FCC RF Test Report

APPLICANT	:	**Commtiva Technology Taiwan Limited**
EQUIPMENT	:	**Smart phone**
BRAND NAME	:	**Commtiva**
MODEL NAME	:	**F800**
FCC ID	:	**X7H-F800**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**Digital Spread Spectrum (DSS)**

The product was received on Aug. 19, 2009 and completely tested on Apr. 09, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

Roy Wu / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR020335B	Rev. 01	Initial issue of report	Apr. 21, 2010

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	A8.4(2)	Number of Channels	≥ 15Chs	Pass	
3.2	15.247(a)(1)	A8.1(a)	20dB Bandwidth	NA	Pass	-
3.3	15.247(a)(1)	A8.1(b)	Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.4	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.5	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 1W	Pass	-
3.6	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.7	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 8.6 dB at 0.262 MHz
3.8	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 3.35 dB at 2483.50 MHz
3.9	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Commtiva Technology Taiwan Limited
4F., No.408, RueiGuang Rd., NeiHu District, Taipei 114, Taiwan

1.2 Manufacturer

Chi Mei Communication Systems, Inc.
No. 4, Mingsheng Street, Tucheng City, Taipei County 23678, Taiwan

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Smart phone
Brand Name	Commtiva
Model Name	F800
FCC ID	X7H-F800
Tx/Rx Frequency Range	2400 MHz ~ 2483.5 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Channel Spacing	1 MHz
Maximum Output Power to Antenna	Bluetooth (1Mbps) : -0.86 dBm (0.82 mW) Bluetooth EDR (2Mbps) : -0.91 dBm (0.81 mW) Bluetooth EDR (3Mbps) : -1.17 dBm (0.76 mW)
Antenna Type	PIFA Antenna with gain -2.42 dBi
HW Version	PR1
SW Version	0.38J
Type of Modulation	Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : π /4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Spread Spectrum (DSS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
4. For accessories equipped with this EUT, please refer to the appendix of the external photo.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07-HY	TW1022/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC Public Notice DA 00-705
- ANSI C63.4-2003
- IC RSS-210 Issue 7

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Base Station	Anritus	8852B	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
4.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
5.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
6.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
7.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
8.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
9.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A

2 Test Configuration of Equipment Under Test

2.1 RF Output Power

Preliminary tests were performed in different data rate and recorded the RF output power in the following table:

Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	π /4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	-1.44 dBm	-1.43 dBm	-1.54 dBm
Ch39	2441MHz	**-0.86 dBm**	-0.91 dBm	-1.17 dBm
Ch78	2480MHz	-0.90 dBm	-1.09 dBm	-1.66 dBm

Remark:

1. The data rate was set in 1Mbps for all the test items due to the highest RF output power.

2. The EUT is programmed to transmit signals continuously for all testing.

2.2 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

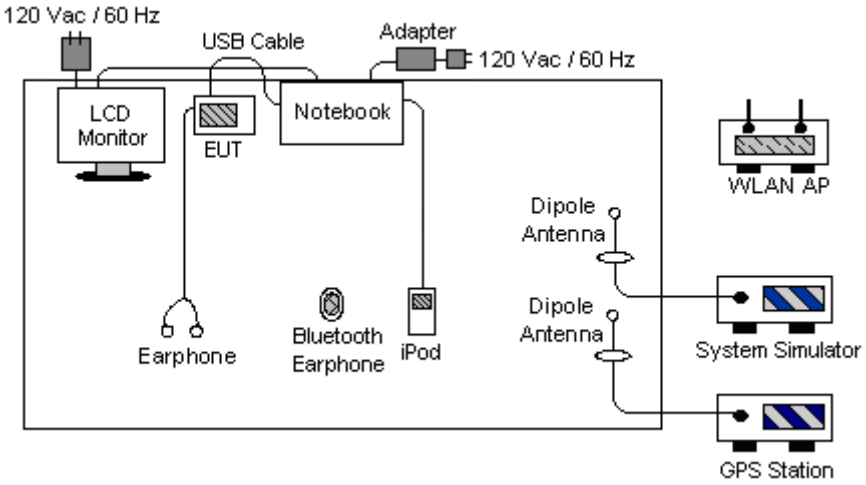
Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases and recorded in this report.

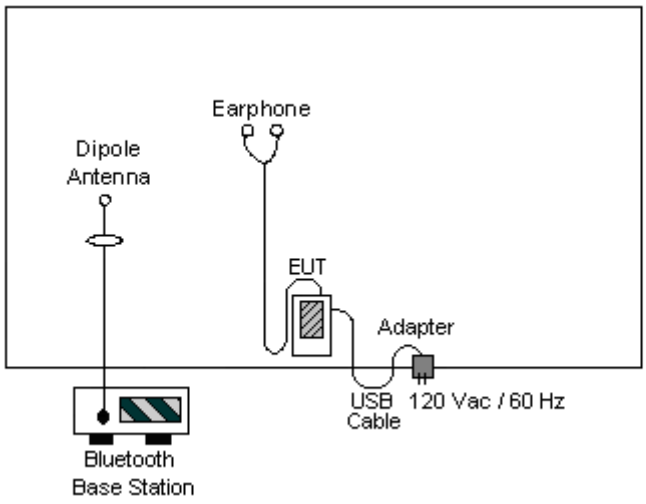
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π /4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Mode 1: CH00_2402 MHz + Earphone 1 Mode 2: CH39_2441 MHz + Earphone 1 Mode 3: CH78_2480 MHz + Earphone 1 Mode 4: CH78_2480 MHz + Earphone 2	N/A	N/A
AC Conducted Emission	Mode 1 : Bluetooth Link + WLAN Link + GPS Rx + Earphone 1 + Camera + USB Cable (Link with Notebook)		
Remark: For radiated TCs, the data rate was set in 1Mbps due to the highest RF output power; only the data of these modes was reported.			

2.3 Connection Diagram of Test System

<Conducted Emission>



<Radiated Emission>



2.4 RF Utility

Key in "＊＃＊＃372＃＊＃＊" on the EUT directly in order to make the EUT into the engineering modes to contact with BT base station for transmitting and receiving signals continuously.

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

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

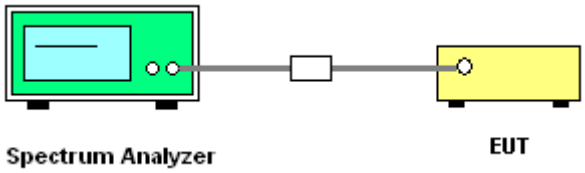
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The modulation types of EUT are irrelevant to number of hopping channels deviation.
4. 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.
5. The number of hopping frequency used is defined as the device has the numbers of total channel.

3.1.4 Test Setup

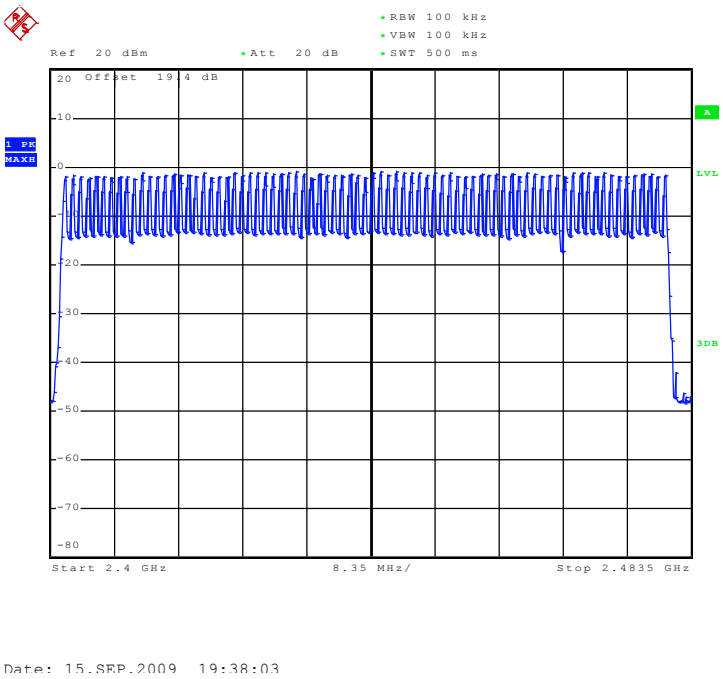


3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	Mode 1~3	Temperature :	26.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Number of Hopping Channels (Channel)	Limits (Channel)	Pass/Fail
79	> 15	Pass

Number of Hopping Channel Plot on Channel 00 - 78



3.2 20dB Bandwidth Measurement

3.2.1 Limit of 20dB Bandwidth

N/A

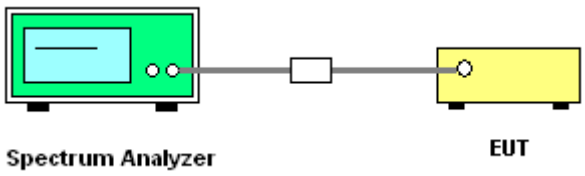
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel;
   RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
5. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

3.2.4 Test Setup

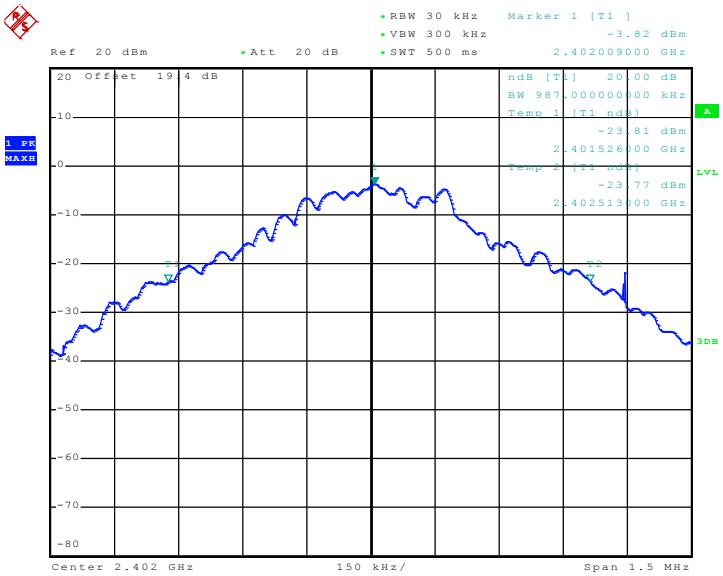


3.2.5 Test Result of 20dB Bandwidth

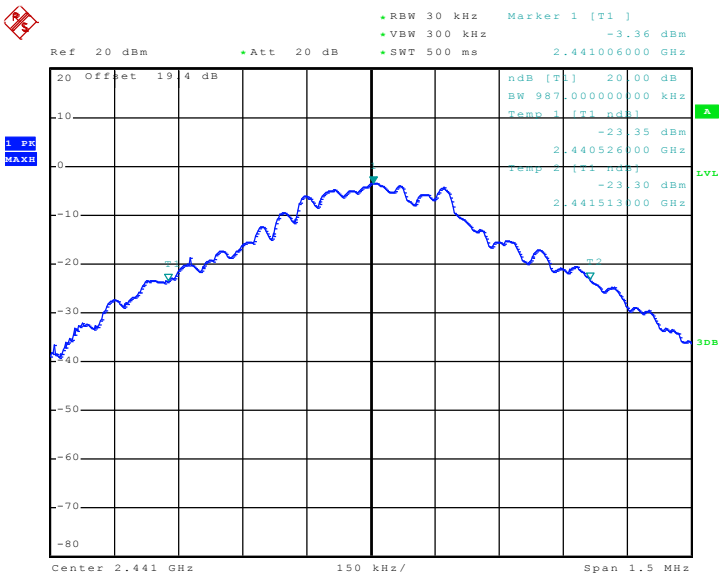
Test Mode :	Mode 1, 2, 3	Temperature :	26.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.987
39	2441	0.987
78	2480	0.987

