FCC RF Test Report

APPLICANT	:	NEC Corp. of America
EQUIPMENT	:	GSM / WCDMA Mobile Phone
BRAND NAME	:	NEC CASIO Mobile Communications, Ltd.
MODEL NAME	:	KMP7R4H1-1A
FCC ID	:	A98-FWP7935
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DSS) Spread Spectrum Transmitter

The product was received on Sep. 05, 2012 and completely tested on Nov. 03, 2012. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures 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:

Jones Tsai / 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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APPENDIX A. PHOTOGRAPHS OF EUT

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR282414-02A	Rev. 01	Initial issue of report	Nov. 07, 2012

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(b)	Hopping Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.3	15.247(a)(1)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.4	15.247(a)(1)	A8.1(a)	20dB Bandwidth	NA	Pass	-
3.5	15.247(b)(1)	A8.1(b)	Peak Output Power	≤ 1 w for 1Mbps ≤ 125 Mw for 2, 3Mbps	Pass	-
3.6	15.247(d)	A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	A8.5	Conducted Spurious Emission	≤ 20dBc	Pass	-
3.8	15.247(d)	A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 10.35 dB at 30.270 MHz
3.9	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 10.00 dB at 1.814 MHz
3.10	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

NEC Corp. of America
Mobile Communications Division, 6535 N. State Highway 161, Irving Texas 75039, United States

1.2 Manufacturer

Arima Communications Corp.
6F., No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	GSM / WCDMA Mobile Phone
Brand Name	NEC CASIO Mobile Communications, Ltd.
Model Name	KMP7R4H1-1A
Sample 1	EUT with black color
Sample 2	EUT with white color
Sample 3	EUT with brown color
FCC ID	A98-FWP7935
EUT supports Radios application	GSM/GPRS/WCDMA/HSPA/ WLAN 11bgn / Bluetooth / NFC
HW Version	8007MB-004
SW Version	AN0020220r
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Product Specification subjective to this standard	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Maximum Output Power to Antenna	Bluetooth (1Mbps) : 1.76 dBm (0.0015 W) Bluetooth EDR (2Mbps) : 2.49 dBm (0.0018 W) Bluetooth EDR (3Mbps) : 2.84 dBm (0.0019 W)
Antenna Type	Chip Antenna type with gain -1.30 dBi
Type of Modulation	Bluetooth 3.0 EDR : GFSK, π/4-DQPSK, 8-DPSK

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.
	TH02-HY	CO05-HY	03CH07-HY	722060/4086B-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 and ANSI C63.10-2009
- IC RSS-210 Issue 8
- IC RSS-Gen Issue 3

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, recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY70DA2029	N/A	N/A
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Earphone	NTT	Stereo	FCC DoC	N/A	N/A
6.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m

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	1.42 dBm	2.12 dBm	2.49 dBm
Ch39	2441MHz	1.76 dBm	2.49 dBm	**2.84** dBm
Ch78	2480MHz	1.46 dBm	2.14 dBm	2.51 dBm

Remark:

1. All the test data for each data rate were verified, but only the worst case was reported.
2. The data rate was set in 3Mbps for all the test items due to the highest RF output power.
3. 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 ANSI C63.10-2009 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).

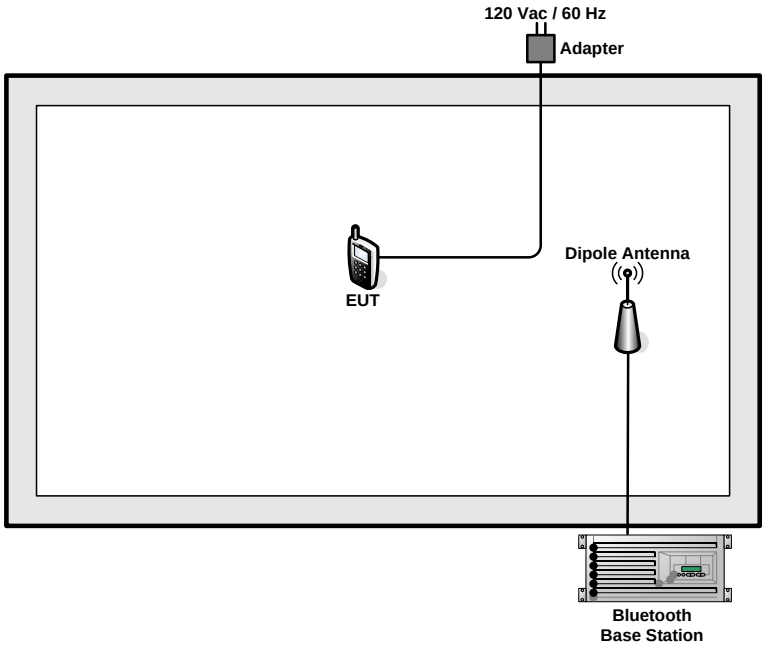
Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations.

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

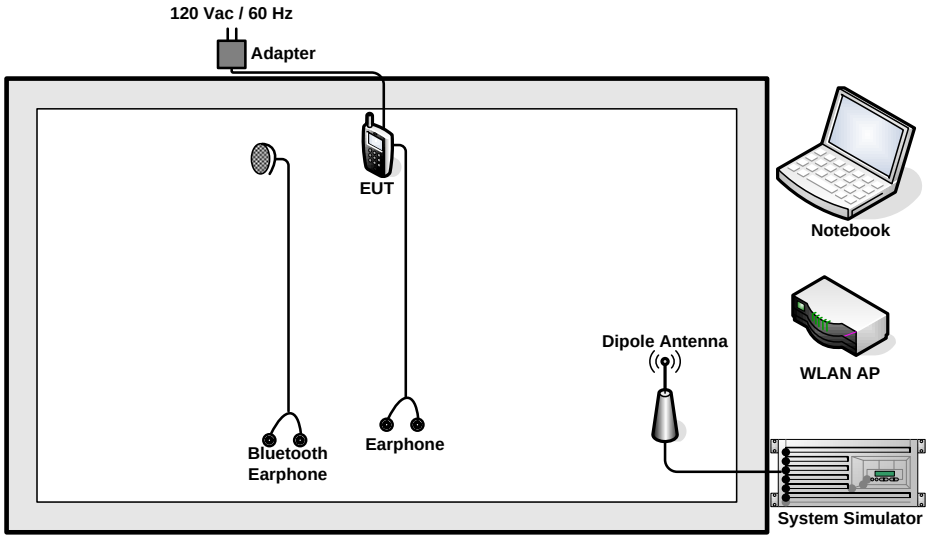
Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted TCs	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated TCs	Pretest	Pretest	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz
AC Conducted Emission	Mode 1 :WCDMA Band V Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + Battery + Charging Cable from Adapter		
Remark: For radiated TCs, the data rate was set in 3Mbps due to the highest RF output power; only the data of these modes was reported.			

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



AC Conducted Emission Mode>



2.4 RF Utility

For Bluetooth function, programmed RF utility, “Command” installed in the notebook make the EUT provides functions like channel selection and power level for continuous transmitting and receiving signals.

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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. 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.
6. The number of hopping frequency used is defined as the number of total channel.
7. Record the measurement data derived from spectrum analyzer.

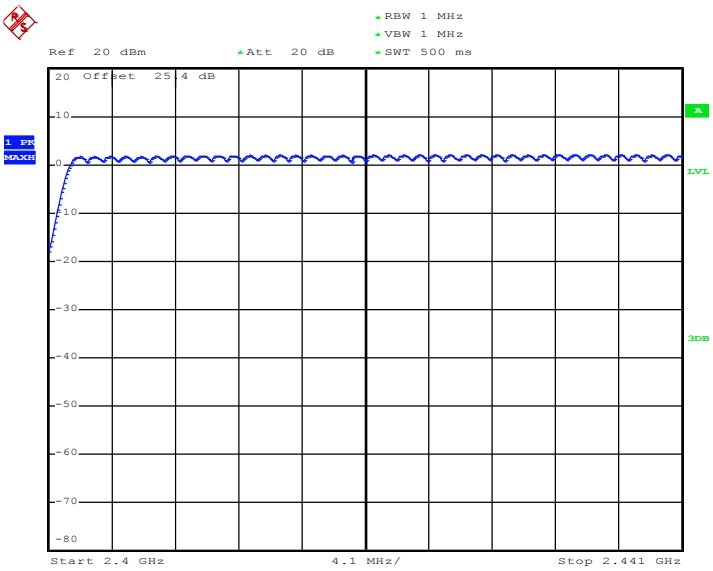
3.1.4 Test Setup

3.1.5 Test Result of Number of Hopping Frequency

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

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

Number of Hopping Channel Plot on Channel 00 - 78



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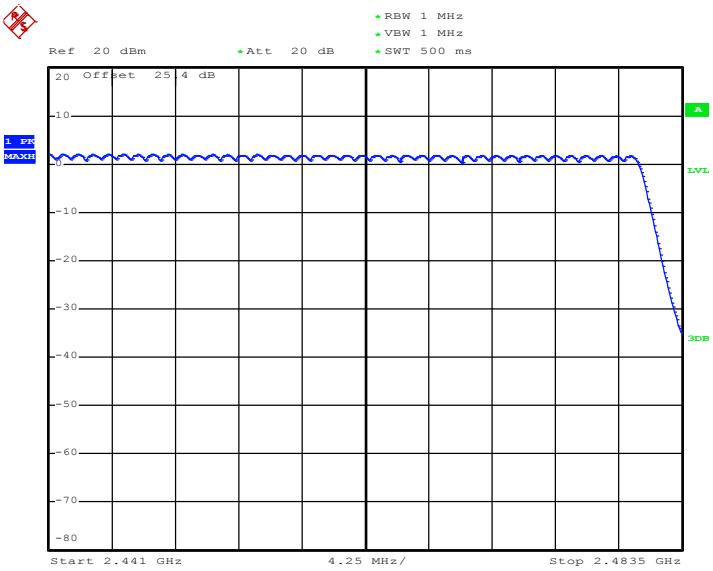


Date: 29.OCT.2012 15:56:11

3.2 Hopping Channel Separation Measurement

3.2.1 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.

3.2.2 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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. 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.
6. Measure and record the results in the test report.

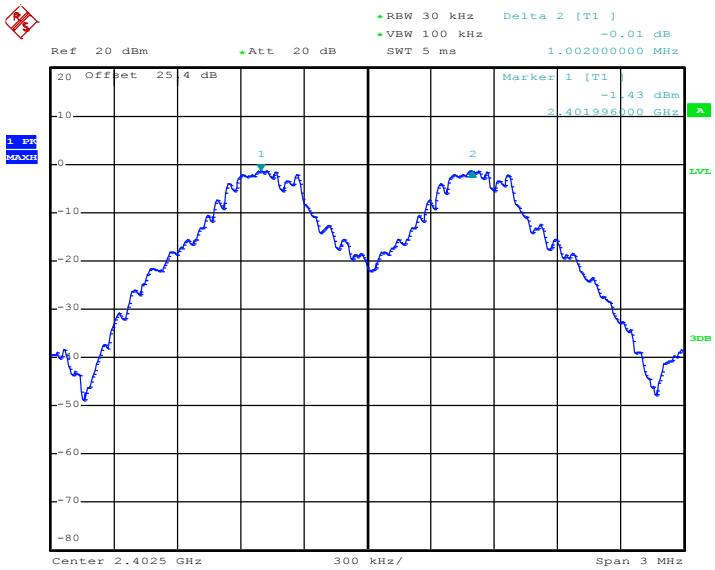
3.2.4 Test Setup

3.2.5 Test Result of Hopping Channel Separation

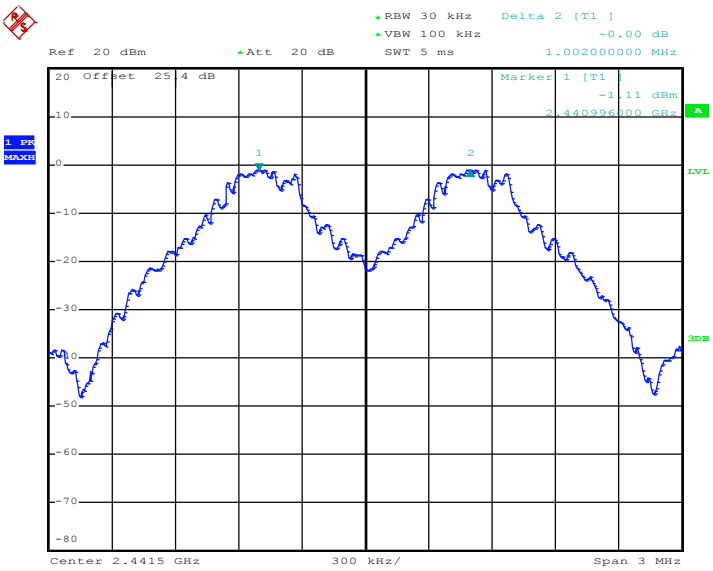
Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.6480	Pass
39	2441	1.002	0.6427	Pass
78	2480	1.002	0.6480	Pass

