

FCC RF Test Report

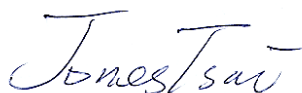
APPLICANT : Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : Vodafone Smart 4G/Smartphone Android™ by SFR STARADDICT III
MODEL NAME : Coolpad 8860U/Coolpad 8861U
MARKETING NAME : Vodafone Smart 4G/Smartphone Android™ by SFR STARADDICT III
FCC ID : R38YL8860U
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Apr. 04, 2013 and testing was completed on Sep. 12, 2013. 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.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR340403E	Rev. 01	Initial issue of report	Sep. 14, 2013



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	≤ 17, 24, 30 dBm (depend on band)	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 4, 11, 17 dBm (depend on band)	Pass	-
3.4	15.407(a)(6)	Peak Excursion Ratio	≤ 13dB	Pass	-
3.5	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 2.24 dB at 5725.000 MHz
3.6	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 13.68 dB at 0.420 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

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.

Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.2 Manufacturer

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd.

Coolpad Information Harbor, 2nd Mengxi Road, Northern Part of Science&Technology Park, Nanshan district, Shenzhen, P.R.China

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Mobile Phone
Brand Name	Vodafone Smart 4G/Smartphone Android™ by SFR STARADDICT III
Model Name	Coolpad 8860U/Coolpad 8861U
Marketing Name	Vodafone Smart 4G/Smartphone Android™ by SFR STARADDICT III
FCC ID	R38YL8860U
EUT supports Radios application	GSM/GPRS/EGPRS/LTE/WLAN 802.11abgn HT 20/ Bluetooth v3.0 + EDR/Bluetooth v4.0/NFC
HW Version	T3
SW Version	082.12.T3.130819.CP8860U (for Vodafone Smart 4G) 082.12.T3.130819.CP8861U (for Smartphone Android™ by SFR STARADDICT III)
EUT Stage	Production Unit

Remark:

- The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
- There are two types of EUT for this project. The differences between them are summary below:

Sample List	Function Type	Brand name	Model name
Sample 1	With NFC	Vodafone Smart 4G	Coolpad 8860U
Sample 2	With NFC	Smartphone Android™ by SFR STARADDICT III	Coolpad 8861U

Sample 1 and sample 2 are identical on hardware. The only difference is for different market purpose. In this report, we use with sample 1 to perform the test.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx/Rx Frequency Range	WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 11.88 dBm / 0.0154 W 802.11n HT20 : 11.95 dBm / 0.0157 W <5260 MHz ~ 5320 MHz> 802.11a : 13.08 dBm / 0.0203 W 802.11n HT20 : 13.08 dBm / 0.0203 W <5500 MHz ~ 5700 MHz> 802.11a : 14.36 dBm / 0.0273 W 802.11n HT20 : 14.33 dBm / 0.0271 W
Antenna Type	PIFA Antenna
Antenna Gain	WLAN 5.2GHz Band: -1.70 dBi WLAN 5.3GHz Band: 0.50 dBi WLAN 5.5GHz Band: 0.40 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.			FCC Registration No.
	TH01-SZ	CO01-SZ	03CH01-SZ	831040

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 (Y 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)
WLAN 5.2GHz Band	36	5180	44	5220
	38	5190	46	5230
	40	5200	48	5240

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
WLAN 5.3GHz Band	52	5260	60	5300
	54	5270	62	5310
	56	5280	64	5320

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
WLAN 5.5GHz Band	100	5500	116	5580
	102	5510	132	5660
	104	5520	134	5670
	108	5540	136	5680
	110	5550	140	5700
	112	5560		

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and the highest power data rates 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							
		6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
CH 36	5180 MHz	10.65	10.62	10.65	10.76	10.63	10.82	10.83	10.94
CH 44	5220 MHz	11.43	11.38	10.97	11.55	11.58	11.60	11.65	11.76
CH 48	5240 MHz	11.83	11.72	11.83	11.74	11.78	11.86	11.76	11.88
CH 052	5260 MHz	11.74	11.75	11.86	11.83	11.83	11.95	11.94	11.98
CH 060	5300 MHz	12.47	12.52	12.56	12.58	12.53	12.64	12.67	12.76
CH 064	5320 MHz	12.87	12.89	12.92	13.00	12.87	12.94	13.02	13.08
CH 100	5500 MHz	13.69	13.71	13.73	13.75	13.77	13.81	13.90	13.95
CH 116	5580MHz	13.86	13.87	13.55	13.82	13.96	14.03	14.08	14.13
CH 140	5700 MHz	14.18	14.09	14.06	14.12	14.16	14.21	14.28	14.36

Channel	Frequency	5GHz 802.11n HT20 RF Power (dBm)							
		OFDM Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180 MHz	10.74	10.80	10.80	10.89	10.99	10.97	11.01	11.00
CH 44	5220 MHz	11.52	11.59	11.64	11.67	11.76	11.82	11.77	11.77
CH 48	5240 MHz	11.68	11.76	11.82	11.87	11.88	11.91	11.93	11.95
CH 052	5260 MHz	11.72	11.84	11.84	11.89	11.94	12.01	11.97	12.01
CH 060	5300 MHz	12.41	12.47	12.57	12.63	12.66	12.76	12.62	12.72
CH 064	5320 MHz	12.76	12.88	12.93	12.99	13.02	13.06	13.04	13.08
CH 100	5500 MHz	13.55	13.63	13.67	13.71	13.84	13.86	13.88	13.91
CH 116	5580MHz	13.78	13.75	13.79	13.81	14.04	14.14	14.17	14.18
CH 140	5700 MHz	13.98	14.04	14.17	14.23	14.26	14.30	14.32	14.33

2.3 Test Mode

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

Test Cases				
	Test Items	Mode	Data rate	Test Channel
Conducted TCs	26dB BW Power Spectral Density	802.11a	54 Mbps	L/M/H
		802.11n HT20	MCS7	L/M/H
	Output Power	802.11a	54 Mbps	L/M/H
		802.11n HT20	MCS7	L/M/H
	Peak Excursion	802.11a	54 Mbps	L/M/H
		802.11n HT20	MCS7	L/M/H
	Frequency Stability	802.11a	54 Mbps	L/M/H
		802.11n HT20	MCS7	L/M/H
Radiated TCs	Radiated Band Edge	802.11a	54 Mbps	L/H
		802.11n HT20	MCS7	L/H
	Radiated Spurious Emission	802.11a	54 Mbps	L/M/H
		802.11n HT20	MCS7	L/M/H
AC Conducted Emission	Mode 1 : GSM1900 Idle + WLAN(5GHz) Link + Bluetooth Link + USB Cable (Charging from Adapter) + Earphone + Battery 1 Mode 2 : GSM1900 Idle + WLAN(5GHz) Link + Bluetooth Link + USB Cable (Charging from Adapter) + Earphone + Battery 2			
Remark: 1. The worst case of conducted emission is mode 2; only the test data of it was reported. 2. For Radiated TCs, all the test modes are performed with Battery 1, only the worst mode (802.11n HT20 CH36) based on Battery 1 need to verify Battery 2.				