20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 39



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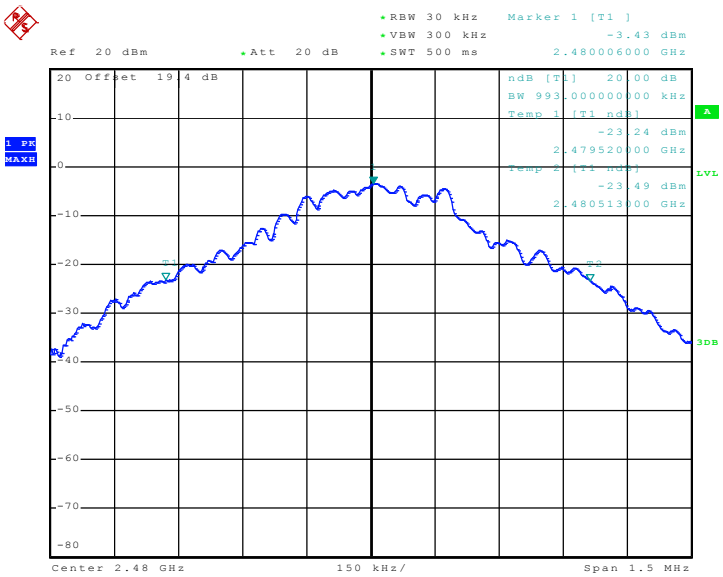
20 dB Bandwidth Plot on Channel 78



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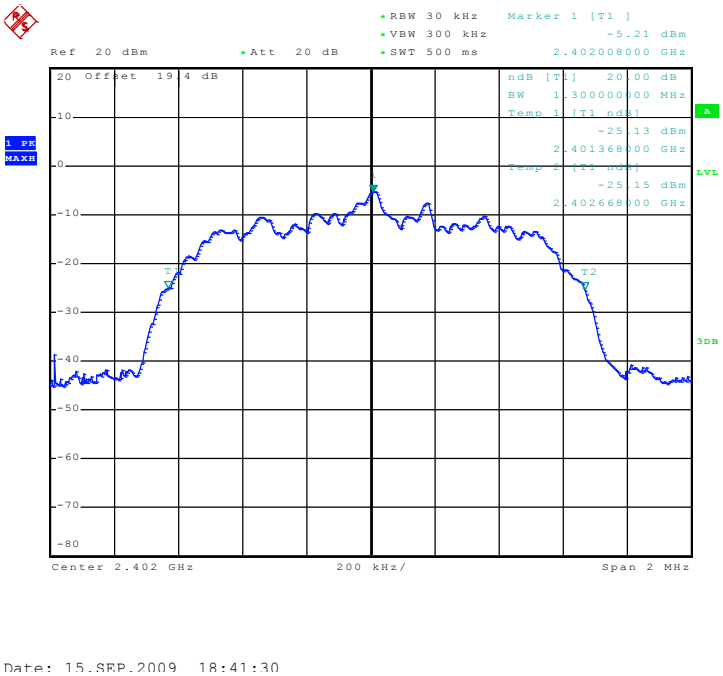
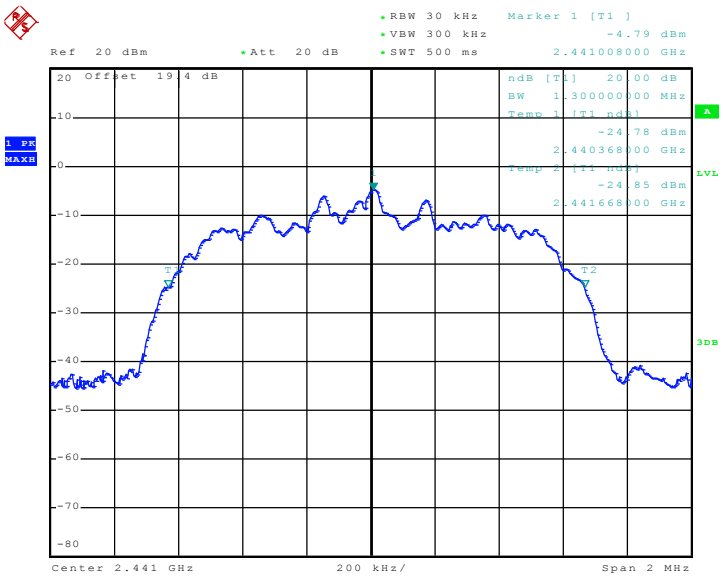
Test Mode :	Mode 4, 5, 6	Temperature :	26.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.300
39	2441	1.300
78	2480	1.304

20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 39



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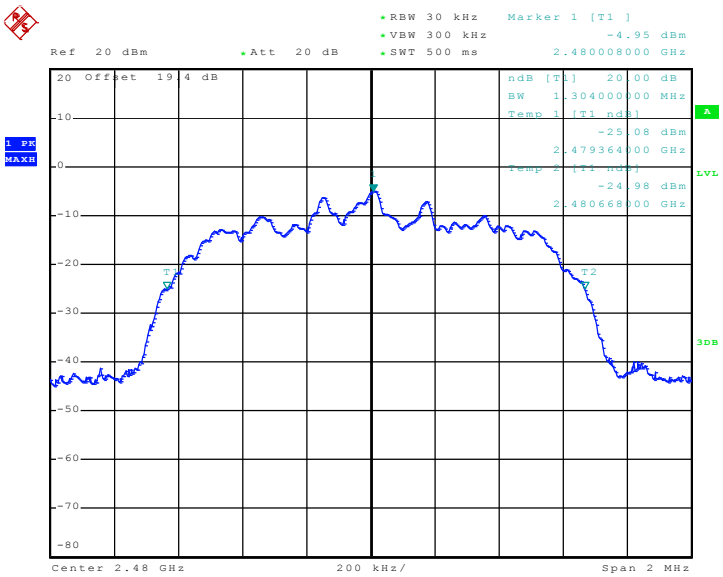
20 dB Bandwidth Plot on Channel 78



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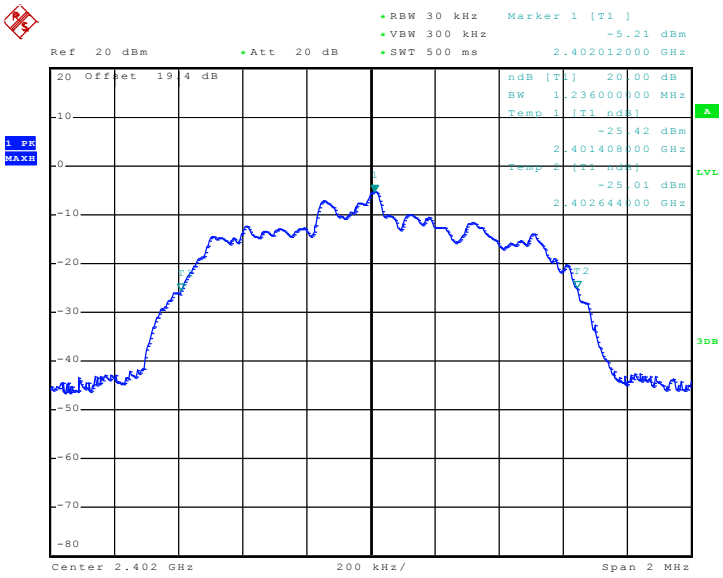
Test Mode :	Mode 7, 8, 9	Temperature :	26.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.236
39	2441	1.236
78	2480	1.240

20 dB Bandwidth Plot on Channel 00



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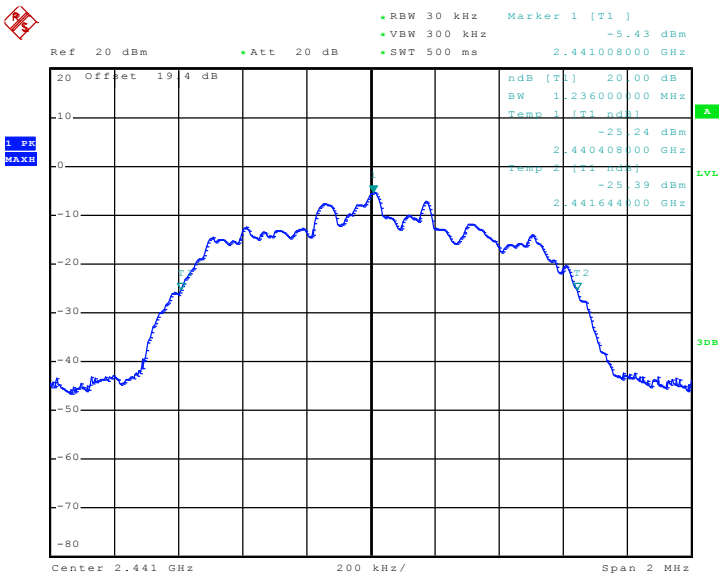
20 dB Bandwidth Plot on Channel 39



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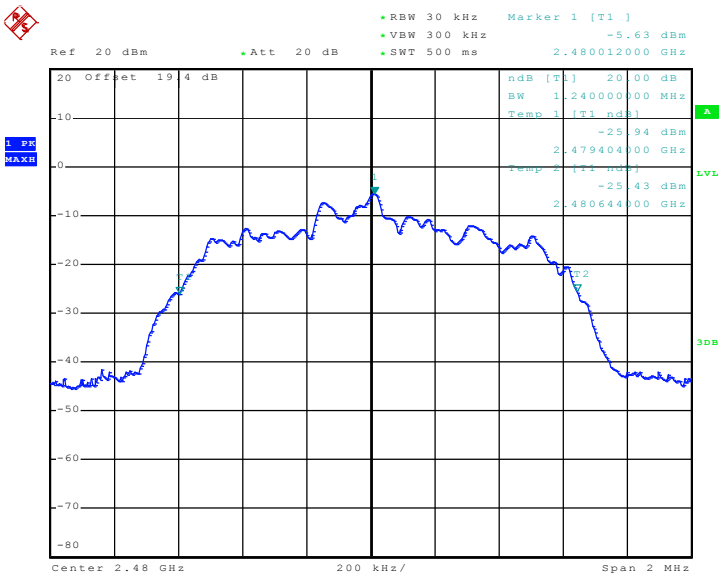
20 dB Bandwidth Plot on Channel 78



Date: 15.SEP.2009 18:42:28

3.3 Hopping Channel Separation Measurement

3.3.1 Limit of Hopping Channel Separation

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.

