

INTERCOMMUNICATING STATION **AN/FIC-type**

3 December 1958

Cognizant Serv: USA FSN: LS-127/FI, LS-127A/FI: 5830-162-8169

LS-127( )/FI

LS-127B/FI: 5830-503-2690

USA

USN

USAF

TYPE CLASS:

Std

STOCK NO:

LS-127/FI, LS-127A/FI:

4B1484AM

LS-127B/FI: 4B1479B-

127



LS-127/FI

**FUNCTIONAL DESCRIPTION:**

Intercommunicating Station LS-127( )/FI is the master or control station unit of an intercommunication system and is used in systems serving large headquarters buildings, depots, communications centers, or similar fixed plant installations.

This equipment consists of a self-contained speaker microphone and amplifier and can be used with as many as 24 other station units on a one-way, talk-back, selected station, or all-talk basis.

The LS-127( )/FI is designed specifically for use with Intercommunicating Station LS-129/FI or LS-130( )/FI.

**TECHNICAL CHARACTERISTICS:**

*Input and Output Impedances:* 50 or 050 ohms

*Speaker Voice Coil Impedance:* 45 ohms

*Power Output:* 2-1/2 w

*Power Requirements:* 30 w (in use), 15 w (idle), 115-v 50/60-cycle ac

MIL-HDBK-161

**AN/FIC-type INTERCOMMUNICATING STATION**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunicating Station LS-127( )/FI (Equipment consists of only one major component.)	4B1486M	7-3/8 x 6-7/8 x 19-3/4	30

**REFERENCE DATA AND LITERATURE:**

TM 11-2572 and TM 11-2572A

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	3.75	79.5

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## INTERCOMMUNICATING STATION AN/FIC-type

3 December 1958

Cognizant Serv: USA FSN: 5830-162-8170

LS-128( )/FI

USA

USN

USAF

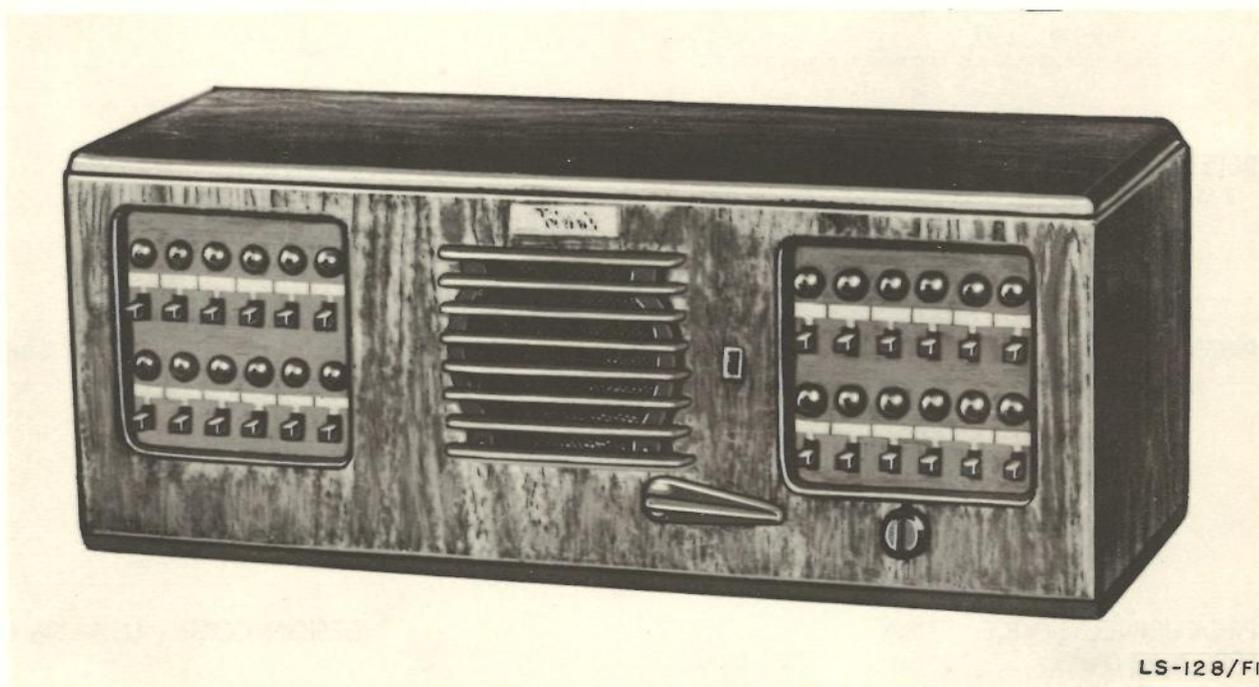
TYPE CLASS: Std  
 STOCK NO: 4B1484M

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LS-128/FI

**FUNCTIONAL DESCRIPTION:**

Intercommunicating Station LS-128( )/FI is the master or control station unit of an intercommunication system and is used in systems serving large headquarters buildings, depots, communications centers, or similar fixed-plant installations.

This equipment consists essentially of a speaker microphone and amplifier and can be used in conjunction with as many as 24 other station units on a one-way, talk-back, selected station, or all-talk basis.

The LS-128( )/FI is designed specifically for use with Intercommunicating Station LS-129/FI or LS-130( )/FI.

**TECHNICAL CHARACTERISTICS:**

*Input and Output Impedances:* 50 or 500 ohms

*Speaker Voice Coil Impedance:* 45 ohms

*Power Output:* 2-1/2 w

*Power Requirements:* 30 w (in use), 15 w (idle), 115-v 50/60 cycle ac

MIL-HDBK-161

**AN/FIC-type INTERCOMMUNICATING STATION**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunicating Station LS-128( )/FI (Equipment consists of only one major component.)	4B11484M	7-3/8 x 6-7/8 x 19-3/4	30

**REFERENCE DATA AND LITERATURE:**

TM 11-2572 and TM 11-2572A

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	3.9	79.5

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## INTERCOMMUNICATING STATION AN/FIC-type

3 December 1958

Cognizant Serv: USA FSN: 5830-222-1664

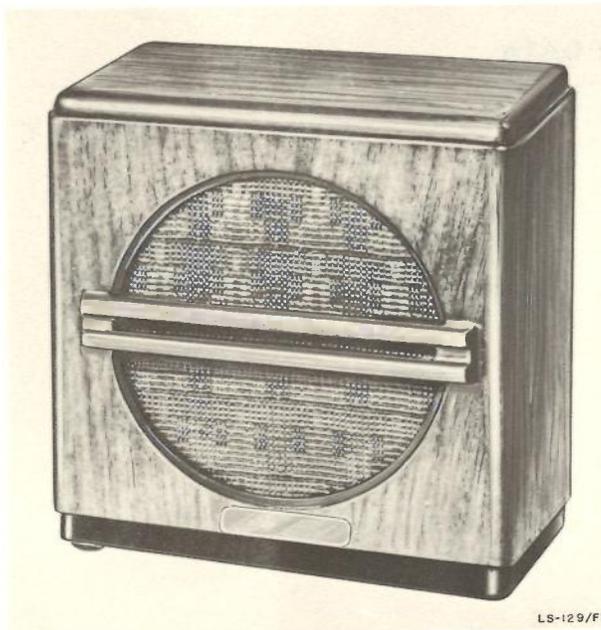
LS-129/FI

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 6C294A-129A



LS-129/FI

## FUNCTIONAL DESCRIPTION:

Intercommunicating Station LS-129/FI is a speaker microphone equipment used in an intercommunication system. It is used in headquarters building, depots, communications centers, and similar installations.

This equipment consists of a speaker microphone contained in a wooden cabinet. It cannot initiate calls to other speaker microphone units or to the master station unit of a system in which it is used.

The LS-129/FI receives power from the master control station unit of the system in which it is used.

## TECHNICAL CHARACTERISTICS:

Output Impedance: 50 ohms

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunicating Station LS-129/FI (Equipment consists of only one major component.)	6C294A-129A	7-3/8 x 3-3/4 x 7-1/8	4.25

## REFERENCE DATA AND LITERATURE:

TM 11-2572

MIL-HDBK-161

**AN/FIC-type** INTERCOMMUNICATING STATION

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1 (10 units)	4	

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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3 December 1958

Cognizant Serv: USA FSN: 5830-222-1663

## INTERCOMMUNICATING STATION AN/FIC-type

LS-130( )/FI

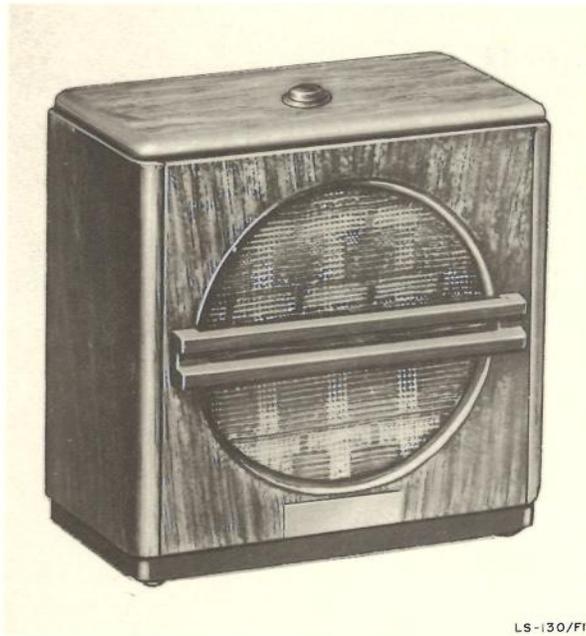
USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 6C294A-130

-- L/Std  
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LS-130/FI

## FUNCTIONAL DESCRIPTION:

Intercommunicating Station LS-130( )/FI is a speaker microphone equipment designed for use as a local station unit in an intercommunication system. It is used in systems serving large headquarters buildings, depots, communications centers, or similar installations.

This equipment consists of a 5-inch speaker microphone contained in a wooden cabinet and is equipped with a push-button for signaling annunciator-equipped master station units.

The LS-130( )/FI cannot initiate calls to the other speaker microphone units or to master station units not equipped with annunciators.

The LS-130( )/FI receives power from the master control station unit of the system in which it is used.

## TECHNICAL CHARACTERISTICS:

*Output Impedance:* 50 ohms

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunicating Station LS-130( )/FI (Equipment consists of only one major component.)	6C294A-130	7-3/8 x 3-3/4 x 7-1/8	4.25

## REFERENCE DATA AND LITERATURE:

TM 11-2572

MIL-HDBK-161

**AN/FIC-type** INTERCOMMUNICATING STATION

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1 (10 units)	4	

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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INTERCOMMUNICATING STATION **AN/FIC-type**

3 December 1958

Cognizant Serv: USA FSN: 5830-170-9935

LS-138/FI

USA

USN

USAF

TYPE CLASS:

L/Std

STOCK NO:

4B1482AMA



LS-138/FI

**FUNCTIONAL DESCRIPTION:**

Intercommunicating Station LS-138/FI is a master or control station unit of an intercommunication unit. It is used in systems serving large headquarters buildings, depots, communications centers, or similar installations.

This equipment consists of a self-contained speaker microphone and amplifier unit and is used in conjunction with 12 other local station units on a one-way, talk-back, selected station, or all-talk basis.

The LS-138/FI can communicate with other master stations and through them with their remote stations.

**TECHNICAL CHARACTERISTICS:**

*Input and Output Impedances:* 50 or 500 ohms

*Speaker Voice Coil Impedance:* 45 ohms

*Power Output:* 2-1/2 w

*Power Requirements:* 30 w (in use), 15 w (idle), 110/220-v 50/60-cycle ac

**AN/FIC-type INTERCOMMUNICATING STATION****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunicating Station LS-138/FI	4B1482AMA	7-3/8 x 6-7/8 x 13-3/8	20.5
	(Equipment consists of only one major component.)			

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	3.3	70

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

INTERCOMMUNICATION STATION **AN/FIC-type**

3 December 1958

Cognizant Serv: USA FSN: 5830-503-2691

LS-200/FI

USA

USN

USAF

TYPE CLASS:

Std

Used by

STOCK NO:

6C42-200

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Intercommunication Station LS-200/FI is used for voice communication over wire lines between offices of a large headquarters. The equipment is arranged to provide privacy of communication (by means of speaker-microphone or handset) between stations when all master stations in the system are equipped with this feature. Annunciators are used as a means of signaling between points in the system.

The LS-200/FI is used with as many as six other local station units.

**TECHNICAL CHARACTERISTICS:**

*Input and Output Impedances:* 50 or 500 ohms

*Speaker Voice Coil Impedance:* 45 ohms

*Power Output:* 2 w

*Power Requirements:* 30 w (in use), 15 w (idle), 105- to 125-v 60 cycle ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunication Station LS-200/FI (Equipment consists of only one major component.)	6C42-200	13-3/4 x 7-1/8 x 7-1/2	

**REFERENCE DATA AND LITERATURE:**

TM 11-5089

**SHIPPING DATA**

PKGS	VOLUM (Cu Ft)	WEIGHT (Lbs)
1	2.0	27

MIL-HDBK-161

**AN/FIC-type** INTERCOMMUNICATION STATION

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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INTERCOMMUNICATION STATION **AN/FIC-type**

3 December 1958

Cognizant Serv: USA FSN: 5830-521-0542

LS-201/FI

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 6C42-201

Used by

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Intercommunication Station LS-201/FI is used for voice communication over wire lines between officers of a large headquarters. The equipment is arranged to provide privacy of communication (by means of speaker-microphone or handset) between stations when all master stations in the system are equipped with this feature. Annunciators are used as a means of signaling between points in the system.

The LS-201/FI is used with as many as 12 other local station units.

**TECHNICAL CHARACTERISTICS:***Input and Output Impedances:* 50 or 500 ohms*Speaker Voice Coil Impedance:* 45 ohms*Power Output:* 2 w*Power Requirements:* 30 w (in use), 15 w (idle), 105- to 125-v 60 cycle ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunication Station LS-201/FI	6C41-201	13-3/4 x 7-1/8 x 7-1/2	
	(Equipment consists of only one major component.)			

**REFERENCE DATA AND LITERATURE:**

TM 11-5089

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	2.0	29

MIL-HDBK-161

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**AN/FIC-type** INTERCOMMUNICATION STATION

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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INTERCOMMUNICATION STATION **AN/FIC-type**

3 December 1958

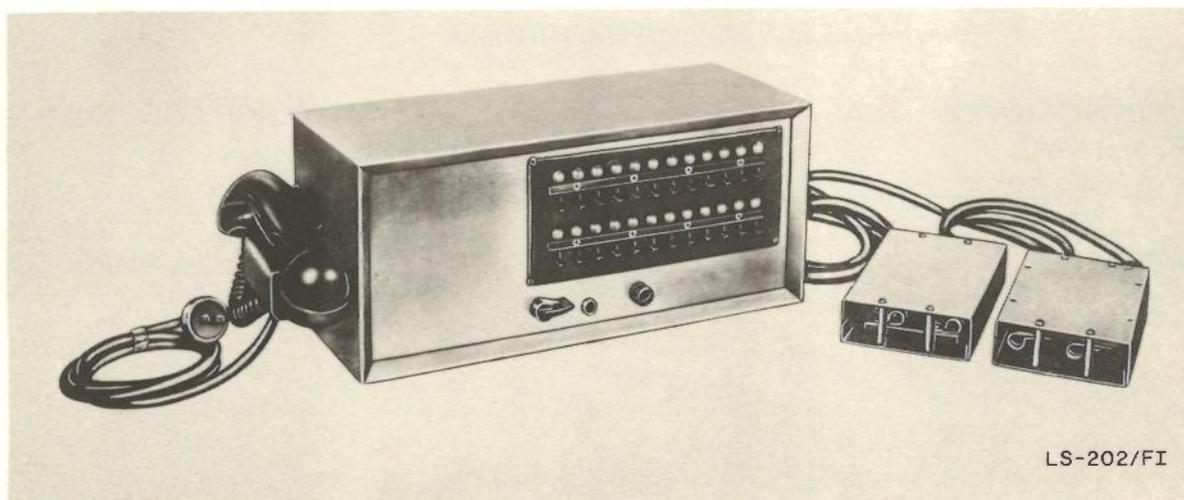
Cognizant Serv: USA FSN: 5830-503-2692

LS-202/FI

USA

USN

USAF

TYPE CLASS:  
STOCK NO:Std  
6C42-202--  
--Used by  
--**FUNCTIONAL DESCRIPTION:**

Intercommunication Station LS-202/FI is used for voice communication over wire lines between offices of a large headquarters. The equipment is arranged to provide privacy of communication (by means of speaker-microphone or hand-set) between stations when all master stations in the system are equipped with this feature. Annunciators are used as a means of signaling between points in the system.

The LS-202/FI is used with as many as 24 other local station units.

**TECHNICAL CHARACTERISTICS:**

*Input and Output Impedances:* 50 or 500 ohms

*Speaker Voice Coil Impedance:* 45 ohms

*Power Output:* 2 w

*Power Requirements:* 30 w (in use), 15 w (idle), 105- to 125-v  
60 cycle ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Intercommunication Station LS-202/FI (Equipment consists of only one major component.)	6C42-202	21-3/4 x 7-1/2 x 8-1/2	

**REFERENCE DATA AND LITERATURE:**

TM 11-5089

MIL-HDBK-161

**AN/FIC-type** INTERCOMMUNICATION STATION

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	2.3	33

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RECORDER-REPRODUCER ASSEMBLY **AN/FNH-type**

20 November 1958

Cognizant Serv: USN FSN:

RD-153/SNH

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Recorder-Reproducer Assembly is a completely self-contained unit designed to provide continuous recording without loss of time for reloading. It consists of four rack-mounted Sound Recorder-Reproducers Type VRF-7 and incorporates an overlap relay circuit. Adjacent units in the rack are intended to operate in pairs and the change-over from one unit to the other in a pair is automatic.

This equipment is designed for fixed installation and can be used to record and play back orders, conferences, or conversations.

The recording medium is an endless 35-mm cellulose acetate film which can record audible sound for a period of 2 hours continuously or, by substituting a motor pulley and belt, it can record 3 hours continuously for each VRF-7 unit.

*Note.* Each VRF-7 unit is similar to Sound Recorder-Reproducer type VRF-1, except for mechanical modifications to provide for rack mounting, and for minor electronic modifications to provide for overlap operation.

Facilities are provided for switching the input to each of the four units from any one of 16 telephone, radio, or microphone lines.

**TECHNICAL CHARACTERISTICS:***Number of Inputs:* 16*Overlap Operation:* Automatic; unit starts 2 minutes before first unit reaches end of recording time*Reload Indication:* Red signal lamps*Recording Medium:* 35 mm cellulose acetate film*Recording Time (each unit):* 2 hours continuous, 3 hours with motor pulley and belt changes*Film Speed:* 40 feet per minute*Audio Power Output:* 5 w*Recording Needle:* Sapphire tip*Frequency Response:*  $\pm 3$  db from 300 to 4,500 cps, 1,000 cps reference*Noise Level:* 200 uw maximum*Distortion:* 2.5% at 400 and 1,000 cps*Gain:* 108 db  $\pm 2$ *Operating Power Requirements (Each Unit):* 130 w, 115-v 60-cycle ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Amplifier			
1	Control Panel			
1	Main Frame Assembly			
1	Mounting Rack			
4	Recorder-Reproducer VRF-7			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 365-1825

MIL-HDBK-161

**AN/FNH-type** RECORDER-REPRODUCER ASSEMBLY

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG: Dwg. No. 58-60

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Frederick Hart and Co., Inc.	Poughkeepsie, N. Y.	NObsr 46447	

## AMPLIFIER ASSEMBLY AN/FRA-1( )

1 July 1958

Cognizant Serv: USA FSN: 5820-194-4977

USA

USN

USAF

TYPE CLASS:

Std

Used by

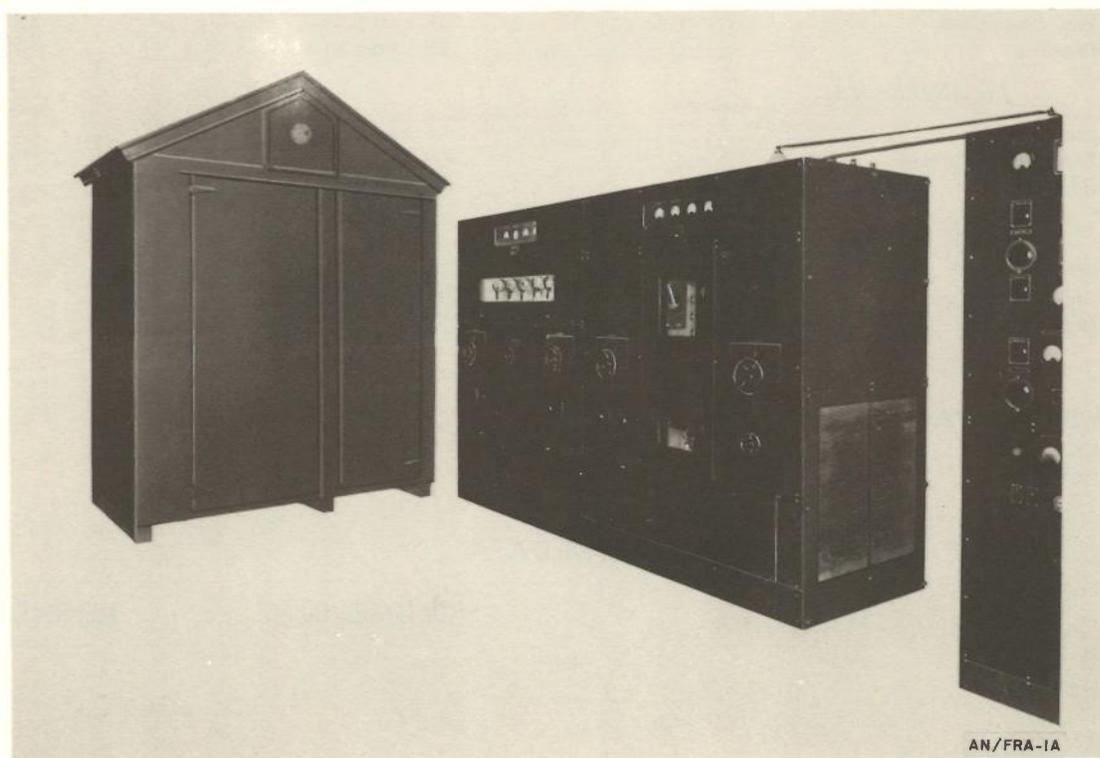
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STOCK NO:

2C466

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**FUNCTIONAL DESCRIPTION:**

Amplifier Assembly AN/FRA-1( ) is a low- to medium-frequency, medium-power (class C), rf power-amplifier equipment intended for military fixed-station radiotelegraph service. It is operated with such exciters as Radio Transmitter BC-365-( ).

This equipment consists essentially of the power amplifier, its related rectifier, an antenna tuning unit, and associated items.

Models A and B include a prefabricated wooden house that

contains the antenna tuning networks. All models are functionally interchangeable but differ in arrangement of controls, control circuitry, and similar design details.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.15 to 0.55

*Antenna Characteristics:* 750 to 3,000 uuf; 6 to 12 ohms

*Type of Signal:* Cw (on-off), or fsk (125-cycle shift)

*Power Output:* 6 to 10 kw

*Power Requirements:* 22 kva, 200/240-v 50/60-cycle 3-phase ac

MIL-HDBK-161

**AN/FRA-1( ) AMPLIFIER ASSEMBLY**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For AN/FRA-1:</i>				
1	Antenna tuning unit	-----	120 x 97 x 68	2,540
1	Power amplifier	-----	78 x 60 x 36	1,400
1	Rectifier	-----	78 x 60 x 36	1,600
<i>For AN/FRA-1A:</i>				
1	Amplifier	-----	76 x 60 x 36	900
1	Antenna tuning unit	-----	98 x 84 x 58	1,400
1	Rectifier unit	-----	76 x 60 x 36	2,000
<i>For AN/FRA-1B:</i>				
1	Amplifier	-----	76 x 60 x 36	1,650
1	Antenna tuning unit	-----	110 x 84 x 62	2,600
1	Rectifier unit	-----	76 x 60 x 36	1,700

**REFERENCE DATA AND LITERATURE:**

TM 11-1055  
TM 11-5028

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
<i>Type No.:</i> AN/FRA-1 17	646.82	9,915
<i>Type No.:</i> AN/FRA-1A 13	----	9,488
<i>Type No.:</i> AN/FRA-1B 10	----	8,846

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-A-10209

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radio Receptor Co., Inc.	Brooklyn, N. Y.	2151-P-50-02	\$16,462.00
Collins Radio Co.	Cedar Rapids, Iowa	43026-P-56-55	16,465.00

## AMPLIFIER GROUP AN/FRA-2

1 July 1958

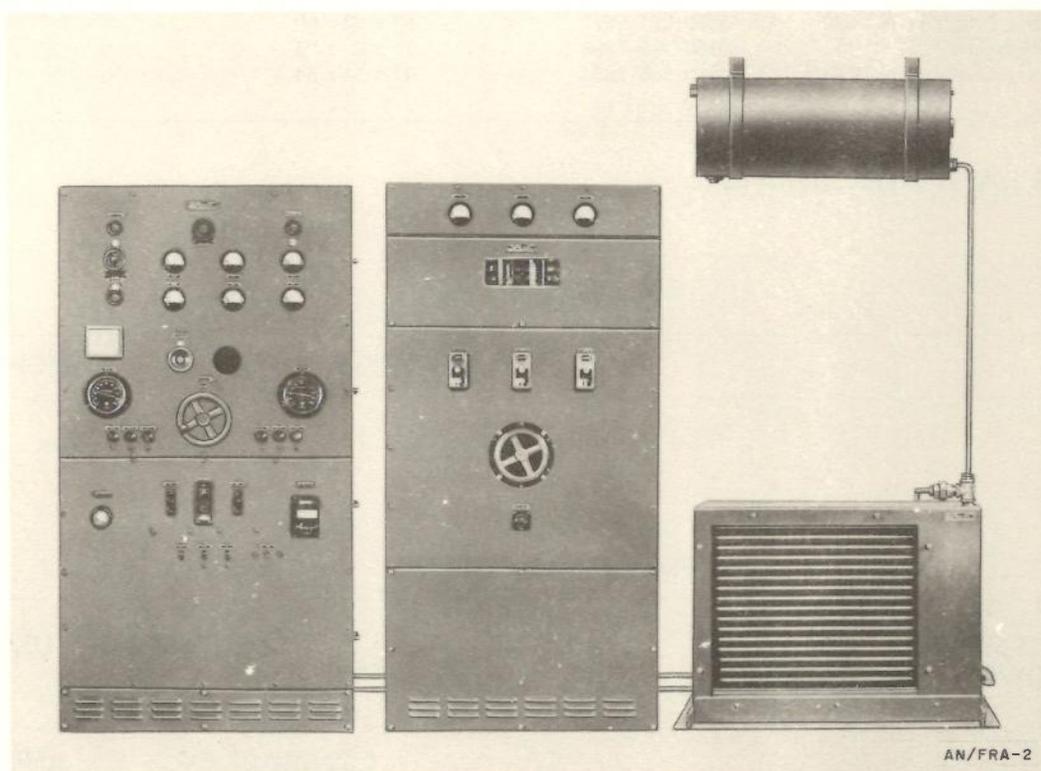
Cognizant Serv: USA FSN: 5895-194-9394

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C466-2

**FUNCTIONAL DESCRIPTION:**

Amplifier Group AN/FRA-2 is a low- to medium-power, cw or frequency-shift keying, Rf power-amplifying equipment used for fixed-station radioteletypewriter communication.

This equipment consists essentially of the power-amplifier unit (a push-pull, class C amplifier), its associated rectifier, and a water-cooling unit.

This power amplifier is operated with Radio Transmitter BC-339- ( ) or equal and is available in several models, all

of which are functionally interchangeable but different in design details.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 26.5

*Exciter Requirements:* 400 to 1,000 w

*Type Modulation:* AM

*Type of Signal:* Cw or mcw (300 wpm International Morse Code maximum); or fsk (850-cycle frequency shift)

*Power Output:* 10 kw

*Power Requirements:* 220-v 50/60-cycle 3-phase ac

MIL-HDBK-161

**AN/FRA-2** AMPLIFIER GROUP

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS (FSN)	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Amplifier BC-340	5820-224-5997	83 x 42 x 60	2,370
1	Rectifier RA-22	6130-230-7293	79 x 39 x 95	3,105
1	Water Cooling Unit RU-2	4110-545-7836	47 x 54 x 54	850

REFERENCE DATA AND LITERATURE:  
TM 11-801

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
21	653.7	9,258

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3309

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Lewyt Manufacturing Corp.	Long Island City, N. Y.	21541-P-50-06	\$12,488.00

## RADIO FREQUENCY SWITCHING GROUP AN/FRA-3

21 November 1958

Cognizant Serv: USN FSN: 5820-303-5722

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --

Used by

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--**FUNCTIONAL DESCRIPTION:**

Radio Frequency Switching Group AN/FRA-3 is specifically designed to permit radio operators to select any one of forty antennae from the operating position at the receiver. By means of a patching arrangement at the switching location, the five remote-control panels may be patched to control any one of the five (forty point) antenna selector switches.

This equipment consists essentially of five complete systems. Each of five receiver operators at five different locations may select any one antenna from a remotely located group of forty.

The receiver operator, by turning a hand crank, turns a synchronized generator that is electrically connected to a synchronized motor at the antenna switch location.

**TECHNICAL CHARACTERISTICS:***Control Panel:*

Size: 19 inches x 12-7/8 inches

Type Mounting: Standard relay rack

Mounted Behind Panel: 5G synchronized generator and if. synchronized motor

Hand Crank: On shaft of sunchronized generator; protrudes through lower center of panel.

*Antenna Selector:*

Number: 5

Location: Mounted in same relay rack cabinet

*RF Patch Panels J-239/G:*

Components: 11 Jack Switches 491388, five of which are partially used

Location: Two are mounted in relay rack cabinets with antenna selectors

*Electrical Connector Assemblies J-435/G and J-436/G:*

Location: Mounted in relay rack cabinet with antenna selectors

Function: To patch synchronized control cables from the control panels to the antenna selector

**AN/FRA-3** RADIO FREQUENCY SWITCHING GROUP

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
5	Antenna Selector SA-256/ FRA-3	.....	12-7/32 x 15 x 19	47.5
1	Blank panel	.....	3/16 x 5-7/32 x 19	.625
5	Control Panel C-923/FRA-3	.....	8-1/4 x 12-7/32 x 19	16
1	Electrical Connector Assembly J-435/FRA-3	.....	2-1/4 x 3-15/32 x 19	2.25
1	Electrical Connector Assembly J-436/FRA-3	.....	2-1/4 x 3-15/32 x 19	1.875
1 Box	Equipment spares			
2 Sets	Installation drawings			
5	Synchronized control patch cords			

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 91500

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	23	425

(An additional box holds equipment spares, synchronized control patch cords, manuals, and drawings.)

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuAer

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Transcontinental Electronic Corp.	New York, N. Y.	NObsr-49003, 19 July 1949	\$4,500.00

## FREQUENCY SHIFT CONVERTER GROUP AN/FRA-4

21 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by  
F16-Q-112605-200

## FUNCTIONAL DESCRIPTION:

Frequency Shift Converter Group AN/FRA-4 is used in the shore-based portion of a radiotelegraph system. It selects the strongest of three frequency shift signals from associated receiving equipments and converts mark-space type frequency into polar relay operation, keyed tone output, and keyed direct current output; or converts multiple shift facsimile-type signals into amplitude modulated tone output.

The outputs are used to operate teletypewriter printers, tape recorders, remotely located telegraph or teletypewriter terminal equipment, facsimile recorders, or similar equipment.

The equipment uses the three intermediate frequency signals from Diversity Radio Receiving Equipment RBP or RCP. A one- or two-receiver system is also applicable.

The comparator, keyer, and power supply may be removed from the main table-mounted type cabinet and mounted in any 19-inch relay rack.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 50 kc, 10 kc band*Tone Frequency:* 850 to 3,750 cps*Reception:*

Type Signal: Frequency shift

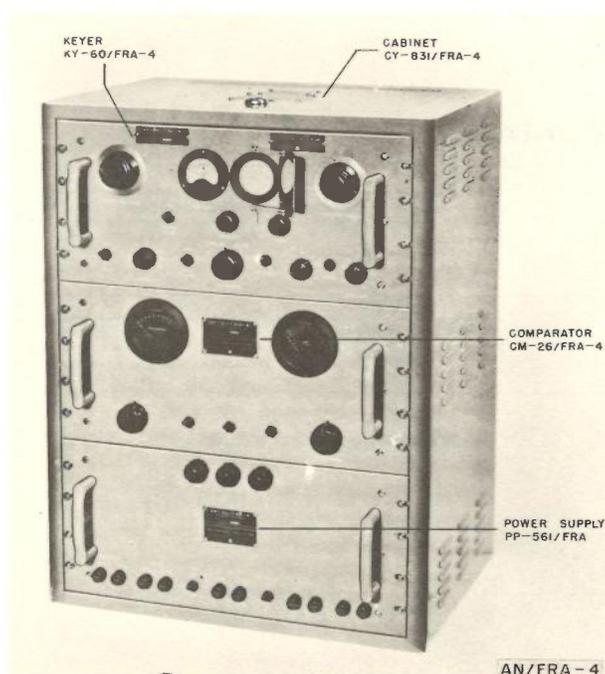
Type Modulation: Fm

*Power Output:*

Tone: 10 v across 600 ohms

Dc Signal 90 v across 3,000 ohms

Polar Relay: 270-v dc

*Keying Speeds Obtainable:* 100 wpm*Power Requirements:* 227 w, 115-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Converter Group AN/FRA-4, consisting of:			
1	Cabinet CY-831/FRA-4	-----	28 x 28-3/8 x 17-1/16	159
1	Comparator CM-26/FRA-4	-----	8-3/4 x 19 x 15-3/16	
1	Keyer KY-60/FRA-4	-----	8-3/4 x 19 x 15-3/16	
1	Power Supply PP-561/FRA-4	-----	8-3/4 x 19 x 15-3/16	
1	Maintenance parts kit	-----	12-3/4 x 25 x 16-1/2	86

MIL-HDBK-161

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**AN/FRA-4** FREQUENCY SHIFT CONVERTER GROUP

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REFERENCE DATA AND LITERATURE:

NAVSHIPS 91496

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	26.7	372

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hoffman Radio Corp.	Los Angeles, Calif.	NObsr-43389, 15 June 1949	

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CONTROL-MONITOR GROUP **AN/FRA-6**

21 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

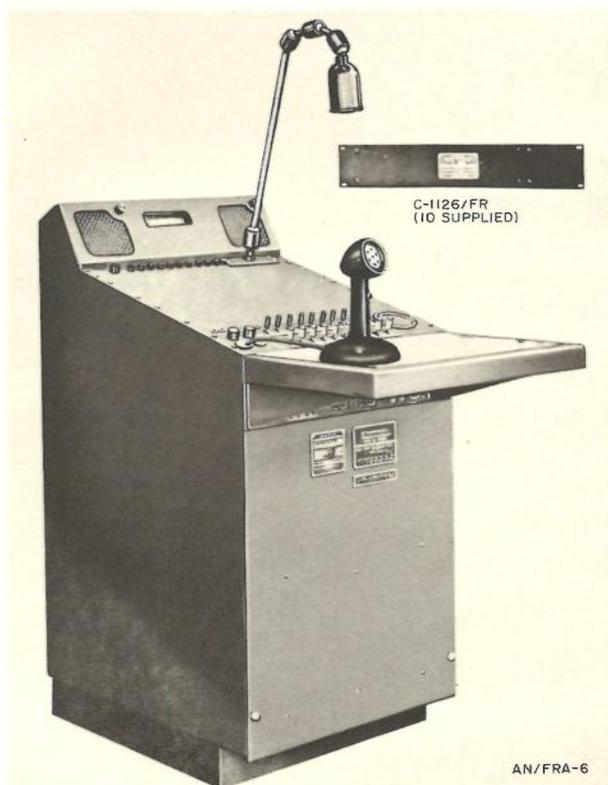
Used by

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STOCK NO: --

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**FUNCTIONAL DESCRIPTION:**

Control-Monitor Group AN/FRA-6 is an airport remote-control console used for the operation of one to ten transmitters remotely located from the airport control tower. It is also used for selecting and controlling the output of one to ten remotely located receivers.

When required, two of these groups can be connected in multiple to share any or all the remote equipment available.

**TECHNICAL CHARACTERISTICS:**

*Number of Controlled Channels:* 10 receivers (maximum); 10 transmitters (maximum)

*Power Requirements:* 25 w, 105- to 125-v 50- to 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Amplifier Assembly AM-744/ FRA-6	-----	8 x 5-3/4 x 17-7/16	
1	Amplifier, Audio Frequency AM-728/FRA-6	-----	8 x 2-7/8 x 17-7/16	
1	Console, Communication Con- trol OA-408/FRA-6	-----	40 x 19-1/2 x 36	
1	Power Supply PP-851/FRA-6	-----	7-1/4 x 8-5/8 x 10-7/8	

MIL-HDBK-161

AN/FRA-6 CONTROL-MONITOR GROUP

REFERENCE DATA AND LITERATURE:

NAVSHIPS 91816(a)

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	39.2	705

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## CONTROL-MONITOR GROUP AN/FRA-11

21 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

Used by

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Control-Monitor Group AN/FRA-11 is used at airport control towers as an aircraft communication control system to provide unified air-to-ground voice communication.

This equipment provides flexible control of 16 transmit-receive communication channels. The transmitters and receivers may be either locally or remotely located.

Provisions are made for recording any received signal. A limited number of voice recorders may be employed for recording specific channels. Any desired shift in channel recording may be made on the jack panel of cabinet number one.

## TECHNICAL CHARACTERISTICS:

*Number of Controlled Channels:* 16 receiver; 16 transmitter  
*Impedance:*

Preamplifier: 200 ohms input; 200 ohms output

Audio Frequency Amplifier AM-1042/FRA-11: 5,000 ohms input; 600 ohms output

Audio Frequency Amplifier AM-1043/FRA-11: 200 ohms input; 600 ohms output

Amplifier Assembly AM-1044/FRA-11: 600 ohms input; 1,200 ohms output

Signal Distributing Panel SB-390/FRA-11: 100,000 ohms input; 600 ohms output

*Power Requirements:* 1,600 w, 115-v 60-cycle 2-wire 1-phase ac  
(the dc power is supplied as part of the equipment)

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Amplifier Assembly AM-1044/ FRA-11	-----	8-3/4 x 13-1/2 x 19	
4	Audio Frequency Amplifier AM-1042/FRA-11	-----	8-3/4 x 14 x 19	
3	Audio Frequency Amplifier AM-1043/FRA-11	-----	5-1/4 x 10-1/2 x 19	
3	Control Indicator C-1443/ FRA-11	-----	20-1/16 x 34-3/8 x 35	
3	Dynamic Microphone Electro- voice Model 602D	-----		
1	Power Distribution Panel SB-389/FRA-11	-----	5-1/4 x 5-1/2 x 19	
2	Power Supply PP-1142/ FRA-11	-----	8-3/4 x 11-1/2 x 19	
3	Power Supply PP-1143/ FRA-11	-----	7-7/8 x 8-3/4 x 19	
1	Radio Signal Distribution Panel SB-390/FRA-11	-----	7 x 13-1/2 x 19	
16	Relay Assembly RE-166/ FRA-11	-----	3-1/2 x 9-1/4 x 19	
3	Speaker, Pull Down, Jenson Type AP-10	-----	4-1/2 x 5 dia	

MIL-HDBK-161

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**AN/FRA-11** CONTROL-MONITOR GROUP

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92273

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
18	70.7	1,037.2

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Charleston Naval Shipyard	Naval Base, S. C.	BuAer P.O. 40738, 40700	

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## MODULATOR-POWER SUPPLY AN/FRA-16

21 November 1958

Cognizant Serv: USN FSN: 5825-642-8025

USA

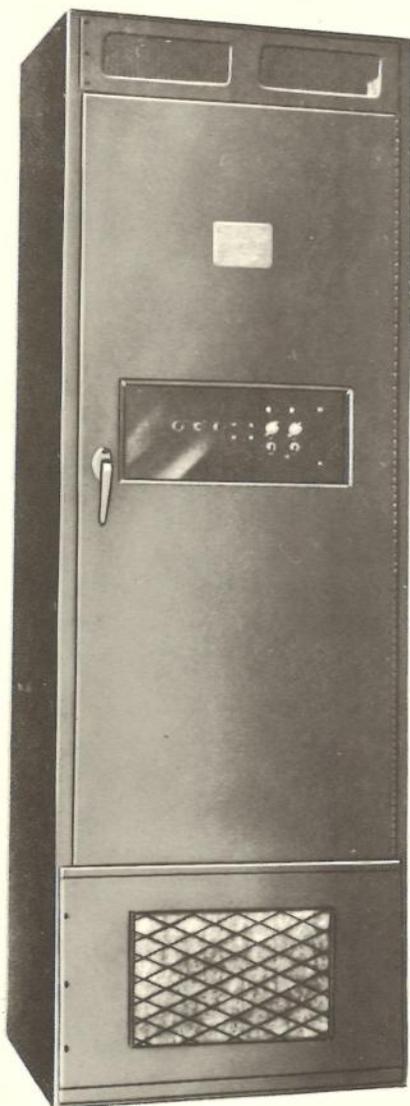
USN

USAF

TYPE CLASS:  
STOCK NO:--  
--

Used by

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AN/FRA-16

**FUNCTIONAL DESCRIPTION:**

Modulator-Power Supply AN/FRA-16 is designed to provide a high voltage, low voltage, and bias voltage to Dual Ultra-High Frequency Fan Marker Transmitter TZU with which it is used. It also furnishes a 3,000-cycle amplified signal for modulating the transmitter carrier.

Two modulator-power supplies are required for each dual transmitter; one of the power supplies and one of the transmitters being used as standby for emergency purposes.

**TECHNICAL CHARACTERISTICS:***Power Output:*

High-voltage Power Supply: 400 ma at 1,000-v dc

Low-voltage Power Supply: 400 ma at 500-v dc

Bias Power Supply: 100 ma at -150-v dc

Tone Oscillator and Modulator: 3,000-cycle modulation tone

*Power Requirements:* 11- to 16-amp, 93- to 127-v 60-cycle ac

MIL-HDBK-161

**AN/FRA-16** MODULATOR-POWER SUPPLY

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Modulator-power supply		18 x 24 x 72	645

REFERENCE DATA AND LITERATURE:

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Lewyt Manufacturing Corp.	Brooklyn, N. Y.	NObsr-64240	\$6,000.00

## VACUUM TUBE KEYER UNIT AN/FRA-type

7 November 1958

Cognizant Serv: USN FSN: 5820-665-3425

50059

USA

USN

USAF

TYPE CLASS:  
STOCK NO:

Used by



50059

**FUNCTIONAL DESCRIPTION:**

Vacuum Tube Keyer Unit 50059 consists of an amplifier and rectifier designed for line operation of high-speed telegraphic ink recorders. It is used to link automatically the high-speed telegraphic incoming signals to the recorders.

Incoming low-level sinusoidal signals, keyed at high speed, are amplified and converted to dc pulses of substantially flat-top characteristics suitable for actuating the recorder. It is primarily designed for the differential operation of high-speed recorders. However, unidirectional operation required for operating certain other types of recorders and for vacuum-tube keying of radiotelegraph transmitters also may be used.

**TECHNICAL CHARACTERISTICS:**

**Keying Speed:** 500 wpm (maximum), equivalent to 200 keying cps

**Signal Input:**

Frequency: 300 to 10,000 cps

**Sensitivity:** -10 db (with provisions for changing sensitivity)

**Line Impedance:** 600 ohms

**Out, Differential or Unidirectional (Ungrounded or Either Side Grounded):**

1,600-ohm Load: 40 v

100,000-ohm Load: 125 v

**Output Voltage Limits:**

**Differential Operation:** Voltages of opposite polarity equal within 1 db

**Unidirectional Operation:** Minimum voltage change 40 db

**Output Wave Shape:** Essentially flat-topped

**Ac Attention (Maximum Tone Signal or Harmonic in Output):**

Less than 60 uv

**Power Requirements:** 150 w, 105- to 125-v 50- to 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRA-type VACUUM TUBE KEYER UNIT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
	Vacuum-Tube Keyer Unit 50059	-----	8-3/4 x 16 x 19	72

(Equipment consists of only one major component.)

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 954U5

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
RCA Victor Division of Radio Corp. of America	Camden, N. J.	NOs-91075, 26 August 1941	

ANTENNA COUPLER **AN/FRA-type**

5 December 1958

Cognizant Serv: USN FSN:

CU-168/FRR

	USA	USN	USAF
TYPE CLASS:	Used by	Used by	Alt-Std
STOCK NO:	--	F16-C-91719-2001	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Antenna Coupler CU-168/FRR is a ground station equipment which provides means for operating up to five communications receivers from a single receiving antenna. Additional couplers may be connected in tandem in order to provide antenna inputs for additional receivers. The coupler is used with an unbalanced line having a nominal impedance of 70 ohms.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 2 to 32*Number of Outputs:* 5 to receivers; 1 to tandem coupler*Impedance:* 70 ohms*Mounting Data:* Relay rack (19 in.), or in Cabinet CY-597A/G*Power Requirements:* 125 w, 105 to 125 v, 50- to 400-cycle, 1-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Coupler CU-168/FRR	-----	8-23/32 x 19 x 11-13/16	
	consists of:			
1	Main chassis			
1	Power supply			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91697A

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1		

MIL-HDBK-161

**AN/FRA-type** ANTENNA COUPLER

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG: MIL-C-0015744C

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NObsr-49175, 2 June 1950 NObsr-52727	

## FREQUENCY SHIFT RECEIVER CONVERTER AN/FRA-type

5 December 1958

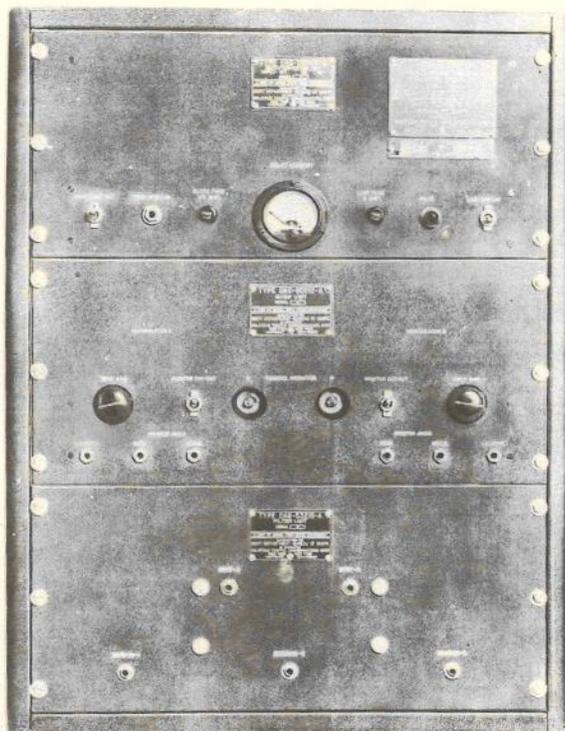
Cognizant Serv: USN FSN:

FRC

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
F16-Q-15108-100 --

FRC

## FUNCTIONAL DESCRIPTION:

Frequency Shift Receiver Converter FRC is used to demodulate frequency-shift-keyed radioteletype signals. It functions at audio frequencies and is used with any two stable communication receivers equipped with a beat-frequency-oscillator. "Polar keying" is used. The unit provides dual-channel diversity reception, and is used at shore stations.

The FRC is identical with Frequency Shift Receiver Equipment FRC-1 except that the FRC uses Navy components. The FRC replaces nomenclature for the identical Navy Model FSC.

The following equipment is used with, but is not supplied with, Frequency Shift Receiver Converter FRC: spaced diversity (2) antennas, and communication receivers (2).

## TECHNICAL CHARACTERISTICS:

*Frequency:*

Mark: 2,975 cps

Space: 2,125 cps

*Keying Speed:* 70 dot cps on relay output. Several hundred wpm on tone output

*Input Impedance:* 500 ohms

*Input Level:* 6 mw (minimum)

*Limited Range:* 0.5- to 30-v rms input

*Limited Output:* 4-v rms

*Limited Output Impedance:* 500 ohms

*Attenuator Loss:* 12 db

*Mark and Space Filter Input and Output Impedances:* 500 ohms

*Space Filter Bandpass:* 1,600 to 2,600 cps

*Mark Filter Bandpass:* 2,400 to 3,600 cps

*Rejection Ratio (Space Channel):* 26 db down

*Output Mixer Unit:* 15 ma at 10-v polar dc (4-v minimum)

*Output Tone Keyer:* 1,000 cps af tone

*Mounting:* Table or standard relay rack

*Power Requirements:* 115-v, 50- to 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRA-type** FREQUENCY SHIFT RECEIVER CONVERTER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Converter Model FRC consists of:	-----	15 x 21 x 28	150
1	Cabinet RW-10420 includes:	-----	15 x 21 x 28	150
1	Filter Unit RVV-53215			
1	Mixer Unit RW-50212			
1	Power and Keyer Unit BVV-20345			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,078

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Washington Navy Yard	Washington, D.C.	----	\$2,500.00 with spares

## FREQUENCY SHIFT KEYER EQUIPMENT AN/FRA-type

26 November 1958

Cognizant Serv: USN FSN:

FSD

USA

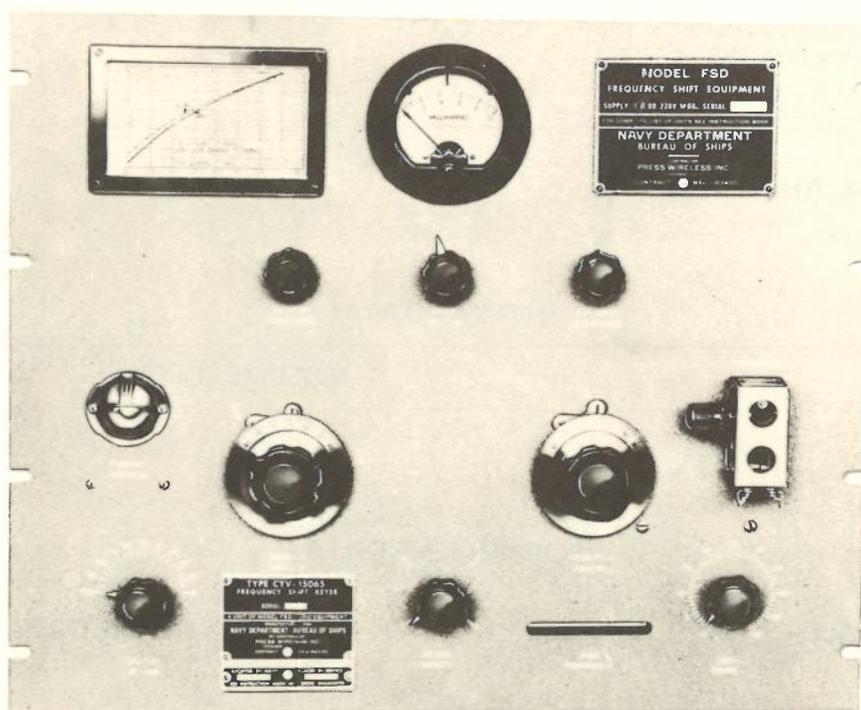
USN

USAF

TYPE CLASS:  
STOCK NO:--  
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Used by

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FSD

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Keyer Equipment FSD is used to replace the exciter of a continuous-wave transmitter with a source of radio-frequency excitation that can be frequency-shift keyed to produce telegraph or facsimile signals corresponding to the signals at the keyer input. This method of keying minimizes selective fading, interference, and static disturbances, thereby assuring a higher fidelity of transmission. It is primarily intended for installation in shore stations.

Four preset crystal-controlled oscillator frequencies are provided.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 2 to 5 mc

*Type Modulation:* Fm

*Type of Signals:* Frequency-shift keying

*Input Level:* 0 to -20 db

*Power Output:* 1-1/2 w (variable)

*Power Requirements:* 100- 260-v 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRA-type** FREQUENCY SHIFT KEYER EQUIPMENT

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Keyer CYV- 35065 consists of:	-----	12-1/2 x 15-3/4 x 19	65
1	Audio-frequency chassis			
1	Oscillator oven chassis			
1	Radio-frequency chassis			
1	Rectifier Power Unit CYV- 20349	-----	8-3/4 x 12 x 19	30

REFERENCE DATA AND LITERATURE:

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Press Wireless, Inc.	Chicago, Ill.	NXsr-83400, 27 November 1944	

## FREQUENCY SHIFT KEYER EQUIPMENT AN/FRA-type

26 November 1958

Cognizant Serv: USN FSN: 5815-328-9335

FSH

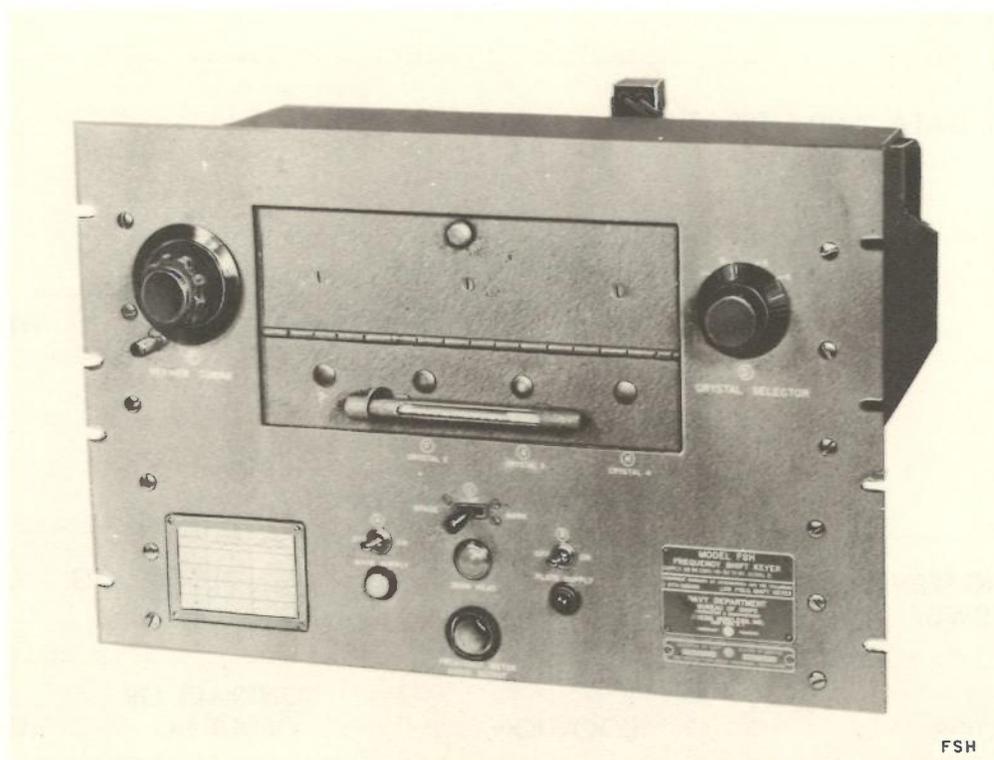
USA

USN

USAF

TYPE CLASS:  
STOCK NO:

Used by



FSH

**FUNCTIONAL DESCRIPTION:**

Frequency Shift Keyer Equipment FSH provides a means of conveying intelligence on a radio circuit using the principle of carrier frequency shift. Mark and space impulses received by the unit produce two fixed frequency conditions which differ by 170 cycles per second.

This unit replaces the oscillator of the transmitter with which it is associated. Although designed primarily for radioteletype, the basic system of frequency-shift keying can be used on any radiotelegraph system having similar keyed signal requirements.

The FSH is intended to operate as an exciter with Radio Transmitter BC-365 or similar transmitters and may be keyed either by teletypewriters, Demodulator 50124, or Vacuum

Tube Keyer Unit 50059. It is designed for standard 19-inch rack mounting, but may be table mounted.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 100 to 500 kc

*Frequency Control:* Crystal

*Frequency-shift Data:*

Mark: +85 cps above assigned frequency

Space: -85 cps below assigned frequency

*RF Output:* 2 w

*Keying Data:*

Signal: 30- to 100-v dc polar or neutral signal

Speed: 60 cps or teletypewriter impulses

*Power Requirements:* 125 w, 115/230-v 50- 60-cycle ac

**AN/FRA-type** FREQUENCY SHIFT KEYSER EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Keyer Model FSH	-----	12-1/4 x 14 x 19	75
(Equipment consists of only one major component.)				

## REFERENCE DATA AND LITERATURE:

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Press Wireless, Inc.	New York, N. Y.	NXsr-91981	\$2,000.00 with spares

## TONE KEYING UNIT AN/FRA-type

1 July 1958

Cognizant Serv: USA FSN: 5820-263-1171

KY-7/FRT

USA

USN

USAF

TYPE CLASS:

Std

STOCK NO:

2C2262-7A



KY-7/FRT

## FUNCTIONAL DESCRIPTION:

Tone Keying Unit KY-7/FRT provides a keyed negative output voltage and adapts any type of keyed radio transmitting equipment to tone-keying operations.

A 1,000-cycle keying tone is fed over a 500-ohm line into the input transformer, which has a center tap for simplex control.

This equipment contains a polarized keying relay, controlled

by the keyed tone input, that can be used to key an associated radio transmitter.

## TECHNICAL CHARACTERISTICS:

*Type of Signal:* Tone keyed negative output voltage

*Input Impedance:* 500 ohms

*Keyed Output Voltage:* 0 to 115 v

*Power Requirements:* 115/230-v 50-60-cycle ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Tone Keying Unit KY-7/FRT (Equipment consists of only one major component.)	(FSN) 5820-263-1171	8-3/4 x 9-13/16 x 19	28.3

## REFERENCE DATA AND LITERATURE:

TM 11-2669

MIL-HDBK-161

**AN/FRA-type** TONE KEYING UNIT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	2.7	67

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-T-10247

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Ereco Radio Laboratory, Inc.	Garden City, N. Y.	17643-P-45-04	\$160.08
Lucian Labs	----	23459-P-50-10	266.50

KEYER AN/FRA-type

3 December 1958

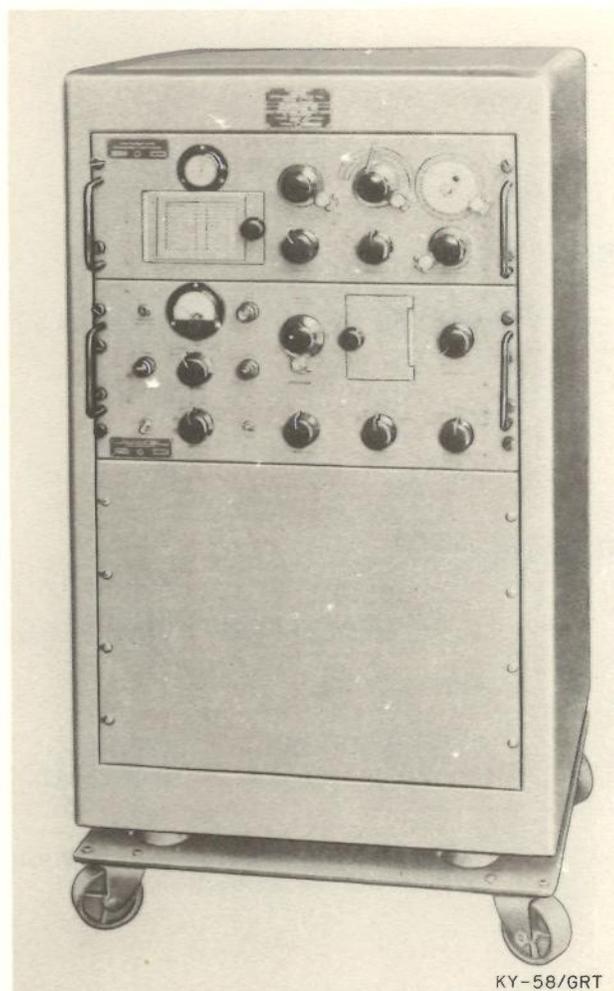
Cognizant Serv: USN FSN: 5820-503-3402

KY-58/GRT

USA

USN

USAF

TYPE CLASS:  
STOCK NO:Std  
2C640-58Used by  
F16-K-47681-1001Used by  
--**FUNCTIONAL DESCRIPTION:**

Keyer KY-58/GRT is a frequency-shift keyer used in long distance radio telegraph systems to improve transmission. It replaces the exciter of a continuous wave transmitter with a source of excitation that can be shifted in frequency (a smaller value higher and lower) to produce telegraph or facsimile signals corresponding to those delivered to the transmitter input. This frequency-shift method is used to minimize selective fading, interference, and static disturbances.

This keyer can be connected to an external master oscillator (such as that of the associated transmitter) and provides three crystal-controlled channels.

Keyer KY-58/GRT is electrically and mechanically identical with Keyer KY-75/SRT except that the KY-58/GRT is mounted on casters for mobility whereas the KY-75/SRT is not.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.0 to 6.7

*Type Modulation:* Fm

*Type of Signal:* Frequency-shift keying, facsimile

*Power Output:* 6 w into 75-ohm load

*Power Requirements:* 470 w, 115/230-v 50/60-cycle 1-phase ac

KY-58/GRT

MIL-HDBK-161

**AN/FRA-type** KEYER

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
-----	------	---------------	------------------------	-----------------

(FSN)

1	Keyer KY-58/GRT	5820-503-3402		
---	-----------------	---------------	--	--

(Equipment consists of only one major component.)

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91543

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
------	----------------	--------------

2	20.9	469
---	------	-----

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
National Co., Inc.	Malden Mass.	NObsr-42513, 30 June 1948 NObsr-52052, 30 October 1950	\$1160.00

## EXCITER UNIT AN/FRA-type

5 December 1958

Cognizant Serv: USA FSN: 0-5/FR, 0-5A/FR: 5820-194-9657  
0-5B/FR, 0-5C/FR: 5820-240-3899

0-5( )/FR

	USA	USN	USAF
TYPE CLASS:	Std	--	L/Std
STOCK NO:	0-5/FR, 0-5A/FR: 2C2710-5, 0-5B/FR, 0-5C/FR: 2C2710-5B	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Exciter Unit 0-5( )/FR is a frequency-shift keying device. It generates a mark signal 425 cps above an assigned frequency upon closing a standard telegraph key and a space signal 425 cps below the assigned frequency upon opening the key.

Although designed primarily for radioteletype, the basic system of frequency-shift keying can be used on any radio-telegraph system having similarly keyed signal requirements.

The equipment is designed for mounting on a table or in a standard 19-inch relay rack.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 6*Frequency Shift:* 0 to 1000 cps positive*Rf Output:* 2 w (variable)*Rf Termination:* Coaxial fitting*Power Requirements:* 125 w, 110/220-v 50-60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Exciter Unit 0-5( )/FR (Equipment consists of only one major component.)	-----	12-1/4 x 12-1/2 x 19	81

## REFERENCE DATA AND LITERATURE:

TM 11-2205

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	8	108

MIL-HDBK-161

**AN/FRA-type** EXCITER UNIT

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Press Wireless, Inc.	Hicksville, N. Y.	31402 Phila 43-02; 31402-43 PP 2008	

## HIGH FREQUENCY POWER AMPLIFIER EQUIPMENT AN/FRA-type

20 October 1958

Cognizant Serv: USN FSN:

TPA

USA

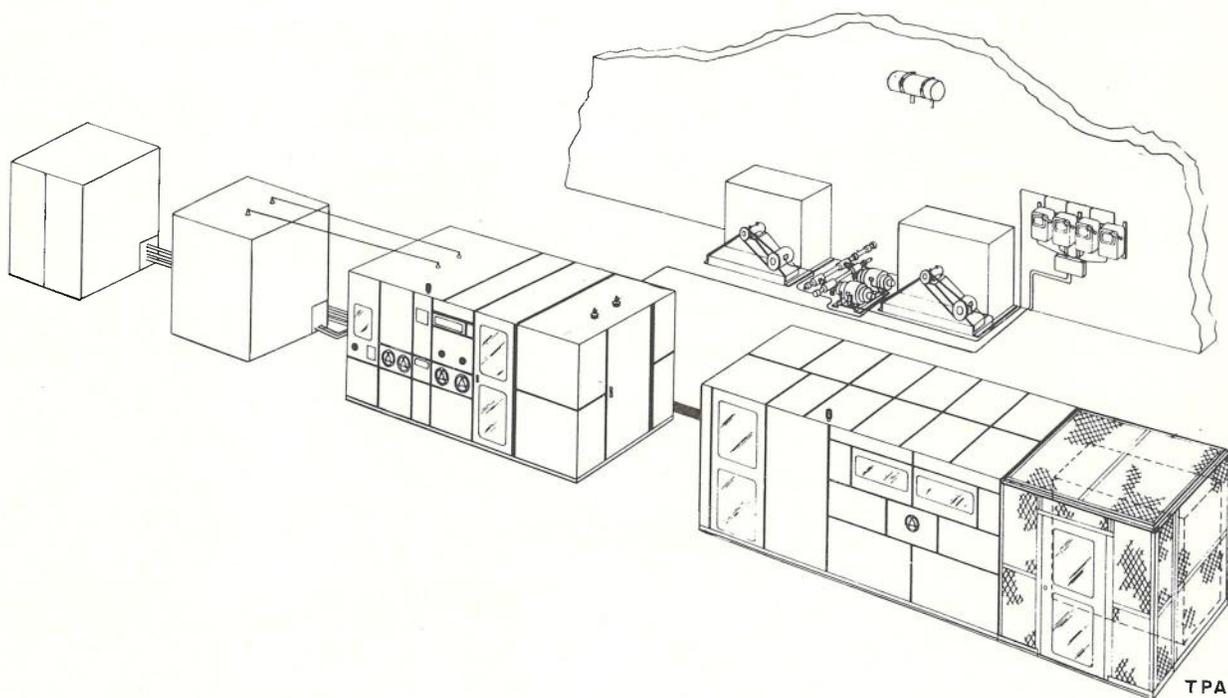
USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

**FUNCTIONAL DESCRIPTION:**

High Frequency Power Amplifier Equipment TPA is an hf power amplifier intended primarily for shore radio installations. It is used for the amplification and transmission of radio communications from one shore station to another, or from a shore station to ships at sea.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 22  
*Frequency Control:* External exciter unit  
*Type Signal:* Cw, mcw, voice  
*Power Output:* 50 kw  
*Input Impedance:* 200 and 600 ohms  
*Output Impedance:* 600 ohms  
*Power Requirements:* 220-v 50- to 60-cycle 3-phase ac

**AN/FRA-type HIGH FREQUENCY POWER AMPLIFIER EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Cooling unit 10565	-----	51 x 60 x 62	1,378
1	Dual Pump Unit 10565	-----	35 x 36 x 50	618
1	Power Amplifier 50278, including:	-----	60 x 78 x 168	6,816
1	Oscillograph 61067	-----	8-3/4 x 14-1/4 x 19-1/2	54
1	Rectifier Power Unit 20458, consisting of:	-----	60 x 78 x 168	5,991
1	Plate Contact or Circuit Breaker Assembly 29905	-----	21 x 36-1/2 x 69	971
1	Plate Transformer 302867	-----	32 x 66 x 73	6,675
1	Screen inclosure	-----	60 x 78 x 80	404
1	Starter Rack 211656, consisting of:	-----	7 x 11 x 15	235
1	Magnetic controller	-----		
1	Surge Tank 10566	-----	14 x 16 x 34	75

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,962(A)

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
40	2,512	39,114

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone & Radio Corp.	Clifton, N. J.	NXsr-84985	

## LORAN SWITCHING EQUIPMENT AN/FRA-type

12 November 1958

Cognizant Serv: USN FSN:

UM

USA

USN

USAF

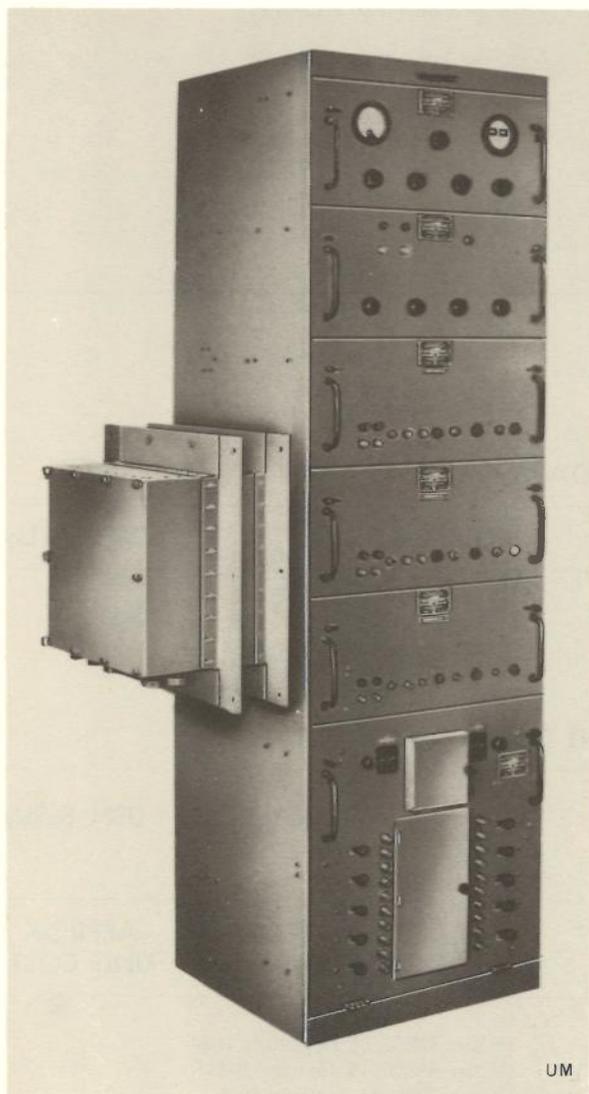
TYPE CLASS: --  
STOCK NO: --

Used by

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**FUNCTIONAL DESCRIPTION:**

Loran Switching Equipment UM is used in transmitting stations of a Loran system to correlate the major station equipments and to perform the auxiliary functions of shielding and of discriminating between local and remote pulses. The loran equipment consists of an excitation switching unit, a discriminator switching unit, three discriminator units, and a power distribution panel mounted in a cabinet. The unit is located with transmitting and timing equipment in a shielded room.

Three distinct functions are performed by Loran switching equipment. These are selective switching, isolation, and discrimination.

**TECHNICAL CHARACTERISTICS:**

*Power Factor:* 95%

*Power Requirements:* 600 w (approximately) with space heaters on, 115-v ( $\pm 5$  v) 55- to 65-cycle 1-phase ac

## AN/FRA-type LORAN SWITCHING EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
5 sets	Equipment spares	-----	15 x 15 x 24	130
1	Loran Switching Equipment	-----	20 x 36-13/16 x 77-5/16	630
	UM, consisting of:			
1	Cabinet 10473	-----	20 x 36-13/16 x 77-5/16	305
1	Discriminator Switching Unit 23483	-----	9-39/64 x 20-5/16 x 22	35
3	Discriminator Unit 50247	-----	9-39/64 x 20-5/16 x 22	75
1	Excitation Switching Unit 24471	-----	9-34/64 x 19-1/2 x 22	30
1	Power Distribution Panel 23482	-----	5 x 22 x 22	35

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,745

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
6	221.82	2,615

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Bridgeport, Conn.	NXsr-81395, 30 December 1944 NXsr-88826, 11 January 1945 NXsr-8826, 11 January 1945	

## AUTOMATIC TRANSMITTER FOR PERFORATED TAPE AN/FRA-type

26 November 1958

Cognizant Serv: FSN:

XTR-442-C

USA

USN

USAF

TYPE CLASS:

Used by

STOCK NO:

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Automatic Transmitter for Perforated Tape XTR-442-C is an electromechanical device used to produce International Morse Code characters from perforated Wheatstone tape at speeds variable from 10 to 100 words per minute. It is used with radiotelegraph transmitting equipment and carrier telegraph equipment at ground stations.

The equipment consists of an auto head and drive unit and an electronic unit, each contained in a separate case. The auto head and drive unit keys electrical impulses in response to the perforations on the Wheatstone tape. The electronic unit operates with the auto head and drive unit to produce modulated signals or to operate a keying relay, either of which may be used to key a radiotelegraph transmitter.

Two types of output are available. The terminal output of an electronically operated relay (bias or similar voltage) is used for the control of a radiotelegraph transmitter. Keyed audio-frequency tone from several automatic tape transmitters may be used with appropriate carrier equipment for the control of radiotelegraph transmitters at a remote location. In addition, the auto head, through which the perforated tape passes, can be used to operate any standard polar relay for local control of a transmitter without using the electronic unit.

## TECHNICAL CHARACTERISTICS:

*Keying Speed:* Variable from 10 to 100 wpm

*Power Requirements:* 115-v 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Auto head and drive unit	-----	8-1/2 x 12 x 13-3/4	30
1	Electronic unit	-----	9-1/4 x 10 x 15	14

## REFERENCE DATA AND LITERATURE:

TM 11-2545

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	5.7	141

MIL-HDBK-161

**AN/FRA-type** AUTOMATIC TRANSMITTER FOR PERFORATED TAPE

PROCUREMENT DATA

PROCURING SERVICE: USN, BuShips  
SPEC &/or DWG:

DESIGN COG: Commercial

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
McElroy & Goode, Inc.	Boston, Mass.		

## RADIO SET AN/FRC-6

1 July 1958

Cognizant Serv: USA FSN: 5820-192-7142

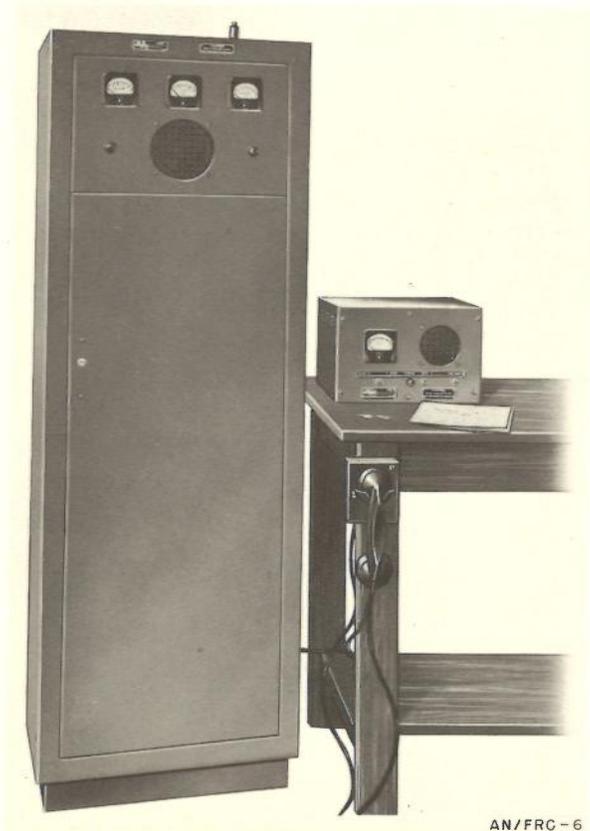
USA

USN

USAF

TYPE CLASS: L/Std  
STOCK NO: 2S2002-6A

Used by



## FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-6 is a two-way, crystal-controlled, FM (voice) transmitting and receiving equipment used for communication in the vhf band by military police, security troops, and similar units.

The equipment consists of cabinet-inclosed, rack and panel-mounted equipment and includes a control console, handset, and associated accessories.

This set can be operated by remote control over a field telephone pair from a distance up to 10 miles and can communicate with fixed or vehicular stations, in open country up to 20 miles away.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 30 to 40

*Type Modulation:* Fm

*Type of Signal:* Voice

*Power Output:* 50 w

*Power Requirements:* 325 w, 115-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna AS-412/FRC-6	(FSN) 5985-243-0428		
1	Console C-559A/FRC-6	(FSN) 5820-194-2969	12 x 18 x 10	33
1	Rack MT-658A/FRC-6 consists of:	(USA) 2Z7383-658A	68-1/8 x 22-1/2 x 15	173
	Radio Receiver R-276A/ FRC-6	(FSN) 5820-164-7229	9 x 9 x 18-1/2	21
	Radio Set Control C-560A/ FRC-6	(FSN) 5820-170-4778	5-1/4 x 6 x 18-1/2	9
	Radio Transmitter T-215A/FRC-6	(FSN) 5820-194-0974	9 x 9 x 18-1/2	38

MIL-HDBK-161

**AN/FRC-6** RADIO SET

REFERENCE DATA AND LITERATURE:

TM 11-5506

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	40.101	496

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3291

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Farnsworth Electronics Division, International Telegraph & Telephone Corp.	Palo Alto, Calif.	37214-P-53-51	\$1,223.46

1 July 1958

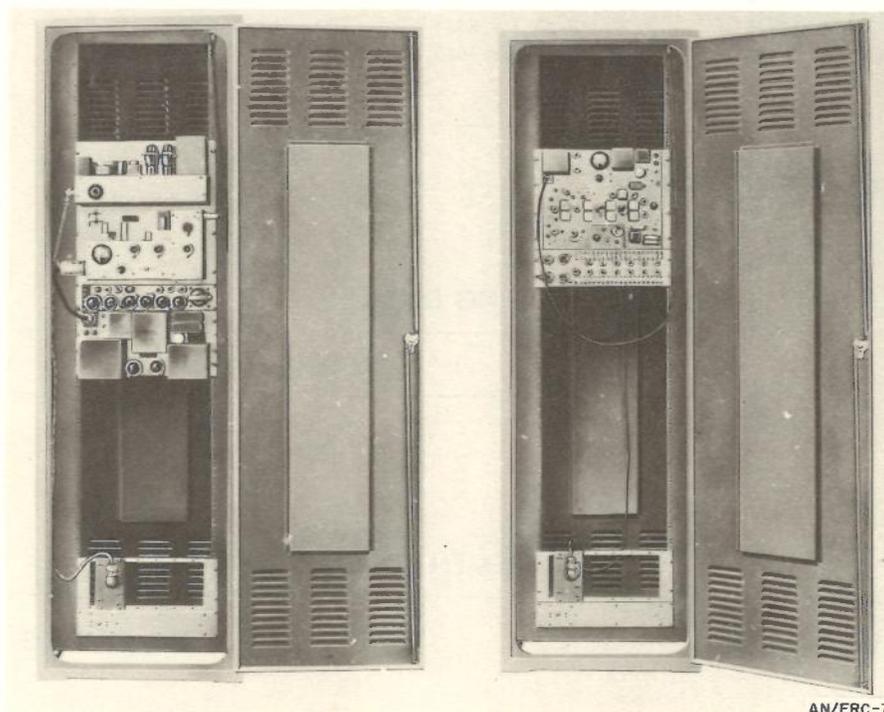
Cognizant Serv: USA FSN: 5820-249-6593

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2S2002-7



AN/FRC-7

### FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-7( ) is a medium-power, Am (voice and tone) receiving and transmitting equipment used for fixed-plant relay, point-to-point, ground-to-air, and similar applications in the vhf band.

This equipment consists of rack-mounted operating components (installed in a steel, floor-type cabinet), an antenna, a power supply, and associated items.

This set can provide four-channel communication with such equipment as Carrier Terminal Set AN/FCC-2.

When the operating components of this equipment are

installed in special weatherproof cabinets, the set is designated Radio Set AN/FRC-17.

### TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 132 to 156

*Type Modulation:* Am

*Type of Signal:* Voice or tone

*Power output:* 12 w

*Power Requirements:*

Transmitter: 400 w, 105-125-v 60-cycle 1-phase ac

Receiver: 90 w, 105-125-v 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRC-7( ) RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Antenna AS-576/FRC	(USA) 2A264-576	54 x 50 x 12	40
2	Cabinet	-----	84 x 17 x 26-1/4	265
1	Power Supply PP-749/FRC	(FSN) 6130-245-9677	8-3/4 x 8-3/4 x 19	68
1	Radio Receiver R-448/FRC	(FSN) 5820-244-8534	14 x 2-1/2 x 19	20
1	Radio Transmitter T-326/ FRC	(FSN) 5820-252-4626	19-7/32 x 8-11/16 x 19	14

**REFERENCE DATA AND LITERATURE:**

TM 11-292

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
7	134.8	1,149

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radio Receptor Co. Inc.	Brooklyn, N. Y.	14598-P-50-06	\$3,182.00

RADIO SET **AN/FRC-9**

1 July 1958

Cognizant Serv: USA FSN: 5820-230-0442

USA

USN

USAF

TYPE CLASS:

L/Std

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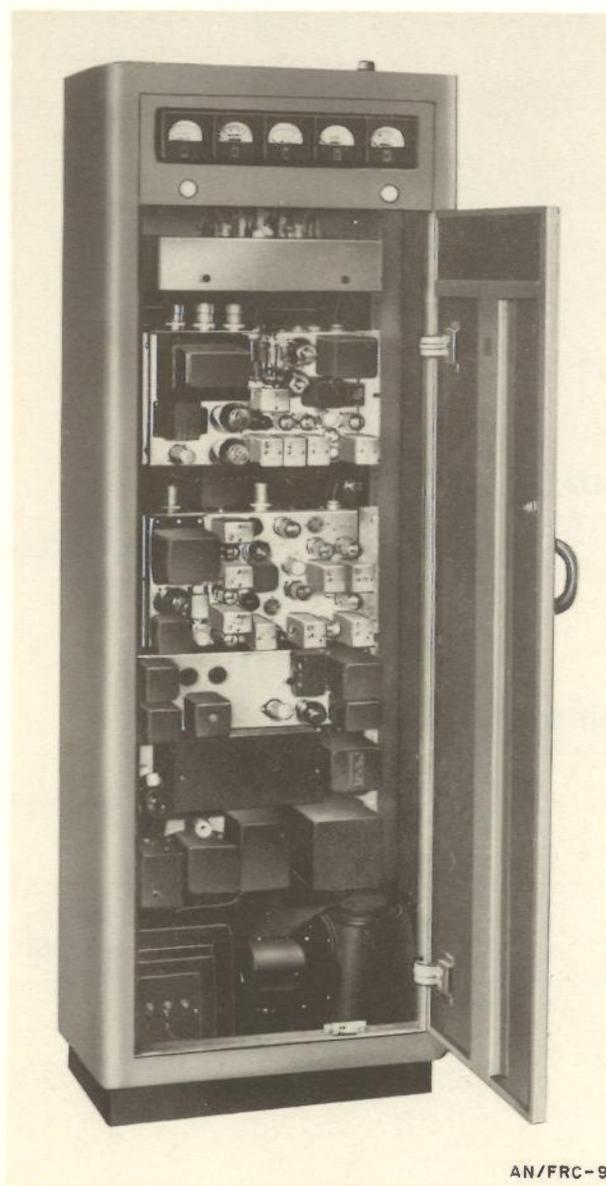
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STOCK NO:

2C5608

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AN/FRC-9

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-9 is a medium-power, crystal-controlled, Fm (voice), radio transmitting and receiving equipment operating in the vhf band. It is used for fixed-station, point-to-point communication for traffic control by guard and security troops, military police units and similar organizations.

This equipment consists of a single-channel transmitter with associated receiver and power supply components enclosed in a floor-type metal cabinet. It has an automatic power overload reset, and includes a blower motor.

A whip-type or equivalent antenna is used.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 30 to 40

*Type Modulation:* FM

*Type of Signal:* Voice

*Power Output:* 250 w

*Power Requirements:* 1,160 w, 115-v 60-cycle ac

MIL-HDBK-161

**AN/FRC-9 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Antenna	2A292-8250		
1	Control panel	2C2801-1		
1	Rack	2Z7381 .20		
1	Radio Receiving Set AN/ FRR-5	2C4508		
1	Radio transmitter	2C6702		
1	Remote Control Unit C-408/FR	2C731		
1	Rf amplifier	2C305		
1	Transmitter control	2C729-4		

**REFERENCE DATA AND LITERATURE:**

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO SET AN/FRC-10

1 July 1958

Cognizant Serv: USA FSN: 5820-188-6177

	USA	USN	USAF
TYPE CLASS:	Std	Std	Std
STOCK NO:	2C5110		

## FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-10 is a high-power, hf, long range, AM (voice, and tone) radioteletype communication equipment used in long-distance, fixed-plant applications.

This equipment consists of a single-sideband radio transmitter, radio receiver, and carrier terminal facilities. It provides six full duplex radioteletype channels (plus a vf order-wire facility) when operated in a system terminated by identical or equivalent equipment. It can be arranged for double modulation diversity operation when required to overcome fading or interference with long-distance communication.

This set requires elaborate antenna arrays, and power is provided by 5-kw field power units located at each of the sites of the operating components, which usually are displaced a considerable distance from each other.

The U. S. Navy radio transmitting equipment TEF is essentially the same as Radio Transmitter WECO D156000, which is part of this set; Radio Receiver REA (USN) is essentially the same equipment as Radio Receiver WECO D-99945.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4.5 to 22

*Type Modulation:* Am (single-sideband)

*Type of Signal:* Voice and tone

*Power Output:* 2 kw (peak envelope)

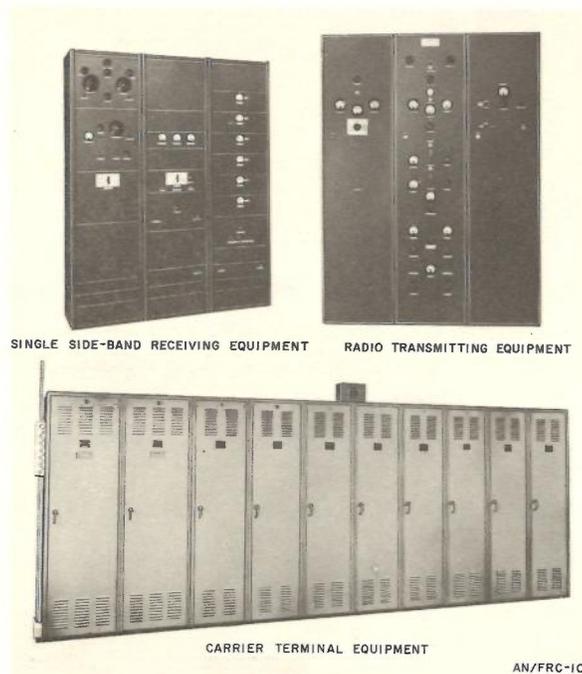
*Power Requirements:*

Transmitter: 5 kw, 220-v 50/60-cycle 3-phase ac

Receiver: 500 w, 115-v 50/60-cycle 1-phase ac

Carrier Terminals: 3 kw, 115-v 50/60-cycle 1-phase ac

Distortion Measuring Bay: 250 w, 115-v 50/60 cycle 1-phase ac



## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Carrier Terminal OA-63/ FRC-10	5805-240-6224	220-1/4 x 84 x 17	5,260
	AND			
1	Carrier Terminal OA-64/ FRC-10	5805-241-3305		
1	Distortion measuring bay	6625-669-0093	22 x 84 x 17	350
1	Radio Receiver D-99945	6636-194-7068	65-1/8 x 84 x 18-1/4	1,440
1	Transmitter WECO D-156000	5820-189-7041	60-3/4 x 88 x 30	2,400

MIL-HDBK-161

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**AN/FRC-10** RADIO SET

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**REFERENCE DATA AND LITERATURE:**

TM 11-2132, TM 11-832, TM 11-884

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**SHIPPING DATA**

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PKGS		VOLUME (Cu Ft)	WEIGHT (Lbs)
OA-63/FRC-10 and OA-64/FRC-10 D-99945 D-156000	25	213.5	5,478

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**PROCUREMENT DATA**

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PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 89067-89080

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	New York, N. Y.		

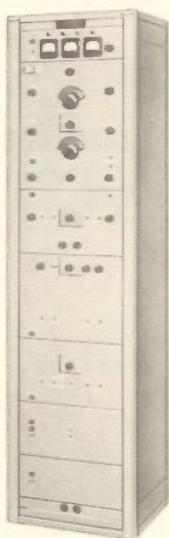
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RADIO SET **AN/FRC-10A**

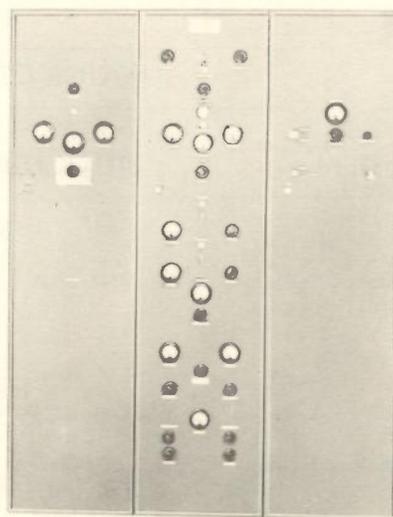
1 July 1958

Cognizant Serv: USA FSN: 5820-193-7099

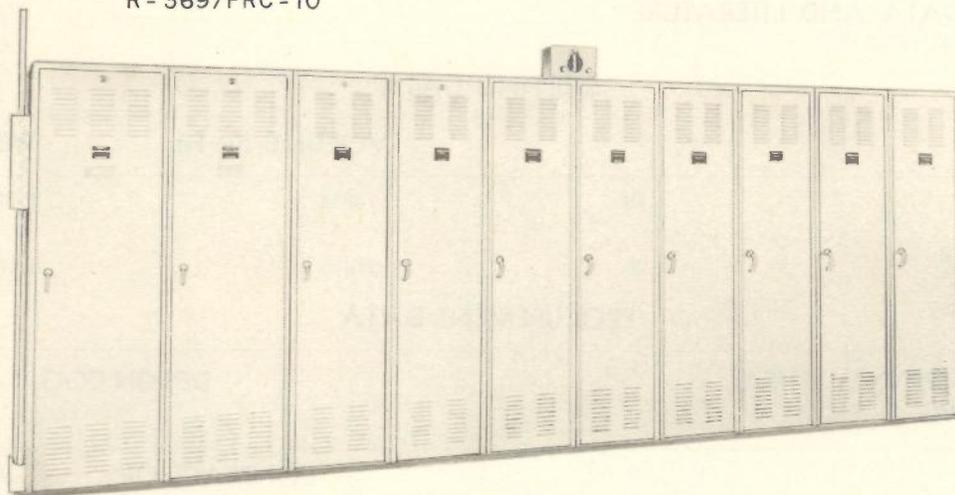
	USA	USN	USAF
TYPE CLASS:	Std	Std	Std
STOCK NO:	2C5110A	--	--



RADIO RECEIVER  
R-369/FRC-10



RADIO TRANSMITTING EQUIPMENT



CARRIER TERMINAL EQUIPMENT

AN/FRC-10A

**AN/FRC-10A** RADIO SET**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-10A is an improved version of Radio Set AN/FRC-10; the commercial receiver unit has been replaced by Radio Receiver R-369/FRC-10. The same multiplexing equipment (Carrier Terminal OA-63/FRC-10 and Carrier Terminal OA-64/FRC-10) and transmitter (commercial WECO D-156000) are used in this set as were used in the earlier model, AN/FRC-10.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:*

Transmitter: 4.5 to 22

Receiver: 4 to 28

*Type Modulation:* Am

*Type of Signal:* Composite transmissions consisting of tone-radioteletype, voice, facsimile, or other audio frequencies in the range from 100 to 6,000 cpsp also, standard double-sideband am

*Power Output:* 2 kw (peak envelope)

*Power Requirements:*

Transmitter: 5 kw, 220-v 50/60-cycle 3-phase ac

Receiver: 500 w, 115-v 50-60-cycle 1-phase ac

Carrier terminals: 3 kw, 115-v 50/60-cycle 1-phase ac

Distortion Measuring Bay: 250 w, 115-v 50/60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Carrier Terminal OA-63/ FRC-10	5805-241-3305	22-1/4 x 84 x 17	5,260
	AND			
1	Carrier Terminal OA-64/ FRC-10	5805-240-6224	22 x 84 x 17	550
1	Distortion measuring equip- ment	6625-669-0093		
1	Radio Receiver R-369/FRC-10	5820-497-9043		
1	Transmitter WECO D-156000	5820-189-7041	60-3/4 x 88 x 30	2,400

**REFERENCE DATA AND LITERATURE:**

TM 11-832, TM 11-870

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
R-369/FRC-10 D-156000	18	2,111
OA-63/FRC-10 & OA-64/FRC-10 }	25	5,478

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

## RADIO SET AN/FRC-10B

1 July 1958

Cognizant Serv: USA FSN: 5820-186-9264

USA

USN

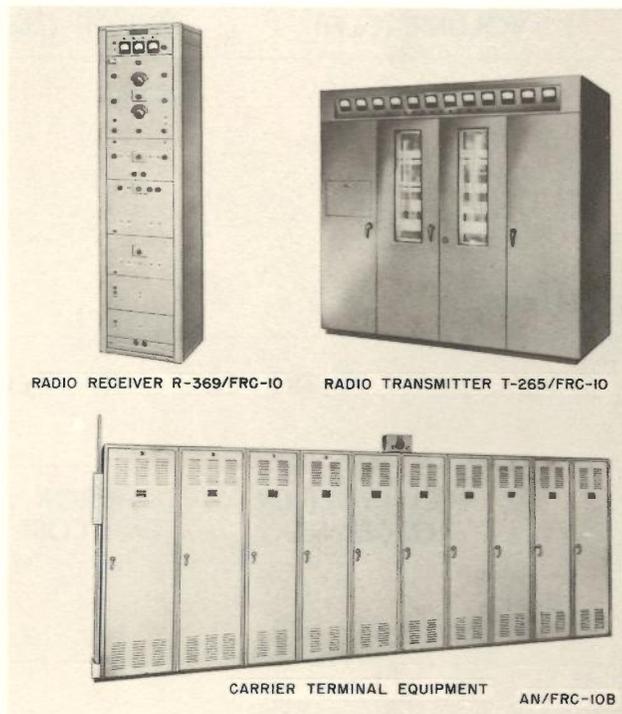
USAF

TYPE CLASS:  
STOCK NO:

Std

Std

Std



## FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-10B is an improved version of Radio Set AN/FRC-10; the commercial transmitter and receiver units have been replaced by Radio Transmitter T-265/FRC-10 and Radio Receiver R-369/FRC-10. The same multiplexing equipment (Carrier Terminal OA-63/FRC-10 and Carrier Terminal OA-64/FRC-10) is used in all models of the AN/FRC-10( ).

