Report of Calibration

Fluke Calibration, test.
6920 Seaway Blvd.
Everett, WA 98203-5800

UNIT UNDER TEST:	Agilent 8564E Spectrum Analyzer	TEST RESULT:	FAIL
SERIAL NUMBER:	sample	PERFORMED ON:	01 April 2012
ASSET NUMBER:	sample-8564E	DATA TYPE:	
PROCEDURE NAME:	AT 8564EC: (2 yr) VER /9640-LPN,E4418,LFCTR,LO,SWPG	TEMPERATURE:	73.00 °C
PROCEDURE REV.:	$Revision: $	HUMIDITY:	40 %
CALIBRATED BY:	Fluke Calibration		
P.O. NUMBER:			
CUSTOMER:			

Fluke Calibration, test. 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).

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: TAR mode, 2 hours and 6 minutes

Standards Used

Asset #	Description	Cal Date	Due Date
F23520	Fluke 9640A-LPNX RF Reference Source	11/3/2011	11/2/2012
F23520-50	Fluke 9640A-50 Leveling Head	11/3/2011	11/2/2012
sample_MG3694C	Anritsu MG3694C Signal Generator 40 GHz	3/27/2012	3/27/2013
sample-81	Fluke 81 50 MHz Function Generator	3/2/2012	3/1/2013
sample-8482A	HP 8482A Power Sensor 4.2 GHz	12/7/2011	12/7/2012
sample-8487A	HP 8487A Power Sensor 50 GHz	3/27/2012	3/27/2013
sample-E4419A	Agilent E4419A Power Meter	2/15/2012	2/15/2013
sample-FCA3000	Tektronix FCA3000 Timer/Counter/Analyzer	3/30/2012	3/29/2013
sample-MG3697C	Anritsu MG3697C Signal Generator 67 GHz	3/27/2012	3/27/2013

Test Results

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

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UUT IDENTIFICATION
 Serial Number:   4103A00443
 Firmware Level:  990108

INSTALLED UUT OPTIONS
 006 (30 Hz Frequency Coverage)
 007 (Fast Time Domain Sweeps)

10 MHz REFERENCE OUTPUT ACCURACY
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Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
10 MHz		10.00000029	9.99996000	10.00004000	MHz	Pass	
FAST SWEEP TIME ACCURACY							
300 MHz		300.0000	299.7000	300.3000	MHz	Pass	
CALIBRATOR AMPLITUDE ACCURACY							
-10 dBm		-9.973	-10.300	-9.700	dBm	Pass	
DISPLAYED AVERAGE NOISE LEVEL							
30 Hz		-120.7	-150.0	-90.0	dBm	Pass	
1 kHz		-138.7	-150.0	-105.0	dBm	Pass	
10 kHz		-143.0	-170.0	-120.0	dBm	Pass	
100 kHz		-144.3	-170.0	-120.0	dBm	Pass	
1 MHz to 10 MHz		-153.8	-170.0	-140.0	dBm	Pass	
10 MHz to 2.9 GHz		-152.2	-170.0	-145.0	dBm	Pass	
2.9 GHz to 6.46 GHz		-145.1	-170.0	-147.0	dBm	Fail	0.00
6.46 GHz to 13.2 GHz		-145.2	-170.0	-143.0	dBm	Pass	
13.2 GHz to 22.0 GHz		-146.2	-170.0	-140.0	dBm	Pass	
22.0 GHz to 26.8 GHz		-142.2	-170.0	-136.0	dBm	Pass	
26.8 GHz to 31.15 GHz		-135.6	-170.0	-139.0	dBm	Fail	0.00
31.15 GHz to 40 GHz		-134.8	-170.0	-130.0	dBm	Pass	
RESOLUTION BW SWITCHING and IF ALIGNMENT UNCERTAINTY							
2 MHz		-0.14	-0.50	0.50	dB	Pass	
1 MHz		-0.09	-0.50	0.50	dB	Pass	
100 kHz		-0.05	-0.50	0.50	dB	Pass	
30 kHz		0.16	-0.50	0.50	dB	Pass	
10 kHz		0.25	-0.50	0.50	dB	Pass	
3 kHz		0.18	-0.50	0.50	dB	Pass	
1 kHz		0.18	-0.50	0.50	dB	Pass	
300 Hz		0.16	-1.00	1.00	dB	Pass	
100 Hz		0.21	-0.50	0.50	dB	Pass	
30 Hz		0.25	-0.50	0.50	dB	Pass	
10 Hz		0.25	-0.50	0.50	dB	Pass	
3 Hz		0.21	-0.50	0.50	dB	Pass	
1 Hz		0.25	-0.50	0.50	dB	Pass	
RESOLUTION BANDWIDTH ACCURACY and SELECTIVITY							
Resolution Bandwidth Accuracy (-3 dB)							
2 MHz		2.27	1.50	3.00	MHz	Pass	
1 MHz		1.01	0.75	1.25	MHz	Pass	
300 kHz		291.67	270.00	330.00	kHz	Pass	
100 kHz		100.33	90.00	110.00	kHz	Pass	
30 kHz		30.75	27.00	33.00	kHz	Pass	
10 kHz		10.47	9.00	11.00	kHz	Pass	
3 kHz		3.13	2.70	3.30	kHz	Pass	
1 kHz		1.05	0.90	1.10	kHz	Pass	
300 Hz		302.99	270.00	330.00	Hz	Pass	
Resolution BW Selectivity Ratio (Spec < 15.0:1)							
2 MHz: 4.5:1						Pass	
1 MHz: 7.7:1						Pass	
300 kHz: 12.0:1						Pass	
100 kHz: 11.5:1						Pass	
30 kHz: 12.1:1						Pass	
10 kHz: 9.4:1						Pass	
3 kHz: 11.2:1						Pass	
1 kHz: 12.3:1						Pass	
300 Hz: 12.7:1						Pass	
INPUT ATTENUATOR SWITCHING UNCERTAINTY							