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. Please refer FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels; RBW ≥ 1% of the span; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

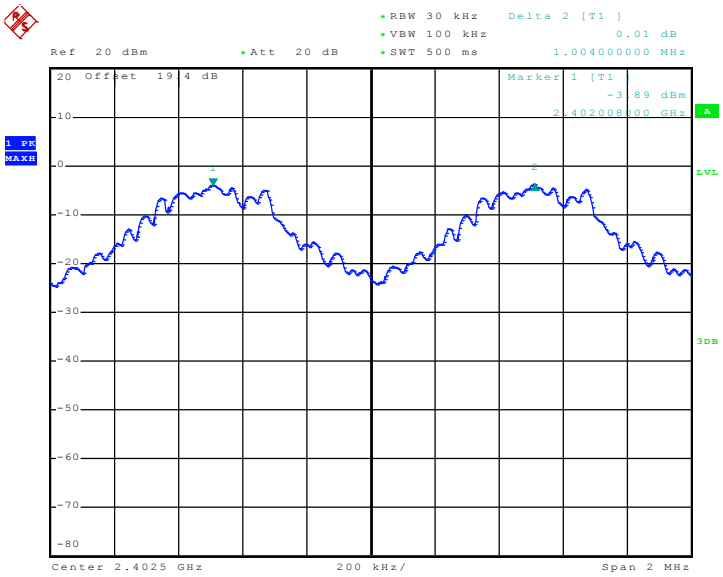
3.3.4 Test Setup

3.3.5 Test Result of Hopping Channel Separation

Test Mode :	Mode 1, 2, 3	Temperature :	26.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	50%

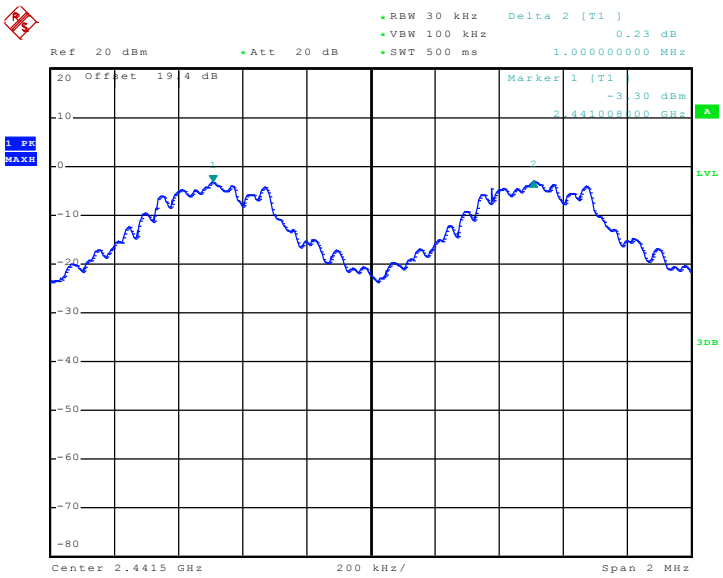
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.004	0.658	Pass
39	2441	1.000	0.658	Pass
78	2480	1.000	0.662	Pass

Channel Separation Plot on Channel 00 - 01



Date: 15.SEP.2009 18:47:27

Channel Separation Plot on Channel 39 - 40



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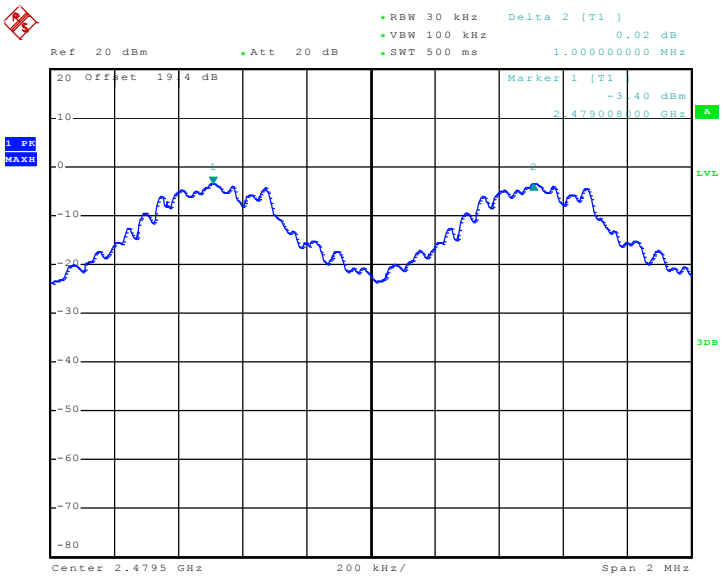
Channel Separation Plot on Channel 77 - 78



Date: 15.SEP.2009 19:13:18

3.4 Dwell Time Measurement

3.4.1 Limit of Dwell Time

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.

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
5. Use the marker-delta function to calculate the dwell time.

3.4.4 Test Setup

3.4.5 Test Result of Dwell Time

Test Mode :	Mode 2	**Temperature :**	26.4℃
Test Engineer :	Ken Hsu	**Relative Humidity :**	50%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
DH5	3.50	2940.00	0.33	0.4	Pass

Remark:

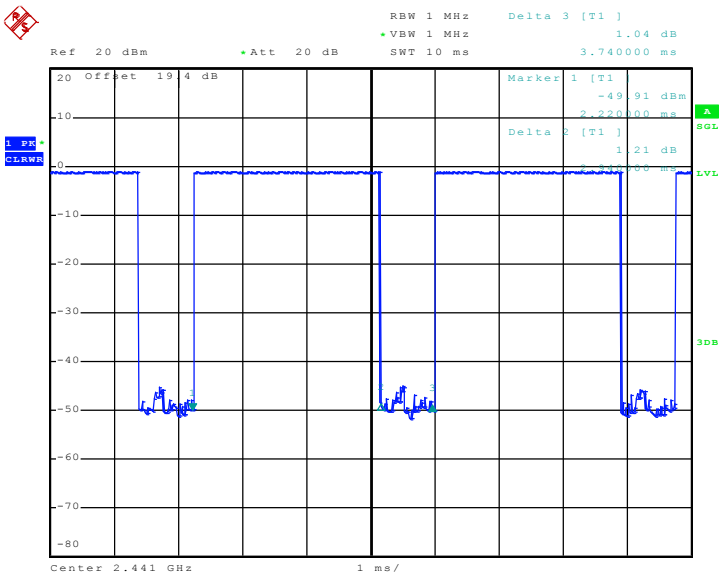
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time

2. 79 channels come from the Hopping Channel number.

3. Average Hopping Channel = hops/sweep time

4. t: Package Transfer Time(us)

DH5 Dwell Time (One Pulse) Plot on Channel 39



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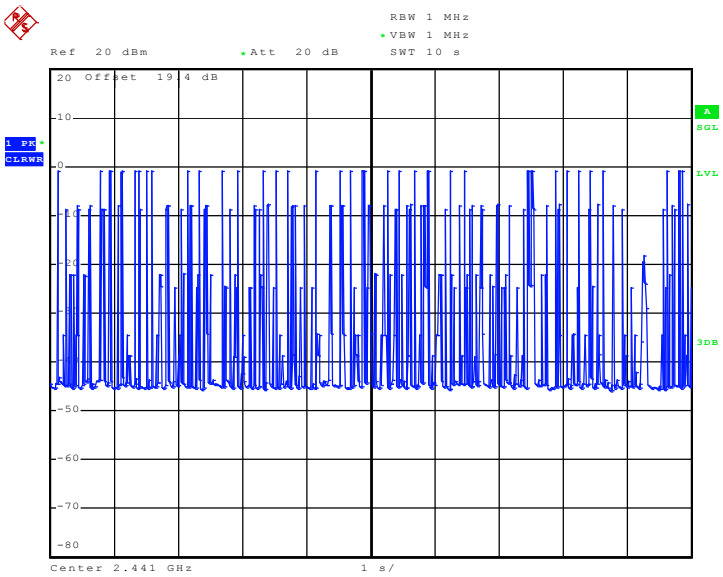
DH5 Dwell Time (Count Pulses) Plot on Channel 39



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3.5 Peak Output Power Measurement

3.5.1 Limit of Peak Output Power

Frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1W (30 dBm).

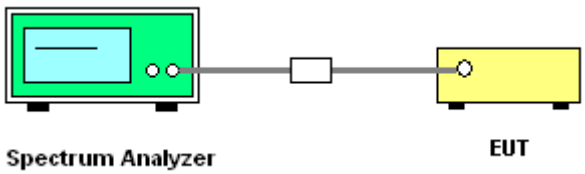
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.

3.5.4 Test Setup

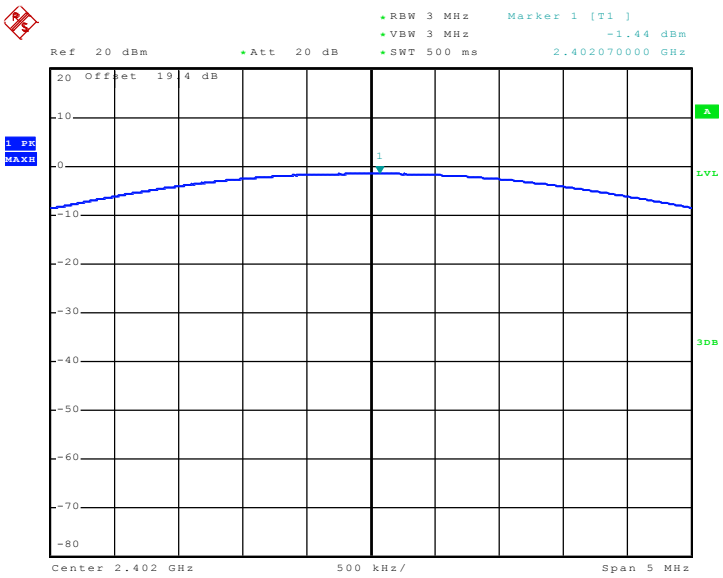


3.5.5 Test Result of Peak Output Power

Test Mode :	Mode 1, 2, 3	Temperature :	26.4℃
Test Engineer :	Ken Hsu	Relative Humidity :	50%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	-1.44	30	Pass
39	2441	-0.86	30	Pass
78	2480	-0.90	30	Pass

Peak Output Power Plot on Channel 00



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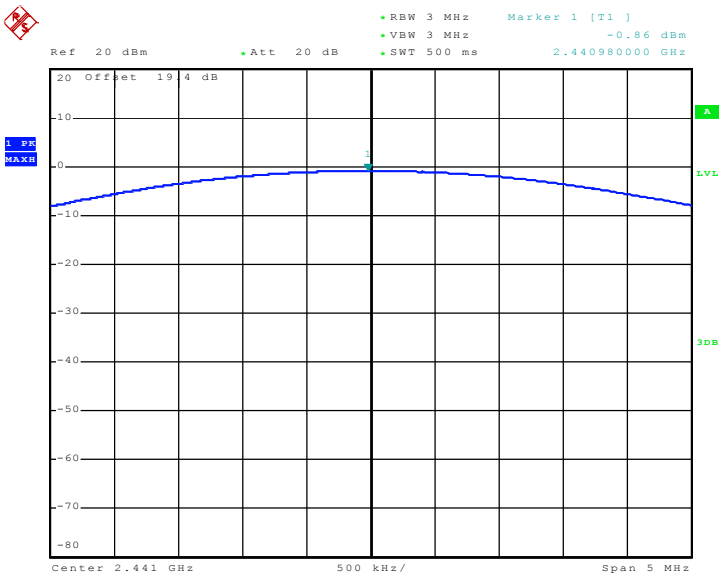
Peak Output Power Plot on Channel 39



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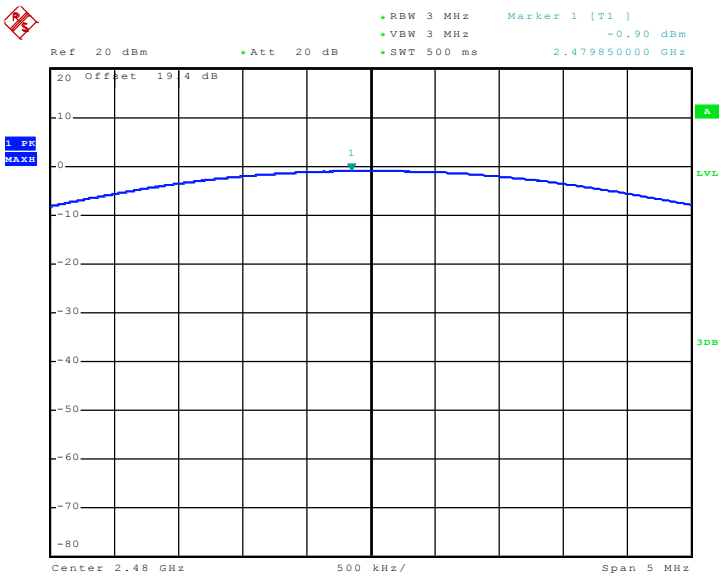
Peak Output Power Plot on Channel 78



3.6 Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 1MHz, Video bandwidth (VBW) ≥ RBW. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 1MHz RBW. Note: If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Applies to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 1MHz, Sweep: Auto for Peak; set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto for Average. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation. See FCC Section 15.35(b) and (c).
4. In case the emission is fail due to the used RBW / VBW is too wide, marker-delta method of FCC Public Notice DA 00-705 will be followed.

