Test Report

Product Name : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone

Model No. : S81

FCC ID. : JVPS81

Applicant : BenQ Corporation

Address : 157 Shan-Ying Road, Gueishan, Taoyuan 333, Taiwan, R.O.C.

Date of Receipt : March 09, 2006

Issued Date : April 18, 2006

Report No. : 063L056-RF-US-P06V01

Reference No. : KH-6030

Test Report Certification

Issued Date: April 18, 2006
Report No.: 063L056-RF-US-P06V01

Product Name	:	WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Applicant	:	BenQ Corporation
Address	:	157 Shan-Ying Road, Gueishan, Taoyuan 333, Taiwan, R.O.C.
Manufacturer	:	1.BenQ Corporation 2.BenQ China Co., Ltd.
Model No.	:	S81
FCC ID.	:	JVPS81
Rated Voltage	:	AC 120V/60Hz
Working Voltage	:	Battery 3.7V
Trade Name	:	BenQ-Siemens
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2005 CISPR 22: 2005 ANSI C63.4: 2003
Test Result	:	Complied

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

Documented By : Grace Lin (Grace Lin)

Tested By : Tom Hsieh (Tom Hsieh)

Approved By : Gene Chang (Gene Chang)

CNLA 0914

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10. EMI REDUCTION METHOD DURING COMPLIANCE TESTING 39
Attachment 1: EUT Test Photographs
Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	: WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Trade Name	: BenQ-Siemens
FCC ID.	: JVPS81
Model No.	: S81
Frequency Range	: 2402 - 2480MHz
Antenna Gain	: Refer to the table “Antenna List”
Channel Number	: 79
Type of Modulation	: FHSS
Antenna Type	: Chip Antenna
Channel Control	: Auto

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	ACX	AT3216 Series	0.5dBi

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. This device is WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone with a built-in 2.4GHz Bluetooth 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 the construction and functions in typical operation. The test results are shown on the report.

1.2. Operational Description

The EUT is a WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone 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

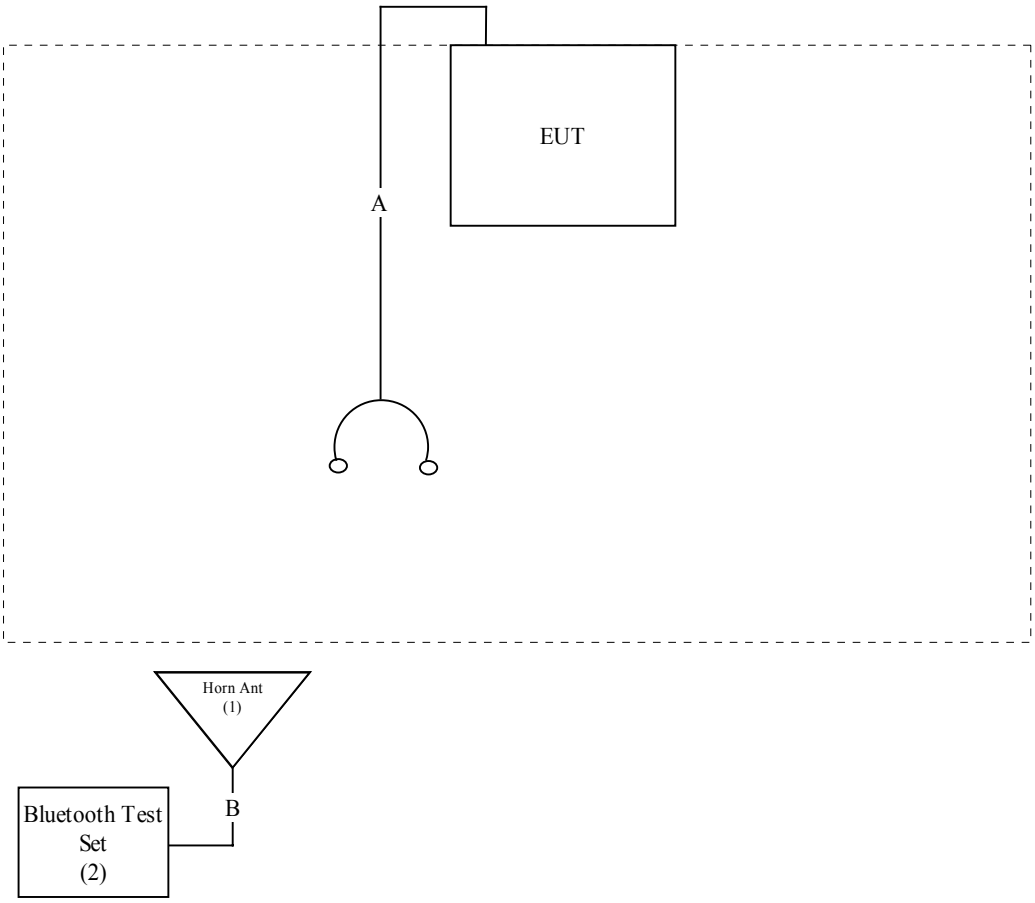
1.3. Test System Details

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)	Horn Ant	ETS	3115	6348	N/A	N/A
(2)	Bluetooth Test Set	Anritsu	MT8852A	6K00003057	N/A	Non-shielded, 1.8m

Signal Cable Type		Signal cable Description
A.	Earphone Cable	Non-shielded, 1.5m
B.	RF Cable (N-Type)	Shielded, 1.0m

1.4. Configuration of Test System



1.5. EUT Exercise Software

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

(2) Press "*#728#" into the test mode of the EUT.

(3) Associate the Bluetooth test set with the EUT.

(4) Configure the test channel and the packet type of the Bluetooth test set.

(5) Press "Loop" to start the loop test of the Bluetooth test set.

(6) Verify that the EUT works correctly.

