

FCC 47 CFR PART 15 SUBPART C

Product Type : Notebook

Applicant : DIALOGUE INC

Address : 4TH FL 20 LN 54 JHONGJHENG RD SINDIAN TAIPEI
HSIEN, , 231, TW

Trade Name : M2

Model Number : M2A1

Test Specification : FCC 47 CFR PART 15 SUBPART C: Oct., 2009
ANSI C63.4-2003

Issue Date : Mar. 29, 2010

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan Country 334, Taiwan R.O.C.
Tel : +886-3-2710188 / Fax : +886-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330

Note: This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp. This document may be altered or revised by A Test Lab Techno Corp. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by TAF, or any government agencies. The test results in the report only apply to the tested sample.

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Mar. 29, 2010	Initial Issue	

Verification

Issued Date: 2010/03/29

Product Type : Notebook
Applicant : DIALOGUE INC
Address : 4TH FL 20 LN 54 JHONGJHENG RD SINDIAN TAIPEI
HSIEN, , 231, TW
Trade Name : M2
Model Number : M2A1
FCC ID : X8P-M2A1
EUT Rated Voltage : DC 19V, 3.42A
Test Voltage : 120 Vac / 60 Hz
Applicable : FCC 47 CFR PART 15 SUBPART C: Oct., 2009
Standard : ANSI C63.4-2003

Test Result : Complied

Performed Lab. : A Test Lab Techno Corp.

No. 140-1, Changan Street, Bade City,
Taoyuan Country 334, Taiwan R.O.C.


Tel : +886-3-2710188 / Fax : +886-3-2710190

Taiwan Accreditation Foundation accreditation number:
1330



<http://www.atl-lab.com.tw/e-index.htm>

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the Electromagnetic Compatibility Directive 2004/108/EC and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved By : 
(Manager) (Miller Lee)

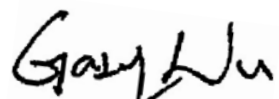
Reviewed By : 
(Testing Engineer) (John Cheng)

TABLE OF CONTENTS

1	General Information.....	7
2	EUT Description	8
3	Test Methodology	9
3.1.	Mode of Operation	9
3.2.	EUT Exercise Software	10
3.3.	Configuration of Test System Details	10
3.4.	Test Site Environment	10
4	Conducted Emission Measurement.....	11
4.1.	Limit.....	11
4.2.	Test Instruments	11
4.3.	Test Setup	11
4.4.	Test Procedure	12
4.5.	Test Result	13
5	Radiated Interference Measurement.....	17
5.1.	Limit.....	17
5.2.	Test Instruments	17
5.3.	Setup	18
5.4.	Test Procedure	18
5.5.	Test Result	20
6	Maximum Conducted Output Power Measurement	30
6.1.	Limit.....	30
6.2.	Test Setup	30
6.3.	Test Instruments	30
6.4.	Test Procedure	30
6.5.	Test Result	31
6.6.	Test Graphs	33
7	Minimum 20dB RF Bandwidth Measurement.....	42
7.1.	Limit.....	42
7.2.	Test Setup	42
7.3.	Test Instruments	42
7.4.	Test Procedure	42
7.5.	Test Result	43
7.6.	Test Graphs	44

8	Carrier Frequency Separation Measurement	46
8.1.	Limit	46
8.2.	Test Setup	46
8.3.	Test Instruments	46
8.4.	Test Procedure	46
8.5.	Test Result	47
8.6.	Test Graphs	48
9	Number of Hopping Measurement	50
9.1.	Limit	50
9.2.	Test Setup	50
9.3.	Test Instruments	50
9.4.	Test Procedure	50
9.5.	Test Result	51
9.6.	Test Graphs	52
10	Time of Occupancy (Dwell Time) Measurement	54
10.1.	Limit	54
10.2.	Test Setup	54
10.3.	Test Instruments	54
10.4.	Test Procedure	54
10.5.	Test Result	55
10.6.	Test Graphs	57
11	Out of Band Conducted Emissions Measurement	59
11.1.	Limit	59
11.2.	Test Setup	59
11.3.	Test Instruments	59
11.4.	Test Procedure	59
11.5.	Test Result	60
11.6.	Test Graphs	60
12	Band Edges Measurement	67
12.1.	Limit	67
12.2.	Test Setup	67
12.3.	Test Instruments	67
12.4.	Test Procedure	68
12.5.	Test Graphs	69

13 Antenna Measurement	77
13.1. Limit.....	77
13.2. Antenna Connector Construction.....	77

1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.247	RSS-GEN			
15.207	7.2.2	AC Power Conducted Emission	PASS	----
----	6	Receiver Radiated Emissions	PASS	----
Standard		Item	Result	Remark
15.247	RSS-210			
15.247(c)	A8.5	Transmitter Radiated Emissions	PASS	----
15.247(b)(1)	A8.4 (2)	Max. Output Power	PASS	----
15.247(a)(1)	A8.1 (1)	20dB RF Bandwidth	PASS	----
15.247(a)(1)(iii)	A8.1 (2)	Carrier Frequency Separation	PASS	----
15.247(a)(1)(iii)	A8.1 (4)	Number of Hopping	PASS	----
15.247(a)(1)(iii)	A8.1 (4)	Time of Occupancy (Dwell Time)	PASS	----
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	PASS	----
15.247(c)	A8.5	Band Edge Measurement	PASS	----
15.203	-	Antenna Requirement	PASS	----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty of 30 MHz - 1GHz is evaluated as ± 3.072 dB.

2 EUT Description

Product	:	Notebook
Trade Name	:	M2
Model Number	:	M2A1
Applicant	:	DIALOGUE INC 4TH FL 20 LN 54 JHONGJHENG RD SINDIAN TAIPEI HSIEN, , 231, TW
Manufacturer	:	AOpen Information Product (Zhongshan) Inc. Zhongshan Torch High-tech Industrial Development Zone, Zhongshan City, Guangdong, China
FCC ID	:	X8P-M2A1
Frequency Range	:	2402 ~ 2480 MHz
Modulation Type	:	GFSK for 1Mbps
	:	$\pi/4$ -DQPSK for 2Mbps
	:	8DPSK for 3Mbps
Antenna Type	:	PCB Antenna
Antenna Gain	:	-4.67 dBi
RF Output Power (Conducted)	:	GFSK for 1Mbps -0.090 dBm
	:	$\pi/4$ -DQPSK for 2Mbps -3.190 dBm
	:	8DPSK for 3Mbps -2.730 dBm
Component		
Power Adapter	:	DELTA, ADP-65HB BB
	:	Input:100-240Vac, 1.5A, 50-60Hz
	:	Output: 19Vdc, 3.42A
	:	Cable in: Shielded, 1.75 m
	:	Cable out: Non-Shielded, 1.75 m with a core
Battery	:	Boston-Power, PS00D0Q
	:	11.1 Vdc, 48Wh

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL 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: GFSK Mode
Mode 2: $\pi/4$ -DQPSK Mode
Mode 3: 8DPSK Mode
Mode 4: IDLE Mode
Mode 5: Normal Operation Mode

Description of Test Modes

Preliminary tests were performed in different modulation to find the worst case. The modulation shown in the table below is the worst-case. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Modulation Type	Channel	Frequency (MHz)	Packet Type	Conducted Power (dBm)	Worst Case
GFSK	Low	2402	DH1	-0.67	<input type="checkbox"/>
	Middle	2441	DH3	-0.37	<input type="checkbox"/>
	High	2480	DH5	-0.09	<input checked="" type="checkbox"/>
	Low	2402	DH1	-1.18	<input type="checkbox"/>
	Middle	2441	DH3	-1.25	<input type="checkbox"/>
	High	2480	DH5	-1.08	<input type="checkbox"/>
	Low	2402	DH1	-0.61	<input type="checkbox"/>
	Middle	2441	DH3	-0.95	<input type="checkbox"/>
	High	2480	DH5	-1.15	<input type="checkbox"/>
$\pi/4$ -DQPSKe	Low	2402	2DH1	-3.35	<input type="checkbox"/>
	Middle	2441	2DH3	-3.58	<input type="checkbox"/>
	High	2480	2DH5	-3.62	<input type="checkbox"/>
	Low	2402	2DH1	-5.06	<input type="checkbox"/>
	Middle	2441	2DH3	-4.07	<input type="checkbox"/>
	High	2480	2DH5	-3.75	<input type="checkbox"/>
	Low	2402	2DH1	-3.19	<input type="checkbox"/>
	Middle	2441	2DH3	-3.60	<input type="checkbox"/>
	High	2480	2DH5	-3.52	<input type="checkbox"/>
8DPSK	Low	2402	3DH1	-2.93	<input type="checkbox"/>
	Middle	2441	3DH3	-2.73	<input type="checkbox"/>
	High	2480	3DH5	-2.88	<input type="checkbox"/>
	Low	2402	3DH1	-4.23	<input type="checkbox"/>
	Middle	2441	3DH3	-4.51	<input type="checkbox"/>
	High	2480	3DH5	-4.72	<input type="checkbox"/>
	Low	2402	3DH1	-4.24	<input type="checkbox"/>
	Middle	2441	3DH3	-4.44	<input type="checkbox"/>
	High	2480	3DH5	-4.36	<input type="checkbox"/>

Tested System Details

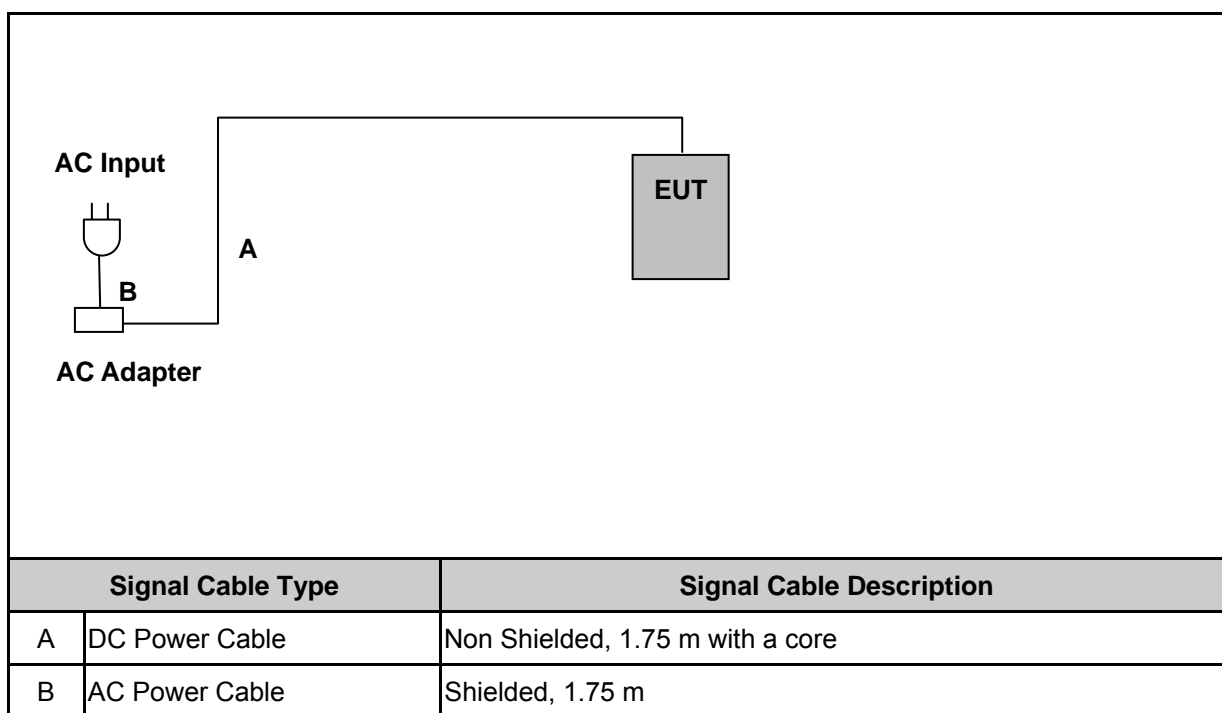
The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model Number	Serial Number	Power Cord
1.	Bluetooth Tester	R & S	CBT	100350	NA

3.2. EUT Exercise Software

1.	Setup the EUT and Bluetooth Tester (CBT) as shown on 3.3.
2.	Turn on the power of all equipment.
3.	EUT run test program.
4.	Open Bluetooth function link to CBT.

3.3. Configuration of Test System Details



3.4. Test Site Environment

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

4 Conducted Emission Measurement

4.1. Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

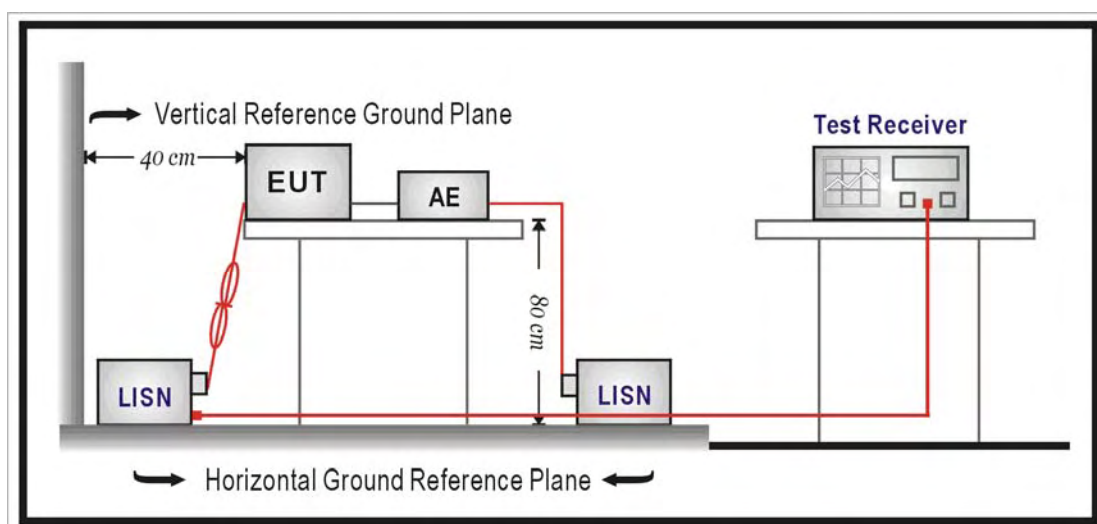
4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	07/01/2009	(1)
LISN	EMCO	3816/2 SH	00060110	06/05/2009	(1)
LISN	EMCO	3816/2 SH	00060111	06/29/2009	(1)
Transient Limiter	ELECTRO-METRICS	EM-7600	777	09/22/2009	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.3. Test Setup



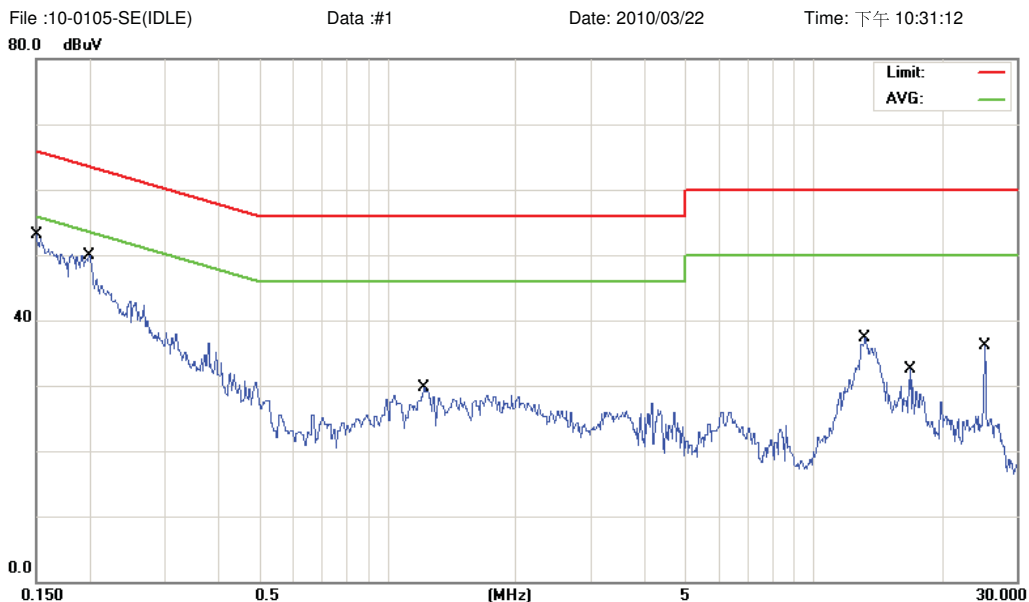
4.4. Test Procedure

The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

4.5. Test Result



Site : Conducted

Phase: **L1**

Temperature: 26 °C

Limit: CISPR22 Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 55 %

EUT: Notebook

M/N: M2A1

Mode: 4

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1500	30.70	10.11	40.81	65.99	-25.18	QP	
2	0.1500	10.60	10.11	20.71	55.99	-35.28	AVG	
3 *	0.1997	34.60	10.08	44.68	63.62	-18.94	QP	
4	0.1997	18.10	10.08	28.18	53.62	-25.44	AVG	
5	1.2200	13.20	9.66	22.86	56.00	-33.14	QP	
6	1.2200	3.60	9.66	13.26	46.00	-32.74	AVG	
7	13.2000	24.20	10.34	34.54	60.00	-25.46	QP	
8	13.2000	15.60	10.34	25.94	50.00	-24.06	AVG	
9	16.8000	13.10	10.26	23.36	60.00	-36.64	QP	
10	16.8000	7.30	10.26	17.56	50.00	-32.44	AVG	
11	25.1500	20.20	10.53	30.73	60.00	-29.27	QP	
12	25.1500	17.10	10.53	27.63	50.00	-22.37	AVG	

*:Maximum data x:Over limit !:over margin

●Reference Only

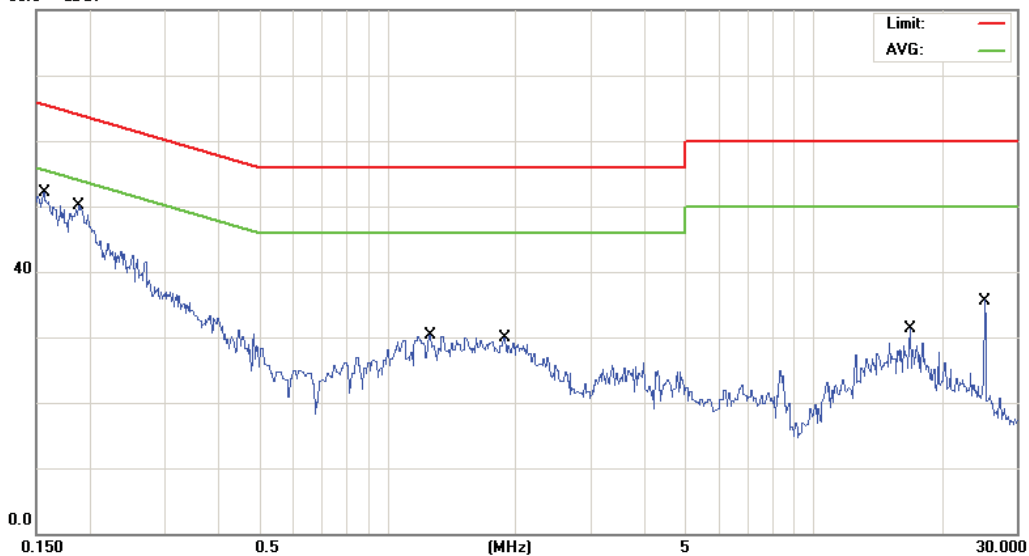
File :10-0105-SE(IDLE)

Data :#2

Date: 2010/03/22

Time: 下午 10:36:22

80.0 dBuV



Site : Conducted

Phase: **N**

Temperature: 26 °C

Limit: CISPR22 Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 55 %

EUT: Notebook

M/N: M2A1

Mode: 4

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1563	34.30	10.10	44.40	65.65	-21.25	QP	
2	0.1563	9.30	10.10	19.40	55.65	-36.25	AVG	
3 *	0.1884	35.40	10.07	45.47	64.10	-18.63	QP	
4	0.1884	17.90	10.07	27.97	54.10	-26.13	AVG	
5	1.2560	16.30	9.64	25.94	56.00	-30.06	QP	
6	1.2560	7.20	9.64	16.84	46.00	-29.16	AVG	
7	1.8860	17.00	9.69	26.69	56.00	-29.31	QP	
8	1.8860	6.80	9.69	16.49	46.00	-29.51	AVG	
9	16.8000	11.70	10.33	22.03	60.00	-37.97	QP	
10	16.8000	6.20	10.33	16.53	50.00	-33.47	AVG	
11	25.1500	20.00	10.67	30.67	60.00	-29.33	QP	
12	25.1500	17.10	10.67	27.77	50.00	-22.23	AVG	

*:Maximum data x:Over limit !:over margin

●Reference Only



Site : Conducted

Phase: **L1**

Temperature: 26 °C

Limit: CISPR22 Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 55 %

EUT: Notebook

M/N: M2A1

Mode: 5

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1500	32.20	10.11	42.31	65.99	-23.68	QP	
2	0.1500	11.10	10.11	21.21	55.99	-34.78	AVG	
3 *	0.1787	33.40	10.09	43.49	64.54	-21.05	QP	
4	0.1787	11.70	10.09	21.79	54.54	-32.75	AVG	
5	0.2494	26.80	10.06	36.86	61.77	-24.91	QP	
6	0.2494	10.20	10.06	20.26	51.77	-31.51	AVG	
7	1.2019	15.50	9.67	25.17	56.00	-30.83	QP	
8	1.2019	7.60	9.67	17.27	46.00	-28.73	AVG	
9	13.2500	22.70	10.34	33.04	60.00	-26.96	QP	
10	13.2500	15.50	10.34	25.84	50.00	-24.16	AVG	
11	25.1500	20.50	10.53	31.03	60.00	-28.97	QP	
12	25.1500	17.60	10.53	28.13	50.00	-21.87	AVG	