Channel Separation Plot on Channel 00 - 01



Channel Separation Plot on Channel 39 - 40



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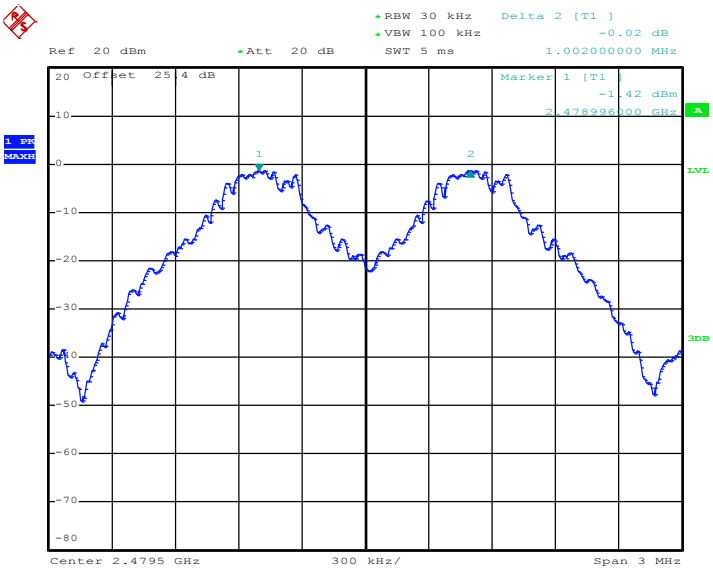
Channel Separation Plot on Channel 77 - 78

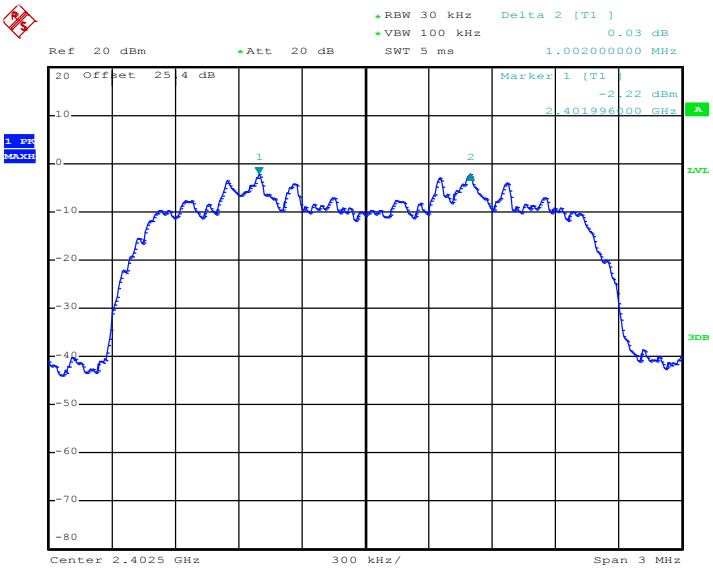


Date: 29.OCT.2012 15:19:18

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8640	Pass
39	2441	1.002	0.8640	Pass
78	2480	1.002	0.9040	Pass

Channel Separation Plot on Channel 00 - 01



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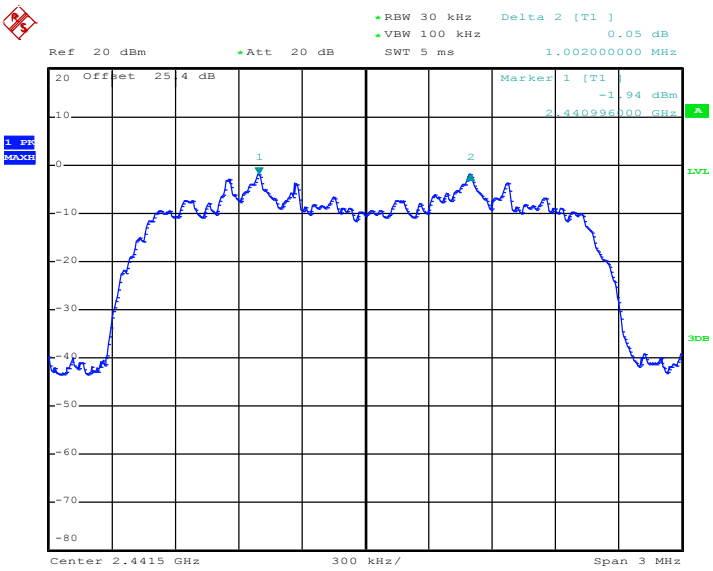
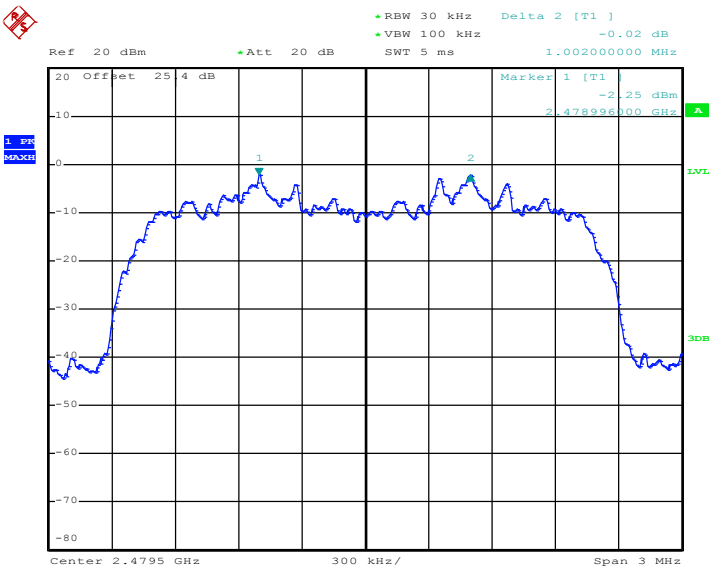
Channel Separation Plot on Channel 39 - 40



Date: 29.OCT.2012 15:20:46

Channel Separation Plot on Channel 77 - 78

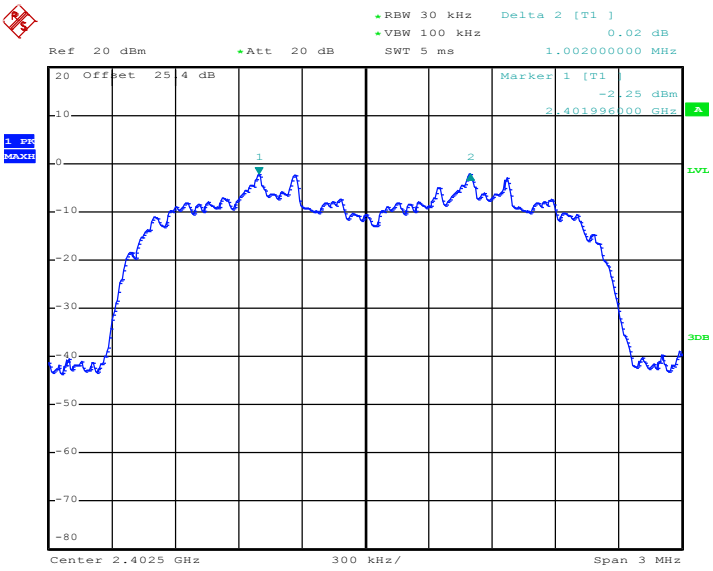


Date: 29.OCT.2012 15:21:45

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8680	Pass
39	2441	1.002	0.8720	Pass
78	2480	1.002	0.8680	Pass

Channel Separation Plot on Channel 00 - 01



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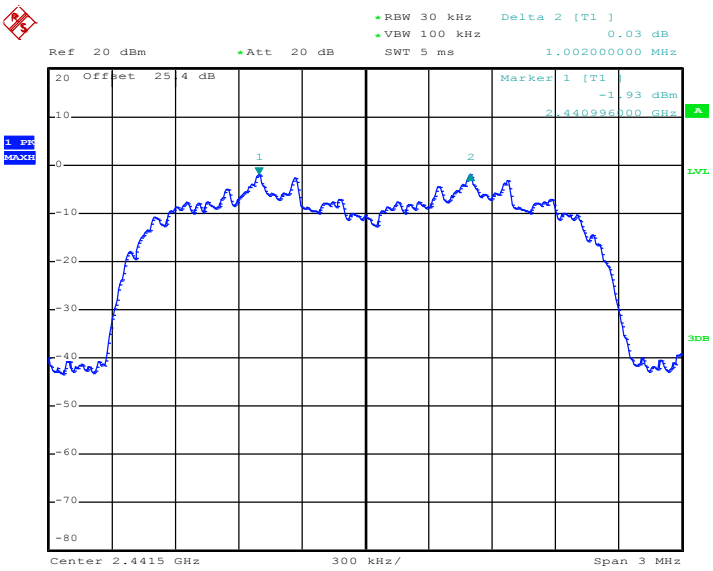
Channel Separation Plot on Channel 39 - 40



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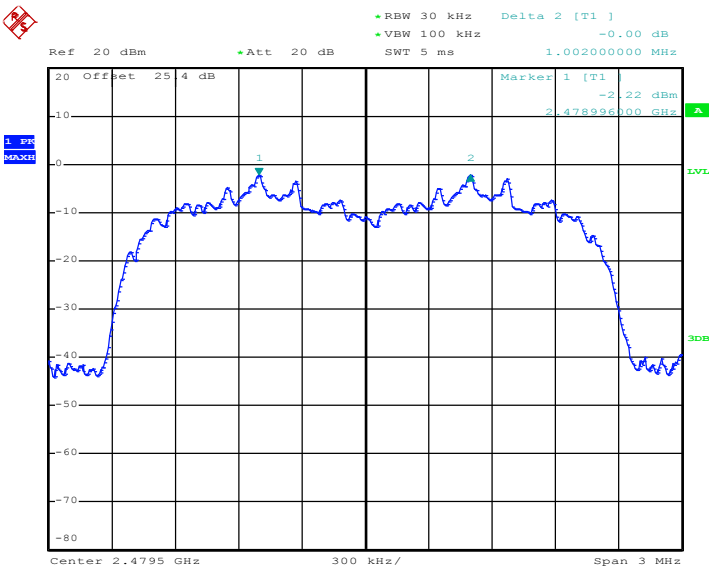
Channel Separation Plot on Channel 77 - 78



Date: 29.OCT.2012 15:23:53

3.3 Dwell Time Measurement

3.3.1 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.

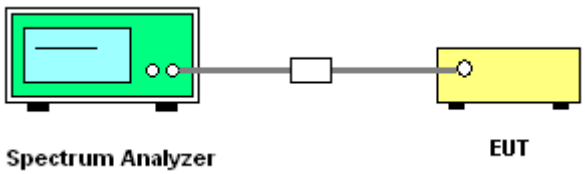
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. 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.
6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Dwell Time

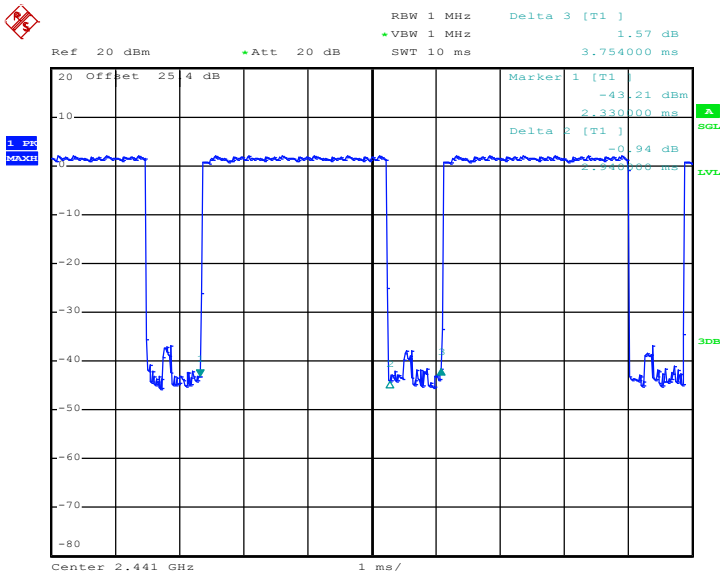
Test Mode :	3DH5	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	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)

3DH5 Dwell Time (One Pulse) Plot on Channel 39



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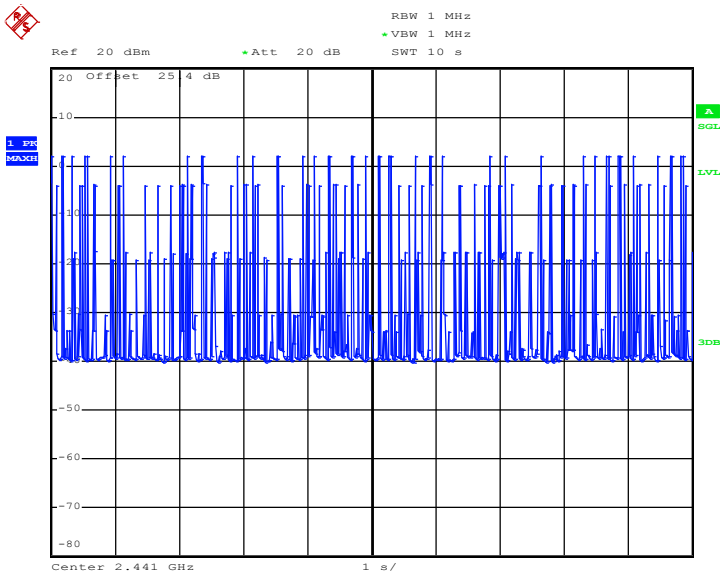
3DH5 Dwell Time (Count Pulses) Plot on Channel 39



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3.4 20dB Bandwidth Measurement

3.4.1 Limit of 20dB Bandwidth

Reporting only

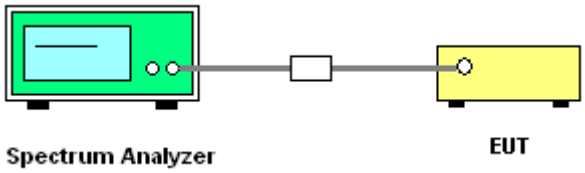
3.4.2 Measuring Instruments

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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
   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. Measure and record the results in the test report.

