

Synthesized RF Receiver Supplement

S-1. Introduction.

The receiver is equipped with a frequency synthesizer that allows frequencies to be easily changed without retuning. Normally the frequency does not have to be changed; the unit comes programmed to a specific frequency listed on the Frequency and Access Code Label on the receiver.

S-2. RF Receiver Board Frequency Synthesizer.

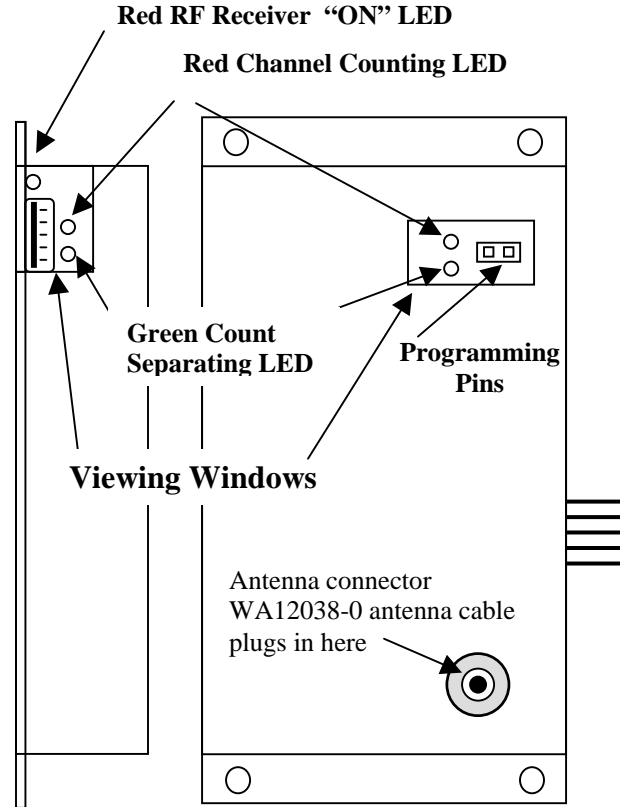
Located in the receiver is the RF Receiver Board. (See your existing receiver manual for exact location). The circuitry on this board contains a digital oscillator and synthesizer that are controlled by a microprocessor. This eliminates the need for specific crystals to change frequencies. A pair of programming pins allows the unit to be reprogrammed in the field to a different channel. The on board microprocessor automatically retunes the RF receiver when the channel is changed; no retuning or any other adjustment is required.

S-3. Reading The Channel (Frequency).

Locate the RF Receiver Board. Locate one of the Viewing Windows. Looking in the Viewing Window close to the edge of the board is a red LED that, with the power to the receiver ON, is constantly lit. This indicates the RF Receiver Board is ON and working. Looking farther back into either of the Viewing Windows there are two flashing LEDs, a red one and a green one. These LEDs flash repeatedly and slowly so allow some time to see them flash. These flashing LEDs indicate the channel (frequency) the unit is receiving.

The counting is done in two digits, where the two digits indicate channel number. The red LED counts (flashes) the channel number in two digits; the green LED indicates (flashes) the spacing and position of the counted digit. The ones digit is counted first and then the tens digit with one green LED flash indicating the beginning of the count of ones digit and two green LED flashes indicating the beginning of the tens digit count.

An example is if the channel is AK04 the channel number is 04. The ones digit is 4 (four red flashes) and the second is zero (no red flash).



RF Receiver Board
End View

RF Receiver Board
Front View

**Figure S-1. E13157-S
Synthesized RF Receiver Board.**

The repeated sequence for reading channel 4 is:
Long pause, green, red, red, red, red, short pause
green, green, (no red flash, zero).

The repeated sequence for reading channel 12 is:
Long pause, green, red, red, short pause, green,
green, red.