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

0914

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

Site Name: Quietek Corporation

Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

2. Conducted Emission

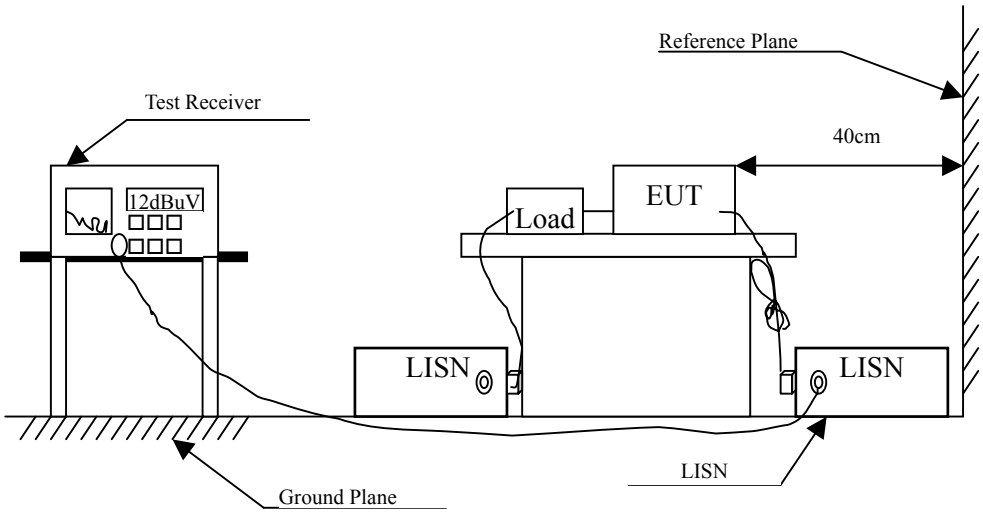
2.1. Test Equipment

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	ESH3-Z5/825016/6	May, 2005	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2005	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2005	
5	No.1 Shielded Room				

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 : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmitter (Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Quasi-Peak					
0.177	0.749	38.700	39.449	-25.770	65.219
*0.347	0.300	50.160	50.460	-9.902	60.362
0.638	0.304	36.570	36.874	-19.126	56.000
1.107	0.320	38.070	38.390	-17.610	56.000
2.505	0.360	32.150	32.510	-23.490	56.000
5.177	0.440	38.820	39.260	-20.740	60.000
Average					
0.177	0.749	27.870	28.619	-36.600	65.219
*0.347	0.300	38.150	38.450	-21.912	60.362
0.638	0.304	22.770	23.074	-32.926	56.000
1.107	0.320	24.980	25.300	-30.700	56.000
2.505	0.360	16.280	16.640	-39.360	56.000
5.177	0.440	25.720	26.160	-33.840	60.000

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 : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmitter (Channel 39)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Quasi-Peak					
0.170	0.300	32.110	32.410	-33.032	65.442
*0.347	0.306	44.170	44.476	-15.895	60.371
0.465	0.310	35.820	36.130	-20.883	57.013
0.922	0.320	25.980	26.300	-29.700	56.000
1.736	0.340	29.160	29.500	-26.500	56.000
5.568	0.430	32.410	32.840	-27.160	60.000
Average					
0.170	0.300	23.500	23.800	-41.642	65.442
*0.347	0.306	36.920	37.226	-23.145	60.371
0.465	0.310	29.150	29.460	-27.553	57.013
0.922	0.320	16.230	16.550	-39.450	56.000
1.736	0.340	20.070	20.410	-35.590	56.000
5.568	0.430	22.440	22.870	-37.130	60.000

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

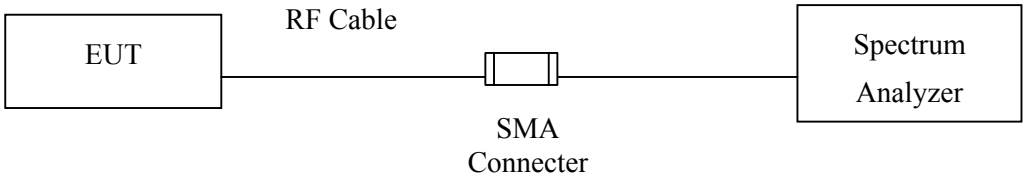
3.1. Test Equipment

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

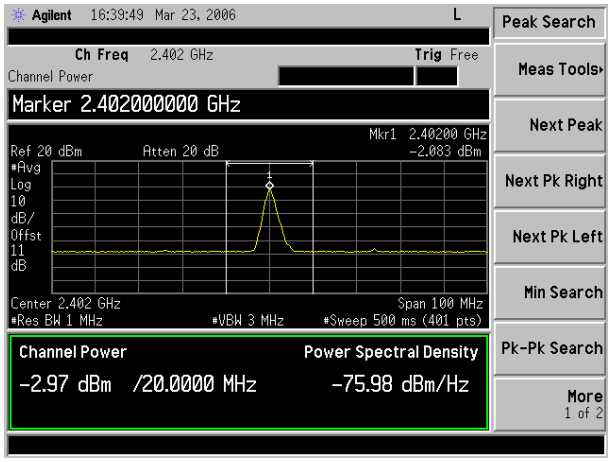
The measurement uncertainty is defined as ± 1.27 dB

3.5. Test Result of Peak Power Output

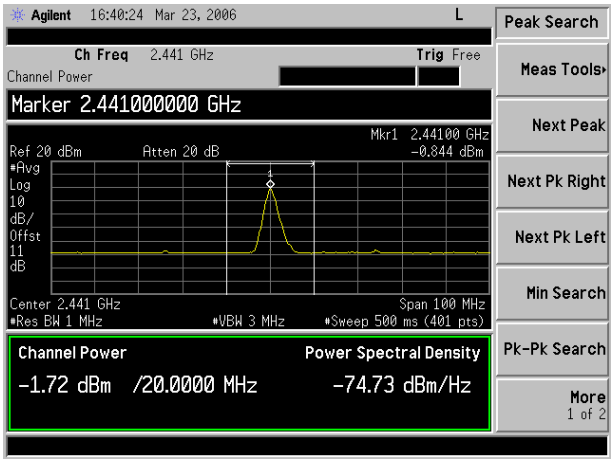
Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Peak Power Output
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	-2.97 dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-1.72 dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-2.45 dBm	1 Watt= 30 dBm	Pass

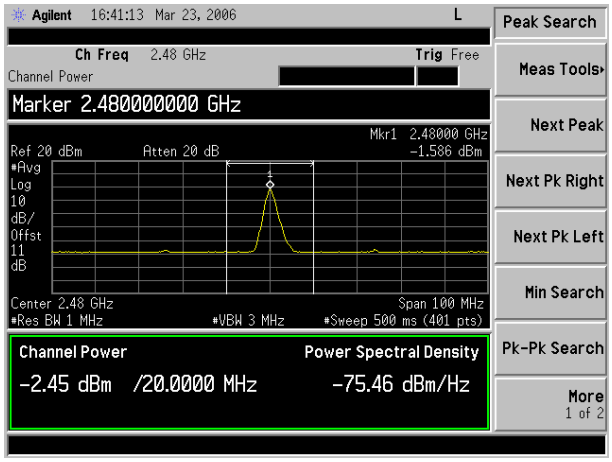
Channel 00



Channel 39



Channel 78



Note:

1. Receiver setting (Peak Detector): RBW: 1MHz; VBW: 3MHz; Span: 100MHz。

4. Radiated Emission

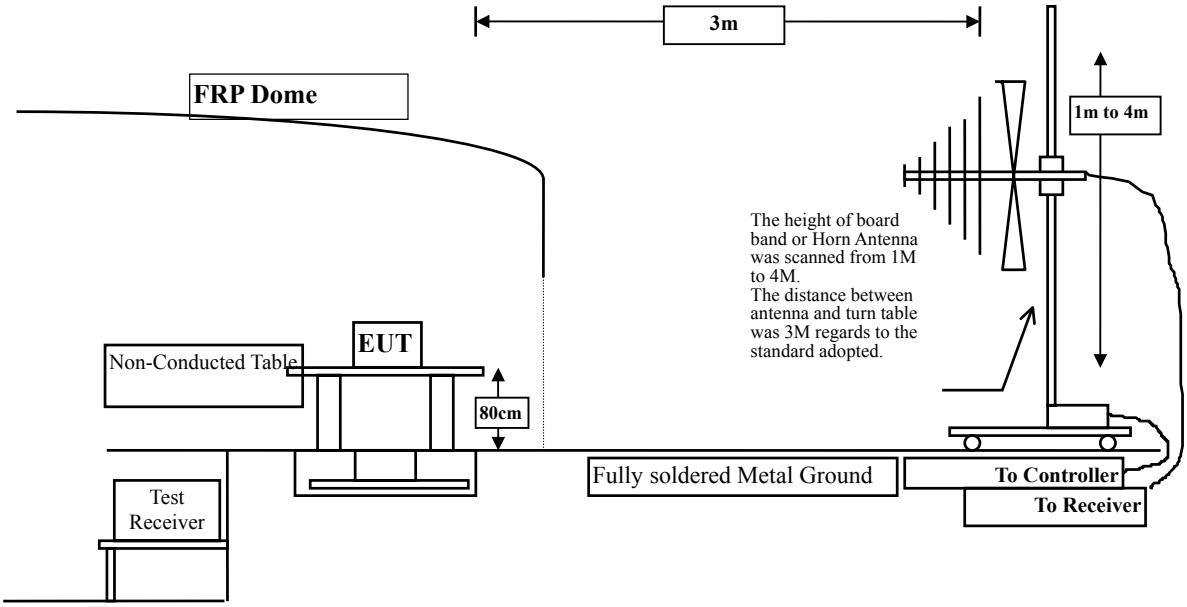
4.1. Test Equipment

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
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2005
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2005
	Horn Antenna	ETS	3115 / 0005-6160	July, 2005
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 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 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 1G is defined as ± 3.9 dB
under 1G is defined as ± 3.8 dB

4.6. Test Result of Radiated Emission

Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (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	40.303	43.966	-30.034	74.000
7206.000	9.357	38.704	48.060	-25.940	74.000
9608.000	11.842	38.016	49.858	-24.142	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	40.835	44.498	-29.502	74.000
7206.000	9.357	38.465	47.821	-26.179	74.000
9608.000	11.842	38.502	50.344	-23.656	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements 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 : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (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	39.991	43.912	-30.088	74.000
7323.000	9.657	37.726	47.383	-26.617	74.000
9764.000	11.798	37.655	49.453	-24.547	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	39.848	43.769	-30.231	74.000
7323.000	9.657	38.515	48.172	-25.828	74.000
9764.000	11.798	37.668	49.466	-24.534	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements 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 : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Harmonic Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (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	38.354	42.550	-31.450	74.000
7440.000	9.951	38.142	48.093	-25.907	74.000
9920.000	11.856	37.867	49.723	-24.277	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	38.742	42.938	-31.062	74.000
7440.000	9.951	37.463	47.414	-26.586	74.000
9920.000	11.856	38.462	50.318	-23.682	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements 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 : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : General Radiated Emission
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
66.380	6.714	12.286	19.000	-21.000	40.000
108.310	13.340	3.860	17.200	-26.300	43.500
177.930	11.255	7.405	18.660	-24.840	43.500
384.050	19.842	2.508	22.350	-23.650	46.000
599.880	24.440	2.610	27.050	-18.950	46.000
*721.120	25.948	2.402	28.350	-17.650	46.000
Vertical					
49.560	9.305	11.556	20.860	-19.14	40.000
73.650	7.487	15.883	23.370	-16.63	40.000
108.330	13.341	9.729	23.070	-20.43	43.500
481.050	22.199	4.761	26.960	-19.04	46.000
599.880	24.440	4.500	28.940	-17.06	46.000
721.120	25.948	2.112	28.060	-17.94	46.000

Note:

1. All readings below 1GHz are Quasi-Peak and above 1GHz are peak and/or average as necessary.
2. Lowest, middle, and highest frequency are verified and the worst case is shown on the report.
3. " * " means this data is the worst emission level.
4. Measurement Level = Reading Level + Correct Factor

5. Band Edge

5.1. Test Equipment

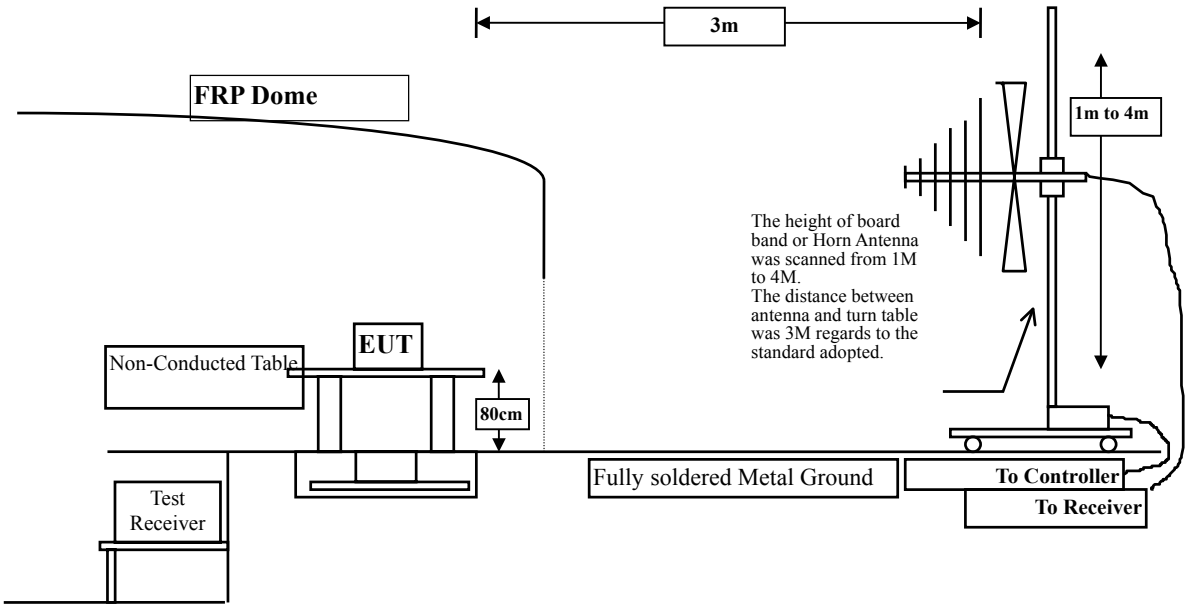
The following test equipments are used during the band edge tests:

	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	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2005
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2005
X	Horn Antenna	ETS	3115 / 0005-6160	July, 2005
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2005
	Test Site: Site 3			

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 Radiated Measurement:



5.3. Limit

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 is 120 kHz, above 1GHz are 1 MHz.

