FCC RF Test Report

APPLICANT	**:**	**Dodds LLC**
EQUIPMENT	**:**	**Tablet PC**
MODEL NAME	**:**	**3HT7G**
FCC ID	**:**	**ZHS-1013**
STANDARD	**:**	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	**:**	**(DTS) Digital Transmission System**

The product was completely tested on Aug. 17, 2012. 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 ANSI C63.10-2009 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

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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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR1O2041A	Rev. 01	Initial issue of report	Jul. 18, 2012
FR1O2041A	Rev. 02	1. Add average reduced VBW measurement data for radiated emission measurement for WLAN. 2. Add correction factor and corresponding section for the radiated emission measurement for BT.	Aug. 17, 2012

SUMMARY OF WLAN TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.2	15.247(b)	A8.4	Power Output	≤ 30dBm	Pass	-
3.3	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
3.4	15.247(d)	A8.5	Spurious Emission	≤ 20 dBc	Pass	-
3.5	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
3.6	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 8.90 dB at 4.998 MHz
3.7	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.45 dB at 2389.92 MHz
3.8	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

SUMMARY OF BLUETOOTH TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
4.1	15.247(a)(1)(iii)	A8.4(2)	Number of Channels	≥ 15Chs	Pass	-
4.2	15.247(a)(1)	A8.1(b)	Channel Separation	≥ 2/3 of 20dB BW	Pass	-
4.3	15.247(a)(1)(i)	A8.1(d)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
4.4	15.247(a)(1)	A8.1(a)	20dB Bandwidth	N/A	Pass	-
4.5	15.247(b)	A8.1(b)	Peak Power Output Measurement	≤125mW for BT	Pass	-
4.6	15.247(d)	A8.5	Frequency Band Edges	≤ 20dBc	Pass	-
4.7	15.247(d)	A8.5	Spurious Emission	≤ 20 dBc	Pass	-
4.8	15.247(e)	A8.2(b)	Power Spectral Density	≤ 8dBm	Pass	-
4.9	15.207	Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 8.90 dB at 4.998 MHz
4.10	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 2.75 dB at 183.630 MHz
4.11	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Dodds LLC
Suite 400, 8040 Excelsior Drive Madison, WI 53717 302.691-6287

1.2 Feature of Equipment Under Test

Product Specification	
Equipment	Tablet PC
Model Name	3HT7G
FCC ID	ZHS-1013
EUT supports Radios application	WLAN 11abgn / Bluetooth

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	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n: 5180MHz ~ 5240MHz, 5745MHz ~5805MHz. Bluetooth : 2402 MHz ~ 2480 MHz
Maximum Peak Output Power to Antenna	**<2.4GHz>** **<Legacy Ant 2>** 802.11b : 21.48 dBm (0.1406 W) 802.11g : 26.44 dBm (0.4406 W) **<SISO Ant 2>** 802.11 n HT-20 : 23.82 dBm (0.2409 W) **<MIMO Ant 1+2>** 802.11 n HT-20 : 27.50 dBm (0.5624 W)
	<5GHz> **<Legacy Ant 2>** 802.11a : 20.23 dBm / 0.1054 W **<SISO Ant 2>** 802.11n HT-20 : 19.95 dBm / 0.0989 W 802.11n HT-40 : 20.56 dBm / 0.1138W **<MIMO Ant 1+2>** 802.11n HT-20 : 23.57 dBm / 0.2276 W 802.11n HT-40 : 22.80 dBm / 0.1904 W
	<Ant 1> Bluetooth (1Mbps) : 8.35 dBm (0.0068 W) Bluetooth EDR (2Mbps) : 8.37 dBm (0.0069 W) Bluetooth EDR (3Mbps) : 8.74 dBm (0.0075 W)

<table>
<tr><th colspan="2">Product Specification subjective to this standard</th></tr>
<tr><td rowspan="2">Duty Cycle</td><td><2.4GHz>
<Legacy Ant 2>
802.11b : 97.65%
802.11g : 87.16%
<SISO Ant 2>
802.11n HT-20 : 86.36%
<MIMO Ant 1+2>
802.11n HT-20 : 76.38% for Ant 1
802.11n HT-20 : 75.90% for Ant 2</td></tr>
<tr><td><5GHz>
<Legacy Ant 2>
802.11a : 86.50%
<SISO Ant 1>
802.11n HT-20 : 86.08%
802.11n HT-40 : 86.43%
<MIMO Ant 1+2>
802.11n HT-20 : 76.06% for Ant 1
802.11n HT-20 : 75.46% for Ant 2
802.11n HT-40 : 75.90% for Ant 1
802.11n HT-40 : 75.56% for Ant 2</td></tr>
<tr><td>Antenna Type</td><td><2.4GHz>
Ant 1 :
PIFA Antenna with gain 1.90 dBi
Ant 2 :
PIFA Antenna with gain 1.50 dBi
<5GHz>
Ant 1 :
PIFA Antenna with gain 2.50 dBi
Ant 2 :
PIFA Antenna with gain 2.70 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11b : DSSS (BPSK / QPSK / CCK)
802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
Bluetooth 3.0 EDR : GFSK, π/4-DQPSK, 8-DPSK</td></tr>
<tr><td>Antenna Function Description</td><td>
<table>
<tr><th></th><th>Ant 1.</th><th>Ant 2.</th></tr>
<tr><td>Bluetooth V3.0</td><td>V</td><td>-</td></tr>
<tr><td>802.11 b</td><td>-</td><td>V</td></tr>
<tr><td>802.11 g</td><td>-</td><td>V</td></tr>
<tr><td>802.11 a</td><td>-</td><td>V</td></tr>
<tr><td>802.11 n SISO</td><td>-</td><td>V</td></tr>
<tr><td>802.11 n MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

Note: WLAN and BT can't transmit simultaneously.

1.3 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	03CH07HY	722060/4086B-1

1.4 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
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance DR01
- 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, and FCC Part 15E recorded in separated test reports.

1.5 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
2.	Bluetooth Base Station	R&S	CBT32	N/A	N/A	Unshielded, 1.8 m
3.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
4.	LCD Monitor	Dell	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
6.	iPod Earphone	Apple	N/A	FCC DoC	Unshielded, 1.0 m	N/A
7.	AC Adapter	N/A	N/A	N/A	N/A	N/A

2 Test Configuration of Equipment Under Test

2.1 Test Mode

The EUT supports 802.11 a/b/g/n and Bluetooth V3.0 with two diversity antennas, Antenna 1 and 2, and completely uncorrelated MIMO modes. The Antenna 1 is receiver only for WLAN legacy/SISO mode, and dedicates for Bluetooth. The test configurations are reported in following sections.

For conducted test cases, the high, middle, low channels of legacy modes (802.11b,g,a) and 802.11n mode (SISO, MIMO) were tested respectively by choosing the highest RF output power chain, and data rate from preliminary conducted power testing as shown in section 2.3.

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: conducted emission (150 KHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

For radiated measurements, pre-scanned tests were conducted to determine the final configuration from all possible combinations. Pre-scanned tests, X, Y, Z in three orthogonal panels, were conducted to determine the final configuration from all possible combinations modes, and the worst mode (Z plane for 2.4G, Y plane for 5G <Legacy / SISO>, and X plane for 5G <MIMO>) is recorded in this report only, and the worst modes from the legacy modes and n modes were used for the full radiated test measurement.

Test Cases	
Conducted TCs	**<WLAN Legacy Ant 2>**

Test Mode	802.11b	802.11g
CH01	Mode 1	Mode 4
CH06	Mode 2	Mode 5
CH11	Mode 3	Mode 6

Test Mode	802.11a
CH149	Mode 7
CH157	Mode 8
CH161	Mode 9

<WLAN SISO Ant 2>

Test Mode	2.4GHz 802.11n HT-20
CH01	Mode 10
CH06	Mode 11
CH11	Mode 12

Test Mode	5GHz 802.11n HT-20
CH149	Mode 13
CH157	Mode 14
CH161	Mode 15

Test Mode	5GHz 802.11n HT-40
CH151	Mode 16
CH159	Mode 17

<WLAN MIMO Ant 1>

Test Mode	2.4GHz 802.11n HT-20
CH01	Mode 18
CH06	Mode 19
CH11	Mode 20

Test Mode	5GHz 802.11n HT-20
CH149	Mode 21
CH157	Mode 22
CH161	Mode 23

Test Mode	5GHz 802.11n HT-40
CH151	Mode 24
CH159	Mode 25

<table>
<tr><th colspan="2">Test Cases</th></tr>
<tr><td>Conducted TCs</td><td>
<WLAN MIMO Ant 2>
<table>
<tr><th>Test Mode</th><th>2.4GHz 802.11n HT-20</th></tr>
<tr><td>CH01</td><td>Mode 26</td></tr>
<tr><td>CH06</td><td>Mode 27</td></tr>
<tr><td>CH11</td><td>Mode 28</td></tr>
</table>
<table>
<tr><th>Test Mode</th><th>5GHz 802.11n HT-20</th></tr>
<tr><td>CH149</td><td>Mode 29</td></tr>
<tr><td>CH157</td><td>Mode 30</td></tr>
<tr><td>CH161</td><td>Mode 31</td></tr>
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<table>
<tr><th>Test Mode</th><th>5GHz 802.11n HT-40</th></tr>
<tr><td>CH151</td><td>Mode 32</td></tr>
<tr><td>CH159</td><td>Mode 33</td></tr>
</table>
<BT>
<table>
<tr><th>Test Mode</th><th>1Mbps</th><th>2Mbps</th><th>3Mbps</th></tr>
<tr><td>CH00</td><td>Mode 1</td><td>Mode 4</td><td>Mode 7</td></tr>
<tr><td>CH39</td><td>Mode 2</td><td>Mode 5</td><td>Mode 8</td></tr>
<tr><td>CH78</td><td>Mode 3</td><td>Mode 6</td><td>Mode 9</td></tr>
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<tr><td>Radiated TCs</td><td>
<WLAN Legacy / SISO Ant 2>
<table>
<tr><th>Test Mode</th><th>802.11b</th><th>802.11g</th><th>2.4GHz 802.11n HT-20</th></tr>
<tr><td>CH01</td><td>Mode 1</td><td>Mode 4</td><td>Mode 7</td></tr>
<tr><td>CH06</td><td>Mode 2</td><td>Mode 5</td><td>-</td></tr>
<tr><td>CH11</td><td>Mode 3</td><td>Mode 6</td><td>Mode 8</td></tr>
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<table>
<tr><th>Test Mode</th><th>802.11a</th><th>5GHz 802.11n HT-20</th></tr>
<tr><td>CH149</td><td>Mode 9</td><td>Mode 12</td></tr>
<tr><td>CH157</td><td>Mode 10</td><td>-</td></tr>
<tr><td>CH161</td><td>Mode 11</td><td>Mode 13</td></tr>
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<table>
<tr><th>Test Mode</th><th>5GHz 802.11n HT-40</th></tr>
<tr><td>CH151</td><td>Mode 14</td></tr>
<tr><td>CH159</td><td>Mode 15</td></tr>
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<WLAN MIMO>
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<tr><th>Test Mode</th><th>2.4GHz 802.11n HT-20</th></tr>
<tr><td>CH01</td><td>Mode 16</td></tr>
<tr><td>CH06</td><td>Mode 17</td></tr>
<tr><td>CH11</td><td>Mode 18</td></tr>
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<tr><th>Test Mode</th><th>5GHz 802.11n HT-20</th></tr>
<tr><td>CH149</td><td>Mode 19</td></tr>
<tr><td>CH157</td><td>Mode 20</td></tr>
<tr><td>CH161</td><td>Mode 21</td></tr>
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<tr><th>Test Mode</th><th>5GHz 802.11n HT-40</th></tr>
<tr><td>CH151</td><td>Mode 22</td></tr>
<tr><td>CH159</td><td>Mode 23</td></tr>
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<BT>
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<tr><th>Test Mode</th><th>3Mbps</th></tr>
<tr><td>CH00</td><td>Mode 1</td></tr>
<tr><td>CH39</td><td>Mode 2</td></tr>
<tr><td>CH78</td><td>Mode 3</td></tr>
</table>
</td></tr>
<tr><td>AC Conducted Emission</td><td>Mode 1 :WLAN (2.4G) Link + Bluetooth Link + HDMI Cable + USB Cable (Charging from Adapter) + Earphone + MPEG4
Mode 2 WLAN (5G) Link + Bluetooth Link + HDMI Cable + USB Cable (Charging from Adapter) + Earphone + MPEG4</td></tr>
<tr><td colspan="2">Remark: The worst case of conducted emission is mode 2; only the test data of it was reported.</td></tr>
</table>

2.2 Carrier Frequency Channel

The EUT supports channels number 1~11.

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

The EUT supports channels number 149~161.

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4	149	5745	159	5795
	151	5755	161	5805
	157	5785	-	-

For BT has 79 channel numbers with 1MHz channel spacing.

Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78

For example

Channel (n)	Frequency (MHz)
00	2402
39	2441
78	2480

2.3 Pre-Scanned RF Power

2.3.1 WLAN RF Output Power

Preliminary tests were performed in different data rate as below table and the highest power data rates (11b, 11g, 11n HT-20 modes) were chosen for full test in the following sections to demonstrate compliance to the FCC limit line.

<Legacy Ant 2>

2.4GHz 802.11b mode				
Data Rate (MHz)	**1M bps**	**2M bps**	**5.5M bps**	**11M bps**
Peak Power (dBm)	**21.48**	21.37	21.43	21.31

2.4GHz 802.11g mode								
Data Rate (MHz)	**6M bps**	**9M bps**	**12M bps**	**18M bps**	**24M bps**	**36M bps**	**48M bps**	**54M bps**
Peak Power (dBm)	**26.44**	26.29	26.21	26.19	26.09	26.22	25.72	25.84

5GHz 802.11a mode								
Data Rate (MHz)	**6M bps**	**9M bps**	**12M bps**	**18M bps**	**24M bps**	**36M bps**	**48M bps**	**54M bps**
Peak Power (dBm)	**20.23**	20.18	20.12	20.02	19.97	19.81	19.79	19.97

<SISO Ant 2>

2.4GHz 802.11n HT-20 mode								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**23.82**	23.75	23.72	23.80	23.65	23.56	23.39	23.45

5GHz 802.11n HT-20 mode								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**19.95**	19.92	19.82	19.73	19.67	19.72	19.92	19.88

5GHz 802.11n HT-40 mode								
Data Rate (MHz)	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Peak Power (dBm)	**20.56**	19.98	19.01	19.52	19.42	19.27	19.13	18.89

<MIMO Ant 1 + 2 >

2.4GHz 802.11n HT-20 mode								
Data Rate (MHz)	**MCS8**	**MCS9**	**MCS10**	**MCS11**	**MCS12**	**MCS13**	**MCS14**	**MCS15**
Peak Power (dBm) MIMO – Ant 1	24.47	23.98	24.13	24.06	23.82	**24.54**	23.68	23.94
Peak Power (dBm) MIMO – Ant 2	24.51	24.03	**24.81**	23.81	23.93	23.74	23.55	23.87
MIMO Ant 1 + 2 (Measure and Sum)	**27.50**	27.02	27.49	26.95	26.89	27.17	26.63	26.92

5GHz 802.11n HT-20 mode								
Data Rate (MHz)	**MCS8**	**MCS9**	**MCS10**	**MCS11**	**MCS12**	**MCS13**	**MCS14**	**MCS15**
Power (dBm) MIMO – Ant 1	**20.93**	20.59	20.71	20.49	20.67	20.14	20.39	20.41
Power (dBm) MIMO – Ant 2	20.16	20.07	**20.35**	20.13	20.02	19.92	19.75	19.83
MIMO Ant 1 + 2 (Measure and Sum)	**23.57**	23.35	23.54	23.32	23.37	23.04	23.09	23.14

5GHz 802.11n HT-40 mode								
Data Rate (MHz)	**MCS8**	**MCS9**	**MCS10**	**MCS11**	**MCS12**	**MCS13**	**MCS14**	**MCS15**
Power (dBm) MIMO – Ant 1	**20.51**	19.75	19.63	20.07	19.81	20.10	19.34	19.43
Power (dBm) MIMO – Ant 2	18.92	19.09	19.11	**19.37**	18.91	19.16	19.03	18.41
MIMO Ant 1 + 2 (Measure and Sum)	**22.80**	22.44	22.39	22.74	22.39	22.67	22.20	21.96

2.3.2 BT RF Output Power

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

<Ant 1>

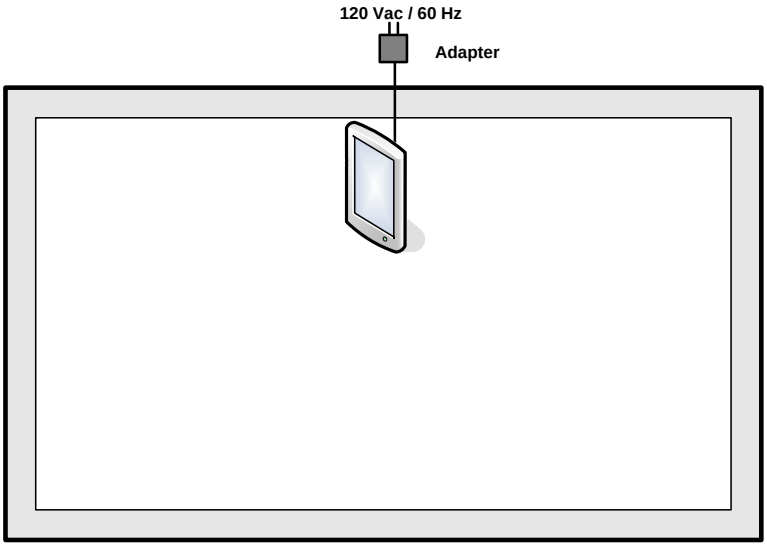
Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	π/4-DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	8.35 dBm	8.37 dBm	**8.74 dBm**
Ch39	2441MHz	8.06 dBm	8.06 dBm	8.39 dBm
Ch78	2480MHz	8.16 dBm	8.16 dBm	8.56 dBm

Remark:

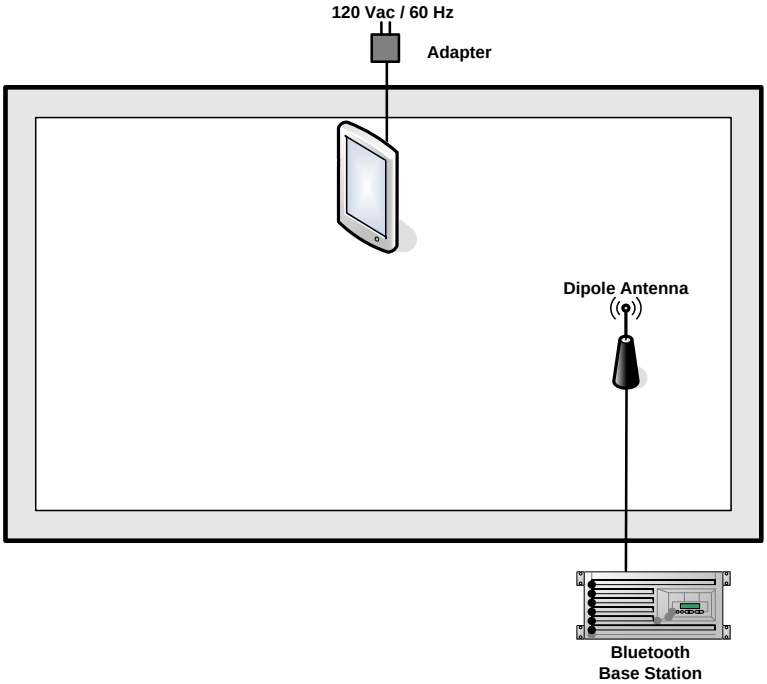
1. All the test data for each data rate were verified, but only the worst case was reported.
2. The data rate was set in 3Mbps for all the test items due to the highest RF output power.
3. The EUT is programmed to transmit signals continuously for all testing.

2.4 Connection Diagram of Test System

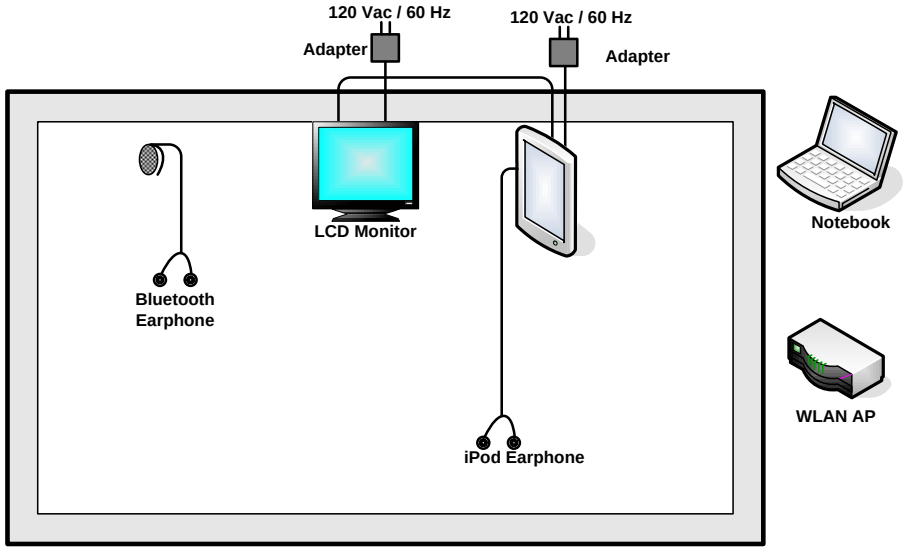
<WLAN Tx Mode>



<BT Tx Mode>



<AC Conducted Emission Mode>



2.5 RF Utility

The programmed RF utility “PUTTERY.EXE”, is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing.

3 WLAN Test Result

3.1 6dB Bandwidth Measurement

3.1.1 Limit of 6dB Bandwidth

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

3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance DR01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW).Set the Video bandwidth (VBW) ≥ 3 * RBW in order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

3.1.4 Test Setup

3.1.5 Test Result of 6dB Bandwidth

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Legacy Ant 2		
01	2412	8.14	0.5	Pass
06	2437	8.17	0.5	Pass
11	2462	8.15	0.5	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Legacy Ant 2		
01	2412	16.23	0.5	Pass
06	2437	16.22	0.5	Pass
11	2462	16.04	0.5	Pass

Test Mode :	2.4GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11 n HT-20 6dB Bandwidth (MHz)			6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		SISO Ant 2	MIMO Ant 1	MIMO Ant 2		
01	2412	17.31	17.24	17.12	0.5	Pass
06	2437	17.24	17.24	17.04	0.5	Pass
11	2462	17.32	17.12	17.00	0.5	Pass

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a 6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		Legacy Ant 2		
149	5745	15.84	0.5	Pass
157	5785	15.92	0.5	Pass
161	5805	16.00	0.5	Pass

Test Mode :	5GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

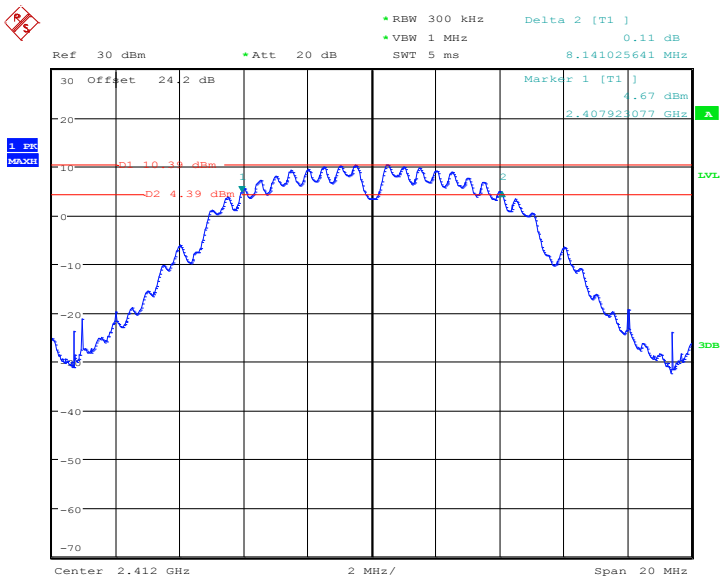
Channel	Frequency (MHz)	5GHz 802.11n (HT-20, SISO, MIMO) 6dB Bandwidth (MHz)			6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		SISO Ant 2	MIMO Ant 1	MIMO Ant 2		
149	5745	17.24	16.92	16.64	0.5	Pass
157	5785	16.72	17.12	16.64	0.5	Pass
161	5805	17.08	16.80	16.52	0.5	Pass

Test Mode :	5GHz 802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n (HT-40, SISO, MIMO) 6dB Bandwidth (MHz)			6dB Bandwidth Min. Limit (MHz)	Pass/Fail
		SISO Ant 2	MIMO Ant 1	MIMO Ant 2		
151	5755	35.32	36.32	36.00	0.5	Pass
159	5795	35.52	36.48	36.16	0.5	Pass

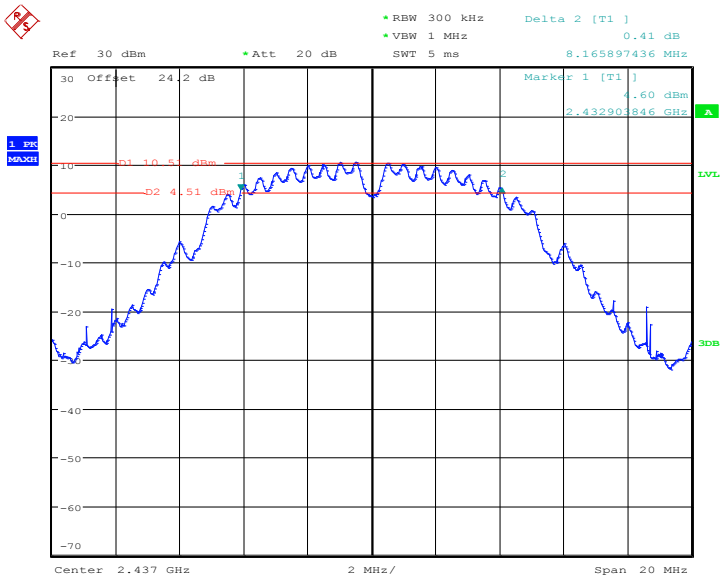
3.1.7 Test Result of 6dB Bandwidth Plots