Other examples are (equals count):

- AK01 (1): green, red, short pause, green, green.
- AK02 (2): green, red, red, short pause, green, green.
- AK05 (5): green, red, red, red, red, red, short pause, green, green.
- AK07 (7): green, red, red, red, red, red, red, red, short pause, green, green.
- AK10 (10): green, short pause, green, green, red.
- AK11 (11): green, red, short pause, green, green, red.
- AK14 (14): green, red, red, red, red, short pause, green, green, red.
- AK20 (20): green, green, green, red, red.
- AKA06 (27): green, red, red, red, red, red, red, red, short pause, green, green, red, red.

Synthesized RF Receiver Supplement

S-4. Reprogramming The Synthesizer.

The RF Receiver can be reprogrammed in the unit without removing the RF Receiver Board. Locate the Programming Pins by looking at the side of the RF Receiver Board. To reprogram the synthesizer a small metal tipped blade screwdriver or other tool is necessary to short the two pins together to put in the reprogramming mode.

Having located the programming pins and while watching the flashing red Channel Counting LED, short the programming pins together and keep them shorted. (Do not be concerned while shorting these pins together about touching the metal RF Receiver shield with the shorting tool, it will not cause any damage to the circuitry).

When the Programming Pins are shorted the RF Receiver will go into the programming mode. KEEP THE PINS SHORTED UNTIL THE PROGRAMMING IS COMPLETE. The green and red channel indicating LEDs will complete one last channel indication and then only the red LED Channel Counting LED will start to flash. The synthesizer will start programming from channel AK01 and count up in sequence for each channel with a pause in between each channel count. A full count of flashes will be made for each channel with a short pause in between each channel counts by the red Channel Counting LED. The channel counts will increase by one channel after each pause. Keep track of the individual channel counts to determine which frequency the synthesizer is on.

The flashing sequence is as follows: one flash (AK01) short pause, two flashes (AK02), short pause, three flashes (AK03), etc. For channel numbers ten and greater the red LED will still count these out completely, so for channel AK12 there will be twelve flashes. The green LED DOES NOT flash during channel programming.

When you have reached the correct count for the channel desired, remove the short from the shorting pins immediately. Wait a minute for the RF Receiver to automatically retune itself and the green and red channel indicating light should then start to flash indicating the current channel number.

Check the channel count to verify that the RF Receiver is programmed to the desired channel. (If you have passed the channel number desired

wait a minute for the green LED to flash and re-short the pins, the count will begin again from channel AK01).

Channel and Frequency Designations by Count.

Indicator Count	Channel Designator	Actual Frequency
1.	AK01	439.8 MHz
2.	AK02	439.6 MHz
3.	AK03	439.4 MHz
4.	AK04	439.2 MHz
5.	AK05	439.0 MHz
6.	AK06	438.8 MHz
7.	AK07	438.6 MHz
8.	AK08	438.4 MHz
9.	AK09	438.2 MHz
10.	AK10	438.0 MHz
11.	AK11	437.8 MHz
12.	AK12	437.6 MHz
13.	AK13	437.4 MHz
14.	AK14	437.2 MHz
15.	AK15	437.0 MHz
16.	AK16	436.8 MHz
17.	AK17	436.6 MHz
18.	AK18	436.4 MHz
19.	AK19	436.2 MHz
20.	AK20	436.0 MHz
21.	AKA00	433.125 MHz
22.	AKA01	433.325 MHz
23.	AKA02	433.525 MHz
24.	AKA03	433.725 MHz
25.	AKA04	433.925 MHz
26.	AKA05	434.125 MHz
27.	AKA06	434.325 MHz
28.	AKA07	434.525 MHz
29.	AKA08	434.725 MHz

S-5. Supplemental Parts List.

Synthesized RF receiver board: E13157-S (one model covers all bands and all Part 15, low power, receiver models).

Piggyback adapter board required for use with 10K 12, 16 and 24 receivers: E13152-0 (requires four 6-32x1/4 screws H441-0).

Antenna cable with bulkhead connector: WA12038-0 (For use on all products using this receiver, the receiver itself ships without the cable).

Supplemental synthesized receiver manual: TC10KMOD-5.