Test Report

Product Name : Bluetooth

Model No. : MS-6837D

FCC ID. : I4L-MS6837D

Applicant : MICRO-STAR INT'L Co., LTD.

Address : No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.

Date of Receipt : March 16, 2006

Issued Date : March 23, 2006

Report No. : 063L105-RF-US-P06V01

Test Report Certification

Issued Date: March 23, 2006
Report No.: 063L105-RF-US-P06V01

Product Name	:	Bluetooth
Applicant	:	MICRO-STAR INT'L Co., LTD.
Address	:	No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.
Manufacturer	:	MICRO-STAR INT'L Co., LTD.
Model No.	:	MS-6837D
FCC ID.	:	I4L-MS6837D
Rated Voltage	:	AC 120V/60Hz
EUT Voltage	:	DC 5V
Trade Name	:	MSI
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2005
		CISPR 22 Edition 4.1: 2004
		ANSI C63.4: 2003
Test Result	:	Complied

NVLAP Lab Code: 200533-0

The Test Results relate only to the samples tested.
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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Anita Chou
(Anita Chou)

Tested By : Tom Hsieh
(Tom Hsieh)

Approved By : Gene Chang
(Gene Chang)

CNLA 0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Bluetooth
Trade Name	MSI
FCC ID.	I4L-MS6837D
Model No.	MS-6837D
Frequency Range	2402 – 2480MHz
Channel Number	79
Type of Modulation	Frequency Hopping Spread Spectrum
Antenna Type	Connector / Printed
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Model No.	Part No.	Peak Gain
1	wgt	H12Y	TW12YBLP101A	0.56dBi
2	wgt	P72	N/A	-1.13dBi
3	MSI	MS-6837D	--	0.00dBi

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 hopsets 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. The EUT is a Bluetooth module with a built-in 2.4GHz transceiver.
2. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle, and highest frequency are selected to perform the test.
4. QuieTek verified among construction and function in typical operation, then shown in this test report.

1.2. Operational Description

The EUT is a Bluetooth module with 79 channels.

This device provides wireless technology that revolutionizes personal connectivity. It is the solution for the seamless integration of Bluetooth technology into personal computer enabling short-range wireless connections between desktop/laptop computers, Bluetooth-enabled peripherals, and portable handheld devices.

Test Mode:	Mode 1: Transmitter (Antenna 1) Mode 2: Transmitter (Antenna 3)

1.3. Tested System Details

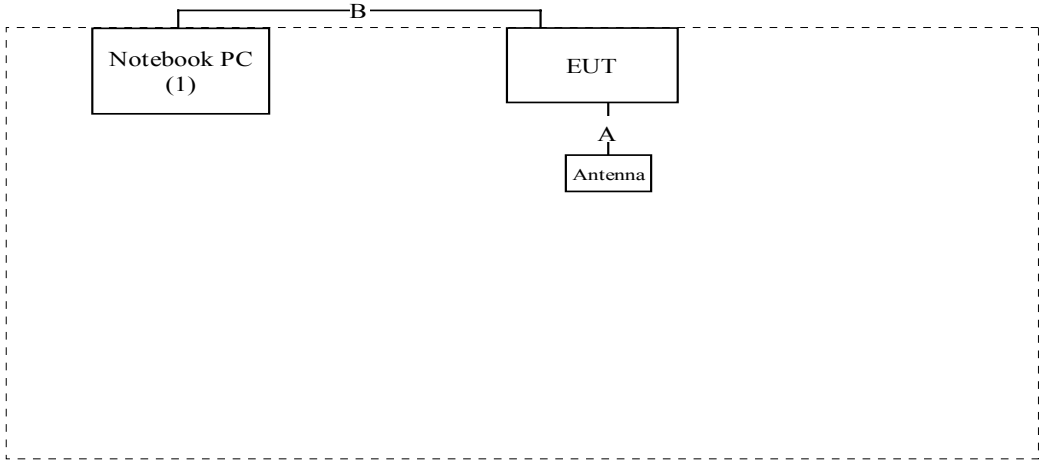
The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
(1)	Notebook PC	DELL	PPT	N/A	DoC	Non-Shielded, 0.8m

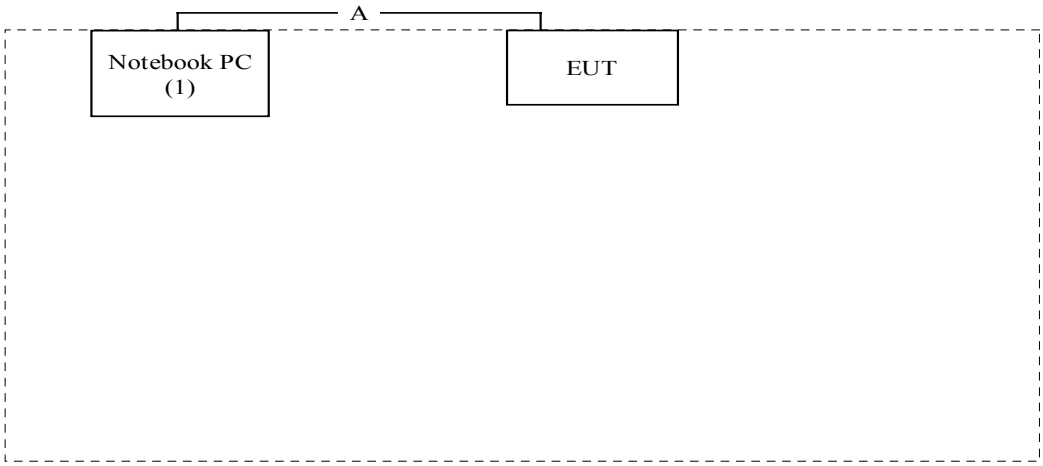
Signal Cable Type		Signal cable Description
A.	USB Cable	Shielded, 1.5m
B.	Antenna Cable	Non-shielded, 0.01m

1.4. Configuration of Tested System

Antenna 1



Antenna 3



1.5. EUT Exercise Software

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

(2) Execute the BlueTest program (v1.2.1) on the notebook.

(3) Configure the test channel, the power level, and the packet length=DH5.

(4) Press OK to start the continuous transmission.

(5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: June 22, 2001 File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Reference 31040/SIT1300F2

July 03, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200533-0

0914

Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
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E-Mail : service@quietek.com

NVLAP Lab Code: 200533-0

2. Conducted Emission

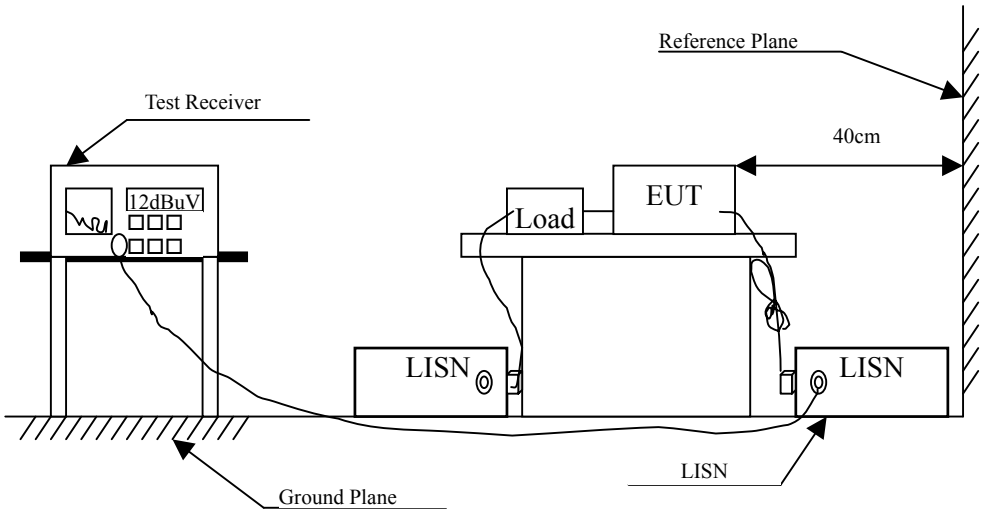
2.1. Test Equipment

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

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2005	
2	L.I.S.N.	R & S	ENV4200 / 848411/10	Feb., 2006	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2005	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2006	
5	No.1 Shielded Room			N/A	

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 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

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

2.4. Test Procedure

The EUT and 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. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

2.6. Test Result of Conducted Emission

Product : Bluetooth
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.209	0.585	39.430	40.015	-24.299	64.314
0.298	0.300	31.930	32.230	-29.541	61.771
0.691	0.310	23.880	24.190	-31.810	56.000
0.876	0.310	27.500	27.810	-28.190	56.000
3.384	0.380	8.490	8.870	-47.130	56.000
9.818	0.590	22.740	23.330	-36.670	60.000
Average					
0.209	0.585	19.630	20.215	-34.099	54.314
0.298	0.300	10.930	11.230	-40.541	51.771
0.691	0.310	12.490	12.800	-33.200	46.000
0.876	0.310	16.990	17.300	-28.700	46.000
3.384	0.380	0.480	0.860	-45.140	46.000
9.818	0.590	17.010	17.600	-32.400	50.000

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

Product : Bluetooth
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.220	0.300	38.710	39.010	-24.990	64.000
0.703	0.310	29.120	29.430	-26.570	56.000
0.771	0.320	28.190	28.510	-27.490	56.000
0.828	0.320	27.030	27.350	-28.650	56.000
1.055	0.320	21.520	21.840	-34.160	56.000
15.869	0.900	34.220	35.120	-24.880	60.000
Average					
0.220	0.300	16.350	16.650	-37.350	54.000
0.703	0.310	18.100	18.410	-27.590	46.000
0.771	0.320	18.230	18.550	-27.450	46.000
0.828	0.320	16.190	16.510	-29.490	46.000
1.055	0.320	11.300	11.620	-34.380	46.000
15.869	0.900	32.880	33.780	-16.220	50.000