3.6.4 Test Setup

3.6.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	00	Relative Humidity :	46~47%
		Test Engineer :	Kai Wang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2369.66	47.33	-26.67	74.00	44.13	32.11	5.47	34.38	103	11	Peak
2369.66	38.33	-15.67	54.00	35.13	32.11	5.47	34.38	103	11	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2369.66	46.06	-27.94	74.00	42.86	32.11	5.47	34.38	163	212	Peak
2369.66	34.22	-19.78	54.00	31.02	32.11	5.47	34.38	163	212	Average

Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~50%
		Test Engineer :	Ivan Jiang

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	65.01	-8.99	74.00	61.55	32.27	5.38	34.19	100	18	Peak
2483.50	50.65	-3.35	54.00	47.19	32.27	5.38	34.19	100	18	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	65.53	-8.47	74.00	62.07	32.27	5.38	34.19	106	330	Peak
2483.50	49.16	-4.84	54.00	45.7	32.27	5.38	34.19	106	330	Average

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~50%
		Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	63.29	-10.71	74.00	59.82	32.27	5.38	34.19	100	360	Peak
2483.50	29.10	-24.90	54.00	25.63	32.27	5.38	34.19	100	360	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBµV/m)	Delta Result (dB)	Average Result (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
Single Carrier Mode	84.38	56.23	28.15	54	-25.85	Pass
Hopping Mode	84.38	55.28	29.10	54	-24.90	Pass

Note : Average result = Maximum field strength – Delta result

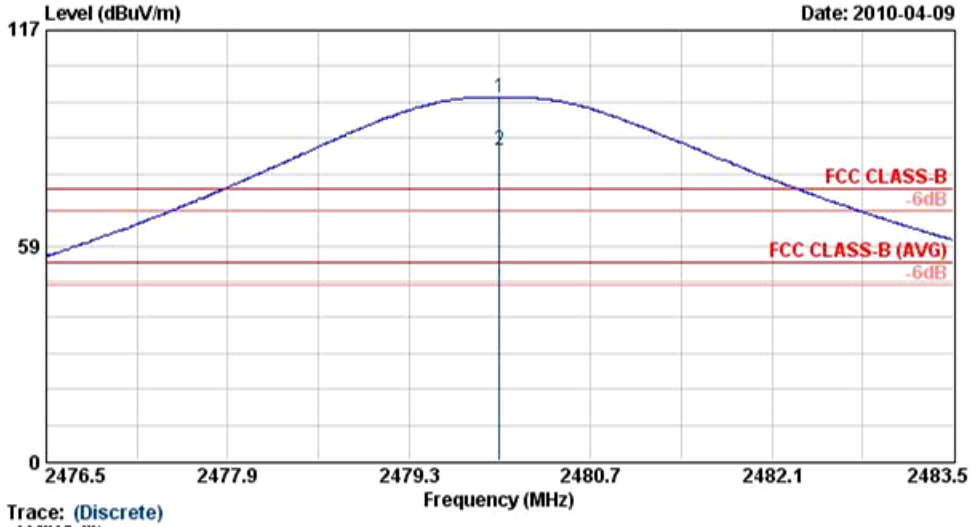
ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	61.62	-12.38	74.00	58.15	32.27	5.38	34.19	105	0	Peak
2483.50	28.80	-25.20	54.00	25.33	32.27	5.38	34.19	105	0	Average

Summary results of marker-delta method:

Test mode	Maximum field strength of the fundamental emission (dBµV/m)	Delta Result (dB)	Average Result (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
Single Carrier Mode	82.93	54.64	28.29	54	-25.71	Pass
Hopping Mode	82.93	54.13	28.80	54	-25.20	Pass

Note : Average result = Maximum field strength – Delta result

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal

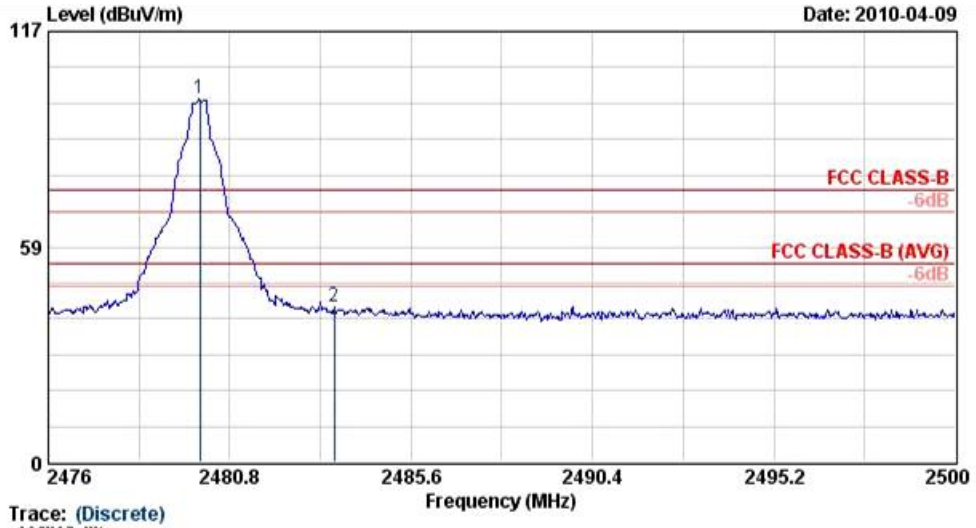


Site : 03CH07-HY
Condition : FCC CLASS-B HF-ANT_090824 HORIZONTAL
Project : FR 981906-09
Mode : Mode 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	98.76	24.76	74.00	95.30	32.27	5.38	34.19	100	360	Peak
2 @	2480.00	84.38	30.38	54.00	80.91	32.27	5.38	34.19	100	360	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal

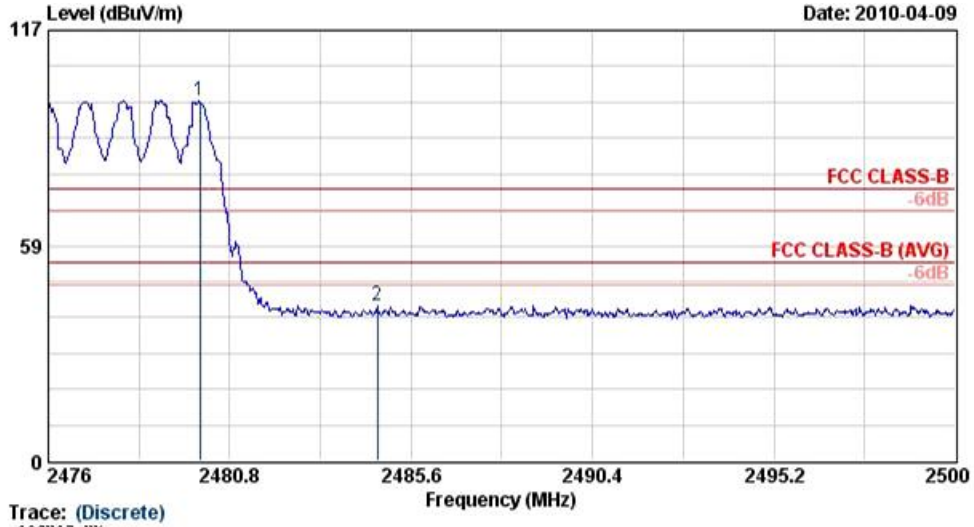


Site : 03CH07-HY
Condition : FCC CLASS-B HF-ANT_090824 HORIZONTAL
Project : FR 981906-09
Mode : Mode 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	98.52	24.52	74.00	95.05	32.27	5.38	34.19	100	360	Peak
2	2483.56	42.29	-31.71	74.00	38.83	32.27	5.38	34.19	100	360	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 56.23 dB , single carrier Mode

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal



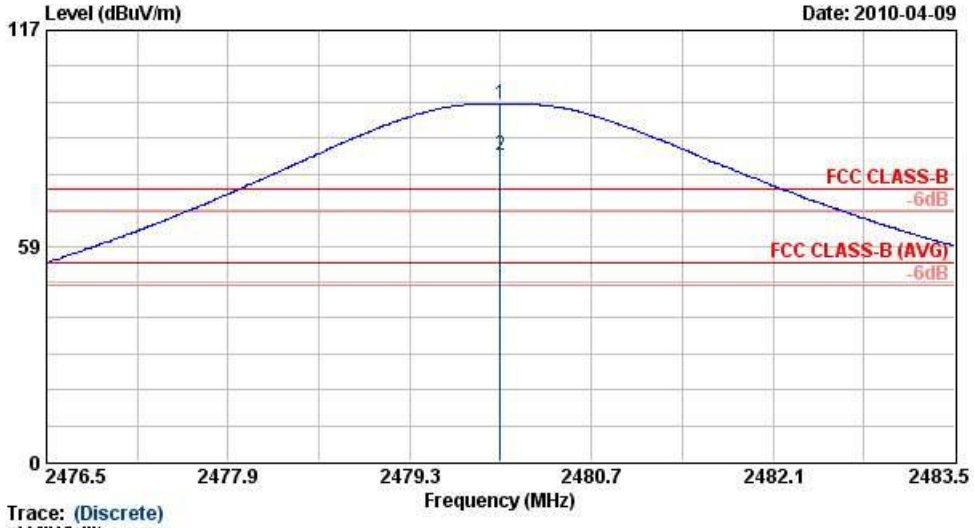
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B HF-ANT_090824 HORIZONTAL
Project : FR 981906-09
Mode : Mode 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	97.69	23.69	74.00	94.22	32.27	5.38	34.19	100	360	Peak
2	2484.71	42.41	-31.59	74.00	38.94	32.27	5.38	34.19	100	360	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 55.28 dB , Hopping Mode

