Test Report

Product Name	IPC
Model No.	AR-V5403FLxxxx (x=0~9,A~Z or Space)
FCC ID.	ZJD-ARV5403FL

Applicant	Acrosser Technology Co., Ltd
Address	10F., No.12, Lane 609, Sec. 5, Chongsin Rd., Sanchong District, New Taipei City 241, Taiwan, R.O.C.

Date of Receipt	May 10, 2011
Issued Date	May 16, 2011
Report No.	115211R-RFUSP29V01
Report Version	V1.0

Test Report Certification

Issued Date: May 16, 2011
Report No.: 115211R-RFUSP29V01

Product Name	IPC
Applicant	Acrosser Technology Co., Ltd
Address	10F., No.12, Lane 609, Sec. 5, Chongsin Rd., Sanchong District, New Taipei City 241, Taiwan, R.O.C.
Manufacturer	Acrosser Technology Co., Ltd
Model No.	AR-V5403FLxxxx (x=0~9,A~Z or Space)
FCC ID.	ZJD-ARV5403FL
EUT Rated Voltage	AC 100-240 V, 50-60 Hz
EUT Test Voltage	AC 120V/ 60Hz
Trade Name	Acrosser
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2009
Test Result	Complied

The Test Results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Tested By : Vincent chu
(Engineer / Vincent Chu)

Approved By :
(Manager / Vincent Lin)

NVLAP Lab Code: 200533-0

Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	IPC
Trade Name	Acrosser
Model No.	AR-V5403FLxxxx (x=0~9,A~Z or Space)
FCC ID.	ZJD-ARV5403FL
Frequency Range	2402 – 2480MHz
Channel Number	79
Type of Modulation	FHSS: GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	Dipole
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: FSP, M/N: FSP096AHB Input: AC 100-240V, 50-60Hz, 2.0A Output: DC 12V-8A Cable out: Non-Shielded, 2.5m, with one ferrite core bonded. Power Cord: Non-Shielded, 0.8m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	KINSUN	6603803081-000	Dipole	2.89 dBi for 2.4 GHz

Note: The antenna of EUT is conform to FCC 15.203

Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

Note:

1. This device is a IPC, Contains functions and so on WiFi、Bluetooth , This report for Bluetooth.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.

1.2. Operational Description

The EUT is a IPC with built-in 2.4GHz Bluetooth V2.0+EDR transceiver. The number of the channels is 79 in 2402-2480MHz. The device adapts the frequency hopping spread spectrum modulation. The antenna is dipole antenna and provides diversity function to improve the receiving function.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted.

This equipment includes WLAN and Bluetooth, which can transmit signals simultaneously, the antenna distance small than 5 cm.

Test Mode	Mode 1: Transmit - 1Mbps (GFSK) Mode 2: Transmit - 3Mbps (8DPSK)

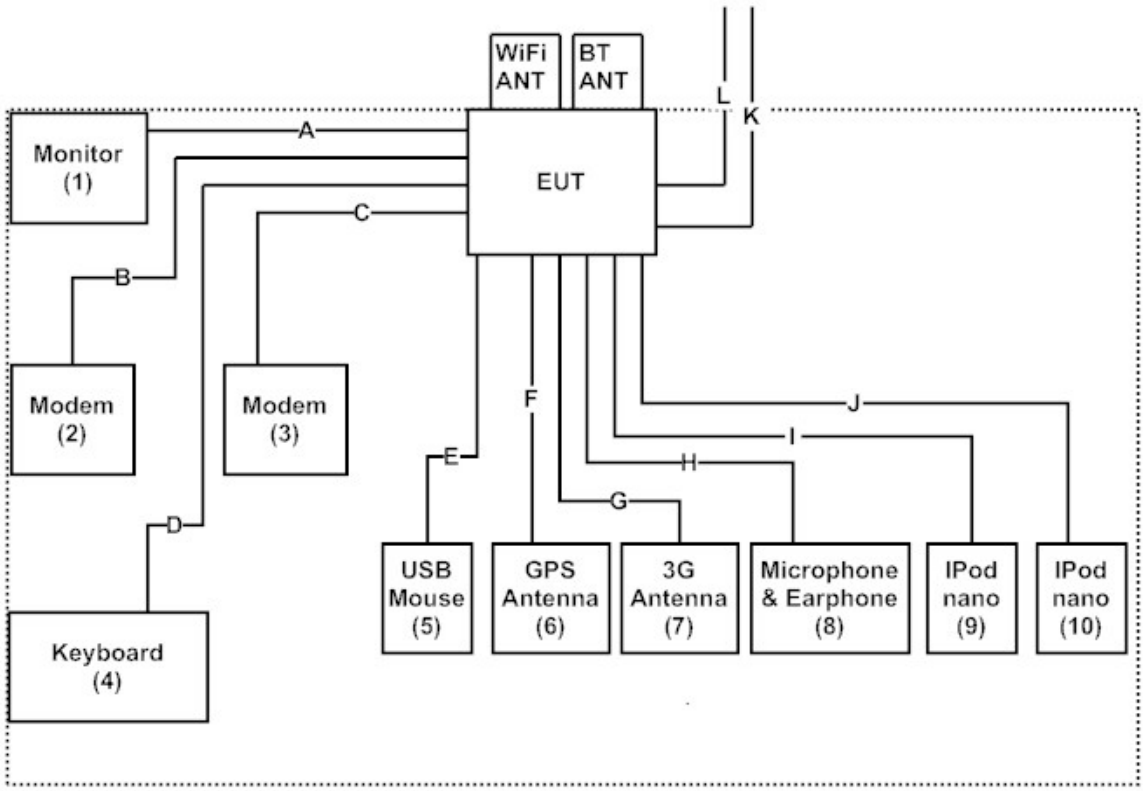
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Monitor	LG	W2261VT	907YHZK07373	DoC	Non-Shielded, 1.8m
2	Modem	ACEEX	DM-1414	0102027541	IFAXDM1414	Non-Shielded, 1.8m
3	Modem	ACEEX	DM-1414	0102027559	IFAXDM1414	Non-Shielded, 1.8m
4	Keyboard	DELL	SK-8115	MY-0DJ325-71619-6A 3-1917	DoC	N/A
5	USB Mouse	DELL	M056U0A	F0Y01YEF	DoC8	N/A
6	GPS Antenna	N/A	DAM1575A4	N/A	N/A	N/A
7	3G Antenna	Mobile mark	N/A	N/A	N/A	N/A
8	Microphone & Earphone	Ergotech	ET-E201	N/A	N/A	N/A
9	IPod nano	Apple	A1199	5U704829VQ5	N/A	N/A
10	IPod nano	Apple	A1199	5U705F6YVQ5	N/A	N/A

Signal Cable Type		Signal cable Description
A	VGA Cable	Non-Shielded, 1.8m, with two ferrite cores bonded.
B	RS-232 Cable	Non-Shielded, 1.5m
C	RS-232 Cable	Non-Shielded, 1.5m
D	USB Cable	Non-Shielded, 1.8m
E	USB Cable	Non-Shielded, 1.8m
F	GPS Antenna Cable	Non-Shielded, 5.0m
G	3G Antenna Cable	Non-Shielded, 4.5m
H	Microphone & Earphone Cable	Non-Shielded, 1.8m
I	USB Cable	Non-Shielded, 12m
J	USB Cable	Non-Shielded, 1.2m
K	RJ45 Cable	Non-Shielded, 5.0m
L	RJ45 Cable	Non-Shielded, 5.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4.

(2) Execute software on the EUT.

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous Transmit.

(5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site: http://www.quietek.com/

Site Description: File on
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Accreditation on NVLAP
NVLAP Lab Code: 200533-0

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E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

