Report of Calibration

<Your Company Name Goes Here>
<report substitution mt_user1>
<report substitution mt_user2>

UNIT UNDER TEST:	Hewlett Packard E4407B ESA-E Series Spectrum Analyzer	TEST RESULT:	FAIL
SERIAL NUMBER:	CI00010059	PERFORMED ON:	22 April 2010
ASSET NUMBER:	Sample-HP E4407B	DATA TYPE:	FOUND-LEFT
PROCEDURE NAME:	HP E4407B: (1 yr) VER /9640-LPN,4418,LFCTR,SWPG,UWSG	TEMPERATURE:	23.00 °C
PROCEDURE REV.:	$Revision: 1.2 $	HUMIDITY:	40 %
CALIBRATED BY:	User Fluke5		
P.O. NUMBER:			
CUSTOMER:			

<Your Company Name Goes Here> certifies that the above listed instrument meets or exceeds all specifications as stated in the referenced procedure unless otherwise noted). It has been calibrated using measurement standards traceable to the National Institute of Standards and Technology (NIST), or to NIST accepted intrinsic standards of measurement, or derived by the ratio type of self-calibration techniques. This calibration complies with MIL-STD-45662A and ANSI/NCSL Z540.1-1999 (R2002).

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Note: Any Test Uncertainty Ratio (TUR) that is less than four to one will appear under the "TUR" heading on the data record. If the TUR meets or exceeds four to one, the field is left blank.

REMARKS: Test Time: 2 hrs. 19 min.

Standards Used

Asset #	Description	Cal Date	Due Date
Sample-Anritsu MG3694B	Anritsu MG3694B Signal Generator	12/9/2009	12/9/2010
Sample-Fluke 9640A-50-LPN	Fluke 9640A-50 Leveling Head	12/3/2009	12/3/2010
Sample-Fluke 9640A-LPN	Fluke 9640A-LPN RF Reference Source	12/3/2009	12/3/2010
Sample-Fluke PM 6690	Fluke PM 6690 Frequency Counter/Timer/Analyzer	12/9/2009	12/9/2010
Sample-HP 11667B	Hewlett Packard 11667B Power Splitter	12/9/2009	12/9/2010
Sample-HP 8340B	Hewlett Packard 8340B Synthesized Sweeper	4/21/2010	4/21/2011
Sample-HP 8481D	Hewlett Packard 8481D Power Sensor	4/20/2010	4/20/2011
Sample-HP 8485A	Hewlett Packard 8485A Power Sensor	12/9/2009	12/9/2010
Sample-HP 86205A	Hewlett Packard 86205A 50 Ohm Directional Bridge	12/9/2009	12/9/2010
Sample-HP 87300B	Hewlett Packard 87300B Directional Coupler	12/9/2009	12/9/2010
Sample-HP E4419A	Hewlett Packard E4419A Power Meter	12/9/2009	12/9/2010