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
Cumulative Accuracy at 50 MHz							
20 dB ATTEN		0.01	-0.60	0.60	dB	Pass	
30 dB ATTEN		0.03	-1.20	1.20	dB	Pass	
40 dB ATTEN		-0.24	-1.80	1.80	dB	Pass	
50 dB ATTEN		-0.20	-1.80	1.80	dB	Pass	
60 dB ATTEN		-0.20	-1.80	1.80	dB	Pass	
70 dB ATTEN		-0.15	-1.80	1.80	dB	Pass	
Incremental Accuracy at 50 MHz							
20 dB ATTEN		0.01	-0.60	0.60	dB	Pass	
30 dB ATTEN		0.02	-0.60	0.60	dB	Pass	
40 dB ATTEN		-0.27	-0.60	0.60	dB	Pass	
50 dB ATTEN		0.04	-0.60	0.60	dB	Pass	
60 dB ATTEN		0.00	-0.60	0.60	dB	Pass	
70 dB ATTEN		0.05	-0.60	0.60	dB	Pass	
Cumulative Accuracy at 2.9 GHz							
20 dB ATTEN		0.01	-0.60	0.60	dB	Pass	
30 dB ATTEN		0.02	-1.20	1.20	dB	Pass	
40 dB ATTEN		-0.20	-1.80	1.80	dB	Pass	
50 dB ATTEN		-0.23	-1.80	1.80	dB	Pass	
60 dB ATTEN		-0.25	-1.80	1.80	dB	Pass	
70 dB ATTEN		-0.20	-1.80	1.80	dB	Pass	
Incremental Accuracy at 2.9 GHz							
20 dB ATTEN		0.01	-0.60	0.60	dB	Pass	1.81
30 dB ATTEN		0.01	-0.60	0.60	dB	Pass	1.81
40 dB ATTEN		-0.22	-0.60	0.60	dB	Pass	1.97
50 dB ATTEN		-0.03	-0.60	0.60	dB	Pass	2.06
60 dB ATTEN		-0.02	-0.60	0.60	dB	Pass	2.06
70 dB ATTEN		0.05	-0.60	0.60	dB	Pass	1.83
IF GAIN UNCERTAINTY							
Log Mode, 10 dB steps							
-10 dBm REF LVL		-0.10	-1.00	1.00	dB	Pass	
-20 dBm REF LVL		-0.14	-1.00	1.00	dB	Pass	
-30 dBm REF LVL		-0.25	-1.00	1.00	dB	Pass	
-40 dBm REF LVL		-0.25	-1.00	1.00	dB	Pass	
-50 dBm REF LVL		-0.22	-1.00	1.00	dB	Pass	
-60 dBm REF LVL		-0.32	-1.00	1.00	dB	Pass	
-70 dBm REF LVL		-0.37	-1.00	1.00	dB	Pass	
-80 dBm REF LVL		-0.44	-1.00	1.00	dB	Pass	
Log Mode, 1 dB steps							
-1 dBm REF LVL		-0.03	-1.00	1.00	dB	Pass	
-2 dBm REF LVL		-0.02	-1.00	1.00	dB	Pass	
-3 dBm REF LVL		-0.02	-1.00	1.00	dB	Pass	
-4 dBm REF LVL		-0.05	-1.00	1.00	dB	Pass	
-5 dBm REF LVL		-0.03	-1.00	1.00	dB	Pass	
-6 dBm REF LVL		-0.07	-1.00	1.00	dB	Pass	
-7 dBm REF LVL		-0.05	-1.00	1.00	dB	Pass	
-8 dBm REF LVL		-0.08	-1.00	1.00	dB	Pass	
-9 dBm REF LVL		-0.10	-1.00	1.00	dB	Pass	
-10 dBm REF LVL		-0.10	-1.00	1.00	dB	Pass	
-11 dBm REF LVL		-0.10	-1.00	1.00	dB	Pass	
-12 dBm REF LVL		-0.13	-1.00	1.00	dB	Pass	
Linear Mode, 10 dB steps							
-10 dBm REF LVL		-0.11	-1.00	1.00	dB	Pass	
-20 dBm REF LVL		-0.13	-1.00	1.00	dB	Pass	

