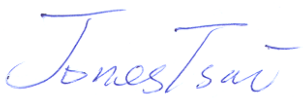
FCC RF Test Report

APPLICANT	:	**Quanta Computer Inc.**
EQUIPMENT	:	**Clover Station 1.0**
BRAND NAME	:	**Clover**
MODEL NUMBER	:	**P100/C101**
FCC ID	:	**HFS-CS101**
STANDARD	:	**FCC Part 15 Subpart C §15.247**
CLASSIFICATION	:	**(DTS) Digital Transmission System**

The product was received on Oct. 05, 2013 and testing was completed on Nov. 25, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant 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: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager

Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR3O0501B	Rev. 01	Initial issue of report	Nov. 25, 2013
FR3O0501B	Rev. 02	Revising EUT supports radios application of Bluetooth in section 1.3.	Nov. 26, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(2)	RSS-210 A8.2(a)	6dB Bandwidth	≥ 0.5MHz	Pass	-
3.1	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	RSS-210 A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.3	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	≤ 8dBm/3kHz	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges	≤ 20dBc	Pass	-
			Conducted Spurious Emission		Pass	-
3.5	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.07 dB at 2389.830 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 5.10 dB at 0.166 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Quanta Computer Inc.
211, Wen Hwa 2nd Rd., Kuei Shan, Tao Yuan 33377, Taiwan

1.2 Manufacturer

Quanta Computer Inc.
211, Wen Hwa 2nd Rd., Kuei Shan, Tao Yuan 33377, Taiwan

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Clover Station 1.0
Brand Name	Clover
Model Number	P100/C101
FCC ID	HFS-CS101
EUT supports Radios application	GSM/EGPRS/WCDMA/HSDPA WLAN 11b/g/n (HT20), WLAN 11a/n (HT20/HT40) Bluetooth v3.0+EDR
HW Version	D
SW Version	S/W: shipping image: 148, factory image: 20E09.
EUT Stage	Identical Prototype

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

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n: 5745~5825MHz.
Maximum Output Power to antenna	**<2412 MHz ~ 2462 MHz >** **<Ant. 1>** 802.11b : 17.60 dBm (0.0575 W) 802.11g : 20.85 dBm (0.1216 W) 802.11n HT20 : 20.63 dBm (0.1156 W) **<Ant. 2>** 802.11b : 17.80 dBm (0.0603 W) 802.11g : 21.38 dBm (0.1374 W) 802.11n HT20 : 21.23 dBm (0.1327 W) **<MIMO Ant. 1+2>** 802.11n HT20 : 23.92 dBm (0.2466 W) **<5745 MHz ~ 5825 MHz >** **<Ant. 1>** 802.11a : 22.76 dBm (0.1888 W) 802.11n HT20 : 22.19 dBm (0.1656 W) 802.11n HT40 : 21.38 dBm (0.1374 W) **<Ant. 2>** 802.11a : 21.67 dBm (0.1469 W) 802.11n HT20 : 21.35 dBm (0.1365 W) 802.11n HT40 : 20.99 dBm (0.1256 W) **<MIMO Ant. 1+2>** 802.11n HT20 : 24.74 dBm (0.2979 W) 802.11n HT40 : 24.08 dBm (0.2559 W)

<table>
<tr><th colspan="2">Product Specification subjective to this standard</th></tr>
<tr><td>Antenna Type</td><td><Ant .1>
802.11b/g/n : PCB Antenna type with gain 4.39 dBi
802.11a/n : PCB Antenna type with gain 2.76 dBi
<Ant. 2>
802.11b/g/n : PIFA Antenna type with gain 3.12 dBi
802.11a/n : PIFA Antenna type with gain 3.79 dBi</td></tr>
<tr><td>Type of Modulation</td><td>802.11b : DSSS (DBPSK / DQPSK / CCK)
802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)</td></tr>
<tr><td>Antenna Function for Transmitter</td><td>
<table>
<tr><td></td><td>Chain
Port 0
Ant. 1</td><td>Chain
Port 1
Ant. 2</td></tr>
<tr><td>802.11 b</td><td>V</td><td>V</td></tr>
<tr><td>802.11 g</td><td>V</td><td>V</td></tr>
<tr><td>802.11 a</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n SISO</td><td>V</td><td>V</td></tr>
<tr><td>802.11 n MIMO</td><td>V</td><td>V</td></tr>
</table>
</td></tr>
</table>

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978			
Test Site No.	Sporton Site No.			FCC/IC Registration No.
	TH02-HY	CO05-HY	03CH07-HY	722060/4086B-1

Note: The test site complies with ANSI C63.4 2003 requirement.

1.7 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 KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- ANSI C63.4-2003

Remark:

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

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals 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) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y Plane for 2.4GHz and Z Plane for 5GHz) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency and Channel

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		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4	149	5745	159	5795
	151	5755	161	5805
	153	5765	165	5825
	157	5785	-	-

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

<Ant. 1>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.80	17.06	16.99	16.91

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	20.85	20.84	20.83	20.84	20.62	20.60	20.71	20.73

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	20.63	20.58	20.57	20.61	20.60	20.62	20.61	20.62

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	22.76	22.65	22.61	22.56	22.59	22.59	22.57	22.56

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.19	21.86	22.01	21.99	21.75	22.03	21.99	21.86

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.38	21.32	21.20	21.35	20.76	21.37	21.29	20.98

<Ant. 2>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	17.60	17.07	17.14	17.16

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.38	21.36	21.35	21.33	21.34	21.32	21.31	21.25

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.23	21.16	21.17	21.01	21.21	21.20	21.20	21.21

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.67	21.66	21.65	21.66	21.64	21.64	21.65	21.63

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.35	21.07	21.23	21.21	21.06	21.25	21.29	21.29

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	20.99	20.87	20.81	20.97	20.50	20.96	20.77	20.83

MIMO <Ant. 1+2>

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	23.92	23.89	23.69	23.90	23.74	23.87	23.80	23.89

5GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	24.74	24.52	24.69	24.54	24.50	24.50	24.56	24.52

5GHz 802.11n HT40								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	24.08	24.07	24.03	23.77	23.79	23.91	23.71	23.97

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

2.3 Test Mode

Final results of test modes, data rates and test channels are shown as following table.

<2.4GHz>

Test Cases				
	Test Items	**Mode**	**Data Rate**	**Test Channel**
Conducted TCs	**6dB and 99% BW Power Spectral Density**	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20 SISO	**MCS0**	**1/6/11**
		802.11n HT20 MIMO	**MCS8**	**1/6/11**
	Output Power	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20 SISO	**MCS0**	**1/6/11**
		802.11n HT20 MIMO	**MCS8**	**1/6/11**
	Conducted Band Edge	**802.11b**	**1 Mbps**	**1/11**
		802.11g	**6 Mbps**	**1/11**
		802.11n HT20 SISO	**MCS0**	**1/6/11**
		802.11n HT20 MIMO	**MCS8**	**1/6/11**
	Conducted Spurious Emission	**802.11b**	**1 Mbps**	**1/6/11**
		802.11g	**6 Mbps**	**1/6/11**
		802.11n HT20 SISO	**MCS0**	**1/6/11**
		802.11n HT20 MIMO	**MCS8**	**1/6/11**

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20 SISO	MCS0	1
		802.11n HT20 MIMO	MCS8	1/6/11
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20 SISO	MCS0	1
		802.11n HT20 MIMO	MCS8	1/6/11

<5GHz>

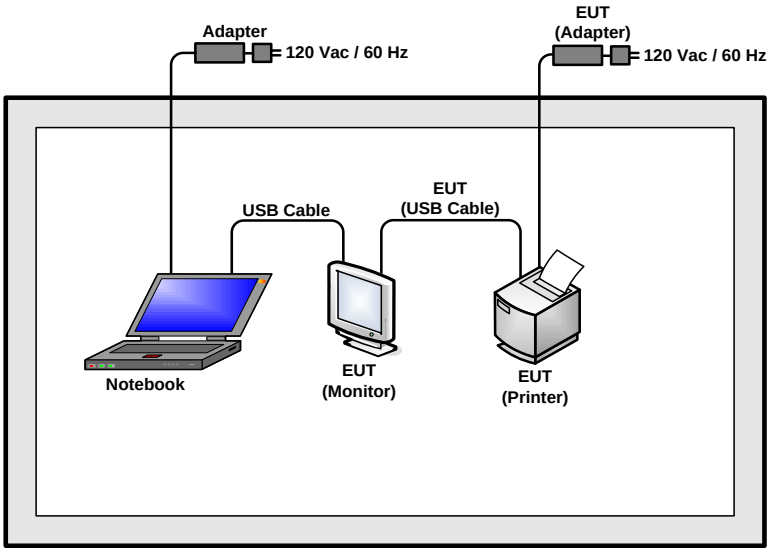
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	6dB and 99% BW Power Spectral Density	802.11a	6 Mbps	149/157/165
		802.11n HT20 SISO	MCS0	149/157/165
		802.11n HT20 MIMO	MCS8	149/157/165
		802.11n HT40 SISO	MCS0	151/159
		802.11n HT40 MIMO	MCS8	151/159
	Output Power	802.11a	6 Mbps	149/157/165
		802.11n HT20 SISO	MCS0	149/157/165
		802.11n HT20 MIMO	MCS8	149/157/165
		802.11n HT40 SISO	MCS0	151/159
		802.11n HT40 MIMO	MCS8	151/159
	Conducted Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20 SISO	MCS0	149/157/165
		802.11n HT20 MIMO	MCS8	149/157/165
		802.11n HT40 SISO	MCS0	151/159
		802.11n HT40 MIMO	MCS8	151/159

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	Conducted Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20 SISO	MCS0	149/157/165
		802.11n HT20 MIMO	MCS8	149/157/165
		802.11n HT40 SISO	MCS0	151/159
		802.11n HT40 MIMO	MCS8	151/159
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20 SISO	MCS0	157
		802.11n HT20 MIMO	MCS8	149/157/165
		802.11n HT40 MIMO	MCS8	151/159
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20 SISO	MCS0	157
		802.11n HT20 MIMO	MCS8	149/157/165
		802.11n HT40 MIMO	MCS8	151/159

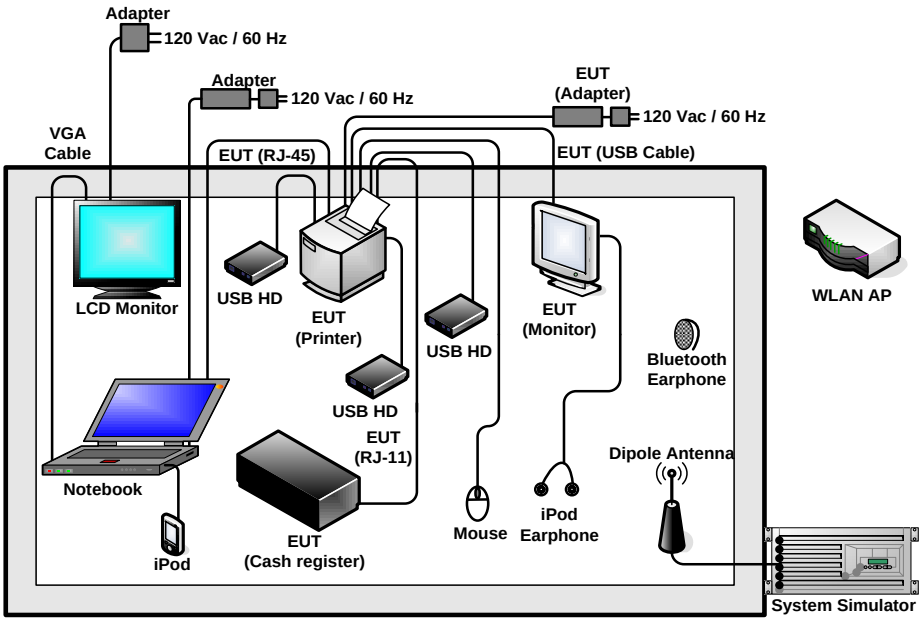
Test Cases	
AC Conducted Emission	Mode 1 : WCDMA Band II Idle + WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 + TC + Print + Adapter 1
Remark: TC stands for Test Configuration, and consists of Mouse, USB HD(Load), iPod Earphone, RJ-45 Link, and RJ-11(Load with cash register).	

2.4 Connection Diagram of Test System

< WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	USB HD	WD	WDBAAR3200ABK-PESN	FCC DoC	Unshielded, 0.5 m	N/A
5.	(USB) Mouse	Genius	Traveier 515 Laser	FCC DoC	Shielded, 1.3 m	N/A
6.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.2 m	N/A
7.	Notebook	DELL	Latitude E6320	FCC DoC	Unshielded, 3.0 m	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
8.	Notebook	DELL	P20G	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
9.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
10.	iPod	Apple	A1285	FCC DoC	Unshielded, 1.0 m	N/A
11.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m

2.6 EUT Operation Test Setup

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

2.7 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 6dB and 99% Bandwidth Measurement

3.1.1 Limit of 6dB and 99% Bandwidth

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

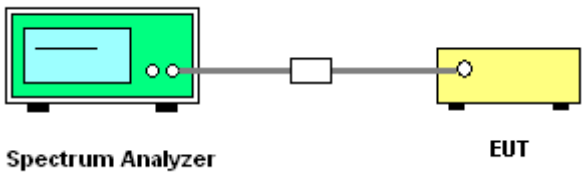
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 1MHz and set the Video bandwidth (VBW) = 3MHz.
6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

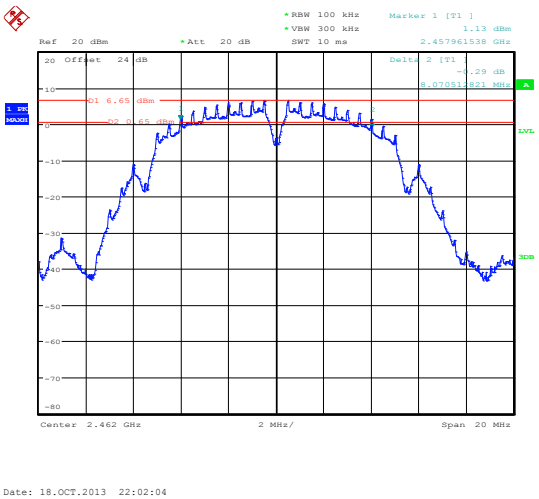
Test Band :	2.4GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)		6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant. 1	Ant. 2	Ant. 1	Ant. 2		
11b	1Mbps	1	1	2412	11.15	-	8.08	-	0.50	Pass
11b	1Mbps	1	6	2437	11.10	-	8.08	-	0.50	Pass
11b	1Mbps	1	11	2462	11.15	-	8.07	-	0.50	Pass
11g	6Mbps	1	1	2412	-	17.20	-	15.64	0.50	Pass
11g	6Mbps	1	6	2437	-	17.20	-	15.54	0.50	Pass
11g	6Mbps	1	11	2462	-	17.30	-	15.45	0.50	Pass
HT20	MCS0	1	1	2412	-	18.05	-	15.44	0.50	Pass
HT20	MCS0	1	6	2437	-	17.95	-	15.78	0.50	Pass
HT20	MCS0	1	11	2462	-	18.05	-	15.71	0.50	Pass
HT20	MCS0	2	1	2412	18.15	18.05	15.32	16.31	0.50	Pass
HT20	MCS0	2	6	2437	18.05	18.05	15.82	16.30	0.50	Pass
HT20	MCS0	2	11	2462	18.15	18.05	15.69	16.53	0.50	Pass

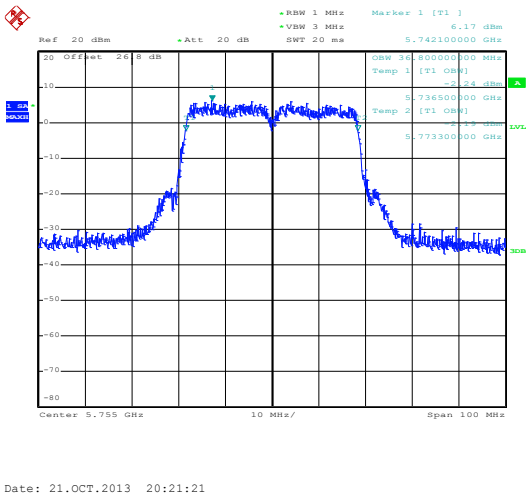
Test Band :	5GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)		6dB Bandwidth (MHz)		6dB Bandwidth Min. Limit (MHz)	Pass/Fail
					Ant. 1	Ant. 2	Ant. 1	Ant. 2		
11a	6Mbps	1	149	5745	17.10	-	15.46	-	0.50	Pass
11a	6Mbps	1	157	5785	17.10	-	15.64	-	0.50	Pass
11a	6Mbps	1	165	5825	17.20	-	15.44	-	0.50	Pass
HT20	MCS0	1	149	5745	17.95	-	15.82	-	0.50	Pass
HT20	MCS0	1	157	5785	18.00	-	15.80	-	0.50	Pass
HT20	MCS0	1	165	5825	17.95	-	15.80	-	0.50	Pass
HT40	MCS0	1	151	5755	36.80	-	36.16	-	0.50	Pass
HT40	MCS0	1	159	5795	36.70	-	36.32	-	0.50	Pass
HT20	MCS0	2	149	5745	17.90	17.85	15.88	16.32	0.50	Pass
HT20	MCS0	2	157	5785	18.00	18.00	16.00	16.30	0.50	Pass
HT20	MCS0	2	165	5825	17.90	18.00	15.68	16.28	0.50	Pass
HT40	MCS0	2	151	5755	36.70	36.70	36.00	36.32	0.50	Pass
HT40	MCS0	2	159	5795	36.70	36.60	36.32	36.32	0.50	Pass

Minimum 6dB Bandwidth



Maximum 99% Occupied Bandwidth



3.2 Peak Output Power Measurement

3.2.1 Limit of Peak 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 with directional gain greater than 6dBi is 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.

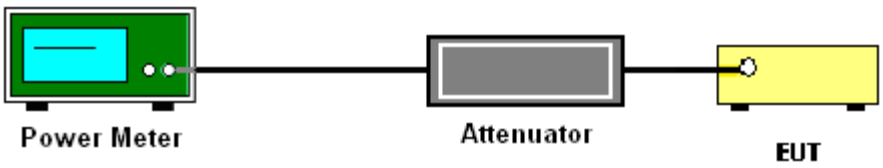
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.2.4 Test Setup



3.2.5 Test Result of Peak Output Power

Test Band :	2.4GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Max. Limit (dBm)		DG (dBi)		Pass/Fail
					Ant. 1	Ant. 2	SUM	Ant. 1	Ant. 2	Ant. 1	Ant. 2	
11b	1Mbps	1	1	2412	17.80	17.47		30.00	30.00	4.39	3.12	Pass
11b	1Mbps	1	6	2437	17.53	17.60		30.00	30.00	4.39	3.12	Pass
11b	1Mbps	1	11	2462	17.33	17.52		30.00	30.00	4.39	3.12	Pass
11g	6Mbps	1	1	2412	20.46	21.20		30.00	30.00	4.39	3.12	Pass
11g	6Mbps	1	6	2437	20.66	21.31	-	30.00	30.00	4.39	3.12	Pass
11g	6Mbps	1	11	2462	20.85	21.38		30.00	30.00	4.39	3.12	Pass
HT20	MCS0	1	1	2412	19.95	20.03		30.00	30.00	4.39	3.12	Pass
HT20	MCS0	1	6	2437	20.45	21.07		30.00	30.00	4.39	3.12	Pass
HT20	MCS0	1	11	2462	20.63	21.23		30.00	30.00	4.39	3.12	Pass
HT20	MCS0	2	1	2412	20.58	20.52	23.56	29.21		6.79		Pass
HT20	MCS0	2	6	2437	20.22	20.79	23.52	29.21		6.79		Pass
HT20	MCS0	2	11	2462	20.51	21.27	23.92	29.21		6.79		Pass

Note: Measured power (dBm) has offset with cable loss.

Test Band :	5GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Max. Limit (dBm)		DG (dBi)		Pass/Fail
					Ant. 1	Ant. 2	Worst +10log(2)	Ant. 1	Ant. 2	Ant. 1	Ant. 2	
11a	6Mbps	1	149	5745	22.76	21.28	-	30.00	30.00	2.76	3.79	Pass
11a	6Mbps	1	157	5785	22.42	21.57		30.00	30.00	2.76	3.79	Pass
11a	6Mbps	1	165	5825	22.52	21.67		30.00	30.00	2.76	3.79	Pass
HT20	MCS0	1	149	5745	22.19	21.13		30.00	30.00	2.76	3.79	Pass
HT20	MCS0	1	157	5785	21.94	21.27		30.00	30.00	2.76	3.79	Pass
HT20	MCS0	1	165	5825	22.04	21.35		30.00	30.00	2.76	3.79	Pass
HT40	MCS0	1	151	5755	21.38	20.77		30.00	30.00	2.76	3.79	Pass
HT40	MCS0	1	159	5795	21.15	20.99		30.00	30.00	2.76	3.79	Pass
HT20	MCS0	2	149	5745	22.31	20.69	24.59	29.70		6.30		Pass
HT20	MCS0	2	157	5785	22.03	20.90	24.51	29.70		6.30		Pass
HT20	MCS0	2	165	5825	22.24	21.14	24.74	29.70		6.30		Pass
HT40	MCS0	2	151	5755	21.72	20.13	24.01	29.70		6.30		Pass
HT40	MCS0	2	159	5795	21.65	20.40	24.08	29.70		6.30		Pass

Note: Measured power (dBm) has offset with cable loss.

3.2.6 Test Result of Average output Power (Reporting Only)

Test Band :	2.4GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant. 1	Ant. 2	Ant. 1	Ant. 2	Sum Power
11b	1Mbps	1	1	2412	0.04	0.04	13.84	13.76	
11b	1Mbps	1	6	2437	0.04	0.04	13.76	14.08	
11b	1Mbps	1	11	2462	0.04	0.04	13.59	13.81	
11g	6Mbps	1	1	2412	0.20	0.20	11.00	11.20	
11g	6Mbps	1	6	2437	0.20	0.20	11.20	11.34	-
11g	6Mbps	1	11	2462	0.20	0.20	11.23	11.44	
HT20	MCS0	1	1	2412	0.22	0.22	11.01	10.59	
HT20	MCS0	1	6	2437	0.22	0.22	11.06	11.08	
HT20	MCS0	1	11	2462	0.22	0.22	11.11	11.30	
HT20	MCS0	2	1	2412	0.42	0.42	11.11	10.76	13.95
HT20	MCS0	2	6	2437	0.42	0.42	11.04	11.03	14.05
HT20	MCS0	2	11	2462	0.42	0.42	11.14	11.40	14.28

Note: Measured power (dBm) has offset with cable loss and duty factor.

Test Band :	5GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)		
					Ant. 1	Ant. 2	Ant. 1	Ant. 2	Sum Power
11a	6Mbps	1	149	5745	0.20	0.21	14.00	13.61	-
11a	6Mbps	1	157	5785	0.20	0.21	13.97	14.01	
11a	6Mbps	1	165	5825	0.20	0.21	13.98	14.09	
HT20	MCS0	1	149	5745	0.22	0.22	11.68	11.55	
HT20	MCS0	1	157	5785	0.22	0.22	11.53	11.80	
HT20	MCS0	1	165	5825	0.22	0.22	11.58	11.92	
HT40	MCS0	1	151	5755	0.44	0.43	11.76	11.82	
HT40	MCS0	1	159	5795	0.44	0.43	11.58	12.09	
HT20	MCS0	2	149	5745	0.42	0.42	12.86	10.86	14.98
HT20	MCS0	2	157	5785	0.42	0.42	12.83	11.28	15.13
HT20	MCS0	2	165	5825	0.42	0.42	12.91	11.48	15.26
HT40	MCS0	2	151	5755	0.79	0.79	12.87	10.93	15.02
HT40	MCS0	2	159	5795	0.79	0.79	12.76	11.31	15.11

Note: Measured power (dBm) has offset with cable loss and duty factor.

3.3 Power Spectral Density Measurement

3.3.1 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.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
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.
6. Measure and record the results in the test report.
7. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

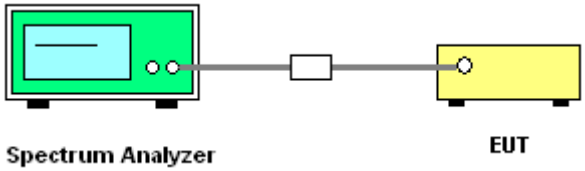
   If measurements performed using method (2) plus 10 log (N) exceeds the emission limit, the test should choose method (1) before declaring that the device fails the emission limit.

   Method (1): Measure and sum the spectra across the outputs.

