Test Report

Product Name ： Bluetooth modem

Model No. ： 4300A, 4161A

FCC ID. ： BDNBT4161B

Applicant ： Zoom Telephonics, Inc.

Address ： 207 South Street Boston MA 02111 USA

Date of Receipt ： 2009/07/17

Issued Date ： 2009/07/30

Report No. ： 097324R-RFUSP43V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2009/07/30
Report No. : 097324R-RFUSP43V01

QuieTek

Product Name	:	Bluetooth modem
Applicant	:	Zoom Telephonics, Inc.
Address	:	207 South Street Boston MA 02111 USA
Manufacturer	:	Billionton Systems, Inc.
Model No.	:	4300A, 4161A
FCC ID.	:	BDNBT4161B
Rated Voltage	:	AC 120V/60Hz
EUT Voltage	:	AC 120V/60Hz
Trade Name	:	zoom
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.

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)

Tested By : Halu Chung

(Halu Chung / Engineer)

Approved By : Roy Wang

(Roy Wang / Manager)

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	Bluetooth modem
Trade Name	zoom
Model No.	4300A, 4161A
Frequency Range	2402~2480MHz
Channel Number	79
Type of Modulation	FHSS
Channel Control	Auto
Antenna Type	Monopole
Antenna Gain	1.8 dBi

Component	
RS232 Cable	Shielded, 0.5m
Power Adapter	Sunny, SYS1381-0606-W2 I/P: 100~240V~0.5A MAX, 50-60Hz O/P: 6V, 1.0A, 6W MAX Cable Out: Non-Shielded, 1.4m

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 Bluetooth modem including a 2.4GHz receiving function, and transmitting function.
2. The variation of model number is for different strategy of marketing.
3. 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.
4. 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.
5. 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 097324R-RFUSP37V02 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 transmitting operation, which was shown in this test report and defined as follows:

Pre-Test Mode	
EMI	Mode 1: Transmit
Final Test Mode	
EMI	Mode 1: Transmit

Emission	Mode 1
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
Band Edge	Yes
Channel of Number	Yes
Channel Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

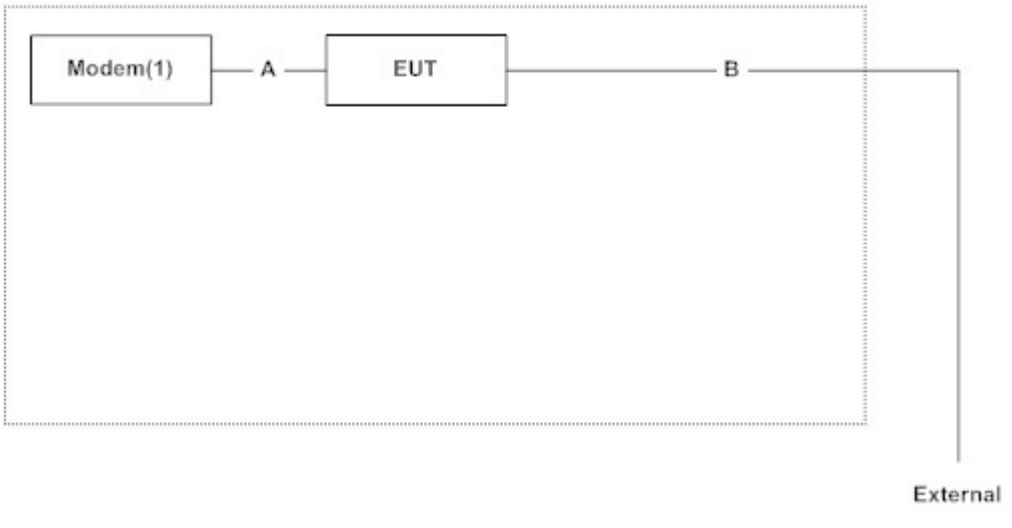
1.4. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Modem	ACEEX	DM-1414	980033035	DoC	Non-shielded, 1.6m

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Modem Cable	Shielded, 1.5m
B	Telecom Cable	Non-Shielded, 5.0m

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	The EUT will play the function from Bluetooth program.
4	Verify the model operation.
5	Repeat the above procedure (3) to (4).

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
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	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Channel Separation (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	24
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	23
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
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. Peak Power Output

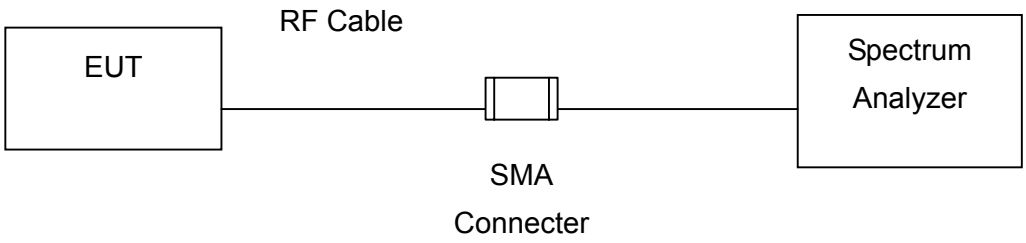
2.1. Test Equipment

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.

2.2. Test Setup



2.3. 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

2.4. 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.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2008