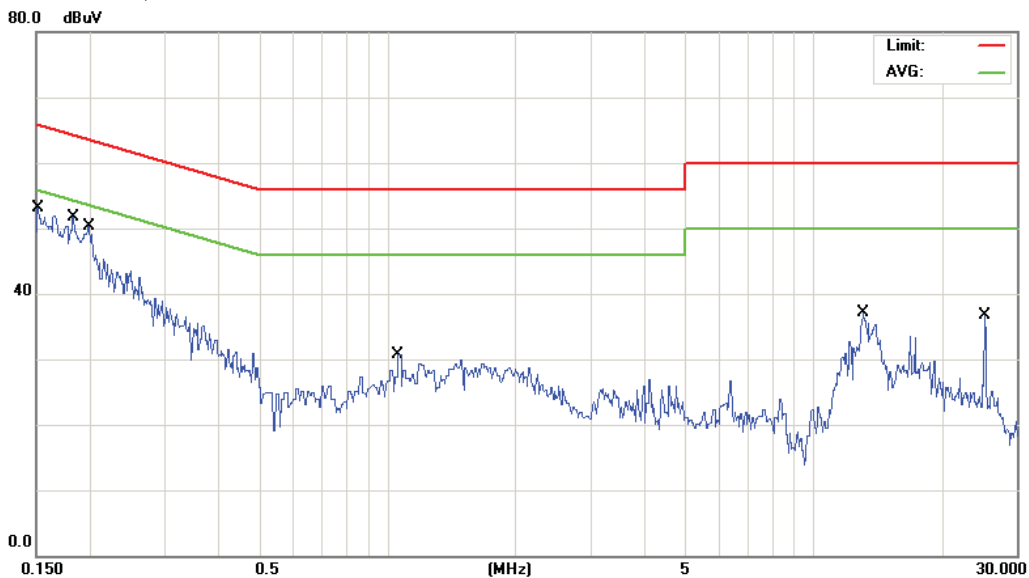
*:Maximum data x:Over limit !:over margin

●Reference Only

File :10-0105-SE(GSM850+BT+WIF Data :#2

Date: 2010/03/22

Time: 下午 09:52:52



Site : Conducted

Phase: **N**

Temperature: 26 °C

Limit: CISPR22 Class B Conduction(QP)

Power: AC 120V/60Hz

Humidity: 55 %

EUT: Notebook

M/N: M2A1

Mode: 5

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.1514	35.60	10.10	45.70	65.92	-20.22	QP	
2	0.1514	10.80	10.10	20.90	55.92	-35.02	AVG	
3 *	0.1829	35.80	10.08	45.88	64.35	-18.47	QP	
4	0.1829	16.30	10.08	26.38	54.35	-27.97	AVG	
5	0.1990	34.80	10.07	44.87	63.65	-18.78	QP	
6	0.1990	18.70	10.07	28.77	53.65	-24.88	AVG	
7	1.0669	14.50	9.72	24.22	56.00	-31.78	QP	
8	1.0669	6.80	9.72	16.52	46.00	-29.48	AVG	
9	13.0500	23.80	10.37	34.17	60.00	-25.83	QP	
10	13.0500	16.00	10.37	26.37	50.00	-23.63	AVG	
11	25.1500	21.20	10.67	31.87	60.00	-28.13	QP	
12	25.1500	18.20	10.67	28.87	50.00	-21.13	AVG	

*:Maximum data x:Over limit !:over margin

●Reference Only

5 Radiated Interference Measurement

5.1. Limit

Frequency Range (MHz)	Peak (dBuV)
30 to 88	39
88 to 216	43.5
216 to 960	46.4
Above 960	49.5

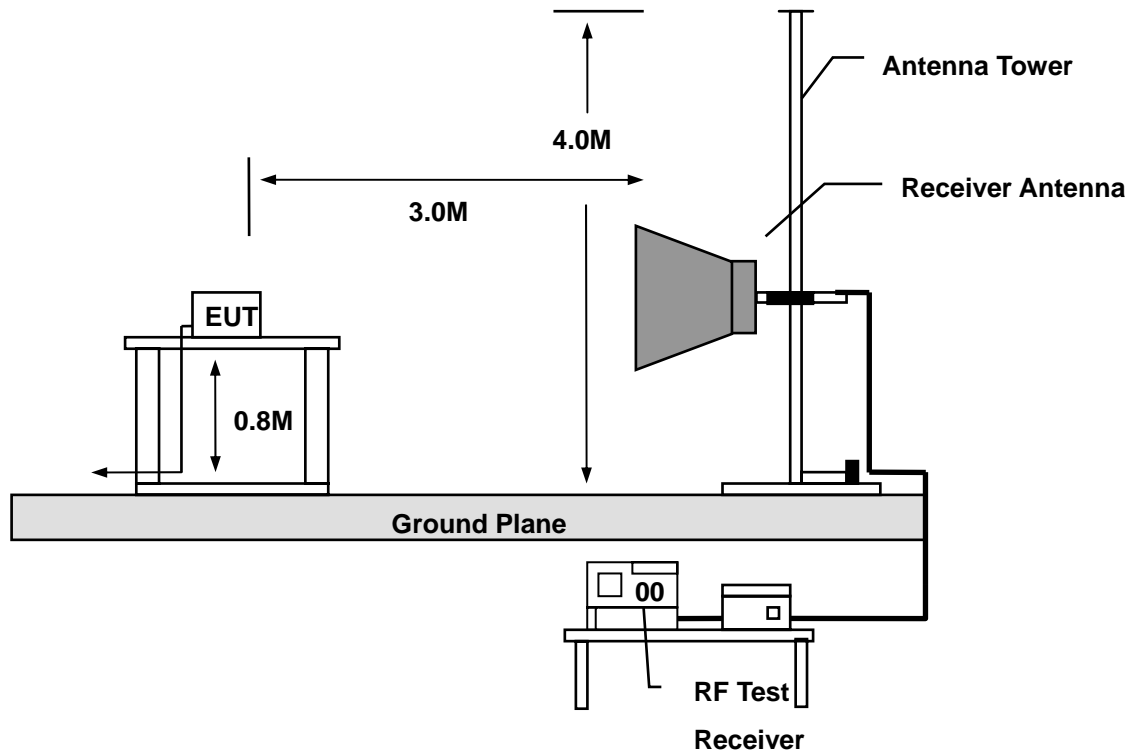
5.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/27/2009	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/20/2009	(2)
Pre Amplifier	Agilent	8449B	3008A02237	07/01/2009	(1)
Pre Amplifier	Agilent	8447D	2944A10961	06/30/2009	(1)
Bi-log Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	06/23/2009	(2)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	07/01/2009	(2)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/30/2009	(2)
Test Site	ATL	TE01	888001	08/06/2009	(1)

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

5.3. Setup



5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field intensity in decibels referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

$$(1) \text{ Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

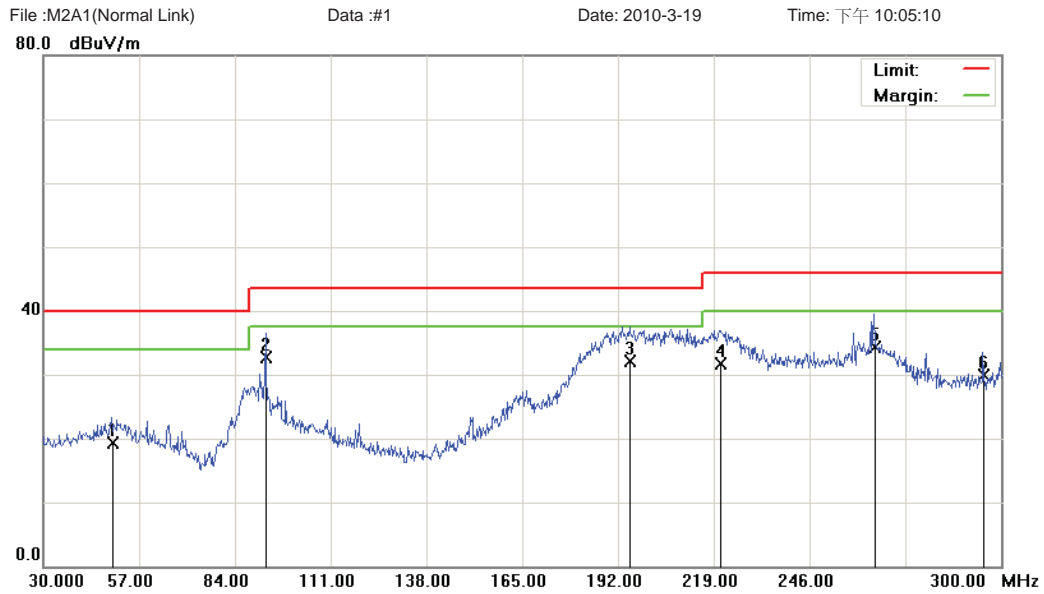
$$(2) \text{ Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)}$$

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

5.5. Test Result



Site: : 966 Chamber Polarization: *Vertical* Temperature: 22 ℃
 Limit: FCC Class B 3M Radiation Power: Humidity: 60 %
 EUT: Notebook Distance: 3m RBW: 120 KHz VBW: 300 KHz
 M/N: M2A1
 Mode: 5
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		49.3050	31.49	-12.12	19.37	40.00	-20.63	QP		
2	*	92.7750	45.26	-12.55	32.71	43.50	-10.79	QP		
3		195.3750	45.13	-13.10	32.03	43.50	-11.47	QP		
4		220.8900	44.09	-12.34	31.75	46.00	-14.25	QP		
5		264.2250	45.29	-11.07	34.22	46.00	-11.78	QP		
6		295.0050	40.18	-10.20	29.98	46.00	-16.02	QP		

*:Maximum data x:Over limit !:over margin

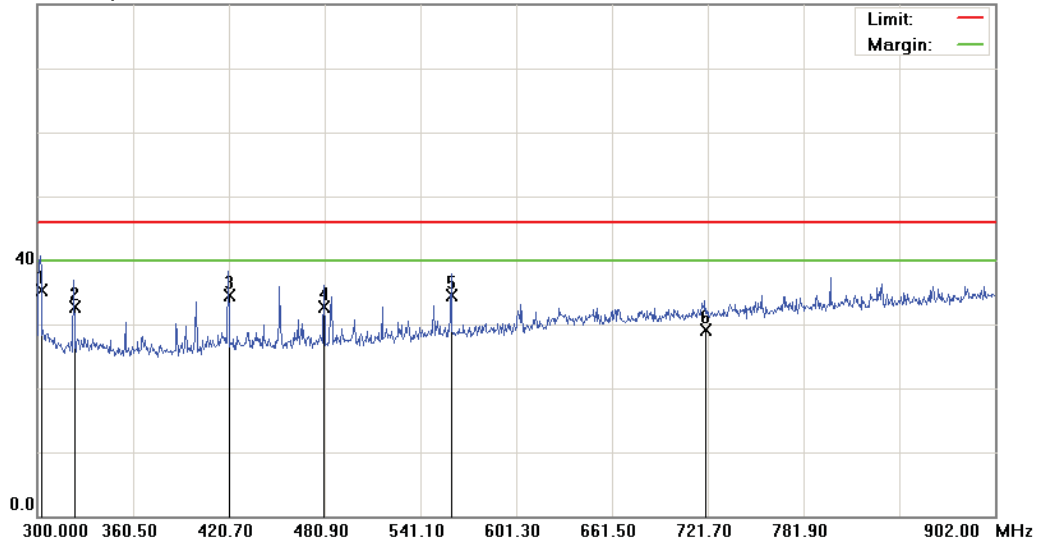
File :M2A1(Normal Link)

Data :#2

Date: 2010-3-19

Time: 下午 10:08:04

80.0 dBuV/m



Site: : 966 Chamber

Polarization: *Vertical*

Temperature: 22 ℃

Limit: FCC Class B 3M Radiation

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 120 KHz VBW: 300 KHz

M/N: M2A1

Mode: 5

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	302.1070	45.36	-10.04	35.32	46.00	-10.68	QP		
2		323.1770	42.48	-9.68	32.80	46.00	-13.20	QP		
3		420.0990	42.58	-8.09	34.49	46.00	-11.51	QP		
4		479.9980	40.29	-7.52	32.77	46.00	-13.23	QP		
5		560.0640	40.16	-5.66	34.50	46.00	-11.50	QP		
6		719.8950	32.59	-3.55	29.04	46.00	-16.96	QP		

*:Maximum data x:Over limit !:over margin

File :M2A1(Normal Link)

Data :#3

Date: 2010-3-19

Time: 下午 10:10:58

80.0 dBuV/m



Site: : 966 Chamber

Limit: FCC Class B 3M Radiation

EUT: Notebook

M/N: M2A1

Mode: 5

Note:

Polarization: *Horizontal*

Power:

Distance: 3m

Temperature: 22 °C

Humidity: 60 %

RBW: 120 KHz VBW: 300 KHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		92.6400	43.45	-12.57	30.88	43.50	-12.62	QP		
2		165.4050	38.57	-15.31	23.26	43.50	-20.24	QP		
3		199.1550	43.67	-13.16	30.51	43.50	-12.99	QP		
4	*	219.9450	47.26	-12.38	34.88	46.00	-11.12	QP		
5		247.3500	45.26	-11.05	34.21	46.00	-11.79	QP		
6		295.0050	43.78	-10.20	33.58	46.00	-12.42	QP		

*:Maximum data x:Over limit !:over margin

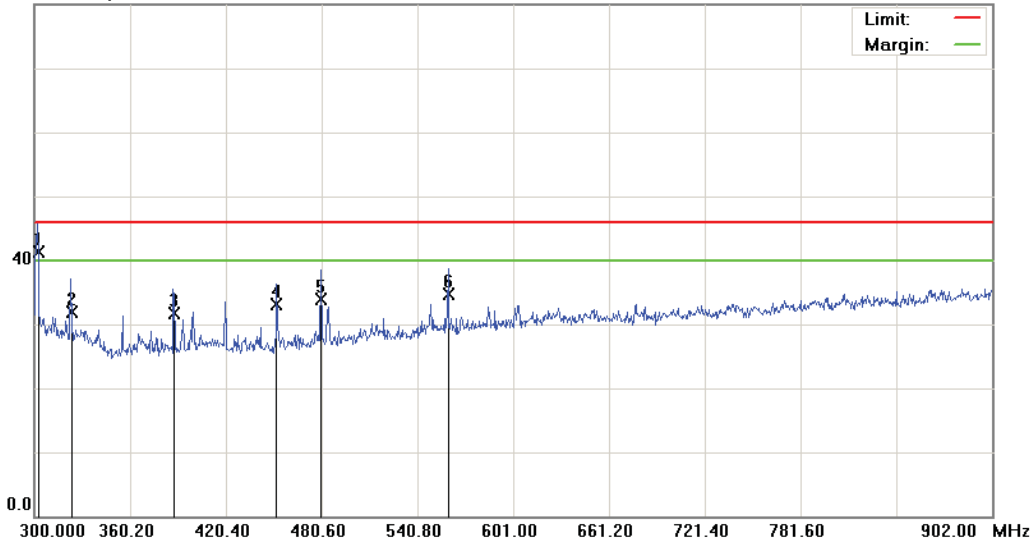
File :M2A1(Normal Link)

Data :#4

Date: 2010-3-19

Time: 下午 10:13:53

80.0 dBuV/m



Site: : 966 Chamber

Polarization: *Horizontal*

Temperature: 22 ℃

Limit: FCC Class B 3M Radiation

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 120 KHz VBW: 300 KHz

M/N: M2A1

Mode: 5

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	302.1070	51.34	-10.04	41.30	46.00	-4.70	QP		
2		323.1770	41.67	-9.68	31.99	46.00	-14.01	QP		
3		387.5910	40.26	-8.53	31.73	46.00	-14.27	QP		
4		452.3060	41.29	-8.10	33.19	46.00	-12.81	QP		
5		479.9980	41.37	-7.52	33.85	46.00	-12.15	QP		
6		560.0640	40.29	-5.66	34.63	46.00	-11.37	QP		

*:Maximum data x:Over limit !:over margin

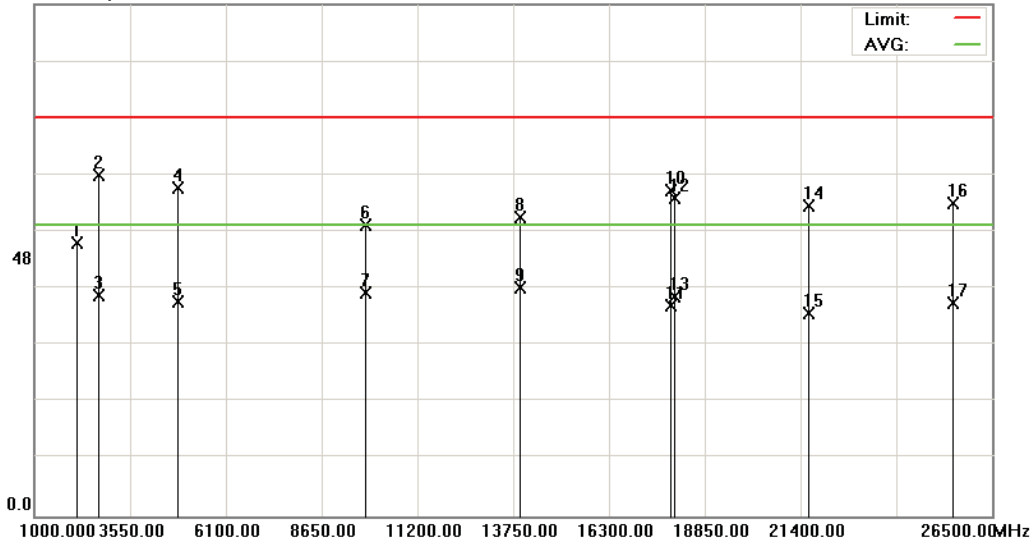
File :M2A1(2402MHZ)

Data :#19

Date: 2010-3-19

Time: 下午 08:28:55

95.0 dBuV/m



Site: : 966 Chamber

Polarization: **Vertical**

Temperature: 22 ℃

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 1

Note: 2402MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		2126.250	50.87	-0.27	50.60	74.00	-23.40	peak		
2	*	2700.000	40.80	22.58	63.38	74.00	-10.62	peak		
3		2700.000	18.37	22.58	40.95	54.00	-13.05	AVG		
4		4802.400	53.64	7.30	60.94	74.00	-13.06	peak		
5		4802.400	32.45	7.30	39.75	54.00	-14.25	AVG		
6		9821.150	36.24	17.77	54.01	74.00	-19.99	peak		
7		9821.150	23.67	17.77	41.44	54.00	-12.56	AVG		
8		13908.000	36.91	18.53	55.44	74.00	-18.56	peak		
9		13908.000	23.87	18.53	42.40	54.00	-11.60	AVG		
10		17948.000	35.66	24.67	60.33	74.00	-13.67	peak		
11		17948.000	14.38	24.67	39.05	54.00	-14.95	AVG		
12		18034.000	35.72	23.28	59.00	74.00	-15.00	peak		
13		18034.000	17.50	23.28	40.78	54.00	-13.22	AVG		
14		21621.000	36.19	21.29	57.48	74.00	-16.52	peak		
15		21621.000	16.37	21.29	37.66	54.00	-16.34	AVG		
16		25441.750	38.98	19.02	58.00	74.00	-16.00	peak		
17		25441.750	20.48	19.02	39.50	54.00	-14.50	AVG		

*:Maximum data x:Over limit !:over margin

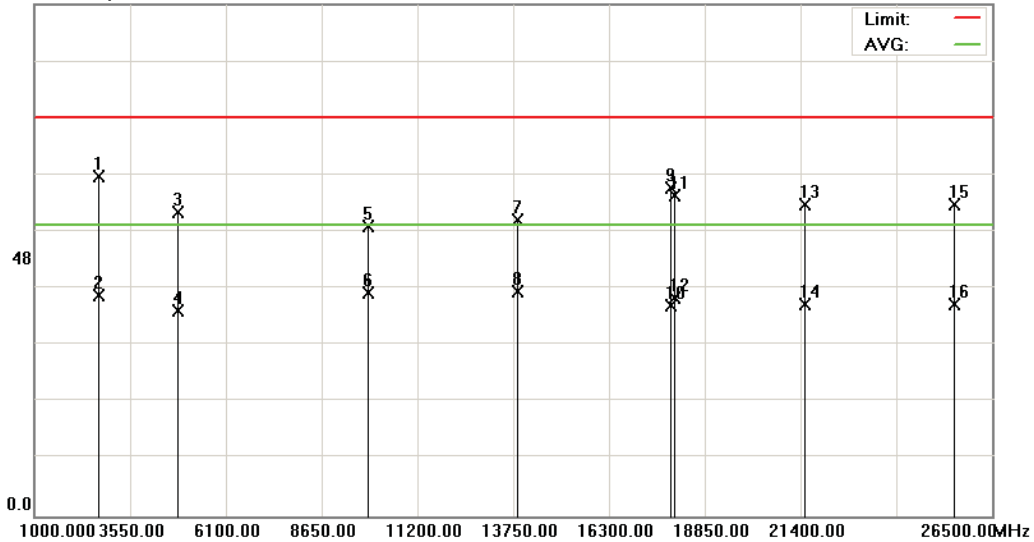
File :M2A1(2402MHZ)