   The total final Power Spectral Density is from a device with 2 transmitter outputs. The spectrum measurements of the individual outputs are all performed with the same span and number of points, the spectrum value in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 to obtain the value for the first frequency bin of the summed spectrum.

   Method (2): Measure and add 10 log (N) dB, where N is the number of outputs. (N=2)

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Band :	2.4GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Peak Power Density (dBm/3kHz)			Max. Limit (dBm/3kHz)		DG (dBi)		Pass/Fail
					Ant. 1	Ant. 2	Worst +10log(2)	Ant. 1	Ant. 2	Ant. 1	Ant. 2	
11b	1Mbps	1	1	2412	-6.09	-		8.00	8.00	4.39	3.12	Pass
11b	1Mbps	1	6	2437	-7.53	-		8.00	8.00	4.39	3.12	Pass
11b	1Mbps	1	11	2462	-7.60	-		8.00	8.00	4.39	3.12	Pass
11g	6Mbps	1	1	2412	-	-11.11		8.00	8.00	4.39	3.12	Pass
11g	6Mbps	1	6	2437	-	-11.69	-	8.00	8.00	4.39	3.12	Pass
11g	6Mbps	1	11	2462	-	-10.59		8.00	8.00	4.39	3.12	Pass
HT20	MCS0	1	1	2412	-	-11.56		8.00	8.00	4.39	3.12	Pass
HT20	MCS0	1	6	2437	-	-12.61		8.00	8.00	4.39	3.12	Pass
HT20	MCS0	1	11	2462	-	-10.99		8.00	8.00	4.39	3.12	Pass
HT20	MCS0	2	1	2422	-11.57	-10.77	-7.76	7.21		6.79		Pass
HT20	MCS0	2	6	2437	-12.64	-13.35	-9.63	7.21		6.79		Pass
HT20	MCS0	2	11	2452	-11.71	-12.03	-8.70	7.21		6.79		Pass

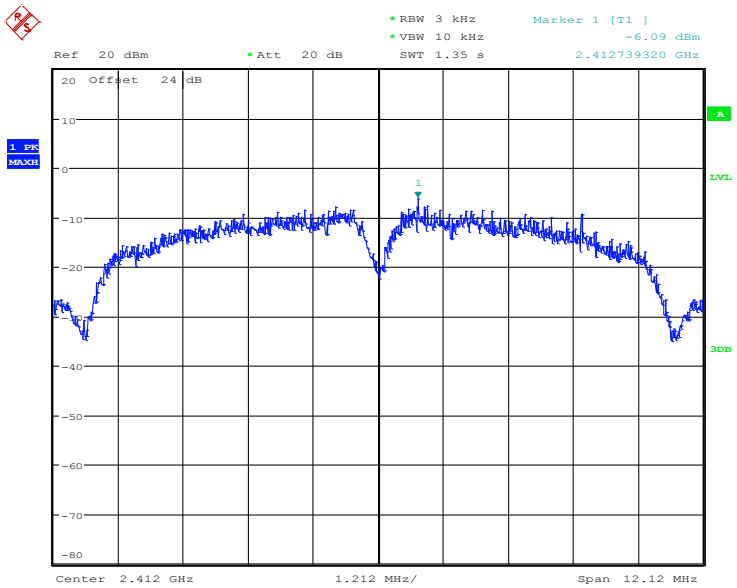
Note: Measured power density (dBm) has offset with cable loss.

Test Band :	5GHz	Temperature :	24~26℃
Test Engineer :	Book Lin	Relative Humidity :	45~49%

Mod.	Data Rate	N_{TX}	CH.	Freq. (MHz)	Peak Power Density (dBm/3kHz)			Max. Limit (dBm/3kHz)		DG (dBi)		Pass/Fail
					Ant. 1	Ant. 2	Worst +10log(2)	Ant. 1	Ant. 2	Ant. 1	Ant. 2	
11a	6Mbps	1	149	5745	-10.14	-	-	8.00	8.00	2.76	3.79	Pass
11a	6Mbps	1	157	5785	-10.93	-		8.00	8.00	2.76	3.79	Pass
11a	6Mbps	1	165	5825	-10.01	-		8.00	8.00	2.76	3.79	Pass
HT20	MCS0	1	149	5745	-12.53	-		8.00	8.00	2.76	3.79	Pass
HT20	MCS0	1	157	5785	-12.93	-		8.00	8.00	2.76	3.79	Pass
HT20	MCS0	1	165	5825	-12.56	-		8.00	8.00	2.76	3.79	Pass
HT40	MCS0	1	151	5755	-15.90	-		8.00	8.00	2.76	3.79	Pass
HT40	MCS0	1	159	5795	-14.25	-		8.00	8.00	2.76	3.79	Pass
HT20	MCS0	2	149	5745	-11.18	-10.91	-7.90	7.70		6.30		Pass
HT20	MCS0	2	157	5785	-11.05	-12.06	-8.04	7.70		6.30		Pass
HT20	MCS0	2	165	5825	-10.42	-11.75	-7.41	7.70		6.30		Pass
HT40	MCS0	2	151	5755	-14.55	-12.05	-9.04	7.70		6.30		Pass
HT40	MCS0	2	159	5795	-14.19	-11.79	-8.78	7.70		6.30		Pass

Note: Measured power density (dBm) has offset with cable loss.

Worst Case Power Density (dBm/3kHz)



3.4 Conducted Band Edges and Spurious Emission Measurement

3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

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).

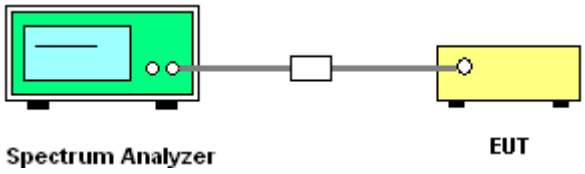
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.4.4 Test Setup



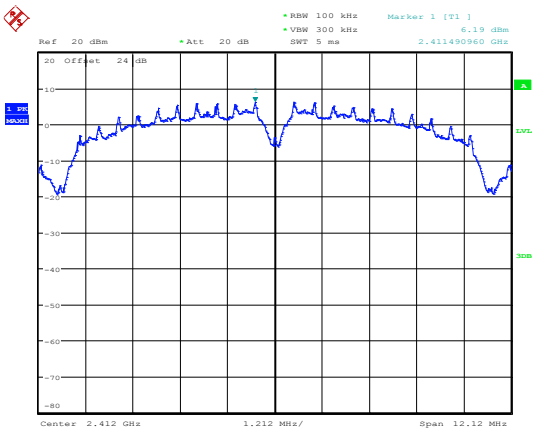
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Number of TX = 1, Ant. 1 (Measured)

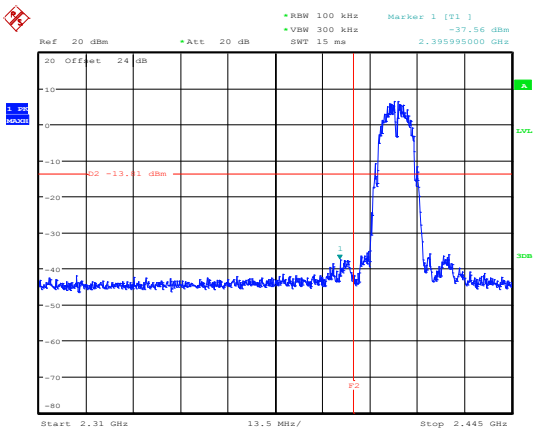
Number of TX	1	**Ant. :**	1
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	45~49%
Test Channel :	01	**Test Engineer :**	Book Lin

WLAN 802.11b Channel 01

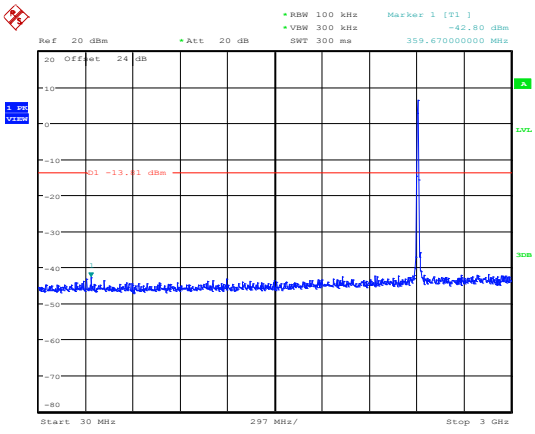
100kHz PSD reference Level



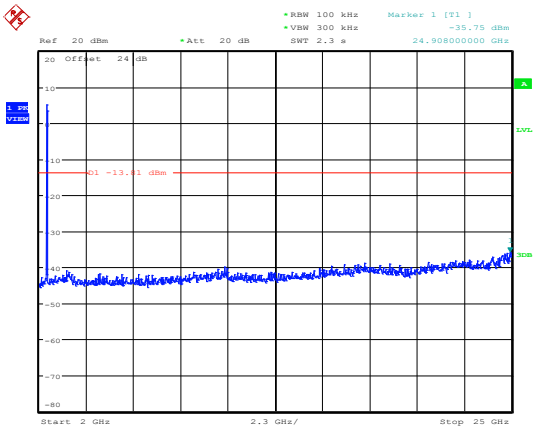
Low Channel Plot



Spurious Emission 30MHz~3GHz



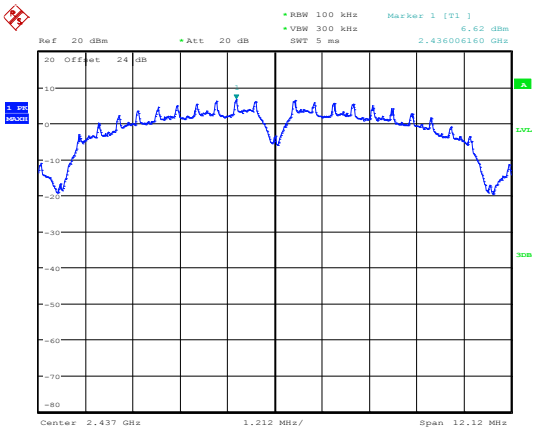
Spurious Emission 2GHz~25GHz



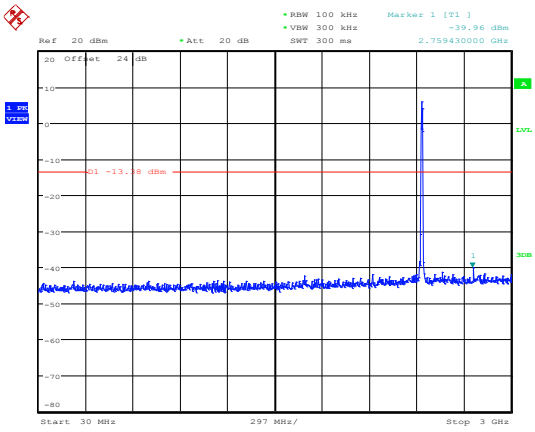
Number of TX :	1	**Ant. :**	1
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	06	**Test Engineer :**	Book Lin

WLAN 802.11b Channel 06

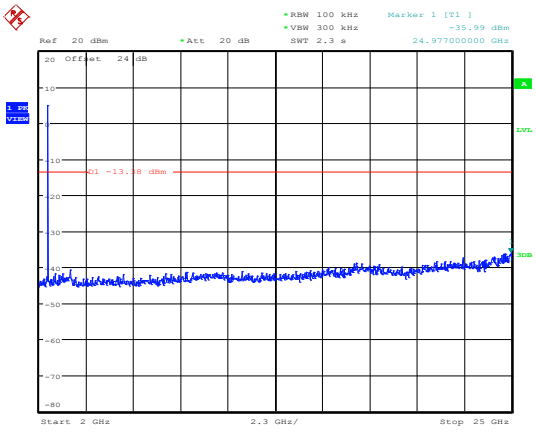
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



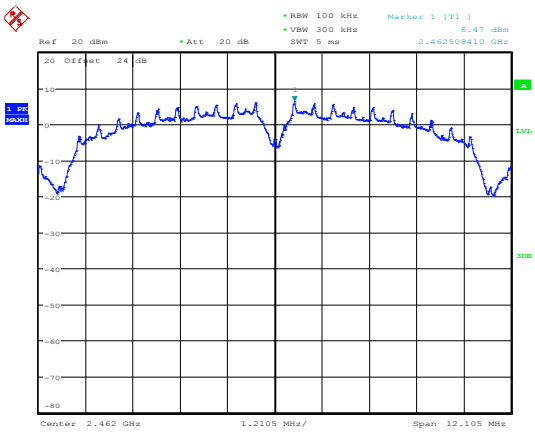
Spurious Emission 2GHz~25GHz



Number of TX :	1	**Ant. :**	1
Test Mode :	802.11b	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	45~49%
Test Channel :	11	**Test Engineer :**	Book Lin

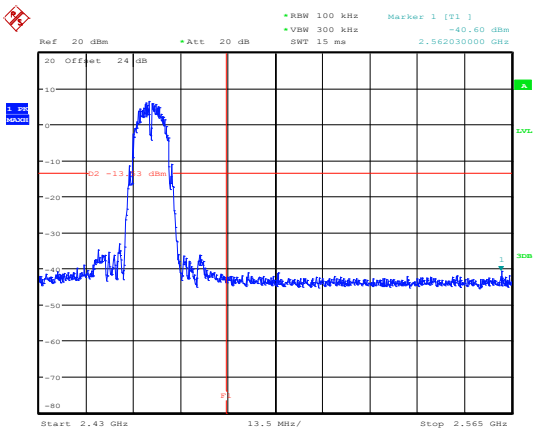
WLAN 802.11b Channel 11

100kHz PSD reference Level



Date: 18.OCT.2013 22:02:32

High Channel Plot



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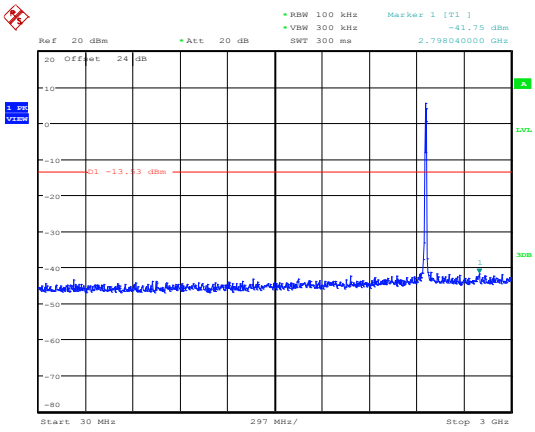
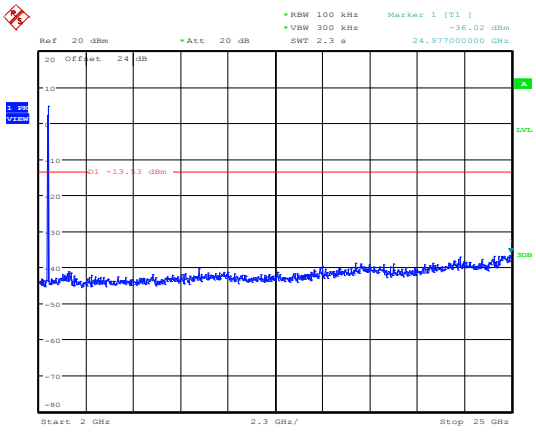
Spurious Emission 30MHz~3GHz



Date: 18.OCT.2013 22:03:03

Spurious Emission 2GHz~25GHz

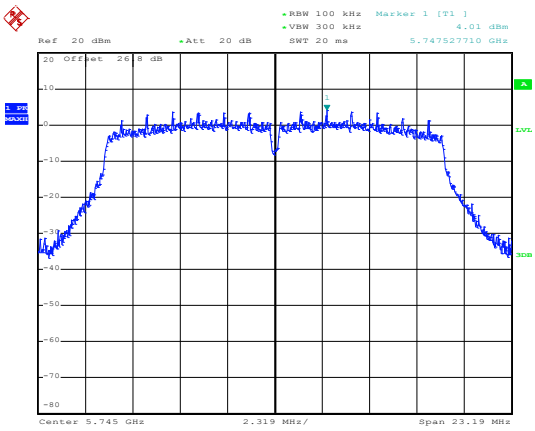


Date: 18.OCT.2013 22:03:21

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11a	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	149	**Test Engineer :**	Book Lin

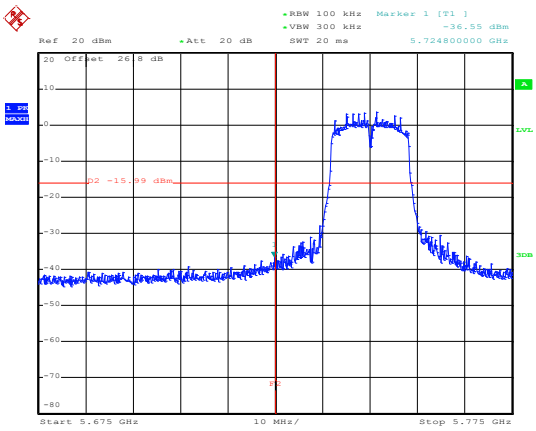
WLAN 802.11a Channel 149

100kHz PSD reference Level



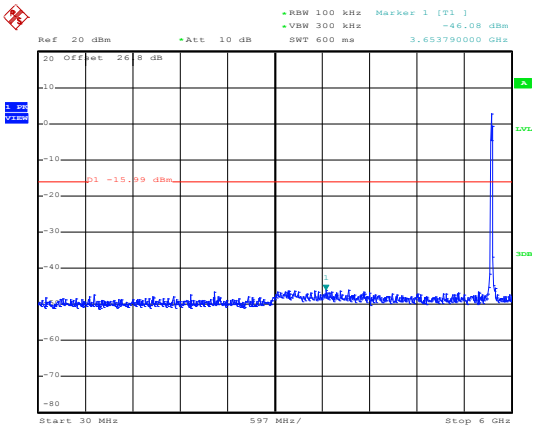
Date: 21.OCT.2013 17:29:09

Low Channel Plot



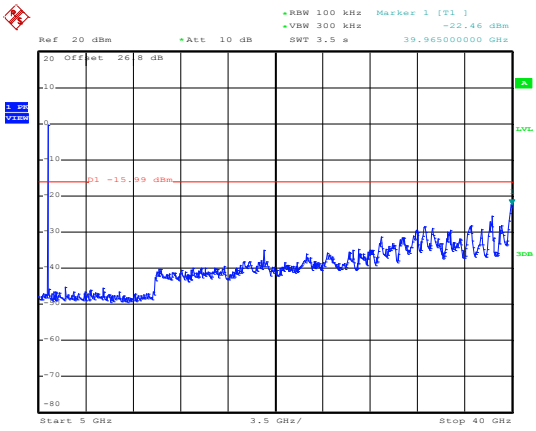
Date: 21.OCT.2013 17:29:25

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 17:31:48

Spurious Emission 5GHz~40GHz

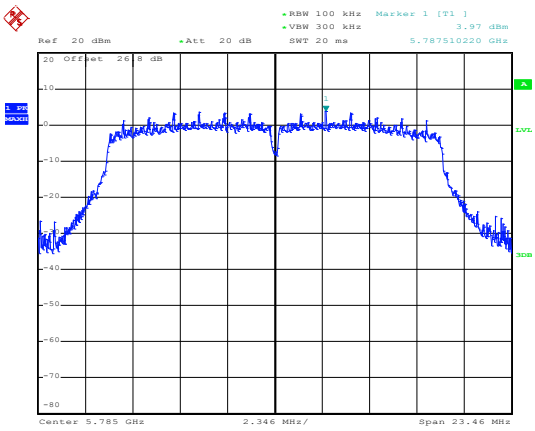


Date: 21.OCT.2013 17:32:07

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11a	**Temperature :**	24~26℃
Test Band :	5GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	157	**Test Engineer :**	Book Lin

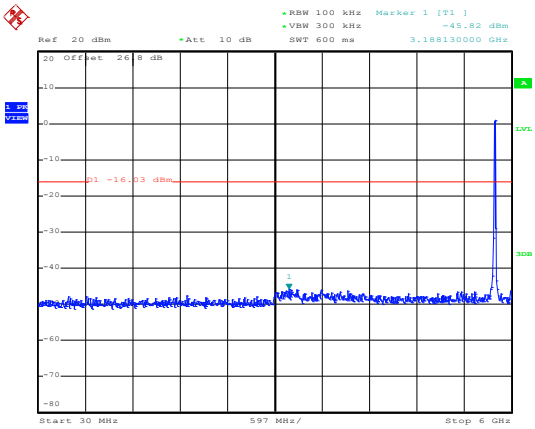
WLAN 802.11a Channel 157

100kHz PSD reference Level



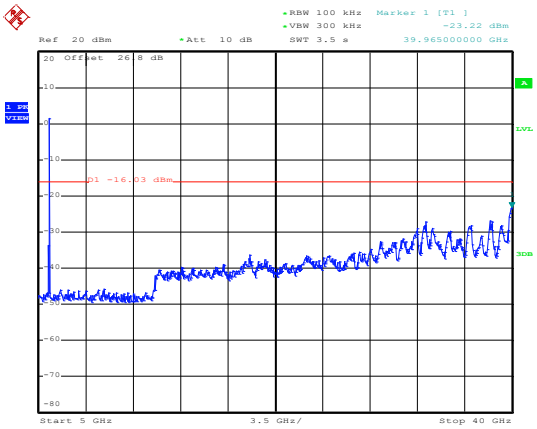
Date: 21.OCT.2013 17:35:43

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 17:36:18

Spurious Emission 5GHz~40GHz

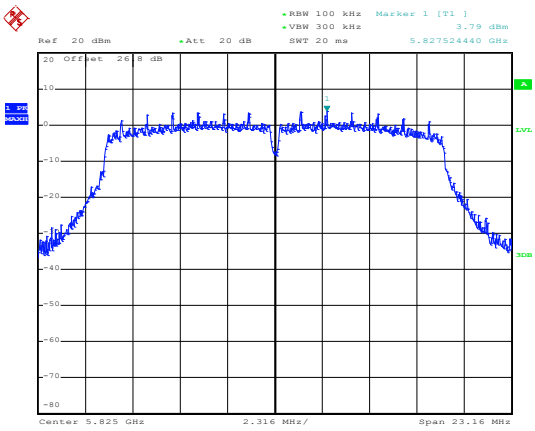


Date: 21.OCT.2013 17:36:37

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11a	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	165	**Test Engineer :**	Book Lin

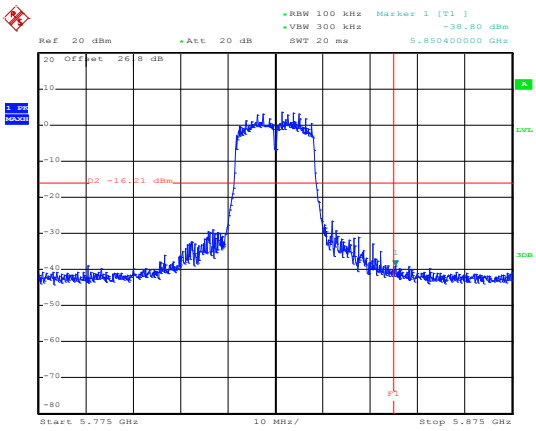
WLAN 802.11a Channel 165

100kHz PSD reference Level



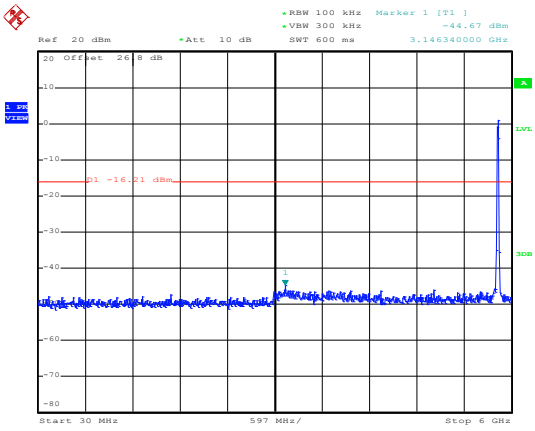
Date: 21.OCT.2013 17:40:05

High Channel Plot



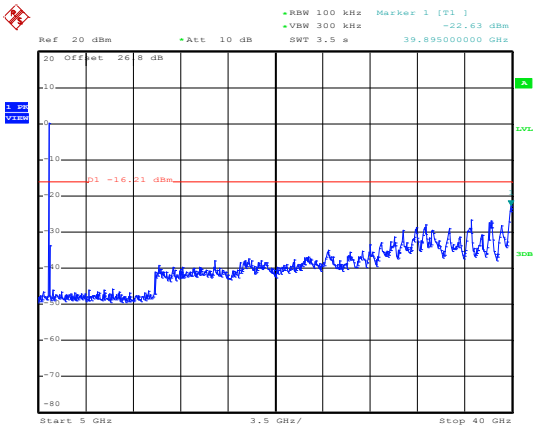
Date: 21.OCT.2013 17:40:47

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 17:41:16

Spurious Emission 5GHz~40GHz

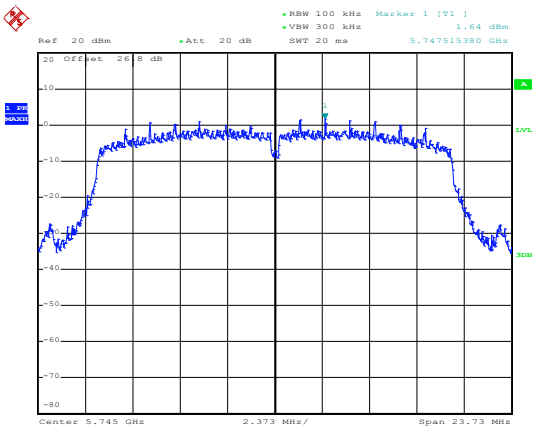


Date: 21.OCT.2013 17:41:34

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	149	**Test Engineer :**	Book Lin

