

FCC RF Test Report

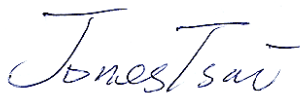
APPLICANT : SAMSUNG ELECTRONICS CO., LTD.
EQUIPMENT : Mobile
BRAND NAME : SAMSUNG
MODEL NAME : SCH-I939I
FCC ID : A3LSCHI939I
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Jan. 03, 2014 and testing was completed on Feb. 12, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) 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 (SHENZHEN) INC., the test report shall not be reproduced except in full.



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (SHENZHEN) INC.

No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District,
Shenzhen, Guangdong, P.R.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR410307E	Rev. 01	Initial issue of report	Feb. 13, 2014

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	26dB Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	$\leq 17, 24, 30$ dBm (depend on band)	Pass	-
3.3	15.407(a)	Power Spectral Density	$\leq 4, 11, 17$ dBm (depend on band)	Pass	-
3.4	15.407(a)(6)	Peak Excursion Ratio	≤ 13 dB	Pass	-
3.5	15.407(b)	Unwanted Emissions	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	Under limit 7.12 dB at 5149.700 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 10.01 dB at 0.150 MHz
3.7	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.8	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.9	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

SAMSUNG ELECTRONICS CO., LTD.

416 Maetan-3dong, Yeongtong-gu, Suwon-City, Gyeonggi-do, 443-742, Korea

1.2 Manufacturer

SAMSUNG ELECTRONICS CO., LTD.

416 Maetan-3dong, Yeongtong-gu, Suwon-City, Gyeonggi-do, 443-742, Korea

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Mobile
Brand Name	SAMSUNG
Model Name	SCH-I939I
FCC ID	A3LSCHI939I
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
GPRS/EGPRS Multislot Class	GPRS Class 10, EGPRS Class 10
WCDMA Operating Band(s)	FDDI/FDDII/FDDV
CDMA Operating Band(s)	BC0
Wi-Fi Specification	2.4GHz 802.11b/g/n (HT20) 5GHz 802.11a/n (HT20/HT40)
Bluetooth Version	Bluetooth v3.0+EDR, Bluetooth v4.0 LE
NFC Specification	Type A/B
HW Version	I939I.02
SW Version	I939IKEUAMK1
EUT Stage	Pre-Production

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 5660 MHz ~ 5700 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 12.69 dBm / 0.0186 W 802.11n HT20 : 11.41 dBm / 0.0138 W 802.11n HT40 : 10.16 dBm / 0.0104 W <5260 MHz ~ 5320 MHz> 802.11a : 12.16 dBm / 0.0164 W 802.11n HT20 : 11.39 dBm / 0.0138 W 802.11n HT40 : 9.63 dBm / 0.0092 W <5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz> 802.11a : 12.58 dBm / 0.0181 W 802.11n HT20 : 11.58 dBm / 0.0144 W 802.11n HT40 : 10.77 dBm / 0.0119 W
Antenna Type	FPCB Antenna with gain <5180 MHz ~ 5240 MHz> -6.10 dBi <5260 MHz ~ 5320 MHz> -4.90 dBi <5500 MHz ~ 5700 MHz > 1.90 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 Site

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.		
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P.R.C. TEL: +86-755- 3320-2398		
Test Site No.	Sporton Site No.		
	TH01-SZ	CO01-SZ	03CH01-SZ
	FCC Registration No.		
	831040		

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 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)
5470-5725 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. Final Output Power equals to Measured Output Power adds the duty factor.

Channel	Frequency	5GHz 802.11a RF Power (dBm)							
		OFDM Data Rate							
		6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
CH 36	5180 MHz	12.25	12.23	12.22	12.21	12.21	12.20	12.23	12.21
CH 44	5220 MHz	12.52	12.50	12.49	12.48	12.48	12.47	12.50	12.48
CH 48	5240 MHz	12.69	12.67	12.66	12.65	12.65	12.64	12.67	12.65
CH 52	5260 MHz	11.87	11.85	11.84	11.83	11.83	11.82	11.85	11.83
CH 60	5300 MHz	12.16	12.14	12.13	12.12	12.12	12.11	12.14	12.12
CH 64	5320 MHz	12.01	11.99	11.98	11.97	11.97	11.96	11.99	11.97
CH 100	5500 MHz	12.28	12.26	12.25	12.24	12.24	12.23	12.26	12.24
CH 116	5580 MHz	12.58	12.56	12.55	12.54	12.54	12.53	12.56	12.54
CH 140	5700 MHz	10.81	10.79	10.78	10.77	10.77	10.76	10.79	10.77

Channel	Frequency	5GHz 802.11a/n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180 MHz	11.10	11.03	11.08	11.06	10.91	10.94	10.93	11.04
CH 44	5220 MHz	11.41	11.34	11.39	11.37	11.22	11.25	11.24	11.35
CH 48	5240 MHz	11.33	11.26	11.31	11.29	11.14	11.17	11.16	11.27
CH 52	5260 MHz	10.31	10.24	10.29	10.27	10.12	10.15	10.14	10.25
CH 60	5300 MHz	11.39	11.32	11.37	11.35	11.20	11.23	11.22	11.33
CH 64	5320 MHz	10.88	10.81	10.86	10.84	10.69	10.72	10.71	10.82
CH 100	5500 MHz	11.19	11.12	11.17	11.15	11.00	11.03	11.02	11.13
CH 116	5580 MHz	11.58	11.51	11.56	11.54	11.39	11.42	11.41	11.52
CH 140	5700 MHz	9.91	9.84	9.89	9.87	9.72	9.75	9.74	9.85

Channel	Frequency	5GHz 802.11a/n HT40 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190 MHz	9.88	9.84	9.85	9.81	9.83	9.86	9.84	9.82
CH 46	5230 MHz	10.16	10.12	10.13	10.09	10.11	10.14	10.12	10.10
CH 54	5270 MHz	9.31	9.27	9.28	9.24	9.26	9.29	9.27	9.25
CH 62	5310 MHz	9.63	9.59	9.60	9.56	9.58	9.61	9.59	9.57
CH 102	5510 MHz	10.44	10.40	10.41	10.37	10.39	10.42	10.40	10.38
CH 110	5550 MHz	10.77	10.73	10.74	10.70	10.72	10.75	10.73	10.71
CH 134	5670 MHz	10.59	10.55	10.56	10.52	10.54	10.57	10.55	10.53

2.3 Test Mode

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

Test Cases				
Conducted TCs	Test Items	Mode	Data rate	Test Channel
	26dB BW Power Spectral Density	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/M/H
	Output Power	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/M/H
	Peak Excursion	802.11a	6 Mbps	H
		802.11n HT20	MCS0	H
		802.11n HT40	MCS0	H
	Frequency Stability	802.11a	6 Mbps	L/H
Radiated TCs	Radiated Band Edge	802.11a	6 Mbps	L/H
		802.11n HT20	MCS0	L/H
		802.11n HT40	MCS0	L/H
	Radiated Spurious Emission	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/M/H
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable (Charging from Adapter) + Earphone for SIM 1			

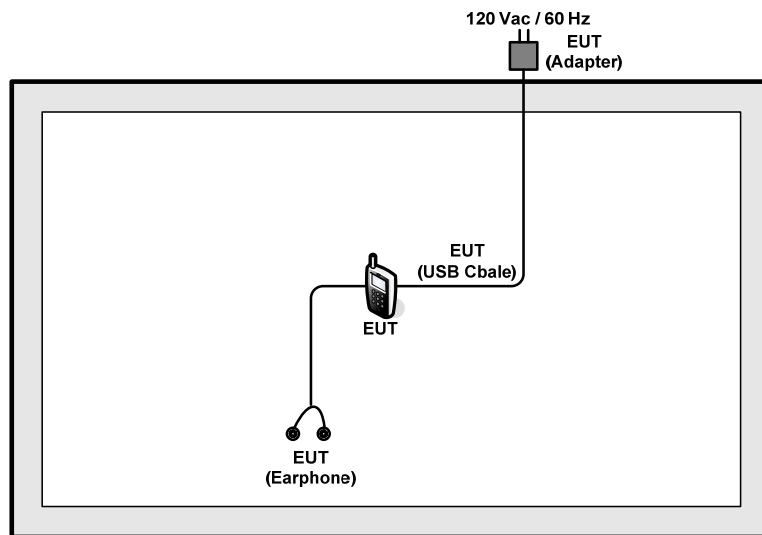
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5600 MHz and 5650-5725MHz
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