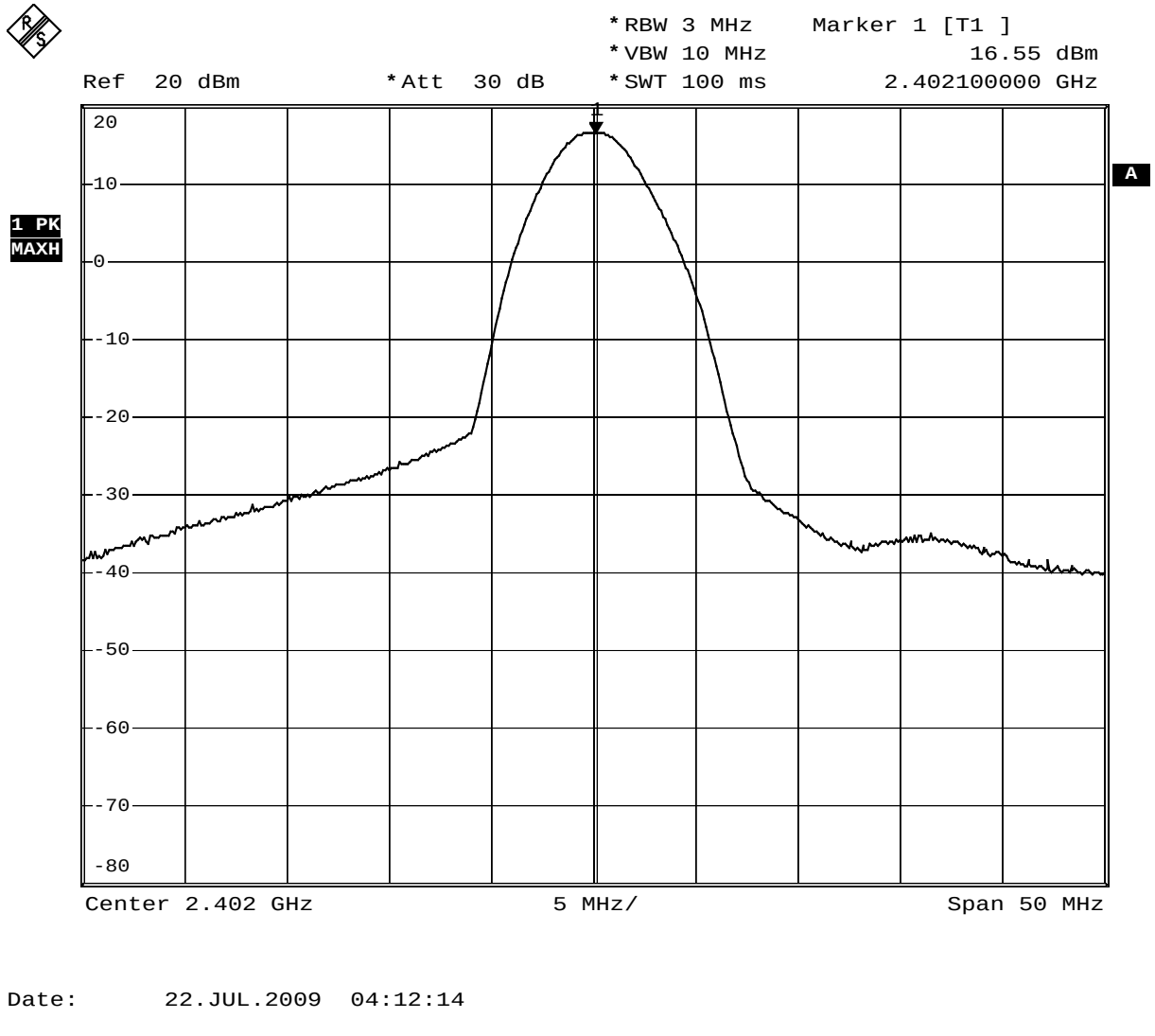
2.6. Test Result

Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	16.55	20 dBm	Pass

Channel 00

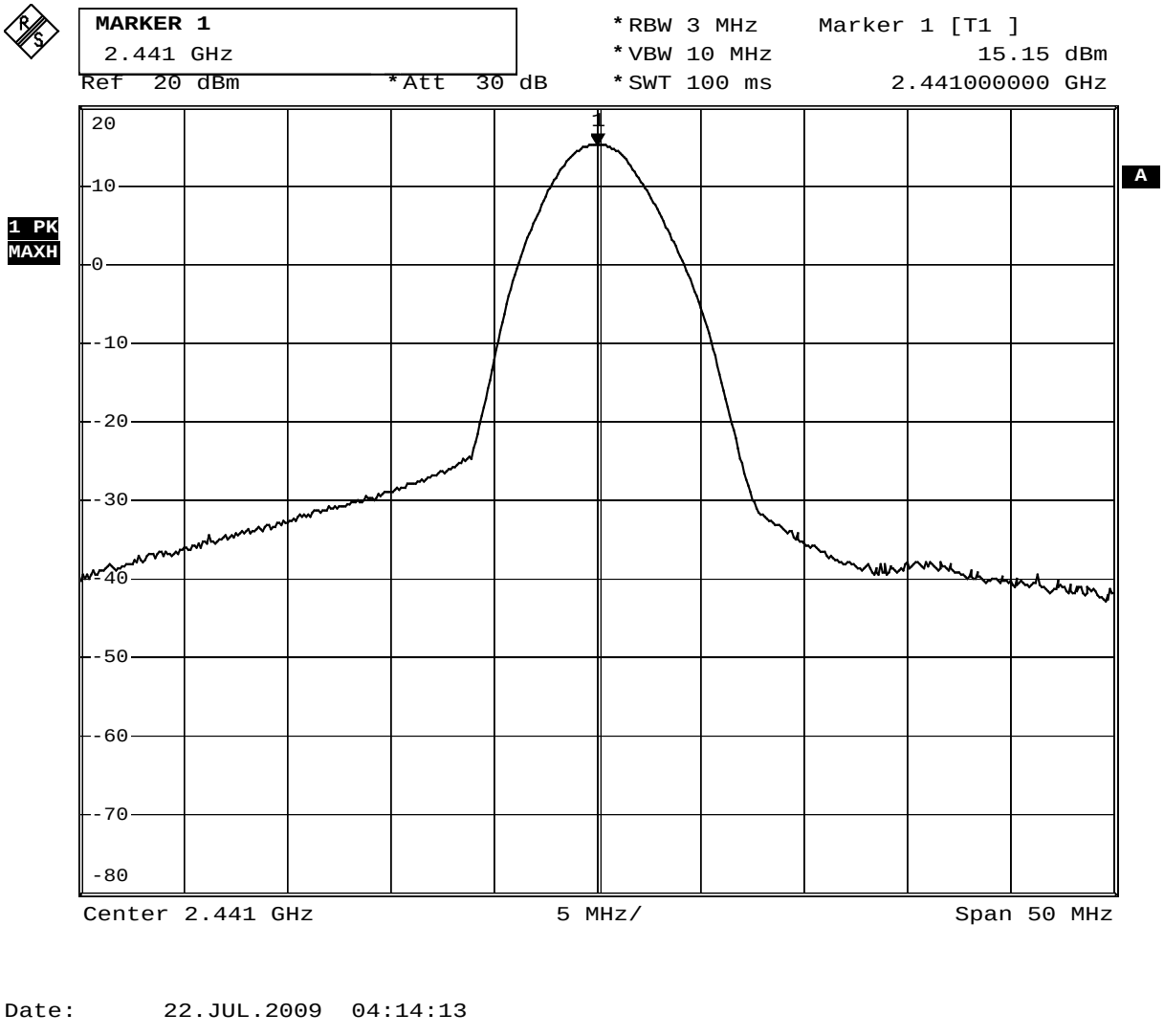


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	15.15	20 dBm	Pass

Channel 39

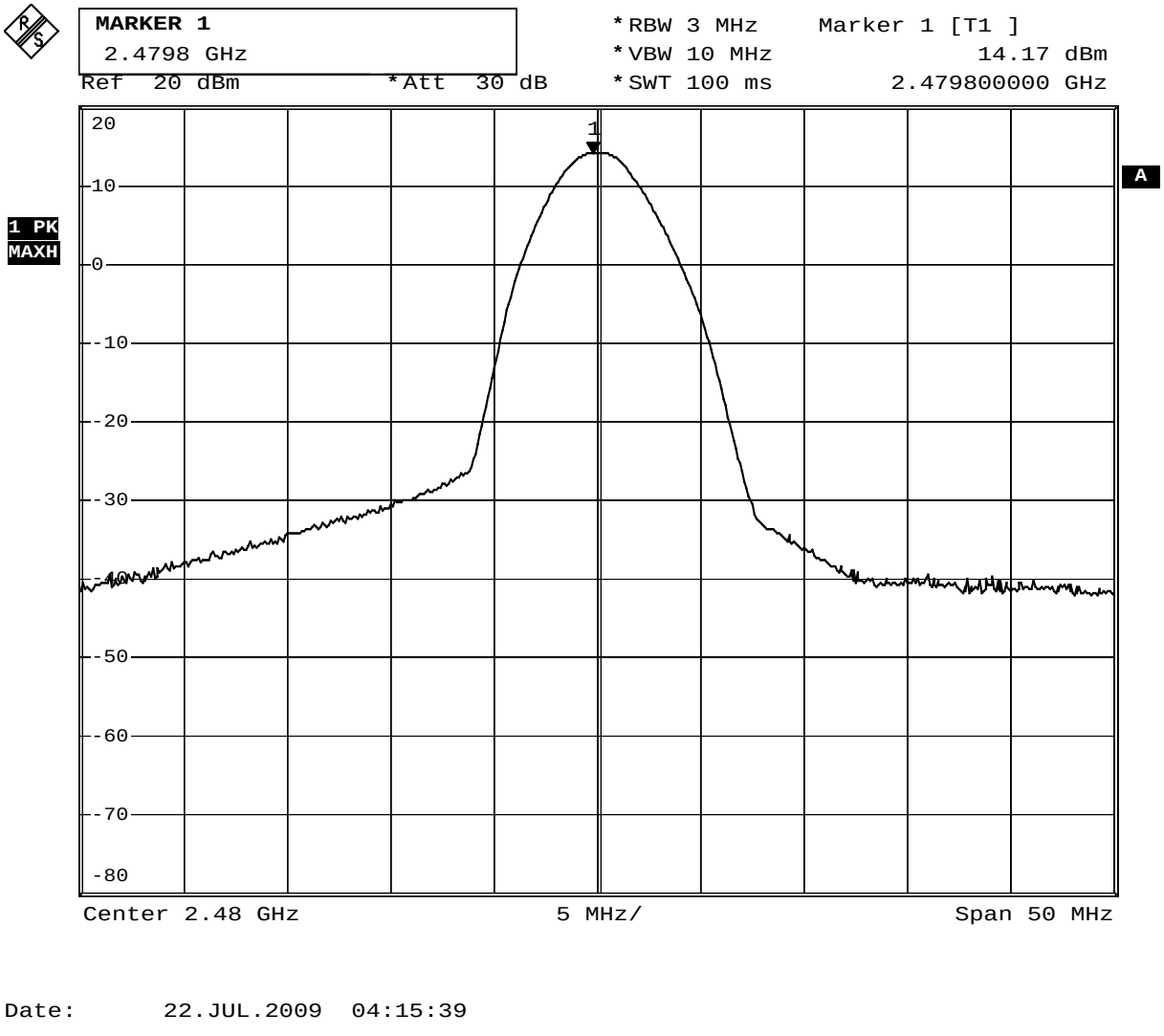


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	14.17	20 dBm	Pass

Channel 78

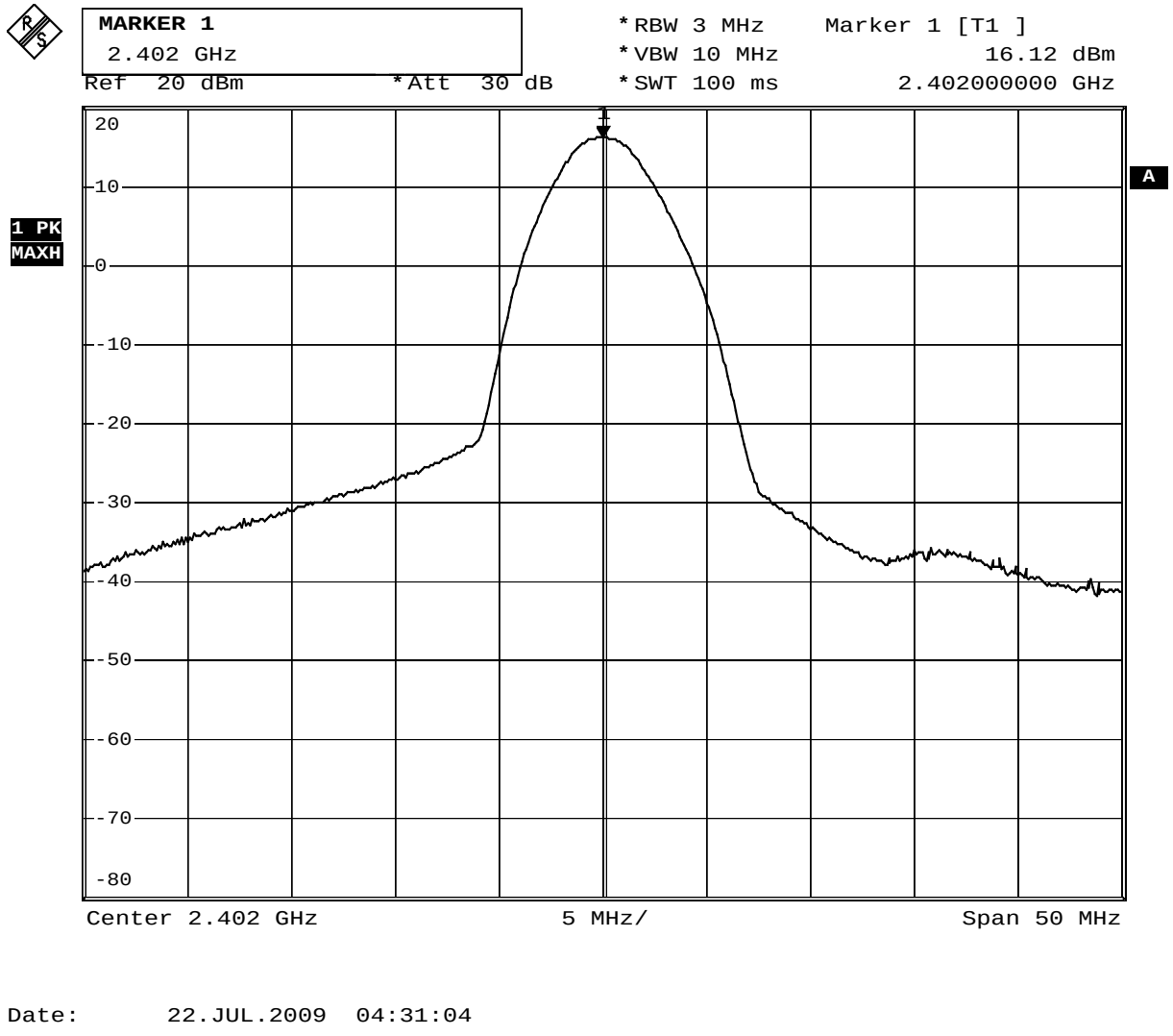


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

QPSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	16.12	20 dBm	Pass

Channel 00

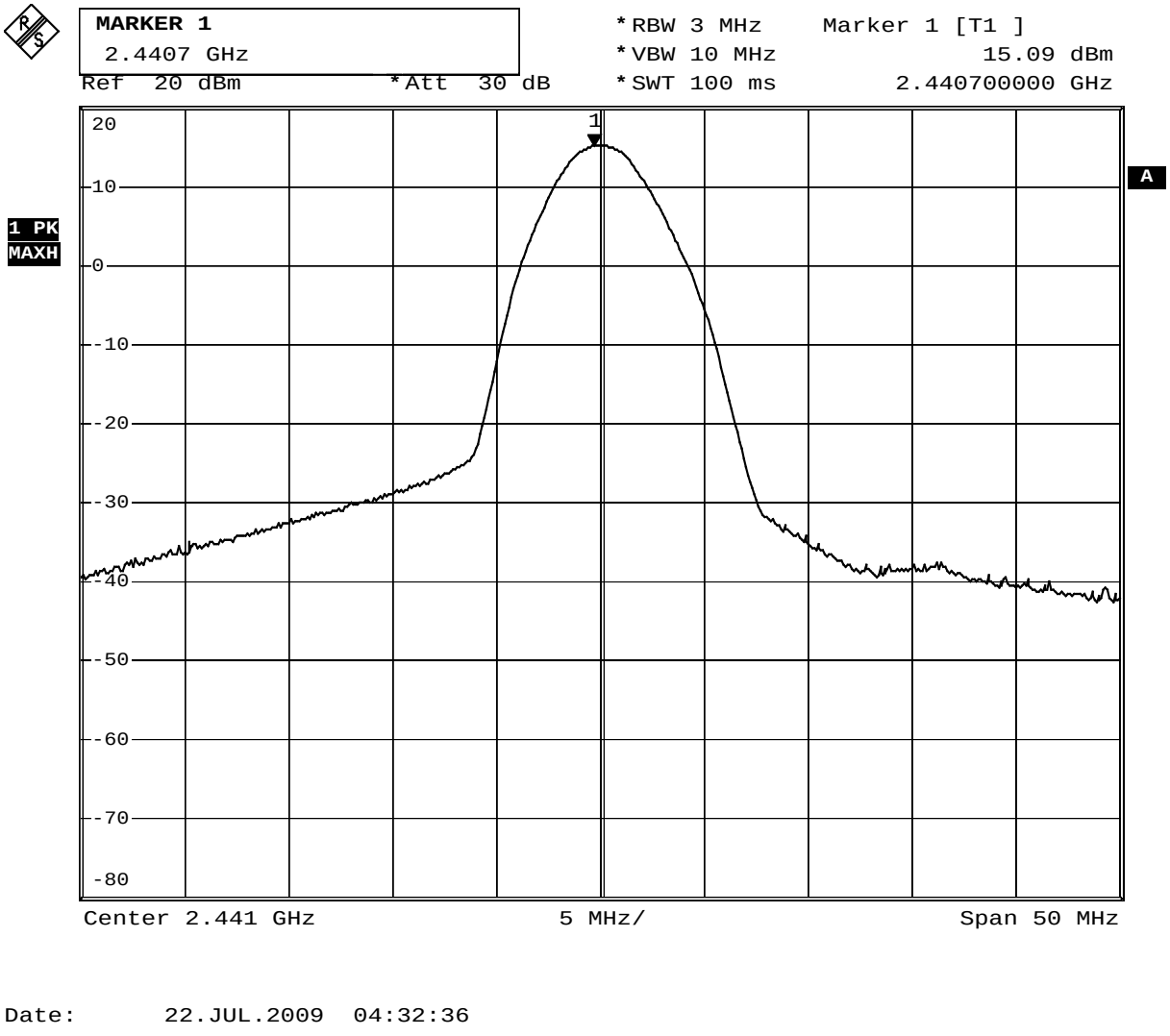


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

QPSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	15.09	20 dBm	Pass

Channel 39

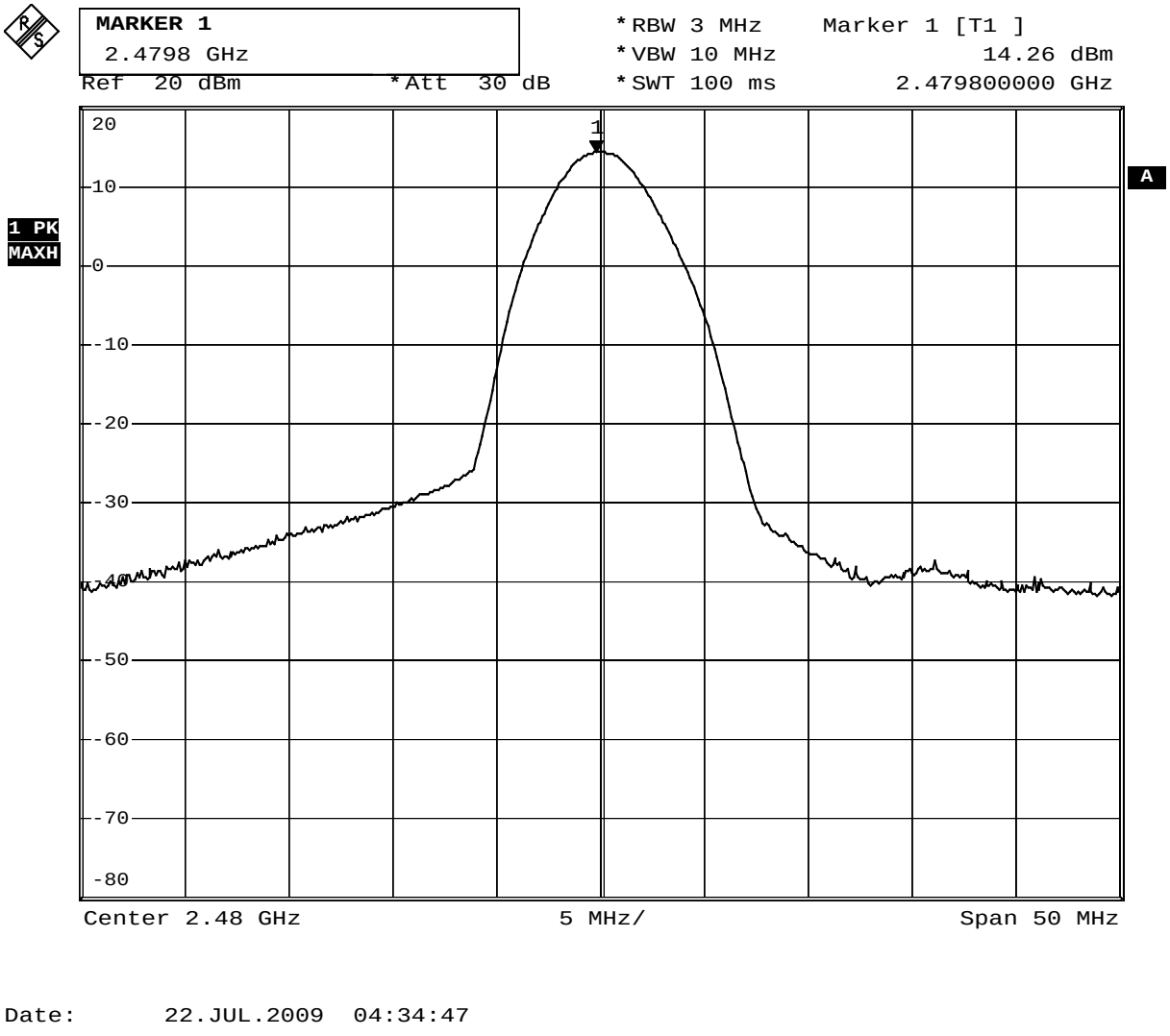


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

QPSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	14.26	20 dBm	Pass

Channel 78

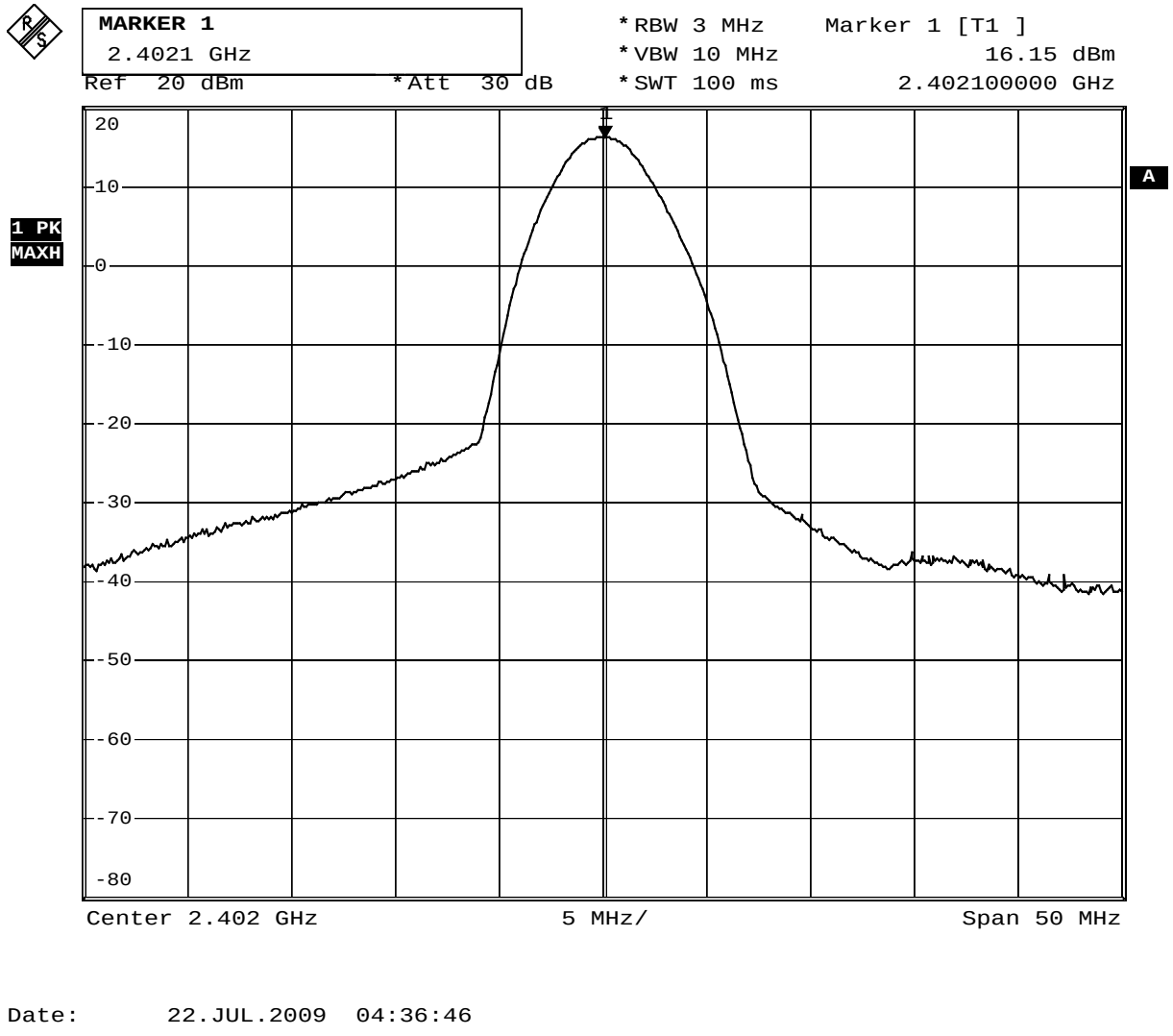


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

PSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	16.15	20 dBm	Pass

Channel 00

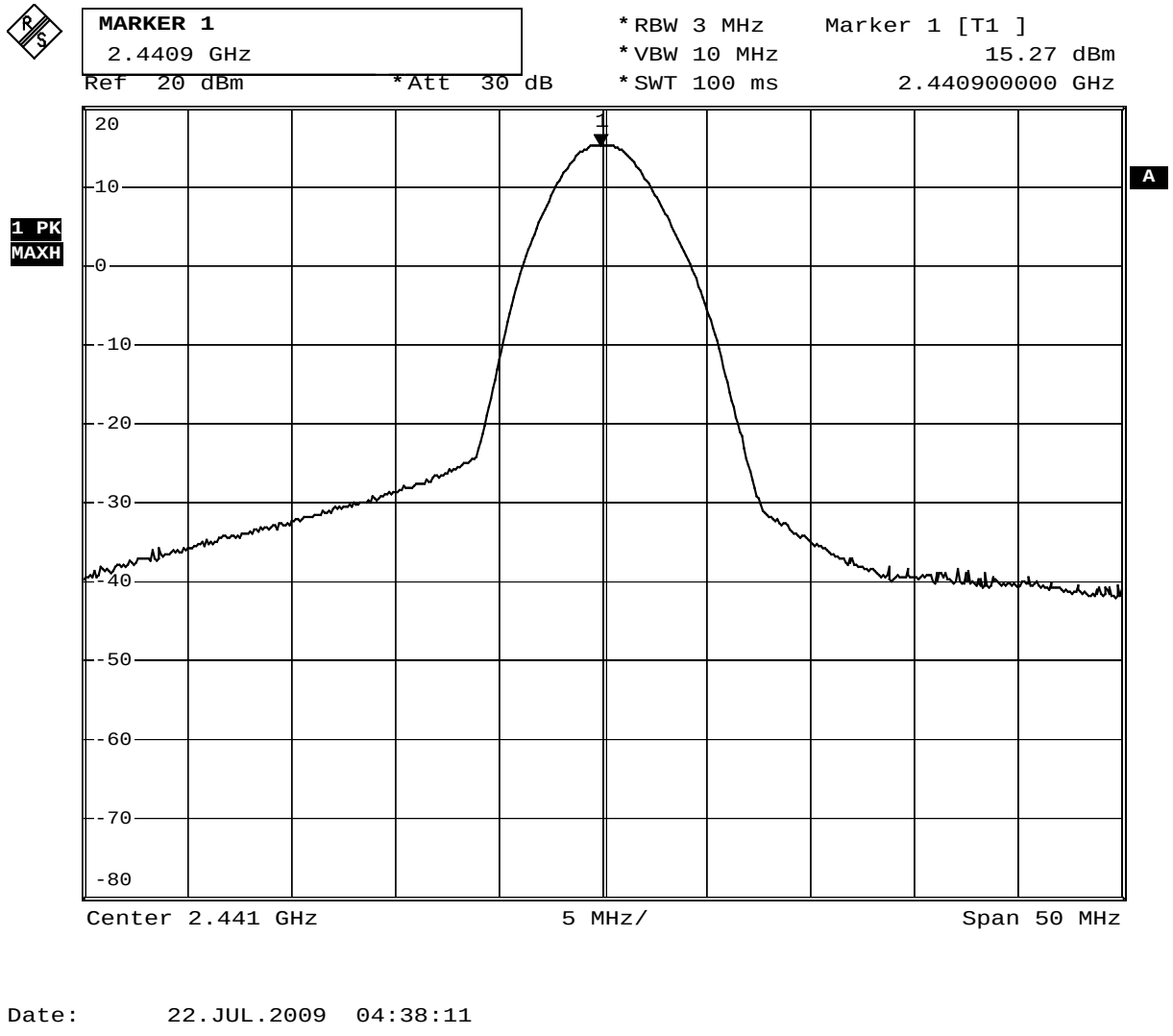


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

PSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	15.27	20 dBm	Pass

Channel 39

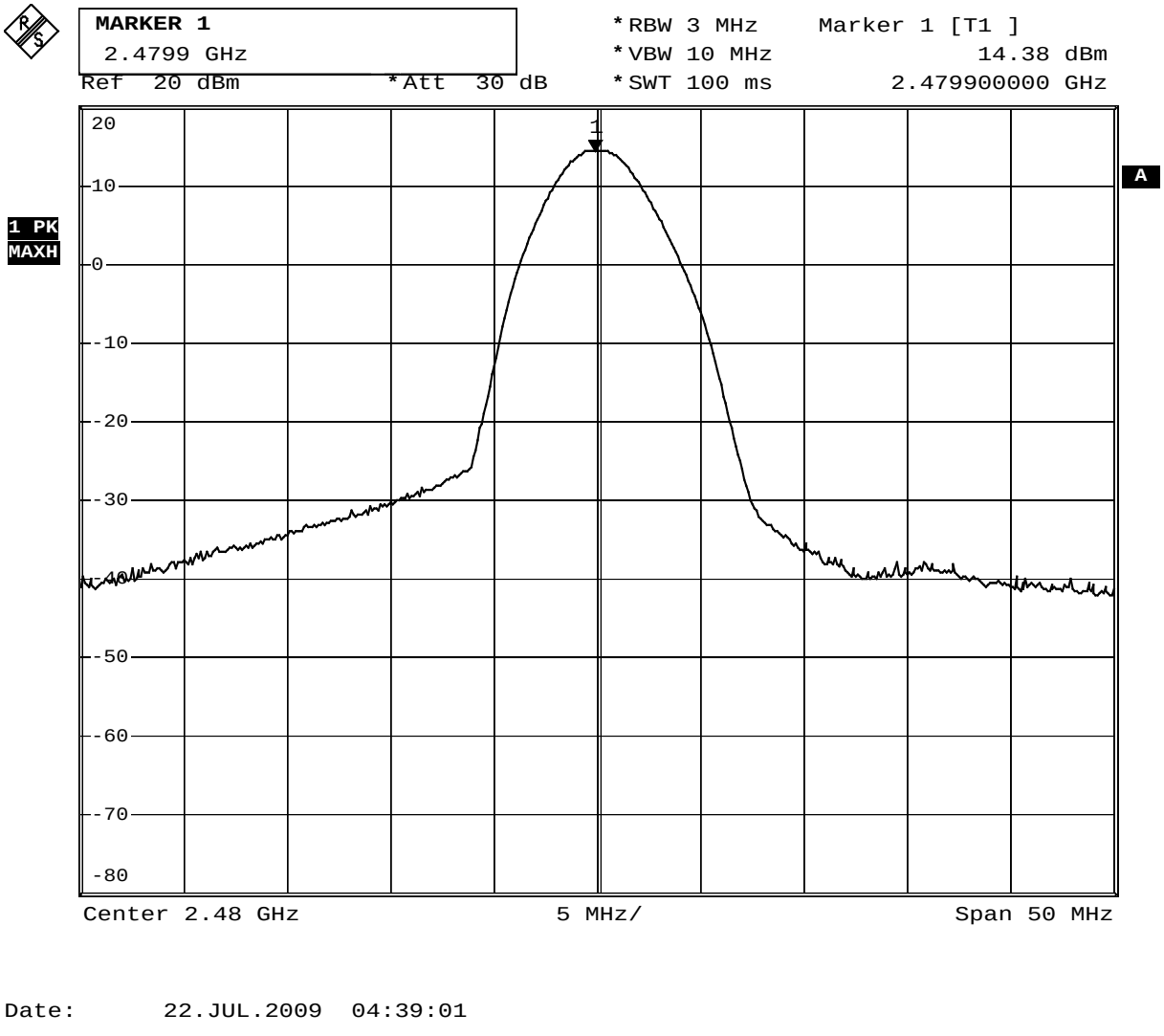


Product	Bluetooth modem		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

PSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	14.38	20 dBm	Pass

Channel 78



3. Conducted Emission

3.1. Test Equipment

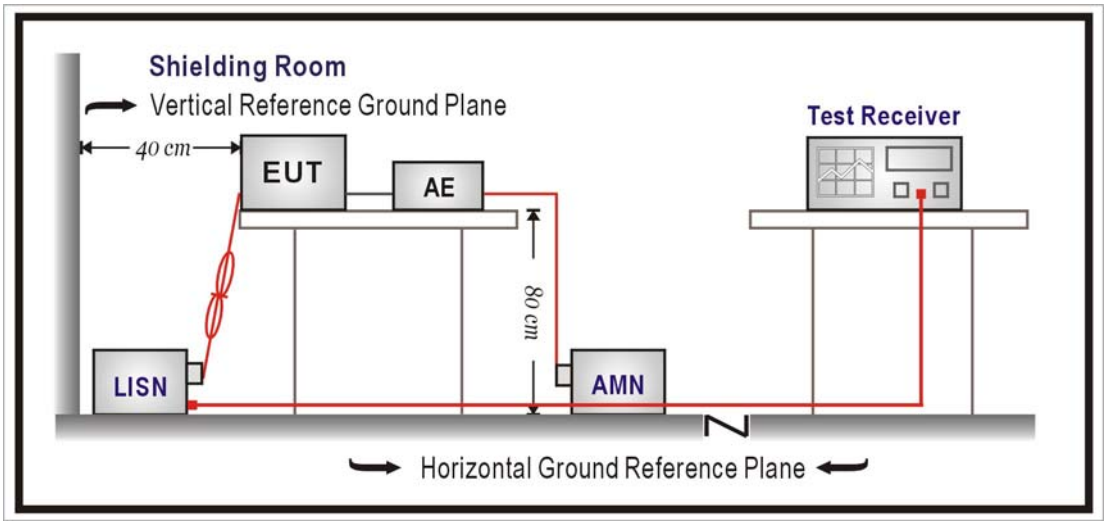
The following test equipments are used during the test:

Conducted Emission / SR2

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

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

3.2. Test Setup



3.3. 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.

3.4. 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 refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all 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.

3.5. Test Specification

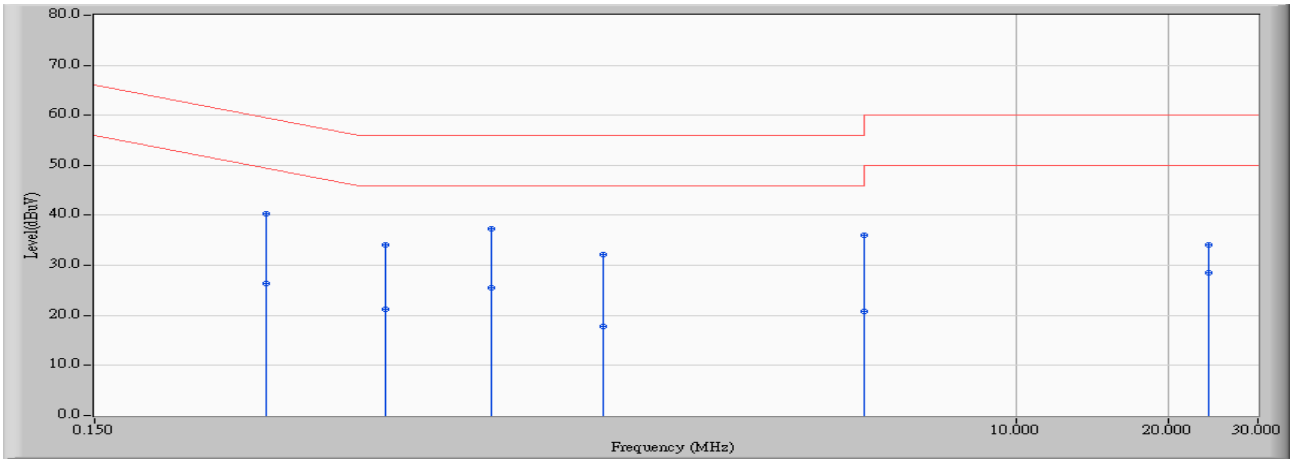
According to FCC Part 15 Subpart C Paragraph 15.207: 2008

3.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

3.7. Test Result

Site : SR2	Time : 2009/07/22 - 20:32
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-LISN(16A) - Line1	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX

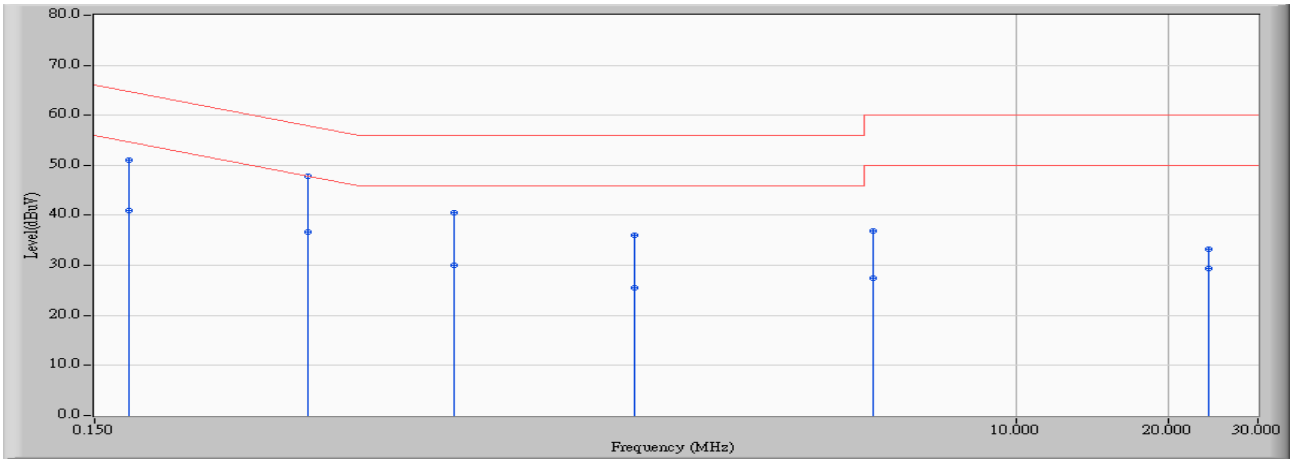


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.328	9.727	30.660	40.387	-19.116	59.502	QUASIPEAK
2		0.328	9.727	16.710	26.437	-23.066	49.502	AVERAGE
3		0.564	9.820	24.220	34.040	-21.960	56.000	QUASIPEAK
4		0.564	9.820	11.410	21.230	-24.770	46.000	AVERAGE
5	*	0.912	9.820	27.520	37.340	-18.660	56.000	QUASIPEAK
6		0.912	9.820	15.720	25.540	-20.460	46.000	AVERAGE
7		1.525	9.815	22.320	32.135	-23.865	56.000	QUASIPEAK
8		1.525	9.815	8.050	17.865	-28.135	46.000	AVERAGE
9		4.976	9.850	26.100	35.950	-20.050	56.000	QUASIPEAK
10		4.976	9.850	11.060	20.910	-25.090	46.000	AVERAGE
11		24.005	10.353	23.700	34.053	-25.947	60.000	QUASIPEAK
12		24.005	10.353	18.070	28.423	-21.577	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 : 2009/07/22 - 20:47
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR2-LISN(16A) - Line2	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.175	9.705	41.240	50.945	-13.760	64.705	QUASIPEAK
2		0.175	9.705	31.180	40.885	-13.820	54.705	AVERAGE
3	*	0.398	9.765	38.100	47.865	-10.041	57.905	QUASIPEAK
4		0.398	9.765	26.860	36.625	-11.281	47.905	AVERAGE
5		0.771	9.810	30.820	40.630	-15.370	56.000	QUASIPEAK
6		0.771	9.810	20.230	30.040	-15.960	46.000	AVERAGE
7		1.754	9.825	26.190	36.015	-19.985	56.000	QUASIPEAK
8		1.754	9.825	15.650	25.475	-20.525	46.000	AVERAGE
9		5.187	9.851	26.940	36.791	-23.209	60.000	QUASIPEAK
10		5.187	9.851	17.600	27.451	-22.549	50.000	AVERAGE
11		24.009	10.513	22.760	33.273	-26.727	60.000	QUASIPEAK
12		24.009	10.513	18.950	29.463	-20.537	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.

4. Radiated Emission

4.1. Test Equipment

The following test equipment are used during the test:

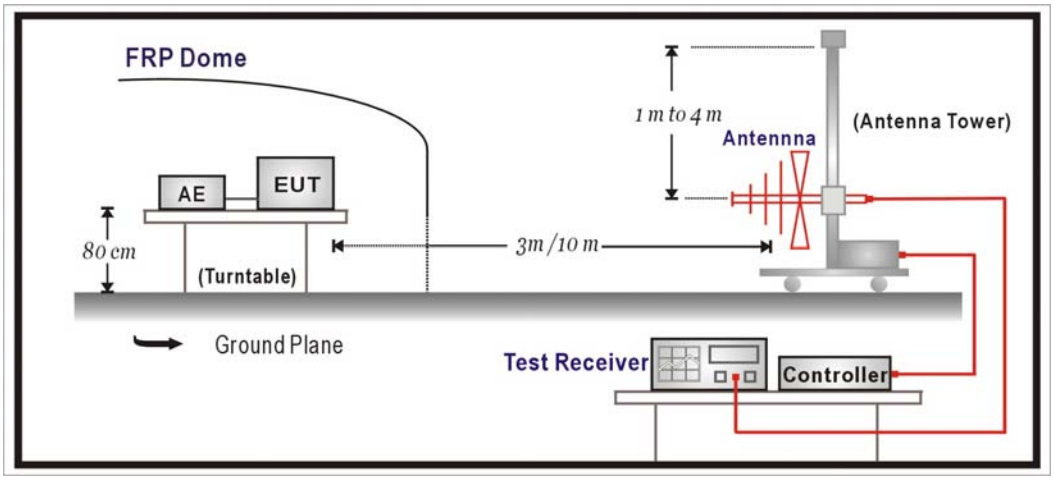
Radiated Emission / Site1

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
Bilog Antenna	Schaffner Chase	CBL6112B	2895	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	N/A	N/A
Spectrum Analyzer	R & S	FSP40	100005	2008/08/25
Spectrum Analyzer	Advantest	R3162	120300649	2008/11/24
Test Receiver	R & S	ESCS 30	825442/017	2009/02/13

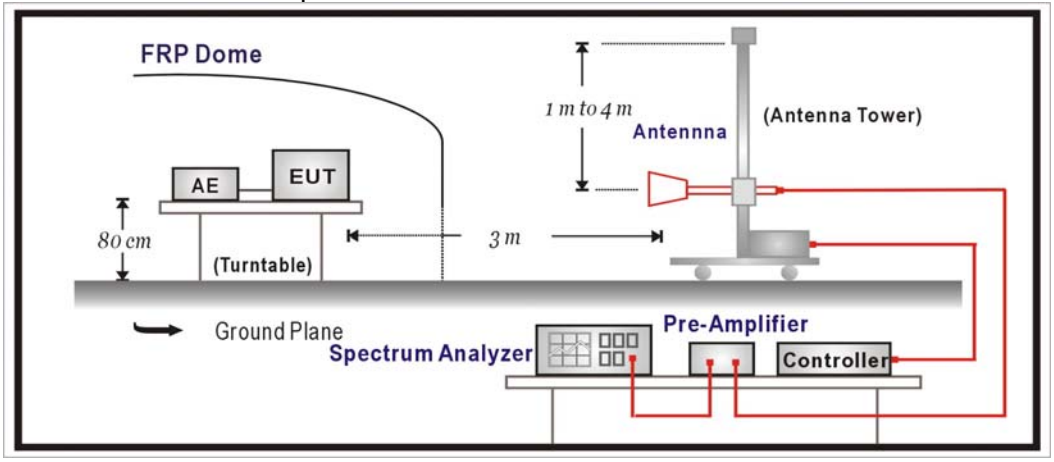
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. “N/A” Ca1.Date is used to Pre-test, not final test.