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:*

Transmitter: 4 to 23

Receiver: 4 to 28

*Type Modulation:* Am

*Type of Signals:* Composite transmissions consisting of tone-radioteletype, voice, facsimile, or other audio frequencies in the range from 100 to 6,000 cps; also, standard double-sideband am

*Power Output:* 4 kw (ssb peak envelope power), 1 kw (dsb carrier)

*Power Requirements:*

Transmitter: 10kw, 230-v 50/60-cycle 3-phase ac

Receiver: 500 w, 50-60-cycle 1-phase ac

Carrier terminals: 3 kw, 115-v 50/60-cycle 1-phase ac

Distortion measuring bay: 250 w, 115-v 50/60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USN)		
1	Carrier Terminal OA-63/ FRC-10	5805-241-3305	220-1/4 x 84 x 17	5,260
	AND			
1	Carrier Terminal OA-64/ FRC-10	5805-240-6224	22 x 84 x 17	550
1	Distortion measuring equip- ment	6625-669-0093		
1	Radio Receiver R-369/FRC-10	5820-497-9043		
1	Radio Transmitter T-265/ FRC-10	5820-249-6609	84 x 84 x 42-1/2	5,800

MIL-HDBK-161

**AN/FRC-10B** RADIO SET

REFERENCE DATA AND LITERATURE:

TM 11-814, TM 11-870

SHIPPING DATA

UNIT	PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
T-265/FRC-10	31	595.3	10,009
R-369/FRC-10	18	156.4	2,111
OA-63/FRC-10 & } OA-64/FRC-10 }	25	213.5	5,478

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO SET AN/FRC-15

1 July 1958

Cognizant Serv: USA FSN: 5820-537-3997

USA

USN

USAF

TYPE CLASS: Std

Std

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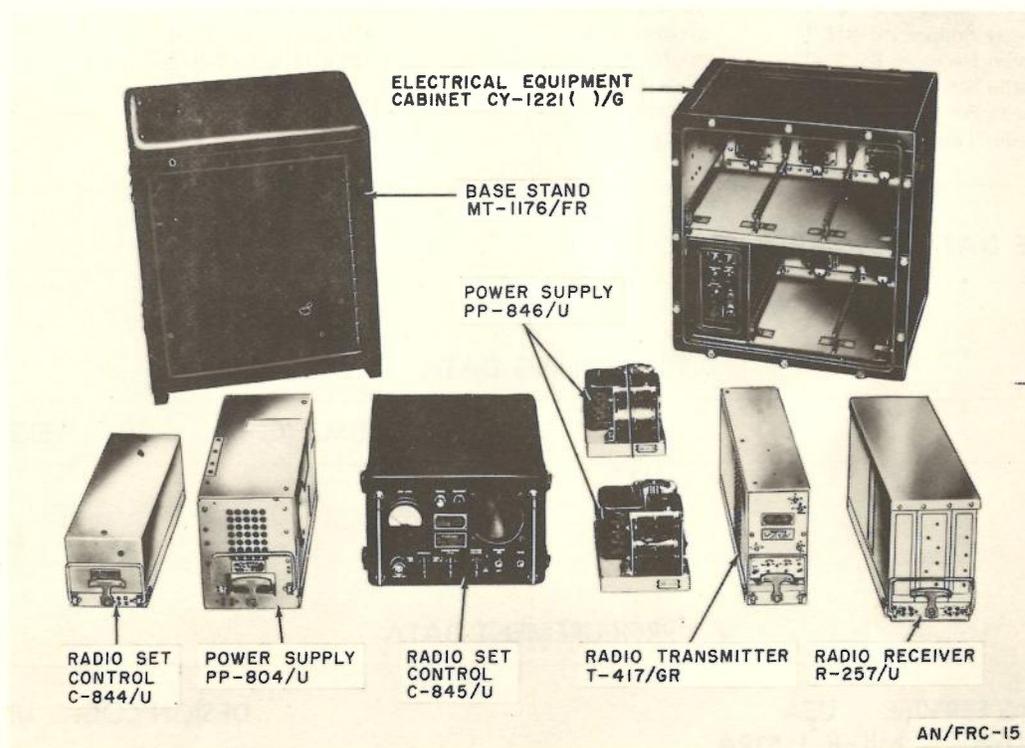
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STOCK NO:

2S2002-15

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**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-15 is a vhf, FM, low-powered radio receiving and transmitting equipment used in tactical and nontactical communication applications.

This equipment consists of receiver and transmitter components, local and remote-control units, equipment cabinet and base, related power supplies, and accessories.

It can be operated in simplex, duplex, and retransmission applications. Push-to-talk operation over either of two preset frequencies is provided either locally or at a maximum distance of 10 miles from the transmitter site. Duplex operation requires an additional antenna and can be conducted from the

local operating site only. The remote-control unit can be used to transmit tone signals for transmitter adjustment and signaling, to monitor reception, and to intercommunicate between the set and the remote point.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 25 to 50

*Type Modulation:* Fm

*Type of Signal:* Voice

*Power Output:* 0.5 w (rcvr); 45 w (xmtr)

*Power Requirements:*

PP-804/U: 230 va, 115/230-v 50-65-cycle ac

PP-846/U: 46 va, 115/230-v 50-65-cycle ac

MIL-HDBK-161

**AN/FRC-15 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Power Supply PP-804/U	3H4497-804	8-5/8 x 7 x 14-1/2	40
2	Power Supply PP-846/U	3H4497-846	5-1/8 x 6-1/4 x 7-1/16	10.5
1	Radio Receiver R-257/U	2C180-257	8-1/2 x 14-1/2 x 5-3/4	19
1	Radio Set Control C-844/U	2C684-844	8-3/4 x 14-3/4 x 5-7/8	6.5
1	Radio Set Control C-845/U	2C684-845	8-7/16 x 13-3/4 x 13-1/2	17.5
1	Radio Transmitter T-417/GR	2C6900-417	8-1/2 x 14-1/2 x 4-1/2	9

**REFERENCE DATA AND LITERATURE:**

TM 11-282

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
3	28.1	477

**PROCUREMENT DATA**

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: MIL-R-11539A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Motorola, Inc.	Chicago, Ill.	50967-P-57-55	\$1,894.00

1 July 1958

Cognizant Serv: USA FSN: 5820-249-6592

USA

USN

USAF

TYPE CLASS:

Std

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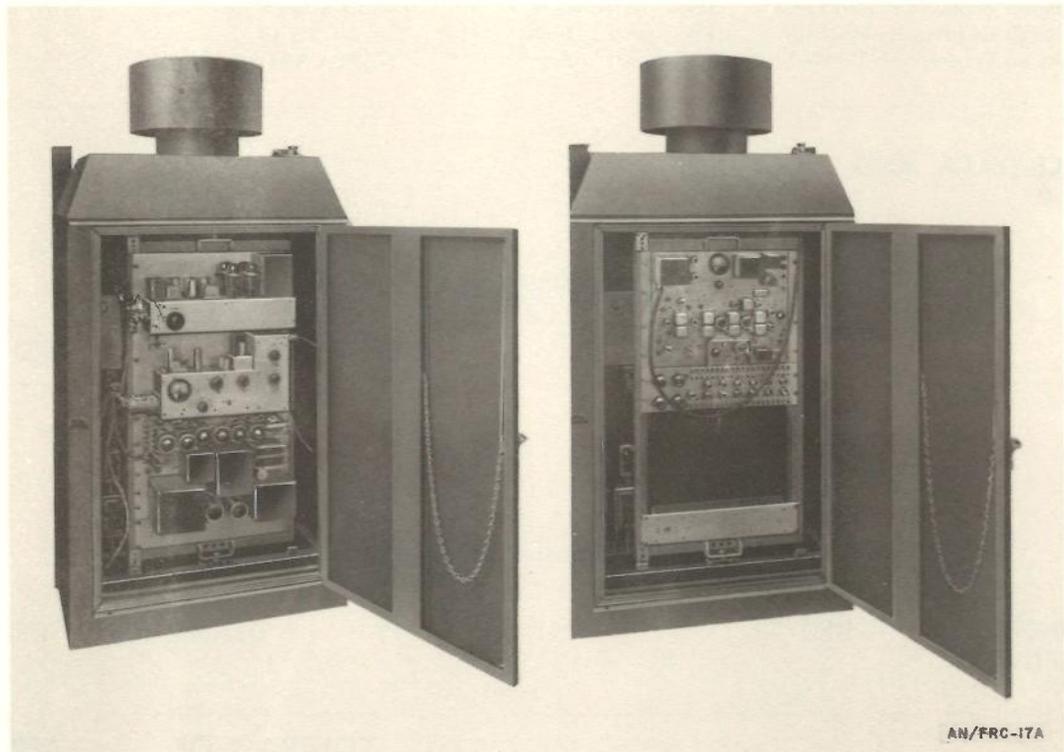
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STOCK NO:

2S2002-17

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AN/FRC-17A

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-17( ) is a medium-power vhf, Am (voice and tone) receiving and transmitting equipment used for fixed-plant, radio-relay applications. It is housed in special weatherproof cabinets for outdoor installation.

It consists essentially of a receiver and transmitter with accessory items, and operates from a commercial power source or equivalent power unit.

The major operating components of this equipment, when

installed in floor-type cabinets, is designated Radio Set AN/FRC-7( ).

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 132 to 156

*Type Modulation:* Am

*Type of Signal:* Voice or tone

*Power Output:* 12 w

*Power Requirements:*

Transmitter: 400 w, 105-125-v 60-cycle 1-phase ac

Receiver: 90 w, 105-125-v 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRC-17( ) RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Antenna AS-576/FRC	(USA) 2A264-576	54 x 50 x 12	40
2	Cabinet (outdoor)	-----	64-1/2 x 18 x 32	290
1	Power Supply PP-749/FRC	(FSN) 6130-245-9677	8-3/4 x 8-3/4 x 19	68
1	Radio Receiver R-448/FRC	(FSN) 5820-244-8534	14 x 2-1/2 x 19	20
1	Radio Transmitter T-326/FRC	(FSN) 5820-252-4626	19-7/32 x 8-11/16 x 19	14

**REFERENCE DATA AND LITERATURE:**

TM 11-292

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
7	140.57	1,269

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radio Receptor Co., Inc.	New York, N. Y.	14598-P-50-06	\$3,233.00

## RADIO REPEATER SET

RADIO-TELEPHONE TERMINAL SET AN/FRC-23( )

RADIO REPEATER SET AN/FRC-26( )

1 July 1958

Cognizant Serv: USA FSN: AN/FRC-23: 5820-399-7166  
AN/FRC-26: 5820-399-7168

	USA	USN	USAF
TYPE CLASS:	L/Std	--	--
STOCK NO:	AN/FRC-23: 2C5347	--	--
	AN/FRC-26: 2C5347A		

(No Photograph Available)

## FUNCTIONAL DESCRIPTION:

Radio-Telephone Terminal Set AN/FRC-23 and Radio Repeater Set AN/FRC-26 are fixed plant, pm microwave radio transmitting and receiving sets that are the system terminal and repeater elements, respectively, of a 24-channel, simultaneous two-way, point-to-point communications system.

Radio-Telephone Terminal Set AN/FRC-23 consists essentially of the normal transmitter and receiver components plus a standby or spare transmitter and a diversity receiver that can be used as a spare, and antenna, multiplexing, testing, and associated items.

Radio Repeater Set AN/FRC-26 is composed essentially of the same primary operating components arranged for

operation at intermediate points of a system to extend its effective range. Additional components are provided to insure 24-hour-per-day operation.

These sets can be adjusted to operate in conjunction with Radio Repeater Set AN/FRC-34 and Radio Set AN/FRC-35, after rearrangement of components and interconnections.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 1,700 to 1,850

*Type Modulation:* Pulse

*Type Signal:* 24-channel voice

*Power Output:* 10 w

*Power Requirements:* 2,400 w, 117-v ( $\pm 5\%$ ) 50/60-cycle ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
-----	------	---------------	------------------------	-----------------

(This set is normally procured as a complete unit for specific application; components may vary in accordance with system requirements.)

## REFERENCE DATA AND LITERATURE:

TM 11-222, TM 11-222A

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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MIL-HDBK-161

AN/FRC-23( ) RADIO-TELEPHONE TERMINAL SET

AN/FRC-26( ) RADIO REPEATER SET

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Syracuse, N. Y.	18830-P-51 32140-P-51 168-30-P-51	

## RADIO SET AN/FRC-27( )

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1127

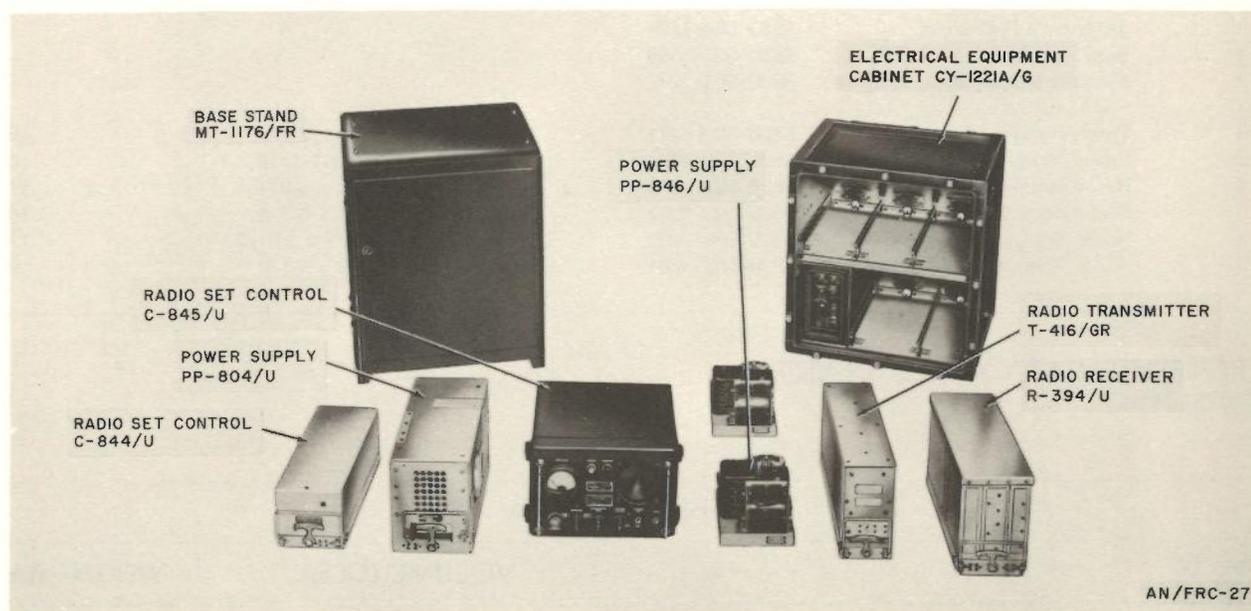
USA

USN

USAF

TYPE CLASS: Std  
STOCK NO: 2S2002-27

-- Std  
-- --

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-27( ) is a vhf, FM, low-powered radio receiving and transmitting equipment used in fixed communication applications.

This equipment consists of receiver and transmitter components, local and remote-control units, equipment cabinet and base, related power supplies, and accessories.

It can be operated in simplex, duplex, and retransmission applications. Push-to-talk operation over either of two preset frequency channels is provided either locally or at a maximum distance of 10 miles from the transmitter site. Duplex operation requires an additional antenna and can be conducted from the local operating site only. The remote-control unit can be used to transmit tone signals for signaling and for transmitter adjustment, to monitor reception, and to inter-communicate between the remote point and the set.

Radio Sets AN/FRC-27( ) and AN/TRC-34 are identical, except that Base Stand MT-1176/FR is supplied only with the former.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 152 to 174

*Type Modulation:* Fm

*Type of Signal:* Voice

*Transmitter Power Output:* 50 w

*Power Requirements:*

Power Supply PP-804/U: 230 va, 115/230-v 50/60-cycle ac

Power Supply PP-846/U: 46 va, 115/230-v 50/60-cycle ac

MIL-HDBK-161

AN/FRC-27( ) RADIO SET

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Antenna AT-438/GR	5985-264-7498		
1	Base Stand MT-1176/FR	5820-503-2569		
1	Electrical Equipment Cabinet CY-1221/G	5820-503-0792		
1	Power Supply PP-804/U	5820-500-4421	8-5/8 x 7 x 14-1/2	40
2	Power Supply PP-846/U	5820-500-4426	5-1/8 x 6-1/4 x 7-1/16	10
1	Radio Receiver R-394/U	5820-537-3950	8-1/2 x 14-1/2 x 5-3/4	19
1	Radio Set Control C-844/U	5820-503-0997	8-3/4 x 17-3/4 x 5-7/8	10
1	Radio Set Control C-845/U	5820-503-1004	8-7/16 x 13-3/4 x 13-1/2	17.5
1	Radio Transmitter T-416/GR	5820-503-3304	8-1/2 x 14-1/2 x 4-1/2	9

REFERENCE DATA AND LITERATURE:

TM 11-226

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	27.6	473

PROCUREMENT DATA

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C.

SPEC &/or DWG: MIL-N-11539A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Great American Electric, Inc.		43072-P-56-55	\$1,352.00
Motorola, Inc.	Chicago, Ill.	50967-P-57-55	1,993.00

RADIO SET **AN/FRC-30**

1 July 1958

Cognizant Serv: USA FSN: 5820-511-4266

USA

USN

USAF

TYPE CLASS:

STOCK NO:

2S2002-30

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-30 is an AM, hf, single-sideband, twin-channel radiotelephone equipment used to handle two-way telephone or six two-way radiotelegraph or radioteletype traffic in long-range, point-to-point communication. It can be operated in transoceanic radio communication circuits.

This equipment includes radio transmitting equipment (shown above) that provides operation over 10 push-button-selected preset frequency channels, and receiving, carrier terminal, and auxiliary components.

It is similar to Radio Set AN/FRC-10B, the only difference being in the transmitters of the two sets. The external appearance of Radio Transmitter T-409/FRC-30 is identical to that of Radio Transmitter T-265/FRC-10; the differences are all in internal circuitry and technical characteristics.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

Transmitter: 4.5 to 28

Receiver: 4 to 28

*Type Modulation:* Am (ssb or dsb)*Type of Signal:* Voice, facsimile, teletypewriter (composite transmission)*Power Output:*

Ssb: 4 kw

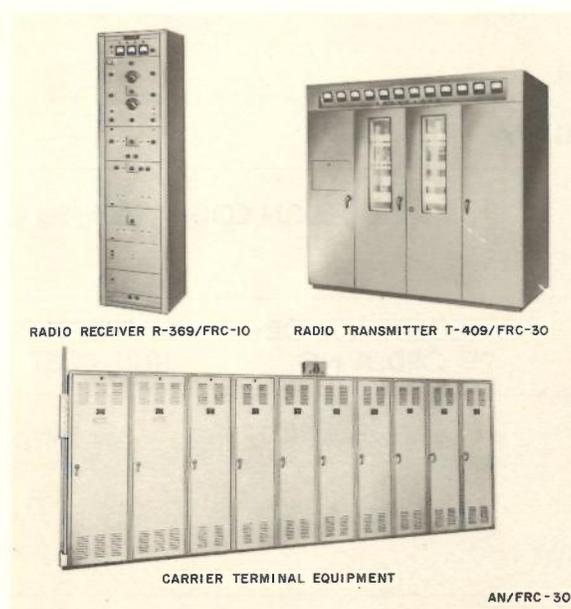
Dsb: 1 kw

*Power Requirements:*

Transmitter: 9 kw, 230-v 50/60-cycle 3-phase ac

Receiver: 500 w, 115-v 50/60-cycle 1-phase ac

Carrier Terminals: 3 kw, 115-v 50/60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Carrier Terminal OA-63/ FRC-10	5805-241-3305	91 x 36 x 180	6,780
1	Carrier Terminal OA-64/ FRC-10	5805-240-6224	84 x 28 x 44	1,440
1	Radio Receiver R-369/FRC-10	5820-497-9043	84 x 22-1/2 x 17	550
1	Radio Transmitter T-409/ FRC-30	5820-545-7272	84 x 42-1/2 x 48	5,800

MIL-HDBK-161

**AN/FRC-30** RADIO SET

REFERENCE DATA AND LITERATURE:

TM 11-814, C1  
TM 11-870  
TM 11-2132

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	668.8	13,877

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	New York, N. Y.	16803-P-51-06	\$74,296.41

RADIO SET AN/FRC-31( )

1 July 1958

Cognizant Serv: USA FSN:

USA

USN

USAF

TYPE CLASS:

L/Std

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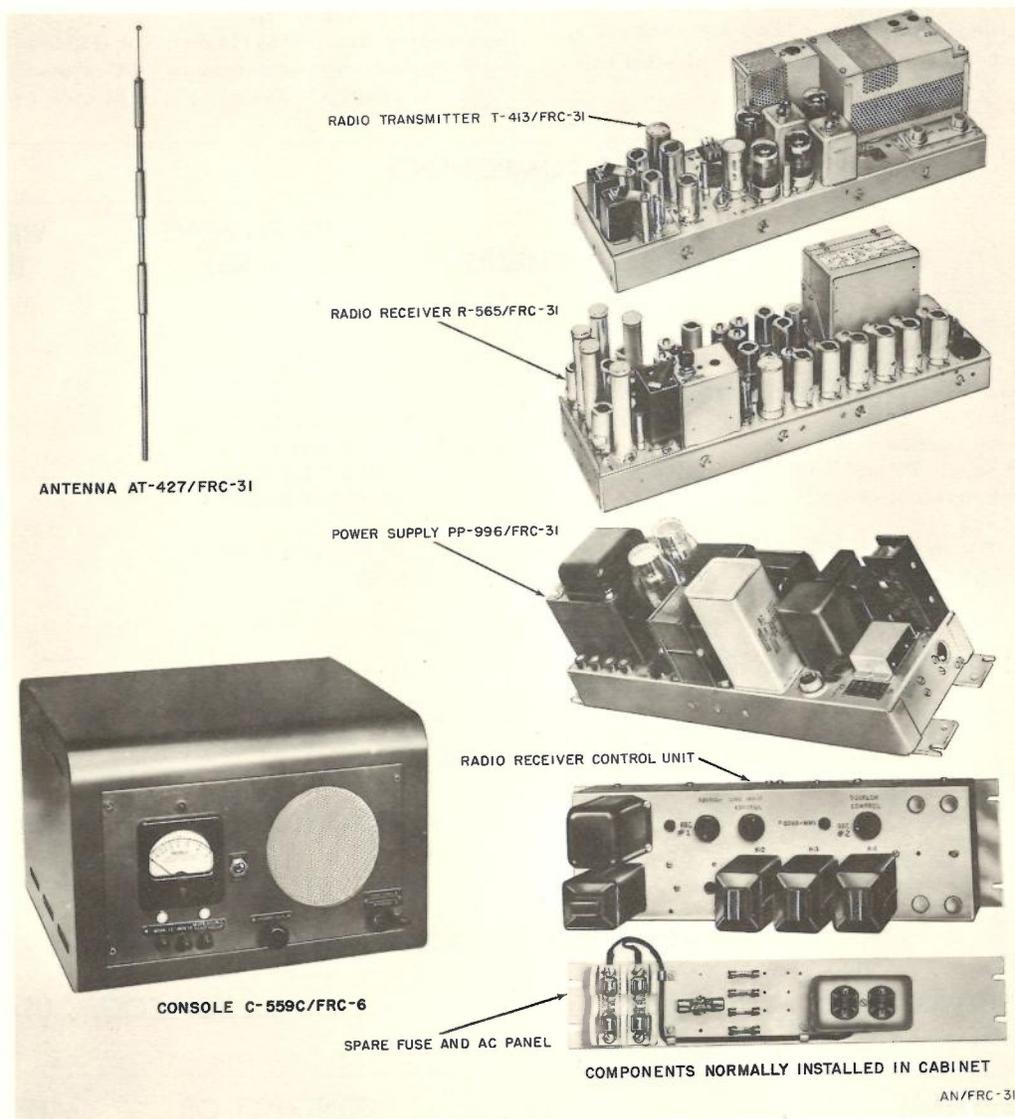
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STOCK NO:

2C5396.2

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**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-31( ) is a general-purpose, vhf, fm (voice or tone) radio receiving and transmitting equipment used for nontactical, fixed-plant communication applications

in the field by military police, Transportation Corps, and similar operations. It is operated from a console, which can be set up at a maximum distance of 10 miles from the rest of the equipment.

## AN/FRC-31( ) RADIO SET

This equipment consists essentially of an antenna used for both transmission and reception, the operating console, and an equipment cabinet that houses the transmitter, receiver, power supply, control unit, and ac panel. The equipment cabinet is weatherproof, and may be installed outdoors.

This set has facilities for transmitting and receiving on either of two pairs of crystal-controlled frequencies to enable communication with groups of vehicles, in a typical application, over one pair of frequencies while communication is maintained over the other pair of frequencies with other fixed stations.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:*

Transmitter: 2 channels within 240 kc of each other, 152 to 174 mc

Receiver: 2 channels within 180 kc of each other, 152 to 174 mc

Antenna: 162 to 174 mc

*Type Modulation:* FM

*Type of Signal:* Voice or tone

*Power Output:* 50 w (167 to 174 mc); 60 w (152 to 167 mc)

*Power Requirements:* 50 w (console), 115 w standby or 480 w transmitting (power supply); 117-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
1	Antenna AT-427/FRC-31	2A288A-160	164 lg x 3-3/16 dia.	73
1	Console C-559/FRC-6	2C684-559C	9 x 12-3/4 x 13	30
1	Electrical equipment cabinet		54-5/16 x 18 x 20	128.5
1	Power Supply PP-966/FRC-31	3H4496.59	7-1/4 x 6-1/4 x 19	42
1	Radio Receiver R-565/ FRC-31	2C4575-12	5-1/4 x 4-7/8 x 16-1/2	9
1	Radio Transmitter T-413/ FRC-31	2C6703-11	5-1/4 x 4-7/8 x 16-1/2	6.5

## REFERENCE DATA AND LITERATURE:

TM 11-234

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
3	33.2	583

## PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Motorola, Inc.	Chicago, Ill.	3500-P-52	

RADIO REPEATER SET **AN/FRC-34**

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1229

	USA	USN	USAF
TYPE CLASS:	S/Std	--	--
STOCK NO:	2S2002-34	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Repeater Set AN/FRC-34 is the relay station equipment in an unattended fixed plant type of microwave radio-relay system operating in the 1,700- to 1,850-mc range. The system provides two-way communication for up to 24 voice channels. This equipment, along with Radio Telephone Terminal Sets AN/FRC-35, is specially procured in complete system groups.

This equipment receives the signals transmitted by Radio Set AN/FRC-35, amplifies them, reshapes the pulses, and retransmits the composite signal. It consists primarily of three transmitters and three receivers (two in operation, one

standby spare) and associated equipments. In addition to standard voice communication circuits, the system provides for the transmission of teletypewriter, telemetering, supervisory control, and similar functions.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 1,700 to 1,850*Type Modulation:* Ppm*Type of Signal:* Voice, teletypewriter, telemeter, video, etc*Number of Channels:* 24 voice (maximum)*Power Output:* 10 w (peak)*Power Requirements:* 1,700 w, 117-v ( $\pm 5\%$ ) 50/60-cycle ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
-----	------	---------------	------------------------	-----------------

(Quantities and items of specific components vary in accordance with channeling requirements of system.)

**REFERENCE DATA AND LITERATURE:**

TM 11-222B

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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MIL-HDBK-161

**AN/FRC-34** RADIO REPEATER SET

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MFR. No. MIL-766-8503G1

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Corp.	Schenectady, N. Y.	16830-PH-51 3214-PH-51	

## RADIO TELEPHONE TERMINAL SET AN/FRC-35

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1134

USA

USN

USAF

TYPE CLASS: S/Std  
 STOCK NO: 2S2002-35

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Telephone Terminal Set AN/FRC-35 is the terminal radio and multiplexing equipment used in a fixed-plant microwave multichannel radiotelephone system. The system provides two-way communication over a maximum of 24 voice channels. This equipment, along with Radio Repeater Set AN/FRC-34, is procured in complete system groupings for specific applications.

This equipment consists primarily of two microwave radio transmitters and two receivers (one of each in use and the others as standby spares) and 24-channel telephone pulse-position multiplexing equipment.

In addition to the 24 voice channels, this equipment pro-

vides for the transmission of teletypewriter, telemetering, supervisory control, and other similar functions. Special fault-indicating devices at the unattended repeater stations are received by, translated in, and displayed or recorded at this terminal equipment, thus providing constant operational control over the distant repeater stations.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 1,700 to 1,850

*Type Modulation:* Ppm

*Type of Signal:* Voice, teletypewriter, telemeter, video, etc

*Number of Channels:* 24 voice (maximum)

*Power Output:* 10 w

*Power Requirements:* 3,000 w, 117-v ( $\pm 5\%$ ) 50/60-cycle ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
-----	------	---------------	------------------------	-----------------

(Quantities and items of specific components vary in accordance with channeling requirements of system.)

## REFERENCE DATA AND LITERATURE:

TM 11-222B

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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MIL-HDBK-161

**AN/FRC-35** RADIO TELEPHONE TERMINAL SET

PROCUREMENT DATA

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: MFR. NO. MIL-766-8503G1

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Corp.	Schenectady, N. Y.		

## RADIO SET AN/FRC-36

21 November 1958

Cognizant Serv: USN FSN: 5820-642-8428

USA

USN

USAF

TYPE CLASS: --

Used by

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-36 is a medium-power frequency modulated (voice), fixed radio receiving and transmitting station used for two-way communication by guards and security police in internal security and industrial control operations.

This equipment consists essentially of a transmitter, receiver, power supply, and control chassis assembled in an upright metal cabinet. The set is suitable for either outdoor or indoor installations. Remote-control facilities are furnished by a separate unit, Radio Set Control C-1624/FRC-36.

With associated accessories, this unit provides two-way communications with mobile and/or other base stations operating within range on the same specific frequency.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 30 to 42

*Type Modulation:* FM (F3).

*Type Emission and Reception:* Voice

*Modulation Acceptance:*  $\pm 15$  kc at  $-6$  db

*Ambient Temperature Range:*  $-30^{\circ}$  C. to  $460^{\circ}$  C.

*Receiver:*

Sensitivity: Less than 0.45 uv for 20 db quieting

Input Impedance: 50 to 72 ohms

Spurious Response Attenuation: 100 db

Frequency Stability:  $\pm 750$  cps

Squelch Threshold Sensitivity: 0.2 uv

Audio Output: 1 w

Power Consumption:

Operate: 40 w

Muted: 30 w

*Transmitter:*

Crystal Frequency Multiplication: 16 times

Power Output: 50 w

Output Impedance: 50 to 72 ohms

Spurious Emission Attenuation:  $-60$  db

Frequency Stability:  $\pm 750$  cps

Modulation:  $\pm 15$  kc for 100% at 1,000 cps

Input Impedance: 500 ohms

Audio Input Level:  $-20$  db

Power Consumption:

Standby: 70 w

Transmit: 400 w

*Power Requirements:* 117-v 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Ac power supply chassis			
1	Cabinet kit			
1	Cable kit			
1	Receiver chassis			
1	Receiver if. crystal (3,185 kc)			
1	Remote-control chassis			
1	Spare fuse and ac panel			
1	Transmitter chassis			
1	Tuning toolkit			

## REFERENCE DATA AND LITERATURE:

Commercial literature (Motorola 68P836250-0)

MIL-HDBK-161

**AN/FRC-36** RADIO SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Motorola, Inc.	Chicago, Ill.	NObsr-64259, 30 June 1954	

## RADIO SET AN/FRC-37 (XN-1)

21 November 1958

Cognizant Serv: USN FSN:

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-37 (XN-1) is a transmitting and receiving equipment used in shore-based radio relay link systems. It is a microwave system consisting of one bay of units, an antenna, and a voltage regulator.

This equipment transmits and receives pulsed amplitude modulated signals and has been designed to operate with Multiplex Set C-1X or Modulator Group OA-502/FRC, Demodulator Group OA-504/FRC, and Demodulator-Modulator Group OA-505/FRC.

The set is capable of operating as a repeater in a radio relay system consisting of as many as five hops and is designed to net, on a video basis, with Radio Terminal Group OA-501/FRC, Radio Repeater Group OA-503/FRC, and Radio Repeater Group OA-510/FRC.

Communication between stations is limited to line of sight operation. Highly directional parabolic antennas are used to effectively increase the power output of the transmitter. Two transmitters and two receivers are normally operated in a parallel path arrangement on the same frequency but separated on a polarization basis. Relatively unattended operation is possible by the elimination of switch-over equipment.

## TECHNICAL CHARACTERISTICS:

*Transmitter:*

Frequency Range in Mc: 1,700 to 1,970; 1,970 to 2,400  
 Type Modulation: Pulse  
 Frequency Stability: 0.005% (maximum)  
 Carrier Bandwidth: 6 mc  
 Video Input Impedance: 70 ohms nominal  
 Input Pulse Voltage: 2 to 15 v peak  
 Input Pulse Characteristic: 0.3 usec maximum rise time;  
 0.2 usec wide  
 Power Output: 25 w peak  
 Duty Cycle: 20% maximum (0.8 to 10%)  
 Output Impedance: 50 ohms

*Receiver:*

Frequency Range in Mc: 1,700 to 2,400  
 Frequency Stability:  $\pm 0.02\%$   
 Input Impedance: 50 ohms  
 Noise Figure: 12 db  
 Image Rejection: 65 db  
 Intermediate Frequency: 30 mc  
 Bandwidth:  $7.0 \pm 1$  mc between 3 db points  
 Over-all Gain: 109 db  
 Video Output: 7 to 10 v peak  
 Output Impedance: 70 ohms  
 Wavemeter Accuracy: 0.02%  
 Input Sensitivity: 35 uv

*Power Requirements:* 115-v 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna assembly, Unit 11	-----	120	
1	Dummy load and attenuator panel, Unit 13	-----	1 x 12-1/4 x 19	
1	Equipment Cabinet CY-614/G	-----	22 x 1/2 x 24 x 88	787
1 set	Equipment maintenance parts	-----		163
1	Line voltage regulator, Unit 14	-----	11 x 12-1/2 x 20-1/2	79
1	Power distribution panel, Unit 12	-----	7 x 13-1/2 x 19	
1	Receiver, Unit 1	-----	10-1/2 x 12 x 19	
1	Receiver, Unit 6	-----	10-1/2 x 12 x 19	
1	Receiver power supply, Unit 7	-----	7 x 14-1/2 x 19	
1	Receiver power supply, Unit 10	-----	7 x 14-1/2 x 19	

**AN/FRC-37 (XN-1) RADIO SET****MAJOR COMPONENTS—Continued**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Transmitter, high band, Unit 4	-----	12-1/4 x 14-1/2 x 19	
1	Transmitter, high band, Unit 5	-----	12-1/4 x 14-1/2 x 19	
1	Transmitter, low band, Unit 2	-----	12-1/4 x 14-1/2 x 19	
1	Transmitter, low band, Unit 3	-----	12-1/4 x 14-1/2 x 19	
1	Transmitter power supply, Unit 8	-----	7 x 14-1/2 x 19	
1	Transmitter power supply, Unit 9	-----	7 x 14-1/2 x 19	

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS-92834

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
17	2,78.7	2,721

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

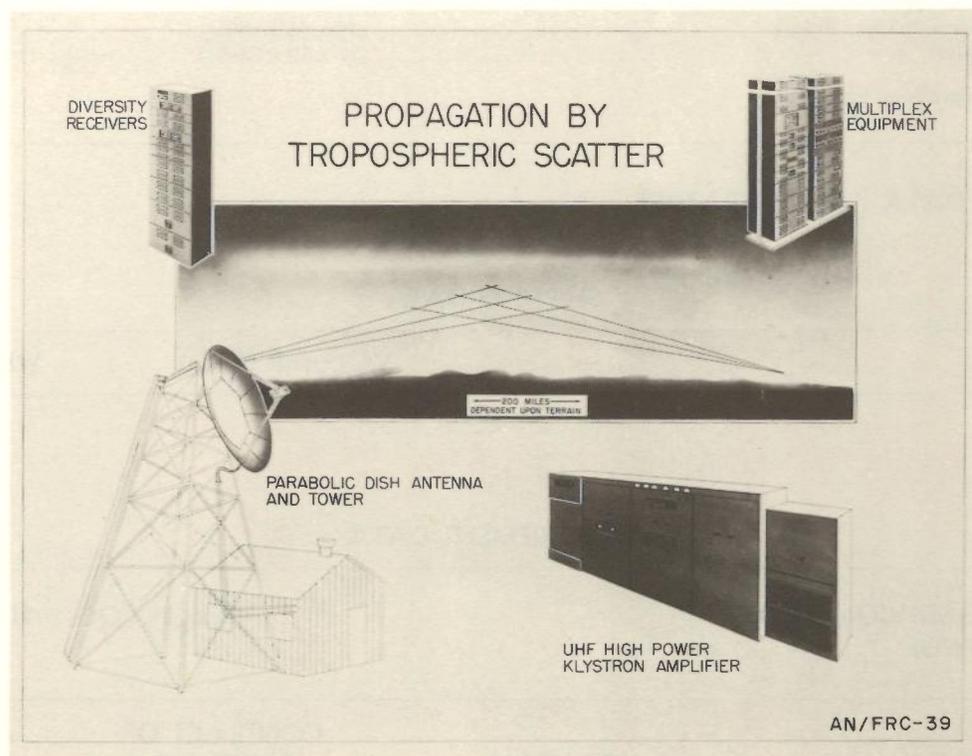
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telecommunication Laboratories	Nutley, N. J.	NObsr-64145, 30 March 1954	

RADIO SET **AN/FRC-39**

21 November 1958

Cognizant Serv: USAF FSN:

	USA	USN	USAF
TYPE CLASS:	--	--	Tent-Std
STOCK NO:	--	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-39 is a multichannel equipment for voice and data signal transmission in point-to-point communication facilities serving filter centers of the Air Defense Command.

The number of operating components required depends on whether it will be used as a terminal station or in pairs as a repeater station of a radio relay facility.

This equipment is normally operated with other units, such

as Telephone Terminals AN/TCC-3 and AN/TCC-7 or Telegraph Terminal AN/TCC-20.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:*

Band A: 755 to 985

Band B: 1,700 to 2,400

*Operational Range:* 200 miles (approximate)

*Type Modulation:* Fm (F3, F9)

*Type Signal:* Voice; composite transmission

*Power Output:* 1 or 10 kw (depending on power amplifier used)



## RADIO SET AN/FRC-39 (V)

21 November 1958

Cognizant Serv: USAF FSN:

	USA	USN	USAF
TYPE CLASS:	--	--	Tent-Std
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-39(V) is designed to function as a terminal station and provides transmission and reception of multichannel voice as well as data signals. It consists of variable components both as to type and quantity, the selection of which depends upon the installation.

Application in pairs provides facilities for a repeater station. When additional sets are added to a repeater station, these provide branching facilities.

This equipment will operate with multiplex equipment to provide up to 72 simultaneous transmission channels.

It is used mainly for transmission of Air Defense Command tactical and administrative communications traffic.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 400 to 2,400

*Operational Range:* Over-the-horizon transmission

*Type Emission:* F9 (fm); response  $\pm 2$  db from 0.25 to 340 kc

*Power Output:* 1 kw or 10 kw

*Power Requirements:*

For 1-kw Operation: 4 kw, 208-v  $\pm 10\%$  50- to 63-cycle 4-wire 3-phase ac

For 10-kw Operation: 34 kw, 208-v  $\pm 10\%$  50- to 63-cycle 4-wire 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For 1-Kw Dual Diversity:</i>				
1	Auto transfer switch			
2	Diplexer assembly			
2	Exciter, Rel Type #863			
2	Parabolic reflector	-----	28 ft or 60 ft dia	
2	Power assembly (1 kw), Rel Type #865			
3	Receiver, Rel Type #864			
1	Receiver patch			
2	Vertical or horizontal polarized feed horn			
<i>For 10-Kw Fourfold Diversity:</i>				
2	Branching filter			
2	Diplexer assembly			
2	Exciter, Rel Type #863			
1	Exciter patch			
2	PA patch			
2	Parabolic reflector	-----	28 ft or 60 ft dia	
2	Power amplifier (10 kw), Rel Type #866			
5	Receiver, Rel Type #864			
1	Receiver patch			
2	Vertical or horizontal polarized feed horn			

MIL-HDBK-161

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**AN/FRC-39 (V) RADIO SET**

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**REFERENCE DATA AND LITERATURE:**

TO 31R5-2FRC39-(series)

**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF, ARDC

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
RCA	Camden, N. J.	AR30(635)6242	

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## RADIO SET AN/FRC-42

24 November 1958

Cognizant Serv: USN FSN: 5820-665-1715

USA

USN

USAF

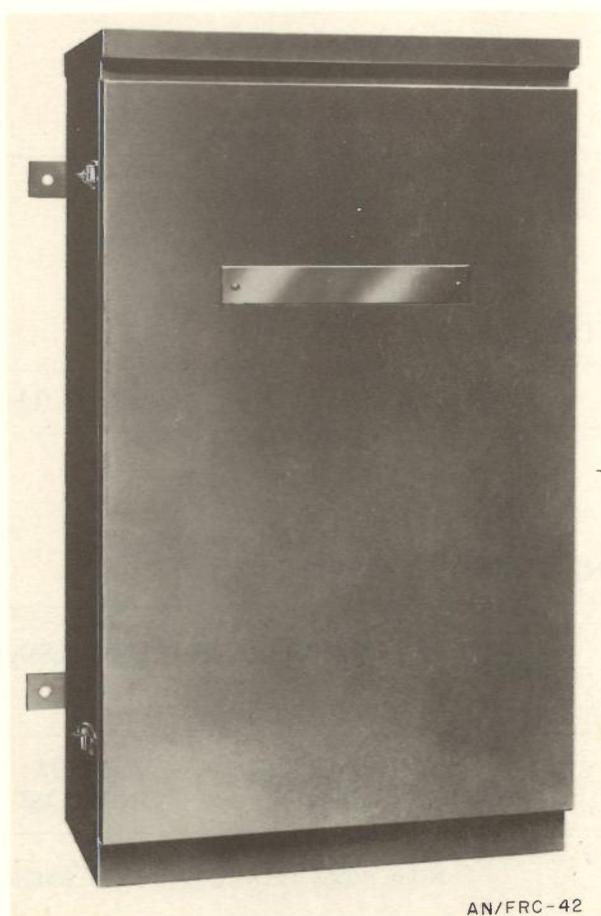
TYPE CLASS: --

Used by --

STOCK NO: --

--

--



AN/FRC-42

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-42 is a general purpose, fixed station two-way communication equipment. It may be used in conjunction with Radio Sets AN/VRC-32 and AN/PRC-33.

The pole-mounted cabinet is provided with straps for mounting it on cross arms between two telephone poles. This cabinet must be installed close to the antenna transmission line and a source of line voltage.

This equipment is a militarized version of a commercial (General Electric Company Model PO-16W) pole-mounted radio set.

**TECHNICAL CHARACTERISTICS:***Receiver:*

Type: Wide band, double-conversion superheterodyne

Frequency Range in Mc: 30 to 54

Audio Output: 1.5 w; less than 10% distortion

Sensitivity: .4 uv, 20-db quieting method

Squelch: Adjustable, will open at less than .15 uv at critical setting

Selectivity: 100 db  $\pm$ 30 kc; 20-db quieting method

Bandwidth:  $\pm$ 15 kc at the 6-db points

Spurious Response: At least 100 db down

Ambient Temperature:  $-30^{\circ}$  C to  $160^{\circ}$  C. (outside of cabinet that houses chassis)

Frequency Stability:

Unheated crystal:  $\pm$ 0.002%

Heated crystal:  $\pm$ 0.0005%

Audio Frequency: Within +2 to -8 of a 6 db/octave de-emphasis curve from 300 to 3,000 cps (1,000-cps reference)

Channel Separation (Maximum): .4% of operating frequency (approximately 160 kc) in 2-, 3-, or 4-channel operation

Control: Crystal

Intermediate Frequencies: 3.2 mc and 290 kc

Output: F3 phase modulation

Type Signal: Voice

Radio Set Control:

Preamplifier:

Input impedance: 100,000 ohms (dynamic microphone); 270 ohms (carbon microphone)

Output impedance:

Frequency response:  $\pm$ 2 db, 400 to 3,500 cps

Distortion: Less than 5% at 1,000 cps

Line Amplifier:

Input impedance: 600 ohms nominal

Output impedance: 3.5 ohms

Frequency response:  $\pm$ 3 db, 400 to 3,500 cps with 1-w output

Tone Oscillator Frequency: 800 cps (approximately)

Control Circuits:

One channel control: 105 v with line terminated

Remote squelch: 105-v dc with control pair open (maximum); 12-v dc with control pair terminated (for simplexing with the telephone line)

Voltage Line to Line or Line to Ground: 105-v dc with control pair open or terminated (maximum)

Antenna: Folded unipod

Power Requirements: 117-v 50- to 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRC-42 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna AS-759/FRC-36			
1	Cabinet, Electrical Equipment CY-1907/FRC-42			
1	Control Unit C-1846/FRC-42			
1	Loudspeaker LS-256/U			
1	Radio Receiver-Transmitter RT-368/FRC-42			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92653

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

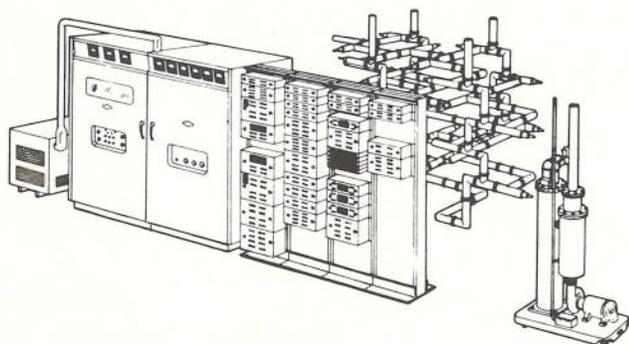
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Electronics Division	Syracuse, N. Y.	NObsr 64749, 6 June 1955	\$628.00

RADIO SET **AN/FRC-44**

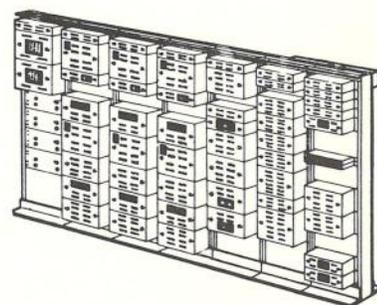
24 November 1958

Cognizant Serv: USAF FSN:

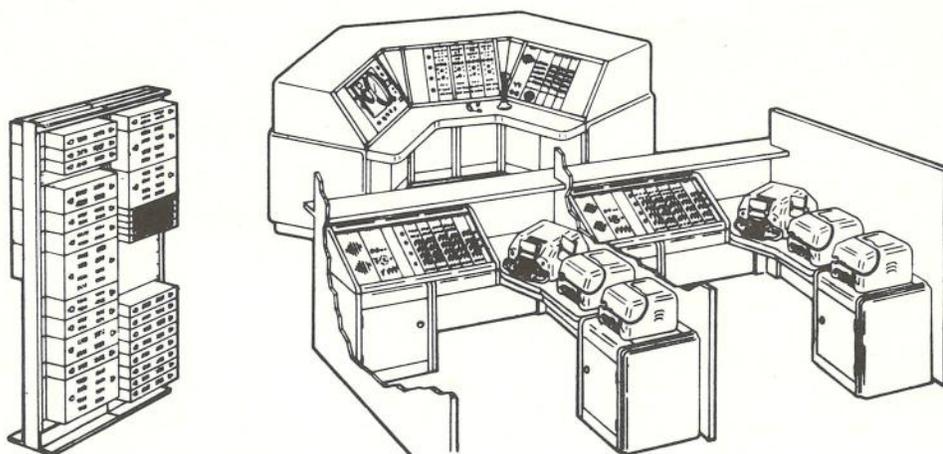
	USA	USN	USAF
TYPE CLASS:	--	--	--
STOCK NO:	--	--	--



TRANSMITTER SITE



RECEIVER SITE



CONTROL SITE

AN/FRC-44

**AN/FRC-44 RADIO SET****FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-44 is a complete multifrequency, ground-to-air, single sideband (ssb) receiving, transmitting, and control facility for world-wide communication. It can transmit intelligence of up to 3 kilocycles or transform to a 2- to 3-kilocycle bandwidth, including voice, frequency-shift keying, selective calling, and data transmission.

Selection of omnidirectional or steerable antennas for both receiver and transmitter and azimuth control of the steerable beams are controllable from the control site.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2.8 to 30

*Operational Range:* Beyond 30 miles

*Transmitting Power:* 12 kw to 300 kw

*Power Requirements:* 15 amp minimum, 115-v 50- to 60-cycle, 1-phase ac; 200 amp minimum, 195- to 225-v 50- to 60-cycle, 3-phase ac; or 100 amp minimum, 350- to 410-v 50- to 60-cycle, 3-phase ac; or 30 amp minimum, 195- to 225-v 50- to 60-cycle, 3-phase ac; or 20 amp minimum, 350- to 410-v 50- to 60-cycle, 3-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
*	Antenna Multicoupler AN/ FRC-44			
	Converter, Frequency Shift CV-350/URC w/power supply			
	Keyer KY-217( )/URC w/power supply			
	Receiver group			
	Regenerative repeater			
	Signal Generator Group OA- 1373( )/FRC-44			
	Transmitter Group OA-1446 ( )/GRT			
	Transmitter Group OA-1448 ( )/GRT			

\* The quantity of individual items is determined by actual requirements.

**REFERENCE DATA AND LITERATURE:**

AF-30(635)4504

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF

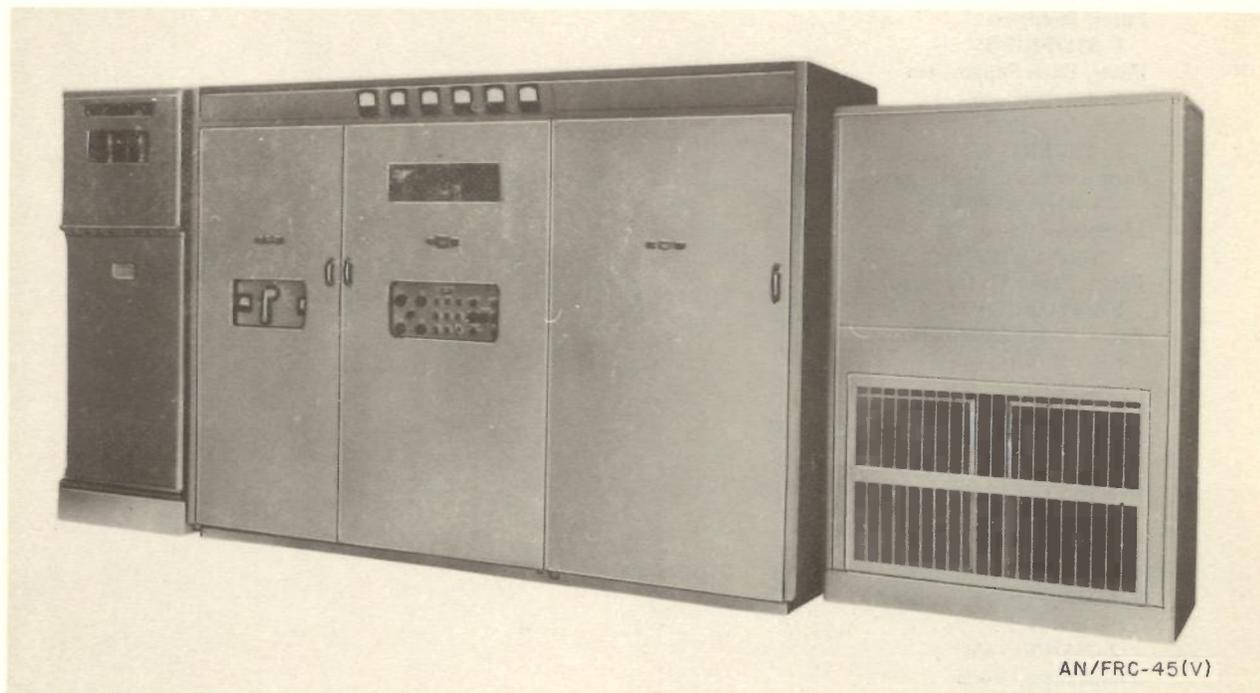
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa		
Westinghouse Electric	Baltimore, Md.		
Wilcox Electric Co.	Kansas City, Mo.		

RADIO SET AN/FRC-45(V)

24 November 1958

Cognizant Serv: USAF FSN:

	USA	USN	USAF
TYPE CLASS:	--	--	Ltd-Std
STOCK NO:	--	--	1700-016092180



AN/FRC-45(V)

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-45(V) is designed to function as a terminal station providing transmission and reception of multichannel voice and data signals. In pairs, these sets provide facilities for a repeater station. By adding sets to a repeater station, branching facilities are provided.

This equipment consists of variable components both as to type and quantity; selection of specific items depends upon the installation desired.

Application is in a tropospheric forward scatter system and a fixed ground installation.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 755 mc to 985; 1 band

*Type Emission:* Fm, F9

*Power Output:* 1 kw or 10 kw (nominal)

*Number of Channels:* 24-teletypewriter

*Power Requirements:* For more than 2 kw, 208-v 60-cycle 3-phase ac; for less than 2 kw, 120-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(*)	Amplifier, Radio Frequency AM-1563/FRC-45( )			
	Antenna, dish type			
	Carrier telegraph terminal system		----- 30 ft or 60 ft	

**AN/FRC-45(V) RADIO SET****MAJOR COMPONENTS—Continued**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
	Dummy load, electrical			
	Fan, Centrifugal			
	HD-267/FRC-45( )			
	Filter, Bandpass			
	F-331/FRC-45( )			
	Filter, Band Suppression			
	F-329/FRC-45( )			
	Filter, Low Pass			
	F-330/FRC-45( )			
	Jack Assembly, Telephone			
	TA-324/FRC-45( )			
	Modulator Group			
	OA-1285/FRC-45( )			
	Panel, Power Distribution			
	SB-644/FRC-45( )			
	Panel, Power Distribution			
	SB-645/FRC-45( )			
	Power Supply			
	PP-1610/FRC-45( )			
	Rack, Electrical Equipment			
	MT-1752/FRC-45( )			
	Receiver Group			
	OA-1284/FRC-45(V)			
	Receiver-Transmitter			
	RT-392/FRC-45( )			
(*)	Telephone system, carrier			
	Terminal Box			
	J-785/FRC-45( )			
	Transmitter Group			
	OA-1285/FRC-45( )			
	Voltage regulator			

\* The quantity of individual items as well as the applicability of specific items is determined by actual requirements.

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

**PROCUREMENT DATA**

PROCURING SERVICE: USAF  
SPEC &/or DWG: GS-18074

DESIGN COG: USAF, RCUE

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co., Inc.	New York, N. Y.	AF18(600)-572	

RADIO SET **AN/FRC-47**

24 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-47 is a communication equipment employing the tropospheric forward scatter technique. It provides 12 multiplexed voice channels.

Used in pairs, this radio set provides facilities for a repeater station.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 300 to 400; 1 band; 12 channels

*Type Emission:* A3a

*Transmitter Power Output:* 50 kw

*Power Requirements:* 280-v 60-cycle 3-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Antenna system			
1	Audio termination facility			
1	Monitor and cable assembly			
2	Multiplexer			
1	Radio frequency test stand			
4	Receiver			
2	Transmitter			

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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MIL-HDBK-161

**AN/FRC-47** RADIO SET

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN

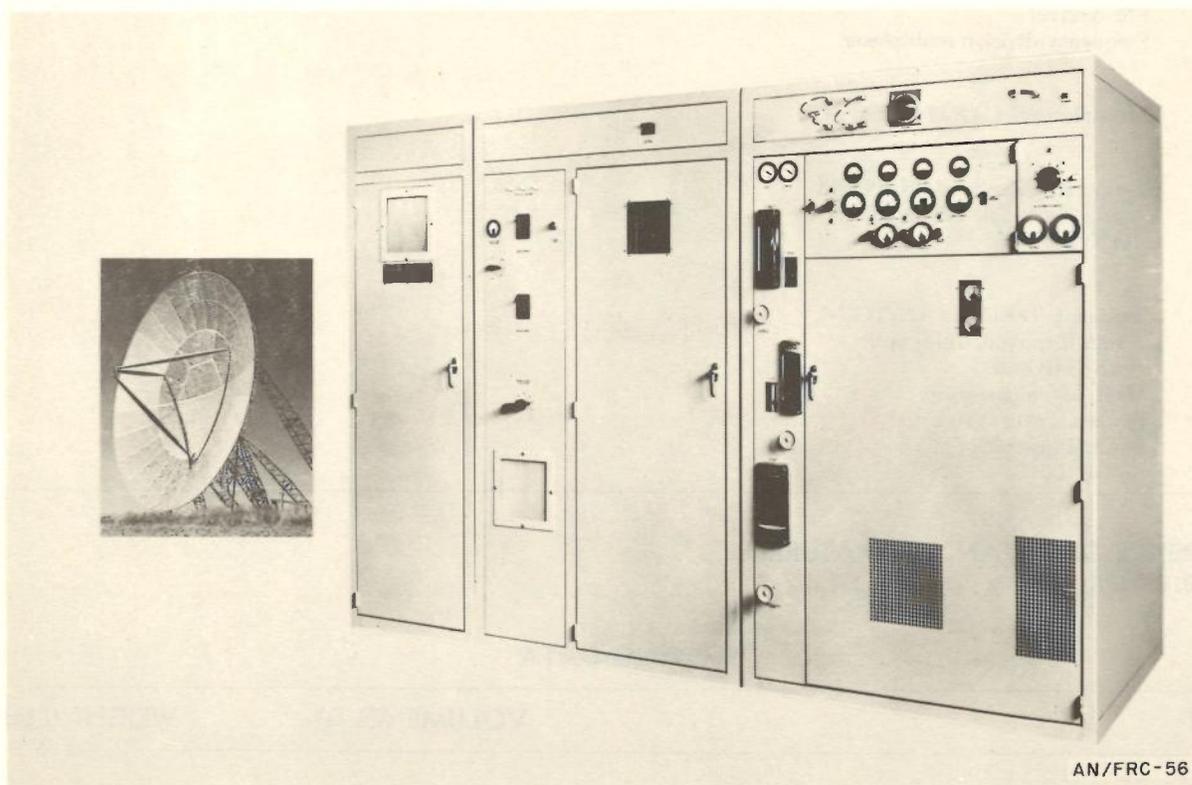
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO SET AN/FRC-56 (V)

24 November 1958

Cognizant Serv: USAF FSN: 5820-607-9492

	USA	USN	USAF
TYPE CLASS:	--	--	Tent-Std
STOCK NO:	--	--	--



AN/FRC-56

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRC-56(V) is designed to function as a terminal station that provides transmission and reception of multichannel voice and data signals. It is used mainly for transmission of Air Defense Command tactical and administrative communications traffic.

This equipment consists of variable components both as to type and quantity. The selection of specific number and type of items depends on the installation requirements.

Employed in pairs, these sets provide facilities for a repeater

station. When additional sets are added to a repeater station they provide branching facilities.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1,700 to 2,400; single band

*Type Emission:* Fm (F9)

*Frequency-division Multiplexer:* Up to 72 voice channels

*Power Output:* 1 kw or 10 kw (maximum)

*Power Requirements:* For more than 2 kw, 208-v 60-cycle 3-phase ac or for less than 2 kw, 115-v 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRC-56 (V) RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2 or 3	Antenna			
2 or 3	Coaxial feed or horn assembly			
36 or 48	Compandor			
2	FM exciter			
3 or 4	FM receiver			
1	Frequency-division multiplexer			
	or			
	Multiplexer Set AN/TCC-32			
	or			
	Terminal, Telephone AN/TCC-3 with Terminal, Telegraph AN/TCC-20			
	or			
	Terminal, Telephone AN/TCC-7 with Terminal, Telegraph AN/TCC-20			
2 or 3	Mast, antenna support			
2	Power amplifier (10 kw)			
2 or 3	Power duplexer			

**REFERENCE DATA AND LITERATURE:**

TO 31R5-2FRC39 & 56( ) (pending)

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USAF, RCUE  
SPEC &/or DWG: RADC-2425A

DESIGN COG: USAF, RCUE

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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Radio Corporation of America

Long Island, N. Y.

MICROWAVE RADIO RELAY SET **AN/FRC type**

5 December 1958

Cognizant Serv: USAF FSN:

CLR-6, Philco

	USA	USN	USAF
TYPE CLASS:	--	Used by	Alt-Std
STOCK NO:	--	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Microwave Radio Relay Set CLR-6, Philco (Radio Set AN/TRC-30) is a frequency modulated radio set used in two-way, (duplex) point-to-point radio relay systems, for ground or fixed station installation. Communications are provided by identical, or equivalent, repeater and terminal equipment operating in the same system.

Microwave Radio Relay Set CLR-6, consists of a radio transmitter, a receiver, a 4-foot parabola antenna, a reflector, and wave guide kit. A complete relay system consists of two terminal sets, each with 20 to 40 miles apart in tandem, to span the distance between the terminals.

When used with its associated multiplexing equipment (such as Philco Time Division Multiplexing Equipment CMT-4) the system may be expanded to 24 telephone channels. Each channel may be further expanded to as many as 12 additional channels for telegraph, teletype, telemetering, signaling, and supervisory control circuits. High-speed facsimile transmission is also possible by using two adjacent

telephone channels as one. With the use of smaller multiplexing units, one, four, or eight voice channels may be inserted, or dropped off, at any repeater station as may be required.

Voice termination equipment is used with, but is not part of the set.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 7,125 to 7,425 (with channel division determined by multiplexing equipment)

*Operating Range:*

Repeater Spacing: Line of sight (20 to 40 miles)

Total Range: 1,000 miles (average) terminal spacing

*Type Modulation:* Fm

*Type of Signal:* Voice, cw, radioteletype

*Power Output:* 1 w

*Power Requirements (Per terminal or repeater station):* 1,200 w with heaters, 700 w without heaters, 115-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Philco CLR-6 Repeater/ Terminal (in rack)	-----	28 x 90 x 90	500
1	Philco Multiplexing Equipment (CMT-4)			

**REFERENCE DATA AND LITERATURE:**

Philco Training Manual CLR-6

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	135	810

MIL-HDBK-161

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**AN/FRC type** MICROWAVE RADIO RELAY SET

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PROCUREMENT DATA

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PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF, RCUE

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## MICROWAVE RADIO RELAY SET AN/FRC-type

5 December 1958

Cognizant Serv: USAF FSN:

CLR-7, Philco

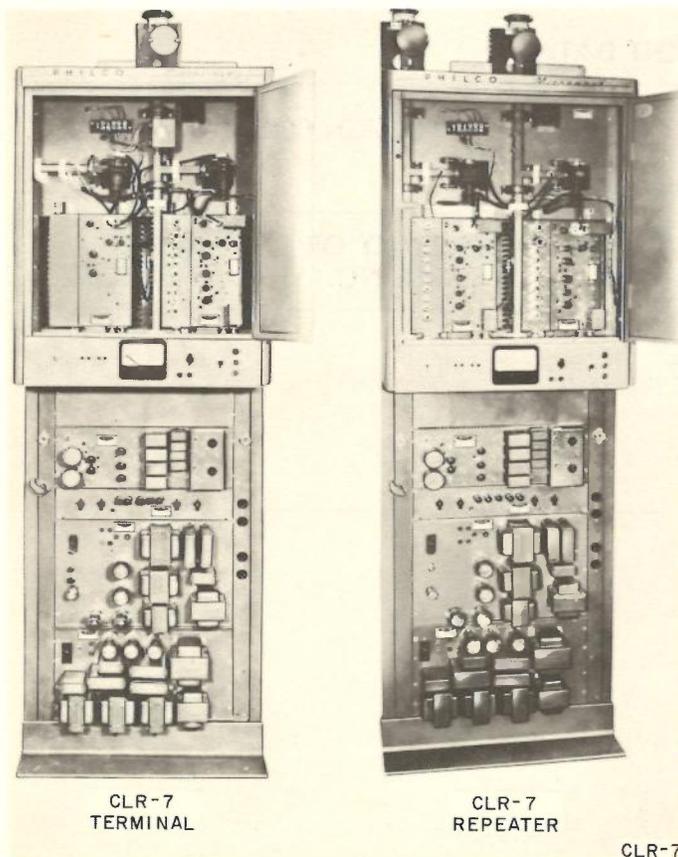
USA

USN

USAF

TYPE CLASS:  
STOCK NO:--  
--

Used by

Alt-Std  
1,760-NSL

## FUNCTIONAL DESCRIPTION:

Microwave Radio Relay Set CLR-7, Philco, is the transmitting and receiving portion of a microwave communication station. Two or more such stations make up a radio relay link to provide two-way (duplex) communication between two points, when the CLR-7 is used in conjunction with suitable multiplexing equipment such as Philco Time Division Multiplexing Equipment GMT-4.

Microwave Radio Relay Set CLR-7, Philco, is used in ground, fixed stations, as radio relay links wherever use of land communication lines is not feasible. It can communicate with Microwave Radio Relay Sets CLR-6 or other CLR-7 equipments.

This equipment is designed to accommodate frequency-division and pulse-amplitude time division multiplex equipments which provide up to 60 voice channels, each of which may be further multiplexed to provide up to 16 telegraph or teletype channels, per voice channel. The radio relay link is usually made up of a number of stations located at intervals of 20 to 40 miles.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 6,125 to 8,100 in 5 bands

*Transmitter Power Output:* 1 w

*Receiver Bandwidth:* 10 mc

*Power Requirements:* 600 w (nominal), 117-v, regulated, 50- to 60-cycle ac; 150 w (approx), 117-v, unregulated, 50- to 60-cycle ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
3	Klystron	FSN 5960-296-4473		
1	Microwave Repeater CLR-7RGL	FSN 5820-505-1580		
1	Microwave Terminal CLR-7TGL	FSN 5820-505-1482		

## REFERENCE DATA AND LITERATURE:

TO 31R5-4-5-11

TO 31-1-11

MIL-HDBK-161

**AN/FRC-type** MICROWAVE RADIO RELAY SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF, RCUE

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Philco Corporation	Philadelphia, Pa.		

CODE TAPE RECORDER **AN/FRH-type**

20 November 1958

Cognizant Serv: USN FSN:

RD-110/U, RD-110A/U

USA

USN

USAF

TYPE CLASS:  
STOCK NO:--  
--Used by  
RD-110/U: F16-Q-  
239818-200  
RD-110A/U: F16-Q-  
239817-200--  
--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Code Tape Recorders RD-110/U and RD-110A/U are used to record signal codes from several types of radio receiver outputs, or from the output of an automatic (transmitting) typewriter. The recorder inscribes an ink trace of International Morse or similarly coded signals on paper tape suitable for manual transcription. Automatic transcription from the tape is possible with automatic typewriters and suitable tape-scanning devices. An automatic tape feed unit is incorporated in the RD-110A/U.

**TECHNICAL CHARACTERISTICS:**

*Input Voltage:* 0.07 through 7.0 volts at 600 ohms impedance  
*Output Amplitude:* Constant at voltages between above input limits

*Operating Frequency:*

Without Filter: 1,000 to 3,000 cps

With Filter: 1,875 cps (all other frequencies and noise are rejected.)

*Power Requirements:* 200 w, 115/230-v 60-cycle 1-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USN)		
1	Code Tape Recorder RD-110/U	F16-Q-239818-200	10-15/32 x 19 x 15-1/2	80
	or			
1	Code Tape Recorder RD-110A/U	F16-Q-239817-200	10-15/32 x 19 x 15-1/2	80

(Equipment consists of only one major component.)

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91682

MIL-HDBK-161

**AN/FRH-type** CODE TAPE RECORDER

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	3.13	90

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Whiteford Laboratory	Lynn, Mass.	NObsr-49122 NObsr 57254	

CODE TAPE RECORDER **AN/FRH-type**

20 November 1958

Cognizant Serv: **USN** FSN:**RD-112/U****USA****USN****USAF**

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-239820-200 --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Code Tape Recorder RD-112/U is a self-contained, undulating type, ink-slip recorder capable of converting radio-telegraph code information from the audio output of a communications-type radio receiver into its visual equivalent in permanently written form. The signals are recorded in ink on standard paper recording tape.

This equipment is capable of recording telegraphic code signals at speeds up to 350 wpm.

The recorder is contained in a steel case with a hinged lid on top. The ink reservoir assembly, recording pen assembly, and all controls, switches, and indicators necessary for normal operation of the equipment are located on the front panel. The front panel also contains an electronic tuning eye for

correct frequency adjustment of the audio signal output from the radio receiver.

**TECHNICAL CHARACTERISTICS:***Operating Frequency:*

Without Filter: 500 to 5,000 cps

With Filter: 1,875 cps (all other frequencies and noise rejected)

*Input Impedance:* 300-ohm single line; 600-ohm single line; or 600-ohm balanced line*Input Sensitivity:* 0.075 volt*Tape Speed:* 5 to 35 feet per minute*Recording Speed:* Up to 350 wpm.*Tape Type:* Standard 3/8-inch wide recording tape*Pen Stroke:* Adjustable 1/32 to 3/16 inch*Power Requirements:* 115/230-v 50/60-cycle 1-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USN)		
1	Code Tape Recorder RD-112/U (Equipment consists of only one major component.)	F16-Q-239820-200	14 x 19 x 16-1/2	78.0

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91781

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	6.6	138

MIL-HDBK-161

**AN/FRH-type** CODE TAPE RECORDER

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
McElroy Manufacturing Corp.	Littleton, Mass.	NObsr-52163	

TRANSMITTER CONTROL-MONITOR GROUP **AN/FRQ-3**

24 November 1958

Cognizant Serv: USN FSN:

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Transmitter Control-Monitor Group AN/FRQ-3 is a radio frequency and audio frequency manually operated switching and monitoring equipment employed in shore transmitter stations.

This equipment permits standardization of components; the methods of installation and wiring give maximum operational flexibility.

**TECHNICAL CHARACTERISTICS:***Receiving Equipment:*

Frequency Range: 80 kc to 560 kc 1.9 mc to 24 mc

Reception: Phone, cw, or mcw

Jack Positions: 78

*Switching Panel Line and Equipment Circuits: 20**Oscilloscope Pulse Repetition Rate: 7 to 30,000 cps**Audio Oscillator:*

Output Impedance: 600 ohms

Voltage: 24.5 v

Frequency Range: 20 to 40,000 cps

*Monitoring Rf Jack Switches: 80**Af Jack Positions, Monitoring: 156**Miscellaneous Rf Switches: 60 ea**Antenna Coupler:*

Impedance: 70 ohms

Frequency Range in Mc: 2 to 32

*Frequency Meter Range: 160 to 30,000 kc**Power Requirements: 110-v 60-cycle 1-phase ac***MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Monitoring Group OA-489/ FRQ-3 including:			
2	Antenna Coupler CU- 168/FRR			
2	Audio Oscillator EL- Tronics Model TE-200k			
1	Desk FN-28/G			
1	Frequency Meter LR-1 or FR/36U			
2	Frequency Shift Converter CV-60/URR			
2	Oscilloscope OBL-3a			
2	Radio Receiver RCH			
2	RF/AF Jack position			
1	RF/AF Switching position			
2	Speaker Panel LS-139/G			
1	Transmitter Control Con- sole OA-490/FRQ-3 including:			
1	Audio Oscillator Hew- lett-Packard Type 200 AB			
2	Jack panel			
2	Loudspeaker			
1	Oscilloscope OBL-3a			

MIL-HDBK-161

**AN/FRQ-3** TRANSMITTER CONTROL-MONITOR GROUP

MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Receiver RCH			
2	Switching panel			
1	Volt-Ohm-Milliam- meter OBQ-4			
1	Volume Level Indicator TS-629/U			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92228

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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Electronics Division, U.S. Naval Gun Factory

## DIVERSITY RECEIVING EQUIPMENT AN/FRR-3( )

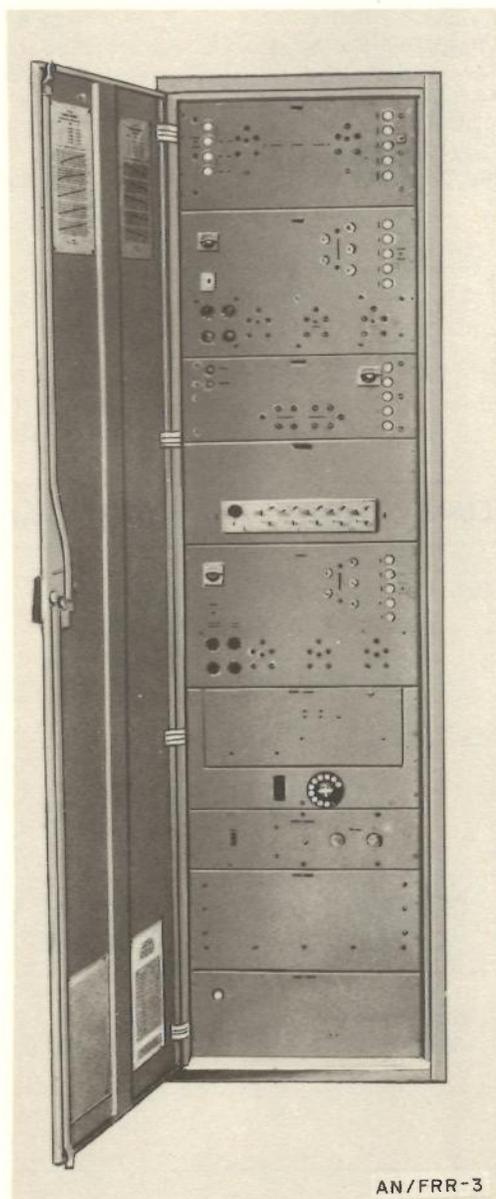
1 July 1958

Cognizant Serv: USA FSN: 5820-187-3154

USA

USN

USAF

TYPE CLASS: L/Std  
STOCK NO: 2S2001-3--  
----  
1760-265497715

AN/FRR-3

**FUNCTIONAL DESCRIPTION:**

Diversity Receiving Equipment AN/FRR-3( ) is an hf, am (voice and frequency-shift-keying) radio receiving equipment used in long-range, point-to-point communication to overcome the effects of radio fading. It is fixed-plant equipment.

This equipment consists essentially of two identical super-heterodyne radio receivers, which operate from separate antennas, and an hf oscillator common to both receivers. Its output can be fed to Radioteletype Terminal Equipment AN/FGC-1.

It is equipped with a telephone dial that may be used to turn the equipment on or off and to select any of five preset frequency channels or any combination of four antennas.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2.4 to 23 in 5 bands

*Type Modulation:* AM

*Type of Signal:* Voice and fsk radioteletype

*Power Requirements:* 400 w, 100-130/200-260-v 50-60-cycle ac

MIL-HDBK-161

**AN/FRR-3( ) DIVERSITY RECEIVING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS*	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna unit	-----	8-3/4 x 13-5/8 x 18-3/4	35
1	Cabinet	-----	85 x 17 x 22-1/2	
1	Multiplier unit	-----	7 x 13-3/4 x 18-3/4	29.5
1	Oscillator unit	-----	8-3/4 x 10-5/8 x 18-3/4	35
1	Power control unit	-----	5-1/4 x 7-1/2 x 18-3/4	15.25
1	Power filter unit	-----	8-3/4 x 11-1/4 x 18-3/4	62.5
1	Power supply unit	-----	7-1/2 x 13-5/8 x 18-3/4	61.75
2	Receiver unit	-----	12-1/4 x 13-3/4 x 18-3/4	46
1	Remote control unit	-----	10-1/2 x 8 x 18-3/4	24.25

\* Components not separately stocked.

**REFERENCE DATA AND LITERATURE:**

TM 11-872

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
3	53.16	1,146

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co. Press Wireless Manufacturing Co. Inc.	Cedar Rapids, Iowa New York, N. Y.	3217-P-51-06 38861-P-53-47	\$2,700.00

24 November 1958

Cognizant Serv: USA

FSN: 5820-164-7207

RECR.

RADIO SET AN/FRR-4

BC 100H

USA

USN

USAF

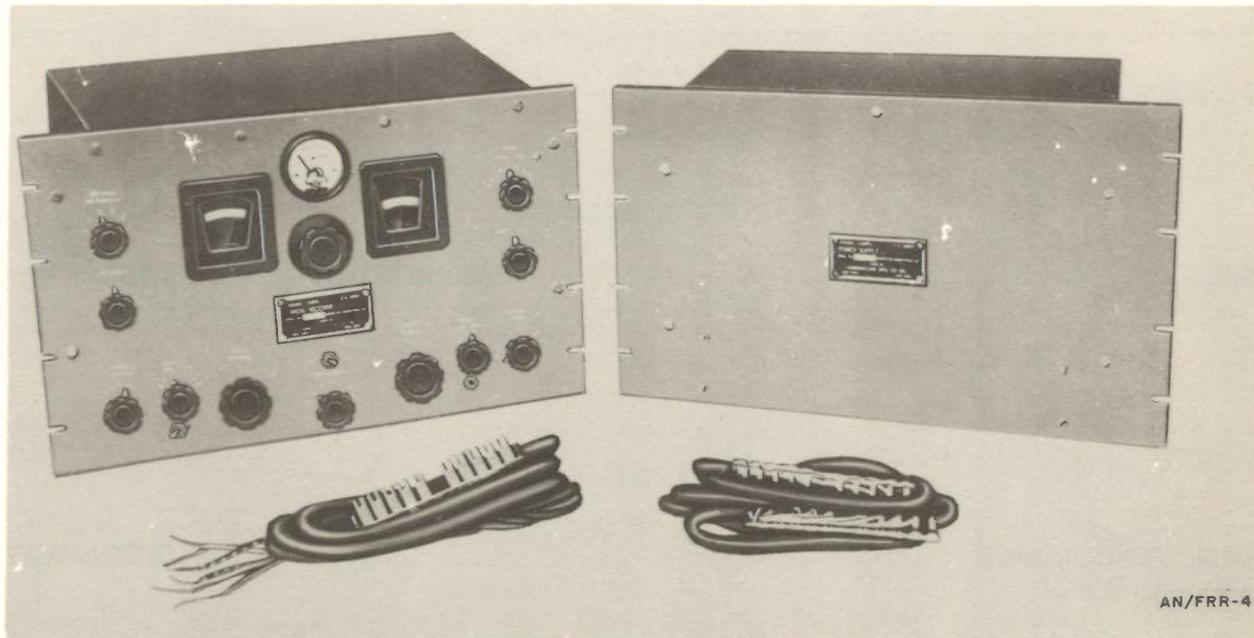
TYPE CLASS:

Std

Obs

STOCK NO:

2S2001-4FP

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/FRR-4 is a medium-frequency, amplitude-modulated, long-range receiving equipment. It is designed for fixed station or mobile and vehicular installation and for intercept team application.

This equipment consists of a commercial (Hammarlund Super-Pro) communications receiver, which may be cabinet-inclosed or rack and panel mounted; included also is a power supply unit.

In emergencies, the equipment can be operated by battery supply.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

Band 1: .54 to 1.16

Band 2: 1.16 to 2.5

Band 3: 2.5 to 5

Band 4: 5 to 10

Band 5: 10 to 20

*Type Modulation:* AM*Operational Range:* 100 miles*Type Signal:* Cw, tone, voice*Power Requirements:* 180 w, 105- to 125-v 50- to 60-cycle ac

MIL-HDBK-161

**AN/FRR-4** RADIO SET

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Supply Unit RA-84	-----	10-1/2 x 10 x 19	60
1	Radio Receiver BC-1004	-----	10-1/2 x 15-3/8 x 19	55

**REFERENCE DATA AND LITERATURE:**  
TM 11-866

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	7.4	175

**PROCUREMENT DATA**

**PROCURING SERVICE:**  
SPEC &/or DWG:

**DESIGN COG:**

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

RADIO RECEIVING SET AN/FRR-7( )

1 July 1958  
 Cognizant Serv: USA FSN: 5820-164-7174

	USA	USN	USAF
TYPE CLASS:	Std	Used by	--
STOCK NO:	2C6731	--	--



AN/FRR-7

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-7( ) is a crystal-controlled, fixed-frequency, am (voice and tone) receiving equipment operating in the medium-frequency band.

This equipment consists of a lightweight radio receiver with built-in power supply and loudspeaker. It provides for break-in operation when operated in conjunction with a transmitter using the same or an adjacent frequency.

This set has squelch control for reducing background noise volume control, and provision for operation of an external loudspeaker. It uses a conventional type antenna system.

**TECHNICAL CHARACTERISTICS:**

- Frequency Range in Mc:* 1.6 to 2.9
- Type Modulation:* AM
- Type of Signal:* Tone, voice
- Power Requirements:* 40 w, 115-v 50/60-cycle ac



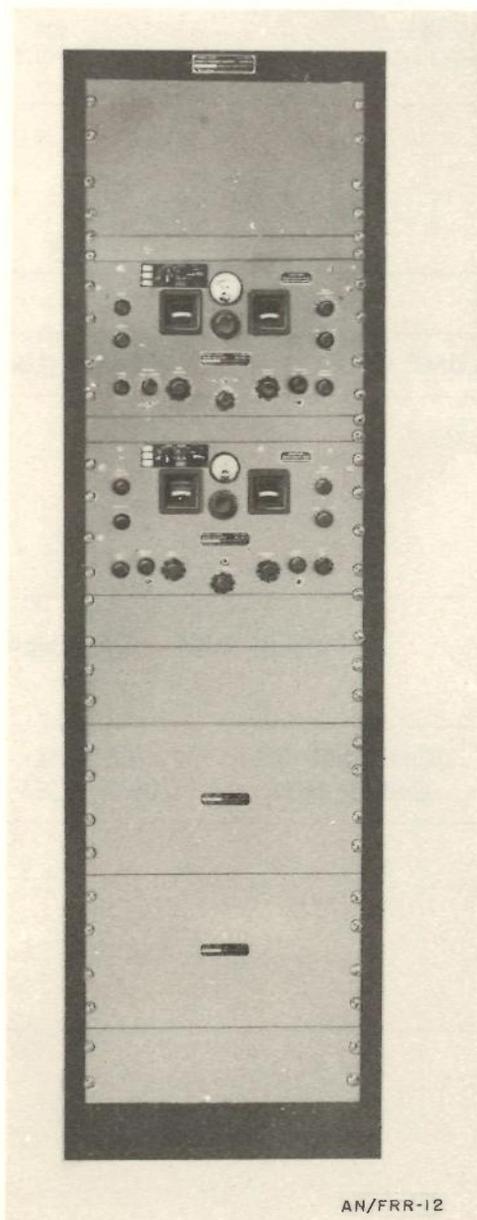
## RADIO RECEIVING SET AN/FRR-12

1 July 1958

Cognizant Serv: USA FSN: 5820-164-7219

R-270

	USA	USN	USAF
TYPE CLASS:	L/Std	--	L/Std
STOCK NO:	2S2001-12	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-12 is a fixed-station, dual-diversity receiving set for use in point-to-point radioteletype systems. This set may also be used for cw, mcw, or am voice reception.

This equipment consists primarily of two Radio Receivers R-270/FRR (modified) mounted, with their power supplies, in a standard steel floor-type cabinet. Sufficient space is available in the equipment rack to install separately procured radioteletype converters such as Converter CV-31/TRA-7.

The receivers have noise-limiter, bandspread, phasing, volume, and beat-frequency-oscillator controls. The received frequency can be either crystal-controlled or manually selected.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.25 to 40 in 5 bands

*Type Modulation:* AM

*Type of Signal:* Cw, mcw, voice, fsk radioteletype

*Power Requirements:* 400 w, 95-130/190-260-v 25-60-cycle ac

MIL-HDBK-161

**AN/FRR-12** RADIO RECEIVING SET

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
2	Power Supply Unit RA-74-D	6130-398-4500	10-1/2 x 10-1/4 x 19	60.5
1	Rack MT-660( )/FRR-12	5820-223-9843	76 x 18 x 22	230
2	Radio Receiver R-27/FRR	5820-164-7179	10-1/2 x 16-3/4 x 19	60.50

REFERENCE DATA AND LITERATURE:

TM 11-896

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	34.7	934

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 69-19, 3280

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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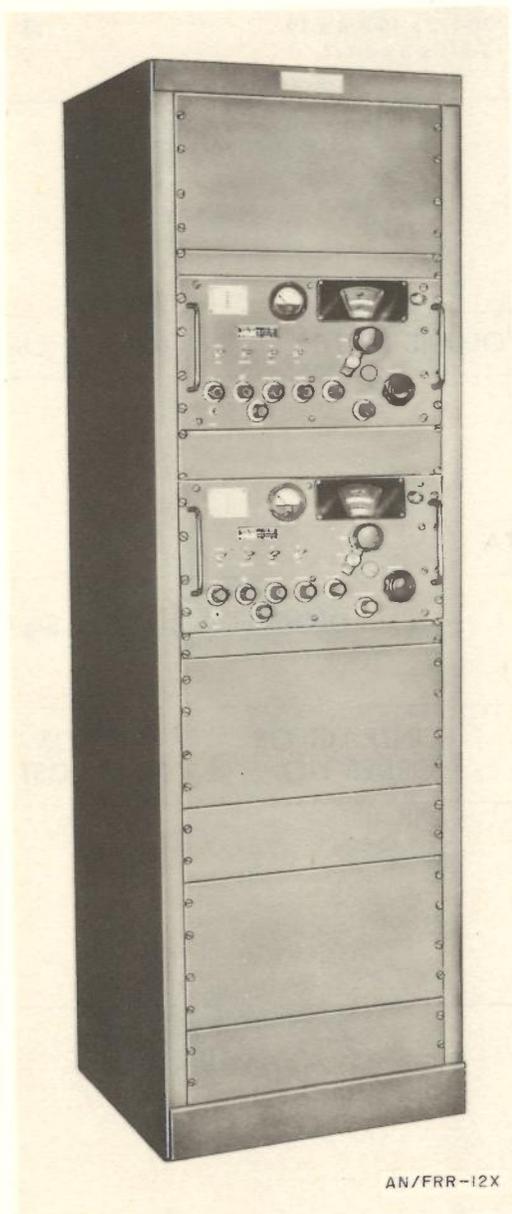
## RADIO RECEIVING SET AN/FRR-12X

1 July 1958

Cognizant Serv: USA FSN: 5820-187-3141

R-274

	USA	USN	USAF
TYPE CLASS:	L/Std	--	--
STOCK NO:	2S2001-12X	--	--



AN/FRR-12X

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-12X provides the same services in the same applications as Radio Receiving Set AN/FRR-12. The AN/FRR-12X uses later model receivers that have self-contained power supplies.

This equipment consists of two Radio Receivers R-274/FRR and a terminal box installed in a standard steel floor-type cabinet. Space is available for installation of additional equipment in the rack.

The receivers have rf and audio gain, phasing, and beat-frequency-oscillator controls. The receivers can be either crystal or manually controlled.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 54.0

*Type Modulation:* AM

*Type of Signal:* Cw, tone, voice, fsk

*Power Requirements:* 240 w, 95/105/117/130/190/210/234/  
360-v 50-60-cycle ac

MIL-HDBK-161

**AN/FRR-12X** RADIO RECEIVING SET

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Rack MT-693/FRR-12X	5820-223-9844	76-3/4 x 18-1/8 x 22	
2	Radio Receiver R-274/FRR	5820-187-3143	10-1/2 x 16-3/4 x 19	58
1	Terminal Box J-346/FRR-12X	5976-240-4450	7-3/4 x 3 x 4-1/4	2.2

REFERENCE DATA AND LITERATURE:

TM 11-896A

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1		

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3395

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
The Hallicrafter Co.	Chicago, Ill.	25557-P-49	

## RADIO RECEIVING SET AN/FRR-21, -22, -23

24 November 1958

Cognizant Serv: USN FSN: 5820-649-4772

SRR-13

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --

Used by --



AN/FRR-21

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Sets AN/FRR-21, AN/FRR-22, and AN/FRR-23 are designed for fixed station operation in the low-, medium-, and high-frequency bands. Each set has provisions for rack mounting.

The frequency range of each receiver is divided into five bands with continuous tuning throughout each band.

These equipments are intended for shore communication and for ground based installations.

The basic receiver of all three sets is a double superheterodyne type having two stages of radio frequency amplification ahead of the first mixer and local oscillator. Radio Receiving Sets AN/FRR-22 and AN/FRR-23 have accommodations for an external oscillator, which can replace the local oscillator.

These three receiving sets are basically similar to Radio Receiving Sets AN/SRR-11, AN/SRR-12, and AN/SRR-13, respectively.

**TECHNICAL CHARACTERISTICS:***Frequency Range:***AN/FRR-21:**

- Band 1: 14 to 30 kc
- Band 2: 30 to 63 kc
- Band 3: 63 to 133 kc
- Band 4: 133 to 283 kc
- Band 5: 283 to 600 kc

**AN/FRR-22:**

- Band 1: 250 to 500 kc
- Band 2: 500 to 1,000 kc
- Band 3: 1,000 to 2,000 kc
- Band 4: 2,000 to 4,000 kc
- Band 5: 4,000 to 8,000 kc

**AN/FRR-23:**

- Band 1: 2 to 4 mc
- Band 2: 4 to 8 mc
- Band 3: 8 to 16 mc

MIL-HDBK-161

## AN/FRR-21, -22, -23 RADIO RECEIVING SET

Band 4: 16 to 24 mc

Band 5: 24 to 32 mc

Type Modulation: Am A1, A2 (-21, -22, -23); A3 (-22, -23); fm (F1)

Type Signal: Cw, voice, fsk

Frequency Control: Continuous 1c oscillator tuning

Receiver Type: Superheterodyne, employing double conversion

Receiver Output: 6 mw into 600 ohms (0 db); output through headphones and indicated on output meter

Input Impedance to Antenna Preamplifier: 73 ohms low impedance; 200 ohms high impedance

First Intermediate Frequency:

AN/FRR-21: 60 kc on bands 1 and 4; 200 kc on bands 2, 3, and 5

AN/FRR-22: 200 kc on bands 1, 2, and 3; 1,600 kc on bands 4 and 5

AN/FRR-23: 1,600 kc on all 5 bands

Second Intermediate Frequency: 200 kc for all three receivers

Receiver Sensitivity (Cw with High Impedance Antenna):

14 to 18 Kc: 8 uv minimum

18 to 100 Kc: 5 uv minimum

100 to 600 Kc: 3.5 uv minimum

600 Kc to 8 Mc: 3 uv minimum

8 to 24 Mc: 4 uv

24 to 34 Mc: 5 uv or better

Power Requirements: 0.85 amp, 90% pf; 105, 115, or 125 v 50- to 60- or 400-cycle 1 phase ac

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Connectors, clamps, and cable			
1	Radio receiving set	-----	8-3/4 x 17-1/2 x 18-1/2	75

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 92211

### SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	5.5	1

### PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radio Corporation of America, RCA Victor Division	Camden, N. J.	NObsr-52623, 29 June 1951 NObsr-57135, 19 December 1951	

RADIO RECEIVING SET AN/FRR-24

24 November 1958

Cognizant Serv: USN FSN: 5820-665-3514

USA

USN

USAF

TYPE CLASS: --

Used by

STOCK NO: --

FUNCTIONAL DESCRIPTION:

Radio Receiving Set AN/FRR-24 is a double-conversion superheterodyne type diversity receiver for use at shore stations in point-to-point communication. It can receive signals in single-channel, space- or frequency-dual-, or triple-diversity operations, such as double-sideband radiotelephone, on-off keyed radiotelegraph, and frequency-shift-keyed telegraph to operate single-channel teletypewriters at 24.5 dot cycles and/or up to four-channel multiplex at 98 dot cycles.

The functions and performance of this equipment are similar to those of Radio Receiving Sets AN/FRR-10 and AN/FRR-37, except that the AN/FRR-24 uses both dual- or triple-diversity operation and cannot receive single-sideband suppressed signals.

The complete equipment is contained in four rack cabinets permanently connected together.