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

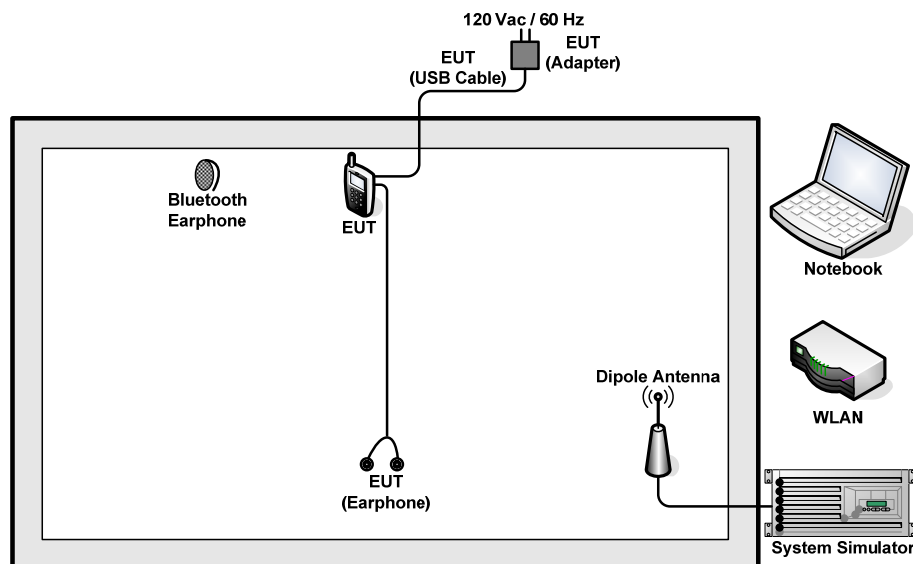
Ch. #		Band I : 5150-5250 MHz	Band II : 5250-5350 MHz	Band III : 5470-5600 MHz and 5650-5725MHz
		802.11n HT40	802.11n HT40	802.11n HT40
L	Low	38	54	102
M	Middle	-	-	110
H	High	46	62	134

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	CMW 500	N/A	N/A	Unshielded, 1.8 m
2.	WLAN AP	D-Link	DIR-815	KA2DIR815A1	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
4.	Notebook	DELL	Vostro 2420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

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.

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.

$$\begin{aligned}
 \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\
 &= 4.2 + 10 = 14.2 \text{ (dB)}
 \end{aligned}$$

3 Test Result

3.1 26dB Bandwidth Measurement

3.1.1 Description of 26dB 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 and 5470-5725MHz, 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.

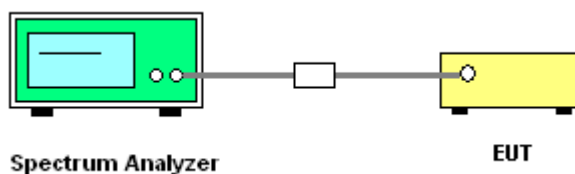
3.1.2 Measuring Instruments

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. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 26dB Bandwidth Plots

Test Band :	5GHz band 1	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

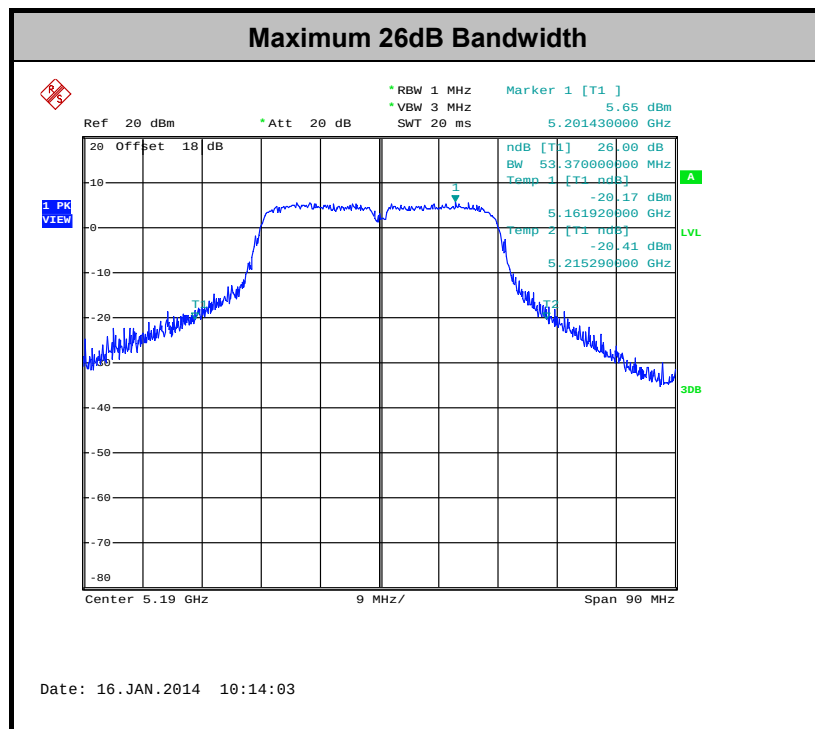
Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	36	5180	28.75	16.99
11a	6Mbps	1	44	5220	28.00	16.99
11a	6Mbps	1	48	5240	28.70	16.99
HT20	MCS0	1	36	5180	28.50	16.99
HT20	MCS0	1	44	5220	28.30	16.99
HT20	MCS0	1	48	5240	28.70	16.99
HT40	MCS0	1	38	5190	53.37	16.99
HT40	MCS0	1	46	5230	52.65	16.99

Test Band :	5GHz band 2	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	52	5260	28.35	23.98
11a	6Mbps	1	60	5300	28.05	23.98
11a	6Mbps	1	64	5320	27.8	23.98
HT20	MCS0	1	52	5260	27.75	23.98
HT20	MCS0	1	60	5300	27.9	23.98
HT20	MCS0	1	64	5320	26.55	23.98
HT40	MCS0	1	54	5270	51.48	23.98
HT40	MCS0	1	62	5310	52.38	23.98

Test Band :	5GHz band 3	Temperature :	24~26°C
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	100	5500	22.7	23.98
11a	6Mbps	1	116	5580	22.8	23.98
11a	6Mbps	1	140	5700	22.65	23.98
HT20	MCS0	1	100	5500	22.95	23.98
HT20	MCS0	1	116	5580	23.05	23.98
HT20	MCS0	1	140	5700	23.05	23.98
HT40	MCS0	1	102	5510	46.17	23.98
HT40	MCS0	1	110	5550	45.63	23.98
HT40	MCS0	1	134	5670	46.53	23.98



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 $4 \text{ dBm} + 10\log B$, 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 and 5470-5600 MHz and 5650-5725 MHz, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or $11 \text{ dBm} + 10\log B$, 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.

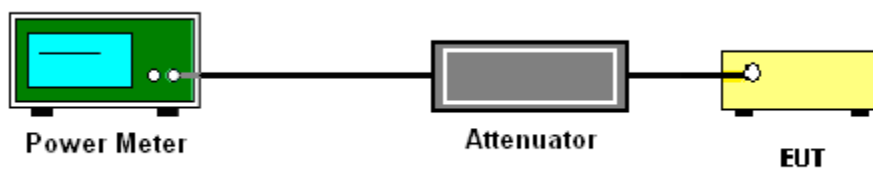
3.2.3 Test Procedures

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 :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

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	0.30	12.25	16.99	-6.10	-	Pass
11a	6Mbps	1	44	5220	0.30	12.52	16.99	-6.10		Pass
11a	6Mbps	1	48	5240	0.30	12.69	16.99	-6.10		Pass
HT20	MCS0	1	36	5180	0.32	11.10	16.99	-6.10		Pass
HT20	MCS0	1	44	5220	0.32	11.41	16.99	-6.10		Pass
HT20	MCS0	1	48	5240	0.32	11.33	16.99	-6.10		Pass
HT40	MCS0	1	38	5190	0.65	9.88	16.99	-6.10		Pass
HT40	MCS0	1	46	5230	0.65	10.16	16.99	-6.10		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.

Test Band :	5GHz band 2	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

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	0.30	11.87	23.98	-4.90	-	Pass
11a	6Mbps	1	60	5300	0.30	12.16	23.98	-4.90		Pass
11a	6Mbps	1	64	5320	0.30	12.01	23.98	-4.90		Pass
HT20	MCS0	1	52	5260	0.32	10.31	23.98	-4.90		Pass
HT20	MCS0	1	60	5300	0.32	11.39	23.98	-4.90		Pass
HT20	MCS0	1	64	5320	0.32	10.88	23.98	-4.90		Pass
HT40	MCS0	1	54	5270	0.65	9.31	23.98	-4.90		Pass
HT40	MCS0	1	62	5310	0.65	9.63	23.98	-4.90		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.

Test Band :	5GHz band 3	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

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	0.30	12.28	23.98	1.90	-	Pass
11a	6Mbps	1	116	5580	0.30	12.58	23.98	1.90		Pass
11a	6Mbps	1	140	5700	0.30	10.81	23.98	1.90		Pass
HT20	MCS0	1	100	5500	0.32	11.19	23.98	1.90		Pass
HT20	MCS0	1	116	5580	0.32	11.58	23.98	1.90		Pass
HT20	MCS0	1	140	5700	0.32	9.91	23.98	1.90		Pass
HT40	MCS0	1	102	5510	0.65	10.44	23.98	1.90		Pass
HT40	MCS0	1	110	5550	0.65	10.77	23.98	1.90		Pass
HT40	MCS0	1	134	5670	0.65	10.59	23.98	1.90		Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the band 5470-5600 MHz and 5650-5725 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.

