FCC RF Test Report

APPLICANT	:	**VeriFone, Inc.**
EQUIPMENT	:	**Point of Sale Terminal**
BRAND NAME	:	**VeriFone**
MODEL NAME	:	**VX690 3G-BT-WiFi**
FCC ID	:	**B32VX6903GBTWIFI**
STANDARD	:	**FCC Part 15 Subpart E §15.407**
CLASSIFICATION	:	**(NII) Unlicensed National Information Infrastructure**

The product was received on Apr. 11, 2014 and testing was completed on Apr. 28, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and the testing has shown the tested sample to be in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 1190

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR441115E	Rev. 01	Initial issue of report	May 13, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	RSS-210 A9.2	26dB & 99% Bandwidth	-	Pass	-
3.2	15.407(a)	RSS-210 A9.2	Maximum Conducted Output Power	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	RSS-210 A9.2	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(a)(6)	RSS-210 A9.3	Peak Excursion Ratio	≤ 13dB	Pass	-
3.5	15.407(b)	RSS-210 A9.3	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 1.32 dB at 5379.920 MHz
3.6	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 11.20 dB at 13.558 MHz
3.7	15.407(g)	-	Frequency Stability	Within Operation Band	Pass	-
3.8	15.407(c)	RSS-210 A9.4	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.9	15.203 & 15.407(a)	RSS-210 A9.2	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

VeriFone, Inc.
1400 West Stanford Ranch Road Suite 200 Rocklin CA 95765 USA

1.2 Manufacturer

Inventec Appliances (Pudong) Co., Ltd.
No. 789 Pu Xing Road, Shanghai, P.R.C.

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Point of Sale Terminal
Brand Name	VeriFone
Model Name	VX690 3G-BT-WiFi
FCC ID	B32VX6903GBTWIFI
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/RFID WLAN 11a/b/g/n (HT20) Bluetooth v4.0 EDR/LE
EUT Stage	Identical Prototype

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

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz
Maximum Output Power to Antenna	**<5180 MHz ~ 5240 MHz>** 802.11a : 8.81 dBm / 0.0076 W 802.11n HT20 : 8.83 dBm / 0.0076 W **<5260 MHz ~ 5320 MHz>** 802.11a : 8.66 dBm / 0.0073 W 802.11n HT20 : 8.37 dBm / 0.0069 W **<5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz >** 802.11a : 8.12 dBm / 0.0065 W 802.11n HT20 : 8.14 dBm / 0.0065 W
99% Occupied Bandwidth	802.11a : 17.20 MHz 802.11n HT20 : 18.20 MHz
Antenna Type	**<5180 MHz ~ 5240 MHz>** PIFA Antenna with gain 1.93 dBi **<5260 MHz ~ 5320 MHz>** PIFA Antenna with gain 1.45 dBi **<5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz >** PIFA Antenna with gain 2.60 dBi
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

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

1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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

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

1.7 Applicable Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D01 General UNII Test Procedures v01r03
- ANSI C63.4-2003

Remark:

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

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) 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)
5150-5250 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38	**5190**	**46**	**5230**
	40	5200	48	5240

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5250-5350 MHz Band 2 (U-NII-2A)	52	5260	60	5300
	54	**5270**	**62**	**5310**
	56	5280	64	5320

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5470-5600 MHz and 5650-5725 MHz Band 3 (U-NII-2C)	100	5500	116	5580
	102	**5510**	132	5660
	104	5520	**134**	**5670**
	108	5540	136	5680
	110	**5550**	140	5700
	112	5560		

Note: The above Frequency and Channel in boldface were 802.11n HT40.

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 in the following tables.

5GHz 802.11a mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Average Power (dBm)	**8.81**	8.80	8.81	8.81	8.79	8.72	8.72	8.80

5GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Average Power (dBm)	**8.83**	8.70	8.73	8.64	8.54	8.80	8.75	8.70

2.3 Test Mode

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

Test Cases				
	Test Items	**Mode**	**Data rate**	**Test Channel**
Conducted TCs	**26dB and 99% BW Power Spectral Density**	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**6.5 Mbps**	**L/M/H**
	Output Power	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**6.5 Mbps**	**L/M/H**
	Peak Excursion	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**6.5 Mbps**	**L/M/H**
	Frequency Stability	**802.11a**	**6 Mbps**	**L/M/H**
Radiated TCs	**Radiated Band Edge**	**802.11a**	**6 Mbps**	**L/H**
		802.11n HT20	**6.5 Mbps**	**L/H**
	Radiated Spurious Emission	**802.11a**	**6 Mbps**	**L/M/H**
		802.11n HT20	**6.5 Mbps**	**L/M/H**
AC Conducted Emission	Mode 1 ： GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + TC + TF + Battery 1 + Adapter 1			

Remark:

1. TC stands for Test Configuration, and consists of Smart Card, SD Card, and Printer.

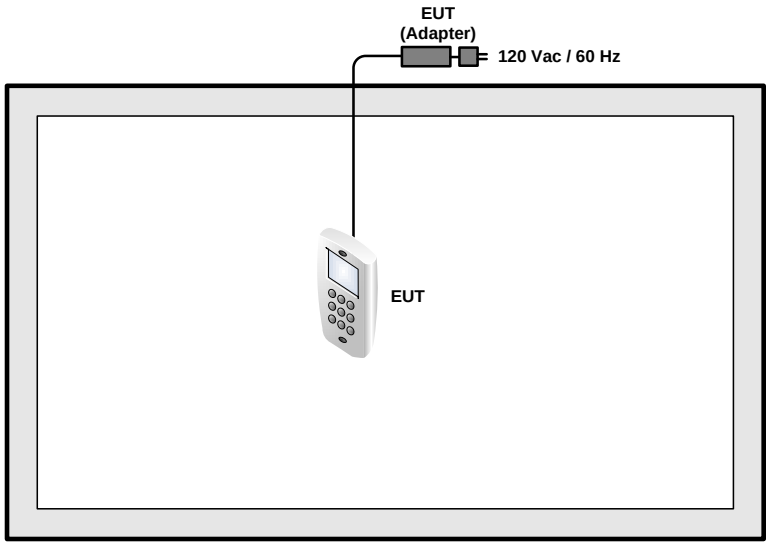
2. TF stands for Test Function, and consists of MSR On and RFID On.

Ch. #		Band I：5150-5250 MHz	Band II：5250-5350 MHz	Band III：5470-5600 MHz and 5650-5725MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

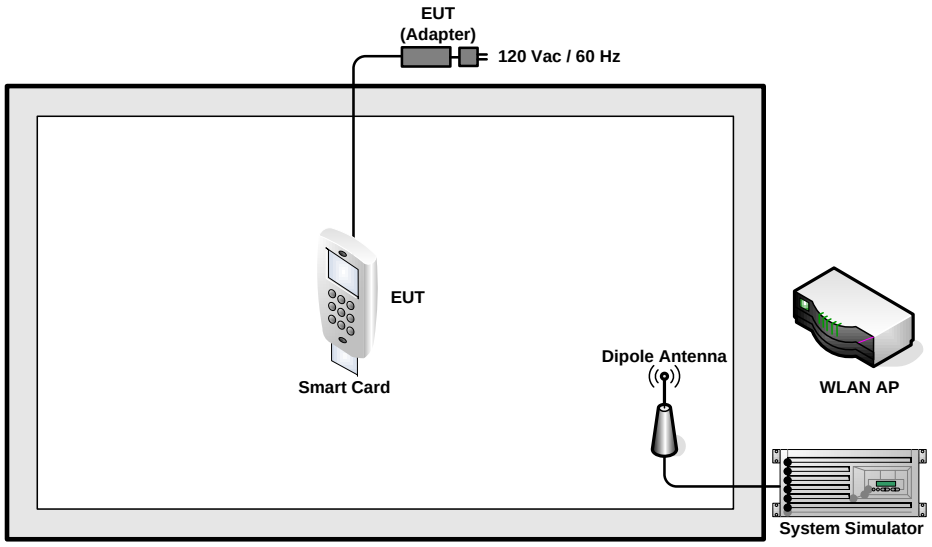
Ch. #		Band I：5150-5250 MHz	Band II：5250-5350 MHz	Band III：5470-5600 MHz and 5650-5725MHz
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	Pendulum	GSG-54	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/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Smart Card	N/A	N/A	N/A	N/A	N/A
6.	MSR Card	N/A	N/A	N/A	N/A	N/A
7.	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, “WiFi Tx Test”, was provided and enabled to make EUT continuously transmit/receive signal.

2.7 Measurement Results Explanation Example

For all conducted test items:

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

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

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

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 26dB & 99% Occupied Bandwidth Measurement

3.1.1 Description of 26dB & 99% Occupied Bandwidth

There is no restriction limits for bandwidth. The maximum conducted output power can be limited by measured emission bandwidth (B).

For the band 5150-5250 MHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B.

For the bands 5250-5350 MHz, 5470-5600 MHz and 5650-5725MHz, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B.

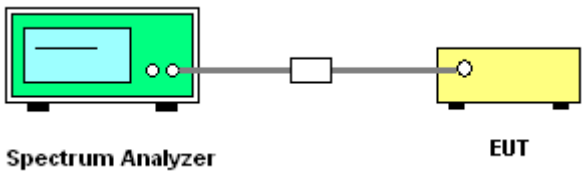
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r03.
   Section D) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW) ≥ 3 * RBW.
8. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 26dB & 99% Occupied Bandwidth Plots

Test Band :	5GHz band 1	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	36	5180	17.20	18.95	22.36	16.78
11a	6Mbps	1	44	5220	17.15	19.15	22.34	16.82
11a	6Mbps	1	48	5240	17.10	19.15	22.33	16.82
HT20	MCS0	1	36	5180	18.05	19.55	22.56	16.91
HT20	MCS0	1	44	5220	18.05	19.50	22.56	16.90
HT20	MCS0	1	48	5240	18.10	19.55	22.58	16.91

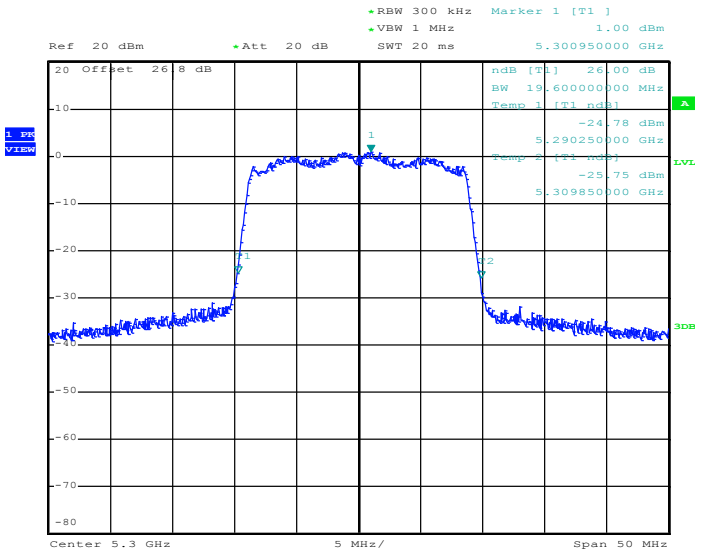
Test Band :	5GHz band 2	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	52	5260	17.15	19.05	29.34	23.80
11a	6Mbps	1	60	5300	17.20	19.05	29.36	23.80
11a	6Mbps	1	64	5320	17.15	19.15	29.34	23.82
HT20	MCS0	1	52	5260	18.05	19.50	29.56	23.90
HT20	MCS0	1	60	5300	18.00	19.60	29.55	23.92
HT20	MCS0	1	64	5320	18.00	19.50	29.55	23.90

