

FCC Part15.247 Test Report

Product Name : GSM Mobile Phone
Model No. : HUAWEI G7210
FCC ID : QISG7210

Applicant : HUAWEI TECHNOLOGIES CO.,LTD
Address : Administration Building, Huawei Base, Bantian,
Longgang district, Shenzhen 518129

Date of Receipt : 28/03/2011
Test Date : 28/03/2011 ~ 07/04/2011
Issued Date : 07/04/2011
Report No. : 113S052R-RF-US-P05V01
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, NVLAP or any agency of the Government.

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Test Report Certification

Issued Date : 07/04/2011

Report No. : 113S052R-RF-US-P05V01



Product Name : GSM Mobile Phone
 Applicant : HUAWEI TECHNOLOGIES CO.,LTD
 Address : Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129
 Manufacturer : HUAWEI TECHNOLOGIES CO.,LTD
 Address : Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129
 Model No. : HUAWEI G7210
 FCC ID : QISG7210
 EUT Voltage : DC 3.7V
 Trade Name : HUAWEI
 Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2008; ANSI C63.4: 2009; ANSI C63.10: 2009
 Test Result : Complied
 Performed Location : Suzhou EMC Laboratory
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 FCC Registration Number: 800392

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Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	: BSMI, NCC, TAF
Germany	: TUV Rheinland
Norway	: Nemko, DNV
USA	: FCC, NVLAP
Japan	: VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://www.quietek.com/tw/ctg/cts/accreditations.htm>
 The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>
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1. General Information

1.1. EUT Description

Product Name	GSM Mobile Phone
Trade Name	HUAWEI
Model No.	HUAWEI G7210
FCC ID	QISG7210
Working Voltage	DC 3.7V
Frequency Range	802.11b/g: 2412 - 2462 MHz
Channel Number	802.11b/g: 11
Type of Modulation	802.11b: DSSS 802.11g: OFDM
Data Rate	802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11b: 1/2/5.5/11 Mbps
Channel Control	1*Tx + 1*Rx
Antenna Type	Internal
Peak Antenna Gain	-2.2dBi
AC Adapter #1	Manufacturer: HUAWEI M/N: HS-050040U6 Input: 100-240V~50/60Hz 0.2A Output: DC 5V, 400mA
AC Adapter #2	Manufacturer: HUAWEI M/N: HS-050040E5 Input: 100-240V~50/60Hz 0.2A Output: DC 5V, 400mA

Note : Adapter #1 is used for RF test.

For 2.4GHz Band

802.11b/g Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A

1.2. Mode of Operation

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

Test Mode
Mode 1: Transmit by 802.11b
Mode 2: Transmit by 802.11g

Note:

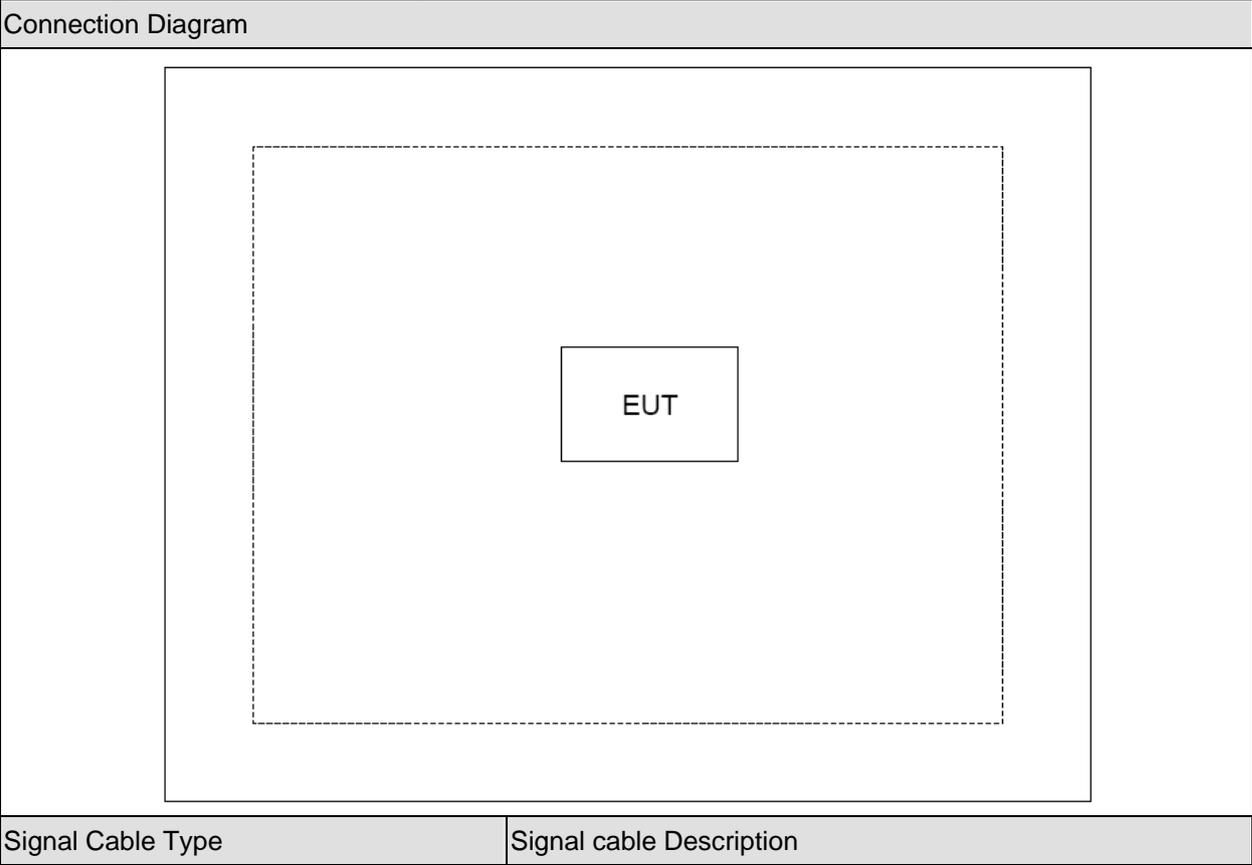
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. For portable device, radiated spurious emission was verified over X, Y, Z axis, and shown the worst case on this report.
3. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 114019R-RF-US-P01V02.

1.3. 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.	Power Cord
1	N/A	N/A	N/A	N/A	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Execute the software provided by applicant on the phone.
4	Select test channel and test mode to test.

2. Technical Test

2.1. Summary of Test Result

- No deviations from the test standards
 Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.207	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.209	Yes	No
RF Antenna Conducted Spurious	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2008 15.247(d)	Yes	No
Operation Frequency Range of 20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2008 15.215(c)	Yes	No
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(a)(2)	Yes	No
Power Output	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(b)(3)	Yes	No
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(e)	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

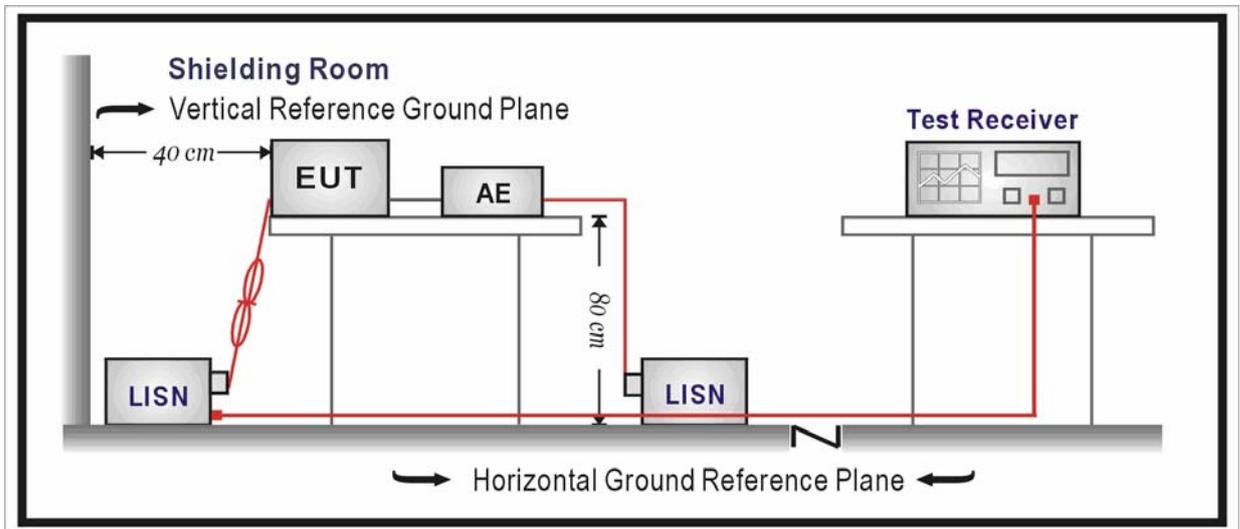
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100726	2011.04.23
Two-Line V-Network	R&S	ENV216	100043	2011.06.18
Two-Line V-Network	R&S	ENV216	100044	2011.09.07
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2011.05.05
50ohm Termination	SHX	TF2	07081401	2011.09.27
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2012.01.14

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

3.2. Test Setup



3.3. Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

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

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

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

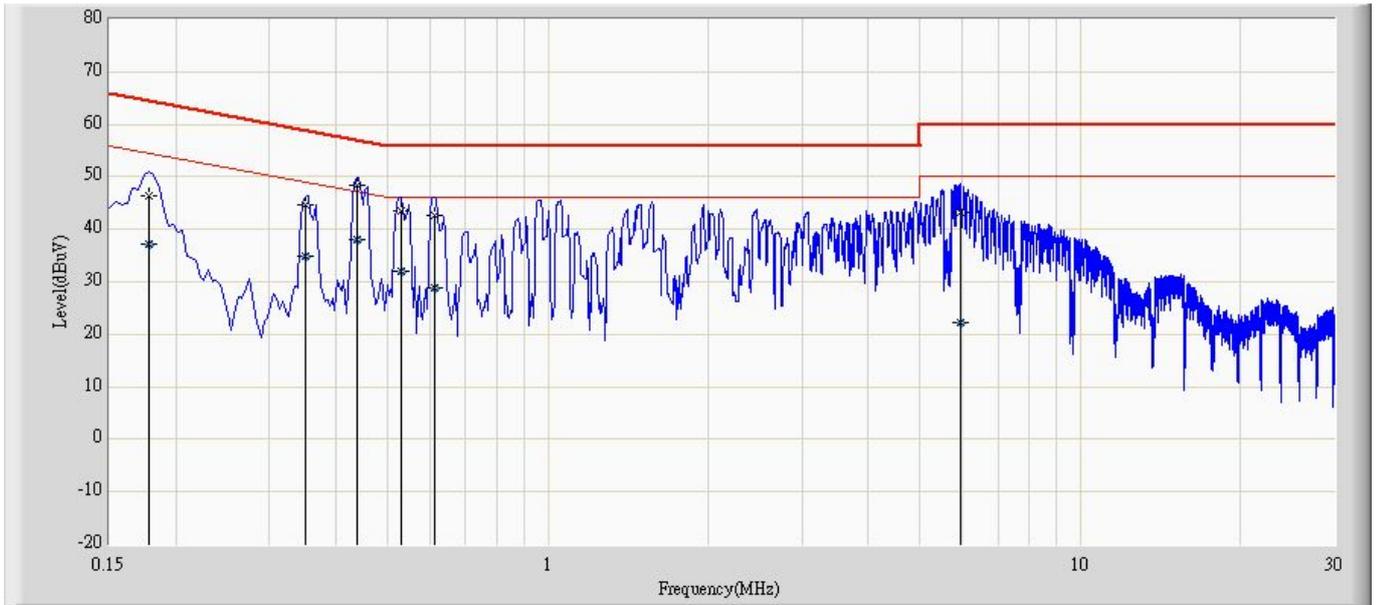
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

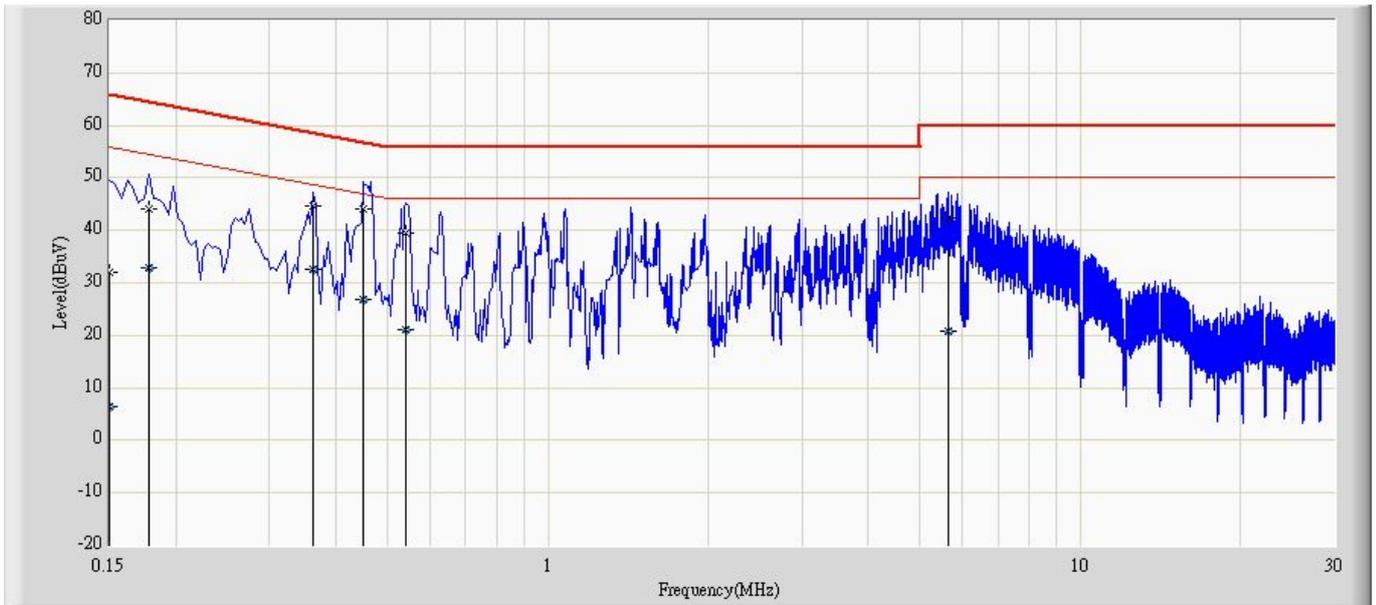
3.6. Test Result

Site: TR1	Time: 2011/04/03 - 16:21
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101043(0.009-30MHz)	Polarity: Line
EUT: GSM Mobile Phone	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.178	46.282	36.655	-18.297	64.578	9.627	QP
2		0.178	37.295	27.668	-17.284	54.578	9.627	AV
3		0.350	44.730	35.050	-14.232	58.962	9.680	QP
4		0.350	34.882	25.202	-14.080	48.962	9.680	AV
5	*	0.438	48.526	38.836	-8.574	57.100	9.690	QP
6		0.438	37.915	28.225	-9.185	47.100	9.690	AV
7		0.530	43.497	33.807	-12.503	56.000	9.690	QP
8		0.530	31.975	22.285	-14.025	46.000	9.690	AV
9		0.614	42.601	32.911	-13.399	56.000	9.690	QP
10		0.614	28.718	19.028	-17.282	46.000	9.690	AV
11		5.938	43.313	33.464	-16.687	60.000	9.849	QP
12		5.938	22.120	12.271	-27.880	50.000	9.849	AV

Site: TR1	Time: 2011/04/03 - 16:25
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101043(0.009-30MHz)	Polarity: Neutral
EUT: GSM Mobile Phone	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.150	32.043	22.302	-33.957	66.000	9.741	QP
2		0.150	6.537	-3.204	-49.463	56.000	9.741	AV
3		0.178	44.163	34.460	-20.416	64.578	9.703	QP
4		0.178	32.927	23.224	-21.652	54.578	9.703	AV
5		0.362	44.678	35.023	-14.004	58.682	9.655	QP
6		0.362	32.580	22.924	-16.103	48.682	9.655	AV
7	*	0.450	44.073	34.405	-12.802	56.875	9.668	QP
8		0.450	26.882	17.214	-19.993	46.875	9.668	AV
9		0.542	39.566	29.892	-16.434	56.000	9.674	QP
10		0.542	21.215	11.540	-24.785	46.000	9.674	AV
11		5.642	42.341	32.495	-17.659	60.000	9.846	QP
12		5.642	20.843	10.997	-29.157	50.000	9.846	AV

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
EMI Test Receiver	R&S	ESCI	100573	2011.04.23
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2011.10.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2011.05.05
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2012.01.14