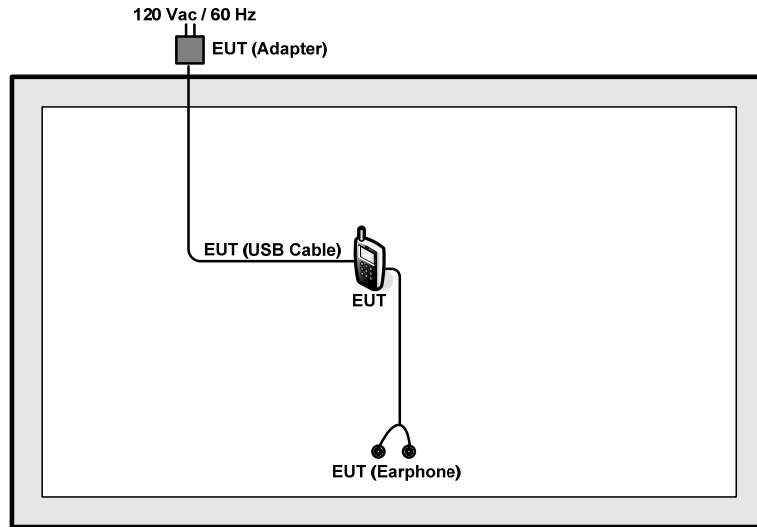


Ch. #		5.2GHz Band	5.3GHz Band	5.5GHz Band
		802.11a	802.11a	802.11a
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

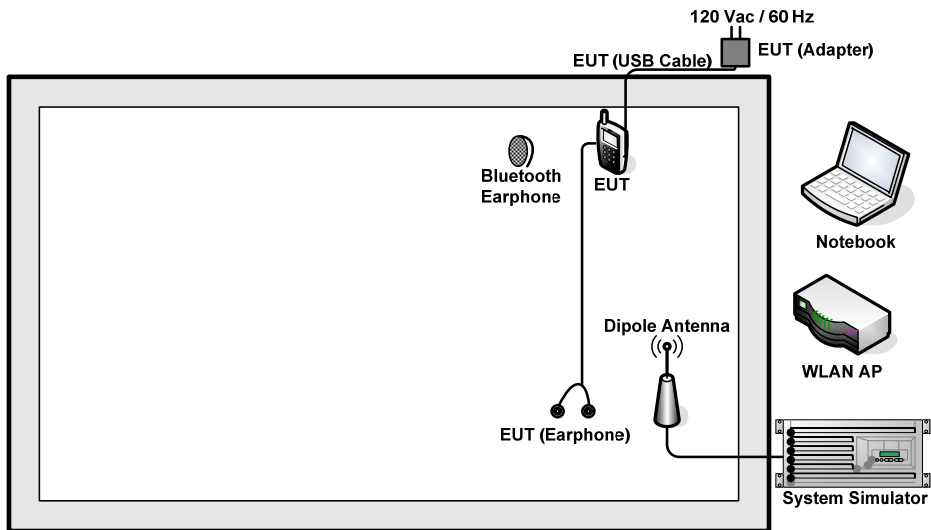
Ch. #		5.2GHz Band	5.3GHz Band	5.5GHz Band
		802.11n HT20	802.11n HT20	802.11n HT20
L	Low	36	52	100
M	Middle	44	60	116
H	High	48	64	140

2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Agilent	E5515C	N/A	N/A	Unshielded, 1.8 m
2.	DC Power Supply	TOPWORD	3303DR	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11	N/A	Unshielded, 1.8 m
4.	Notebook	DELL	P08S	QDS-BRCM1030	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2.6 Description of RF Function Operation Test Setup

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

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

2.7 Measurement Results Explanation Example

For all conducted test items:

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

Example :

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

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 8 dB and 10dB attenuator.

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)}. \\ &= 8 + 10 = 18 \text{ (dB)} \end{aligned}$$

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.

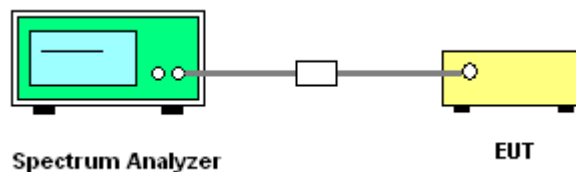
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 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 :	5.2GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	54Mbps	1	36	5180	21.80	17.00
11a	54Mbps	1	44	5220	22.10	17.00
11a	54Mbps	1	48	5240	23.20	17.00
HT20	MCS7	1	36	5180	22.60	17.00
HT20	MCS7	1	44	5220	22.70	17.00
HT20	MCS7	1	48	5240	22.90	17.00

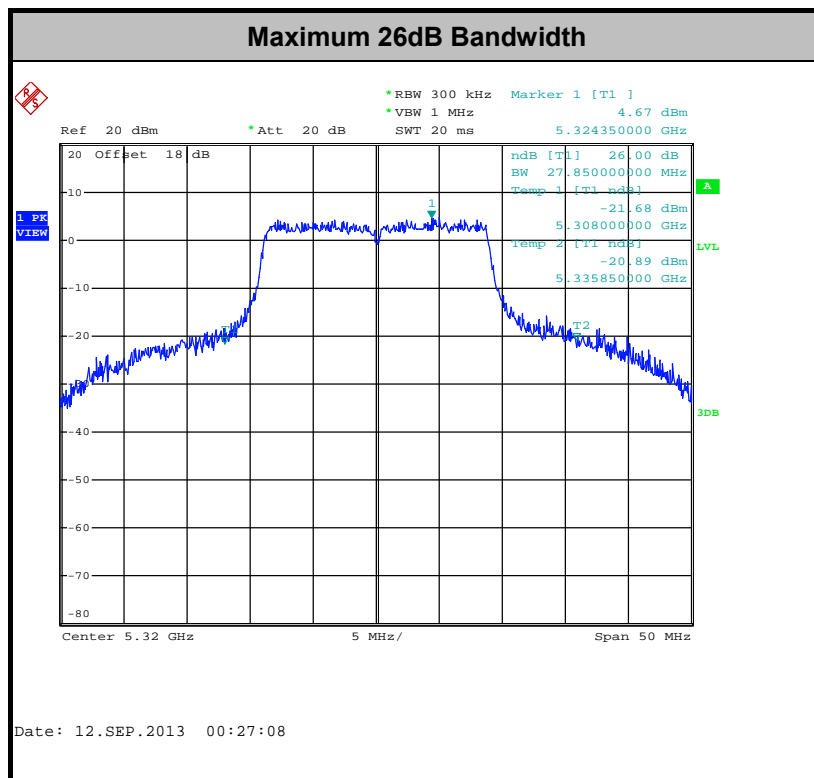
Test Band :	5.3GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	54Mbps	1	52	5260	23.10	24.00
11a	54Mbps	1	60	5300	23.70	24.00
11a	54Mbps	1	64	5320	26.00	24.00
HT20	MCS7	1	52	5260	24.00	24.00
HT20	MCS7	1	60	5300	26.50	24.00
HT20	MCS7	1	64	5320	27.85	24.00