6 dB Bandwidth Plot on 802.11b Channel 01 – Legacy Ant 2



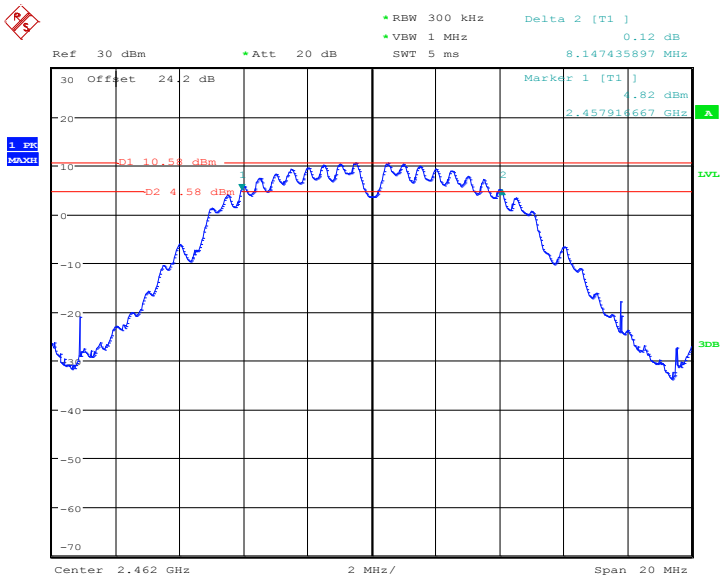
Date: 4.JUN.2012 15:34:54

6 dB Bandwidth Plot on 802.11b Channel 06 – Legacy Ant 2



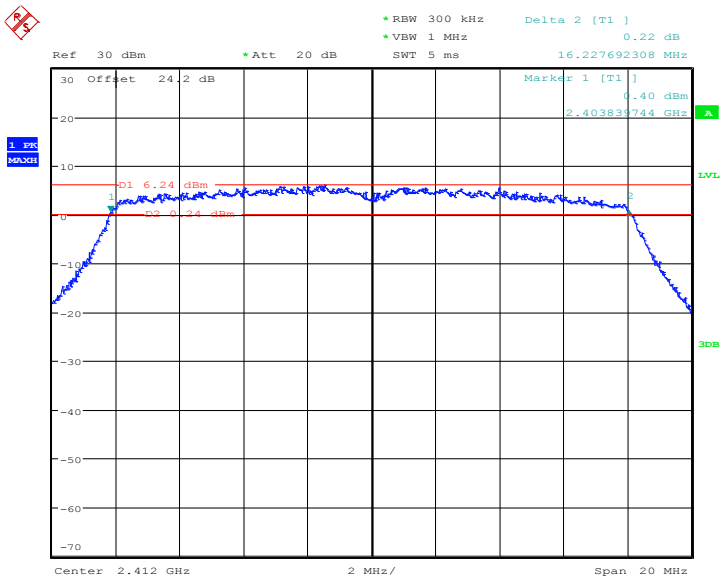
Date: 4.JUN.2012 15:38:49

6 dB Bandwidth Plot on 802.11b Channel 11 – Legacy Ant 2



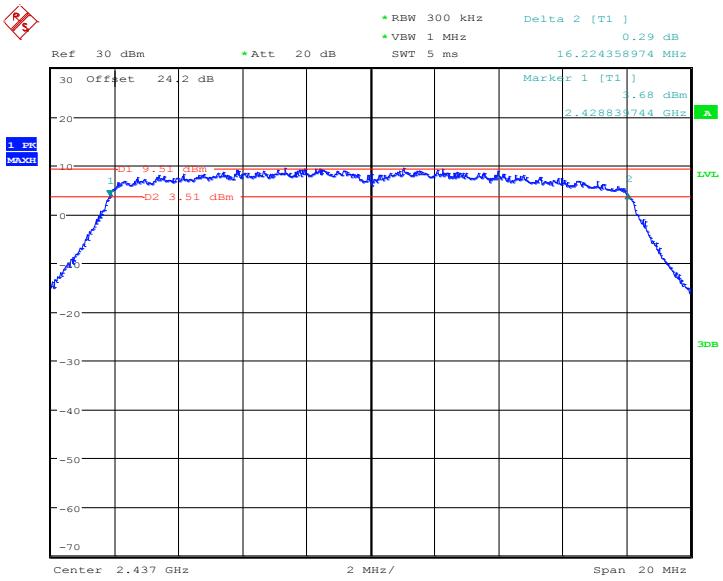
Date: 4.JUN.2012 15:43:53

6 dB Bandwidth Plot on 802.11g Channel 01 – Legacy Ant 2



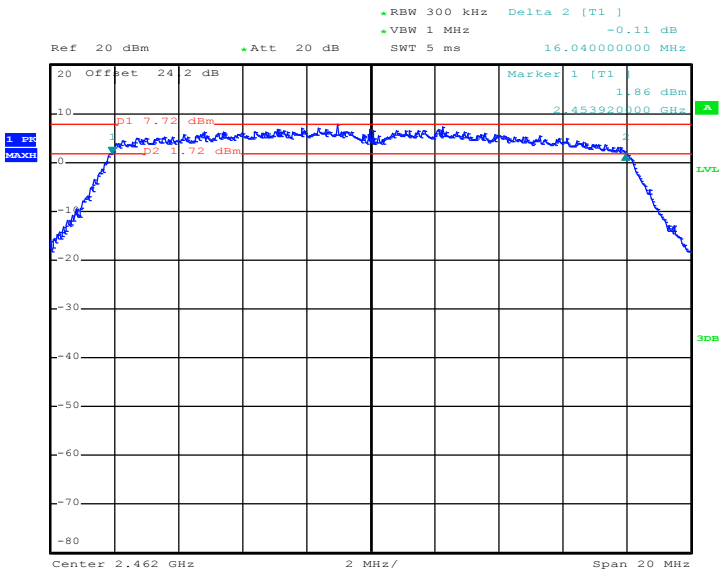
Date: 4.JUN.2012 16:30:43

6 dB Bandwidth Plot on 802.11g Channel 06 – Legacy Ant 2



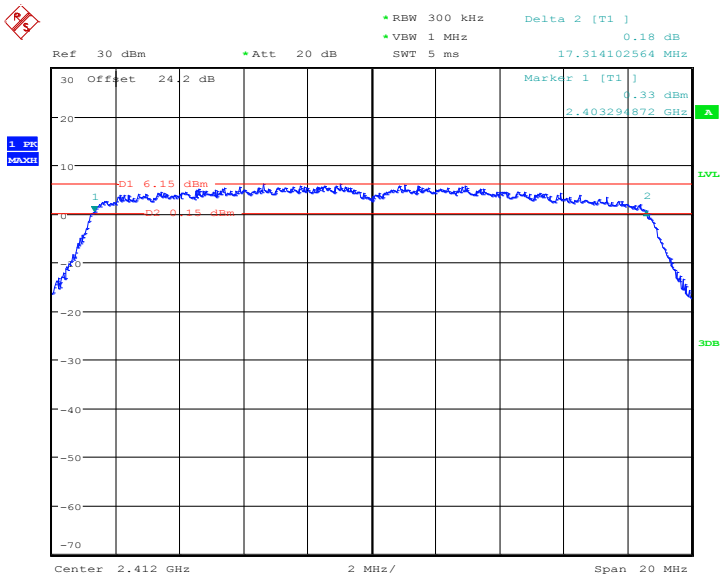
Date: 4.JUN.2012 17:12:42

6 dB Bandwidth Plot on 802.11g Channel 11 – Legacy Ant 2



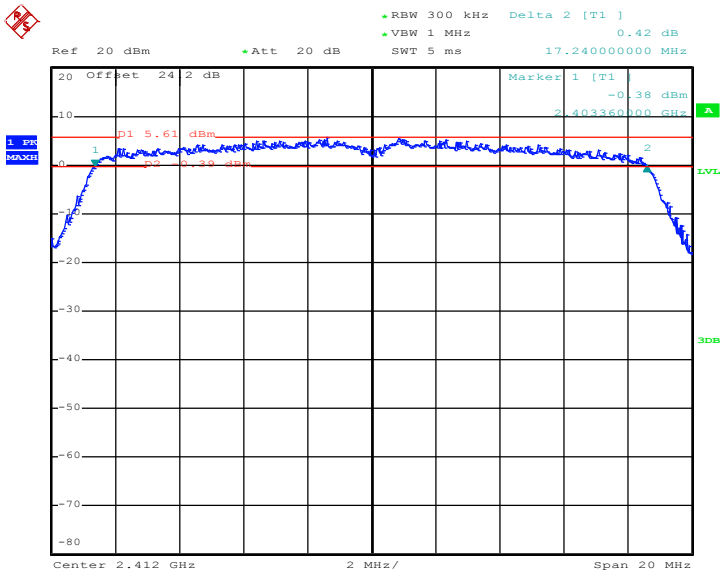
Date: 10.JUL.2012 09:59:42

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 01 – SISO ANT 2



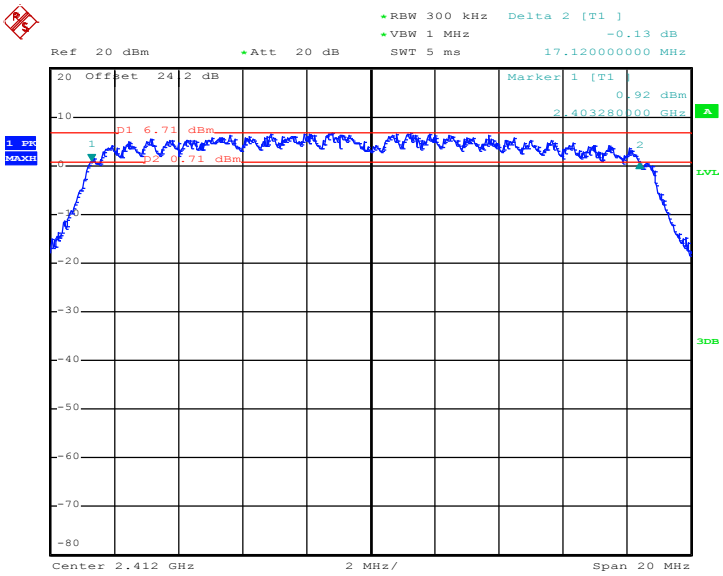
Date: 4.JUN.2012 17:30:55

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 01 – MIMO ANT 1



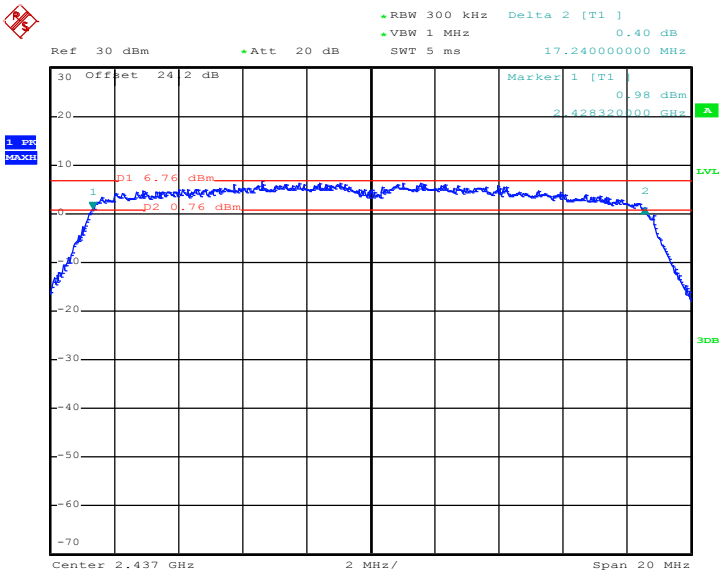
Date: 10.JUL.2012 15:28:00

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 01 – MIMO ANT 2



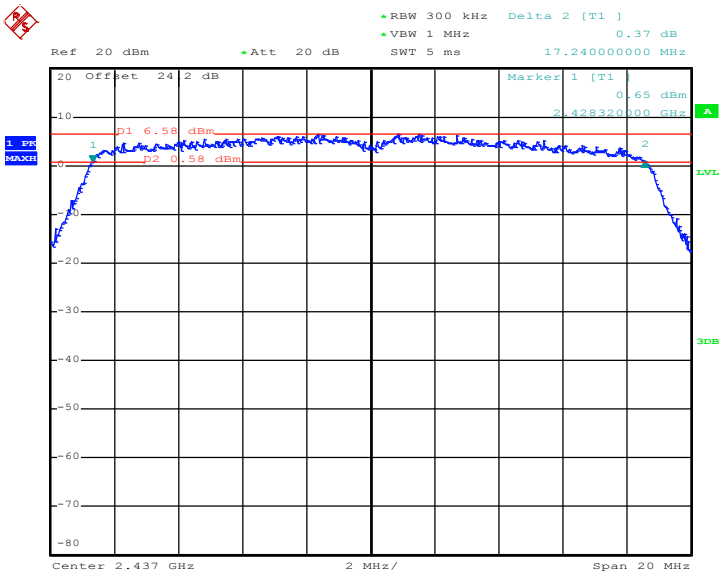
Date: 10.JUL.2012 15:31:37

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 06 – SISO ANT 2



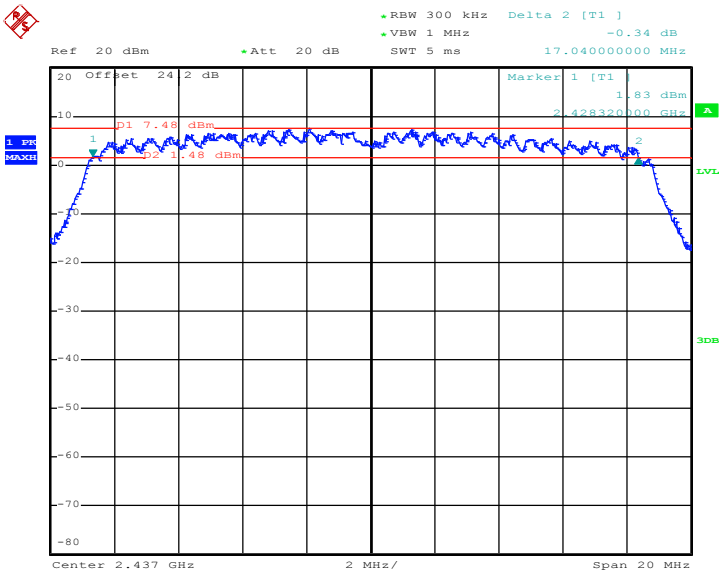
Date: 4.JUN.2012 20:26:14

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 06 – MIMO ANT 1



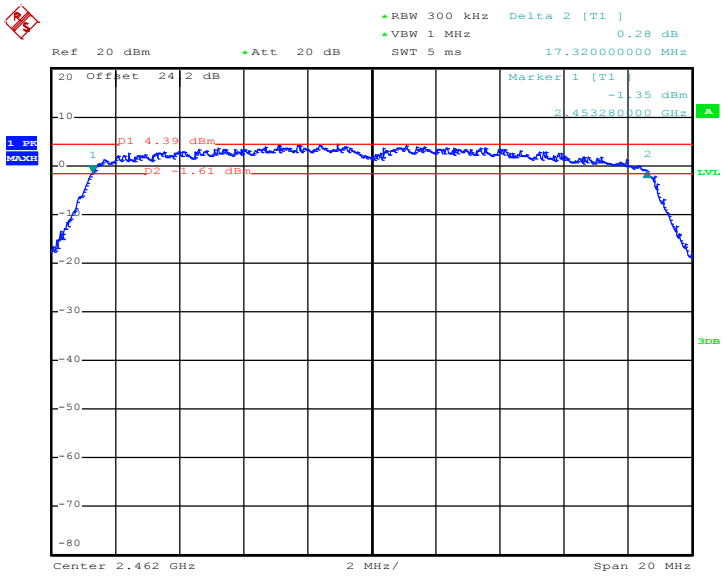
Date: 10.JUL.2012 15:56:36

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 06 – MIMO ANT 2



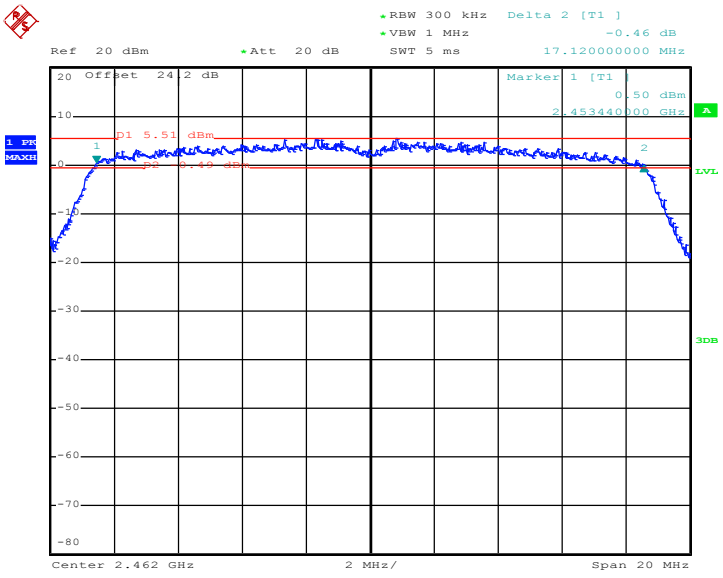
Date: 10.JUL.2012 15:53:55

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 11 – SISO ANT 2



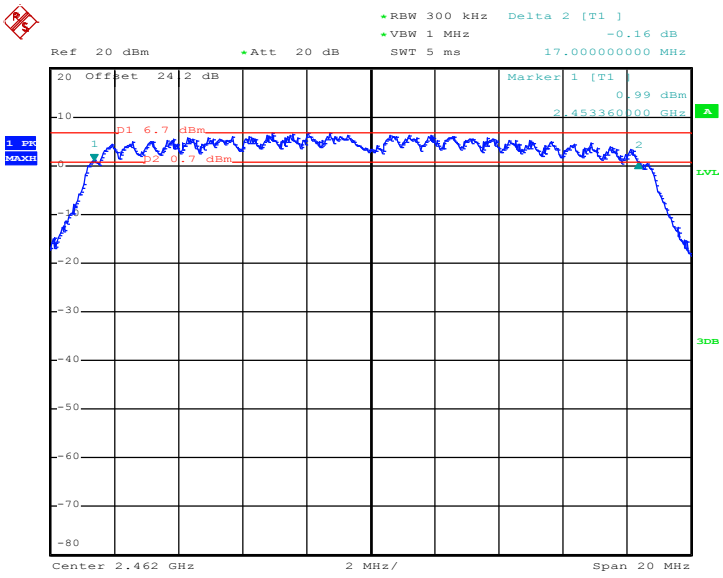
Date: 6.JUN.2012 19:49:49

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 11 – MIMO ANT 1



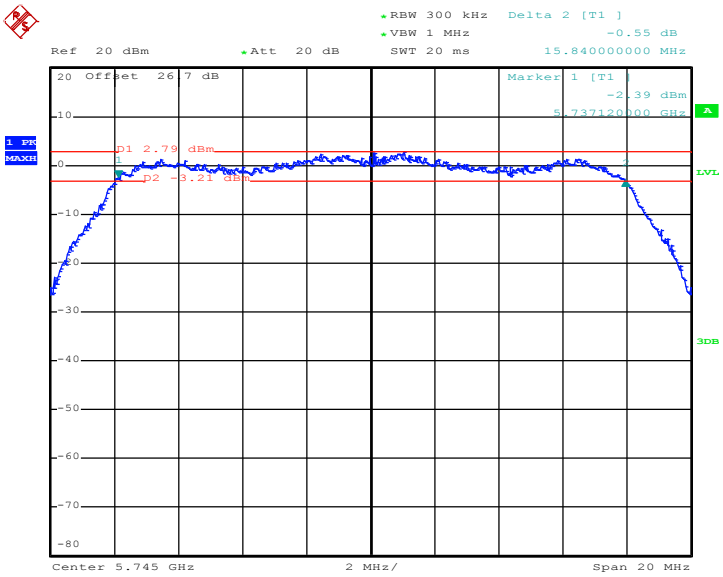
Date: 10.JUL.2012 13:58:32

6 dB Bandwidth Plot on 2.4GHz 802.11n HT-20 Channel 11 – MIMO ANT 2



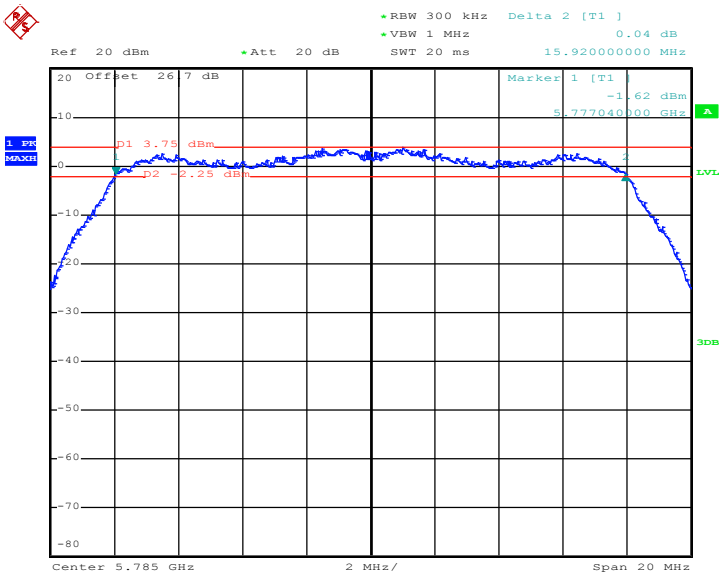
Date: 10.JUL.2012 14:01:35

6 dB Bandwidth Plot on 802.11a Channel 149 - Legacy Ant 2



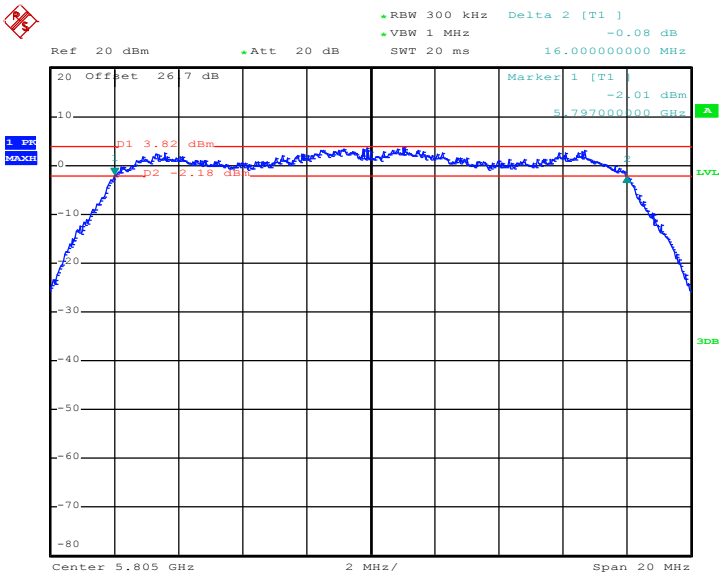
Date: 10.JUL.2012 16:12:50

6 dB Bandwidth Plot on 802.11a Channel 157 - Legacy Ant 2



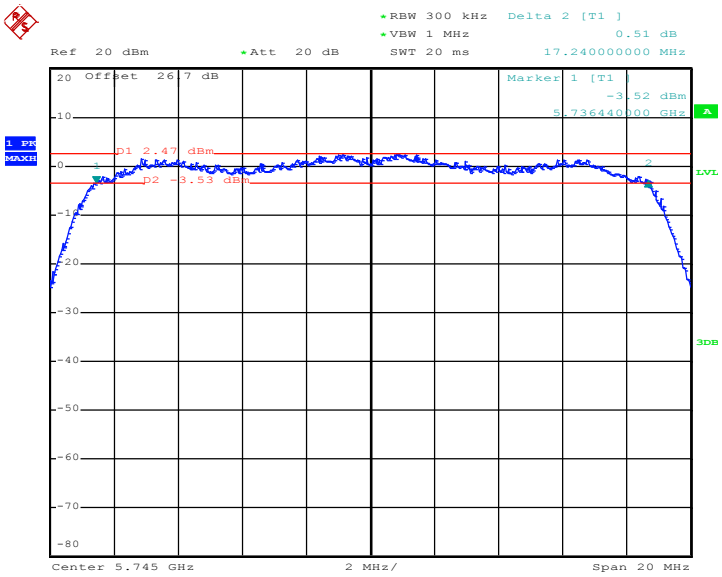
Date: 10.JUL.2012 16:30:55

6 dB Bandwidth Plot on 802.11a Channel 161 - Legacy Ant 2



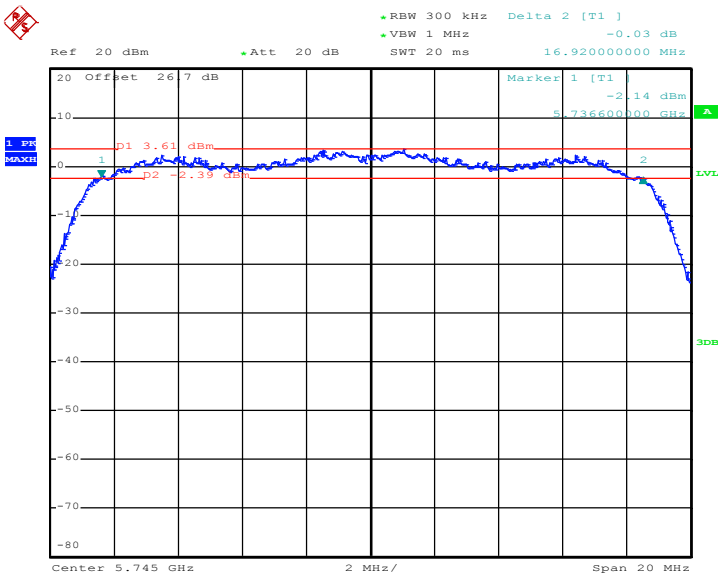
Date: 10.JUL.2012 16:36:11

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 149 - SISO Ant 2



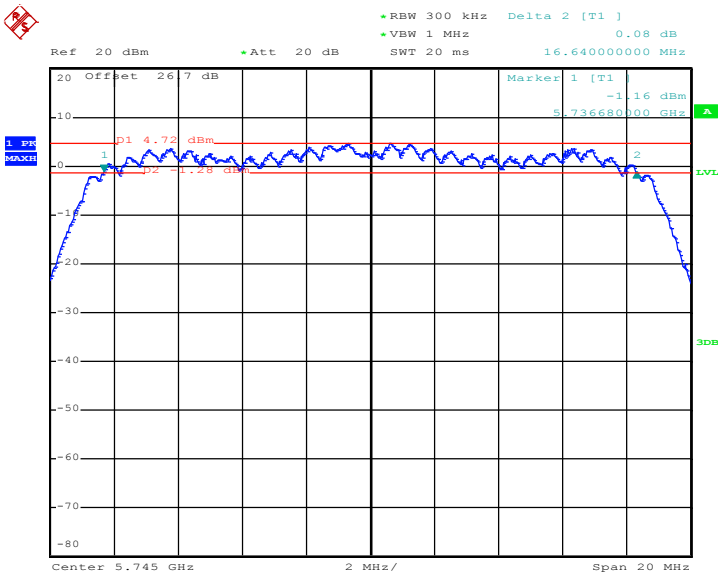
Date: 10.JUL.2012 16:55:05

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 149 - MIMO Ant 1



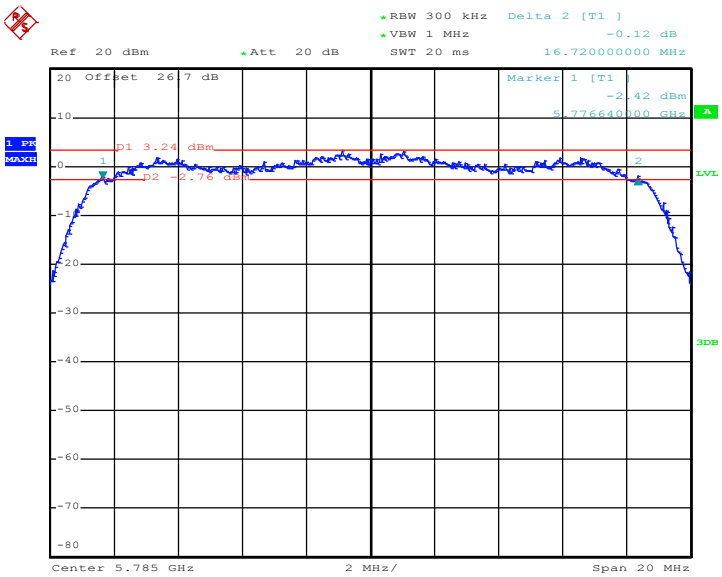
Date: 10.JUL.2012 17:38:10

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 149 - MIMO Ant 2



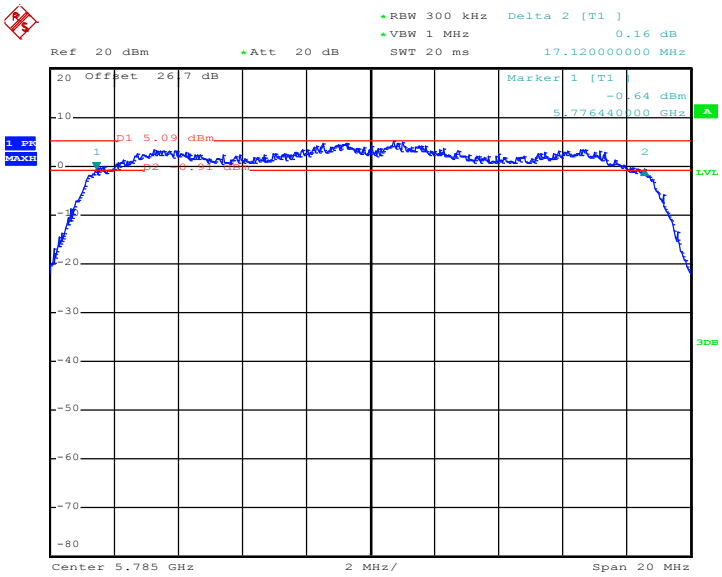
Date: 10.JUL.2012 17:49:18

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 157 - SISO Ant 2



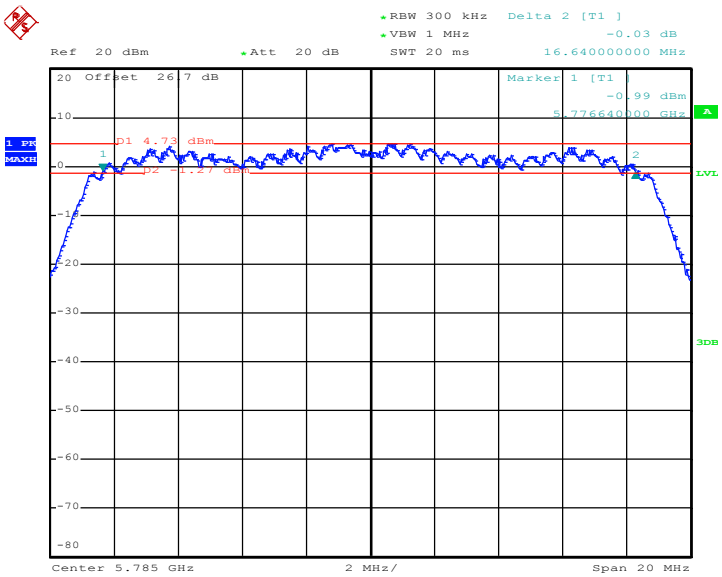
Date: 10.JUL.2012 17:56:58

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 157 - MIMO Ant 1



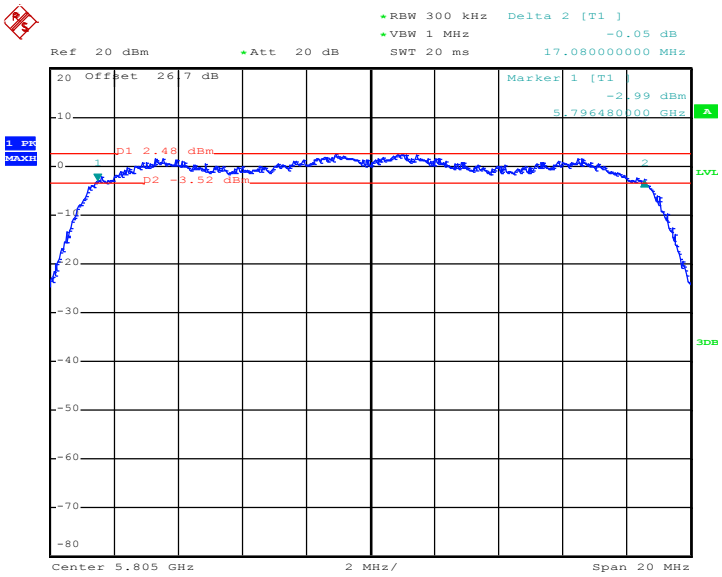
Date: 10.JUL.2012 17:34:49

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 157 - MIMO Ant 2



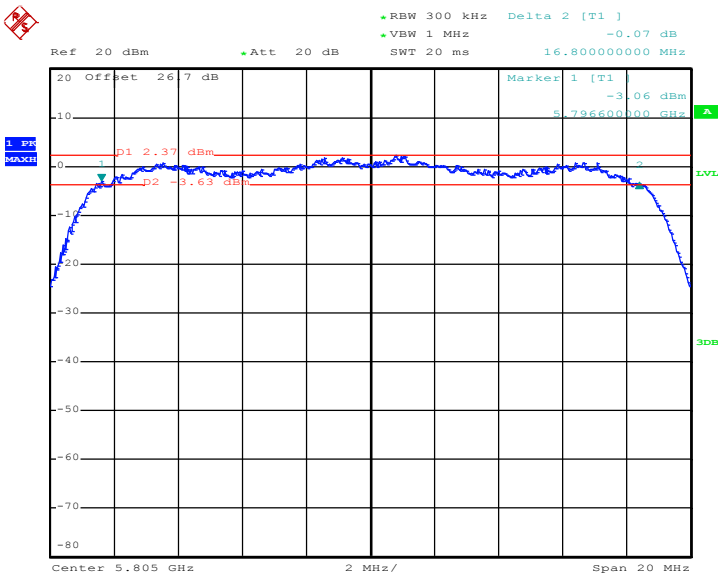
Date: 10.JUL.2012 17:32:09

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 161 - SISO Ant 2



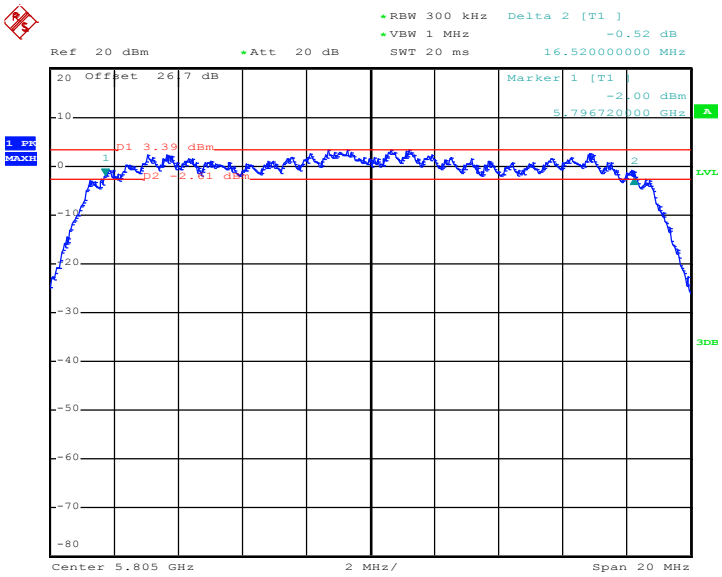
Date: 10.JUL.2012 17:59:40

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 161 - MIMO Ant 1



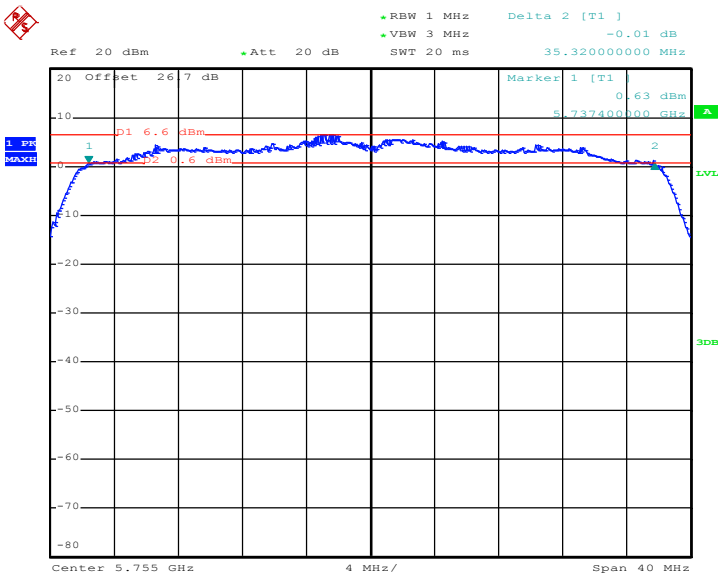
Date: 10.JUL.2012 17:24:42

6 dB Bandwidth Plot on 5GHz 802.11n HT-20 Channel 161 - MIMO Ant 2



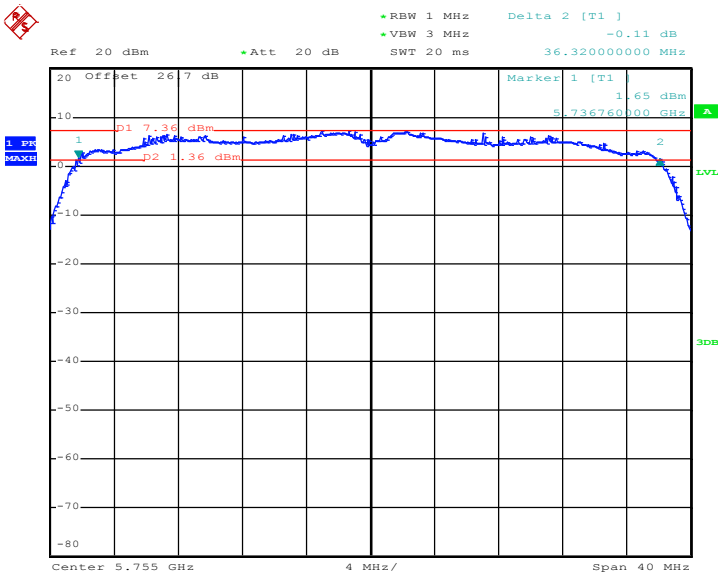
Date: 10.JUL.2012 17:28:14

6 dB Bandwidth Plot on 5GHz 802.11n HT-40 Channel 151 - SISO Ant 2



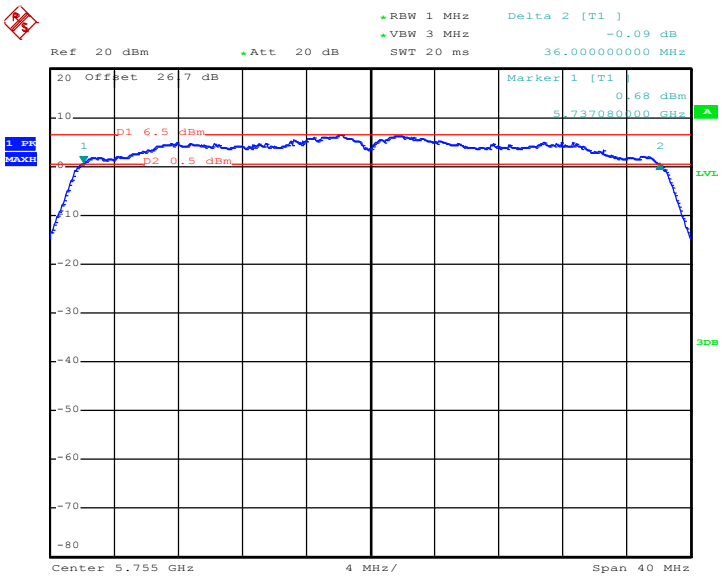
Date: 10.JUL.2012 19:48:36

6 dB Bandwidth Plot on 5GHz 802.11n HT-40 Channel 151 - MIMO Ant 1



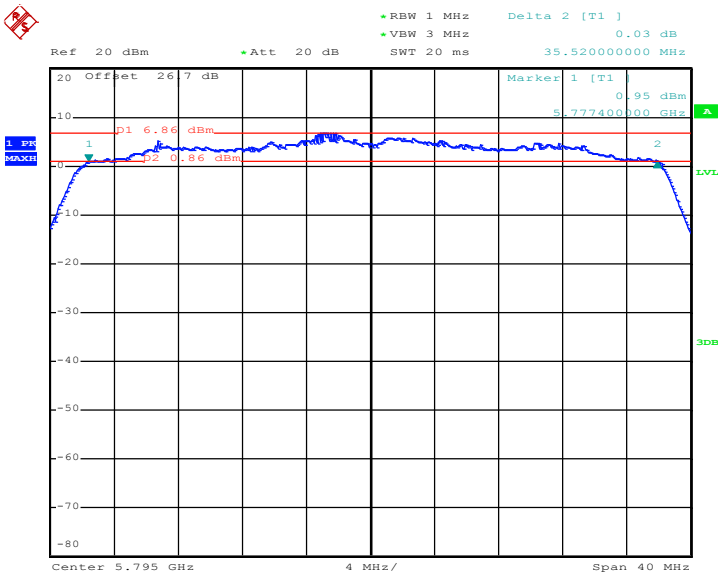
Date: 10.JUL.2012 21:00:14

6 dB Bandwidth Plot on 5GHz 802.11n HT-40 Channel 151 - MIMO Ant 2



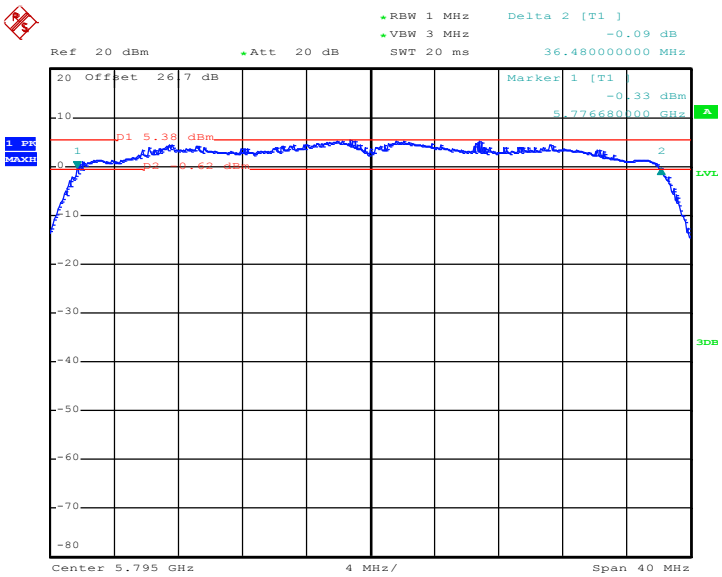
Date: 10.JUL.2012 20:55:09

6 dB Bandwidth Plot on 5GHz 802.11n HT-40 Channel 159 - SISO Ant 2



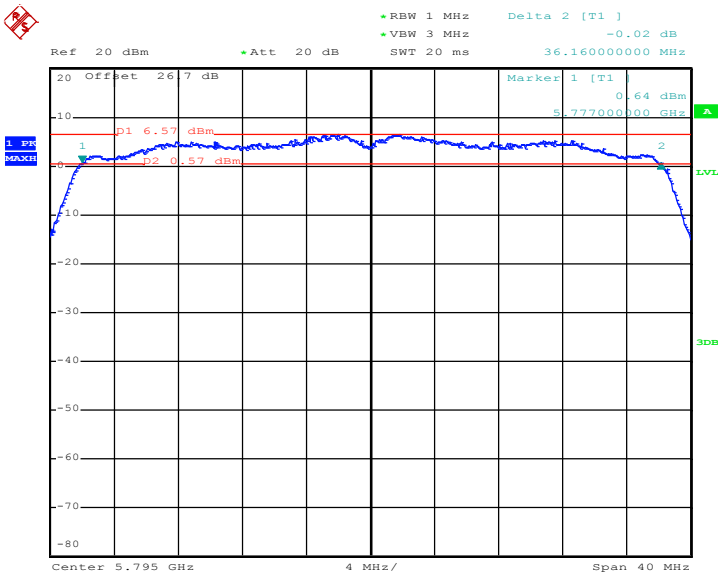
Date: 10.JUL.2012 20:02:01

6 dB Bandwidth Plot on 5GHz 802.11n HT-40 Channel 159 - MIMO Ant 1



Date: 10.JUL.2012 21:04:27

6 dB Bandwidth Plot on 5GHz 802.11n HT-40 Channel 159 - MIMO Ant 2



Date: 10.JUL.2012 21:08:12

3.2 Output Power Measurement

3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, the limit for peak output power is 30dBm. If transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

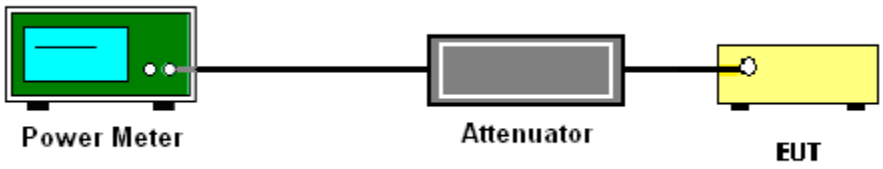
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure 7.2.1.3 Option 3(peak power meter method) and 7.2.2.3 Option 3(average power meter method) of FCC KDB No. 558074 DTS Meas. Guidance DR01.
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.
4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Legacy Ant 2		
01	2412	21.48	30	Pass
06	2437	21.44	30	Pass
11	2462	21.30	30	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Legacy Ant 2		
01	2412	24.41	30	Pass
06	2437	26.44	30	Pass
11	2462	24.52	30	Pass

Test Mode :	2.4GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 Peak Output Power (dBm)				Max. Limits (dBm)	Pass/Fail
		SISO ANT 2	MIMO ANT 1	MIMO ANT 2	MIMO ANT 1+2		
01	2412	23.25	23.74	24.64	27.22	30	Pass
06	2437	23.82	24.47	24.51	27.50	30	Pass
11	2462	23.15	23.23	24.23	26.77	30	Pass

Note : MIMO ANT 1+2 is a calculated result from sum of the power MIMO 1 and MIMO 2.

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a Peak Output Power (dBm)	Max. Limits (dBm)	Pass/Fail
		Legacy Ant 2		
149	5745	19.83	30	Pass
157	5785	20.21	30	Pass
161	5805	20.23	30	Pass

Test Mode :	5GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT-20 Peak Output Power (dBm)				Max. Limits (dBm)	Pass/Fail
		SISO ANT 2	MIMO ANT 1	MIMO ANT 2	MIMO ANT 1+2		
149	5745	19.65	20.93	20.16	23.57	30	Pass
157	5785	19.95	20.71	20.37	23.55	30	Pass
161	5805	19.86	19.46	20.07	22.79	30	Pass

Test Mode :	5GHz 802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT-40 Peak Output Power (dBm)				Max. Limits (dBm)	Pass/Fail
		SISO ANT 2	MIMO ANT 1	MIMO ANT 2	MIMO ANT 1+2		
151	5755	20.18	20.51	18.92	22.80	30	Pass
159	5795	20.56	18.78	20.18	22.55	30	Pass

Note : MIMO ANT 1+2 is a calculated result from sum of the power MIMO 1 and MIMO 2.

3.2.6 Test Result of Average output Power

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)
		Legacy Ant 2
01	2412	17.78
06	2437	17.73
11	2462	17.75

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)
		Legacy Ant 2
01	2412	13.32
06	2437	16.64
11	2462	14.61

Test Mode :	2.4GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	2.4GHz 802.11n HT-20 Average Output Power (dBm)			
		SISO ANT 2	MIMO ANT 1	MIMO ANT 2	MIMO ANT 1+2
01	2412	13.42	13.85	13.69	16.78
06	2437	13.63	14.80	14.68	17.75
11	2462	13.53	13.25	13.57	16.42

Note :

1. MIMO ANT 1+2 is a calculated result from sum of the power MIMO ANT 1 and MIMO ANT 2.
2. The average power is measured by power meter with average power sensor and is reporting only.

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a Average Output Power (dBm)
		Legacy Ant 2
149	5745	9.22
157	5785	9.77
161	5805	9.85

Test Mode :	5GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT-20 Average Output Power (dBm)			
		SISO ANT 2	MIMO ANT 1	MIMO ANT 2	MIMO ANT 1+2
149	5745	9.42	10.32	9.80	13.08
157	5785	10.07	9.78	10.13	12.97
161	5805	9.94	9.53	9.56	12.56

Test Mode :	5GHz 802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	5GHz 802.11n HT-40 Average Output Power (dBm)			
		SISO ANT 2	MIMO ANT 1	MIMO ANT 2	MIMO ANT 1+2
151	5755	9.44	9.60	9.78	12.70
159	5795	9.94	8.93	10.33	12.69

Note :

1. MIMO ANT 1+2 is a calculated result from sum of the power MIMO ANT 1 and MIMO ANT 2.
2. The average power is measured by power meter with average power sensor and is reporting only.

3.3 Band Edges Measurement

3.3.1 Limit of Band Edges

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

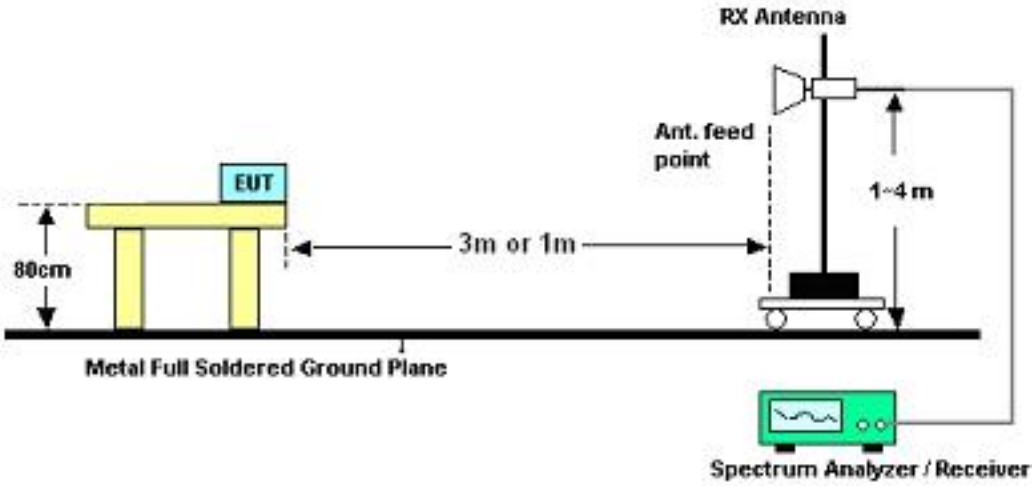
1. The testing follows the guidelines in the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01, ANSI C63.4-2003 and ANSI C63.10-2009.
2. For Unwanted Emissions into Non-Restricted Frequency Bands:
   Conducted emission test:
   Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.
3. For Unwanted Emissions into Restricted Frequency Bands:
   Radiated emission test:
   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; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
2	802.11a	86.50	2050	0.488	1KHz
2	802.11b	97.65	12456	0.080	1KHz
2	802.11g	87.16	2064	0.484	1KHz
2	2.4G 802.11n (BW 20MHz)	86.36	1900	0.526	1KHz
2	5G 802.11n (BW 20MHz)	86.08	1904	0.525	1KHz
2	5G 802.11n (BW 40MHz)	86.43	653.6	1.530	3KHz
1+2	2.4G 802.11n (BW 20MHz) for Ant1	76.38	970	1.031	3KHz
1+2	2.4G 802.11n (BW 20MHz) for Ant2	75.90	970	1.031	
1+2	5G 802.11n (BW 20MHz) for Ant1	76.06	972	1.029	3KHz
1+2	5G 802.11n (BW 20MHz) for Ant2	75.46	966	1.035	
1+2	5G 802.11n (BW 40MHz) for Ant1	75.90	336.4	2.973	3KHz
1+2	5G 802.11n (BW 40MHz) for Ant2	75.56	336.4	2.973	

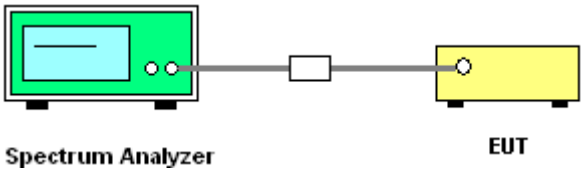
Note : For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.3.4 Test Setup

<Radiated Band Edges>



<Conducted Band Edges>



3.3.5 Test Result of Radiated Band Edges

Test Mode :	802.11b <Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
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
2389.65	62.56	-11.44	74	58.27	32.22	6.03	33.96	166	211	Peak
2390	49.11	-4.89	54	44.82	32.22	6.03	33.96	166	211	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
2388.93	56.95	-17.05	74	52.66	32.22	6.03	33.96	177	347	Peak
2390	42.82	-11.18	54	38.53	32.22	6.03	33.96	177	347	Average

Test Mode :	802.11b <Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
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
2484.14	63.32	-10.68	74	58.85	32.29	6.18	34	131	231	Peak
2483.62	53.22	-0.78	54	48.75	32.29	6.18	34	131	231	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
2493.76	66.71	-7.29	74	62.23	32.3	6.18	34	200	286	Peak
2483.6	48.07	-5.93	54	43.6	32.29	6.18	34	200	286	Average

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
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
2388.3	68.67	-5.33	74	64.38	32.22	6.03	33.96	108	230	Peak
2390	51.75	-2.25	54	47.46	32.22	6.03	33.96	108	230	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
2389.38	62.16	-11.84	74	57.87	32.22	6.03	33.96	170	343	Peak
2388.57	45.04	-8.96	54	40.75	32.22	6.03	33.96	170	343	Average

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
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
2485.3	72.3	-1.7	74	67.83	32.29	6.18	34	130	229	Peak
2483.52	53.32	-0.68	54	48.85	32.29	6.18	34	130	229	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
2484.52	65.06	-8.94	74	60.59	32.29	6.18	34	200	285	Peak
2483.56	47.34	-6.66	54	42.87	32.29	6.18	34	200	285	Average

Test Mode :	2.4GHz 802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
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
2387.49	71.1	-2.9	74	66.81	32.22	6.03	33.96	166	226	Peak
2389.83	52.96	-1.04	54	48.67	32.22	6.03	33.96	166	226	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
2385.96	64.44	-9.56	74	60.15	32.22	6.03	33.96	170	329	Peak
2389.56	46.81	-7.19	54	42.52	32.22	6.03	33.96	170	329	Average

Test Mode :	2.4GHz 802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
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
2484.72	72.21	-1.79	74	67.74	32.29	6.18	34	103	229	Peak
2483.68	52.97	-1.03	54	48.5	32.29	6.18	34	103	229	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
2483.52	63.44	-10.56	74	58.97	32.29	6.18	34	200	290	Peak
2483.58	47.2	-6.8	54	42.73	32.29	6.18	34	200	290	Average

Test Mode :	802.11a <Ant 2>	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	41~42%
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
5725	75.8	-11.22	87.02	64.33	34.81	9.92	33.26	133	68	Peak

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
5725	77.61	-10.78	88.39	66.14	34.81	9.92	33.26	106	288	Peak

Test Mode :	802.11a <Ant 2>	Temperature :	24~25°C
Test Channel :	161	Relative Humidity :	41~42%
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
5850	50.66	-34.94	85.58	39.27	34.98	9.87	33.46	100	57	Peak

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
5850	51.67	-35.57	87.24	40.28	34.98	9.87	33.46	105	246	Peak

Test Mode :	5GHz 802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	41~42%
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
5725	86.82	-2.88	89.7	75.35	34.81	9.92	33.26	100	78	Peak

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
5725	88.91	-1.82	90.73	77.44	34.81	9.92	33.26	105	289	Peak

Test Mode :	5GHz 802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	161	Relative Humidity :	41~42%
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
5850	49.9	-35.5	85.4	38.51	34.98	9.87	33.46	100	79	Peak

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
5850	51.39	-34.62	86.01	40	34.98	9.87	33.46	103	241	Peak

Test Mode :	5GHz 802.11n HT-40 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	151	Relative Humidity :	41~42%
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
5725	85.2	-3.26	88.46	73.73	34.81	9.92	33.26	100	68	Peak

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
5725	88.14	-1.24	89.38	76.67	34.81	9.92	33.26	100	335	Peak

Test Mode :	5GHz 802.11n HT-40 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	41~42%
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
5850	70.9	-16.18	87.08	59.51	34.98	9.87	33.46	100	85	Peak

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
5850	73.52	-16.09	89.61	62.13	34.98	9.87	33.46	133	270	Peak

Test Mode :	2.4GHz 802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
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
2385.15	72.3	-1.7	74	68.02	32.21	6.03	33.96	164	218	Peak
2389.92	53.55	-0.45	54	49.26	32.22	6.03	33.96	164	218	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
2389.11	70.08	-3.92	74	65.79	32.22	6.03	33.96	172	114	Peak
2388.75	49.8	-4.2	54	45.51	32.22	6.03	33.96	172	114	Average

Test Mode :	2.4GHz 802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
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
2483.7	72.61	-1.39	74	68.14	32.29	6.18	34	112	350	Peak
2483.6	53.11	-0.89	54	48.64	32.29	6.18	34	112	350	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
2484.5	**65.32**	**-8.68**	**74**	**60.85**	**32.29**	**6.18**	**34**	**199**	**70**	Peak
2483.96	51.52	-2.48	54	47.05	32.29	6.18	34	199	70	Average

Test Mode :	5GHz 802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	41~42%
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
5725	73.17	-14.81	87.98	61.7	34.81	9.92	33.26	176	34	Peak

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
5725	68.61	-22.94	91.55	57.14	34.81	9.92	33.26	131	114	Peak

Test Mode :	5GHz 802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	161	Relative Humidity :	41~42%
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
5850	51.84	-34.6	86.44	40.45	34.98	9.87	33.46	200	357	Peak

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
5850	50.57	-40.19	90.76	39.18	34.98	9.87	33.46	111	145	Peak

Test Mode :	5GHz 802.11n HT-40 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	151	Relative Humidity :	41~42%
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
5725	83.33	-5.31	88.64	71.86	34.81	9.92	33.26	198	37	Peak

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
5725	85.12	-6.47	91.59	73.65	34.81	9.92	33.26	131	125	Peak

Test Mode :	5GHz 802.11n HT-40 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu		

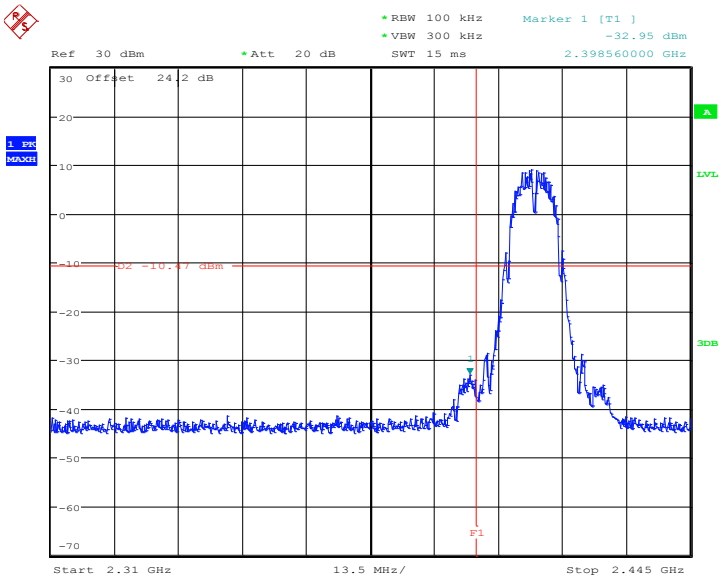
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5850	62.3	-23.86	86.16	50.91	34.98	9.87	33.46	108	288	Peak

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
5850	66.23	-24.92	91.15	54.84	34.98	9.87	33.46	110	124	Peak

3.3.6 Test Result of Conducted Band Edges

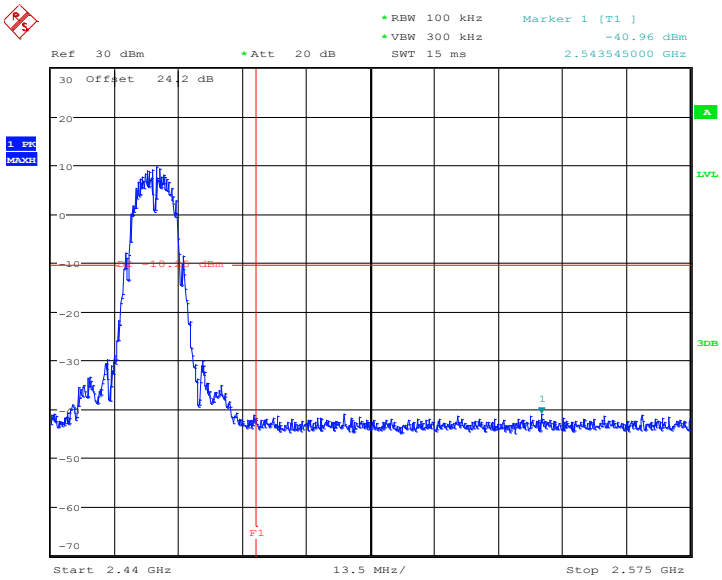
Test Mode :	<Legacy Ant 2>	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Kenny Chen

Low Band Edge Plot on 802.11b Channel 01



Date: 4.JUN.2012 15:35:32

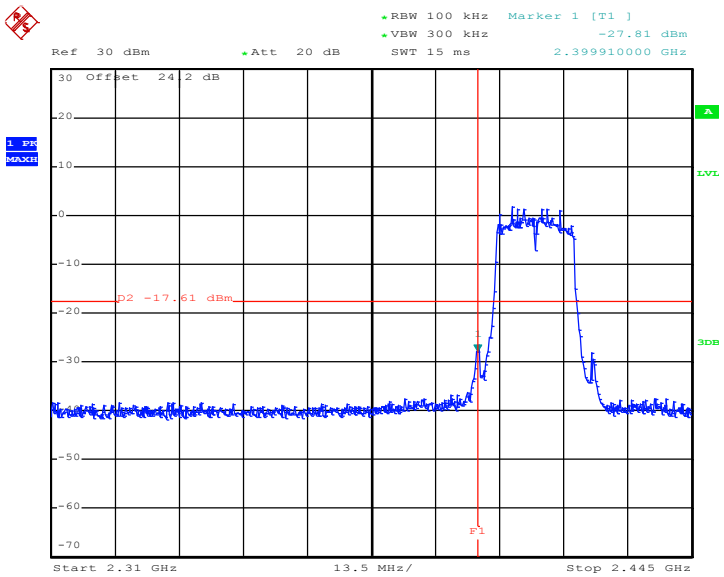
High Band Edge Plot on 802.11b Channel 11



Date: 4.JUN.2012 15:44:41

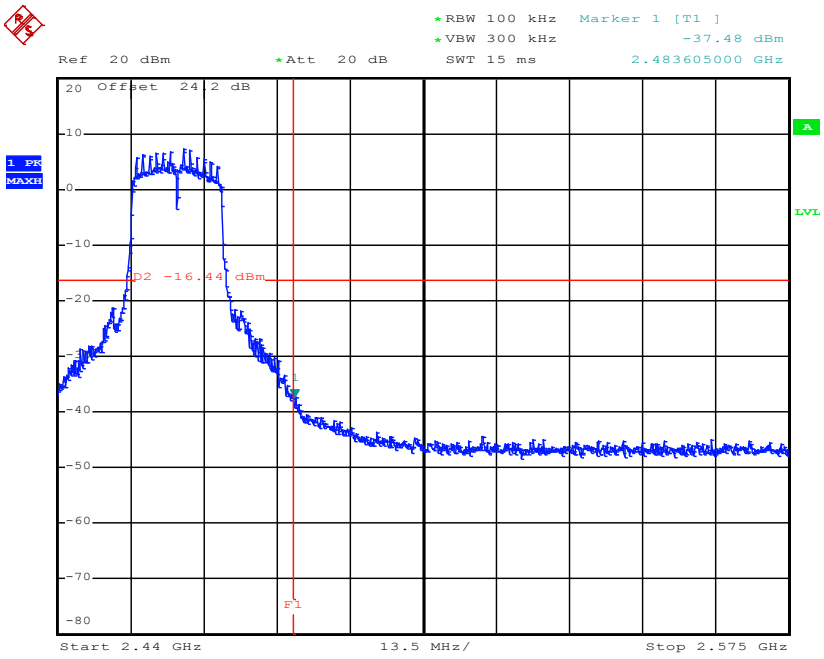
Test Mode :	<Legacy Ant 2>	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Kenny Chen

Low Band Edge Plot on 802.11g Channel 01



Date: 4.JUN.2012 20:13:40

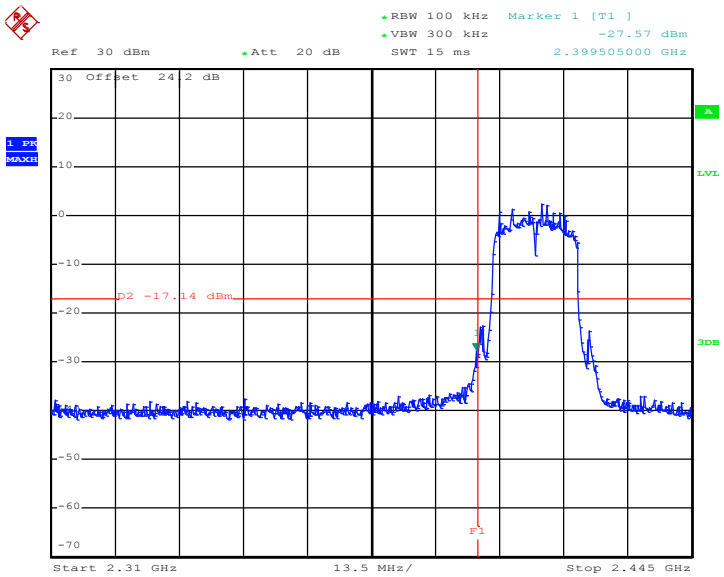
High Band Edge Plot on 802.11g Channel 11



Date: 10.JUL.2012 10:33:59

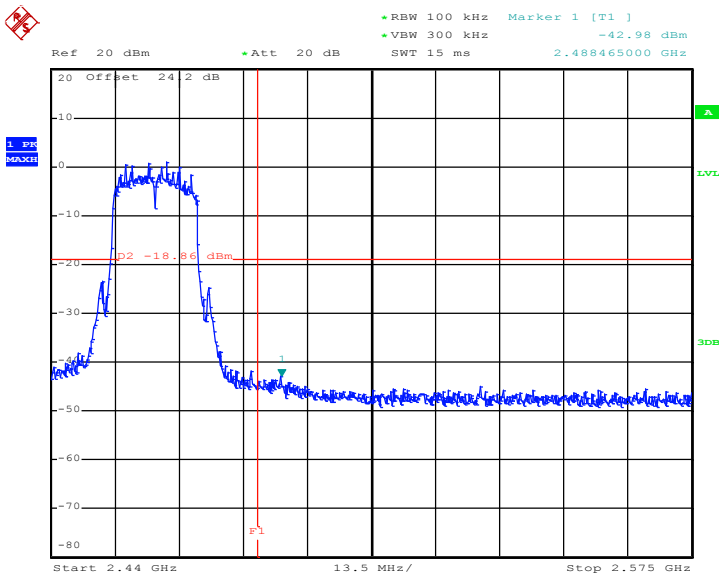
Test Mode :	<SISO Ant 2>	Temperature :	24~26℃
Test Band :	2.4GHz 802.11n HT-20	Relative Humidity :	50~53%
Test Channel :	01 and 11	Test Engineer :	Kenny Chen

Low Band Edge Plot on 2.4GHz 802.11n HT-20 Channel 01



Date: 4.JUN.2012 20:30:29

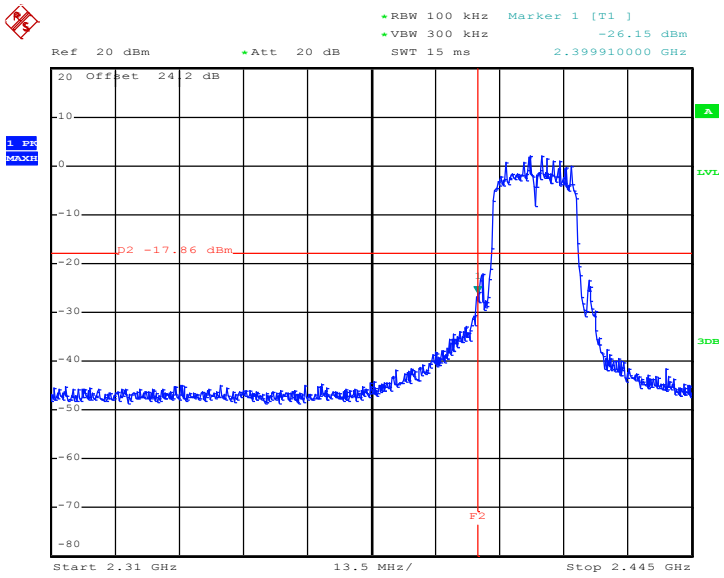
High Band Edge Plot on 2.4GHz 802.11n HT-20 Channel 11



Date: 6.JUN.2012 19:50:40

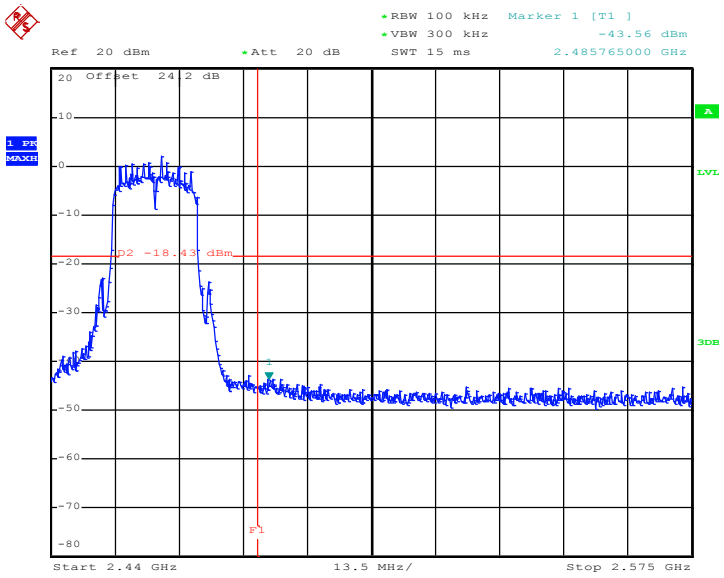
Test Mode :	<MIMO Ant 1>	**Temperature :**	24~26℃
Test Band :	2.4GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Kenny Chen

Low Band Edge Plot on 2.4GHz 802.11n HT-20 Channel 01



Date: 10.JUL.2012 15:28:41

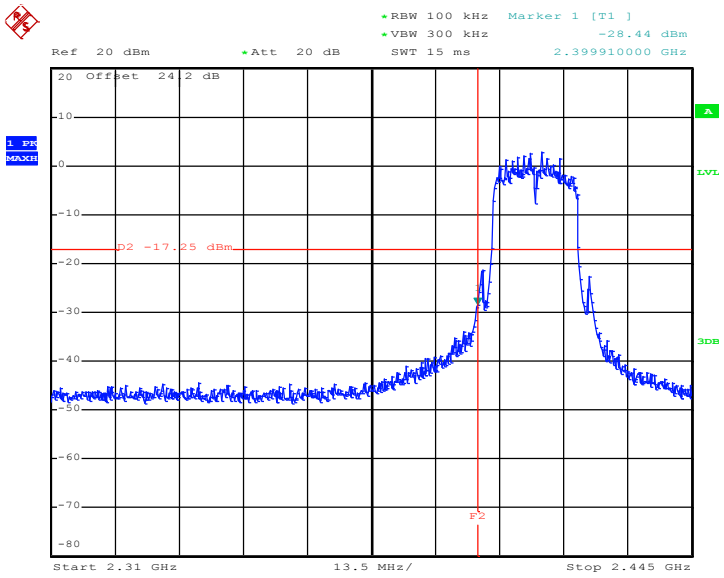
High Band Edge Plot on 2.4GHz 802.11n HT-20 Channel 11



Date: 10.JUL.2012 15:24:24

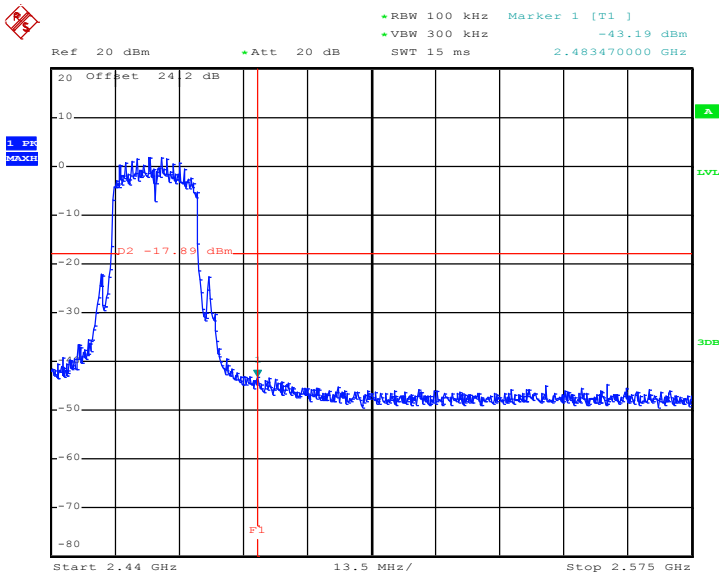
Test Mode :	<MIMO Ant 2>	**Temperature :**	24~26℃
Test Band :	2.4GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	01 and 11	**Test Engineer :**	Kenny Chen

Low Band Edge Plot on 2.4GHz 802.11n HT-20 Channel 01



Date: 10.JUL.2012 15:33:23

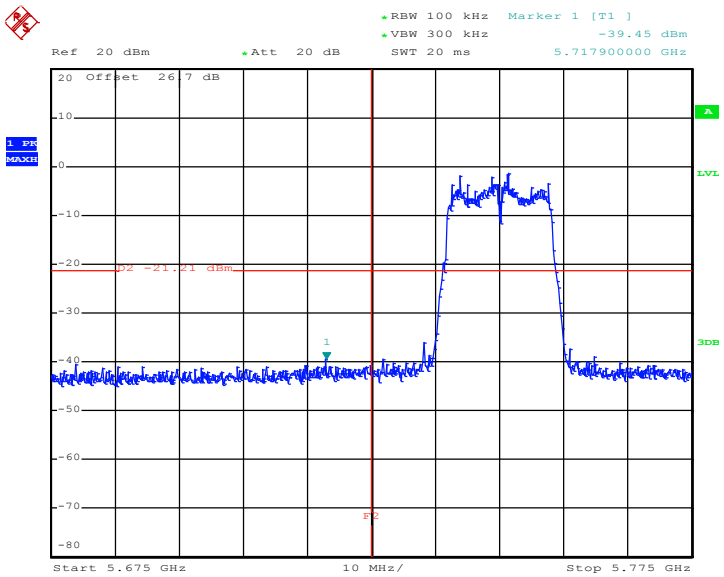
High Band Edge Plot on 2.4GHz 802.11n HT-20 Channel 11