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 and 5470-5600 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).

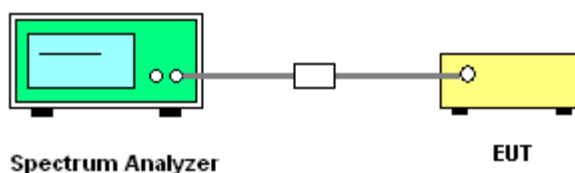
Note: Though the rule refers to “peak power spectral density”, the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

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 $\geq$ 3 MHz.
 - Number of points in sweep $\geq$ 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 :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

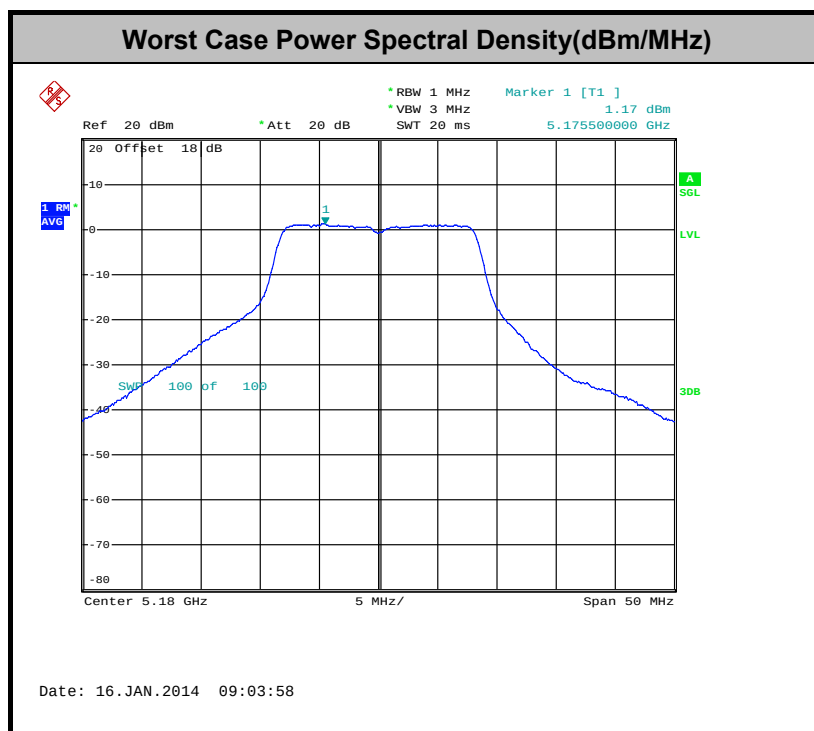
Mod.	Data Rate	N _{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	Pass/Fail
11a	6Mbps	1	36	5180	0.30	1.47	4.00	-6.10	Pass
11a	6Mbps	1	44	5220	0.30	1.32	4.00	-6.10	Pass
11a	6Mbps	1	48	5240	0.30	1.41	4.00	-6.10	Pass
HT20	MCS0	1	36	5180	0.32	0.33	4.00	-6.10	Pass
HT20	MCS0	1	44	5220	0.32	0.07	4.00	-6.10	Pass
HT20	MCS0	1	48	5240	0.32	0.24	4.00	-6.10	Pass
HT40	MCS0	1	38	5190	0.65	-3.77	4.00	-6.10	Pass
HT40	MCS0	1	46	5230	0.65	-3.89	4.00	-6.10	Pass

Test Band :	5GHz band 2	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

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	0.30	0.76	11.00	-4.90	Pass
11a	6Mbps	1	60	5300	0.30	0.53	11.00	-4.90	Pass
11a	6Mbps	1	64	5320	0.30	0.89	11.00	-4.90	Pass
HT20	MCS0	1	52	5260	0.32	-0.42	11.00	-4.90	Pass
HT20	MCS0	1	60	5300	0.32	-0.55	11.00	-4.90	Pass
HT20	MCS0	1	64	5320	0.32	-0.36	11.00	-4.90	Pass
HT40	MCS0	1	54	5270	0.65	-4.43	11.00	-4.90	Pass
HT40	MCS0	1	62	5310	0.65	-4.43	11.00	-4.90	Pass

Test Band :	5GHz band 3	Temperature :	24~26°C
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

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	0.30	1.37	11.00	1.90	Pass
11a	6Mbps	1	116	5580	0.30	1.45	11.00	1.90	Pass
11a	6Mbps	1	140	5700	0.30	-0.69	11.00	1.90	Pass
HT20	MCS0	1	100	5500	0.32	0.32	11.00	1.90	Pass
HT20	MCS0	1	116	5580	0.32	0.39	11.00	1.90	Pass
HT20	MCS0	1	140	5700	0.32	-1.89	11.00	1.90	Pass
HT40	MCS0	1	102	5510	0.65	-3.03	11.00	1.90	Pass
HT40	MCS0	1	110	5550	0.65	-3.19	11.00	1.90	Pass
HT40	MCS0	1	134	5670	0.65	-3.37	11.00	1.90	Pass



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.

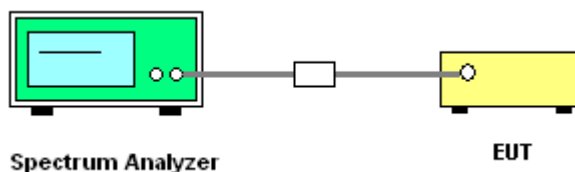
3.4.3 Test Procedures

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 $\geq$ 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

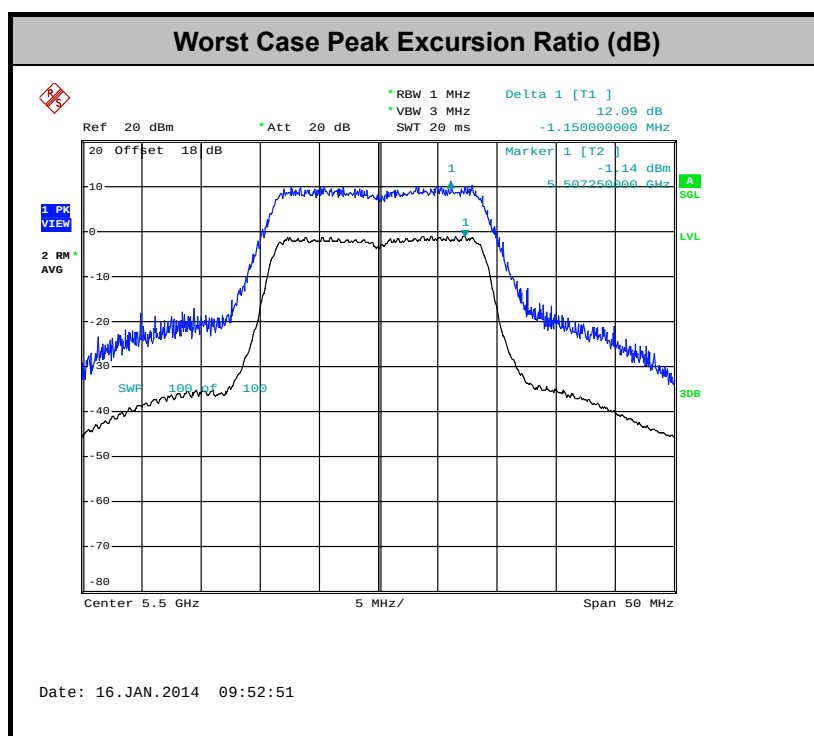


3.4.5 Test Result of Peak Excursion Ratio

Test Band :	5GHz band 3	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

Mod.	N _{TX}	Channel	Freq. (MHz)	Peak Excursion Ratio (dB)					Max. Limits (dB)	Pass/Fail
				BPSK	QPSK	16QAM	64QAM	256QAM		
11a	1	100	5500	9.14	9.80	9.87	9.24	-	13	Pass
HT20	1	100	5500	9.13	9.61	9.85	10.22	-	13	Pass
HT40	1	102	5510	8.89	9.03	9.20	9.06	-	13	Pass

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



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

Duty Cycle Offset: 1.87 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 5470-5725MHz 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.

