

FCC RF Test Report

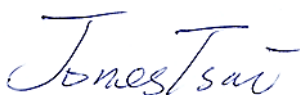
APPLICANT : VERTU Corporation Limited
EQUIPMENT : Cellular Telephone
BRAND NAME : VERTU
MODEL NAME : SIGNATURE TOUCH
TYPE (LTE) : RM-980V
TYPE (WCDMA) : RM-980C
FCC ID : P7QRM-980V
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Mar. 03, 2014 and testing was completed on May 21, 2014. 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



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
FR430314C	Rev. 01	Initial issue of report	May 26, 2014

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	$\geq 0.5\text{MHz}$	Pass	-
3.1	-	RSS-Gen 4.6.1	99% Bandwidth	-	Pass	-
3.2	15.247(b)	RSS-210 A8.4	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.3	15.247(e)	RSS-210 A8.2(b)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	Pass	-
3.4	15.247(d)	RSS-210 A8.5	Conducted Band Edges	$\leq 20\text{dBc}$	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 9.16 dB at 2483.830 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 9.10 dB at 0.150 MHz
3.7	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom

1.2 Manufacturer

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Cellular Telephone
Brand Name	VERTU
Model Name	SIGNATURE TOUCH
Type (LTE)	RM-980V
Type (WCDMA)	RM-980C
FCC ID	P7QRM-980V
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20/ WLAN 5GHz 802.11a/n HT20/HT40/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	F2
SW Version	1_160_0001
Sample #1	LTE SKU
Sample #2	WCDMA SKU
Sample #3	LTE SKU with 2 nd EMMC
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are three different types of EUT sample #1, sample #2 and sample #3. For WWAN bands, Sample 1 support WCDMA and LTE bands, sample #2 only support WCDMA band and LTE band is disabled by software. Sample #1 and Sample #3 are different for EMMC. We choose sample #1 to perform all tests.

List of Accessory:

Specification of Accessory		
AC Adapter	Brand Name	VERTU
	Model Name	AC-32V
Battery	Brand Name	VERTU
	Model Name	BP-9V
Car Charger	Brand Name	VERTU
	Model Name	DC-30V
Portable Power Charger	Brand Name	VERTU
	Model Name	DC-15V
Earphone 1	Brand Name	VERTU
	Model Name	WH-4V
Earphone 2	Brand Name	VERTU
	Model Name	WH-5V
USB Cable	Brand Name	VERTU
	Model Name	CA-225DV
Wireless Charger	Brand Name	VERTU
	Model Name	AC-35V

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/ac: 5745~5825MHz.
Maximum (Peak) Output Power to Antenna	<2412 MHz ~ 2462 MHz> 802.11b : 19.23 dBm (0.0838 W) 802.11g : 21.89 dBm (0.1545 W) 802.11n HT20 : 19.64 dBm (0.0920 W) <5745 MHz ~ 5825 MHz> 802.11a : 20.81 dBm (0.1205 W) 802.11n HT20 : 19.44 dBm (0.0879 W) 802.11n HT40 : 19.03 dBm (0.0800 W) 802.11ac VHT20 : 17.41 dBm (0.0551 W) 802.11ac VHT40 : 17.02 dBm (0.0504 W) 802.11ac VHT80 : 16.60 dBm (0.0457 W)
99% Occupied Bandwidth	<2412 MHz ~ 2462 MHz> 802.11b : 13.95MHz 802.11g : 18.55MHz 802.11n HT20 : 19.00MHz <5745 MHz ~ 5825 MHz> 802.11a : 19.40MHz 802.11n HT20 : 19.60MHz 802.11n HT40 : 37.70MHz 802.11ac VHT20 : 19.25 MHz 802.11ac VHT40 : 37.00 MHz 802.11ac VHT80 : 75.12 MHz
Antenna Type	802.11b/g/n : PIFA Antenna with gain -2.00 dBi 802.11a/n/ac : PIFA Antenna with gain 0.80 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

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 1 st 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	03CH06-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
- IC RSS-210 Issued 8
- IC RSS-Gen Issue 3
- NOTICE 2012-DRS0126

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, 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 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.

WLAN 2.4GHz 802.11b Average Power (dBm)						
Power vs. Channel			Power vs. Data Rate			
Channel	Frequency (MHz)	Data Rate 1M bps	Channel	2M bps	5.5M bps	11M bps
CH 01	2412	19.23	CH 01	19.20	19.12	19.11
CH 06	2437	19.02				
CH 11	2462	19.01				

WLAN 2.4GHz 802.11g Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps								
CH 01	2412	21.42	CH 11	21.64	21.69	21.82	21.73	21.75	21.69	21.75
CH 06	2437	21.82								
CH 11	2462	21.89								

WLAN 2.4GHz 802.11n HT20 Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0								
CH 01	2412	19.19	CH 11	19.37	19.38	19.43	19.32	19.36	19.21	19.22
CH 06	2437	19.21								
CH 11	2462	19.64								

WLAN 5GHz 802.11a Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate 6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 149	5745	20.81	CH 149	20.66	20.76	20.74	20.75	20.77	20.75	20.71
CH 157	5785	20.34								
CH 165	5825	20.51								

WLAN 5GHz 802.11n-HT20 Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 149	5745	19.44	CH 149	19.35	19.41	19.39	19.34	19.37	19.43	19.35
CH 157	5785	19.36								
CH 165	5825	19.33								

WLAN 5GHz 802.11n-HT40 Average Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 151	5755	19.03	CH 151	18.09	18.13	18.11	18.14	18.24	18.03	18.26
CH 159	5795	18.79								

WLAN 5GHz 802.11ac VHT20 RF Power (dBm)											
Power vs. Channel			Power vs. Data Rate								
Channel	Frequency (MHz)	Data Rate MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
CH 149	5745	16.86	CH 165	17.23	16.69	16.91	17.34	17.18	17.05	16.77	17.09
CH 157	5785	17.05									
CH 165	5825	17.41									

WLAN 5GHz 802.11ac VHT40 RF Power (dBm)												
Power vs. Channel			Power vs. Data Rate									
Channel	Frequency (MHz)	Data Rate MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 151	5755	17.02	CH 151	17.01	17.00	16.99	17.01	16.97	15.89	15.52	15.61	15.84
CH 159	5795	16.45										

WLAN 5GHz 802.11ac VHT80 RF Power (dBm)											
Power vs. Channel			Power vs. Data Rate								
Channel	Frequency (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
CH 155	5775	16.60	16.05	16.12	16.18	16.14	16.12	15.76	15.95	16.10	15.98

2.3 Test Mode

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

<WLAN 2.4GHz>

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

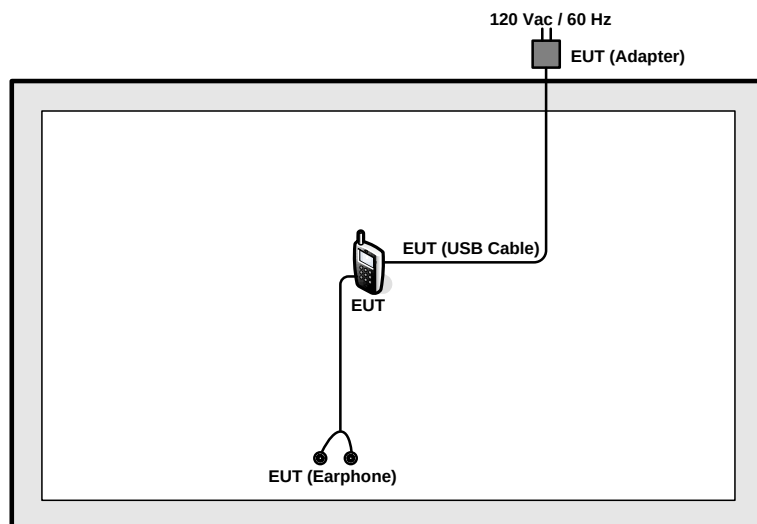
<WLAN 5GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	6dB and 99% BW Power Spectral Density	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/157/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	155
	Output Power	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/157/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	155
	Conducted Band Edge	802.11a	6 Mbps	149/165
		802.11n HT20	MCS0	149/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	-
Conducted TCs	Conducted Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/157/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	155

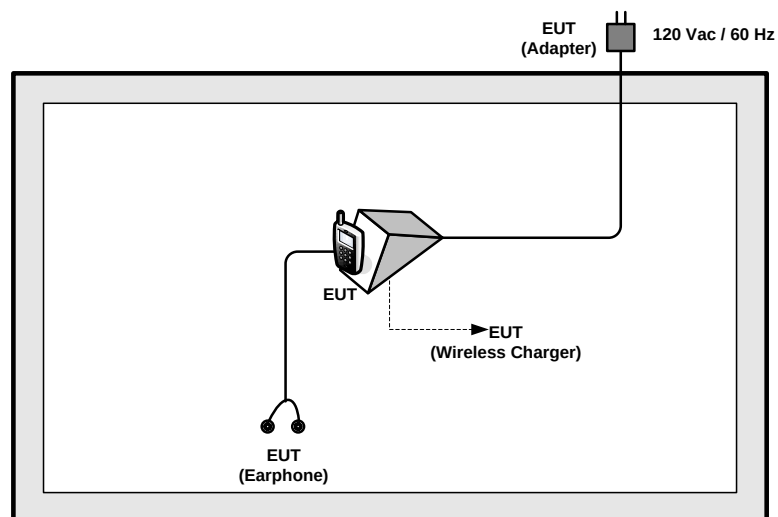
Test Cases				
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	-
		802.11n HT20	MCS0	-
		802.11n HT40	MCS0	-
		802.11ac VHT20	MCS0	-
		802.11ac VHT40	MCS0	-
		802.11ac VHT80	MCS0	-
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	-
		802.11ac VHT40	MCS0	-
		802.11ac VHT80	MCS0	155
AC Conducted Emission	Mode 1 : LTE Band 2 Idle + WLAN 2.4GHz Link + Bluetooth Link + NFC Tx + Earphone 1 + USB Cable (Data Link with Notebook)			
	Mode 2 : LTE Band 2 Idle + WLAN 5GHz Link + Bluetooth Link + NFC Tx + Earphone 1 + USB Cable (Data Link with Notebook)			
	Mode 3 : GSM1900 Idle + WLAN (2.4GHz) Link + Bluetooth Link + WPC Charging + GPS Rx + Earphone 2 + Wireless charger (Charging from Adapter)			
Remark: The worst case of conducted emission is mode 1; only the test data of it is reported.				

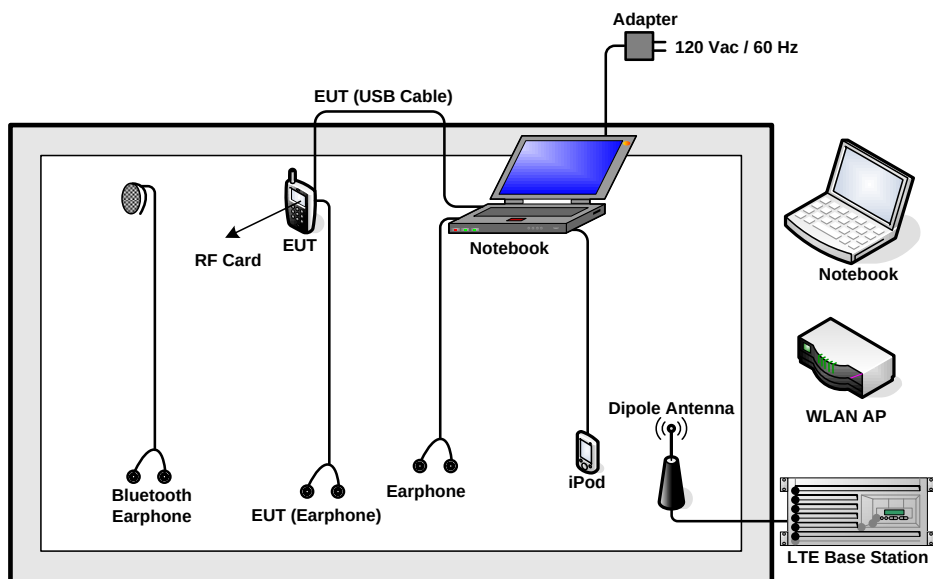
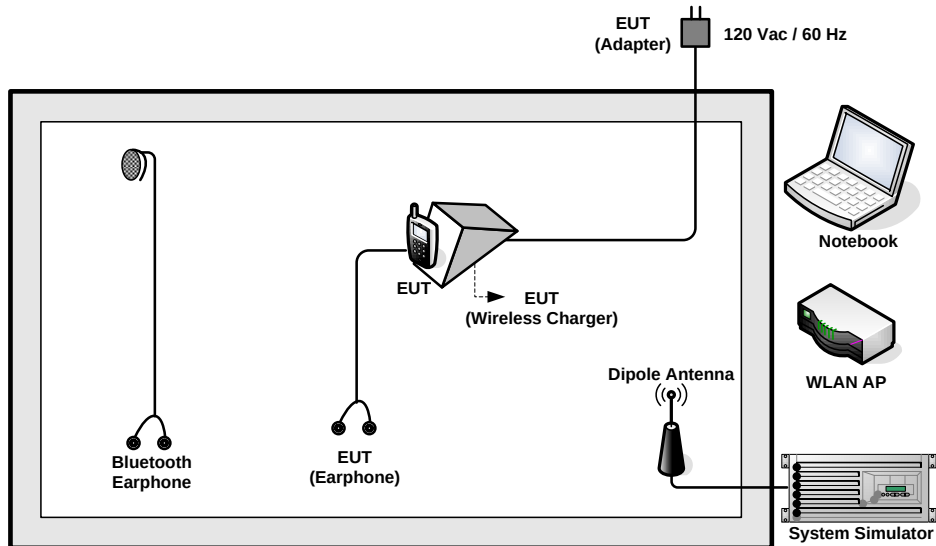
2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<WLAN Tx Mode with WPC Charging>



<AC Conducted Emission Mode>

<AC Conducted Emission Mode for WPC Charging Mode>


2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	R&S	CMW 500	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	TOPWARD	3303D	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	Latitude E6320	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 0.9 m DC O/P: Shielded, 1.8 m
6.	Bluetooth Earphone	Sony Erricsson	MW600	PY700A2029	N/A	N/A
7.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
8.	Earphone	Apple	A1285	FCC DoC	Unshielded, 1.2 m	N/A
9.	RF Card	Metro Taipei	Easy Card	N/A	N/A	N/A
10.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.6 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

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 5.4 dB and 20dB attenuator.

$$\begin{aligned}\text{Offset (dB)} &= \text{RF cable loss (dB)} + \text{attenuator factor (dB)} \\ &= 5.4 + 20 = 25.4 \text{ (dB)}\end{aligned}$$

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.

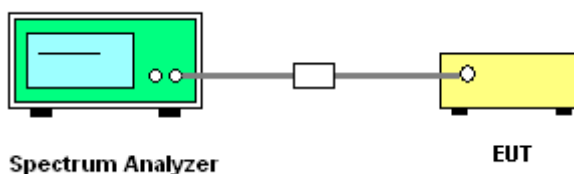
3.1.2 Measuring Instruments

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



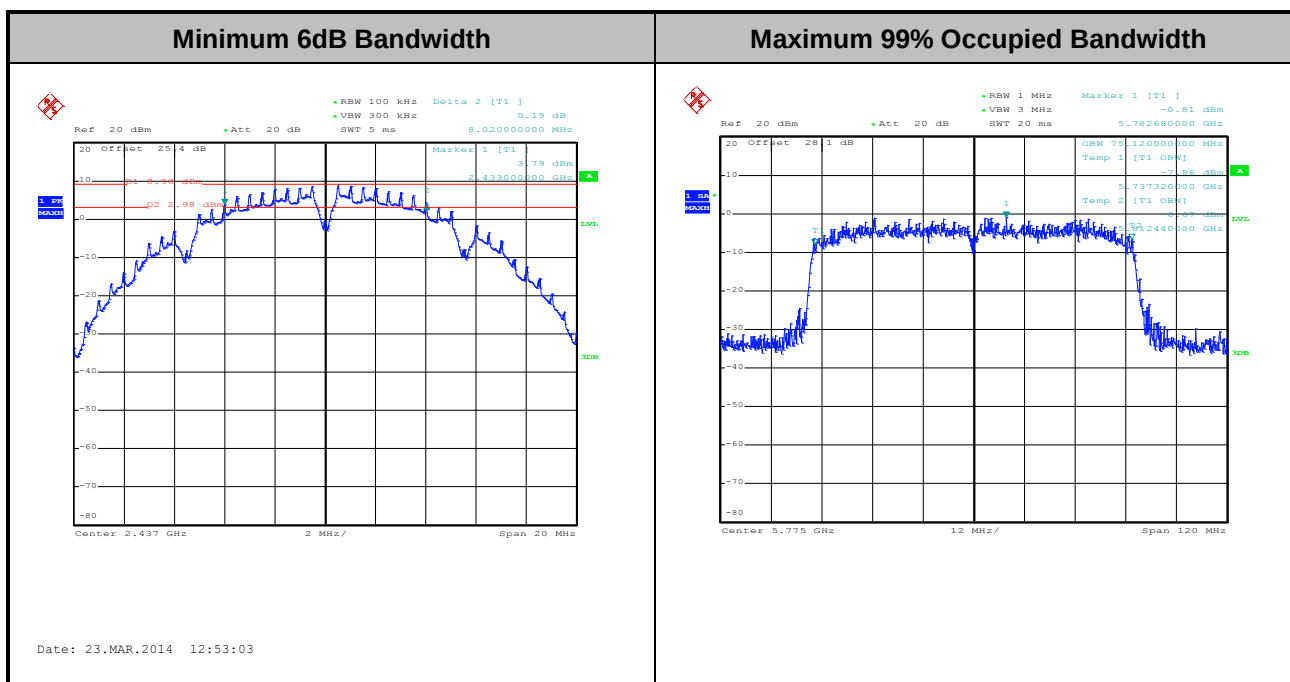
**3.1.5 Test Result of 6dB and 99% Occupied Bandwidth**

Test Band :	2.4GHz + 5GHz band 4	Temperature :	24~26℃
Test Engineer :	Alex Lee	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11b	1Mbps	1	1	2412	13.95	8.54	0.50	Pass
11b	1Mbps	1	6	2437	13.60	8.02	0.50	Pass
11b	1Mbps	1	11	2462	13.70	8.52	0.50	Pass
11g	6Mbps	1	1	2412	18.55	16.32	0.50	Pass
11g	6Mbps	1	6	2437	18.00	16.28	0.50	Pass
11g	6Mbps	1	11	2462	17.90	16.30	0.50	Pass
HT20	MCS0	1	1	2412	19.00	17.60	0.50	Pass
HT20	MCS0	1	6	2437	18.80	17.34	0.50	Pass
HT20	MCS0	1	11	2462	18.70	17.56	0.50	Pass



Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	6dB Bandwidth (MHz)	6dB Bandwidth Min. Limit (MHz)	Pass/Fail
11a	6Mbps	1	149	5745	18.95	16.46	0.50	Pass
11a	6Mbps	1	157	5785	19.20	16.44	0.50	Pass
11a	6Mbps	1	165	5825	19.40	16.44	0.50	Pass
HT20	MCS0	1	149	5745	19.30	17.60	0.50	Pass
HT20	MCS0	1	157	5785	19.60	17.60	0.50	Pass
HT20	MCS0	1	165	5825	19.50	17.58	0.50	Pass
HT40	MCS0	1	151	5755	37.40	35.12	0.50	Pass
HT40	MCS0	1	159	5795	37.70	35.28	0.50	Pass
VHT20	MCS0	1	149	5745	19.20	17.56	0.50	Pass
VHT20	MCS0	1	157	5785	19.20	17.56	0.50	Pass
VHT20	MCS0	1	165	5825	19.25	17.54	0.50	Pass
VHT40	MCS0	1	151	5755	37.00	35.32	0.50	Pass
VHT40	MCS0	1	159	5795	37.00	35.12	0.50	Pass
VHT80	MCS0	1	155	5775	75.12	75.20	0.50	Pass



Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Output Power Measurement

3.2.1 Limit of Output Power

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

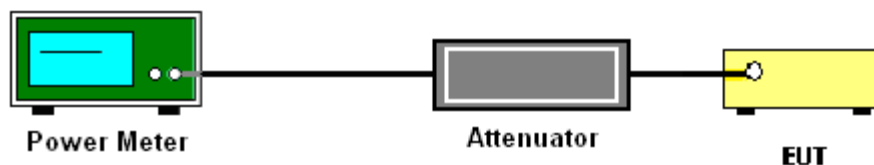
3.2.2 Measuring Instruments

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.