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.

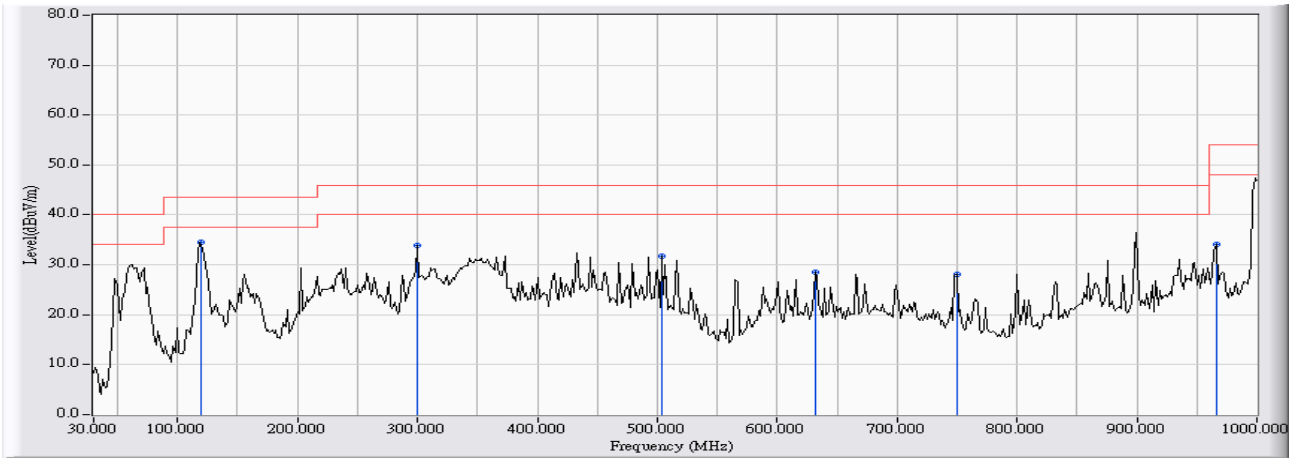
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2008

4.6. Test Result

30MHz-1GHz Spurious

Site : Site 1	Time : 2009/07/28 - 16:18
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2441

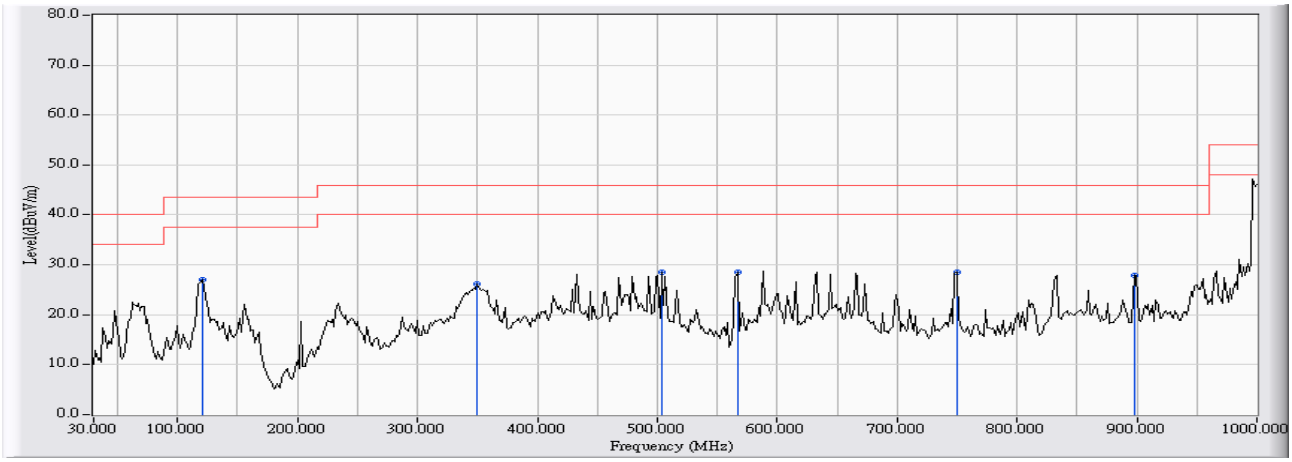


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	118.917	-15.635	50.148	34.513	-8.987	43.500	QUASIPEAK
2		299.983	-8.843	42.634	33.791	-12.209	46.000	QUASIPEAK
3		503.683	-6.906	38.641	31.735	-14.265	46.000	QUASIPEAK
4		631.400	-2.442	31.029	28.588	-17.412	46.000	QUASIPEAK
5		749.417	-6.435	34.568	28.134	-17.866	46.000	QUASIPEAK
6		966.050	1.563	32.459	34.022	-19.978	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 : Site 1	Time : 2009/07/28 - 16:21
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_30-1G(2009) - VERTICAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2441



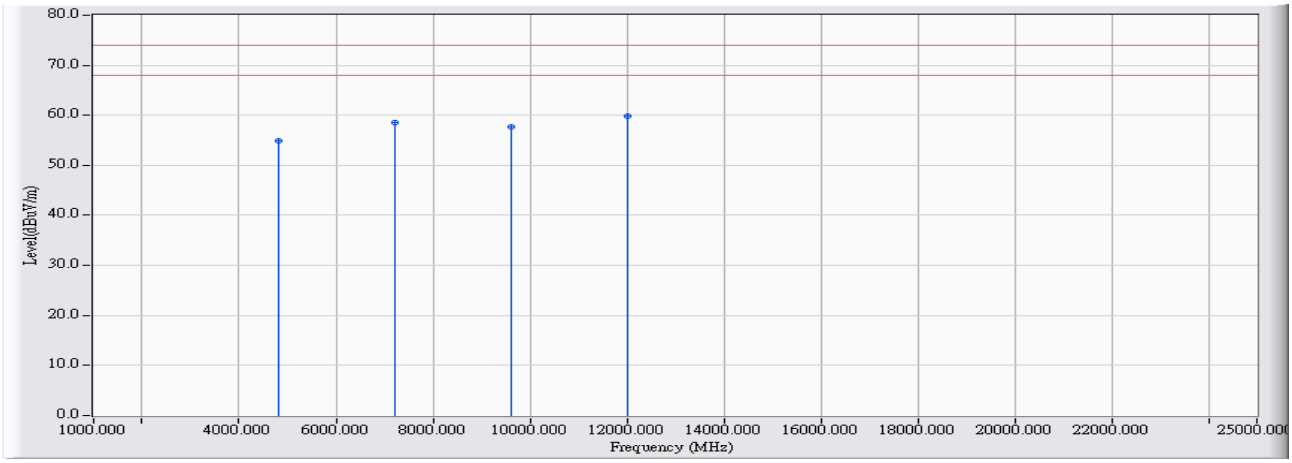
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	120.533	-11.463	38.393	26.929	-16.571	43.500	QUASIPEAK
2		350.100	-13.153	39.234	26.082	-19.918	46.000	QUASIPEAK
3		503.683	-5.728	34.298	28.570	-17.430	46.000	QUASIPEAK
4		566.733	-8.327	36.794	28.467	-17.533	46.000	QUASIPEAK
5		749.417	-5.685	34.171	28.487	-17.513	46.000	QUASIPEAK
6		898.150	-3.788	31.685	27.897	-18.103	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 : Site 1	**Time : 2009/07/27 - 10:22**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2402**

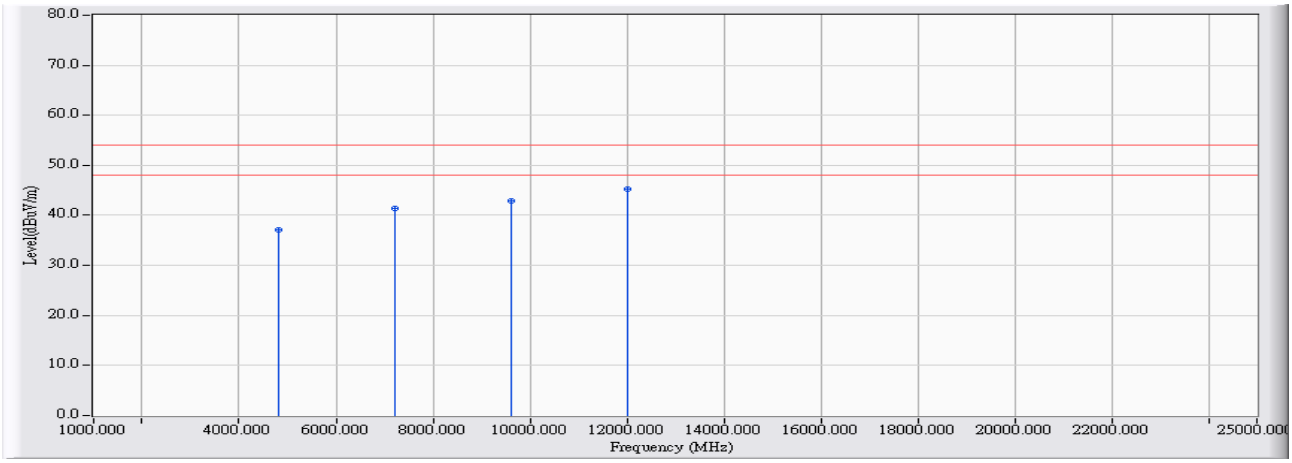


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4803.700	3.342	51.480	54.822	-19.178	74.000	54.000	PEAK
2		7205.600	9.743	48.870	58.613	-15.387	74.000	54.000	PEAK
3		9607.800	13.651	43.960	57.612	-16.388	74.000	54.000	PEAK
4	*	12009.100	18.807	41.130	59.937	-14.063	74.000	54.000	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 : Site 1	**Time : 2009/07/27 - 10:23**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2402**

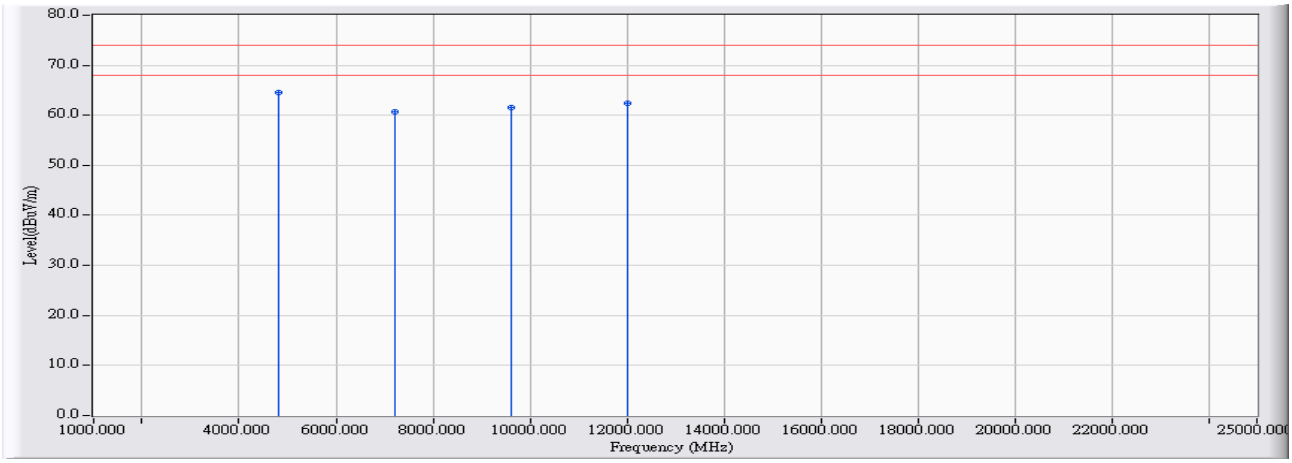


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4804.000	3.343	33.730	37.073	-16.927	74.000	54.000	AVERAGE
2		7206.000	9.745	31.700	41.445	-12.555	74.000	54.000	AVERAGE
3		9608.000	13.653	29.140	42.792	-11.208	74.000	54.000	AVERAGE
4	*	12009.900	18.805	26.410	45.215	-8.785	74.000	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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	**Time : 2009/07/27 - 10:50**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2402**

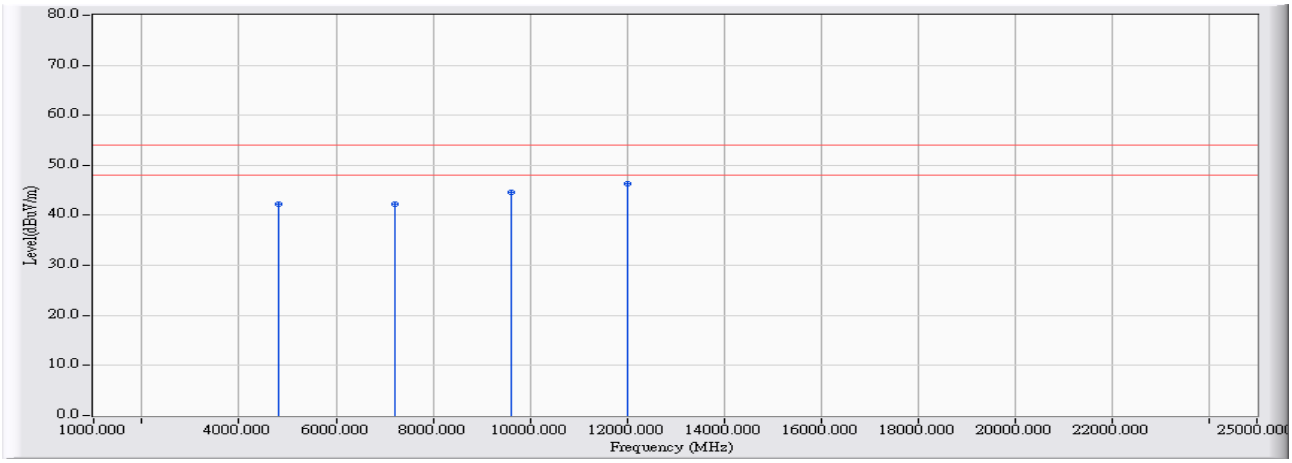


		Frequency (MHz)	**Correct Factor (dB)**	**Reading Level (dBuV)**	**Measure Level (dBuV/m)**	**Margin (dB)**	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4803.700	5.531	59.060	64.592	-9.408	74.000	54.000	PEAK
2		7206.200	9.401	51.240	60.641	-13.359	74.000	54.000	PEAK
3		9607.300	13.712	47.830	61.542	-12.458	74.000	54.000	PEAK
4		12009.200	17.435	44.990	62.425	-11.575	74.000	54.000	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 : Site 1	**Time : 2009/07/27 - 10:51**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2402**

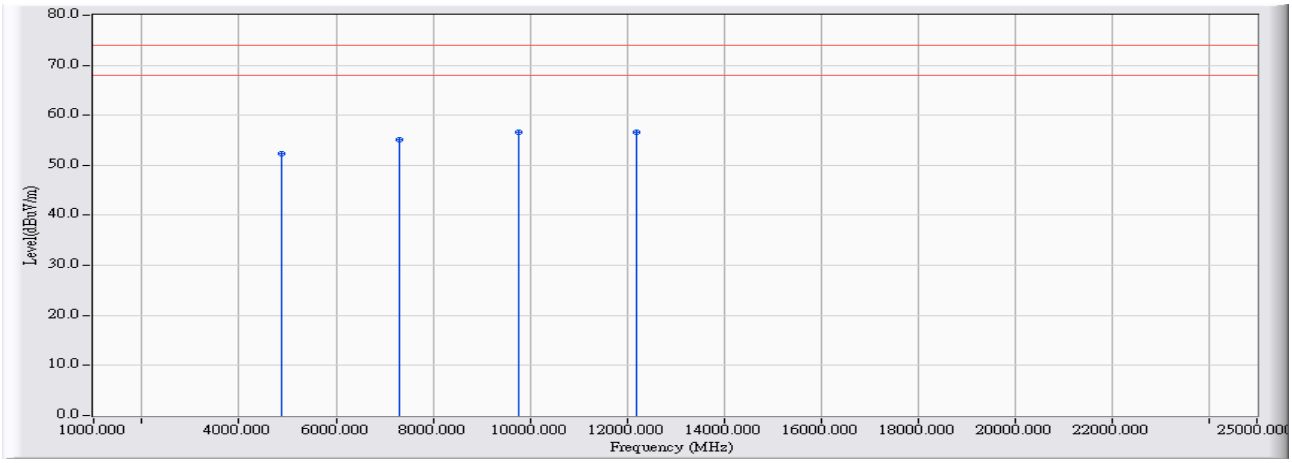


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4804.000	5.532	36.780	42.312	-11.688	74.000	54.000	AVERAGE
2		7206.000	9.400	32.770	42.170	-11.830	74.000	54.000	AVERAGE
3		9608.000	13.716	30.980	44.695	-9.305	74.000	54.000	AVERAGE
4	*	12010.100	17.434	28.840	46.274	-7.726	74.000	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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	**Time : 2009/07/27 - 11:12**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2441**

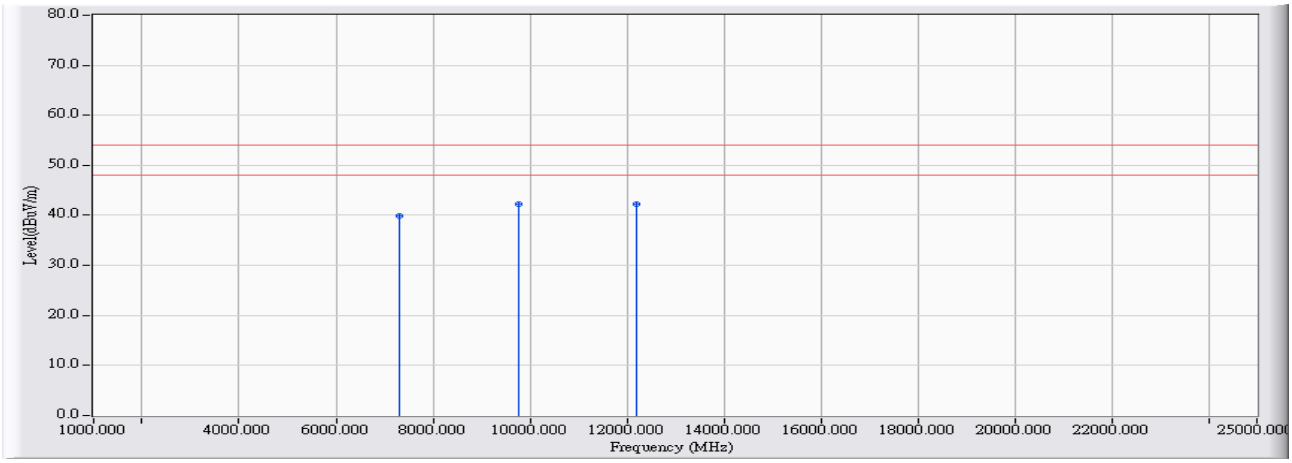


		Frequency (MHz)	**Correct Factor (dB)**	**Reading Level (dBuV)**	**Measure Level (dBuV/m)**	**Margin (dB)**	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4882.200	3.554	48.790	52.343	-21.657	74.000	54.000	PEAK
2		7322.500	9.626	45.500	55.126	-18.874	74.000	54.000	PEAK
3		9763.300	14.279	42.250	56.529	-17.471	74.000	54.000	PEAK
4	*	12204.500	18.045	38.630	56.675	-17.325	74.000	54.000	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 : Site 1	**Time : 2009/07/27 - 11:23**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2441**

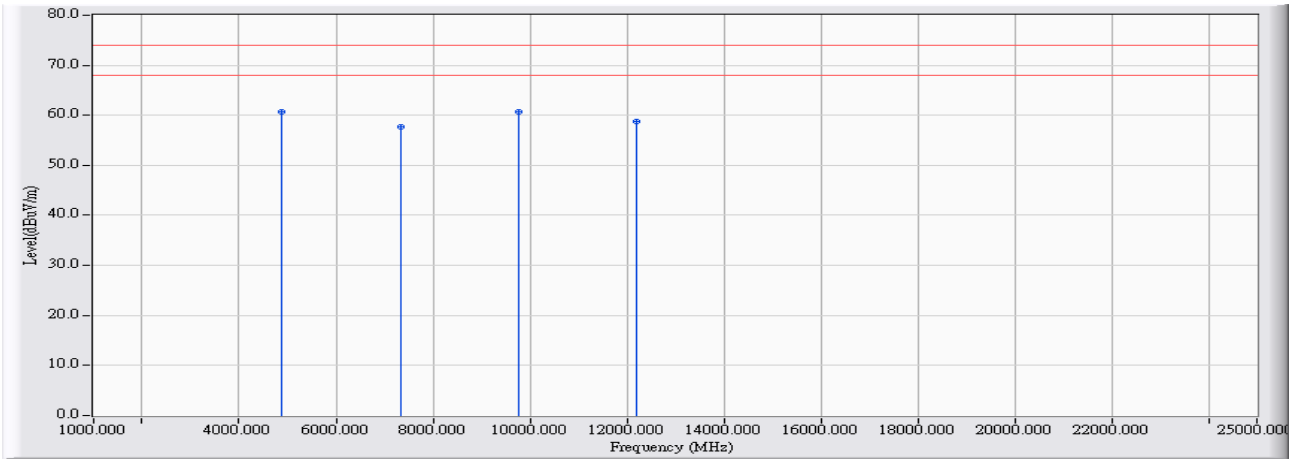


		Frequency (MHz)	**Correct Factor (dB)**	**Reading Level (dBuV)**	**Measure Level (dBuV/m)**	**Margin (dB)**	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		7323.000	10.282	29.660	39.942	-14.058	74.000	54.000	AVERAGE
2		9764.100	14.282	28.000	42.282	-11.718	74.000	54.000	AVERAGE
3	*	12205.100	18.042	24.250	42.292	-11.708	74.000	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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	**Time : 2009/07/27 - 11:32**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2441**

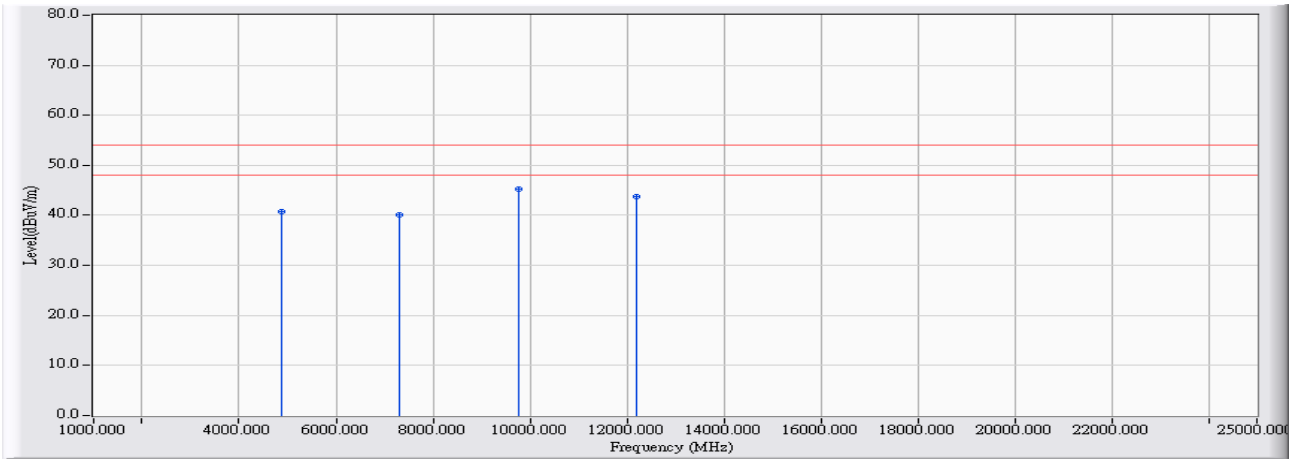


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	4882.100	5.581	55.130	60.711	-13.289	74.000	54.000	PEAK
2		7323.400	9.628	48.110	57.738	-16.262	74.000	54.000	PEAK
3		9763.300	14.494	46.130	60.624	-13.376	74.000	54.000	PEAK
4		12203.900	17.089	41.660	58.749	-15.251	74.000	54.000	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 : Site 1	**Time : 2009/07/27 - 11:34**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2441**

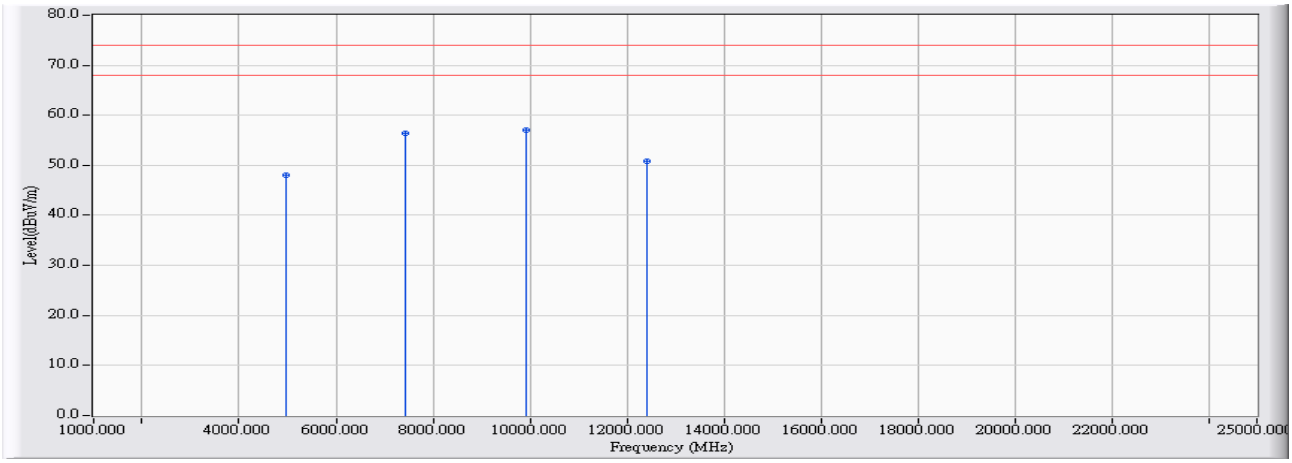


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4882.000	5.581	35.270	40.851	-13.149	74.000	54.000	AVERAGE
2		7323.000	9.627	30.570	40.197	-13.803	74.000	54.000	AVERAGE
3	*	9764.100	14.497	30.660	45.157	-8.843	74.000	54.000	AVERAGE
4		12204.900	17.086	26.610	43.697	-10.303	74.000	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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	**Time : 2009/07/27 - 13:13**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2480**