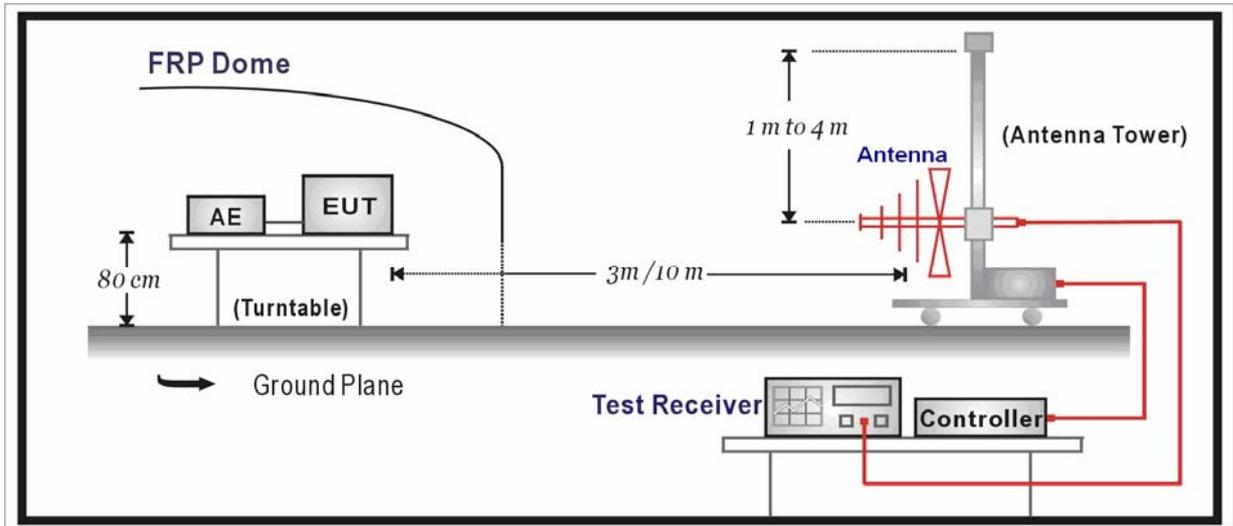
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2011.04.23
EMI Test Receiver	R&S	ESCI	100906	2012.01.15
Preamplifier	Quietek	AP-180C	CHM-0602013	2011.05.05
Preamplifier	Quietek	AP-040G	CHM-0906001	2011.05.05
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2011.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2011.06.11
High-Pass Filter	Wainwright	WHKX2.8/18G-12SS	SN1	2011.03.03
High-Pass Filter	Wainwright	WHKX7.0/18G-8SS	SN16	2011.03.03
Lowpass Filter	Wainwright	WLKS4500-9SS	SN2	2011.03.03
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC5-TH	2012.01.14

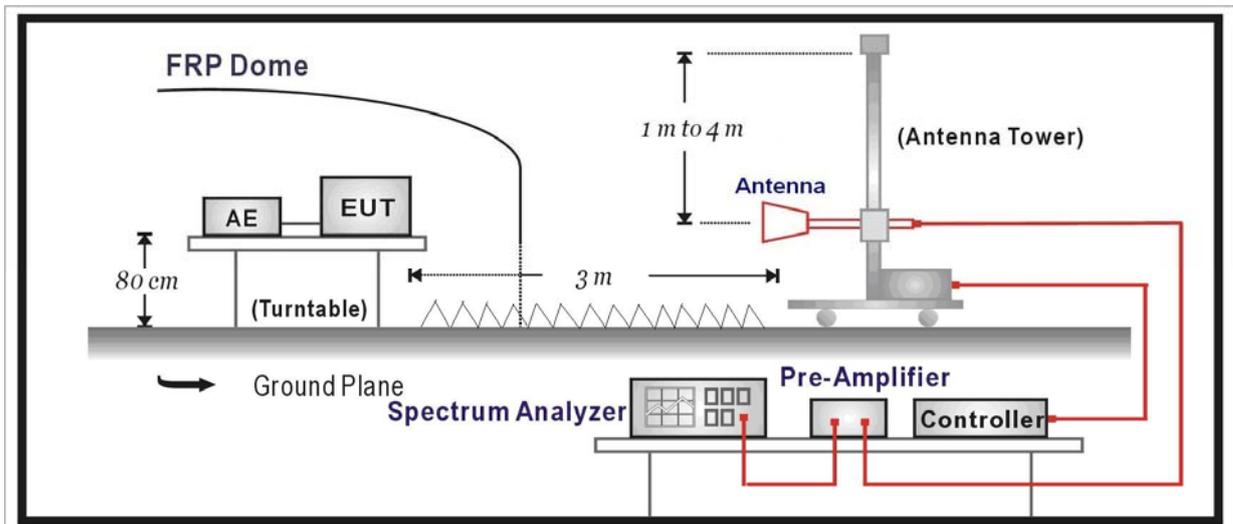
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

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

Note: When doing emission measurement above 1GHz, the horn antenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60 degrees for H-plane and 90 degrees for E-plane.

4.5. Uncertainty

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

4.6. Test Result

All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:

Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;

Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Mode 1: Transmit by 802.11b

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	H	2412.6	74.0	32.0	106.0	Fundamental	/	PK
	H	290.1	23.5	-7.7	15.8	46	-30.2	QP
	H	539.3	27.3	-1.6	25.7	46	-20.3	QP
	H	3031.5	43.0	-0.7	42.3	54(Note)	-11.7	PK
	H	4824.0	45.5	3.1	48.6	54(Note)	-5.4	PK
	H	7236.0	44.9	9.6	54.5	74	-19.5	PK
	H	7236.0	33.9	9.6	43.5	54	-10.5	AV
6	H	2437.0	74.5	26.0	100.5	Fundamental	/	PK
	H	291.3	24.7	-7.7	17.0	46	-29	QP
	H	553.3	25.6	-1.1	24.5	46	-21.5	QP
	V	3031.5	42.9	3.8	46.7	54(Note)	-7.3	PK
	H	4874.0	43.6	3.1	46.7	54(Note)	-7.3	PK
	H	7311.0	45.1	9.4	54.5	74	-19.5	PK
	H	7311.0	35.4	9.4	44.8	54	-9.2	AV
11	H	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK
	H	2462.0	73.0	32.0	105.0	Fundamental	/	PK
	H	294.5	24.3	-7.6	16.7	46	-29.3	QP
	H	567.4	25.9	-0.8	25.1	46	-20.9	QP
	V	3031.5	43.1	0.3	43.4	54(Note)	-10.6	PK
	H	4924.0	42.3	3.3	45.6	54(Note)	-8.4	PK
	H	7386.0	44.1	9.6	53.7	54(Note)	-0.3	PK
V	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK	

Note : This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 2: Transmit by 802.11g

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	H	2411.0	72.7	32.0	104.7	Fundamental	/	PK
	H	295.0	23.8	-7.6	16.2	46	-29.8	QP
	H	592.1	24.3	-0.8	23.5	46	-22.5	QP
	V	3031.5	44.1	-0.4	43.7	54(Note)	-10.3	PK
	V	4824.0	42.1	3.1	45.2	54(Note)	-8.8	PK
	V	7236.0	42.3	9.6	51.9	54(Note)	-2.1	PK
	H	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK
6	H	2436.9	72.2	31.7	103.9	Fundamental	/	PK
	H	310.0	24.2	-7.0	17.2	46	-28.8	QP
	H	652.7	25.4	0.0	25.4	46	-20.6	QP
	H	3031.5	44.0	0.7	44.7	54(Note)	-9.3	PK
	H	4874.0	42.0	3.2	45.2	54(Note)	-8.8	PK
	H	7311.0	44.6	9.5	54.1	74	-19.9	PK
	H	7311.0	34.3	9.5	43.8	54	-10.2	AV
11	H	2464.4	71.8	31.9	103.7	Fundamental	/	PK
	H	311.0	16.9	7.0	23.9	46	-22.1	QP
	H	680.4	24.5	-0.5	24.	46	-22.0	QP
	V	3031.5	43.2	-0.3	42.9	54(Note)	-11.1	PK
	H	4924.0	42.0	3.3	45.3	54(Note)	-8.7	PK
	H	7386.0	44.5	9.7	54.2	74	-19.8	PK
	H	7386.0	34.2	9.7	43.9	54	-10.1	AV
	H	24000.0	59.1	-8.9	50.2	54(Note)	-3.8	PK

Note : This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

5. RF Antenna Conducted Spurious

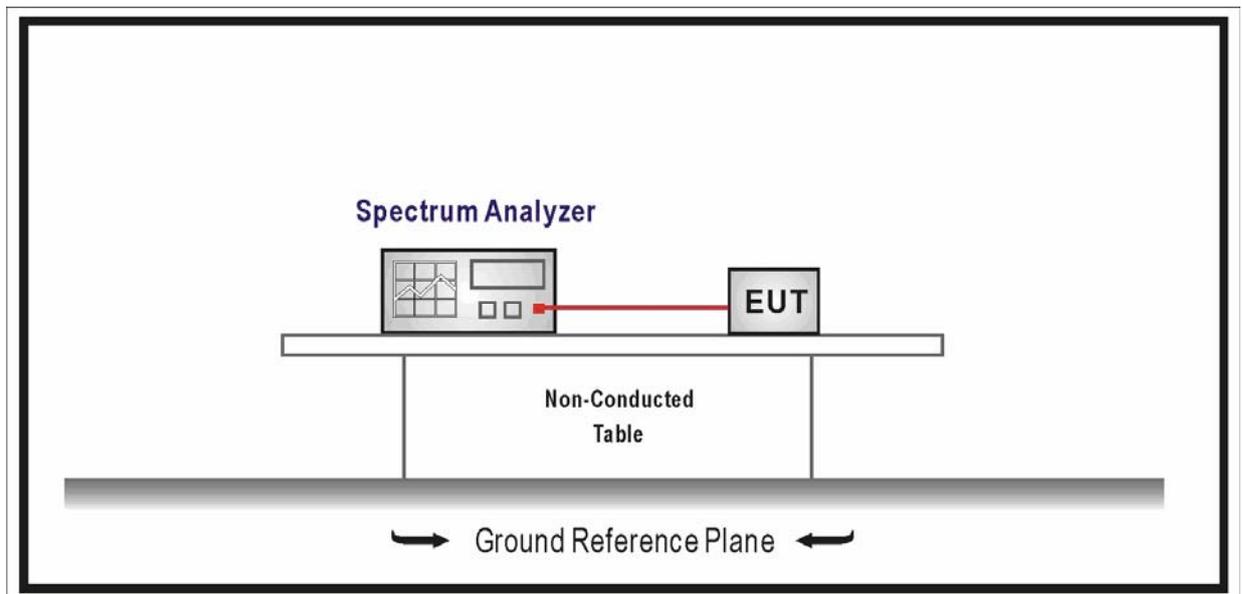
5.1. Test Equipment

RF Antenna Conducted Spurious / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2011.04.30
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2012.01.14

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

5.2. Test Setup



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.

5.4. Test Procedure

The EUT was tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

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

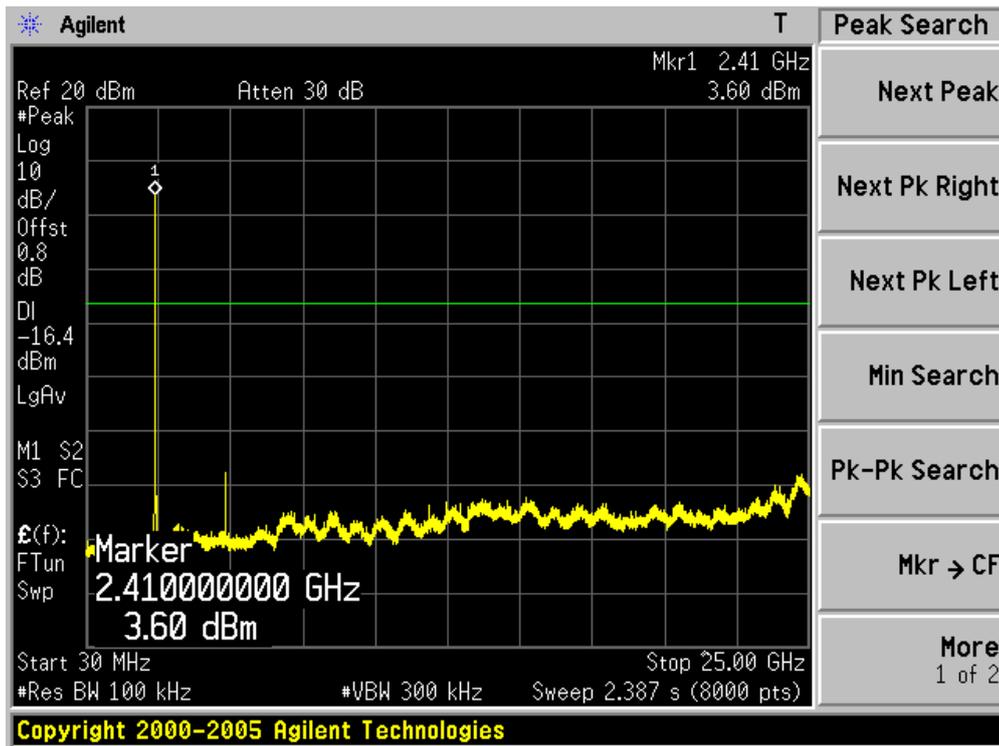
5.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

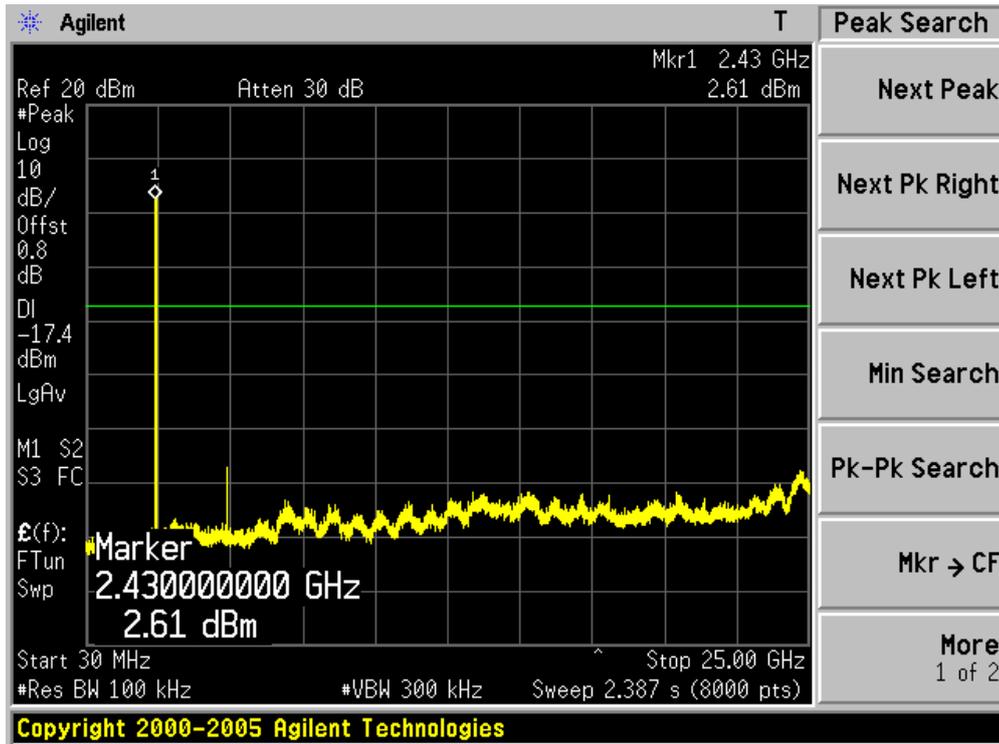
5.6. Test Result

Product	:	GSM Mobile Phone
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

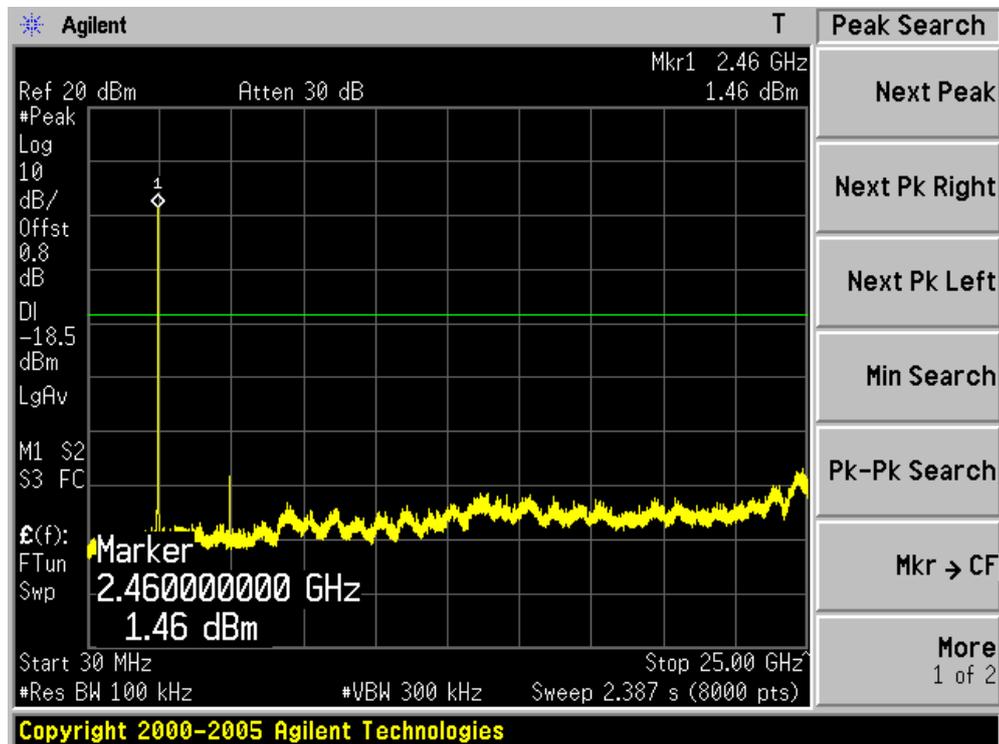
Channel 01 (2412MHz)