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical



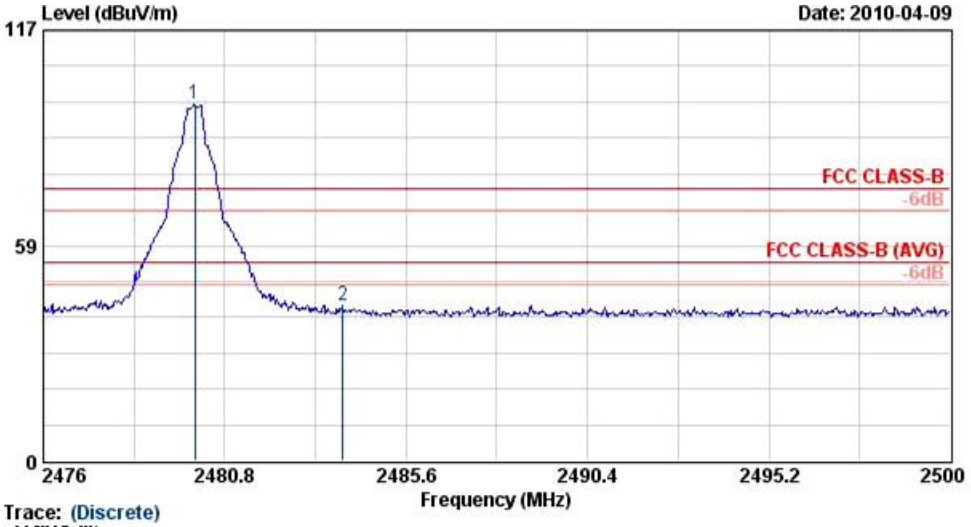
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B HF-ANT_090824 VERTICAL
Project : FR 981906-09
Mode : Mode 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	97.05	23.05	74.00	93.58	32.27	5.38	34.19	105	0	Peak
2 @	2480.00	82.93	28.93	54.00	79.46	32.27	5.38	34.19	105	0	Average

* Maximum field strength of the fundamental emission

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical



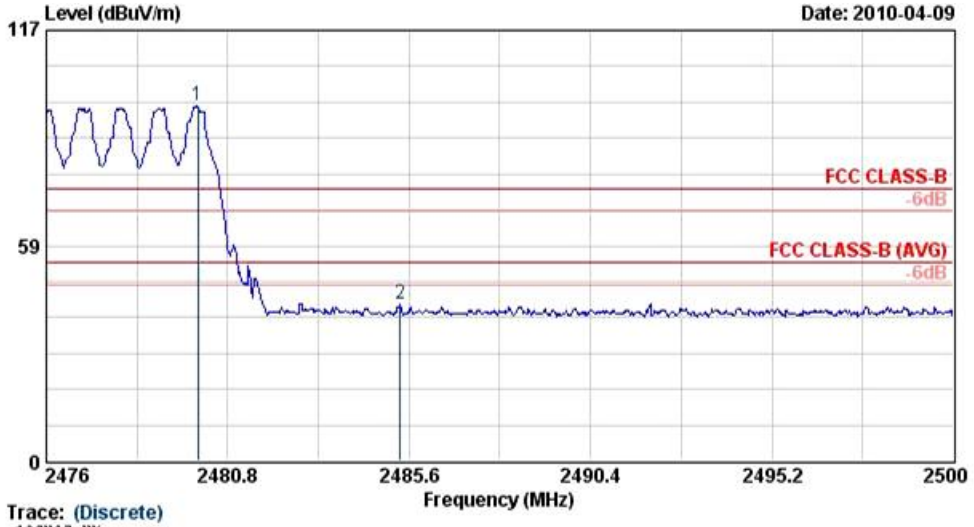
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B HF-ANT_090824 VERTICAL
Project : FR 981906-09
Mode : Mode 11

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	96.81	22.81	74.00	93.35	32.27	5.38	34.19	105	0	Peak
2	2483.92	42.17	-31.83	74.00	38.70	32.27	5.38	34.19	105	0	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 54.64 dB , single carrier Mode

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical



Site : 03CH07-HY
Condition : FCC CLASS-B HF-ANT_090824 VERTICAL
Project : FR 981906-09
Mode : Mode 11

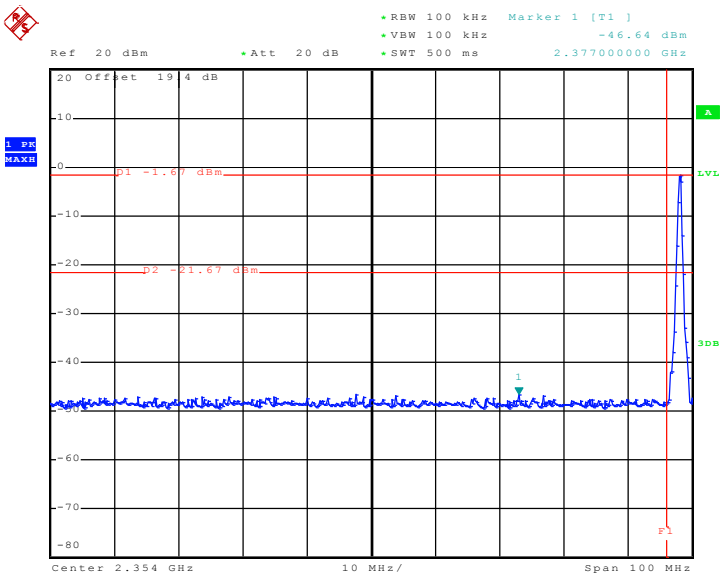
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	2480.00	96.65	22.65	74.00	93.19	32.27	5.38	34.19	105	0	Peak
2	2485.36	42.52	-31.48	74.00	39.06	32.27	5.38	34.19	105	0	Peak

* Marker-Delta Method (RBW/VBW=100KHz): 54.13 dB , Hopping Mode

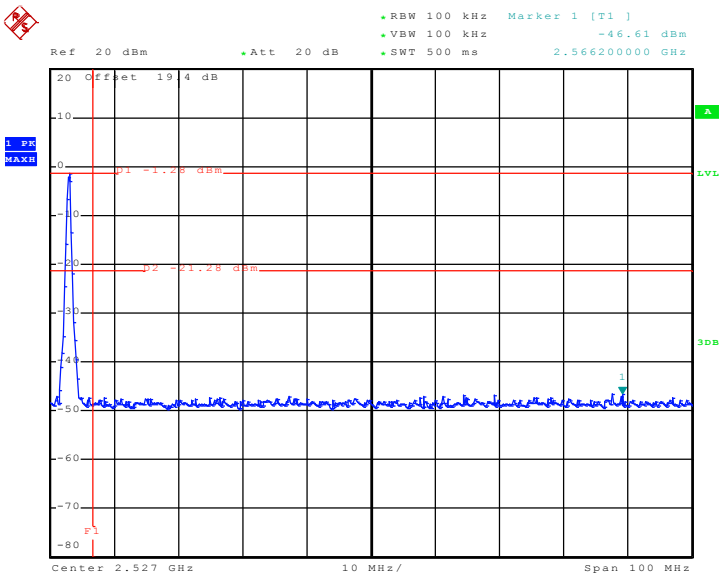
3.6.6 Test Result of Conducted Band Edges

Test Mode :	Mode 1 and 3	**Temperature :**	26.4℃
Test Channel :	00 and 78	**Relative Humidity :**	50%
		Test Engineer :	Ken Hsu

Low Band Edge Plot on Channel 00



High Band Edge Plot on Channel 78



3.7 AC Conducted Emission Measurement

3.7.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

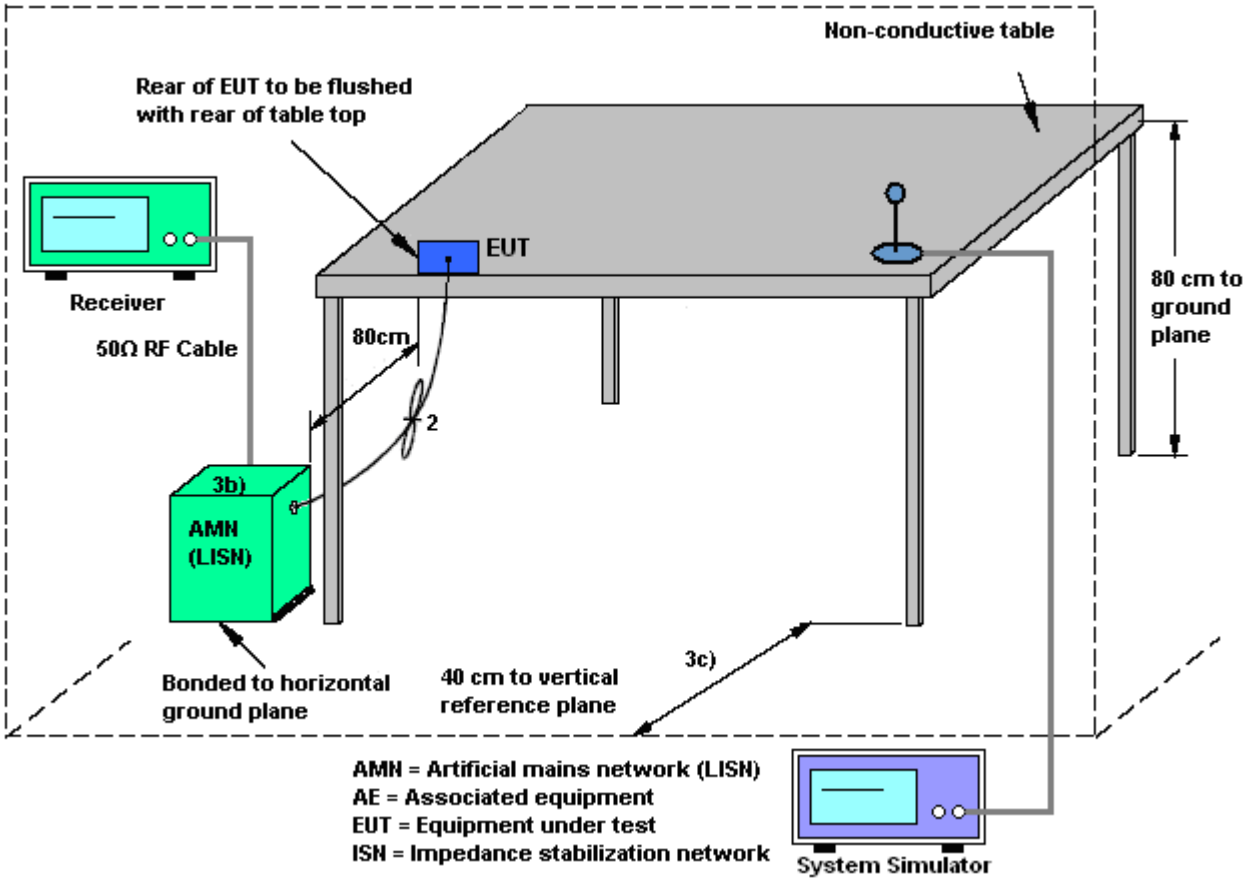
3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