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

Product : Bluetooth
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.150	0.300	49.430	49.730	-16.270	66.000
0.723	0.310	33.270	33.580	-22.420	56.000
0.883	0.310	26.300	26.610	-29.390	56.000
15.742	1.010	33.360	34.370	-25.630	60.000
21.115	1.120	31.490	32.610	-27.390	60.000
28.334	1.200	34.090	35.290	-24.710	60.000
Average					
0.150	0.300	28.390	28.690	-27.310	56.000
0.723	0.310	19.310	19.620	-26.380	46.000
0.883	0.310	14.740	15.050	-30.950	46.000
15.742	1.010	31.750	32.760	-17.240	50.000
21.115	1.120	25.150	26.270	-23.730	50.000
28.334	1.200	28.340	29.540	-20.460	50.000

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

Product : Bluetooth
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 2: Transmitter (Antenna 3)(Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.185	0.300	45.340	45.640	-19.360	65.000
0.293	0.300	32.170	32.470	-29.444	61.914
0.770	0.320	28.880	29.200	-26.800	56.000
0.843	0.320	29.120	29.440	-26.560	56.000
0.940	0.320	24.330	24.650	-31.350	56.000
1.568	0.340	27.550	27.890	-28.110	56.000
Average					
0.185	0.300	23.240	23.540	-31.460	55.000
0.293	0.300	12.430	12.730	-39.184	51.914
0.770	0.320	19.150	19.470	-26.530	46.000
0.843	0.320	19.470	19.790	-26.210	46.000
0.940	0.320	13.150	13.470	-32.530	46.000
1.568	0.340	18.480	18.820	-27.180	46.000

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

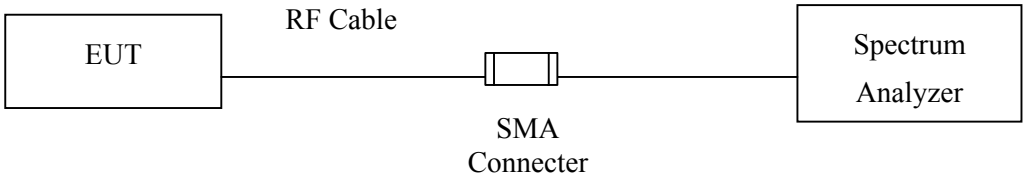
3.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2005

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 1Watt.

3.4. Uncertainty

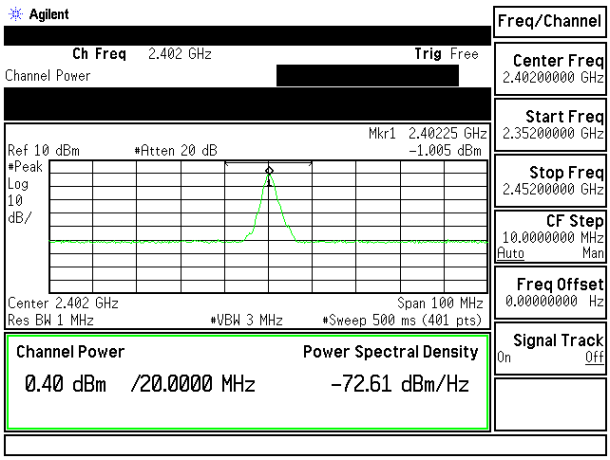
The measurement uncertainty is defined as ± 1.27 dB

3.5. Test Result of Peak Power Output

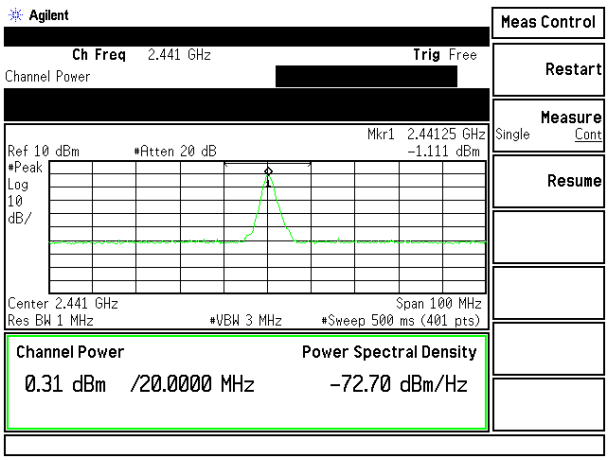
Product : Bluetooth
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	0.40dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	0.31dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	0.47dBm	1 Watt= 30 dBm	Pass

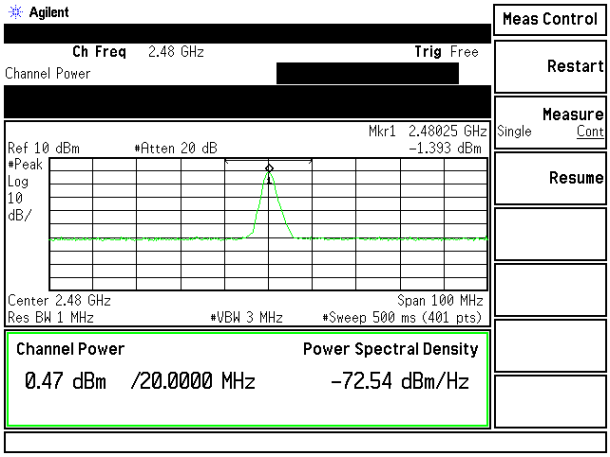
Channel 00



Channel 39



Channel 78



4. Radiated Emission

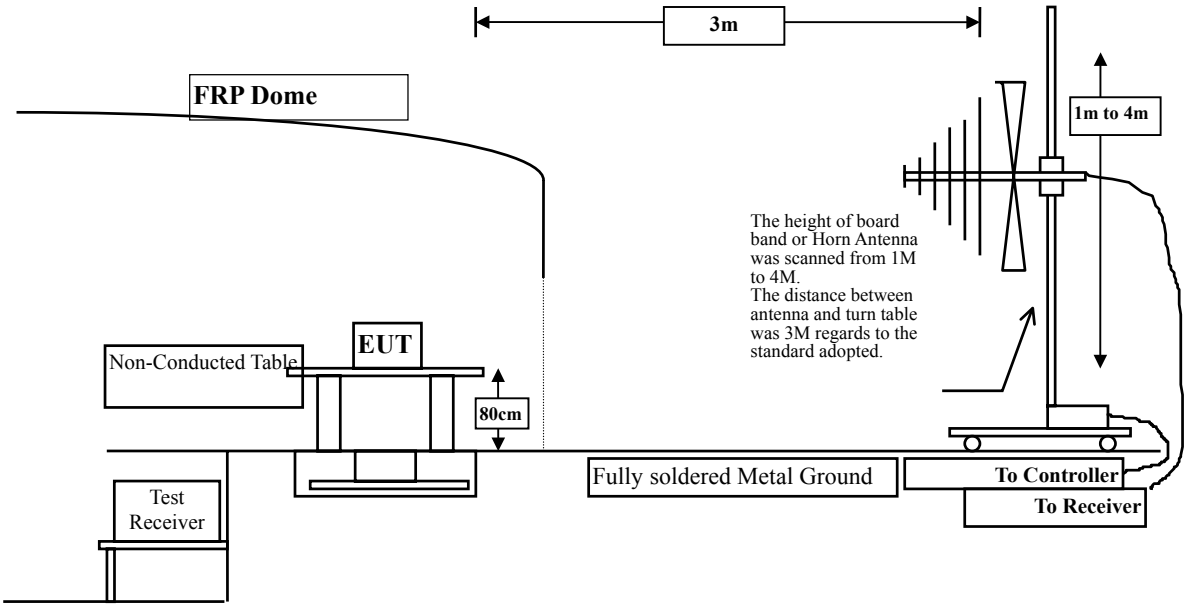
4.1. Test Equipment

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

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☐Site # 1	Test Receiver	R & S	ESVS 10 / 834468/003	May, 2005
	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2005
	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2005
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2005
☐Site # 2	Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2005
	Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2005
	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2005
	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2005
	Horn Antenna	ETS	3115 / 0005-6160	Sep., 2005
	Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2005
☒Site # 3	Test Receiver	R & S	ESI 26 / 838786/004	May, 2005
	Spectrum Analyzer	Advantest	R3162 / 100803480	May, 2005
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2005
	Horn Antenna	Schwarzbeck	9120D / 305, 306	July, 2005
	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2005
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2005
	Pre-Amplifier	HP	8449B / 3008A01123	July, 2005
	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P	May, 2005

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.

4.2. Test Setup



4.3. Limits

➢ **General Radiated Emission Limits**

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

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

Remarks: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT 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.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field dtrength of harmonics measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

The frequency range from 30MHz to 10th harminics is checked.