3.2.4 Test Setup



**3.2.5 Test Result of Peak Output Power**

Test Mode :	2.4GHz + 5GHz band 4	Temperature :	24~26℃
Test Engineer :	Alex Lee	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	19.23	30.00	-2.00	Pass
11b	1Mbps	1	6	2437	19.02	30.00	-2.00	Pass
11b	1Mbps	1	11	2462	19.01	30.00	-2.00	Pass
11g	6Mbps	1	1	2412	21.42	30.00	-2.00	Pass
11g	6Mbps	1	6	2437	21.82	30.00	-2.00	Pass
11g	6Mbps	1	11	2462	21.89	30.00	-2.00	Pass
HT20	MCS0	1	1	2412	19.19	30.00	-2.00	Pass
HT20	MCS0	1	6	2437	19.21	30.00	-2.00	Pass
HT20	MCS0	1	11	2462	19.64	30.00	-2.00	Pass



Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	20.81	30.00	0.80	Pass
11a	6Mbps	1	157	5785	20.34	30.00	0.80	Pass
11a	6Mbps	1	165	5825	20.51	30.00	0.80	Pass
HT20	MCS0	1	149	5745	19.44	30.00	0.80	Pass
HT20	MCS0	1	157	5785	19.36	30.00	0.80	Pass
HT20	MCS0	1	165	5825	19.33	30.00	0.80	Pass
HT40	MCS0	1	151	5755	19.03	30.00	0.80	Pass
HT40	MCS0	1	159	5795	18.79	30.00	0.80	Pass
VHT20	MCS0	1	149	5745	16.86	30.00	0.80	Pass
VHT20	MCS0	1	157	5785	17.05	30.00	0.80	Pass
VHT20	MCS0	1	165	5825	17.41	30.00	0.80	Pass
VHT40	MCS0	1	151	5755	17.02	30.00	0.80	Pass
VHT40	MCS0	1	159	5795	16.45	30.00	0.80	Pass
VHT80	MCS0	1	155	5775	16.60	30.00	0.80	Pass

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

3.2.6 Test Result of Average output Power (Reporting Only)

Test Mode :	2.4GHz + 5GHz band 4	Temperature :	24~26℃
Test Engineer :	Alex Lee	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	0.10	16.50	30.00	-2.00	Pass
11b	1Mbps	1	6	2437	0.10	16.42	30.00	-2.00	Pass
11b	1Mbps	1	11	2462	0.10	16.32	30.00	-2.00	Pass
11g	6Mbps	1	1	2412	0.59	12.80	30.00	-2.00	Pass
11g	6Mbps	1	6	2437	0.59	13.00	30.00	-2.00	Pass
11g	6Mbps	1	11	2462	0.59	13.35	30.00	-2.00	Pass
HT20	MCS0	1	1	2412	0.63	9.80	30.00	-2.00	Pass
HT20	MCS0	1	6	2437	0.63	9.95	30.00	-2.00	Pass
HT20	MCS0	1	11	2462	0.63	10.16	30.00	-2.00	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	0.59	12.43	30.00	0.80	Pass
11a	6Mbps	1	157	5785	0.59	11.93	30.00	0.80	Pass
11a	6Mbps	1	165	5825	0.59	12.10	30.00	0.80	Pass
HT20	MCS0	1	149	5745	0.66	10.17	30.00	0.80	Pass
HT20	MCS0	1	157	5785	0.66	10.13	30.00	0.80	Pass
HT20	MCS0	1	165	5825	0.66	10.15	30.00	0.80	Pass
HT40	MCS0	1	151	5755	1.21	9.99	30.00	0.80	Pass
HT40	MCS0	1	159	5795	1.21	9.79	30.00	0.80	Pass
VHT20	MCS0	1	149	5745	0.82	7.85	30.00	0.80	Pass
VHT20	MCS0	1	157	5785	0.82	7.91	30.00	0.80	Pass
VHT20	MCS0	1	165	5825	0.82	8.36	30.00	0.80	Pass
VHT40	MCS0	1	151	5755	1.47	8.79	30.00	0.80	Pass
VHT40	MCS0	1	159	5795	1.47	8.19	30.00	0.80	Pass
VHT80	MCS0	1	155	5775	2.61	8.73	30.00	0.80	Pass

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.

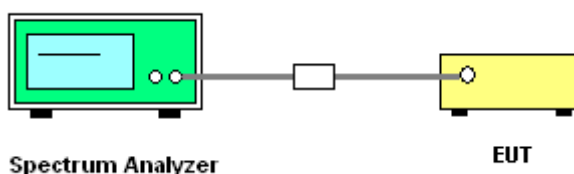
3.3.2 Measuring Instruments

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.

3.3.4 Test Setup



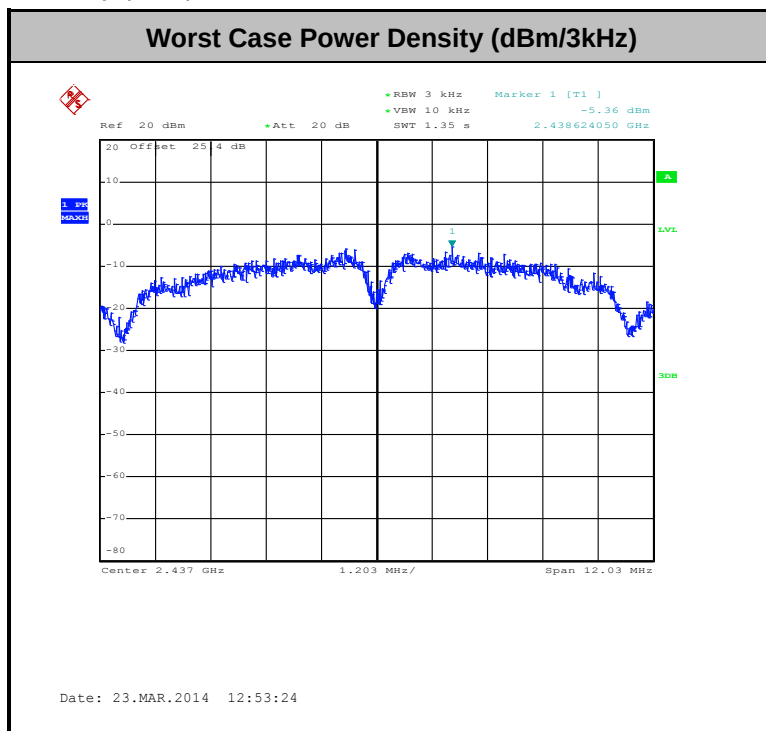
3.3.5 Test Result of Power Spectral Density

Test Mode :	2.4GHz + 5GHz band 4	Temperature :	24~26℃
Test Engineer :	Alex Lee	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11b	1Mbps	1	1	2412	-6.27	8.00	-2.00	Pass
11b	1Mbps	1	6	2437	-5.36	8.00	-2.00	Pass
11b	1Mbps	1	11	2462	-6.63	8.00	-2.00	Pass
11g	6Mbps	1	1	2412	-12.52	8.00	-2.00	Pass
11g	6Mbps	1	6	2437	-10.74	8.00	-2.00	Pass
11g	6Mbps	1	11	2462	-12.41	8.00	-2.00	Pass
HT20	MCS0	1	1	2412	-14.50	8.00	-2.00	Pass
HT20	MCS0	1	6	2437	-15.51	8.00	-2.00	Pass
HT20	MCS0	1	11	2462	-16.01	8.00	-2.00	Pass

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Peak Power Density (dBm/3kHz)	Max. Limits (dBm/3kHz)	DG (dBi)	Pass/Fail
11a	6Mbps	1	149	5745	-12.17	8.00	0.80	Pass
11a	6Mbps	1	157	5785	-13.78	8.00	0.80	Pass
11a	6Mbps	1	165	5825	-13.42	8.00	0.80	Pass
HT20	MCS0	1	149	5745	-15.24	8.00	0.80	Pass
HT20	MCS0	1	157	5785	-14.22	8.00	0.80	Pass
HT20	MCS0	1	165	5825	-15.81	8.00	0.80	Pass
HT40	MCS0	1	151	5755	-18.89	8.00	0.80	Pass
HT40	MCS0	1	159	5795	-18.43	8.00	0.80	Pass
VHT20	MCS0	1	149	5745	-18.61	8.00	0.80	Pass
VHT20	MCS0	1	157	5785	-17.61	8.00	0.80	Pass
VHT20	MCS0	1	165	5825	-17.97	8.00	0.80	Pass
VHT40	MCS0	1	151	5755	-21.41	8.00	0.80	Pass
VHT40	MCS0	1	159	5795	-21.39	8.00	0.80	Pass
VHT80	MCS0	1	155	5775	-23.60	8.00	0.80	Pass

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



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).

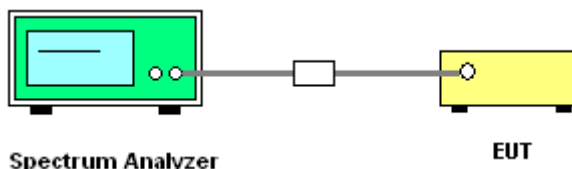
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

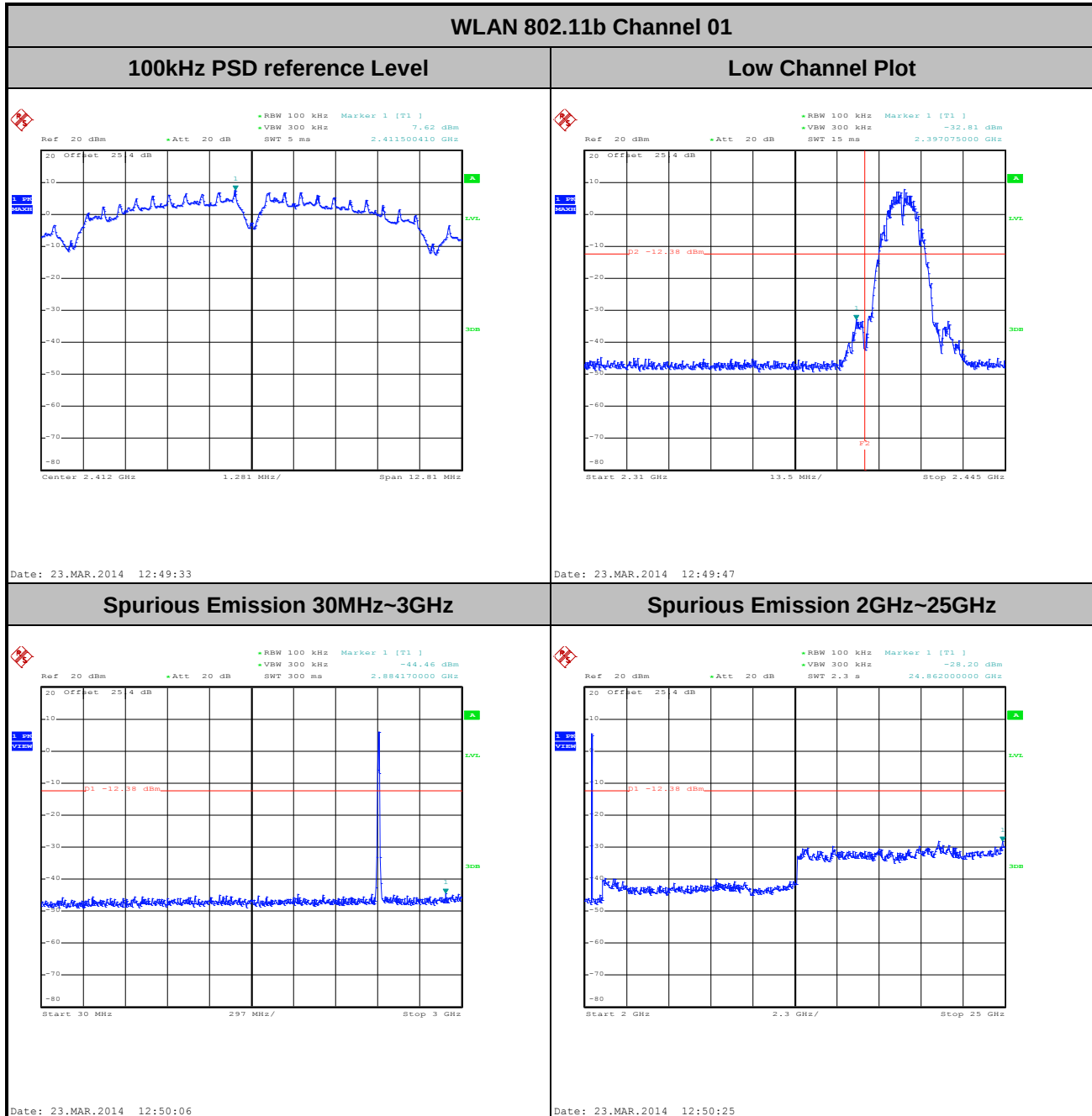
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit 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



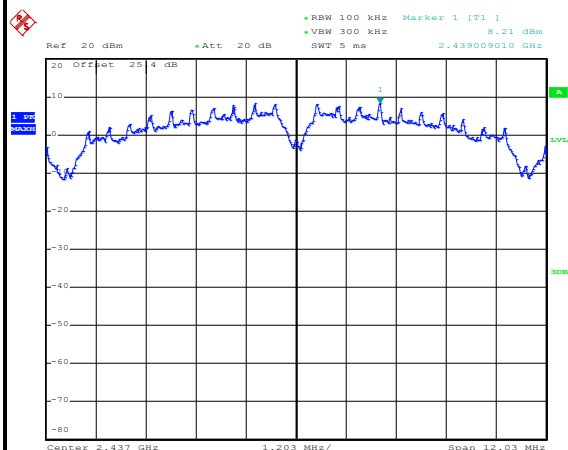
3.4.5 Test Result of Conducted Band Edges and Spurious Emission

Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Alex Lee

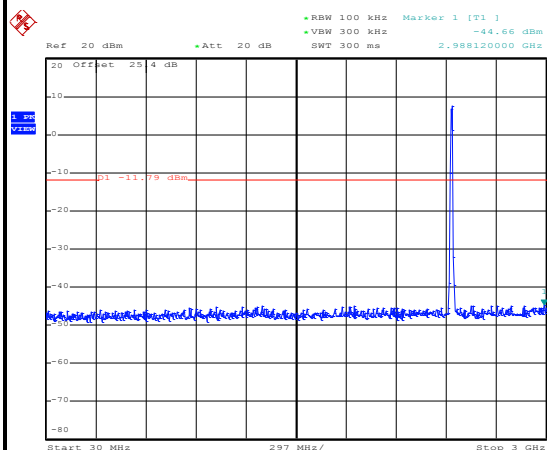




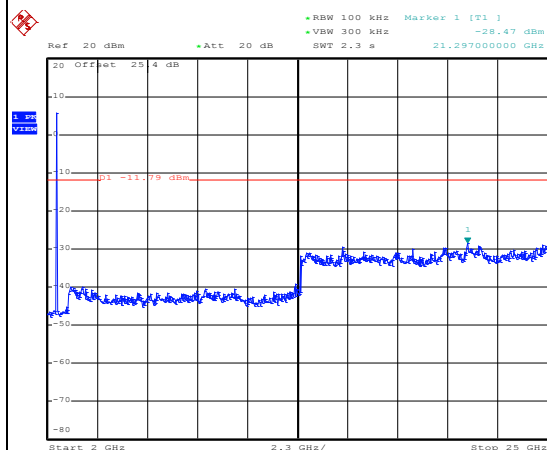
Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Alex Lee

WLAN 802.11b Channel 06**100kHz PSD reference Level**

Date: 23.MAR.2014 12:53:33

Spurious Emission 30MHz~3GHz

Date: 23.MAR.2014 12:53:53

Spurious Emission 2GHz~25GHz

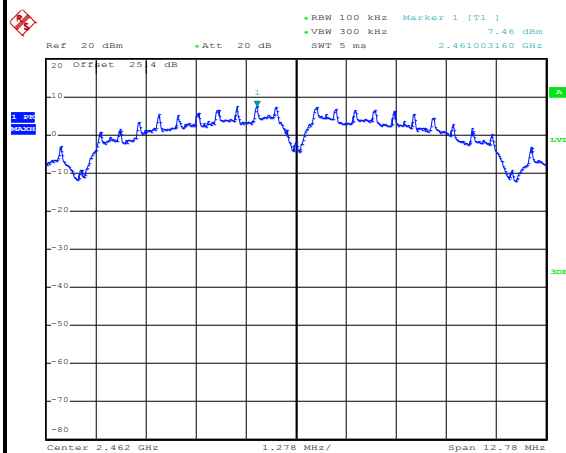
Date: 23.MAR.2014 12:54:11



Test Mode :	802.11b	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Alex Lee

