EXHIBIT # 9

FCC Requirements CRF 47 Part 2.1033,c (9)

Tune up Procedure

JXBLMDSXP4-8T

TITLE: TEST PROCEDURE, XP4 TRANSMITTER PCA & MODULE	DOCUMENT NO. 130-000023 TST	REVISION D
	OWNER: Randy Karr	PAGE 1 OF 10

1.0 PURPOSE

Verify Transmitter PCAs (130-000110-001 / 130-000111-001/130-000023-002/130-000024-002) and the related transmitter modules designed/manufactured meets the specification (140-000075-SPC, Rev. D).
Provide failure information to design/production engineering for product quality improvement.
Establish Test Data Record for engineering/manufacturing/Customer Service.

2.0 SCOPE

Units Under Test are transmitter PCAs (130-000110-001 / 130-000111-001/130-000023-002/130-000024-002) and the related transmitter modules only.

All tests are performed at room temperature/ humidity/altitude in the Manufacturing production area.

The tests are divided into two sub-procedures: Test Procedure I verifies the printed circuit card assembly (PCA) without the HP module. Test Procedure II verifies operation of the final transmitter module assembly.

3.0 RESPONSIBILITY

Design Engineer and production engineer are responsible for review , modification and approval of this procedure.
Production engineer is responsible for test equipment calibration and the test tool updating.
Test operator is responsible for following the test procedure (Section 6 .0) and providing Test and Assembly Data Base Application.

4.0 REFERENCES

Schematics	130-000023-S02
PCA	Rev. A: 130-000110-001/130-000111-001/130-000023-002/130-000024-002
PCB	Rev. A: 360-000017-002
BOM	130-000110-P01/130-000111-P01/130-000023/P02/130-000024-P02
Specification	140-000075-SPC
Assembly Drawing	130-000023-A02
Non-conforming Material	000-000019-PRC
ESD Procedure	000-000021-PRC

5.0 TEST EQUIPMENT and TOOLS

Test operator shall ensure that calibration labels are current on all test equipment. Test fixture and cables do not require calibration. Test operator shall also verify that the controller computer has a current Software Release label. No testing is allowed at this station unless these conditions are met.

1.	Test fixture (130-000023-FXT)	One each
2.	Gigatronics 8541 Power Meter or equivalent	One each
3.	HP 8564E Spectrum Analyzer or equivalent	One each
4.	HP 33120A Synthesizer Function Generator	Two each

7. Digital Multimeter (Fluke 77 or equivalent) One each
5. DC Power Supplies: +22V,+12V,+6.25V,+5V,-5V One each
   0 to +5V variable comes from Test Fixture Two each
6. MS-DOS based computer PC (486) - (66 MHz; 16 Mbytes Ram; 500 Mbytes HD or better)

6.0 TEST PROCEDURE

ESD CAUTION: OBSERVE ESD PRECAUTIONS AT ALL TIMES DURING THE TEST

Mark the "PASS" box on each data line as appropriate or leave unmarked for a failed test.

6. 1 TEST PROCEDURE I: PCA TEST

6.1.1 Test Set Up (Refer to Appendix A for a block diagram of the test setup):

Attach cable W1 to the Test Fixture
Attach the labeled ends of the cable to the respective instruments as shown in the block diagram.
Setup the test instrumentation as follows:

INSTRUMENT	SIGNAL NAME	Test Fixture	INSTRUMENT SETTING(S)
HP 33120A (I)	TX_DDS	Ref. Freq.	Frequency: 5.0 MHz Waveform: Square (50% duty cycle) Amplitude: 2.5 Vp-p DC Offset: 1.0 V
HP 33120A (II)	MOD	Modulation	Frequency: 1.0 MHz Waveform: Sinusoidal Amplitude: 2.5 Vp-p (Nominal; Starting point) DC Offset: 0.0 V
DCPS #2	TX_OU_CN	+5V	+5 VDC; 0.5 A
DCPS #3	+12V	12V	+12.0 VDC; 0.5 A
DCPS #4 / Mute SW	+5V	+5V	+5.0 VDC; 0.5 A
DCPS #5	+6.25V	+6.25V	+6.25 VDC; 0.5 A
DCPS #6	-5V	-5V	-5.0 VDC; 0.5 A
DCPS #7	+22V	+22V	+22.0 VDC; 0.5 A

6.1.2 Record the followings into Test and Assembly Database Application (TADA) for each unit under test.

Part number.
Serial number / Bar code
Revision.
Test operator initials.
Current date.