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units	TUR

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IDENTIFICATION

 Serial Number:   CI00010059
 Firmware Level:  A.14.06

INSTALLED OPTIONS
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Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
AYZ (External Mixing)							
BAA (FM Demodulation)							
B7D (Digital Signal Processing and Fast A-D Converter)							
B7E (RF Communications Hardware)							
B72 (10 Mb Memory Expansion)							
1DN (50 Ohm Tracking Generator, 9 kHz to 3 GHz)							
1DR (Narrow Resolution Bandwidths)							
1DS (Preamplifier, to 3 GHz)							
1D6 (Time-gated Spectrum Analysis)							
10 MHz REFERENCE OUTPUT ACCURACY							
10 MHz		10.0000008	9.9999750	10.0000250	MHz	Pass	
FREQUENCY READOUT AND MARKER FREQUENCY COUNT ACCURACY							
Frequency Readout Accuracy							
1 MHz Span							
1.5 GHz		1.50000000	1.49999099	1.50000901	GHz	Pass	
4 GHz		4.00000000	3.99999099	4.00000901	GHz	Pass	
9 GHz		9.00000000	8.99999099	9.00000901	GHz	Pass	
16 GHz		16.00000000	15.99999099	16.00000901	GHz	Pass	
21 GHz		21.00000000	20.99999099	21.00000901	GHz	Pass	
10 MHz Span							
1.5 GHz		1.50000000	1.49990999	1.50009001	GHz	Pass	
4 GHz		4.00000000	3.99990999	4.00009001	GHz	Pass	
9 GHz		9.00000000	8.99990999	9.00009001	GHz	Pass	
16 GHz		16.00000000	15.99990999	16.00009001	GHz	Pass	
21 GHz		21.00000000	20.99990999	21.00009001	GHz	Pass	
20 MHz Span							
1.5 GHz		1.50000000	1.49983499	1.50016501	GHz	Pass	
4 GHz		4.00000000	3.99983499	4.00016501	GHz	Pass	
9 GHz		9.00000000	8.99983499	9.00016501	GHz	Pass	
16 GHz		16.00000000	15.99983499	16.00016501	GHz	Pass	
21 GHz		21.00000000	20.99983499	21.00016501	GHz	Pass	
Frequency Count Accuracy							
1 MHz Span							
1.5 GHz		1.500000000	1.499999999	1.500000001	GHz	Pass	
4 GHz		4.000000000	3.999999999	4.000000001	GHz	Pass	
9 GHz		9.000000000	8.999999999	9.000000001	GHz	Pass	
16 GHz		15.999999999	15.999999999	16.000000001	GHz	Fail	
21 GHz		21.000000000	20.999999999	21.000000001	GHz	Pass	
20 MHz Span							
1.5 GHz		1.500000000	1.499999999	1.500000001	GHz	Pass	
4 GHz		4.000000000	3.999999999	4.000000001	GHz	Pass	
9 GHz		9.000000000	8.999999999	9.000000001	GHz	Pass	
16 GHz		15.999999999	15.999999999	16.000000001	GHz	Fail	
21 GHz		21.000000000	20.999999999	21.000000001	GHz	Pass	
FREQUENCY SPAN ACCURACY							
Span (Center Frequency)							
3000 MHz (1.5 GHz)		2400.0	2370.0	2430.0	MHz	Pass	
100 MHz (60 MHz)		80.0	79.0	81.0	MHz	Pass	
100 kHz (10.05 MHz)		80.0	79.0	81.0	kHz	Pass	
100 MHz (850 MHz)		80.0	79.0	81.0	MHz	Pass	
100 kHz (800.05 MHz)		80.0	79.0	81.0	kHz	Pass	
100 MHz (1.45 GHz)		80.0	79.0	81.0	MHz	Pass	