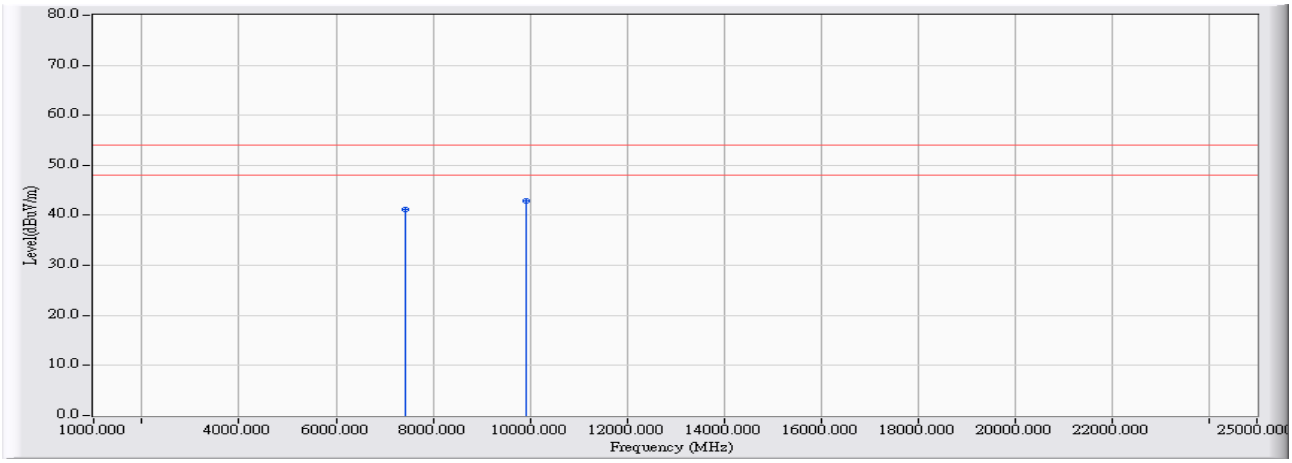


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4959.900	3.772	44.340	48.112	-25.888	74.000	54.000	PEAK
2		7440.200	10.831	45.660	56.490	-17.510	74.000	54.000	PEAK
3	*	9920.520	14.910	42.150	57.060	-16.940	74.000	54.000	PEAK
4		12400.100	17.271	33.530	50.800	-23.200	74.000	54.000	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 : Site 1	**Time : 2009/07/27 - 13:13**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - HORIZONTAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2480**

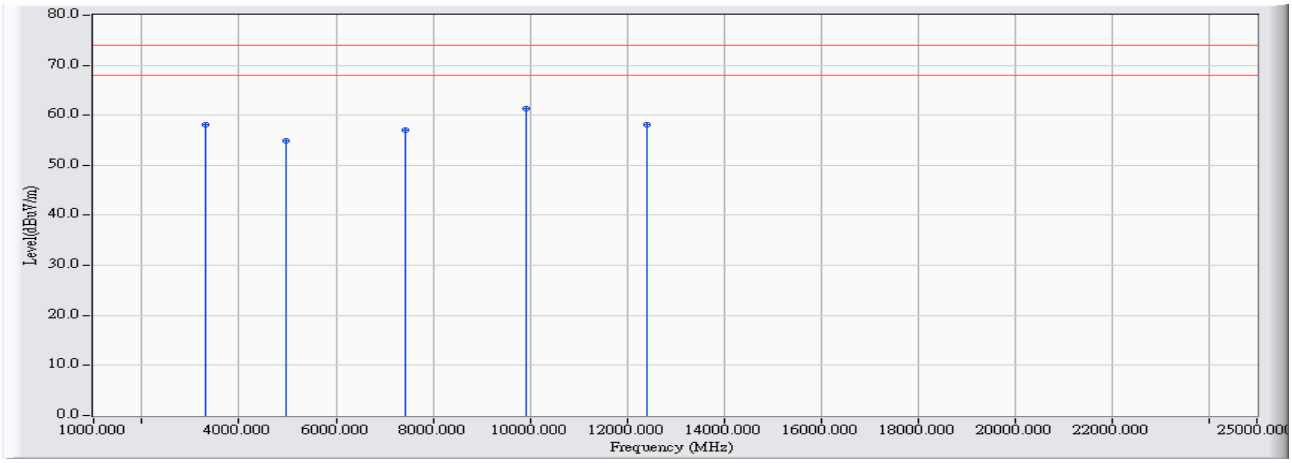


		Frequency (MHz)	**Correct Factor (dB)**	**Reading Level (dBuV)**	**Measure Level (dBuV/m)**	**Margin (dB)**	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		7440.100	10.830	30.370	41.200	-12.800	74.000	54.000	AVERAGE
2	*	9920.010	14.908	28.030	42.938	-11.062	74.000	54.000	AVERAGE

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.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : Site 1	**Time : 2009/07/27 - 13:27**
Limit : FCC_SpartC_15.247_H_03M_PK	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2480**

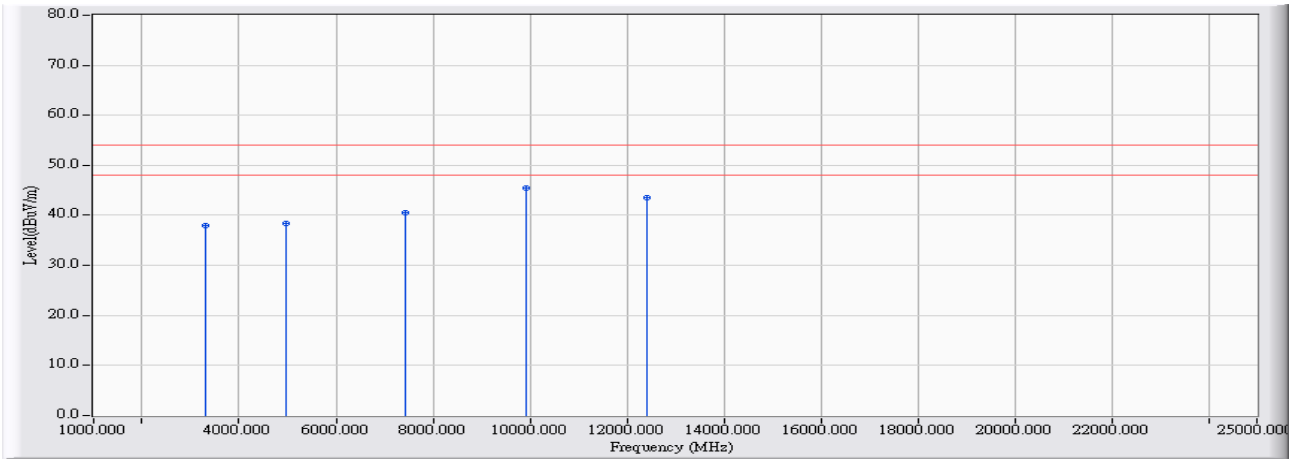


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		3307.080	0.420	57.800	58.221	-15.779	74.000	54.000	PEAK
2		4959.960	5.629	49.310	54.939	-19.061	74.000	54.000	PEAK
3		7440.480	9.865	47.270	57.136	-16.864	74.000	54.000	PEAK
4	*	9919.960	15.278	46.080	61.358	-12.642	74.000	54.000	PEAK
5		12400.000	16.725	41.410	58.135	-15.865	74.000	54.000	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 : Site 1	**Time : 2009/07/27 - 13:27**
Limit : FCC_SpartC_15.247_H_03M_AV	**Margin : 6**
Probe : CB4_FCC_EFS_1-18G(2009-06) - VERTICAL	**Power : AC 120V/60Hz**
EUT : Bluetooth modem	**Note : TX-2480**



		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		3307.360	0.422	37.480	37.902	-16.098	74.000	54.000	AVERAGE
2		4960.000	5.629	32.810	38.439	-15.561	74.000	54.000	AVERAGE
3		7439.960	9.864	30.670	40.535	-13.465	74.000	54.000	AVERAGE
4	*	9920.080	15.279	30.230	45.509	-8.491	74.000	54.000	AVERAGE
5		12400.000	16.725	26.910	43.635	-10.365	74.000	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.
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:

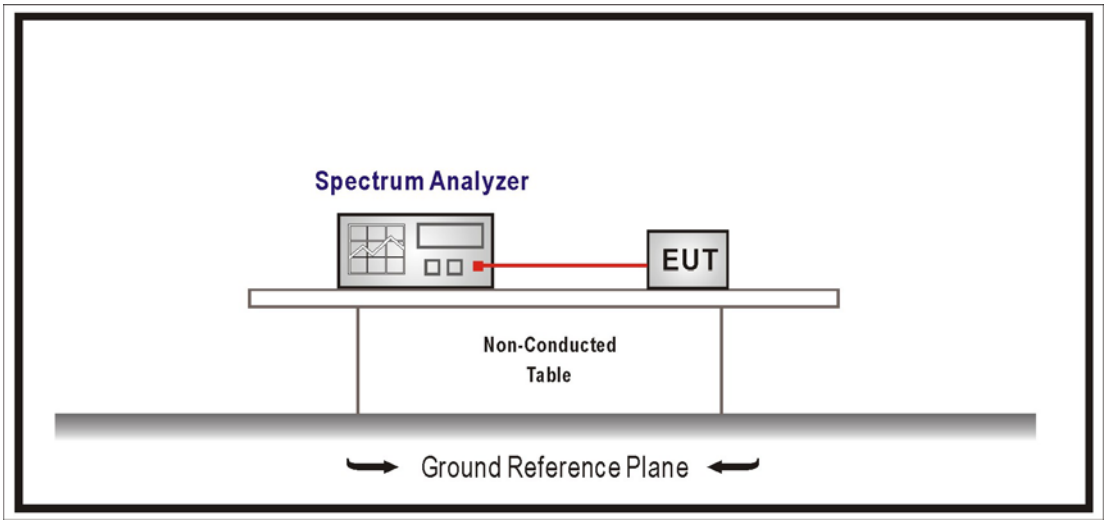
RF Conducted Measurement:				
Item	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.
1	Spectrum Analyzer	R & S	FSP / 100561	Jan., 2009
2	No.1 OATS			Sep., 2008

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

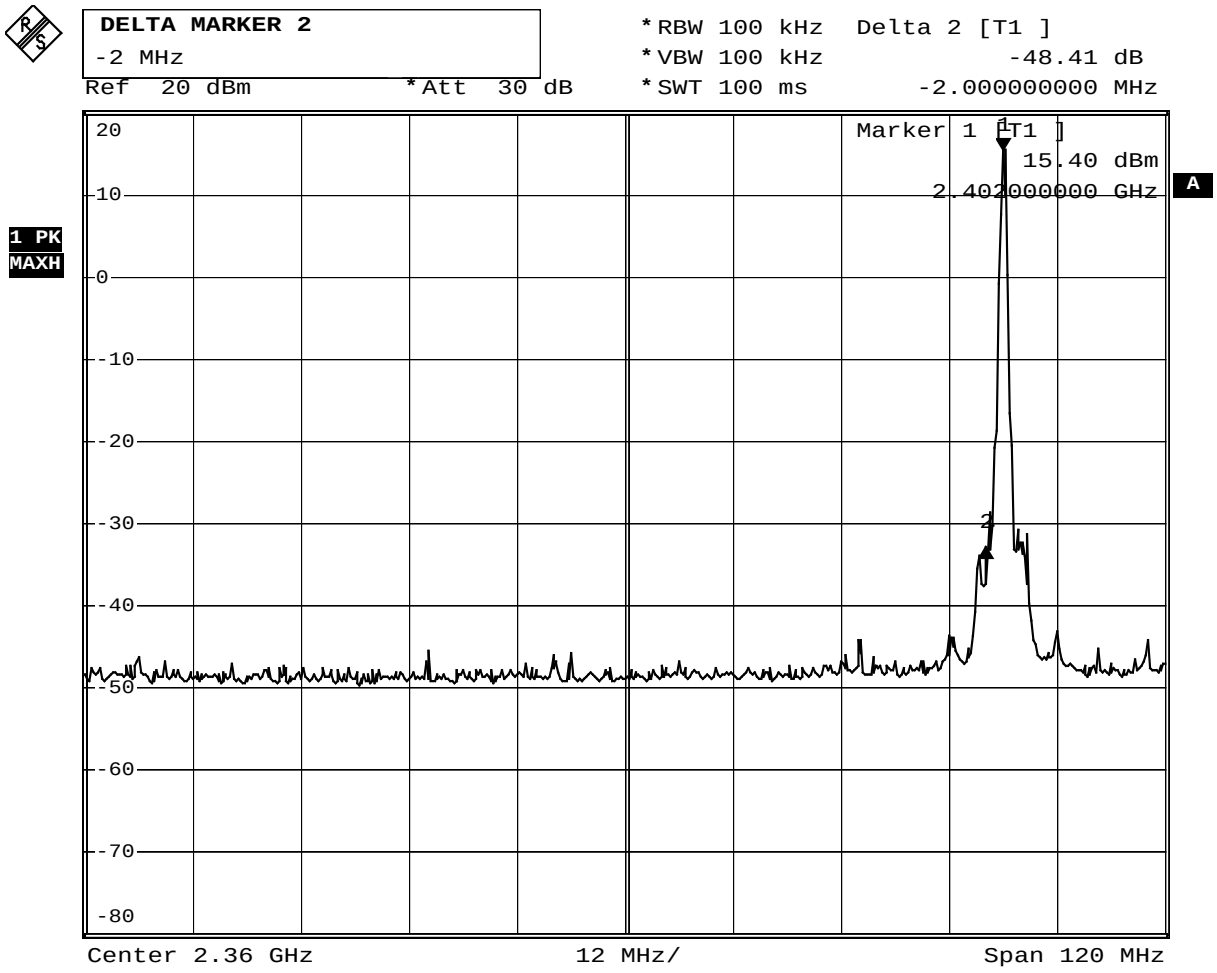
According to FCC Part 15 Subpart C Paragraph 15.247: 2008

5.6. Test Result

Product	Bluetooth modem		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

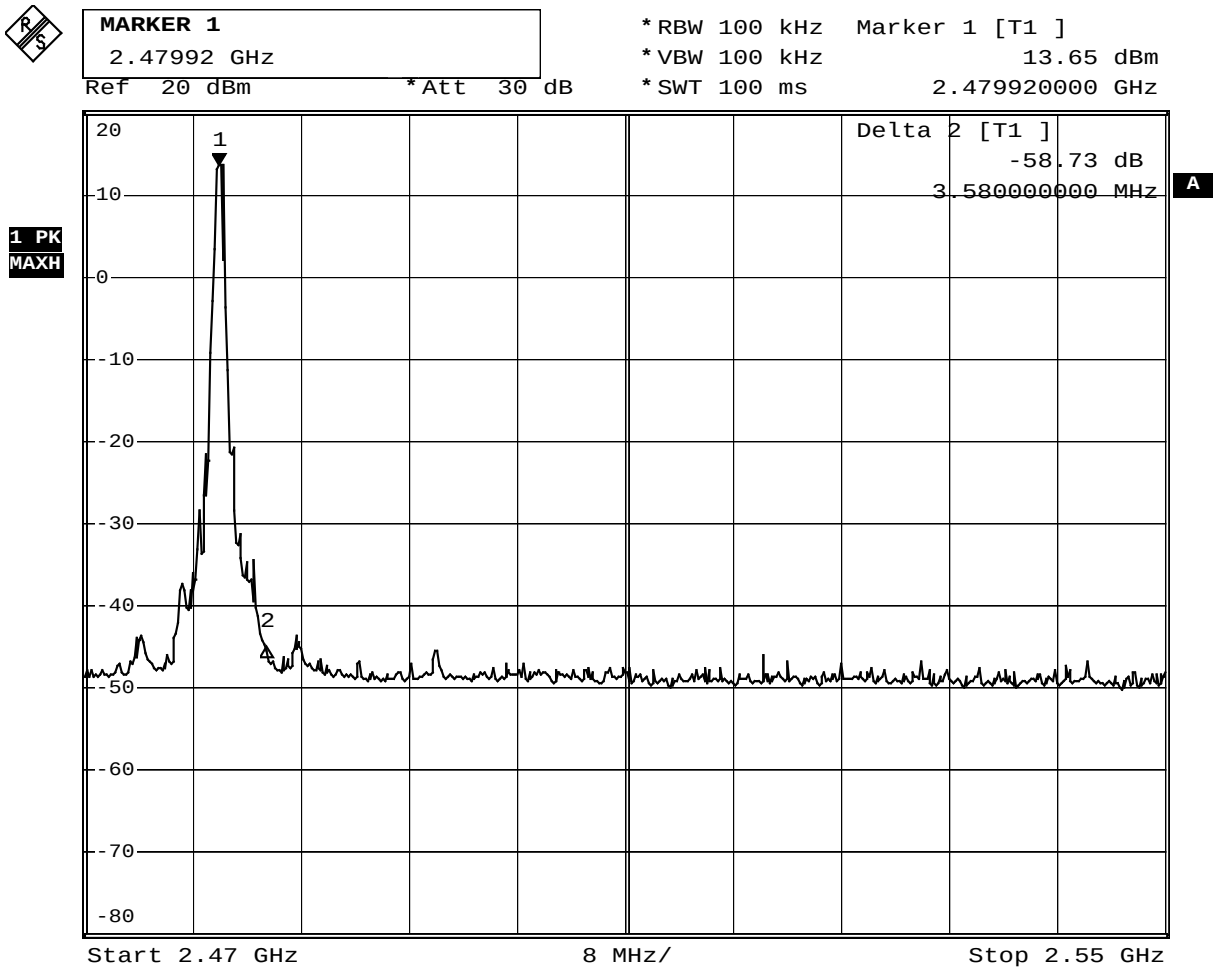
Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	48.41	≧20	Pass
78	2480	58.73	≧20	Pass

Channel 00



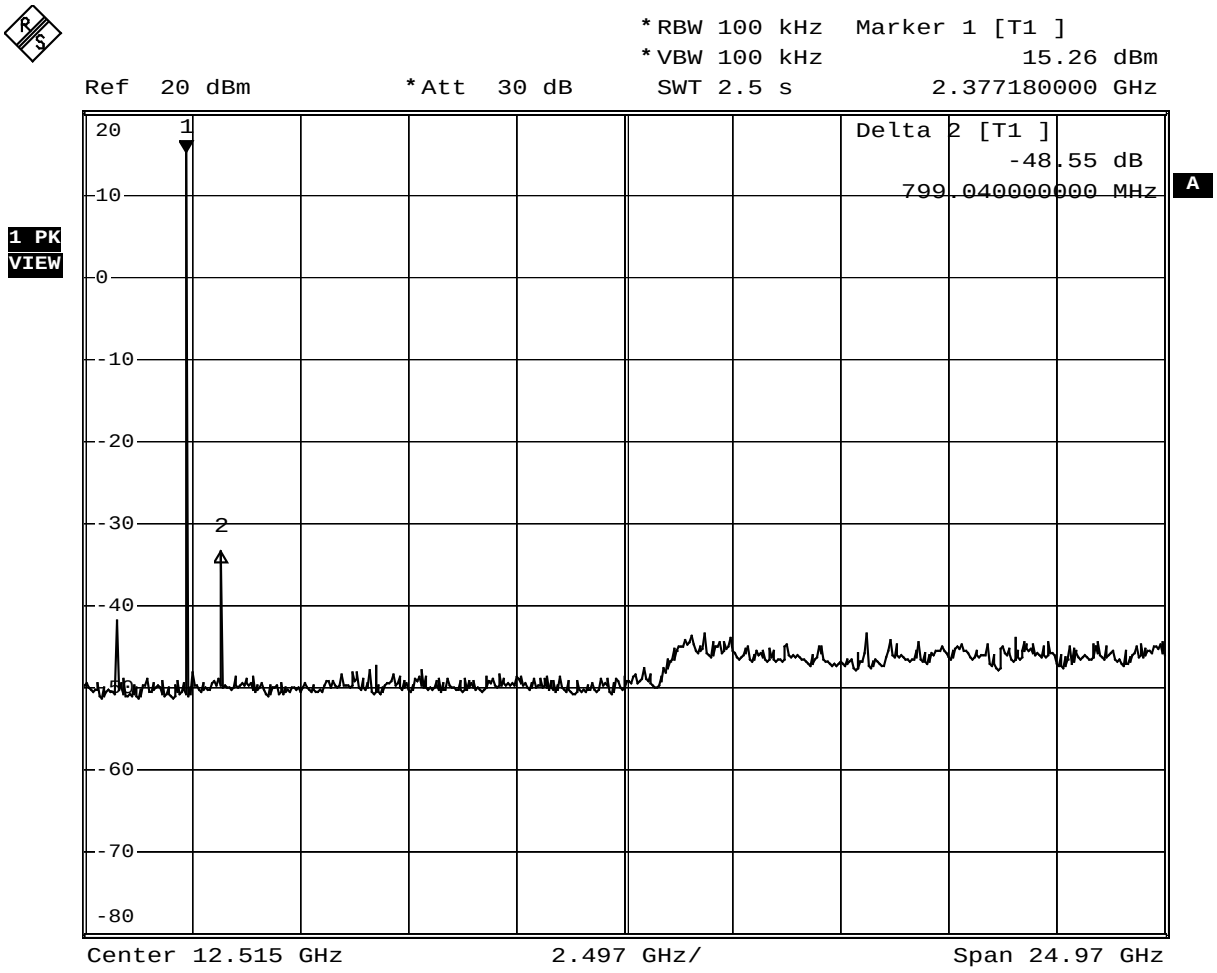
Date: 22.JUL.2009 05:25:32

Channel 78



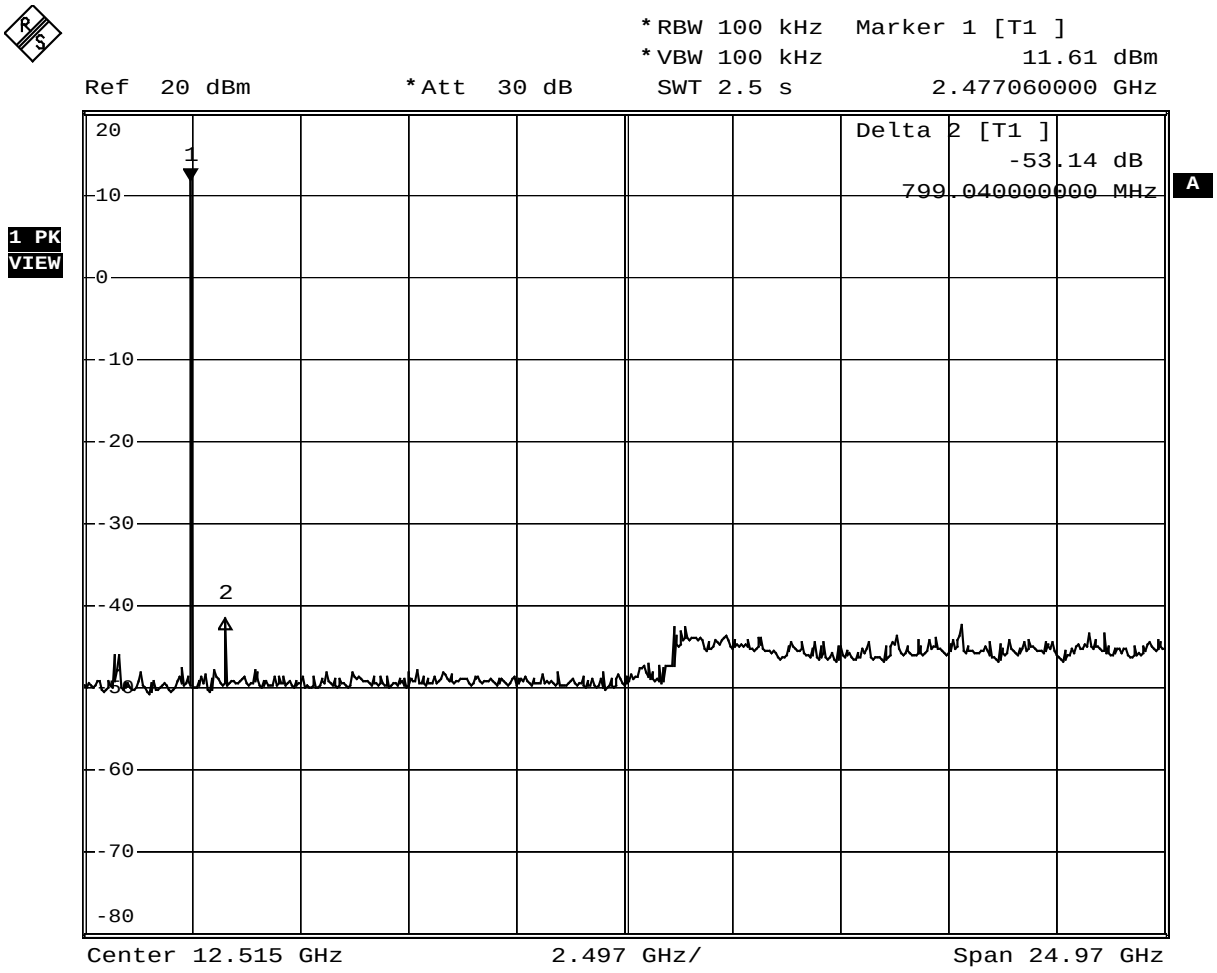
Date: 22.JUL.2009 05:28:11

Channel 00 (30MHz-25GHz)



Date: 22.JUL.2009 17:53:32

Channel 78 (30MHz~25GHz)



Date: 22.JUL.2009 17:51:19

6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

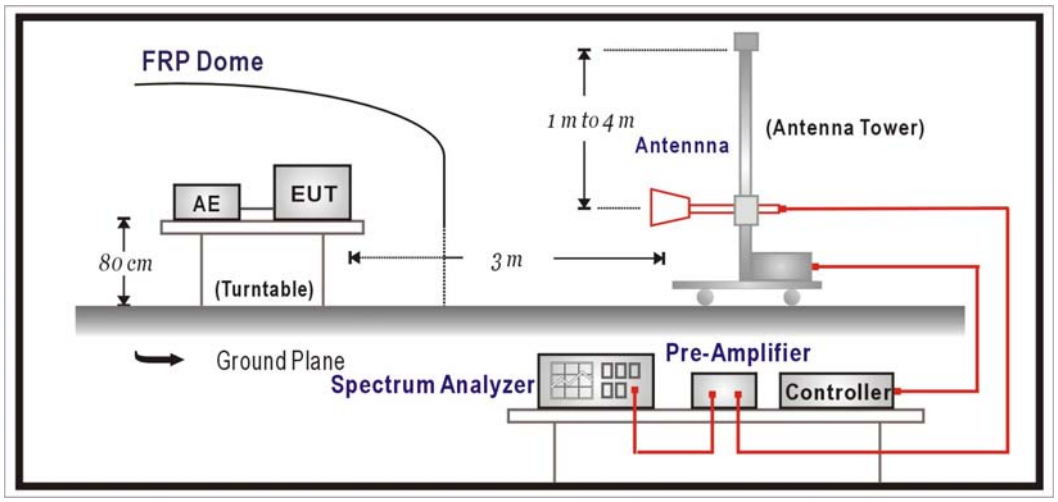
RF Radiated Measurement:					
Item	Equipment		Manufacturer	Model No. / Serial No.	Last Cal.
1	X	Spectrum Analyzer	R & S	FSP40 / 100005	Aug., 2008
2	X	Pre-Amplifier	HP	8449B / 3008A01123	Feb., 2009
3		Loop Antenna	R & S	HFH2-Z2 / 833799/004	Sep., 2008
4		BiconiLog Antenna	Schwarzbeck	VULB 9166 / 1061	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.