Test Band :	5GHz band 3	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	99% Bandwidth (MHz)	26dB Bandwidth (MHz)	IC 99% Bandwidth EIRP Limit (dBm)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	100	5500	17.20	19.05	29.36	23.80
11a	6Mbps	1	116	5580	17.10	19.05	29.33	23.80
11a	6Mbps	1	140	5700	17.10	19.00	29.33	23.79
HT20	MCS0	1	100	5500	18.05	19.40	29.56	23.88
HT20	MCS0	1	116	5580	18.00	19.50	29.55	23.90
HT20	MCS0	1	140	5700	18.05	19.50	29.56	23.90

Maximum 26dB Bandwidth



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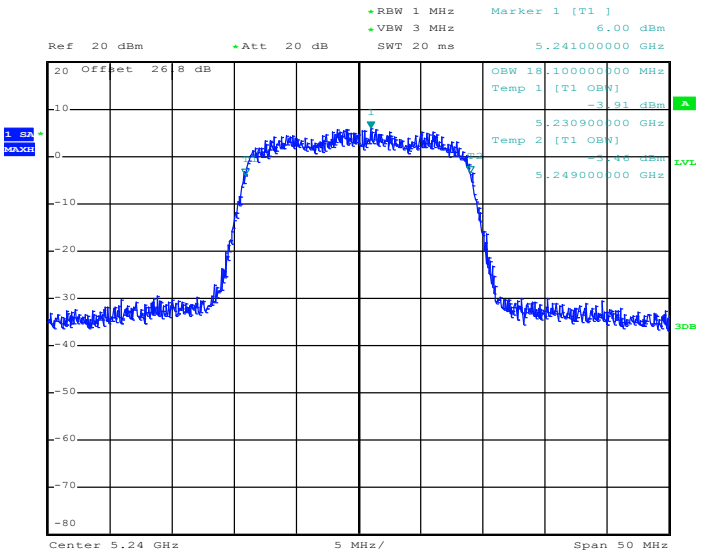
Maximum 99% Occupied Bandwidth



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3.1.6 Test Result of 20dB Occupied Bandwidth

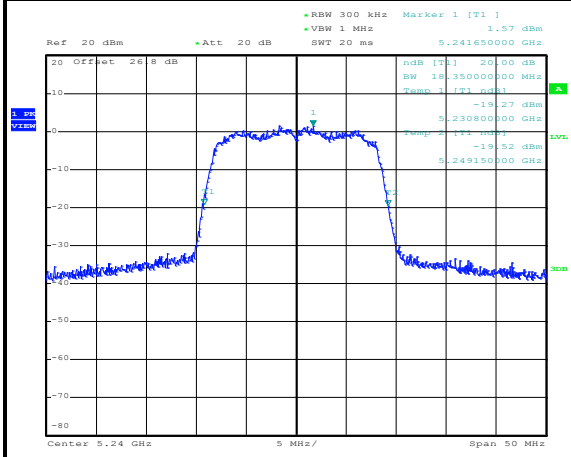
Mod.	Data Rate	NTX	Channel	Freq. (MHz)	20dB Bandwidth (MHz)	20dB Bandwidth Upper Frequency (FH) (MHz)	Upper Limit Line (MHz)	Pass/Fail
11a	6Mbps	1	48	5240	18.35	5249.15	5250	Pass
HT20	MCS0	1	48	5240	18.90	5249.45		Pass

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	20dB Bandwidth (MHz)	20dB Bandwidth Upper Frequency (FH) (MHz)	Upper Limit Line (MHz)	Pass/Fail
11a	6Mbps	1	52	5260	18.30	5250.90	5250	Pass
HT20	MCS0	1	52	5260	18.90	5250.55		Pass

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	20dB Bandwidth (MHz)	20dB Bandwidth Upper Frequency (FH) (MHz)	Upper Limit Line (MHz)	Pass/Fail
11a	6Mbps	1	132	5660	18.20	5650.90	5650	Pass
HT20	MCS0	1	132	5660	19.00	5650.50		Pass

20dB Occupied Bandwidth

802.11a CH48 5240MHz



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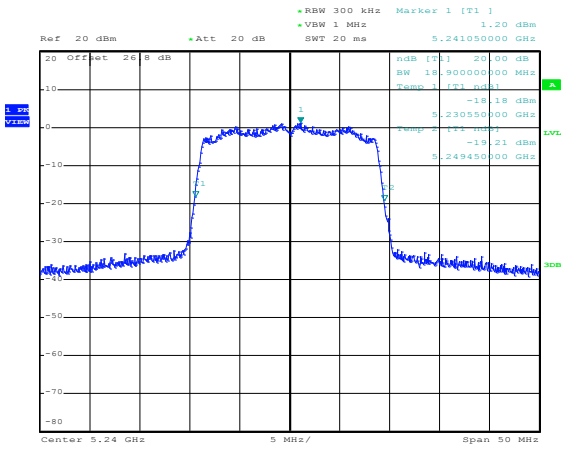
802.11n HT20 CH48 5240MHz



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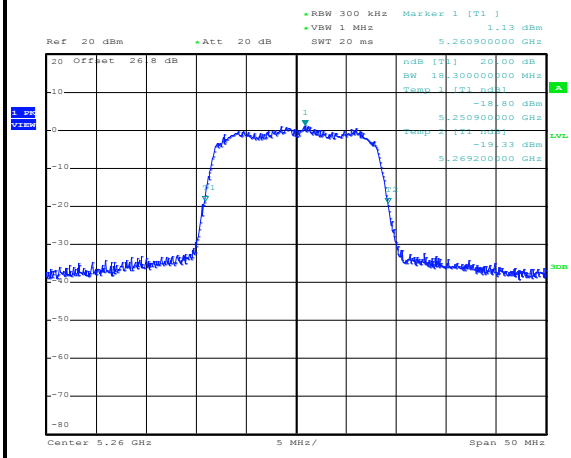
802.11a CH52 5260MHz



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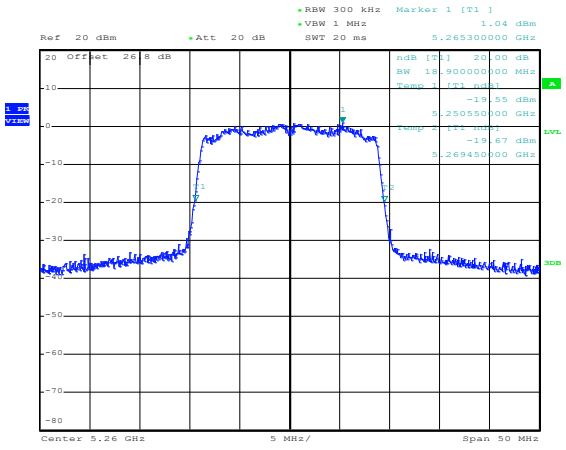
802.11n HT20 CH52 5260MHz



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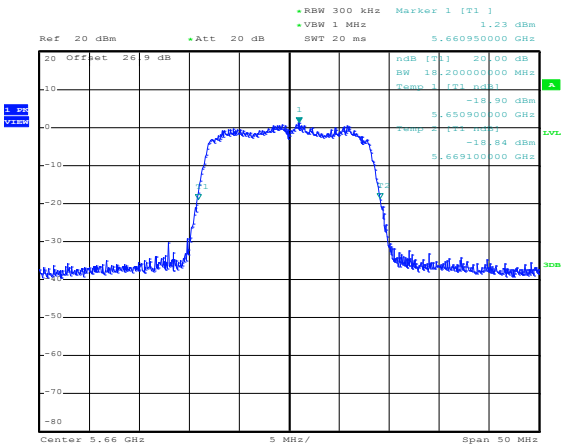
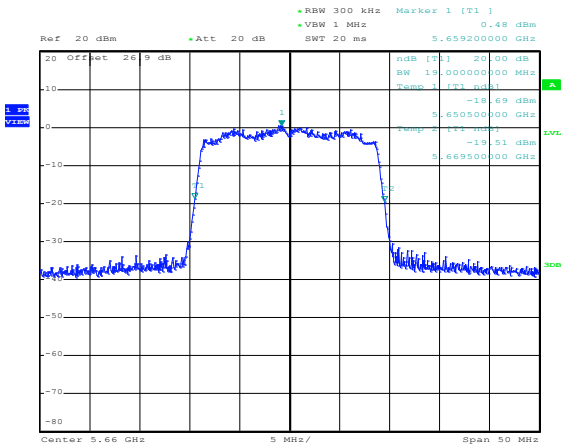
20dB Occupied Bandwidth	
802.11a CH132 5660MHz	802.11n HT20 CH132 5660MHz





3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5150-5250 MHz, the maximum conducted output power shall not exceed the lesser of 50 mW (17dBm) or 4 dBm + 10log B, where B is the 26 dB emissions bandwidth in 1-MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the bands 5250-5350 MHz, 5470-5600 MHz and 5650-5725 MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log B, where B is the 26 dB emissions bandwidth in 1-MHz. If transmitting antenna directional gain is greater than 6 dBi, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

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

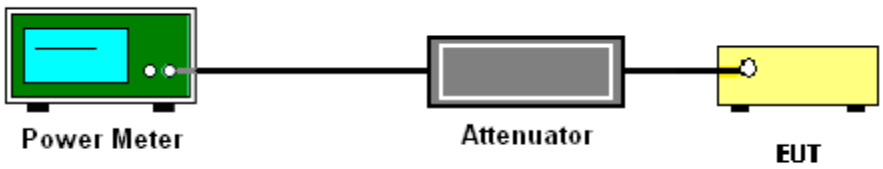
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D01 General UNII Test Procedures v01r03.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Test Band :	5GHz band 1	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	36	5180	0.10	8.81	16.78	1.93	-	Pass
11a	6Mbps	1	44	5220	0.10	8.67	16.82	1.93		Pass
11a	6Mbps	1	48	5240	0.10	8.61	16.82	1.93		Pass
HT20	MCS0	1	36	5180	0.12	8.83	16.91	1.93		Pass
HT20	MCS0	1	44	5220	0.12	8.80	16.90	1.93		Pass
HT20	MCS0	1	48	5240	0.12	8.53	16.91	1.93		Pass

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	IC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6Mbps	1	36	5180	0.10	8.81	20.43	1.93	22.36	Pass
11a	6Mbps	1	44	5220	0.10	8.67	20.41	1.93	22.34	Pass
11a	6Mbps	1	48	5240	0.10	8.61	20.40	1.93	22.33	Pass
HT20	MCS0	1	36	5180	0.12	8.83	20.63	1.93	22.56	Pass
HT20	MCS0	1	44	5220	0.12	8.80	20.63	1.93	22.56	Pass
HT20	MCS0	1	48	5240	0.12	8.53	20.65	1.93	22.58	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the band 5150-5250 MHz, the maximum average conducted output power shall not exceed lesser of 50 mW (17dBm) or 4 dBm + 10log (B), where B is 26dB BW for FCC.
3. For the band 5150-5250 MHz, the maximum average EIRP output power shall not exceed lesser of 200 mW (23dBm) or 10 dBm + 10log (B), where B is 99%OBW for IC.