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
-30 dBm REF LVL		-0.26	-1.00	1.00	dB	Pass	
-40 dBm REF LVL		-0.24	-1.00	1.00	dB	Pass	
-50 dBm REF LVL		-0.22	-1.00	1.00	dB	Pass	
-60 dBm REF LVL		-0.36	-1.00	1.00	dB	Pass	
-70 dBm REF LVL		-0.43	-1.00	1.00	dB	Pass	
-80 dBm REF LVL		-0.49	-1.00	1.00	dB	Pass	
SCALE FIDELITY (dB from REF LVL)							
Cumulative, 10 dB/Div, RES BW >= 300 Hz							
-6 dB		0.00	-0.60	0.60	dB	Pass	
-12 dB		-0.17	-0.85	0.85	dB	Pass	
-18 dB		-0.34	-0.85	0.85	dB	Pass	
-24 dB		-0.34	-0.85	0.85	dB	Pass	
-30 dB		-0.34	-0.85	0.85	dB	Pass	
-36 dB		-0.34	-0.85	0.85	dB	Pass	
-42 dB		-0.34	-0.85	0.85	dB	Pass	
-48 dB		-0.50	-0.85	0.85	dB	Pass	
-54 dB		-0.50	-0.85	0.85	dB	Pass	
-60 dB		-0.50	-0.85	0.85	dB	Pass	
-66 dB		-0.50	-0.85	0.85	dB	Pass	
-72 dB		-0.50	-0.85	0.85	dB	Pass	
-78 dB		-0.50	-0.85	0.85	dB	Pass	
-84 dB		-0.34	-0.85	0.85	dB	Pass	
-90 dB		-0.34	-0.85	0.85	dB	Pass	
Incremental, 10 dB/DIV, Res BW >= 300 Hz							
-12 dB		-0.01	-0.10	0.10	dB	Pass	2.51
-18 dB		-0.03	-0.10	0.10	dB	Pass	2.50
-24 dB		-0.01	-0.10	0.10	dB	Pass	2.51
-30 dB		0.00	-0.10	0.10	dB	Pass	2.52
-36 dB		0.00	-0.10	0.10	dB	Pass	2.52
-42 dB		0.00	-0.10	0.10	dB	Pass	2.52
-48 dB		-0.01	-0.10	0.10	dB	Pass	2.51
-54 dB		-0.01	-0.10	0.10	dB	Pass	2.51
-60 dB		0.00	-0.10	0.10	dB	Pass	2.52
-66 dB		0.00	-0.10	0.10	dB	Pass	2.52
-72 dB		0.00	-0.10	0.10	dB	Pass	2.01
-78 dB		0.00	-0.10	0.10	dB	Pass	2.01
-84 dB		0.01	-0.10	0.10	dB	Pass	1.97
-90 dB		0.01	-0.10	0.10	dB	Pass	1.97
Cumulative, 10 dB/Div, RES BW <= 100 Hz							
-6 dB		0.00	-0.60	0.60	dB	Pass	
-12 dB		-0.17	-0.85	0.85	dB	Pass	
-18 dB		-0.17	-0.85	0.85	dB	Pass	
-24 dB		-0.17	-0.85	0.85	dB	Pass	
-30 dB		-0.17	-0.85	0.85	dB	Pass	
-36 dB		-0.17	-0.85	0.85	dB	Pass	
-42 dB		-0.17	-0.85	0.85	dB	Pass	
-48 dB		-0.17	-0.85	0.85	dB	Pass	
-54 dB		-0.17	-0.85	0.85	dB	Pass	
-60 dB		0.00	-0.85	0.85	dB	Pass	
-66 dB		-0.17	-0.85	0.85	dB	Pass	
-72 dB		-0.17	-0.85	0.85	dB	Pass	
-78 dB		-0.17	-0.85	0.85	dB	Pass	
-84 dB		-0.17	-0.85	0.85	dB	Pass	
-90 dB		-0.17	-0.85	0.85	dB	Pass	
-94 dB		0.00	-1.50	1.50	dB	Pass	
-98 dB		0.17	-1.50	1.50	dB	Pass	
Incremental, 10 dB/Div, RES BW <= 100 Hz							