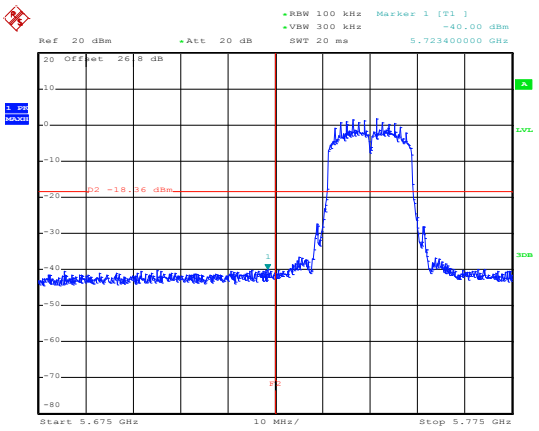
WLAN 802.11n HT20 Channel 149

100kHz PSD reference Level



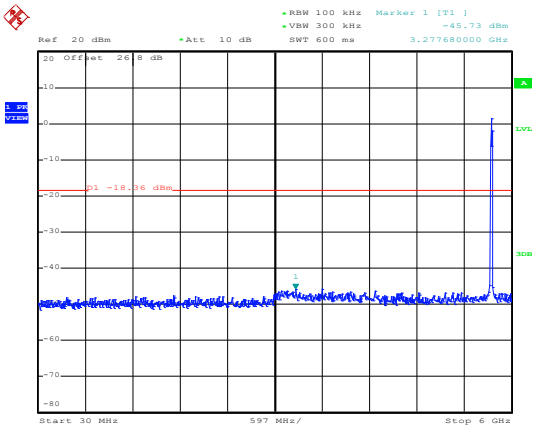
Date: 21.OCT.2013 19:05:25

Low Channel Plot



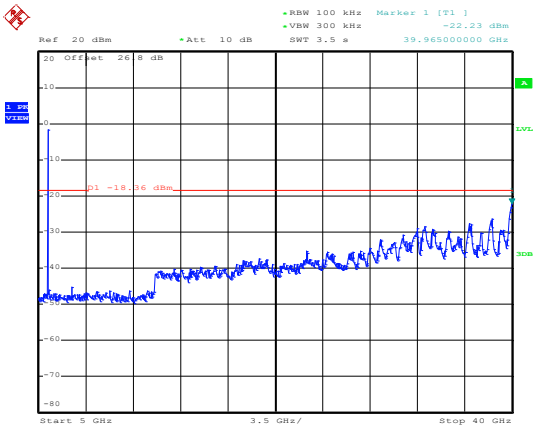
Date: 21.OCT.2013 19:05:39

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 19:05:58

Spurious Emission 5GHz~40GHz

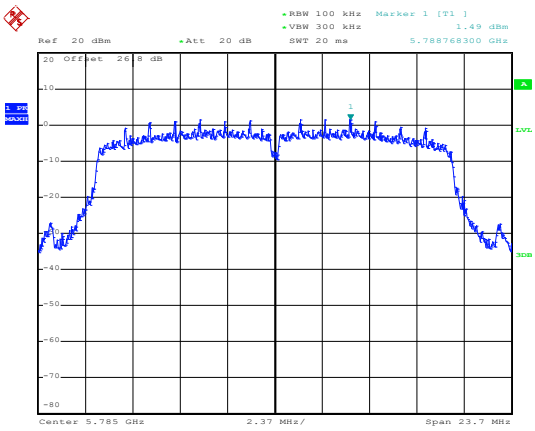


Date: 21.OCT.2013 19:06:17

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	157	**Test Engineer :**	Book Lin

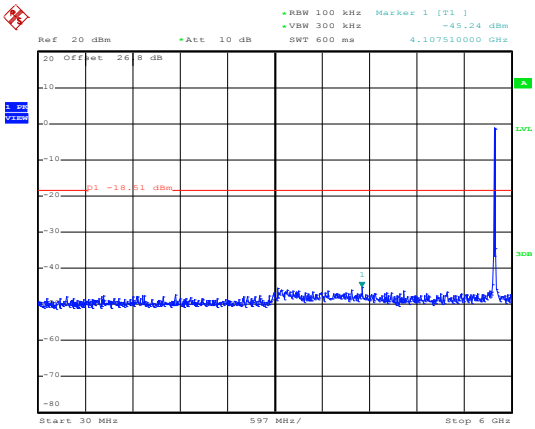
WLAN 802.11n HT20 Channel 157

100kHz PSD reference Level



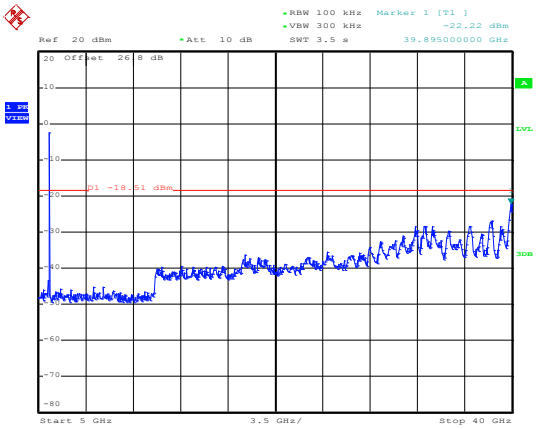
Date: 21.OCT.2013 19:14:56

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 19:15:15

Spurious Emission 5GHz~40GHz

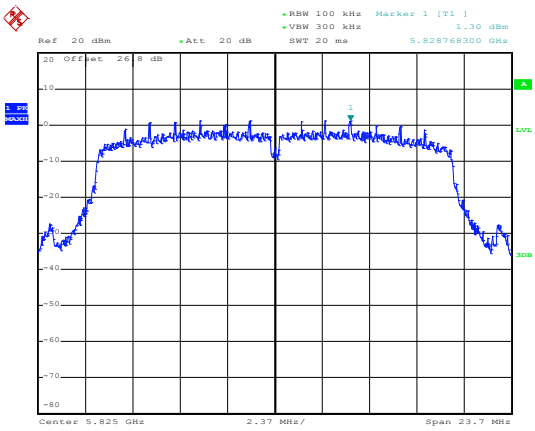


Date: 21.OCT.2013 19:15:34

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	165	**Test Engineer :**	Book Lin

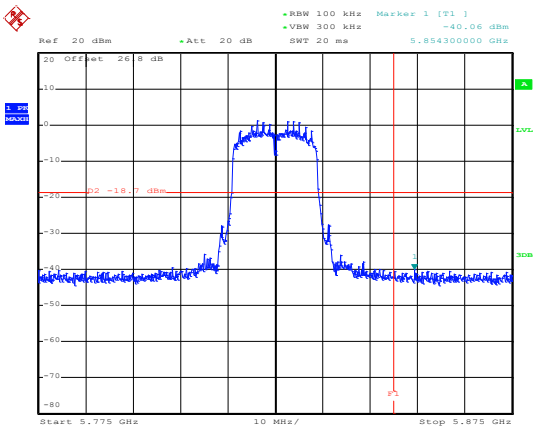
WLAN 802.11n HT20 Channel 165

100kHz PSD reference Level



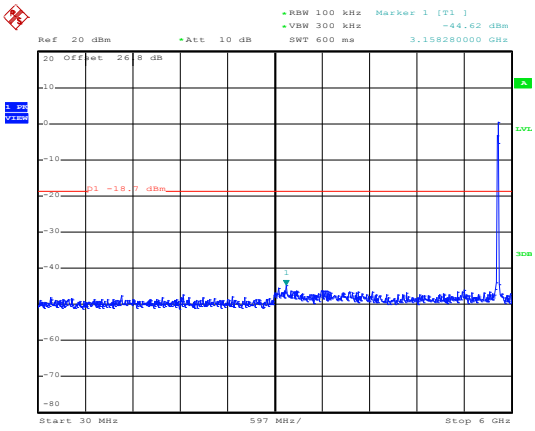
Date: 21.OCT.2013 19:19:00

High Channel Plot



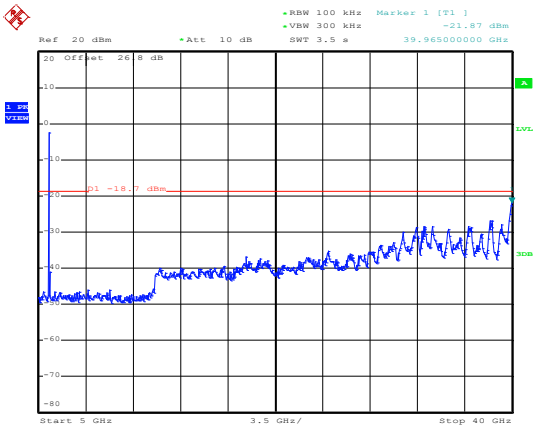
Date: 21.OCT.2013 19:19:14

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 19:19:33

Spurious Emission 5GHz~40GHz

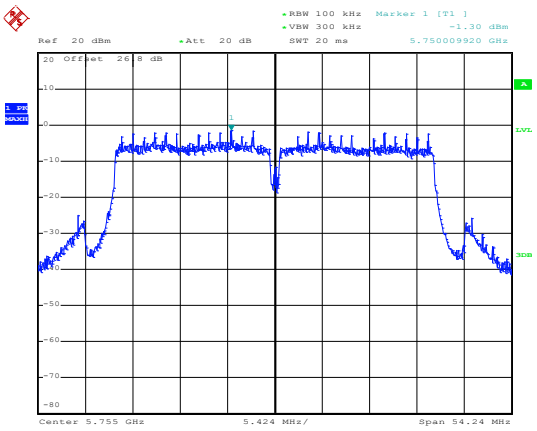


Date: 21.OCT.2013 19:19:52

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	151	**Test Engineer :**	Book Lin

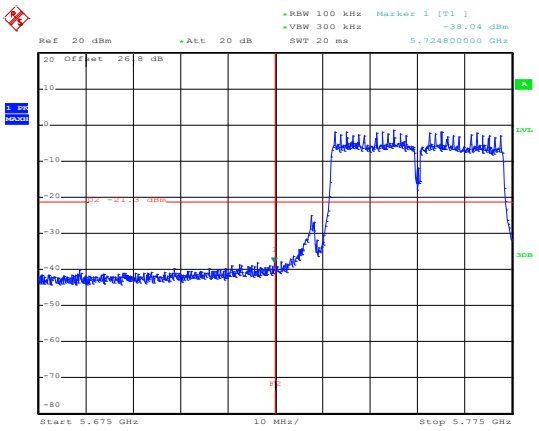
WLAN 802.11n HT40 Channel 151

100kHz PSD reference Level



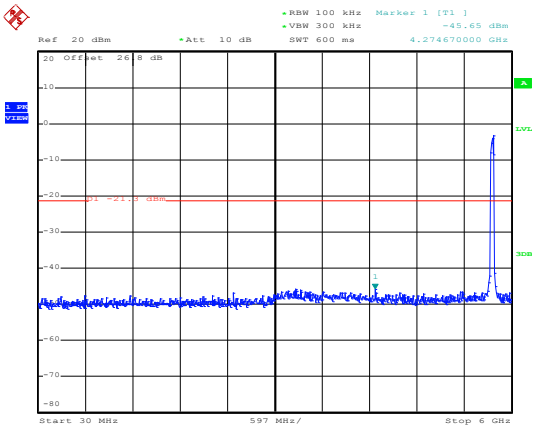
Date: 21.OCT.2013 20:20:19

Low Channel Plot



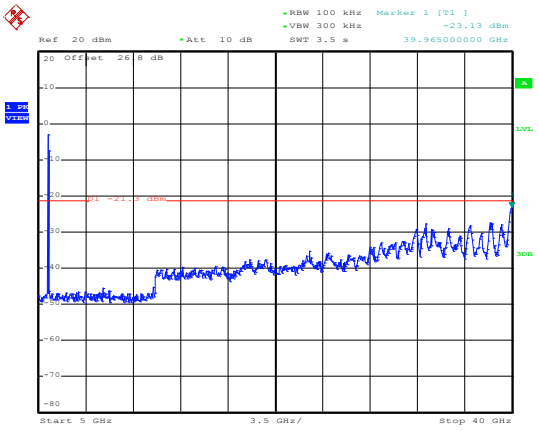
Date: 21.OCT.2013 20:20:32

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:20:52

Spurious Emission 5GHz~40GHz

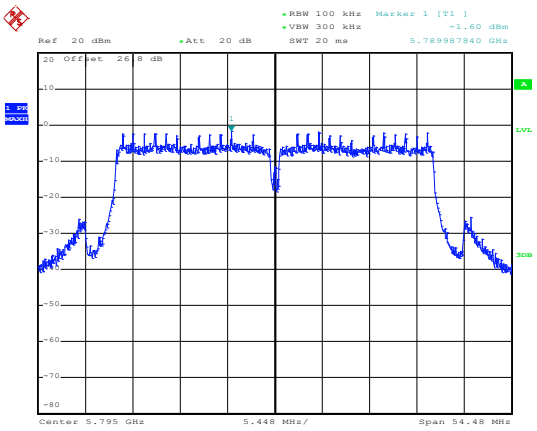


Date: 21.OCT.2013 20:21:10

Number of TX :	1	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	159	**Test Engineer :**	Book Lin

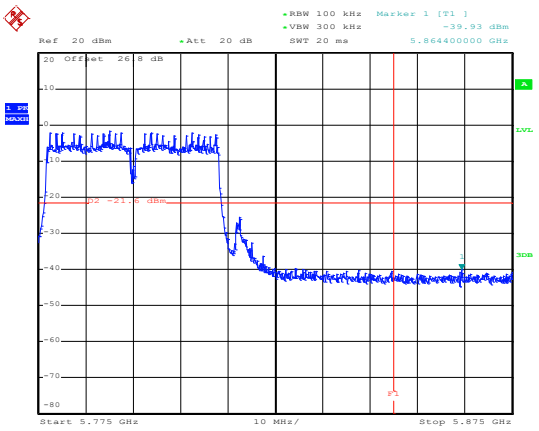
WLAN 802.11n HT40 Channel 159

100kHz PSD reference Level



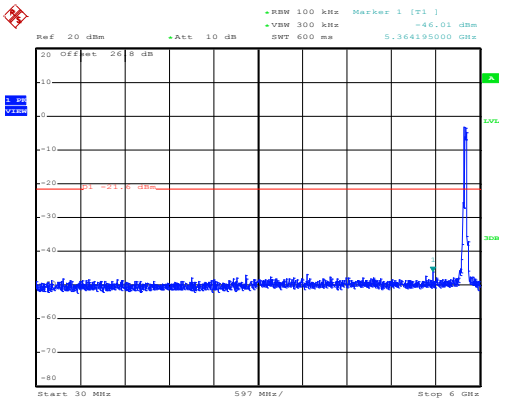
Date: 21.OCT.2013 20:23:59

High Channel Plot



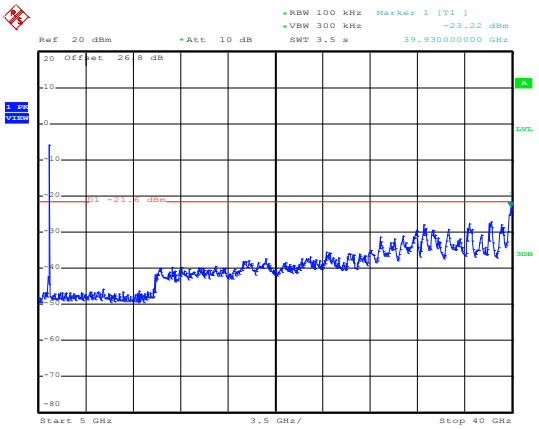
Date: 21.OCT.2013 20:24:13

Spurious Emission 30MHz~6GHz



Date: 25.NOV.2013 11:02:50

Spurious Emission 5GHz~40GHz



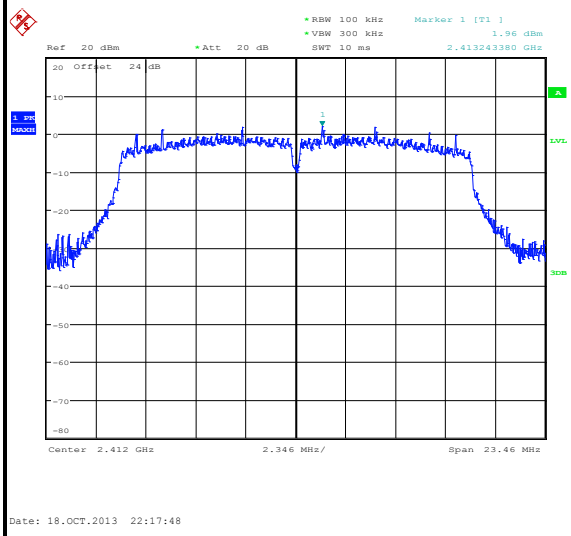
Date: 21.OCT.2013 20:24:51

Number of TX = 1, Ant. 2 (Measured)

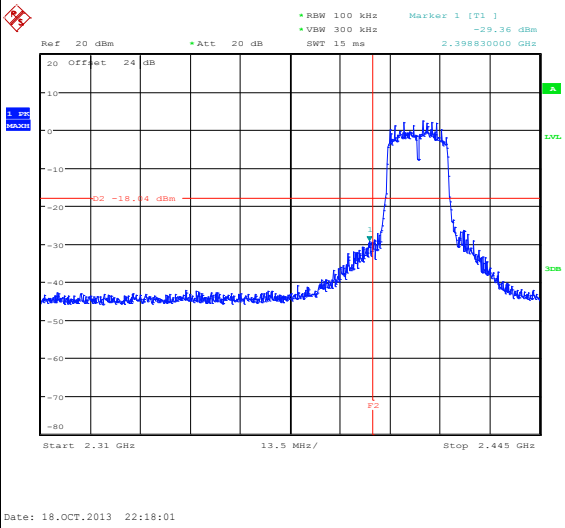
Number of TX :	1	**Ant. :**	2
Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	45~49%
Test Channel :	01	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 01

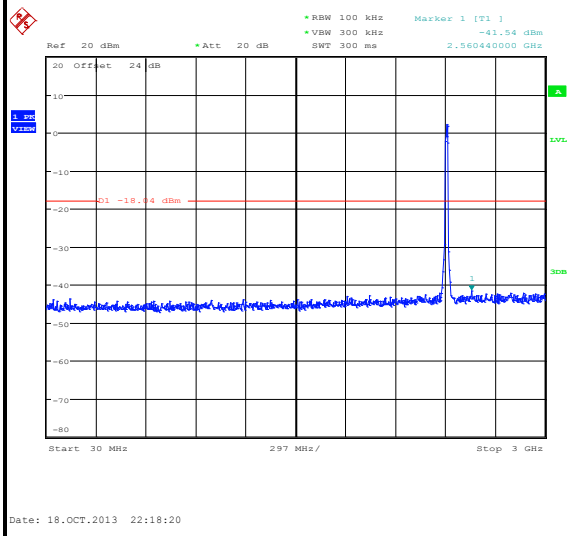
100kHz PSD reference Level



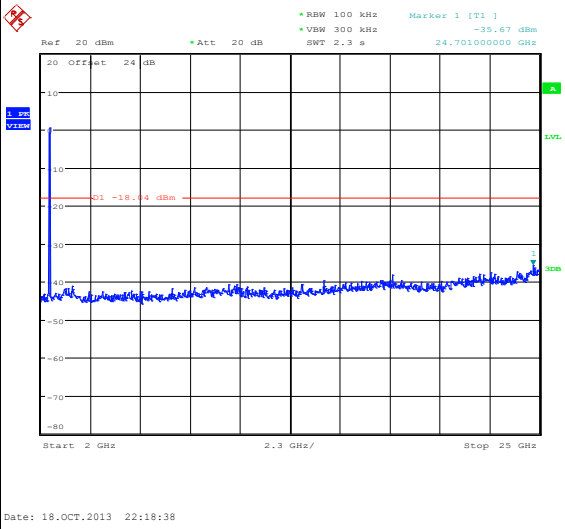
Low Channel Plot



Spurious Emission 30MHz~3GHz



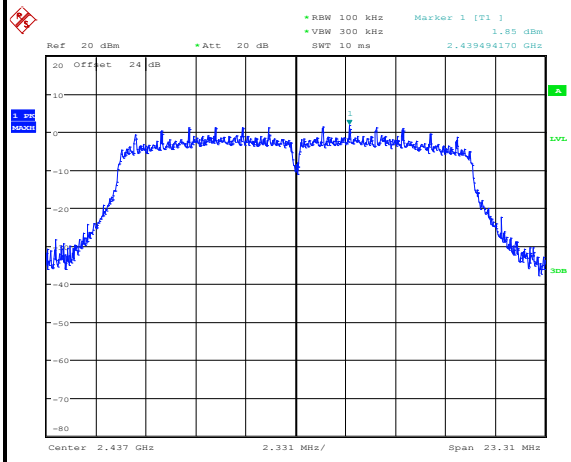
Spurious Emission 2GHz~25GHz



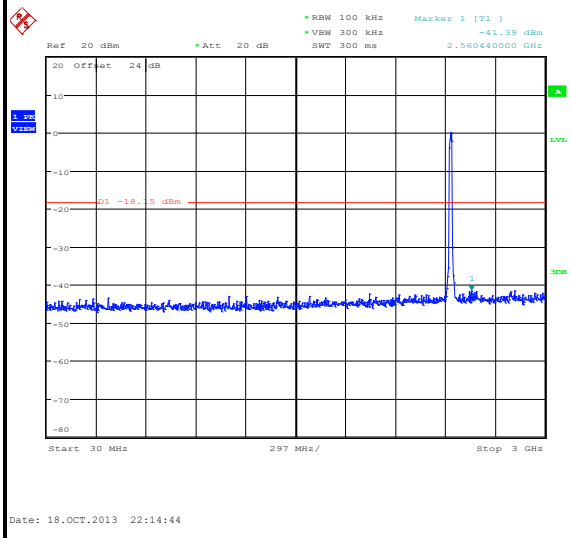
Number of TX :	1	**Ant. :**	2
Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	06	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 06

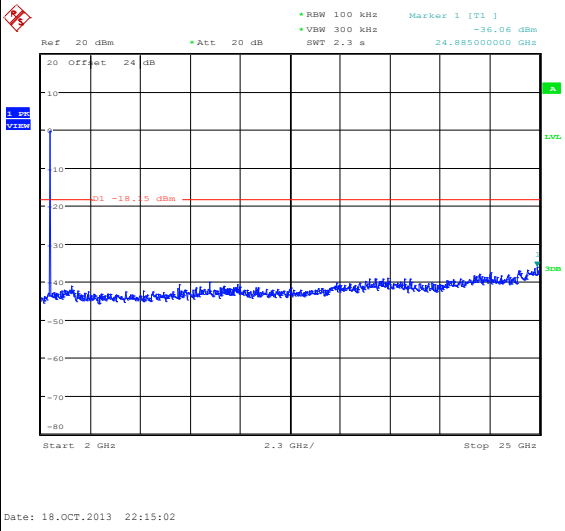
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