4.5. Uncertainty

The measurement uncertainty above 1GHz is defined as ± 3.9 dB

under 1GHz is defined as ± 3.19 dB

4.6. Test Result of Radiated Emission

Product : Bluetooth
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 00)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	48.951	52.614	-21.356	74.000
7206.000	9.357	38.351	47.707	-26.263	74.000
9608.000	11.842	37.381	49.223	-24.747	74.000
Average Detector:					
Vertical					
Peak Detector:					
4804.000	3.663	53.061	56.724	-17.246	74.000
7206.000	9.357	38.578	47.934	-26.036	74.000
9608.000	11.842	37.723	49.565	-24.405	74.000
Average Detector:					
4804.012	3.663	41.799	45.462	-8.508	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4882.250	3.922	49.762	53.684	-20.286	74.000
7323.250	9.657	37.612	47.269	-26.701	74.000
9764.250	11.797	37.488	49.286	-24.684	74.000
Average Detector:					
Vertical					
Peak Detector:					
4882.250	3.922	56.125	60.047	-13.923	74.000
7323.250	9.657	37.826	47.483	-26.487	74.000
9764.250	11.797	37.315	49.113	-24.857	74.000
Average Detector:					
4882.012	3.921	39.273	43.194	-10.776	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 78)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	4.197	48.527	52.723	-21.247	74.000
7440.000	9.951	37.324	47.275	-26.695	74.000
9920.000	11.856	36.902	48.758	-25.212	74.000
Average Detector:					
Vertical					
Peak Detector:					
4960.000	4.197	54.006	58.202	-15.768	74.000
7440.000	9.951	37.221	47.172	-26.798	74.000
9920.000	11.856	36.188	48.044	-25.926	74.000
Average Detector:					
4960.000	4.197	37.382	41.578	-12.392	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 00)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	51.999	55.662	-18.308	74.000
7206.000	9.357	37.562	46.918	-27.052	74.000
9608.000	11.842	36.357	48.199	-25.771	74.000
Average Detector:					
4804.000	3.663	35.512	39.175	-14.795	54.000
Vertical					
Peak Detector:					
4804.000	3.663	55.359	59.022	-14.948	74.000
7206.000	9.357	37.295	46.651	-27.319	74.000
9608.000	11.842	37.768	49.610	-24.360	74.000
Average Detector:					
4804.000	3.663	39.523	43.186	-10.784	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.921	50.088	54.009	-19.961	74.000
7323.000	9.657	38.389	48.046	-25.924	74.000
9764.000	11.798	36.686	48.484	-25.486	74.000
Average Detector:					
4882.000	3.921	36.329	40.250	-13.720	54.000
Vertical					
Peak Detector:					
4882.000	3.921	56.318	60.239	-13.731	74.000
7323.000	9.657	37.562	47.219	-26.751	74.000
9764.000	11.798	37.313	49.111	-24.859	74.000
Average Detector:					
4882.000	3.921	39.667	43.588	-10.382	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3)(Channel 78)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4960.000	4.197	51.091	55.287	-18.683	74.000
7440.000	9.951	36.596	46.547	-27.423	74.000
9920.000	11.856	36.325	48.181	-25.789	74.000
Average Detector:					
4960.000	4.197	36.100	40.296	-13.674	54.000
Vertical					
Peak Detector:					
4960.000	4.197	53.030	57.226	-16.744	74.000
7440.000	9.951	35.888	45.839	-28.131	74.000
9920.000	11.856	38.004	49.860	-24.110	74.000
Average Detector:					
4960.000	4.197	37.590	41.786	-12.184	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz。
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz。
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : Bluetooth
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 00)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
112.400	13.042	11.200	24.242	-19.258	43.500
119.700	12.953	12.810	25.763	-17.737	43.500
207.010	9.773	20.300	30.073	-13.427	43.500
468.900	18.781	19.500	38.281	-7.719	46.000
481.100	18.781	11.240	30.021	-15.979	46.000
599.800	19.991	16.400	36.391	-9.609	46.000
Vertical					
112.400	11.958	15.590	27.548	-15.952	43.500
211.800	10.287	15.200	25.487	-18.013	43.500
226.400	10.798	18.180	28.978	-17.022	46.000
500.450	18.354	14.520	32.874	-13.126	46.000
505.300	18.595	13.400	31.995	-14.005	46.000
966.100	22.938	16.710	39.648	-14.352	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. " " means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
112.500	13.017	16.600	29.617	-13.883	43.500
226.400	10.511	18.420	28.931	-17.069	46.000
250.670	13.341	18.230	31.571	-14.429	46.000
364.600	15.769	17.830	33.599	-12.401	46.000
500.450	18.352	14.520	32.872	-13.128	46.000
599.900	20.003	16.420	36.422	-9.578	46.000
Vertical					
114.880	11.810	14.260	26.070	-17.430	43.500
207.100	10.042	10.340	20.382	-23.118	43.500
211.880	10.279	10.850	21.129	-22.371	43.500
468.900	18.457	12.950	31.407	-14.593	46.000
536.700	19.708	11.270	30.978	-15.022	46.000
599.900	21.902	13.340	35.241	-10.759	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. “ ” means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 78)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
112.450	13.038	15.340	28.378	-15.122	43.500
204.500	9.822	13.400	23.222	-20.278	43.500
384.050	15.761	10.590	26.351	-19.649	46.000
536.830	19.050	15.640	34.690	-11.310	46.000
687.170	21.022	12.740	33.762	-12.238	46.000
696.900	20.880	13.250	34.131	-11.869	46.000
Vertical					
112.500	11.937	11.200	23.137	-20.363	43.500
207.100	10.042	10.320	20.362	-23.138	43.500
231.100	11.296	12.970	24.266	-21.734	46.000
250.670	13.346	18.040	31.386	-14.614	46.000
481.100	18.586	11.240	29.826	-16.174	46.000
599.900	21.902	13.460	35.361	-10.639	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. “ ” means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3)(Channel 00)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
112.400	13.042	15.300	28.342	-15.158	43.500
204.600	9.806	16.100	25.906	-17.594	43.500
510.100	18.923	12.150	31.073	-14.927	46.000
665.300	20.692	13.200	33.892	-12.108	46.000
687.100	21.022	12.740	33.762	-12.238	46.000
696.800	20.891	13.600	34.491	-11.509	46.000
Vertical					
112.400	11.958	15.300	27.258	-16.242	43.500
481.100	18.586	11.640	30.226	-15.774	46.000
527.100	18.888	11.310	30.198	-15.802	46.000
536.100	19.642	12.600	32.242	-13.758	46.000
677.430	20.110	13.500	33.610	-12.390	46.000
696.100	20.536	13.100	33.636	-12.364	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. “ ” means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
112.600	12.976	13.700	26.676	-16.824	43.500
207.100	9.777	10.320	20.097	-23.403	43.500
231.100	10.996	13.340	24.336	-21.664	46.000
461.100	18.633	13.700	32.333	-13.667	46.000
481.100	18.781	13.750	32.531	-13.469	46.000
599.800	19.991	16.400	36.391	-9.609	46.000
Vertical					
207.100	10.042	14.700	24.742	-18.758	43.500
233.700	11.442	11.380	22.822	-23.178	46.000
250.600	13.346	13.590	26.936	-19.064	46.000
364.600	16.449	12.830	29.279	-16.721	46.000
505.100	18.595	14.300	32.895	-13.105	46.000
750.200	23.184	13.240	36.424	-9.576	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. “ ” means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Bluetooth
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 78)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
114.800	12.890	12.820	25.710	-17.790	43.500
207.010	9.773	10.690	20.463	-23.037	43.500
233.700	11.142	12.160	23.302	-22.698	46.000
481.100	18.781	10.690	29.471	-16.529	46.000
536.800	19.047	11.270	30.316	-15.684	46.000
599.800	19.991	13.340	33.331	-12.669	46.000
Vertical					
204.600	9.887	16.040	25.927	-17.573	43.500
488.300	18.566	11.210	29.776	-16.224	46.000
527.100	18.888	11.340	30.228	-15.772	46.000
536.700	19.708	15.600	35.308	-10.692	46.000
687.100	20.364	12.700	33.064	-12.936	46.000
696.700	20.633	13.620	34.253	-11.747	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak. Measurement above 1GHz is performed with peak and/or average as necessary.
2. " " means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

5. Band Edge

5.1. Test Equipment

The following test equipments are used during the band edge tests:

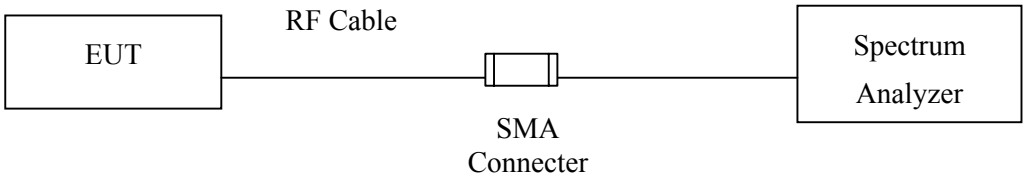
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2005
X	Spectrum Analyzer	Advantest	R3162 / 100803480	May, 2005
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2005
X	Horn Antenna	Schwarzbeck	9120D / 305, 306	July, 2005
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2005
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2005
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2005
X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P	May, 2005

