



Test Report

Product Name : Wireless digitizer tablet

Model No. : RCK-M01R

FCC ID. : RWU-RCKM01R

Applicant : Sanford, L.P.

Address : 25 First St. Suite 301 Cambridge, MA 02141, USA

Date of Receipt : 2007/04/03

Issued Date : 2008/11/20

Report No. : 089230R-RFUSP05V01-B

Version : V1.0

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.

Test Report Certification

Issued Date : 2008/11/20

Report No. : 089230R-RFUSP05V01-B



Product Name : Wireless digitizer tablet

Applicant : Sanford, L.P.

Address : 25 First St. Suite 301 Cambridge, MA 02141, USA

Manufacturer : Shanghai Hank wireless Co., Ltd

Model No. : RCK-M01R

FCC ID. : RWU-RCKM01R

Rated Voltage : AC 120 V / 60 Hz

EUT Voltage : AC 120 V / 60 Hz

Trade Name : mimio

Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2005

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.

Documented By

:

Sandy Chuang

(Sandy Chuang / Adm. Specialist)

Reviewed By

:

Lucia Lu

(Lucia Lu / Engineer)

Approved By

:

Roy Wang

(Roy Wang / Manager)

TABLE OF CONTENTS

Description	Page
1. General Information	5
1.1. EUT Description	5
1.2. Operational Description	7
1.3. Test Mode	8
1.4. Tested System Details	9
1.5. Configuration of tested System	10
1.6. EUT Exercise Software	11
1.7. Test Facility	12
2. Peak Power Output	13
2.1. Test Equipment	13
2.2. Test Setup	13
2.3. Test procedures	13
2.4. Limits	13
2.5. Test Specification	13
2.6. Uncertainty	13
2.7. Test Result	14
3. RF antenna conducted test	17
3.1. Test Equipment	17
3.2. Test Setup	17
3.3. Limits	18
3.4. Test Procedure	18
3.5. Uncertainty	18
3.6. Test Result	19
4. Conducted Emission	28
4.1. Test Equipment	28
4.2. Test Setup	28
4.3. Limits	29
4.4. Test Procedure	29
4.5. Test Specification	29
4.6. Uncertainty	29
4.7. Test Result	30
4.8. Test Photo	34
5. Radiated Emission	35
5.1. Test Equipment	35
5.2. Test Setup	35
5.3. Limits	36
5.4. Test Procedure	36
5.5. Test Specification	36
5.6. Uncertainty	36
5.7. Test Result	37
5.8. Test Photo	45
6. Band Edge	47
6.1. Test Equipment	47
6.2. Test Setup	48

6.3.	Limits	48
6.4.	Test Procedure	49
6.5.	Test Specification.....	49
6.6.	Uncertainty	49
6.7.	Test Result.....	50
7.	Occupied Bandwidth.....	54
7.1.	Test Equipment.....	54
7.2.	Test Setup	54
7.3.	Test Procedures	54
7.4.	Limits	54
7.5.	Test Specification.....	54
7.6.	Uncertainty	54
7.7.	Test Result.....	55
8.	Power Density.....	56
8.1.	Test Equipment.....	56
8.2.	Test Setup	56
8.3.	Limits	56
8.4.	Test Procedures	56
8.5.	Test Specification.....	56
8.6.	Uncertainty	56
8.7.	Test Result.....	57
Attachement.....		58
	EUT Photograph.....	58

1. General Information

1.1. EUT Description

Product Name	Wireless digitizer tablet
Trade Name	mimio
Model No.	RCK-M01R
Frequency Range	2402~2479MHz
Channel Number	78
Type of Modulation	Direct Sequence Spread Spectrum (DSSS)
Antenna Gain	-3.67dBi (Dongle)
Channel Control	Auto
Antenna Type	Soldered on PCB

Component	
USB Cable	Shielded, 1.5m, two ferrite cores bonded.

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

Note:

1. This device is a Wireless digitizer tablet included a 2.4GHz receiving function, and 2.4GHz transmitting function.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regards to the frequency band operation; the highest rate that was included the lowest 、 middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 089230R-RFUSP01V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
EMI	Mode 1: Transmit (Dongle)
Final Test Mode	
TX	Mode 1: Transmit (Dongle)

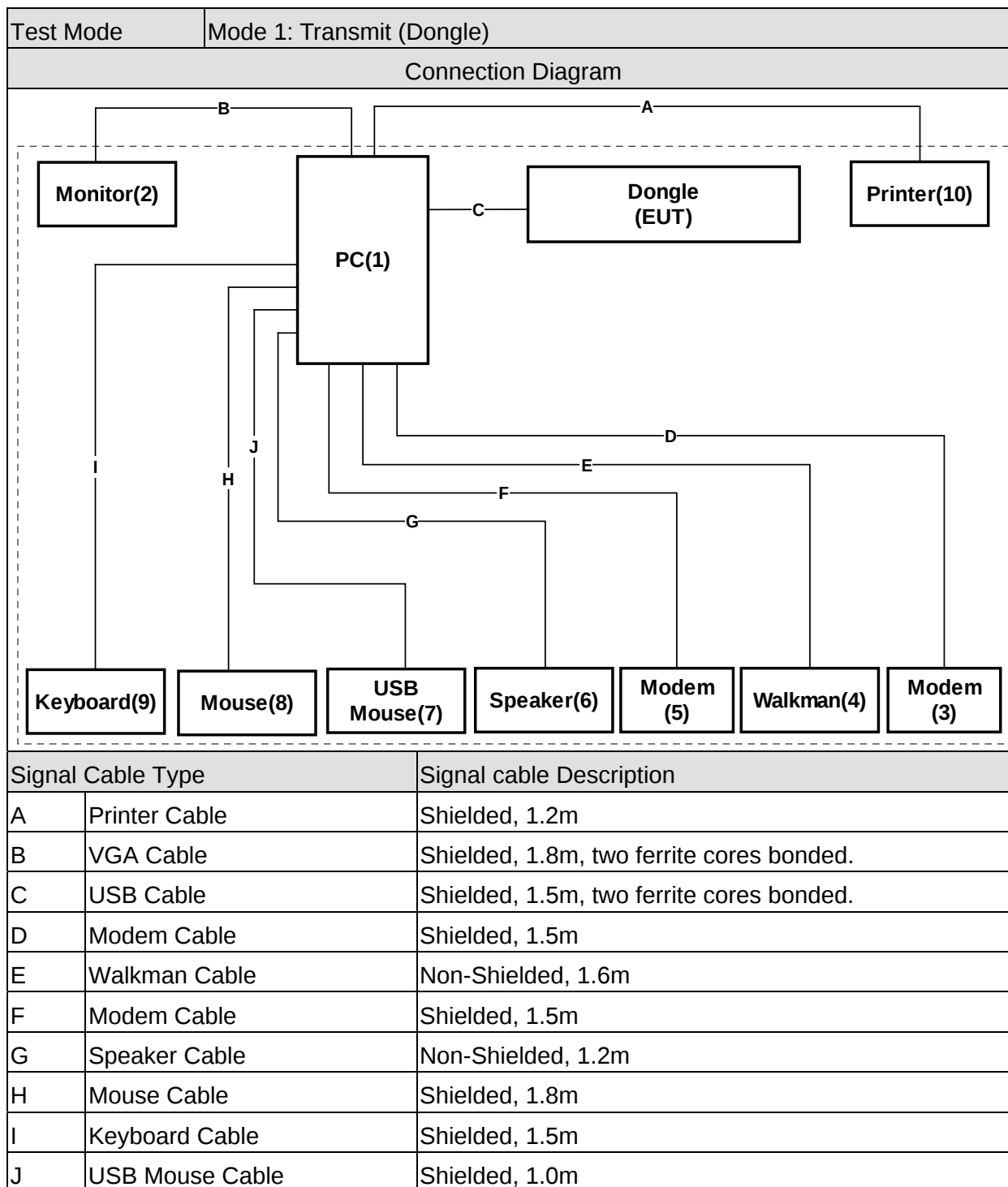
Emission	
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Occupied Bandwidth	Yes
Power Density	Yes

1.4. Tested System Details

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

Test Mode		Mode 1: Transmit (Dongle)				
Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	PC	Gigabyte	GA-6VX7B-4X	103039 04728	DoC	Non-shielded, 1.8m
2	Monitor	CHI MEI	A170E1-09	3UC120955SA1249	DoC	Non-shielded, 1.8m
3	Modem	ACEEX	DM-1414	0102027543	DoC	Non-shielded, 1.6m
4	Walkman	AIWA	US-J202	I20201	DoC	--
5	Modem	ACEEX	DM-2814	960018054	DoC	Non-shielded, 1.6m
6	Speaker	Polk Audio	205	N/A	DoC	--
7	USB Mouse	Logitech	M-SBF83	HCA52200184	DoC	--
8	Mouse	Logitech	M-SBF83	HCA52200288	DoC	--
9	Keyboard	ACER	6311-TW2C	N/A	DoC	--
10	Printer	HP	C2642A	MY75L1D2XN	DoC	Non-shielded, 0.7m

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.5
2	Turn on the power of all equipment.
3	Notebook PC reads data from disk.
4	Data will be transmitting through EUT.
5	The transmitting status will be shown on the monitor.
6	Repeat the above procedure (4) to (5)

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Power Density (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (DSSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description:

January 24, 2005 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520



Accredited by TAF
Accreditation Number: 1313



Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2008



Site Name: Quietek Corporation

Site Address: No.75-1, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan, R.O.C.

TEL : 886-3-592-8858 / FAX : 886-3-592-8859

E-Mail : service@quietek.com

2. Peak Power Output

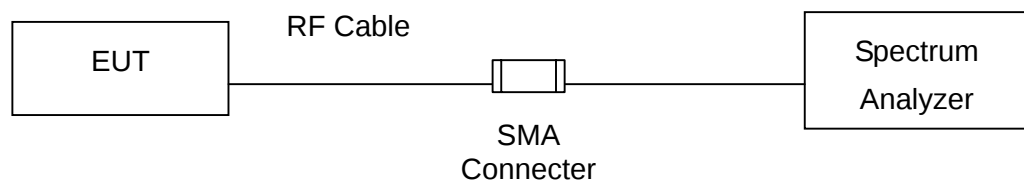
2.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R&S	FSP/ 100005	Oct., 2006
2	No.1 OATS			Sep., 2006

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Test procedures

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

2.4. Limits

The maximum peak power shall be less 1 Watt.

2.5. Test Specification

According to FCC CFR Title 47 Part 15 Subpart C Section 15.247:2005

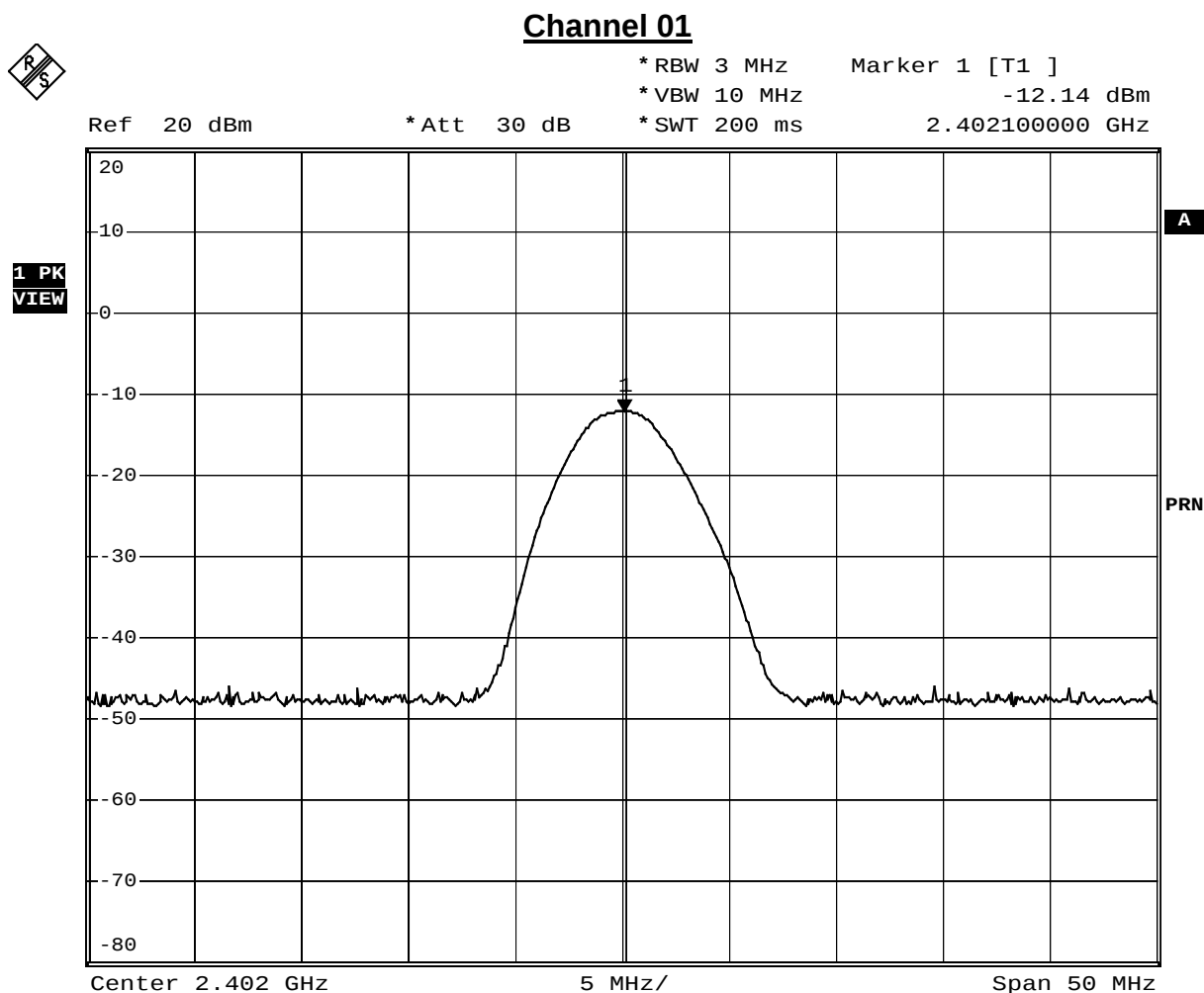
2.6. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB.