3.4.4 Test Setup

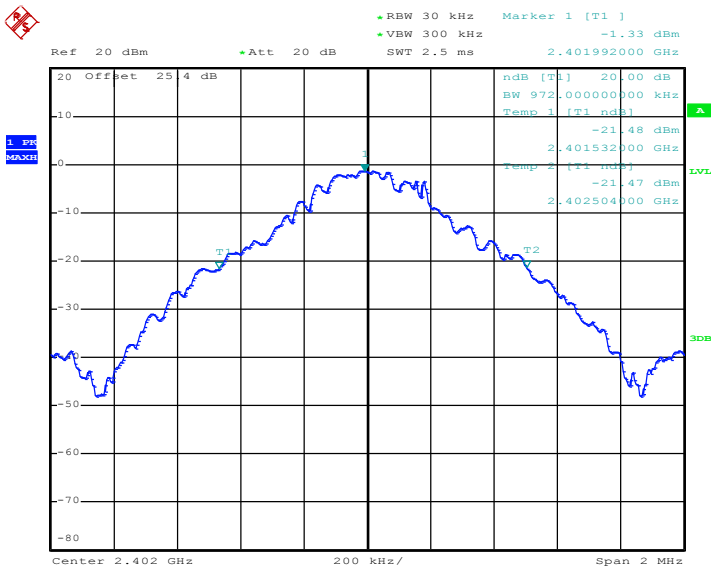


3.4.5 Test Result of 20dB Bandwidth

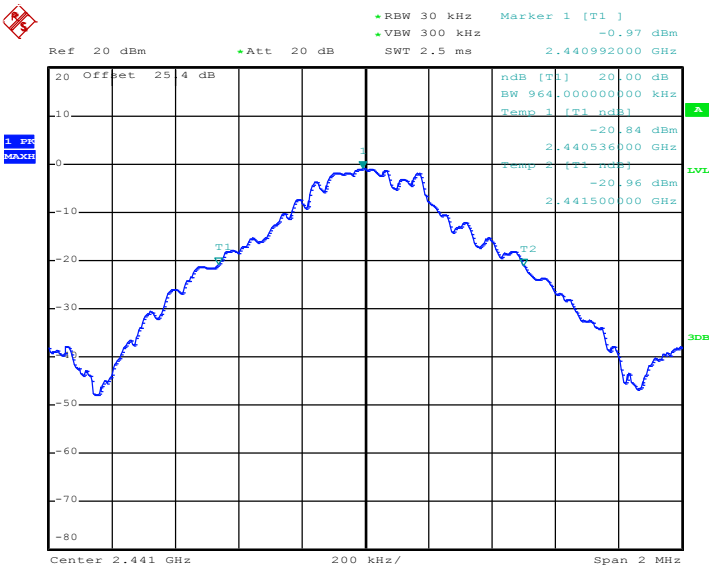
Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.972
39	2441	0.964
78	2480	0.972

20 dB Bandwidth Plot on Channel 00



20 dB Bandwidth Plot on Channel 39



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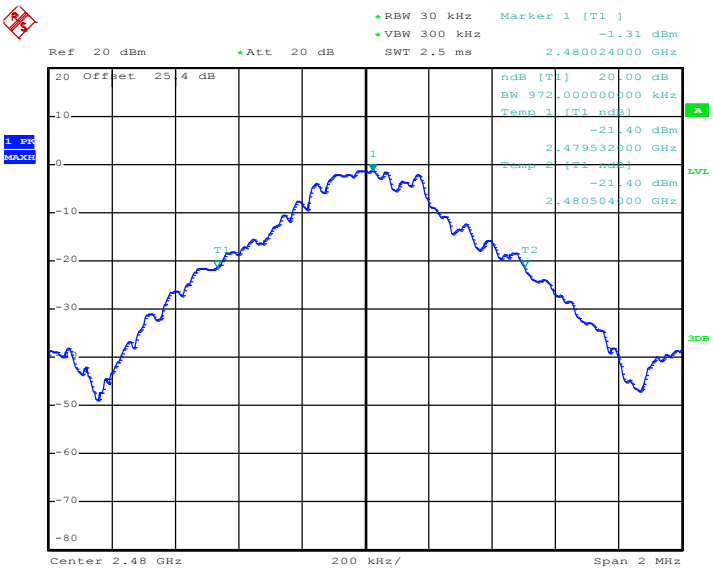
20 dB Bandwidth Plot on Channel 78

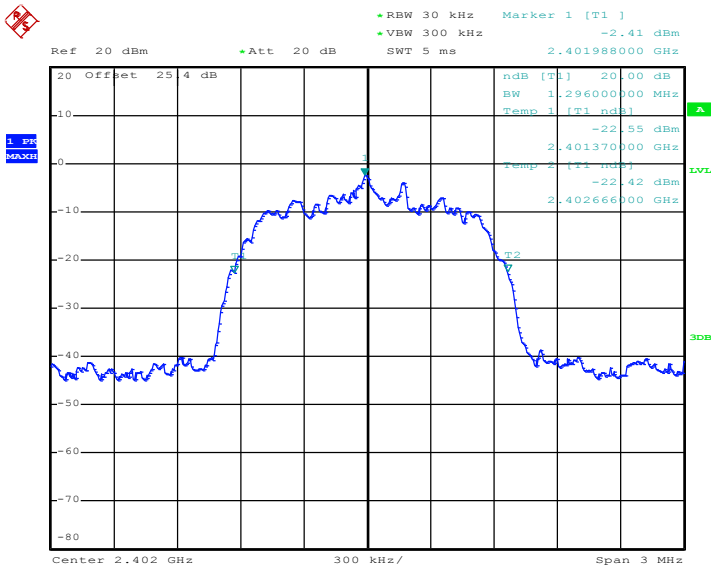


Date: 29.OCT.2012 15:37:08

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.296
39	2441	1.296
78	2480	1.356

20 dB Bandwidth Plot on Channel 00



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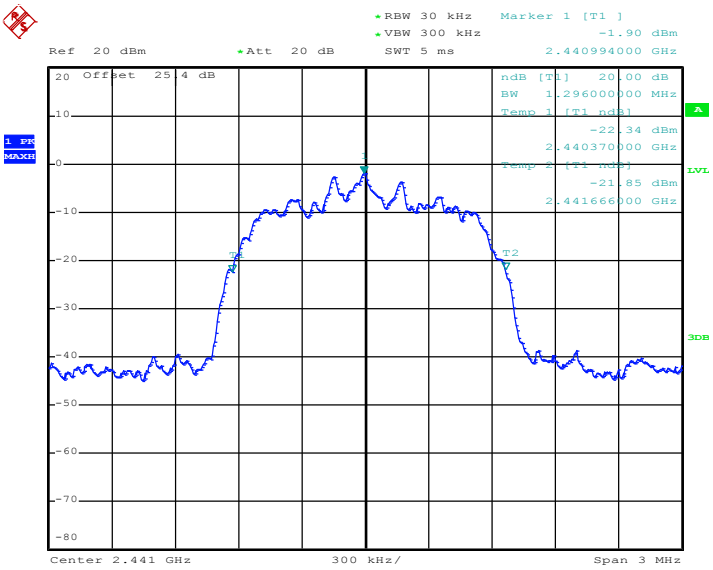
20 dB Bandwidth Plot on Channel 39



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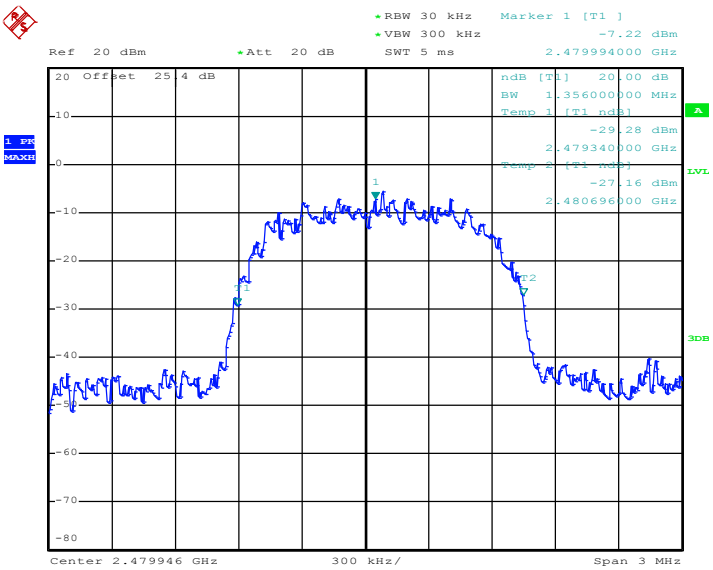
20 dB Bandwidth Plot on Channel 78

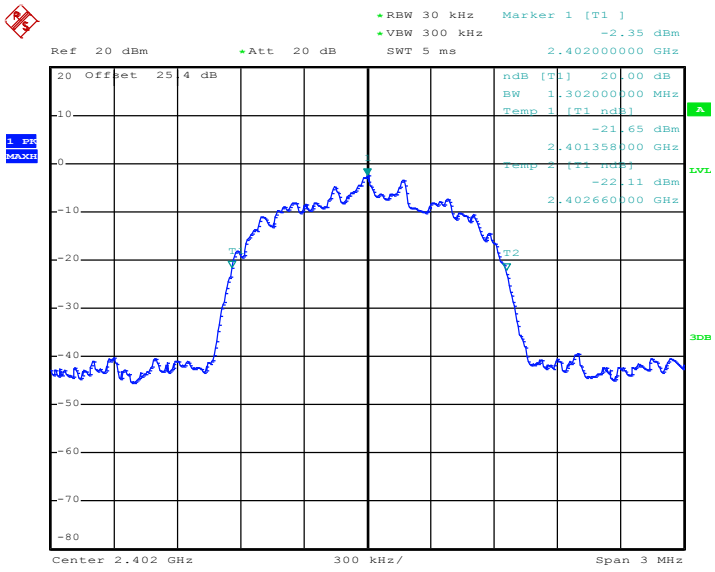


Date: 29.OCT.2012 15:41:26

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

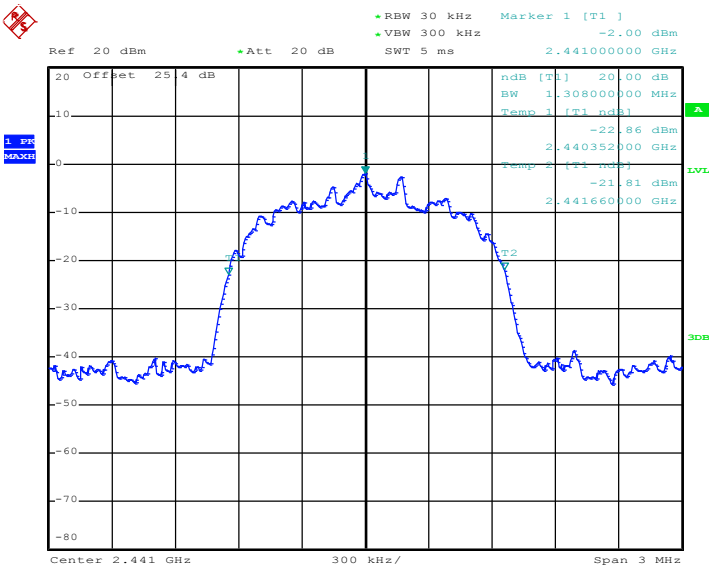
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.302
39	2441	1.308
78	2480	1.302