Test Band :	5.5GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	54Mbps	1	100	5500	24.05	24.00
11a	54Mbps	1	116	5580	23.10	24.00
11a	54Mbps	1	140	5700	22.00	24.00
HT20	MCS7	1	100	5500	23.15	24.00
HT20	MCS7	1	116	5580	22.65	24.00
HT20	MCS7	1	140	5700	23.15	24.00



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, bands, 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.

3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

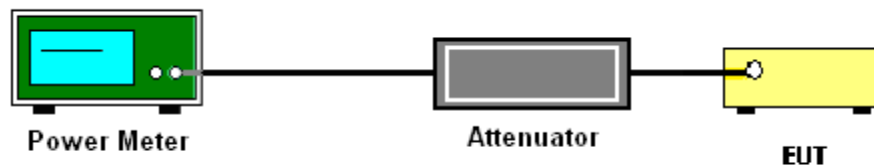
3.2.3 Test Procedures

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 :	5.2GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	54Mbps	1	36	5180	3.41	10.94	17	0.60	Pass
11a	54Mbps	1	44	5220	3.41	11.76	17	0.60	Pass
11a	54Mbps	1	48	5240	3.41	11.88	17	0.60	Pass
HT20	MCS7	1	36	5180	3.55	11.00	17	0.60	Pass
HT20	MCS7	1	44	5220	3.55	11.77	17	0.60	Pass
HT20	MCS7	1	48	5240	3.55	11.95	17	0.60	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).

Test Band :	5.3GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	54Mbps	1	52	5260	3.41	11.98	24	0.50	Pass
11a	54Mbps	1	60	5300	3.41	12.76	24	0.50	Pass
11a	54Mbps	1	64	5320	3.41	13.08	24	0.50	Pass
HT20	MCS7	1	52	5260	3.55	12.01	24	0.50	Pass
HT20	MCS7	1	60	5300	3.55	12.72	24	0.50	Pass
HT20	MCS7	1	64	5320	3.55	13.08	24	0.50	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the 5250-5350 MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (B).



Test Band :	5.5GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Freq. (MHz)	Duty Factor (dB)	RF Output Power (dBm)	Power Limit (dBm)	DG (dBi)	Pass/Fail
11a	54Mbps	1	100	5500	3.41	13.95	24	0.40	Pass
11a	54Mbps	1	116	5580	3.41	14.13	24	0.40	Pass
11a	54Mbps	1	140	5700	3.41	14.36	24	0.40	Pass
HT20	MCS7	1	100	5500	3.55	13.91	24	0.40	Pass
HT20	MCS7	1	116	5580	3.55	14.18	24	0.40	Pass
HT20	MCS7	1	140	5700	3.55	14.33	24	0.40	Pass

Note:

1. Final Output Power equals to Measured Output Power adds the duty factor.
2. For the 5250-5350 MHz and 5650-5725MHz bands, the maximum conducted output power shall not exceed the lesser of 250 mW (24dBm) or 11 dBm + 10log (B).

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

See list of measuring instruments 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).

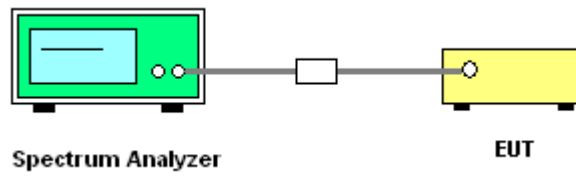
Note: Though the rule refers to “peak power spectral density”, the intent is to measure the maximum value of the time average of the power spectral density measured during a period of continuous transmission.

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 :	5.2GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Max. Limits (dBm/MHz)	DG (dBi)	Pass/Fail
11a	54Mbps	1	36	5180	3.41	-0.29	4.00	0.60	Pass
11a	54Mbps	1	44	5220	3.41	0.92	4.00	0.60	Pass
11a	54Mbps	1	48	5240	3.41	0.94	4.00	0.60	Pass
HT20	MCS7	1	36	5180	3.55	-0.28	4.00	0.60	Pass
HT20	MCS7	1	44	5220	3.55	0.55	4.00	0.60	Pass
HT20	MCS7	1	48	5240	3.55	0.93	4.00	0.60	Pass

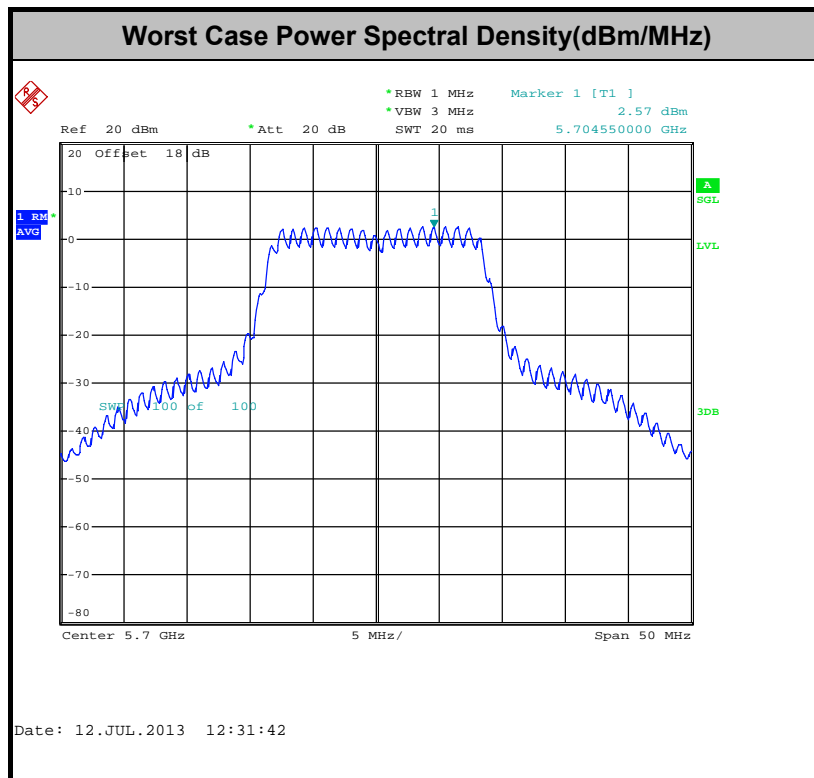
Test Band :	5.3GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Max. Limits (dBm/MHz)	DG (dBi)	Pass/Fail
11a	54Mbps	1	52	5260	3.41	1.70	11	0.50	Pass
11a	54Mbps	1	60	5300	3.41	2.46	11	0.50	Pass
11a	54Mbps	1	64	5320	3.41	2.33	11	0.50	Pass
HT20	MCS7	1	52	5260	3.55	1.62	11	0.50	Pass
HT20	MCS7	1	60	5300	3.55	2.23	11	0.50	Pass
HT20	MCS7	1	64	5320	3.55	2.89	11	0.50	Pass