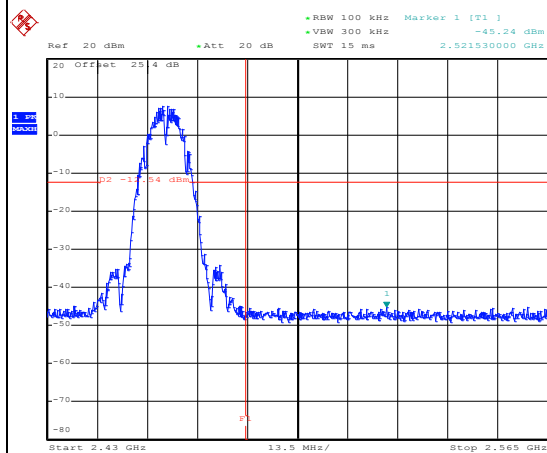
WLAN 802.11b Channel 11

100kHz PSD reference Level



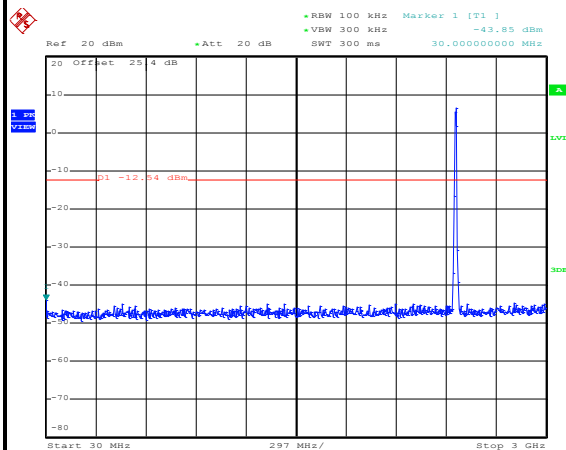
Date: 23.MAR.2014 12:56:31

High Channel Plot



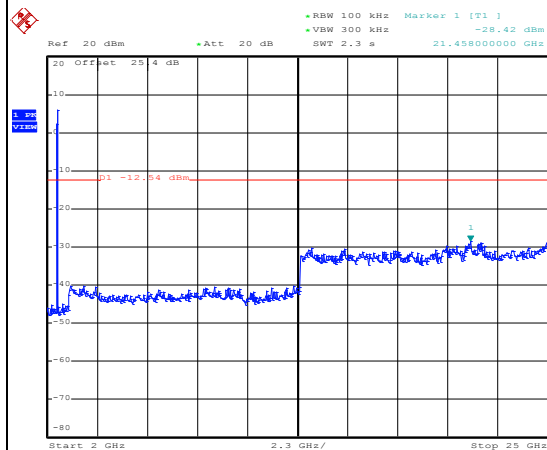
Date: 23.MAR.2014 12:56:45

Spurious Emission 30MHz~3GHz



Date: 23.MAR.2014 12:57:04

Spurious Emission 2GHz~25GHz



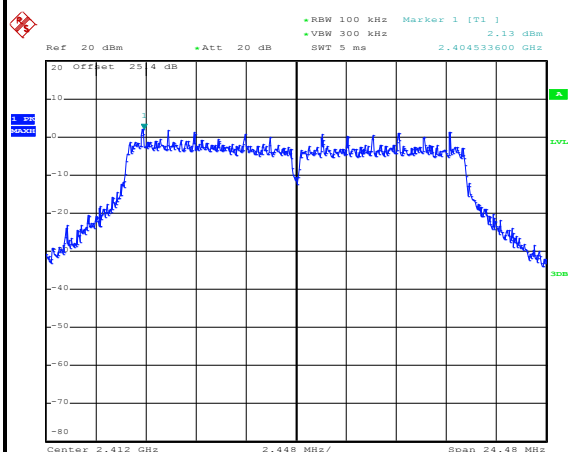
Date: 23.MAR.2014 12:57:22



Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Alex Lee

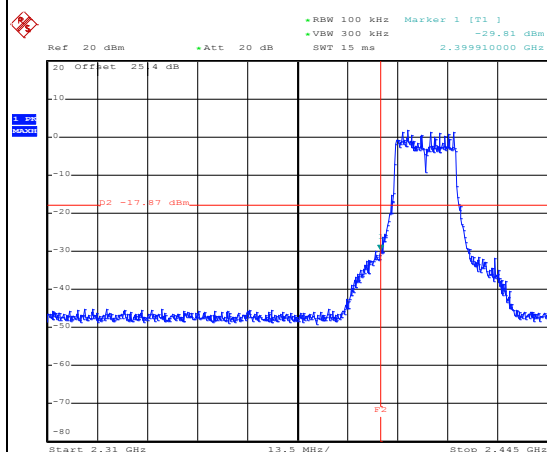
WLAN 802.11g Channel 01

100kHz PSD reference Level



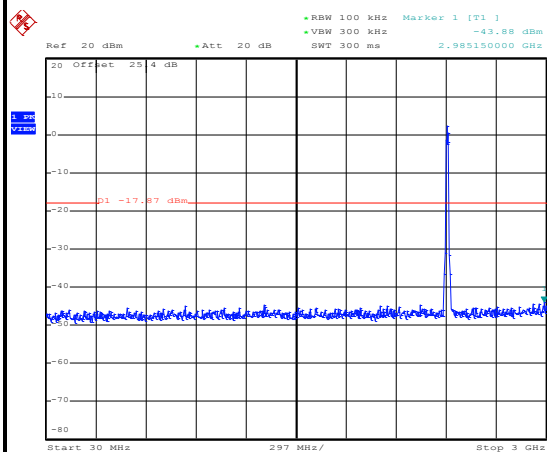
Date: 23.MAR.2014 13:07:18

Low Channel Plot



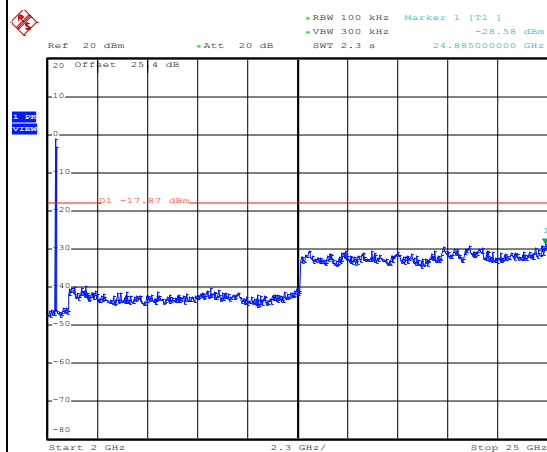
Date: 23.MAR.2014 13:07:32

Spurious Emission 30MHz~3GHz



Date: 23.MAR.2014 13:07:51

Spurious Emission 2GHz~25GHz



Date: 23.MAR.2014 13:08:09

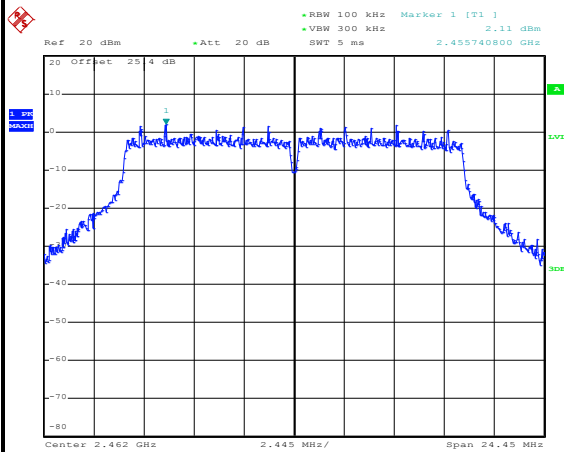


WLAN 802.11g Channel 06	
100kHz PSD reference Level	

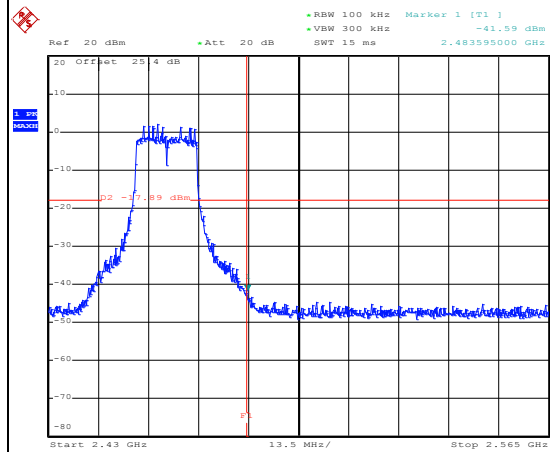




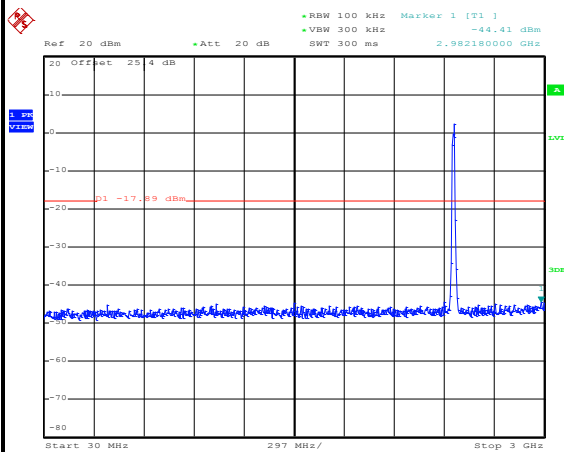
Test Mode :	802.11g	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Alex Lee

WLAN 802.11g Channel 11**100kHz PSD reference Level**

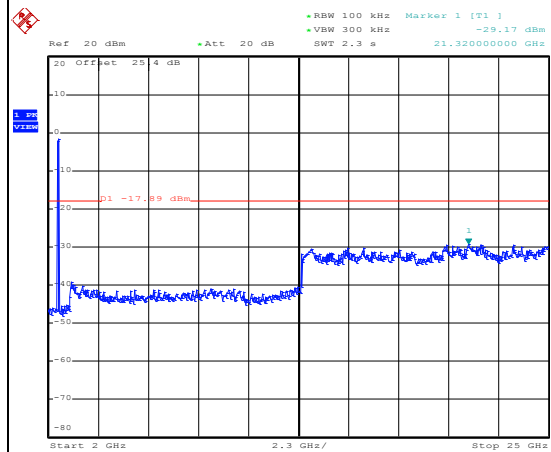
Date: 23.MAR.2014 12:59:57

High Channel Plot

Date: 23.MAR.2014 13:00:11

Spurious Emission 30MHz~3GHz

Date: 23.MAR.2014 13:00:30

Spurious Emission 2GHz~25GHz

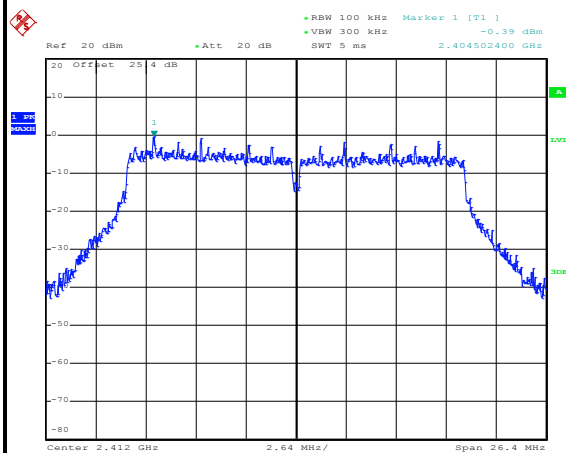
Date: 23.MAR.2014 13:00:49



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Low	Relative Humidity :	50~53%
Test Channel :	01	Test Engineer :	Alex Lee

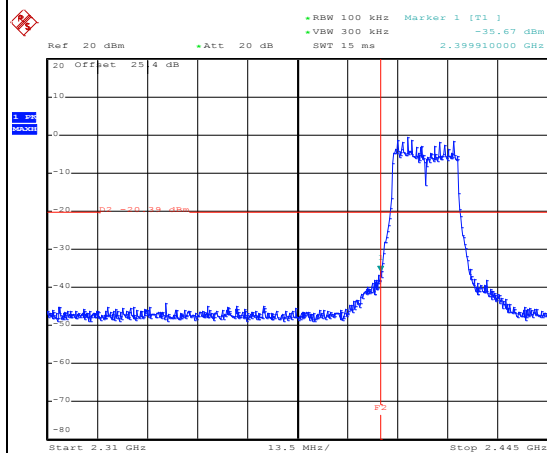
WLAN 802.11n HT20 Channel 01

100kHz PSD reference Level



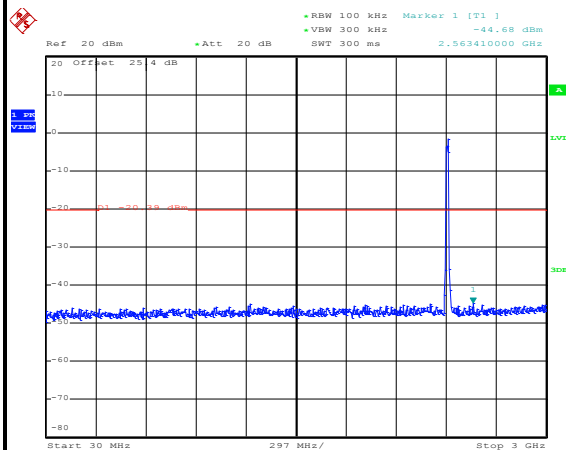
Date: 23.MAR.2014 13:13:28

Low Channel Plot



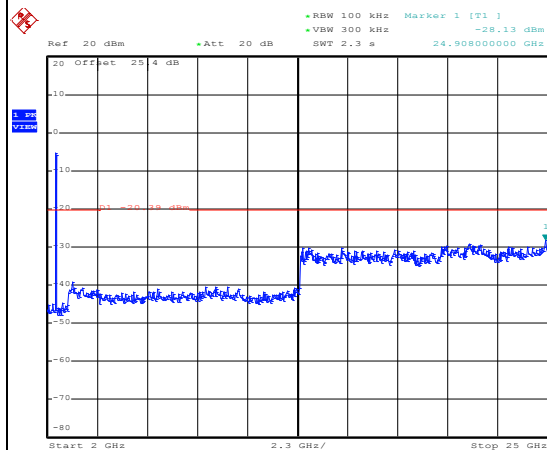
Date: 23.MAR.2014 13:13:42

Spurious Emission 30MHz~3GHz



Date: 23.MAR.2014 13:14:01

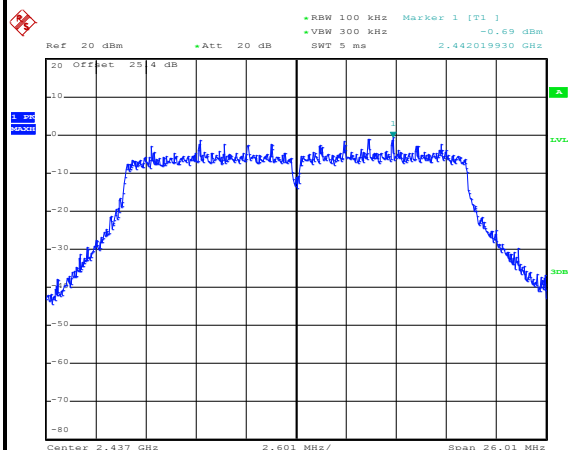
Spurious Emission 2GHz~25GHz



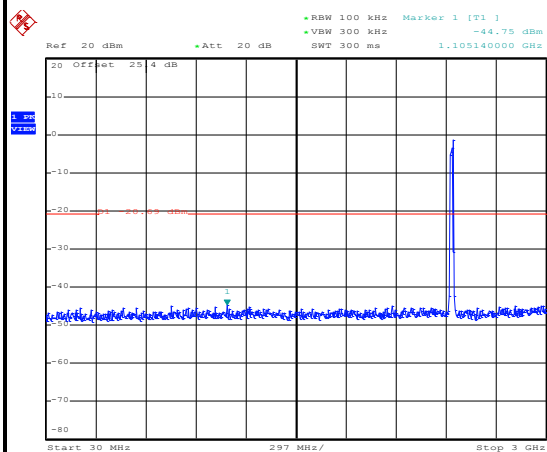
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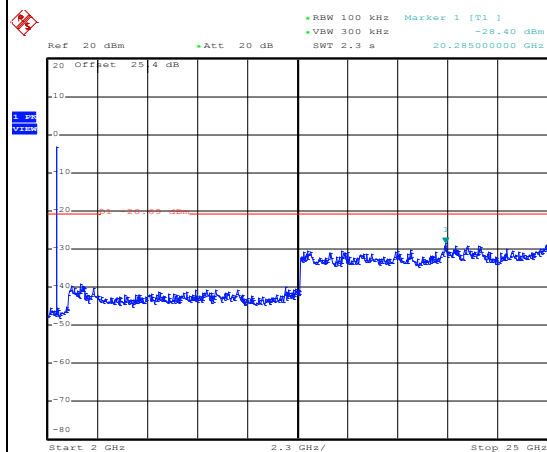
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz Mid	Relative Humidity :	50~53%
Test Channel :	06	Test Engineer :	Alex Lee

WLAN 802.11n HT20 Channel 06**100kHz PSD reference Level**

Date: 23.MAR.2014 13:16:41

Spurious Emission 30MHz~3GHz

Date: 23.MAR.2014 13:17:00

Spurious Emission 2GHz~25GHz

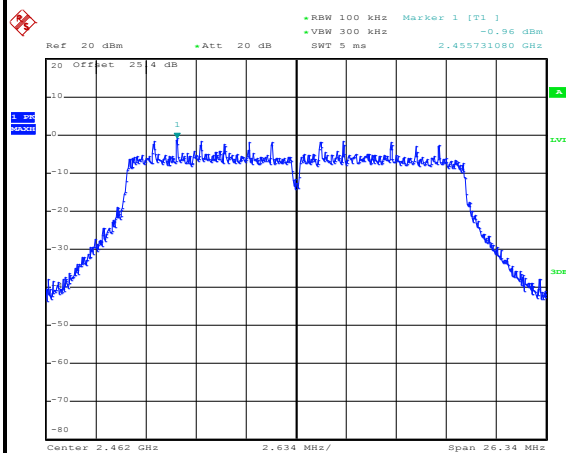
Date: 23.MAR.2014 13:17:19



Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	2.4GHz High	Relative Humidity :	50~53%
Test Channel :	11	Test Engineer :	Alex Lee