Date: 10.JUL.2012 15:21:48

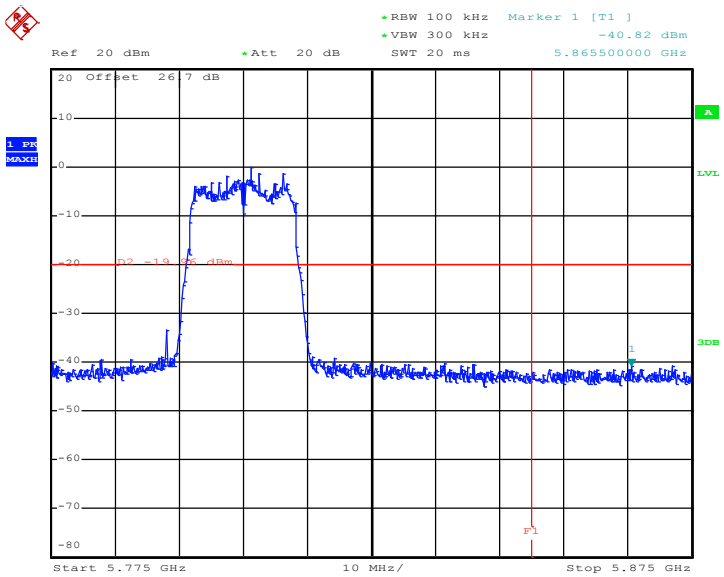
Test Mode :	<Legacy Ant 2>	**Temperature :**	24~26℃
Test Band :	802.11a	**Relative Humidity :**	50~53%
Test Channel :	149 and 161	**Test Engineer :**	Kenny Chen

Low Band Edge Plot on 802.11a Channel 149



Date: 10.JUL.2012 16:18:44

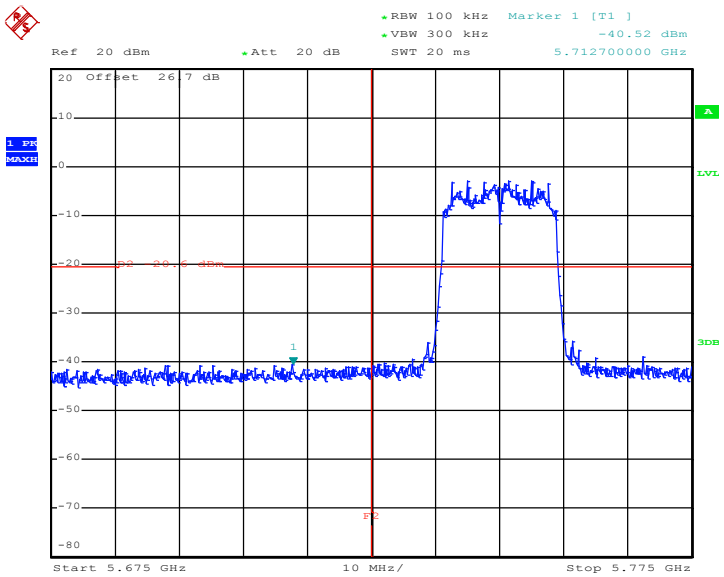
High Band Edge Plot on 802.11a Channel 161



Date: 10.JUL.2012 16:36:54

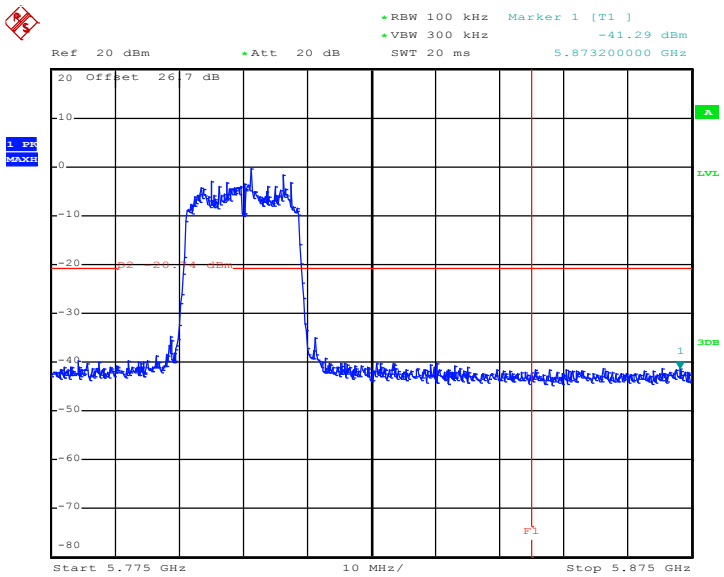
Test Mode :	<SISO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	149 and 161	**Test Engineer :**	Kenny Chen

Low Band Edge Plot on 5GHz 802.11n HT-20 Channel 149



Date: 10.JUL.2012 16:55:47

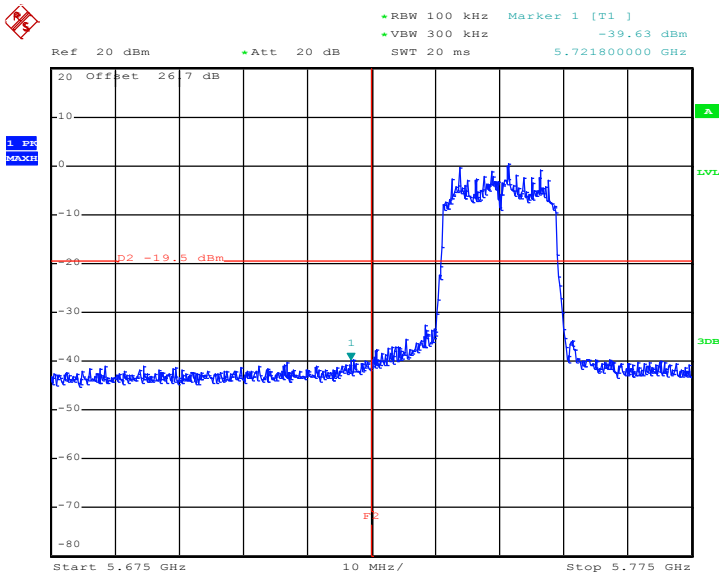
High Band Edge Plot on 5GHz 802.11n HT-20 Channel 161



Date: 10.JUL.2012 18:00:33

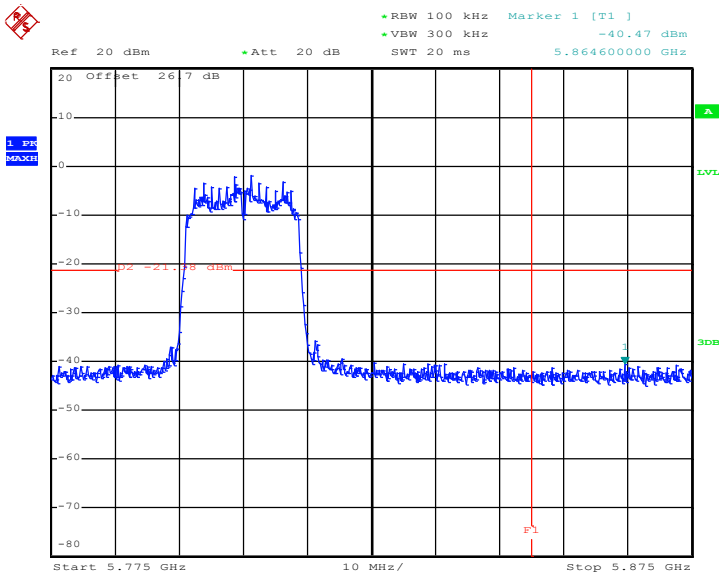
Test Mode :	<MIMO Ant 1>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	149 and 161	**Test Engineer :**	Kenny Chen

Low Band Edge Plot on 5GHz 802.11n HT-20 Channel 149



Date: 10.JUL.2012 17:39:33

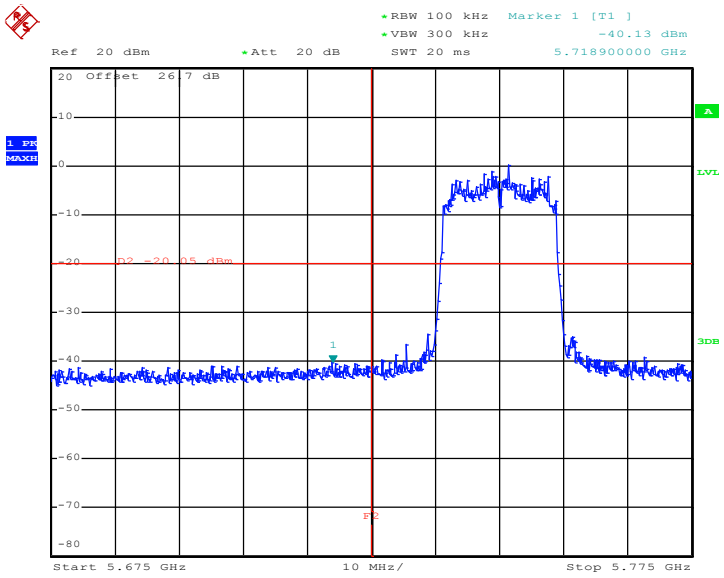
High Band Edge Plot on 5GHz 802.11n HT-20 Channel 161



Date: 10.JUL.2012 17:25:45

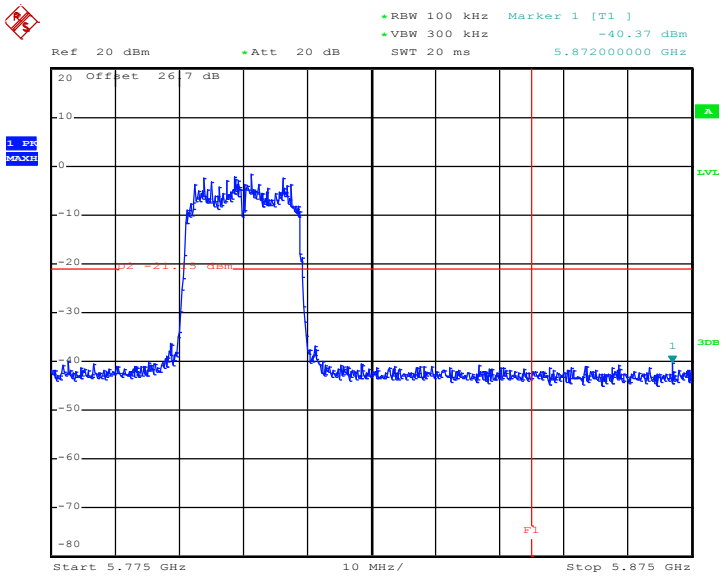
Test Mode :	<MIMO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	149 and 161	**Test Engineer :**	Kenny Chen

Low Band Edge Plot on 5GHz 802.11n HT-20 Channel 149



Date: 10.JUL.2012 17:50:22

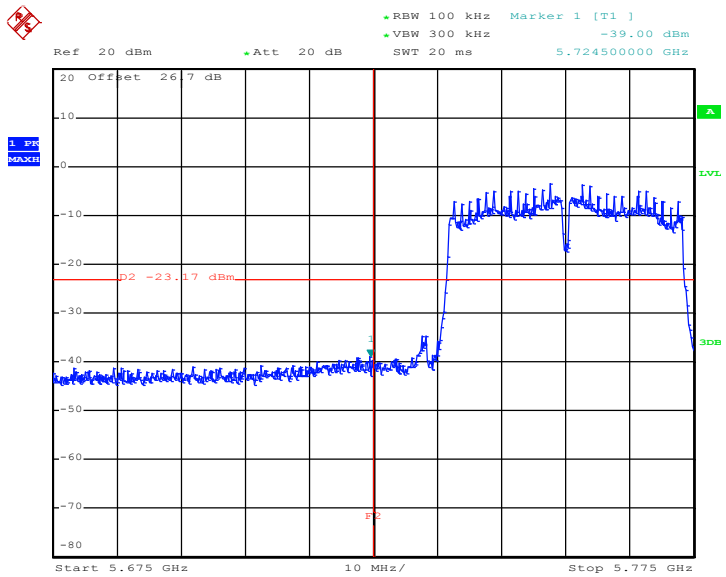
High Band Edge Plot on 5GHz 802.11n HT-20 Channel 161



Date: 10.JUL.2012 17:29:04

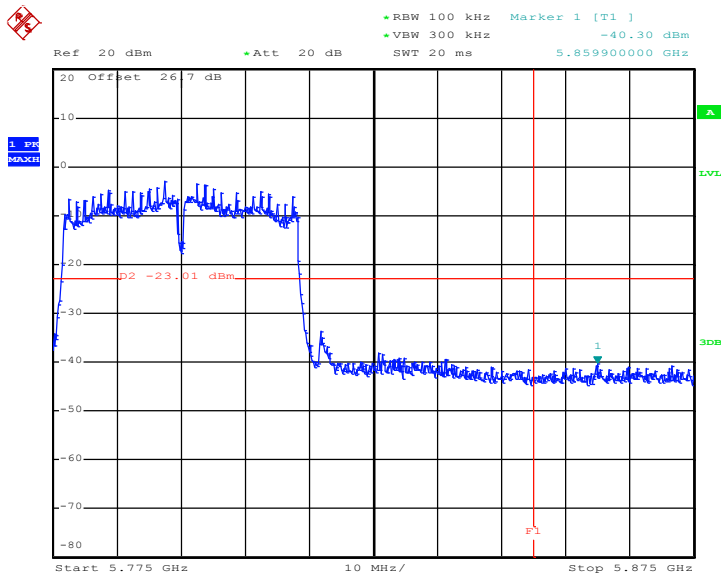
Test Mode :	<SISO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-40	**Relative Humidity :**	50~53%
Test Channel :	151 and 159	**Test Engineer :**	Book Lin

Low Band Edge Plot on 5GHz 802.11n HT-40 Channel 151



Date: 10.JUL.2012 19:52:47

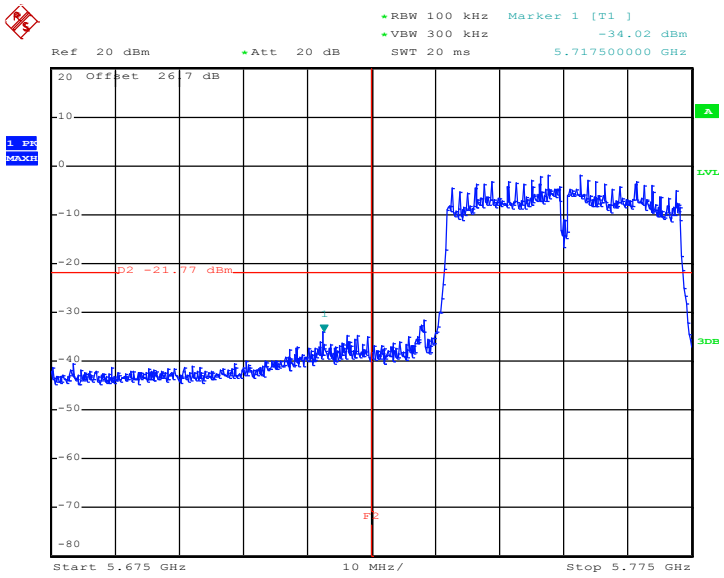
High Band Edge Plot on 5GHz 802.11n HT-40 Channel 159



Date: 10.JUL.2012 20:02:56

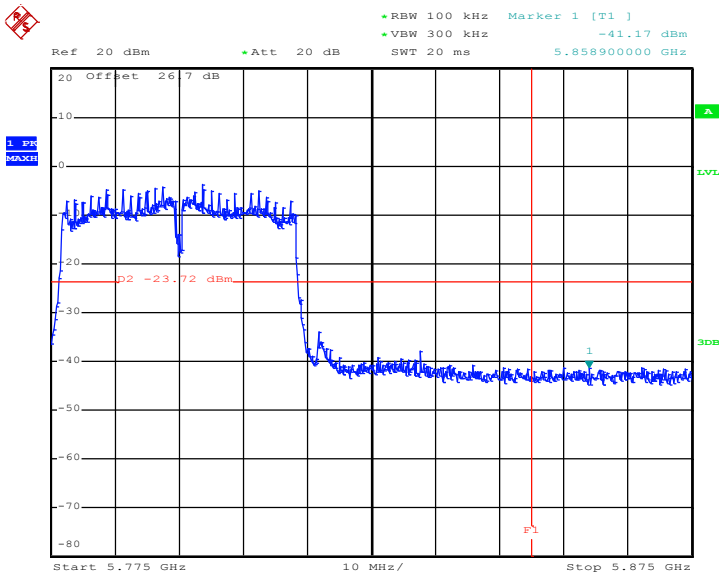
Test Mode :	<MIMO Ant 1>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-40	**Relative Humidity :**	50~53%
Test Channel :	151 and 159	**Test Engineer :**	Book Lin

Low Band Edge Plot on 5GHz 802.11n HT-40 Channel 151



Date: 10.JUL.2012 21:00:59

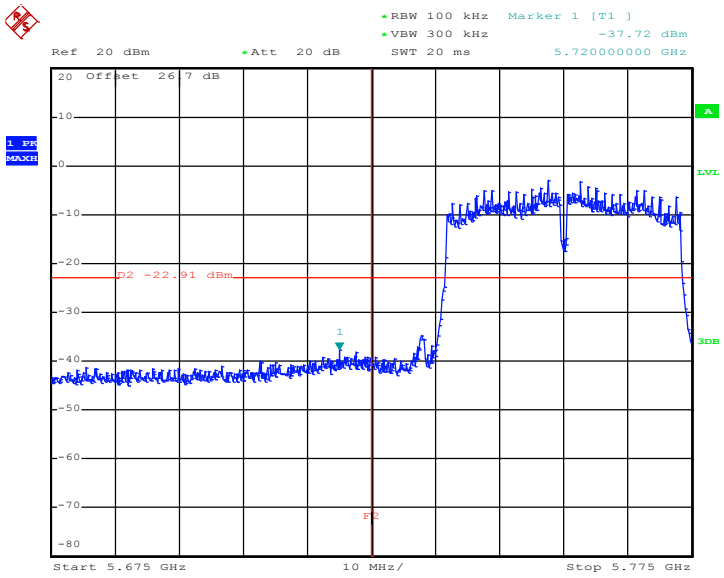
High Band Edge Plot on 5GHz 802.11n HT-40 Channel 159



Date: 10.JUL.2012 21:05:33

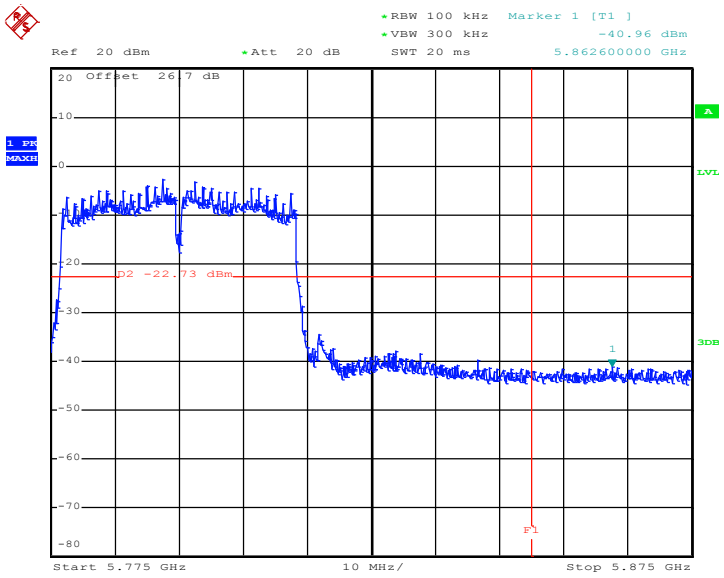
Test Mode :	<MIMO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-40	**Relative Humidity :**	50~53%
Test Channel :	151 and 159	**Test Engineer :**	Book Lin

Low Band Edge Plot on 5GHz 802.11n HT-40 Channel 151



Date: 10.JUL.2012 20:55:50

High Band Edge Plot on 5GHz 802.11n HT-40 Channel 159



Date: 10.JUL.2012 21:08:57

3.4 Spurious Emission Measurement

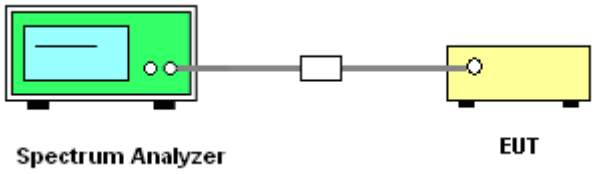
3.4.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Setup



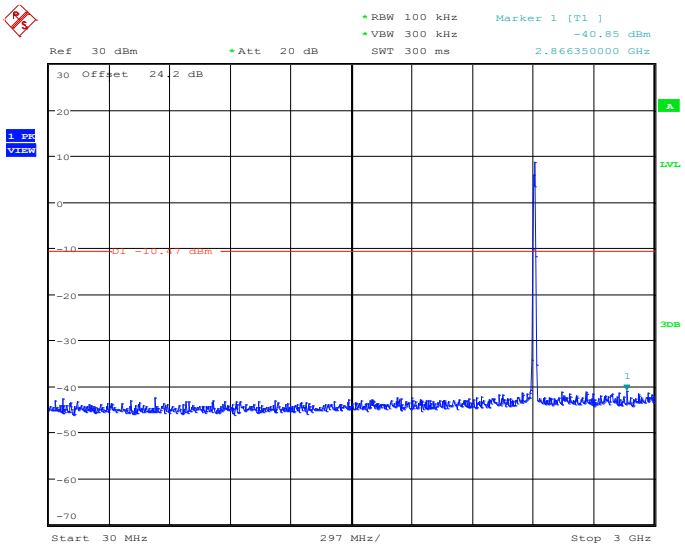
3.4.4 Test Procedure

1. The testing follows the guidelines in the Measurement Procedure of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance DR01, ANSI C63.4-2003 and ANSI C63.10-2009.
2. Set RBW = 100 KHz, VBW=300 KHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz, when maximum peak conducted output power procedure is used. The attenuation is set to 30dB, when maximum conducted output power procedure is used.

3.4.5 Test Result of Spurious Emission

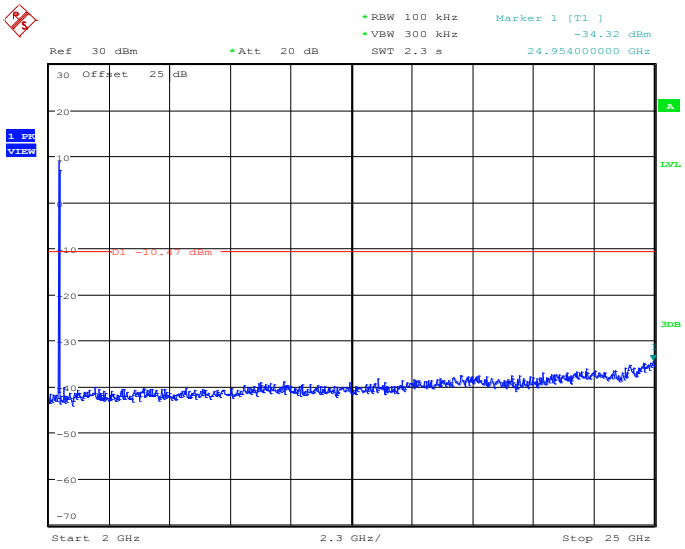
Test Mode :	<Legacy Ant 2>	Temperature :	24~26℃
Test Band :	802.11b	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot on 802.11b CH01 between 30 MHz~3 GHz



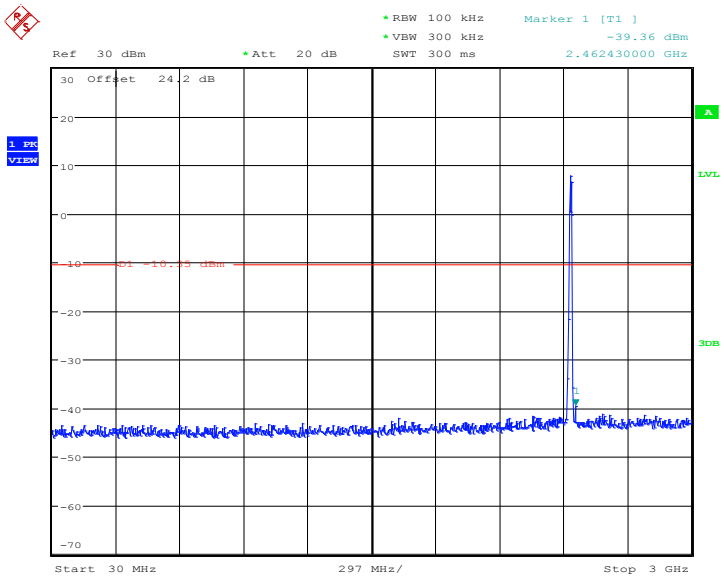
Date: 4.JUN.2012 15:36:17

Conducted Spurious Emission Plot on 802.11b CH01 between 2 GHz~25 GHz



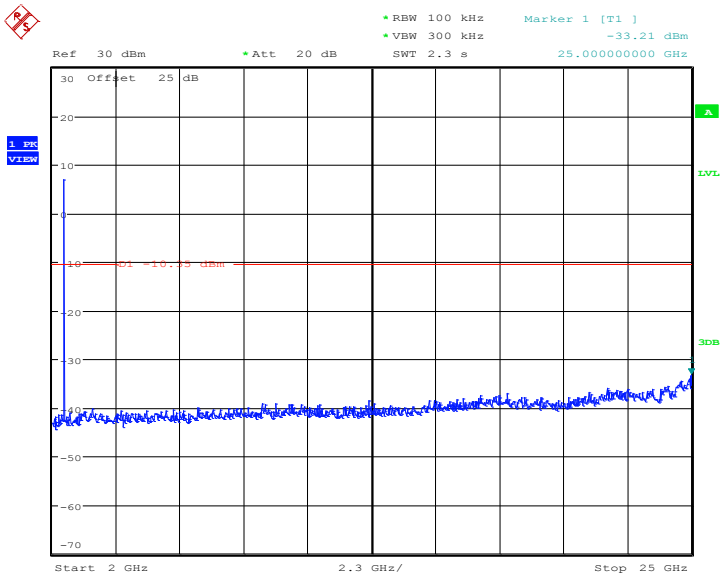
Date: 4.JUN.2012 15:36:34

Conducted Spurious Emission Plot on 802.11b CH06 between 30 MHz~3 GHz



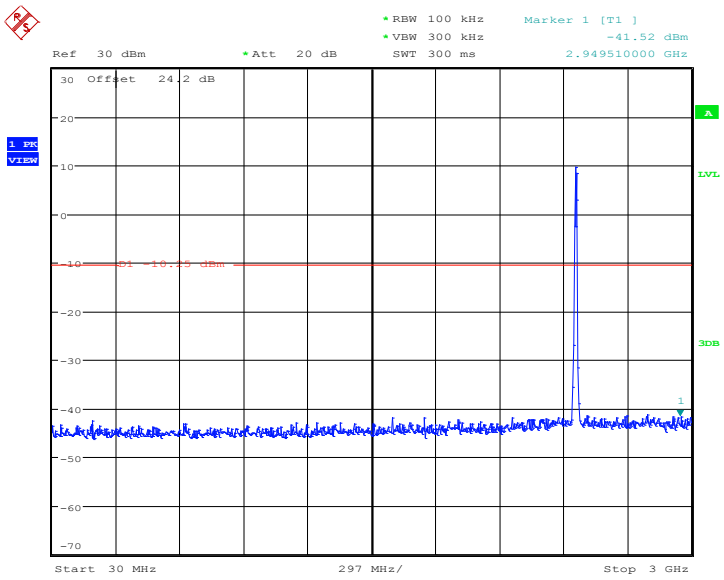
Date: 4.JUN.2012 15:41:39

Conducted Spurious Emission Plot on 802.11b CH06 between 2 GHz~25 GHz



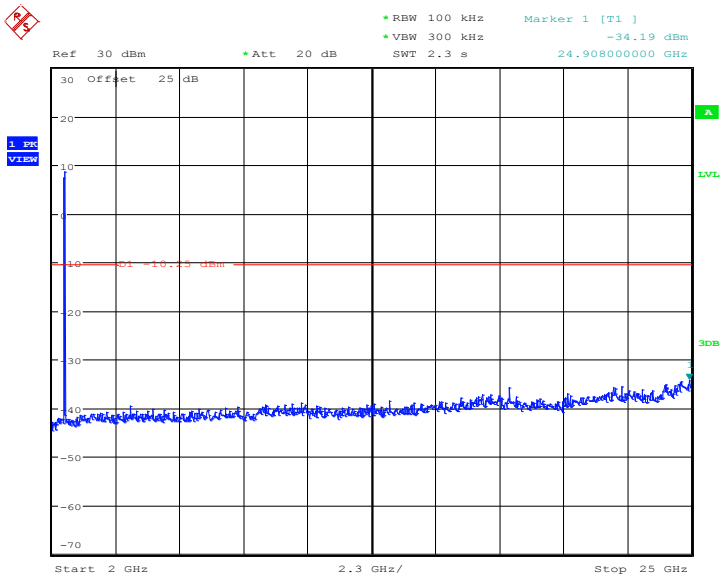
Date: 4.JUN.2012 15:41:56

Conducted Spurious Emission Plot on 802.11b CH11 between 30 MHz~3 GHz



Date: 4.JUN.2012 15:45:55

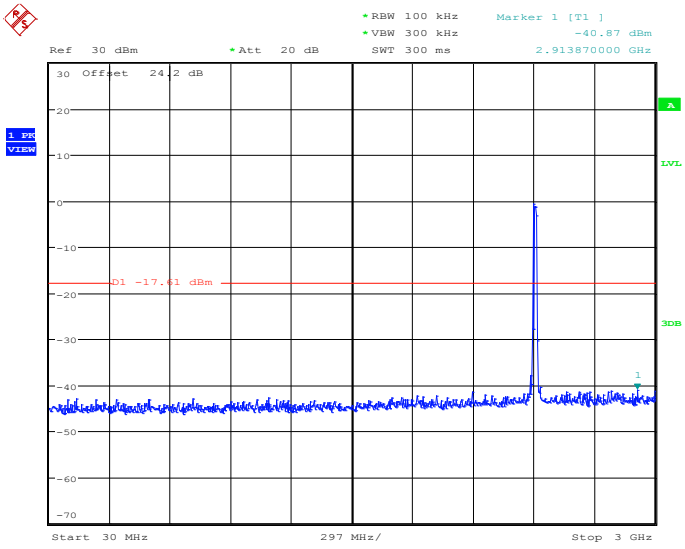
Conducted Spurious Emission Plot on 802.11b CH11 between 2 GHz~25 GHz



Date: 4.JUN.2012 15:46:12

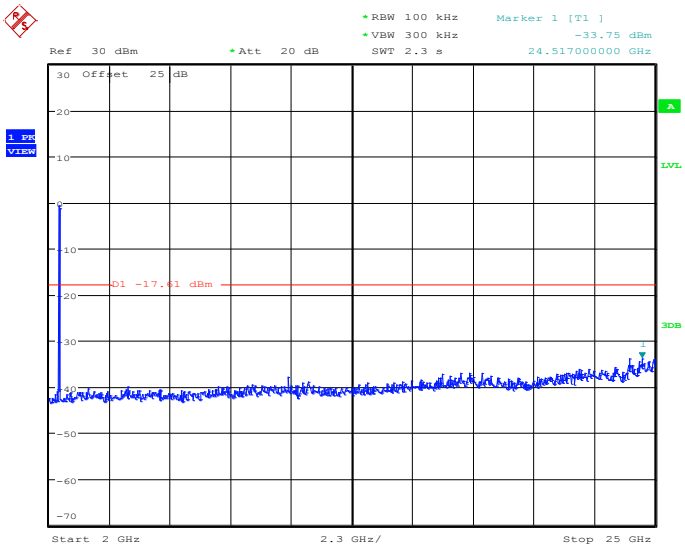
Test Mode :	<Legacy Ant 2>	Temperature :	24~26℃
Test Band :	802.11g	Relative Humidity :	50~53%
Test Channel :	01, 06, 11	Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot on 802.11g CH01 between 30 MHz~3 GHz



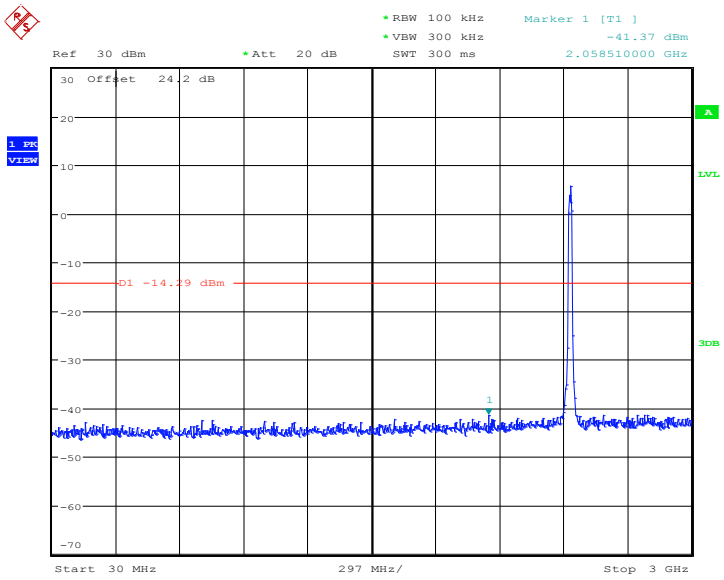
Date: 4.JUN.2012 16:46:28

Conducted Spurious Emission Plot on 802.11g CH01 between 2 GHz~25 GHz



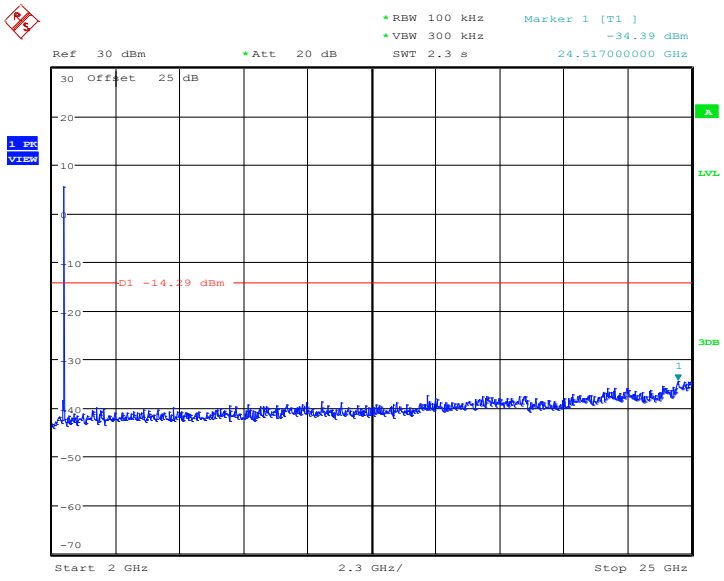
Date: 4.JUN.2012 16:46:45

Conducted Spurious Emission Plot on 802.11g CH06 between 30 MHz~3 GHz



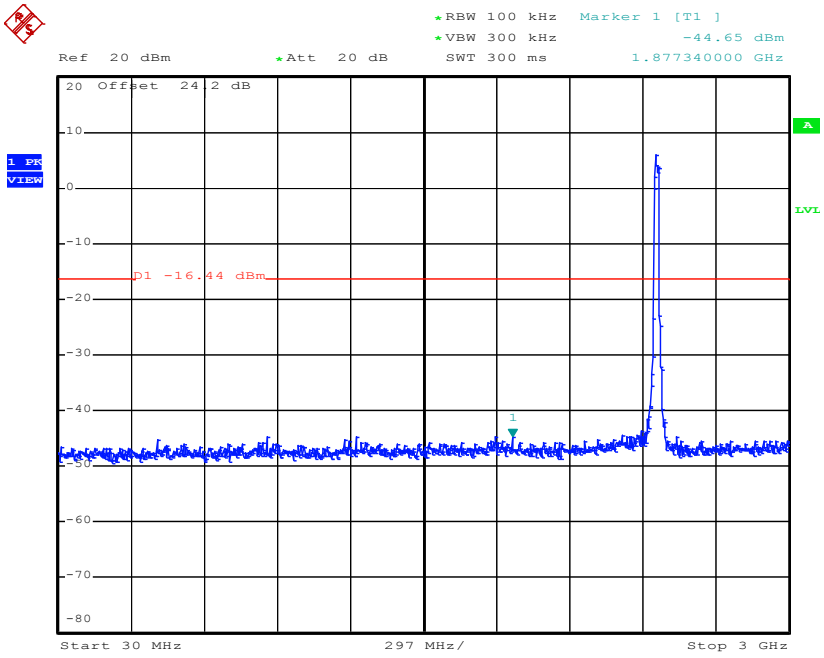
Date: 4.JUN.2012 17:15:01

Conducted Spurious Emission Plot on 802.11g CH06 between 2 GHz~25 GHz



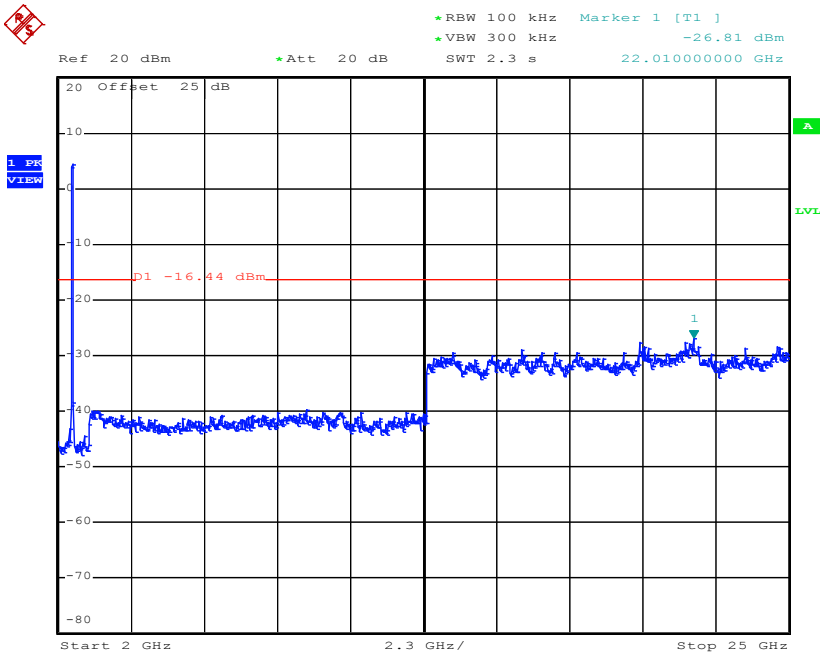
Date: 4.JUN.2012 17:15:18

Conducted Spurious Emission Plot on 802.11g CH11 between 30 MHz~3 GHz



Date: 10.JUL.2012 10:20:21

Conducted Spurious Emission Plot on 802.11g CH11 between 2 GHz~25 GHz

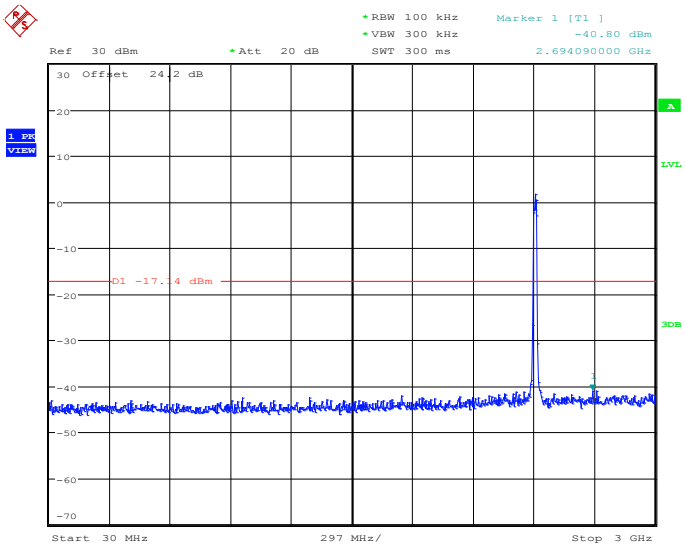


Date: 10.JUL.2012 10:20:39

Test Mode :	<SISO Ant 2>	**Temperature :**	24~26℃
Test Band :	2.4GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	01, 06, 11	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20

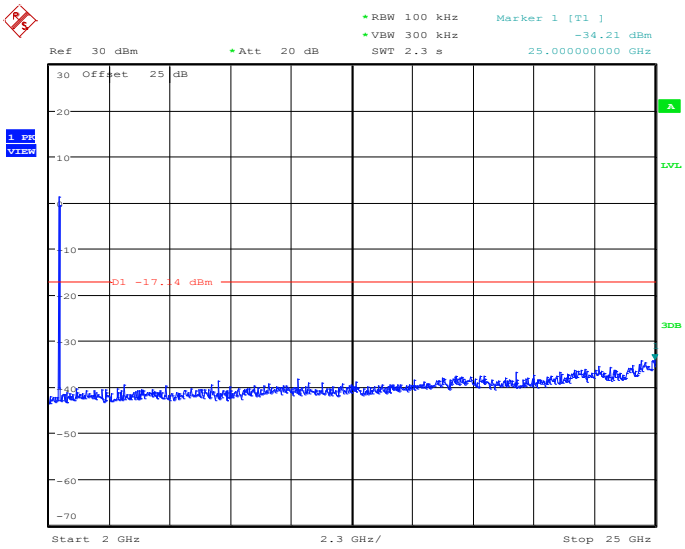
CH01 between 30 MHz~3 GHz



Date: 4.JUN.2012 17:32:34

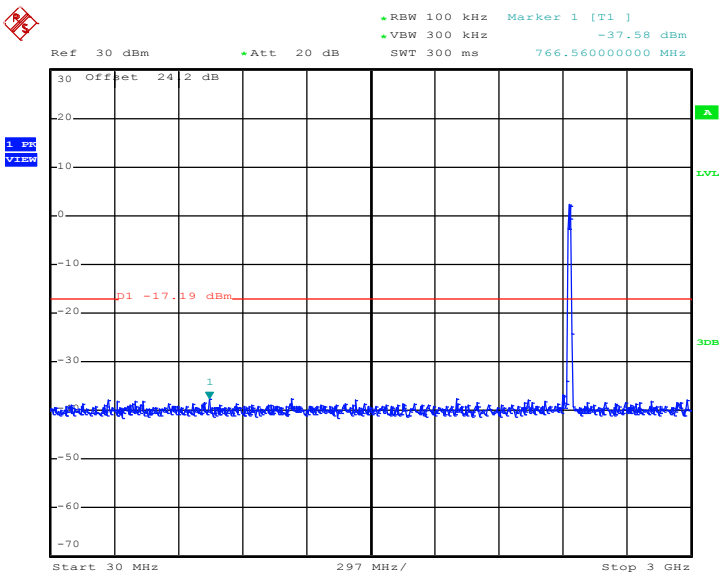
Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20

CH01 between 2 GHz~25 GHz



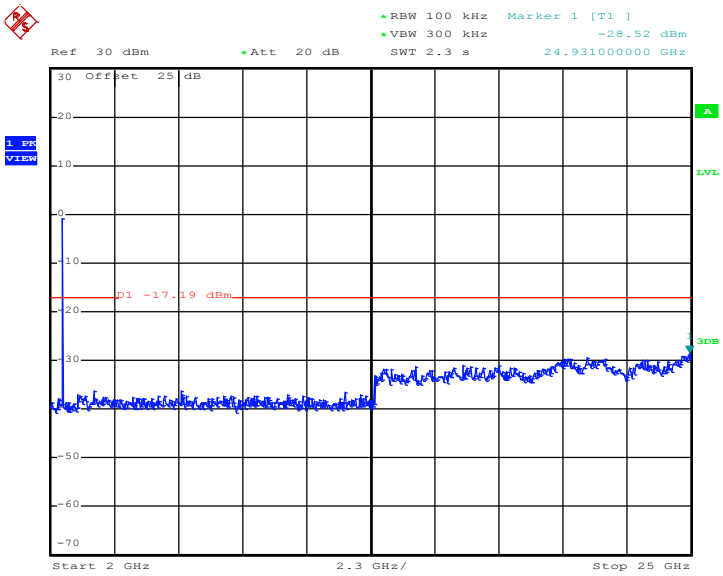
Date: 4.JUN.2012 17:32:51

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH06 between 30 MHz~3 GHz



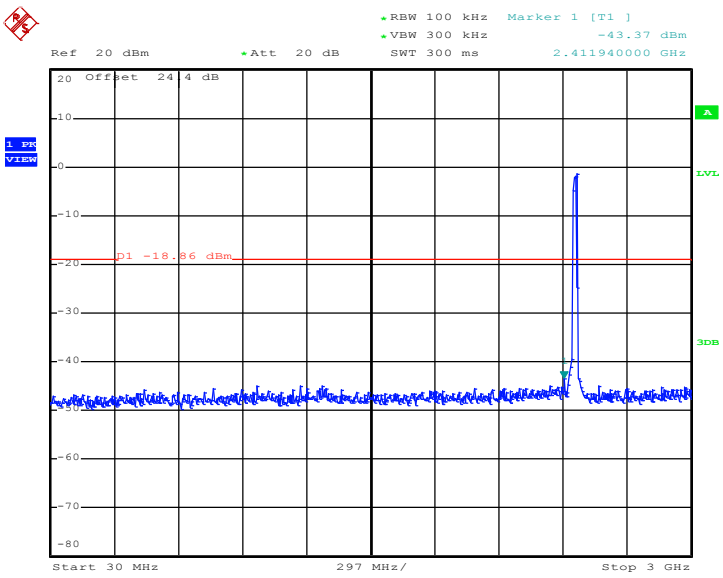
Date: 4.JUN.2012 20:26:53

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH06 between 2 GHz~25 GHz



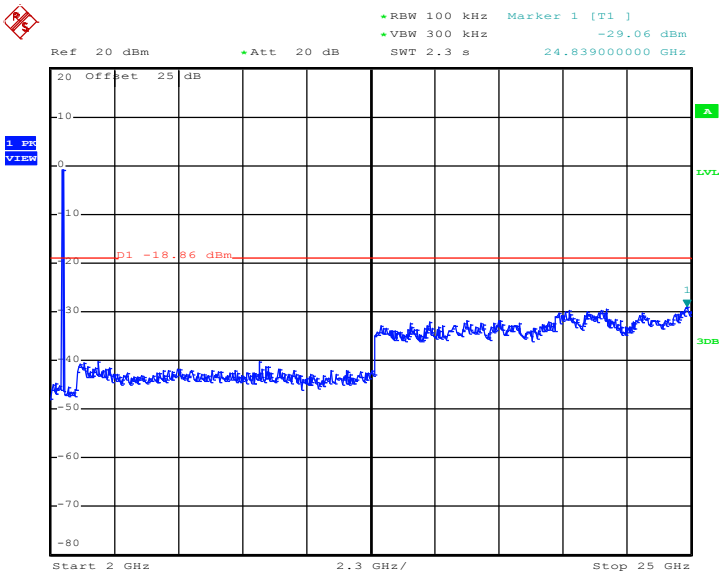
Date: 4.JUN.2012 20:27:11

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH11 between 30 MHz~3 GHz



Date: 6.JUN.2012 19:51:16

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH11 between 2 GHz~25 GHz

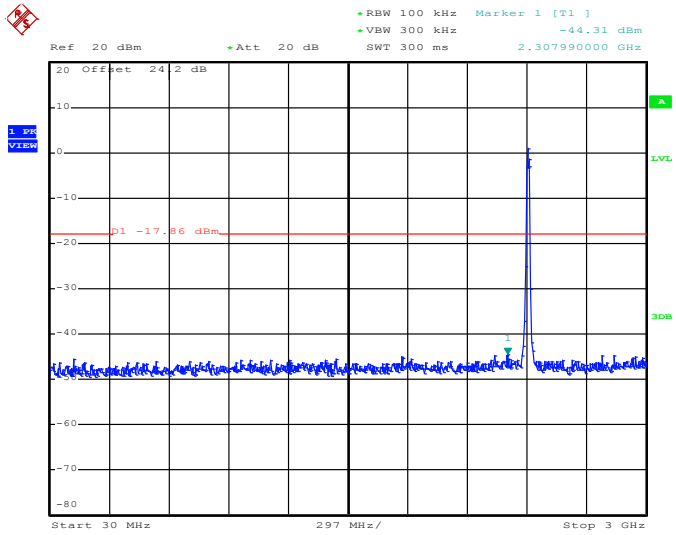


Date: 6.JUN.2012 19:51:34

Test Mode :	<MIMO Ant 1>	**Temperature :**	24~26℃
Test Band :	2.4GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	01, 06, 11	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20

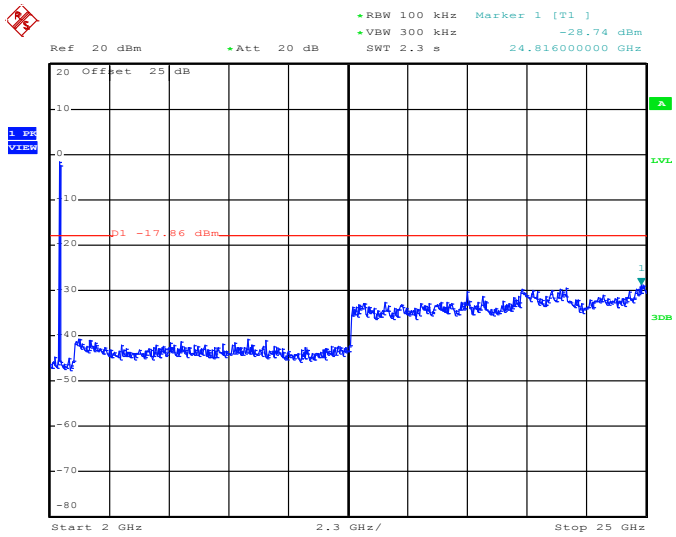
CH01 between 30 MHz~3 GHz



Date: 10.JUL.2012 15:36:25

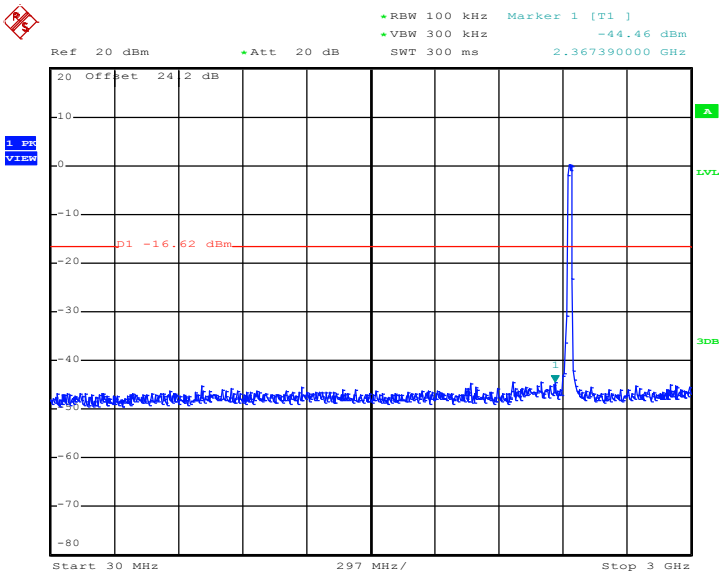
Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20