20 dB Bandwidth Plot on Channel 00



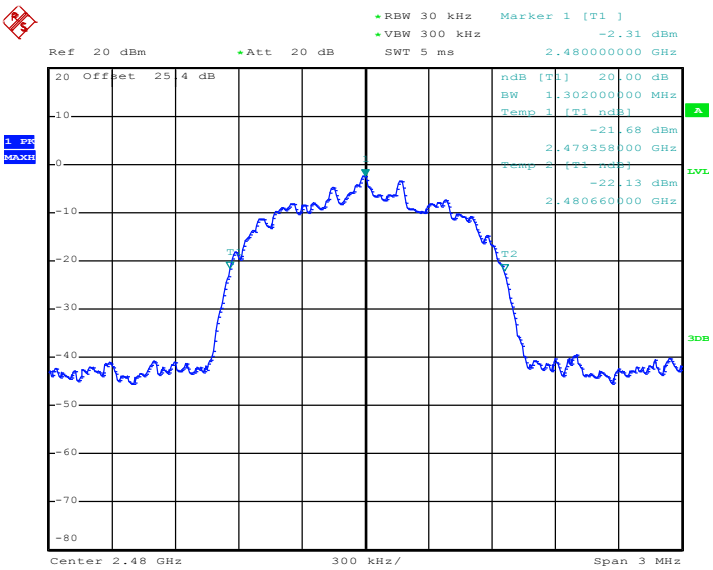
Date: 29.OCT.2012 15:41:50

20 dB Bandwidth Plot on Channel 39



Date: 29.OCT.2012 15:42:13

20 dB Bandwidth Plot on Channel 78



Date: 29.OCT.2012 15:42:50

3.5 Peak Output Power Measurement

3.5.1 Limit of Peak Output Power

Section 15.247 (b) The maximum peak conducted output power of the intentional radiator shall not exceed the following: (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts. The power limit for 1Mbps is 1watt, and for 2Mbps, and 3Mbps are 0.125 watts.

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 RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the test report.

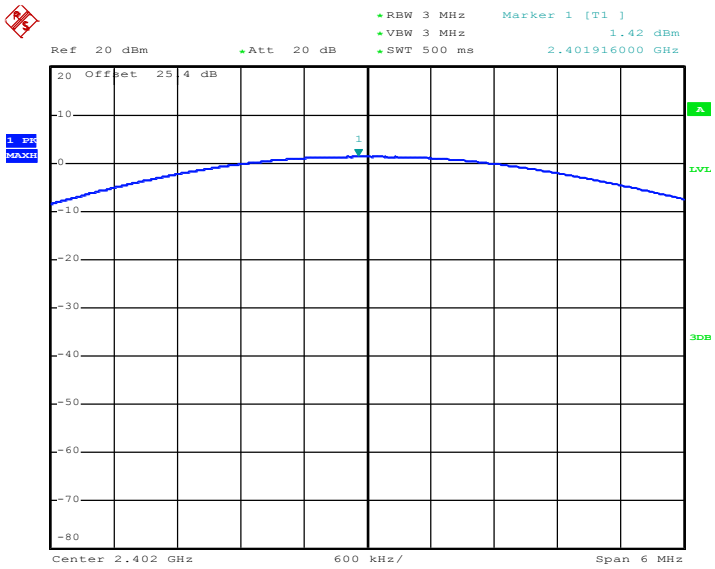
3.5.4 Test Setup

3.5.5 Test Result of Peak Output Power

Test Mode :	1Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

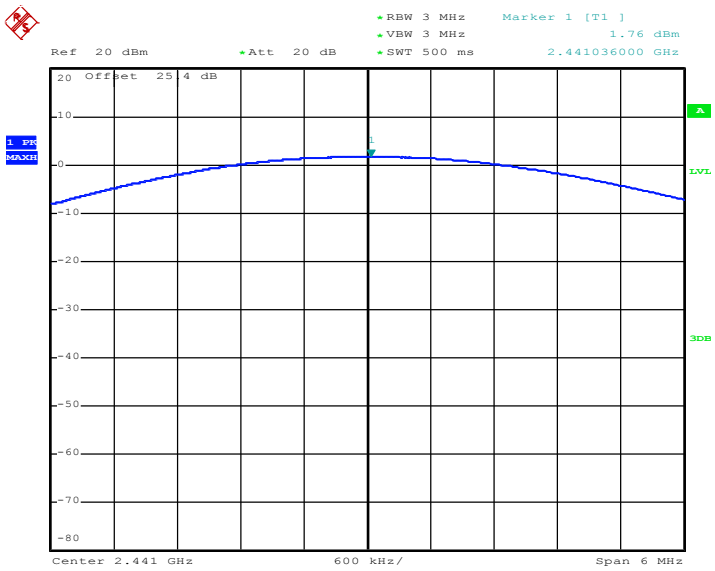
Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	1.42	30.00	Pass
39	2441	1.76	30.00	Pass
78	2480	1.46	30.00	Pass

Peak Output Power Plot on Channel 00



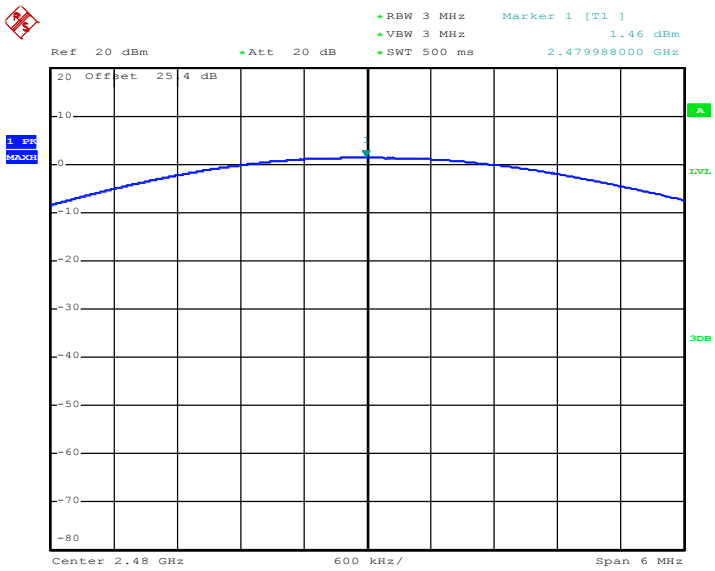
Date: 29.OCT.2012 15:01:58

Peak Output Power Plot on Channel 39



Date: 29.OCT.2012 15:07:35

Peak Output Power Plot on Channel 78

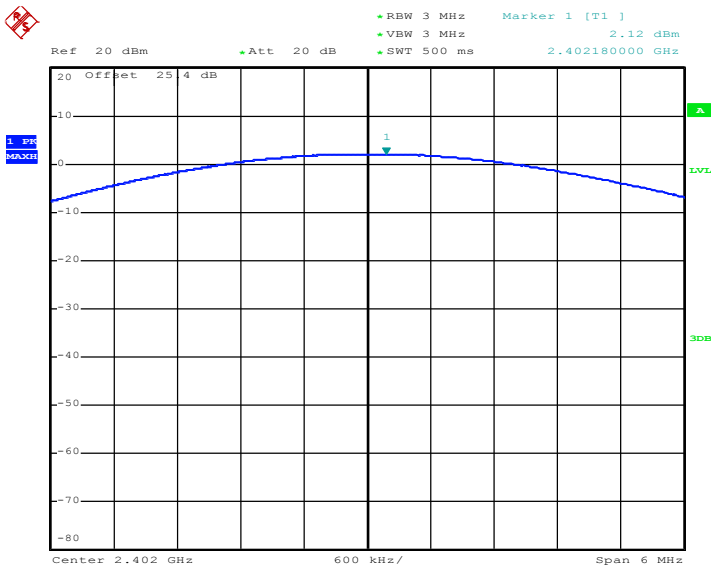


Date: 29.OCT.2012 15:04:30

Test Mode :	2Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

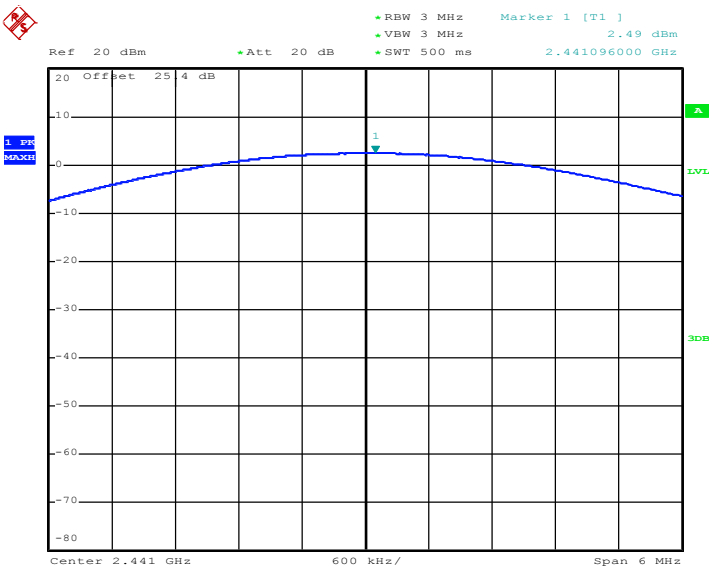
Channel	Frequency (MHz)	RF Power (dBm)		
		π /4-DQPSK	Max. Limits	Pass/Fail
		2 Mbps	(dBm)	
00	2402	2.12	20.97	Pass
39	2441	2.49	20.97	Pass
78	2480	2.14	20.97	Pass

Peak Output Power Plot on Channel 00



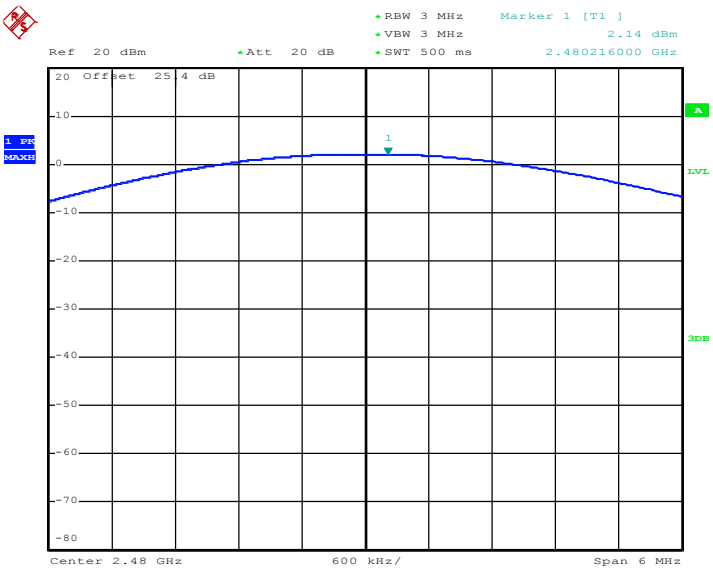
Date: 29.OCT.2012 15:02:23

Peak Output Power Plot on Channel 39



Date: 29.OCT.2012 15:03:40

Peak Output Power Plot on Channel 78

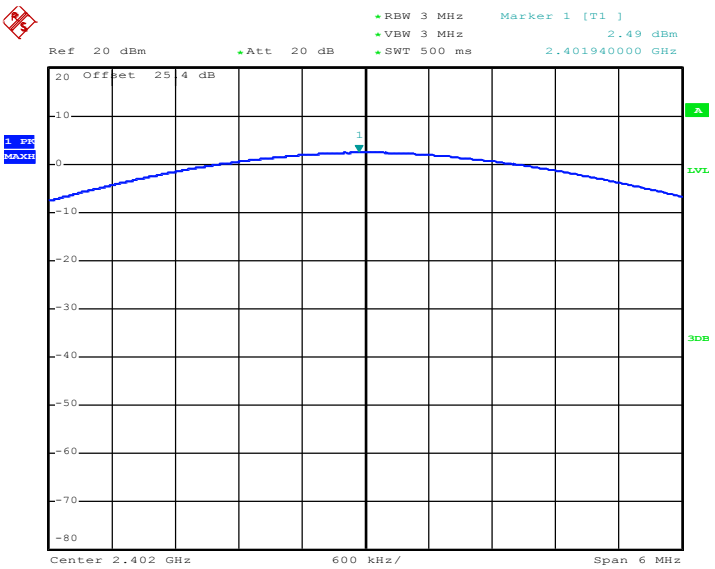


Date: 29.OCT.2012 15:04:56

Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

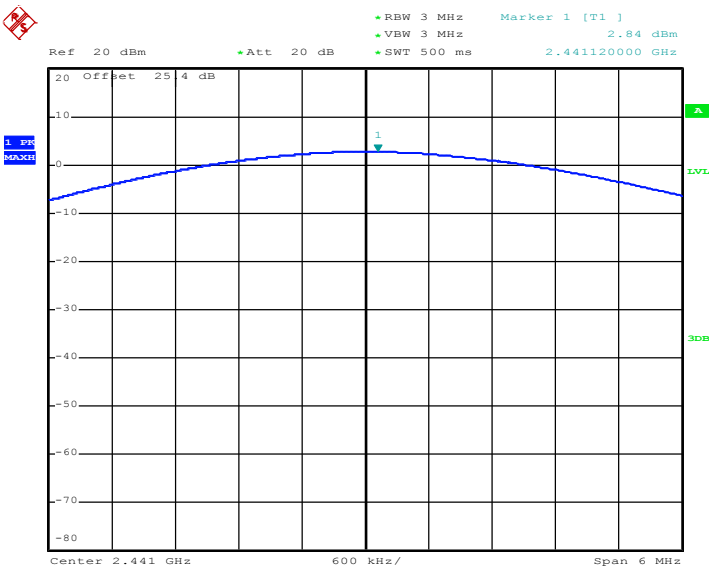
Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits	Pass/Fail
		3 Mbps	(dBm)	
00	2402	2.49	20.97	Pass
39	2441	2.84	20.97	Pass
78	2480	2.51	20.97	Pass