5.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB
under 1G is defined as ± 3.8 dB

5.6. Test Result of Band Edge

Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Channel 00)

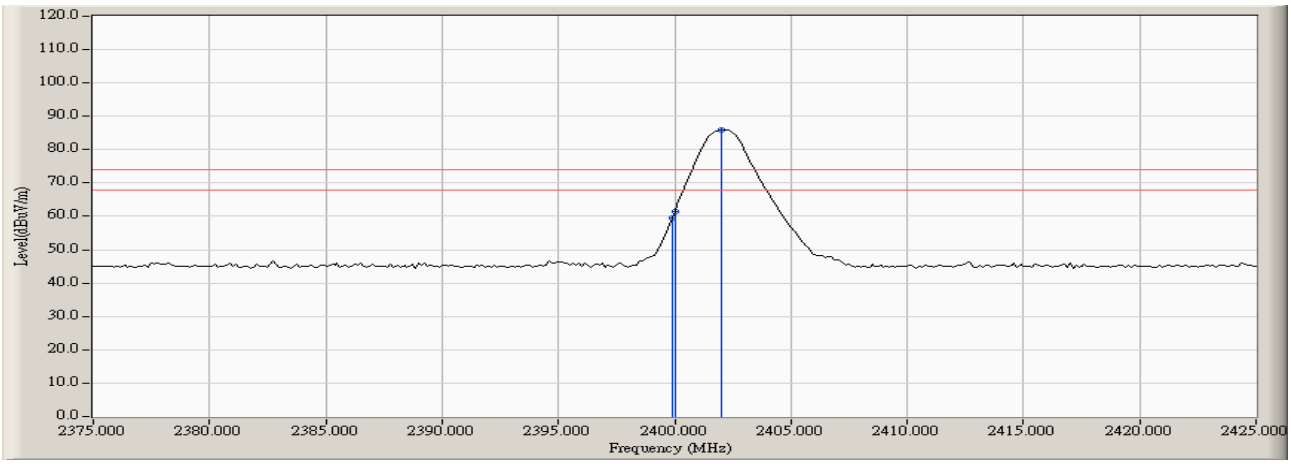
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2399.880	-1.707	61.147	59.440	74.00	54.00	Pass
00 (Average)	2399.880	-1.707	47.167	45.460	74.00	54.00	Pass

Figure Channel 00: (Horizontal)



Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Channel 00)

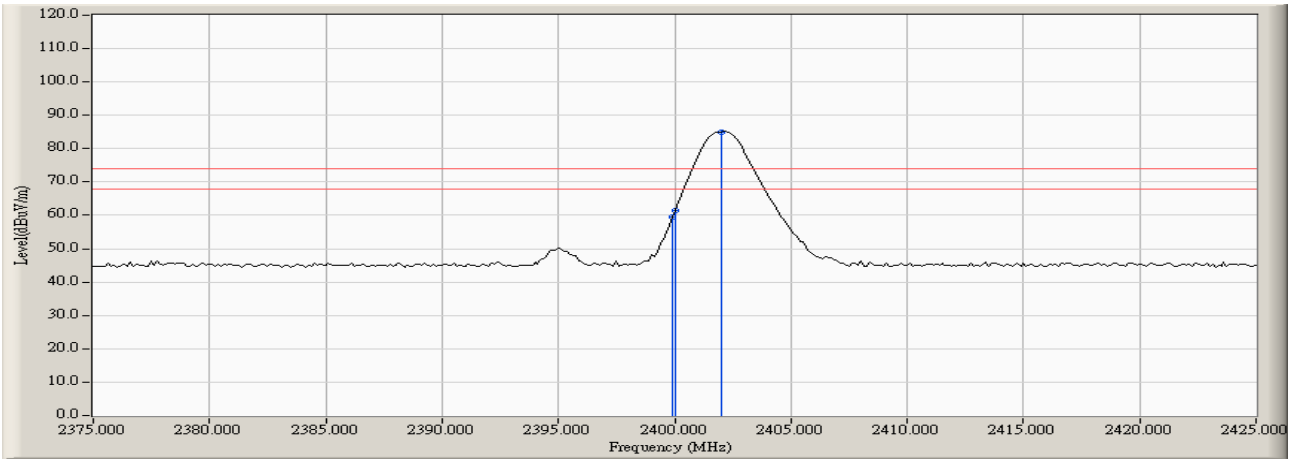
RF Radiated Measurement:

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

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2399.880	-1.707	61.157	59.450	74.00	54.00	Pass
00(Average)	2399.880	-1.707	46.007	44.300	74.00	54.00	Pass

Figure Channel 00: (Vertical)



Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Channel 78)

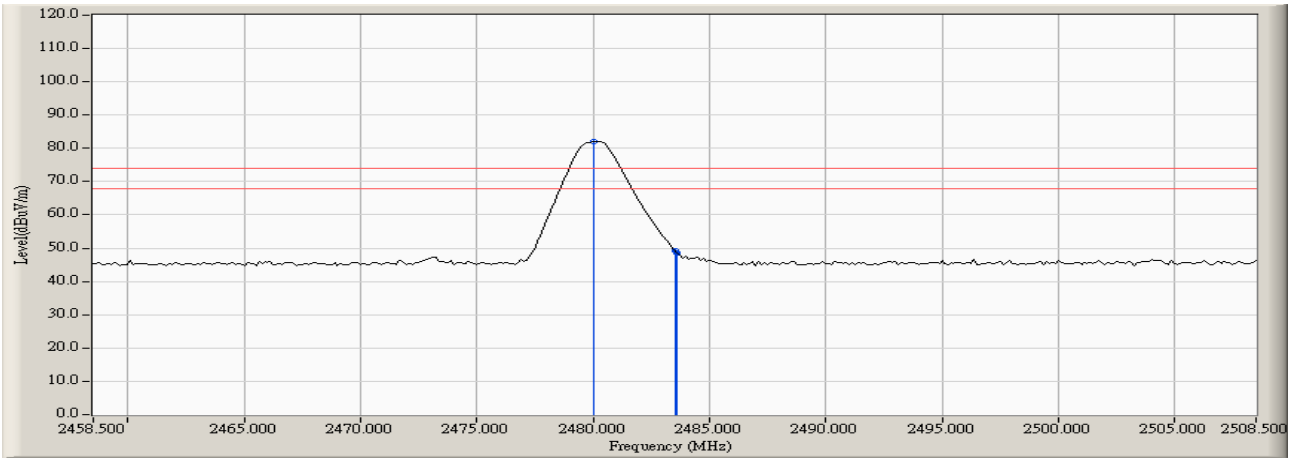
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2483.500	-1.391	50.603	49.212	74.00	54.00	Pass
78(Average)	--		--	--	74.00	54.00	Pass