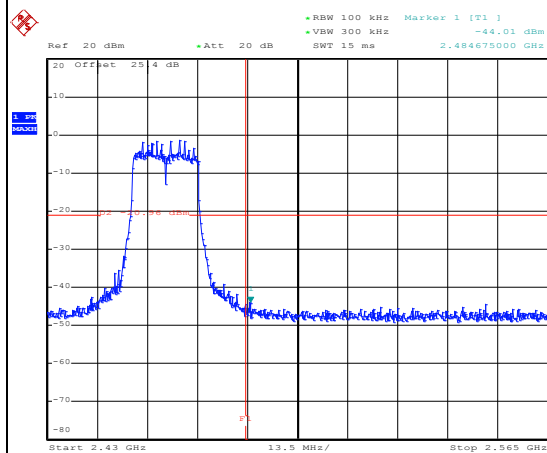
WLAN 802.11n HT20 Channel 11

100kHz PSD reference Level



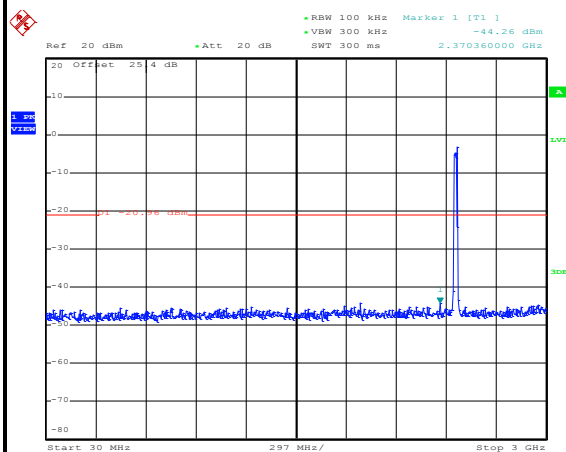
Date: 23.MAR.2014 13:19:52

High Channel Plot



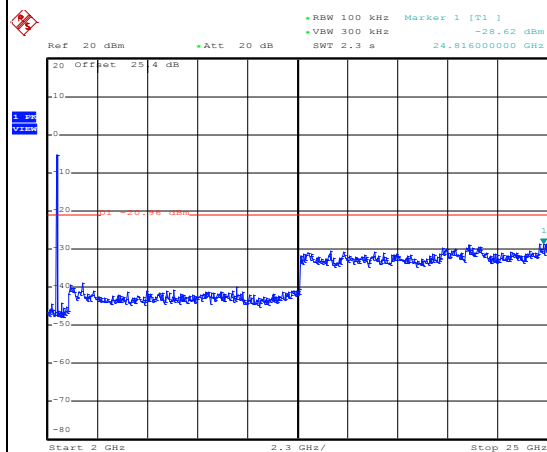
Date: 23.MAR.2014 13:20:06

Spurious Emission 30MHz~3GHz



Date: 23.MAR.2014 13:20:25

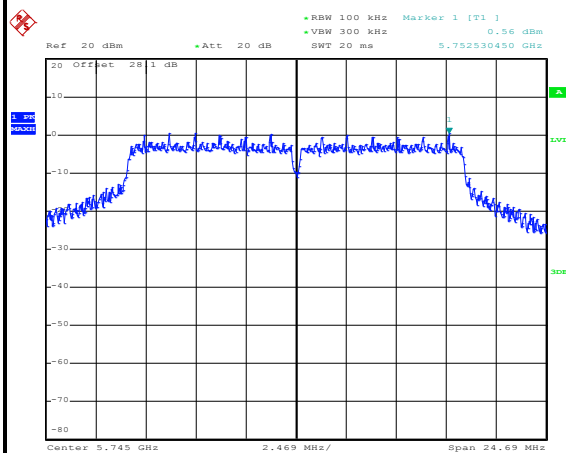
Spurious Emission 2GHz~25GHz



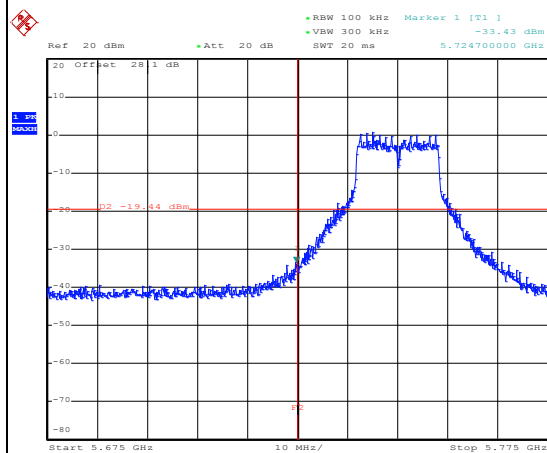
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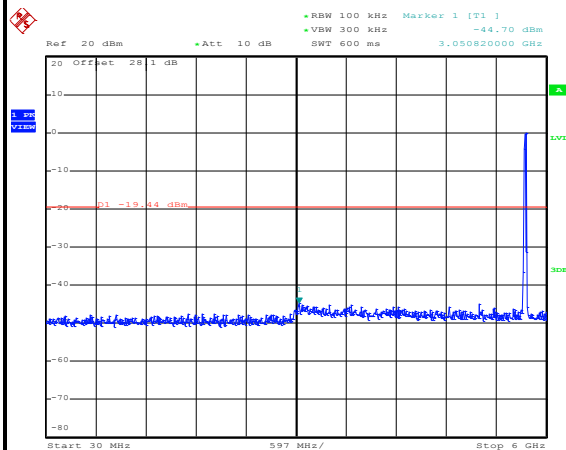
Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	149	Test Engineer :	Alex Lee

WLAN 802.11a Channel 149**100kHz PSD reference Level**

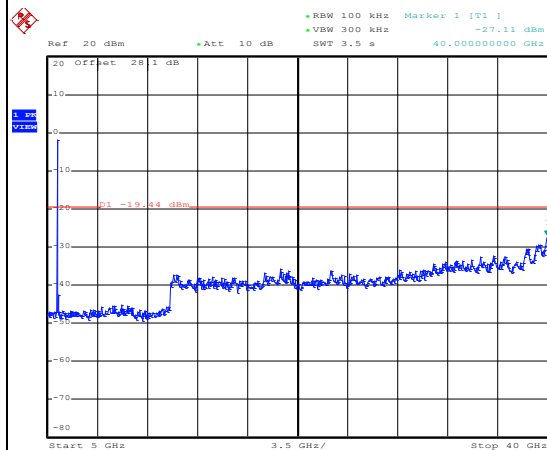
Date: 23.MAR.2014 14:18:37

Low Channel Plot

Date: 23.MAR.2014 14:18:51

Spurious Emission 30MHz~6GHz

Date: 23.MAR.2014 14:19:10

Spurious Emission 5GHz~40GHz

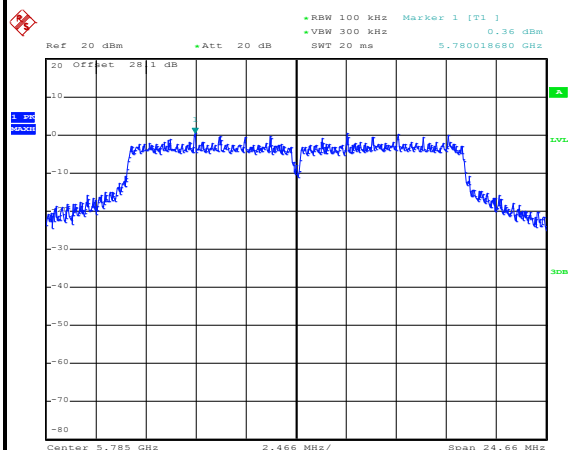
Date: 23.MAR.2014 14:19:29



Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	5GHz Mid	Relative Humidity :	50~53%
Test Channel :	157	Test Engineer :	Alex Lee

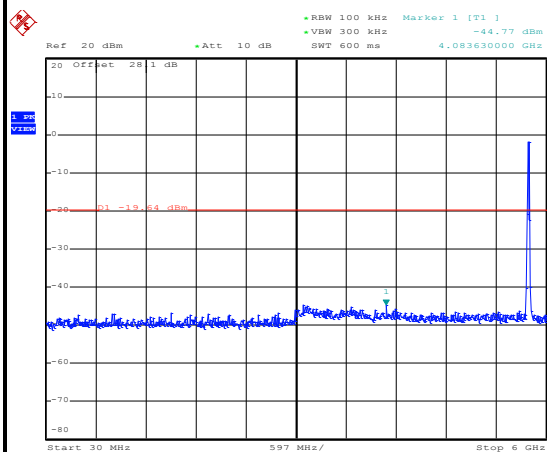
WLAN 802.11a Channel 157

100kHz PSD reference Level



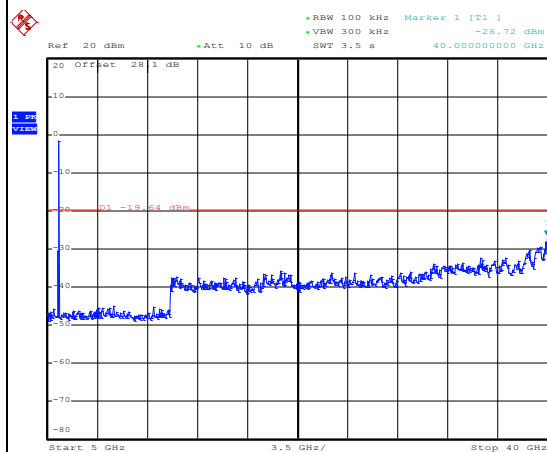
Date: 23.MAR.2014 14:14:23

Spurious Emission 30MHz~6GHz



Date: 23.MAR.2014 14:14:43

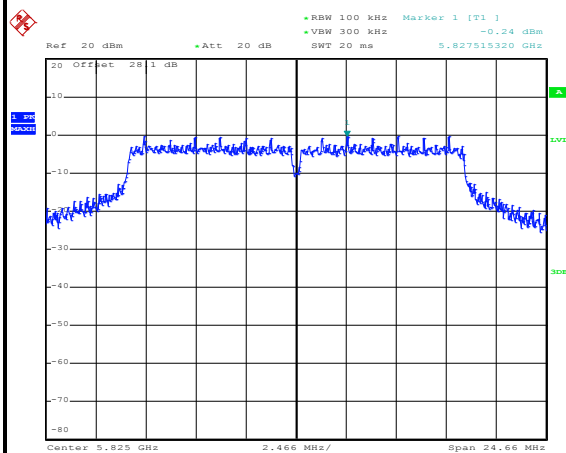
Spurious Emission 5GHz~40GHz



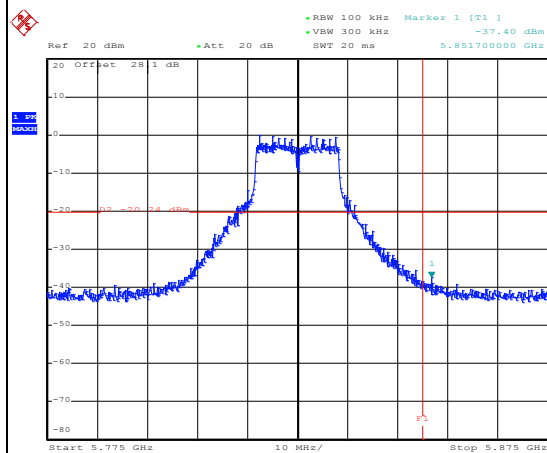
Date: 23.MAR.2014 14:15:01



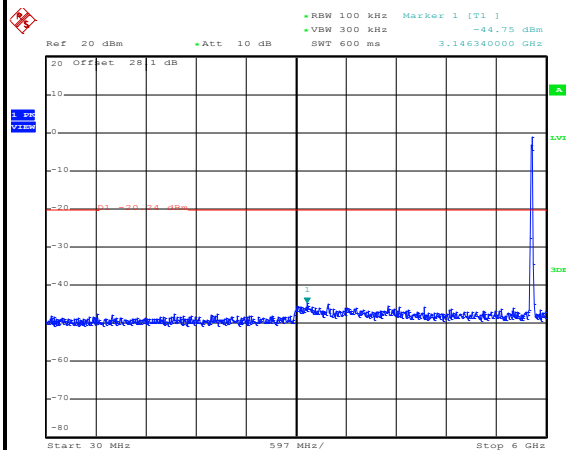
Test Mode :	802.11a	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	165	Test Engineer :	Alex Lee

WLAN 802.11a Channel 165**100kHz PSD reference Level**

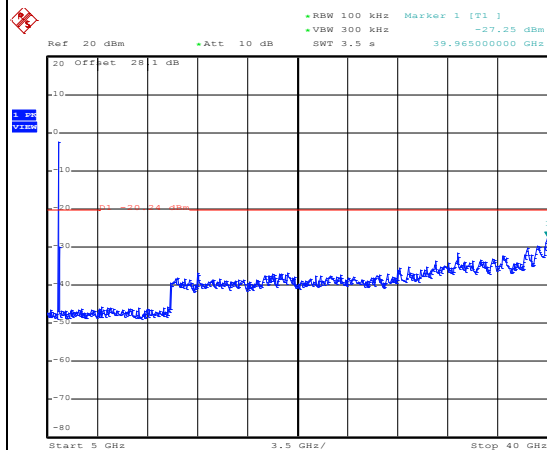
Date: 23.MAR.2014 14:08:47

High Channel Plot

Date: 23.MAR.2014 14:12:04

Spurious Emission 30MHz~6GHz

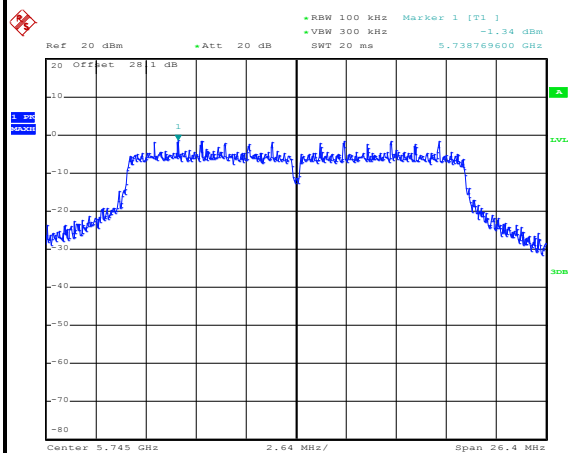
Date: 23.MAR.2014 14:09:21

Spurious Emission 5GHz~40GHz

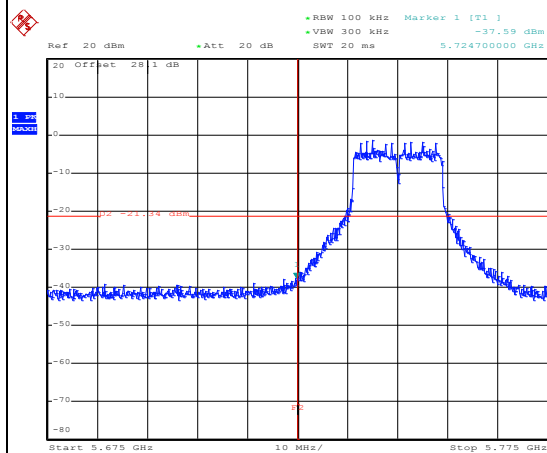
Date: 23.MAR.2014 14:09:39



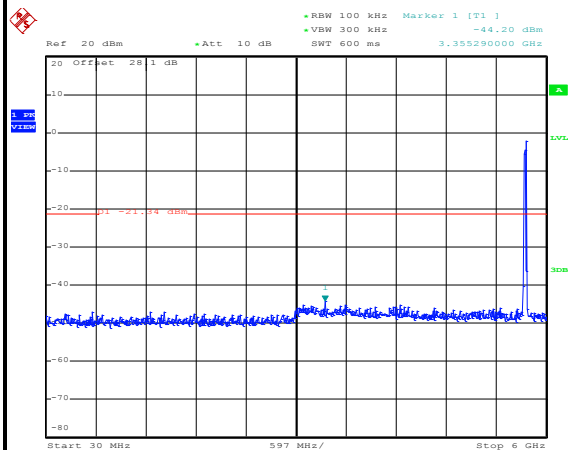
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	149	Test Engineer :	Alex Lee

WLAN 802.11n HT20 Channel 149**100kHz PSD reference Level**

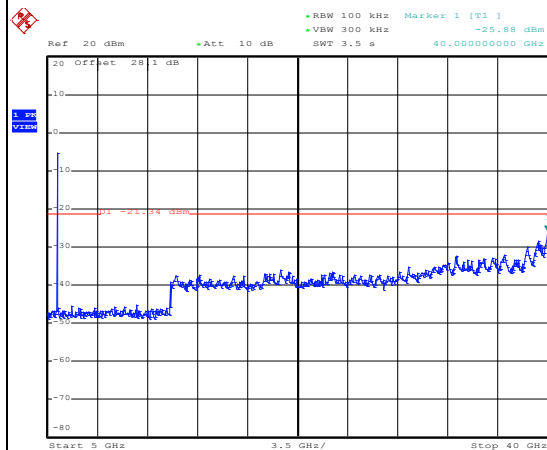
Date: 23.MAR.2014 13:54:12

Low Channel Plot

Date: 23.MAR.2014 13:56:42

Spurious Emission 30MHz~6GHz

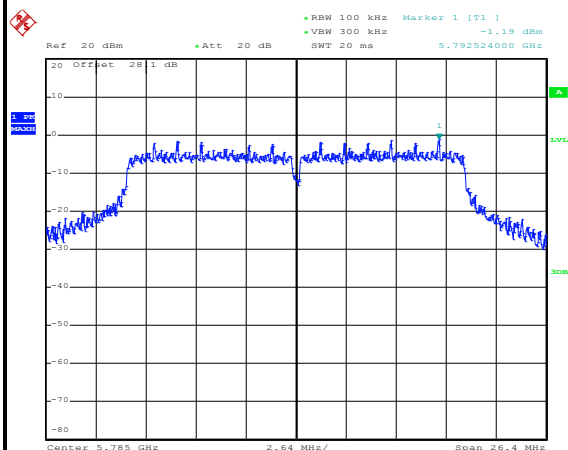
Date: 23.MAR.2014 13:54:45

Spurious Emission 5GHz~40GHz

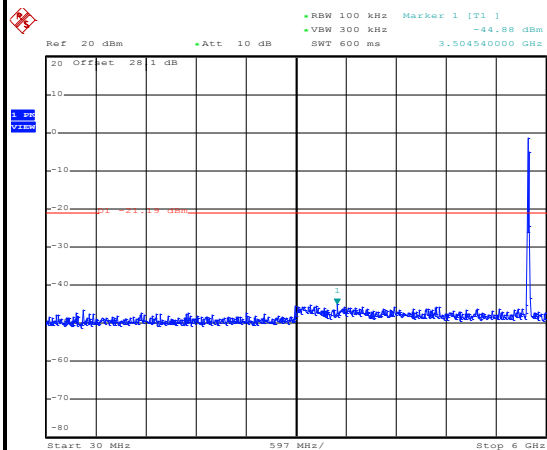
Date: 23.MAR.2014 13:55:04



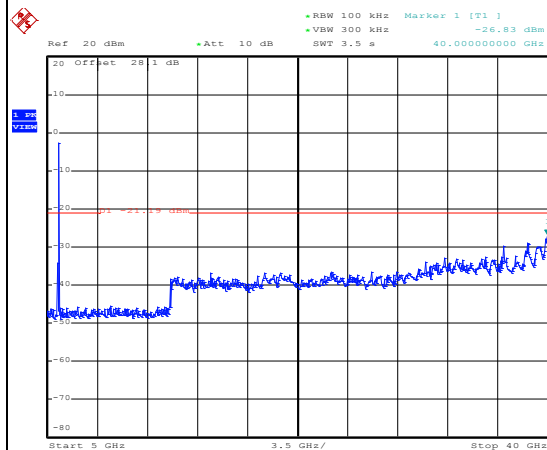
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	5GHz Mid	Relative Humidity :	50~53%
Test Channel :	157	Test Engineer :	Alex Lee

WLAN 802.11n HT20 Channel 157**100kHz PSD reference Level**

Date: 23.MAR.2014 14:01:30

Spurious Emission 30MHz~6GHz

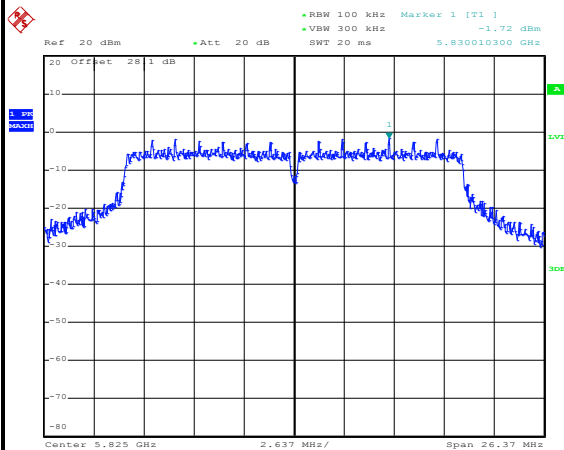
Date: 23.MAR.2014 14:01:49

Spurious Emission 5GHz~40GHz

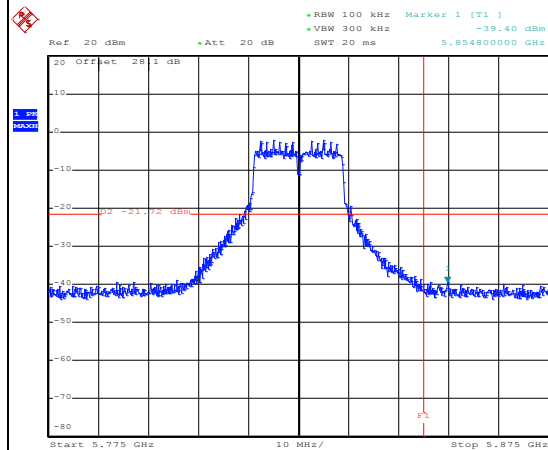
Date: 23.MAR.2014 14:02:08



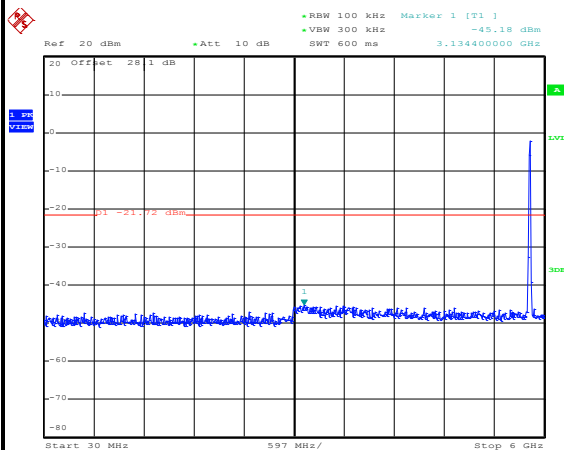
Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	165	Test Engineer :	Alex Lee