TECHNICAL CHARACTERISTICS:

Frequency Range in Mc:

- Band 1: 2 to 4
- Band 2: 4 to 8
- Band 3: 8 to 16
- Band 4: 16 to 32

Type Modulation: AM (A1, A2, A3); FM (F1, F4)

Type Signal: Cw, mcw, voice, fsk, facsimile

Type of Frequency Control: Manual tuned with tuneable oscillator or crystal-controlled oscillator

Antenna Input Impedance: 70 ohms, unbalanced

Frequency Stability: 0.002% per degree C. frequency variation, 6-db gain variation

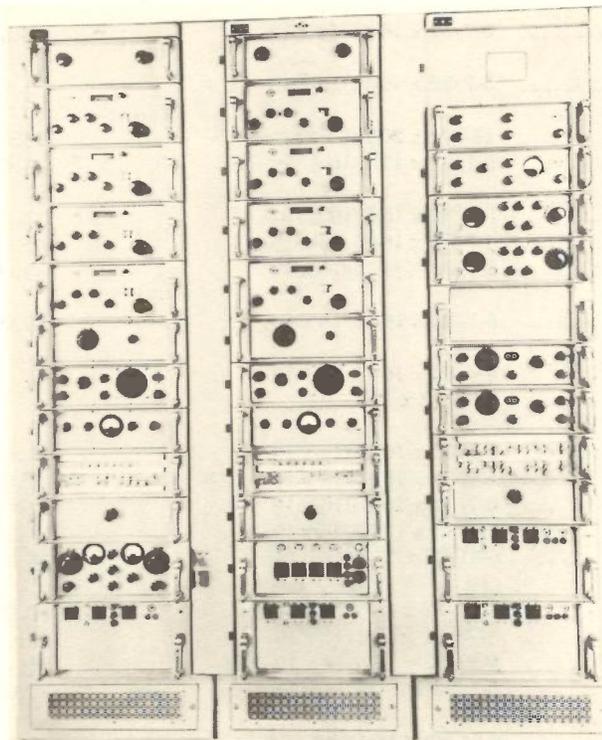
Intermediate Frequency Rejection: 100 db

Sensitivity: A2, A3, 2 uv; A1, A4, F1, 3 uv

Gain Variation: 6 db

Keying Speed: 500 wpm

Power Requirements: 1.5 kw; 10- 115-, and 125-v 50- to 60 cycle 1-phase ac



AN/FRR-24

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
3	Amplifier-Converter AM-450/FRR-24	-----	6-31/32 x 16-15/16 x 19	58.0
3	Amplifier-Converter AM-451/FRR-24	-----	6-31/32 x 16-15/16 x 19	58.0

## AN/FRR-24 RADIO RECEIVING SET

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
3	Amplifier-Converter AM-452/FRR-24	-----	6-31/32 x 16-15/16 x 19	58.0
3	Amplifier-Converter AM-453/FRR-24	-----	6-31/32 x 16-15/16 x 19	58.0
1	Amplifier-Detector AM-438/FRR-24	-----	5-7/32 x 16-15/16 x 19	36.0
3	Amplifier-Detector AM-439/FRR-24	-----	5-7/32 x 16-15/16 x 19	36.0
2	Amplifier-Detector AM-440/FRR-24	-----	5-7/32 x 16-15/16 x 19	31.0
4	Cabinet CY-860/FRR-24	-----	14-3/4 x 20-7/8 x 84	215.0
1	Comparator-Keyer CM-32/FRR-24	-----	5-7/32 x 15-7/16 x 19	33.0
3	Control Panel SB-142/FRR-24	-----	5-7/32 x 15-7/16 x 19	33.0
3	Filter Assembly F-99/FRR-24	-----	5-7/32 x 16-15/16 x 19	45.0
3	Frequency Converter CV-126/FRR-24	-----	5-7/32 x 16-15/16 x 19	33.0
3	Frequency Shift Converter CV-127/FRR-24	-----	5-7/32 x 16-15/16 x 19	35.0
3	Keyer KY-62/FRR-24	-----	5-7/32 x 16-15/16 x 19	35.0
1	Oscillator Assembly O-131/FRR-24	-----	6-31/32 x 19	
1	Patch Panel SB-138/FRR-24	-----	5-7/32 x 16-15/16 x 19	21.0
1	Patch Panel SB-140/FRR-24	-----	5-7/32 x 16-15/16 x 19	21.0
1	Patch Panel SB-143/FRR-24	-----	5-7/32 x 16-15/16 x 19	21.0
1	Patch Panel SB-169/FRR-24	-----	5-7/32 x 16-15/16 x 19	21.0
1	Power Distribution Panel SB-141/FRR-24	-----	6-31/32 x 15-5/16 x 19	28.0
3	Power Supply PP-590/FRR-24	-----	8-23/32 x 15-5/16 x 19	96.0
1	Power Supply PP-648/FRR-24	-----	8-23/32 x 15-5/16 x 19	96.0
1	Power Supply PP-649/FRR-24	-----	8-23/32 x 15-5/16 x 19	96
3	R. F. Amplifier AM-454/ FRR-24	-----	5-7/32 x 16-15/16 x 19	32.0
1	Toolbox	-----	6-31/32 x 16-15/16 x 19	41.0

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 91580

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	173.35	4,368

RADIO RECEIVING SET **AN/FRR-24**

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
National Co., Inc.	Malden, Mass.	NObsr-39402, 30 June 1947	\$60,260.00



RADIO RECEIVING SET **AN/FRR-27**

24 November 1958

Cognizant Serv: USN FSN: 5820-665-2380

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --

Used by --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio receiving Set AN/FRR-27 is a very-high-frequency, double-conversion superheterodyne equipment designed for single-channel, crystal-controlled operation. It provides means for reception of amplitude-modulated voice and tone transmission.

This equipment is designed for use in air traffic control towers at naval air stations and can be used at naval shore stations or advanced bases on point-to-point communications circuits.

Radio Receiving Set AN/FRR-27 is part of a series of fixed-tuned crystal-controlled radio receivers similar in design and construction but differing in frequency ranges. The series of radio receiving sets includes AN/FRR-26 with a range from 2 to 8 megacycles; AN/FRR-30, with a range from 200 to 500 kilocycles; AN/FRR-31, with a range from 8 to 32 megacycles.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

Rated: 100 to 156 in 1 band

Maximum: 98 to 159

*Reception:* A2 and A3*Frequency Control:* Crystal-controlled oscillator*Receiver Type:* Double-conversion superheterodyne*Intermediate Frequencies:* 23 mc and 3 mc*Power Output:*

Audio Channel: 1.5 w minimum into 200- to 600-ohm load, with less than 7% distortion

Phone Jack: 15 mw minimum into 600-ohm load

*Frequency Stability of Receiver:* Variation in line voltage of  $\pm 10\%$  of normal does not vary resonant frequency by more than 0.002%. Variation in ambient temperature between  $-20^{\circ}$  C. to  $+50^{\circ}$  C. does not vary resonant frequency by more than 0.01% from  $25^{\circ}$  C.

*Squelch Circuit:*

Effective Silencing Range: 1 to 100 uv

Time Constant: 0.2 sec maximum

Audio Output Reduction: Over 40 db

*Antenna Input:* 50 ohms, unbalanced

*Power Requirements:* 54 w nominal; 105-, 115-, or 125-v 50- to 60-cycle 1-phase ac; 0.50 amp

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Plugs (3) for external cords	-----	1 x 3-1/2 x 3-1/2	0.2
1	Radio Receiver R-518/FRR-27 including mounting legs	-----	6 x 17 x 18-3/4	35.5
2	Relay rack mounting bracket	-----	1 x 5-1/4 x 6	.6
1	Test Cable W601	-----	3-1/2 x 3-1/2 x 12	1.33

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92021

MIL-HDBK-161

**AN/FRR-27** RADIO RECEIVING SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
------	----------------	--------------

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG: MIL-R-156458 (Ships)

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Communication Co., Inc.	Coral Gables, Fla.	NObsr-52715, 29 June 1951	\$390.60

## RADIO RECEIVING SET AN/FRR-28

24 November 1958

Cognizant Serv: USN FSN: 5820-665-2362

SP-600

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
F16-Q-112117-200 --

AN/FRR-28

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-28 is an amplitude-modulated equipment designed for diversity radio reception with a frequency-shift converter-comparator group to provide two-channel space or frequency-diversity reception of radio signals. It is used for single- or dual-diversity reception of radiotelephone or telegraph signals in the high-frequency spectrum.

This equipment employs two commercial standard (Hammarlund Model SP-600-MX) receivers modified for diversity operation. A radio frequency-beat frequency oscillator unit is included which may be used to confer a high degree of stability to the ensemble. Optional crystal control is also provided. An amplifier-detector unit may be used for local monitoring purposes. A keyer unit is used to convert the received signal to a keyed audio tone of a selected frequency; this can then be used in a circuit external to the receiving set either to key a radio transmitter or to operate a teletypewriter.

The set is installed in a relay-rack cabinet with patching panel and loudspeaker unit.

Frequency-shift signal reception is also possible with the use of an additional converter-comparator, space and wiring being provided for Frequency Shift Converter-Comparator Group AN/URA-6. The set features beat-frequency oscillator and noise-limiter circuits, and has provisions for visual indication of the output.

**TECHNICAL CHARACTERISTICS:***Receiver:*

- Frequency Range: 540 kc to 54 mc in 6 bands (self-controlled 1.545-mc to 20.045-mc master oscillator)
- Type of Reception: A1, A2, A3, FSK (with the use of a converter)
- Intermediate Frequencies: 455 kc and 3.955 mc (100 ohms output impedance)
- Input Impedance: 72 ohms, unbalanced
- Output Impedance: 600 ohms to loudspeaker or external lines; 8,000 ohms to front panel jacks
- Audio Output Power: 2.5 w into 600 ohms; 15 mw into 8,000 ohms

*Rf Oscillator:*

- Frequency Range Mc: 2 to 32 in 4 bands (temperature-controlled variable oscillator)
- Preset Frequencies: 3-hf crystals and 2-bfo crystals

*Amplifier-Detector:*

- Input Impedance: 1,000 ohms
- Output Impedance: 4,000 ohms

MIL-HDBK-161

## AN/FRR-28 RADIO RECEIVING SET

Loudspeaker Input Impedance: 500 ohms

Keyer:

Input: Positive polar keying, negative polar keying, keyed tone, polar relay keying

Output Tone: 425, 765, 1,105, 1,445, 1,785, or 2,125 cps into 600 ohms

Power Requirements: 570 w, 115- or 230-v 50- to 60-cycle 1-phase ac

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Amplifier-Detector AM-615/UR, including cable	-----	3-1/2 x 19 x 14	15
1	Cabinet CY-597A/G	-----	87-1/2 x 24 x 22-3/8	275
12	Cable	-----		
2	Fuse	-----		
1	Keyer KY-79/UR, with cable	-----	3-1/2 x 19 x 13-1/2	22
1	Loudspeaker, Magnetic LS-187/UR	-----	10-1/2 x 19 x 3-13/16	12
1	Oscillator, Radio Frequency O-165/UR, including cable	-----	10-1/2 x 19 x 14	54
1	Panel, Patching, Communication S-224/UR, including six patch cords	-----	3-1/2 x 19 x 6	7
2	Receiver, Radio R-450/FRR-28	-----	10-1/2 x 19 x 16-1/2	66

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 91582

### SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	73.4	1,040

### PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

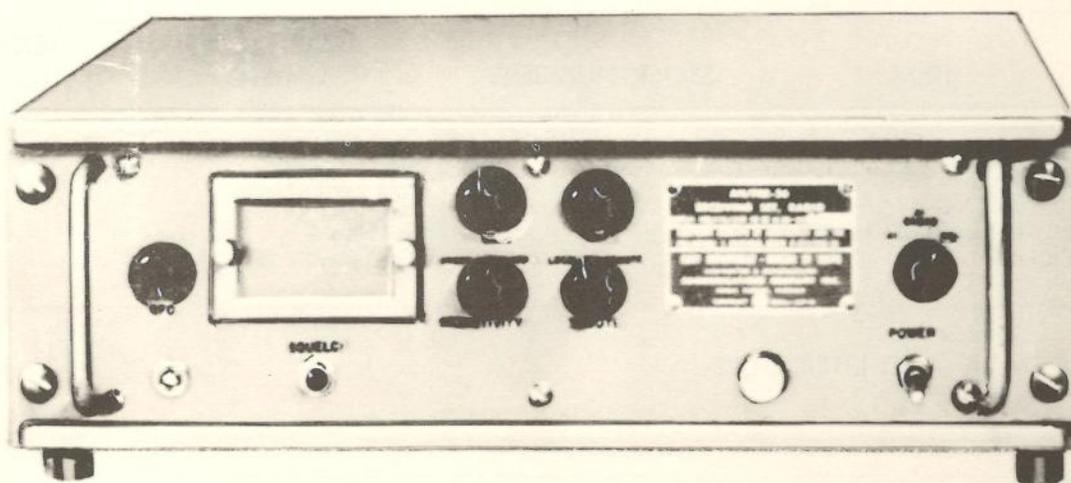
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Northern Radio Co., Inc.	New York, N. Y.	NObsr-52132, 19 December 1950	

## RADIO RECEIVING SET AN/FRR-30

24 November 1958

Cognizant Serv: USN FSN: 5820-665-2360

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--



AN/FRR-30

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-30 is designed for reception of telegraphy without the use of modulation audio frequencies in the A1 and A1 broad positions. It also provides telegraphy by keying of modulating audio frequencies and telephony in the A2, A3 position of operation over the designated frequency range.

This equipment is for use in air traffic control towers at naval air stations. The receiver can also be used at naval shore stations or advanced bases on point-to-point communication circuits.

It can be employed for both local and limited remote operation and is suitable for continuous operation over long periods of time.

**TECHNICAL CHARACTERISTICS:***Frequency Range:*

- Band 1: 200 kc to 380 kc
- Band 2: 380 kc to 560 kc

*Number of Preset Frequencies:* One as determined by the crystal of the channel determining oscillator

*Frequency Control:* Crystal-controlled oscillator

*Type Modulation:* AM, A2, A3

*Receiver Type:* Single conversion

*Intermediate Frequency:* 75 kc

*Receiver Output:*

Audio Channel: 1.5 w minimum into a 200- to 600-ohm load, with less than 7% distortion

Phone Jack: 15 mw minimum into a 600-ohm load with less than 7% distortion

*Type Reception:* A1, A2, A3

*Frequency Stability Data:* +10% of normal does not vary the resonant frequency by more than 100 cps (approximately)

Variation in Power Line Frequency: 50 to 60 cps does not vary the resonant frequency by more than 100 cps (approximately)

**AN/FRR-30** RADIO RECEIVING SET

Variation in Ambient Temperature:  $-15^{\circ}$  C. to  $+50^{\circ}$  C.  
does not vary the resonant frequency by more than 200  
cps (approximately)

*Squelch Circuit Effective Silencing Range:* 1 to 100 uv (approx-  
imately)

*Time Constant:* Under 0.2 second

*Time Constant Impedances:*

Antenna Input: 72 ohms unbalanced

**Audio Channel Outputs:**

Audio Receptacle: Load can be within a range of 200 to  
600 ohms with less than 2-db variation of audio output

Headphone Jack: Can be used with a 600-ohm headphone

*Antenna Data:* An antenna having a 72-ohm terminal im-  
pedance is required

*Power Requirements:* 105- 115-v, or 125-v 50- to 60-cycle ac;  
0.57 amp at 115-v; 62 w at 115-v rms

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Plugs (4)	-----	1 x 3-1/2 x 3-1/2	0.31
1	Radio Receiver R-519/FRR-30, including legs	-----	6 x 17 x 18-3/4	40
1 pair	Relay-rack mounting brackets	-----	1 x 5-1/4 x 6	0.56
1	Test cable	-----	3-1/2 x 3-1/2 x 12	1.13

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92679

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.25	88.5

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG: MIL-R-15645A

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Communications Co., Inc.	Coral Gables, Fla.	NObsr-52715, 29 June 1951	\$630.00

## RADIO RECEIVING SET AN/FRR-31

24 November 1958

Cognizant Serv: USN FSN: 5820-665-2369

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Receiving Set AN/FRR-31 is designed for the reception of telegraphy without the use of modulating audio frequencies in the A1 and A1 BROAD positions. It also provides telegraphy by keying of modulating audio frequencies, and telephony in the A2, A3 position of operation over the designated frequency range.

This equipment is for use in air traffic control towers at naval air stations. The receiver can also be used at naval shore stations or advanced bases on point-to-point communication circuits.

It can be employed for both local and limited remote operation and is suitable for continuous operation over long periods of time.

## TECHNICAL CHARACTERISTICS:

Frequency Range in Mc: 8 mc to 32; 3 bands  
Number of Preset Frequencies: 1

*Type Control:* Crystal-controlled oscillator*Type Modulation:* AM on A2, A3*Intermediate Frequency:* 2,020-kc first IF; 120-kc second IF*Receiver Output:*

Audio Channel: 1.5 w (minimum) into 200- to 600-ohm load

Phone Jack: 15 mw (minimum) into 600-ohm load

*Type Reception:* A1, A2, A3*Squelch Circuit:*

Effective Silencing Range: 1 to over 100 uv

Time Constant: Under 0.2 sec

*Impedance:*

Antenna Input: 72 ohms unbalanced

Audio Channel Output:

*Audio Receptacle:* 200 to 600 ohms with less than 2-db variation*Headphone:* 600 ohms*Power Requirements:* 62 w 105- 115-, or 125-v 50- to 60-cycle ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 pair	Relay-rack mounting brackets	-----	1 x 5-1/4 x 6	
1	Radio Receiver R-777/FRR-31	-----	6 x 17 x 18-3/4	40
1	Set of plugs	-----	1 x 3-1/2 x 3-1/2	
1	Test cable	-----	3-1/2 x 3-1/2 x 12	1

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 92835

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.3	88.5

MIL-HDBK-161

**AN/FRR-31** RADIO RECEIVING SET

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Communications Co., Inc.	Coral Gables, Fla.	NObsr-52715, 29 June 1951	\$3,850.00

## RADIO RECEIVING SET AN/FRR-32

24 November 1958

Cognizant Serv: USN FSN: 5820-644-4783

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-32 is an amplitude-modulated communications equipment designed for fixed station operation. It is used with a frequency-shift converter-comparator group to provide two-channel space- or frequency-diversity reception of radio signals.

A built-in monitoring unit permits local monitoring and tuning of the two component receivers. Both are controlled by a separate master oscillator to improve stability.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

- Band 1: 2 to 4
- Band 2: 4 to 8
- Band 3: 8 to 16
- Band 4: 16 to 24
- Band 5: 24 to 32

*Frequency Control:* Crystal controlled when using the RF oscillator; continuous lc oscillator tuning when operating the receivers without the master oscillator

*Receiver Type:* Dual-conversion superheterodyne*Intermediate Frequencies:* First IF, 1,600 kc; second IF, 200 kc*Type Reception:* A1, A2, A3, F1*Receiver Output:* 6 mw into 600 ohms*Input Impedance (to Antenna Preamplifier):*

Low: 73 ohms

High: 200 ohms

*Receiver Sensitivity (CW):*

2 to 8 Mc: 5 uv minimum

8 to 24 Mc: 6 uv minimum

24 to 32 Mc: 8 uv minimum

*Silencer Diodes:* Operate on A3 signals*Threshold Control Range:* 40 db*Power Data (at 115 v):*

Receivers 1 and 2: 62.5 w

Comparator Keyer: 80 w

Rf Oscillator: 295 w

*Power Requirements:* 490 w; 105; 115-, or 125-v, 50- to 60-cycle 1-phase ac; 90% pf**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiving Set AN/FRR-32 including:	-----	22-3/8 x 24 x 87-9/16	
2	Radio Receiver R-618/ FRR-32	-----	8-3/4 x 18-1/2 x 19	75
1	Cabinet CY-597A/G	-----	22-3/8 x 24 x 87-9/16	
1	Comparator Keyer CM-70/FRR-32	-----	8-23/32 x 18-3/16 x 19	
1	Dynamic Loudspeaker LS-169/G	-----	4-3/8 x 8-23/32 x 19	
1	Patching Communication Switchboard SB-431/ FRR-32	-----	1-1/16 x 10-1/2 x 19	
1	Radio Frequency Oscillator O-330/FRR-32	-----	10-15/32 x 18-5/8 x 19	

**REFERENCE DATA AND LITERATURE:**

MIL-HDBK-161

**AN/FRR-32** RADIO RECEIVING SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radio Corporation of America, RCA Victor Division	Camden, N. J.	NObsr-57571	

RADIO RECEIVING SET **AN/FRR-33**

1 July 1958

Cognizant Serv: USA: FSN: 5815-503-1501

R-391

USA

USN

USAF

TYPE CLASS:

Std

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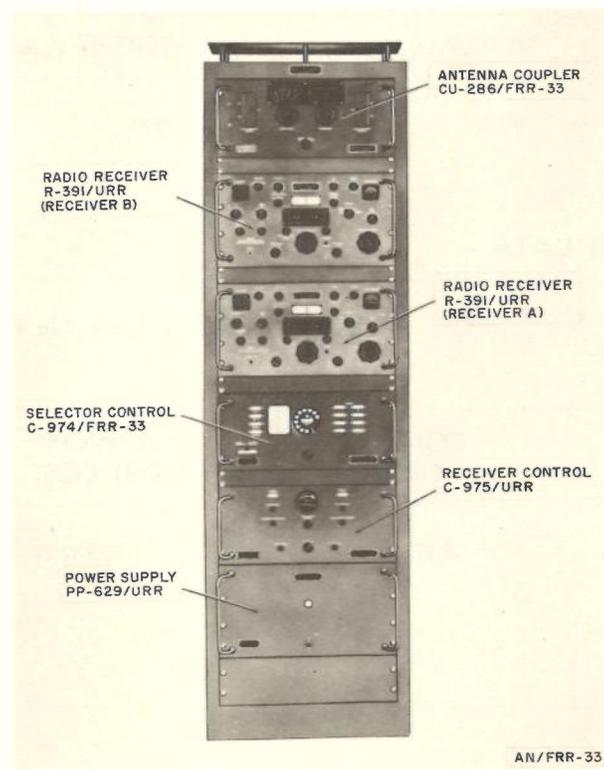
Std

STOCK NO:

2S2001-33

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## FUNCTIONAL DESCRIPTION:

Radio Receiving Set AN/FRR-33 is a dual-diversity equipment used for minimizing the effects of fading in radioteletype signals. It is operated in conjunction with Radioteletype Terminal Equipment AN/FGC-1 in fixed plant military communication applications at higher headquarters.

This equipment includes two identical radio receivers, an antenna coupler, a selector control, a receiver control, a remote switching control, and a power supply, all of which are rack-mounted in a steel cabinet. A complete diversity antenna system, providing two rhombic antennas for each set, is required but not supplied with this equipment.

As many as three AN/FRR-33 systems can be controlled by the remote switching control.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 0.5 to 32

*Type Modulation:* AM

*Type of Signal:* Cw, voice, fsk radio tty (850-cycle shift)

*Power Requirements:* 1,475 w, 115/230-v 48-62-cycle ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
1	Antenna Coupler CU-286/ FRR-33	2A745-286	19 x 18-1/4 x 8-3/4	
1	Electrical Equipment Cabinet CY-1119/U	6F300-1119	20-13/16 x 21-27/32 x 76	
1	Power Supply PP-629/URR	3H4497-629	19 x 15-15/64 x 10-1/2	
2	Radio Receiver R-391/URR	2C4180-391	19 x 14-1/2 x 10-1/2	
1	Receiver Control C-975/URR	2C684-975	19 x 17-9/16 x 8-3/4	
1	Remote Switching Control C-973/FRR-33	2C684-973	9-21/64 x 12-51/64 x 8-7/32	
1	Selector Control C-974/FRR-33	2C684-974	19 x 15-5/16 x 8-3/4	

MIL-HDBK-161

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**AN/FRR-33** RADIO RECEIVING SET

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REFERENCE DATA AND LITERATURE:

TM 11-871

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
9	65.6	1,099

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-D-10251

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	26575-P-52-51	\$9,087.23

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## RADIO RECEIVING SET AN/FRR-34

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1496

R-390

USA

USN

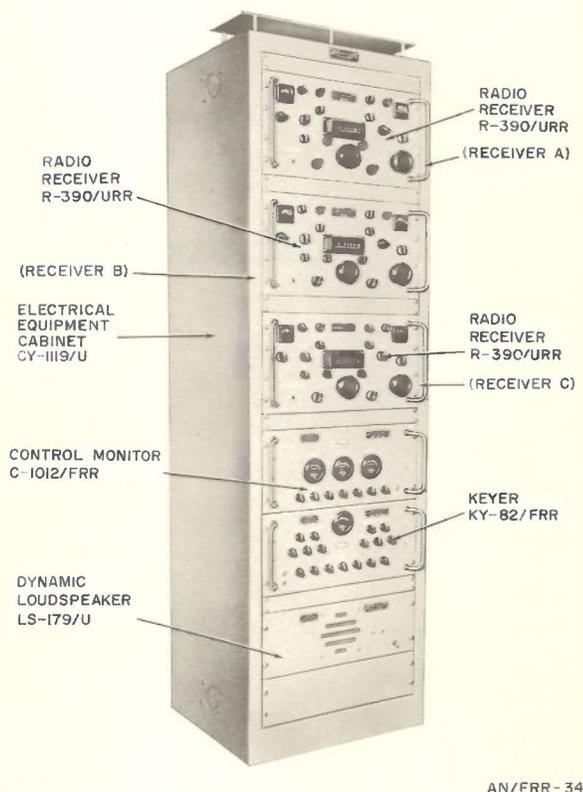
USAF

TYPE CLASS: Std  
 STOCK NO: 2S2001-34

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Std

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## FUNCTIONAL DESCRIPTION:

Radio Receiving Set AN/FRR-34 is a triple-diversity equipment used for the reception of radiotelephone, radiotelegraph, and radioteletype signals.

This equipment consists essentially of three receivers, a control monitor, a keyer, and a loudspeaker, all mounted in an equipment cabinet.

By means of switching circuits in the keyer, the following modes of operation can be selected: each receiver separately; two in dual diversity or three in triple diversity, to minimize fading; or two in dual diversity while the third is operated as a search receiver on other frequencies.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 0.5 to 32

*Type Modulation:* AM

*Type of Signal:* Cw, mcw, voice

*Power Output:* 5 mw (phones); 10 mw (600-ohm balanced line); 500 mw (600-ohm unbalanced line)

*Power Requirements:* 980 w, 115/230-v 50/60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Control Monitor C-1012/FRR	(USA) 2C684-1012	19 x 8-23/32 x 13-5/16	
1	Dynamic Loudspeaker LS-179/U	(FSN) 5965-284-6709	19 x 2-7/8 x 6-31/32	
1	Electrical Equipment Cabinet CY-1119/FRR	(USA) 6F-300-1119	21-7/8 x 20-13/16 x 76	
1	Keyer KY-82/FRR	(USA) 2C640-82	19 x 18-11/16 x 8-23/32	
3	Radio Receiver R-390/URR	(USA) 2C4180-390	19 x 14-1/2 x 10-1/2	

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**AN/FRR-34** RADIO RECEIVING SET

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REFERENCE DATA AND LITERATURE:

TM 11-864

SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	122	922

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PROCUREMENT DATA

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: MIL-R-10909A

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	20302-P-57-51	\$4,482.00

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RADIO RECEIVING SET **AN/FRR-36**

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1503

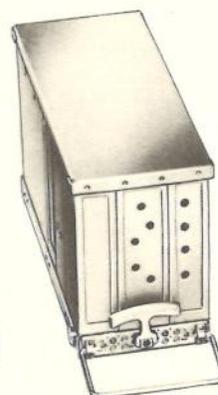
	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	2S2001-36	--	--



ELECTRICAL  
EQUIPMENT  
CABINET  
CY-1150/U



POWER  
SUPPLY  
PP-846/U



RADIO  
RECEIVER  
R-394/U

AN/FRR-36

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-36 is a vhf fm (voice) equipment used in monitoring and communication applications.

This set consists essentially of a radio receiver with its power supply, housed in a metal equipment cabinet, and includes an appropriate vertical antenna.

It is a fixed-station equipment; the same receiver compo-

nent with different power-supply and antenna component, for vehicular installation, is Radio Receiving Set AN/VRR-7.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 152 to 174

*Type Modulation:* FM

*Type of Signal:* Voice

*Power Requirements:* 46 va, 115/230-v 50/60-cycle ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna AT-438/GR	(FSN) 5985-264-7498	21 x 57-1/4 x 57-1/4	7.5
1	Electrical Equipment Cabinet CY-1150/U	(USA) 6F290-1150	10-5/8 x 21-1/4 x 7-1/2	14.5
1	Power Supply PP-846/U	(USA) 3H4497-846	5 x 6-1/4 x 7-1/16	9.5
1	Radio Receiver R-394/U	(USA) 2C180-394	8-1/2 x 14-1/2 x 5-3/4	17

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**AN/FRR-36** RADIO RECEIVING SET

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REFERENCE DATA AND LITERATURE:

TM 11-229

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	7.25	176

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-N-11539

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Motorola, Inc.	Chicago, Ill.	11661-P-52-51	\$615.24

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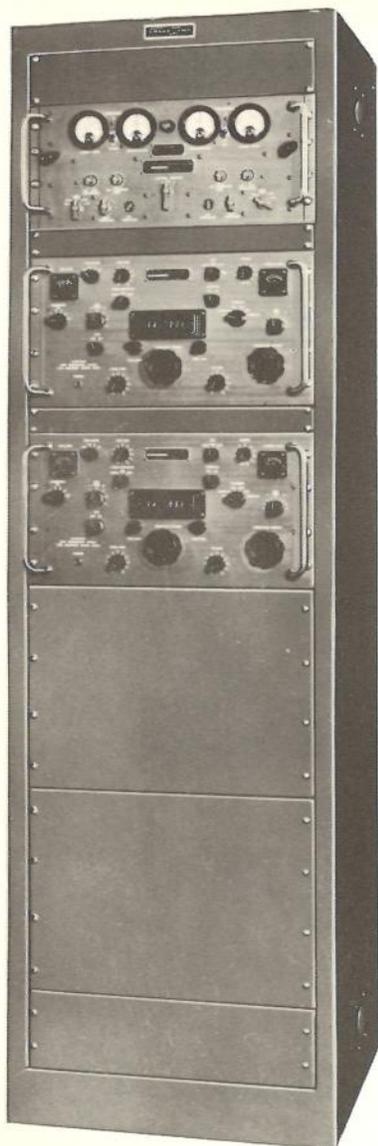
## RADIO RECEIVING SET AN/FRR-38( )

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1497

A-390

TYPE CLASS:	Std	--	Std
STOCK NO:	2S2001-38	--	--



AN/FRR-38

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-38( ) is a dual-diversity equipment that receives frequency-shift-keyed, single-channel, or time-division multiplex radioteletype signals. It is used as a radio receiver in a space-diversity radioteletype communications system.

This equipment consists of two receivers and a frequency-shift converter mounted in an equipment cabinet and includes an installation kit.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.5 to 32

*Type Modulation:* AM

*Type of Signal:* Cw, mcw, voice, fsk

*Power Requirements:* 270 w, 115/230-v 50/60-cycle 1-phase ac

**AN/FRR-38( )** RADIO RECEIVING SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Cabinet, Electrical Equipment CY-1119/U	6F300-1119	76 x 20-1/2 x 21-27/32	225
1	Frequency Shift Converter CV-116/URR	2C716-3	8-3/4 x 17 x 19	65
1	Installation Kit for Radio Re- ceiving Set AN/FRR-38			
2	Radio Receiver R-390/URR	2C4180-390	10-1/2 x 17-1/4 x 19	80

## REFERENCE DATA AND LITERATURE:

TM 11-674

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	64.3	875

## PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

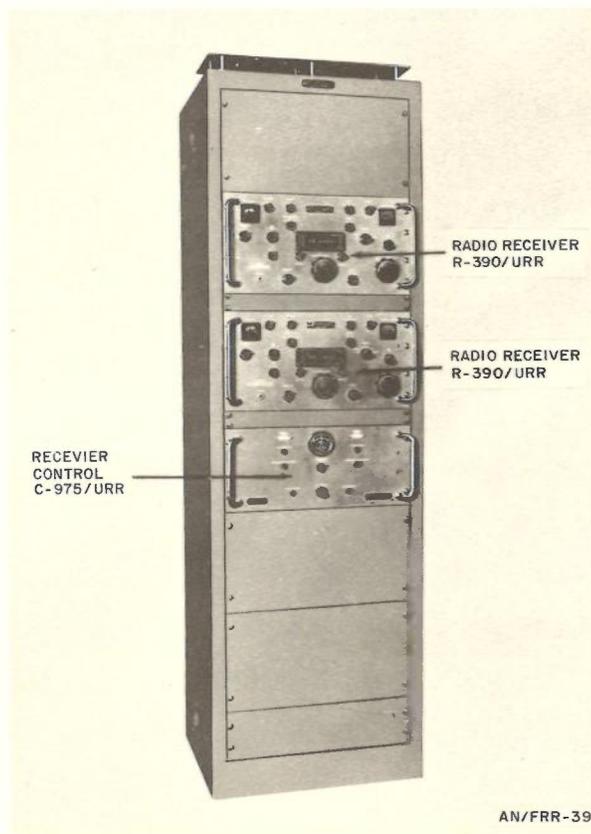
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hoffman Labs, Inc.	Los Angeles, Calif.	26565-P-52-93	\$3,643.0

RADIO RECEIVING SET **AN/FRR-39**

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1515

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	2S2001-39	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-39 is a diversity equipment used at a terminal of a system to receive frequency-shift-keyed, single-channel or time-division multiplex, teletype-writer signals; it also can be used to receive voice, cw, or tone signals.

It consists of two receivers and a receiver control unit mounted in an equipment cabinet.

This equipment is operated in conjunction with Radioteletype Terminal Equipment AN/FGC-11( ), or other similar radioteletype converter equipment.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.5 to 32

*Type Modulation:* AM (single- or double-sideband)

*Type of Signal:* Cw, mcw, voice, fsk

*Power Output:* 5 mw (phones); 10 mw (60-ohm bal line);  
500 mw (600-ohm unbal line)

*Power Requirements:* 270 w, 115/230-v 50/60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Electrical Equipment Cabinet CY-1119/U	5820-503-0801	78-1/2 x 20-13/16 x 21-7/8	165
2	Radio Receiver R-390/URR	5820-503-1242	10-1/2 x 17-1/4 x 19	80
1	Receiver Control C-975/URR	5815-503-0891	8-3/4 x 16-1/2 x 19	48

MIL-HDBK-161

**AN/FRR-39** RADIO RECEIVING SET

REFERENCE DATA AND LITERATURE:

TM 11-648

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
3	53.4	2,501.6

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	26566-P-52-93	\$9,492.11

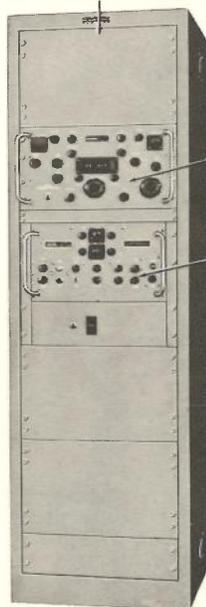
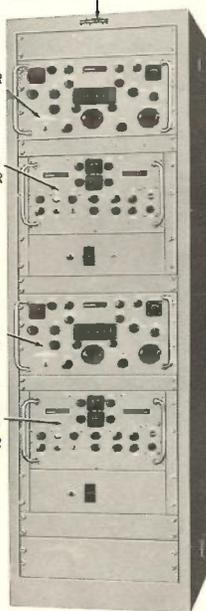
## RADIO RECEIVING SET AN/FRR-40, -41

1 July 1958

Cognizant Serv: USA FSN: AN/FRR-40: 5820-545-7325

AN/FRR-41: 5820-503-1513

	USA	USN	USAF
TYPE CLASS:	Std	--	Std
STOCK NO:	AN/FRR-40: 2S001-40 AN/FRR-41: 2S2001-41	--	--

RADIO RECEIVING SET  
AN/FRR-40RADIO RECEIVING SET  
AN/FRR-41RADIO  
RECEIVER  
R-390/URRSINGLE  
SIDEBAND  
CONVERTER  
CV-157/URRRADIO  
RECEIVER  
R-390/URRSINGLE  
SIDEBAND  
CONVERTER  
CV-157/URR

AN/FRR-40,-41

## FUNCTIONAL DESCRIPTION:

Radio Receiving Sets AN/FRR-40 and AN/FRR-41 are used for the reception of single-sideband or twin single-sideband radio signals that carry multiplex teletypewriter, facsimile, and/or voice intelligence.

The AN/FRR-40 consists of one receiver and a single-sideband converter housed in a metal equipment cabinet. The AN/FRR-41, composed of two receivers and two converters housed in a metal equipment cabinet, is used for dual-diversity reception.

Both equipments are used in long-range applications between installations that have a heavy flow of message traffic. The audio output of each of these sets is capable of operating voice-reproducing equipment directly, or of feeding carrier terminal equipment that provides several teletypewriter or facsimile channels.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 0.5 to 32

*Type Modulation:* AM (single- or double-sideband)

*Type of Signal:* Voice, cw, tone (radioteletype)

*Power Requirements:* 520 w (AN/FRR-40), 1,040 w (AN/FRR-41), 105-125-210/250-v 50/60-cycle 1 phase ac

MIL-HDBK-161

**AN/FRR-40, -41 RADIO RECEIVING SET****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
<i>For AN/FRR-40:</i>				
1	Electrical Equipment Cabinet CY-1119/U	6F300-1119	76 x 20-1/2 x 21-27/32	225
1	Radio Receiver R-390/URR	2C4180-390	10-1/2 x 17-1/4 x 19	80
1	Single Side Band Converter CV-157/URR	2C722-157	15-3/4 x 15 x 19	104
<i>For AN/FRR-41:</i>				
1	Electrical Equipment Cabinet CY-1119/U	6F300-1119	76 x 20-1/2 x 21-27/32	225
2	Radio Receiver R-390/URR	2C4180-390	10-1/2 x 17-1/4 x 19	80
2	Single Side Band Converter CV-157/URR	2C772-157	15-3/4 x 15 x 19	104

**REFERENCE DATA AND LITERATURE:**

TM 11-649

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
AN/FRR-40 4	55.3	642
AN/FRR-41 6	75.3	909

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hoffman Labs. Inc.	Los Angeles, Calif.	26565-P-52-93	\$6,402.30 (AN/FRR-40) \$11,423.89 (AN/FRR-41)

RADIO RECEIVING SET **AN/FRR-44**

1 July 1958

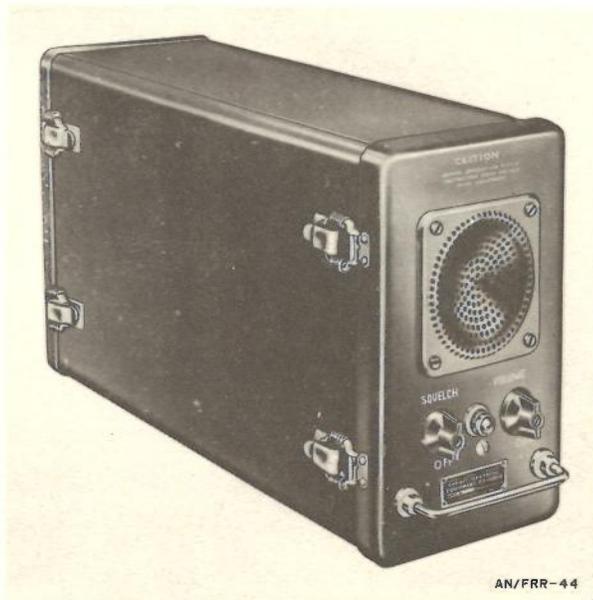
Cognizant Serv: USA FSN: 5820-503-1504

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2S2031-44

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Set AN/FRR-44 is a vhf (FM-voice) fixed station equipment used primarily for monitoring and radio communication applications.

This equipment consists essentially of a radio receiver and its power supply, housed in an equipment cabinet, and includes antenna and accessory components.

The primary operating component, Radio Receiver R-257/U, is also used as the receiving component of such radio equipments as Radio Sets AN/FRC-15, AN/TRC-22, and AN/VRC-6( ).

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 25 to 50

*Type Modulation:* FM

*Type of Signal:* Voice, tone

*Power Requirements:* 0.4 amp, 115-v 50/60-cycle ac; or 0.2 amp, 230-v 50/60-cycle ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
1	Antenna AS-612/U	2A249-612	11-1/2 x 5-1/4 x 41	30.0
1	Electrical Equipment Cabinet CY-1150/U	6F290-1150	10-5/8 x 21-1/4 x 7-1/2	14.5
1	Power Supply PP-846/U	3H4497-846	5 x 6-1/4 x 7-1/16	9.5
1	Radio Receiver R-257/U	2C4180-257	8-1/2 x 14-1/2 x 5-3/4	17.0

**REFERENCE DATA AND LITERATURE:**

TM 11-225

MIL-HDBK-161

**AN/FRR-44** RADIO RECEIVING SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	5.60	140

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-N-11539

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Motorola, Inc.	Chicago, Ill.	11661-P-52-51	\$729.71

## RADIO RECEIVER AN/FRR-type

BC-779

1 July 1958

Cognizant Serv: USA FSN: 5820-164-7215

USA

USN

USAF

TYPE CLASS:

L/Std

Used by

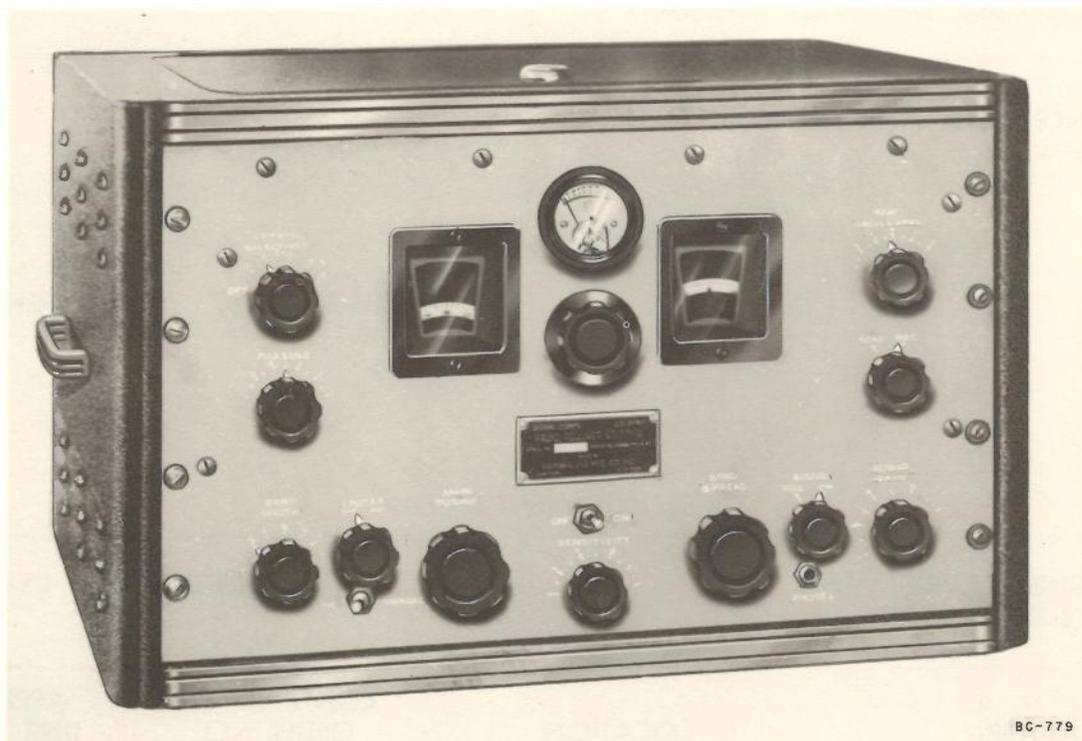
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STOCK NO:

2C4779

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BC-779

**FUNCTIONAL DESCRIPTION:**

Radio Receiver BC-779 is a long-range lf and hf, AM (voice, tone, and cw) equipment operating in five frequency bands. It is used for fixed station, monitoring, and similar communication applications.

This equipment consists of a table model commercial type (Hammarlund Super-Pro) communication receiver that can be operated in its metal cabinet or mounted on a standard relay rack. It can be provided with shock mounts for use in a vehicle.

This receiver operates on a single long-wire or doublet antenna system and uses an external power supply unit. It can also be operated from storage and dry batteries.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.1 to 0.4 and 2.5 to 20.0 in 5 bands

*Type Modulation:* AM

*Type of Signal:* Cw, tone, voice

*Power Requirements:* 180 w from one of the following power units:

Power Supply Unit RA-74: 95-260-v 25/60-cycle ac

Power Supply Unit RA-84: 105-125-v 50/60-cycle ac

Power Supply Unit RA-94: 115/230-v 50/60-cycle ac

OR

One 6-v storage battery, five 45-v B batteries, and one 45-v C battery

**AN/FRR-type** RADIO RECEIVER

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Radio Receiver BC-779 (Equipment consists of only one major component.)	5820-164-7215	10-1/2 x 13-3/8 x 19	55

## REFERENCE DATA AND LITERATURE:

TM 11-866

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.3	90

## PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

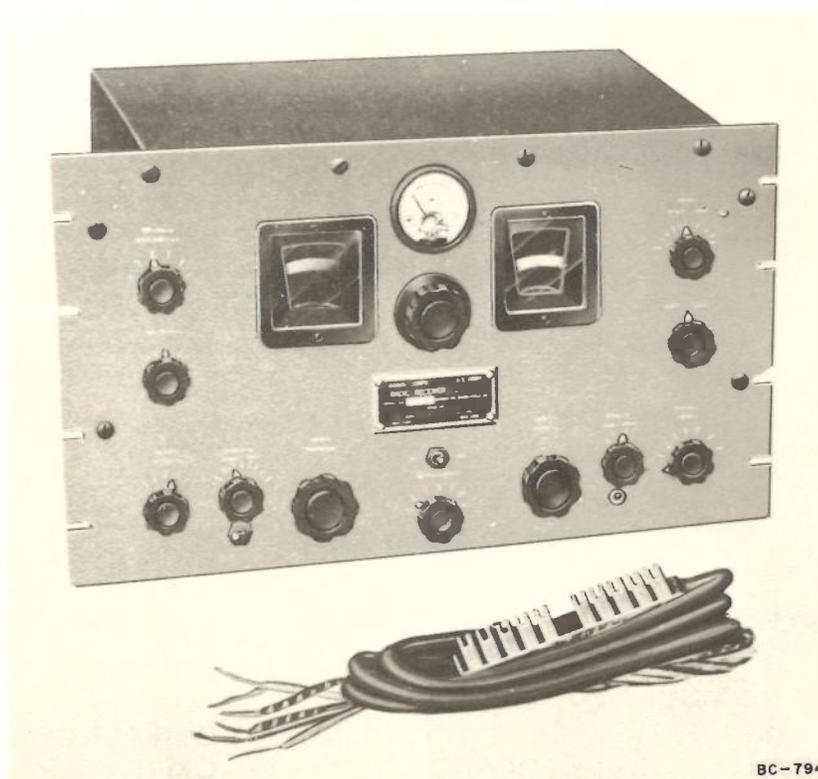
RADIO RECEIVER **AN/FRR-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-164-6377

BC-794

	USA	USN	USAF
TYPE CLASS:	Std	--	A/Std
STOCK NO:	2C4794	--	--



BC-794

**FUNCTIONAL DESCRIPTION:**

Radio Receiver BC-794 is a general purpose, am (voice, tone and cw), receiving equipment operating in the medium- and high-frequency bands. It is used as fixed station equipment for communication, monitoring, or similar applications.

This equipment consists essentially of a commercial (Hammarlund Super-Pro) communications-type radio receiver and includes accessories. It may be installed in a vehicle by means of appropriate shock mounts.

A doublet antenna with a balanced transmission line, a straight wire and ground, or equivalent antenna systems may be used.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.25 to 40.0 in 5 bands

*Type Modulation:* AM

*Type of Signal:* Voice, tone, cw

*Power Requirements:* 180 w from one of the following power units:

Power Supply Unit RA-74: 95-260-v 25/60-cycle ac

Power Supply Unit RA-84: 105-125-v 50/60-cycle ac

Power Supply Unit RA-94: 115/230-v 50/60-cycle ac

OR

One 6-v storage battery, five 45-v B batteries, and one 45-v C battery

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Radio Receiver BC-794 (Equipment consists of only one major component.)	5820-164-6377	10-1/2 x 13-3/8 x 19	55

**REFERENCE DATA AND LITERATURE:**

TM 11-866

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.3	90

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-1523; 71-3280

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hammarlund Manufacturing Co.	----	12613-P-47	

## RADIO RECEIVER AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN: 5820-164-6375

BC-1004

USA

USN

USAF

TYPE CLASS:

Std

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STOCK NO:

2C5004

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**FUNCTIONAL DESCRIPTION:**

Radio Receiver BC-1004 is a crystal-controlled, general purpose, AM (voice, tone, and cw) receiving equipment used in fixed-plant or vehicular applications for monitoring, intercept, or communication in the lf and mf ranges.

This equipment consists essentially of a commercial (Hammarlund Super Pro) communications type receiver that can be removed from its cabinet and mounted on a standard rack panel. For vehicular use, a shock mount is available.

It operates with a conventional straight wire antenna and ground or a doublet-type antenna system.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 2.5, 5.0 to 20.0

*Type Modulation:* AM

*Type of Signal:* Voice, tone, cw

*Power Requirements:* 180 w from one of the following power units:

Power Supply Unit RA-74: 95-260-v 25/60-cycle ac

Power Supply Unit RA-84: 105-125-v 50/60-cycle ac

Power Supply Unit RA-94: 115/230-v 50/60-cycle ac

OR

One 6-v storage battery, five 45-v B batteries, and one 45-v C battery

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Radio Receiver BC-1004 (Equipment consists of only one major component.)	5820-164-6375	10-1/2 x 13-1/2 x 19	55

**REFERENCE DATA AND LITERATURE:**

TM 11-866

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.3	90

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-1523

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hammarlund Co.	----	9092-P-44	

## RADIO RECEIVER ASSEMBLY AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN:

OA-58/FRC

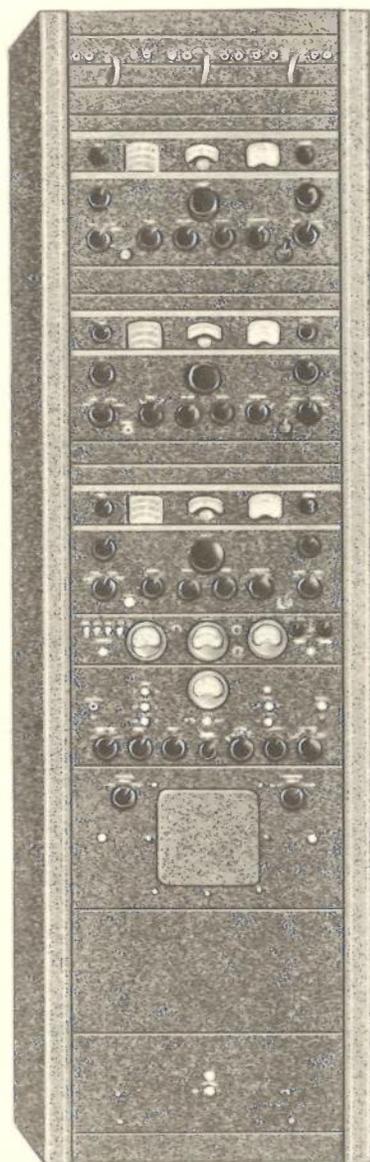
USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C5137-58

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OA-58/FRC

## FUNCTIONAL DESCRIPTION:

Radio Receiver Assembly OA-58/FRC is a long-range, medium- and high-frequency, triple-diversity, AM (voice, cw, and mcw) fixed-station radio receiving equipment, designed to minimize the effects of fading.

This equipment consists of three superheterodyne radio receivers, each with an individual power supply; a tone keyer; a monitoring unit; loudspeaker; and accessories, assembled on a standard relay rack, and inclosed in a steel floor-type cabinet.

Each of the receivers can be operated separately from its own doublet or rhombic antenna. The monitoring unit is common to all receivers and operates on its own power-supply unit. The loudspeaker can be switched to any one, or all, of the radio receiver outputs.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 0.54 to 32.0 in 6 overlapping bands

*Type Modulation:* AM

*Type of Signal:* Cw, voice, mcw

*Power Requirements:* 450 w, 110-160/190-260-v 50-60 cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER ASSEMBLY**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Cabinet	-----	84 x 21 x 22	275.0
1	Loudspeaker assembly	-----	10-1/2 x 4-1/2 x 19	26.5
1	Monitoring unit	-----	3-1/2 x 7-1/2 x 19	10.5
1	Monitoring unit power supply	-----	7 x 7 x 19	17.5
3	Radio Receiver (RCA Model AR-88F)	-----	10-1/2 x 19 x 19	78.5
1	Tone keyer unit	-----	7 x 11 x 19	26.5

**REFERENCE DATA AND LITERATURE:**

TM 11-889

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
7	78.74	1,122

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-17815C (RCA)

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
RCA-RCA Victor	New York, N. Y.	21366-P-50-7	\$5,274.79

RADIO RECEIVER ASSEMBLY **AN/FRR-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-194-2983

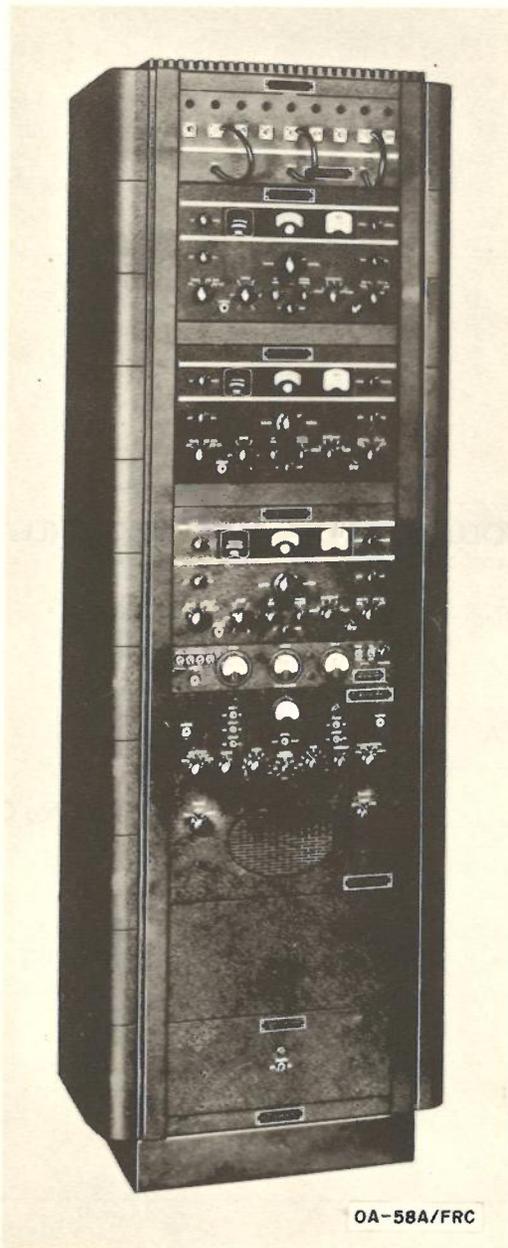
OA-58A/FRC

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C5137-58A



OA-58A/FRC

**FUNCTIONAL DESCRIPTION:**

Radio Receiver Assembly OA-58A/FRC is a long-range, mf and hf, triple-diversity, am, fixed-station radio receiving equipment. It is a military version of commercial (RCA) equipment OA-58/FRC.

This equipment consists of three superheterodyne radio receivers, a tone keyer, a monitoring unit, loudspeaker, and accessories, assembled in a standard relay rack and inclosed in a steel floor-type cabinet.

Each receiver can be operated independently, or two or three receivers can be operated in diversity by feeding their outputs through the tone keyer, which combines (voice signals) these outputs, or selects (cw) the strongest signals to key the tone output of the keyer.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.535 to 32 in 6 overlapping bands

*Type Modulation:* AM

*Type of Signal:* Cw, mew, voice; single receiver, double- or triple-diversity

*Power Requirements:* 450 w, 110/125/150/210/240-v 50-60-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER ASSEMBLY**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Dynamic Loudspeaker LS-156/FRC	6C42-156	8-3/4 x 4-3/4 x 19	10
1	Keyer KT-50/FRC	2C640-50	7 x 12-1/2 x 19	10
1	Patching Panel SB-99/FRC	2Z6955-99	7 x 1-9/16 x 19	5
1	Power Supply PP-479/FRC	3H4497-479	7 x 7-1/8 x 19	20
1	Rack MT-687/FRC	2Z7383-687	84-7/8 x 21-1/2 x 28	250
3	Radio Receiver R-320/FRC	2C4180-320	10-1/2 x 19-1/8 x 19	80
1	Receiver Monitor MX-968/ FRC	2C2562-986Z	7 x 7-3/4 x 19	26

**REFERENCE DATA AND LITERATURE:**

TM 11-889A

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	67.372	995

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO RECEIVER ASSEMBLY **AN/FRR-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-164-7220

OA-59/FRC

	USA	USN	USAF
TYPE CLASS:	L/Std	--	--
STOCK NO:	2C5404	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Receiver Assembly OA-59/FRC is a crystal-controlled, dual-diversity, fixed-frequency, AM (cw) receiving equipment used for radioteletype and radiotelegraph long-range communication in fixed-plant installations.

This equipment consists, essentially, of two commercial type (Wilcox Model CW 3-D) receivers, each with its own power supply, rack-and-panel-mounted in a steel floor-type cabinet. It operates in six bands, which are selected by means of appropriate plug-in coils furnished with the equipment. It

is provided with hf and beat-frequency oscillators common to both receiver components.

This set uses two rhombic or two other matched-type antenna systems.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.9 to 24.0 in six bands

*Type Modulation:* AM

*Type of Signal:* Cw, radioteletype

*Power Requirements:* 1.3 amp, 110-115-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Metal cabinet	-----	72 x 24 x 17	
2	Wilcox Model CW3-D Receiver	-----	10-1/2 x 19 x 11-1/2	

**REFERENCE DATA AND LITERATURE:**

TM 11-2204

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	37	528

MIL-HDBK-161

**AN/FRR-type** RADIO RECEIVER ASSEMBLY

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: 115AD-4CW-3-D

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Wilcox-Gay Corp.	Charlotte, Mich.		

## RADIO RECEIVER AN/FRR-type

5 December 1958

Cognizant Serv: USA FSN:

R-208/FR

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C4547-2



R-208/FR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-208/FR is a crystal-controlled amplitude-modulated (continuous wave only) receiving equipment used for long distance point-to-point or ground-to-air applications at fixed-plant installations.

This equipment consists of a single rack-mounted component which may be installed with any combination of eight receivers (one or more of which may be Radio Receiver R-209/FR) on a standard relay rack. It can be preset by selection of appropriate interchangeable coils to operate in frequency channels covered by four sets of plug-in coils for each band.

When installed in combinations of several receivers, each receiver can be controlled independently, either locally or

from a remote operating point, through the use of Remote Control Console CY-161/FRC.

Sensitivity, frequency selection, beat-frequency oscillator, and noise controls are included. The equipment uses a doublet, rhombic, or other suitable type of antenna system.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.95 to 16.5 by use of four sets of rf coils:

Set 1: 1.95 to 3.6

Set 2: 3.5 to 6.1

Set 3: 5.6 to 10.0

Set 4: 9.4 to 16.5

*Type of Modulation:* AM

*Type of Signal:* Cw

*Power Requirements:* 70 w, 110-v 60-cycle ac

MIL-HDBK-161

**AN/FRR-type** RADIO RECEIVER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiver R-208/FR (Equipment consists of only one major component.)	-----	3-15/32 x 12-1/2 x 19	20.6

REFERENCE DATA AND LITERATURE:

TM 11-853

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	2.5	40

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO RECEIVER AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN: 5820-164-7203

R-209( )/FR

USA

USN

USAF

TYPE CLASS:

L/Std

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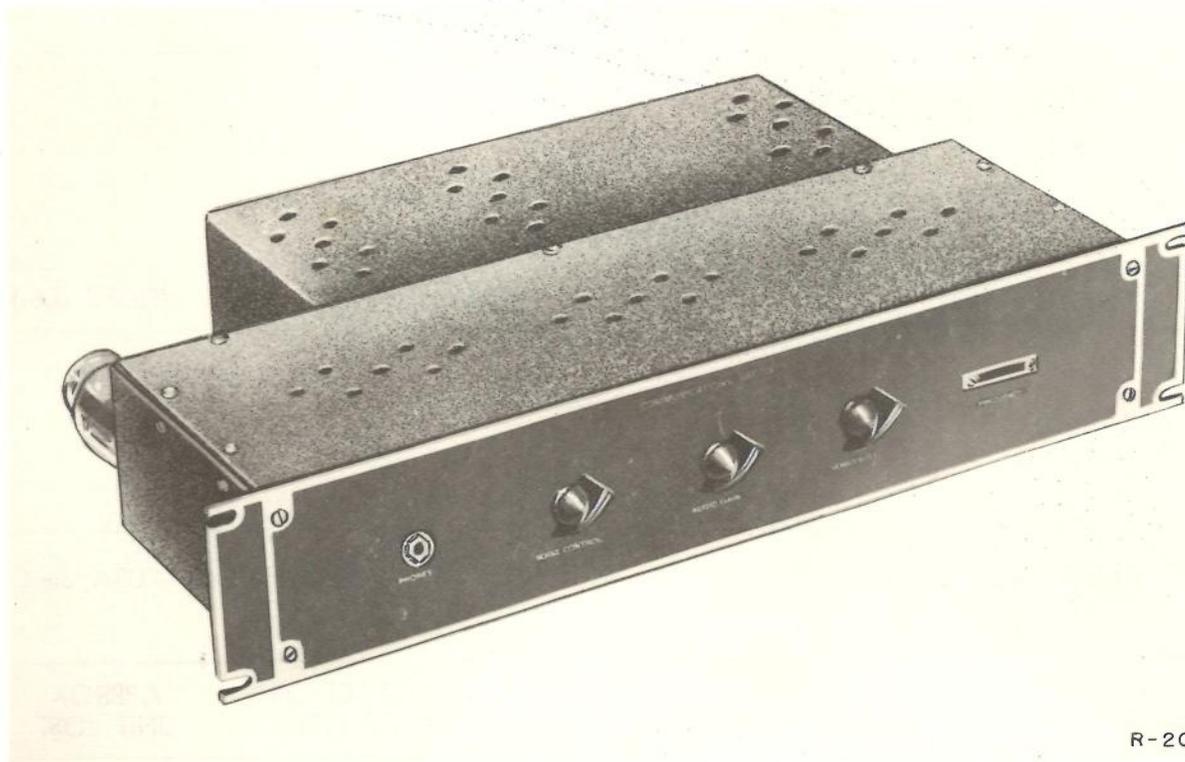
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STOCK NO:

2C4547.1-1

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R-209/FR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-209( )/FR is a crystal-controlled, superheterodyne am (voice), mf and hf receiving equipment designed for use in point-to-point or ground-to-air communication and similar applications at fixed-plant installations.

This equipment consists of a single, panel-mounted radio receiver having three panel controls and designed for installation in a standard relay rack, which can accommodate a total of eight such receivers. The frequency band is selected by means of four sets of interchangeable RF coils.

It can be mounted with seven other identical receivers, or in any combination of Radio Receivers R-208/FR and R-

209/FR, and installed in a single floor-type cabinet to form a single operating bay of equipment.

Each receiver as assembled can be individually controlled locally or, by means of Remote Control Console CY-161/FRC, from a remote operation point.

Antenna systems generally used with this equipment are of the long wire, doublet, rhombic, or other suitable types.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.95 to 16.5 in four overlapping bands, by use of sets of RF coils

*Type Modulation:* AM

*Type of Signal:* Voice

*Power Requirements:* 70 w, 110-v 60-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiver R-209/FR (Equipment consists only of a single major component.)	(FSN) 5820-164-7203 (USA) 2C4547.1-1	3-15/32 x 12-1/4 x 19	20

**REFERENCE DATA AND LITERATURE:**

TM 11-853

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	2.39	50

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC & / or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO RECEIVER AN/FRR-type

5 December 1958

Cognizant Serv: USA FSN: 5820-503-1261

R-210/U

USA

USN

USAF

TYPE CLASS:

L/Std

Used by

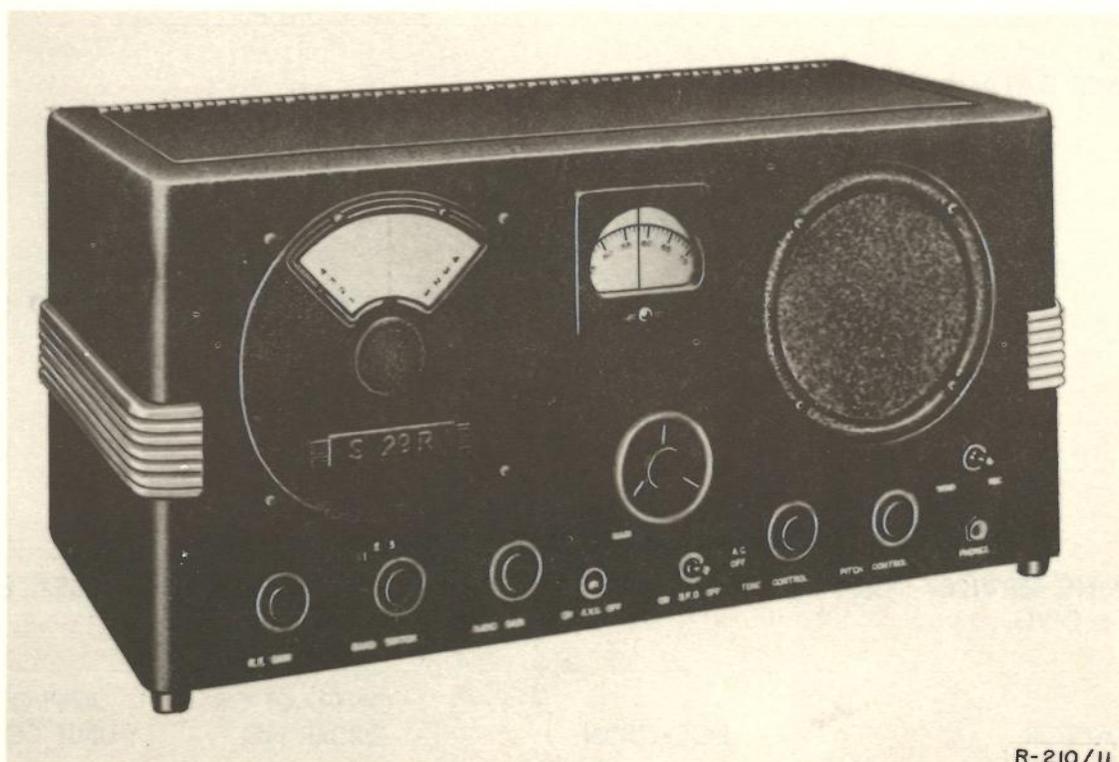
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STOCK NO:

2C4534

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R-210/U

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-210/U is a transportable, amplitude-modulated (voice and continuous wave) equipment used for point-to-point communication in the low-frequency, medium-frequency, and high-frequency ranges at fixed-plant installations.

The equipment consists essentially of a commercial (Hallcrafters S22R) table model radio receiver of the conventional communications type and consists of a single unit in a steel cabinet. It has a built-in loudspeaker and provisions for head-

set operation. Its controls include RF and AF gain, pitch, band selection, avc, beat-frequency oscillator, and on-off switches. It uses a long-wire type antenna.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.11 to 18.0 in four bands

*Type of Modulation:* AM

*Type of Signal:* Voice or cw

*Power Requirements:* 50 w, 110-125-v 50/60-cycle ac; or 110-125-v dc

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiver R-210/U (Equipment consists of only one major component.)	(FSN) 5820-503-1261	18 x 8-1/2 x 9-1/4	

**REFERENCE DATA AND LITERATURE:**

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	2	55

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO RECEIVER AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN: 5820-187-3143

R-274/FRR

USA

USN

USAF

TYPE CLASS:

Std

Std

--

STOCK NO:

2C4180-274

--

--



R-274/FRR

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-274/FRR is a medium-, high-, and very-high-frequency am (voice, tone and cw) receiving equipment used for communication and special applications in fixed plant and similar installations.

This equipment consists of a single radio receiver component having a built-in power supply that is mounted on a panel for rack mounting. It requires additional equipment for reproduction of audio signals.

Carrier shift signals can be fed to appropriate teletypewriter terminal equipment or to Dual Diversity Converter CV-31/TRA-7 and similar units. Provision is made for use of the

audio end of this radio receiver alone, and for standby operation when used in conjunction with radio transmitting equipment.

It operates with a single-wire antenna or any of the more complex fixed radio station antennas.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 54

*Type Modulation:* AM

*Type of Signal:* Cw, tone, voice, frequency shift keyed radio-teletype (with additional equipment)

*Power Requirements:* 120 w, 95/260-v (in 8 different steps)  
50-60-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Radio Receiver R-274/FRR (Equipment consists of only one major component.)	2C4180-274	10-15/32 x 18-1/8 x 19	58

**REFERENCE DATA AND LITERATURE:**

TM 11-897

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.64	105

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3340

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO RECEIVER **AN/FRR-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-187-3143

R-274A/FRR, R-274C/FRR

USA

USN

USAF

TYPE CLASS:  
STOCK NO:Std  
R-274A/FRR: 2C4180-  
274A  
R-274C/FRR: 2C4180-  
274C**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-274A/FRR and R-274C/FRR are operationally the same as Radio Receiver R-274/FRR, but differ greatly in appearance and slightly in technical characteristics.

These equipments consist of a single radio receiver component with a built-in power supply. They are designed for rack-mounting in standard fixed-station 19-inch equipment bays. Frequency-shift keyed signals can be fed to radioteletype converters either at audio frequency or through coaxial cable at intermediate RF frequency.

These receivers operate on either single-wire antennas or doublets, as well as the usually more complex arrays in fixed-plant applications.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 54

*Type Modulation:* AM

*Type of Signal:* Cw, tone, voice, frequency-shift keyed radioteletype (with additional equipment)

*Power Requirements:* 130 w, 90-270-v, 50-60-cycle ac

MIL-HDBK-161

**AN/FRR-type** RADIO RECEIVER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiver R-274A/FRR (Equipment consists of only one major component.)	-----	21-3/8 x 12-3/4 x 17-1/8	66

REFERENCE DATA AND LITERATURE:

TM 11-851

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	8.15	220

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC & or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO RECEIVER AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN: 5820-223-2502

R-320/FRC

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C4180-320



R-320/FRC

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-320/FRC is an am (voice, cw, and mcw) receiving equipment used for general communications such as point-to-point, ground-to-air, and ship-to-shore applications or for diversity reception.

The R-320/FRC is a commercial (RCA Model AR-88-F) receiver having avc, IF gain, and a diode output circuit. It operates in the frequency range 0.535 to 0.32 mc (in 6 bands) and requires 115-230 v ac. It is used in Radio Receiver As-

sembly OA-58A/FRC, which uses three such receivers for triple diversity reception.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.535 to 32.0 in 6 overlapping bands

*Type of Signal:* Cw, mcw, voice

*Power Output:* 2.5 w, maximum undistorted

*Power Requirements:* 115/230-v 50/60-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiver R-320/FRC (Equipment consists of only one major component.)			98

**REFERENCE DATA AND LITERATURE:**

TM 11-880, TM 11-899

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	8.93	200

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-E-10004

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
RCA	New York, N. Y.	13533-P-48-77	\$810.07

1 July 1958

Cognizant Serv: USA FSN: 5820-503-1243

RADIO RECEIVER AN/FRR-type

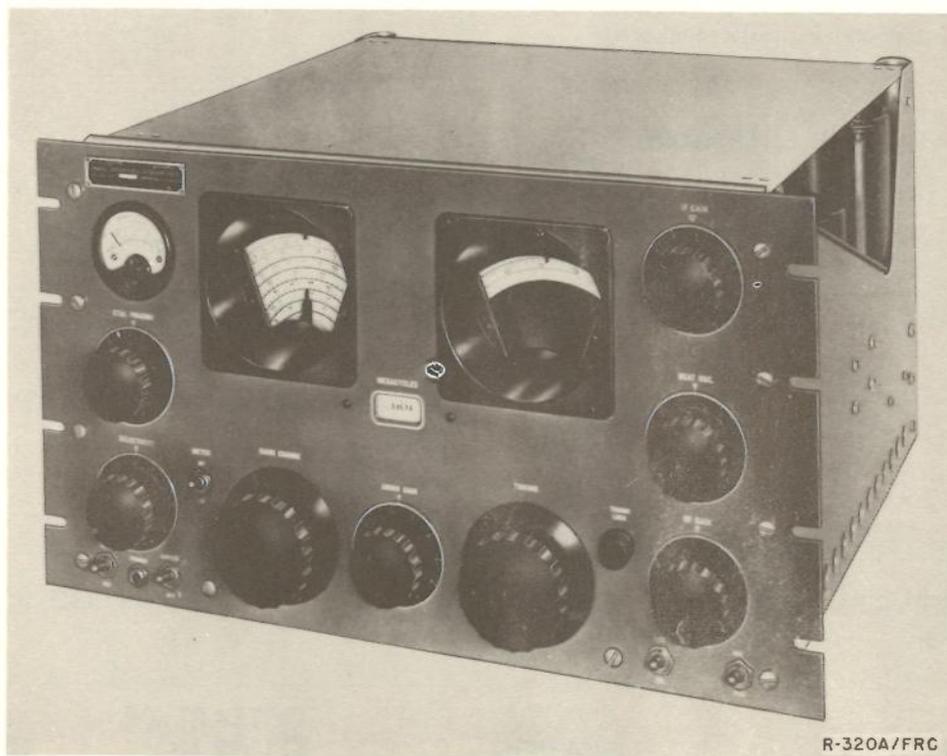
SP-600

R-320A/FRC

USA

USN

USAF

TYPE CLASS:  
STOCK NO:Std  
2C4180-320A--  
----  
--

R-320A/FRC

**FUNCTIONAL DESCRIPTION:**

Radio Receiver R-320A/FRC is a commercial (Hammarlund SP-600-J-4) receiver having avc, IF gain, a diode output circuit, a crystal filter, and a beat-frequency oscillator.

Its application and capabilities are similar to those of Radio Receiver R-320/FRC and R-274A/FRR.

This receiver covers a wider range of frequencies than the

R-320/FRC, and has other operational advantages over the earlier model.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 54

*Type Modulation:* AM

*Type of Signal:* Cw, tone, voice

*Power Requirements:* 130 w, 90-270-v (in seven selective stages) 50-60-cycle ac

MIL-HDBK-161

**AN/FRR-type** RADIO RECEIVER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Radio Receiver R-320A/FRC (Equipment consists of only one major component.)	2C4180-320A	-----	67.5

REFERENCE DATA AND LITERATURE:

TM 11-851

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	8.15	170

PROCUREMENT DATA

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hammarlund Mfg Co.	New York, N. Y.	19474-P-50-06	\$590.00

## DIVERSITY RECEIVING EQUIPMENT AN/FRR-type

5 December 1958

Cognizant Serv: USN FSN: 5820-665-2249

RBE

USA

USN

USAF

TYPE CLASS: --

Used by

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Diversity Receiving Equipment RBE is a complete diversity radio receiving equipment suitable for use at Naval radio stations. It is used for diversity reception of continuous wave or interrupted continuous wave radio telegraph signals by either loudspeaker or headphones, or by telegraph recorder. The equipment also permits the reception of modulated continuous wave radio telephone signals, by headphone or loudspeaker methods, over separate channels without diversity combination of these separate channels. The components of the equipment are mounted on a cabinet type rack.

Each major unit is provided with a self-contained power component to provide the power for both plate and heater circuits.

Three antennas are used with, but not supplied with, Diversity Receiving Equipment RBE.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:*

System: 550 to 30,000 kc

Single and Dual Preselector: 550 to 32,000 kc

*Intermediate Frequency:* 456 kc*Input Connections:* Single wire type antenna, balanced feed line or a low impedance concentric transmission line*Input Impedance:*

System: 600 ohms

Loudspeaker: 600 ohms

Single and Dual Preselector: 80 to 125 ohms

*Output Impedance (Single and Dual Preselector):* 80 to 100 ohms*Diversity Combining Unit:*

Type of Reception: Cw or icw

Maximum Speed: 500 words per minute

*Power Output (Loudspeaker):* 1.75 v*Power Requirements:* 115-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Blank panel			
1	Diversity Combining Unit NT-50079	-----	12-7/32 x 13-9/16 x 19	60
1	Dual Preselector NT-50091	-----	10-15/32 x 10-9/16 x 19	34
1	Loudspeaker NT-49140	-----	8-23/32 x 8-11/16 x 19	32
1	Mounting rack (cabinet type) Patch cords			
3	Radio Receiver NT-46142	-----	10-15/32 x 13-9/16 x 19	60
1	Single Preselector NT-50090	-----	10-15/32 x 10-9/16 x 19	20

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,261

MIL-HDBK-161

**AN/FRR-type** DIVERSITY RECEIVING EQUIPMENT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Supply Corp.	Washington, D. C.	NOs-70248, 11 December 1939 N171S-59715, 25 July 1940	

## RADIO RECEIVING EQUIPMENT AN/FRR-type

5 December 1958

Cognizant Serv: USN FSN: 5820-642-7814

RBF-3

USA

USN

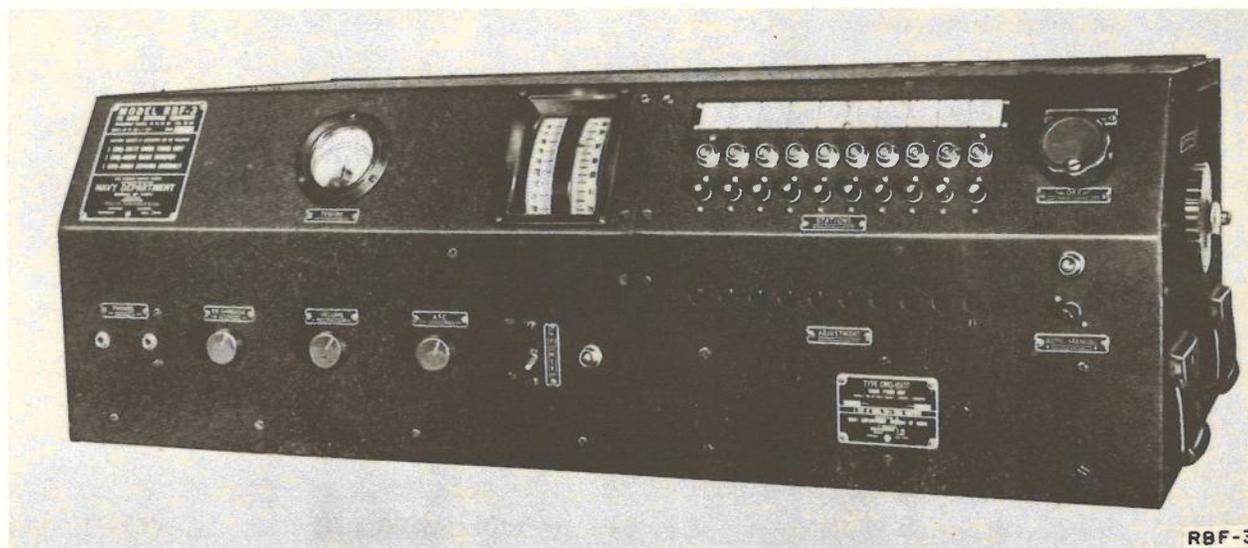
USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-248420-200 --



RBF-3

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Equipment RBF-3 is a shore-based equipment designed for monitoring signals from sono-radio buoy transmitting equipments. This equipment may automatically monitor up to ten signals at as many different frequencies in the 70 to 90 megacycle band.

The receiver has a special tuning unit which provides manual tuning, push-button tuning, or (by means of a motor driven tuning and muting device) continuous automatic tuning of one station after another for 5-second periods. In an emergency, the receiver can be operated from batteries, using manual tuning only.

The RBF-3 is used with Radio Transmitting Equipment JM series.

The RBF-3 is complete and ready for installation except for a headset that is required but not supplied.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 70 to 90

*Type Receiver:* Superheterodyne

*Type Modulation:* AM

*Impedance:*

Output: 50 and 5,000 ohms

Input: 50 to 75 ohm concentric line connectors

*Antenna:*

Type: Spike with ground plane

Feed: 69-ohm coaxial line

Mounting: 10-ft pipe for connection to 100-ft tower

*Power Requirements:* 215 w; 95- to 125-v, 50- to 60-cycle, 1-phase ac; or 8-v and 300-v batteries for dc

**AN/FRR-type RADIO RECEIVING EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Assembly CWQ-66084	-----	152 x 72 dia	34
1	Antenna Cable RG-8/U or RG-11/U	-----	200 ft lg	17
1	Constant Voltage Transformer 30B722	-----	-----	55
1 set	Equipment spares and acces sories	-----	-----	350
1	Ground Plane A-1202	-----	-----	10
1	Receiver-Tuner consists of:	-----	12-7/16 x 39-1/8 x 18-3/16	235
1	Radio Receiver CWQ-46024	-----	12-5/16 x 39-5/8 x 19-1/4	
1	Radio Tuner Unit CWQ- 10177	-----	7-1/2 x 17-1/2 x 14-3/4	

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,225-IB

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
6	43.49	880

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Wells-Gardner and Co.	Chicago, Ill.	NXss-19175, 5 December 1942	\$3,500.00 with spares

## HIGH FREQUENCY RADIO RECEIVING EQUIPMENT AN/FRR-type

5 December 1958

Cognizant Serv: USN FSN 5820-642-7792

RBQ-1

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
F16-Q-253920-200 --

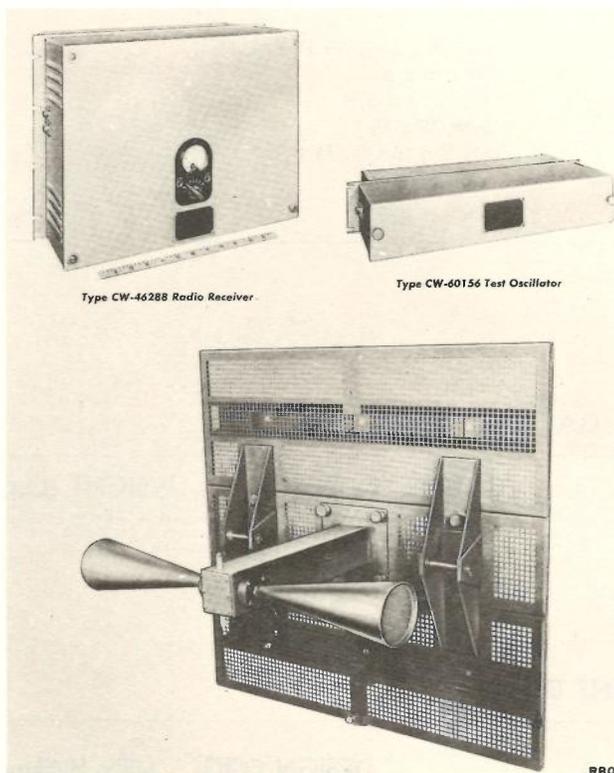
## FUNCTIONAL DESCRIPTION:

High Frequency Radio Receiving Equipment RBQ-1 makes up the receiving terminal of a continuously operated point-to-point, ultra-high-frequency radio link. The major units are rack mounted for either indoor or outdoor installations. The equipment is suitable for reception of single channel voice, multichannel voice carrier telegraph, or multichannel voice carrier telegraph and two channel voice carrier telephone signals. Output facilities at voice frequencies are arranged for connecting to conventional wire line circuits for either local or remote operation.

The RBQ-1 is designed primarily for use with High Frequency Radio Telephone Transmitting Equipment TDG-1. The RBQ-1 is electrically and mechanically interchangeable with High Frequency Radio Receiving Equipment RBQ, and is identical except for minor modifications.

The following equipment is used with, but is not supplied with, High Frequency Radio Receiving Equipment RBQ-1: Coaxial cable and fittings to connect receiver and antenna.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 132 to 156*Frequency Control:* Crystal*Type of Reception:* A2, A3*Sensitivity:* 2mv*Audio Response:* Flat within 3 db from 150 to 10,000 cps*Input Impedance:* To match a 70 ohm transmission line*Mounting:* Rack mounted in either indoor or outdoor cabinet*Power Output:* 30 mw at an output impedance of 600 ohms*Power Requirements:* 100 w; 110- or 120-v, 60-cycle, 1-phase ac. Outdoor cabinet heater requires an additional 325 w, but is not normally operated at the same time as the receiver.

MIL-HDBK-161

**AN/FRR-type HIGH FREQUENCY RADIO RECEIVING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1*	Antenna (3-db) 150427			
1*	Antenna (9-db) 150428			
1*	Antenna Outfit 150429			
1	Cabinet 10604	-----	84 x 26-1/4 x 17	
1	Cable Outfit 150418			
1	Outdoor Cabinet 10589	-----	67-7/8 x 32-1/2 x 18-3/4	
1	Portable Antenna (6-db) 66157	-----	40 x 40 x 25	
1	Radio Receiver 46288	-----	14 x 19 x 9-5/8	
1	Spare Part Panel 10569	-----	3-15/32 x 19	
1	Test Oscillator Unit 60156	-----	3-1/2 x 19 x 9-3/4	

\* May be substituted for Portable Antenna 66157.

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900.621

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4		

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co., Inc.	New York, N. Y.	NXsr-83392, 15 Febru- ary 1945	\$2284.00 with spares

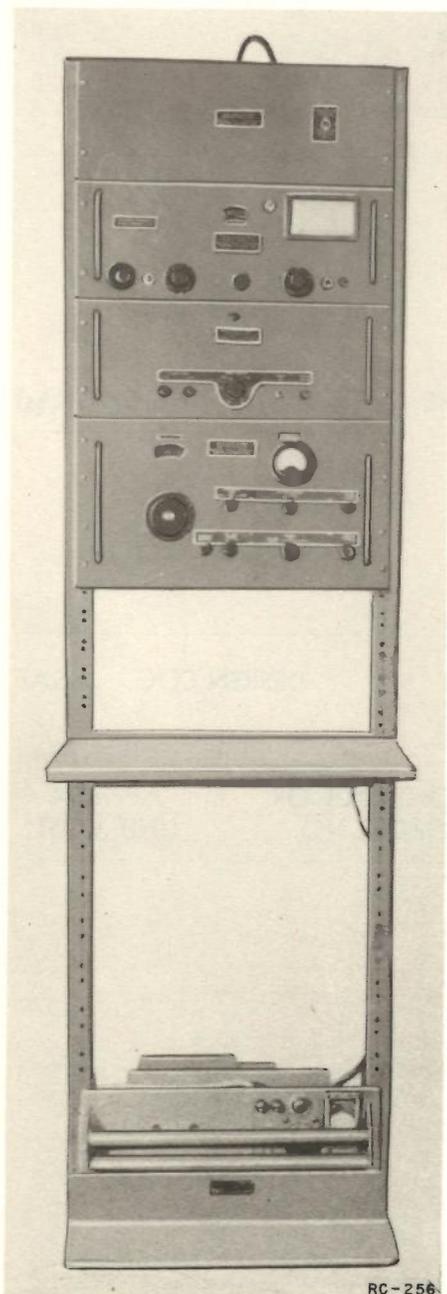
## RADIO RECEIVING EQUIPMENT AN/FRR-type

5 December 1958

Cognizant Serv: USAF FSN:

RC-256

	USA	USN	USAF
TYPE CLASS:	--	--	A/Std
STOCK NO:	--	--	--



## FUNCTIONAL DESCRIPTION:

Radio Receiving Equipment RC-256 is an amplitude-modulated radio equipment and is used with, but not part of, Radio Transmitter RC-257 to form a single-channel radio terminal station for point-to-point and air-to-ground communication.

The input impedance matches Radio Frequency Cable RG-11/U for operation with Antenna Equipment RC-81 or RC-81-C.

This receiver provides continuous tuning over its entire frequency range, and for precise calibration, a Frequency Meter BD-1420 is supplied.

A series-type noise limiter is built in for reduction of pulse-type interference.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 100 to 156

*Type Modulation:* AM

*Type of Signal:* Voice, cw, icw, and tone

*Power Output:* 1.2 w into 600-ohm impedance (maximum)

*Power Requirements:* 100 w, 110-125/220-250-v 60-cycle 1-phase ac

RC-256

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Equipment RC-81-C	-----	-----	6.7
1	Frame FM-39	-----	72 x 20 x 3	12100
1	Frequency Meter BC-1420	-----	7 x 19 x 11-1/2	35.0
1	Fuse Panel PN-15-B	-----	5 x 19 x 5	24.0
1	Radio Receiver BC-1421	-----	10-15/32 x 19 x 13-9/16	38.0
1	Rectifier RA-147	-----	8-23/32 x 19 x 6-31/32	26.0
1	Switching Panel PN-56	-----	6-31/32 x 19-1/8	7.5

**REFERENCE DATA AND LITERATURE:**

TO 16-40 RC-256-6-3-4-6

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	66.53	948

**PROCUREMENT DATA**

PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO RECEIVING EQUIPMENT AN/FRR-type

5 December 1958

Cognizant Serv: USN FSN: 5820-644-4778

RCO

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
F16-Q-261730-200 --

RCO

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Equipment RCO is a crystal-controlled, fixed frequency, superheterodyne receiver designed for single channel reception. It is designed to withstand constant duty such as that required for aeronautical ground-station, airport traffic control, or for point-to-point service requiring a reliable, crystal-controlled, fixed-frequency receiver. Individual RCO receivers may be mounted in a relay rack, with each receiver used to monitor a given station or frequency.

The following equipment is used, but is not supplied, with Radio Receiving Equipment RCO: one pair of 600-ohm headphones or one 600-ohm loudspeaker.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 100 to 156, at one preset crystal controlled frequency

*Intermediate Frequency:* 6,480 ke

*Type of Reception:* A2, A3

*Impedance:*

Output: 600 ohms balanced to ground

Input: 50 ohms for coaxial cables

*Sensitivity:* 7.5 uv for 6-mw output

*Antenna Description:* Quarter wavelength, adjustable over frequency range of the RCO

*Power Output:* 0.5 w into 600-ohm load

*Power Requirements:* 75 110- to 120-v 50- to 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRR-type RADIO RECEIVING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Assembly 66091			
1	Radio Receiver 66090	-----	5-1/4 x 19 x 14	28

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,255

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	6.54	150

**PROCUREMENT DATA**

PROCURING SERVICE: USN

DESIGN COG: USN, BuSihps

SPEC &/or DWG: EN 28/4750-43 SHIPS

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Communications Co., Inc.	Coral Gables, Fla.	NXss-31381, 8 June 1943	\$500.00 with spares

## DIVERSITY RADIO RECEIVING EQUIPMENT AN/FRR-type

5 December 1958

Cognizant Serv: USN FSN: 5820-665-2365

RCP

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Diversity Radio Receiving Equipment RCP is designed to receive one triple-diversity signal, one dual-diversity signal and one straight signal, or three straight-set signals. Each of the three identical superheterodyne receivers consists of a radio-frequency tuning unit covering a frequency range of 3 to 24 megacycles, and an intermediate-frequency unit employing amplification at 450 kilocycles and 50 kilocycles.

The signal control panel is employed for switching, combining, and monitoring signals. The tone keyer is used for telegraph service, and the audio-frequency amplifier is used for telephone service.

A complete diversity antenna system is required for use, but is not supplied, with Diversity Radio Receiving Equipment RCP.

## TECHNICAL CHARACTERISTICS:

Frequency Range in Mc: 3 to 24 in three bands

Band 1: 3 to 6 mc

Band 2: 6 to 12 mc

Band 3: 12 to 24 mc

Type of Reception: A1, A2, A3 with provision for special keying or line equipment

Impedance:

Output: 600 ohms

Antenna Matching: 125 ohms

Sensitivity: Overall rf gain (midband minimum), 3,000 voltage gain, 1-2 conversion gain; over-all IF. average gain, 25,000 voltage gain

Antenna: Fishbone, rhombic or open "V" with open 4-wire transmission line of 200-ohm impedance; three antennas are required.

Keying Speed: Up to 500 dot-cycles per second

Power Putput:

Telephone: 60 mw into a 600-ohm load

Telegraph: 6 db above 1.5 to 12 milliwatts with attenuator pad out

Power Requirements:

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Adjustment Tools 8410-A			
1	A. F. Frequency Amplifier Unit 50098	-----	10-1/4 x 10-15/32 x 19	32
4	Antenna Panel 23276	-----	5-3/4 x 19	3.2
3	Battery (45 volts) 870747-1			
2	Blank Panel 16015A			
5	Blank Panel 16016A			
3	Cabinet Rack 16013A	-----	19-15/16 x 20-5/16 x 88-5/8	
3	I. F. Amplifier Unit 50097	-----	9-1/4 x 19 x 27-31/32	85
1	Power Control Panel 23275	-----	4-7/8 x 10-15/32 x 19	9.5
2	Rack Handle 16009A			
2	Rack Step 16008			
3	Radio-Frequency Amplifier Unit 50096	-----	8-1/4 x 19 x 27-31/32	83
1	Rectifier Power Unit 20136	-----	9-5/8 x 19 x 21	123
3	Shielded Lead 16010A			
1	Signal Control Panel 50157	-----	5-7/8 x 10-15/32 x 19	57
2	Tone Keyer Unit 35007	-----	10-15/32 x 10-3/4 x 19	37
1	Transformer-Voltage Regulating 30815	-----	5-5/8 x 6-15/16 x 15-9/16	52
1 set	Trim Strips 16014-B			
1 set	Vacuum Tubes 16018-A			

MIL-HDBK-161

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**AN/FRR-type** DIVERSITY RADIO RECEIVING EQUIPMENT

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,478

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**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
RCA, Victor Division of Radio Corporation of America	Camden, N. J.	NXss-27145, 12 April 1943	\$12,800.00 with spares

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## RADIO RECEIVING EQUIPMENT AN/FRR-type

20 November 1958

Cognizant Serv: USN FSN:

RDE

USA

USN

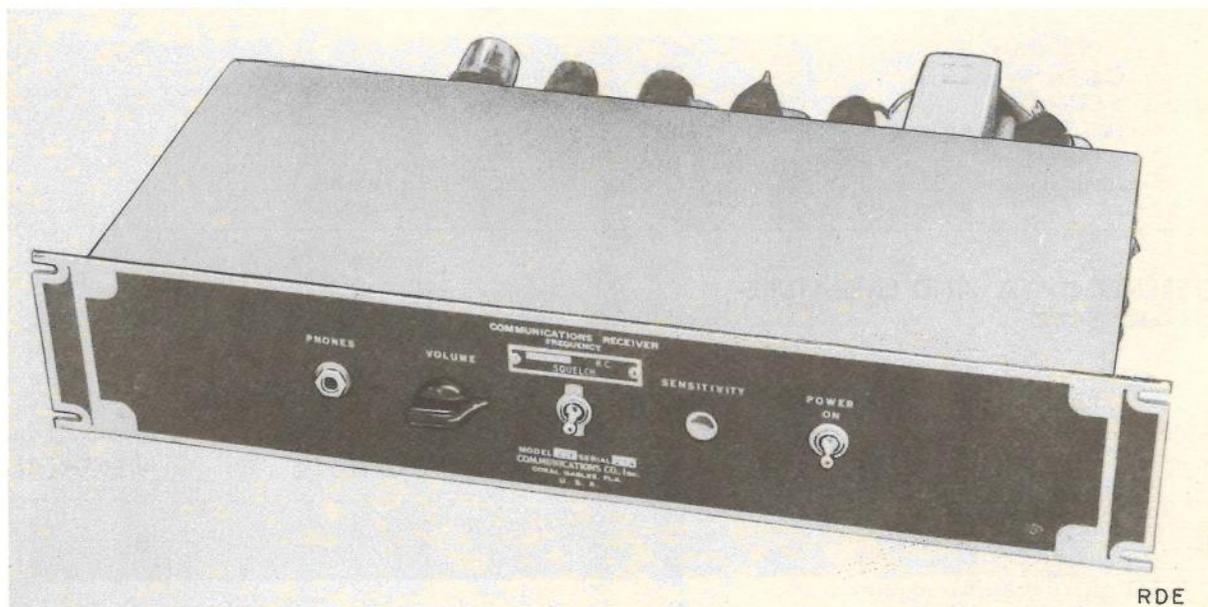
USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-266290-200 --

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Equipment RDE is a fixed-tuned crystal-controlled radio telephone receiver, designed for operation on any one frequency within its available frequency band. Three plug-in RF transformers are used in the circuits, and four sets of transformers are required to cover the total frequency range.