No. 3 OATS

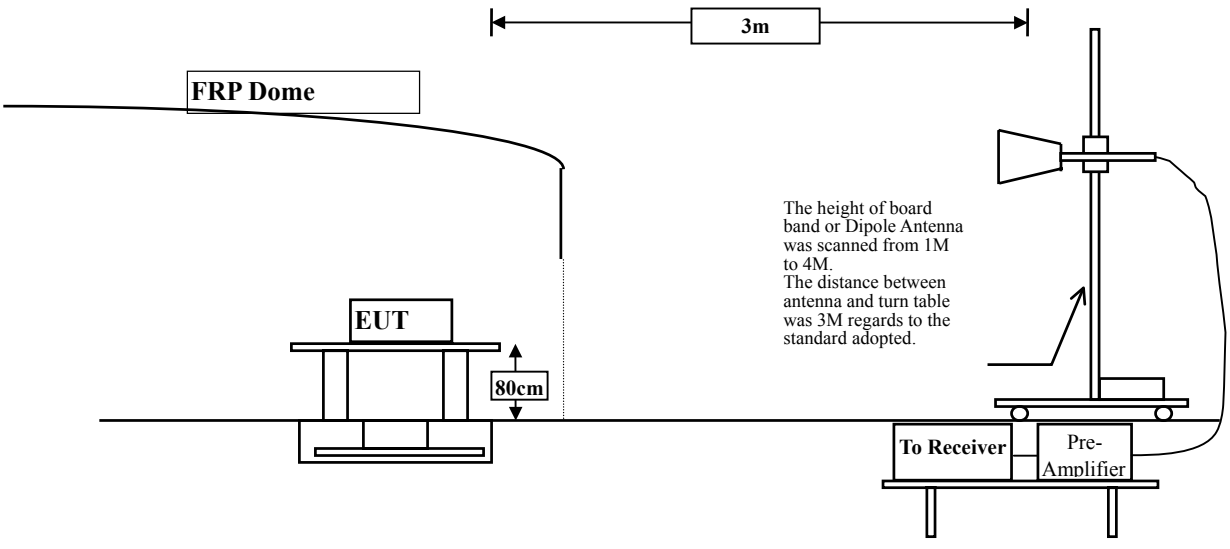
Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by "X" are used to measure the final test results.

5.2. Test Setup

RF Conducted Measurement:



RF Radiated 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 either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

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.
The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30)is 120 kHz, above 1GHz are 1 MHz.

5.5. Uncertainty

The measurement uncertainty above 1GHz is defined as ± 3.9 dB
under 1GHz is defined as ± 3.19 dB

5.6. Test Result of Band Edge

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 00)

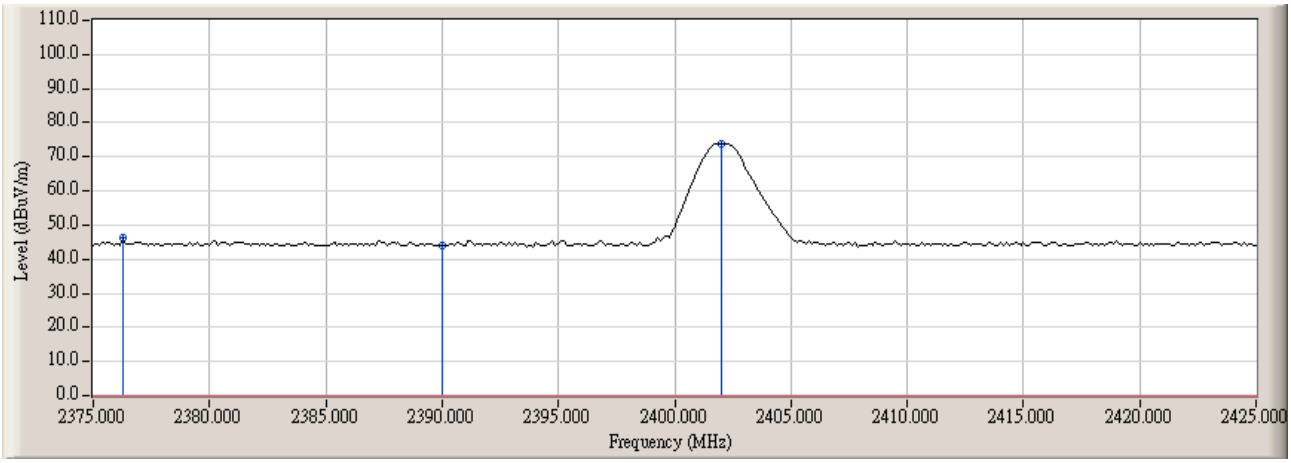
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2376.250	48.582	46.140	74.00	54.00	Pass
00 (Average)	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Horizontal)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 00)

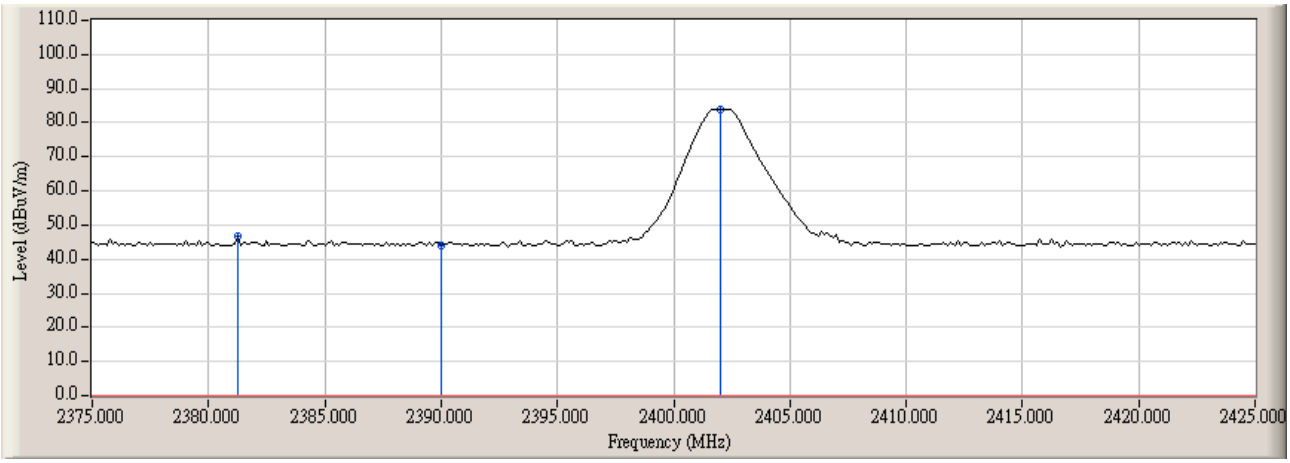
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2381.250	49.249	46.830	74.00	54.00	Pass
00(Average)	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Vertical)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 78)

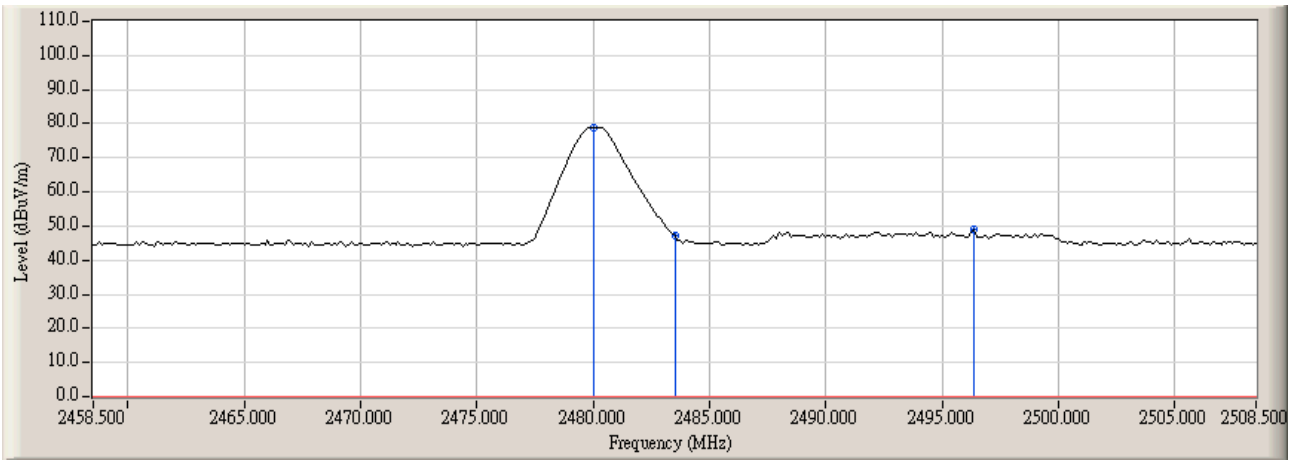
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2496.380	51.077	49.180	74.00	54.00	Pass
78(Average)	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Horizontal)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 78)

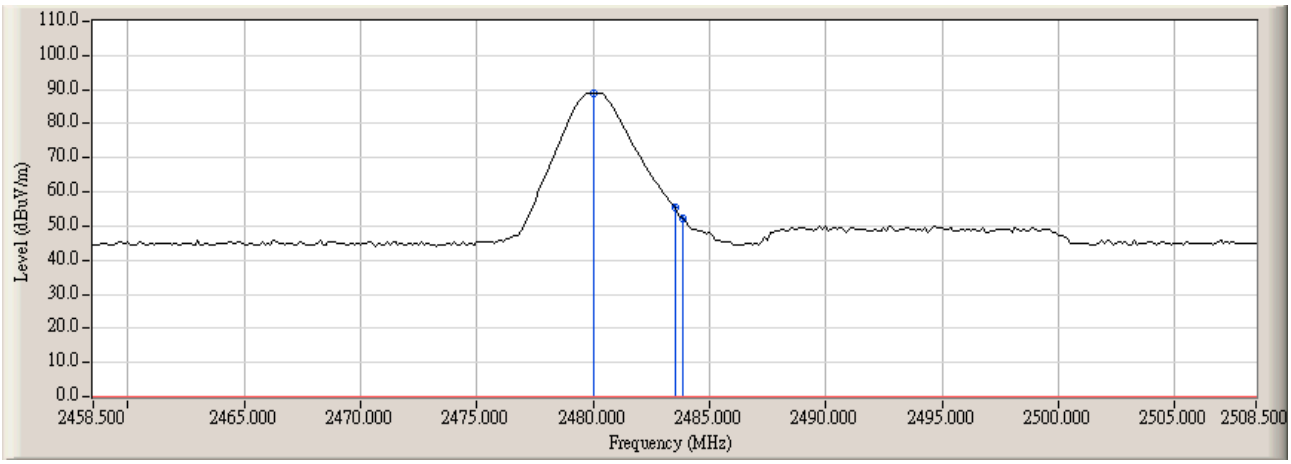
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2483.880	54.266	52.330	74.00	54.00	Pass
78(Average)	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Vertical)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3)(Channel 00)