Testing Laboratory
0914

2. Conducted Emission

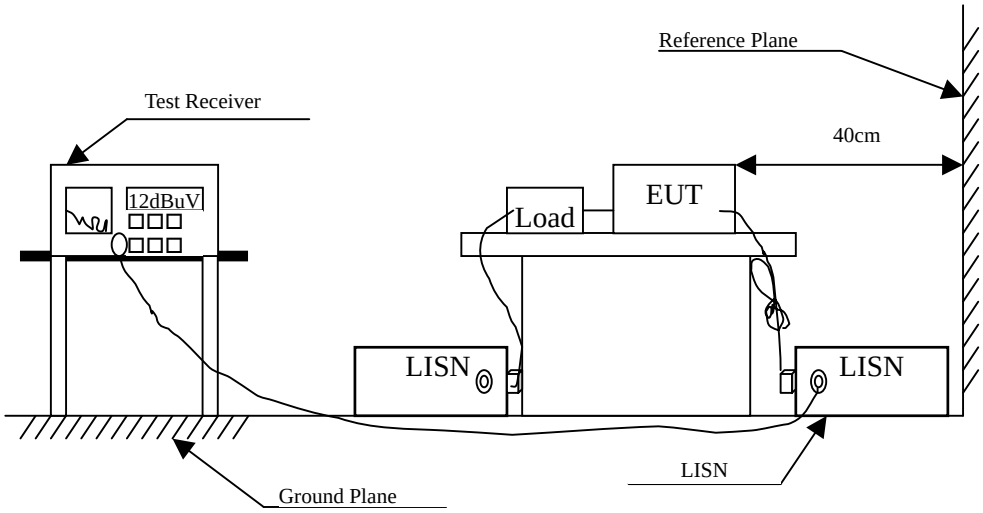
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/014	Feb., 2011	
2	L.I.S.N.	R & S	ESH3-Z5/825562/002	Feb., 2011	EUT
3	L.I.S.N.	R & S	ENV4200/848411/010	Feb., 2011	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2/100410	July, 2011	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : IPC
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.236	9.682	40.190	49.872	-13.671	63.543
0.287	9.654	40.660	50.314	-11.772	62.086
0.326	9.650	39.050	48.700	-12.271	60.971
0.541	9.640	30.950	40.590	-15.410	56.000
3.466	9.690	23.240	32.930	-23.070	56.000
13.064	9.910	23.340	33.250	-26.750	60.000
Average					
0.236	9.682	28.130	37.812	-15.731	53.543
0.287	9.654	32.680	42.334	-9.752	52.086
0.326	9.650	28.280	37.930	-13.041	50.971
0.541	9.640	24.820	34.460	-11.540	46.000
3.466	9.690	15.890	25.580	-20.420	46.000
13.064	9.910	12.410	22.320	-27.680	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : IPC
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.236	9.692	37.310	47.002	-16.541	63.543
0.287	9.664	40.170	49.834	-12.252	62.086
0.326	9.660	34.570	44.230	-16.741	60.971
0.646	9.650	23.650	33.300	-22.700	56.000
3.564	9.700	19.770	29.470	-26.530	56.000
12.322	9.880	21.600	31.480	-28.520	60.000
Average					
0.236	9.692	20.460	30.152	-23.391	53.543
0.287	9.664	31.440	41.104	-10.982	52.086
0.326	9.660	20.020	29.680	-21.291	50.971
0.646	9.650	19.240	28.890	-17.110	46.000
3.564	9.700	11.720	21.420	-24.580	46.000
12.322	9.880	10.460	20.340	-29.660	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

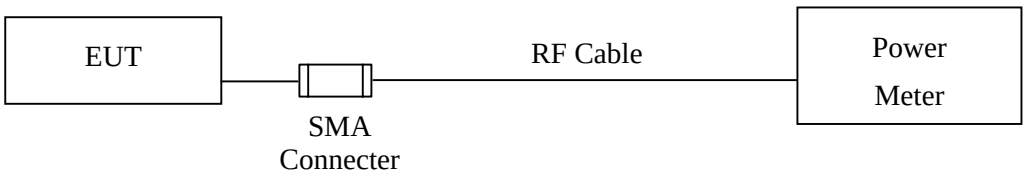
3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2011
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2010

Note: 1. All equipments are calibrated every one year.

2. The test instruments marked by "X" are used to measure the final test results.

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 0.125Watt.

3.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : IPC
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	-11.45	0.125 Watt= 20.97 dBm	Pass
Channel 39	2441.00	-14.06	0.125 Watt= 20.97 dBm	Pass
Channel 78	2480.00	-10.82	0.125 Watt= 20.97 dBm	Pass

Product : IPC
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402.00	0.66	0.125 Watt= 20.97 dBm	Pass
Channel 39	2441.00	0.06	0.125 Watt= 20.97 dBm	Pass
Channel 78	2480.00	-1.88	0.125 Watt= 20.97 dBm	Pass

4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the radiated emission test:

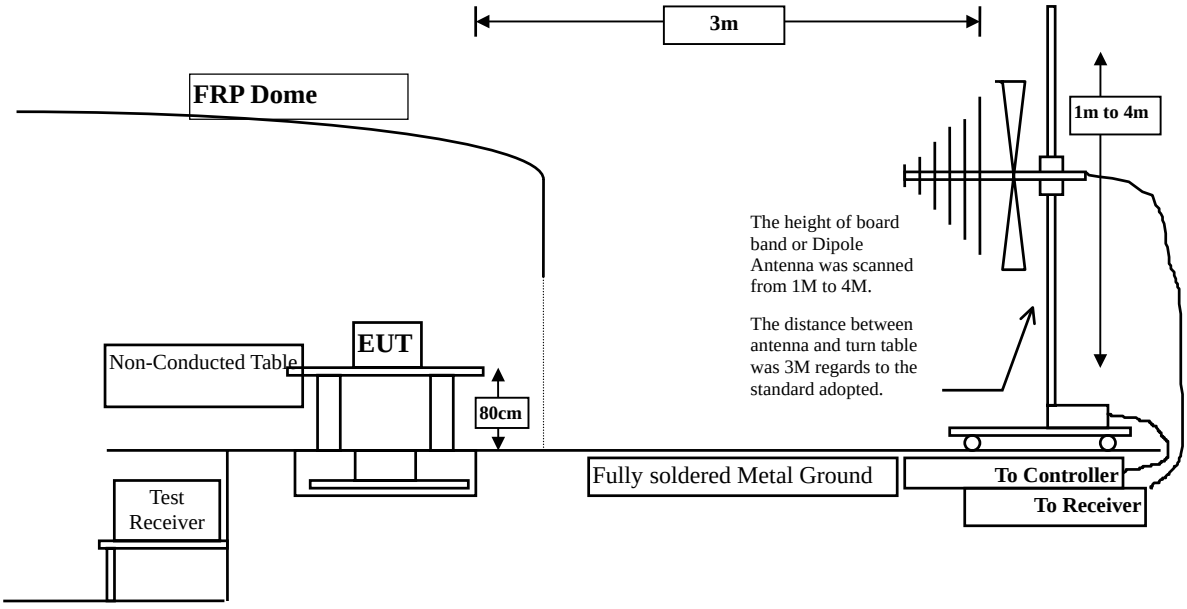
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2010
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2010
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2010
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2010
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2011
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated every one year.

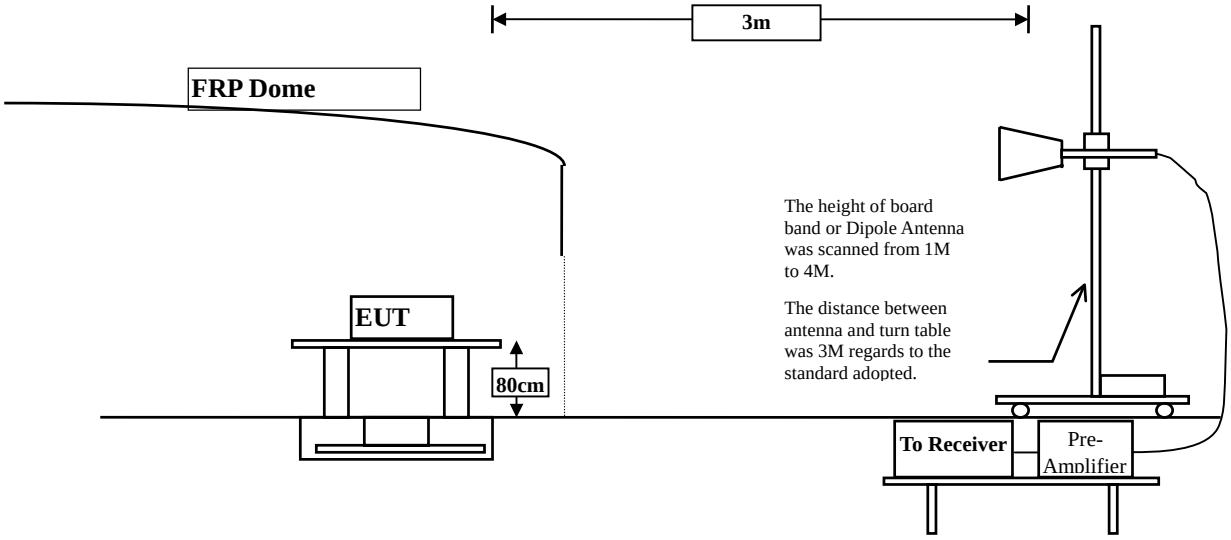
2. The test instruments marked by "X" are used to measure the final test results.