Test Band :	5.5GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Max. Limits (dBm/MHz)	DG (dBi)	Pass/Fail
11a	54Mbps	1	100	5500	3.41	4.81	11	0.40	Pass
11a	54Mbps	1	116	5580	3.41	4.04	11	0.40	Pass
11a	54Mbps	1	140	5700	3.41	5.98	11	0.40	Pass
HT20	MCS7	1	100	5500	3.55	5.47	11	0.40	Pass
HT20	MCS7	1	116	5580	3.55	4.16	11	0.40	Pass
HT20	MCS7	1	140	5700	3.55	5.03	11	0.40	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

See list of measuring instruments of this test report.

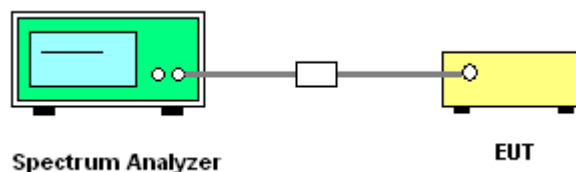
3.4.3 Test Procedures

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 :	5.2GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	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	36	5180	8.75	9.05	9.75	9.53	-	13	Pass
HT20	1	36	5180	9.05	9.15	9.65	9.37	-	13	Pass

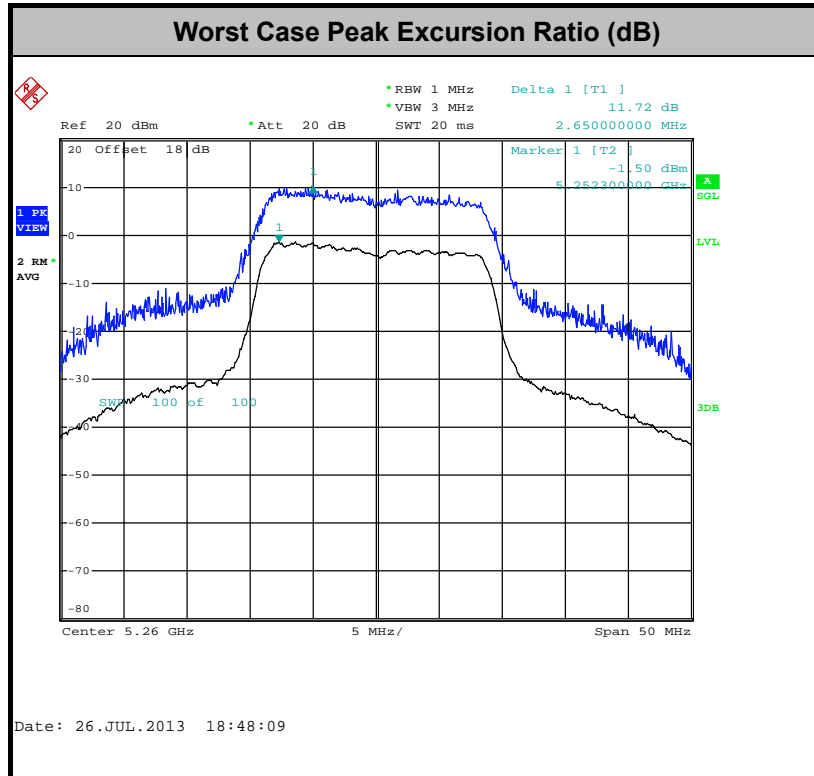
Test Band :	5.3GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	N _{TX}	Channel	Freq. (MHz)	Peak Excursion Ratio (dB)					Max. Limits (dB)	Pass/Fail
				BPSK	QPSK	16QAM	64QAM	256QAM		
11a	1	52	5260	8.94	8.72	9.29	8.82	-	13	Pass
HT20	1	52	5260	8.57	8.79	9.76	8.58	-	13	Pass

Test Band :	5.5GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	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	8.77	8.89	8.93	9.54	-	13	Pass
HT20	1	100	5500	8.94	8.67	9.26	8.46	-	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: 1.96 dB

3.5 Unwanted Radiated Emission Measurement

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

3.5.1 Limit of Unwanted Emissions

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

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

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

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

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

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

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

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



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

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

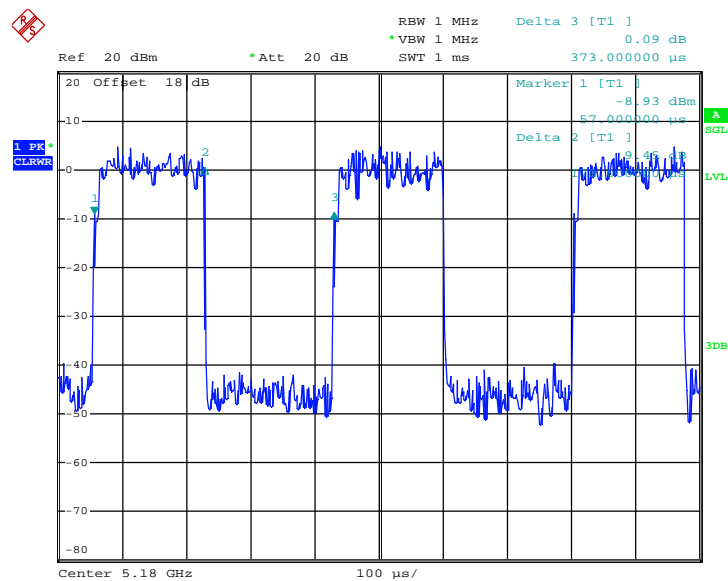
3.5.3 Test Procedures

1. The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r03. Section H) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - The setting follows the H) 5) of FCC KDB 789033.
 - RBW = 1 MHz
 - VBW ≥ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - (3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - The setting follows H) 6) of FCC KDB 789033.
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	45.576	0.170	5.882	10kHz
802.11n HT20	44.199	0.160	6.250	10kHz

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.