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

EIRP (dBm)	Field Strength at 3m (dB μ V/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 $\geq$ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

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

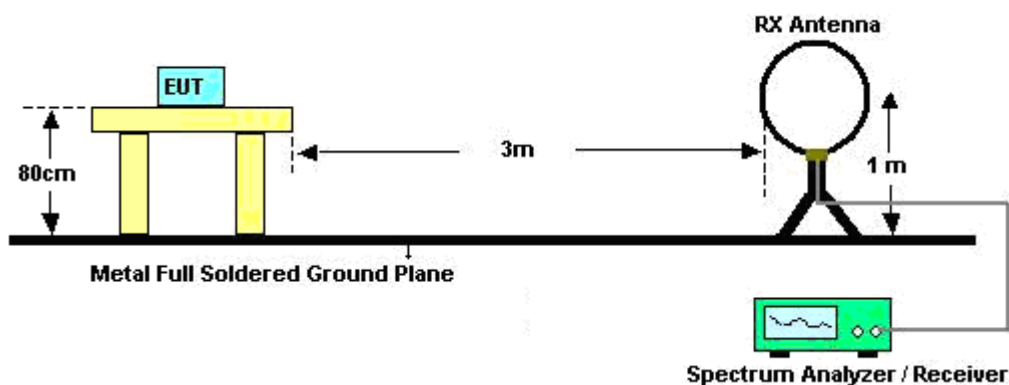
- The setting follows H) 6) of FCC KDB 789033.
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control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

Band	Duty Cycle(%)	T(μ s)	1/T(kHz)	VBW Setting
802.11a	93.33	1400.00	0.714	1kHz
802.11n HT20	92.98	1298.00	0.770	1kHz
802.11n HT40	86.02	640.00	1.563	3kHz

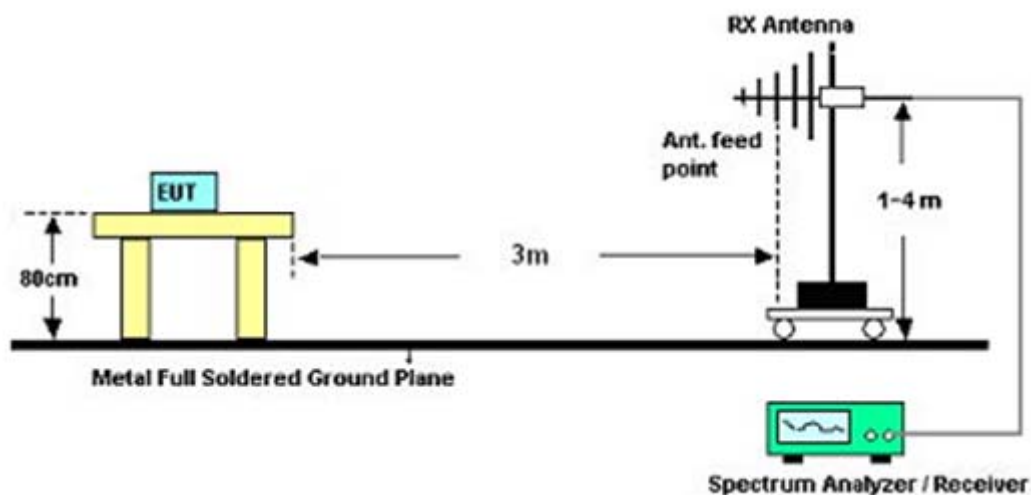
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters 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

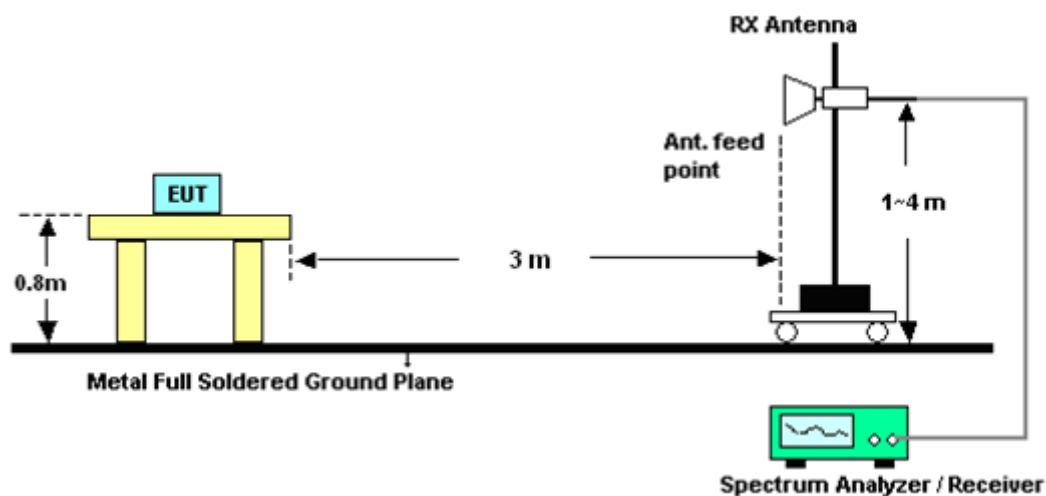
For radiated emissions below 30MHz



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 :	23~25°C
Test Channel :	36	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5058.65	53.45	-20.55	74	40.14	34.17	8.59	29.45	109	72	Peak
5148.8	43.23	-10.77	54	29.85	34.14	8.69	29.45	109	72	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
5119.7	54.5	-19.5	74	41.13	34.15	8.67	29.45	100	85	Peak
5150	43.11	-10.89	54	29.73	34.14	8.69	29.45	100	85	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5042.3	53.18	-20.82	74	39.86	34.18	8.59	29.45	116	306	Peak
5094.05	42.85	-11.15	54	29.5	34.16	8.64	29.45	116	306	Average
5385.31	53.3	-20.7	74	39.76	34.05	8.93	29.44	116	306	Peak
5408.96	42.54	-11.46	54	28.99	34.04	8.95	29.44	116	306	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
5117.15	53.96	-20.04	74	40.62	34.15	8.64	29.45	100	73	Peak
5146.4	42.86	-11.14	54	29.48	34.14	8.69	29.45	100	73	Average
5457.69	53.35	-20.65	74	39.77	34.02	9	29.44	100	73	Peak
5432.94	42.61	-11.39	54	29.04	34.03	8.98	29.44	100	73	Average



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5028.95	53.19	-20.81	74	39.88	34.19	8.57	29.45	104	314	Peak
5096.15	42.49	-11.51	54	29.14	34.16	8.64	29.45	104	314	Average
5432.83	54.07	-19.93	74	40.5	34.03	8.98	29.44	104	314	Peak
5396.75	42.38	-11.62	54	28.85	34.04	8.93	29.44	104	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
5069	53.4	-20.6	74	40.06	34.17	8.62	29.45	100	86	Peak
5066	42.43	-11.57	54	29.12	34.17	8.59	29.45	100	86	Average
5409.4	52.82	-21.18	74	39.27	34.04	8.95	29.44	100	86	Peak
5459.67	42.44	-11.56	54	28.86	34.02	9	29.44	100	86	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5420.95	53.11	-20.89	74	39.57	34.03	8.95	29.44	102	322	Peak
5350.33	42.71	-11.29	54	29.19	34.06	8.9	29.44	102	322	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
5411.49	53.36	-20.64	74	39.81	34.04	8.95	29.44	100	85	Peak
5351.98	42.41	-11.59	54	28.89	34.06	8.9	29.44	100	85	Average