Figure Channel 78: (Horizontal)



Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Channel 78)

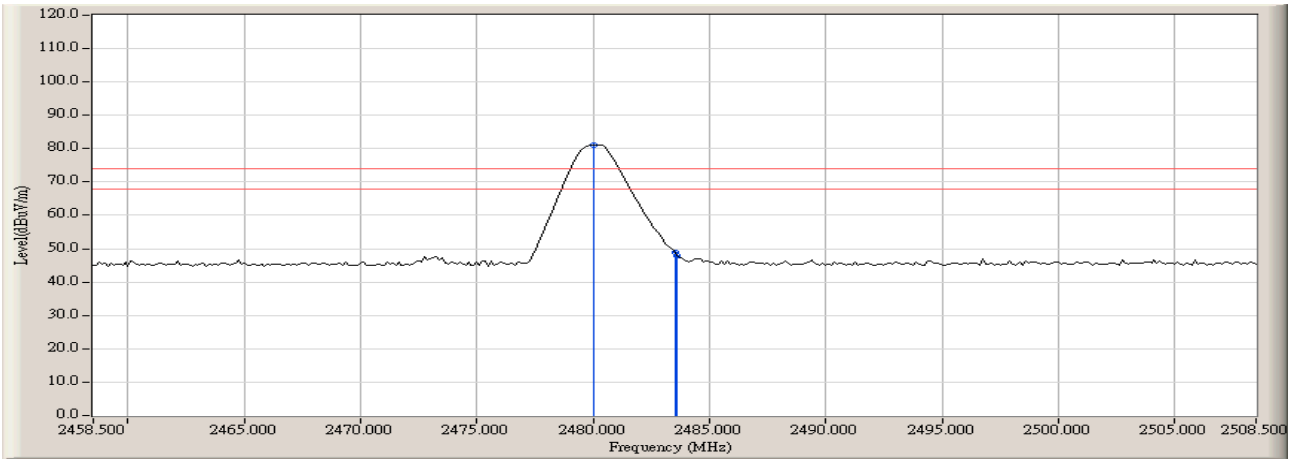
RF Radiated Measurement:

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

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2483.500	-1.391	50.339	48.948	74.00	54.00	Pass
78(Average)	--		--	--	74.00	54.00	Pass

Figure Channel 78: (Vertical)



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

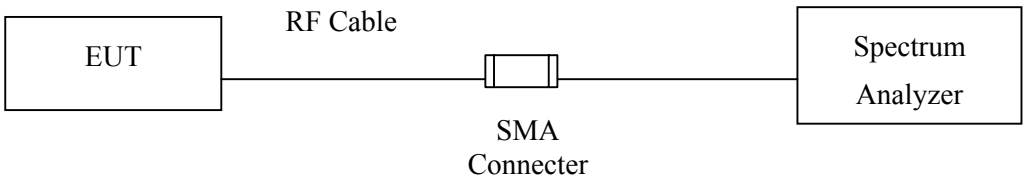
6.1. Test Equipment

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

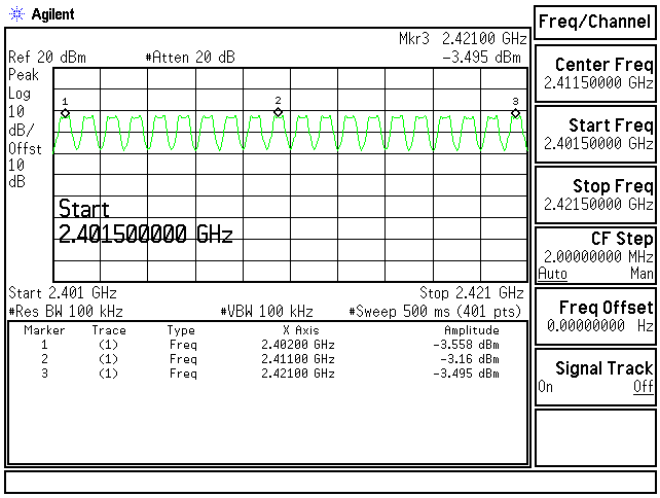
The measurement uncertainty is defined as ± 200kHz

6.5. Test Result of Channel Number

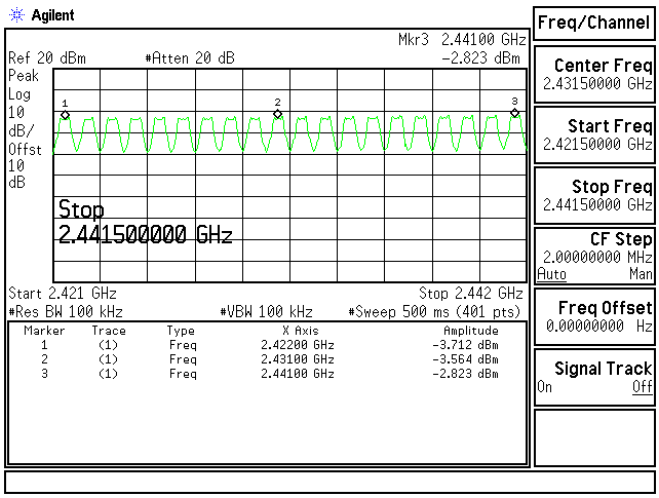
Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Channel Number
Test Site : CTR01
Test Mode : Mode 1: Transmitter

