

DWG. NO.	SH	REV	APPLICATION		REVISIONS			
			NEXT ASSEMBLY	FINAL ASSEMBLY	REV	DESCRIPTION	DATE	APPROVED
650-049200	1	A			A			---

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		 Wulfsberg Electronics <i>A Chelton Group Company</i>					
APPROVALS		DATE		TEST PROCEDURE P-2000/C-2000/RT-2000 SYSTEM			
DRAWN	S HOVELSRUD	8/1/03					
CHECKED	---	---					
ENGINEER	S HOVELSRUD	8/1/03					
ISSUED	---	---		SIZE A	CAGE CODE 1B7G3	DWG NO. 650-049200	REV A
				SCALE: NONE		DO NOT SCALE DRAWING	

1.0 PURPOSE

This document describes the performance tests required for a P-2000/C-2000/RT-2000 after it has been assembled from tested modules.

The test procedure is divided into seven categories:

1. Software Loading/Audio and Transmitter Alignment.
2. Pre-environmental Test.
3. Environmental Test Cold.
4. Environmental Test Hot.
5. Burn-in
6. Vibration Test.
7. Final Test.

2.0 SCOPE

All part numbers of the Flexcomm 2000 Family can be tested with this procedure. The table below lists the specific sections of this test procedure that must be used for testing a P-2000, C-2000, and RT-2000 respectively.

[illegible]

3.0 Certification of Board and Modules

Certification of boards/modules is accomplished by installing the board/module into a test P-2000/C-2000/RT-2000. The board/module is a "certified part" when the complete unit passes all tests as listed in this test procedure.

4.0 Required Equipment

AC Voltmeter Fluke Model 77 or Equivalent.

Environmental Chamber capable of +60°C. to -30°C.

Vibration Table.

TSH-2000 Interface box.

Power Supply 18-33 volts DC, 5 amp with voltage and CURRENT meters.

RF Cables and power cables.

Communication analyzer Motorola model R-2670.

5.0 SYSTEM INTERCONNECT AND TURN ON PROCEDURE

- 1) Connect the TSH-2000 25 Pin Connector to the P-2000 UUT.
- 2) Connect the Power Supply to the TSH-2000.
- 3) Connect the Test C-2000 to the TSH-2000.
- 4) Connect the RF output connector of the P-2000 under test to the R-2670 as required.
- 5) Connect the Audio input/output ports of the TSH-2000 to the R-2670 as required per the test procedure.