Test Band :	5GHz band 2	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	52	5260	0.10	8.66	23.80	1.45	-	Pass
11a	6Mbps	1	60	5300	0.10	8.36	23.80	1.45		Pass
11a	6Mbps	1	64	5320	0.10	7.81	23.82	1.45		Pass
HT20	MCS0	1	52	5260	0.12	8.37	23.90	1.45		Pass
HT20	MCS0	1	60	5300	0.12	8.29	23.92	1.45		Pass
HT20	MCS0	1	64	5320	0.12	7.83	23.90	1.45		Pass

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	IC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6Mbps	1	52	5260	0.10	8.66	23.34	1.45	29.34	Pass
11a	6Mbps	1	60	5300	0.10	8.36	23.36	1.45	29.36	Pass
11a	6Mbps	1	64	5320	0.10	7.81	23.34	1.45	29.34	Pass
HT20	MCS0	1	52	5260	0.12	8.37	23.56	1.45	29.56	Pass
HT20	MCS0	1	60	5300	0.12	8.29	23.55	1.45	29.55	Pass
HT20	MCS0	1	64	5320	0.12	7.83	23.55	1.45	29.55	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the band 5250-5350 MHz, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (B), where B is 26dB BW for FCC and 99% OBW for IC.

Test Band :	5GHz band 3	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	100	5500	0.10	8.12	23.80	2.60	-	Pass
11a	6Mbps	1	116	5580	0.10	8.03	23.80	2.60		Pass
11a	6Mbps	1	140	5700	0.10	7.51	23.79	2.60		Pass
HT20	MCS0	1	100	5500	0.12	8.14	23.88	2.60		Pass
HT20	MCS0	1	116	5580	0.12	7.97	23.90	2.60		Pass
HT20	MCS0	1	140	5700	0.12	7.53	23.90	2.60		Pass

Mod.	Data Rate	N_{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	IC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
11a	6Mbps	1	100	5500	0.10	8.12	23.36	2.60	29.36	Pass
11a	6Mbps	1	116	5580	0.10	8.03	23.33	2.60	29.33	Pass
11a	6Mbps	1	140	5700	0.10	7.51	23.33	2.60	29.33	Pass
HT20	MCS0	1	100	5500	0.12	8.14	23.56	2.60	29.56	Pass
HT20	MCS0	1	116	5580	0.12	7.97	23.55	2.60	29.55	Pass
HT20	MCS0	1	140	5700	0.12	7.53	23.56	2.60	29.56	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the 5470-5600 MHz and 5650-5725 MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (B), where B is 26dB BW for FCC and 99% OBW for IC.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5150-5250 MHz, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band.

For the bands 5250-5350 MHz, 5470-5600 MHz and 5650-5725 MHz, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band.

If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r03.

Section F) Peak power spectral density (PPSD).

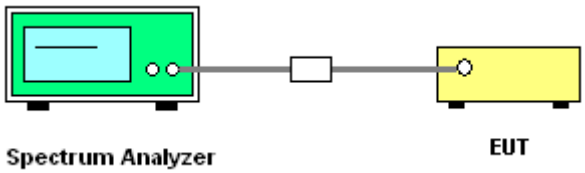
Note: Though the rule refers to “peak power spectral density”, the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

 # Method SA-2 #

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D01 General UNII Test Procedures v01r03.
   - Measure the duty cycle.
   - Set span to encompass the entire emission bandwidth (EBW) of the signal.
   - Set RBW = 1 MHz.
   - Set VBW ≥ 3 MHz.
   - Number of points in sweep ≥ 2 Span / RBW.
   - Sweep time = auto.
   - Detector = RMS
   - Trace average at least 100 traces in power averaging mode.
   - Add 10 log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add 10 log(1/0.25) = 6 dB if the duty cycle is 25 percent.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
3. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Test Band :	5GHz band 1	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	EIRP PSD Limit (dBm)	Pass/Fail
11a	6Mbps	1	36	5180	0.10	-1.04	4.00	1.93	10	Pass
11a	6Mbps	1	44	5220	0.10	-1.17	4.00	1.93	10	Pass
11a	6Mbps	1	48	5240	0.10	-1.69	4.00	1.93	10	Pass
HT20	MCS0	1	36	5180	0.12	-1.00	4.00	1.93	10	Pass
HT20	MCS0	1	44	5220	0.12	-1.10	4.00	1.93	10	Pass
HT20	MCS0	1	48	5240	0.12	-1.78	4.00	1.93	10	Pass

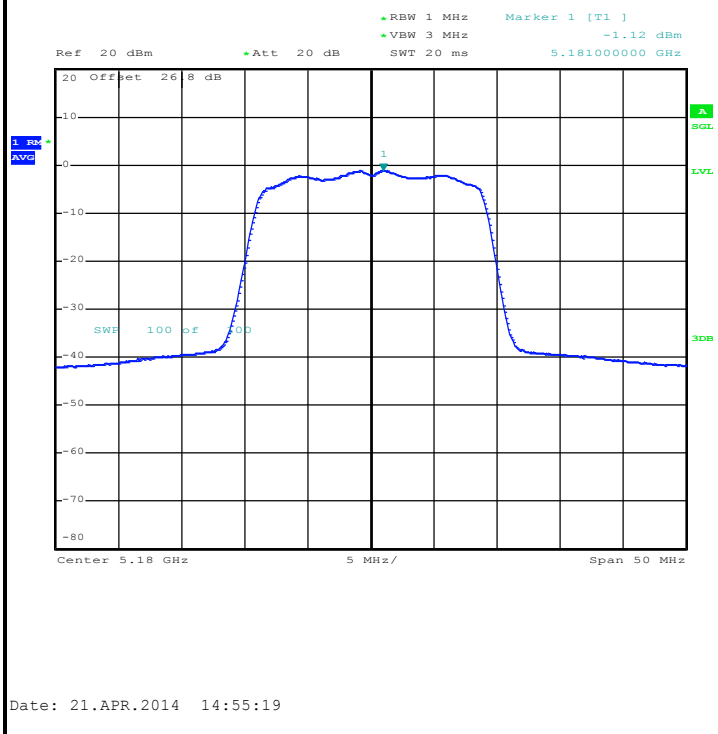
Test Band :	5GHz band 2	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	52	5260	0.10	-1.66	11.00	1.45	Pass
11a	6Mbps	1	60	5300	0.10	-1.43	11.00	1.45	Pass
11a	6Mbps	1	64	5320	0.10	-1.65	11.00	1.45	Pass
HT20	MCS0	1	52	5260	0.12	-2.01	11.00	1.45	Pass
HT20	MCS0	1	60	5300	0.12	-1.83	11.00	1.45	Pass
HT20	MCS0	1	64	5320	0.12	-1.88	11.00	1.45	Pass

Test Band :	5GHz band 3	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	Data Rate	N_{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	100	5500	0.10	-1.30	11.00	2.60	Pass
11a	6Mbps	1	116	5580	0.10	-1.64	11.00	2.60	Pass
11a	6Mbps	1	140	5700	0.10	-1.12	11.00	2.60	Pass
HT20	MCS0	1	100	5500	0.12	-1.51	11.00	2.60	Pass
HT20	MCS0	1	116	5580	0.12	-1.76	11.00	2.60	Pass
HT20	MCS0	1	140	5700	0.12	-1.54	11.00	2.60	Pass

Worst Case Power Spectral Density(dBm/MHz)



Note: Average Power Density (dB) = Measured value+ Duty Factor

3.4 Peak Excursion Ratio Measurement

3.4.1 Limit of Peak Excursion Ratio

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

3.4.2 Measuring Instruments

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

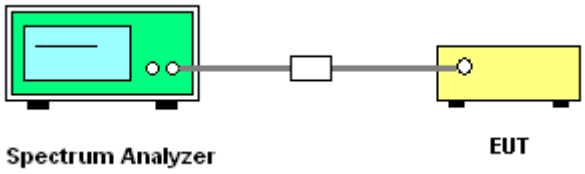
3.4.3 Test Procedures

The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r03.

Section G) Peak excursion measurement

1. The transmitter output is connected to the spectrum analyzer.
2. Set the spectrum analyzer span to view the entire emission bandwidth.
3. Find the maximum of the peak-max-hold spectrum.
   *Set RBW = 1MHz.
   *Set VBW ≥ 3MHz.
   *Detector = peak.
   *Trace mode = max-hold.
   *Allow the sweeps to continue until the trace stabilizes.
   *Use the peak search function to find the peak of the spectrum.
4. Use the procedure found under section 3.3 to measure the PPSD.
5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

3.4.4 Test Setup



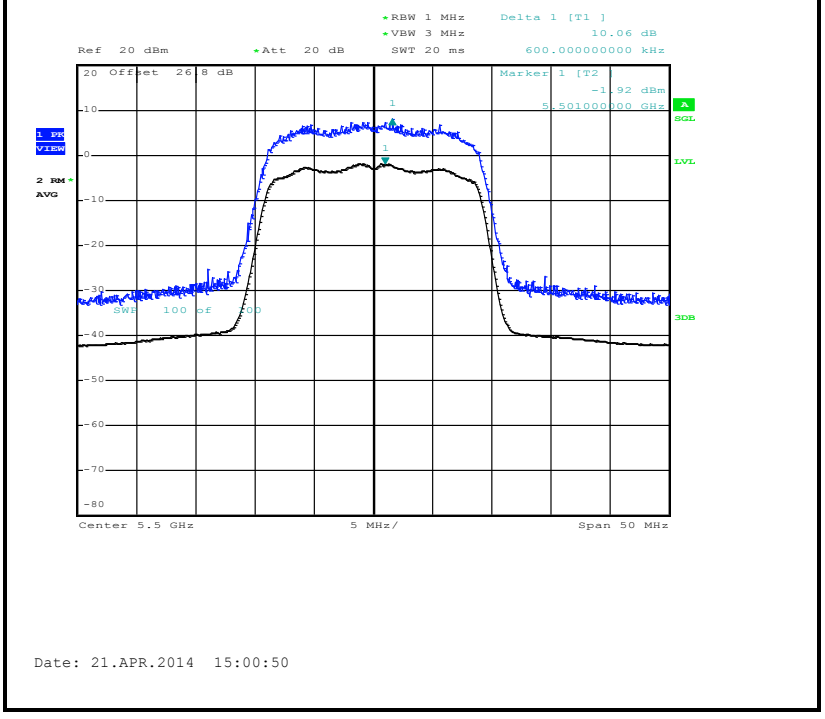
3.4.5 Test Result of Peak Excursion Ratio

Test Band :	5GHz band 3	Temperature :	21~26℃
Test Engineer :	Alex Lee	Relative Humidity :	45~54%

Mod.	N_{TX}	Channel	Freq. (MHz)	Peak Excursion Ratio (dB)					Max. Limits (dB)	Pass/Fail
				BPSK	QPSK	16QAM	64QAM	256QAM		
11a	1	100	5500	9.77	9.00	9.21	9.44	-	13	Pass
HT20	1	100	5500	9.39	9.84	9.39	9.60	-	13	Pass

Note: All modulation measured based on the minimum data rate setting.