5GHz 802.11a Duty Cycle



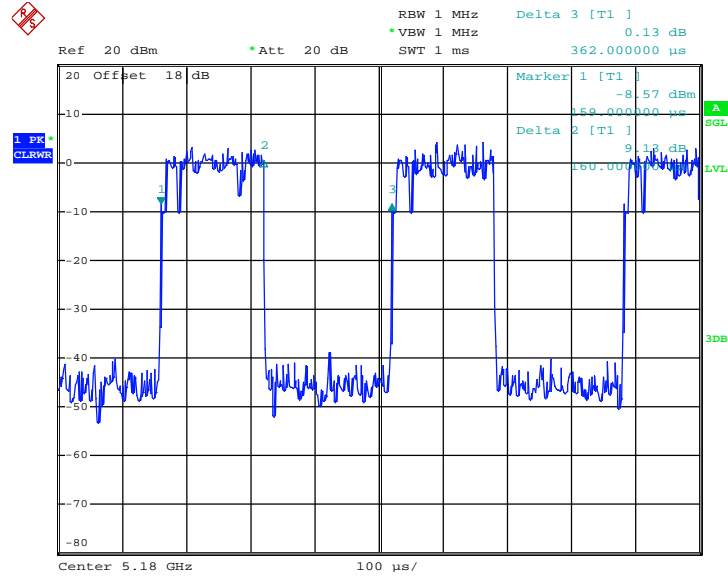
Date: 10.JUL.2013 20:28:34

Note:

The total loss is 18dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



5GHz 802.11n HT20 Duty Cycle



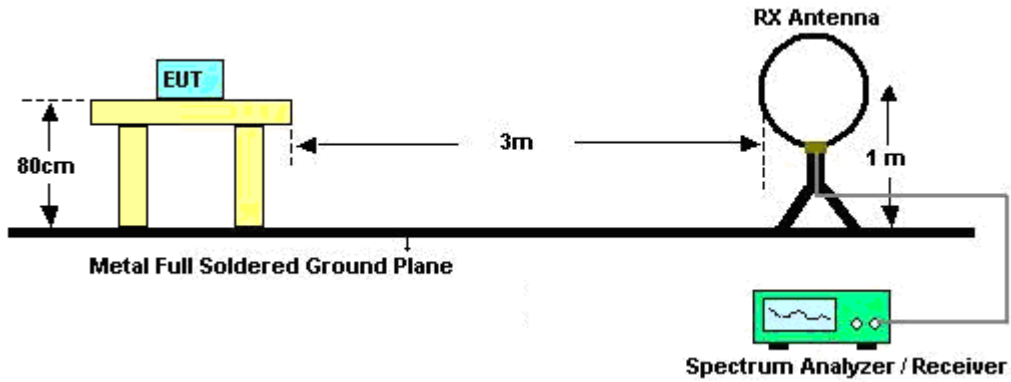
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Note:

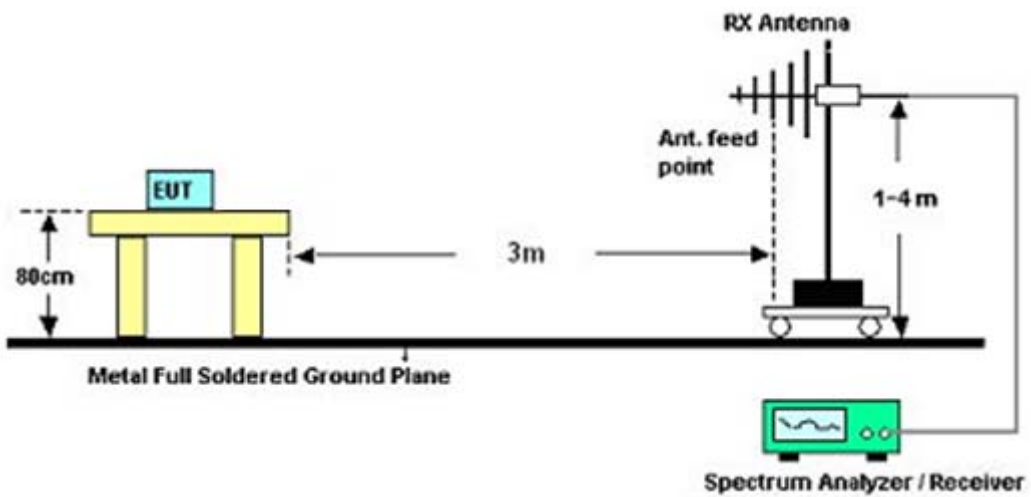
The total loss is 18dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.5.4 Test Setup