Channel 06 (2437MHz)

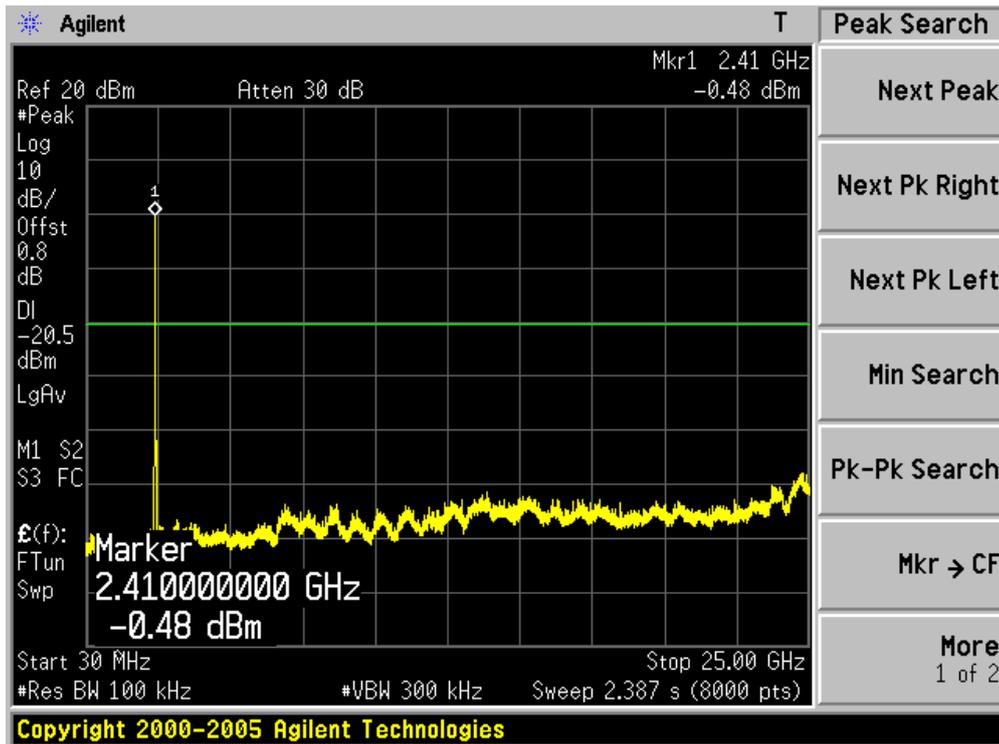


Channel 11 (2462MHz)

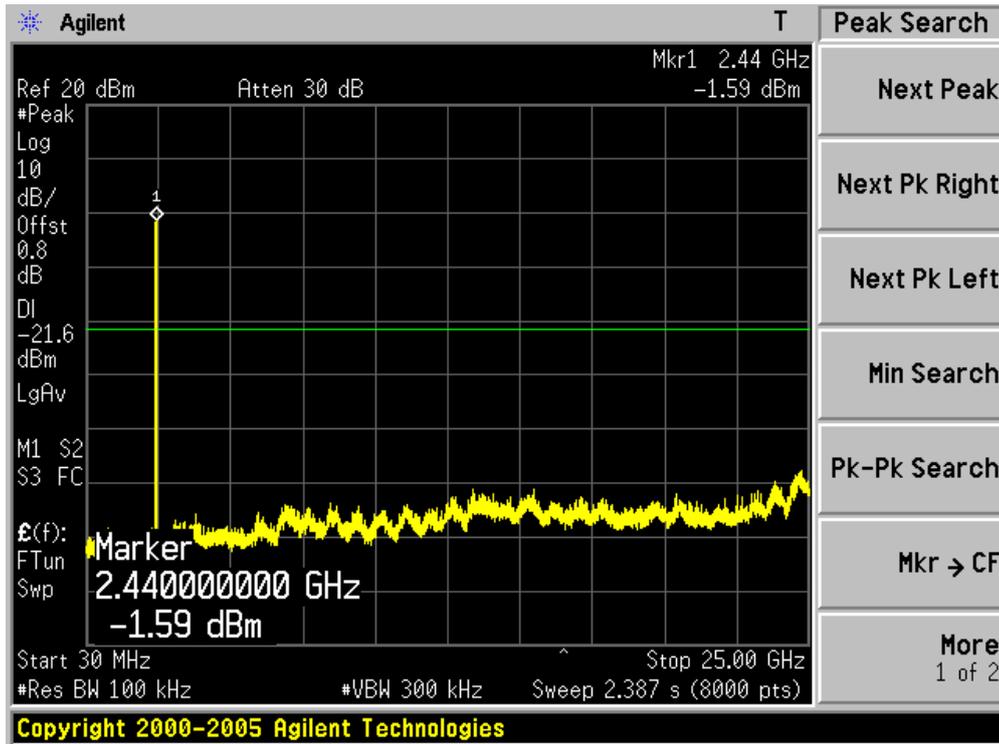


Product	: GSM Mobile Phone
Test Item	: RF Antenna Conducted Spurious
Test Site	: TR-8
Test Mode	: Mode 2: Transmit by 802.11g

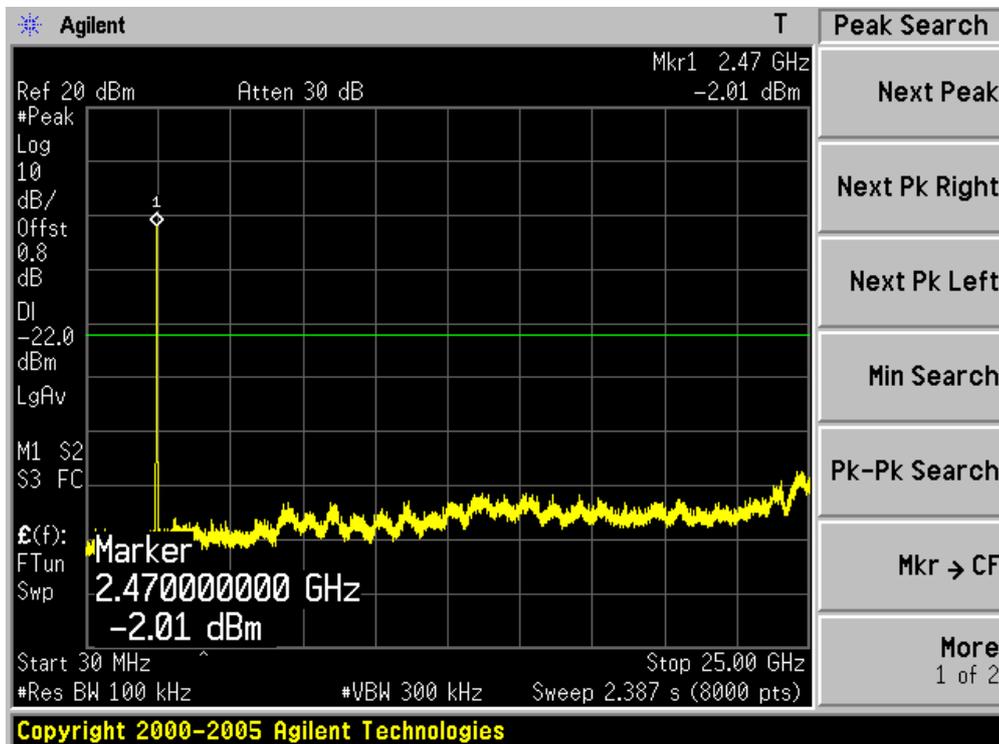
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



6. Radiated Emission Band Edge

6.1. Test Equipment

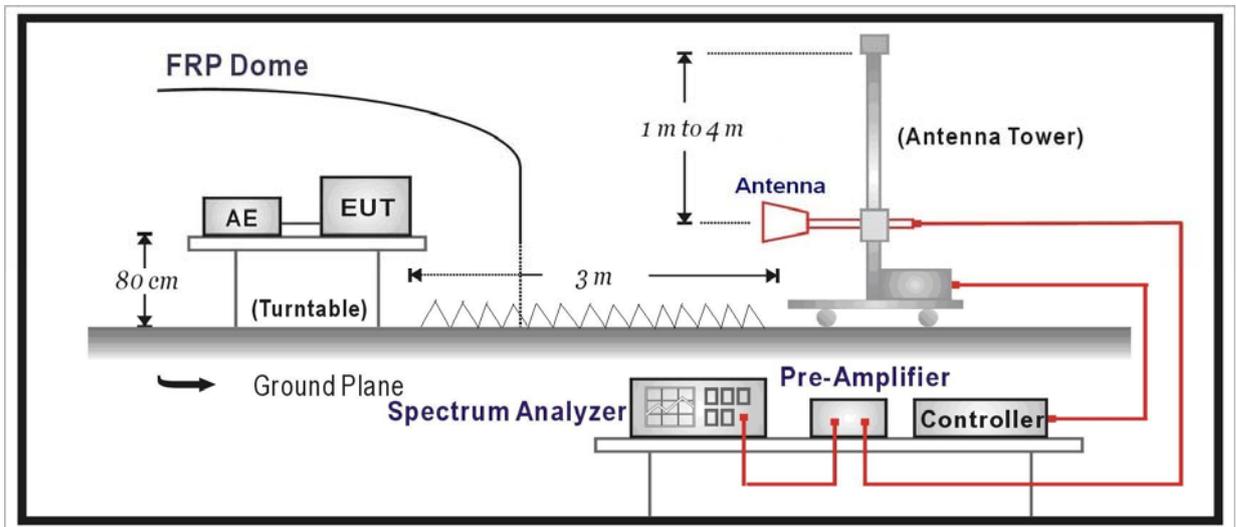
Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2011.04.23
EMI Test Receiver	R&S	ESCI	100573	2011.04.23
Preamplifier	Quietek	AP-025C	CHM-0511006	2011.05.05
Preamplifier	Quietek	AP-180C	CHM-0602013	2011.05.05
Bilog Type Antenna	Schaffner	CBL6112B	2932	2011.10.18
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2011.06.11
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2011.05.05
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2012.01.14

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

Note 2: The test instruments marked with "X" are used to measure the final test results.

6.2. Test Setup



6.3. Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2009 on radiated measurement.

6.5. Uncertainty

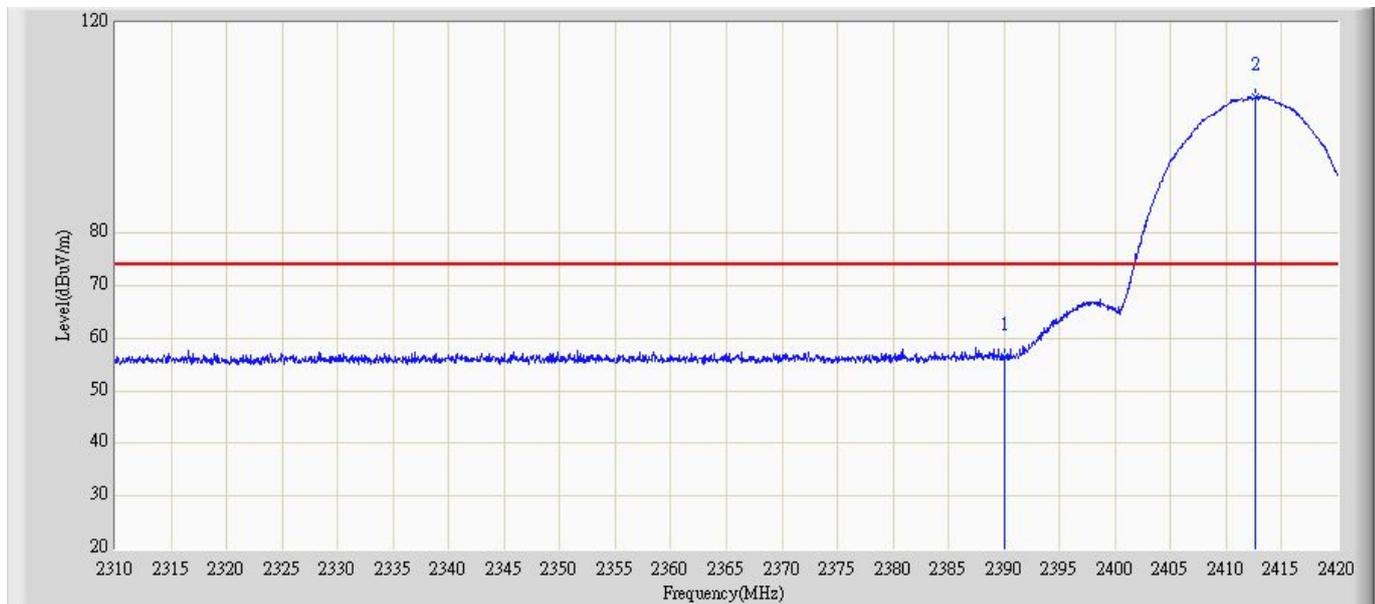
The measurement uncertainty above 1G is defined as ± 3.9 dB

6.6. Test Result

Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;

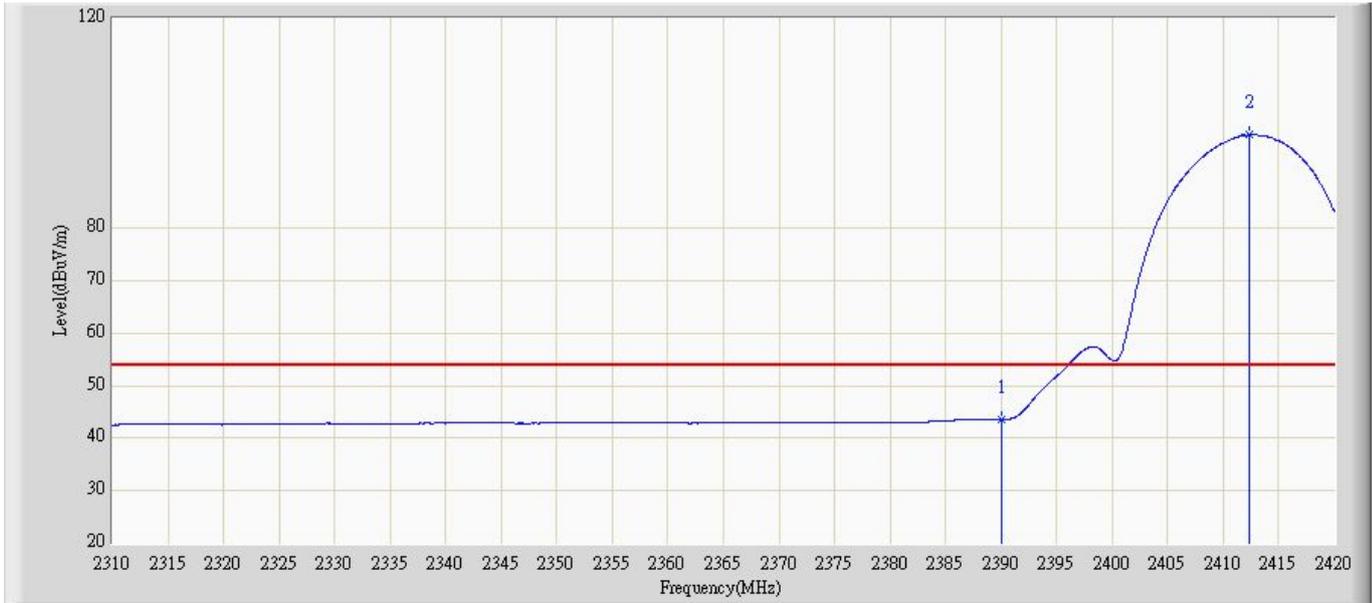
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 11:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2412MHz by 802.11b	



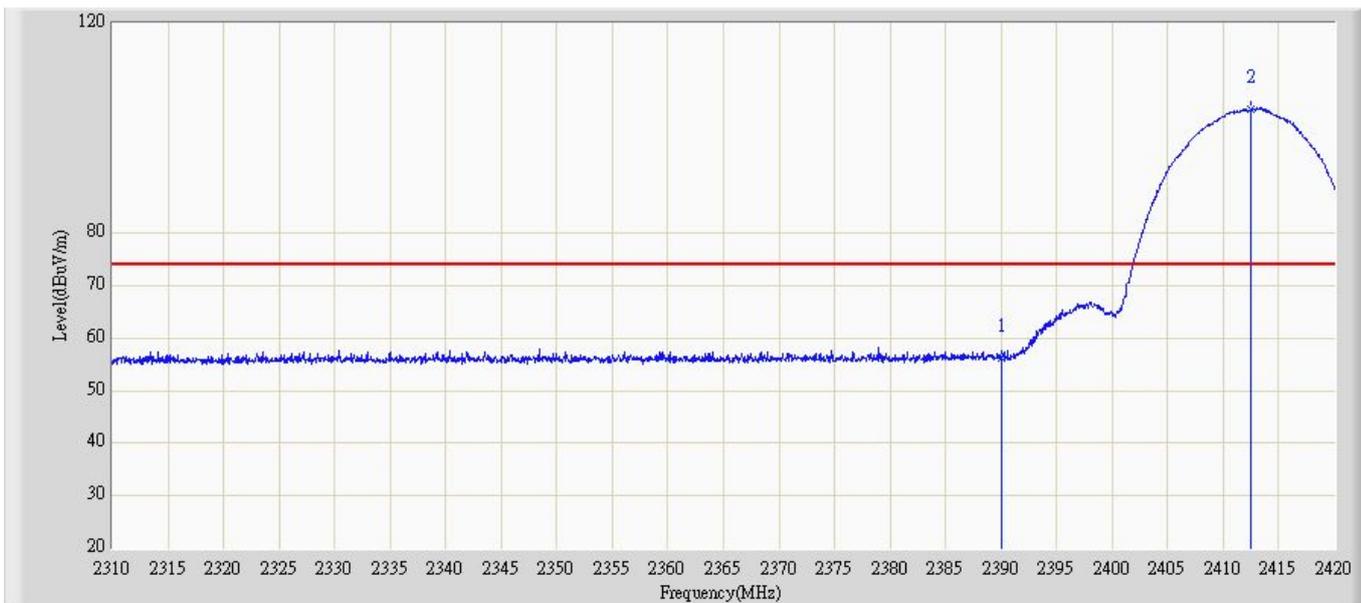
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	56.475	24.478	-17.525	74.000	31.997	PK
2	*	2412.575	105.964	73.950	N/A	N/A	32.014	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 11:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2412MHz by 802.11b	