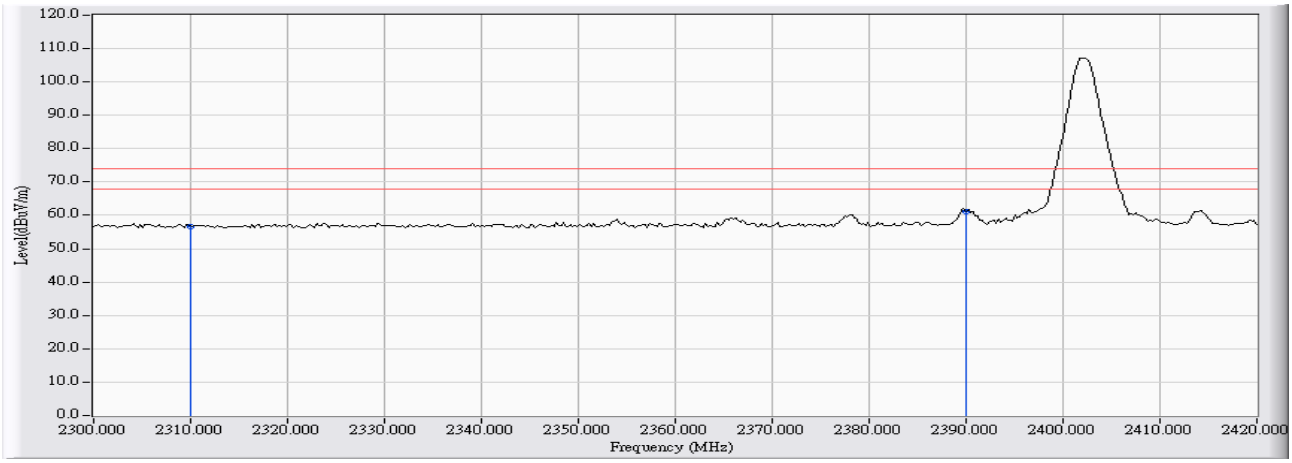
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2008

6.6. Test Result

Site : Site 1	Time : 2009/07/27 - 15:45
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2402

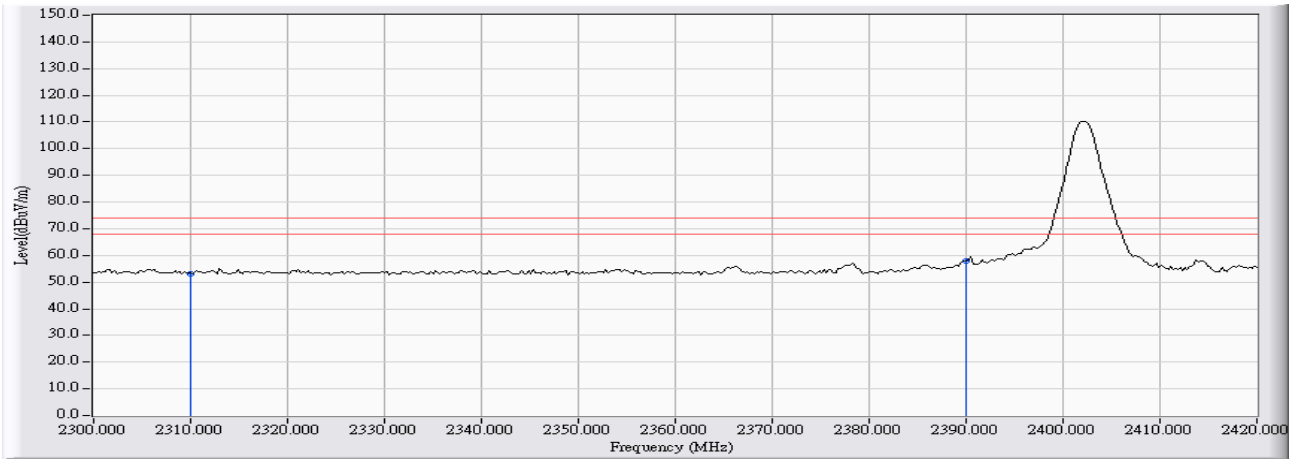


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	31.658	25.096	56.753	-17.247	74.000	54.000	PEAK
2	*	2390.000	32.036	29.038	61.074	-12.926	74.000	54.000	PEAK

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 : Site 1	Time : 2009/07/27 - 15:49
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2402

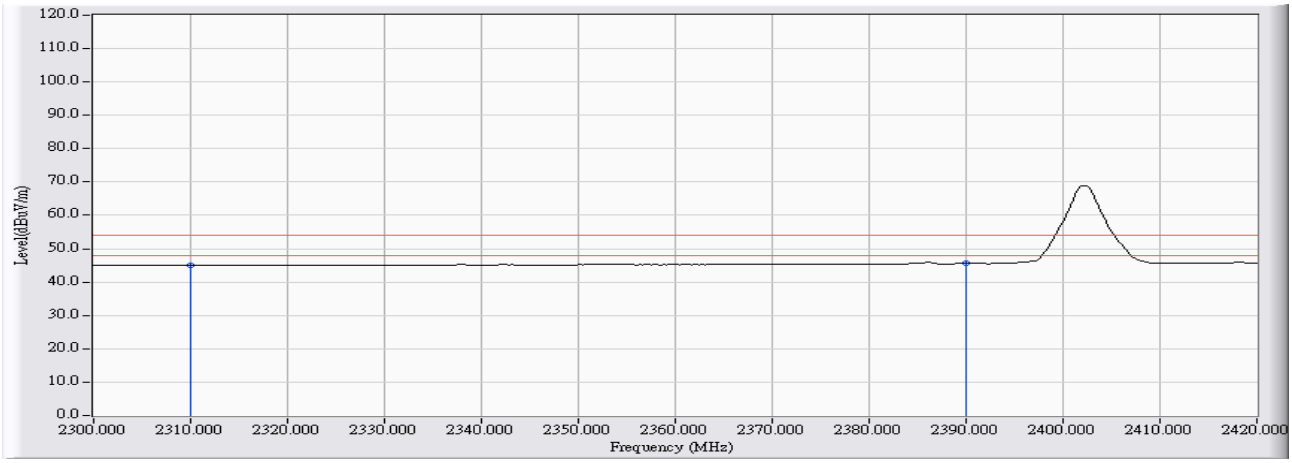


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	28.738	24.499	53.236	-20.764	74.000	54.000	PEAK
2	*	2390.000	28.470	29.639	58.109	-15.891	74.000	54.000	PEAK

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 : Site 1	Time : 2009/07/27 - 15:46
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2402

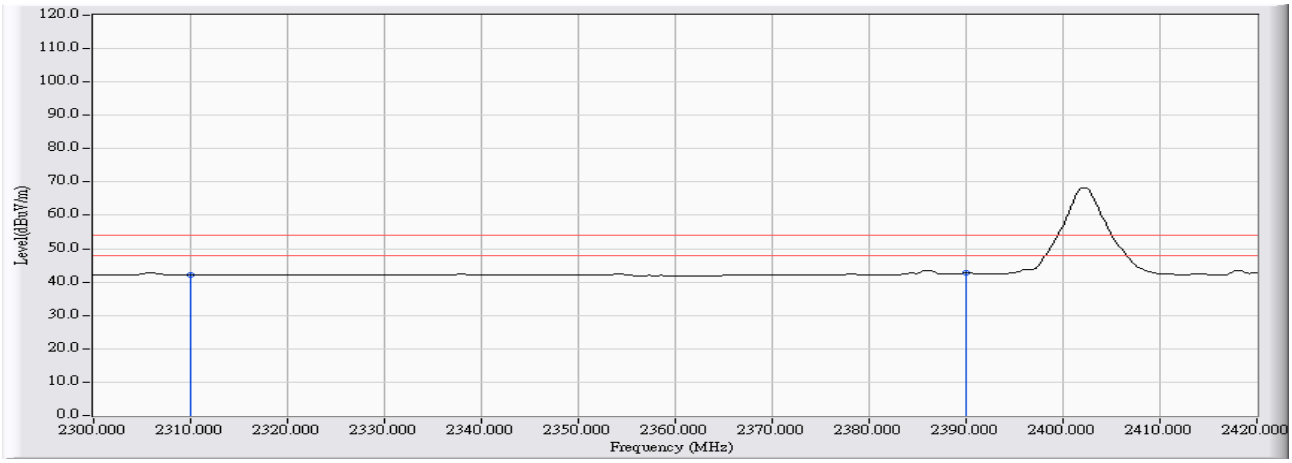


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	31.658	13.427	45.084	-8.916	74.000	54.000	AVERAGE
2	*	2390.000	32.036	13.735	45.771	-8.229	74.000	54.000	AVERAGE

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 : Site 1	Time : 2009/07/27 - 15:49
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2402

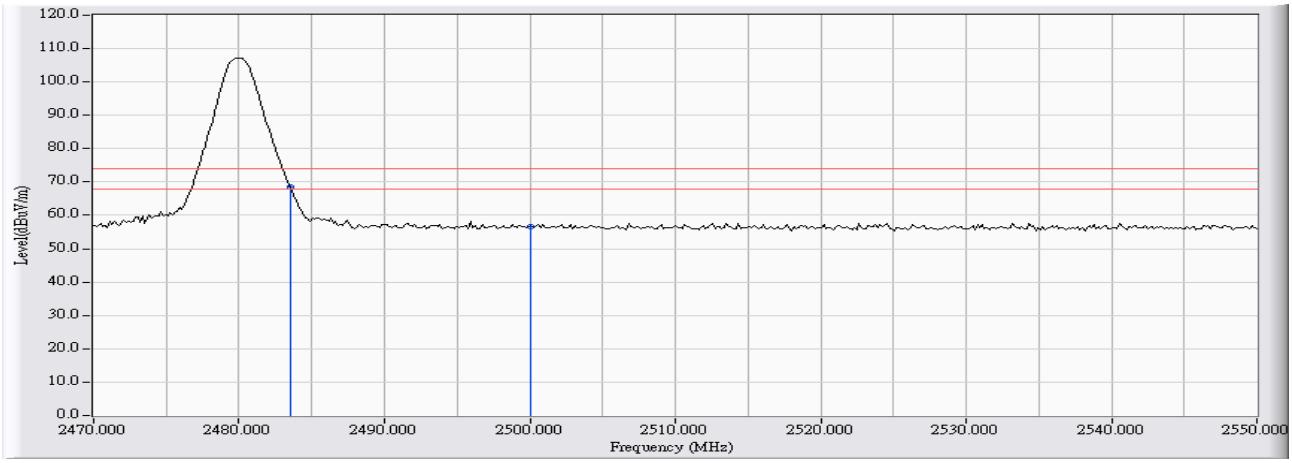


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		2310.000	28.738	13.454	42.191	-11.809	74.000	54.000	AVERAGE
2	*	2390.000	28.470	14.214	42.684	-11.316	74.000	54.000	AVERAGE

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 : Site 1	Time : 2009/07/28 - 11:00
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2480

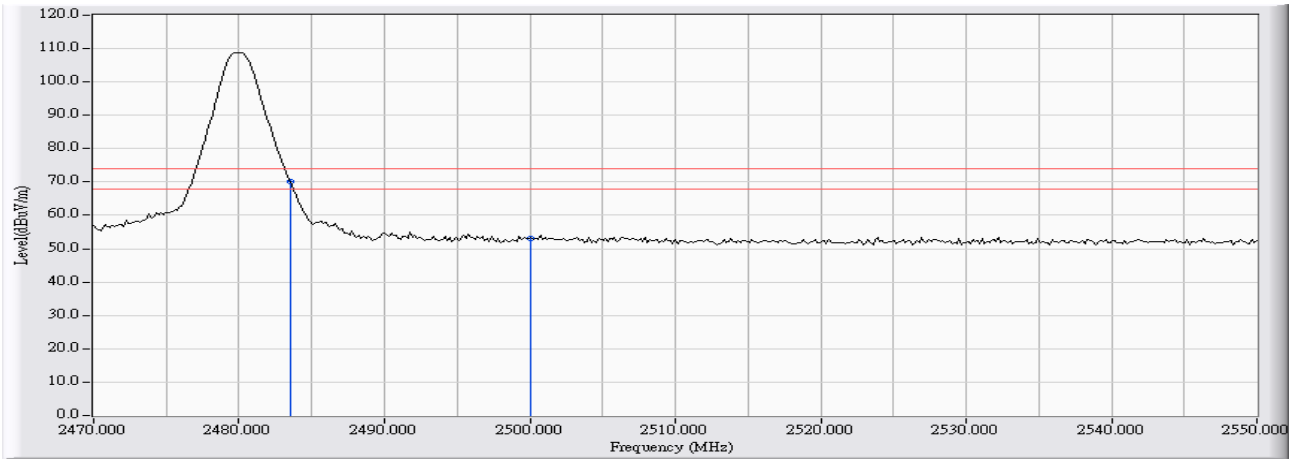


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	2483.500	32.480	36.134	68.614	-5.386	74.000	54.000	PEAK
2		2500.000	32.557	24.215	56.773	-17.227	74.000	54.000	PEAK

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 : Site 1	Time : 2009/07/28 - 11:07
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2480

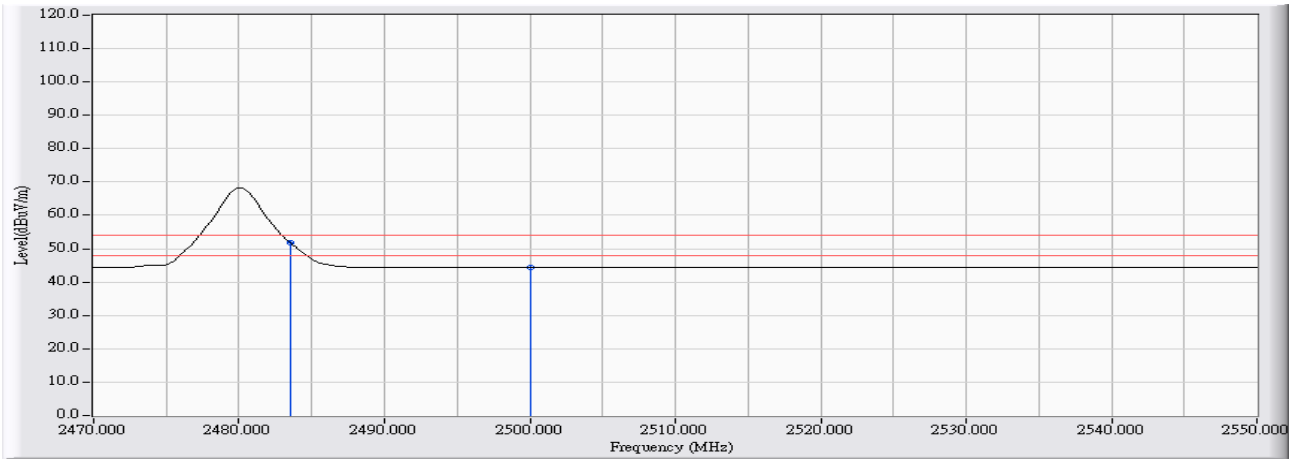


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	2483.500	28.156	42.050	70.205	-3.795	74.000	54.000	PEAK
2		2500.000	28.142	25.056	53.198	-20.802	74.000	54.000	PEAK

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 : Site 1	Time : 2009/07/28 - 11:02
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - HORIZONTAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2480

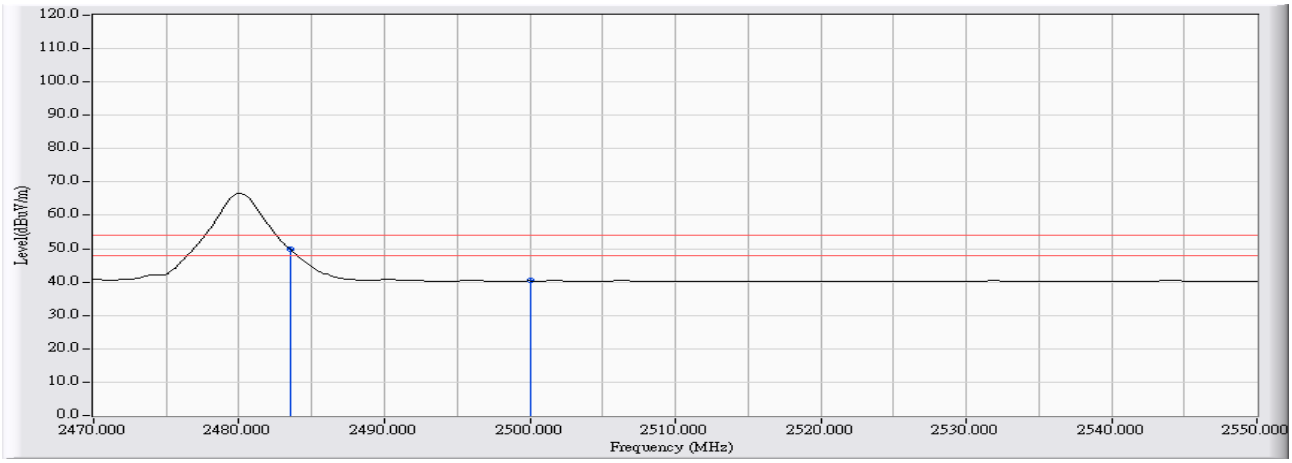


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1	*	2483.500	32.480	19.357	51.837	-2.163	74.000	54.000	AVERAGE
2		2500.000	32.557	11.858	44.416	-9.584	74.000	54.000	AVERAGE

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 : Site 1	Time : 2009/07/28 - 11:08
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : FCC_EFS_1-18G(2009-06) - VERTICAL	Power : AC 120V/60Hz
EUT : Bluetooth modem	Note : TX-2480



		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	*	2483.500	28.156	21.680	49.835	-4.165	74.000	54.000	AVERAGE
2		2500.000	28.142	12.235	40.377	-13.623	74.000	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

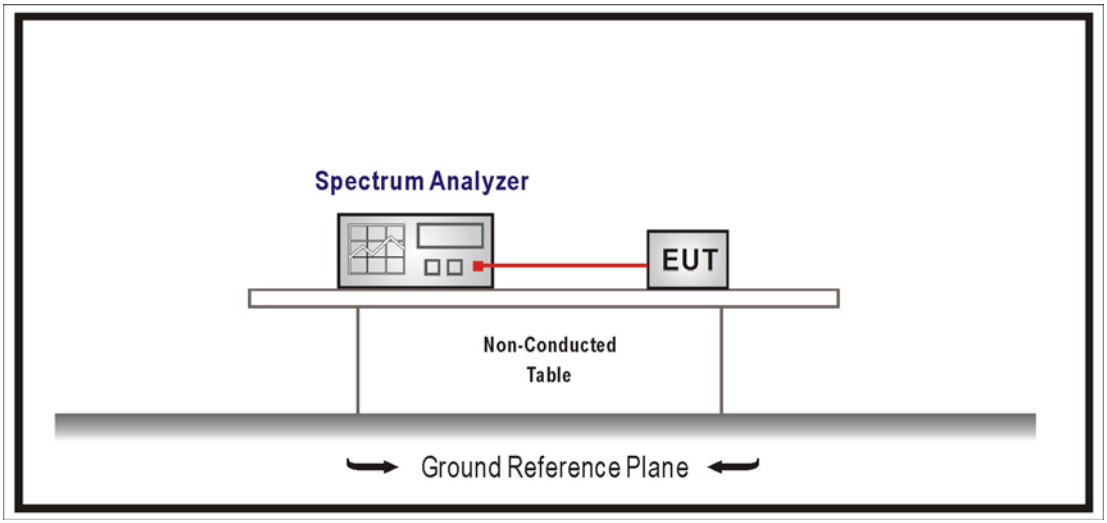
7.1. Test Equipment

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 ≥ 1% of the span , VBW ≥ RBW

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

7.5. Test Specification

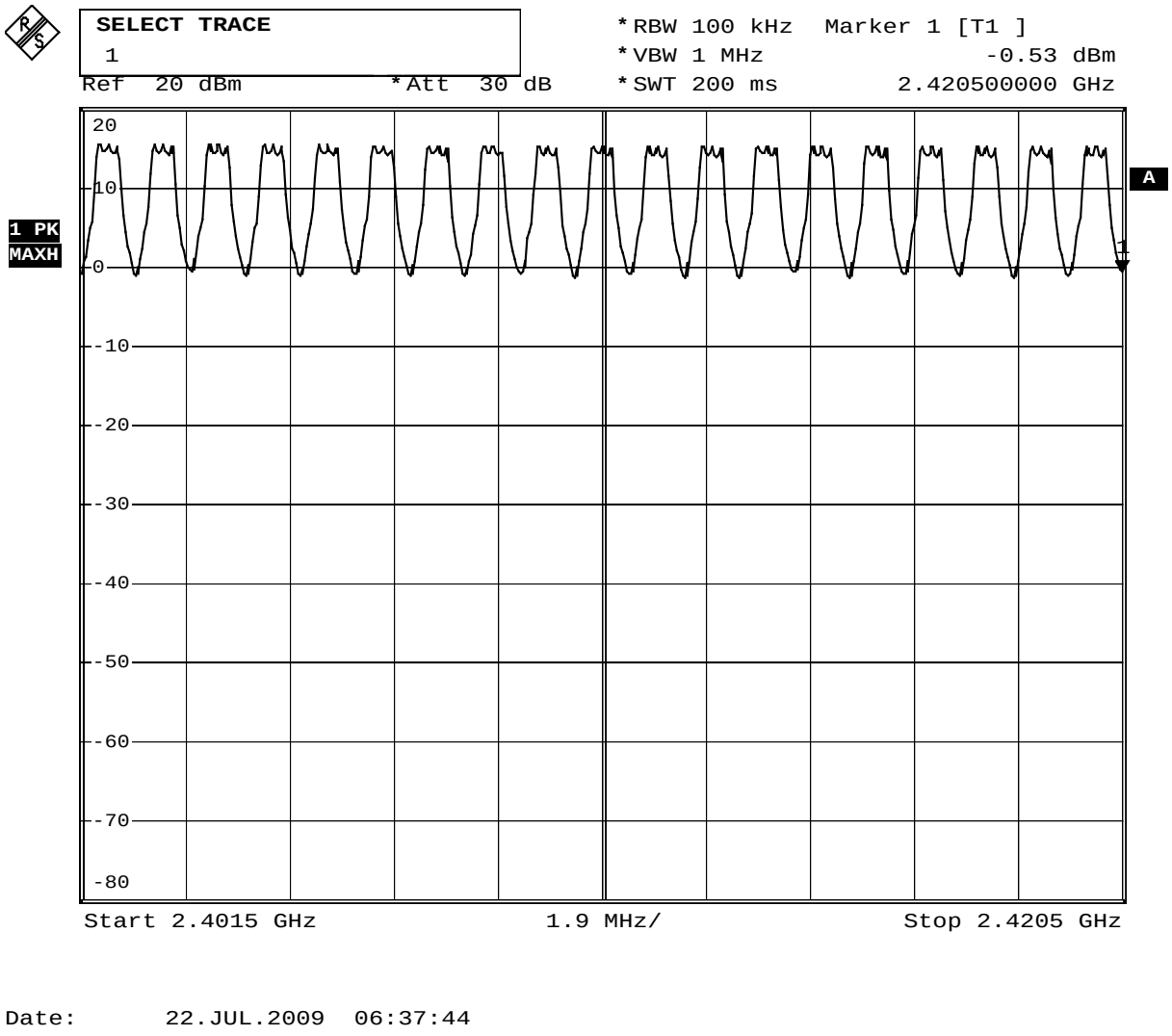
According to FCC Part 15 Subpart C Paragraph 15.247: 2008

