

23 November 1966

Cog Service: USN FSN:

TRANSMITTER GROUP AN/WRA-3

Functional Class:

USA

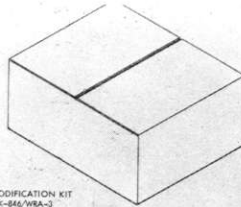
USN

USAF

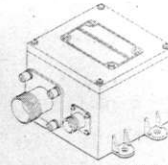
TYPE CLASS:

Used by

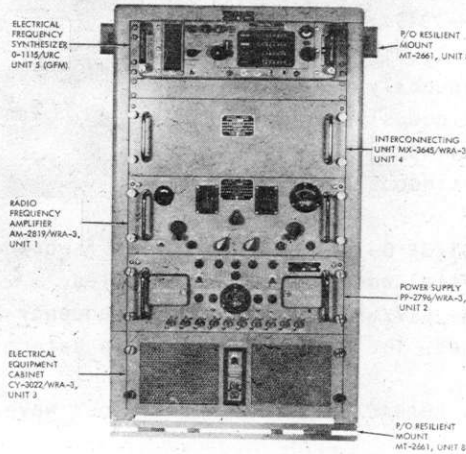
MANUFACTURER'S NAME/CODE NUMBER: Hoffman Electronics Corporation, Military Products Division, (82260).



MODIFICATION KIT  
MK-846/WRA-3  
(INCLUDES TRANSMITTER  
TRANSFER CONTROL  
C-6562/WRA-3)



RELAY ASSEMBLY  
RE-754/WRT-4  
UNIT 7



TRANSMITTER GROUP AN/WRA-3

**FUNCTIONAL DESCRIPTION:**

Transmitter Group AN/WRA-3 is a continuous wave (CW) transmitter primarily intended for use as an exciter for Radio Set AN/URC-32 and Radio Transmitting Set AN/WRT-2. However, it may also be used independently for direct transmission. The equipment is designed for installation aboard surface and undersurface vessels.

No field changes in effect at time of preparation (25 July 1966).

**RELATION TO OTHER EQUIPMENT:**

The AN/WRA-3 is similar to Transmitter Group AN/WRA-3(XN-1). The basic differences between the two equipments is that the AN/WRA-3 has been upgraded in the use of non-standard parts, an RF drive control gear box has been added, and RF dial-lights have been incorporated, also Relay Assembly RE-754/WRT-4 is now supplied and the accompanying modification kit has been changed. Transmitter Transfer Control C-6562/WRA-3 (part of the modification kit) has been redesigned, and Synthesizer 0-1115/URC is now used in place of the 0-792/SRC.

**EQUIPMENT REQUIRED BUT NOT SUPPLIED:**

(1) Electronic Multimeter AN/USM-116; (1) Multimeter AN/PSM-4; (1) Oscilloscope AN/USM-117; (1) RF Signal Generator CAQI-606-A; (1) Dummy Load DA-91/U; (1) Radio Receiver R-1051/URC; (1) Tube Socket Adapter Test Kit AN/USM-119; \*Bulk Cable, RG-218/U, DSGA-4, RG-58C/U, TTHFWA-1-1/2, MSCA-7, and RG-213/U; (1) Telegraph Key (Any Type); Miscellaneous Hardware.

\*As required by Specific AN/WRT-2 or AN/URC-32 installation when used with Modification Kit MK-846/WRA-3.

**TECHNICAL CHARACTERISTICS:**

**FREQUENCY RANGE**

ELECTRICAL FREQUENCY SYNTHESIZER 0-1115/URC(GFM)

- BAND 1: 2 to 4.25 mc, one channel every 12.5 cycles.
- BAND 2: 4 to 8.5 mc, one channel every 25 cycles.
- BAND 3: 8 to 17 mc, one channel every 50 cycles.
- BAND 4: 16 to 34 mc, one channel every 100 cycles.

RADIO FREQUENCY AMPLIFIER AM-2819/WRA-3

- BAND 1: 2 to 4 mc, continuously variable.
- BAND 2: 4 to 8 mc, continuously variable.
- BAND 3: 8 to 16 mc, continuously variable.
- BAND 4: 16 to 23 mc, continuously variable.
- BAND 5: 23 to 32 mc, continuously variable.

**TYPE OF FREQUENCY CONTROL**

ELECTRICAL FREQUENCY SYNTHESIZER 0-1115/URC(GFM): The frequency of the electrical frequency synthesizer is crystal and reactance controlled.

RADIO FREQUENCY AMPLIFIER AM-2819/WRA-3: The radio frequency amplifier is manually controlled and reactance tuned. The output frequency is determined by the electrical frequency synthesizer.

**TYPE OF EMISSION AND MODULATION CHARACTERISTICS:** Continuous wave, A0, or A1 emission.

**POWER OUTPUT**

FOR DIRECT TRANSMISSION: Adjustable up to 15 watts, into a 50 ohm load.

FOR EXCITATION: Adjustable up to 1.5 watts, into a 50 ohm load.

**FREQUENCY STABILITY:** The frequency of the transmitter group is stable to one part in 100 million per day.

**ELECTRICAL INPUT AND OUTPUT DATA**

ELECTRICAL FREQUENCY SYNTHESIZER 0-1115/URC(GFM): The output of the electrical frequency synthesizer is adjustable from 1.0 to 2.5 volts. This output is 2.0 volts when the 0-1115/URC is used with the transmitter group.

RADIO FREQUENCY AMPLIFIER AM-2819/WRA-3: Input from the electrical frequency synthesizer is 80 milliwatts into 50-ohm load. An additional input is applied to the radio frequency amplifier only when auxiliary equipment is used. This input also has a nominal input impedance of 50 ohms. The output is variable to either 1.5 watts into 50-ohms (for excitation) or 15 watts into 50 ohms (for direct-transmission).

**CHARACTERISTICS OF RECOMMENDED ANTENNAS:** For direct transmission, a tunable antenna with an input impedance of 50-ohms is required.

**AMBIENT TEMPERATURE LIMITATIONS:** The transmitter group will operate satisfactorily within the ambient temperature range of from 0 to 50 deg C (32 to 122 deg F).

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**TRANSMITTER GROUP AN/WRA-3**

CHARACTERISTICS OF POWER SUPPLY PP-2796/WRA-3: The power supply operates with 115 v, 47.5 to 63.0 cps, single phase primary power input. The power consumption is a nominal 595 watts during standby operation and a nominal 1020 watts during locked-key cw operation. The power factor is from 0.85 to 1.0 depending upon mode of operation. The power supply has the following nominal outputs:

2 amp at + 28 v dc	- 24 to - 39 v dc (bias)	1.4 amp at 144(RMS)
0.7 amp at - 28 v dc	80 ma at + 300 v dc	400 cps quasi
1.4 amp at - 28 v dc	220 ma at + 950 v dc	square wave

**MAJOR COMPONENTS**

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitter Group AN/WRA-3 includes:		607
1	Electrical Equipment Cabinet CY-3022/WRA-3	22-1/4 x 23-1/4 x 37-1/2	265.5
1	Electrical Frequency Synthesizer (GFM)0-1115/URC	5-1/4 x 19 x 21-1/2	90.0
1	Radio Frequency Amplifier AM-2819/WRA-3	7 x 19 x 21-1/2	45.0
1	Power Supply PP-2796/WRA-3	7 x 19 x 23-1/4	103.0
1	Interconnecting Unit MX-3645/WRA-3	7 x 19 x 21-13/16	9.5
1	Resilient Mount MT-2661/WRA-3		
	Base	4 x 22-1/4 x 22-45/64	67.0
	Stabilizer	2-3/4 x 6-3/4 x 25-3/4	27.0
1	Relay Assembly RE-754/WRT-4	3-3/4 x 5-1/2 x 5-5/8	3.0
1	Modification Kit MK-846/WRA-3		
2	Technical Manual NAVSHIPS 0967-031-9010		
2	Maintenance Standards Book 0967-031-9030		
1	Performance Standard Sheet NAVSHIPS 0967-031-9020		
2	Technical Manual NAVSHIPS 94829		
	Miscellaneous Parts Box, Containing:	2 x 6 x 9	
1	Connector MS35168-88F		
1	Connector UG-21E/U		
*4	Fuse, 6 ampere F02A250V6AS(3F1, 3F2)		
*4	Fuse, 12 ampere F03A250V12AS(3F1, 3F2)		
**	Miscellaneous Hardware		

\*Alternate fuses for 115 v ac or 230 v ac operation.

\*\*For fastening the resilient mount to the Electrical equipment Cabinet.

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 0967-031-9010: Technical Manual for Transmitter Group AN/WRA-3.

**SHIPPING DATA**

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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**PROCUREMENT DATA**

PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: USN, NAVSHIPS

TRANSMITTER GROUP AN/WRA-3

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hoffman Electronics Corporation, Military Products Division	El Monte, California	NObsr-91345	