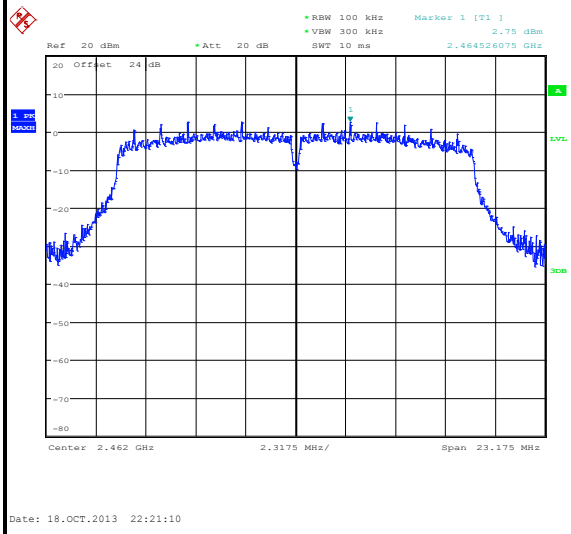
Spurious Emission 2GHz~25GHz



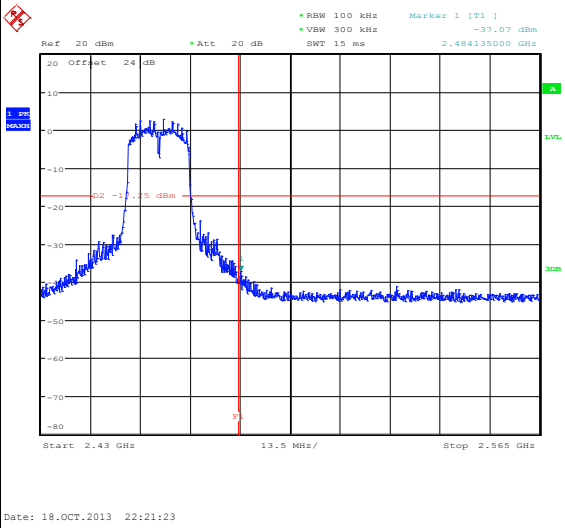
Number of TX :	1	**Ant. :**	2
Test Mode :	802.11g	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	45~49%
Test Channel :	11	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 11

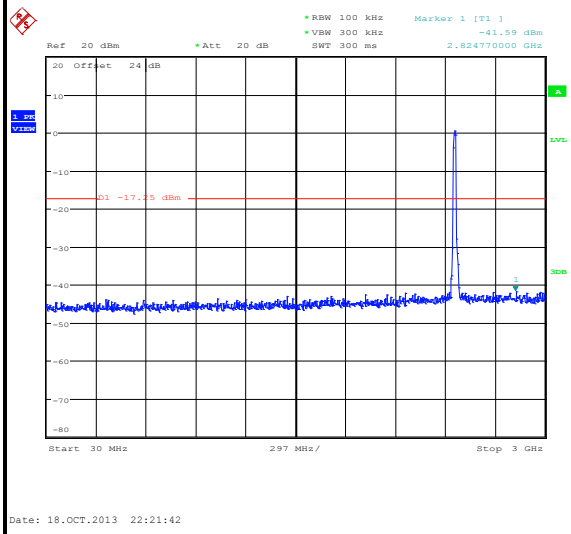
100kHz PSD reference Level



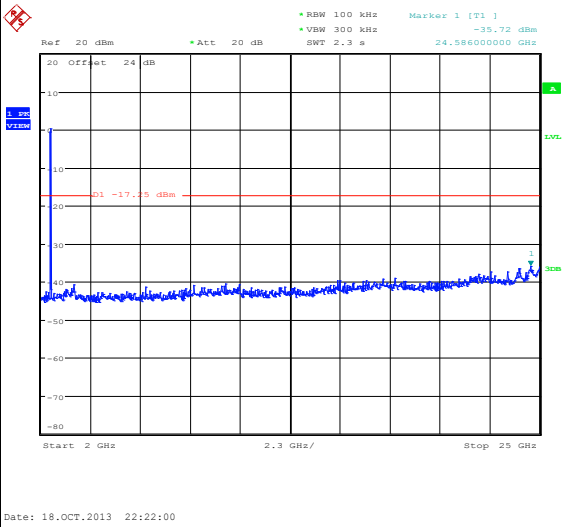
High Channel Plot



Spurious Emission 30MHz~3GHz



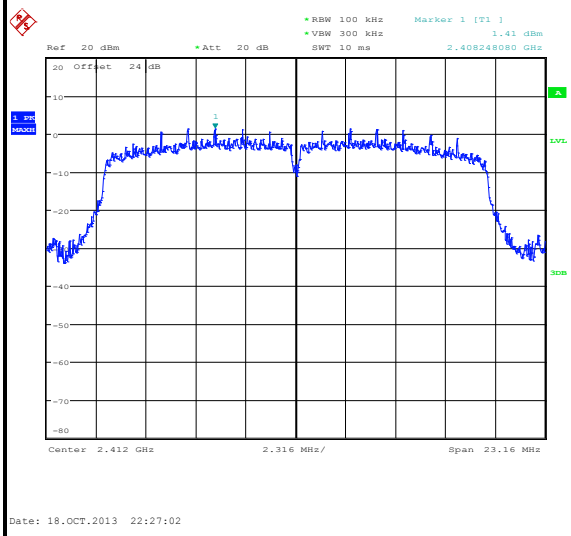
Spurious Emission 2GHz~25GHz



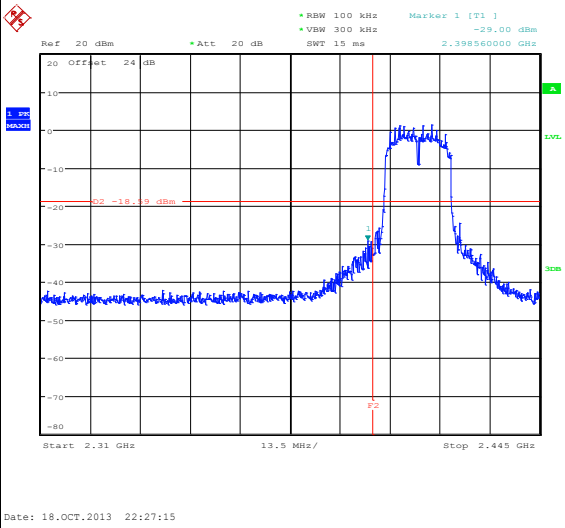
Number of TX :	1	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	45~49%
Test Channel :	01	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 01

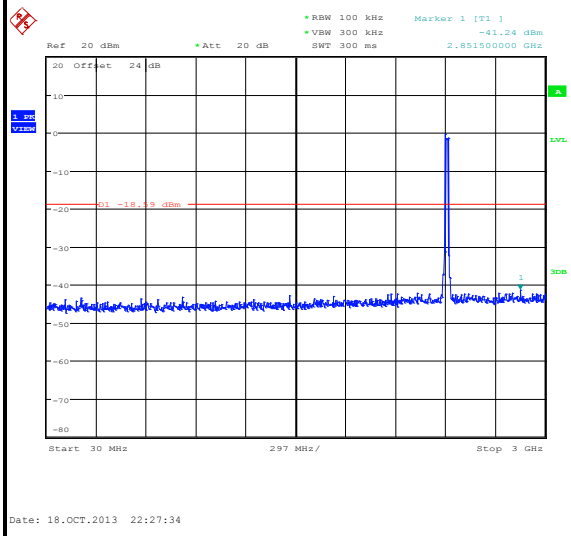
100kHz PSD reference Level



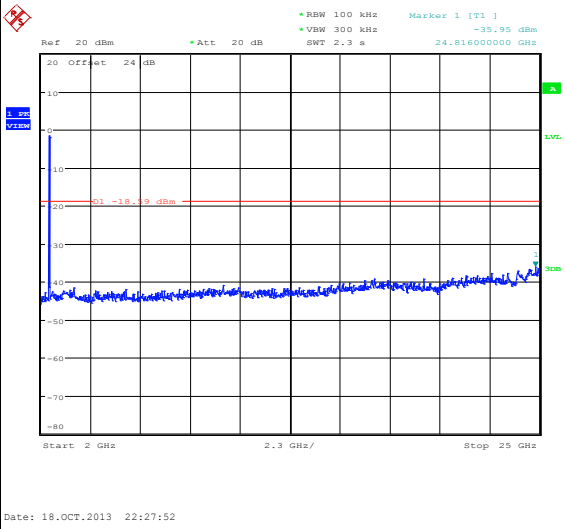
Low Channel Plot



Spurious Emission 30MHz~3GHz



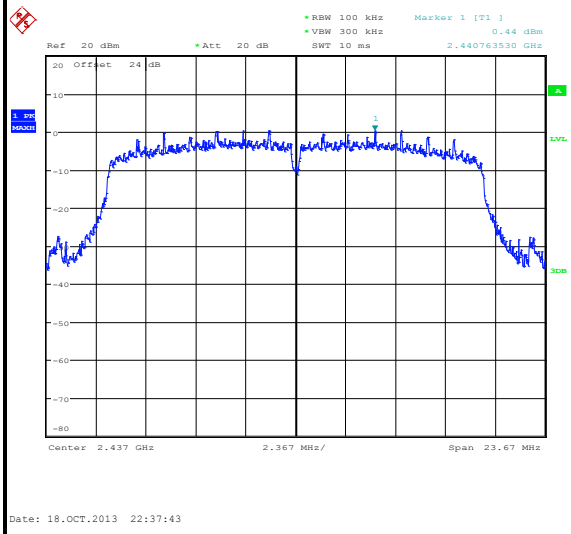
Spurious Emission 2GHz~25GHz



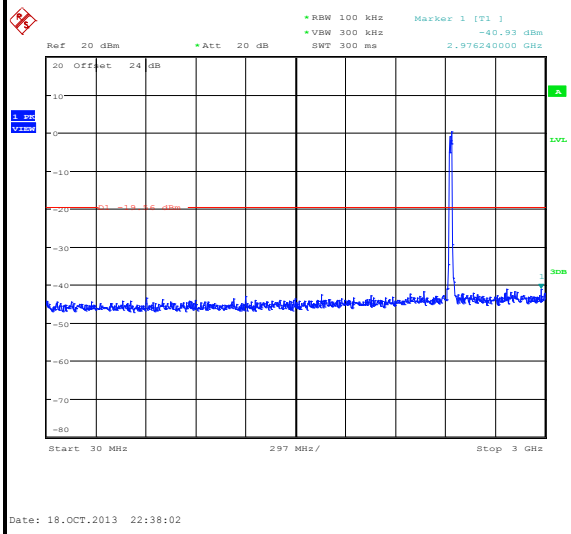
Number of TX :	1	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	06	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 06

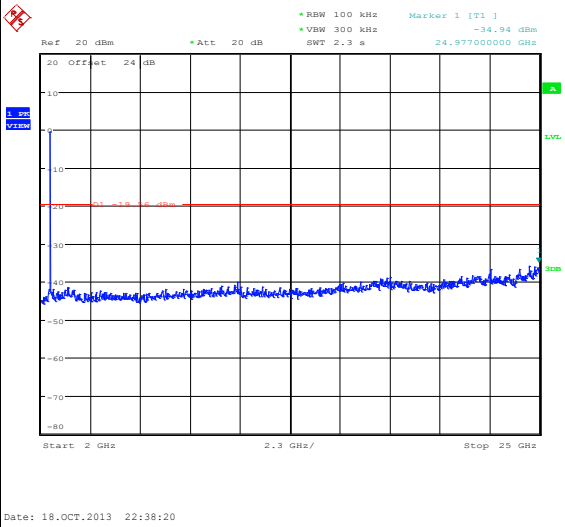
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



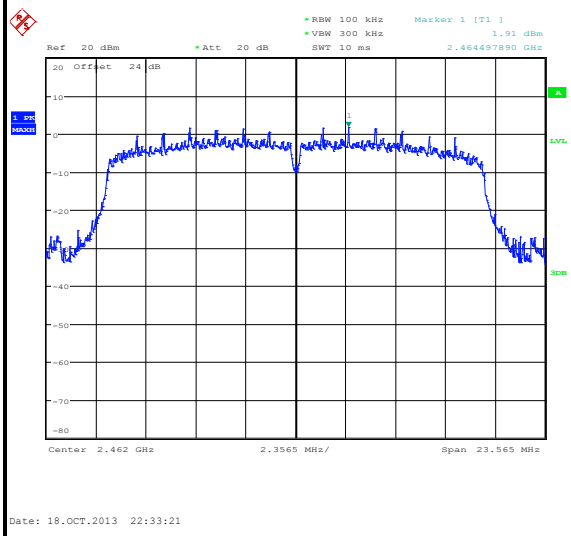
Spurious Emission 2GHz~25GHz



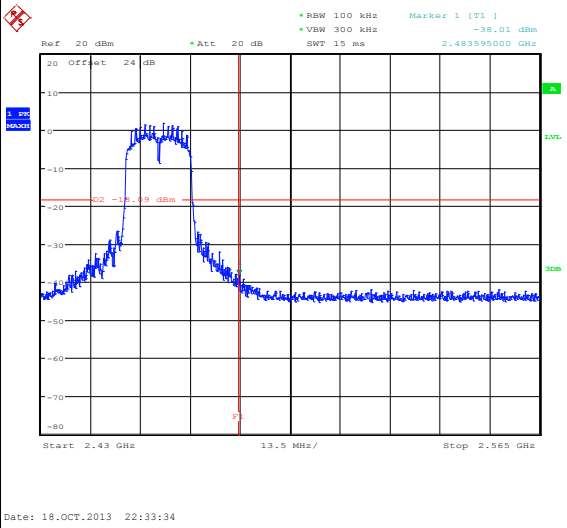
Number of TX :	1	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	45~49%
Test Channel :	11	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 11

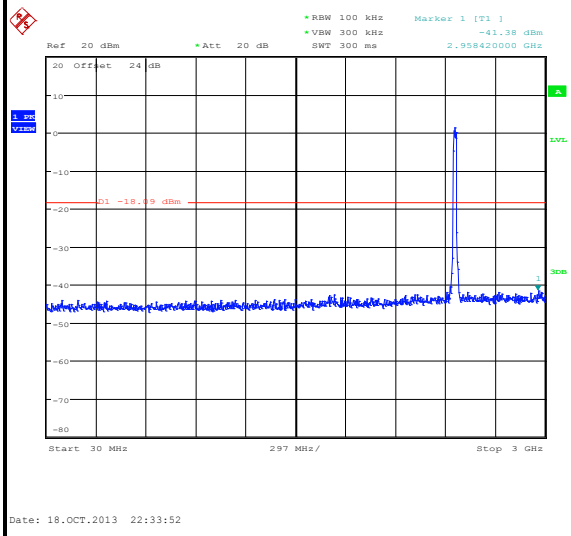
100kHz PSD reference Level



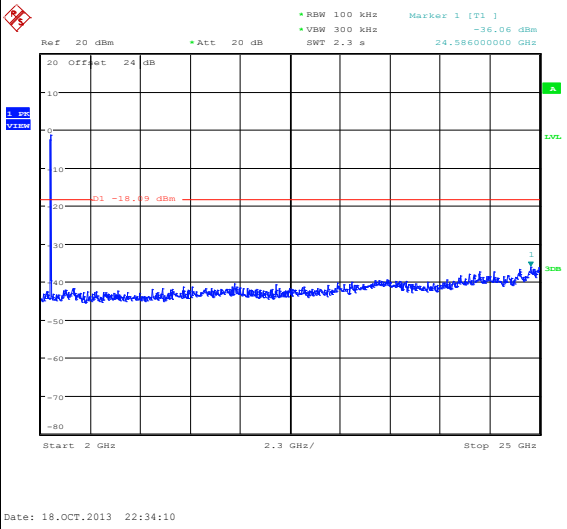
High Channel Plot



Spurious Emission 30MHz~3GHz



Spurious Emission 2GHz~25GHz

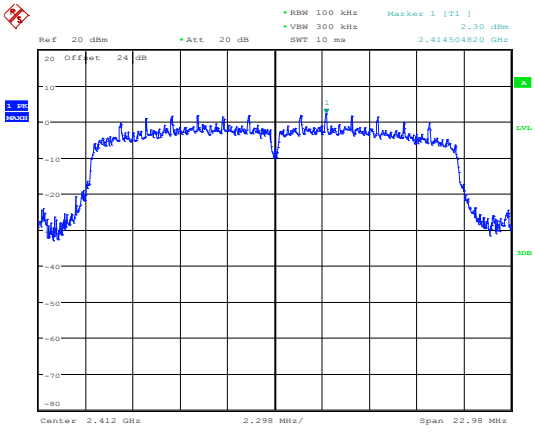


Number of TX = 2, Ant. 1 (Measured)

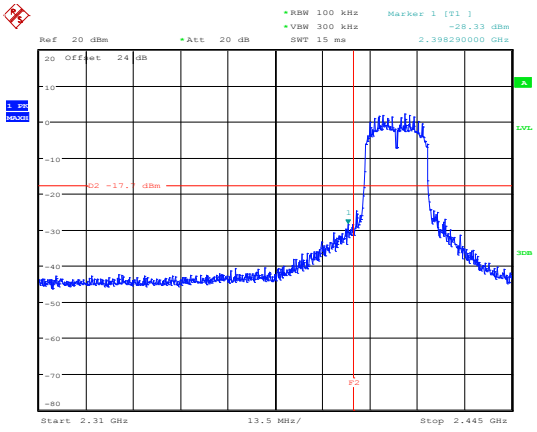
Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	45~49%
Test Channel :	01	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 01

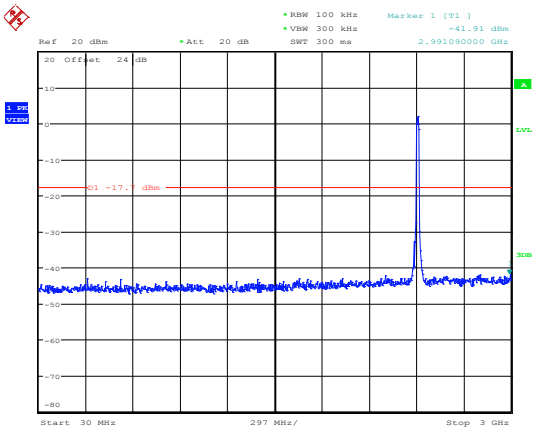
100kHz PSD reference Level



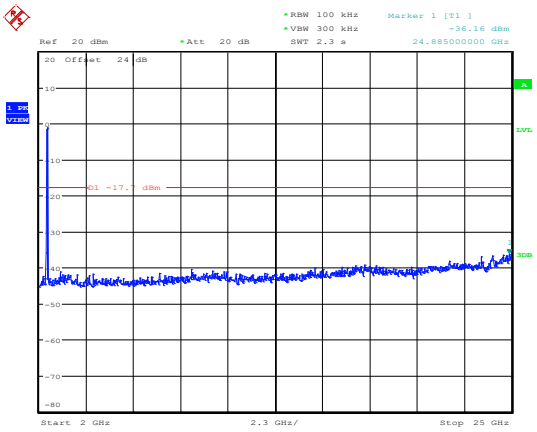
Low Channel Plot



Spurious Emission 30MHz~3GHz



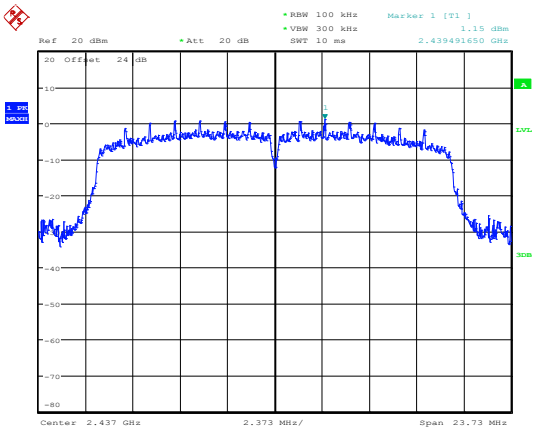
Spurious Emission 2GHz~25GHz



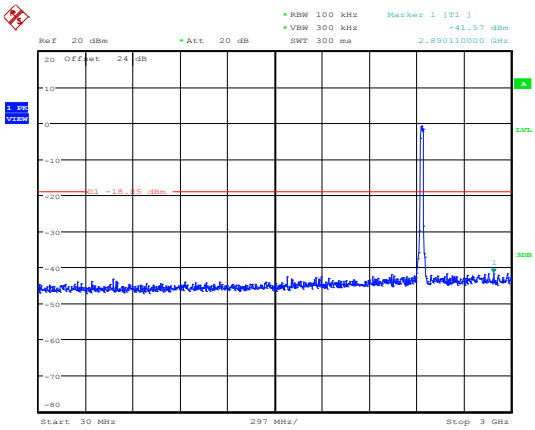
Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	06	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 06

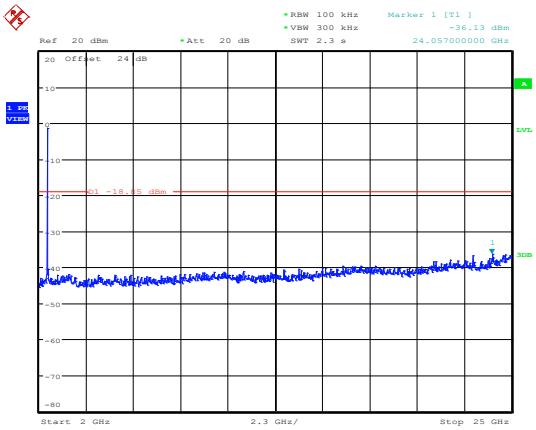
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



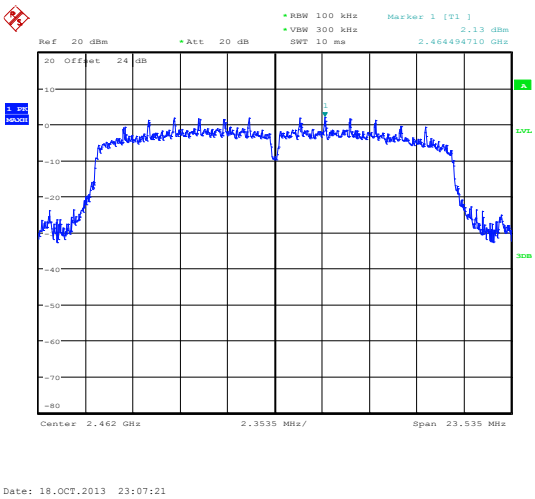
Spurious Emission 2GHz~25GHz



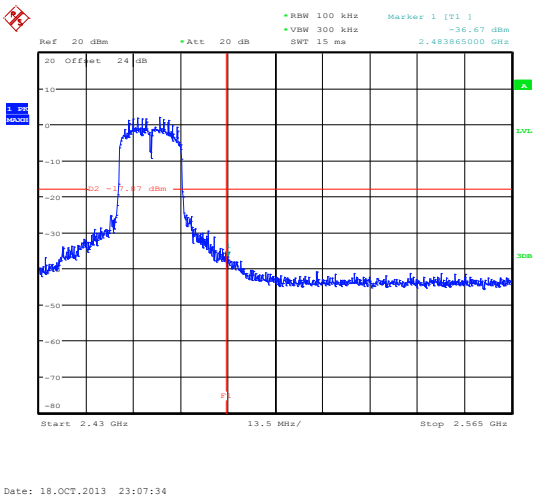
Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	45~49%
Test Channel :	11	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 11

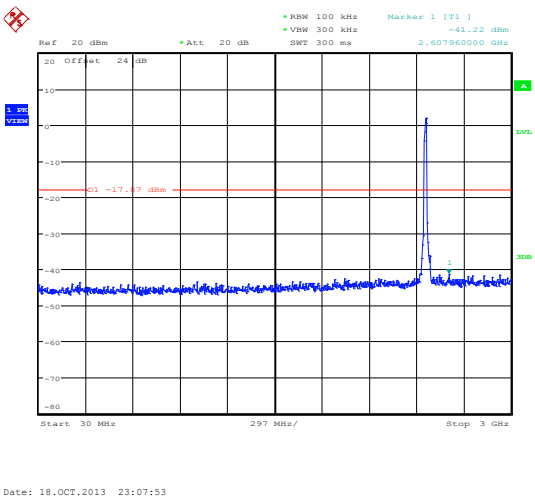
100kHz PSD reference Level



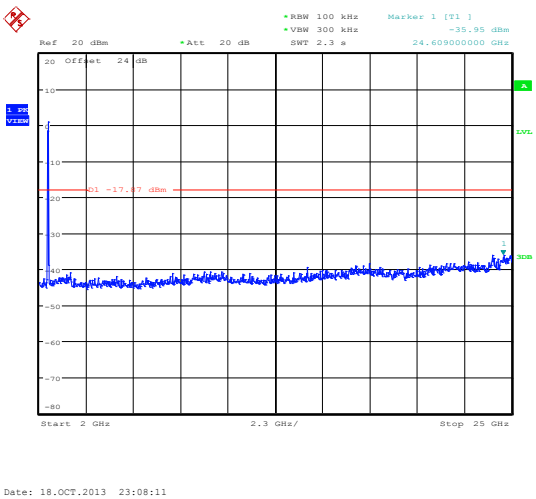
High Channel Plot



Spurious Emission 30MHz~3GHz



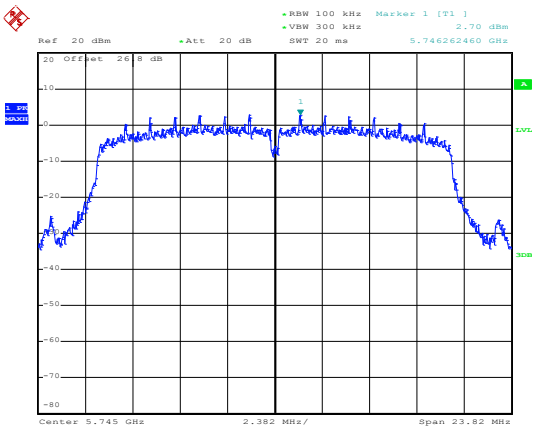
Spurious Emission 2GHz~25GHz



Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	149	**Test Engineer :**	Book Lin