Worst Case Peak Excursion Ratio (dB)



Note: Peak Excursion Ratio (dB) = Peak – (Average + Duty Cycle Offset)

Duty Cycle Offset: 0.22 dB

3.5 Unwanted Radiated Emission Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.5.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of –27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
- 27	68.3

(3) KDB789033 v01r03 H)2)c)(i) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

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 789033 D01 General UNII Test Procedures v01r03. Section H) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - The setting follows the H) 5) of FCC KDB 789033.
   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

   (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

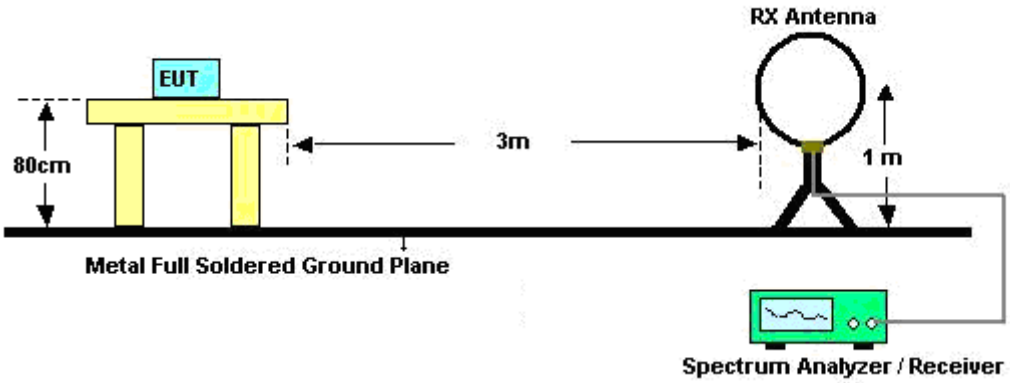
   - The setting follows H) 6) of FCC KDB 789033.
   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(μs)	1/T(kHz)	VBW Setting
802.11a	97.81	1432	0.70	1kHz
802.11n HT20	97.38	1338	0.75	1kHz

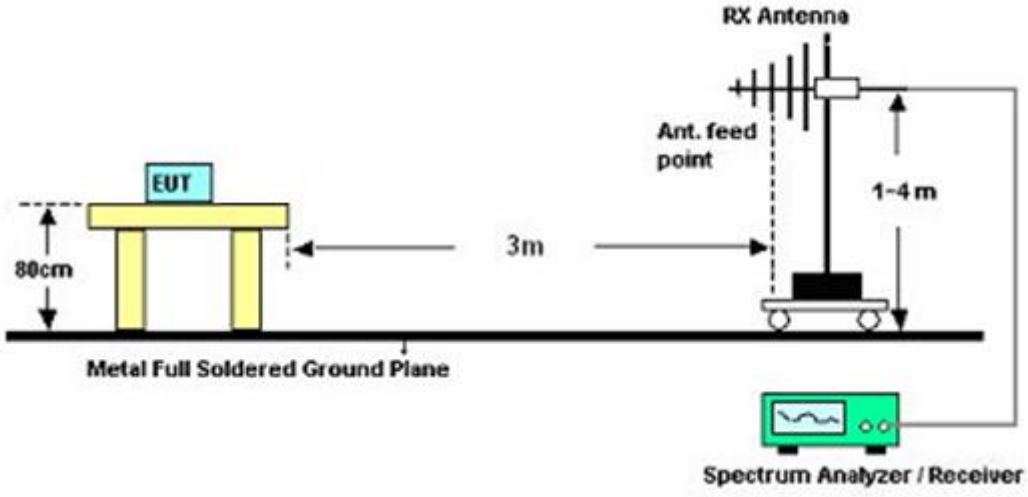
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.5.4 Test Setup

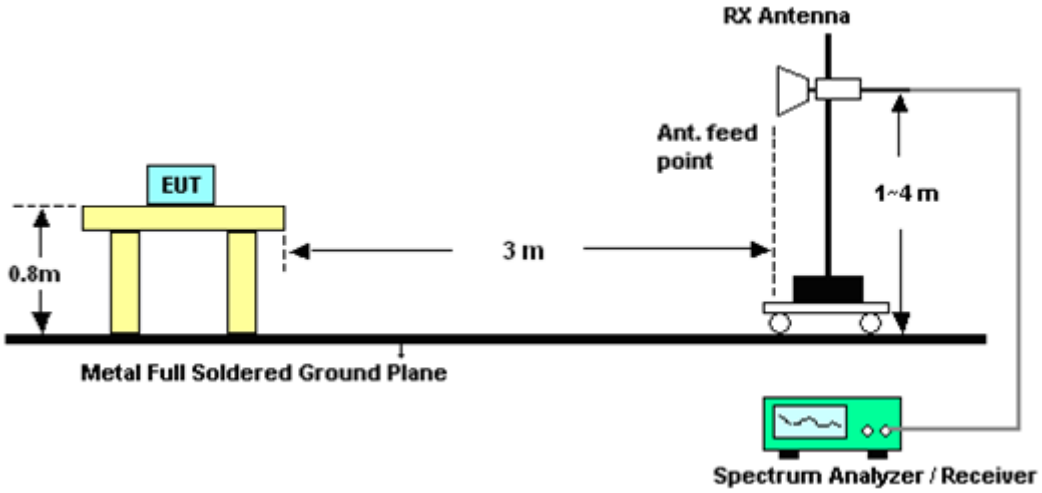
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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

3.5.6 Test Result

3.5.6.1 Test Result of Radiated Band Edges

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5149.4	55.66	-18.34	74	44.64	34.29	9.22	32.49	103	54	Peak
5019.8	44.53	-9.47	54	33.94	33.94	8.97	32.32	103	54	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5034.2	53.79	-20.21	74	43.11	33.99	9.01	32.32	156	350	Peak
5148.95	40.48	-13.52	54	29.46	34.29	9.22	32.49	156	350	Average

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	48	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5079.8	55.62	-18.38	74	44.79	34.12	9.1	32.39	140	51	Peak
5079.8	44.45	-9.55	54	33.62	34.12	9.1	32.39	140	51	Average
5399.72	60.89	-13.11	74	49.69	34.94	9.65	33.39	126	316	Peak
5399.94	51.57	-2.43	54	40.37	34.94	9.65	33.39	126	316	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
5132	53.72	-20.28	74	42.74	34.25	9.18	32.45	101	346	Peak
5141	40.46	-13.54	54	29.4	34.29	9.22	32.45	101	346	Average
5400.05	54.41	-19.59	74	43.21	34.94	9.65	33.39	101	346	Peak
5400.05	42.73	-11.27	54	31.53	34.94	9.65	33.39	101	346	Average

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	52	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5138.45	54.24	-19.76	74	43.26	34.25	9.18	32.45	151	49	Peak
5100.05	43.69	-10.31	54	32.81	34.16	9.14	32.42	151	49	Average
5419.85	61.75	-12.25	74	50.47	34.98	9.69	33.39	100	315	Peak
5419.96	51.27	-2.73	54	39.99	34.98	9.69	33.39	100	315	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
5130.5	53.87	-20.13	74	42.89	34.25	9.18	32.45	100	358	Peak
5140.85	40.27	-13.73	54	29.21	34.29	9.22	32.45	100	358	Average
5358.8	54.69	-19.31	74	43.45	34.81	9.61	33.18	100	358	Peak
5419.96	41.57	-12.43	54	30.29	34.98	9.69	33.39	100	358	Average

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	64	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5356.6	55.92	-18.08	74	44.68	34.81	9.61	33.18	136	50	Peak
5351.1	43.37	-10.63	54	32.18	34.81	9.56	33.18	136	50	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
5403.68	55.13	-18.87	74	43.93	34.94	9.65	33.39	182	299	Peak
5350.99	42.29	-11.71	54	31.1	34.81	9.56	33.18	182	299	Average

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	100	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5419.76	55.88	-18.12	74	44.6	34.98	9.69	33.39	100	316	Peak
5469.52	42.42	-11.58	54	31.1	35.11	9.78	33.57	100	316	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
5404.72	54.37	-19.63	74	43.13	34.94	9.69	33.39	102	47	Peak
5469.68	41.37	-12.63	54	30.05	35.11	9.78	33.57	102	47	Average

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	140	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5726.6	55.03	-18.97	74	43.81	35.33	10.04	34.15	110	291	Peak
5725.48	42.15	-11.85	54	30.93	35.33	10.04	34.15	110	291	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
5731.24	54.75	-19.25	74	43.55	35.33	10.04	34.17	100	28	Peak
5725.08	42.14	-11.86	54	30.92	35.33	10.04	34.15	100	28	Average

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5146.85	55.99	-18.01	74	44.97	34.29	9.22	32.49	128	49	Peak
5019.8	44.13	-9.87	54	33.54	33.94	8.97	32.32	128	49	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
5149.1	53.92	-20.08	74	42.9	34.29	9.22	32.49	130	358	Peak
5149.85	40.57	-13.43	54	29.55	34.29	9.22	32.49	130	358	Average

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	48	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5079.8	55.24	-18.76	74	44.41	34.12	9.1	32.39	151	47	Peak
5079.95	42.69	-11.31	54	31.86	34.12	9.1	32.39	151	47	Average
5399.72	61.54	-12.46	74	50.34	34.94	9.65	33.39	126	317	Peak
5400.05	50.68	-3.32	54	39.48	34.94	9.65	33.39	126	317	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
5127.8	53.01	-20.99	74	42.03	34.25	9.18	32.45	100	345	Peak
5149.55	39.99	-14.01	54	28.97	34.29	9.22	32.49	100	345	Average
5400.16	59.69	-14.31	74	48.49	34.94	9.65	33.39	196	303	Peak
5399.94	48.47	-5.53	54	37.27	34.94	9.65	33.39	196	303	Average