Data :#18

Date: 2010-3-19

Time: 下午 08:30:32

95.0 dBuV/m



Site: : 966 Chamber

Polarization: **Horizontal**

Temperature: 22 ℃

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 1

Note: 2402MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2700.000	40.53	22.58	63.11	74.00	-10.89	peak		
2		2700.000	18.28	22.58	40.86	54.00	-13.14	AVG		
3		4802.400	49.21	7.30	56.51	74.00	-17.49	peak		
4		4802.400	30.87	7.30	38.17	54.00	-15.83	AVG		
5		9854.000	35.81	17.89	53.70	74.00	-20.30	peak		
6		9854.000	23.58	17.89	41.47	54.00	-12.53	AVG		
7		13844.000	36.79	18.11	54.90	74.00	-19.10	peak		
8		13844.000	23.57	18.11	41.68	54.00	-12.32	AVG		
9		17924.000	36.09	24.81	60.90	74.00	-13.10	peak		
10		17924.000	14.32	24.81	39.13	54.00	-14.87	AVG		
11		18029.750	36.18	23.28	59.46	74.00	-14.54	peak		
12		18029.750	17.13	23.28	40.41	54.00	-13.59	AVG		
13		21510.500	36.44	21.35	57.79	74.00	-16.21	peak		
14		21510.500	17.93	21.35	39.28	54.00	-14.72	AVG		
15		25505.500	38.79	18.98	57.77	74.00	-16.23	peak		
16		25505.500	20.37	18.98	39.35	54.00	-14.65	AVG		

*:Maximum data x:Over limit !:over margin

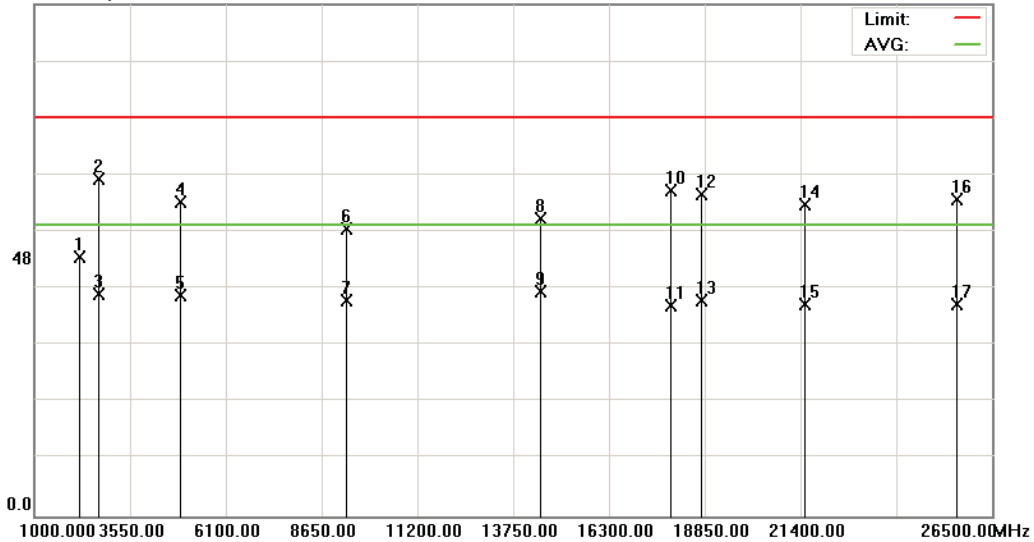
File :M2A1(2441MHZ)

Data :#17

Date: 2010-3-19

Time: 下午 08:32:31

95.0 dBuV/m



Site: : 966 Chamber

Polarization: **Vertical**

Temperature: 22 °C

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 1

Note: 2441MHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		2189.150	47.77	0.42	48.19	74.00	-25.81	peak		
2	*	2700.000	39.92	22.58	62.50	74.00	-11.50	peak		
3		2700.000	18.64	22.58	41.22	54.00	-12.78	AVG		
4		4882.700	50.67	7.74	58.41	74.00	-15.59	peak		
5		4882.700	33.13	7.74	40.87	54.00	-13.13	AVG		
6		9291.900	36.51	16.80	53.31	74.00	-20.69	peak		
7		9291.900	23.15	16.80	39.95	54.00	-14.05	AVG		
8		14464.000	37.16	17.95	55.11	74.00	-18.89	peak		
9		14464.000	23.69	17.95	41.64	54.00	-12.36	AVG		
10		17916.000	35.48	24.87	60.35	74.00	-13.65	peak		
11		17916.000	14.31	24.87	39.18	54.00	-14.82	AVG		
12		18739.500	36.69	23.12	59.81	74.00	-14.19	peak		
13		18739.500	16.82	23.12	39.94	54.00	-14.06	AVG		
14		21510.500	36.37	21.35	57.72	74.00	-16.28	peak		
15		21510.500	18.05	21.35	39.40	54.00	-14.60	AVG		
16		25548.000	39.72	18.95	58.67	74.00	-15.33	peak		
17		25548.000	20.26	18.95	39.21	54.00	-14.79	AVG		

*:Maximum data x:Over limit !:over margin

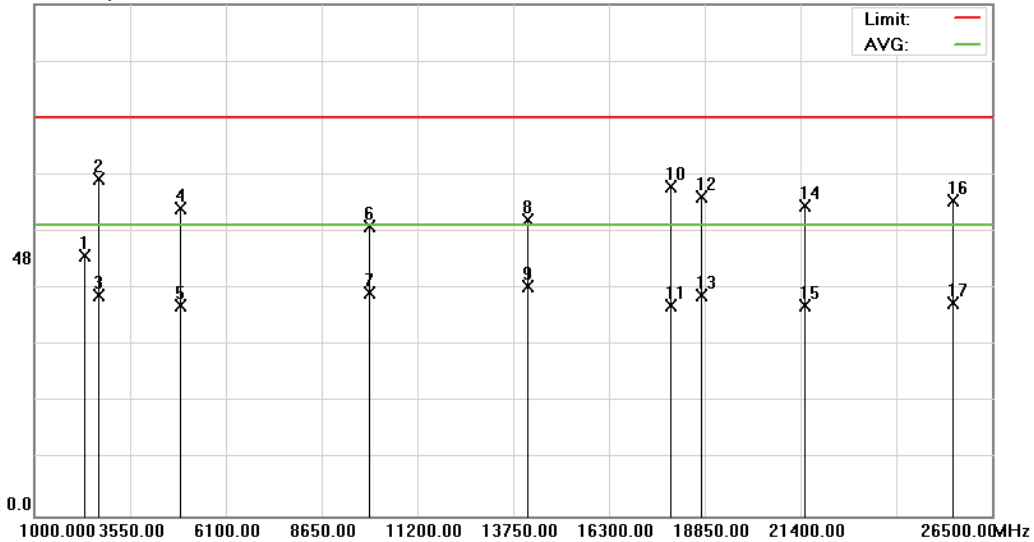
File :M2A1(2441MHZ)

Data :#18

Date: 2010-3-19

Time: 下午 08:34:08

95.0 dBuV/m



Site: : 966 Chamber

Polarization: **Horizontal**

Temperature: 22 ℃

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 1

Note: 2441MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		2302.200	47.72	0.52	48.24	74.00	-25.76	peak		
2		2700.000	40.01	22.58	62.59	74.00	-11.41	peak		
3		2700.000	18.36	22.58	40.94	54.00	-13.06	AVG		
4		4882.700	49.41	7.74	57.15	74.00	-16.85	peak		
5		4882.700	31.40	7.74	39.14	54.00	-14.86	AVG		
6		9923.350	36.10	17.78	53.88	74.00	-20.12	peak		
7		9923.350	23.57	17.78	41.35	54.00	-12.65	AVG		
8		14116.000	36.15	18.87	55.02	74.00	-18.98	peak		
9	*	14116.000	23.85	18.87	42.72	54.00	-11.28	AVG		
10		17940.000	36.46	24.71	61.17	74.00	-12.83	peak		
11		17940.000	14.29	24.71	39.00	54.00	-15.00	AVG		
12		18735.250	36.19	23.13	59.32	74.00	-14.68	peak		
13		18735.250	17.85	23.13	40.98	54.00	-13.02	AVG		
14		21510.500	36.25	21.35	57.60	74.00	-16.40	peak		
15		21510.500	17.77	21.35	39.12	54.00	-14.88	AVG		
16		25441.750	39.42	19.02	58.44	74.00	-15.56	peak		
17		25441.750	20.53	19.02	39.55	54.00	-14.45	AVG		

*:Maximum data x:Over limit !:over margin

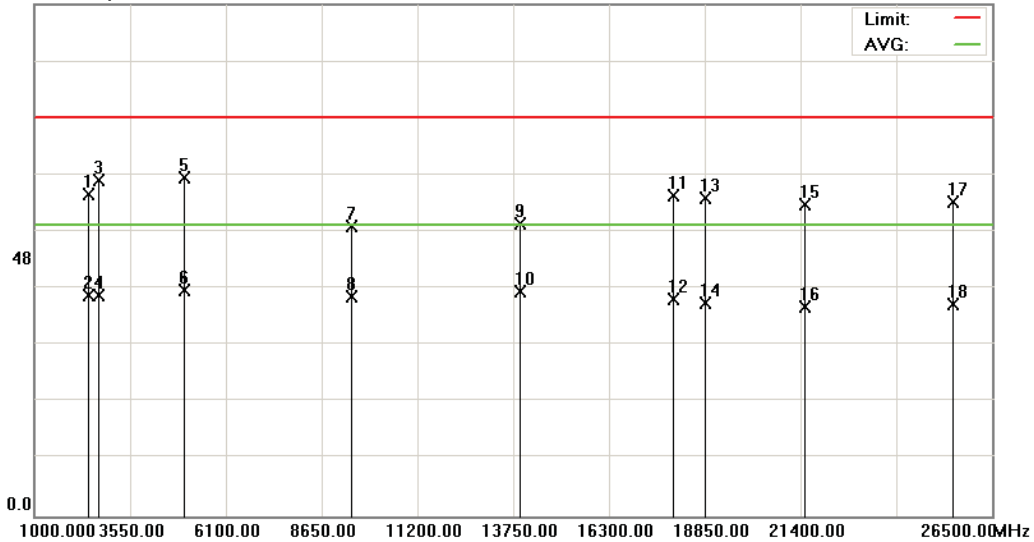
File :M2A1(2480MHZ)

Data :#19

Date: 2010-3-19

Time: 下午 08:36:26

95.0 dBuV/m



Site: : 966 Chamber

Polarization: **Vertical**

Temperature: 22 ℃

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 1

Note: 2480MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		2409.300	59.52	0.11	59.63	74.00	-14.37	peak		
2		2409.300	40.82	0.11	40.93	54.00	-13.07	AVG		
3		2700.000	39.73	22.58	62.31	74.00	-11.69	peak		
4		2700.000	18.34	22.58	40.92	54.00	-13.08	AVG		
5	*	4959.350	55.13	7.80	62.93	74.00	-11.07	peak		
6		4959.350	34.14	7.80	41.94	54.00	-12.06	AVG		
7		9426.950	36.70	17.04	53.74	74.00	-20.26	peak		
8		9426.950	23.71	17.04	40.75	54.00	-13.25	AVG		
9		13916.000	35.68	18.53	54.21	74.00	-19.79	peak		
10		13916.000	23.12	18.53	41.65	54.00	-12.35	AVG		
11		18000.000	33.93	25.57	59.50	74.00	-14.50	peak		
12		18000.000	14.67	25.57	40.24	54.00	-13.76	AVG		
13		18875.500	35.92	23.15	59.07	74.00	-14.93	peak		
14		18875.500	16.41	23.15	39.56	54.00	-14.44	AVG		
15		21506.250	36.55	21.35	57.90	74.00	-16.10	peak		
16		21506.250	17.51	21.35	38.86	54.00	-15.14	AVG		
17		25446.000	39.31	19.01	58.32	74.00	-15.68	peak		
18		25446.000	20.22	19.01	39.23	54.00	-14.77	AVG		

*:Maximum data x:Over limit !:over margin

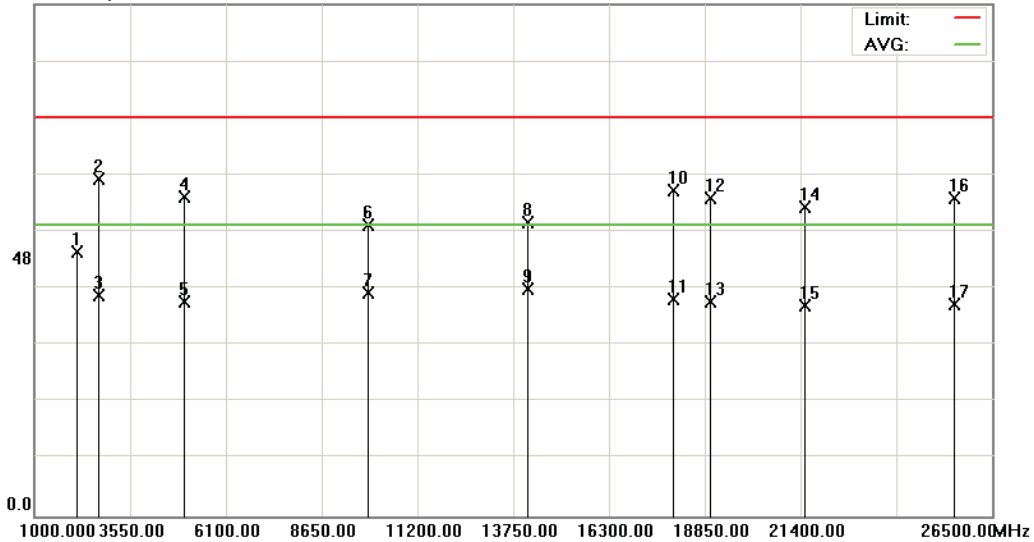
File :M2A1(2480MHZ)

Data :#20

Date: 2010-3-19

Time: 下午 08:38:03

95.0 dBuV/m



Site: : 966 Chamber

Polarization: **Horizontal**

Temperature: 22 ℃

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 1

Note: 2480MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		2130.500	49.37	-0.23	49.14	74.00	-24.86	peak		
2	*	2700.000	40.09	22.58	62.67	74.00	-11.33	peak		
3		2700.000	18.39	22.58	40.97	54.00	-13.03	AVG		
4		4959.350	51.52	7.80	59.32	74.00	-14.68	peak		
5		4959.350	31.96	7.80	39.76	54.00	-14.24	AVG		
6		9890.500	36.31	17.80	54.11	74.00	-19.89	peak		
7		9890.500	23.74	17.80	41.54	54.00	-12.46	AVG		
8		14116.000	35.75	18.87	54.62	74.00	-19.38	peak		
9		14116.000	23.34	18.87	42.21	54.00	-11.79	AVG		
10		17996.000	35.04	25.50	60.54	74.00	-13.46	peak		
11		17996.000	14.68	25.50	40.18	54.00	-13.82	AVG		
12		18994.500	35.95	23.09	59.04	74.00	-14.96	peak		
13		18994.500	16.76	23.09	39.85	54.00	-14.15	AVG		
14		21502.000	36.08	21.36	57.44	74.00	-16.56	peak		
15		21502.000	17.66	21.36	39.02	54.00	-14.98	AVG		
16		25492.750	40.03	18.99	59.02	74.00	-14.98	peak		
17		25492.750	20.34	18.99	39.33	54.00	-14.67	AVG		

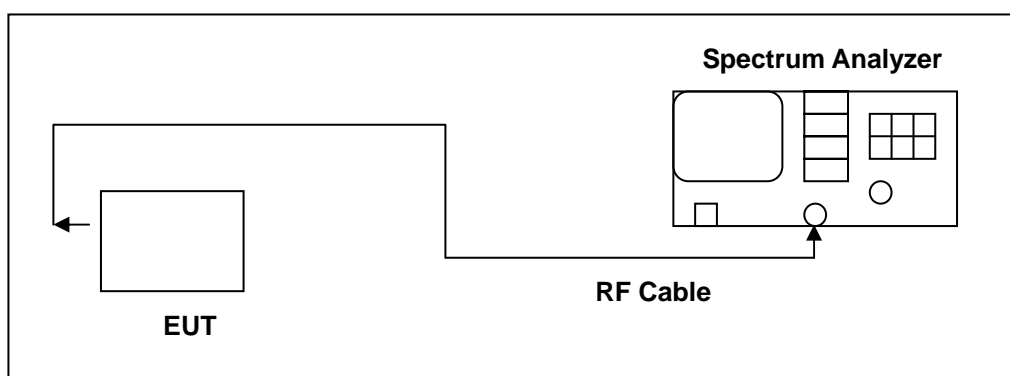
*:Maximum data x:Over limit !:over margin

6 Maximum Conducted Output Power Measurement

6.1. Limit

For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels < 1 watt.

6.2. Test Setup



6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	⁽²⁾
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to spectrum analyzer. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the spectrum Analyzer, for prevent the spectrum analyzer input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.

The antenna port of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

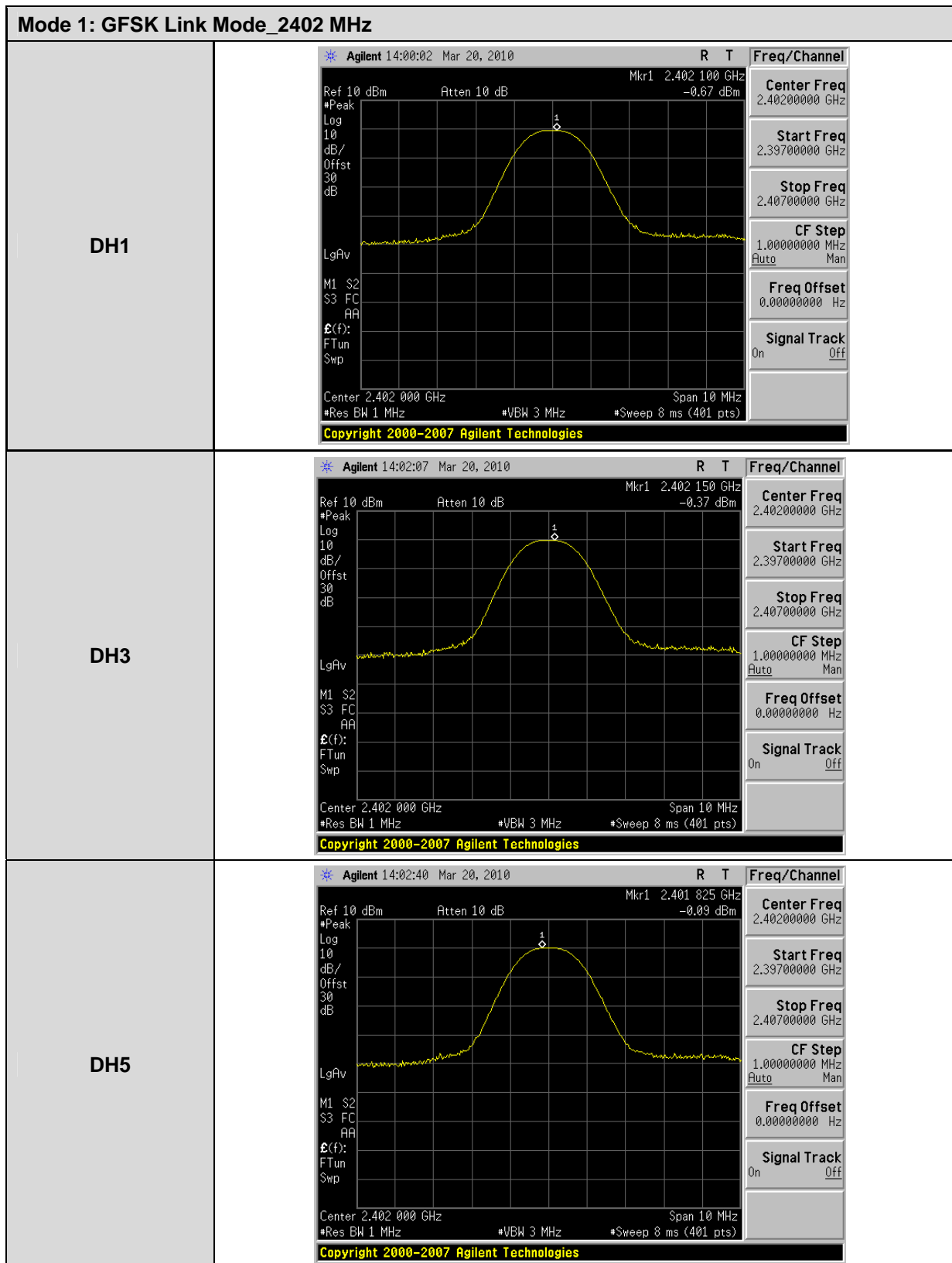
6.5. Test Result

Product	Notebook					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 1: GFSK Link Mode					
Date of Test	03/20/2010			Test Site	TE06	
Frequency (MHz)	Packet Type	Average Power		Peak Power		Limit (W)
		(dBm)	(W)	(dBm)	(W)	
2402	DH1	-0.930	0.001	-0.670	0.001	< 1
	DH3	-0.390	0.001	-0.370	0.001	< 1
	DH5	-0.190	0.001	-0.090	0.001	< 1
2441	DH1	-1.380	0.001	-1.180	0.001	< 1
	DH3	-1.250	0.001	-1.250	0.001	< 1
	DH5	-1.290	0.001	-1.080	0.001	< 1
2480	DH1	-0.900	0.001	-0.610	0.001	< 1
	DH3	-1.120	0.001	-0.950	0.001	< 1
	DH5	-1.260	0.001	-1.150	0.001	< 1