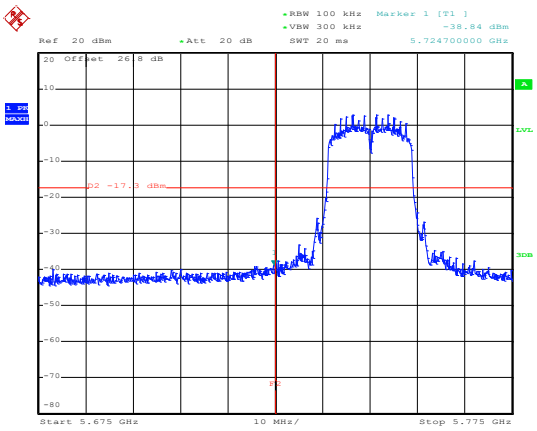
WLAN 802.11n HT20 Channel 149

100kHz PSD reference Level



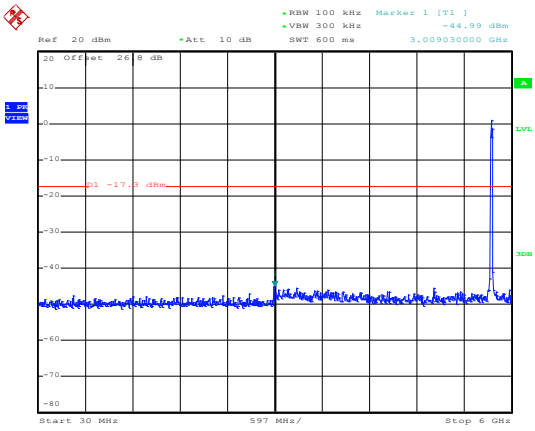
Date: 21.OCT.2013 19:28:47

Low Channel Plot



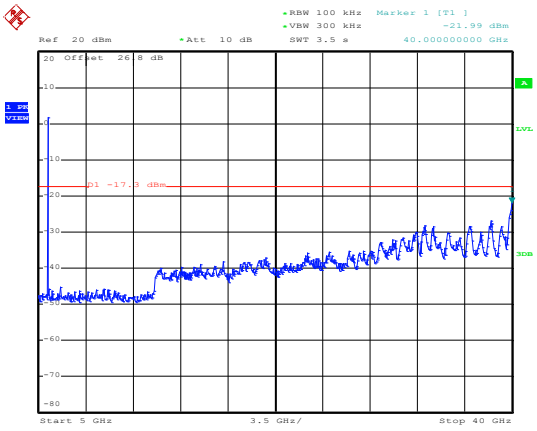
Date: 21.OCT.2013 19:29:01

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 19:29:20

Spurious Emission 5GHz~40GHz

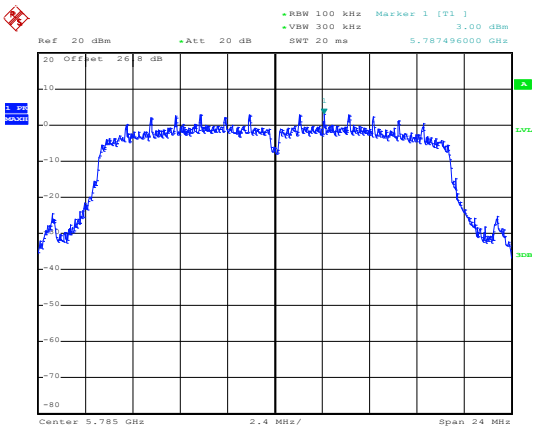


Date: 21.OCT.2013 19:29:39

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	157	**Test Engineer :**	Book Lin

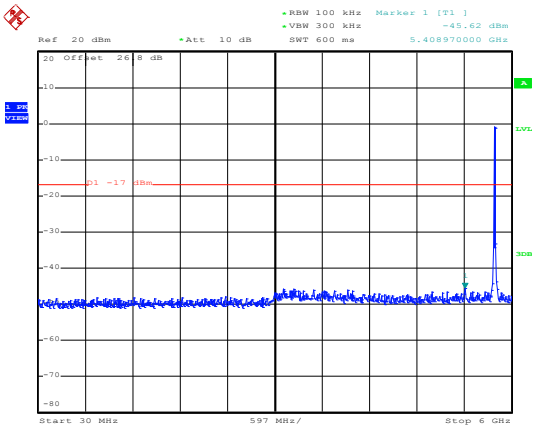
WLAN 802.11n HT20 Channel 157

100kHz PSD reference Level



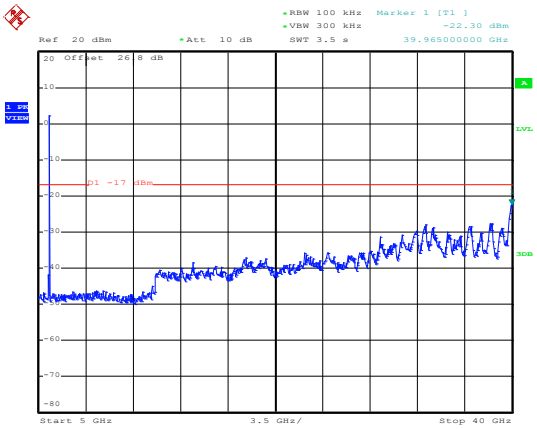
Date: 21.OCT.2013 20:01:18

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:01:38

Spurious Emission 5GHz~40GHz

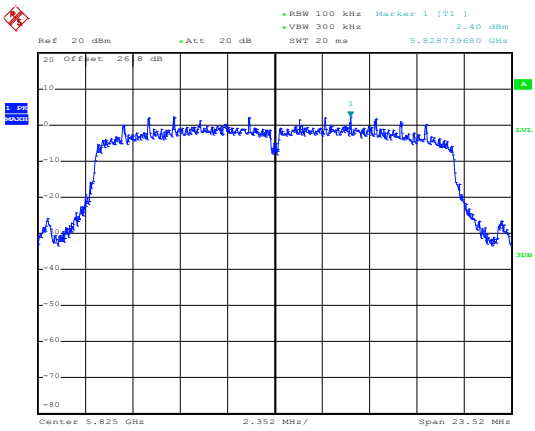


Date: 21.OCT.2013 20:01:57

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	165	**Test Engineer :**	Book Lin

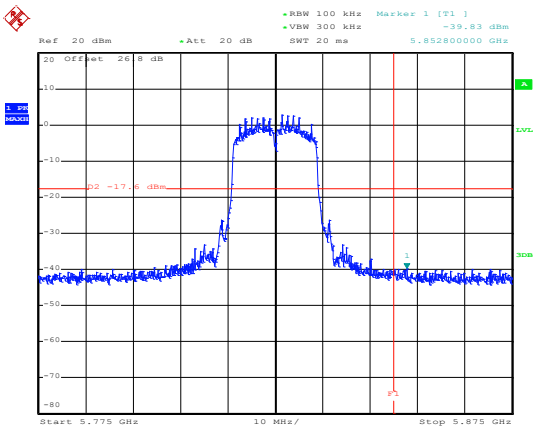
WLAN 802.11n HT20 Channel 165

100kHz PSD reference Level



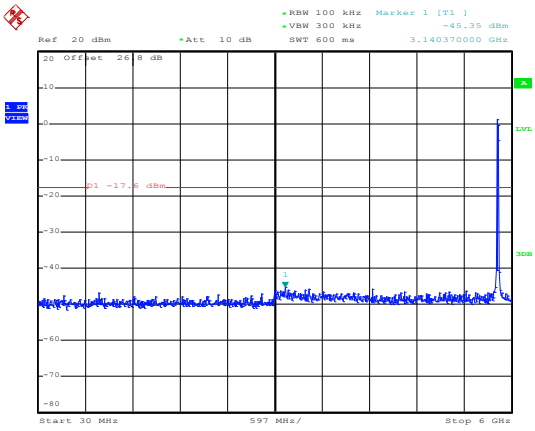
Date: 21.OCT.2013 20:06:55

High Channel Plot



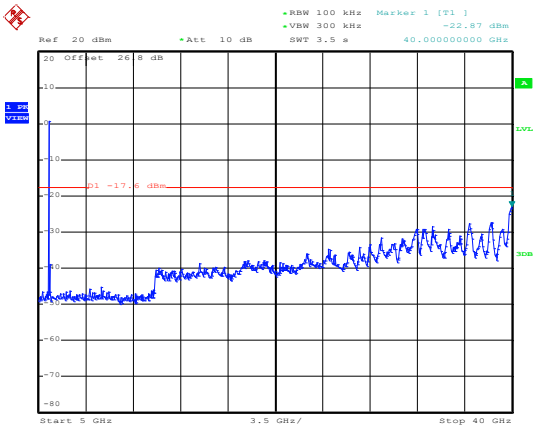
Date: 21.OCT.2013 20:07:09

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:07:28

Spurious Emission 5GHz~40GHz

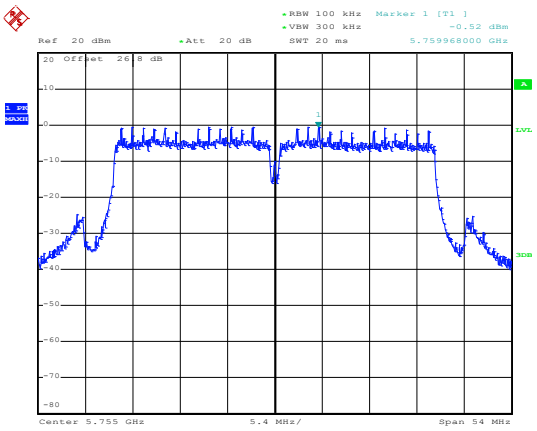


Date: 21.OCT.2013 20:07:47

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	151	**Test Engineer :**	Book Lin

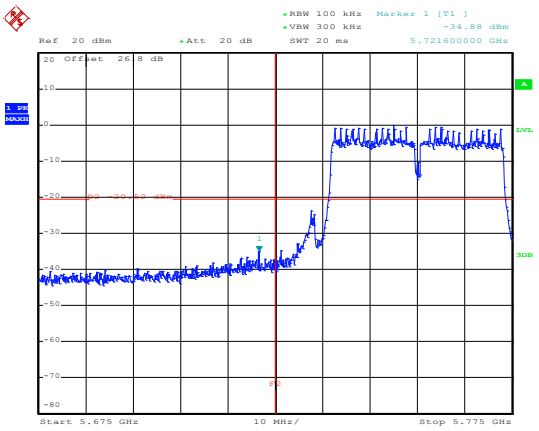
WLAN 802.11n HT40 Channel 151

100kHz PSD reference Level



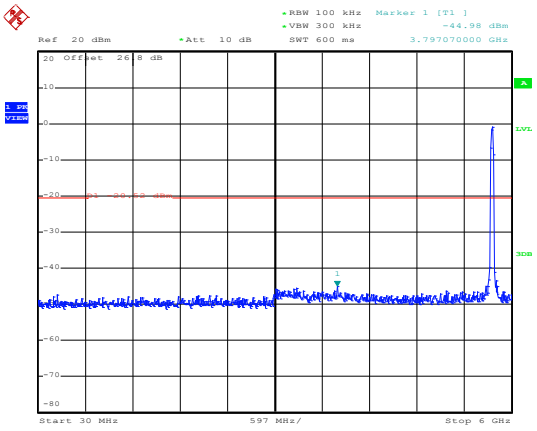
Date: 21.OCT.2013 20:38:34

Low Channel Plot



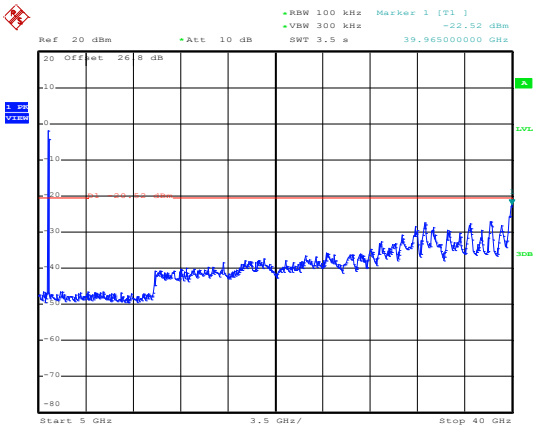
Date: 21.OCT.2013 20:38:48

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:39:07

Spurious Emission 5GHz~40GHz

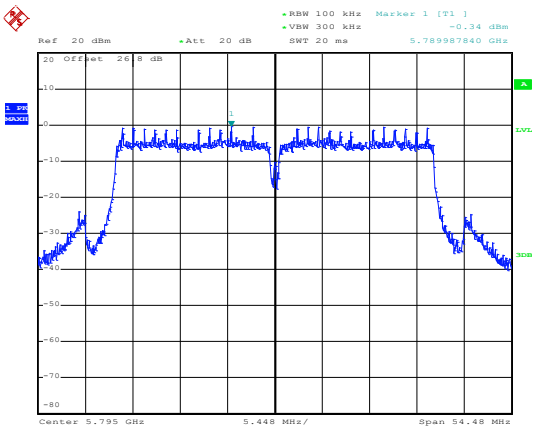


Date: 21.OCT.2013 20:39:26

Number of TX :	2	**Ant. :**	1
Test Mode :	802.11n HT40	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	159	**Test Engineer :**	Book Lin

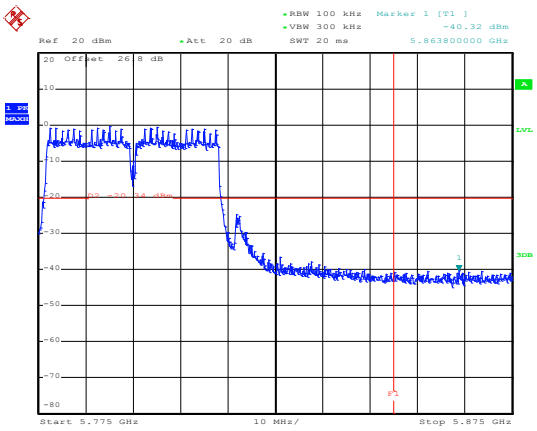
WLAN 802.11n HT40 Channel 159

100kHz PSD reference Level



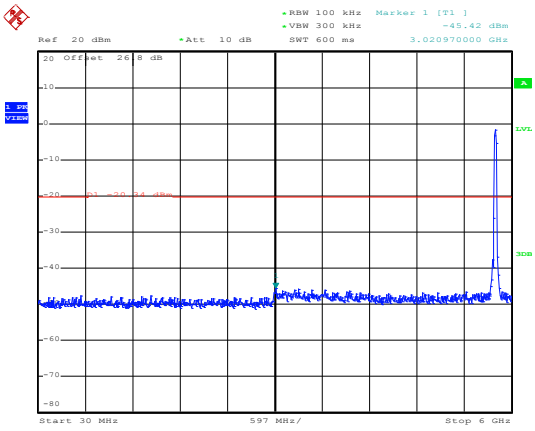
Date: 21.OCT.2013 20:28:32

High Channel Plot



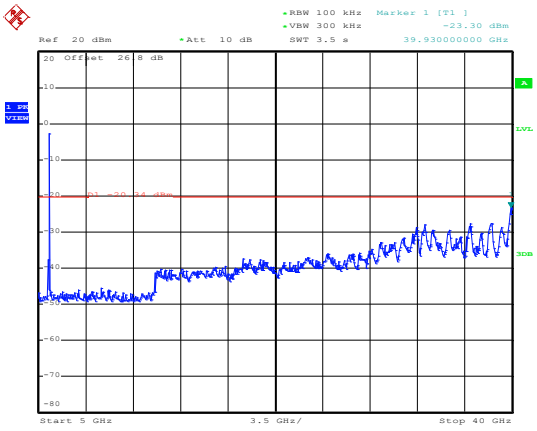
Date: 21.OCT.2013 20:28:46

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:29:05

Spurious Emission 5GHz~40GHz



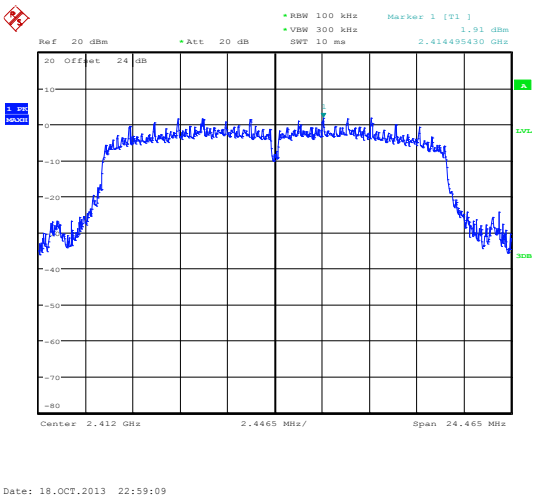
Date: 21.OCT.2013 20:29:24

Number of TX = 2, Ant. 2 (Measured)

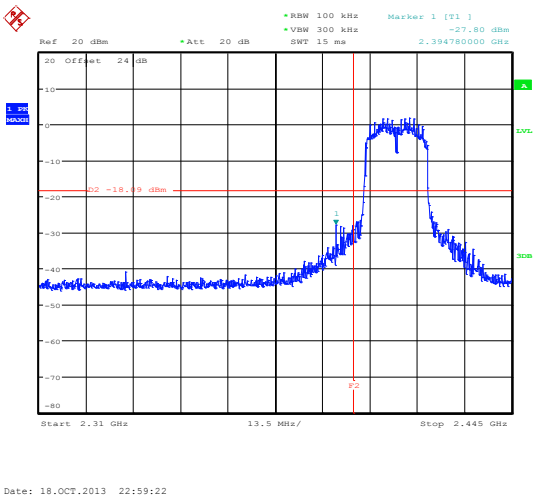
Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Low	**Relative Humidity :**	45~49%
Test Channel :	01	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 01

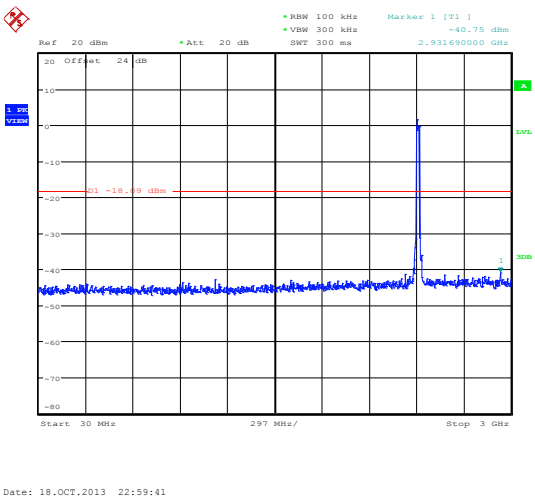
100kHz PSD reference Level



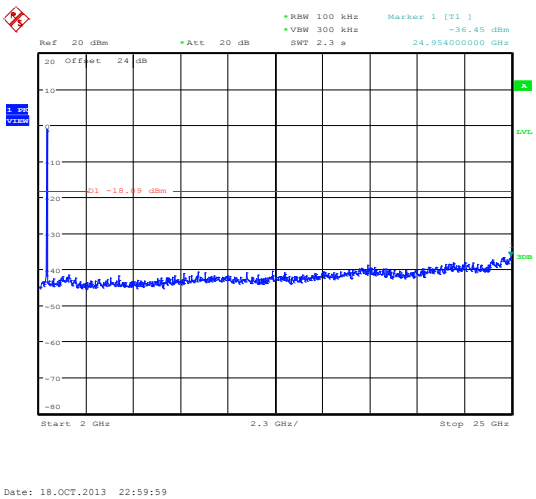
Low Channel Plot



Spurious Emission 30MHz~3GHz



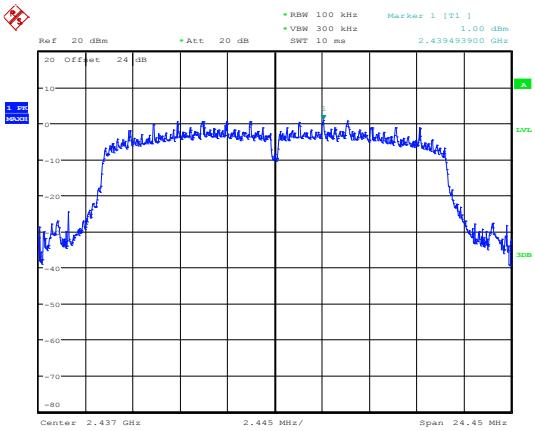
Spurious Emission 2GHz~25GHz



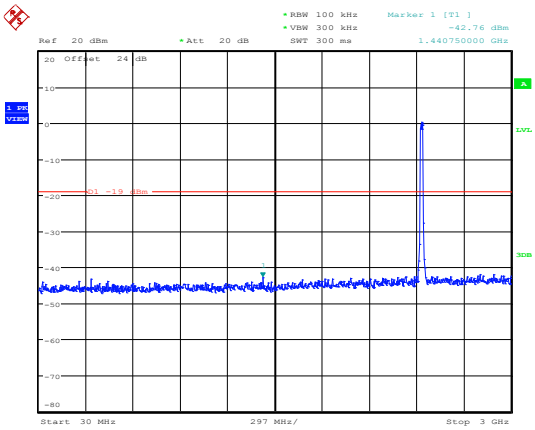
Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	06	**Test Engineer :**	Book Lin

WLAN 802.11n HT20 Channel 06

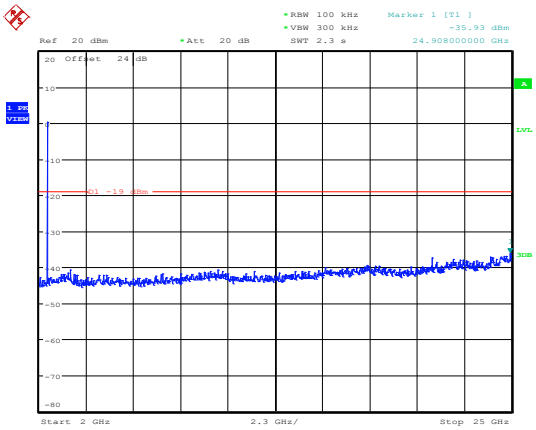
100kHz PSD reference Level



Spurious Emission 30MHz~3GHz



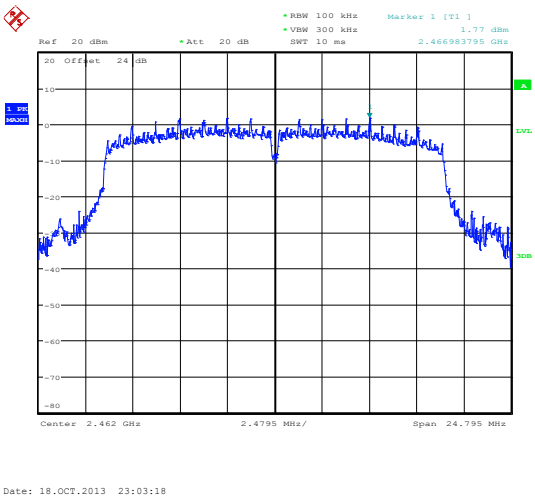
Spurious Emission 2GHz~25GHz



Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	2.4GHz High	**Relative Humidity :**	45~49%
Test Channel :	11	**Test Engineer :**	Book Lin

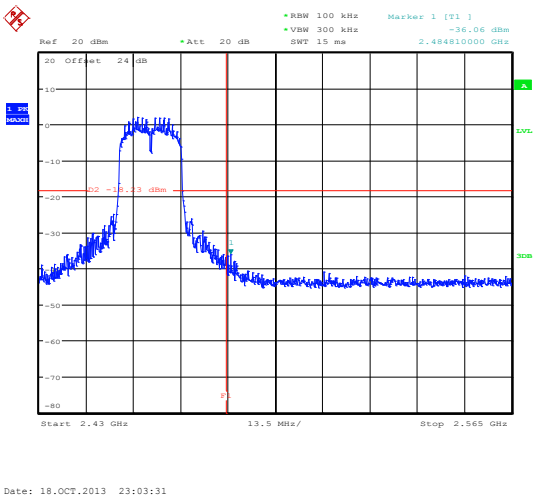
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