2.7. Test Result

Product	Wireless digitizer tablet		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2008/11/20	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2402	-12.14	1Watt= 30 dBm	Pass
39	2440	-13.66	1Watt= 30 dBm	Pass
78	2479	-14.40	1Watt= 30 dBm	Pass



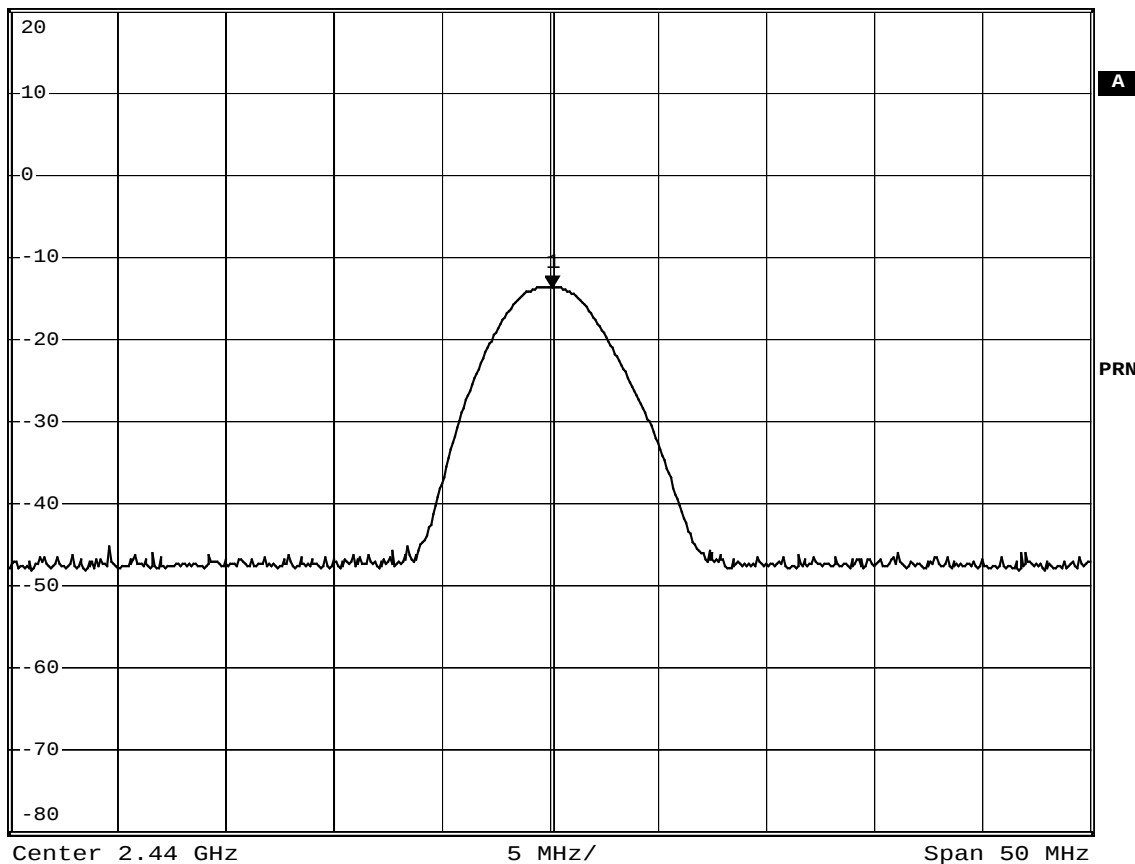
Date: 20.NOV.2008 09:21:01

Channel 38



Ref 20 dBm * Att 30 dB * RBW 3 MHz Marker 1 [T1] -13.66 dBm
 * VBW 10 MHz * SWT 200 ms 2.440100000 GHz

1 PK
VIEW



Date: 20.NOV.2008 09:22:05

Channel 79

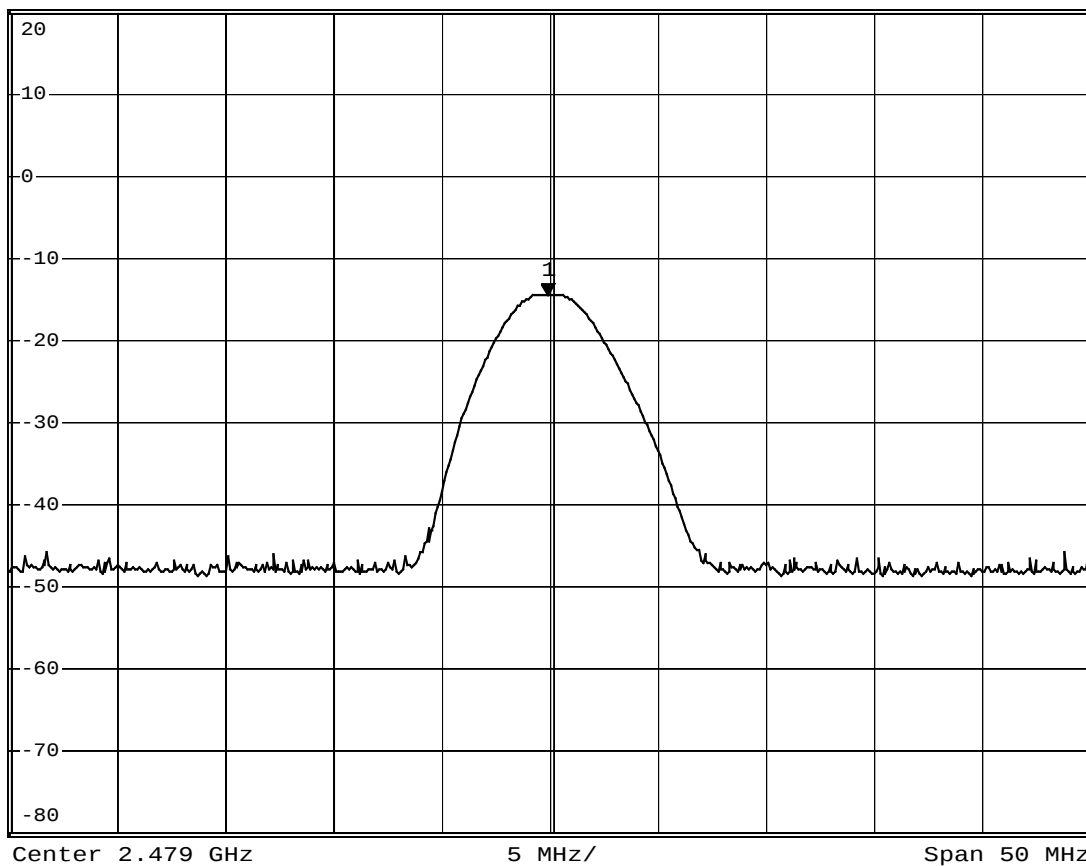


* RBW 3 MHz Marker 1 [T1]
 * VBW 10 MHz -14.40 dBm
 * SWT 200 ms 2.478900000 GHz

Ref 20 dBm

* Att 30 dB

1 PK
VIEW



Date: 20.NOV.2008 09:19:59

3. RF antenna conducted test

3.1. Test Equipment

The following test equipments are used during the test:

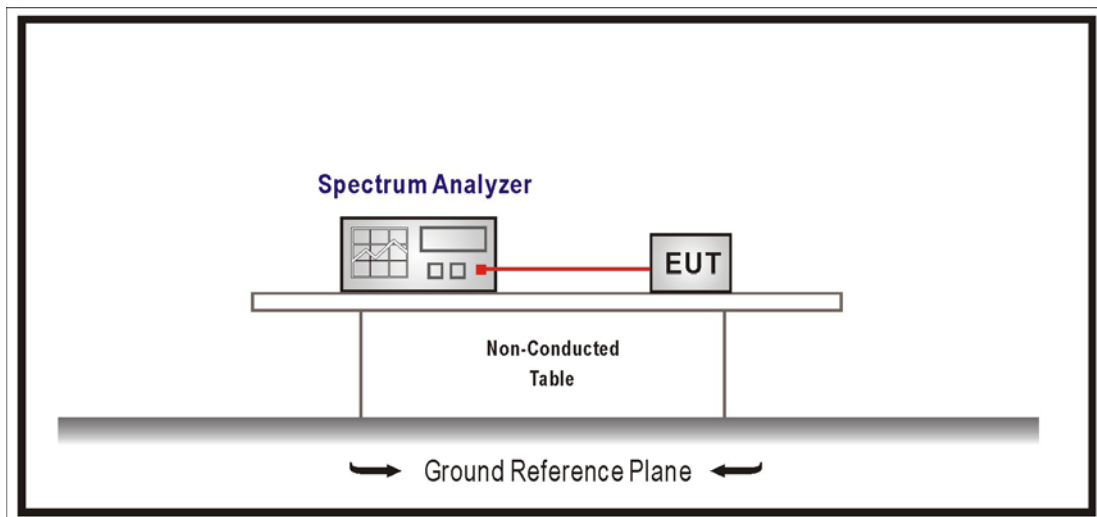
RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2008
2	No.1 OATS			Sep., 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. Test instruments are marked with "X" are used to measure the final test results.

3.2. Test Setup

RF Antenna Conducted Measurement:



3.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

3.4. Test Procedure

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

3.5. Uncertainty

The measurement uncertainty

Conducted is defined as $\pm 1.27\text{dB}$

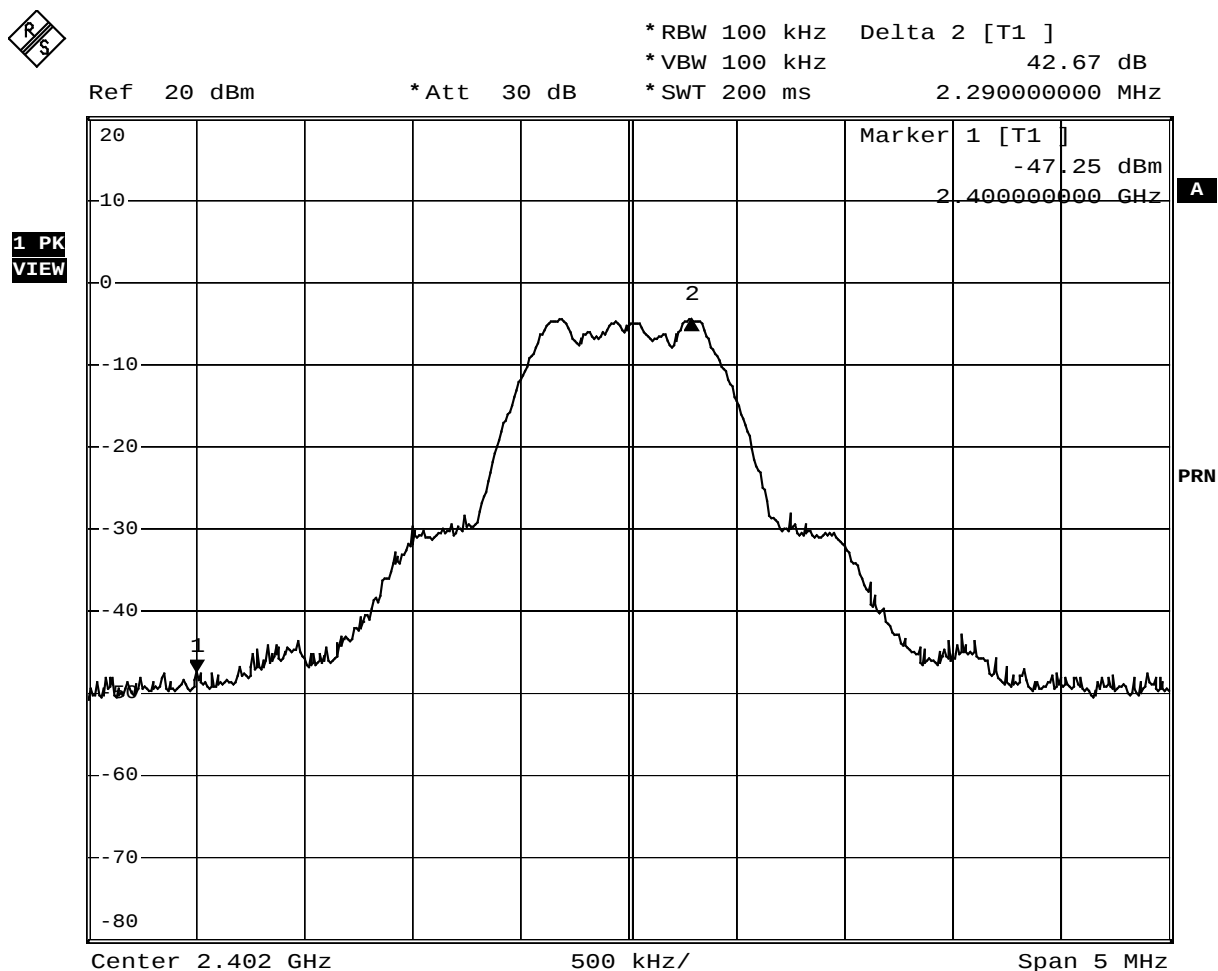
Radiated is defined as $\pm 3.9\text{dB}$

3.6. Test Result

Product	Wireless digitizer tablet		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2008/11/20	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1	2412.00	40.04	>30	Pass
11	2462.00	46.83	>30	Pass

Channel 01 (2402MHz)



Date: 20.NOV.2008 08:36:11

Channel 78 (2479MHz)

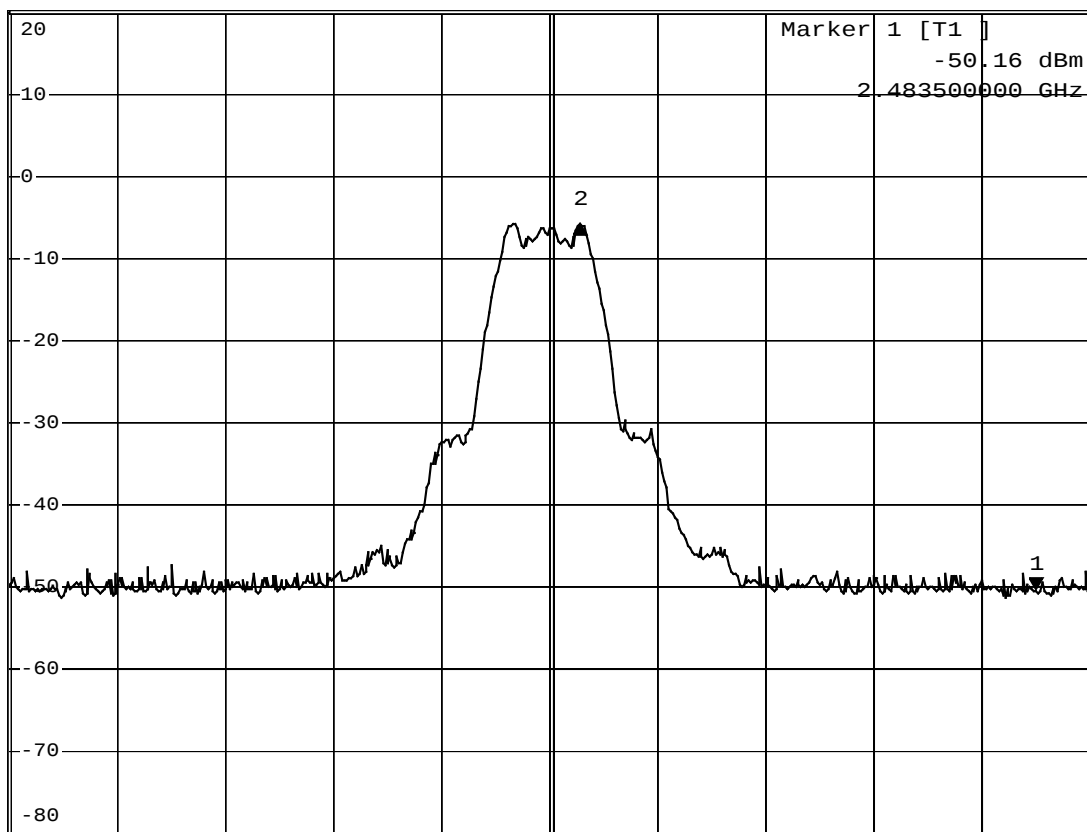


* RBW 100 kHz Delta 2 [T1]
 * VBW 100 kHz 44.24 dB
 * SWT 200 ms -4.220000000 MHz

