4.5.1 DIAGNOSTIC TEST PROCEDURES

Diagnostic testing is a built-in function of the WJ-8615D VHF/UHF Compact Receiver. It is designed to allow troubleshooting or fault analysis from the front panel. Refer to **paragraph 2.2.1** for a description of DIP switch S1 on the IEEE-488/Interrupt subassembly (A1A2) in order for the diagnostic test function to operate properly.

In the diagnostic test mode, the receiver has many of its software loops opened to aid maintenance personnel in ascertaining the cause of a particular fault. Before attempting to utilize the receiver diagnostics, power up receiver to verify that no error conditions exist as indicated in the front panel display. Refer to **paragraph 2.7** for a description of the error codes.

4.5.1.1 Diagnostic Test Set-Up Procedures

Apply power to the receiver while depressing the CONTROL pushbutton in. The display indicates "dEF oFF". Rotate the tuning wheel to "dEF oFF". Depress CHANGE until the display indicates "d1AG oFF". Rotate the tuning wheel to "d1AG on". Depress CONTROL, the front panel display is back to normal operation with the TEST LED illuminated. Switch position 8 of S1 is an over-ride utilized to turn the diagnostic test on within the receiver.

4.5.2 The following paragraphs describe each of the diagnostic tests and expected results. **Table 4-4** indicates the function of the front panel LED's and pushbuttons.

4.5.2.1 **Select Bandwidth** - Depress and hold this pushbutton in to indicate the position of the IF bandwidth filter (slot 1 through 5) and the filter size (kHz) in the display window. The -dBm display indicates the IF bandwidth code (refer to **Table 3-1**). A non-existed IF bandwidth filter is indicated as 0000.

4.5.2.2 **Manual Gain Control Test Mode** - In the Manual Gain Control Test mode, the operator may enter fixed attenuation ranging from 0 to 114 dB by utilizing the CHANGE ↑/↓ pushbuttons. The attenuation level is displayed in the -dBm display. Depress the MGC pushbutton as required to produce a front panel LED display reflecting the MCG LED illuminated and the CLV LED extinguished.

4.5.2.3 **MGC, CLV** - With these pushbuttons depressed and the corresponding LED's illuminated, utilization of the AM Detector is indicated in the -dBm display from 0 to 100%.

4.5.2.4 **AGC, CLV** - With these pushbuttons depressed and the corresponding LED's illuminated, relative signal strength is indicated in the -dBm display.

4.5.2.5 **AGC** - With this pushbutton depressed, the COR LEV display indicates a specific test code (see **Table 4-4**). The -dBm display indicates the value of that code. Utilize the CHANGE ↑/↓ pushbuttons to step through the tests.

Table 4-3. Test Codes and Values

The following tests are enabled only when the AGC LED is illuminated.

Test Code (COR LEV)	Description	Value (-dBm)	Comments
FA	Peak deviation of FM AC value	0 - 255	
Fd	FM DC level for FM Discriminator	0 - 255	127 typical with signal centered in IF.
LG	LOG Detector (0 - 60 dB above noise floor)	0 - 255	
bc	Voltage equivalent of bandwidth select code.	0 - 255	Depress SELECT BANDWIDTH to step through bandwidths. Refer to **Table 3-1** for specific codes.
2L	2nd LO tuning voltage at 5 MHz.	0 - 255	100 to 140 typical
AP	AM Peak Detector level	0 - 255	
AA	AM AC modulation	0 - 200	0 = 0%, 200 = 100%
XX	Normal COR operation		

NOTE

For the FA, Fd, LG, 2L and AP tests, a value indication at the extremes indicates a fault. Refer to the Performance Test **paragraph 4.6** to isolate the fault.

4.5.2.6 **AFC** - This pushbutton removes the ±10 times the selected bandwidth limitation (**paragraph 2.4.1.8**), allowing the AFC circuitry to track from the lowest tuned frequency to the highest tuned frequency.

4.5.2.7 **BFO** - This pushbutton removes the software correction from the BFO circuitry, causing it to be open-looped. The BFO counter does not run during this test.

4.5.2.8 **TUNE LOCK** - Depressing this pushbutton indicates the frequency of the 1st LO Synthesizer from the microprocessor.

4.5.2.9 **FASTER** - Depressing this pushbutton indicates the frequency of the 2nd LO Synthesizer from the microprocessor.

4.5.2.10 **SLOWER** - Depressing this pushbutton indicates the frequency of the 3rd Synthesizer from the microprocessor.

Table 4-4. Diagnostic Tests

MGC	AGC	CLV	Description of Test with LED Illuminated
ON	OFF	OFF.....	Provides operator with a selection up to 114 dB of attenuation. Refer to **paragraph 4.5.2.2.**
ON	OFF	ON.....	Utilization of AM Detector is indicated in the -dBm display. Refer to **paragraph 4.5.2.3.**
OFF	ON	ON.....	Provides signal strength indication in -dBm display. Refer to **paragraph 4.5.2.4.**
OFF	ON	OFF.....	COR LEV window displays a code described in **Table 4-4.** The -dBm display indicates the value for the specific code. Refer to **paragraph 4.5.2.5**
AFC			Enables receiver to tune across entire frequency range. Refer for **paragraph 4.5.2.6.**
BFO.....			Removes software correction from BFO. Refer to **paragraph 4.5.2.7.**

Front Panel Pushbutton	Description of Test
TUNE LOCK	Provides 1st LO Synthesizer frequency from microprocessor. Refer to **paragraph 4.5.2.8.**
FASTER	Provides 2nd LO Synthesizer frequency from microprocessor. Refer to **paragraph 4.5.2.9.**
SLOWER.....	Provides 3rd Synthesizer frequency from microprocessor. Refer to pargraph 4.5.2.10.
CONTROL	Places receiver into the REMOTE mode.

NOTE

The receiver should not be placed into the diagnostic operation mode if the IEEE-488 interface bus is utilized. Certain pushbutton sequences stop 488 operation.