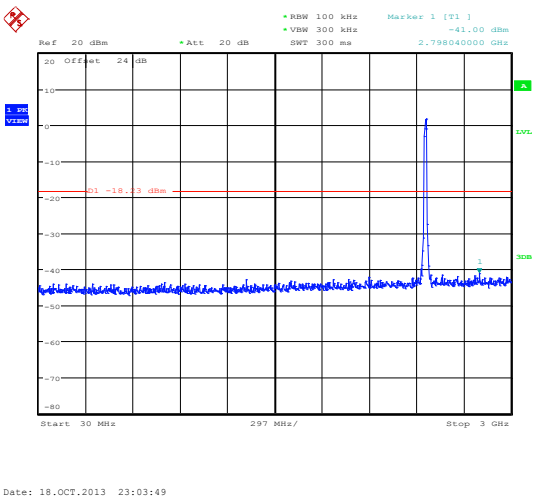
Date: 18.OCT.2013 23:03:18

High Channel Plot



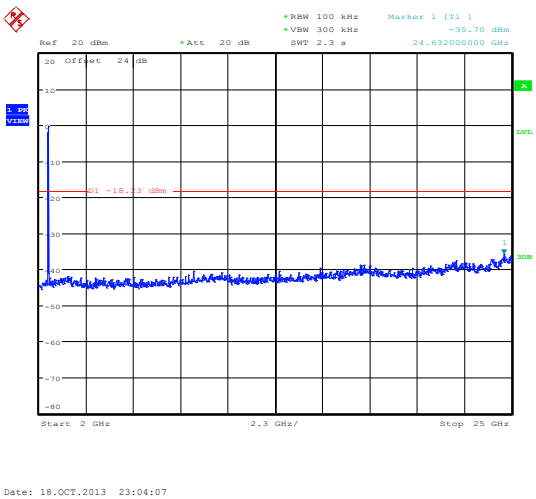
Date: 18.OCT.2013 23:03:31

Spurious Emission 30MHz~3GHz



Date: 18.OCT.2013 23:03:49

Spurious Emission 2GHz~25GHz

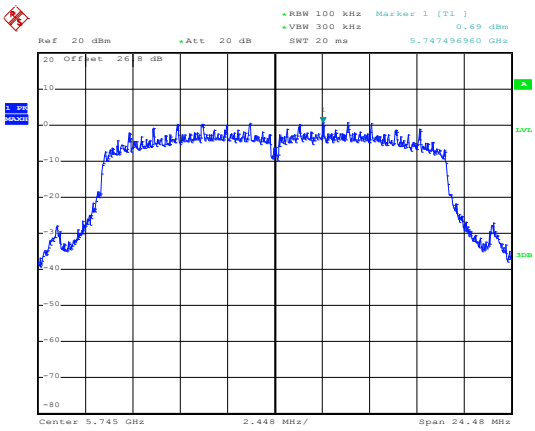


Date: 18.OCT.2013 23:04:07

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	149	**Test Engineer :**	Book Lin

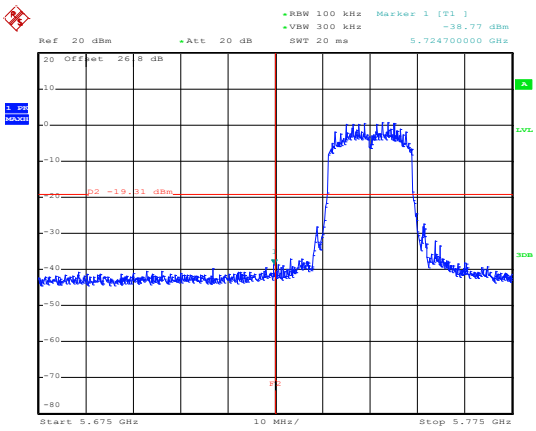
WLAN 802.11n HT20 Channel 149

100kHz PSD reference Level



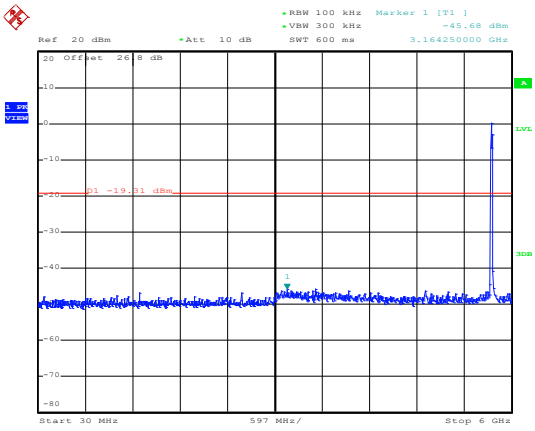
Date: 21.OCT.2013 19:38:15

Low Channel Plot



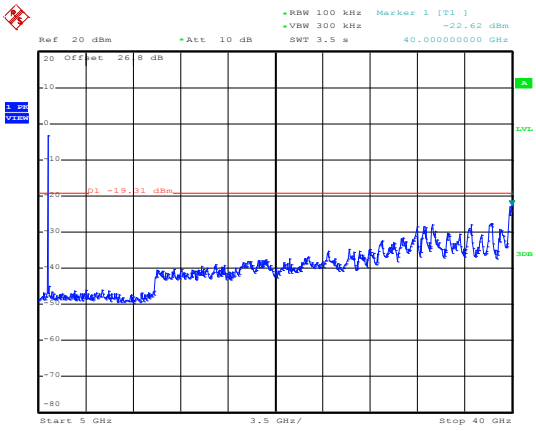
Date: 21.OCT.2013 19:39:39

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 19:38:48

Spurious Emission 5GHz~40GHz

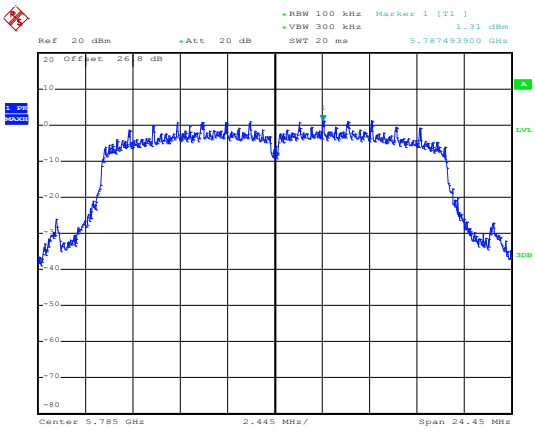


Date: 21.OCT.2013 19:39:07

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz Mid	**Relative Humidity :**	45~49%
Test Channel :	157	**Test Engineer :**	Book Lin

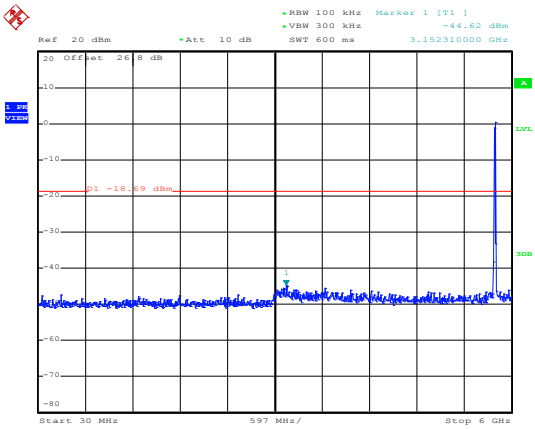
WLAN 802.11n HT20 Channel 157

100kHz PSD reference Level



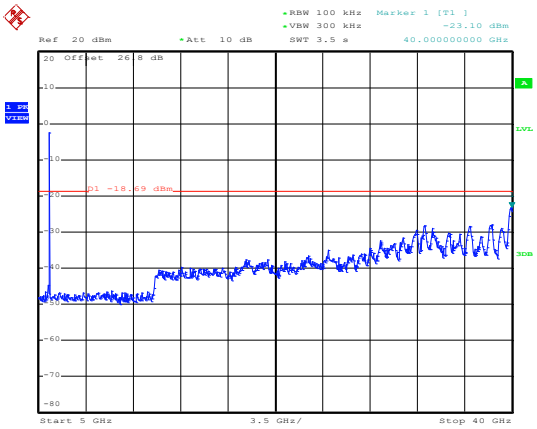
Date: 21.OCT.2013 19:54:15

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 19:54:35

Spurious Emission 5GHz~40GHz

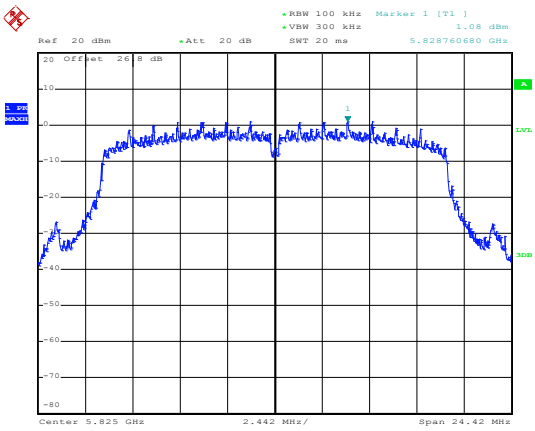


Date: 21.OCT.2013 19:54:54

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT20	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	165	**Test Engineer :**	Book Lin

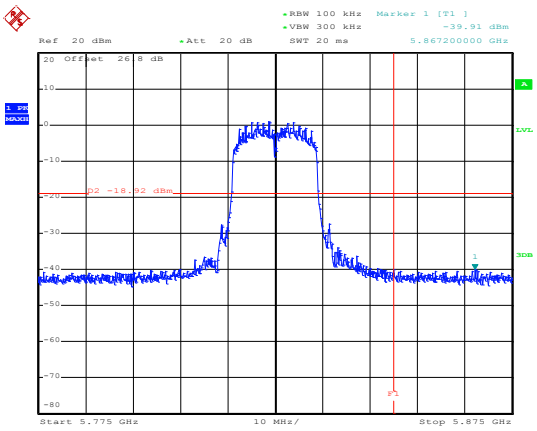
WLAN 802.11n HT20 Channel 165

100kHz PSD reference Level



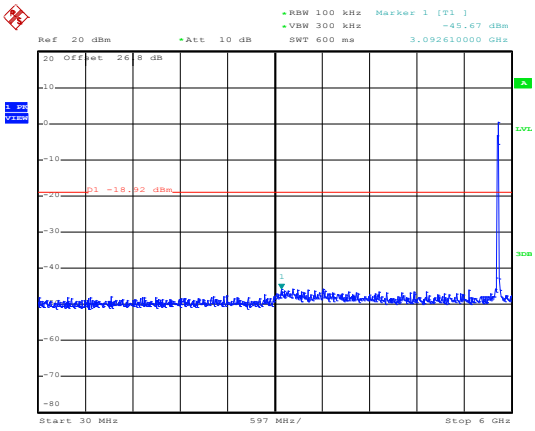
Date: 21.OCT.2013 20:11:38

High Channel Plot



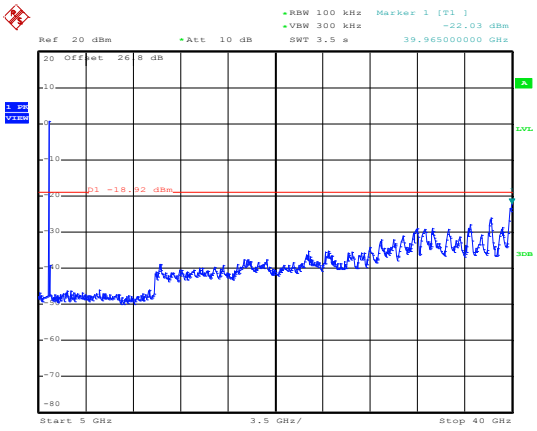
Date: 21.OCT.2013 20:11:52

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:12:11

Spurious Emission 5GHz~40GHz

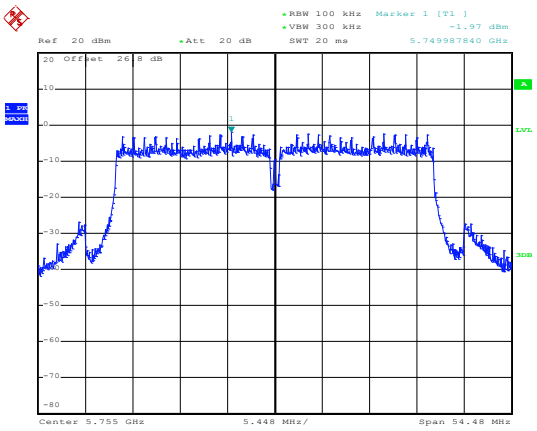


Date: 21.OCT.2013 20:12:30

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT40	**Temperature :**	24~26℃
Test Band :	5GHz Low	**Relative Humidity :**	45~49%
Test Channel :	151	**Test Engineer :**	Book Lin

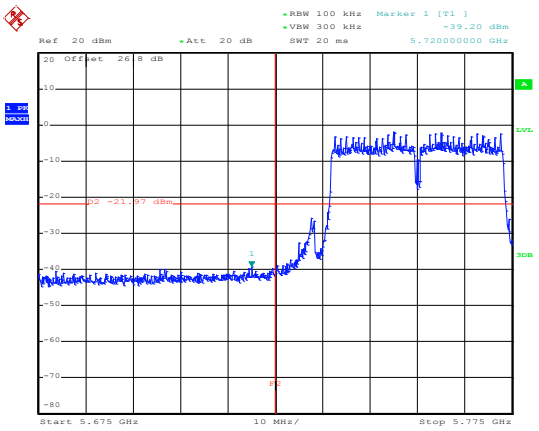
WLAN 802.11n HT40 Channel 151

100kHz PSD reference Level



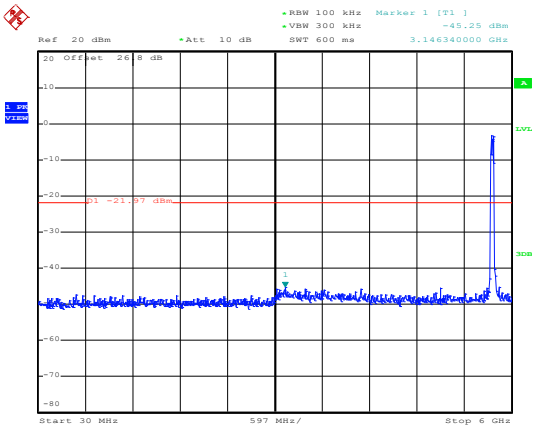
Date: 21.OCT.2013 20:35:22

Low Channel Plot



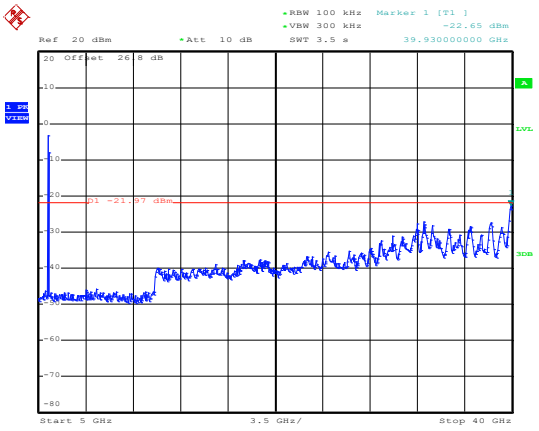
Date: 21.OCT.2013 20:35:36

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:35:55

Spurious Emission 5GHz~40GHz

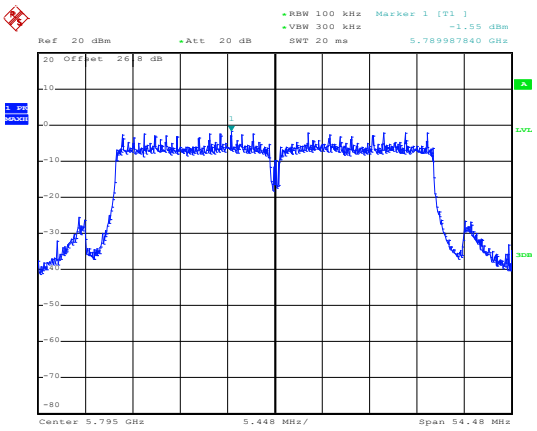


Date: 21.OCT.2013 20:36:14

Number of TX :	2	**Ant. :**	2
Test Mode :	802.11n HT40	**Temperature :**	24~26℃
Test Band :	5GHz High	**Relative Humidity :**	45~49%
Test Channel :	159	**Test Engineer :**	Book Lin

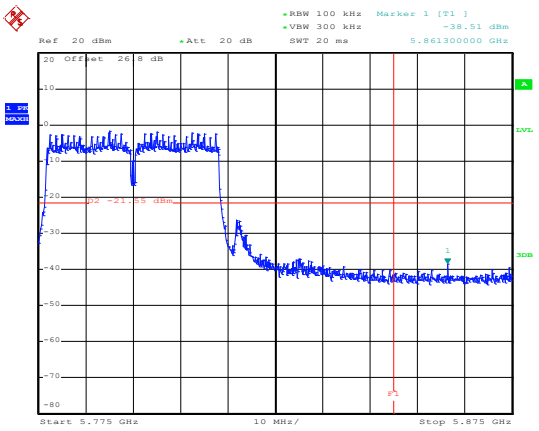
WLAN 802.11n HT40 Channel 159

100kHz PSD reference Level



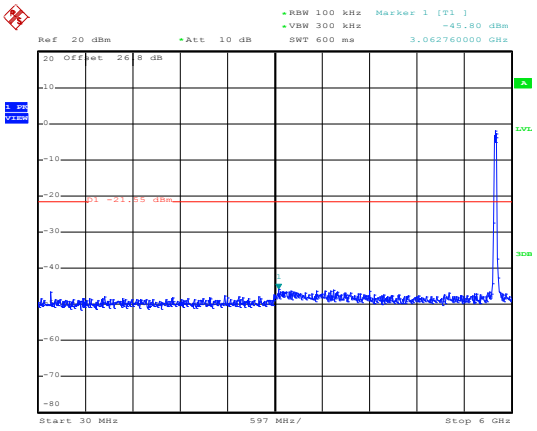
Date: 21.OCT.2013 20:31:36

High Channel Plot



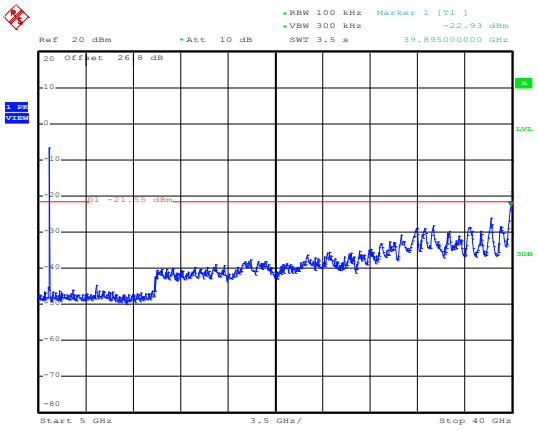
Date: 21.OCT.2013 20:31:50

Spurious Emission 30MHz~6GHz



Date: 21.OCT.2013 20:32:10

Spurious Emission 5GHz~40GHz



Date: 21.OCT.2013 20:32:28

3.5 Radiated Band Edges and Spurious Emission Measurement

3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

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

3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

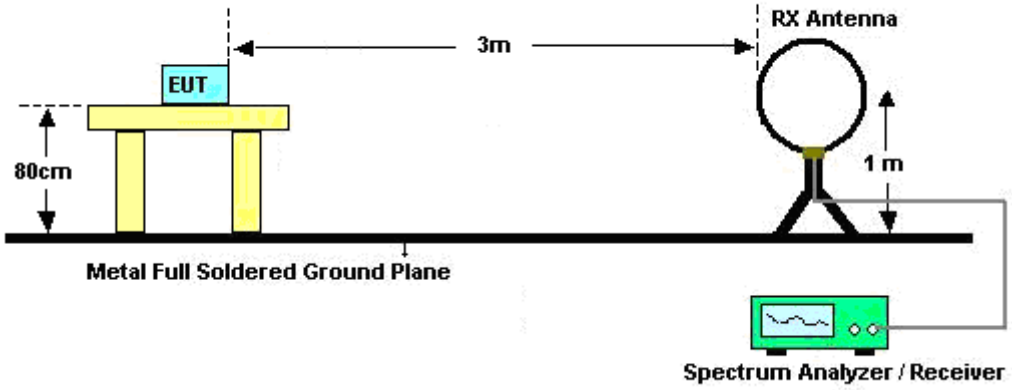
3.5.3 Test Procedure

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
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.

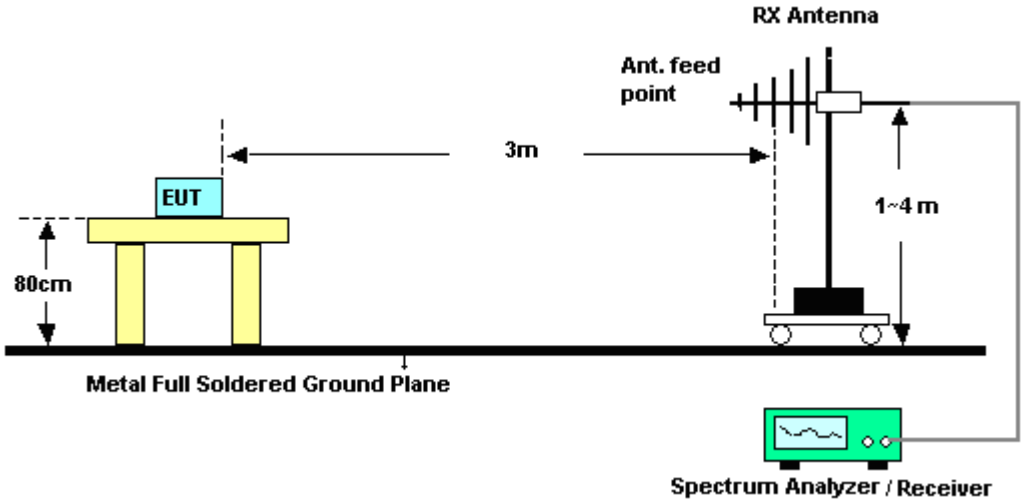
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	99.04	-	-	10Hz
2	802.11b	99.04	-	-	
1	802.11g	95.39	2070	0.48	1kHz
2	802.11g	95.39	2070	0.48	
1	2.4GHz 802.11n HT20 for Ant. 1	95.07	1930	0.52	
2	2.4GHz 802.11n HT20 for Ant. 2	95.05	1920	0.52	
1+2	2.4GHz 802.11n HT20 for Ant. 1	90.83	990	1.01	3kHz
1+2	2.4GHz 802.11n HT20 for Ant. 2	90.74	980	1.02	
1	802.11a	95.41	2080	0.48	1kHz
2	802.11a	95.37	2060	0.49	
1	5GHz 802.11n HT20 for Ant. 1	95.05	1920	0.52	
2	5GHz 802.11n HT20 for Ant. 2	95.07	1930	0.52	
1+2	5GHz 802.11n HT20 for Ant. 1	90.83	990	1.01	3kHz
1+2	5GHz 802.11n HT20 for Ant. 2	90.83	990	1.01	
1	5GHz 802.11n HT40 for Ant. 1	90.38	940	1.06	
2	5GHz 802.11n HT40 for Ant. 2	90.48	950	1.05	
1+2	5GHz 802.11n HT40 for Ant. 1	83.33	500	2.00	
1+2	5GHz 802.11n HT40 for Ant. 2	83.33	500	2.00	

3.5.4 Test Setup

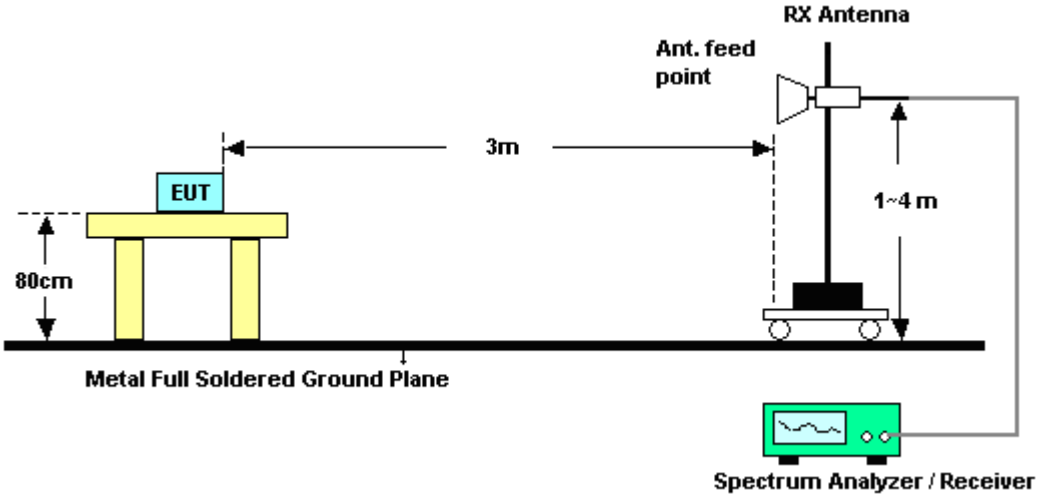
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 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.