7.6. Test Result

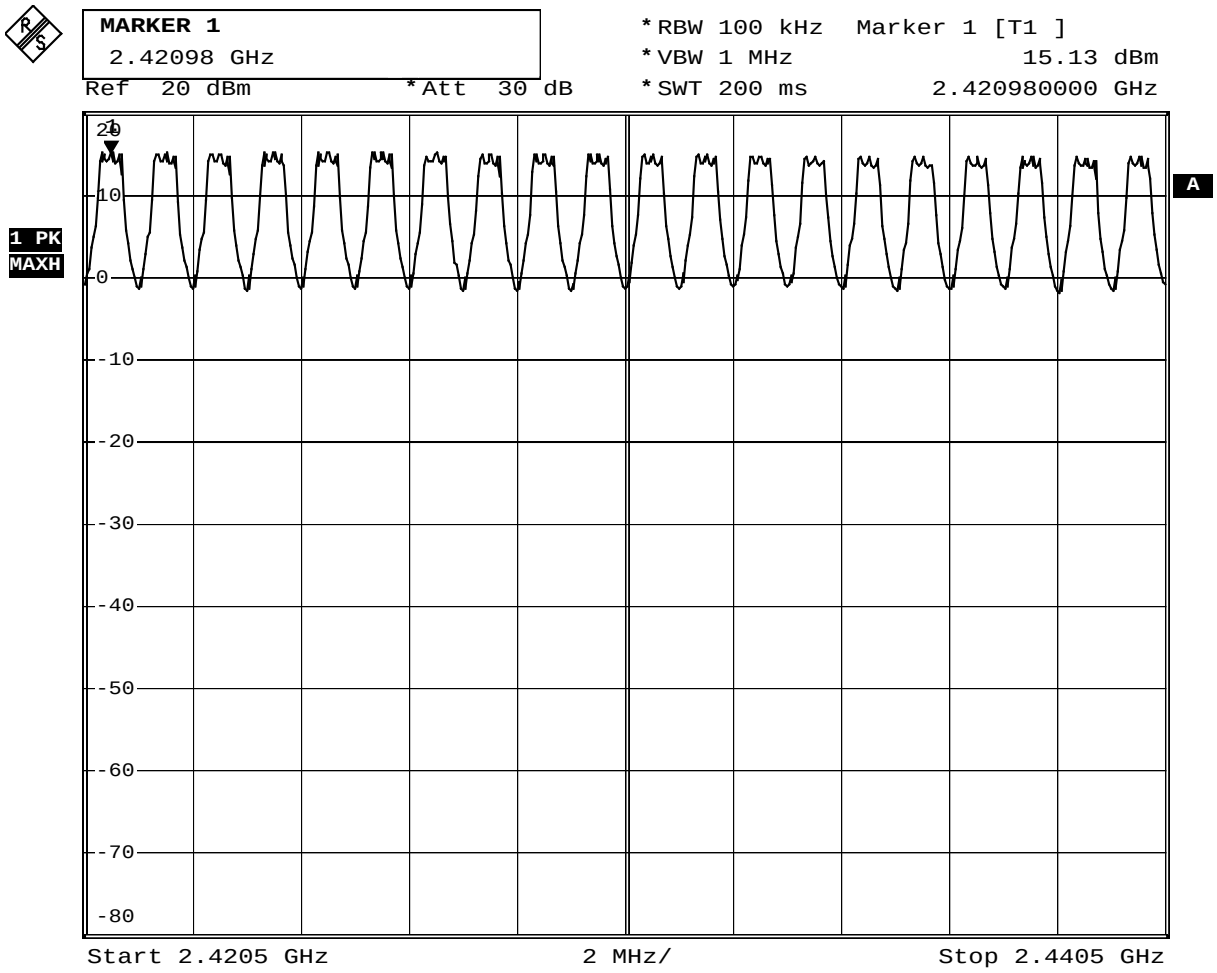
Product	Bluetooth modem		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

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

2402-2420MHz

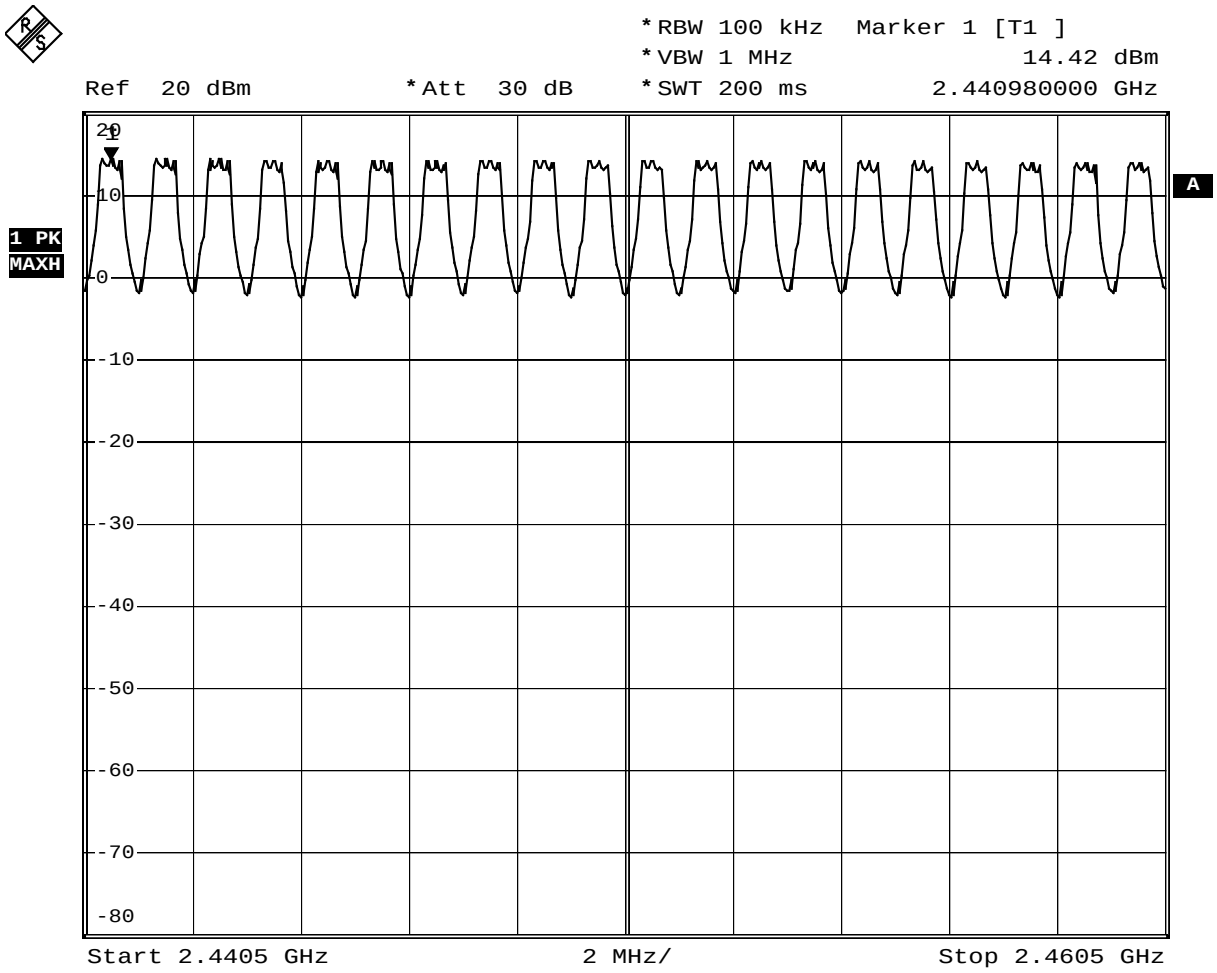


2421-2440MHz



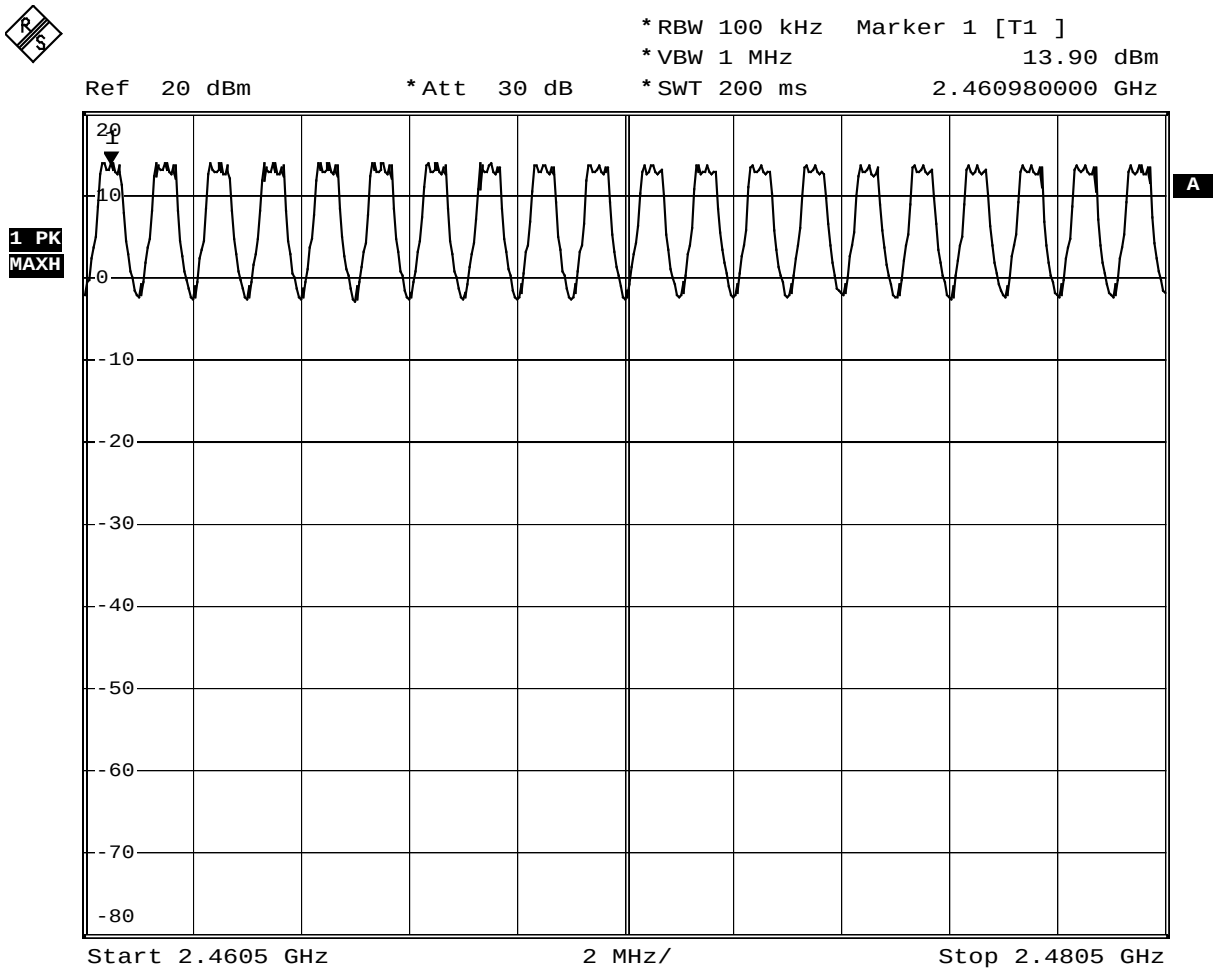
Date: 22.JUL.2009 06:45:52

2441-2460MHz



Date: 22.JUL.2009 06:51:16

2461-2480MHz



Date: 22.JUL.2009 06:53:55

8. Carrier Frequency Separation

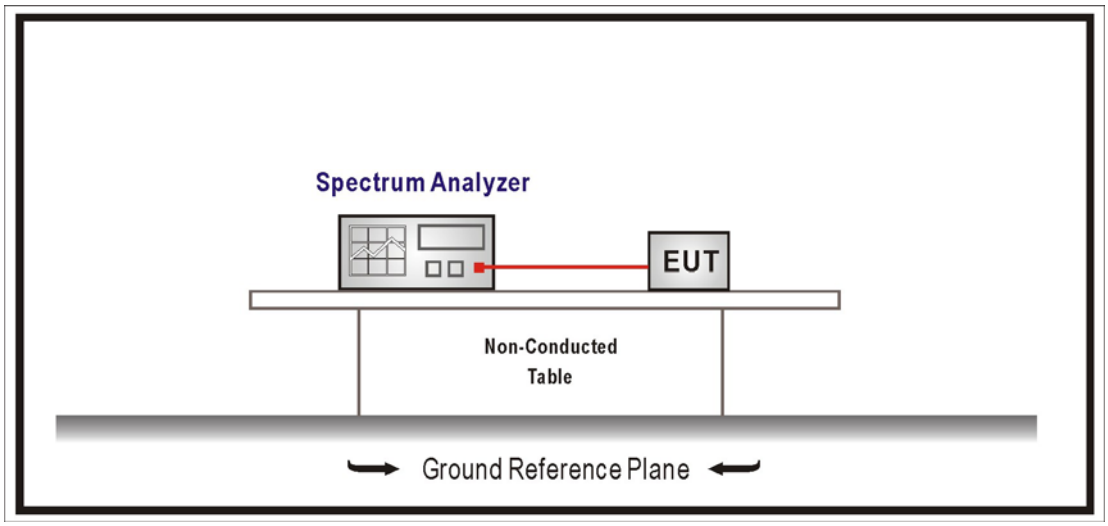
8.1. Test Equipment

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) ≥ 1% of the span, VBW ≥ RBW

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

8.5. Test Specification

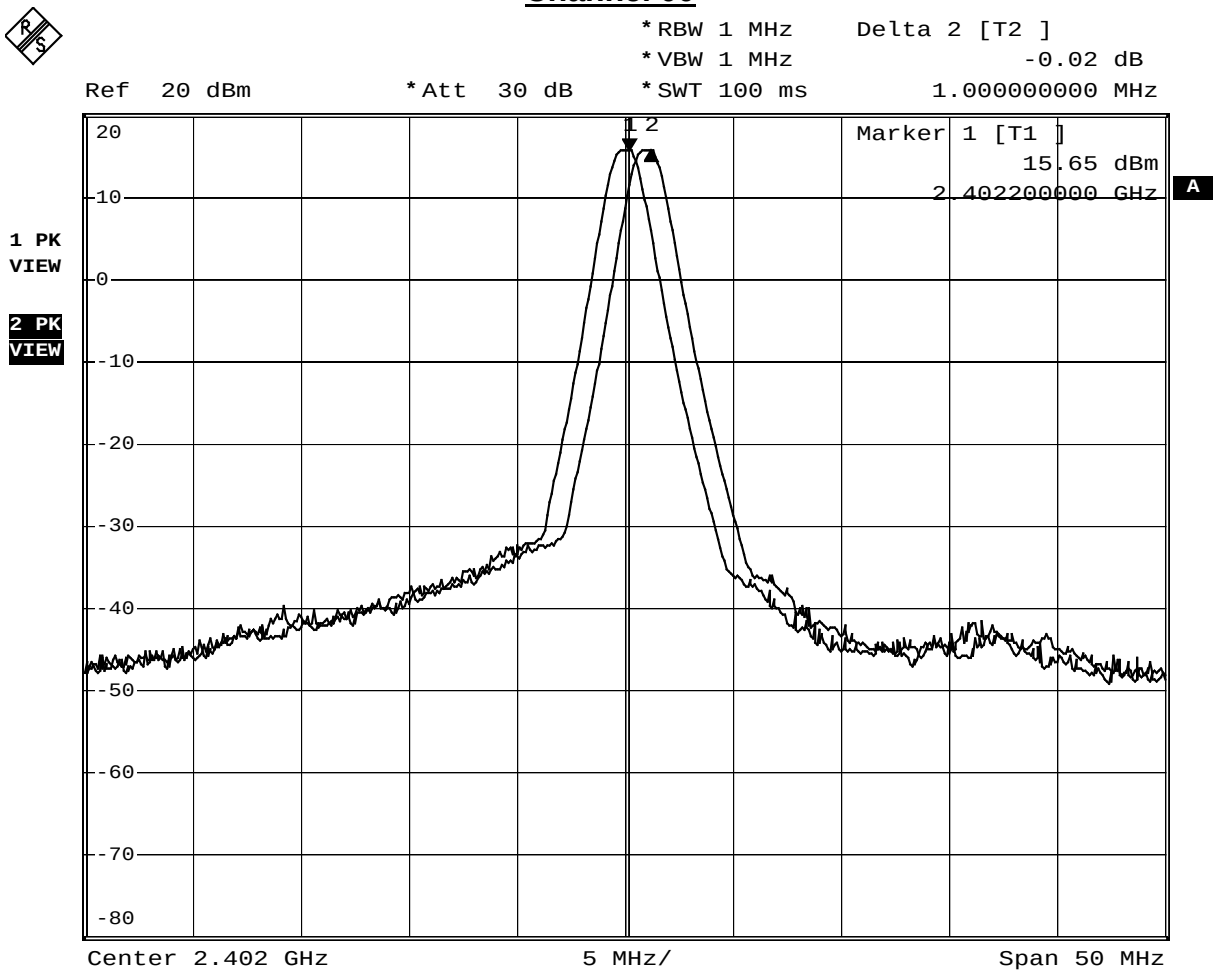
According to FCC Part 15 Subpart C Paragraph 15.247: 2008

8.6. Test Result

Product	Bluetooth modem		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
00	2402.00	1000	>760	Pass

Channel 00

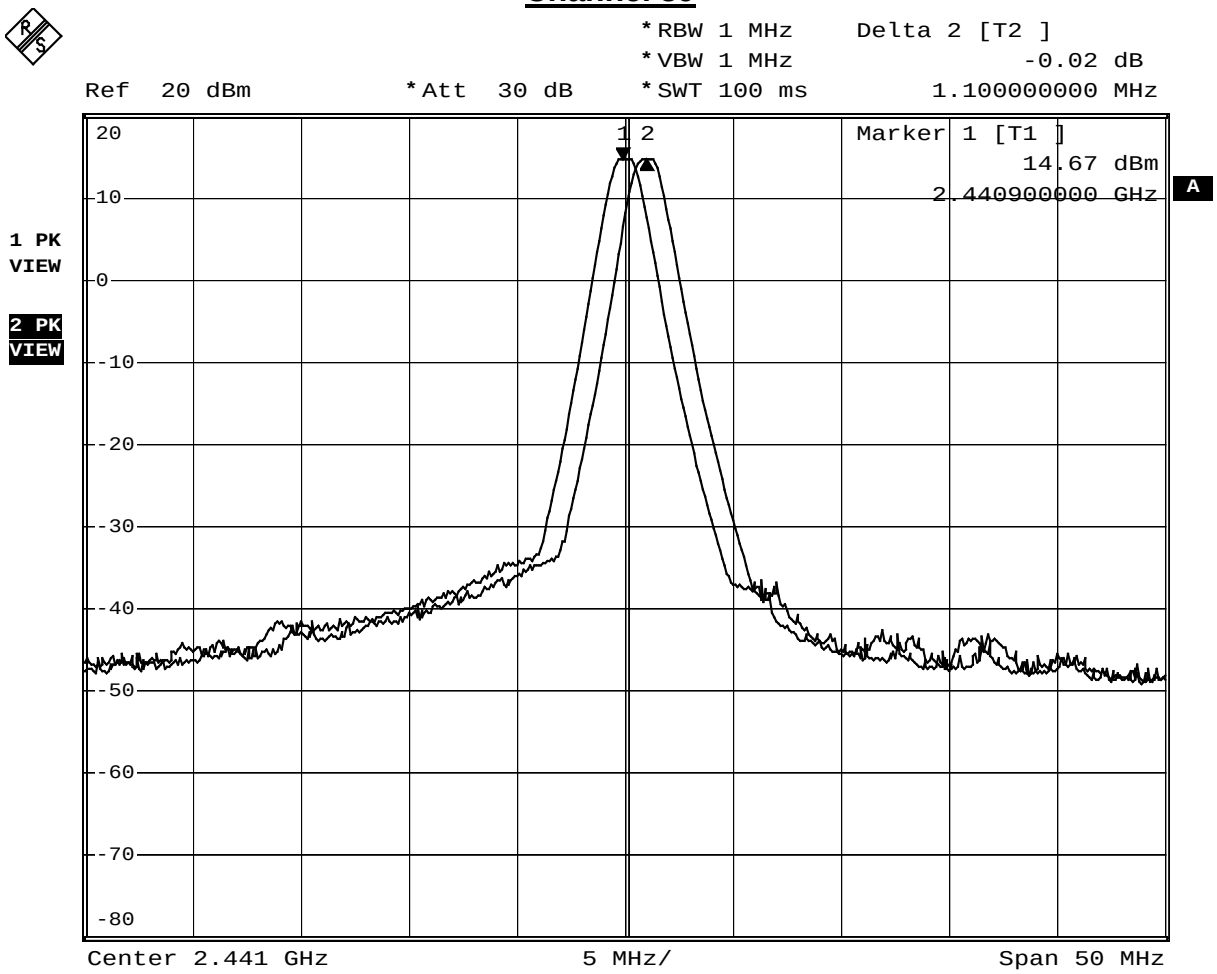


Date: 22.JUL.2009 07:09:45

Product	Bluetooth modem		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
39	2441.00	1100	>760	Pass

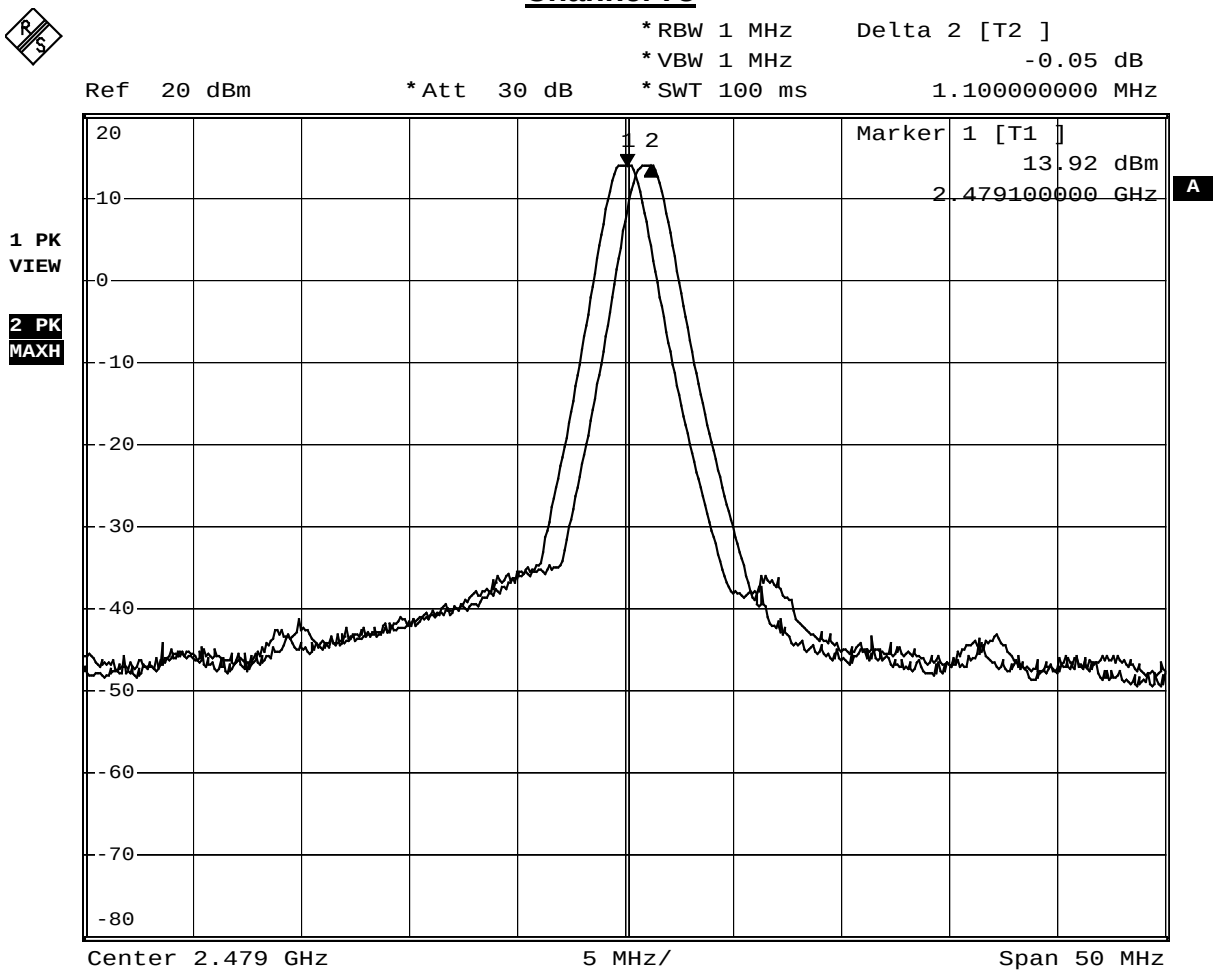
Channel 39



Product	Bluetooth modem		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

Channel No.	Frequency (MHz)	Measure Level (kHz)	Limit (kHz)	Result
78	2480.00	1100	>773	Pass

Channel 78



Date: 22.JUL.2009 07:15:15

9. Occupied Bandwidth

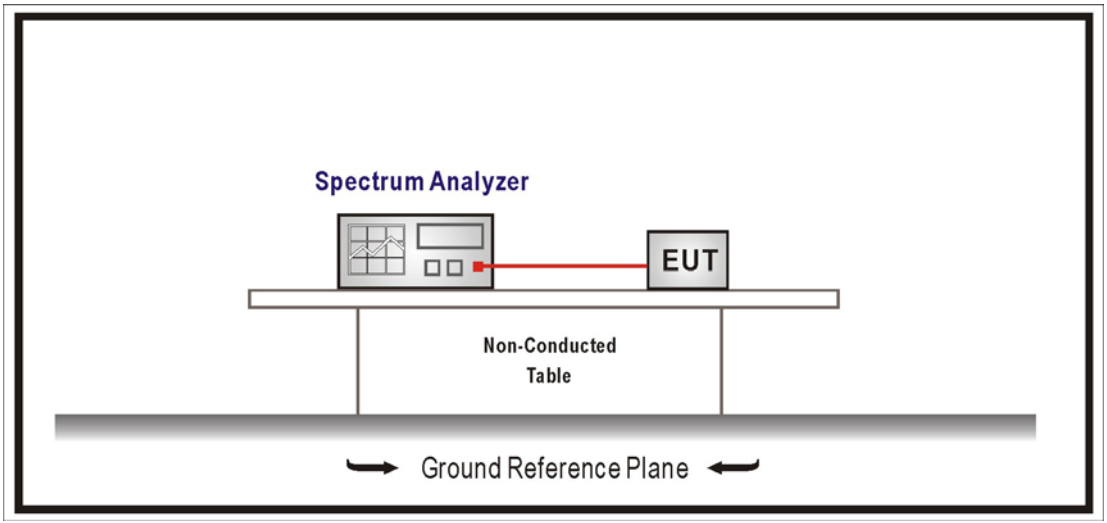
9.1. Test Equipment

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

Frequency hopping systems operating in the 902-928 MHz band: the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Frequency hopping systems operating in the 2400-2483.5 MHz band: the maximum allowed 20 dB bandwidth of the hopping channel is not determined in standard.
Frequency hopping systems operating in the 5725-5850 MHz band: the maximum allowed 20 dB bandwidth of the hopping channel is 1 MHz.