This equipment can be used for either local or unattended remote operation. It is a superheterodyne receiver, designed primarily for airport control operation and for aeronautical ground stations. The equipment does not include audio reproduction devices; therefore, loudspeaker or earphones must be separately procured.

Both this equipment and later models (See Radio Receiving

Equipment RDE-1) are being replaced by Radio Receiving Set AN/FRR-26( ).

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2.0 to 8.10 in four bands, using plug-in coils and crystals in the oscillator circuit

*Reception:* Radiotelephone

*Power Output:* 0.5 w into a 600-ohm load

*Output Impedance:* 600 ohms

*Antenna Requirements:*

High Impedance: 50  $\mu$ f or more capacity

Low Impedance: 100- or 400-ohm line

*Power Requirements:* 115-v 60-cycle 1-phase ac



RADIO RECEIVING EQUIPMENT **AN/FRR-type**

20 November 1958

Cognizant Serv: USN FSN:

RDE-1

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-266300-200 --

(See Illustration of Radio Receiving Equipment RDE page 507)

**FUNCTIONAL DESCRIPTION:**

Radio Receiving Equipment RDE-1 is functionally and mechanically similar to Radio Receiving Equipment RDE. The major difference in the two equipments is the improved electronic circuitry of the RDE-1, the later model.

This equipment is a fixed-tuned, crystal-controlled, radio-telephone receiver used primarily for shore installations. It can be used for either local or remote operation.

A squelch circuit is provided to block the receiver when no signal is being received.

Both the RDE and the RDE-1 are being replaced by Radio Receiving Set AN/FRR-26( ).

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2.8 to 8.0 in four bands (single frequency)

*Frequency Control:* Crystal

*Reception:* Radiotelephone

*Power Output:* 0.5 w

*Output Impedance:* 600 ohms

*Sensitivity:* 600 ohms

*Input Impedance:* 100 and 400 ohms

*Power Requirements:* 110-115-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Receiver RDE-1 (This equipment consists of only one major operating component.)	-----	3-1/2 x 19 x 13	31

**REFERENCE DATA AND LITERATURE:**

Instruction Book for Navy Model RDE-1 Receiver

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	1.4	35

MIL-HDBK-161

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**AN/FRR-type** RADIO RECEIVING EQUIPMENT

---

PROCUREMENT DATA

---

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Communications Co., Inc.	Coral Gables, Fla.	N5er-4606	

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## DIVERSITY RADIO RECEIVING EQUIPMENT AN/FRR-type

20 November 1958

Cognizant Serv: USN FSN:

RDM, RDM-1

USA

USN

USAF

TYPE CLASS: --

STOCK NO: --

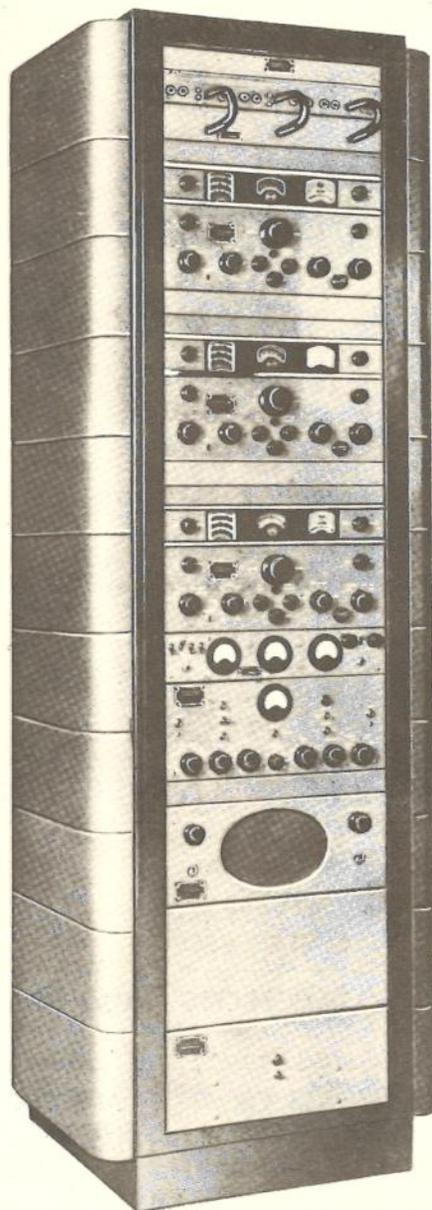
Used by

RDM: F16-Q-269940- --

200

RDM-1: F16-Q-269941-

200



RDM

**FUNCTIONAL DESCRIPTION:**

Diversity Radio Receiving Equipments RDM and RDM-1 are long-range, mf and hf, triple-diversity, AM., fixed-station radio receiving sets. They are military versions of commercial (RCA DR-89) diversity receiving equipments. These equipments are very similar to the OA-58/FRC and the OA-58A/FRC.

This equipment consists of three superheterodyne radio receivers, a tone keyer, a monitoring unit, loudspeaker, and accessories. These components are assembled in a standard relay rack and inclosed in a steel floor-type cabinet.

Each receiver can be operated independently or two or three receivers can be operated in diversity by feeding their outputs through the tone keyer, which either combines voice signal outputs, or selects the strongest cw or mow signal to key the tone output of the keyer.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.535 to 32.0 in six overlapping bands

*Type of Reception:* Cw, mow, voice

*Power Output:*

Tone Keyer and Combining Unit: 12 mw

Receiver Amplifier: 2.5 w

*Output Impedance:*

Tone Keyer: 600 ohms

Receiver Amplifier: 600 ohms

*Input Impedance:* Antenna coupling system designed to provide optimum coupling from 200-ohm transmission line, except in the broadcast band (535 to 1,600 kc)

*Power Requirements:* 100-165/190-260-4 50-60-cycle 1-phase ac



SINGLE SIDE BAND RADIO RECEIVING EQUIPMENT **AN/FRR-type**

1 July 1958

Cognizant Serv: USN FSN: 6636-194-7068

REA, REA-1

USA

USN

USAF

TYPE CLASS:

L/Std

L/Std

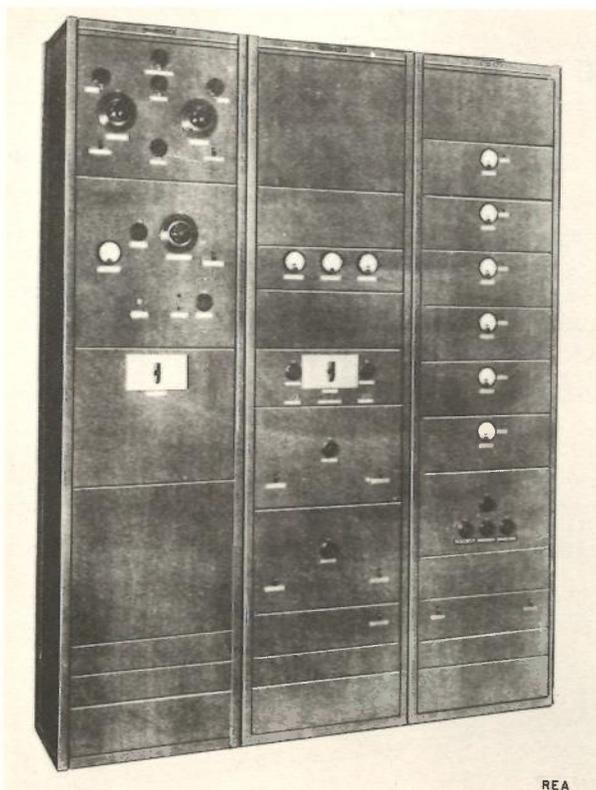
--

STOCK NO:

2C4522

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**FUNCTIONAL DESCRIPTION:**

Single Side Band Radio Receiving Equipments REA and REA-1 are the Navy counterparts of Radio Receiver WECO D-99945 used in Radio Set AN/FRC-10. They are complete single-sideband, reduced-carrier, radio receivers of the triple detection type, for either one, or both of two telephone channels arranged as a twin-channel system. They can be used in conjunction with multichannel carrier telegraph receiving equipment.

The REA is identical to the REA-1, except that the REA-1 has an improved first beat oscillator frequency control unit and an improved tuning control unit.

The equipment is inclosed in three rack-type bays, and is complete, except for a receiving antenna system, a power cable, headsets, and terminal equipment.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 22 in two bands

*Type Modulation:* AM (single or double sideband)

*Type of Signal:* Composite transmissions consisting of tone-radioteletype, voice, facsimile, or other audio frequencies in the range from 100 to 6,000 cps; also can receive standard double-sideband amplitude modulated voice

*Power Output:* +15 vw each channel into individual 600-ohm lines

*Power Requirements:* 500 w, 115-v 50/60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Single Sideband Radio Receiving Equipment (WECO-CW-D-99945)	-----	65-1/8 x 84 x 18-1/4	1,440

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95354

TM 11-884

MIL-HDBK-161

**AN/FRR-type** SINGLE SIDE BAND RADIO RECEIVING EQUIPMENT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO SET **AN/FRR-type**

1 July 1958

Cognizant Serv: USA

FSN:

SCR-244, -A, -B, -C

USA

USN

USAF

TYPE CLASS:

L/Std

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Std

STOCK NO:

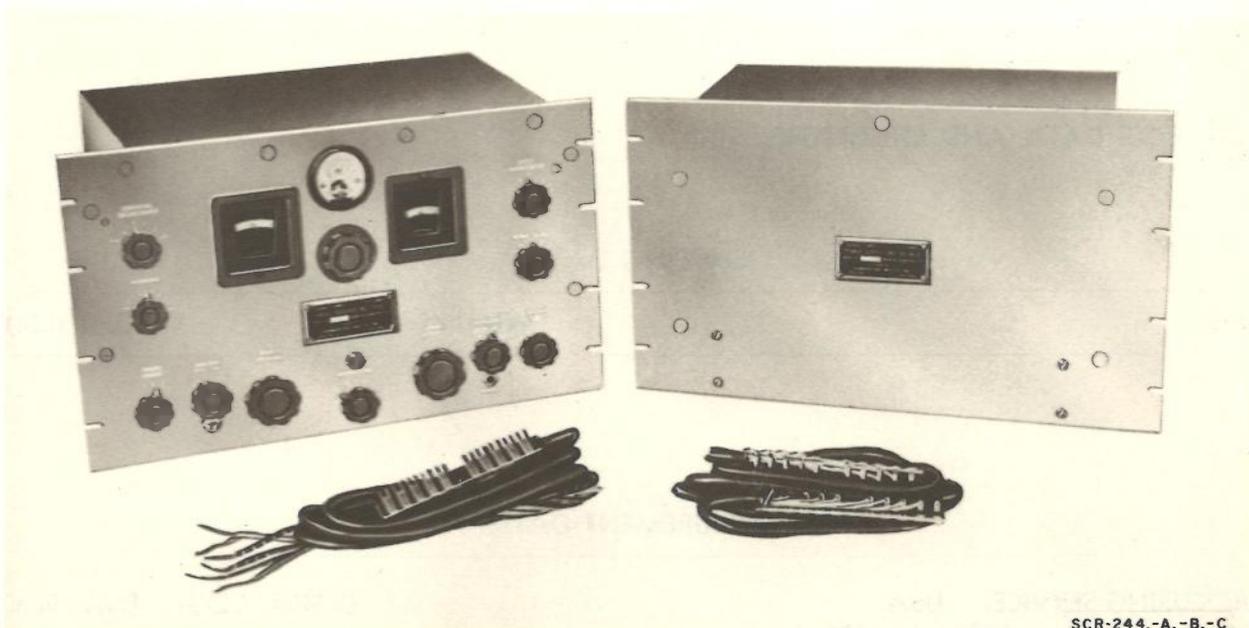
2S244A

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2S244B

2S244C



SCR-244, -A, -B, -C

**FUNCTIONAL DESCRIPTION:**

Radio Sets SCR-244, -A, -B, and -C are general purpose, AM (voice and cw) receiving equipments used for communication, monitoring, or intercept purposes in the mf and hf bands in fixed station applications.

This equipment consists essentially of a commercial (Hammarlund Super-Pro) communications type receiver, plus a power supply. It may be operated as table top equipment or installed in a standard relay rack. When cabinet inclosed it may be mounted on appropriate shock mounts

and operated in vehicles, if a proper power source is available.

Automatic and manual volume control are provided.

Antenna and accessory items are included with this set.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 20.0 in 5 bands

*Type Modulation:* AM

*Type of Signal:* Voice, tone, cw

*Power Requirements:* 105-120-v 50/60-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Cabinet CH-104	2Z1577-104	12-1/4 x 16-1/2 x 23	18
1	Power Supply Unit RA-94	3H4496-94	10-1/2 x 10 x 19	60
1	Radio Receiver BC-1004	2C5004	10-1/2 x 15-3/8 x 19	55

**REFERENCE DATA AND LITERATURE:**

TM 11-866

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	7.4	175

**PROCUREMENT DATA**

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: (USA) 71-1525-A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hammarlund Manufacturing Co., Inc.	New York, N. Y.	3479-P-52-06	\$828.22

## RADIO SET AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN:

SCR-244-D

USA

USN

USAF

TYPE CLASS:

L/Std

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Std

STOCK NO:

2S244D

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**FUNCTIONAL DESCRIPTION:**

Radio Set SCR-244-D is similar to the earlier models (SCR-244, -A, -B, and -C), except that the power supply has been built into the receiver chassis.

This set is used for communication, monitoring, or intercept purposes in the mf and hf bands in fixed station applications.

It is installed as table top equipment. (For rack-mounted

version of this equipment see Radio Receiver R-274A/FRR and R-320A/FRC.)

Antenna and accessory items are included with this set.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 54 in 6 bands

*Type Modulation:* AM

*Type of Signal:* Voice, tone, cw

*Power Requirements:* 130w, 90-270-v 25-60-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Radio Receiver R-483/FRR (Equipment consists of only one major component.)	2C4180-483	12-3/4 x 17-1/2 x 21-3/8	102.5

**REFERENCE DATA AND LITERATURE:**

TM 11-851

**SHIPPING DATA**

PKGS	DIMENSIONS (Inches)	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	18 1/4 x 35 x 25 1/4	9.33	175

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO SET AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN: 5820-164-8148

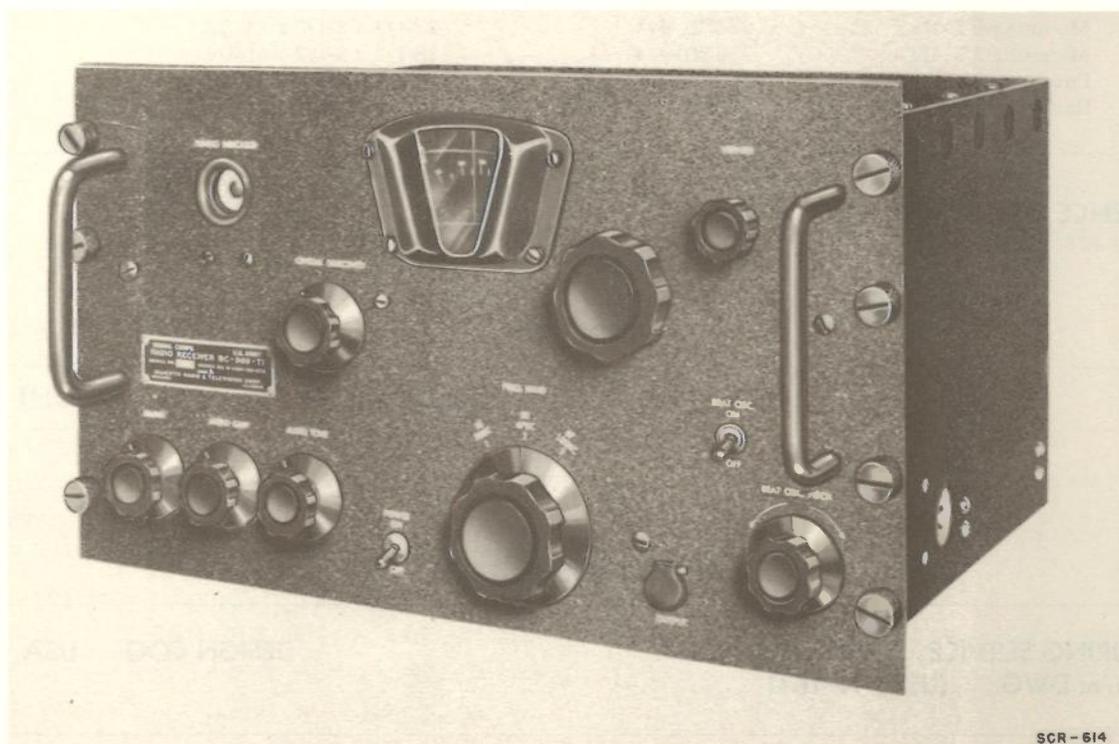
SCR-614-( )

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 28614A

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SCR-614

**FUNCTIONAL DESCRIPTION:**

Radio Set SCR-614-( ) is an IF, multiband AM, (voice, cw, and tone), long-range radio receiving equipment. It is intended for radio direction finding, monitoring, or intercept applications.

This equipment consists of a radio receiver, which can be rack-mounted or installed on a vehicular shock mount, a power supply unit, and associated accessories.

It uses a whip-type antenna in vehicular use and a balanced 100-ohm line antenna in fixed plant installations.

It operates from 115- or 230-v ac power.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.015 to 0.15 in 3 bands

*Type Modulation:* AM

*Type of Signal:* Cw, voice, or tone

*Power Output:* 2 w

*Power Requirements:* 95-130/190-260-v 25-70-cycle ac

MIL-HDBK-161

**AN/FRR-type RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Case CS-109A	2Z1890-109	20-1/8 x 10-1/2 x 13-1/2	18.5
1	Mounting FT-411	2Z6721-411	21-1/4 x 3-1/2 x 13-1/2	10.2
1	Mounting FT-414	2Z6721-414	18-1/4 x 3-1/2 x 11-3/4	9.5
1	Power Supply Unit RA-61	3H4496-61	19 x 4 x 13-7/8	52.1
1	Radio Receiver BC-969	2C4969	19 x 10-1/2 x 15-7/8	49.3

**REFERENCE DATA AND LITERATURE:**

TM 11-873

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-1641

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO SET AN/FRR-type

1 July 1958

Cognizant Serv: USA FSN: 5820-164-7239

SCR-704

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2S704

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SCR-704

**FUNCTIONAL DESCRIPTION:**

Radio Set SCR-704 is a long-range, AM (voice, tone, and cw) receiving equipment used for high-frequency intercept, monitoring, and similar applications for fixed plant use.

This equipment consists essentially of a commercial (Hammarlund Super-Pro) communications-type table model receiver and a panel-mounted power supply. The equipment may be installed in a standard relay rack and operates in five frequency bands.

This set can be installed and battery operated in a vehicle. It can be used for communication purposes or as an audio

amplifier if required. The antenna generally is a single-wire and ground or a doublet antenna system having a balanced transmission line may be used.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.25 to 40.0 mc in 5 bands

*Type Modulation:* AM

*Type of Signal:* Cw, tone, and voice

*Power Requirements:* 115-230-v 50/60-cycle ac; or one 6-v storage battery, five 45-v B batteries, and one 45-v C battery

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
1	Cabinet CH-104	2Z1577-104	10-1/2 x 23 x 16-1/2	18
1	Power Supply Unit RA-94	3H4496-94	10-1/2 x 19 x 10	60
1	Radio Receiver BC-794	2C4794	10-1/2 x 19 x 15-3/8	55

MIL-HDBK-161

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**AN/FRR-type** RADIO SET

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**REFERENCE DATA AND LITERATURE:**

TM 11-866

**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	7.5	179

**PROCUREMENT DATA**

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PROCURING SERVICE:  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hammarlund Manufacturing Co.	----	9092-P-44	

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RADIO COMMUNICATIONS RECEIVER **AN/FRR-type**

20 November 1958

Cognizant Serv: FSN:

SP-600-JX

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --



SP-600-JX

**FUNCTIONAL DESCRIPTION:**

Radio Communications Receiver SP-600-JX is the commercial prototype of Radio Receiver R-483/FRR, Radio Receiver R-274A/FRR, and Radio Set SCR-244-D.

This equipment is a general purpose radio communications receiving set and is primarily intended for fixed station use. It provides continuous tuning from 0.54 to 54.0 mc and can be used to receive voice, cw, tone, or frequency-shift-keyed signals. This radio receiver may be used in space diversity applications in conjunction with diversity keyers or combiners requiring IF. output from the receiver.

It is identical with or similar to Radio Receiver R-274A/FRR, Radio Receiver R-274C/FRR, Radio Receiver R-320A/FRC, Radio Receiver R-483/FRR, and Radio Receiver R-483A/FRR and Radio Set SCR-244-D.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.54 to 54.0 in 6 bands

*Output Power:* 2.5 w

*Output Impedance:* 600-ohm balanced split winding

*Sensitivity:* 2.3  $\mu$ v

*Power Requirements:* 130 w, 90-270-v 50-60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRR-type RADIO COMMUNICATIONS RECEIVER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Communication Receiver SP-600-JX (Equipment consists of only one major component.)	-----	12-3/4 x 17-1/2 x 21-3/8	102.5

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91405, TM 11-851

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	8.15	220

**PROCUREMENT DATA**

PROCURING SERVICE:  
SPEC &/or DWG: COMMERCIAL

DESIGN COG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hammarlund Manufacturing Co., Inc.	New York 1, N. Y.		

## RADIO TRANSMITTING EQUIPMENT AN/FRT-1

20 November 1958

Cognizant Serv: USN FSN: 5820-302-5957

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment AN/FRT-1 is a multi-channel communication unit capable of continuous wave, modulated continuous wave, and voice emission. It permits simultaneous operation of four channels; one or two of them modulated with voice or tone, and the others on straight continuous wave telegraph.

This equipment is designed to be operated from the remote assembly; however, in case of emergency the transmitter can

be operated on continuous wave telegraph or radiotelephone through the use of connections and controls on the transmitter.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 150 kc to 500 kc; 2 mc to 18 mc*Power Output:* 500 to 600 w*Output Impedance:* 500 to 600 ohms*Modulator Response:* 1-db variation*Harmonic Distortion:* 8% maximum*Noise Level:* -60 db*Power Requirements:* 230-v 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Amplifier AM-2/FRC	-----	3-1/2 x 9-1/2 x 19	
1	Dual Modulator Cabinet MD-1/FRC	-----	12-1/8 x 24 x 60-3/4	475
3 or 4	High RF Cabinet T-4/FRC	-----	12-1/8 x 24 x 60-3/4	325
0 or 1	Low RF Cabinet T-5/FRC	-----	18-1/8 x 24 x 60-3/4	325
6	Oscillator O-2/FRC	-----	3-1/2 x 9-1/2 x 19	
1	Power Cabinet PP-1/FRC	-----	24 x 27-9/16 x 60-3/4	660
4	Switch Panel SA-2/FRC	-----	3-1/2 x 9-1/2 x 19	

## REFERENCE DATA AND LITERATURE:

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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MIL-HDBK-161

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**AN/FRT-1** RADIO TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Aircraft Accessories Corp.	Kansas City, Kans.		

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## RADIO TRANSMITTING SET AN/FRT-3

26 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

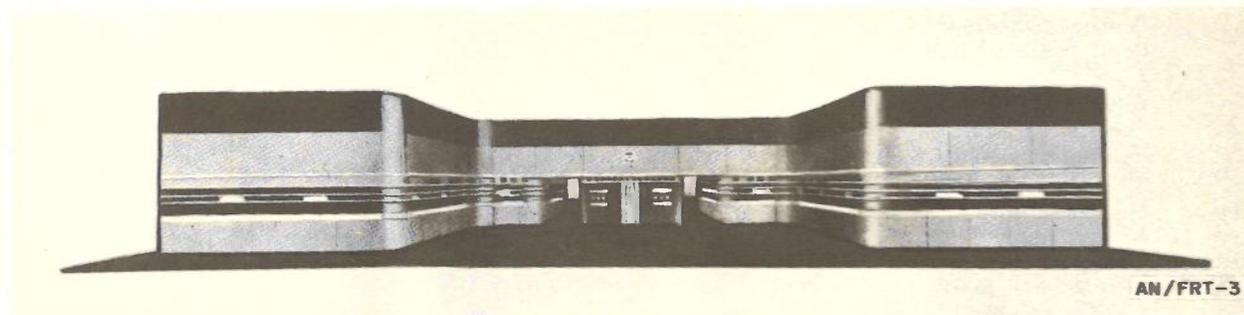
Used by

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STOCK NO: --

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AN/FRT-3

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Set AN/FRT-3 is a complete super-power shore unit designed for world-wide radiotelegraph and radioteletype communication in the very low-frequency band.

This equipment includes a basic transmitter combined with auxilliary power and cooling items, antenna tuning apparatus, and a suitable antenna-ground system.

Either ON-OFF or frequency-shift keying may be used for signaling.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 14.5 to 35 kc

*Type Emission:* Cw telegraph or frequency-shift keying

*Nominal Output:* 1,140 kw

*Frequency Stability:* 0.001%

*Power Requirements:*

4,160-v 60-cycle 3-wire 3-phase ac

460-v 60-cycle 3-wire 3-phase ac

115-v 60-cycle 2-wire 1-phase ac

125-v dc (240 amp-hour battery)

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
4	Air/water heat exchanger	-----	92 x 95 x 111	
2	Antenna-ground system material			
2	Automatic tracking unit			
4	Blower			
1	Cooling system control unit			
2	Dc emergency pump			
1	Dc switch			
4	Distilled water pump			
1	Enclosure			
2	Exciter equipment			
2	Exciter plate transformer			
2	Frequency Generator-Monitor O-146/FRT-3	-----	18 x 49 x 72	36.8
1	Installation material			
2	Main filter reactor and dump- ing resistor			

**AN/FRT-3** RADIO TRANSMITTING SET

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Main plate transformer			
2	Main rectifier			
1	Piping, water			
1	Power amplifier (port)			
1	Power amplifier (starboard)			
1	Test oscillator			
2	Water/heat exchanger	-----	17 x 19 x 50	
2	Pure water tank	-----	72 dia x 84	
4	Raw water pump			
2	Series current-limiting resistor			
1 set	Antenna Loading coils			
1 set	Antenna variometers			
1 set	Equipment spare parts			
1 set	Helix house material			
1 set	Installation cable			
1 set	Installation drawings			
1	Shielding compartment			
1	Supervisory console			
1	Switchgear and control equipment			
1	Test load, pa (port)	-----	24 x 60 x 90	
1	Test load, pa (starboard)	-----	24 x 60 x 90	
1	Test load pump			

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 91652

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
------	----------------	--------------

## PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &amp;/or DWG:

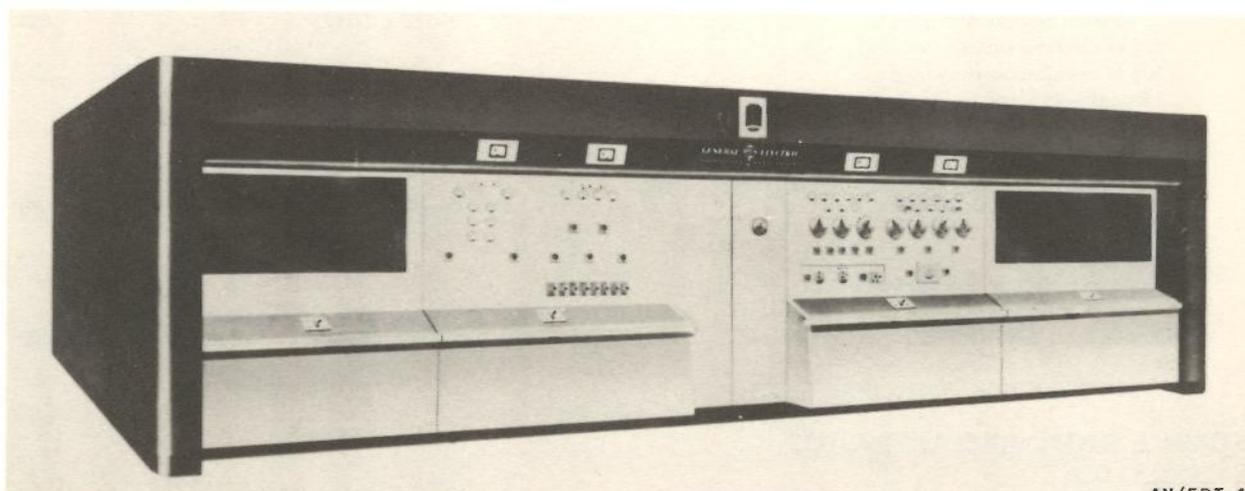
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radio Corporation of America	New York, N. Y.	NObsr-39291, 23 June 1947	\$30,000.00

## RADIO TRANSMITTING SET AN/FRT-4

26 November 1958

Cognizant Serv: USN FSN: 5820-665-2277

	USA	USN	USAF
TYPE CLASS:	--	Used by	Used by
STOCK NO:	--	--	--



AN/FRT-4

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Set AN/FRT-4 is a shore-based low-frequency, high-power, radiotelegraph transmitter used primarily in shore-to-ship communications. The set provides for continuous wave, modulated continuous wave, voice, and tone transmission signals.

This equipment permits three types of keying: Direct-current line keying at any speed up to 500 words per minute; facsimile keying at any speed up to 500 words per minute; and frequency-shift keying up to a maximum of 200-cycle-per-second shift.

The set has master oscillator frequency control and provides continuous tuning throughout its frequency range.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:*

- Band 1: 50 to 60 kc
- Band 2: 60 to 70 kc
- Band 3: 70 to 85 kc
- Band 4: 85 to 105 kc
- Band 5: 105 to 125 kc
- Band 6: 125 to 150 kc

*Type Modulation:* AM (FM with Adaptor NFM-83-50)

*Power Output:* 55 w

*Frequency Stability:* 0.005%

*Output Impedance:* 600 ohms

*Power Requirements:* 230-v 50- to 60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna tuning equipment	-----	-----	16,000
1	Antenna Series Capacitor CB-1/U	-----	54-1/2 x 35 x 53	800



## RADIO TRANSMITTING SET AN/FRT-5

26 November 1958

Cognizant Serv: USN FSN: 5820-669-7137

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-122695-100 --



AN/FRT-5

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-5 is a medium power, high-frequency equipment, designed for shore base use and to provide shore-to-ship or point-to-point communication. It permits ON-OFF radiotelegraph, frequency-shift telegraph or teletypewriter, and facsimile transmission.

This equipment provides 10 preset crystal-controlled channels and has a stabilized variable frequency oscillator. It is intended for optimum operation into an antenna with an impedance of 600 ohms.

The set is identical with the commercial Collins type 205D-1 equipment and is similar to Radio Transmitting Equipment TEB except for redesign.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 26

*Power Output:* 15 kw

*Type Modulation:* AM, FM

*Type Signal:* Cw, rtt, fax

*Output Impedance:* 600 ohms

*Frequency Control:* Crystal and stabilized oscillator using afc, and provision for connecting an external master oscillator

*Ambient Temperature:* 32° to 122°F, in a relative humidity up to 95%

*Type of Keying:*

Vacuum Tube: Electronic keyer arranged to accept keying impulses that are negative, positive; polar negative and polar positive for mark

Frequency Shift: Grounded or ungrounded polar or neutral keying

*Keying Speed:* To 400 wpm

*Operating Control:* Local automatic sequence stop and start control, with provision for automatic shutdown from a remote position if not keyed for selected period from 2 to 30 min. Transmitter has automatic overload reset with up to nine 30 sec lockout periods

*Power Requirements:* 27.5 key locked, 4.25 kw standby, 207-235-v 57-63-cycle 3 phase ac; and 115-v 60-cycle 1-phase ac for crystal oven



## RADIO TRANSMITTING SET AN/FRT-5A

26 November 1958

Cognizant Serv: USN FSN: 5820-665-2470

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-122693-200 --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Set AN/FRT-5A is a medium power, shore-based equipment providing A1 radiotelegraph, frequency-shift telegraph, or facsimile transmission.

The principal function of this equipment is to provide reliable communications over long and difficult circuits, either shore-to-shore or point-to-point.

The transmitter may be remotely operated. It is equipped with an automatic shutdown when not keyed for an adjustable time.

This set is the same as Radio Transmitting Set AN/FRT-5

except that provision is made in Frequency Shift Keyer KY-45A/FRT-5 for facsimile transmission. It is a replacement for Radio Transmitting Equipment TEB.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4 to 26

*Frequency Control:* Crystal or stabilized oscillator

*Type of Signal:* Cw, rtt, fax

*Keying Speed:* 400 wpm maximum

*Power Output:* 15 kw

*Power Requirements:* 28 kw maximum 207-253-v 60-cycle 3-phase ac; and 115-v 60-cycle 1-phase ac for crystal oven

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Keyer KY-45A/FRT-5	-----	10-1/2 x 19 x 15-1/8	29
1	Power Control C-587A/FRT-5	-----	38-1/4 x 30-1/4 x 14-1/4	273
1	Power Supply PP-454A/FRT-5	-----	8-3/4 x 19 x 15-1/8	85
1	Power Supply PP-490A/FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,780
1	Power Transformer TF-122/U	-----	18-1/2 x 36-1/2 x 14 3/4	560
1	Radio Transmitter T-225A/ FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,942
1	RF Oscilloscope O-91A/FRT-5	-----	10-1/2 x 19 x 15-1/8	35
1	RF Oscilloscope O-92A/FRT-5	-----	5-1/4 x 19 x 12	15

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 91457(A)

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
13	597.9	9,360

MIL-HDBK-161

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**AN/FRT-5A** RADIO TRANSMITTING SET

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone and Radio Corp.	Clifton, N. J.	NObr-49171, 12 June 1951	

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RADIO TRANSMITTING SET **AN/FRT-5B**

26 November 1958

Cognizant Serv: **USN** FSN: 5820-644-4923**USA****USN****USAF**

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-122692-200 --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-5B is a 15-kilowatt equipment designed for precision shore-to-ship or point-to-point communications. It is equipped for off-on keying, frequency-shift keying, or teleprinter operation, and features rapid and accurate channel switching.

This equipment is the same as Radio Transmitting Set AN/FRT-5 except that provision is made in the Frequency Shift Keyer KY-45A/FRT-5 for facsimile transmission. It is also similar to Radio Transmitting Set AN/FRT-5A except for minor differences in circuit design and components.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 4 to 26*Number of Preset Channels:* 10*Frequency Control:* Crystal or master oscillator*Type Emission:* Cw, rtt, fax*Type Modulation:* AM, FM*Power Output:* 15 kw into 600-ohm fixed load*Keying Speed:* To 400 wpm*Power Requirements:*Transmitting Equipment: 28 kw, 230-v ( $\pm 10\%$ ) 60-cycle ( $\pm 5\%$ ) 3-phase ac; and

Crystal Ovens: 115-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Control C-587B/FRT-5	-----	38-1/4 x 30-1/4 x 14-1/4	273
1	Power Supply PP-4908/FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,780
1	Power Transformer TF-122/U	-----	18-1/2 x 36-1/2 x 14-3/4	560
1	Radio Transmitter T-225B/ FRT-5 including:	-----	91-1/2 x 46-5/8 x 37-1/2	1,942
1	Frequency Shift Keyer KY-45B/FRT-5	-----	10-1/2 x 19 x 15-1/8	29
1	Power Supply PP-454A/FRT-5	-----	8-3/4 x 19 x 15-1/8	85
1	RF Oscillator O-91B/FRT-5	-----	10-1/2 x 19 x 15-1/8	35
1	RF Oscillator O-92B/FRT-5	-----	5-1/4 x 19 x 12	15

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91740

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
13	597.9	9,360

MIL-HDBK-161

---

**AN/FRT-5B** RADIO TRANSMITTING SET

---

PROCUREMENT DATA

---

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone & Radio Corp.	Clifton, N. J.	NObsr-52662, 27 June 1951	

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## RADIO TRANSMITTING SET AN/FRT-6

26 November 1958

Cognizant Serv: USN FSN: 5820-642-7784

USA

USN

USAF

TYPE CLASS: --

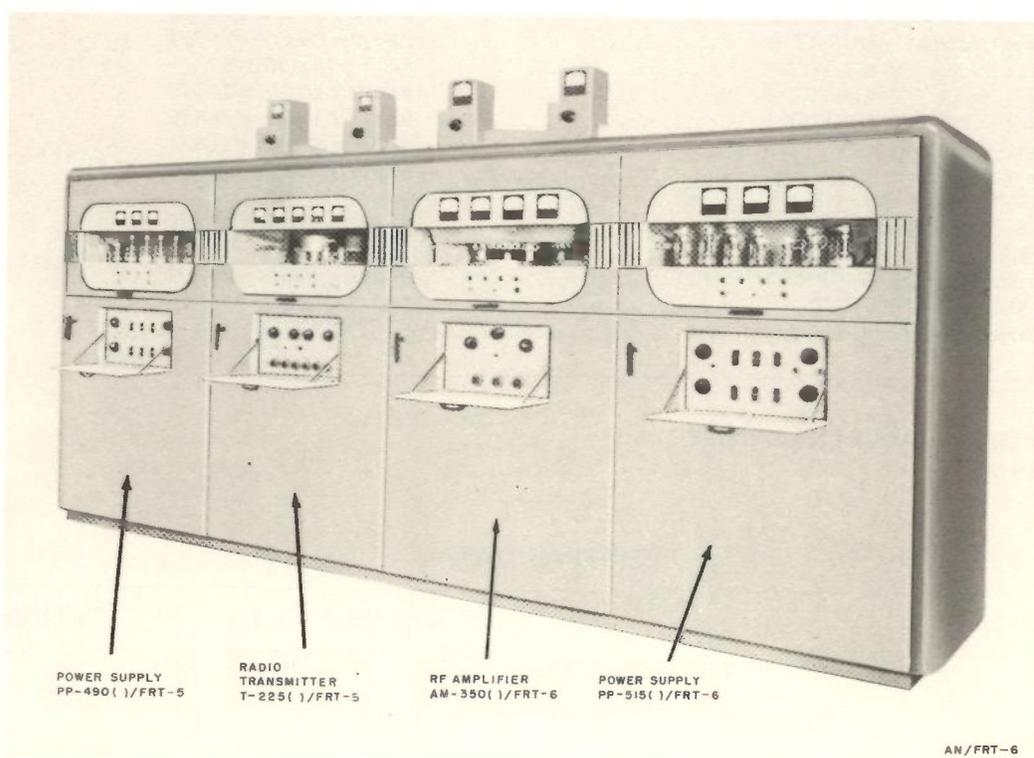
Used by

--

STOCK NO: --

F16-Q-122696-200

--



AN/FRT-6

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-6 is a long-range, high-frequency facility designed for shore-based communications service. It provides an output power of 40 kilowatt for ON-OFF radiotelegraph, frequency-shift telegraph or teletypewriter, and facsimile transmission.

This equipment is principally employed for shore-to-ship and point-to-point communication. The high radio frequency power output makes it suitable for transmission over long and difficult circuits.

The set provides 10 preset, crystal-controlled channels and has a stabilized variable frequency oscillator. It is intended for optimum operation into an antenna with an impedance of 600 ohms.

The transmitter may be operated without using the main radio frequency amplifier section to provide a 15-kilowatt

output, instead of the normal 40-kilowatt output, for operation to medium distances or for emergency use.

Radio Transmitting Set AN/FRT-6 is similar functionally to Radio Transmitting Equipment TEC.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 26

*Frequency Control:* Crystal or stabilized oscillator

*Type of Signal:* Cw, rtt, fax

*Type Modulation:* AM, FM

*Keying:* Maximum keying speed 400 wpm, A1, F1

*Nominal Power Output:* 40 kw

*Power Requirements:* 86 kw (normal), 27.5 kw (low power); 207-253-v 60-cycle 3-phase ac; and 115-v 60-cycle 1-phase ac for crystal oven

**AN/FRT-6 RADIO TRANSMITTING SET****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Keyer KY-45/FRT-5	-----	10-1/2 x 19 x 15-1/8	49
1	Power Control C-587/FRT-5	-----	38-1/2 x 30-1/4 x 14-1/4	298
1	Power Control C-598/FRT-6	-----	24-1/2 x 38-1/2 x 14-3/4	137
1	Power Supply PP-454/FRT-5	-----	8-3/4 x 19 x 15-1/8	88
1	Power Supply PP-490/FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,742
1	Power Supply PP-515/FRT-6	-----	91-1/2 x 46-5/8 x 37-1/2	2,030
1	Power Transformer TF-122/U	-----	18-1/2 x 36-1/2 x 14-3/4	527
1	Power Transformer Assembly TF-124/FRT-6	-----	55-3/4 x 58-1/2 x 30-1/2	3,010
1	Radio Transmitter T-255/ FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	2,108
1	RF Amplifier AM-350/FRT-6	-----	91-1/2 x 46-5/8 x 54-1/2	2,550
1	RF Oscillator O-92/FRT-5	-----	10-1/2 x 19 x 15-1/8	35
1	RF Oscillator O-92/FRT-5	-----	5-1/4 x 19 x 12	15

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91263

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
29	958.8	17,892

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG: RE-13A900B

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NObsr-39400, 30 June 1947 NObsr-42465, 30 June 1948	\$58,816.00 \$58,816.00

## RADIO TRANSMITTING SET AN/FRT-6A

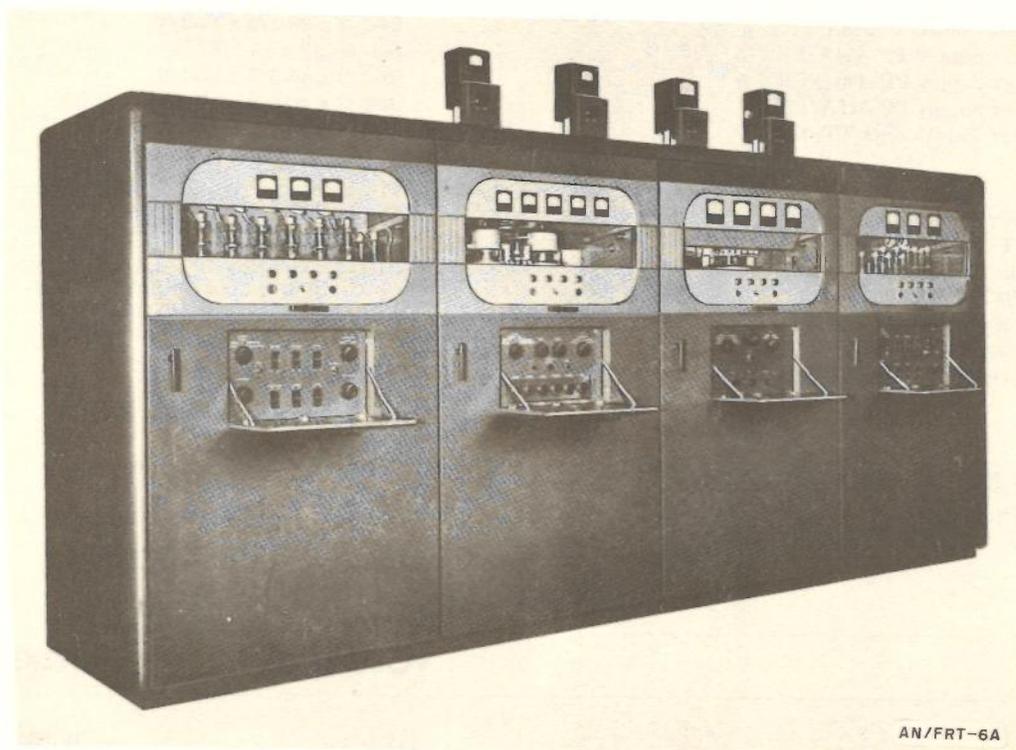
26 November 1958

Cognizant Serv: USN FSN: 5820-642-8579

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by  
F16-Q-122697-200**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-6A is a long-range, high-frequency facility designed for shore-based communications service. It provides an output power of 40 kilowatt for ON-OFF radiotelegraph, frequency-shift telegraph or teletypewriter, and facsimile transmission.

This equipment is principally employed for shore-to-ship and point-to-point communication.

The set provides 10 preset, crystal-controlled channels and has a stabilized variable frequency oscillator. It is intended for optimum operation into an antenna with an impedance of 600 ohms.

The transmitter may be operated less the high-power ampli-

fier and rectifier at which time service similar to that obtained from Radio Transmitting Set AN/FRT-5A is available.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 26

*Frequency Control:* Crystal or stabilized master oscillator

*Type of Signal:* Cw, rtt, fax

*Power Output:*

Normal Operation: 40 kw

Without Main RF Amplifier: 15 kw

*Keying Speed:* 400 wpm maximum

*Type Modulation:* AM, FM

*Power Requirements:* 86 kw (normal), 27.5 kw (low power); 207-253-v 60-cycle 3-phase ac; and 115-v 60-cycle 1-phase ac for crystal oven

**AN/FRT-6A** RADIO TRANSMITTING SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Keyer KY-45A/FRT-5	-----	10-1/2 x 19 x 15-1/8	29
1	Power Control C-587A/FRT-5	-----	38-1/4 x 30-1/4 x 14-1/4	273
1	Power Control C-598A/FRT-6	-----	24-1/2 x 38-1/2 x 14-3/4	146
1	Power Supply PP-454A/FRT-5	-----	8-3/4 x 19 x 15-1/8	85
1	Power Supply PP-490A/FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,780
1	Power Supply PP-515A/FRT-6	-----	91-1/2 x 46-5/8 x 37-0/2	1,954
1	Power Transformer TT-122/U	-----	18-1/2 x 36-1/2 x 14-3/4	560
	or			
	Power Transformer Assembly TF-124/FRT-6	-----	55-3/4 x 58-1/2 x 30-1/2	3,010
1	Radio Transmitter T-225A/ FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,942
1	RF Amplifier AM-350A/FRT-6	-----	91-1/2 x 46-5/8 x 37-1/2	2,372
1	RF Oscillator O-91A/FRT-5	-----	10-1/2 x 19 x 15-1/8	35
1	RF Oscillator O-92A/FRT-5	-----	5-1/4 x 19 12	15

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 91404(A)

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
18	1,196.1	19,836

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone and Radio Corp.	Clifton, N. J.	NObsr-49171, 24 May 1950	

RADIO TRANSMITTING SET **AN/FRT-6B**

26 November 1958

Cognizant Serv: USN FSN: 5820-642-8381

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	F16-Q-122698-200	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-6B is a 40-kilowatt set designed for precision shore-to-ship or point-to-point communications. It is equipped for ON-OFF keying, frequency-shift keying, or teleprinter operation, and features rapid and accurate channel switching.

This equipment may be operated as a 15 kilowatt unit by deactivating the main amplifier and its power supply. By means of an isolated switch, the output circuit is disconnected from the power amplifier input and connected to the transmission line of the antenna.

Radio Transmitting Set AN/FRT-6B consists essentially of Radio Transmitting Set AN/FRT-5B, with an additional power amplifier and rectifier. It is similar to Radio Trans-

mitting Set AN/FRT-6A except for minor circuit changes and component parts.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 4 to 26*Preset Channels:* 10*Frequency Control:* Crystal or master oscillator*Type Emission:* Cw, rtt, fax*Keying Speed:* To 400 wpm*Power Output:* 40 kw into 600 ohms*Type Modulation:* AM or FM*Power Requirements:* 86 kw (normal), 27.5 kw (low power); 230-v ( $\pm 10\%$ ) 60-cycle ( $\pm 5\%$ ) 3-phase ac; and 115-v 60-cycle 1-phase ac for crystal oven**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1				
1	Power Control C-587C/FRT-5	-----	38-1/4 x 30-1/4 x 14-1/4	273
1	Power Control C-5985/FRT-6	-----	24-1/2 x 38-1/2 x 14-3/4	146
1	Power Supply PP-490B/FRT-5	-----	91-1/2 x 46-5/8 x 37-1/2	1,780
1	Power Supply PP-515B/FRT-6	-----	91-1/2 x 46-5/8 x 37-1/2	1,954
1	Power Transformer TF-122/U	-----	18-1/2 x 36-1/2 x 14-3/4	560
	Power Transformer Assembly	-----	55-3/4 x 58-1/2 x 30-1/2	3,010
	TF-124/FRT-6			
1	Radio Transmitter T-225B/ FRT-5, including:	-----	91-1/2 x 46-5/8 x 47-1/2	1,942
	Frequency Shift Keyer	-----		
1	KY-45B/FRT-5	-----	10-1/2 x 19 x 15-1/8	29
	Power Supply PP-454A/ FRT-5	-----	8-3/4 x 19 x 15-1/8	85
1	RF Oscillator O-91B/FRT-5	-----	10-1/2 x 19 x 15-1/8	35
1	RF Oscillator O-92B/FRT-5	-----	5-1/4 x 19 x 12	15
1	RF Amplifier AM-350B/FRT-6	-----	91-1/2 x 46-5/8 x 37-1/2	2,372

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91739

MIL-HDBK-161

**AN/FRT-6B** RADIO TRANSMITTING SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
18	1,196.1	19,836

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone & Radio Corp.	Clifton, N. J.	NObsr-52662, 27 June 1951	

## RADIO TRANSMITTING SET AN/FRT-6C

26 November 1958

Cognizant Serv: USN FSN: 5820-347-9145

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitter Set AN/FRT-6C is a 40 kilowatt shore-based communication service designed to provide continuous-wave radiotelegraph, frequency-shift-telegraph, or facsimile transmission. It is primarily intended for reliable and precise shore-to-ship and point-to-point-communication. The high radio-frequency power output permits the transmission of intelligence over long and difficult circuits.

This equipment may be operated as a 15 kilowatt unit functioning independently of the 40 kilowatt main amplifier and its power supply.

Radio Transmitting Sets AN/FRT-6, AN/FRT-6A, and AN/FRT-6B are similar except for minor circuit changes and component parts. Radio Transmitting Set AN/FRT-6C is similar to the previous models except that the components

have been changed to permit operation from 50 or 60 cycles instead of from 60 cycles only.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4 to 26*Type of Signal:* Cw, rtt, fax*Type Control:* Crystal or stabilized oscillator*Power Output:* 40 kw nominal*Keying Speed:* 400 wpm maximum*Equipment Power Factor:*

Starting (Hi-voltage Off): 82.5%

Standby (Key Operation): 80.5%

Operation (Normal): 96%

*Power Requirements:* 86 kw (normal) 27.5 (low power); 207-253-v 50/60-cycle 3-phase ac; and 115-v 50/60 cycle 1-phase ac for crystal oven

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Frequency Shift Keyer KY-45B/FRT-5	-----	10-1/2 x 15-1/8 x 19	29
1	Power Control C-587C/FRT-5	-----	14-1/4 x 30-1/4 x 38-1/4	298
1	Power Control C-598B/FRT-6	-----	14-3/4 x 24-1/2 x 38-1/2	146
1	Power Supply PP-454C-FRT-5	-----	8-3/4 x 15-1/8 x 19	88
1	Power Supply PP-490C/FRT-5	-----	37-1/2 x 43-1/2 x 79-3/8	1,742
1	Power Supply PP-515C/FRT-6	-----	37-1/2 x 43-1/2 x 79-3/8	2,030
1	Power Transformer TF-214/U	-----	19-1/8 x 31-3/4 x 40-1/2	675
1	Power Transformer TF-215/U	-----	30 x 57 x 60	2,350
1	Radio Transmitter T-225/ FRT-5	-----	37-1/2 x 46-5/8 x 91-1/2	2,108
1	RF Amplifier AM-350C/ FRT-6	-----	43-1/2 x 54-1/2 x 91-1/2	2,550
1	RF Oscillator O-91B/FRT-5	-----	10-1/2 x 15-1/8 x 19	35
1	RF Oscillator O-92B/FRT-5	-----	5-1/4 x 12 x 19	15

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 92596(A)

MIL-HDBK-161

**AN/FRT-6C** RADIO TRANSMITTING SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
19	1,130	19,309

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG: MIL-T-16268(SHIPS)

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone and Radio Corp.	Clifton, N. J.	NObsr-64118, 8 February 1945	\$62,000.00

## RADIO TRANSMITTING SET AN/FRT-15

26 November 1958

Cognizant Serv: USN FSN: 5820-665-2284

USA

USN

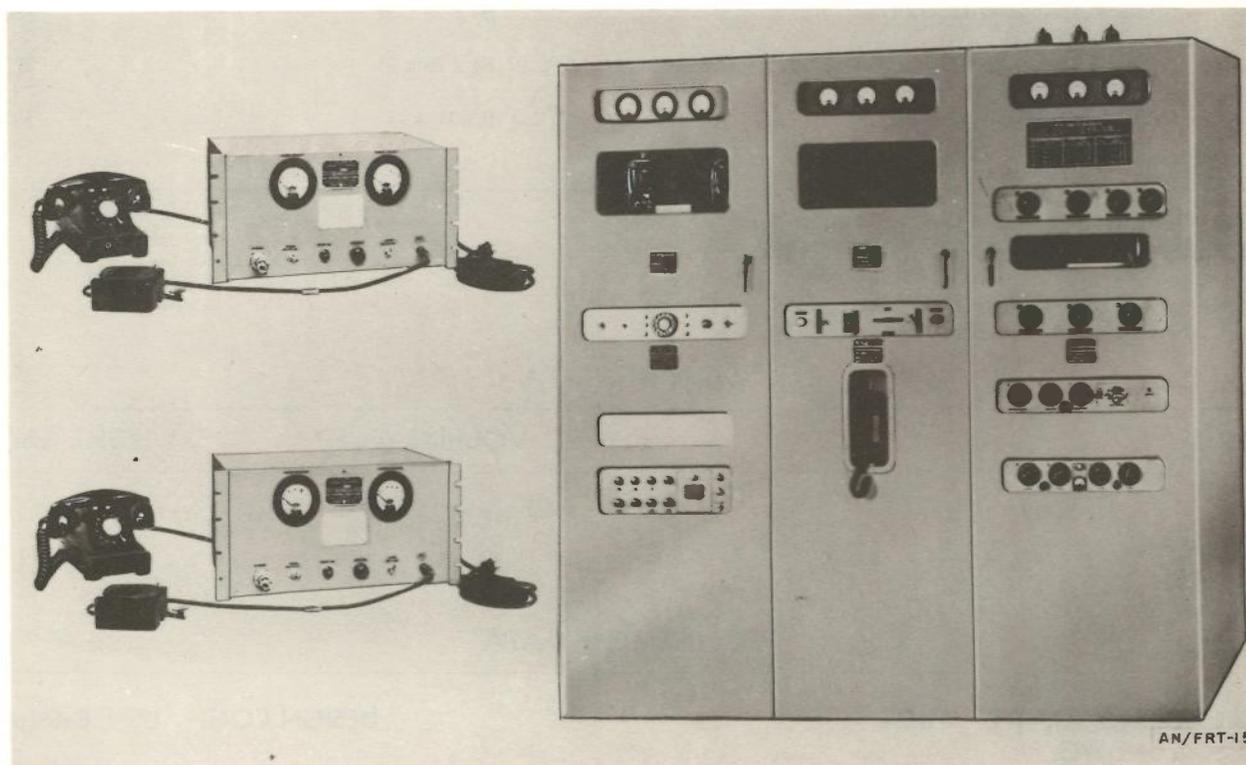
USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-122708-200 --

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-15 is a general service, medium-power, communication set used at shore stations. It is suitable for point-to-point and aeronautical ground station operations.

This equipment provides telephone-type dial automatic tuning for ten preset channels. It permits complete remote control over a two-pair telephone line.

The transmitter has a built-in frequency-shift keying unit.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2 to 30

*Frequency Control:* Crystal or master oscillator

*Number of Preset Frequencies:* 10

*Type of Signal:* Voice, cw, mcw, rtt, fax

*Type Modulation:* AM

*Modulating Tone Frequency:* 1,000 cps

*RF Power Output:*

2 to 12 mc: 3,000 w

12 to 26 mc: 2,500 w

26 to 30 mc: 2,000 w

*Frequency Drift:*  $\pm 0.003\%$  maximum

*Keying Speed:*

A1: 500 wpm

A2: 50 wpm

*Power Requirements:* 9,920 w; 220-v 50-60-cycle 3-phase ac, and 110-v 50-60-cycle 1-phase ac for remote-control unit

**AN/FRT-15 RADIO TRANSMITTING SET****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Supply Group OA-206/ FRT-15	-----	84 x 26 x 31	1,350
1	Radio Modulator Group OA- 204/FRT-15	-----	84 x 29 x 31	880
1	Radio Transmitter Group OA- 205/FRT-15	-----	84 x 29 x 31	775
2	Transmitter Control C-475/ FRT	-----	9 x 19 x 11	105

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
6	521.33	7,413

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radiomarine Corporation of America	New York, N. Y.	NObsr-43454, 30 June 1949	

## RADIO TRANSMITTING SET AN/FRT-15A

26 November 1958

Cognizant Serv: USN FSN: 5820-548-3809

	USA	USN	USAF
TYPE CLASS:	--	Used by	Ltd-Std
STOCK NO:	--	--	1760-049587010

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Set AN/FRT-15A is a general service unit intended for use in naval shore or air force ground installations. It is suitable for point-to-point and aeronautical ground station operation on a number of selected frequency channels.

The set has been designed for operation of ambient temperatures between 0° and 50° centigrade (32° and 122° Fahrenheit) and in a relative humidity up to 95 percent.

This equipment is capable of continuous operation on continuous-wave, modulated continuous wave, telephone, frequency-shift keying (with phase modulation, if desired), or facsimile. The appropriate frequency may be selected automatically either locally or remotely.

Radio Transmitting Set AN/FRT-15 is identical in appearance, rating, operation, and application with Radio Transmitting Set AN/FRT-15 but differs in certain minor details of construction.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30

*Tuning:* Continuous over entire range

*Number of Frequency Channels:* 12

*Number of Preset Frequencies:* 11

*Number of Manually Tuned Frequencies:* 1

*Type of Frequency Control:* Crystal or master oscillator

*Frequency Selection:* Any one frequency by use of telephone-type dial, either locally or remotely

*Time to Change Preset Frequency and/or Mode of Operation:*

Less than 15 seconds

*Type Emission:* Cw, mcw, voice modulated, fsk, fax

*Type Modulation:* AM

*Input:* -25 to 0 db into 500 ohm impedance

*Audio Response:* -Flat with  $\pm 3$  db from 15 cps to 3,500 cps

*Compression:* Above 70% modulation; 10 db increase in input results in less than 3 db change in modulation level

*Modulation Capability:* 100%

*Type of Frequency-shift Circuit:* Reactance modulated oscillator

*Nominal Oscillator Frequency:* 200 kc

*Deviation:* Adjustable from 0 to  $\pm 1,000$  cps

*Deviation Response:* Linear with respect to dc input voltage, within 5%

*Stability:* Within 5% above 200 cps, within 10 cps below 200 cps frequency shift

*Frequency of Phase Modulation:* 200 cps per second  $\pm 5\%$

*Placement of Antenna:* 1 radian  $\pm 0.1$  radian

*Phototransmission:*

Input Signal: Peak magnitude of +1 to +20 v

Input Impedance: 600 ohms  $\pm 10\%$

Maximum Deviation: Zero signal, 1,000 cps; peak signal, +1,000 cps

*Response:*

Static: Linear within 5% with respect to an input signal, over a 30 db range below any value between +1- and +20-v dc

Dynamic: Peak of any ac signal voltage of 0 to 2,000 cps is with 2 db of dc voltage to cause some deviation

*Keying:*

Type: Polar or neutral

Range: 30- to 135-v dc

Control: Local or remote

Circuit: Electronic

Speed: Cw ON-OFF or frequency shift up to 500 wpm; mew, up to 50 wpm

*Control:* Local or remote

*Local Control:* Start and stop by manual switches; emission and channel selection by telephone-type dial

*Remote Control:* Initial start at transmitter only; restart, standby, stop, emission, and channel selection by telephone-type dial

*Nominal RF Output Power:*

2 to 12 Mc: 3,000 w

12 to 26 Mc: 2,500 w

26 to 30 Mc: 2,000 w

*Output Transmission Line:* Balanced; impedance 70 to 800 ohms; maximum standing wave ratio with load connected, two to one

*Crystals, Channel Frequency:*

Type: CR-27/U

Number Required: 1 to 10

Frequency Range: 1,800 to 3,800 kc

Operating Temperature: 75° C.  $\pm 1^\circ$  C.

*Master Oscillator:*

Type: Rf oscillator 0-140A/FRT-15

Frequency Range: 1,800 kc to 4,000 kc

*Power Requirements:*

Power Supply Group OA-206A/FRT-15: 220-v 50-60-cycle 3-phase ac

Transmitter Control C-745A/FRT-15: 110-v 50-60-cycle 1-phase ac

## AN/FRT-15A RADIO TRANSMITTING SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Supply Group OA-206A/FRT-15 including:	-----	25-15/16 x 31 x 83-15/16	1,175
1	Cabinet-Power Supply CY-933A/FRT-15	-----	25-5/16 x 31	1,040
2	Desk set	-----	5-1/2 x 7 x 9	8
1	Power Supply PP-632A/ FRT-15	-----	11-5/8 x 16 x 25-1/2	92
1	Power Supply PP-633A/ FRT-15	-----	8 x 9-1/8 x 25-7/16	43
2	Telegraph key	-----	2-3/8 x 3-5/16 x 6	4
2	Transmitter Control C-745A/FRT-15	-----	8-23/32 x 11-5/8 x 19	96
1	Radio Modulator Group OA-204A/FRT-15, including:	-----	28-15/16 x 31 x 83-15/16	975
1	Cabinet CY-931A/FRT-15	-----	28-15/16 x 31 x 83-15/16	659
1	Keyer KY-70A/FRT-15	-----	10-15/32 x 16-1/4 x 19	46
1	Power Supply PP-631A/ FRT-15	-----	8-23/32 x 16 x 19	78
1	Radio Modulator MD-137A/FRT-15	-----	27 x 28-1/4 x 29-5/8	70
1	Relay Assembly RE-95A/ FRT-15	-----	8 x 11-3/4 x 27	19
1	Signal Data Converter CV-165A/FRT-15	-----	4-11/16 x 8-15/16 x 19	8
1	Voltage Regulator CN-143A/FRT-15	-----	8-23/32 x 8-7/8 x 19	95
1	Radio Transmitter Group OA-2050A/FRT-15 including:	-----	28-15/16 x 31 x 83-15/16	925
1	Amplifier-Oscillator AM-483A/FRT-15	-----	11-3/8 x 25-3/16 x 30-1/8	87
1	Cabinet-Radio Frequency Amplifier CY-932A/ FRT-15	-----	28-15/16 x 31 x 82-15/16	761
1	RF Oscillator O-140A/FRT-15 including:	-----	10-15/32 x 19 x 20-7/8	77
1	Band Pass Filter F-105A/ FRT-15	-----	3-1/2 x 3-3/4 x 14	7
1	Filter-Mixer F-104A/ FRT-15	-----	3 x 3-1/2 x 10-3/16	2
1	Frequency Selector-Mixer CV-275/FRT-15A	-----	3-13/16 x 6-9/16 x 16-5/16	8
1	Frequency Selector-Mixer CV-276/FRT-15A	-----	4-3/8 x 6 x 14	8
1	Frequency Selector C-1245/FRT-15A	-----	3-13/16 x 6-3/4 x 16-15/16	9
1	Harmonic Generator O-206/FRT-15A	-----	3-7/8 x 6 x 13-1/2	4
1	Oscillator Assembly O-141A/FRT-15	-----	5 x 7 x 13-3/16	12
1 Set	Interconnecting and Accessory items			

RADIO TRANSMITTING SET **AN/FRT-15A****REFERENCE DATA AND LITERATURE:**

NAVSHIPS 91848(A)

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
15	457.9	7,144

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
 SPEC &/or DWG: TS-2176

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radiomarine Corporation of America	New York, N. Y.	NObsr-52677, 28 June 1951	\$17,500.00
		NObsr-63158, 31 December 1952	17,500.00



## RADIO TRANSMITTING SET AN/FRT-15B

26 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

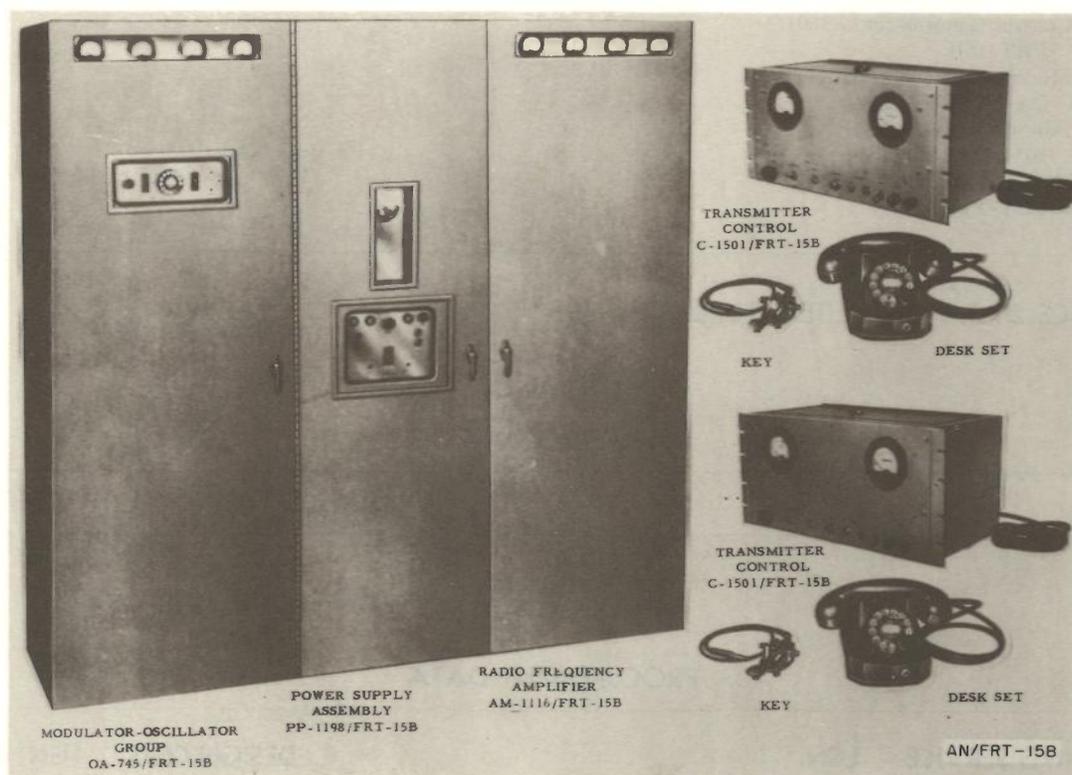
Used by

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STOCK NO: --

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## FUNCTIONAL DESCRIPTION:

Radio Transmitting Set AN/FRT-15B is used at shore stations to provide medium-power communications. It is suitable for point-to-point and aeronautical ground station operation on a number of selected frequency channels.

This equipment is capable of continuous operation on continuous-wave, modulated continuous wave, telephone, frequency-shift keying, or facsimile.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30

*Number of Bands:* 10

*Number of Channels:* 10

*Type of Signal:* Cw, mcw, voice, rtt, fax

*Frequency Control:* Crystal and master oscillator

*Power Output:* 3,000 w

*Power Requirements:* 220-v 50-60-cycle 3-phase ac

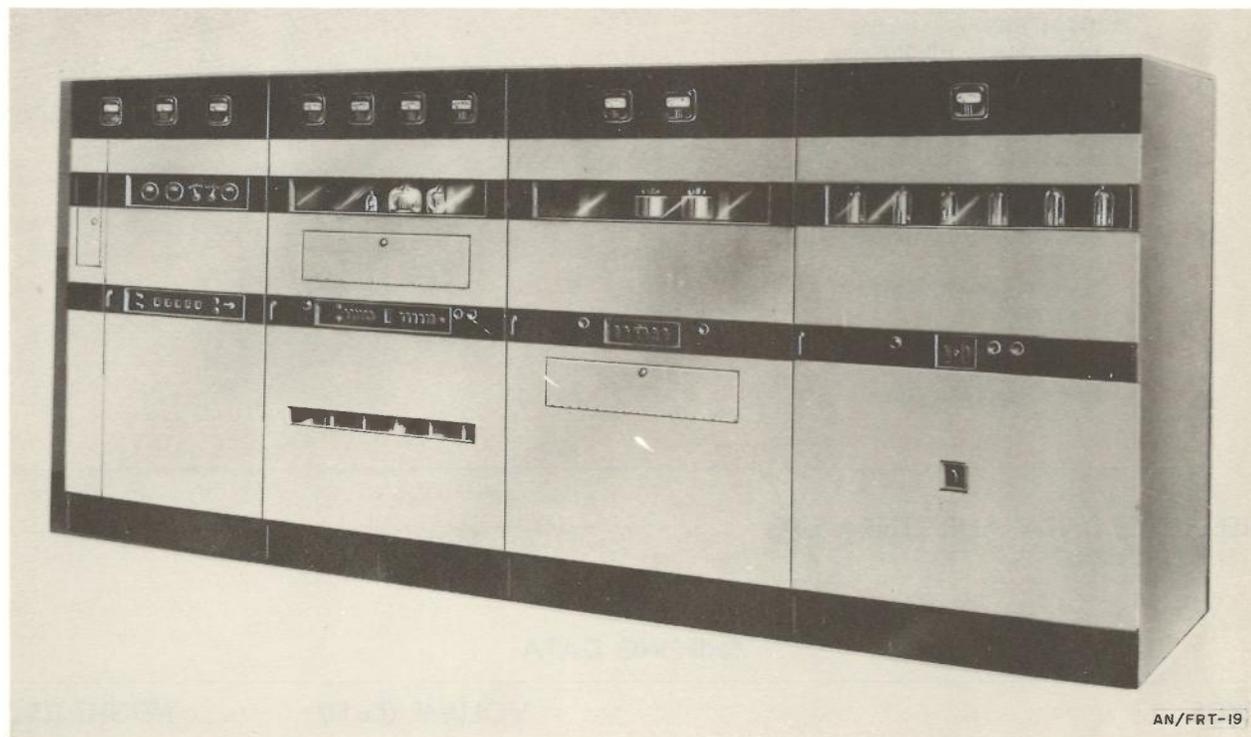


## RADIO TRANSMITTING SET AN/FRT-19

26 November 1958

Cognizant Serv: USN FSN: 5820-665-2297

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-19 is a shore-based, low-frequency communication set. It provides continuous-wave transmission and is used primarily for shore-to-ship communications under widely varying climatic conditions.

This equipment consists essentially of an exciter bay, amplifier bay, and antenna tuner. Frequency control for the one channel provided is by means of a master or crystal oscillator.

**TECHNICAL CHARACTERISTICS:***Frequency Range:*

- Band 1: 30 kc to 48 kc
- Band 2: 48 kc to 78 kc

Band 3: 78 kc to 130 kc

Band 4: 130 kc to 215 kc

Band 5: 215 kc to 355 kc

Band 6: 355 kc to 600 kc

*Frequency Accuracy and Stability:*  $\pm 3$  cps, at 30.0 kc;  $\pm 20$  cps, at 600.0 kc

*Frequency Control:* Crystal

*Type Modulation:* AM

*Type of Signal:* Cw, mew, fsk, fax

*Output Impedance:* 600 ohms

*Power Output:*

0.03 to 0.3 mc: 15 kw

0.3 to 0.6 mc: 3 kw

*Power Requirements:* 230-v 50/60-cycle 3-phase ac

MIL-HDBK-161

**AN/FRT-19 RADIO TRANSMITTING SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Coupler MK-156/ FRT-19			
1	Radio Frequency Amplifier AM-804/FRT-19 including: Power Supply PP-1016/ FRT-19			
1	Power Supply PP-901/FRT-19			
1	Radio Frequency Amplifier AM-805/FRT-29 including: Power Supply PP-1015/ FRT-19 Power Supply PP-1018/ FRT-19 Power Supply PP-1017/ FRT-19			
1	Radio Transmitter T-396/ FRT-19 including: Power Supply PP-1014/ FRT-19			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92117

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Sierra Electronic Corp. and Manufacturing Co.	San Carlos, Calif.	NObsr-52585, 20 June 1951	\$66,000.00

## RADIO TRANSMITTING SET AN/FRT-22

1 July 1958

Cognizant Serv: USA FSN:

USA

USN

USAF

TYPE CLASS:

Std

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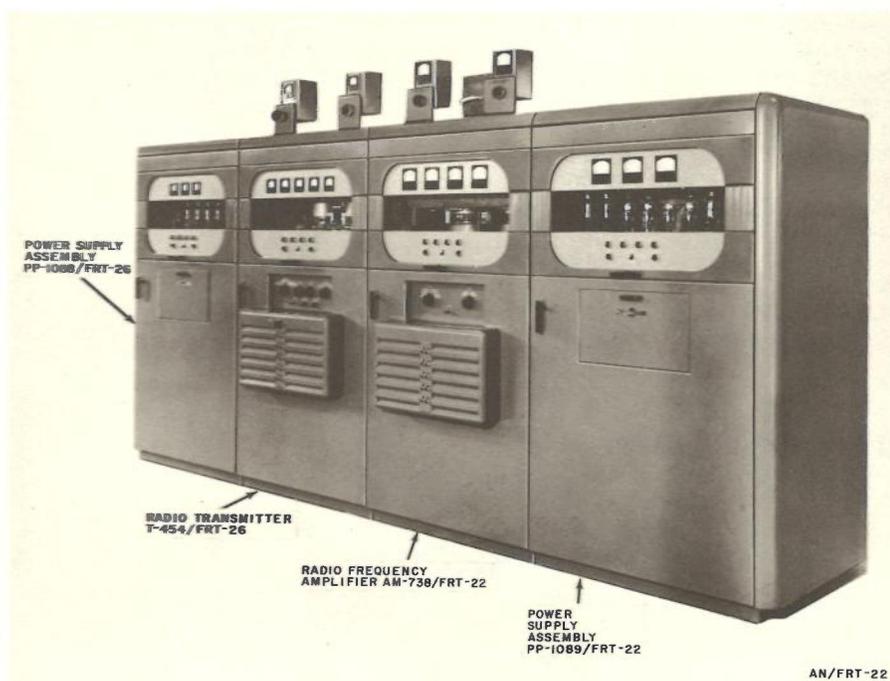
Std

STOCK NO:

2S2003-22

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1760-266489168

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-22 is a high-power, hf, fixed station radio equipment used for handling cw radio-telegraph, frequency-shift teletypewriter, or facsimile traffic over long distances.

It consists essentially of a transmitter (having two RF oscillators, a frequency-shift keyer, and a power supply), an amplifier, and two power assemblies. Each of these components is housed in a metal cabinet; these four cabinets are bolted together to form a single unit.

This equipment is the primary operating component of Coded Facility -344 (TB SIG 322-334).

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 26.5

*Type Modulation:* AM, FM

*Type of Signal:* Cw, fsk, ssb

*Power Output:*

Ssb: 30 kw

Cw, fsk: 40 kw

*Power Requirements:* 84.5 kw, 230-v ( $\pm 10\%$ ) 50/60-cycle 3-phase ac

MIL-HDBK-161

**AN/FRT-22 RADIO TRANSMITTING SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Frequency Shift Keyer KY-45/FRT-5	2C640-45	19 x 15-1/8 x 10-1/2	
1	Power Supply PP-454/FRT-5	3H4497-454	19 x 15-1/8 x 8-3/4	
1	Power Supply Assembly PP-1088/FRT-26	3H4499-1088	79-5/16 x 43-1/2 x 37-11/16	1,800
1	Power Supply Assembly PP-1089/FRT-22	3H4499-1089	79-5/16 x 43-1/2 x 37-11/16	2,000
1	Power Transformer TF-196/ FRT-26	2Z9964-196	32 x 42 x 19-1/8	605
1	Radio Frequency Amplifier AM-738/FRT-22	2C448A-738	91-9/16 x 43-1/2 x 59-7/16	2,650
1	Radio Transmitter T-454/ FRT-26	2C6900A-454	91-9/16 x 43-1/2 x 42-7/16	2,200
1	RF Oscillator O-91/FRT-5	2C2709-91	19 x 15-1/8 x 10-1/2	
1	RF Oscillator O-270/FRT-26	2C2710-270	19 x 10-13/16 x 5-1/4	

**REFERENCE DATA AND LITERATURE:**

TM 11-847

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	481.423	12,595

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-11181

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	25866-P-55-55	\$67,613.30

## RADIO TRANSMITTING SET AN/FRT-23

26 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

Used by

--

STOCK NO: --

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(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Set AN/FRT-23 is a general purpose equipment designed for the transmission of continuous-wave voice and tone modulation, and facsimile carriers.

*Type of Modulation:* AM*Frequency Control:* Crystal and master oscillator*Power Output:*

2 to 12 MC: 600 w

12 to 26 MC: 500 w

26 to 30 MC: 400 w

*Power Requirements:* 3,600 va, 115/230-v 50-60-cycle 1-phase ac

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30*Type of Signal:* Cw, mew, voice

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitting Set AN/FRT-23	-----	24 x 32 x 72	
(Equipment consists of only one major component.)				

## REFERENCE DATA AND LITERATURE:

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

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**AN/FRT-23** RADIO TRANSMITTING SET

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG: USCG SPEC RTTS 345

DESIGN COG: USN, USCG

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone and Radio Corp.	Clifton, N. J.	Teq-38329, 20 November 1940 Teq-38850, 19 February 1952 Teq-39205, 30 December 1952	

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RADIO TRANSMITTING SET **AN/FRT-26**

1 July 1958

Cognizant Serv: USN FSN: 5820-503-3306

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	2S2003-26	--	--



POWER SUPPLY ASSEMBLY  
PP-1088/FRT-26

RADIO TRANSMITTER  
T-454/FRT-26



POWER SUPPLY CONTROL  
C-1402/FRT-26



STEP-UP POWER TRANSFORMER  
TF-196/FRT-26

AN/FRT-26

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Set AN/FRT-26 is a medium-power, hf fixed station radio equipment used for handling cw radiotelegraph, radioteletype, or facsimile traffic over long distances.

It consists essentially of a transmitter and its power supply (housed in two metal cabinets bolted together to form a single unit), a high-voltage power transformer, and a power control. The transmitter cabinet contains two RF oscillators, a frequency-shift keyer, and a power supply.

This equipment is the primary operating component of Coded Facility-333 (TB SIG 322-333).

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 26.5

*Type Modulation:* AM, FM

*Type of Signal:* Cw, fsk

*Power Output:* 15 kw

*Power Requirements:* 27.5 kw, 230-v ( $\pm 10\%$ ) 50/60-cycle 3-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Frequency Shift Keyer KY-45/FRT-5	2C640-45	19 x 15-1/8 x 10-1/2	
1	Power Supply PP-454/FRT-5	3H4497-454	19 x 15-1/8 x 8-3/4	
1	Power Supply Assembly PP-1088/FRT-26	3H4499-1088	9-5/16 x 43-1/2 x 37-11/16	1,800
1	Power Supply Control C-1402/FRT-26	2C684-1402	38-1/4 x 30-1/4 x 14-3/4	298

MIL-HDBK-161

**AN/FRT-26** RADIO TRANSMITTING SET

MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Transformer TF-196/ FRT-26	2Z9964-196	32 x 42 x 19-1/8	605
1	Radio Transmitter T-454/ FRT-26	2C6900A-454	91-9/16 x 43-1/2 x 42-7/16	2,200
1	RF Oscillator O-91/FRT-5	2C2709-91	19 x 15-1/8 x 10-1/2	
1	RF Oscillator O-270/FRT-26	2C2710-270	19 x 10-13/16 x 5-1/4	

REFERENCE DATA AND LITERATURE:

TM 11-846

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	196.97	5,070

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-11181

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	21770-P-56-55	\$38,380.00

## GROUND STATION TRANSMITTER AN/FRT-type

4 November 1958

Cognizant Serv:

USN FSN:

30K-5

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

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## FUNCTIONAL DESCRIPTION:

Ground Station Transmitter 30K-5 is a self-contained dual-channel radio transmitter designed for general applications where service is intermittent, such as aeronautical ground stations, police stations, or general point-to-point communication. The unit contains a flexible pi network output circuit arrangement that permits the use of a variety of antenna types.

Remote operation may be provided by Remote Control Unit 177L-2; this unit provides filament and plate power controls as well as keying, microphone pre-amplifier, and channel switching functions. The transmitter can be converted for

use with a 50-cycle power source or converted from 230- to 115-volt operation.

Equipment required for the operation of the transmitter are a telegraph key and standard phone plug, connecting cables (No. 10 AWG or larger), and an antenna.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30 in 2 channels

*Frequency Stability:* Within 0.004%

*Type Signal:* AM

*Type Transmission:* Cw, voice

*Modulation Capability:* 100% with cw or voice

*Harmonic and Spurious Radiation:* At least 30 db below carrier level at output terminals

*Keying Data:*

Speed: 32 dot-cycles per second (80 wpm) maximum

Pulse Width Distortion: 20% (maximum)

*Transient Dip:* 25% (maximum)

*Audio Input Level:* 0.005 v sufficient for 100% modulation at 1,000 cps without clipper

*Audio Frequency Response:* Within 3 db from 150 to 3,000 cps without clipper, 25 db or more down at 4,000 cps; reference is 90% modulation at 1,000 cps

*Audio Frequency Distortion:* Less than 10% at 1,000 cps with 100% modulation without clipper

*Audio Peak Clipper:* Cuts off sharply at 4,000 cps; both positive and negative clipped

*Carrier Shift:* 5% (maximum)

*Power Output (Nominal):*

2 to 15 Mc: 300 w cw, 250 w voice

15 to 24 Mc: 250 w cw, 200 w voice

24 to 30 Mc: 225 w cw, 150 w voice

*Output Impedance:* Adjustable in 1-turn steps for matching any unbalanced load with a resistive component of 70 to 2,000 ohms, providing the total load impedance does not require a higher voltage than does the 2,000 ohms pure resistance; above 4 mc the lower resistance limit may be reduced to 50 ohms; a series load coil will permit matching 50 ohms from 2 to 4 mc.

*Operating Conditions:*

Ambient Temperature Range: 0° to 50°C.

Ambient Humidity Range: 0 to 95% relative

Altitude: Sea level to 6,000 feet (higher with 75% of nominal power output)

*Power Requirements:* 1,350 w (maximum), 230-v 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRT-type** GROUND STATION TRANSMITTER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Coils			
1 set	Crystals			
1 set	Equipment maintenance parts			
2	Microphone			
1	Ground Station Transmitter 30K-5,	-----	20 x 22 x 70	385
	including:			
1	Microphone connector			
	or			
1 set	Tools			
1 set	Vacuum tubes			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92867

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: Commercial

SPEC &/or DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Ia.	NObsr-71045, 26 Sept 1955	\$3,460 with equipment

## COMMUNICATIONS TRANSMITTER AN/FRT-type

6 November 1958

Cognizant Serv: USN FSN:

431D-1

USA

USN

USAF

TYPE CLASS: --

Used by

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Communications Transmitter 431D-1 is a shore-based radio transmitter used for high-frequency radiotelegraph and radiotelephone operation in shore-to-ship, ground station-to-aircraft, and similar applications of point-to-point communication. Ten preset channels are available.

Frequency-shift operation may be used if Frequency-Shift Oscillator Unit 709E-1 (Collins Radio) is installed.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30

*Frequency Stability:* Better than 0.002%

*Type Transmission:* Cw, voice, fsk

*Number of Autotune Channels:* 10

*Autotune Cycle Time:* Less than 8 seconds (approximately 8 seconds with 50-cps supply)

*Keying Data:*

Cw: 200 wpm

Fsk: 240 dot-cycles per second

*Impedance:*

Output: 50 to 70 ohms with a maximum swr of 2 to 1

RF Input: 50 to 70 ohms

*Audio Characteristics:*

Input Impedance: 600 ohms

Input Level: -20 to +10 dbm

Frequency Response: Within 3 db at 350 to 27,000 cps

*Distortion (Total Harmonic):* Less than 5% at 1,000 cps and 90% modulation when clipping is not used

*Noise:* At least 40 db below 100% modulation

*Power Output:* 1 kw

*RF Input Power Required:* 0.5 w approximately (2 w maximum) from external source

*Operating Conditions:*

Ambient Temperature Range: 0 to 50°C

Relative Humidity: 95% (maximum)

Elevation: 10,000 feet (maximum) above sea level for satisfactory operation

*Power Requirements:* 4,150 w (maximum) 208- to 230-v 60-cycle 1-phase ac,  $\pm 5\%$  line voltage and line frequency variation

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Coils			
1 set	Crystals			
1 set	Equipment parts			
2	Microphone			
1	Radio Transmitter 431D-1	-----	33 x 48 x 84	1,250
1	RF connector, make plug			
1	Tube kit			

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 92869

MIL-HDBK-161

**AN/FRT-type** COMMUNICATIONS TRANSMITTER

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USN, BuShips  
SPEC &/or DWG:

DESIGN COG: Commercial

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Ia.	NObsr-71045, 25 September 1955	\$12,821.00 with equipment spares

## RADIO TRANSMITTER AN/FRT-type

4 December 1958

Cognizant Serv: USAF FSN:

BC-329( )

	USA	USN	USAF
TYPE CLASS:	Models -A through -H, and -J, -L, and -M are Ltd-Std; -N is S/Std.	Used by	L/Std
STOCK NO:	--	--	--



## FUNCTIONAL DESCRIPTION:

Radio Transmitter BC-329 is a fixed, ground radio transmitter for short-range airport control by voice communication. Tactical use is for emergency airport traffic control at advanced air bases.

It is crystal controlled, but has a master oscillator for emergency operation at a frequency range from 0.19 to 0.41 mc. The 500-ohm impedance audio input circuit is designed for a low impedance microphone or telephone line.

The antenna output is designed for operation into a long-wire antenna such as the antenna kit used with, but not part of, Tower AB-127/FR.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 0.2 to 0.41 mc, preset, single channel

*Operating Range:* Short (nominal)

*Type Modulation:* AM

*Type of Signal:* Voice

*Power Output:* 25 w

*Power Requirements:* 560 w, 105- to 125-v, 50 to 60 cps, 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitter BC-329 (Equipment consists only of a single major operating component.)	-----	30-1/2 x 24-1/2 x 20	240

## REFERENCE DATA AND LITERATURE:

TO 16-30GRT-2-3

**AN/FRT-type** RADIO TRANSMITTER

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	7.4	264

PROCUREMENT DATA

PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF, RCUE

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO TRANSMITTER AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5820-194-0970

BC-339-( )

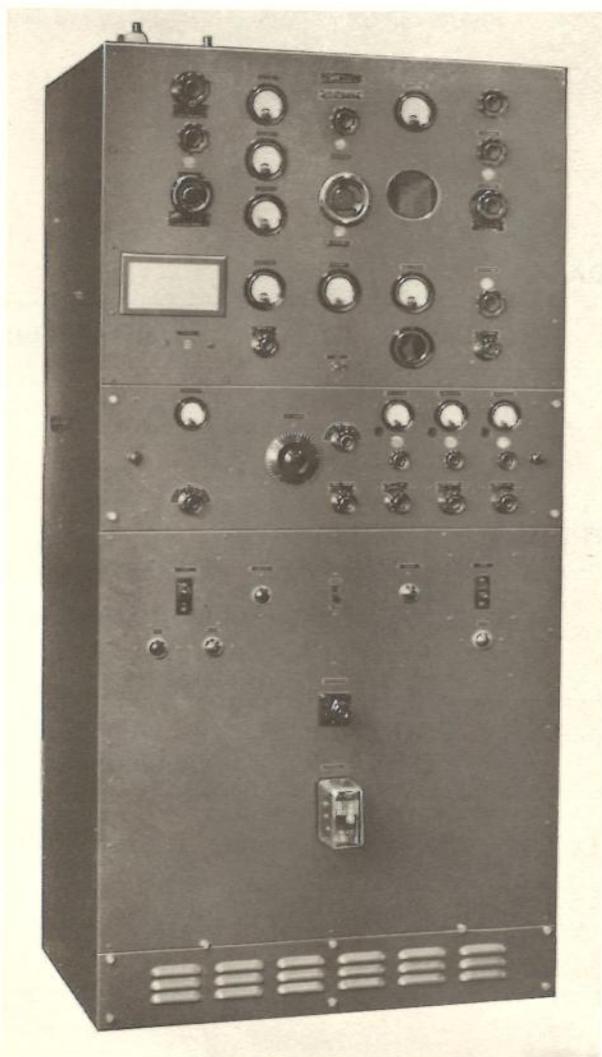
USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C6339

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## FUNCTIONAL DESCRIPTION:

Radio Transmitter BC-339-( ) is a high-frequency, medium power, radiotelegraph transmitting equipment used for fixed-plant, long-range, high-speed communication.

This equipment consists of a floor-type steel cabinet containing the operating components and related apparatus.

It can be operated independently, or as a driver for Power Amplifier BC-340 with Rectifier RA-22 and Water Cooling Unit RU-2 to form a 10-kw radiotelegraph or radioteletype facility.

It has provision for remote starting, stopping, and keying the transmitter over a telephone pair from distances up to 6 miles away, and can be operated under such conditions at speeds of 300 wpm.

It is usually operated with a rhombic, doublet, or similar array, and operates on 220-volt ac.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4.0 to 26.5

*Type Modulation:* AM

*Type of Signal:* Cw; or, with additional equipment, fsk

*Power Output:* 1 kw

*Power Requirements:*

BC-339-A, -B, -C, -F: 220-v 60-cycle 3-phase ac

BC-339-E, -G, -H, -J, -K, -L, -M: 220-v 50/60-cycle 3-phase ac

Key Up: 1,610 w

Key Down: 4,300 w

**AN/FRT-type RADIO TRANSMITTER****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Radio Transmitter BC-339-( ) (Equipment consists of only one major component.)	5820-194-0970	81-5/8 x 33-3/8 x 37-1/8	1,560

**REFERENCE DATA AND LITERATURE:**

TM 11-836

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
6	115	2,350

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
 SPEC &/or DWG: (USA) 71-3309

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Barker & Williamson, Inc.	Bristol, Pa.	4650-P-52-31	\$6,090.64
A. F. Smuckler & Co., Inc.	Brooklyn, N. Y.	3361-P-52-06	5,766.31

## RADIO TRANSMITTER AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5820-189-7053

BC-365-( )

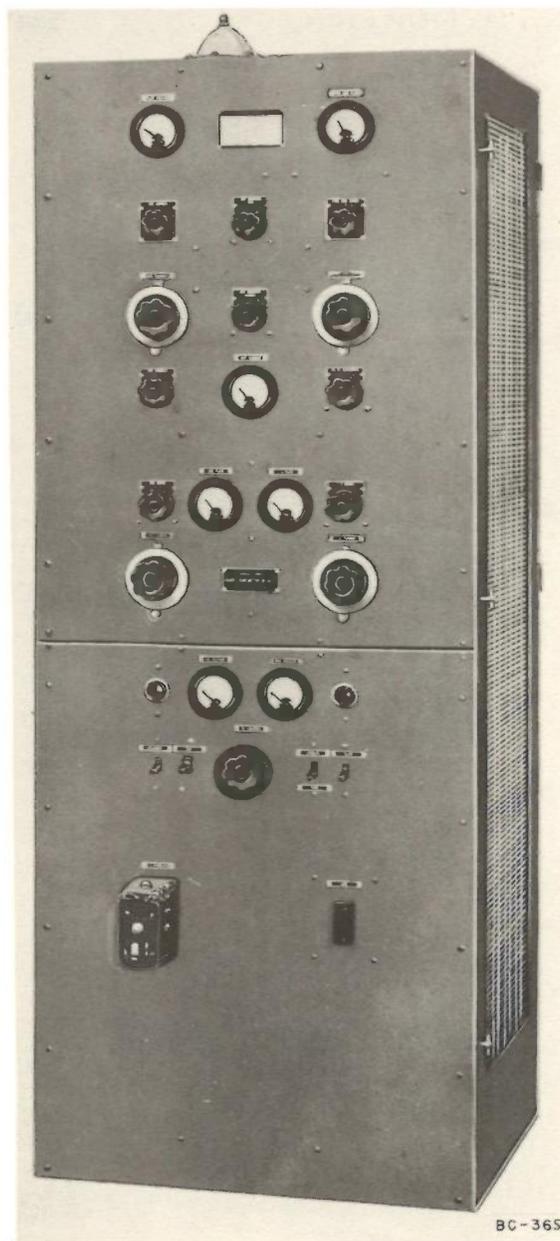
USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C6355F

Used by --  
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## FUNCTIONAL DESCRIPTION:

Radio Transmitter BC-365-( ) is a medium-power, lf and mf, radiotelegraph transmitting equipment used at fixed-plant installations for long-range communication.