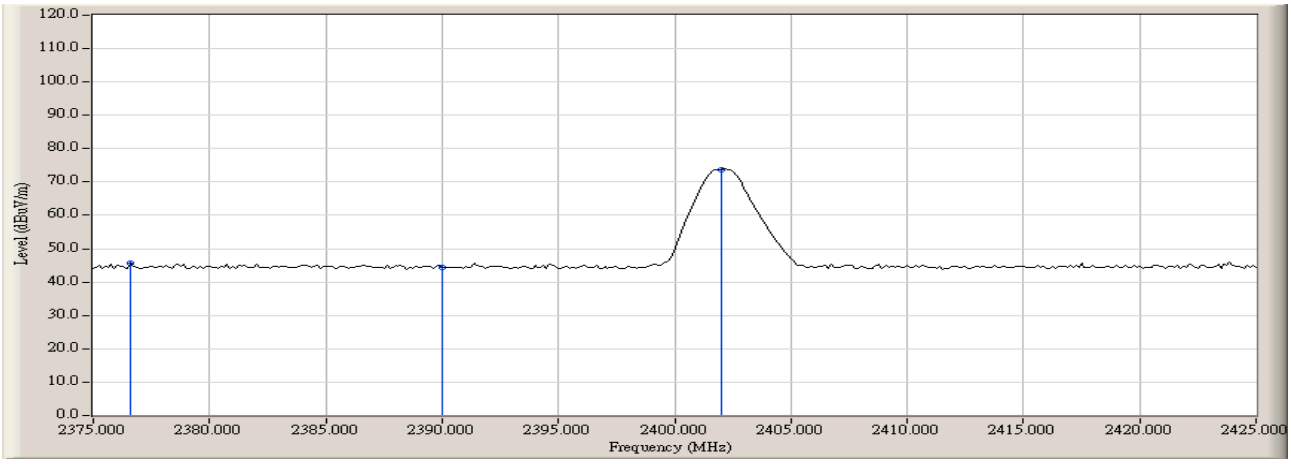
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2376.620	48.110	45.670	74.00	54.00	Pass
00 (Average)	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Horizontal)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 00)

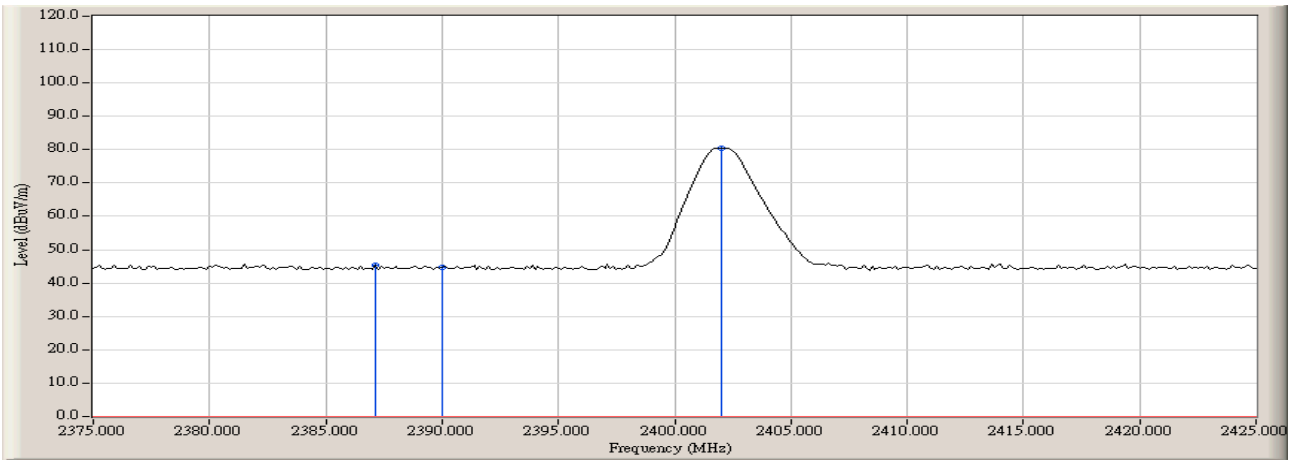
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2387.120	47.901	45.510	74.00	54.00	Pass
00(Average)	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Vertical)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 78)

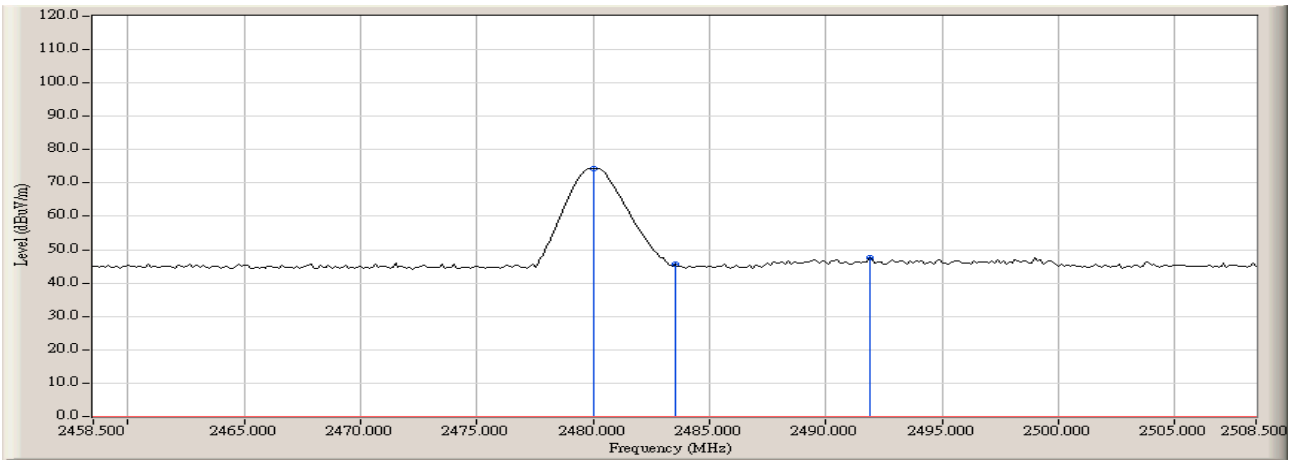
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2491.880	49.641	47.730	74.00	54.00	Pass
78(Average)	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Horizontal)



Note:
RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Bluetooth
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (Antenna 3) (Channel 78)

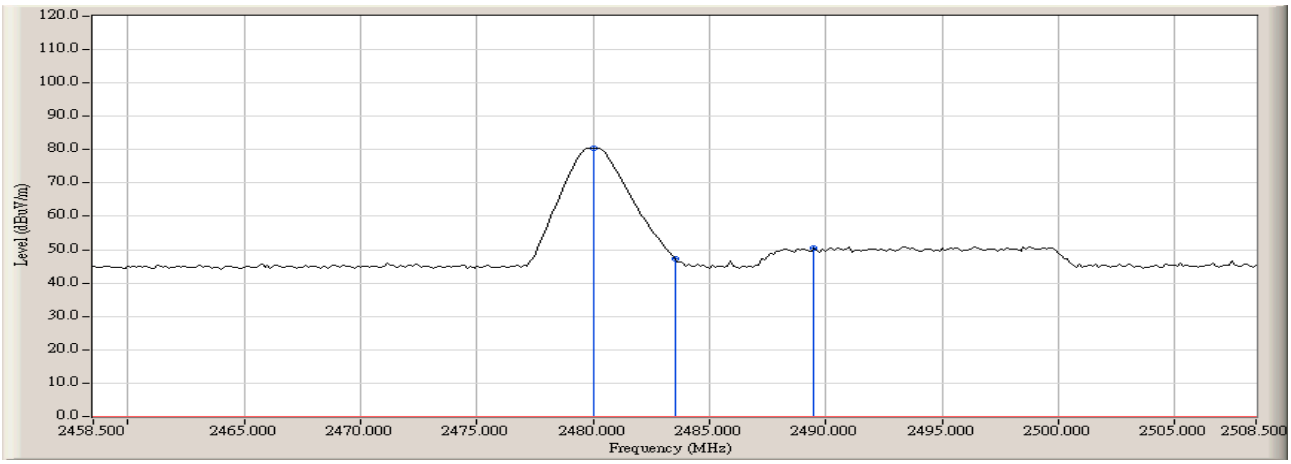
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2489.500	52.518	50.600	74.00	54.00	Pass
78(Average)	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Vertical)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

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

6. Channel Number

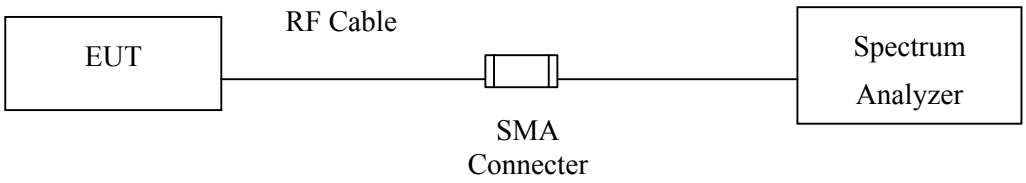
6.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2005