Product	Notebook					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 2: $\pi/4$ -DQPSK Mode					
Date of Test	03/20/2010			Test Site	TE06	
Frequency (MHz)	Packet Type	Average Power		Peak Power		Limit (W)
		(dBm)	(W)	(dBm)	(W)	
2402	DH1	-3.920	0.000	-3.350	0.000	< 1
	DH3	-3.830	0.000	-3.580	0.000	< 1
	DH5	-3.880	0.000	-3.620	0.000	< 1
2441	DH1	-5.590	0.000	-5.060	0.000	< 1
	DH3	-4.220	0.000	-4.070	0.000	< 1
	DH5	-4.230	0.000	-3.750	0.000	< 1
2480	DH1	-3.420	0.000	-3.190	0.000	< 1
	DH3	-3.840	0.000	-3.600	0.000	< 1
	DH5	-3.950	0.000	-3.520	0.000	< 1

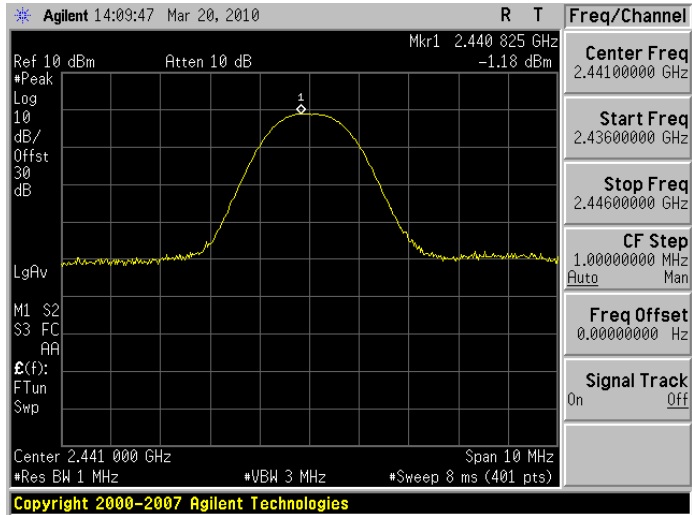
Product	Notebook					
Test Item	Maximum Conducted Output Power					
Test Mode	Mode 3: 8DPSK Mode					
Date of Test	03/20/2010			Test Site	TE06	
Frequency (MHz)	Packet Type	Average Power		Peak Power		Limit (W)
		(dBm)	(W)	(dBm)	(W)	
2402	DH1	-2.930	0.001	-2.930	0.001	< 1
	DH3	-3.290	0.000	-2.730	0.001	< 1
	DH5	-3.680	0.000	-2.880	0.001	< 1
2441	DH1	-4.880	0.000	-4.230	0.000	< 1
	DH3	-4.560	0.000	-4.510	0.000	< 1
	DH5	-4.740	0.000	-4.720	0.000	< 1
2480	DH1	-4.740	0.000	-4.240	0.000	< 1
	DH3	-4.590	0.000	-4.440	0.000	< 1
	DH5	-4.610	0.000	-4.360	0.000	< 1

6.6. Test Graphs (Peak Power)

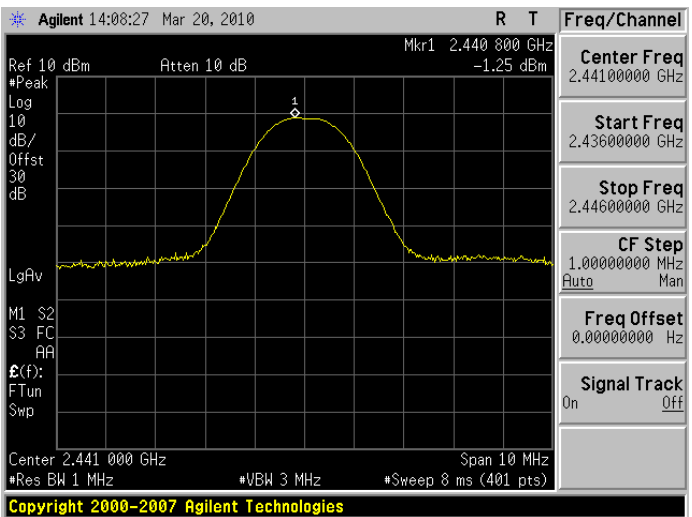


Mode 1: GFSK Link Mode_2441 MHz

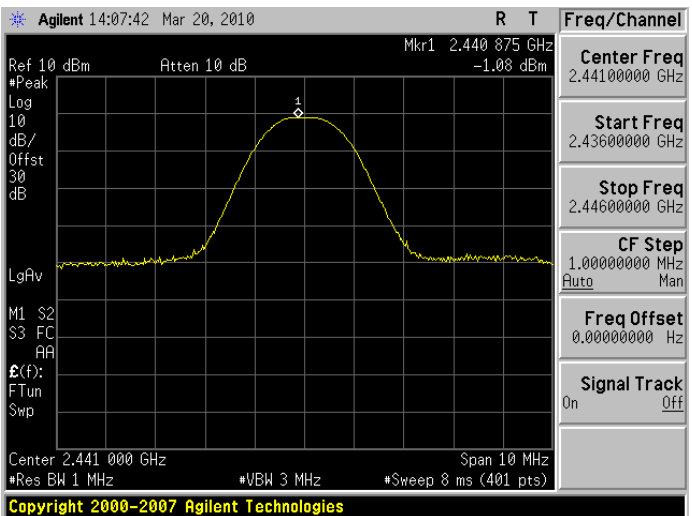
DH1

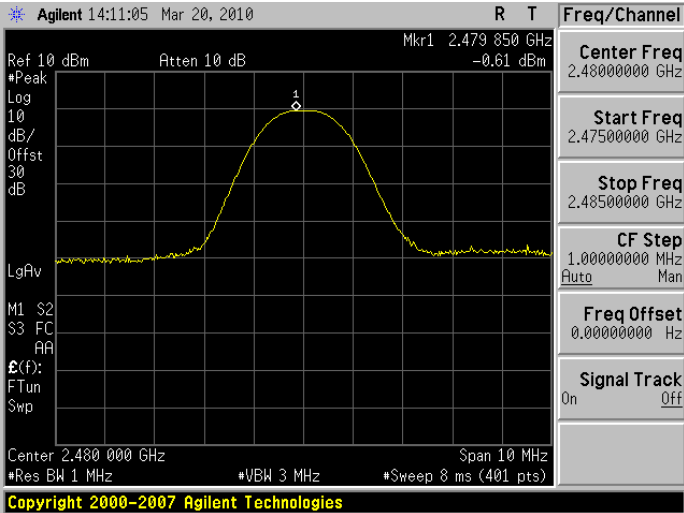
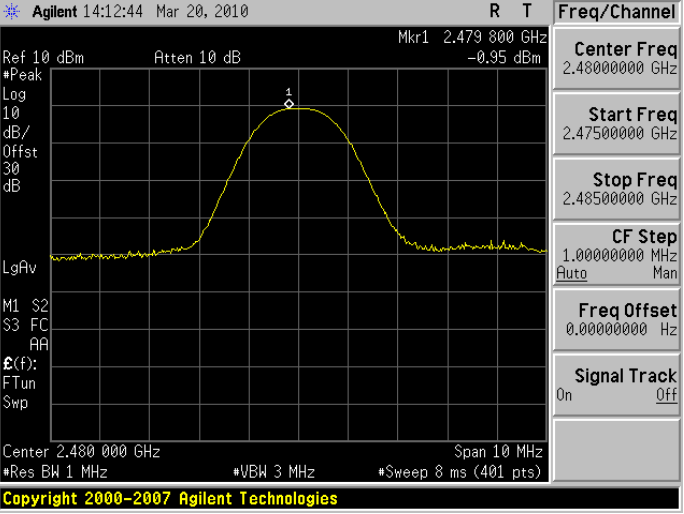
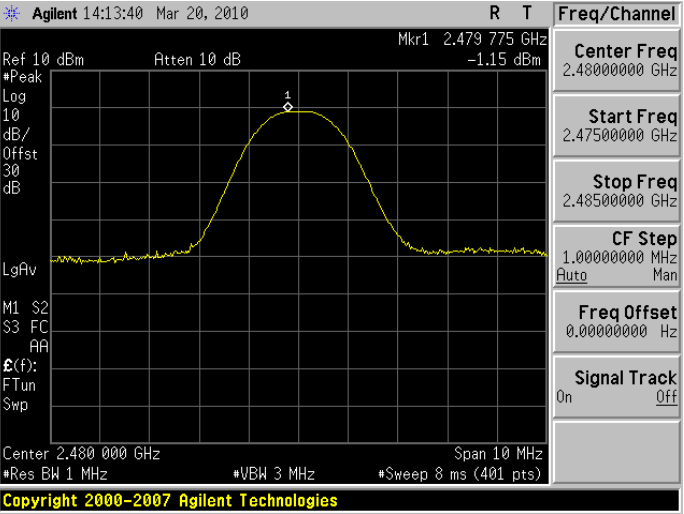


DH3



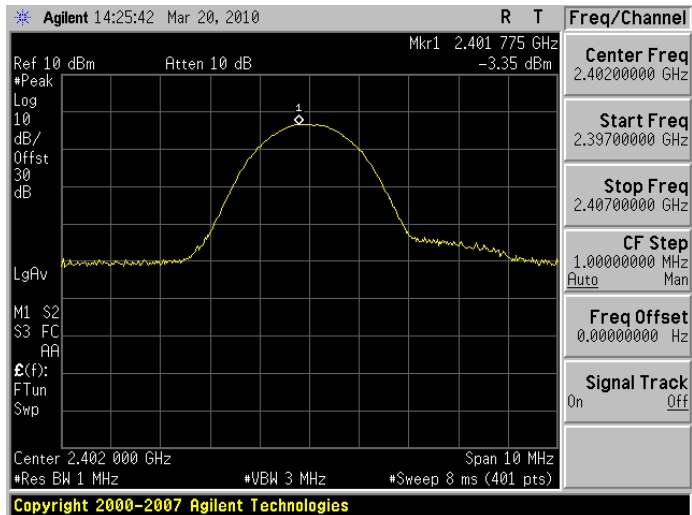
DH5



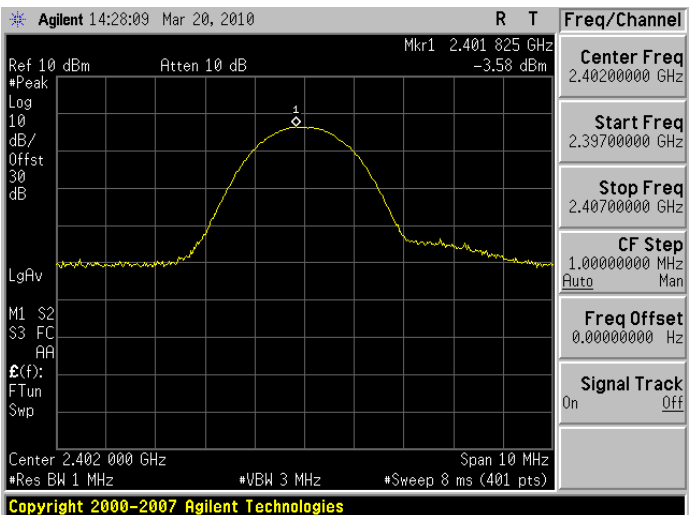
Mode 1: GFSK Link Mode_2480 MHz	
DH1	 <p>Agilent 14:11:05 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 2.479 850 GHz -0.61 dBm</p> <p>Center 2.480 000 GHz Span 10 MHz</p> <p>*Res BW 1 MHz *VBW 3 MHz *Sweep 8 ms (401 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p>
DH3	 <p>Agilent 14:12:44 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 2.479 800 GHz -0.95 dBm</p> <p>Center 2.480 000 GHz Span 10 MHz</p> <p>*Res BW 1 MHz *VBW 3 MHz *Sweep 8 ms (401 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p>
DH5	 <p>Agilent 14:13:40 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 2.479 775 GHz -1.15 dBm</p> <p>Center 2.480 000 GHz Span 10 MHz</p> <p>*Res BW 1 MHz *VBW 3 MHz *Sweep 8 ms (401 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p>