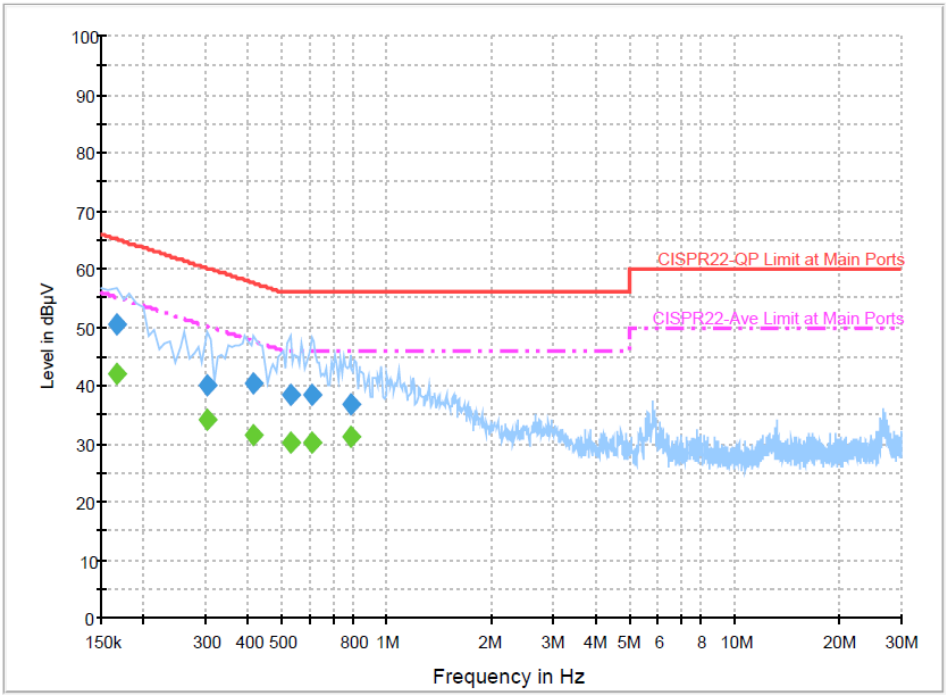
1. Please follow the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.7.4 Test Setup



3.7.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Hayden Wu	Relative Humidity :	45~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Bluetooth Link + WLAN Link + GPS Rx + Earphone 1 + Camera + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



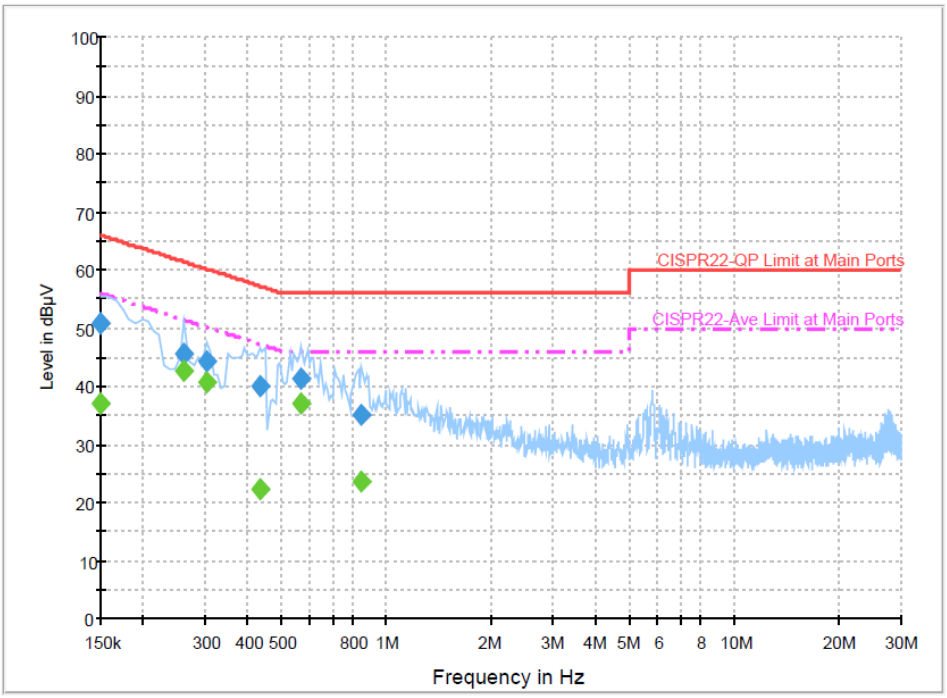
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	50.4	Off	L1	19.5	14.8	65.2
0.302000	40.0	Off	L1	19.4	20.2	60.2
0.414000	40.3	Off	L1	19.4	17.3	57.6
0.526000	38.5	Off	L1	19.5	17.5	56.0
0.606000	38.2	Off	L1	19.5	17.8	56.0
0.782000	36.7	Off	L1	19.5	19.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	42.1	Off	L1	19.5	13.1	55.2
0.302000	34.0	Off	L1	19.4	16.2	50.2
0.414000	31.4	Off	L1	19.4	16.2	47.6
0.526000	30.1	Off	L1	19.5	15.9	46.0
0.606000	30.1	Off	L1	19.5	16.0	46.0
0.782000	31.1	Off	L1	19.5	14.9	46.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Hayden Wu	Relative Humidity :	45~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Bluetooth Link + WLAN Link + GPS Rx + Earphone 1 + Camera + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	51.0	Off	N	19.5	15.0	66.0
0.262000	45.4	Off	N	19.4	16.0	61.4
0.302000	44.1	Off	N	19.5	16.1	60.2
0.430000	40.0	Off	N	19.4	17.3	57.3
0.566000	41.3	Off	N	19.5	14.8	56.0
0.846000	35.0	Off	N	19.5	21.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	37.1	Off	N	19.5	18.9	56.0
0.262000	42.8	Off	N	19.4	8.6	51.4
0.302000	40.8	Off	N	19.5	9.4	50.2
0.430000	22.2	Off	N	19.4	25.1	47.3
0.566000	37.1	Off	N	19.5	8.9	46.0
0.846000	23.7	Off	N	19.5	22.3	46.0

3.8 Radiated Emission Measurement

3.8.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.8.2 Measuring Instruments

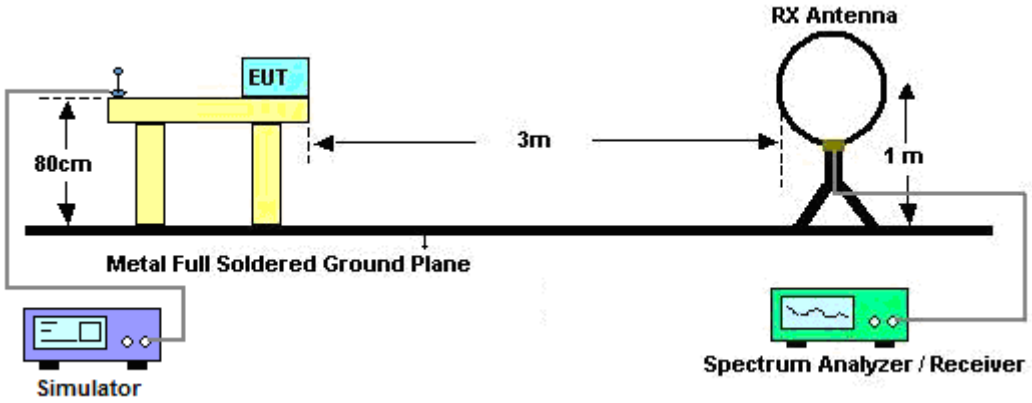
See list of measuring instruments of this test report.

3.8.3 Test Procedures

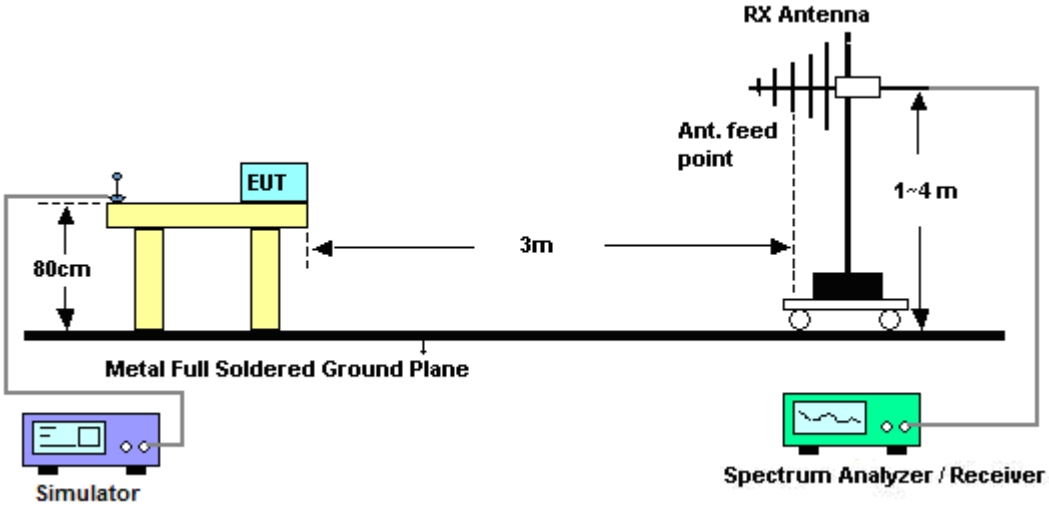
1. The testing follows the guidelines in FCC Public Notice DA 00-705 Measurement Guidelines.
2. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
3. Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.8.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.8.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

Test Engineer :	Kai Wang	Temperature :	24~25°C
		Relative Humidity :	46~47%

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

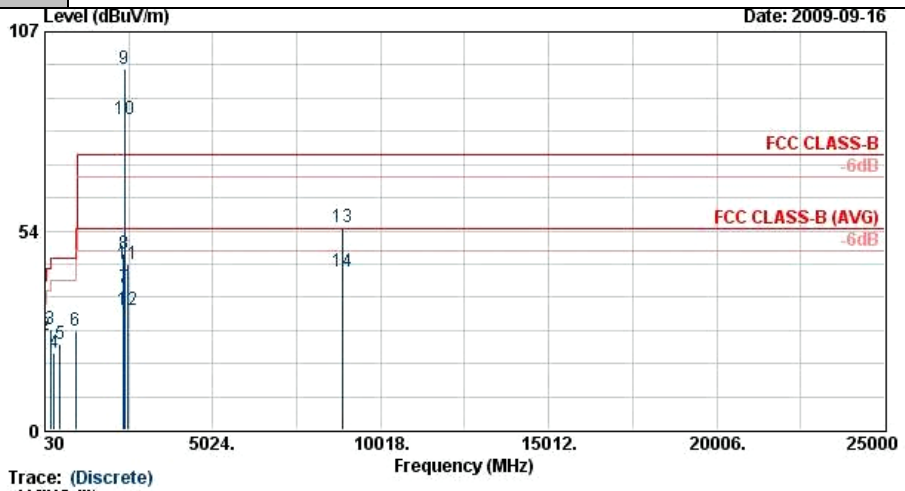
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