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
-12 dB		-0.03	-0.20	0.20	dB	Pass	
-18 dB		-0.03	-0.20	0.20	dB	Pass	
-24 dB		0.00	-0.20	0.20	dB	Pass	
-30 dB		0.00	-0.20	0.20	dB	Pass	
-36 dB		0.00	-0.20	0.20	dB	Pass	
-42 dB		0.00	-0.20	0.20	dB	Pass	
-48 dB		0.00	-0.20	0.20	dB	Pass	
-54 dB		0.00	-0.20	0.20	dB	Pass	
-60 dB		0.03	-0.20	0.20	dB	Pass	
-66 dB		0.00	-0.20	0.20	dB	Pass	
-72 dB		-0.03	-0.20	0.20	dB	Pass	
-78 dB		0.00	-0.20	0.20	dB	Pass	
-84 dB		0.00	-0.20	0.20	dB	Pass	
-90 dB		0.00	-0.20	0.20	dB	Pass	
Cumulative, 2 dB/Div							
-2 dB		0.03	-0.20	0.20	dB	Pass	
-4 dB		0.03	-0.40	0.40	dB	Pass	
-6 dB		0.03	-0.60	0.60	dB	Pass	
-8 dB		0.00	-0.80	0.80	dB	Pass	
-10 dB		0.00	-0.85	0.85	dB	Pass	
-12 dB		-0.03	-0.85	0.85	dB	Pass	
-14 dB		-0.10	-0.85	0.85	dB	Pass	
-16 dB		-0.13	-0.85	0.85	dB	Pass	
-18 dB		-0.17	-0.85	0.85	dB	Pass	
Incremental, 2 dB/Div							
-2 dB		0.02	-0.10	0.10	dB	Pass	2.47
-4 dB		0.00	-0.10	0.10	dB	Pass	2.52
-6 dB		0.00	-0.10	0.10	dB	Pass	2.52
-8 dB		-0.02	-0.10	0.10	dB	Pass	2.51
-10 dB		0.00	-0.10	0.10	dB	Pass	2.52
-12 dB		-0.02	-0.10	0.10	dB	Pass	2.51
-14 dB		-0.04	-0.10	0.10	dB	Pass	2.50
-16 dB		-0.02	-0.10	0.10	dB	Pass	2.51
-18 dB		-0.02	-0.10	0.10	dB	Pass	2.51
Linear							
-2 dB		0.02	-0.33	0.32	dB	Pass	
-4 dB		-0.02	-0.42	0.40	dB	Pass	
-6 dB		-0.03	-0.54	0.50	dB	Pass	
-8 dB		-0.08	-0.68	0.63	dB	Pass	
-10 dB		-0.09	-0.87	0.79	dB	Pass	
-12 dB		-0.11	-1.10	0.98	dB	Pass	
-14 dB		-0.14	-1.42	1.22	dB	Pass	
-16 dB		-0.11	-1.82	1.51	dB	Pass	
-18 dB		-0.07	-2.36	1.86	dB	Pass	
RESIDUAL FM							
0 Hz		0.2	0.0	1.0	Hz	Pass	
NOISE SIDEBANDS (Offset from 1 GHz)							
+100 Hz		-82.4	-150.0	-88.0	dBc/H	Fail	0.00
-100 Hz		-83.7	-150.0	-88.0	dBc/H	Fail	0.00
+1 kHz		-103.4	-150.0	-97.0	dBc/H	Pass	
-1 kHz		-103.2	-150.0	-97.0	dBc/H	Pass	
+10 kHz		-116.4	-150.0	-113.0	dBc/H	Pass	
-10 kHz		-116.0	-150.0	-113.0	dBc/H	Pass	
+30 kHz		-115.5	-150.0	-113.0	dBc/H	Pass	
-30 kHz		-116.5	-150.0	-113.0	dBc/H	Pass	
+100 kHz		-117.9	-150.0	-117.0	dBc/H	Pass	
-100 kHz		-116.5	-150.0	-117.0	dBc/H	Fail	0.00