WLAN 802.11n HT20 Channel 165**100kHz PSD reference Level**

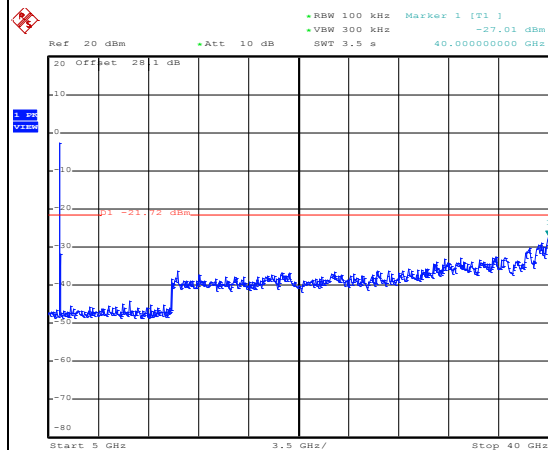
Date: 23.MAR.2014 14:04:59

High Channel Plot

Date: 23.MAR.2014 14:05:13

Spurious Emission 30MHz~6GHz

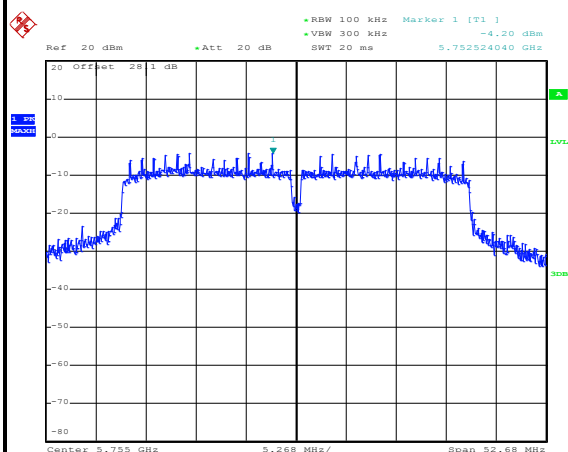
Date: 23.MAR.2014 14:05:32

Spurious Emission 5GHz~40GHz

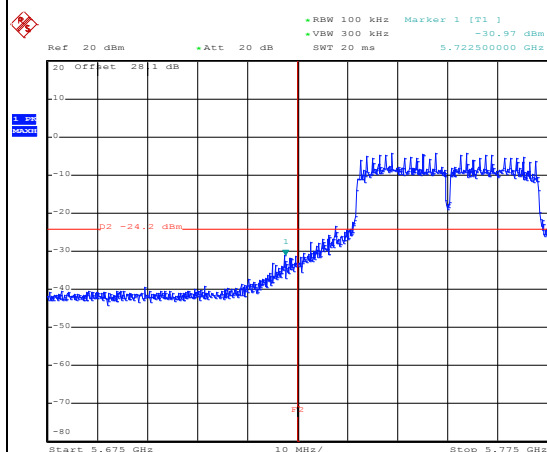
Date: 23.MAR.2014 14:05:50



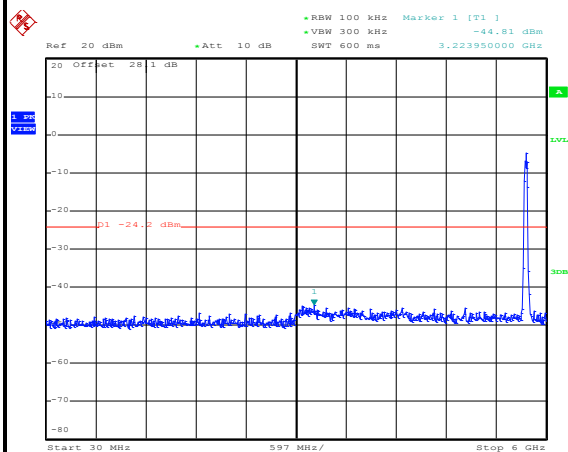
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	151	Test Engineer :	Alex Lee

WLAN 802.11n HT40 Channel 151**100kHz PSD reference Level**

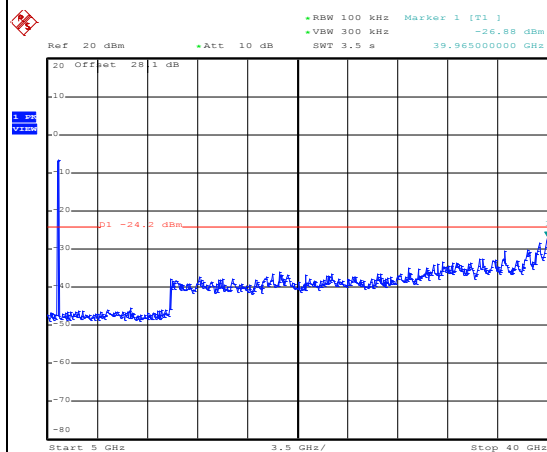
Date: 23.MAR.2014 13:39:52

Low Channel Plot

Date: 23.MAR.2014 13:40:06

Spurious Emission 30MHz~6GHz

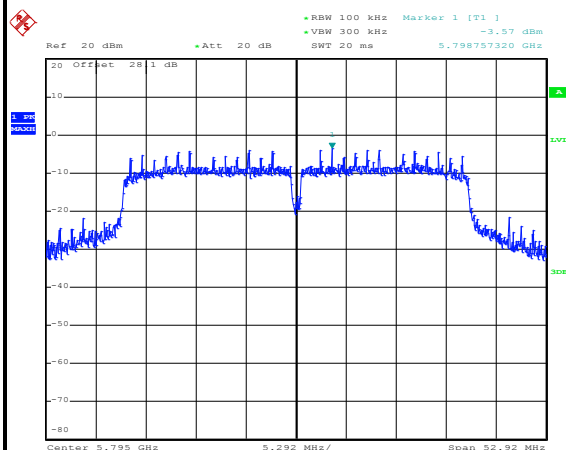
Date: 23.MAR.2014 13:41:27

Spurious Emission 5GHz~40GHz

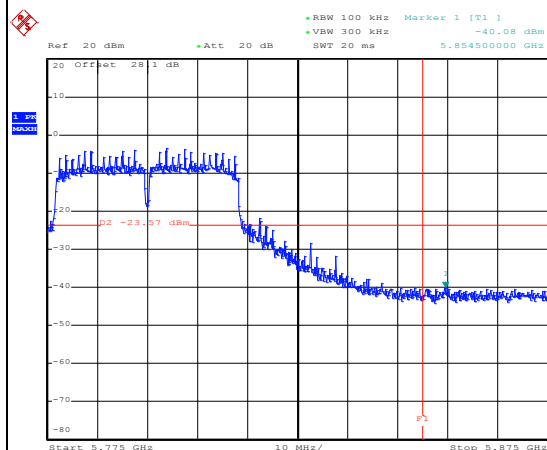
Date: 23.MAR.2014 13:41:46



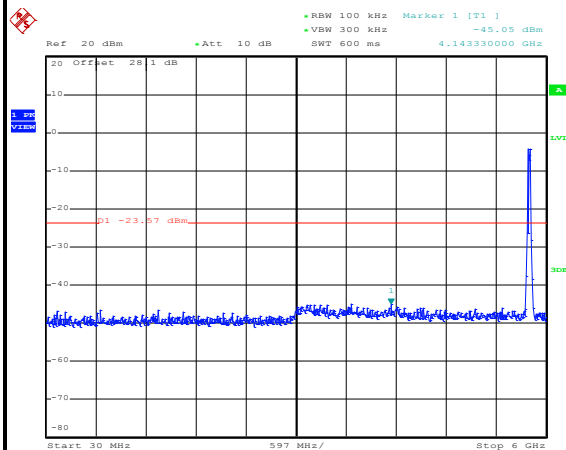
Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	159	Test Engineer :	Alex Lee

WLAN 802.11n HT40 Channel 159**100kHz PSD reference Level**

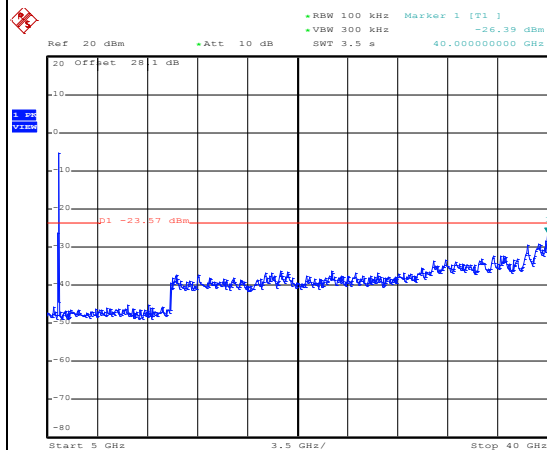
Date: 23.MAR.2014 13:44:54

High Channel Plot

Date: 23.MAR.2014 13:45:08

Spurious Emission 30MHz~6GHz

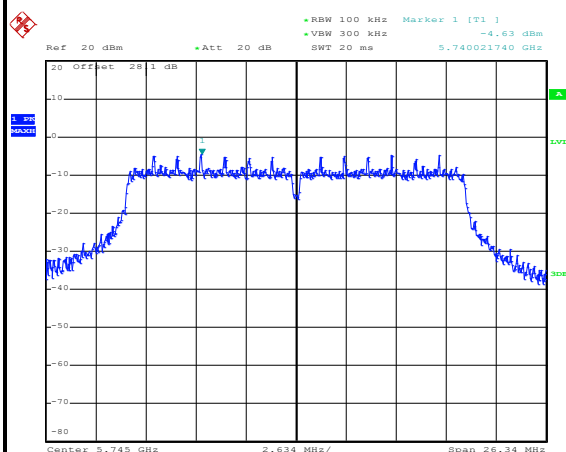
Date: 23.MAR.2014 13:45:27

Spurious Emission 5GHz~40GHz

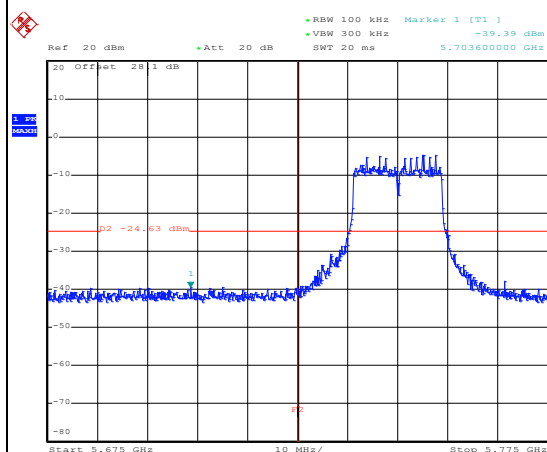
Date: 23.MAR.2014 13:45:46



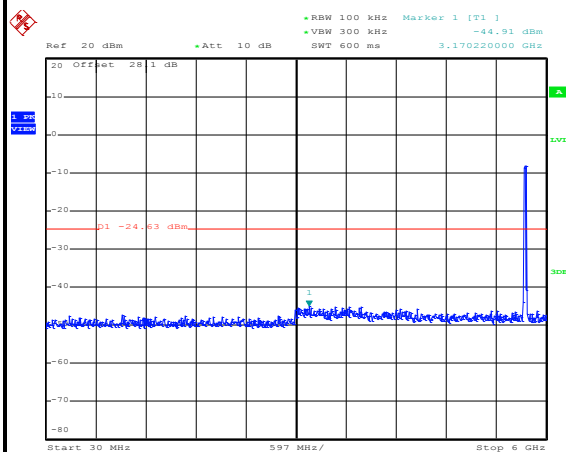
Test Mode :	802.11ac VHT20	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	149	Test Engineer :	Alex Lee

WLAN 802.11ac VHT20 Channel 149**100kHz PSD reference Level**

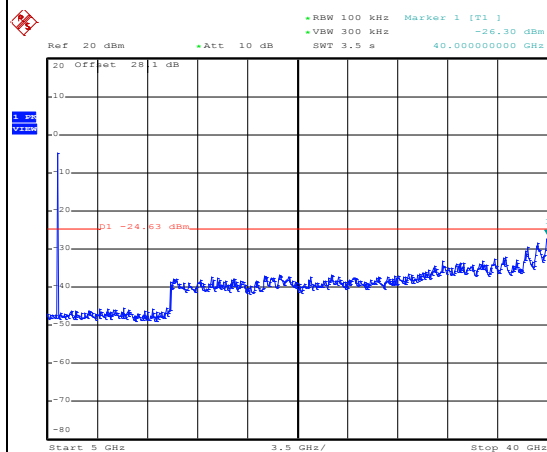
Date: 23.MAR.2014 14:26:17

Low Channel Plot

Date: 23.MAR.2014 14:26:31

Spurious Emission 30MHz~6GHz

Date: 23.MAR.2014 14:26:50

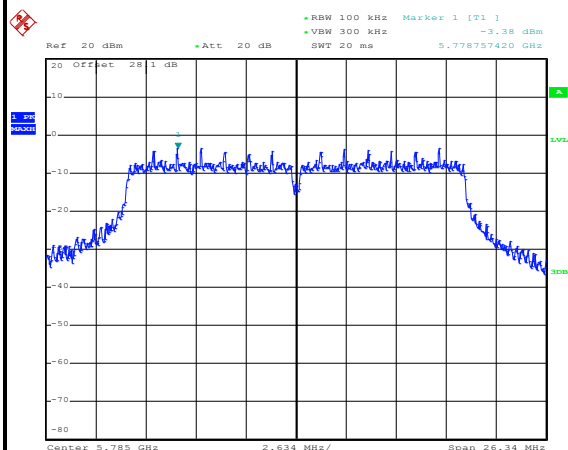
Spurious Emission 5GHz~40GHz

Date: 23.MAR.2014 14:27:08



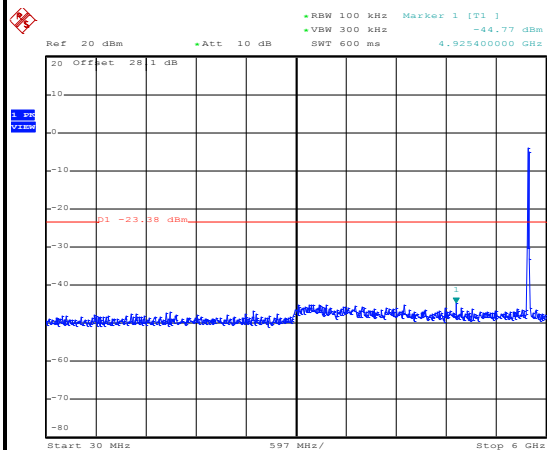
Test Mode :	802.11ac VHT20	Temperature :	24~26℃
Test Band :	5GHz Mid	Relative Humidity :	50~53%
Test Channel :	157	Test Engineer :	Alex Lee

100kHz PSD reference Level



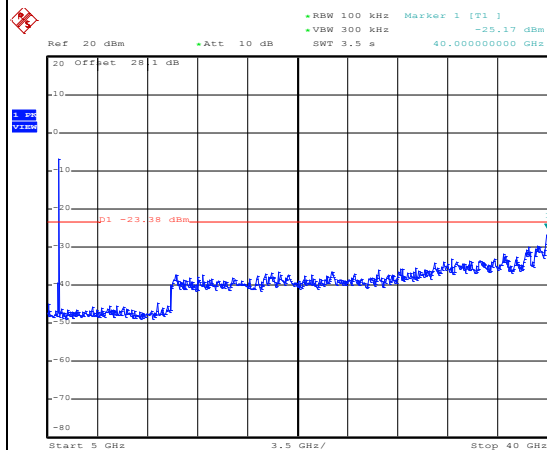
Date: 23.MAR.2014 14:30:04

Spurious Emission 30MHz~6GHz



Date: 23.MAR.2014 14:30:24

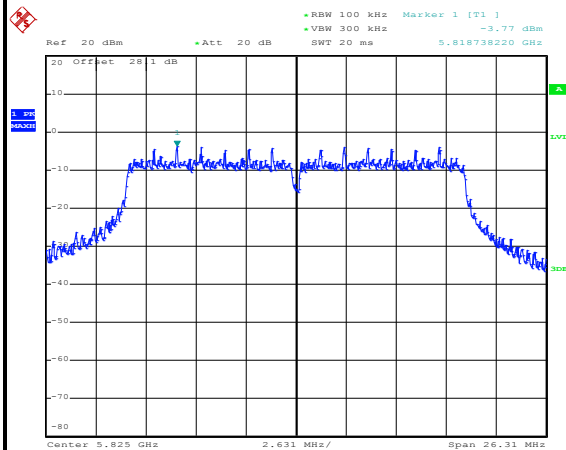
Spurious Emission 5GHz~40GHz



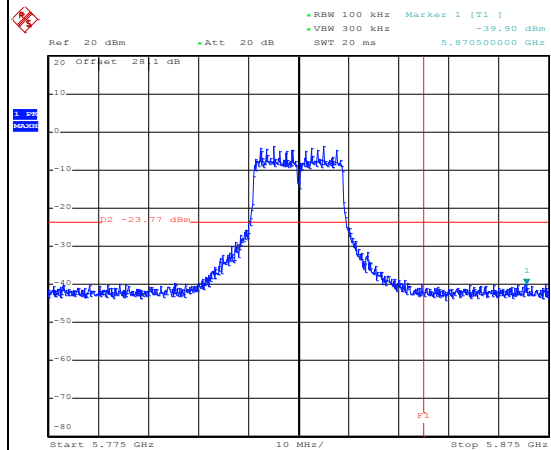
Date: 23.MAR.2014 14:30:42



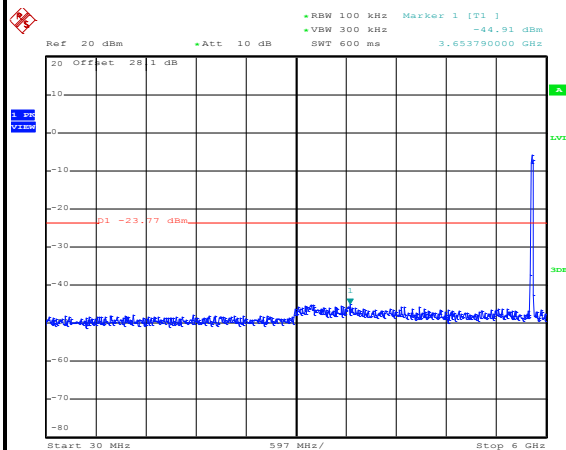
Test Mode :	802.11ac VHT20	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	165	Test Engineer :	Alex Lee