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

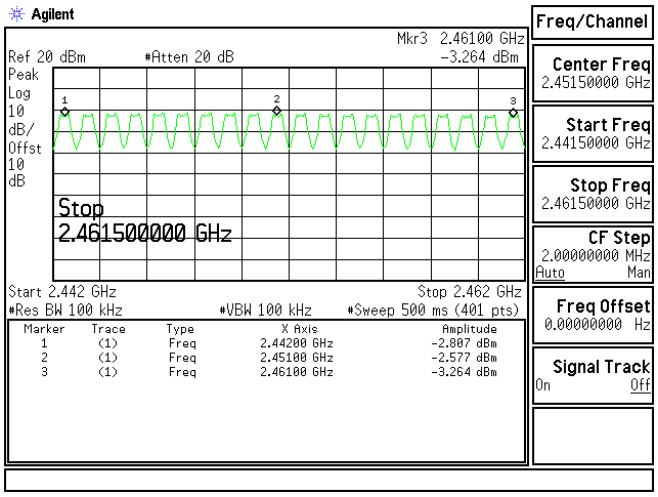
2402-2421MHz



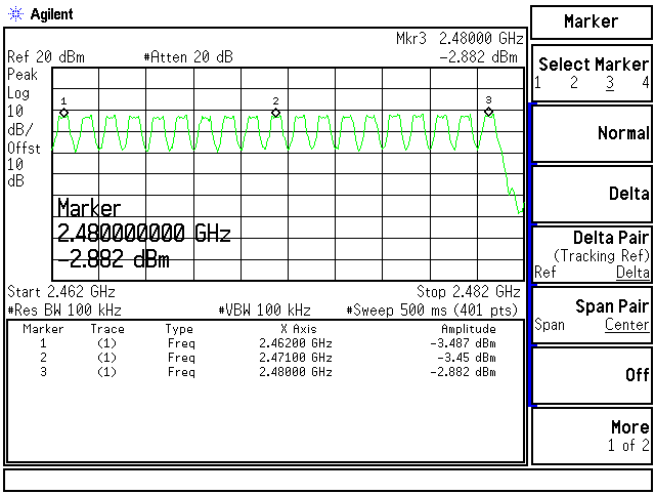
2422-2441MHz



2442-2461MHz



2462-2481MHz



7. Channel Separation

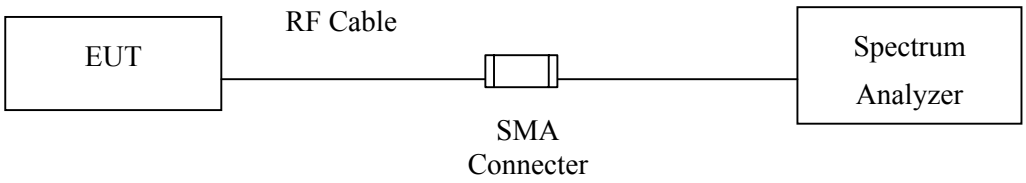
7.1. Test Equipment

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

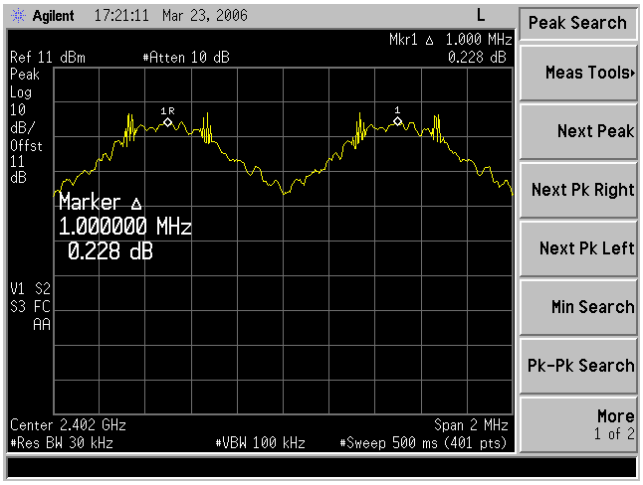
The measurement uncertainty is defined as ± 150Hz

7.5. Test Result of Channel Separation

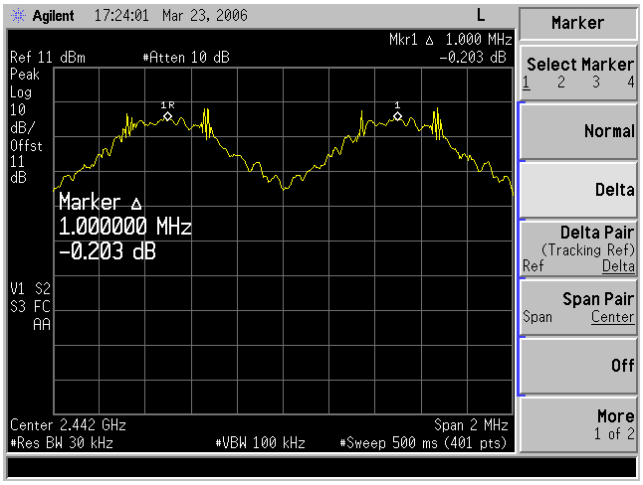
Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Channel Separation
Test Site : CTR01
Test Mode : Mode 1: Transmitter

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

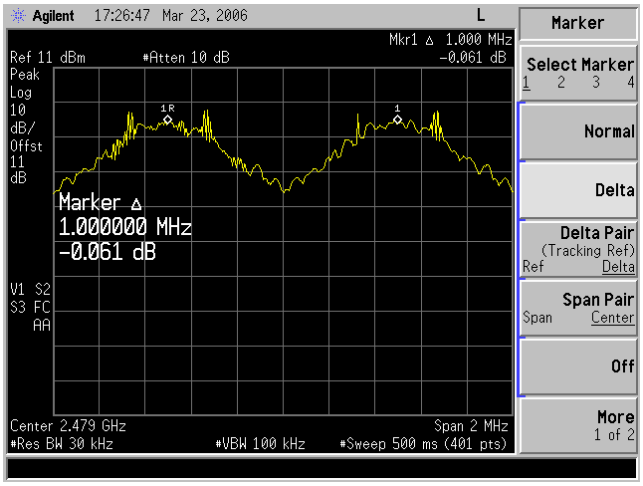
Channel 00 2402MHz



Channel 39 2441MHz



Channel 78 2480 MHz



8. Dwell Time

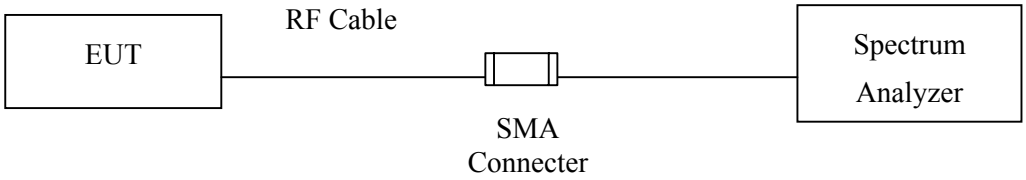
8.1. Test Equipment

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	March, 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

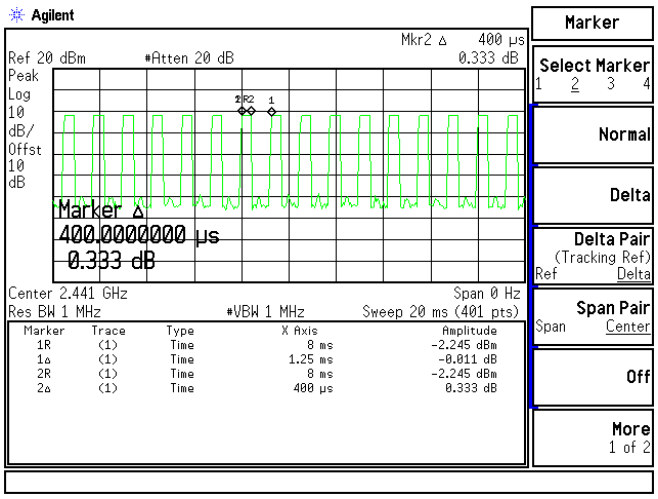
The measurement uncertainty is defined as ± 25msec