Test Results						
Test Description	**True Value**	**Test Result**	**Lower limit**	**Upper limit**	**Units**	**TUR**
100 kHz (1.49905 GHz)		80.0	79.0	81.0	kHz	Pass
NOISE SIDEBANDS						
Offset from 1 GHz						
10 kHz		-96.04	-147.00	-90.00	dBc/H	Pass
20 kHz		-106.79	-157.00	-100.00	dBc/H	Pass
30 kHz		-111.83	-163.00	-106.00	dBc/H	Pass
NOISE SIDEBANDS - WIDE OFFSETS						
Offset from 1 GHz (1 kHz RBW)						
100 kHz		-122.43	-155.00	-118.00	dBc/H	Pass
1 MHz		-127.11	-162.00	-125.00	dBc/H	Pass
5 MHz		-130.94	-164.00	-127.00	dBc/H	Pass
10 MHz		-137.32	-168.00	-131.00	dBc/H	Pass
SYSTEM SIDEBANDS						
Offset from 500 MHz						
30 kHz to 230 kHz		-91.34	-130.00	-65.00	dBc/H	Pass
-30 kHz to -230 kHz		-82.36	-130.00	-65.00	dBc/H	Pass
RESIDUAL FM						
1 kHz RBW		19	0	150	Hz	Pass
SWEEP TIME ACCURACY						
100 µs		100.0	99.0	101.0	µs	Pass
500 µs		500.0	495.0	505.0	µs	Pass
1 ms		0.997	0.990	1.010	ms	Pass
5 ms		5.000	4.950	5.050	ms	Pass
20 ms		20.00	19.80	20.20	ms	Pass
100 ms		100.0	99.0	101.0	ms	Pass
1 s		1.000	0.990	1.010	s	Pass
DISPLAY SCALE FIDELITY						
Cumulative Log Fidelity, RBW >= 1 kHz						
(dB from Ref Level)						
-4 dB		-3.98	-4.30	-3.70	dB	Pass
-8 dB		-7.98	-8.30	-7.70	dB	Pass
-12 dB		-11.96	-12.40	-11.60	dB	Pass
-16 dB		-15.96	-16.40	-15.60	dB	Pass
-20 dB		-19.93	-20.40	-19.60	dB	Pass
-24 dB		-23.91	-24.50	-23.50	dB	Pass
-28 dB		-27.90	-28.50	-27.50	dB	Pass
-32 dB		-31.87	-32.60	-31.40	dB	Pass
-36 dB		-35.87	-36.60	-35.40	dB	Pass
-40 dB		-39.88	-40.60	-39.40	dB	Pass
-44 dB		-43.86	-44.70	-43.30	dB	Pass
-48 dB		-47.85	-48.70	-47.30	dB	Pass
-52 dB		-51.83	-52.70	-51.30	dB	Pass
-56 dB		-55.72	-56.70	-55.30	dB	Pass
-60 dB		-59.62	-60.70	-59.30	dB	Pass
-64 dB		-63.78	-64.80	-63.20	dB	Pass
-68 dB		-67.83	-68.98	-67.02	dB	Pass
-72 dB		-71.69	-72.80	-71.20	dB	Pass
-76 dB		-75.71	-76.80	-75.20	dB	Pass
-80 dB		-79.42	-80.80	-79.20	dB	Pass
-84 dB		-82.93	-85.15	-82.85	dB	Pass
Incremental Log Fidelity, RBW >= 1 kHz						
(dB from Ref Level)						
-4 dB		-0.23	-0.40	0.40	dB	Pass
-8 dB		-0.00	-0.40	0.40	dB	Pass

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
-12 dB		-0.01	-0.40	0.40	dB	Pass	
-16 dB		-0.01	-0.40	0.40	dB	Pass	
-20 dB		-0.02	-0.40	0.40	dB	Pass	
-24 dB		-0.02	-0.40	0.40	dB	Pass	
-28 dB		-0.02	-0.40	0.40	dB	Pass	
-32 dB		-0.02	-0.40	0.40	dB	Pass	
-36 dB		0.00	-0.40	0.40	dB	Pass	
-40 dB		0.01	-0.40	0.40	dB	Pass	
-44 dB		-0.03	-0.40	0.40	dB	Pass	
-48 dB		-0.01	-0.40	0.40	dB	Pass	
-52 dB		-0.03	-0.40	0.40	dB	Pass	3.88
-56 dB		-0.10	-0.40	0.40	dB	Pass	3.82
-60 dB		-0.10	-0.40	0.40	dB	Pass	3.82
-64 dB		0.16	-0.40	0.40	dB	Pass	3.70
-68 dB		0.05	-0.40	0.40	dB	Pass	3.61
-72 dB		-0.15	-0.40	0.40	dB	Pass	3.78
-76 dB		0.02	-0.40	0.40	dB	Pass	3.58
-80 dB		-0.28	-0.40	0.40	dB	Pass	3.66
Cumulative Log Fidelity, RBW <= 300 Hz							
(dB from Ref Level)							
-4 dB		-3.98	-4.34	-3.66	dB	Pass	
-8 dB		-7.98	-8.38	-7.62	dB	Pass	
-12 dB		-11.98	-12.42	-11.58	dB	Pass	
-16 dB		-15.96	-16.46	-15.54	dB	Pass	
-20 dB		-19.94	-20.50	-19.50	dB	Pass	
-24 dB		-23.94	-24.54	-23.46	dB	Pass	
-28 dB		-27.92	-28.58	-27.42	dB	Pass	
-32 dB		-31.91	-32.62	-31.38	dB	Pass	
-36 dB		-35.90	-36.66	-35.34	dB	Pass	
-40 dB		-39.89	-40.70	-39.30	dB	Pass	
-44 dB		-43.89	-44.74	-43.26	dB	Pass	
-48 dB		-47.87	-48.78	-47.22	dB	Pass	
-52 dB		-51.87	-52.82	-51.18	dB	Pass	
-56 dB		-55.88	-56.86	-55.14	dB	Pass	
-60 dB		-59.89	-60.90	-59.10	dB	Pass	
-64 dB		-63.90	-64.94	-63.06	dB	Pass	
-68 dB		-67.89	-68.98	-67.02	dB	Pass	
-72 dB		-71.92	-73.02	-70.98	dB	Pass	
-76 dB		-75.88	-77.06	-74.94	dB	Pass	
-80 dB		-79.81	-81.10	-78.90	dB	Pass	
-84 dB		-83.74	-85.14	-82.86	dB	Pass	
-88 dB		-87.83	-89.18	-86.82	dB	Pass	
-92 dB		-91.77	-93.22	-90.78	dB	Pass	
-96 dB		-95.69	-97.26	-94.74	dB	Pass	
-98 dB		-97.14	-99.28	-96.72	dB	Pass	
Incremental Log Fidelity, RBW <= 300 Hz							
(dB from Ref Level)							
-4 dB		-0.02	-0.40	0.40	dB	Pass	
-8 dB		0.00	-0.40	0.40	dB	Pass	
-12 dB		0.00	-0.40	0.40	dB	Pass	
-16 dB		-0.02	-0.40	0.40	dB	Pass	
-20 dB		-0.02	-0.40	0.40	dB	Pass	
-24 dB		0.00	-0.40	0.40	dB	Pass	
-28 dB		-0.02	-0.40	0.40	dB	Pass	
-32 dB		-0.01	-0.40	0.40	dB	Pass	
-36 dB		-0.01	-0.40	0.40	dB	Pass	
-40 dB		-0.01	-0.40	0.40	dB	Pass	
-44 dB		0.00	-0.40	0.40	dB	Pass	
-48 dB		-0.02	-0.40	0.40	dB	Pass	
-52 dB		0.00	-0.40	0.40	dB	Pass	3.91