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 ≥ 1% of the 20 dB bandwidth, VBW ≥ 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 15.247: 2008

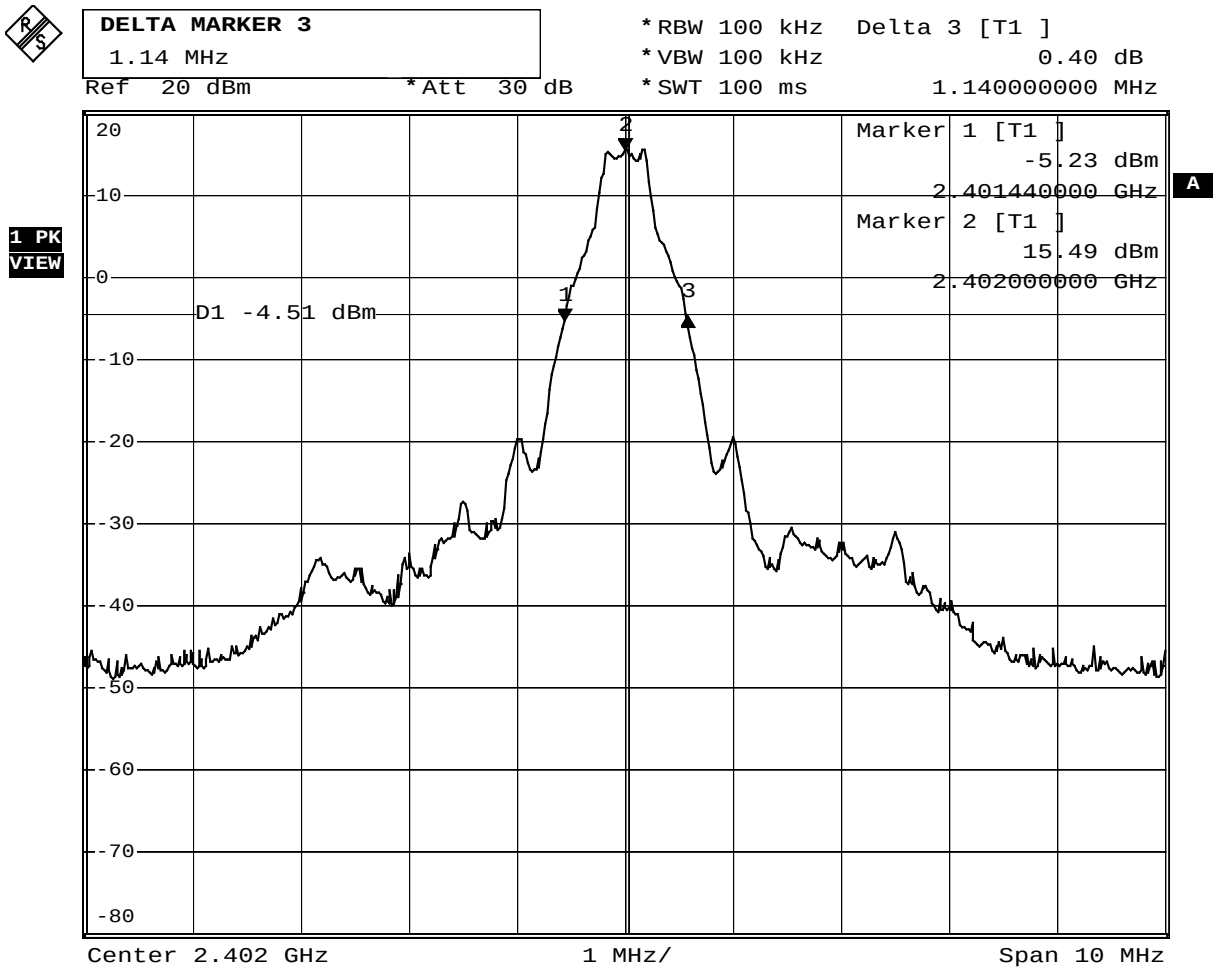
9.6. Test Result

Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402.00	1.14	--	Pass

Channel 00

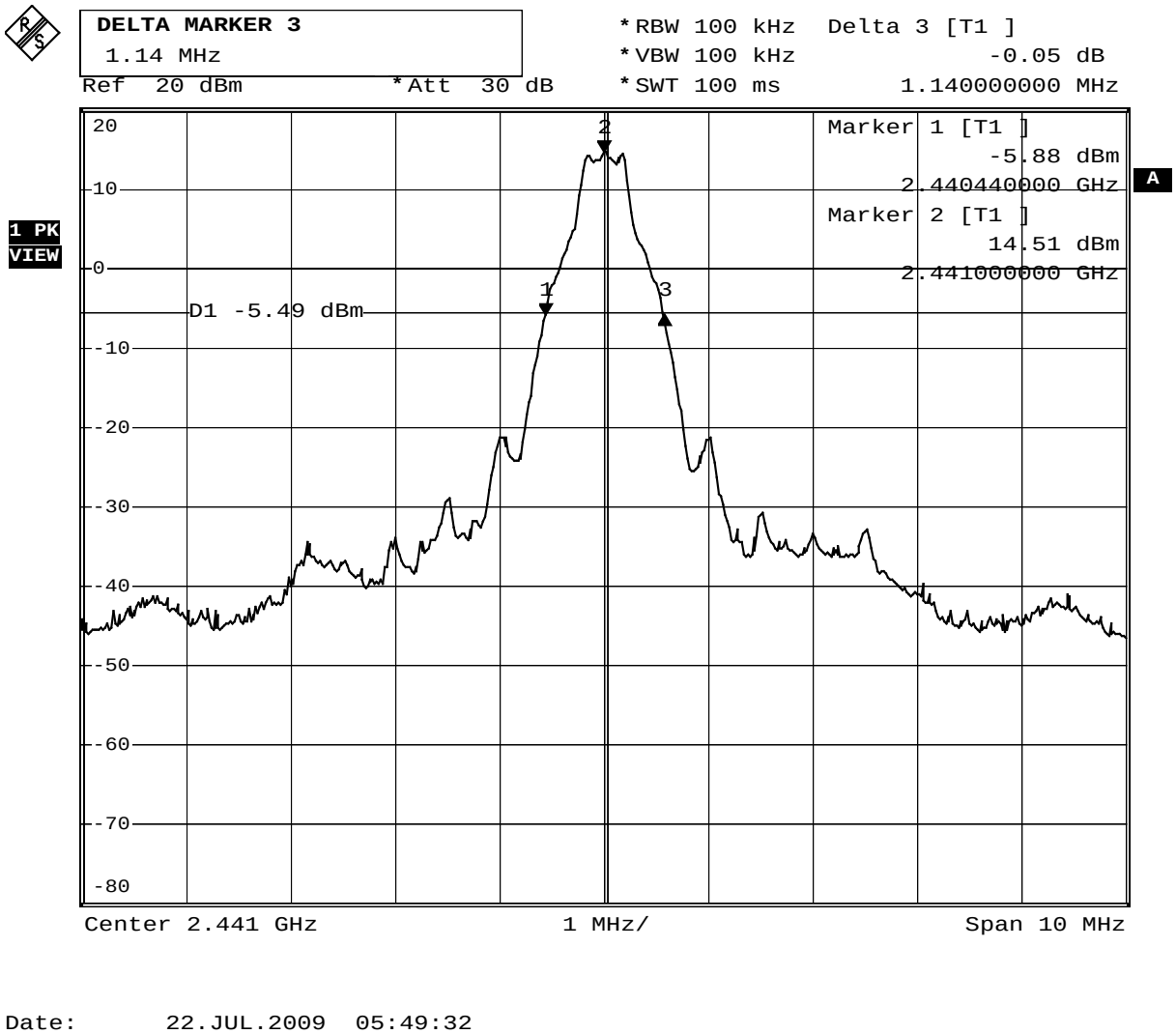


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441.00	1.14	--	Pass

Channel 39

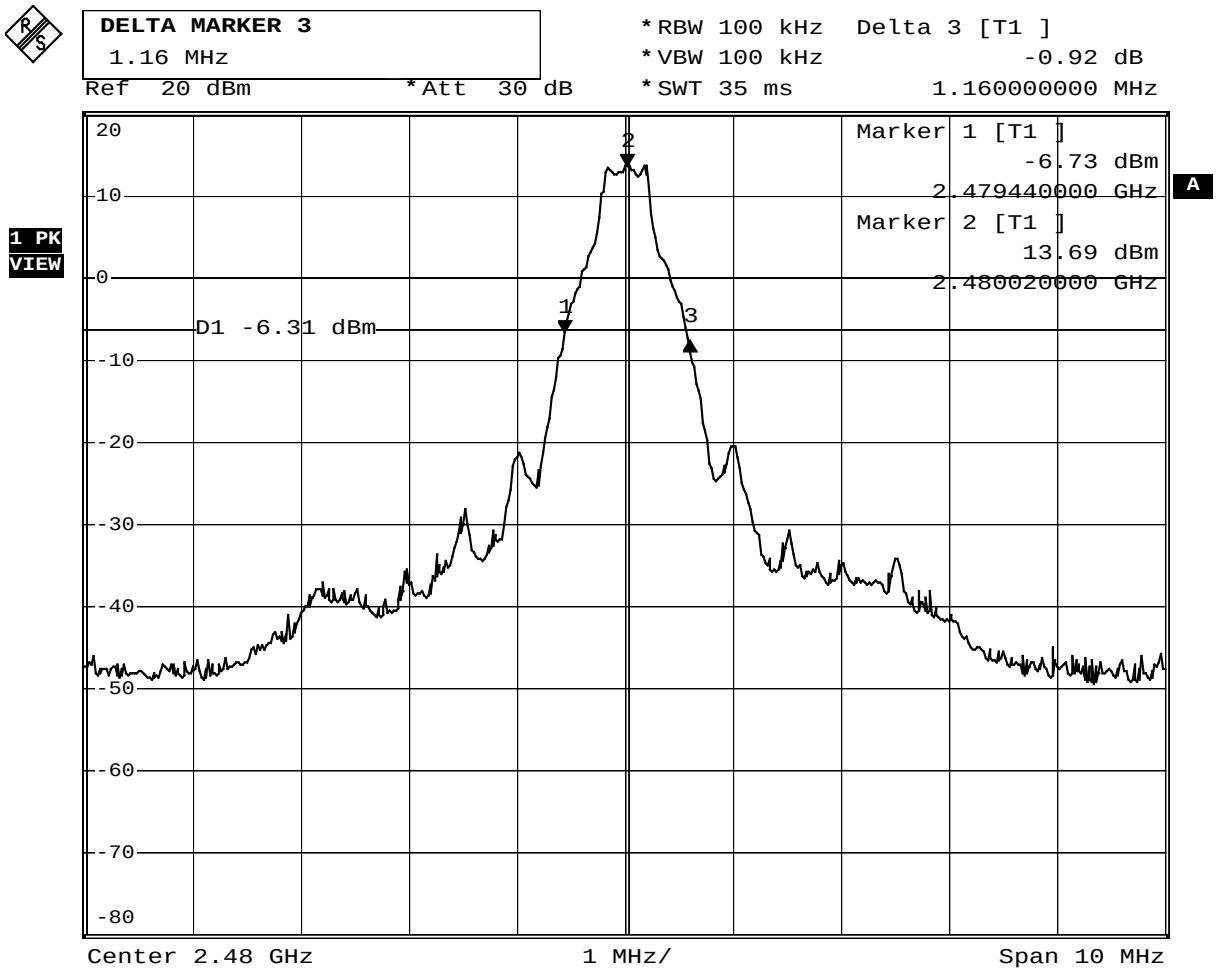


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

GFSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480.00	1.16	--	Pass

Channel 78

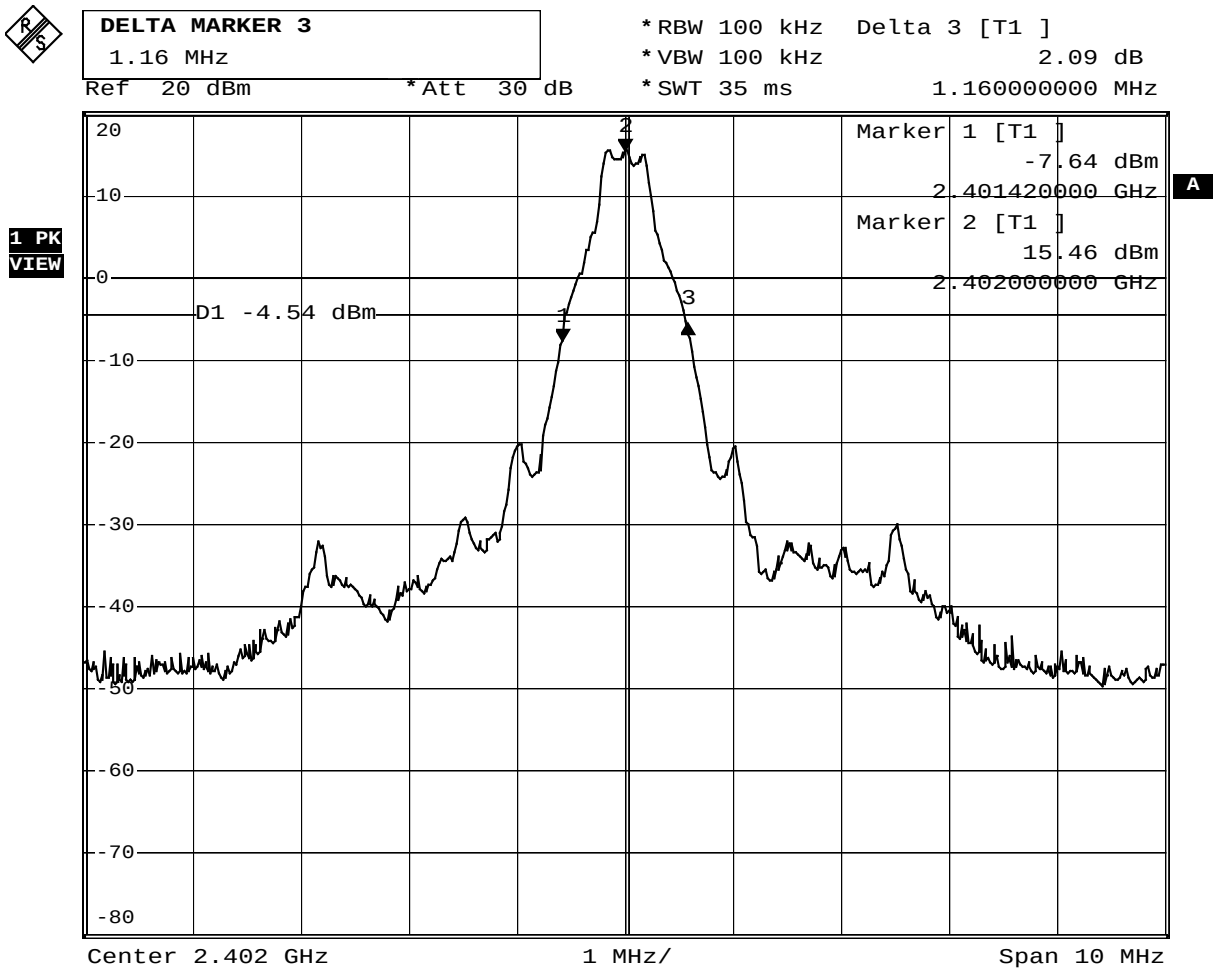


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

QPSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402.00	1.16	--	Pass

Channel 00

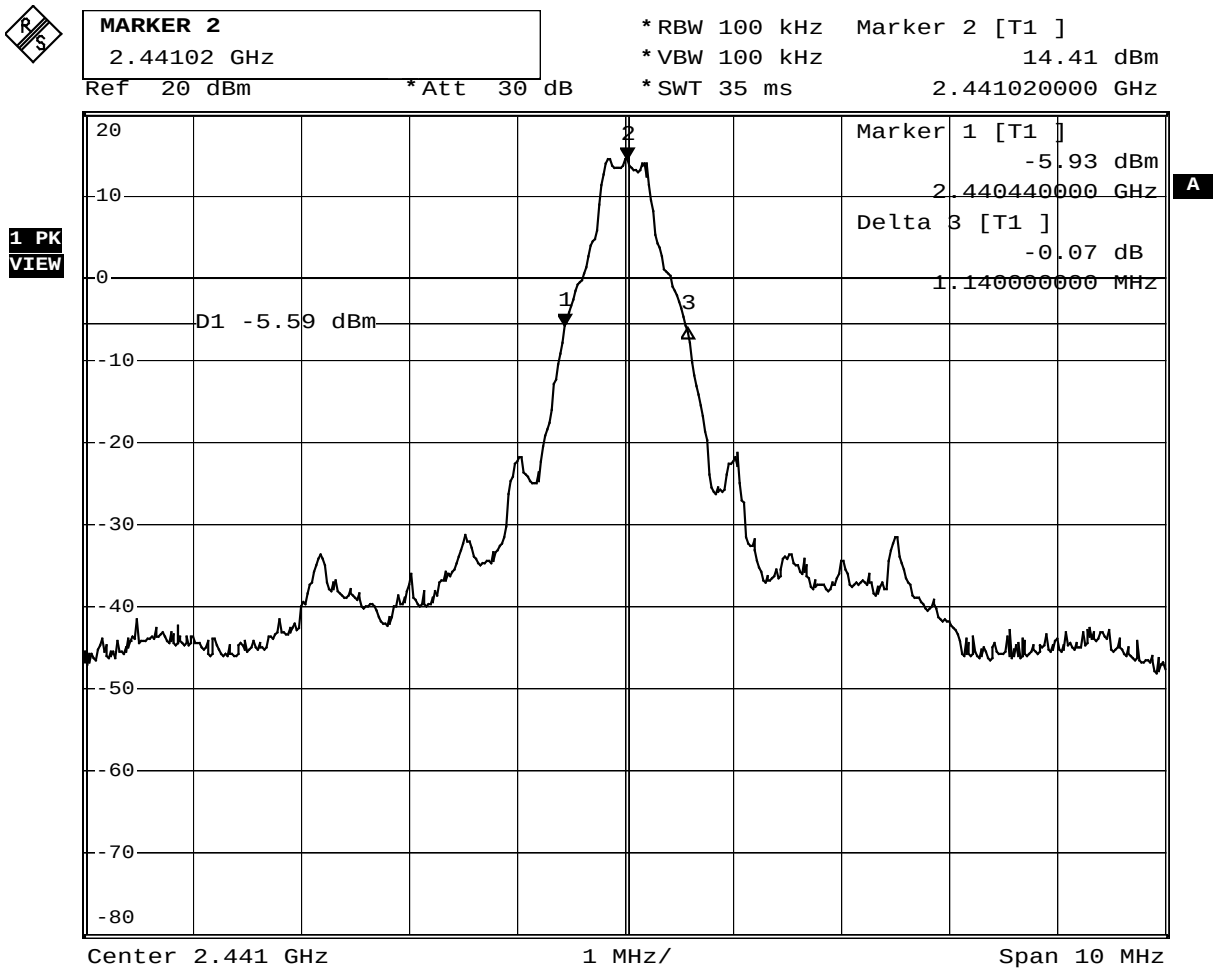


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

QPSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441.00	1.14	--	Pass

Channel 39

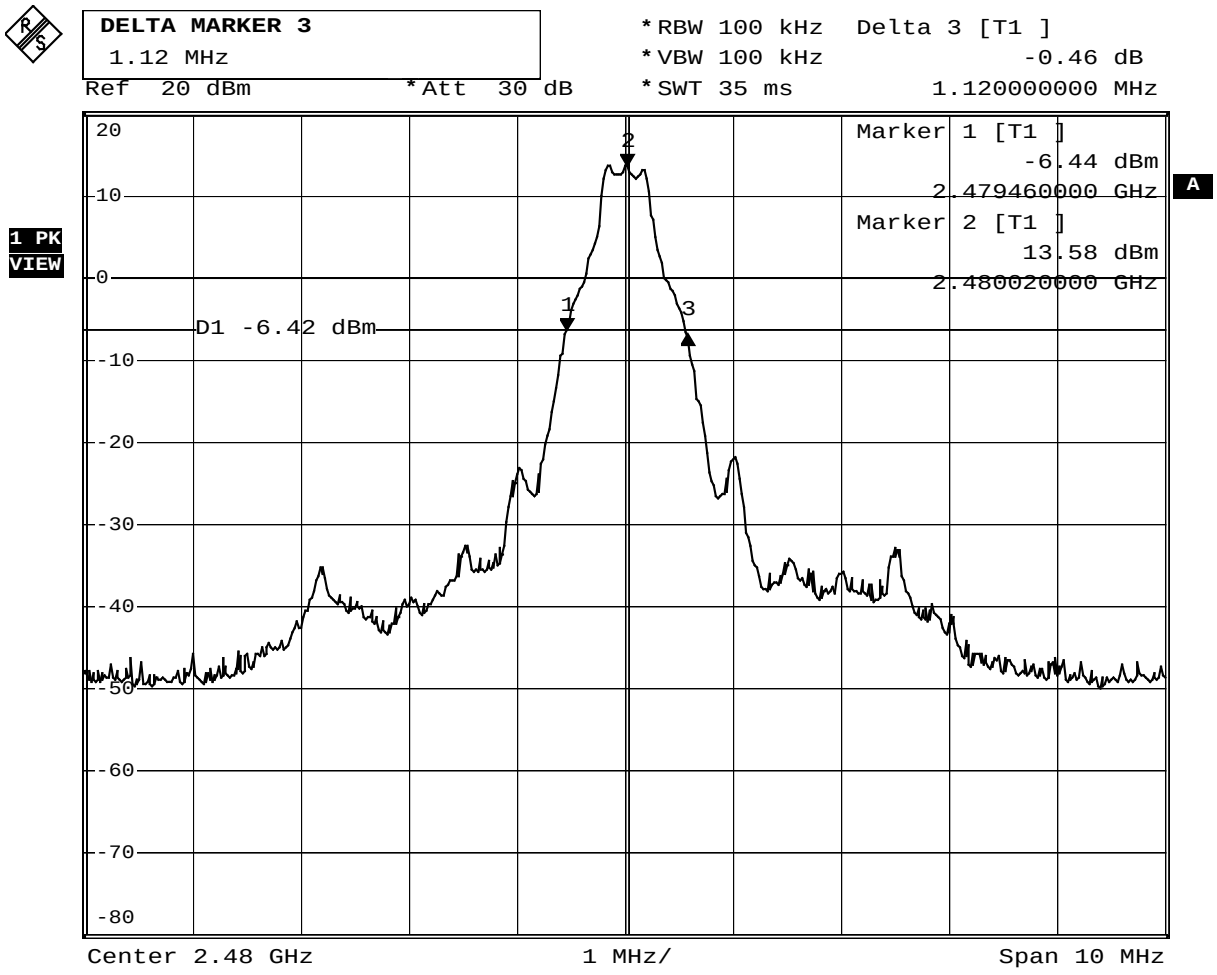


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

QPSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480.00	1.12	--	Pass

Channel 78

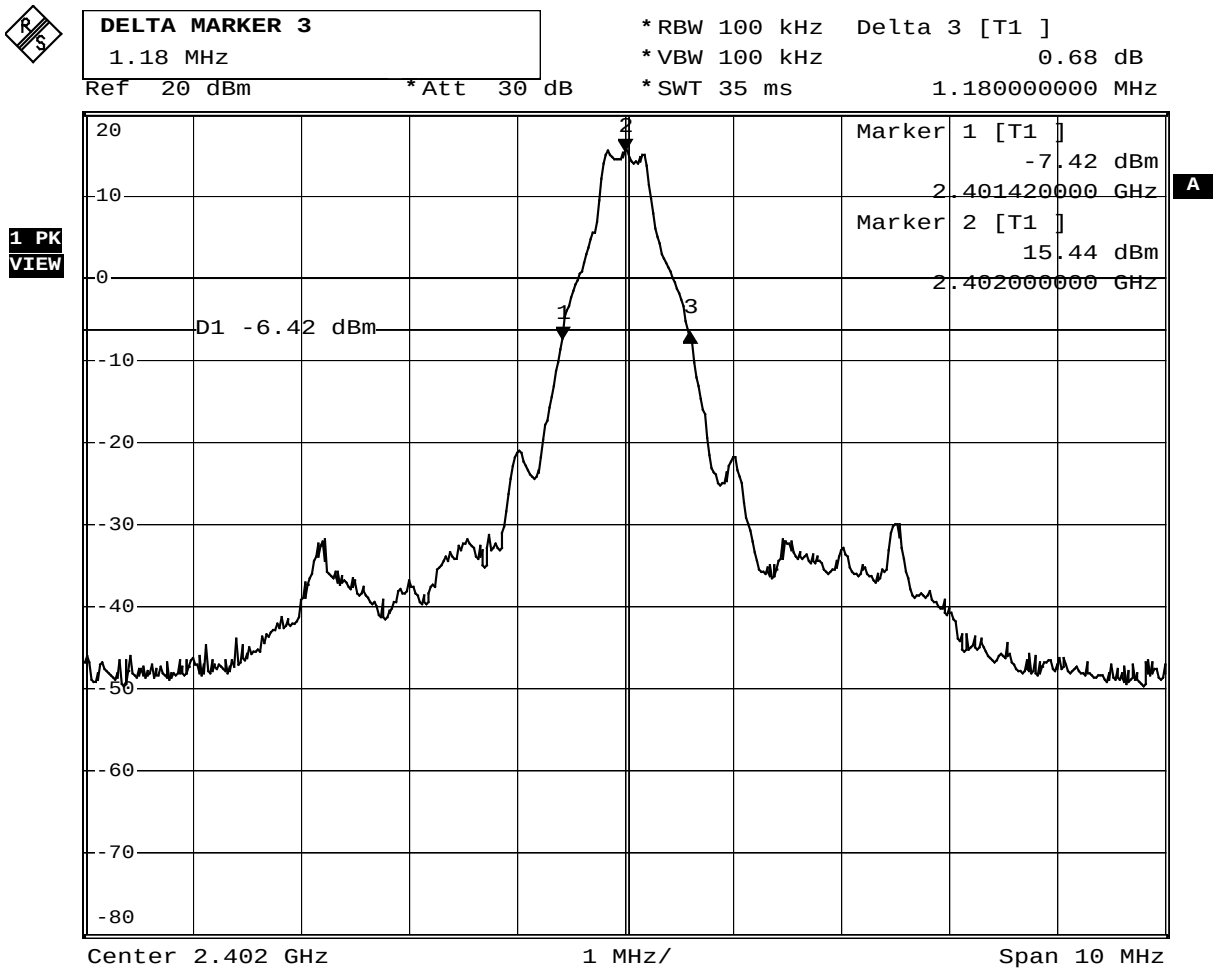


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

PSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402.00	1.18	--	Pass

Channel 00

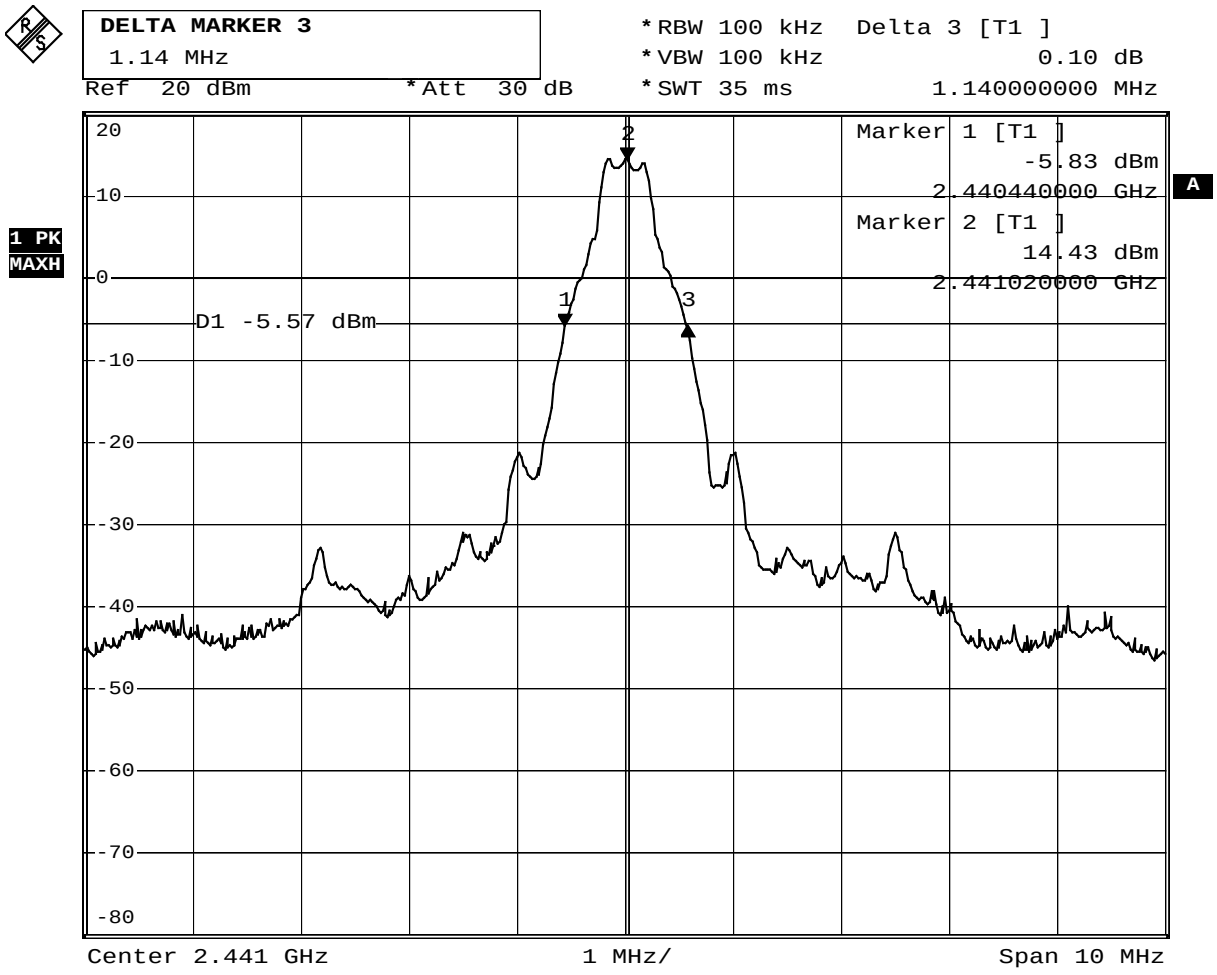


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

PSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441.00	1.14	--	Pass