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

6.2. Test Setup



6.3. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

6.4. Uncertainty

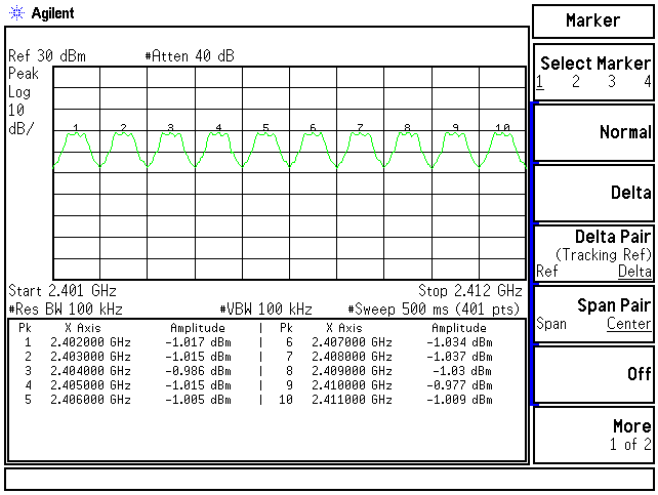
The measurement uncertainty is defined as ± 1.27dB

6.5. Test Result of Channel Number

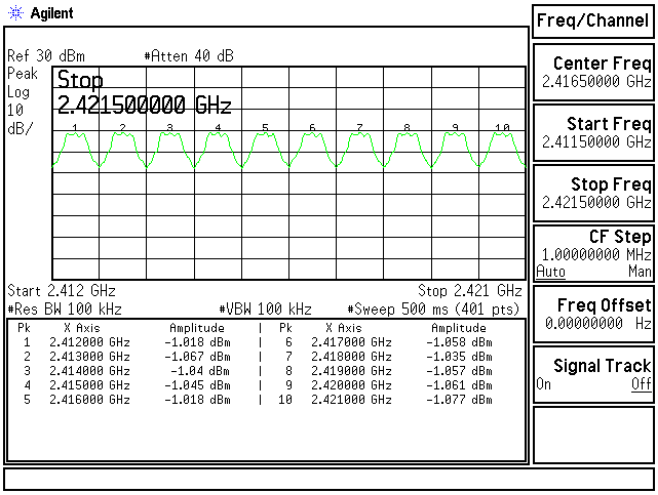
Product : Bluetooth
Test Item : Channel Number
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

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

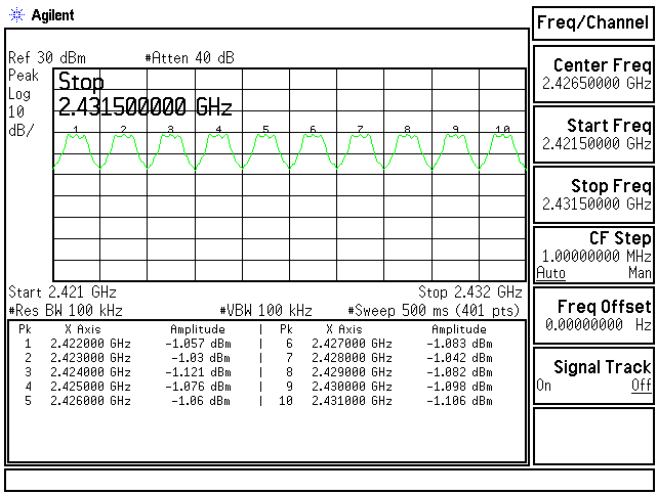
2402-2411MHz



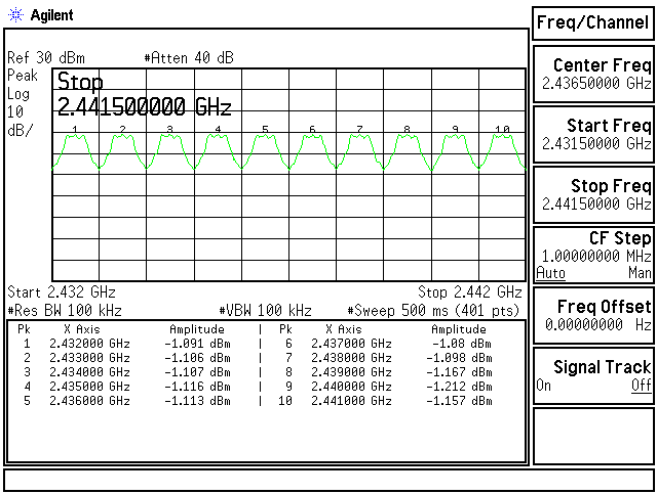
2412-2421MHz



2422-2431MHz

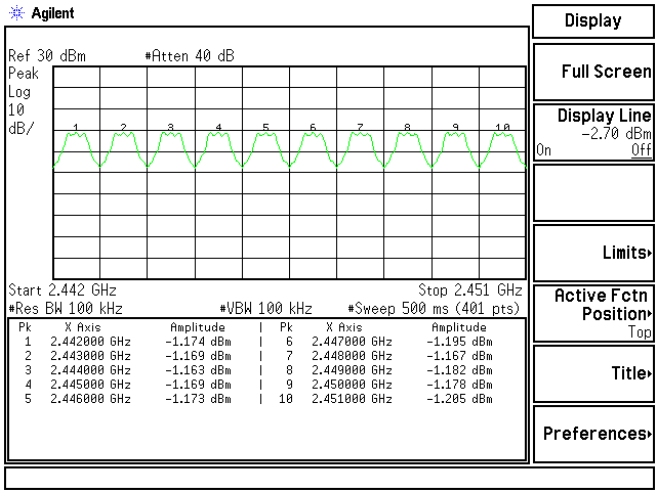


2432-2441MHz

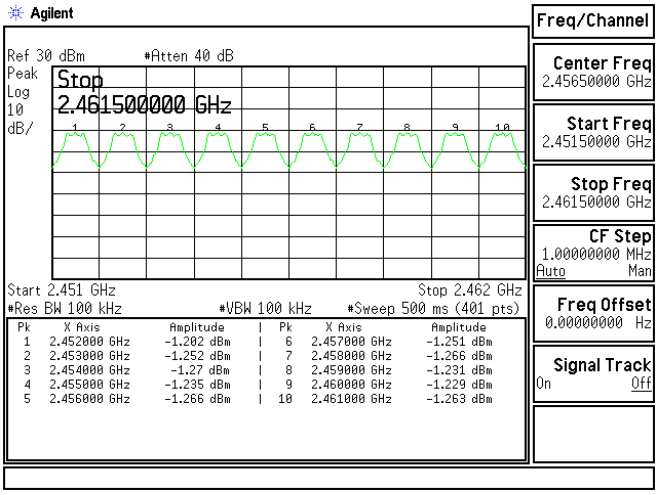


Product : Bluetooth
Test Item : Channel Number
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

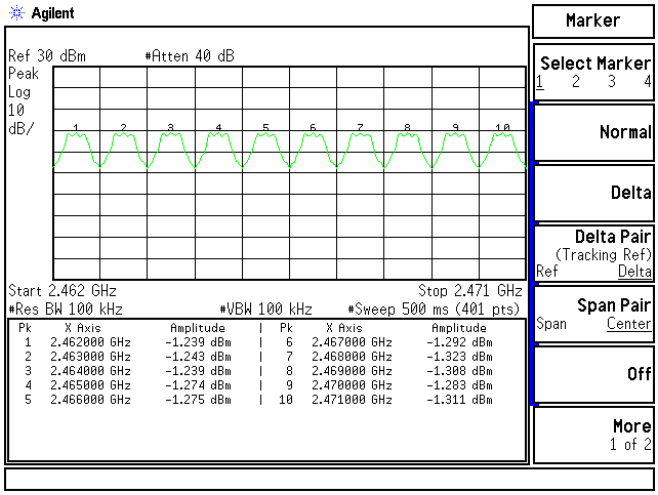
2442-2451MHz



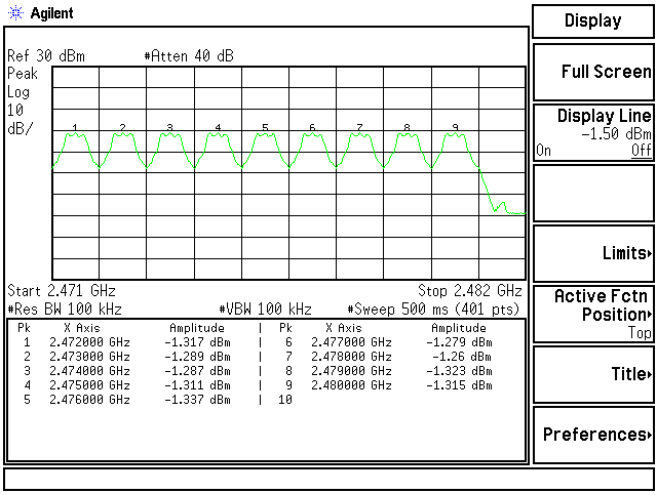
2452-2461MHz



2462-2471MHz



2472-2481MHz



7. Channel Separation

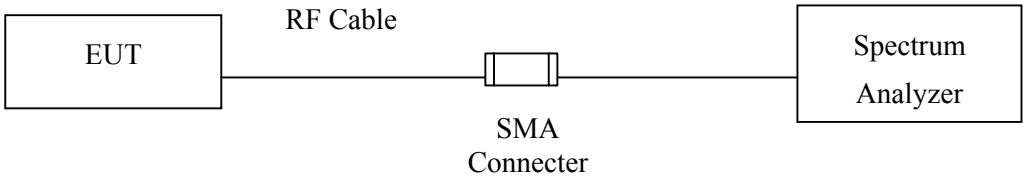
7.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2005

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

7.2. Test Setup



7.3. Limit

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.