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	52	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5100.05	54.93	-19.07	74	44.05	34.16	9.14	32.42	151	49	Peak
5100.05	42.94	-11.06	54	32.06	34.16	9.14	32.42	151	49	Average
5420.07	61.63	-12.37	74	50.35	34.98	9.69	33.39	100	314	Peak
5419.96	50.46	-3.54	54	39.18	34.98	9.69	33.39	100	314	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
5033.3	53.1	-20.9	74	42.42	33.99	9.01	32.32	100	346	Peak
5136.65	40.05	-13.95	54	29.07	34.25	9.18	32.45	100	346	Average
5419.85	58.56	-15.44	74	47.28	34.98	9.69	33.39	177	295	Peak
5419.85	47.8	-6.2	54	36.52	34.98	9.69	33.39	177	295	Average

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	64	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5448.34	55.45	-18.55	74	44.13	35.07	9.73	33.48	100	52	Peak
5350.11	43.48	-10.52	54	32.29	34.81	9.56	33.18	100	52	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
5395.21	55.44	-18.56	74	44.13	34.94	9.65	33.28	199	302	Peak
5350.66	42.24	-11.76	54	31.05	34.81	9.56	33.18	199	302	Average

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	100	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5428.56	55.21	-18.79	74	43.93	35.03	9.73	33.48	100	316	Peak
5469.68	42.58	-11.42	54	31.26	35.11	9.78	33.57	100	316	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
5444.72	55.04	-18.96	74	43.76	35.03	9.73	33.48	136	297	Peak
5468.24	41.84	-12.16	54	30.52	35.11	9.78	33.57	136	297	Average

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	140	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh		

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
5727.48	55.12	-18.88	74	43.9	35.33	10.04	34.15	132	304	Peak
5725	42.38	-11.62	54	31.16	35.33	10.04	34.15	132	304	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
5729.8	54.99	-19.01	74	43.77	35.33	10.04	34.15	101	31	Peak
5725	41.81	-12.19	54	30.59	35.33	10.04	34.15	101	31	Average

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

Test Mode :	802.11a	**Temperature :**	21~23°C
Test Channel :	36	**Relative Humidity :**	45~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209 3. 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
5180	95.83	-	-	84.7	34.38	9.27	32.52	103	54	Average
5180	104.59	-	-	93.46	34.38	9.27	32.52	103	54	Peak
10359	44.44	-29.56	74	52.31	37.29	13.71	58.87	100	0	Peak
15540	47.23	-26.77	74	48.83	40.33	15.56	57.49	100	0	Peak

Test Mode :	802.11a	**Temperature :**	21~23°C
Test Channel :	36	**Relative Humidity :**	45~48%
Test Engineer :	Stan Hsieh	**Polarization :**	Vertical
Remark :	1. 5178 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209 3. 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
5178	86.22	-	-	75.09	34.38	9.27	32.52	156	350	Average
5178	95.71	-	-	84.58	34.38	9.27	32.52	156	350	Peak
10359	44.38	-29.62	74	52.25	37.29	13.71	58.87	100	0	Peak
15540	47.31	-26.69	74	48.91	40.33	15.56	57.49	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5222 MHz is fundamental signal which can be ignored. 2. 10440 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209 3. 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
36.75	18.61	-21.39	40	33.95	15.32	0.6	31.26	-	-	Peak
64.02	15.76	-24.24	40	40.19	6	0.79	31.22	-	-	Peak
129.9	22.09	-21.41	43.5	40.04	12	1.15	31.1	-	-	Peak
391.7	17.23	-28.77	46	30.47	15.58	2.12	30.94	-	-	Peak
657	22.44	-23.56	46	29.75	20.33	2.85	30.49	-	-	Peak
923	26.34	-19.66	46	29.2	24.09	3.4	30.35	100	0	Peak
5222	96.62	-	-	85.46	34.46	9.35	32.65	139	54	Average
5222	105.9	-	-	94.74	34.46	9.35	32.65	139	54	Peak
10440	44.06	-29.94	74	51.88	37.35	13.71	58.88	100	0	Peak
15660	46.41	-27.59	74	47.65	40.46	15.65	57.35	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5224 MHz is fundamental signal which can be ignored. 2. 10440 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209 3. 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
49.17	28.57	-11.43	40	50.33	8.75	0.69	31.2	-	-	Peak
90.21	35.04	-8.46	43.5	56.5	8.7	0.94	31.1	174	55	Peak
118.29	26.42	-17.08	43.5	45.15	11.29	1.09	31.11	-	-	Peak
403.6	16.58	-29.42	46	29.31	16.01	2.15	30.89	-	-	Peak
556.2	21.45	-24.55	46	29.73	19.92	2.57	30.77	-	-	Peak
737.5	24.17	-21.83	46	29.4	22.14	3.03	30.4	-	-	Peak
5224	86.62	-	-	75.46	34.46	9.35	32.65	101	348	Average
5224	96.09	-	-	84.93	34.46	9.35	32.65	101	348	Peak
10440	44.44	-29.56	74	52.26	37.35	13.71	58.88	100	0	Peak
15660	45.68	-28.32	74	46.92	40.46	15.65	57.35	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	48	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5240	95.58	-	-	84.33	34.51	9.39	32.65	140	51	Average
5240	104.89	-	-	93.64	34.51	9.39	32.65	140	51	Peak
10479	43.86	-30.14	74	51.64	37.39	13.72	58.89	100	0	Peak
15720	46.93	-27.07	74	47.99	40.52	15.69	57.27	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	48	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5238 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5238	86.58	-	-	75.33	34.51	9.39	32.65	101	346	Average
5238	95.61	-	-	84.36	34.51	9.39	32.65	101	346	Peak
10479	43.89	-30.11	74	51.67	37.39	13.72	58.89	100	0	Peak
15720	46.4	-27.6	74	47.46	40.52	15.69	57.27	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	52	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10521 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5260	95.33	-	-	84.06	34.59	9.44	32.76	151	49	Average
5260	104.18	-	-	92.91	34.59	9.44	32.76	151	49	Peak
10521	43.63	-30.37	74	51.33	37.42	13.72	58.84	100	0	Peak
15780	47.71	-26.29	74	48.6	40.58	15.75	57.22	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	52	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5262 MHz is fundamental signal which can be ignored. 2. 10521 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5262	85.3	-	-	74.03	34.59	9.44	32.76	100	358	Average
5262	93.85	-	-	82.58	34.59	9.44	32.76	100	358	Peak
10521	43.62	-30.38	74	51.32	37.42	13.72	58.84	100	0	Peak
15780	47.29	-26.71	74	48.18	40.58	15.75	57.22	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	60	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 2. 10599MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5300	94.59	-	-	83.4	34.68	9.48	32.97	137	52	Average
5300	104.33	-	-	93.14	34.68	9.48	32.97	137	52	Peak
10599	44.2	-29.8	74	51.58	37.5	13.73	58.61	100	0	Peak
15900	46.66	-27.34	74	47.2	40.7	15.84	57.08	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	60	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5298 MHz is fundamental signal which can be ignored. 2. 10599MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5298	87.13	-	-	75.94	34.68	9.48	32.97	164	349	Average
5298	96.48	-	-	85.29	34.68	9.48	32.97	164	349	Peak
10599	43.09	-30.91	74	50.47	37.5	13.73	58.61	100	0	Peak
15900	47.16	-26.84	74	47.7	40.7	15.84	57.08	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	64	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5322 MHz is fundamental signal which can be ignored. 2. 5480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5322	94.37	-	-	83.1	34.72	9.52	32.97	136	50	Average
5322	103.4	-	-	92.13	34.72	9.52	32.97	136	50	Peak
5480	48.99	-5.01	54	37.67	35.16	9.82	33.66	100	315	Average
5480	57.45	-16.55	74	46.13	35.16	9.82	33.66	136	50	Peak
10641	43.38	-30.62	74	50.63	37.54	13.73	58.52	100	0	Peak
15960	47.75	-26.25	74	48.1	40.77	15.88	57	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	64	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5322 MHz is fundamental signal which can be ignored. 2. 5480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5322	89.85	-	-	78.58	34.72	9.52	32.97	182	299	Average
5322	98.83	-	-	87.56	34.72	9.52	32.97	182	299	Peak
5480	46.59	-7.41	54	35.27	35.16	9.82	33.66	193	296	Average
5480	53.81	-20.19	74	42.49	35.16	9.82	33.66	193	296	Peak
10641	43.93	-30.07	74	51.18	37.54	13.73	58.52	100	0	Peak
15960	47.57	-26.43	74	47.92	40.77	15.88	57	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	100	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5502 MHz is fundamental signal which can be ignored. 2. 5660 MHz and 16500 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5502	92.9	-	-	81.58	35.2	9.86	33.74	100	316	Average
5502	102.63	-	-	91.31	35.2	9.86	33.74	100	316	Peak
5660	47.88	-6.12	54	36.7	35.29	9.98	34.09	100	289	Average
5660	55.86	-18.14	74	44.68	35.29	9.98	34.09	100	289	Peak
11001	46.47	-27.53	74	52.37	37.9	13.76	57.56	100	0	Peak
16500	48.68	-25.32	74	47.02	41.5	16.13	55.97	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	100	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5500 MHz is fundamental signal which can be ignored. 2. 5660 MHz and 16500 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5500	89.09	-	-	77.69	35.2	9.86	33.66	102	47	Average
5500	98.13	-	-	86.73	35.2	9.86	33.66	102	47	Peak
5660	47.47	-6.53	54	36.29	35.29	9.98	34.09	101	29	Average
5660	53.09	-20.91	74	41.91	35.29	9.98	34.09	101	29	Peak
11001	45.29	-28.71	74	51.19	37.9	13.76	57.56	100	0	Peak
16500	47.9	-26.1	74	46.24	41.5	16.13	55.97	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	116	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5580 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5580	92.82	-	-	81.67	35.24	9.92	34.01	147	317	Average
5580	101.97	-	-	90.82	35.24	9.92	34.01	147	317	Peak
11160	45.05	-28.95	74	50.41	38.07	13.93	57.36	100	0	Peak
16740	48.07	-25.93	74	46.15	41.74	16.23	56.05	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	116	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5578 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5578	89.84	-	-	78.69	35.24	9.92	34.01	100	46	Average
5578	99.01	-	-	87.86	35.24	9.92	34.01	100	46	Peak
11160	44.98	-29.02	74	50.34	38.07	13.93	57.36	100	0	Peak
16740	47.63	-26.37	74	45.71	41.74	16.23	56.05	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	140	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 5860 MHz and 17100 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5700	89.57	-	-	78.36	35.31	10.02	34.12	110	291	Average
5700	98.64	-	-	87.43	35.31	10.02	34.12	110	291	Peak
5860	48.61	-5.39	54	37.41	35.42	10.13	34.35	134	43	Average
5860	51.93	-22.07	74	40.73	35.42	10.13	34.35	134	43	Peak
11400	46.53	-27.47	74	51.09	38.3	14.21	57.07	100	0	Peak
17100	49.08	-24.92	74	46.84	41.94	16.46	56.16	100	0	Peak