Test Description	True Value	Test Result	Lower limit	Upper limit	Units	TUR
IMAGE, MULTIPLE, & OUT-OF-RANGE RESPONSES						
2 GHz Center Frequency						
2021.4 MHz		-91.3	-110.0	-80.0	dBc	Pass
2621.4 MHz		-91.3	-110.0	-80.0	dBc	Pass
2321.4 MHz		-91.5	-110.0	-80.0	dBc	Pass
2600.0 MHz		-91.3	-110.0	-80.0	dBc	Pass
7910.7 MHz		-91.3	-110.0	-80.0	dBc	Pass
9821.4 MHz		-91.5	-110.0	-80.0	dBc	Pass
4 GHz Center Frequency						
4021.4 MHz		-89.5	-110.0	-80.0	dBc	Pass
4621.4 MHz		-90.5	-110.0	-80.0	dBc	Pass
4321.4 MHz		-90.8	-110.0	-80.0	dBc	Pass
4600.0 MHz		-90.8	-110.0	-80.0	dBc	Pass
8310.7 MHz		-91.0	-110.0	-80.0	dBc	Pass
8932.1 MHz		-90.5	-110.0	-80.0	dBc	Pass
9 GHz Center Frequency						
9021.40 MHz		-89.2	-110.0	-80.0	dBc	Pass
9621.40 MHz		-90.3	-110.0	-80.0	dBc	Pass
9321.40 MHz		-90.0	-110.0	-80.0	dBc	Pass
9600.00 MHz		-90.0	-110.0	-80.0	dBc	Pass
18310.70 MHz		-90.5	-110.0	-80.0	dBc	Pass
18932.10 MHz		-90.3	-110.0	-80.0	dBc	Pass
15 GHz Center Frequency						
15021.40 MHz		-88.2	-110.0	-80.0	dBc	Pass
15621.40 MHz		-89.2	-110.0	-80.0	dBc	Pass
22655.35 MHz		-90.0	-110.0	-80.0	dBc	Pass
23276.75 MHz		-89.7	-110.0	-80.0	dBc	Pass
7344.65 MHz		-90.0	-110.0	-80.0	dBc	Pass
7966.05 MHz		-89.8	-110.0	-80.0	dBc	Pass
20 GHz Center Frequency						
20021.400 MHz		-86.8	-110.0	-80.0	dBc	Pass
20621.400 MHz		-89.8	-110.0	-80.0	dBc	Pass
15543.725 MHz		-90.3	-110.0	-80.0	dBc	Pass
25699.075 MHz		-89.8	-110.0	-80.0	dBc	Pass
9844.650 MHz		-90.0	-110.0	-80.0	dBc	Pass
10466.050 MHz		-90.5	-110.0	-80.0	dBc	Pass
29 GHz Center Frequency						
28378.600 MHz		-90.5	-110.0	-60.0	dBc	Pass
28978.600 MHz		-88.3	-110.0	-60.0	dBc	Pass
24450.925 MHz		-90.0	-110.0	-55.0	dBc	Pass
28700.000 MHz		-90.2	-110.0	-55.0	dBc	Pass
16455.350 MHz		-90.0	-110.0	-55.0	dBc	Pass
35272.325 MHz		-90.2	-110.0	-55.0	dBc	Pass
35 GHz Center Frequency						
35021.400 MHz		-88.0	-110.0	-60.0	dBc	Pass
35621.400 MHz		-89.5	-110.0	-60.0	dBc	Pass
33093.725 MHz		-86.0	-110.0	-55.0	dBc	Pass
35321.400 MHz		-89.7	-110.0	-55.0	dBc	Pass
8744.538 MHz		-88.8	-110.0	-55.0	dBc	Pass
15544.650 MHz		-88.2	-110.0	-55.0	dBc	Pass
FREQUENCY READOUT / FREQUENCY COUNT MARKER ACCURACY						
Frequency Readout Accuracy						