Peak Output Power Plot on Channel 00



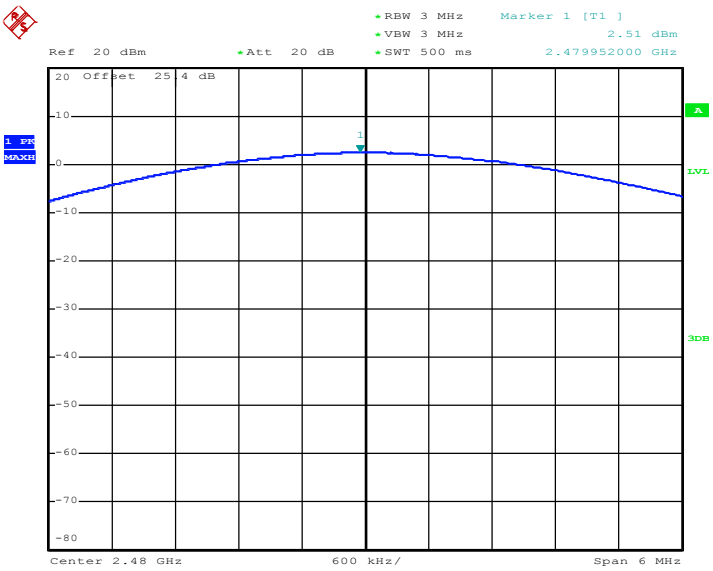
Date: 29.OCT.2012 15:02:49

Peak Output Power Plot on Channel 39



Date: 29.OCT.2012 15:04:05

Peak Output Power Plot on Channel 78



Date: 29.OCT.2012 15:05:21

3.6 Conducted 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

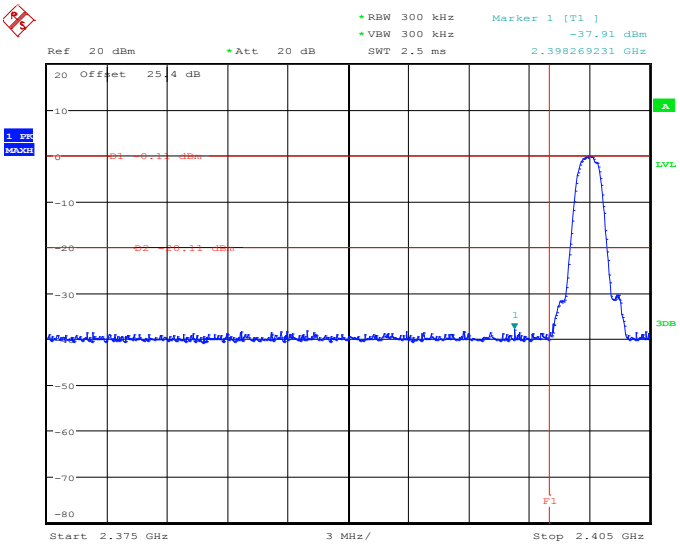
1. The testing follows the guidelines in Band-edge Compliance of RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 300KHz (≥ 1% span=30MHz), VBW = 300KHz (≥ RBW). Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 300KHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

3.6.4 Test Setup

1.6.5 Test Result of Conducted Band Edges

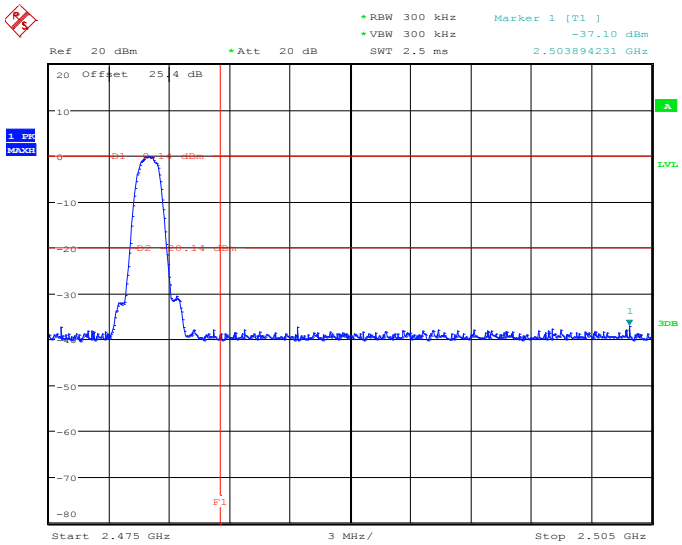
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	00 and 78	**Relative Humidity :**	50~53%
		Test Engineer :	Coyote Lin

Low Band Edge Plot on Channel 00



Date: 2.NOV.2012 14:17:01

High Band Edge Plot on Channel 78

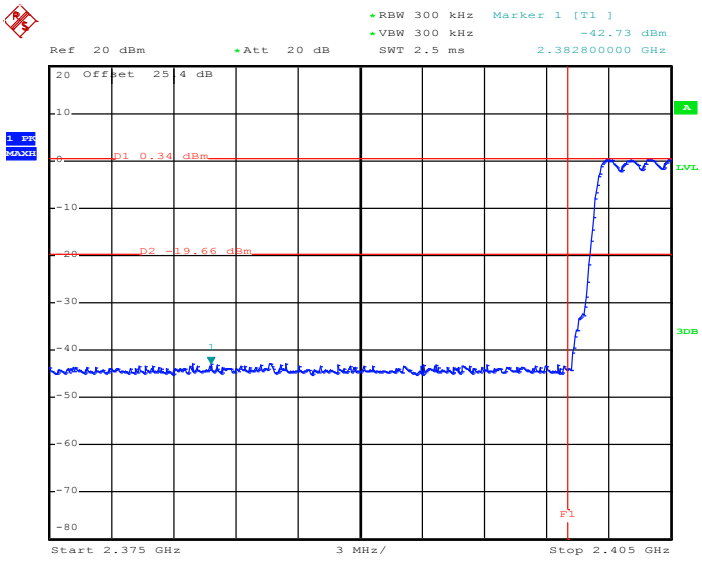


Date: 2.NOV.2012 14:18:04

1.6.6 Test Result of Conducted Hopping Mode Band Edges

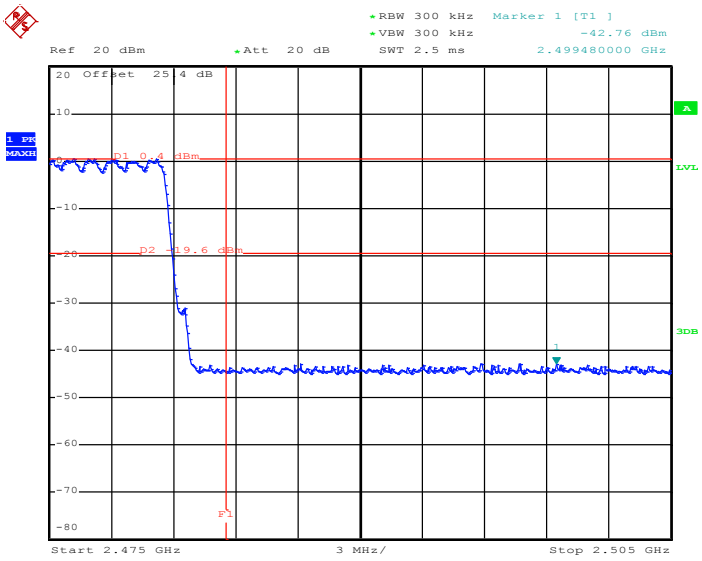
Test Mode :	3Mbps	Temperature :	24~26℃
Test Engineer :	Coyote Lin	Relative Humidity :	50~53%

Hopping Mode Low Band Edge Plot



Date: 29.OCT.2012 16:33:06

Hopping Mode High Band Edge Plot



Date: 29.OCT.2012 16:37:08

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

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.

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedure

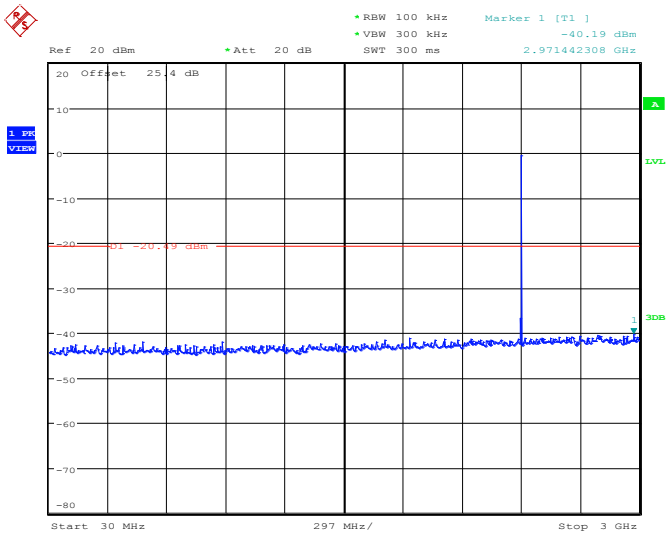
1. The testing follows the guidelines in Spurious RF Conducted Emissions of FCC Public Notice DA 00-705 Measurement Guidelines
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 KHz, VBW = 300KHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 KHz RBW.
5. Measure and record the results in the test report.

3.7.4 Test Setup

3.7.5 Test Result

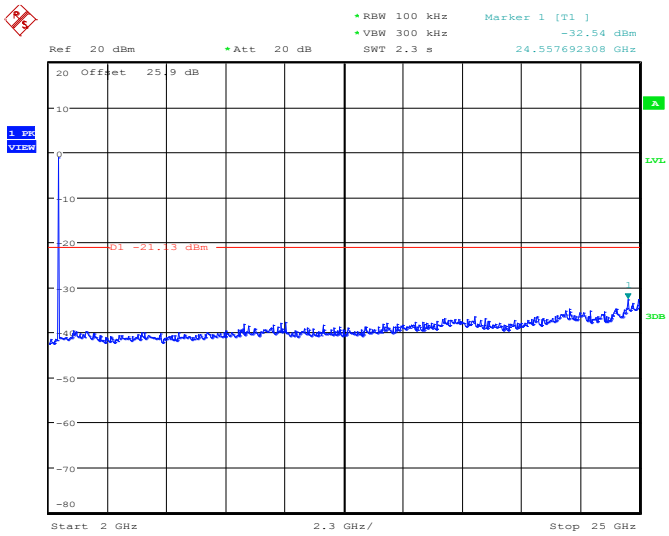
Test Mode :	3Mbps	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Coyote Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 30.OCT.2012 06:25:40

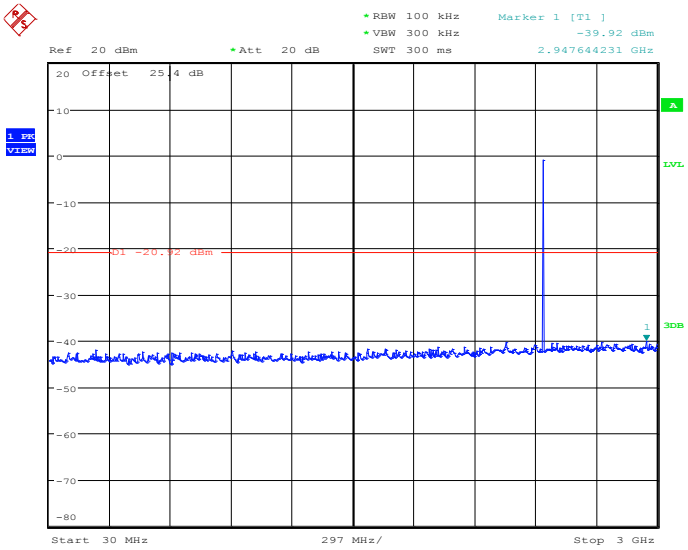
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 30.OCT.2012 06:26:32