Test Mode :	802.11a	Temperature :	21~23°C
Test Channel :	140	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 5860 MHz and 17100 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5700	89.2	-	-	77.99	35.31	10.02	34.12	100	28	Average
5700	98.07	-	-	86.86	35.31	10.02	34.12	100	28	Peak
5860	44.1	-9.9	54	32.9	35.42	10.13	34.35	100	27	Average
5860	53.49	-20.51	74	42.29	35.42	10.13	34.35	100	27	Peak
11400	46.55	-27.45	74	51.11	38.3	14.21	57.07	100	0	Peak
17100	50.27	-23.73	74	48.03	41.94	16.46	56.16	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5180	95.31	-	-	84.18	34.38	9.27	32.52	128	49	Average
5180	104.38	-	-	93.25	34.38	9.27	32.52	128	49	Peak
10359	44.64	-29.36	74	52.51	37.29	13.71	58.87	100	0	Peak
15540	47.61	-26.39	74	49.21	40.33	15.56	57.49	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	36	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5178 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5178	86.34	-	-	75.21	34.38	9.27	32.52	130	358	Average
5178	95.47	-	-	84.34	34.38	9.27	32.52	130	358	Peak
10359	43.76	-30.24	74	51.63	37.29	13.71	58.87	100	0	Peak
15540	47.34	-26.66	74	48.94	40.33	15.56	57.49	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5220 MHz is fundamental signal which can be ignored. 2. 10440 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
31.62	21.79	-18.21	40	34.9	17.76	0.55	31.42	100	31	Peak
64.02	17.06	-22.94	40	41.49	6	0.79	31.22	-	-	Peak
129.9	21.63	-21.87	43.5	39.58	12	1.15	31.1	-	-	Peak
395.2	16.41	-29.59	46	29.5	15.7	2.13	30.92	-	-	Peak
547.8	21.9	-24.1	46	30.58	19.56	2.55	30.79	-	-	Peak
718.6	23.64	-22.36	46	29.7	21.36	2.98	30.4	-	-	Peak
5220	96.07	-	-	84.81	34.46	9.35	32.55	139	54	Average
5220	105.19	-	-	93.93	34.46	9.35	32.55	139	54	Peak
10440	44.13	-29.87	74	51.95	37.35	13.71	58.88	100	0	Peak
15660	46.1	-27.9	74	47.34	40.46	15.65	57.35	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	44	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5224 MHz is fundamental signal which can be ignored. 2. 10440 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
31.62	26.93	-13.07	40	40.04	17.76	0.55	31.42	122	22	Peak
64.02	23.61	-16.39	40	48.04	6	0.79	31.22	-	-	Peak
119.91	26.59	-16.91	43.5	45.19	11.4	1.1	31.1	-	-	Peak
388.2	16.41	-29.59	46	29.83	15.42	2.12	30.96	-	-	Peak
549.9	20.32	-25.68	46	28.77	19.8	2.55	30.8	-	-	Peak
738.9	24.63	-21.37	46	29.82	22.18	3.03	30.4	-	-	Peak
5224	85.81	-	-	74.65	34.46	9.35	32.65	101	347	Average
5224	95.57	-	-	84.36	34.51	9.35	32.65	101	347	Peak
10440	45.07	-28.93	74	52.89	37.35	13.71	58.88	100	0	Peak
15660	46.75	-27.25	74	47.99	40.46	15.65	57.35	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	48	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5242 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5242	94.27	-	-	82.98	34.55	9.39	32.65	151	47	Average
5242	103.21	-	-	91.92	34.55	9.39	32.65	151	47	Peak
10479	45.01	-28.99	74	52.79	37.39	13.72	58.89	100	0	Peak
15720	46.82	-27.18	74	47.88	40.52	15.69	57.27	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	48	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5238 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5238	86.04	-	-	74.79	34.51	9.39	32.65	100	345	Average
5238	94.58	-	-	83.33	34.51	9.39	32.65	100	345	Peak
10479	43.64	-30.36	74	51.42	37.39	13.72	58.89	100	0	Peak
15720	46.95	-27.05	74	48.01	40.52	15.69	57.27	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	52	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5258 MHz is fundamental signal which can be ignored. 2. 10521 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5258	93.89	-	-	82.71	34.55	9.39	32.76	151	49	Average
5258	102.96	-	-	91.78	34.55	9.39	32.76	151	49	Peak
10521	43.96	-30.04	74	51.66	37.42	13.72	58.84	100	0	Peak
15780	46.99	-27.01	74	47.88	40.58	15.75	57.22	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	52	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10521 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5260	84.91	-	-	73.64	34.59	9.44	32.76	100	346	Average
5260	94	-	-	82.73	34.59	9.44	32.76	100	346	Peak
10521	44.21	-29.79	74	51.91	37.42	13.72	58.84	100	0	Peak
15780	47.88	-26.12	74	48.77	40.58	15.75	57.22	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	60	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5298 MHz is fundamental signal which can be ignored. 2. 10599 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5298	93.62	-	-	82.43	34.68	9.48	32.97	136	50	Average
5298	102.8	-	-	91.61	34.68	9.48	32.97	136	50	Peak
10599	43.05	-30.95	74	50.43	37.5	13.73	58.61	100	0	Peak
15900	46.89	-27.11	74	47.43	40.7	15.84	57.08	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	60	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 2. 10599 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5300	90.24	-	-	79.05	34.68	9.48	32.97	197	302	Average
5300	99.48	-	-	88.29	34.68	9.48	32.97	197	302	Peak
10599	43.36	-30.64	74	50.74	37.5	13.73	58.61	100	0	Peak
15900	47.13	-26.87	74	47.67	40.7	15.84	57.08	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	64	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5318 MHz is fundamental signal which can be ignored. 2. 5480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5318	94	-	-	82.73	34.72	9.52	32.97	100	52	Average
5318	103.1	-	-	91.83	34.72	9.52	32.97	100	52	Peak
5480	49.1	-4.9	54	37.78	35.16	9.82	33.66	151	316	Average
5480	54.41	-19.59	74	43.09	35.16	9.82	33.66	151	316	Peak
10641	44.66	-29.34	74	51.91	37.54	13.73	58.52	100	0	Peak
15960	47.17	-26.83	74	47.52	40.77	15.88	57	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	64	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. 5480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5320	90.39	-	-	79.12	34.72	9.52	32.97	199	302	Average
5320	99.62	-	-	88.35	34.72	9.52	32.97	199	302	Peak
5480	45.9	-8.1	54	34.58	35.16	9.82	33.66	193	271	Average
5480	52.2	-21.8	74	40.88	35.16	9.82	33.66	193	271	Peak
10641	43.33	-30.67	74	50.58	37.54	13.73	58.52	100	0	Peak
15960	47.54	-26.46	74	47.89	40.77	15.88	57	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	100	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5498 MHz is fundamental signal which can be ignored. 2. 5660 MHz and 16500 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5498	92.82	-	-	81.46	35.2	9.82	33.66	100	316	Average
5498	102.24	-	-	90.88	35.2	9.82	33.66	100	316	Peak
5660	48.37	-5.63	54	37.19	35.29	9.98	34.09	100	289	Average
5660	55.61	-18.39	74	44.43	35.29	9.98	34.09	100	289	Peak
11001	44.81	-29.19	74	50.71	37.9	13.76	57.56	100	0	Peak
16500	48.36	-25.64	74	46.7	41.5	16.13	55.97	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	100	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5498 MHz is fundamental signal which can be ignored. 2. 5660 MHz and 16500 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5498	89.83	-	-	78.47	35.2	9.82	33.66	136	297	Average
5498	99.17	-	-	87.81	35.2	9.82	33.66	136	297	Peak
5660	47.64	-6.36	54	36.46	35.29	9.98	34.09	100	26	Average
5660	52.45	-21.55	74	41.27	35.29	9.98	34.09	100	26	Peak
11001	44.97	-29.03	74	50.87	37.9	13.76	57.56	100	0	Peak
16500	48.09	-25.91	74	46.43	41.5	16.13	55.97	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	116	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5578 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5578	93.74	-	-	82.59	35.24	9.92	34.01	158	359	Average
5578	102.58	-	-	91.43	35.24	9.92	34.01	158	359	Peak
11160	44.64	-29.36	74	50	38.07	13.93	57.36	100	0	Peak
16740	48.26	-25.74	74	46.34	41.74	16.23	56.05	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	116	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5582 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5582	89.08	-	-	77.92	35.25	9.92	34.01	113	49	Average
5582	97.6	-	-	86.44	35.25	9.92	34.01	113	49	Peak
11160	46.25	-27.75	74	51.61	38.07	13.93	57.36	100	0	Peak
16740	48.05	-25.95	74	46.13	41.74	16.23	56.05	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	140	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Horizontal
Remark :	1. 5698 MHz is fundamental signal which can be ignored. 2. 5860 MHz and 17100 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5698	89.35	-	-	78.14	35.31	10.02	34.12	132	304	Average
5698	98.35	-	-	87.14	35.31	10.02	34.12	132	304	Peak
5860	48.4	-5.6	54	37.2	35.42	10.13	34.35	147	44	Average
5860	52.13	-21.87	74	40.93	35.42	10.13	34.35	147	44	Peak
11400	46.51	-27.49	74	51.07	38.3	14.21	57.07	100	0	Peak
17100	49.48	-24.52	74	47.24	41.94	16.46	56.16	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	21~23°C
Test Channel :	140	Relative Humidity :	45~48%
Test Engineer :	Stan Hsieh	Polarization :	Vertical
Remark :	1. 5702 MHz is fundamental signal which can be ignored. 2. 5860 MHz and 17100 MHz are not within a restricted band and satisfies both the average and peak limits of 15.209. 3. 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
5702	88.26	-	-	77.04	35.32	10.02	34.12	101	31	Average
5702	97.95	-	-	86.73	35.32	10.02	34.12	101	31	Peak
5860	46.37	-7.63	54	35.17	35.42	10.13	34.35	122	294	Average
5860	51.61	-22.39	74	40.41	35.42	10.13	34.35	122	294	Peak
11400	46.36	-27.64	74	50.92	38.3	14.21	57.07	100	0	Peak
17100	49.7	-24.3	74	47.46	41.94	16.46	56.16	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 (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