3.5.6 Test Result of Radiated Spurious at Band Edges

< Ant. 1>

Test Mode :	802.11b	**Temperature :**	22~25°C
Test Band :	Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Eric Shih

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	59.73	-14.27	74	54.79	32.3	6.91	34.27	117	178	Peak
2390	46.72	-7.28	54	41.81	32.3	6.91	34.3	117	178	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**
2353.92	57.89	-16.11	74	53.04	32.26	6.84	34.25	177	275	Peak
2390	45.59	-8.41	54	40.68	32.3	6.91	34.3	177	275	Average

Test Mode :	802.11b	**Temperature :**	22~25°C
Test Band :	High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Eric Shih

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**
2484.61	60.63	-13.37	74	55.62	32.38	7.06	34.43	100	239	Peak
2483.5	47.69	-6.31	54	42.68	32.38	7.06	34.43	100	239	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**
2484.31	58.91	-15.09	74	53.9	32.38	7.06	34.43	200	282	Peak
2483.5	45.62	-8.38	54	40.61	32.38	7.06	34.43	200	282	Average

< Ant. 1>

Test Mode :	802.11g	**Temperature :**	22~25°C
Test Band :	Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Eric Shih

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
2389.29	73.76	-0.24	74	68.82	32.3	6.91	34.27	166	208	Peak
2389.38	49.97	-4.03	54	45.03	32.3	6.91	34.27	166	208	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
2387.85	72.86	-1.14	74	67.92	32.3	6.91	34.27	168	287	Peak
2389.38	47.77	-6.23	54	42.83	32.3	6.91	34.27	168	287	Average

Test Mode :	802.11g	**Temperature :**	22~25°C
Test Band :	High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Eric Shih

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
2483.71	73.45	-0.55	74	68.44	32.38	7.06	34.43	100	240	Peak
2483.83	47.63	-6.37	54	42.62	32.38	7.06	34.43	100	240	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
2485.69	73.86	-0.14	74	68.85	32.38	7.06	34.43	187	272	Peak
2484.13	47.45	-6.55	54	42.44	32.38	7.06	34.43	187	272	Average

< Ant. 2>

Test Mode :	802.11g	**Temperature :**	22~25°C
Test Band :	High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Eric Shih

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**
2486.2	73.92	-0.08	74	68.91	32.38	7.06	34.43	100	236	Peak
2484.73	49.83	-4.17	54	44.82	32.38	7.06	34.43	100	236	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	70.19	-3.81	74	65.18	32.38	7.06	34.43	180	272	Peak
2484.79	45.87	-8.13	54	40.86	32.38	7.06	34.43	180	272	Average

< MIMO Ant. 1+2>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Band :	Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Eric Shih

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
2389.83	73.93	-0.07	74	69.02	32.3	6.91	34.3	100	346	Peak
2383.89	49.65	-4.35	54	44.73	32.28	6.91	34.27	100	346	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
2389.29	72.98	-1.02	74	68.04	32.3	6.91	34.27	105	25	Peak
2389.38	49.5	-4.5	54	44.56	32.3	6.91	34.27	105	25	Average

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Band :	High	**Relative Humidity :**	51~54%
Test Channel :	11	**Test Engineer :**	Eric Shih

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
2483.98	73.82	-0.18	74	68.81	32.38	7.06	34.43	123	276	Peak
2484.88	49.89	-4.11	54	44.88	32.38	7.06	34.43	123	276	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
2487.25	73.67	-0.33	74	68.66	32.38	7.06	34.43	100	207	Peak
2484.7	48.62	-5.38	54	43.61	32.38	7.06	34.43	100	207	Average

< Ant. 1>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Band :	Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Eric Shih

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
2388.48	73.37	-0.63	74	68.43	32.3	6.91	34.27	100	242	Peak
2387.4	48.37	-5.63	54	43.43	32.3	6.91	34.27	100	242	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
2389.29	69.81	-4.19	74	64.87	32.3	6.91	34.27	121	196	Peak
2389.56	47.04	-6.96	54	42.1	32.3	6.91	34.27	121	196	Average

< Ant. 2>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Band :	Low	**Relative Humidity :**	51~54%
Test Channel :	01	**Test Engineer :**	Eric Shih

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
2388.66	73.45	-0.55	74	68.51	32.3	6.91	34.27	104	238	Peak
2388.93	50.3	-3.7	54	45.36	32.3	6.91	34.27	104	238	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
2389.29	67.5	-6.5	74	62.56	32.3	6.91	34.27	100	274	Peak
2390	46.3	-7.7	54	41.39	32.3	6.91	34.3	100	274	Average

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

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 1GHz.

< Ant. 1>

Test Mode :	802.11b	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	100.38	-	-	95.42	32.31	6.95	34.3	117	178	Average
2412	112	-	-	107.04	32.31	6.95	34.3	117	178	Peak
4824	40.86	-33.14	74	57.05	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11b	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2412	98.06	-	-	93.1	32.31	6.95	34.3	177	275	Average
2412	109.71	-	-	104.75	32.31	6.95	34.3	177	275	Peak
4824	41.42	-32.58	74	57.61	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11b	Temperature :	22~25°C
Test Channel :	06	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	100.34	-	-	95.35	32.35	6.99	34.35	120	244	Average
2437	112.11	-	-	107.12	32.35	6.99	34.35	120	244	Peak
4874	41.63	-32.37	74	57.69	33.95	8.82	58.83	100	0	Peak
7311	43.73	-30.27	74	55.01	35.54	10.91	57.73	100	0	Peak

Test Mode :	802.11b	Temperature :	22~25°C
Test Channel :	06	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2438 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2438	97.83	-	-	92.84	32.35	6.99	34.35	148	285	Average
2438	109.57	-	-	104.58	32.35	6.99	34.35	148	285	Peak
4875	41.81	-32.19	74	57.87	33.95	8.82	58.83	100	0	Peak
7311	45.7	-28.3	74	56.98	35.54	10.91	57.73	100	0	Peak

Test Mode :	802.11b	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2460	99.68	-	-	94.68	32.37	7.02	34.39	100	239	Average
2460	111.24	-	-	106.24	32.37	7.02	34.39	100	239	Peak
4923	40.94	-33.06	74	56.87	33.93	8.87	58.73	100	0	Peak
7386	43.22	-30.78	74	54.51	35.52	10.99	57.8	100	0	Peak

Test Mode :	802.11b	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2462 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2462	98.5	-	-	93.5	32.37	7.02	34.39	200	282	Average
2462	110.43	-	-	105.43	32.37	7.02	34.39	200	282	Peak
4923	41.34	-32.66	74	57.27	33.93	8.87	58.73	100	0	Peak
7386	44.03	-29.97	74	55.32	35.52	10.99	57.8	100	0	Peak

< Ant. 1>

Test Mode :	802.11g	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 2410 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2410	97.63	-	-	92.67	32.31	6.95	34.3	166	208	Average
2410	107.65	-	-	102.69	32.31	6.95	34.3	166	208	Peak
4824	40.99	-33.01	74	57.18	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11g	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Vertical
Remark :	1. 2410 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2410	94.69	-	-	89.73	32.31	6.95	34.3	168	287	Average
2410	105.07	-	-	100.11	32.31	6.95	34.3	168	287	Peak
4824	41.3	-32.7	74	57.49	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11g	Temperature :	22~25°C
Test Channel :	06	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	98.39	-	-	93.4	32.35	6.99	34.35	120	245	Average
2437	108.71	-	-	103.76	32.35	6.99	34.39	120	245	Peak
4875	41.47	-32.53	74	57.53	33.95	8.82	58.83	100	0	Peak
7311	42.94	-31.06	74	54.22	35.54	10.91	57.73	100	0	Peak

Test Mode :	802.11g	Temperature :	22~25°C
Test Channel :	06	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	95.88	-	-	90.89	32.35	6.99	34.35	166	287	Average
2437	104.85	-	-	99.88	32.33	6.99	34.35	166	287	Peak
4875	41	-33	74	57.06	33.95	8.82	58.83	100	0	Peak
7311	43.13	-30.87	74	54.41	35.54	10.91	57.73	100	0	Peak

Test Mode :	802.11g	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
50.25	26.76	-13.24	40	48.86	8.4	0.7	31.2	-	-	Peak
231.15	37.42	-8.58	46	56.71	10.22	1.49	31	-	-	Peak
269.49	42.56	-3.44	46	59.02	12.9	1.64	31	122	144	Peak
346.2	34.46	-11.54	46	49.27	14.28	1.94	31.03	-	-	Peak
384.7	29.42	-16.58	46	42.99	15.3	2.11	30.98	-	-	Peak
500.2	34.69	-11.31	46	44.84	18	2.45	30.6	-	-	Peak
2460	97.65	-	-	92.65	32.37	7.02	34.39	100	240	Average
2460	107.87	-	-	102.87	32.37	7.02	34.39	100	240	Peak
4923	41.37	-32.63	74	57.3	33.93	8.87	58.73	100	0	Peak
7386	43.9	-30.1	74	55.19	35.52	10.99	57.8	100	0	Peak

Test Mode :	802.11g	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.95	32.46	-7.54	40	55.74	7.2	0.72	31.2	105	78	Peak
99.39	25.04	-18.46	43.5	44.75	10.4	0.99	31.1	-	-	Peak
269.76	31.15	-14.85	46	47.61	12.9	1.64	31	-	-	Peak
384.7	29.06	-16.94	46	42.63	15.3	2.11	30.98	-	-	Peak
479.9	27.2	-18.8	46	38.02	17.6	2.38	30.8	-	-	Peak
924.4	28.42	-17.58	46	31.25	24.12	3.4	30.35	-	-	Peak
2460	97.3	-	-	92.3	32.37	7.02	34.39	187	272	Average
2460	107.52	-	-	102.52	32.37	7.02	34.39	187	272	Peak
4923	40.77	-33.23	74	56.7	33.93	8.87	58.73	100	0	Peak
7386	43.6	-30.4	74	54.89	35.52	10.99	57.8	100	0	Peak

< Ant. 2>

Test Mode :	802.11g	**Temperature :**	22~25°C
Test Channel :	11	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 2463 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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	29.08	-10.92	40	47.74	11.9	0.64	31.2	-	-	Peak
231.15	37.28	-8.72	46	56.57	10.22	1.49	31	-	-	Peak
269.76	40.92	-5.08	46	57.38	12.9	1.64	31	106	21	Peak
346.2	34.5	-11.5	46	49.31	14.28	1.94	31.03	-	-	Peak
461.7	32.94	-13.06	46	43.99	17.42	2.33	30.8	-	-	Peak
512.8	28.25	-17.75	46	38.32	18.1	2.48	30.65	-	-	Peak
2463	101.57	-	-	96.57	32.37	7.02	34.39	100	236	Average
2463	111.21	-	-	106.21	32.37	7.02	34.39	100	236	Peak
4923	41.82	-32.18	74	57.75	33.93	8.87	58.73	100	0	Peak
7386	43.12	-30.88	74	54.41	35.52	10.99	57.8	100	0	Peak

Test Mode :	802.11g	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.14	31.78	-8.22	40	54.67	7.6	0.71	31.2	147	75	Peak
98.31	25.58	-17.92	43.5	45.77	9.92	0.99	31.1	-	-	Peak
192.54	28.62	-14.88	43.5	49.54	8.89	1.29	31.1	-	-	Peak
398	28.04	-17.96	46	40.99	15.82	2.14	30.91	-	-	Peak
479.9	27.28	-18.72	46	38.1	17.6	2.38	30.8	-	-	Peak
909.7	28.76	-17.24	46	32.22	23.5	3.36	30.32	-	-	Peak
2460	94	-	-	89	32.37	7.02	34.39	180	272	Average
2460	104.04	-	-	99.04	32.37	7.02	34.39	180	272	Peak
4923	41.99	-32.01	74	57.92	33.93	8.87	58.73	100	0	Peak
7386	43.7	-30.3	74	54.99	35.52	10.99	57.8	100	0	Peak

< MIMO Ant. 1+2>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 2410 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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	25.52	-14.48	40	44.18	11.9	0.64	31.2	-	-	Peak
243.84	36.44	-9.56	46	54.21	11.7	1.53	31	-	-	Peak
269.49	41.35	-4.65	46	57.81	12.9	1.64	31	105	252	Peak
346.2	33.97	-12.03	46	48.78	14.28	1.94	31.03	-	-	Peak
461.7	32.64	-13.36	46	43.69	17.42	2.33	30.8	-	-	Peak
500.2	33.93	-12.07	46	44.08	18	2.45	30.6	-	-	Peak
2410	98.83	-	-	93.87	32.31	6.95	34.3	100	346	Average
2410	109.77	-	-	104.81	32.31	6.95	34.3	100	346	Peak
4824	43.07	-30.93	74	59.26	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	01	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2412 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.41	32.82	-7.18	40	55.71	7.6	0.71	31.2	114	169	Peak
97.23	24.66	-18.84	43.5	45.1	9.68	0.98	31.1	-	-	Peak
269.49	30.83	-15.17	46	47.29	12.9	1.64	31	-	-	Peak
384.7	29.09	-16.91	46	42.66	15.3	2.11	30.98	-	-	Peak
479.9	27.22	-18.78	46	38.04	17.6	2.38	30.8	-	-	Peak
934.2	28.7	-17.3	46	31.35	24.3	3.42	30.37	-	-	Peak
2412	98.67	-	-	93.71	32.31	6.95	34.3	105	25	Average
2412	108.69	-	-	103.73	32.31	6.95	34.3	105	25	Peak
4824	42.84	-31.16	74	59.03	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	06	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	99.69	-	-	94.7	32.35	6.99	34.35	112	210	Average
2437	109.44	-	-	104.45	32.35	6.99	34.35	112	210	Peak
4875	43.03	-30.97	74	59.09	33.95	8.82	58.83	100	0	Peak
7311	43.72	-30.28	74	55	35.54	10.91	57.73	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	06	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2437	99.03	-	-	94.04	32.35	6.99	34.35	105	28	Average
2437	108.52	-	-	103.57	32.35	6.99	34.39	105	28	Peak
4875	42.63	-31.37	74	58.69	33.95	8.82	58.83	100	0	Peak
7311	43.37	-30.63	74	54.65	35.54	10.91	57.73	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2460	99.65	-	-	94.65	32.37	7.02	34.39	123	276	Average
2460	109.32	-	-	104.32	32.37	7.02	34.39	123	276	Peak
4924	41.1	-32.9	74	57	33.93	8.9	58.73	100	0	Peak
7386	43.94	-30.06	74	55.23	35.52	10.99	57.8	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	11	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
2460	98.99	-	-	93.99	32.37	7.02	34.39	100	207	Average
2460	109.11	-	-	104.11	32.37	7.02	34.39	100	207	Peak
4923	42.22	-31.78	74	58.15	33.93	8.87	58.73	100	0	Peak
7386	43.96	-30.04	74	55.25	35.52	10.99	57.8	100	0	Peak

< Ant. 1>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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	26.05	-13.95	40	44.71	11.9	0.64	31.2	-	-	Peak
97.23	22.88	-20.62	43.5	43.32	9.68	0.98	31.1	-	-	Peak
269.76	41.51	-4.49	46	57.97	12.9	1.64	31	136	59	Peak
346.2	34.66	-11.34	46	49.47	14.28	1.94	31.03	-	-	Peak
500.2	34.43	-11.57	46	44.58	18	2.45	30.6	-	-	Peak
934.2	29.65	-16.35	46	32.3	24.3	3.42	30.37	-	-	Peak
2414	96.23	-	-	91.27	32.31	6.95	34.3	100	158	Average
2414	106.44	-	-	101.48	32.31	6.95	34.3	100	158	Peak
4824	41.3	-32.7	74	57.49	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	01	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2410 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.14	32.29	-7.71	40	55.18	7.6	0.71	31.2	147	78	Peak
192.54	28.67	-14.83	43.5	49.59	8.89	1.29	31.1	-	-	Peak
269.49	30.58	-15.42	46	47.04	12.9	1.64	31	-	-	Peak
384.7	28.73	-17.27	46	42.3	15.3	2.11	30.98	-	-	Peak
500.2	26.58	-19.42	46	36.73	18	2.45	30.6	-	-	Peak
934.2	28.67	-17.33	46	31.32	24.3	3.42	30.37	-	-	Peak
2410	94.35	-	-	89.39	32.31	6.95	34.3	121	196	Average
2410	104.08	-	-	99.12	32.31	6.95	34.3	121	196	Peak
4824	41.68	-32.32	74	57.87	33.97	8.77	58.93	100	0	Peak

< Ant. 2>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	01	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 2414 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
57.81	23.23	-16.77	40	47.58	6.16	0.75	31.26	-	-	Peak
244.11	36.33	-9.67	46	54	11.8	1.53	31	-	-	Peak
269.49	41.29	-4.71	46	57.75	12.9	1.64	31	110	23	Peak
346.2	34.81	-11.19	46	49.62	14.28	1.94	31.03	-	-	Peak
461.7	32.2	-13.8	46	43.25	17.42	2.33	30.8	-	-	Peak
675.9	27.8	-18.2	46	34.9	20.46	2.89	30.45	-	-	Peak
2414	100.17	-	-	95.21	32.31	6.95	34.3	104	236	Average
2414	109.89	-	-	104.93	32.31	6.95	34.3	104	236	Peak
4824	40.3	-33.7	74	56.49	33.97	8.77	58.93	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	01	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 2410 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
139.62	22.5	-21	43.5	40.9	11.5	1.2	31.1	-	-	Peak
231.15	25.01	-20.99	46	44.3	10.22	1.49	31	-	-	Peak
269.49	31.72	-14.28	46	48.18	12.9	1.64	31	177	69	Peak
384.7	28.82	-17.18	46	42.39	15.3	2.11	30.98	-	-	Peak
479.9	28.06	-17.94	46	38.88	17.6	2.38	30.8	-	-	Peak
573	23.81	-22.19	46	32.24	19.67	2.61	30.71	-	-	Peak
2410	93.21	-	-	88.25	32.31	6.95	34.3	100	274	Average
2410	103.44	-	-	98.48	32.31	6.95	34.3	100	274	Peak
4824	41.91	-32.09	74	58.1	33.97	8.77	58.93	100	0	Peak

< Ant. 1>

Test Mode :	802.11a	**Temperature :**	22~25°C
Test Channel :	149	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 5744 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5744	99.1	-	-	87.87	35.34	10.06	34.17	104	261	Average
5744	108.99	-	-	97.76	35.34	10.06	34.17	104	261	Peak
11490	46.93	-27.07	74	65.14	0	14.33	32.54	100	0	Peak

Test Mode :	802.11a	**Temperature :**	22~25°C
Test Channel :	149	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Vertical
Remark :	1. 5743 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5743	96.73	-	-	85.5	35.34	10.06	34.17	108	255	Average
5743	106.94	-	-	95.71	35.34	10.06	34.17	108	255	Peak
11490	47.09	-26.91	74	51.35	38.38	14.33	56.97	100	0	Peak

Test Mode :	802.11a	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
57.81	23.29	-16.71	40	47.64	6.16	0.75	31.26	-	-	Peak
246.27	36.41	-9.59	46	53.88	12	1.53	31	-	-	Peak
269.49	42.61	-3.39	46	59.07	12.9	1.64	31	146	133	Peak
346.2	35.15	-10.85	46	49.96	14.28	1.94	31.03	-	-	Peak
461.7	32.54	-13.46	46	43.59	17.42	2.33	30.8	-	-	Peak
500.2	33.28	-12.72	46	43.43	18	2.45	30.6	-	-	Peak
5787	99.78	-	-	88.56	35.38	10.07	34.23	101	257	Average
5787	109.95	-	-	98.73	35.38	10.07	34.23	101	257	Peak
11568	48.48	-25.52	74	52.39	38.46	14.41	56.78	100	0	Peak

Test Mode :	802.11a	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.95	32.47	-7.53	40	55.75	7.2	0.72	31.2	102	229	Peak
99.39	24.95	-18.55	43.5	44.66	10.4	0.99	31.1	-	-	Peak
269.49	31.29	-14.71	46	47.75	12.9	1.64	31	-	-	Peak
384.7	28.58	-17.42	46	42.15	15.3	2.11	30.98	-	-	Peak
573	24.65	-21.35	46	33.08	19.67	2.61	30.71	-	-	Peak
934.2	30.34	-15.66	46	32.99	24.3	3.42	30.37	-	-	Peak
5787	98.3	-	-	87.08	35.38	10.07	34.23	105	257	Average
5787	108.86	-	-	97.64	35.38	10.07	34.23	105	257	Peak
11571	47.69	-26.31	74	51.6	38.46	14.41	56.78	100	0	Peak

Test Mode :	802.11a	Temperature :	22~25°C
Test Channel :	165	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5827 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5827	97.28	-	-	86.04	35.4	10.11	34.27	100	261	Average
5827	108.06	-	-	96.82	35.4	10.11	34.27	100	261	Peak
11649	47.86	-26.14	74	51.44	38.51	14.52	56.61	100	0	Peak

Test Mode :	802.11a	Temperature :	22~25°C
Test Channel :	165	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5823 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5823	95.4	-	-	84.16	35.4	10.11	34.27	112	257	Average
5823	105.6	-	-	94.36	35.4	10.11	34.27	112	257	Peak
11649	47.66	-26.34	74	51.24	38.51	14.52	56.61	100	0	Peak

< Ant. 2>

Test Mode :	802.11a	**Temperature :**	22~25°C
Test Channel :	157	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 5783 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
57.27	24.84	-15.16	40	49.1	6.24	0.74	31.24	-	-	Peak
141.24	24.01	-19.49	43.5	42.41	11.5	1.2	31.1	-	-	Peak
205.23	28.95	-14.55	43.5	49.56	9.15	1.34	31.1	-	-	Peak
500.2	35.25	-10.75	46	45.4	18	2.45	30.6	154	352	Peak
651.4	27.84	-18.16	46	35.12	20.38	2.84	30.5	-	-	Peak
909.7	29.71	-16.29	46	33.17	23.5	3.36	30.32	-	-	Peak
5783	77.72	-	-	66.51	35.37	10.07	34.23	100	140	Average
5783	87.91	-	-	76.7	35.37	10.07	34.23	100	140	Peak
11570	42.91	-11.09	54	46.82	38.46	14.41	56.78	100	112	Average
11570	51.74	-22.26	74	55.65	38.46	14.41	56.78	100	112	Peak

Test Mode :	802.11a	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.68	32.24	-7.76	40	55.13	7.6	0.71	31.2	117	322	Peak
98.58	24.61	-18.89	43.5	44.56	10.16	0.99	31.1	-	-	Peak
269.49	30.91	-15.09	46	47.37	12.9	1.64	31	-	-	Peak
346.2	26.76	-19.24	46	41.57	14.28	1.94	31.03	-	-	Peak
479.9	28.04	-17.96	46	38.86	17.6	2.38	30.8	-	-	Peak
934.2	28.91	-17.09	46	31.56	24.3	3.42	30.37	-	-	Peak
5787	78.07	-	-	66.85	35.38	10.07	34.23	100	104	Average
5787	88.07	-	-	76.85	35.38	10.07	34.23	100	104	Peak
11570	49.37	-4.63	54	53.28	38.46	14.41	56.78	100	196	Average
11570	59.22	-14.78	74	63.13	38.46	14.41	56.78	100	196	Peak

< MIMO Ant. 1+2>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	149	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 5743 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5743	98	-	-	86.77	35.34	10.06	34.17	103	259	Average
5743	108.02	-	-	96.79	35.34	10.06	34.17	103	259	Peak
11490	50.7	-23.3	74	54.96	38.38	14.33	56.97	100	0	Peak