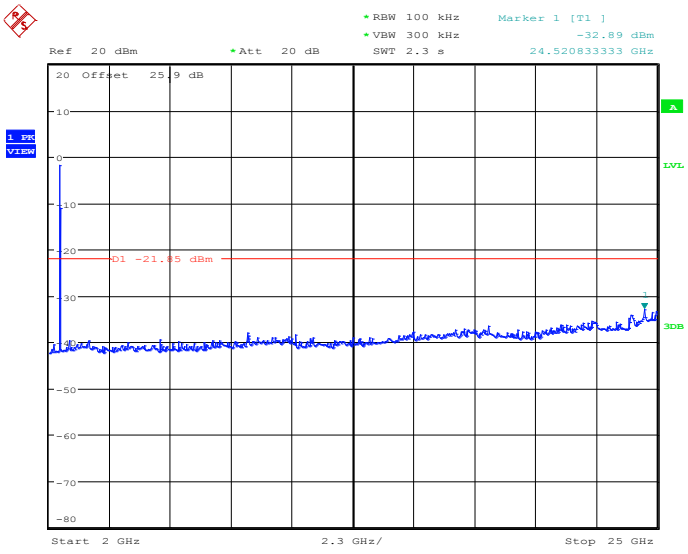
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	39	**Relative Humidity :**	50~53%
		Test Engineer :	Coyote Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 30.OCT.2012 06:27:24

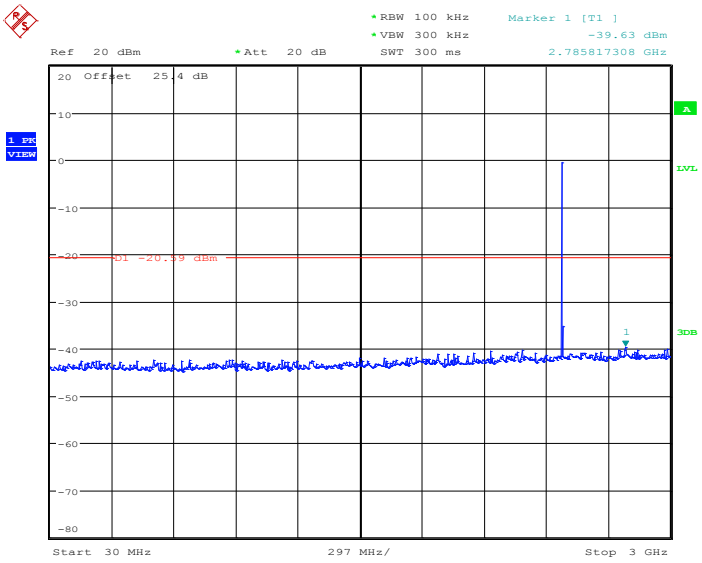
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 30.OCT.2012 06:28:16

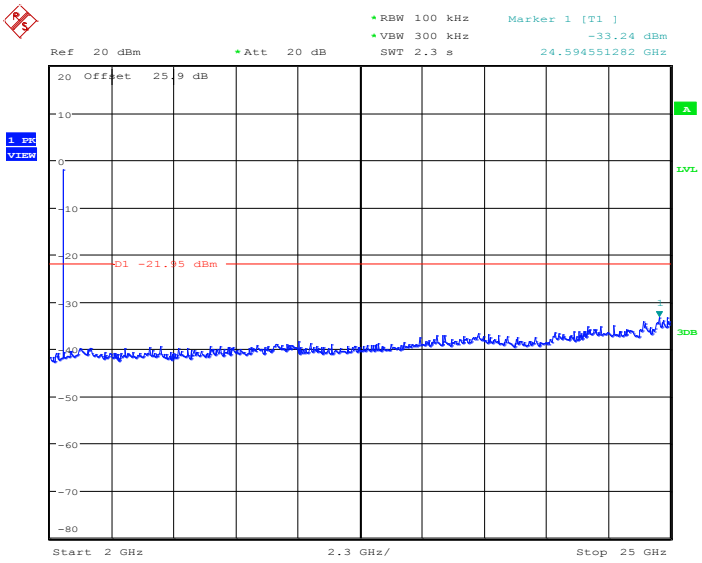
Test Mode :	3Mbps	**Temperature :**	24~26℃
Test Channel :	78	**Relative Humidity :**	50~53%
		Test Engineer :	Coyote Lin

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 30.OCT.2012 06:29:08

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 30.OCT.2012 06:29:59

3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious 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.

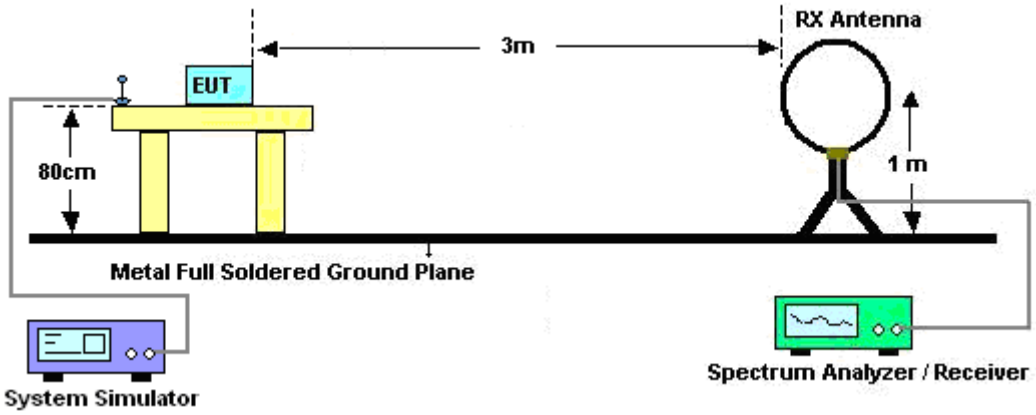
3.8.3 Test Procedures

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA 00-705 Measurement Guidelines and fulfills ANSI C63.4-2003 and the guidelines in ANSI C63.10-2009 test site requirement.
2. The EUT was placed on a turntable with 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 KHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Level = Peak Level + 20*log(Duty cycle)
7. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

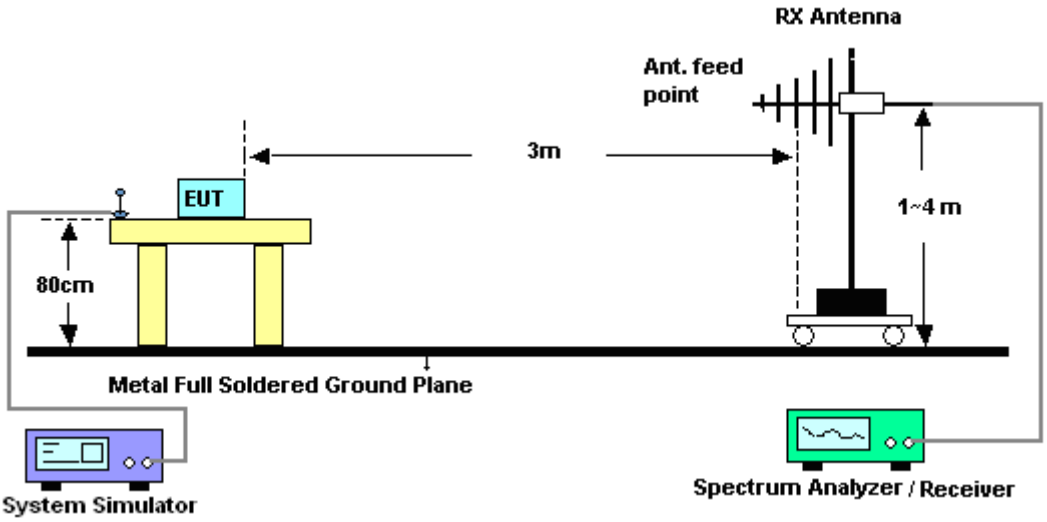
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.73dB) derived from 20log (dwell time/100ms).
For example: Average level = 44.54dBuV/m – 24.73 (dB) = 19.81dBuV/m.

3.8.4 Test Setup

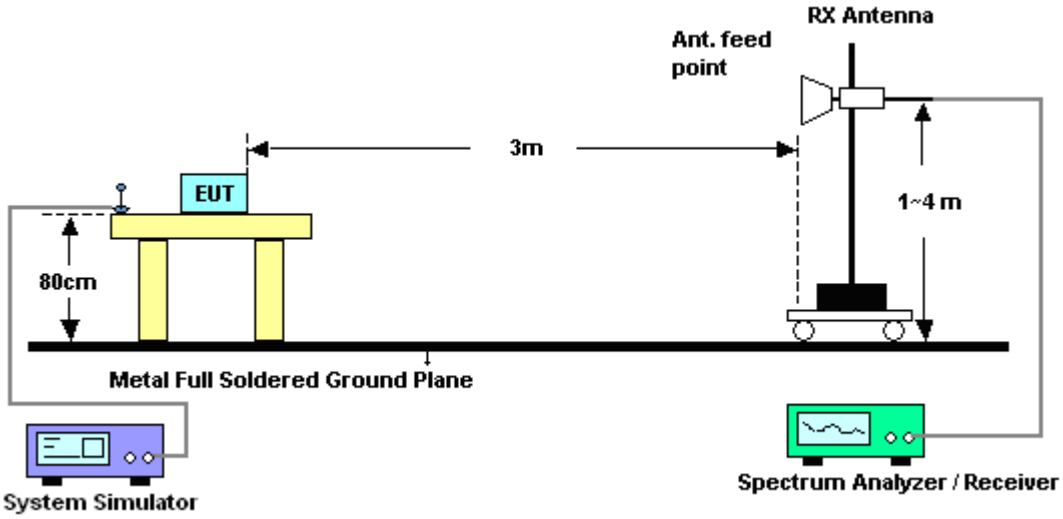
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



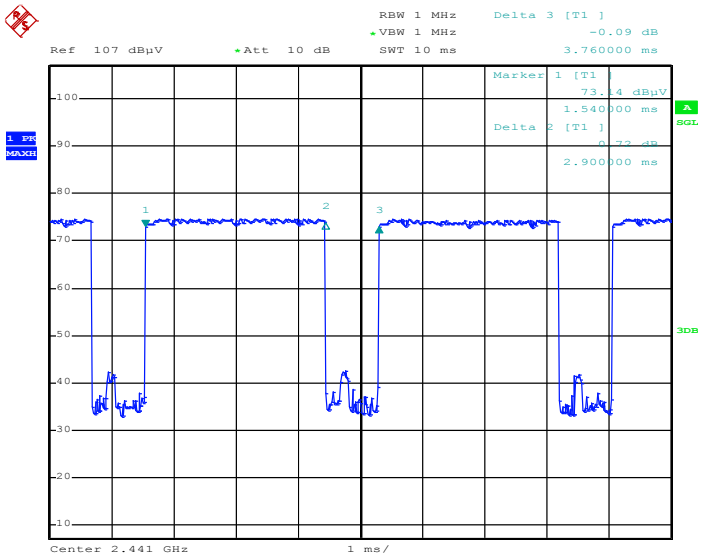
3.8.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

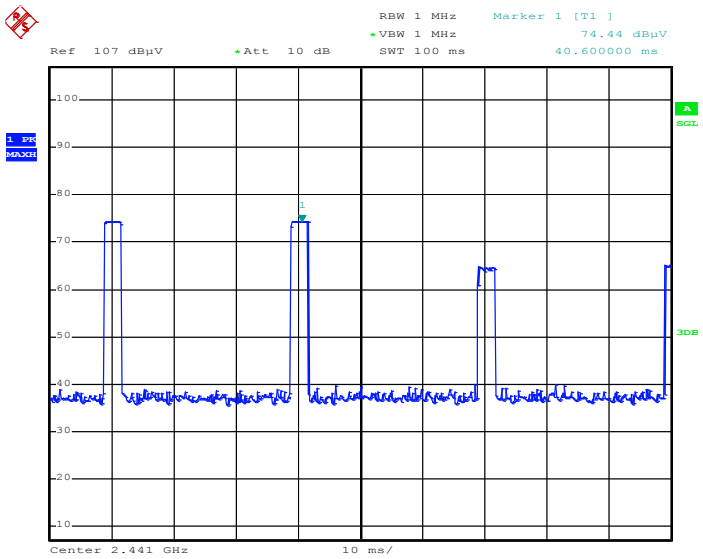
3.8.6 Duty cycle correction factor for average measurement

<Sample 1>

3DH5 on time/100ms (One Pulse) Plot on Channel 39



3DH5 on time/100ms (Count Pulses) Plot on Channel 39

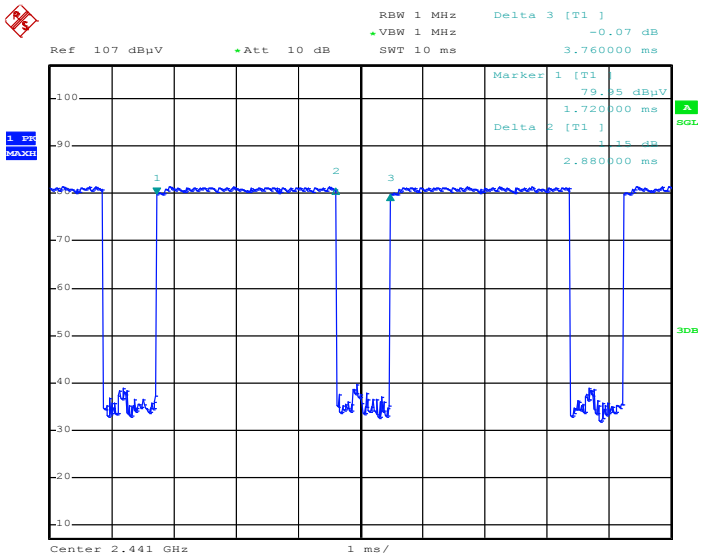


Note:

1. Duty cycle = on time/100 milliseconds = 2 * 2.90 / 100 = 5.80 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -24.73 dB
3. 3DH5 has the highest duty cycle and is reported.