Visually inspect the Unit-Under-Test (UUT) to look for any damaged components or connectors, missing components or abnormalities. If any are found then the operator shall contact the Production Supervisor for resolution of any discrepancies. When the operator is satisfied that no physical problems or anomalies exist then the rest of this test procedure may be performed.

6.1.3 Verify the following voltages/signals at the Hybrid pin I/O (Refer to Appendix B for location of the Hybrid pins to probe for.)

	Probe at	**Pass Condition**			
6.1.3.1	Hybrid Pin 4	+5.0	VDC	± 0.1 VDC	
6.1.3.2	Hybrid Pin 7	+10.0	VDC	± 0.2 VDC	For HP hybrids
		+ 8.0	VDC	± 0.2 VDC	For C&S hybrids
6.1.3.3	Hybrid Pin 8	0.0	VDC	± 0.1 VDC	
6.1.3.4	Hybrid Pin 9	-5.0	VDC	± 0.1 VDC	
6.1.3.5	PCA Pin 6	+1.8	VDC	± 0.2 VDC	
6.1.3.6	PCA Pin 16	<0.2	VDC		

6.1.4 Adjust attenuation control potentiometer on Test Fixture to obtain +5V on PCA connector pin 3

6.1.5 Adjust R46 on PCA to obtain +/- 0.1 Volt on hybrid pin 11

6.1.6 Adjust potentiometer R30 fully clockwise & counterclockwise

Probe at	**Pass Condition**
Hybrid pin 2	Voltage at hybrid Pin2 varies when adjusting R30

6.1.7 Check the following indicators:

	Pass Condition
Lock Fail indicator D5:	On

6.1.8 Verify reference signal is present at U10/Pin11.

6.1.9 Power off all the DC supplies and the signal generators.
Disconnect all cabling to the UUT.
Re-insert the UUT into its ESD packaging.
Ensure that the Test Data Record and/or the TADA database is completely filled out.

If the UUT passed all tests, route it to the next assembly station for conversion to module assembly. Otherwise, route it to the Debug/Rework station.

6.2 TEST PROCEDURE II: MODULE TEST

6.2.1 Test Set Up (Refer to Appendix A for a block diagram of the test setup):

Attach cable W1 to the 16 pin connector on the PCA.
Attach the labeled ends of the cable to the respective instruments as shown in the block diagram.
Install the waveguide-to-coax adapter to the RF output of the hybrid in the module.
Connect a coax cable ("K" connectored) between the coax adapter and the input to the spectrum analyzer.
Setup the test instrumentation as follows:

INSTRUMENT	SIGNAL NAME	CONNECTION	INSTRUMENT SETTING(S)
HP 33120A (I)	TX_DDS	DDS Ref. Frequency Input on Test Fixture	Frequency: Set to be fo (Refer to Appendix D) Waveform: Square (50% duty cycle) Amplitude: 2.5 Vp-p DC Offset: 1.0 V
HP 33120A (II)	MOD	Mod. Input on Test Fixture	Frequency: 2.0 MHz Waveform: Sinusoidal Amplitude: 2.5 Vp-p DC Offset: 0 V
HP 8564E	RF OUTPUT	Hybrid SMA Connector	Center freq.: Set to be fo (Refer to Appendix D) Span: 200 kHz RBW: 3 kHz VBW: 3 kHz Sweep: 85 msec.
DCPS #2	TX_OU_CN	+5V	+5 VDC; 0.5 A
DCPS #3	+12V	+12V	+12.0 VDC; 0.5 A
DCPS #4 / Mute SW	+5V	+5V	+5.0 VDC; 0.5 A
DCPS #5	+6.25V	+6.25V	+6.25 VDC; 0.5 A
DCPS #6	-5V	-5V	-5.0 VDC; 0.5 A
DCPS #7	+22V	+22V	+22.0 VDC; 0.5 A

6.2.2 Record the followings into Test and Assembly Database Application (TADA) for each unit under test.

Part number.
Serial number / Bar code
Revision.
Test operator initials
Current date.

Visually inspect the Unit-Under-Test (UUT) to look for any damaged components or connectors, missing components or abnormalities. If any are found then the operator shall contact the Production Supervisor for resolution of any discrepancies. When the operator is satisfied that no physical problems or anomalies exist then the rest of this test procedure may be performed.