CH01 between 2 GHz~25 GHz



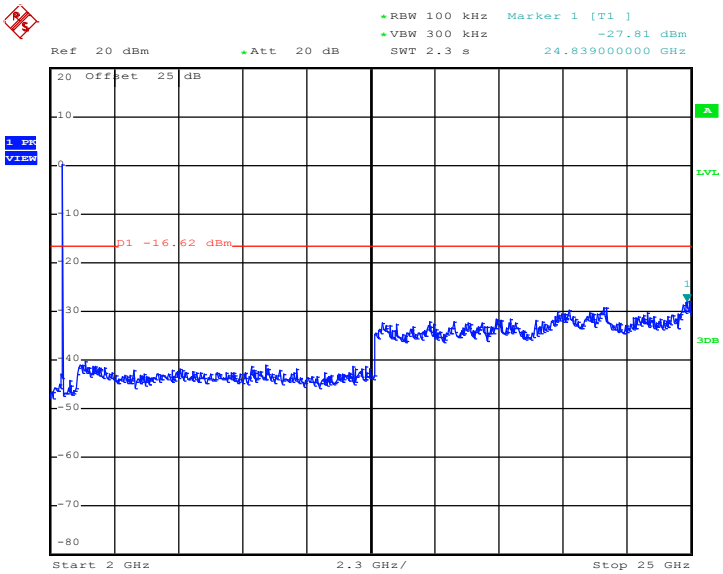
Date: 10.JUL.2012 15:36:43

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH06 between 30 MHz~3 GHz



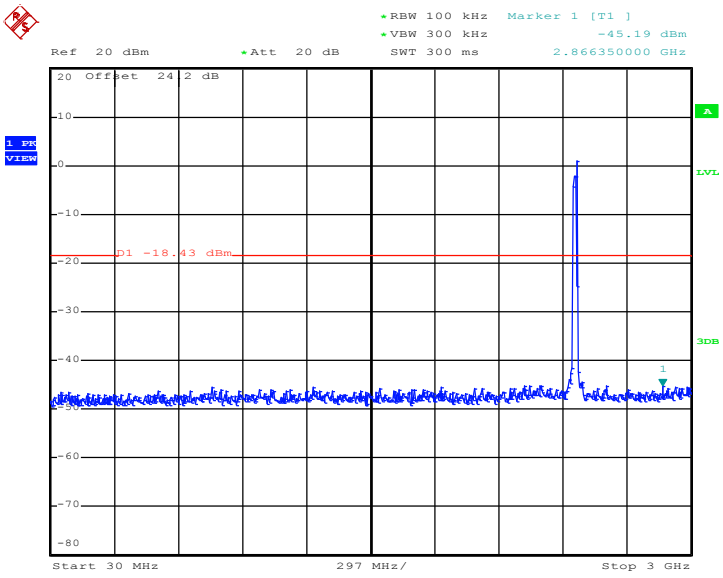
Date: 10.JUL.2012 15:57:28

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH06 between 2 GHz~25 GHz



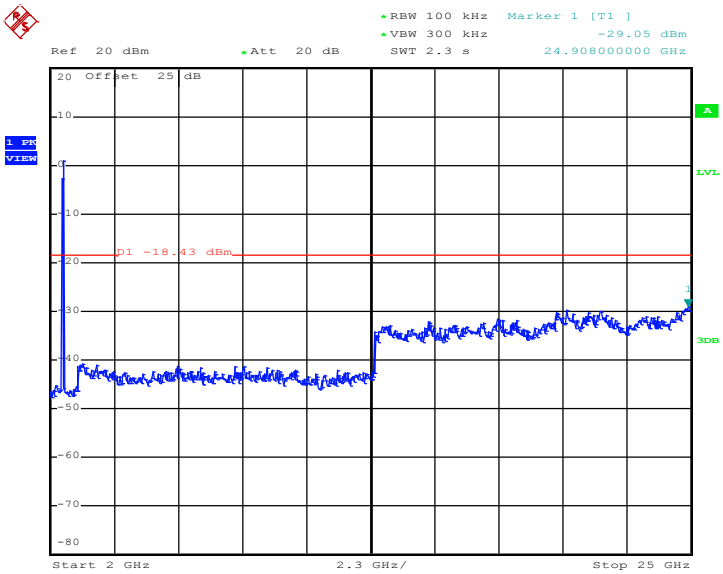
Date: 10.JUL.2012 15:57:46

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH11 between 30 MHz~3 GHz



Date: 10.JUL.2012 15:39:48

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH11 between 2 GHz~25 GHz

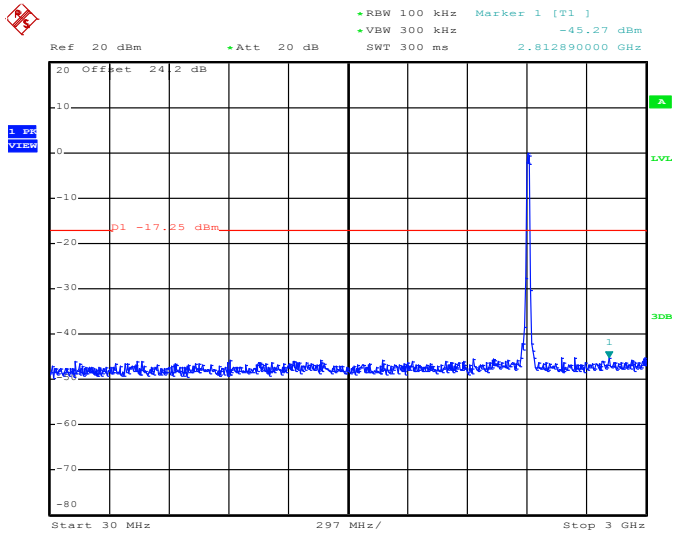


Date: 10.JUL.2012 15:40:05

Test Mode :	<MIMO Ant 2>	**Temperature :**	24~26℃
Test Band :	2.4GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	01, 06, 11	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20

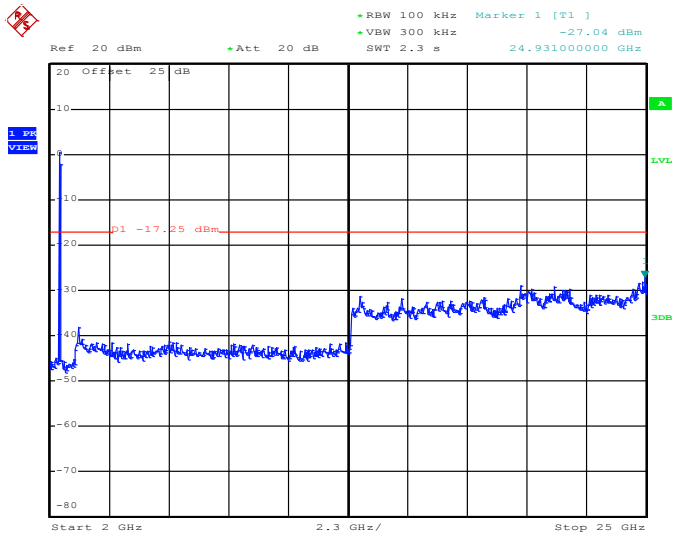
CH01 between 30 MHz~3 GHz



Date: 10.JUL.2012 15:34:01

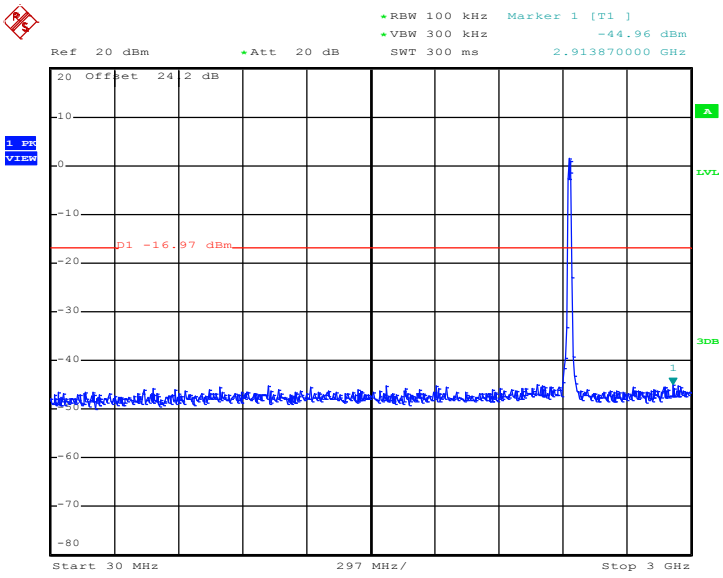
Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20

CH01 between 2 GHz~25 GHz



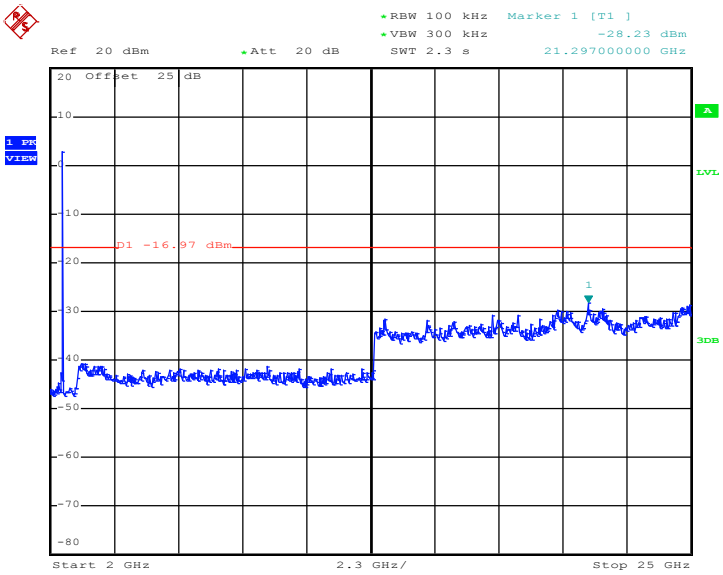
Date: 10.JUL.2012 15:34:18

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH06 between 30 MHz~3 GHz



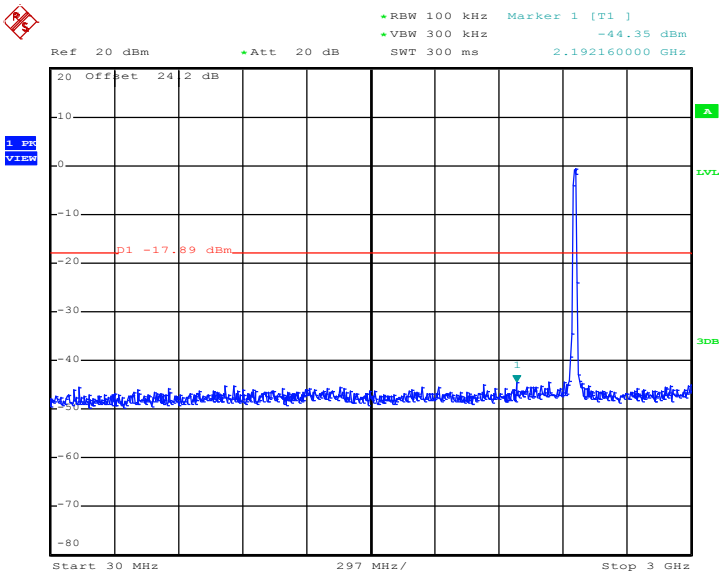
Date: 10.JUL.2012 15:54:45

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH06 between 2 GHz~25 GHz



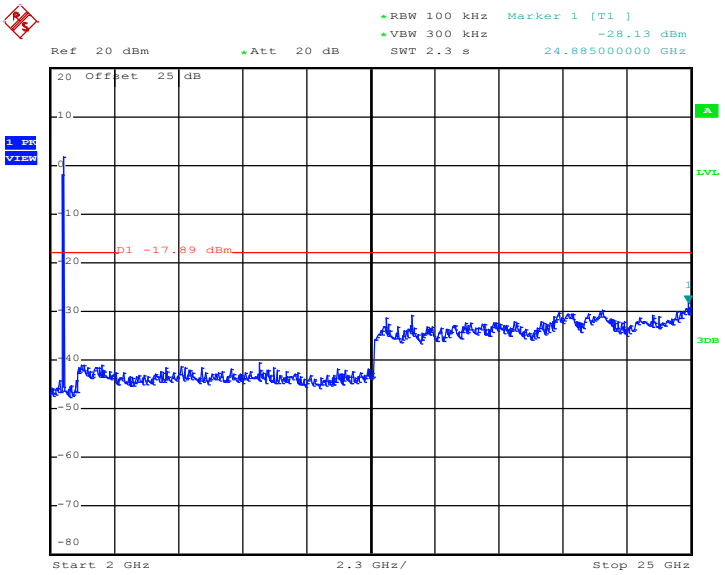
Date: 10.JUL.2012 15:55:03

Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH11 between 30 MHz~3 GHz



Date: 10.JUL.2012 15:50:12

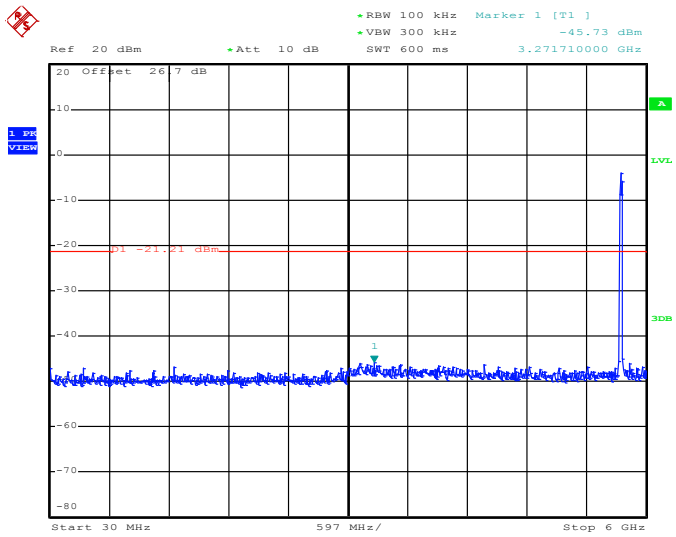
Conducted Spurious Emission Plot on 2.4GHz 802.11 n HT-20 CH11 between 2 GHz~25 GHz



Date: 10.JUL.2012 15:50:30

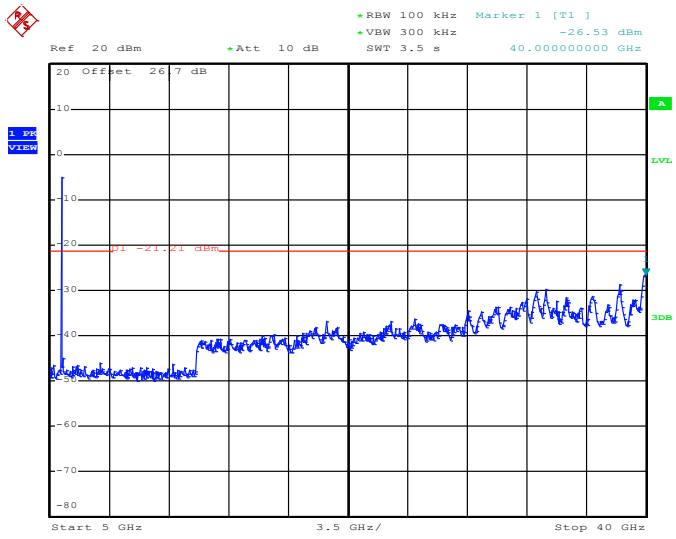
Test Mode :	<Legacy Ant 2>	**Temperature :**	24~26℃
Test Band :	802.11a	**Relative Humidity :**	50~53%
Test Channel :	149, 157, 161	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 802.11a CH149 between 30 MHz~6 GHz



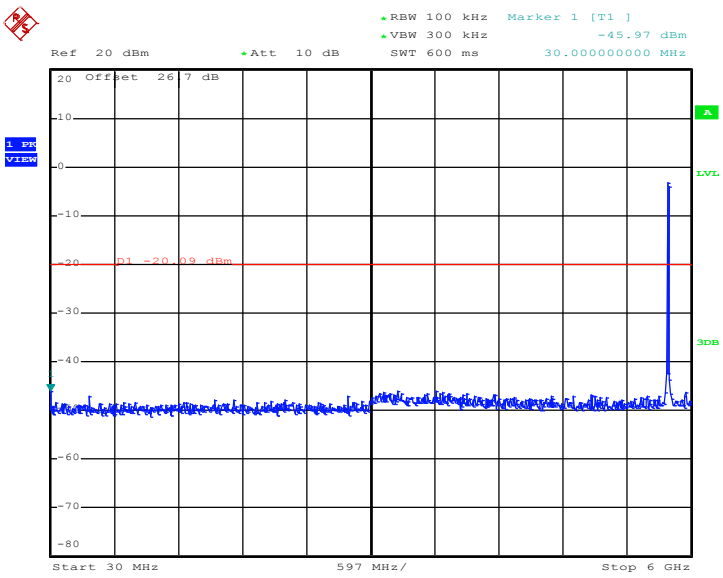
Date: 10.JUL.2012 21:22:32

Conducted Spurious Emission Plot on 802.11a CH149 between 5 GHz~40 GHz



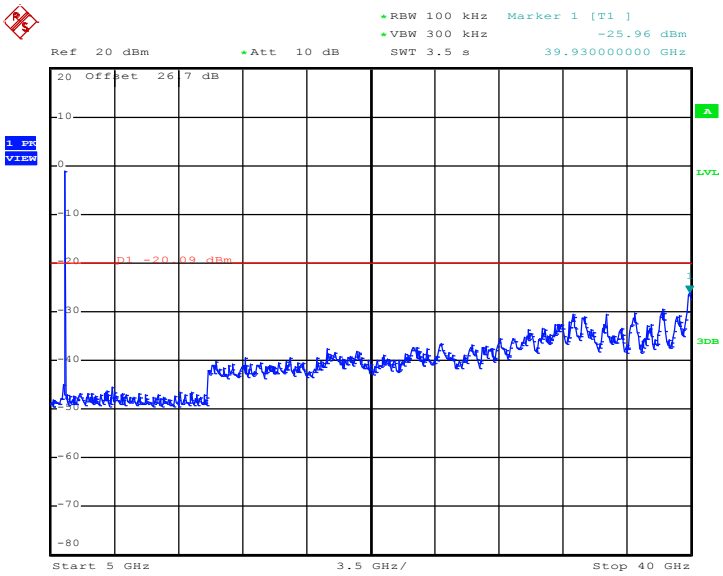
Date: 10.JUL.2012 21:22:49

Conducted Spurious Emission Plot on 802.11a CH157 between 30 MHz~6 GHz



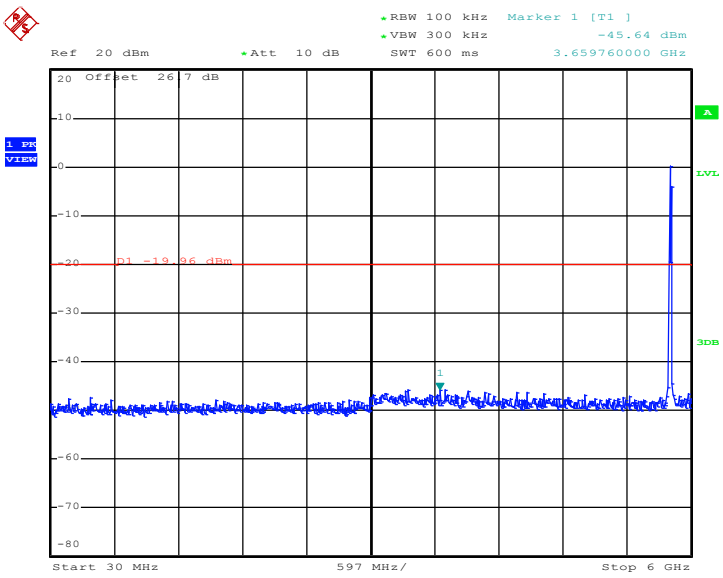
Date: 10.JUL.2012 21:23:46

Conducted Spurious Emission Plot on 802.11a CH157 between 5 GHz~40 GHz



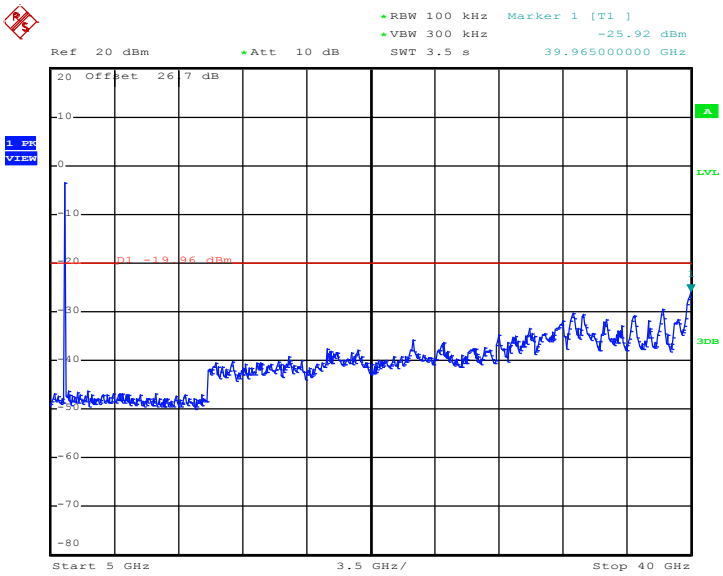
Date: 10.JUL.2012 21:24:03

Conducted Spurious Emission Plot on 802.11a CH161 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:25:48

Conducted Spurious Emission Plot on 802.11a CH161 between 5 GHz~40 GHz

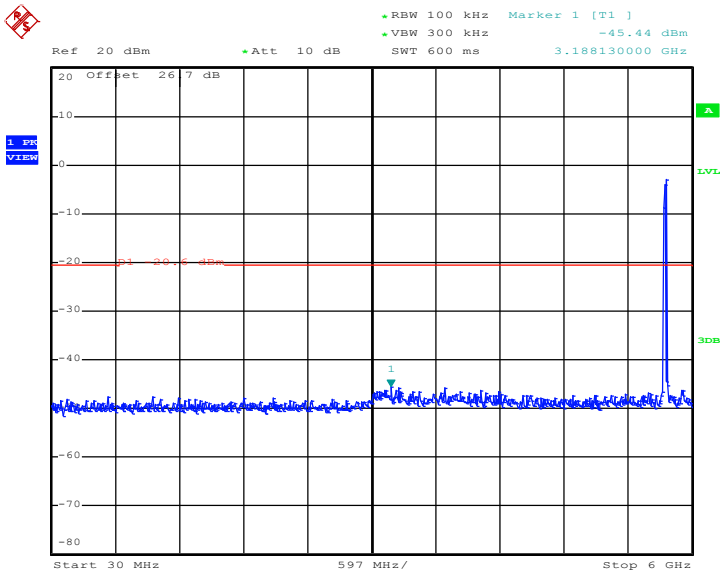


Date: 10.JUL.2012 21:26:05

Test Mode :	<SISO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	149, 157, 161	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20

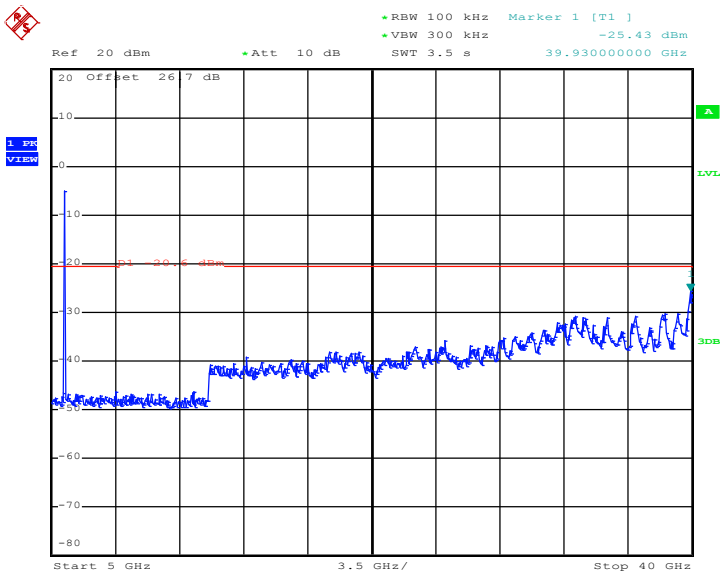
CH149 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:29:08

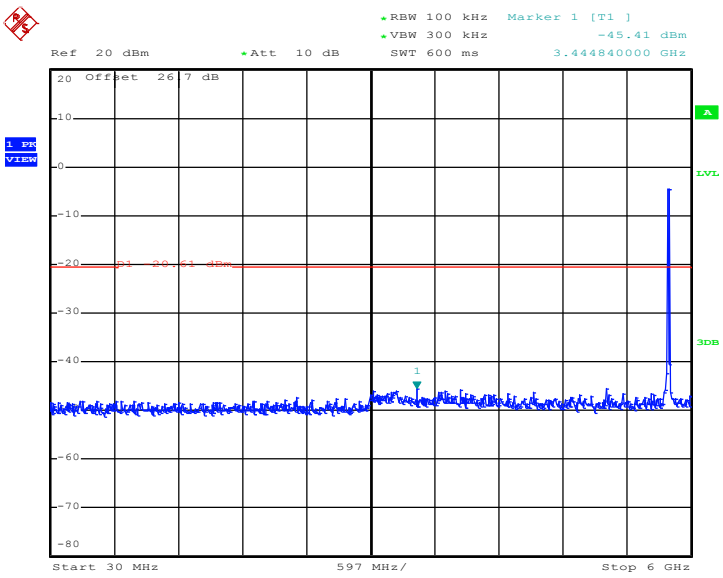
Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20

CH149 between 5GHz~40 GHz



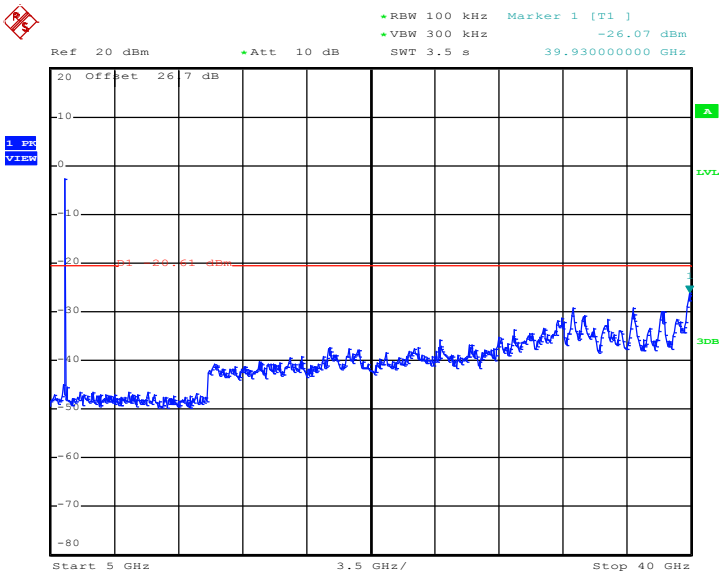
Date: 10.JUL.2012 21:29:25

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH157 between 30 MHz~6 GHz



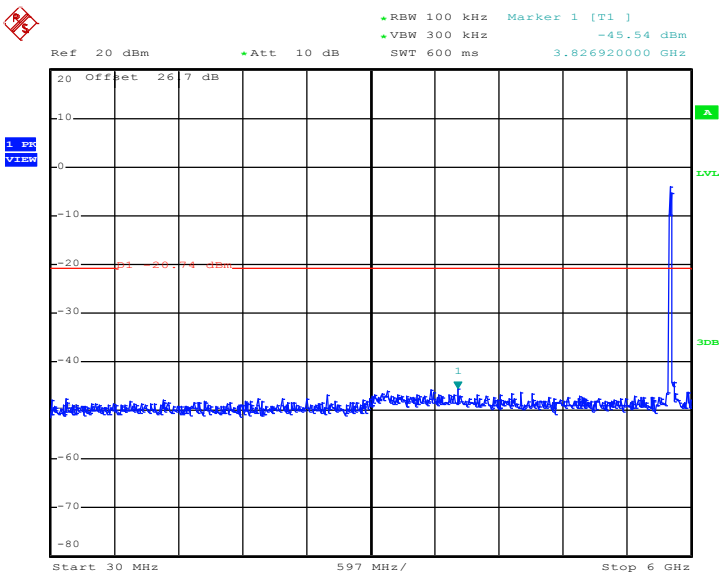
Date: 10.JUL.2012 21:30:08

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH157 between 5GHz~40 GHz



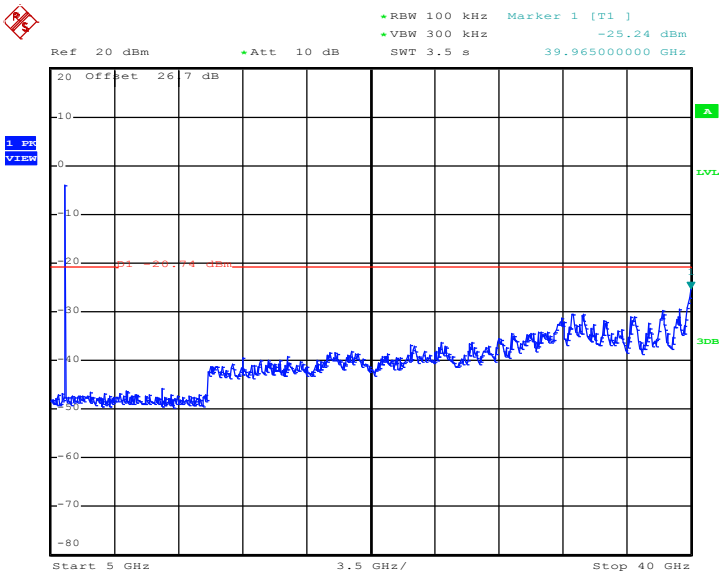
Date: 10.JUL.2012 21:30:25

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH161 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:31:23

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH161 between 5 GHz~40 GHz

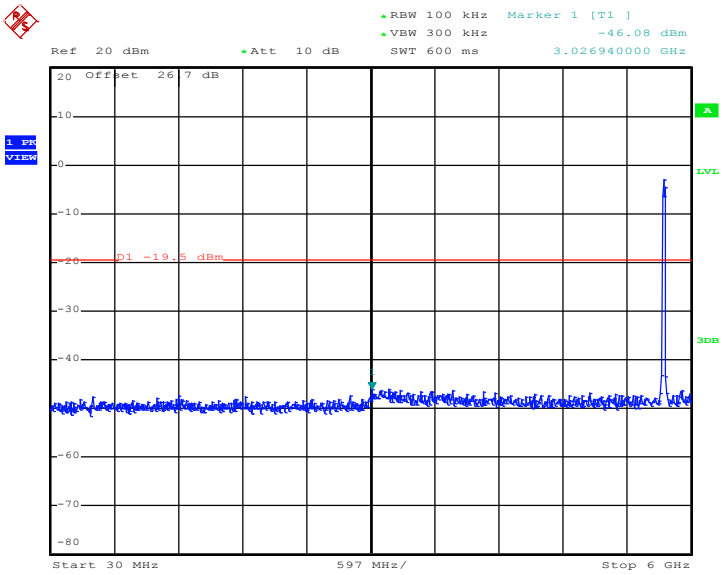


Date: 10.JUL.2012 21:31:40

Test Mode :	<MIMO Ant 1>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	149, 157, 161	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20

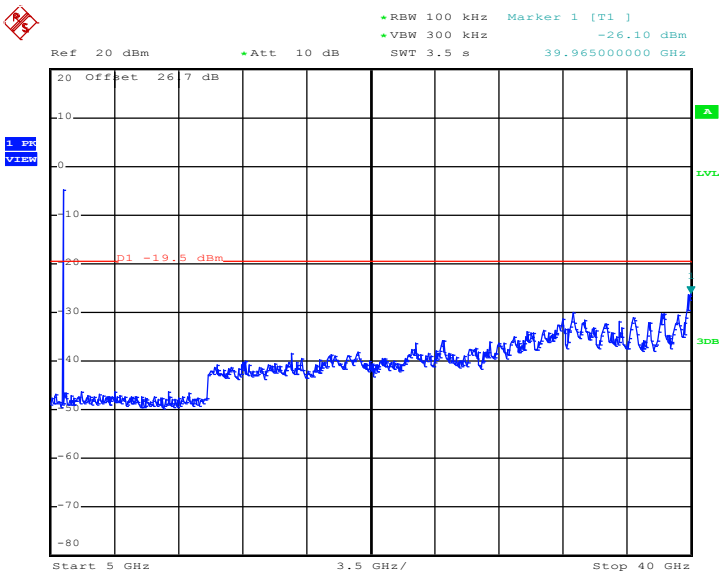
CH149 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:38:35

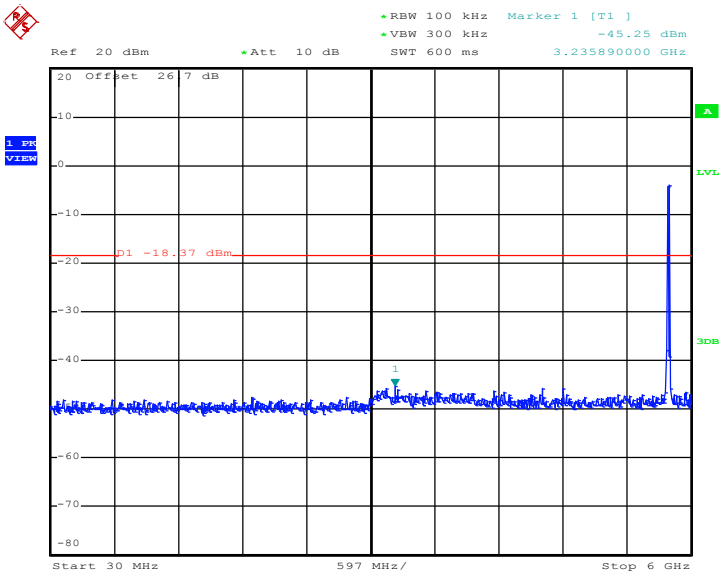
Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20

CH149 between 5 GHz~40 GHz



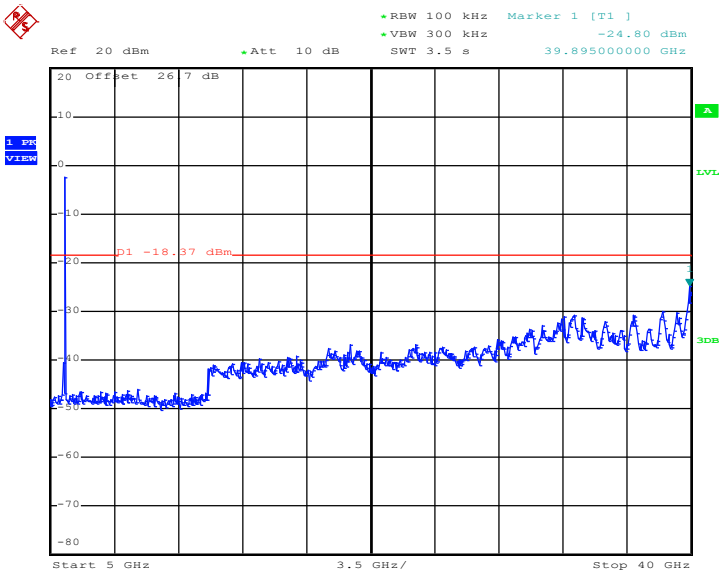
Date: 10.JUL.2012 21:38:53

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH157 between 30 MHz~6 GHz



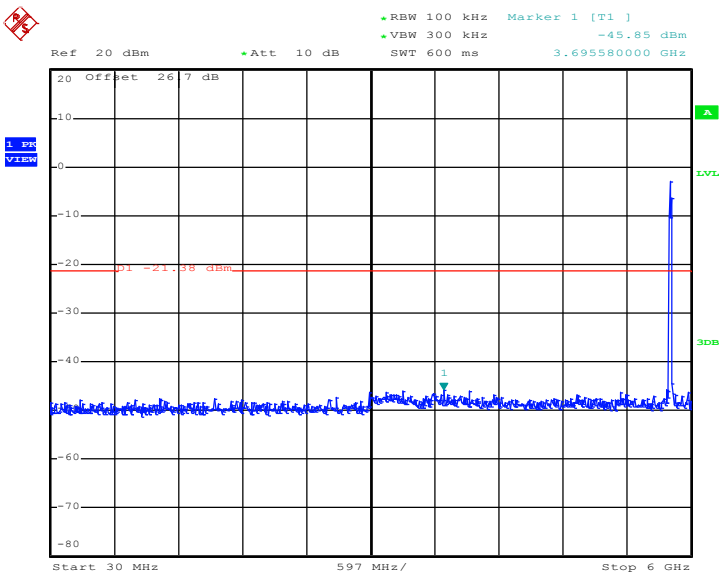
Date: 10.JUL.2012 21:35:47

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH157 between 5 GHz~40 GHz



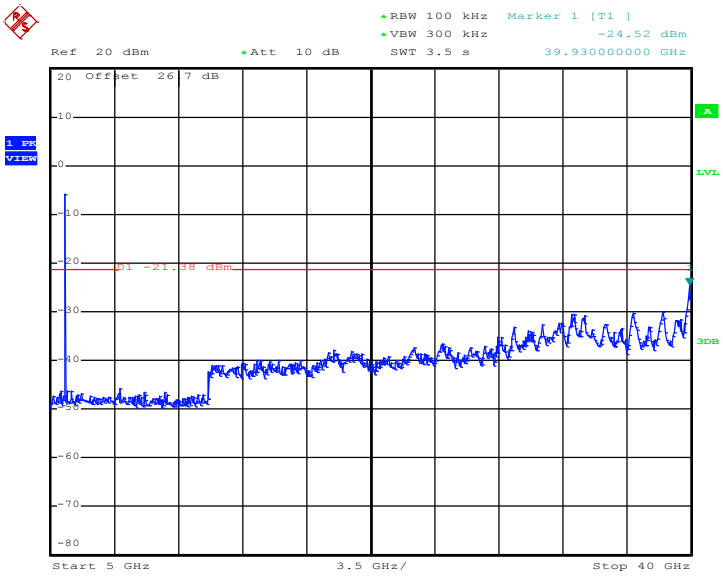
Date: 10.JUL.2012 21:36:04

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH161 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:34:31

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH161 between 5 GHz~40 GHz

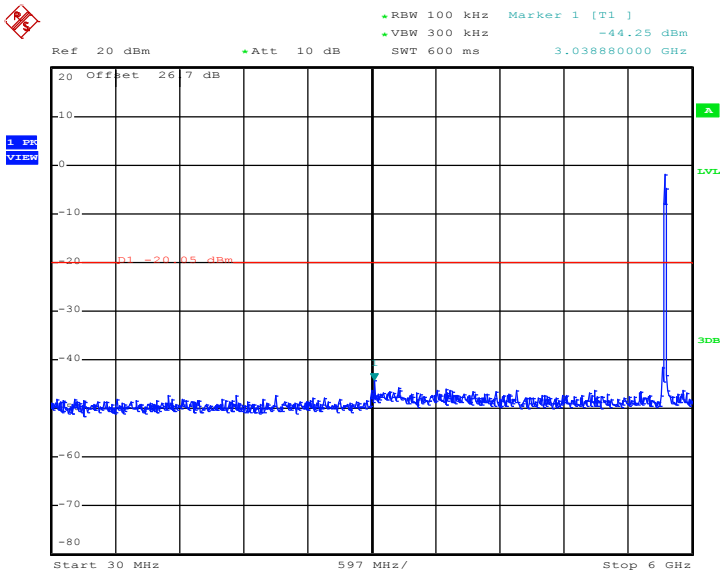


Date: 10.JUL.2012 21:34:49

Test Mode :	<MIMO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-20	**Relative Humidity :**	50~53%
Test Channel :	149, 157, 161	**Test Engineer :**	Kenny Chen

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20

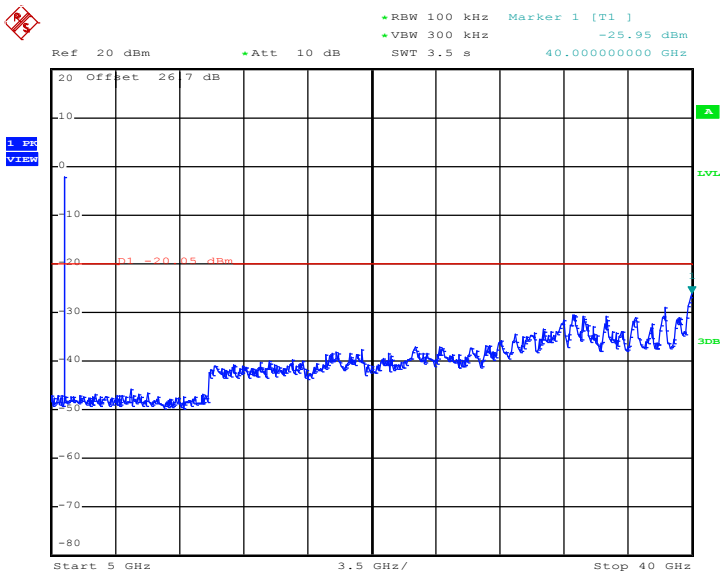
CH149 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:37:49

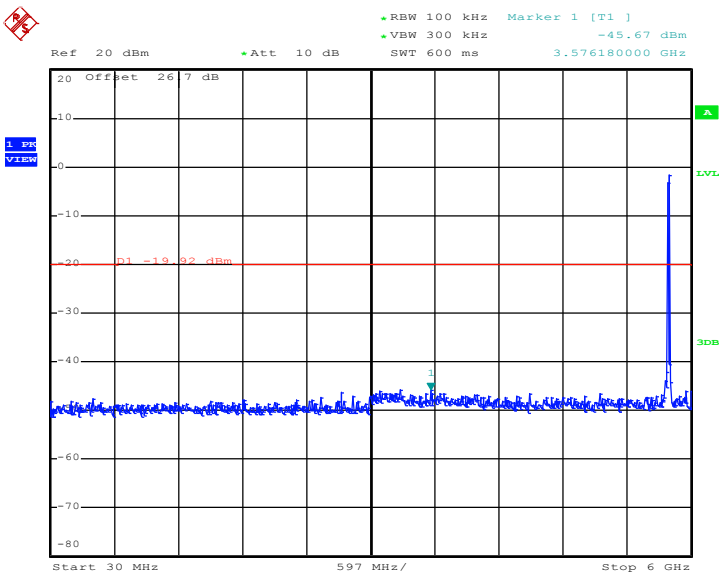
Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20

CH149 between 5 GHz~40 GHz



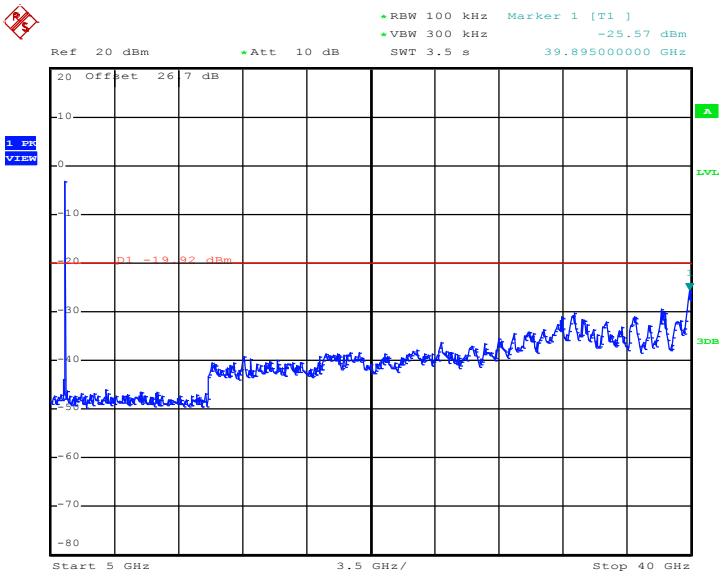
Date: 10.JUL.2012 21:38:06

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH157 between 30 MHz~6 GHz



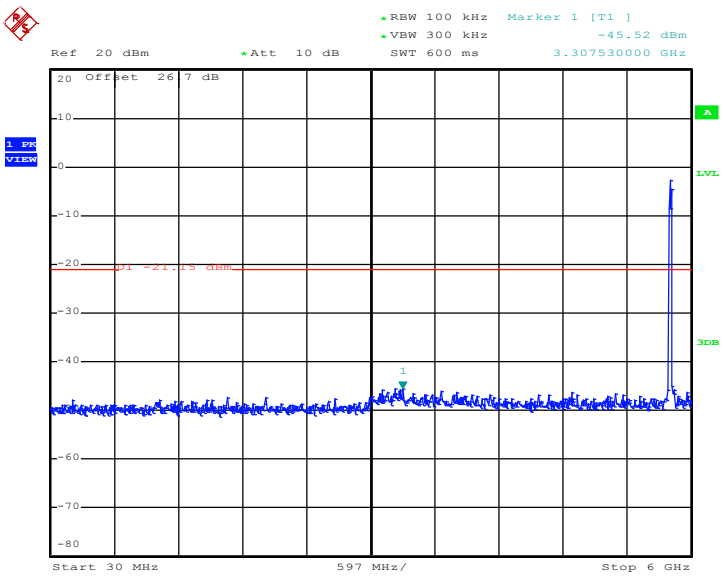
Date: 10.JUL.2012 21:36:36

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH157 between 5 GHz~40 GHz



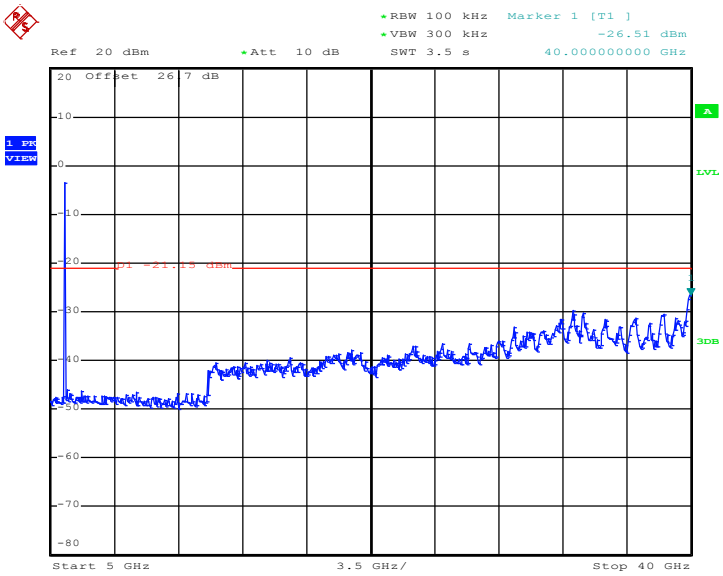
Date: 10.JUL.2012 21:36:54

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH161 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:33:44

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-20 CH161 between 5 GHz~40 GHz

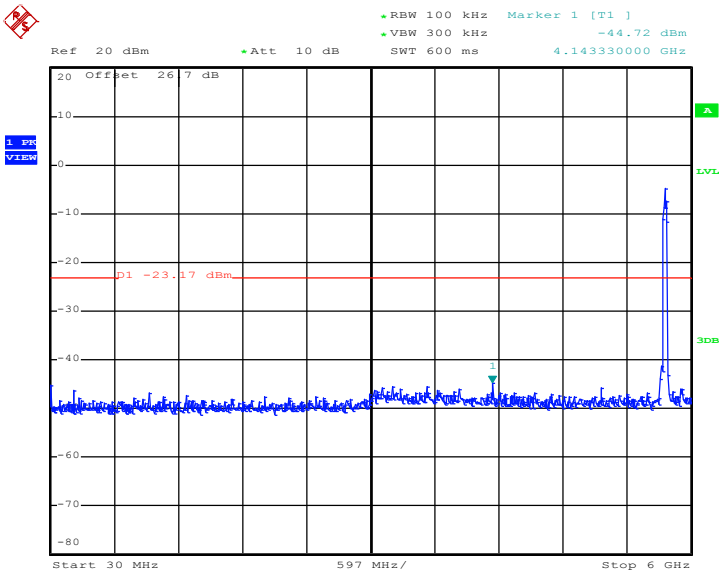


Date: 10.JUL.2012 21:34:02

Test Mode :	<SISO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-40	**Relative Humidity :**	50~53%
Test Channel :	151, 159	**Test Engineer :**	Book Lin

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

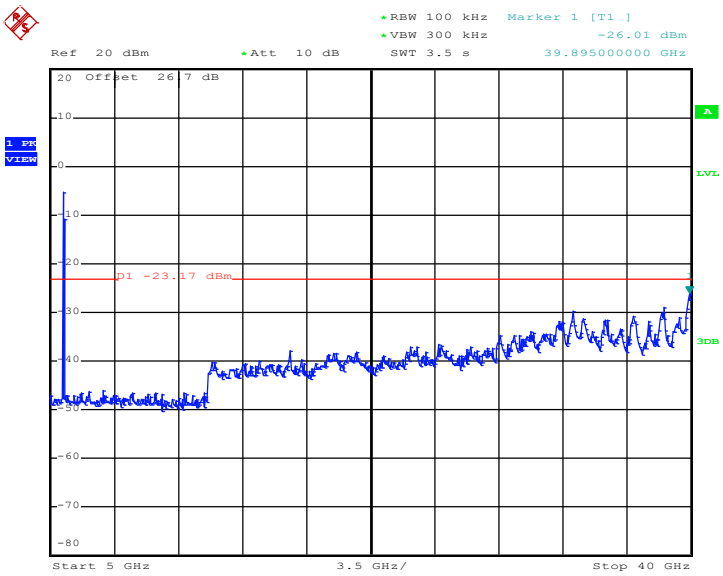
CH151 between 30 MHz~6 GHz



Date: 10.JUL.2012 20:37:29

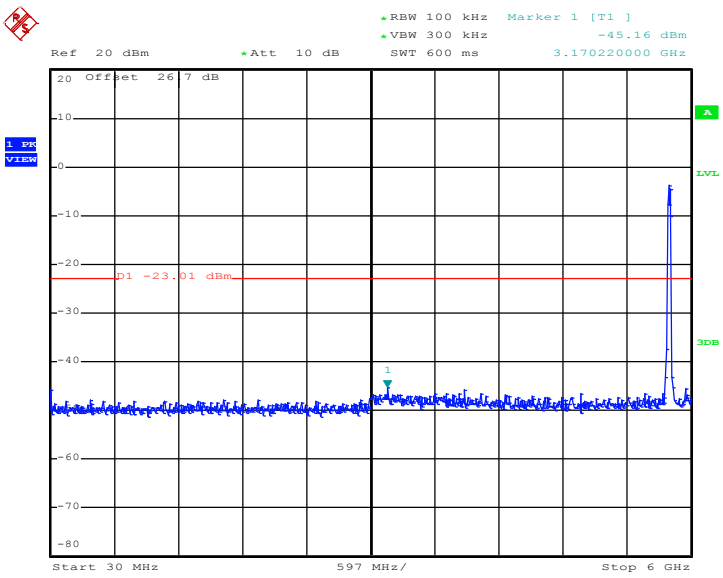
Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

