Test Report

Under

FCC Part15 Subpart C

Report Reference No. ..... :	A1304031F 01001	
Tested by (name + signature) ..... :	Brgant Xu	.....
Reviewer by (name + signature)..... :	Teresa Hu	.....
Approved by (name + signature) ..... :	Joe Long	.....
Date of issue ..... :	2013-6-20	
Testing Laboratory ..... :	DongGuan Anci Electronic Technology Co., Ltd	
Address ..... .:	No. A222, Building A, Shifu Hardware Plaza, Changan Town, Dongguan City, Guangdong Pr., China. FCC Registered Test Site Number: 721657	
Performed location..... .:	QuieTek Technology (Suzhou) Co., Ltd.	
Address ..... .:	No. 99 Hongye Rd., Suzhou Industrial Park Loufeng Hi-Tech Development Zone, Suzhou, China FCC Registered Test Site Number: 800392	

Product name .....:	iRetroPhone Bluetooth
Model No. .....:	HO-BTL-2XX
FCC ID .....:	O3ZHOBTL2XX
Applicant's name .....:	Konnext Corporation Limited
Address .....:	Flat A, 5/F, Contempo Place, 81 Hung To Rd, Kwun Tong, Kowloon, Hong Kong
Manufacturer .....:	Konnext Corporation Limited
Address .....:	Flat A, 5/F, Contempo Place, 81 Hung To Rd, Kwun Tong, Kowloon, Hong Kong

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product	iRetroPhone Bluetooth
Brand Name	KONNEXT
Model No.	HO-BTL-2XX
Working Voltage	DC 5V
Frequency Range	2402- 2480 MHz
Channel Number	79
Channel Separation	1MHz
Type of Modulation	GFSK
Data Rate	1Mbps(GFSK), 2Mbps(Pi/4 DQPSK), 3Mbps (8DPSK)
Antenna Type	Printed Antenna
Peak Antenna Gain	-0.39dBi

1.2. Mode of Operation

Test Mode
Mode 1: Transmitter-1Mbps(GFSK_DH5)
Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)
Mode 3: Transmitter-3Mbps(8DPSK_DH5)

Note:

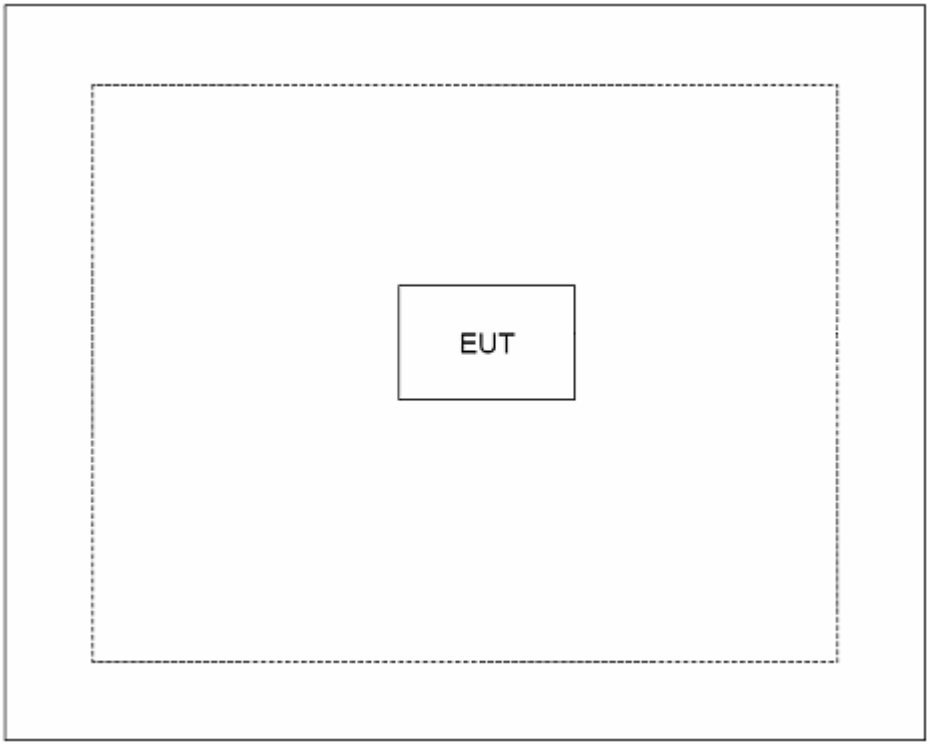
1. The device described above was tested by Dong Guan Anci Electronic Technology Co., Ltd. to determine the maximum emission levels emanated from the device and severity levels of the device endure and its performance criterion. The measurement results are contained in this test report and Dong Guan Anci Electronic Technology Co., Ltd. assumes full responsibility for the accuracy and completeness of these measurements. This report shows the EUT is technically compliance with the above official standards.
2. This report applies to the above sample only and shall not be reproduced in part without written approval of Dong Guan Anci Electronic Technology Co., Ltd

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

Connection Diagram


Signal Cable Type		Signal cable Description
A	N/A	N/A

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Run the software “Bluetool”, then select test mode and channel to test

2. Technical Test

2.1. Summary of Test Result

Performed Test Item	Normative References	Test Result
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.207; DA00-705	Pass
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.209; DA00-705	Pass
20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.247(a)(1); DA00-705	Pass
Carrier Frequency Separation	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.247(a)(1); DA00-705	Pass
Number of Hopping Frequencies	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.247(a)(1)(iii); DA00-705	Pass
Time of Occupancy (Dwell Time)	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.247(a)(1)(iii); DA00-705	Pass
Peak Output Power	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.247(b)(1); DA00-705	Pass
Band-edge Compliance of RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2012 Section 15.215(c), 15.247(d); DA00-705	Pass
Spurious RF Conducted Emissions	FCC CFR Title 47 Part 15 Subpart C: 2012 15.247(d); DA00-705	Pass
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2012 15.247(d); DA00-705	Pass

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

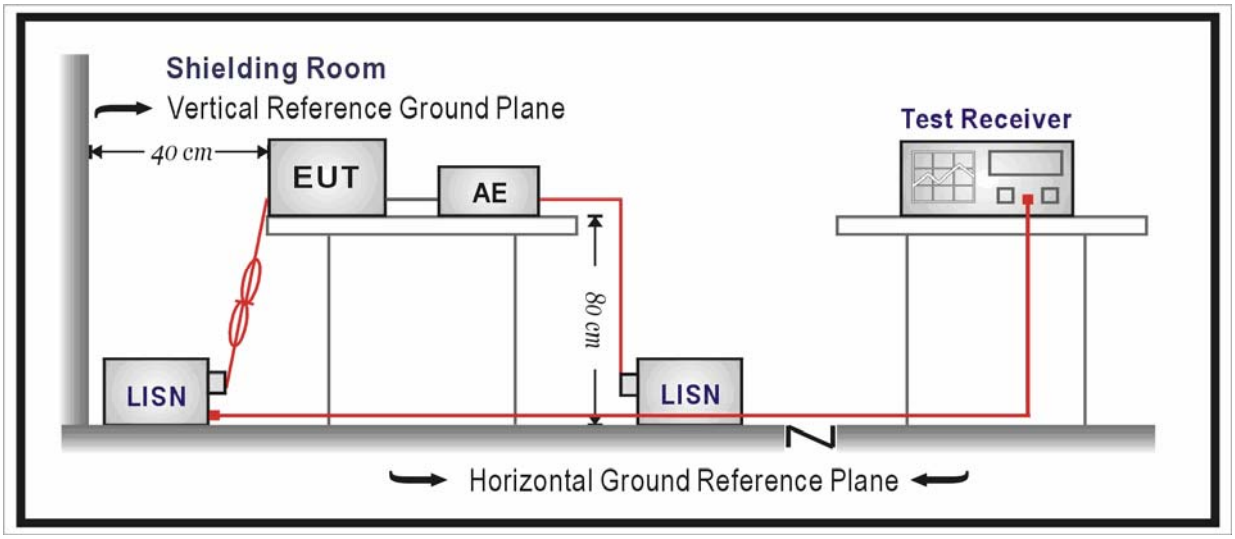
3. Conducted Emission

3.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2013.03.31	2014.03.30
Two-Line V-Network	R&S	ENV216	100043	2013.03.31	2014.03.30
Two-Line V-Network	R&S	ENV216	100044	2013.03.18	2014.03.17
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2013.03.02	2014.03.01
50ohm Termination	SHX	TF2	07081401	2013.03.18	2014.03.17
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2013.01.11	2014.01.10

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

According to FCC ANSI C63.4: 2009 & ANSI C63.10: 2009.

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.

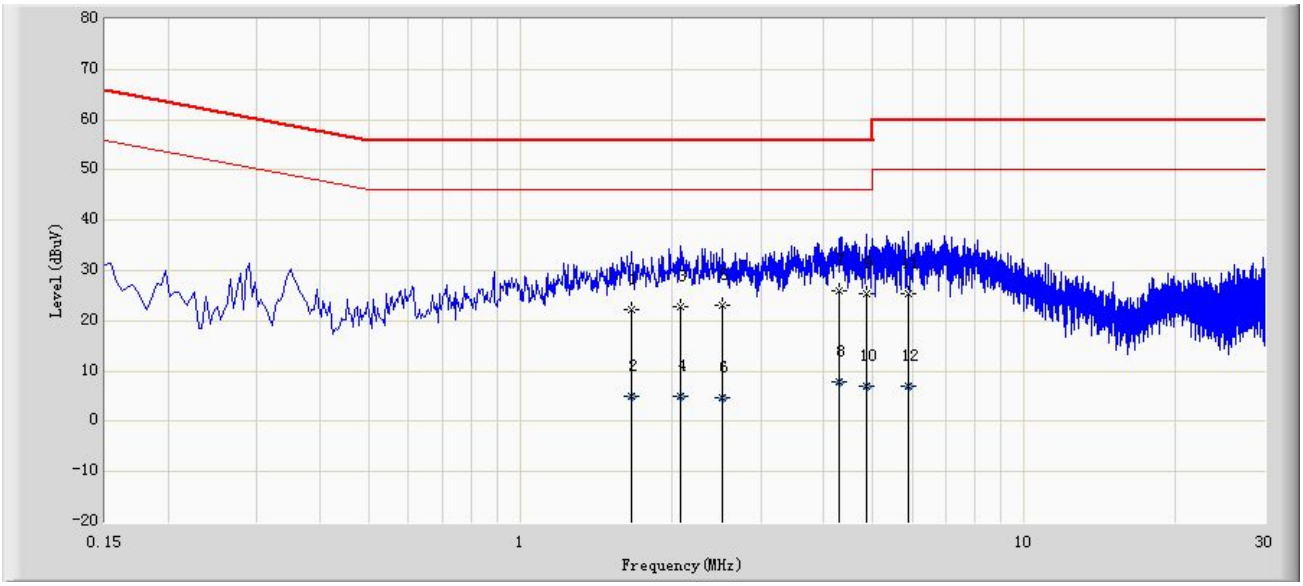
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.01 dB

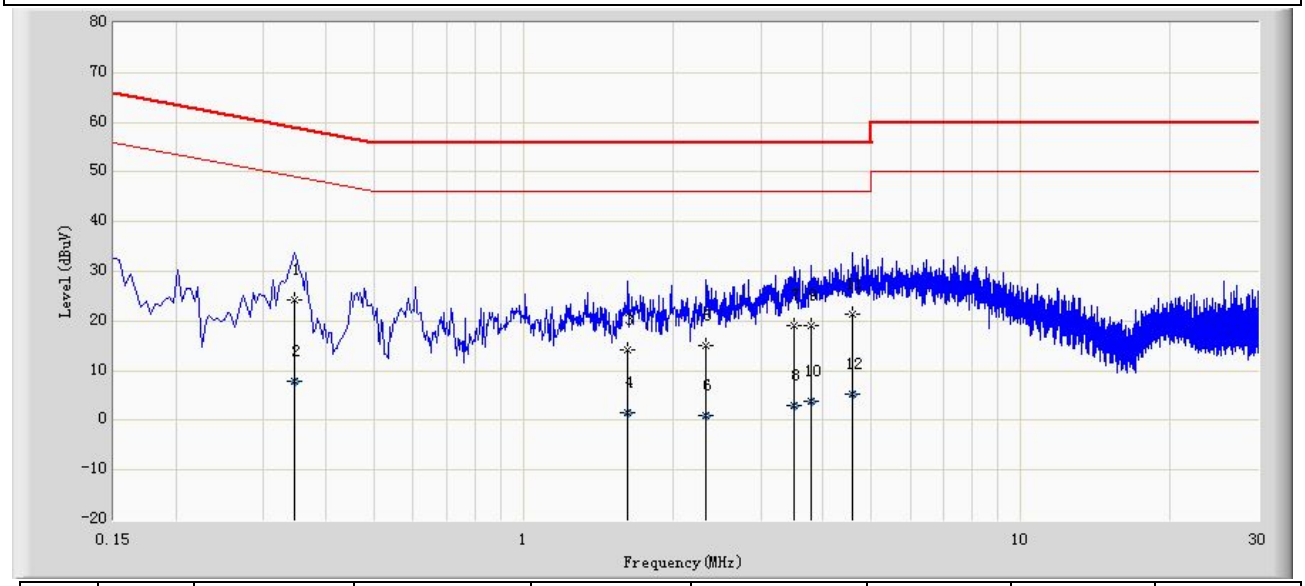
3.6. Test Result

Time: 2013/06/16 - 14:55	
Limit: FCC_Part15.207_CE_AC Power_ClassB	Power: AC 120V/60Hz
Probe: ENV216_101044(0.009-30MHz)	Polarity: Line
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		1.666	22.161	12.367	-33.839	56.000	9.794	QP
2		1.666	5.105	-4.689	-40.895	46.000	9.794	AV
3		2.074	22.858	13.068	-33.142	56.000	9.790	QP
4		2.074	5.077	-4.713	-40.923	46.000	9.790	AV
5		2.514	23.141	13.339	-32.859	56.000	9.802	QP
6		2.514	4.780	-5.022	-41.220	46.000	9.802	AV
7	*	4.306	26.104	16.256	-29.896	56.000	9.848	QP
8		4.306	7.837	-2.011	-38.163	46.000	9.848	AV
9		4.866	25.445	15.585	-30.555	56.000	9.860	QP
10		4.866	7.147	-2.713	-38.853	46.000	9.860	AV
11		5.878	25.377	15.484	-34.623	60.000	9.893	QP
12		5.878	6.894	-2.999	-43.106	50.000	9.893	AV

Time: 2013/06/16 - 14:59	
Limit: FCC_Part15.207_CE_AC Power_ClassB	Power: AC 120V/60Hz
Probe: ENV216_101044(0.009-30MHz)	Polarity: Neutral
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.346	24.228	14.256	-34.830	59.058	9.973	QP
2		0.346	7.932	-2.040	-41.126	49.058	9.973	AV
3		1.618	14.289	4.307	-41.711	56.000	9.982	QP
4		1.618	1.456	-8.526	-44.544	46.000	9.982	AV
5		2.326	15.085	5.116	-40.915	56.000	9.969	QP
6		2.326	1.099	-8.870	-44.901	46.000	9.969	AV
7		3.506	19.024	8.998	-36.976	56.000	10.026	QP
8		3.506	3.103	-6.923	-42.897	46.000	10.026	AV
9		3.798	19.193	9.148	-36.807	56.000	10.044	QP
10		3.798	3.838	-6.206	-42.162	46.000	10.044	AV
11	*	4.598	21.312	11.234	-34.688	56.000	10.078	QP
12		4.598	5.211	-4.867	-40.789	46.000	10.078	AV

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / Below 1GHz

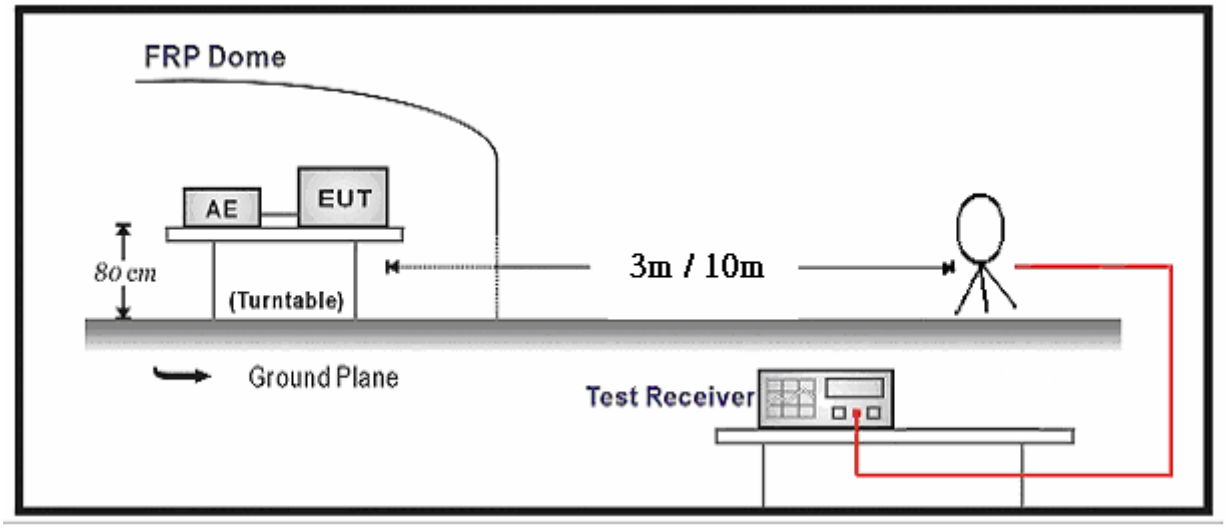
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2013.03.31	2014.03.30
Loop Antenna	R&S	HFH2-Z2	833799/003	2013.03.18	2014.03.17
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2013.03.16	2014.03.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2013.03.02	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	N/A	2013.05.08	2014.05.07

Radiated Emission / Above 1GHz

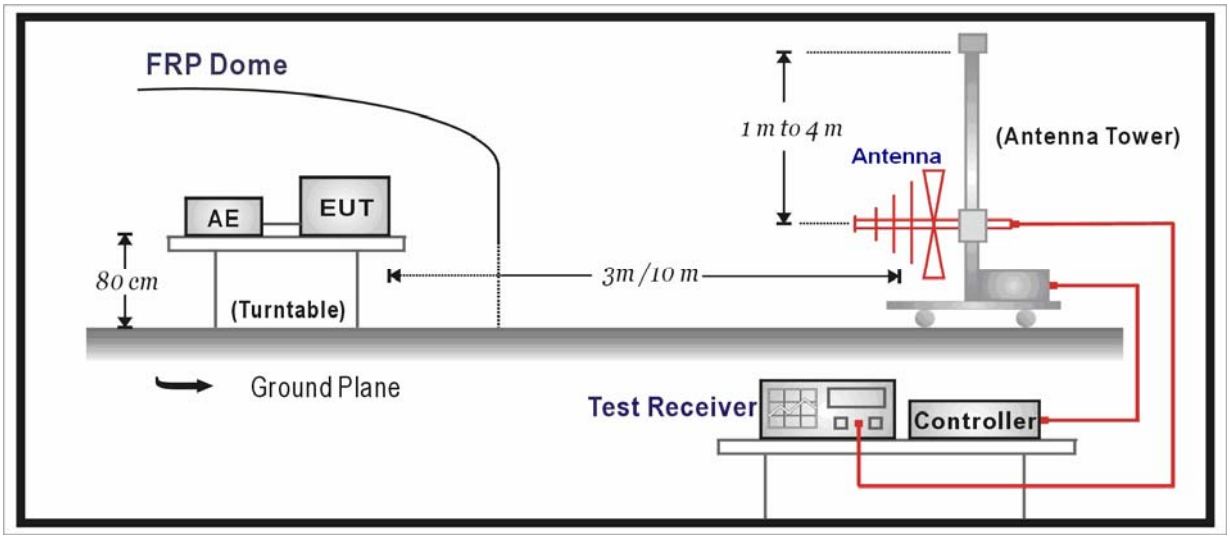
Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.03.31	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.05	2014.05.04
Preamplifier	QuieTek	AP-040G	CHM-090600 1	2013.05.05	2014.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.03.16	2014.03.15
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2013.03.25	2014.03.24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2013.03.25	2014.03.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	Cable1#	2013.03.02	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	Cable2#	2013.03.02	2014.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	Cable3#	2013.03.02	2014.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	N/A	2013.01.12	2014.01.11

4.2. Test Setup

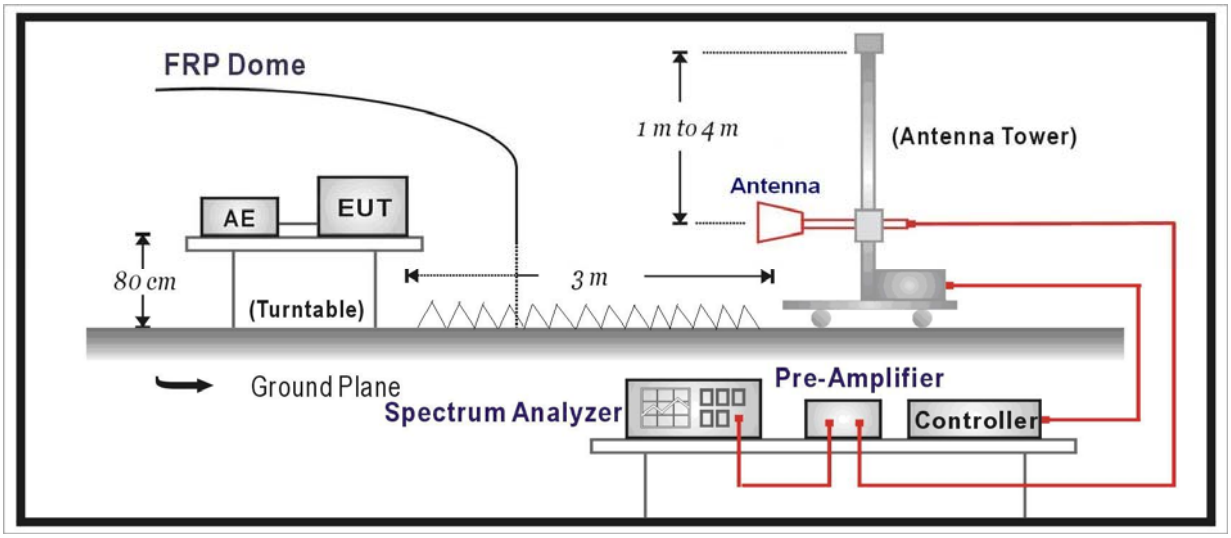
Below 30MHz Test Setup:



Below 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

According to ANSI C63.10: 2009.

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 60~10 degrees for H-plane and 90~10 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.

Measure Level = Reading Level + Cable Loss + Antenna Factor – Preamplifier Gain

Mode 1: Transmitter-1Mbps(GFSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
0	H	2402.1	66.7	28.2	94.9	Fundamental	/	PK
	H	539.3	3.9	19.3	23.2	46	-22.8	QP
	V	644.0	1.4	19.5	20.9	46	-25.1	QP
	H	3122.5	43.8	-5.1	38.7	54(Note2)	-15.3	PK
	H	4808.0	47.7	-1.9	45.8	54(Note2)	-8.2	PK
	V	7206.0	40.4	3.5	43.9	54(Note2)	-10.1	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK
39	H	2441.1	66.3	28.3	94.6	Fundamental	/	PK
	V	553.3	2.6	19.6	22.2	46	-23.8	QP
	V	648.4	2.3	19.5	21.8	46	-24.2	QP
	V	3122.5	43.7	-5.1	38.6	54(Note2)	-15.4	PK
	H	4884.5	48.4	-1.6	46.8	54(Note2)	-7.2	PK
	H	7323.0	41.4	3.7	45.1	54(Note2)	-8.9	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK
78	H	2480.0	65.9	28.5	94.4	Fundamental	/	PK
	V	525.2	4.3	18.8	23.1	46	-22.9	QP
	H	744.9	1.4	20.2	21.6	46	-24.4	QP
	H	3122.5	43.6	-5.1	38.5	54(Note2)	-15.5	PK
	H	4961.0	48.5	-1.4	47.1	54(Note2)	-6.9	PK
	V	7440.0	42.4	3.6	46.0	54(Note2)	-8.0	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

2: 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: Transmitter-2Mbps(Pi/4 DQPSK _DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
0	H	2402.1	67.9	28.2	96.1	Fundamental	/	PK
	V	524.7	4.4	18.8	23.2	46	-22.8	QP
	V	652.7	1.8	19.5	21.3	46	-24.7	QP
	V	3122.5	43.4	-5.1	38.3	54(Note2)	-15.7	PK
	H	4799.5	49.2	-1.9	47.3	54(Note2)	-6.7	PK
	H	7206.0	40.2	3.5	43.7	54(Note2)	-10.3	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK
39	H	2441.3	68.0	28.4	96.4	Fundamental	/	PK
	V	652.7	1.5	19.5	21.0	46	-25.0	QP
	V	756.5	0.8	20.4	21.2	46	-24.8	QP
	V	3122.5	43.0	-5.1	37.9	54(Note2)	-16.1	PK
	H	4884.5	49.2	-1.6	47.6	54(Note2)	-6.4	PK
	H	7323.0	40.6	3.6	44.2	54(Note2)	-9.8	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK
78	H	2480.1	68.1	28.5	96.6	Fundamental	/	PK
	V	525.2	4.4	18.8	23.2	46	-22.8	QP
	H	754.6	2.0	20.4	22.4	46	-23.6	QP
	V	3122.5	42.9	-5.1	37.8	54(Note2)	-16.2	PK
	H	4961.0	49.8	-1.3	48.5	54(Note2)	-5.5	PK
	H	7440.0	40.8	3.6	44.4	54(Note2)	-9.6	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

2: 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 3: Transmitter-3Mbps(8DPSK_DH5)

CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
0	H	2402.0	68.1	28.2	96.3	Fundamental	/	PK
	V	553.3	2.5	19.6	22.1	46	-23.9	QP
	V	746.8	1.6	20.3	21.9	46	-24.1	QP
	H	3122.5	43.3	-5.1	38.2	54(Note2)	-15.8	PK
	H	4808.0	50.2	-1.9	48.3	54(Note2)	-5.7	PK
	H	7206.0	39.9	3.5	43.4	54(Note2)	-10.6	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK
39	H	2441.1	68.2	28.4	96.6	Fundamental	/	PK
	V	567.9	2.4	19.6	22.0	46	-24.0	QP
	H	709.0	1.4	19.5	20.9	46	-25.1	QP
	V	3122.5	43.4	-5.1	38.3	54(Note2)	-15.7	PK
	H	4884.5	49.9	-1.6	48.3	54(Note2)	-5.7	PK
	H	7323.0	41.1	3.6	44.7	54(Note2)	-9.3	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK
78	H	2479.9	68.3	28.5	96.8	Fundamental	/	PK
	H	604.2	1.8	19.5	21.3	46	-24.7	QP
	H	714.3	2.1	19.6	21.7	46	-24.3	QP
	H	3122.5	43.2	-5.1	38.1	54(Note2)	-15.9	PK
	H	4961.0	49.5	-1.4	48.1	54(Note2)	-5.9	PK
	H	7440.0	40.8	3.7	44.5	54(Note2)	-9.5	PK
	H	24000.0	31.4	18.8	50.2	54(Note2)	-3.8	PK

Note 1: The test trace is same as the ambient noise (the test frequency range: 9kHz~30MHz, 18GHz~25GHz), therefore no data appear in the report.

2: 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.

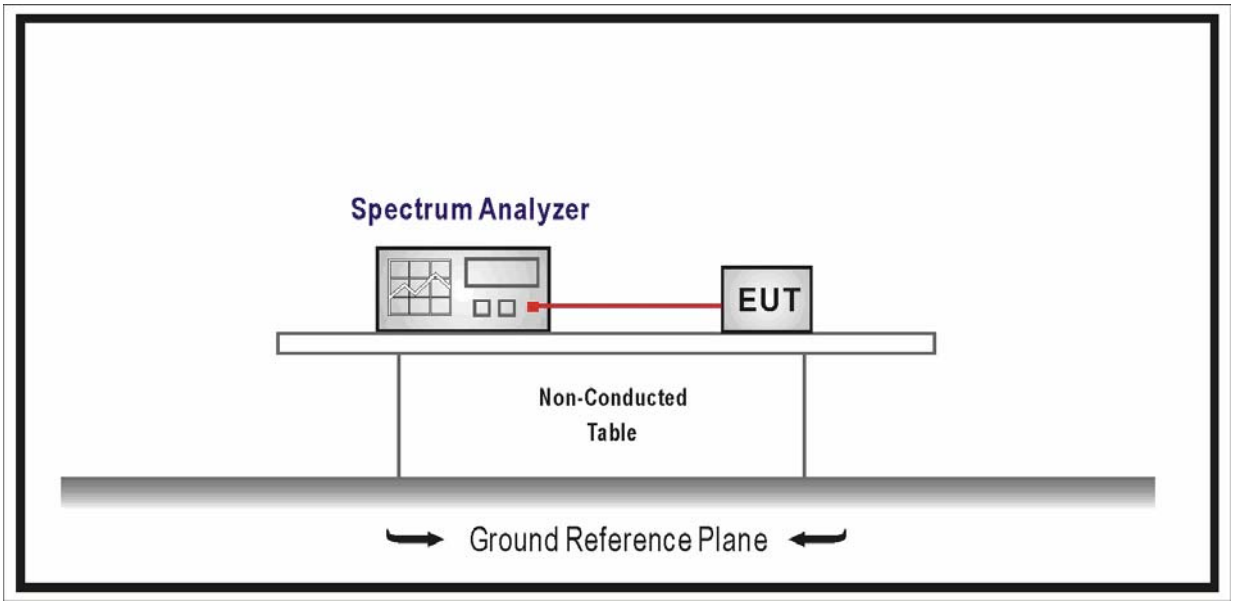
5. 20dB Bandwidth

5.1 Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	N/A	2013.05.08	2014.05.07

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

- For frequency hopping systems operating in 2400-2483.5 MHz band, no limitation.
- For frequency hopping systems operating in 902-928 MHz band, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
- For frequency hopping systems operating in 5725-5850 MHz band, the maximum 20 dB bandwidth of the hopping channel is 1 MHz.

5.4 Test Procedure

According to ANSI C63.10: 2009.

Use the following spectrum analyzer settings:

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

RBW ≧ 1% of the 20dB bandwidth

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize.

Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

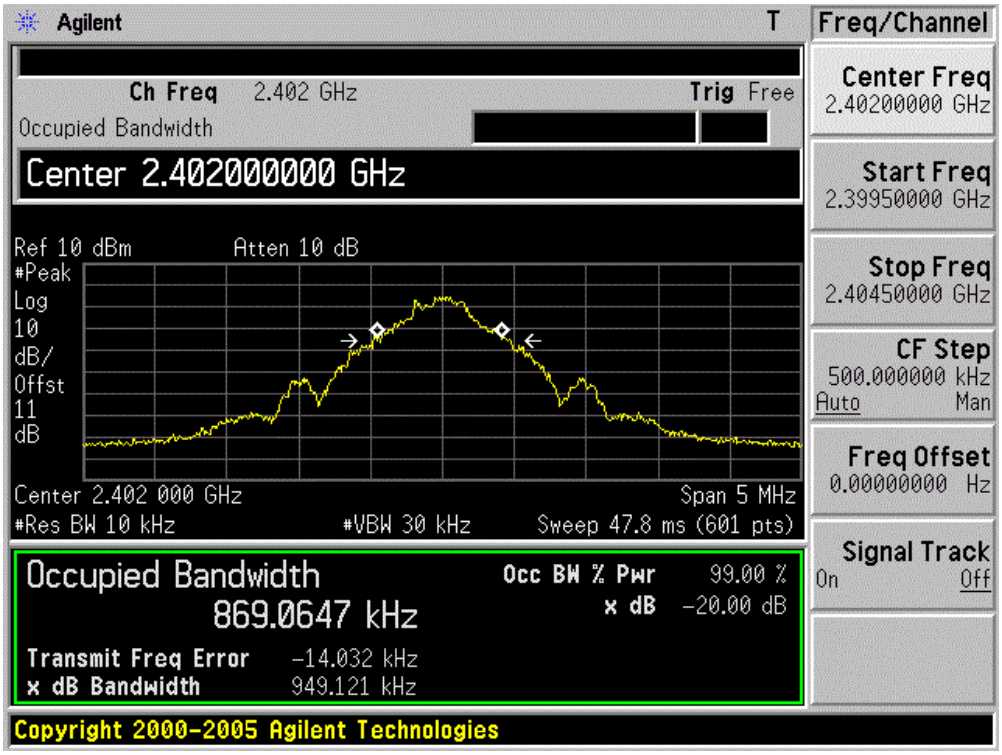
5.5 Uncertainty

The measurement uncertainty is defined as ± 1 kHz

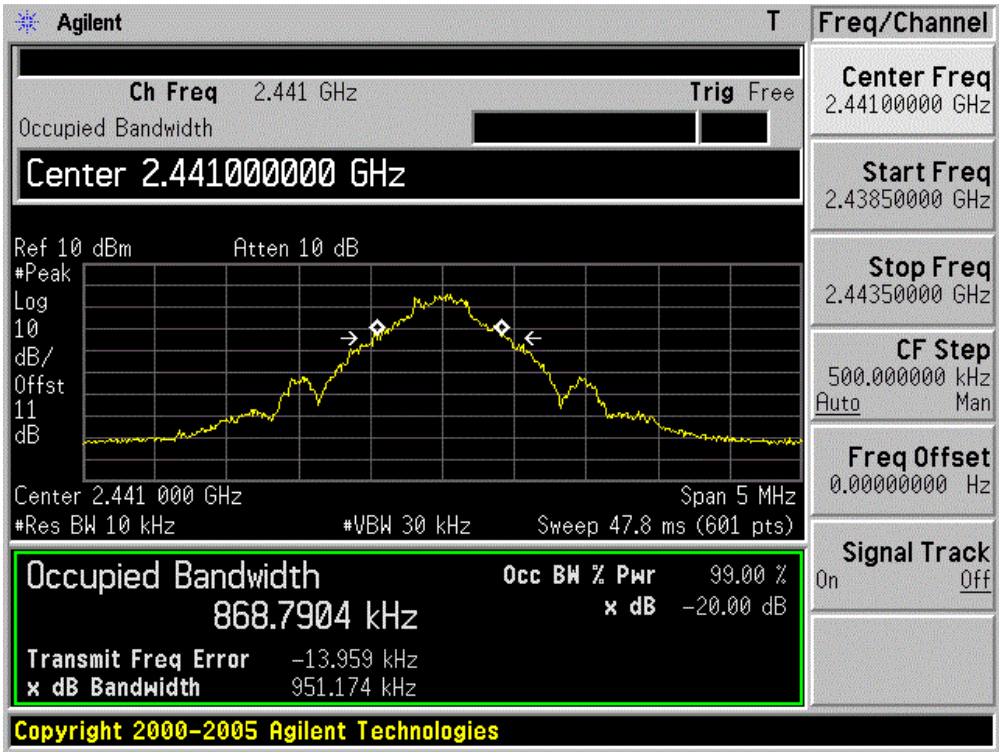
5.6 Test Result

Mode1: Transmit by DH5			
Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	949.1	869.1
39	2441	951.2	868.8
78	2480	927.4	868.1