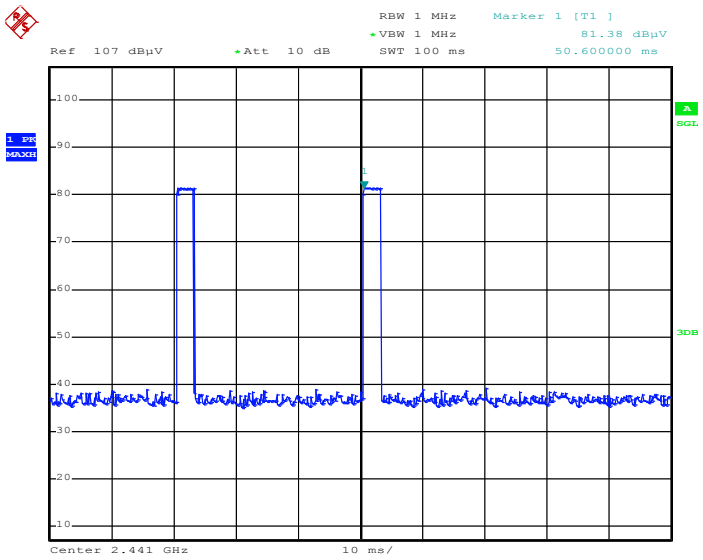
<Sample 2>

3DH5 on time/100ms (One Pulse) Plot on Channel 39



Date: 3.NOV.2012 06:31:28

3DH5 on time/100ms (Count Pulses) Plot on Channel 39



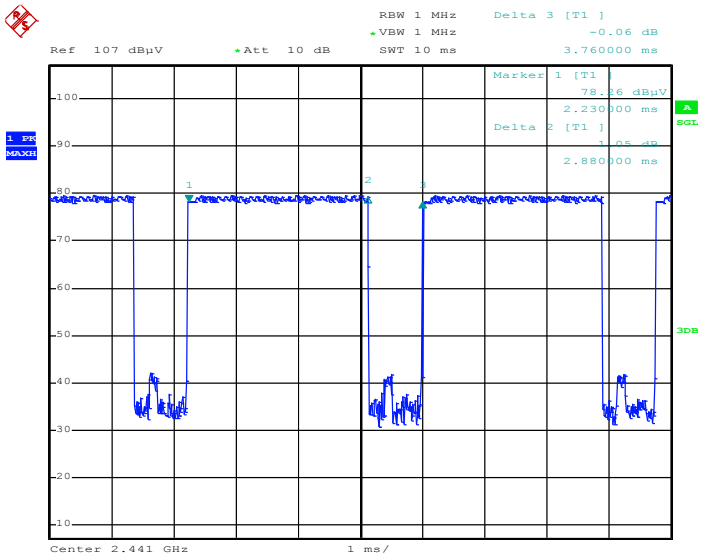
Date: 3.NOV.2012 06:31:55

Note:

1. Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
3. 3DH5 has the highest duty cycle and is reported.

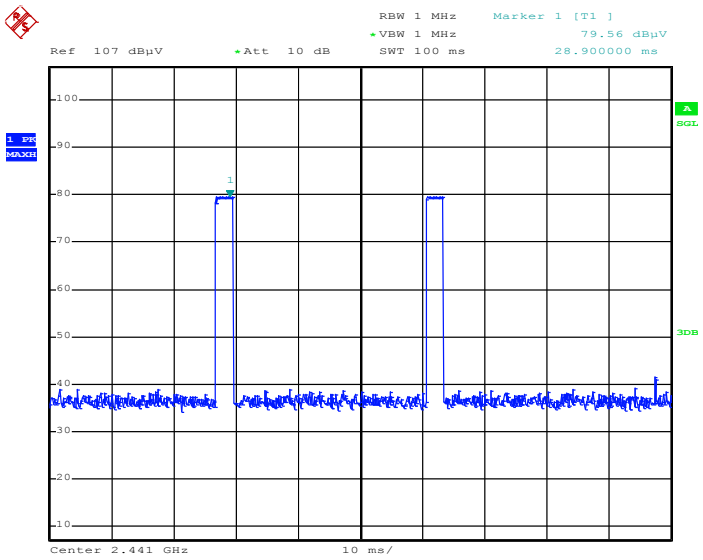
<Sample 3>

3DH5 on time/100ms (One Pulse) Plot on Channel 39



Date: 3.NOV.2012 07:08:28

3DH5 on time/100ms (Count Pulses) Plot on Channel 39



Date: 3.NOV.2012 07:09:15

Note:

1. Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
3. 3DH5 has the highest duty cycle and is reported.

3.8.7 Test Result of Radiated Band Edges

<Sample 1>

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	00	**Relative Humidity :**	50~51%
		Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2343.48	44.54	-29.46	74	40.29	32.24	5.95	33.94	120	27	Peak
2343.48	19.81	-34.19	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2321.97	44.58	-29.42	74	40.36	32.23	5.92	33.93	101	288	Peak
2321.97	19.85	-34.15	54	-	-	-	-	-	-	Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.73dB) derived from 20log (dwell time/100ms).

For example: Average level = 44.54dBuV/m – 24.73 (dB) = 19.81dBuV/m.

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	50~51%
		Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	62.93	-11.07	74	58.37	32.38	6.18	34	109	38	Peak
2483.5	38.20	-15.80	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	52.33	-21.67	74	47.77	32.38	6.18	34	101	173	Peak
2483.5	27.60	-26.40	54	-	-	-	-	-	-	Average

<Sample 2>

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	50~51%
		Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	59.54	-14.46	74	54.98	32.38	6.18	34	115	64	Peak
2483.5	34.75	-19.25	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	55.91	-18.09	74	51.35	32.38	6.18	34	165	114	Peak
2483.5	31.12	-22.88	54	-	-	-	-	-	-	Average

<Sample 3>

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	50~51%
		Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	59.43	-14.57	74	54.87	32.38	6.18	34	157	50	Peak
2483.5	34.64	-19.36	54	-	-	-	-	-	-	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	**Level (dBµV/m)**	**Over Limit (dB)**	**Limit Line (dBµV/m)**	**Read Level (dBµV)**	**Antenna Factor (dB)**	**Cable Loss (dB)**	**Preamp Factor (dB)**	**Ant Pos (cm)**	**Table Pos (deg)**	**Remark**
2483.5	53.36	-20.64	74	48.8	32.38	6.18	34	100	266	Peak
2483.5	28.57	-25.43	54	-	-	-	-	-	-	Average

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

<Sample 1>

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	00	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	99.21	-	-	94.84	32.3	6.03	33.96	120	27	Peak
2402	74.48	-	-	-	-	-	-	-	-	Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.73dB) derived from 20log (dwell time/100ms).

For example: Average level = 99.21dBuV/m – 24.73 (dB) = 74.48dBuV/m.

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	00	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2402	89.08	-	-	84.71	32.3	6.03	33.96	101	288	Peak
2402	64.35	-	-	-	-	-	-	-	-	Average

Test Mode :	3Mbps	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2441	91.41	-	-	86.93	32.35	6.11	33.98	100	135	Peak
2441	66.68	-	-	-	-	-	-	-	-	Average

Test Mode :	3Mbps	Temperature :	24~25°C
Test Channel :	39	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2441	90.17	-	-	85.69	32.35	6.11	33.98	100	294	Peak
2441	65.44	-	-	-	-	-	-	-	-	Average

Test Mode :	3Mbps	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.27	29.65	-10.35	40	40.99	20	0.53	31.87	102	96	Peak
48.9	26.47	-13.53	40	48.52	8.9	0.68	31.63	-	-	Peak
184.17	29.11	-14.39	43.5	50.15	8.94	1.26	31.24	-	-	Peak
313.3	19.37	-26.63	46	35.07	13.67	1.8	31.17	-	-	Peak
585.6	20.81	-25.19	46	29.35	19.55	2.65	30.74	-	-	Peak
811.7	24.52	-21.48	46	29.38	22.22	3.17	30.25	-	-	Peak
2480	102.1	-	-	97.54	32.38	6.18	34	109	38	Peak
2480	77.37	-	-	-	-	-	-	-	-	Average

Test Mode :	3Mbps	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
43.23	27.38	-12.62	40	47.39	11.1	0.64	31.75	111	49	Peak
62.4	26.79	-13.21	40	51.65	6.14	0.78	31.78	-	-	Peak
109.11	28.67	-14.83	43.5	48.66	10.7	1.05	31.74	-	-	Peak
358.8	16.26	-29.74	46	30.72	14.9	2.05	31.41	-	-	Peak
585.6	20.92	-25.08	46	29.46	19.55	2.65	30.74	-	-	Peak
822.9	24.35	-21.65	46	29.16	22.32	3.2	30.33	-	-	Peak
2480	91.01	-	-	86.45	32.38	6.18	34	101	173	Peak
2480	66.28	-	-	-	-	-	-	-	-	Average

<Sample 2>

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30.54	21.92	-18.08	40	33.97	19.28	0.54	31.87	100	27	Peak
143.13	13.88	-29.62	43.5	32.79	11.33	1.2	31.44	-	-	Peak
294.6	25.03	-20.97	46	41.42	13.23	1.73	31.35	-	-	Peak
435.8	17.85	-28.15	46	29.99	16.75	2.26	31.15	-	-	Peak
573.7	20.9	-25.1	46	29.84	19.35	2.62	30.91	-	-	Peak
758.5	23.48	-22.52	46	29.41	21.47	3.07	30.47	-	-	Peak
2480	96.55	-	-	91.99	32.38	6.18	34	115	64	Peak
2480	71.76	-	-	-	-	-	-	-	-	Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.79dB) derived from 20log (dwell time/100ms).

For example: Average level = 96.55dBuV/m – 24.79 (dB) = 71.76dBuV/m.

Test Mode :	3Mbps	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	25.86	-14.14	40	39.34	17.84	0.56	31.88	100	233	Peak
98.58	17.09	-26.41	43.5	38.08	9.68	0.99	31.66	-	-	Peak
294.6	20.5	-25.5	46	36.89	13.23	1.73	31.35	-	-	Peak
447.7	18.17	-27.83	46	30.01	17.01	2.3	31.15	-	-	Peak
633.9	22.3	-23.7	46	29.85	20.07	2.79	30.41	-	-	Peak
781.6	23.81	-22.19	46	29.17	21.82	3.11	30.29	-	-	Peak
2480	91.82	-	-	87.26	32.38	6.18	34	165	114	Peak
2480	67.03	-	-	-	-	-	-	-	-	Average

<Sample 3>

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
44.58	29.13	-10.87	40	49.7	10.5	0.65	31.72	100	57	Peak
144.75	13.77	-29.73	43.5	32.68	11.31	1.2	31.42	-	-	Peak
291.36	24.2	-21.8	46	40.73	13.18	1.7	31.41	-	-	Peak
519.1	19.7	-26.3	46	29.83	18.41	2.49	31.03	-	-	Peak
582.8	21.96	-24.04	46	30.6	19.5	2.64	30.78	-	-	Peak
813.1	25.74	-20.26	46	30.6	22.23	3.17	30.26	-	-	Peak
2480	98.27	-	-	93.71	32.38	6.18	34	157	50	Peak
2480	73.48	-	-	-	-	-	-	-	-	Average

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (24.79dB) derived from 20log (dwell time/100ms).