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5387.76	53.95	-20.05	74	40.41	34.05	8.93	29.44	100	316	Peak
5386.96	42.42	-11.58	54	28.88	34.05	8.93	29.44	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
5353.68	53.26	-20.74	74	39.74	34.06	8.9	29.44	155	280	Peak
5463.44	42.33	-11.67	54	28.76	34.01	9	29.44	155	280	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.24	57.95	-16.05	74	44.41	34	9.13	29.59	108	358	Peak
5725.32	44.16	-9.84	54	30.62	34	9.13	29.59	108	358	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
5753.48	53.44	-20.56	74	39.91	34	9.14	29.61	101	73	Peak
5729	43.02	-10.98	54	29.48	34	9.13	29.59	101	73	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5089.1	54.19	-19.81	74	40.86	34.16	8.62	29.45	108	346	Peak
5148.65	43.67	-10.33	54	30.29	34.14	8.69	29.45	108	346	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5009.45	53.4	-20.6	74	40.12	34.19	8.54	29.45	100	16	Peak
5147.15	42.8	-11.2	54	29.42	34.14	8.69	29.45	100	16	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5113.1	54.09	-19.91	74	40.75	34.15	8.64	29.45	103	286	Peak
5145.05	42.79	-11.21	54	29.41	34.14	8.69	29.45	103	286	Average
5350.99	53.3	-20.7	74	39.78	34.06	8.9	29.44	103	286	Peak
5383.22	42.6	-11.4	54	29.06	34.05	8.93	29.44	103	286	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
5063.75	53.21	-20.79	74	39.9	34.17	8.59	29.45	100	91	Peak
5141.6	42.88	-11.12	54	29.52	34.14	8.67	29.45	100	91	Average
5383.88	53.32	-20.68	74	39.78	34.05	8.93	29.44	100	91	Peak
5459.89	42.57	-11.43	54	28.99	34.02	9	29.44	100	91	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5122.85	53.11	-20.89	74	39.74	34.15	8.67	29.45	106	67	Peak
5142.35	42.56	-11.44	54	29.2	34.14	8.67	29.45	106	67	Average
5365.07	53.11	-20.89	74	39.6	34.05	8.9	29.44	106	67	Peak
5413.03	42.44	-11.56	54	28.9	34.03	8.95	29.44	106	67	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
5095.85	53.59	-20.41	74	40.24	34.16	8.64	29.45	100	91	Peak
5146.55	42.47	-11.53	54	29.09	34.14	8.69	29.45	100	91	Average
5404.01	52.97	-21.03	74	39.42	34.04	8.95	29.44	100	91	Peak
5438.55	42.41	-11.59	54	28.84	34.03	8.98	29.44	100	91	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5357.37	53.25	-20.75	74	39.73	34.06	8.9	29.44	104	322	Peak
5350.66	42.76	-11.24	54	29.24	34.06	8.9	29.44	104	322	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
5448.34	53.52	-20.48	74	39.96	34.02	8.98	29.44	110	85	Peak
5359.46	42.5	-11.5	54	28.98	34.06	8.9	29.44	110	85	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5362.32	52.63	-21.37	74	39.12	34.05	8.9	29.44	100	328	Peak
5356.88	42.32	-11.68	54	28.8	34.06	8.9	29.44	100	328	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
5380.88	52.62	-21.38	74	39.08	34.05	8.93	29.44	106	90	Peak
5463.44	43.33	-10.67	54	29.76	34.01	9	29.44	106	90	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725.32	58.22	-15.78	74	44.68	34	9.13	29.59	108	358	Peak
5726.28	43.04	-10.96	54	29.5	34	9.13	29.59	108	358	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
5735.24	53.19	-20.81	74	39.66	34	9.14	29.61	102	88	Peak
5725	42.82	-11.18	54	29.28	34	9.13	29.59	102	88	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5148.35	57.44	-16.56	74	44.06	34.14	8.69	29.45	120	69	Peak
5149.7	46.88	-7.12	54	33.5	34.14	8.69	29.45	120	69	Average
5394.55	53.3	-20.7	74	39.77	34.04	8.93	29.44	120	69	Peak
5447.24	43.51	-10.49	54	29.95	34.02	8.98	29.44	120	69	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
5148.05	54.47	-19.53	74	41.09	34.14	8.69	29.45	100	97	Peak
5149.1	44.82	-9.18	54	31.44	34.14	8.69	29.45	100	97	Average
5407.2	53.39	-20.61	74	39.84	34.04	8.95	29.44	100	97	Peak
5424.69	43.53	-10.47	54	29.96	34.03	8.98	29.44	100	97	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	46	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5078.3	53.57	-20.43	74	40.23	34.17	8.62	29.45	131	312	Peak
5066.9	43.59	-10.41	54	30.28	34.17	8.59	29.45	131	312	Average
5374.53	53.93	-20.07	74	40.39	34.05	8.93	29.44	131	312	Peak
5389.93	43.9	-10.1	54	30.36	34.05	8.93	29.44	131	312	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
5120.45	53.97	-20.03	74	40.6	34.15	8.67	29.45	100	92	Peak
5145.8	43.7	-10.3	54	30.32	34.14	8.69	29.45	100	92	Average
5363.31	53.83	-20.17	74	40.32	34.05	8.9	29.44	100	92	Peak
5429.09	43.62	-10.38	54	30.05	34.03	8.98	29.44	100	92	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	54	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5055.65	53.11	-20.89	74	39.8	34.17	8.59	29.45	132	73	Peak
5139.05	43.24	-10.76	54	29.87	34.15	8.67	29.45	132	73	Average
5414.57	53.21	-20.79	74	39.67	34.03	8.95	29.44	132	73	Peak
5427.88	43.36	-10.64	54	29.79	34.03	8.98	29.44	132	73	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
5081.45	52.97	-21.03	74	39.63	34.17	8.62	29.45	100	91	Peak
5106.95	43.35	-10.65	54	30.01	34.15	8.64	29.45	100	91	Average
5428.65	53.67	-20.33	74	40.1	34.03	8.98	29.44	100	91	Peak
5401.15	43.17	-10.83	54	29.62	34.04	8.95	29.44	100	91	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	62	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5045.75	53.1	-20.9	74	39.78	34.18	8.59	29.45	104	326	Peak
5136.95	43.41	-10.59	54	30.04	34.15	8.67	29.45	104	326	Average
5350.66	54.58	-19.42	74	41.06	34.06	8.9	29.44	104	326	Peak
5350.88	44.87	-9.13	54	31.35	34.06	8.9	29.44	104	326	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
5123	52.9	-21.1	74	39.53	34.15	8.67	29.45	100	90	Peak
5144.75	43.24	-10.76	54	29.86	34.14	8.69	29.45	100	90	Average
5420.84	52.92	-21.08	74	39.38	34.03	8.95	29.44	100	90	Peak
5407.53	43.51	-10.49	54	29.96	34.04	8.95	29.44	100	90	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	102	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5416.4	53.76	-20.24	74	40.22	34.03	8.95	29.44	100	338	Peak
5459.12	43.17	-10.83	54	29.59	34.02	9	29.44	100	338	Average
5759.8	53.47	-20.53	74	39.95	34	9.15	29.63	100	338	Peak
5751.56	43.62	-10.38	54	30.09	34	9.14	29.61	100	338	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
5354.8	52.8	-21.2	74	39.28	34.06	8.9	29.44	107	88	Peak
5459.28	43.28	-10.72	54	29.7	34.02	9	29.44	107	88	Average
5743.08	53.56	-20.44	74	40.03	34	9.14	29.61	107	88	Peak
5758.04	43.67	-10.33	54	30.15	34	9.15	29.63	107	88	Average



Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	134	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang		

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
5464.4	52.75	-21.25	74	39.18	34.01	9	29.44	110	358	Peak
5450.32	43.12	-10.88	54	29.54	34.02	9	29.44	110	358	Average
5740.2	53.03	-20.97	74	39.5	34	9.14	29.61	110	358	Peak
5727.56	43.55	-10.45	54	30.01	34	9.13	29.59	110	358	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
5425.68	52.76	-21.24	74	39.19	34.03	8.98	29.44	103	96	Peak
5432.56	43.12	-10.88	54	29.55	34.03	8.98	29.44	103	96	Average
5758.04	52.71	-21.29	74	39.19	34	9.15	29.63	103	96	Peak
5727.88	43.52	-10.48	54	29.98	34	9.13	29.59	103	96	Average