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
-56 dB		0.01	-0.40	0.40	dB	Pass	3.57
-60 dB		0.01	-0.40	0.40	dB	Pass	3.57
-64 dB		0.01	-0.40	0.40	dB	Pass	3.57
-68 dB		-0.01	-0.40	0.40	dB	Pass	3.90
-72 dB		0.03	-0.40	0.40	dB	Pass	3.59
-76 dB		-0.04	-0.40	0.40	dB	Pass	3.87
-80 dB		-0.07	-0.40	0.40	dB	Pass	3.84
Linear Fidelity, RBW >= 1 kHz							
(dB from Ref Level)							
-4 dB		141.6	138.7	147.7	mV	Pass	
-8 dB		89.41	85.88	94.82	mV	Pass	
-12 dB		56.39	52.54	61.48	mV	Pass	
-16 dB		35.43	31.50	40.44	mV	Pass	
-20 dB		22.26	18.22	27.17	mV	Pass	
Linear Fidelity, RBW <= 300 Hz							
(dB from Ref Level)							
-4 dB		140.9	137.8	146.7	mV	Pass	
-8 dB		89.10	85.29	94.23	mV	Pass	
-12 dB		56.06	52.16	61.11	mV	Pass	
-16 dB		35.48	31.26	40.21	mV	Pass	
-20 dB		22.37	18.07	27.02	mV	Pass	
Zero Span, RBW <= 300 Hz							
(dB from Ref Level)							
-4 dB		-3.96	-4.36	-3.64	dB	Pass	
-8 dB		-7.95	-8.42	-7.58	dB	Pass	
-12 dB		-11.95	-12.48	-11.52	dB	Pass	
-16 dB		-15.94	-16.54	-15.46	dB	Pass	
-20 dB		-19.92	-20.60	-19.40	dB	Pass	
-24 dB		-23.91	-24.66	-23.34	dB	Pass	
-28 dB		-27.88	-28.72	-27.28	dB	Pass	
-32 dB		-31.85	-32.78	-31.22	dB	Pass	
-36 dB		-35.79	-36.84	-35.16	dB	Pass	
-40 dB		-39.69	-40.90	-39.10	dB	Pass	
-44 dB		-43.60	-44.96	-43.04	dB	Pass	
-48 dB		-47.50	-49.02	-46.98	dB	Pass	
-52 dB		-51.48	-53.08	-50.92	dB	Pass	
-56 dB		-55.40	-57.14	-54.86	dB	Pass	
-60 dB		-59.37	-61.20	-58.80	dB	Pass	
-64 dB		-63.20	-65.50	-62.50	dB	Pass	
-68 dB		-67.12	-69.50	-66.50	dB	Pass	
-70 dB		-69.48	-71.50	-68.50	dB	Pass	
INPUT ATTENUATION SWITCHING UNCERTAINTY							
Input Attenuation Setting (10 dB Reference)							
0 dB		0.05	-0.30	0.30	dB	Pass	2.03
5 dB		0.03	-0.30	0.30	dB	Pass	2.03
15 dB		-0.03	-0.30	0.30	dB	Pass	2.15
20 dB		-0.03	-0.30	0.30	dB	Pass	2.83
25 dB		-0.05	-0.35	0.35	dB	Pass	3.31
30 dB		-0.02	-0.40	0.40	dB	Pass	3.81
35 dB		-0.02	-0.45	0.45	dB	Pass	
40 dB		-0.04	-0.50	0.50	dB	Pass	
45 dB		-0.01	-0.55	0.55	dB	Pass	
50 dB		0.03	-0.60	0.60	dB	Pass	
55 dB		0.10	-0.65	0.65	dB	Pass	
60 dB		-0.11	-0.70	0.70	dB	Pass	
65 dB		-0.11	-0.75	0.75	dB	Pass	
REFERENCE LEVEL ACCURACY							