For example: Average level = 98.27dBuV/m – 24.79 (dB) = 73.48dBuV/m.

Test Mode :	3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. Test result of emissions which are 20 dB lower than the limit is not reported per15.31.		

Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	25.95	-14.05	40	37.29	20	0.53	31.87	100	258	Peak
100.74	17.56	-25.94	43.5	38.34	9.89	1	31.67	-	-	Peak
291.36	21.98	-24.02	46	38.51	13.18	1.7	31.41	-	-	Peak
514.9	19.91	-26.09	46	30.08	18.35	2.48	31	-	-	Peak
595.4	21.81	-24.19	46	30.02	19.72	2.68	30.61	-	-	Peak
782.3	24.32	-21.68	46	29.66	21.84	3.11	30.29	-	-	Peak
2480	92.04	-	-	87.48	32.38	6.18	34	100	266	Peak
2480	67.25	-	-	-	-	-	-	-	-	Average

3.9 AC Conducted Emission Measurement

3.9.1 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.

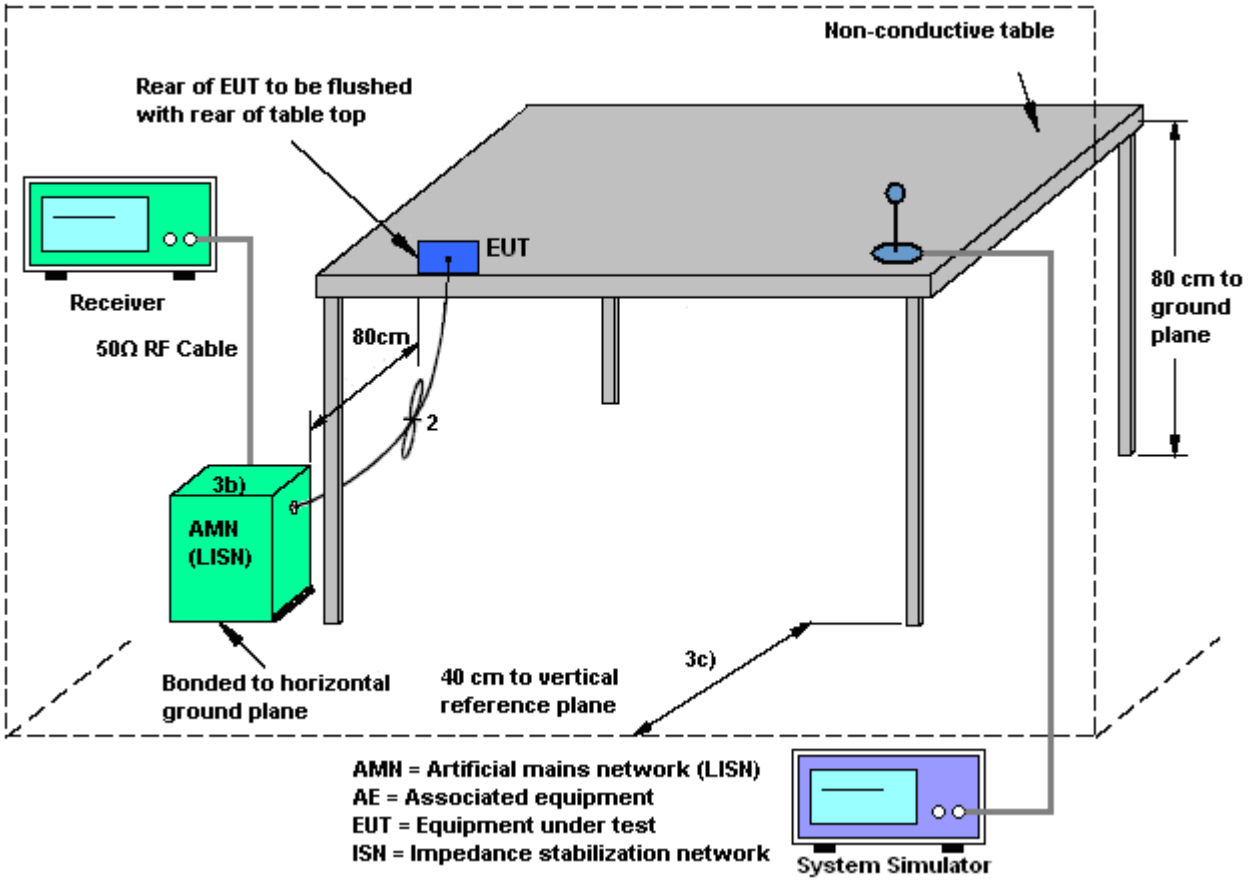
3.9.2 Measuring Instruments

See list of measuring instruments of this test report.

3.9.3 Test Procedures

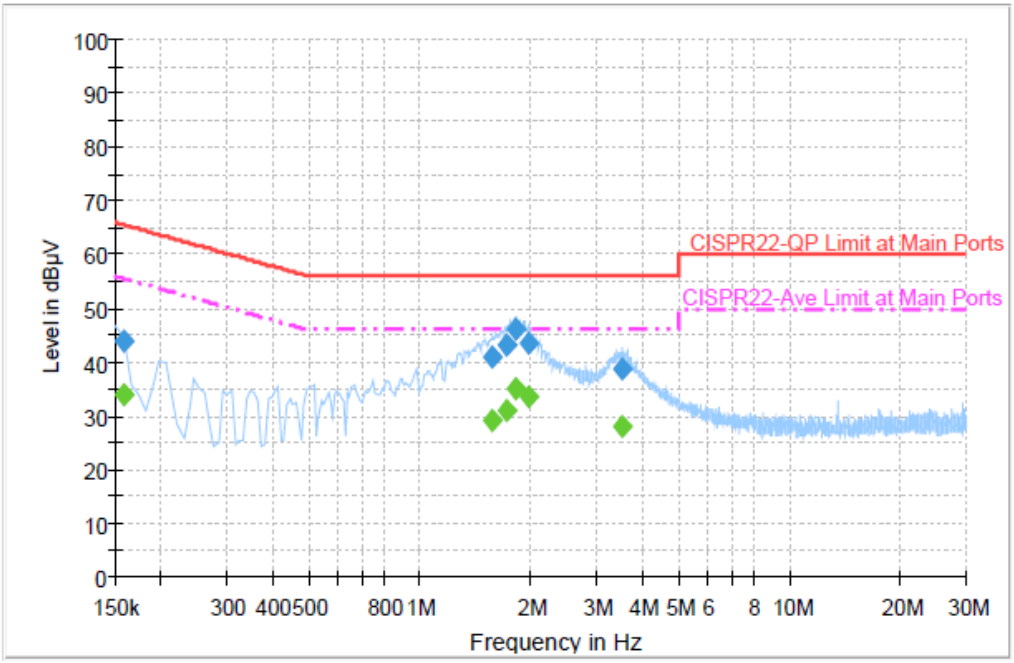
1. The test follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 test site requirement.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line 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.

3.9.4 Test Setup



3.9.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Slash Huang	**Relative Humidity :**	45~47%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + Battery + Charging Cable from Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



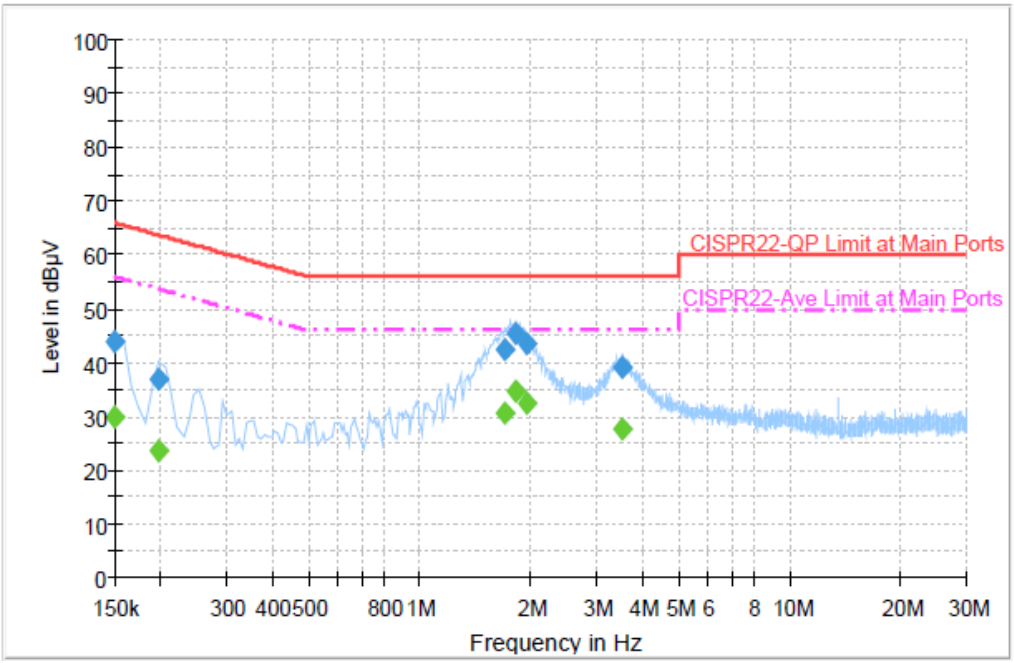
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	44.0	Off	L1	19.3	21.6	65.6
1.574000	41.0	Off	L1	19.4	15.0	56.0
1.718000	43.2	Off	L1	19.5	12.8	56.0
1.814000	46.0	Off	L1	19.5	10.0	56.0
1.966000	43.4	Off	L1	19.5	12.6	56.0
3.518000	38.8	Off	L1	19.6	17.2	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	33.8	Off	L1	19.3	21.8	55.6
1.574000	29.1	Off	L1	19.4	16.9	46.0
1.718000	30.9	Off	L1	19.5	15.1	46.0
1.814000	35.1	Off	L1	19.5	10.9	46.0
1.966000	33.5	Off	L1	19.5	12.5	46.0
3.518000	28.0	Off	L1	19.6	18.0	46.0

Test Mode :	Mode 1	**Temperature :**	20~22℃
Test Engineer :	Slash Huang	**Relative Humidity :**	45~47%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WCDMA Band V Idle + Bluetooth Link + WLAN Link + MPEG4 + Earphone + Battery + Charging Cable from Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	43.9	Off	N	19.4	22.1	66.0
0.198000	37.0	Off	N	19.3	26.7	63.7
1.702000	42.3	Off	N	19.5	13.7	56.0
1.814000	45.5	Off	N	19.5	10.5	56.0
1.958000	43.4	Off	N	19.5	12.6	56.0
3.526000	39.0	Off	N	19.6	17.0	56.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	29.8	Off	N	19.4	26.2	56.0
0.198000	23.7	Off	N	19.3	30.0	53.7
1.702000	30.6	Off	N	19.5	15.4	46.0
1.814000	34.7	Off	N	19.5	11.3	46.0
1.958000	32.4	Off	N	19.5	13.6	46.0
3.526000	27.7	Off	N	19.6	18.3	46.0

3.10 Antenna Requirements

3.10.1 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.

3.10.2 Antenna Connected Construction

Non-standard connector used.

3.10.3 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	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Oct. 29, 2012~ Nov. 02, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	Jun. 05, 2012	Oct. 29, 2012~ Nov. 02, 2012	Jun. 04, 2013	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	Sep. 27, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	Sep. 27, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	Sep. 27, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Sep. 27, 2012	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Sep. 27, 2012	Jul. 27, 2013	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Sep. 12, 2012~ Oct. 05, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 06, 2012	Oct. 06, 2012~ Nov. 03, 2012	Oct. 05, 2013	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Sep. 12, 2012~ Nov. 03, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 22, 2012	Sep. 12, 2012~ Nov. 03, 2012	Aug. 21, 2013	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A023 62	1GHz ~ 26.5GHz	Dec. 05, 2011	Sep. 12, 2012~ Nov. 03, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	159088	1GHz ~ 18GHz	Mar. 10, 2012	Sep. 12, 2012~ Nov. 03, 2012	Mar. 09, 2013	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Feb. 27, 2012	Sep. 12, 2012~ Nov. 03, 2012	Feb. 26, 2013	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 03, 2012	Sep. 12, 2012~ Nov. 03, 2012	Sep. 02, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 251	15GHz ~ 40GHz	Oct. 21, 2011	Sep. 12, 2012~ Sep. 27, 2012	Oct. 20, 2012	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170 251	15GHz ~ 40GHz	Sep. 28, 2012	Sep. 28, 2012~ Nov. 03, 2012	Sep. 27, 2013	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/00 1	9 kHz~30 MHz	Jul. 03, 2012	Sep. 12, 2012~ Nov. 03, 2012	Jul. 02, 2014	Radiation (03CH07-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	Jun. 05, 2012	Sep. 12, 2012~ Nov. 03, 2012	Jun. 04, 2013	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.26**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

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

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 EP282414-02 as below.