4.2. Test Setup

Below 1GHz



Above 1GHz



4.3. Limits

➢ **General Radiated Emission Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range form 30MHz - 10th Harmonic of fundamental was investigated.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : IPC
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2402MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.327	49.310	52.637	-21.363	74.000
4824.000	3.261	47.480	50.741	-23.259	74.000
7206.000	10.136	38.530	48.666	-25.334	74.000
7236.000	10.650	36.600	47.250	-26.750	74.000
9608.000	13.706	35.420	49.126	-24.874	74.000
9648.000	13.337	35.980	49.316	-24.684	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	6.638	51.040	57.677	-16.323	74.000
4824.000	6.421	58.670	65.091	-8.909	74.000
7206.000	11.005	41.580	52.585	-21.415	74.000
7236.000	11.495	36.150	47.645	-26.355	74.000
9608.000	14.103	35.810	49.913	-24.087	74.000
9608.000	14.103	36.350	50.453	-23.547	74.000
Average Detector:					
4804.000	6.638	40.760	47.397	-6.603	54.000
4824.000	6.421	44.810	51.231	-2.769	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2441MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	53.610	56.647	-17.353	74.000
4882.000	3.001	52.900	55.901	-18.099	74.000
7311.000	11.795	36.000	47.794	-26.206	74.000
7323.000	11.846	36.000	47.847	-26.153	74.000
9748.000	12.635	36.660	49.295	-24.705	74.000
9764.000	12.563	37.100	49.663	-24.337	74.000
Average Detector:					
4874.000	3.038	43.620	46.657	-7.343	54.000
4882.000	3.001	38.110	41.111	-12.889	54.000
Vertical					
Peak Detector:					
4874.000	5.812	61.420	67.231	-6.769	74.000
4882.000	5.713	53.040	58.754	-15.246	74.000
7311.000	12.630	37.300	49.929	-24.071	74.000
7323.000	12.727	38.570	51.298	-22.702	74.000
9748.000	13.126	36.260	49.386	-24.614	74.000
9764.000	13.028	36.890	49.918	-24.082	74.000
Average Detector:					
4874.000	5.812	37.280	43.091	-10.909	54.000
4882.000	5.713	46.250	51.964	-2.036	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)(2480MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	2.858	36.240	39.097	-34.903	74.000
4960.000	2.760	50.290	53.050	-20.950	74.000
7386.000	12.127	35.540	47.668	-26.332	74.000
7440.000	13.426	35.690	49.115	-24.885	74.000
9848.000	12.852	36.890	49.743	-24.257	74.000
9920.000	13.958	36.020	49.978	-24.022	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	5.521	37.980	43.500	-30.500	74.000
4960.000	5.557	59.910	65.467	-8.533	74.000
7386.000	13.254	34.850	48.104	-25.896	74.000
7440.000	13.426	36.200	49.625	-24.375	74.000
9848.000	13.367	37.060	50.427	-23.573	74.000
9920.000	13.958	37.160	51.118	-22.882	74.000
Average Detector:					
4960.000	5.557	46.030	51.587	-2.413	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)(2402MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.327	39.630	42.957	-31.043	74.000
4844.000	3.171	38.130	41.301	-32.699	74.000
7206.000	10.136	36.250	46.386	-27.614	74.000
7266.000	11.162	36.020	47.182	-26.818	74.000
9608.000	13.706	36.050	49.756	-24.244	74.000
9688.000	12.964	36.810	49.775	-24.225	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	6.638	52.550	59.187	-14.813	74.000
4844.000	6.178	37.450	43.628	-30.372	74.000
7206.000	11.005	37.140	48.145	-25.855	74.000
7266.000	11.982	36.010	47.992	-26.008	74.000
9608.000	14.103	35.880	49.983	-24.017	74.000
9688.000	13.507	36.450	49.958	-24.042	74.000
Average Detector:					
4804.000	6.638	29.250	35.887	-18.113	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.038	37.430	40.467	-33.533	74.000
4882.000	5.713	44.820	50.534	-23.466	74.000
7311.000	11.795	35.130	46.924	-27.076	74.000
7323.000	12.727	35.420	48.148	-25.852	74.000
9748.000	12.635	36.450	49.085	-24.915	74.000
9764.000	13.028	36.250	49.278	-24.722	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.812	38.060	43.871	-30.129	74.000
4882.000	5.713	56.920	62.634	-11.366	74.000
7311.000	12.630	35.760	48.389	-25.611	74.000
7323.000	12.727	35.580	48.308	-25.692	74.000
9748.000	13.126	37.420	50.546	-23.454	74.000
9764.000	13.028	37.350	50.378	-23.622	74.000
Average Detector:					
4882.000	5.713	32.570	38.284	-15.716	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2480MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4904.000	2.914	37.210	40.125	-33.875	74.000
4960.000	2.760	37.450	40.210	-33.790	74.000
7356.000	11.995	35.070	47.064	-26.936	74.000
7440.000	12.567	34.790	47.356	-26.644	74.000
9808.000	12.475	36.160	48.635	-25.365	74.000
9920.000	13.456	35.850	49.306	-24.694	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	5.530	37.380	42.911	-31.089	74.000
4960.000	5.557	47.500	53.057	-20.943	74.000
7356.000	13.005	35.060	48.064	-25.936	74.000
7440.000	13.426	34.570	47.995	-26.005	74.000
9808.000	12.901	36.210	49.111	-24.889	74.000
9920.000	13.958	36.120	50.078	-23.922	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK) (2441MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
84.320	-10.564	41.045	30.481	-9.519	40.000
270.560	-5.007	36.403	31.396	-14.604	46.000
499.480	0.048	32.614	32.662	-13.338	46.000
633.340	1.880	32.793	34.673	-11.327	46.000
792.420	5.209	30.310	35.519	-10.481	46.000
1000.000	9.119	35.046	44.165	-9.835	54.000
Vertical					
35.820	-2.159	39.047	36.888	-3.112	40.000
84.320	-4.484	41.404	36.920	-3.080	40.000
202.660	-7.739	46.678	38.939	-4.561	43.500
759.440	2.532	31.290	33.822	-12.178	46.000
967.020	8.071	29.443	37.514	-16.486	54.000
1000.000	4.329	38.449	42.778	-11.222	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : IPC
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK) (2441MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
41.640	-3.949	37.640	33.691	-6.309	40.000
90.140	-9.449	41.144	31.695	-11.805	43.500
299.660	-3.585	36.857	33.272	-12.728	46.000
367.560	-1.205	33.687	32.482	-13.518	46.000
633.340	1.880	33.099	34.979	-11.021	46.000
1000.000	9.119	36.091	45.210	-8.790	54.000
Vertical					
84.320	-4.484	38.831	34.347	-5.653	40.000
132.820	-4.440	35.919	31.479	-12.021	43.500
499.480	-0.852	32.045	31.193	-14.807	46.000
823.460	3.462	30.964	34.427	-11.573	46.000
968.960	8.191	30.263	38.454	-15.546	54.000
1000.000	4.329	38.482	42.811	-11.189	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

5. RF Antenna Conducted Test

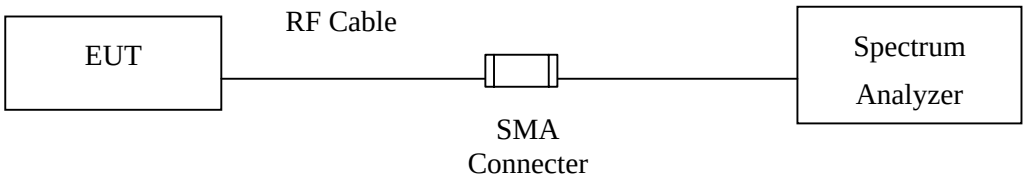
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2010
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2010
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2011

Note: 1. All equipments are calibrated every one year.

2. The test instruments Marked "X" are used to measure the final test results.

5.2. Test Setup



5.3. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.4. Test Procedure

The EUT was setup to ANSI C63.4, 2009; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