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
Log, RBW >= 1 kHz							
-10 dBm		-10.05	-10.30	-9.70	dBm	Pass	
0 dBm		-0.10	-0.30	0.30	dBm	Pass	
-30 dBm		-29.98	-30.30	-29.70	dBm	Pass	
-40 dBm		-39.95	-40.30	-39.70	dBm	Pass	
-50 dBm		-49.92	-50.50	-49.50	dBm	Pass	
-60 dBm		-59.90	-60.50	-59.50	dBm	Pass	
-70 dBm		-69.80	-70.50	-69.50	dBm	Pass	
-80 dBm		-79.17	-80.70	-79.30	dBm	Fail	
Log, RBW <= 300 Hz							
-10 dBm		-10.04	-10.30	-9.70	dBm	Pass	
0 dBm		-0.05	-0.30	0.30	dBm	Pass	
-30 dBm		-29.97	-30.30	-29.70	dBm	Pass	
-40 dBm		-39.95	-40.30	-39.70	dBm	Pass	
-50 dBm		-49.93	-50.50	-49.50	dBm	Pass	
-60 dBm		-59.96	-60.50	-59.50	dBm	Pass	
-70 dBm		-69.93	-70.50	-69.50	dBm	Pass	
-80 dBm		-79.75	-80.70	-79.30	dBm	Pass	
Linear, RBW >= 1 kHz							
-10 dBm		-10.04	-10.30	-9.70	dBm	Pass	
0 dBm		-0.08	-0.30	0.30	dBm	Pass	
-30 dBm		-29.97	-30.30	-29.70	dBm	Pass	
-40 dBm		-39.96	-40.30	-39.70	dBm	Pass	
-50 dBm		-49.93	-50.50	-49.50	dBm	Pass	
-60 dBm		-59.93	-60.50	-59.50	dBm	Pass	
-70 dBm		-69.87	-70.50	-69.50	dBm	Pass	
-80 dBm		-79.40	-80.70	-79.30	dBm	Pass	
Linear, RBW <= 300 Hz							
-10 dBm		-10.01	-10.30	-9.70	dBm	Pass	
0 dBm		-0.04	-0.30	0.30	dBm	Pass	
-30 dBm		-29.96	-30.30	-29.70	dBm	Pass	
-40 dBm		-39.92	-40.30	-39.70	dBm	Pass	
-50 dBm		-49.92	-50.50	-49.50	dBm	Pass	
-60 dBm		-59.93	-60.50	-59.50	dBm	Pass	
-70 dBm		-69.95	-70.50	-69.50	dBm	Pass	
-80 dBm		-79.84	-80.70	-79.30	dBm	Pass	
RESOLUTION BANDWIDTH SWITCHING UNCERTAINTY							
RBW Setting (Relative to 1 kHz RBW)							
3 kHz		0.01	-0.30	0.30	dB	Pass	
9 kHz		-0.03	-0.30	0.30	dB	Pass	
10 kHz		0.04	-0.30	0.30	dB	Pass	
30 kHz		0.01	-0.30	0.30	dB	Pass	
100 kHz		-0.09	-0.30	0.30	dB	Pass	
120 kHz		-0.04	-0.30	0.30	dB	Pass	
300 kHz		0.05	-0.30	0.30	dB	Pass	
1 MHz		0.04	-0.30	0.30	dB	Pass	
3 MHz		-0.03	-0.30	0.30	dB	Pass	
5 MHz		0.06	-0.60	0.60	dB	Pass	
300 Hz		0.06	-0.30	0.30	dB	Pass	
200 Hz		0.05	-0.30	0.30	dB	Pass	
100 Hz		0.02	-0.30	0.30	dB	Pass	
30 Hz		-0.00	-0.30	0.30	dB	Pass	
10 Hz		0.09	-0.30	0.30	dB	Pass	
ABSOLUTE AMPLITUDE ACCURACY							
Log, Preamp Off		-20.00	-20.34	-19.66	dBm	Pass	
Linear, Preamp Off		-20.03	-20.34	-19.66	dBm	Pass	