CH151 between 5 GHz~40 GHz



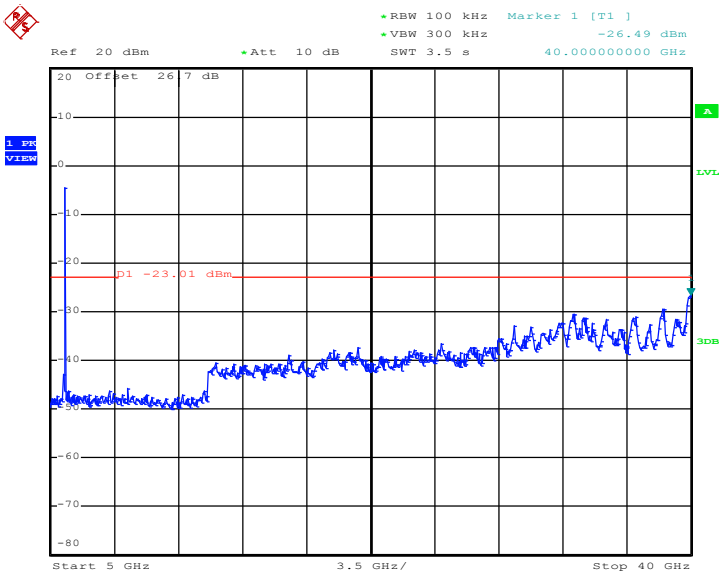
Date: 10.JUL.2012 20:37:47

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40 CH159 between 30 MHz~6 GHz



Date: 10.JUL.2012 20:34:35

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40 CH159 between 5 GHz~40 GHz

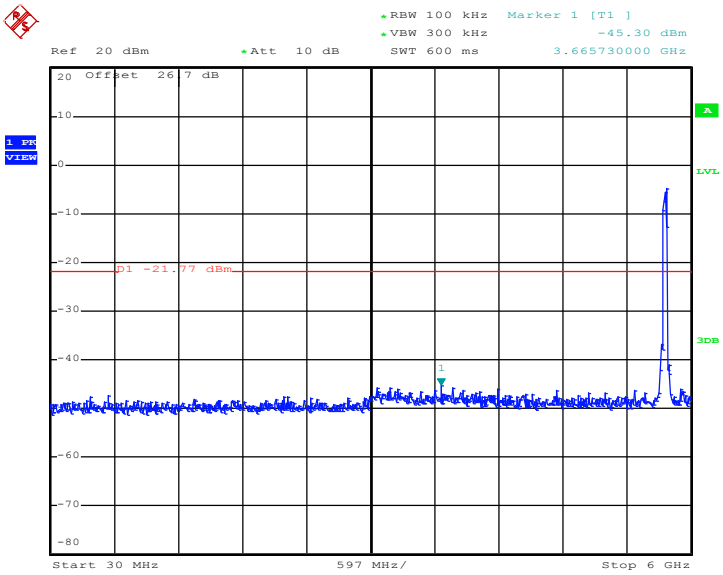


Date: 10.JUL.2012 20:34:52

Test Mode :	<MIMO Ant 1>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-40	**Relative Humidity :**	50~53%
Test Channel :	151, 159	**Test Engineer :**	Book Lin

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

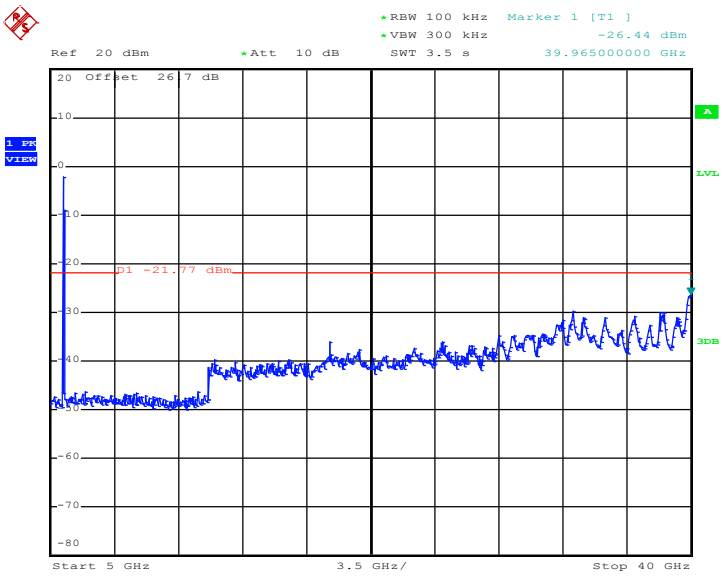
CH151 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:01:45

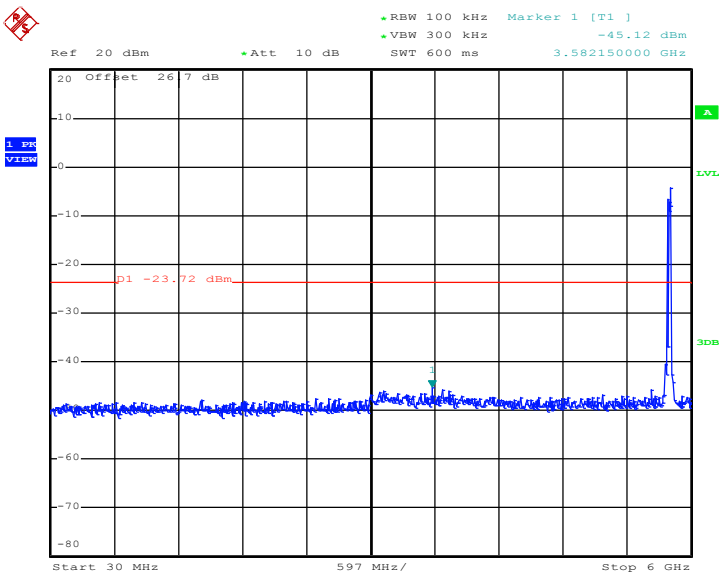
Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

CH151 between 5 GHz~40 GHz



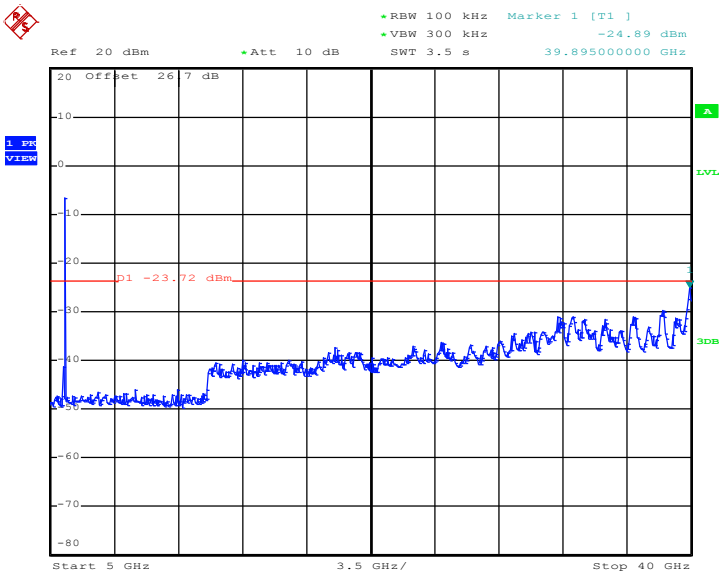
Date: 10.JUL.2012 21:02:03

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40 CH159 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:05:54

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40 CH159 between 5 GHz~40 GHz

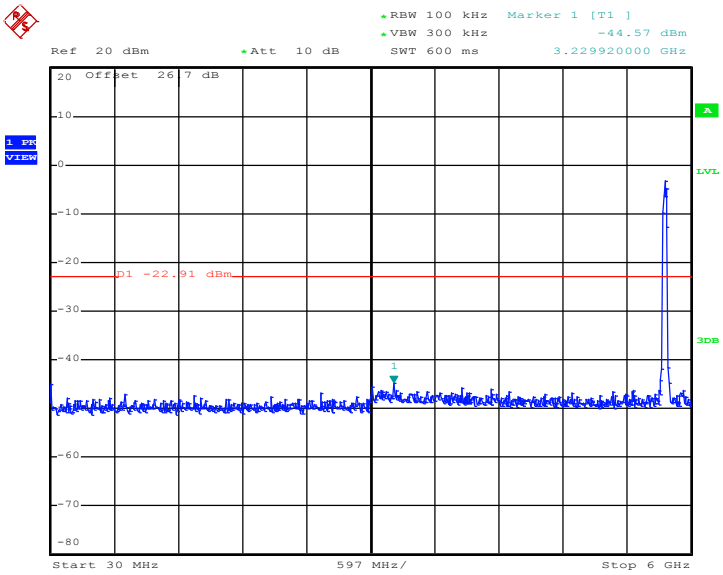


Date: 10.JUL.2012 21:06:11

Test Mode :	<MIMO Ant 2>	**Temperature :**	24~26℃
Test Band :	5GHz 802.11n HT-40	**Relative Humidity :**	50~53%
Test Channel :	151, 159	**Test Engineer :**	Book Lin

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

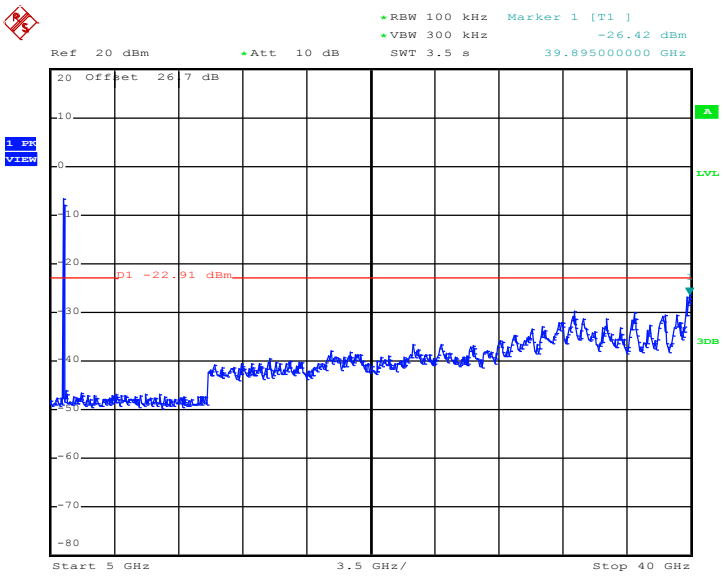
CH151 between 30 MHz~6 GHz



Date: 10.JUL.2012 20:56:16

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

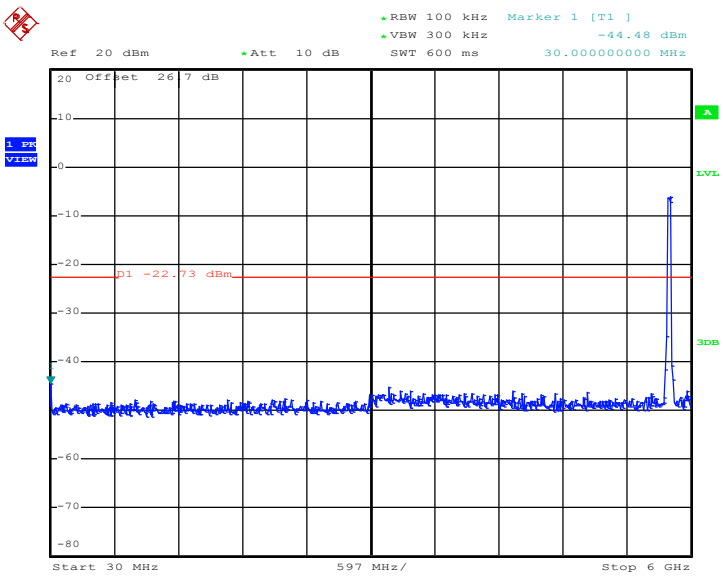
CH151 between 5 GHz~40 GHz



Date: 10.JUL.2012 20:56:34

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

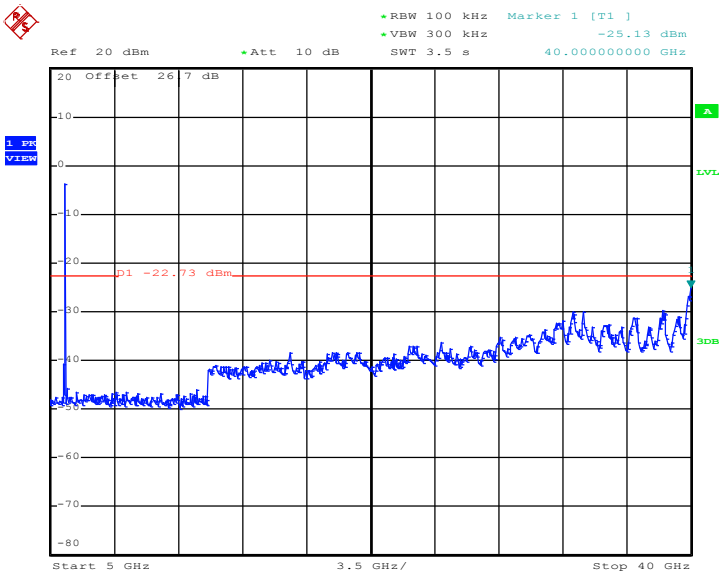
CH159 between 30 MHz~6 GHz



Date: 10.JUL.2012 21:09:21

Conducted Spurious Emission Plot on 5GHz 802.11 n HT-40

CH159 between 5 GHz~40 GHz



Date: 10.JUL.2012 21:09:39

3.5 Power Spectral Density Measurement

3.5.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

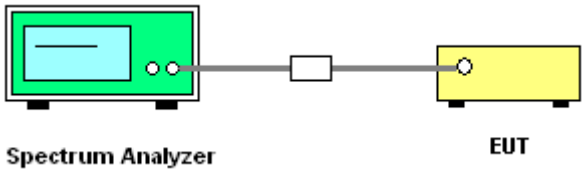
3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Test Procedures

1. The testing follows Measurement Procedure Option 1 (Peak PSD) of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance DR01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Record the measurement data derived from spectrum analyzer.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. Video bandwidth (VBW) >= 300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r01.

3.5.4 Test Setup



3.5.5 Test Result of Power Spectral Density

Test Mode :	802.11b	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11b Power Density		Max. Limits (dBm)	Pass /Fail
		Legacy Ant 2			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	9.53	-5.67	8	Pass
06	2437	9.65	-5.55	8	Pass
11	2462	9.75	-5.45	8	Pass

Test Mode :	802.11g	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11g Power Density		Max. Limits (dBm)	Pass /Fail
		Legacy Ant 2			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
01	2412	2.39	-12.81	8	Pass
06	2437	5.71	-9.49	8	Pass
11	2462	3.56	-11.64	8	Pass

Test Mode :	2.4GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Ch.	Freq. (MHz)	2.4GHz 802.11n (BW20 MHz) Power Density						Max. Limits (dBm)	Pass /Fail
		SISO ANT 2		MIMO ANT 1		MIMO ANT 2			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10LOG2	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10LOG2		
01	2412	2.86	-12.34	2.14	-13.06	2.75	-12.45	8	Pass
06	2437	2.81	-12.39	3.38	-11.82	3.03	-12.17	8	Pass
11	2462	1.14	-14.06	1.57	-13.63	2.11	-13.09	8	Pass

Test Mode :	802.11a	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	802.11a Power Density		Max. Limits (dBm)	Pass /Fail
		Legacy Ant 2			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)		
149	5745	-1.21	-16.41	8	Pass
157	5785	-0.09	-15.29	8	Pass
161	5805	0.04	-15.16	8	Pass

Test Mode :	5GHz 802.11n HT-20	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Ch.	Freq. (MHz)	5GHz 802.11n (BW20 MHz) Power Density						Max. Limits (dBm)	Pass /Fail
		SISO ANT 2		MIMO ANT 1		MIMO ANT 2			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10LOG2	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10LOG2		
149	5745	-0.60	-15.80	0.50	-14.70	-0.05	-15.25	8	Pass
157	5785	-0.61	-15.81	1.63	-13.57	0.08	-15.12	8	Pass
161	5805	-0.74	-15.94	-1.38	-16.58	-1.15	-16.35	8	Pass

Test Mode :	5GHz 802.11n HT-40	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	50~53%

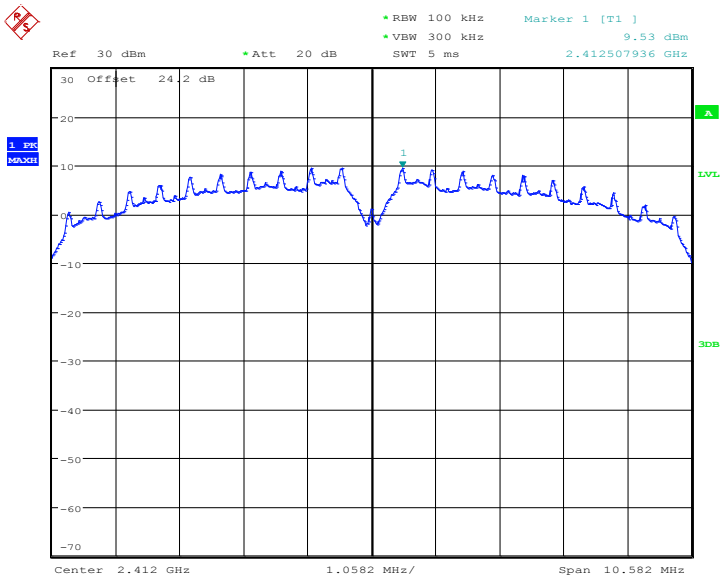
Ch.	Freq. (MHz)	5GHz 802.11n (BW40 MHz) Power Density						Max. Limits (dBm)	Pass /Fail
		SISO ANT 2		MIMO ANT 1		MIMO ANT 2			
		Measured PSD/100KHz (dBm)	PSD/3KHz (dBm)	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10LOG2	Measured PSD/100KHz (dBm)	PSD/3KHz (dBm) +10LOG2		
151	5755	-3.17	-18.37	-1.77	-16.97	-2.91	-18.11	8	Pass
159	5795	-3.01	-18.21	-3.72	-18.92	-2.73	-17.93	8	Pass

Note:

1. *Measured power density (dBm) has offset with cable loss.*
2. *BWCF (dB) = 10 log (3k/100k) = -15.2 dB*
3. *Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB)*
4. *MIMO Power Density/ 3KHz (dBm)= Measured power density/ 100KHz (dBm) + BWCF (dB) + 10LOG(N=2),where N=2 transmitters.*

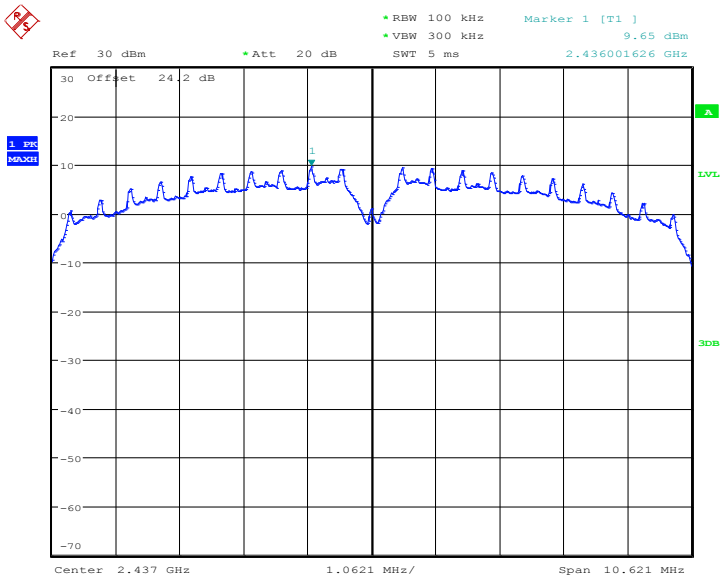
3.5.6 Test Result of Power Spectral Density Plots

PSD Plot on 802.11b Channel 01 – Legacy Ant 2



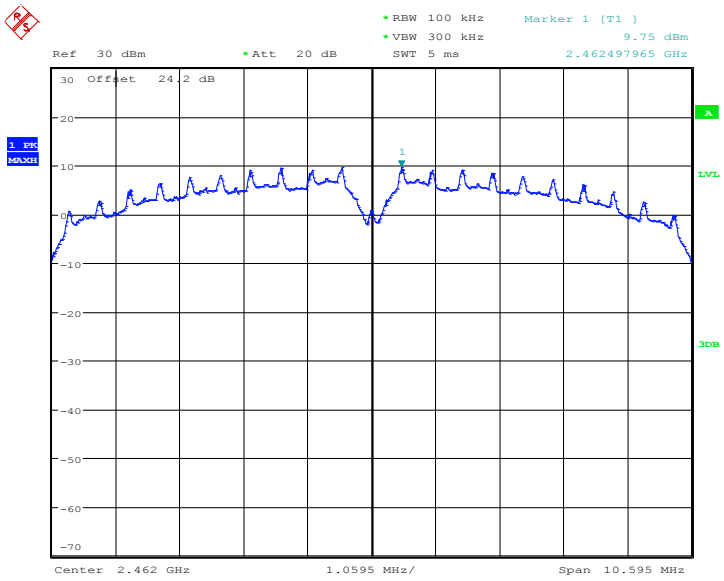
Date: 4.JUN.2012 15:35:15

PSD Plot on 802.11b Channel 06 – Legacy Ant 2



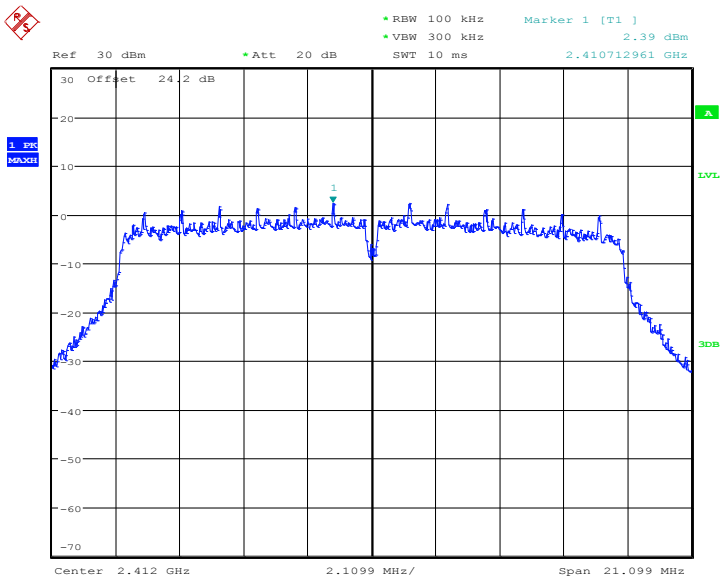
Date: 4.JUN.2012 15:41:10

PSD Plot on 802.11b Channel 11 – Legacy Ant 2



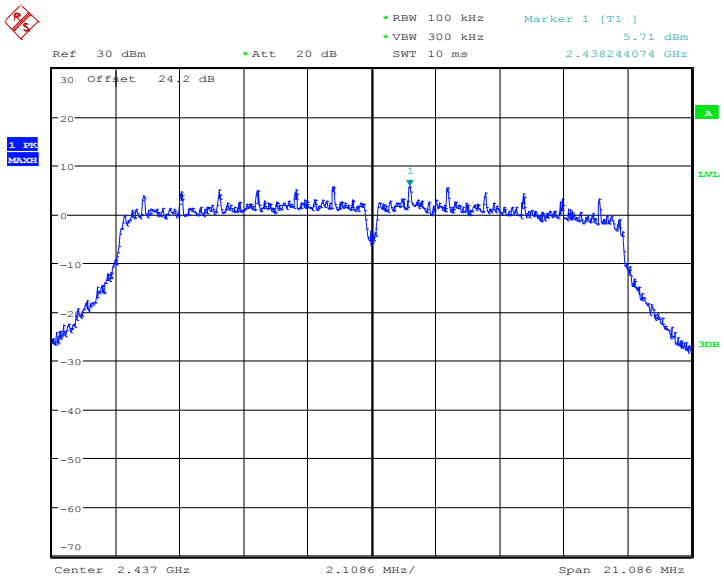
Date: 4.JUN.2012 15:44:14

PSD Plot on 802.11g Channel 01 – Legacy Ant 2



Date: 4.JUN.2012 16:31:21

PSD Plot on 802.11g Channel 06 – Legacy Ant 2



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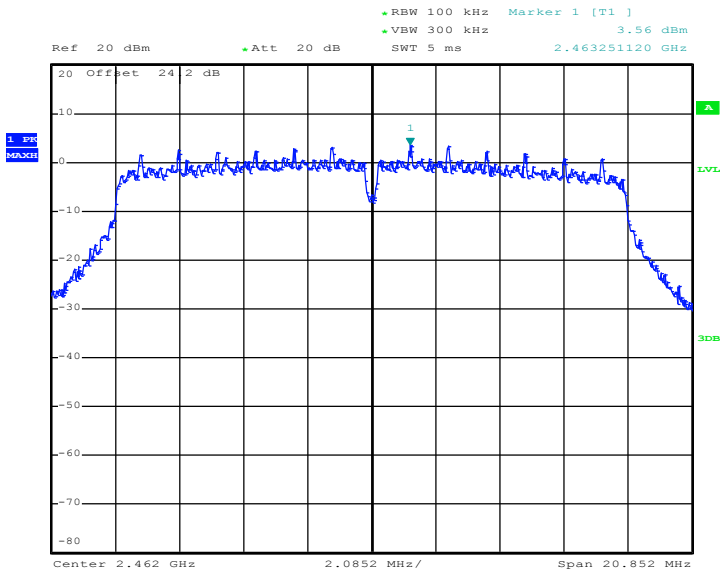
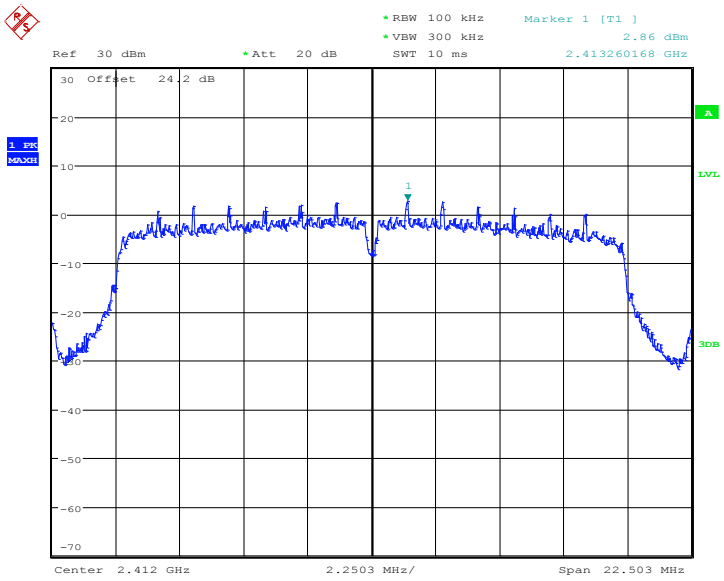
PSD Plot on 802.11g Channel 11 – Legacy Ant 2



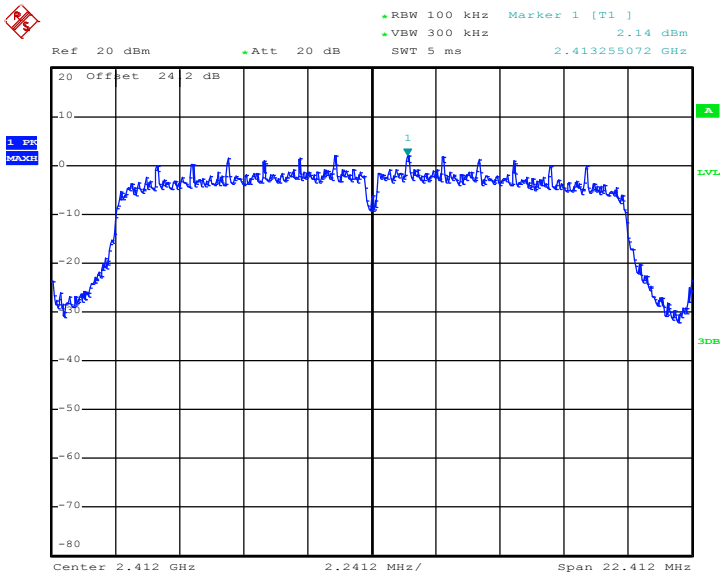
Date: 10.JUL.2012 10:00:02

PSD Plot on 2.4GHz 802.11n HT-20 Channel 01 – SISO ANT 2



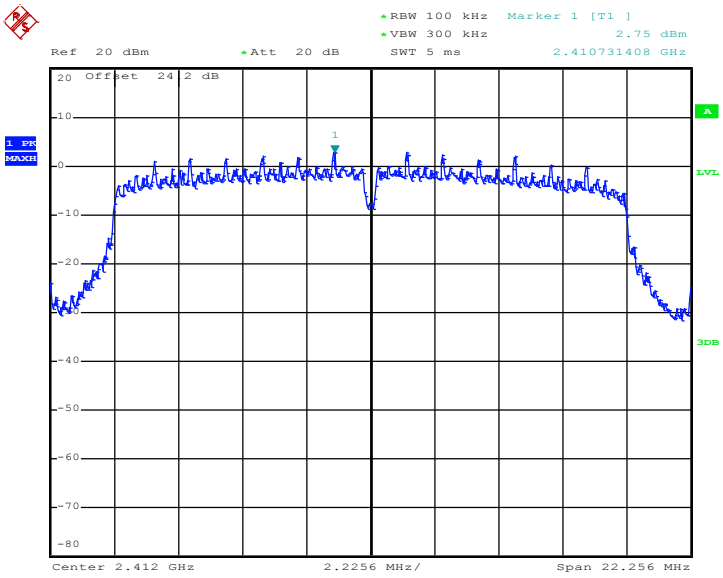
Date: 4.JUN.2012 17:31:49

PSD Plot on 2.4GHz 802.11n HT-20 Channel 01 – MIMO ANT 1



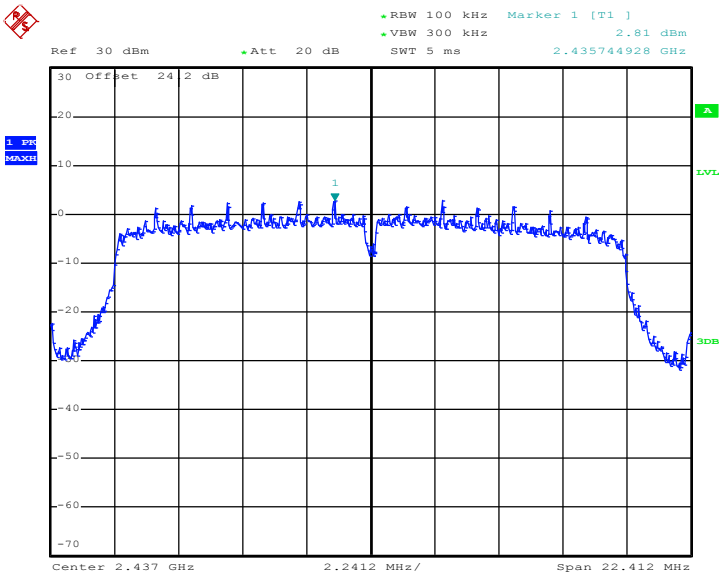
Date: 10.JUL.2012 15:28:22

PSD Plot on 2.4GHz 802.11n HT-20 Channel 01 – MIMO ANT 2



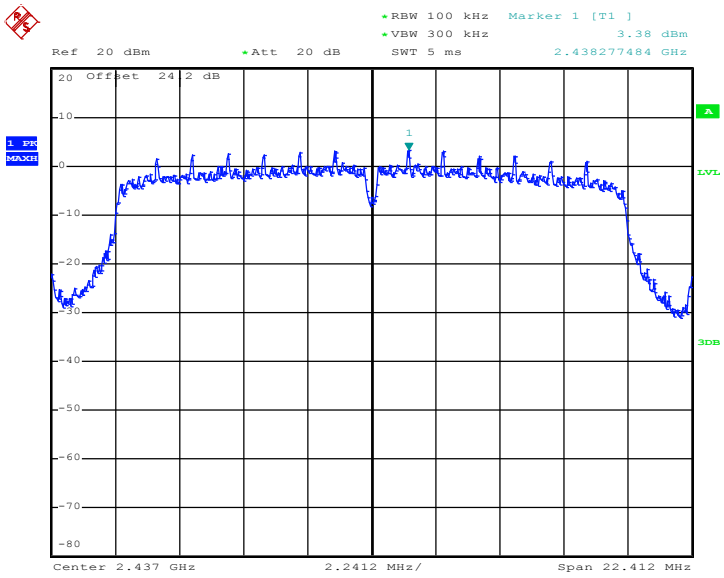
Date: 10.JUL.2012 15:32:05

PSD Plot on 2.4GHz 802.11n HT-20 Channel 06 – SISO ANT 2



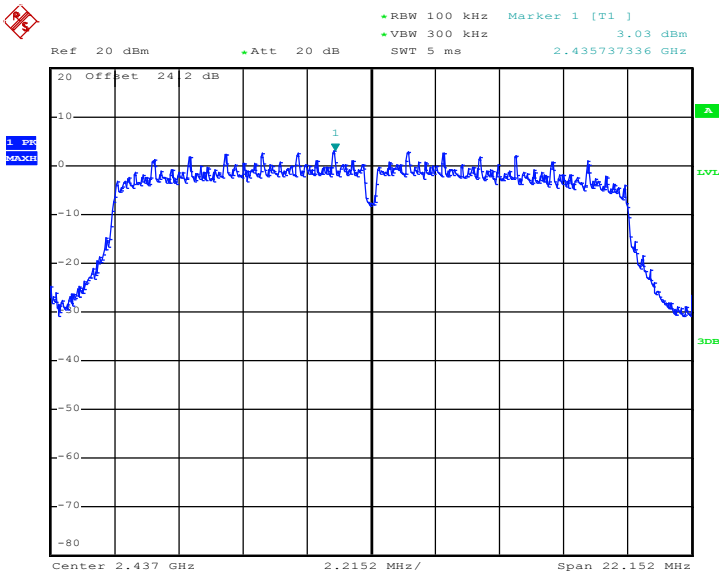
Date: 4.JUN.2012 20:26:33

PSD Plot on 2.4GHz 802.11n HT-20 Channel 06 – MIMO ANT 1



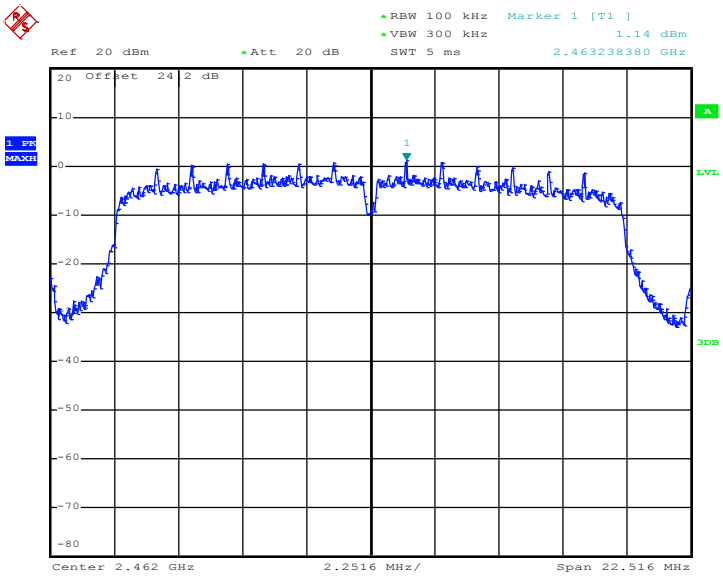
Date: 10.JUL.2012 15:57:03

PSD Plot on 2.4GHz 802.11n HT-20 Channel 06 – MIMO ANT 2



Date: 10.JUL.2012 15:54:17

PSD Plot on 2.4GHz 802.11n HT-20 Channel 11 – SISO ANT 2



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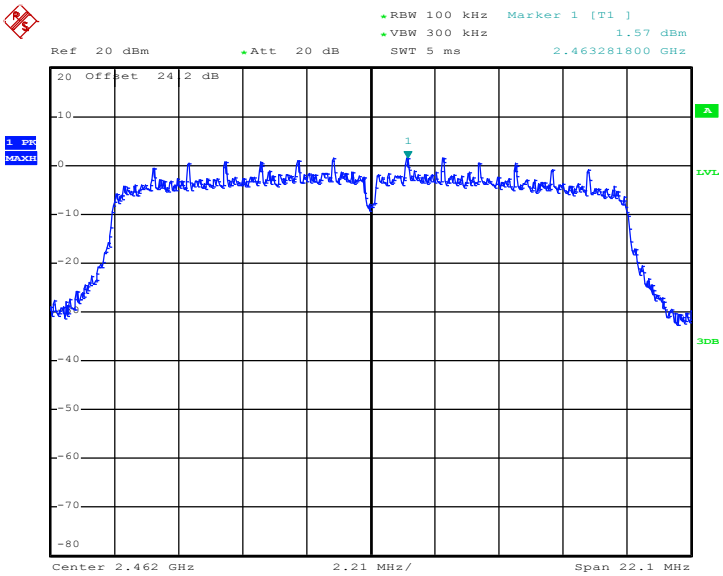
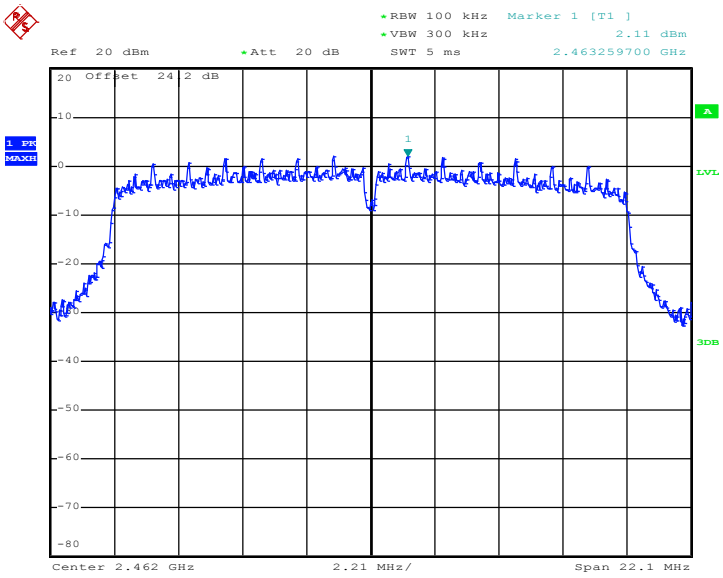
PSD Plot on 2.4GHz 802.11n HT-20 Channel 11 – MIMO ANT 1