8.5. Test Result of Dwell Time

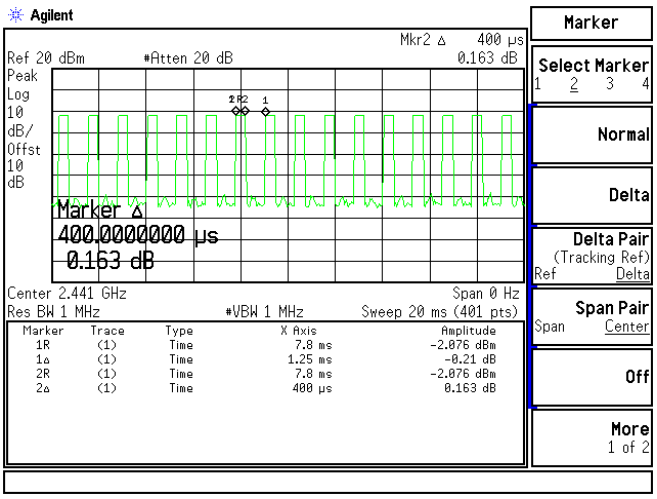
Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Dwell Time
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (Channel 00,39,78 – DH1)

Channel (MHz)	Measurement Level (ms)	Required Limit (sec.)	Result
CH 00 2402	128.184	< 0.4	Pass
CH 39 2441	128.184	< 0.4	Pass
CH 78 2480	128.184	< 0.4	Pass

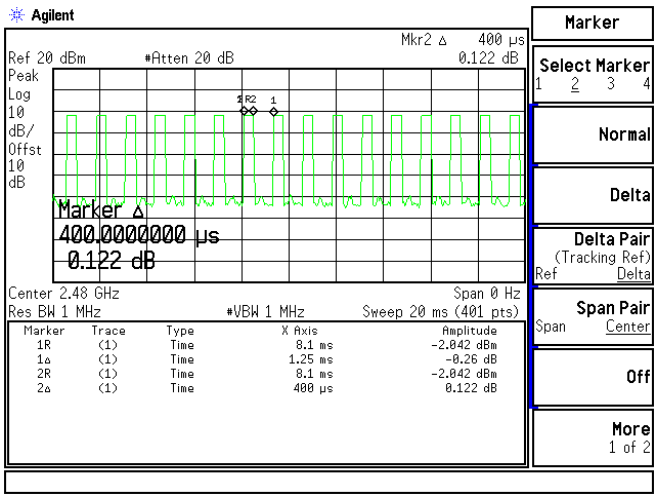
CH 00 2402MHz



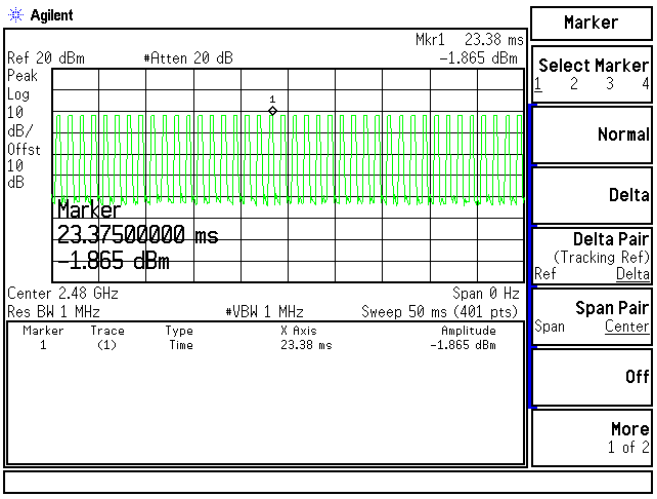
CH 39 2441MHz



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: 40/50msec=0.8 hops/msec

A) 2402MHz The Maximum Occupancy Time Within 31.6sec: (400 μs*800)/(79*31.6)=128.184msec。

B) 2441MHz The Maximum Occupancy Time Within 31.6sec: (400 μs*800)/(79*31.6)= 128.184msec。

C) 2480MHz The Maximum Occupancy Time Within 31.6sec: (400 μs*800)/(79*31.6)= 128.184msec。

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

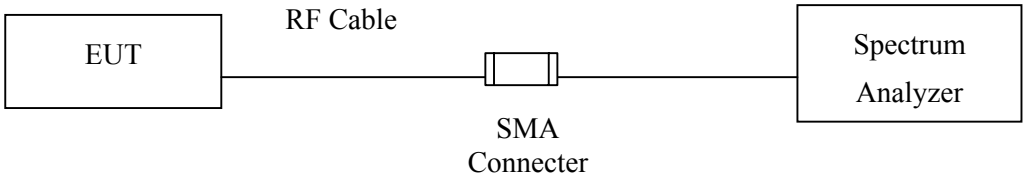
9.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	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.

9.2. Test Setup



9.3. Limits

The minimum bandwidth shall be at least 500kHz.

9.4. Uncertainty

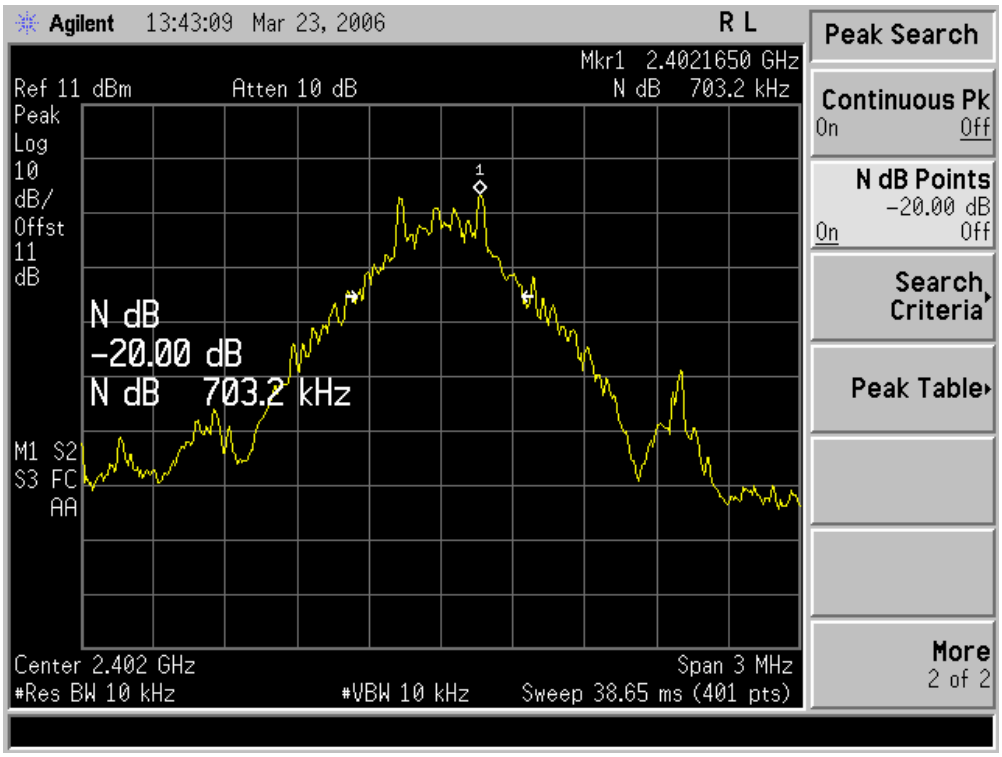
The measurement uncertainty is defined as ± 150Hz