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
Log, Preamp On		-29.99	-30.37	-29.63	dBm	Pass	
Linear, Preamp On		-30.02	-30.37	-29.63	dBm	Pass	
OVERALL AMPLITUDE ACCURACY							
0 dBm Reference Level							
0.00 dBm		-0.07	-0.54	0.54	dBm	Pass	
-10.00 dBm		-10.06	-10.54	-9.46	dBm	Pass	
-20.00 dBm		-20.03	-20.54	-19.46	dBm	Pass	
-30.00 dBm		-30.01	-30.54	-29.46	dBm	Pass	
-40.00 dBm		-39.98	-40.54	-39.46	dBm	Pass	
-50.00 dBm		-49.93	-50.54	-49.46	dBm	Pass	2.52
-20 dBm Reference Level							
-20.00 dBm		-20.00	-20.54	-19.46	dBm	Pass	
-30.00 dBm		-30.00	-30.54	-29.46	dBm	Pass	
-40.00 dBm		-39.99	-40.54	-39.46	dBm	Pass	
-50.00 dBm		-49.96	-50.54	-49.46	dBm	Pass	2.51
-40 dBm Reference Level							
-40.00 dBm		-39.99	-40.54	-39.46	dBm	Pass	
-50.00 dBm		-49.96	-50.54	-49.46	dBm	Pass	2.50
-50 dBm Reference Level							
-50.00 dBm		-49.97	-50.54	-49.46	dBm	Pass	2.50
RESOLUTION BANDWIDTH ACCURACY							
3 dB bandwidth							
5 MHz		4.26	3.50	6.50	MHz	Pass	
3 MHz		2.99	2.55	3.45	MHz	Pass	
1 MHz		1.02	0.85	1.15	MHz	Pass	
300 kHz		303	255	345	kHz	Pass	
100 kHz		99	85	115	kHz	Pass	
30 kHz		29.3	25.5	34.5	kHz	Pass	
10 kHz		9.6	8.5	11.5	kHz	Pass	
3 kHz		2.97	2.55	3.45	kHz	Pass	
1 kHz		1.00	0.85	1.15	kHz	Pass	
6 dB bandwidth (EMI)							
120 kHz		116	96	144	kHz	Pass	
9 kHz		8.45	7.20	10.80	kHz	Pass	
FREQUENCY RESPONSE							
Relative to 50 MHz (10 dB Input Attenuation)							
Band 0 (9 kHz to 3.0 GHz)							
Max Response: 9 kHz		0.17	-0.46	0.46	dB	Pass	
Min Response: 1.725 GHz		-0.04	-0.46	0.46	dB	Pass	1.55
Peak-to-Peak Response		0.21	0.00	0.92	dB	Pass	2.80
Preamp On							
Band 0 (1 MHz to 3.0 GHz)							
Max Response: 2.325 GHz		0.15	-1.50	1.50	dB	Pass	2.48
Min Response: 675 MHz		-0.24	-1.50	1.50	dB	Pass	3.20
Peak-to-Peak Response		0.38	0.00	3.00	dB	Pass	
Band 1 (3.0 GHz to 6.7 GHz)							
Max Response: 3.05 GHz		0.61	-1.50	1.50	dB	Pass	3.58
Min Response: 5 GHz		-0.07	-1.50	1.50	dB	Pass	
Peak-to-Peak Response		0.67	0.00	2.60	dB	Pass	