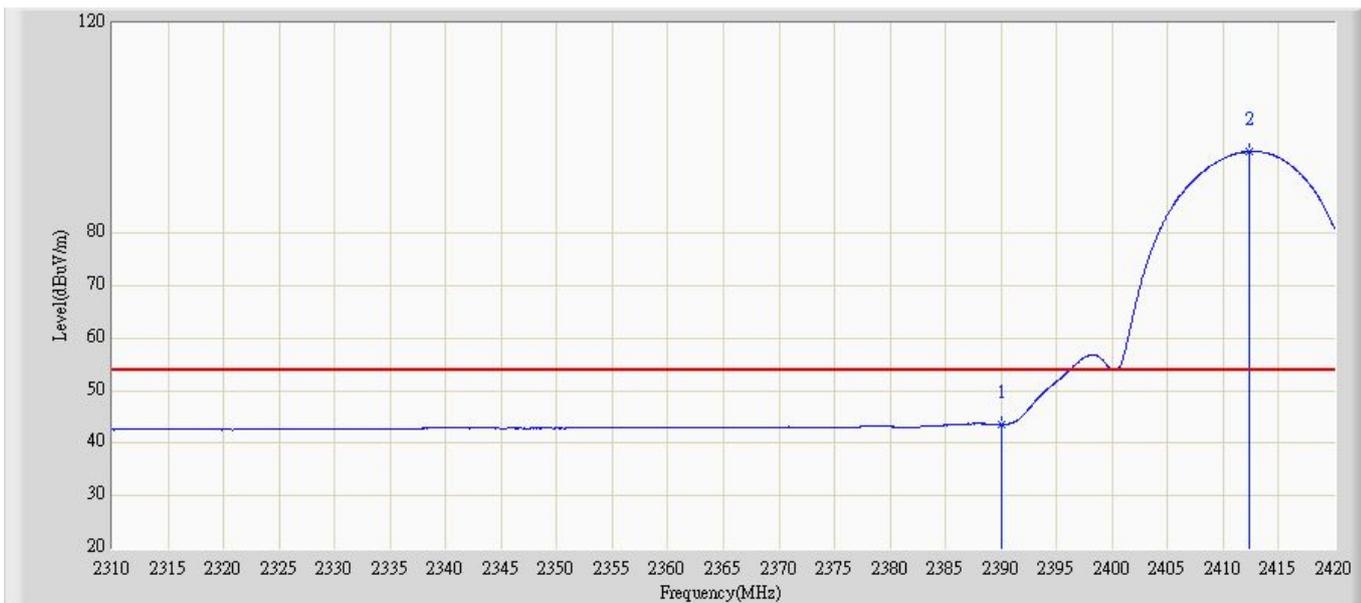
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	43.580	11.583	-10.420	54.000	31.997	AV
2	*	2412.355	97.778	65.764	N/A	N/A	32.014	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 11:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2412MHz by 802.11b	



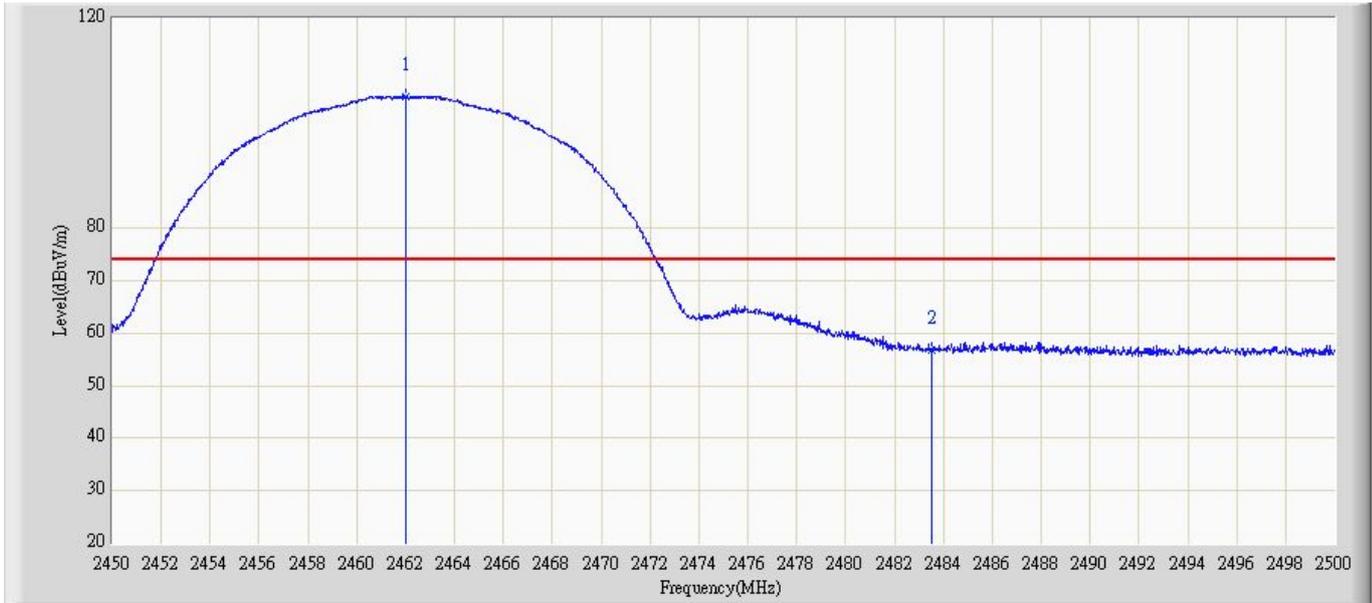
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	56.119	24.122	-17.881	74.000	31.997	PK
2	*	2412.520	103.716	71.702	N/A	N/A	32.014	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 11:51
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2412MHz by 802.11b	



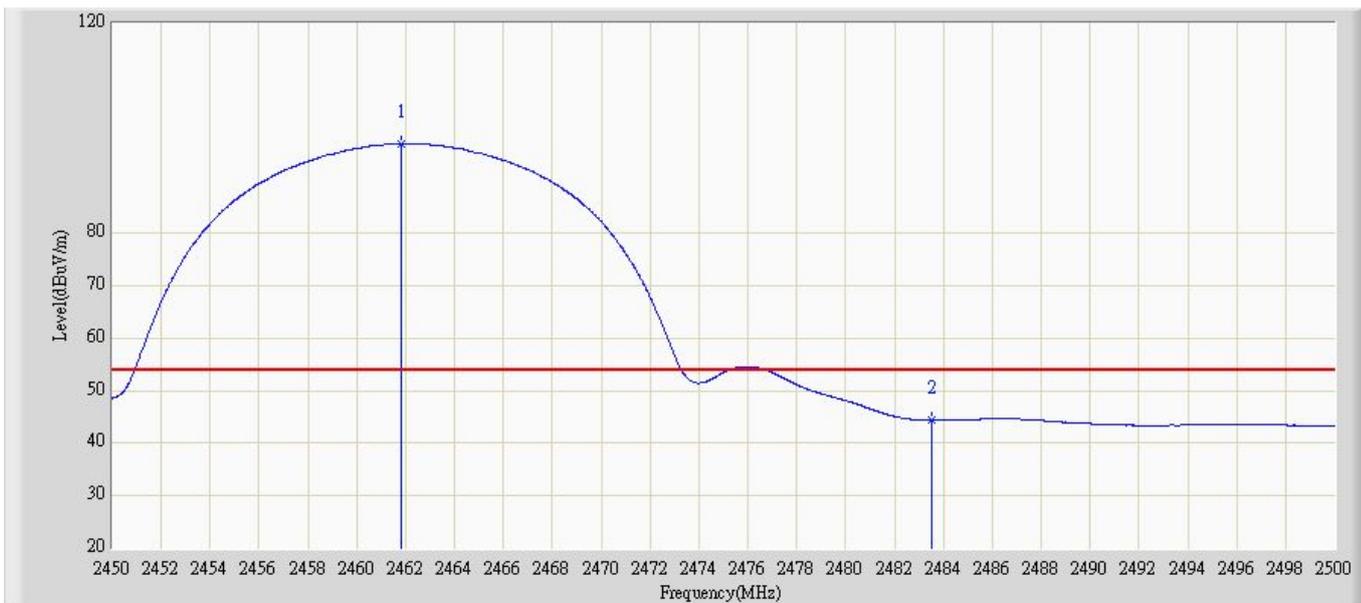
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	43.641	11.644	-10.359	54.000	31.997	AV
2	*	2412.355	95.600	63.586	N/A	N/A	32.014	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 11:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2462MHz by 802.11b	



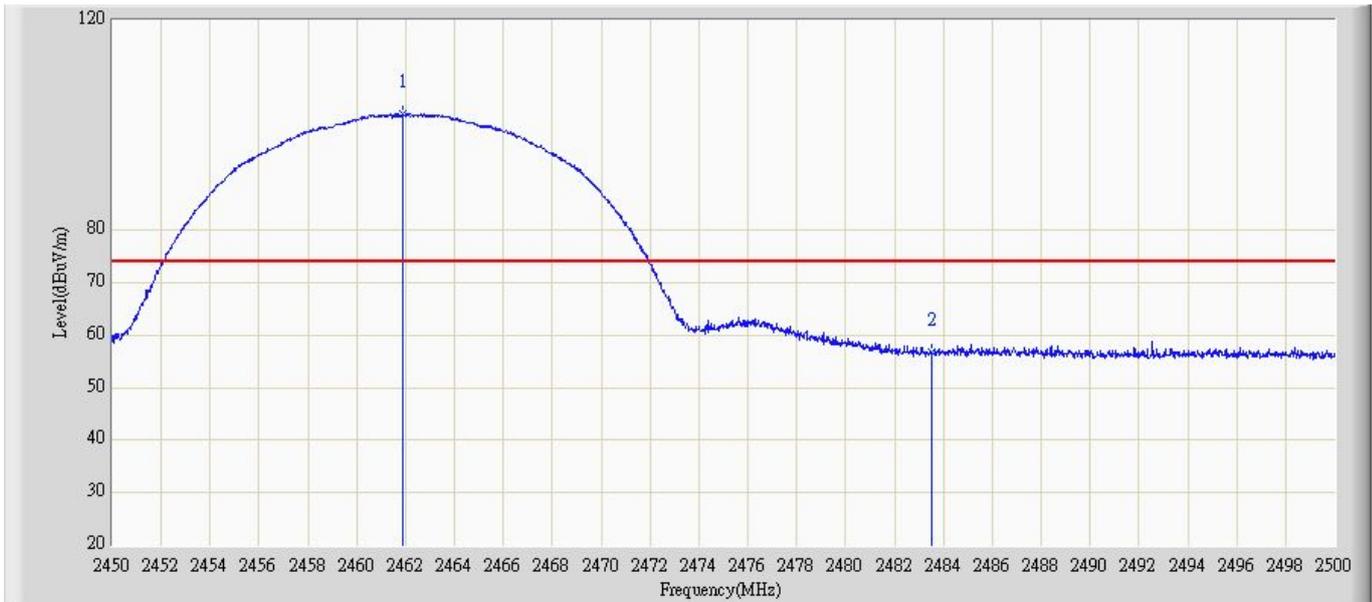
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.025	104.973	73.006	N/A	N/A	31.967	PK
2		2483.500	56.703	24.824	-17.297	74.000	31.878	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 13:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2462MHz by 802.11b	



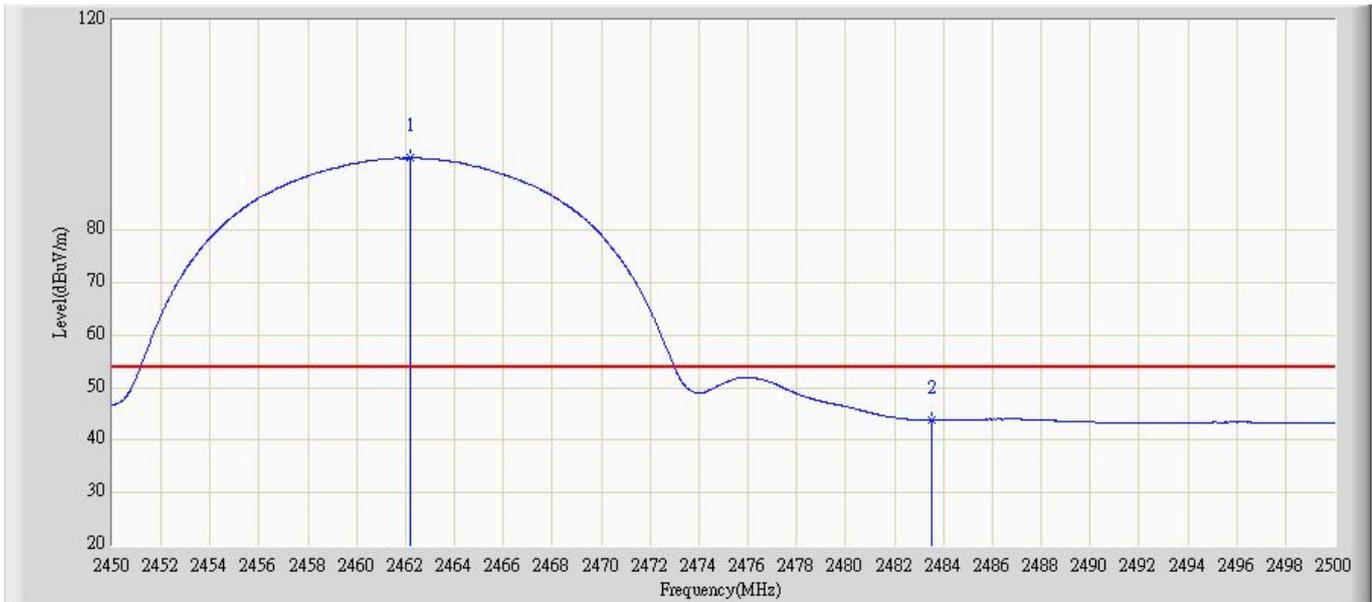
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.800	97.065	65.097	N/A	N/A	31.968	AV
2		2483.500	44.338	12.459	-9.662	54.000	31.878	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 13:49
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2462MHz by 802.11b	



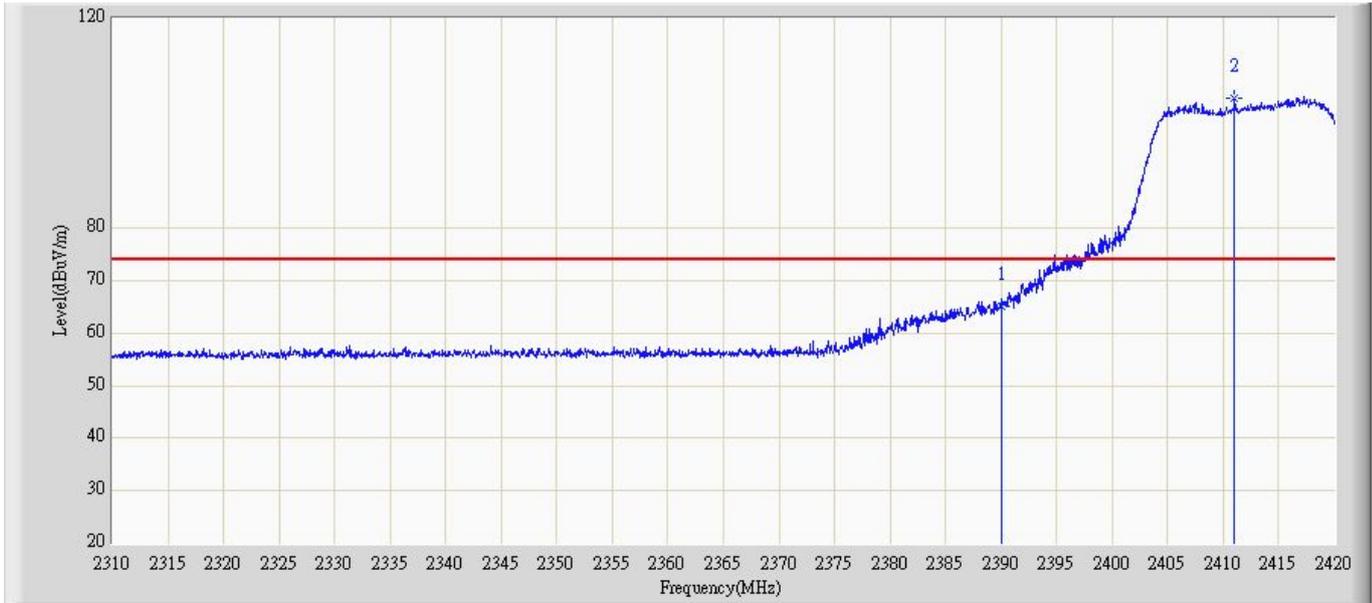
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2461.875	102.063	70.095	N/A	N/A	31.968	PK
2		2483.500	56.682	24.803	-17.318	74.000	31.878	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 1: Transmit at 2462MHz by 802.11b	