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

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 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	93.29	-	-	79.89	34.13	8.72	29.45	109	72	Peak
5180	84.28	-	-	70.88	34.13	8.72	29.45	109	72	Average
10360	44.26	-29.74	74	51.54	36.78	12.85	56.91	152	260	Peak
15540	41.59	-32.41	74	41.96	40.2	16.2	56.77	189	238	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 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	92.03	-	-	78.63	34.13	8.72	29.45	100	85	Peak
5180	83.53	-	-	70.13	34.13	8.72	29.45	100	85	Average
10360	50.86	-23.14	74	58.14	36.78	12.85	56.91	152	260	Peak
15540	40.76	-33.24	74	41.13	40.2	16.2	56.77	189	238	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	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.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	90.82	-	-	77.41	34.11	8.75	29.45	133	60	Peak
5220	82.6	-	-	69.19	34.11	8.75	29.45	133	60	Average
10440	46.39	-27.61	74	53.65	36.74	12.89	56.89	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
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.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	90.8	-	-	77.39	34.11	8.75	29.45	100	90	Peak
5220	81.94	-	-	68.53	34.11	8.75	29.45	100	90	Average
10440	42.22	-31.78	74	49.48	36.74	12.89	56.89	125	230	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (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	91.29	-	-	77.86	34.11	8.77	29.45	103	286	Peak
5240	82.41	-	-	68.98	34.11	8.77	29.45	103	286	Average
10480	49.06	-24.94	74	56.31	36.71	12.92	56.88	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (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	89.69	-	-	76.26	34.11	8.77	29.45	100	91	Peak
5240	81.27	-	-	67.84	34.11	8.77	29.45	100	91	Average
10480	44.53	-29.47	74	51.78	36.71	12.92	56.88	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10520 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	93.12	-	-	79.67	34.09	8.8	29.44	104	314	Peak
5260	84.75	-	-	71.3	34.09	8.8	29.44	104	314	Average
10520	43.09	-30.91	74	50.32	36.71	12.93	56.87	110	220	Peak
15780	41.15	-32.85	74	41.57	40.2	16.34	56.96	109	345	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10520 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	89.93	-	-	76.48	34.09	8.8	29.44	100	86	Peak
5260	81.07	-	-	67.62	34.09	8.8	29.44	100	86	Average
10520	49.99	-24.01	74	57.22	36.71	12.93	56.87	110	220	Peak
15780	40.32	-33.68	74	40.74	40.2	16.34	56.96	109	345	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5300 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
5300	90.75	-	-	77.26	34.08	8.85	29.44	127	307	Peak
5300	82.05	-	-	68.56	34.08	8.85	29.44	127	307	Average
10600	44.93	-29.07	74	52.04	36.76	12.98	56.85	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5300 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
5300	91.68	-	-	78.19	34.08	8.85	29.44	100	77	Peak
5300	82.96	-	-	69.47	34.08	8.85	29.44	100	77	Average
10600	45.89	-28.11	74	53	36.76	12.98	56.85	100	0	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5320 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
5320	92.51	-	-	79.03	34.07	8.85	29.44	102	322	Peak
5320	84.03	-	-	70.55	34.07	8.85	29.44	102	322	Average
10640	44.75	-29.25	74	51.8	36.78	13.01	56.84	152	135	Peak
15960	41.1	-32.9	74	41.57	40.2	16.44	57.11	173	245	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5320 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
5320	88.25	-	-	74.77	34.07	8.85	29.44	100	85	Peak
5320	80.08	-	-	66.6	34.07	8.85	29.44	100	85	Average
10640	47.57	-26.43	74	54.62	36.78	13.01	56.84	152	135	Peak
15960	41.46	-32.54	74	41.93	40.2	16.44	57.11	173	245	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5500 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
5500	88.12	-	-	74.53	34	9.03	29.44	100	316	Peak
5500	79.82	-	-	66.23	34	9.03	29.44	100	316	Average
11000	47.22	-26.78	74	53.73	37	13.24	56.75	163	230	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5500 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
5500	83.91	-	-	70.32	34	9.03	29.44	155	280	Peak
5500	75.04	-	-	61.45	34	9.03	29.44	155	280	Average
11000	50.25	-23.75	74	56.76	37	13.24	56.75	163	230	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5580 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
5580	89.19	-	-	75.63	34	9.07	29.51	100	17	Peak
5580	80.81	-	-	67.25	34	9.07	29.51	100	17	Average
11160	46.73	-27.27	74	52.8	37.27	13.29	56.63	170	200	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5580 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
5580	82.45	-	-	68.89	34	9.07	29.51	103	261	Peak
5580	74.35	-	-	60.79	34	9.07	29.51	103	261	Average
11160	50.34	-23.66	74	56.41	37.27	13.29	56.63	170	200	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5700 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
5700	92.29	-	-	78.75	34	9.12	29.58	108	358	Peak
5700	83.59	-	-	70.05	34	9.12	29.58	108	358	Average
11400	47.06	-26.94	74	52.52	37.64	13.37	56.47	147	285	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5700 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
5700	86.21	-	-	72.67	34	9.12	29.58	101	73	Peak
5700	78.18	-	-	64.64	34	9.12	29.58	101	73	Average
11400	49.85	-24.15	74	55.31	37.64	13.37	56.47	147	285	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 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	93.78	-	-	80.38	34.13	8.72	29.45	108	346	Peak
5180	84.94	-	-	71.54	34.13	8.72	29.45	108	346	Average
10360	43.38	-30.62	74	50.66	36.78	12.85	56.91	152	260	Peak
15540	42.28	-31.72	74	42.65	40.2	16.2	56.77	189	238	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 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	89.92	-	-	76.52	34.13	8.72	29.45	100	16	Peak
5180	81.57	-	-	68.17	34.13	8.72	29.45	100	16	Average
10360	50.88	-23.12	74	58.16	36.78	12.85	56.91	152	260	Peak
15540	42.04	-31.96	74	42.41	40.2	16.2	56.77	189	238	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	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.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	90.2	-	-	76.79	34.11	8.75	29.45	147	62	Peak
5220	82.06	-	-	68.65	34.11	8.75	29.45	147	62	Average
10440	39.32	-34.68	74	46.58	36.74	12.89	56.89	125	230	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
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.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5220	89.84	-	-	76.43	34.11	8.75	29.45	100	91	Peak
5220	81.4	-	-	67.99	34.11	8.75	29.45	100	91	Average
10440	37.91	-36.09	74	45.17	36.74	12.89	56.89	200	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (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	91.69	-	-	78.26	34.11	8.77	29.45	116	306	Peak
5240	82.99	-	-	69.56	34.11	8.77	29.45	116	306	Average
10480	45.99	-28.01	74	53.24	36.71	12.92	56.88	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5240 MHz is fundamental signal which can be ignored. 2. 10480 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (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	89.07	-	-	75.64	34.11	8.77	29.45	100	73	Peak
5240	80.43	-	-	67	34.11	8.77	29.45	100	73	Average
10480	47.74	-26.26	74	54.99	36.71	12.92	56.88	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10520 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	90.19	-	-	76.74	34.09	8.8	29.44	106	67	Peak
5260	81.84	-	-	68.39	34.09	8.8	29.44	106	67	Average
10520	44.36	-29.64	74	51.59	36.71	12.93	56.87	110	220	Peak
15780	41.79	-32.21	74	42.21	40.2	16.34	56.96	109	345	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5260 MHz is fundamental signal which can be ignored. 2. 10520 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	90.03	-	-	76.58	34.09	8.8	29.44	100	91	Peak
5260	81.62	-	-	68.17	34.09	8.8	29.44	100	91	Average
10520	50.02	-23.98	74	57.25	36.71	12.93	56.87	110	220	Peak
15780	41.35	-32.65	74	41.77	40.2	16.34	56.96	109	345	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5300 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
5300	92.53	-	-	79.04	34.08	8.85	29.44	102	312	Peak
5300	84.15	-	-	70.66	34.08	8.85	29.44	102	312	Average
10600	41.92	-32.08	74	49.03	36.76	12.98	56.85	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 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	88.6	-	-	75.11	34.08	8.85	29.44	100	76	Peak
5300	80.13	-	-	66.64	34.08	8.85	29.44	100	76	Average
10600	43.89	-30.11	74	51	36.76	12.98	56.85	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5320 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
5320	91.98	-	-	78.5	34.07	8.85	29.44	104	322	Peak
5320	83.1	-	-	69.62	34.07	8.85	29.44	104	322	Average
10640	46.49	-27.51	74	53.54	36.78	13.01	56.84	152	135	Peak
15960	42.13	-31.87	74	42.6	40.2	16.44	57.11	173	245	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5320 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
5320	86.94	-	-	73.46	34.07	8.85	29.44	110	85	Peak
5320	78.7	-	-	65.22	34.07	8.85	29.44	110	85	Average
10640	47.22	-26.78	74	54.27	36.78	13.01	56.84	152	135	Peak
15960	42.13	-31.87	74	42.6	40.2	16.44	57.11	173	245	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5500 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
5500	88.72	-	-	75.13	34	9.03	29.44	100	328	Peak
5500	80.33	-	-	66.74	34	9.03	29.44	100	328	Average
11000	45.5	-28.5	74	52.01	37	13.24	56.75	163	230	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5500 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
5500	85.86	-	-	72.27	34	9.03	29.44	106	90	Peak
5500	77.15	-	-	63.56	34	9.03	29.44	106	90	Average
11000	50.41	-23.59	74	56.92	37	13.24	56.75	163	230	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5580 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
5580	89.25	-	-	75.69	34	9.07	29.51	100	328	Peak
5580	80.97	-	-	67.41	34	9.07	29.51	100	328	Average
11160	46.08	-27.92	74	52.15	37.27	13.29	56.63	170	200	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5580 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
5580	84.46	-	-	70.9	34	9.07	29.51	103	6	Peak
5580	75.69	-	-	62.13	34	9.07	29.51	103	6	Average
11160	50.77	-23.23	74	56.84	37.27	13.29	56.63	170	200	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5700 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
5700	90.58	-	-	77.04	34	9.12	29.58	108	358	Peak
5700	81.88	-	-	68.34	34	9.12	29.58	108	358	Average
11400	47.18	-26.82	74	52.64	37.64	13.37	56.47	147	285	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5700 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
5700	85.38	-	-	71.84	34	9.12	29.58	102	88	Peak
5700	76.83	-	-	63.29	34	9.12	29.58	102	88	Average
11400	49.56	-24.44	74	55.02	37.64	13.37	56.47	147	285	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5190 MHz is fundamental signal which can be ignored. 2. 10380 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
62.01	20.98	-19.02	40	42.65	7.86	1.01	30.54	156	230	Peak
250.19	26.58	-19.42	46	42.89	12	1.86	30.17	-	-	Peak
420.91	20.75	-25.25	46	31.62	16.39	2.34	29.6	-	-	Peak
693.48	23.66	-22.34	46	30.88	18.9	2.96	29.08	-	-	Peak
819.58	25.11	-20.89	46	30.32	20.5	3.2	28.91	-	-	Peak
885.54	25.8	-20.2	46	30.53	20.79	3.3	28.82	-	-	Peak
5190	88.93	-	-	75.53	34.13	8.72	29.45	120	69	Peak
5190	80.44	-	-	67.04	34.13	8.72	29.45	120	69	Average
10380	44.65	-29.35	74	51.92	36.77	12.86	56.9	147	225	Peak
15570	42.73	-31.27	74	43.11	40.2	16.22	56.8	165	278	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	38	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5190 MHz is fundamental signal which can be ignored. 2. 10380 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
62.01	19.86	-20.14	40	41.53	7.86	1.01	30.54	-	-	Peak
170.65	16.51	-26.99	43.5	34.79	10.58	1.57	30.43	-	-	Peak
250.19	16.73	-29.27	46	33.04	12	1.86	30.17	-	-	Peak
429.64	20.8	-25.2	46	31.71	16.3	2.36	29.57	-	-	Peak
589.69	23.79	-22.21	46	31.68	18.58	2.74	29.21	-	-	Peak
836.07	26.1	-19.9	46	31.23	20.5	3.25	28.88	178	260	Peak
5190	86.78	-	-	73.38	34.13	8.72	29.45	100	97	Peak
5190	77.95	-	-	64.55	34.13	8.72	29.45	100	97	Average
10380	50.13	-23.87	74	57.4	36.77	12.86	56.9	147	225	Peak
15570	42.06	-31.94	74	42.44	40.2	16.22	56.8	165	278	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	46	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5230 MHz is fundamental signal which can be ignored. 2. 10460 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5230	87.15	-	-	73.72	34.11	8.77	29.45	131	312	Peak
5230	79.17	-	-	65.74	34.11	8.77	29.45	131	312	Average
10460	46.07	-27.93	74	53.33	36.73	12.9	56.89	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	46	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5230 MHz is fundamental signal which can be ignored. 2. 10460 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5230	84.41	-	-	70.98	34.11	8.77	29.45	100	92	Peak
5230	76.69	-	-	63.26	34.11	8.77	29.45	100	92	Average
10460	46.56	-27.44	74	53.82	36.73	12.9	56.89	100	360	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	54	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5270 MHz is fundamental signal which can be ignored. 2. 10540 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
5270	87.12	-	-	73.67	34.09	8.8	29.44	132	73	Peak
5270	78.86	-	-	65.41	34.09	8.8	29.44	132	73	Average
10540	45.45	-28.55	74	52.64	36.72	12.95	56.86	110	220	Peak
15810	41.95	-32.05	74	42.39	40.2	16.35	56.99	109	345	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	54	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5270 MHz is fundamental signal which can be ignored. 2. 10540 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
5270	85.01	-	-	71.56	34.09	8.8	29.44	100	91	Peak
5270	76.62	-	-	63.17	34.09	8.8	29.44	100	91	Average
10540	48.66	-25.34	74	55.85	36.72	12.95	56.86	110	220	Peak
15810	41.37	-32.63	74	41.81	40.2	16.35	56.99	109	345	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	62	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5310 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
5310	88.19	-	-	74.71	34.07	8.85	29.44	104	326	Peak
5310	79.96	-	-	66.48	34.07	8.85	29.44	104	326	Average
10620	45.57	-28.43	74	52.64	36.77	13	56.84	104	185	Peak
15930	41.94	-32.06	74	42.42	40.2	16.41	57.09	145	231	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	62	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5310 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
5310	85.18	-	-	71.7	34.07	8.85	29.44	100	90	Peak
5310	76.34	-	-	62.86	34.07	8.85	29.44	100	90	Average
10620	46.99	-27.01	74	54.06	36.77	13	56.84	104	185	Peak
15930	41.43	-32.57	74	41.91	40.2	16.41	57.09	145	231	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	102	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5510 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
5510	83.36	-	-	69.78	34	9.04	29.46	100	338	Peak
5510	75.22	-	-	61.64	34	9.04	29.46	100	338	Average
11020	46.92	-27.08	74	53.38	37.03	13.25	56.74	100	210	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	102	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5510 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
5510	81.03	-	-	67.45	34	9.04	29.46	107	88	Peak
5510	72.71	-	-	59.13	34	9.04	29.46	107	88	Average
11020	50.65	-23.35	74	57.11	37.03	13.25	56.74	100	210	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	110	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5550 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
5550	85.43	-	-	71.85	34	9.05	29.47	100	353	Peak
5550	77.12	-	-	63.54	34	9.05	29.47	100	353	Average
11100	47.16	-26.84	74	53.41	37.16	13.27	56.68	170	200	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	110	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5550 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
5550	79.33	-	-	65.75	34	9.05	29.47	116	31	Peak
5550	71.02	-	-	57.44	34	9.05	29.47	116	31	Average
11100	50.97	-23.03	74	57.22	37.16	13.27	56.68	170	200	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	134	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5670 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
5670	88.33	-	-	74.78	34	9.11	29.56	110	358	Peak
5670	80.05	-	-	66.5	34	9.11	29.56	110	358	Average
11340	48.64	-25.36	74	54.29	37.53	13.34	56.52	111	231	Peak