Mode2: $\pi/4$ -DQPSK Link Mode_2402 MHz

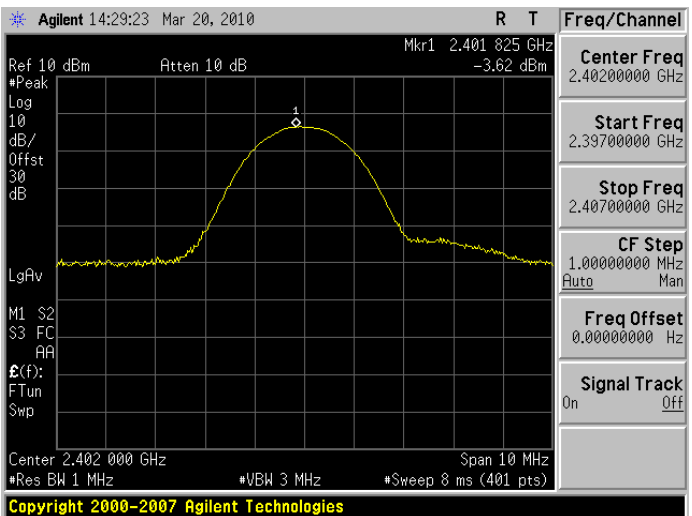
DH1



DH3

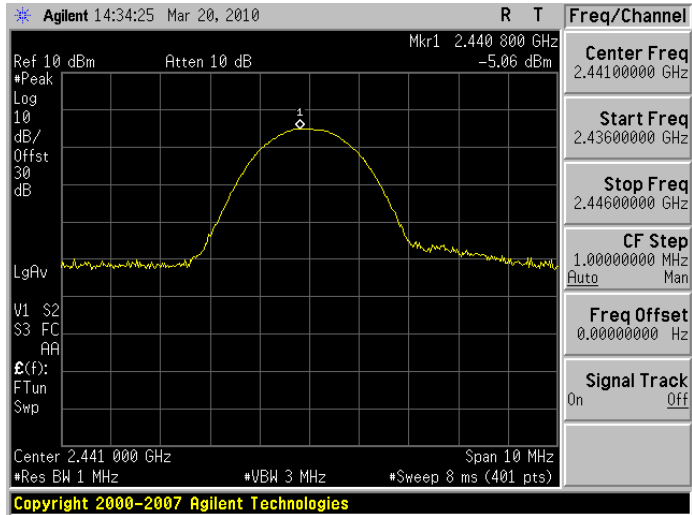


DH5

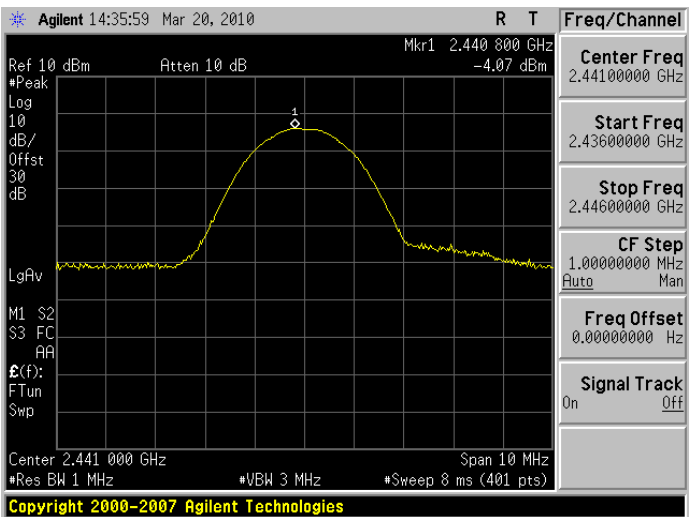


Mode2: $\pi/4$ -DQPSK Link Mode_2441 MHz

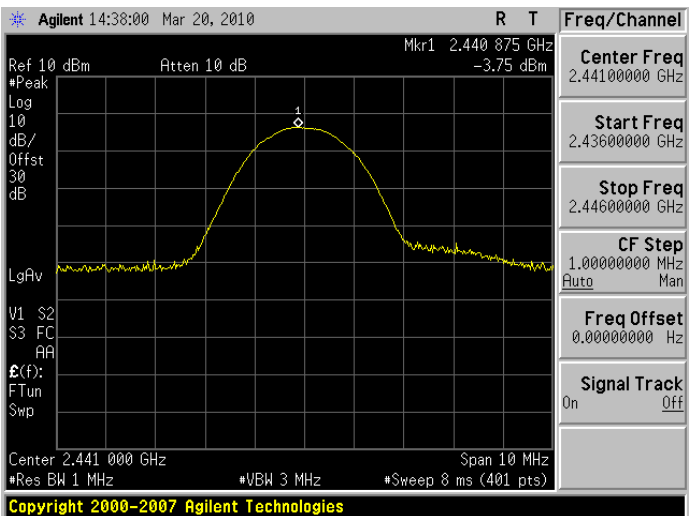
DH1



DH3

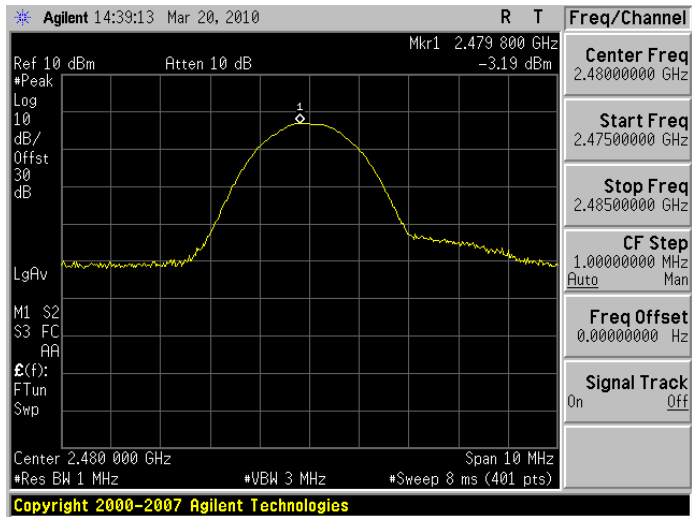


DH5

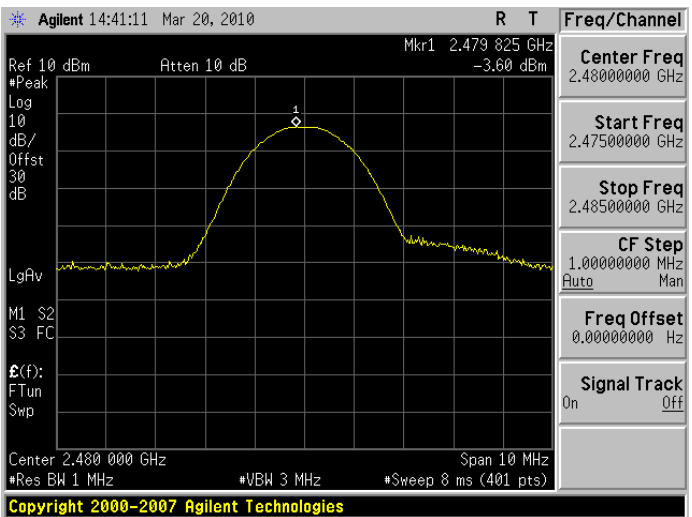


Mode2: $\pi/4$ -DQPSK Link Mode_2480 MHz

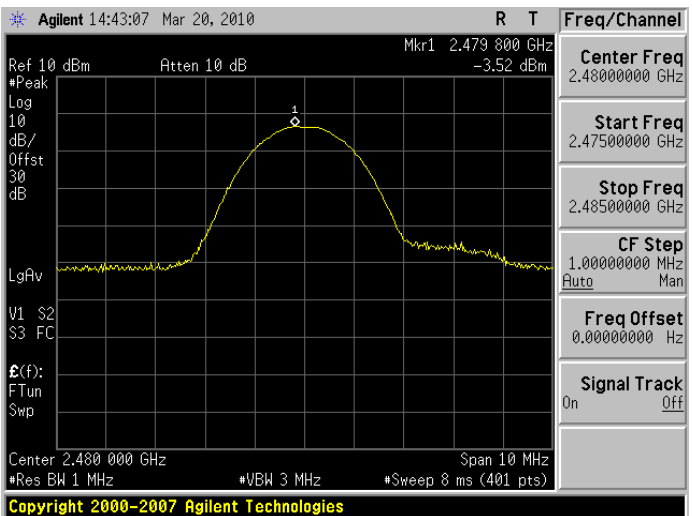
DH1



DH3

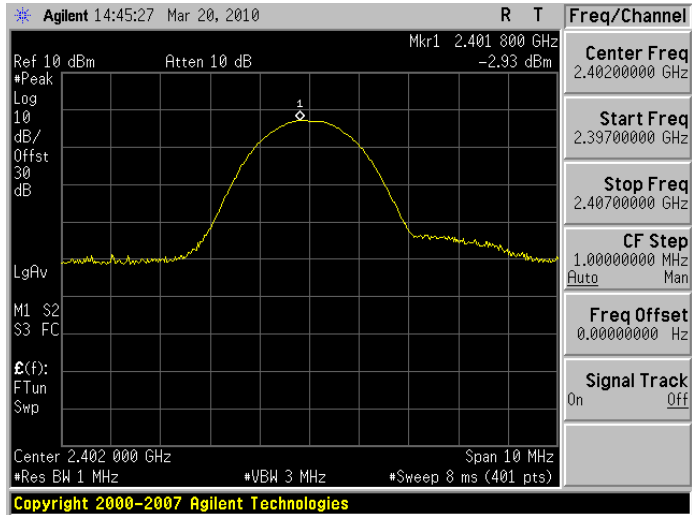


DH5

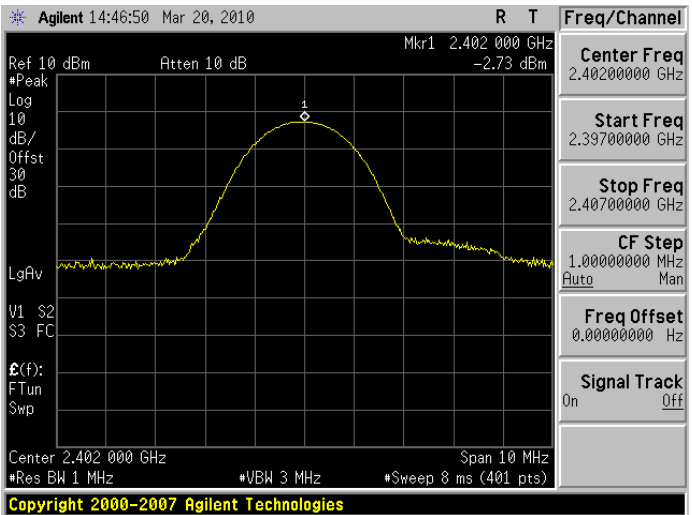


Mode3: 8DPSK Link Mode_2402 MHz

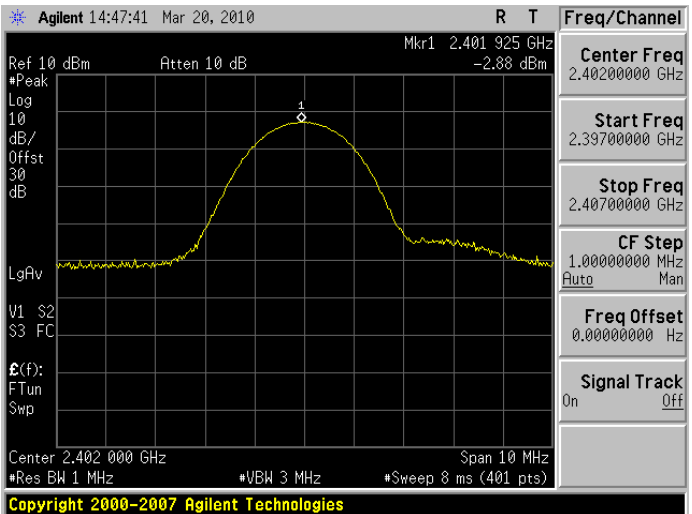
DH1



DH3

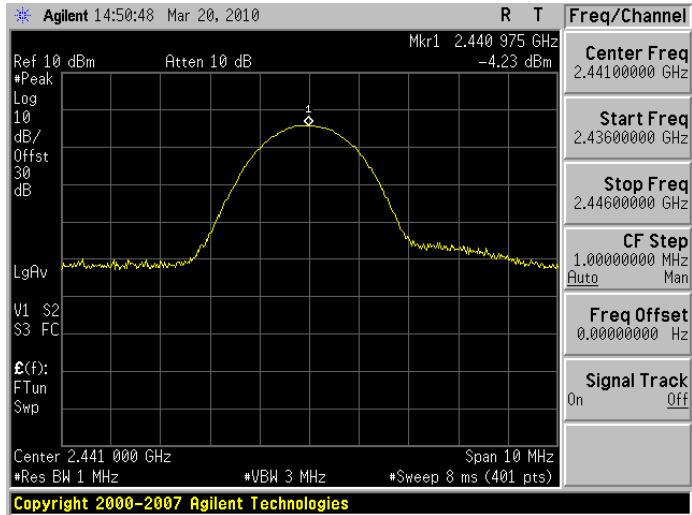


DH5

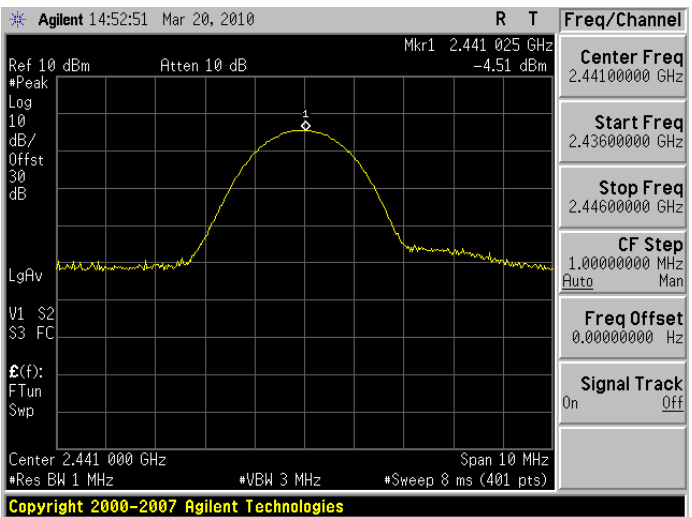


Mode3: 8DPSK Link Mode_2441 MHz

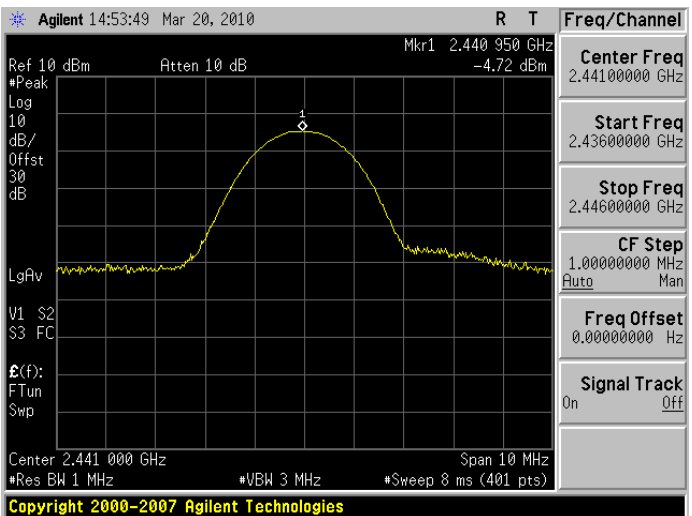
DH1



DH3

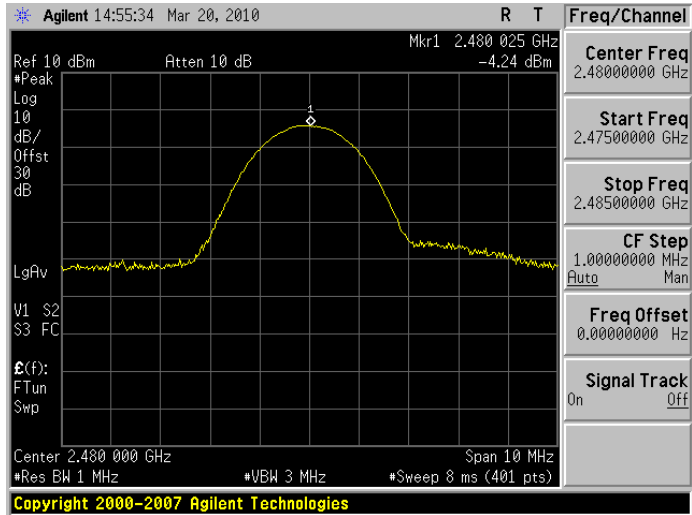


DH5

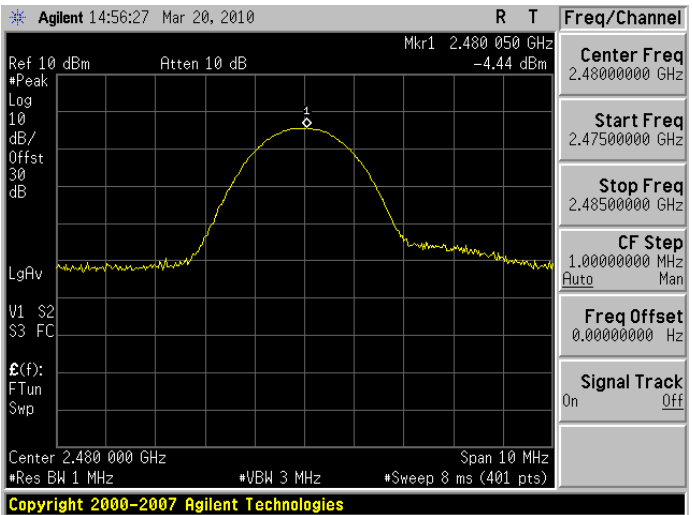


Mode3: 8DPSK Link Mode_2480 MHz

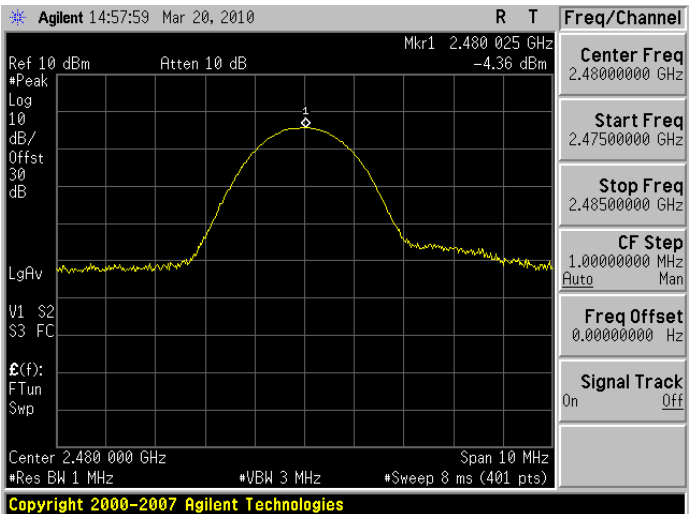
DH1



DH3



DH5

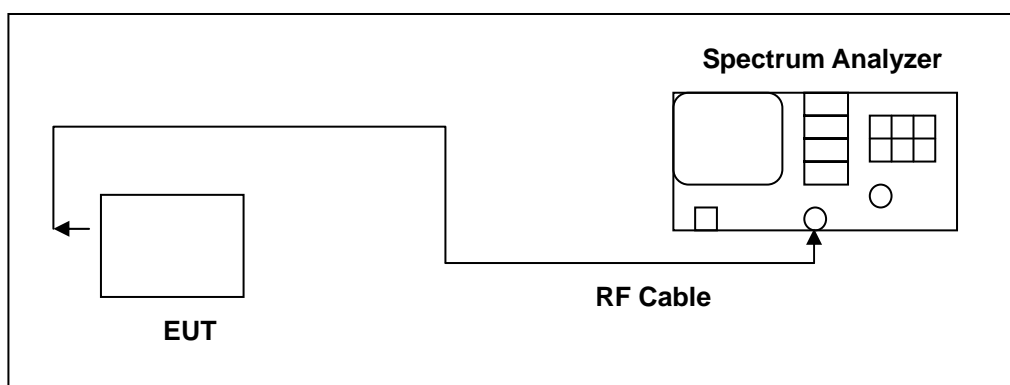


7 Minimum 20dB RF Bandwidth Measurement

7.1. Limit

For frequency hopping systems operating in the 2400–2483.5 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hop-ping channel is < 1 MHz.

7.2. Test Setup



7.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	⁽²⁾
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

7.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = approx. 2 to 3 times the 20dB bandwidth, centered on a hopping frequency
2. RBW \geq 1% of the 20dB span
3. VBW \geq RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

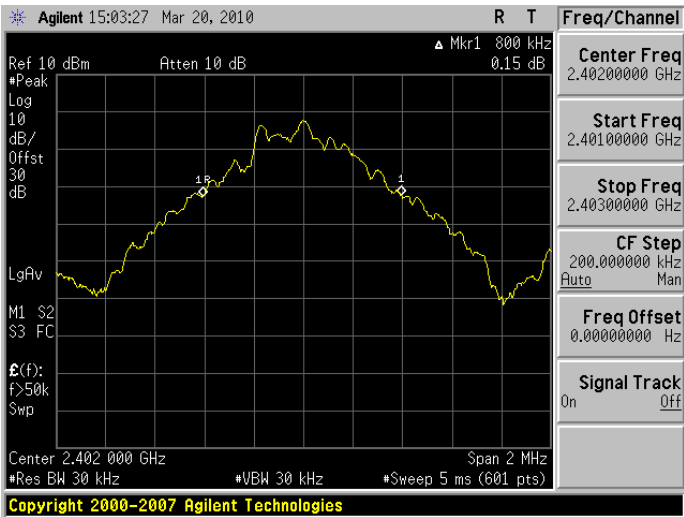
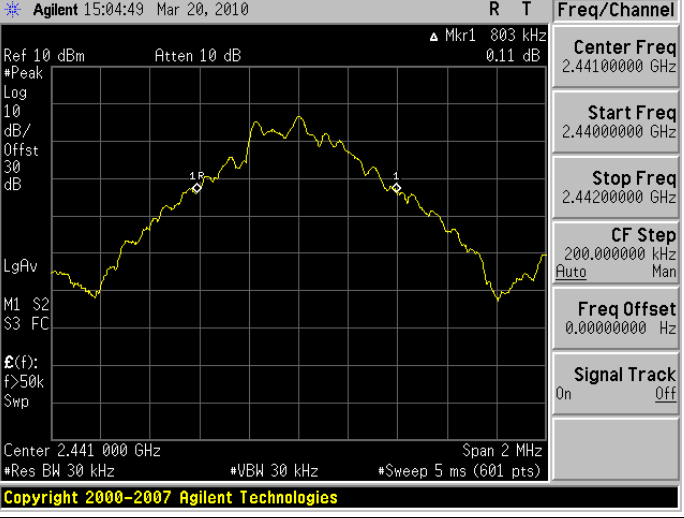
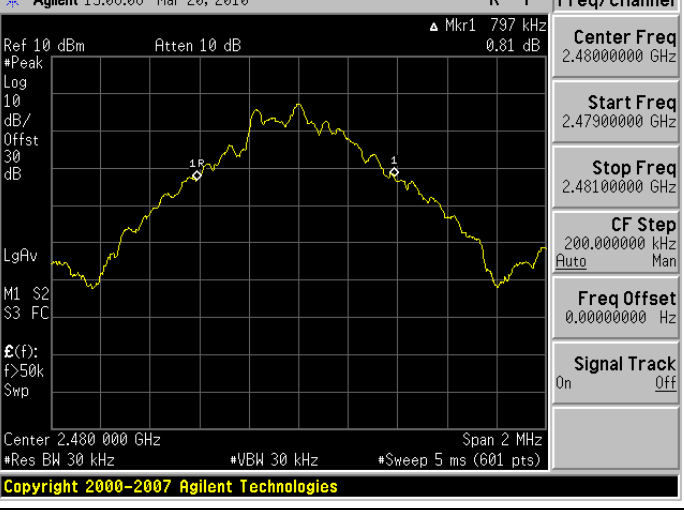
The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20dB bandwidth of the emission.

7.5. Test Result

Product	Notebook		
Test Item	Minimum 20dB RF Bandwidth		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency (MHz)	Measurement (MHz)		Limit (MHz)
2402	0.800		< 1
2441	0.803		< 1
2480	0.797		< 1

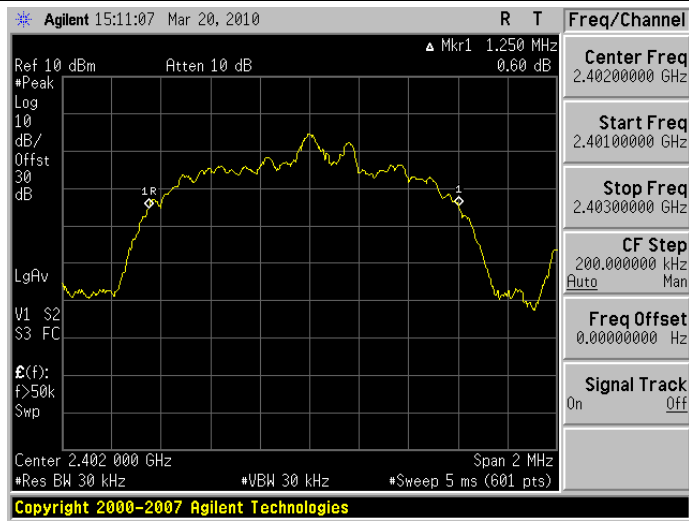
Product	Notebook		
Test Item	Minimum 20dB RF Bandwidth		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency (MHz)	20dB Bandwidth (MHz)	2/3 20dB Bandwidth (MHz)	Limit (MHz)
2402	1.250	0.834	< 1
2441	1.260	0.840	< 1
2480	1.260	0.840	< 1

7.6. Test Graphs

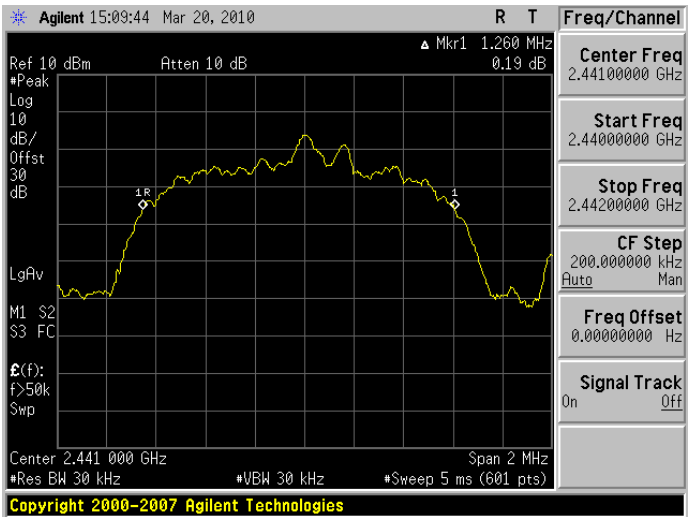
Mode 1: GFSK Link Mode	
2402	 <p>Agilent 15:03:27 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 800 kHz 0.15 dB</p> <p>#Peak Log 10 dB/Offst 30 dB</p> <p>LgAv M1 S2 S3 FC</p> <p>$E(f)$: f>50k Swp</p> <p>Center 2.402 000 GHz Span 2 MHz</p> <p>#Res BW 30 kHz #VBW 30 kHz #Sweep 5 ms (601 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p> <p>Freq/Channel</p> <p>Center Freq 2.40200000 GHz</p> <p>Start Freq 2.40100000 GHz</p> <p>Stop Freq 2.40300000 GHz</p> <p>CF Step 200.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p>
2441	 <p>Agilent 15:04:49 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 803 kHz 0.11 dB</p> <p>#Peak Log 10 dB/Offst 30 dB</p> <p>LgAv M1 S2 S3 FC</p> <p>$E(f)$: f>50k Swp</p> <p>Center 2.441 000 GHz Span 2 MHz</p> <p>#Res BW 30 kHz #VBW 30 kHz #Sweep 5 ms (601 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p> <p>Freq/Channel</p> <p>Center Freq 2.44100000 GHz</p> <p>Start Freq 2.44000000 GHz</p> <p>Stop Freq 2.44200000 GHz</p> <p>CF Step 200.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p>
2480	 <p>Agilent 15:06:08 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 797 kHz 0.81 dB</p> <p>#Peak Log 10 dB/Offst 30 dB</p> <p>LgAv M1 S2 S3 FC</p> <p>$E(f)$: f>50k Swp</p> <p>Center 2.480 000 GHz Span 2 MHz</p> <p>#Res BW 30 kHz #VBW 30 kHz #Sweep 5 ms (601 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p> <p>Freq/Channel</p> <p>Center Freq 2.48000000 GHz</p> <p>Start Freq 2.47900000 GHz</p> <p>Stop Freq 2.48100000 GHz</p> <p>CF Step 200.000000 kHz Auto Man</p> <p>Freq Offset 0.0000000 Hz</p> <p>Signal Track On Off</p>

Mode3: 8DPSK Link Mode

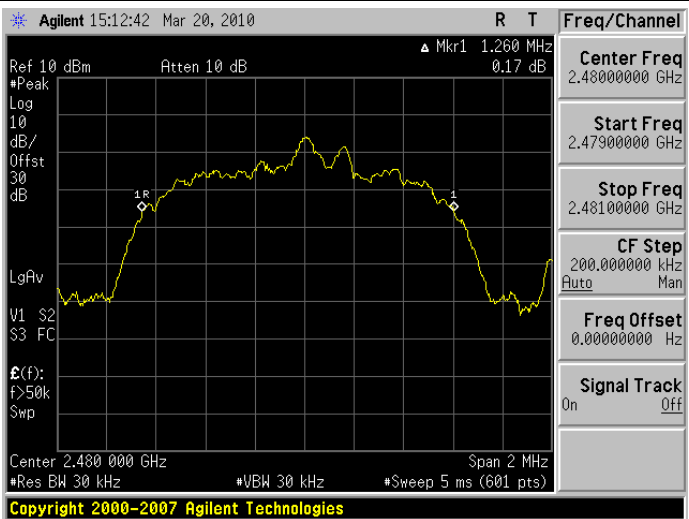
2402



2441



2480

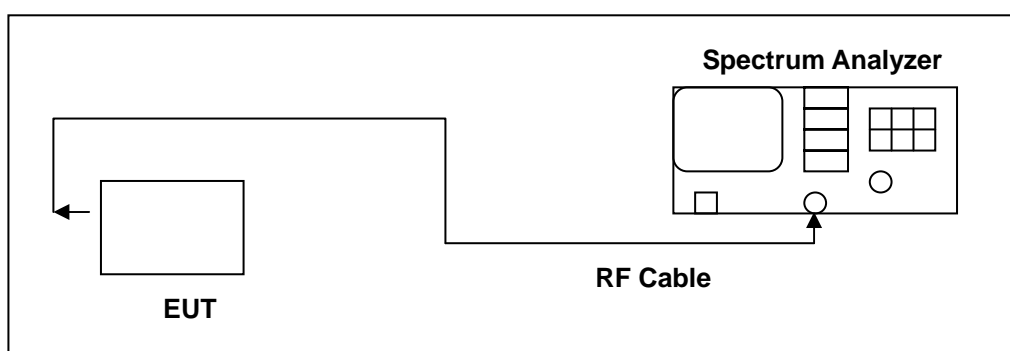


8 Carrier Frequency Separation Measurement

8.1. Limit

For frequency hopping systems operating in the 2400–2483.5 MHz band shall use at least 75 hopping frequencies. The Carrier Frequency Separation is 1 MHz.