Ref 20 dBm

* Att 30 dB

1 PK
VIEW



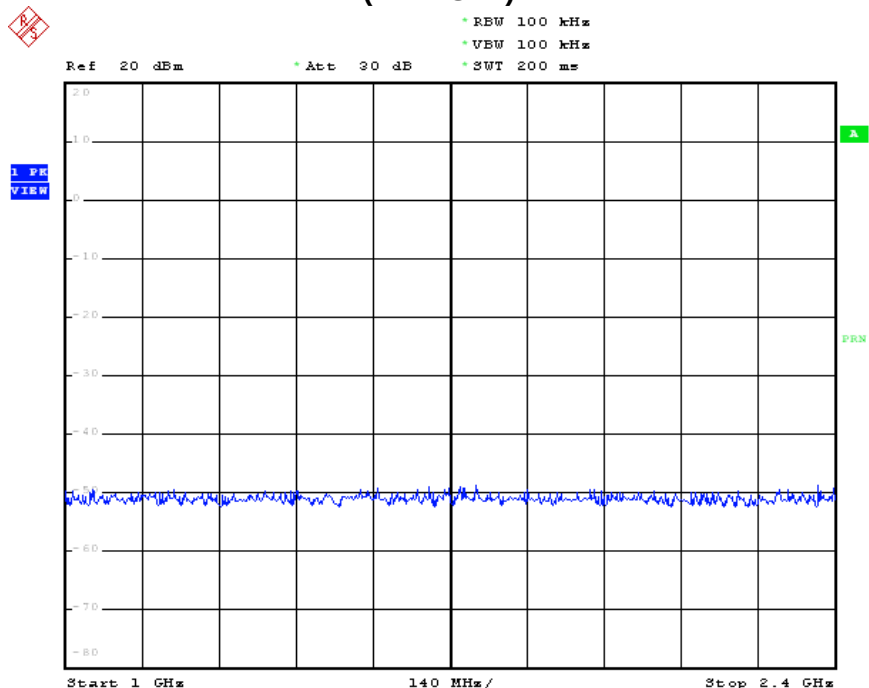
Center 2.479 GHz

1 MHz/

Span 10 MHz

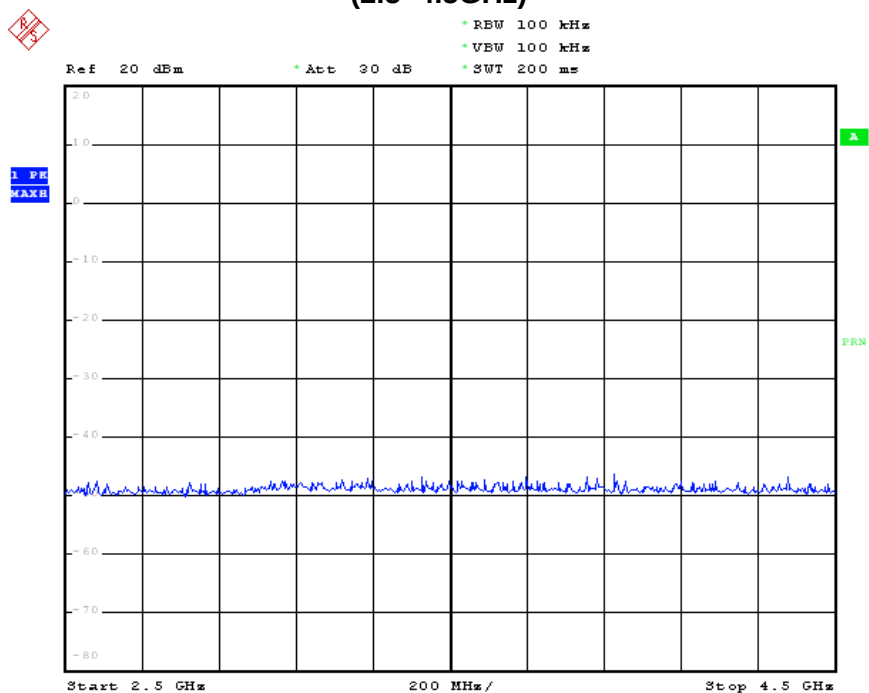
Date: 20.NOV.2008 08:41:30

(1~2.4GHz)



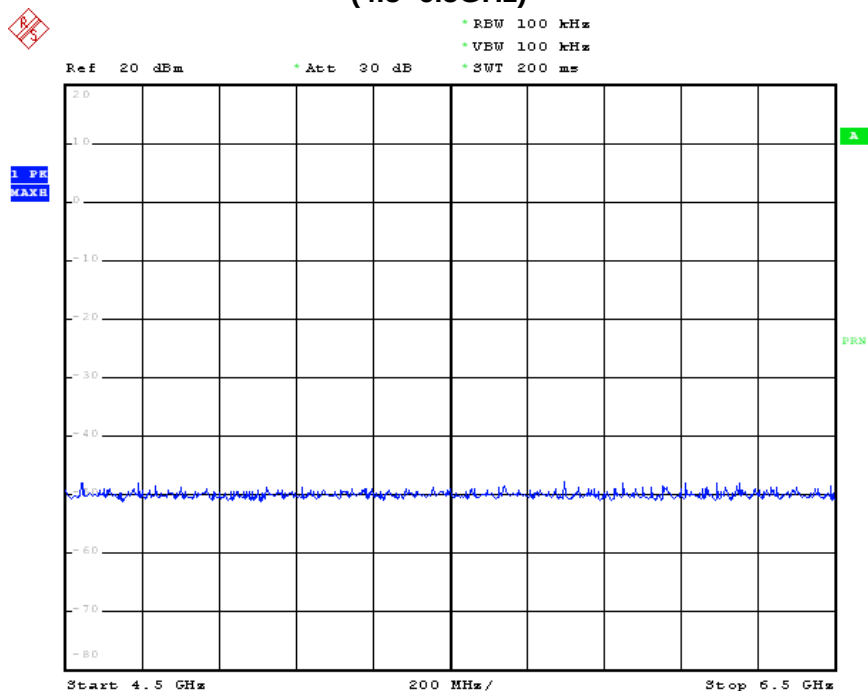
Date: 19.NOV.2008 11:56:09

(2.5~4.5GHz)



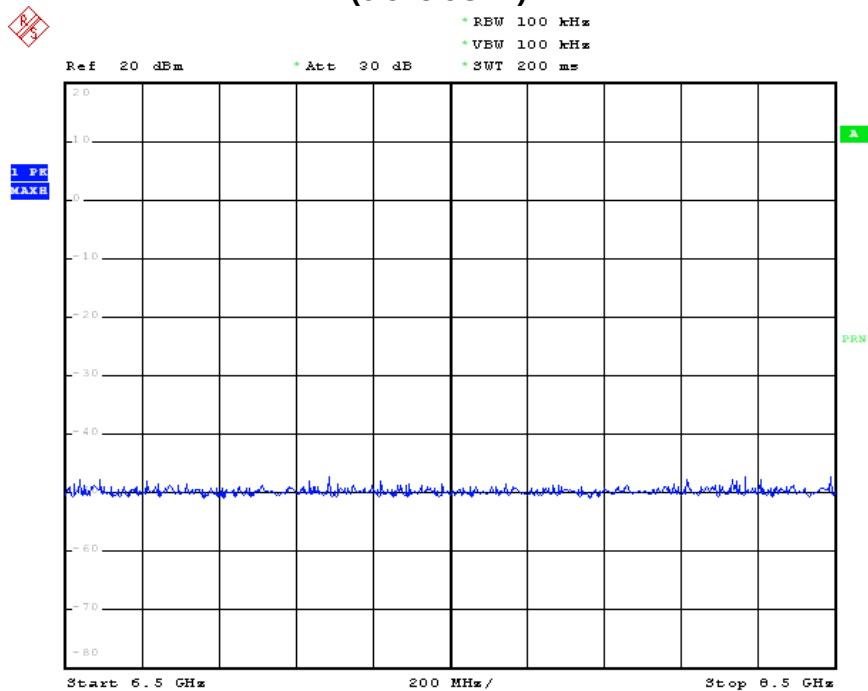
Date: 19.NOV.2008 11:59:30

(4.5~6.5GHz)



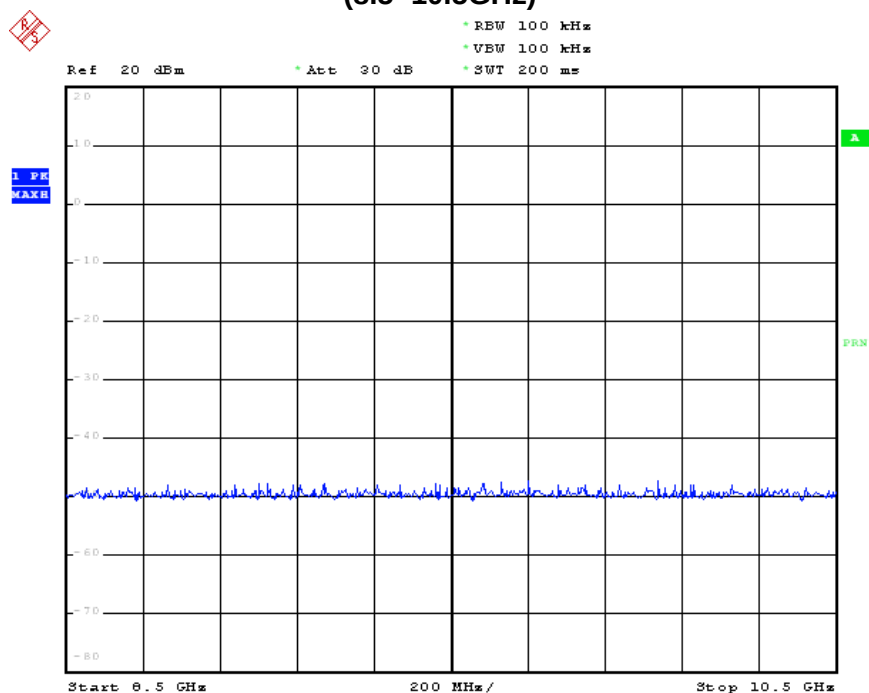
Date: 19.NOV.2008 12:02:40

(6.5~8.5GHz)



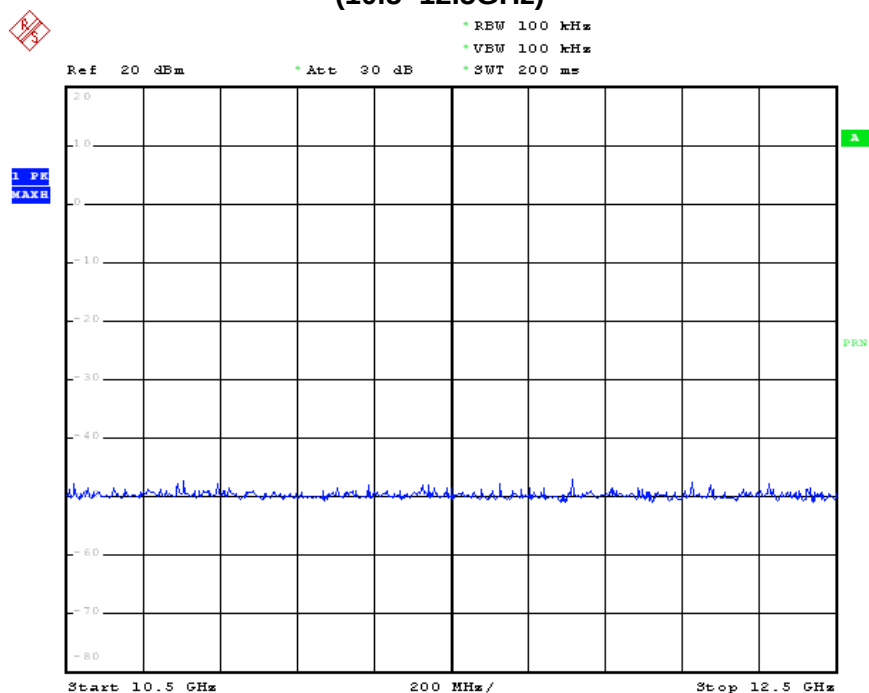
Date: 19.NOV.2008 12:03:17

(8.5~10.5GHz)



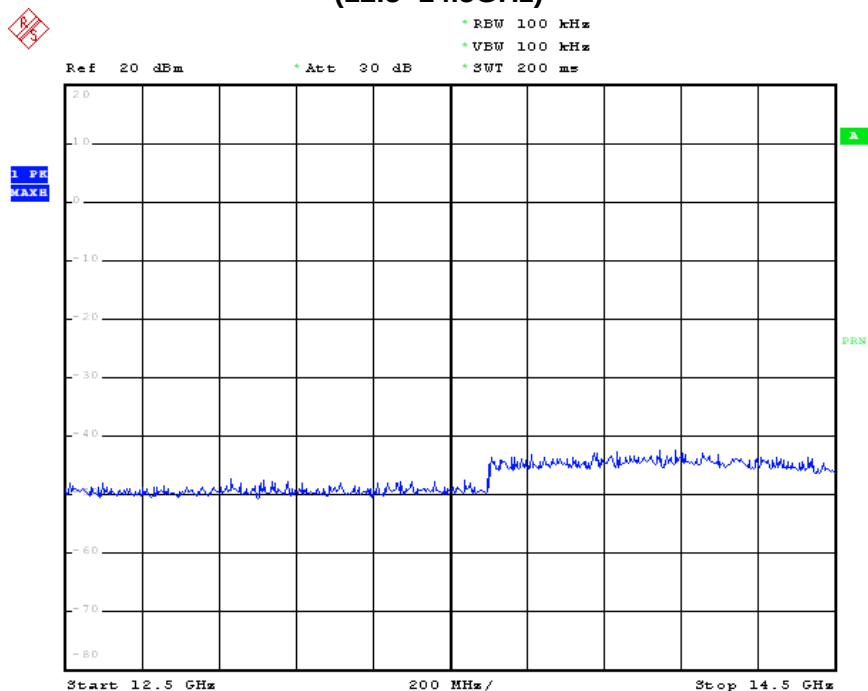
Date: 19.NOV.2008 12:03:57

(10.5~12.5GHz)



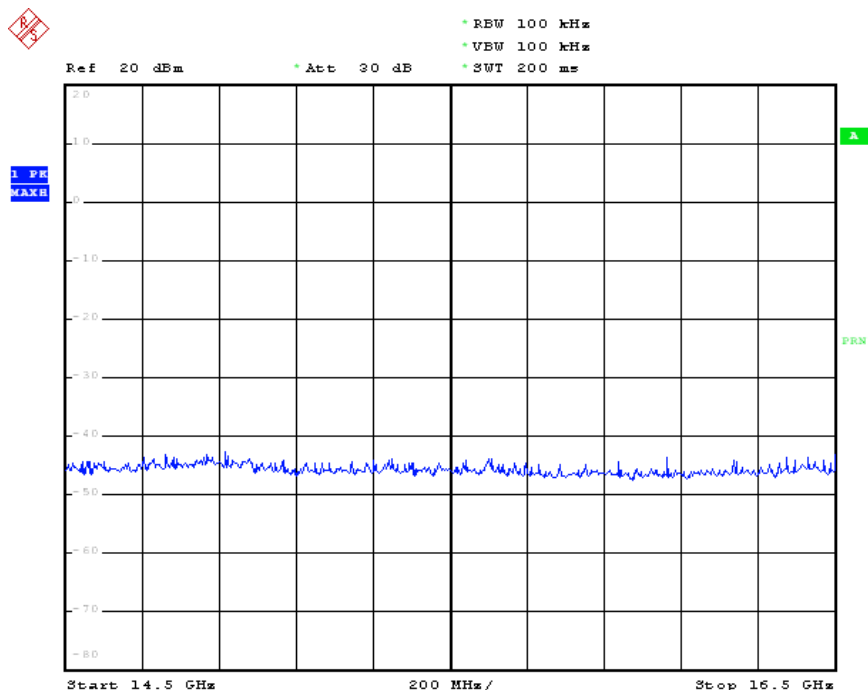
Date: 19.NOV.2008 12:04:54

(12.5~14.5GHz)



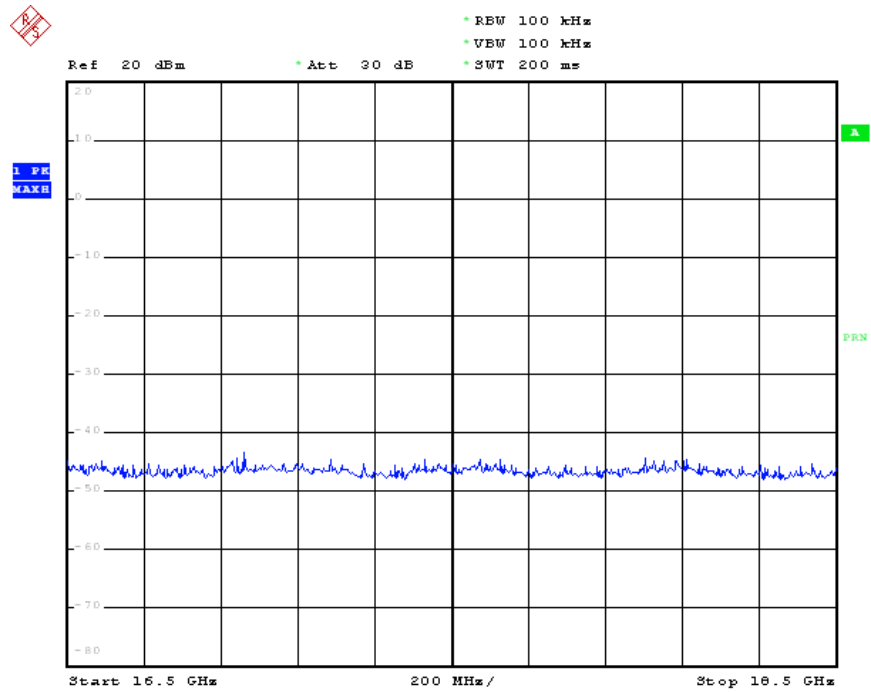
Date: 19.NOV.2008 12:05:29

(14.5~16.5GHz)



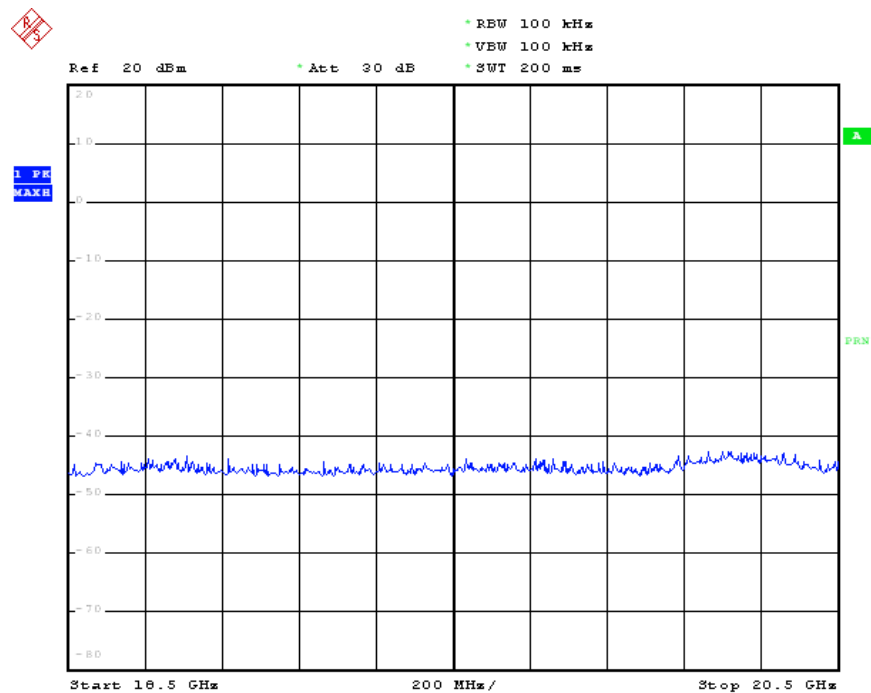
Date: 19.NOV.2008 12:06:06

(16.5~18.5GHz)



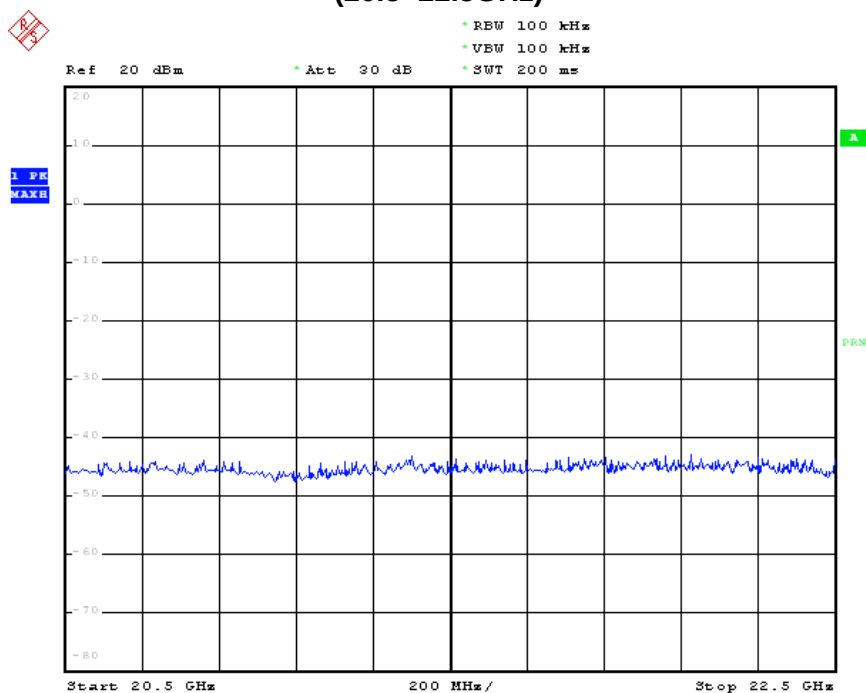
Date: 19.NOV.2008 12:06:44

(18.5~20.5GHz)



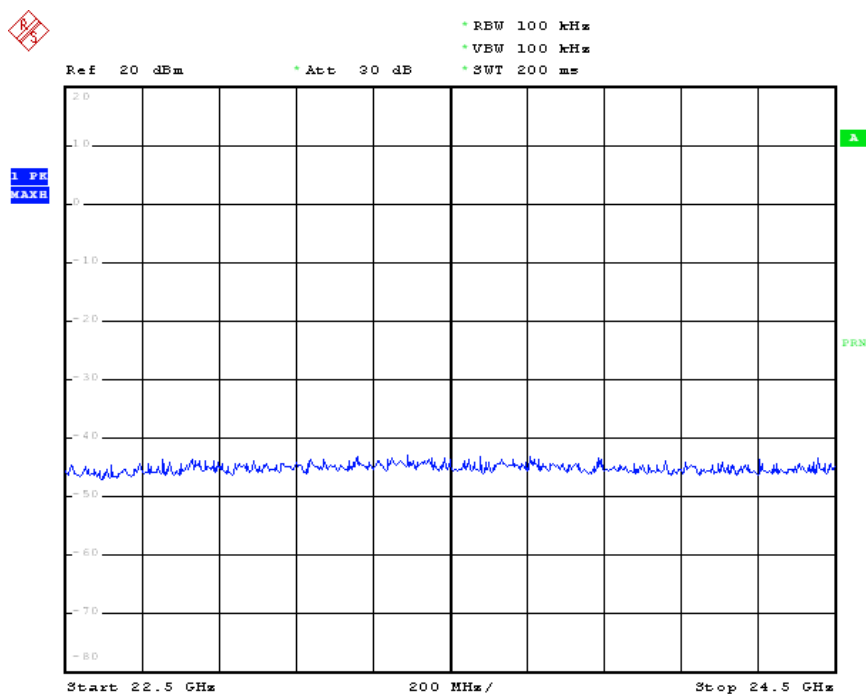
Date: 19.NOV.2008 13:16:47

(20.5~22.5GHz)



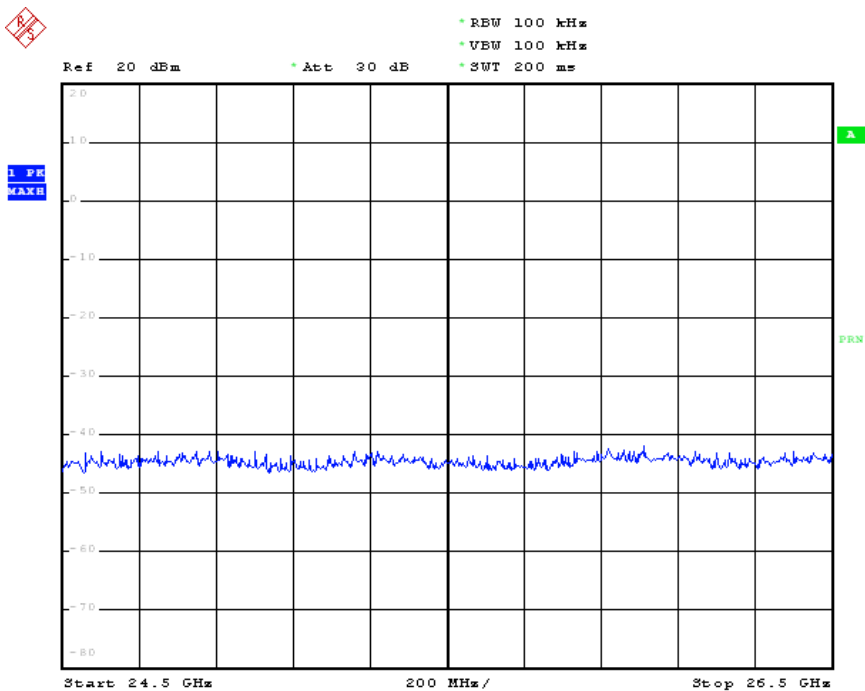
Date: 19.NOV.2008 13:19:43

(22.5~24.5GHz)



Date: 19.NOV.2008 13:20:43

(24.5~26.5GHz)



Date: 19.NOV.2008 13:21:21

4. Conducted Emission

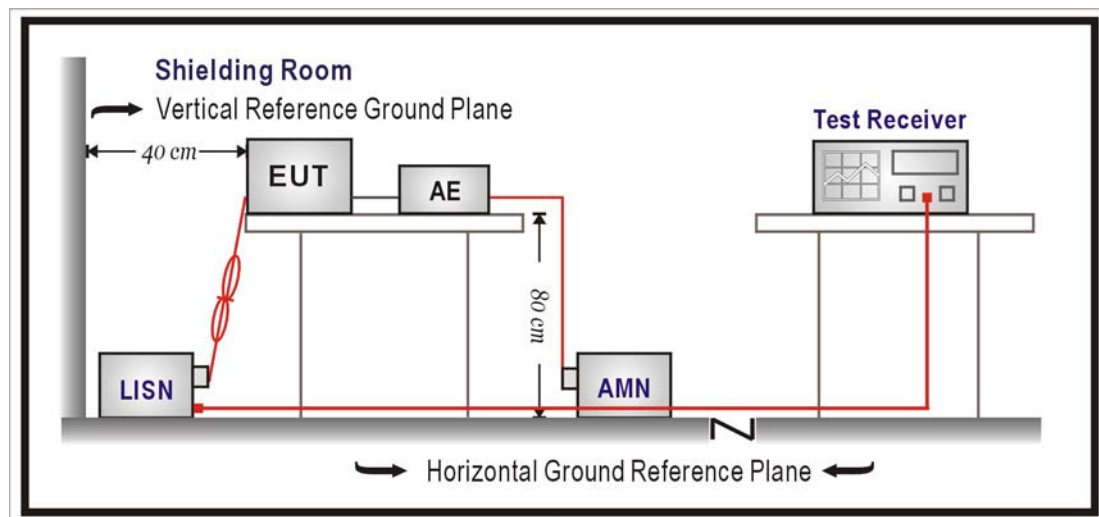
4.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/018	Sep., 2006	
2	Artificial Mains Network	R & S	ENV4200/848411/10	Feb., 2007	Peripherals
3	LISN	R & S	ESH3-Z5/825562/002	Feb., 2007	EUT
4	Pulse Limiter	R & S	ESH3-Z2/357.8810.52	Feb., 2007	
5	No.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	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.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

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

4.5. Test Specification

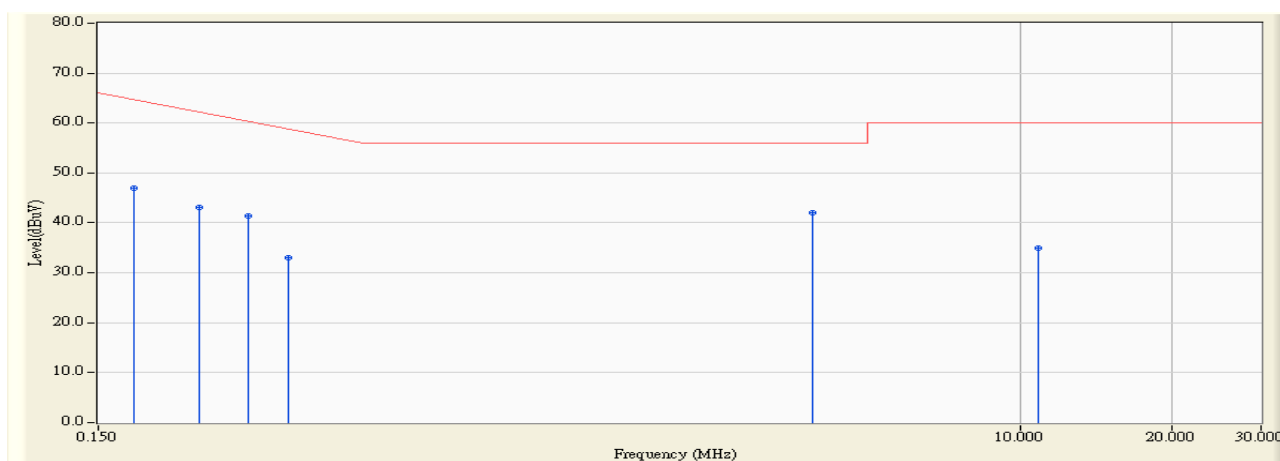
According to FCC Part 15 Subpart C Paragraph 15.207: 2005

4.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

4.7. Test Result

Site : QuieTek Shielding Room2	Time : 2006/04/19 - 20:00
Limit : CISPR_B_00M_QP	Margin : 0
EUT :Wireless digitizer tablet	Probe : SR3_LISN(16A) - Line1
Power : AC 120V/60Hz	Note : Mode 1: Transmit (Dongle)

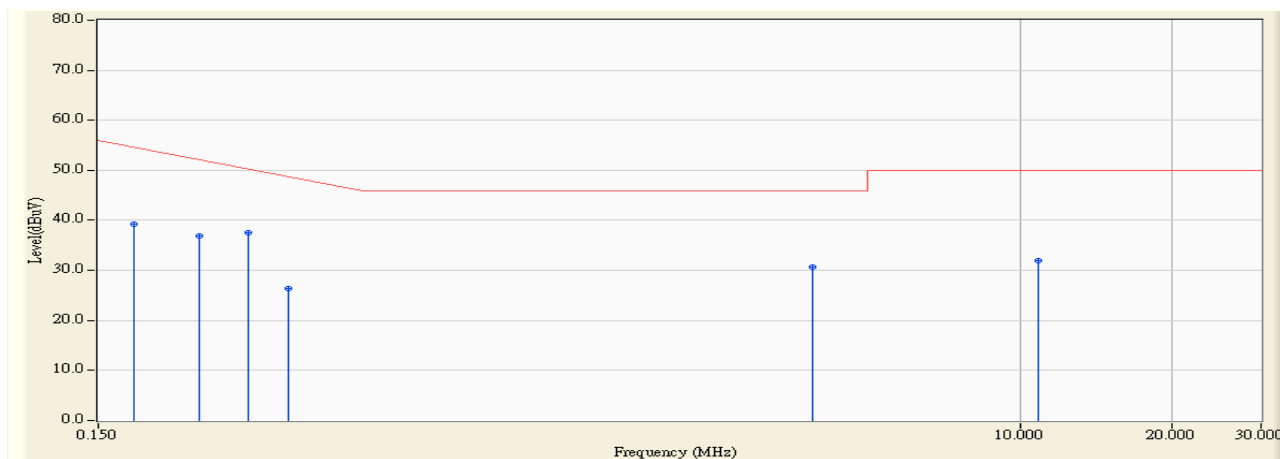


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.176	0.146	46.750	46.896	-18.361	65.257	QUASIPeAK
2		0.237	0.160	42.940	43.100	-20.414	63.514	QUASIPeAK
3		0.298	0.177	41.270	41.447	-20.324	61.771	QUASIPeAK
4		0.356	0.190	32.930	33.120	-26.994	60.114	QUASIPeAK
5	*	3.895	0.430	41.700	42.130	-13.870	56.000	QUASIPeAK
6		10.853	0.750	34.160	34.910	-25.090	60.000	QUASIPeAK

Note:

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

Site : QuieTek Shielding Room2	Time : 2006/04/19 - 20:00
Limit : CISPR_B_00M_AV	Margin : 0
EUT :Wireless digitizer tablet	Probe : SR3_LISN(16A) - Line1
Power : AC 120V/60Hz	Note : Mode 1: Transmit (Dongle)

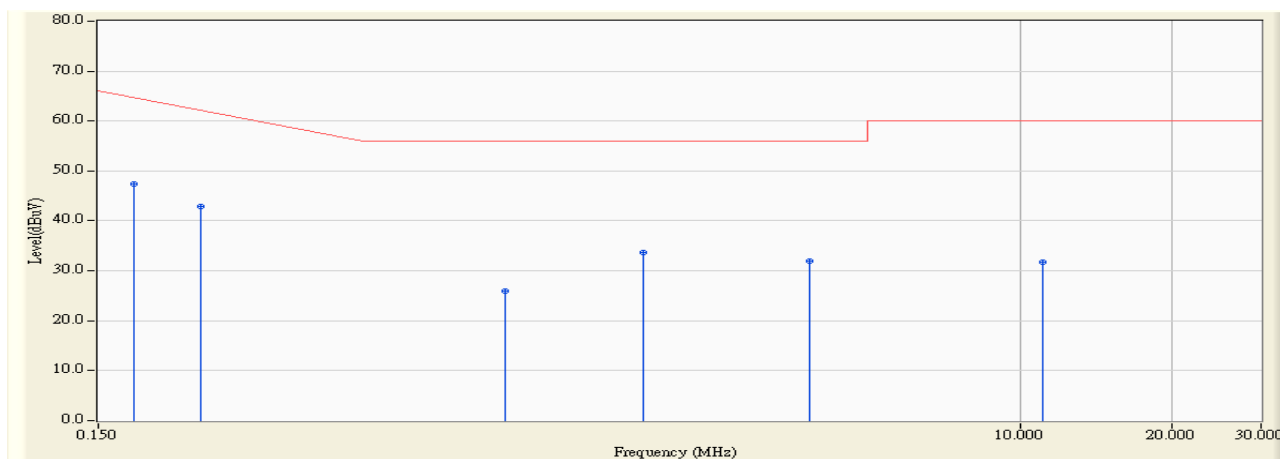


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.176	0.146	39.020	39.166	-16.091	55.257	AVERAGE
2		0.237	0.160	36.740	36.900	-16.614	53.514	AVERAGE
3	*	0.298	0.177	37.250	37.427	-14.344	51.771	AVERAGE
4		0.356	0.190	26.120	26.310	-23.804	50.114	AVERAGE
5		3.895	0.430	30.280	30.710	-15.290	46.000	AVERAGE
6		10.853	0.750	31.250	32.000	-18.000	50.000	AVERAGE

Note:

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

Site : QuieTek Shielding Room2	Time : 2006/04/19 - 20:04
Limit : CISPR_B_00M_QP	Margin : 0
EUT :Wireless digitizer tablet	Probe : SR3_LISN(16A) - Line2
Power : AC 120V/60Hz	Note : Mode 1: Transmit (Dongle)

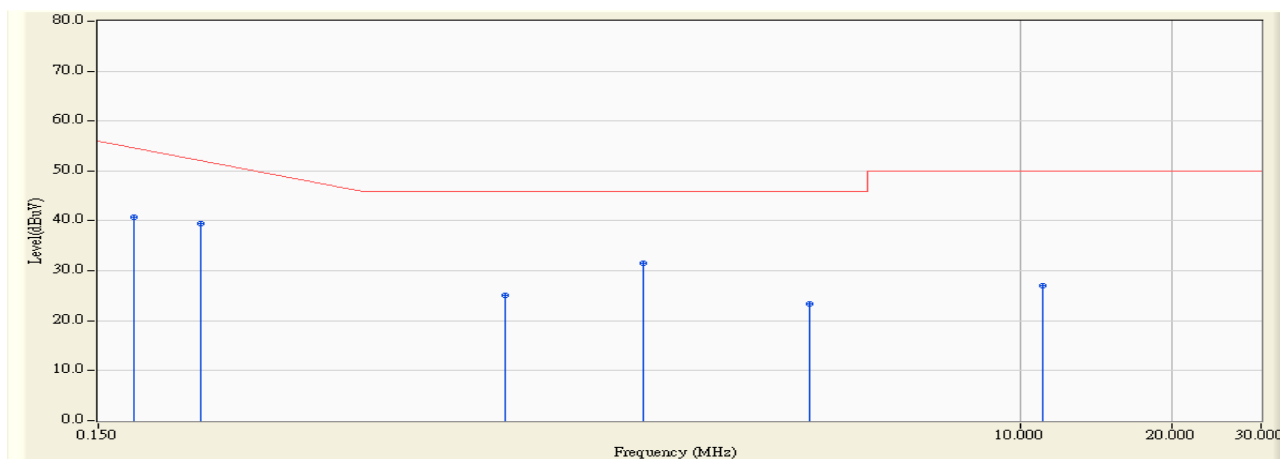


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.177	0.146	47.350	47.496	-17.733	65.229	QUASIPeAK
2		0.240	0.160	42.760	42.920	-20.509	63.429	QUASIPeAK
3		0.956	0.230	25.810	26.040	-29.960	56.000	QUASIPeAK
4		1.796	0.360	33.420	33.780	-22.220	56.000	QUASIPeAK
5		3.830	0.430	31.430	31.860	-24.140	56.000	QUASIPeAK
6		11.088	0.670	31.090	31.760	-28.240	60.000	QUASIPeAK

Note:

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

Site : QuieTek Shielding Room2	Time : 2006/04/19 - 20:04
Limit : CISPR_B_00M_AV	Margin : 0
EUT :Wireless digitizer tablet	Probe : SR3_LISN(16A) - Line2
Power : AC 120V/60Hz	Note : Mode 1: Transmit (Dongle)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.177	0.146	40.620	40.766	-14.463	55.229	AVERAGE
2	*	0.240	0.160	39.240	39.400	-14.029	53.429	AVERAGE
3		0.956	0.230	24.970	25.200	-20.800	46.000	AVERAGE
4		1.796	0.360	31.080	31.440	-14.560	46.000	AVERAGE
5		3.830	0.430	22.980	23.410	-22.590	46.000	AVERAGE
6		11.088	0.670	26.350	27.020	-22.980	50.000	AVERAGE

Note:

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

5. Radiated Emission

5.1. Test Equipment

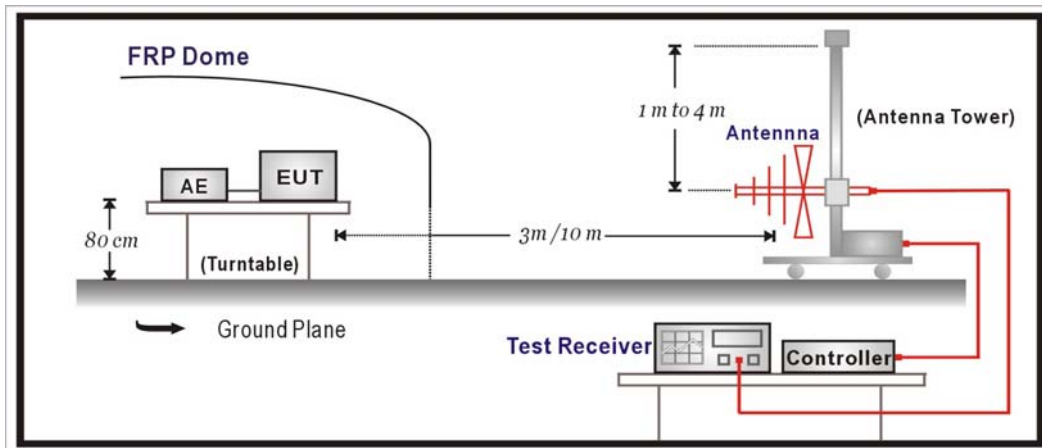
The following test equipment are used during the test:

Item		Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Test Receiver	R & S	ESCS 30 / 825442/017	Jan., 2007
2	X	Spectrum Analyzer	Advantest	R3261C / 81720266	N/A
3	X	Pre-Amplifier	HP	8447D / 2944A09276	N/A
4	X	Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2006
5	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2006
6	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2007
7	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Jul., 2006
8		No.1 OATS			Sep., 2006

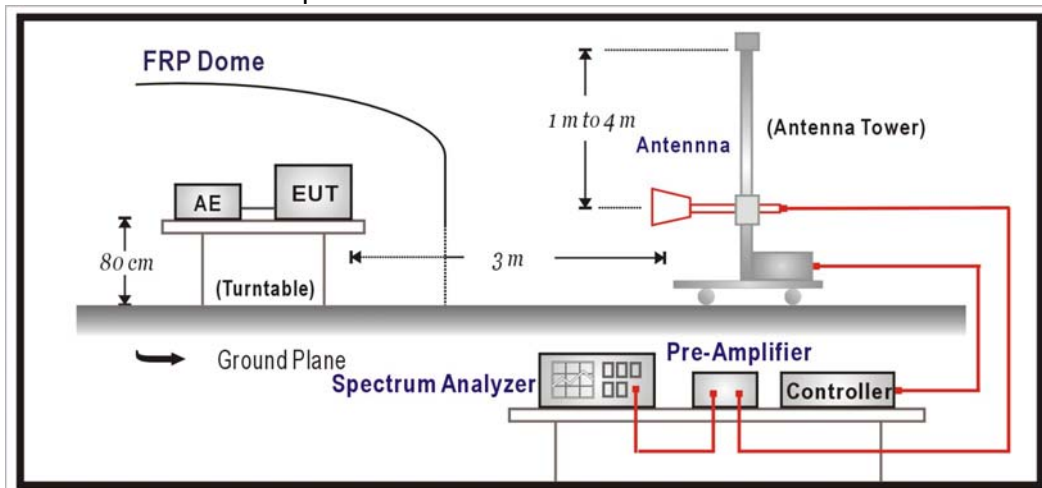
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. "N/A" Ca1.Date is used to Pre-test, not final test.

5.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



5.3. 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	dBuV/m
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.

5.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 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 C63.4:2003 on radiated measurement. The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. The frequency range from 30MHz to 10th harmonics is checked.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2005

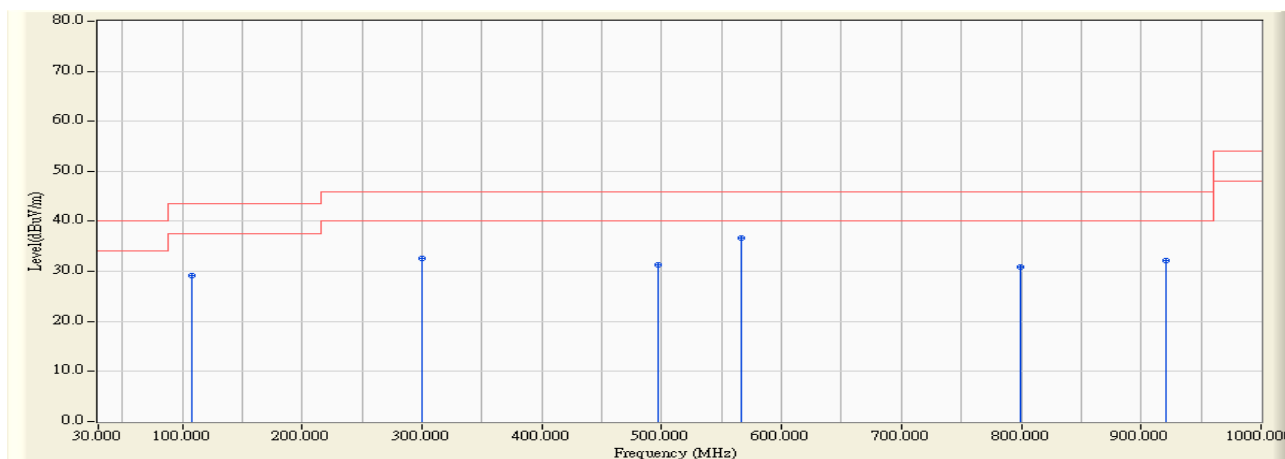
5.6. Uncertainty

The measurement uncertainty
 30MHz~1GHz as $\pm 3.19\text{dB}$
 1GHz~26.5Ghz as $\pm 3.9\text{dB}$

5.7. Test Result

30MHz-1GHz Spurious:

Site : Site 1	Time : 2007/04/19 - 13:59
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : Wireless Tablet Receiver X860	Probe : FCC_RF_30-1G(200605) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-39 Mode 1: Transmit (Dongle)

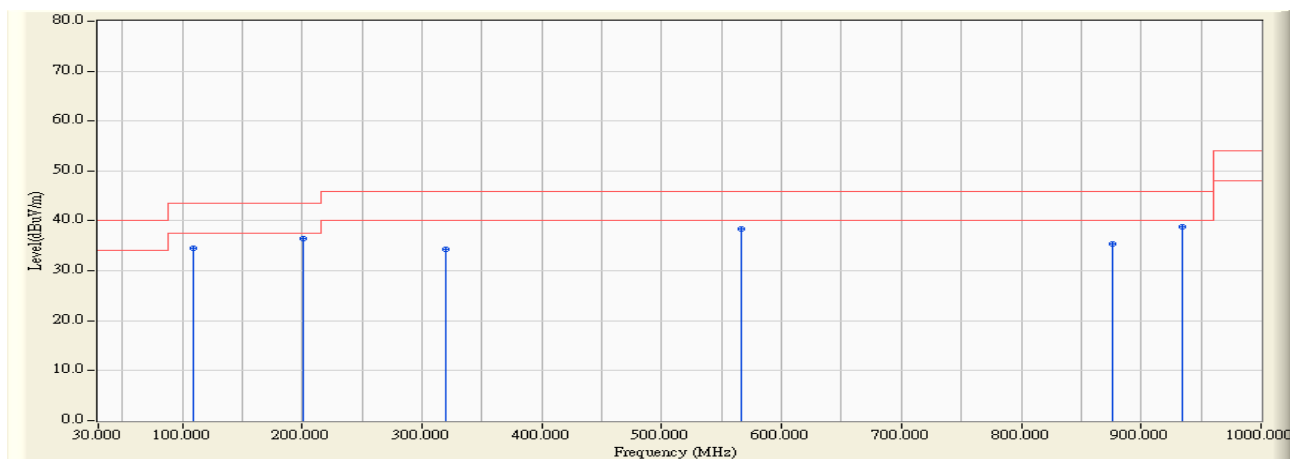


	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	107.756	-8.951	38.092	29.141	-14.359	43.500	Quasi-Peak
2	300.200	-3.511	36.185	32.674	-13.326	46.000	Quasi-Peak
3	496.533	-1.757	33.035	31.278	-14.722	46.000	Quasi-Peak
4	* 566.513	4.251	32.337	36.588	-9.412	46.000	Quasi-Peak
5	799.780	3.500	27.311	30.812	-15.188	46.000	Quasi-Peak
6	920.301	4.073	28.014	32.087	-13.913	46.000	Quasi-Peak

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : Site 1	Time : 2007/04/19 - 14:00
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_30-1G(200605) - VERTICAL
Power : AC 120V/60Hz	Note : TX-39 Mode 1: Transmit (Dongle)



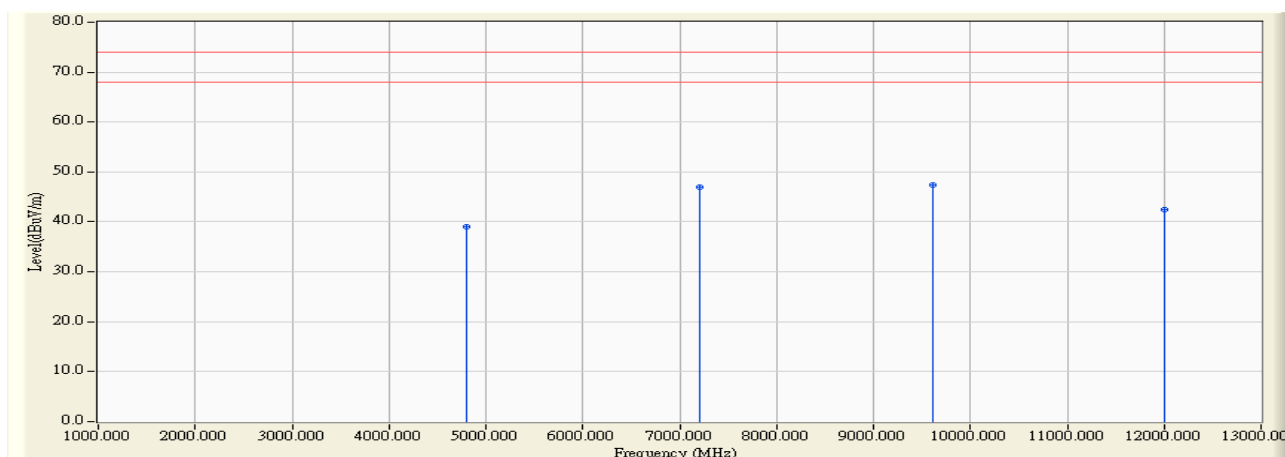
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		109.699	-1.577	36.183	34.606	-8.894	43.500	Quasi-Peak
2	*	201.062	-2.930	39.459	36.529	-6.971	43.500	Quasi-Peak
3		319.639	-4.658	38.877	34.219	-11.781	46.000	Quasi-Peak
4		566.513	3.254	35.048	38.302	-7.698	46.000	Quasi-Peak
5		875.591	4.196	31.141	35.337	-10.663	46.000	Quasi-Peak
6		933.908	7.251	31.583	38.834	-7.166	46.000	Quasi-Peak

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Harmonic & Spurious:

Site : Site 1	Time : 2007/04/20 - 15:16
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-01 Mode 1: Transmit (Dongle)

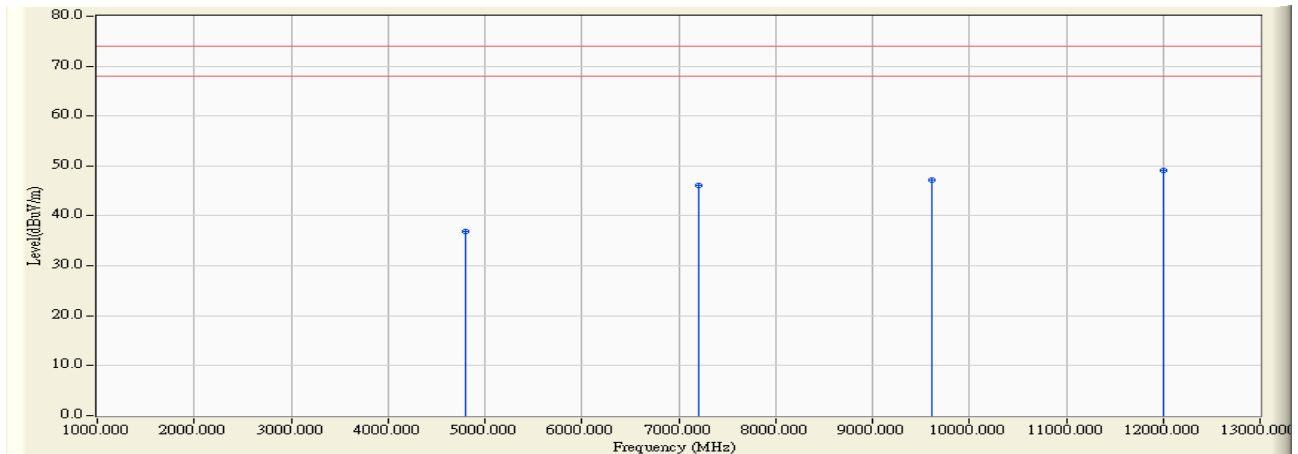


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4804.110	3.595	35.370	38.965	-35.035	74.000	54.000	PEAK
2		7205.370	8.690	38.250	46.940	-27.060	74.000	54.000	PEAK
3	*	9608.400	12.690	34.660	47.350	-26.650	74.000	54.000	PEAK
4		12010.250	11.039	31.390	42.429	-31.571	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/04/20 - 15:17
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-01 Mode 1: Transmit (Dongle)

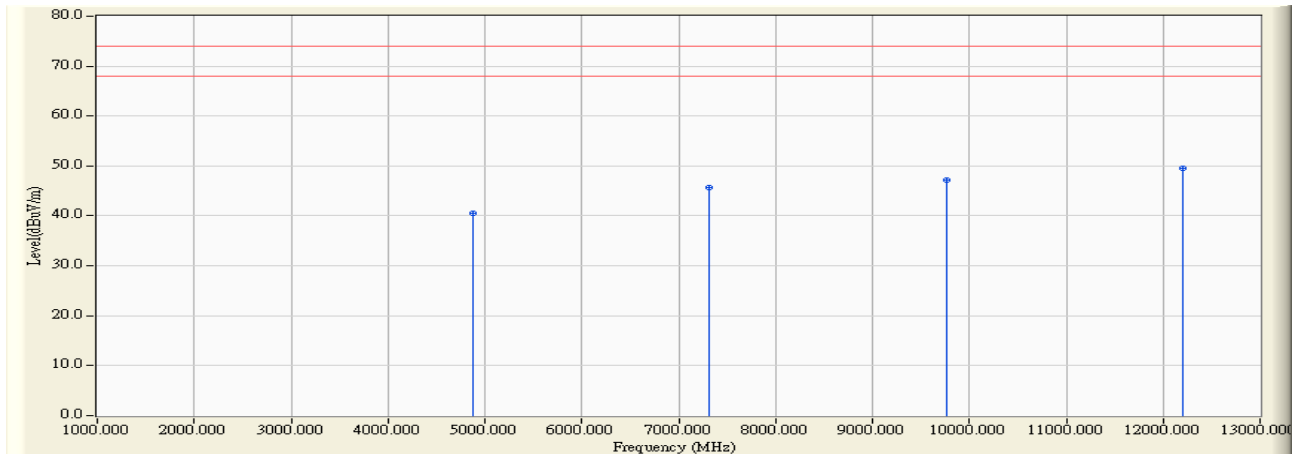


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4803.940	1.812	35.100	36.911	-37.089	74.000	54.000	PEAK
2		7207.250	8.641	37.560	46.201	-27.799	74.000	54.000	PEAK
3		9608.060	14.677	32.590	47.267	-26.733	74.000	54.000	PEAK
4	*	12010.660	16.613	32.410	49.022	-24.978	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/04/20 - 15:19
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-39 Mode 1: Transmit (Dongle)

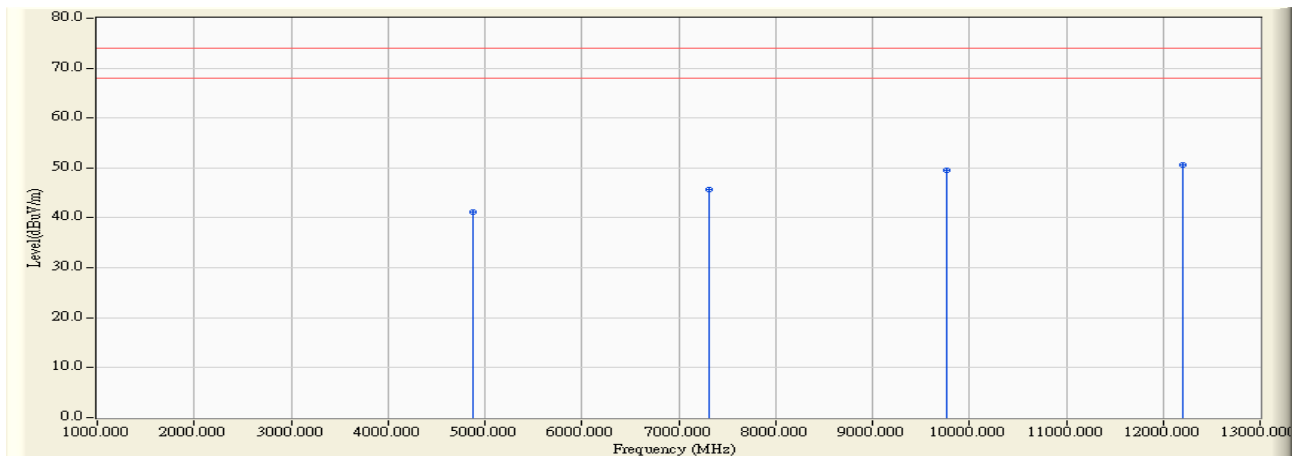


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4879.990	4.128	36.470	40.598	-33.402	74.000	54.000	PEAK
2		7319.370	8.855	36.850	45.705	-28.295	74.000	54.000	PEAK
3		9760.530	13.200	34.070	47.269	-26.731	74.000	54.000	PEAK
4	*	12200.120	18.468	31.140	49.608	-24.392	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/04/20 - 15:20
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-39 Mode 1: Transmit (Dongle)

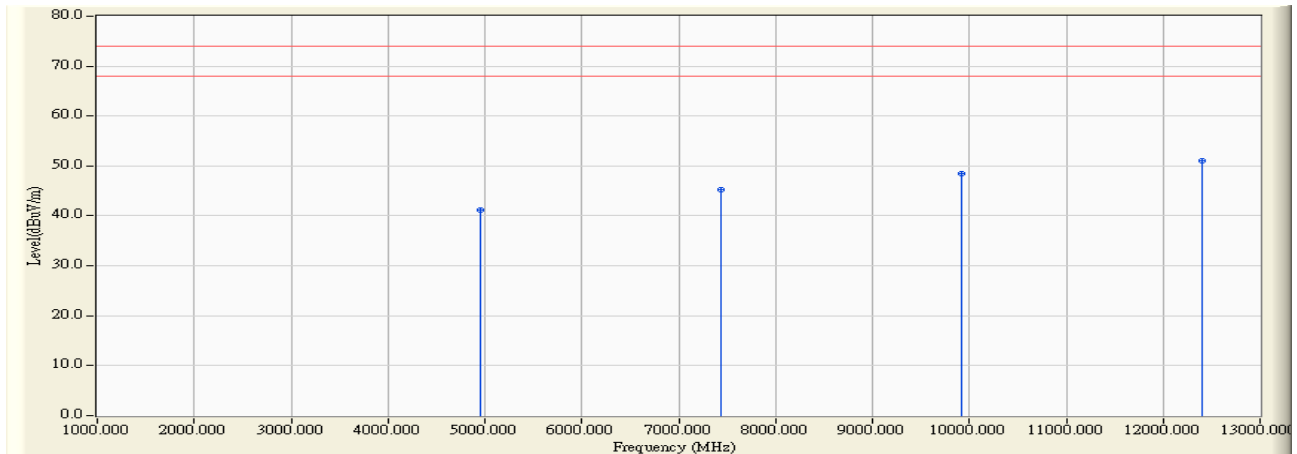


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4880.680	2.492	38.680	41.171	-32.829	74.000	54.000	PEAK
2		7320.140	8.855	36.860	45.715	-28.285	74.000	54.000	PEAK
3		9760.400	15.199	34.340	49.539	-24.461	74.000	54.000	PEAK
4	*	12200.380	19.562	31.130	50.692	-23.308	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/04/20 - 15:21
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_1G-18G(2005-3) - HORIZONTAL
Power : AC 120V/60Hz	Note : TX-78 Mode 1: Transmit (Dongle)

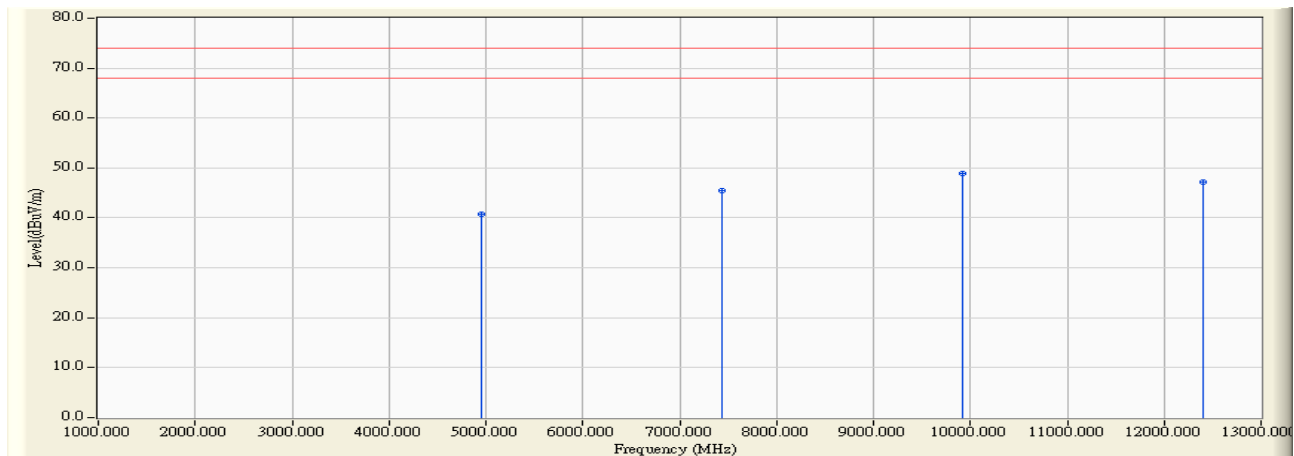


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4958.080	4.399	36.720	41.120	-32.880	74.000	54.000	PEAK
2		7436.220	9.012	36.170	45.182	-28.818	74.000	54.000	PEAK
3		9916.320	14.503	33.920	48.423	-25.577	74.000	54.000	PEAK
4	*	12395.020	20.223	30.910	51.133	-22.867	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : Site 1	Time : 2007/04/20 - 15:22
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
EUT :Wireless digitizer tablet	Probe : FCC_RF_1G-18G(2005-3) - VERTICAL
Power : AC 120V/60Hz	Note : TX-78 Mode 1: Transmit (Dongle)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4958.400	2.915	37.840	40.755	-33.245	74.000	54.000	PEAK
2		7437.810	9.014	36.530	45.544	-28.456	74.000	54.000	PEAK
3	*	9916.400	15.341	33.560	48.900	-25.100	74.000	54.000	PEAK
4		12395.040	16.213	30.930	47.143	-26.857	74.000	54.000	PEAK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

6. Band Edge

6.1. Test Equipment

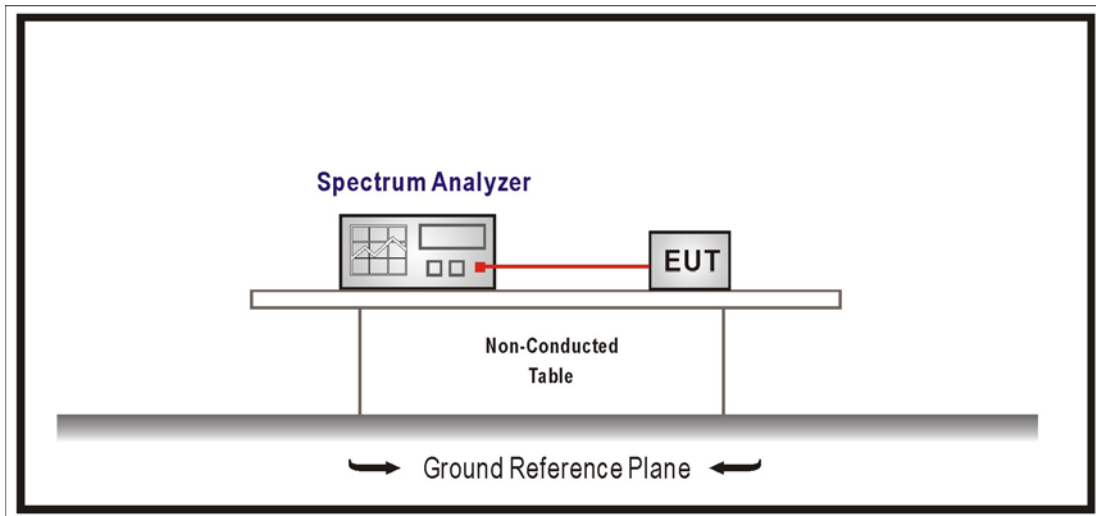
The following test equipment are used during the test:

RF Conducted Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer		R & S	FSP / 100561	Mar., 2007
2	No.1 OATS				Sep., 2006
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2006
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2007
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2006
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2006
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2006
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2006
7	No.1 OATS				Sep., 2006

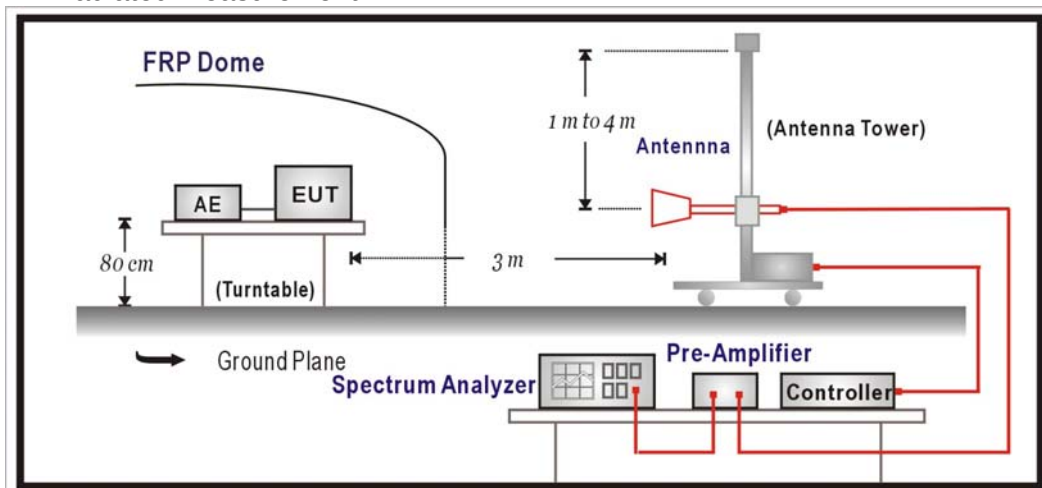
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

6.2. Test Setup

RF Conducted Measurement:



RF Radiated Measurement:



6.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 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 C63.4:2003 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2005

6.6. Uncertainty

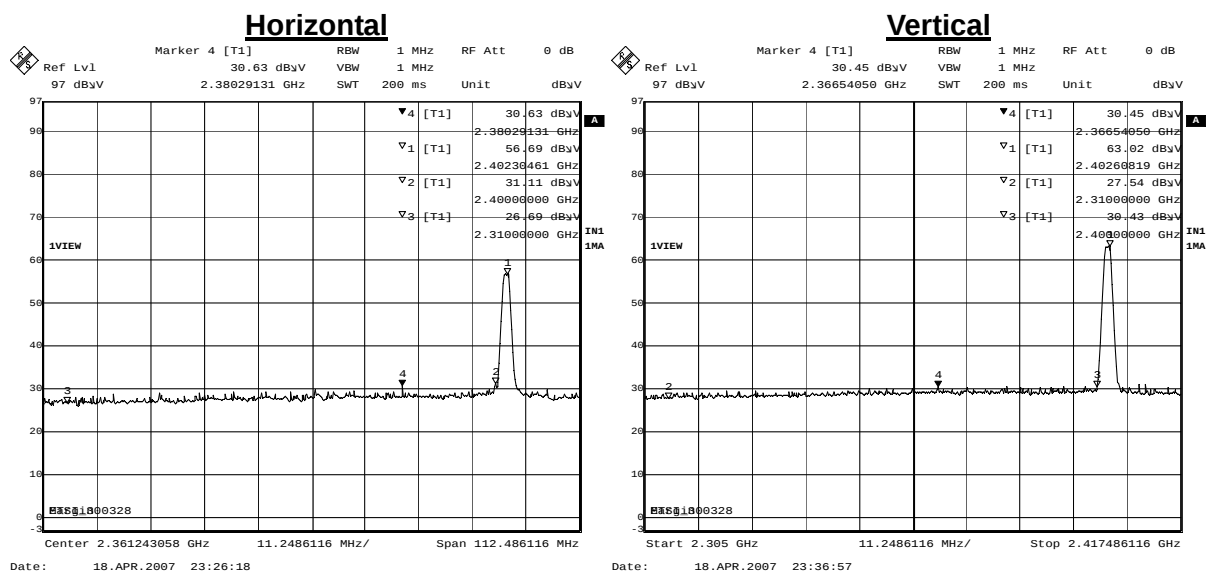
The measurement uncertainty
 Conducted is defined as $\pm 1.27\text{dB}$
 Radiated is defined as $\pm 3.9\text{dB}$

6.7. Test Result

Product	Wireless digitizer tablet		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2006/04/19	Test Site	No.1 OATS

RF Radiated Measurement: (Peak)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1(Horizontal)	2380.020	30.630	24.441	4.502	59.572	74	54	Pass
1(Vertical)	2366.540	30.450	22.799	4.494	57.743	74	54	Pass



Note: 1.For peak measurements above 1GHz, set RBW=1MHz, VBW=1MHz

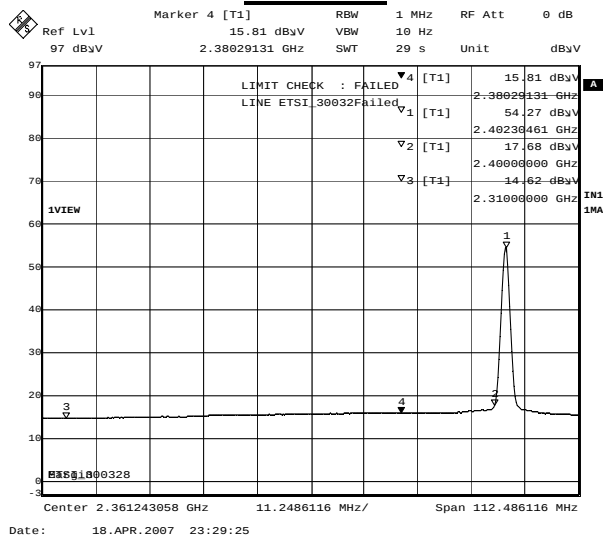
- The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	Wireless digitizer tablet		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2006/04/19	Test Site	No.1 OATS

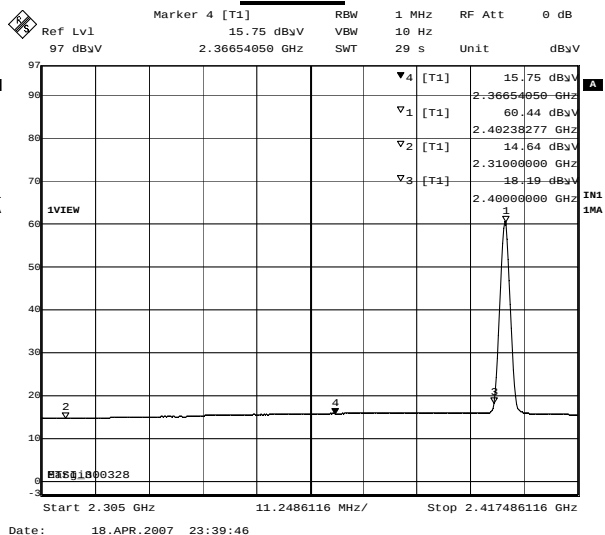
RF Radiated Measurement: (Average)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1(Horizontal)	2380.290	15.810	24.442	4.502	44.754	74	54	Pass
1(Vertical)	2366.540	15.750	22.799	4.494	43.043	74	54	Pass

Horizontal



Vertical



Note: 1.For average measurements above 1GHz, set RBW=1MHz, VBW=10Hz

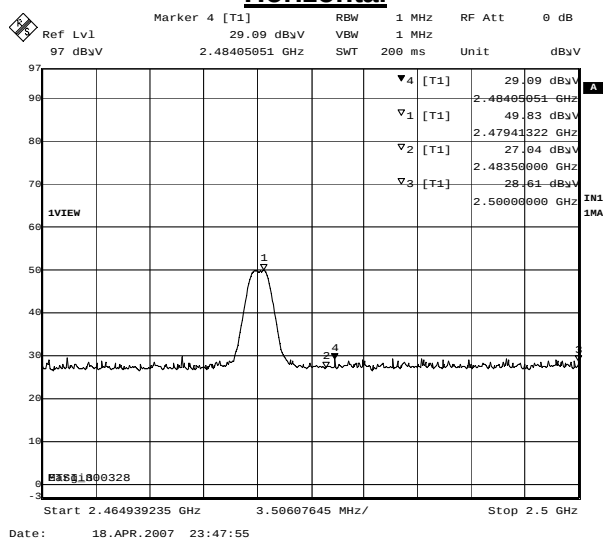
2.The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	Wireless digitizer tablet		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2006/04/19	Test Site	No.1 OATS