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	149	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Vertical
Remark :	1. 5743 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5743	96.76	-	-	85.53	35.34	10.06	34.17	104	258	Average
5743	106.8	-	-	95.57	35.34	10.06	34.17	104	258	Peak
11490	45.73	-8.27	54	49.99	38.38	14.33	56.97	100	158	Average
11490	54.58	-19.42	74	58.84	38.38	14.33	56.97	100	158	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5786 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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	25.92	-14.08	40	44.58	11.9	0.64	31.2	-	-	Peak
231.15	37.22	-8.78	46	56.51	10.22	1.49	31	-	-	Peak
269.76	41.58	-4.42	46	58.04	12.9	1.64	31	112	301	Peak
346.2	35.09	-10.91	46	49.9	14.28	1.94	31.03	-	-	Peak
500.2	33.63	-12.37	46	43.78	18	2.45	30.6	-	-	Peak
983.2	28.66	-25.34	54	30.51	24.93	3.49	30.27	-	-	Peak
5786	97.56	-	-	86.34	35.38	10.07	34.23	101	258	Average
5786	107.69	-	-	96.47	35.38	10.07	34.23	101	258	Peak
11571	49.76	-24.24	74	53.67	38.46	14.41	56.78	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5783 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.14	31.53	-8.47	40	54.42	7.6	0.71	31.2	142	227	Peak
192.27	26.96	-16.54	43.5	47.91	8.86	1.29	31.1	-	-	Peak
269.76	30.83	-15.17	46	47.29	12.9	1.64	31	-	-	Peak
615.7	24.05	-21.95	46	31.8	20.08	2.74	30.57	-	-	Peak
856.5	25.45	-20.55	46	29.32	23.24	3.28	30.39	-	-	Peak
934.2	28.63	-17.37	46	31.28	24.3	3.42	30.37	-	-	Peak
5783	95.71	-	-	84.5	35.37	10.07	34.23	104	258	Average
5783	106.05	-	-	94.84	35.37	10.07	34.23	104	258	Peak
11568	47.01	-6.99	54	50.92	38.46	14.41	56.78	100	158	Average
11568	55.76	-18.24	74	59.67	38.46	14.41	56.78	100	158	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	165	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5827 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5827	96.87	-	-	85.63	35.4	10.11	34.27	100	261	Average
5827	107.36	-	-	96.12	35.4	10.11	34.27	100	261	Peak
11649	50.96	-23.04	74	54.54	38.51	14.52	56.61	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	165	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5823 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5823	95.09	-	-	83.85	35.4	10.11	34.27	113	264	Average
5823	105.29	-	-	94.05	35.4	10.11	34.27	113	264	Peak
11652	46.9	-7.1	54	50.43	38.52	14.52	56.57	100	167	Average
11652	55.08	-18.92	74	58.61	38.52	14.52	56.57	100	167	Peak

<Ant. 1>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	157	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 5783 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
50.25	25.64	-14.36	40	47.74	8.4	0.7	31.2	-	-	Peak
244.11	36.58	-9.42	46	54.25	11.8	1.53	31	-	-	Peak
269.49	42.07	-3.93	46	58.53	12.9	1.64	31	113	341	Peak
346.2	34.49	-11.51	46	49.3	14.28	1.94	31.03	-	-	Peak
384.7	28.96	-17.04	46	42.53	15.3	2.11	30.98	-	-	Peak
664	27.09	-18.91	46	34.34	20.35	2.87	30.47	-	-	Peak
5783	74.05	-	-	62.84	35.37	10.07	34.23	100	142	Average
5783	84.1	-	-	72.89	35.37	10.07	34.23	100	142	Peak
11570	43.41	-10.59	54	47.32	38.46	14.41	56.78	115	212	Average
11570	51.69	-22.31	74	55.6	38.46	14.41	56.78	115	212	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5783 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.14	31.17	-8.83	40	54.06	7.6	0.71	31.2	200	312	Peak
195.78	23.33	-20.17	43.5	44.15	8.98	1.3	31.1	-	-	Peak
269.49	31.93	-14.07	46	48.39	12.9	1.64	31	-	-	Peak
384.7	28.6	-17.4	46	42.17	15.3	2.11	30.98	-	-	Peak
479.9	27	-19	46	37.82	17.6	2.38	30.8	-	-	Peak
934.2	29.53	-16.47	46	32.18	24.3	3.42	30.37	-	-	Peak
5783	74.24	-	-	63.03	35.37	10.07	34.23	100	107	Average
5783	84.03	-	-	72.82	35.37	10.07	34.23	100	107	Peak
11571	48.13	-5.87	54	52.04	38.46	14.41	56.78	126	196	Average
11571	58.41	-15.59	74	62.32	38.46	14.41	56.78	126	196	Peak

< Ant. 2>

Test Mode :	802.11n HT20	**Temperature :**	22~25°C
Test Channel :	157	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 5783 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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	26.77	-13.23	40	45.43	11.9	0.64	31.2	-	-	Peak
231.15	37.72	-8.28	46	57.01	10.22	1.49	31	-	-	Peak
269.49	42.68	-3.32	46	59.14	12.9	1.64	31	182	196	Peak
346.2	35.52	-10.48	46	50.33	14.28	1.94	31.03	-	-	Peak
461.7	31.77	-14.23	46	42.82	17.42	2.33	30.8	-	-	Peak
500.2	34.31	-11.69	46	44.46	18	2.45	30.6	-	-	Peak
5783	97.79	-	-	86.58	35.37	10.07	34.23	101	262	Average
5783	108.99	-	-	97.78	35.37	10.07	34.23	101	262	Peak
11571	47.24	-26.76	74	51.15	38.46	14.41	56.78	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	22~25°C
Test Channel :	157	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5787 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
52.41	32.6	-7.4	40	55.49	7.6	0.71	31.2	136	48	Peak
98.58	24.84	-18.66	43.5	44.79	10.16	0.99	31.1	-	-	Peak
192.54	27.33	-16.17	43.5	48.25	8.89	1.29	31.1	-	-	Peak
479.9	26.95	-19.05	46	37.77	17.6	2.38	30.8	-	-	Peak
570.9	24.33	-21.67	46	32.75	19.69	2.61	30.72	-	-	Peak
934.2	30.36	-15.64	46	33.01	24.3	3.42	30.37	-	-	Peak
5787	95.96	-	-	84.74	35.38	10.07	34.23	105	259	Average
5787	106.83	-	-	95.61	35.38	10.07	34.23	105	259	Peak
11568	49.54	-24.46	74	53.45	38.46	14.41	56.78	100	0	Peak

< MIMO Ant. 1+2>

Test Mode :	802.11n HT40	**Temperature :**	22~25°C
Test Channel :	151	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Horizontal
Remark :	1. 5757 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5757	94.41	-	-	83.19	35.36	10.06	34.2	102	262	Average
5757	104.94	-	-	93.72	35.36	10.06	34.2	102	262	Peak
11511	47.86	-26.14	74	52.06	38.4	14.35	56.95	100	0	Peak

Test Mode :	802.11n HT40	**Temperature :**	22~25°C
Test Channel :	151	**Relative Humidity :**	51~54%
Test Engineer :	Eric Shih	**Polarization :**	Vertical
Remark :	1. 5757 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5757	93.46	-	-	82.24	35.36	10.06	34.2	125	266	Average
5757	103.72	-	-	92.5	35.36	10.06	34.2	125	266	Peak
11510	42.71	-11.29	54	46.91	38.4	14.35	56.95	100	159	Average
11510	52.42	-21.58	74	56.62	38.4	14.35	56.95	100	159	Peak

Test Mode :	802.11n HT40	Temperature :	22~25°C
Test Channel :	159	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Horizontal
Remark :	1. 5797 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5797	93.64	-	-	82.4	35.38	10.09	34.23	101	262	Average
5797	103.76	-	-	92.52	35.38	10.09	34.23	101	262	Peak
11589	47.95	-26.05	74	51.78	38.47	14.44	56.74	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	22~25°C
Test Channel :	159	Relative Humidity :	51~54%
Test Engineer :	Eric Shih	Polarization :	Vertical
Remark :	1. 5793 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

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
5793	91.03	-	-	79.79	35.38	10.09	34.23	101	105	Average
5793	101.79	-	-	90.55	35.38	10.09	34.23	101	105	Peak
11589	42.28	-11.72	54	46.11	38.47	14.44	56.74	100	196	Average
11589	52.6	-21.4	74	56.43	38.47	14.44	56.74	100	196	Peak

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 (dBμV)	
	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.

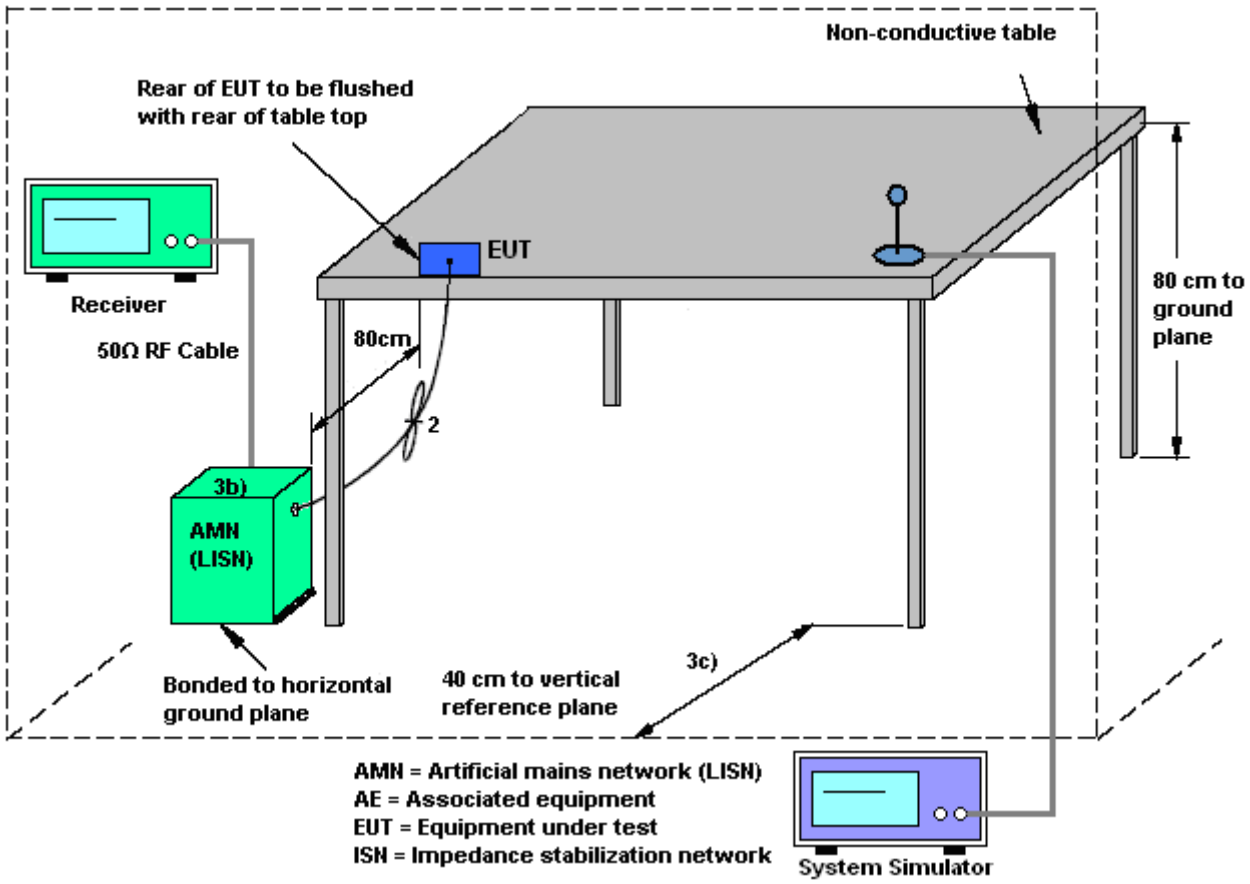
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

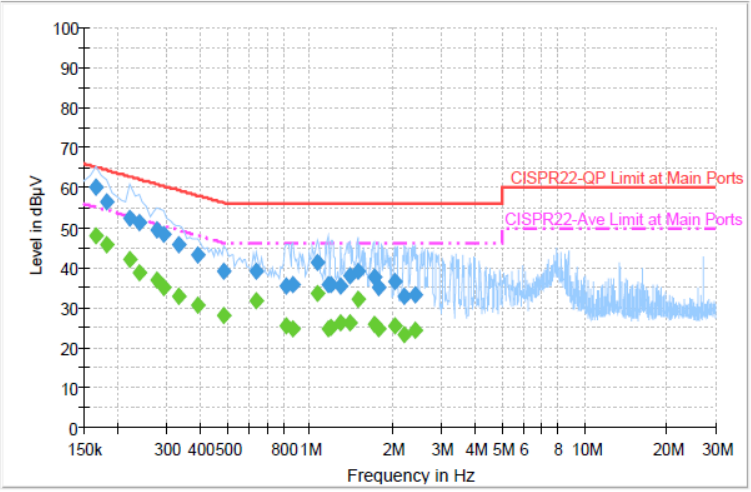
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other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

3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

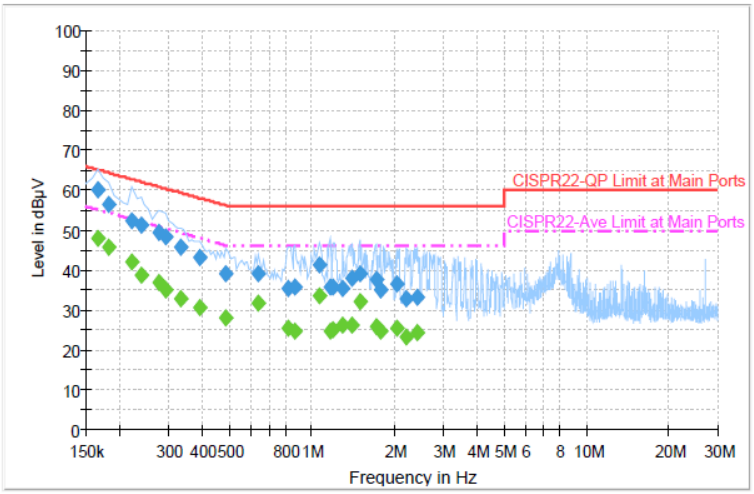
Test Mode :	Mode 1	Temperature :	20~29℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band II Idle + WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 + TC + Print + Adapter 1		



Final Result : QuasiPeak

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	60.1	Off	L1	19.4	5.1	65.2
0.182000	56.4	Off	L1	19.4	8.0	64.4
0.222000	52.4	Off	L1	19.4	10.3	62.7
0.238000	51.1	Off	L1	19.5	11.1	62.2
0.278000	49.5	Off	L1	19.3	11.4	60.9
0.294000	48.4	Off	L1	19.4	12.0	60.4
0.334000	45.9	Off	L1	19.4	13.5	59.4
0.390000	43.0	Off	L1	19.4	15.1	58.1
0.486000	39.1	Off	L1	19.4	17.1	56.2
0.638000	39.2	Off	L1	19.4	16.8	56.0
0.822000	35.6	Off	L1	19.5	20.4	56.0
0.870000	35.9	Off	L1	19.5	20.1	56.0
1.070000	41.3	Off	L1	19.4	14.7	56.0
1.166000	35.8	Off	L1	19.4	20.2	56.0
1.198000	36.0	Off	L1	19.5	20.0	56.0
1.294000	35.3	Off	L1	19.5	20.7	56.0
1.398000	38.1	Off	L1	19.5	17.9	56.0
1.494000	39.1	Off	L1	19.5	16.9	56.0
1.710000	37.5	Off	L1	19.5	18.5	56.0
1.774000	34.9	Off	L1	19.5	21.1	56.0
2.030000	36.5	Off	L1	19.5	19.5	56.0
2.214000	32.8	Off	L1	19.6	23.2	56.0
2.414000	33.3	Off	L1	19.6	22.7	56.0

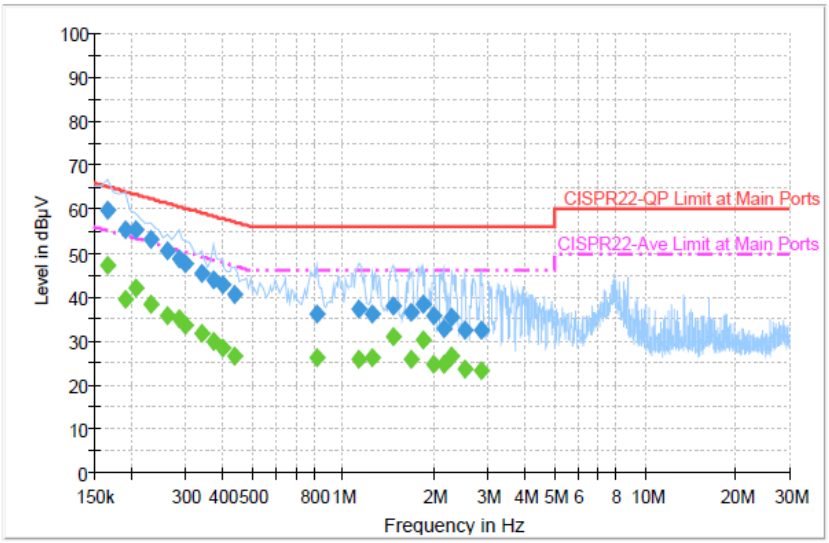
Test Mode :	Mode 1	Temperature :	20~29℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WCDMA Band II Idle + WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 + TC + Print + Adapter 1		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	48.1	Off	L1	19.4	7.1	55.2
0.182000	45.6	Off	L1	19.4	8.8	54.4
0.222000	41.9	Off	L1	19.4	10.8	52.7
0.238000	38.7	Off	L1	19.5	13.5	52.2
0.278000	36.8	Off	L1	19.3	14.1	50.9
0.294000	35.0	Off	L1	19.4	15.4	50.4
0.334000	32.9	Off	L1	19.4	16.5	49.4
0.390000	30.7	Off	L1	19.4	17.4	48.1
0.486000	28.2	Off	L1	19.4	18.0	46.2
0.638000	31.7	Off	L1	19.4	14.3	46.0
0.822000	25.6	Off	L1	19.5	20.4	46.0
0.870000	24.8	Off	L1	19.5	21.2	46.0
1.070000	33.7	Off	L1	19.4	12.3	46.0
1.166000	24.8	Off	L1	19.4	21.2	46.0
1.198000	25.1	Off	L1	19.5	20.9	46.0
1.294000	26.3	Off	L1	19.5	19.7	46.0
1.398000	26.2	Off	L1	19.5	19.8	46.0
1.494000	32.2	Off	L1	19.5	13.8	46.0
1.710000	26.0	Off	L1	19.5	20.0	46.0
1.774000	24.6	Off	L1	19.5	21.4	46.0
2.030000	25.6	Off	L1	19.5	20.4	46.0
2.214000	23.4	Off	L1	19.6	22.6	46.0
2.414000	24.2	Off	L1	19.6	21.8	46.0

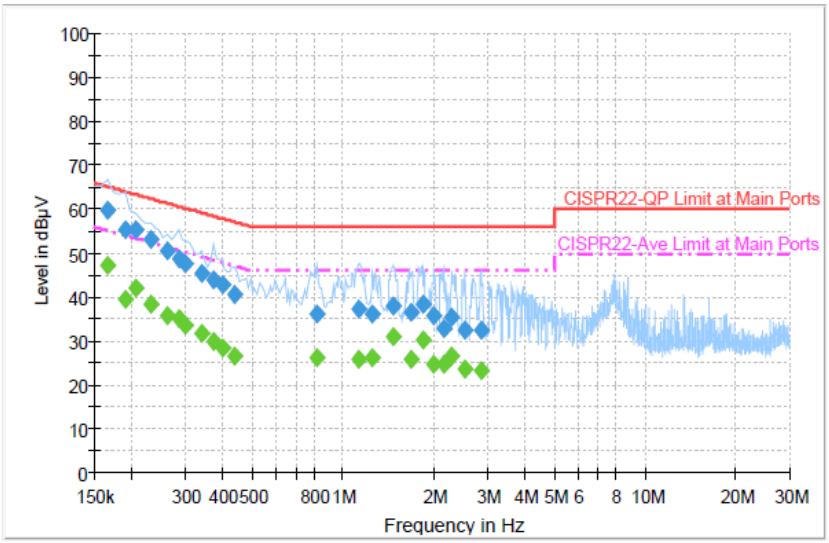
Test Mode :	Mode 1	Temperature :	20~29℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band II Idle + WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 + TC + Print + Adapter 1		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	59.9	Off	N	19.4	5.3	65.2
0.190000	55.3	Off	N	19.4	8.7	64.0
0.206000	55.2	Off	N	19.4	8.2	63.4
0.230000	53.1	Off	N	19.4	9.3	62.4
0.262000	50.7	Off	N	19.4	10.7	61.4
0.286000	48.8	Off	N	19.4	11.8	60.6
0.302000	47.8	Off	N	19.4	12.4	60.2
0.342000	45.3	Off	N	19.4	13.9	59.2
0.374000	43.8	Off	N	19.4	14.6	58.4
0.398000	42.7	Off	N	19.5	15.2	57.9
0.438000	40.7	Off	N	19.4	16.4	57.1
0.822000	36.3	Off	N	19.6	19.7	56.0
1.126000	37.4	Off	N	19.5	18.6	56.0
1.254000	36.3	Off	N	19.5	19.7	56.0
1.462000	38.1	Off	N	19.5	17.9	56.0
1.686000	36.5	Off	N	19.5	19.5	56.0
1.830000	38.5	Off	N	19.5	17.5	56.0
1.998000	35.9	Off	N	19.5	20.1	56.0
2.150000	32.8	Off	N	19.6	23.2	56.0
2.294000	35.6	Off	N	19.6	20.4	56.0
2.542000	32.4	Off	N	19.6	23.6	56.0
2.854000	32.6	Off	N	19.6	23.4	56.0

Test Mode :	Mode 1	Temperature :	20~29℃
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WCDMA Band II Idle + WLAN (2.4GHz) Link + Bluetooth Link + MPEG4 + TC + Print + Adapter 1		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	47.1	Off	N	19.4	8.1	55.2
0.190000	39.5	Off	N	19.4	14.5	54.0
0.206000	42.2	Off	N	19.4	11.2	53.4
0.230000	38.5	Off	N	19.4	13.9	52.4
0.262000	36.0	Off	N	19.4	15.4	51.4
0.286000	34.9	Off	N	19.4	15.7	50.6
0.302000	33.5	Off	N	19.4	16.7	50.2
0.342000	31.9	Off	N	19.4	17.3	49.2
0.374000	29.9	Off	N	19.4	18.5	48.4
0.398000	28.5	Off	N	19.5	19.4	47.9
0.438000	26.5	Off	N	19.4	20.6	47.1
0.822000	26.3	Off	N	19.6	19.7	46.0
1.126000	26.0	Off	N	19.5	20.0	46.0
1.254000	26.4	Off	N	19.5	19.6	46.0
1.462000	31.1	Off	N	19.5	14.9	46.0
1.686000	25.7	Off	N	19.5	20.3	46.0
1.830000	30.4	Off	N	19.5	15.6	46.0
1.998000	24.7	Off	N	19.5	21.3	46.0
2.150000	24.7	Off	N	19.6	21.3	46.0
2.294000	26.7	Off	N	19.6	19.3	46.0
2.542000	23.7	Off	N	19.6	22.3	46.0
2.854000	23.3	Off	N	19.6	22.7	46.0

3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

For CDD transmissions, directional gain is calculated as

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth antenna.

The EUT supports CDD mode.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

	Ant. 1 (dBi)	Ant. 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
2.4 GHz	4.39	3.12	6.79	6.79	0.79	0.79
Band I	0.75	2.29	4.56	4.56	0.00	0.00
Band II	0.57	1.79	4.21	4.21	0.00	0.00
Band III	3.34	3.86	6.61	6.61	0.61	0.61
Band IV	2.76	3.79	6.30	6.30	0.30	0.30

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 07, 2013	Oct. 15, 2013~ Nov. 25, 2013	Jun. 06, 2014	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	Oct. 15, 2013~ Nov. 25, 2013	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	Oct. 15, 2013~ Nov. 25, 2013	Aug. 16, 2014	Conducted (TH02-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 06, 2013	Nov. 11, 2013~ Nov. 14, 2013	Sep. 05, 2014	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz~30GHz	Nov. 30, 2012	Nov. 11, 2013~ Nov. 14, 2013	Nov. 29, 2013	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/0001	9 kHz~30 MhZ	Jul. 03, 2012	Nov. 11, 2013~ Nov. 14, 2013	Jul. 03, 2014	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Nov. 11, 2013~ Nov. 14, 2013	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2013	Nov. 11, 2013~ Nov. 14, 2013	Aug. 21, 2014	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Nov. 11, 2013~ Nov. 14, 2013	Oct. 02, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	30MHz~1GHz	Feb. 26, 2013	Nov. 11, 2013~ Nov. 14, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~26.5GHz	Dec. 01, 2012	Nov. 11, 2013~ Nov. 14, 2013	Nov. 30, 2013	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	159088	DC~18G High Gain	Feb. 27, 2013	Nov. 11, 2013~ Nov. 14, 2013	Feb. 26, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Nov. 11, 2013~ Nov. 14, 2013	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	Nov. 11, 2013~ Nov. 14, 2013	N/A	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9KHz – 2.75GHz	Nov. 13, 2012	Oct. 19, 2013	Nov. 12, 2013	Conduction (CO05-HY)
Two-LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2012	Oct. 19, 2013	Dec. 11, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 06, 2012	Oct. 19, 2013	Dec. 05, 2013	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Oct. 19, 2013	N/A	Conduction (CO05-HY)

5 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 (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.50**