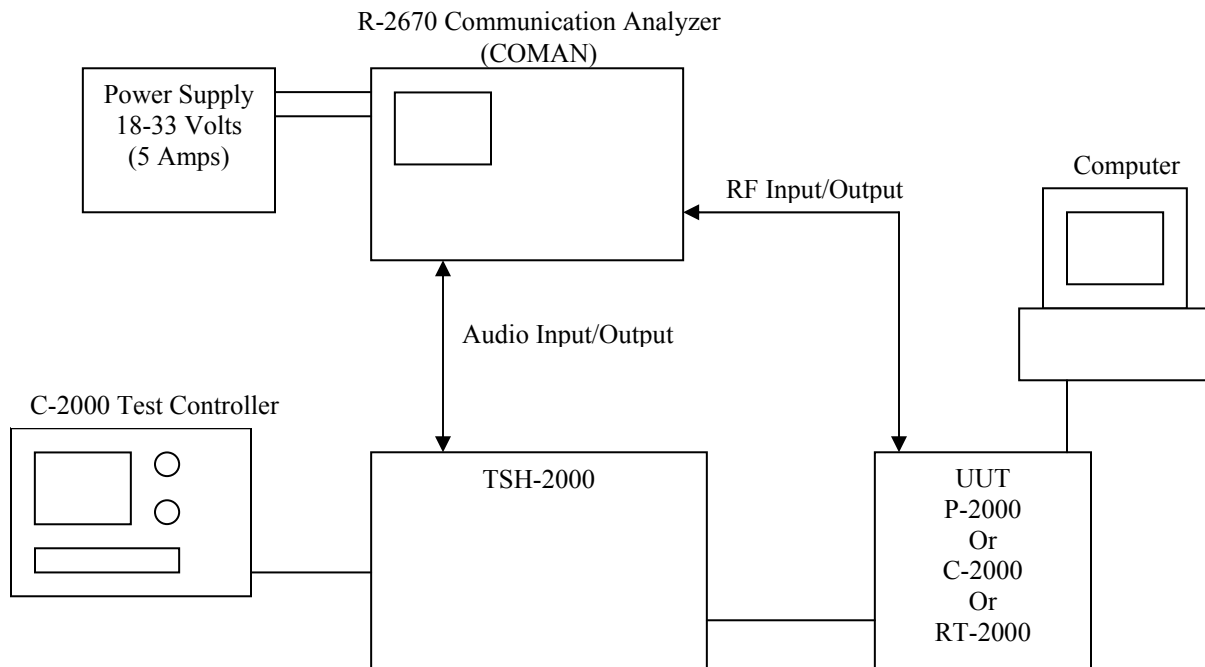


Figure 1 P-2000/C-2000/RT-2000 SYSTEM TEST INTERCONNECT

6.0 P-2000/C-2000/RT-2000 SETUP PROCEDURES

Perform the following tests for each unit marking all test data sheets as required:

6.1 Software Loading

Connect the test system as outline in section 5. Turn power on and verify unit turns on and that current draw is < 1 amp.

6.1.1 P-2000

Using the procedure outlined in WED document 650-049200-01, load the current software revision into both the Display processor and the CPU board Processor. Mark software revision numbers on the appendix A data sheet.

6.1.1 C-2000

Using the procedure outlined in WED document 650-049300-01, load the current software revision into both the display processor and the CPU board Processor. Mark software revision numbers on the appendix A data sheet.

6.1.2 RT-2000

Using the procedure outlined the WED document 650-049400-01, load the current software revision into the CPU board Processor. Mark software revision numbers on the appendix A data sheet.

6.2 Transmitter Alignment

6.2.1 P-2000

6.2.1.1 Set Tx High and Low Output Power

For FM1:

Connect the PC serial cable into the front connector on the UUT. On the PC start the current version of Motorola Tuner software. Set the COMAN to measure RF power and it to scanning mode from 100 MHz to 1000 MHz.

Set the UUT to high transmit power using the "EDIT" page. Then set the UUT to "CPS mode on FM1" using the "Program page". Select the high power transmitter setup mode in the Motorola software. Using the Motorola software, set each frequency to the limits listed in appendix A data sheet.

Set the UUT to low transmit power using the "EDIT" page. Then set the UUT to "CPS mode on FM1" using the "Program page". Select the low power transmitter setup mode in the Motorola software. Using the Motorola software, set each frequency to the limits listed in appendix A data sheet.

For FM2:

Set the UUT to high transmit power using the "EDIT" page. Then set the UUT to "CPS mode on FM2 using the "Program page". Select the high power transmitter setup mode in the Motorola software. Using the Motorola software, set each frequency to the limits listed in appendix A data sheet.

Set the UUT to low transmit power using the "EDIT" page. Then set the UUT to "CPS mode on FM2 using the "Program page". Select the low power transmitter setup mode in the Motorola software. Using the Motorola software, set each frequency to the limits listed in appendix A data sheet.

6.2.1.2 Set Tx Modulation Levels

Set the UUT to Normal operating mode. Select channel 100 on FM1. Input a .25 VRMS signal on Mic input #1. Set the COMAN to measure FM modulation. Adjust Internal UUT Internal Pot #3 until the measured value is within the limits set in the test data sheet in Appendix A.

Set the UUT to Normal operating mode. Select channel 100 on FM2. Input a .25 VRMS signal on Mic input #2. Set the COMAN to measure FM modulation. Adjust Internal UUT Internal Pot #6 until the measured value is within the limits set in the test data sheet in Appendix A.

6.2.1.3 Verify Tx Spurious Output

Set the UUT to Normal operating mode. Select channel 100 on FM1. Input a .25 VRMS signal on Mic input #1. Set the COMAN to measure RF Spectrum at least 4 times greater than the center frequency of the channel. Transmit and measure the highest spurious output.