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
Band 2 (6.7 GHz to 13.2 GHz)							
Max Response: 10.6 GHz		0.66	-2.00	2.00	dB	Pass	
Min Response: 7.8 GHz		-0.55	-2.00	2.00	dB	Pass	
Peak-to-Peak Response		1.21	0.00	3.60	dB	Pass	
Band 3 (13.2 GHz to 26.5 GHz)							
Max Response: 23 GHz		0.52	-2.00	2.00	dB	Pass	2.86
Min Response: 26 GHz		0.01	-2.00	2.00	dB	Pass	2.54
Peak-to-Peak Response		0.51	0.00	3.60	dB	Pass	
OTHER INPUT-RELATED SPURIOUS RESPONSES							
Applied Frequency (Response Type)							
Center Frequency: 2.0 GHz							
2042.8 MHz (Image)		-83	-130	-65	dBc	Pass	
2642.8 MHz (Image)		-90	-130	-65	dBc	Pass	
1820.8 MHz (Multiple)		-85	-130	-65	dBc	Pass	
278.5 MHz (Multiple)		-85	-130	-65	dBc	Pass	
5600.0 MHz (Out-of-Band)		-100	-130	-80	dBc	Pass	
6242.8 MHz (Out-of-Band)		-99	-130	-80	dBc	Pass	
Center Frequency: 4.0 GHz							
4042.8 MHz (Image)		-89	-130	-65	dBc	Pass	
4642.8 MHz (Image)		-87	-130	-65	dBc	Pass	
3742.9 MHz (Multiple)		-89	-130	-65	dBc	Pass	
2242.8 MHz (Out-of-Band)		-98	-130	-80	dBc	Pass	
Center Frequency: 9.0 GHz							
9042.8 MHz (Image)		-86	-130	-65	dBc	Pass	
9642.8 MHz (Image)		-88	-130	-65	dBc	Pass	
4982.1 MHz (Out-of-Band)		-88	-130	-80	dBc	Pass	
9342.8 MHz (Multiple)		-98	-130	-65	dBc	Pass	
Center Frequency: 15.0 GHz							
15042.8 MHz (Image)		-82	-130	-65	dBc	Pass	
15642.8 MHz (Image)		-85	-130	-65	dBc	Pass	
18830.35 MHz (Multiple)		-85	-130	-65	dBc	Pass	
4151.75 MHz (Out-of-Band)		-96	-130	-80	dBc	Pass	
Center Frequency: 21.0 GHz							
21042.8 MHz (Image)		-81	-130	-65	dBc	Pass	
21642.8 MHz (Image)		-84	-130	-65	dBc	Pass	
21342.8 MHz (Multiple)		-84	-130	-65	dBc	Pass	
5008.95 MHz (Out-of-Band)		-93	-130	-80	dBc	Pass	
SPURIOUS RESPONSES							
Third Order Intermodulation (50 kHz signal separation)							
1 kHz RBW (except as noted)							
300 MHz		24.6	12.5	40.0	dBm	Pass	
300 MHz (30 Hz RBW)		28.9	12.5	40.0	dBm	Pass	
5 GHz		19.9	11.0	40.0	dBm	Pass	
8 GHz		14.1	7.5	40.0	dBm	Pass	
Second Harmonic Intercept							
-20 dBm Mixer Level							
300 MHz		56.6	35.0	385.0	dBm	Pass	
900 MHz		42.4	45.0	495.0	dBm	Fail	0.00
-10 dBm Mixer Level							