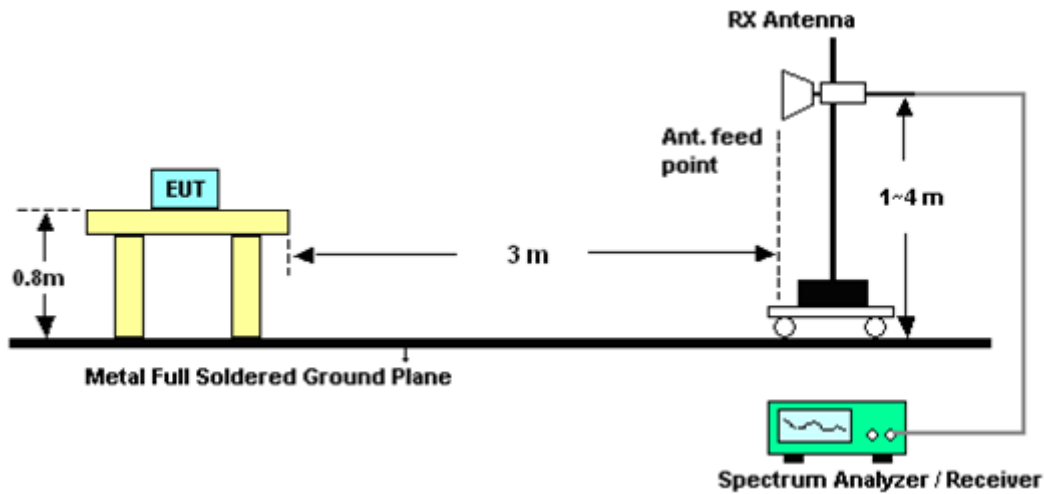
For radiated emissions below 30MHz



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

<Battery 1>

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	49~53%
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
5146.7	54.18	-19.82	74	40.85	34	8.69	29.36	124	304	Peak
5149.1	44.01	-9.99	54	30.68	34	8.69	29.36	124	304	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.35	57.83	-16.17	74	44.5	34	8.69	29.36	101	63	Peak
5149.85	48.17	-5.83	54	34.84	34	8.69	29.36	101	63	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	49~53%
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
5396.97	50.12	-23.88	74	36.71	33.85	8.93	29.37	110	300	Peak
5363.53	41.85	-12.15	54	28.45	33.87	8.9	29.37	110	300	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
5371.89	49.77	-24.23	74	36.37	33.87	8.9	29.37	100	63	Peak
5381.46	42.02	-11.98	54	28.6	33.86	8.93	29.37	100	63	Average



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	49~53%
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
5100	50.82	-23.18	74	37.51	34.03	8.64	29.36	100	300	Peak
5100	42.33	-11.67	54	29.02	34.03	8.64	29.36	100	300	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
5142.35	50.52	-23.48	74	37.21	34	8.67	29.36	123	39	Peak
5108.3	42.53	-11.47	54	29.23	34.02	8.64	29.36	123	39	Average

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	49~53%
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
5350.44	54.09	-19.91	74	40.68	33.88	8.9	29.37	100	286	Peak
5350.66	44.53	-9.47	54	31.12	33.88	8.9	29.37	100	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
5350.88	59.85	-14.15	74	46.44	33.88	8.9	29.37	124	39	Peak
5350.55	50.19	-3.81	54	36.78	33.88	8.9	29.37	124	39	Average



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	49~53%
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
5456.56	55.74	-18.26	74	42.29	33.82	9	29.37	124	58	Peak
5459.6	42.3	-11.7	54	28.85	33.82	9	29.37	124	58	Average
5470	56.17	-17.83	74	42.73	33.81	9	29.37	124	58	Peak
5470	43.14	-10.86	54	29.7	33.81	9	29.37	124	58	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
5456.72	55.96	-18.04	74	42.51	33.82	9	29.37	124	58	Peak
5448.08	45.36	-8.64	54	31.93	33.82	8.98	29.37	124	58	Average
5470	58.36	-15.64	74	44.92	33.81	9	29.37	124	58	Peak
5470	48.37	-5.63	54	34.93	33.81	9	29.37	124	58	Average

Remark: 5470 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit.

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
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	60.45	-7.85	68.3	46.56	34.15	9.13	29.39	100	291	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	62.43	-5.87	68.3	48.54	34.15	9.13	29.39	102	70	Peak

Remark: 5725 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit.



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	49~53%
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
5149.1	55.48	-18.52	74	42.15	34	8.69	29.36	100	291	Peak
5149.25	45.82	-8.18	54	32.49	34	8.69	29.36	100	291	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.95	61.04	-12.96	74	47.71	34	8.69	29.36	114	75	Peak
5150	50.73	-3.27	54	37.4	34	8.69	29.36	114	75	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	49~53%
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
5398.95	49.68	-24.32	74	36.25	33.85	8.95	29.37	120	284	Peak
5386.52	41.82	-12.18	54	28.4	33.86	8.93	29.37	120	284	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
5389.05	49.72	-24.28	74	36.3	33.86	8.93	29.37	100	25	Peak
5387.4	41.73	-12.27	54	28.31	33.86	8.93	29.37	100	25	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	49~53%
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
5146.85	51.85	-22.15	74	38.52	34	8.69	29.36	100	294	Peak
5119.85	42.37	-11.63	54	29.04	34.02	8.67	29.36	100	294	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
5100.35	50.33	-23.67	74	37.04	34.07	8.57	29.35	113	49	Peak
5110.1	42.98	-11.02	54	29.68	34.02	8.64	29.36	113	49	Average

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	49~53%
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
5350.44	55.02	-18.98	74	41.61	33.88	8.9	29.37	111	285	Peak
5350.99	46.04	-7.96	54	32.63	33.88	8.9	29.37	111	285	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
5351.32	61.8	-12.2	74	48.39	33.88	8.9	29.37	100	75	Peak
5350	50.67	-3.33	54	37.26	33.88	8.9	29.37	100	75	Average



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	49~53%
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
5458.64	57.59	-16.41	74	44.14	33.82	9	29.37	103	97	Peak
5459.92	43.18	-10.82	54	29.73	33.82	9	29.37	103	97	Average
5470	55.9	-18.1	74	42.46	33.81	9	29.37	103	97	Peak
5470	45.15	-8.85	54	31.71	33.81	9	29.37	103	97	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
5459.76	59.14	-14.86	74	45.69	33.82	9	29.37	109	347	Peak
5458.48	45.86	-8.14	54	32.41	33.82	9	29.37	109	347	Average
5470	61.93	-12.07	74	48.49	33.81	9	29.37	109	347	Peak
5470	50.42	-3.58	54	36.98	33.81	9	29.37	109	347	Average

Remark: 5470 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit.

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
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
5725.08	65.8	-2.5	68.3	51.91	34.15	9.13	29.39	100	305	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	66.06	-2.24	68.3	52.17	34.15	9.13	29.39	104	44	Peak

Remark: 5725/5725.08 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit.



<Battery 2>

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
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	61.71	-6.59	68.3	47.82	34.15	9.13	29.39	100	321	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	64.06	-4.24	68.3	50.17	34.15	9.13	29.39	104	54	Peak

Remark: 5725 MHz is not within a restricted band, and satisfies 68.3 dBμV /m peak emission limit.