Channel 39

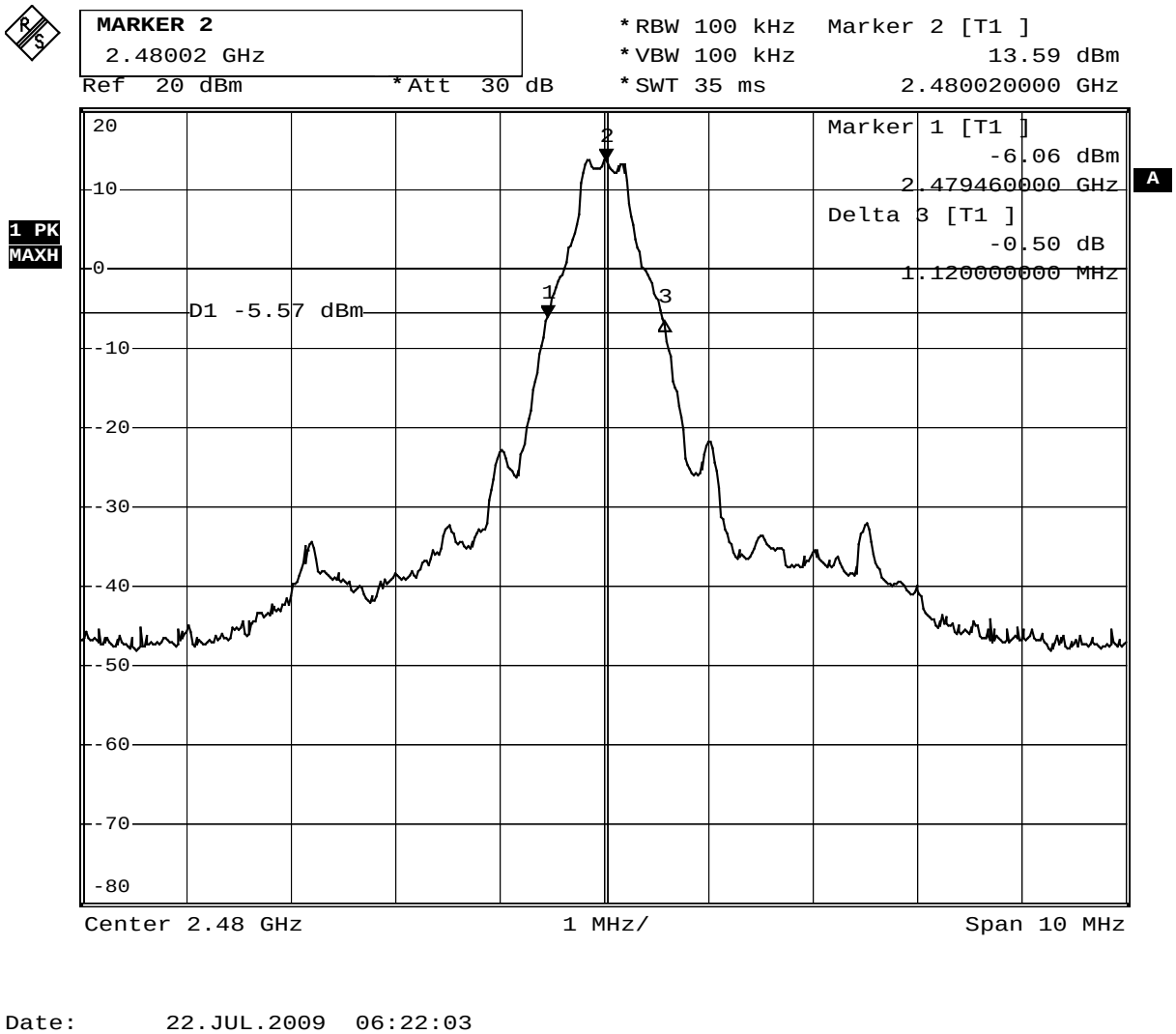


Product	Bluetooth modem		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

PSK Modulation, PRBS Packet Type

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480.00	1.12	--	Pass

Channel 78



10. Dwell Time

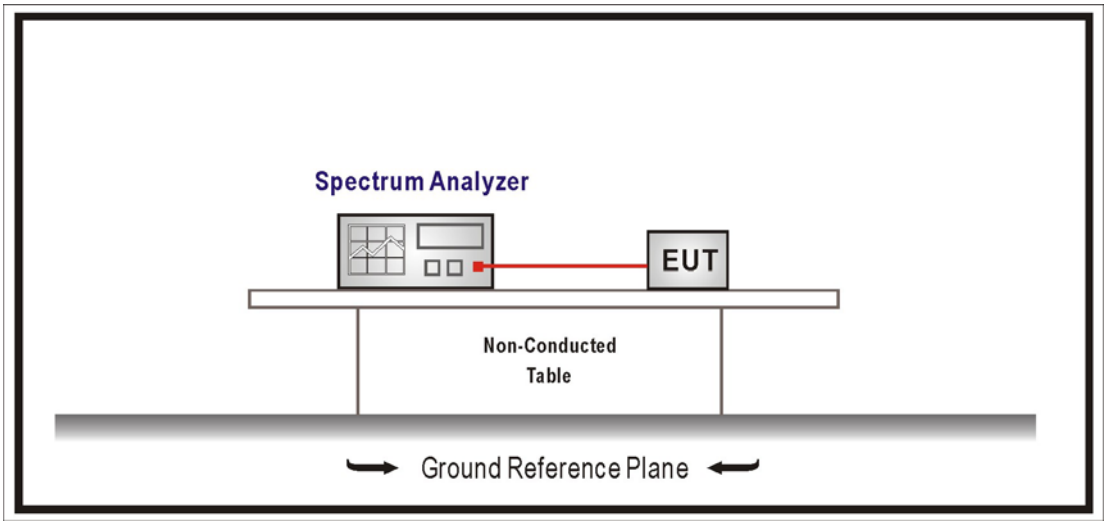
10.1. Test Equipment

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 ≥ 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 15.247: 2008

10.6. Test Result

Product	Bluetooth modem		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit		
Date of Test	2009/07/22	Test Site	No.1 OATS

Occupancy Time of Frequency Hopping System

A) 2402MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 4/5msec=800 /sec

The Maximum Occupancy Time Within 31.6sec: 0.00056*(800/79)*31.6=0.1792sec。

B) 2441MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 4/5msec=800 /sec

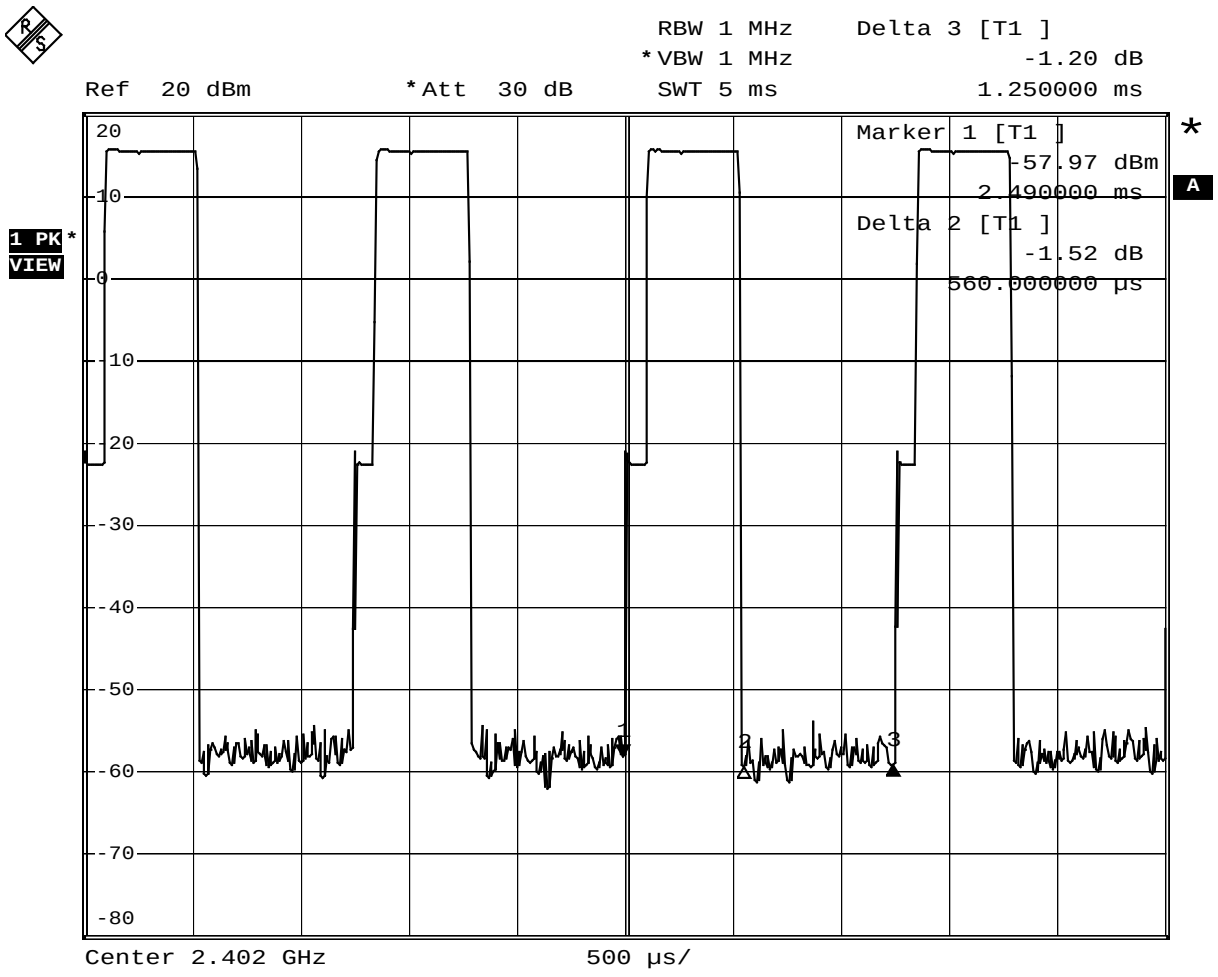
The Maximum Occupancy Time Within 31.6sec: 0.00056*(800/79)*31.6=0.1792sec。

C) 2480MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 4/5msec=800 /sec

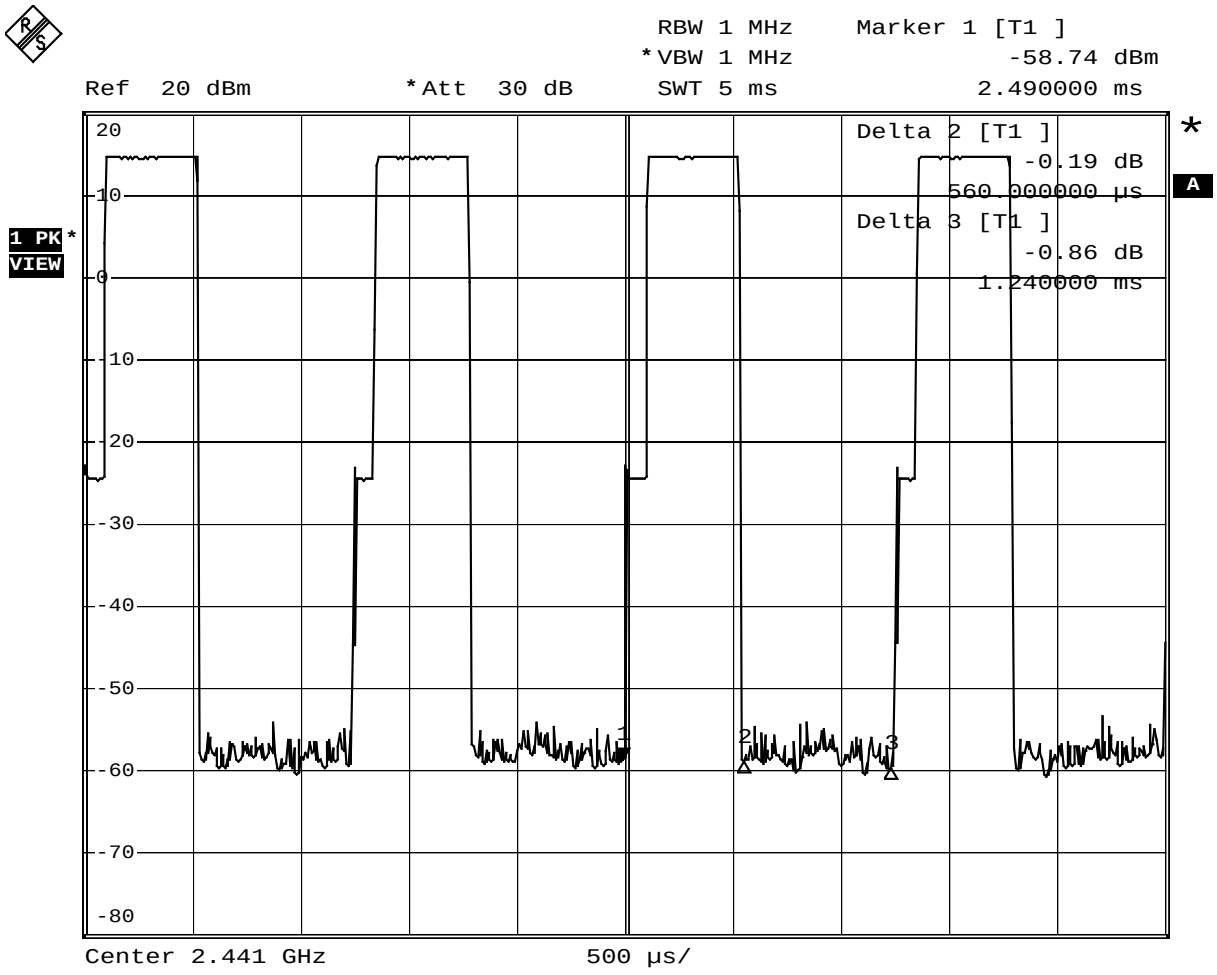
The Maximum Occupancy Time Within 31.6sec: 0.00056*(800/79)*31.6=0.1792sec。

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

Hop rate-2402MHz

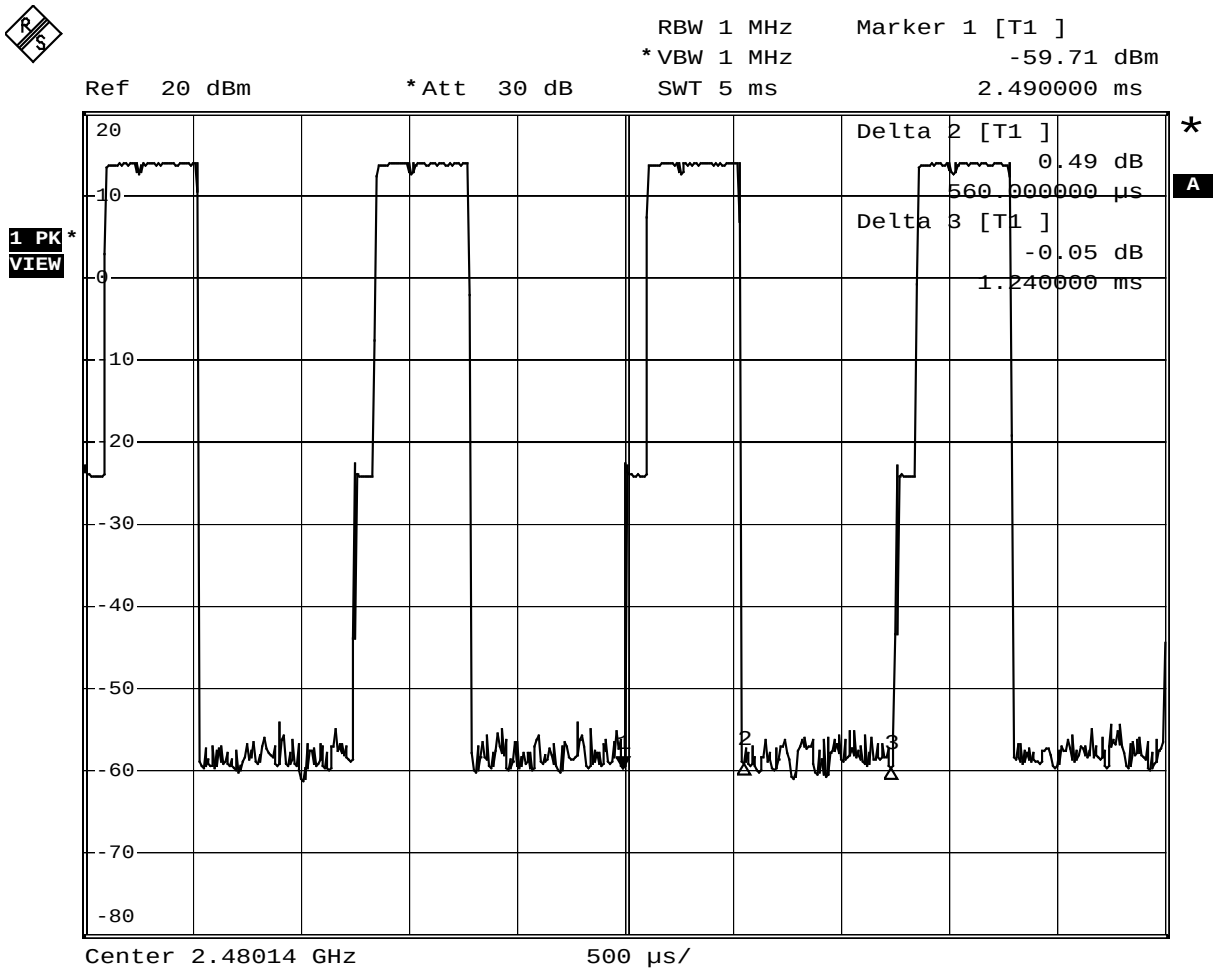


Hop rate-2441MHz



Date: 22.JUL.2009 07:04:36

Hop rate-2480MHz



Date: 22.JUL.2009 07:00:52

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