6.2.3 Verify the following voltages/signals at the Hybrid pin I/O (Refer to Appendix B for location of the Hybrid pins to probe for.)

	Probe at	**Pass Condition**			
6.2.3.1	Hybrid Pin 4	+5.0 VDC	± 0.1 VDC		
6.2.3.2	Hybrid Pin 7	+10.0 VDC	± 0.2 VDC	For	HP hybrid module
		+8.0 VDC	± 0.2 VDC	For	C&S hybrid module
6.2.3.3	Hybrid Pin 8	+5.0 VDC	± 0.1 VDC		
6.2.3.4	Hybrid Pin 9	-5.0 VDC	± 0.1 VDC		
6.2.3.5	PCA Pin 16	0 VDC	± 0.1 VDC	When MUTE on fixture set to TX OFF	
		+5VDC	± 0.1 VDC	When MUTE on fixture set to TX ON	

6.2.4 Monitor D5

	Pass Condition
Remove REF FREQ. from test fixture	D5 is light up
Re-connect REF FREQ. To test fixture	D5 is extinguished

6.2.5 Set the spectrum analyzer span to be 3 GHz. Change the TX frequency by tuning the frequency of HP33120A(I) from f_1 to f_2 (Refer to Appendix D), observe RF frequency

Pass Condition
RF output frequency follows TX_REF change.

6.2.6 Set the spectrum analyzer as follows:

Span: 20 MHz
RBW: 1 MHz

Adjust R30 to obtain maximum sideband amplitude, then use the marker to measure reference to side band power:

	Pass Condition
Reference to upper side band power	> 50 dB
Reference to lower side band power	> 50 dB

6.2.7 Set the spectrum analyzer SPAN to 100 MHz and connect to Mod Input on the Test Fixture.

Observe hybrid output RF carrier:

Pass Condition
RF carrier modulated

6.2.8 Use Spectrum Analyzer to measure RF average phase noise level:

Marker at	**Pass Condition**	
100 KHz away from the carrier.	< -78 dB/Hz	For 38 GHz Module
	< - 82 dB/Hz	For all the other Modules

6.2.9 Set Mute SW on the fixture as following. Use power meter to measure hybrid output RF power:

	MUTE	ATTEN Control on Test Fixture	**Pass Condition:** RF output	D5
6.2.9.1	TX Off	5V	≤-30 dBm	Off
6.2.9.2	TX On	0V	≤-8.5 dBm	Off
6.2.9.3	TX On	5V	≥ +19 dBm for 38 GHz hybrids ≥ + 20 dBm for all the other hybrids.	Off Off

6.2.10 Change the TX frequency by tuning the frequency of HP33120A(I) from f_1 to f_2 (Refer to Appendix D), measure hybrid output RF signal using power meter:

	Pass Condition
RF power	≥ +19 dBm for 38 GHz hybrids ≥ + 20 dBm for all the other hybrids.

6.2.11 Power off all the DC supplies and the signal generators.
Disconnect all cabling to the UUT.
Re-insert the UUT into its ESD packaging.
Ensure that the Test Data Record and/or the TADA database is completely filled out.
If the UUT passed all tests, route to the next assembly station.
If the UUT failed any test, route to the Debug/Rework station