WLAN 802.11ac VHT20 Channel 165**100kHz PSD reference Level**

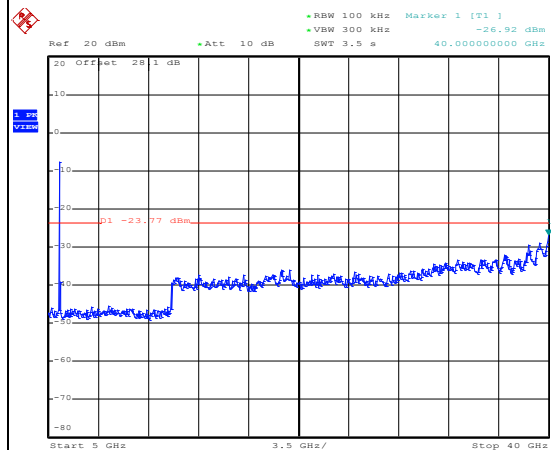
Date: 23.MAR.2014 14:33:07

High Channel Plot

Date: 23.MAR.2014 14:33:21

Spurious Emission 30MHz~6GHz

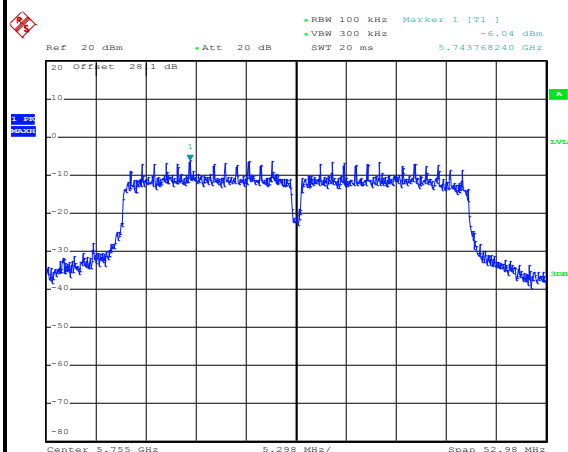
Date: 23.MAR.2014 14:33:40

Spurious Emission 5GHz~40GHz

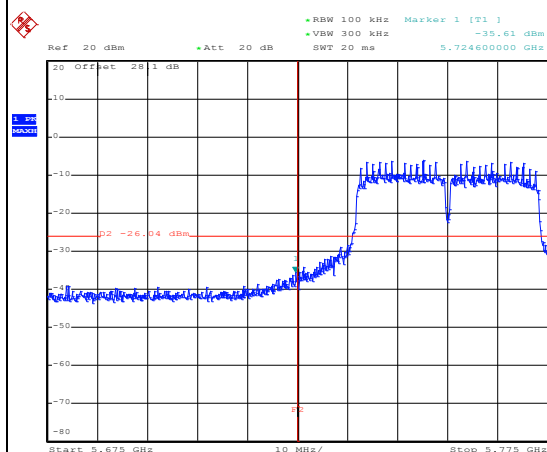
Date: 23.MAR.2014 14:33:59



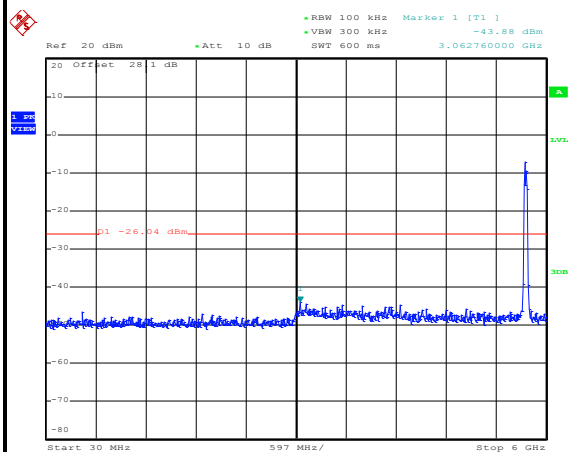
Test Mode :	802.11ac VHT40	Temperature :	24~26°C
Test Band :	5GHz Low	Relative Humidity :	50~53%
Test Channel :	151	Test Engineer :	Alex Lee

WLAN 802.11ac VHT40 Channel 151**100kHz PSD reference Level**

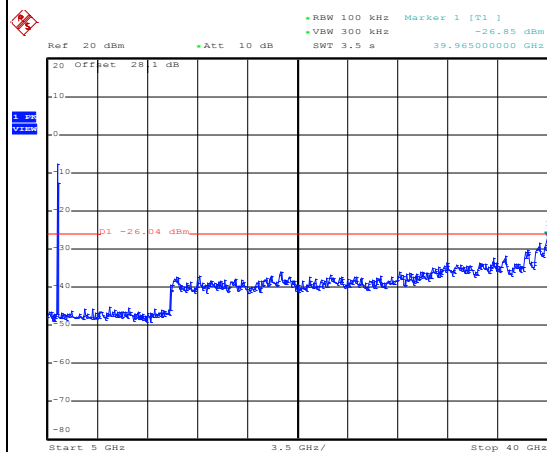
Date: 23.MAR.2014 14:37:33

Low Channel Plot

Date: 23.MAR.2014 14:37:47

Spurious Emission 30MHz~6GHz

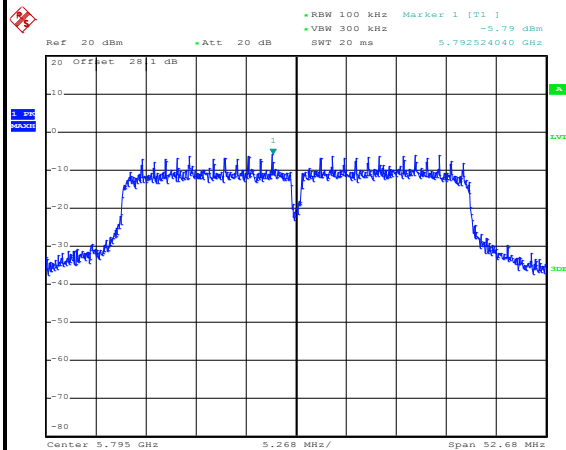
Date: 23.MAR.2014 14:38:06

Spurious Emission 5GHz~40GHz

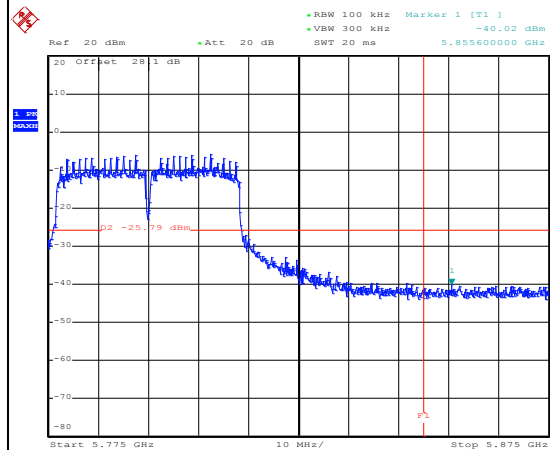
Date: 23.MAR.2014 14:38:24



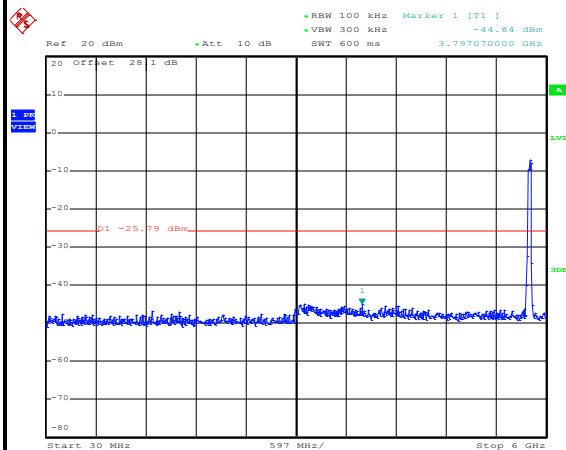
Test Mode :	802.11ac VHT40	Temperature :	24~26°C
Test Band :	5GHz High	Relative Humidity :	50~53%
Test Channel :	159	Test Engineer :	Alex Lee

WLAN 802.11ac VHT40 Channel 159**100kHz PSD reference Level**

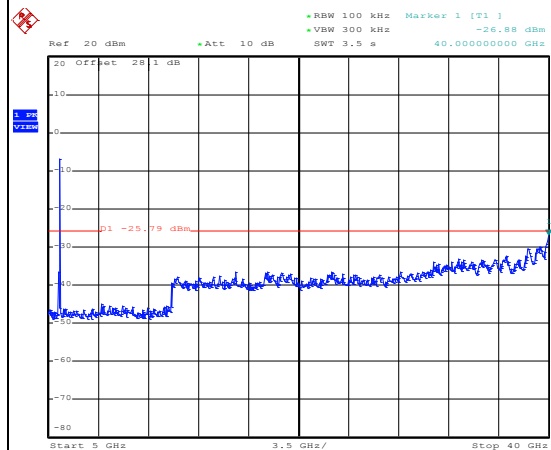
Date: 23.MAR.2014 14:41:56

High Channel Plot

Date: 23.MAR.2014 14:42:09

Spurious Emission 30MHz~6GHz

Date: 23.MAR.2014 14:42:29

Spurious Emission 5GHz~40GHz

Date: 23.MAR.2014 14:42:47



WLAN 802.11ac VHT80 Channel 155	
100kHz PSD reference Level	



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 Procedures

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 - Preamplifier 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; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

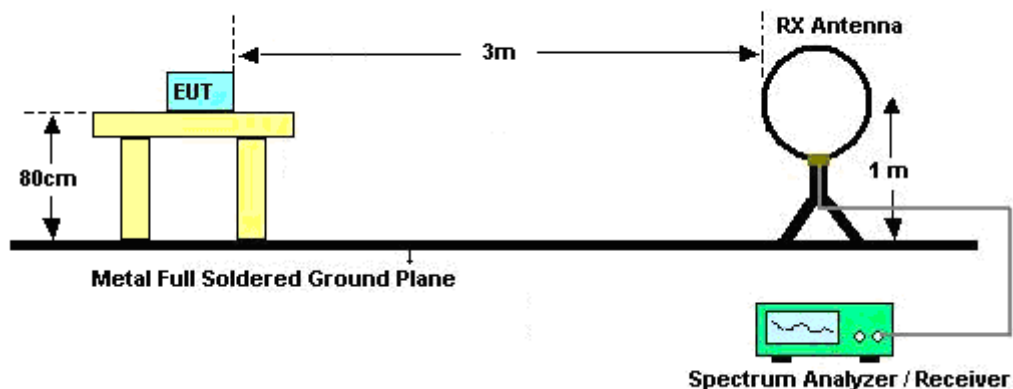
For average measurement:

 - $VBW = 10$ Hz, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, 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.

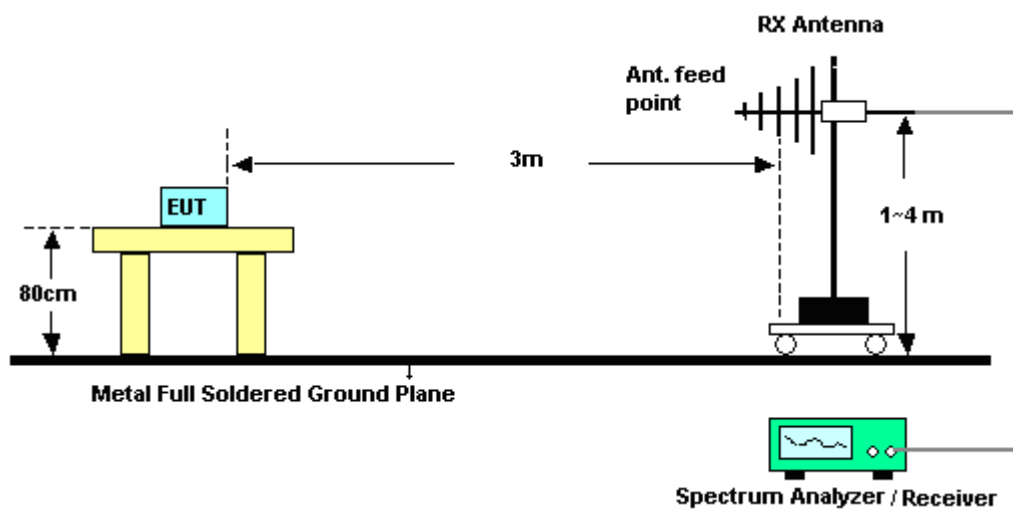
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.63	8.240	0.121	300Hz
802.11g	87.24	1.368	0.731	1kHz
2.4GHz 802.11n HT20	86.49	1.280	0.781	1kHz
802.11a	87.26	1.370	0.730	1kHz
5GHz 802.11n HT20	85.95	1.272	0.786	1kHz
5GHz 802.11n HT40	75.71	0.636	1.572	3kHz
5GHz 802.11ac VHT20	82.74	0.978	1.022	3kHz
5GHz 802.11ac VHT40	71.26	0.496	2.016	3kHz
5GHz 802.11ac VHT80	54.87	0.248	4.032	10kHz

3.5.4 Test Setup

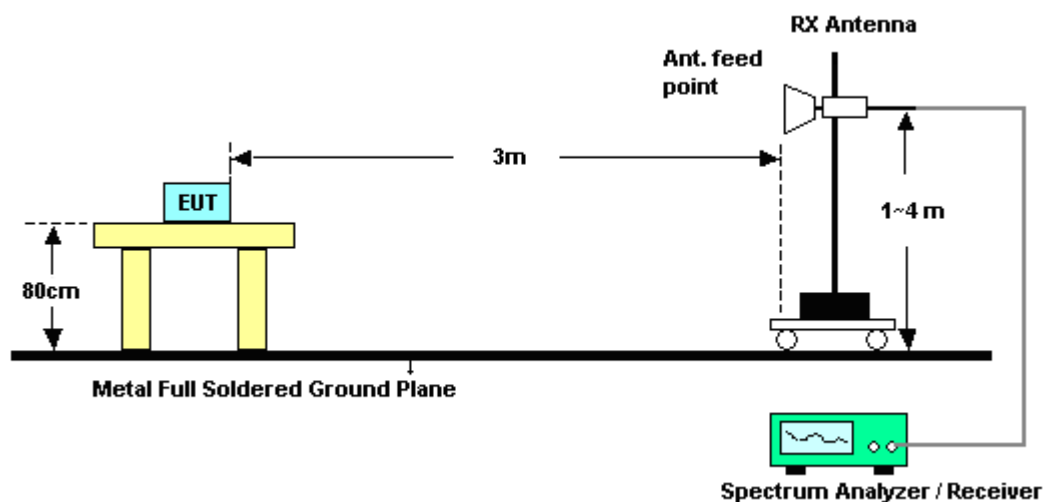
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b	Temperature :	25~26°C
Test Band :	Low	Relative Humidity :	44~45%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.39	49.15	-24.85	74	45.11	31.92	6.45	34.33	148	32	Peak
2390	38.29	-15.71	54	34.25	31.92	6.45	34.33	148	32	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
2352.12	49.68	-24.32	74	45.75	31.89	6.38	34.34	105	109	Peak
2387.67	38.44	-15.56	54	34.4	31.92	6.45	34.33	105	109	Average

Test Mode :	802.11b	Temperature :	25~26°C
Test Band :	High	Relative Humidity :	44~45%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.55	49.64	-24.36	74	45.35	32	6.59	34.3	143	32	Peak
2483.71	38.54	-15.46	54	34.26	31.99	6.59	34.3	143	32	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
2486.11	51.85	-22.15	74	47.57	31.99	6.59	34.3	100	112	Peak
2483.56	39.84	-14.16	54	35.56	31.99	6.59	34.3	100	112	Average



Test Mode :	802.11g	Temperature :	25~26°C
Test Band :	Low	Relative Humidity :	44~45%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2390	63.84	-10.16	74	59.8	31.92	6.45	34.33	127	6	Peak
2390	44.26	-9.74	54	40.22	31.92	6.45	34.33	127	6	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
2389.74	60.62	-13.38	74	56.58	31.92	6.45	34.33	100	160	Peak
2390	41.98	-12.02	54	37.94	31.92	6.45	34.33	100	160	Average

Test Mode :	802.11g	Temperature :	25~26°C
Test Band :	High	Relative Humidity :	44~45%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.34	62.65	-11.35	74	58.37	31.99	6.59	34.3	124	39	Peak
2483.5	43.51	-10.49	54	39.23	31.99	6.59	34.3	124	39	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
2483.83	64.84	-9.16	74	60.56	31.99	6.59	34.3	100	149	Peak
2483.5	44.76	-9.24	54	40.48	31.99	6.59	34.3	100	149	Average



Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Band :	Low	Relative Humidity :	44~45%
Test Channel :	01	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.74	56.13	-17.87	74	52.09	31.92	6.45	34.33	128	8	Peak
2390	41.16	-12.84	54	37.12	31.92	6.45	34.33	128	8	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
2390	53.31	-20.69	74	49.27	31.92	6.45	34.33	101	163	Peak
2390	39.86	-14.14	54	35.82	31.92	6.45	34.33	101	163	Average

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Band :	High	Relative Humidity :	44~45%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.98	57.54	-16.46	74	53.26	31.99	6.59	34.3	124	4	Peak
2483.68	40.68	-13.32	54	36.4	31.99	6.59	34.3	124	4	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
2485.45	55.92	-18.08	74	51.64	31.99	6.59	34.3	100	149	Peak
2483.5	40.49	-13.51	54	36.21	31.99	6.59	34.3	100	149	Average

<WLAN Tx Mode with WPC Charging>

Test Mode :	802.11g	Temperature :	25~26°C
Test Band :	High	Relative Humidity :	44~45%
Test Channel :	11	Test Engineer :	Gavin Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.74	61.89	-12.11	74	57.61	31.99	6.59	34.3	170	310	Peak
2483.59	43.06	-10.94	54	38.78	31.99	6.59	34.3	170	310	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
2483.56	64.19	-9.81	74	59.91	31.99	6.59	34.3	200	208	Peak
2483.53	44.9	-9.1	54	40.62	31.99	6.59	34.3	200	208	Average

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

Note: Pre-scanned all test modes and only choose the worst case mode recorded in the test report for radiated spurious emission below 30MHz.