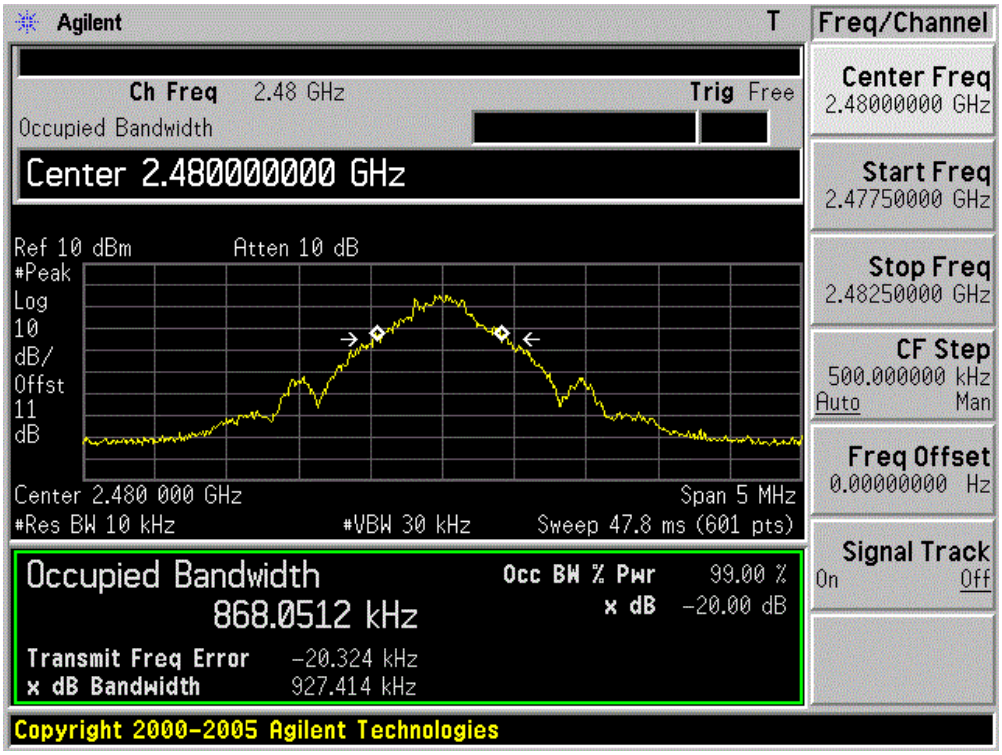
Channel 00 (2402MHz)



Channel 39 (2441MHz)

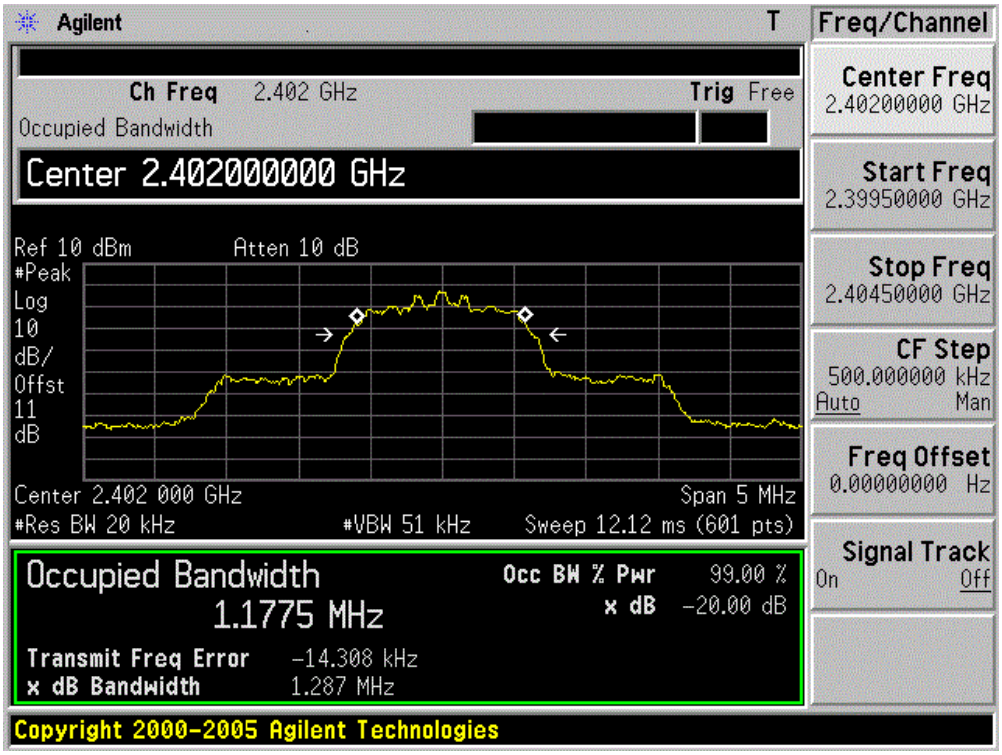


Channel 78 (2480MHz)

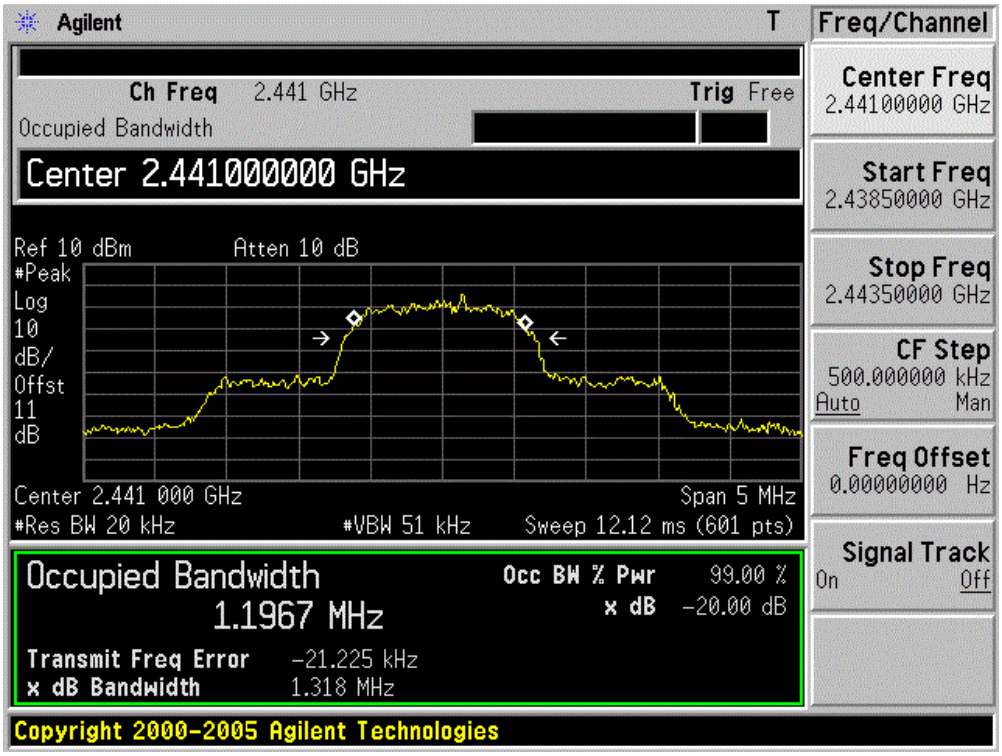


Mode2: Transmit by 2DH5			
Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1287.0	1177.5
39	2441	1318.0	1196.7
78	2480	1261.0	1182.4

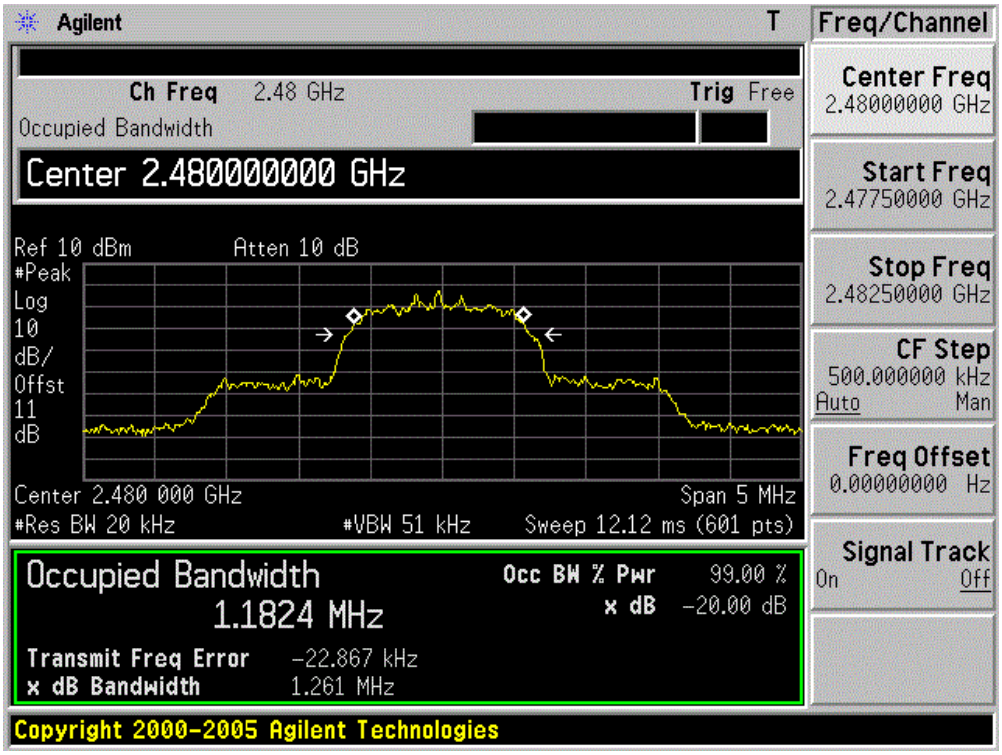
Channel 00 (2402MHz)



Channel 39 (2441MHz)

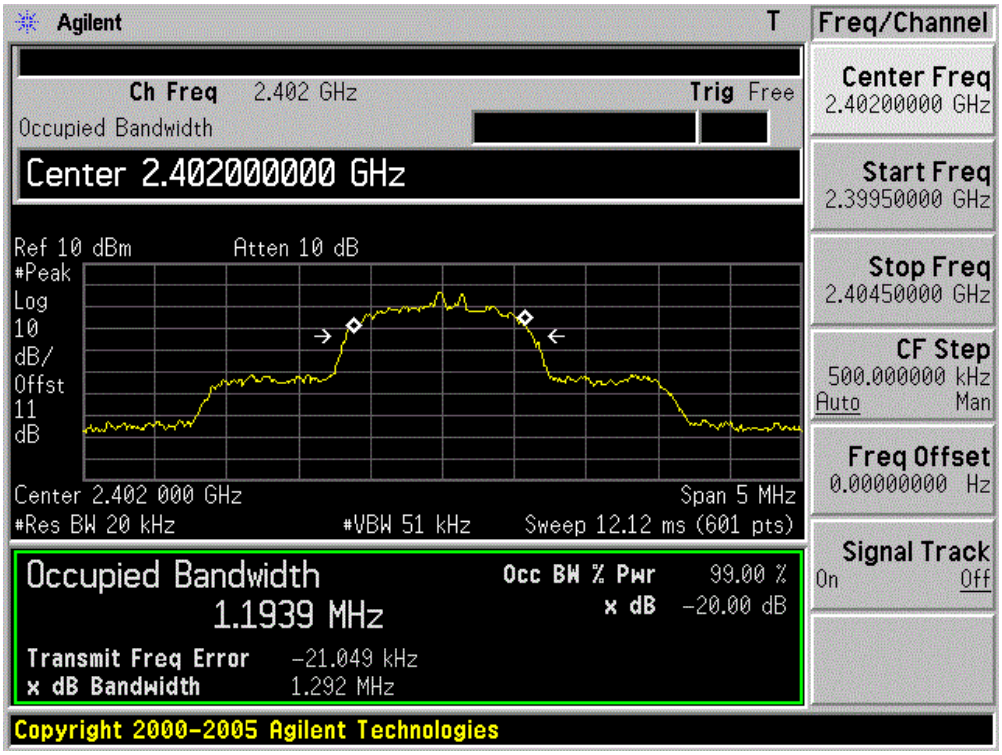


Channel 78 (2480MHz)

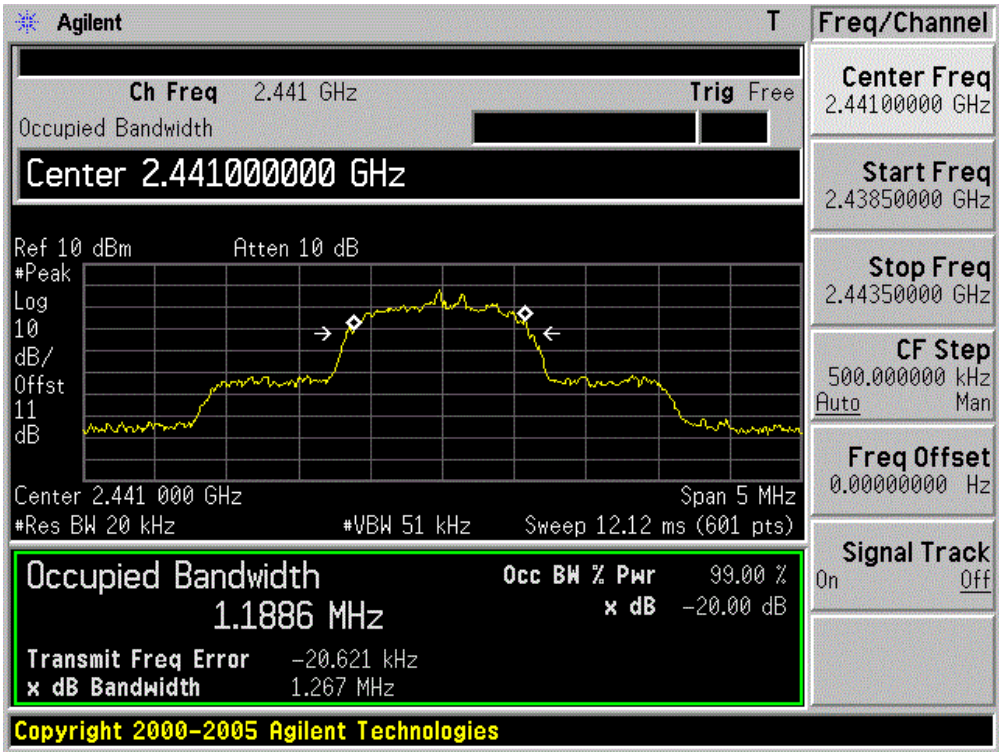


Mode3: Transmit by 3DH5			
Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
00	2402	1292.0	1193.9
39	2441	1267.0	1188.6
78	2480	1296.0	1202.7

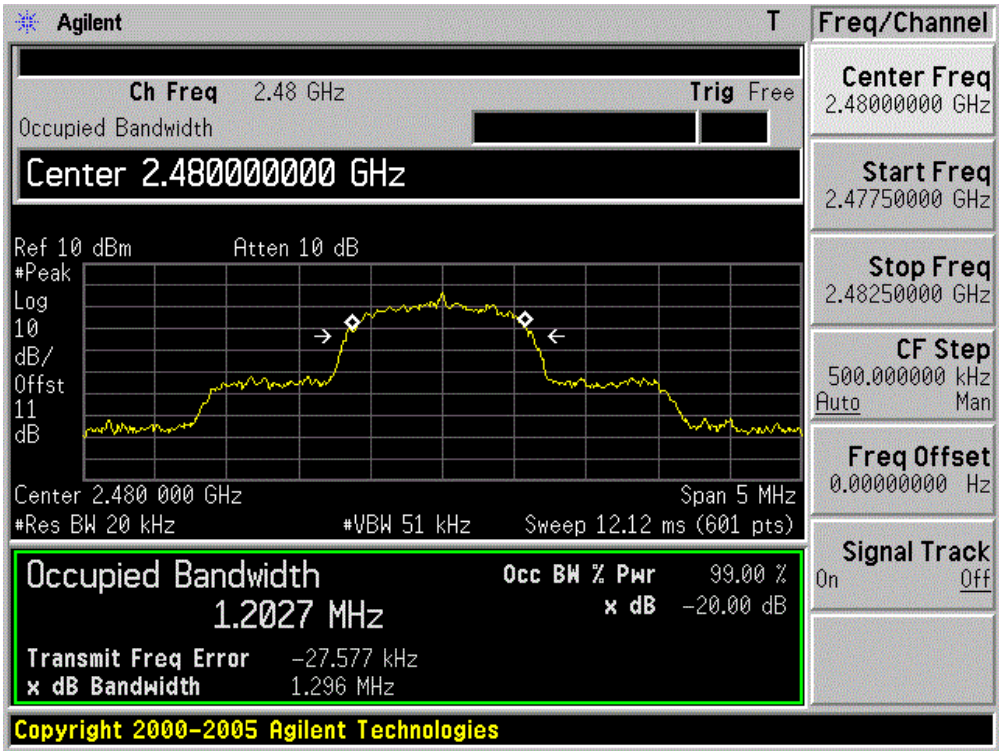
3DH5 Channel 00 (2402MHz)



3DH5 Channel 39 (2441MHz)



3DH5 Channel 78 (2480MHz)



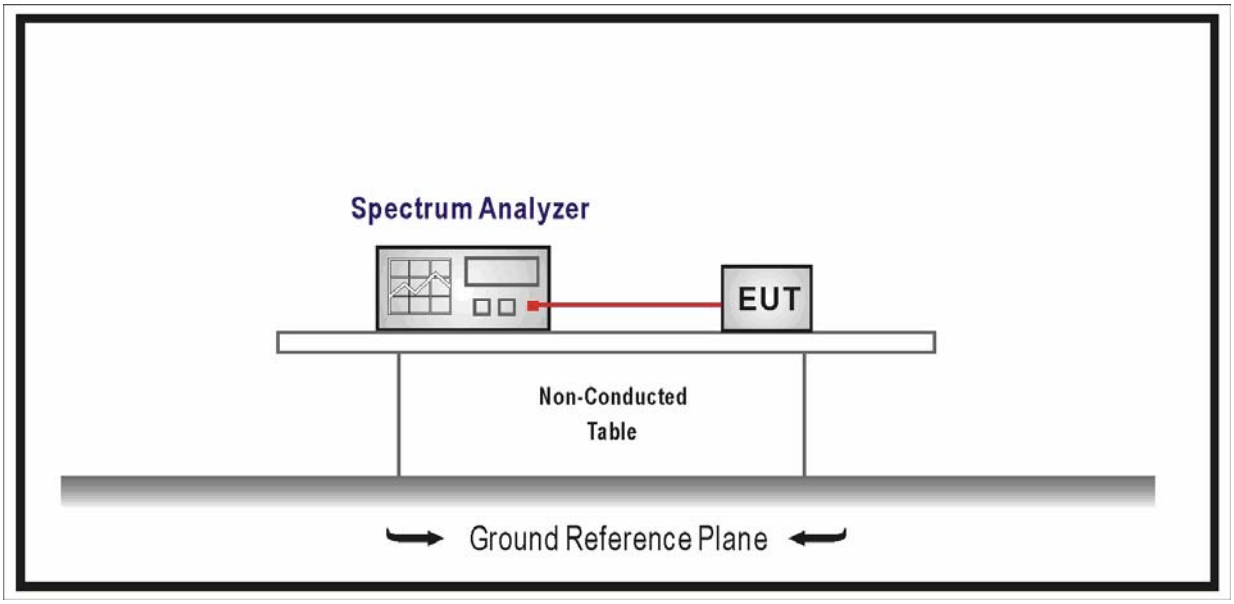
6. Carrier Frequency Separation

6.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2013.05.08	2013.05.07

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

6.2. Test Setup



6.3. 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. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each

transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

- For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
- Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

6.4. Test Procedure

According to ANSI C63.10: 2009.

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

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

Resolution (or IF) Bandwidth (RBW) ≧ 1% of the span

Video (or Average) Bandwidth VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

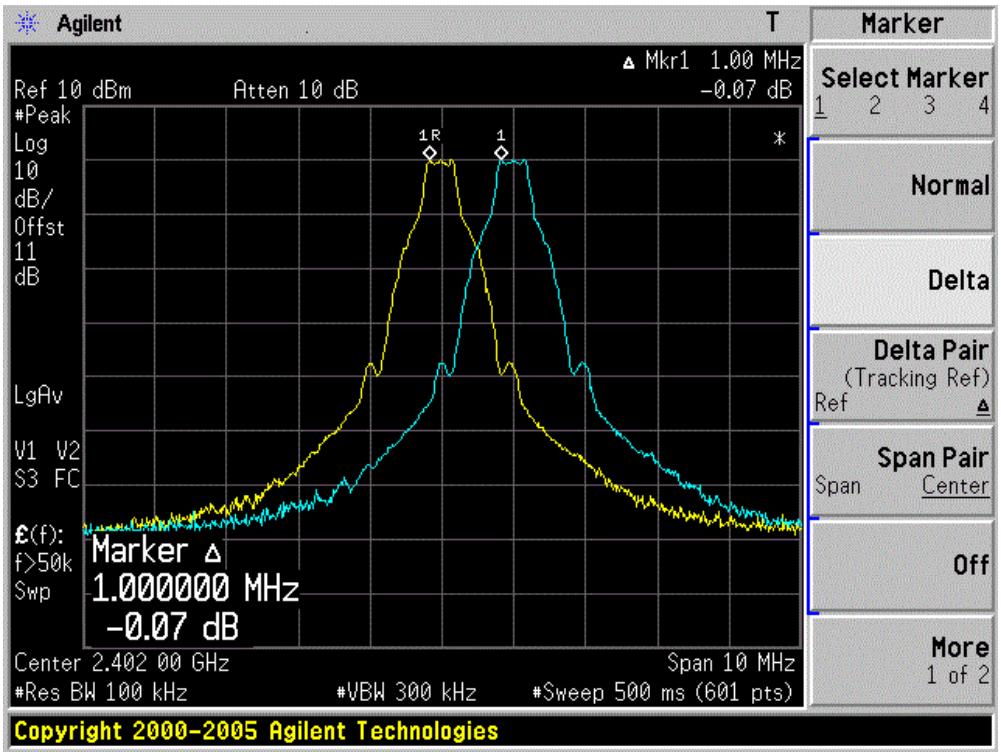
Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

6.5. Uncertainty

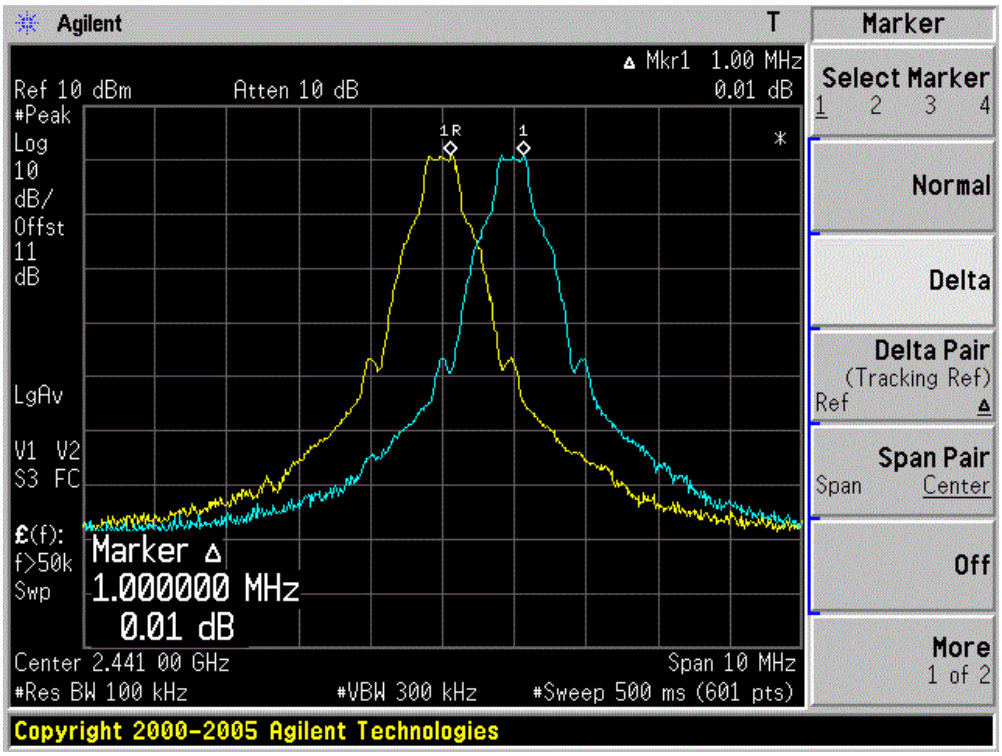
The measurement uncertainty is defined as ± 1 kHz

6.6. Test Result

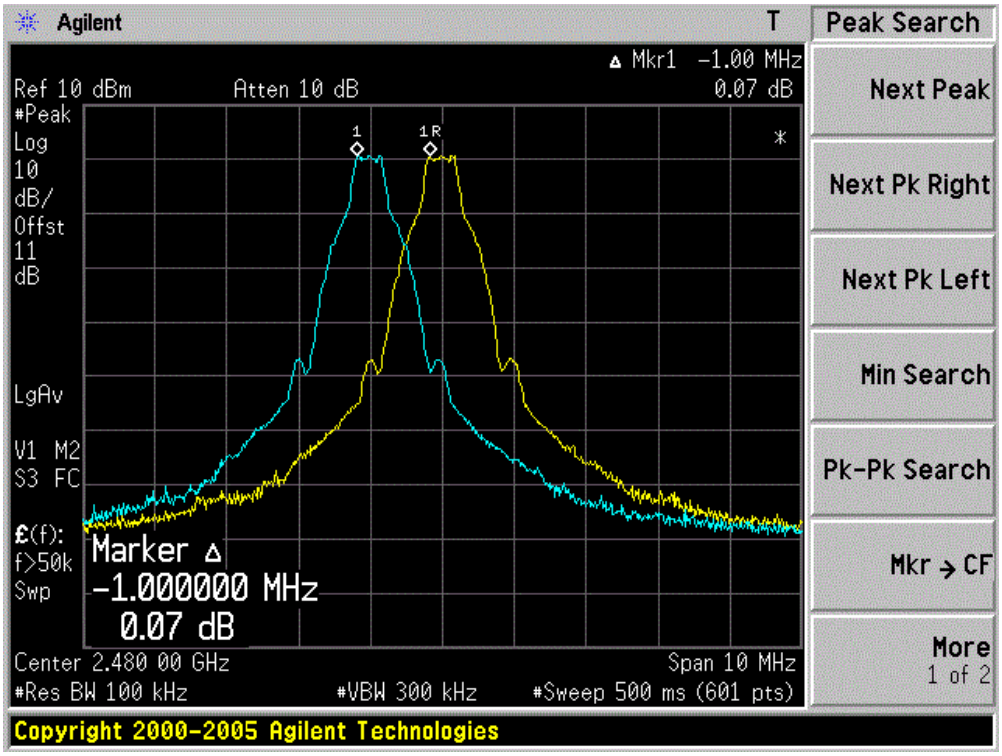
DH5 Channel 00 (2402MHz)



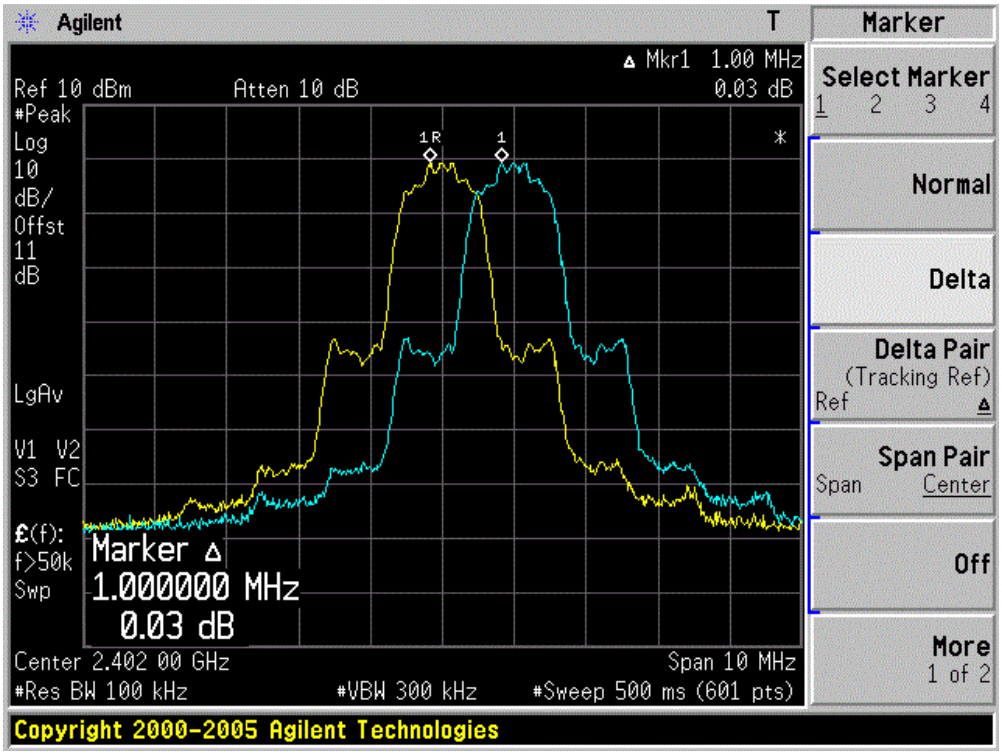
DH5 Channel 39 (2441MHz)



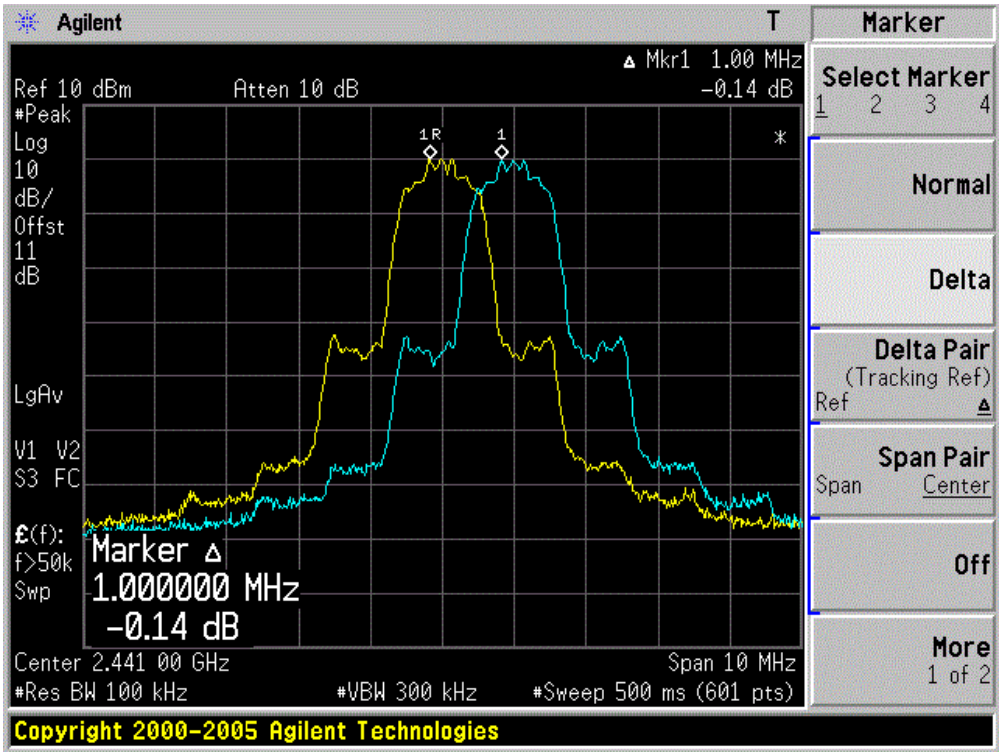
DH5 Channel 78 (2480MHz)



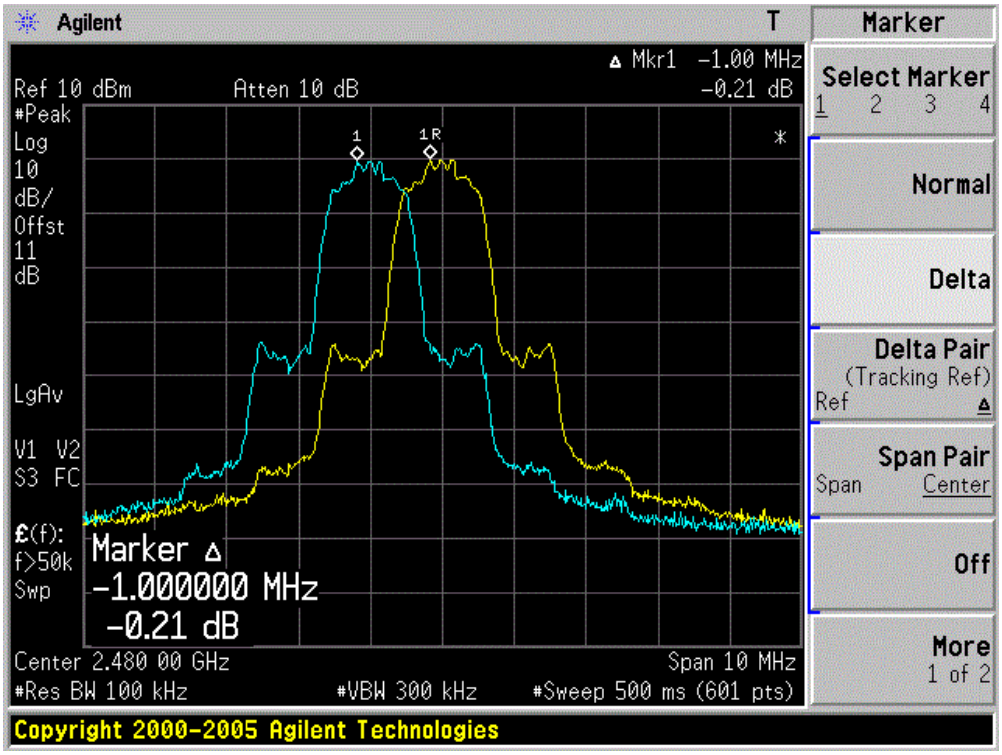
2DH5 Channel 00 (2402MHz)



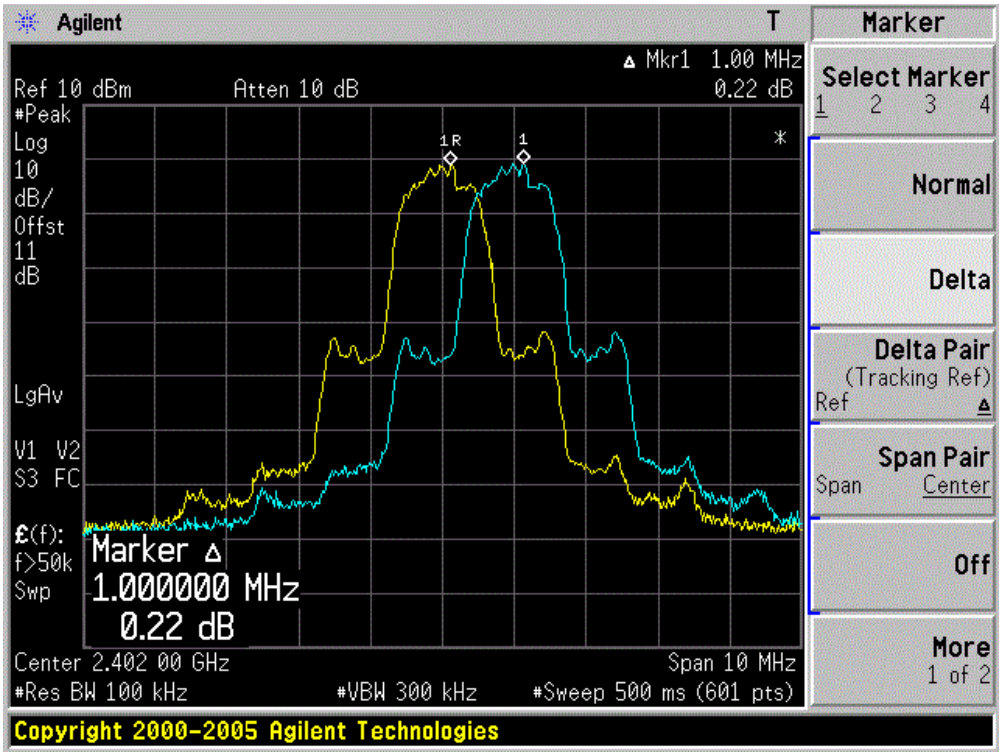
2DH5 Channel 39 (2441MHz)