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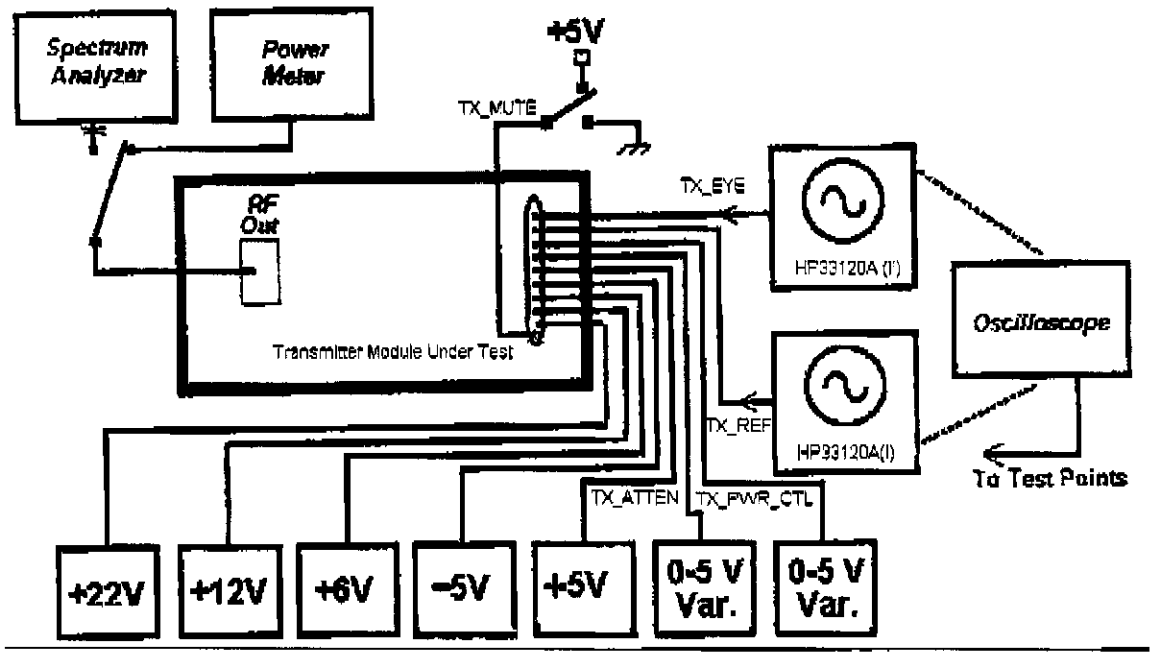
APPENDIX A

Transmitter Module Test Setup Block diagram:



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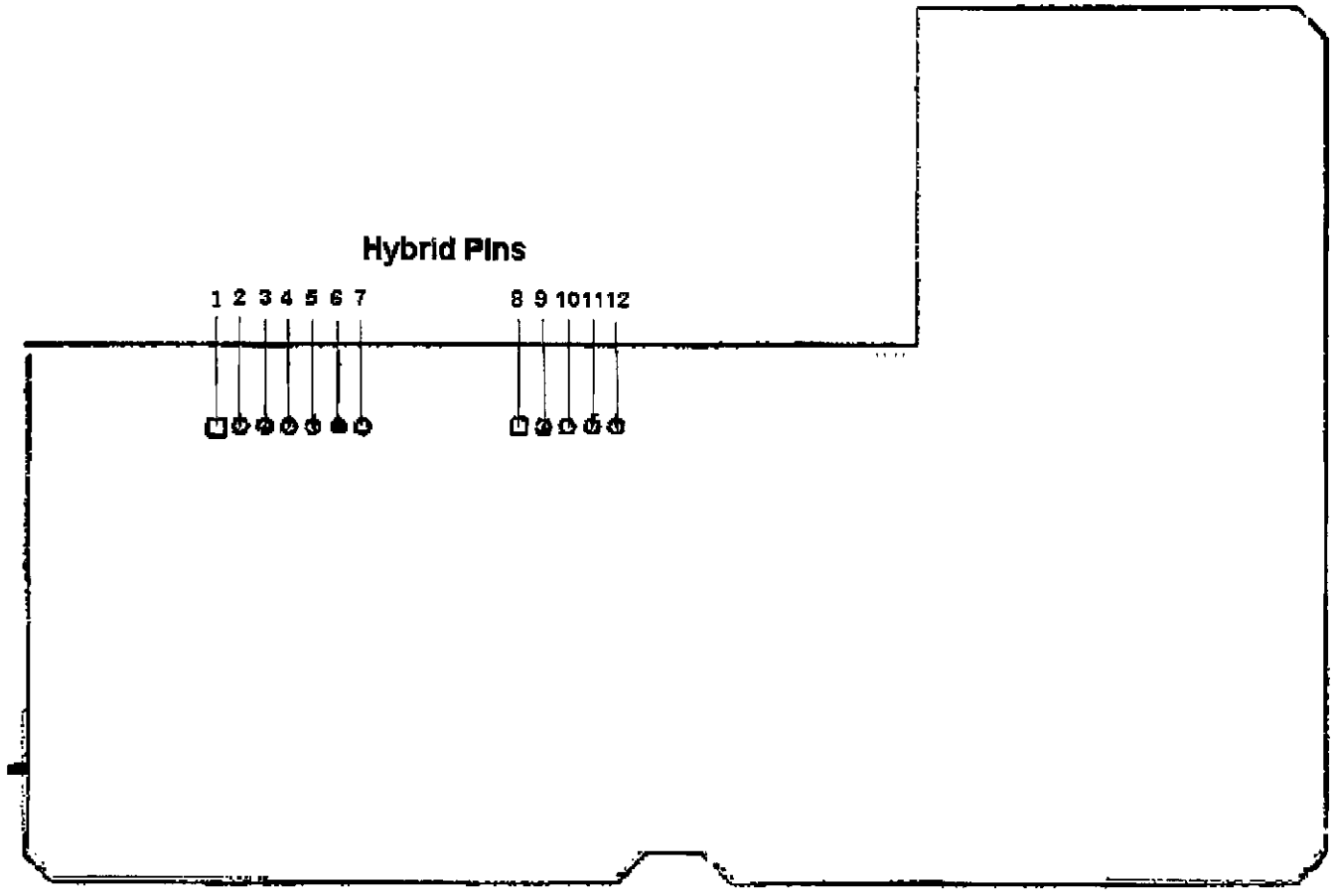
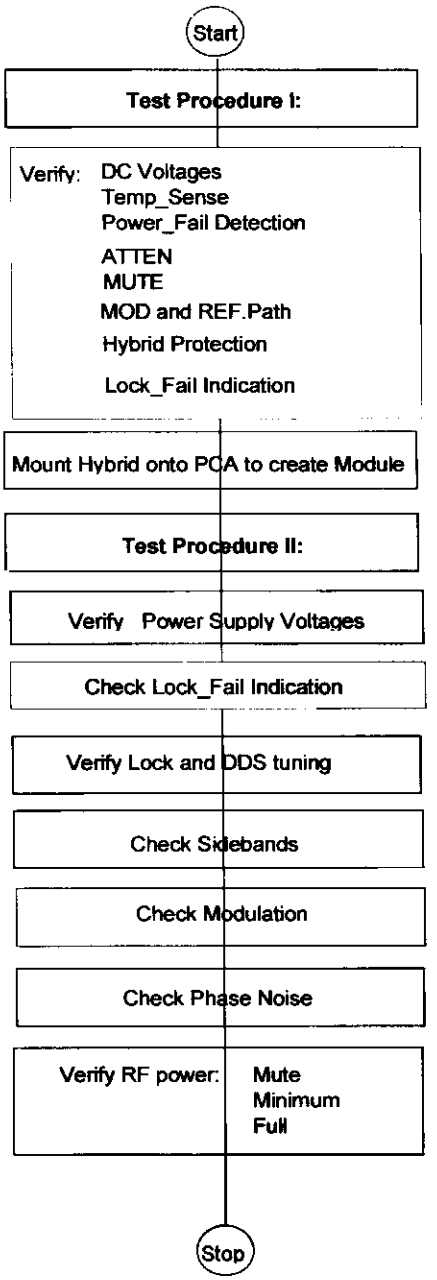
APPENDIX B

PCA (Component Side)



APPENDIX C

Test Flow Chart



APPENDIX D

Hybrid Frequencies
(The frequencies for new hybrids are not included)

Hybrids	f1(MHz)	f0 (MHz)	f2(MHz)
140-000188-001	6.225585938	6.347656250	6.46976563
140-000207-001	6.225585938	6.347656250	6.46976563
140-000162-001	5.761718750	5.961100260	6.160481771
140-000213-001	5.761718750	5.961100260	6.160481771
140-000163-001	5.976562500	6.194661458	5.976562500
140-000214-001	5.976562500	6.194661458	5.976562500
140-000167-001	8.642578125	9.130859375	9.619140625
140-000177-001	9.213867188	9.309082031	9.404296875
140-000176-001	9.052734375	9.331054688	9.609375000
140-000179-001	6.142578125	6.150716146	6.158854167
140-000180-001	6.253255208	6.261393229	6.269531250
140-000183-001	5.924479167	6.005859375	6.087239583
140-000184-001	6.250000000	6.331380208	6.412760417
140-000199-001	6.035156250	6.097819010	6.160481771
140-000200-001	6.160481771	6.282226563	6.403971354
140-000075-001	5.182495117	5.483276367	5.755004883
140-000159-001	5.920410156	6.195068359	6.469726563
140-000074-001	4.518615723	4.677917480	4.813781738