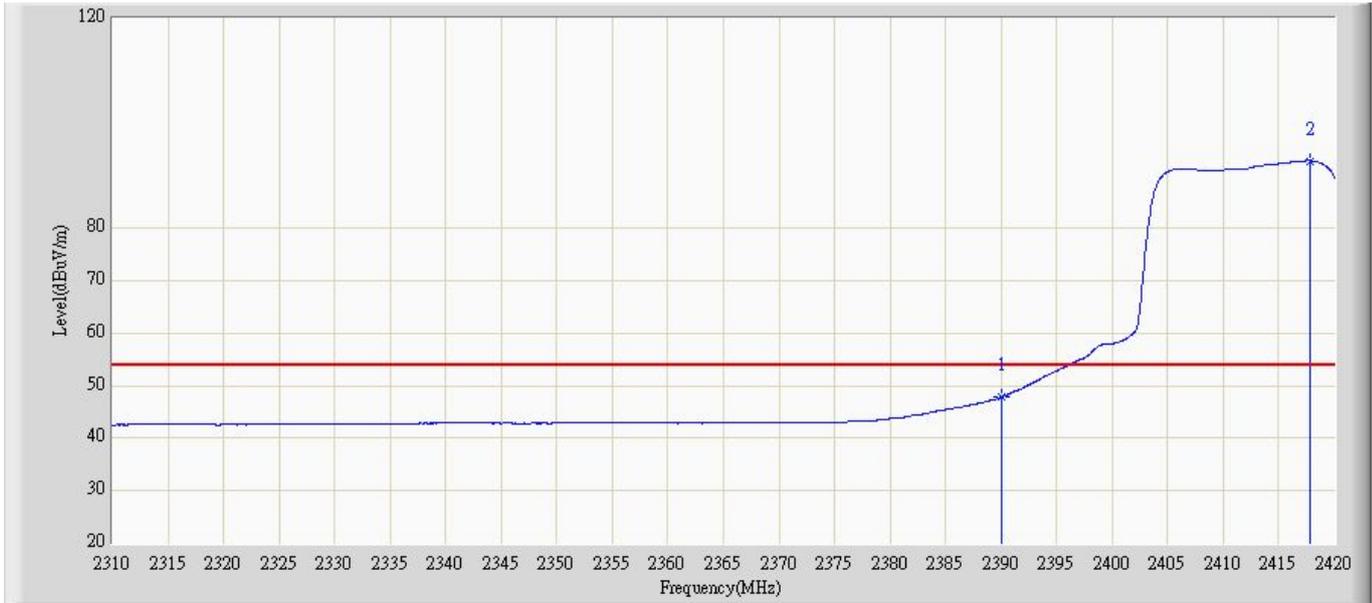
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2462.175	93.775	61.809	N/A	N/A	31.966	AV
2		2483.500	43.828	11.949	-10.172	54.000	31.878	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:13
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2412MHz by 802.11g	



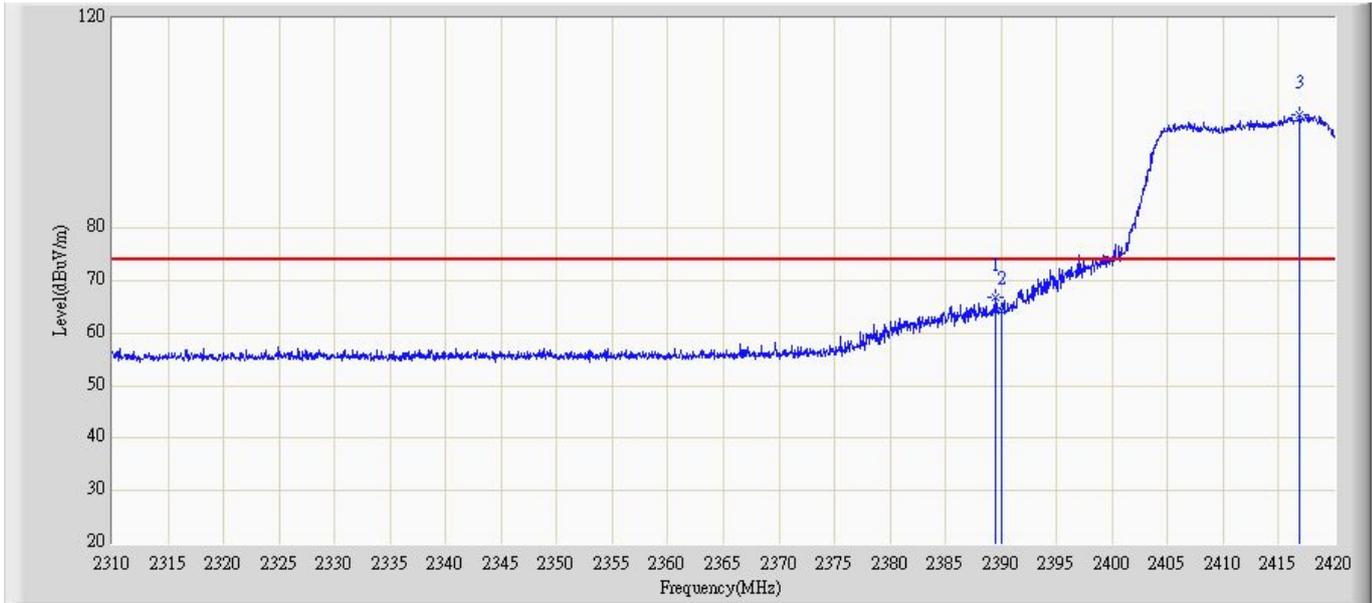
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	64.984	32.987	-9.016	74.000	31.997	PK
2	*	2411.035	104.737	72.725	N/A	N/A	32.012	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2412MHz by 802.11g	



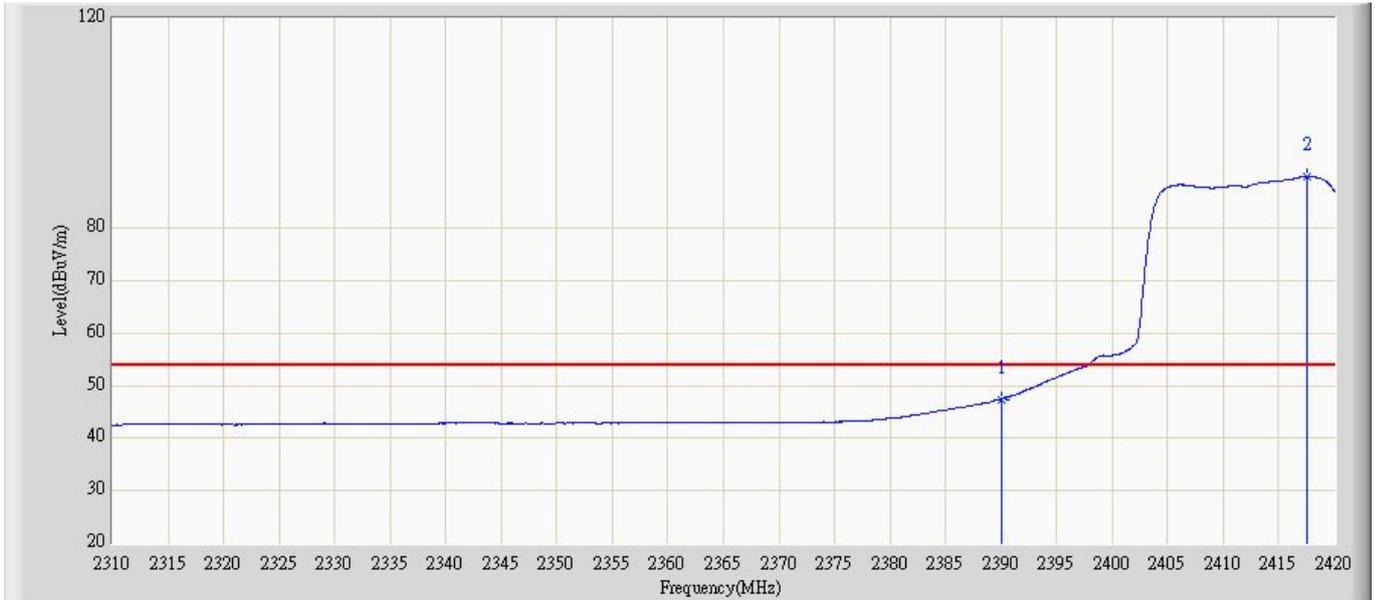
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.806	15.809	-6.194	54.000	31.997	AV
2	*	2417.855	92.841	60.819	N/A	N/A	32.022	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2412MHz by 802.11g	



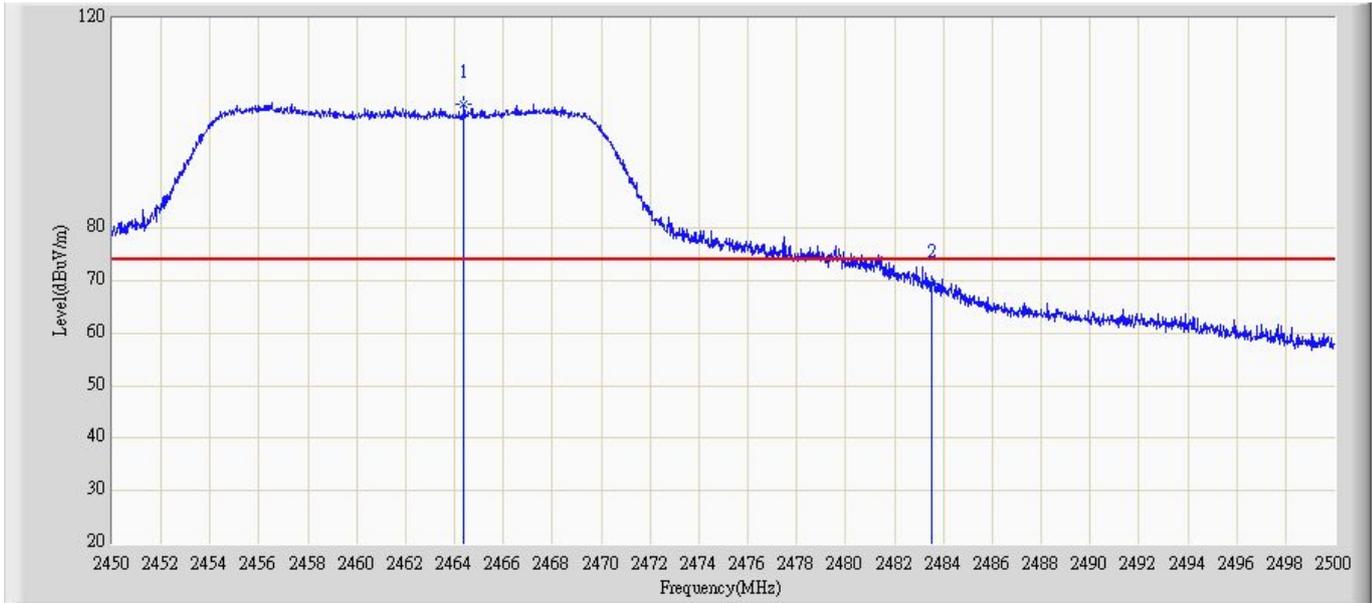
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2389.530	66.951	34.955	-7.049	74.000	31.997	PK
2		2390.000	64.373	32.376	-9.627	74.000	31.997	PK
3	*	2416.865	101.620	69.600	N/A	N/A	32.021	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:20
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2412MHz by 802.11g	



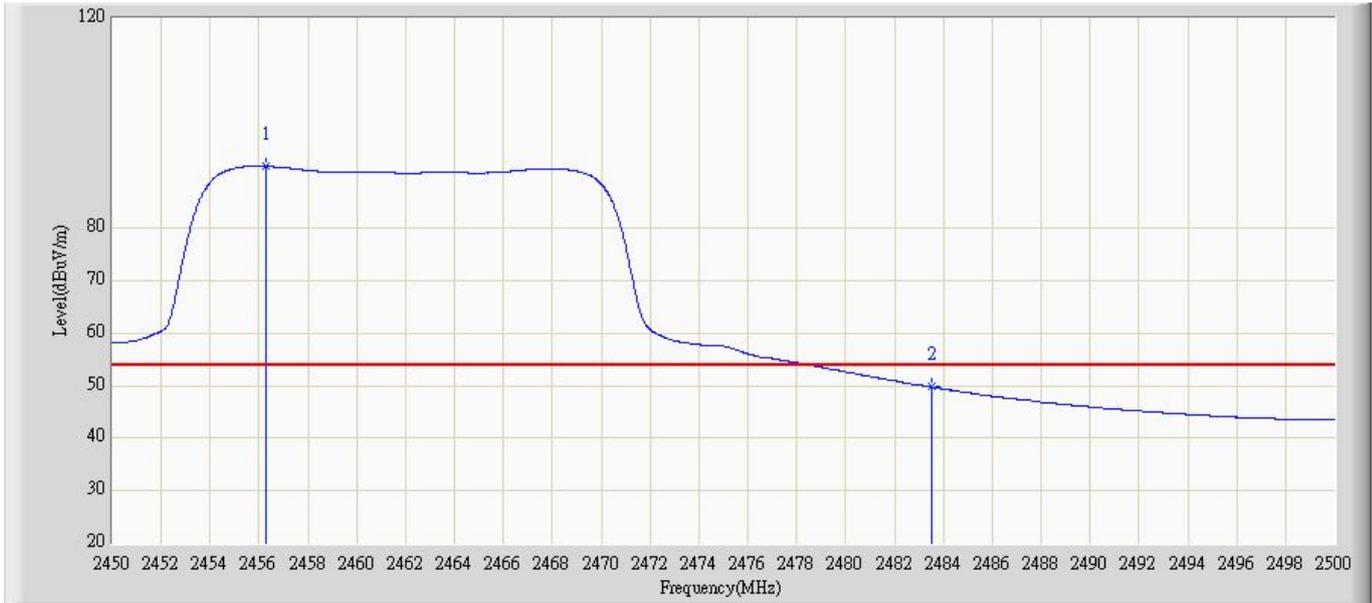
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	47.421	15.424	-6.579	54.000	31.997	AV
2	*	2417.525	89.799	57.778	N/A	N/A	32.021	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2462MHz by 802.11g	



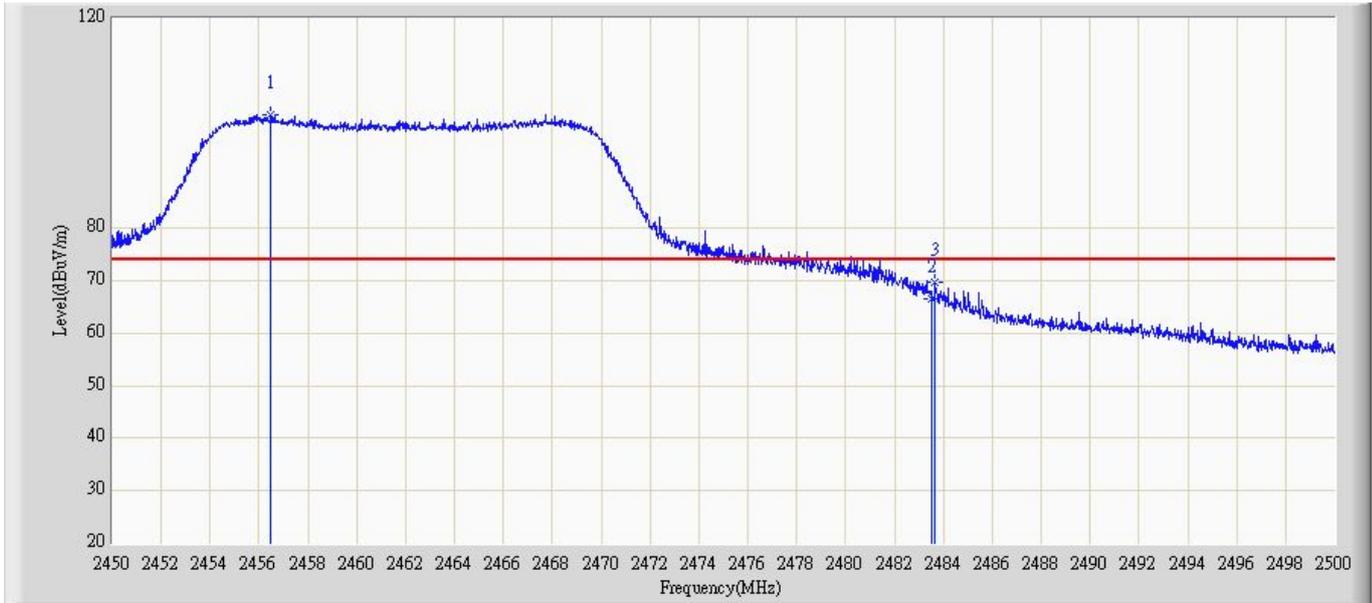
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2464.375	103.714	71.758	N/A	N/A	31.956	PK
2		2483.500	69.329	37.450	-4.671	74.000	31.878	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:26
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Horizontal
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2462MHz by 802.11g	