6.2.2 C-2000
Not required

6.2.3 RT-2000
Perform the same tests listed in section 6.2.

6.3 Audio Setup

6.3.1 P-2000

6.3.1.1 FM1 Sidetone.

Set the UUT to Normal operating mode and select channel 100 on FM1. Input a standard transmit signal into Mic #1. Adjust UUT internal pot #2 for 5.0 VRMS out FM1 Headset output.

6.3.1.2 FM1 Rx Audio.

Set the UUT to Normal operating mode and select channel 1000 on FM1. Set them COMAN to produce a standard 25 kHz channel Rx test signal. Adjust UUT internal pot #2 until the output level of FM1 Headset output is 7.75 VRMS

6.3.1.3 FM2 Sidetone.

Set the UUT to Normal operating mode and select channel 100 on FM2. Input a standard transmit signal into Mic #4. Adjust UUT internal pot #3 for 3.3VRMS out FM2 Headset output.

6.3.1.4 FM2 Rx Audio.

Set the UUT to Normal operating mode and select channel 100 on FM2. Set them COMAN to produce a standard 25 kHz channel Rx test signal. Adjust UUT internal pot #5 until the output level of FM2 Headset output is 7.75 VRMS

6.3.2 C-2000
Not required

6.3.3 RT-2000
Perform the tests listed in section 6.3.1.

APPENDIX A Transmitter Alignment and Audio Setup

Product Type: _____ P/N: _____

MTN # _____ Tester: _____ Date: _____

6.1 Software Version Numbers

Display Board: _____ (P-2000/C-2000 only)

CPU Board: _____ (All)

6.2 Transmitter Alignment

6.2.1 Tx High and Low Power Alignment

FM1 TYPE: _____ (VHF,UHF-1,UHF-2, 800)

VHF Frequency (9.75 ± .25) Watts	UHF-1 Frequency (9.75 ± .25) Watts	UHF-2 Frequency (9.75 ± .25) Watts	800 MHz Frequency (2.75 ± .25) Watts	High Pwr	Hi Pwr Softpot	Low Pwr	Low Pwr Softpot
136.025	403.100	450.025	800.0125				
142.125	424.850	465.225	815.0125				
154.225	438.050	475.225	824.9875				
160.125	444.050	484.975	851.0125				
168.075	456.350	500.275	860.0125				
173.975	463.700	511.975	869.9875				
N/A	469.650	519.975	N/A				

FM2 TYPE: _____ (VHF,UHF-1,UHF-2, 800)

VHF Frequency (9.75 ± .25) Watts	UHF-1 Frequency (9.75 ± .25) Watts	UHF-2 Frequency (9.75 ± .25) Watts	800 MHz Frequency (2.75 ± .25) Watts	High Pwr	Hi Pwr Softpot	Low Pwr	Low Pwr Softpot
136.025	403.100	450.025	800.0125				
142.125	424.850	465.225	815.0125				
154.225	438.050	475.225	824.9875				
160.125	444.050	484.975	851.0125				
168.075	456.350	500.275	860.0125				
173.975	463.700	511.975	869.9875				
N/A	469.650	519.975	N/A				

6.2.2 Tx Modulation Level

FM1 Modulation Level: _____ (3.0 ± 100 Hz) Internal Pot Value: _____

FM2 Modulation Level: _____ (3.0 ± 100 Hz) Internal Pot Value: _____

6.2.2 Tx Spurious Level

FM1 Spurious Level: _____ (-70 dBc)

FM2 Spurious Level: _____ (-70 dBc)

6.3 Setup

FM1 Sidetone: _____ (5.0 ± .1 VRMS) Internal Pot Value: _____

FM1 Rx Audio: _____ (7.75 ± .1 VRMS) Internal Pot Value: _____

FM2 Sidetone: _____ (5.0 ± .1 VRMS) Internal Pot Value: _____

FM2 Rx Audio: _____ (7.75 ± .1 VRMS) Internal Pot Value: _____