3.8.6 Test Result of Radiated Emission (30 MHz ~ 10th Harmonic)

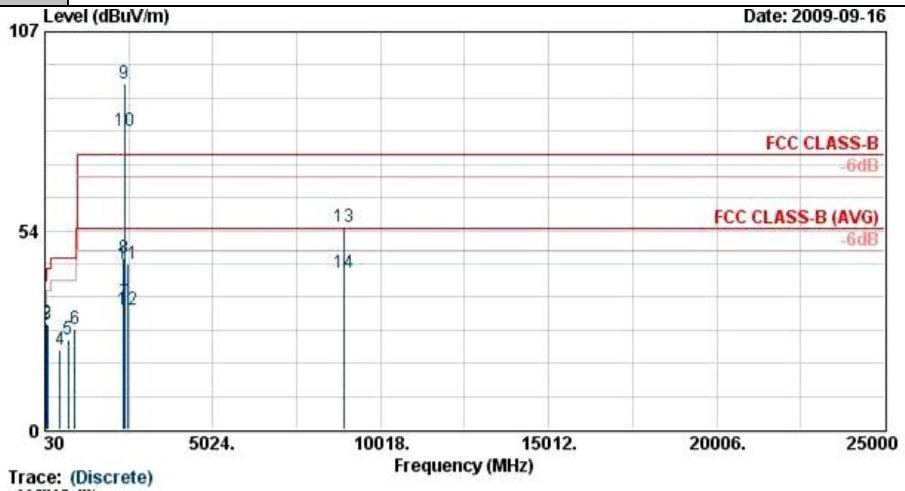
Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	00	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	27.72	-12.28	40.00	38.88	19.90	0.64	31.70	100	241	Peak
2	35.13	25.58	-14.42	40.00	39.40	17.20	0.68	31.70	---	---	Peak
3	192.54	26.88	-16.62	43.50	47.17	9.64	1.67	31.61	---	---	Peak
4	300.00	20.75	-25.25	46.00	36.22	13.80	2.13	31.40	---	---	Peak
5	491.80	22.89	-23.11	46.00	33.04	18.04	2.91	31.11	---	---	Peak
6	940.50	26.79	-19.21	46.00	29.07	24.14	4.24	30.66	---	---	Peak
7	2369.66	38.33	-15.67	54.00	35.13	32.11	5.47	34.38	103	11	Average
8	2369.66	47.33	-26.67	74.00	44.13	32.11	5.47	34.38	103	11	Peak
9 X	2402.00	96.97			93.74	32.16	5.44	34.38	103	11	Peak
10 @	2402.00	83.43			80.22	32.13	5.46	34.38	103	11	Average
11	2484.00	44.44	-29.56	74.00	41.18	32.27	5.38	34.40	103	11	Peak
12	2484.00	32.26	-21.74	54.00	29.00	32.27	5.38	34.40	103	11	Average
13	8901.00	54.34	-19.66	74.00	43.18	36.24	10.31	35.38	100	111	Peak
14	8901.00	42.72	-11.28	54.00	31.55	36.24	10.31	35.38	100	111	Average

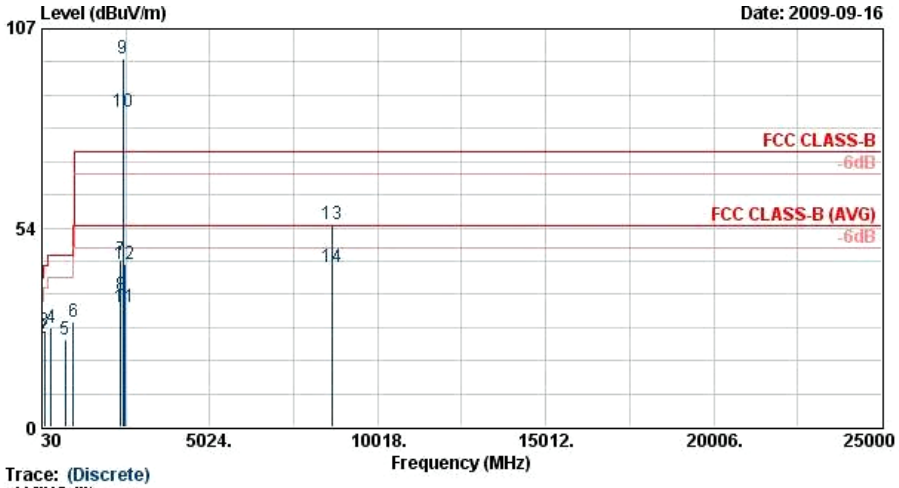
Test Mode :	Mode 1	Temperature :	24~25°C
Test Channel :	00	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		34.05	28.44	-11.56	40.00	41.73	17.74	0.67	31.70	100	211	Peak
2		92.37	28.69	-14.81	43.50	49.81	9.46	1.12	31.70	---	---	Peak
3		106.41	28.42	-15.08	43.50	47.71	11.20	1.20	31.69	---	---	Peak
4		491.80	21.56	-24.44	46.00	31.71	18.04	2.91	31.11	---	---	Peak
5		713.70	24.35	-21.65	46.00	30.49	21.15	3.59	30.87	---	---	Peak
6		929.30	26.96	-19.04	46.00	29.63	23.78	4.22	30.67	---	---	Peak
7		2369.66	34.22	-19.78	54.00	31.02	32.11	5.47	34.38	163	212	Average
8		2369.66	46.06	-27.94	74.00	42.86	32.11	5.47	34.38	163	212	Peak
9	X	2402.00	93.17			89.95	32.16	5.44	34.38	163	212	Peak
10	@	2402.00	80.16			76.95	32.13	5.46	34.38	163	212	Average
11		2484.00	44.36	-29.64	74.00	41.10	32.27	5.38	34.40	163	212	Peak
12		2484.00	32.24	-21.76	54.00	28.98	32.27	5.38	34.40	163	212	Average
13		8946.00	54.36	-19.64	74.00	43.17	36.26	10.32	35.39	100	88	Peak
14		8946.00	42.30	-11.70	54.00	31.11	36.26	10.32	35.39	100	88	Average

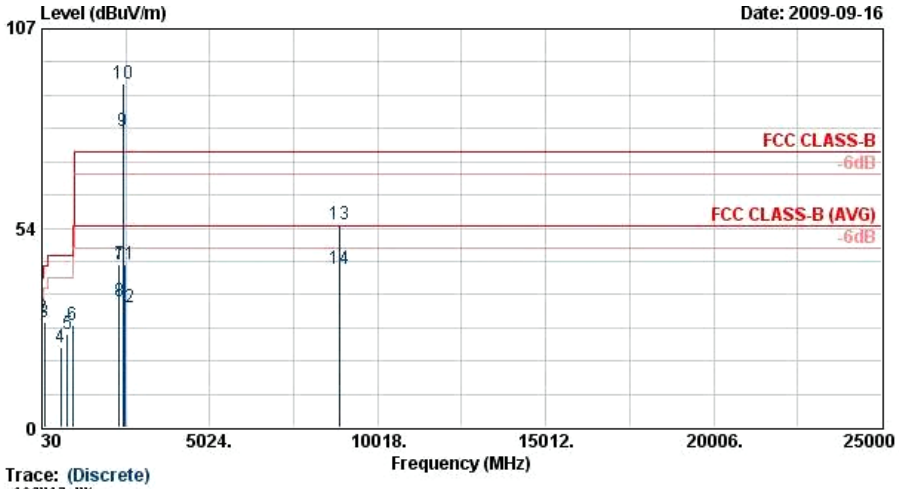
Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN HORIZONTAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		30.00	26.61	-13.39	40.00	37.77	19.90	0.64	31.70	100	123	Peak
2		42.69	23.86	-16.14	40.00	42.15	12.68	0.72	31.70	---	---	Peak
3		106.41	25.75	-17.75	43.50	45.04	11.20	1.20	31.69	---	---	Peak
4		300.00	26.60	-19.40	46.00	42.07	13.80	2.13	31.40	---	---	Peak
5		727.00	23.65	-22.35	46.00	29.47	21.39	3.63	30.85	---	---	Peak
6		960.10	28.18	-25.82	54.00	30.17	24.36	4.29	30.64	---	---	Peak
7		2374.00	45.11	-28.89	74.00	41.91	32.11	5.47	34.38	101	11	Peak
8		2374.00	35.33	-18.67	54.00	32.13	32.11	5.47	34.38	101	11	Average
9	X	2441.00	99.05			95.81	32.22	5.41	34.39	101	11	Peak
10	@	2441.00	84.76			81.52	32.22	5.41	34.39	101	11	Average
11		2484.00	32.28	-21.72	54.00	29.02	32.27	5.38	34.40	101	11	Average
12		2484.00	43.84	-30.16	74.00	40.58	32.27	5.38	34.40	101	11	Peak
13		8658.00	54.45	-19.55	74.00	43.47	36.09	10.23	35.33	100	57	Peak
14		8658.00	42.87	-11.13	54.00	31.88	36.09	10.23	35.33	100	57	Average

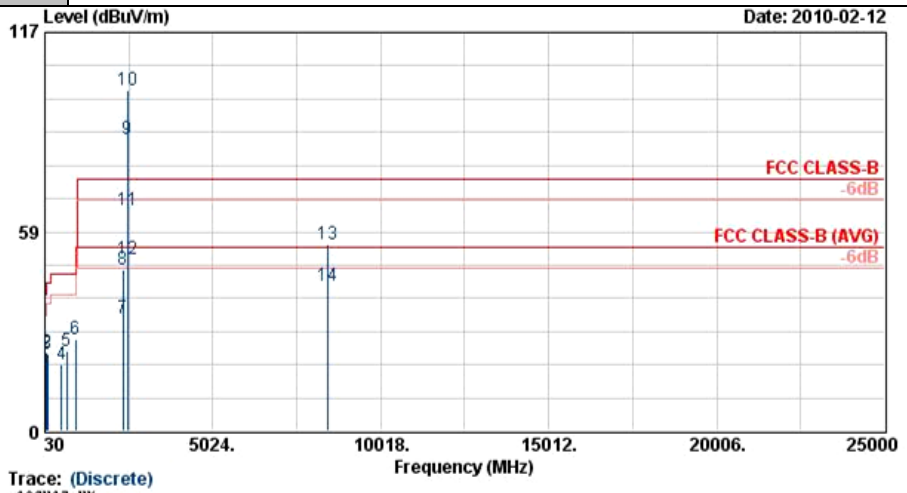
Test Mode :	Mode 2	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	46~47%
Test Engineer :	Kai Wang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B 3m SHF-EHF HORN VERTICAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	29.76	-10.24	40.00	40.92	19.90	0.64	31.70	100	257	Peak
2	34.86	29.45	-10.55	40.00	43.27	17.20	0.68	31.70	---	---	Peak
3	106.41	28.23	-15.27	43.50	47.53	11.20	1.20	31.69	---	---	Peak
4	598.90	21.53	-24.47	46.00	29.81	19.48	3.24	31.00	---	---	Peak
5	786.50	25.12	-20.88	46.00	30.16	21.87	3.81	30.73	---	---	Peak
6	945.40	27.52	-18.48	46.00	29.64	24.28	4.25	30.65	---	---	Peak
7	2326.00	43.92	-30.08	74.00	40.74	32.02	5.51	34.37	129	226	Peak
8	2326.00	33.70	-20.30	54.00	30.53	32.02	5.51	34.37	129	226	Average
9 @	2441.00	79.66			76.42	32.22	5.41	34.39	129	226	Average
10 X	2441.00	92.27			89.03	32.22	5.41	34.39	129	226	Peak
11	2500.00	43.92	-30.08	74.00	40.65	32.30	5.37	34.40	129	226	Peak
12	2500.00	32.24	-21.76	54.00	28.97	32.30	5.37	34.40	129	226	Average
13	8901.00	54.52	-19.48	74.00	43.36	36.24	10.31	35.38	100	284	Peak
14	8901.00	42.39	-11.61	54.00	31.22	36.24	10.31	35.38	100	284	Average