This equipment consists of a single floor-type cabinet containing the operating components and control units. The keyer control is mounted on the front panel, and two separate keyer tubes provide for both am and frequency-shift keying.

Its remote control component permits operation of the transmitter over a telephone pair from a point up to 6 miles away.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 0.15 to 0.55

*Type Modulation:* AM

*Type Signal:* Cw, fsk

*Power Output:* 350 w

*Power Requirements:* 1,800 w, 110/220-v 50/60-cycle ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Radio Transmitter BC-365	2C6355	28 x 26 x 76	810
1	Remote Control Unit RM-10	-----	19 x 1-15/16 x 1-3/4	2.25

**REFERENCE DATA AND LITERATURE:**

TM 11-828

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	46	925

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 171-190

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Telemarine Communications Co.	----	8577-P-48-77	

RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-126-8847

BC-401

USA

USN

USAF

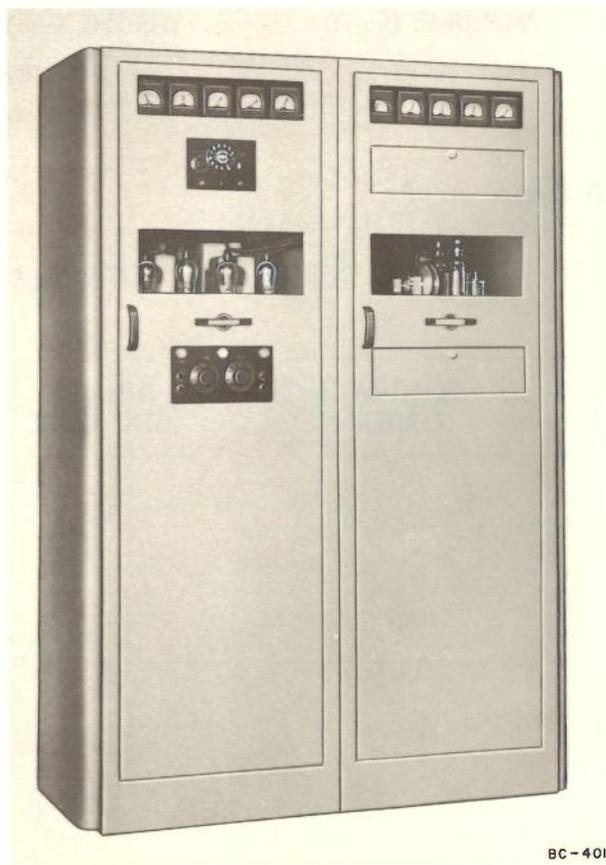
TYPE CLASS: L/Std  
STOCK NO: 2C6381

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BC-401

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter BC-401 is a crystal-controlled, AM (voice and cw), mf and hf radio transmitting equipment used for medium- and long-range communication at permanent installations.

This equipment consists of a steel floor-type cabinet enclosing operating units and components. It operates in 10 preset crystal-controlled channels, has provision for full remote control operation, and uses a double-cage type of antenna or other suitable fixed-plant antenna array.

A receiver and modulation unit and a remote control unit are used with, but are not issued as part of, this equipment.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2 to 18.1

*Type Modulation:* AM

*Type of Signal:* Cw, voice

*Power Output:* 400 w

*Power Requirements:* 220-v 60-cycle 3-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Radio Transmitter BC-401 (Equipment consists of only one major component.)	5820-126-8847	78 x 48 x 24	1,640

MIL-HDBK-161

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**AN/FRT-type** RADIO TRANSMITTER

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REFERENCE DATA AND LITERATURE:

SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 171-97-B

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO TRANSMITTER AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5820-189-7046

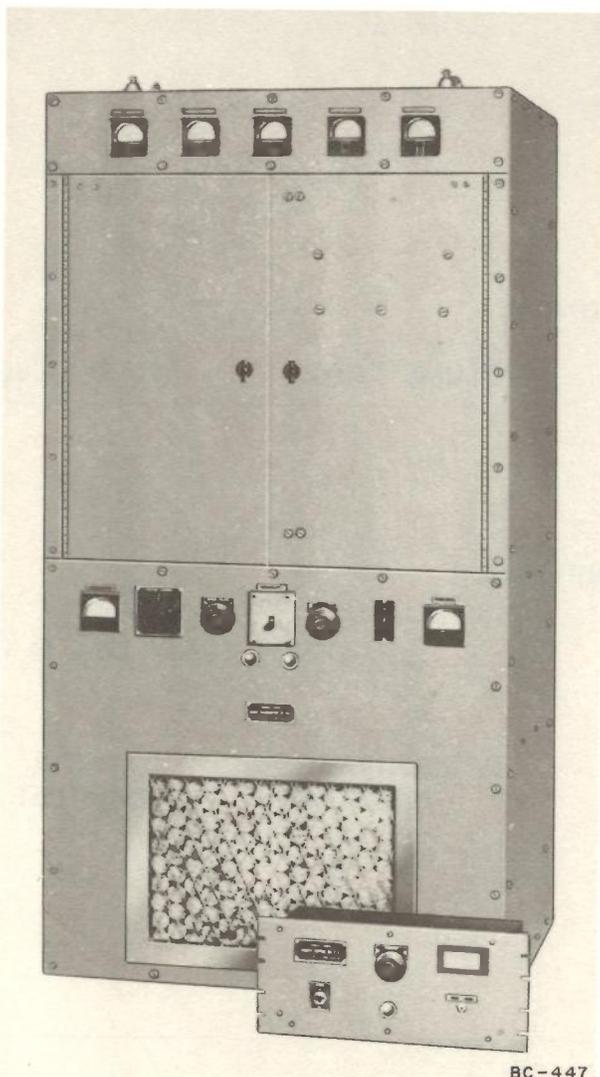
BC-447-( )

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C6387-1

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## FUNCTIONAL DESCRIPTION:

Radio Transmitter BC-447-( ) is a medium-power, long-range, radiotelegraph transmitting equipment operating in the medium- and high-frequency bands at fixed-plant installations.

This equipment consists of a cabinet-inclosed radio transmitter and associated remote control unit, and provides two crystal-controlled channels.

It can be operated from a remote point over a telephone pair, and uses any suitable antenna with a balanced 600-ohm transmission line.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:*

Channel 1: 4.0 to 18.0

Channel 2: 2.0 to 8.0

*Type Modulation:* No provisions

*Type of Signal:* Cw

*Power Output:* 300 w

*Power Requirements:* 1,200 w, 115/230-v 50/60-cycle ac

BC-447

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Radio Transmitter BC-447-( )	5820-189-7046 (USA) 2C6387-1	28-7/16 x 35 x 74	871
1	Remote Control Unit RM-17	(USA) 2C7617		

**REFERENCE DATA AND LITERATURE:**

TM 11-827

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	92	1,247

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 171-191

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## TRANSMITTER AN/FRT-type

25 November 1958

Cognizant Serv: USN FSN:

KWS-1, KWS-1(MOD)

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Transmitters KWS-1 and KWS-1(MOD) (Collins Radio) are compact amateur transmitters, designed for single sideband, continuous-wave and amplitude-modulated operation. They feature filter-type single sideband generation and use a mechanical filter for this purpose.

The power supply cabinet is deck mounted but can be rack mounted, if desired. The exciter and power amplifier may be mounted on a table or on top of the power supply cabinet alongside the operator's table.

The KWS-1 and KWS-1(MOD) are similar except for frequency range and minor design changes.

The following equipment is used with, but is not supplied with, both Transmitters KWS-1 and KWS-1(MOD): one antenna, one speaker control, one Micromatch, Jones Model 263, one telegraph key, and test equipment as required.

In addition, the following equipment is used with, but not supplied with Transmitter KWS-1 only: one microphone assembly with push-to-talk stand and one microphone assembly with plain stand.

## TECHNICAL CHARACTERISTICS:

## Frequency Range in Mc:

## KWS-1:

- Band 1: 3.0 to 4.0
- Band 2: 7.0 to 7.3
- Band 3: 14.0 to 15.0
- Band 4: 21.0 to 22.0

Band 5: 26.4 to 27.4

Band 6: 28.0 to 29.0

Band 7: 29.0 to 30.0

KWS-1(MOD): 3.0 to 6.0, 7.0 to 8.0, and 13.0 to 15.0 in six bands

Type Emission: Cw

Type Modulation: AM, FM

PA Plate Power Input: 1,000 w nominal peak envelope power

Distortion: Third order distortion down more than 35 db with tone frequencies of 900 and 2,500 cps

Calibration: Direct reading in kc on linear scale

Dial Accuracy: Within 200 cps

AF Response: Within  $\pm 3$  db from 200 to 2,900 cps

Frequency Stability Data:

Warm-up:

5 Minutes: 1,000 cps (maximum)

10 Minutes: 500 cps (maximum)

Normal Operation:

20 Minutes: Within 300 cps of starting frequency

30 Minutes: Within 100 cps over 10-minute period

Carrier Suppression: Not less than 50 db

Undesired Sideband Suppression: Not less than 50 db

Spurious Radiation: At least 35 kb down

Impedance Data:

Microphone Input: High impedance

Antenna Connection: 52 ohms

Microphone Patch Connection: 600 ohms

Microphone Patch Signal Level: 0.1 v

Power Requirements: 1,500 w (maximum), 115- or 230-v 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For KWS-1:</i>				
1	Antenna change-over relay			
1 set	Connectors			
1 set	Equipment spare parts			
1	Exciter and power amplifier	-----	10-15/32 x 15-1/2 x 17-3/8	50
1	Microphone assembly, plain stand			
1	Microphone assembly, push-to-talk stand			
1	Power supply	-----	15-1/2 x 17-3/8 x 30	173

MIL-HDBK-161

**AN/FRT-type TRANSMITTER**

**MAJOR COMPONENTS—Continued**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For KWS-1(MOD):</i>				
1	Antenna change-over-relay			
1 set	Equipment spare parts			
1	Exciter and power amplifier	-----	10-15/32 x 15-1/2 x 17-3/8	50
1	Low-pass filter			
1	Plug UG-260/U			
1	Power supply	-----	15-1/2 x 17-3/8 x 30	173
1	Vibration isolator, with adapter plates			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 92787

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN, BuShips  
SPEC &/or DWG:

DESIGN COG: Commercial

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	<i>For KWS-1:</i> NObsr-71045, 26 Sep- tember 1955 NObsr-71287, 27 April 1956 <i>For KWS-1(MOD):</i> NObsr-71289, 27 April 1956	\$2,823.00 with spares

## RADIO TRANSMITTER AN/FRT-type

10 December 1958

Cognizant Serv: USAF FSN:

MW

	USA	USN	USAF
TYPE CLASS:	--	--	Used by
STOCK NO:	--	--	--



## FUNCTIONAL DESCRIPTION:

Radio Transmitter MW is a commercial (Westinghouse) fixed-station AM (voice, cw, or mcw) tone, OFF-ON, or frequency-shift-keying, teletypewriter equipment. A normal installation consists of one rectifier unit, one modulator unit, plus various radio-frequency units to provide for the requirements of the installation.

All RF units require external excitation of 2 w in the range of 2 to 4.5 megacycles from a 70-ohm-impedance coaxial cable. The equipment provides for the connection of up to six RF and/or modulator units to a single rectifier unit at a time; only four such units can be operated simultaneously from one rectifier unit.

The modulator unit provides effective voice transmission with 20-db adjustable volume compression, bypassed when required, and a peak limiter which prevents overmodulation on either the positive or the negative peaks of the modulation envelope.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30 in six bands: band 1, from 2 to 3.46; band 2, from 3.46 to 6.0; band 3, from 6.0 to 10.4; band 4, from 10.4 to 18; band 5, from 18 to 24; and band 6, from 24 to 30

*Type of Modulation:* AM

*Type of Signal:* Cw, mcw, tone, OFF-ON, and frequency-shift-keying teletype

*Power Output:*

AM: 2.5 kw, at all frequencies up to 24 mc; slightly less from 24 to 30 mc

Cw: 3 kw

*Power Requirements:* 24 kw, 210- to 250-v 50/60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Rectifier Unit Style 1474264 Cabinet	-----	24-1/4 x 76 x 24	650
1	RF Unit Style 1474265 Cabinet	-----	12-1/4 x 76 x 24	350
1	Modulator Unit Style 1474266 Cabinet	-----	12-1/4 x 76 x 24	340
1	Power Supply Style 1353091	-----	19 x 14 x 9-1/4	57
1	Crystal Oscillator Style 1353089	-----	8-1/4 x 5 x 6-5/16	3
1	Plate Transformer T-112	-----	31 x 22 x 47-1/2	1,100

MIL-HDBK-161

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**AN/FRT-type RADIO TRANSMITTER**

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**REFERENCE DATA AND LITERATURE:**

Instruction Book CF-1624

**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	70	3,000

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**PROCUREMENT DATA**

PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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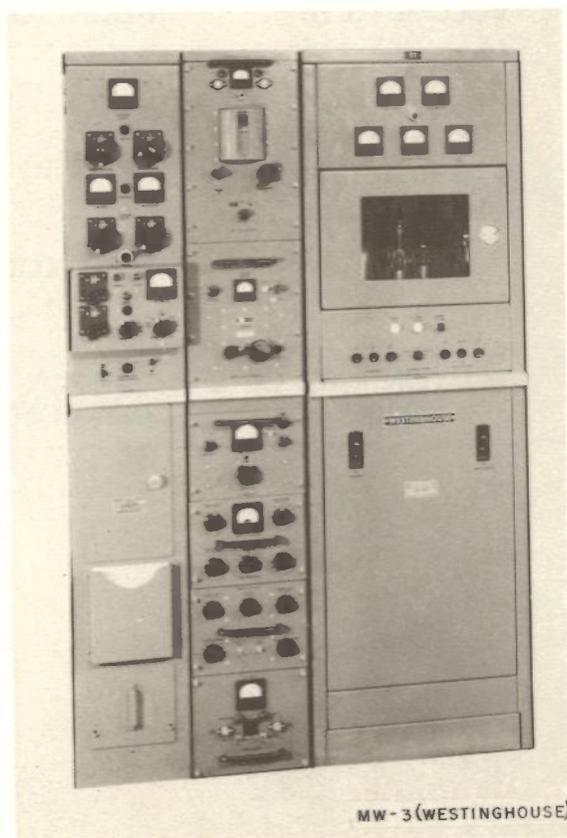
## RADIO SET AN/FRT-type

5 December 1958

Cognizant Serv: FSN:

MW-3

	USA	USN	USAF
TYPE CLASS:	Std	--	Used by
STOCK NO:	--	--	--



## FUNCTIONAL DESCRIPTION:

Radio Set MW-3 is a low-distortion, single-sideband transmitter operating over the frequency range of 2 to 30 mc. It will accommodate two audio channels, each in the frequency range of 300 to 6000 cps. This permits each channel to handle audio tones above 3000 cps for telegraph functions.

This equipment also provides for operation as an AM transmitter to operate with appropriate AM receivers.

This equipment is a commercial equipment (Westinghouse Electric Co., model MW-3) procured for military use.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 30

*Type of Modulation:* AM

*Type of Signal:* Voice of tone

*Power Output:* 2.5 kw (peak)

*Power Requirements:* 208/230/250-v 50/60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	SSB Exciter	(USAF) 472-D-006		
1	Linear Amplifier	(USAF) 307P715G01		
1	Rectifier	FSN) 5820-504-2665		

MIL-HDBK-161

**AN/FRT-type** RADIO SET

REFERENCE DATA AND LITERATURE:

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE:  
SPEC &/or DWG:

DESIGN COG:

CONTRACTOR

LOCATION

CONTRACT OR  
ORDER NO.

APPROX  
UNIT COST

Westinghouse Electronics Corp.

Baltimore, Md.

RADIO TRANSMITTER ASSEMBLY **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-189-7031

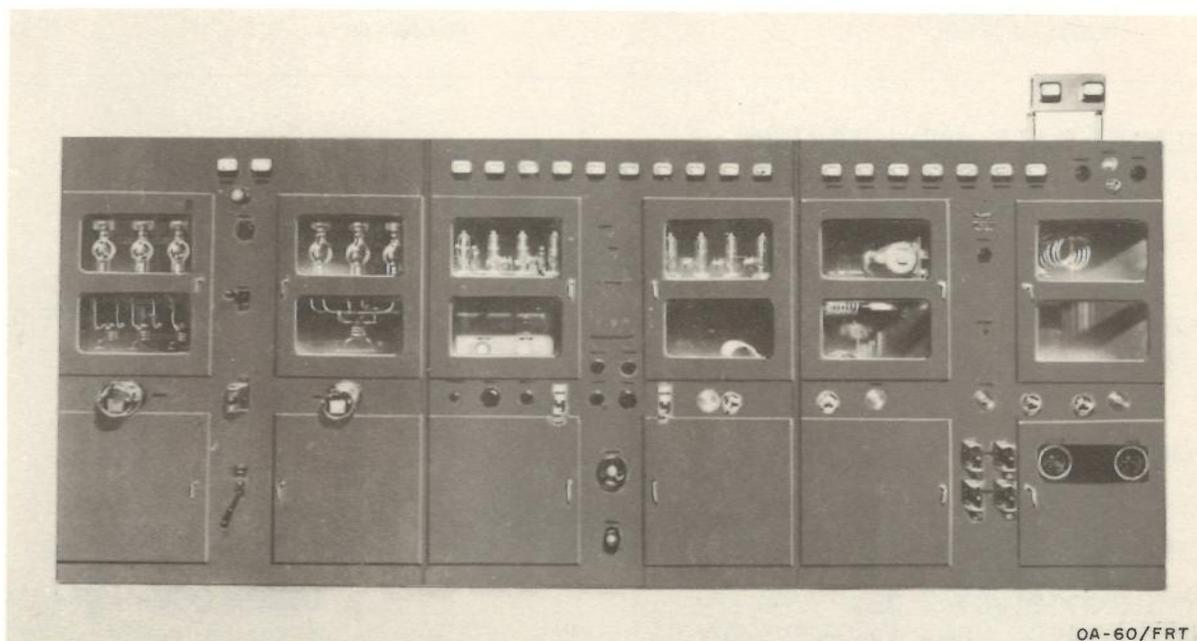
OA-60( )/FRT

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 2C6893



OA-60/FRT

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter Assembly OA-60( )/FRT is a high-power, AM high-frequency, radio transmitting equipment used for point-to-point long-range communication applications at large fixed stations.

This equipment essentially consists of Press Wireless PW-40 transmitter, and is an assembly of operating units and components, rack- and panel-mounted in floor-type cabinets. It includes a high-voltage rectifier, RF exciter, RF power amplifier sections, and water cooling, crystal-control, and related accessory and auxiliary items.

It can be used with a single-sideband transmitter as a linear amplifier, and provides a single preset operating channel.

It is used for high-speed cw, and for radioteletype com-

munication, and can be controlled locally, or from a remote operating site, by appropriate remote control equipment.

It uses a 600-ohm transmission line operating into a rhombic or other high-power antenna system, has a power output of about 40 kw and operates from a 100-kw source of 230-volt 3-phase ac.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:*

OA-60A/FRT: 5.3 to 21

OA-60B/FRT: 4 to 21

*Type Modulation:* AM

*Type of Signal:* Cw, fsk, or single-sideband

*Power Output:* 40 kw

*Power Requirements:* 100 kw, 240-v 3-phase ac

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTER ASSEMBLY

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	High-voltage rectifier	-----	82 x 56 x 72	4,860
1	RF exciter	-----	82 x 56 x 72	3,090
1	RF power amplifier	-----	82 x 56 x 72	3,290
1	Water-cooling unit	-----	66 x 66 x 60	1,093

REFERENCE DATA AND LITERATURE:

TM 11-835

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
27	1,665.5	25,588

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: Press Wireless PW-40A, B

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Press Wireless	West Newton, Mass.		

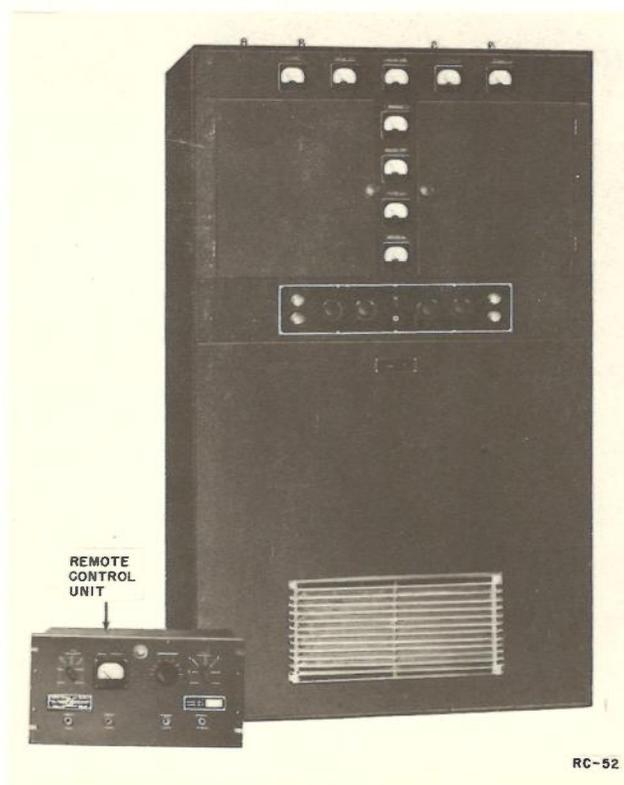
## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5805-164-7086

RC-52-( )

	USA	USN	USAF
TYPE CLASS:	L/Std	--	--
STOCK NO:	2C6903-52	--	--



## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment RC-52-( ) is a medium range, medium- and high-frequency fixed plant radio transmitting station equipment used for point-to-point communication, air-warning and similar applications by means of AM (voice, cw, or mew) signals.

This equipment consists of a single cabinet-inclosed unit and a remote control equipment plus microphone and accessory items. It covers its frequency range (1.5 to 7 mc) in four bands and operates in two preselected channels.

Provision is made for selection of specific types of emission from the remote operating or control point, and for automatic starting and stopping of the equipment by remote control.

A rhombic or doublet antenna is used, and power is derived from a source of 115-v or 230-v ac.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 1.5 to 7.0 in 4 bands

*Type Modulation:* AM

*Type of Signal:* Voice, cw and mew

*Power Output:* 300 w

*Power Requirements:* 115/230-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
1	Microphone M-48/U	2B1657	8 high x 5 diameter	
1	Radio Transmitter BC-452	2C6392	29 x 24 x 72	
1	Remote Control Unit RM-22	2C7622	17-3/8 x 14-1/8 x 10-1/2	

## REFERENCE DATA AND LITERATURE:

MIL-HDBK-161

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**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	50	1,750

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 171-208

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Aireon Manufacturing Co.	Kansas City, Kans.		

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## RADIO SET AN/FRT-type

20 November 1958

Cognizant Serv: USA FSN:

BC-640

SCR-643

USA

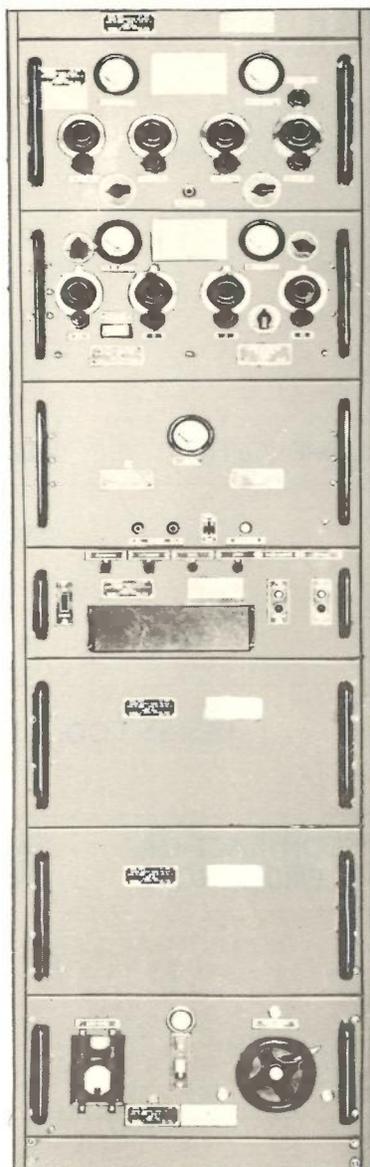
USN

USAF

TYPE CLASS: --

Std

STOCK NO: --



SCR-643

## FUNCTIONAL DESCRIPTION:

Radio Set SCR-643 is a complete fixed station, ground installed, radio transmitting equipment for short-distance point-to-point and ground-to-air communication. It normally is used to provide two transmitting channels for vhf aircraft control net systems.

This equipment consists of two transmitters, each providing one preset, crystal-controlled voice or tone-modulated channel in the vhf range. (Only one of the two transmitters is shown on the accompanying illustration.)

This equipment can be controlled locally or with additional equipment (such as Control Unit RM-27), it can be remotely controlled at distances of up to two miles. The transmitter output matches the 72-ohm coaxial cable normally supplied as part of Antenna Equipment RC-81.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 100 to 156

*Type of Modulation:* AM

*Type of Signal:* Voice or mcw

*Number of Channels:* Simultaneous operation on two preset channels (one preset channel per transmitter)

*Power Output:* 50 w

*Power Requirements:* 5.5 kva (with heaters) or 2.5 kva (without heaters), 110-120-v 50/60-cycle 1-phase ac

MIL-HDBK-161

**AN/FRT-type RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna AM-56-B	-----	43-1/2 x 188 x 2-3/4	4,078
	or			
1	Antenna Mast MA-6	-----	43-1/2 x 188 x 25-3/4	4,078
2	Antenna Equipment RC-81-A	-----	28 x 12 x 38	4
1	Monitoring Equipment RC-80-A	-----	20-1/2 x 72 x 3	134
2	Power Unit PE-89-A	-----	28 x 41 x 60	1,140
1	Shelter HO-3	-----	48 x 66 x 60	2,000
2	Transmitter BC-640-Z	-----	21-1/4 x 72-3/8 x 20	

**REFERENCE DATA AND LITERATURE:**

TO 40SCR-643-2

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
16	500	10,000

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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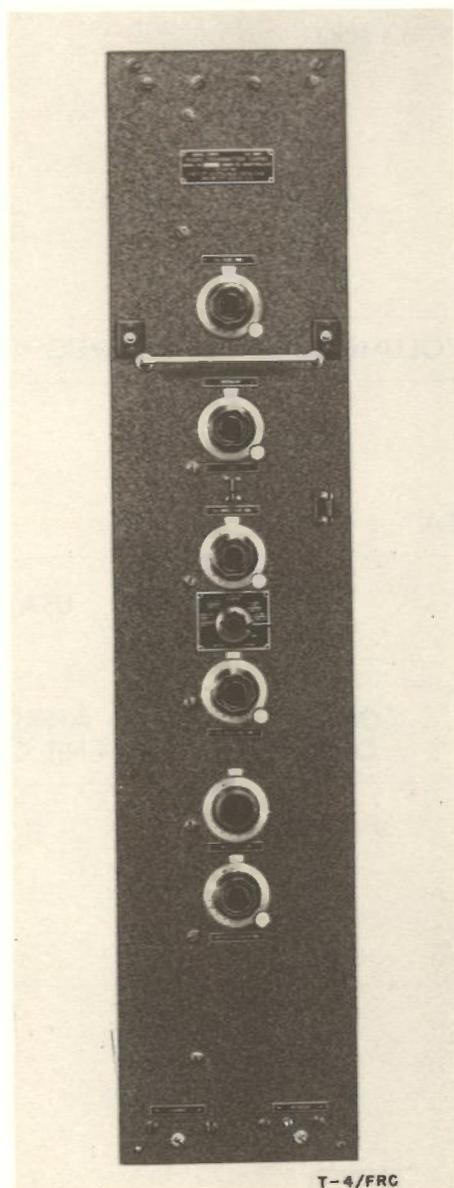
## RADIO TRANSMITTER AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5820-194-0966

T-4( )/FRC

	USA	USN	USAF
TYPE CLASS:	Std	--	L/Std
STOCK NO:	2C6900-4	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-4( )/FRC is a crystal-controlled, medium frequency, AM (voice, cw, mcw, and frequency-shift keying) transmitting equipment, for point-to-point or ground-to-air communication in the hf band, at fixed plant applications.

This equipment consists of a radio transmitting inclosed in a steel floor-type cabinet also containing the low-voltage power supply unit. It can be operated from a distant location by means of appropriate remote-control equipment, and is provided with a selector switch for selection of crystal or master oscillator control, or for radioteletype communication.

For cw transmission a power supply unit alone must be added; for voice communication a power supply unit and a modulator are required. It may be used with three other transmitters, a modulator, and suitable power supply equipment to constitute a multichannel station equipment.

It operates into a delta-matched doublet, a rhombic, or an equivalent antenna system, and requires a 400- or 600-ohm transmission line.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2 to 18

*Type Modulation:* AM (with Modulator Unit MD-1/FRC)

*Type Signal:* Cw, mcw, frequency shift keying, and voice with additional equipment

*Power Output:* 400 w

*Power Requirements:* 220-v 50/60-cycle ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Radio Transmitter T-4/FRC (Equipment consists of only one major component.)	2C6900-4	21 x 24 x 12	330

**REFERENCE DATA AND LITERATURE:**

TM 11-820

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3333

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Espey Manufacturing Co., Inc.	New York, N. Y.	21414-P-50-06	\$1,250.00

## RADIO TRANSMITTER AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5820-240-0545

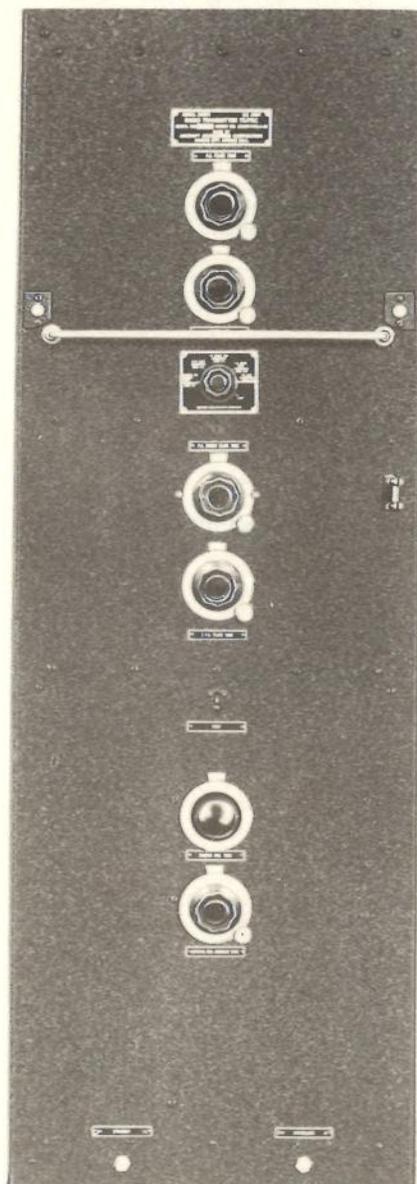
T-5( )FRC

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C6900-5A



T-5/FRC

## FUNCTIONAL DESCRIPTION:

Radio Transmitter T-5( )/FRC is a long-range, high-power, medium- and low-frequency, crystal-controlled transmitting station equipment. It can be used for communication by AM (voice using additional equipment, cw, mew, or frequency-shift keying) signals at fixed plant installations.

This equipment consists of a single transmitting unit and a tuning house, and it is used principally as the low-frequency RF unit of a multichannel radio system.

It operates into a 600-ohm transmission line that feeds a vertical radiator, or a Bevrige-type antenna.

A separate antenna tuning unit is provided to load the antenna. This unit is installed at the antenna end of the RF transmission line.

A low-voltage power supply unit is contained within the equipment cabinet and the high-voltage is furnished by a separate power supply, not furnished as part of this equipment. It requires 220-volt ac power.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 0.15 to 0.55

*Type Modulation:* AM

*Type of Signal:* Cw, mew, fsk, and voice with additional equipment

*Power Output:* 600 w

*Power Requirements:* 220-v 50/60-cycle ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna tuning unit	2C80101-77	49-1/4 x 38-1/4 x 39-1/8	193
1	Radio Transmitter T-5/FRC	-----	61 x 24 x 18	450

**REFERENCE DATA AND LITERATURE:**

TM 11-820

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	57	643

**PROCUREMENT DATA**

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: (USA) 71-3333, 171-225

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Espey Manufacturing Co. Inc.	Brooklyn, N Y.	21414-P-50-06	\$1,440.00

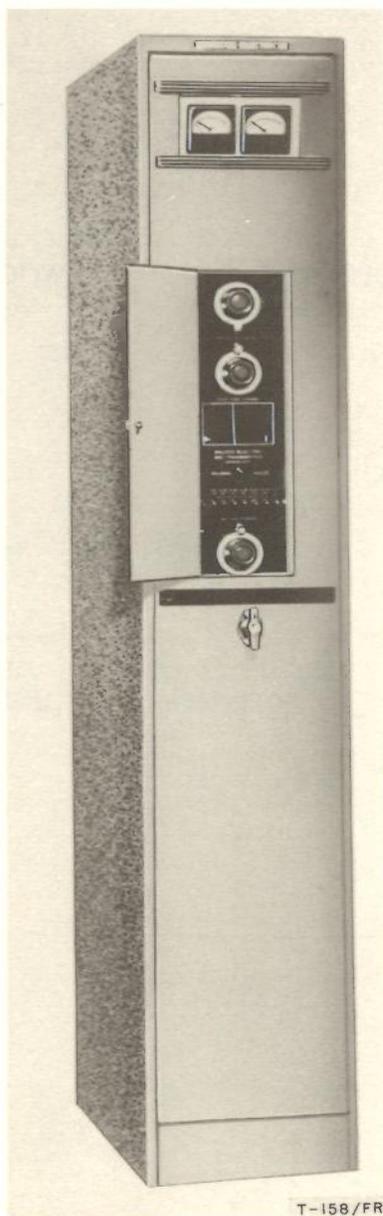
RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-194-0969

T-158( )/FRT

	USA	USN	USAF
TYPE CLASS:	Std	--	Std
STOCK NO:	2C6840	--	--



T-158/FRT

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-158( )/FRT is crystal-controlled, AM (voice, cw, mcw, and frequency-shift keying) medium-power, transmitting equipment. It is used for fixed-plant ground-to-air, and point-to-point long-range communication in the medium- and high-frequency range.

This equipment consists of a radio transmitter, exciter unit, and coil set inclosed in a floor-type cabinet and includes a radioteletype modification kit. The rectifier and modulator are not supplied as part of this equipment.

It is usually operated at a distant site by means of remote control equipment, and can use any 600-ohm antenna.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

T-158, -158A, -158B/FRT: 2 to 18

T-158C/FRT: 2 to 20

T-158D/FRT: 2 to 26

*Type Modulation:* AM*Type of Signal:* Cw, voice, composite transmission, fsk*Power Output:* 2.5 kw*Power Requirements:* 15 kva, 220-v 50/60-cycle 3-phase ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Coil set	-----	-----	6.7
1	Exciter unit	-----	8-3/4 x 8-1/2 x 17-1/4	27
1	Radio Transmitter T-158/FRT	(FSN) 5820-194-0969 (USA) 2C6840	73-3/4 x 26-1/4 x 12-1/4	365

**REFERENCE DATA AND LITERATURE:**

TM 11-2671

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	51.6	732

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3286

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Wilcox Elec. Co., Inc.	Kansas City, Mo.	2546-P-53-36	\$2,219.09

RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-126-8834

T-159/FRT

USA

USN

USAF

TYPE CLASS:  
STOCK NO:L/Std  
2C6632RA-8--  
--Std  
1760-222-650-000**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-159/FRT is a low-power, AM (voice and cw) radio transmitting equipment used for point-to-point, homing, and fixed or mobile station use in the medium- and high-frequency bands.

This equipment consists essentially of a commercial (Collins Model 32 RA-7, -7, or -9) table-model transmitter contained in a steel cabinet. The complete installation includes a microphone and a telegraph key. It operates in four preset channels and may be keyed up to speeds of 60 wpm.

It is designed to work into unbalanced antennas or trans-

mission lines, having a resistive impedance of 30 to 1,200 ohms and a reactive impedance of up to 300 ohms.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.5 to 15.0

*Type Modulation:* AM

*Type of Signal:* Voice and cw

*Power Output:*

Voice: 50 w

Cw: 75 w

*Power Requirements:* 400 w, 115-v 50/60-cycle 1-phase ac



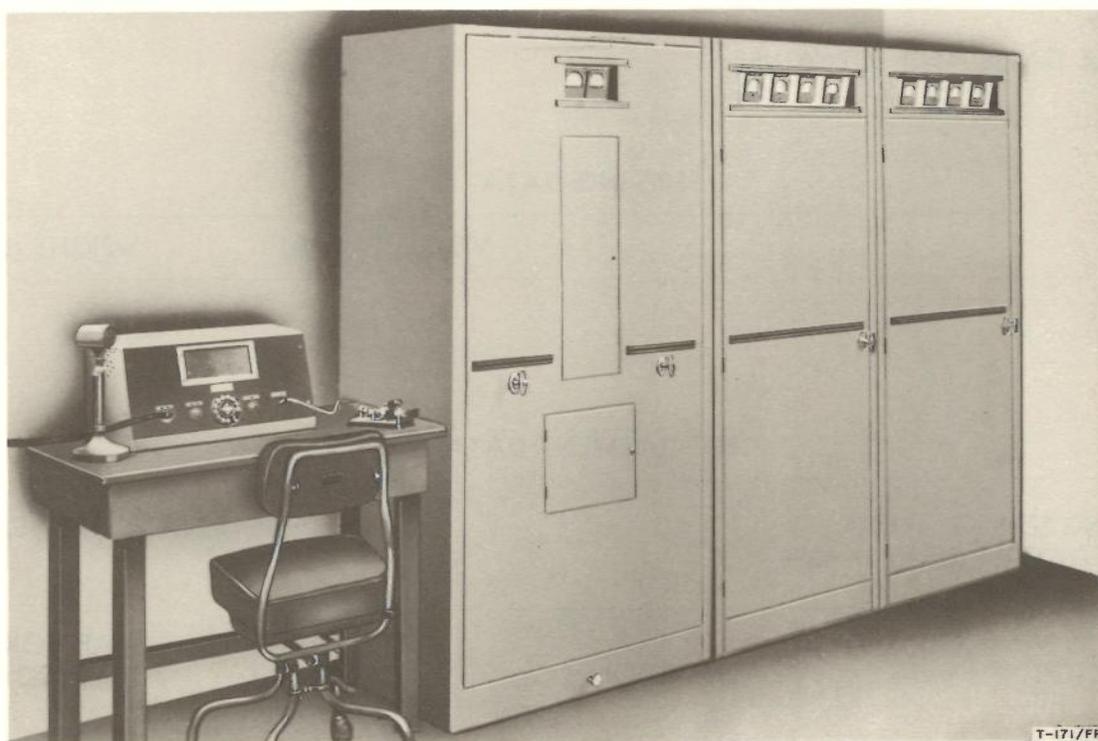
RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: T-171/FR: 5820-126-8852  
T-171A&B/FR: 5820-126-8851

T-171( )/FR

	USA	USN	USAF
TYPE CLASS:	Std	--	Std
STOCK NO:	2C6900-171	--	--



T-171/FR

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-171( )/FR is an IF, long-range, AM (voice and cw) radio transmitting equipment used primarily for handling large traffic loads in fixed station application. It may also be used for homing.

This equipment consists essentially of a large floor type unit transmitter that is used with control and power components to form a complete radio transmitting station.

It may be operated from a distant point by means of remote control equipment and has provision for automatic keying.

The T-171/FR provides voice and cw; the T-171A/FR, cw, remote keying, and voice; and the T-171B/FR, frequency-shift keying and voice.

Power is derived from special power rectifier and supply units.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 0.125 to 0.525

*Type Modulation:* AM

*Type of Signal:* Cw, voice

*Power Output:* 2,400 w

*Power Requirements:*

- 1.0 amp at 4,000-v dc
- 0.125 amp at 2,000-v dc
- 0.1 amp at 500-v dc
- 0.05 amp at 500-v dc
- 1.0 amp at 12-v dc



## RADIO TRANSMITTER AN/FRT-type

1 July 1958

Cognizant Serv: USA FSN: 5815-351-3323

T-172/FR

USA

USN

USAF

TYPE CLASS:

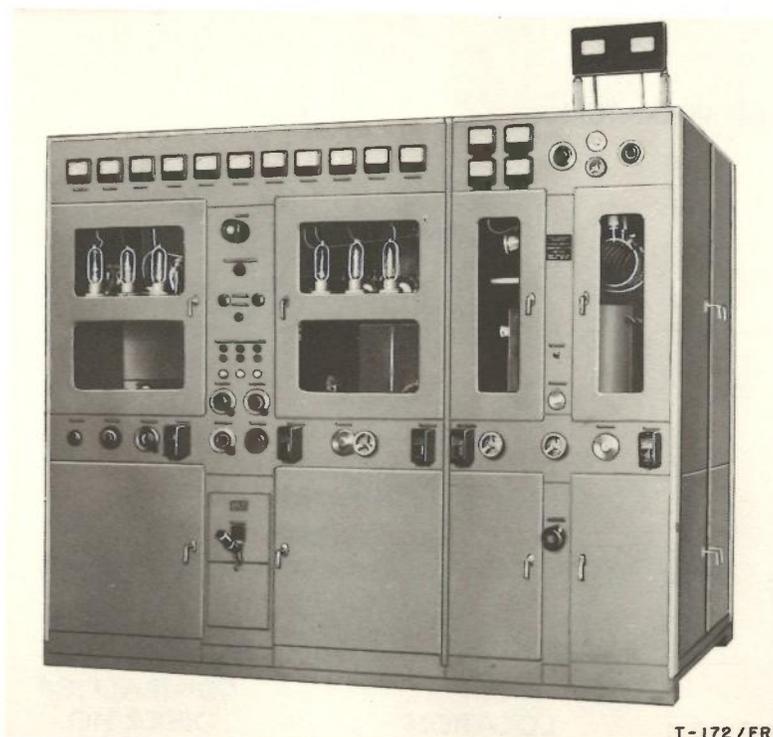
Std

STOCK NO:

2C6890

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T-172/FR

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-172/FR is a crystal-controlled, long-range, high-frequency, transmitting equipment used for cw and frequency-shift keyed communications in fixed-plant applications.

This equipment consists of a rectifier, exciter, power amplifier, and related units inclosed in a large floor-type steel cabinet as a single unit. It is capable of cw transmission at the rate of about 350 wpm; and by means of supplementary equipment, it can be used in radioteletype communication.

This transmitter generally uses a rhombic antenna system having a 500- to 600-ohm, two-wire transmission line, and can be operated from a distant operating point by means of appropriate remote control components. It is the military version of Press Wireless PW-15A.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 21

*Type of Signal:* Cw and frequency shift keying

*Power Output:* 15 kw

*Power Requirements:* 35 kw, 220-v 60-cycle 3-phase ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitter T-172/FR	(FSN) 5815-351-3323 (USA) 2C6890	108 x 84-1/2 x 56-1/4	6,948

(Equipment consists of only one major component.)

**REFERENCE DATA AND LITERATURE:**

TM 11-821

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
12	885.4	11,227

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: 5840-228-3116

T-173/FR

USA

USN

USAF

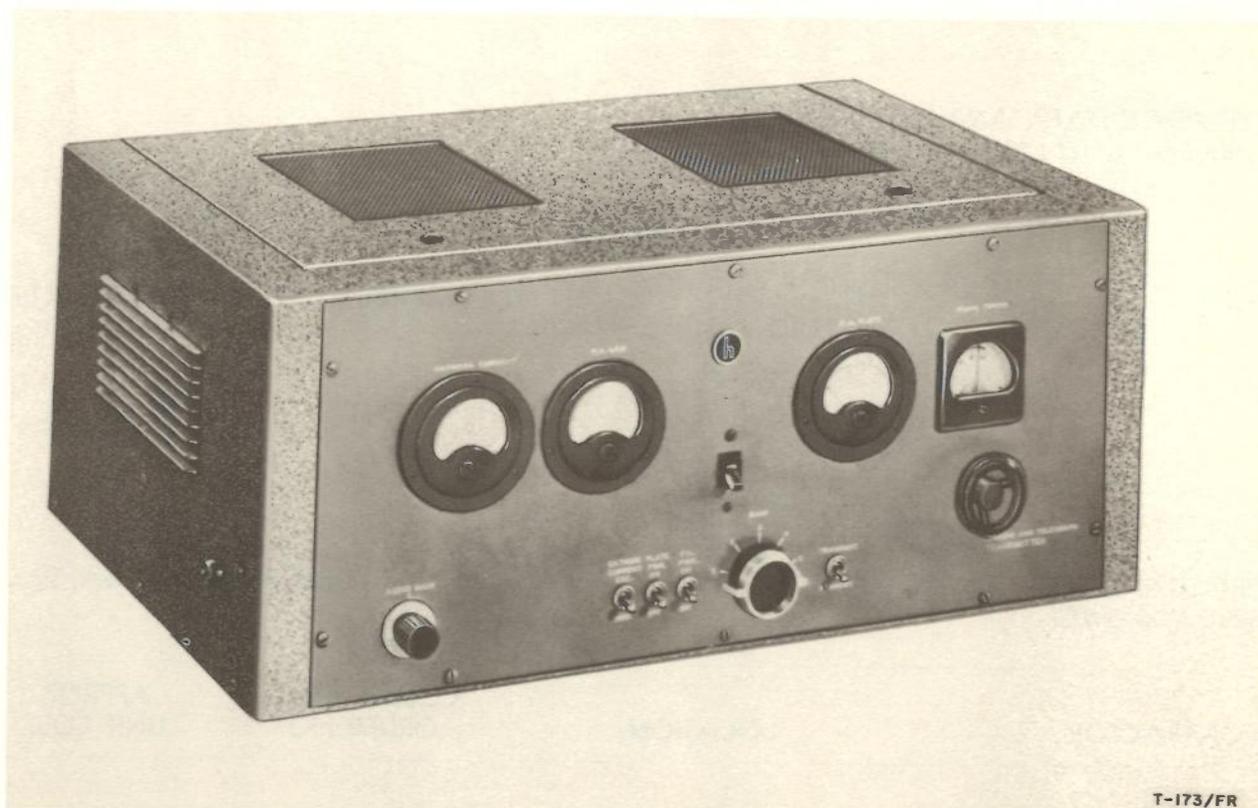
TYPE CLASS: L/Std  
STOCK NO: 2C714

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**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-173/FR is a low-power, high-frequency, AM (voice and cw), transmitting equipment used in point-to-point communication in fixed-plant applications.

This equipment consists essentially of a commercial (Hallicrafter HT-9) table-model transmitter, a microphone, telegraph hand key, and antenna components. It includes a set of crystals by means of which five channels can be preset; there is an individual crystal for each channel. Band switching is accomplished by means of interchangeable plug-in coils and the band switch on the front panel.

This transmitter can be operated with conventional antenna systems.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 1.7 to 30.0

*Type Modulation:* AM

*Type of Signal:* Voice, cw

*Power Output:*

Voice: 75 w

Cw: 100 w

*Power Requirements:* 500 va, 105-125-v 50/60-cycle ac

**AN/FRT-type RADIO TRANSMITTER****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitter T-173/FR	(FSN) 5840-228-3116 (USA) 2C714	29-1/8 x 12-1/2 x 20-1/2	120
(Equipment consists of only one major component.)				

**REFERENCE DATA AND LITERATURE:**

Instruction Book for Hallicrafter Radio Transmitter, Type HT-9.

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	4.17	125

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
 SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

Cognizant Serv: USA FSN: 5820-126-8848

T-177/FR

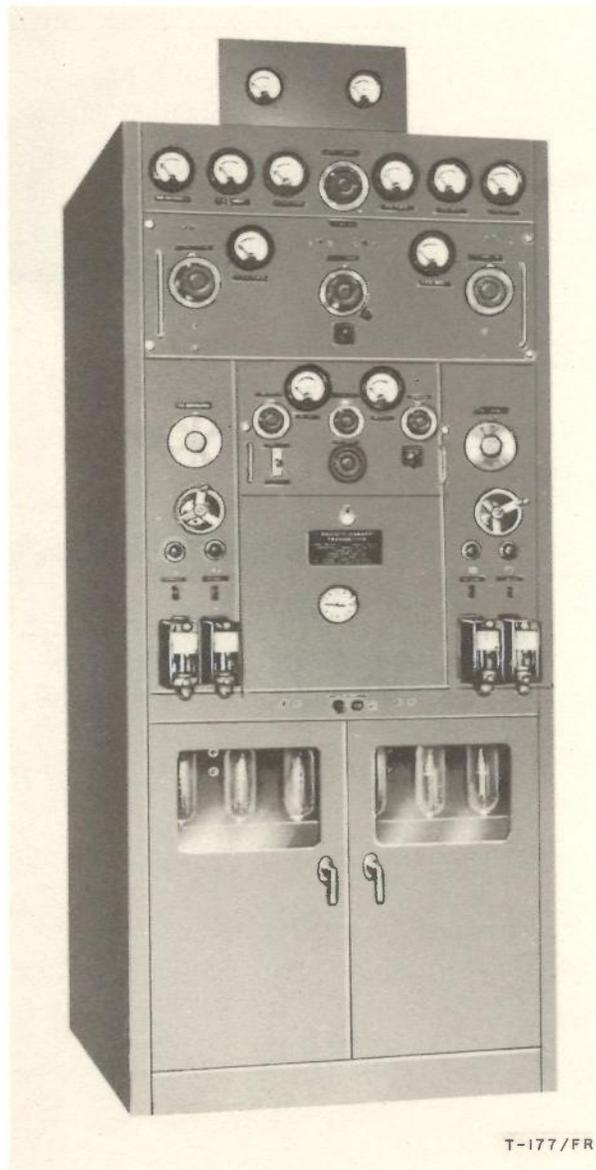
USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 2C6892

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T-177/FR

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-177/FR is a medium-power, hf, long-range radio transmitting station equipment. It is used for cw or frequency-shift radioteletype communication at fixed plant installations.

This equipment consists essentially of a commercial (Press Wireless Model PW918A) radio transmitter and is crystal or master-oscillator controlled. It has provision for electronic keying and for connection of Carrier Terminal OS-5/FC. Internal frequency-shift and remote control provisions are included.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2 to 23

*Type of Signal:* Cw, frequency shift keyed radioteletype

*Power Output:* 2.5 kw

*Power Requirements:* 11.8 kva, 220-230-v 50/60 cycle 3-phase ac

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitter T-177/FR (Equipment consists of only one major component.)		77 x 33 x 36	1,717

REFERENCE DATA AND LITERATURE:

TM 11-834

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
8	196.8	3,326

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-10207

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Wickes Engineering & Construction Co.	Camden, N. J.	21479-P-50-7	\$14,432.95

RADIO TRANSMITTER **AN/FRT-type**

1 July 1958

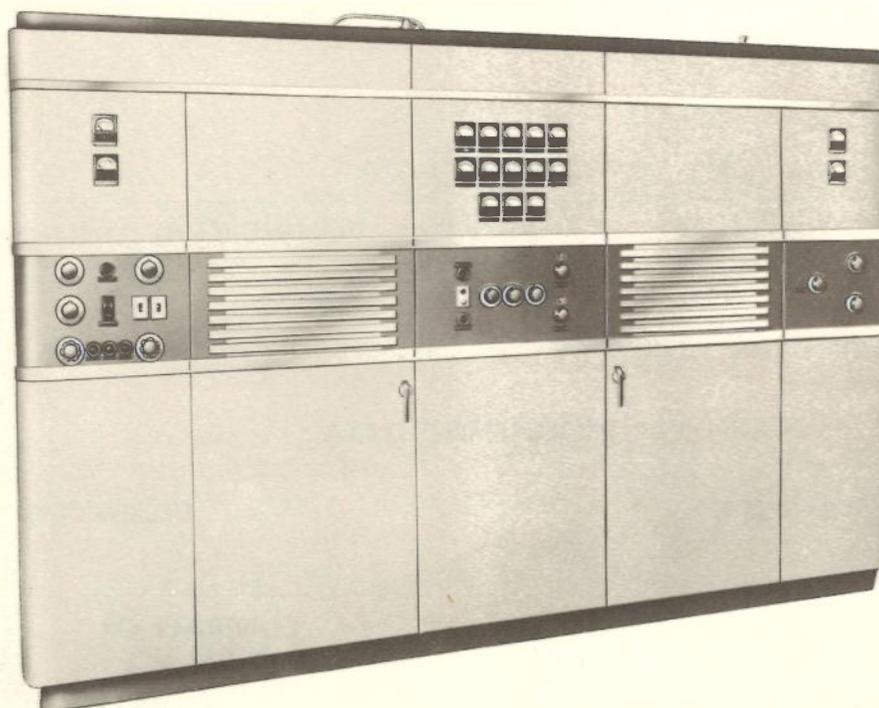
Cognizant Serv: USA FSN:

T-180/FR

USA

USN

USAF

TYPE CLASS: Std  
STOCK NO: --

T-180/FR

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-180/FR is a long-range high-power, AM (voice) transmitting equipment used for communication in the mf and hf bands in fixed-station applications for point-to-point, ground-to-air, and broadcast purposes.

This equipment is a crystal-controlled transmitter providing high-level, class B modulation and class C final.

It consists essentially of an assemblage of control and operating components inclosed in floor-type steel cabinets.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc: 2 to 22*

*Type Modulation: AM*

*Type of Signal: Voice*

*Power Output: 7.5 kw*

*Power Requirements: 220-v 50/60-cycle 3-phase ac*

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitter T-180/FR (Equipment consists of only one major component.)		122 x 90 x 49	

REFERENCE DATA AND LITERATURE:

(RCA) Instruction Book

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	338.25	

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO TRANSMITTER AN/FRT-type

1 December 1958

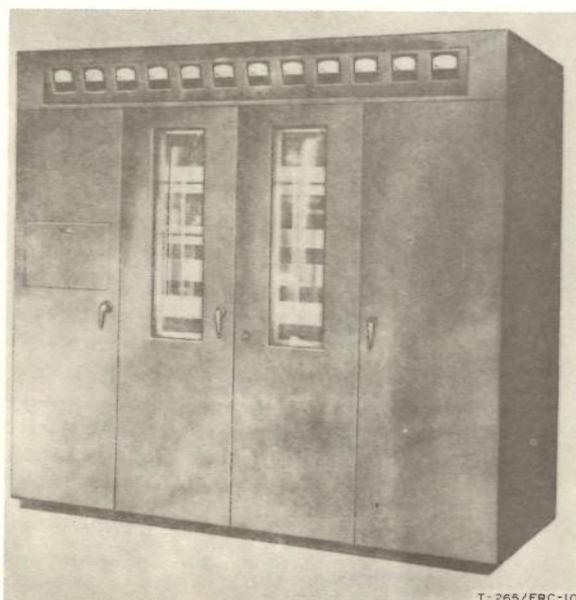
Cognizant Serv: USA FSN: 5820-249-6609

T-265/FRC-10

USA

USN

USAF

TYPE CLASS: Std  
STOCK NO: --Used by  
--

T-265/FRC-10

## FUNCTIONAL DESCRIPTION:

Radio Transmitter T-265/FRC-10 is the transmitting component of the complete single-sideband Radio Set AN/FRC-10B. It is an AM, ssb, twin-channel, suppressed-carrier transmitter designed for long-range point-to-point communication, and operates in the frequency range of 4 to 23 mc. It also can be arranged to transmit conventional double sideband signals.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4 to 23*Type Modulation:* Amplitude, ssb or dsb*Power Output:*

Single Sideband Envelope: 4 kw

Double Sideband Carrier: 1 kw

*Spurious Signal Suppression:* 43 db below envelope power output*Tone Volume:*

Speech Input Terminals: -13 to +20 dbm (+3 dbm normal)

Test-Tone Input Terminals: 0 to +20 dbm (0 dbm normal)

*Vf Input Impedance:* 600 ohms*Frequency Accuracy:*At 4 Mc:  $\pm 0.0011\%$  or lessAt 23 Mc:  $\pm 0.0026\%$  or less*Power Requirements:* 10 kw, 230-v 50/60-cycle 3-phase ac; and 1 kw, 115-v 50/60-cycle 1-phase ac auxiliary power

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Ammeter, Weston Model 425	-----	2 x 2-3/4 x 3-1/4	
1	Distortion measuring equipment	-----	17 x 22 x 84	
1	Generator KS-5472-01	-----	3-15/16 x 3-15/16 x 8	
1	Multimeter TS-352/U	-----	6-1/4 x 8-3/4 x 11-1/4	
1	Radio Transmitter T-265/ FRC-10	-----	42-1/2 x 84 x 84	5,800
1	Test Set 81AW	-----	1-3/4 x 3-1/8 x 4-5/8	
1	Tube Tester I-177-B	-----	5-1/4 x 8-1/2 x 15-1/2	
1	Variac, General Radio Co. V5HMT	-----	4-15/16 x 5 x 6-7/8	
1	Voltage Regulator, Superior Electric Co. EM6210Y or S344	-----	18-5/8 x 23-1/4 x 39-3/8	
1	Voltmeter, Weston Model 433	-----	3-1/2 x 5-1/16 x 6-1/32	

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**REFERENCE DATA AND LITERATURE:**

TM 11-814, NAVSHIPS 92152

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
31	595.3	10,009

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	New York, N. Y.	TASSA Order 1-0279 Philadelphia, 49 Contract MIPR-R-51- 880-19390, 19816	

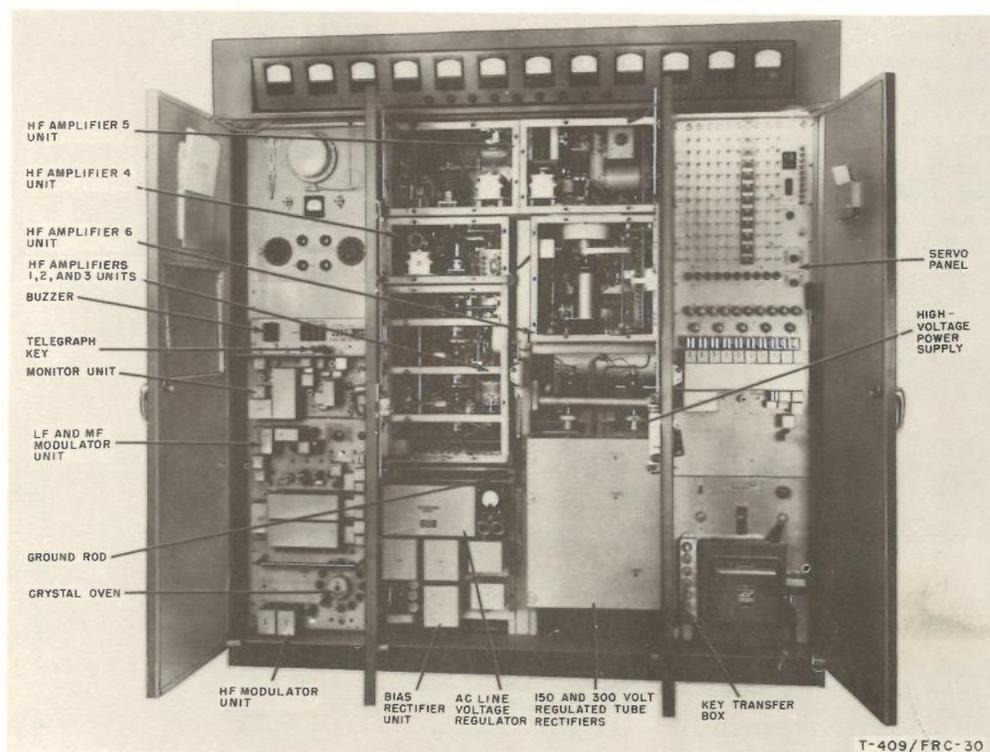
## RADIO TRANSMITTER AN/FRT-type

1 December 1958

Cognizant Serv: USA FSN: 5820-545-7272

T-409/FRC-30

	USA	USN	USAF
TYPE CLASS:	Std	Used by	--
STOCK NO:	--	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter T-409/FRC-30 is the transmitting component of the complete single-sideband Radio Set AN/FRC-30. It is an AM., ssb, twin-channel, suppressed-carrier transmitter designed for long-range point-to-point communication, and operates in the frequency range of 4.5 to 28 mc. It also can be arranged to transmit conventional double sideband signals.

This equipment is an improved version of Radio Transmitter T-265/FRC-10, and is similar in appearance to that equipment. The major operational difference between the two transmitters is the frequency range covered.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4.5 to 28.0

*Type Modulation:* Amplitude, ssb or dsb

**Power Output:**

Single Sideband Envelope: 4 kw

Double Sideband Carrier: 1 kw

*Spurious Signal Suppression:* 43 db below envelope power output

**Tone Volume:**

Speech Input Terminals: -13 to +20 dbm (+3 dbm normal)

Test-Tone Input Terminals: 0 to +20 dbm (0 dbm normal)

*Vf Input Impedance:* 600 ohms

**Frequency Accuracy:**

At 4 Mc:  $\pm 0.0011\%$  or less

At 23 Mc:  $\pm 0.0026\%$  or less

*Power Requirements:* 10kw, 230-v 50/60-cycle 3-phase ac; and 1 kw, 115-v 50-60-cycle 1-phase ac auxiliary power

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Ammeter	-----	2 x 2-3/4 x 3-1/4	
1	Distortion measuring equipment	-----	17 x 22 x 84	
1	Generator	-----	3-15/16 x 3-15/16 x 8	
1	Multimeter	-----	6-1/4 x 8-3/4 x 11-1/4	
1	Radio Transmitter T-409/ FRC-30	-----	42-1/2 x 84 x 84	5,800
1	Test set	-----	1-3/4 x 3-1/8 x 4-5/8	
1	Tube tester	-----	5-1/4 x 8-1/2 x 15-1/2	
1	Variac	-----	4-15/16 x 5 x 6-7/8	
1	Voltage Regulator	-----	18-5/8 x 23-1/4 x 39-3/8	
1	Voltmeter	-----	3-1/2 x 5-1/16 x 6-1/32	

**REFERENCE DATA AND LITERATURE:**

TM 11-814, Ch. 1 TM 11-814; NAVSHIPS 92152

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
31	595.3	10,009

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: J41611AA-90

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	New York, N. Y.		

## TRANSMITTING EQUIPMENT, 2 KW AN/FRT-type

1 December 1958

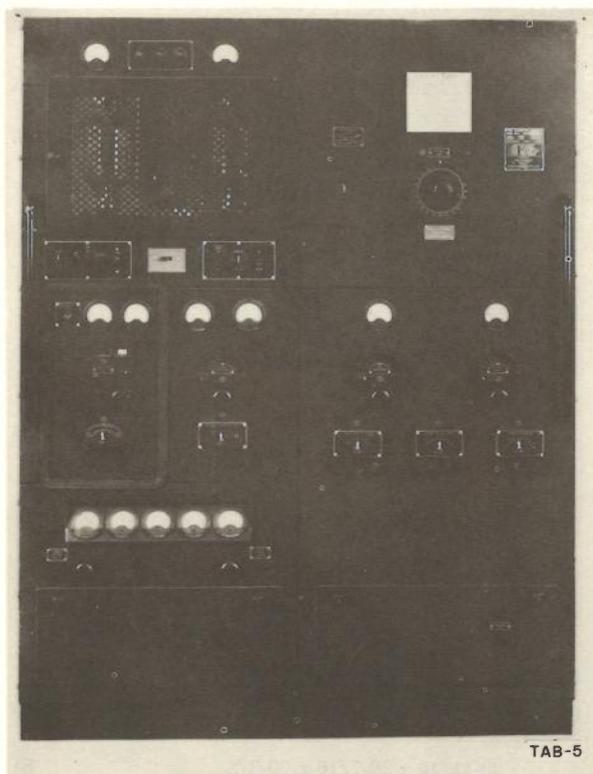
Cognizant Serv: USN FSN:

TAB, TAB-3, TAB-4, TAB-5

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
TAB: F16-Q-305955-200 --  
TAB-3: F16-Q-306015-  
200  
TAB-4: F16-Q-306035-  
200  
TAB-5: F16-Q-306055-  
200

## FUNCTIONAL DESCRIPTION:

2 KW Radio Transmitting Equipments TAB, TAB-3, TAB-4, and TAB-5 are medium-power radiotelegraph transmitters designed for shore station installation to provide cw and icw or mcw transmission at low and medium frequencies. These transmitters may be operated locally or remotely controlled by means of a single pair control line. The equipment is started by pressing the telegraph key, and it will automatically shut down 30 seconds after keying has stopped. An antenna selector switch makes possible a quick change from one transmitting antenna to another when two antennas are used to cover the frequency range.

The TAB series transmitters are all similar. The TAB-2 differs somewhat in appearance from the others and is capable of being operated from a wider range of power sources. The TAB-6 and TAB-7 differ from the others in the series in that they include dry-disk rectifiers in the equipment, and they do not require the motor-generator power supplies that are used with the other sets.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 100 to 555 kc*Type of Signal:* Cw and icw or mcw*Power Output:*

Cw: 2 kw (maximum)

Icw or Mcw: 1 kw (maximum)

*Frequency Control:* Master oscillator*Keying:*

Relay: 100 wpm on cw; 50 wpm on icw or mcw

Vacuum Tube: 500 wpm on cw

*Antenna Requirements:* T-type, 1 each for 100- to 300-kc range and for 300- to 555-kc range*Power Requirements:*

TAB: 6.3 kw, 220-v 60-cycle 2- or 3-phase ac

TAB-3: 6.3 kw, 220-v 60-cycle 3-phase ac

TAB-4: 120-v dc; or 220-v 60-cycle 3-phase ac; or 440-v 25-cycle 3-phase ac

TAB-5: 7.2 kw 220-v 60-cycle 3-phase ac; or 7.2 kw, 220/440-v 25-cycle 3-phase ac

## AN/FRT-type TRANSMITTING EQUIPMENT, 2 KW

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For TAB:</i>				
1	Antenna Selector Switch CG-4319	-----	16-1/2 x 8 x 3	13
1	Generator Transfer Switch CG-4316	-----	28-1/2 x 30 x 15	125
1	Generator Transfer Switch CG-4317	-----	28-1/2 x 30 x 15	125
1	Land Line Control Unit 23216	-----	20-11/16 x 20-7/16 x 10-3/8	81
or				
1	Land Line Control Unit 23217	-----	20-11/16 x 20-7/16 x 10-3/8	81
1	Modification Kit MX- 1271/FRT	-----		
1	Motor-Generator Set CG-4313	-----	80-11/16 x 25-3/4 x 18-1/2	1,580
1	Radio Frequency Tuner TN-199/FRT	-----		
1	Radio Transmitter CG-4320	-----	76-1/16 x 48-5/32 x 33-3/16	895
<i>For TAB-3:</i>				
1	Antenna Selector Switch CAY-3439	-----	16-1/2 x 8 x 3	13
1	Generator Transfer Switch CAY-3452-A	-----	28-1/2 x 30 x 15	125
1	Land Line Control Unit 23216	-----	20-11/16 x 20-7/16 x 10-3/8	81
or				
1	Land Line Control Unit 23217	-----	20-11/16 x 20-7/16 x 10-3/8	81
1	Modification Kit MX- 1271/FRT	-----		
1	Motor-Generator Set CG-3414	-----	80-11/16 x 25-3/4 x 18-1/2	1,580
1	Radio Frequency Tuner TN-199/FRT	-----		
1	Radio Transmitter CAY-3438	-----	76 x 24 x 30	895
<i>For TAB-4:</i>				
1	Antenna Selector Switch CG-4227	-----	16-1/2 x 8 x 3	13
1	Automatic Starter CG-4228	-----		
or				
1	Automatic Starter CG-4228-A	-----		
or				
1	Automatic Starter CG-4228-B	-----		
1	Land Line Control Unit 23216	-----	20-11/16 x 20-7/16 x 10-3/8	81
or				
1	Land Line Control Unit 23217	-----	20-11/16 x 20-7/16 x 10-3/8	81
1	Modification Kit MX-1271	-----		
1	Motor-Generator Set CG-4063	-----		2,216

## TRANSMITTING EQUIPMENT, 2 KW AN/FRT-type

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
	or			
1	Motor-Generator CG-4066	-----	-----	2,216
	or			
1	Motor-Generator Set CG-4068	-----	-----	2,216
1	Radio Frequency Tuner TN-199/FRT	-----	-----	
1	Radio Transmitter CG-4225	-----	-----	1,105
	or			
1	Radio Transmitter CG-4225-A	-----	-----	1,098
	or			
1	Radio Transmitter CG-4225-B	-----	-----	1,039
	<i>For TAB-5:</i>			
1	AC Power Transfer Panel 24084	-----	39-13/16 x 20-1/4 x 11	77
	or			
1	AC Power Transfer Panel 24084-A	-----	39-13/16 x 20-1/4 x 11	108
1	Land Line Control Unit 23216	-----	20-11/16 x 20-7/16 x 10-3/8	81
	or			
1	Land Line Control Unit 23217	-----	20-11/16 x 20-7/16 x 10-3/8	81
1	Modification Kit MX-1271/ FRT	-----	-----	
2	Motor-Generator Set 21503	-----	25-5/16 x 72-1/2 x 22	2,450
	or			
2	Motor-Generator Set 21507	-----	25-5/16 x 72-1/2 x 22	2,450
1	Radio Frequency Tuner TN- 199/FRT	-----	-----	
1	Radio Transmitter 52164	-----	76 x 57-1/2 x 37	1,065
	or			
1	Radio Transmitter 52165	-----	76 x 57-1/2 x 37	1,065

## REFERENCE DATA AND LITERATURE:

TAB: GEI-1776  
 TAB-3: NAVSHIPS 95285  
 TAB-4: GEI-6092  
 TAB-5: NAVSHIPS 95287

**AN/FRT-type TRANSMITTING EQUIPMENT, 2 KW****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
13	220.54	

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
<i>For TAB:</i> General Electric Co.	Schenectady, N. Y.	---	\$17,828.00
<i>For TAB-3:</i> Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NO-12981	
<i>For TAB-4:</i> General Electric Co.	Schenectady, N. Y.	NOs-19885	
<i>For TAB-5:</i> Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NOs-74868	

## TRANSMITTING EQUIPMENT, 2 KW AN/FRT-type

1 December 1958

Cognizant Serv: USN FSN:

TAB-2

USA

USN

USAF

TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

2 KW Transmitting Equipment TAB-2 is a medium-power, low-frequency transmitter intended for use primarily at coastal radio stations, radio compass stations, or aircraft stations. It may be controlled either locally or from some remote point over a single wire telegraph line.

It will radiate from 1 to 2 kw, depending upon the frequency and antenna characteristics. Continuous wave or interrupted continuous wave is available, and the output can be reduced from full power down to one-quarter power. This transmitter may be keyed at any speed up to 100 words per minute in International Morse Code.

This equipment is functionally similar to other models in the TAB-series.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 100 to 555 kc*Power Output:* 2 kw (maximum)*Type of Signal:* Cw, icw*Frequency Accuracy:* Within 350 cps*Interrupter Frequency:* 800 cps*Antenna Requirements:*100- to 300-kc Range: 1,500 to 2,500  $\mu\text{f}$ , 2 to 8 ohms300- to 555-kc Range: 1,000 to 1,500  $\mu\text{f}$ , 2 to 8 ohms

(Separate antennas must be provided for each of these two ranges.)

*Power Requirements:* 115-120/220-230-v dc, 220-v 60-cycle 3-phase ac, or 440-v 25-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna transfer switch	-----	3 x 7-5/8 x 16-1/2	
1	Generator Transfer Switch 3452	-----	12-11/16 x 28-13/16 x 30-5/8	125
2	Motor-generator set (115- 120-v dc)	-----	20-1/4 x 30-5/8 x 73-1/2	2,320
	or			
2	Motor-generator set (220- 230-v dc)	-----	20-1/4 x 30-5/8 x 73-1/2	2,220
	or			
2	Motor-generator set (220-v 60-cycle 3-phase)	-----	20-1/4 x 29-7/8 x 80-11/16	1,580
	or			
2	Motor-generator set (440-v 25-cycle 3-phase ac)	-----	20-1/4 x 29-7/8 x 90-5/16	2,040
1	Motor Starter 3443 (120-v dc)	-----	18 x 22 x 30-7/8	170
	or			
1	Motor Starter 3446 (230-v dc)	-----	18 x 22 x 30-7/8	170
	or			
1	Motor Starter 3448 (220-v 60-cycle 3-phase)	-----	-----	60



## TRANSMITTING EQUIPMENT, 2 KW AN/FRT-type

1 December 1958

Cognizant Serv: USN FSN:

TAB-6, TAB-7

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	TAB-6, F16-Q-306076- 200	--
		TAB-7, F16-Q-306077- 200	

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

2 KW Radio Transmitting Equipments TAB-6 and TAB-7 are functionally and operationally identical with Transmitting Equipment TAB, except that these equipments use disk-type dry rectifiers as their power supply, instead of the motor-generator units supplied with the other sets in the TAB series.

The only difference in the TAB-6 and the TAB-7 is that two identical rectifiers are supplied with the TAB-6, and only one is provided with the TAB-7. Since the TAB-6 has two rectifier units, it also is provided with an ac power transfer panel for quick change-over of power supplies.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 100 to 555 kc*Type of Signal:* Cw and icw or mcw*Power Output:*

Cw: 2 kw (maximum)

Icw or Mcw: 1 kw (maximum)

*Frequency Control:* Master oscillator*Keying:*

Relay: 100 wpm on cw; 50 wpm on icw or mcw

Vacuum tube, 500 wpm on cw

*Antenna Requirements:* T-type, 1 each for 100- to 300-kc range and for 300- to 555-kc range*Power Requirements:* 7.5 kw, 220-v 60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For TAB-6:</i>				
1	AC Power Transfer Panel 24084-A	-----	39-13/16 x 20-1/4 x 11	108
1	Land Line Control Unit 23216	-----	20-11/16 x 20-7/16 x 10-3/8	81
or				
1	Land Line Control Unit 23217	-----	20-11/16 x 20-7/16 x 10-3/8	81
1	Modification Kit MX-127/FRT	-----		
1	Radio Frequency Tuner TN- 199/FRT	-----		
1	Radio Transmitter 52273	-----	76 x 57-1/2 x 37	1,133
2	Rectifier Power Unit 20167	-----	72 x 34 x 24	1,170
<i>For TAB-7:</i>				
1	Land Line Control Unit 23216	-----	20-11/16 x 20-7/16 x 10-3/8	81
or				
1	Land Line Control Unit 23217	-----	20-11/16 x 20-7/16 x 10-3/8	81
1	Modification Kit MX-1271/ FRT	-----		

**AN/FRT-type TRANSMITTING EQUIPMENT, 2 KW**

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSION (Inches)	WEIGHT (Lbs)
1	Radio Frequency Tuner TN- 199/FRT			
1	Radio Transmitter 52237	-----	76 x 57-1/2 x 37	1,133
1	Rectifier Power Unit 20167	-----	72 x 34 x 24	1,170

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,379

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
<i>For TAB-6:</i> 10	305.71	5,346
<i>For TAB-7:</i> 8	221.25	3,677

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NX <sub>ss</sub> -5647 NX <sub>ss</sub> -16821	

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

1 December 1958

Cognizant Serv: USN FSN:

TBA-8, TBA-10, TBA-11

	USA	USN	USAF
--	-----	-----	------

TYPE CLASS:	--	Used by	--
STOCK NO:	--	TBA-8: F16-Q-309575-	--
		200	
		TBA-10: F16-Q-	
		309615-200	
		TBA-11: F16-Q-	
		309635-200	

(See Illustration TBA-6 Under AN/SRT-type: TBA-3, TBA-5, TBA-6, TBA-9 p. 1291)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipments TBA-8, TBA-10, and TBA-11 are high frequency radio telegraph transmitters designed for use at shore installations. These sets are similar in appearance and performance, but differ in the power supply equipment furnished.

These equipments are similar to the shipboard versions, the TBA-3, TBA-5, TBA-6, and TBA-9. (See Radio Transmitting Equipment TBA-3, TBA-5, TBA-6, and TBA-9, classified as AN/SRT-type.)

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4.0 to 26.0  
*Frequency Control:* Master oscillator  
*Nominal Power Output:* 1 kw  
*Type of Signal:* Cw  
*Keying Speed:* 500 wpm (maximum), vacuum tube keying  
*Power Requirements:*  
 TBA-8, TBA-11: 4.6 kw (115 amp starting), 220-v 60-cycle 3-phase ac; 4.6 kw (57.5-amp starting), 440-v 60-cycle 3-phase ac  
 TBA-10: 4.6 kw (30 kw starting), 220-v 60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For TBA-8:</i>				
1	Land Line Control Unit 23269	-----	42-1/8 x 24 x 15-3/4	165
2	Magnetic Controller 21897	-----	23-7/8 x 21-7/16 x 9-1/16	70
2	Motor-Generator Set 21899	-----	19-15/16 x 71-5/16 x 16-5/8	815
1	Power Transfer Switch 24092	-----	12-1/4 x 16 x 9-1/4	26
1	Radio Transmitter 52280	-----	72 x 49 x 31-1/8	975
<i>For TBA-10:</i>				
1	Land Line Control Unit 23269	-----	42-1/8 x 24 x 15-3/4	165
2	Magnetic Controller 21373	-----	22-1/8 x 20-1/4 x 10-1/4	65
2	Motor-Generator Set 21375-A	-----	17-9/16 x 70-7/16 x 16	815
1	Power Transfer Switch 24092	-----	12-1/4 x 16 x 9-1/4	26
1	Radio Transmitter 52282	-----	72 x 49 x 31-1/8	953
<i>For TBA-11:</i>				
1	Land Line Control Unit 23269	-----	42-1/8 x 24 x 15-3/4	165
2	Magnetic Controller 21897	-----	23-7/8 x 21-7/16 x 9-1/16	70
2	Motor-Generator Set 21899	-----	19-15/16 x 71-5/16 x 16-5/8	815
1	Power Transfer Switch 24092	-----	12-1/4 x 16 x 9-1/4	26
1	Radio Transmitter 52280-A	-----	72 x 49-1/4 x 34-1/8	1,128
1	Transmission Line Coupling Unit 50118	-----	9-1/4 x 49 x 31-1/8	116



## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

1 December 1958

Cognizant Serv: USN FSN:

TBK-6, TBK-11, TBK-15, TBK-16

USA

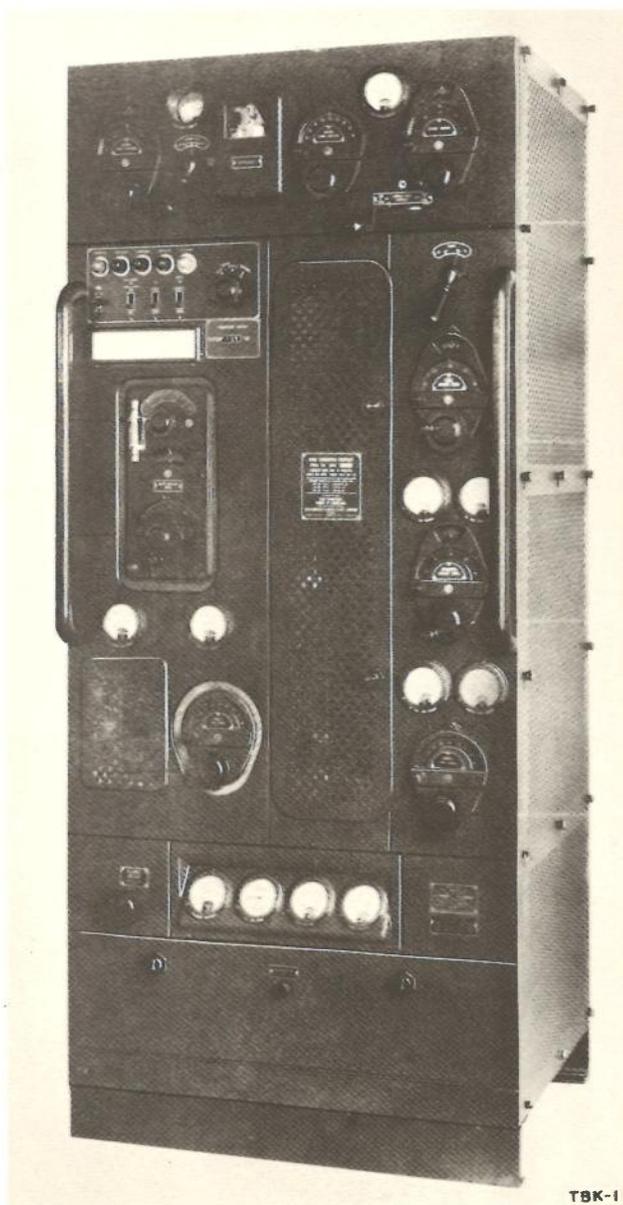
USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --



TBK-11

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipments TBK-6, TBK-11, TBK-15, and TBK-16 are medium power, high frequency transmitters capable of relay keying speeds up to 100 words per minute or (except for the TBK-6) vacuum tube keying speeds up to 500 words per minute. The transmitter power may be reduced from full power to a minimum of 75 watts by disconnecting the power amplifier. These sets are primarily designed for shore station installation.

Remote operation of these transmitters is possible over landline telegraph circuits.

These transmitting equipments are essentially the same as the TBM series of transmitters, except that the TBK series does not have provisions for modulated continuous wave signaling.

Shipboard models of this equipment (classified and described under AN/SRT-type) are the TBK-3, TBK-5, TBK-7 through TBK-10, TBK-12 through TBK-14, and TBK-17 through TBK-20. The TBK-4 is suitable for either shipboard or shore installation, and is classified and described under AN/URT-type equipment.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2.0 to 18.1

*Frequency Control:* Master oscillator

*Type of Signal:* Cw

*Power Output:* 75 or 500 w

*Keying Speed:*

TBK-6: 100 wpm (maximum)

TBK-11, TBK-15, TBK-16: 500 wpm (maximum)

*Antenna:* 80 feet (maximum Length)

*Power Requirements:*

TBK-6: 220/440-v 25-cycle 3-phase ac; 220-v 60-cycle 2/3-phase ac; 230-v dc

TBK-11: 220/440-v 25-cycle 3-phase ac; 220-v 60-cycle 1/3-phase ac

TBK-15: 220-v 60-cycle 3-phase ac

TBK-16: 220/440-v 50/60-cycle 3-phase ac

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>For TBK-6</i>				
2	Motor generator unit (220-v 25-cps 3- $\phi$ )	-----	18-1/2 x 22-1/16 x 72-1/8	1,250
	or			
2	Motor generator unit (220-v 25-cps 2- $\phi$ )	-----	19-9/16 x 18-3/4 x 70-1/8	885
	or			
2	Motor generator unit (220-v 60-cps 3- $\phi$ )	-----	18-9/16 x 18-3/4 x 70-1/8	885
	or			
2	Motor generator unit (230-v dc)	-----	18-9/16 x 18-3/4 x 75	900
	or			
2	Motor generator unit (440-v 25-cps 3- $\phi$ )	-----	18-1/2 x 22-1/16 x 72-1/8	1,250
2	Motor Starter 21251 (230-v dc)	-----	14-1/2 x 15-1/4 x 28-1/2	90
	or			
2	Motor Starter 21252 (220-v 60-cps 3- $\phi$ )	-----	9 x 10-5/8 x 18-3/4	30
	or			
2	Motor Starter 21253 (220-v 60-cps 2- $\phi$ )	-----	9 x 10-5/8 x 18-3/4	30
	or			
2	Motor Starter 21254 (440-v 25-cps 3- $\phi$ )	-----	9 x 10-5/8 x 18-3/4	30
	or			
2	Motor Starter 21259 (220-v 25-cps 3- $\phi$ )	-----	9 x 10-5/8 x 18-3/4	30
1	Power Transfer Unit 23101 (ac)	-----	11 x 20-1/4 x 39-13/16	75
	or			
1	Power Transfer Unit 23102 (dc)			
1	Radio Transmitter 52064 (220-v 60-cps 2/3- $\phi$ )	-----	24 x 32 x 72	711

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
	or			
1	Radio Transmitter 52065 (220/440-v 25-cps 3- $\phi$ )	-----	24 x 32 x 72	711
	or			
1	Radio Transmitter 52066 (230-v dc)	-----	24 x 32 x 72	662
1	Remote Control Unit 23099 (ac)	-----	12-15/16 x 19 x 20	91
	or			
1	Remote Control Unit 23100 (dc)	-----	12-15/16 x 19 x 20	53
	<i>For TBK-11</i>			
1	Land Line Control Unit 23216 (220-v 60-cps 1/3- $\phi$ )	-----	10-3/8 x 20-7/16	81
	or			
1	Land Line Control Unit 23217 (220/440-v 25-cps 3- $\phi$ )	-----	10-3/8 x 20-7/16 x 20-11/16	81
2	Magnetic Controller 21512 (440-v 25-cps 3- $\phi$ )	-----	11-5/8 x 17 x 23-1/4	80
	or			
2	Magnetic Controller 21609 (220-v 25-cps 3- $\phi$ )	-----	11-5/8 x 17 x 23-1/4	80
	or			
2	Magnetic Controller 21610 (220-v 60-cps 3- $\phi$ )	-----	11-5/8 x 17 x 23-1/4	80
	or			
2	Magnetic Controller 21644 (220-v 60-cps 1- $\phi$ )	-----	11-5/8 x 17 x 24-1/4	80
2	Motor Generator Unit 21521 (220/440-v 25-cps 3- $\phi$ )	-----	20-1/2 x 21-3/4 x 78-1/2	1,250
	or			
2	Motor Generator Unit 21522 (220-v 60-cps 3- $\phi$ )	-----	20-3/8 x 20-1/2 x 74-21/32	1,100
	or			
2	Motor Generator Unit 21671 (220-v 60-cps 1- $\phi$ )	-----	20-3/8 x 20-1/2 x 74-21/32	1,100

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Transfer Panel 24084-A	-----	11 x 20-1/4 x 39-13/16	108
1	Radio Transmitter 52169 (220/440-v 25-cps 3-φ)	-----	24 x 32 x 72	810
	or			
1	Radio Transmitter 52170 (220-v 60-cps 1/3-φ)	-----	24 x 32 x 72	797
	For TBK-15			
1	Land Line Control Unit 23216	-----	11-1/16 x 20-5/16 x 20-3/4	81
2	Magnetic Controller 21668	-----	9-3/16 x 16-5/8 x 18-3/4	50
2	Motor Generator Unit 21677	-----	20-3/8 x 20-1/2 x 74-21/32	1,105
1	Power Transfer Panel 24084-A	-----	11 x 20-1/4 x 39-13/16	108
1	Radio Transmitter 52170	-----	24 x 32 x 72	797
	For TBK-16			
1	Land Line Control Unit 23216	-----	11 x 20-3/4 x 21-5/16	81
1	Radio Transmitter 52170	-----	24 x 32 x 72	789
1	Rectifier Power Unit 20228	-----	24 x 32 x 72	1000

## REFERENCE DATA AND LITERATURE:

TBK-6: Technical Manuals for Navy Model TBK-3, 4, 5, 6, 7, 8, 10 and 17, Radio Transmitting Equipment  
 TBK-11: NAVSHIPS 900386  
 TBK-15: NAVSHIPS 900386  
 TBK-16: NAVSHIPS 900387

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
------	----------------	--------------

## PROCUREMENT DATA

PROCURING SERVICE: USN  
 DESIGN COG: USN, BuShips  
 SPEC &/or DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
For TBK-6: Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NOs 47498	
For TBK-11: Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NOs 67051 NOs 72975 NOs 80646	
For TBK-15: Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NOs 67051 NOs 72975 NOs 80646	
For TBK-16: Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NXsr 38688 NXsr 18237	

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

1 December 1958

Cognizant Serv: USN FSN:

TBL-10, TBL-11

USA

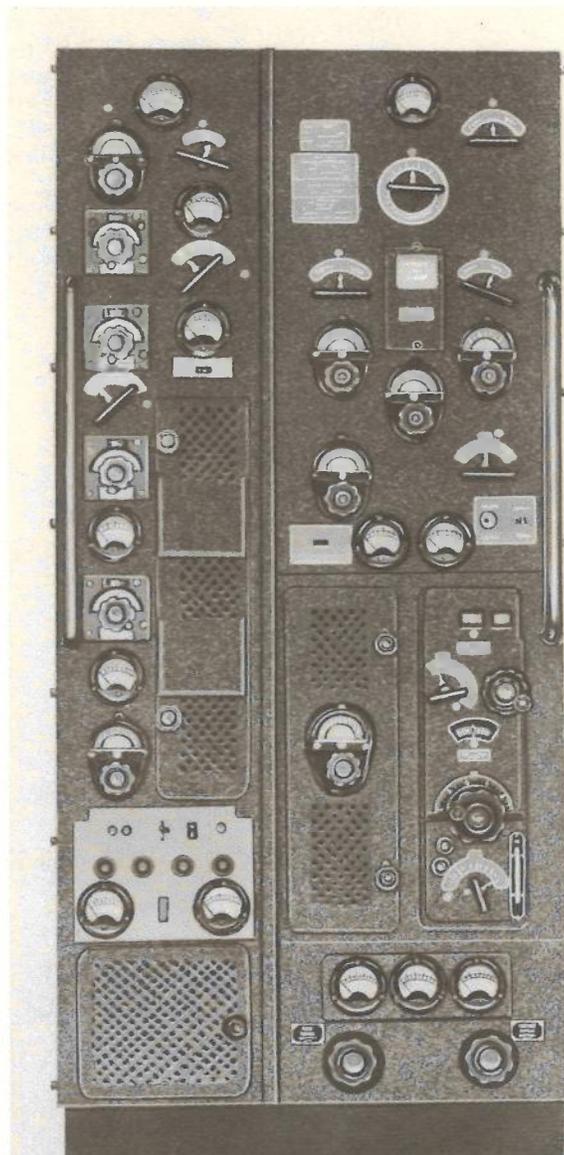
USN

USAF

TYPE CLASS: --

STOCK NO: --

Used by

TBL-10: F16-Q-  
312555-200TBL-11: F16-Q-  
312575-200

TBL-11

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipments TBL-10 and TBL-11 are designed for shore station installation where space is at a premium.

These equipments can be keyed at speeds up to 100 words per minute, and can be controlled either locally or remotely. Remote control is accomplished by means of a landline control unit, which may be located up to 50 miles from the transmitter, with landline connecting circuits.

The TBL-10 and TBL-11 are identical with the exception of a power transfer panel and an extra rectifier power unit furnished with the TBL-10.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 175 to 600 kc; 2,000 to 18,000 kc

*Frequency Control:* Master oscillator

*Type of Signal:* Cw, mew; voice signals may be transmitted with additional speech input equipment not furnished as part of this equipment

*Power Output:*

Cw: 200 w

Mew: 100 w

Voice: 50 w

*Keying Speed:* 100 wpm (maximum)

*Power Requirements:* 3.5 kw, 220/440-v 50-60 cycle 3-phase ac



RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

18 November 1958

Cognizant Serv: USN FSN: 5820-644-0915

TBM-6

USA

USN

USAF

TYPE CLASS: --

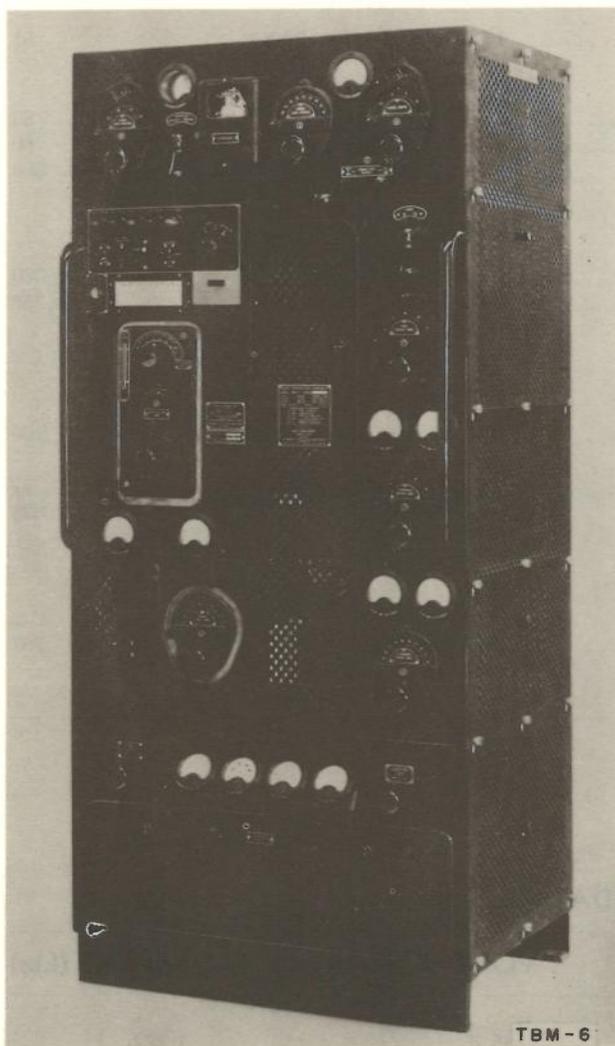
Used by

--

STOCK NO: --

--

--

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TBM-6 is designed for use as shore-based equipment.

This equipment is a medium power, high frequency transmitter capable of vacuum tube keying speeds up to 500 words-per-minute. The modulator unit provides 50 words-per-minute modulated continuous wave telegraph transmission; vacuum tube keying cannot be used on this type of transmission. The transmitter power output may be reduced from full power to a minimum of 75 watts for telegraphic signaling by disconnecting the power amplifier.

Either local or remote operation is possible. Remote operation is possible by use of a land line when telegraphing.

A remote control unit and a radiophone unit are required for use, but are not supplied, with this equipment.