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

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

<Battery 1>

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	49~53%
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	100.71	-	-	87.37	33.98	8.72	29.36	124	304	Peak
5180	93.54	-	-	80.2	33.98	8.72	29.36	124	304	Average
10360	43.25	-30.75	74	50.66	36.65	12.85	56.91	158	250	Peak
15540	43.14	-30.86	74	44.19	39.52	16.2	56.77	110	125	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	49~53%
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	107.33	-	-	93.99	33.98	8.72	29.36	101	63	Peak
5180	99.46	-	-	86.12	33.98	8.72	29.36	101	63	Average
10360	42.5	-31.5	74	49.91	36.65	12.85	56.91	152	260	Peak
15540	42.75	-31.25	74	43.8	39.52	16.2	56.77	194	285	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	49~53%
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. 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
5220	101.48	-	-	88.13	33.96	8.75	29.36	100	317	Peak
5220	93.73	-	-	80.38	33.96	8.75	29.36	100	317	Average
10440	44.26	-29.74	74	51.69	36.57	12.89	56.89	185	169	Peak
15660	43.7	-30.3	74	44.66	39.64	16.27	56.87	189	278	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	49~53%
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. 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
5220	108.66	-	-	95.31	33.96	8.75	29.36	113	57	Peak
5220	100.47	-	-	87.12	33.96	8.75	29.36	113	57	Average
10440	45.38	-28.62	74	52.81	36.57	12.89	56.89	148	179	Peak
15660	43.32	-30.68	74	44.28	39.64	16.27	56.87	148	192	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	49~53%
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	102.76	-	-	89.4	33.95	8.77	29.36	110	300	Peak
5240	94.69	-	-	81.33	33.95	8.77	29.36	110	300	Average
10480	42.3	-31.7	74	49.75	36.51	12.92	56.88	149	289	Peak
15720	43.3	-30.7	74	44.21	39.71	16.3	56.92	150	280	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	49~53%
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	108.2	-	-	94.84	33.95	8.77	29.36	100	63	Peak
5240	100.79	-	-	87.43	33.95	8.77	29.36	100	63	Average
10480	42.65	-31.35	74	50.1	36.51	12.92	56.88	180	258	Peak
15720	43.6	-30.4	74	44.51	39.71	16.3	56.92	185	263	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	49~53%
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	101.87	-	-	88.5	33.93	8.8	29.36	100	300	Peak
5260	94.19	-	-	80.82	33.93	8.8	29.36	100	300	Average
10520	42.22	-31.78	74	49.66	36.5	12.93	56.87	110	220	Peak
15780	43.15	-30.85	74	44	39.77	16.34	56.96	109	345	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	49~53%
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	108.08	-	-	94.71	33.93	8.8	29.36	123	39	Peak
5260	99.63	-	-	86.26	33.93	8.8	29.36	123	39	Average
10520	42.13	-31.87	74	49.57	36.5	12.93	56.87	110	220	Peak
15780	43.72	-30.28	74	44.57	39.77	16.34	56.96	109	345	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 2. 10600 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5300	102.12	-	-	88.73	33.91	8.85	29.37	100	280	Peak
5300	95.45	-	-	82.06	33.91	8.85	29.37	100	280	Average
10600	42.11	-31.89	74	49.43	36.55	12.98	56.85	185	215	Peak
15900	42.34	-31.66	74	43.11	39.89	16.4	57.06	196	190	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5300 MHz is fundamental signal which can be ignored. 2. 10600 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5300	106.54	-	-	93.15	33.91	8.85	29.37	100	69	Peak
5300	99.34	-	-	85.95	33.91	8.85	29.37	100	69	Average
10600	42.6	-31.4	74	49.92	36.55	12.98	56.85	185	215	Peak
15900	43.31	-30.69	74	44.08	39.89	16.4	57.06	196	190	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	49~53%
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	100.29	-	-	86.91	33.9	8.85	29.37	100	286	Peak
5320	93.49	-	-	80.11	33.9	8.85	29.37	100	286	Average
10640	42.67	-31.33	74	49.93	36.57	13.01	56.84	152	135	Peak
15960	44.38	-29.62	74	45.09	39.96	16.44	57.11	173	245	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	49~53%
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	107.94	-	-	94.56	33.9	8.85	29.37	124	39	Peak
5320	102	-	-	88.62	33.9	8.85	29.37	124	39	Average
10640	41.95	-32.05	74	49.21	36.57	13.01	56.84	152	135	Peak
15960	43.51	-30.49	74	44.22	39.96	16.44	57.11	173	245	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 5500 MHz is fundamental signal which can be ignored. 16500 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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	97.23	-	-	83.78	33.79	9.03	29.37	123	59	Peak
5500	89.15	-	-	75.7	33.79	9.03	29.37	123	59	Average
11000	42.44	-31.56	74	49.16	36.79	13.24	56.75	163	230	Peak
16500	40.42	-33.58	74	40.4	40.49	16.39	56.86	178	296	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 5500 MHz is fundamental signal which can be ignored. 16500 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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	105.05	-	-	91.6	33.79	9.03	29.37	118	64	Peak
5500	97.81	-	-	84.36	33.79	9.03	29.37	118	64	Average
11000	42.18	-31.82	74	48.9	36.79	13.24	56.75	163	230	Peak
16500	40.94	-33.06	74	40.92	40.49	16.39	56.86	178	296	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5580 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	100.64	-	-	87.05	33.9	9.07	29.38	103	290	Peak
5580	93.43	-	-	79.84	33.9	9.07	29.38	103	290	Average
11160	43.28	-30.72	74	49.03	37.59	13.29	56.63	170	200	Peak
16740	41.95	-32.05	74	41.48	40.34	16.86	56.73	156	350	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5580 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	105.28	-	-	91.69	33.9	9.07	29.38	115	46	Peak
5580	97.53	-	-	83.94	33.9	9.07	29.38	115	46	Average
11160	43.13	-30.87	74	48.88	37.59	13.29	56.63	170	200	Peak
16740	41.21	-32.79	74	40.74	40.34	16.86	56.73	156	350	Peak



Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 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
5700	104.14	-	-	90.31	34.09	9.12	29.38	100	291	Peak
5700	96.24	-	-	82.41	34.09	9.12	29.38	100	291	Average
11400	43.38	-30.62	74	47.77	38.71	13.37	56.47	147	285	Peak
17100	39.89	-34.11	74	38.93	40.03	17.43	56.5	165	246	Peak