Test Mode :	802.11n HT40	Temperature :	23~25°C
Test Channel :	134	Relative Humidity :	48~52%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5670 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
5670	83.63	-	-	70.08	34	9.11	29.56	103	96	Peak
5670	75.35	-	-	61.8	34	9.11	29.56	103	96	Average
11340	50.8	-23.2	74	56.45	37.53	13.34	56.52	111	231	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.

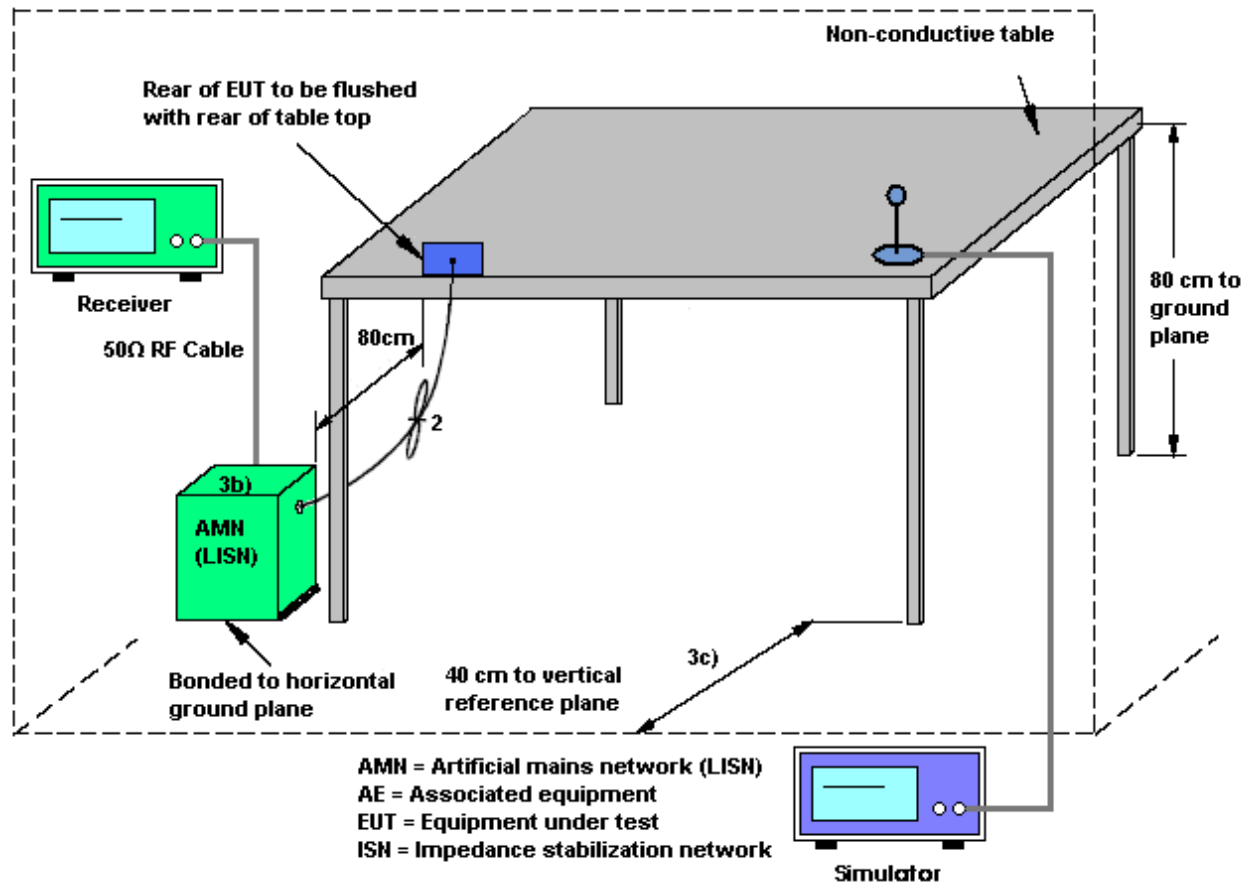
3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