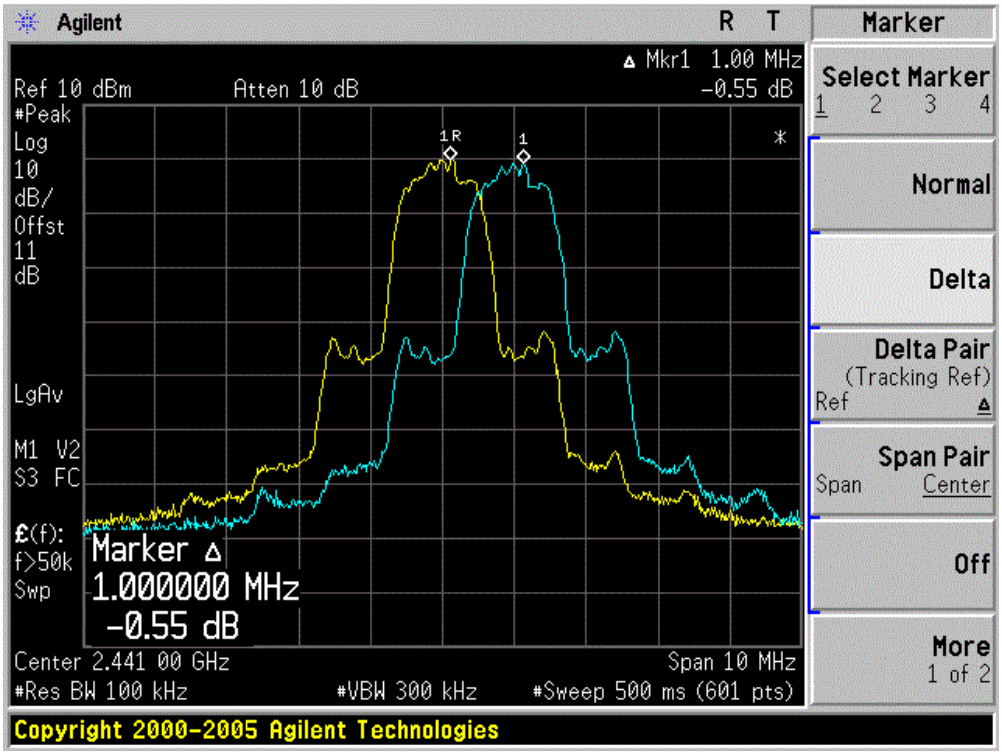
2DH5 Channel 78 (2480MHz)



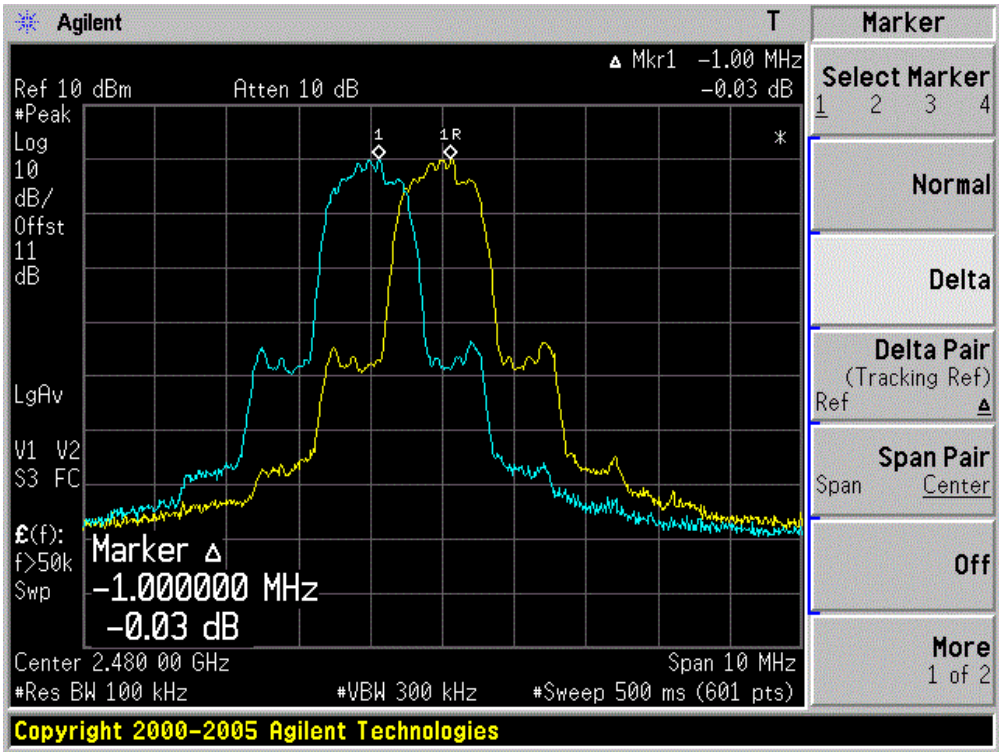
3DH5 Channel 00 (2402MHz)



3DH5 Channel 39 (2441MHz)



3DH5 Channel 78 (2480MHz)



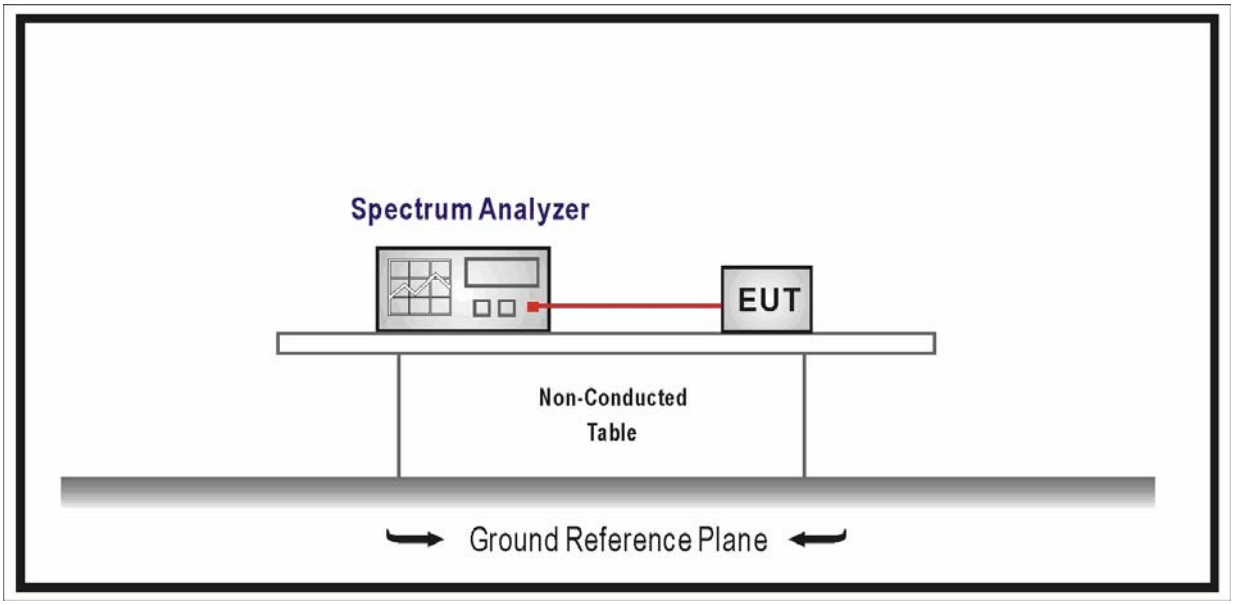
7. Number of Hopping Frequencies

7.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2013.05.08	2014.05.07

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

- For frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.
- For frequency hopping systems operating in 902-928 MHz band shall use at least 50 hopping frequencies.
- For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedure

According to ANSI C63.10: 2009.

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW ≧ 1% of the span

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. It may prove necessary to bread the span up to sections, in order to clearly show all of the hopping frequencies.

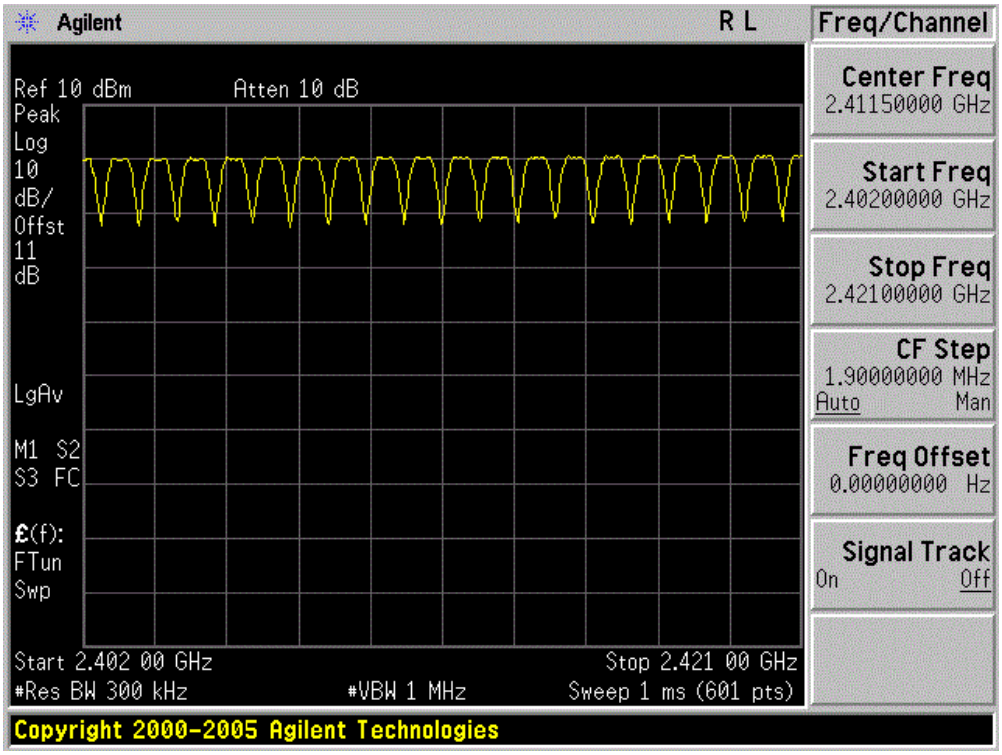
7.5. Uncertainty

The measurement uncertainty is defined as ± 1 kHz

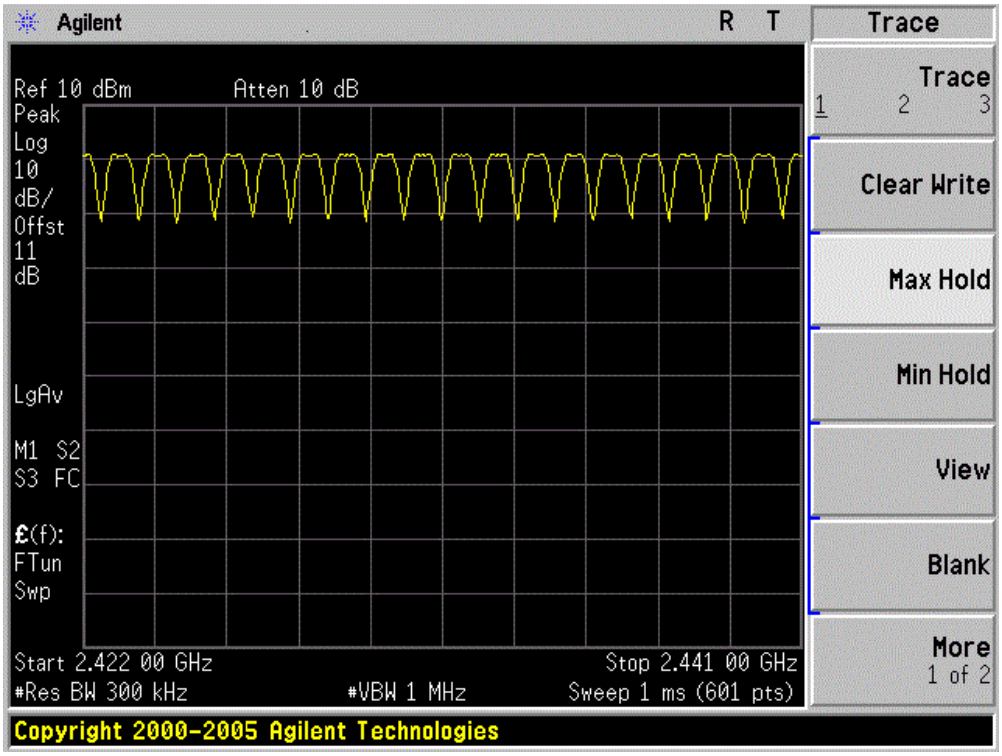
7.6. Test Result

Mode1: Transmit by DH5			
Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

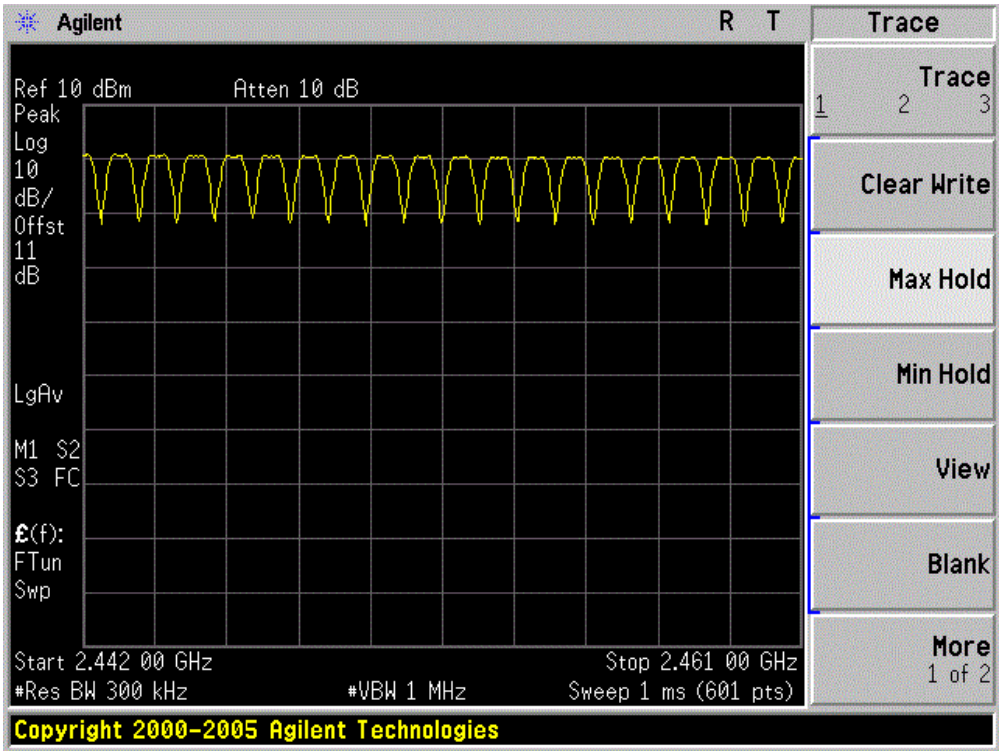
2402 - 2421 MHz



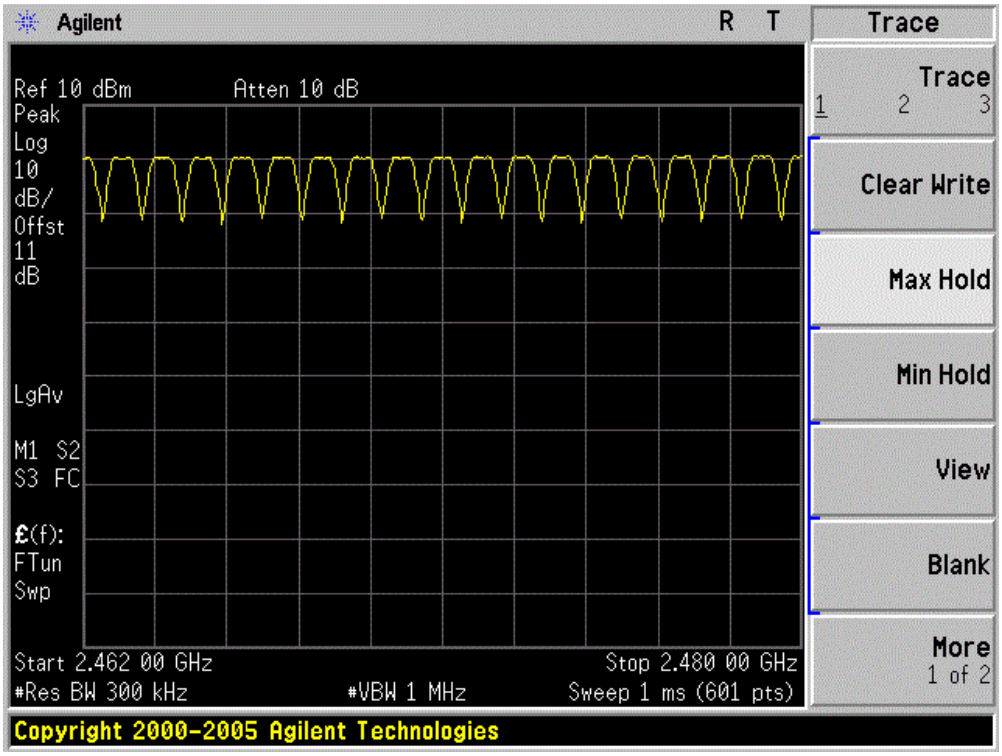
2422 - 2441 MHz



2442 - 2461 MHz

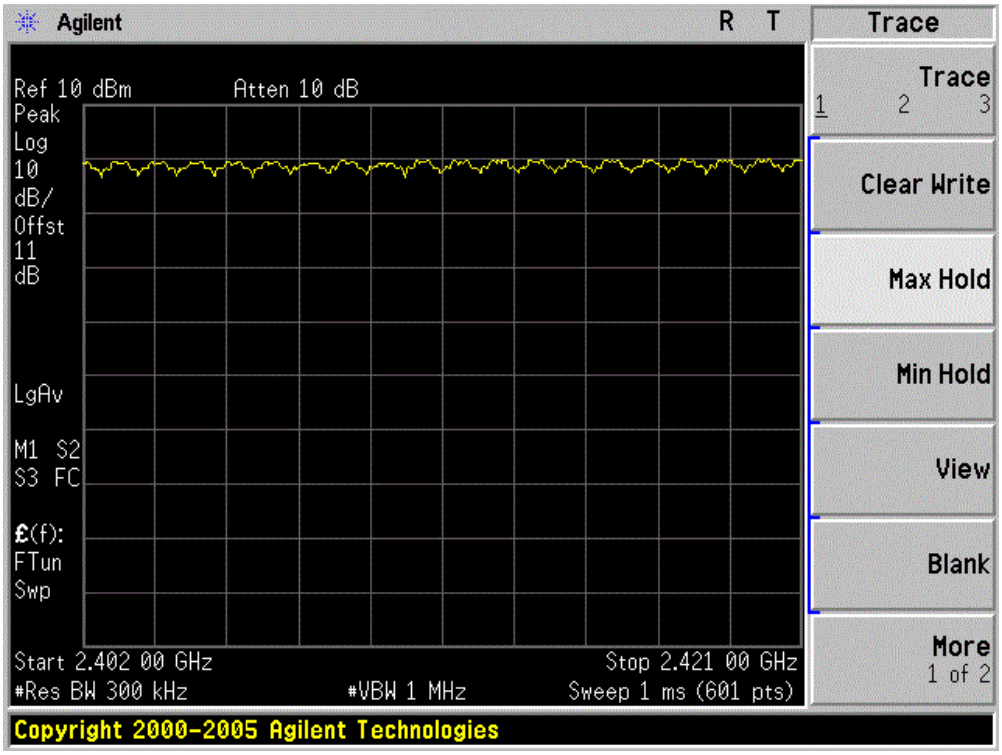


2462 - 2480 MHz

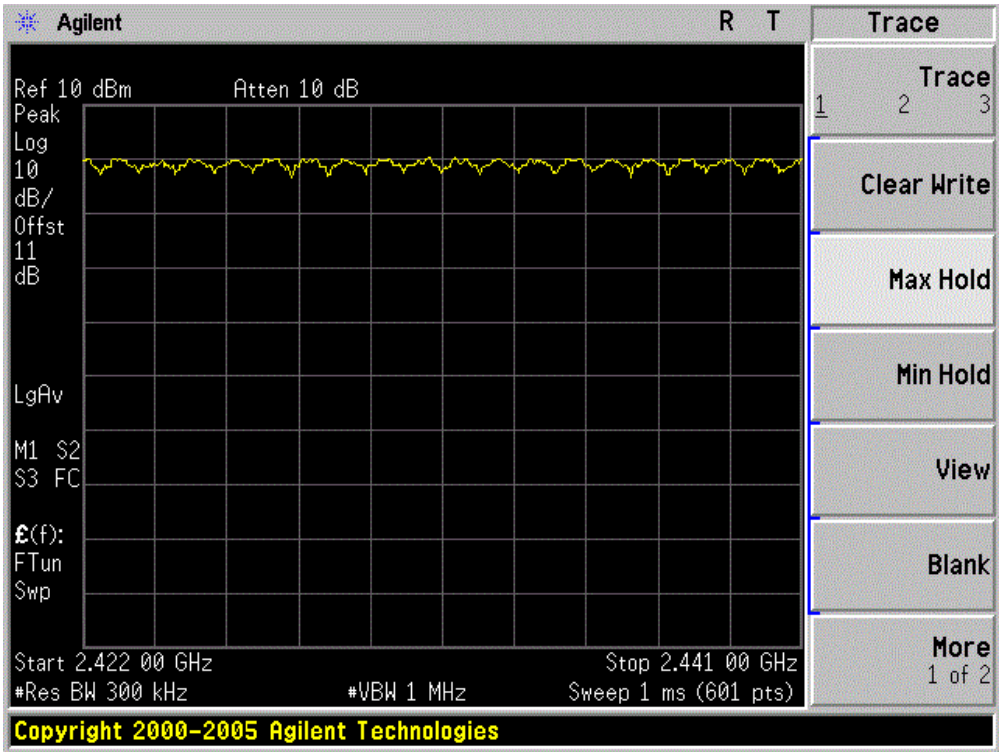


Mode2: Transmit by 2DH5			
Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

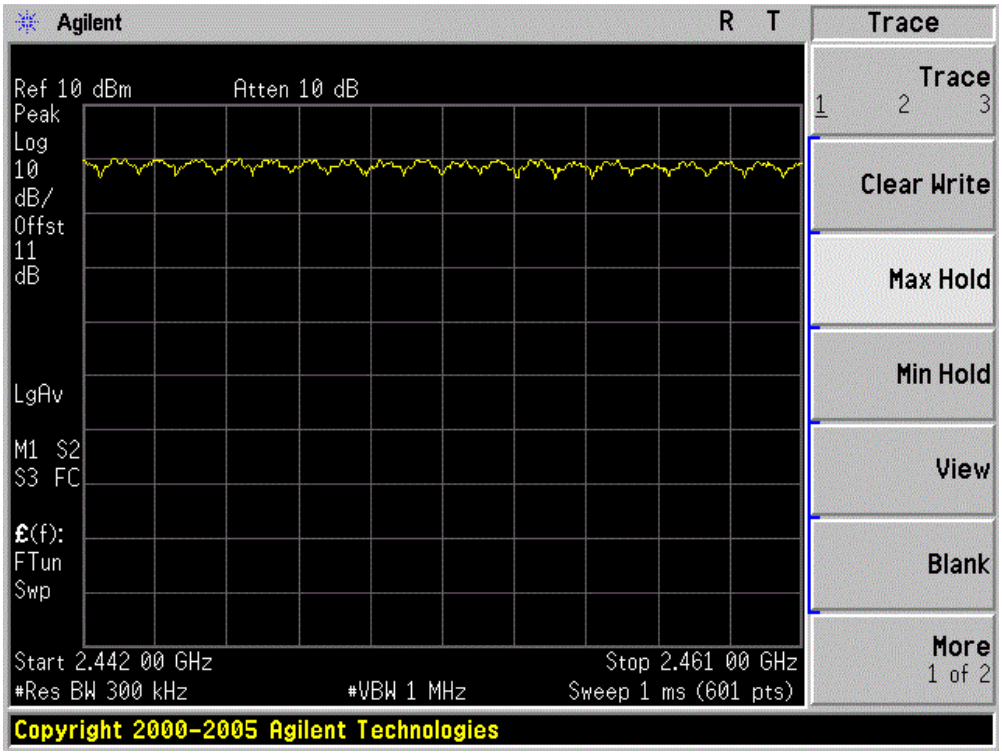
2402 - 2421 MHz



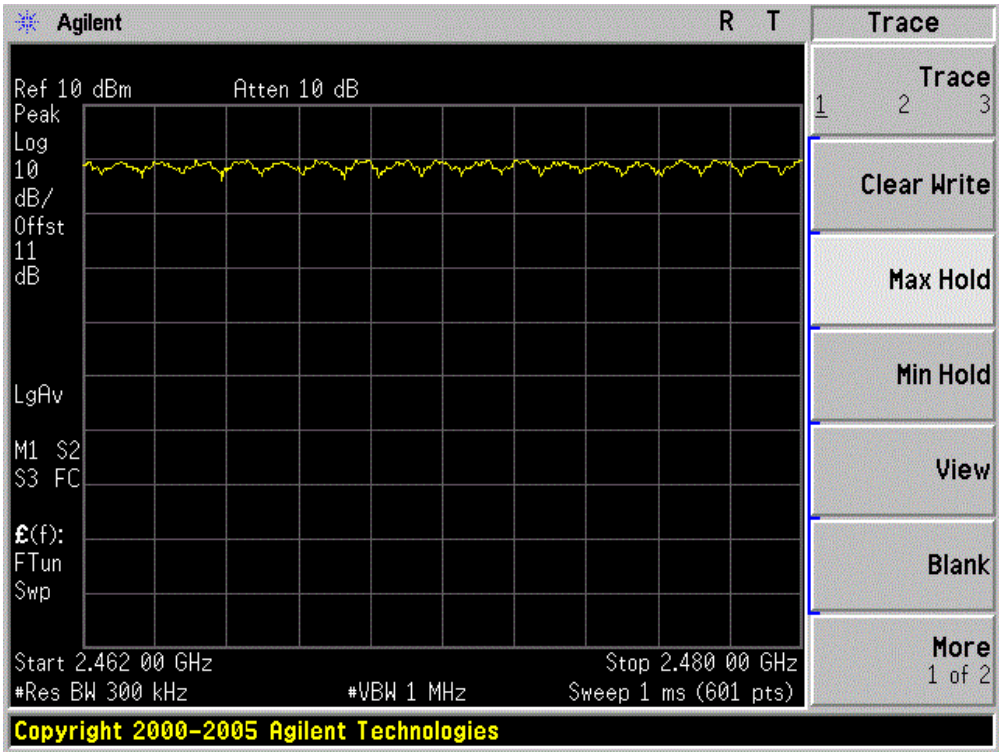
2422 - 2441 MHz



2442 - 2461 MHz

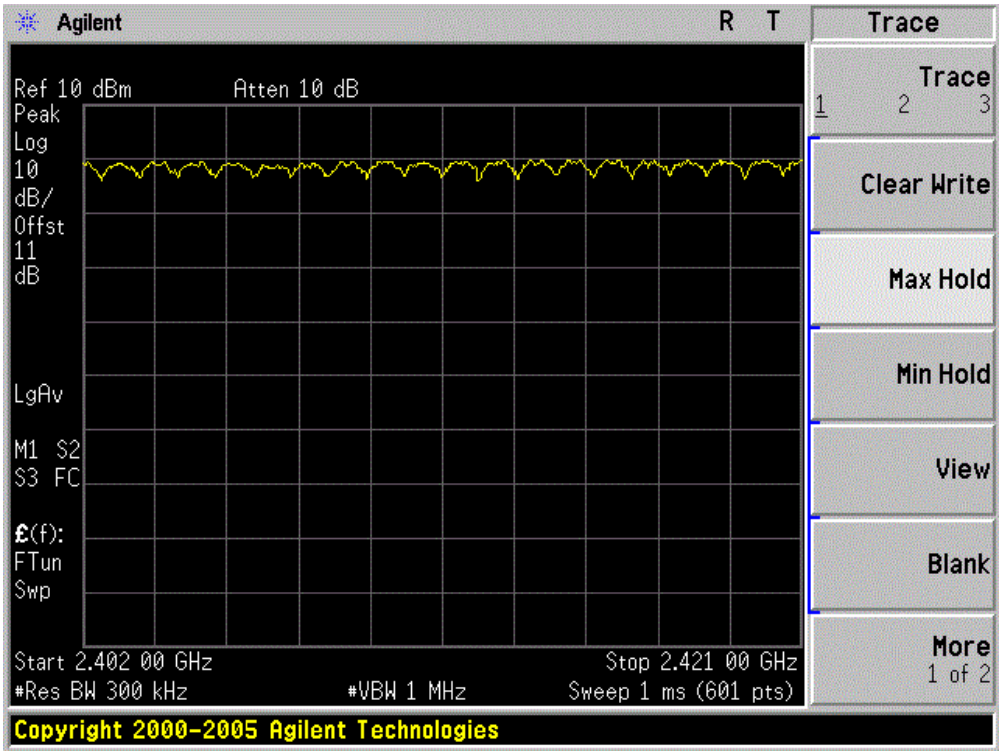


2462 - 2480 MHz

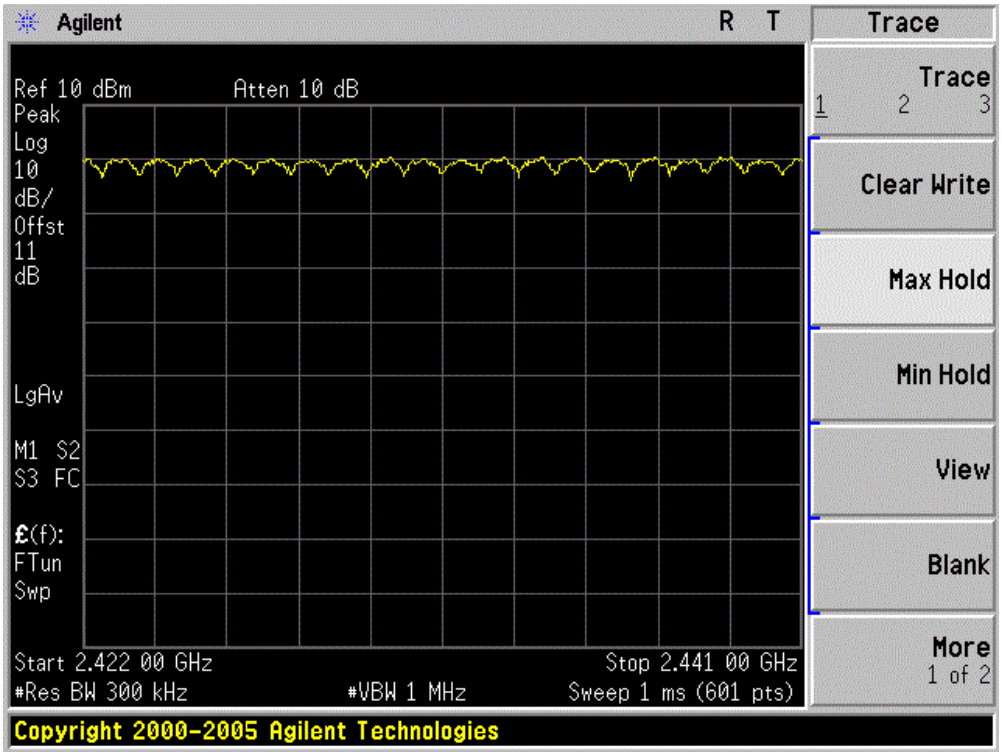


Mode3: Transmit by 3DH5			
Frequency Band (MHz)	Number of Hopping Frequencies	Limit	Result
2400 - 2483.5	79	>15	Pass

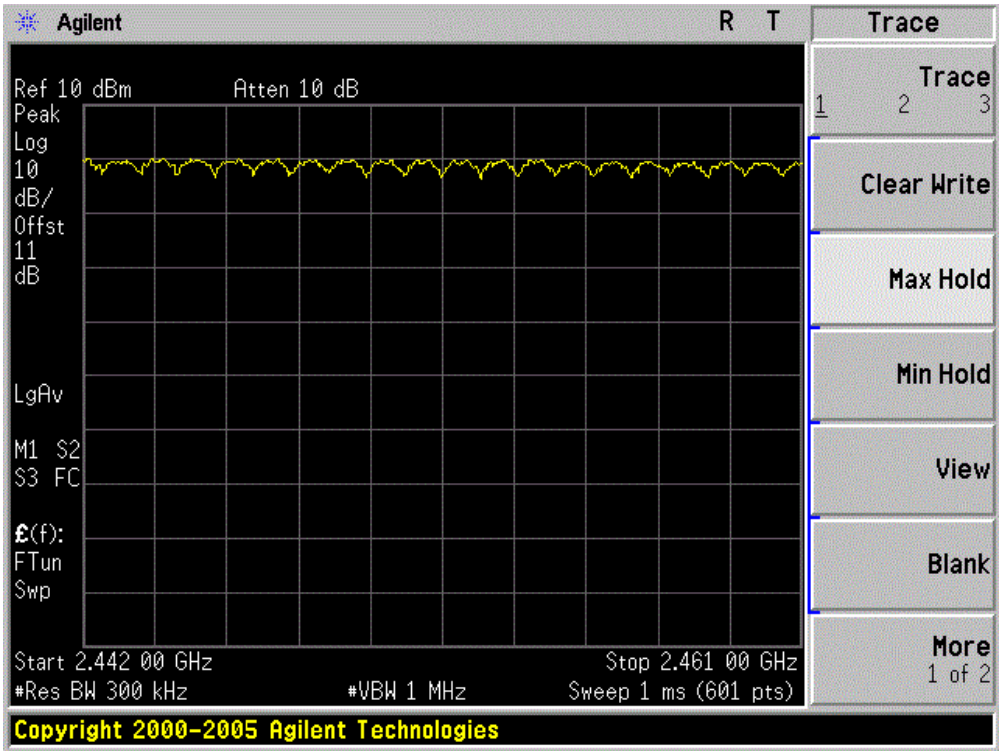
2402 - 2421 MHz



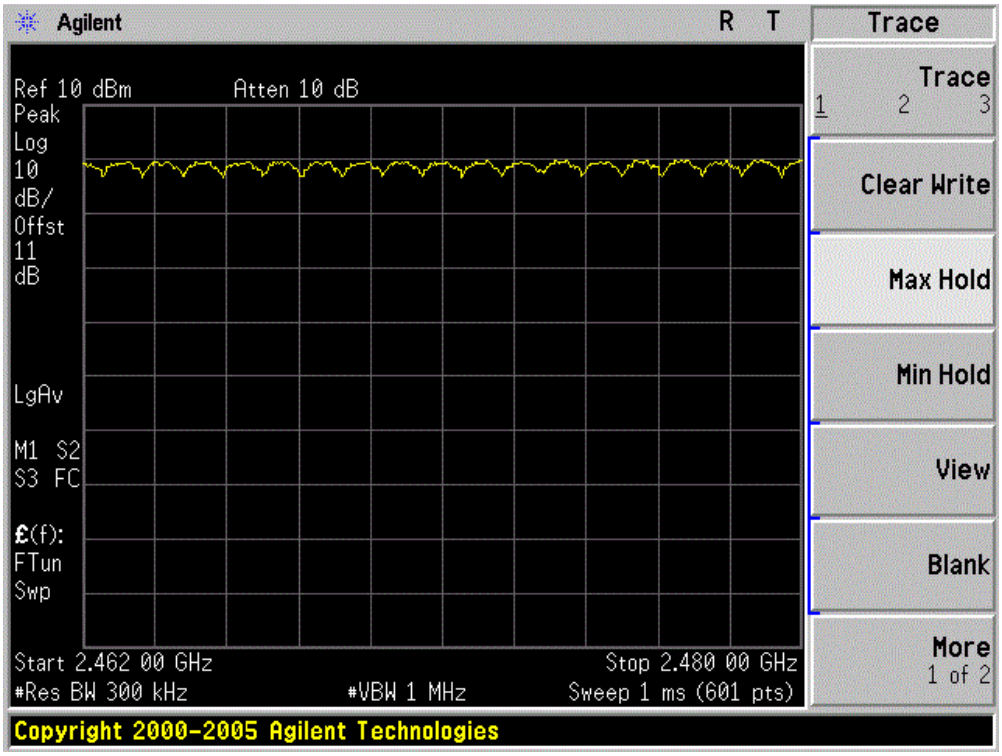
2422 - 2441 MHz



2442 - 2461 MHz



2462 - 2480 MHz



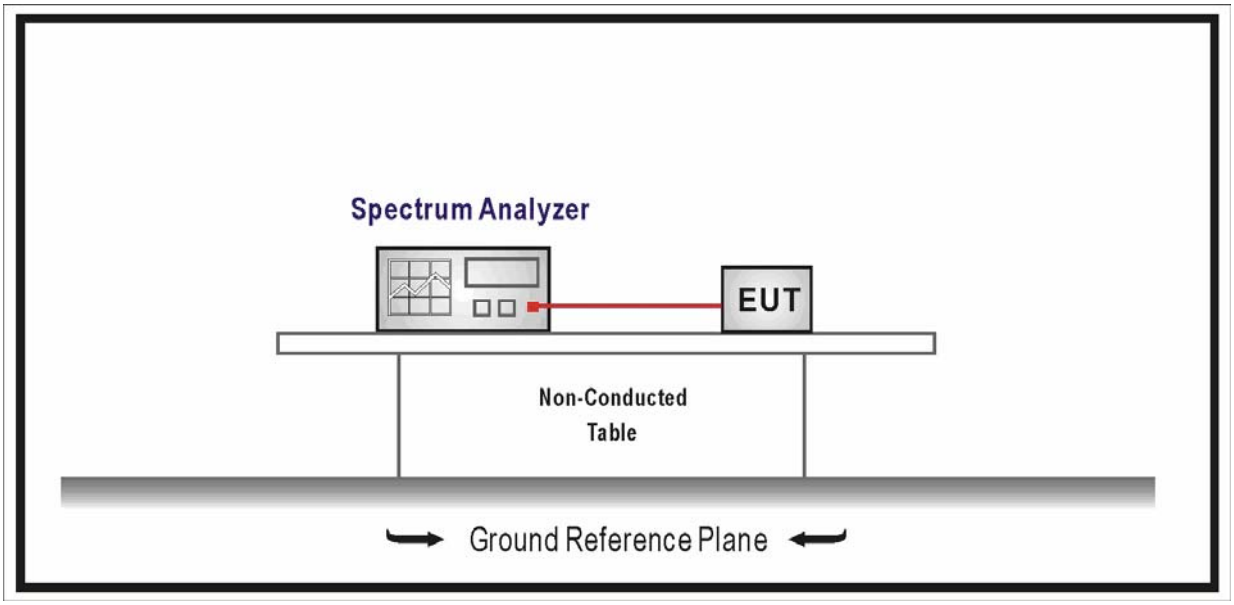
8. Time of Occupancy (Dwell Time)

8.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2013.05.08	2014.05.07

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

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

channel is 500 kHz.

- Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.
- Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater then 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

8.4. Test Procedure

According to ANSI C63.10: 2009.

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = zero span, centered on a hopping channel

RBW = 1MHz

VBW ≧ RBW

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

Detector function = peak

Trace = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

8.5. Uncertainty

The measurement uncertainty is defined as ± 0.1 us

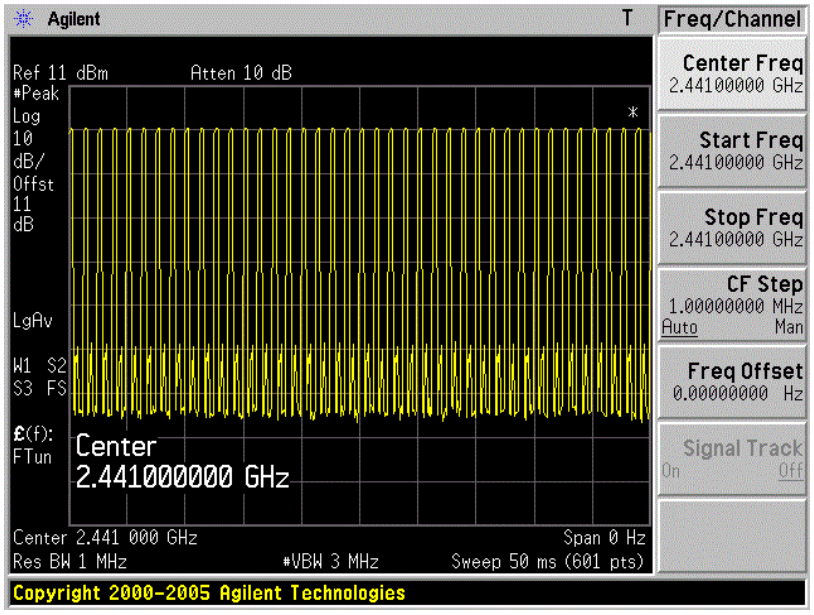
8.6. Test Result

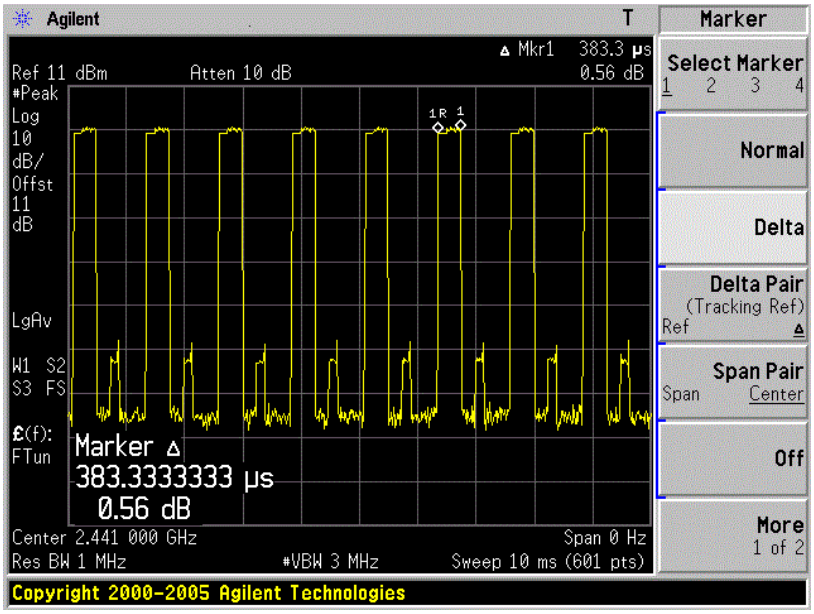
Mode1: Transmit by 3DH1				
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	122.56	< 400	Pass

Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 40/50msec=800 hops/sec.

- 2441MHz, The Maximum Occupancy Time Within 31.6sec: [(0.383ms*800)/79]*31.6 =122.56msec

Channel 39 (2441MHz)-(3DH1)



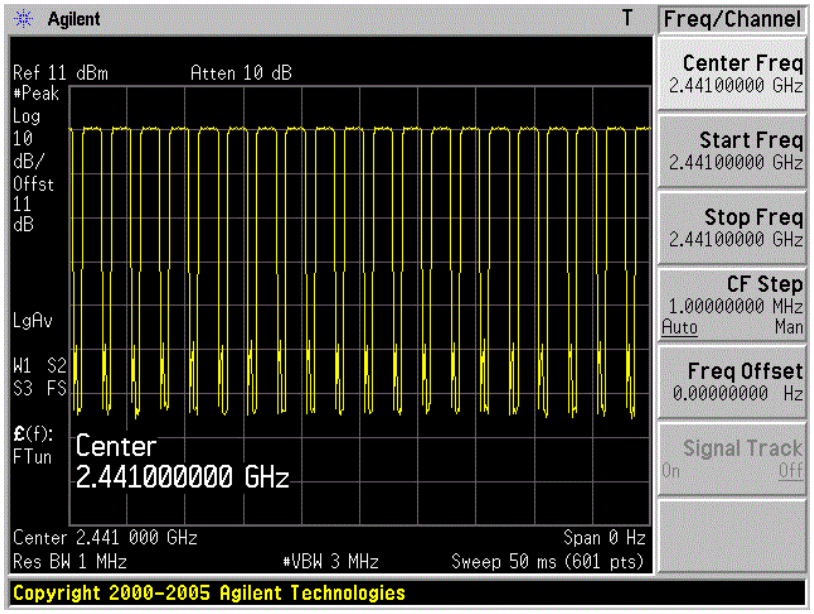


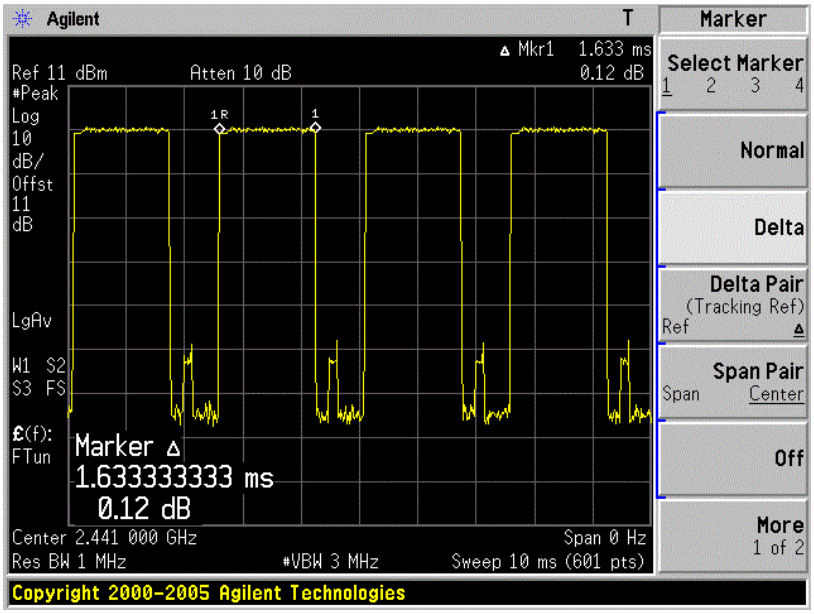
Mode2: Transmit by 3DH3				
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	261.28	< 400	Pass

Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 20/50msec=400hops/sec.

- 2441MHz, The Maximum Occupancy Time Within 31.6sec:
  [(1.633ms*400)/79]*31.6=261.28msec

Channel 39 (2441MHz) - (3DH3)



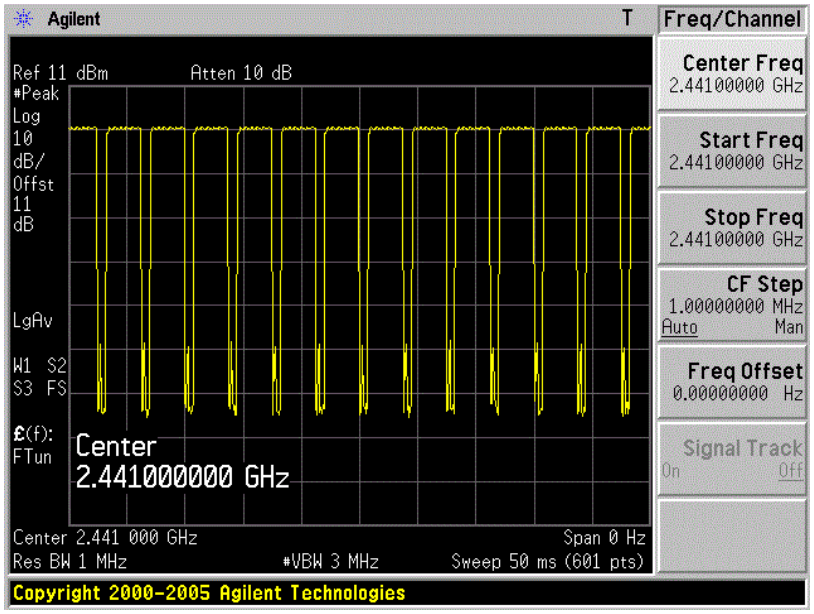


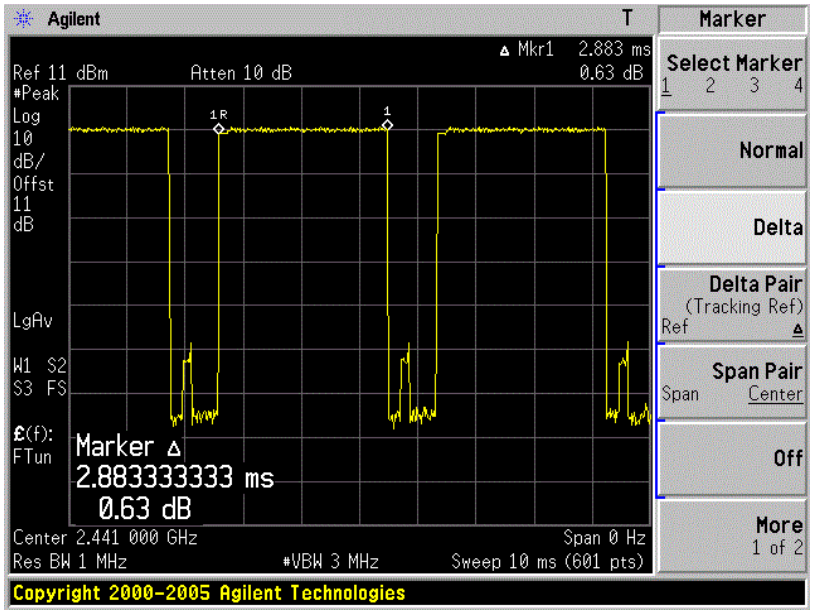
Mode3: Transmit by 3DH5				
Channel No.	Frequency (MHz)	Time of Occupancy (ms)	Limit (ms)	Result
39	2441	322.90	< 400	Pass

Test Time Period: 0.4*79=31.6sec, Hopping Times Within 1sec: 14/50msec=280 hops/sec.

- 2441MHz, The Maximum Occupancy Time Within 31.6sec: [(2.883 ms*280)/79]*31.6= 322.90msec

Channel 39 (2441MHz) - (3DH5)





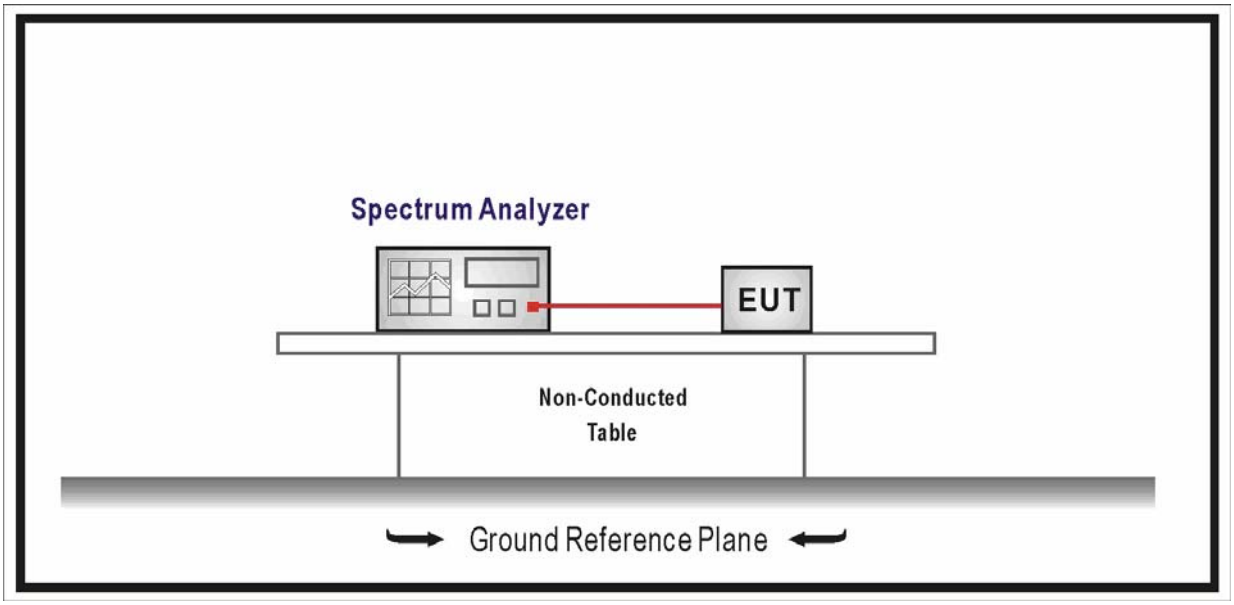
9. Peak Output Power

9.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2013.05.08	2014.05.07

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

- For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
- For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels.

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

According to ANSI C63.10: 2009.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20dB bandwidth, centered on a hopping channel

RBW ＞ the 20 dB bandwidth of the emission being measured.

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (don't forget added the external attenuation and cable loss).

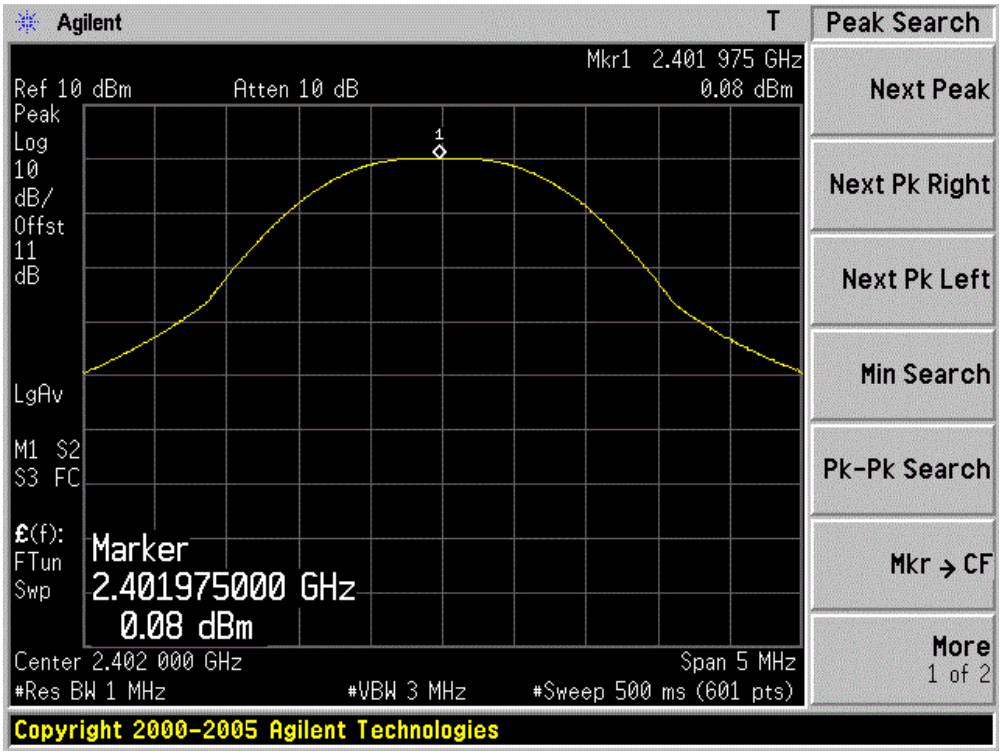
9.5. Uncertainty

The measurement uncertainty is defined as ± 1.0 dB

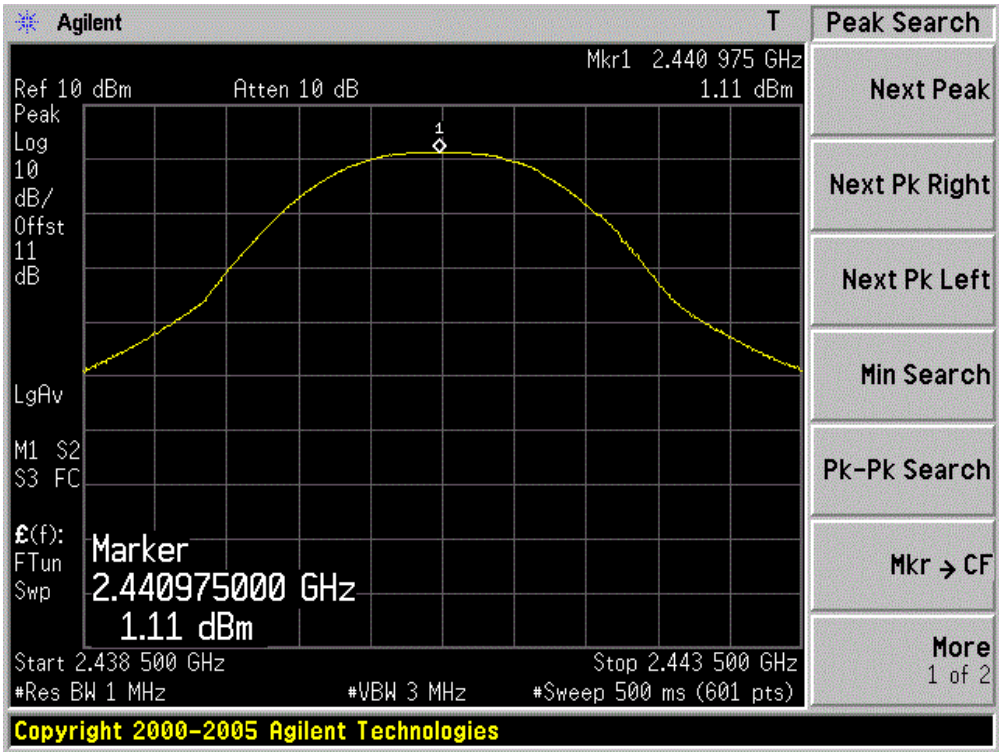
9.6. Test Result

Mode 1: Transmit by DH5				
Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	0.08	30.00	Pass
39	2441	1.11	30.00	Pass
78	2480	0.87	30.00	Pass

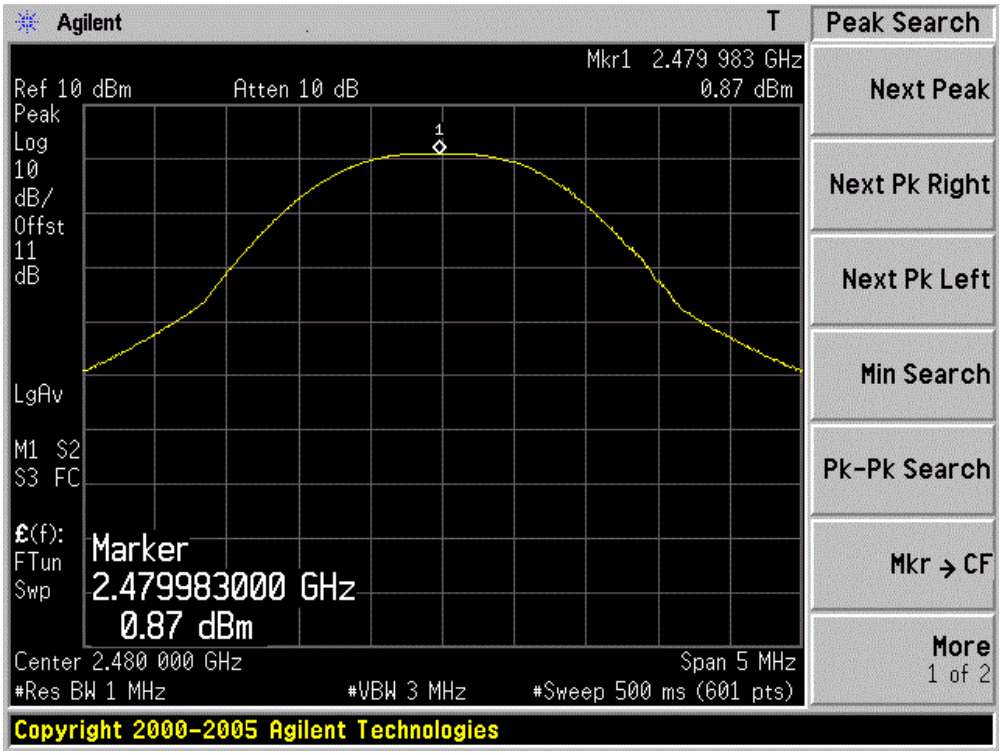
DH5 2402MHz



DH5 2441MHz

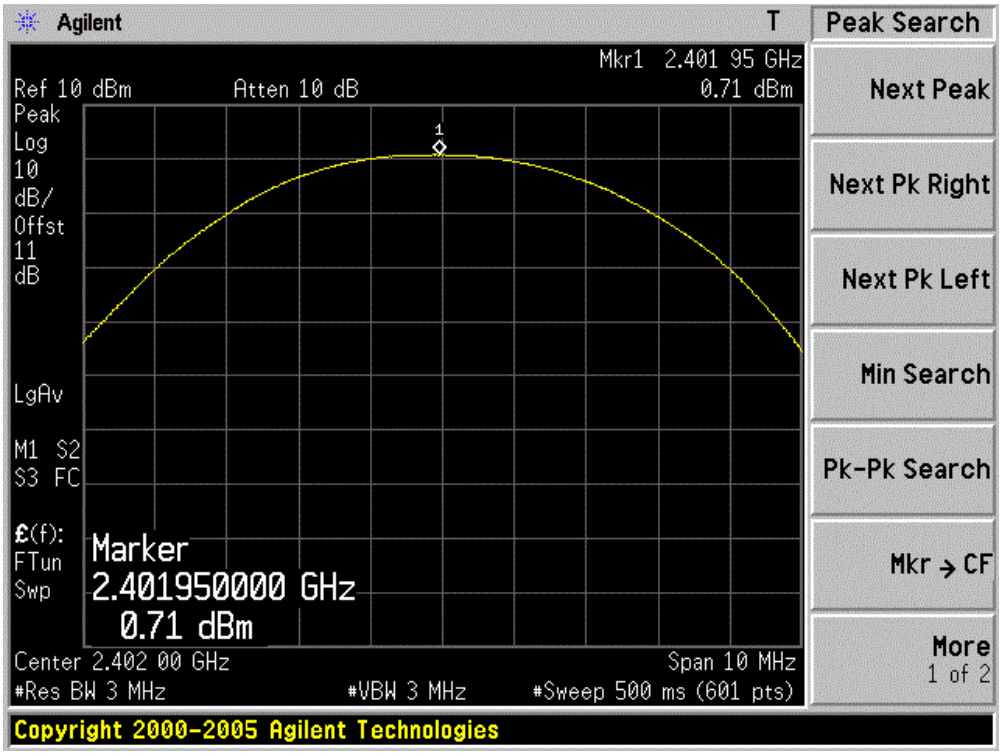


DH5 2480MHz

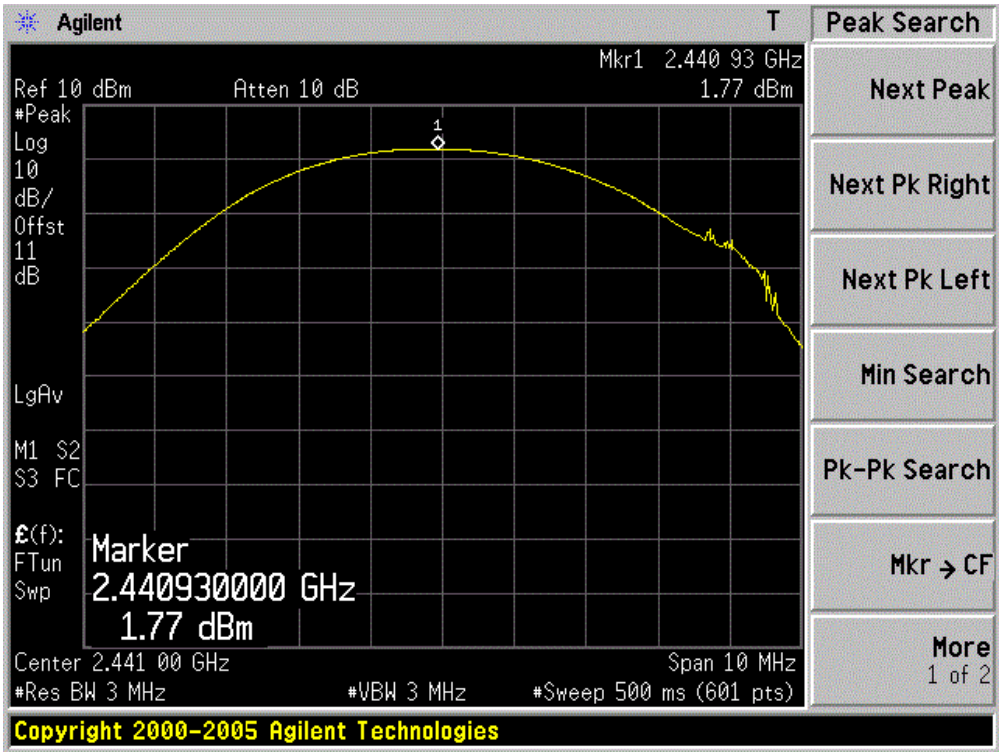


Mode 2: Transmit by 2DH5				
Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	0.71	30.00	Pass
39	2441	1.77	30.00	Pass
78	2480	1.53	30.00	Pass

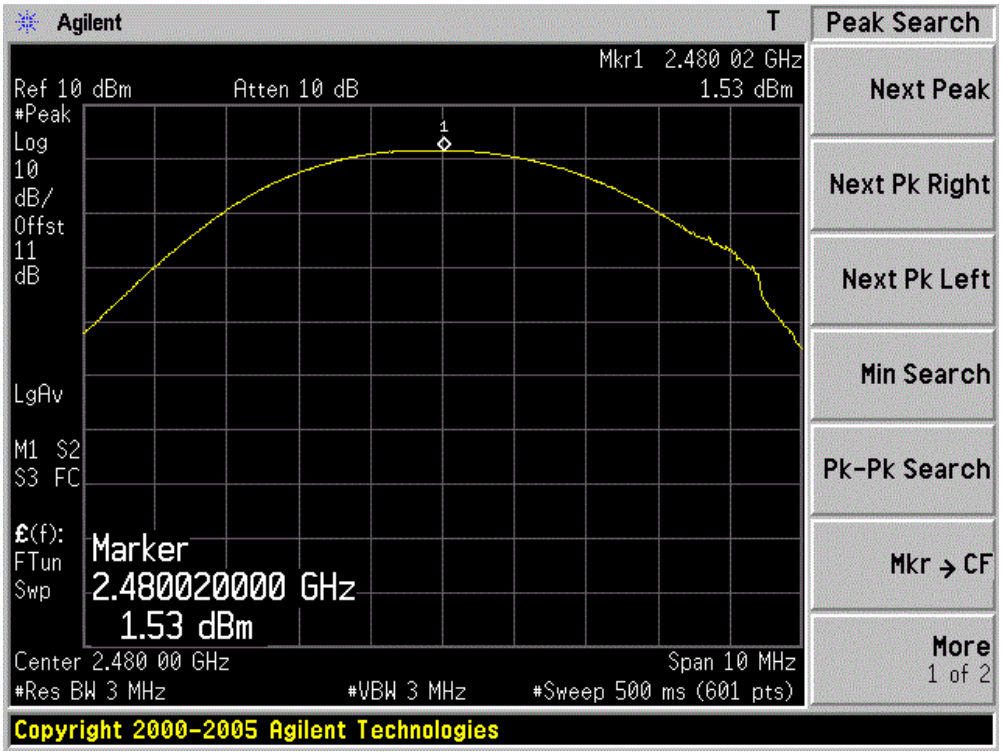
2DH5 2402MHz



2DH5 2441MHz

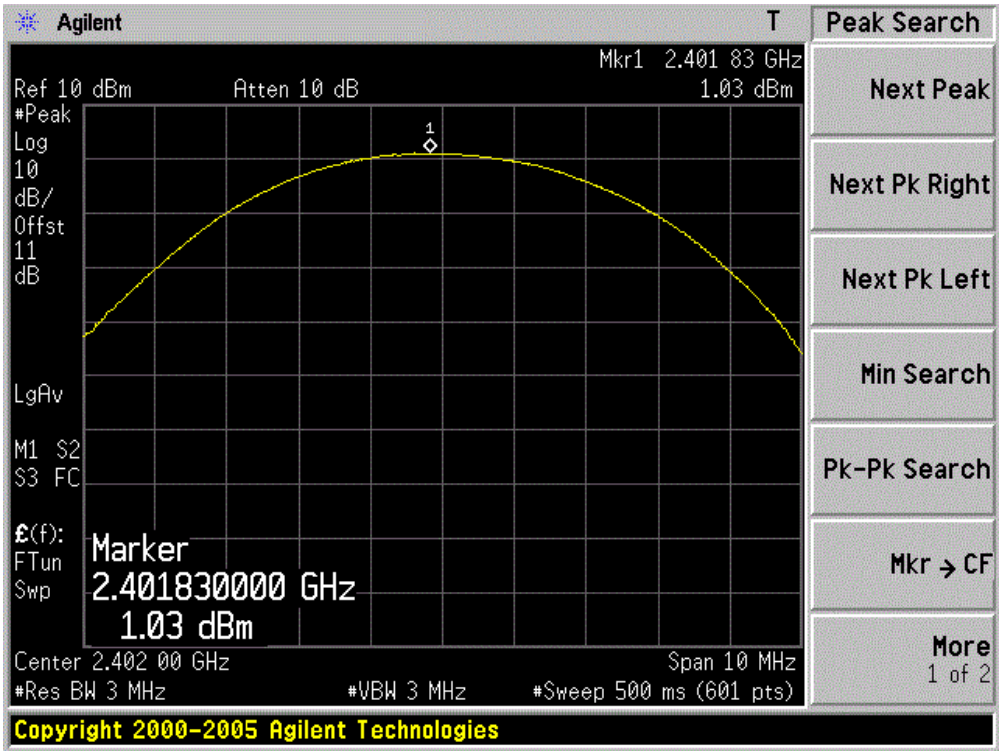


2DH5 2480MHz

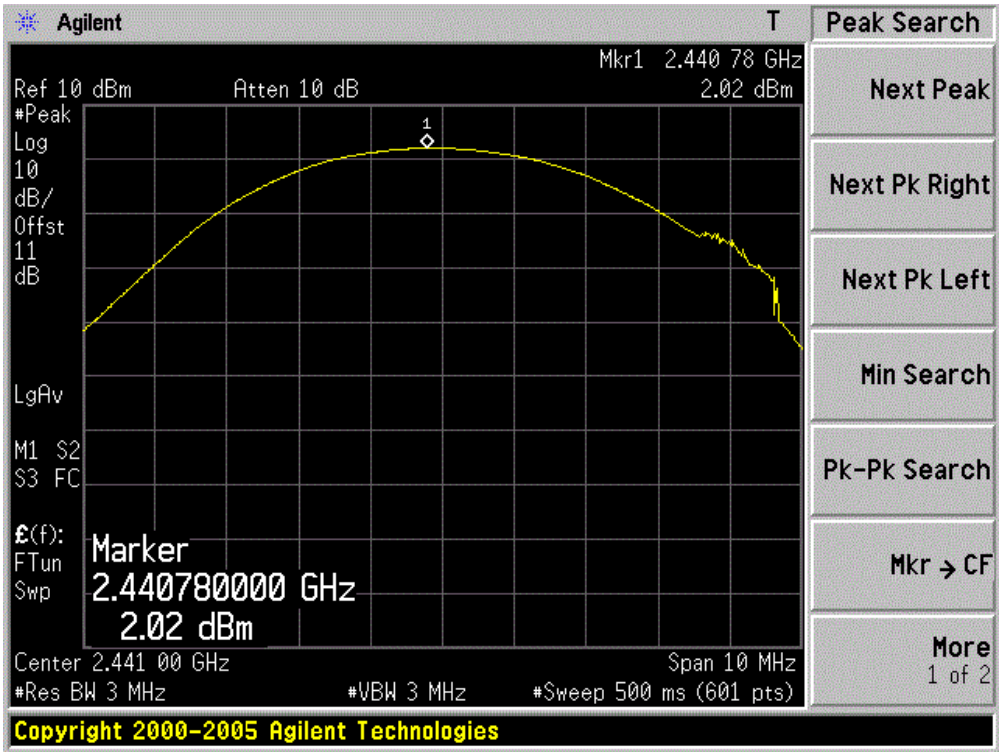


Mode 3: Transmit by 3DH5				
Channel No.	Frequency (MHz)	Measurement Power Output (dBm)	Limit (dBm)	Result
0	2402	1.03	30.00	Pass
39	2441	2.02	30.00	Pass
78	2480	1.85	30.00	Pass

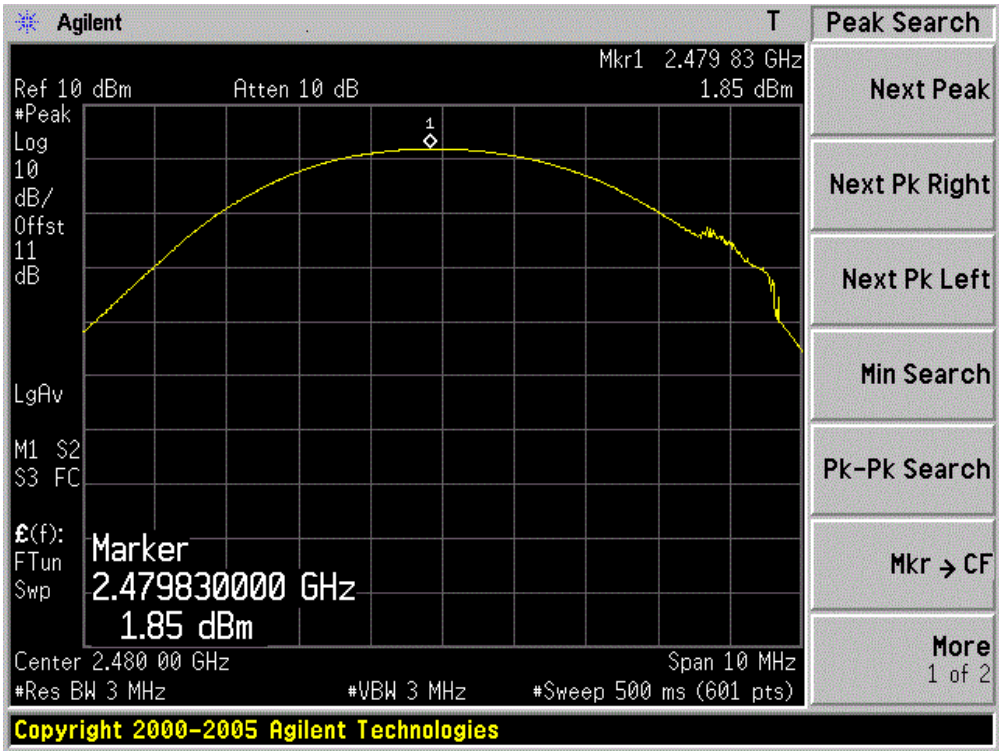
3DH5 2402MHz



3DH5 2441MHz



3DH5 2480MHz



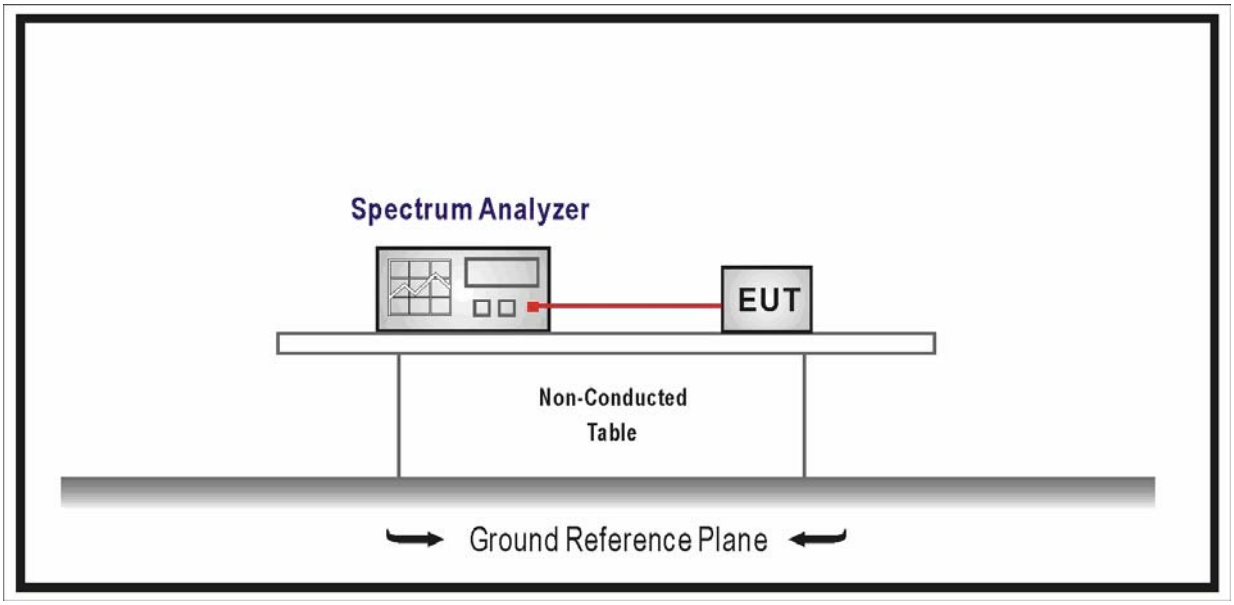
10. Band-edge Compliance of RF Conducted Emissions

10.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	N/A	2013.05.08	2014.05.07

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

- Intentional radiators operating under the alternative provisions to the general emission limits as contained in 15.217 through 15.257 and in Subpart E of FCC part 15, must be designed to ensure that 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
- In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or

digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) of FCC part 15 is not required.