The TMB series is basically similar to the TBK series except that the TBK series are A1 radio telegraph transmitters and are not equipped with modulators. In addition, there is some flexibility in the type power equipment used with the various transmitters.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 2,000 to 18,100 kc

*Power Output:*

A1: 75 or 500 w

A2, A3: 350 w

*Frequency Control:* Master oscillator

*Type Emission:* A1, A2, A3

*Keying Speed:*

A1: 500 wpm (maximum)

A2: 50 wpm (maximum)

*Modulator Data:*

Speech Input: 6 mw level from 600-ohm source

Modulation: 100%

Af Distortion: 10% (maximum)

Gain: 60 db

Output: 400 w

*Antenna Data:* 80 feet (maximum length outside trunk)

*Power Requirements:*

Motor Generator 21521: 220-v 25-cycle 3-phase ac

Motor Generator 21522: 220-v 60-cycle 3-phase ac

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Land Line Control 23217 (25 cps)	-----	10-3/8 x 20-7/16 x 20-11/16	81
	or			
	Land Line Control 23216 (60 cps)	-----	11-1/16 x 20-5/16 x 20-3/4	81
2	Magnetic Controller 21511 (25 cps)	-----	11-5/8 x 17 x 24-1/4	80
	21411 (60 cps)	-----	11-5/8 x 17 x 24-1/2	80
1	Modulator 50066 (25 cps)	-----	18 x 24 x 72	380
	or			
	Modulator 50065 (60 cps)	-----	18 x 24 x 72	380
2	Motor Generator Set 21521 (25 cps)	-----	20-1/2 x 21-3/4 x 78-1/2	1,250
	or			
	Motor Generator Set 21522 (60 cps)	-----	20-3/8 x 20-1/2 x 74-21/32	1,100
1	Power Transfer Panel 24084	-----	11 x 20-1/4 x 39-13/16	77
1	Radio Transmitter 52169 (25 cps)	-----	24 x 32 x 72	825
	or			
	Radio Transmitter 52170 (60 cps)	-----	24 x 32 x 72	797

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900386

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
12	185.37	4,274

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Westinghouse Electric & Mfg. Co.	Baltimore, Md.	NOs-67051, 12 June 1939 NOs-72975, 8 May 1940 NOs-80646, 8 January 1941 NOs-80646, 21 September 1942	



RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

18 November 1958

Cognizant Serv: USN FSN: 5820-644-0916

TBM-8

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TBM-8 is designed for use as shore-based equipment.

This equipment is a medium power, high frequency transmitter capable of vacuum tube keying speeds up to 500 words per-minute. The modulator unit provides 50 words-per minute modulated continuous wave telegraph transmission; vacuum tube keying cannot be used on this type of transmission. The transmitter power output may be reduced from full power to a minimum of 75 watts for telegraphic signaling by disconnecting the power amplifier.

Either local or remote operation is possible. Remote operation is possible by use of a land line when telegraphing.

A remote control unit and a radiophone unit are required for use, but are not supplied, with this equipment.

The TBM series is basically similar to the TBK series except that the TBK series are A1 radio telegraph transmitters and are not equipped with modulators. In addition, there is some flexibility in the type power equipment used with the various transmitters.

**TECHNICAL CHARACTERISTICS:***Frequency Range:* 2,000 to 18,100 kc*Power Output:*

A1: 75 or 500 w

A2, A3: 350 w

*Frequency Control:* Master oscillator*Type Emission:* A1, A2, A3*Keying Speed:*

A1: 500 wpm (maximum)

A2: 50 wpm (maximum)

*Modulator Data:*

Speech Input: 6 mw level from 600-ohm source

Modulation: 100%

Af Distortion: 10% (maximum)

Gain: 60 db

Output: 400 w

*Antenna Data:* 80 feet (maximum length outside trunk)*Power Requirements:* 220-v 60-cycle 3-phase ac (Motor Generator 21677)**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Land Line Control 23216	-----	10-3/8 x 20-7/16 x 20-11/16	81
2	Magnetic Controller 21668	-----	9-3/16 x 16-5/8 x 18-3/4	50
1	Modulator 50065-A	-----	18 x 24 x 72	380
2	Motor Generator Set 21677	-----	20-3/8 x 20-1/2 x 74-21/32	1,105
1	Power Transfer Panel 24084-A	-----	11 x 20-1/4 x 39-13/16	108
1	Radio Transmitter 52170	-----	24 x 32 x 72	797

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900386

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
11	187.76	4,089

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Westinghouse Electric & Mfg. Co.	Baltimore, Md.	NOs-67051, 12 June 1939 NOs-72975, 8 May 1940 NOs-80646, 8 January 1941 NOs-80646, 21 September 1942	

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

18 November 1958

Cognizant Serv: FSN:

TBM-10

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TBM-10 is designed for use as shore-based equipment.

This equipment is a medium power, high frequency transmitter capable of vacuum tube keying speeds up to 500 words-per-minute. The modulator unit provides 50 words-per-minute modulated continuous wave telegraph transmission; vacuum tube keying cannot be used on this type of transmission. The transmitter power output may be reduced from full power to a minimum of 75 watts for telegraphic signaling by disconnecting the power amplifier.

Either local or remote operation is possible. Remote operation is possible by use of a land line when telegraphing.

A remote control unit and a radiophone unit are required for use, but are not supplied, with this equipment.

The TBM series is basically similar to the TBK series except that the TBK series are A1 radio telegraph transmitters and are not equipped with modulators. In addition, there is some flexibility in the type power equipment used with the various transmitters.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 2,000 to 18,100 kc

*Power Output:*

A1: 75 or 500 w

A2, A3: 350 w

*Frequency Control:* Master oscillator

*Type Emission:* A1, A2, A3

*Keying Speed:*

A1: 500 wpm (maximum)

A2: 50 wpm (maximum)

*Modulator Data:*

Speech Input: 6 mw level from 600-ohm source

Modulation: 100%

Af Distortion: 10% (maximum)

Gain: 60 db

Output: 400 w

*Antenna Data:* 80 feet (maximum length outside trunk)

*Power Requirements:* 220- or 440-v 50- or 60-cycle 3-phase ac  
(Rectifier Power Unit 20228)

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Land Line Control 23216	-----	11 x 20-3/4 x 21-5/16	81
1	Modulator 50065-A	-----	18 x 24 x 72	385
1	Radio Transmitter 52170	-----	24 x 32 x 72	789
1	Rectifier Power Unit 20228	-----	24 x 32 x 72	1,000

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900387

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
9	206.43	3,838

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Westinghouse Electric & Mfg. Co.	Baltimore, Md.	NXsr-18237, 1 July 1943 NXsr-38688, 28 September 1943	

## RADIO TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type

4 December 1958

Cognizant Serv: USN FSN:

TBU-1

USA

USN

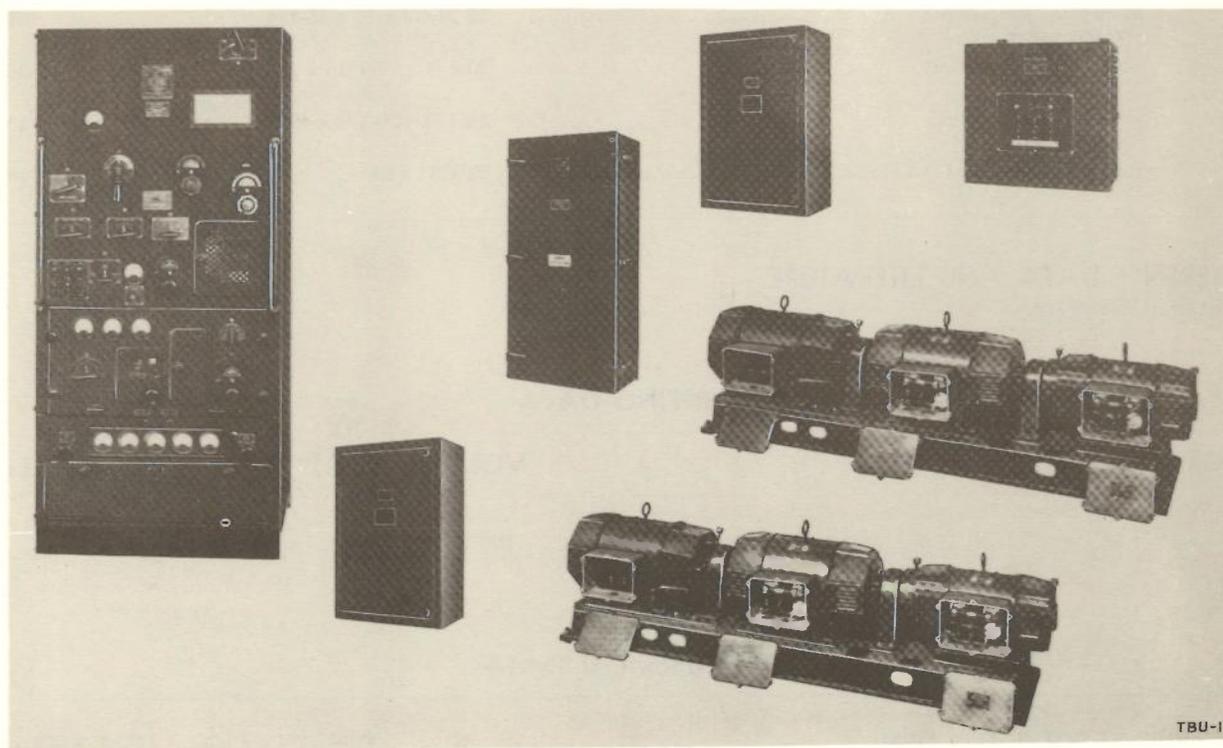
USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-315395 --



TBU-1

**FUNCTIONAL DESCRIPTION:**

Radio Telegraph Transmitting Equipment TBU-1 is primarily designed for use at shore installations where a medium power transmitter is desired. Frequency is continuously variable throughout the specified range. The transmitter may be operated from the front panel or from a remote location by use of the land line control unit.

Radio Telegraph Transmitting Equipments TBU-1 and TBU-3 have been adapted for shore installations by the addition of duplicate motor-generator sets and a land line control unit, otherwise they are identical to the TBU and TBU-2 models.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 300 to 2,000 kc

*Type of Signal:* Cw, mcw

*Keying Data:* Relay keying, 100 wpm max speed

*Nominal Power Output:*

Cw: 1,000 w

Mcw: 500 w

*Frequency Control:* Master oscillator

*Power Supply Equipment:* Motor-generator

*Power Requirements:* 220/440-v 60-cycle 3-phase ac; 230-v dc

MIL-HDBK-161

**AN/FRT-type RADIO TELEGRAPH TRANSMITTING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Land Line Control Unit CAY-23216	-----	20-3/4 x 21-3/16 x 11-1/16	81
2	Magnetic Controller CAY-21710	-----	22-21/32 x 16 x 13-1/4	70
2	Motor Generator Unit CAY-21447	-----	20-1/4 x 77-1/15 x 20-3/8	1,205
1	Power Transfer Panel CAY-24083	-----	39-7/8 x 20-1/4 x 10-3/8	108
1	Radio Transmitter CAY-52227	-----	72 x 34 x 24	769

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,384

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
16	190.36	5,532

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Westinghouse Electric Mfg. Co.	Baltimore, Md.	NOs-66593 9 May 1939 NOs-82338, 24 Feb 1941	\$12,500.00 in- cluding spares

## RADIO TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type

4 December 1958

Cognizant Serv: USN FSN:

TBU-3

USA

USN

USAF

TYPE CLASS:                    --                                   Used by                                   --  
 STOCK NO:                    --                                   F16-Q-315470-200                   --

(See Illustration: TBU-1, p. 633)

## FUNCTIONAL DESCRIPTION:

Radio Telegraph Transmitting Equipment TBU-3 is primarily designed for use at shore stations where a medium power transmitter is desired. Frequency is continuously variable throughout the specified range. The transmitter may be operated from the front panel or from a remote location by use of the land line control unit.

Radio Telegraph Transmitting Equipment TBU-3 and TBU-1 have been adapted for shore installations by the addition of duplicate motor-generator sets and a land line control unit, otherwise they are identical to the TBU and TBU-2 models.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 300 to 2,000 ac*Type of Signal:* Cw, mcw*Keying Data:* Relay keying, 100 wmp max speed*Nominal Power Output:*

Cw: 1,000 w

Mcw: 500 w

*Frequency Control:* Master oscillator*Power Supply Equipment:* Motor-generator*Power Requirements:* 220/440-v 60-cycle 3-phase ac; 230-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Land Line Control Unit CAY-23216	-----	20-3/4 x 21-3/16 x 11-1/16	81
2	Magnetic Controller CAY-21694	-----	18-29/32 x 16-5/8 x 9-3/16	50
	or			
2	Magnetic Controller CAY-21696	-----	18-29/32 x 16-5/8 x 9-3/16	50
2	Motor Generator Unit CAY-21448	-----	22-1/8 x 74-21/32 x 30-3/4	1,185
	or			
2	Motor Generator Unit CAY-21447	-----	20-1/4 x 77-1/15 x 20-3/8	1,205
1	Radio Transmitter CAY-52224	-----	72 x 34 x 24	769
	or			
1	Radio Transmitter CAY-52225	-----	72 x 34 x 24	769

MIL-HDBK-161

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**AN/FRT-type** RADIO TELEGRAPH TRANSMITTING EQUIPMENT

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,384

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**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
7	146.27	4,257

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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Westinghouse Electric & Manufacturing Co.	Baltimore, Md.	NOS-66593, 9 May 1939 NOS-82338, 24 Feb 1941	\$12,500.00 including spares

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## RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

Cognizant Serv: USN FSN:

TCB

USA

USN

USAF

TYPE CLASS:

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Used by

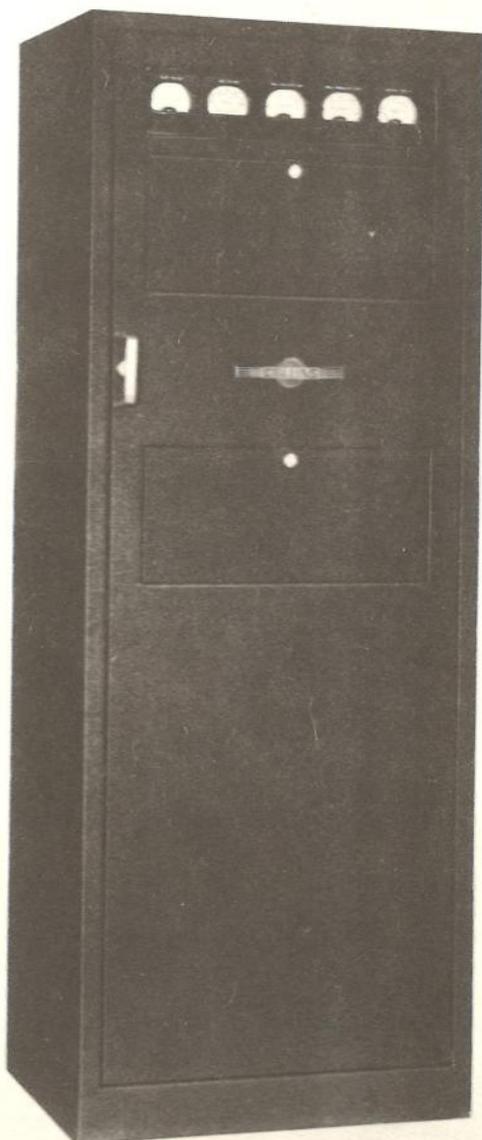
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STOCK NO:

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F16-Q-318652-100

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TCB

## FUNCTIONAL DESCRIPTION:

Radio Telephone and Telegraph Transmitting Equipment TCB is used primarily for general communication in shore installations. This equipment offers rapid automatic frequency selection from ten pretuned channels. It can be operated from either the front panel or from a remote control unit.

The TCB, TCB-1, and TCB-2 are similar in operation but the models differ slightly in frequency range, output power, and power requirements.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 1,500 to 15,000 kc, 10 +reset channels

*Power Output:* 150 w

*Type of Signal:* Cw, mcw, voice

*Keying Data:*

Type: Vacuum tube

Cw: High speed keying

Mcw: 60 wpm

*Frequency Control:* Crystal

*Power Requirements:* 110-v 60-cycle 1-phase ac

**AN/FRT-type RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Operator's Control Unit 177E-2	-----	8-3/4 x 19 x 10	38
1	Operator's Desk Set 223F-4	-----	6 x 9 x 7-1/2	5.75
1	Station Control Unit 176L-2	-----	7-3/4 x 9 x 5-1/2	11
1	Transmitter 16E-1	-----	61-3/4 x 21-1/2 x 16-1/2	502

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95302

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
14		2,209

**PROCUREMENT DATA**

PROCURING SERVICE: USN, BuShips  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NOs-66284, 22 Apr 1939 NXss-7663, 23 Nov 1942	\$3,000.00 with equipment spares

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**RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

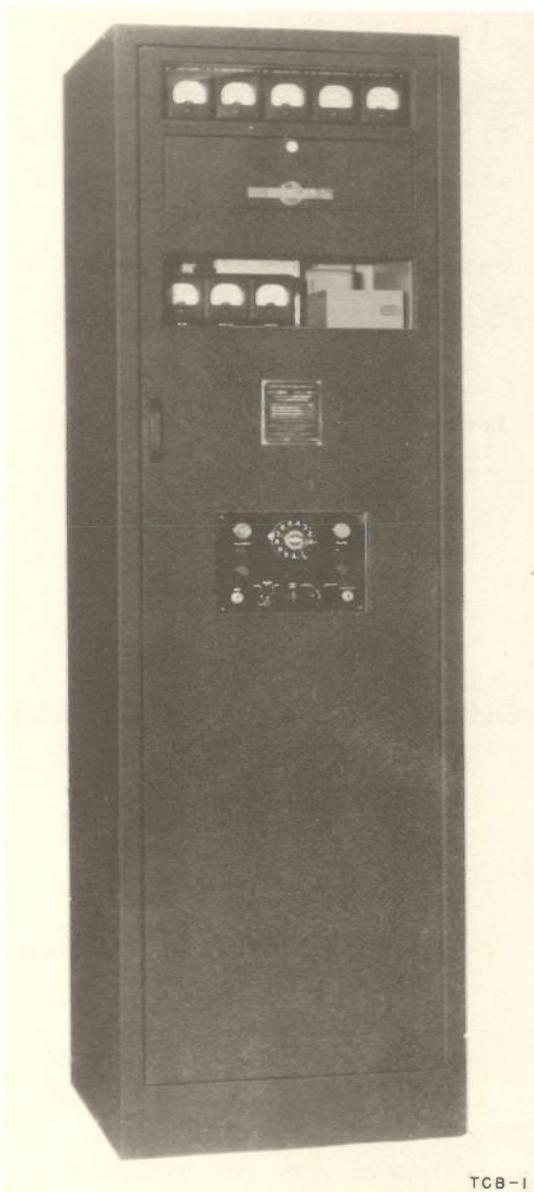
TCB-1

USA

USN

USAF

 TYPE CLASS:        --  
 STOCK NO:           --

 Used by             --  
 F16-Q-318655-200   --


TCB-1

**FUNCTIONAL DESCRIPTION:**

Radio Telephone and Telegraph Transmitting Equipment TCB-1 is primarily used for general communication in shore installations. This equipment offers rapid automatic frequency selection from ten pretuned channels. It can be operated from either the front panel or from a remote control unit.

The TCB, TCB-1, and TCB-2 are similar in operation but the models differ in frequency range, output power, and power requirements.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 1,500 to 12,000 kc, 10 preset channels

*Frequency Control:* Crystal

*Power Output:* 75 w

*Type of Signal:* Cw, mcw, voice

*Keying Data:*

Type: Vacuum tube keying

Cw: High speed keying

Mcw: 60 wpm

*Power Requirements:* 110-v 25/60-cycle 1-phase ac

**AN/FRT-type RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Operator's Control Unit 177G-4 (60 cps)	-----	10 x 19 x 10-1/2	53
	or			
1	Operator's Control Unit 177G-5 (25 cps)	-----	10 x 19 x 10-1/2	53
1	Operator's Desk Set 223G-3 (60 cps)	-----	6 x 9 x 7-1/2	5.75
	or			
1	Operator's Desk Set 223G-6 (25 cps)	-----	6 x 9 x 7-1/2	5.75
1	Transmitter 16E-5 (60 cps)	-----	78 x 24 x 24	952
	or			
1	Transmitter 16E-6 (25 cps)	-----	78 x 24 x 24	950

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95303

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
14		2,209

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG: S-500-2366

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NOs-81551, 10 Feb 1941	\$3,000.00 with equipment spares

RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCB-2

USA

USN

USAF

TYPE CLASS:	--	Used by	--
STOCK NO:	--	F16-Q-318675-200	--

(See Illustration of TCB-1, p. 639)

## FUNCTIONAL DESCRIPTION:

Radio Telephone and Telegraph Transmitting Equipment TCB-2 is used primarily for general communication in shore installations. This equipment offers rapid automatic frequency selection from ten pretuned channels. It can be operated from either the front panel or from a remote control unit.

The TCB, TCB-1, and TCB-2 are similar in operation but the models differ slightly in frequency range, output power, and power requirements.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 1,500 to 12,000 kc, 10 preset channels*Frequency Control:* Crystal*Power Output:* 75 w*Type of Signal:* Cw, mcw, voice*Keying Data:*

Type: Vacuum tube keying

Cw: High speed keying

Mcw: 60 wpm

*Power Requirements:* 110-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Operator's Control Unit 177G-4	-----	10 x 19 x 10-1/2	53
1	Operator's Desk Set 223G-3	-----	6 x 9 x 7-1/2	5-3/4
1	Transmitter 16E-5	-----	78 x 24 x 24	952

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 95304

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
14		2,209

MIL-HDBK-161

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**AN/FRT-type** RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

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PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/or DWG: EN28/4448-42/SHIPS

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

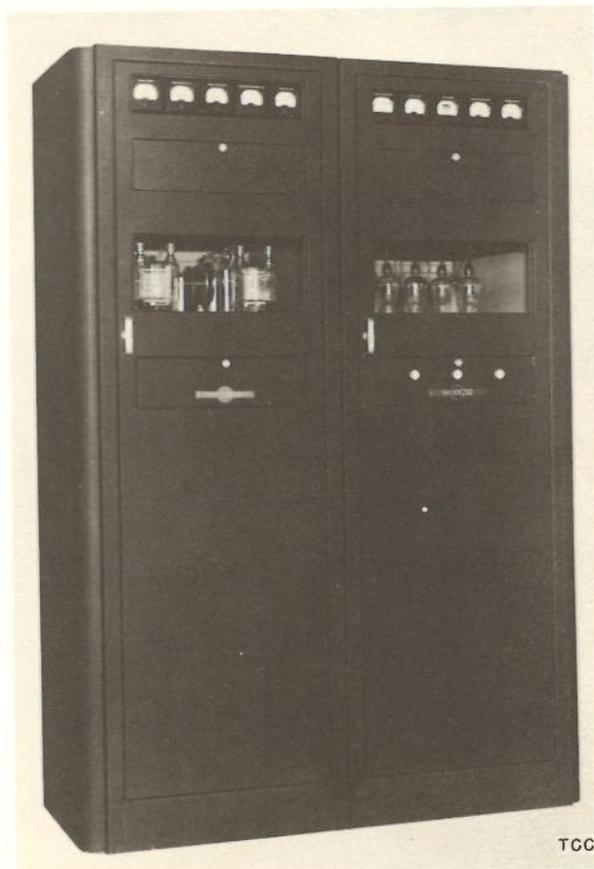
Cognizant Serv: USN FSN:

TCC

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
F16-Q-318678-200 --

TCC

## FUNCTIONAL DESCRIPTION:

Radio Telephone and Telegraph Transmitting Equipment is designed for shore use where medium and high frequency cw, mcw, and voice operation on any one of 10 preset frequencies is required with rapid changeover. By means of an autotune and telephone dial system, frequency change, choice of emission, and starting and shutting down the equipment may be accomplished either at the transmitter or at a remote point.

Equipments comprising the TCC series are all similar in operation and differ mainly in power source requirements. The TCC and TCC-2 differ from the other models of the series in that the frequency range extends from 2.0 to 20.0 megacycles, instead of 2.0 to 18.1 megacycles.

Although TCC series equipments are still in use, they have been superseded by Radio Transmitting Equipment TDH.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 20

*Frequency Control:* Crystal, 10 preset channels

*Type of Signal:* Cw, mcw, voice

*Keying Speeds:*

Cw: Vacuum tube keying speeds up to several hundred wpm

Mcw: Up to 60 wpm

*Power Output:*

Cw: 1,000 w

Mcw, Voice: 600 w

*Power Requirements:* 4.5 kw, 20-v 50/60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Bay, consisting of:	-----	78 x 24 x 24	990
1	RF Bay, consisting of:	-----	78 x 24 x 24	580

MIL-HDBK-161

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**AN/FRT-type RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT**

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**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95305

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**SHIPPING DATA**

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<b>PKGS</b>	<b>VOLUME (Cu Ft)</b>	<b>WEIGHT (Lbs)</b>
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**PROCUREMENT DATA**

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**PROCURING SERVICE:** USN, BuShips  
**SPEC &/or DWG:**

**DESIGN COG:** USN, BuShips

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX UNIT COST</b>
Collins Radio Co.	Cedar Rapids, Iowa	NOs-66284, 22 Apr 1939	\$11,500.00 including equipment spares

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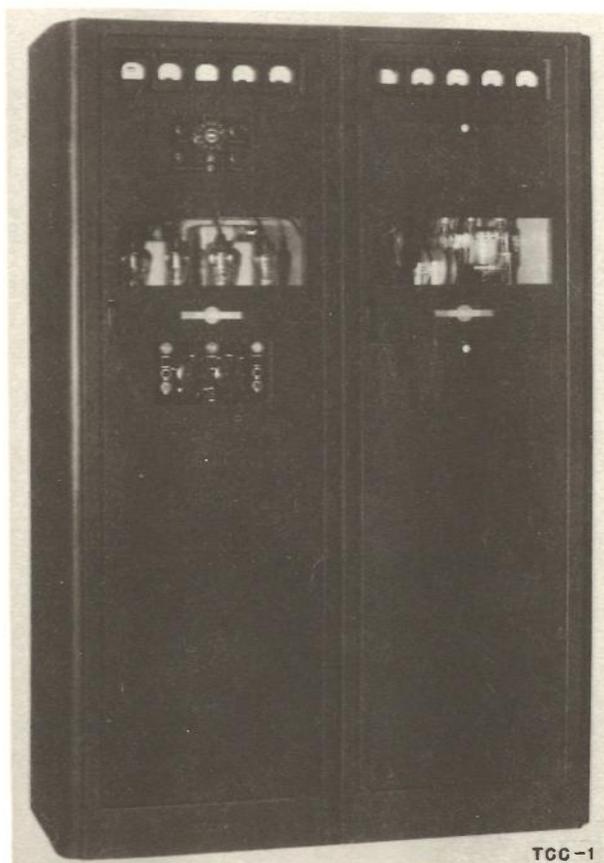
## RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

Cognizant Serv: **USN** **FSN:**

TCC-1

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--



### FUNCTIONAL DESCRIPTION:

Radio Telephone and Telegraph Transmitting Equipment TCC-1 is designed for shore use where medium- and high-frequency cw, mcw, and voice operation on any one of 10 preset frequencies is required with rapid changeover. By means of an autotune and telephone dial system, frequency change, choice of emission, and starting and shutting down the equipment may be accomplished either at the transmitter or at a remote point.

Equipments comprising the TCC series are all similar in operation and differ chiefly in power source requirements.

Although TCC series equipments are still in use, they have been superseded by Radio Transmitting Equipment TDH.

### TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2.0 to 18.1 mc

*Frequency Control:* Crystal, 10 preset channels

*Type of Signal:* Cw, mcw, voice

*Keying Speeds:*

Cw: Vacuum tube keying speeds up to several hundred words per minute

Mcw: Up to 60 wpm

*Power Output:*

Cw: 1,000 w

Mcw, voice: 600 w

*Power Requirements:* 4.5 kw, 220-v 25/60-cycle 3-phase ac

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
i	Autotune RF Unit 1014-1 (60 cps)	-----	78 x 24 x 24	600
	or			
1	Autotune RF Unit 1014-2	-----	78 x 24 x 24	600
1	Frequency Converter 231N500	-----	66 x 26-1/2 x 16	2,360
1	L. H. Dust Cover 33M-2	-----	78 x 24 x 2	20
1	Operator's Control Unit 177G-1 (60 cps)	-----	10-1/2 x 19 x 10	53

**AN/FRT-type RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT****MAJOR COMPONENTS—Continued**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
	or			
1	Operator's Control Unit 177G-3 (25 cps)	-----	10-1/2 x 19 x 10	53
1	Operator's Desk Set 223G-1 (60 cps)	-----	5-1/2 x 1/8 x 7-1/2	5.75
	or			
1	Operator's Desk Set 223G-5 (25 cps)	-----	5-1/2 x 5-1/8 x 7-1/2	5.75
1	Power Modulator Unit 1021-1 (60 cps)	-----	78 x 24 x 24	1,000
	or			
1	Power and Modulator Unit 1021-2 (25 cps)	-----	78 x 24 x 24	1,000
1	R. H. Dust Cover 38M-1	-----	78 x 24 x 2	20

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95306

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
26	233.0	4,446

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NOs-74981, 29 Jun 1940	\$11,500.00 in- cluding equip- ment spares

RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCC-2

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	F16-Q-318679-100 (Navy)	--

(See Illustration of TCC, p. 643)

**FUNCTIONAL DESCRIPTION:**

Radio Telephone and Telegraph Transmitting Equipment TCC-2 is designed for shore use where medium and high frequency cw, mcw, and voice operation on any one of 10 preset frequencies is required with rapid changeover. By means of an autotune and telephone dial system, frequency change, choice of emission, and starting and shutting down the equipment may be accomplished either at the transmitter or at a remote point.

Equipments comprising the TCC series are all similar in operation and differ chiefly in power source requirements. The TCC and TCC-2 differ from the other models of the series in that the frequency range extends from 2.0 to 20.0 megacycles, instead of 2.0 to 18.1 megacycles.

Although TCC series equipments are still in use, they have been superseded by Radio Transmitting Equipment TDH.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 2 to 20*Frequency Control:* Crystal, 10 preset channels*Type of Signal:* Cw, mcw, voice*Keying Speeds:*

Cw: Up to several hundred words per minute

Mcw: Up to 60 wpm

*Power Output:*

Cw: 1,000 w

Mcw, voice: 600 w

*Power Requirements:* 4.5 kw, 220-v 50/60-cycle 3-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Autotune RF Bay 1007-6	-----	78 x 24 x 24	600
1	Operator's Control Unit 177E-2	-----	10-1/2 x 19 x 10	53
1	Operator's Desk Set 223G-4	-----	6 x 9 x 7-1/2	5.75
1	Power Unit 1006-6	-----	78 x 24 x 24	990
1	Station Control Unit 176L-2	-----	11-1/2 x 12-1/4 x 6-3/8	12

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95307

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

---

**AN/FRT-type** RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NOs-74981, 29 Jun 1940	\$11,500.00 including equipment spares

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## RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

Cognizant Serv: USN FSN:

TCC-3

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	F16-Q-318680-200	--

(See Illustration of TCC-1, p. 645)

**FUNCTIONAL DESCRIPTION:**

Radio Telephone and Telegraph Transmitting Equipment TCC-3 is designed for shore use where medium and high frequency cw, mcw, and voice operation on any one of 10 preset frequencies is required with rapid changeover. By means of an autotune and telephone dial system, frequency change, choice of emission, and starting and shutting down the equipment may be accomplished either at the transmitter or at a remote point.

Equipments comprising the TCC series are all similar in operation and differ chiefly in power source requirements.

Although TCC series equipments are still in use, they have been superseded by Radio Transmitting Equipment TDH.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 2.0 to 18.1*Frequency Control:* Crystal, 10 preset channels*Type of Signal:* Cw, mcw, voice*Keying Speeds:*

Cw: Up to several hundred words per minute

Mcw: Up to 60 wpm

*Power Output:*

Cw: 1,000 w

Mcw, Voice: 600 w

*Power Requirements:* 4.5 kw, 220-v 25/60-cycle 3-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Autotune RF Unit 1014-5	-----	78 x 24 x 24	600
1	Frequency Converter 231N500	-----	66 x 26-1/2 x 16	2,360
1	L. H. Dust Cover 38M-2	-----	78 x 24 x 2	20
1	Operator's Control Unit 177G-5	-----	10-1/2 x 19 x 10	53
1	Operator's Desk Set 223G-3	-----	5-1/2 x 5-1/8 x 7-1/2	5.75
1	Power and Modulator Unit 1021-5	-----	78 x 24 x 24	1,000
1	R. H. Dust Cover 38M-1	-----	78 x 24 x 2	20

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95308

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
22	271.89	3,893

MIL-HDBK-161

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**AN/FRT-type** RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT

---

PROCUREMENT DATA

---

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

---

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NOs-81551, 10 Feb 1941	\$11,500.00 including equipment spares

---

RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCC-4

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-318682-200 --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Telephone and Telegraph Transmitting Equipment TCC-4 is designed for shore use where medium and high frequency, cw, mcw, and voice operation on any one of 10 preset frequencies is required with rapid changeover. By means of an autotune and telephone dial system, frequency change, choice of emission, and starting and shutting down the equipment may be accomplished either at the transmitter or at a remote point.

Equipments comprising the TCC series are all similar in operation and differ chiefly in power source requirements.

Although TCC series equipments are still in use, they have been superseded by Radio Transmitting Equipment TDH.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:* 2.0 to 18.1*Frequency Control:* Crystal, 10 preset channels*Type of Signal:* Cw, mcw, voice*Keying Speeds:*

Cw: Up to several hundred words per minute

Mcw: Up to 60 wpm

*Power Output:*

Cw: 1,000 w

Mcw, voice: 600 w

*Power Requirements:* 4.5 kw, 220-v 60-cycle 3-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	L. H. Dust Cover 38M-2	-----	78 x 24 x 2	20
1	Operator's Control Unit NT-23360	-----	10-1/2 x 19 x 10	53
1	Operator's Desk Set 223G-3	-----	5-1/2 x 5-1/8 x 7-1/2	5.75
1	Radio Transmitter NT-52297, consisting of:			
	RF Power Unit	-----	78 x 24 x 24	600
	Modulator unit	-----	78 x 24 x 24	1,000
1	R. H. Dust Cover 38M-1	-----	78 x 24 x 2	20

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,214

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
22	271.89	3,893

MIL-HDBK-161

---

**AN/FRT-type** RADIO TELEPHONE AND TELEGRAPH TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

---

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

---

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NX <del>ss</del> -7662, 23 Feb 1942	\$11,500.00 including equipment spares

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RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCF

USA

USN

USAF

TYPE CLASS: --

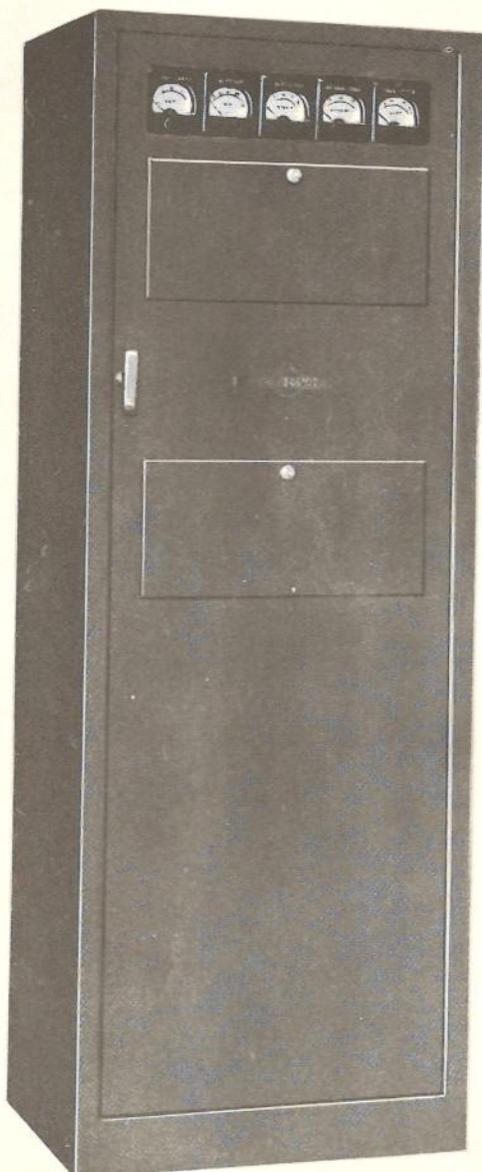
Used by

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STOCK NO: --

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TCF

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCF features rapid automatic selection of any 1 of 10 predetermined crystal frequencies. Through the use of an autotune motor and telephone dial system, frequency change, choice of emission, and starting and shutting down the equipment are accomplished either locally through a station control unit or remotely by means of an operator's control unit and desk set.

The TCF is designed for shore base operations.

Radio Transmitting Equipment TCF is similar in construction to the model TCB but differs in frequency range.

Equipment required but not supplied: Two telegraph keys and two volume indication meters.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 10,000 to 30,140 kc

*Frequency Control:* Crystal

*Power Output:* 50 to 75 w

*Type of Signal:* Cw, mcw, voice

*Operating Control:* Local or remote

*Keying Rate:* 60 wpm maximum

*Antenna:* Conventional single wire

*Power Requirements:* 1 kw, 110-v 60-cycle cps 1-phase ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Desk Set 223F-4	-----	6 x 7-1/2 x 9	5.75
1	Hand Set 997N19	-----		
1	Operator's Control Unit 177E-1	-----	8-3/4 x 10 x 19	38
1	Station Control Unit 176L-1	-----	5-1/2 x 7-3/4 x 9	11
1	Transmitter 16E-2	-----	16-1/2 x 21-1/2 x 61-3/4	502

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,116

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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Collins Manufacturing Co.

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

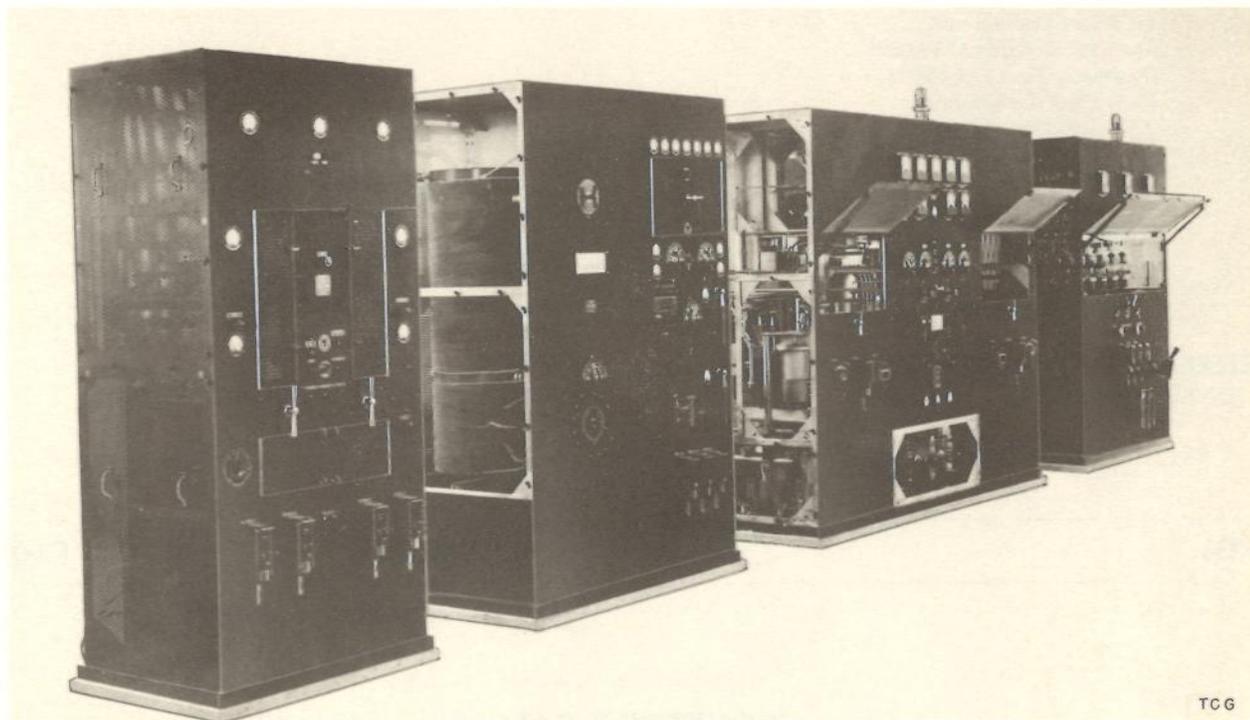
Cognizant Serv: USN FSN:

TCG

USA

USN

USAF

TYPE CLASS:  
STOCK NO:--  
--Used by  
----  
--

TCG

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCG is designed primarily as high-power, low-frequency, radiotelegraph transmitters for shore to ship service. This transmitter is capable of continuously variable adjustment to any frequency in the 50- to 150-kilocycle range. The TCG and TCG-1 are similar in operation, but differ in power requirements.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 50 to 150 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signal:* Cw

*Nominal Power Output:* 50 kw

*Keying Data:*

Relay Keying: Max. speed 200 wp

Dc Line Keying: Max. speed 500 wpm

*Power Requirements:* 100 kw, 230-v 60-cycle cps 3-phase ac

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	2 kw Exciter	CG-52194		
2	50 kw Power Amplifier	CG-50081		
1	Air Water Cooling unit			
2	Auxiliary Rectifier	CG-20121		
1	Contractor Unit	CG-29092		
1	Main Plate Transformer	CG-30458A		
1	Main Rectifier	CG-20111		
3	Step-down Transformer	-----	12-3/8 x 31-3/4 x 14-3/8	640
1	Water Cooling Unit			
	CWH-10273			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95311

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG: RE13A596A

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NOs-77907, 21 Oct 1940	\$256,275.00 in- cluding spares

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCG-1

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(See Illustration of TCG, p. 655)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TCG-1 is designed primarily as high-power, low-frequency radio telegraph transmitters for shore to ship service. This transmitter is capable of continuously variable adjustment to any frequency in the 50 to 150 kilocycle range. The TCG and TCG-1 are similar in operation, but differ in power requirements.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 50 to 150 kc in 6 bands*Frequency Control:* Master oscillator*Type of Signal:* Cw*Nominal Power Output:* 50 kw*Keying Data:*

Relay Keying: Maximum speed 200 wpm

De Line Keying: Maximum speed 500 wpm

*Power Requirements:* 100 kw, 400-v 25-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	2 kw Exciter CG-52229	-----	92 x 66-1/8 x 50-17/32	1,350
1	50 kw Power Amplifier CG-50089	-----	100-5/16 x 120-7/8 x 143-7/16	6,275
1	Air Water Cooling Unit	-----		
1	Auxiliary Rectifier CG-20127	-----	92 x 44-7/8 x 88-5/8	1,397
1	Contractor Unit CG-29089	-----	65-3/8 x 46 x 44	1,954
1	Main Plate Transformer CV-30597	-----	44-1/2 x 65-5/8 x 100-3/8	7,000
1	Main Rectifier CG-20115	-----	100-5/8 x 74-7/8 x 49-1/4	3,343
3	Step-Down Transformer CG-35595	-----	12-3/8 x 31-3/4 x 14-3/8	640
1	Water Cooling Unit CWH-10273	-----		

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 95311

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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MIL-HDBK-161

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**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

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PROCURING SERVICE: USN, BuShips  
SPEC &/or DWG: RE13A596A

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NOs-77907, 21 Oct 1940	\$256,275.00 including spares

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RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCG-2

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCG-2 is designed primarily as a high-power, intermediate frequency transmitter for shore to ship service and is to be used at shore stations.

**TECHNICAL CHARACTERISTICS:**

Frequency Range: 50 to 150 kc

Frequency Control: Master oscillator

*Type of Signal:* Cw*Nominal Power Output:* 50 kw*Keying Data:*

Relay Keying: Maximum speed 200 wpm

Facsimile Keying: Maximum speed 500 wpm

DC Line Keying: Maximum speed 500 wpm

*Power Requirements:* 100 kw, 230-v 50/60-cycle 3-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna tuning equipment			
1	Auxiliary Rectifier 20121-A	-----	38-5/8 x 45-7/8 x 92	1,382
1	Contacting Unit 29174	-----	44 x 46 x 65-3/8	1,790
1	Exciter 52194-A (2 kw)	-----	50-7/32 x 66-1/8 x 102	2,000
1	Main Plate Transformer 30846	-----	40-3/4 x 58-1/2 x 94-1/2	5,000
1	Main Rectifier 20152	-----	49-1/4 x 79-7/8 x 100-5/16	2,635
1	Power Amplifier 50125 (50 kw)	-----	100-5/16 x 120-7/8 x 143-7/16	5,000
1	Tank and Circulating Unit 10171	-----	38 x 51-1/2 x 67-3/8	1,500
1	Water Cooling Unit 10107			

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

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**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

---

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NOs-77907, 30 Jun 1942	\$163,600.00 including equipment spares

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## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

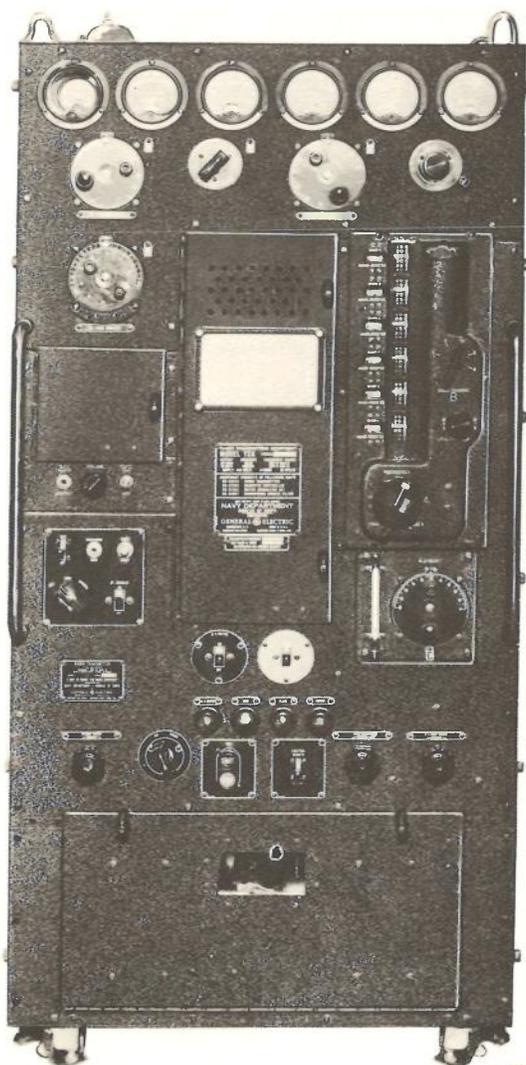
Cognizant Serv: USN FSN:

TCK

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by  
115-v dc: F16-Q-  
320915-200  
220/440-v ac: F-16-Q-  
320920-200

TCK

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TCK is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. The equipments are not limited solely to this application since installation of proper shock mountings adapts them for use on shipboard. The equipment is small in size with a relatively high output, and is for use where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically, except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signal:* Cw, voice

*Keying Data:* Relay keying, maximum speed 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 2.3 kw, 115/230-v dc; or 2.4 kw 220/440-v 60-cycle 3-phase ac

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnetic Controller CG-21627 (115-v dc operation)	-----	29-3/16 x 19-7/16 x 13-11/16	130
	or			
1	Magnetic Controller CG-21628 (230-v dc operation)	-----	29-3/16 x 19-7/16 x 13-11/16	130
	or			
1	Magnetic Controller CG-21629 (220/440-v, 3 phase, 60 cps operation)	-----	19-15/16 x 20-7/16 x 8-13/16	40
1	Microphone CAU-51006A	-----	3-3/8 x 3-1/4 x 3-3/4	1
1	Microphone CAU-51016A	-----	9-3/4 x 5-1/4 x 2-1/2	2
1	Microphone Circuit Filter CG-53087	-----	9-3/32 x 7-7/16 x 5-3/16	9
1	Motor-Generator Unit CG- 21631 (115-v dc operation)	-----	14-1/8 x 41-15/16 x 11-1/4	370
	or			
1	Motor-Generator Unit CG- 21632 (230-v dc operation)	-----	14-1/8 x 41-5/16 x 11-1/4	370
	or			
1	Motor Generator Unit CG- 21633 (220/440-v, 3 phase, 60 cps operation)	-----	14-1/8 x 38-1/4 x 11-1/4	320
1	Transmitter Unit CG-52214 (115-v dc operation)	-----	52-5/16 x 25 x 18-1/4	275
	or			
1	Transmitter Unit CG-52215 (230-v dc operation)	-----	52-5/16 x 25 x 18-1/4	280
	or			
1	Transmitter Unit CG-52216 (220/440-v, 3 phase, 60 cps operation)	-----	52-5/16 x 25 x 18-1/4	285

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,210

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
6	80.1	1,595

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG: EN-28/1263-41

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NOs-83834, 2 April 1941	\$9,578.00 including equipment spares



RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCK-1

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	115-v Dc: F16-Q-- 320945-200	--
		220/440-v Ac: F16-Q-- 320956-200	

(See Illustration of TCK, p. 661)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCK-1 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. The equipments are not limited solely to this application since installation of proper shock mountings adapts them for use on shipboard. The equipment is small in size with a relatively high output, and is for use where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models in the TCK are similar electrically and mechanically, except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master Oscillator

*Type of Signal:* Cw, voice

*Keying Data:* Relay keying, maximum speed 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 2.4 kw, 220/440-v 60-cycle 3-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnetic Controller CG-21629	-----	19-15/16 x 20-7/16 x 8-13/16	40
1	Microphone CAU-51016A	-----	9-3/4 x 5-1/4 x 2-1/2	2
1	Microphone Circuit Filter CG-53087	-----	9-3/32 x 7-7/16 x 5-3/16	9
1	Motor-Generator Unit CG- 21633	-----	14-1/8 x 38-1/4 x 11-1/4	320
1	Transmitter Unit CG-52216	-----	52-5/16 x 25 x 18-1/4	285

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,210

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	76.8	1,344

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG: S-500-2982

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NOs-87454, 18 June 1941	\$9,578.00 including equipment spares

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCK-2

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

F16-Q-320985-200 --

(See Illustration of TCK, p. 661)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCK-2 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. The equipments are not limited solely to this application since installation of proper shock mountings adapts them for use on shipboard. The equipment is small in size with a relatively high output, and is for use where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically, except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the

TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit. Model TCK-2 is not supplied with a microphone.

**TECHNICAL CHARACTERISTICS:***Frequency Range:* 2,000 to 18,100 kc in 6 bands*Frequency Control:* Master oscillator*Type of Signal:* Cw, voice*Keying Data:* Relay keying, maximum speed 100 wpm*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:* 500 ohms to line*Power Requirements:* 2.4 kw, 220/440-v 60-cycle 3-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnetic Controller CG-21629	-----	19-15/16 x 20-7/16 x 8-13/16	40
	or			
1	Magnetic Controller CG-21630	-----	19-15/16 x 20-7/16 x 8-13/16	40
1	Motor-Generator Unit CG-21633	-----	14-1/8 x 38-1/4 x 11-1/4	320
1	Transmitter Unit CG-52216A	-----	52-5/16 x 25 x 18-1/4	285

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,210

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	68.1	1,334

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	TCG-34112, 26 December 1941	\$9,578.00 including equipment spares

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

Cognizant Serv: USN FSN:

TCK-3

USA

USN

USAF

TYPE CLASS: --

STOCK NO: --

Used by

220 Ac: F16-Q-320995- --

200 (Navy)

440 Ac: F16-Q-321005-

200 (Navy)



TCK-3

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TCK-3 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. The equipment is not limited solely to this application since installation of proper shock mounting adapts it for use on shipboard. The equipment is small in size with a relatively high output, and is for use where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically, except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signal:* Cw, voice

*Keying Data:* Relay keying, maximum speed of 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 2.3 kw, 115/230-v dc; or 2.4 kw 220/440-v 60-cycle 3-phase ac

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnetic Controller CG-21627 (115-v dc operation)	-----	29-3/16 x 19-7/16 x 3-11/16	130
	or			
1	Magnetic Controller CG-21628 (230-v dc operation)	-----	29-3/16 x 19-7/16 x 13-11/16	130
	or			
1	Magnetic Controller CG-21629 (220/440-v ac operation)	-----	19-15/16 x 20-7/16 x 8-13/16	40
1	Microphone CAU-51044A	-----	9-3/4 x 5-1/4 x 2-1/2	2
1	Motor-Generator Unit CG- 21631A (115-v dc operation)	-----	14-1/8 x 41-15/16 x 11-1/4	370
	or			
1	Motor-Generator Unit CG- 21632A (230-v dc operation)	-----	14-1/8 x 41-15/16 x 11-1/4	370
	or			
1	Motor-Generator Unit CG- 21633A (220/440-v ac operation)	-----	14-1/8 x 38-1/4 x 11-1/4	320
1	Transmitter Unit CG-52214A (115-v dc operation)	-----	52-5/16 x 25 x 18-1/4	275
	or			
1	Transmitter Unit CG-52215A (230-v dc operation)	-----	52-5/16 x 25 x 18-1/4	280
	or			
1	Transmitter Unit CG-52216A (220/440-v ac operation)	-----	52-5/16 x 25 x 18-1/4	285

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,210

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	61.0	1,180

## PROCUREMENT DATA

PROCURING SERVICE: USN, BuShips      DESIGN COG: USN, BuShips  
SPEC &/or DWG: EN28/1362-43 SHIPS, EN28/1258-43 SHIPS, EN28/5820-43

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NXss-18783, 11 February 1943	\$9,578.00 including equipment spares



## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

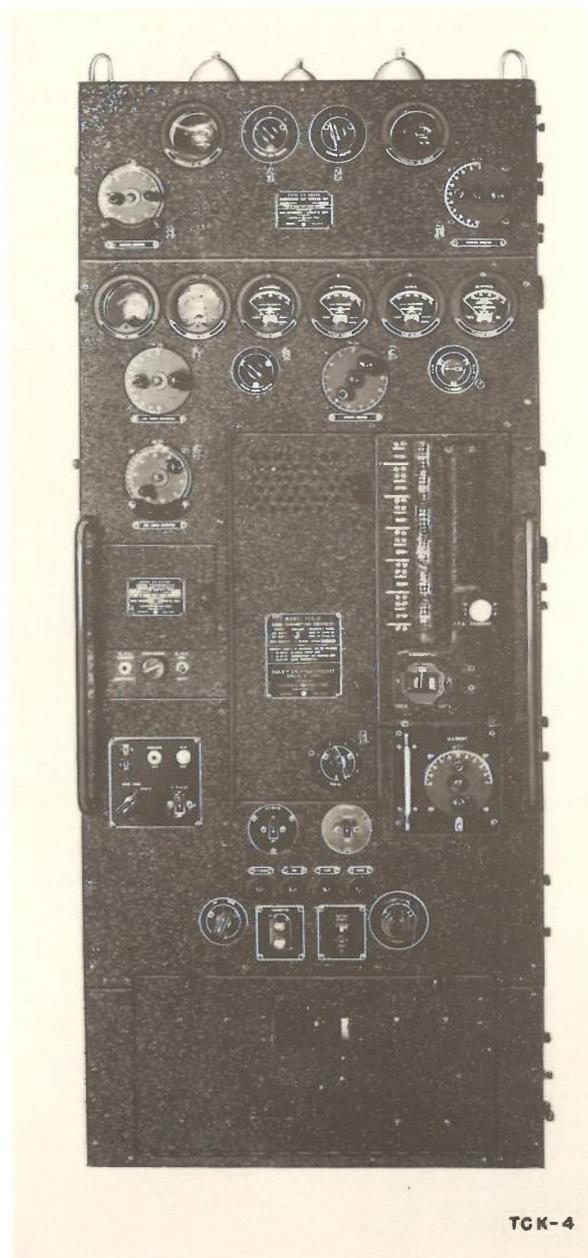
Cognizant Serv: USN FSN:

TCK-4

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by  
110/220 ac: F16-Q-  
321025-200

TCK-4

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TCK-4 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. The equipment is not limited solely to this application since installation of proper shock mountings adapts them for use on shipboard. It is small in size with a relatively high output, and is used where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically, except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signal:* Cw, voice

*Keying Data:* Relay keying, maximum speed 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 1.8 kw, 110/220-v 60-cycle 1-phase ac

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Line Coupling Unit CG-50139	-----	11-15/32 x 25 x 16-3/32	65
1	Microphone CAU-51044A	-----	9-3/4 x 5-1/4 x 2-1/2	2
1	Rectifier CG-20219	-----	51-25/32 x 24-13/16 x 16	375
1	Transmitter Unit CG-52299	-----	52-5/16 x 25 x 18-1/4	290

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,210

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	102.7	1,275

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
 SPEC &/or DWG: MIL-R-15526

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	NXss-18783, 22 February 1943	\$9,578.00 including equipment spares

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCK-5

USA

USN

USAF

TYPE CLASS: --

Used by

--

STOCK NO: --

--

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(See Illustration of TCK, p. 661)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCK-5 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. This equipment is not limited solely to this application since installation of proper shock mountings adapts it for use on shipboard. It is small in size with a relatively high output, and is used where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically, except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signals:* Cw, voice

*Keying Data:* Relay keying, maximum speed 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 2.3 kw, 115-v dc

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnetic Controller CG-21627	-----	29-3/16 x 19-7/16 x 13-11/16	130
1	Microphone CAU-51044A	-----	9-3/4 x 5-1/4 x 2-1/2	2
1	Motor-Generator Unit CG-21631A	-----	14-1/8 x 41-15/16 x 11-1/4	370
1	Transmitting Unit CG-52214A	-----	52-5/16 x 25 x 18-1/4	275

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,210

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	64.5	1,335

MIL-HDBK-161

**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Schenectady, N. Y.	TCG-36083, 16 June 1943	\$9,578.00 including equipment spares

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

5 December 1958

Cognizant Serv: USN FSN:

TCK-6

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(See Illustration of TCK-4, p. 673)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TCK-6 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. This equipment is not limited solely to this application since installation of proper shock mountings adapts it for use on shipboard. It is small in size with a relatively high output, and is used where space is at a premium. The transmitter may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signal:* Cw, voice

*Keying Data:* Relay keying, maximum speed 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 1.8 kw, 110/220-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Line Coupling Unit CG-50139	-----	11-15/32 x 25 x 16-3/32	65
1	Microphone CAU-51044A	-----	9-3/4 x 5-1/4 x 2-1/2	2
1	Rectifier CG-20219	-----	51-25/32 x 24-13/16 x 16	375
1	Transmitter Unit CG-52299	-----	52-5/16 x 25 x 18-1/4	290

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,210

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
5	102.7	1,275

MIL-HDBK-161

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**AN/FRT-type RADIO TRANSMITTING EQUIPMENT**

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**PROCUREMENT DATA**

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**PROCURING SERVICE:** USN  
**SPEC &/or DWG:**

**DESIGN COG:** USN, BuShips

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<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX UNIT COST</b>
General Electric Co.	Schenectady, N. Y.	TCG-36083, 30 Jun 1943	\$9,578.00 including equipment spares

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RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCK-7

USA

USN

USAF

TYPE CLASS: --

Used by

--

STOCK NO: --

--

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(See Illustration of TCK, p. 661)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TCK-7 is used for mf and hf telegraph and telephone transmission at shore installations, particularly at advanced bases. This equipment is not limited solely to this application since installation of proper shock mountings adapts it for use on shipboard. The equipment is small in size with a relatively high output, and is used where space is at a premium. It may be operated from the front panel or from a remote location by use of a standard four- or six-wire remote control unit.

All models of the TCK series are similar electrically and mechanically except that the TCK-4 and TCK-6 use a rectifier and a transmission line coupling unit. Models of the TCK series are not interchangeable due to minor circuit modifications and differences in power requirements.

Equipment required but not supplied: Navy standard four- or six-wire remote control unit.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 2,000 to 18,100 kc in 6 bands

*Frequency Control:* Master oscillator

*Type of Signal:* Cw, voice

*Keying Data:* Relay keying, maximum speed 100 wpm

*Nominal Power Output:*

Cw: 400 w

Voice: 100 w

*Input Impedance:*

To Microphone: 70 ohms

To Line: 500 ohms

*Power Requirements:* 2.3 kw, 230-v dc

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnetic Controller CG-211197	-----	17-5/16 x 11-9/16 x 10-5/8	46
1	Microphone CAU-51078	-----	10-3/8 x 5-1/4 x 2-5/8	2-1/4
1	Motor-Generator Unit CGU- 21632A	-----	14-1/8 x 41-15/16 x 11-1/4	345
1	Transmitter Unit CG-52345	-----	52-5/16 x 25 x 18-1/4	285

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,210

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
8	72.4	1,221

MIL-HDBK-161

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**AN/FRT-type** RADIO TRANSMITTING EQUIPMENT

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co	Schenectady, N. Y	NXsr-53304, 16 Mar 1944	\$9,578.00 including equipment spares

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RADIO TELEPHONE TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TCR

USA

USN

USAF

TYPE CLASS: -- Used by  
STOCK NO: -- F16-Q-324675-200 --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Telephone Transmitting Equipment TCR is a medium-power mf radiotelephone transmitter used at shore stations for communication with ships or other shore stations.

This equipment is specifically designed for remote control operation, and since only 58 feet of cable are supplied to connect the control units to the transmitter, location of the units must be carefully calculated.

Although it is still in use, the TCR has been superseded by Radio Transmitting Equipment TDF.

## TECHNICAL CHARACTERISTICS:

*Frequency Range:* 2,000 to 3,000 kc (6 pretuned channels)

*Frequency Control:* Crystal

*Type of Signal:* Mcw, voice

*Power Output (Average):* 125 w

*Keying:*

Type: Relay

Speed: 40 wpm

*Antenna:* Single-wire, quarter-wave with suitable ground, 50 to 65 feet

*Power Requirements:* 1.01 kw 105-125/210-250-v 50/60-cycle 1-phase ac (Conversion kits are available for operation on 220-v 25-cycle 3-phase ac; 44-v dc; 115-v dc; and 230-v dc)

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Cable equipment	-----	50 ft lg	
2	Control Unit 23242	-----	8-1/4 x 14 x 9-1/4	16 ea
1	Fused Line Switch 31322	-----	7-1/2 x 6-1/2 x 4	4.25
2	Hand Telephone Assembly 51027	-----	5-1/2 x 9 x 7-1/2	5 ea
1	Radio Transmitter 52207	-----	61-1/4 x 34 x 20	690
2	Telegraph Key type CQ	-----	1-3/8 x 2-7/8 x 5-1/2	0.33 ea

## REFERENCE DATA AND LITERATURE:

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	74	1,660

MIL-HDBK-161

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**AN/FRT-type** RADIO TELEPHONE TRANSMITTING EQUIPMENT

---

PROCUREMENT DATA

---

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radiomarine Corp. of America	New York, N. Y.	NOs-87455, 18 June 1941	

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RADIO TELEPHONE TRANSMITTING EQUIPMENT **AN/FRT-type**

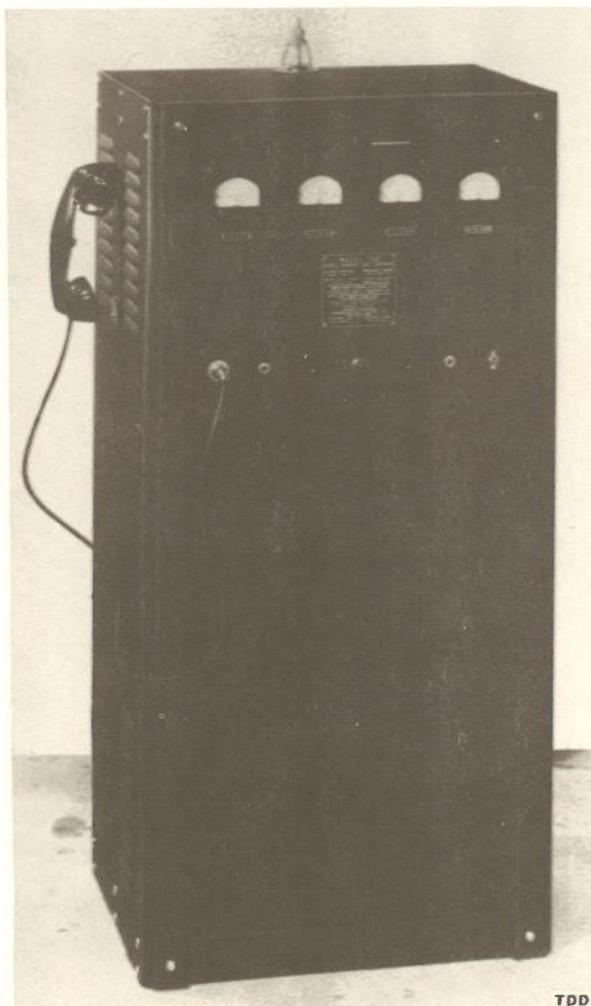
5 December 1958

Cognizant Serv: **USN** **FSN:****TDD, TDD-1, -2, -3, -4****USA****USN****USAF**

TYPE CLASS: --

Used by --

STOCK NO: --



TDD

**FUNCTIONAL DESCRIPTION:**

Radio Telephone Transmitting Equipment TDD, TDD-1, -2, -3, and -4 are low-power transmitters for use in airport traffic control towers. They are crystal controlled and operate in the frequency range of 200 to 550 kilocycles. Provisions are made for connection of a remote telephone or microphone and a muting relay. The muting relay prevents feed-back or objectionable interference when a receiver is used in conjunction with the transmitter equipment. Models of the TDD series are electrically and mechanically interchangeable. Antenna (Crystals NT-40,000) is required, but not supplied with the basic equipment.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 200 to 550 kc in 3 bands

*Frequency Control:* Crystal

*Type Emission:* A3

*Amplitude Modulation:* 100%

*Power Output:* 15 w average

*Power Requirements:* 330 w; 115-v  $\pm 10\%$ , 60-cycle, 1-phase ac

*Antenna Type:* Single-wire, 100 to 500 feet

## AN/FRT-type RADIO TELEPHONE TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
<i>TDD or TDD-1</i>				
1	Radio Telephone Transmitting Equipment, consisting of:			
	Cabinet	-----	18 x 25-1/2 x 52	120
	Radio Transmitter NT- 52258	-----	14 x 14 x 19	70
<i>TDD-2</i>				
1	Radio Telephone Transmitting Equipment, consisting of:			
	Cabinet	-----	18 x 25-1/2 x 52	120
	Radio Transmitter NT- 52258-A	-----	14 x 14 x 19	70
<i>TDD-3</i>				
1	Radio Telephone Transmitting Equipment, consisting of:			
	Cabinet	-----	18 x 25-1/2 x 52	120
	Radio Transmitter NT- 52258-B	-----	14 x 14 x 19	70
<i>TDD-4</i>				
1	Radio Telephone Transmitting Equipment, consisting of:			
	Radio Transmitter NT- 52258-C	-----	17-5/8 x 22 x 51-3/4	190
	Set of equipment spares and accessories	-----	9 x 12-3/4 x 18-1/2	62

## REFERENCE DATA AND LITERATURE:

TDD-2: NAVSHIPS 900,271-1B  
TDD-3: NAVSHIPS 900,271-1B  
TDD-4: NAVSHIPS 91499

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	39.72	452

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RADIO TELEPHONE TRANSMITTING EQUIPMENT **AN/FRT-type**


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PROCUREMENT DATA

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PROCURING SERVICE: USN, BuShips  
 SPEC &/or DWG: MIL-R-15588

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
<i>TDD-2:</i> Communications Co., Inc.	Coral Gables, Fla.	NXsr-38851, 11 October 1943	\$1,100.00 including equipment spares
<i>TDD-3:</i> Communications Co., Inc.	Coral Gables, Fla.	NXsr-90765, 23 January 1945	\$1,100.00 including equipment spares
<i>TDD-4:</i> Starrett Television Corp.	New York, N. Y.	NObsr-52247, 2 Feb-1951	\$1,100.00 including equipment spares

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RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TDF

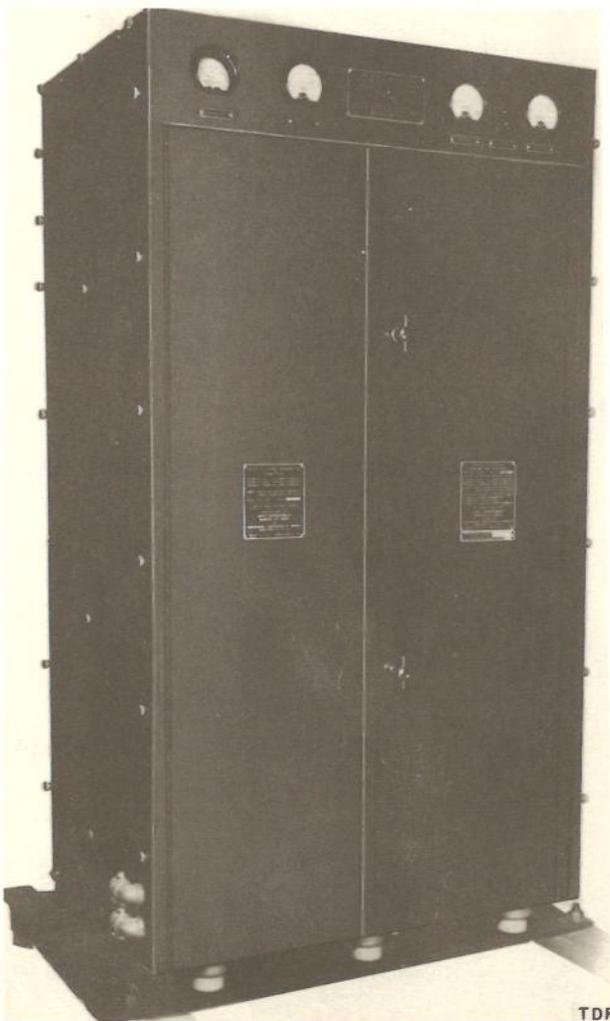
USA

USN

USAF

TYPE CLASS:  
STOCK NO:

Used by

115KC: 16-Q-332895-  
200220KC: 16-Q-332905-  
200**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TDF is designed for installation at shore stations for communication with ship or other shore stations. This equipment is similar to Radio Telephone Transmitting Equipment TCR, but has a greater frequency range.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 2.0 to 9.4 mc

*Type of Signal:* Cw, mew, voice

*Keying Data:* Relay keying, 40 wpm

*Nominal Power Output:* 125 w

*Antenna Data:* Quarter-wave antenna with suitable ground system

*Power Requirements:* 1,000 w, 105-125/210-250-v 50-60-cycle 1-phase ac; conversion kits are available for other power sources

MIL-HDBK-161

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
2	Control Unit 23288	-----	8-1/4 x 14 x 9-1/4	16
2	Hand Telephone Assembly 51027	-----	5-1/2 x 9 x 7-1/2	5
1	Main Line Safety Switch 24969	-----	7-1/2 x 6-1/2 x 4	4.25
1	Radiotelephone Transmitter 52261	-----	61-1/4 x 34 x 20	690
1	Set of Frequency Conversion Parts	-----		
2	Telegraph Key	-----	1-3/8 x 2-7/8 x 5-1/2	0.33

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95329

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	74	1,660

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Radiomarine Corp. of America	New York, N. Y.	NXs-9542	\$3,000.00

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

5 December 1958

Cognizant Serv: USN FSN:

TDH, TDH-2, -3, -4

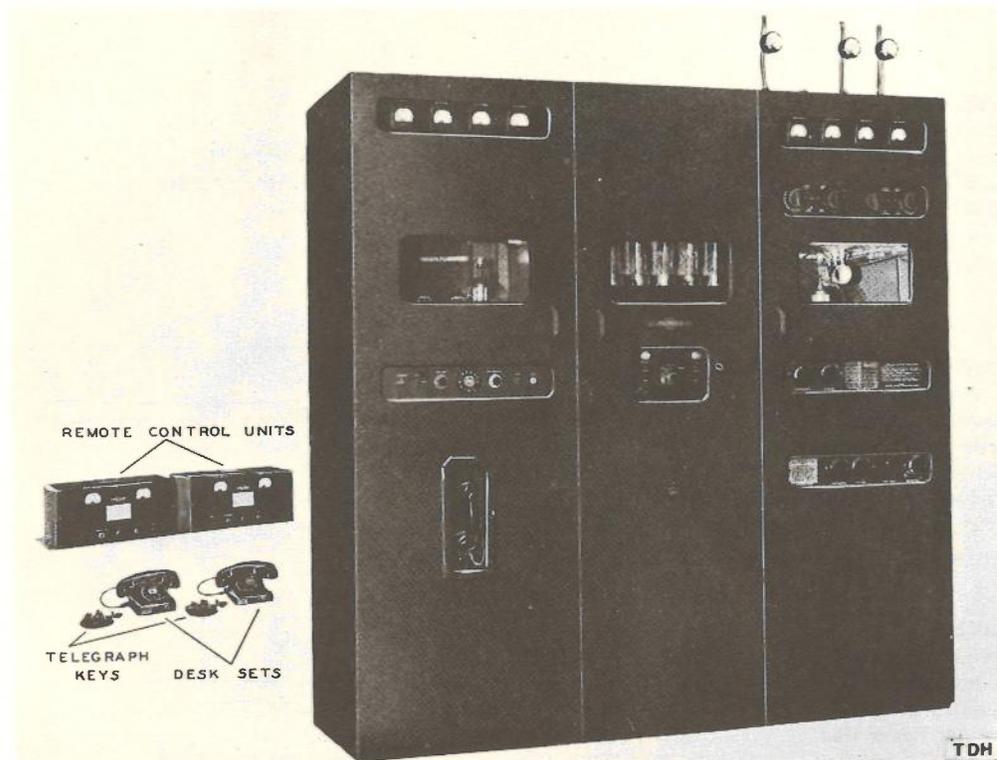
USA

USN

USAF

TYPE CLASS:  
STOCK NO:--  
--

--	TDH-2: 16-Q-333606-	--
	200	
	TDH-3: 16-Q-333608-	
	200	
	TDH-4: 16-Q-333645-	
	200	

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipments TDH and TDH-2, -3 and -4 are primarily intended for land applications involving point to point communication, aeronautical ground stations, and other services requiring operation on a number of readily selected frequency channels. The units are equipped with an automatic telephone dial system which permits the selection of any one of eleven pretuned frequency channels, and may be operated at the transmitter, or from a remote location. The TDH, TDH-2, -3 and -4 are similar electrically and mechanically, and differ only in minor modifications.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2 to 18.1  
*Type of Emission:* A1, A2, A3  
*Keying:* A1—200 wpm maximum; A2—60 wpm max  
*Power Output:* At 2 to 12 mc, 3 kw; at 12 to 18.1 mc, 2.5 kw  
*Power Source Required:*  
 Transmitter—9.92 kw, 230-v, 50 to 60-cycle, 3-phase ac (.84 pf).  
 Remote Control Unit—52 w, 115-v, 50- to 60-cycle, 1-phase ac (0.86 pf)

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT****MAJOR COMPONENTS**

<b>QTY</b>	<b>ITEM</b>	<b>STOCK NUMBERS</b>	<b>DIMENSIONS (Inches)</b>	<b>WEIGHT (Lbs)</b>
<i>For TDH</i>				
2	Desk Set Collins	20N406		
1 set	Equipment Spares			
3	Microphone	CTE-51004		
1	Modulator	COL-50129	84 x 28-1/2 x 31	830
1	Radio Transmitter	COL-52291	95-5/8 x 28-1/2 x 31	775
1	Rectifier Power Unit	COL-20196	84 x 25 x 31	1,350
2	Remote Control Unit	COL-23351	19 x 8-15/16 x 10-1/2	80
<i>For TDH-2</i>				
1 set	Equipment Spares			
3	Microphone Collins	20N406		
1	Modulator	COL-50129	84 x 28-1/2 x 31	800
1	Radio Transmitter	COL-52291	95-5/8 x 28-1/2 x 31	775
1	Rectifier Power Unit	COL-20196	84 x 25 x 31	1,350
2	Remote Control Unit	COL-23351	19 x 8-15/16 x 10-1/2	80
2	Telegraph Key and Cord	COL-26019		
<i>For TDH-3</i>				
1 set	Equipment Spares			
3	Microphone Collins	20N406		
1	Modulator	COL-50129	84 x 28-1/2 x 31	830
1	Radio Transmitter	COL-52291	95-5/8 x 29-1/2 x 31	775
1	Rectifier Power Unit	COL-20196	84 x 25 x 31	830
2	Remote Control Unit	COL-23384	19 x 8-15/16 x 19-1/2	105
2	Telegraph Key and Cord	COL-26019		
<i>For TDH-4</i>				
2	Desk Set Collins	223G-B		
1 set	Equipment Spares			
1	Modulator	COL-50129	84 x 28-1/2 x 31	830
1	Radio Transmitter	COL-52343	86 x 28-1/2 x 31	749
1	Rectifier Power Unit	COL-20196	84 x 25 x 31	1,350
2	Remote Control Unit	COL-23384	19 x 8-15/16 x 19-1/2	105
2	Telegraph Key and Cord	COL-26019		

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95531, 95332, 900,904, 900,798

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
22	475	6,000

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NX <sub>ss</sub> -5515 NX <sub>ss</sub> -25888 NX <sub>ss</sub> -21717 NX <sub>sr</sub> -55667	\$11,000.00



## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

6 October 1958

Cognizant Serv: USN FSN:

TDN

USA

USN

USAF

TYPE CLASS: --

Used by

STOCK NO: --

F16-Q-334400-100



## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TDN is a multichannel radio telegraph transmitter made up of separate radio-frequency units for different channels. The use of these

separate units makes possible simultaneous operation on several frequencies and rapid frequency change without using completed RF switching.

Each RF unit is a complete telegraph transmitter, lacking only a power supply to operate independently. It is designed for operation on its own RF line and antenna system. The audio amplifier unit is a complete audio-frequency equipment that provides voice transmission throughout the frequency range of the equipment.

The transmitter is used at aircraft ground stations and for general communications. Remote control is possible at distances up to 1/2 mile.

## TECHNICAL CHARACTERISTICS:

*RF Unit:*

Frequency Range in Mc: 2 to 20 in three bands

Frequency Control: Crystal

Type Signal: AM

Type Transmission: Cw, voice

Modulation: 100% with maximum input of 4 kw from power amplifier

Impedance, RF Line: 400 to 700 ohms

*AF Unit:*

Type: Balanced speech and power audio amplifier for modulation of single RF unit

Power Output: 3 kw

Distortion:

95% Modulation: Less than 10%

70% Modulation: Less than 50%

Overall Frequency Response: 300 to 4,000 cps within 3 db

Power Requirements (Four RF Units in Use): 20 kw, 220-v 50- to 60-cycle 3-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Lock Control Unit 23357	-----	7 x 19 x 4-1/2	10
1 set	Miscellaneous hardware			
1	Plate Transformer 301046	-----	26-1/2 x 15-1/2 x 26	
4	Radio Transmitter:			
(1)	52349	-----	72 x 11-1/4 x 34	
(2)	52350	-----	72 x 11-1/4 x 34	
(1)	52351	-----	72 x 11-1/4 x 34	
1	Rectifier Power Unit 301046	-----	71-3/4 x 22-1/2 x 34-1/4	

MIL-HDBK-161

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**AN/FRT-type RADIO TRANSMITTING EQUIPMENT**

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**REFERENCE DATA AND LITERATURE:**

Instruction book for Navy Model TDN Radio Transmitting Equipment

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**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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**PROCUREMENT DATA**

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone & Radio Corp.	Newark, N. J.	NXss-18118, 24 November 1942 (Cw transmission only)	

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## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

7 October 1958

Cognizant Serv: USN FSN: TDN-2, 5820-644-4879 (with equipment spares) TDN-2, TDN-3, TDN-4  
 TDN-3, 5820-642-6403  
 5820-665-1784 (with equipment spares)  
 TDN-4, 5820-462-6368  
 5820-665-2312 (with equipment spares)

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipments TDN-2, TDN-3, and TDN-4 are multichannel radio telegraph transmitters using separate radio-frequency units for different channels. The use of these separate units makes possible not only simultaneous operation on several frequencies but also rapid frequency change without using complicated RF switching.

Each RF unit is a complete telegraph transmitter, lacking only the power supply to operate independently. Each unit operates with a separate antenna. The audio amplifier unit is a complete audio-frequency equipment that provides voice transmission throughout the frequency range of the transmitting equipment. The stations can be controlled at the transmitter location or from a remote location at distances up to 1/2 mile.

The TDN-2 and TDN-3 have crystal oscillator control on five and six preset channels, respectively. The TDN-4 has master oscillator control and has been modified to facilitate connection of external frequency-shift keying apparatus.

The radio transmitting equipment is designed for use at

aircraft ground stations or for general shore station communications.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 20 in three bands

*Number of Preset Frequencies:*

TDN-2, TDN-4: 5

TDN-3: 6

*Frequency Control:* Quartz crystal or Colpitts master oscillator

*Type Signal:* AM

*Type Transmission:*

TDN-2, TDN-3: Cw

TDN-4: Cw, voice

*Nominal Power Output:* 3 kw for keyed cw or intermittent PHONE per transmitter

*Audio Input Level:* 25 db below 6 mw

*Frequency Response:* Flat within 3 db between 300 and 4,000 cps

*Input Impedance:* 500 ohms

*Power Requirements:* 115-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Equipment spare parts (less tubes)	-----	-----	940 (TDN-2) 970 (TDN-3) 1,017 (TDN-4)
1	Local control and keyer cabinet, including:	-----	20-3/4 x 22 x 76-3/16	320
3	Keying unit	-----		
1	Operator's control unit	-----		
1	Selector control unit	-----		
1	Local control and keyer cabinet (TDN-2), including:	-----	20-3/4 x 22 x 76-3/16	325
1	Keyer Power Supply 20322	-----	6-25/32 x 6-31/32 x 19	20
2	Keying Unit 23466	-----	6-19/32 x 6-31/32 x 19	15

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS—Continued

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Operator's Control Unit 23465	-----	5-7/32 x 9-11/16 x 19	16
1	Selector Control Unit 23464	-----	15-5/16 x 19 x 24-15/32	115
1	Local control and keyer cabinet (TDN-3), including:	-----	20-3/4 x 22 x 76-3/16	335
1	Keyer power supply	-----		
3	Keyer unit	-----		
1	Operator's unit	-----		
1	Selector control unit	-----		
1	Local control and keyer cabinet (TDN-4), including:	-----	20-3/4 x 22 x 76-3/16	325
1	Keyer power supply	-----		
2	Keying unit	-----		
1	Local Control Switch Panel 23470	-----	6 x 6-31/32 x 19	6
1	Operator's control unit	-----		
1	Selector control unit	-----		
2	Master oscillator cabinet, in- cluding:	-----	19-5/8 x 22 x 76-3/16	395
1	Oscillator Power Supply 20323	-----		
1	Patchboard Panel 23472	-----	4-1/4 x 7 x 19	5
1	Patchboard Panel 23511	-----	4-1/4 x 7 x 19	5
4	RF Oscillator 35059	-----	8-3/4 x 15-1/4 x 19	40
3	Transmitter connector panel RE-23-F-2268	-----	2-7/8 x 3-3/4 x 8-5/8	1
2	Modulator 50204 (TDN-4)	-----	11-1/4 x 34 x 72	496
1 set	Operating tubes	-----		93 (TDN-2) 108 (TDN-3) 123 (TDN-4)
2	Plate Transformer 301046-A	-----	18-1/2 x 25-11/16 x 26-1/4	750
2	Radio Transmitter 52349	-----	11-1/4 x 34 x 72	296
2	Radio Transmitter 52350	-----	11-1/4 x 34 x 72	296
1 (TDN- -2, -4)	Radio Transmitter 52351	-----	11-1/4 x 34 x 72	296
2 (TDN- 3)		-----		
1 set	Spare tubes	-----		93 (TDN-2) 108 (TDN-3) 123 (TDN-4)

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,709

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
25 for TDN-2	816.5	11,104
18 for TDN-3	801.75	9,162
23 For TDN-4	938	10,688

## PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone & Radio Corp.	Clifton, N. J.	NXsr-51522, 3 March 1944	\$26,100, (TDN-2) with equipment spares \$28,000 (TDN-3) with equipment spares \$29,700 (TDN-4) with equipment spares



## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

9 October 1958

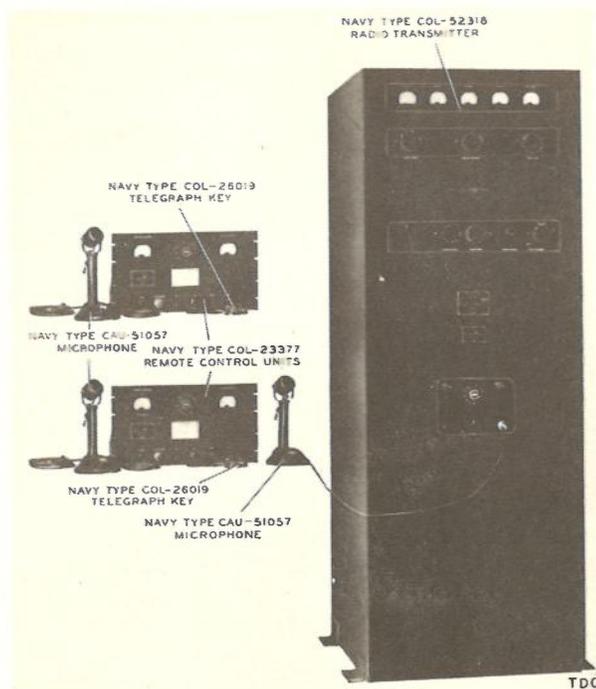
Cognizant Serv: USN FSN: 5820-265-8325  
5820-665-2283 (with equipment spares)

TDO

USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --Used by --  
F16-Q-335815-200 --

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TDO is a medium-powered, high-frequency radio transmitter used at shore stations for point-to-point communication. It uses an autotune system for instantaneous selection of any one of 11 preset channels. Channel selection is made by a telephone dial on the transmitter panel or at the remote control unit.

The remote control units may be used for complete control of the equipment at any distance where the total line loss does not exceed 25 decibels. An electronic carrier control permits keying speeds up to several hundred words per minute for continuous-wave operation and 60 words per minute for modulated continuous-wave operation. A master oscillator is used for frequency control.

The radio transmitter is designed to operate into an unbalanced 70- to 600-ohm antenna or line.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 2 to 18.1*Frequency Control:* Master oscillator, 10 preset channels*Type Signal:* AM*Type Transmission:* Cw, mcw, voice*Nominal Power Output:*

Cw: 400 w

Mcw and Voice: 250 w

*Keying Data:*

Cw: 200 wpm

Mcw: 60 wpm

*Input Impedance:* 500 ohms*Power Requirements:*

Transmitter: 1,570 w; 115/230-v 50- to 60-cycle 1-phase ac

Remote Control Unit: 25 w, 115-v 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Accessories			
1 set	Equipment spares			100
3	Microphone 26019			
1	Radio Transmitter 52318		80-5/8 x 28 x 28-1/8	1,140
2	Remote Control Unit 23377		8 x 19 x 10-1/2	60
2	Telegraph Key 26019			
2 sets	Vacuum tubes			10

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**AN/FRT-type RADIO TRANSMITTING EQUIPMENT**

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95336

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
12	164.9	2,372

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NXss-20834, 5 January 1943	\$9,578 with equipment spares
		NXss-24869, 27 February 1943	\$9,578 with equipment spares

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

17 October 1958

Cognizant Serv: USN FSN: 5820-642-6165  
5820-665-2281 (with equipment spares)

TEB

USA

USN

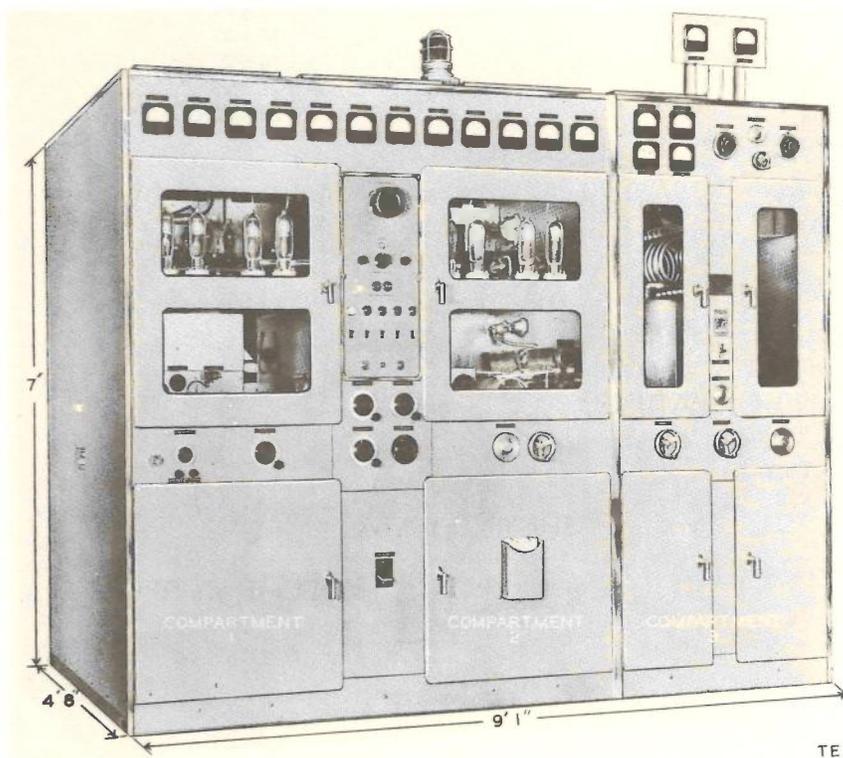
USAF

TYPE CLASS: --

Used by

STOCK NO: --

F16-Q-338850-200

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TEB is a high-powered, high-frequency shore-based equipment used for radiotelegraph or frequency-shift operation in shore-to-ship and point-to-point communication within line-of-sight distances. Six preset crystal-controlled channels are available, and provision is made for connecting an external master oscillator.

Vacuum-tube keying speeds up to 400 words per minute are possible. An external frequency-shift keyer unit may be connected for teletypewriter operation. An automatic control circuit will shut down the entire unit, except for the blowers and oscillator oven, if the transmitter is not keyed for a predetermined period, adjustable from 2 to 30 minutes.

The TEB is designed to work into a balanced two-wire transmission line of 550 to 600 ohms impedance and zero reactance.

This equipment is essentially the Press Wireless Co. Model PW-15 and is identical with Radio Transmitter T-172/FR.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4 to 21

*Frequency Control:* Crystal

*Frequency Stability:* Better than 1 cps/mc/°C in ambient temperature of 140° F

*Ambient Temperature Limits:* 0° to 50°C

*Type Signal:* AM., FM

*Type Transmission:* Cw, fsk

*Type Keying:* Vacuum tube

*Keying Speed:* 400 wpm or better

*Carrier Output:*

Cw into 600-ohm Load: 15 kw

Frequency-shift into 600-ohm Load: 15 kw

*Power Output:* 15 kw

*Output Impedance:* Balanced two-wire line of 550 to 650 ohms

*Power Consumption:*

Key Down: 35 kw for 15-kw RF output

Key Up: 6.9 kw for zero RF output

*Power Requirements:* 0.945 pf, 207- to 253-v 57- to 63-cycle 3-phase ac

**AN/FRT-type RADIO TRANSMITTING EQUIPMENT****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Equipment spares:			
	Box 1	-----	38 x 19 x 27	201
	Box 2	-----	38 x 15 x 27	208
	Box 3	-----	38 x 15 x 27	200
	Box 4	-----	38 x 21 x 28	622
1	Radio Transmitter 52353	-----	84 x 109 x 56	6,365
1 set	Vacuum tubes (operating and spare):			
	Box 1	-----	34 x 17 x 30	40
	Box 2	-----	38 x 19 x 27	94
	Box 3	-----	53 x 23 x 27	186
	Box 4	-----	41 x 21 x 28	94
	Box 5	-----	41 x 21 x 28	94

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 900,352(A)

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
20	834	15,628

**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Press Wireless Manufacturing Corp.	Long Island City, N. Y.	NXsr-55605	\$38,500.00
		NXsr-83381	38,500.00
		N5sr-10537	38,500.00
		N5sr-17791	38,500.00

## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

17 October 1958

Cognizant Serv: USN FSN: 5820-642-6149  
5820-665-2048 (with equipment spares)

TEC

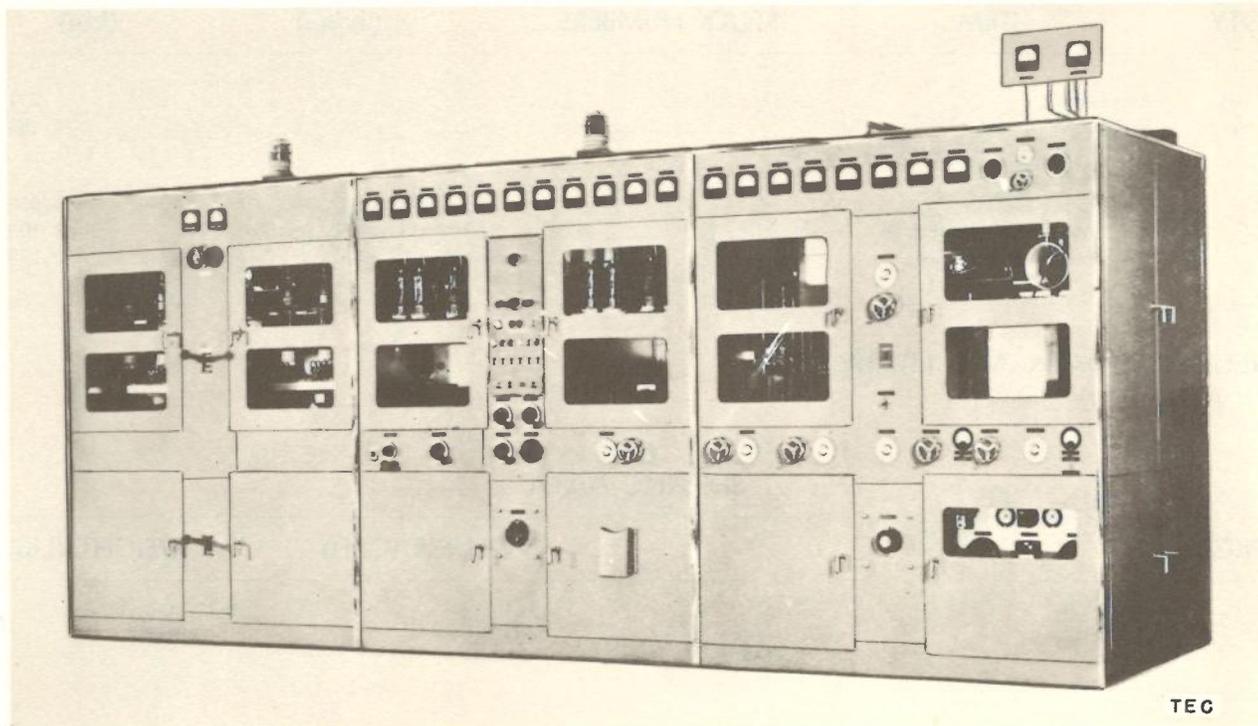
USA

USN

USAF

TYPE CLASS: --  
STOCK NO: --

Used by  
F16-Q-339595-200



TEC

## FUNCTIONAL DESCRIPTION:

Radio Transmitting Equipment TEC is a shore-based unit used for high-powered, high-frequency radiotelegraph or frequency-shift operation in shore-to-ship and point-to-point communication. Six preset crystal-controlled channels available, and provision is made for connecting a master oscillator.