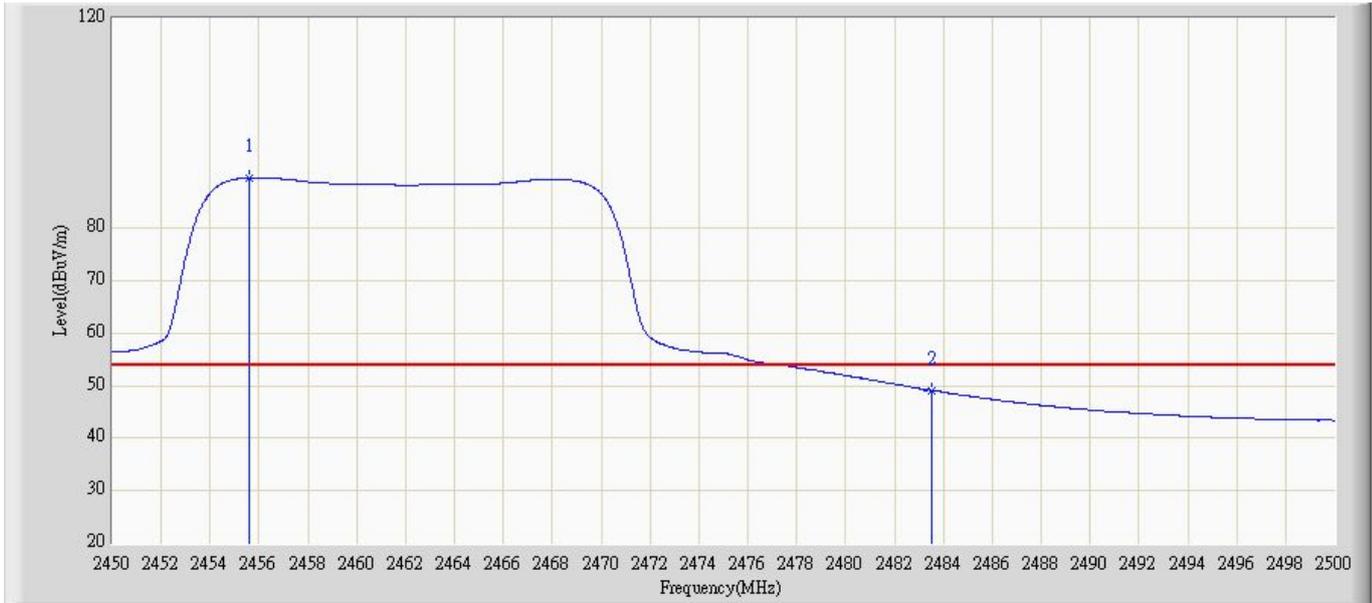
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2456.300	91.801	59.810	N/A	N/A	31.992	AV
2		2483.500	49.752	17.873	-4.248	54.000	31.878	AV

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2462MHz by 802.11g	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2456.475	101.564	69.573	N/A	N/A	31.991	PK
2		2483.500	66.485	34.606	-7.515	74.000	31.878	PK
3		2483.650	69.853	37.975	-4.147	74.000	31.878	PK

Engineer: Jack	
Site: AC5	Time: 2011/04/06 - 14:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D-499(1-18GHz)	Polarity: Vertical
EUT: GSM Mobile Phone	Power: DC 3.7V
Note: Mode 2: Transmit at 2462MHz by 802.11g	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2455.600	89.650	57.656	N/A	N/A	31.995	AV
2		2483.500	49.156	17.277	-4.844	54.000	31.878	AV

7. Operation Frequency Range of 20dB Bandwidth

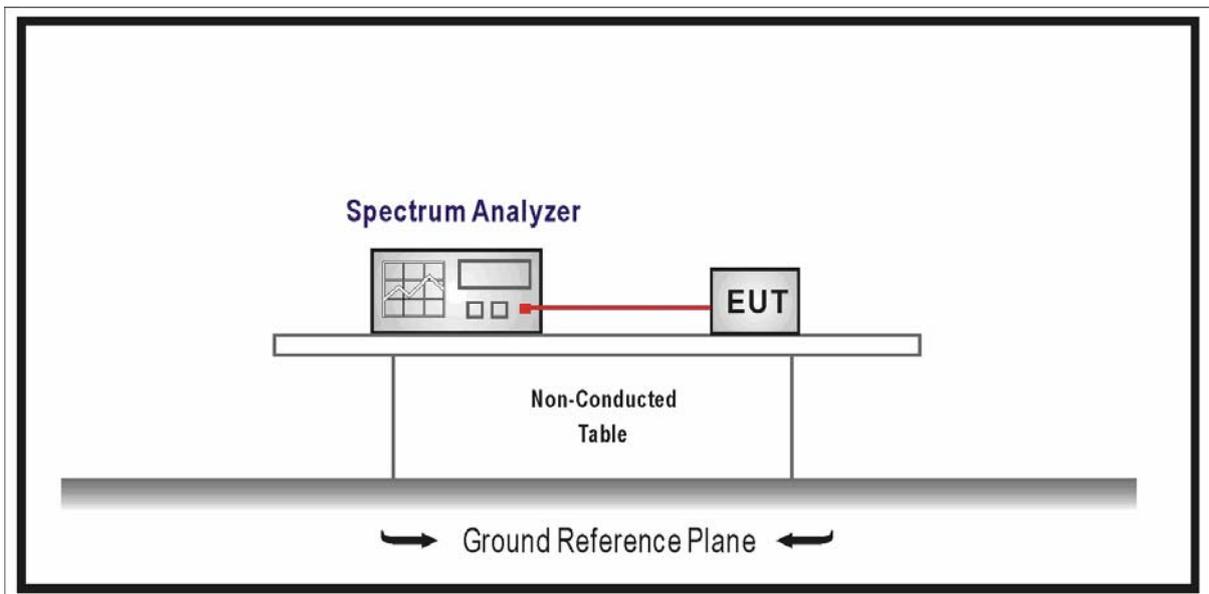
7.1. Test Equipment

Operation Frequency Range of 20dB Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2011.04.30
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2012.01.14

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

7.2. Test Setup



7.3. Limit

20 dB bandwidth of the emission is contained within the operation frequency band.

7.4. Test Procedure

The EUT was tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

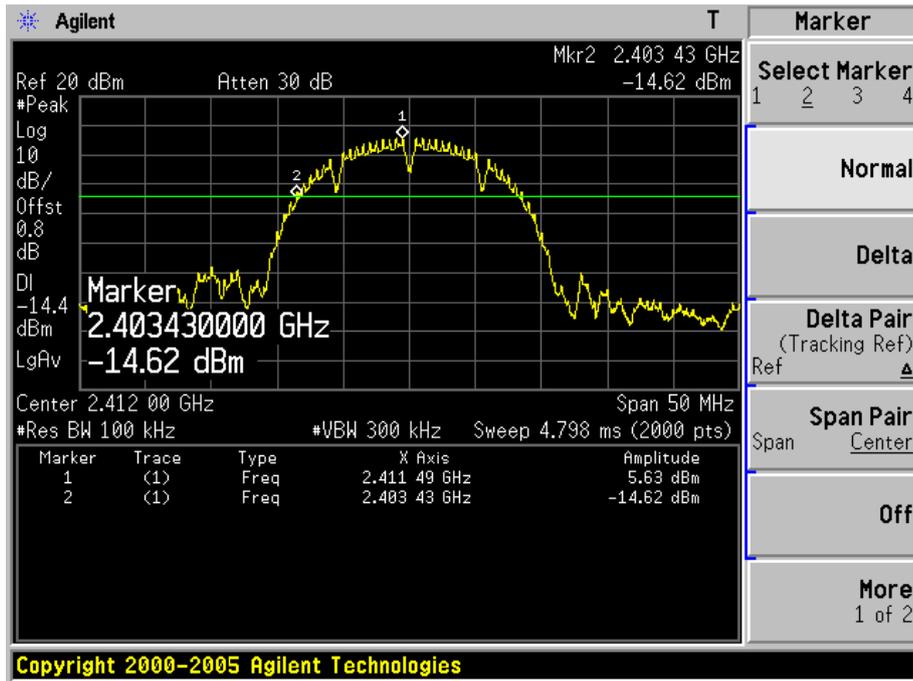
7.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

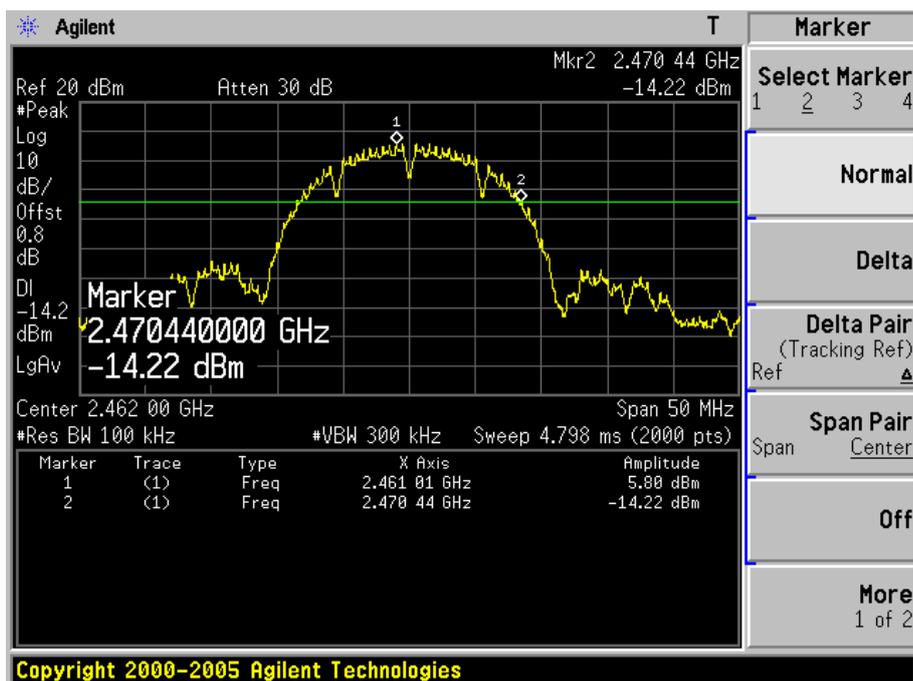
7.6. Test Result

Product	:	GSM Mobile Phone
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel 01 (2412MHz)

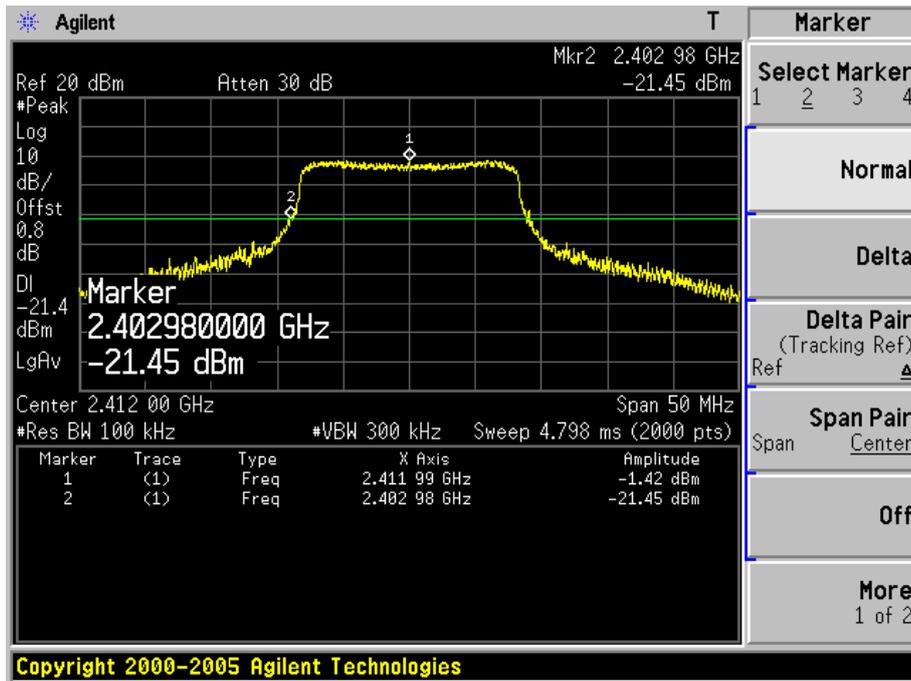


Channel 11 (2462MHz)

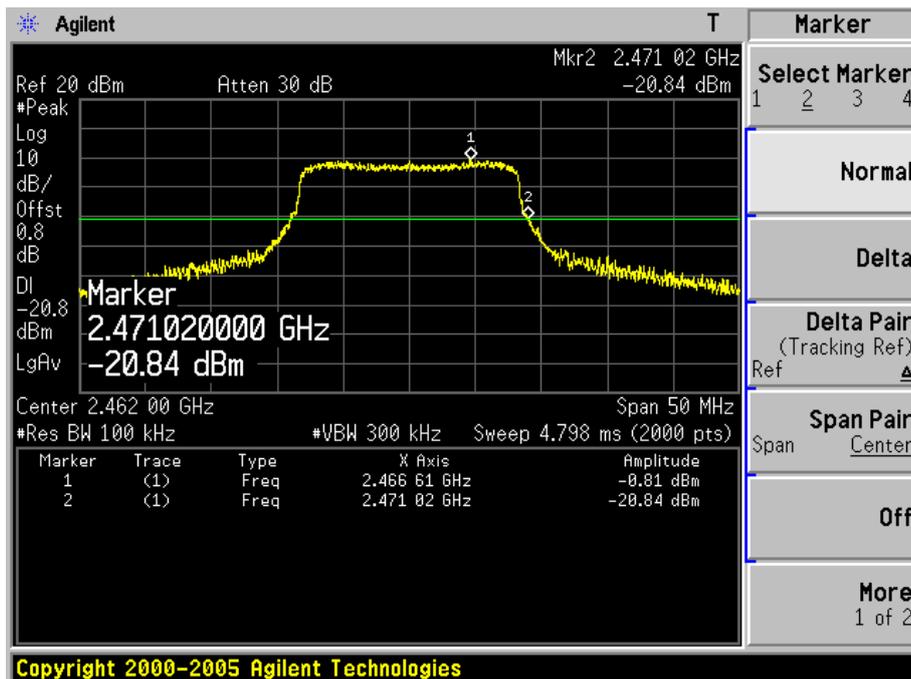


Product	: GSM Mobile Phone
Test Item	: Operation Frequency Range of 20dB Bandwidth
Test Site	: TR-8
Test Mode	: Mode 2: Transmit by 802.11g

Channel 01 (2412MHz)



Channel 11 (2462MHz)



8. Occupied Bandwidth

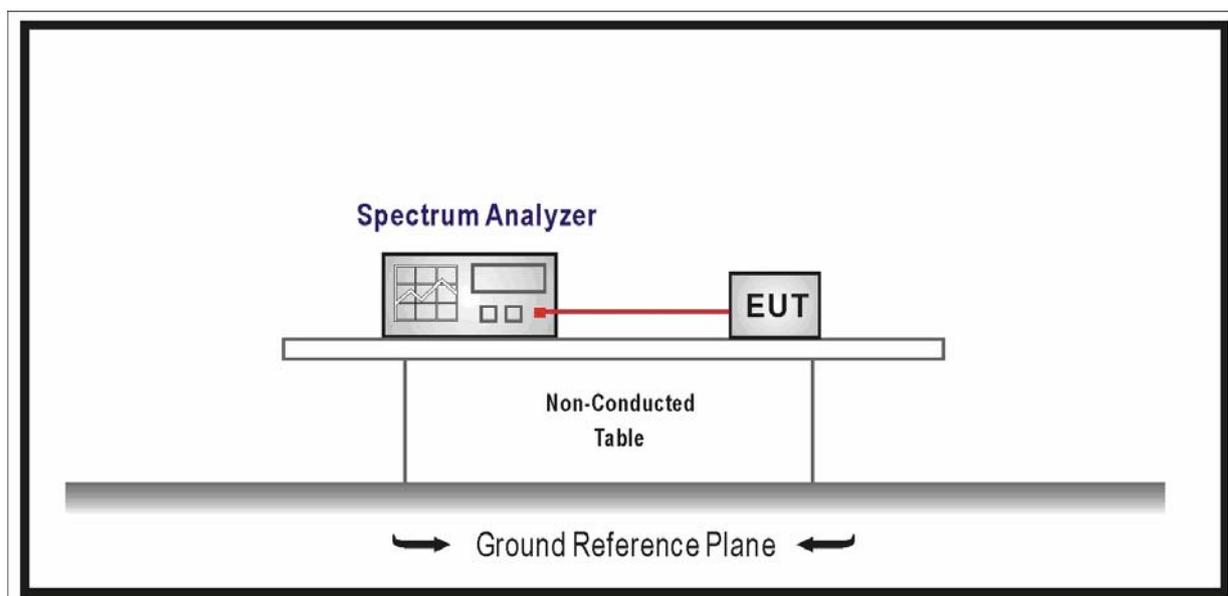
8.1. Test Equipment

Occupied Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2011.04.30
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2012.01.14

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

8.2. Test Setup



8.3. Limit

The minimum 6 dB bandwidth shall be at least 500 kHz.