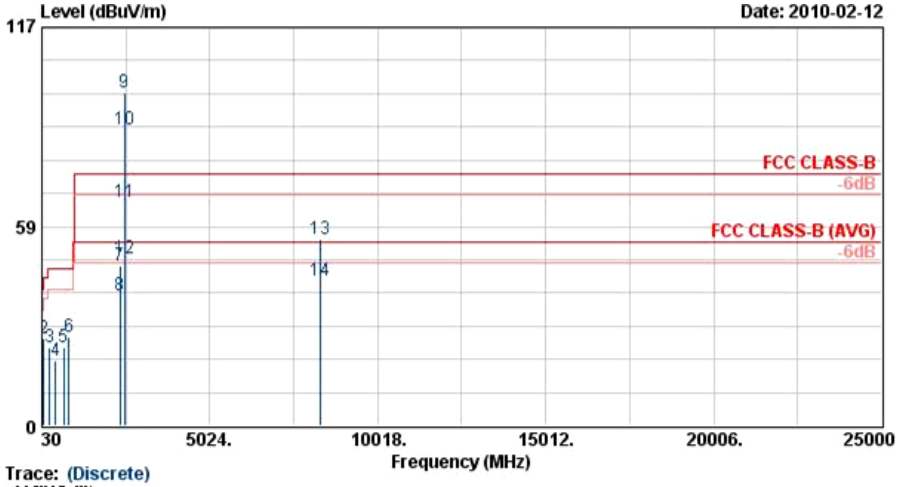
Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~50%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091208 HORIZONTAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		30.00	22.04	-17.96	40.00	33.59	19.51	0.64	31.70	100	110	Peak
2		93.18	23.00	-20.50	43.50	44.26	9.32	1.13	31.70	---	---	Peak
3		107.49	22.78	-20.72	43.50	42.21	11.06	1.21	31.69	---	---	Peak
4		517.70	19.77	-26.23	46.00	29.35	18.51	2.99	31.08	---	---	Peak
5		677.30	23.49	-22.51	46.00	30.26	20.66	3.49	30.92	---	---	Peak
6		954.50	26.85	-19.15	46.00	29.22	24.00	4.27	30.65	---	---	Peak
7		2350.00	32.97	-21.03	54.00	29.56	32.05	5.50	34.14	100	18	Average
8		2350.00	47.61	-26.39	74.00	44.20	32.05	5.50	34.14	100	18	Peak
9	@	2480.00	85.88			82.41	32.27	5.38	34.19	100	18	Average
10	X	2480.00	100.17			96.70	32.27	5.38	34.19	100	18	Peak
11		2483.50	65.01	-8.99	74.00	61.54	32.27	5.38	34.19	100	18	Peak
12	!	2483.50	50.65	-3.35	54.00	47.18	32.27	5.38	34.19	100	18	Average
13		8433.00	54.78	-19.22	74.00	43.75	36.00	10.13	35.10	110	78	Peak
14		8433.00	42.47	-11.53	54.00	31.44	36.00	10.13	35.10	110	78	Average

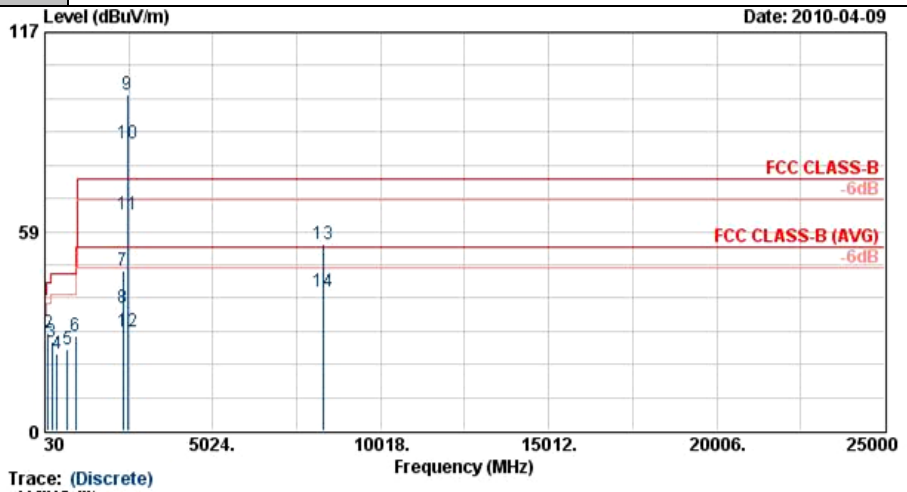
Test Mode :	Mode 3	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~50%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091208 VERTICAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		30.54	22.20	-17.80	40.00	34.30	18.95	0.65	31.70	---	---	Peak
2		81.57	25.45	-14.55	40.00	48.44	7.70	1.01	31.70	137	40	Peak
3		253.02	22.99	-23.01	46.00	39.74	12.81	1.93	31.49	---	---	Peak
4		430.90	18.94	-27.06	46.00	30.64	16.75	2.73	31.17	---	---	Peak
5		688.50	23.02	-22.98	46.00	29.66	20.75	3.52	30.91	---	---	Peak
6		833.40	26.23	-19.77	46.00	30.47	22.54	3.92	30.70	---	---	Peak
7		2350.00	46.87	-27.13	74.00	43.46	32.05	5.50	34.14	106	330	Peak
8		2350.00	38.23	-15.77	54.00	34.82	32.05	5.50	34.14	106	330	Average
9	X	2480.00	97.70			94.23	32.27	5.38	34.19	106	330	Peak
10	@	2480.00	86.88			83.41	32.27	5.38	34.19	106	330	Average
11		2483.50	65.53	-8.47	74.00	62.06	32.27	5.38	34.19	106	330	Peak
12	!	2483.50	49.16	-4.84	54.00	45.69	32.27	5.38	34.19	106	330	Average
13		8313.00	54.71	-19.29	74.00	43.76	36.00	10.05	35.10	100	26	Peak
14		8313.00	42.63	-11.37	54.00	31.68	36.00	10.05	35.10	100	26	Average

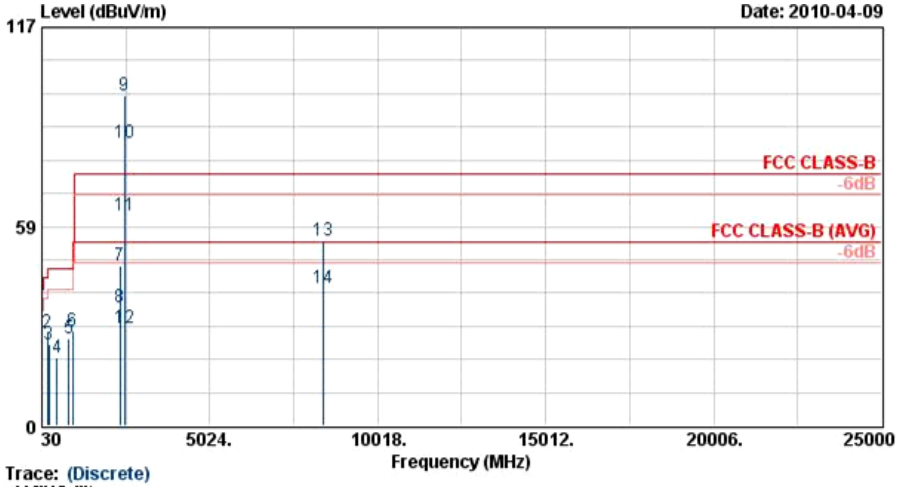
Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~50%
Test Engineer :	Ivan Jiang	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091208 HORIZONTAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		43.77	26.59	-13.41	40.00	45.72	11.55	0.82	31.50	100	69	Peak
2		121.53	28.88	-14.62	43.50	46.86	12.15	1.43	31.56	---	---	Peak
3		243.30	26.18	-19.82	46.00	43.51	11.95	2.13	31.42	---	---	Peak
4		399.40	22.76	-23.24	46.00	35.03	16.11	2.80	31.18	---	---	Peak
5		694.10	23.73	-22.27	46.00	29.97	20.80	3.79	30.83	---	---	Peak
6		946.10	27.68	-18.32	46.00	29.91	23.87	4.48	30.58	---	---	Peak
7		2350.00	46.97	-27.03	74.00	43.56	32.05	5.50	34.14	100	360	Peak
8		2350.00	36.17	-17.83	54.00	32.76	32.05	5.50	34.14	100	360	Average
9	X	2480.00	98.86			95.39	32.27	5.38	34.19	100	360	Peak
10	@	2480.00	84.38			80.91	32.27	5.38	34.19	100	360	Average
11		2483.50	63.29	-10.71	74.00	59.82	32.27	5.38	34.19	100	360	Peak
12		2483.50	29.10	-24.90	54.00	25.63	32.27	5.38	34.19	100	360	Average
13		8310.00	54.73	-19.27	74.00	43.78	36.00	10.05	35.10	100	195	Peak
14		8310.00	40.81	-13.19	54.00	29.86	36.00	10.05	35.10	100	195	Average

Test Mode :	Mode 4	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	46~50%
Test Engineer :	Ivan Jiang	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091208 VERTICAL

		Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
		MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1		33.51	30.80	-9.20	40.00	44.27	17.29	0.72	31.47	100	99	Peak
2		202.26	27.27	-16.23	43.50	47.97	8.85	1.93	31.48	---	---	Peak
3		243.30	23.99	-22.01	46.00	41.33	11.95	2.13	31.42	---	---	Peak
4		481.30	20.15	-25.85	46.00	30.34	17.78	3.09	31.06	---	---	Peak
5		825.00	25.80	-20.20	46.00	29.88	22.46	4.17	30.71	---	---	Peak
6		953.80	27.65	-18.35	46.00	29.72	23.99	4.52	30.57	---	---	Peak
7		2350.00	46.80	-27.20	74.00	43.39	32.05	5.50	34.14	105	0	Peak
8		2350.00	34.59	-19.41	54.00	31.18	32.05	5.50	34.14	105	0	Average
9	X	2480.00	97.09			93.62	32.27	5.38	34.19	105	0	Peak
10	X	2480.00	82.93			79.46	32.27	5.38	34.19	105	0	Average
11		2483.50	61.62	-12.38	74.00	58.15	32.27	5.38	34.19	105	0	Peak
12		2483.50	28.80	-25.20	54.00	25.33	32.27	5.38	34.19	105	0	Average
13		8409.00	54.46	-19.54	74.00	43.44	36.00	10.12	35.10	100	69	Peak
14		8409.00	40.63	-13.37	54.00	29.61	36.00	10.12	35.10	100	69	Average

3.9 Antenna Requirements

3.9.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.9.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.9.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 23, 2009	Jun. 22, 2010	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	0932001	N/A	Sep. 17, 2009	Sep. 16, 2010	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	0846202	N/A	Sep. 10, 2009	Sep. 09, 2010	Conducted (TH02-HY)
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 27, 2010	Mar. 26, 2011	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	116456	N/A	Jun. 05, 2008	Jun. 04, 2010	-
Bluetooth Base Station	Anritsu	MT8852B	6K00005722	N/A	N/A	N/A	-
Bluetooth Base Station	R&S	CBT32	100519	N/A	May 12, 2009	May 11, 2011	-

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty Uc(y)	**1.13**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**		

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty Uc(y)	**1.27**		
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	±0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	±1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	±0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site Imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1 = 0.197 Antenna VSWR Γ2 = 0.194 Uncertainty = 20Log(1-Γ1*Γ2)	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty Uc(y)	**2.36**				
Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**				

Appendix A. Photographs of EUT

Please refer to Sporton report number EP020335 as below.