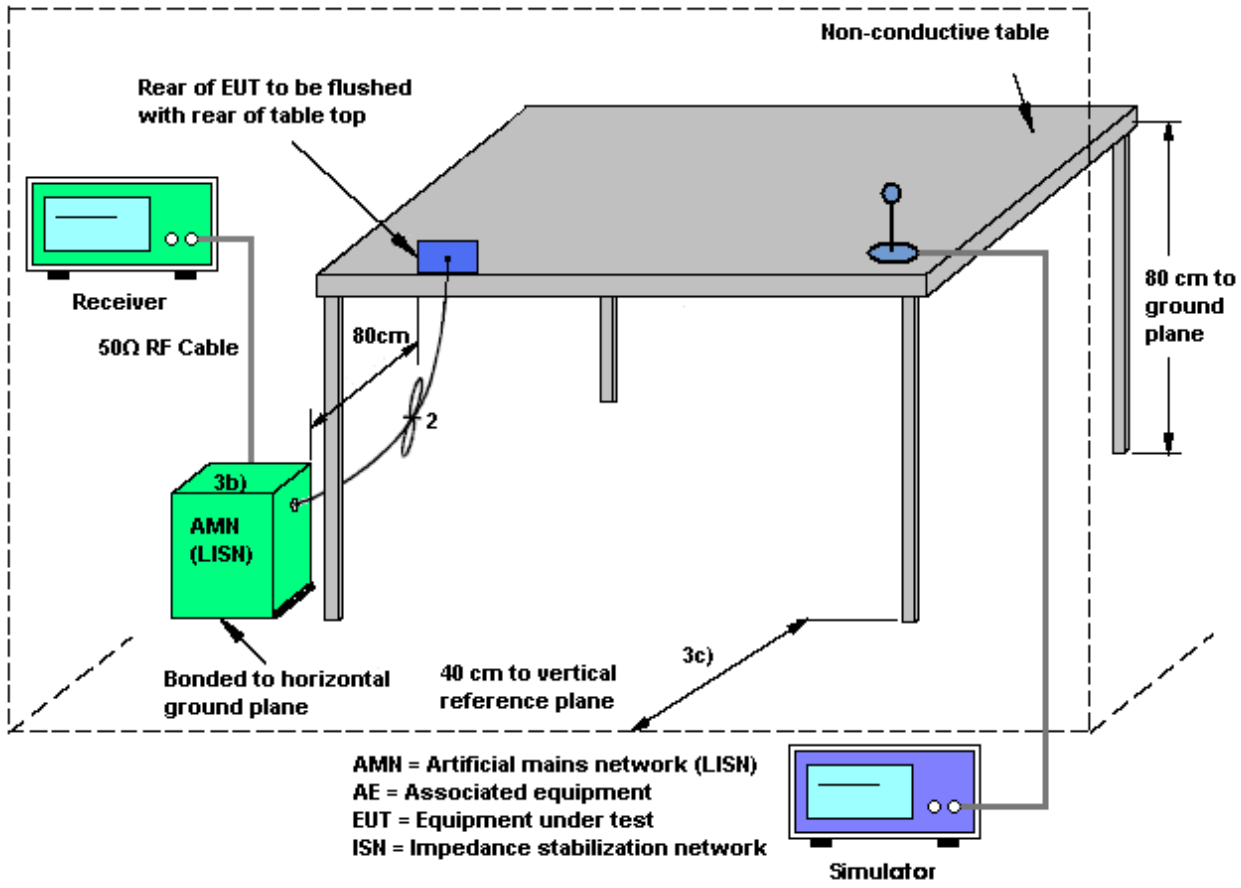
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

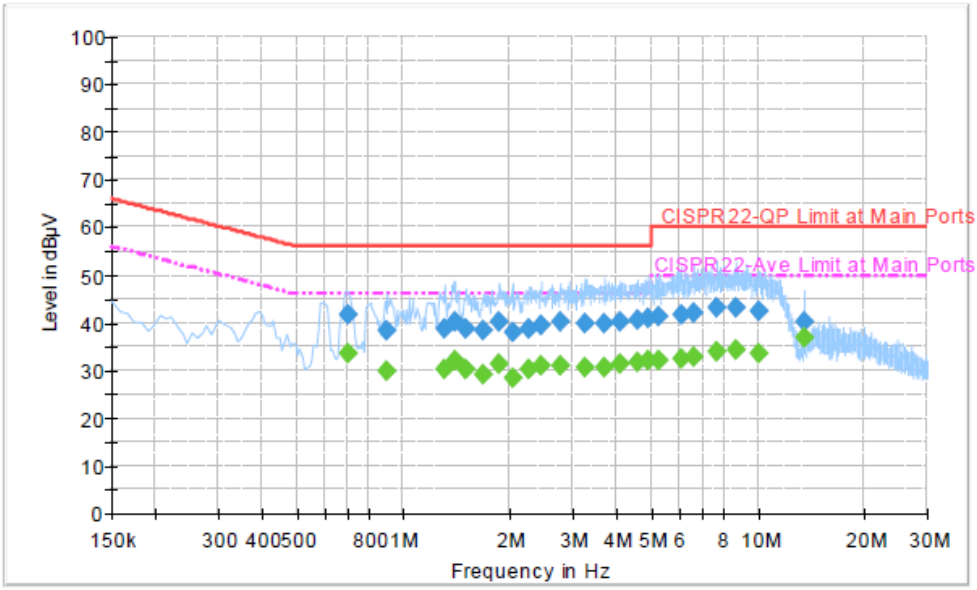
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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

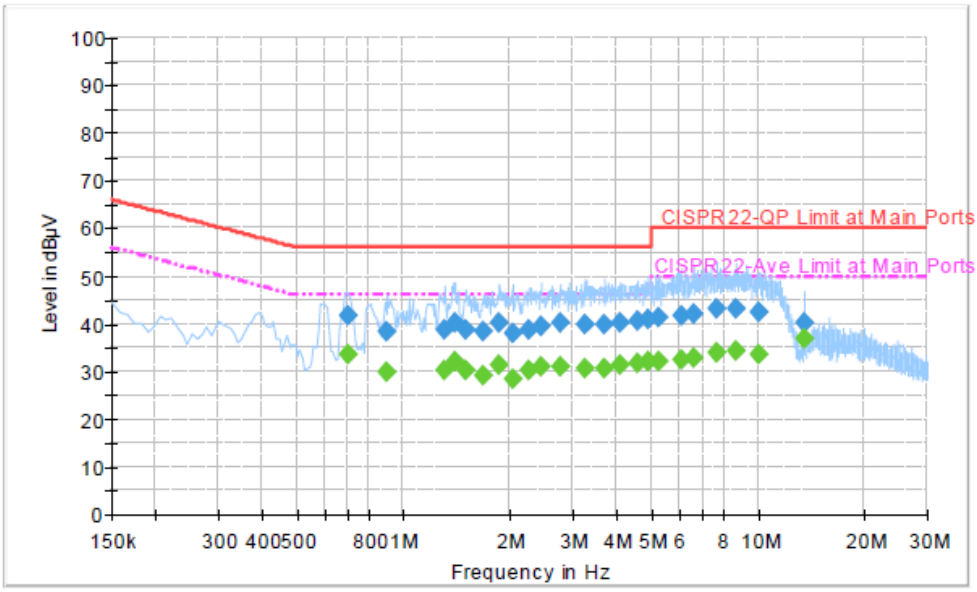
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Cosmo Xu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + TC + TF + Battery 1 + Adapter 1		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.702000	41.7	Off	L1	19.5	14.3	56.0
0.902000	38.5	Off	L1	19.5	17.5	56.0
1.310000	38.6	Off	L1	19.5	17.4	56.0
1.398000	40.3	Off	L1	19.5	15.7	56.0
1.502000	38.7	Off	L1	19.4	17.3	56.0
1.686000	38.3	Off	L1	19.5	17.7	56.0
1.870000	40.1	Off	L1	19.5	15.9	56.0
2.030000	38.0	Off	L1	19.5	18.0	56.0
2.246000	38.9	Off	L1	19.5	17.1	56.0
2.446000	39.5	Off	L1	19.6	16.5	56.0
2.774000	40.2	Off	L1	19.6	15.8	56.0
3.238000	39.7	Off	L1	19.6	16.3	56.0
3.686000	39.9	Off	L1	19.6	16.1	56.0

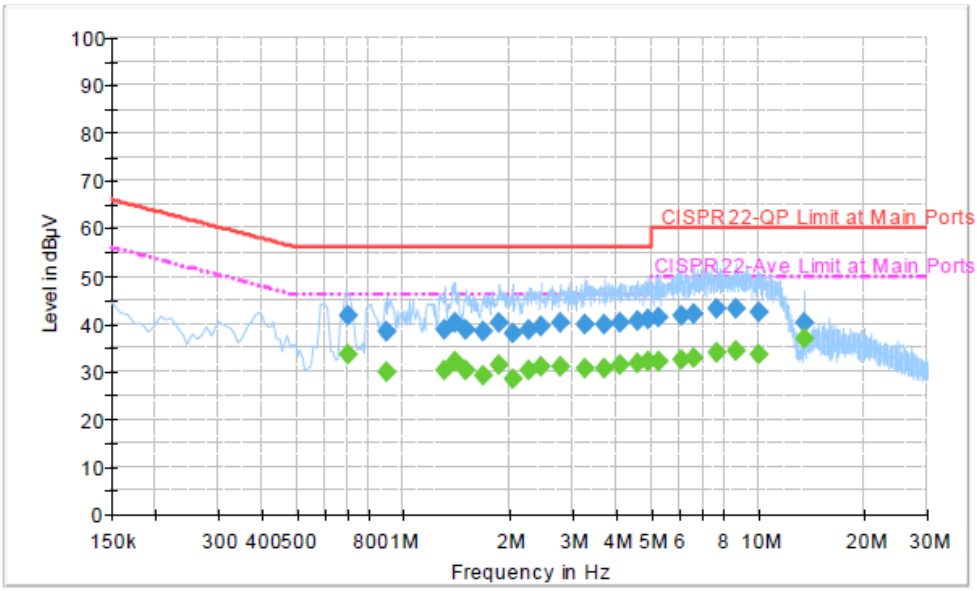
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Cosmo Xu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + TC + TF + Battery 1 + Adapter 1		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.086000	40.2	Off	L1	19.6	15.8	56.0
4.566000	40.7	Off	L1	19.6	15.3	56.0
4.902000	40.9	Off	L1	19.6	15.1	56.0
5.238000	41.4	Off	L1	19.5	18.6	60.0
6.086000	41.5	Off	L1	19.6	18.5	60.0
6.558000	42.1	Off	L1	19.6	17.9	60.0
7.638000	43.2	Off	L1	19.6	16.8	60.0
8.702000	43.2	Off	L1	19.7	16.8	60.0
10.006000	42.4	Off	L1	19.7	17.6	60.0
13.558000	40.3	Off	L1	19.8	19.7	60.0