10.4. Test Procedure

According to ANSI C63.10: 2009.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation.

RBW ≧ 1% of the span

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation prouduct outside of the band, if this level is greater than that at the bandedge.

Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

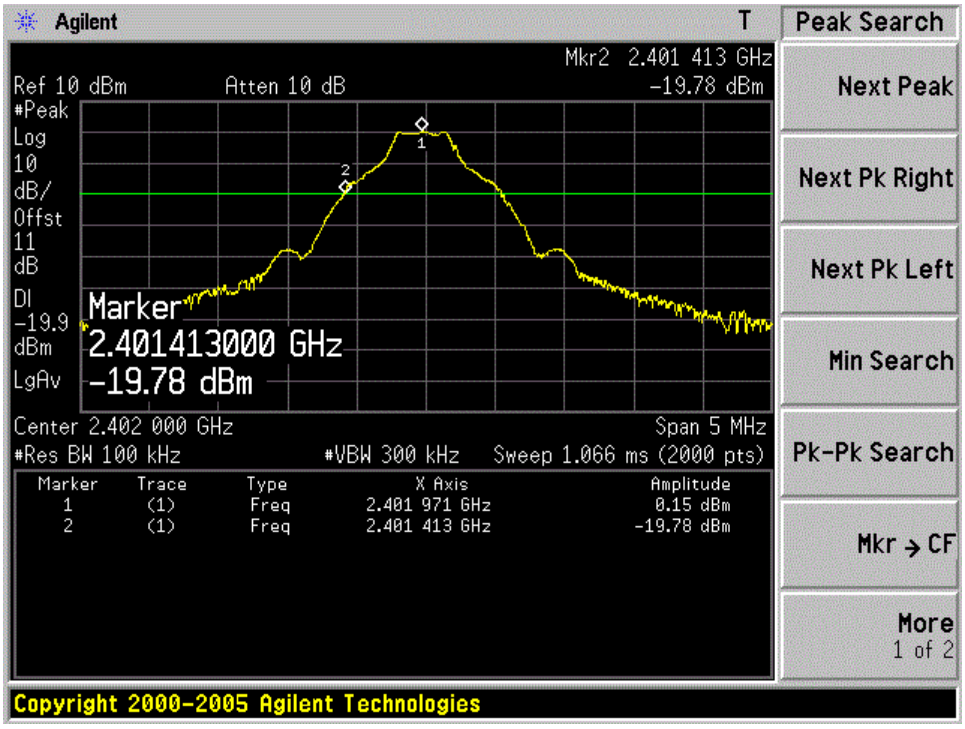
Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

10.5. Uncertainty

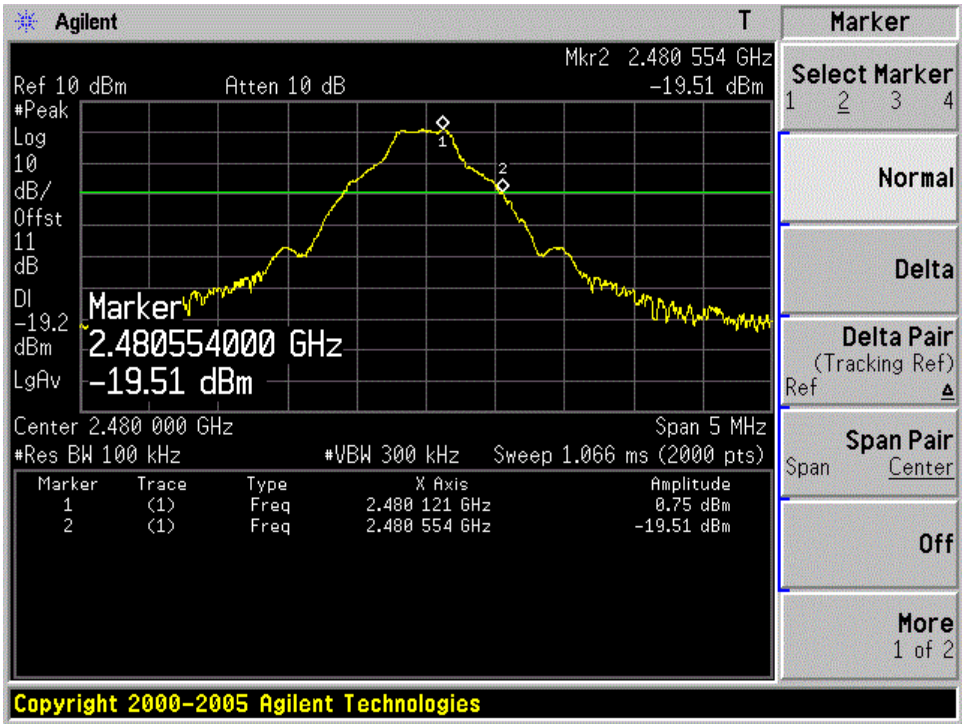
The measurement uncertainty is defined as ± 1.0 dB

10.6. Test Result

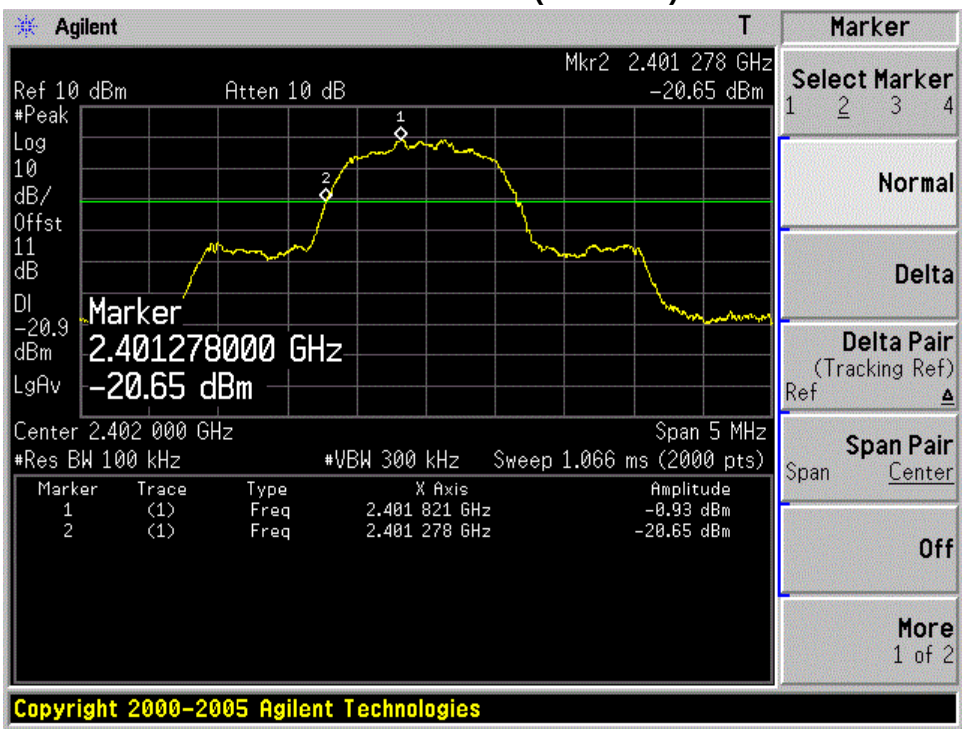
DH5 Channel 00 (2402MHz)



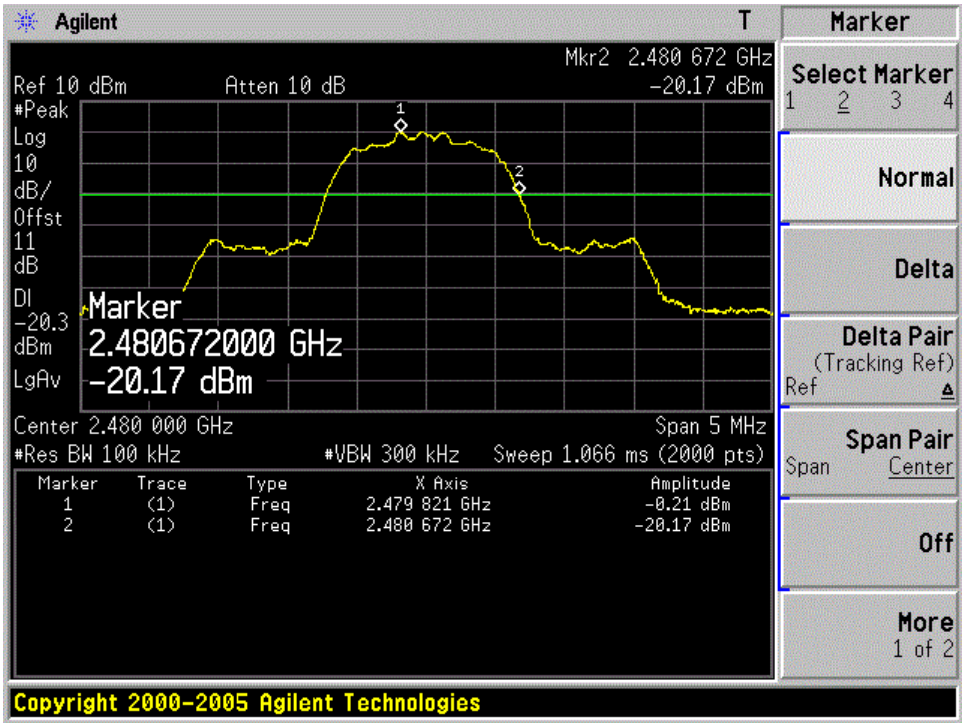
Channel 78 (2480MHz)



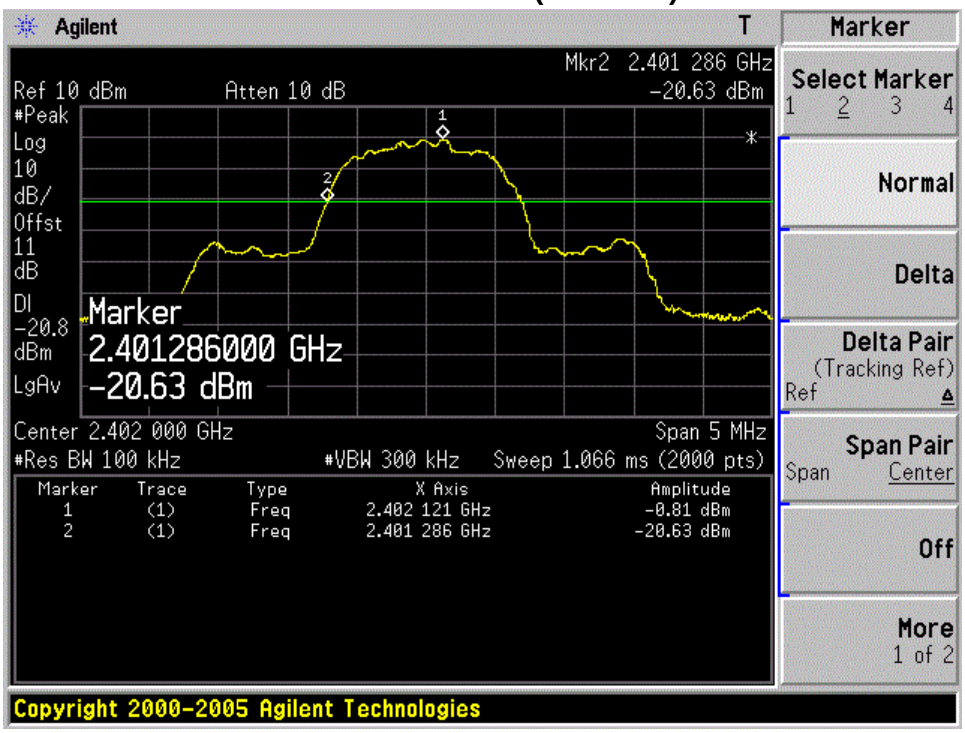
2DH5 Channel 00 (2402MHz)



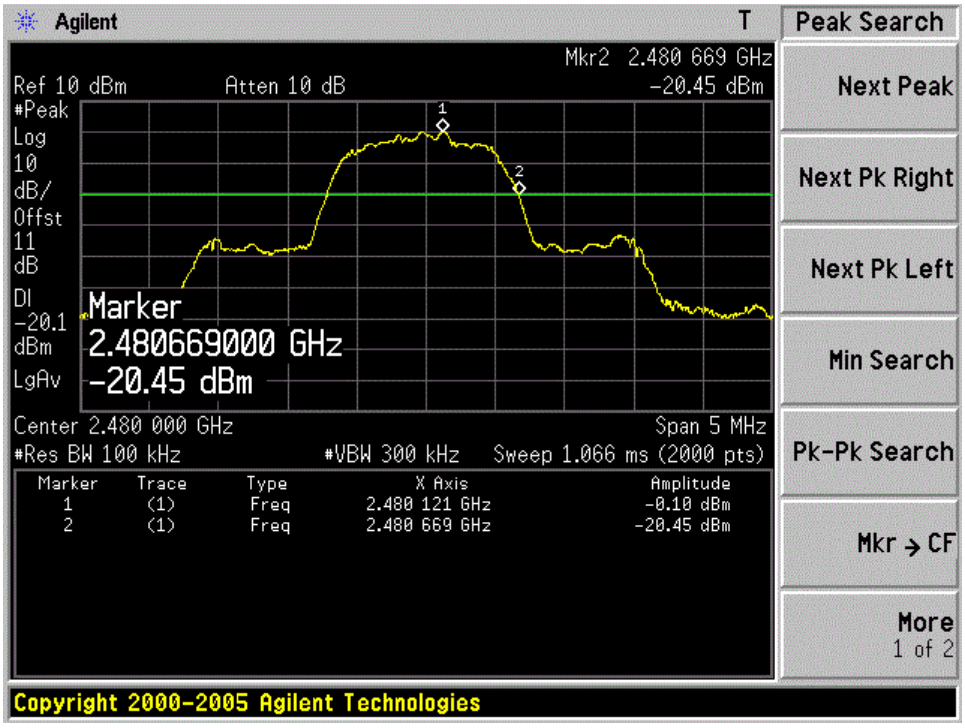
2DH5 Channel 78 (2480MHz)



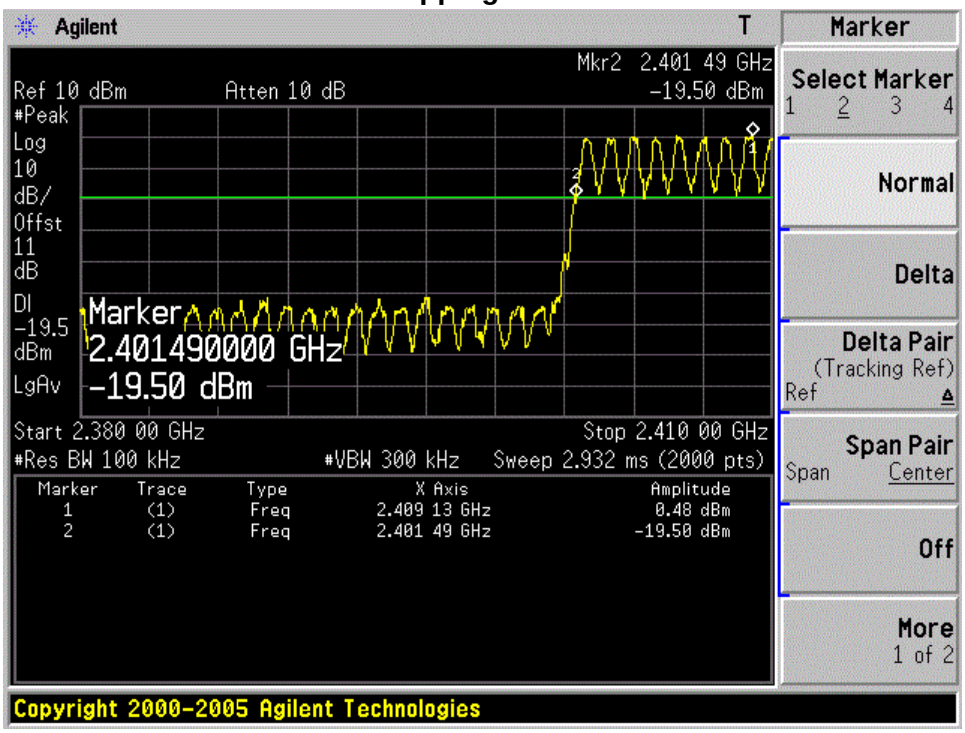
3DH5 Channel 00 (2402MHz)

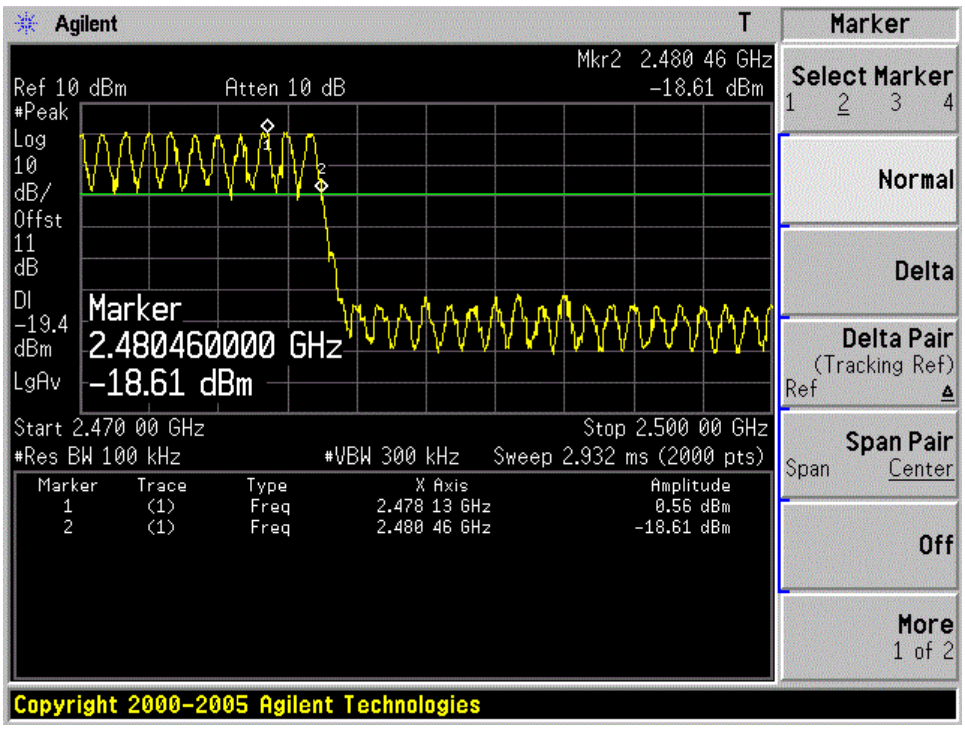


3DH5 Channel 78 (2480MHz)



Hopping Mode





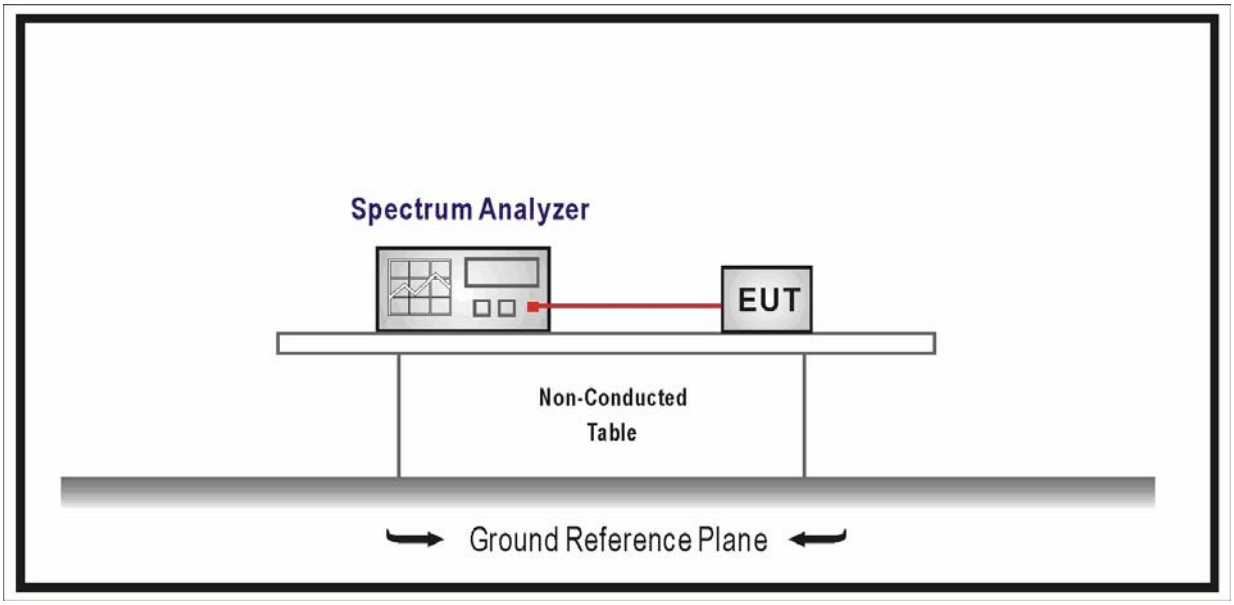
11. Spurious RF Conducted Emissions

11.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2013.01.22	2014.01.21
Temperature/Humidity Meter	Zhicheng	ZC1-2	TR8-TH	2013.05.08	2014.05.07

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

11.2. Test Setup



11.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits

based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) of FCC part 15 is not required.

11.4. Test Procedure

According to ANSI C63.10: 2009.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10^{th} harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

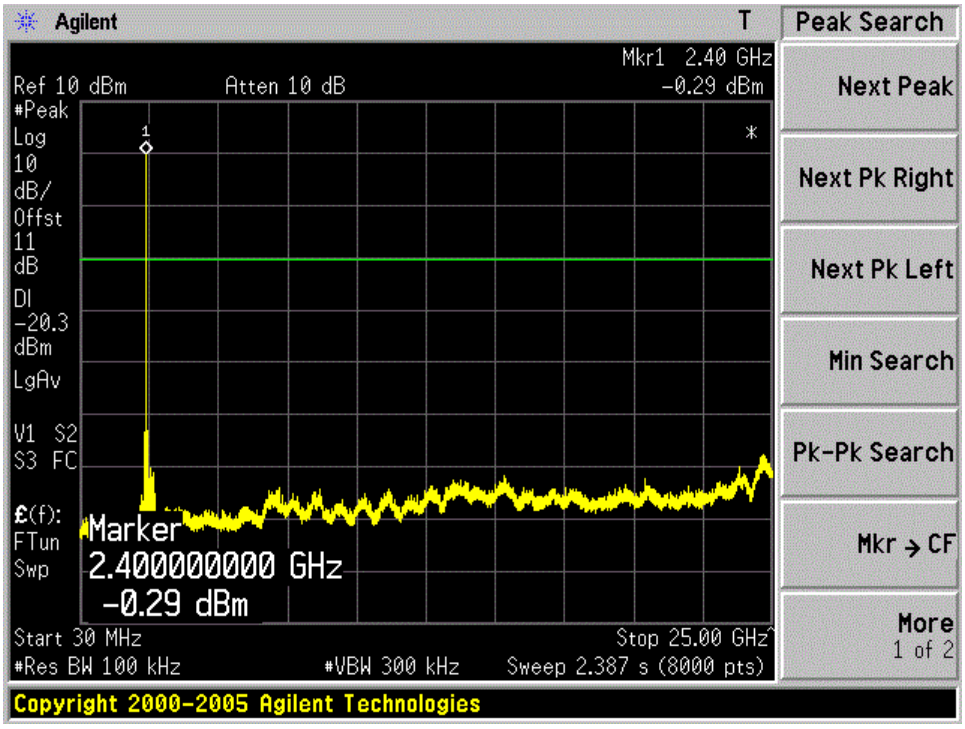
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

11.5. Uncertainty

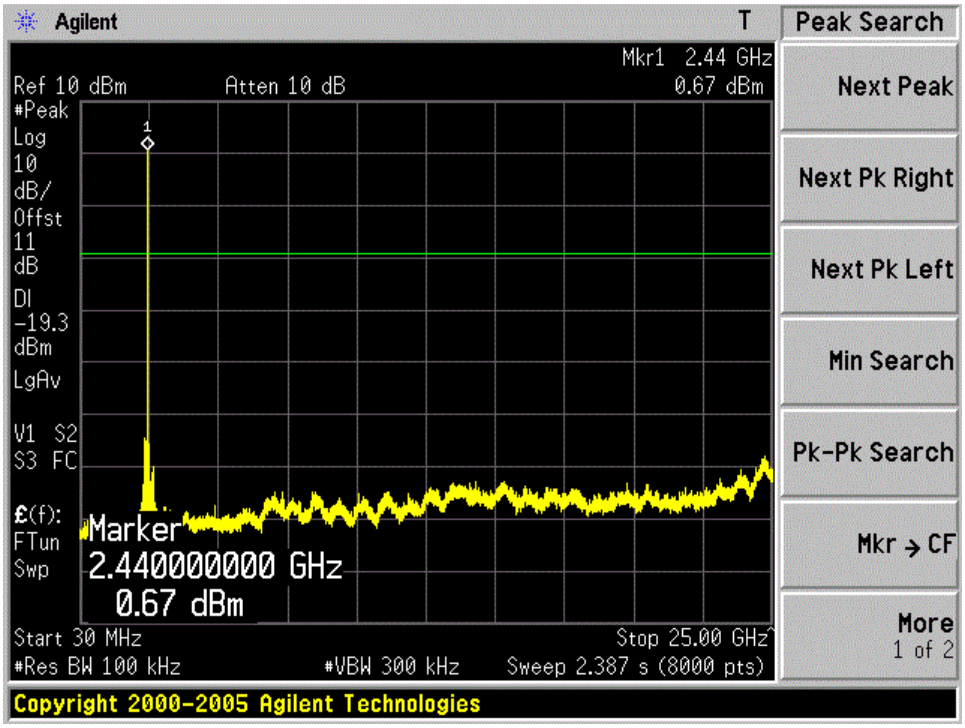
The measurement uncertainty is defined as ± 1.0 dB

11.6. Test Result

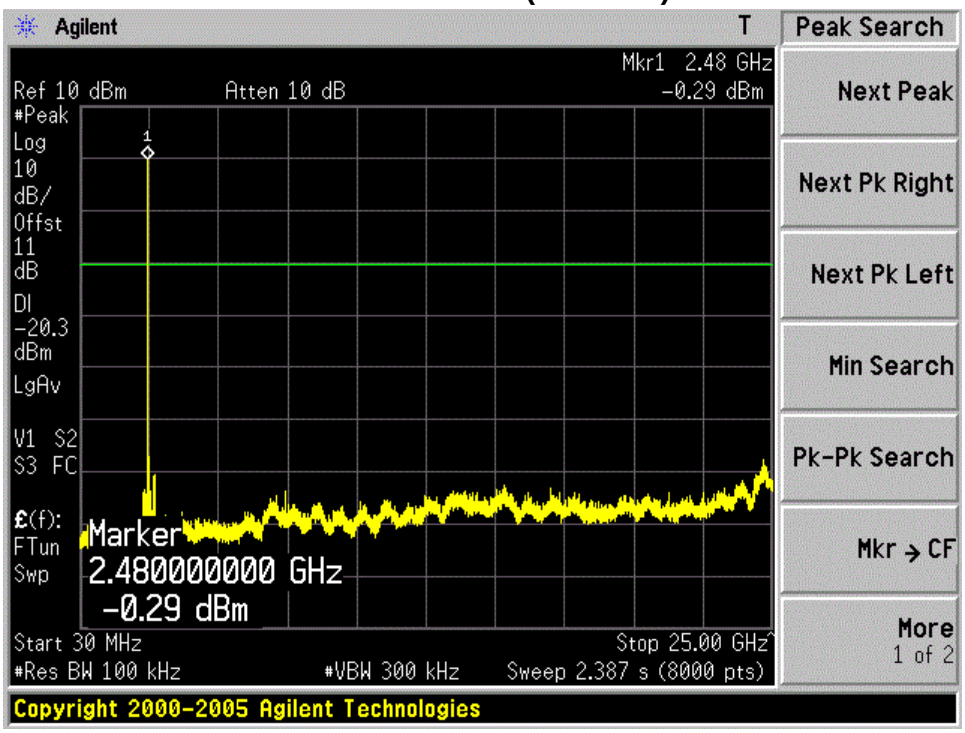
DH5 Channel 00 (2402MHz)



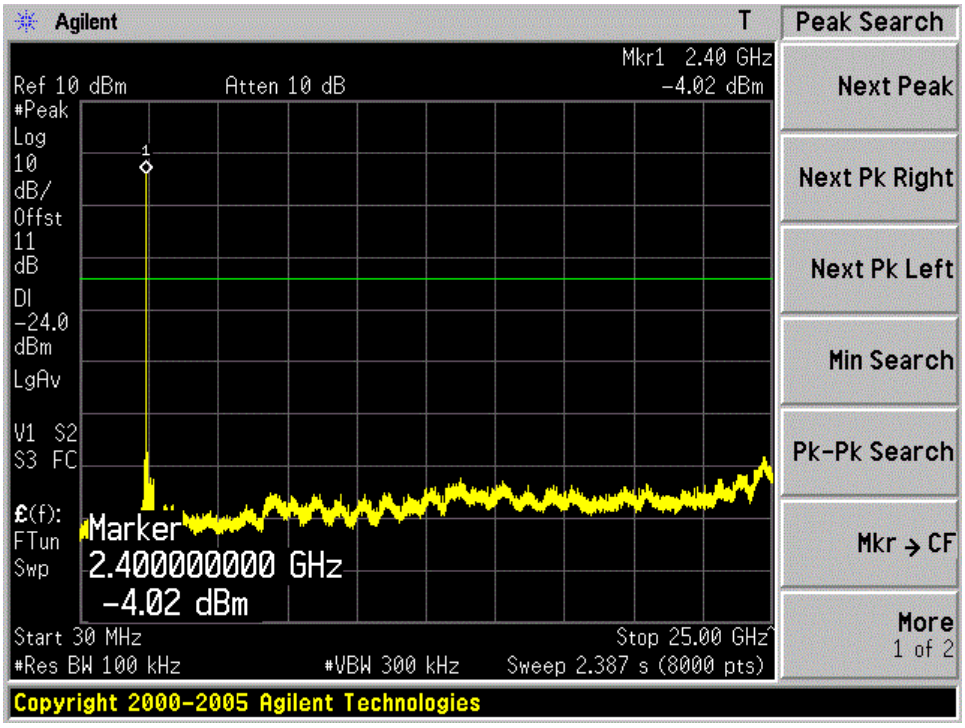
DH5 Channel 39 (2441MHz)