<WLAN Tx Mode with WPC Charging>

Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	43~45%
Test Engineer :	Eric Shih	Polarization :	Horizontal

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01798	36.91	-85.6	122.51	16.36	20.26	0.29	-	-	Average
0.08997	21.96	-86.56	108.52	1.6	20.07	0.29	-	-	Average
0.09668	22.89	-85.01	107.9	2.53	20.07	0.29	-	-	QP
0.12604	22.32	-83.27	105.59	1.97	20.06	0.29	-	-	Average
0.17584	51.52	-51.18	102.7	31.2	20.03	0.29	-	-	Average
0.456	45.5	-48.92	94.42	25.21	20	0.29	-	-	Average
1.707	52.26	-17.74	70	31.91	20.02	0.33	100	78	QP
12.04	36.71	-33.29	70	16.54	19.77	0.4	-	-	QP
20.401	36.83	-33.17	70	16.22	20.18	0.43	-	-	QP
27.26	36.25	-33.75	70	15.39	20.38	0.48	-	-	QP



Test Mode :	802.11g	Temperature :	23~25°C
Test Channel :	11	Relative Humidity :	43~45%
Test Engineer :	Eric Shih	Polarization :	Vertical

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01798	36.45	-86.06	122.51	15.9	20.26	0.29	-	-	Average
0.07005	23.37	-87.33	110.7	2.97	20.11	0.29	-	-	Average
0.09672	28.02	-79.87	107.89	7.66	20.07	0.29	-	-	QP
0.14504	27.09	-77.28	104.37	6.76	20.04	0.29	-	-	Average
0.17652	47.48	-55.19	102.67	27.16	20.03	0.29	-	-	Average
0.26662	46.02	-53.07	99.09	25.72	20.01	0.29	-	-	Average
1.324	43.48	-21.69	65.17	23.16	20.01	0.31	100	88	QP
14.76	36.43	-33.57	70	16.26	19.76	0.41	-	-	QP
17.071	38.07	-31.93	70	17.81	19.84	0.42	-	-	QP
25.79	36.54	-33.46	70	15.68	20.39	0.47	-	-	QP



Test Mode :	5GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	43~45%
Test Engineer :	Eric Shih	Polarization :	Horizontal

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01798	36.23	-86.28	122.51	15.68	20.26	0.29	-	-	Average
0.06573	21.38	-89.87	111.25	0.98	20.11	0.29	-	-	Average
0.09666	23.24	-84.66	107.9	2.88	20.07	0.29	-	-	QP
0.12352	22.59	-83.18	105.77	2.24	20.06	0.29	-	-	Average
0.17278	49.08	-53.77	102.85	28.75	20.04	0.29	-	-	Average
0.30368	38.93	-59.03	97.96	18.63	20.01	0.29	-	-	Average
0.51253	46.41	-27	73.41	26.1	20	0.31	100	5	QP
10.512	35.72	-34.28	70	15.56	19.77	0.39	-	-	QP
19.51	37.4	-32.6	70	16.88	20.09	0.43	-	-	QP
26.955	35.2	-34.8	70	14.33	20.39	0.48	-	-	QP



Test Mode :	5GHz 802.11n HT40	Temperature :	23~25°C
Test Channel :	151	Relative Humidity :	43~45%
Test Engineer :	Eric Shih	Polarization :	Vertical

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01798	36.57	-85.94	122.51	16.02	20.26	0.29	-	-	Average
0.08076	23.45	-86.01	109.46	3.05	20.11	0.29	-	-	Average
0.0967	27.97	-79.93	107.9	7.61	20.07	0.29	-	-	QP
0.14508	26.83	-77.54	104.37	6.5	20.04	0.29	-	-	Average
0.17618	47.14	-55.55	102.69	26.82	20.03	0.29	-	-	Average
0.3863	44.49	-51.38	95.87	24.2	20	0.29	-	-	Average
1.699	38.43	-24.57	63	18.08	20.02	0.33	100	88	QP
9.432	34.74	-35.26	70	14.61	19.75	0.38	-	-	QP
19.375	38.43	-31.57	70	17.93	20.07	0.43	-	-	QP
29.015	36.44	-33.56	70	15.7	20.23	0.51	-	-	QP

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.

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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	100.88	-	-	96.79	31.93	6.49	34.33	148	32	Average
2412	106	-	-	101.91	31.93	6.49	34.33	148	32	Peak
4824	48.29	-25.71	74	59.31	34.4	10.17	55.59	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2413 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
2413	100.33	-	-	96.24	31.93	6.49	34.33	105	109	Average
2413	104.88	-	-	100.79	31.93	6.49	34.33	105	109	Peak
4824	49.05	-24.95	74	60.07	34.4	10.17	55.59	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2436 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
2436	99.69	-	-	95.55	31.94	6.52	34.32	146	30	Average
2436	104.93	-	-	100.79	31.94	6.52	34.32	146	30	Peak
4875	47.54	-26.46	74	58.67	34.37	10.18	55.68	100	0	Peak
7311	49.84	-24.16	74	59.57	35.61	10.94	56.28	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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	98.15	-	-	93.99	31.96	6.52	34.32	100	110	Average
2438	103.19	-	-	99.03	31.96	6.52	34.32	100	110	Peak
4875	49.17	-24.83	74	60.3	34.37	10.18	55.68	100	0	Peak
7311	48.61	-25.39	74	58.34	35.61	10.94	56.28	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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
187.14	27.44	-16.06	43.5	48.68	9.04	1.47	31.75	100	209	Peak
206.04	27.22	-16.28	43.5	48.26	9.15	1.56	31.75	-	-	Peak
262.2	28.48	-17.52	46	44.7	13.72	1.79	31.73	-	-	Peak
307	26.68	-19.32	46	43.13	13.35	1.93	31.73	-	-	Peak
345.5	24.28	-21.72	46	39.76	14.25	2.03	31.76	-	-	Peak
529.6	24.67	-21.33	46	35.82	18.3	2.52	31.97	-	-	Peak
2463	99.25	-	-	95.03	31.97	6.56	34.31	143	32	Average
2463	104.07	-	-	99.85	31.97	6.56	34.31	143	32	Peak
4923	49.12	-24.88	74	60.36	34.34	10.2	55.78	100	0	Peak
7386	49.42	-24.58	74	59.05	35.56	10.92	56.11	100	0	Peak

Test Mode :	802.11b	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
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
43.5	29.51	-10.49	40	50.28	10.26	0.76	31.79	100	164	Peak
51.06	23.72	-16.28	40	46.71	7.98	0.81	31.78	-	-	Peak
152.04	22.23	-21.27	43.5	42.11	10.5	1.37	31.75	-	-	Peak
511.4	21.98	-24.02	46	33.51	17.91	2.5	31.94	-	-	Peak
634.6	23.85	-22.15	46	33.39	19.72	2.79	32.05	-	-	Peak
847.4	23.94	-22.06	46	31.69	20.78	3.22	31.75	-	-	Peak
2463	98.91	-	-	94.69	31.97	6.56	34.31	100	112	Average
2463	103.41	-	-	99.19	31.97	6.56	34.31	100	112	Peak
4923	48.29	-25.71	74	59.53	34.34	10.2	55.78	100	0	Peak
7386	48.8	-25.2	74	58.43	35.56	10.92	56.11	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2411 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
2411	93.12	-	-	89.03	31.93	6.49	34.33	127	6	Average
2411	103.5	-	-	99.41	31.93	6.49	34.33	127	6	Peak
4824	47.08	-26.92	74	58.1	34.4	10.17	55.59	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2411 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
2411	91.58	-	-	87.49	31.93	6.49	34.33	100	160	Average
2411	102.01	-	-	97.92	31.93	6.49	34.33	100	160	Peak
4824	47.4	-26.6	74	58.42	34.4	10.17	55.59	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2436 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
2436	93.28	-	-	89.14	31.94	6.52	34.32	127	7	Average
2436	103.78	-	-	99.64	31.94	6.52	34.32	127	7	Peak
4875	47.87	-26.13	74	59	34.37	10.18	55.68	100	0	Peak
7311	48.09	-25.91	74	57.82	35.61	10.94	56.28	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2436 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
2436	90.95	-	-	86.81	31.94	6.52	34.32	100	157	Average
2436	101.31	-	-	97.17	31.94	6.52	34.32	100	157	Peak
4875	46.98	-27.02	74	58.11	34.37	10.18	55.68	100	0	Peak
7311	50.35	-23.65	74	60.08	35.61	10.94	56.28	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2461 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
159.6	25.02	-18.48	43.5	45.2	10.1	1.47	31.75	-	-	Peak
198.75	26.68	-16.82	43.5	47.72	9.18	1.53	31.75	-	-	Peak
203.34	26.71	-16.79	43.5	47.75	9.16	1.55	31.75	102	249	Peak
303.5	25.85	-20.15	46	42.38	13.27	1.92	31.72	-	-	Peak
342	24.16	-21.84	46	39.8	14.1	2.02	31.76	-	-	Peak
749.4	23.67	-22.33	46	32.41	20.2	3.05	31.99	-	-	Peak
2461	91.45	-	-	87.23	31.97	6.56	34.31	124	39	Average
2461	102.02	-	-	97.8	31.97	6.56	34.31	124	39	Peak
4923	46.6	-27.4	74	57.84	34.34	10.2	55.78	100	0	Peak
7386	48.63	-25.37	74	58.26	35.56	10.92	56.11	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2461 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
43.5	28.97	-11.03	40	49.74	10.26	0.76	31.79	100	153	Peak
51.6	23.29	-16.71	40	46.28	7.98	0.81	31.78	-	-	Peak
146.64	22.25	-21.25	43.5	42.05	10.62	1.33	31.75	-	-	Peak
301.4	20.63	-25.37	46	37.2	13.24	1.91	31.72	-	-	Peak
643	23.28	-22.72	46	32.95	19.57	2.8	32.04	-	-	Peak
746.6	23.1	-22.9	46	31.88	20.17	3.04	31.99	-	-	Peak
2461	89.87	-	-	85.65	31.97	6.56	34.31	100	149	Average
2461	100.91	-	-	96.69	31.97	6.56	34.31	100	149	Peak
4923	47.43	-26.57	74	58.67	34.34	10.2	55.78	100	0	Peak
7386	48.53	-25.47	74	58.16	35.56	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2411 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
160.14	23.74	-19.76	43.5	43.92	10.1	1.47	31.75	-	-	Peak
188.76	25.69	-17.81	43.5	46.88	9.08	1.48	31.75	-	-	Peak
204.96	26.29	-17.21	43.5	47.34	9.15	1.55	31.75	100	225	Peak
310.5	25.18	-20.82	46	41.57	13.4	1.94	31.73	-	-	Peak
315.4	24.59	-21.41	46	40.82	13.55	1.95	31.73	-	-	Peak
345.5	23.36	-22.64	46	38.84	14.25	2.03	31.76	-	-	Peak
2411	90.1	-	-	86.01	31.93	6.49	34.33	128	8	Average
2411	100.58	-	-	96.49	31.93	6.49	34.33	128	8	Peak
4824	48.94	-25.06	74	59.96	34.4	10.17	55.59	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	01	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2411 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	28.18	-11.82	40	48.3	10.92	0.75	31.79	100	152	Peak
71.85	19.39	-20.61	40	43.71	6.5	0.95	31.77	-	-	Peak
198.75	21.81	-21.69	43.5	42.85	9.18	1.53	31.75	-	-	Peak
314	20.84	-25.16	46	37.1	13.52	1.95	31.73	-	-	Peak
633.9	22.28	-23.72	46	31.82	19.72	2.79	32.05	-	-	Peak
650	23.54	-22.46	46	33.28	19.5	2.8	32.04	-	-	Peak
2411	88.15	-	-	84.06	31.93	6.49	34.33	101	163	Average
2411	98.81	-	-	94.72	31.93	6.49	34.33	101	163	Peak
4824	47.45	-26.55	74	58.47	34.4	10.17	55.59	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2436 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
2436	87.66	-	-	83.52	31.94	6.52	34.32	129	7	Average
2436	98.41	-	-	94.27	31.94	6.52	34.32	129	7	Peak
4875	47.51	-26.49	74	58.64	34.37	10.18	55.68	100	0	Peak
7311	49.13	-24.87	74	58.86	35.61	10.94	56.28	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	06	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2436 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
2436	86.52	-	-	82.38	31.94	6.52	34.32	100	151	Average
2436	97.63	-	-	93.49	31.94	6.52	34.32	100	151	Peak
4875	47.26	-26.74	74	58.39	34.37	10.18	55.68	100	0	Peak
7311	49.04	-24.96	74	58.77	35.61	10.94	56.28	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2461 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
2461	86.49	-	-	82.27	31.97	6.56	34.31	124	4	Average
2461	97.39	-	-	93.17	31.97	6.56	34.31	124	4	Peak
4923	47.29	-26.71	74	58.53	34.34	10.2	55.78	100	0	Peak
7386	48.45	-25.55	74	58.08	35.56	10.92	56.11	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
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
2463	85.19	-	-	80.97	31.97	6.56	34.31	100	149	Average
2463	96.74	-	-	92.52	31.97	6.56	34.31	100	149	Peak
4923	47.24	-26.76	74	58.48	34.34	10.2	55.78	100	0	Peak
7386	48.69	-25.31	74	58.32	35.56	10.92	56.11	100	0	Peak

Test Mode :	802.11a	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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	94.73	-	-	81.6	35.04	11.39	33.3	148	280	Average
5744	105.08	-	-	91.95	35.04	11.39	33.3	148	280	Peak
11490	49.85	-24.15	74	54.85	37.79	11.04	53.83	100	0	Peak

Test Mode :	802.11a	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5746 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
5746	98.09	-	-	84.96	35.04	11.39	33.3	100	60	Average
5746	108.73	-	-	95.6	35.04	11.39	33.3	100	60	Peak
11490	49.94	-24.06	74	54.94	37.79	11.04	53.83	100	0	Peak

Test Mode :	802.11a	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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
5786	95.49	-	-	82.29	35.09	11.43	33.32	147	276	Average
5786	105.83	-	-	92.63	35.09	11.43	33.32	147	276	Peak
11571	50.23	-23.77	74	54.98	37.92	11.09	53.76	100	0	Peak

Test Mode :	802.11a	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5784 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
5784	98.75	-	-	85.56	35.08	11.43	33.32	100	59	Average
5784	108.92	-	-	95.73	35.08	11.43	33.32	100	59	Peak
11571	50.06	-23.94	74	54.81	37.92	11.09	53.76	100	0	Peak

Test Mode :	802.11a	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 5824 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
182.55	26.18	-17.32	43.5	47.29	9.18	1.46	31.75	-	-	Peak
201.45	27.6	-15.9	43.5	48.62	9.18	1.55	31.75	100	277	Peak
275.16	28.34	-17.66	46	45.35	12.89	1.83	31.73	-	-	Peak
303.5	26.17	-19.83	46	42.7	13.27	1.92	31.72	-	-	Peak
310.5	25.63	-20.37	46	42.02	13.4	1.94	31.73	-	-	Peak
345.5	24.43	-21.57	46	39.91	14.25	2.03	31.76	-	-	Peak
5824	95.69	-	-	82.38	35.13	11.51	33.33	172	284	Average
5824	105.84	-	-	92.53	35.13	11.51	33.33	172	284	Peak
11649	50.92	-23.08	74	55.45	38.05	11.14	53.72	100	0	Peak

Test Mode :	802.11a	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5826 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	28.27	-11.73	40	48.39	10.92	0.75	31.79	102	172	Peak
51.06	22.57	-17.43	40	45.56	7.98	0.81	31.78	-	-	Peak
153.66	22.87	-20.63	43.5	42.84	10.4	1.38	31.75	-	-	Peak
310.5	22.97	-23.03	46	39.36	13.4	1.94	31.73	-	-	Peak
391	19.89	-26.11	46	34.01	15.53	2.16	31.81	-	-	Peak
639.5	23.62	-22.38	46	33.25	19.62	2.79	32.04	-	-	Peak
5826	98.61	-	-	85.3	35.13	11.51	33.33	100	50	Average
5826	108.99	-	-	95.68	35.13	11.51	33.33	100	50	Peak
11649	49.91	-24.09	74	54.44	38.05	11.14	53.72	100	0	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 5746 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
5746	95.49	-	-	82.36	35.04	11.39	33.3	174	284	Average
5746	105.89	-	-	92.76	35.04	11.39	33.3	174	284	Peak
11490	50.56	-23.44	74	55.56	37.79	11.04	53.83	100	0	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	149	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5746 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
5746	98.44	-	-	85.31	35.04	11.39	33.3	100	59	Average
5746	108.87	-	-	95.74	35.04	11.39	33.3	100	59	Peak
11490	49.7	-24.3	74	54.7	37.79	11.04	53.83	100	0	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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
182.55	26.19	-17.31	43.5	47.3	9.18	1.46	31.75	-	-	Peak
201.45	27.19	-16.31	43.5	48.21	9.18	1.55	31.75	101	258	Peak
285.15	27.72	-18.28	46	44.69	12.9	1.85	31.72	-	-	Peak
303.5	25.94	-20.06	46	42.47	13.27	1.92	31.72	-	-	Peak
342	24.14	-21.86	46	39.78	14.1	2.02	31.76	-	-	Peak
384	20.82	-25.18	46	35.22	15.26	2.14	31.8	-	-	Peak
5786	95.18	-	-	81.98	35.09	11.43	33.32	146	281	Average
5786	105.37	-	-	92.17	35.09	11.43	33.32	146	281	Peak
11571	50.9	-23.1	74	55.65	37.92	11.09	53.76	100	0	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	157	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
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
43.5	28.35	-11.65	40	49.12	10.26	0.76	31.79	100	182	Peak
48.9	23.07	-16.93	40	45.33	8.73	0.79	31.78	-	-	Peak
152.85	22.7	-20.8	43.5	42.67	10.4	1.38	31.75	-	-	Peak
303.5	23.7	-22.3	46	40.23	13.27	1.92	31.72	-	-	Peak
387.5	22.01	-23.99	46	36.25	15.42	2.15	31.81	-	-	Peak
643	23.94	-22.06	46	33.61	19.57	2.8	32.04	-	-	Peak
5786	98.11	-	-	84.91	35.09	11.43	33.32	100	49	Average
5786	108.42	-	-	95.22	35.09	11.43	33.32	100	49	Peak
11571	50.67	-23.33	74	55.42	37.92	11.09	53.76	100	0	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 5826 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
5826	95.76	-	-	82.45	35.13	11.51	33.33	146	283	Average
5826	106	-	-	92.69	35.13	11.51	33.33	146	283	Peak
11649	49.78	-24.22	74	54.31	38.05	11.14	53.72	100	0	Peak

Test Mode :	5GHz 802.11n HT20	Temperature :	25~26°C
Test Channel :	165	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5824 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
5824	98.42	-	-	85.11	35.13	11.51	33.33	100	62	Average
5824	108.58	-	-	95.27	35.13	11.51	33.33	100	62	Peak
11649	49.87	-24.13	74	54.4	38.05	11.14	53.72	100	0	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	25~26°C
Test Channel :	151	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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
182.55	25.02	-18.48	43.5	46.13	9.18	1.46	31.75	-	-	Peak
201.45	28.36	-15.14	43.5	49.38	9.18	1.55	31.75	102	226	Peak
281.64	28.52	-17.48	46	45.59	12.82	1.84	31.73	-	-	Peak
303.5	27.7	-18.3	46	44.23	13.27	1.92	31.72	-	-	Peak
345.5	24.71	-21.29	46	40.19	14.25	2.03	31.76	-	-	Peak
653.5	23.28	-22.72	46	33.05	19.46	2.81	32.04	-	-	Peak
5757	93.79	-	-	80.65	35.06	11.39	33.31	159	283	Average
5757	103.65	-	-	90.51	35.06	11.39	33.31	159	283	Peak
11511	50.08	-23.92	74	55.02	37.8	11.06	53.8	100	0	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	25~26°C
Test Channel :	151	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5753 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
43.5	28.59	-11.41	40	49.36	10.26	0.76	31.79	100	153	Peak
155.55	22.81	-20.69	43.5	42.96	10.2	1.4	31.75	-	-	Peak
201.45	23.21	-20.29	43.5	44.23	9.18	1.55	31.75	-	-	Peak
627.6	22.54	-23.46	46	32.05	19.75	2.79	32.05	-	-	Peak
643	24.4	-21.6	46	34.07	19.57	2.8	32.04	-	-	Peak
881	24.07	-21.93	46	31.46	20.9	3.32	31.61	-	-	Peak
5753	96.97	-	-	83.82	35.06	11.39	33.3	100	60	Average
5753	107.09	-	-	93.94	35.06	11.39	33.3	100	60	Peak
11511	50.96	-23.04	74	55.9	37.8	11.06	53.8	100	0	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	25~26°C
Test Channel :	159	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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	93.87	-	-	80.63	35.09	11.47	33.32	158	283	Average
5797	103.54	-	-	90.3	35.09	11.47	33.32	158	283	Peak
11589	50.28	-23.72	74	54.97	37.96	11.1	53.75	100	0	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	25~26°C
Test Channel :	159	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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	96.53	-	-	83.29	35.09	11.47	33.32	100	60	Average
5793	106.27	-	-	93.03	35.09	11.47	33.32	100	60	Peak
11589	50.67	-23.33	74	55.36	37.96	11.1	53.75	100	0	Peak