8.2. Test Setup



8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	⁽²⁾
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

8.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth transmitter of the V6 had its hopping function enabled. The following spectrum analyzer settings were used:

1. Span = wide enough to capture the peaks of two adjacent channels
2. Resolution (or IF) Bandwidth (RBW) \geq 1% of the span
3. Video (or Average) Bandwidth (VBW) \geq RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

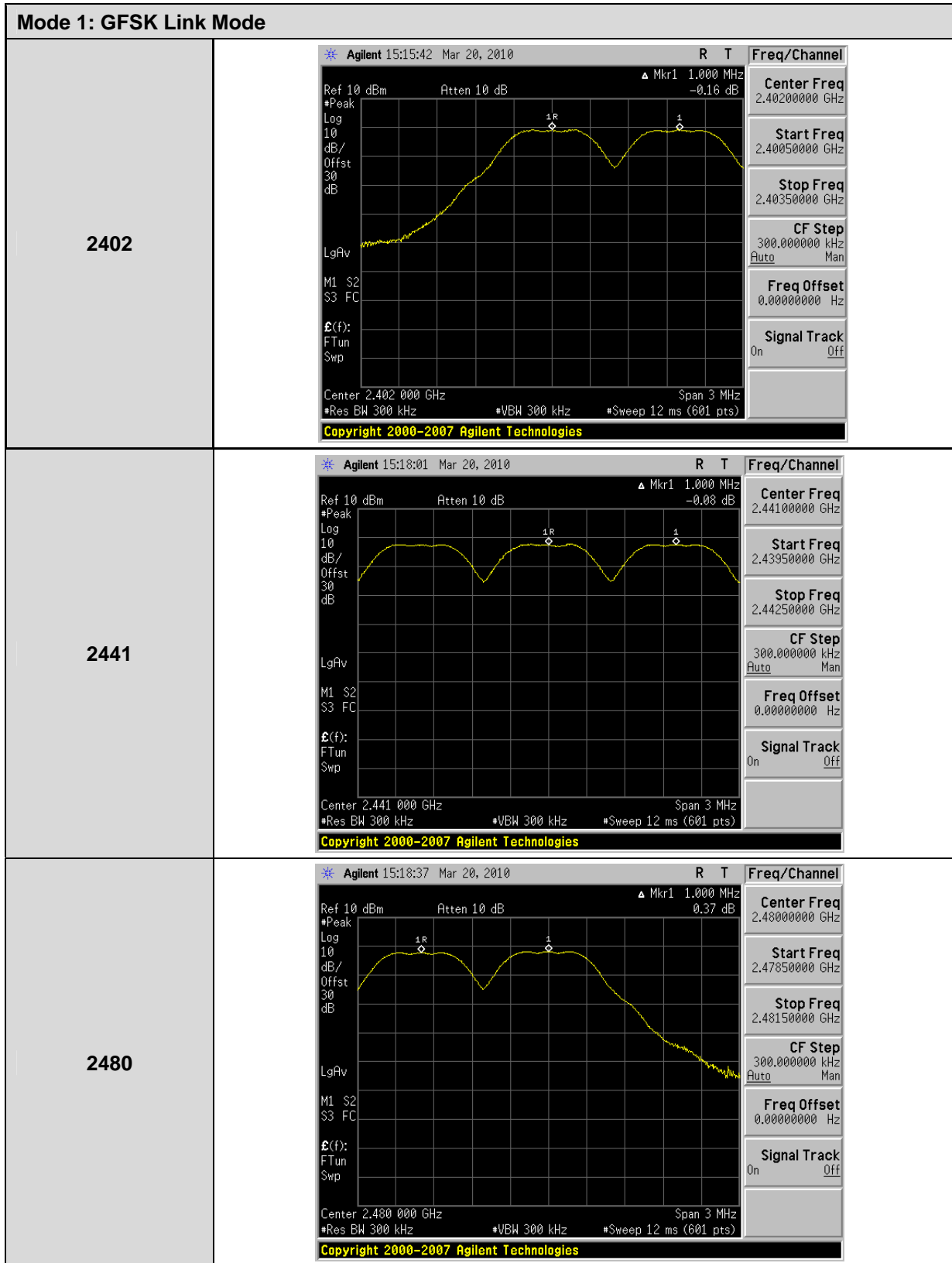
The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

8.5. Test Result

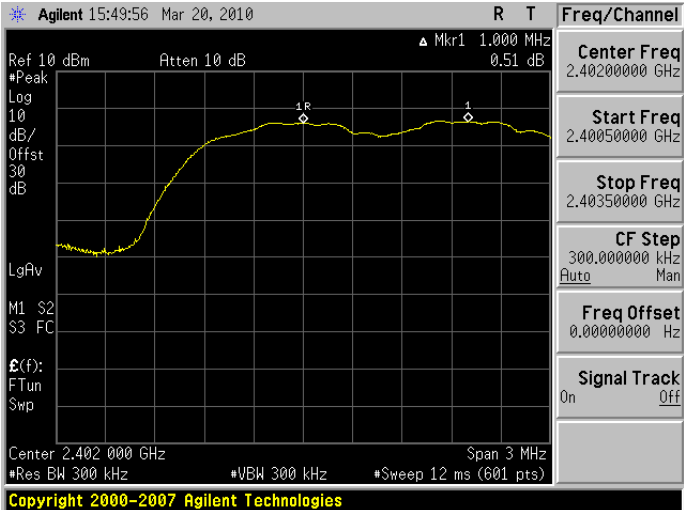
Product	Notebook		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency (MHz)	Measurement (MHz)	Limit (MHz)	
2402	1	1	
2441	1	1	
2480	1	1	

Product	Notebook		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency (MHz)	Measurement (MHz)	Limit (MHz)	
2402	1	1	
2441	1	1	
2480	1	1	

8.6. Test Graphs



Mode3: 8DPSK Link Mode

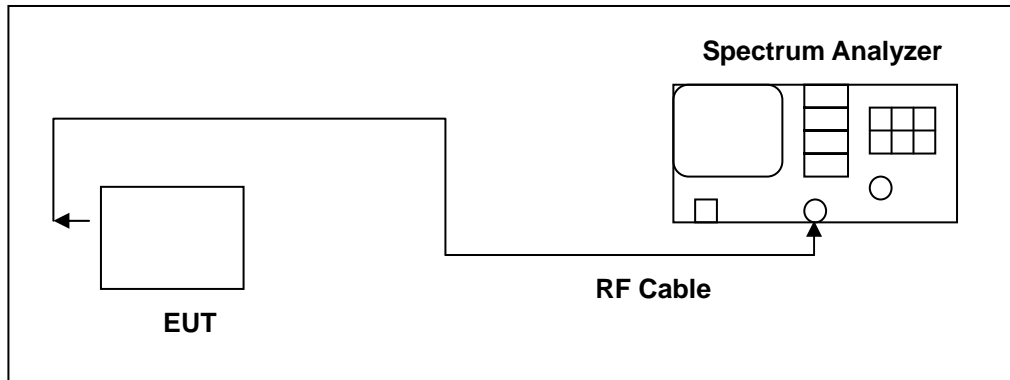
<p>2402</p>	 <p>Agilent 15:49:56 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 1.000 MHz 0.51 dB</p> <p>Center 2.402 000 GHz Span 3 MHz Res BW 300 kHz VBW 300 kHz Sweep 12 ms (601 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p>
<p>2441</p>	 <p>Agilent 15:50:33 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 1.000 MHz 0.53 dB</p> <p>Center 2.441 000 GHz Span 3 MHz Res BW 300 kHz VBW 300 kHz Sweep 12 ms (601 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p>
<p>2480</p>	 <p>Agilent 15:51:14 Mar 20, 2010</p> <p>Ref 10 dBm Atten 10 dB Mkr1 1.000 MHz 0.60 dB</p> <p>Center 2.480 000 GHz Span 3 MHz Res BW 300 kHz VBW 300 kHz Sweep 12 ms (601 pts)</p> <p>Copyright 2000-2007 Agilent Technologies</p>

9 Number of Hopping Measurement

9.1. Limit

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

9.2. Test Setup



9.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	⁽²⁾
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

9.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = the frequency band of operation
2. RBW \geq 1% of the span
3. VBW \geq RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

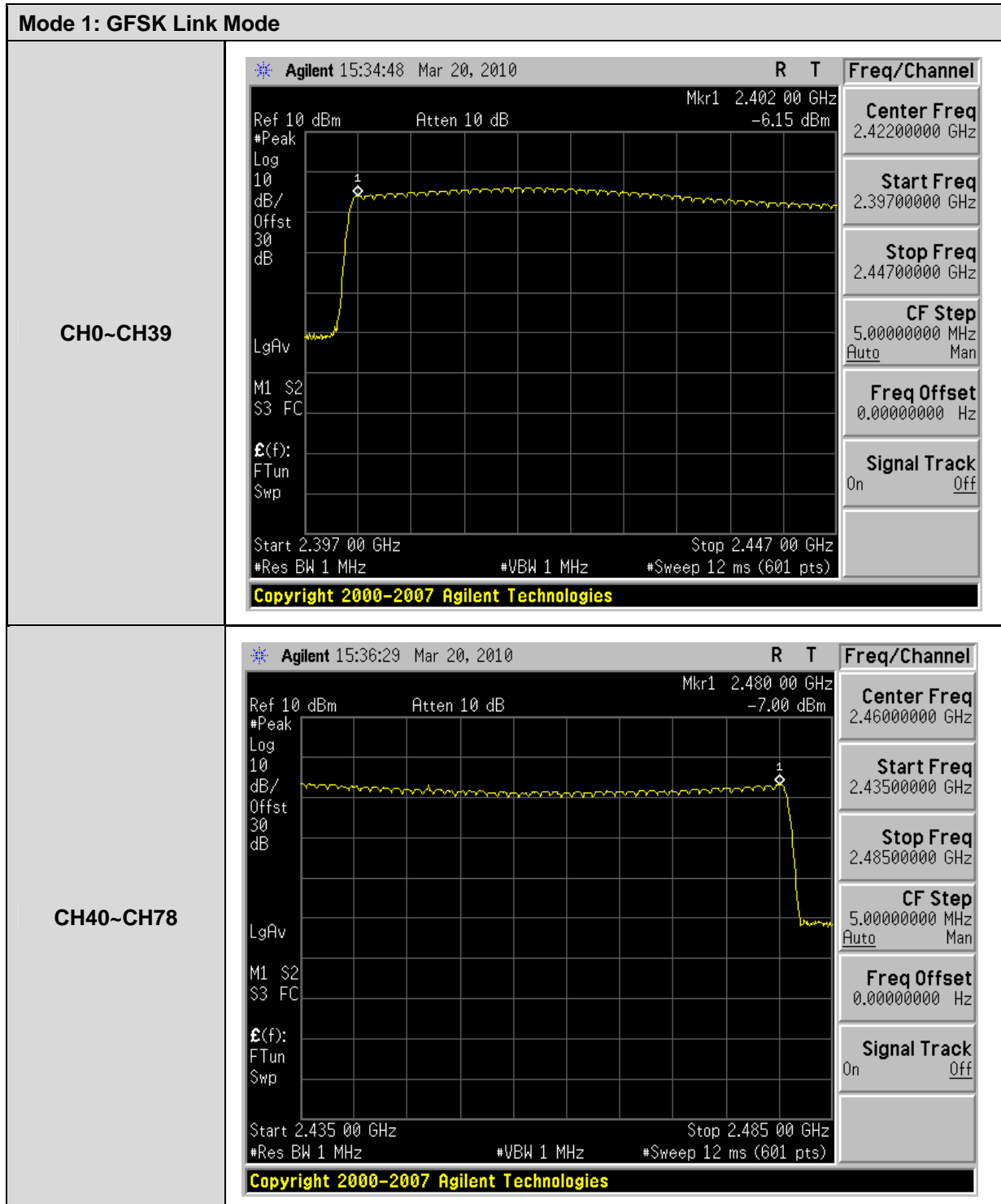
The trace was allowed to stabilize.

9.5. Test Result

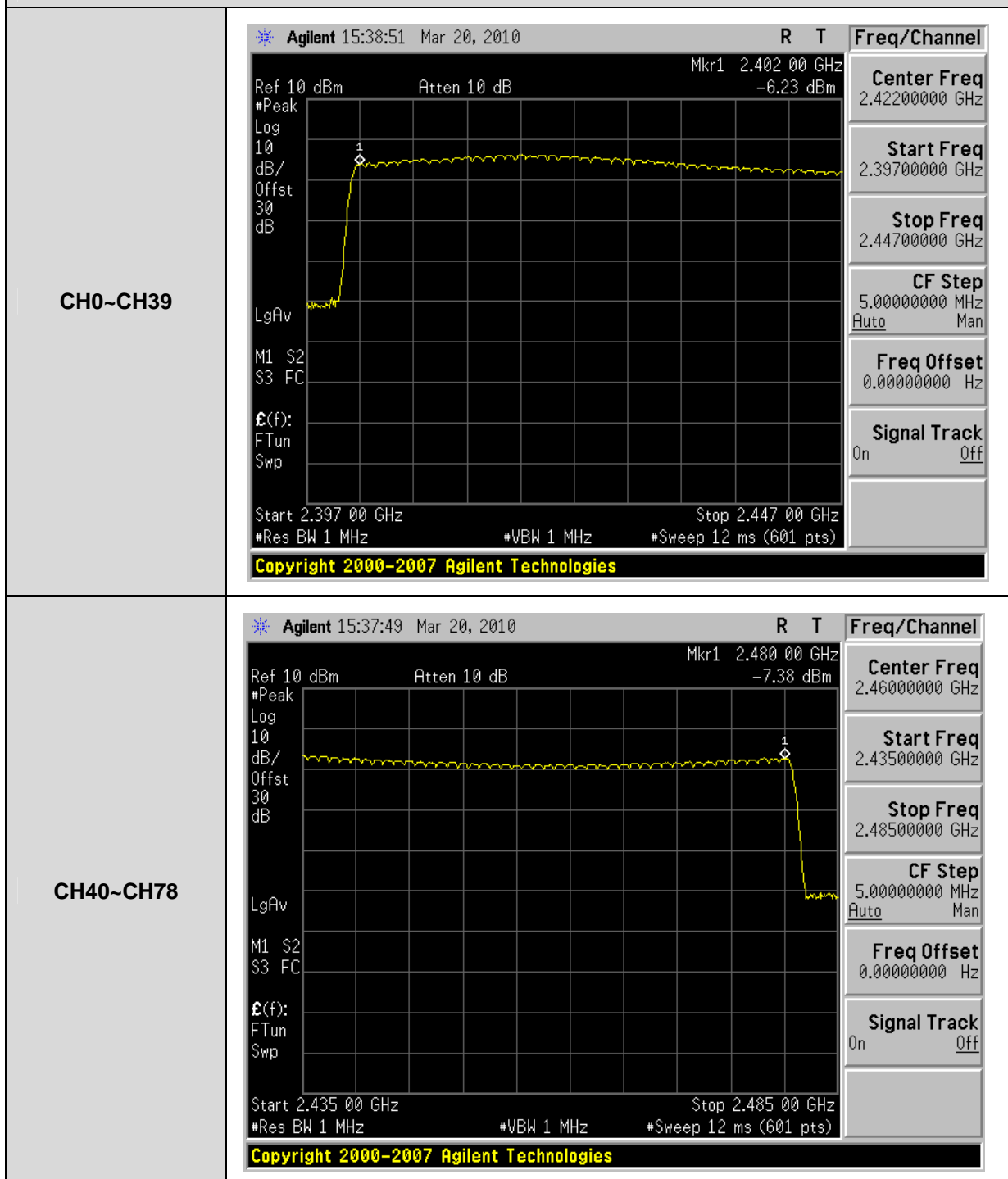
Product	Notebook		
Test Item	Number of Hopping		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency Range (MHz)	Measurement (ch)		Limit (ch)
2402 – 2480	79		> 15

Product	Notebook		
Test Item	Number of Hopping		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency Range (MHz)	Measurement (ch)		Limit (ch)
2402 - 2480	79		> 15

9.6. Test Graphs



Mode 3: 8DPSK Link Mode

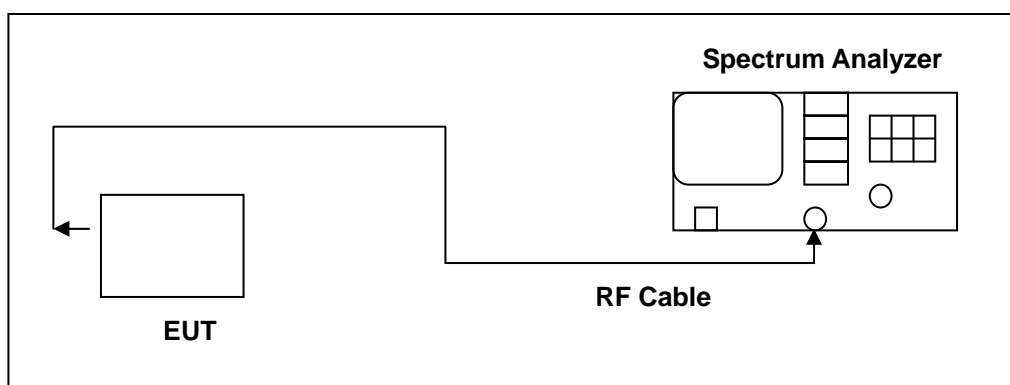


10 Time of Occupancy (Dwell Time) Measurement

10.1. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

10.2. Test Setup



10.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	⁽²⁾
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

10.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

1. Span = zero span, centered on a hopping channel
2. RBW = 1 MHz
3. VBW \geq RBW
4. Sweep = as necessary to capture the entire dwell time per hopping channel
5. Detector function = peak
6. Trace = max hold

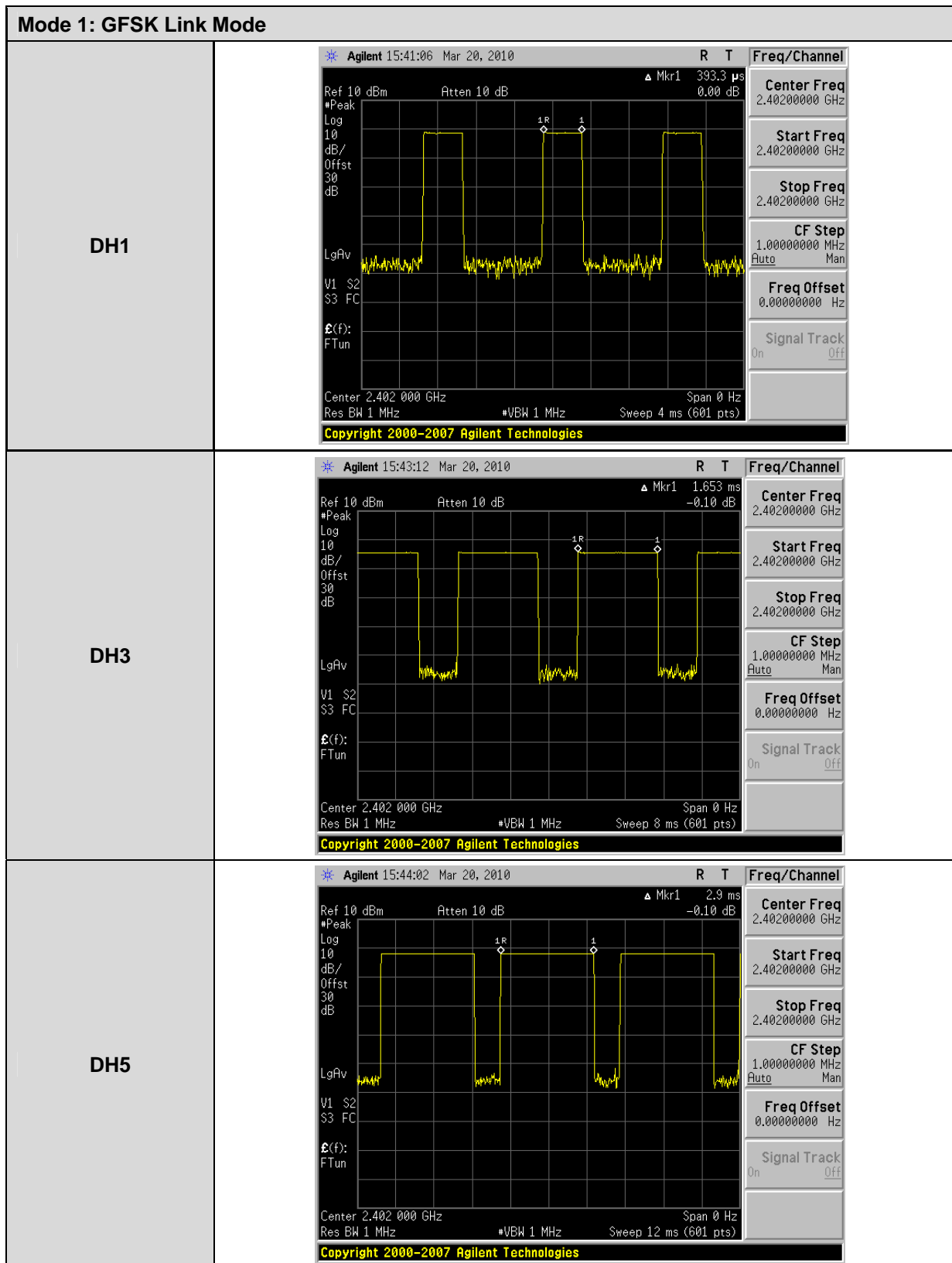
The marker-delta function was used to determine the dwell time.