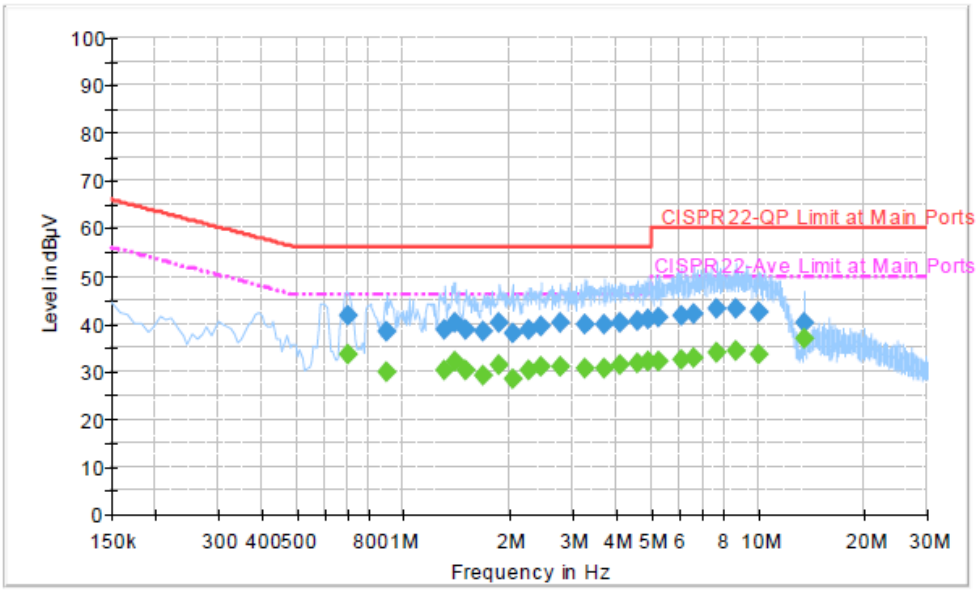
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Cosmo Xu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + TC + TF + Battery 1 + Adapter 1		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.702000	33.4	Off	L1	19.5	12.6	46.0
0.902000	30.0	Off	L1	19.5	16.0	46.0
1.310000	30.3	Off	L1	19.5	15.7	46.0
1.398000	32.2	Off	L1	19.5	13.8	46.0
1.502000	30.4	Off	L1	19.4	15.6	46.0
1.686000	29.3	Off	L1	19.5	16.7	46.0
1.870000	31.2	Off	L1	19.5	14.8	46.0
2.030000	28.5	Off	L1	19.5	17.5	46.0
2.246000	30.1	Off	L1	19.5	15.9	46.0
2.446000	31.2	Off	L1	19.6	14.8	46.0
2.774000	31.0	Off	L1	19.6	15.0	46.0
3.238000	30.7	Off	L1	19.6	15.3	46.0
3.686000	30.8	Off	L1	19.6	15.2	46.0

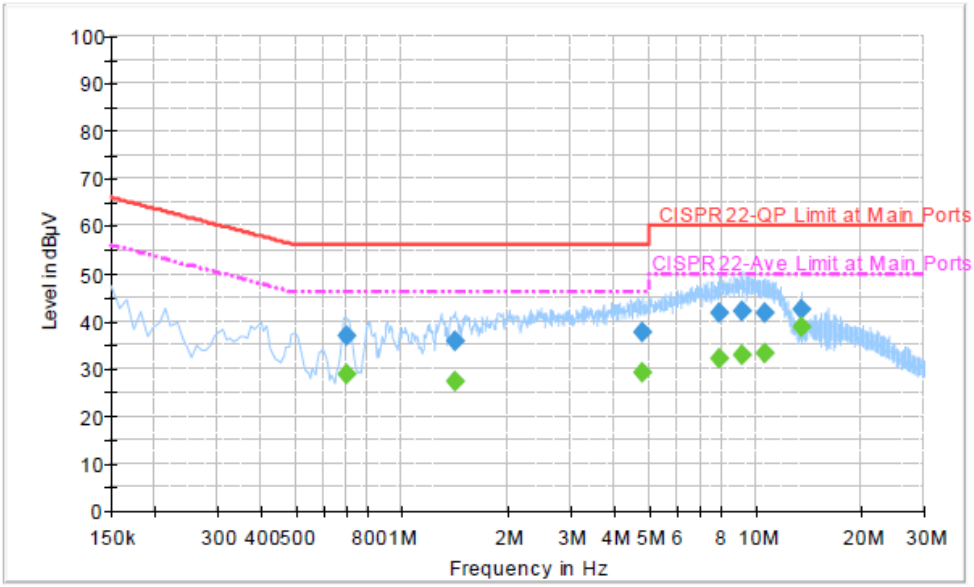
Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Cosmo Xu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + TC + TF + Battery 1 + Adapter 1		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
4.086000	31.3	Off	L1	19.6	14.7	46.0
4.566000	31.6	Off	L1	19.6	14.4	46.0
4.902000	32.3	Off	L1	19.6	13.7	46.0
5.238000	32.1	Off	L1	19.5	17.9	50.0
6.086000	32.6	Off	L1	19.6	17.4	50.0
6.558000	33.0	Off	L1	19.6	17.0	50.0
7.638000	34.0	Off	L1	19.6	16.0	50.0
8.702000	34.3	Off	L1	19.7	15.7	50.0
10.006000	33.7	Off	L1	19.7	16.3	50.0
13.558000	36.8	Off	L1	19.8	13.2	50.0

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Cosmo Xu	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 (GPRS class 8) Idle + WLAN (5GHz) Link + TC + TF + Battery 1 + Adapter 1		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.702000	36.8	Off	N	19.5	19.2	56.0
1.414000	35.9	Off	N	19.4	20.1	56.0
4.806000	37.7	Off	N	19.6	18.3	56.0
7.942000	41.7	Off	N	19.6	18.3	60.0
9.174000	42.2	Off	N	19.8	17.8	60.0
10.646000	41.6	Off	N	19.7	18.4	60.0
13.558000	42.5	Off	N	19.9	17.5	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.702000	28.9	Off	N	19.5	17.1	46.0
1.414000	27.2	Off	N	19.4	18.8	46.0
4.806000	29.1	Off	N	19.6	16.9	46.0
7.942000	32.2	Off	N	19.6	17.8	50.0
9.174000	32.8	Off	N	19.8	17.2	50.0
10.646000	33.1	Off	N	19.7	16.9	50.0
13.558000	38.8	Off	N	19.9	11.2	50.0

3.7 Frequency Stability Measurement

3.7.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

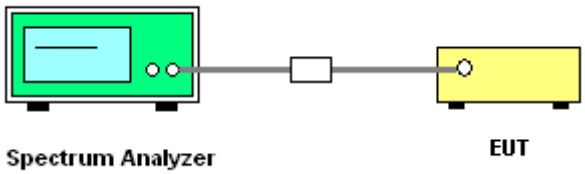
3.7.2 Measuring Instruments

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

3.7.3 Test Procedures

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

3.7.4 Test Setup



3.7.5 Test Result of Frequency Stability

Test Band :	5GHz band 1,2,3	Test Engineer :	Alex Lee

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (˚C)	Voltage (V)
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.3
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	4.2
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	3.7
11a	6Mbps	1	36	5180	5180.050	0.050	9.65	0	3.7
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	50	3.7

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (˚C)	Voltage (V)
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	3.3
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	4.2
11a	6Mbps	1	64	5320	5320.000	0.000	0.00	20	3.7
11a	6Mbps	1	64	5320	5320.025	0.025	4.70	0	3.7
11a	6Mbps	1	64	5320	5319.975	-0.025	-4.70	50	3.7

Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (˚C)	Voltage (V)
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	3.3
11a	6Mbps	1	100	5500	5500.000	0.000	0.00	20	4.2
11a	6Mbps	1	100	5500	5499.950	-0.050	-9.09	20	3.7
11a	6Mbps	1	100	5500	5500.025	0.025	4.55	0	3.7
11a	6Mbps	1	100	5500	5499.975	-0.025	-4.55	50	3.7

Note: Center Frequency = (Low Frequency + High Frequency) / 2.

3.8 Automatically Discontinue Transmission

3.8.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.8.2 Measuring Instruments

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

3.8.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.9 Antenna Requirements

3.9.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2) ,if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.9.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.9.3 Antenna Gain

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

4 List of Measuring Equipments

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	Apr. 18, 2014~ Apr. 24, 2014	Jun. 06, 2014	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	Apr. 18, 2014~ Apr. 24, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	Apr. 18, 2014~ Apr. 24, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV30	101749	10Hz ~ 30GHz	Feb. 10, 2014	Apr. 24, 2014~ Apr. 27, 2014	Feb. 09, 2015	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 06, 2013	Apr. 24, 2014~ Apr. 27, 2014	Sep. 05, 2014	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/0001	9 kHz~30 MhZ	Jul. 03, 2012	Apr. 24, 2014~ Apr. 27, 2014	Jul. 03, 2014	Radiation (03CH07-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 10, 2013	Apr. 24, 2014~ Apr. 27, 2014	Oct. 09, 2014	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	75962	1GHz~18GHz	Aug. 22, 2013	Apr. 24, 2014~ Apr. 27, 2014	Aug. 21, 2014	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 03, 2013	Apr. 24, 2014~ Apr. 27, 2014	Oct. 02, 2014	Radiation (03CH07-HY)
Amplifier	EM	EM18G40G	060604	18GHz ~ 40GHz	Oct. 17, 2013	Apr. 24, 2014~ Apr. 27, 2014	Oct. 16, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10 MHz ~ 1000MHz 32dB GAIN	Mar. 17, 2014	Apr. 24, 2014~ Apr. 27, 2014	Mar. 16, 2015	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1 GHz~26.5 GHz	Nov. 29, 2013	Apr. 24, 2014~ Apr. 27, 2014	Nov. 28, 2014	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	DC~18 G High Gain	Jul. 09, 2013	Apr. 24, 2014~ Apr. 27, 2014	Jul. 08, 2014	Radiation (03CH07-HY)
Turn Table	ChainTek	ChainTek 3000	N/A	0 ~ 360 degree	N/A	Apr. 24, 2014~ Apr. 27, 2014	N/A	Radiation (03CH07-HY)
Antenna Mast	ChainTek	ChainTek 3000	N/A	N/A	N/A	Apr. 24, 2014~ Apr. 27, 2014	N/A	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz ~ 2.75GHz	Nov. 15, 2013	Apr. 28, 2014	Nov. 14, 2014	Conduction (CO05-HY)
LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 12, 2013	Apr. 28, 2014	Dec. 11, 2014	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 04, 2013	Apr. 28, 2014	Dec. 03, 2014	Conduction (CO05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Apr. 28, 2014	N/A	Conduction (CO05-HY)

5 Uncertainty of Evaluation

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

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

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

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