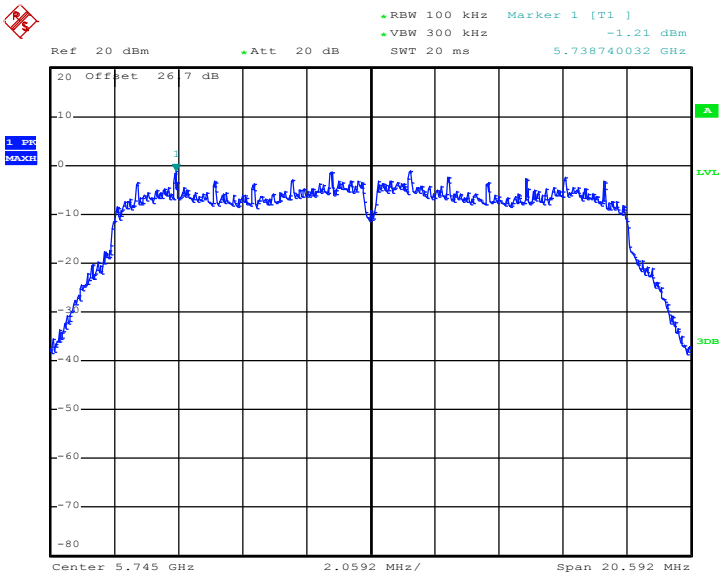
Date: 10.JUL.2012 15:23:57

PSD Plot on 2.4GHz 802.11n HT-20 Channel 11 – MIMO ANT 2



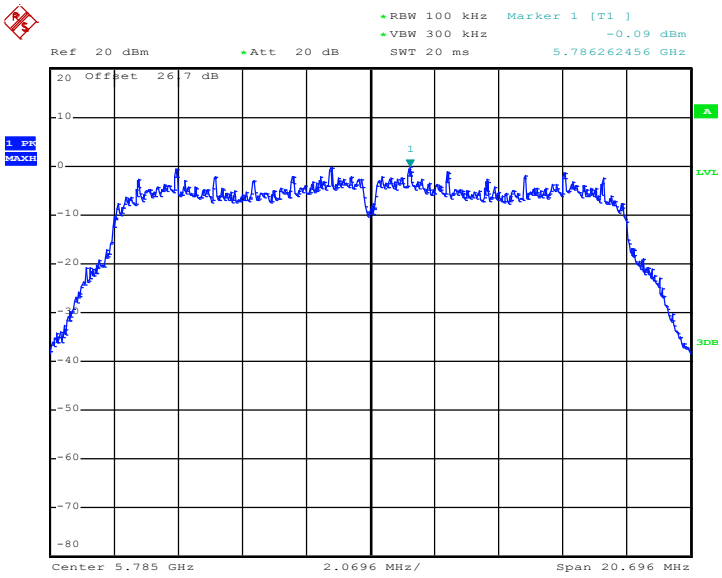
Date: 10.JUL.2012 15:21:27

PSD Plot on 802.11a Channel 149 - Legacy Ant 2



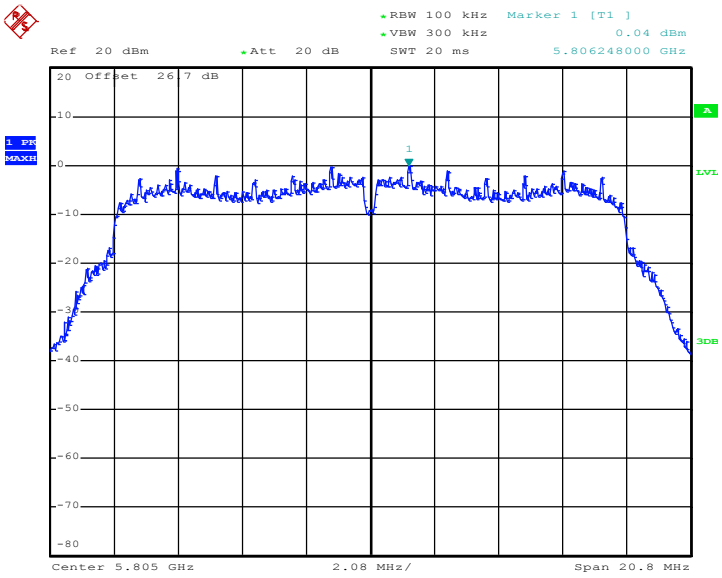
Date: 10.JUL.2012 16:16:23

PSD Plot on 802.11a Channel 157 - Legacy Ant 2



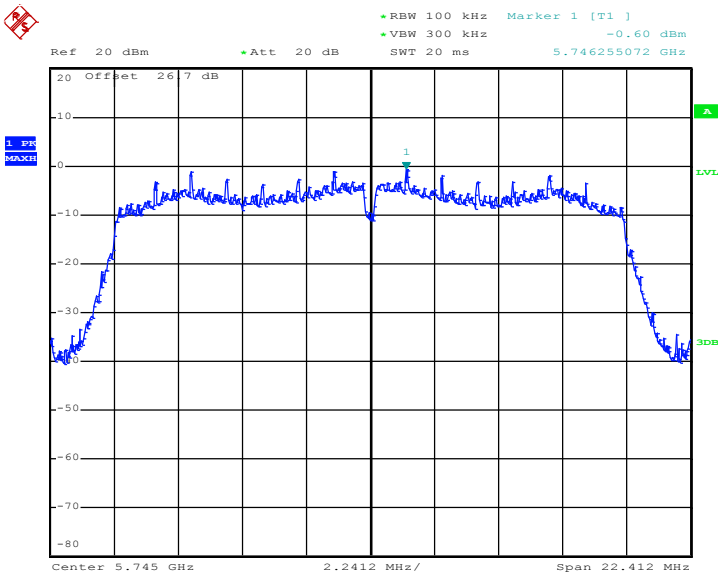
Date: 10.JUL.2012 16:31:27

PSD Plot on 802.11a Channel 161 - Legacy Ant 2



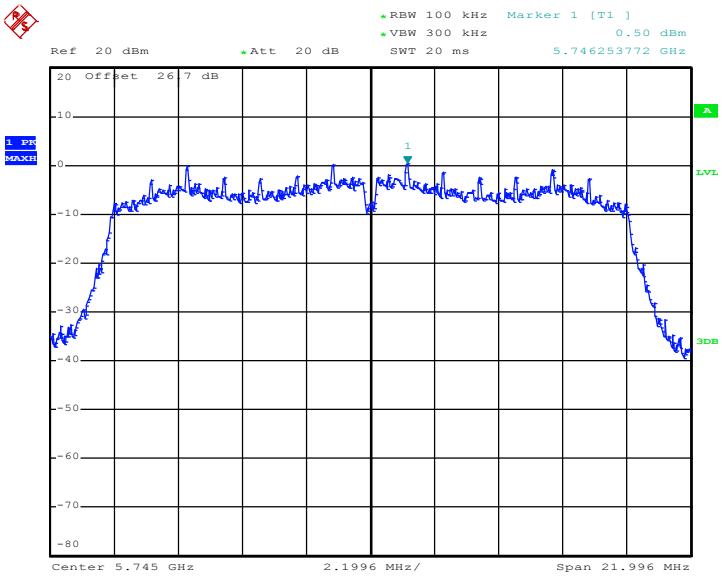
Date: 10.JUL.2012 16:36:37

PSD Plot on 5GHz 802.11n HT-20 Channel 149 - SISO Ant 2



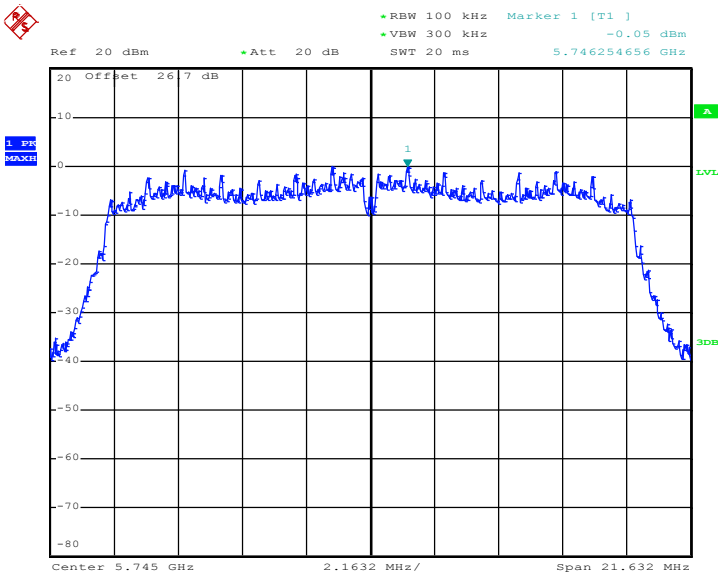
Date: 10.JUL.2012 16:55:25

PSD Plot on 5GHz 802.11n HT-20 Channel 149 - MIMO Ant 1



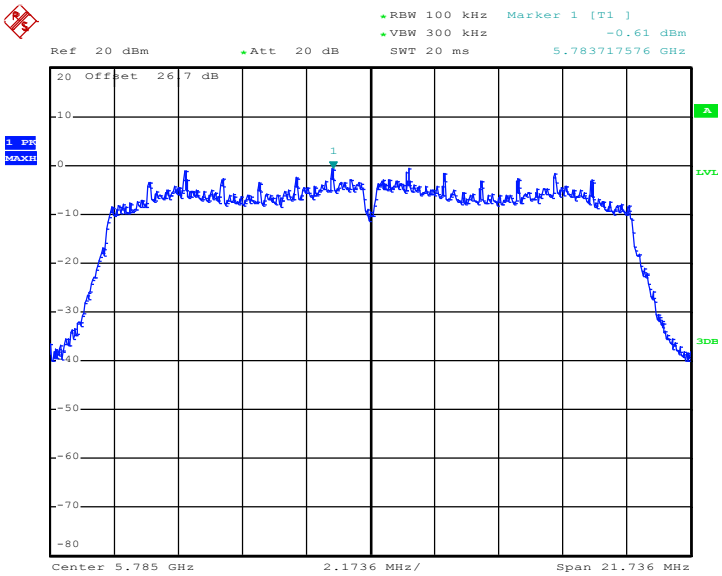
Date: 10.JUL.2012 17:38:48

PSD Plot on 5GHz 802.11n HT-20 Channel 149 - MIMO Ant 2



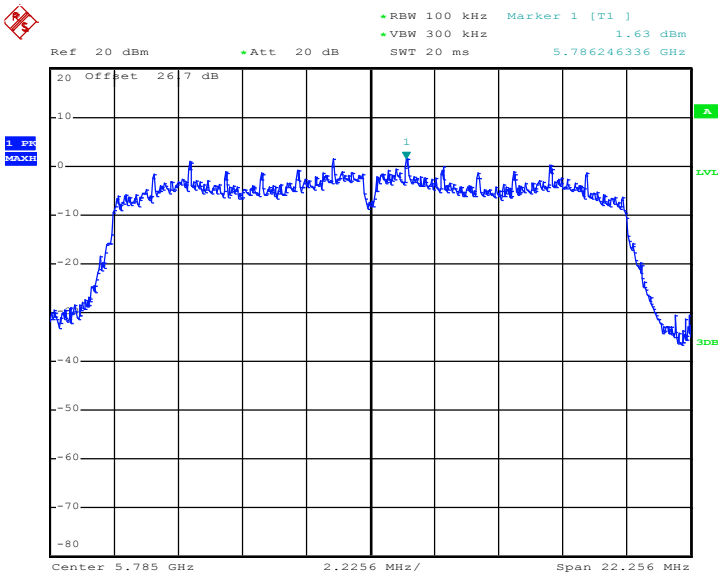
Date: 10.JUL.2012 17:49:41

PSD Plot on 5GHz 802.11n HT-20 Channel 157 - SISO Ant 2



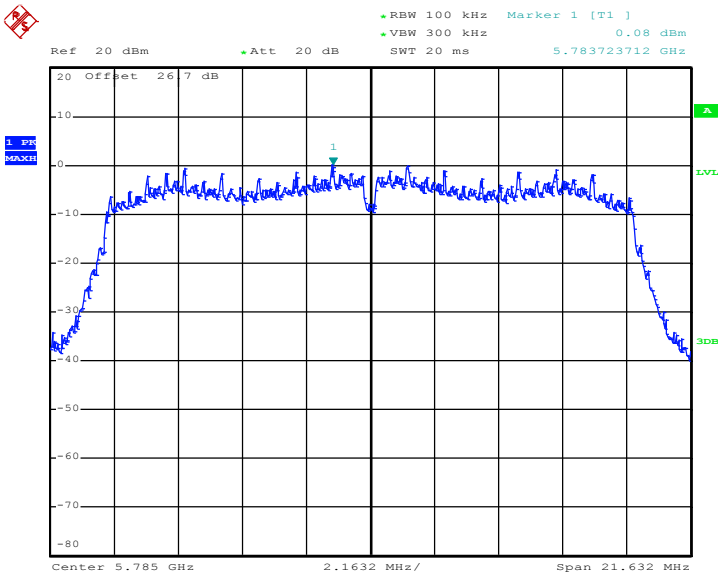
Date: 10.JUL.2012 17:57:23

PSD Plot on 5GHz 802.11n HT-20 Channel 157 - MIMO Ant 1



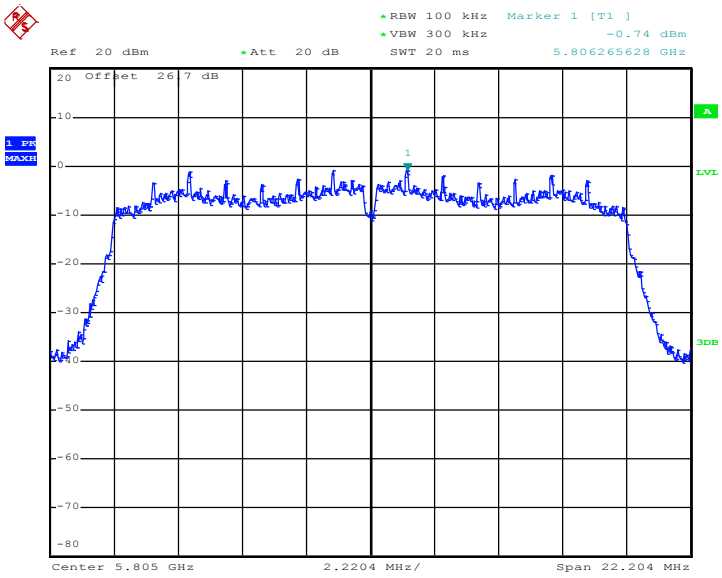
Date: 10.JUL.2012 17:35:16

PSD Plot on 5GHz 802.11n HT-20 Channel 157 - MIMO Ant 2



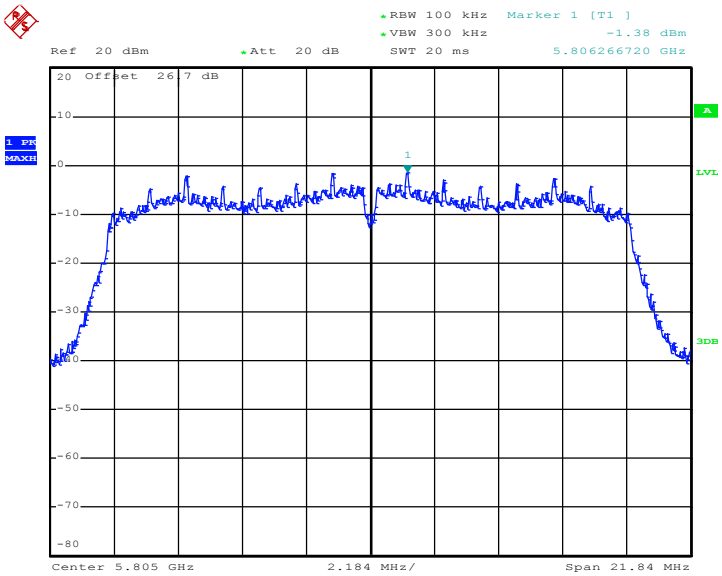
Date: 10.JUL.2012 17:32:45

PSD Plot on 5GHz 802.11n HT-20 Channel 161 - SISO Ant 2



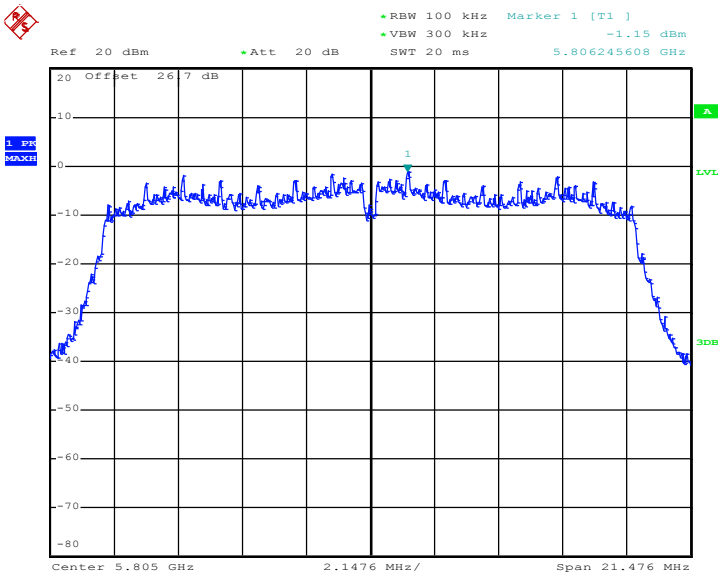
Date: 10.JUL.2012 18:00:11

PSD Plot on 5GHz 802.11n HT-20 Channel 161 - MIMO Ant 1



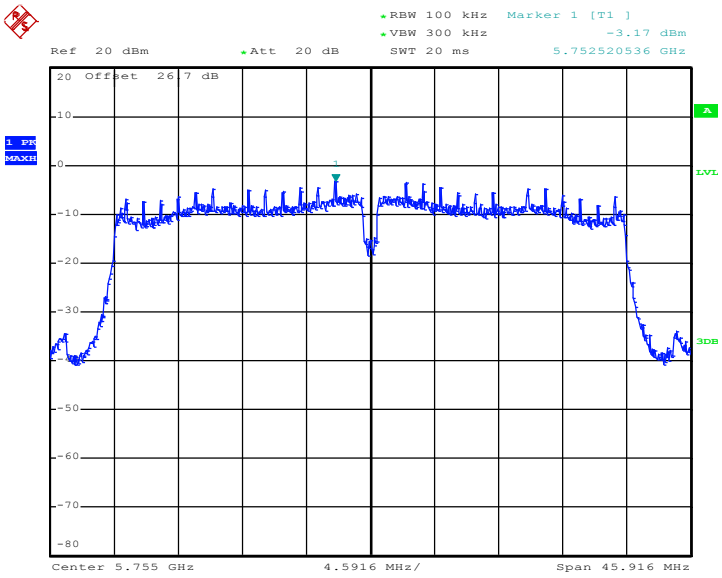
Date: 10.JUL.2012 17:25:18

PSD Plot on 5GHz 802.11n HT-20 Channel 161 - MIMO Ant 2



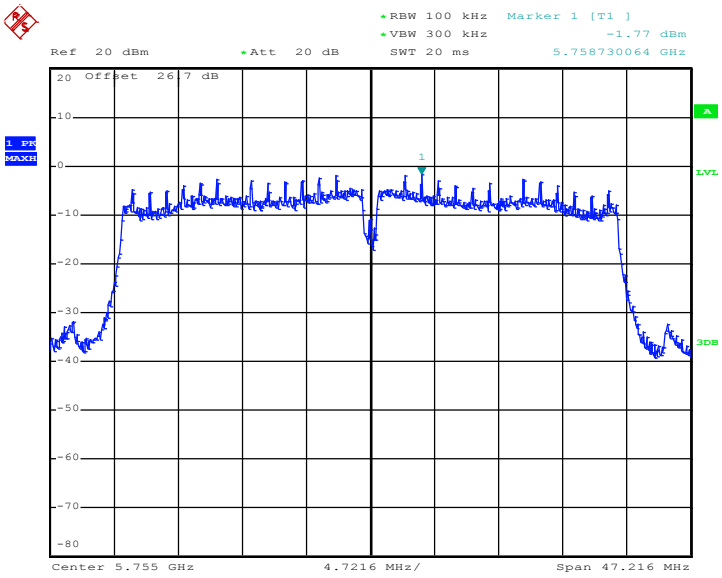
Date: 10.JUL.2012 17:28:39

PSD Plot on 5GHz 802.11n HT-40 Channel 151 - SISO Ant 2



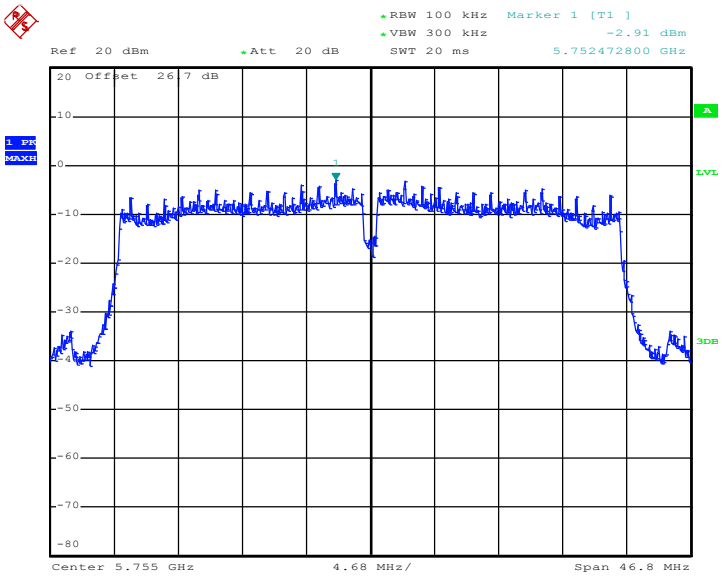
Date: 10.JUL.2012 19:51:15

PSD Plot on 5GHz 802.11n HT-40 Channel 151 - MIMO Ant 1



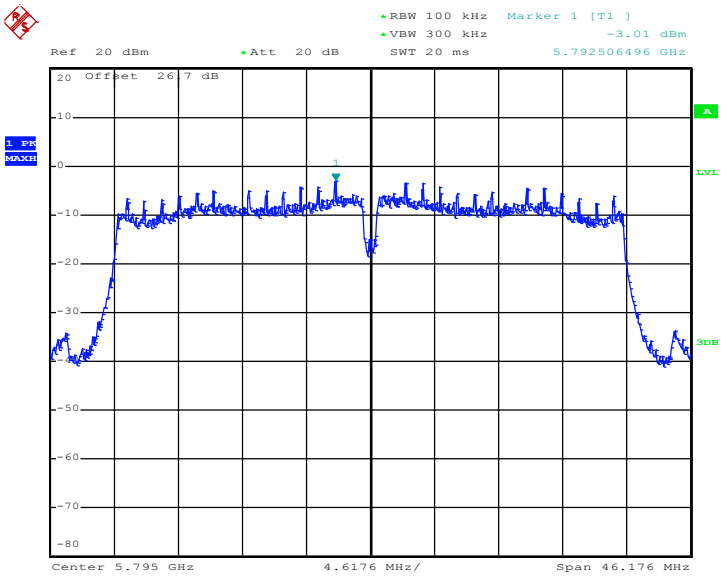
Date: 10.JUL.2012 21:00:43

PSD Plot on 5GHz 802.11n HT-40 Channel 151 - MIMO Ant 2



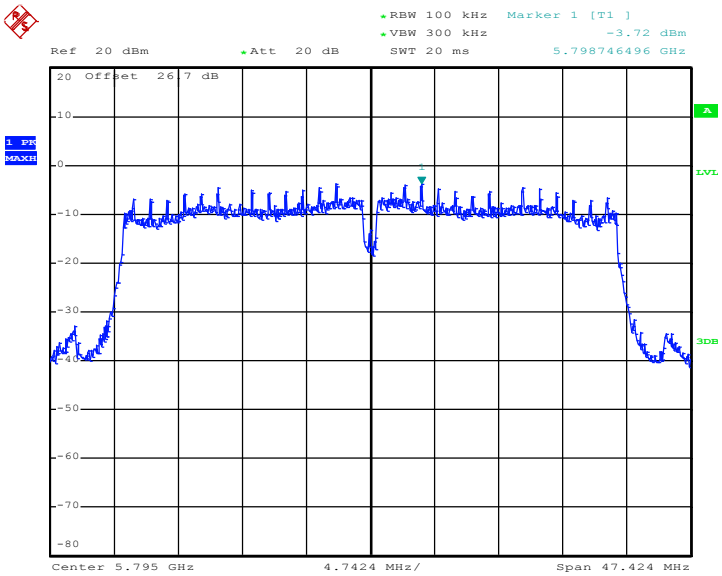
Date: 10.JUL.2012 20:55:29

PSD Plot on 5GHz 802.11n HT-40 Channel 159 - SISO Ant 2



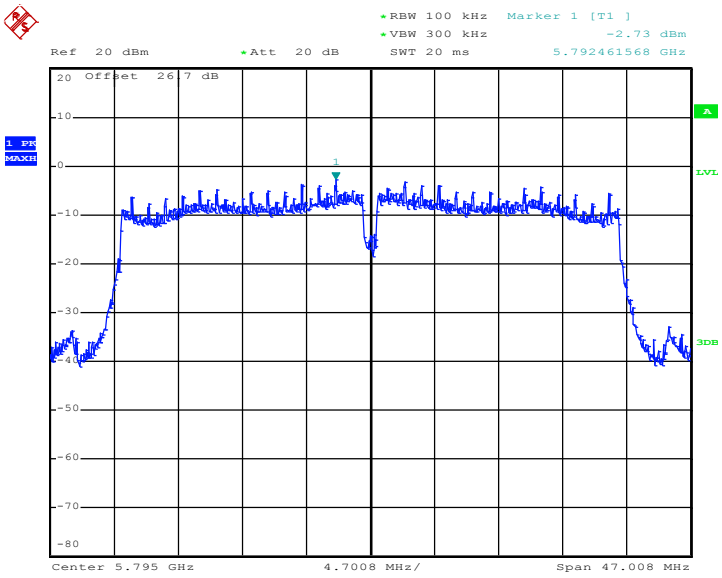
Date: 10.JUL.2012 20:02:32

PSD Plot on 5GHz 802.11n HT-40 Channel 159 - MIMO Ant 1



Date: 10.JUL.2012 21:05:15

PSD Plot on 5GHz 802.11n HT-40 Channel 159 - MIMO Ant 2



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3.6 AC Conducted Emission Measurement

3.6.1 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.

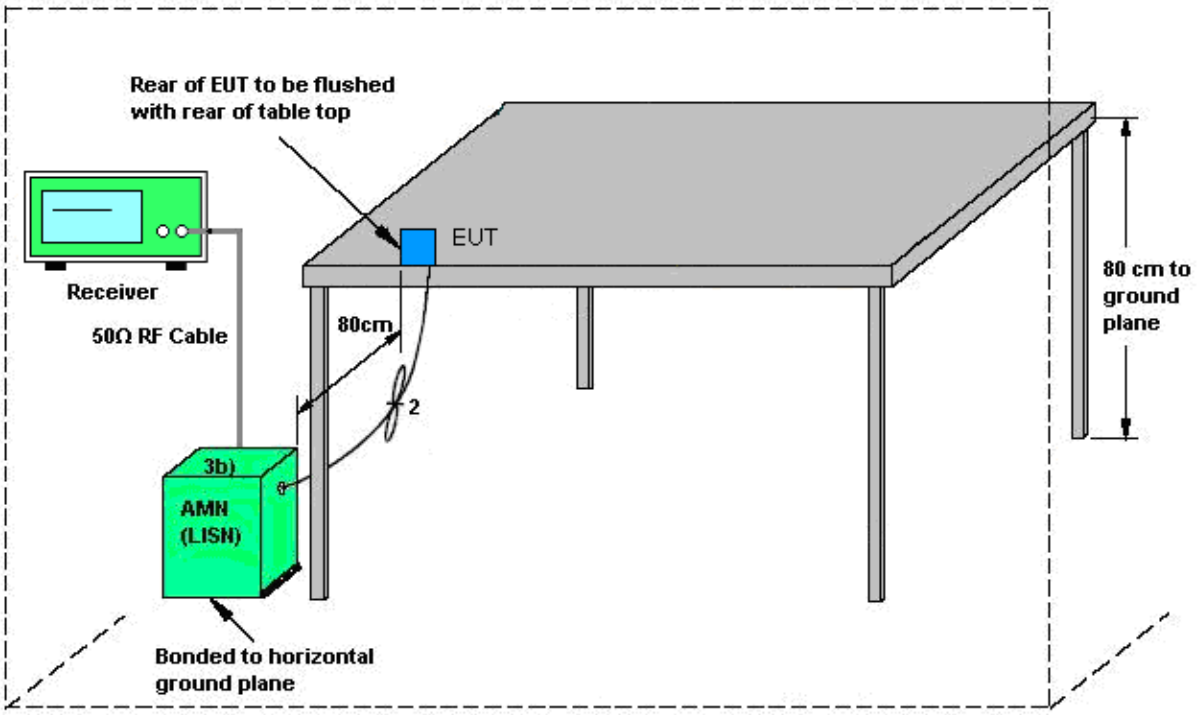
3.6.2 Measuring Instruments

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 ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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.

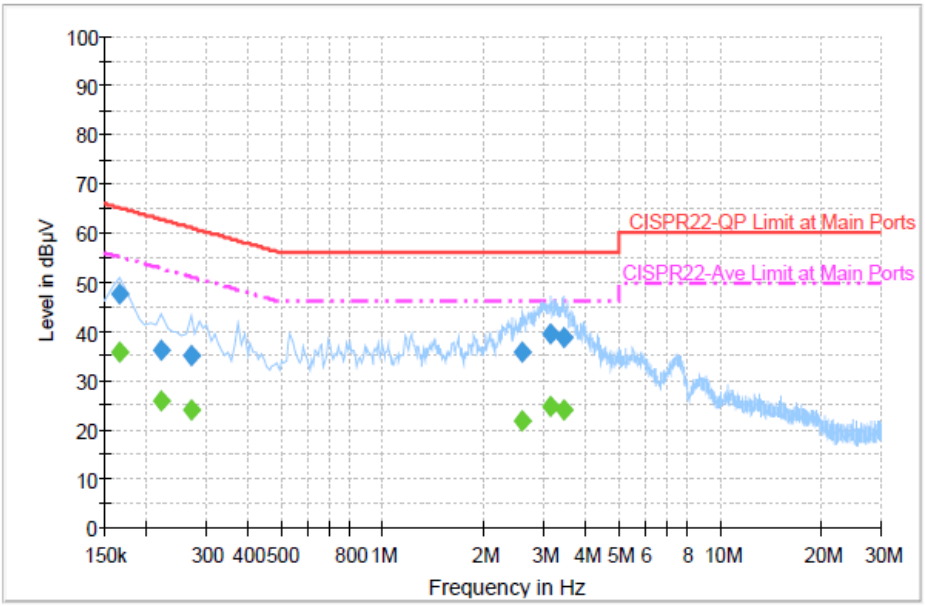
3.6.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	Temperature :	20~21℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	51~52%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN (5G) Link + Bluetooth Link + HDMI Cable + USB Cable (Charging from Adapter) + Earphone + MPEG4		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



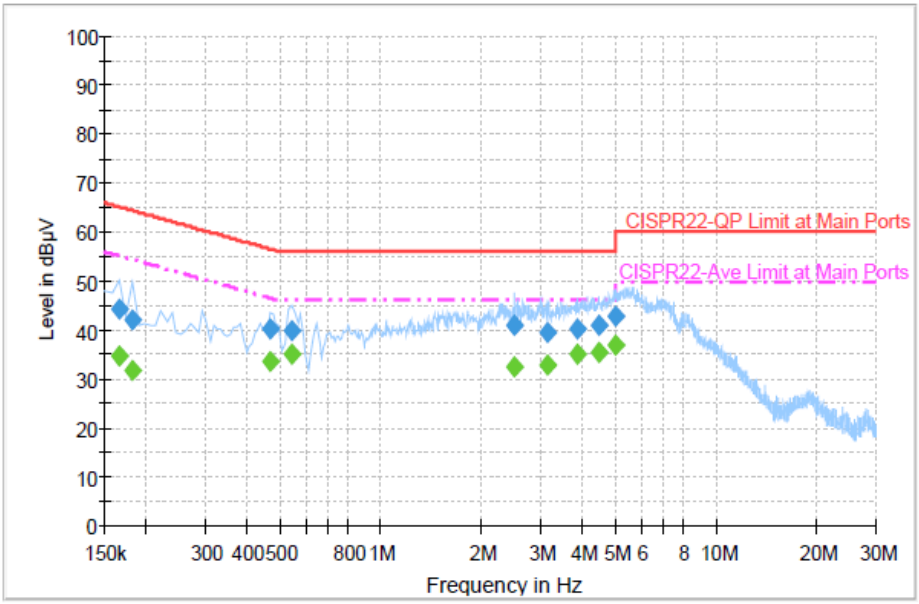
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.7	Off	L1	19.4	17.5	65.2
0.222000	36.2	Off	L1	19.4	26.5	62.7
0.270000	35.0	Off	L1	19.4	26.1	61.1
2.598000	36.0	Off	L1	19.4	20.0	56.0
3.142000	39.5	Off	L1	19.5	16.5	56.0
3.438000	38.9	Off	L1	19.5	17.1	56.0

Final Result : Average

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	35.8	Off	L1	19.4	19.4	55.2
0.222000	25.9	Off	L1	19.4	26.8	52.7
0.270000	24.1	Off	L1	19.4	27.0	51.1
2.598000	21.6	Off	L1	19.4	24.4	46.0
3.142000	24.9	Off	L1	19.5	21.1	46.0
3.438000	23.9	Off	L1	19.5	22.1	46.0

Test Mode :	Mode 2	**Temperature :**	20~21℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	51~52%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WLAN (5G) Link + Bluetooth Link + HDMI Cable + USB Cable (Charging from Adapter) + Earphone + MPEG4		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	44.4	Off	N	19.4	20.8	65.2
0.182000	42.0	Off	N	19.4	22.4	64.4
0.470000	40.2	Off	N	19.4	16.3	56.5
0.542000	39.8	Off	N	19.4	16.2	56.0
2.502000	40.9	Off	N	19.5	15.1	56.0
3.142000	39.3	Off	N	19.5	16.7	56.0
3.870000	40.1	Off	N	19.5	15.9	56.0
4.462000	40.9	Off	N	19.5	15.1	56.0
4.998000	42.7	Off	N	19.5	13.3	56.0

Final Result : Average

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	34.8	Off	N	19.4	20.4	55.2
0.182000	31.9	Off	N	19.4	22.5	54.4
0.470000	33.7	Off	N	19.4	12.8	46.5
0.542000	34.9	Off	N	19.4	11.1	46.0
2.502000	32.4	Off	N	19.5	13.6	46.0
3.142000	32.9	Off	N	19.5	13.1	46.0
3.870000	35.1	Off	N	19.5	10.9	46.0
4.462000	35.3	Off	N	19.5	10.7	46.0
4.998000	37.1	Off	N	19.5	8.9	46.0

3.7 Radiated Emission Measurement

3.7.1 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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. 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

3.7.2 Measuring Instruments

See list of measuring instruments of this test report.

3.7.3 Test Procedures

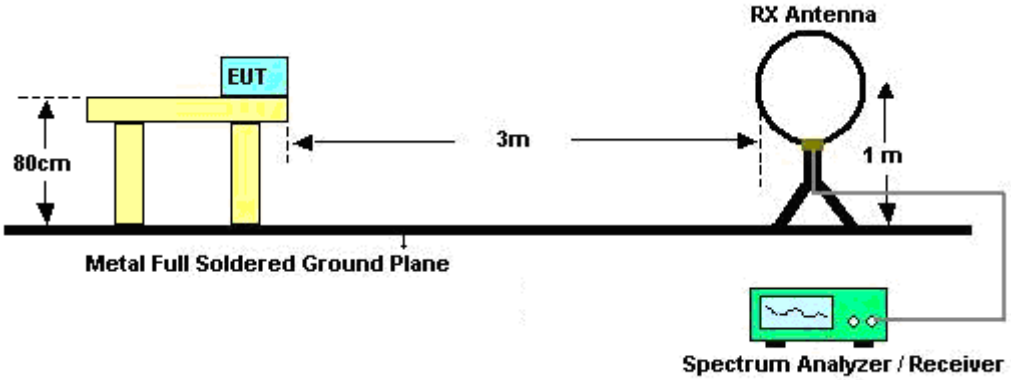
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. 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; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
2	802.11a	86.50	2050	0.488	1KHz
2	802.11b	97.65	12456	0.080	1KHz
2	802.11g	87.16	2064	0.484	1KHz
2	2.4G 802.11n (BW 20MHz)	86.36	1900	0.526	1KHz
2	5G 802.11n (BW 20MHz)	86.08	1904	0.525	1KHz
2	5G 802.11n (BW 40MHz)	86.43	653.6	1.530	3KHz
1+2	2.4G 802.11n (BW 20MHz) for Ant1	76.38	970	1.031	3KHz
1+2	2.4G 802.11n (BW 20MHz) for Ant2	75.90	970	1.031	
1+2	5G 802.11n (BW 20MHz) for Ant1	76.06	972	1.029	3KHz
1+2	5G 802.11n (BW 20MHz) for Ant2	75.46	966	1.035	
1+2	5G 802.11n (BW 40MHz) for Ant1	75.90	336.4	2.973	3KHz
1+2	5G 802.11n (BW 40MHz) for Ant2	75.56	336.4	2.973	

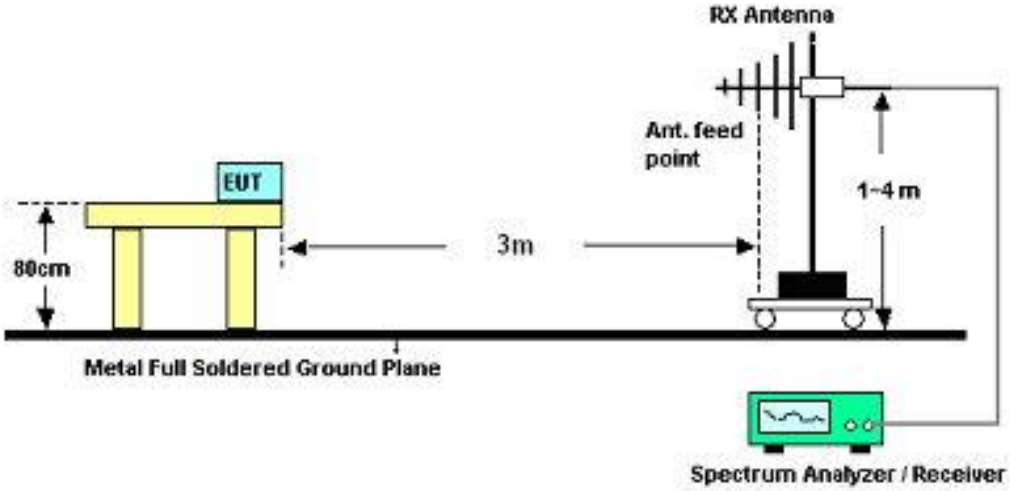
Note : For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

3.7.4 Test Setup

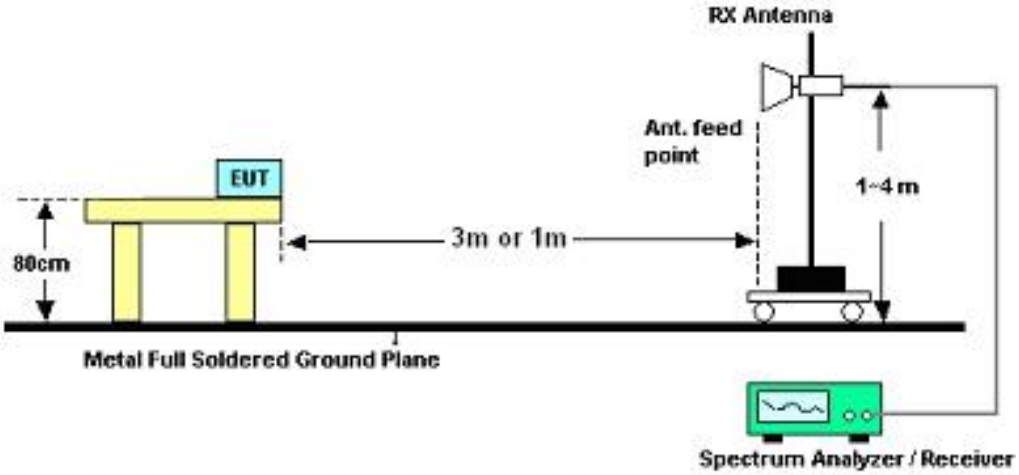
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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.

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

Test Mode :	802.11b<Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2389.65	62.56	-11.44	74	58.27	32.22	6.03	33.96	166	211	Peak
2390	49.11	-4.89	54	44.82	32.22	6.03	33.96	166	211	Average
2412	109.62	-	-	105.29	32.23	6.07	33.97	166	211	Average
2412	114.03	-	-	109.7	32.23	6.07	33.97	166	211	Peak
2488	40.04	-13.96	54	35.66	32.2	6.18	34	166	211	Average
2488	52.34	-21.66	74	47.96	32.2	6.18	34	166	211	Peak

Test Mode :	802.11b<Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2388.93	56.95	-17.05	74	52.66	32.22	6.03	33.96	177	347	Peak
2390	42.82	-11.18	54	38.53	32.22	6.03	33.96	177	347	Average
2412	101.17	-	-	96.84	32.23	6.07	33.97	177	347	Average
2412	105.63	-	-	101.3	32.23	6.07	33.97	177	347	Peak
2500	34.09	-19.91	54	29.71	32.2	6.18	34	177	347	Average
2500	45.94	-28.06	74	41.56	32.2	6.18	34	177	347	Peak

Test Mode :	802.11b <Ant 2>	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	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
88.86	22.44	-21.06	43.5	44.66	8.51	0.93	31.66	-	-	Peak
163.11	37.2	-6.3	43.5	57.12	10.22	1.22	31.36	100	69	Peak
281.1	34.26	-11.74	46	50.98	13.04	1.64	31.4	-	-	Peak
307	25.83	-20.17	46	41.75	13.51	1.79	31.22	-	-	Peak
643	22.76	-23.24	46	30.18	20.14	2.82	30.38	-	-	Peak
881.7	27.94	-18.06	46	32.44	22.92	3.31	30.73	-	-	Peak
2437	109.75	-	-	105.36	32.26	6.11	33.98	107	226	Average
2437	114.4	-	-	110.01	32.26	6.11	33.98	107	226	Peak
4874	45.88	-28.12	74	62.43	34.1	9.13	59.78	100	0	Peak

Test Mode :	802.11b <Ant 2>	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	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
42.96	30.04	-9.96	40	49.45	11.7	0.64	31.75	100	52	Peak
160.14	30.68	-12.82	43.5	50.35	10.5	1.22	31.39	-	-	Peak
277.86	32.34	-13.66	46	49.08	13	1.64	31.38	-	-	Peak
458.2	24.22	-21.78	46	35.86	17.21	2.32	31.17	-	-	Peak
663.3	23.37	-22.63	46	30.59	20.3	2.87	30.39	-	-	Peak
881.7	33.54	-12.46	46	38.04	22.92	3.31	30.73	-	-	Peak
2437	104.44	-	-	100.05	32.26	6.11	33.98	196	277	Average
2437	108.84	-	-	104.45	32.26	6.11	33.98	196	277	Peak
4874	42.33	-31.67	74	58.88	34.1	9.13	59.78	100	0	Peak

Test Mode :	802.11b <Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2376	41.54	-12.46	54	37.47	32.03	5.99	33.95	131	231	Average
2376	53.92	-20.08	74	49.85	32.03	5.99	33.95	131	231	Peak
2462	111.2	-	-	106.78	32.27	6.14	33.99	131	231	Average
2462	115.64	-	-	111.22	32.27	6.14	33.99	131	231	Peak
2484.14	63.32	-10.68	74	58.85	32.29	6.18	34	131	231	Peak
2483.62	53.22	-0.78	54	48.75	32.29	6.18	34	131	231	Average

Test Mode :	802.11b <Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2378	37.99	-16.01	54	33.92	32.03	5.99	33.95	200	286	Average
2378	49.94	-24.06	74	45.87	32.03	5.99	33.95	200	286	Peak
2462	106.24	-	-	101.82	32.27	6.14	33.99	200	286	Average
2462	110.63	-	-	106.21	32.27	6.14	33.99	200	286	Peak
2493.76	66.71	-7.29	74	62.23	32.3	6.18	34	200	286	Peak
2483.6	48.07	-5.93	54	43.6	32.29	6.18	34	200	286	Average

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2388.3	68.67	-5.33	74	64.38	32.22	6.03	33.96	108	230	Peak
2390	51.75	-2.25	54	47.46	32.22	6.03	33.96	108	230	Average
2412	100.59	-	-	96.26	32.23	6.07	33.97	108	230	Average
2412	110.27	-	-	105.94	32.23	6.07	33.97	108	230	Peak
2496	39.34	-14.66	54	34.96	32.2	6.18	34	108	230	Average
2496	53.34	-20.66	74	48.96	32.2	6.18	34	108	230	Peak

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2389.38	62.16	-11.84	74	57.87	32.22	6.03	33.96	170	343	Peak
2388.57	45.04	-8.96	54	40.75	32.22	6.03	33.96	170	343	Average
2412	93.94	-	-	89.61	32.23	6.07	33.97	170	343	Average
2412	103.51	-	-	99.18	32.23	6.07	33.97	170	343	Peak
2490	35.7	-18.3	54	31.32	32.2	6.18	34	170	343	Average
2490	48.03	-25.97	74	43.65	32.2	6.18	34	170	343	Peak

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	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
45.93	27.37	-12.63	40	48.31	10.1	0.66	31.7	-	-	Peak
146.1	37.69	-5.81	43.5	56.63	11.27	1.21	31.42	100	28	Peak
278.13	35.41	-10.59	46	52.15	13	1.64	31.38	-	-	Peak
306.3	26.63	-19.37	46	42.6	13.48	1.78	31.23	-	-	Peak
458.9	23.95	-22.05	46	35.57	17.23	2.32	31.17	-	-	Peak
881.7	27.39	-18.61	46	31.89	22.92	3.31	30.73	-	-	Peak
2437	103.72	-	-	99.33	32.26	6.11	33.98	132	199	Average
2437	113.94	-	-	109.56	32.25	6.11	33.98	132	199	Peak
4874	44.54	-29.46	74	61.08	34.1	9.14	59.78	100	0	Peak

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	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
45.66	30.41	-9.59	40	51.35	10.1	0.66	31.7	100	92	Peak
128.28	30.9	-12.6	43.5	49.7	11.64	1.14	31.58	-	-	Peak
278.4	32.64	-13.36	46	49.38	13	1.64	31.38	-	-	Peak
458.2	25.15	-20.85	46	36.79	17.21	2.32	31.17	-	-	Peak
687.8	23.83	-22.17	46	30.88	20.5	2.91	30.46	-	-	Peak
881.7	33.3	-12.7	46	37.8	22.92	3.31	30.73	-	-	Peak
2437	98.51	-	-	94.12	32.26	6.11	33.98	194	279	Average
2437	109.24	-	-	104.85	32.26	6.11	33.98	194	279	Peak
4874	40.84	-33.16	74	57.39	34.1	9.13	59.78	100	0	Peak

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2372	40.18	-13.82	54	36.11	32.03	5.99	33.95	130	229	Average
2372	53.74	-20.26	74	49.67	32.03	5.99	33.95	130	229	Peak
2462	101.56	-	-	97.14	32.27	6.14	33.99	130	229	Average
2462	111.62	-	-	107.2	32.27	6.14	33.99	130	229	Peak
2485.3	72.3	-1.7	74	67.83	32.29	6.18	34	130	229	Peak
2483.52	53.32	-0.68	54	48.85	32.29	6.18	34	130	229	Average

Test Mode :	802.11g <Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2346	34.91	-19.09	54	30.92	31.98	5.95	33.94	200	285	Average
2346	45.96	-28.04	74	41.97	31.98	5.95	33.94	200	285	Peak
2462	96.24	-	-	91.82	32.27	6.14	33.99	200	285	Average
2462	106.53	-	-	102.11	32.27	6.14	33.99	200	285	Peak
2484.52	65.06	-8.94	74	60.59	32.29	6.18	34	200	285	Peak
2483.56	47.34	-6.66	54	42.87	32.29	6.18	34	200	285	Average

Test Mode :	802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2387.49	71.1	-2.9	74	66.81	32.22	6.03	33.96	166	226	Peak
2389.83	52.96	-1.04	54	48.67	32.22	6.03	33.96	166	226	Average
2412	101.33	-	-	97	32.23	6.07	33.97	166	226	Average
2412	111.31	-	-	106.98	32.23	6.07	33.97	166	226	Peak
2484	40.44	-13.56	54	36.08	32.18	6.18	34	166	226	Average
2484	54.44	-19.56	74	50.08	32.18	6.18	34	166	226	Peak

Test Mode :	802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2385.96	64.44	-9.56	74	60.15	32.22	6.03	33.96	170	329	Peak
2389.56	46.81	-7.19	54	42.52	32.22	6.03	33.96	170	329	Average
2412	93.42	-	-	89.09	32.23	6.07	33.97	170	329	Average
2412	103.48	-	-	99.15	32.23	6.07	33.97	170	329	Peak
2484	37.38	-16.62	54	33.02	32.18	6.18	34	170	329	Average
2484	50.43	-23.57	74	46.07	32.18	6.18	34	170	329	Peak

Test Mode :	802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2390	41.17	-12.83	54	37.04	32.06	6.03	33.96	103	229	Average
2390	54.13	-19.87	74	50	32.06	6.03	33.96	103	229	Peak
2462	100.06	-	-	95.64	32.27	6.14	33.99	103	229	Average
2462	110.22	-	-	105.8	32.27	6.14	33.99	103	229	Peak
2484.72	72.21	-1.79	74	67.74	32.29	6.18	34	103	229	Peak
2483.68	52.97	-1.03	54	48.5	32.29	6.18	34	103	229	Average

Test Mode :	802.11n HT-20 <SISO Ant 2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2390	37.06	-16.94	54	32.93	32.06	6.03	33.96	200	290	Average
2390	48.59	-25.41	74	44.46	32.06	6.03	33.96	200	290	Peak
2462	94.89	-	-	90.47	32.27	6.14	33.99	200	290	Average
2462	103.84	-	-	99.42	32.27	6.14	33.99	200	290	Peak
2483.52	63.44	-10.56	74	58.97	32.29	6.18	34	200	290	Peak
2483.58	47.2	-6.8	54	42.73	32.29	6.18	34	200	290	Average

Test Mode :	802.11a <Ant 2>	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 107.02 dBuV/m - 20dB = 87.02 dBuV/m.		

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
5725	75.8	-11.22	87.02	64.33	34.81	9.92	33.26	133	68	Peak
5745	97.63	-	-	85.88	35.14	9.91	33.3	133	68	Average
5745	107.02	-	-	95.27	35.14	9.91	33.3	133	68	Peak
5850	54.46	-32.56	87.02	43.07	34.98	9.87	33.46	133	68	Peak

Test Mode :	802.11a <Ant 2>	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	77.61	-10.78	88.39	66.14	34.81	9.92	33.26	106	288	Peak
5745	98.32	-	-	86.57	35.14	9.91	33.3	106	288	Average
5745	108.39	-	-	96.64	35.14	9.91	33.3	106	288	Peak
5850	53.46	-34.93	88.39	42.07	34.98	9.87	33.46	106	288	Peak

Test Mode :	802.11a <Ant 2>	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	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
42.96	22.03	-17.97	40	41.44	11.7	0.64	31.75	-	-	Peak
169.05	36.24	-7.26	43.5	56.64	9.66	1.23	31.29	100	88	Peak
278.4	35.2	-10.8	46	51.94	13	1.64	31.38	-	-	Peak
303.5	26.55	-19.45	46	42.62	13.4	1.78	31.25	-	-	Peak
444.2	23.26	-22.74	46	35.18	16.93	2.29	31.14	-	-	Peak
881.7	27.14	-18.86	46	31.64	22.92	3.31	30.73	-	-	Peak
11570	43.27	-30.73	74	49.74	38.3	13.17	57.94	100	0	Peak
5785	96.88	-	-	85.13	35.19	9.9	33.34	100	58	Average
5785	105.88	-	-	94.13	35.19	9.9	33.34	100	58	Peak

Test Mode :	802.11a <Ant 2>	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	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
42.69	33.08	-6.92	40	52.49	11.7	0.64	31.75	100	79	Peak
194.43	30.48	-13.02	43.5	51.45	9.05	1.3	31.32	-	-	Peak
278.4	32.13	-13.87	46	48.87	13	1.64	31.38	-	-	Peak
457.5	23.98	-22.02	46	35.61	17.21	2.32	31.16	-	-	Peak
687.1	23.86	-22.14	46	30.91	20.49	2.91	30.45	-	-	Peak
881.7	33.92	-12.08	46	38.42	22.92	3.31	30.73	-	-	Peak
11570	43.18	-30.82	74	49.65	38.3	13.17	57.94	100	0	Peak
5785	97.36	-	-	85.61	35.19	9.9	33.34	143	284	Average
5785	108.12	-	-	96.37	35.19	9.9	33.34	143	284	Peak

Test Mode :	802.11a <Ant 2>	**Temperature :**	24~25°C
Test Channel :	161	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5805 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	49.95	-35.63	85.58	38.48	34.81	9.92	33.26	100	57	Peak
5805	96.07	-	-	84.32	35.24	9.89	33.38	100	57	Average
5805	105.58	-	-	93.83	35.24	9.89	33.38	100	57	Peak
5850	50.66	-34.94	85.58	39.27	34.98	9.87	33.46	100	57	Peak

Test Mode :	802.11a <Ant 2>	**Temperature :**	24~25°C
Test Channel :	161	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5805 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	52.35	-34.89	87.24	40.88	34.81	9.92	33.26	105	246	Peak
5805	97.14	-	-	85.39	35.24	9.89	33.38	105	246	Average
5805	107.24	-	-	95.49	35.24	9.89	33.38	105	246	Peak
5850	51.67	-35.57	87.24	40.28	34.98	9.87	33.46	105	246	Peak

Test Mode :	802.11n HT-20 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	149	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	86.82	-2.88	89.7	75.35	34.81	9.92	33.26	100	78	Peak
5745	100.32	-	-	88.57	35.14	9.91	33.3	100	78	Average
5745	109.7	-	-	97.95	35.14	9.91	33.3	100	78	Peak
5850	53.7	-36	89.7	42.31	34.98	9.87	33.46	100	78	Peak

Test Mode :	802.11n HT-20 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	149	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	88.91	-1.82	90.73	77.44	34.81	9.92	33.26	105	289	Peak
5745	101.37	-	-	89.92	34.84	9.91	33.3	105	289	Average
5745	110.73	-	-	99.28	34.84	9.91	33.3	105	289	Peak
5850	54.64	-36.09	90.73	43.25	34.98	9.87	33.46	105	289	Peak

Test Mode :	802.11n HT-20 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	161	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5805 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	50.36	-35.04	85.4	38.89	34.81	9.92	33.26	100	79	Peak
5805	94.16	-	-	82.41	35.24	9.89	33.38	100	79	Average
5805	105.4	-	-	93.65	35.24	9.89	33.38	100	79	Peak
5850	49.9	-35.5	85.4	38.51	34.98	9.87	33.46	100	79	Peak

Test Mode :	802.11n HT-20 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	161	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5805 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	51.97	-34.04	86.01	40.5	34.81	9.92	33.26	103	241	Peak
5805	95.69	-	-	83.94	35.24	9.89	33.38	103	241	Average
5805	106.01	-	-	94.26	35.24	9.89	33.38	103	241	Peak
5850	51.39	-34.62	86.01	40	34.98	9.87	33.46	103	241	Peak

Test Mode :	802.11n HT-40 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	151	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5755 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	85.2	-3.26	88.46	73.73	34.81	9.92	33.26	100	68	Peak
5755	98.67	-	-	86.9	35.16	9.91	33.3	100	68	Average
5755	108.46	-	-	96.69	35.16	9.91	33.3	100	68	Peak
5850	59.07	-29.39	88.46	47.68	34.98	9.87	33.46	100	68	Peak

Test Mode :	802.11n HT-40 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	151	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5755 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	88.14	-1.24	89.38	76.67	34.81	9.92	33.26	100	335	Peak
5755	95.04	-	-	83.27	35.16	9.91	33.3	100	335	Average
5755	109.38	-	-	97.61	35.16	9.91	33.3	100	335	Peak
5850	59.94	-29.44	89.38	48.55	34.98	9.87	33.46	100	335	Peak

Test Mode :	802.11n HT-40 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	159	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5795 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	70.63	-16.46	87.08	59.16	34.81	9.92	33.26	100	85	Peak
5795	97.13	-	-	85.41	35.21	9.89	33.38	100	85	Average
5795	107.08	-	-	95.36	35.21	9.89	33.38	100	85	Peak
5850	70.9	-16.18	87.08	59.51	34.98	9.87	33.46	100	85	Peak

Test Mode :	802.11n HT-40 <SISO Ant 2>	**Temperature :**	24~25°C
Test Channel :	159	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5795 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	75.96	-13.65	89.61	64.49	34.81	9.92	33.26	133	270	Peak
5795	99.27	-	-	87.55	35.21	9.89	33.38	133	270	Average
5795	109.61	-	-	97.89	35.21	9.89	33.38	133	270	Peak
5850	73.52	-16.09	89.61	62.13	34.98	9.87	33.46	133	270	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. 3216 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2385.15	72.3	-1.7	74	68.02	32.21	6.03	33.96	164	218	Peak
2389.92	53.55	-0.45	54	49.26	32.22	6.03	33.96	164	218	Average
2412	102	-	-	97.67	32.23	6.07	33.97	164	218	Average
2412	112.35	-	-	108.02	32.23	6.07	33.97	164	218	Peak
2484	40.05	-13.95	54	35.69	32.18	6.18	34	164	218	Average
2484	54.72	-19.28	74	50.36	32.18	6.18	34	164	218	Peak
3216	46.57	-45.78	92.35	66.99	32.74	7.19	60.35	100	0	Peak
4824	50.2	-23.8	74	66.97	34.1	9.12	59.99	100	0	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2389.11	70.08	-3.92	74	65.79	32.22	6.03	33.96	172	114	Peak
2388.75	49.8	-4.2	54	45.51	32.22	6.03	33.96	172	114	Average
2412	95.54	-	-	91.21	32.23	6.07	33.97	172	114	Average
2412	105.63	-	-	101.3	32.23	6.07	33.97	172	114	Peak
2484	37.38	-16.62	54	33.02	32.18	6.18	34	172	114	Average
2484	50.61	-23.39	74	46.25	32.18	6.18	34	172	114	Peak
4824	49.14	-24.86	74	65.91	34.1	9.12	59.99	100	0	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	06	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
91.56	22.48	-21.02	43.5	44.47	8.72	0.95	31.66	-	-	Peak
166.35	36.44	-7.06	43.5	56.68	9.85	1.23	31.32	100	71	Peak
277.32	33.73	-12.27	46	50.48	12.98	1.64	31.37	-	-	Peak
303.5	26.08	-19.92	46	42.15	13.4	1.78	31.25	-	-	Peak
445.6	23.73	-22.27	46	35.63	16.95	2.29	31.14	-	-	Peak
881.7	27.72	-18.28	46	32.22	22.92	3.31	30.73	-	-	Peak
2389.56	64.62	-9.38	74	60.33	32.22	6.03	33.96	171	0	Peak
2389.2	46.71	-7.29	54	42.42	32.22	6.03	33.96	171	0	Average
2437	112.12	-	-	107.74	32.25	6.11	33.98	171	0	Peak
2437	102.81	-	-	98.42	32.26	6.11	33.98	171	0	Average
2487.48	65.3	-8.7	74	60.83	32.29	6.18	34	171	0	Peak
2483.82	45.42	-8.58	54	40.95	32.29	6.18	34	171	0	Average
4874	52.07	-21.93	74	68.62	34.1	9.13	59.78	101	334	Peak
4874	35.37	-18.63	54	51.92	34.1	9.13	59.78	101	334	Average

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	06	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	2437 MHz is fundamental signal which can be ignored.		

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
45.66	31.01	-8.99	40	51.95	10.1	0.66	31.7	100	96	Peak
163.11	28.55	-14.95	43.5	48.47	10.22	1.22	31.36	-	-	Peak
278.4	31.99	-14.01	46	48.73	13	1.64	31.38	-	-	Peak
457.5	24.23	-21.77	46	35.86	17.21	2.32	31.16	-	-	Peak
687.1	24.26	-21.74	46	31.31	20.49	2.91	30.45	-	-	Peak
881.7	32.79	-13.21	46	37.29	22.92	3.31	30.73	-	-	Peak
2382.63	57.82	-16.18	74	53.54	32.21	6.03	33.96	200	116	Peak
2379.93	41.26	-12.74	54	37.01	32.21	5.99	33.95	200	116	Average
2437	106.68	-	-	102.29	32.26	6.11	33.98	200	116	Peak
2437	96.79	-	-	92.4	32.26	6.11	33.98	200	116	Average
2492	45.56	-28.44	74	41.18	32.2	6.18	34	200	116	Peak
2492	33.35	-20.65	54	28.97	32.2	6.18	34	200	116	Average
4874	49.71	-24.29	74	66.26	34.1	9.13	59.78	100	0	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2390	38.69	-15.31	54	34.56	32.06	6.03	33.96	112	350	Average
2390	52.06	-21.94	74	47.93	32.06	6.03	33.96	112	350	Peak
2462	101.48	-	-	97.06	32.27	6.14	33.99	112	350	Average
2462	111.26	-	-	106.84	32.27	6.14	33.99	112	350	Peak
2483.7	72.61	-1.39	74	68.14	32.29	6.18	34	112	350	Peak
2483.6	53.11	-0.89	54	48.64	32.29	6.18	34	112	350	Average
4924	34.72	-19.28	54	51.05	34.1	9.15	59.58	100	336	Average
4924	51.08	-22.92	74	67.41	34.1	9.15	59.58	100	336	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	2462 MHz is fundamental signal which can be ignored.		