10.5. Test Result

Product	Notebook		
Test Item	Time of Occupancy (Dwell Time)		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	03/20/2010	Test Site	TE06
DH1			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	800/79CH = 10.13(times/sec)		
Each Channel Dwell Times (1)	0.3933 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 10.13 = 320.108(times)		
Dwell Times on Cycle (1) * (2)	125.8985 ms (sec)		
LIMIT(msec)	< = 400		
DH3			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	400/79CH = 5.1(times/sec)		
Each Channel Dwell Times (1)	1.653 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 5.1 = 161.16(times)		
Dwell Times on Cycle (1) * (2)	266.39748 ms (sec)		
LIMIT(msec)	< = 400		
DH5			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	266.7/79CH = 3.37(times/sec)		
Each Channel Dwell Times (1)	2.900 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 3.37 = 106.492(times)		
Dwell Times on Cycle (1) * (2)	308.8260 ms (sec)		
LIMIT(msec)	< = 400		

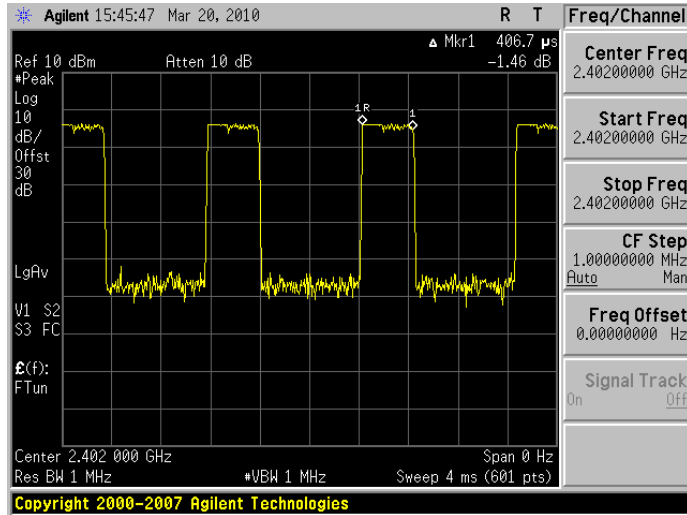
Product	Notebook		
Test Item	Time of Occupancy (Dwell Time)		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	03/20/2010	Test Site	TE06
DH1			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	800/79CH = 10.13(times/sec)		
Each Channel Dwell Times (1)	0.4067 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 10.13 = 320.108(times)		
Dwell Times on Cycle (1) * (2)	320.5147 ms (sec)		
LIMIT(msec)	< = 400		
DH3			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	400/79CH = 5.1(times/sec)		
Each Channel Dwell Times (1)	1.667 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 5.1 = 161.16(times)		
Dwell Times on Cycle (1) * (2)	268.65372 ms (sec)		
LIMIT(msec)	< = 400		
DH5			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	266.7/79CH = 3.37(times/sec)		
Each Channel Dwell Times (1)	2.900 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 3.37 = 106.492(times)		
Dwell Times on Cycle (1) * (2)	308.8268 ms (sec)		
LIMIT(msec)	< = 400		

10.6. Test Graphs

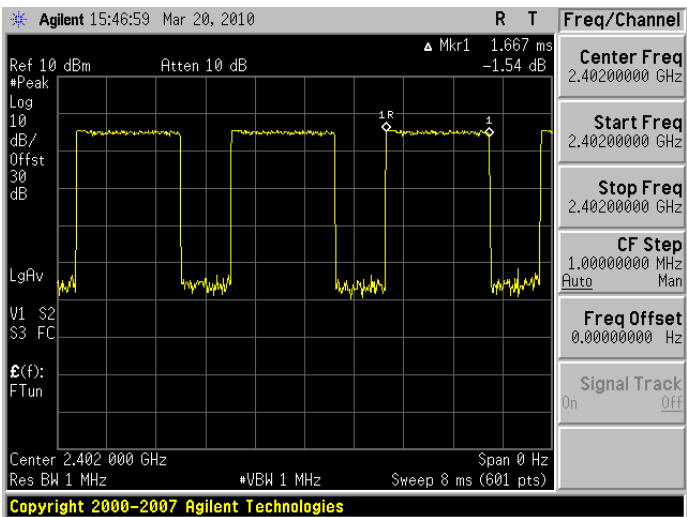


Mode3: 8DPSK Link Mode

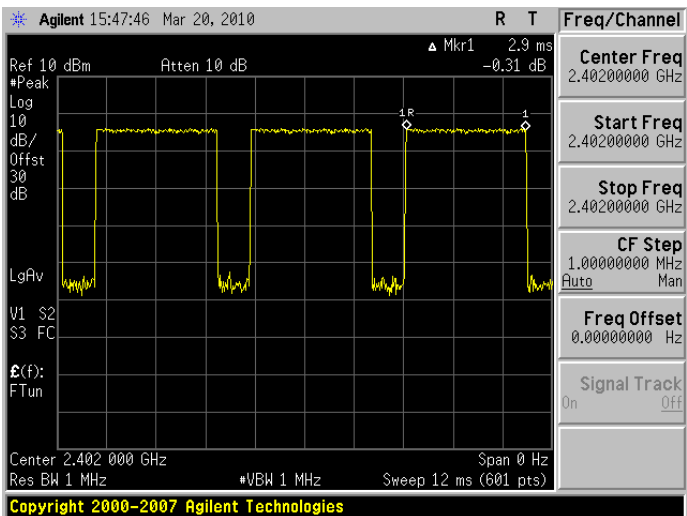
3DH1



3DH3



3DH5

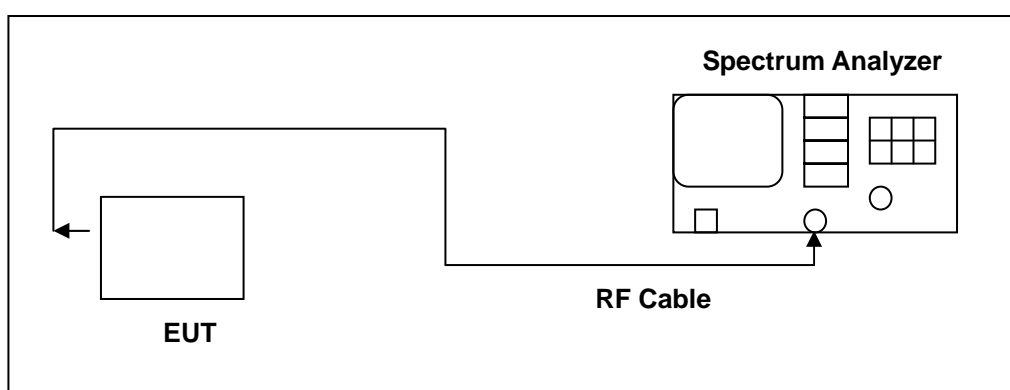


11 Out of Band Conducted Emissions Measurement

11.1. 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

11.2. Test Setup



11.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	⁽²⁾
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

11.4. Test Procedure

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels (Channel 0, 39, 78)

11.5. Test Result

Product	Notebook		
Test Item	Out of Band Conducted		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency (MHz)	Fundamental (dBμV)	Limit (dBμV)	Measurement (dBμV)
2402	104.69	84.69	78.41
2441	102.73	82.73	78.30
2480	102.33	82.33	78.47

Product	Notebook		
Test Item	Out of Band Conducted		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	03/20/2010	Test Site	TE06
Frequency (MHz)	Fundamental (dBμV)	Limit (dBμV)	Measurement (dBμV)
2402	105.39	85.39	78.48
2441	104.61	84.61	77.73
2480	100.99	80.99	77.93

11.6. Test Graphs



Site: : RF Conducted Polarization: Temperature: 22 °C
 Limit: Power: Humidity: 60 %
 EUT: Notebook Distance: 3m RBW: 100 KHz VBW: 100 KHz
 M/N: M2A1
 Mode: 1
 Note: 2402MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2399.065	104.69	0.00	104.69			peak		TX
2		24819.155	78.41	0.00	78.41			peak		

*:Maximum data x:Over limit !:over margin

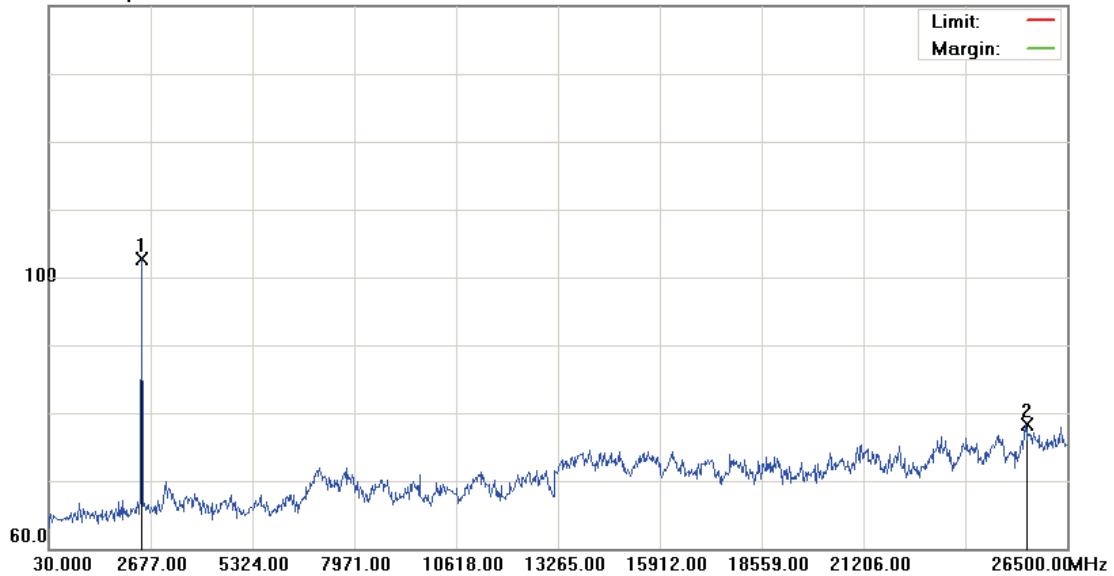
File :M2A1(20db)

Data :#2

Date: 2010/3/20

Time: 下午 04:01:52

140.0 dBuV/m



Site: : RF Conducted

Polarization:

Temperature: 22 °C

Limit:

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 100 KHz VBW: 100 KHz

M/N: M2A1

Mode: 1

Note: 2441MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2438.770	102.73	0.00	102.73			peak		TX
2		25427.965	78.30	0.00	78.30			peak		

*:Maximum data x:Over limit !:over margin

File :M2A1(20db)

Data :#3

Date: 2010/3/20

Time: 下午 04:02:23

140.0 dBuV/m



Site : RF Conducted

Polarization:

Temperature: 22 °C

Limit:

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 100 KHz VBW: 100 KHz

M/N: M2A1

Mode: 1

Note: 2480MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2478.475	102.33	0.00	102.33			peak		TX
2		25414.730	78.47	0.00	78.47			peak		

*:Maximum data x:Over limit !:over margin

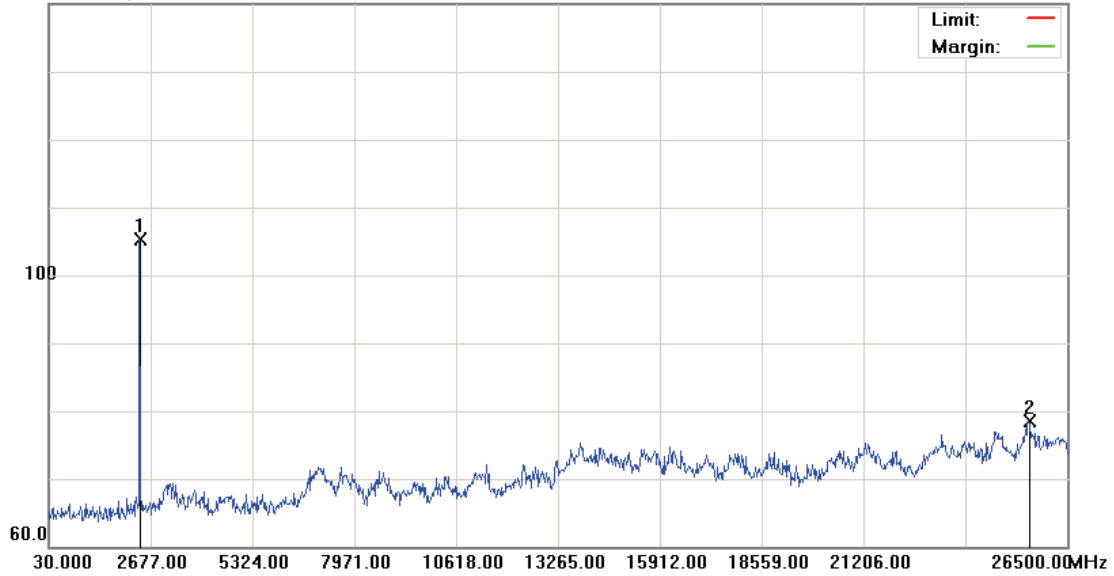
File :M2A1(20db)

Data :#4

Date: 2010/3/20

Time: 下午 04:03:05

140.0 dBuV/m



Site: : RF Conducted

Polarization:

Temperature: 22 °C

Limit:

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 100 KHz VBW: 100 KHz

M/N: M2A1

Mode: 3

Note: 2402MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2399.065	105.39	0.00	105.39			peak		TX
2		25507.375	78.48	0.00	78.48			peak		

*:Maximum data x:Over limit !:over margin

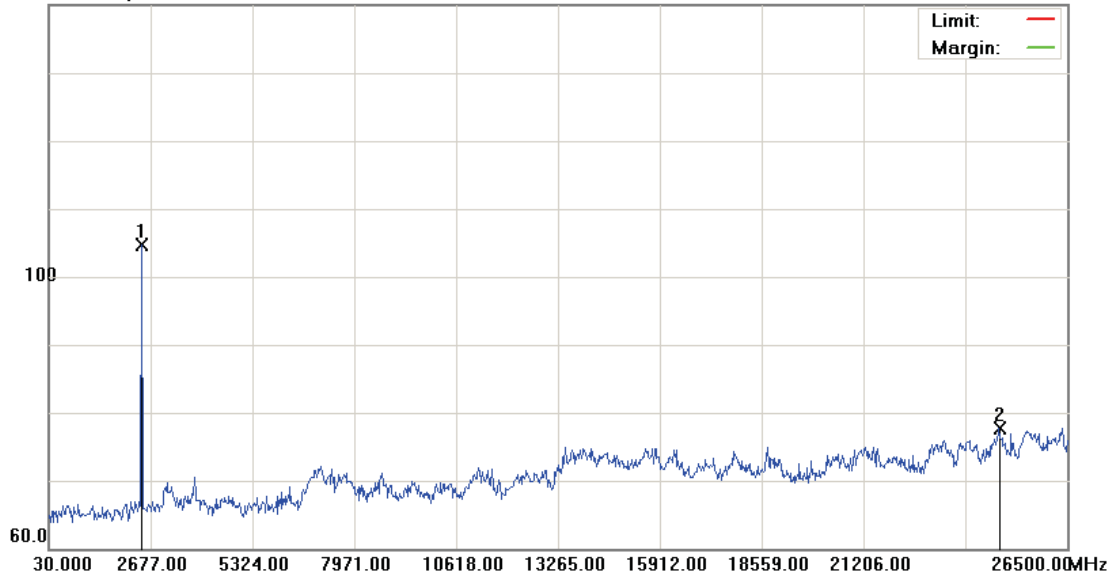
File :M2A1(20db)

Data :#5

Date: 2010/3/20

Time: 下午 04:03:38

140.0 dBuV/m



Site: : RF Conducted

Polarization:

Temperature: 22 °C

Limit:

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 100 KHz VBW: 100 KHz

M/N: M2A1

Mode: 3

Note: 2441MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2438.770	104.61	0.00	104.61			peak		TX
2		24739.745	77.73	0.00	77.73			peak		

*:Maximum data x:Over limit !:over margin

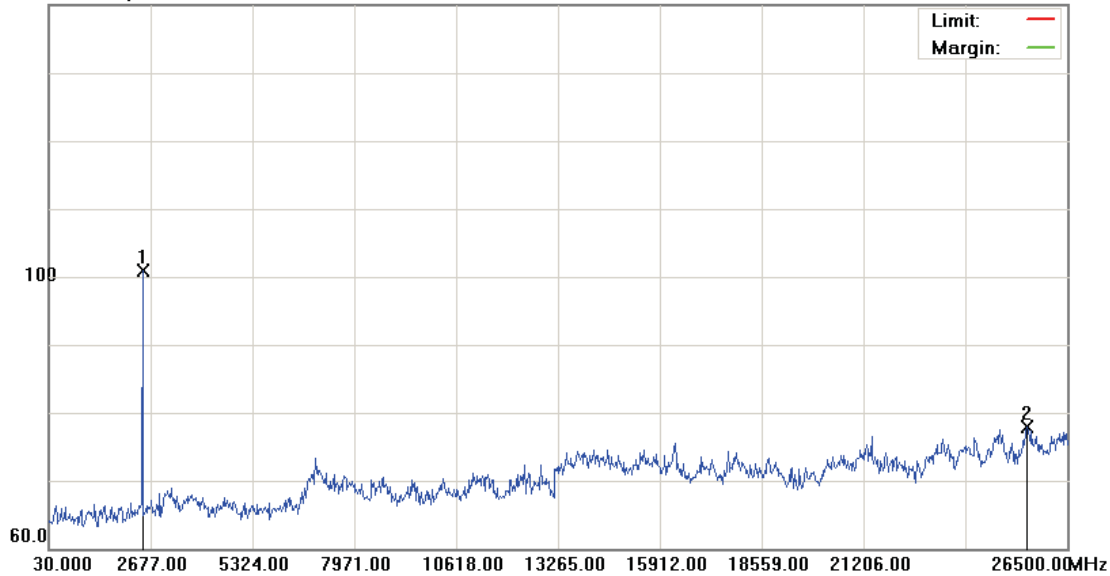
File :M2A1(20db)

Data :#6

Date: 2010/3/20

Time: 下午 04:04:10

140.0 dBuV/m



Site: : RF Conducted

Polarization:

Temperature: 22 °C

Limit:

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 100 KHz VBW: 100 KHz

M/N: M2A1

Mode: 3

Note: 2480MHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	2478.475	100.99	0.00	100.99			peak		TX
2		25454.435	77.93	0.00	77.93			peak		

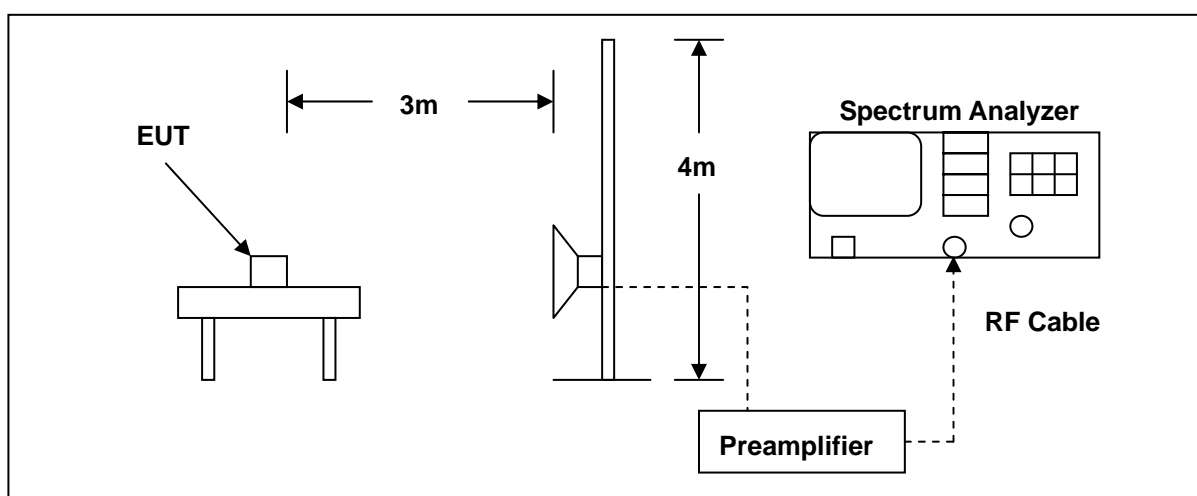
*:Maximum data x:Over limit !:over margin

