03 January 1991

To: Rex Debolt
   Linda Scott
   Ron Berkman
   Drew White
   Mark Takeuchi
   Mark Prather

Re: RF5609A (new part)
   RF5613A (discontinued part)

EG&G Reticon has informed us that the RF5613A (HAL P/N 630-05613) has been <u>discontinued</u>, effective <u>immediately</u>. Reticon does not intend to re-do the IC mask to correct known defects.

As of December 31, 1990, HAL had 297 pieces of the RF5613A in stock. This part is used in the ST-8000 (2 per unit) and has been slated for use in the ST-8000A. I therefore suggest the following:

1. For the short-term, the RF5613A will continue to be used in standard ST-8000 HF Modems. We can build approximately 125 - 130 more ST-8000's out of existing stock - and retain a few for spare part replacement.

2. For the ST-8000<u>A</u> FSK Modem, we will change to the EGG Reticon part <u>RF5609A</u> which we are assured is still a current part.

3. For the long-term, the standard ST-8000 will also be converted to the RF5609A part.

The two parts, RF5613A and RF5609A are similar and have identical pin-out. One will plug into the same circuits designed for the other. However, the two parts do differ in performance.

1. The RF5613A is a Linear-Phase Low-Pass Filter; the RF5609A is an Elliptic Low-Pass filter.

2. The amplitude response of the RF5609A has a <u>much</u> sharper corner than the RF5613A.

3. The phase of the RF5609A is highly peaked at the corner frequency, but moderately linear to approximately 0.8 x the corner frequency.

4. The RF5613A has a clock-to-corner multiplier of 128; the RF5609A has a multiplier of 100.

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The following are the design formulas for the two parts:

RF5613A:

   F(clock) = 128 x F(corner) = 128 x (0.75) x BAUD = 96 x BAUD

RF5609A:

   F(clock) = 100 x F(corner) = 100 x (1/0.800) x (0.75) x BAUD

      = 93.75 x BAUD
       (using 0.8xF(corner) for phase linearity)

It appears that the two parts may be used interchangeably <u>without</u> requiring a software change.

I therefore request the following:

1. Enter the new HAL part number "630-5609" into inventory and issue a new SCD for the RF5609A by EG&G Reticon.

2. Change all ST-8000<u>A</u> schematic diagrams and parts lists from RF5613A to RF5609A. This will impact Schematic Drawings A1794A and A1795A.

3. I will revise all ST-8000A parts lists.

4. Collect data for two comparison curves in an ST-8000 with BAUD = 100, one using the RF5613A and the other using the RF5609A.

5. When servicing ST-8000 modems and replacement of an RF5613A is required, use the RF5613A's as long as they are available. When it becomes necessary to substitute the RF5609A, replace <u>both</u> RF5613A's in a modem with RF5609A's.

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