Test Mode :	5GHz 802.11ac VHT80	Temperature :	25~26°C
Test Channel :	155	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 5773 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
192	26.54	-16.96	43.5	47.7	9.1	1.49	31.75	-	-	Peak
201.45	27.7	-15.8	43.5	48.72	9.18	1.55	31.75	100	264	Peak
210.9	27.27	-16.23	43.5	48.35	9.1	1.57	31.75	-	-	Peak
307	27.47	-18.53	46	43.92	13.35	1.93	31.73	-	-	Peak
345.5	23.6	-22.4	46	39.08	14.25	2.03	31.76	-	-	Peak
384	22.28	-23.72	46	36.68	15.26	2.14	31.8	-	-	Peak
5773	86.93	-	-	73.73	35.08	11.43	33.31	183	335	Average
5773	96.29	-	-	83.09	35.08	11.43	33.31	183	335	Peak
11550	50.04	-23.96	74	54.83	37.89	11.09	53.77	100	0	Peak

Test Mode :	5GHz 802.11ac VHT80	Temperature :	25~26°C
Test Channel :	155	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5773 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
42.15	28.82	-11.18	40	48.94	10.92	0.75	31.79	100	231	Peak
51.33	22.64	-17.36	40	45.63	7.98	0.81	31.78	-	-	Peak
152.04	23.96	-19.54	43.5	43.84	10.5	1.37	31.75	-	-	Peak
310.5	21.05	-24.95	46	37.44	13.4	1.94	31.73	-	-	Peak
562.5	20.92	-25.08	46	31.03	19.3	2.6	32.01	-	-	Peak
636	24.53	-21.47	46	34.11	19.68	2.79	32.05	-	-	Peak
5773	89.72	-	-	76.52	35.08	11.43	33.31	100	59	Average
5773	99.53	-	-	86.33	35.08	11.43	33.31	100	59	Peak
11550	50.24	-23.76	74	55.03	37.89	11.09	53.77	100	0	Peak

<WLAN Tx Mode with WPC Charging>

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Horizontal
Remark :	1. 2464 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
121.53	25.23	-18.27	43.5	43.59	12.16	1.23	31.75	-	-	Peak
135.84	24.93	-18.57	43.5	43.89	11.5	1.29	31.75	-	-	Peak
187.14	25.84	-17.66	43.5	47.08	9.04	1.47	31.75	-	-	Peak
304.2	33.07	-12.93	46	49.58	13.29	1.92	31.72	106	109	Peak
391	23.59	-22.41	46	37.71	15.53	2.16	31.81	-	-	Peak
620.6	22.09	-23.91	46	31.74	19.62	2.78	32.05	-	-	Peak
2464	90.76	-	-	86.87	31.97	6.56	34.64	170	310	Average
2464	101.17	-	-	97.28	31.97	6.56	34.64	170	310	Peak
4923	40.13	-33.87	74	56.16	34.34	10.2	60.57	100	0	Peak
7386	41.41	-32.59	74	55.49	35.56	10.92	60.56	100	0	Peak

Test Mode :	802.11g	Temperature :	25~26°C
Test Channel :	11	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 2464 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
50.52	28.58	-11.42	40	51.26	8.3	0.8	31.78	-	-	Peak
75.09	29.44	-10.56	40	53.75	6.5	0.96	31.77	-	-	Peak
87.24	30.16	-9.84	40	52.76	8.12	1.04	31.76	101	102	Peak
448.4	24.64	-21.36	46	37.32	16.88	2.31	31.87	-	-	Peak
634.6	22.58	-23.42	46	32.12	19.72	2.79	32.05	-	-	Peak
723.5	22.77	-23.23	46	31.93	19.87	2.97	32	-	-	Peak
2464	92	-	-	88.11	31.97	6.56	34.64	200	208	Average
2464	102.64	-	-	98.75	31.97	6.56	34.64	200	208	Peak
4923	40.02	-33.98	74	56.05	34.34	10.2	60.57	100	0	Peak
7386	42.07	-31.93	74	56.15	35.56	10.92	60.56	100	0	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	25~26°C
Test Channel :	151	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	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
134.76	28.71	-14.79	43.5	47.57	11.6	1.29	31.75	-	-	Peak
137.73	28.03	-15.47	43.5	47.18	11.3	1.3	31.75	-	-	Peak
167.16	25.88	-17.62	43.5	46.19	9.86	1.58	31.75	-	-	Peak
307	34.46	-11.54	46	50.91	13.35	1.93	31.73	100	125	Peak
391	23.1	-22.9	46	37.22	15.53	2.16	31.81	-	-	Peak
441.4	23.18	-22.82	46	35.95	16.81	2.29	31.87	-	-	Peak
5757	93.79	-	-	80.65	35.06	11.39	33.31	159	283	Average
5757	103.65	-	-	90.51	35.06	11.39	33.31	159	283	Peak
11511	50.08	-23.92	74	55.02	37.8	11.06	53.8	100	0	Peak

Test Mode :	5GHz 802.11n HT40	Temperature :	25~26°C
Test Channel :	151	Relative Humidity :	44~45%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	1. 5753 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
46.2	30.07	-9.93	40	51.91	9.17	0.77	31.78	-	-	Peak
81.3	30.46	-9.54	40	53.98	7.24	1	31.76	100	147	Peak
87.24	29.9	-10.1	40	52.5	8.12	1.04	31.76	-	-	Peak
307	26.67	-19.33	46	43.12	13.35	1.93	31.73	-	-	Peak
317.5	26.12	-19.88	46	42.3	13.61	1.95	31.74	-	-	Peak
441.4	24.76	-21.24	46	37.53	16.81	2.29	31.87	-	-	Peak
5753	96.97	-	-	83.82	35.06	11.39	33.3	100	60	Average
5753	107.09	-	-	93.94	35.06	11.39	33.3	100	60	Peak
11511	50.96	-23.04	74	55.9	37.8	11.06	53.8	100	0	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 (dB μ V)	
	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.

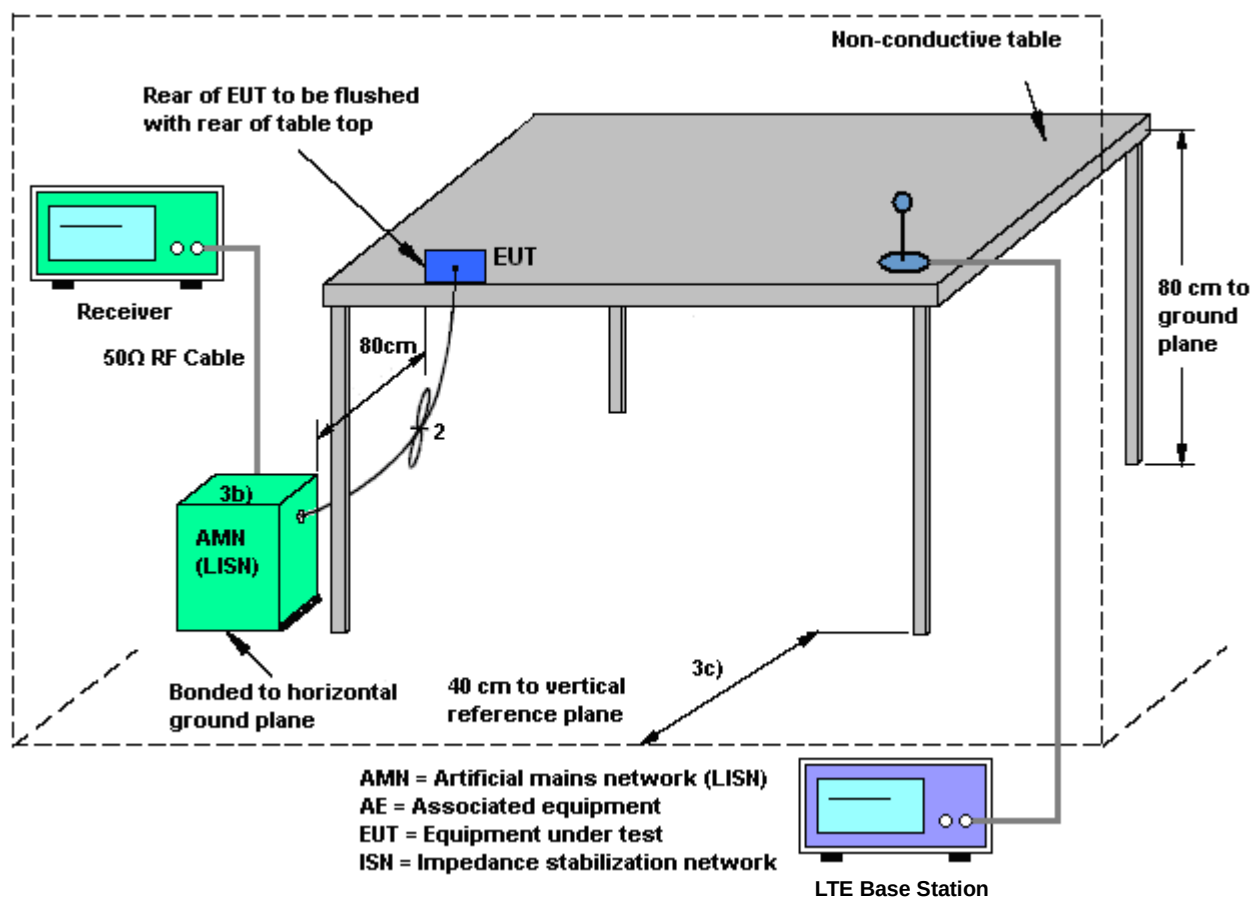
3.6.2 Measuring Instruments

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.

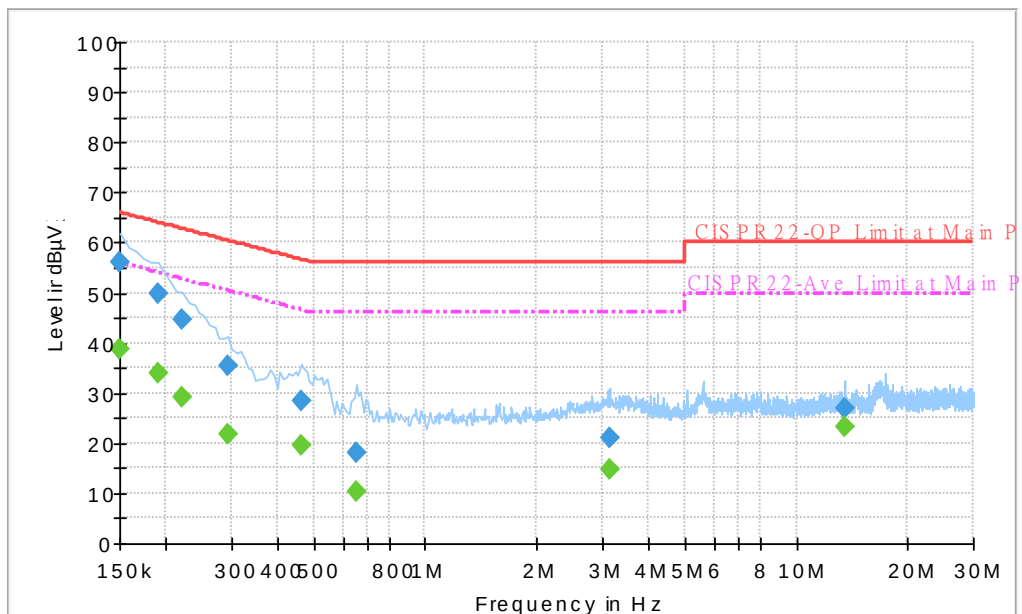
3.6.4 Test Setup



3.6.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	LTE Band 2 Idle + WLAN 2.4GHz Link + Bluetooth Link + NFC Tx + Earphone 1 + USB Cable (Data Link with Notebook)		

ENV216 Auto Test



Final Result : Quasi-Peak

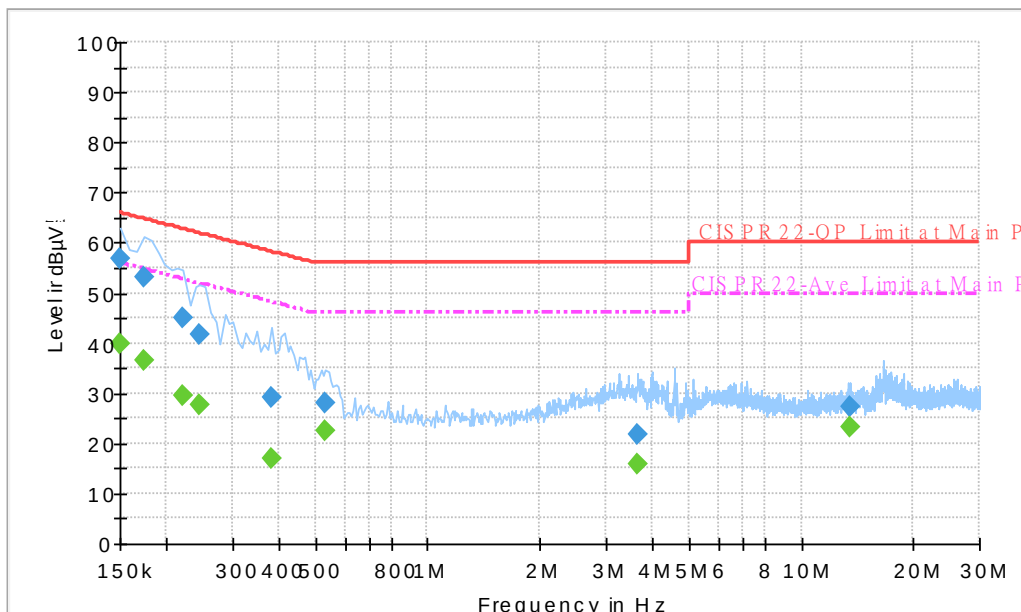
Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	56.2	Off	L1	19.4	9.8	66.0
0.190000	49.8	Off	L1	19.4	14.2	64.0
0.222000	44.6	Off	L1	19.4	18.1	62.7
0.294000	35.3	Off	L1	19.4	25.1	60.4
0.462000	28.4	Off	L1	19.3	28.3	56.7
0.654000	18.0	Off	L1	19.4	38.0	56.0
3.134000	20.9	Off	L1	19.6	35.1	56.0
13.558000	27.1	Off	L1	19.8	32.9	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	38.7	Off	L1	19.4	17.3	56.0
0.190000	33.8	Off	L1	19.4	20.2	54.0
0.222000	29.1	Off	L1	19.4	23.6	52.7
0.294000	21.7	Off	L1	19.4	28.7	50.4
0.462000	19.7	Off	L1	19.3	27.0	46.7
0.654000	10.2	Off	L1	19.4	35.8	46.0
3.134000	14.9	Off	L1	19.6	31.1	46.0
13.558000	23.1	Off	L1	19.8	26.9	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Kai-Chun Chu	Relative Humidity :	46~48%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	LTE Band 2 Idle + WLAN 2.4GHz Link + Bluetooth Link + NFC Tx + Earphone 1 + USB Cable (Data Link with Notebook)		

ENV216 Auto Test


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	56.9	Off	N	19.4	9.1	66.0
0.174000	53.1	Off	N	19.3	11.7	64.8
0.222000	44.9	Off	N	19.4	17.8	62.7
0.246000	41.6	Off	N	19.4	20.3	61.9
0.382000	29.0	Off	N	19.3	29.2	58.2
0.534000	28.0	Off	N	19.4	28.0	56.0
3.646000	21.8	Off	N	19.6	34.2	56.0
13.558000	27.2	Off	N	19.9	32.8	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	39.9	Off	N	19.4	16.1	56.0
0.174000	36.7	Off	N	19.3	18.1	54.8
0.222000	29.7	Off	N	19.4	23.0	52.7
0.246000	27.5	Off	N	19.4	24.4	51.9
0.382000	16.8	Off	N	19.3	31.4	48.2
0.534000	22.4	Off	N	19.4	23.6	46.0
3.646000	16.0	Off	N	19.6	30.0	46.0
13.558000	23.4	Off	N	19.9	26.6	50.0

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

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

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Rohde & Schwarz	FSP40	100055	9kHz~40GHz	Jun. 07, 2013	Mar. 23, 2014	Jun. 06, 2014	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB41292344	300MHz~40GHz	Jan. 28, 2014	Mar. 23, 2014	Jan. 27, 2015	Conducted (TH02-HY)
Power Sensor	Agilent	E9327A	US40441548	300MHz~40GHz	Jan. 28, 2014	Mar. 23, 2014	Jan. 27, 2015	Conducted (TH02-HY)
Spectrum Analyzer	R&S	FSP30	101067	9kHz ~ 30GHz	Nov. 20, 2013	Mar. 22, 2014~ May 21, 2014	Nov. 19, 2014	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/0003	20MHz ~ 1000MHz	May 06, 2013	Mar. 22, 2014	May 05, 2014	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/0003	20MHz ~ 1000MHz	May 06, 2014	May 21, 2014	May 05, 2015	Radiation (03CH06-HY)
Bilog Antenna	Schaffner	CBL6112B	2885	30MHz -2GHz	Oct. 10, 2013	Mar. 22, 2014~ May 21, 2014	Oct. 09, 2014	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 02, 2013	Mar. 22, 2014~ May 21, 2014	Aug. 01, 2014	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9kHz ~ 1GHz	Apr. 12, 2013	Mar. 21, 2014	Apr. 11, 2014	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9kHz ~ 1GHz	Apr. 16, 2014	May 21, 2014	Apr. 15, 2015	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 18, 2013	Mar. 22, 2014~ May 21, 2014	Jul. 17, 2014	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 03, 2013	Mar. 22, 2014~ May 21, 2014	Oct. 02, 2014	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A01917	1GHz ~ 26.5GHz	Feb. 10, 2014	Mar. 22, 2014~ May 21, 2014	Feb. 19, 2015	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 - 360 degree	N/A	Mar. 22, 2014~ May 21, 2014	N/A	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1 m ~ 4 m	N/A	Mar. 22, 2014~ May 21, 2014	N/A	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz ~ 2.75GHz	Nov. 15, 2013	Mar. 27, 2014 ~ May 19, 2014	Nov. 14, 2014	Conduction (CO05-HY)
Two-LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2013	Mar. 27, 2014 ~ May 19, 2014	Dec. 11, 2014	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 04, 2013	Mar. 27, 2014 ~ May 19, 2014	Dec. 03, 2014	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Mar. 27, 2014 ~ May 19, 2014	N/A	Conduction (CO05-HY)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 06, 2013	May 21, 2014	Sep. 05, 2014	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/0001	9 kHz~30 MHz	Jul. 03, 2012	May 21, 2014	Jul. 02, 2014	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	May 21, 2014	Oct. 09, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz 32dB GAIN	Mar. 17, 2014	May 21, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	May 21, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	May 21, 2014	N/A	Radiation (03CH07-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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

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