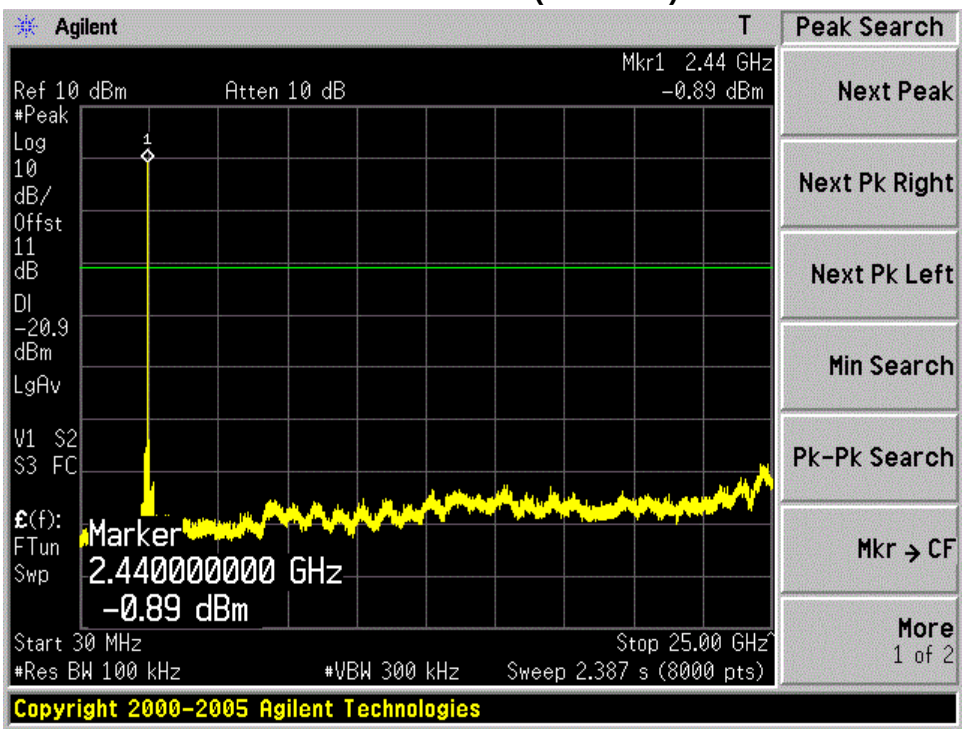
DH5 Channel 78 (2480MHz)



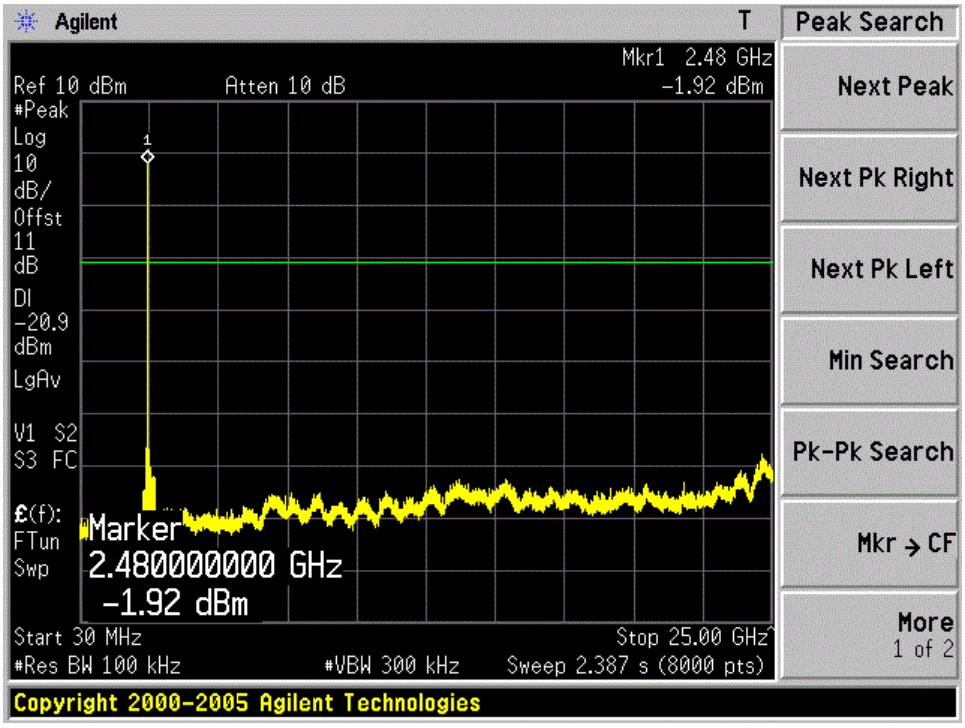
2DH5 Channel 00 (2402MHz)



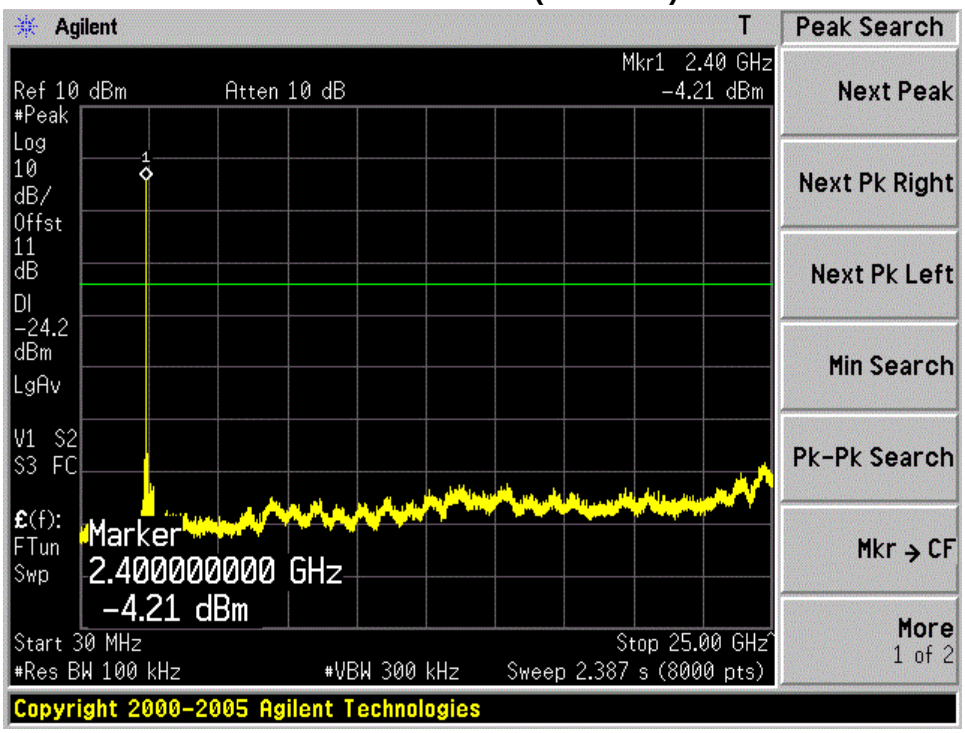
2DH5 Channel 39 (2441MHz)



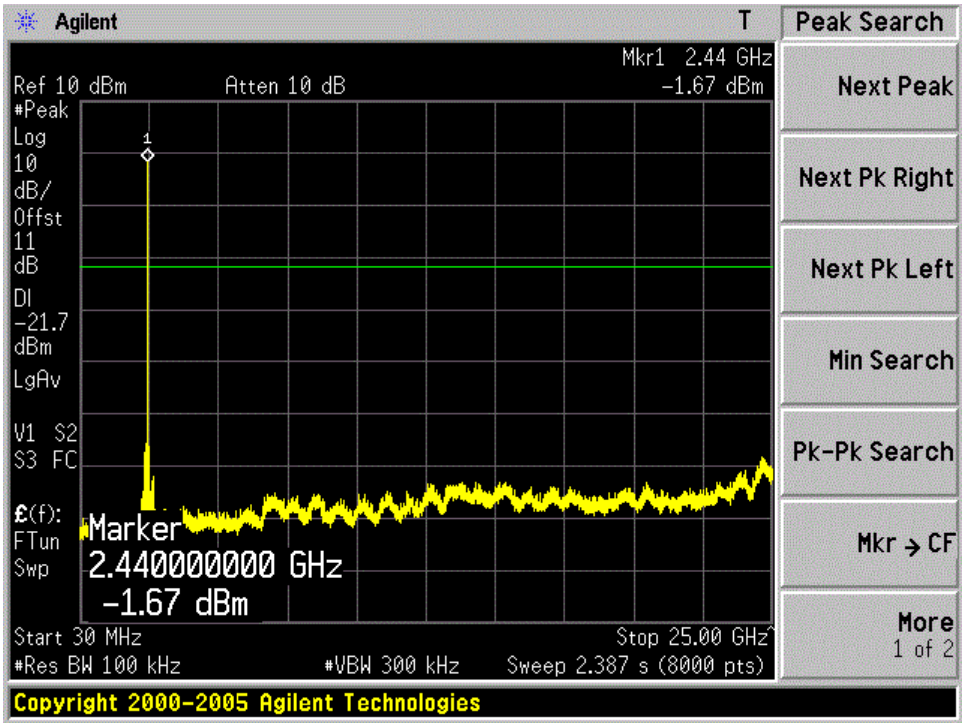
2DH5 Channel 78 (2480MHz)



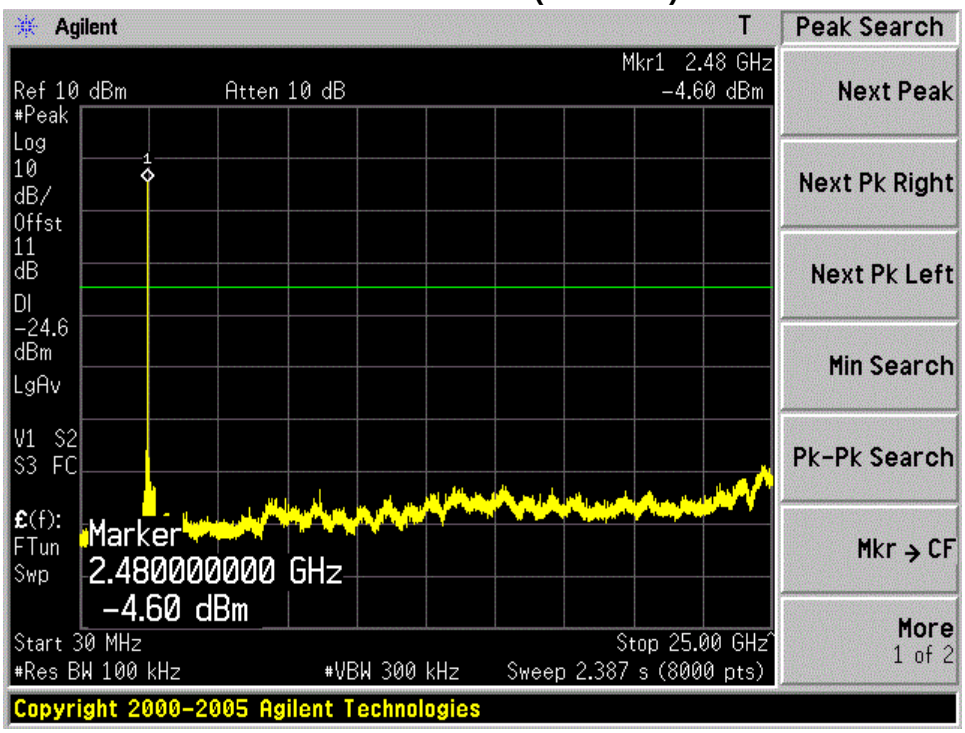
3DH5 Channel 00 (2402MHz)



3DH5 Channel 39 (2441MHz)



3DH5 Channel 78 (2480MHz)

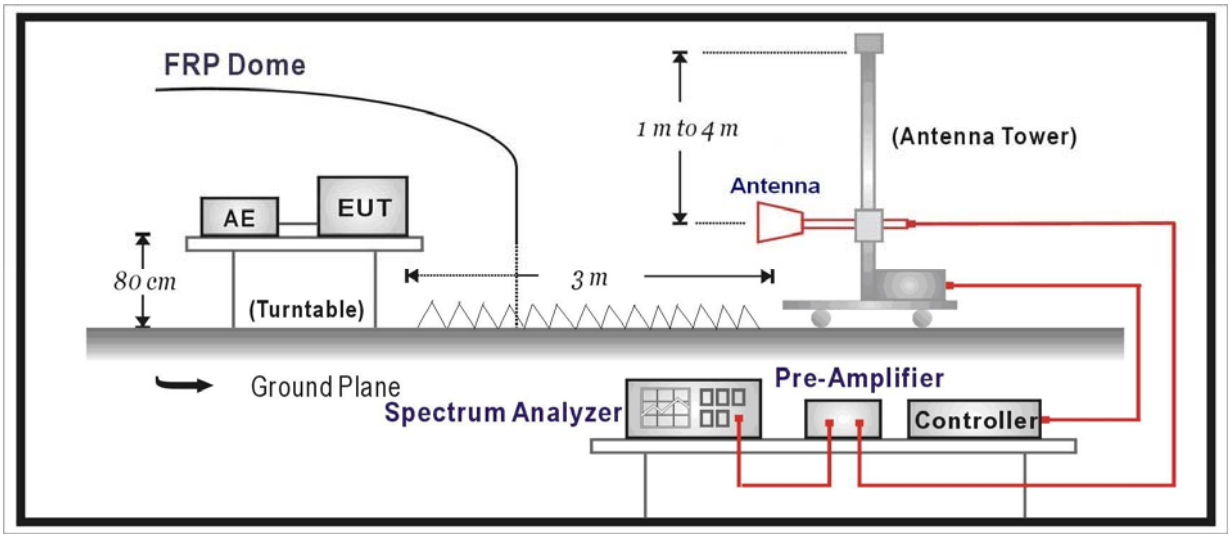


12. Radiated Emission Band Edge

12.1. Test Equipment

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2013.03.31	2014.03.30
EMI Test Receiver	R&S	ESCI	100573	2013.03.31	2014.03.30
Preamplifier	Miteq	NSP1800-25	1364185	2013.05.05	2014.05.04
Preamplifier	QuieTek	AP-040G	CHM-0906001	2013.05.05	2014.05.04
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2013.03.16	2014.03.15
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	499	2013.06.09	2014.06.08
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2013.03.02	2014.03.01
Temperature/Humidity Meter	zhicheng	ZC1-2	AC5-TH	2013.01.12	2014.01.11

12.2. Test Setup



12.3. 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) of FCC part 15.

12.4. Test Procedure

According to ANSI C63.10: 2009.

This test is required for any spurious emission or modulation product that falls in a Restricted Band, as defined in Section 15.205 of FCC part 15. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for f ≧ 1 GHz, 100 kHz for f < 1GHz

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b) of FCC part 15.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209 of FCC Part 15. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log (dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit of FCC part 15.

If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative “marker-delta” method may be employed.

12.5. Uncertainty

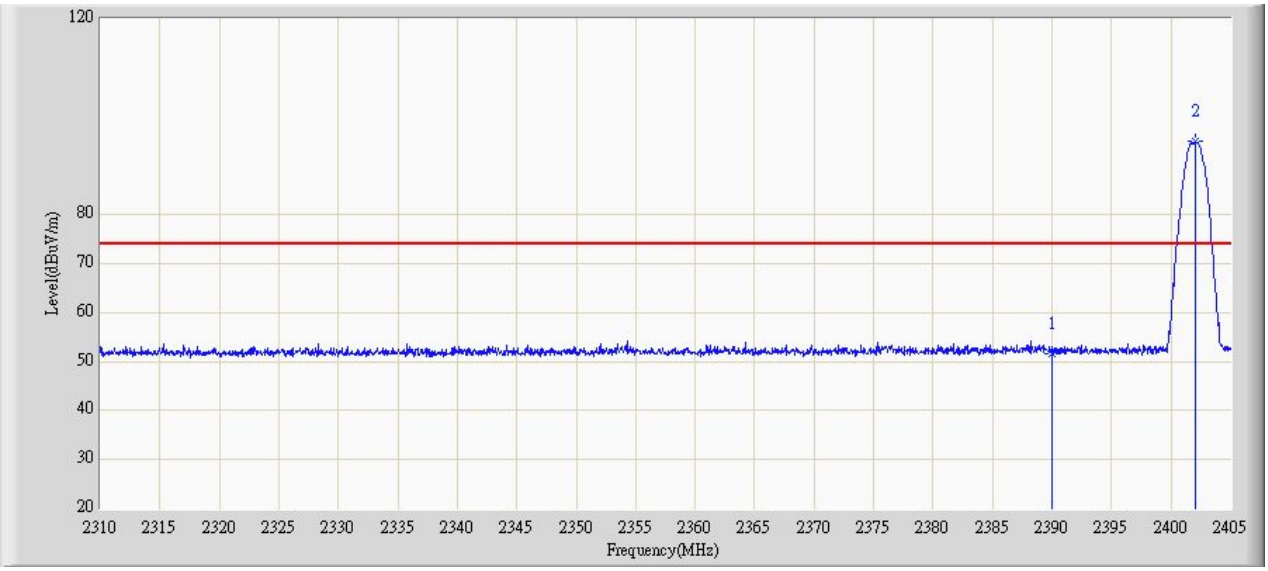
The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

12.6. Test Result

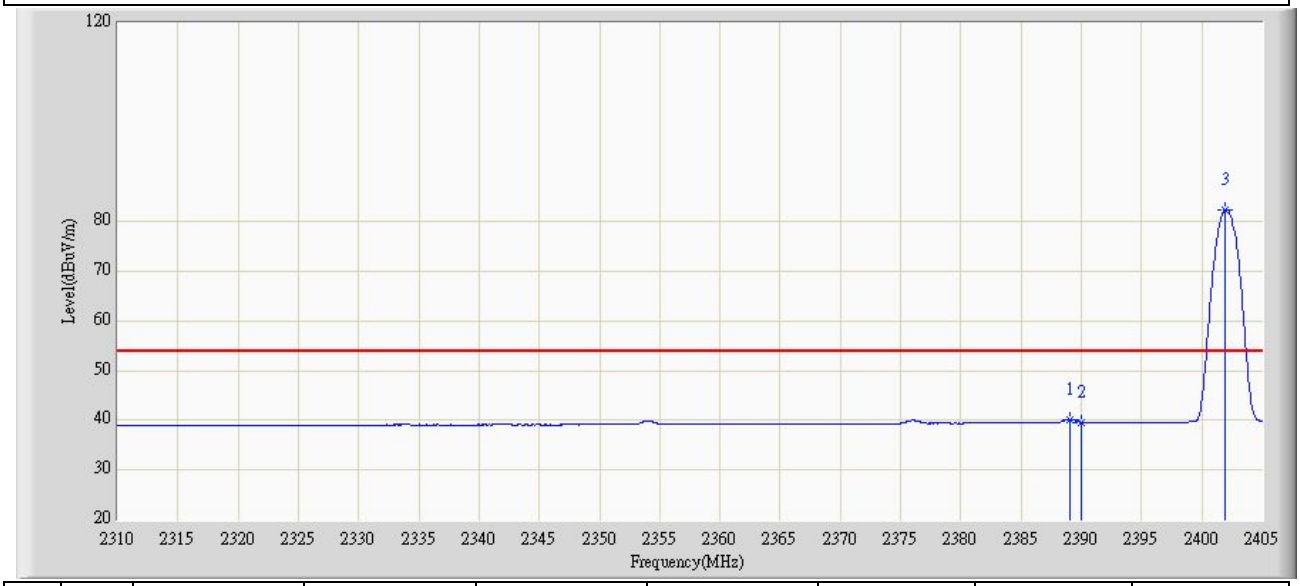
All of the test result shown indicates the worst case, and spectrum analyzer parameters setting as shown below:
Peak detector: RBW = 1MHz, VBW = 3MHz, sweep time = 200ms;
Average detector: RBW = 1MHz, VBW = 10Hz, sweep time = auto.

Engineer: Brgant	Time: 2013/05/22 - 19:13
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 1:Transmit at Channel 2402MHz by DH5	



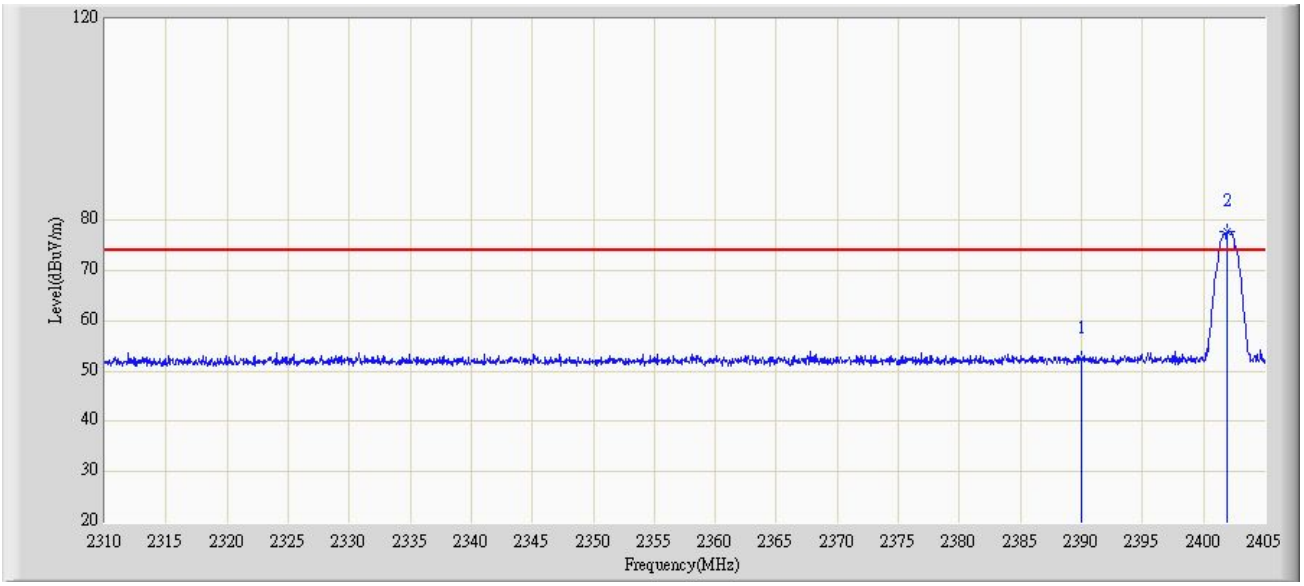
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.636	23.514	-22.364	74.000	28.122	PK
2	*	2402.055	94.866	66.695	N/A	N/A	28.171	PK

Engineer: Brgant	Time: 2013/05/22 - 20:18
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 1:Transmit at Channel 2402MHz by DH5	



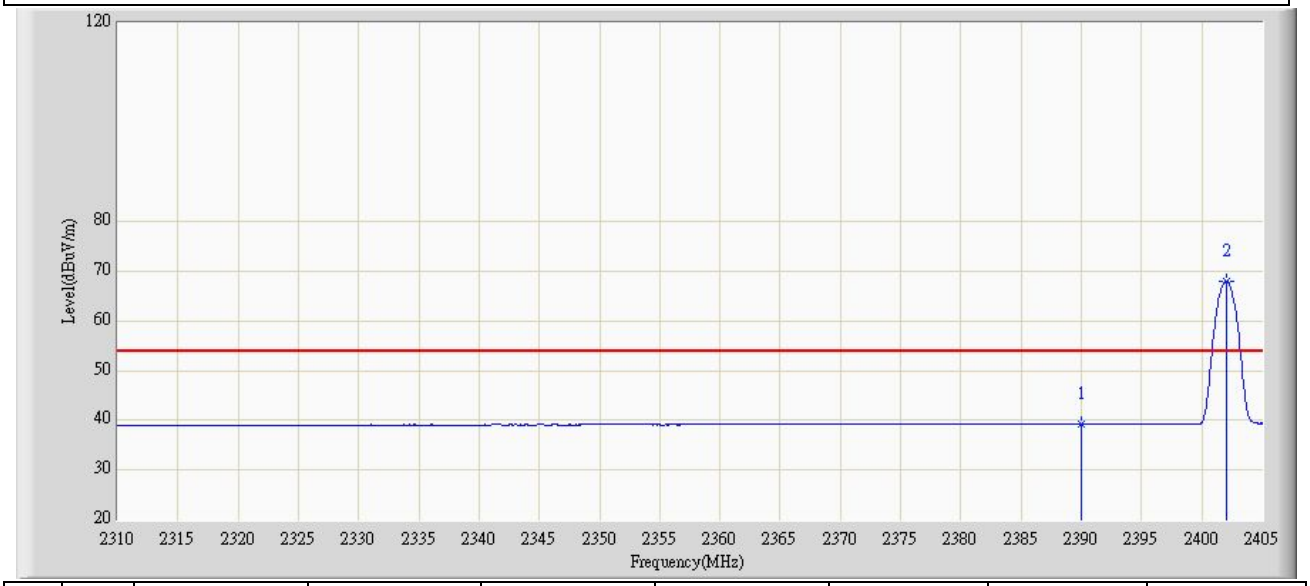
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2389.040	40.171	12.053	-13.829	54.000	28.118	AV
2		2390.000	39.575	11.453	-14.425	54.000	28.122	AV
3	*	2401.960	82.479	54.308	N/A	N/A	28.170	AV

Engineer: Brgant	Time: 2013/05/22 - 20:19
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 1:Transmit at Channel 2402MHz by DH5	



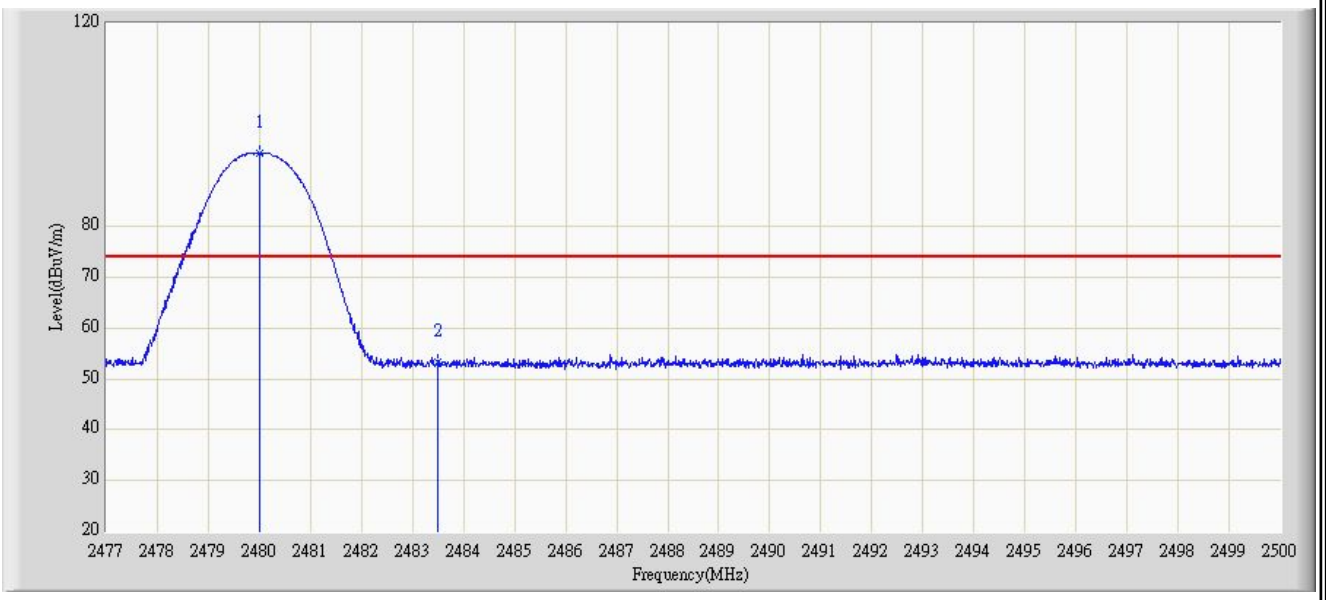
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.481	24.359	-21.519	74.000	28.122	PK
2	*	2401.913	77.740	49.569	N/A	N/A	28.170	PK

Engineer: Brgant	Time: 2013/05/22 - 20:20
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 1:Transmit at Channel 2402MHz by DH5	



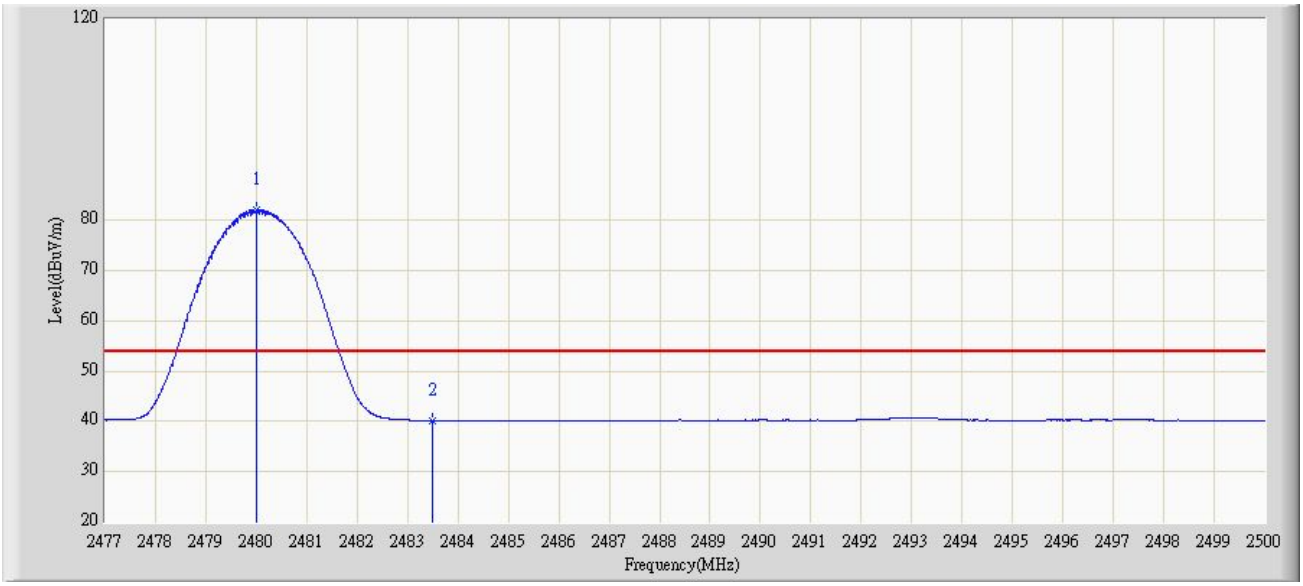
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.273	11.151	-14.727	54.000	28.122	AV
2	*	2402.008	68.031	39.860	N/A	N/A	28.171	AV

Engineer: Brgant	Time: 2013/05/22 - 20:22
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 1:Transmit at Channel 2480MHz by DH5	



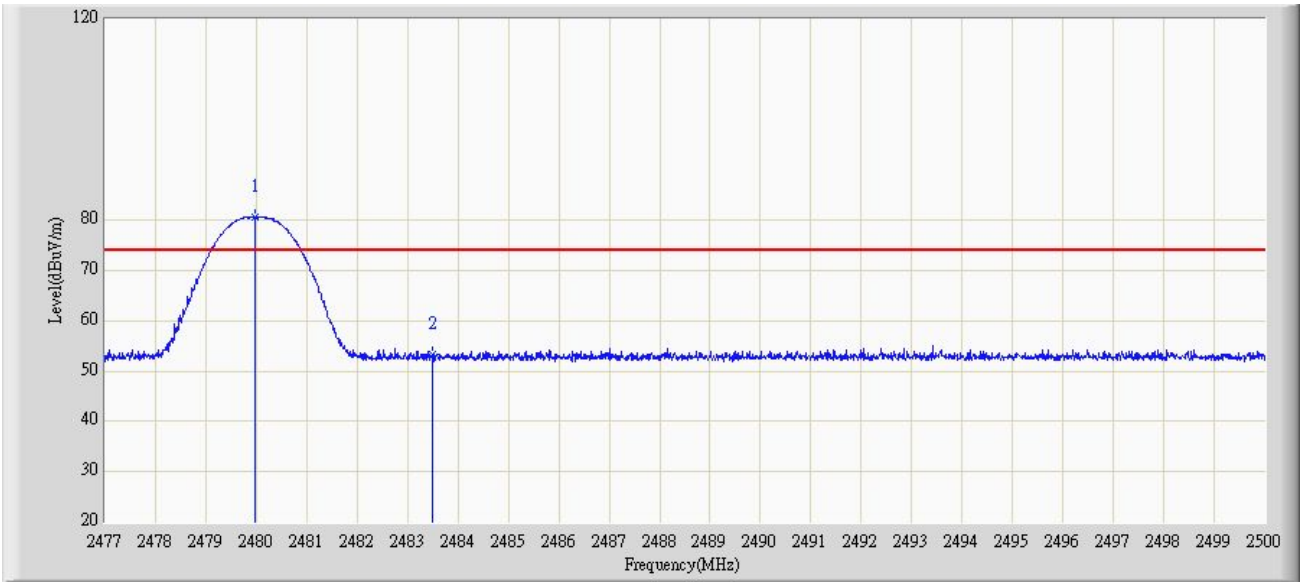
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.990	94.392	65.892	N/A	N/A	28.500	PK
2		2483.500	53.322	24.808	-20.678	74.000	28.514	PK

Engineer: Brgant	Time: 2013/05/22 - 20:25
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 1:Transmit at Channel 2480MHz by DH5	



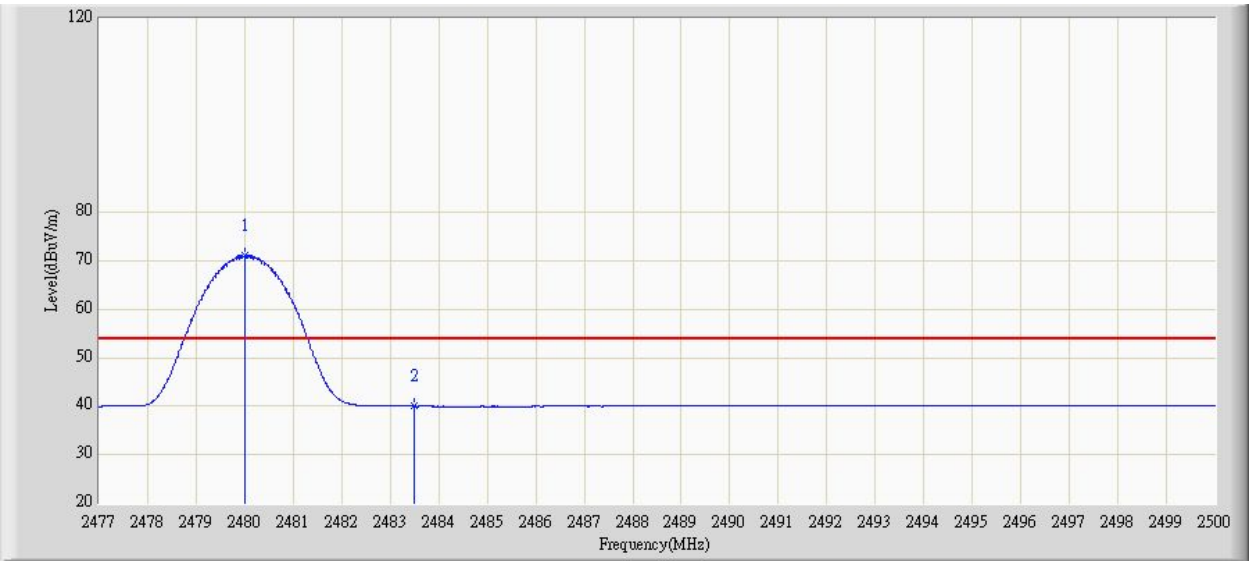
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	82.111	53.611	N/A	N/A	28.500	AV
2		2483.500	40.171	11.657	-13.829	54.000	28.514	AV

Engineer: Brgant	Time: 2013/05/22 - 20:28
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 1:Transmit at Channel 2480MHz by DH5	