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
1.55 GHz		91.4	75.0	825.0	dBm	Pass	
3.1 GHz		97.6	90.0	990.0	dBm	Pass	
GAIN COMPRESSION							
30 kHz RBW (except as noted)							
50 MHz		-0.4	-1.0	1.0	dB	Pass	
50 MHz (30 Hz RBW)		0.1	-1.0	1.0	dB	Pass	
1400 MHz		-0.2	-1.0	1.0	dB	Pass	
2500 MHz		0.1	-1.0	1.0	dB	Pass	
4400 MHz		-0.3	-1.0	1.0	dB	Pass	
7600 MHz		-0.5	-1.0	1.0	dB	Pass	
14000 MHz		-0.5	-1.0	1.0	dB	Pass	
DISPLAYED AVERAGE NOISE LEVEL							
1 kHz RBW, Preamp Off							
10 MHz to 1 GHz		-119.7	-216.0	-116.0	dBm	Pass	
1 GHz to 2 GHz		-118.7	-216.0	-116.0	dBm	Pass	
2 GHz to 3 GHz		-118.3	-212.0	-112.0	dBm	Pass	
3 GHz to 6 GHz		-118.1	-212.0	-112.0	dBm	Pass	
6 GHz to 12 GHz		-117.3	-211.0	-111.0	dBm	Pass	
12 GHz to 22 GHz		-113.8	-207.0	-107.0	dBm	Pass	
22 GHz to 26.5 GHz		-111.1	-206.0	-106.0	dBm	Pass	
1 kHz RBW, Preamp On (20 to 30°C)							
10 MHz to 1 GHz		-135.0	-232.0	-132.0	dBm	Pass	
1 GHz to 2 GHz		-133.9	-232.0	-132.0	dBm	Pass	
2 GHz to 3 GHz		-130.7	-230.0	-130.0	dBm	Pass	
10 Hz RBW, Preamp Off							
10 MHz to 1 GHz		-154.4	-235.0	-135.0	dBm	Pass	
1 GHz to 2 GHz		-152.9	-235.0	-135.0	dBm	Pass	
2 GHz to 3 GHz		-150.0	-231.0	-131.0	dBm	Pass	
3 GHz to 6 GHz		-136.6	-231.0	-131.0	dBm	Pass	
6 GHz to 12 GHz		-136.2	-230.0	-130.0	dBm	Pass	
12 GHz to 22 GHz		-132.5	-226.0	-126.0	dBm	Pass	
22 GHz to 26.5 GHz		-131.0	-225.0	-125.0	dBm	Pass	
10 Hz RBW, Preamp On (20 to 30°C)							
10 MHz to 1 GHz		-154.1	-251.0	-151.0	dBm	Pass	
1 GHz to 2 GHz		-153.2	-251.0	-151.0	dBm	Pass	
2 GHz to 3 GHz		-150.4	-249.0	-149.0	dBm	Pass	0.00
RESIDUAL RESPONSES							
150 kHz to 1 MHz		-97.0	-190.0	-90.0	dBm	Pass	
1 MHz to 6.7 GHz		-99.6	-190.0	-90.0	dBm	Pass	
TRACKING GENERATOR							
Not Tested							
TIME-GATED SPECTRUM ANALYSIS							
Not Tested							
FIRST LO OUTPUT POWER ACCURACY							
First LO Frequency							
3.0 GHz		16.320	15.500	17.000	dBm	Pass	
3.3 GHz		16.326	15.500	17.000	dBm	Pass	
3.7 GHz		16.335	15.500	17.000	dBm	Pass	
3.9 GHz		16.340	15.500	17.000	dBm	Pass	
4.1 GHz		16.341	15.500	17.000	dBm	Pass	
4.5 GHz		16.345	15.500	17.000	dBm	Pass	
4.9 GHz		16.354	15.500	17.000	dBm	Pass	

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
5.3 GHz		16.359	15.500	17.000	dBm	Pass	
5.7 GHz		16.364	15.500	17.000	dBm	Pass	
5.9 GHz		16.368	15.500	17.000	dBm	Pass	
6.1 GHz		16.368	15.500	17.000	dBm	Pass	
6.5 GHz		16.373	13.000	17.500	dBm	Pass	
6.9 GHz		16.377	13.000	17.500	dBm	Pass	
7.1 GHz		16.377	13.000	17.500	dBm	Pass	
IF INPUT ACCURACY							
Amplitude (20° to 30°C)		0.18	-1.00	1.00	dB	Pass	

***** End of Certificate *****