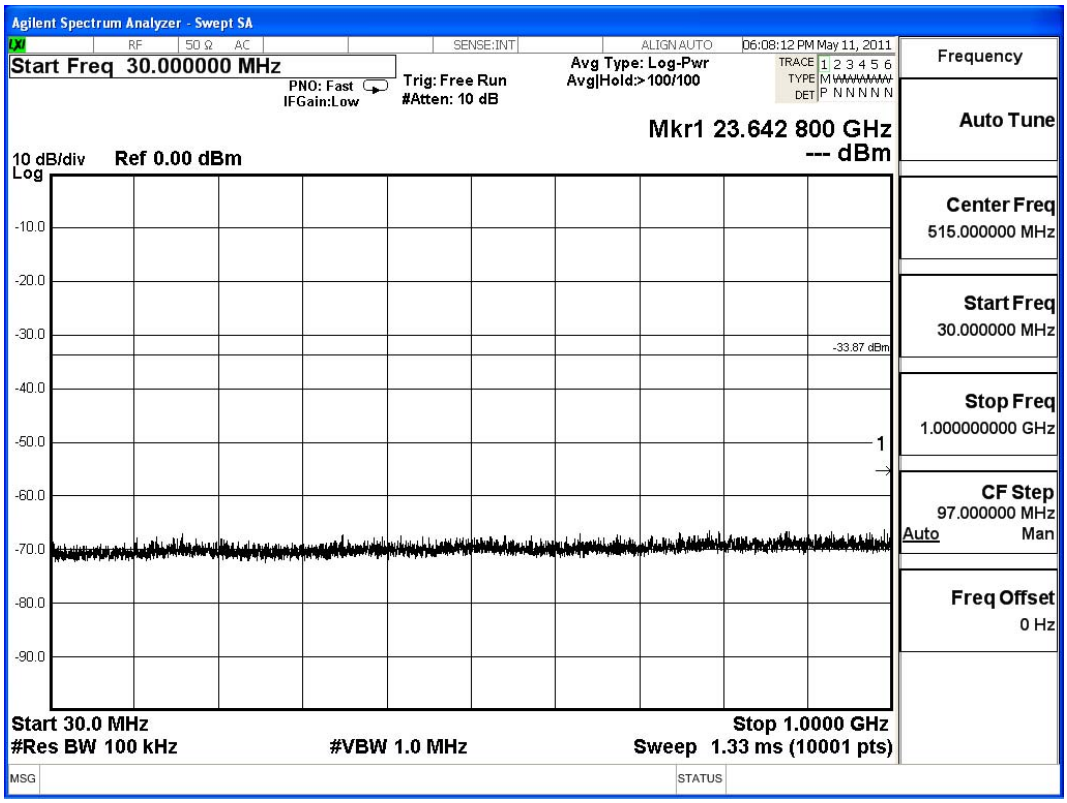
5.5. Uncertainty

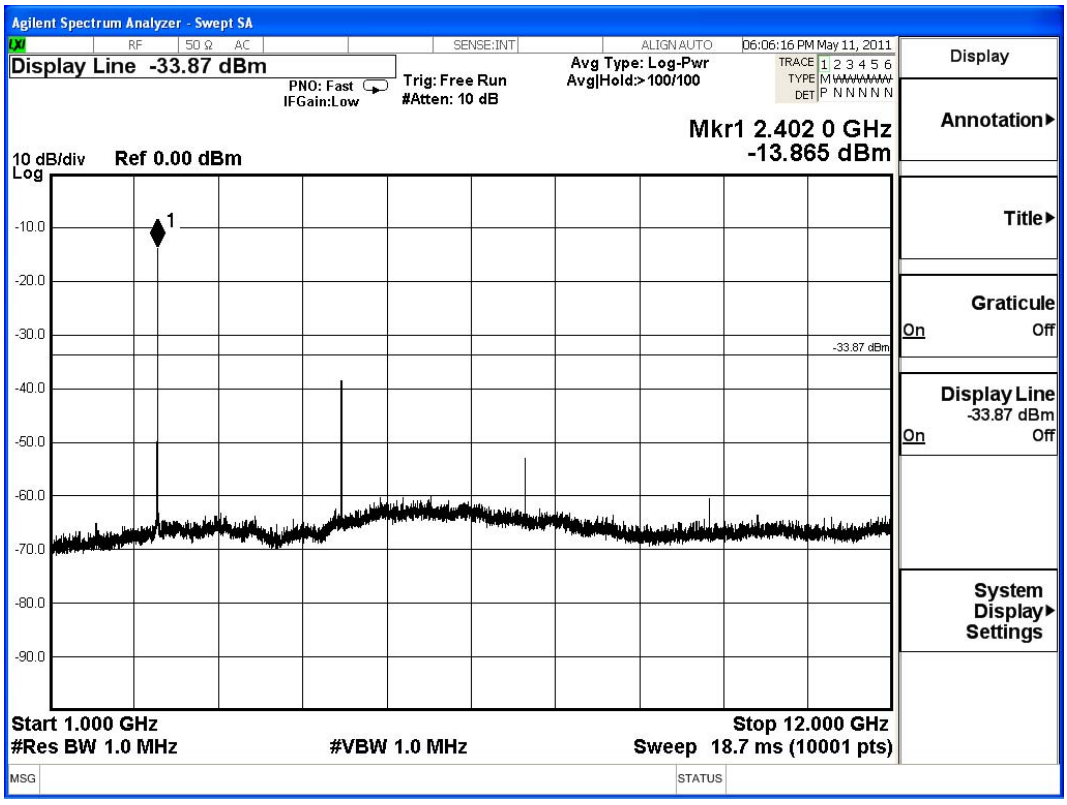
± 150Hz

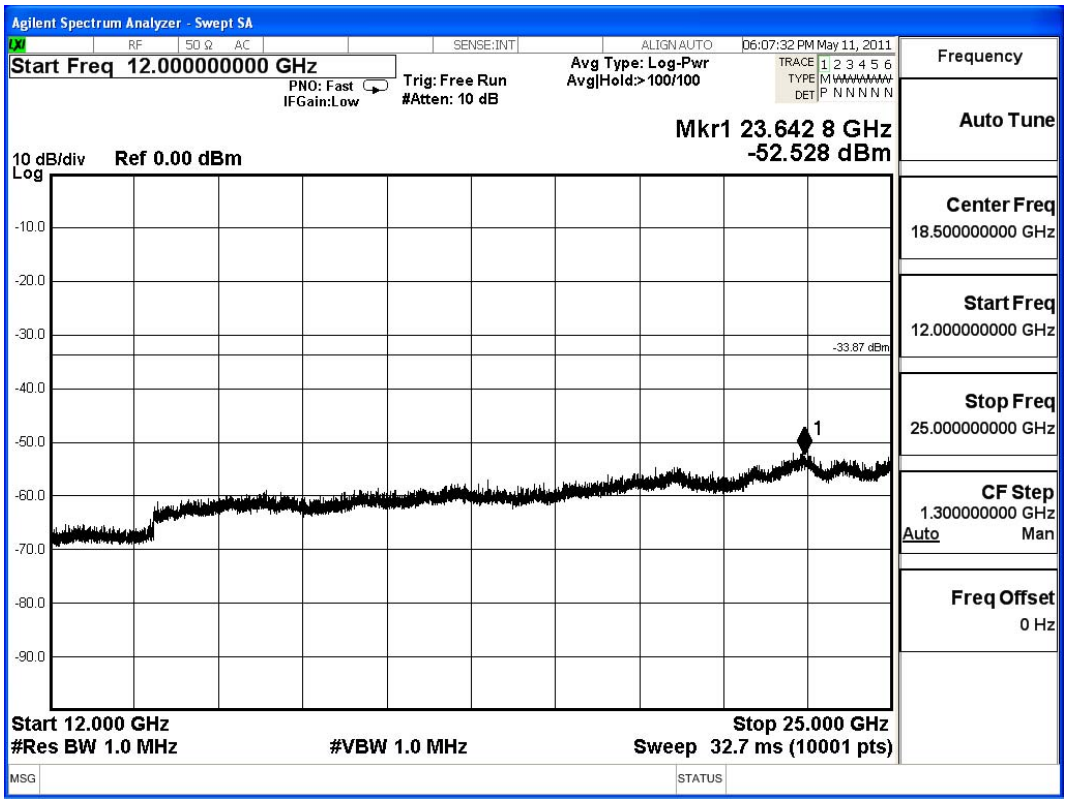
5.6. Test Result of RF Antenna Conducted Test

Product : IPC
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 00:

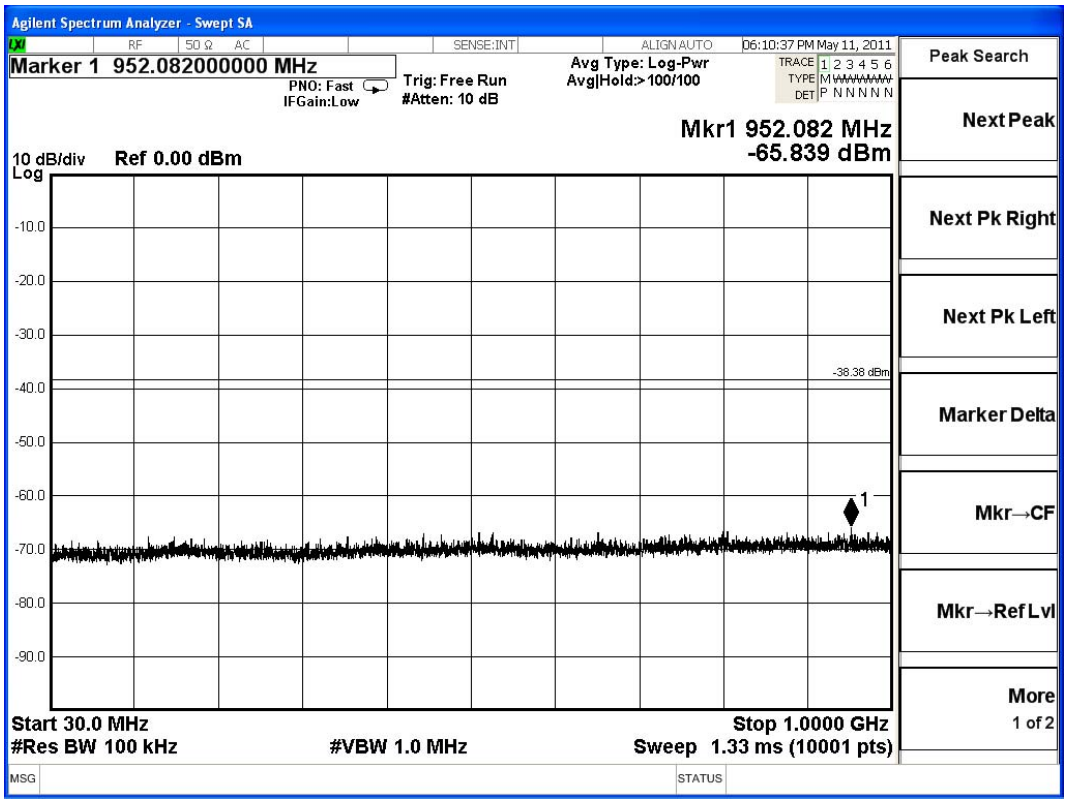


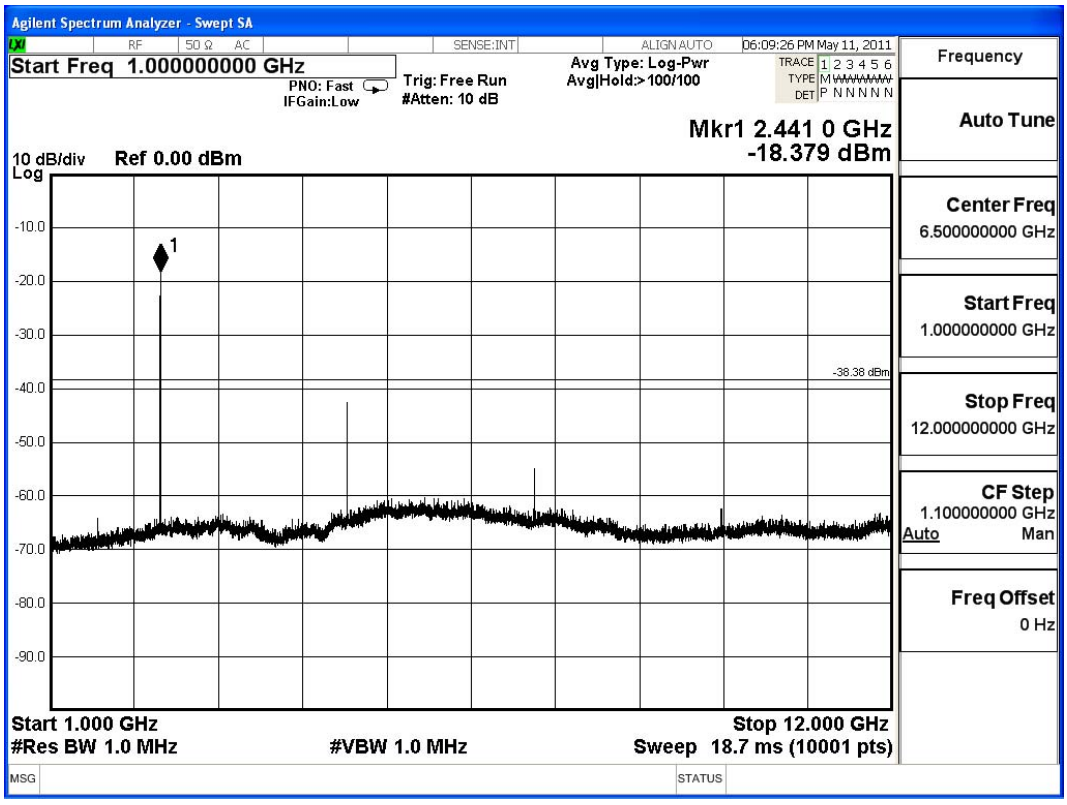

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
06:06:16 PM May 11, 2011
Display Line -33.87 dBm
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.402 0 GHz
-13.865 dBm
10 dB/div
Log
Ref 0.00 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-33.87 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 18.7 ms (10001 pts)
MSG
STATUS
Display
Annotation
Title
Graticule
On Off
Display Line
-33.87 dBm
On Off
System
Display
Settings

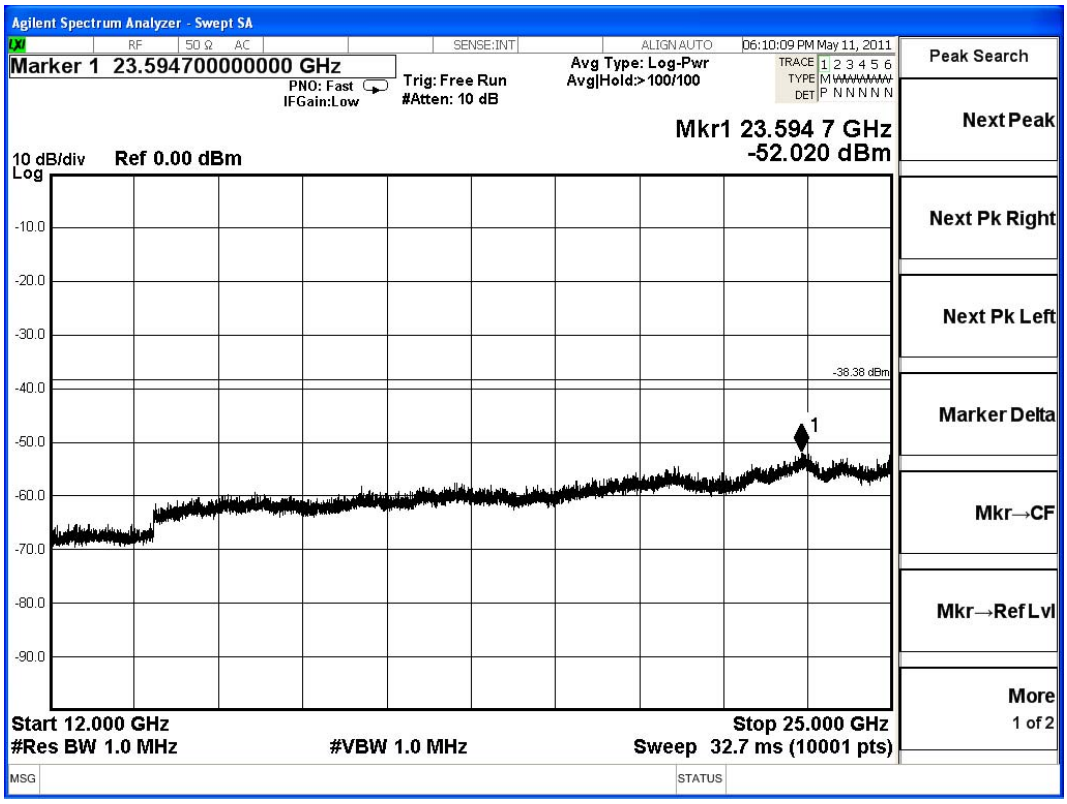

Agilent Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
06:07:32 PM May 11, 2011
Start Freq 12.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 23.642 8 GHz
-52.528 dBm
10 dB/div
Log
Ref 0.00 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-33.87 dBm
Start 12.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 32.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto Man
Freq Offset
0 Hz

Product : IPC
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 39:

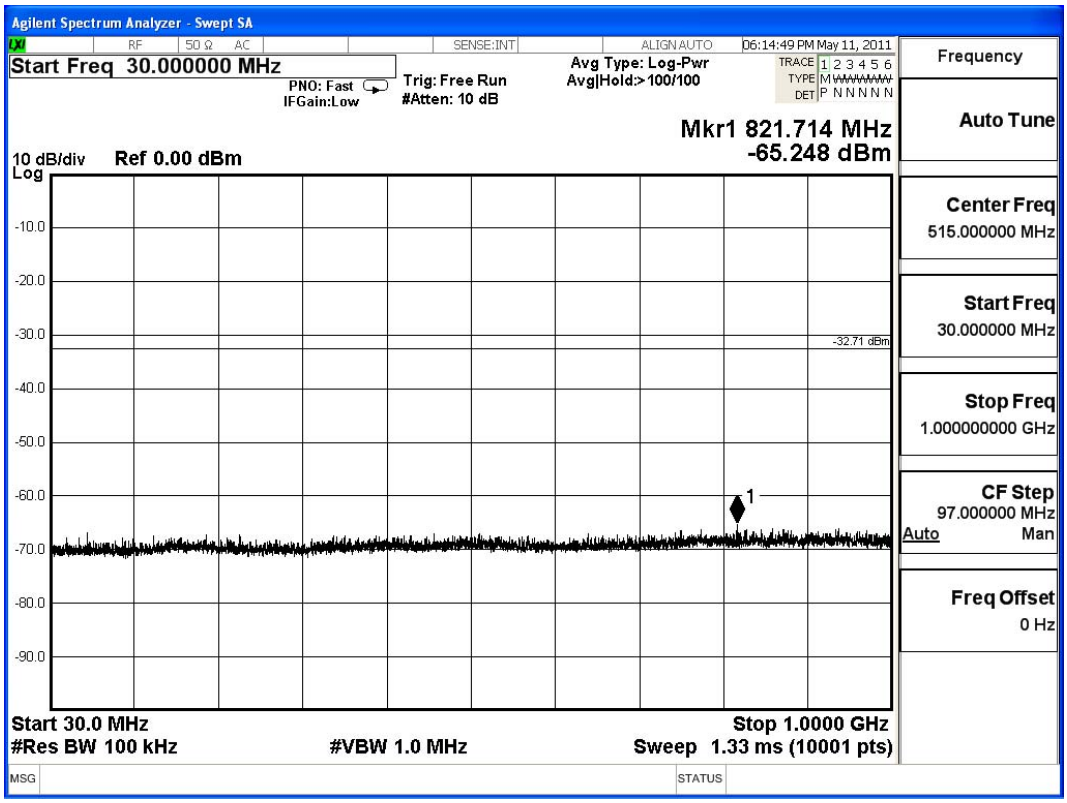


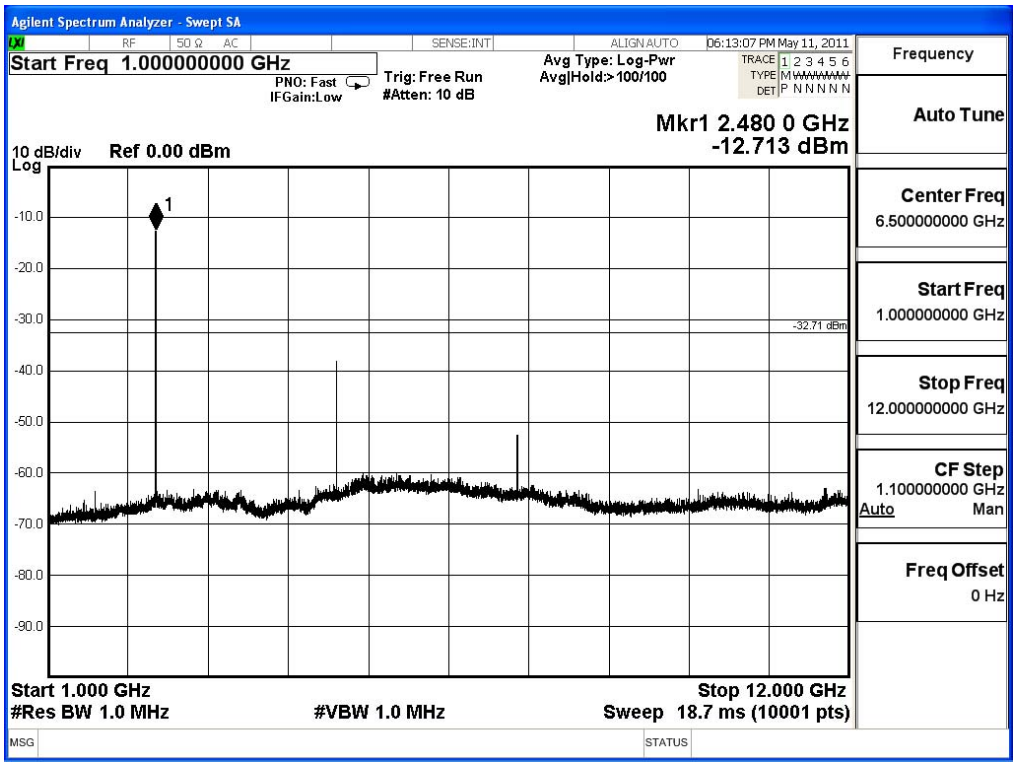

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:09:26 PM May 11, 2011
Mkr1 2.441 0 GHz
-18.379 dBm
10 dB/div
Log
Ref 0.00 dBm
-38.38 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 18.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz

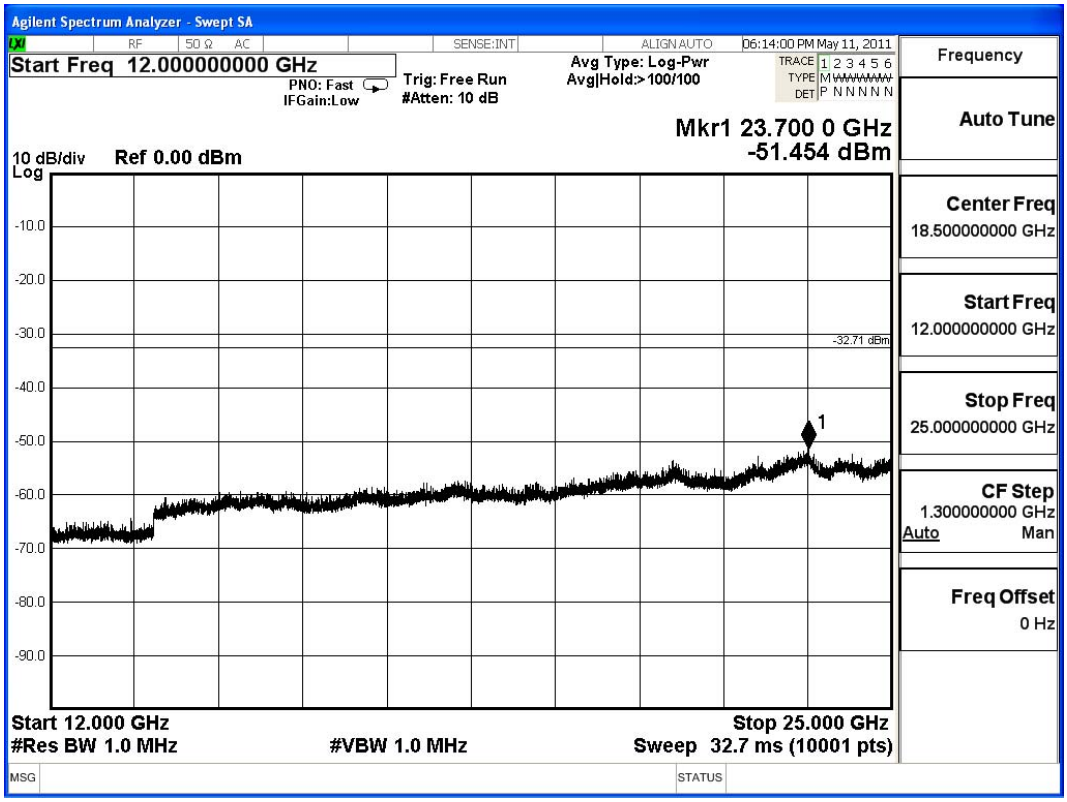

Agilent Spectrum Analyzer - Swept SA
Marker 1 23.594700000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:10:09 PM May 11, 2011
Mkr1 23.594 7 GHz
-52.020 dBm
10 dB/div
Log
Ref 0.00 dBm
-38.38 dBm
Start 12.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 32.7 ms (10001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

Product : IPC
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit - 1Mbps (GFSK)

Figure Channel 78:

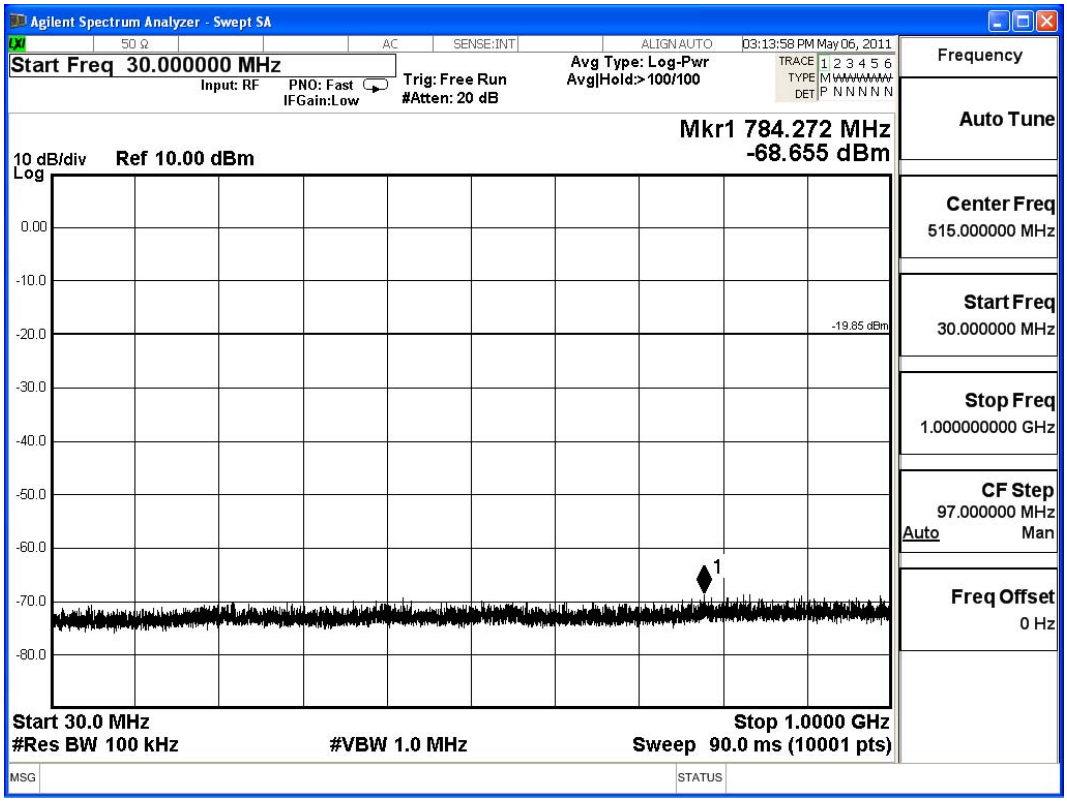


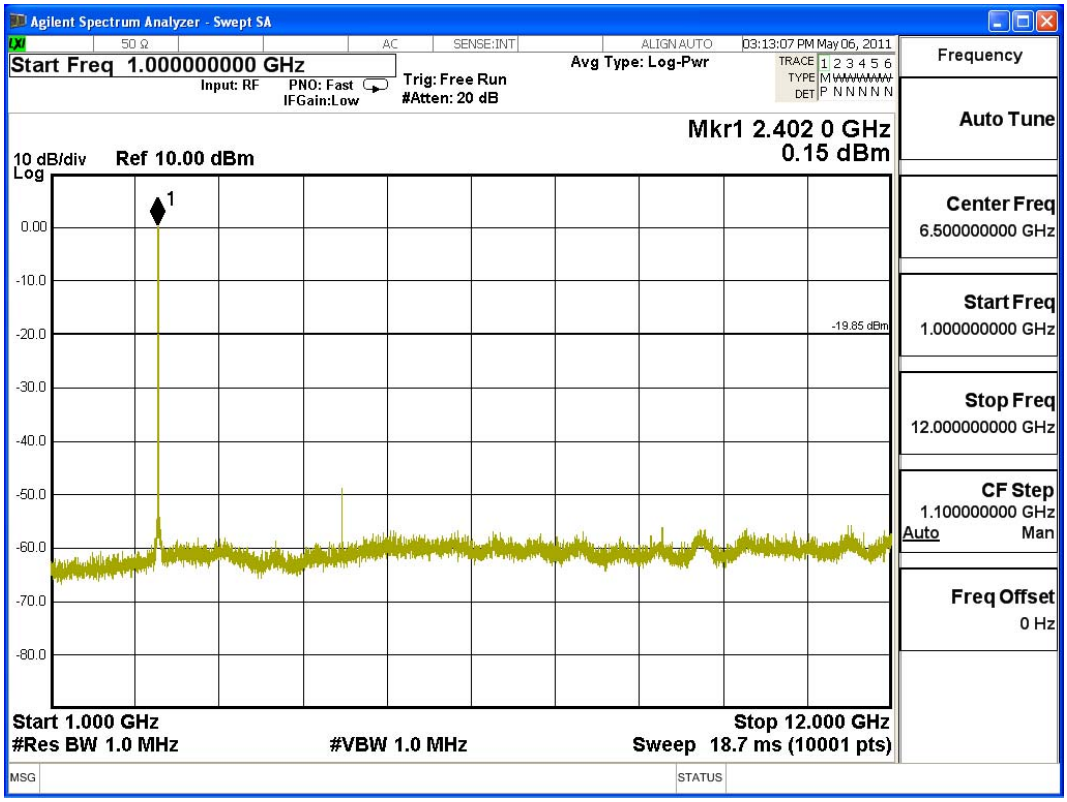

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:13:07 PM May 11, 2011
Mkr1 2.480 0 GHz
-12.713 dBm
10 dB/div
Log
Ref 0.00 dBm
-32.71 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 18.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz

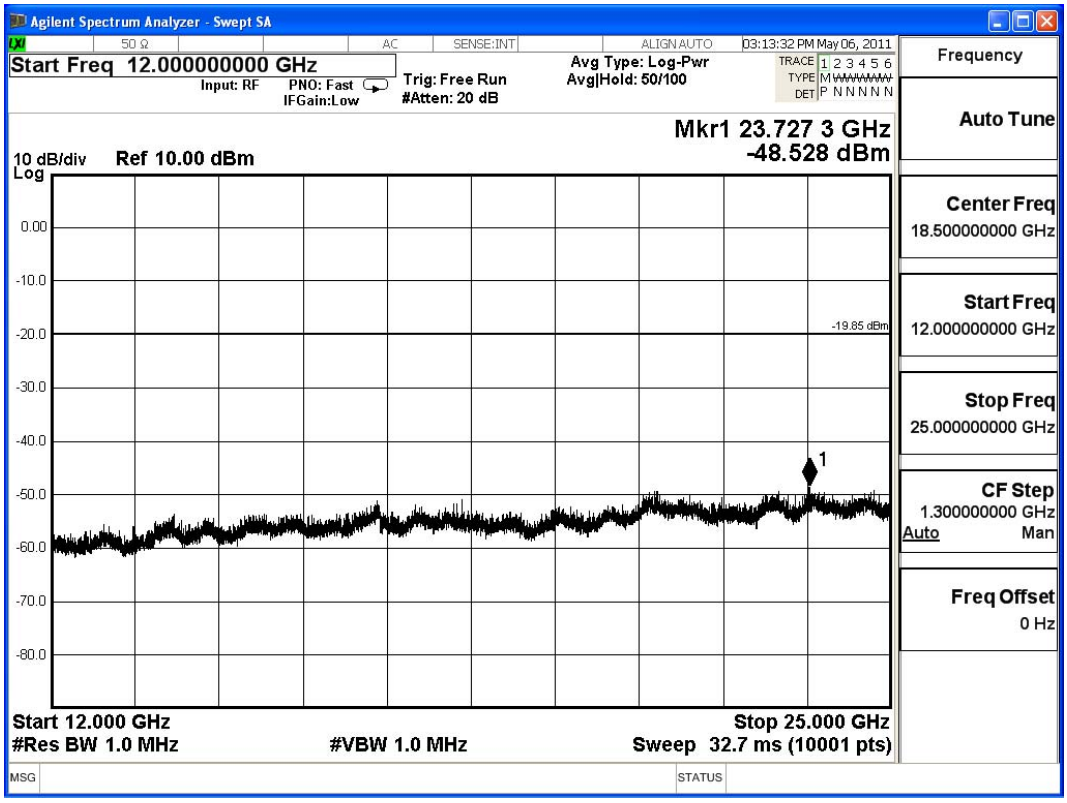

Agilent Spectrum Analyzer - Swept SA
Start Freq 12.000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
06:14:00 PM May 11, 2011
Mkr1 23.700 0 GHz
-51.454 dBm
10 dB/div
Log
Ref 0.00 dBm
-32.71 dBm
Start 12.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 32.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Product : IPC
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 00:

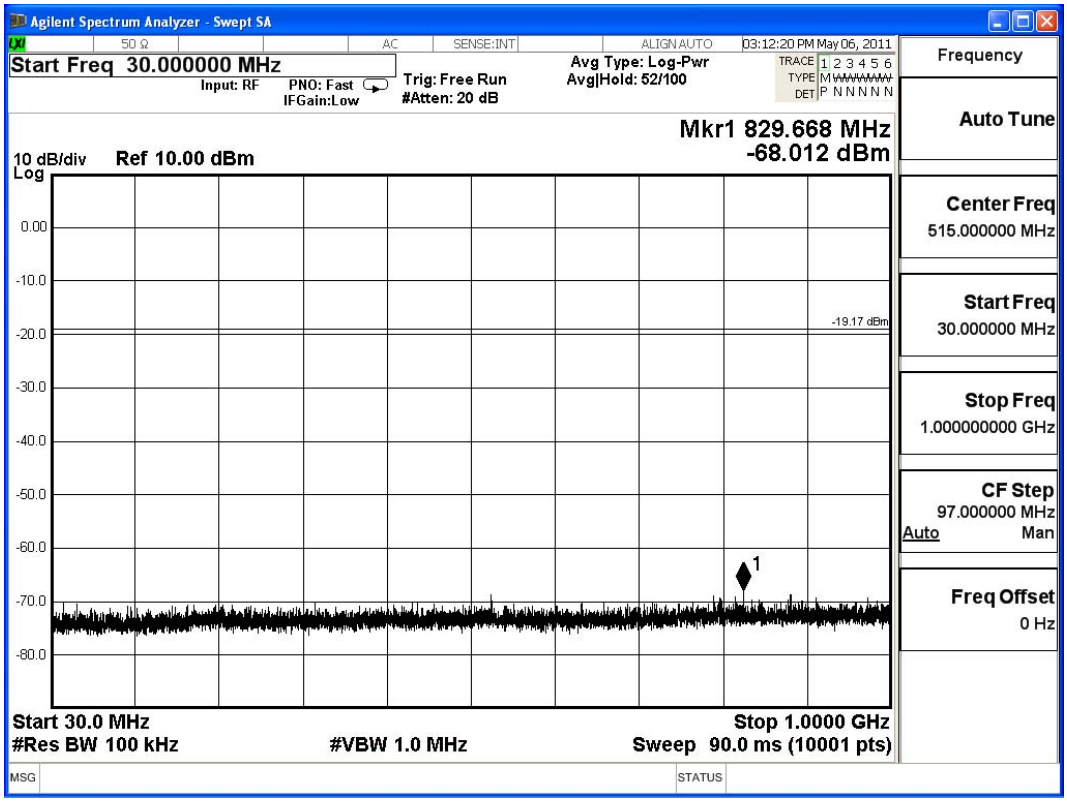


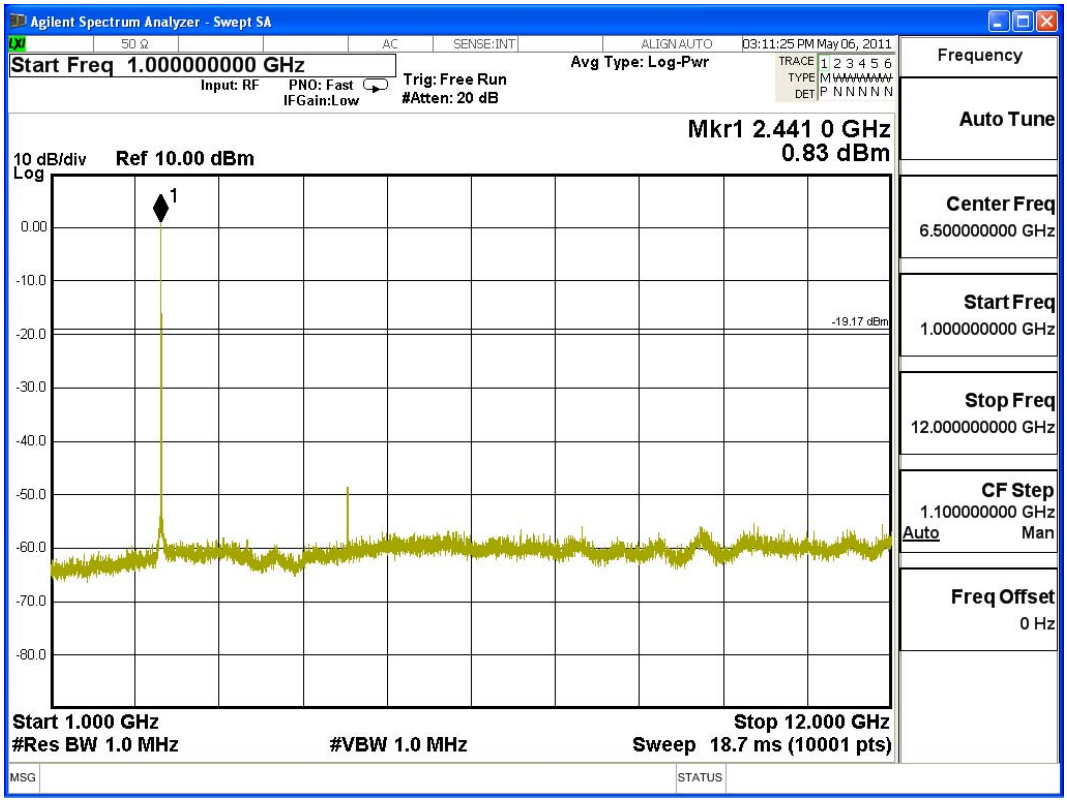

Agilent Spectrum Analyzer - Swept SA
Start Freq 1.000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
03:13:07 PM May 06, 2011
Mkr1 2.402 0 GHz
0.15 dBm
10 dB/div
Log
Ref 10.00 dBm
-19.85 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 18.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz

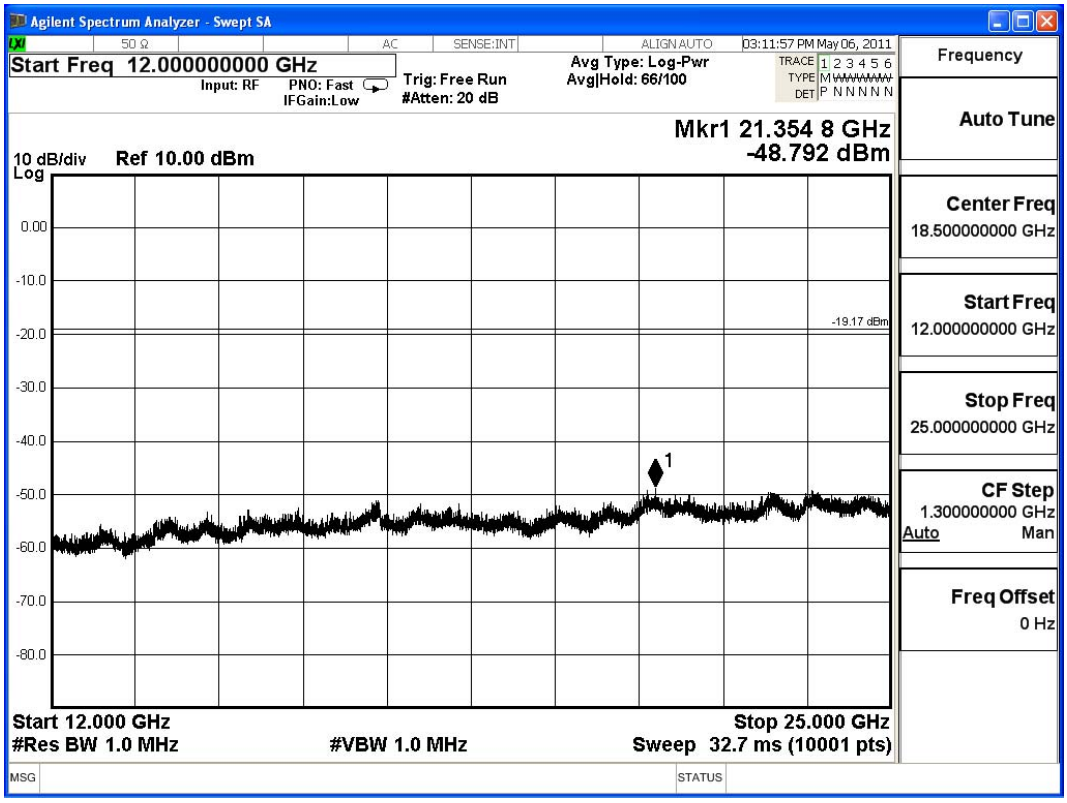

Agilent Spectrum Analyzer - Swept SA
Start Freq 12.000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 50/100
03:13:32 PM May 06, 2011
Mkr1 23.727 3 GHz
-48.528 dBm
10 dB/div
Log
Ref 10.00 dBm
-19.85 dBm
Start 12.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 32.7 ms (10001 pts)
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Product : IPC
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 39: 30MHz-25GHz




Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:11:25 PM May 06, 2011
Start Freq 1.000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 2.441 0 GHz
0.83 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-19.17 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 12.000 GHz
Sweep 18.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
6.500000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
12.000000000 GHz
CF Step
1.100000000 GHz
Auto
Man
Freq Offset
0 Hz


Agilent Spectrum Analyzer - Swept SA
50 Ω
AC
SENSE:INT
ALIGN AUTO
03:11:57 PM May 06, 2011
Start Freq 12.000000000 GHz
Input: RF
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold: 66/100
TRACE 1 2 3 4 5 6
TYPE M
DET P N N N N N
Mkr1 21.354 8 GHz
-48.792 dBm
10 dB/div
Log
Ref 10.00 dBm
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-19.17 dBm
Start 12.000 GHz
#Res BW 1.0 MHz
#VBW 1.0 MHz
Stop 25.000 GHz
Sweep 32.7 ms (10001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
18.500000000 GHz
Start Freq
12.000000000 GHz
Stop Freq
25.000000000 GHz
CF Step
1.300000000 GHz
Auto
Man
Freq Offset
0 Hz

Product : IPC
Test Item : RF Antenna Conducted Test
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit - 3Mbps (8DPSK)

Figure Channel 78: