



Test Report

Product Name : Mini GPS
Model No. : 887
FCC ID. : OUP970500201

Applicant : TRANSYSTEM INC.
Address : No.1-2, Li-Hsin Rd.1, Science-Based Industrial Park,
Hsinchu, Taiwan R.O.C.

Date of Receipt : 2009/02/09
Issued Date : 2009/04/03
Report No. : 092075R-RFUSP06V01
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 : 2009/04/03

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 Applicant : TRANSYSTEM INC.
 Address : No.1-2, Li-Hsin Rd.1, Science-Based Industrial Park, Hsinchu,
 Taiwan R.O.C.
 Manufacturer : TRANSYSTEM INC.
 Model No. : 887
 FCC ID. : OUP970500201
 Rated Voltage : DC 3V (Power by Battery)
 EUT Voltage : DC 3V (Power by Battery)
 Trade Name : TSI
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C Section 15.247:2008
 Test Result : Complied

The test results relate only to the samples tested.

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Documented By : Demi Chang

(Demi Chang / Engineering Adm. Specialist)

Tested By : Rita Hsu

(Rita Hsu / Assistant 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	8
1.3. Test Mode	9
1.4. Tested System Details	10
1.5. Configuration of tested System	11
1.6. EUT Exercise Software	12
1.7. Test Facility	13
2. Conducted Emission.....	15
2.1. Test Equipment.....	15
2.2. Test Setup	15
2.3. Limits	16
2.4. Test Procedure	16
2.5. Test Specification.....	16
2.6. Test Result.....	17
2.7. Test Photo	19
3. Peak Power Output	20
3.1. Test Equipment.....	20
3.2. Test Setup	20
3.3. Test procedures	20
3.4. Limits	20
3.5. Test Specification.....	20
3.6. Test Result.....	21
4. Radiated Emission	24
4.1. Test Equipment.....	24
4.2. Test Setup	24
4.3. Limits	25
4.4. Test Procedure	25
4.5. Test Specification.....	25
4.6. Test Result.....	26
4.7. Test Photo	36
5. RF antenna conducted test	39
5.1. Test Equipment.....	39
5.2. Test Setup	39
5.3. Limits	40
5.4. Test Procedure	40
5.5. Test Specification.....	40
5.6. Test Result.....	41
6. Band Edge.....	57
6.1. Test Equipment.....	57
6.2. Test Setup	57

6.3.	Limits	58
6.4.	Test Procedure	58
6.5.	Test Specification.....	58
6.6.	Test Result.....	59
7.	Number of hopping frequency	67
7.1.	Test Equipment.....	67
7.2.	Test Setup	67
7.3.	Limits	68
7.4.	Test Procedures	68
7.5.	Test Specification.....	68
7.6.	Test Result.....	69
8.	Carrier Frequency Separation	73
8.1.	Test Equipment.....	73
8.2.	Test Setup	73
8.3.	Limits	73
8.4.	Test Procedures	73
8.5.	Test Specification.....	73
8.6.	Test Result.....	74
9.	Occupied Bandwidth.....	75
9.1.	Test Equipment.....	75
9.2.	Test Setup	75
9.3.	Limits	76
9.4.	Test Procedures	76
9.5.	Test Specification.....	76
9.6.	Test Result.....	77
10.	Dwell Time.....	80
10.1.	Test Equipment.....	80
10.2.	Test Setup	80
10.3.	Limits	81
10.4.	Test Procedures	81
10.5.	Test Specification.....	81
10.6.	Test Result.....	82
Attachement.....		85
	EUT Photograph.....	85

1. General Information

1.1. EUT Description

Product Name	Mini GPS
Trade Name	TSI
Model No.	887
Frequency Range	2402~2480MHz
Channel Number	79
Type of Modulation	FHSS
Channel Control	Auto
Antenna Type	Soldered on PCB
Antenna Gain	0dBi

Component	
USB Cable	Shielded, 1.5m
Car Charger	mobileconn, mb-st1-5050
	Non-Shielded, 1.47m

Working 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		

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 hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. This device is a Mini GPS including a 2.4GHz receiving function, and transmitting function.
2. These test results 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 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 092075R-RFUSP01V02 under Declaration of Conformity.

1.2. Operational Description

The EUT is 2.4GHz wireless Mini GPS. Bluetooth technology operates in the unlicensed industrial, scientific and medical (ISM) band at 2402MHz to 2480MHz, using a spread spectrum and frequency hopping. The signal hops among 79 frequencies at 1 MHz intervals to give a high degree of interference immunity.

When you travel in different country, it allows you to record your routes by ways of time/ distance/ speed. Through user friendly software utility, it can combine the beautiful pictures and record routes show on the map. This recorder is small and robust, ideal to carry everywhere for applications such as route tracking, mountain climbing or fleet management.

Some vehicles having heavy metallic sun protecting coating on windshields may affect GPS signal receptions. Driving in and around high buildings may affect GPS signal receptions. In general, any GPS receiver performs best in open space where it can see clear sky. iBT-GPS outputs data every second, therefore the actual position and the position shown in your map may have slight time delay.

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 transmitting operation, which was shown in this test report and defined as follows:

Pre-Test Mode	
EMI	Mode 1: Transmit (Data Transmit)
	Mode 2: Transmit (Car Charger)
Final Test Mode	
EMI	Mode 1: Transmit (Data Transmit)
	Mode 2: Transmit (Car Charger)

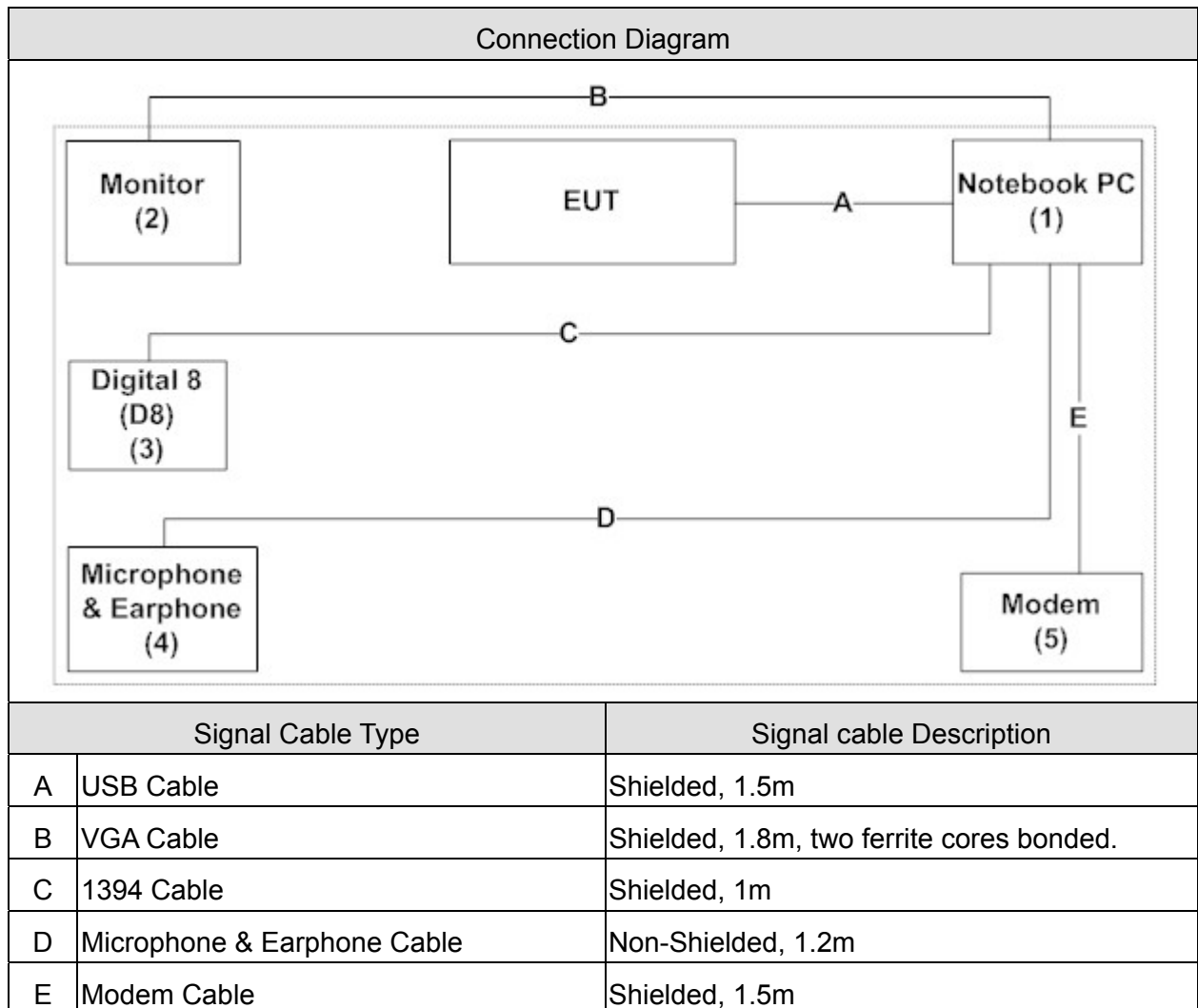
Emission	Mode 1	Mode 2
Conducted Emission	Yes	No
Peak Power Output	Yes	No
Radiated Emission	Yes	Yes
Band Edge	Yes	No
Channel of Number	Yes	No
Channel Separation	Yes	No
Occupied Bandwidth	Yes	No
Dwell Time	Yes	No

1.4. Tested System Details

The types for all equipments, 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	Notebook PC	DELL	LATITUDE D400	GK43D1S	DoC	Non-shielded, 1.7m, a ferrite core bonded
2	Monitor	CHI MEI	A170E1-09	3UC120955SA 1249	DoC	Non-shielded, 1.8m
3	Digital 8 (D8)	SONY	DCR-TRV110	P35209	DoC	--
4	Microphone & Earphone	Ronald	MOE060	N/A	DoC	--
5	Modem	ACEEX	DM-1414	0102027548	DoC	Non-shielded, 1.6m

1.5. Configuration of tested System



1.6. EUT Exercise Software

1	Setup the EUT and Notebook PC as shown on 1.5.
2	Turn on the power of all equipment.
3	Data will be continue transmitting through EUT.
4	Repeat the above procedure (2) to (3)

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 B 15.107 Conducted Emission	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 (FHSS)	15 - 35	26
Humidity (%RH)		25 - 75	51
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Of Number (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	53
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	22
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	22
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	22
Humidity (%RH)		25 - 75	48
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
Effective through: December 27, 2010



Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2009



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. Conducted Emission

2.1. Test Equipment

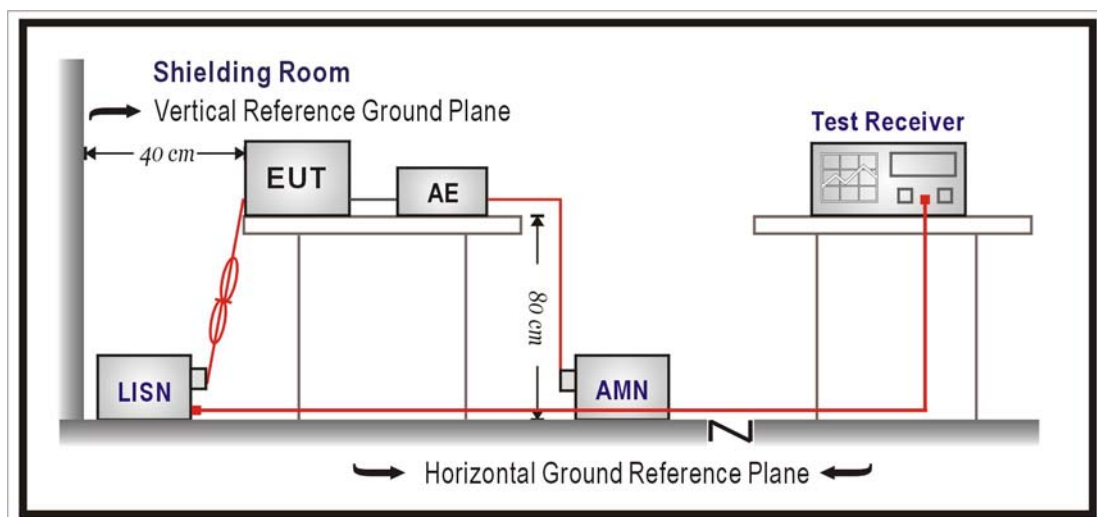
The following test equipment are used during the test:

Conducted Emission / SR2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
4-Wire ISN	R & S	ENY 41	837032/001	2008/04/15
Artificial Mains Network	R & S	ENV4200	848411/010	2008/03/13
Double 2-Wire ISN	R & S	ENY 22	835354/008	2008/04/15
LISN	R & S	ESH3-Z5	825562/002	2008/03/31
Pulse Limiter	R & S	ZSH3Z2	357.8810.54	2008/07/19
Test Receiver	R & S	ESCS 30	100122	2009/02/21

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

2.2. Test Setup



2.3. 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.

2.4. Test Procedure

The EUT was setup and tested according to ANSI C63.4, 2003.

The EUT and simulators 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 refers 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 of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

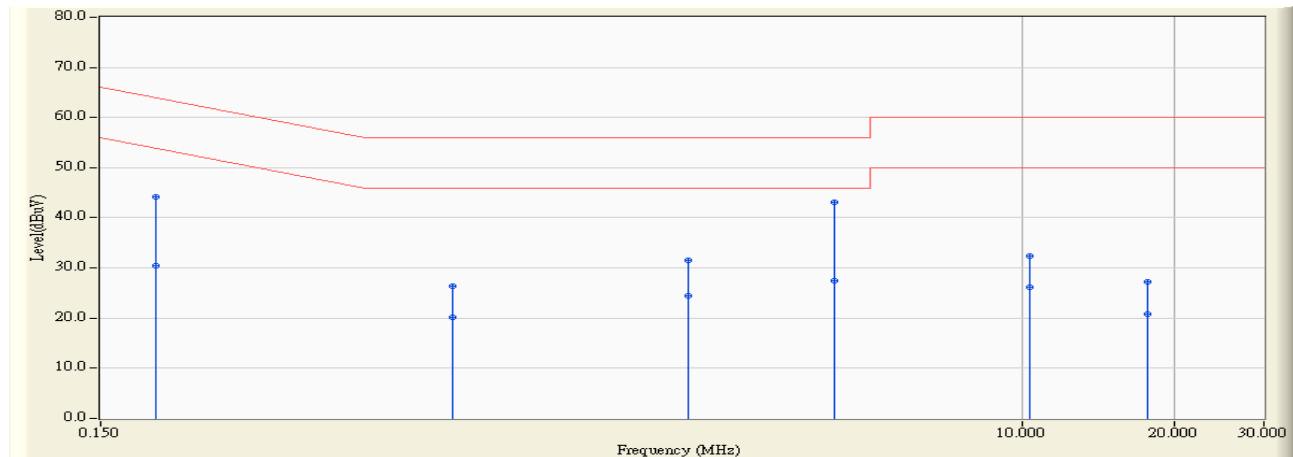
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

2.6. Test Result

Site : SR2	Time : 2009/02/22 - 10:52
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-LISN(16A) - Line1	Power : AC 120V / 60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)

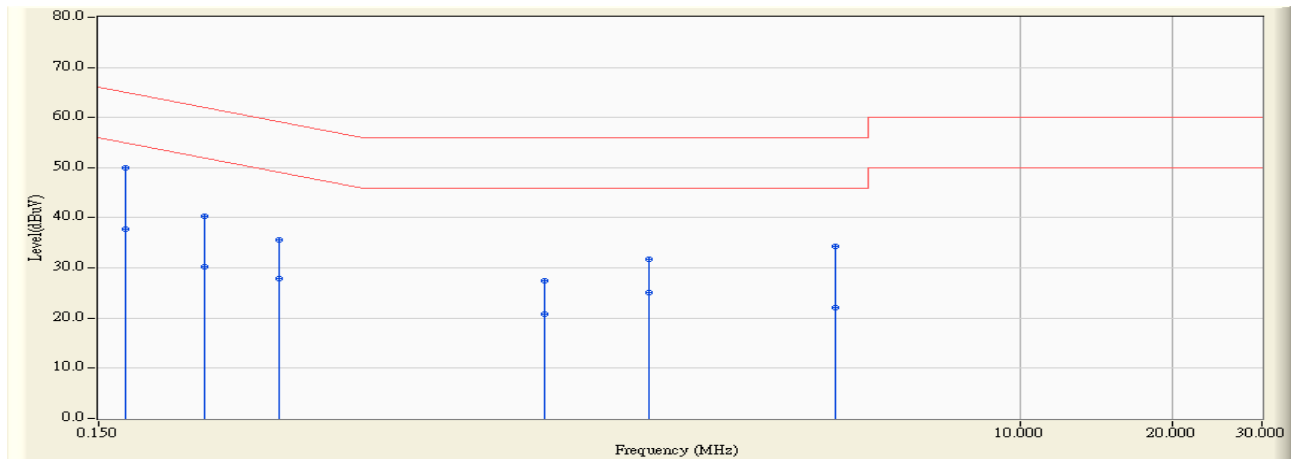


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.193	9.658	34.530	44.188	-19.720	63.908	QUASIPeAK
2		0.193	9.658	20.760	30.418	-23.490	53.908	AVERAGE
3		0.744	9.820	16.460	26.280	-29.720	56.000	QUASIPeAK
4		0.744	9.820	10.340	20.160	-25.840	46.000	AVERAGE
5		2.181	9.812	21.820	31.632	-24.368	56.000	QUASIPeAK
6		2.181	9.812	14.680	24.492	-21.508	46.000	AVERAGE
7	*	4.248	9.840	33.270	43.110	-12.890	56.000	QUASIPeAK
8		4.248	9.840	17.700	27.540	-18.460	46.000	AVERAGE
9		10.334	10.110	22.370	32.480	-27.520	60.000	QUASIPeAK
10		10.334	10.110	16.150	26.260	-23.740	50.000	AVERAGE
11		17.685	10.227	17.030	27.257	-32.743	60.000	QUASIPeAK
12		17.685	10.227	10.470	20.697	-29.303	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 : SR2	Time : 2009/02/22 - 10:59
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-LISN(16A) - Line2	Power : AC 120V / 60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1	*	0.170	9.711	40.280	49.991	-14.992	64.983	QUASIPeAK
2		0.170	9.711	28.070	37.781	-17.202	54.983	AVERAGE
3		0.244	9.697	30.570	40.267	-21.700	61.967	QUASIPeAK
4		0.244	9.697	20.510	30.207	-21.760	51.967	AVERAGE
5		0.341	9.740	25.840	35.580	-23.589	59.169	QUASIPeAK
6		0.341	9.740	18.120	27.860	-21.309	49.169	AVERAGE
7		1.146	9.813	17.600	27.413	-28.587	56.000	QUASIPeAK
8		1.146	9.813	11.020	20.833	-25.167	46.000	AVERAGE
9		1.837	9.827	21.810	31.637	-24.363	56.000	QUASIPeAK
10		1.837	9.827	15.300	25.127	-20.873	46.000	AVERAGE
11		4.310	9.838	24.430	34.268	-21.732	56.000	QUASIPeAK
12		4.310	9.838	12.180	22.018	-23.982	46.000	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.

3. Peak Power Output

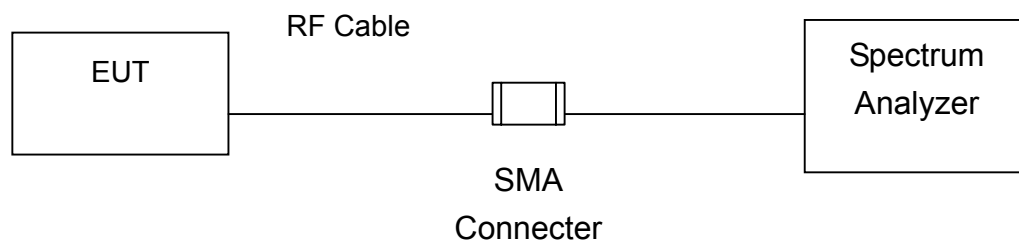
3.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R&S	FSP/ 100005	Oct., 2008
2	No.1 OATS			Sep., 2008

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

3.2. Test Setup



3.3. Test procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

3.4. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

3.6. Test Result

Product	Mini GPS		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit (Data Transmit)		
Date of Test	2009/02/12	Test Site	No.1 OATS

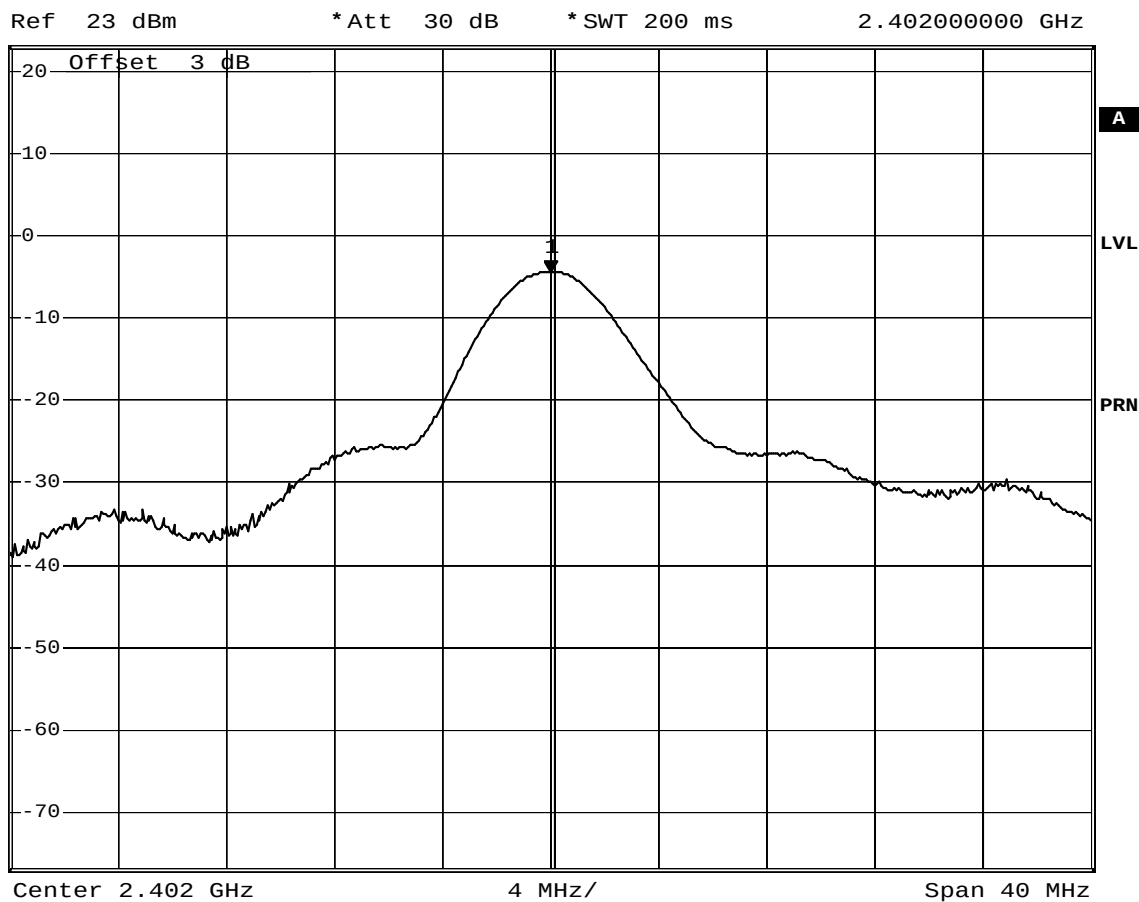
1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	-4.38	1Watt= 30 dBm	Pass

Channel 00



* RBW 3 MHz Marker 1 [T1]
 * VBW 10 MHz -4.38 dBm
 * SWT 200 ms 2.402000000 GHz



Date: 12.FEB.2009 10:33:03

Product	Mini GPS		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	-1.60	1Watt= 30 dBm	Pass

Channel 39

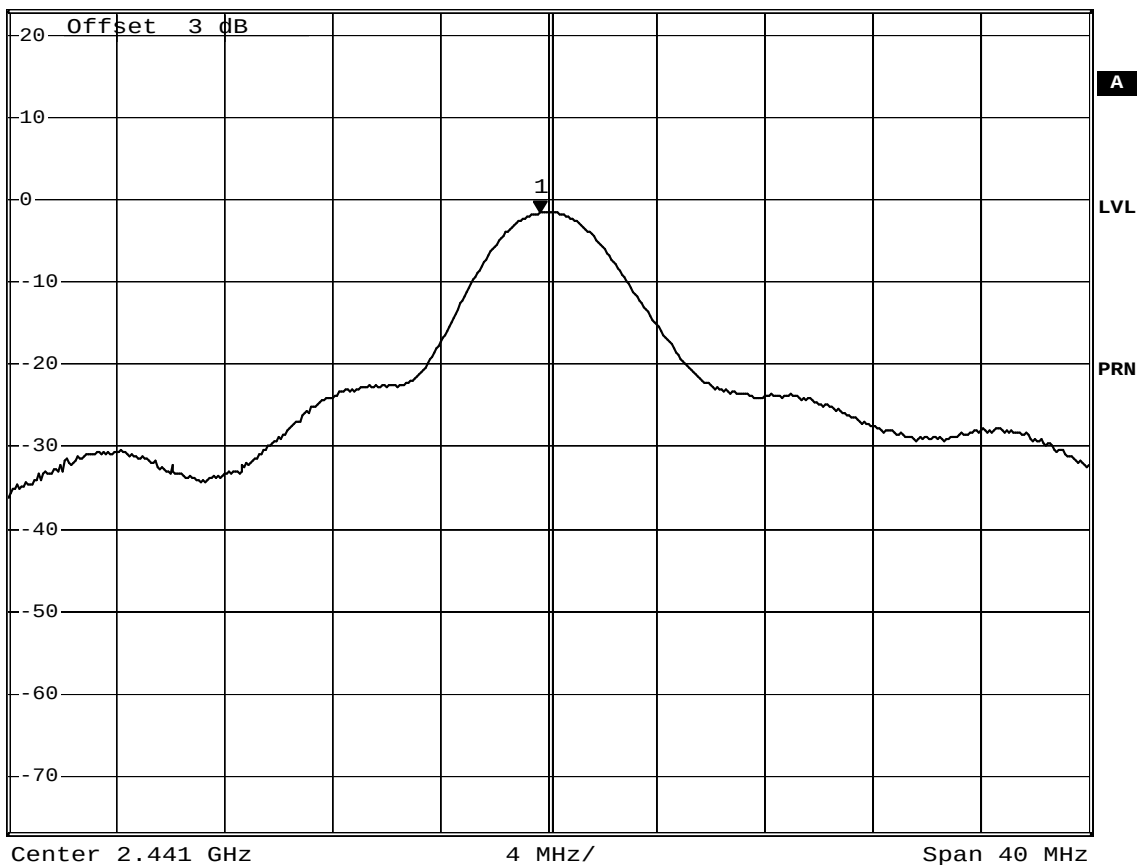


* RBW 3 MHz Marker 1 [T1]
 * VBW 10 MHz -1.60 dBm
 * SWT 200 ms 2.440680000 GHz

Ref 23 dBm

* Att 30 dB

1 PK
VIEW



Date: 12.FEB.2009 10:34:51

Product	Mini GPS		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

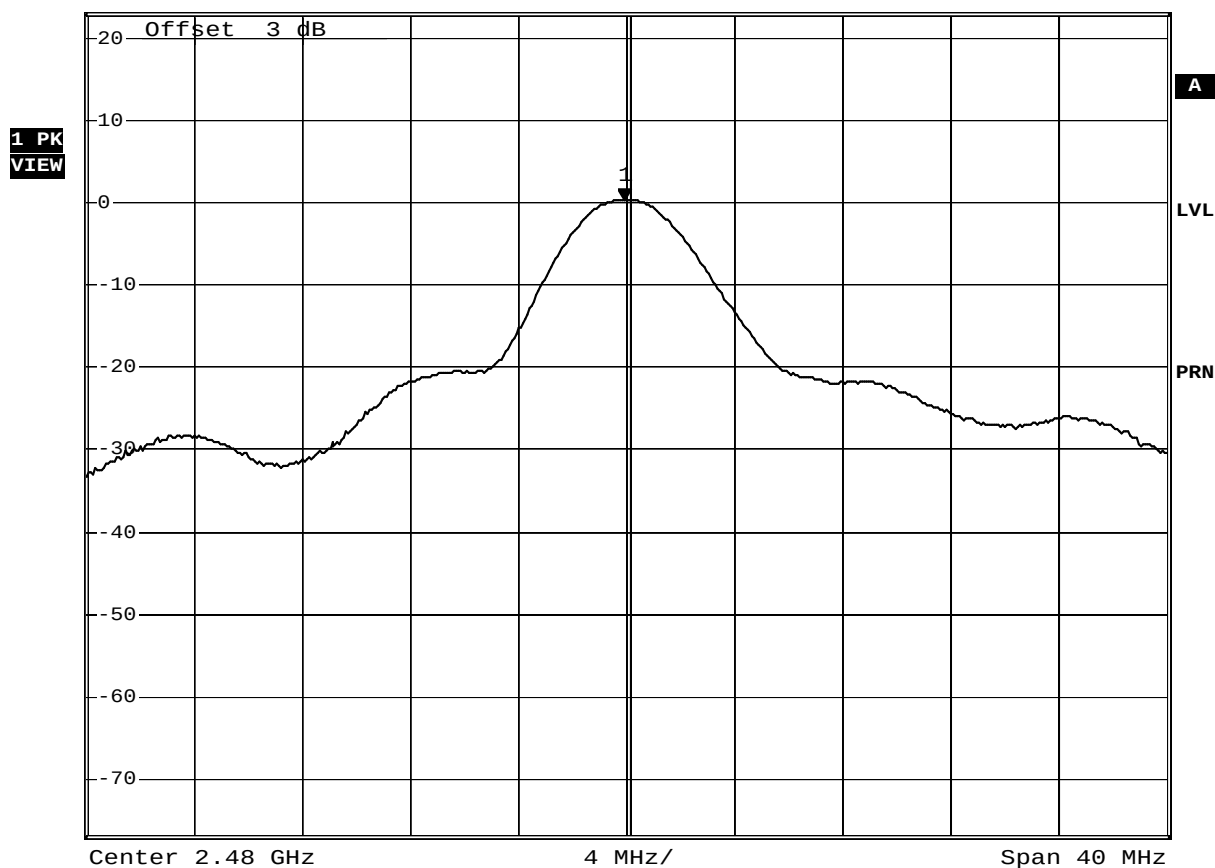
1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	0.29	1Watt= 30 dBm	Pass

Channel 78



Ref 23 dBm *Att 30 dB *RBW 3 MHz Marker 1 [T1] 0.29 dBm
*VBW 10 MHz *SWT 200 ms 2.479920000 GHz



Date: 12.FEB.2009 10:30:42

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the test:

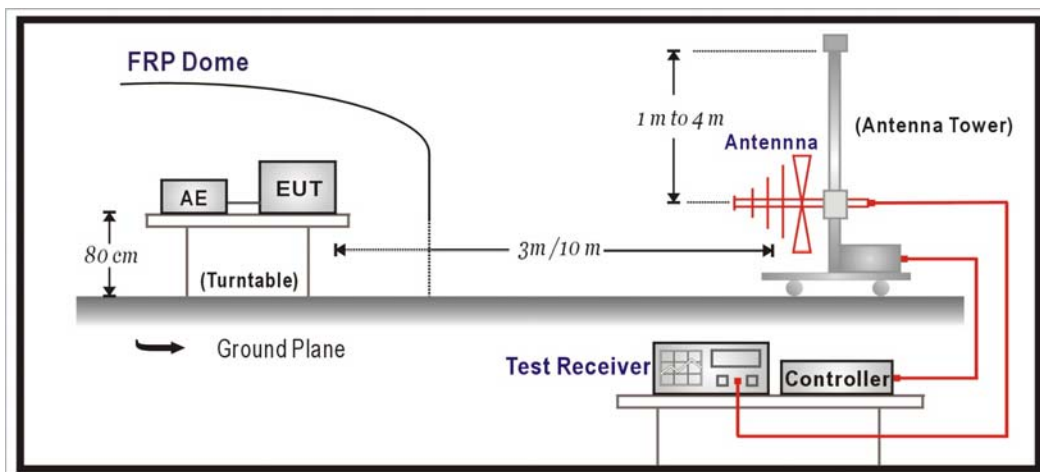
Radiated Emission / Site2

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2708	2008/09/03
Horn Antenna	Electro Metrics	EM-6961	103325	2009/03/15
Pre-Amplifier	HP	8449B	3008A01123	2008/11/15
Pre-Amplifier	QuieTek	AP-025C	002	N/A
Spectrum Analyzer	R & S	FSP40	100005	2008/08/25
Spectrum Analyzer	Advantest	R3162	121200166	2009/02/19
Test Receiver	R & S	ESCS 30	836858/023	2008/04/01

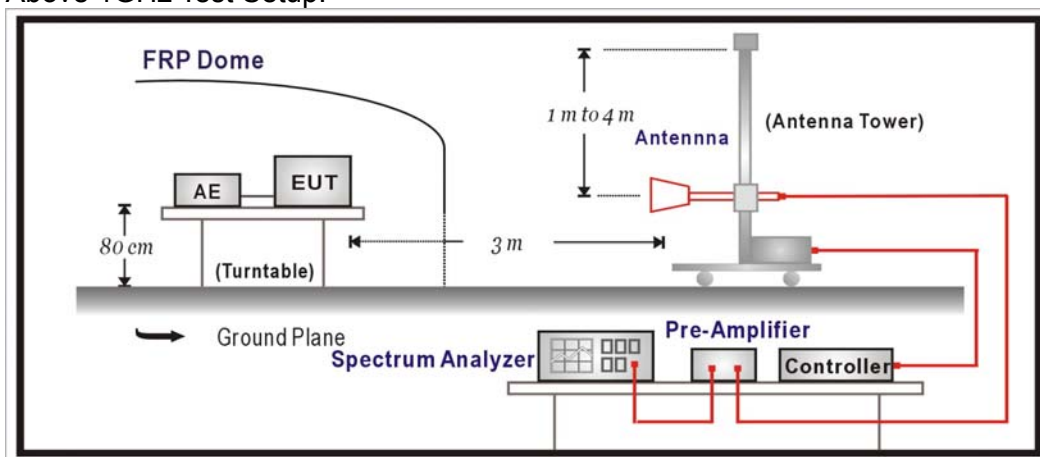
- Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. "N/A" Ca1.Date is used to Pre-test, not final test.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. 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.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

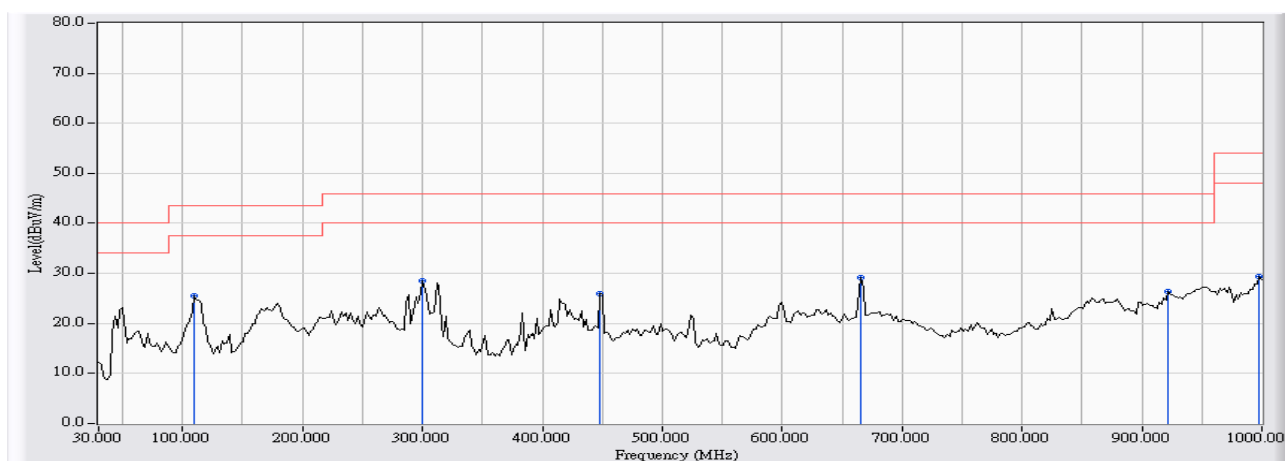
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

4.6. Test Result

30MHz-1GHz Spurious

Site : Site2	Time : 2009/02/18 - 17:26
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 3V
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-CH39(887)

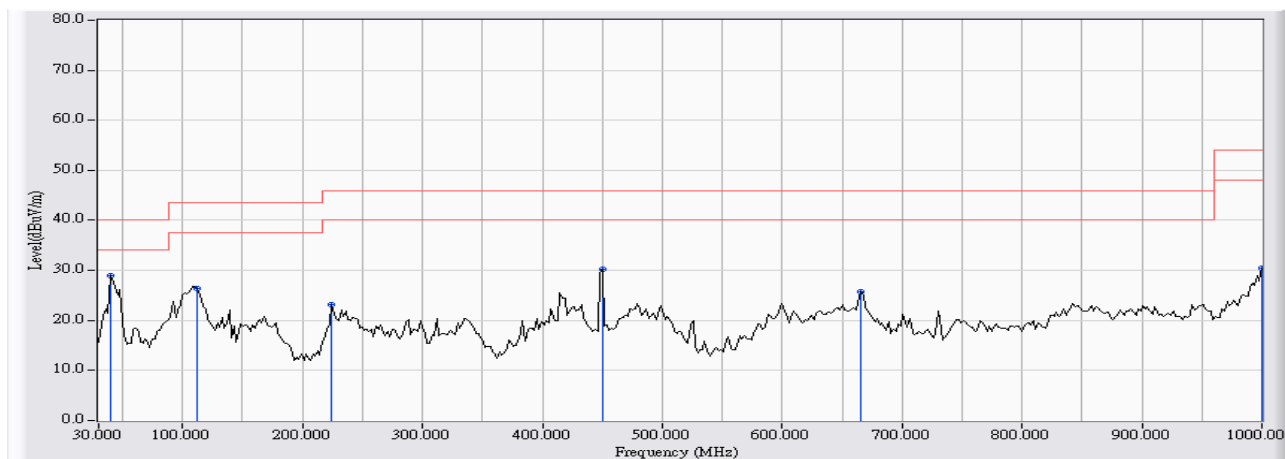


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		109.699	-14.930	40.474	25.544	-17.956	43.500	QUASIPeAK
2		300.200	-8.134	36.761	28.626	-17.374	46.000	QUASIPeAK
3		447.936	-6.019	32.070	26.051	-19.949	46.000	QUASIPeAK
4	*	665.651	-3.125	32.207	29.082	-16.918	46.000	QUASIPeAK
5		922.245	0.850	25.632	26.482	-19.518	46.000	QUASIPeAK
6		998.056	2.741	26.630	29.371	-24.629	54.000	QUASIPeAK

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 : Site2	Time : 2009/02/18 - 17:31
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : DC 3V
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-CH39(887)

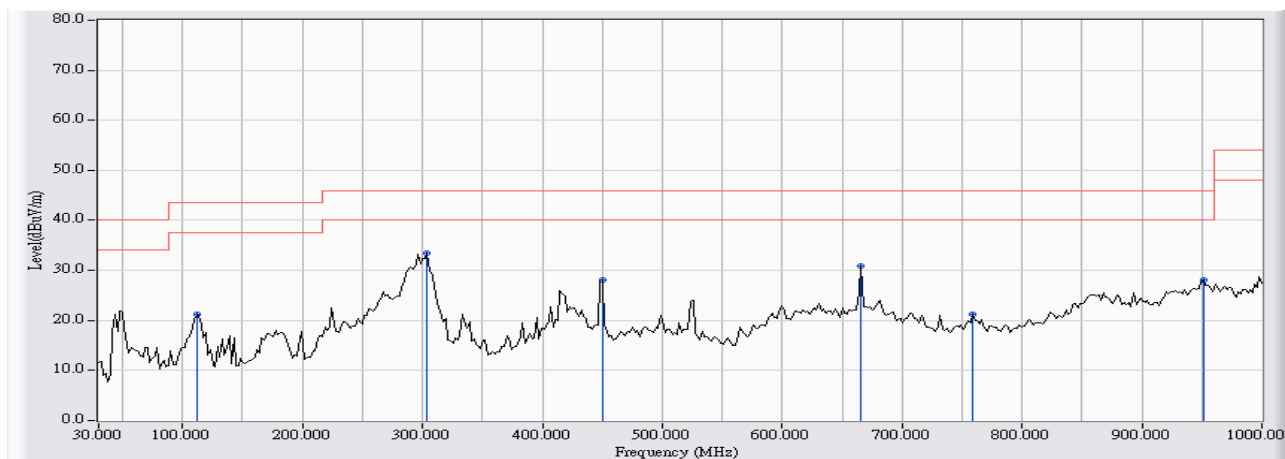


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	39.719	-8.219	37.129	28.910	-11.090	40.000	QUASIPeAK
2		111.643	-11.449	37.914	26.465	-17.035	43.500	QUASIPeAK
3		224.389	-11.836	35.020	23.184	-22.816	46.000	QUASIPeAK
4		449.880	-7.559	37.814	30.255	-15.745	46.000	QUASIPeAK
5		665.651	-3.255	29.056	25.801	-20.199	46.000	QUASIPeAK
6		1000.000	0.993	29.366	30.359	-23.641	54.000	QUASIPeAK

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 : Site2	Time : 2009/02/18 - 18:04
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - HORIZONTAL	Power : DC 3V
EUT : Mini GPS	Note : Mode 2: Transmit (Car Charger)-CH39(887)

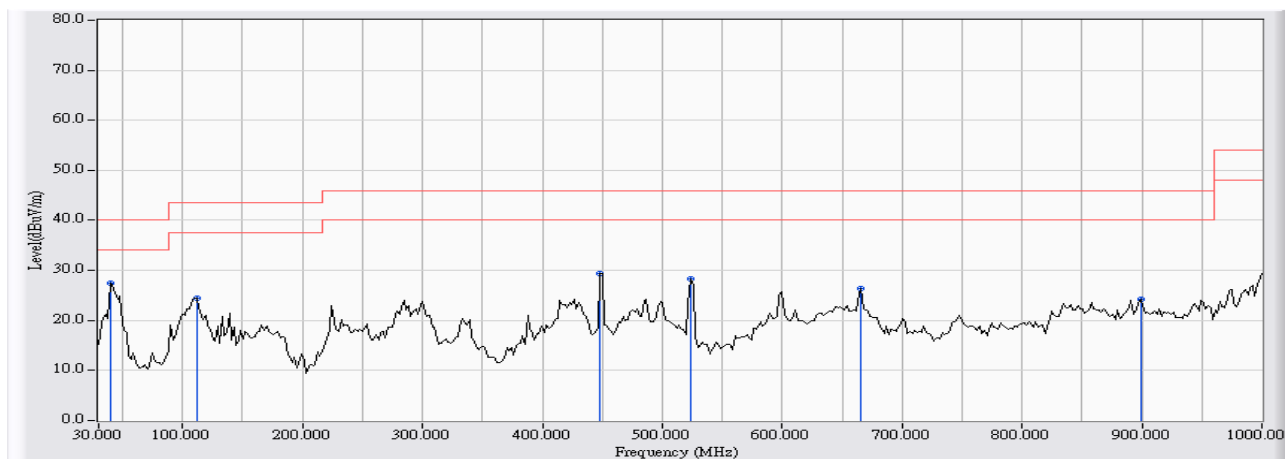


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		111.643	-14.505	35.707	21.202	-22.298	43.500	QUASIPeAK
2	*	304.088	-7.762	41.260	33.498	-12.502	46.000	QUASIPeAK
3		449.880	-6.272	34.302	28.030	-17.970	46.000	QUASIPeAK
4		665.651	-3.125	34.045	30.920	-15.080	46.000	QUASIPeAK
5		758.958	-4.619	25.837	21.218	-24.782	46.000	QUASIPeAK
6		951.403	3.055	25.034	28.089	-17.911	46.000	QUASIPeAK

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 : Site2	Time : 2009/02/18 - 18:07
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB3_FCC_30-1G(2008-9) - VERTICAL	Power : DC 3V
EUT : Mini GPS	Note : Mode 2: Transmit (Car Charger)-CH39(887)



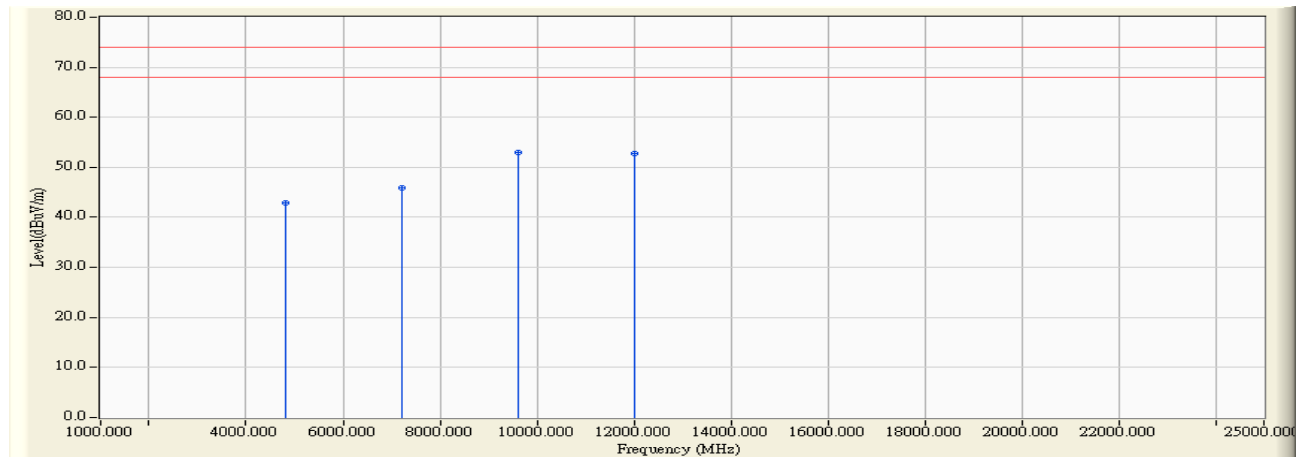
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	39.719	-8.219	35.579	27.360	-12.640	40.000	QUASIPeAK
2		111.643	-11.449	35.961	24.512	-18.988	43.500	QUASIPeAK
3		447.936	-7.854	37.340	29.486	-16.514	46.000	QUASIPeAK
4		523.747	-9.180	37.413	28.233	-17.767	46.000	QUASIPeAK
5		665.651	-3.255	29.542	26.287	-19.713	46.000	QUASIPeAK
6		898.918	-3.018	27.304	24.286	-21.714	46.000	QUASIPeAK

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 : Site2	Time : 2008/12/09 - 12:24
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-2402

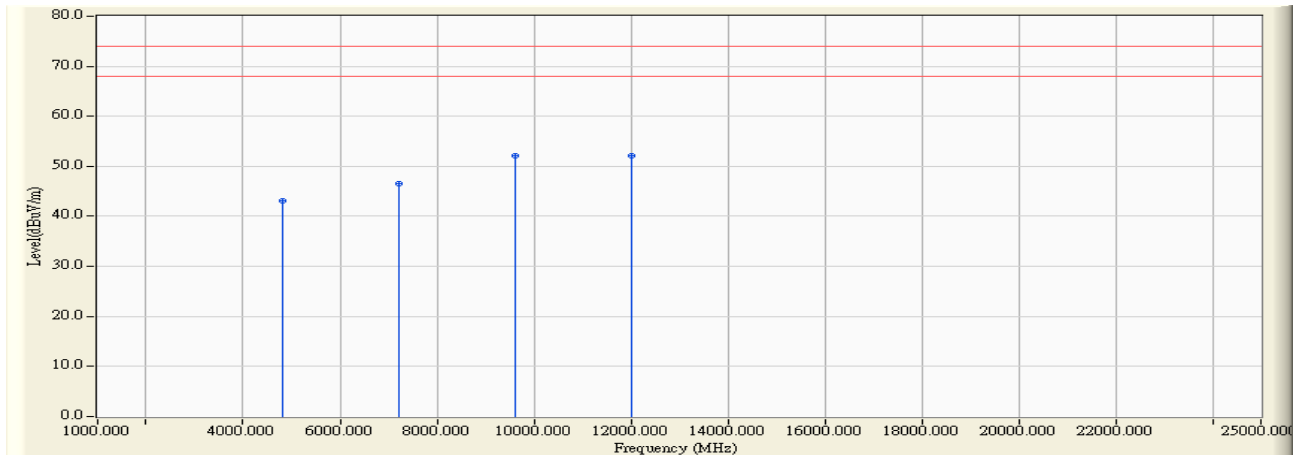


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	3.053	39.880	42.933	-31.067	74.000	PEAK
2		7206.020	6.950	39.030	45.980	-28.020	74.000	PEAK
3	*	9608.000	14.964	37.930	52.894	-21.106	74.000	PEAK
4		12010.030	16.678	36.040	52.718	-21.282	74.000	PEAK

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site2	Time : 2008/12/09 - 13:27
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-2402

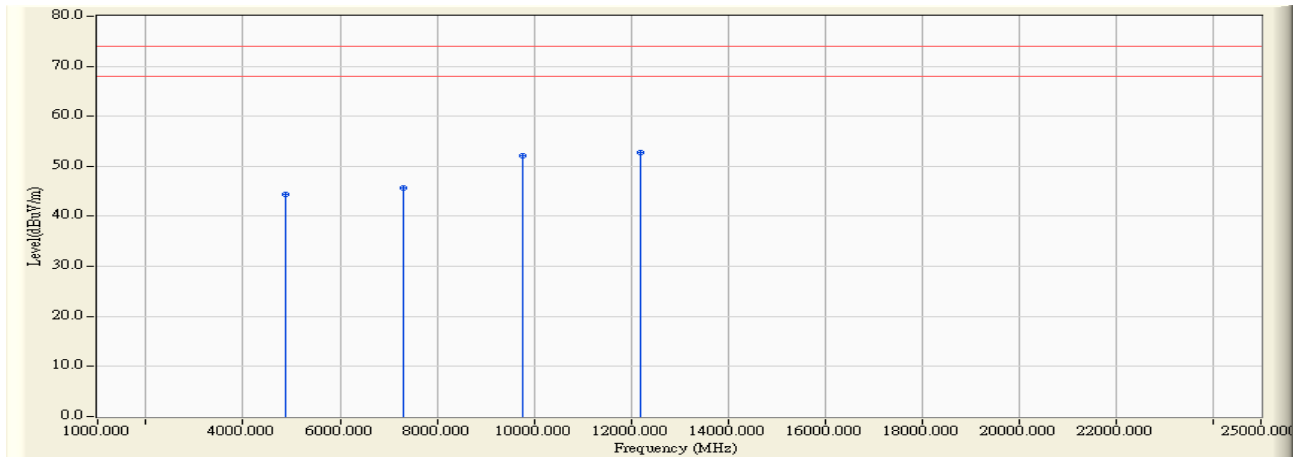


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4804.000	3.053	40.000	43.053	-30.947	74.000	PEAK
2		7206.000	7.362	39.270	46.632	-27.368	74.000	PEAK
3		9608.000	14.964	37.066	52.030	-21.970	74.000	PEAK
4	*	12010.000	16.678	35.451	52.128	-21.872	74.000	PEAK

Note:

1. All readings 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. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site2	Time : 2008/12/09 - 13:38
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-2441

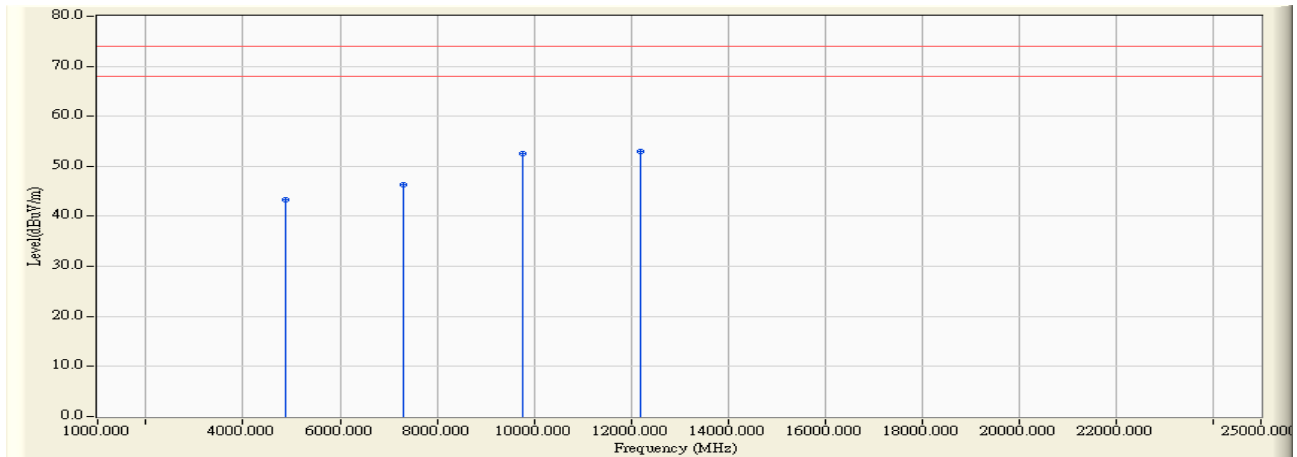


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4881.980	3.305	41.080	44.385	-29.615	74.000	PEAK
2		7323.004	7.022	38.730	45.752	-28.248	74.000	PEAK
3		9764.008	15.492	36.580	52.072	-21.928	74.000	PEAK
4	*	12205.004	17.263	35.560	52.824	-21.176	74.000	PEAK

Note:

1. All readings 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. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site2	Time : 2008/12/09 - 13:46
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-2441

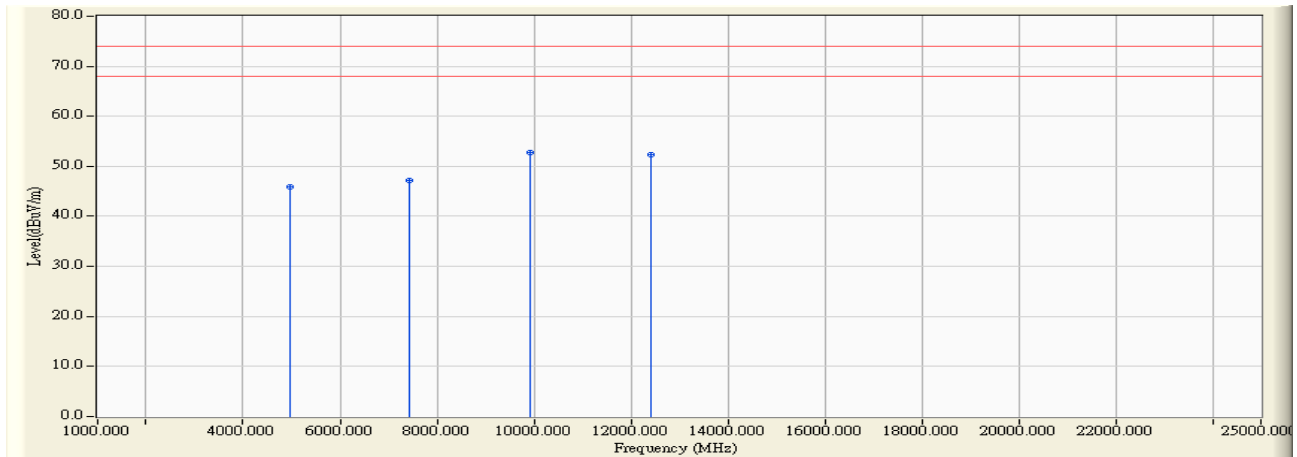


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4881.980	3.305	40.080	43.385	-30.615	74.000	PEAK
2		7323.004	7.669	38.660	46.329	-27.671	74.000	PEAK
3		9764.008	13.966	38.600	52.566	-21.434	74.000	PEAK
4	*	12205.004	16.850	36.040	52.891	-21.109	74.000	PEAK

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site2	Time : 2008/12/09 - 13:58
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-2480

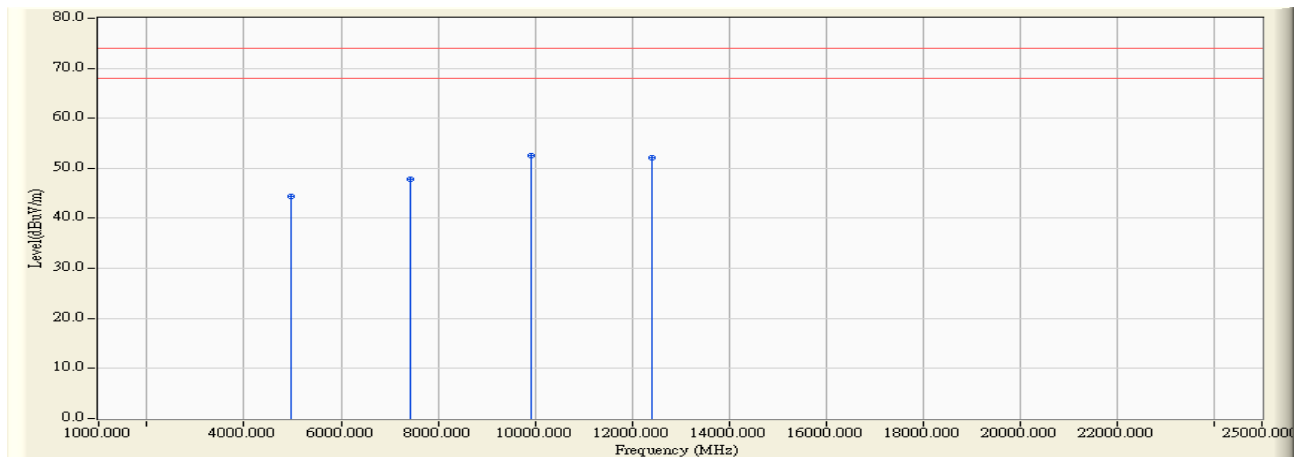


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4961.020	3.550	42.390	45.940	-28.060	74.000	PEAK
2		7440.020	7.121	39.970	47.091	-26.909	74.000	PEAK
3	*	9921.030	16.028	36.720	52.748	-21.252	74.000	PEAK
4		12400.020	17.861	34.410	52.271	-21.729	74.000	PEAK

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site2	Time : 2008/12/09 - 14:08
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2008-05) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : Mode 1: Transmit (Data Transmit)-2480



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		4961.020	3.550	40.760	44.310	-29.690	74.000	PEAK
2		7440.020	8.004	39.760	47.764	-26.236	74.000	PEAK
3	*	9921.030	14.185	38.340	52.525	-21.475	74.000	PEAK
4		12400.030	17.063	35.100	52.163	-21.837	74.000	PEAK

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipments are used during the test:

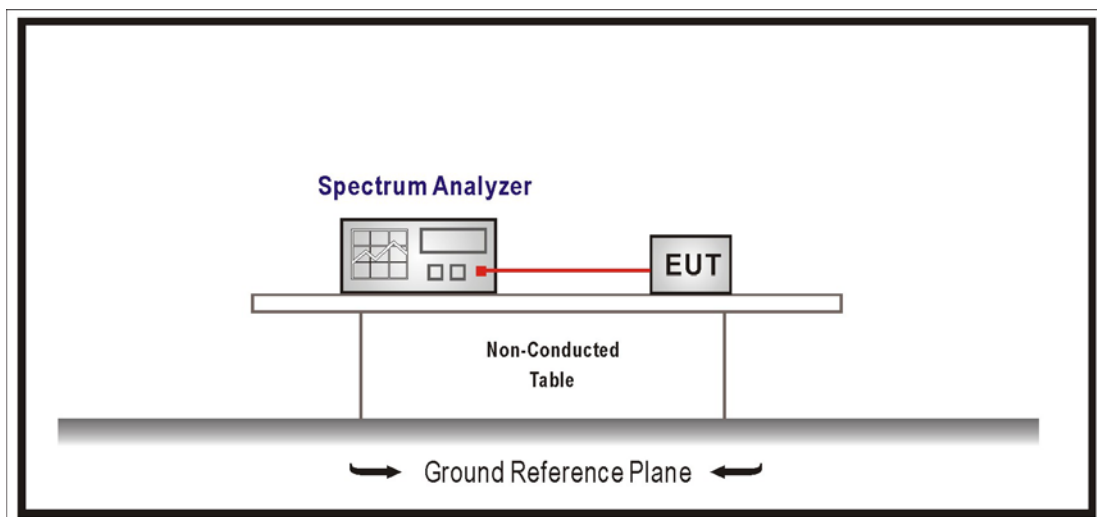
RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2009
2	No.1 OATS			Sep., 2008

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.

5.2. Test Setup

RF Conducted Measurement:



5.3. 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)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

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

5.5. Test Specification

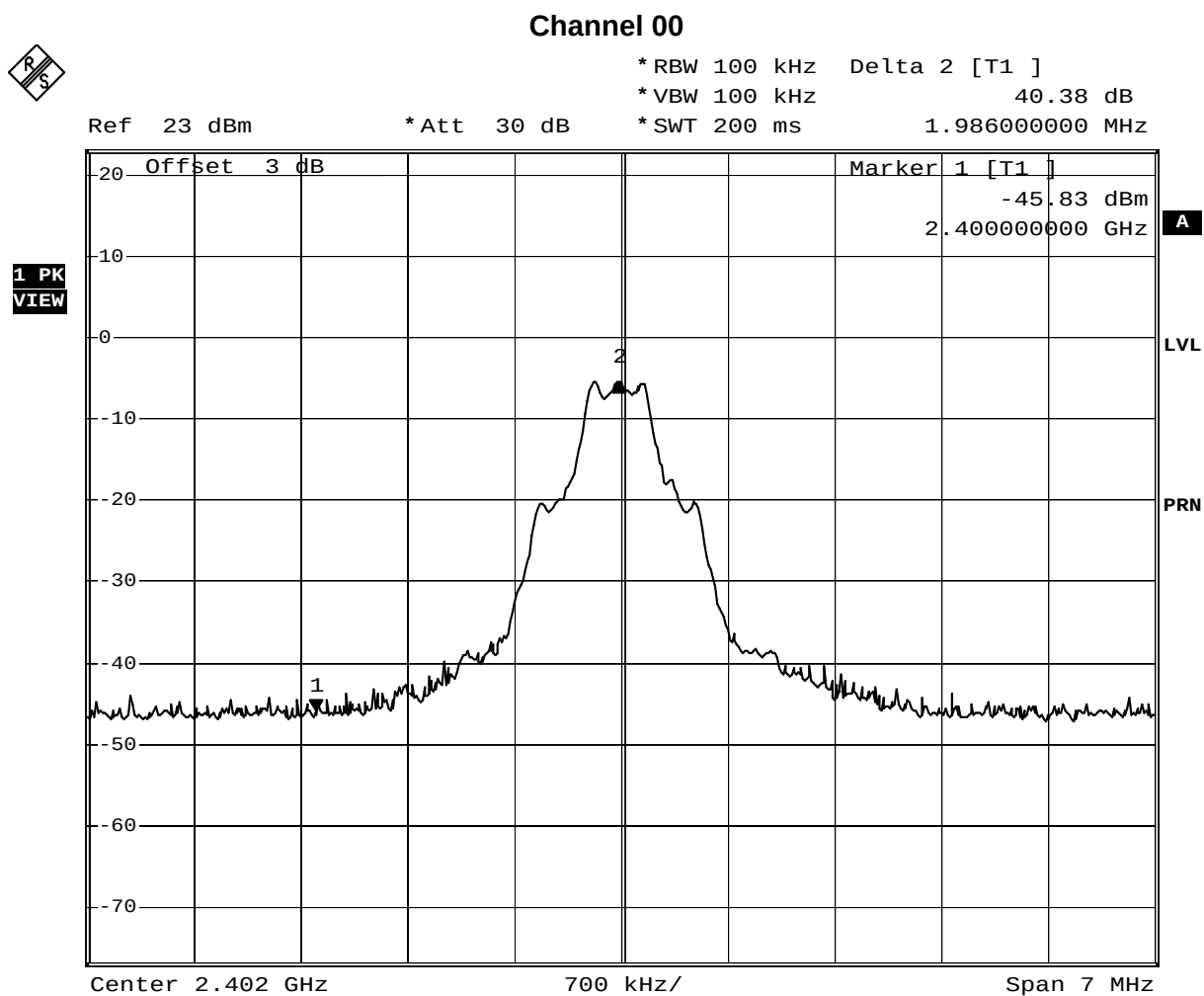
According to FCC Part 15 Subpart C Paragraph 15.207: 2008

5.6. Test Result

Product	Mini GPS		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	40.38	≥ 20	Pass
78	2480	45.35	≥ 20	Pass

Figure Channel 1:



Date: 12.FEB.2009 11:02:52

Channel 78

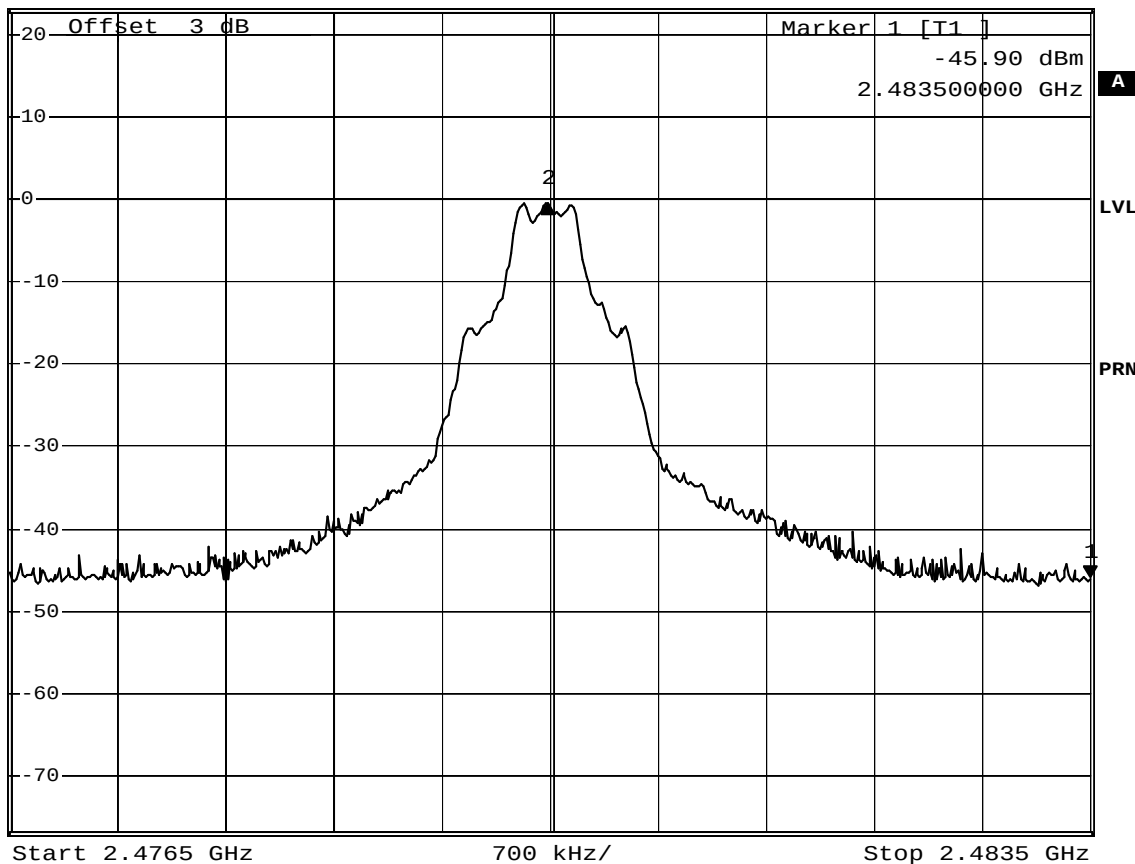


* RBW 100 kHz Delta 2 [T1]
 * VBW 100 kHz 45.35 dB
 * SWT 200 ms -3.514000000 MHz

Ref 23 dBm

* Att 30 dB

1 PK
VIEW

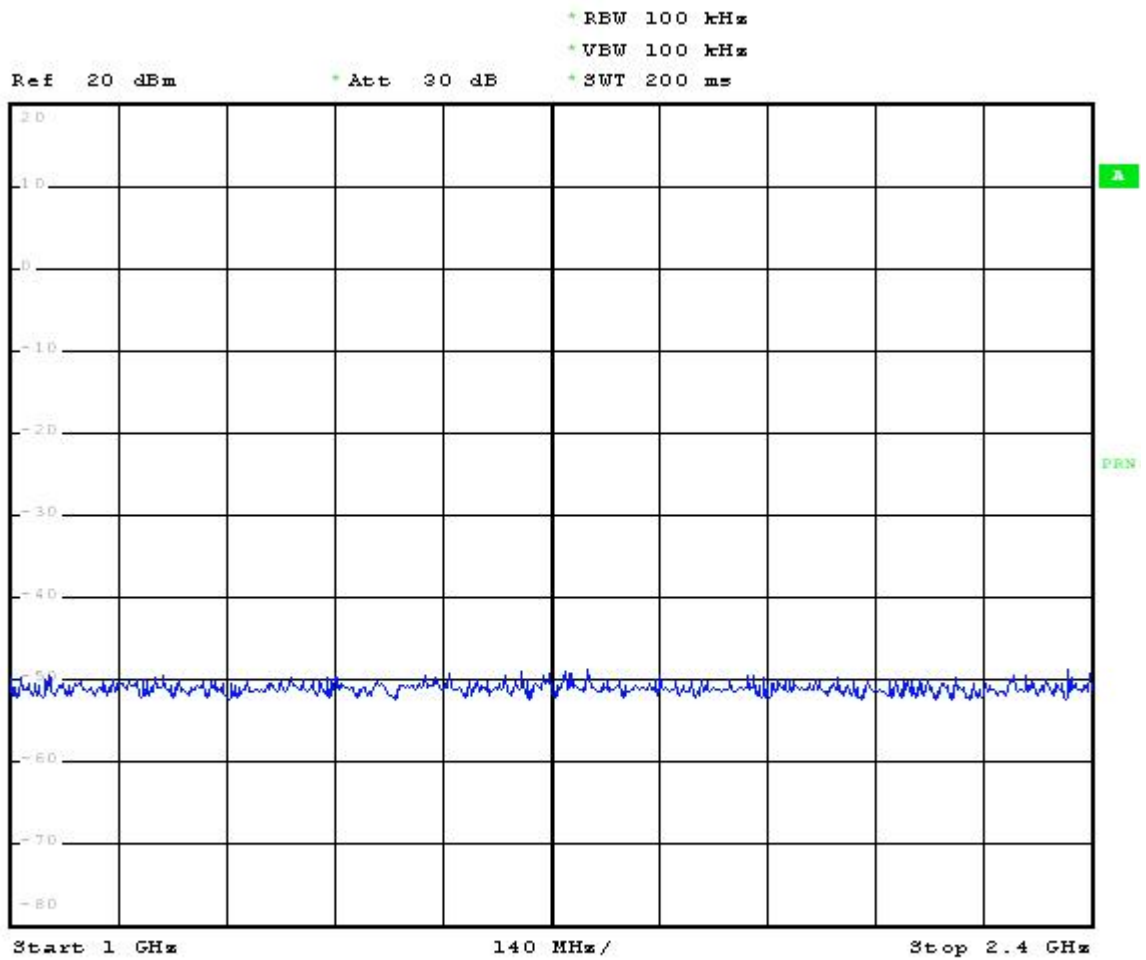


Date: 12.FEB.2009 11:00:10

(1GHz-2.4GHz)

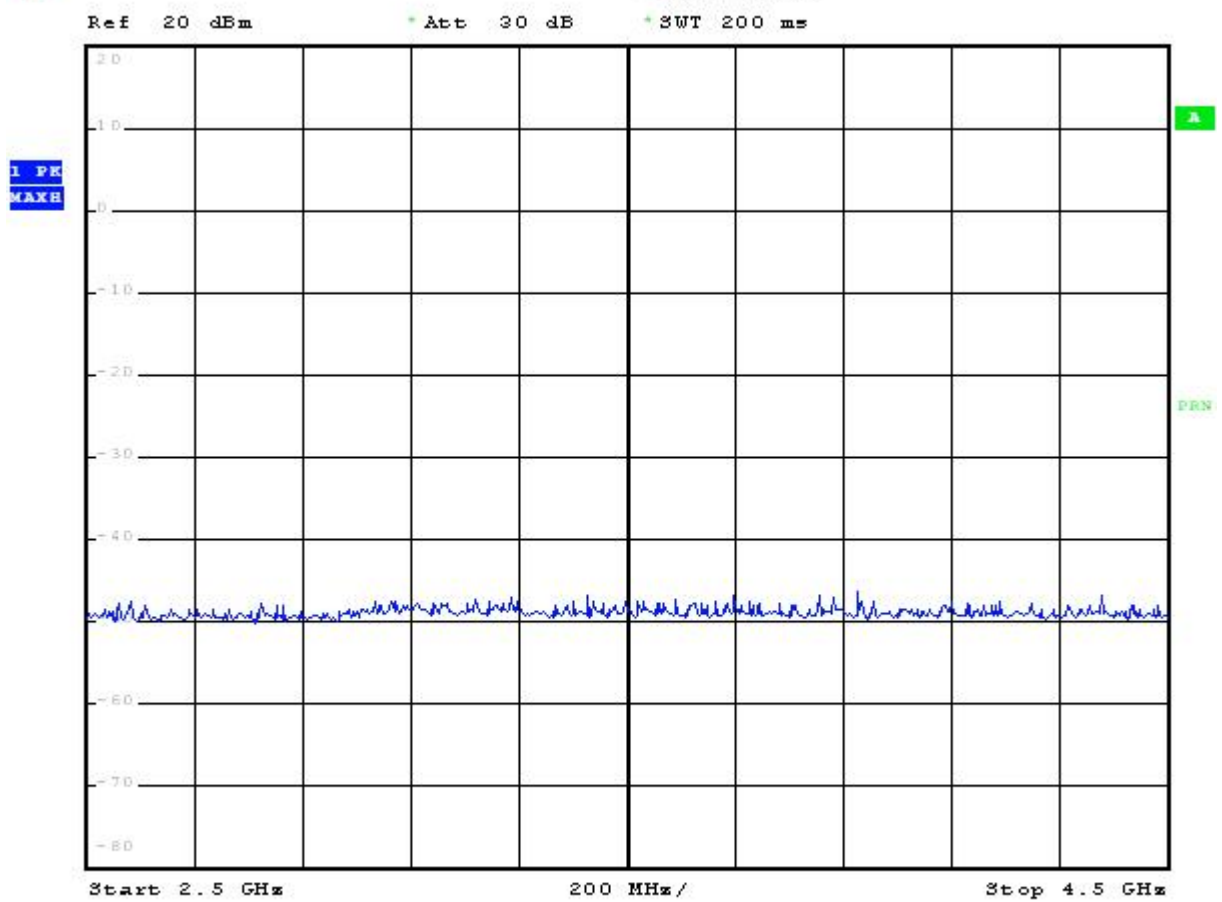


1 PR
VIEW



Date: 12.FEB.2009 11:56:09

(2.5GHz~4.5GHz)

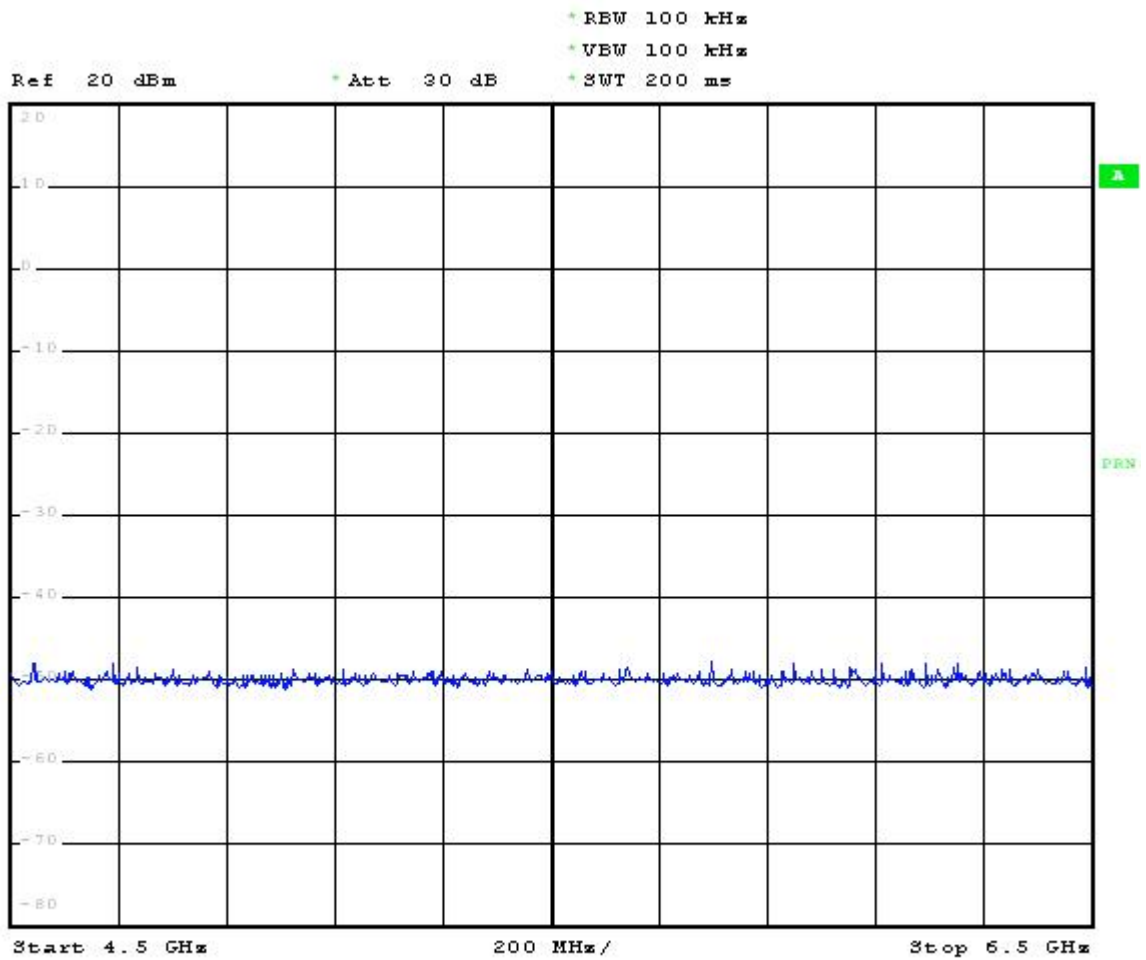


Date: 12.FEB.2009 11:59:30

(4.5GHz~6.5GHz)



1 PR
MAXH

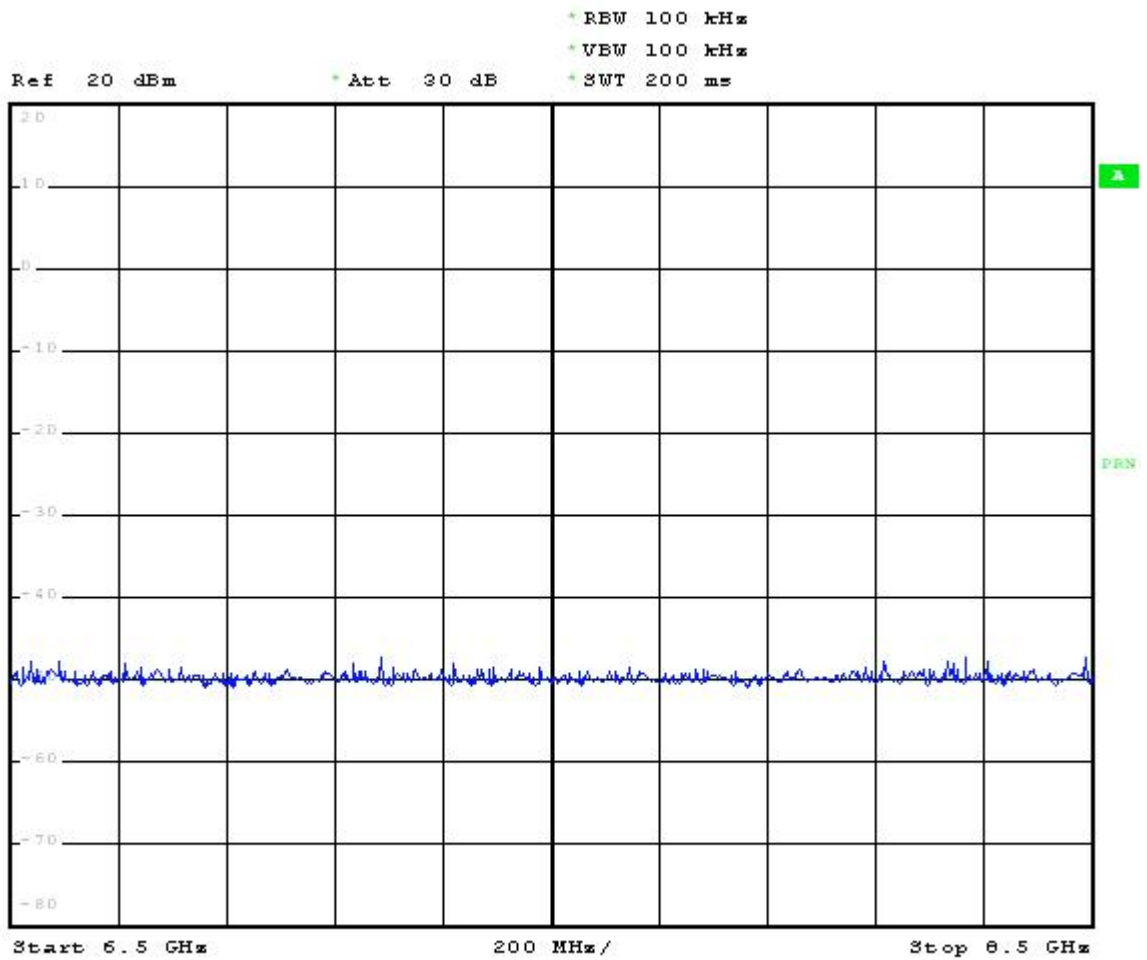


Date: 12.FEB.2009 12:02:40

(6.5GHz~8.5GHz)



1 PR
MAXH

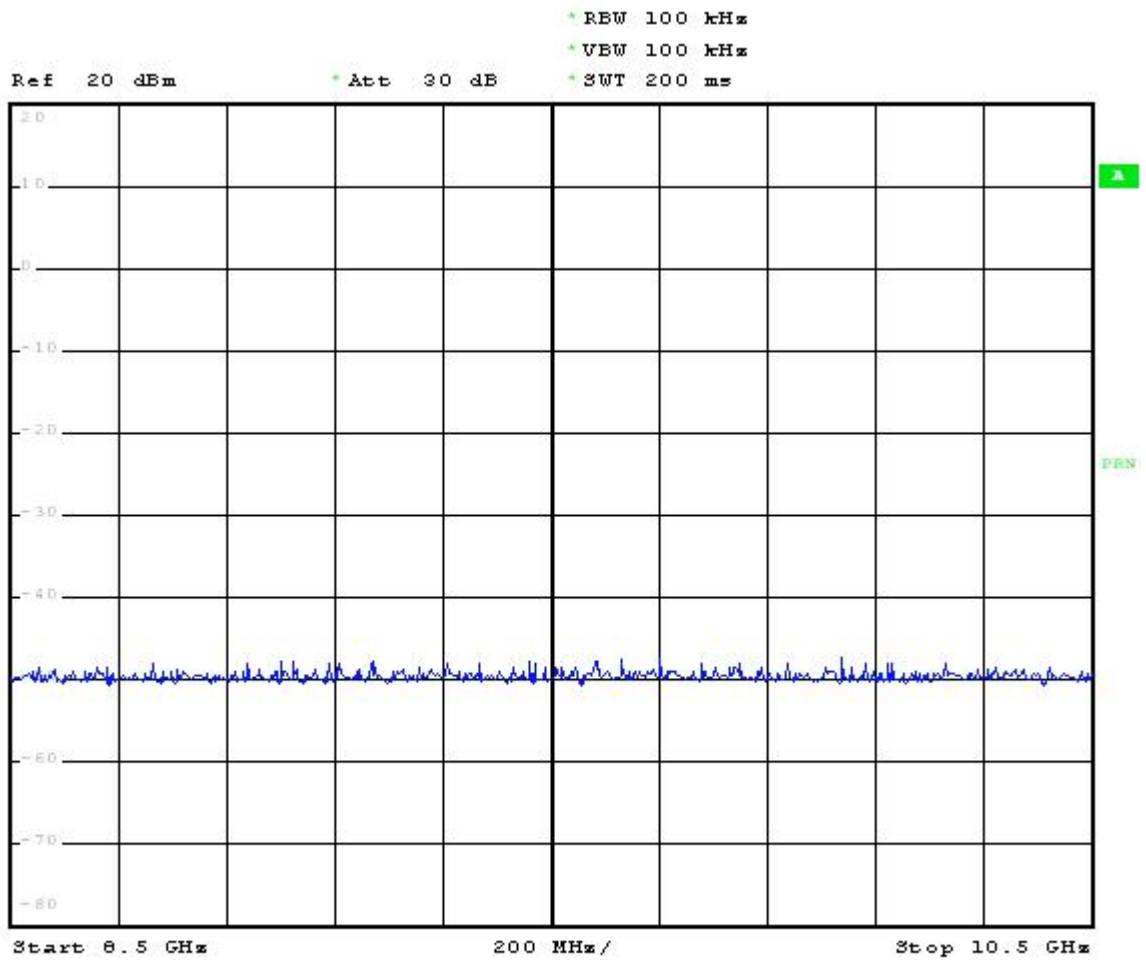


Date: 12.FEB.2009 12:03:17

(8.5GHz~10.5GHz)

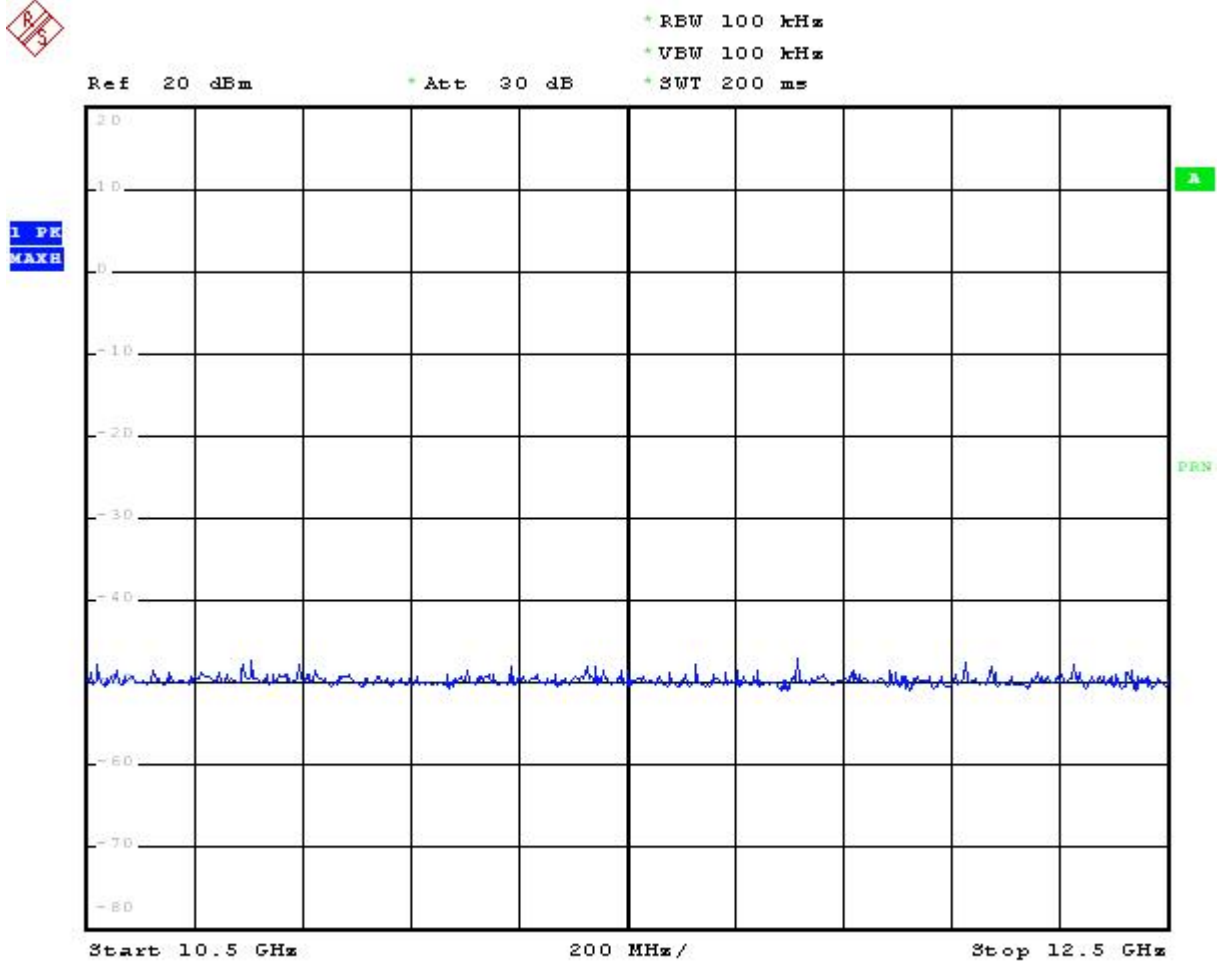


1 PR
MAXH



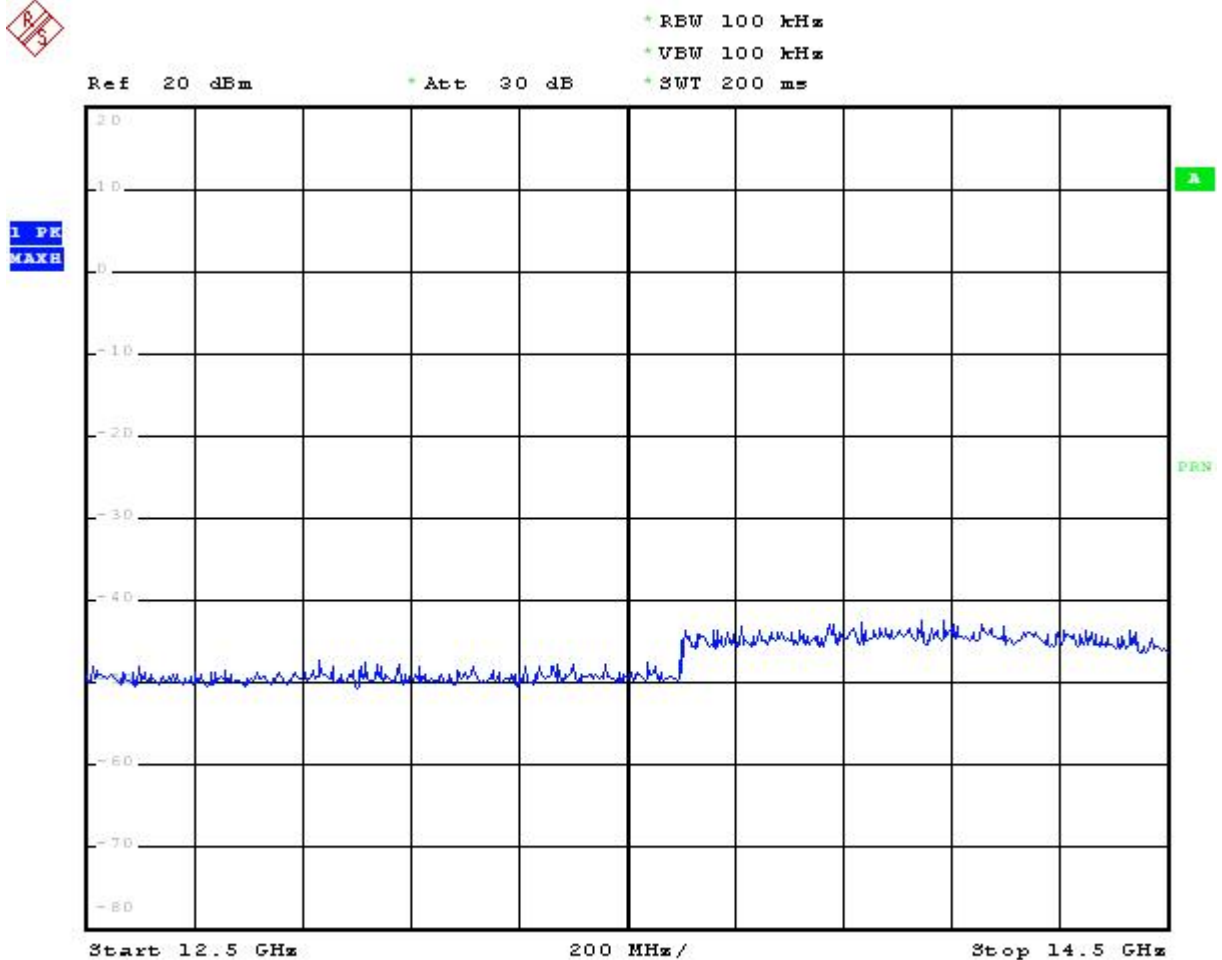
Date: 12.FEB.2009 12:03:57

(10.5GHz~12.5GHz)



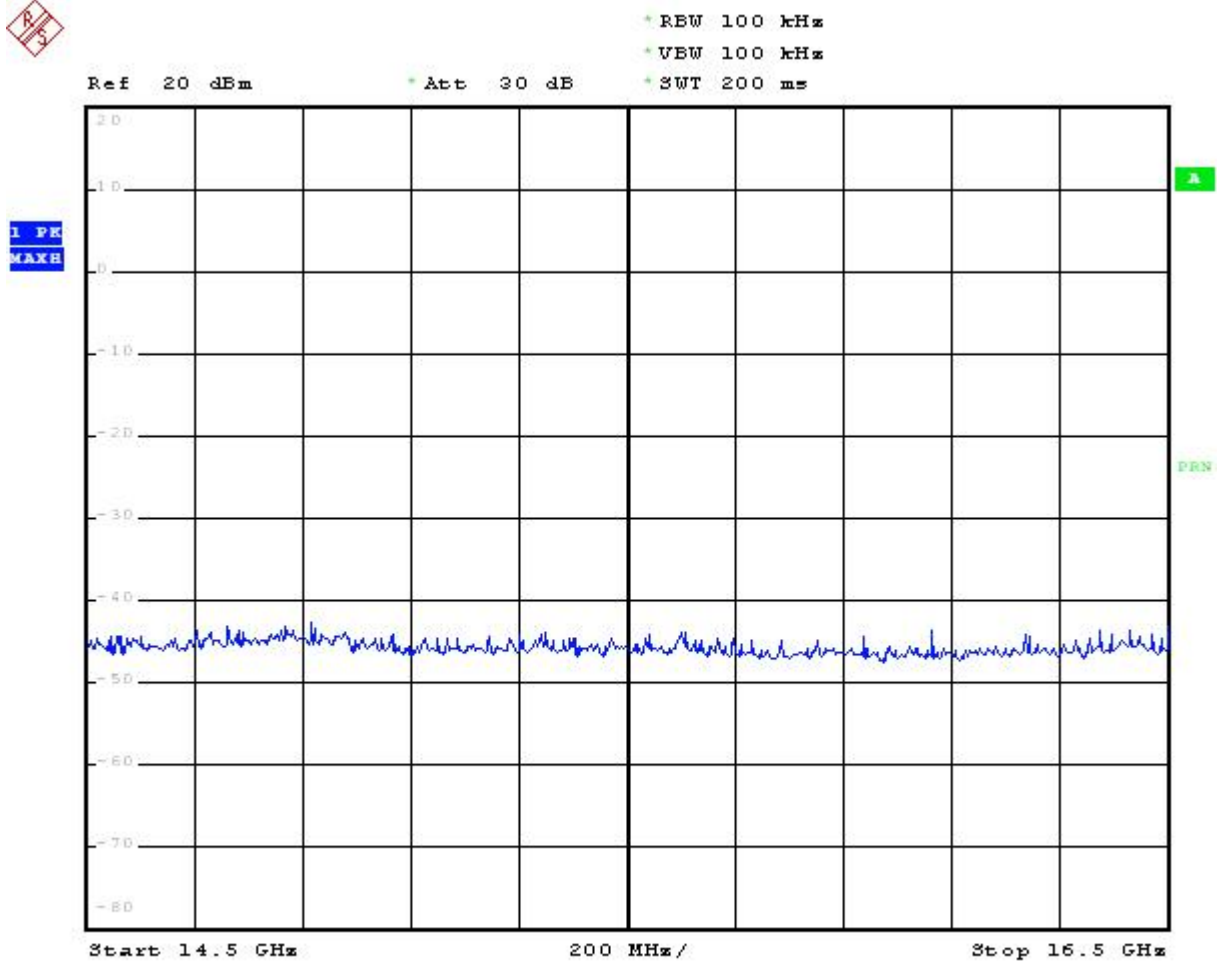
Date: 12.FEB.2009 12:04:54

(12.5GHz~14.5GHz)



Date: 12.FEB.2009 12:05:29

(14.5GHz~16.5GHz)

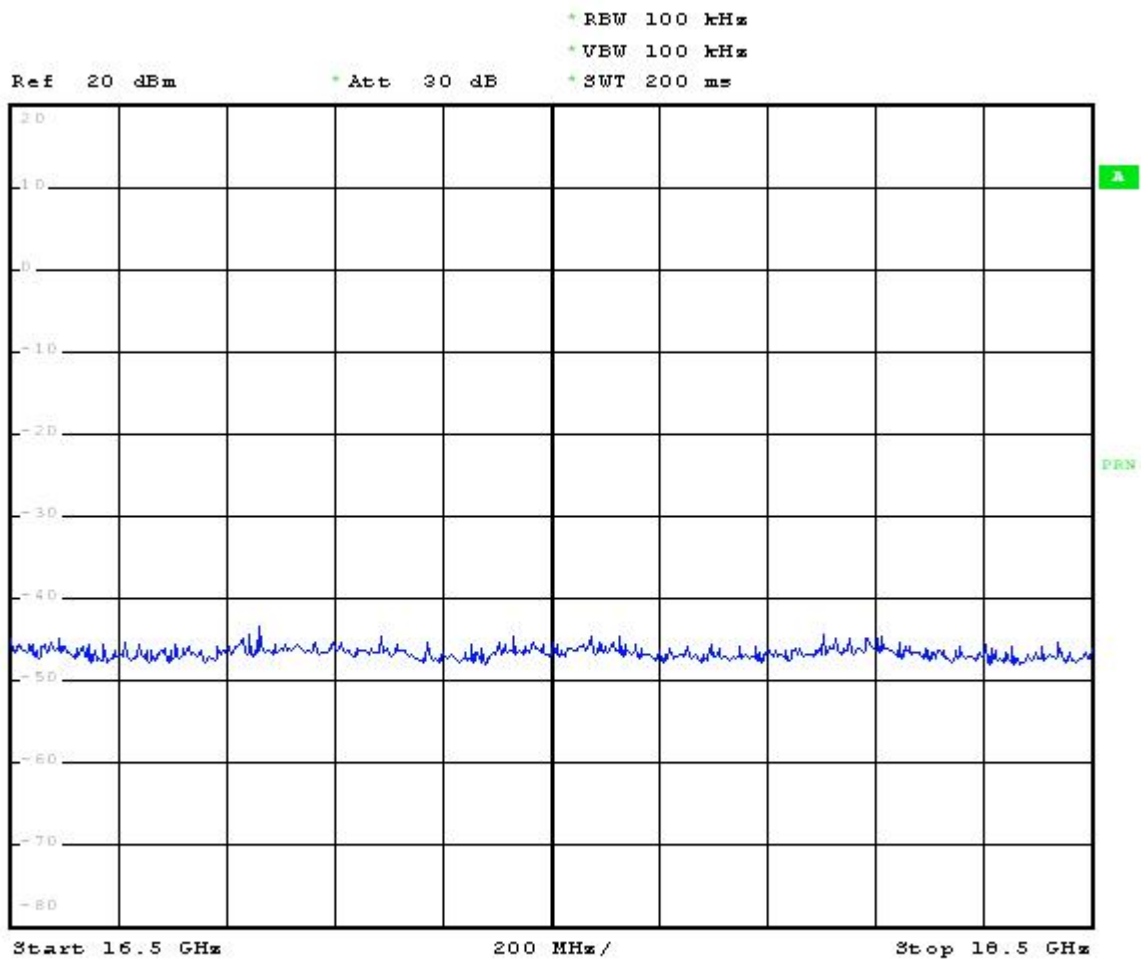


Date: 12.FEB.2009 12:06:06

(16.5GHz~18.5GHz)

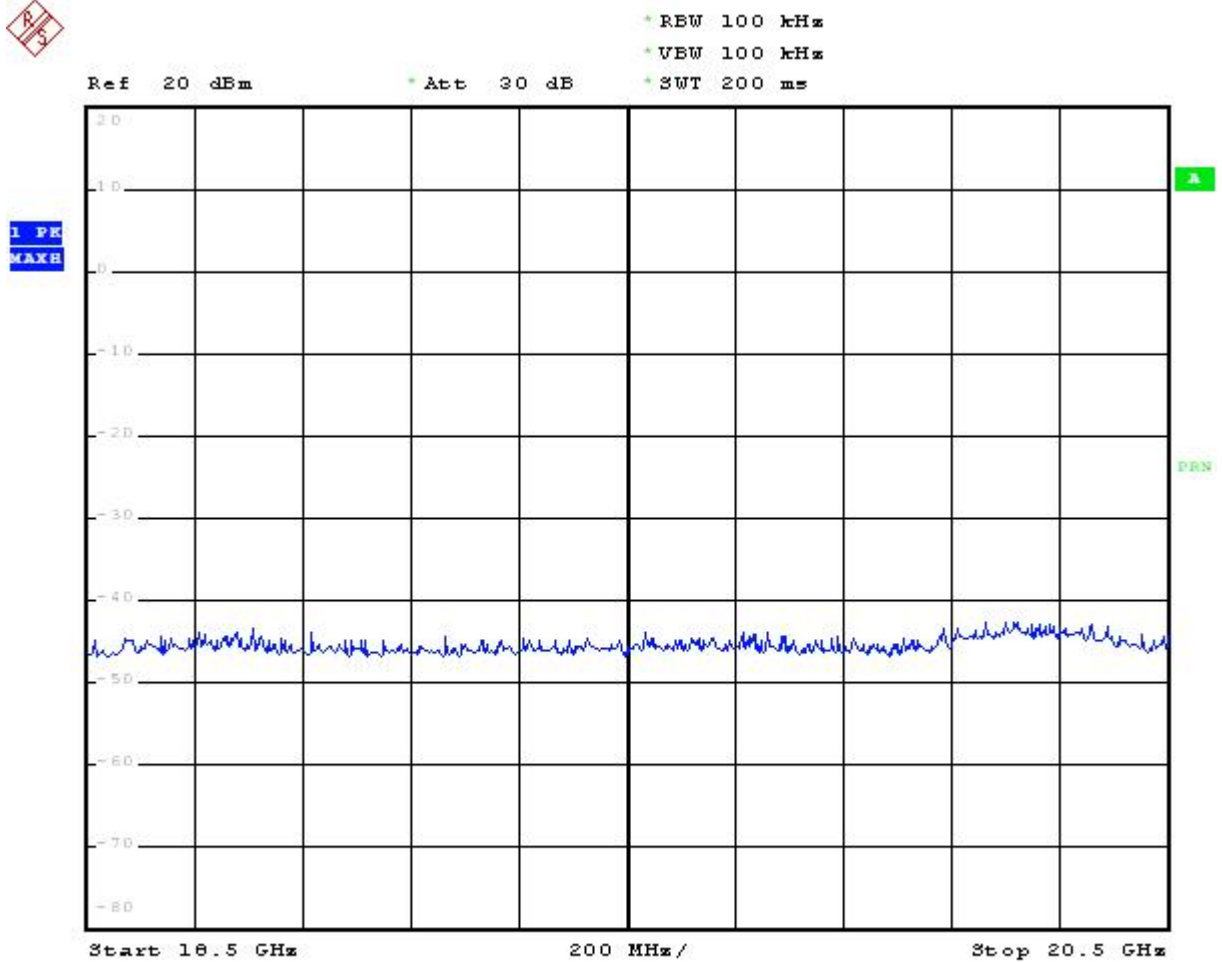


1 PR
MAXH



Date: 12.FEB.2009 12:06:44

(18.5GHz~20.5GHz)

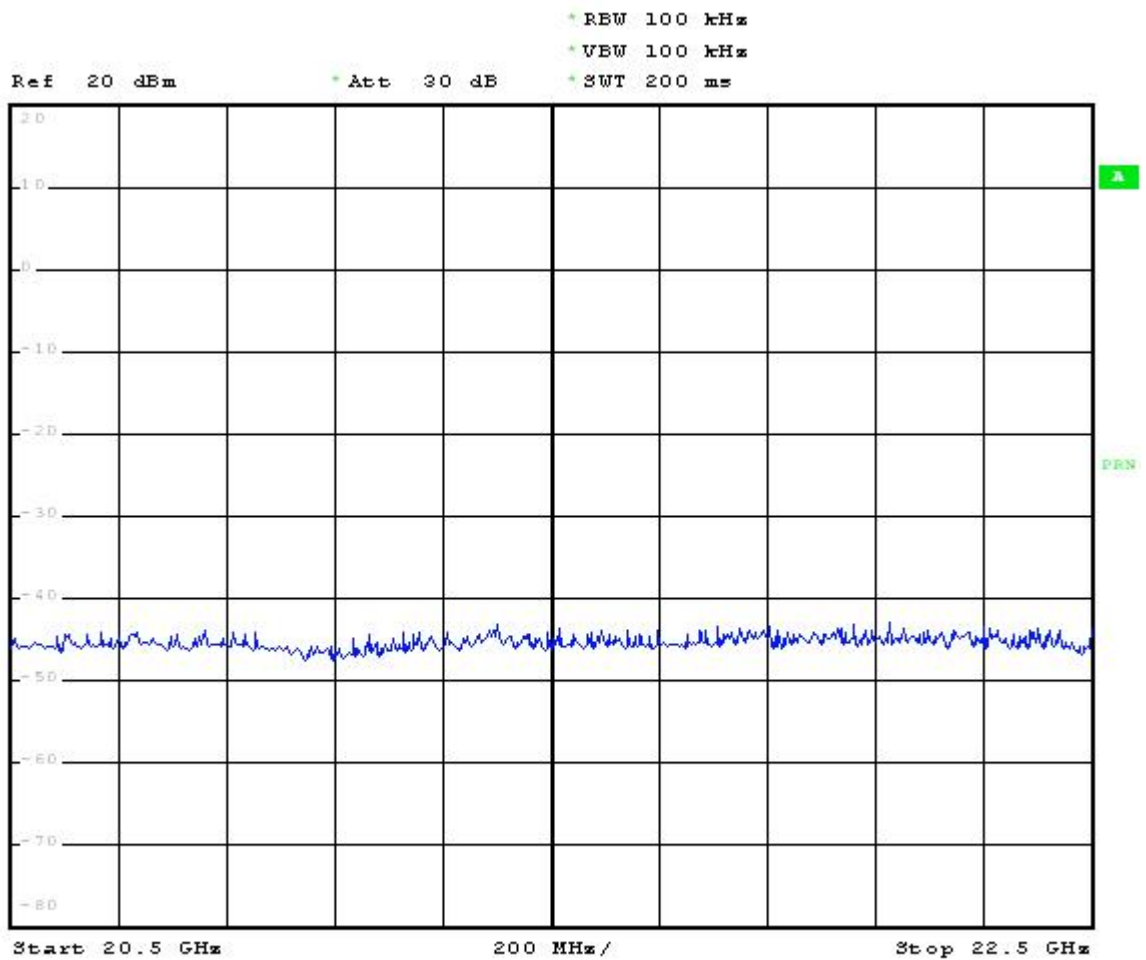


Date: 12.FEB.2009 13:16:47

(20.5GHz~22.5GHz)

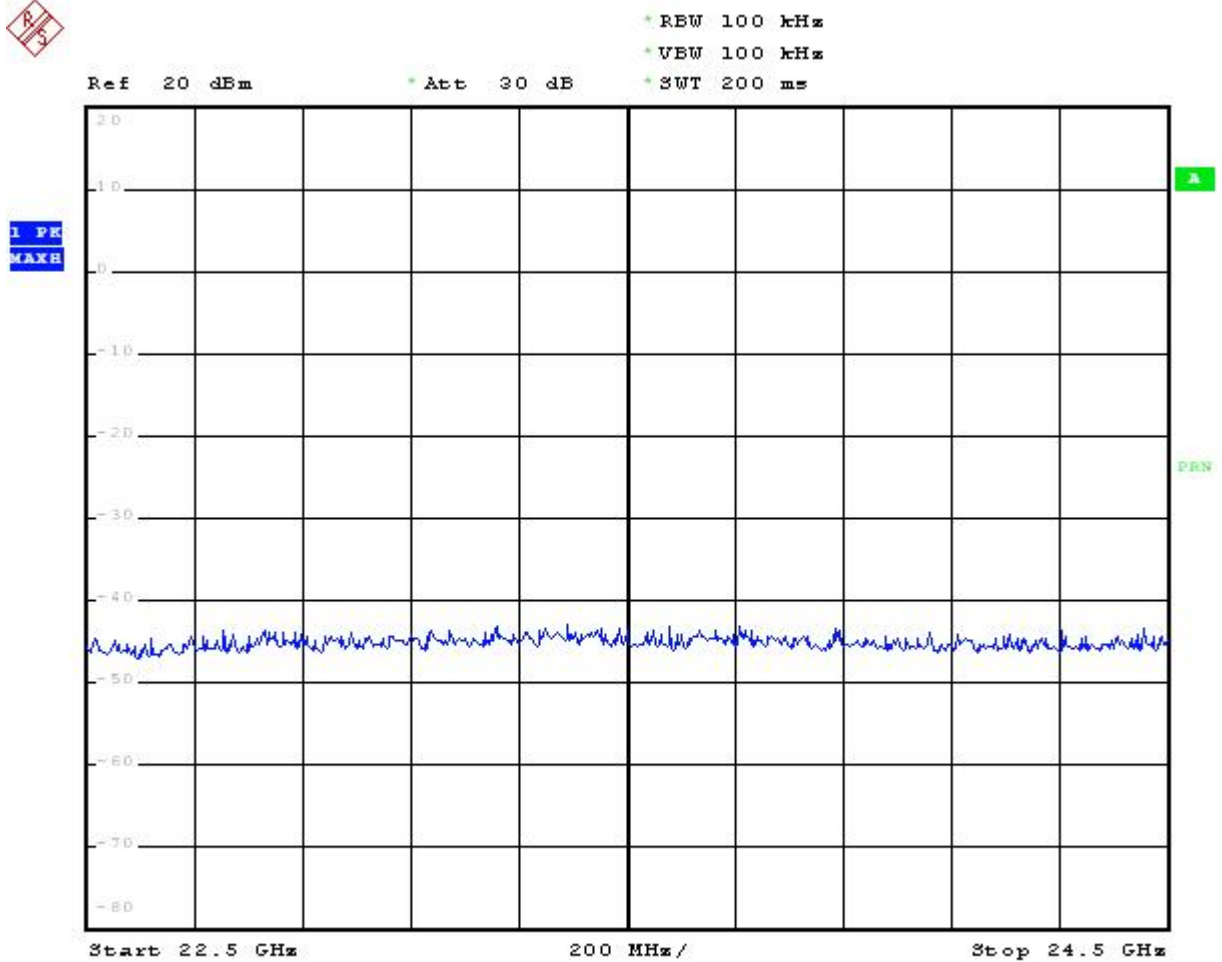


1 PR
MAXH



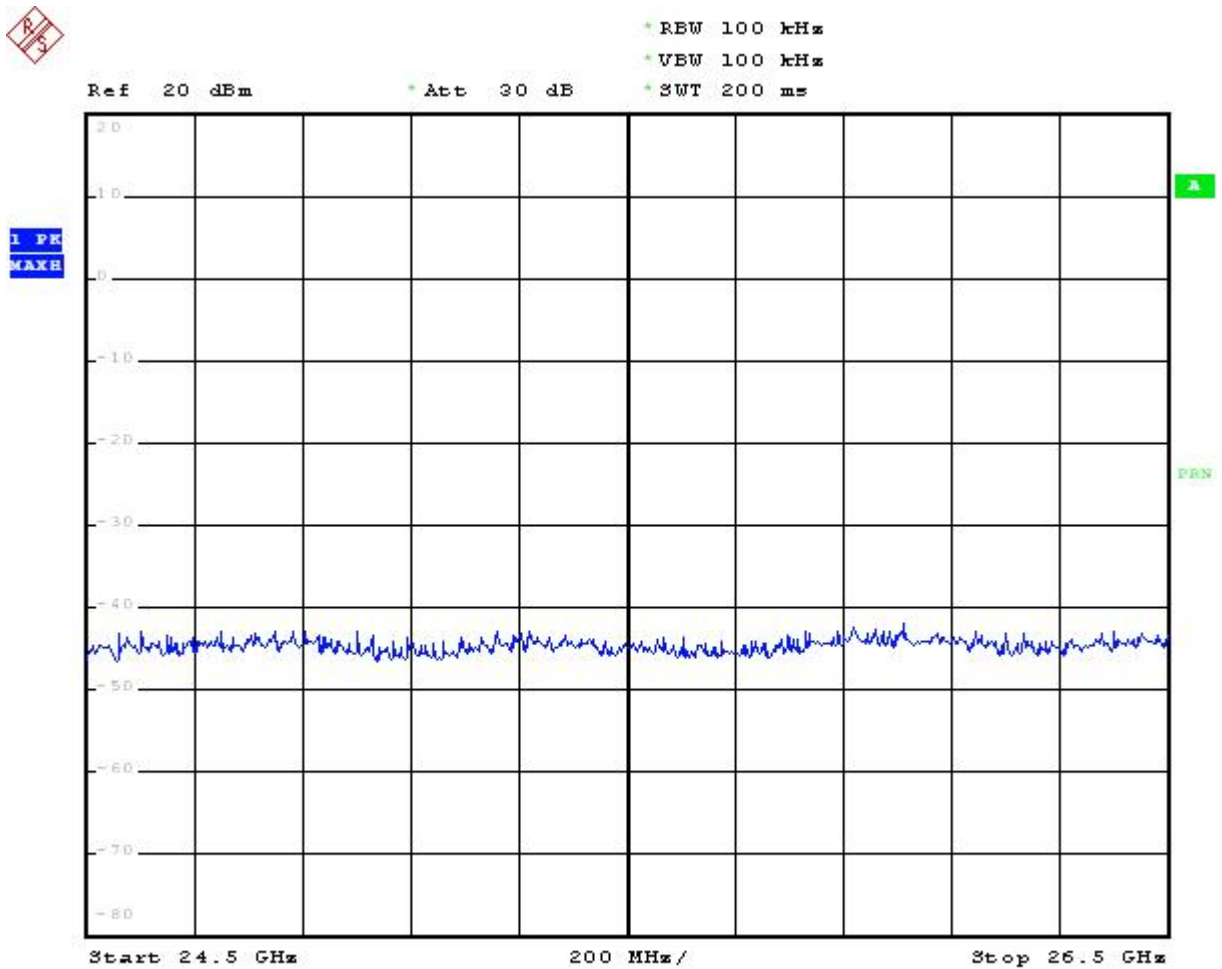
Date: 12.FEB.2009 13:19:43

(22.5GHz~24.5GHz)



Date: 12.FEB.2009 13:20:43

(24.5GHz~26.5GHz)



Date: 12.FEB.2009 13:21:21

6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

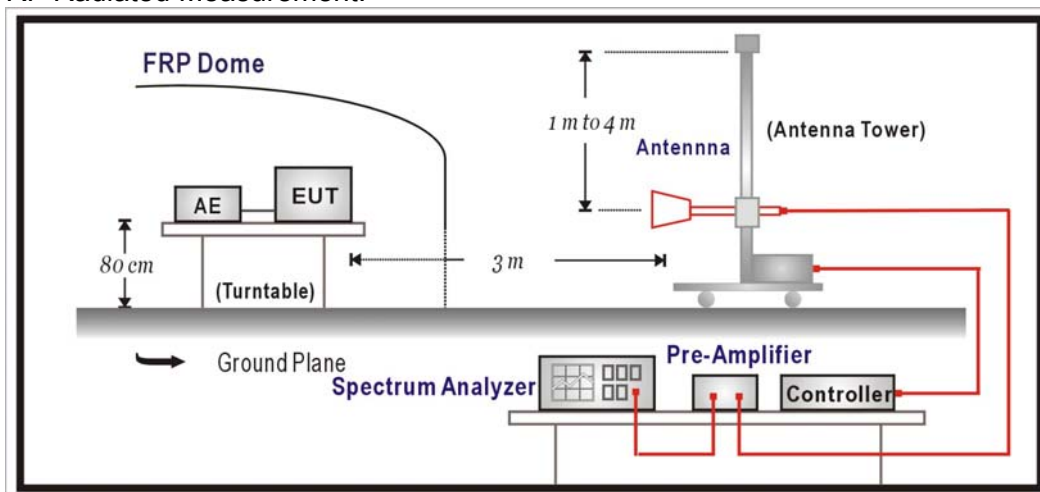
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2008
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2009
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2008
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	Sep., 2008
5		Bilog Antenna	Chase	CBL6112B / 2455	Sep., 2008
6	X	Horn Antenna	Schwarzbeck	BBHA 9120D / BBHA9120D312	Sep., 2008
7	No.1 OATS				Sep., 2008

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 Radiated Measurement:



6.3. 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.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

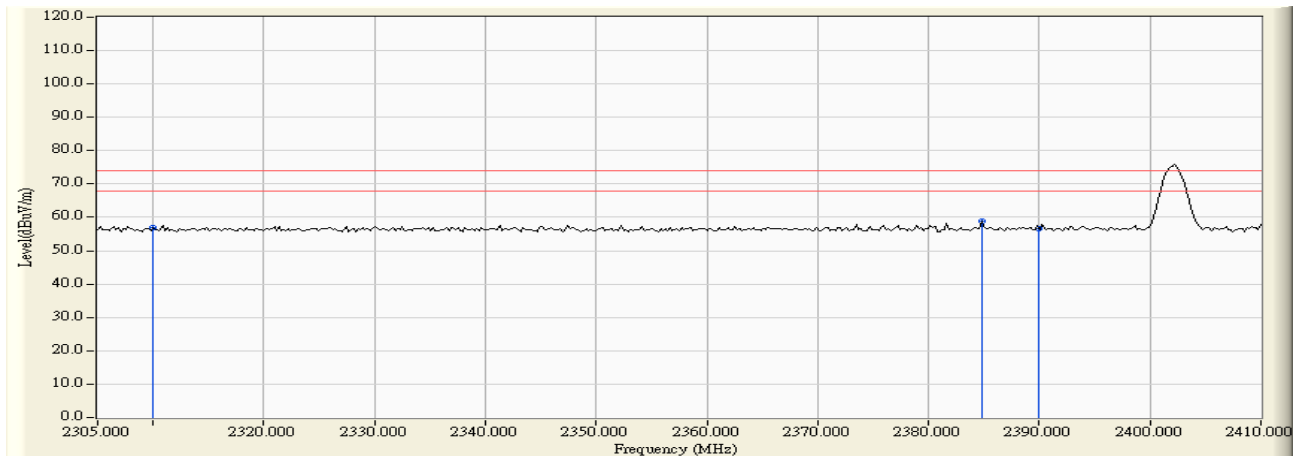
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

6.6. Test Result

Site : Site1	Time : 2009/04/01 - 11:01
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2402

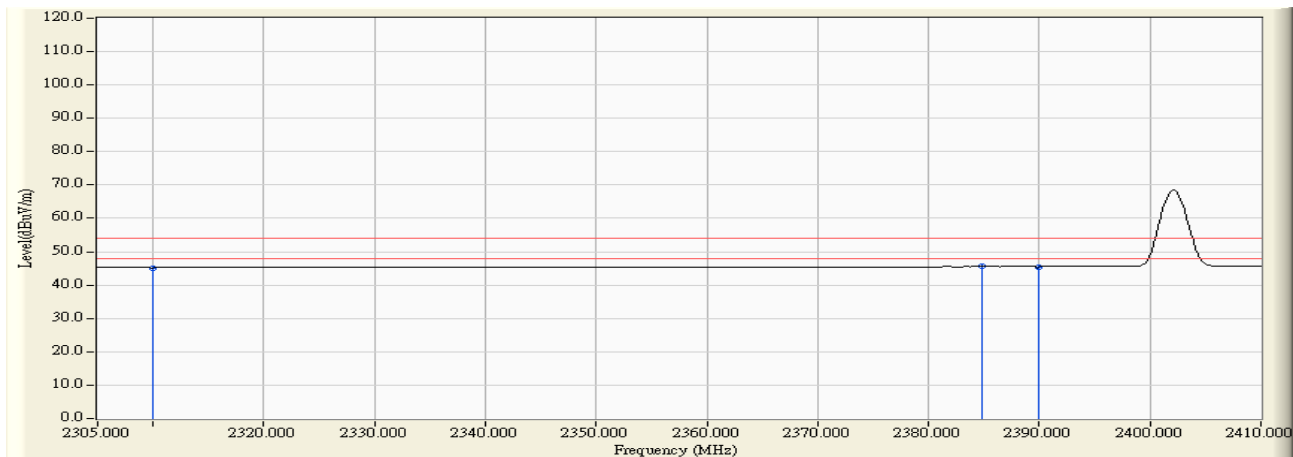


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	31.658	25.195	56.852	-17.148	74.000	PEAK
2	*	2384.800	32.011	26.726	58.737	-15.263	74.000	PEAK
3		2390.000	32.036	24.582	56.618	-17.382	74.000	PEAK

Note:

1. All readings 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. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:03
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2402

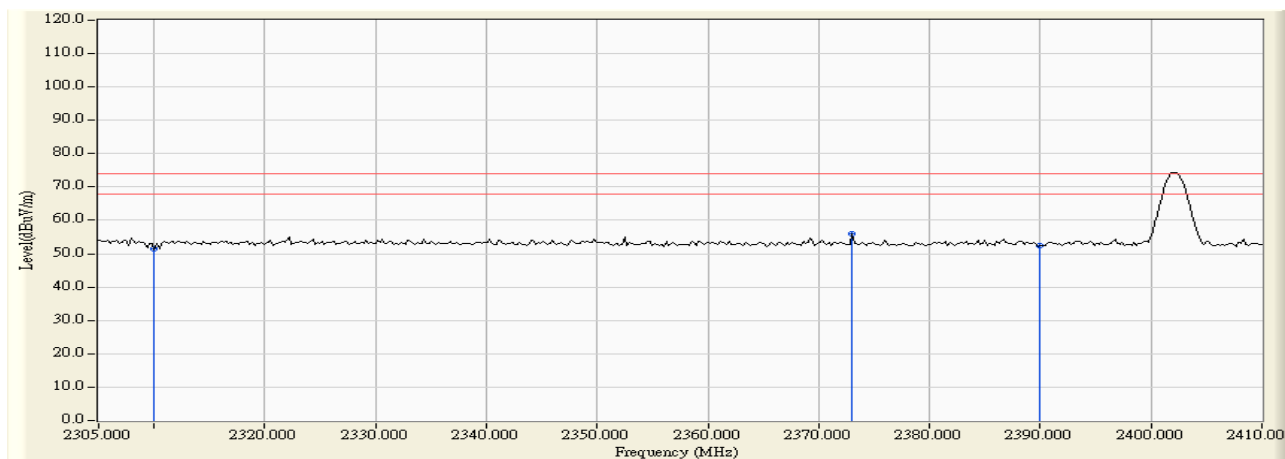


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	31.658	13.464	45.121	-8.879	54.000	AVERAGE
2	*	2384.800	32.011	13.517	45.528	-8.472	54.000	AVERAGE
3		2390.000	32.036	13.454	45.490	-8.510	54.000	AVERAGE

Note:

1. All readings 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. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:11
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2402

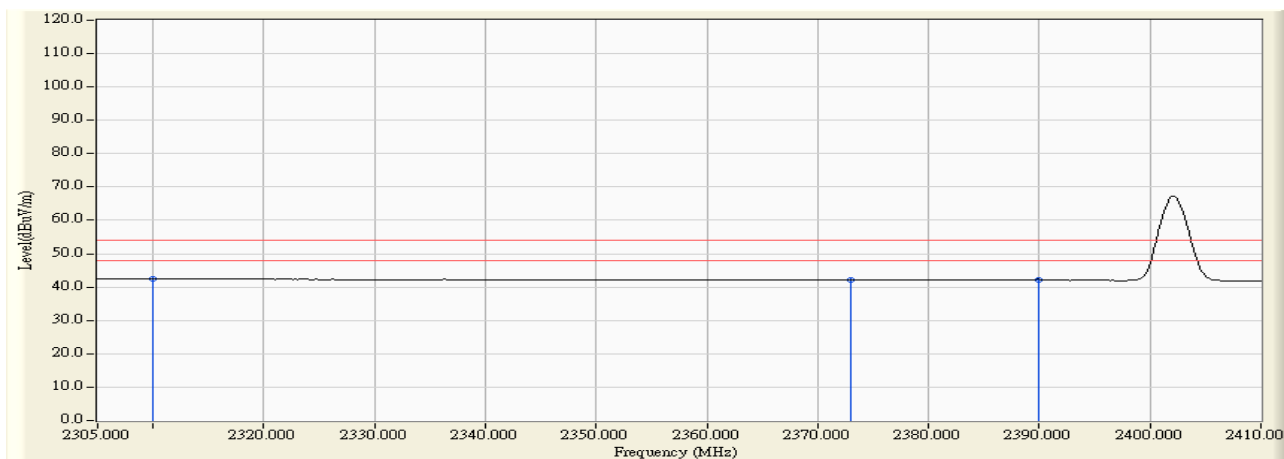


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	28.738	22.786	51.523	-22.477	74.000	PEAK
2	*	2373.040	28.525	27.395	55.920	-18.080	74.000	PEAK
3		2390.000	28.470	23.866	52.336	-21.664	74.000	PEAK

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:12
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2402

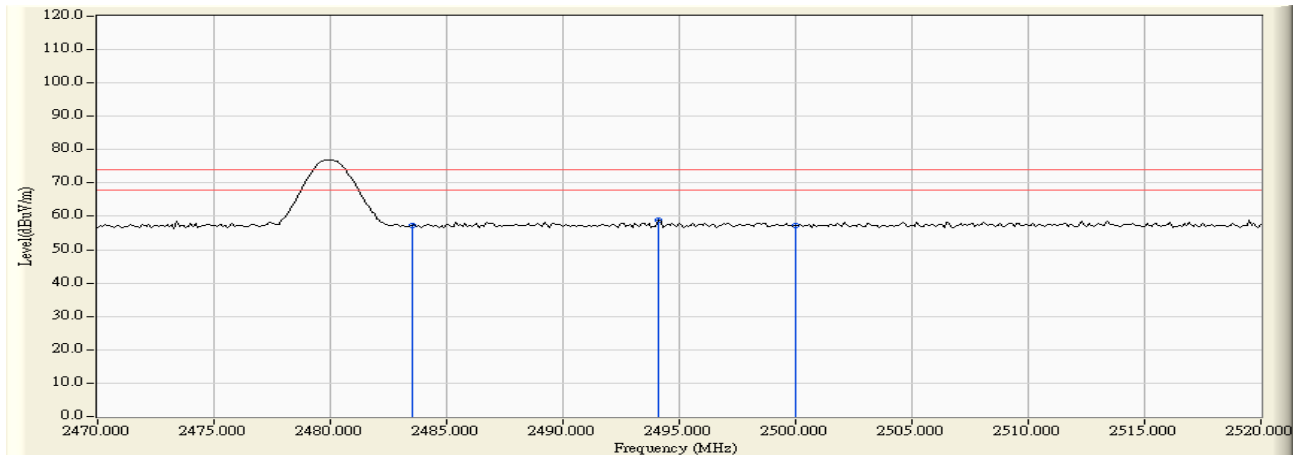


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2310.000	28.738	13.671	42.408	-11.592	54.000	AVERAGE
2		2373.040	28.525	13.524	42.049	-11.951	54.000	AVERAGE
3		2390.000	28.470	13.738	42.208	-11.792	54.000	AVERAGE

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:23
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2480

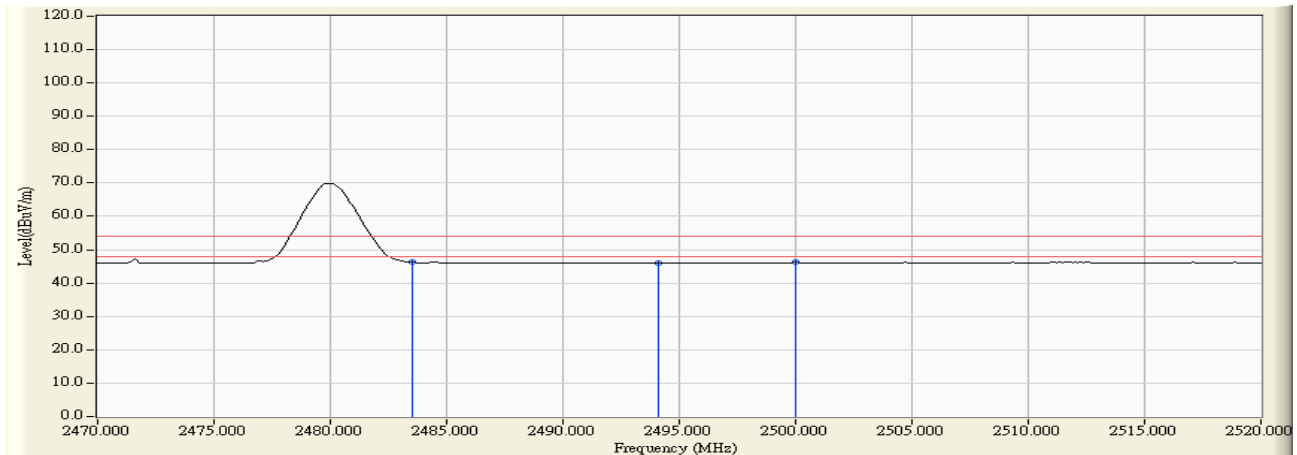


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	32.480	24.632	57.112	-16.888	74.000	PEAK
2	*	2494.100	32.531	26.373	58.904	-15.096	74.000	PEAK
3		2500.000	32.557	24.588	57.146	-16.854	74.000	PEAK

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:24
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2480

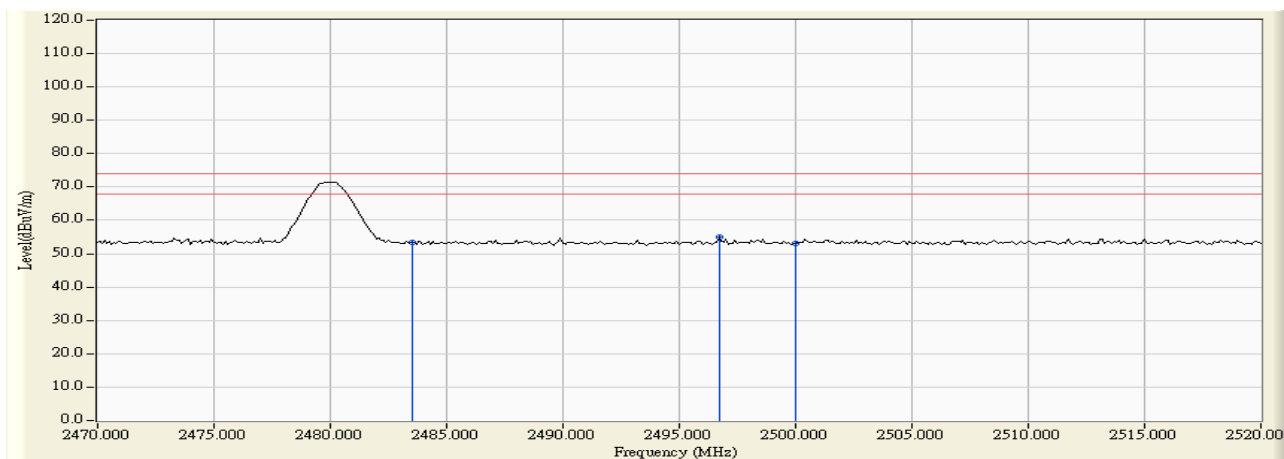


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	32.480	13.757	46.237	-7.763	54.000	AVERAGE
2		2494.100	32.531	13.558	46.089	-7.911	54.000	AVERAGE
3	*	2500.000	32.557	13.875	46.433	-7.567	54.000	AVERAGE

Note:

1. All readings 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. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:27
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2480

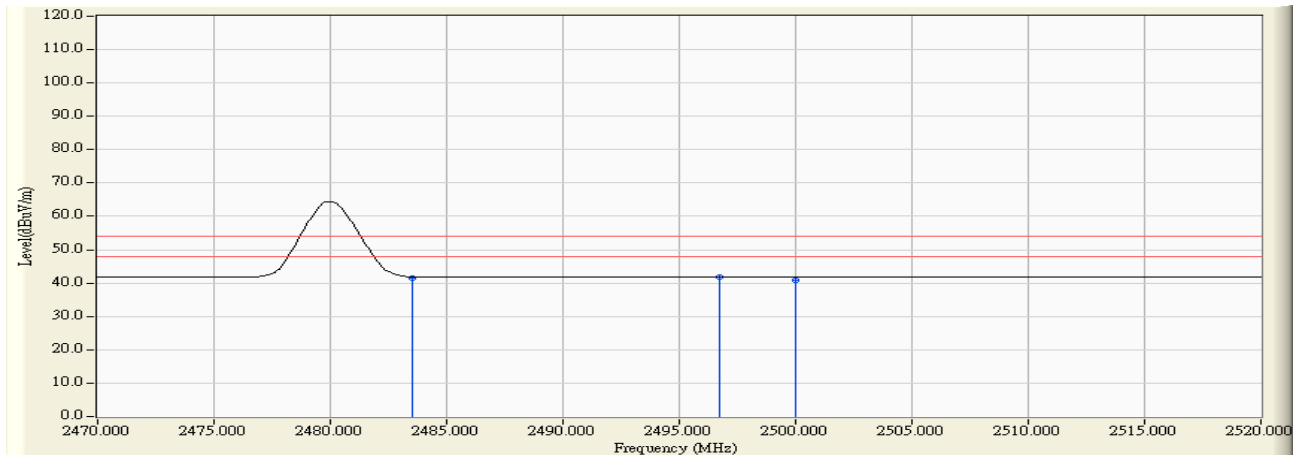


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	28.156	25.191	53.346	-20.654	74.000	PEAK
2	*	2496.700	28.113	26.827	54.941	-19.059	74.000	PEAK
3		2500.000	28.142	24.896	53.038	-20.962	74.000	PEAK

Note:

1. All readings 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. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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 : Site1	Time : 2009/04/01 - 11:28
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB4_FCC_1-18G(2009-01) - VERTICAL	Power : AC 120V/60Hz
EUT : Mini GPS	Note : 2480



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	28.156	13.248	41.403	-12.597	54.000	AVERAGE
2	*	2496.700	28.113	13.580	41.694	-12.306	54.000	AVERAGE
3		2500.000	28.142	12.781	40.923	-13.077	54.000	AVERAGE

Note:

1. All readings 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. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. 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. Number of hopping frequency

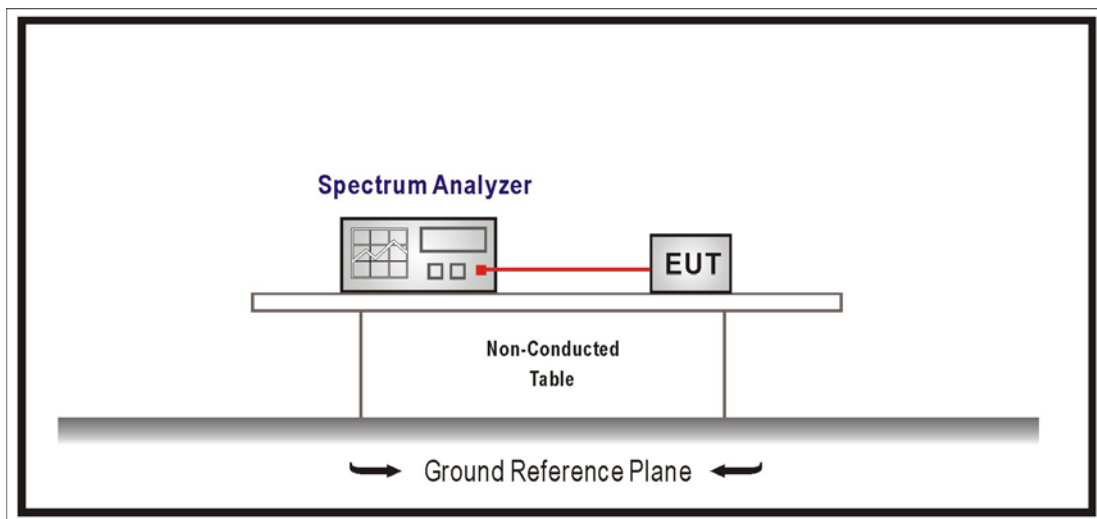
7.1. Test Equipment

The following test equipments are used during the test:

Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2009
2	No.1 OATS			Sep., 2008

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

7.2. Test Setup



7.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

$RBW \geq 1\%$ of the span , $VBW \geq RBW$

Sweep = auto, Detector function = peak, Trace = max hold

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

7.6. Test Result

Product	Mini GPS		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

Frequency Range (MHz)	Measure Level (Hopping Channel)	Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass



2402-2420MHz

* RBW 100 kHz

* VBW 1 MHz

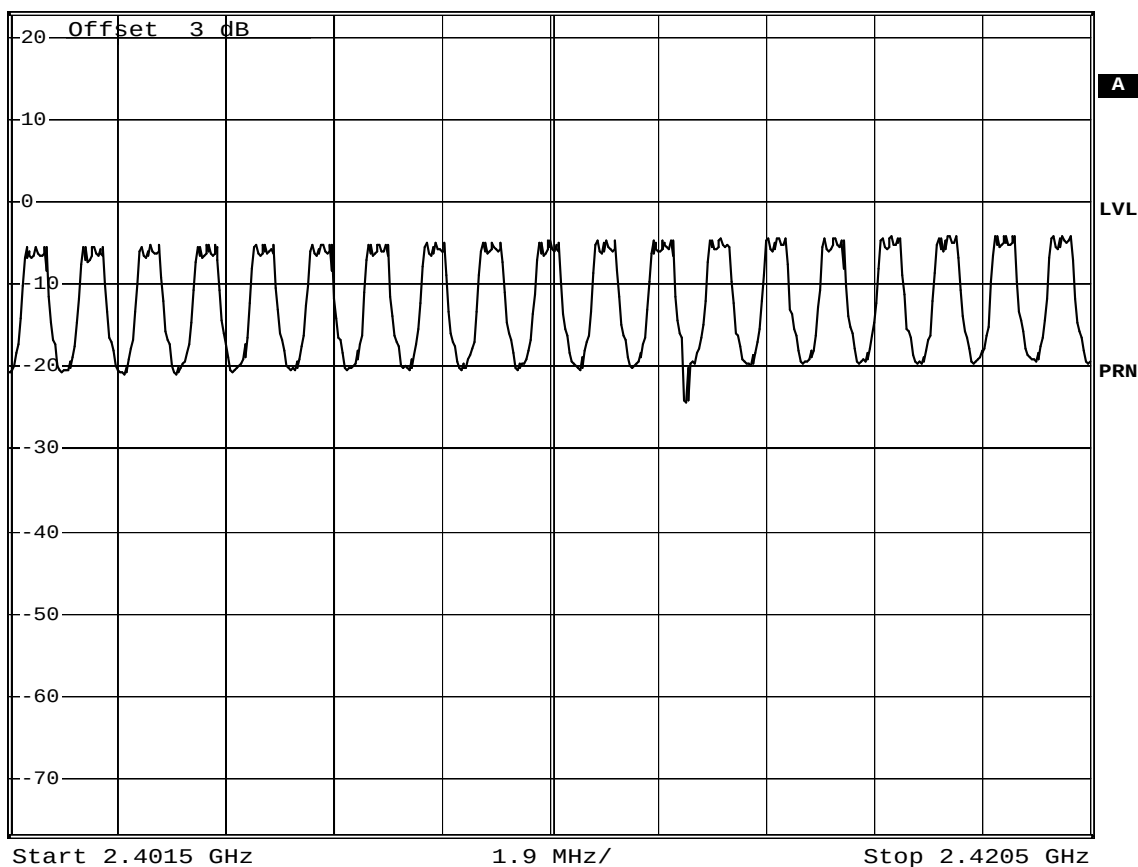
* SWT 200 ms

Ref 23 dBm

* Att 30 dB

Offset 3 dB

1 PK
VIEW



Date: 12.FEB.2009 11:45:08

2421-2440MHz



* RBW 100 kHz

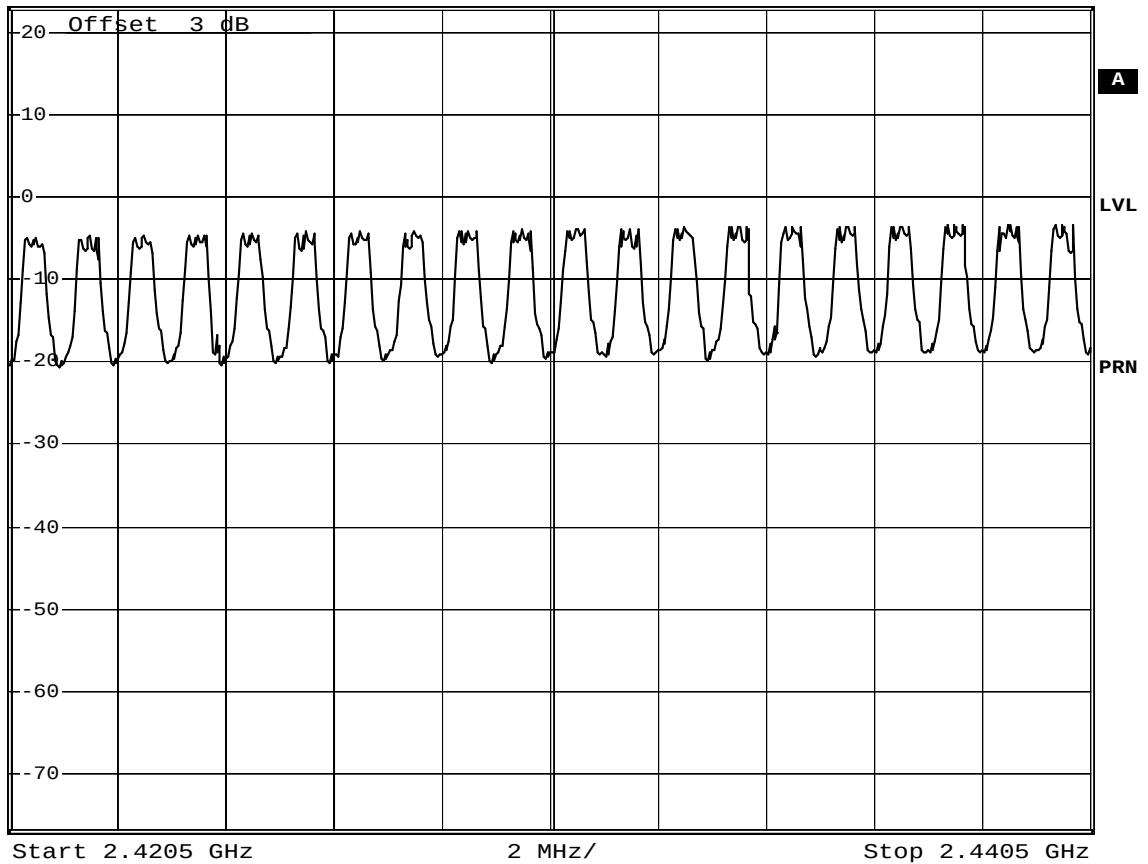
* VBW 1 MHz

* SWT 200 ms

Ref 23 dBm

* Att 30 dB

1 PK
VIEW



Date: 12.FEB.2009 16:31:42

2441-2460MHz



* RBW 100 kHz

* VBW 1 MHz

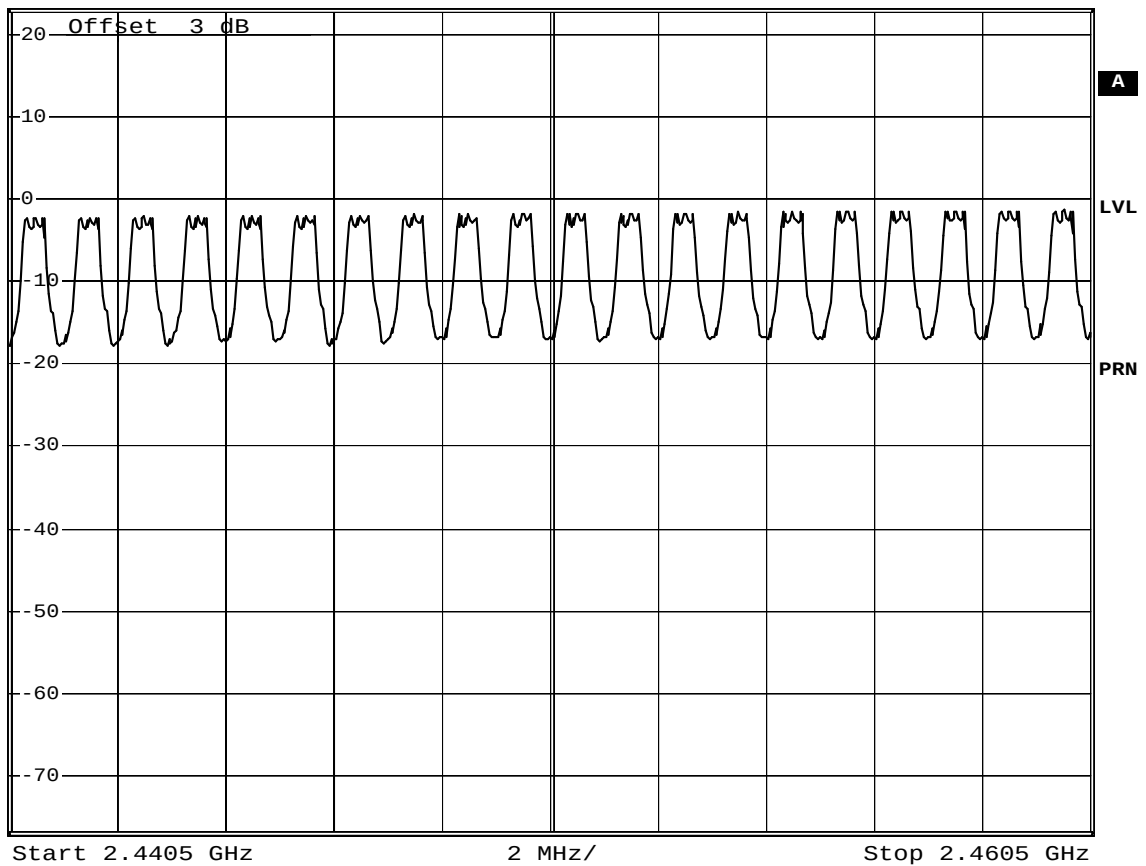
* SWT 200 ms

Ref 23 dBm

* Att 30 dB

* SWT 200 ms

1 PK
VIEW



Date: 12.FEB.2009 12:22:30



2461-2480MHz

* RBW 100 kHz

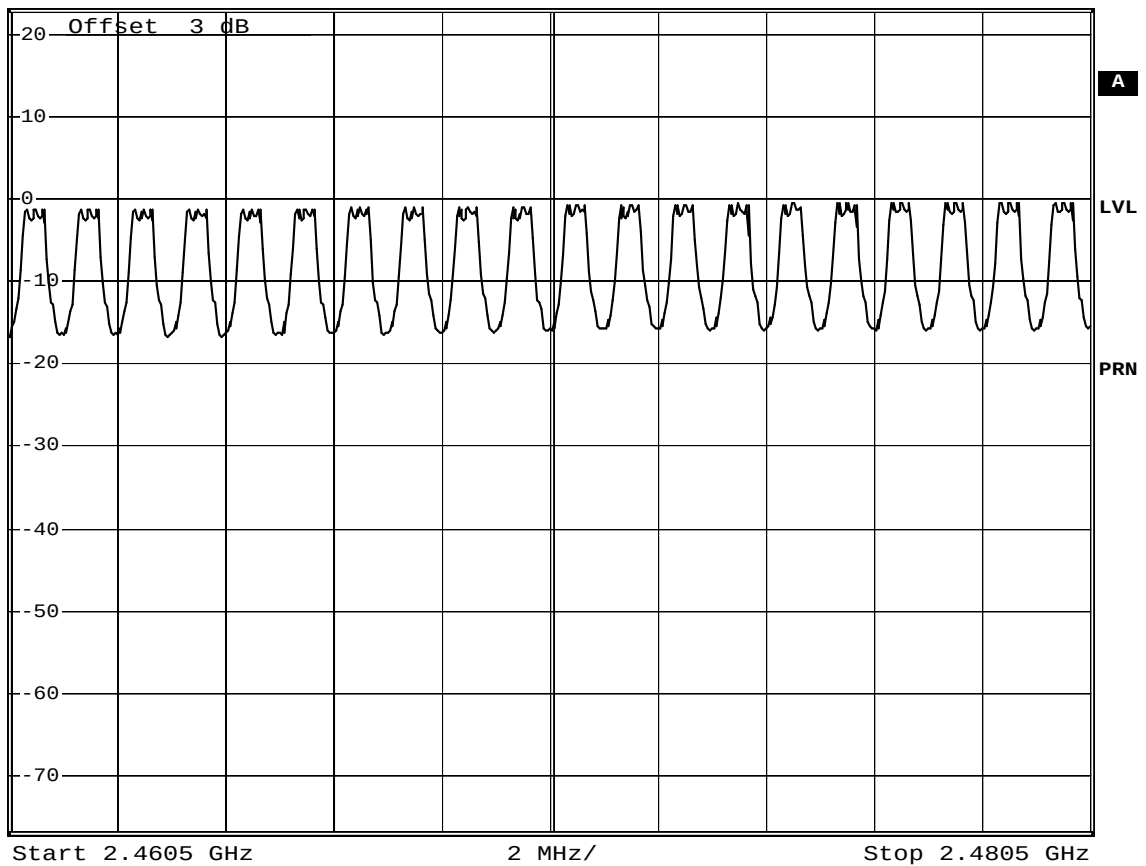
* VBW 1 MHz

* SWT 200 ms

Ref 23 dBm

* Att 30 dB

1 PK
VIEW



Date: 12.FEB.2009 13:02:01

8. Carrier Frequency Separation

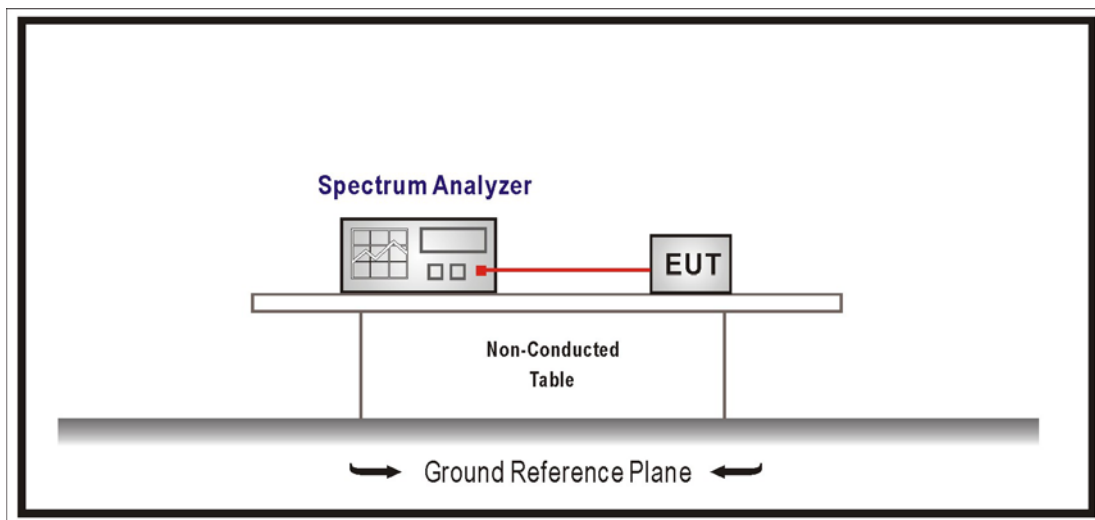
8.1. Test Equipment

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	Jan., 2009
2	No.1 OATS			Sep., 2008

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

8.2. Test Setup



8.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW) $\geq$ 1% of the span, VBW $\geq$ RBW

Sweep = auto, Detector function = peak, Trace = max hold

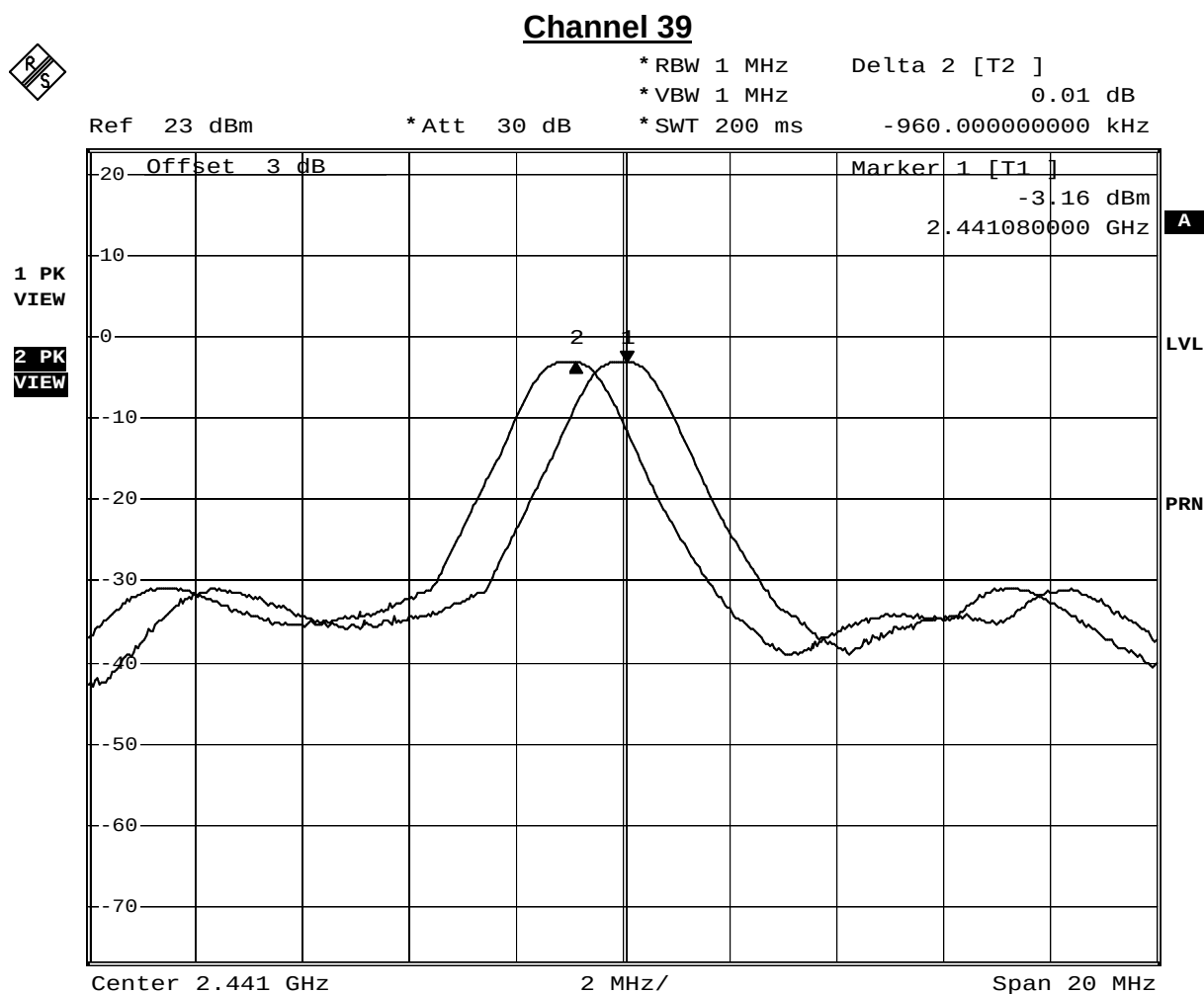
8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

8.6. Test Result

Product	Mini GPS		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
39	2441.00	960	>775	Pass



Date: 12.FEB.2009 16:21:15

9. Occupied Bandwidth

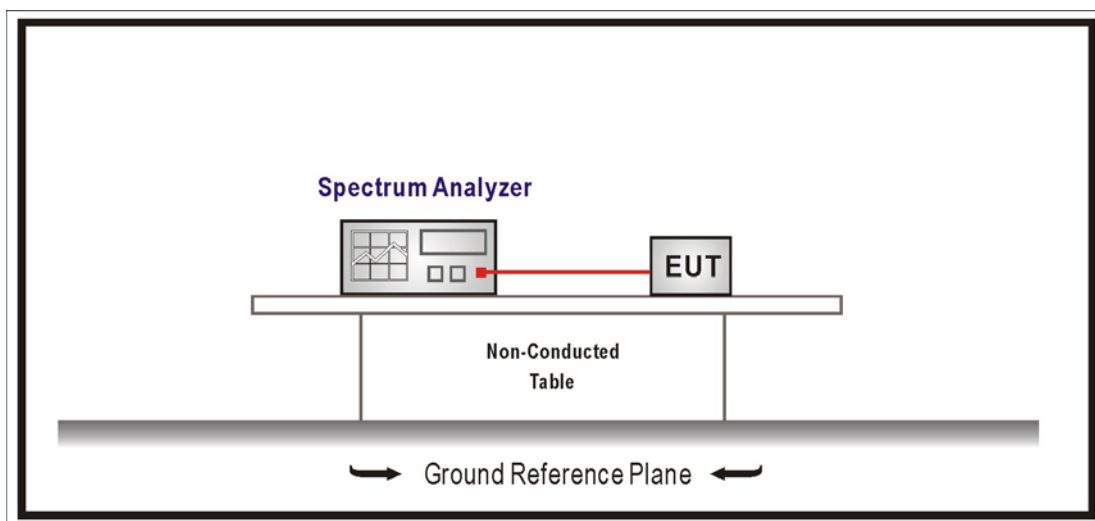
9.1. Test Equipment

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	Jan., 2009
2	No.1 OATS			Sep., 2008

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

9.2. Test Setup



9.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

9.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW $\geq$ 1% of the 20 dB bandwidth, VBW $\geq$ RBW

Sweep = auto, Detector function = peak, Trace = max hold

The EUT should be transmitting at its maximum data rate.