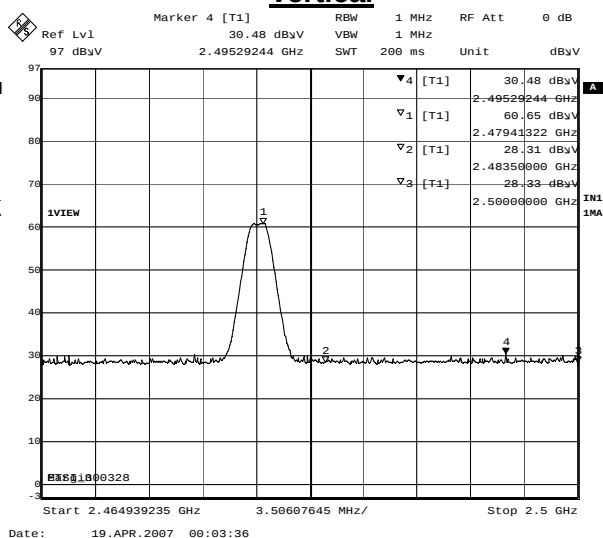
RF Radiated Measurement: (Peak)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Horizontal)	2484.050	29.090	24.722	4.473	58.385	74	54	Pass
78(Vertical)	2495.290	30.480	23.148	4.580	58.208	74	54	Pass

Horizontal



Vertical



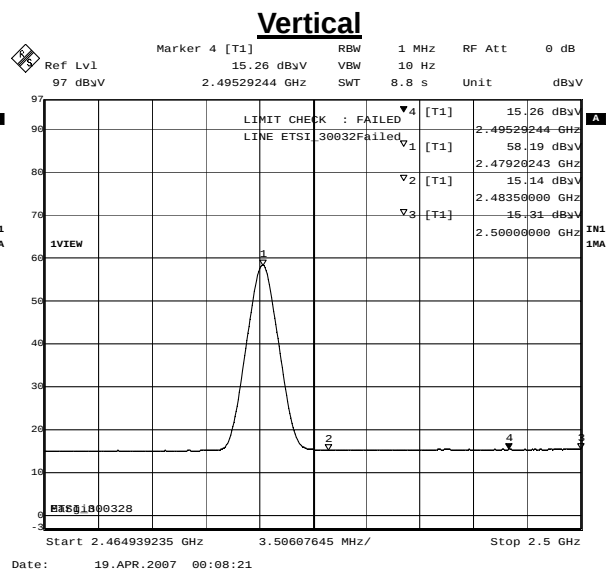
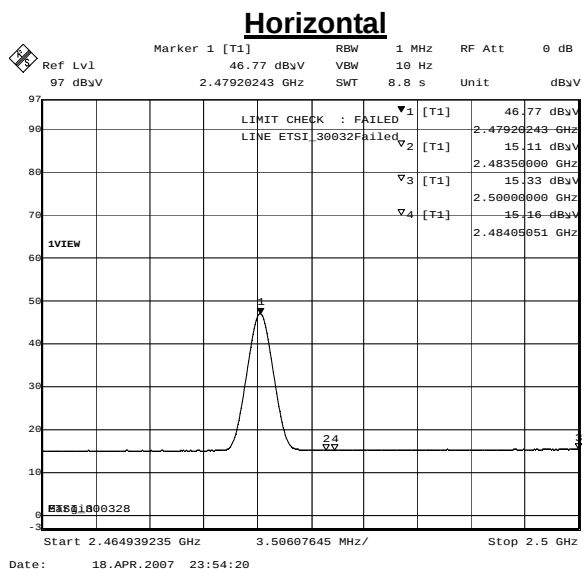
Note: 1.For peak measurements above 1GHz, set RBW=1MHz, VBW=1MHz

2. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product	Wireless digitizer tablet		
Test Item	Band Edge		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2006/04/19	Test Site	No.1 OATS

RF Radiated Measurement: (Average)

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Horizontal)	2484.050	15.160	24.722	4.573	44.455	74	54	Pass
78(Vertical)	2495.290	15.260	23.122	4.573	42.988	74	54	Pass



Note: 1.For average measurements above 1GHz, set RBW=1MHz, VBW=10Hz

2.The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

7. Occupied Bandwidth

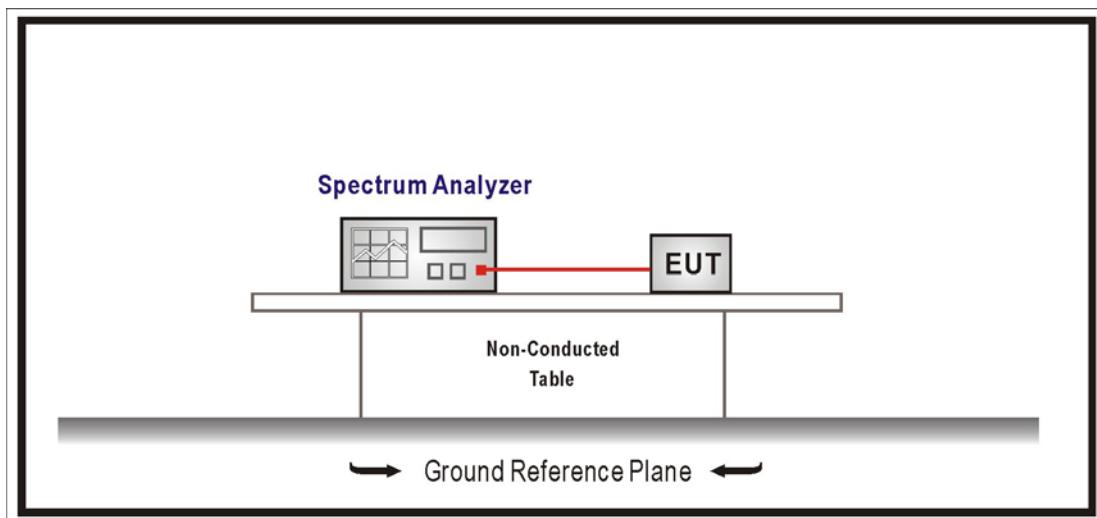
7.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2007
2	No.1 OATS			Sep., 2006

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2005

7.6. Uncertainty

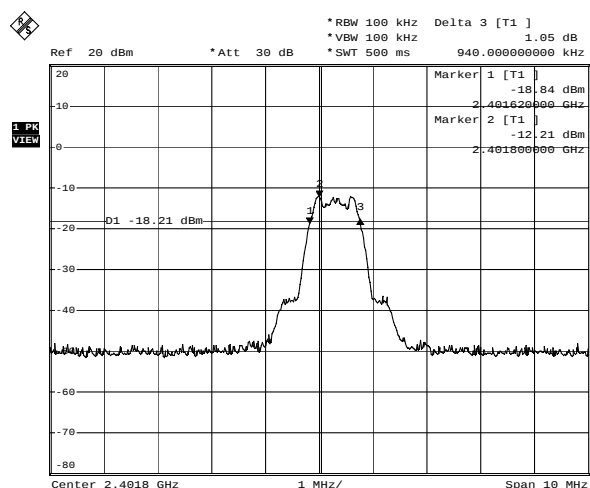
The measurement uncertainty is defined as $\pm 50\text{kHz}$

7.7. Test Result

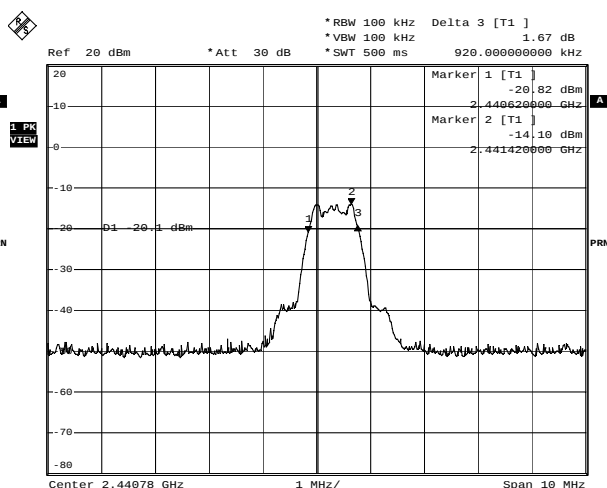
Product	Wireless digitizer tablet		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2006/04/19	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Value (kHz)	Limit (kHz)	Result
01	2402	940	≥ 500	Pass
39	2440	920	≥ 500	Pass
78	2479	960	≥ 500	Pass

Channel 01



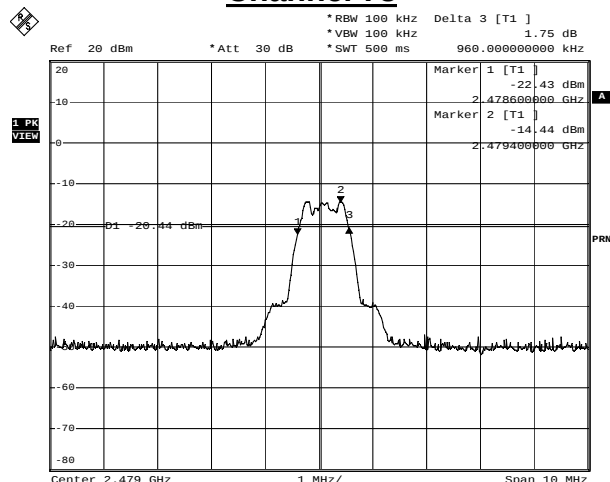
Channel 39



Date: 12.APR.2007 14:26:45

Date: 12.APR.2007 14:29:39

Channel 78



Date: 12.APR.2007 14:31:17

8. Power Density

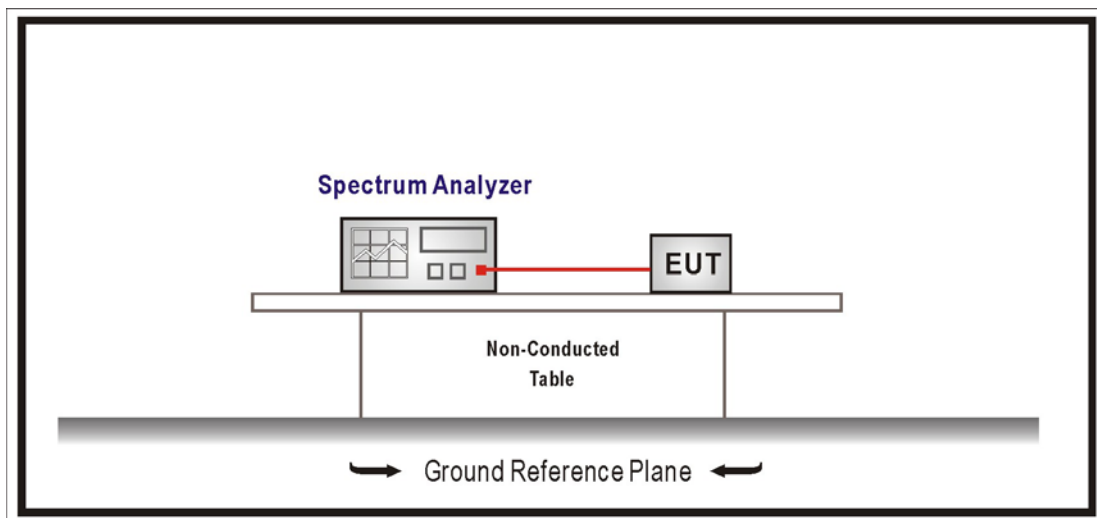
8.1. Test Equipment

The following test equipment are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Mar., 2007
2	No.1 OATS			Sep., 2006

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW= 3 kHz, Set VBW $\geq$ 9 kHz, Sweep time=Auto, Set detector=Peak detector

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2007

8.6. Uncertainty

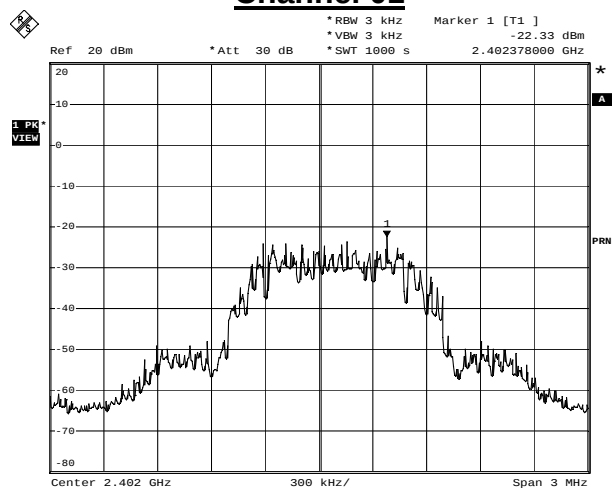
The measurement uncertainty is defined as ± 1.27 dB.

8.7. Test Result

Product	Wireless digitizer tablet		
Test Item	Power Density		
Test Mode	Mode 1: Transmit (Dongle)		
Date of Test	2007/04/12	Test Site	No.1 OATS

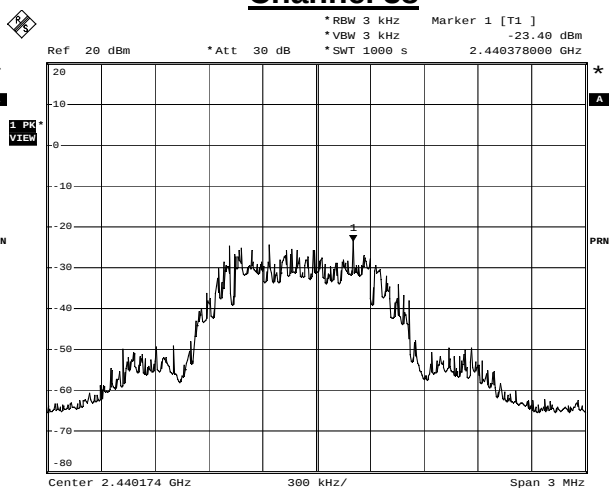
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2402	-22.33	≤ 8	Pass
39	2440	-23.40	≤ 8	Pass
78	2479	-23.73	≤ 8	Pass

Channel 01



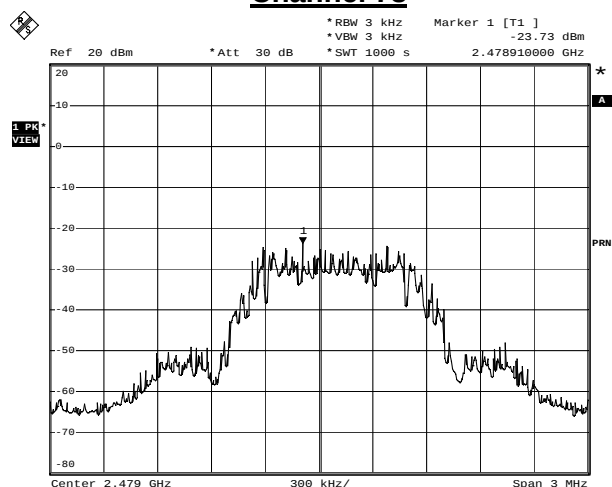
Date: 12.APR.2007 15:27:19

Channel 38



Date: 12.APR.2007 15:22:56

Channel 78



Date: 12.APR.2007 15:17:48