Vacuum-tube type keying speeds up to 400 words per minute are possible. An external frequency-shift keyer may be connected for teletypewriter operation. An automatic control feature will shut down the equipment if it is not keyed for any predetermined period, adjustable from 2 to 30 minutes. The control section provides overload protection for both driver and power amplifier stages.

The TEC may be used in conjunction with a single-side-band transmitter, the output of which is fed into the power amplifier stage of the TEC. The TEC is designed to work into a balanced two-wire transmission line of 550 to 650 ohms impedance with zero reactance.

This equipment is essentially The Press Wireless Model PW-40.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 4 to 21

*Frequency Control:* Crystal or external oscillator

*Frequency Stability:* Drift less than 2 cps/mc at 20°C (68°F.)  
ambient temperature

*Type Signal:* AM, FM

*Type Transmission:* Cw, voice, fsk

*Type Keying:* Vacuum tube

*Keying Speed:* 400 wpm or better

*Carrier Output:*

Cw into 550- to 650-ohm Load: 40 kw

Voice into 550- to 650-ohm Load: 30 kw

Frequency-shift into 550-to 650-ohm Load: 40 kw

*Power Output:*

Normal Operation: 40 kw

Without Power Amplifier: 2 kw

MIL-HDBK-161

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

*Heat Dissipation:*

Power Amplifier: 22 kw  
Exciter: 2 kw  
Main Rectifier: 2 kw

*Power Consumption:*

Key Down: 95 kw  
Key Up: 38 kw at zero frequency output  
*Power Requirements:* 0.95 pf, 207- to 253-v 60-cycle 3-phase ac

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1 set	Accessories	-----	-----	234
1 set	Equipment spares	-----	-----	4,393
1	Radio Transmitter Unit 52354, consisting of:			
1	Exciter section	-----	84-1/2 x 82 x 56	3,650
1	Power amplifier section	-----	84-1/2 x 82 x 56	3,105
1	Power rectifier section	-----	84-1/2 x 82 x 56	2,780

### REFERENCE DATA AND LITERATURE:

NAVSHIPS 900,212-X

### SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
52	2,343	35,136

### PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Press Wireless Manufacturing Corp.	Long Island City, N. Y.	NXsr-55605, 2 Jan- uary 1955	\$38,816 with equipment spares
		N5sr-807 23 April 1945	\$38,816 with equipment spares

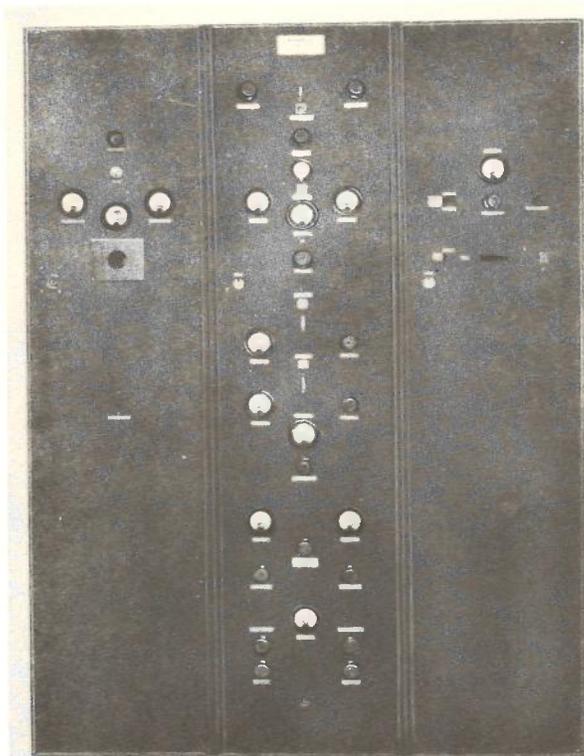
## RADIO TRANSMITTING EQUIPMENT AN/FRT-type

17 October 1958

Cognizant Serv: USN FSN: 5820-642-6215  
5820-665-3847 (with equipment spares)

TEF

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	F16-Q-339600-200	--



TEF

**FUNCTIONAL DESCRIPTION:**

Radio Transmitting Equipment TEF is a medium-powered, high-frequency short wave radiotelephone transmitter for use in transoceanic communication. It provides two telephone

channels in a twin-channel, single-sideband system or, alternatively, one conventional double-sideband channel. The equipment is designed for installation at shore stations.

The transmitting equipment is exceptionally flexible in its disposition of communication channels to reduce interference or interchannel crosstalk. The change from single- to double-sideband operation is made by a relay operated at the transmitter or from a remote control panel and may be adjusted for any one of six preset frequencies.

The TEF has a monitor circuit that is used to measure the degree of distortion at the output.

This equipment is essentially the Western Electric Co. Model D-156000 and is the transmitting component of Radio Sets AN/FRC-10 and AN/FRC-10A.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 4.5 to 22 (by modification, 4 to 20)

*Frequency Control:* Crystal oscillator

*Type Signal:* AM

*Type Transmission:* Cw, mcw, voice

*AF Input:* Two independent channels from 100 to 6,000 cps

*Speech Input Level:*  $\pm 5$  db

*Tone Input:* 1 mw

*Signal-to-Noise Ratio:*

Single Side Band: 50 db plus

Double Side Band: 40 db plus

*Peak Power Output:* 2 kw

*Average Power Output:* 500 w

*Antenna:* 400- to 800-ohm open-wire line or 200-ohm balanced concentric line

*Power Requirements:* 5 kw, 220- to 235-v 50- to 60-cycle 3-phase ac

## AN/FRT-type RADIO TRANSMITTING EQUIPMENT

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Transmitter, WEC Model D-156000, consisting of:	-----	90 x 69 x 27	2,400
4	Amplifier:			
(1)	50221	-----	7 x 20-1/4 x 27	
(1)	50222	-----	7 x 20-1/4 x 27	
(1)	50223	-----	7 x 20-1/4 x 27	
(1)	50224	-----	19-1/4 x 20-1/4 x 27	
1	Antenna Matching Trans- former 47626	-----	7-7/8 x 19 x 19-1/4	
1	Attenuator Panel 632781			
1	Crystal Filter A and B 53220			
1	Double Sideband Input Panel 50219	-----	8-3/4 x 27 x 20-1/4	
1	Grounding Panel 10452			
1	High-Frequency Distribu- tion Panel 10454			
1	Jack Panel 49737	-----	9/16 x 13/16 x 3-15/32	
1	Key Panel 26023			
1	Low-Frequency Distribu- tion Panel 10453			
1	Low-Power High-Frequency Unit 35067	-----	10 x 19 x 27	
2	Modulator:			
(1)	50218 (1A)	-----	5-1/4 x 8-3/4 x 19	
(1)	50246 (1B)	-----	5-1/4 x 8-3/4 x 19	
1	Monitor Panel 60126			
1	Multi-Circuit Low-Fre- quency Panel 50220	-----	12-1/4 x 27 x 20-1/4	
8	Rectifier Unit:			
(1)	20356			
(1)	20357			
(1)	20358			
(1)	301640			
(1)	301641			
(1)	20359	-----	14 x 19 x 26	
(1)	20360	-----	12 x 20-1/4 x 12-5/8	
(1)	20361	-----	12 x 20-1/4 x 12-5/8	
1	Screen Supply Regulator Panel 20362	-----	6 x 27 x 19	
1	Voltage Regulator 301642	-----	8 x 7 x 19-5/16	
1	Voltmeter Switching Panel 49737			

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 95356  
TM 11-832

RADIO TRANSMITTING EQUIPMENT **AN/FRT-type**

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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## PROCUREMENT DATA

PROCURING SERVICE: USN, BuShips  
SPEC &/or DWG:

DESIGN COG: Commercial

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co., Inc.	New York, N. Y.	NXs-60059	\$55,000.00



RADIO COMMUNICATION TRANSMITTING EQUIPMENT **AN/FRT-type**

20 October 1958

Cognizant Serv: USN FSN: 5820-642-6153  
5820-665-2269 (with equipment spares)

TEG-1

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Communication Transmitting Equipment TEG-1 is a highly flexible radio transmitter designed for shore installations. Interference with other units of a duplex communication system are minimized, and instant contact with receiving units on preselected frequency channels are assured by temperature-controlled crystal and oscillator circuits and calibration circuits that simplify checking the accuracy of the self-excited oscillator against crystal-controlled frequencies.

At the transmitter, the control panel permits the choice of 10 preset frequencies and 1 manually controlled frequency and 5 types of carrier emission with 3 power levels. A motor-driven frequency selector and relay switching system permits a complete transfer from one operation to another in less than 25 seconds.

The transmitting equipment may be used for local operation or remote operation from up to 10 remote stations. Both

amplitude and frequency-shift modulation are available at either position.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 200 to 2,000 kc, 1 preset channel 2,000 to 18,100 kc, 9 preset channels and 1 manual

*Frequency Control:* Crystal

*Type Signal:* AM, FM

*Type Transmission:* Cw, mcw, voice, fsk

*Type Keying:* Vacuum tube

*Keying Speeds:*

Cw: Up to 500 wpm

Mcw: Up to 100 wpm

*Carrier Output:*

Cw: 100 w

Mcw, voice: 80 w

*Heat Dissipation:* 1,475 w

*Power Requirements:* 1.6 kw (maximum), key down, 0.95 pf (minimum), 50- to 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Tuner, High-Frequency 472067	-----	19-3/8 x 24-1/4 x 30-7/8	220
1	Antenna Tuner, Low-Frequency 472067	-----	19-3/8 x 30-7/8 x 32	232
1	Cable for remote control	-----		
1	Line Terminal 62385	-----	17 x 24-3/8 x 37-1/2	265
1	Power Transformer 304354 (used when power supply is 220-v ac)	-----	7-3/8 x 10-1/8 x 17-3/8	110
1	Power Transformer 304355 (used when power supply is 440-v ac)	-----	8-3/4 x 10-1/4 x 10-3/4	35
1	Radio Transmitter 53272	-----	24 x 30 x 57-3/8	1,190
1	Transmitter Control 23545	-----	11-1/4 x 12 x 23	53
1	Transmitter Control 63546	-----	17 x 24-3/8 x 30	195

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**AN/FRT-type** RADIO COMMUNICATION TRANSMITTING EQUIPMENT

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## REFERENCE DATA AND LITERATURE:

NAVSHIPS 91167.1

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
13	226	4,335

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
RCA Victor Division of Radio Corp. of America	Camden, N. J.	NObsr-39339	\$44,500.00

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REMOTE CONTROL CONSOLE **AN/FRW-type**

5 December 1958

Cognizant Serv: USN FSN: 5825-665-3571

C-1624/FRW-36

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Remote Control Console C-1624/FRW-36 provides all the control functions necessary to operate a remotely installed one- or two-frequency transmitter, and one or two receivers. The control is used with a frequency-modulated, 2-way radio

communications system base station over a two-wire 500- to 600-ohm line.

**TECHNICAL CHARACTERISTICS:**

Power Requirements: 50 w, 118-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Magnamike Microphone Motorola Model P-7245-B			
1	Remote control console	-----	9 x 12-3/4 x 13	30

**REFERENCE DATA AND LITERATURE:**

68P836225-0 Motorola Instruction Manual

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

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**AN/FRW-type** REMOTE CONTROL CONSOLE

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Motorola Communications & Electronics, Inc.	Chicago, Ill.	NObsr-64259	\$151.00 with spares

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## RADIO SET CONTROL AN/FRW-type

5 December 1958

Cognizant Serv: USN FSN:

C-1846/FRC-42

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Radio Set Control C-1846/FRC-46 is a compact unit designed for remote control of base station applications. The unit consists of a preamplifier, a tone oscillator, line amplifier, and control circuits enclosed in a steel cabinet for desktop mounting.

## TECHNICAL CHARACTERISTICS:

*Line Amplifier:*

Frequency Response:  $\pm 3$  db, 400 to 3,500 cps with 1 w output

Input Impedance: 600 ohms (nominal)

Output Impedance: 3.5 ohms

*Preamplifier:*

Frequency Response:  $+3$  db, 400 to 3,500 cps

Input Impedance: 100,000 ohms (dynamic microphone);  
270 ohms (carbon microphone)

Output Impedance: 600 ohms (nominal)

Distortion: Less than 5% at 1,000 cps

*Tone Oscillator Frequency:**Control Circuits:*

One Channel Control: 105-v with line terminated

Remote Squelch (Maximum): 105-v dc with control pair open; 12-v dc with control pair terminated (for simplexing with telephone line)

*Maximum Voltage Line to Line or Line to Ground:* 105-v dc with control pair open or terminated

*Maximum Short Circuit Line Current:* 50 ma

*Power Requirements:* 65 w, 117-v  $\pm 10\%$ , 50- to 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Set Control C-1846/ FRC-42	-----	8 x 9 x 15	

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 92658

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

**AN/FRW-type** RADIO SET CONTROL

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
General Electric Co.	Syracuse, N. Y.	NObsr-64749	\$151.00

RECORDER **AN/FSH-type**

20 November 1958

Cognizant Serv: USA FSN: 5895-241-3507

RD-41B/U

USA

USN

USAF

TYPE CLASS:

Std

Used by

STOCK NO:

6C262-41B

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RD-41B/U

**FUNCTIONAL DESCRIPTION:**

Recorder RD-41B/U graphically records electrical signals or groups of signals of a definite cyclic or repetitive nature. An immediately visible, permanent record is made on a continuous strip which may be observed at the instant of recording or accumulated for subsequent visual analysis. The recorder is used to record at audio frequencies such signals as hand-keyed code, machine-keyed code, teletypewriter, facsimile signals, and oscillator outputs. Reception of signals may be from line or radio receiver. The scanning speed may be adjusted to synchronize with the signal recorded by varying the rpm of the drum. In special applications, recurring mechanical action may be converted to electrical values for recording. Recording is performed by electrically controlled deposits of metal upon a chemically treated paper.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 30 to 15,000 cps

*Recorded Line Length:* 8.2 inches

*Paper Feed Rate:* 4.2, 8, 16, 70, 90, or 105 lines per inch

*Drum Speed:* 45 to 400 rpm

*Width of Recording Paper:* 9-1/2 inches

*Power Requirements:* 715 w, 110/120-v 60-cycle 1-phase ac

MIL-HDBK-161

**AN/FSH-type RECORDER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Motor drive amplifier	-----	8 x 14 x 19	67
1	Mounting panel	-----	19-9/32 x 3 x 19	8
1	Oscillator	-----	6 x 8-3/4 x 19	25
1	Power panel	-----	4-3/8 x 8-3/4 x 19	23
1	Rack MT-453/F	-----	76-1/8 x 18 x 22	210
1	Recorder	-----	14-13/32 x 7-7/32 x 14-27/32	29
1	Recorder amplifier	-----	10 x 8-3/4 x 19	34
1	Takeup reel	-----	5-1/2 x 6-31/32 x 19	6

**REFERENCE DATA AND LITERATURE:**

TM 11-5526  
TO 16-35RD41-5

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	31.83	450

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Hogan Laboratories, Inc.	New York, N. Y.		

CONTROL-MONITOR SET **AN/FSW-2**

26 November 1958

Cognizant Serv: USN FSN:

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Control-Monitor Set AN/FSW-2 is designed to permit remote control of certain functions of various equipments at a remote point, and to obtain from this point continuous indications of the status of certain equipment.

The control and status information obtained through the use of this equipment is transmitted over telephone lines.

**TECHNICAL CHARACTERISTICS:**

*Power Requirements:* 120-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Control-Monitor Set AN/FSW-2 (Equipment consists of only one major component.)			

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

**AN/FSW-2** CONTROL-MONITOR SET

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## TELEPHONE CENTRAL OFFICE SET AN/FTC-9

26 November 1958

Cognizant Serv: USA FSN: 5805-407-4887

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	4C20850	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Telephone Central Office Set AN/FTC-9 is fixed plant, unattended, single-party, bridged ringing, private automatic (dial) equipment. It provides the necessary switching facilities required for a 50-line dial telephone system.

The set is used in larger structures and limited areas and offers connections for local intercommunication only. It permits expansion to accommodate as many as 100 lines.

This equipment consists essentially of commercial (Automatic Electric Company Type 50 PAX) dial switching equipment and includes installation materials, batteries, and battery-charging accessories.

It is mounted in a double-sided frame, inclosed in a steel cabinet with hinged collapsible doors.

**TECHNICAL CHARACTERISTICS:**

*Number of Switchboard Positions:* None (unattended)

*Automatic Equipment:* 48 v, Type 50 PAX

*Number of Line Circuits:*

Normal: 50

Maximum: 100 (ultimate expansion)

*Power Requirements:* 115-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Steel cabinet with equipment	-----	72 x 24 x 84-1/8	Floor loading requirements: 125 psf
(Equipment consists of only one major component.)				

**REFERENCE DATA AND LITERATURE:**

TM 11-2100; TM 11-2105; TB SIG 322-102

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

**AN/FTC-9** TELEPHONE CENTRAL OFFICE SET

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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TELEPHONE CENTRAL OFFICE SET **AN/FTC-25**

1 July 1958

Cognizant Serv: USA FSN: 5805-537-7461

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	4C27200-2	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Telephone Central Office Set AN/FTC-25 is fixed-plant, unattended, single-party, bridged ringing, 48-volt, common-battery, private automatic (dial) equipment that provides the necessary switching facilities required for a 50-line dial telephone system. It is used in larger structures and limited areas to provide connections for local intercommunication only. It is capable of expansion to accommodate up to 100 lines.

This equipment consists essentially of commercial (Auto-

matic Electric Company Type 50 PAX) dial switching equipment and includes installation materials, batteries, and battery-charging accessories.

It is mounted in a double-sided frame and is inclosed in a steel cabinet with hinged collapsible doors.

**TECHNICAL CHARACTERISTICS:**

*Number of Positions:* Unattended

*Number and Type of Circuits:* 50 lines, expandable to 100 lines

*Power Requirements:* 115-v 60-cycle 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Telephone Central Office Set AN/FTC-25	5805-537-7461	72 x 24 x 84-1/8	
(Equipment consists of only one major component.)				

**REFERENCE DATA AND LITERATURE:**

TM 11-2100, TM 11-2105, TB SIG 322-102

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

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**AN/FTC-25** TELEPHONE CENTRAL OFFICE SET

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Stromberg Carlson Div., General Dynamics Corp.	Rochester, N. Y.	4717-P-52-03	\$4,296.00

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## TELEPHONE SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN: 5805-164-7072

SB-53( )/FTC

USA

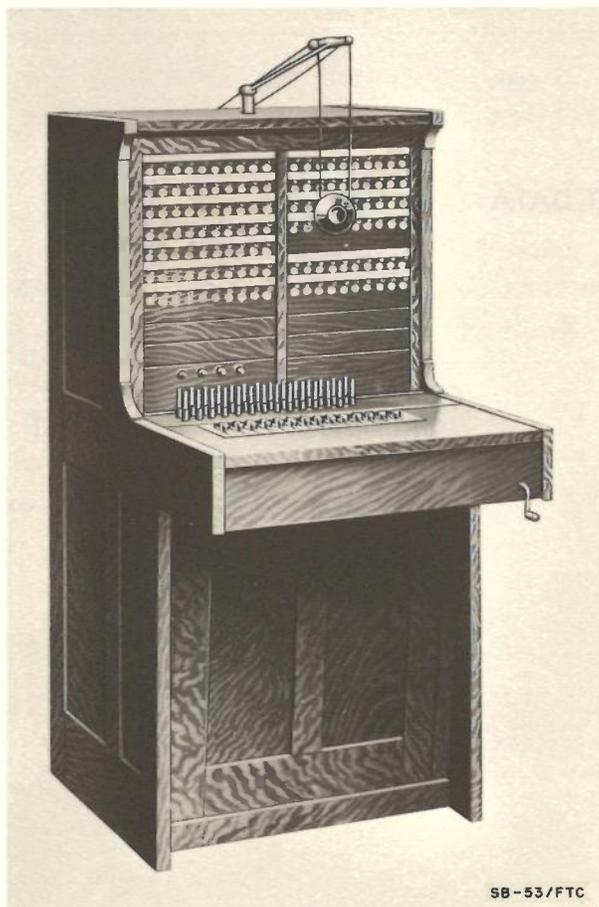
USN

USAF

TYPE CLASS: Std  
 STOCK NO: 4C12100-5.2

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Std  
 S2-431375200



SB-53/FTC

## FUNCTIONAL DESCRIPTION:

Telephone Switchboard SB-53( )/FTC is a single-position, manual, cord-type, universal switchboard used to switch local common-battery and magneto lines, and for connecting other lines to trunk circuits. It is used in fixed-plant applications.

This equipment consists of a desk-type switchboard and uses a separate ringing generator, which is not furnished with the equipment. It is provided with a built-in magneto ringing generator for emergency use.

Fifteen simultaneous talking connections can be made through this equipment.

## TECHNICAL CHARACTERISTICS:

*Number of Switchboard Positions:* 1

*Number and Type of Circuits:* 15 cord; 100 line; 10 trunk

*Power Requirements:* 24-v dc; separate ringing equipment supplies ringing current

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSION (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Telephone Switchboard SB-53( )/FTC (Equipment consists of only one major component.)	5805-164-7072	59 x 24 x 38-3/8	550

MIL-HDBK-161

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**AN/FTC-type TELEPHONE SWITCHBOARD**

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**REFERENCE DATA AND LITERATURE:**

TM 11-2087

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**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	66	

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**PROCUREMENT DATA**

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PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: (Mfr. No.) E-55486-FR

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Stromberg-Carlson Co. Division, General Dynamics Corp.	Rochester, N. Y.	21213-P-54-53	\$2,346.00

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TELEPHONE SWITCHBOARD **AN/FTC-type**

1 July 1958

Cognizant Serv: USA FSN: 5805-164-7071

SB-54/FTC

USA

USN

USAF

TYPE CLASS:

Std

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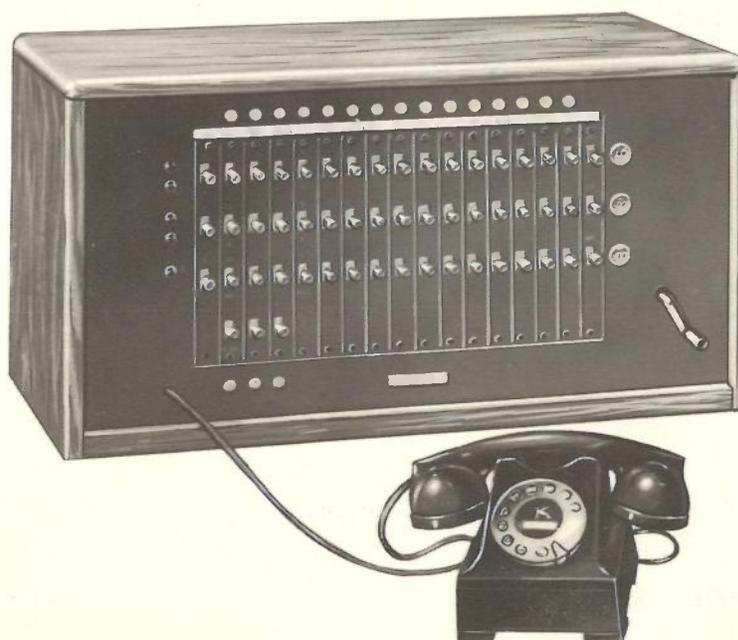
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STOCK NO:

4C11007

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SB-54/FTC

**FUNCTIONAL DESCRIPTION:**

Switchboard SB-54/FTC is a cordless, manual, single-position, common-battery telephone switchboard used for establishing connections between a small number of local stations or between such stations and a dial or manual central office. It is used in fixed-station applications.

This equipment consists essentially of a commercial (Kellogg 1007-cc, special, or equal) telephone switchboard of the desk-mounted or turret type, in which interconnections are made by means of a key in each line or circuit. The maximum inter-connection capacity is five telephone circuits or trunks.

It is designed for 48-v dc ringing from the central office, and has additional keys for night service. It includes provision for magneto ringing; and requires an operator's desk set, which is not furnished.

**TECHNICAL CHARACTERISTICS:**

*Number of Positions:* 1

*Number and Type of Circuits:* 5 connecting; 12 line; 5 trunk

*Power Requirements:* Battery supplied by common-battery central office

**AN/FTC-type TELEPHONE SWITCHBOARD****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Telephone Switchboard SB-54/FTC (Equipment consists of only one major component.)	5805-164-7071	23 x 12 x 12	110

**REFERENCE DATA AND LITERATURE:****SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	40	200

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kellogg Switchboard & Supply Co.	Chicago, Ill.		

TELEPHONE SWITCHBOARD **AN/FTC-type**

1 July 1958

Cognizant Serv: USA FSN: 5805-164-7086

SB-55( )/FTC

USA

USN

USAF

TYPE CLASS:

Std

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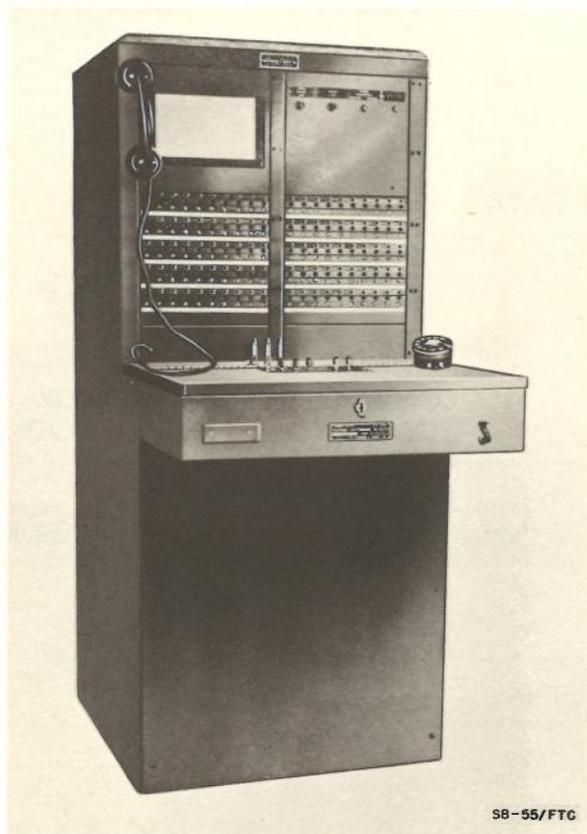
Std

STOCK NO:

4C18100-6

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**FUNCTIONAL DESCRIPTION:**

Telephone Switchboard SB-55( )/FTC is a manual, single-position, two-panel switchboard used for fire-reporting and similar applications at fixed installations.

This equipment consists of a floor-type desk unit. The two trunks may be connected to either a dial or manual telephone facility.

It includes the operator's handset and other accessory items.

Ringin current must be supplied by separate equipment.

**TECHNICAL CHARACTERISTICS:**

*Number of Switchboard Positions:* 1

*Number and Type of Circuits:* 3 cord; 100 line; 2 trunk

*Power Requirements:* 48-v dc

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Telephone Switchboard SB-55/FTC (Equipment consists of only one major component.)	5805-164-7086	38-1/4 x 24 x 57-1/4	400

MIL-HDBK-161

**AN/FTC-type TELEPHONE SWITCHBOARD**

REFERENCE DATA AND LITERATURE:

TM 11-2084

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	40	600

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-S-13171

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Crossbar Tel. & Sig. Co.		55994-P-57-56	\$3,500.00
Kellogg Switchboard & Supply Co.	Chicago, Ill.	21748-P-56-56	3,296.00

## SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN:

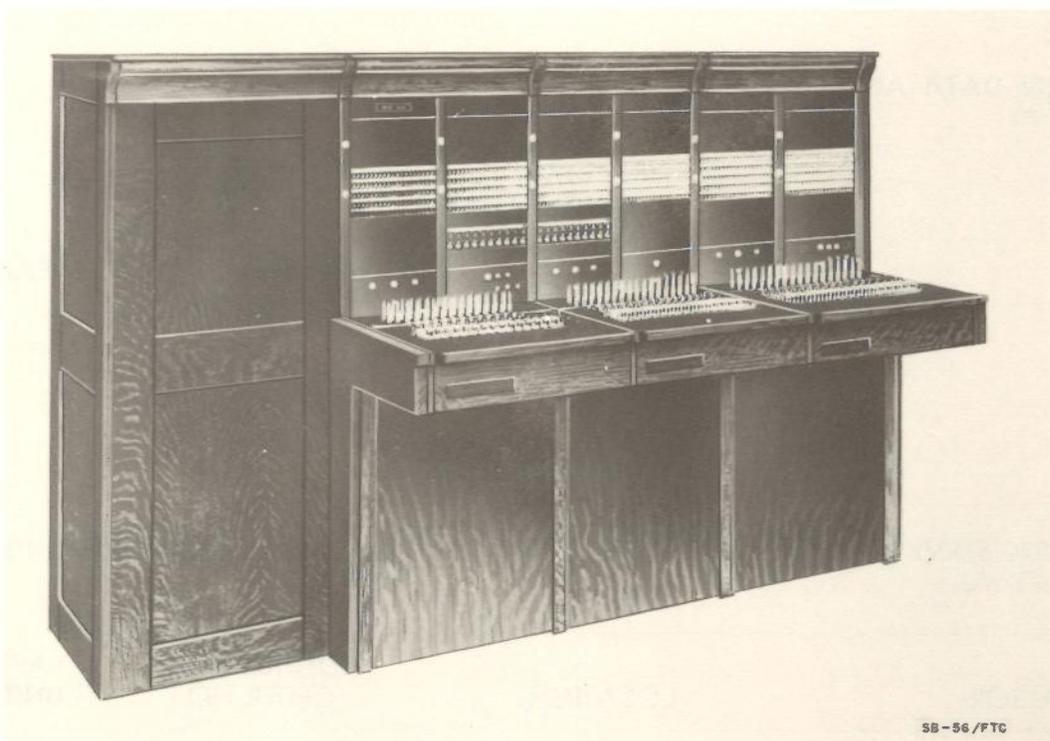
SB-56/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: NSN

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SB-56/FTC

**FUNCTIONAL DESCRIPTION:**

Switchboard SB-56/FTC is a three-position, multiple, common-battery, manual telephone switchboard with a maximum capacity of 800 lines.

This equipment consists of a commercial (Kellogg #6-800) central office type switchboard, each position of which has two jack panel sections. Each position has 15 universal cord circuits, a dial circuit, and an operator's circuit. The switchboard is wired and equipped for 20 magneto trunks, and 20 two-way trunks to automatic exchanges, lamp supervision, and miscellaneous circuits.

A relay rack is mounted at the rear of the switchboard. The main distributing frame and operator's telephone equipment are not supplied as part of this equipment; 24-volt battery supply and ringing current source must be separately procured.

**TECHNICAL CHARACTERISTICS:**

*Number of Positions:* 3 or more

*Number and Type of Circuits:* 45 cord (3 dial); 800 line; 40 trunk

*Power Requirements:* 24-v dc

MIL-HDBK-161

**AN/FTC-type SWITCHBOARD**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
-----	------	---------------	------------------------	-----------------

1	Switchboard SB-56/FTC (Equipment consists of only one major component.)			
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**REFERENCE DATA AND LITERATURE:**

TM 11-2227

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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480

7,500

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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Kellogg Switchboard & Supply Co.

Chicago, Ill.

SWITCHBOARD **AN/FTC-type**

20 November 1958

Cognizant Serv: USA FSN: 5805-223-5488

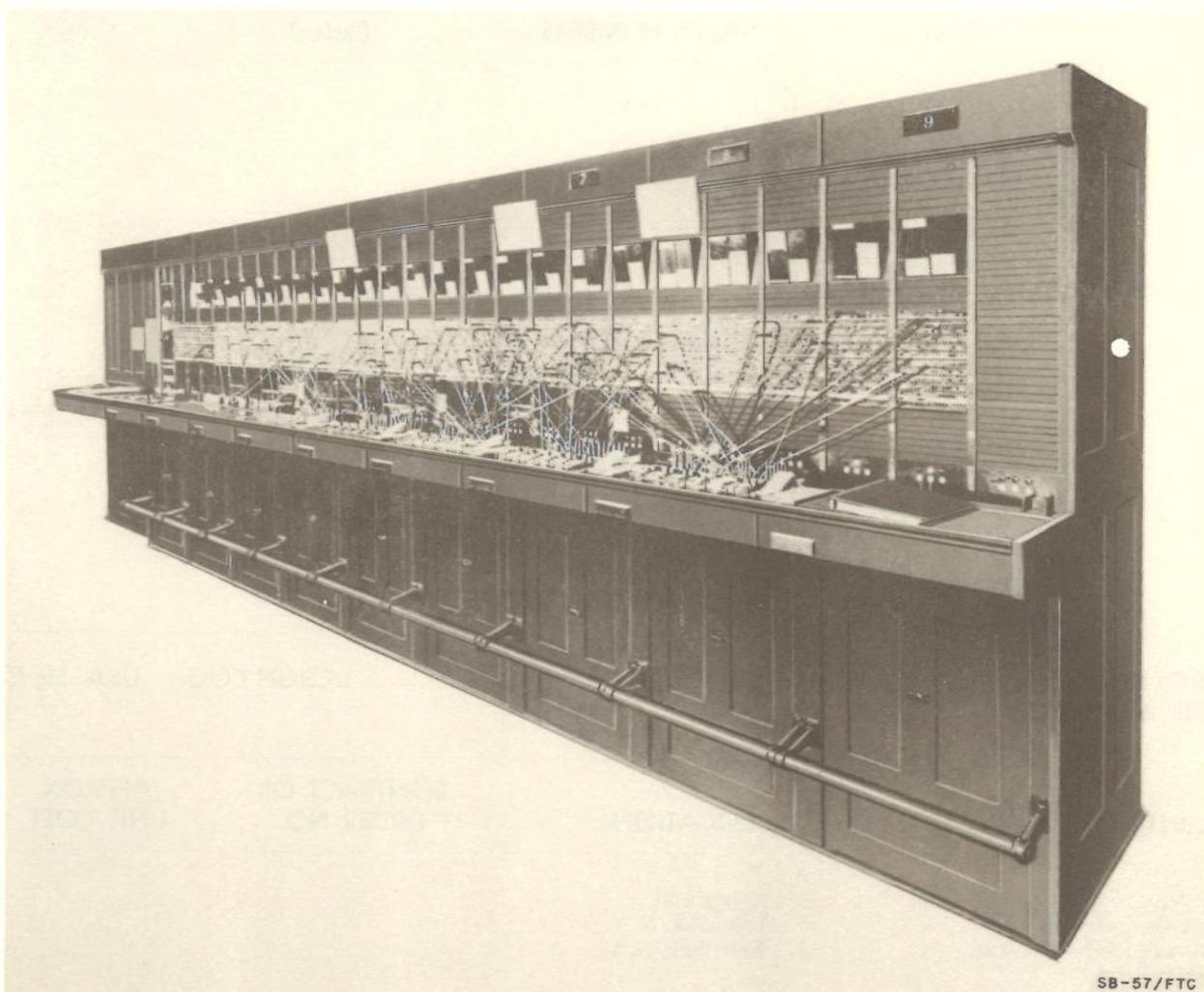
SB-57/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 4C22800-1



SB-57/FTC

**FUNCTIONAL DESCRIPTION:**

Switchboard SB-57/FTC is a large, manual, multiple, common-battery switchboard used for local service with trunking facilities to other offices in permanent installations.

This equipment consists of commercial (Kellogg #2800; Stromberg-Carlson #18, or Western Electric Co. #11) telephone central office switchboard equipment. It has ap-

paratus for common-battery line, common-battery and dial trunks, night alarm, and related circuits, and has provision for re-ring signals.

**TECHNICAL CHARACTERISTICS:**

*Number of Switchboard Positions:* 5 minimum to 20 maximum

*Number and Type of Circuits:*

Cord: 17 per position

MIL-HDBK-161

## AN/FTC-type SWITCHBOARD

Line: Maximum capacity 2,800 lines, multiplied on a 7-panel basis  
Outgoing Trunks: 40  
Manual or Dial Trunks: 20

Magneto Trunks: 20  
Information Trunks: 10  
Interposition Trunks: 10  
*Power Requirements: 24-v battery and 20-cycle ringing power*

### MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Switchboard SB-57/FTC (Equipment consists of only one major component.)	5805-223-5488		

### REFERENCE DATA AND LITERATURE:

#### SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	430	7,800

#### PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kellogg Stromberg-Carlson Western Electric Co., Inc.	Chicago, Ill. Rochester, N. Y. New York, N. Y.		

## SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN: 5805-170-5286

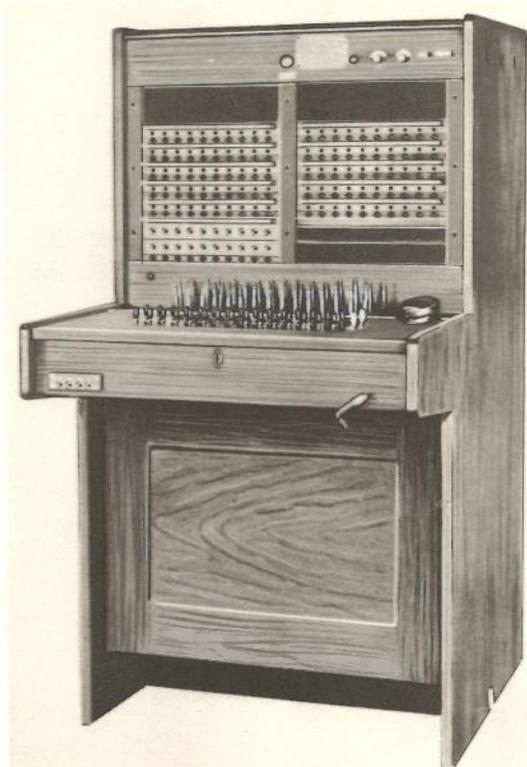
SB-58/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 4C12100-7



SB-58/FTC

## FUNCTIONAL DESCRIPTION:

Switchboard SB-58/FTC is a single-position, nonmultiple, telephone switching equipment for interconnection of and communication between common-battery and magneto lines. It also provides for operation of trunk circuits to either manual or dial central offices.

This equipment consists essentially of a commercial (Western Electric Co. No. G1) floor-type unit having two jack panels, and is equipped for 80 common-battery and 20 local-battery magneto station lines. It also has 15 universal cord circuits, 10 trunks, a dial and cord for operation with automatic central offices, and line and supervisory lamps for local lines. It has provision for one-lamp signaling on trunks.

This switchboard includes an operator's telephone set and has a hand generator for emergency ringing. It does not include battery supply or 20-cycle ringing equipment.

## TECHNICAL CHARACTERISTICS:

*Number of Positions:* 1

*Number and Type of Circuits:* 15 cord (1 dial); 100 line; 10 trunk

*Power Requirements:* 24-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Switchboard SB-58/FTC (Equipment consists of only one equipment.)	5805-170-5286	26-7/8 x 3 4-1/2 x 51-3/16	487

## REFERENCE DATA AND LITERATURE:

MIL-HDBK-161

**AN/FTC-type SWITCHBOARD**

**SHIPPING DATA**

<b>PKGS</b>	<b>VOLUME (Cu Ft)</b>	<b>WEIGHT (Lbs)</b>
1	40	700

**PROCUREMENT DATA**

**PROCURING SERVICE:** USA  
**SPEC &/or DWG:**

**DESIGN COG:** USA, Sig C

<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX UNIT COST</b>
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Western Electric Co.

New York, N. Y.

## SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN: 5805-170-4763

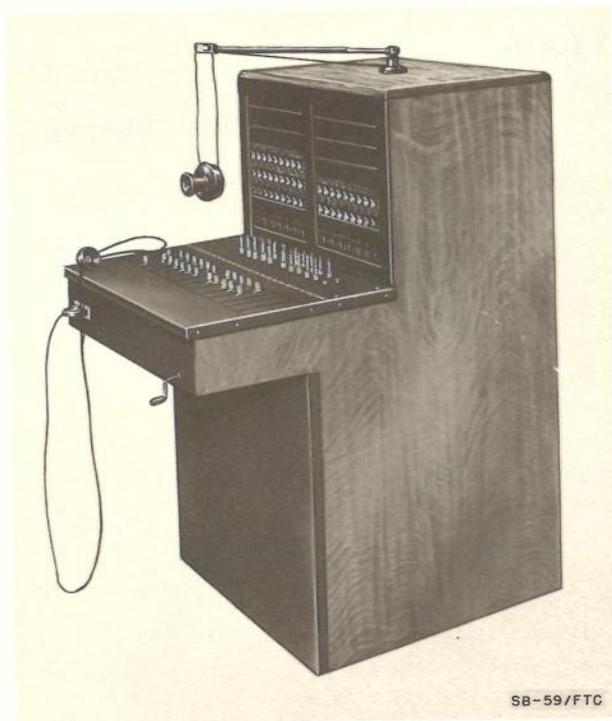
SB-59/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 4C18100-2



## FUNCTIONAL DESCRIPTION:

Switchboard SB-59/FTC is a manual, single position, common-battery, telephone switchboard used for trunking to other common-battery, manual or dial central offices and is not intended for through switching applications.

This equipment consists essentially of a commercial (Kellogg K-100) telephone switchboard. It is a floor-mounted desk-type unit wired for a dial circuit, but does not include a dial. It is equipped with 100 line circuits, 15 cord circuits, and 10 trunks, and includes an operator's telephone set and a hand generator for emergency ringing.

## TECHNICAL CHARACTERISTICS:

*Number of Positions:* 1

*Number and Type of Circuits:* 15 cord 100 line; 10 trunk

*Power Requirements:* 24-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Switchboard SB-59/FTC (Equipment consists of only one major component.)	5805-170-4763	26-7/16 x 34-1/2 x 51-3/16	390

## REFERENCE DATA AND LITERATURE:

MIL-HDBK-161

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**AN/FTC-type SWITCHBOARD**

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SHIPPING DATA

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	35	581

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PROCUREMENT DATA

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PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kellogg Switchboard & Supply Co. Stromberg-Carlson Corp. Western Electric Co.	Chicago, Ill. Rochester, N. Y. New York, N. Y.		

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SWITCHBOARD **AN/FTC-type**

1 July 1958

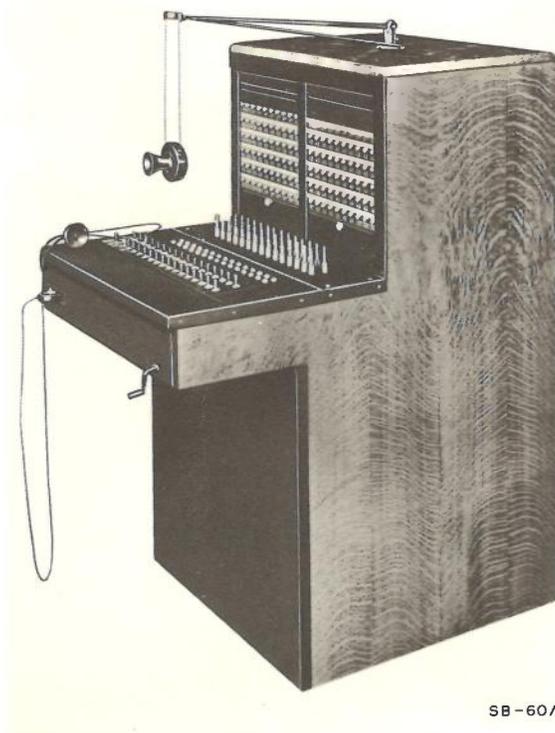
Cognizant Serv: USA FSN: 5805-162-8186

SB-60/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
STOCK NO: 4C18099

SB-60/FTC

**FUNCTIONAL DESCRIPTION:**

Switchboard SB-60/FTC is a single-position, nonmultiple, manual, magneto telephone switchboard used in situations where line resistance, leakage, or other unfavorable plant conditions prohibit satisfactory common battery operation.

This equipment is a floor-mounted, desk-type unit having combination drops (not shown in the illustration) and jacks arranged on two jack panels, and providing for 100 magneto lines, and 15 cords furnished and equipped for double drop supervision. There is also a five-bar hand generator wired to a key for switching to the power generator. An operator's telephone is included.

Local battery supply must be separately procured.

**TECHNICAL CHARACTERISTICS:**

*Number of Positions:* 1

*Number and Type of Circuits:* 15 cord; 100 line; 0 trunk

*Power Requirements:* 3-v dc

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Switchboard SB-60/FTC (Equipment consists of only one major component.)	5805-162-8186		

**REFERENCE DATA AND LITERATURE:**

MIL-HDBK-161

**AN/FTC-type SWITCHBOARD**

**SHIPPING DATA**

<b>PKGS</b>	<b>VOLUME (Cu Ft)</b>	<b>WEIGHT (Lbs)</b>
1	40	575

**PROCUREMENT DATA**

**PROCURING SERVICE:** USA  
**SPEC &/or DWG:**

**DESIGN COG:** USA, Sig C

<b>CONTRACTOR</b>	<b>LOCATION</b>	<b>CONTRACT OR ORDER NO.</b>	<b>APPROX UNIT COST</b>
Kellogg Switchboard & Supply Co. Stromberg-Carlson Corp.	Chicago, Ill. Rochester, N. Y.		

SWITCHBOARD **AN/FTC-type**

1 July 1958

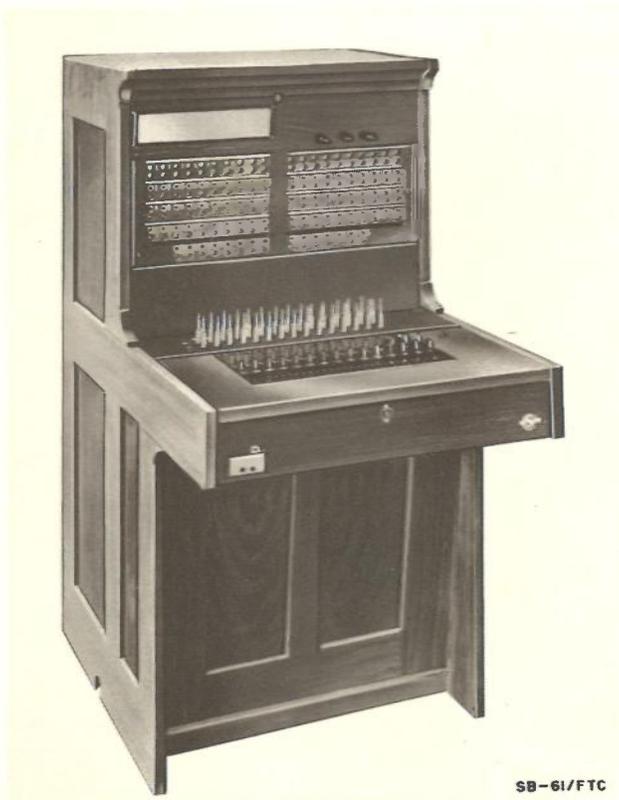
Cognizant Serv: **USA FSN: 5805-164-7082****SB-61/FTC****USA****USN****USAF**

TYPE CLASS:

L/Std

STOCK NO:

4C19080-4



SB-61/FTC

**FUNCTIONAL DESCRIPTION:**

Switchboard SB-61/FTC is a single-position, nonmultiple, common-battery telephone switchboard having switchboard circuits for manual or dial operation to connecting central offices in fixed-plant applications.

This equipment consists of a floor-type commercial (Western Electric Co. No. 550 SC) switchboard having two jack-panels and is wired for 80 common-battery lines, 15 cord circuits, and 15 trunks. It has lamp signaling and supervision. A hand generator is furnished for emergency ringing. It is equipped with a dial, not shown in the illustration, and includes an operator's telephone set.

Battery supply and ringing current must be furnished separately.

**TECHNICAL CHARACTERISTICS:**

*Number of Positions:* 1

*Number and Type of Circuits:* 15 cord; 80 line; 15 trunk

*Power Requirements:* 24-v dc

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Switchboard SB-61/FTC (Equipment consists of only one major component.)	5805-164-7082	25-1/4 x 35 x 51-1/16	500

**REFERENCE DATA AND LITERATURE:**

MIL-HDBK-161

---

**AN/FTC-type SWITCHBOARD**

---

**SHIPPING DATA**

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PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	40	700

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**PROCUREMENT DATA**

---

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	Chicago, Ill.		

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## SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN:

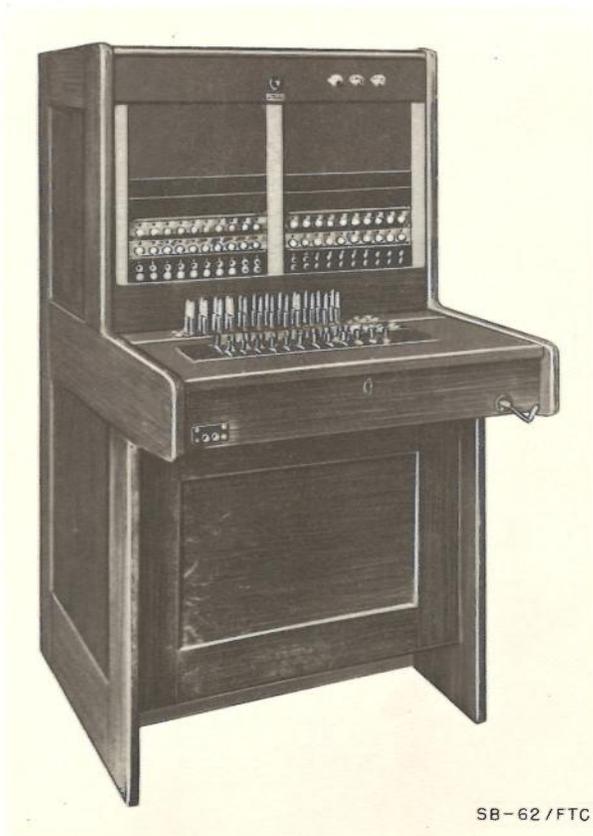
SB-62/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 4C17063-1A.1



SB-62/FTC

## FUNCTIONAL DESCRIPTION:

Switchboard SB-62/FTC is a common-battery, nonmultiple, manual, telephone switchboard having circuits for dial (not shown in this illustration) or manual operation to connecting central offices. It is used in fixed plant applications.

This equipment consists essentially of a commercial (Western Electric Co. No. 551A) telephone switchboard and is a floor-mounted desk-type unit. It is a single-position equipment with two panels and is wired for 40 common-battery lines, 10 cord circuits, and 10 trunks. It has lamp signaling and supervision, a hand generator for emergency signaling, an operator's telephone set, and includes 20 line-circuits equipped with relays for use on circuits of high line-resistance.

It does not include battery supply or ringing equipment.

## TECHNICAL CHARACTERISTICS:

*Number of Positions:* 1

*Number and Type of Circuits:* 10 cord, 40 line, 10 trunk

*Power Requirements:* 24-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Switchboard SB-62/FTC (Equipment consists of only one major component.)	4C17063-1A	25-1/2 x 30-1/2 x 46	500

## REFERENCE DATA AND LITERATURE:

MIL-HDBK-161

**AN/FTC-type SWITCHBOARD**

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	40	700

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	New York, N. Y.		

## SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN: 5805-162-8187

SB-63/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 4C18100-3



## FUNCTIONAL DESCRIPTION:

Switchboard SB-63/FTC is a single-position, manual, common-battery telephone switchboard used in fixed-plant applications.

This equipment consists essentially of a commercial (Kellogg Jr. Masterbuilt) telephone switchboard of the floor-mounted desk type. It has two jack panels and is equipped for 40 common-battery, 40 universal and 20 magneto (with lamp signaling) lines, and is wired for 20 (equipped for 10) dial trunks. It has 15 universal cord circuits, a hand generator for emergency ringing, and an operator's telephone set.

Ringing current and battery must be furnished separately.

## TECHNICAL CHARACTERISTICS:

*Number of Positions:* 1

*Number and Type of Circuits:* 15 cord; 40 common-battery line; 40 universal line; 20 magneto line; 10 trunk

*Power Requirements:* 24-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Switchboard SB-63/FTC (Equipment consists of only one major component.)	(FSN) 5805-162-8187	38-1/4 x 23-15/16 x 58-5/16	500

## REFERENCE DATA AND LITERATURE:

MIL-HDBK-161

**AN/FTC-type SWITCHBOARD**

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	40	700

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kellogg Switchboard & Supply Co.	Chicago, Ill.		

## SWITCHBOARD AN/FTC-type

1 July 1958

Cognizant Serv: USA FSN: 5805-164-7074

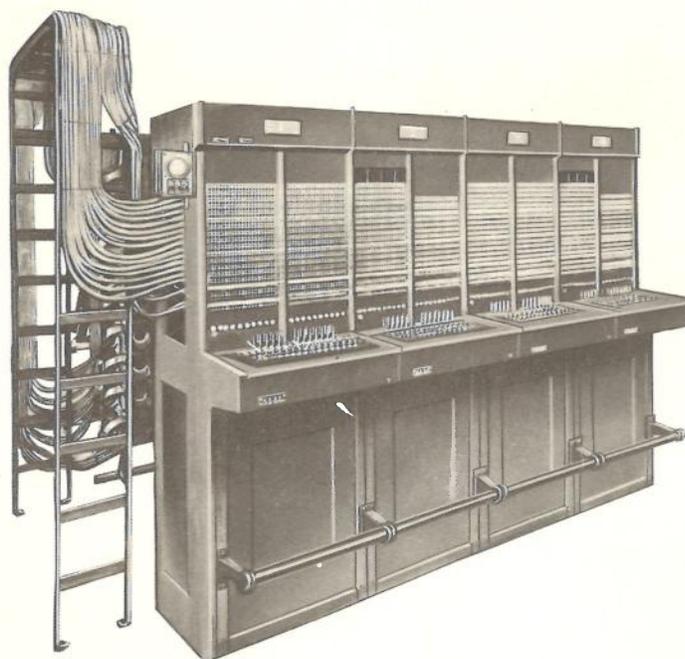
SB-64/FTC

USA

USN

USAF

TYPE CLASS: L/Std  
 STOCK NO: 4C17063-12



SB-64/FTC

**FUNCTIONAL DESCRIPTION:**

Switchboard SB-64/FTC is a medium-size central-office type, multiposition, manual, 640-line (maximum capacity) switchboard equipment used in fixed plant applications.

This equipment consists essentially of a commercial (Western Electric Co. No. 12, 640-line) exchange switchboard, which is a four-position equipment constructed sectionally and having two jack panels per position, each position constituting a self-contained unit. It may be equipped with a total of 640 common battery and/or magneto lines with lamp signaling multiplied on a 2-panel basis, and 120 2-way ring-down trunks. Fifteen universal cord circuits are wired per position (the normal equipment for each position is 13 cords) with lamp supervisory equipment on cord circuits.

It also is equipped with dial and dial cord. Ringing current is supplied by a separate power unit. It uses a main distributing frame supplied separately, which is connected to this switchboard by cabling.

**TECHNICAL CHARACTERISTICS:***Number of Positions:*

Maximum: As required  
 Minimum: 3

*Number and Types of Circuits Per Position:* 15 cord; 640 line;  
 120 trunk

*Power Requirements:* 48-v dc

MIL-HDBK-161

**AN/FTC-type SWITCHBOARD**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Switchboard SB-64/FTC (Equipment consists of only one major component.)	5805-164-7074 (FSN)	-----	3,360

**REFERENCE DATA AND LITERATURE:**

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	480	7,500

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Western Electric Co.	New York, N. Y.		

MANUAL TELEPHONE SWITCHBOARD SECTION **AN/FTC-type**

1 July 1958

Cognizant Serv: **USA** FSN: 5805-498-7752

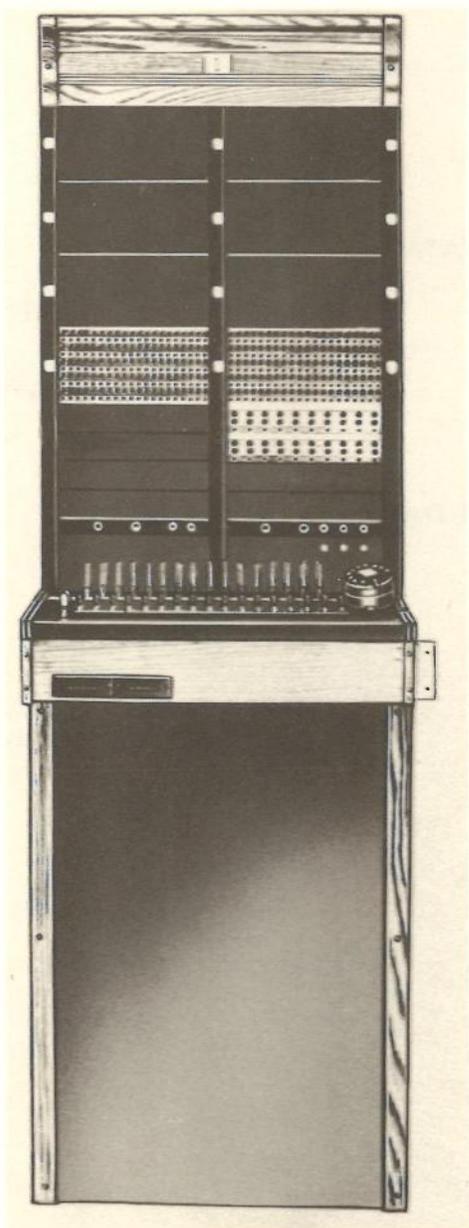
SB-171/FTC

**USA****USN****USAF**

TYPE CLASS:

STOCK NO:

4C21600.1

**FUNCTIONAL DESCRIPTION:**

Manual Telephone Switchboard Section SB-171/FTC is the basic unit of local manual central office switching facilities that are capable of handling 1,200 to 1,600 lines.

This equipment consists essentially of one commercial (Kellogg No. 1600) switchboard section equipped with 15 universal cord circuits.

The 1,200-line office (Coded Facility 152, TB SIG 322-152) includes 16 operating positions or sections and two end positions composed of the SB-171/FTC. The 1,600-line office (Coded Facility 156, TB SIG 322-156) has 22 such operating positions and two end positions.

**TECHNICAL CHARACTERISTICS:**

*Number of Switchboard Positions:* Depends on size of central office in which installed

*Number and Type of Circuits:* 15 cord; trunk and line, as required

**AN/FTC-type** MANUAL TELEPHONE SWITCHBOARD SECTION

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Manual Telephone Switchboard Section SB-171/FTC (Equipment consists of only one major component.)	5805-498-7752	22-5/8 x 37-1/16 x 72-7/8	

## REFERENCE DATA AND LITERATURE:

TM 11-2061

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
11	145.8	2,797

## PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kellogg Switchboard & Supply Co.	Chicago, Ill.		

AUXILIARY TELEPHONE CENTRAL EQUIPMENT **AN/FTC-type**

1 July 1958

Cognizant Serv: USA FSN: 5805-407-4903

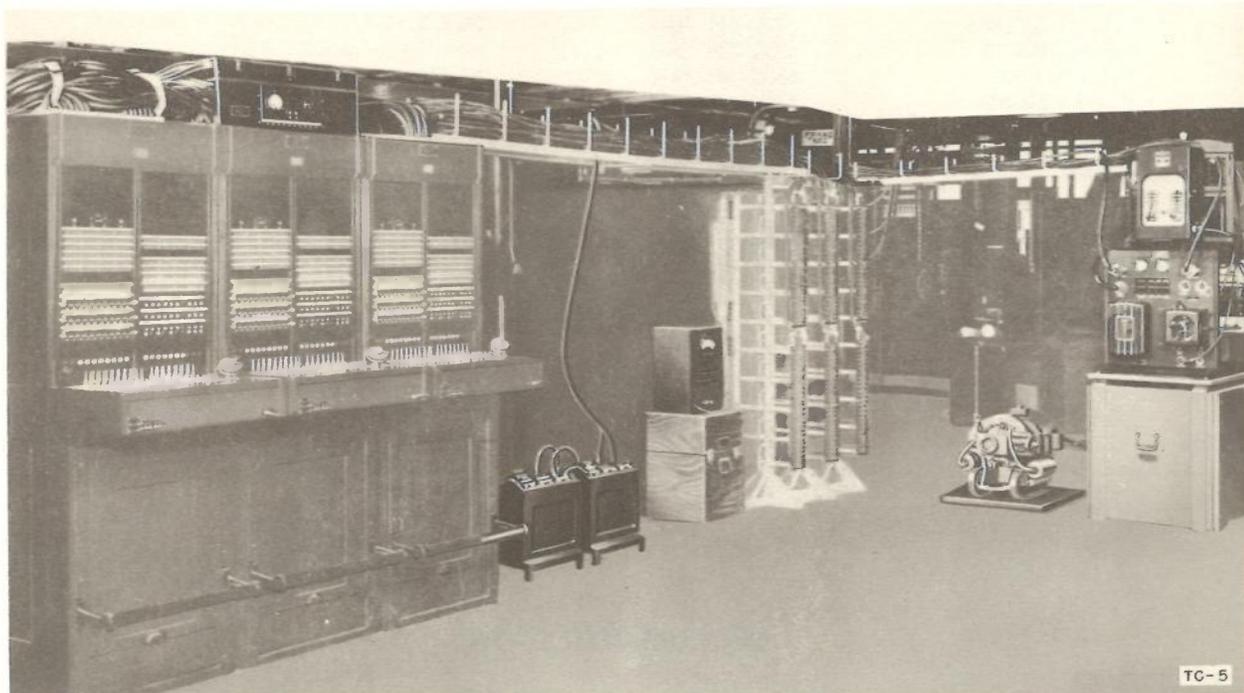
TC-5

USA

USN

USAF

TYPE CLASS: S/Std  
 STOCK NO: 4C27005

**FUNCTIONAL DESCRIPTION:**

Auxiliary Telephone Central Equipment TC-5 is a group of installation components used to enable movement of Telephone Central Office Set TC-2 or TC-10 with a minimum of service interruption.

This equipment consists essentially of a power unit, cable racks, and related items installed at the new location preliminary to movement of the telephone exchange, as in a

*leapfrogging* operation. Switchboards, main frame, and wire chief's test cabinet are then obtained separately and added to these installed components to complete the move.

**TECHNICAL CHARACTERISTICS:***Power Requirements:*

Power Unit PE-75: 2.5 kva, 115-v 60-cycle ac  
 Rectifier RA-36: 0.0- to 65-v dc  
 Storage Batteries: 40- to 56-v dc

MIL-HDBK-161

**AN/FTC-type** AUXILIARY TELEPHONE CENTRAL EQUIPMENT

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
4	Battery BB-46	6140-126-1544		
1	Cabinet BE-72	6625-241-7869	26-1/2 x 6-7/16 x 7	
1	Cabinet BE-75	5930-228-7957	13-1/2 x 9-3/4 x 5-1/4	
1	Panel BD-90	5805-240-4847	26-1/4 x 35-1/2 x 25	
1	Power Unit PE-75	6115-228-5815		
1	Rectifier RA-36	6130-222-6216		

**REFERENCE DATA AND LITERATURE:**

TM 11-340  
TM 11-471

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	149	2,531

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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TELEGRAPH-TELEPHONE SIGNAL CONVERTER **AN/GCA-type**

1 July 1958

Cognizant Serv: USA FSN: 5805-356-2897

TA-182/U

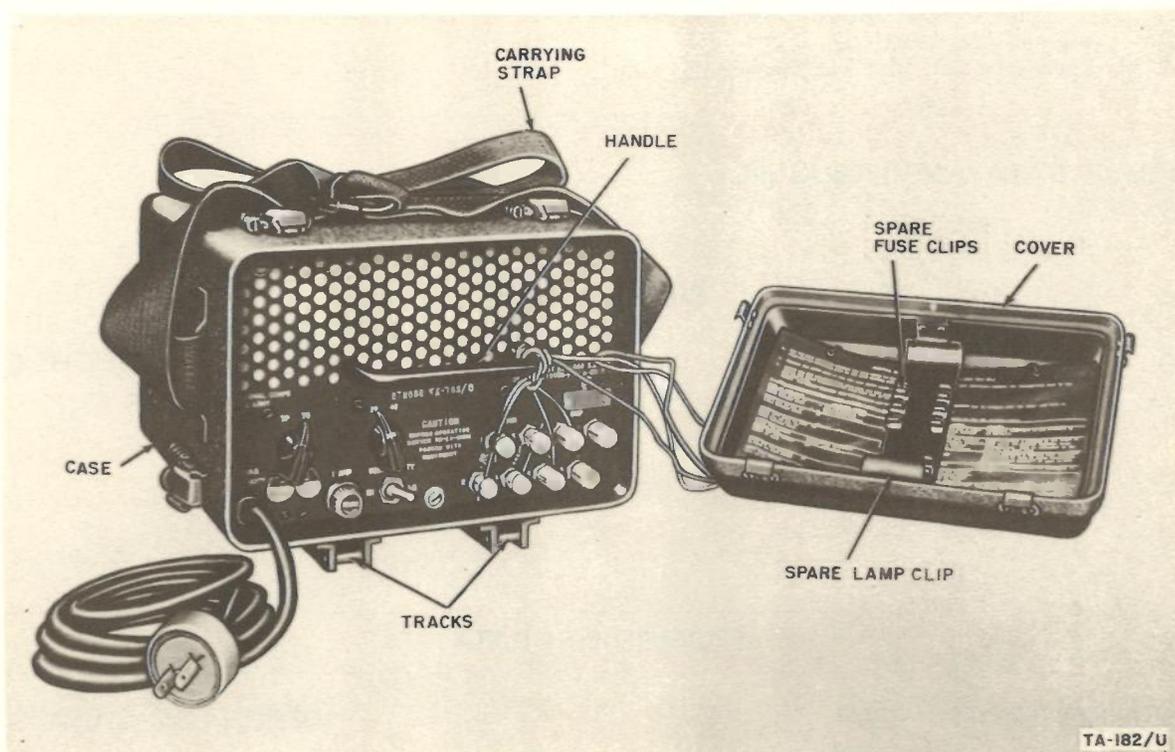
USA

USN

USAF

TYPE CLASS:  
STOCK NO:Std  
4F350-182

Std

**FUNCTIONAL DESCRIPTION:**

Telegraph-Telephone Signal Converter TA-182/U provides a means of signaling in circuits that will not pass 20-cycle ringing signals because of line or equipment characteristics.

In telegraph circuits, it converts 20-cycle ringing signals to 1,225 cps for transmission, and reverses this operation upon reception. In telephone circuits, it converts 20-cycle ringing signals to 1,600 cps for transmission, and reverses this operation upon reception.

**TECHNICAL CHARACTERISTICS:**

*Type of Signal:* Ringing

*Frequency:* Converts 20 cps to 1,225 cps or 1,600 cps

*Type Communication Circuits:* Telegraph and telephone ringing

*Controls:* 2-wire/4-wire selector switch; telephone-telegraph selector switch; high-low sensitivity selector switch

*Power Requirements:* 40 w, 115-v ( $\pm 10\%$ ) 50/60-cycle 1-phase ac

MIL-HDBK-161

**AN/GCA-type TELEGRAPH-TELEPHONE SIGNAL CONVERTER**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Telegraph-Telephone Signal Converter TA-182/U	5805-356-2897	11 x 7-1/2 x 10-1/2	15
(Equipment consists of only one major component.)				

**REFERENCE DATA AND LITERATURE:**

TM 11-2137

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	1.02	24

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-T-10267

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kellogg Switchboard & Supply Co.	Chicago, Ill.	6506-P-51-31	\$379.60
The Rudolph Wurlitzer Co.	----	4697-P-52-31	177.80

KEYER **AN/GGA-type**

23 October 1958

Cognizant Serv: USA FSN: TG-10, 6940-407-3277  
TG-10-F, 5805-303-7753

TG-10, TG-10-F

USA

USN

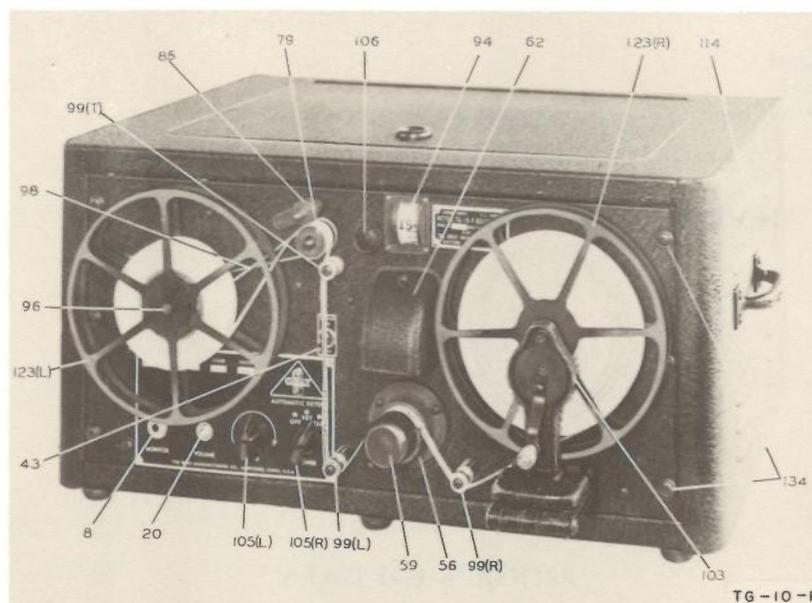
USAF

TYPE CLASS:

Used by

L/Std

STOCK NO: 4A1200

**FUNCTIONAL DESCRIPTION:**

Keyers TG-10 and TG-10-F are automatic keying units designed to provide audible code practice signals from an inked tape recording. The audio-frequency output of the keyer has sufficient power to supply as many as 500 to 1,000 headsets, if necessary. Keyer tone may be supplied directly to headsets or to headsets through practice tables.

The keying unit may be operated with an external telegraph key. It also may be used as a tape puller for any one of several types of ink recorders where the recorder is not provided with its own tape-pulling mechanism.

The keyer is a self-contained unit. It is ready for operation when it is connected to an adequate power source and to the headsets or practice tables. The unit may be operated in its own case or removed and mounted on a standard 19-inch relay rack.

**TECHNICAL CHARACTERISTICS:**

*Speed:* 0 to 1,000 wpm

*Tone Frequency:* 800 cps

*Power Source Requirements:* 115-v 50-cycle 1-phase ac

MIL-HDBK-161

**AN/GGA-type** KEYER

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Keyer TG-10 or TG-10-F			
	In case	-----	11 x 18-1/2 x 24	63
	Removed from case for rack mounting	-----	8-3/4 x 19	40
3	Take-up reel			
2	Tape, inked paper			
1 set	Vacuum Tubes (8)			
(Equipment consists of only one major operating component.)				

REFERENCE DATA AND LITERATURE:

TM 11-447

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
The Gray Manufacturing Co.	Hartford, Conn.		

TELETYPEWRITER SET **AN/GGC-3**

1 July 1958

Cognizant Serv: USA FSN: 5815-503-3309

USA

USN

USAF

TYPE CLASS:

Std

Std

STOCK NO:

4T902-3



AN/GGC-3

**FUNCTIONAL DESCRIPTION:**

Teletypewriter Set AN/GGC-3 is a lightweight, portable, sending and receiving equipment.

This equipment consists essentially of a typing reperforator unit with a keyboard transmitter, a tape transmitter and a teletypewriter table. It derives line-operating current from an associated teletypewriter switchboard, Telegraph Terminal TH-5/TG, or other external source, and can be arranged to operate on either neutral or polar signals on a half- or full-duplex basis.

This set provides facilities for sending from either a key-

board or a tape transmitter; received signals are printed and perforated on tape. It operates over dc wire lines, carrier, or radio channels through suitable line terminating equipment, and is equipped with a universal series-governed motor, enabling operation from either ac or dc sources.

**TECHNICAL CHARACTERISTICS:**

*Operating Speed:* 368.1 or 600 opm

*Motor Characteristics:* Universal ac or dc, series type

*Power Requirements:* 150 w, 115/230-v 50/60-cycle 1-phase ac; or 115-v dc

MIL-HDBK-161

**AN/GGC-3** TELETYPEWRITER SET

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Teletypewriter Reperator- Transmitter TT-76/GGC	4TTT76	21 x 18 x 12	45
1	Teletypewriter Reperator- Transmitter Case CY-1110/ GGC	6F300-1110	25 x 22 x 16	30
1	Teletypewriter Table FN-52/ GGC	4TFN52	21 x 18 x 28	15

REFERENCE DATA AND LITERATURE:

TM 11-2225

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	18.36	208

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-11177A

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Kleinschmidt Laboratories, Inc.	Deerfield, Ill.	47579-P-57-51	\$1,646.70

## TELEGRAPH SWITCHBOARD AN/GGC-type

1 July 1958

Cognizant Serv: USA FSN: 5805-498-7459

SB-6( )/GG

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 4A2593-6

Std  
 1730-407092400



## FUNCTIONAL DESCRIPTION:

Telegraph Switchboard SB-6( )/GG is a transportable, jack-patching manual switchboard used for interconnecting local lines, dc loops, extensions, and teletypewriter sets.

The equipment consists of 16 panel mounted jacks in a steel cabinet, and serves four line circuits. For each line circuit, there are two loop jacks, a set jack for connection of a teletypewriter or other equipment, and a miscellaneous jack for connection of auxiliary equipment or spare teletypewriter sets.

The equipment is used to switch circuits and to make tests of associated line facilities.

## TECHNICAL CHARACTERISTICS:

Number of Positions: 1

Number and Type of Circuits: 4 line

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Telegraph Switchboard SB-6/GG (Equipment consists of only one major component.)	5805-498-7459	7-5/16 x 4-3/4 x 4-5/8	4

## REFERENCE DATA AND LITERATURE:

TM 11-2035

MIL-HDBK-161

**AN/GGC-type TELEGRAPH SWITCHBOARD**

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	0.092	4

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-S-3723

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Artisan Electronics Corp.	New York, N. Y.	4724-P-52-03	\$35.85

AF AMPLIFIER **AN/GIA-type****AM-65/GRC**

4 December 1958

Cognizant Serv: USA FSN:

USA

USN

USAF

TYPE CLASS:

Std

Used by

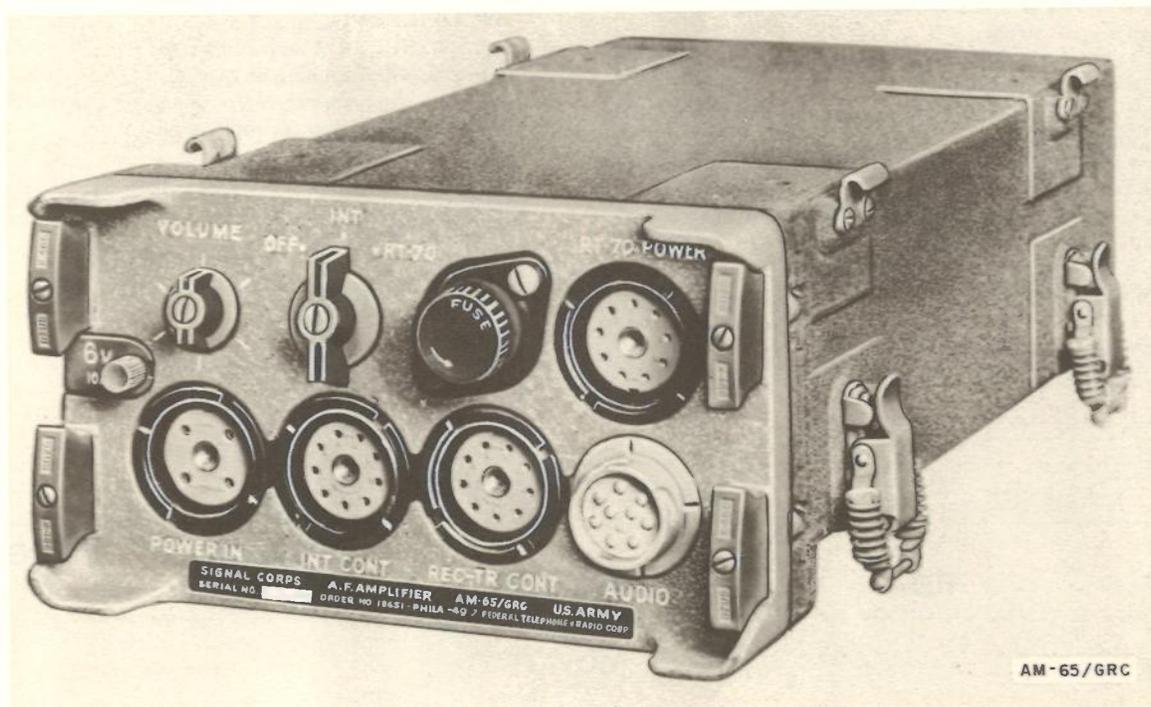
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STOCK NO:

2C449-65

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### FUNCTIONAL DESCRIPTION:

AF Amplifier AM-65/GRC is a lightweight, compact, three-channel audio frequency amplifier and electronic mixer. It is designed to provide interphone operation and radio monitoring in vehicular installations which use one or two receiver-transmitters and one or more interphone control boxes.

The unit contains the audio amplifier and electronic mixer circuits necessary for amplifying and mixing signals from the receiver portions of one Receiver-Transmitter RT-70/GRC and one Receiver-Transmitter RT-66/GRC, RT-67/GRC, or RT-68/GRC, with the high level output of the self-contained interphone amplifier. Separate channels are provided in the amplifier for monitoring the output of the receivers of each type of receiver-transmitter while simultaneously monitoring the low-level output of the interphone amplifier.

Since the unit is intended primarily for vehicular operation, it contains all the power supply circuits required for operation from a 6-, 12-, or 24-volt vehicular battery system, in conjunc-

tion with a plug-in type vibrator unit—Power Supply PP-448/GR, PP-281/GRC, or PP-282/GRC respectively. The amplifier contains the power supply circuits required to operate Receiver-Transmitter RT-70/GRC. In addition, the unit acts as a junction box for all system connections of that receiver-transmitter.

AF Amplifier AM-65/GRC, combined with other installation components, may be used in the radio installations known as Radio Sets AN/GRC-3 through AN/GRC-8 and AN/VRC-7, -13, -14, or -15.

The following equipment is used with, but is not supplied with, AF Amplifier AM-65/GRC: Power Supply PP-448/GR and a 6-volt storage battery, PP-281/GRC and a 12-volt storage battery, or PP-282/GRC and a 24-volt storage battery. A separate 135-volt 8 supply and a 6-volt dc filament power source may be substituted for the vibrator power supply to operate the amplifier. In addition, Chest Set Group AN/GSA-6, Headset-Microphone H-63/U, Headset NT-49507, or Loudspeaker LS-166/U (for listening only) Micro-

**AN/GIA-type AF AMPLIFIER**

phone M-29/U (for talking only), are used as oscillating items.

**TECHNICAL CHARACTERISTICS:***Signal Input Levels:*

Set 1 + INPH CHAN: 5 v (maximum)

Set 2 + INPH CHAN: 5 v (maximum)

Set 1 + Set 2 + INPH CHAN: 0.25 v (maximum)

*Signal Output Levels:*

Set 1 + INPH CHAN: 350 mw (minimum) with a 5 v Set 1 input signal

Set 1 + Set 2 + INPH CHAN: 800 mw (minimum) with 5 v Set 1 input signal

Set 2 + INPH CHAN: 350 mw (minimum) with a 5 v Set 2 input signal

Set 1 + Set 2 + INPH CHAN: 800 mw (minimum) with a 5 v Set 2 input signal

Set 1 + INPH CHAN: 350 mw (minimum) with a 0.25-v interphone input signal

Set 2 + INPH CHAN: 350 mw (minimum) with a 0.25-v interphone input signal

Set 1 + Set 2 + INPH CHAN: 1,800 mw (minimum) with a 0.25-v interphone input signal

*Input Impedances:*

Set 1 + INPH CHAN: 1,500 ohms

Set 2 + INPH CHAN: 1,500 ohms

Set 1 + Set 2 INPH CHAN: 150 ohms

*Output Impedance:* 600 ohms all channels, tap for 150 ohms

*Audio Frequency Response:* Flat to within 4 db for frequencies

between 400 and 2,500 cps, sharp cutoff beyond these limits

*Distortion:* 10% (maximum) per channel

*Cross Talk:* 50 db down (minimum) between Set 1 + INPH

CHAN and Set 2 + INPH CHAN

*Input Voltage Requirements for Operation with Vibrator Power*

*Supply:*

PP-448/GR: 6.1 amp at 6-v dc

PP-281/GRC: 3.85 amp at 12-v dc

PP-282/GRC: 2.4 amp at 24-v dc

*Input Voltage Requirements for Operation with External Supply:*

Filaments, Relay, and Microphone: 6.3 v dc

Plates: 135-v dc

*Voltages Made Available to Receiver-Transmitter RT-70/GRC:*

Plates: 78 ma at 90- to 95-v dc

Filaments: 360 ma at 6.3-v

Relay: 161 ma at 6.3 v

*Operating Temperature Range:* -40° to +131° F.

*Power Requirements (Standby):*

Plates: 35 ma at 135-v dc

Filaments: 1.2 amp at 6.3 v; 0.6 amp at 12.6 v

Relay: 161 ma at 6.3 v

Microphone: 30 ma at 6.3 v

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
(USA)				
1	AF Amplifier AM-65/GRC (Equipment consists of only one major component.)	2C449-65	4-1/4 x 7-7/8 x 12-7/8	15.5

**REFERENCE DATA AND LITERATURE:**

TM 11-5039

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
------	----------------	--------------

AF AMPLIFIER **AN/GIA-type**

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Raytheon Manufacturing Co.	Waltham 54, Mass.	D-36-039-SC-3779 2921-Phila-52-07	\$130.00 with spares



1 July 1958

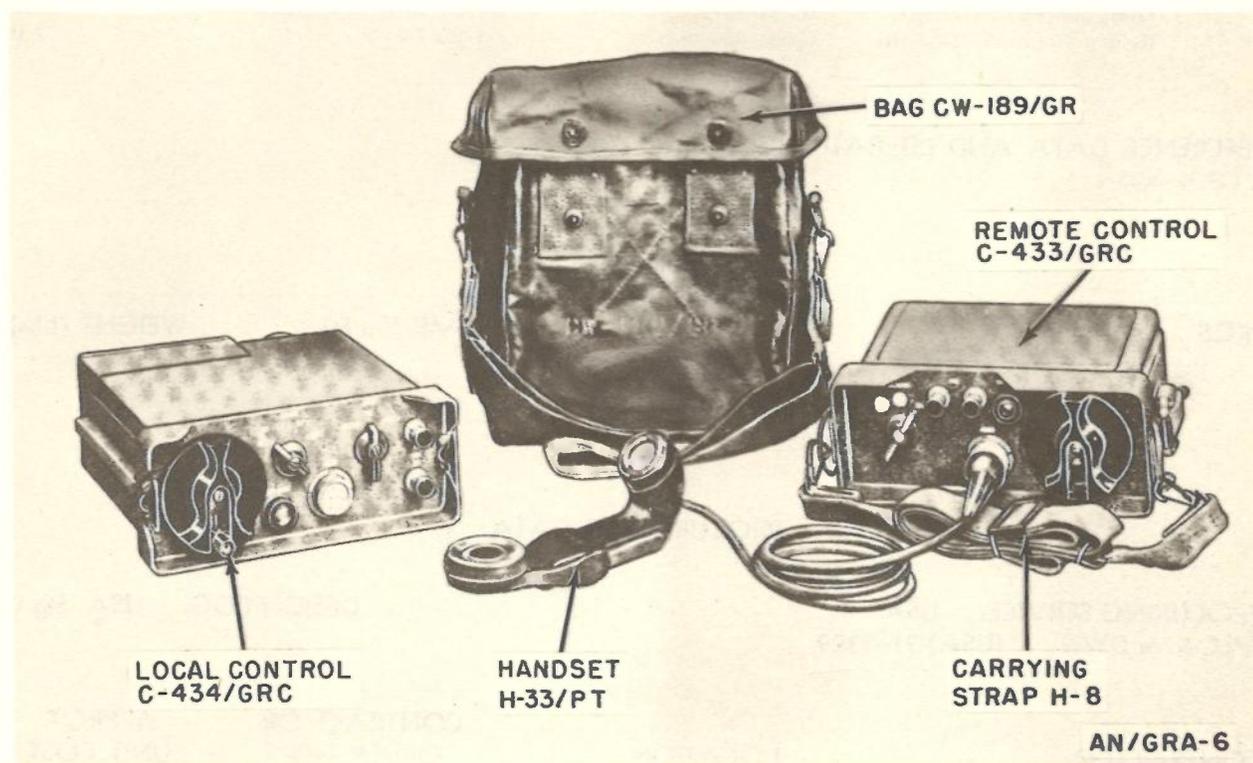
Cognizant Serv: USA FSN: 5820-537-3848

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C684A-6

**FUNCTIONAL DESCRIPTION:**

Control Group AN/GRA-6 is a remote-control equipment used to operate one or two radio sets, either locally or from remote locations, and is used with radio communication equipment at battalion and regimental command levels.

This equipment consists of a remote-control unit, a local-control unit, and accessory components.

It enables push-to-talk control of radio equipment selected from either the local or remote point, and provides telephone facilities, including ringing or call lamp signaling, between

operators up to distances of 2 miles over a conventional telephone pair.

**TECHNICAL CHARACTERISTICS:**

*Type of Signal:* Voice

*Type Communication Circuits:* Duplex telephone communication; push-to-talk; power control

**Controls:**

On local control: LOCAL selector switch; REMOTE selector switch; and RINGER

On remote control: SELECTOR switch and RINGER

MIL-HDBK-161

**AN/GRA-6 CONTROL GROUP**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Local Control C-434/GRC	2C684-434	3-1/2 x 10-1/8 x 8-9/16	10.5
1	Remote Control C-433/GRC	2C684-433	3-1/2 x 7-3/32 x 8-1/4	7.0

**REFERENCE DATA AND LITERATURE:**

TM 11-5038

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	3.32	61

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-3329

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Federal Telephone Radio Co.	Clifton, N. J.	16818-P-51-55	\$279.41

## RADIO SET CONTROL GROUP AN/GRA-11

1 July 1958

Cognizant Serv: USA FSN: 5820-228-6108

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	2C7600-261	--	--



AN/GRA-11

**FUNCTIONAL DESCRIPTION:**

Radio Set Control Group AN/GRA-11 is the joint nomenclature assigned to that equipment formerly known as Remote Control Equipment RC-261.

Radio Set Control Group AN/GRA-11 is an assemblage of items enabling the erection of a local battery telephone facility between a remote operating position and the actual site of a radio equipment. It is used in conjunction with radio equipment used at company and battery level in units organic to infantry, armored, and airborne divisions.

This equipment consists essentially of a control station designed to be operated at the remote point, a control box used at the radio set, and accessories. The remote control unit is connected to the control box at the radio set by a field wire pair.

By means of this equipment the radio set can be operated

from the remote point. Transmission from the remote point can be monitored at the radio set, or operation at the radio set can be monitored at the remote point. In addition, the two terminal units of the system can be used as an intercommunication facility between the two locations.

The equipment is powered by dry batteries and by the hand generator unit that is integral in the remote control unit.

**TECHNICAL CHARACTERISTICS:**

*Type of Signal:* Cw and voice

*Type Communication Circuits:* Local battery telephone

*Controls:* One three-position switch marked RADIO, REMOTE, INTERPHONE; two-position impedance switch marked HIGH, LOW; and press-to-talk switch

*Power Requirements:* 3-v dc (two Batteries BA-30); 6-v dc (four Batteries BA-30)

MIL-HDBK-161

**AN/GRA-11** RADIO SET CONTROL GROUP

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Bag BG-186	2Z551-186	15-1/2 x 5 x 9-5/8	2.0
1	Control Unit RM-53	2C680-53	8-1/2 x 4-3/8 x 4-3/8	4.94
1	Remote Control Unt RM-52	2C680-52	7-1/16 x 3-1/4 x 5-3/16	3.5

REFERENCE DATA AND LITERATURE:

TM 11-2632

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
3	4	71-3/16

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) SC-D-7841, 7849

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Air Communications, Inc.	Winthrop, Mass.	1011-P-45-06	\$54.03
		2206-P-45-03	54.36
		2208-P-45-03	53.97

## RADIO SET CONTROL GROUP AN/GRA-14

1 July 1958  
Cognizant Serv: USA FSN: 820-503-1090

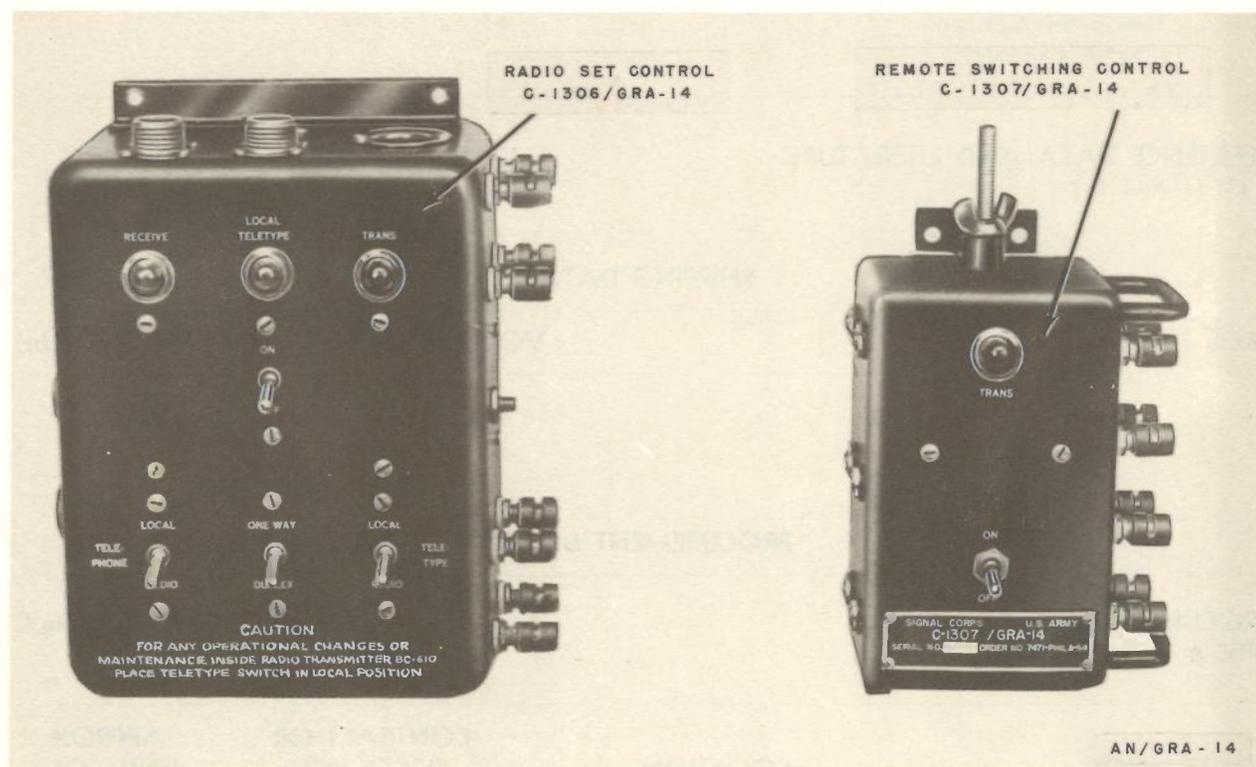
USA

USN

USAF

TYPE CLASS: Std  
STOCK NO: 2C684A-14

Std

**FUNCTIONAL DESCRIPTION:**

Radio Set Control Group AN/GRA-14 is used with Radio Set AN/GRA-26A, AN/GRC-26B, or AN/GRC-26C to provide remote control of the radio set over distances up to 1 mile. It enables control of the following functions of the radio set: switching from send to receive; radiotelephone or radioteletype communication on a one-way or full-duplex basis.

This radio set control group consists of a local-control unit, a remote-control unit, and six cables for connecting the local-control unit to the radio set. The local-control unit is mounted in the radio-set shelter and connected to the radio set and the local telephone. The remote-control unit is located at the remote site and is connected to the remote teletypewriter or telephone, and to a 115-volt ac power source.

The teletypewriters and the perforator transmitter may be moved from the radio-set shelter and located at the remote site. However, for full use of the radio set with the control group, two additional teletypewriters, a perforator transmitter

or reperforator-transmitter teletypewriter, and a 115-volt ac power source are required.

**TECHNICAL CHARACTERISTICS:**

*Types of Operation:* Switching from send to receive; radiotelephone and/or radio-teletype communication on a one-way reversible or full-duplex basis; telephone communication to the radio-set shelter simultaneously with radioteletype communication to a distant station; teletypewriter communication to the radio-set shelter simultaneously with radiotelephone communication to a distant station

*Controls:*

Local-control Unit: ON-OFF, TELEPHONE LOCAL-RADIO; ONE-WAY DUPLEX; LOCAL-RADIO TELETYPE

Remote-control Unit: ON-OFF

*Power Requirements:* 115-v ac (remote-control unit); 115-v dc (local control unit)

MIL-HDBK-161

**AN/GRA-14** RADIO SET CONTROL GROUP

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Radio Set Control C-1306/ GRA-14	-----	12 x 4-3/4 x 8-1/2	7.25
1	Remote Switching Control C-1307/GRA-14	-----	9-1/2 x 4 x 5-3/8	3

REFERENCE DATA AND LITERATURE:

TM 11-264A, C 4

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1	0.4	12.75

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-12665

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
New London Instrument Co., Inc. George Vorow & Co.	New London, Conn. Philadelphia, Pa.	7471-P-54-55 55442-P-56-55	\$78.50 102.00

## AMPLIFIER-MODULATOR GROUP AN/GRA-24

26 November 1958

Cognizant Serv: USAF FSN:

USA

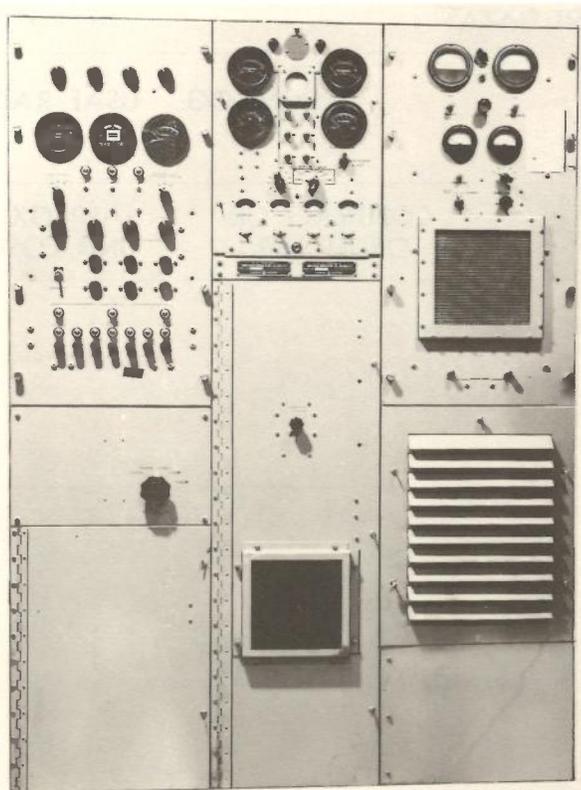
USN

USAF

TYPE CLASS: --

Tent-Std

STOCK NO: --



## FUNCTIONAL DESCRIPTION:

Amplifier-Modulator Group AN/GRA-24 is an ultra-high-frequency power amplifier designed to increase the useful operating range of radio communication with aircraft. It requires an exciter input of 80 watts obtained from either Radio Set AN/GRC-27 or Radio Transmitting Set AN/GRT-3.

This equipment is used where high power ground-to-air communication is required to provide more effective line-of-sight coverage.

The group is intended for single-channel, ground-to-air amplitude-modulated transmission of voice or digital data. It may be switched to either a directional or omnidirectional antenna by means of a switch on the control unit.

Antennas AS-450/GR, AS-505/GR, and AT-197/GR, not supplied, may be used with this equipment.

## TECHNICAL CHARACTERISTICS:

*Frequency in Mc:* 225 to 400

*Type Modulation:* AM, FM (F1, F9; by modification of drivers)

*Type Signal:* Tone, voice, composite transmission

*Exciter Input:* 80 w

*Power Output:* 1,000 w (minimum)

*Power Requirements:* 9 kva, 208-v ( $\pm 10$ -v) 50-60-cycle 3-phase ac; 0.9 pf, 4-wire system

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Amplifier-modulator group	-----	48 x 36 x 60	1,825
1	Control unit	-----	19 x 20 x 8-3/4	50

## REFERENCE DATA AND LITERATURE:

MIL-HDBK-161

**AN/GRA-24** AMPLIFIER-MODULATOR GROUP

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USAF  
SPEC &/or DWG: MIL-A-9529

DESIGN COG: USAF, RADC

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## ANTENNA AN/GRA-type

5 December 1958

Cognizant Serv: USN FSN:

AS-768/GR

USA

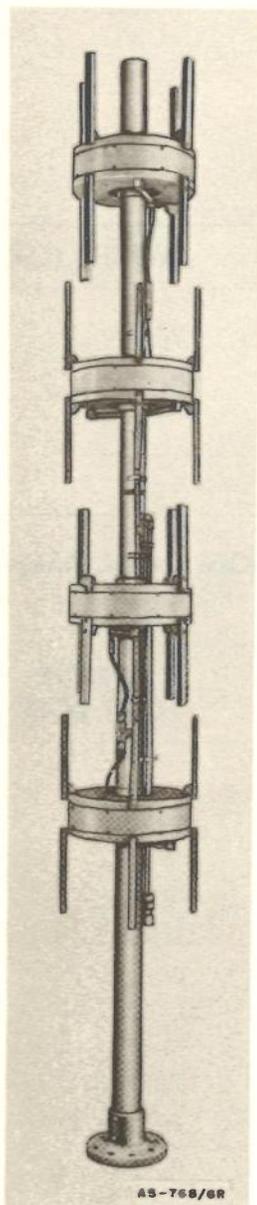
USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

**FUNCTIONAL DESCRIPTION:**

Antenna AS-768/GR is a vertically stacked antenna array designed for radio transmission and reception in the frequency range of 225 to 400 mc. It is used for communication with aircraft at naval air stations.

This vertically stacked antenna array gives a 360° radiation pattern in the horizontal plane with the point of maximum radiation 4° above the optical line of sight.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 225 to 400 mc

*Input Impedance:* 50 ohms at 300 mc

*Radiation Pattern:*

Horizontal: Circular 0° to 360°

Vertical:

15° at 300 mc, point of maximum radiation

4° above optical line of sight

*Standing Wave Ratio:* 2-to-1 maximum



5 December 1958

Cognizant Serv: USA FSN:

ANTENNA AN/GRA-type

AT-249/GRD

USA

USN

USAF

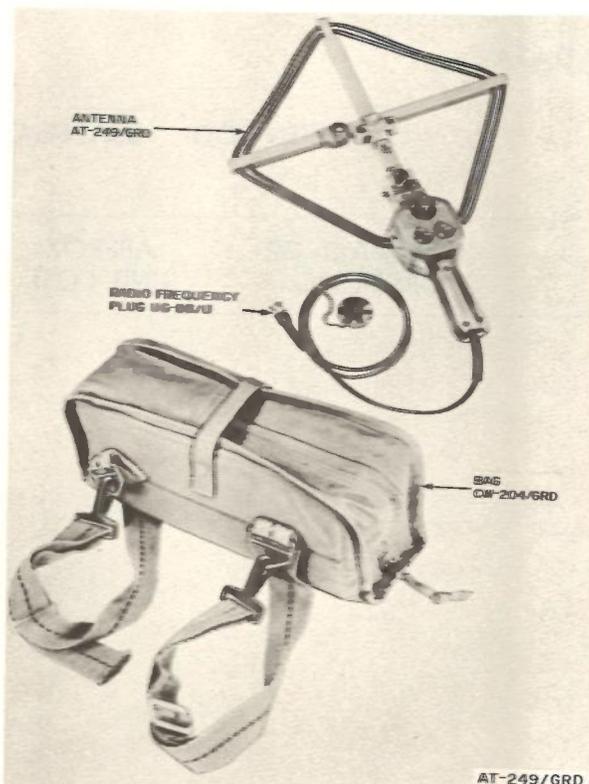
TYPE CLASS:  
STOCK NO:

L/Std

Used by

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**FUNCTIONAL DESCRIPTION:**

Antenna AT-249/GRD, when connected to Radio Set AN/PRC-6, comprises an effective homing device that permits the radio operator to find the direction of a radio transmitter tuned to the frequency of the Radio Set AN/PRC-6 and to proceed toward it.

Highly accurate bearings generally are not required for homing; therefore, an azimuth scale is not provided. When desired, azimuth readings can be obtained by sighting a pocket compass in the direction of the indicated bearings.

Homing Antenna AT-339/PRC can be used in place of Antenna AT-249/GRD. The AT-249/GRD can be used, in the 47- to 55.4-mc range, with Radio Set AN/PRC-10, and with all radio sets containing Receiver-Transmitter RT-68/GRC or Radio Receiver R-110/GRC.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range:* 47 to 55.4 mc, continuously variable

*Type:* Unshielded loop

*Provision for Sensing:* Built-in SENSE or NORMAL switch

*Output Control:* Four-position step attenuator

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna AT-249/GRD	-----	3-1/2 x 14-5/8 x 20-1/4	2
1	Bag CW-204/GRD	-----	5-1/2 x 8-1/8 x 16-1/2	2.6

**REFERENCE DATA AND LITERATURE:**

TM 11-5058

MIL-HDBK-161

**AN/GRA-type** ANTENNA

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1		6.75

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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CONTROL INDICATOR **AN/GRA-type**

5 December 1958

Cognizant Serv: USAF FSN:

C-806/GR

USA

USN

USAF

TYPE CLASS:  
STOCK NO:

Used by

Used by

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Control Indicator C-806/GR selects any one of 10 preset channels from one Radio Receiver R-278/GR and one Radio Transmitter T-217/GR, and indicates when any of a number of transmitters are being modulated. Emergency modulation of a single receiver and reception from a single transmitter are available from jacks.

These functions are available over 5 miles of field wire or commercial telephone lines.

**TECHNICAL CHARACTERISTICS:**

*Quantity of Controlled Channels:* 10

*Power Requirements:* 115 or 230 v, 50- to 60-cycle, 1-phase ac

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Control Indicator C-806/GR (This equipment consists of only one major component.)	-----	3-15/32 x 8 x 19	12

**REFERENCE DATA AND LITERATURE:**

TO 16-35C806-4

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

**AN/GRA-type** CONTROL INDICATOR

PROCUREMENT DATA

PROCURING SERVICE: USAF  
SPEC &/or DWG: WLENG-234-A

DESIGN COG: USAF

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	AF-33(038)-6135	\$230.00 with spares

CONSOLE AN/GRA-type

1 July 1958

Cognizant Serv: USA FSN: 5320-355-7818

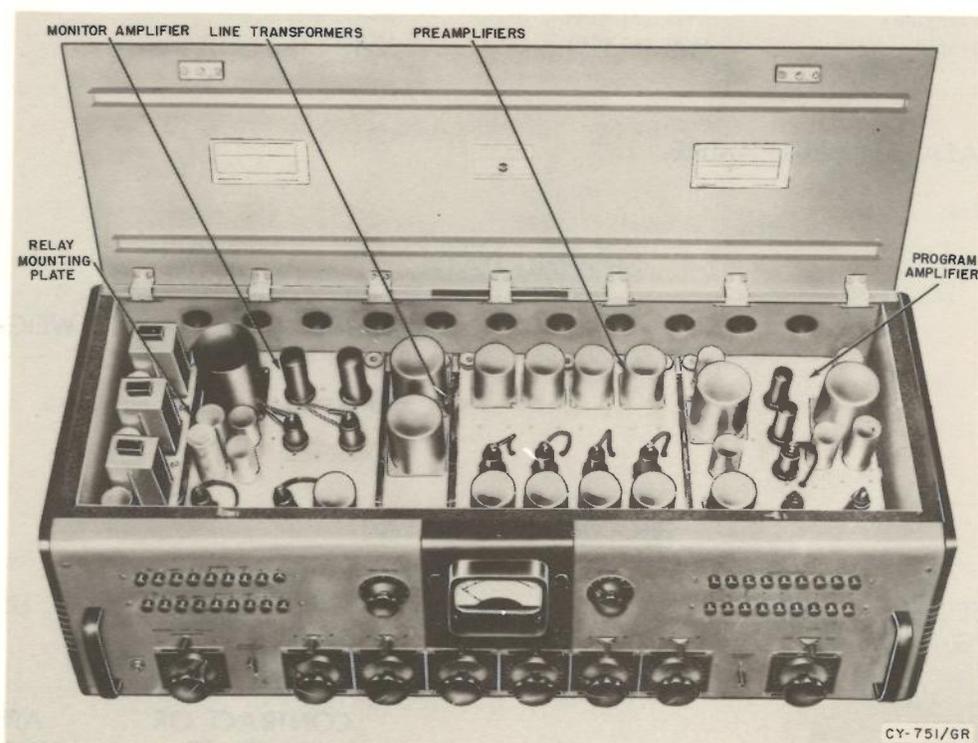
CY-751/GR

USA

USN

USAF

TYPE CLASS: Std  
 STOCK NO: 2C1562B-751



### FUNCTIONAL DESCRIPTION:

Console CY-751/GR is a high-fidelity audio amplifier and control system used in broadcasting am and fm radio programs.

This equipment consists of a power supply (not illustrated) and a console. It provides facilities for mixing and amplifying the outputs of four microphones in one or two studios, a control-room microphone, an announcer-booth microphone, two transcription turntables, or two of six remote lines.

The amplified output signals of the console are transmitted to a radio transmitter to modulate the broadcast carrier.

This console may also be used for auditioning, monitoring, talk-back from the control room to the studios or remote points, studio cuing, and remote cuing. In conjunction with an external recorder and a recording amplifier, it can be used for recording broadcast programs or auditions.

### TECHNICAL CHARACTERISTICS:

*Type of Signal:* Audio (30 to 15,000 cycles)

*Controls:* A-P (6 Audition-program selector switches); REMOTE-LOCAL ANNOUNCE; REG.-EMG. LINE OUT; OVERRIDE-OFF-RECORD; PROGRAM-REMOTE PH MON; MIXER 5 INPUT (9 push-button selectors for connecting turn tables and any one of six remote lines to console); MIXER 6 INPUT (same as MIXER 5 INPUT); REMOTE CUE (8 push-button selectors for remote line and remote talk-back); MONITOR INPUT (9 push-button selectors for monitoring signals); TUBE CHECK (selects console tube stages to be checked on front panel volume meter); MONITOR (volume control for monitor amplifier); MASTER (volume control for program amplifier); VU CONTROL (zero adjust for volume-unit meter)

*Power Requirements:* 225 w, 100- 130-v 50/60-cycles ac

MIL-HDBK-161

**AN/GRA-type CONSOLE**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS (FSN)	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Console amplifier	5895-224-6188	10-1/2 x 17 x 39	135
1	Power supply	5820-265-0704	15 x 8 x 15	60

**REFERENCE DATA AND LITERATURE:**

TM 11-2647  
TO 16-35CY751-5

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	22.6	385

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-M-13231

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Continental Electronics, Ltd. Radio Corp. of America	Dallas, Tex. New York, N. Y.	21328-P-50-01 50728-P-57-55	\$1,850.00 2,304.24

## GENERATOR AN/GRA-type

25 November 1958

Cognizant Serv: USA FSN:

GN-58-A

USA

USN

USAF

TYPE CLASS: L/Std  
STOCK NO: 3H2358

Used by

Used by



## FUNCTIONAL DESCRIPTION:

Generator GN-58-A is a hand operated generator unit designed to supply power to Receiver-Transmitter RT-77/GRC-9 when a vehicular battery is not available, as in portable field use. The equipment requires a single operator who sits astride the leg seat and rotates the generator cranks in the direction indicated on the generator housing.

The generator incorporates a plug-in voltage regulator that operates to keep the output voltage constant, regardless of the speed of rotation or the amount of load on the generator, within 50 to 70 rpm limits.

The GN-58-A is similar to Generator GN-58 except for changes in component parts of voltage regulators and filters.

## TECHNICAL CHARACTERISTICS:

*Speed of Rotation:* 50 to 70 rpm

*Operation:* Manual, by hand crank

*Regulation:* By varying field currents dependent upon speeds of rotation above 50 rpm

*Power Output:* 115 ma at 425-v dc; 2.5 amp at 6.3-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Cord CD-1086	-----	7 feet long	
1	Generator GN-58-A	3H2358	7-1/2 x 8 x 10-1/2	22.75
1	Leg LG-2-A			
2	Leg LG-3			

## REFERENCE DATA AND LITERATURE:

TM 11-263 or TO 31R2-2GRC9-1

MIL-HDBK-161

**AN/GRA-type** GENERATOR

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
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PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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POWER SUPPLY **AN/GRA-type**

5 December 1958

Cognizant Serv: USN FSN:

PP-1098/GRC-9

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

## FUNCTIONAL DESCRIPTION:

Power Supply PP-1098/GRC-9 is designed to convert 115-v 60-cycle single-phase ac into the proper dc voltages to operate Radio Set AN/GRC-9.

The equipment is suitable for use either on shipboard or at shore stations where the normal supply voltage is 115-v 60-cycle single-phase ac.

## TECHNICAL CHARACTERISTICS:

*Power Output:* 65 w (max), 95 ma at 470-v dc, 42 ma at 105-v dc, 17 ma at 105-v dc, 2.5 amp at 6.1-v dc, 450 ma at 1.5-v dc

*Power Input:* 215 w (max), 115-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Power Supply PP-1098/ GRC-9	-----	9 x 16-1/2 x 10-1/4	59
(Equipment consists of only one major component.)				

## REFERENCE DATA AND LITERATURE:

NAVSHIPS 92310

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
1		

MIL-HDBK-161

**AN/GRA-type** POWER SUPPLY

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Charleston Naval Shipyard	Charleston, S. C.	10704/53	

RADIO TRANSMITTER EQUIPMENT **AN/GRA-type**

5 December 1958

Cognizant Serv: USN FSN:

TCA-1

USA

USN

USAF

TYPE CLASS: --

Used by --

STOCK NO: --

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Transmitter Equipment TCA-1 is a low power, general purpose, radio telephone transmitter designed primarily for table mounting in air station control towers.

The TCA-1 features rapid selection of four pretuned channels in the frequency range of 3,000 to 9,050 kilocycles. It is designed to work into an unbalanced antenna or transmission line of 70- to 600-ohm resistive impedance, and up to 1,000-ohm reactive impedance.

This equipment is designed to operate from a 50- to 60-cycle power source or a 50- to 60-cycle and 25-cycle power source.

**TECHNICAL CHARACTERISTICS:***Frequency Range:* 3,000 to 9,050 kc*Number of Channels:* 4 preset*Frequency Control:* Crystal*Type of Signal:* Voice*Power Output:* 15 w*Response (Af):* Uniform within 3 db, from 500 to 2,500 cps; down 30 db or more at 60 and 5,000 cps*Amplitude Distortion (Af):* 6% rms maximum at any modulation level*Residual Noise Level:* 40 db or more below 100% modulation*Power Requirements:* 200 w, 110- 115-v 50-60/25-cycle 1-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Transmitter Model TCA-1 c/o: Radio Frequency Unit 33R-1 Modulator and Power Supply 421A-1 (50 to 60 cps) or 421A-2 (50 to 60 and 25 cps)	-----	12-3/4 x 20-1/4 x 28-1/4	170
1	Operators Desk Set 223F-5			
1	Power Line Connector Cord 65J-1			
1	Receiver Connector 365N808			

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 95301

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)

MIL-HDBK-161

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**AN/GRA-type** RADIO TRANSMITTER EQUIPMENT

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PROCUREMENT DATA

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PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

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CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	NOs-81551, 10 Feb 1941	\$750.00

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RADIO SET **AN/GRC-3**

1 July 1958

Cognizant Serv: USA FSN: 5820-230-0453

USA

USN

USAF

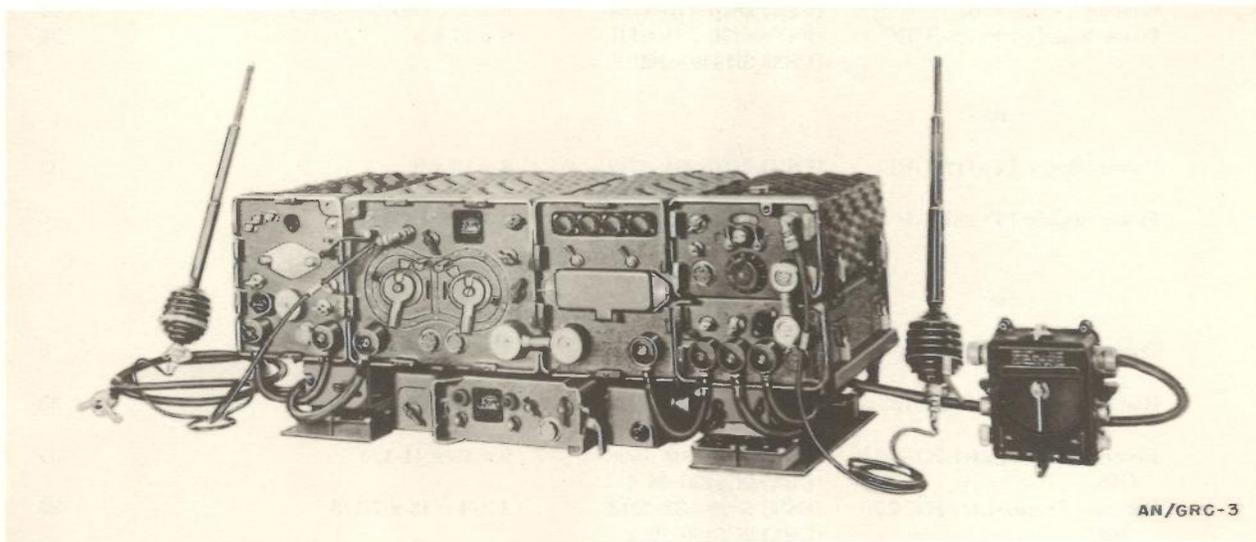
TYPE CLASS:

Std

Std

STOCK NO:

2S12-3124



AN/GRC-3

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-3 is a short-range, fm (voice), two-way communication equipment having provision for retransmission, duplex, and remote control operation. It is one of the integrated series of radio equipment and is used by units organic to an armored division.

It consists of a medium-power radio receiver-transmitter component, designated as set 1, and an auxiliary radio receiver, both of which operate in the frequency range assigned to armored units. In addition, it includes a separate low-power, short-range receiver-transmitter, designated as set 2, which operates in a frequency band common to armored, artillery, and infantry units. Vehicular interphone amplifier and control units for selecting desired modes of operation and service are included.

It operates in a vehicle from the 12- or 24-v vehicular storage battery. A hand generator and associated components (Modification Kit MX-898/GR) provide for operation in semipermanent locations.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

Receiver-Transmitter RT-66/GRC (set 1): 20.0 to 27.9

Receiver-Transmitter RT-70/GRC (set 2): 47.0 to 58.4

Radio Receiver R-108/GRC (auxiliary receiver): 20.0 to 27.9

*Type Modulation:* FM*Type of Signal:* Voice and 1,600-cycle fm signals*Power Output:*

	Transmitting		
	Low		High
Set 1:	1 to 2 w		9 to 16 w
Set 2:		0.5 w	
	Receiving		
	Phone	Speaker	Retransmission
Set 1:	50 mw	1 w	30 mw
Set 2:		75 mw	
Auxiliary receiver . .	50 mw	1 w	30 mw

*Power Requirements:* 110 to 280 w (depending upon mode of operation) from 12/24-v vehicular storage battery

**AN/GRC-3 RADIO SET****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	AF Amplifier AM-65/GRC	(FSN) 5820-194-8303 (USA) 2C449-65.1	4-1/4 x 13 x 7-7/8	15.5
1	Control C-435/GRC	(FSN) 5820-170-4780	3-1/2 x 10-1/2 x 8-3/4	12
1	Power Supply PP-109/GRC	(FSN) 6130-284-0231 (USA) 3H4497-109.1	8 x 13 x 9	33
	or			
1	Power Supply PP-112/GRC	(FSN) 6130-284-0230 (USA) 3H4497-112.1	8 x 13 x 9	33
2	Power Supply PP-281/GR	(FSN) 5820-500-4375 (USA) 3H4497-281.1	4-1/2 x 6 x 3	6
	or			
2	Power Supply PP-282/GR	(FSN) 5820-500-1648 (USA) 3H4497-282.1	4-1/2 x 6 x 3	6
1	Radio Receiver R-108/GRC	(FSN) 5820-503-1258 (USA) 2C4180-108.1	9 x 13 x 7-1/4	35
1	Receiver-Transmitter RT-66/ GRC	(FSN) 5820-503-1508 (USA) 2C5130-66.1	9 x 13 x 11-1/4	35
1	Receiver-Transmitter RT-70/ GRC	(FSN) 5820-537-3913 (USA) 2C5130-70.2	4-3/4 x 13 x 7-1/8	25

**REFERENCE DATA AND LITERATURE:**

TM 11-284

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	10.48	441

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

## RADIO SET AN/GRC-4( )

1 July 1958

Cognizant Serv: USA FSN: 5820-243-6418

USA

USN

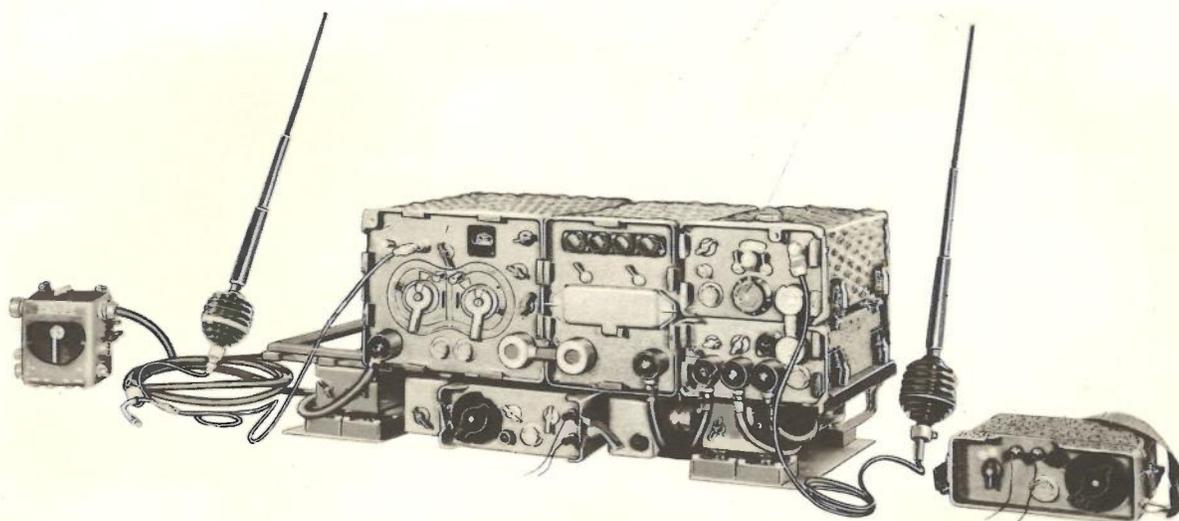
USAF

TYPE CLASS: Std  
 STOCK NO: 2S12-4124

Std

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AN/GRC-4

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-4( ) is a short-range, FM (voice), two-way communication equipment having provision for retransmission, duplex, and remote control operation. It is one of the integrated series of radio equipment and is used by units organic to an armored division.

It consists of a medium-power radio receiver-transmitter component, designated as set 1, that operates in the frequency range assigned to armored units, and a low-power receiver-transmitter, designated as set 2, that operates in a frequency band common to armored, artillery, and infantry units. Vehicular interphone amplifier and control units for selecting desired modes of operation and service are included.

This equipment generally operates in a vehicle from the 12- or 24-v vehicular storage battery; hand generator and associated components (Modification Kit MX-898/GR) may be used for operation in semipermanent ground applications.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

Receiver-Transmitter RT-66/GRC (set 1): 20.0 to 27.9

Receiver-Transmitter RT-70/GRC (set 2): 47.0 to 58.4

*Type Modulation:* Fm*Type of Signal:* Voice and 1,600-cycle fm signals*Power Output:*

	<i>Transmitting</i>	
	<i>Low</i>	<i>High</i>
Set 1:	1 to 2 w	9 to 16 w
Set 2:	0.5 w	

	<i>Receiving</i>		
	<i>Phone</i>	<i>Speaker</i>	<i>Retransmission</i>
Set 1:	50 mw	1 w	30 mw
Set 2:	75 w		

*Power Requirements:* 110 to 280 w (depending upon mode of operation), 12/24-v dc from vehicular storage battery

## AN/GRC-4( ) RADIO SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	AF Amplifier AM-65/GRC	(FSN)5820-194-8303 (USA)2C449-65.1	4-1/4 x 13 x 7-7/8	15.5
1	Control C-435/GRC	(FSN)5820-170-4780	3-1/2 x 10-1/2 x 8-3/4	12
1	Power Supply PP-109/GR	(FSN)6130-284-0231 (USA)3H4497-109.1	8 x 13 x 9	33
	or			
1	Power Supply PP-112/GR	(FSN)6130-284-0230 (USA)3H4497-112.1	8 x 13 x 9	33
1	Power Supply PP-281/GR	(FSN)5820-500-4375 (USA)3H4497-281.1	4-1/2 x 6 x 3	6
	or			
1	Power Supply PP-282/GR	(FSN)5820-500-1648 (USA)3H4497-281.1	4-1/2 x 6 x 3	6
1	Receiver-Transmitter RT-66/GRC	(FSN)5820-503-1508 (USA)2C5130-66.1	9 x 13 x 11-1/4	35
1	Receiver-Transmitter RT-70/GRC	(FSN)5820-537-3913 (USA)2C5130-70.2	4-3/4 x 13 x 7-1/8	25

## REFERENCE DATA AND LITERATURE:

TM 11-284

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	10.48	441

## PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

RADIO SET **AN/GRC-5**

1 July 1958

Cognizant Serv: USA FSN: AN/GRC-5: 5820-230-0449  
AN/GRC-5X: 5820-230-0460

USA

USN

USAF

TYPE CLASS:

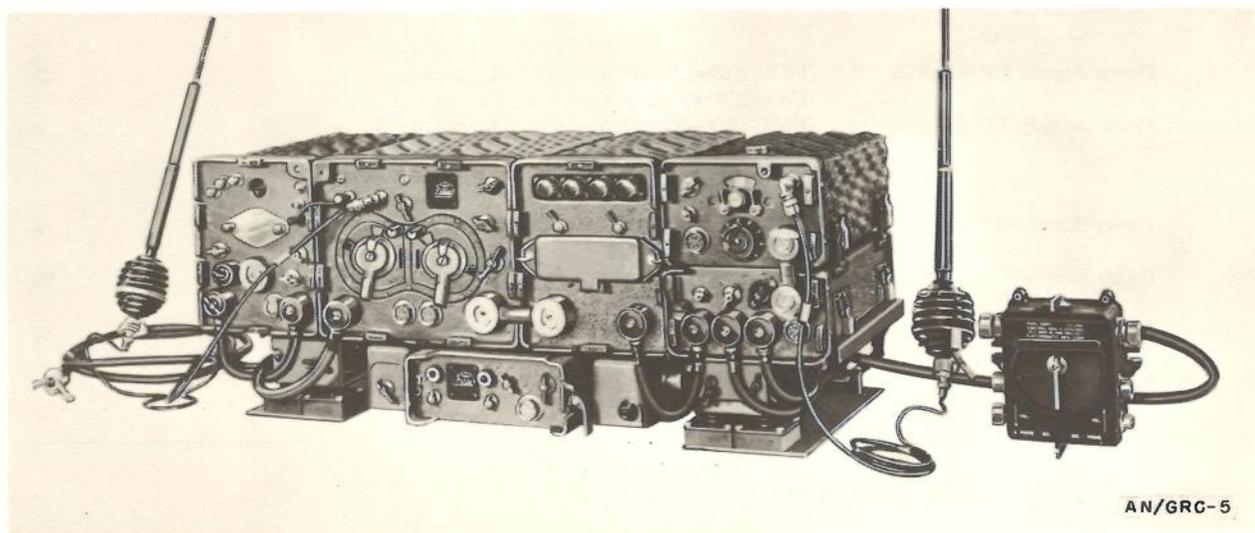
Std

Std

STOCK NO:

AN/GRC-5: 2S12-5/24

AN/GRC-5X: 2S12-5/12



AN/GRC-5

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-5 is a short-range, FM (voice), two-way communication equipment having provision for retransmission, duplex, and remote control operation. It is one of the integrated series of radio equipment used by artillery units.

This equipment consists of a medium-power radio receiver-transmitter, designated as set 1, operating on frequencies assigned to field artillery and a low-power receiver-transmitter designated as set 2, operating on frequencies common to artillery, armored, and infantry units for communication and liaison among all three types of organizations. It includes an auxiliary receiver, a vehicular interphone amplifying equipment, and control units for selecting desired modes of operation and service.

It generally operates in a vehicle from the 12- or 24-v vehicular storage battery; a hand generator and associated components (Modification Kit MX-898/GR) may be used for semipermanent field operation of set 1 or set 2 removed from the vehicle.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

Receiver-Transmitter RT-67/GRC (set 1): 27.0 to 38.9

Receiver-Transmitter RT-70/GRC (set 2): 47.0 to 58.4

Radio Receiver R-109/GRC (auxiliary receiver): 27.0 to 38.9

*Type Modulation:* FM*Type of Signal:* Voice and 1,600-cycle FM tone signals*Power Output:*

	Transmitting		
	Low	High	
Set 1:	1 to 2 w	9 to 16 w	
Set 2:	0.5 w		
	Receiving		
	Phone	Speaker	Retransmission
Set 1:	50 mw	1 w	30 mw
Set 2:	75 mw		
Auxiliary receiver	50 mw	1 w	30 mw

*Power Requirements:* 110 to 280 w (depending upon mode of operation) from 12/24-v vehicular storage battery

MIL-HDBK-161

**AN/GRC-5 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	AF Amplifier AM-65/GRC	(FSN) 5820-194-8303 (USA) 2C449-65.1	4-1/4 x 13 x 7-7/8	15.5
1	Control C-435/GRC	(FSN) 5830-170-7868	3-1/2 x 10-1/2 x 8-3/4	12
1	Power Supply PP-109/GR	(FSN) 6130-284-0231 (USA) 3H4497-109.1	8 x 13 x 9	33
	or			
1	Power Supply PP-112/GR	(FSN) 6130-284-0230 (USA) 3H4497-112.1	8 x 13 x 9	33
2	Power Supply PP-281/GR	(FSN) 5820-500-4375 (USA) 3H4497-281.1	4-1/2 x 6 x 3	6
	or			
2	Power Supply PP-282/GR	(FSN) 5820-500-1648 (USA) 3H4497-282.1	4-1/2 x 6 x 3	6
1	Radio Receiver R-109/GRC	(FSN) 5820-503-1413 (USA) 2C4180-109	9 x 13 x 7-1/4	35
1	Receiver-Transmitter RT-67/GRC	(FSN) 5820-503-1507 (USA) 2C5130-67.1	9 x 13 x 11-1/4	35
1	Receiver-Transmitter RT-70/GRC	(FSN) 5820-537-3913 (USA) 2C5130-70.2	4-3/4 x 13 x 7-1/8	25

**REFERENCE DATA AND LITERATURE:**

TM 11-284

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	10.48	441

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

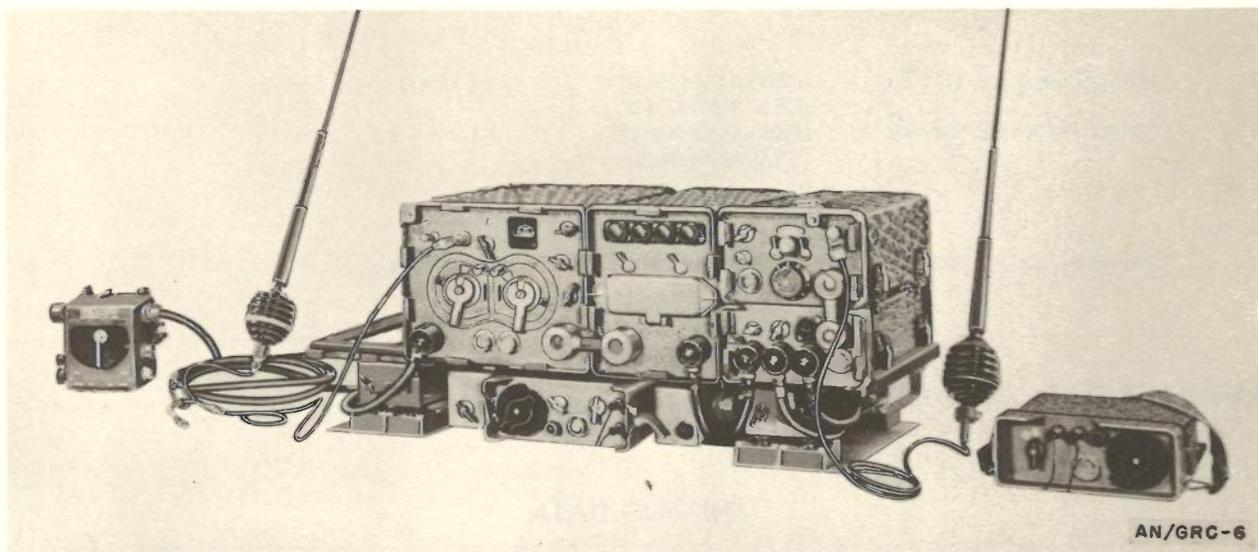
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO SET **AN/GRC-6**

1 July 1958

Cognizant Serv: USA FSN: AN/GRC-6: 5820-222-6417  
AN/GRC-6X: 5820-230-0448

	USA	USN	USAF
TYPE CLASS:	Std	Std	--
STOCK NO:	AN/GRC-6: 2S12-6/24 AN/GRC-6X: 2S12- 6/12	--	--



AN/GRC-6

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-6 is a vehicular, short-range, FM (voice), two-way radio communication equipment having provision for retransmission, duplex, and remote control operation. It is one of the integrated series of radio equipment and is used by artillery units.

This equipment consists of a medium-power receiver-transmitter, designated as set 1, that operates in the frequency range assigned to an artillery unit. In addition, it includes a separate, low-power, short-range receiver-transmitter, designated as set 2, that operates in the frequency band common to armored, artillery, and infantry units. Vehicular interphone amplifier and control units for selecting desired modes of operation and service are included.

It generally operates in a vehicle from the 12- or 24-v vehicular storage battery; a hand generator and associated components (Modification Kit MX-898/GR) may be used for operation in semipermanent locations.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

RT-67/GRC (set 1): 27.0 to 38.9

RT-70/GRC (set 2): 47.0 to 58.4

*Type Modulation:* FM*Type of Signal:* Voice and 1,600-cycle FM tone signals*Power Output:*

	Transmitting		
	Low	High	
Set 1:	1 to 2 w	9 to 16 w	
Set 2:	0.5 w		
	Receiving		
	Phone	Speaker	Retransmission
Set 1:	50 mw	1 w	30 mw
Set 2:	75 mw		

*Power Requirements:* 110 to 280 w (depending upon mode of operation) at 12- or 24-v dc from vehicular storage battery

**AN/GRC-6 RADIO SET****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	AF Amplifier AM-65/GRC	(FSN) 5820-194-8303 (USA) 2C449-65.1	4-1/4 x 13 x 7-7/8	15.5
1	Control C-435/GRC	(FSN) 5830-170-7868	3-1/2 x 10-1/2 x 8-3/4	12
1	Power Supply PP-109/GR	(FSN) 6130-284-0231 (USA) 3H4497-109.1	8 x 13 x 9	33
	or			
1	Power Supply PP-112/GR	(FSN) 6130-284-0230 (USA) 3H4497-112.1	8 x 13 x 9	33
1	Power Supply PP-281/GR	(FSN) 5820-500-4375 (USA) 3H4497-281.1	4-1/2 x 6 x 3	6
	or			
1	Power Supply PP-282/GR	(FSN) 5820-500-1648 (USA) 3H4497-282.1	4-1/2 x 6 x 3	6

**REFERENCE DATA AND LITERATURE:**

TM 11-284

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	10.48	441

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

RADIO SET **AN/GRC-7**

1 July 1958

Cognizant Serv: USA FSN: AN/GRC-7: 5820-230-0446  
AN/GRC-7X: 5820-222-6416

USA

USN

USAF

TYPE CLASS:

Std

Std

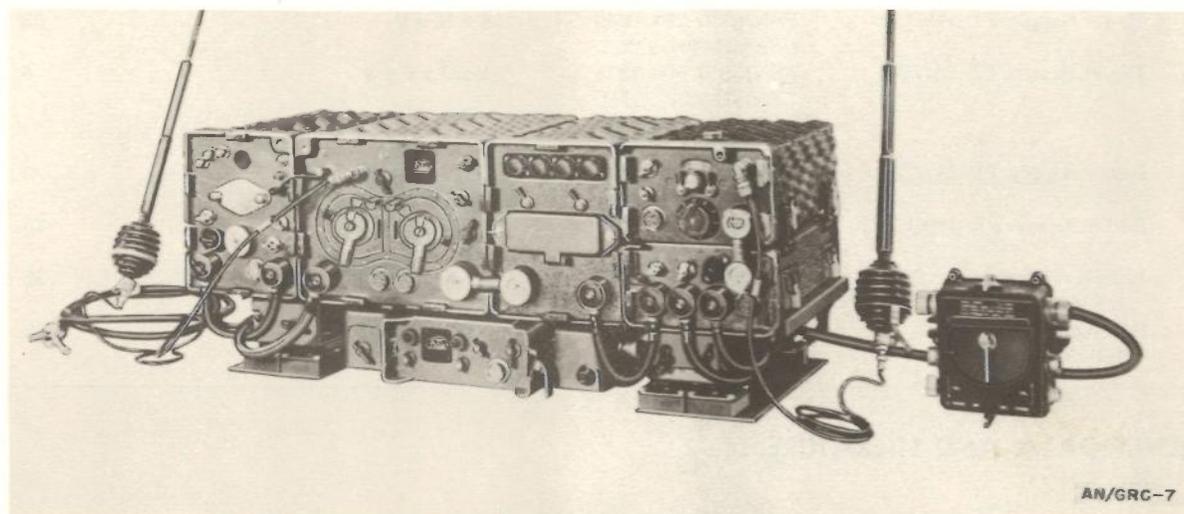
STOCK NO:

AN/GRC-7: 2S12-7/24

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AN/GRC-7X: 2S12-7/12

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AN/GRC-7

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-7 is a short-range, FM (voice), two-way communication equipment having provision for retransmission, duplex, and remote control operation. It is one of the integrated series of radio equipment used by units organic to an infantry division.

It consists of a medium-power radio receiver-transmitter component, designated as set 1, and an auxiliary radio receiver, both of which operate in the frequency range assigned to infantry units. In addition, it includes a separate low-power, short-range receiver-transmitter, designated as set 2, that operates in a frequency band common to armored, artillery, and infantry units. Vehicular interphone amplifier and control units for selecting desired modes of operation and service are included.

It generally operates in a vehicle from the 12- or 24-v vehicular storage battery; a hand generator and associated components (Modification Kit MX-898/GR) may be used for operation in semipermanent locations.

**TECHNICAL CHARACTERISTICS:***Frequency Range in Mc:*

RT-68/GRC (set 1): 38.0 to 54.9

RT-70/GRC (set 2): 47.0 to 58.4

RC-110/GRC (auxiliary receiver): 38.0 to 54.9

*Type Modulation:* FM*Type of Signal:* Voice and 1,600-cycle FM tone signals*Power Output:*

	<i>Transmitting</i>		
	<i>Low</i>		<i>High</i>
Set 1:	1 to 2 w		9 to 16 w
Set 2:		0.5 w	
	<i>Receiving</i>		
	<i>Phone</i>	<i>Speaker</i>	<i>Retransmission</i>
Set 1:	50 mw	1 w	30 mw
Set 2:		75 mw	
Aux Rec:	50 mw	1 w	30 mw

*Power Requirements:* 110 to 280 w (depending upon mode of operation), 12/24-v dc from vehicular storage battery

**AN/GRC-7 RADIO SET****MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	AF Amplifier AM-65/GRC	(FSN)5820-194-8303 (USA)2C449-65.1	4-1/4 x 13 x 7-7/8	15.5
1	Control C-435/GRC	(FSN)5830-170-7868	3-1/2 x 10-1/2 x 8-3/4	12
1	Power Supply PP-109/GR	(FSN)6130-284-0231 (USA)3H4497-109.1	8 x 13 x 9	33
	or			
1	Power Supply PP-112/GR	(FSN)6130-284-0230 (USA)3H4497-112.1	8 x 13 x 9	33
2	Power Supply PP-281/GR	(FSN)5820-500-4375 (USA)3H4497-281.1	4-1/2 x 6 x 3	6
	or			
2	Power Supply PP-282/GR	(FSN)5820-500-1648 (USA)3H4497-282.1	4-1/2 x 6 x 3	6
1	Radio Receiver R-110/GRC	(FSN)5820-503-1254 (USA)2C4180-110.1	9 x 13 x 7-1/4	35
1	Receiver-Transmitter RT-68/GRC	(FSN)5820-503-1505 (USA)2C5130-68.1	9 x 13 x 11-1/4	35
1	Receiver-Transmitter RT-70/GRC	(FSN)5820-537-3913 (USA)2C5130-70.2	4-3/4 x 13 x 7-1/8	25

**REFERENCE DATA AND LITERATURE:**

TM 11-284

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	10.48	441

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

## RADIO SET AN/GRC-8

1 July 1958

Cognizant Serv: USA FSN: AN/GRC-5820-230-0454  
AN/GRC-8X: 5820-230-0445

USA

USN

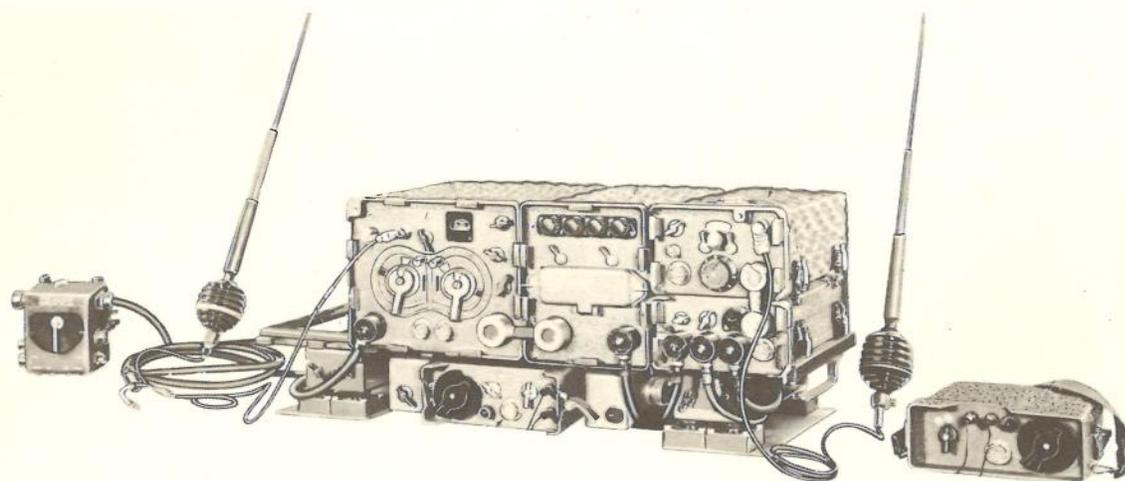
USAF

TYPE CLASS:

Std

Std

STOCK NO:



AN/GRC-8

## FUNCTIONAL DESCRIPTION:

Radio Set AN/GRC-8 is a short-range, FM (voice), two-way communication equipment for retransmission, duplex, and remote control operation. It is one of the integrated series of radio equipment used by units organic to an infantry division.

This equipment consists of a medium-power radio receiver-transmitter component, designated as set 1, operating in the frequency range assigned to infantry units, and a low-power receiver-transmitter, designated as set 2, which operates in a frequency band common to armored, artillery, and infantry units. It includes vehicular interphone amplifying equipment and control units for selecting desired modes of operation.

It generally operates in a vehicle from the 12- or 24-v vehicular storage battery; a hand generator and associated components (Modification Kit MX-898/GR) may be used for operation in semipermanent ground applications.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:*

Receiver-Transmitter RT-68/GRC (set 1): 38.0 to 54.9

Receiver-Transmitter RT-70/GRC (set 2): 47.0 to 58.4

*Type Modulation:* FM*Type of Signal:* Voice and 1,600-cycle FM tone signals*Power Output:*

	<i>Transmitting</i>		
	<i>Low</i>		<i>High</i>
Set 1:	1 to 2 w		9 to 16 w
Set 2:		0.5 w	
	<i>Receiving</i>		
	<i>Phone</i>	<i>Speaker</i>	<i>Retransmission</i>
Set 1:			
Set 2:	50 mw	1 w	30 mw
		75 w	

*Power Requirements:* 110 to 280 w (depending upon mode of operation) from 12/24-v vehicular storage battery

MIL-HDBK-161

**AN/GRC-8 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	AF Amplifier AM-65/GRC	(FSN) 5820-194-8303 (USA) 2C449-65.1	4-1/4 x 13 x 7-7/8	15.5
1	Control C-435/GRC	(FSN) 5830-170-7868	3-1/2 x 10-1/2 x 8-3/4	12
1	Power Supply PP-109/GR	(FSN) 6130-284-0231 (USA) 3H4497-109.1	8 x 13 x 9	33
	or			
1	Power Supply PP-112/GR	(FSN) 6130-284-0230 (USA) 3H4497-112.1	8 x 13 x 9	33
1	Power Supply PP-281/GR	(FSN) 5820-500-4375 (USA) 3H4497-281.1	4-1/2 x 6 x 3	6
	or			
1	Power Supply PP-282/GR	(FSN) 5820-500-1648 (USA) 3H4497-282.1	4-1/2 x 6 x 3	6
1	Receiver-Transmitter RT-68/GRC	(FSN) 5820-503-1505 (USA) 2C5130-68.1	9 x 13 x 11-1/4	35
1	Receiver-Transmitter RT-70/GRC	(FSN) 5820-537-3913 (USA) 2C5130-70.2	4-3/4 x 13 x 7-1/8	25

**REFERENCE DATA AND LITERATURE:**

TM 11-284

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	10.48	441

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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## RADIO SET AN/GRC-9( )

1 July 1958

Cognizant Serv: USA FSN: 5820-193-8845

	USA	USN	USAF
TYPE CLASS:	Std	Used by	Std
STOCK NO:	2S2501-9	--	266-498345

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-9( ) is a light-weight portable or vehicular, 3-band, AM (voice, tone, cw, and mcw) equipment used by infantry and armored units for communication in the hf band.

This equipment consists of a receiver-transmitter (which can be either crystal- or master-oscillator controlled), a power supply, and related accessories. It uses a vehicular whip-type or long-wire antenna, one or two sets of headphones, or a loudspeaker connected at either of the headphone jacks.

Power is derived from a storage battery through the vibrator power unit or from a hand generator such as the GN-58.

During standby, the receiver uses Battery BA-48, which

can be used in conjunction with the hand generator when the transmitter is being operated.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 2 to 12 in 3 bands

*Type Modulation:* AM

*Type of Signal:* Voice, cw, or mcw

*Power Output:*

With PE-237: High, 7 w; low, 1 w (voice)

With GN-58: High 3.6 w; low, 1.2 w (voice)

*Power Requirements:* Vibrator Power Supply PE-237 and 6-, 12-, or 24-v vehicular storage battery; Generator GN-58; or Power Unit PE-162. Battery BA-48 used for standby operation of receiver.

MIL-HDBK-161

**AN/GRC-9( ) RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Generator GN-58	6115-498-4267	10-1/2 x 7-1/2 x 8	22.75
1	Loudspeaker LS-203/U	5965-280-3800	7 x 4-3/4 x 3	3
1	Receiver-Transmitter RT-77/GRC-9	5820-196-9041	16 x 13 x 8	32
1	Vibrator Power Supply PE-237	5820-252-5503	20 x 10-1/2 x 10-3/4	74

**REFERENCE DATA AND LITERATURE:**

TM 11-263

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
3	15.9	359

**PROCUREMENT DATA**

PROCURING SERVICE: USA

DESIGN COG: USA, Sig C

SPEC &/or DWG: MIL-P-1167; MIL-R-12532A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Avco Mfg. Corp., Crosley Division	Cincinnati, Ohio	15170-P-52-55	\$1,387.54
Hoffman Labs., Inc.	Los Angeles, Calif.	341-P-51-55	1,713.21
Lewyt Manufacturing Corp.	Brooklyn, N. Y.	21581-P-56-55	489.00
Tele-King Corp.	----	15174-P-52-01	
The Rowland-Borg Corp.	Chicago, Ill.	53096-P-45-04	1,222.53

1 July 1958

Cognizant Serv: USA FSN: 5820-570-5482

USA

USN

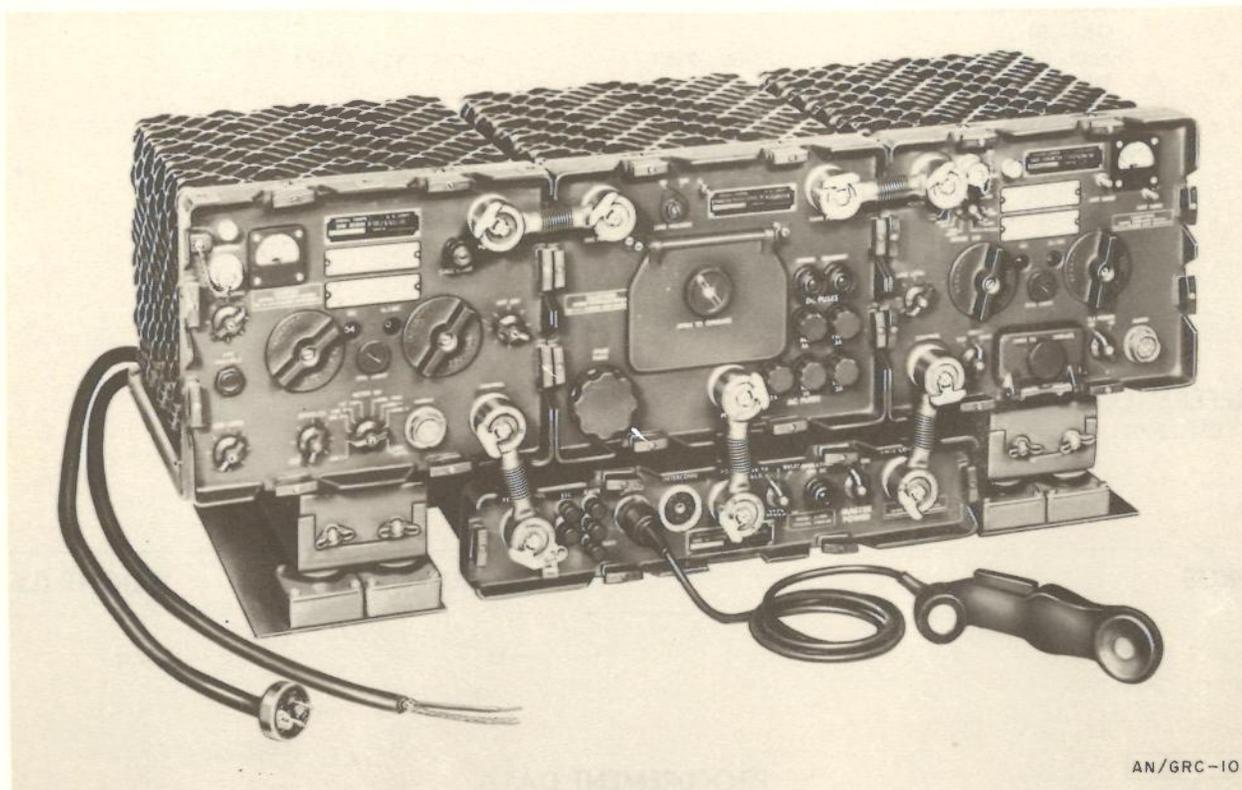
USAF

TYPE CLASS:

Std

STOCK NO:

2S2501-10



AN/GRC-10

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-10 is a vhf, FM receiving and transmitting equipment that may be used in single-channel push-to-talk communication applications, as a terminal station of a single-channel, line of sight, radio relay system, as a major component of a multichannel radio terminal set, or as part of a radio relay (repeater) set of a multichannel system. (See AN/GRC-39 and AN/GRC-40.)

It consists essentially of an antenna system, a receiver, a transmitter, a power supply, a radio-set control, and an equipment rack.

It can be used in fixed-plant, ground, or vehicular applications.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 54 to 70.9 (170 channels spaced 0.1 mc apart).

*Type Modulation:* FM

*Type of Signal:* Voice; multichannel telephone, telegraph; facsimile; or various combinations of these.

*Transmitter Power Output:* 10 w, 40 w.

*Power Requirements, Each:* DY-94/GRC-10: 292 w, 115/230-v, 50/65-cycle ac; 326 w, 26-v dc.

MIL-HDBK-161

**AN/GRC-10 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Antenna Group OA-249/ GRC-10	5985-174-0514	-----	90.5
1	Dynamotor-Power Supply DY-94/GRC-10	6125-392-7183	9-1/4 x 13 x 11-1/4	59.5
1	Electrical Equipment Rack MT-700/GRC-10	5820-503-3465	5 x 12-1/2 x 33-5/8	
1	Radio Receiver R-125/ GRC-10	5820-503-1244	9-1/4 x 13 x 11-1/4	31
1	Radio Set Control C-632/ GRC-10	5820-503-1010	4 x 13 x 18	18
1	Radio Transmitter T-235/ GRC-10	5820-503-3420	9-1/4 x 13 x 11-1/4	34.5

**REFERENCE DATA AND LITERATURE:**

TM 11-614

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	33	609.3

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-10511

DESIGN COG: USA, Sig C

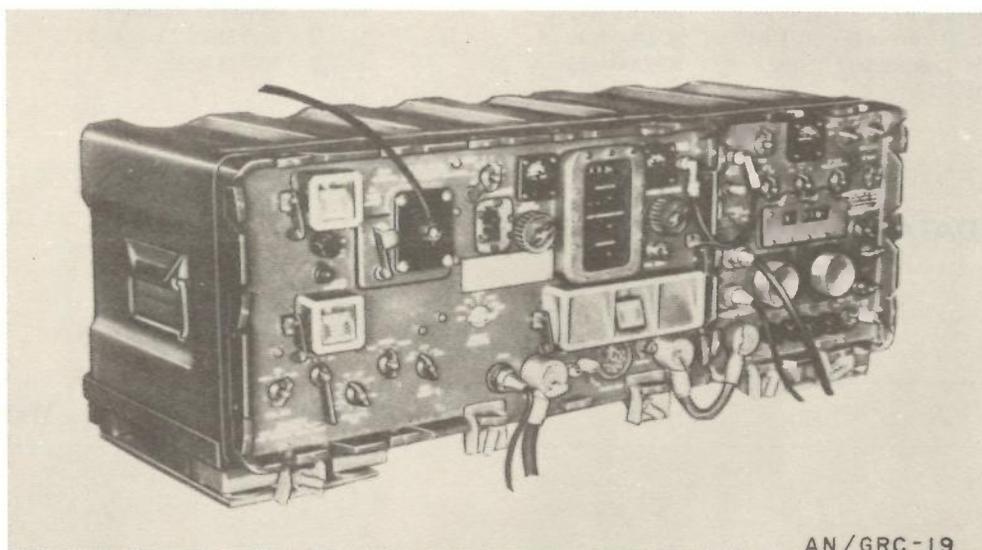
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
A.R.F. Products Co. Motorola, Inc.	River Forest, Ill. Chicago, Ill.	1998-P-51-93 92-P-52-51	\$3,700.80

## RADIO SET AN/GRC-19( )

1 July 1958

Cognizant Serv: USA FSN: 5820-030-0155

	USA	USN	USAF
TYPE CLASS:	Std	--	Std
STOCK NO:	2S2501-19/24	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-19( ) is a mobile or portable, hf equipment used for transmitting and receiving voice, radiotelegraph, and, in conjunction with suitable associated equipment, for radioteletype communication. Its transmitter may be remotely controlled at a maximum distance of 75 feet from the operating site by means of an appropriate control unit.

This equipment consists essentially of a transmitter, receiver, and whip antenna but requires an installation kit suited to the vehicle in which it is used for mobile operation. Both a 28-volt power source and a half-wave, center-fed Hertz array (Antenna Group AN/GRA-12) are required for fixed-station operation.

This radio set has a provision for simultaneous voice and radioteletype service, and it can operated on a simplex or duplex basis or in radio-relay applications.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:*

Transmitter: 1.5 to 20 in 10 bands

Receiver: 0.5 to 32 in 32 bands

*Type Modulation:* AM

*Type of Signal:* Cw, fsk, voice, or fsk and voice composite

*Power Output:* 100 w

*Power Requirements:* 28.5-v dc

MIL-HDBK-161

**AN/GRC-19( ) RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(USA)		
1	Mounting MT-851/GRC-19	2Z6763-851	1-11/16 x 14-9/32 x 33-8/8	45
1	Radio Receiver R-392/URR	2C480-392	11-1/2 x 14-3/16 x 11-1/4	52.3
1	Radio Transmitter T-195/ GRC-19	2C6900-195	11-1/2 x 14-1/8 x 22	125

**REFERENCE DATA AND LITERATURE:**

TM 11-274

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
4	37.1	351

**PROCUREMENT DATA**

PROCURING SERVICE: USA  
SPEC &/or DWG: MIL-R-10473

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	3150-P-51-93	

1 July 1958

Cognizant Serv: USA FSN: 5820-186-9250

USA

USN

USAF

TYPE CLASS:

Std

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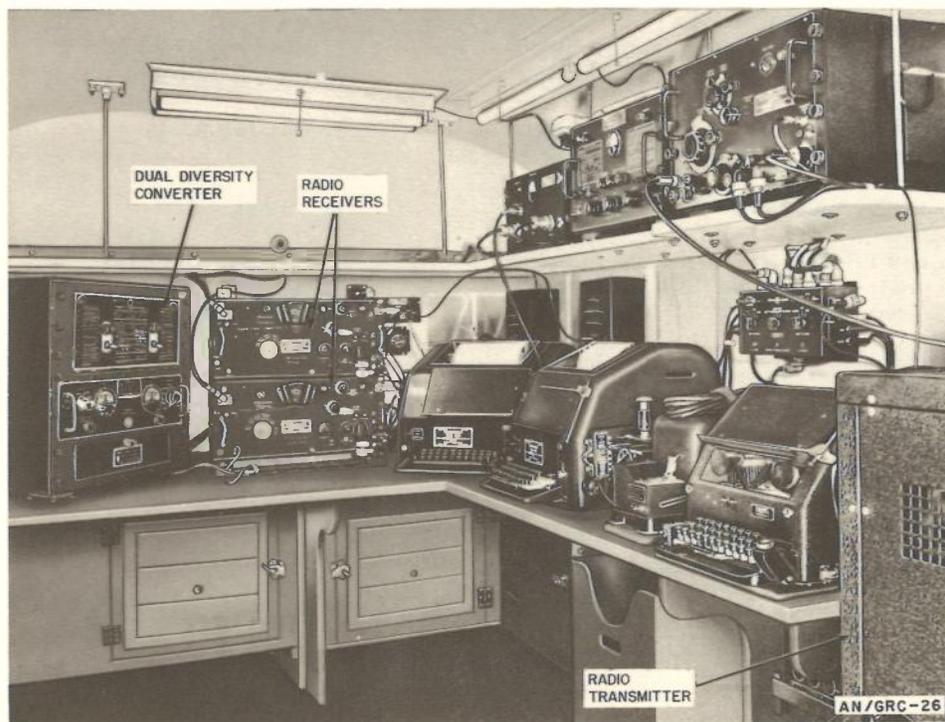
Std

STOCK NO:

2S2501-26

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### FUNCTIONAL DESCRIPTION:

Radio Set AN/GRC-26( ) is a mobile, long-range, AM (voice, tone, cw, or frequency-shift-keying teletypewriter) transmitting and receiving equipment used for point-to-point and ground-to-air communication.

This equipment consists of radio, teletypewriter, and associated items installed in a field-type shelter mounted on a 2-1/2-ton, 6 x 6, cargo truck, with a 1-ton trailer on which a field power unit is installed. Whip-type and doublet antenna components are included.

This set is used primarily for radioteletype operation on a full-duplex basis and uses dual-diversity reception. It can be operated on a half-duplex basis and includes a voice channel serving as an *order wire*. The equipment normally is operated at the halt but can provide voice or cw communication while in motion. The voice channel can be used as a voice-patching

facility, simultaneously with radioteletype operation in emergencies or when otherwise required.

The entire equipment can be transported by a C-82 type aircraft.

Later models of this set are composed of later and improved types of transmitting, receiving, and reproducing equipment. Functionally, the various models generally are interchangeable.

### TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* Receiver: 1.5 to 18.0

*Type Modulation:* AM

*Type of Signal:* Voice, tone, cw, fsk, or voice and fsk composite

*Power Output:*

Voice: 300 w

Cw or Fsk: 400 w

*Power Requirements:* Approximately 3,000 w, 115-v 60-cycle ac

## AN/GRC-26( ) RADIO SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS (FSN)	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Tuning Unit BC-939-( )	5820-223-4641	14-1/2 x 23-1/2 x 11-1/4	48
1	Control Box C-345A/MRC-2	-----	3-1/2 x 2 x 6	4
1	Control Unit C-292B/TRA-7	5815-162-8257	11-27/32 x 12-5/16 x 19-1/8	185
1	Dual Diversity Converter CV-31B/TRA-7	5815-194-9388	20-7/8 x 17-5/16 x 19-1/4	200
1	Frequency Shift Exciter O-39B/TRA-7	5815-240-3295	12-5/8 x 16-3/8 x 19	110
1	Oscillator O-41/TRA-7	-----	-----	-----
1	Perforator-Transmitter TT- 56/MGC	5815-198-9033	13-1/2 x 21 x 25	85
1	Power Unit PE-95-G	-----	38-1/2 x 28-1/4 x 67-1/2	1,556
2	Radio Receiver R-336/GRC-26	5820-194-2992	9-1/4 x 10-3/4 x 18	65
1	Radioteletypewriter Control C-535/GRC-26	5820-221-0188	12 x 7 x 3-3/4	4.5
1	Radio Transmitter T-213/ GRC-26	5820-194-0965	45 x 30 x 31	400
1	Shelter S-55/GRC	5410-498-7314	79-1/2 x 81-1/2 x 145	3,100
1	Speech Amplifier BC-614-( )	5820-164-7288	16-1/2 x 9-3/4 x 9-1/2	30
2	Teletypewriter TT-55/MGC	5815-198-4442	15-1/2 x 18 x 18	60
1	Trailer, 1-ton, 2-wheel	2330-407-7887	67-1/2 x 73 x 145-1/2	1,300

## REFERENCE DATA AND LITERATURE:

TM 11-264

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	1,150	15,400

## PROCUREMENT DATA

PROCURING SERVICE USA

DESIGN COG: USA, Sig C

SPEC &amp;/or DWG: (USA)71-3334, MIL-R-11812

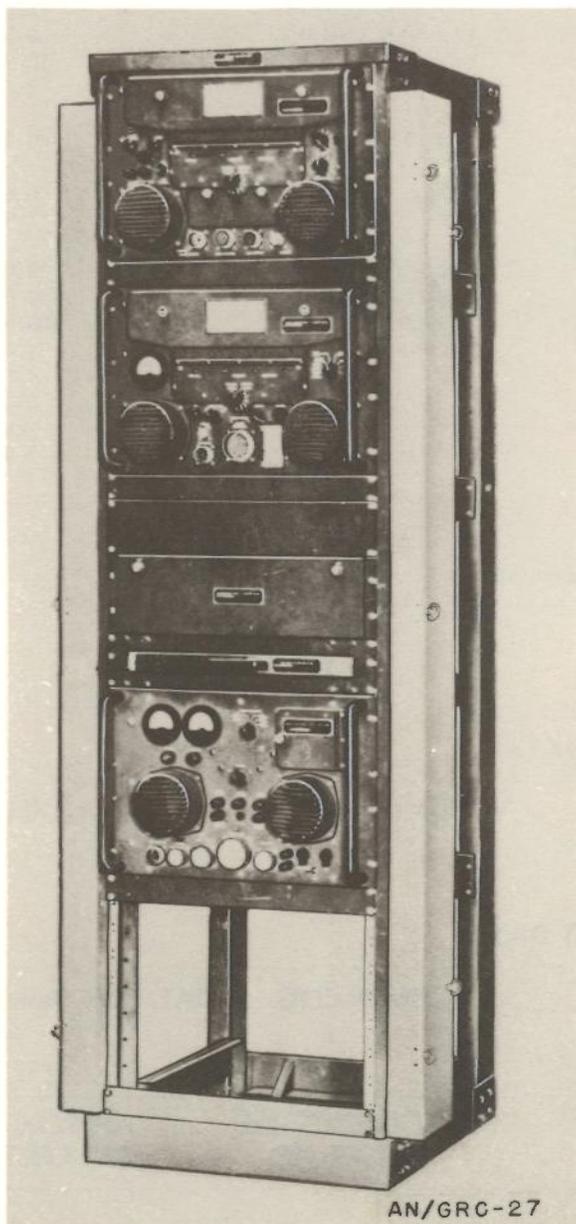
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
American Machine & Foundry Co., Elec- tronics Div.	New York, N. Y.	25209-P-54-55	\$9,181.75
Avco Mfg. Co., Crosely Div.	New York, N. Y.	21316-P-56-55	7,168.81
Barker & Williamson, Inc.	Upper Darby, Pa.	43056-P-56-55	8,081.42
The Hallicrafters Co.	Chicago, Ill.	3357-P-52-36	10,793.66

## RADIO SET AN/GRC-27

26 November 1958

Cognizant Serv: USAF FSN: 5820-511-4267(USAF)  
5820-665-3120(USN)

	USA	USN	USAF
TYPE CLASS:	--	Used by	Alt-Std
STOCK NO:	--	F16-Q-112792-100	1700-266-498-657



## FUNCTIONAL DESCRIPTION:

Radio Set AN/GRC-27 is an ultra-high-frequency transmitting and receiving unit intended primarily for ground-to-air communications. It is also applicable for use on naval vessels for ship-to-air and ship-to-ship communication through an adaptor which makes the control circuits compatible with standard shipboard remote control system.

The set is comprised of an indefinite quantity of radio transmitters, modulator-power supplies, radio receivers, distortion panel components, relay racks, antennas, and the necessary interconnecting tables. A typical ground-to-air communication set up for control-tower operation may consist of four complete transmitter-receiver equipments. Three of these are used for control of aircraft; the fourth as a spare. Requirements for naval operations vary as far as number of component parts are concerned.

This equipment is designed to operate in any one of 10 preset channels.

Radio Receiver R-278/GR monitors either one of two crystal-controlled, preset, standby, guard channels. Modulator-Power Supply MD-129/GR supplies power for Radio Transmitter T-217/GR in cycles of 1 minute ON and 5 minutes OFF.

Equipment can be requisitioned as required on an individual project, or installation basis.

## TECHNICAL CHARACTERISTICS:

*Transmitter:*

Frequency Range in Mc: 225 to 399.9  
 Frequency Control: Crystal synthesizer  
 Number of Channels: 1,750; spaced at 100 kc  
 Preset Channels: 10  
 Type Emission: Voice, mcw  
 Type Modulation: AM  
 Power Output: 100 w (nominal)

*Receiver:*

Frequency Range in Mc: 225 to 399.9  
 Type Reception: Voice, mcw  
 AF Response:  
 Narrow: 400 to 3,000 cps  
 Broad: 200 to 20,000 cps  
 Features: Avc and squelch circuit  
 Power Output: 3 w into 600 ohm load

*Power Requirements:* Minimum installation 2,310 w (approximate), 115/230-v 50-60-cycle 1-phase ac

## AN/GRC-27 RADIO SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
(*)	Antenna AS-505/GR	5985-217-1601	12-1/2 ft lg	50.5
	Antenna AT-197/GR	5985-219-7454	26 x 18-3/4 dia	7.0
	Desk Shelf MX-1058/U	1700-295-560-744	19 x 3-1/2 x 20-3/8	11.3
	Distribution Panel J-390/GR	5820-546-4985	19 x 5-1/4 x 3-1/4	5.5
	Electrical Conduit MX-1174/U	1700-016091-900	5-3/8 x 66-1/4 x 2-3/8	10.0
	Electrical Special Purpose Cable Assembly CX-1539/U	5995-249-7959	6 ft	2.7
	Modulator Power Supply MD- 129B/GR	5820-642-7827	19 x 12-1/4 x 20	140.0
	Plug Connector UG-495/U	5935-258-7884	-----	0.625
	Power Cable Assembly CX- 1541/U	5995-296-8879	5 ft	1.0
	Rack MT-686/GR	5975-538-0410	22-5/8 x 72-1/2 x 21-3/8	96.0
	Radio Receiver R-278B/GR	5825-503-1555	19 x 12-1/4 x 20	115.0
	Radio Transmitter T-217A/GR	5820-257-3579	19 x 12-1/4 x 20	130.0
	RF Cable Assembly CG-693/U	5995-263-1268	5 ft 6 in.	1.4
(*)	RF Cable Assembly CG-707/U	5995-280-4001	2 ft	0.6
	RF Cable RG-17A/U	6145-299-7755	-----	0.5
	Special Purpose Cable Assembly CX-1540/U	5995-249-7959	5 ft 6 in.	2.6
	Special Purpose Cable Assembly CX-1564/U	5995-295-8430	6 ft	2.9

\* Note. The quantity of all items listed depends upon local requirements.

## REFERENCE DATA AND LITERATURE:

TO 31R2-2GRC27-64;  
TO 31R-1-1

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
7	24	600

## PROCUREMENT DATA

PROCURING SERVICE: USAF, USN  
SPEC &/or DWG: BuShips Dwg RE 46D 2022B;  
BuShips Dwg RE 46F 2023B

DESIGN COG: USAF, USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Co.	Cedar Rapids, Iowa	USAF: AF33(038)-19516 USN: MIPR 800-19230	

RADIO SET **AN/GRC-27A**

26 November 1958

Cognizant Serv: USN FSN:

	USA	USN	USAF
TYPE CLASS:	--	Used by	--
STOCK NO:	--	--	--

(No Illustration Available)

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-27A is primarily intended for ultra-high-frequency communication between ships, ship-to-shore, and ship-to-aircraft.

This equipment will net with other radio sets operating in the ultra-high-frequency band, such as TED, TDZ, AN/URR-13, AN/URR-35, RDZ, AN/ARC-27, and AN/ARC-33.

**TECHNICAL CHARACTERISTICS:***Transmitter:*

Frequency Range in Mc: 225 to 399.9  
 Frequency Control: Crystal  
 Frequency Stability:  $\pm 10$  kc

Preset Channels: 10

Type of Signal: Voice, mcw

Type Modulation: AM

Audio Band Width:

*Broad Band:* 200 to 20,000 cps*Narrow Band:* 400 to 3,000 cps*Receiver:*

Frequency Range in Mc: 225 to 399.9

Type of Signal: Voice, mcw

Sensitivity: 30% modulation at 1,000 cps

Output: 3 w into 600 ohms

*Carrier Noise Level:* 40 db below 95% modulated carrier level*Audio Input Level for 95% Modulation:* 45 dbm*Antenna Input Impedance, Receiver and Transmitter:* 52 ohms*Power Requirements:* 115/230-v 50-60-cycle 1-phase ac**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Distribution Panel J-390/GR	-----	3-1/4 x 5-1/5 x 19	5.5
2	Electrical Conduit MX-1174/U	1700-016091-900	2-2/8 x 5-3/8 x 66-1/4	10.0
1	Electrical Special Purpose Cable CX-1539/U	5995-249-7959	72 lg	2.7
1	Modulator-Power Supply MD- 129A/GR	5820-642-7827	19 x 21-1/4 x 20	140.0
2	Plug Connector UG-495/U	5935-258-7884	-----	0.625
2	Power Cable Assembly CX- 1541/U	5995-296-8879	60 lg	1.0
1	Rack MT-1589/GRC-27A	-----	21 x 25-3/4 x 63	113.0
1	Radio Receiver R-278B/GR	5825-503-1555	12-1/4 x 19 x 20	115.0
1	Radio Transmitter T-217A/GR	5820-257-3579	12-1/4 x 19 x 20	130.0
1	RF Cable Assembly CG-690/U	-----	72 lg	
2	RF Cable Assembly CG-707/U	5995-280-4001	24 lg	0.6
1	RF Cable Assembly CG-693/U	5995-263-0268	66 lg	1.4
1	Special Purpose Cable Assembly CX-1540/U	5995-249-7959	66 lg	4.6
1	Special Purpose Cable Assembly CX-1564/U	5995-295-8430	72 lg	2.9

MIL-HDBK-161

**AN/GRC-27A** RADIO SET

REFERENCE DATA AND LITERATURE:

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
9	62.2	1,089

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/or DWG:

DESIGN COG: USN, BuShips

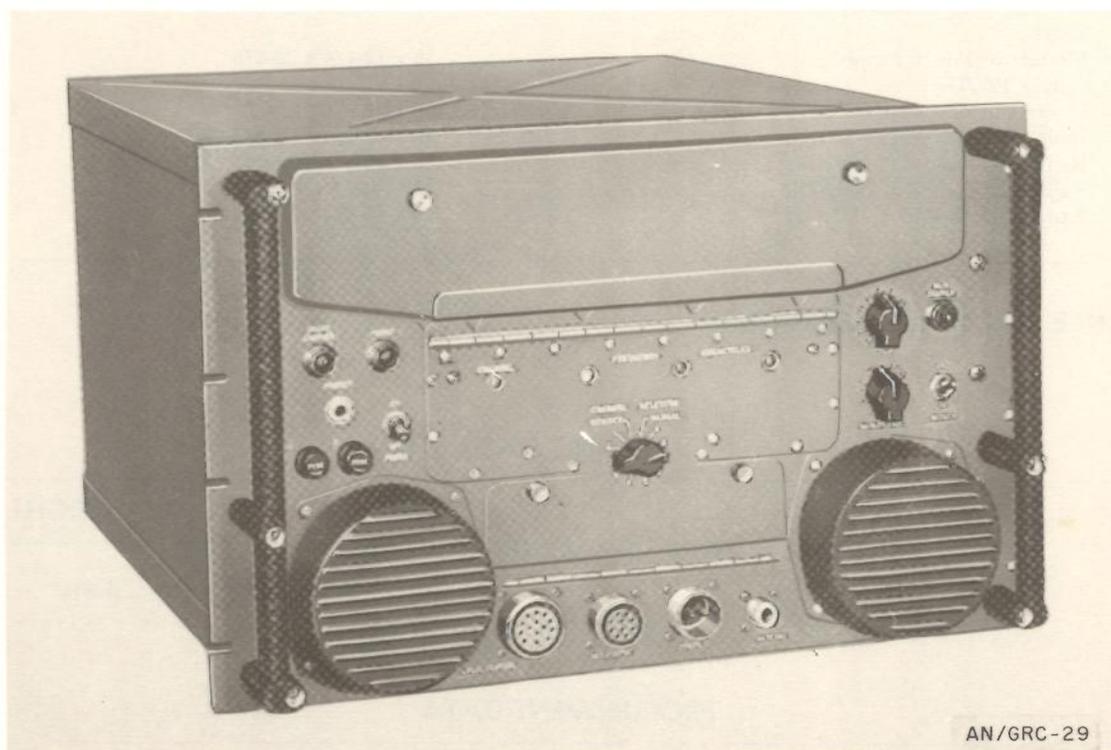
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
Collins Radio Company	Cedar Rapids, Iowa	NObsr-64829	\$6,800.00

## RADIO SET AN/GRC-29

26 November 1958

Cognizant Serv: USAF FSN:

	USA	USN	USAF
TYPE CLASS:	--	Used by	Ltd-Std
STOCK NO:	--	--	--

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-29 is a two-way, ultra-high-frequency communication equipment primarily used for advanced air base traffic control ground-to-air or point-to-point communication. It is an adaption of Radio Set AN/GRC-27. For amphibious use, it has a watertight container, and an adaptable mobile power unit.

Modulator Power Supply MD-129/GR supplies power for Radio Transmitter T-217/GR in cycles of 1 minute ON and 5 minutes OFF.

This equipment can be operated over two telephone pairs from distances of up to 10 miles by means of Radio Set Control C-566/GR.

The antenna system uses low impedance 52-ohm transmission lines and has switching facilities for selecting directional or omnidirectional, broadband operation.

Power requirements are supplied by Power Unit 5JB or an equivalent power source.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 225 to 399.9

*Frequency Control:* Crystal

*Guard Channels Frequency:* 238 mc to 248 mc

*Number of Channels:* 1,750; spaced 100 kc apart

*Number of Preset Channels:* 10

*Type Modulation:* AM

*Type Signal:* Voice

*Power Output:*

Transmitter: 100 w

Receiver: 3 w into 600-ohm resistive load

*Power Requirements:* 2.5 kw, 115/230-v 50-60-cycle 1-phase ac

**AN/GRC-29** RADIO SET

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna AS-450/GR	-----	23 x 17 x 29	65.0
1	Antenna AT-197/GR	-----	19 x 26 x 19	7.5
1	Antenna Mast AB-158/GR	-----	50 ft to 90 ft lg	650.0
8	Cases			
1	Modulator-Power Supply MD-129/GR	-----	19 x 12-1/4 x 22-5/8	180.0
1	Power Unit Type 5JB	-----	73 x 39 x 27	1,400.0
1	Radio Receiver R-278/GR	-----	19 x 12-1/4 x 22-5/8	145.0
1	Radio Set Control C-565/GR	-----	19 x 12-1/4 x 11-1/2	85.0
1	Radio Set Control C-566/GR	-----	19 x 8-3/4 x 11-1/2	45.0
1	Radio Transmitter T-217/GR	-----	19 x 12-1/4 x 22-5/8	150.0

## REFERENCE DATA AND LITERATURE:

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
21	87.9	3,954

## PROCUREMENT DATA

PROCURING SERVICE: USAF, USN  
 SPEC &/or DWG: WLENG-210A

DESIGN COG: USAF, RADC

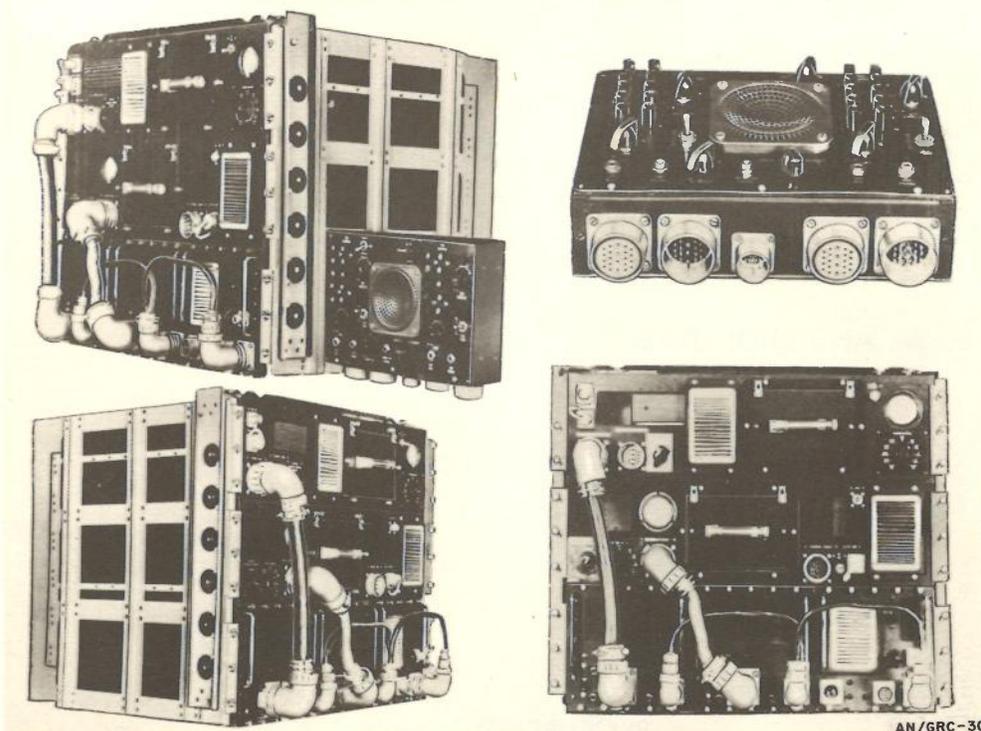
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

RADIO SET **AN/GRC-30**

26 November 1958

Cognizant Serv: USAF FSN:

	USA	USN	USAF
TYPE CLASS:	--	--	Alt-Std
STOCK NO:	--	--	--



AN/GRC-30

**FUNCTIONAL DESCRIPTION:**

Radio Set AN/GRC-30 is a ground-operated, two-way, dual-channel, very-high-frequency and ultra-high-frequency receiver-transmitter. It is normally used to provide communication between ground controlled approach equipment and aircraft.

This equipment provides 20 crystal-controlled, preset channels—10 channels in each receiver-transmitter unit.

Radio Receiver RT-420/GRC-30 monitors one channel in both the very-high-frequency and ultra-high-frequency bands, and has provision for a 1,600-ohm balanced output for direction finding and navigation applications.

Discone Antenna Group OA-291/GRC-30 is normally used with this equipment; it can be remotely controlled over distances up to 5 miles over standard telephone lines.

The set is normally used with Radar Sets AN/FPN-16,

AN/CPN-4, AN/CPN-18, and Radio Set AN/MPN-1, and other ground controlled approach radar equipment.

**TECHNICAL CHARACTERISTICS:***Frequency Range:*

Radio Receiver-Transmitter RT-226/GRC-30: 100 mc to 180 mc; 10 channels

Radio Receiver-Transmitter RT-227/GRC-30: 225 mc to 399.9 mc; 10 channels

Radio Receiver R-420/GRC-30: 100 mc to 160 mc and 225 mc to 399.9 mc; 2 channels in each range

*Frequency Control:* Crystal

*Type Modulation:* AM

*Type Signal:* Voice, tone

*Power Output:*

Transmitter: 12 w (each)

Receiver: 1.2 w (each)

*Power Requirements:* 3,100 w 115/230-v 50-60-cycle 1-phase ac

**AN/GRC-30 RADIO SET**

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Group OA-291/ GRC-30	-----	30 x 38-1/2 x 7-1/2	22
1	Radio Receiver R-420/ GRC-30	-----	7-7/8 x 7-3/4 x 21	45
1	Radio Receiver-Transmitter RT-226/GRC-30	-----	24-1/2 x 6-3/4 x 21	125
1	Radio Receiver-Transmitter RT-227/GRC-30	-----	24-1/2 x 6-3/4 x 21	145
1	Radio Set Control C-896/ GRC-30	-----	12 x 7-3/4 x 21	45
1	Radio Set Control C-897/ GRC-30	-----	12 x 7-3/4 x 21	45

**REFERENCE DATA AND LITERATURE:**

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
	10	650

**PROCUREMENT DATA**

PROCURING SERVICE: USAF  
SPEC &/or DWG:

DESIGN COG: USAF, RADC

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST

## RADIO SET AN/GRC-38( )

Cognizant Serv: USA FSN: 5820-546-6516

USA

USN

USAF

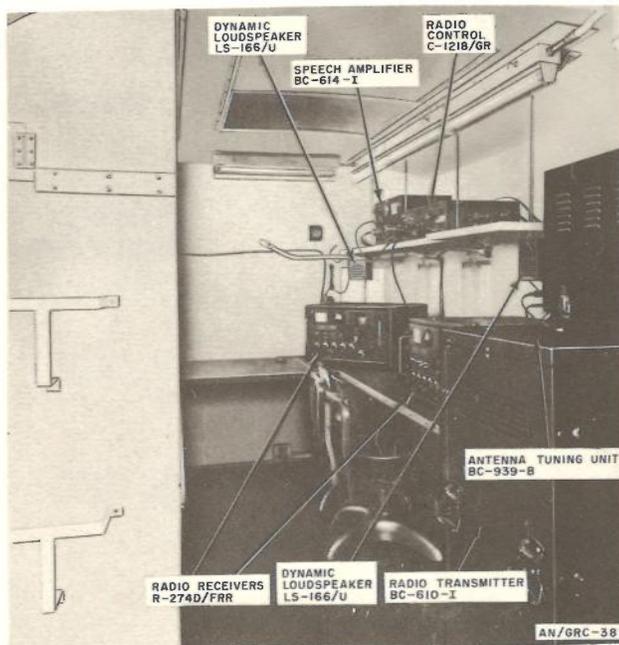
TYPE CLASS: Std  
STOCK NO: 2S2501-38

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L/Std

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## FUNCTIONAL DESCRIPTION:

Radio Set AN/GRC-38( ) is a mobile or fixed transmitting and receiving station used for ground-to-ground and ground-to-air communication applications.

It consists of a transmitter, two receivers, a speech amplifier, an antenna tuning unit, and a radio set control. All operating components are housed in a shelter, which is transportable in a 2-1/2-ton, 6 by 6 cargo truck.

This equipment requires a 115-volt ac commercial power source for fixed station operation, but includes a trailer-mounted generator for mobile use.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:*

Receiver: 0.54 to 54 in six bands

Transmitter: 2 to 18

*Type Modulation:* AM*Type of Signal:* Voice, cw*Transmitter Power Output:*

Cw: 400 w

Voice: 300 w

*Power Requirements:*

Commercial Power: 5.4 kw, 115-v 60-cycle 1-phase ac

Power Unit PE-95-G Rated Output: 10 kw, 120/240-v 60-cycle 1-phase ac

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
1	Antenna Tuning Unit BC-939-B	5820-186-3549	24-1/4 x 9-3/32 x 13-5/16	
2	Radio Receiver R-274D/FRR	5820-503-1241	-----	58
1	Radio Set Control C-1218/GR	5820-503-1012	19 x 12 x 5-1/2	
1	Radio Transmitter BC-610-I	5820-189-7042	-----	401
1	Shelter S-69/GRC	5410-356-2486	142 x 83-1/2 x 79-1/2	7,400
1	Speech Amplifier BC-614-I	5820-164-7288	-----	31

## REFERENCE DATA AND LITERATURE:

TM 11-281B

MIL-HDBK-161

**AN/GRC-38( )** RADIO SET

SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
2	1,130.75	12,365

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG: (USA) 71-1683A

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
The Hallicrafters Co.	Chicago, Ill.	3464-P-52-06	

RADIO TERMINAL SET **AN/GRC-39**

1 July 1958

Cognizant Serv: USA FSN: 5820-309-3213

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	2S12-39	--	--

(See Illustration of Radio Set AN/GRC-10. p. 799)

## FUNCTIONAL DESCRIPTION:

Radio Terminal Set AN/GRC-39 consists essentially of two Radio Sets AN/GRC-10 (one in use and one spare) and two power units. When it is operated in conjunction with Telephone Terminal AN/TCC-3 and associated equipment, it can provide duplex facilities for four voice channels or various combinations of voice, facsimile, and telegraph channels.

It can be utilized in fixed-plant, ground-based, or vehicular applications.

## TECHNICAL CHARACTERISTICS:

*Frequency Range in Mc:* 54 to 70.9 (170 channels spaced 0.1 mc apart)

*Type Modulation:* FM

*Type of Signal:* Voice; multichannel telephone, telegraph; facsimile; or various combinations of these

*Transmitter Power Output:* 10 w, 40 w

*Power Requirements:* Each DY-94/GRC-10: 292 w, 115/230-v 50/65-cycle ac; 326 w, 26-v dc

## MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Dynamic Loudspeaker LS-166/U	5965-243-6420	5 x 3-1/8 x 5	4
1	Junction Box J-85/G	5820-244-0706	4 x 5-1/2 x 5	9
1	Junction Box JB-110	6150-498-9130	2 x 4-1/2 x 12-1/2	6
2	Power Unit PE-75( )	6115-228-5315	24-1/2 x 19 x 36	298
2	Radio Set AN/GRC-10	5820-570-5482	See AN/GRC-10	

## REFERENCE DATA AND LITERATURE:

TM 11-614

## SHIPPING DATA

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
11	100.4	1,910

MIL-HDBK-161

**AN/GRC-39** RADIO TERMINAL SET

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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RADIO REPEATER SET **AN/GRC-40**

1 July 1958

Cognizant Serv: USA FSN: 5820-309-3215

	USA	USN	USAF
TYPE CLASS:	Std	--	--
STOCK NO:	2S12-40	--	--

(See Illustration of Radio Set AN/GRC-10. p. 799)

**FUNCTIONAL DESCRIPTION:**

Radio Repeater Set AN/GRC-40 consists primarily of three Radio Sets AN/GRC-10 (two in use and one spare) and two power units. It operates as a complete radio-relay station between two Radio Terminal Sets AN/GRC-39.

This set can operate in series between terminal stations to extend the range of the system. Normally, the maximum number of relay stations is limited to five by the accumulated background noise in each system.

Operation of each repeater station is limited to line-of-sight in each of two directions.

**TECHNICAL CHARACTERISTICS:**

*Frequency Range in Mc:* 54 to 70.9 (170 channels spaced 0.1 mc apart)

*Type Modulation:* FM

*Type of Signal:* Voice, multichannel telephone, telegraph; facsimile; or various combinations of these

**MAJOR COMPONENTS**

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (Inches)	WEIGHT (Lbs)
		(FSN)		
1	Dynamic Loudspeaker LS-166/U	5965-243-6420	5 x 3-1/8 x 5	4
1	Junction Box J-85/G	5820-244-0706	4 x 5-1/2 x 5	9
1	Junction Box JB-110	6150-498-9130	2 x 4-1/2 x 12-1/2	6
2	Power Unit PE-75-( )	6115-228-5315	24-1/2 x 19 x 36	298
3	Radio Set AN/GRC-10	5820-570-5482	See AN/GRC-10	

**REFERENCE DATA AND LITERATURE:**

TM 11-614

**SHIPPING DATA**

PKGS	VOLUME (Cu Ft)	WEIGHT (Lbs)
15	133.4	2519.3

MIL-HDBK-161

**AN/GRC-40** RADIO REPEATER SET

PROCUREMENT DATA

PROCURING SERVICE: USA  
SPEC &/or DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX UNIT COST
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