7.4. Uncertainty

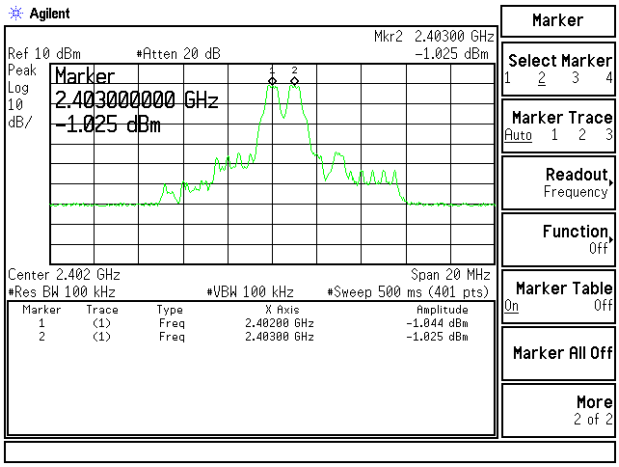
The measurement uncertainty is defined as ± 50Hz

7.5. Test Result of Channel Separation

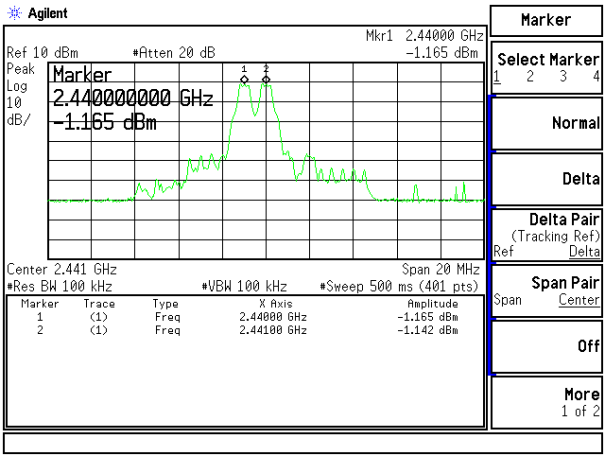
Product : Bluetooth
Test Item : Channel Separation
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

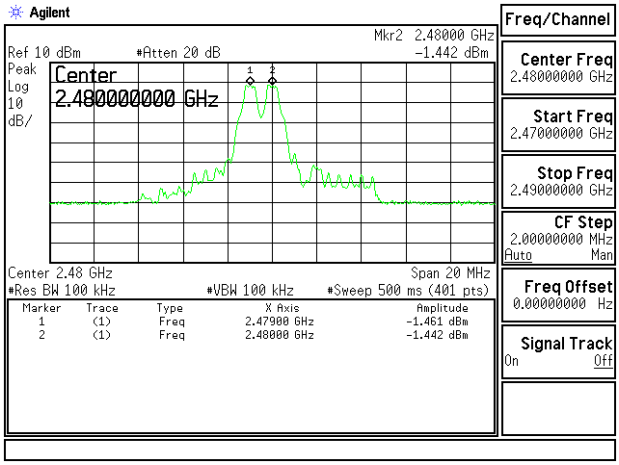
Channel 00 2402MHz



Channel 00 2441MHz



Channel 78 2480 MHz



8. Dwell Time

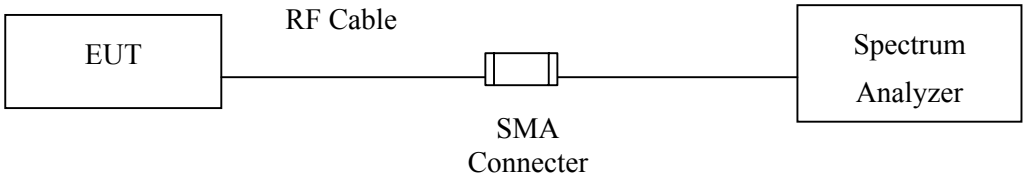
8.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2005

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

8.2. Test Setup



8.3. Limit

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

8.4. Uncertainty

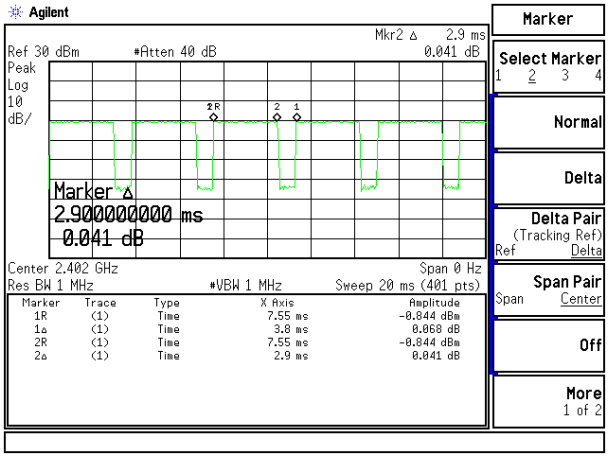
The measurement uncertainty is defined as ± 25msec

8.5. Test Result of Dwell Time

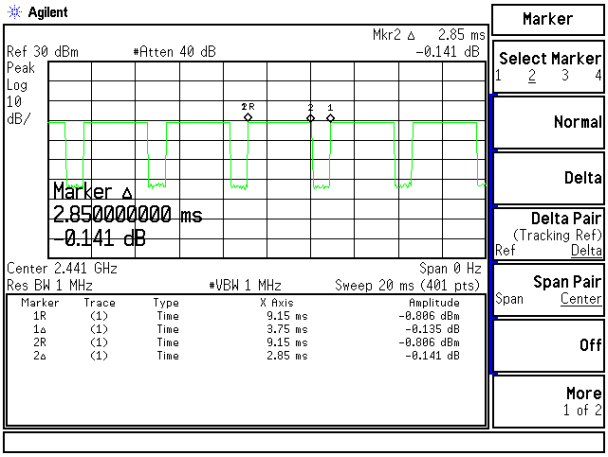
Product : Bluetooth
Test Item : Dwell Time
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)(Channel 00,39,78 –DH5)

Channel (MHz)	Measurement Level (ms)	Required Limit (msec)	Result
CH 00 2402	302.03	< 400	Pass
CH 39 2441	296.83	< 400	Pass
CH 78 2480	307.24	< 400	Pass

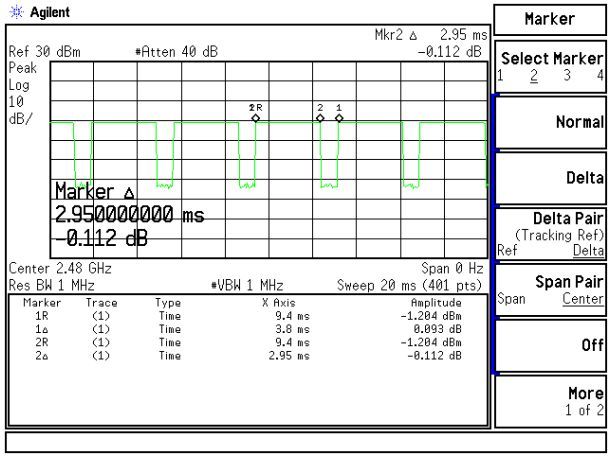
CH 00 2402MHz



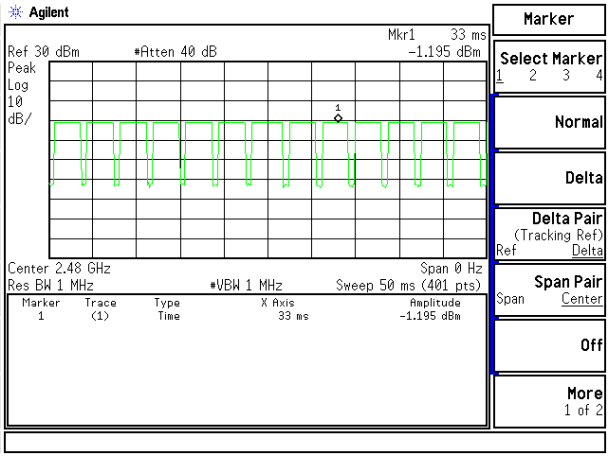
CH 39 2441MHz



CH 78 2480MHz



Total



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

Occupancy Time of Frequency Hopping System

Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 13/50msec=0.260 /sec

A) 2402MHz The Maximum Occupancy Time Within 31.6sec: (2900 μs*260)/(79*31.6)= 302.03msec。

B) 2441MHz The Maximum Occupancy Time Within 31.6sec: (2850 μs*260)/(79*31.6)= 296.83msec。

C) 2480MHz The Maximum Occupancy Time Within 31.6sec: (2950 μs*260)/(79*31.6)= 307.24msec。

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

PS: (1) From Bluetooth Specification， It Hops 1600 Times in 1sec。The Average Occupancy Time of Each 79 Channels is 1600/79 Times，Therefore，We Calculate The Maximum Occupancy Time (worse cars)As Below:

A) 2402Mhz The Occupancy Time of Each Pulse is 0.4msec，The Maximum Occupancy Time within 31.6sec is 0.4msec*1640/79*31.6=289.056msec

B) 2441MHz The Occupancy Time of Each Pulse is 0.4msec，The Maximum Occupancy Time within 31.6sec is 0.4msec*1640/79*31.6=289.056msec

C) 2480MHz The Occupancy Time of Each Pulse is 0.4msec，The Maximum Occupancy Time within 31.6sec is 0.4msec*1640/79*31.6=289.056msec

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

9. Occupied Bandwidth

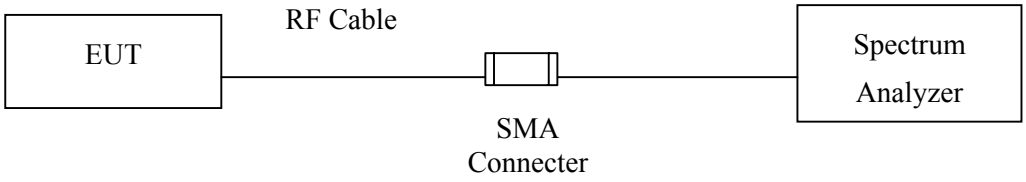
9.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	EMI Test Receiver	R&S	ESI 26 / 838786/004	May, 2005

Note: 1. All equipment upon which need to calibrated are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

9.2. Test Setup



9.3. Limits

The minimum bandwidth shall be at least 500kHz.