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
2384	38.27	-15.73	54	34.17	32.03	6.03	33.96	199	70	Average
2384	51.52	-22.48	74	47.42	32.03	6.03	33.96	199	70	Peak
2462	99.99	-	-	95.57	32.27	6.14	33.99	199	70	Average
2462	109.7	-	-	105.28	32.27	6.14	33.99	199	70	Peak
2484.5	65.32	-8.68	74	60.85	32.29	6.18	34	199	70	Peak
2483.96	51.52	-2.48	54	47.05	32.29	6.18	34	199	70	Average
4924	45.54	-28.46	74	61.87	34.1	9.15	59.58	100	0	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	149	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	73.17	-14.81	87.98	61.7	34.81	9.92	33.26	176	34	Peak
5745	98.53	-	-	86.78	35.14	9.91	33.3	176	34	Average
5745	107.98	-	-	96.23	35.14	9.91	33.3	176	34	Peak
5850	52.46	-35.52	87.98	41.07	34.98	9.87	33.46	176	34	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	149	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5745 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	68.61	-22.94	91.55	57.14	34.81	9.92	33.26	131	114	Peak
5745	101.06	-	-	89.31	35.14	9.91	33.3	131	114	Average
5745	111.55	-	-	99.8	35.14	9.91	33.3	131	114	Peak
5850	51.79	-39.76	91.55	40.4	34.98	9.87	33.46	131	114	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	157	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5785 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850Hz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
31.08	22.57	-17.43	40	34.62	19.28	0.54	31.87	-	-	Peak
148.53	36.91	-6.59	43.5	55.86	11.24	1.21	31.4	100	71	Peak
280.56	33.67	-12.33	46	50.4	13.03	1.64	31.4	-	-	Peak
307	25.98	-20.02	46	41.9	13.51	1.79	31.22	-	-	Peak
444.9	22.5	-23.5	46	34.4	16.95	2.29	31.14	-	-	Peak
881.7	28.88	-17.12	46	33.38	22.92	3.31	30.73	-	-	Peak
5725	55.07	-31.75	86.82	43.6	34.81	9.92	33.26	108	289	Peak
5785	96.16	-	-	84.41	35.19	9.9	33.34	108	289	Average
5785	106.82	-	-	95.07	35.19	9.9	33.34	108	289	Peak
5850	53.2	-33.62	86.82	41.81	34.98	9.87	33.46	108	289	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	157	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5785 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
42.96	31.25	-8.75	40	50.66	11.7	0.64	31.75	100	92	Peak
168.78	31.06	-12.44	43.5	51.46	9.66	1.23	31.29	-	-	Peak
277.59	32.3	-13.7	46	49.06	12.98	1.64	31.38	-	-	Peak
307.7	22.83	-23.17	46	38.74	13.51	1.79	31.21	-	-	Peak
457.5	24.58	-21.42	46	36.21	17.21	2.32	31.16	-	-	Peak
881.7	34.16	-11.84	46	38.66	22.92	3.31	30.73	-	-	Peak
5725	53.19	-37.29	90.48	41.72	34.81	9.92	33.26	100	97	Peak
5785	100.8	-	-	89.05	35.19	9.9	33.34	100	97	Average
5785	110.48	-	-	98.73	35.19	9.9	33.34	100	97	Peak
5850	52.76	-37.72	90.48	41.37	34.98	9.87	33.46	100	97	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	161	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5805 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	52.26	-34.18	86.44	40.79	34.81	9.92	33.26	200	357	Peak
5805	96.5	-	-	84.75	35.24	9.89	33.38	200	357	Average
5805	106.44	-	-	94.69	35.24	9.89	33.38	200	357	Peak
5850	51.84	-34.6	86.44	40.45	34.98	9.87	33.46	200	357	Peak

Test Mode :	802.11n HT-20 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	161	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5805 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	51.06	-39.7	90.76	39.59	34.81	9.92	33.26	111	145	Peak
5805	101.51	-	-	89.76	35.24	9.89	33.38	111	145	Average
5805	110.76	-	-	99.01	35.24	9.89	33.38	111	145	Peak
5850	50.57	-40.19	90.76	39.18	34.98	9.87	33.46	111	145	Peak

Test Mode :	802.11n HT-40 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	151	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 5755 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
86.16	22.83	-17.17	40	45.37	8.24	0.92	31.7	-	-	Peak
160.41	36.19	-7.31	43.5	55.86	10.5	1.22	31.39	100	71	Peak
278.94	33.6	-12.4	46	50.34	13.01	1.64	31.39	-	-	Peak
301.4	26.29	-19.71	46	42.43	13.35	1.77	31.26	-	-	Peak
694.8	24.12	-21.88	46	31.12	20.55	2.93	30.48	-	-	Peak
881.7	28.62	-17.38	46	33.12	22.92	3.31	30.73	-	-	Peak
5725	83.33	-5.31	88.64	71.86	34.81	9.92	33.26	198	37	Peak
5755	97.95	-	-	86.18	35.16	9.91	33.3	198	37	Average
5755	108.64	-	-	96.87	35.16	9.91	33.3	198	37	Peak
5850	57	-31.64	88.64	45.61	34.98	9.87	33.46	198	37	Peak
11510	46.23	-27.77	74	52.89	38.2	13.14	58	100	0	Peak

Test Mode :	802.11n HT-40 <MIMO Ant 1+2>	**Temperature :**	24~25°C
Test Channel :	151	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 5755 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
42.96	32.14	-7.86	40	51.55	11.7	0.64	31.75	100	52	Peak
192	30.77	-12.73	43.5	51.78	9.02	1.29	31.32	-	-	Peak
277.86	33.79	-12.21	46	50.53	13	1.64	31.38	-	-	Peak
457.5	25.18	-20.82	46	36.81	17.21	2.32	31.16	-	-	Peak
717.9	23.45	-22.55	46	30.11	20.86	2.98	30.5	-	-	Peak
881.7	33.36	-12.64	46	37.86	22.92	3.31	30.73	-	-	Peak
5725	85.12	-6.47	91.59	73.65	34.81	9.92	33.26	131	125	Peak
5755	101.31	-	-	89.54	35.16	9.91	33.3	131	125	Average
5755	111.59	-	-	99.82	35.16	9.91	33.3	131	125	Peak
5850	56.48	-35.11	91.59	45.09	34.98	9.87	33.46	131	125	Peak
11510	47.98	-26.02	74	54.64	38.2	13.14	58	100	0	Peak

Test Mode :	802.11n HT-40 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 5795 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	61.78	-24.38	86.16	50.31	34.81	9.92	33.26	108	288	Peak
5795	95.19	-	-	83.47	35.21	9.89	33.38	108	288	Average
5795	106.16	-	-	94.44	35.21	9.89	33.38	108	288	Peak
5850	62.3	-23.86	86.16	50.91	34.98	9.87	33.46	108	288	Peak
11590	47.76	-26.24	74	54.18	38.32	13.19	57.93	100	0	Peak

Test Mode :	802.11n HT-40 <MIMO Ant 1+2>	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5795 MHz is fundamental signal which can be ignored. 2. 5725 MHz and 5850 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
5725	65.77	-25.38	91.15	54.3	34.81	9.92	33.26	110	124	Peak
5795	100.04	-	-	88.32	35.21	9.89	33.38	110	124	Average
5795	111.15	-	-	99.43	35.21	9.89	33.38	110	124	Peak
5850	66.23	-24.92	91.15	54.84	34.98	9.87	33.46	110	124	Peak
11590	43.85	-30.15	74	50.28	38.32	13.18	57.93	100	0	Peak

3.8 Antenna Requirements

3.8.1 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. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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.

3.8.2 Antenna Connected Construction

The antennas type used in this product is with non-standard connector and it is considered to meet antenna requirement.

3.8.3 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. The EUT supports completely uncorrelated MIMO mode. The composite antenna gain for 2.4GHz is 1.7 dBi. The composite antenna gain for 5GHz is 2.6 dBi as following table.

	2.4GHz	5GHz
ANT 1 GAIN (dBi)	1.9	2.5
ANT 2 GAIN (dBi)	1.5	2.7
COMPOSITE GAIN (dBi)	1.7	2.6

FCC KDB 662911 D01 Multiple Transmitter Output v01r01

Unequal antenna gains, with equal transmit powers.

For antenna gains given by G_1, G_2, …, G_N dBi.

If all transmit signals are *completely uncorrelated*, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10})/N]$ dBi

4 BT Test Result

4.1 Number of Channel Measurement

4.1.1 Limits of Number of Hopping Frequency

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

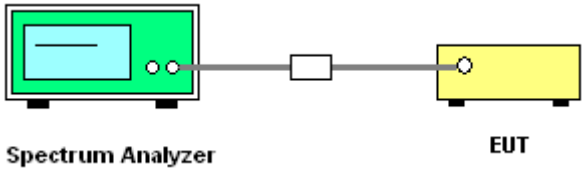
4.1.2 Measuring Instruments

See list of measuring instruments of this test report.

4.1.3 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.

4.1.4 Test Setup

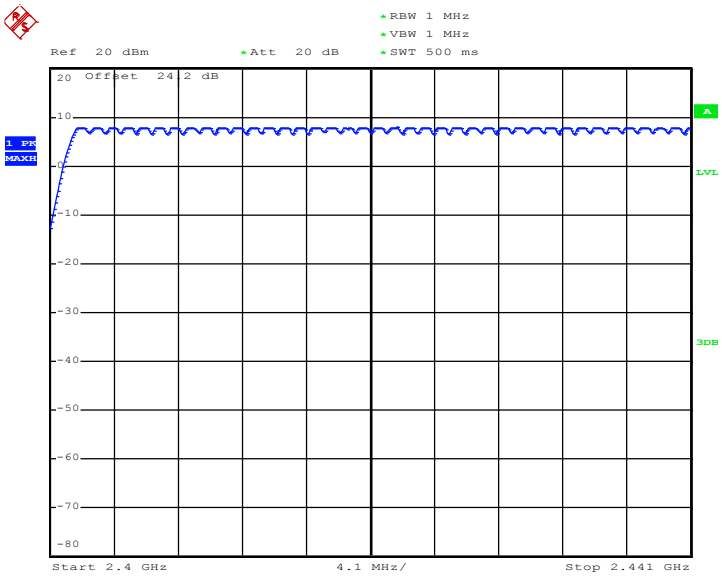


4.1.5 Test Result of Number of Hopping Frequency

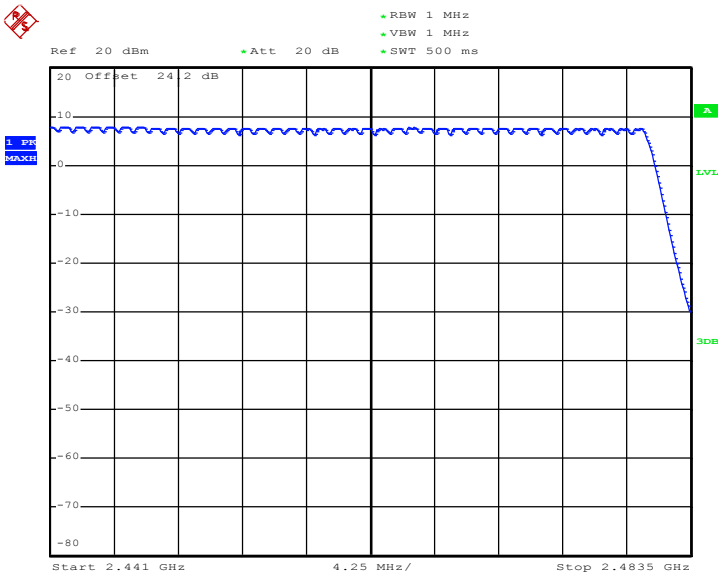
Test Mode :	<BT> : 3Mbps	**Temperature :**	24~26℃
Test Engineer :	Kenny Chen	**Relative Humidity :**	50~53%

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

Number of Hopping Channel Plot on Channel 00 - 78



Date: 18.APR.2012 10:29:46



Date: 18.APR.2012 10:42:30

4.2 Hopping Channel Separation Measurement

4.2.1 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.

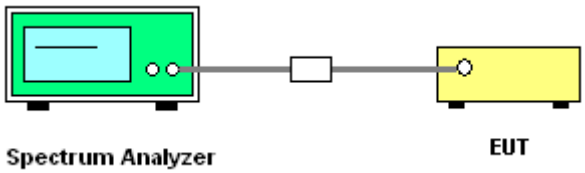
4.2.2 Measuring Instruments

See list of measuring instruments of this test report.

4.2.3 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 and enable the hopping function of the EUT.
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.

4.2.4 Test Setup

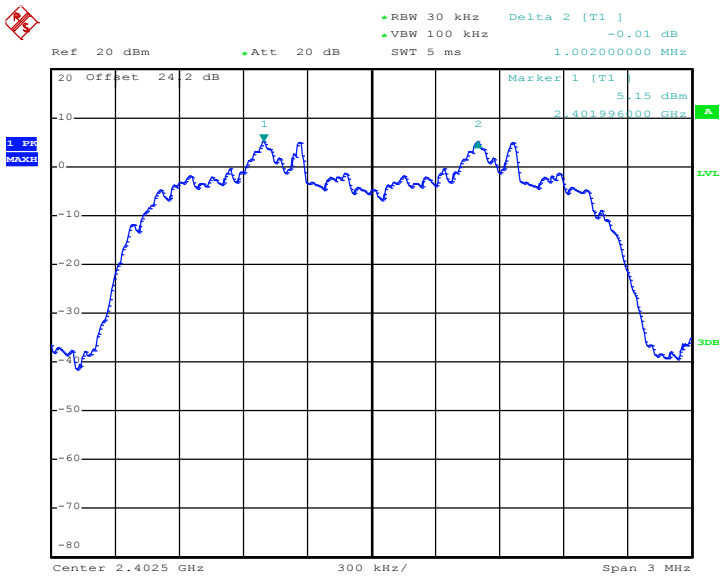


4.2.5 Test Result of Hopping Channel Separation

Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

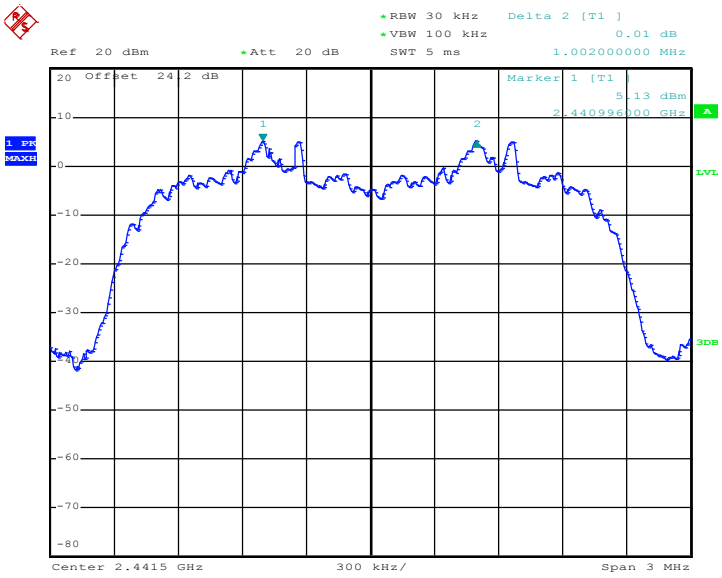
Channel	Frequency (MHz)	Frequency Separation (MHz)	(2/3 of 20dB BW) Limits (MHz)	Pass/Fail
00	2402	1.002	0.8680	Pass
39	2441	1.002	0.8680	Pass
78	2480	1.002	0.8680	Pass

Channel Separation Plot on Channel 00 - 01



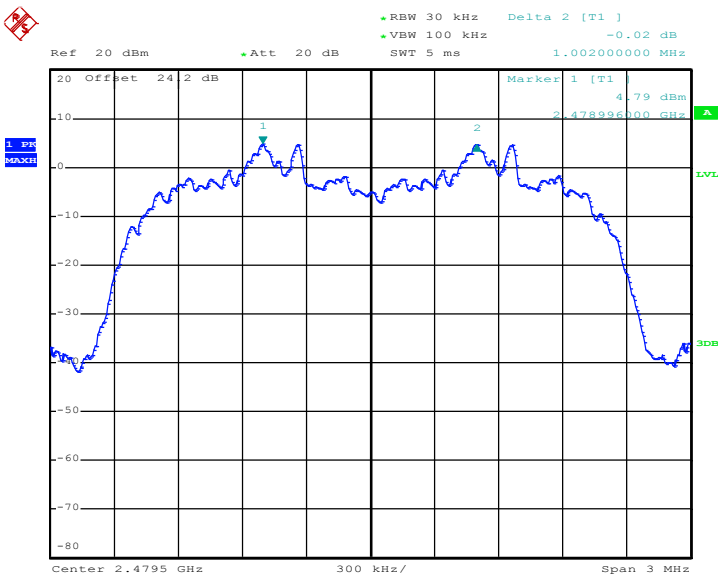
Date: 18.APR.2012 09:57:52

Channel Separation Plot on Channel 39 - 40



Date: 18.APR.2012 09:58:49

Channel Separation Plot on Channel 77 - 78



Date: 18.APR.2012 10:00:41

4.3 Dwell Time Measurement

4.3.1 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.

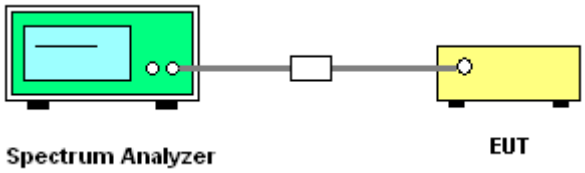
4.3.2 Measuring Instruments

See list of measuring instruments of this test report.

4.3.3 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 a low loss cable.
3. The EUT should be transmitting at its maximum data rate and enable the hopping function of the EUT.
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.

4.3.4 Test Setup



4.3.5 Test Result of Dwell Time

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~26℃
Test Engineer :	Kenny Chen	**Relative Humidity :**	50~53%

Package Mode	Average Hopping Channel	Package Transfer Time (usec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	2.90	2940.00	0.27	0.4	Pass

Remark:

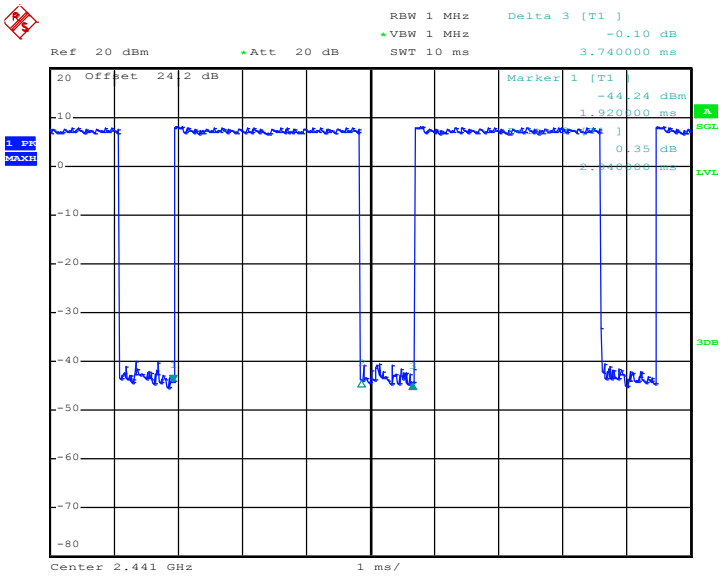
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time

2. 79 channels come from the Hopping Channel number.

3. Average Hopping Channel = hops/sweep time

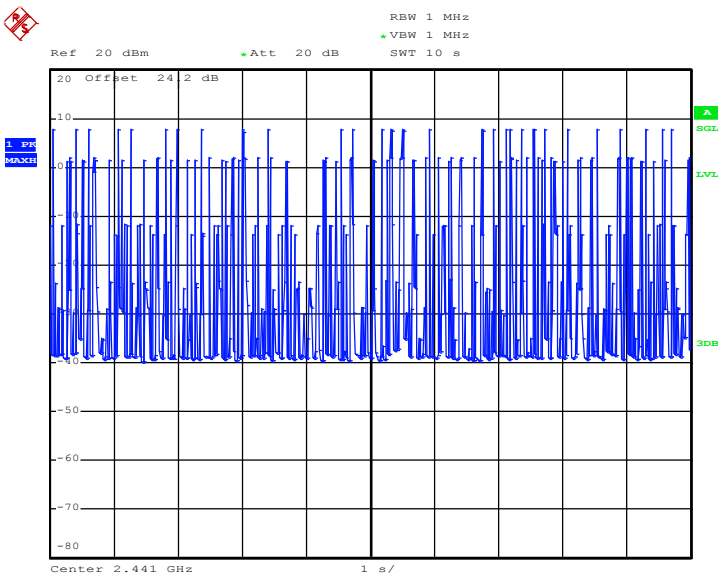
4. T: Package Transfer Time(us)

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



Date: 11.APR.2012 22:19:32

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



Date: 18.APR.2012 09:40:12

4.4 20dB Bandwidth Measurement

4.4.1 Limit of 20dB Bandwidth

Reporting only.

4.4.2 Measuring Instruments

See list of measuring instruments of this test report.

4.4.3 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. The path loss was compensated to the results for each measurement.
3. The EUT should be transmitting at its maximum data rate as the worst cases.
4. For BT 20 dB BW measurement：

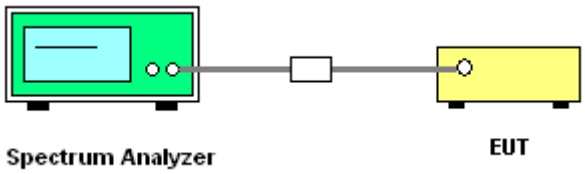
   Use the following spectrum analyzer settings:

   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. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

4.4.4 Test Setup

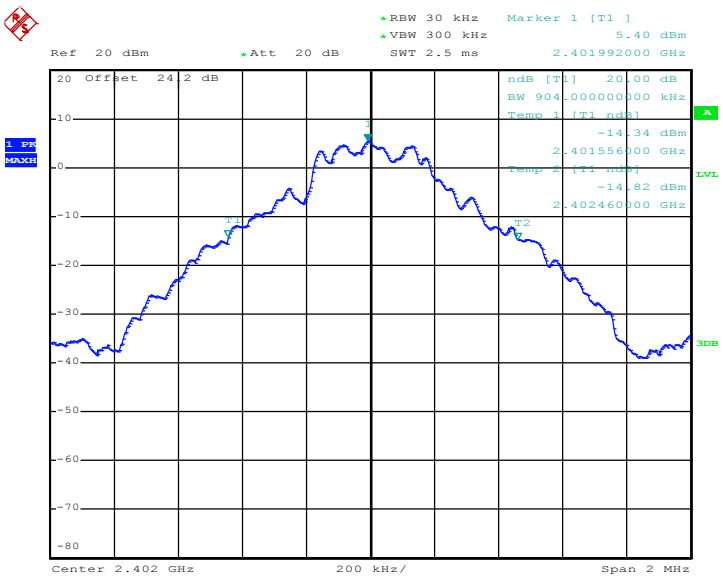


4.4.5 Test Result of 20dB Bandwidth

Test Mode :	<BT> : 1Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

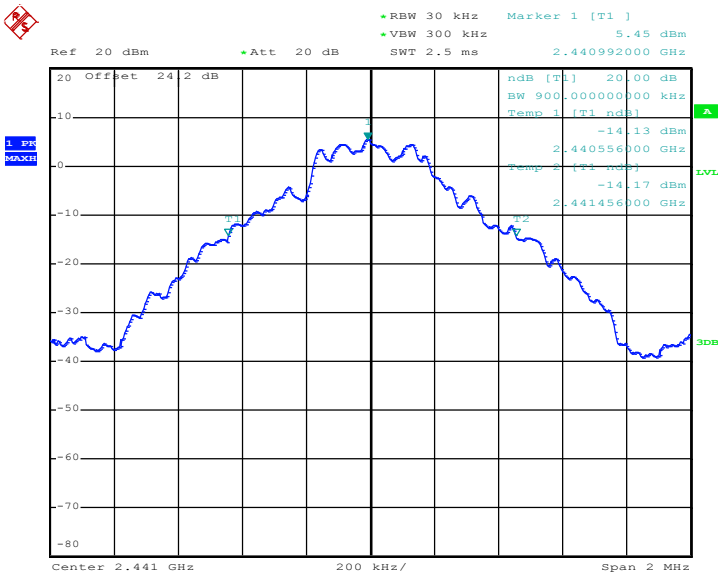
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	0.904
39	2441	0.900
78	2480	0.904

20 dB Bandwidth Plot on Channel 00



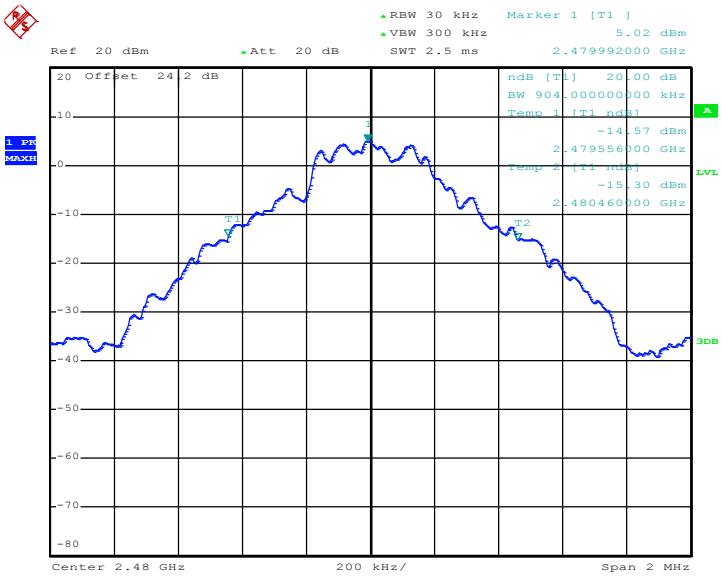
Date: 18.APR.2012 10:05:59

20 dB Bandwidth Plot on Channel 39



Date: 18.APR.2012 10:06:29

20 dB Bandwidth Plot on Channel 78

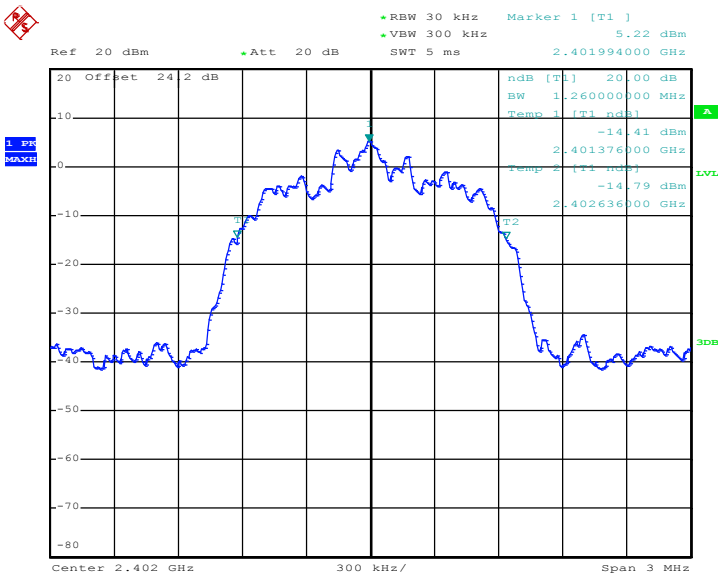


Date: 18.APR.2012 10:07:32

Test Mode :	<BT> : 2Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

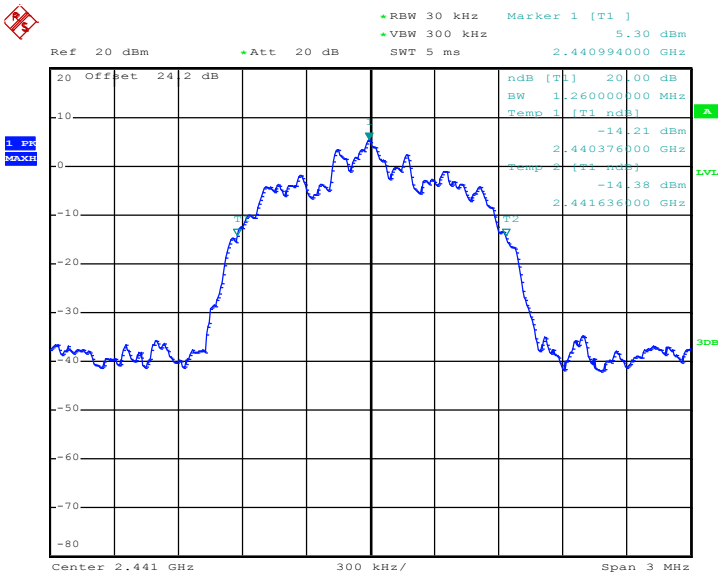
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.260
39	2441	1.260
78	2480	1.266

20 dB Bandwidth Plot on Channel 00



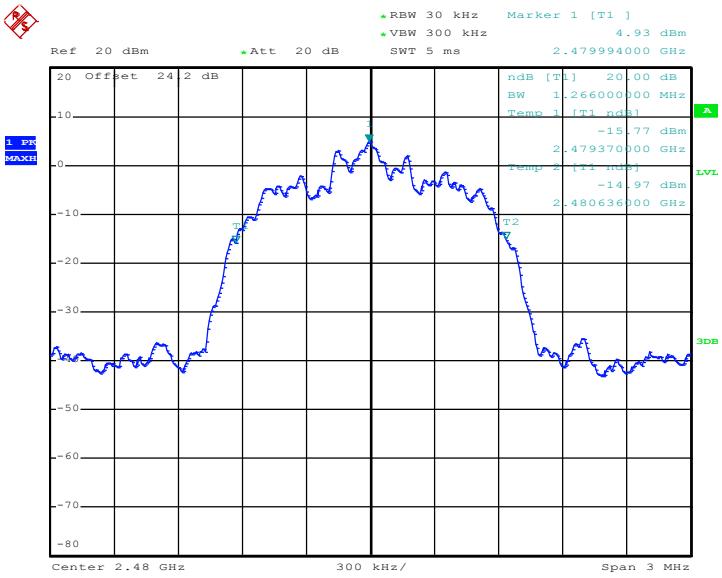
Date: 18.APR.2012 10:09:12

20 dB Bandwidth Plot on Channel 39



Date: 18.APR.2012 10:10:10

20 dB Bandwidth Plot on Channel 78

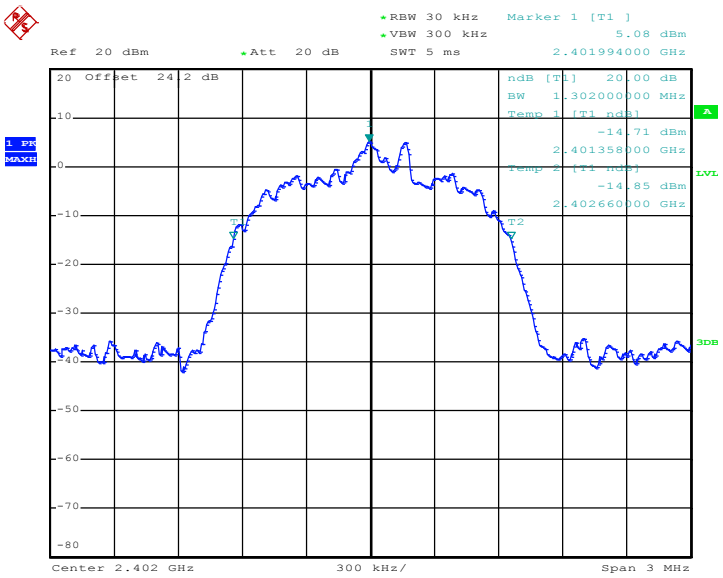


Date: 18.APR.2012 10:11:19

Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

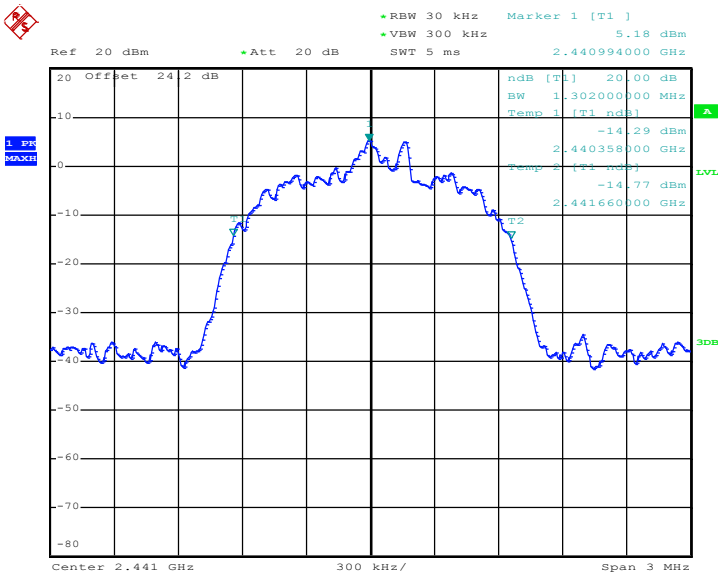
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
00	2402	1.302
39	2441	1.302
78	2480	1.302

20 dB Bandwidth Plot on Channel 00



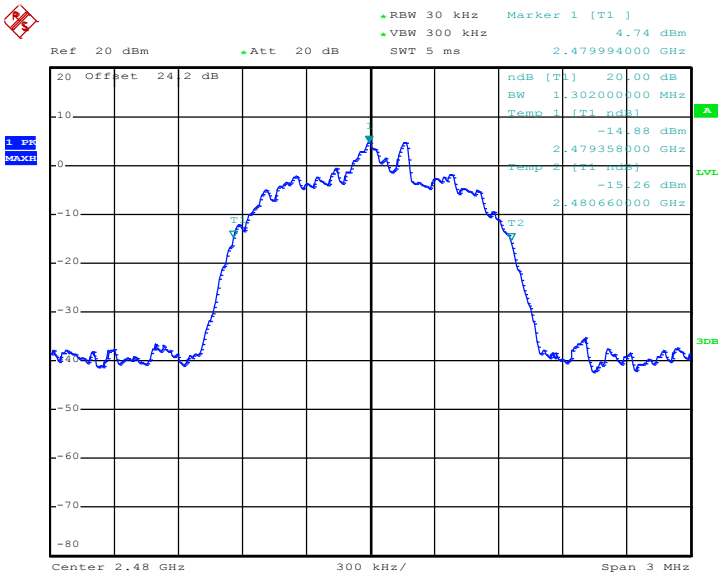
Date: 18.APR.2012 10:12:08

20 dB Bandwidth Plot on Channel 39



Date: 18.APR.2012 10:13:14

20 dB Bandwidth Plot on Channel 78



Date: 18.APR.2012 10:14:05

4.5 Output Power Measurement

4.5.1 Limit of 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.

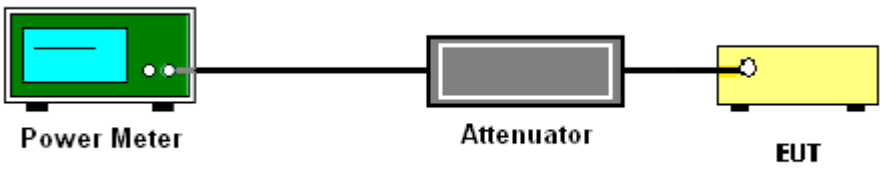
4.5.2 Measuring Instruments

See list of measuring instruments of this test report.

4.5.3 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. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

4.5.4 Test Setup

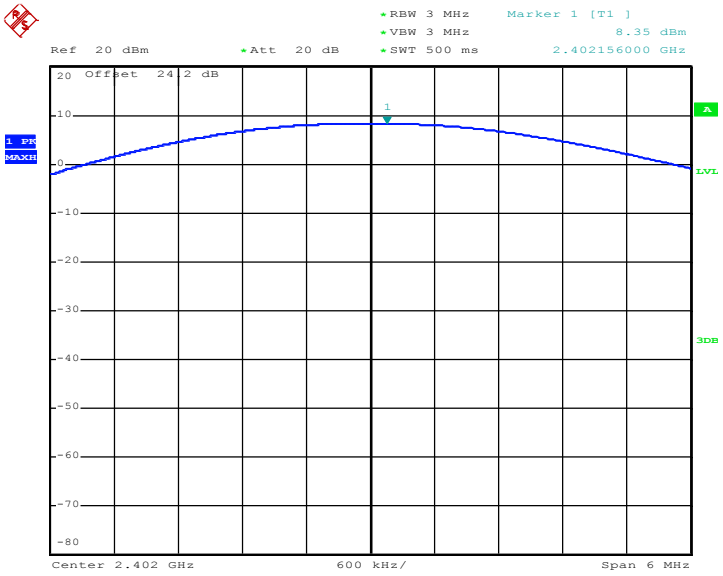


4.5.6 Test Result of Peak Output Power

Test Mode :	<BT> : 1Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

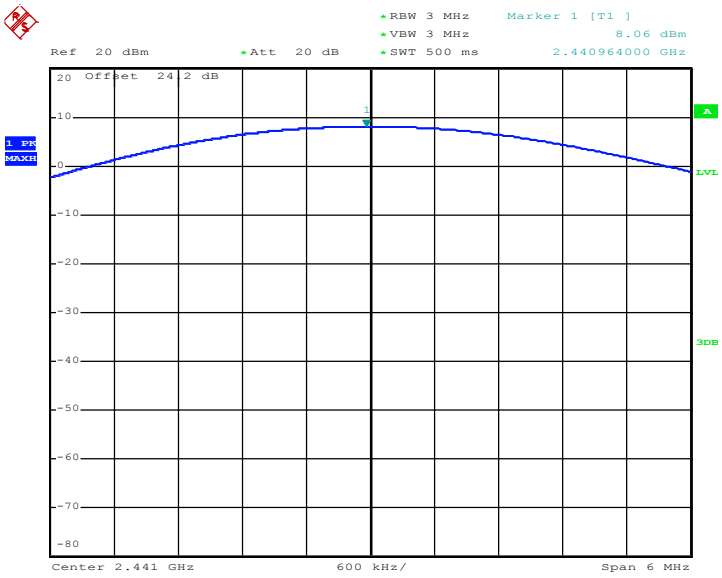
Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	8.35	30	Pass
39	2441	8.06	30	Pass
78	2480	8.16	30	Pass

Peak Output Power Plot on Channel 00



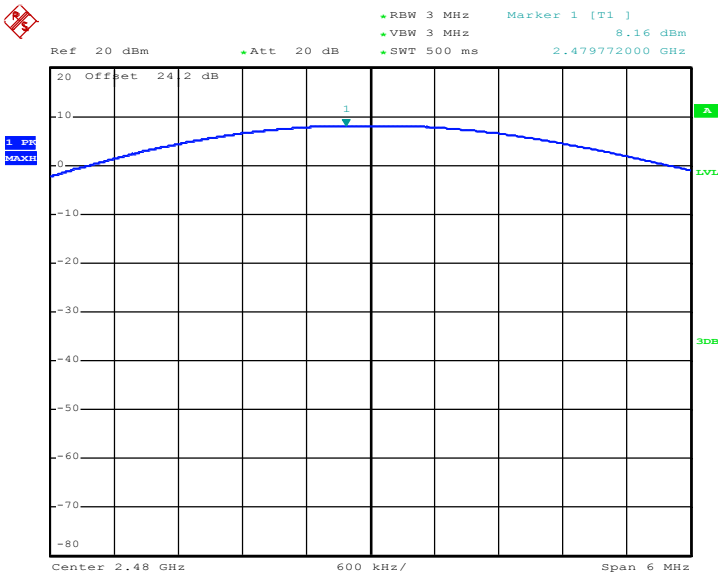
Date: 11.APR.2012 22:01:17

Peak Output Power Plot on Channel 39



Date: 11.APR.2012 22:02:32

Peak Output Power Plot on Channel 78

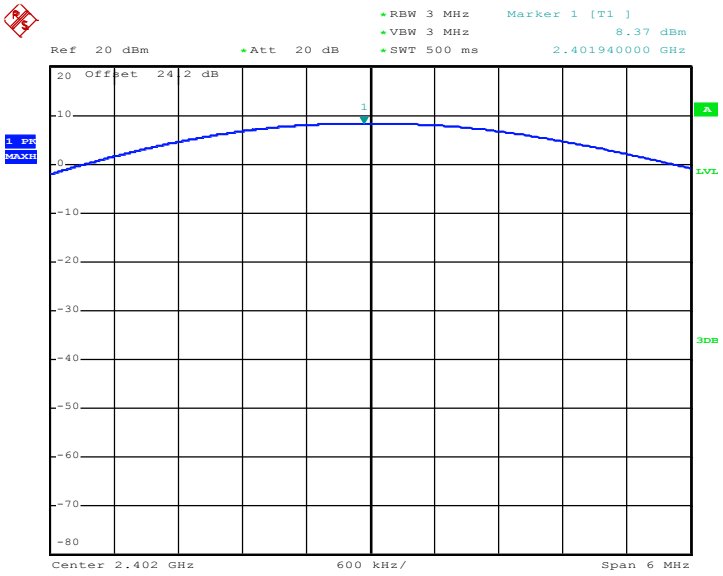


Date: 11.APR.2012 22:03:47

Test Mode :	<BT> : 2Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

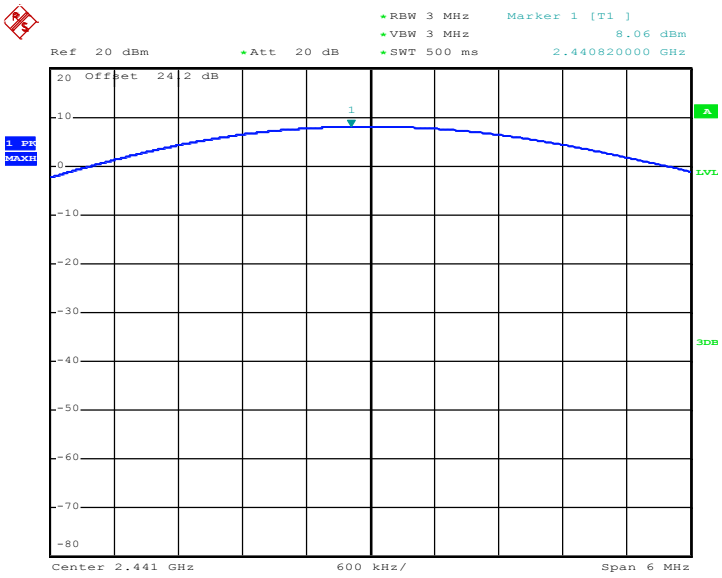
Channel	Frequency (MHz)	RF Power (dBm)		
		π /4-DQPSK	Max. Limits	Pass/Fail
		2 Mbps	(dBm)	
00	2402	8.37	20.97	Pass
39	2441	8.06	20.97	Pass
78	2480	8.16	20.97	Pass

Peak Output Power Plot on Channel 00



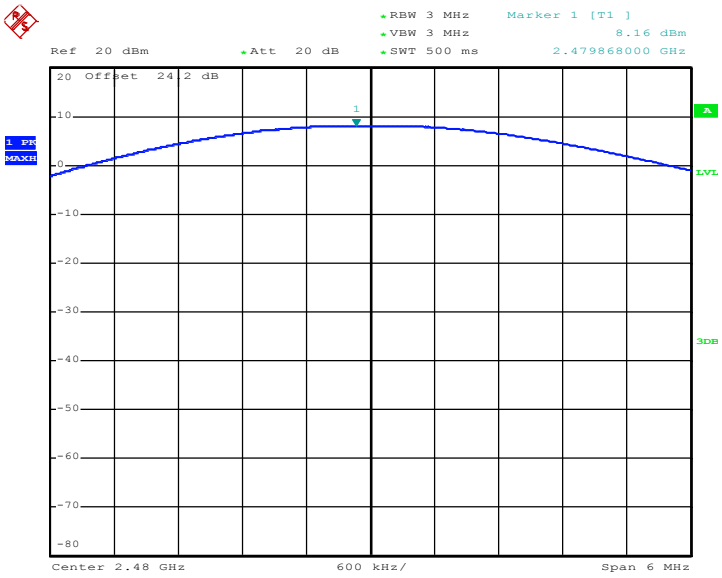
Date: 11.APR.2012 22:01:42

Peak Output Power Plot on Channel 39



Date: 11.APR.2012 22:02:57

Peak Output Power Plot on Channel 78

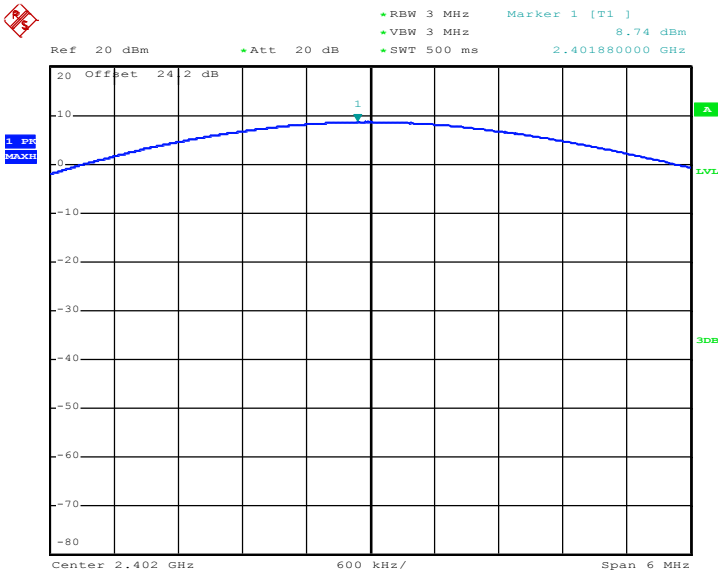


Date: 11.APR.2012 22:04:12

Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

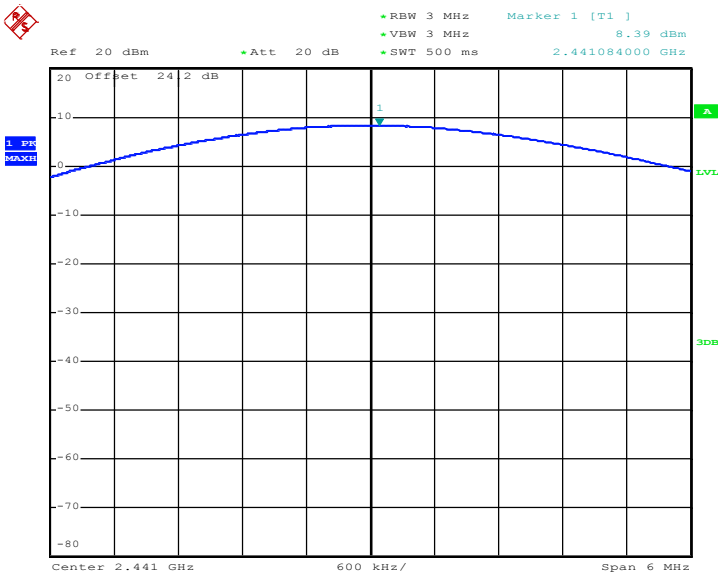
Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	8.74	20.97	Pass
39	2441	8.39	20.97	Pass
78	2480	8.56	20.97	Pass

Peak Output Power Plot on Channel 00



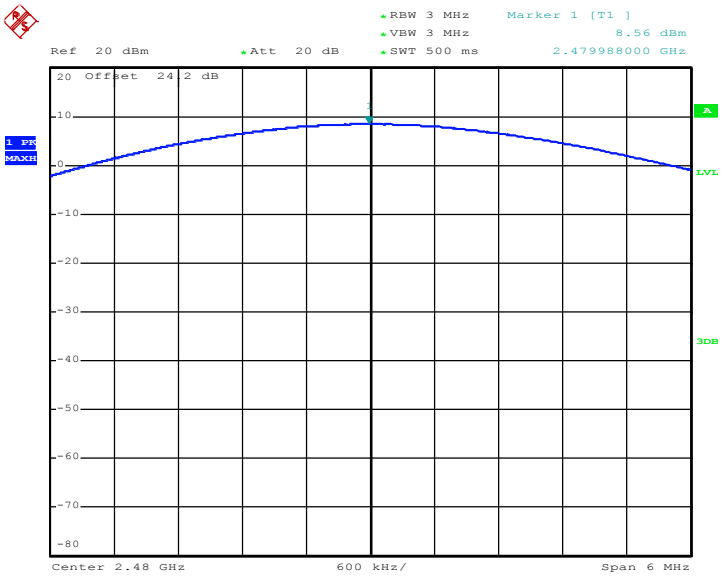
Date: 11.APR.2012 22:02:15

Peak Output Power Plot on Channel 39



Date: 11.APR.2012 22:03:30

Peak Output Power Plot on Channel 78



Date: 11.APR.2012 22:04:45

4.5.7 Test Result of Average Output Power

Test Mode :	<BT> : 1Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)
		GFSK
		1 Mbps
00	2402	8.07
39	2441	7.78
78	2480	7.92

Test Mode :	<BT> : 2Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)
		π/4-DQPSK
		2 Mbps
00	2402	6.82
39	2441	6.54
78	2480	6.68

Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	RF Power (dBm)
		8-DPSK
		3 Mbps
00	2402	6.82
39	2441	6.53
78	2480	6.64

Note: The average power is measured by power meter with average power sensor and is reporting only.

4.6 Band Edges Measurement

4.6.1 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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

4.6.2 Measuring Instruments

See list of measuring instruments of this test report.

4.6.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. RF antenna conducted test: Set RBW = 300kHz, Video bandwidth = 300kHz. 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. For Conducted Band Edge measurement, enable the hopping function of the EUT and repeat. Note: If the device complies with the use of average power 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. For average measurement: use duty cycle correction factor method.

   Duty cycle = On time/100 milliseconds

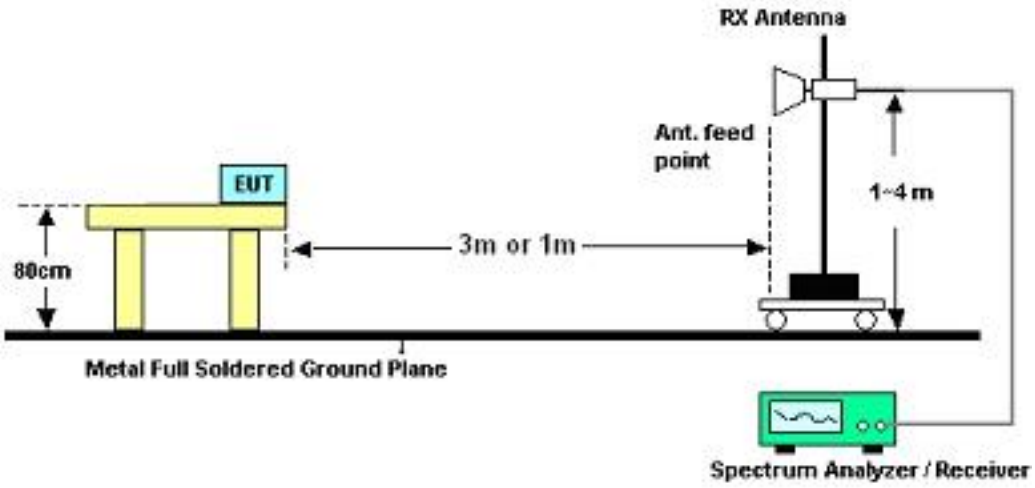
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$

   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.