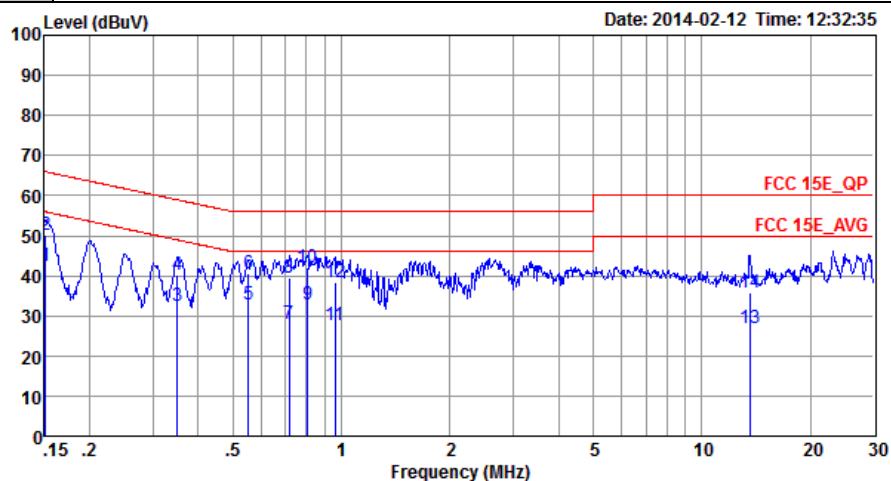
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.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

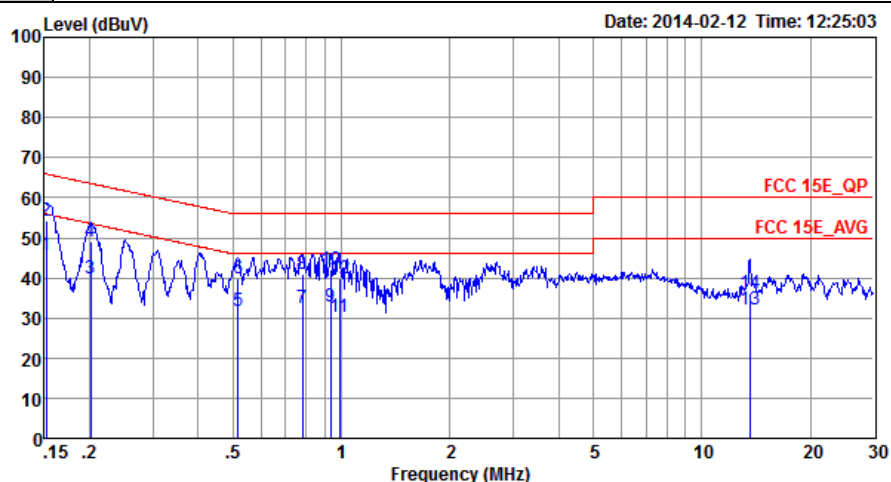
Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Henry Chen	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable (Charging from Adapter) + Earphone for SIM 1		



Site : CO01-SZ
Condition: FCC 15E_QP LISN_L_20130328 LINE
Mode : Mode 1

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.15	42.62	-13.34	55.96	32.20	0.06	10.36	Average
2	0.15	50.22	-15.74	65.96	39.80	0.06	10.36	QP
3	0.35	32.40	-16.56	48.96	22.11	0.11	10.18	Average
4	0.35	40.30	-18.66	58.96	30.01	0.11	10.18	QP
5 *	0.55	33.00	-13.00	46.00	22.70	0.15	10.15	Average
6	0.55	40.60	-15.40	56.00	30.30	0.15	10.15	QP
7	0.72	27.91	-18.09	46.00	17.60	0.16	10.15	Average
8	0.72	39.51	-16.49	56.00	29.20	0.16	10.15	QP
9	0.80	32.93	-13.07	46.00	22.60	0.18	10.15	Average
10	0.80	42.03	-13.97	56.00	31.70	0.18	10.15	QP
11	0.96	27.84	-18.16	46.00	17.50	0.19	10.15	Average
12	0.96	38.34	-17.66	56.00	28.00	0.19	10.15	QP
13	13.62	26.94	-23.06	50.00	15.60	0.86	10.48	Average
14	13.62	35.84	-24.16	60.00	24.50	0.86	10.48	QP

Test Mode :	Mode 1	Temperature :	21~22℃
Test Engineer :	Henry Chen	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + NFC On + USB Cable (Charging from Adapter) + Earphone for SIM 1		



Site : C001-SZ
Condition: FCC 15E_QP LISN_N_20130328 NEUTRAL

Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 *	0.15	45.90	-10.01	55.91	35.50	0.04	10.36	Average
2	0.15	54.10	-11.81	65.91	43.70	0.04	10.36	QP
3	0.20	39.83	-13.71	53.54	29.50	0.04	10.29	Average
4	0.20	49.13	-14.41	63.54	38.80	0.04	10.29	QP
5	0.52	31.60	-14.40	46.00	21.40	0.04	10.16	Average
6	0.52	39.70	-16.30	56.00	29.50	0.04	10.16	QP
7	0.78	32.39	-13.61	46.00	22.20	0.04	10.15	Average
8	0.78	40.79	-15.21	56.00	30.60	0.04	10.15	QP
9	0.93	32.89	-13.11	46.00	22.70	0.04	10.15	Average
10	0.93	42.09	-13.91	56.00	31.90	0.04	10.15	QP
11	0.99	30.19	-15.81	46.00	20.00	0.04	10.15	Average
12	0.99	39.99	-16.01	56.00	29.80	0.04	10.15	QP
13	13.62	32.26	-17.74	50.00	21.30	0.48	10.48	Average
14	13.62	36.16	-23.84	60.00	25.20	0.48	10.48	QP

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.

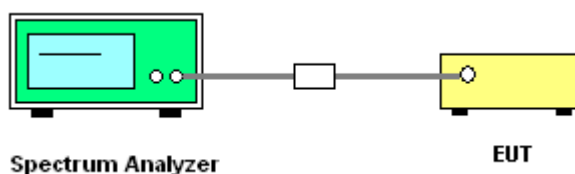
3.7.2 Measuring Instruments

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	Temperature :	24~26℃
Test Engineer :	Fly Liang	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Frequency (MHz)	Center Frequency (Hz)	Frequency Deviation (Hz)	Frequency Stability (ppm)
11a	6Mbps	1	36	5180	5180000000.00	0.00	0.00
11a	6Mbps	1	48	5240	5240000000.00	0.00	0.00

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Center Frequency (Hz)	Frequency Deviation (Hz)	Frequency Stability (ppm)
11a	6Mbps	1	52	5260	5260000000.00	0.00	0.00
11a	6Mbps	1	64	5320	5320000000.00	0.00	0.00

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Center Frequency (Hz)	Frequency Deviation (Hz)	Frequency Stability (ppm)
11a	6Mbps	1	100	5500	5500000000.00	0.00	0.00
11a	6Mbps	1	140	5700	5700000000.00	0.00	0.00

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 Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Mar. 28, 2013	Jan. 15, 2014~ Jan. 16, 2014	Mar. 27, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	13dBm~20dBm	Mar. 28, 2013	Jan. 15, 2014~ Jan. 16, 2014	Mar. 27, 2014	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	0.3GHz~40GHz	Mar. 28, 2013	Jan. 15, 2014~ Jan. 16, 2014	Mar. 27, 2014	Conducted (TH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	Apr. 04, 2013	Jan. 25, 2014~ Feb. 11, 2014	Apr. 03, 2014	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 29, 2013	Jan. 25, 2014~ Feb. 11, 2014	May 28, 2014	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Dec. 25, 2013	Jan. 25, 2014~ Feb. 11, 2014	Dec. 24, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Jan. 25, 2014~ Feb. 11, 2014	Oct. 25, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Jan. 13, 2014	Jan. 25, 2014~ Feb. 11, 2014	Jan. 12, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz Gain 30db	Mar. 29, 2013	Jan. 25, 2014~ Feb. 11, 2014	Mar. 28, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 29, 2013	Jan. 25, 2014~ Feb. 11, 2014	Mar. 28, 2014	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Jan. 25, 2014~ Feb. 11, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Jan. 25, 2014~ Feb. 11, 2014	NCR	Radiation (03CH01-SZ)
ESCIO Test Receiver	R&S	ESCI	100724	9kHz~3GHz	Mar. 29, 2013	Feb. 12, 2014	Mar. 28, 2014	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Mar. 28, 2013	Feb. 12, 2014	Mar. 27, 2014	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Mar. 28, 2013	Feb. 12, 2014	Mar. 27, 2014	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Dec. 17, 2013	Feb. 12, 2014	Dec. 16, 2014	Conduction (CO01-SZ)

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.31
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.90
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