12 Band Edges Measurement

12.1. 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

12.2. Test Setup



12.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	06/23/2009	(2)
Pre Amplifier	Agilent	8449B	3008A02237	07/01/2009	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9120D	9120D-550	07/01/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: ⁽¹⁾ Calibration period 1 year. ⁽²⁾ Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

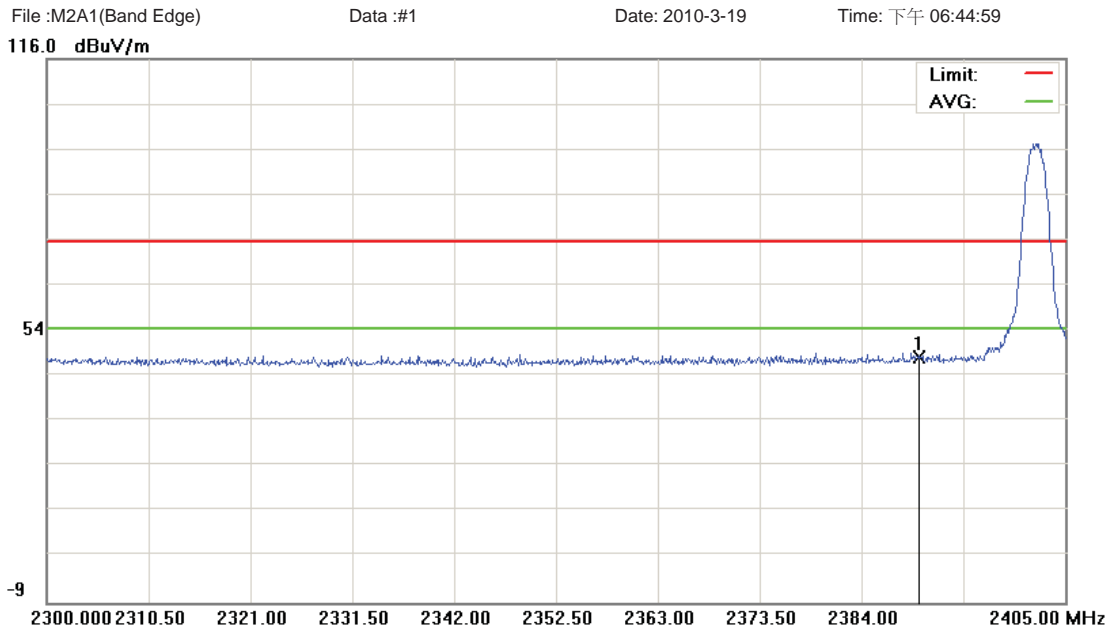
12.4. Test Procedure

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

12.5. Test Graphs



Site: : 966 Chamber	Polarization: <i>Vertical</i>	Temperature: 22 °C
Limit: FCC part 15 (PK)	Power:	Humidity: 60 %
EUT: Notebook	Distance: 3m	RBW: 1000 KHz VBW: 1000 KHz
M/N: M2A1		
Mode: 1		
Note: 2402MHZ		

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	2389.800	47.35	0.19	47.54	74.00	-26.46	peak		

*:Maximum data x:Over limit !:over margin

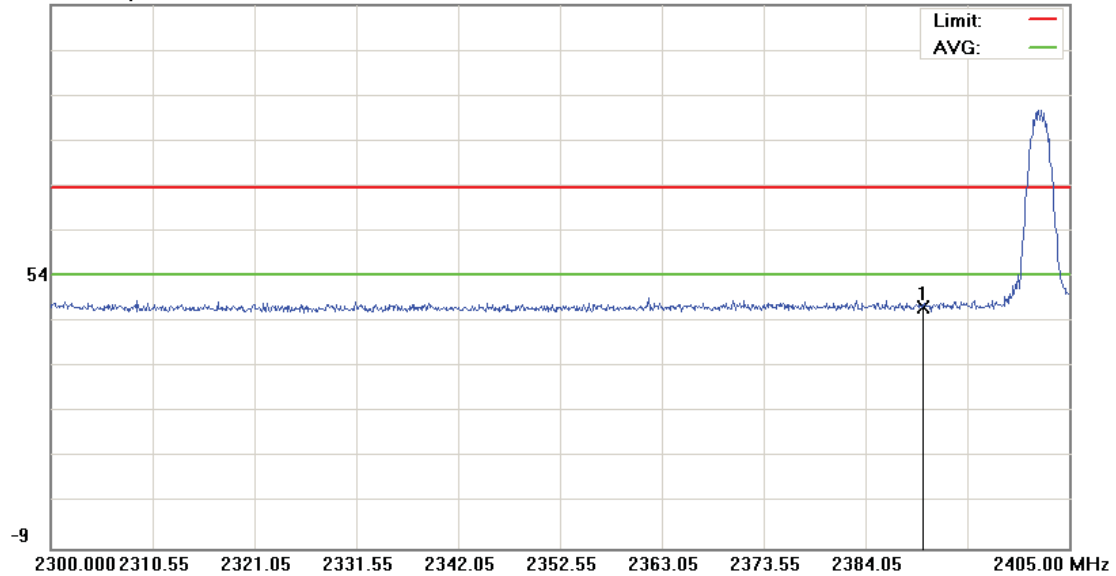
File :M2A1(Band Edge)

Data :#5

Date: 2010-3-19

Time: 下午 06:47:42

116.0 dBuV/m



Site: : 966 Chamber	Polarization: <i>Horizontal</i>	Temperature: 22 °C
Limit: FCC part 15 (PK)	Power:	Humidity: 60 %
EUT: Notebook	Distance: 3m	RBW: 1000 KHz VBW: 1000 KHz
M/N: M2A1		
Mode: 1		
Note: 2402MHZ		

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	2389.800	46.31	0.19	46.50	74.00	-27.50	peak			

*:Maximum data x:Over limit !:over margin

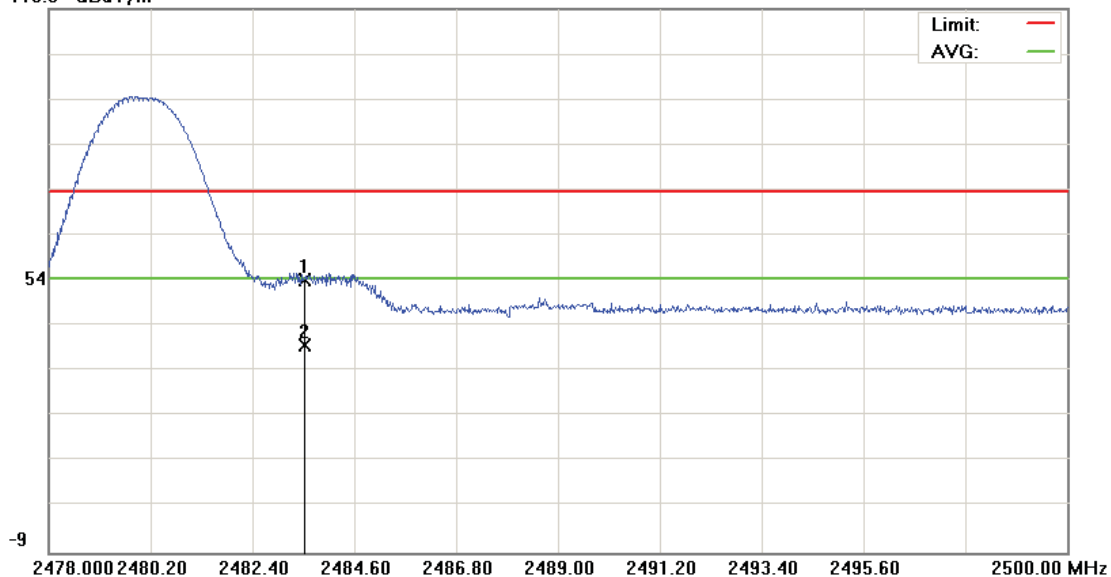
File :M2A1(Band Edge)

Data :#3

Date: 2010-3-19

Time: 下午 07:01:44

116.0 dBuV/m



Site: : 966 Chamber

Limit: FCC part 15 (PK)

EUT: Notebook

M/N: M2A1

Mode: 1

Note: 2480MHZ

Polarization: *Vertical*

Power:

Distance: 3m

Temperature: 22 °C

Humidity: 60 %

RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2483.510	53.47	0.25	53.72	74.00	-20.28	peak			
2	*	2483.510	38.27	0.25	38.52	54.00	-15.48	AVG			

*:Maximum data x:Over limit !:over margin

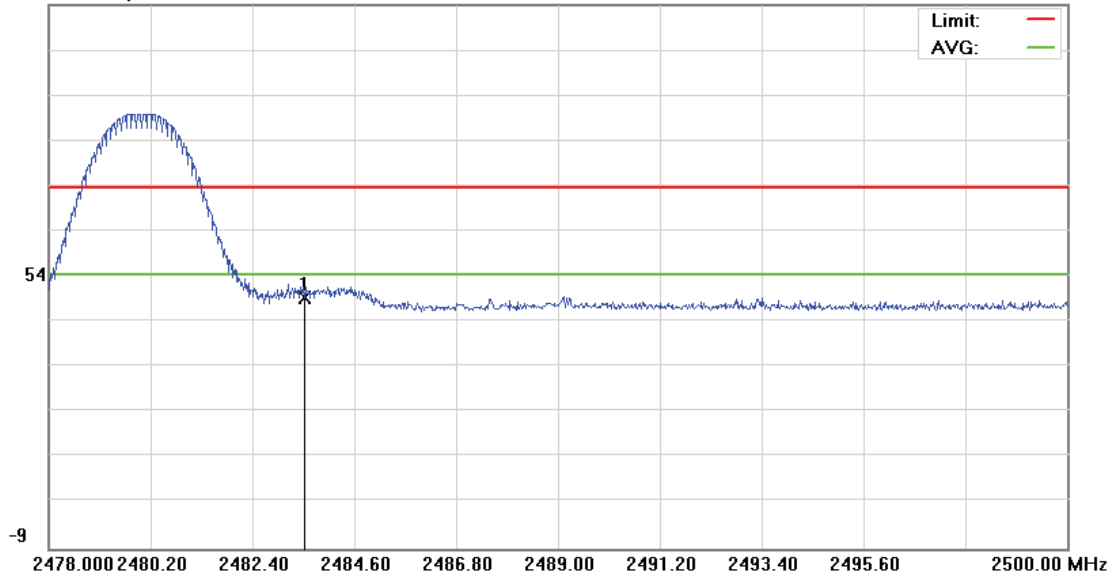
File :M2A1(Band Edge)

Data :#7

Date: 2010-3-19

Time: 下午 07:05:22

116.0 dBuV/m



Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook
M/N: M2A1
Mode: 1
Note: 2480MHZ

Polarization: *Horizontal*
Power:
Distance: 3m
Temperature: 22 °C
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	2483.510	48.51	0.25	48.76	74.00	-25.24	peak		

*:Maximum data x:Over limit !:over margin

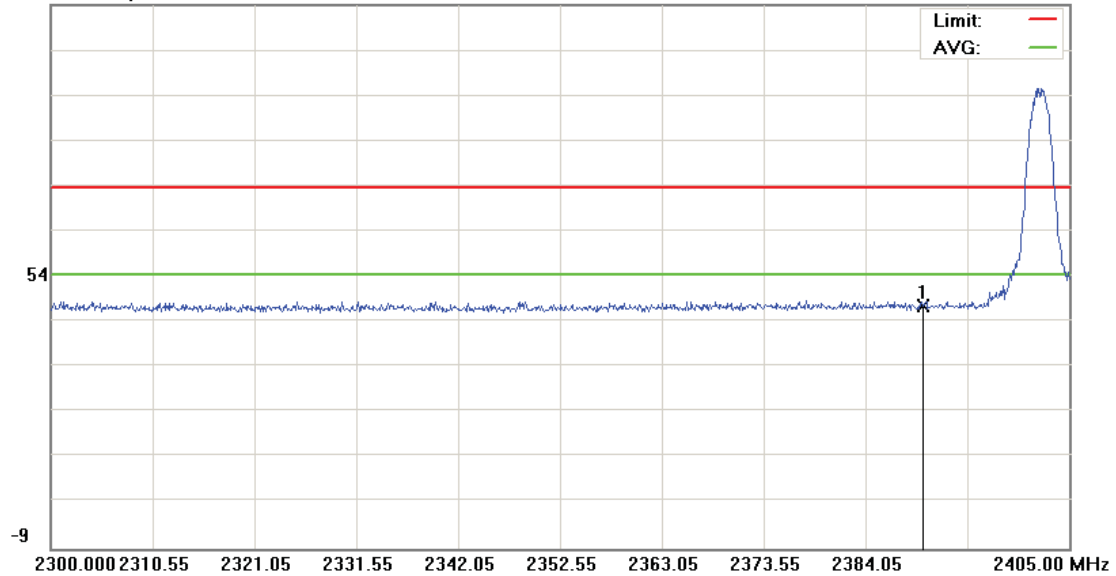
File :M2A1(Band Edge+EDR)

Data :#1

Date: 2010-3-19

Time: 下午 07:22:03

116.0 dBuV/m



Site: : 966 Chamber	Polarization: Vertical	Temperature: 22 °C
Limit: FCC part 15 (PK)	Power:	Humidity: 60 %
EUT: Notebook	Distance: 3m	RBW: 1000 KHz VBW: 1000 KHz
M/N: M2A1		
Mode: 3		
Note: 2402MHZ		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	2389.800	46.72	0.19	46.91	74.00	-27.09	peak		

*:Maximum data x:Over limit !:over margin

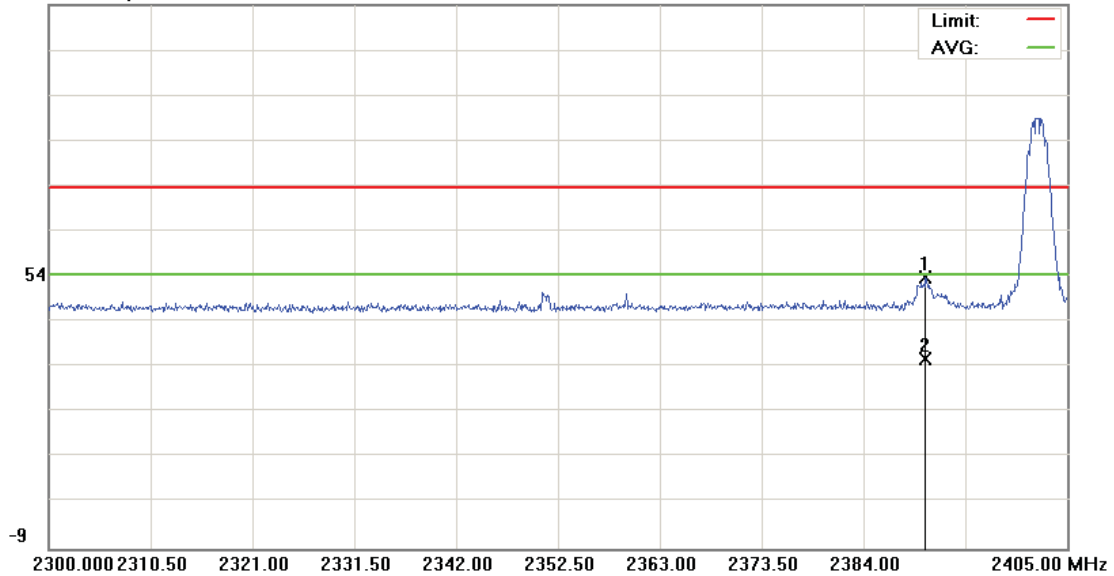
File :M2A1(Band Edge+EDR)

Data :#5

Date: 2010-3-19

Time: 下午 07:24:08

116.0 dBuV/m



Site: : 966 Chamber

Polarization: *Horizontal*

Temperature: 22 °C

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 3

Note: 2402MHZ

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		2390.405	53.07	0.19	53.26	74.00	-20.74	peak		
2	*	2390.405	34.52	0.19	34.71	54.00	-19.29	AVG		

*:Maximum data x:Over limit !:over margin

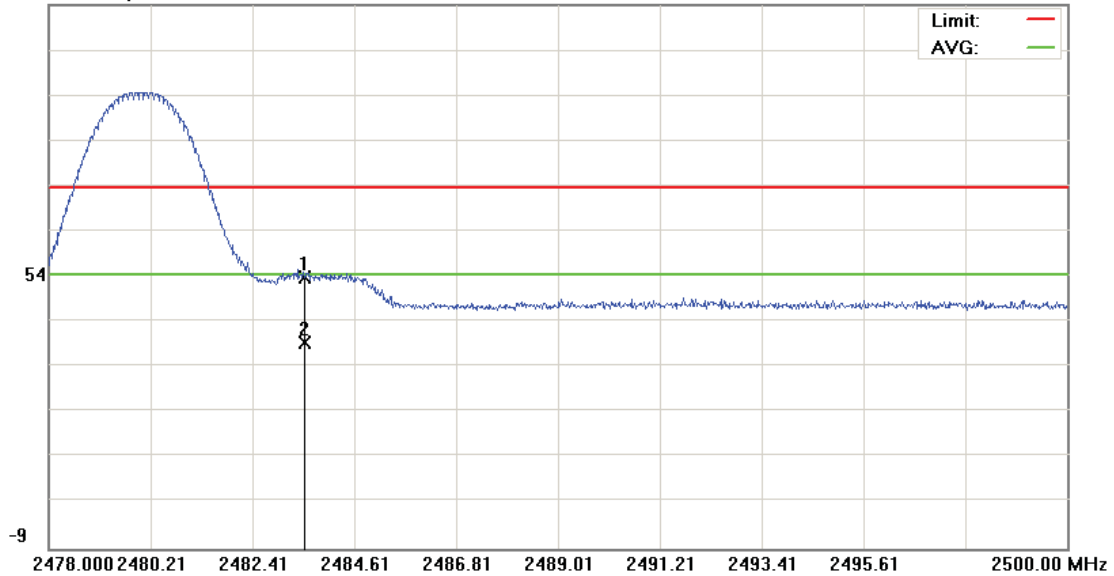
File :M2A1(Band Edge+EDR)

Data :#3

Date: 2010-3-19

Time: 下午 07:28:53

116.0 dBuV/m



Site: : 966 Chamber

Polarization: *Vertical*

Temperature: 22 °C

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 3

Note: 2480MHZ

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2483.510	53.21	0.25	53.46	74.00	-20.54	peak			
2	*	2483.510	37.97	0.25	38.22	54.00	-15.78	AVG			

*:Maximum data x:Over limit !:over margin

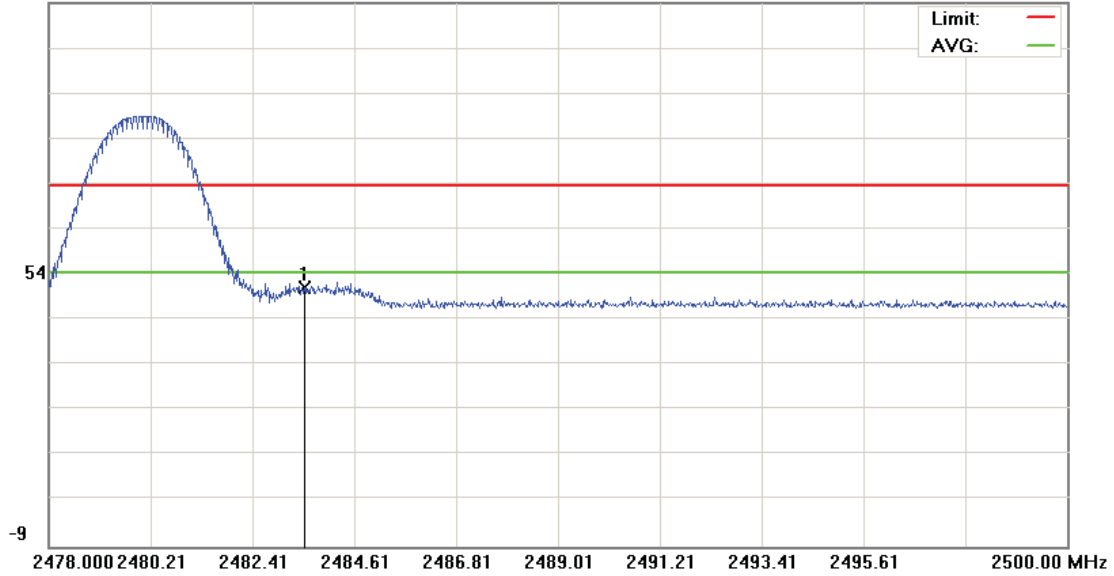
File :M2A1(Band Edge+EDR)

Data :#7

Date: 2010-3-19

Time: 下午 07:33:40

116.0 dBuV/m



Site: : 966 Chamber

Polarization: *Horizontal*

Temperature: 22 °C

Limit: FCC part 15 (PK)

Power:

Humidity: 60 %

EUT: Notebook

Distance: 3m

RBW: 1000 KHz VBW: 1000 KHz

M/N: M2A1

Mode: 3

Note: 2480MHZ

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1	*	2483.510	50.15	0.25	50.40	74.00	-23.60	peak		

*:Maximum data x:Over limit !:over margin

13 Antenna Measurement

13.1. Limit

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

13.2. Antenna Connector Construction

The antenna used in this product is **PIFA antenna**. And the maximum Gain of this antenna is only **-4.67 dBi**.