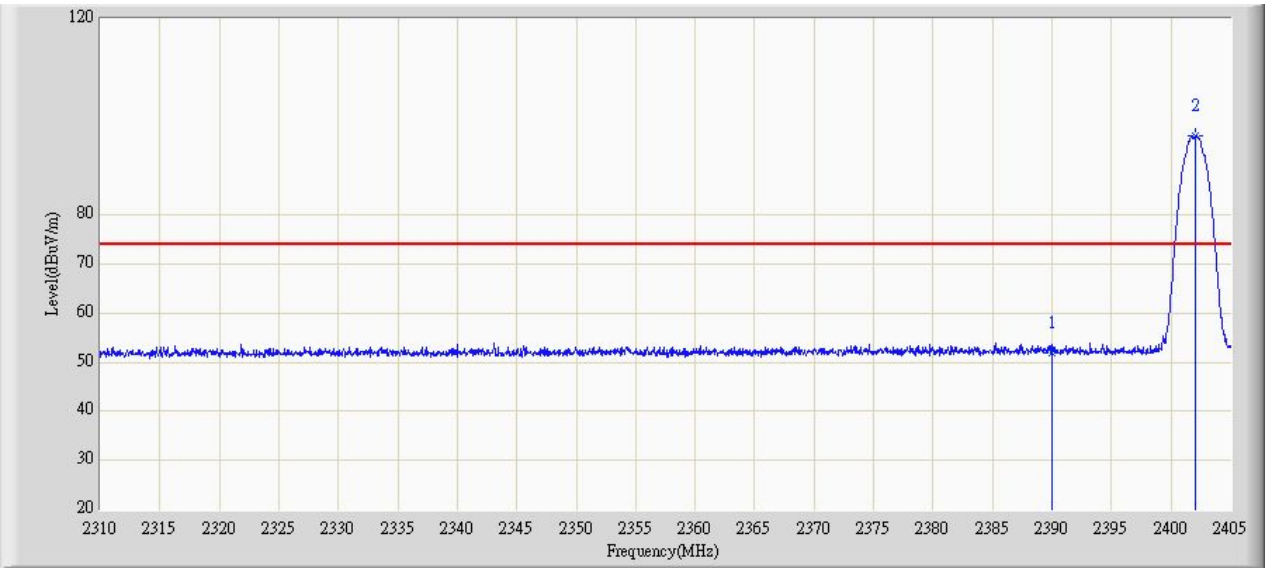
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.979	80.497	51.997	N/A	N/A	28.500	PK
2		2483.500	53.293	24.779	-20.707	74.000	28.514	PK

Engineer: Brgant	Time: 2013/05/22 - 20:29
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 1:Transmit at Channel 2480MHz by DH5	



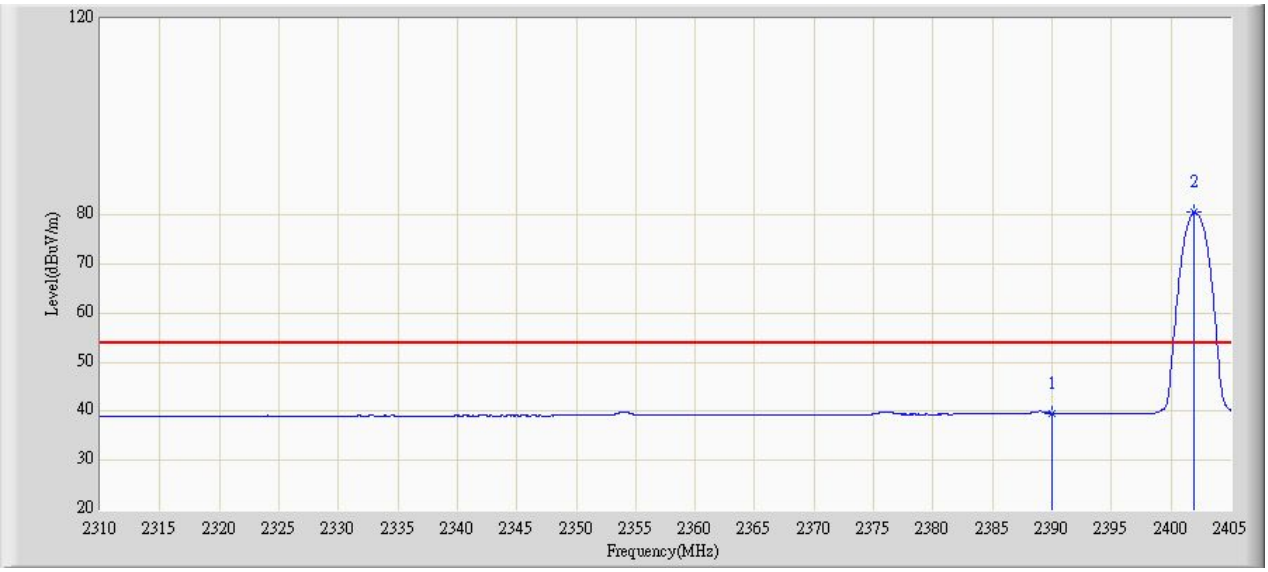
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	71.067	42.567	N/A	N/A	28.500	AV
2		2483.500	39.973	11.459	-14.027	54.000	28.514	AV

Engineer: Brgant	Time: 2013/05/22 - 20:31
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 2:Transmit at Channel 2402MHz by 2DH5	



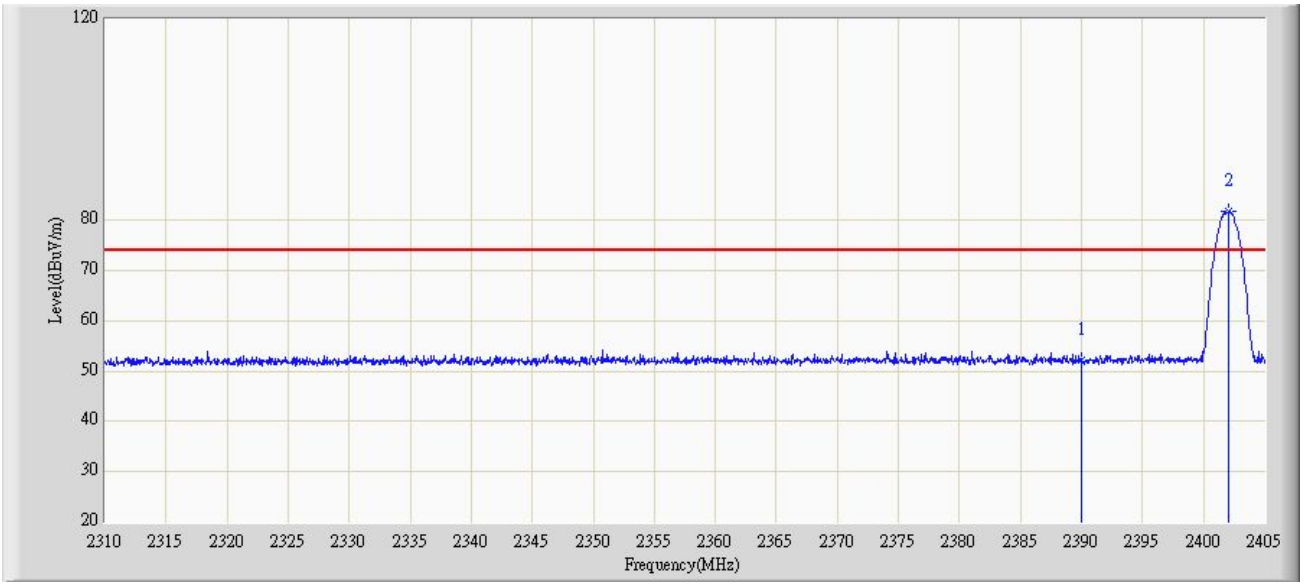
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	51.954	23.832	-22.046	74.000	28.122	PK
2	*	2402.103	96.084	67.913	N/A	N/A	28.171	PK

Engineer: Brgant	Time: 2013/05/22 - 20:35
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 2:Transmit at Channel 2402MHz by 2DH5	



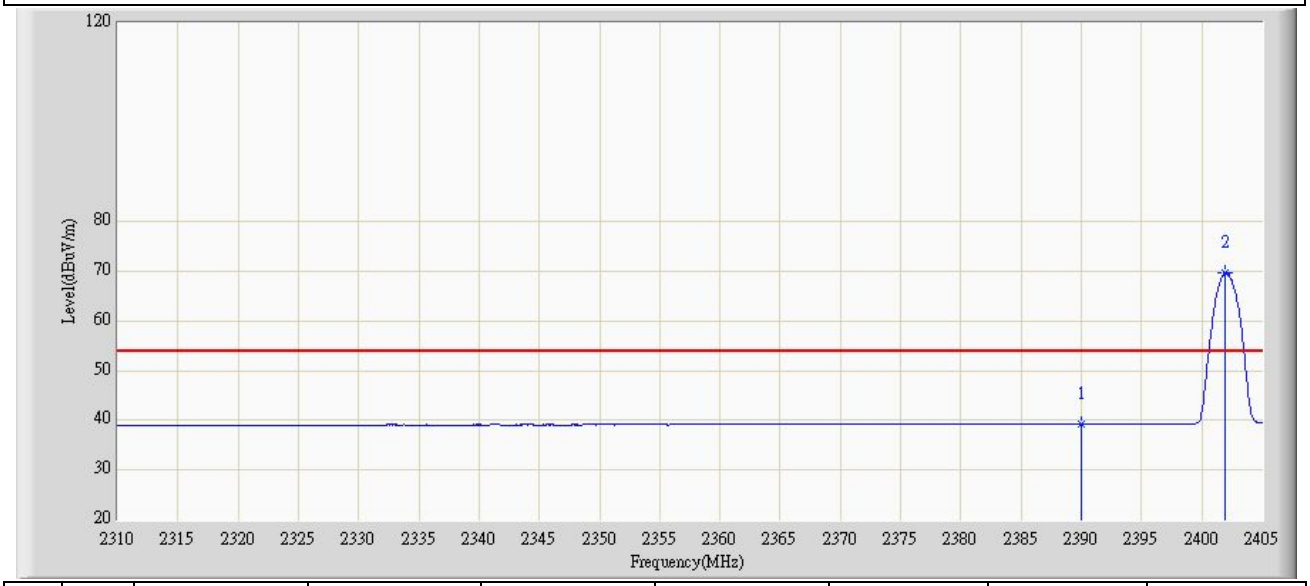
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.610	11.488	-14.390	54.000	28.122	AV
2	*	2401.960	80.643	52.472	N/A	N/A	28.170	AV

Engineer: Brgant	Time: 2013/05/22 - 20:35
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 2:Transmit at Channel 2402MHz by 2DH5	



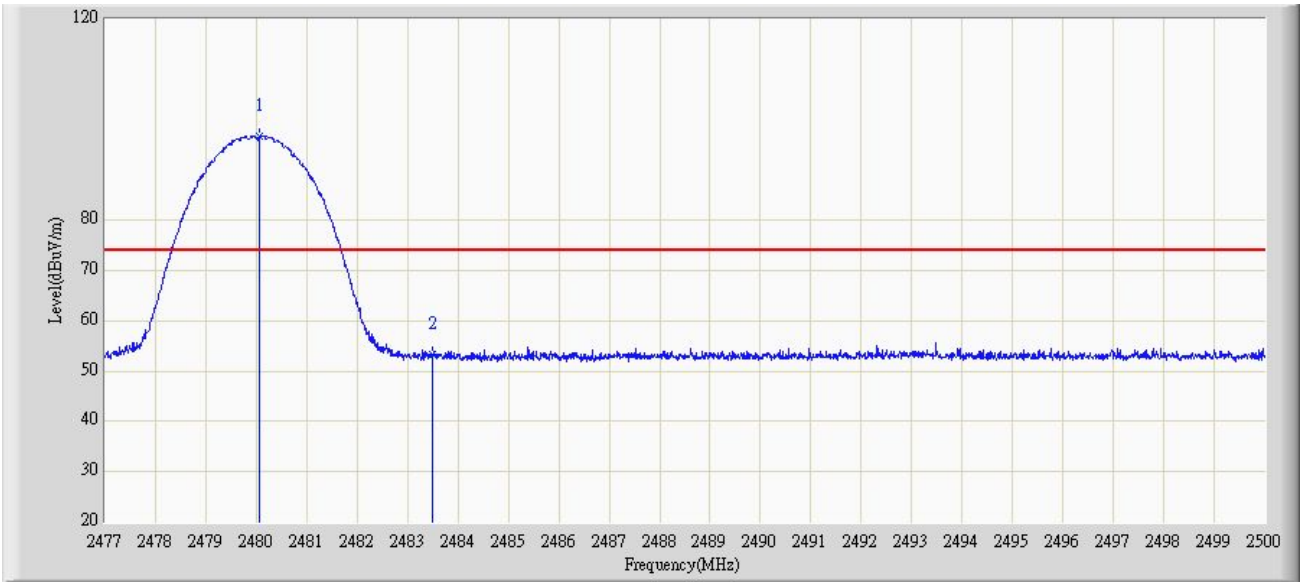
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.127	24.005	-21.873	74.000	28.122	PK
2	*	2402.055	81.788	53.617	N/A	N/A	28.171	PK

Engineer: Brgant	Time: 2013/05/22 - 20:37
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 2:Transmit at Channel 2402MHz by 2DH5	



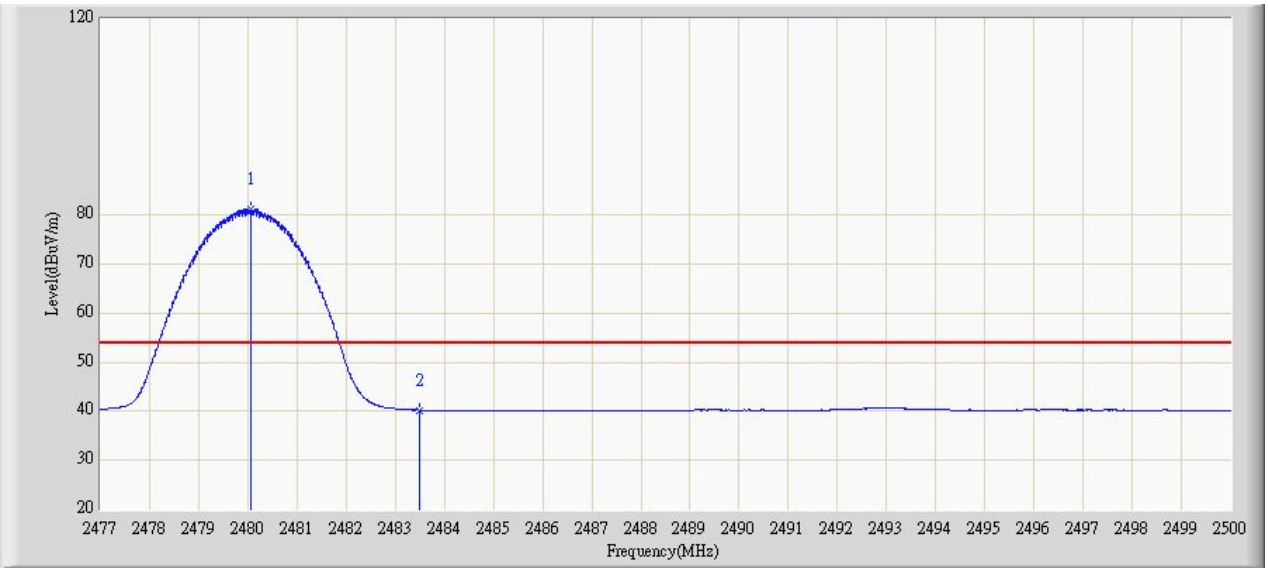
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.269	11.147	-14.731	54.000	28.122	AV
2	*	2401.960	69.764	41.593	N/A	N/A	28.170	AV

Engineer: Brgant	Time: 2013/05/22 - 20:39
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 2:Transmit at Channel 2480MHz by 2DH5	



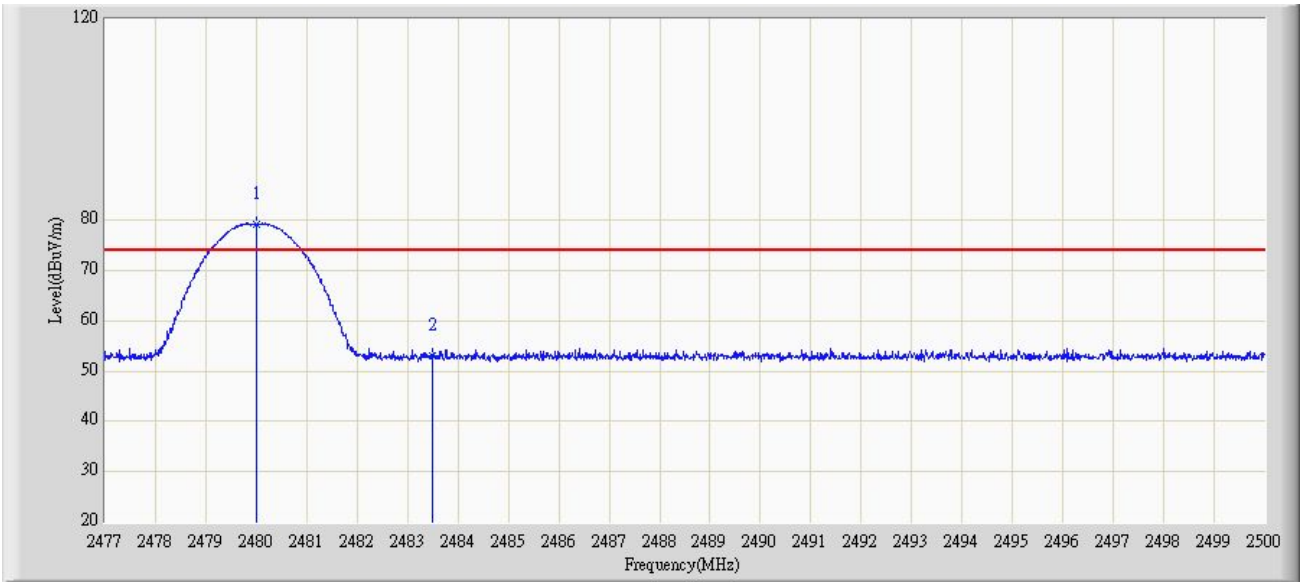
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.059	96.641	68.141	N/A	N/A	28.500	PK
2		2483.500	53.222	24.708	-20.778	74.000	28.514	PK

Engineer: Brgant	Time: 2013/05/22 - 20:42
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 2:Transmit at Channel 2480MHz by 2DH5	



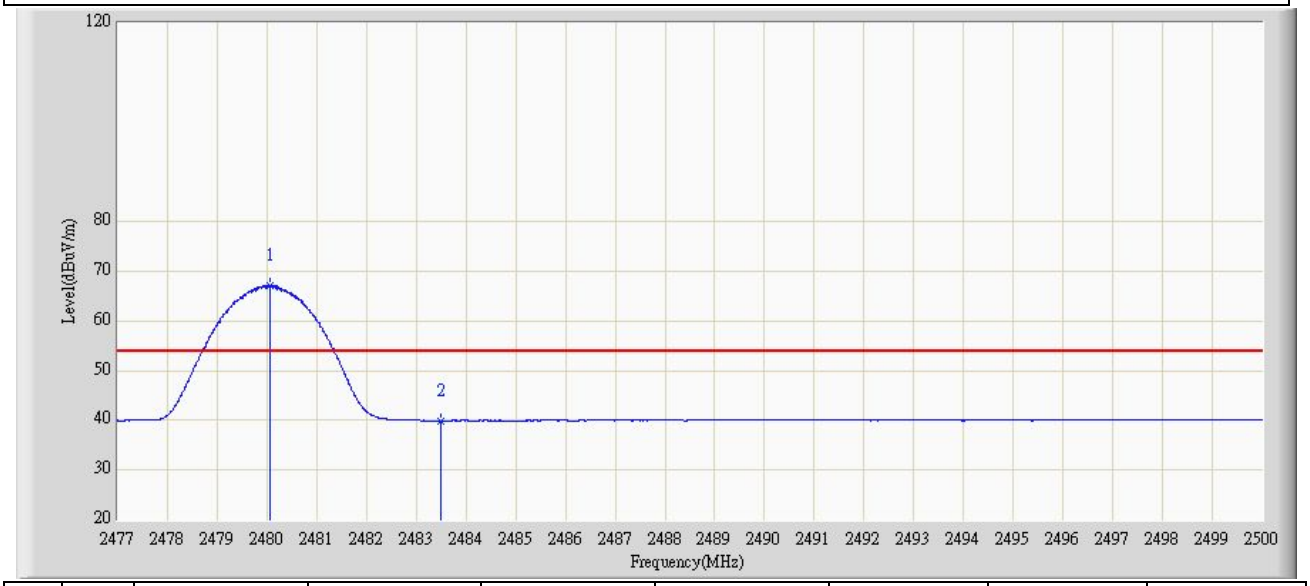
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.059	81.101	52.601	N/A	N/A	28.500	AV
2		2483.500	40.249	11.735	-13.751	54.000	28.514	AV

Engineer: Brgant	Time: 2013/05/22 - 20:43
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 2:Transmit at Channel 2480MHz by 2DH5	



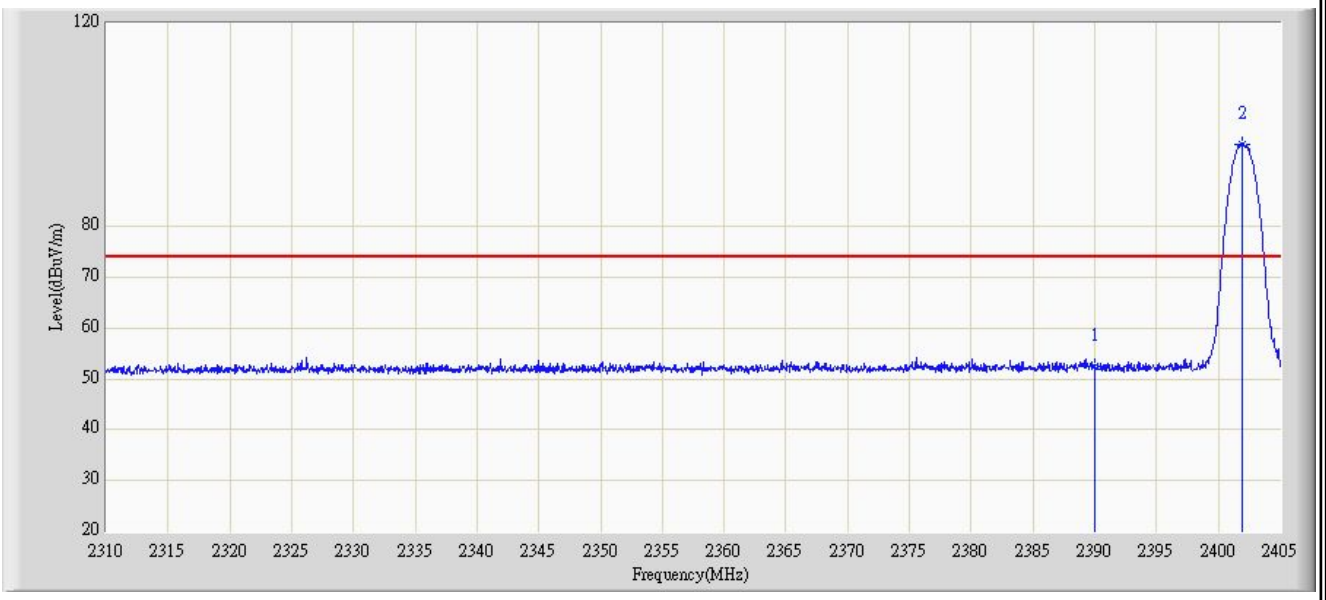
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	79.171	50.671	N/A	N/A	28.500	PK
2		2483.500	53.155	24.641	-20.845	74.000	28.514	PK

Engineer: Brgant	Time: 2013/05/22 - 20:45
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 2:Transmit at Channel 2480MHz by 2DH5	



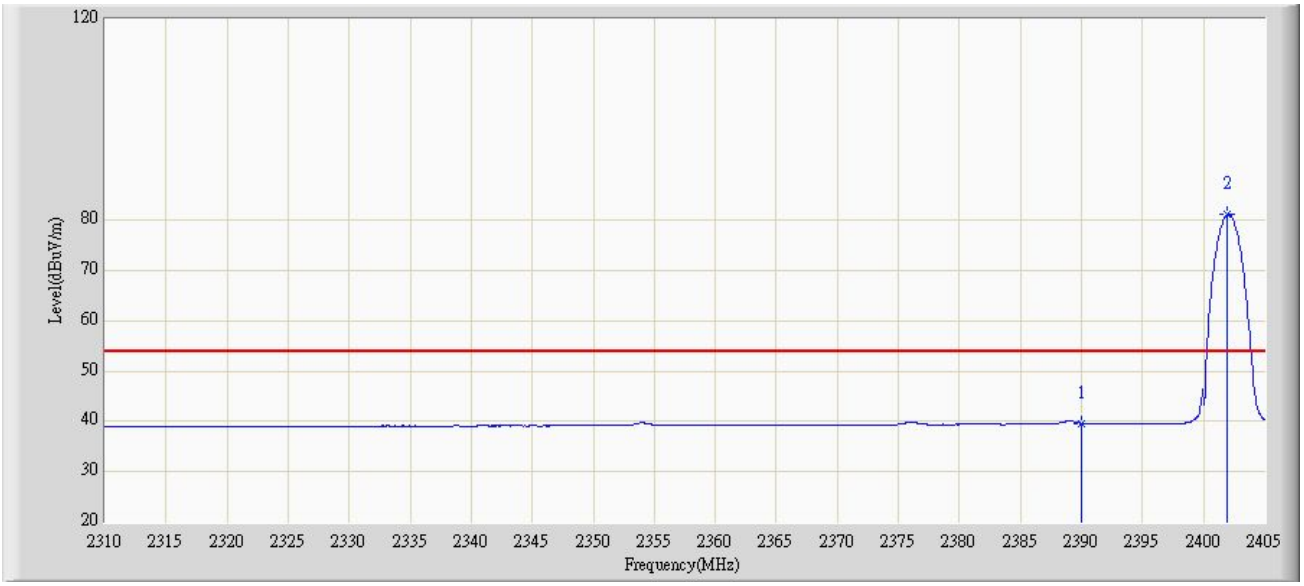
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.048	67.088	38.588	N/A	N/A	28.500	AV
2		2483.500	39.952	11.438	-14.048	54.000	28.514	AV

Engineer: Brgant	Time: 2013/05/22 - 20:46
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 3:Transmit at Channel 2402MHz by 3DH5	



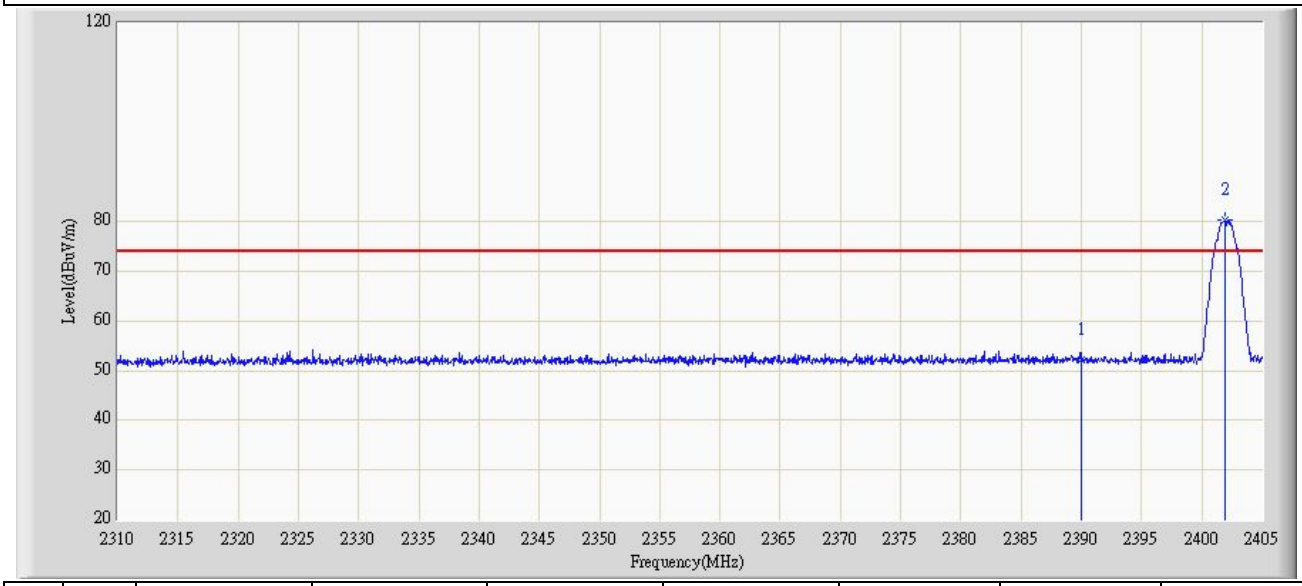
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.574	24.452	-21.426	74.000	28.122	PK
2	*	2401.960	96.290	68.119	N/A	N/A	28.170	PK

Engineer: Brgant	Time: 2013/05/22 - 20:49
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 3:Transmit at Channel 2402MHz by 3DH5	



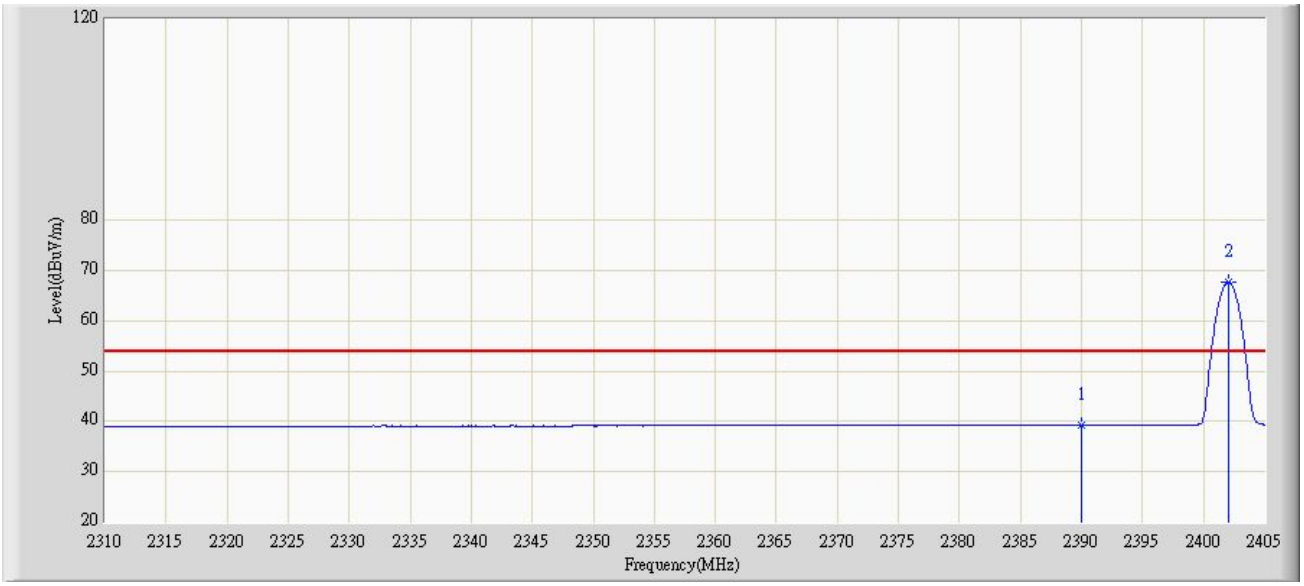
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.638	11.516	-14.362	54.000	28.122	AV
2	*	2401.960	81.124	52.953	N/A	N/A	28.170	AV

Engineer: Brgant	Time: 2013/05/22 - 20:50
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 3:Transmit at Channel 2402MHz by 3DH5	



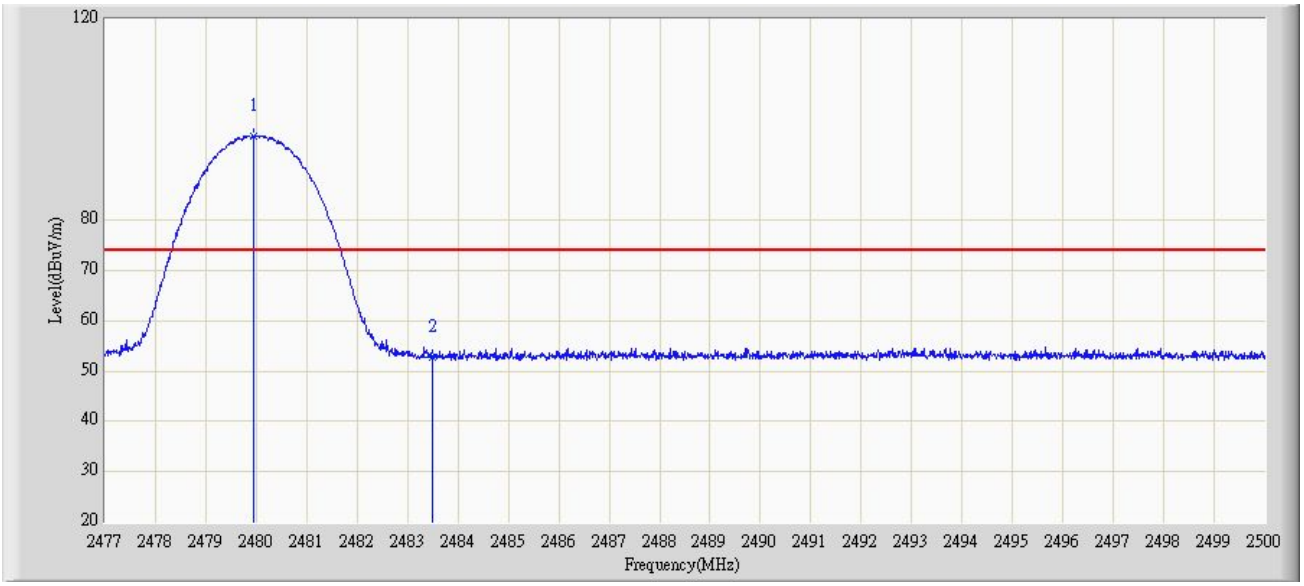
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	52.301	24.179	-21.699	74.000	28.122	PK
2	*	2401.960	80.238	52.067	N/A	N/A	28.170	PK

Engineer: Brgant	Time: 2013/05/22 - 20:51
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 3:Transmit at Channel 2402MHz by 3DH5	



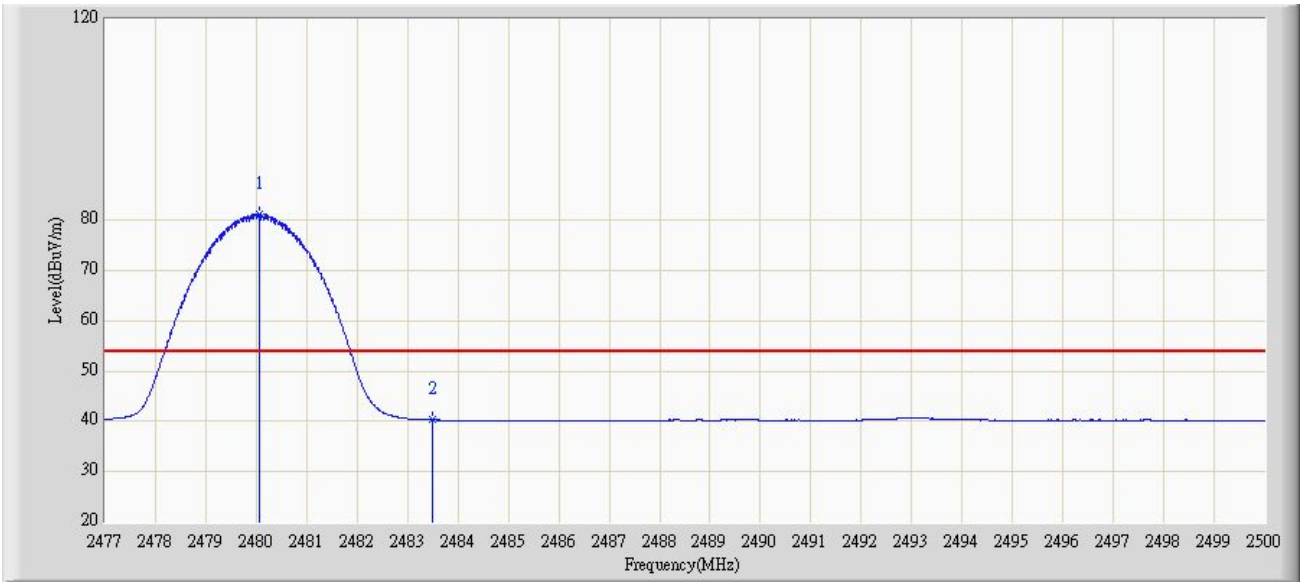
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	39.238	11.116	-14.762	54.000	28.122	AV
2	*	2402.103	67.769	39.598	N/A	N/A	28.171	AV