8.4. Test Procedure

The EUT was tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

8.5. Uncertainty

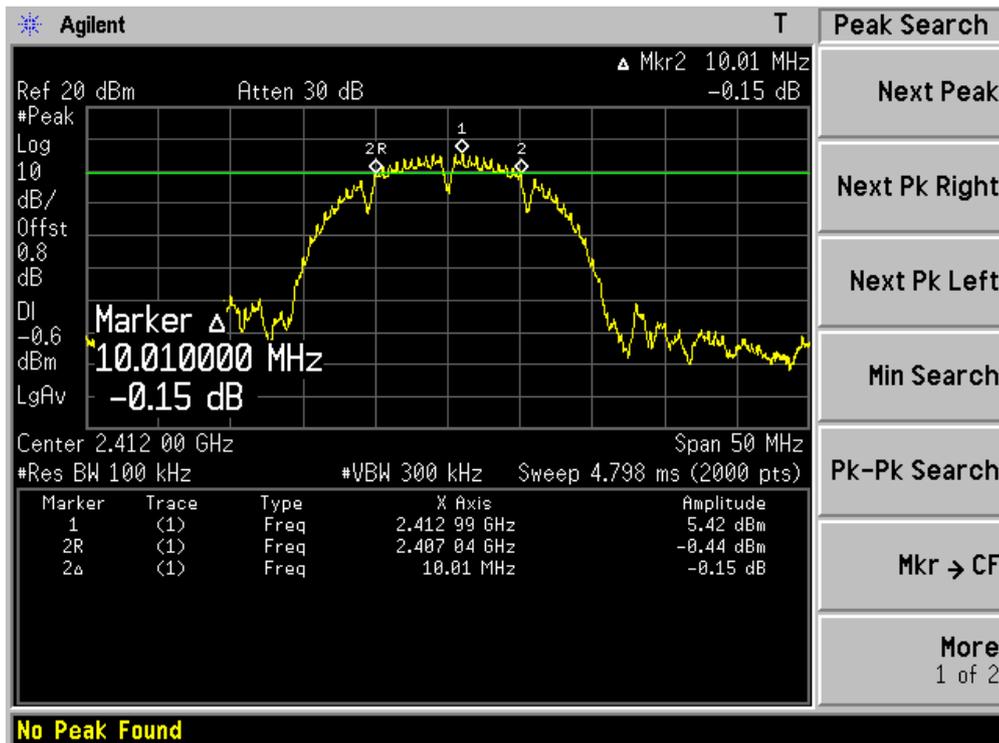
The measurement uncertainty is defined as ± 1 kHz

8.6. Test Result

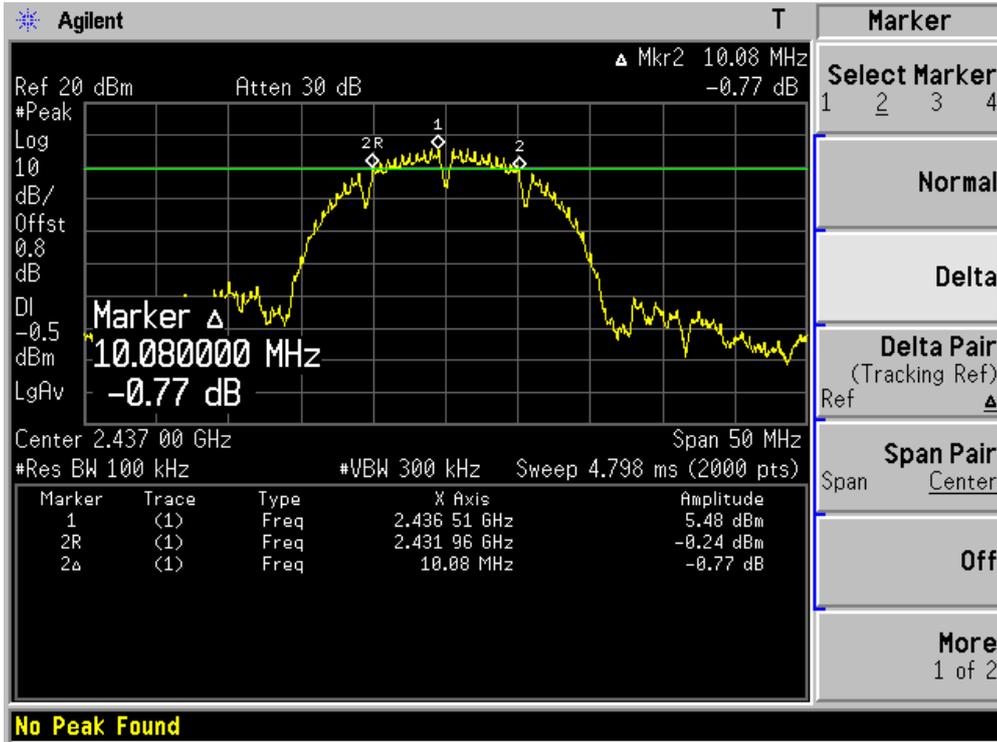
Product	:	GSM Mobile Phone
Test Item	:	6dB Occupied Bandwidth
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	10010	500	Pass
06	2437	10080	500	Pass
11	2462	10080	500	Pass

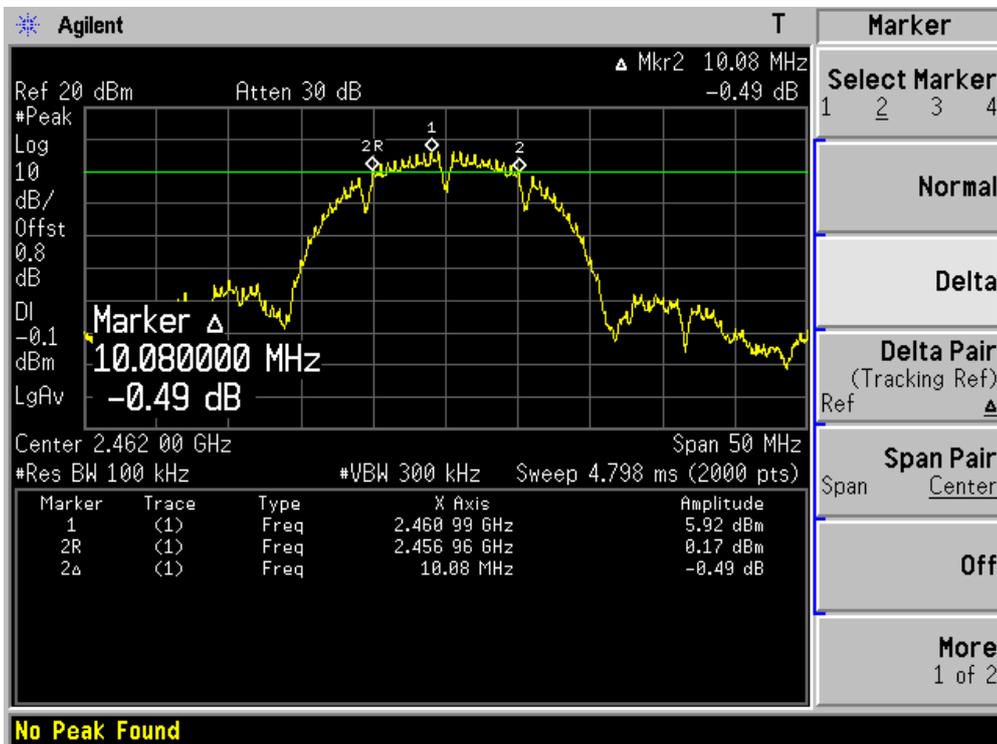
Channel 01 (2412MHz)



Channel 06 (2437MHz)



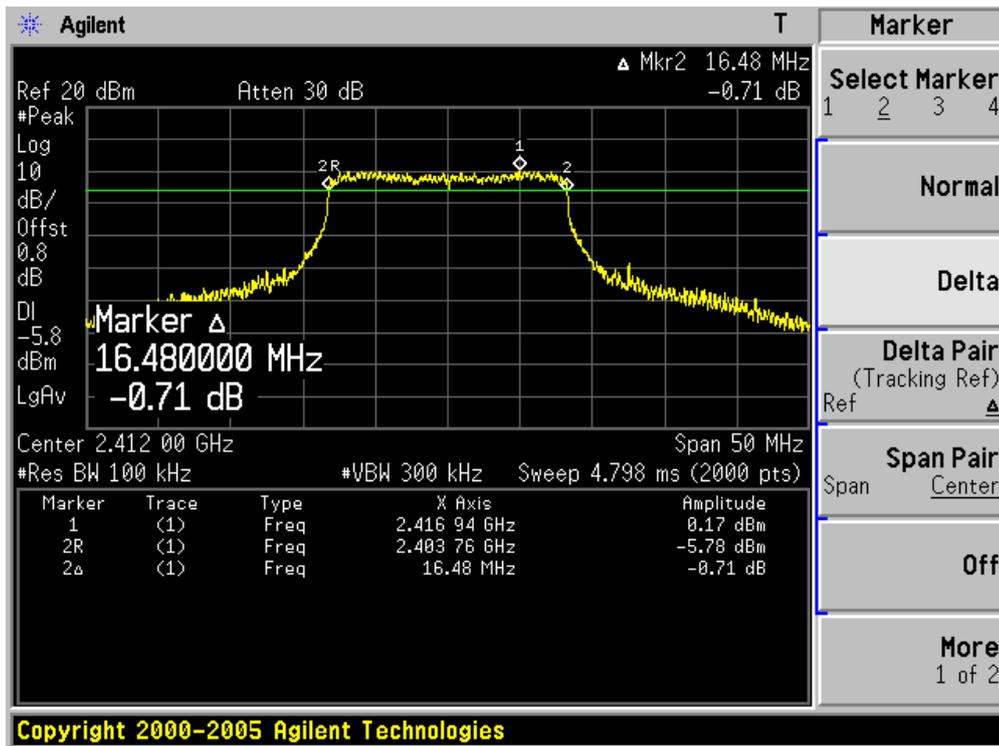
Channel 11 (2462MHz)



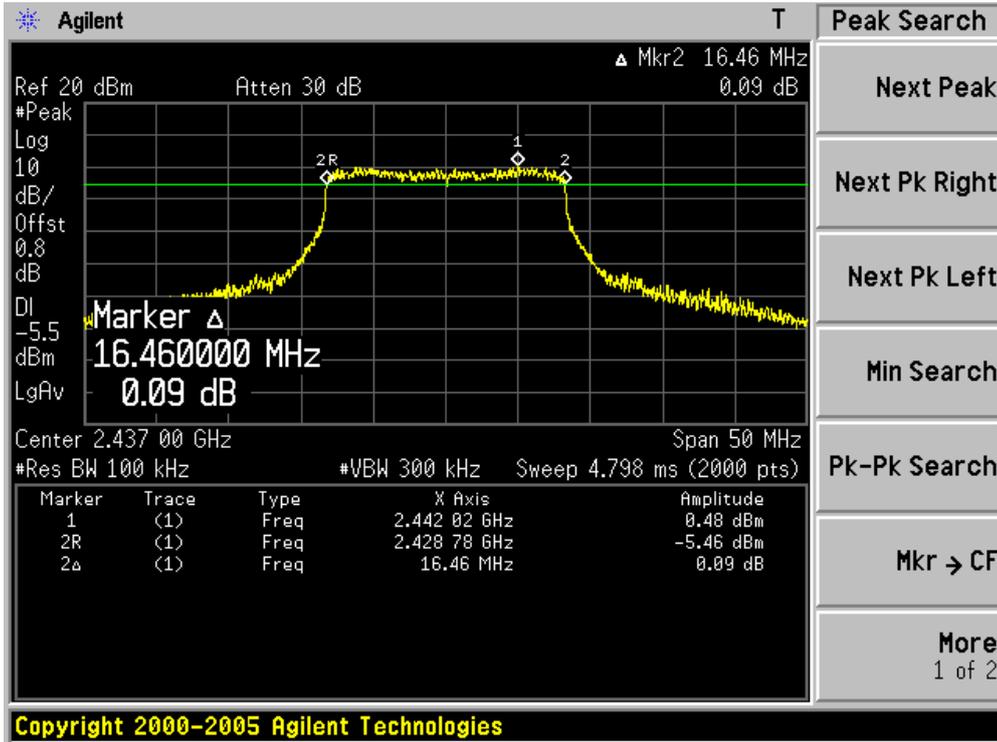
Product	: GSM Mobile Phone
Test Item	: 6dB Occupied Bandwidth
Test Site	: TR-8
Test Mode	: Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	16480	500	Pass
06	2437	16460	500	Pass
11	2462	16480	500	Pass

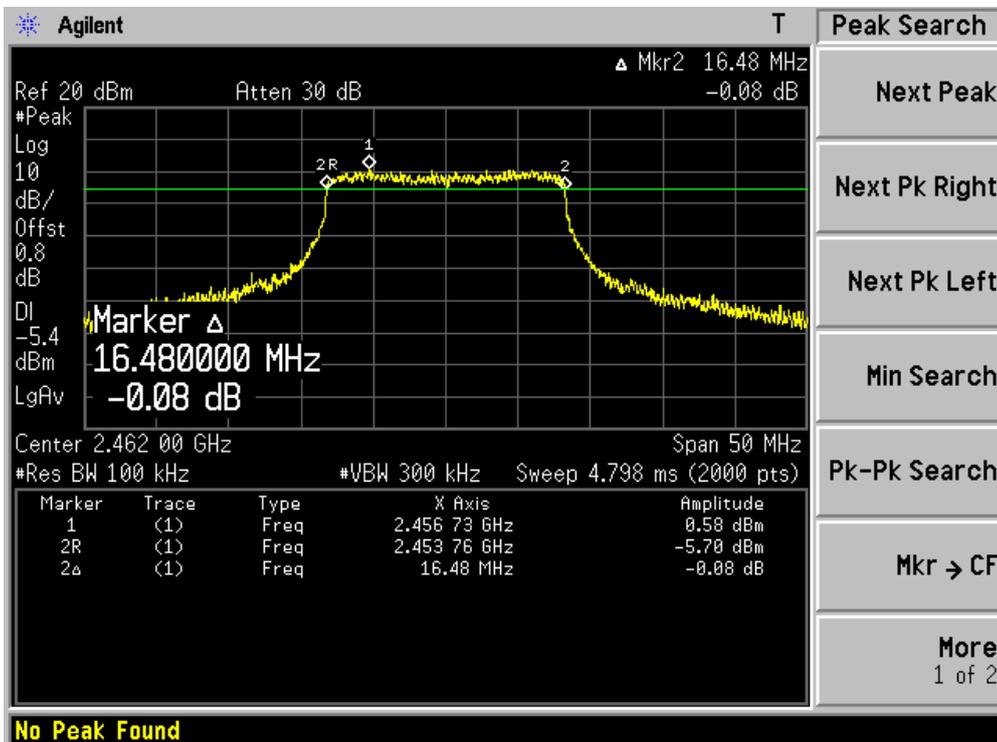
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



9. Power Output

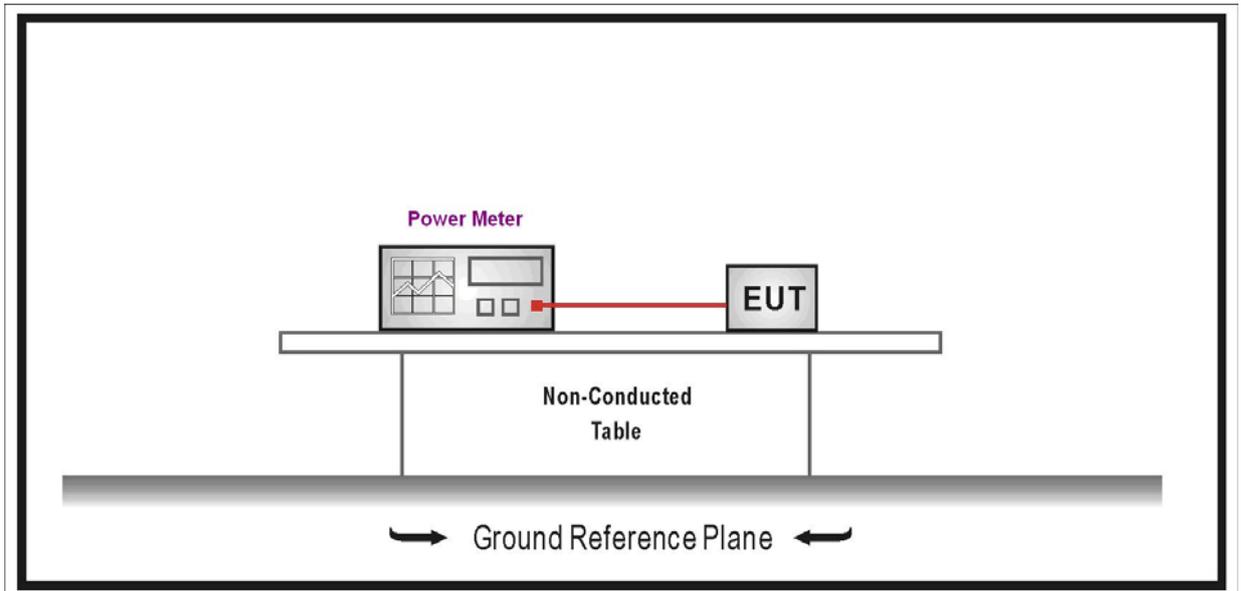
9.1. Test Equipment

Power Output / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2012.01.12
Power Sensor	Anritsu	MA2411B	0846014	2012.01.12
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2012.01.14

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

9.2. Test Setup



9.3. Limit

The maximum peak power shall be less 1 Watt (30dBm).