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
1.5 GHz Center Frequency							
1 MHz Span		1.500002	1.499988	1.500012	GHz	Pass	
10 MHz Span		1.50005	1.49948	1.50052	GHz	Pass	
20 MHz Span		1.50010	1.49895	1.50105	GHz	Pass	
50 MHz Span		1.50008	1.49745	1.50255	GHz	Pass	
100 MHz Span		1.5002	1.4948	1.5052	GHz	Pass	
1 GHz Span		1.500	1.450	1.550	GHz	Pass	
4 GHz Center Frequency							
1 MHz Span		4.000000	3.999988	4.000012	GHz	Pass	
10 MHz Span		4.00002	3.99948	4.00052	GHz	Pass	
20 MHz Span		4.00003	3.99895	4.00105	GHz	Pass	
50 MHz Span		4.00008	3.99745	4.00255	GHz	Pass	
100 MHz Span		4.0000	3.9948	4.0052	GHz	Pass	
1 GHz Span		4.000	3.950	4.050	GHz	Pass	
9 GHz Center Frequency							
1 MHz Span		9.000000	8.999988	9.000012	GHz	Pass	
10 MHz Span		9.00003	8.99948	9.00052	GHz	Pass	
20 MHz Span		9.00007	8.99895	9.00105	GHz	Pass	
50 MHz Span		9.00008	8.99745	9.00255	GHz	Pass	
100 MHz Span		9.0002	8.9948	9.0052	GHz	Pass	
1 GHz Span		9.002	8.950	9.050	GHz	Pass	
16 GHz Center Frequency							
1 MHz Span		16.000000	15.999988	16.000012	GHz	Pass	
10 MHz Span		16.00003	15.99948	16.00052	GHz	Pass	
20 MHz Span		16.00007	15.99895	16.00105	GHz	Pass	
50 MHz Span		16.00017	15.99745	16.00255	GHz	Pass	
100 MHz Span		16.0000	15.9948	16.0052	GHz	Pass	
1 GHz Span		16.000	15.950	16.050	GHz	Pass	
21 GHz Center Frequency							
1 MHz Span		21.000000	20.999988	21.000012	GHz	Pass	
10 MHz Span		21.00005	20.99948	21.00052	GHz	Pass	
20 MHz Span		21.00010	20.99895	21.00105	GHz	Pass	
50 MHz Span		21.00025	20.99745	21.00255	GHz	Pass	
100 MHz Span		21.0000	20.9948	21.0052	GHz	Pass	
1 GHz Span		21.000	20.950	21.050	GHz	Pass	
29 GHz Center Frequency							
1 MHz Span		29.000002	28.999988	29.000012	GHz	Pass	
10 MHz Span		29.00003	28.99948	29.00052	GHz	Pass	
20 MHz Span		29.00003	28.99895	29.00105	GHz	Pass	
50 MHz Span		29.00017	28.99745	29.00255	GHz	Pass	
100 MHz Span		29.0000	28.9948	29.0052	GHz	Pass	
1 GHz Span		29.000	28.950	29.050	GHz	Pass	
35 GHz Center Frequency							
1 MHz Span		35.000000	34.999988	35.000012	GHz	Pass	
10 MHz Span		35.00000	34.99948	35.00052	GHz	Pass	
20 MHz Span		35.00010	34.99895	35.00105	GHz	Pass	
50 MHz Span		35.00017	34.99745	35.00255	GHz	Pass	
100 MHz Span		35.0003	34.9948	35.0052	GHz	Pass	
1 GHz Span		35.002	34.950	35.050	GHz	Pass	
Frequency Count Marker Accuracy (1 MHz Span)							
1.5 GHz		1.500000001	1.499999997	1.500000003	GHz	Pass	3.00
4.0 GHz		4.000000000	3.999999997	4.000000003	GHz	Pass	3.00
9.0 GHz		9.000000000	8.999999995	9.000000005	GHz	Pass	2.50
16.0 GHz		15.999999999	15.999999991	16.000000009	GHz	Pass	3.00