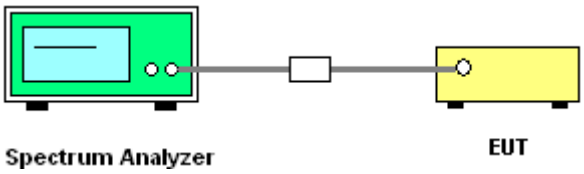
   Average Level = Peak Level + 20*log(Duty cycle)

4.6.4 Test Setup

<Radiated Band Edges>

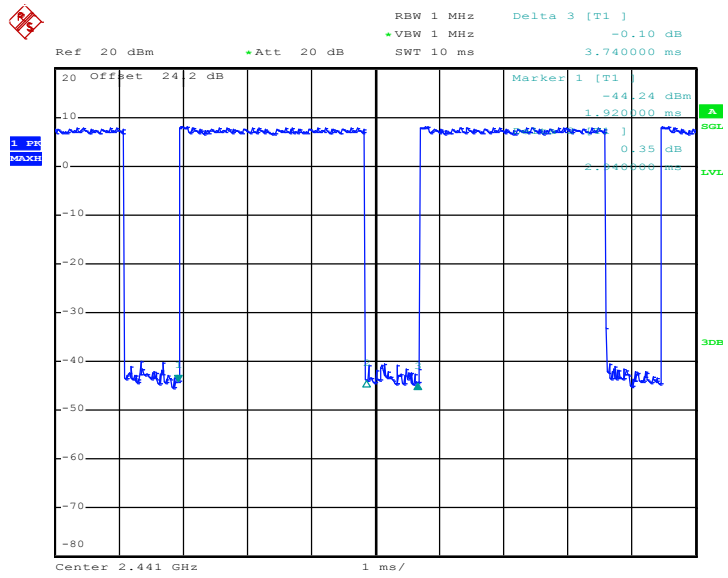


<Conducted Band Edges>



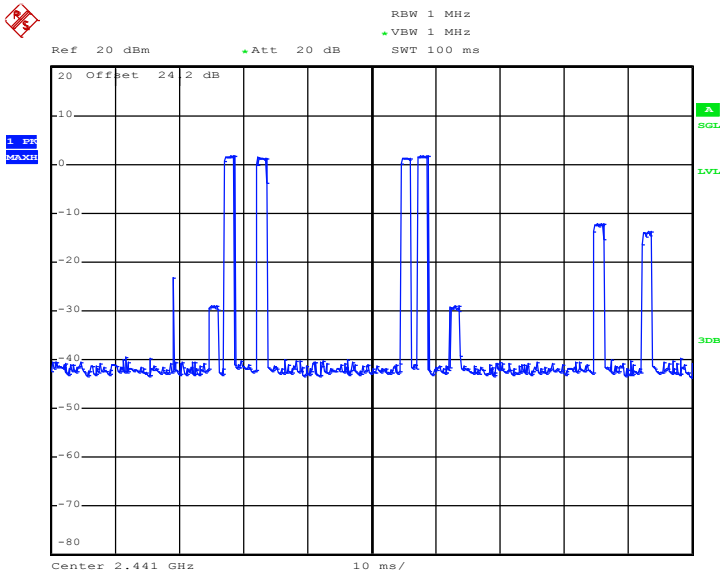
4.6.5 Duty cycle correction factor for average measurement

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



Date: 11.APR.2012 22:19:32

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



Date: 16.AUG.2012 18:36:17

Note: Duty cycle = on time/100 milliseconds = 4 * 2.94 / 100 = 11.76 %

Duty cycle correction factor = 20*log(Duty cycle) = -18.60 dB

4.6.6 Test Result of Radiated Band Edges

Test Mode :	<BT> : 3Mbps	Temperature :	24~25°C
Test Channel :	00	Relative Humidity :	41~42%
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
2389.8	46.25	-27.75	74	42.12	32.06	6.03	33.96	103	143	Peak
2389.8	27.65	-26.35	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
2385.43	46.19	-27.81	74	42.09	32.03	6.03	33.96	196	265	Peak
2385.43	27.59	-26.41	54	-	-	-	-	-	-	Average

Test Mode :	<BT> : 3Mbps	Temperature :	24~25°C
Test Channel :	78	Relative Humidity :	41~42%
Test Engineer :	Gavin Wu		

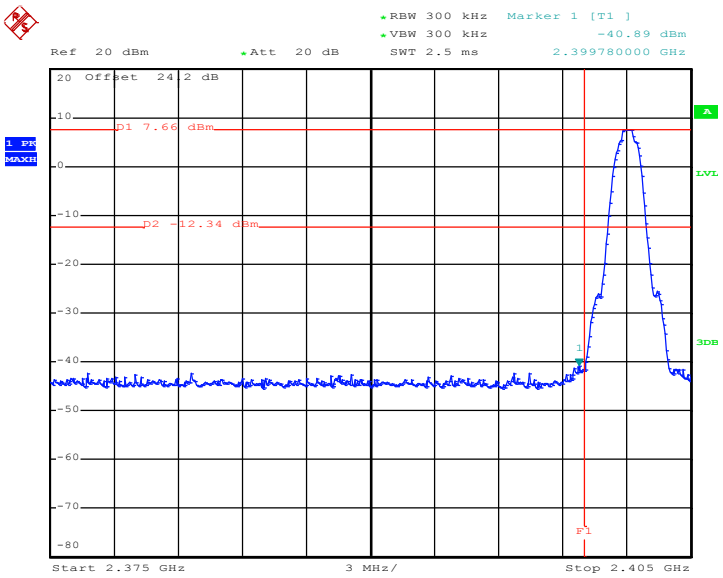
ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.5	68.64	-5.36	74	64.28	32.18	6.18	34	100	137	Peak
2483.5	50.04	-3.96	54	-	-	-	-	-	-	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	67.36	-6.64	74	63	32.18	6.18	34	194	262	Peak
2483.5	48.76	-5.24	54	-	-	-	-	-	-	Average

4.6.7 Test Result of Conducted Band Edges

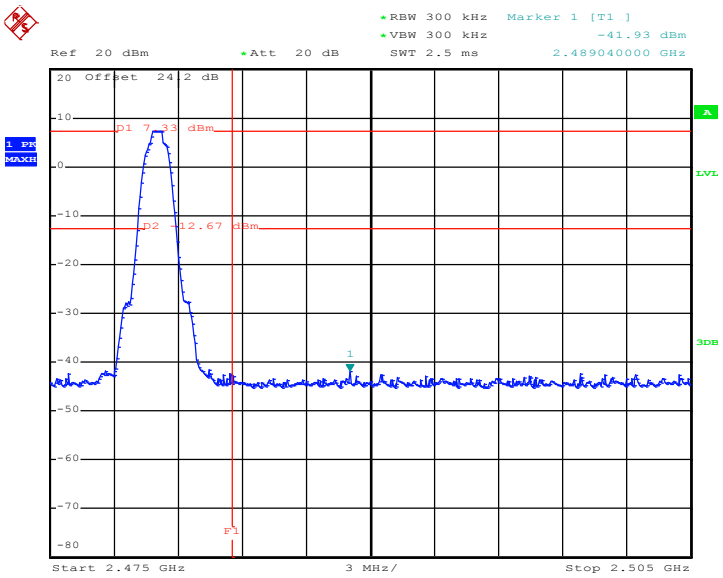
Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Channel :	00 and 78	Relative Humidity :	50~53%
		Test Engineer :	Kenny Chen

Low Band Edge Plot on Channel 00



Date: 18.APR.2012 10:52:12

High Band Edge Plot on Channel 78

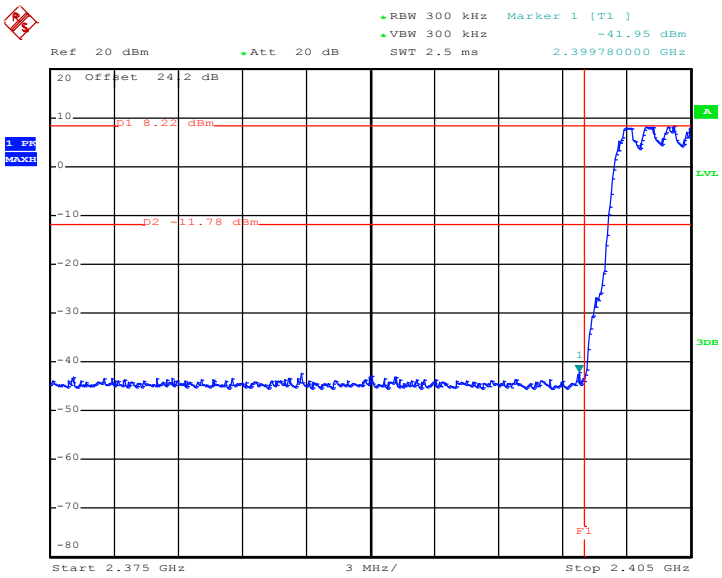


Date: 18.APR.2012 10:53:15

4.6.8 Test Result of Conducted Hopping Mode Band Edges

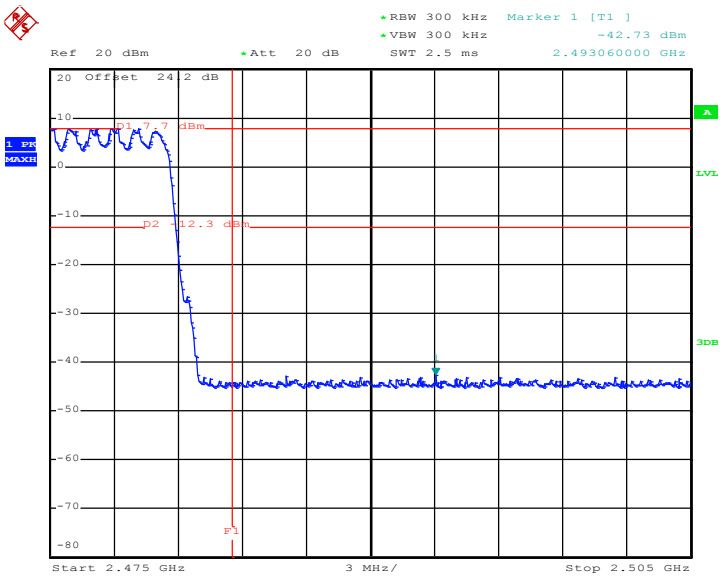
Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Channel :	00 and 78	Relative Humidity :	50~53%
		Test Engineer :	Kenny Chen

Low Band Edge Plot on Channel 00



Date: 6.JUL.2012 00:48:45

High Band Edge Plot on Channel 78



Date: 6.JUL.2012 00:52:04

4.7 Spurious Emission Measurement

4.7.1 Limit of Spurious Emission Measurement

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band.

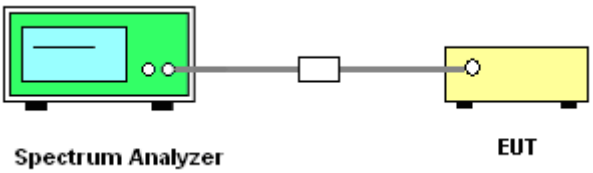
4.7.2 Measuring Instruments

See list of measuring instruments of this test report.

4.7.3 Test Procedure

1. The testing follows the guidelines FCC Public Notice DA 00-705 Measurement Guidelines.
2. The transmitter output was connected to the spectrum analyzer via a low lose cable. The path loss was compensated to the results for each measurement.
3. Set RBW = 100 KHz, Video bandwidth (VBW) ≥ RBW, 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.

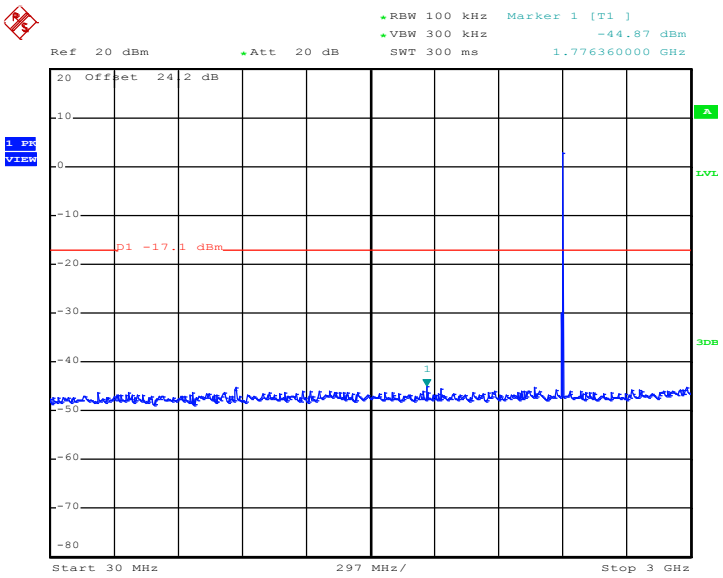
4.7.4 Test Setup



4.7.6 Test Result of Spurious Emission

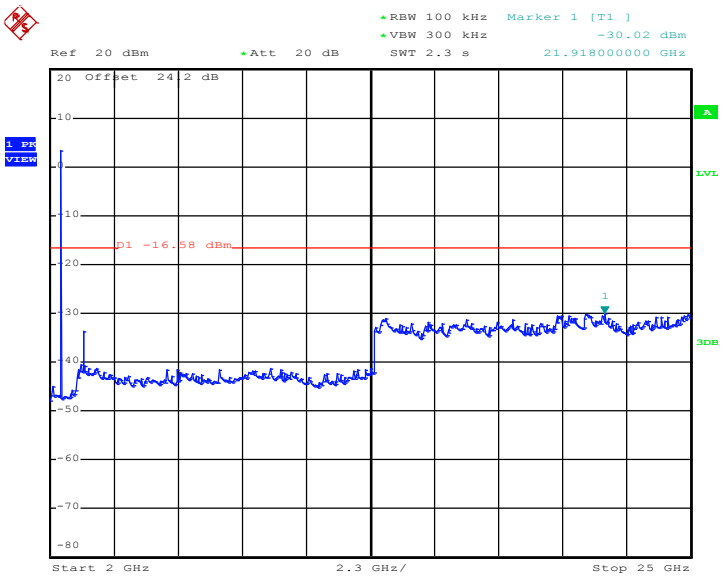
Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Channel :	00	Relative Humidity :	50~53%
		Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.JUL.2012 23:56:16

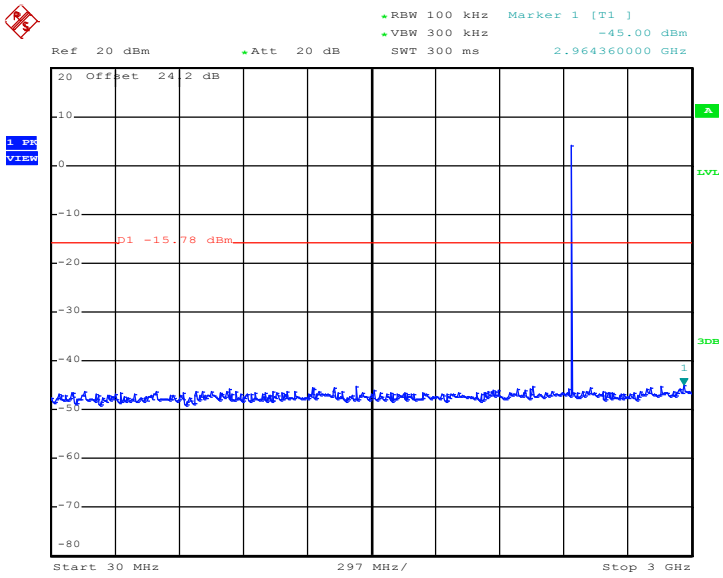
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 5.JUL.2012 23:56:38

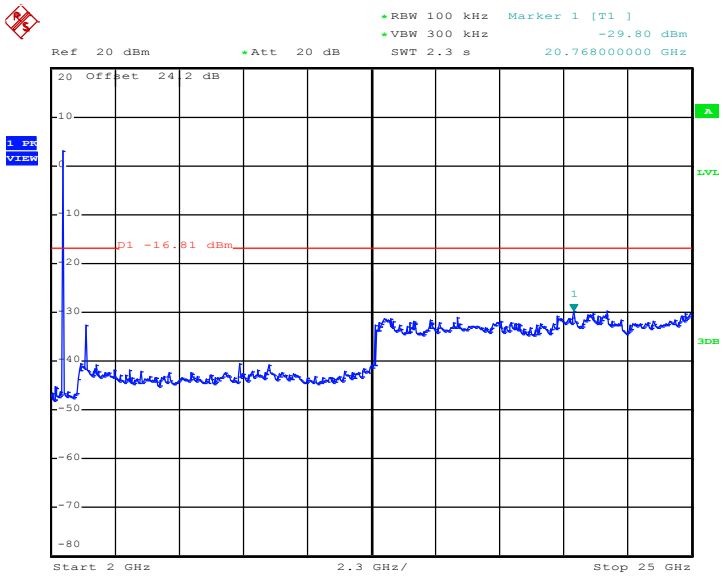
Test Mode :	<BT> : 3Mbps	**Temperature :**	24~26℃
Test Channel :	39	**Relative Humidity :**	50~53%
		Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.JUL.2012 23:57:16

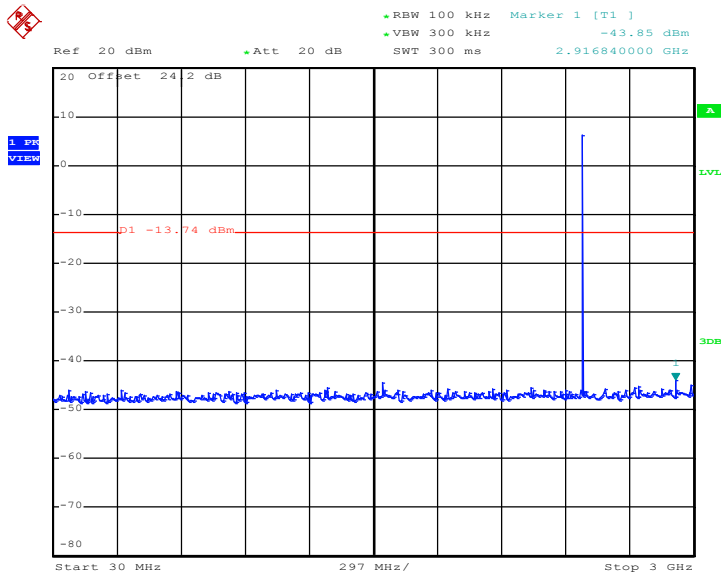
Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 5.JUL.2012 23:57:38

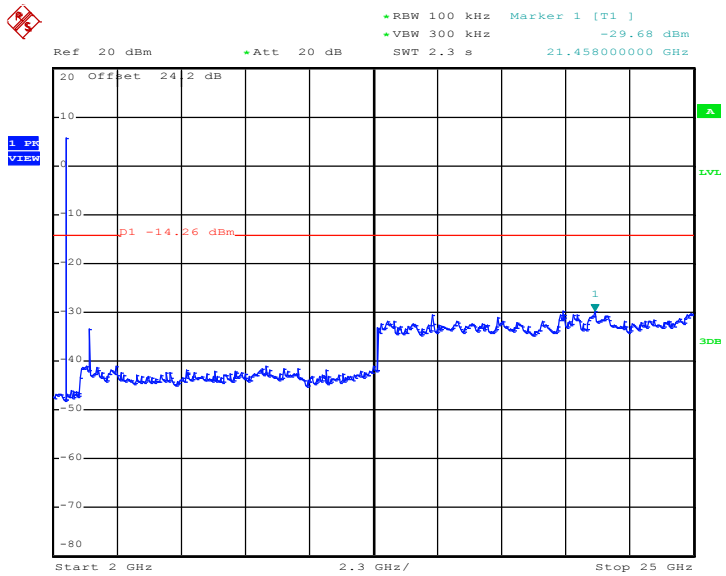
Test Mode :	<BT> : 3Mbps	**Temperature :**	24~26℃
Test Channel :	78	**Relative Humidity :**	50~53%
		Test Engineer :	Kenny Chen

Conducted Spurious Emission Plot between 30MHz ~ 3 GHz



Date: 5.JUL.2012 23:58:11

Conducted Spurious Emission Plot between 2 GHz ~ 25 GHz



Date: 5.JUL.2012 23:58:33

4.8 Power Spectral Density Measurement

4.8.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3KHz band at any time interval of continuous transmission.

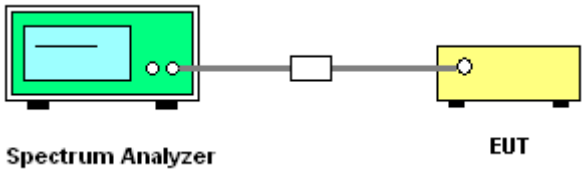
4.8.2 Measuring Instruments

See list of measuring instruments of this test report.

4.8.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB Publication No. 558074.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 KHz. Video bandwidth (VBW) >= 10 KHz.
4. Record the measurement data derived from spectrum analyzer.

4.8.4 Test Setup



4.8.5 Test Result of Power Spectral Density

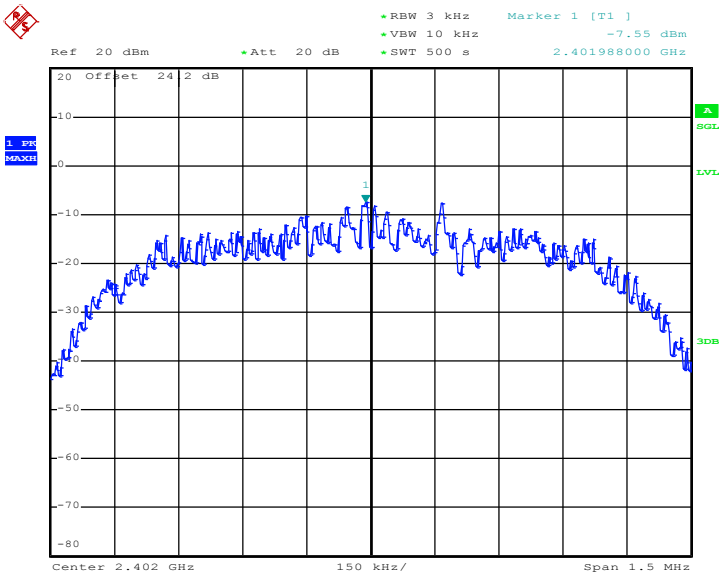
Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

Channel	Frequency (MHz)	BT Power Density	Max. Limits (dBm)	Pass /Fail
		PSD/3KHz (dBm)		
00	2402	-7.55	8	Pass
39	2441	-5.90	8	Pass
78	2480	-5.86	8	Pass

4.8.6 Test Result of Power Spectral Density Plots

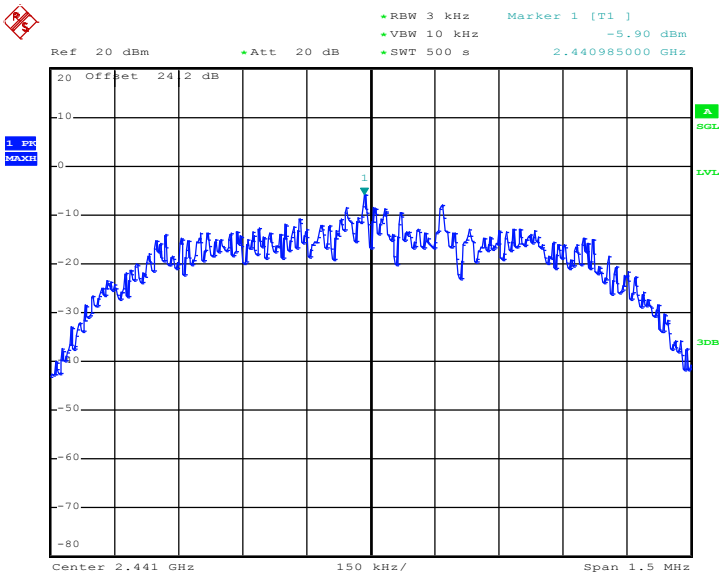
Test Mode :	<BT> : 3Mbps	Temperature :	24~26℃
Test Engineer :	Kenny Chen	Relative Humidity :	50~53%

PSD Plot on Channel 00



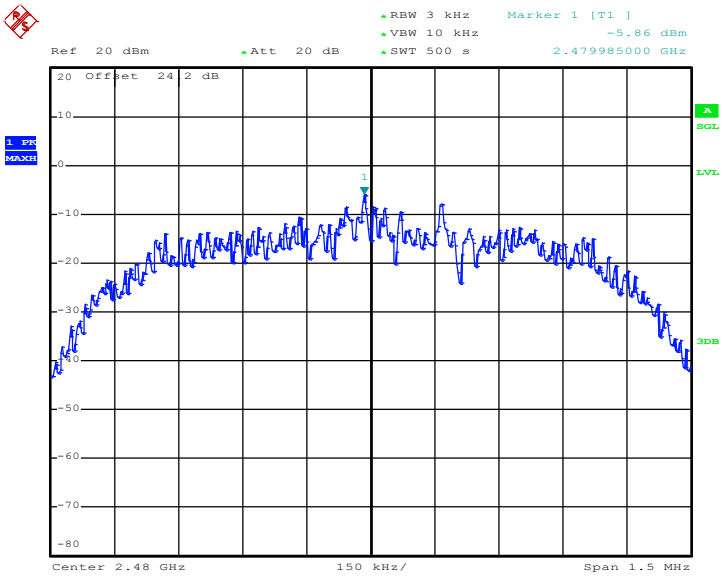
Date: 11.JUL.2012 00:04:04

PSD Plot on Channel 39



Date: 11.JUL.2012 00:13:29

PSD Plot on Channel 78



Date: 11.JUL.2012 00:45:23

4.9 AC Conducted Emission Measurement

4.9.1 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.

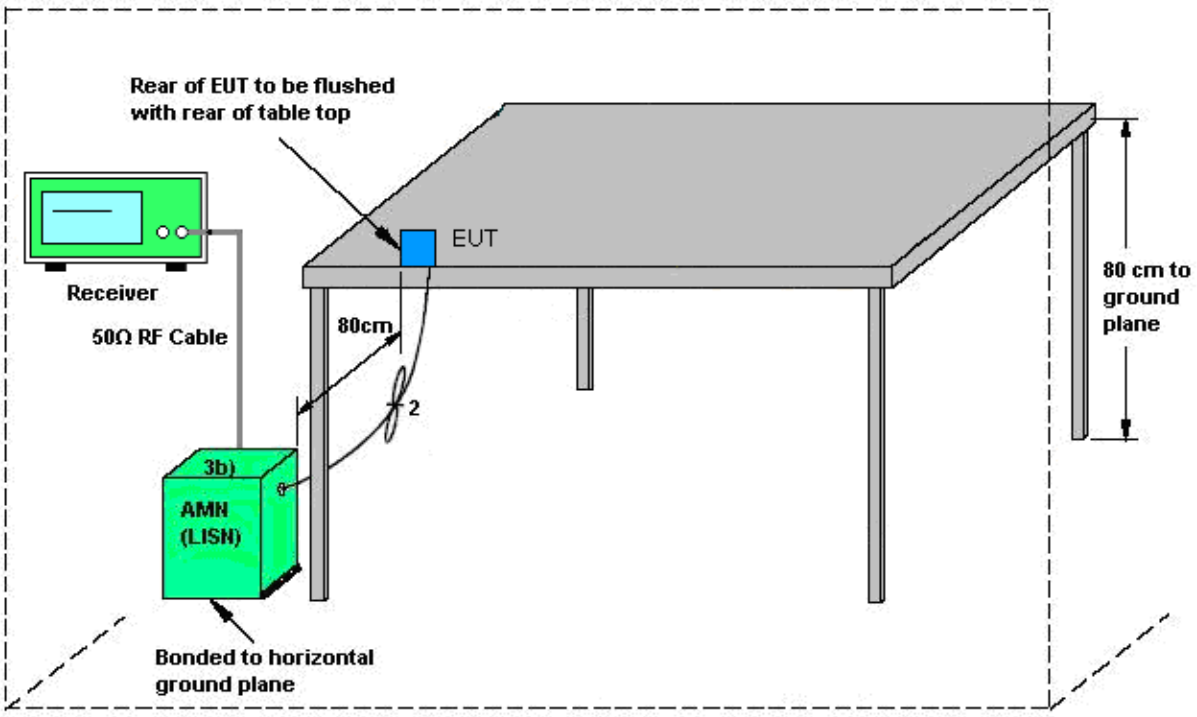
4.9.2 Measuring Instruments

See list of measuring instruments of this test report.

4.9.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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.

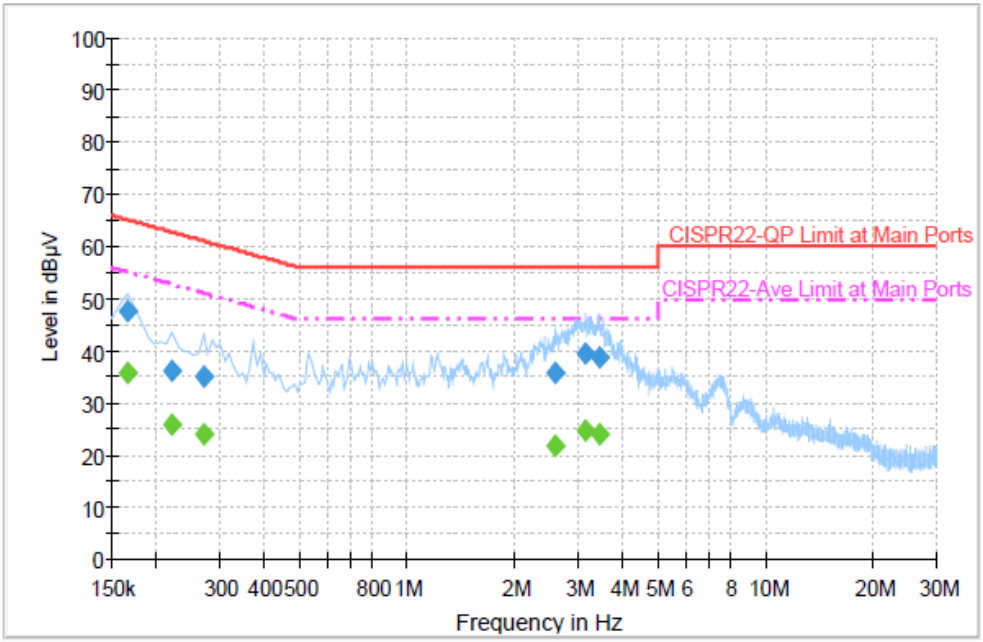
4.9.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

4.9.5 Test Result of AC Conducted Emission

Test Mode :	Mode 2	**Temperature :**	20~21℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	51~52%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN (5G) Link + Bluetooth Link + HDMI Cable + USB Cable (Charging from Adapter) + Earphone + MPEG4		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



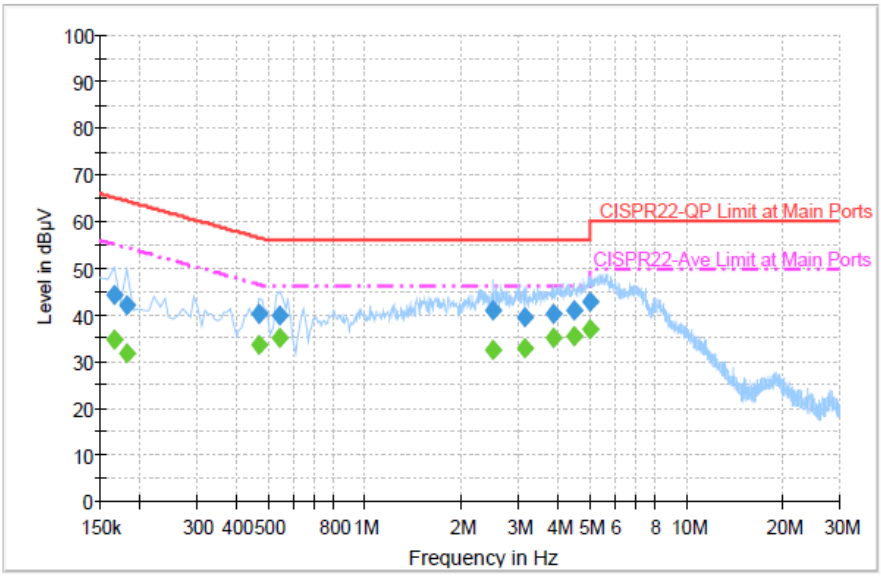
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.7	Off	L1	19.4	17.5	65.2
0.222000	36.2	Off	L1	19.4	26.5	62.7
0.270000	35.0	Off	L1	19.4	26.1	61.1
2.598000	36.0	Off	L1	19.4	20.0	56.0
3.142000	39.5	Off	L1	19.5	16.5	56.0
3.438000	38.9	Off	L1	19.5	17.1	56.0

Final Result : Average

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	35.8	Off	L1	19.4	19.4	55.2
0.222000	25.9	Off	L1	19.4	26.8	52.7
0.270000	24.1	Off	L1	19.4	27.0	51.1
2.598000	21.6	Off	L1	19.4	24.4	46.0
3.142000	24.9	Off	L1	19.5	21.1	46.0
3.438000	23.9	Off	L1	19.5	22.1	46.0

Test Mode :	Mode 2	**Temperature :**	20~21℃
Test Engineer :	Kai-Chun Chu	**Relative Humidity :**	51~52%
Test Voltage :	120Vac / 60Hz	**Phase :**	Neutral
Function Type :	WLAN (5G) Link + Bluetooth Link + HDMI Cable + USB Cable (Charging from Adapter) + Earphone + MPEG4		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	44.4	Off	N	19.4	20.8	65.2
0.182000	42.0	Off	N	19.4	22.4	64.4
0.470000	40.2	Off	N	19.4	16.3	56.5
0.542000	39.8	Off	N	19.4	16.2	56.0
2.502000	40.9	Off	N	19.5	15.1	56.0
3.142000	39.3	Off	N	19.5	16.7	56.0
3.870000	40.1	Off	N	19.5	15.9	56.0
4.462000	40.9	Off	N	19.5	15.1	56.0
4.998000	42.7	Off	N	19.5	13.3	56.0

Final Result : Average

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	34.8	Off	N	19.4	20.4	55.2
0.182000	31.9	Off	N	19.4	22.5	54.4
0.470000	33.7	Off	N	19.4	12.8	46.5
0.542000	34.9	Off	N	19.4	11.1	46.0
2.502000	32.4	Off	N	19.5	13.6	46.0
3.142000	32.9	Off	N	19.5	13.1	46.0
3.870000	35.1	Off	N	19.5	10.9	46.0
4.462000	35.3	Off	N	19.5	10.7	46.0
4.998000	37.1	Off	N	19.5	8.9	46.0

4.10 Radiated Emission Measurement

4.10.1 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. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. 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

4.10.2 Measuring Instruments

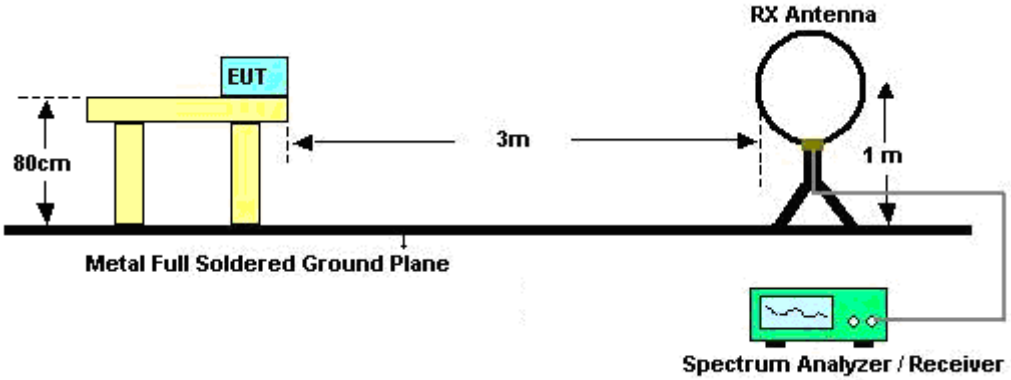
See list of measuring instruments of this test report.

4.10.3 Test Procedures

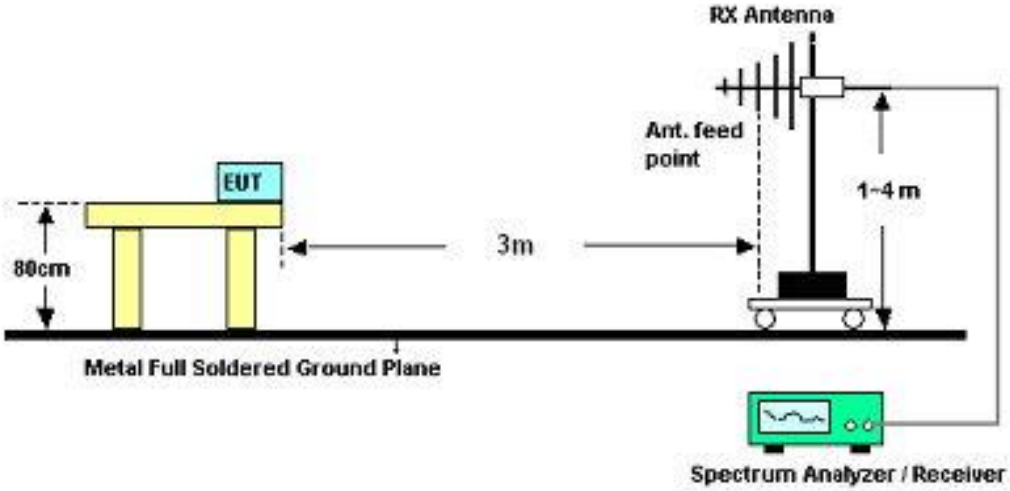
1. The testing follows the guidelines in ANSI C63.4-2003 and ANSI C63.10-2009 and FCC Public Notice DA 00-705 Measurement Guidelines.
2. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. 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; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 1MHz for f ≥ 1 GHz for Peak measurement, and then set VBW=10Hz, while maintaining all of the other instrument settings for Average measurement.
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
8. 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).
9. For average measurement: use duty cycle correction factor method.
   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)
   For example: Peak level = 64 dBuV/m, and duty cycle correction factor= -18dB. Average level= 64 + (-18) = 46 dBuV/m.

4.10.4 Test Setup

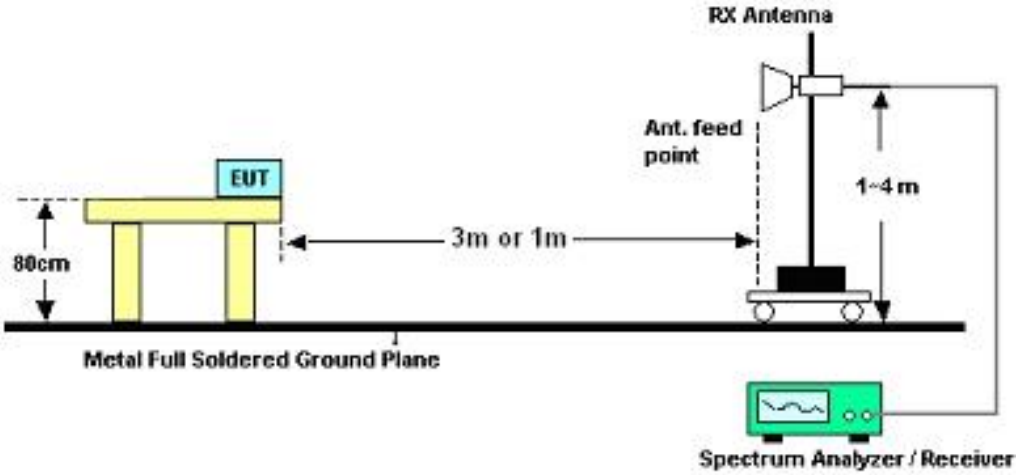
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

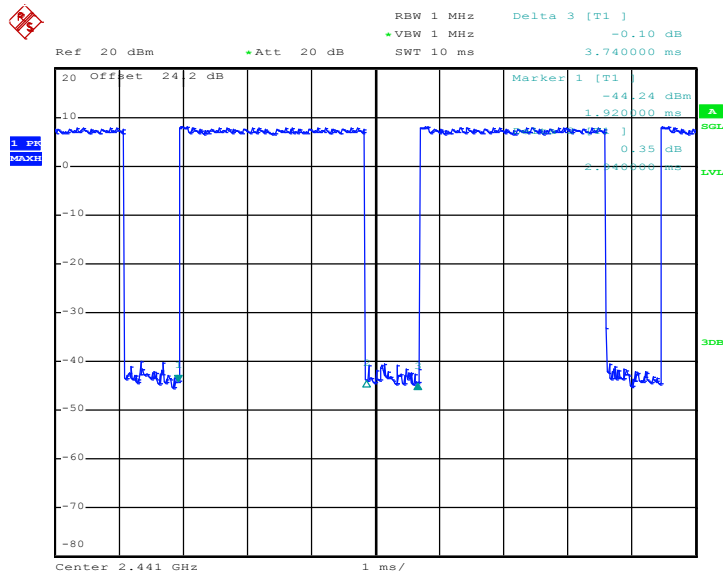


4.10.5 Test Results of Radiated Emissions (9KHz ~ 30MHz)

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.

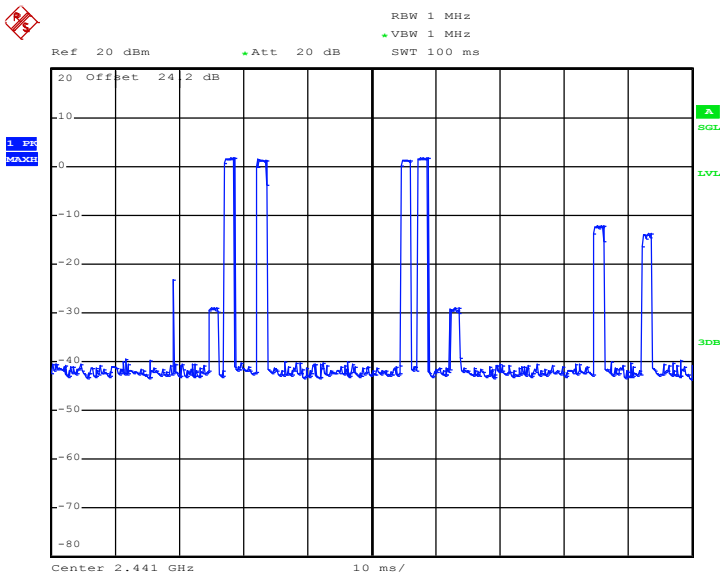
4.10.6 Duty cycle correction factor for average measurement

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



Date: 11.APR.2012 22:19:32

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



Date: 16.AUG.2012 18:36:17

Note: Duty cycle = on time/100 milliseconds = 4 * 2.94 / 100 = 11.76 %

Duty cycle correction factor = 20*log(Duty cycle) = -18.60 dB

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

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~25°C
Test Channel :	00	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 3078 MHz, 3141 MHz and 3201 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2389.8	27.65	-26.35	54	-	-	-	-	-	-	Average
2389.8	46.25	-27.75	74	42.12	32.06	6.03	33.96	103	143	Peak
2402	88.14	-	-	-	-	-	-	-	-	Average
2402	106.74	-	-	102.61	32.06	6.03	33.96	103	143	Peak
2486	25.98	-28.02	54	-	-	-	-	-	-	Average
2486	44.58	-29.42	74	40.22	32.18	6.18	34	103	143	Peak
3078	48.72	-38.02	86.74	69.26	32.71	6.93	60.18	100	0	Peak
3141	49.07	-37.67	86.74	69.58	32.73	7.03	60.27	100	0	Peak
3201	59.72	-27.02	86.74	80.12	32.74	7.19	60.33	100	0	Peak
4804	38.93	-15.07	54	-	-	-	-	-	-	Average
4804	57.53	-16.47	74	74.38	34.1	9.11	60.06	100	99	Peak

Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (18.6dB) derived from 20log (dwell time/100ms).

For example: Average level = 46.25dBuV/m - 18.6 (dB) = 27.65dBuV/m.

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~25°C
Test Channel :	00	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 2402 MHz is fundamental signal which can be ignored. 2. 3078 MHz, 3141 MHz and 3201 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2385.43	27.59	-26.41	54	-	-	-	-	-	-	Average
2385.43	46.19	-27.81	74	42.09	32.03	6.03	33.96	196	265	Peak
2402	85.81	-	-	-	-	-	-	-	-	Average
2402	104.41	-	-	100.28	32.06	6.03	33.96	196	265	Peak
2490	25.76	-28.24	54	-	-	-	-	-	-	Average
2490	44.36	-29.64	74	39.98	32.2	6.18	34	196	265	Peak
3078	46.34	-38.07	84.41	66.88	32.71	6.93	60.18	100	0	Peak
3141	43.56	-40.85	84.41	64.07	32.73	7.03	60.27	100	0	Peak
3201	51.41	-33	84.41	71.81	32.74	7.19	60.33	100	0	Peak
4804	34.81	-19.19	54	-	-	-	-	-	-	Average
4804	53.41	-20.59	74	70.26	34.1	9.11	60.06	100	273	Peak

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~25°C
Test Channel :	39	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 3207 MHz and 9764 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2312	26.52	-27.48	54	-	-	-	-	-	-	Average
2312	45.12	-28.88	74	41.2	31.93	5.92	33.93	197	141	Peak
2441	87.4	-	-	-	-	-	-	-	-	Average
2441	106	-	-	101.74	32.13	6.11	33.98	197	141	Peak
2484	26.69	-27.31	54	-	-	-	-	-	-	Average
2484	45.29	-28.71	74	40.93	32.18	6.18	34	197	141	Peak
3207	44.93	-41.07	86	65.35	32.74	7.19	60.35	100	0	Peak
3260	36.77	-17.23	54	-	-	-	-	-	-	Average
3260	55.37	-18.63	74	75.74	32.75	7.29	60.41	100	346	Peak
4882	40.64	-13.36	54	-	-	-	-	-	-	Average
4882	59.24	-14.76	74	75.78	34.1	9.14	59.78	102	338	Peak
9764	48.93	-37.07	86	60.63	36.79	11.93	60.42	100	0	Peak

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~25°C
Test Channel :	39	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 2441 MHz is fundamental signal which can be ignored. 2. 9764 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
2356	26.78	-27.22	54	-	-	-	-	-	-	Average
2356	45.38	-28.62	74	41.36	32.01	5.95	33.94	191	265	Peak
2441	85.07	-	-	-	-	-	-	-	-	Average
2441	103.67	-	-	99.41	32.13	6.11	33.98	191	265	Peak
2484	26.05	-27.95	54	-	-	-	-	-	-	Average
2484	44.65	-29.35	74	40.29	32.18	6.18	34	191	265	Peak
3260	49.47	-24.53	74	69.84	32.75	7.29	60.41	100	0	Peak
4882	35.2	-18.8	54	-	-	-	-	-	-	Average
4882	53.8	-20.2	74	70.34	34.1	9.14	59.78	100	87	Peak
9764	44.81	-38.86	83.67	56.51	36.79	11.93	60.42	100	0	Peak

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. 3207 MHz, 3306 MHz, and 9920 MHz are not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
130.17	31.25	-12.25	43.5	50.07	11.6	1.15	31.57	-	-	Peak
180.93	40.4	-3.1	43.5	61.43	8.91	1.25	31.19	131	102	Peak
238.71	40.85	-5.15	46	58.74	11.79	1.52	31.2	-	-	Peak
300.7	28.64	-17.36	46	44.8	13.33	1.77	31.26	-	-	Peak
389.6	31.59	-14.41	46	45.14	15.74	2.12	31.41	-	-	Peak
564.6	28.62	-17.38	46	37.88	19.19	2.59	31.04	-	-	Peak
2386	27.1	-26.9	54	-	-	-	-	-	-	Average
2386	45.7	-28.3	74	41.57	32.06	6.03	33.96	100	137	Peak
2480	86.68	-	-	-	-	-	-	-	-	Average
2480	105.28	-	-	100.92	32.18	6.18	34	100	137	Peak
2483.5	50.04	-3.96	54	-	-	-	-	-	-	Average
2483.5	68.64	-5.36	74	64.28	32.18	6.18	34	100	137	Peak
3207	45.85	-39.43	85.28	66.27	32.74	7.19	60.35	100	0	Peak
3306	52.3	-32.98	85.28	72.62	32.76	7.39	60.47	100	0	Peak
4960	38.02	-15.98	54	-	-	-	-	-	-	Average
4960	56.62	-17.38	74	72.8	34.1	9.16	59.44	100	335	Peak
9920	45.98	-39.3	85.28	57.68	37	11.84	60.54	100	0	Peak

Test Mode :	<BT> : 3Mbps	**Temperature :**	24~25°C
Test Channel :	78	**Relative Humidity :**	41~42%
Test Engineer :	Gavin Wu	**Polarization :**	Vertical
Remark :	1. 2480 MHz is fundamental signal which can be ignored. 2. 3306 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.		

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
48.9	32.01	-7.99	40	54.06	8.9	0.68	31.63	-	-	Peak
183.63	40.75	-2.75	43.5	61.8	8.93	1.26	31.24	100	319	QP
234.39	40.13	-5.87	46	58.32	11.52	1.5	31.21	-	-	Peak
304.2	28.04	-17.96	46	44.07	13.43	1.78	31.24	-	-	Peak
358.8	25.82	-20.18	46	40.28	14.9	2.05	31.41	-	-	Peak
582.8	25.87	-20.13	46	34.51	19.5	2.64	30.78	-	-	Peak
2358	26.17	-27.83	54	-	-	-	-	-	-	Average
2358	44.77	-29.23	74	40.72	32.01	5.99	33.95	194	262	Peak
2480	85.3	-	-	-	-	-	-	-	-	Average
2480	103.9	-	-	99.54	32.18	6.18	34	194	262	Peak
2483.5	48.76	-5.24	54	-	-	-	-	-	-	Average
2483.5	67.36	-6.64	74	63	32.18	6.18	34	194	262	Peak
3306	47.93	-35.97	83.9	68.25	32.76	7.39	60.47	100	0	Peak
4960	33.39	-20.61	54	-	-	-	-	-	-	Average
4960	51.99	-22.01	74	68.17	34.1	9.16	59.44	191	13	Peak

4.11 Antenna Requirements

4.11.1 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. F For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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.

4.11.2 Antenna Connected Construction

The antennas type used in this product is with non-standard connector and it is considered to meet antenna requirement.

4.11.3 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.

5 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. 13, 2011	Apr. 27, 2012~ Jun. 06, 2012	Jun. 12, 2012	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Jun. 06, 2012~ Jul. 11, 2012	Jun. 05, 2013	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100522	N/A	Feb. 09, 2012	Apr. 27, 2012~ Jun. 05, 2012	Feb. 08, 2014	Conducted (TH02-HY)
Bluetooth Base Station	R&S	CBT32	100519	N/A	Jun. 05, 2012	Jun. 05, 2012~ Jul. 11, 2012	Jun. 06, 2013	Conducted (TH02-HY)
EMI Test Receiver	R&S	ESCS 30	100356	9KHz ~ 2.75GHz	Oct. 27, 2011	May 14, 2012	Oct. 26, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz ~ 30MHz	Dec. 09, 2011	May 14, 2012	Dec. 08, 2012	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz ~ 30MHz	Dec. 06, 2011	May 14, 2012	Dec. 05, 2012	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	May 14, 2012	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 22, 2011	Apr. 12, 2012 ~ Jul. 10, 2012	Oct. 21, 2012	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP30	101067	9KHz ~ 30GHz	Dec. 06, 2011	Apr. 12, 2012 ~ Aug. 17, 2012	Dec. 05, 2012	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 10, 2011	Apr. 12, 2012 ~ Aug. 17, 2012	Aug. 09, 2012	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz ~ 26.5GHz	Dec. 05, 2011	Apr. 12, 2012 ~ Aug. 17, 2012	Dec. 04, 2012	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Feb. 27, 2012	Apr. 12, 2012 ~ Aug. 17, 2012	Feb. 26, 2013	Radiation (03CH07-HY)
EMI TEST RECEIVER	R&S	ESCI 7	100724	9kHz ~ 7GHz	Aug. 22, 2011	Apr. 12, 2012 ~ Aug. 17, 2012	Aug. 21, 2012	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-00101800-30-10P	159088	1GHz ~ 18GHz	Mar. 10, 2012	Apr. 12, 2012 ~ Aug. 17, 2012	Mar. 09, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 21, 2011	Apr. 12, 2012 ~ Aug. 17, 2012	Oct. 20, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Apr. 12, 2012 ~ Jul. 10, 2012	Jul. 28, 2012	Radiation (03CH07-HY)

6 Uncertainty of Evaluation

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

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

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**