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

9.4. Test Procedure

The EUT was tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Use the wideband power meter to test peak power and record the result.

9.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

9.6. Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (blue marker) for final test of each channel.

MCS Index for 802.11n	Spatial Streams	Data Rate (Mbps)					
		802.11b	802.11g	20MHz Bandwidth		40MHz Bandwidth	
				800ns GI	400ns GI	800ns GI	400ns GI
0	1	1	6	6.5	7.2	13.5	15.0
1	1	2	9	13.0	14.4	27.0	30.0
2	1	5.5	12	19.5	21.7	40.5	45.0
3	1	11	18	26.0	28.9	54.0	60.0
4	1	---	24	39.0	43.3	81.0	90.0
5	1	---	36	52.0	57.8	108.0	120.0
6	1	---	48	58.5	65.0	121.5	135.0
7	1	---	54	65.0	72.2	135.0	150.0
8	2	---	---	13.0	14.4	27.0	30.0
9	2	---	---	26.0	28.9	54.0	60.0
10	2	---	---	39.0	43.3	81.0	90.0
11	2	---	---	52.0	57.8	108.0	120.0
12	2	---	---	78.0	86.7	162.0	180.0
13	2	---	---	104.0	115.6	216.0	240.0
14	2	---	---	117.0	130.0	243.0	270.0
15	2	---	---	130.0	144.0	270.0	300.0

Power output at various data rates:

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Peak Power (dBm)
802.11b	20	2437	6	1	17.01
				5.5	18.67
				11	19.91
802.11g	20	2437	6	6	19.19
				24	19.26
				54	19.36

Product	:	GSM Mobile Phone
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
01	2412	19.69	30.00	Pass
06	2437	19.91	30.00	Pass
11	2462	20.34	30.00	Pass

Product	:	GSM Mobile Phone
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
01	2412	19.21	30.00	Pass
06	2437	19.36	30.00	Pass
11	2462	19.65	30.00	Pass

10. Power Spectral Density

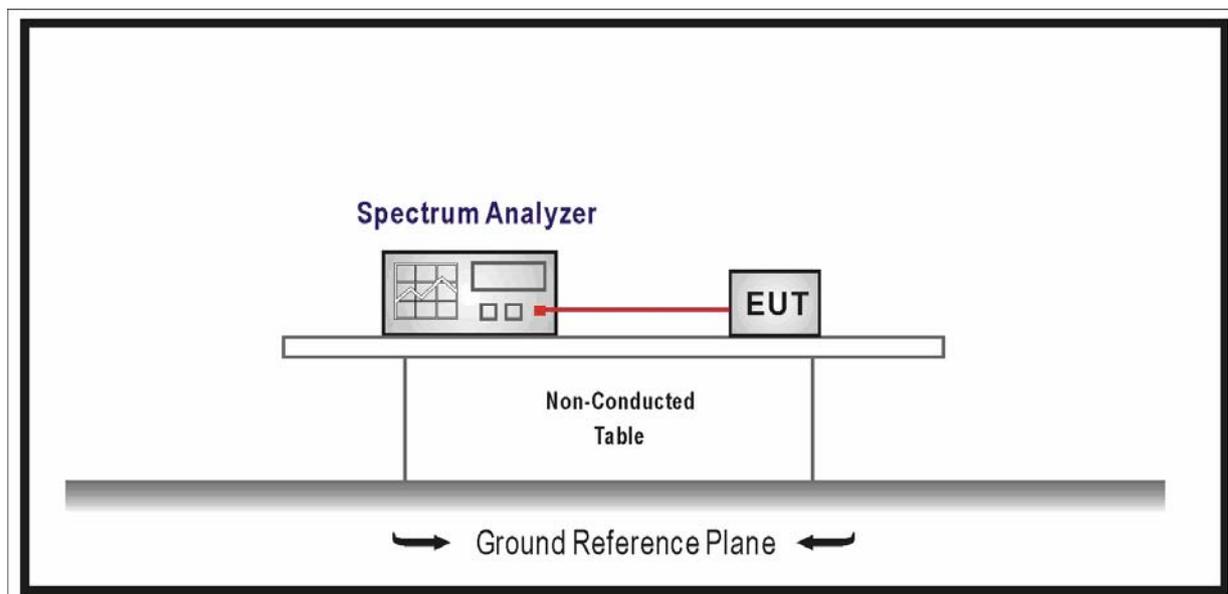
10.1. Test Equipment

Power Spectral Density / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cali. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2011.04.30
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2012.01.14

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

10.2. Test Setup



10.3. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiated to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

10.4. Test Procedure

The EUT was tested according to ANSI C63.10: 2009 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 3 kHz, Set VBW \cong 10 kHz, Sweep time=100s, Set detector=Peak detector.

10.5. Uncertainty

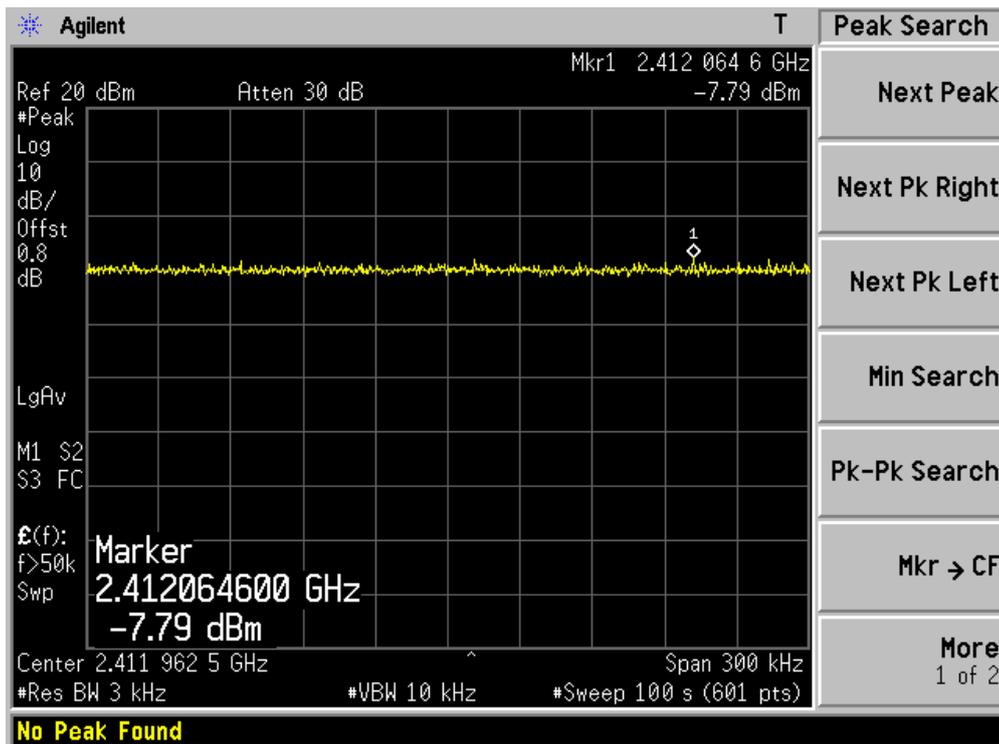
The measurement uncertainty is defined as ± 1.27 dB

10.6. Test Result

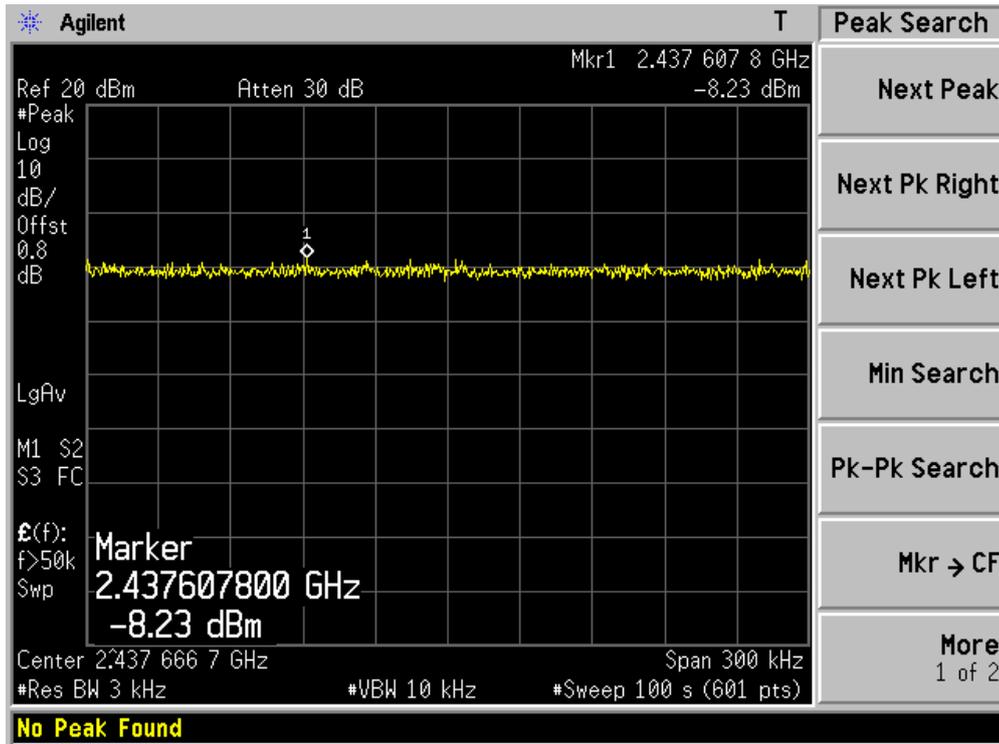
Product	:	GSM Mobile Phone
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Measurement PPSD (dBm)	Limit (dBm)	Result
01	2412	-7.79	8	Pass
06	2437	-8.23	8	Pass
11	2462	-6.79	8	Pass

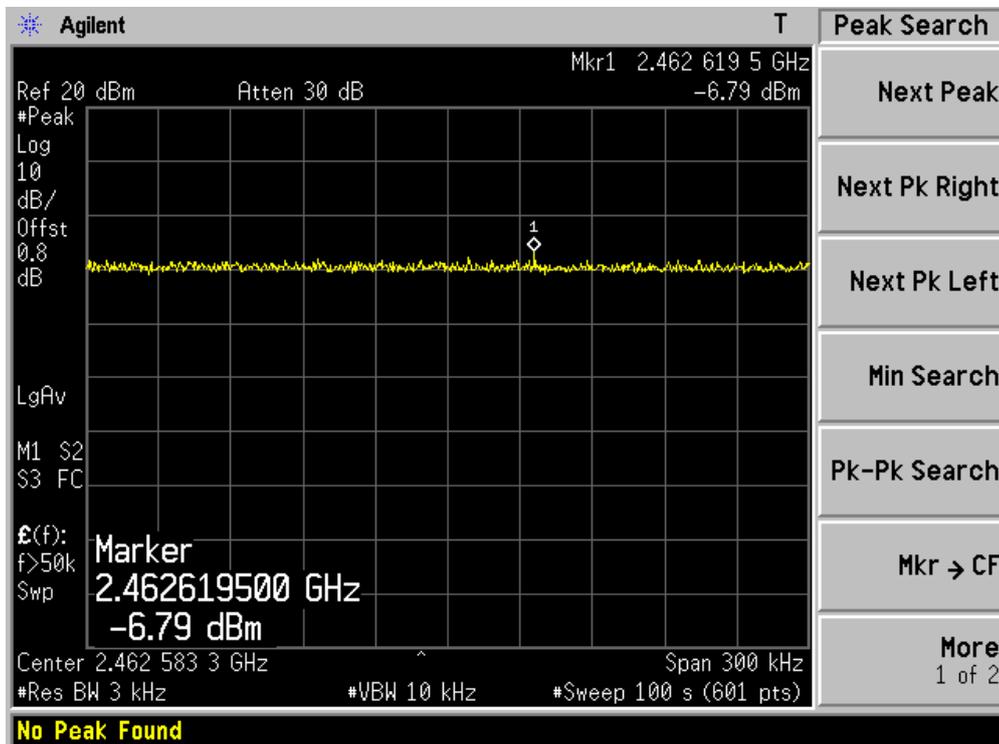
Channel 01 (2412MHz)



Channel 06 (2437MHz)



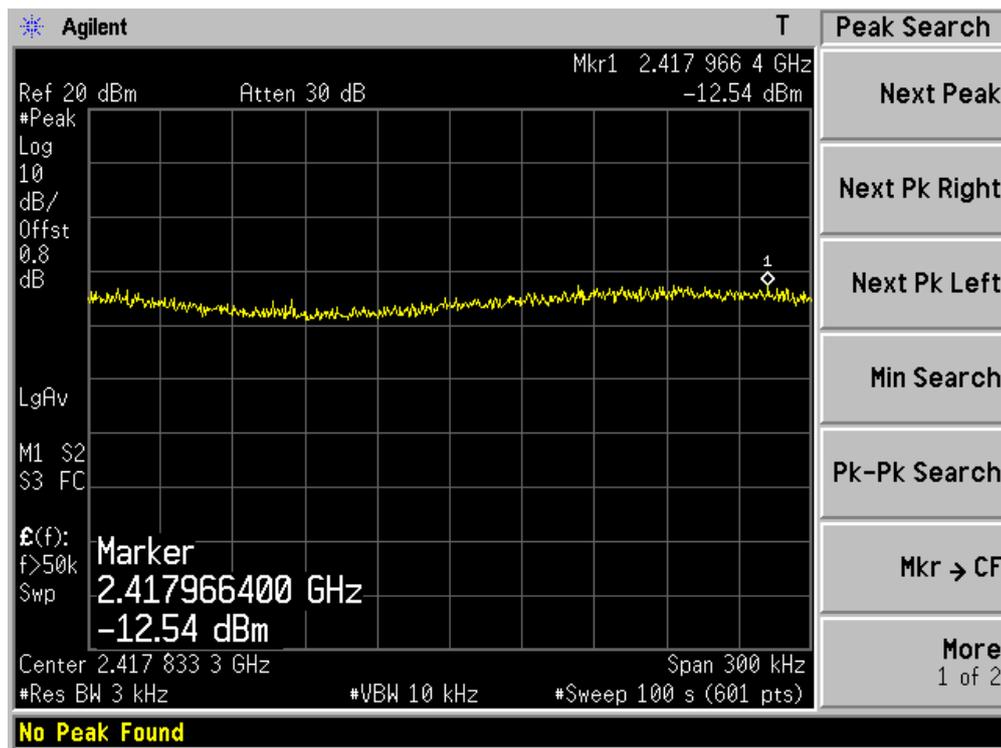
Channel 11 (2462MHz)



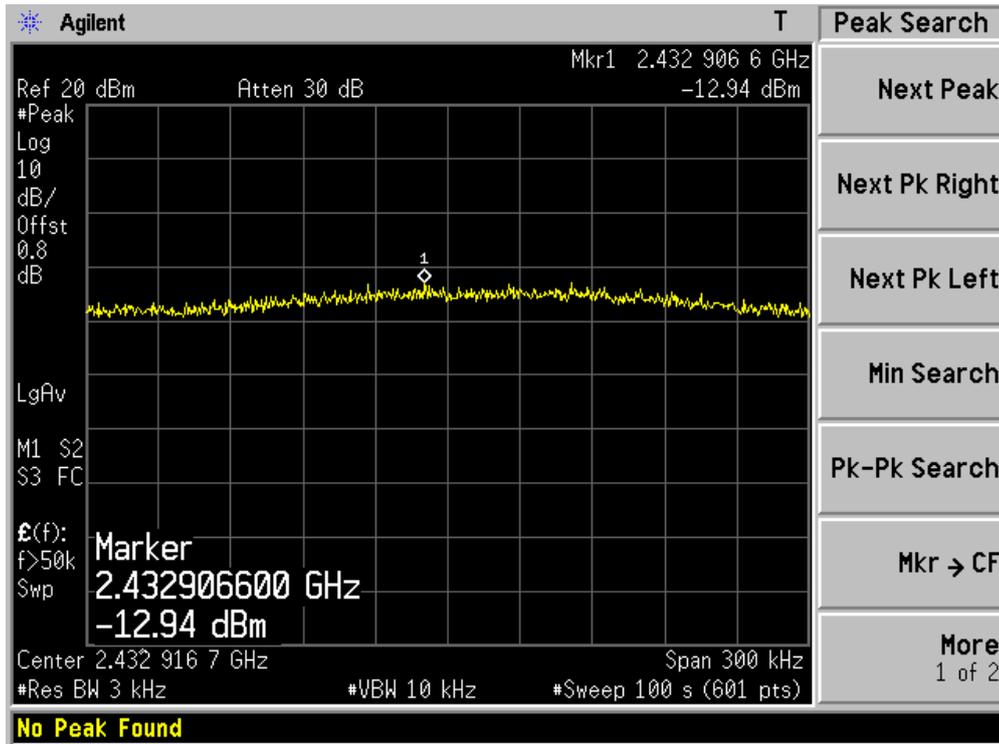
Product	: GSM Mobile Phone
Test Item	: Power Spectral Density
Test Site	: TR-8
Test Mode	: Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Measurement PPSD (dBm)	Limit (dBm)	Result
01	2412	-12.54	8	Pass
06	2437	-12.94	8	Pass
11	2462	-12.27	8	Pass

Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