9.5. Test Specification

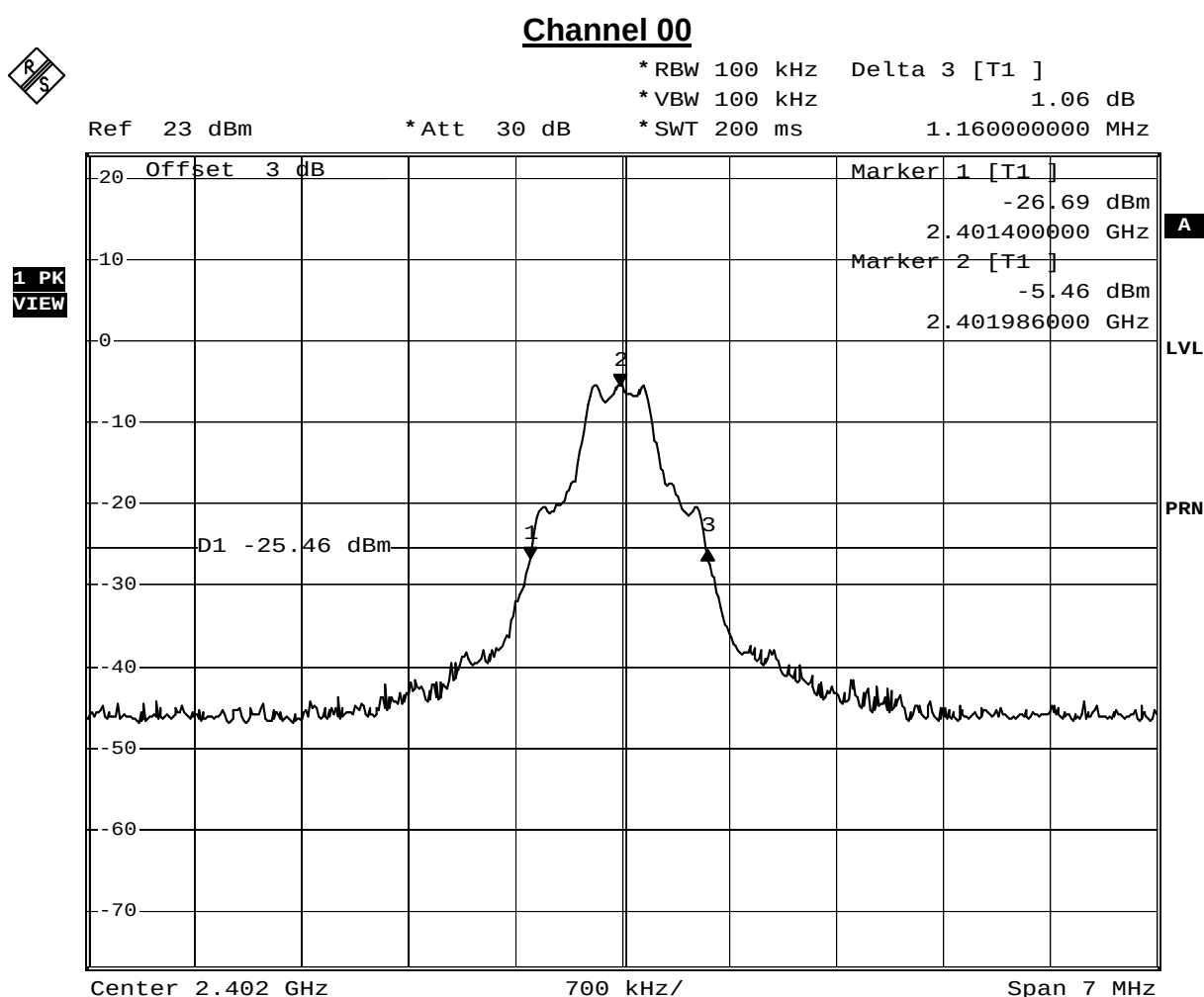
According to FCC Part 15 Subpart C Paragraph 15.207: 2008

9.6. Test Result

Product	Mini GPS		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402.00	1.06	--	Pass

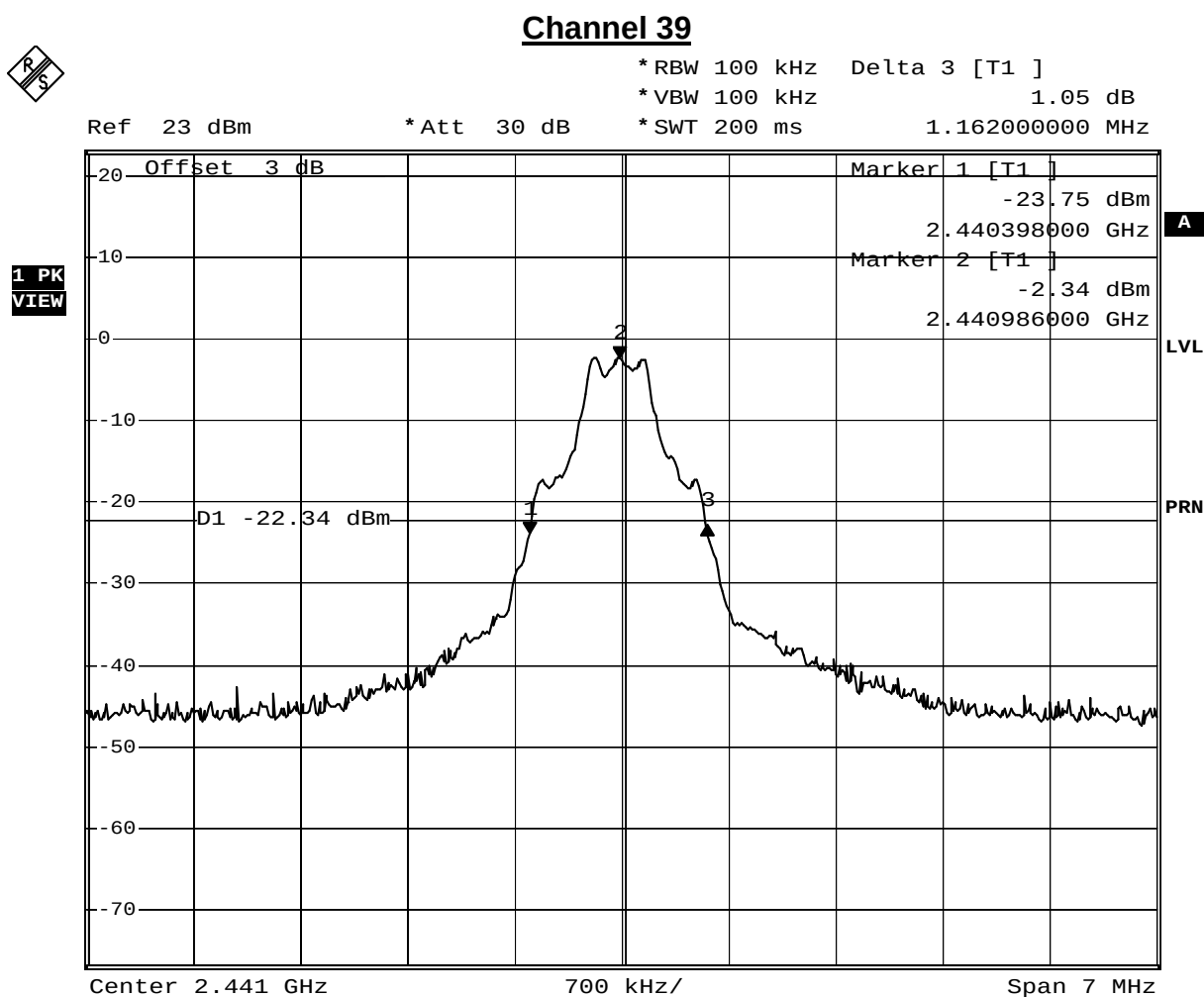


Date: 12.FEB.2009 11:23:47

Product	Mini GPS		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441.00	1.05	--	Pass



Date: 12.FEB.2009 11:25:40

Product	Mini GPS		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

1M-GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480.00	1.01	--	Pass

Channel 78

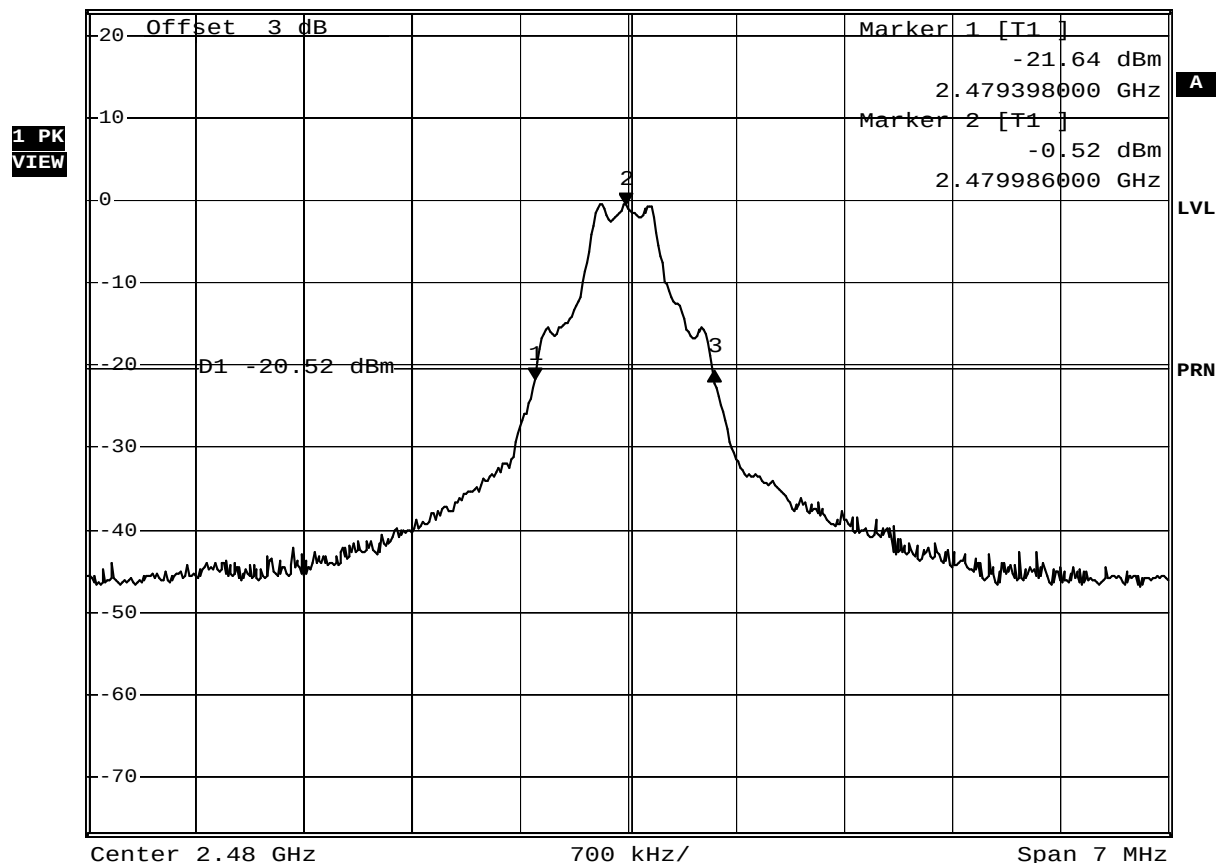


* RBW 100 kHz Delta 3 [T1]
 * VBW 100 kHz 1.01 dB
 * SWT 200 ms 1.162000000 MHz

Ref 23 dBm

* Att 30 dB

1.162000000 MHz



Date: 12.FEB.2009 11:27:27

10. Dwell Time

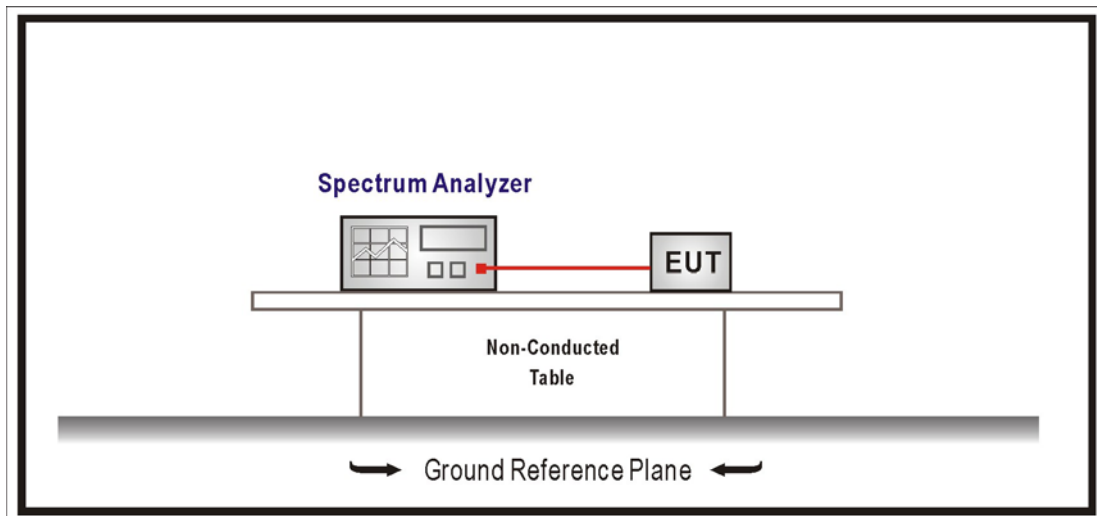
10.1. Test Equipment

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	Jan., 2009
2	No.1 OATS			Sep., 2008

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

10.2. Test Setup



10.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

10.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = zero span, centered on a hopping channel

RBW = 1 MHz, VBW $\geq$ RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak, Trace = max hold

10.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.207: 2008

10.6. Test Result

Product	Mini GPS		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2009/02/12	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System-DH 5

A) 2402MHz Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $5/20\text{msec} = 250 / \text{sec}$

The Maximum Occupancy Time Within 30.8sec: $0.00308 \times (250/79) \times 31.6 = 0.308\text{sec}$.

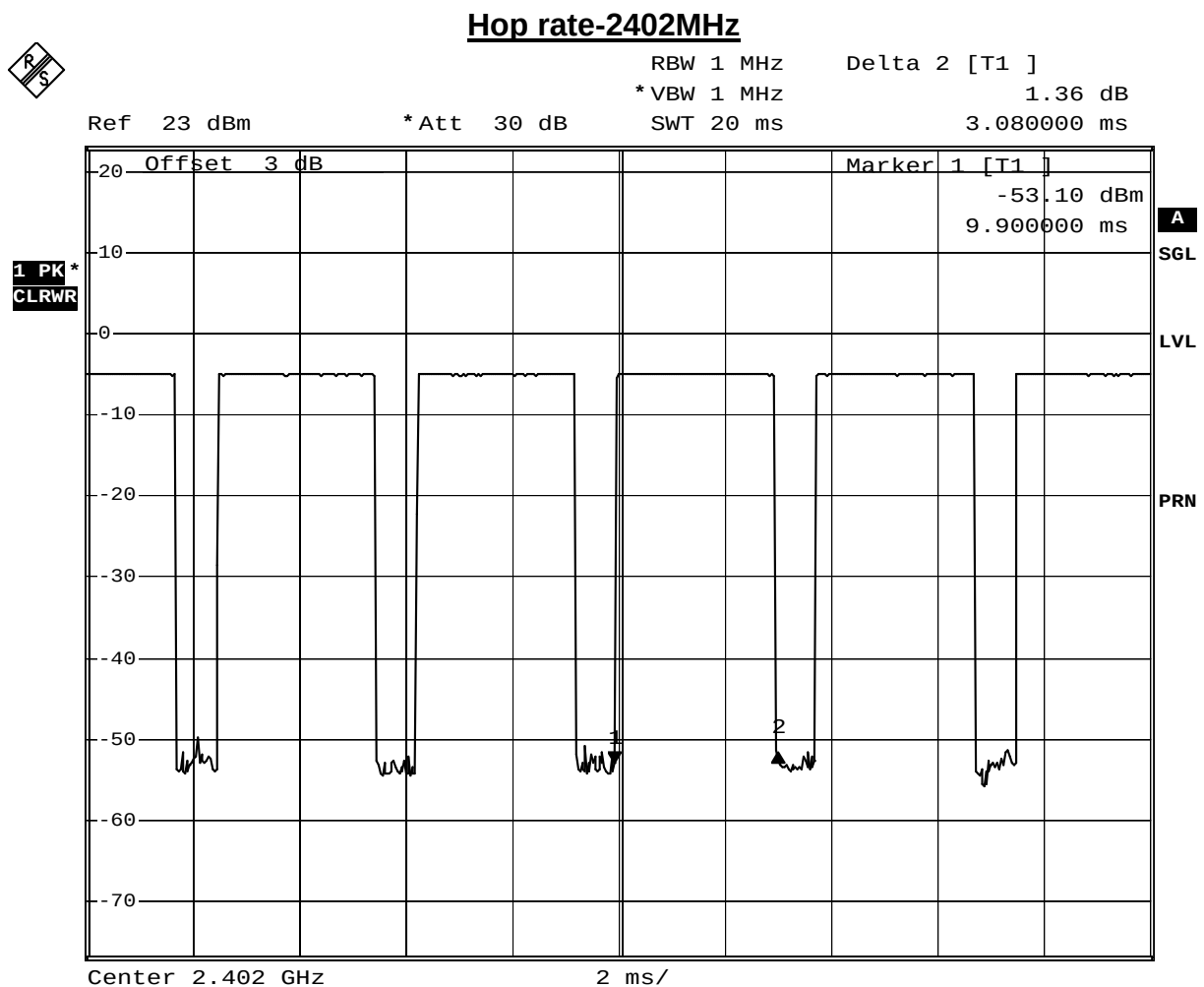
B) 2441MHz Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $5/20\text{msec} = 250 / \text{sec}$

The Maximum Occupancy Time Within 30.4sec: $0.00304 \times (250/79) \times 31.6 = 0.304\text{sec}$.

C) 2480MHz Test Time Period: $0.4 \times 79 = 31.6\text{sec}$, Hopping Times Within 1sec: $5/20\text{msec} = 250 / \text{sec}$

The Maximum Occupancy Time Within 30.8sec: $0.00308 \times (250/79) \times 31.6 = 0.308\text{sec}$.

Test Result: The Average Occupancy Time of Each Highest , Middle and Lowest Channel Is Less Than 0.4sec , And Corresponds to The Standard .

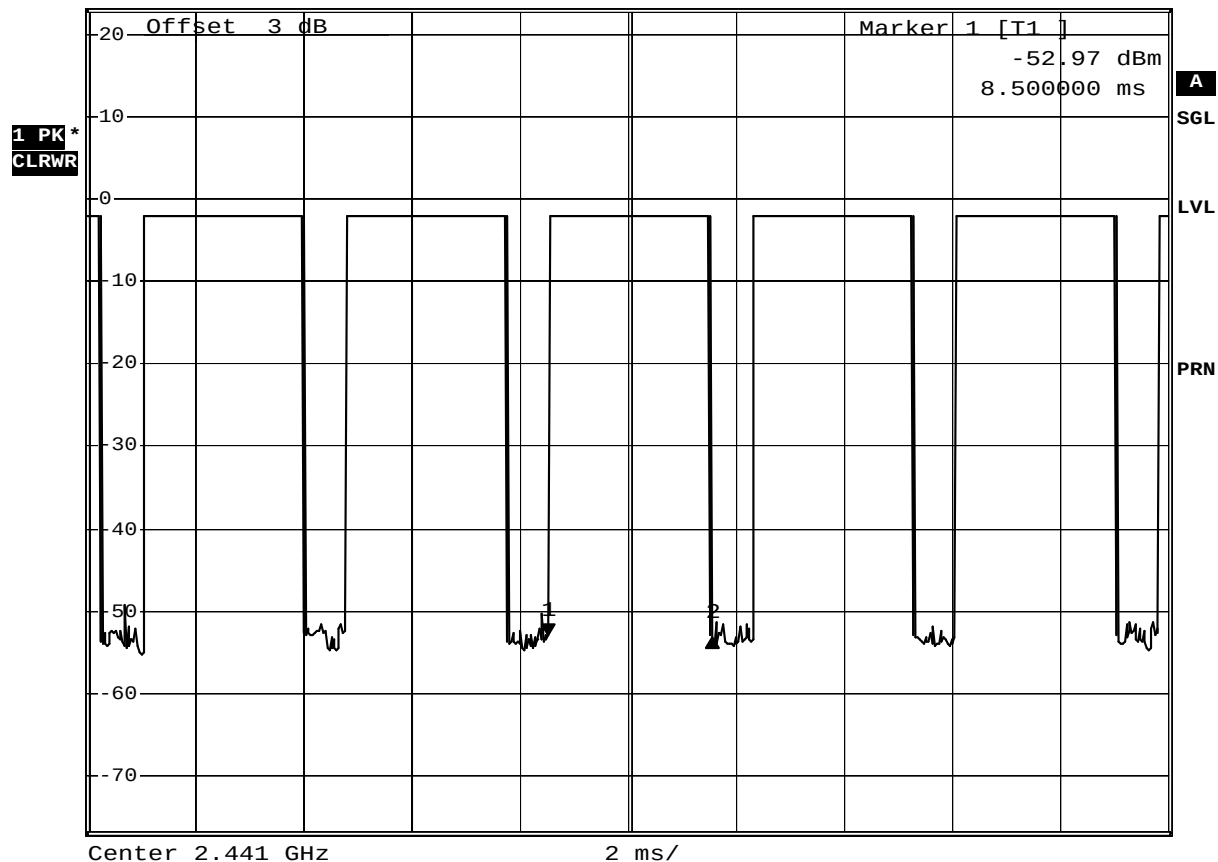


Date: 12.FEB.2009 13:24:06

Hop rate-2441MHz



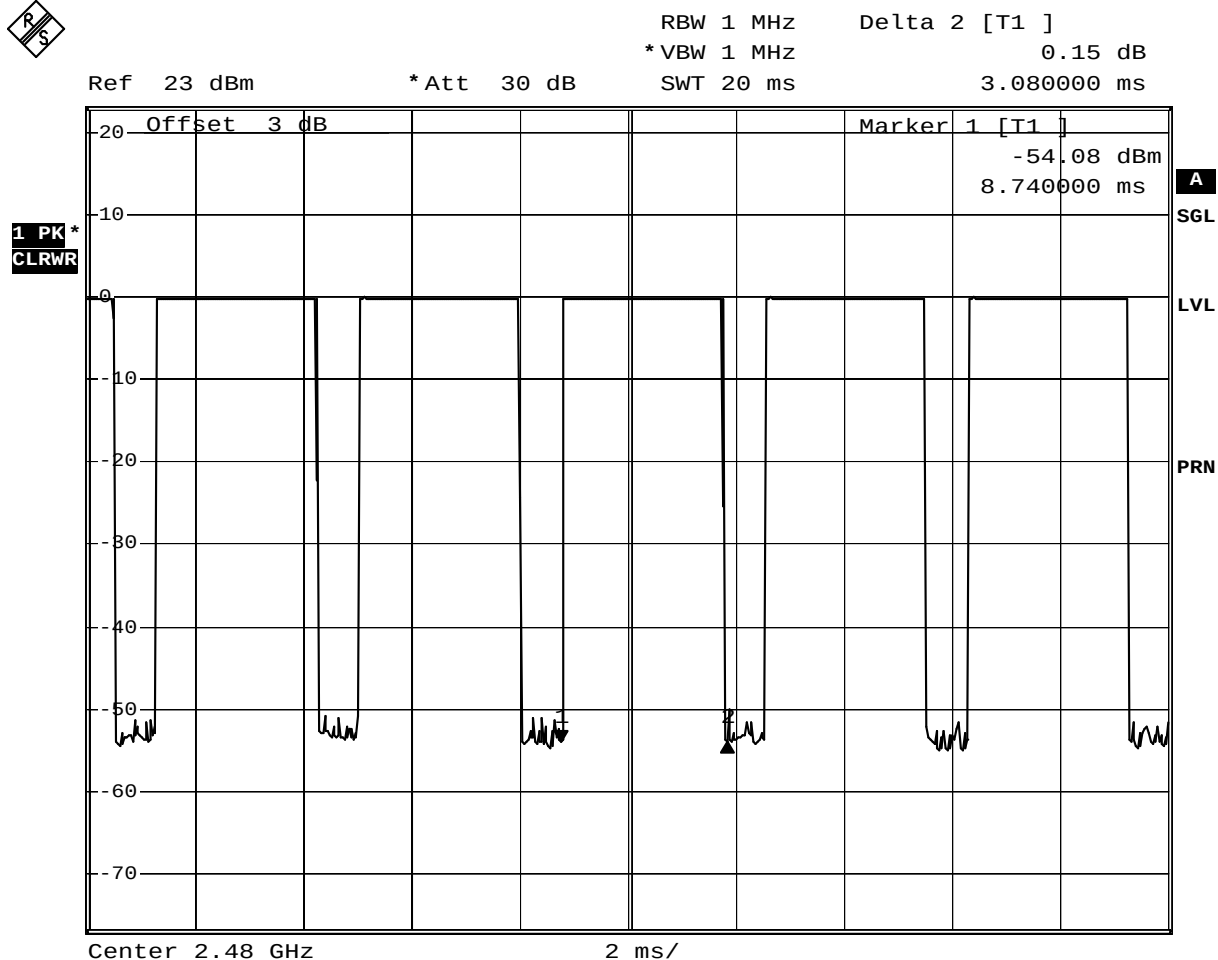
Ref 23 dBm *Att 30 dB RBW 1 MHz Delta 2 [T1] -0.30 dB
 *VBW 1 MHz SWT 20 ms 3.040000 ms



Date: 12.FEB.2009 13:31:10



Hop rate-2480MHz



Date: 12.FEB.2009 13:33:51

Note: Dwell time=time slot length * hop rate / number of hopping channels * period