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|----------------------------|----------------------|-----------------------|------------|--------------------|-------------|-----------------|
| <b>REV A</b>               | APPLICATION          |                       | REVISIONS  |                    |             |                 |
|                            | <b>NEXT ASSEMBLY</b> | <b>FINAL ASSEMBLY</b> | <b>REV</b> | <b>DESCRIPTION</b> | <b>DATE</b> | <b>APPROVED</b> |
| <b>SH 1</b>                |                      | RT-138F               | A          | INITIAL RELEASE    | 8/9/00      | V. Wallace      |
| <b>DWG. NO. 150-040786</b> |                      |                       |            |                    |             |                 |

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|----------------------|---------|---|-----------|-------------------|--------------|
| APPROVALS            | DATE    | TITLE   |           |                   |              |
| DRAWN Bill Patt      | 8/9/00  | <b>WULFSBERG SERVICE BULLETIN WSB RT-138F-1<br/>(ADD NON-STANDARD CTCSS TONE)</b> |           |                   |              |
| CHECKED E. McCluskey | 7/13/00 | SIZE  | CAGE CODE | DWG. NO.          | REV          |
| ENGINEER T. Tammen   | 8/11/00 | A   | 1B7G3     | <b>150-040786</b> | <b>A</b>     |
| ISSUED V. Wallace    | 8/18/00 | SCALE NONE  |           |                   | SHEET 1 OF 1 |
|                      |         |   |           |                   |              |



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# SERVICE BULLETIN

EQUIPMENT: RT-138F

DATE: June 14, 2000

BULLETIN NUMBER: WSB RT-138F-1 Revision A

## APPLICABILITY

This Service Bulletin applies to all RT-138F Flexcomm I Transceivers, P/N 400-014525-XX.

## REASON

This bulletin describes the procedure used to add a non-standard CTCSS Tone to Flexcomm I transceivers.

## EFFECTIVITY

Modifications described in this document are to be performed on RT-138F Flexcomm I Transceivers as required by customer.

## REFERENCES

RT-138F Maintenance Manual, P/N 150-1325-000, Rev. 0

## DESCRIPTION

This Service Bulletin explains how to use a Communications Specialists (Com-Spec) Model HHP-1 Programmer to program a Com-Spec IC-110 EEPROM for a non-standard CTCSS Tone. It also explains how to read the tone stored at a user-specified memory address on the EEPROM.

The EEPROM is identified as component U14 on the RT-138F Audio Board (refer to Figure 3.1-6 in the RT-138F Maintenance Manual). Its Wulfsberg Part Number is 106-714330-01.

The programming phase of this modification consists of removing the Com-Spec IC-110 EEPROM from the RT-138F Audio Board, inserting it into the ZIF socket of the HHP-1 Programmer, setting the tone frequency, crystal selection, and address switches, and pressing the START button to complete the programming cycle.

The verification phase of this modification consists of setting the switches to the proper crystal selection and address, inserting the IC-110 EPROM into the programmer's ZIF socket, connecting a frequency counter to the programmer's audio jack, pressing the START button to complete the read cycle, and reading the tone frequency on the frequency counter.

## **COMPLIANCE**

As required by customer.

## **APPROVAL**

This modification does not affect the original approval.

## **WARRANTY INFORMATION**

The procedure described in this Service Bulletin is considered a product enhancement and is not covered under warranty.

## **MODIFICATION PROCEDURE**

### **CAUTION**

Any disassembly/assembly must be done at a static-safe workstation. Removed modules should be placed in antistatic bags when not installed in the unit.

1. Locate the IC-110 EEPROM (component U14) on the RT-138F Audio Board. Use an IC extractor tool to remove the EEPROM from the board.
2. Set the first five switches (labeled TONE FREQUENCY) located at the top of the HHP-1 Programmer to the desired tone frequency. For example, to program a 250.3 Hz tone, the switches should be set as follows from left to right:  

|           |   |
|-----------|---|
| Switch 1: | 0 |
| Switch 2: | 2 |
| Switch 3: | 5 |
| Switch 4: | 0 |
| Switch 5: | 3 |

3. Set Switch 6 (labeled CRYSTAL SELECTION) to 1 to specify program mode with a 1 MHz crystal.
4. Set Switches 7 and 8 (labeled ADDRESS) to the address location (01 – 32) where the IC-110 EEPROM will store the tone frequency.

### CAUTION

If a tone is already stored at the address specified by Switches 7 and 8, the new tone frequency specified in step 1 above will replace the existing tone.

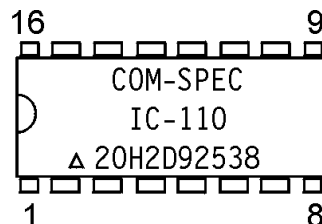
5. Open the ZIF socket located near the middle of the HHP-1 Programmer by moving the lever to the UP position.
6. Insert the IC-110 EEPROM in the ZIF socket. Pin 1 (see Figure 1) should be nearest to the lever (the printing on the face of the IC-110 will be upside down).
7. Close the ZIF socket by moving the lever to the DOWN position.
8. Press and release the START button. The programming cycle takes approximately 15 seconds. The HHP-1 beeps twice when it is finished.
9. Open the ZIF socket by moving the lever to the UP position and remove the IC-110 EEPROM.

### VERIFICATION PROCEDURE

1. Set Switch 6 (labeled CRYSTAL SELECTION) to 9 to specify program mode with a 1 MHz crystal.

**NOTE:** The settings of Switches 1 through 5 (labeled TONE FREQUENCY) are irrelevant in this procedure and can be ignored.

2. Set Switches 7 and 8 (labeled ADDRESS) to the address location (01 – 32) where the tone to be read is stored in the IC-110 EEPROM.



**Figure 1. Com-Spec IC-110 EEPROM**

3. Open the ZIF socket located near the middle of the HHP-1 Programmer by moving the lever to the UP position.
4. Insert the IC-110 EEPROM in the ZIF socket. Pin 1 (see Figure 1) should be nearest to the lever (the printing on the face of the IC-110 will be upside down).
5. Close the ZIF socket by moving the lever to the DOWN position.
6. Connect a frequency counter to the HPP-1 audio jack located on the right side of the programmer's case.
7. Press and release the START button. The read cycle takes approximately 6 seconds. The HHP-1 beeps twice and turns off when it is finished.

The frequency counter displays the CTCSS tone frequency programmed for the address location specified in step 2 above.

8. Open the ZIF socket by moving the lever to the UP position and remove the IC-110 EEPROM.
9. Replace the IC-110 EEPROM in its socket at location U14 in the Audio Board.

### **UNIT TESTING PROCEDURE**

Complete a performance test of RT-138F Receiver CTCSS Squelch and Transmitter CTCSS in accordance with Sections 2.4.4 and 2.4.8 of the RT-138F Maintenance Manual.