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
21.0 GHz		21.000000001	20.999999991	21.000000009	GHz	Pass	2.25
29.0 GHz		28.999999998	28.999999991	29.000000009	GHz	Pass	1.50
35.0 GHz		34.999999998	34.999999983	35.000000017	GHz	Pass	2.83
PULSE DIGITIZATION UNCERTAINTY							
LOG, 1 MHz RES BW		0.75	-1.25	1.25	dB	Pass	
LOG, 2 MHz RES BW		0.91	-3.00	3.00	dB	Pass	
LINEAR, 1 MHz RES BW		1.4	-4.0	4.0	%	Pass	
LINEAR, 2 MHz RES BW		2.0	-12.0	12.0	%	Pass	
SECOND HARMONIC DISTORTION							
SHD (< 1.45 GHz)		-88.5	-130.0	-79.0	dBc	Pass	
SHD (1.5 GHz)		-106.8	-130.0	-85.0	dBc	Pass	
SHD (> 2.0 GHz)		-97.0	-130.0	-90.0	dBc	Pass	
FREQUENCY RESPONSE							
Band 0: < 2.9 GHz							
Maximum (@ 200 Hz)		0.28	-1.80	1.80	dB	Pass	
Minimum (@ 10 MHz)		-0.12	-1.80	1.80	dB	Pass	
Peak-to-Peak		0.40	-2.00	2.00	dB	Pass	
Peak-to-Peak (Sub Band)		0.40	-1.60	1.60	dB	Pass	
Band 1: 2.95 GHz to 6.45 GHz							
Maximum (@ 5.55 GHz)		-0.27	-1.80	1.80	dB	Pass	2.39
Minimum (@ 3.55 GHz)		-0.57	-1.80	1.80	dB	Pass	2.23
Peak-to-Peak		0.30	-2.80	2.80	dB	Pass	1.71
Band 2: 6.5 GHz to 13.2 GHz							
Maximum (@ 8.90 GHz)		-0.22	-2.80	2.80	dB	Pass	
Minimum (@ 12.10 GHz)		-1.15	-2.80	2.80	dB	Pass	3.44
Peak-to-Peak		0.93	-4.40	4.40	dB	Pass	2.65
Band 3, <= 22 GHz							
Maximum (@ 19.20 GHz)		0.04	-3.50	3.50	dB	Pass	2.65
Minimum (@ 13.80 GHz)		-1.14	-3.50	3.50	dB	Pass	
Peak-to-Peak		1.18	-5.00	5.00	dB	Pass	2.94
Band 3, > 22 GHz							
Maximum (@ 24.20 GHz)		-0.43	-4.00	4.00	dB	Pass	
Minimum (@ 22.20 GHz)		-0.82	-4.00	4.00	dB	Pass	
Peak-to-Peak		0.39	-4.40	4.40	dB	Pass	2.24
Band 4: 26.9 GHz to 31.1 GHz							
Maximum (@ 29.90 GHz)		-0.27	-3.00	3.00	dB	Pass	3.23
Minimum (@ 30.20 GHz)		-1.06	-3.00	3.00	dB	Pass	2.69
Peak-to-Peak		0.80	-5.80	5.80	dB	Pass	2.04
Band 5: 31.2 GHz to 40 GHz							
Maximum (@ 32.40 GHz)		-0.11	-3.20	3.20	dB	Pass	3.66
Minimum (@ 34.00 GHz)		-1.26	-3.20	3.20	dB	Pass	2.81
Peak-to-Peak		1.15	-4.80	4.80	dB	Pass	2.01
Band Switching Uncertainty							
Band 0 to 1		0.85	0.00	3.20	dB	Pass	2.90
Band 0 to 2		1.43	0.00	4.00	dB	Pass	3.82
Band 0 to 3, <22 GHz		1.42	0.00	4.30	dB	Pass	3.78
Band 0 to 3, >22 GHz		1.10	0.00	4.00	dB	Pass	3.37
Band 0 to 4		1.34	0.00	4.70	dB	Pass	3.09
Band 0 to 5		1.54	0.00	4.20	dB	Pass	3.03
Band 1 to 2		0.87	0.00	4.60	dB	Pass	3.15
Band 1 to 3, <22 GHz		0.87	0.00	4.90	dB	Pass	3.12

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
Band 1 to 3, >22 GHz		0.55	0.00	4.60	dB	Pass	2.80
Band 1 to 4		0.79	0.00	5.30	dB	Pass	2.58
Band 1 to 5		0.99	0.00	4.80	dB	Pass	2.56
Band 2 to 3, <22 GHz		0.92	0.00	5.70	dB	Pass	3.41
Band 2 to 3, >22 GHz		0.60	0.00	5.40	dB	Pass	3.09
Band 2 to 4		0.84	0.00	6.10	dB	Pass	2.80
Band 2 to 5		1.04	0.00	5.60	dB	Pass	2.81
Band 3: <22 to >22 GHz		0.86	0.00	5.70	dB	Pass	3.22
Band 3, <22 to 4		1.10	0.00	6.40	dB	Pass	2.92
Band 3, <22 to 5		1.30	0.00	5.90	dB	Pass	2.95
Band 3, >22 GHz to 4		0.63	0.00	6.10	dB	Pass	2.57
Band 3, >22 GHz to 5		0.83	0.00	5.60	dB	Pass	2.58
Band 4 to 5		0.99	0.00	6.30	dB	Pass	2.37
FREQUENCY SPAN ACCURACY							
1 kHz		1.000	0.990	1.010	kHz	Pass	
2 kHz		2.000	1.980	2.020	kHz	Pass	
5 kHz		5.000	4.950	5.050	kHz	Pass	
10 kHz		10.00	9.90	10.10	kHz	Pass	
20 kHz		20.04	19.80	20.20	kHz	Pass	
50 kHz		50.11	49.50	50.50	kHz	Pass	
100 kHz		100.2	99.0	101.0	kHz	Pass	
200 kHz		200.0	198.0	202.0	kHz	Pass	
500 kHz		500.0	495.0	505.0	kHz	Pass	
1 MHz		0.998	0.990	1.010	MHz	Pass	
2 MHz		2.000	1.980	2.020	MHz	Pass	
5 MHz		5.000	4.750	5.250	MHz	Pass	
10 MHz		10.00	9.50	10.50	MHz	Pass	
20 MHz		20.00	19.00	21.00	MHz	Pass	
50 MHz		50.00	47.50	52.50	MHz	Pass	
100 MHz		99.8	95.0	105.0	MHz	Pass	
200 MHz		200.0	190.0	210.0	MHz	Pass	
500 MHz		500.0	475.0	525.0	MHz	Pass	
1 GHz		1.002	0.950	1.050	GHz	Pass	
2 GHz		2.000	1.900	2.100	GHz	Pass	
THIRD ORDER INTERMODULATION DISTORTION							
45 MHz		-88.5	-115.0	-82.0	dBc	Pass	
5 GHz		-87.3	-115.0	-90.0	dBc	Fail	0.00
8 GHz		-84.5	-115.0	-75.0	dBc	Pass	
GAIN COMPRESSION							
2 GHz		-0.1	-1.0	1.0	dB	Pass	
4 GHz		-0.0	-1.0	1.0	dB	Pass	
7 GHz		-0.3	-1.0	1.0	dB	Pass	
1ST LO OUTPUT AMPLITUDE (1st LO Frequency)							
3.0 GHz		17.477	14.500	18.500	dBm	Pass	
3.2 GHz		17.385	14.500	18.500	dBm	Pass	
3.4 GHz		16.725	14.500	18.500	dBm	Pass	
3.6 GHz		16.495	14.500	18.500	dBm	Pass	
3.8 GHz		16.491	14.500	18.500	dBm	Pass	
4.0 GHz		16.469	14.500	18.500	dBm	Pass	
4.2 GHz		16.419	14.500	18.500	dBm	Pass	
4.4 GHz		16.296	14.500	18.500	dBm	Pass	
4.6 GHz		16.475	14.500	18.500	dBm	Pass	
4.8 GHz		16.564	14.500	18.500	dBm	Pass	
5.0 GHz		16.643	14.500	18.500	dBm	Pass	
5.2 GHz		16.695	14.500	18.500	dBm	Pass	
5.4 GHz		16.751	14.500	18.500	dBm	Pass	
5.6 GHz		16.652	14.500	18.500	dBm	Pass	
5.8 GHz		16.708	14.500	18.500	dBm	Pass	