9.4. Uncertainty

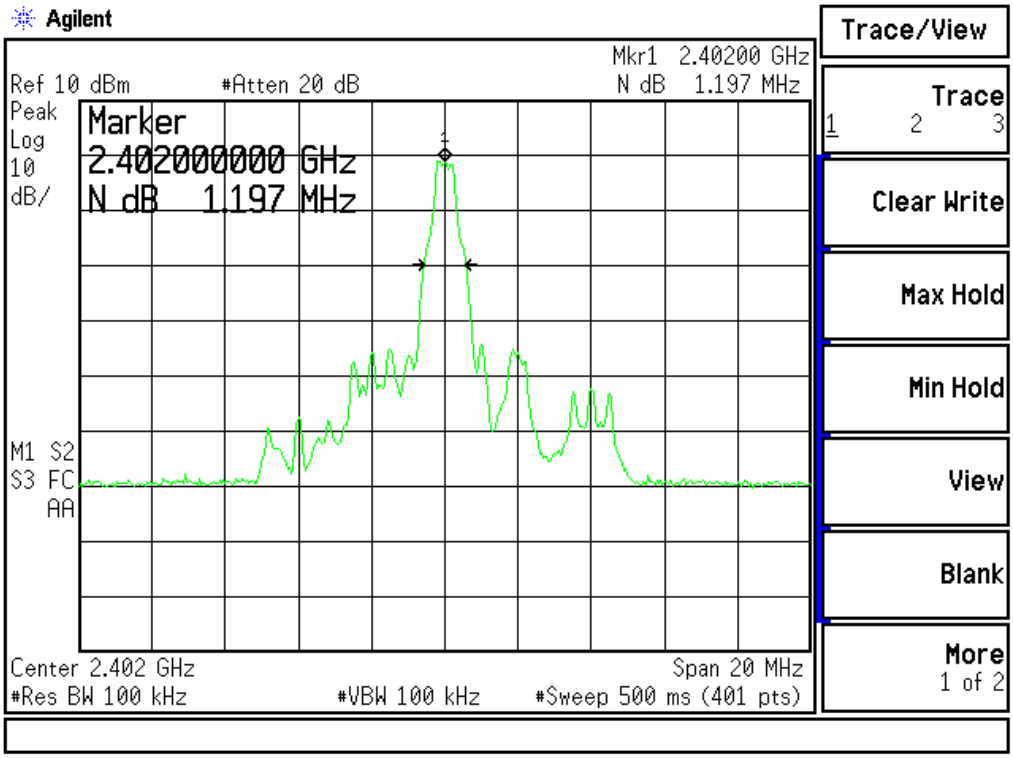
The measurement uncertainty is defined as ± 1.27 dB

9.5. Test Result of Occupied Bandwidth

Product : Bluetooth
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1197	>500	Pass

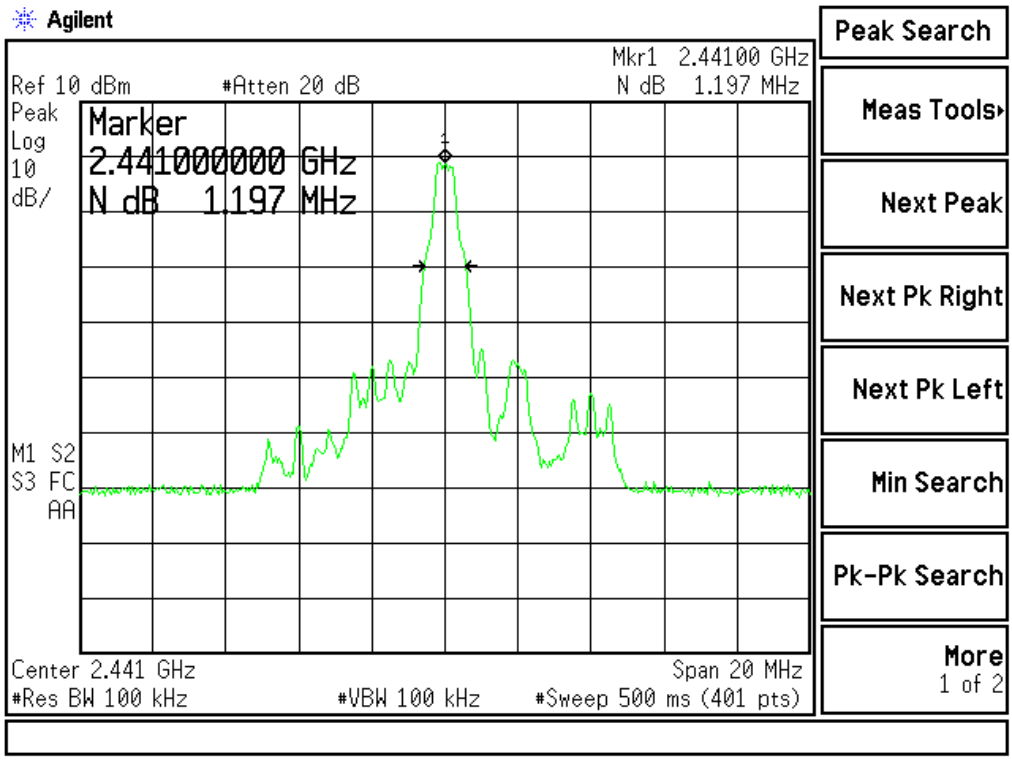
Figure Channel 00:



Product : Bluetooth
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1197	>500	Pass

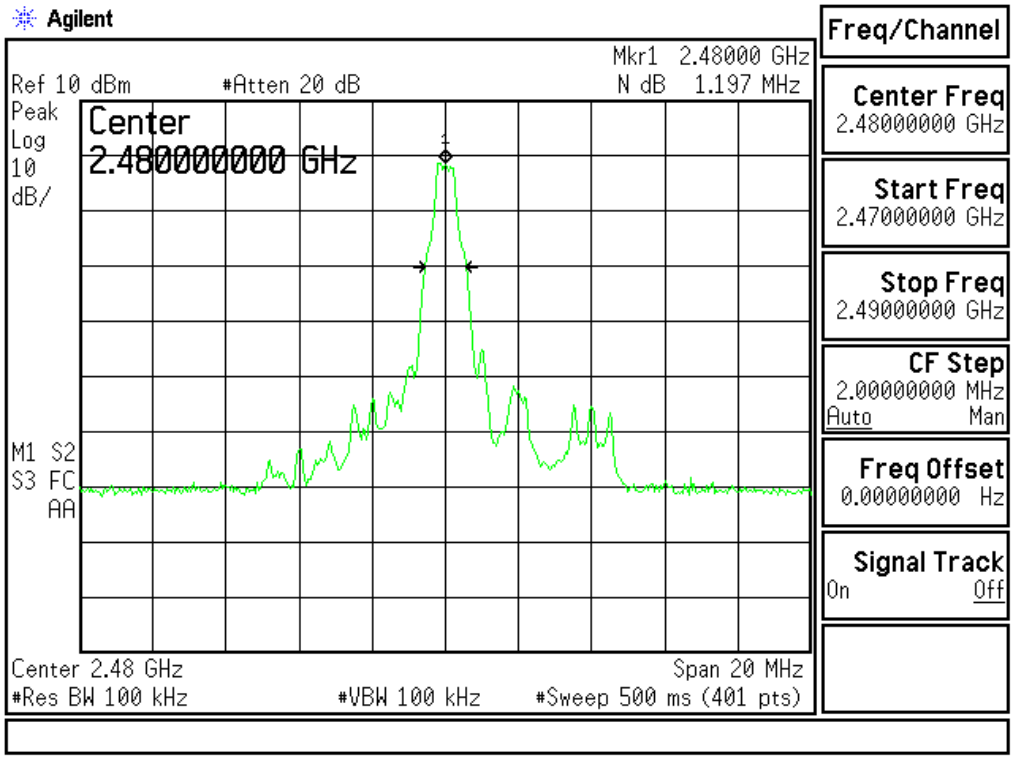
Figure Channel 39:



Product : Bluetooth
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Antenna 1)
Mode 2: Transmitter (Antenna 3)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1197	>500	Pass

Figure Channel 78:



10. EMI Reduction Method During Compliance Testing

No modification was made during testing.