9.5. Test Result of Occupied Bandwidth

Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (CH00)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	703.2	>500	Pass

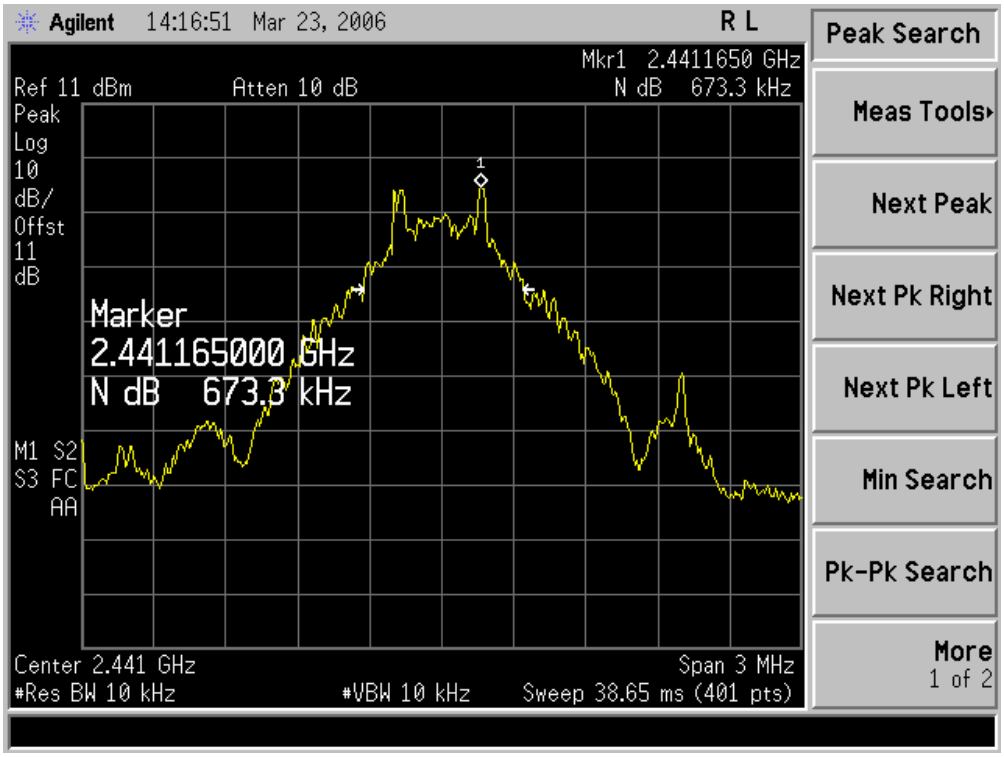
Figure Channel 00:



Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (CH39)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	673.3	>500	Pass

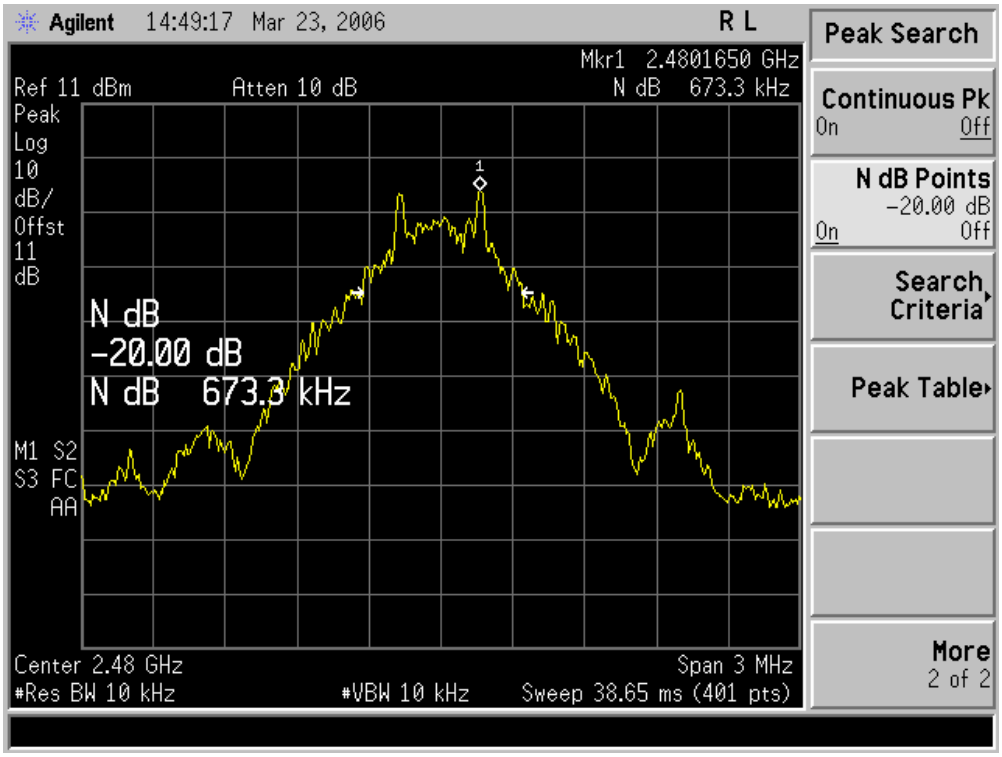
Figure Channel 39:



Product : WCDMA/GSM/DCS/PCS/Bluetooth Mobile Phone
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (CH78)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	673.3	>500	Pass

Figure Channel 78:



10. EMI Reduction Method During Compliance Testing

No modification was made during testing.