Test Results

Test Description	True Value	Test Result	Lower limit	Upper limit	Units		TUR
6.0 GHz		16.361	14.500	18.500	dBm	Pass	
6.2 GHz		16.165	14.500	18.500	dBm	Pass	
6.4 GHz		16.125	14.500	18.500	dBm	Pass	
6.6 GHz		15.820	14.500	18.500	dBm	Pass	
6.8 GHz		15.743	14.500	18.500	dBm	Pass	
SWEEP TIME ACCURACY							
30 ms		30.27	29.70	30.30	ms	Pass	
50 ms		50.17	49.50	50.50	ms	Pass	
100 ms		100.29	99.00	101.00	ms	Pass	
200 ms		201.04	198.00	202.00	ms	Pass	
500 ms		501.96	495.00	505.00	ms	Pass	
1 s		1.00	0.99	1.01	s	Pass	
2 s		2.01	1.98	2.02	s	Pass	
5 s		5.02	4.95	5.05	s	Pass	
10 s		10.03	9.90	10.10	s	Pass	
20 s		20.07	19.80	20.20	s	Pass	
50 s		50.17	49.50	50.50	s	Pass	
100 s		100.24	99.00	101.00	s	Pass	
RESIDUAL RESPONSES							
200 kHz to 2.9 GHz		-95.0	-150.0	-90.0	dBm	Pass	
2.9 GHz to 6.5 GHz		-95.8	-150.0	-90.0	dBm	Pass	
IF INPUT AMPLITUDE ACCURACY							
-30 dBm		-30.5	-31.5	-28.5	dBm	Pass	
GATE DELAY ACCURACY AND GATE LENGTH ACCURACY							
Gate Delay Accuracy							
Minimum		2.74	2.00	4.00	µs	Pass	
Maximum		3.74	2.00	4.00	µs	Pass	
Gate Length Accuracy							
1 Âµs		1.01	0.00	2.00	µs	Pass	
65 ms		65.005698	64.999000	65.001000	ms	Fail	
DELAYED SWEEP ACCURACY							
1000 Âµs		1000.11	999.00	1001.00	µs	Pass	
2000 Âµs		1999.91	1999.00	2001.00	µs	Pass	
5000 Âµs		4999.93	4999.00	5001.00	µs	Pass	
10000 Âµs		9999.93	9999.00	10001.00	µs	Pass	
20000 Âµs		19999.79	19999.00	20001.00	µs	Pass	
50000 Âµs		50000.56	49999.00	50001.00	µs	Pass	
65000 Âµs		64999.98	64999.00	65001.00	µs	Pass	

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