Engineer: Brgant	Time: 2013/05/22 - 20:53
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 3:Transmit at Channel 2480MHz by 3DH5	



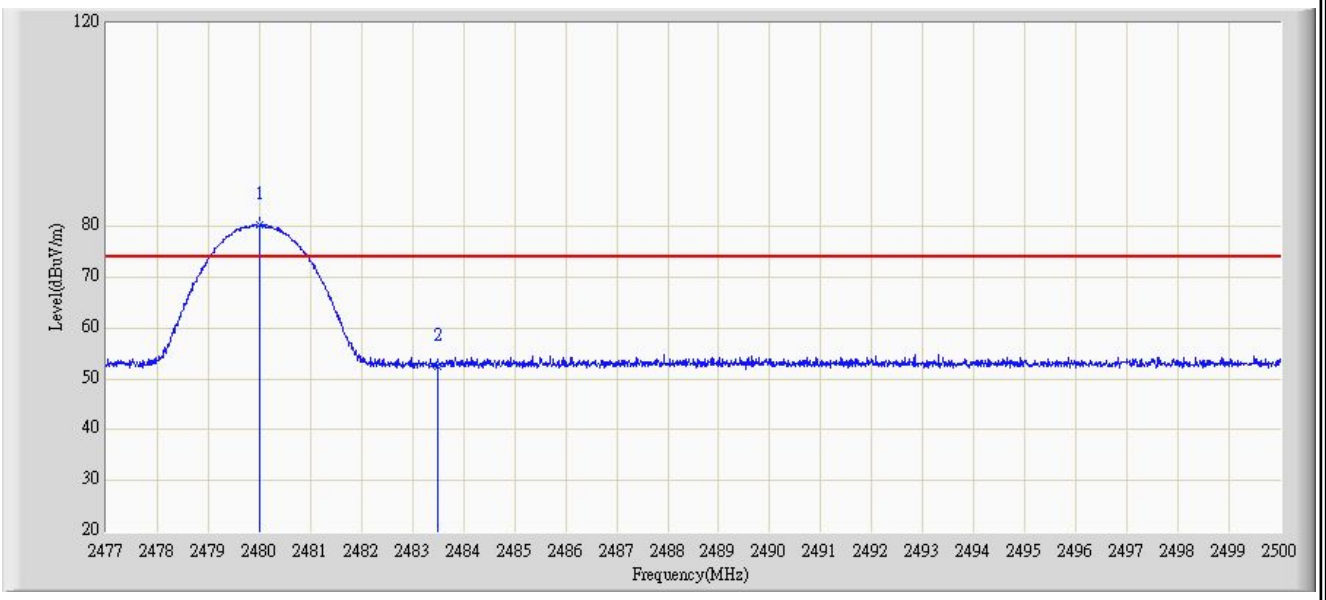
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.944	96.790	68.290	N/A	N/A	28.500	PK
2		2483.500	52.833	24.319	-21.167	74.000	28.514	PK

Engineer: Brgant	Time: 2013/05/22 - 20:57
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Horizontal
Note: Mode 3:Transmit at Channel 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.071	81.086	52.586	N/A	N/A	28.500	AV
2		2483.500	40.280	11.766	-13.720	54.000	28.514	AV

Engineer: Brgant	Time: 2013/05/22 - 20:57
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 3:Transmit at Channel 2480MHz by 3DH5	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	80.259	51.759	N/A	N/A	28.500	PK
2		2483.500	52.422	23.908	-21.578	74.000	28.514	PK

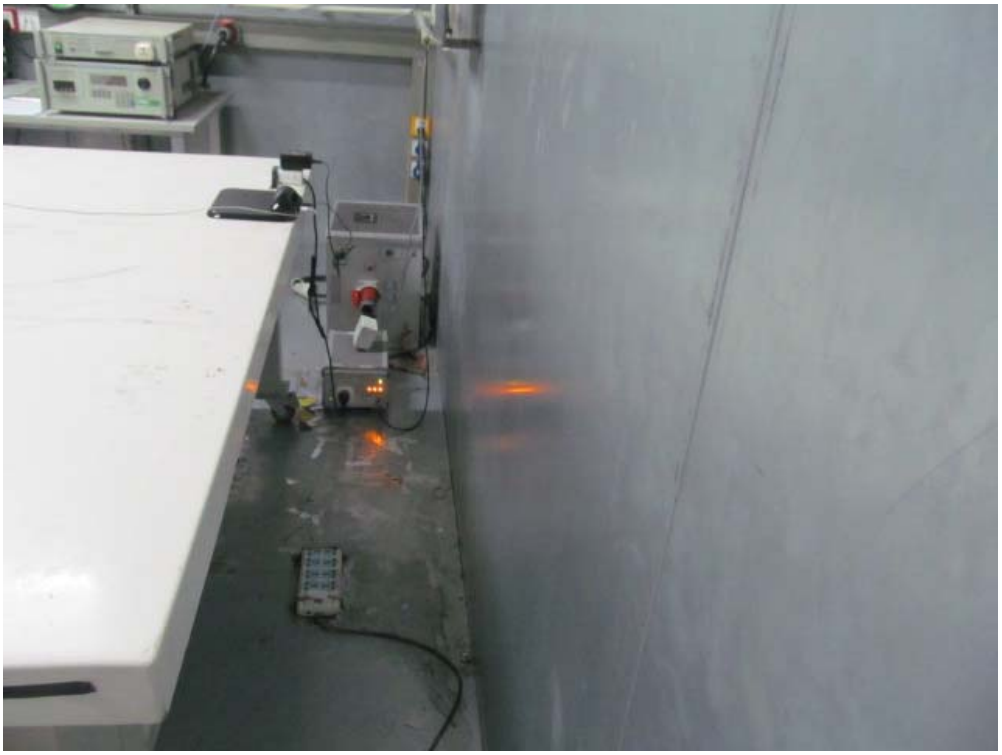
Engineer: Brgant	Time: 2013/05/22 - 20:59
Limit: FCC_Part15.209_RE(3m)	Power: By Battery
Probe: BBHA9120D-737(1-18GHz)	Polarity: Vertical
Note: Mode 3:Transmit at Channel 2480MHz by 3DH5	

No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.979	68.850	40.350	N/A	N/A	28.500	AV
2		2483.500	39.997	11.483	-14.003	54.000	28.514	AV

13. Appendix 1 – Test Setup Photograph

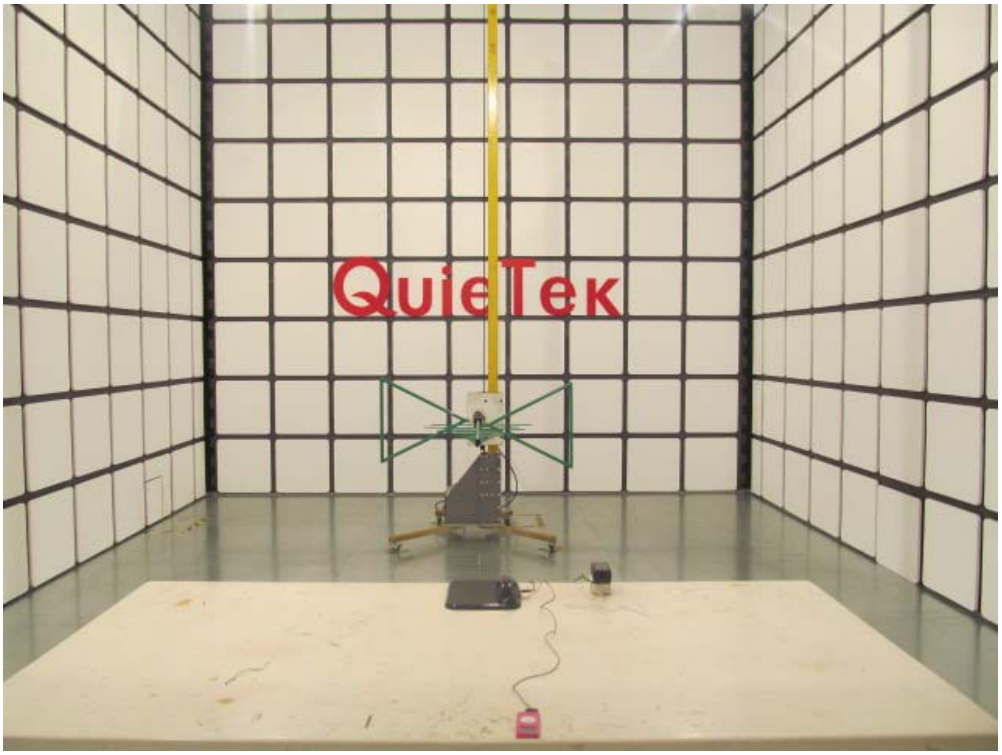
Description: Front View of Conducted Emission Test Setup

Description: Back View of Conducted Emission Test Setup

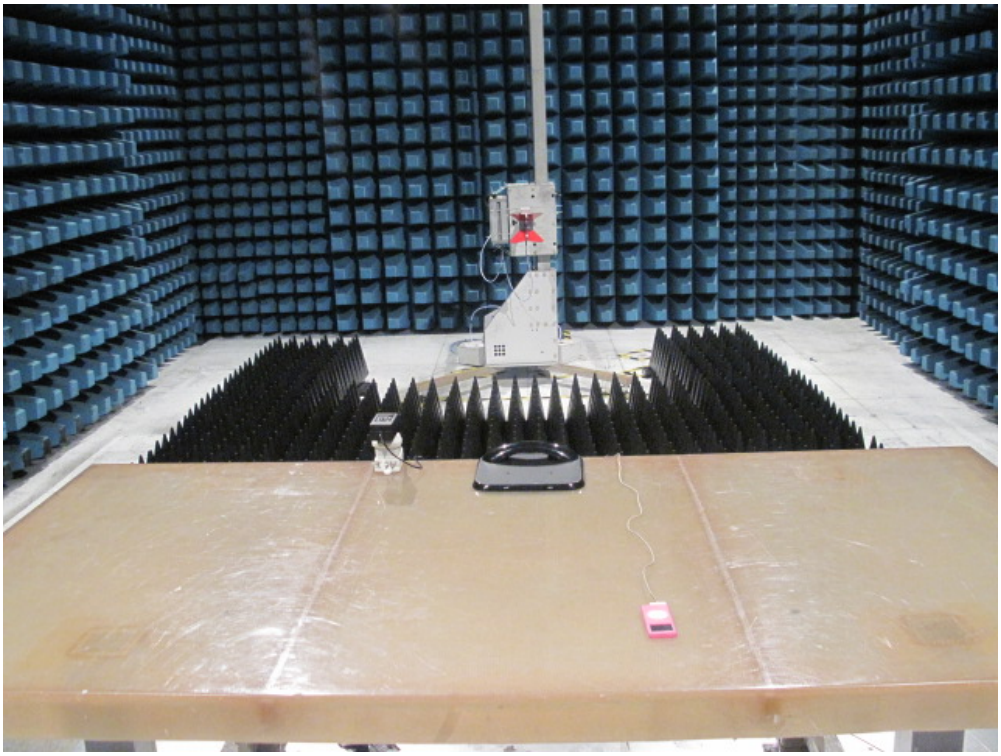


Description: Radiated Emission Test Setup for Below 30MHz

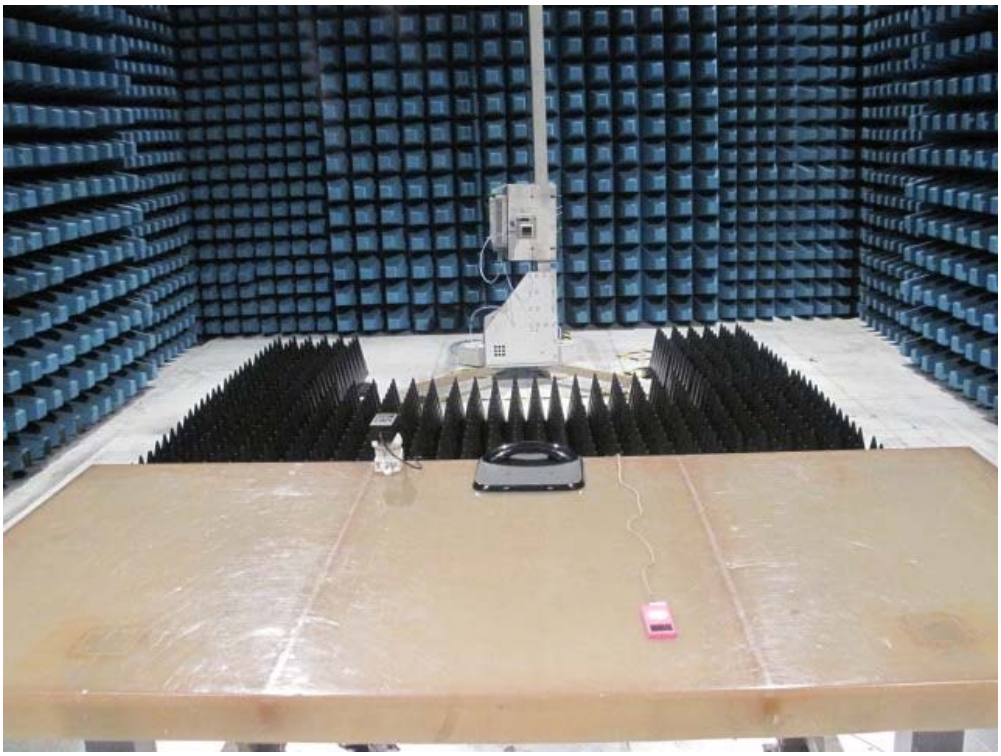
Description: Radiated Emission Test Setup for Below 1GHz



Description: Radiated Emission Test Setup for Above 1GHz



Description: Radiated Emission Test Setup for Above 18GHz



14. Appendix 2 – EUT Photograph

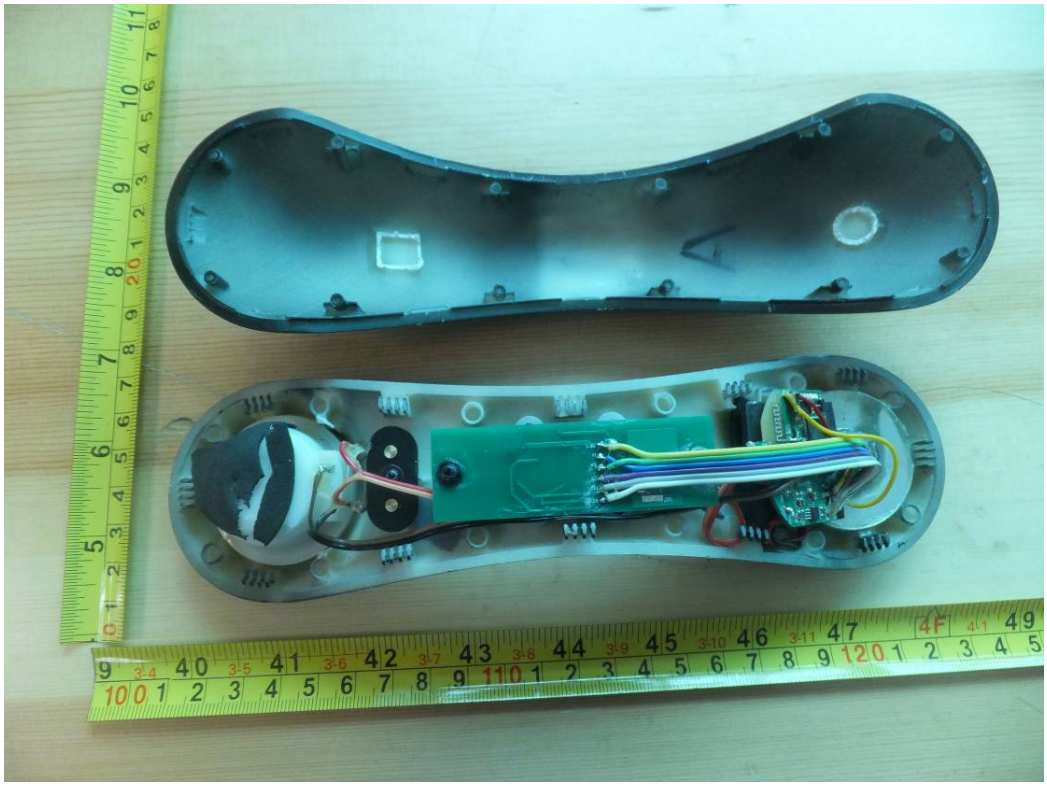
(1) EUT Photo

(2) EUT Photo

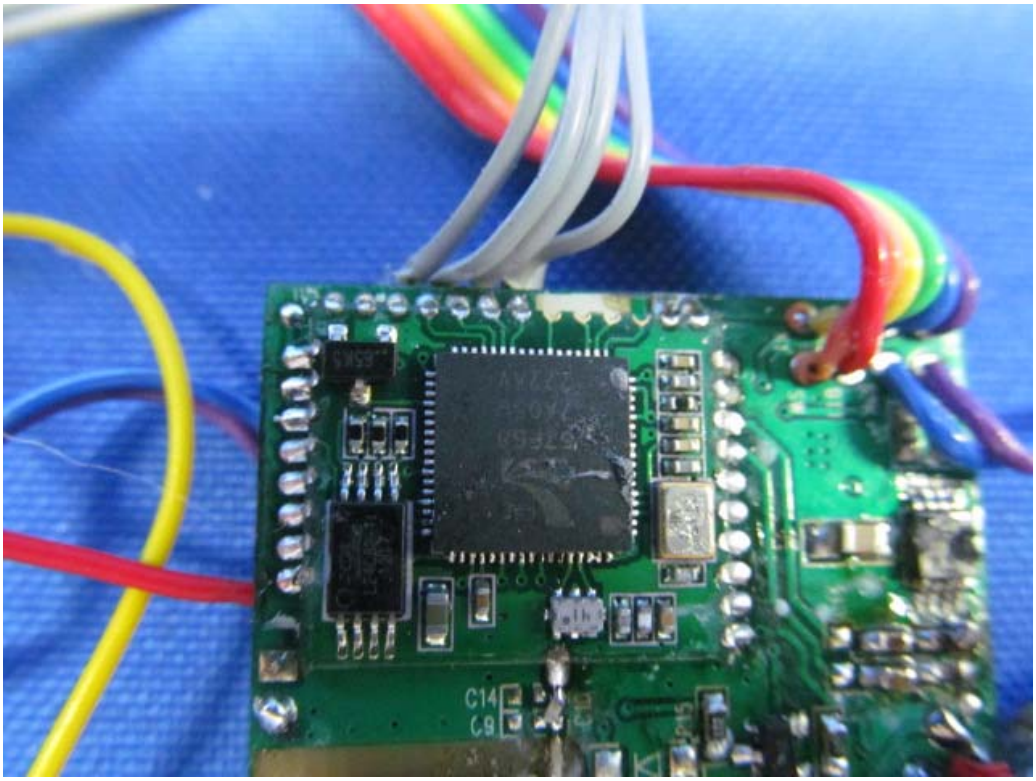
(3) EUT Photo

(4) EUT Photo

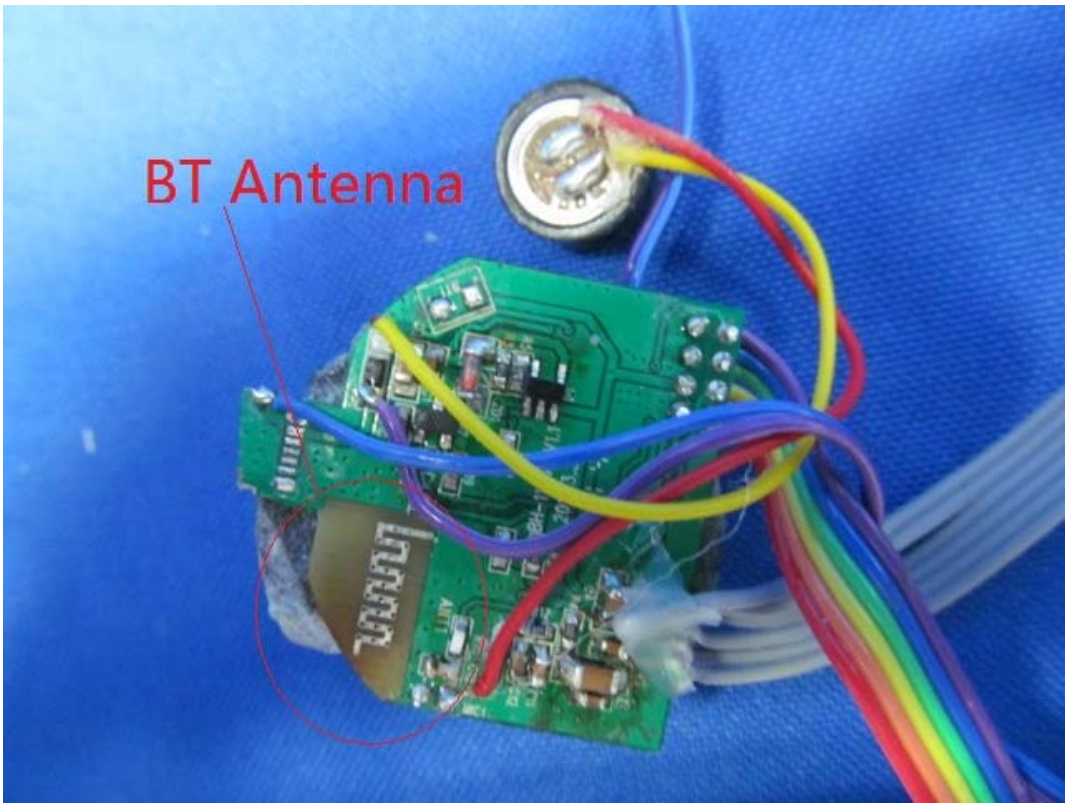
(5) EUT Photo



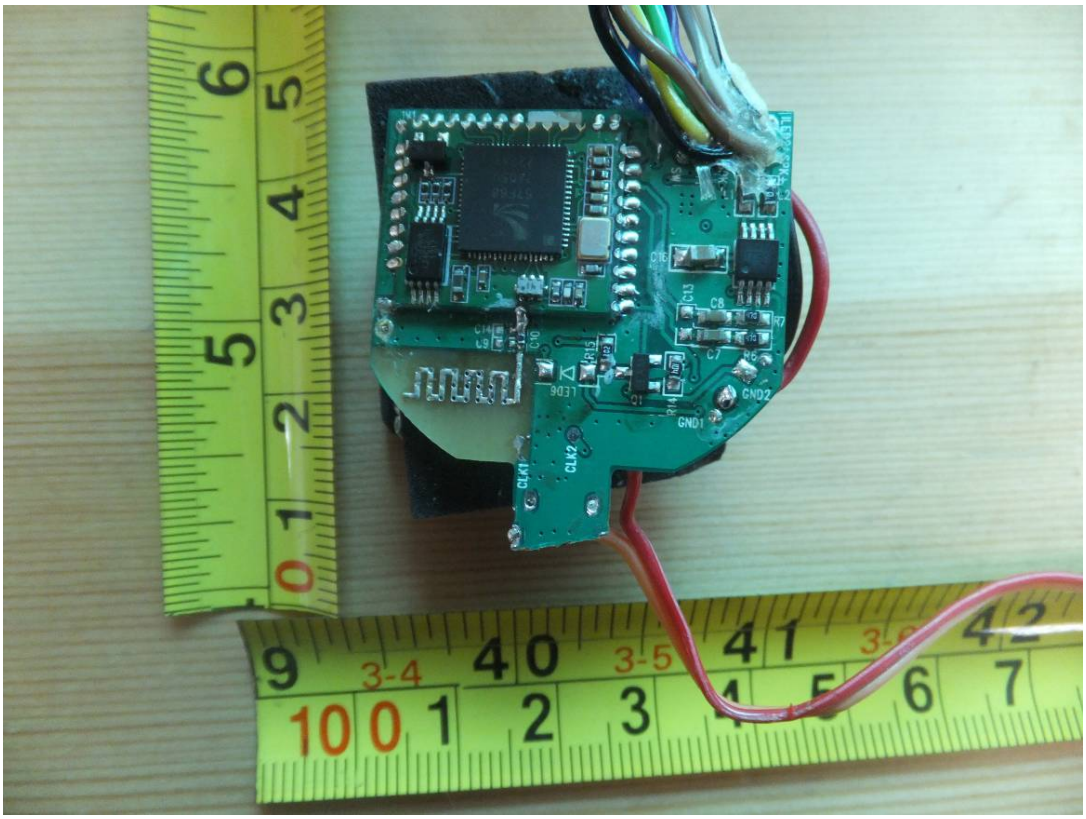
(6) EUT Photo



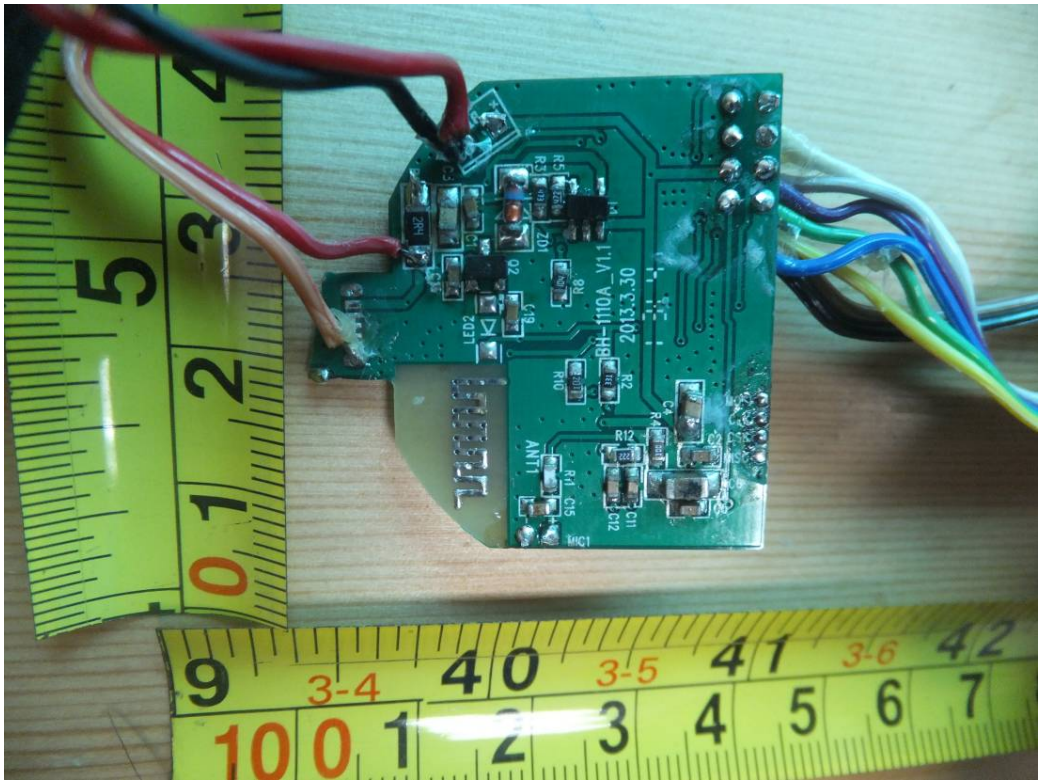
(7) EUT Photo



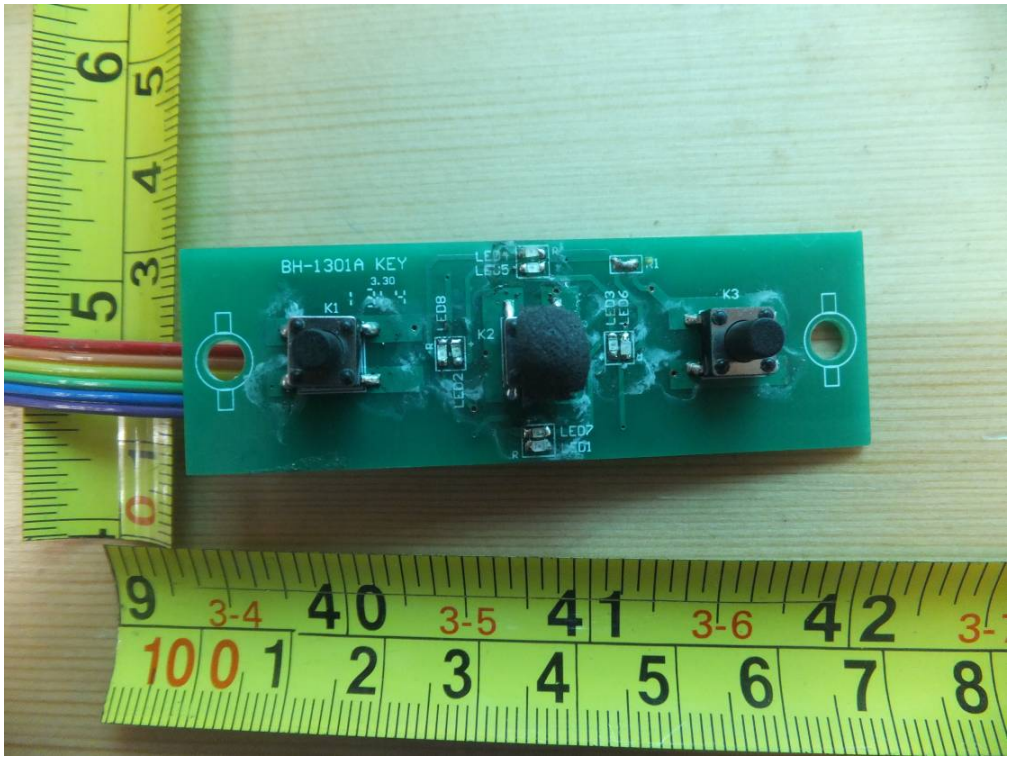
(8) EUT Photo



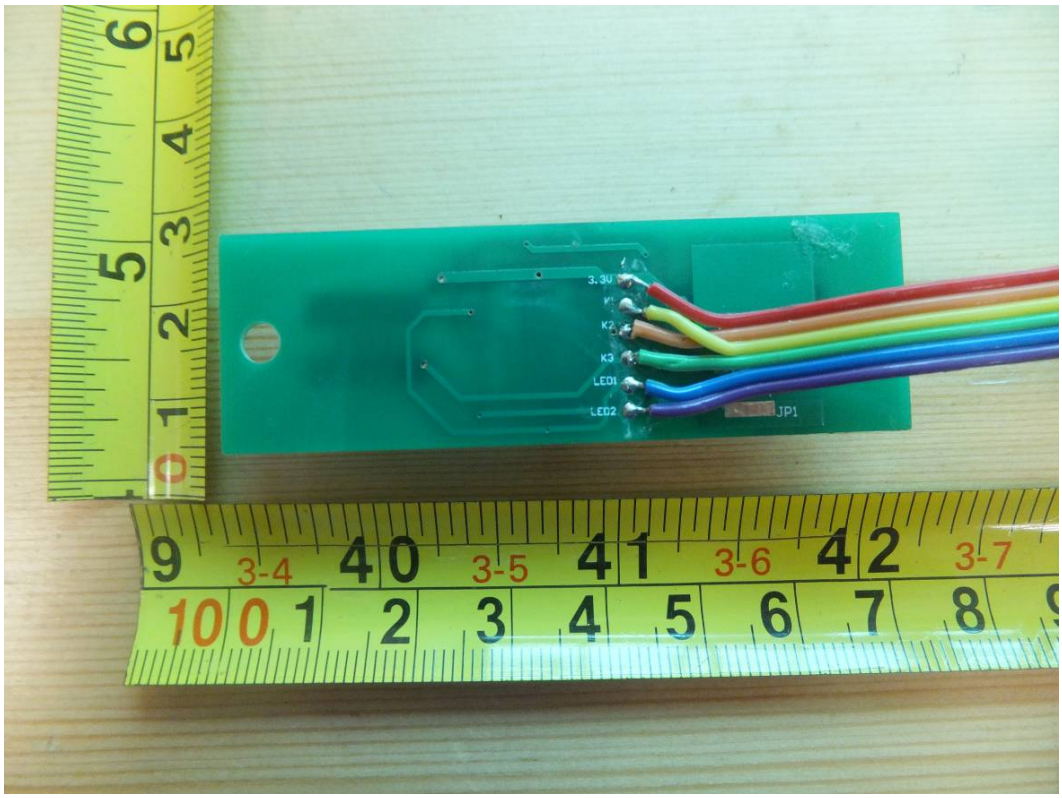
(9) EUT Photo



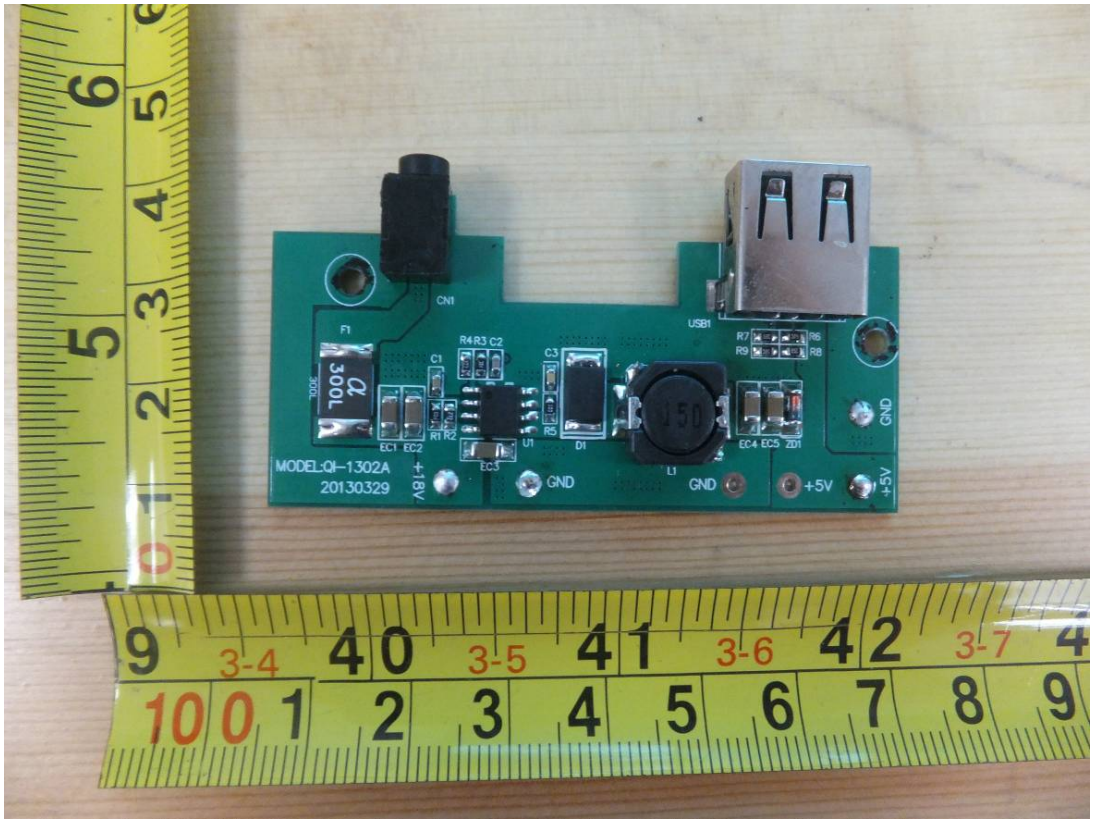
(10) EUT Photo



(11) EUT Photo



(12) EUT Photo



(13) EUT Photo