Test Mode :	802.11a	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 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
5700	105.25	-	-	91.42	34.09	9.12	29.38	102	70	Peak
5700	97.54	-	-	83.71	34.09	9.12	29.38	102	70	Average
11400	44.48	-29.52	74	48.87	38.71	13.37	56.47	147	285	Peak
17100	39.16	-34.84	74	38.2	40.03	17.43	56.5	165	246	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	49~53%
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	102.59	-	-	89.25	33.98	8.72	29.36	100	291	Peak
5180	93.99	-	-	80.65	33.98	8.72	29.36	100	291	Average
10360	42.67	-31.33	74	50.08	36.65	12.85	56.91	152	260	Peak
15540	43.85	-30.15	74	44.9	39.52	16.2	56.77	189	238	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	36	Relative Humidity :	49~53%
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	106.85	-	-	93.51	33.98	8.72	29.36	114	75	Peak
5180	98.98	-	-	85.64	33.98	8.72	29.36	114	75	Average
10360	43.03	-30.97	74	50.44	36.65	12.85	56.91	159	320	Peak
15540	43.51	-30.49	74	44.56	39.52	16.2	56.77	175	210	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	49~53%
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. 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
5220	103.71	-	-	90.36	33.96	8.75	29.36	100	302	Peak
5220	97.58	-	-	84.23	33.96	8.75	29.36	100	302	Average
10440	45.65	-28.35	74	53.08	36.57	12.89	56.89	125	230	Peak
15660	43.93	-30.07	74	44.89	39.64	16.27	56.87	110	225	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	44	Relative Humidity :	49~53%
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. 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
5220	106.72	-	-	93.37	33.96	8.75	29.36	100	76	Peak
5220	99.96	-	-	86.61	33.96	8.75	29.36	100	76	Average
10440	46.18	-27.82	74	53.61	36.57	12.89	56.89	158	250	Peak
15660	43.28	-30.72	74	44.24	39.64	16.27	56.87	110	225	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	49~53%
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	103.4	-	-	90.04	33.95	8.77	29.36	120	284	Peak
5240	94.54	-	-	81.18	33.95	8.77	29.36	120	284	Average
10480	42.9	-31.1	74	50.35	36.51	12.92	56.88	149	289	Peak
15720	43.46	-30.54	74	44.37	39.71	16.3	56.92	139	291	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	48	Relative Humidity :	49~53%
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. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5240	108.68	-	-	95.32	33.95	8.77	29.36	100	25	Peak
5240	100.62	-	-	87.26	33.95	8.77	29.36	100	25	Average
10480	42.57	-31.43	74	50.02	36.51	12.92	56.88	149	289	Peak
15720	42.92	-31.08	74	43.83	39.71	16.3	56.92	185	240	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	49~53%
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	101.36	-	-	87.99	33.93	8.8	29.36	100	294	Peak
5260	93.6	-	-	80.23	33.93	8.8	29.36	100	294	Average
10520	42.22	-31.78	74	49.66	36.5	12.93	56.87	110	220	Peak
15780	43.15	-30.85	74	44	39.77	16.34	56.96	109	345	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	52	Relative Humidity :	49~53%
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	106.92	-	-	93.55	33.93	8.8	29.36	113	49	Peak
5260	99.28	-	-	85.91	33.93	8.8	29.36	113	49	Average
10520	42.13	-31.87	74	49.57	36.5	12.93	56.87	110	220	Peak
15780	43.72	-30.28	74	44.57	39.77	16.34	56.96	109	345	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	49~53%
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	100.61	-	-	87.22	33.91	8.85	29.37	110	282	Peak
5300	93.09	-	-	79.7	33.91	8.85	29.37	110	282	Average
10600	42.11	-31.89	74	49.43	36.55	12.98	56.85	185	215	Peak
15900	42.34	-31.66	74	43.11	39.89	16.4	57.06	196	190	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	60	Relative Humidity :	49~53%
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	105.61	-	-	92.22	33.91	8.85	29.37	100	68	Peak
5300	97.99	-	-	84.6	33.91	8.85	29.37	100	68	Average
10600	42.6	-31.4	74	49.92	36.55	12.98	56.85	185	215	Peak
15900	43.31	-30.69	74	44.08	39.89	16.4	57.06	196	190	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	49~53%
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	101.13	-	-	87.75	33.9	8.85	29.37	111	285	Peak
5320	93.7	-	-	80.32	33.9	8.85	29.37	111	285	Average
10640	42.67	-31.33	74	49.93	36.57	13.01	56.84	152	135	Peak
15960	44.38	-29.62	74	45.09	39.96	16.44	57.11	173	245	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	64	Relative Humidity :	49~53%
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	106.25	-	-	92.87	33.9	8.85	29.37	100	75	Peak
5320	98.42	-	-	85.04	33.9	8.85	29.37	100	75	Average
10640	41.95	-32.05	74	49.21	36.57	13.01	56.84	152	135	Peak
15960	43.51	-30.49	74	44.22	39.96	16.44	57.11	173	245	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 5500 MHz is fundamental signal which can be ignored. 16500 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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	95.83	-	-	82.38	33.79	9.03	29.37	104	96	Peak
5500	88.59	-	-	75.14	33.79	9.03	29.37	104	96	Average
11000	42.44	-31.56	74	49.16	36.79	13.24	56.75	163	230	Peak
16500	40.42	-33.58	74	40.4	40.49	16.39	56.86	178	296	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	100	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 5500 MHz is fundamental signal which can be ignored. 16500 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 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	103.39	-	-	89.94	33.79	9.03	29.37	108	345	Peak
5500	96.49	-	-	83.04	33.79	9.03	29.37	108	345	Average
11000	42.18	-31.82	74	48.9	36.79	13.24	56.75	163	230	Peak
16500	40.94	-33.06	74	40.92	40.49	16.39	56.86	178	296	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5580 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	101.28	-	-	87.69	33.9	9.07	29.38	103	297	Peak
5580	93.22	-	-	79.63	33.9	9.07	29.38	103	297	Average
11160	43.28	-30.72	74	49.03	37.59	13.29	56.63	170	200	Peak
16740	41.95	-32.05	74	41.48	40.34	16.86	56.73	156	350	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	116	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5580 MHz is fundamental signal which can be ignored. 2. 16740 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5580	106.14	-	-	92.55	33.9	9.07	29.38	116	65	Peak
5580	97.89	-	-	84.3	33.9	9.07	29.38	116	65	Average
11160	43.13	-30.87	74	48.88	37.59	13.29	56.63	170	200	Peak
16740	41.21	-32.79	74	40.74	40.34	16.86	56.73	156	350	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 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
173.56	20.6	-22.9	43.5	39.96	9.47	1.59	30.42	-	-	Peak
266.68	27.89	-18.11	46	43.07	13.03	1.9	30.11	-	-	Peak
354.95	29.43	-16.57	46	42.24	14.85	2.16	29.82	-	-	Peak
546.04	34.64	-11.36	46	42.71	18.56	2.64	29.27	-	-	Peak
676.99	31.5	-14.5	46	38.65	19.04	2.91	29.1	-	-	Peak
770.11	35.35	-10.65	46	40.82	20.4	3.1	28.97	158	254	Peak
5700	101.04	-	-	87.21	34.09	9.12	29.38	100	305	Peak
5700	93.34	-	-	79.51	34.09	9.12	29.38	100	305	Average
11400	43.38	-30.62	74	47.77	38.71	13.37	56.47	147	285	Peak
17100	39.89	-34.11	74	38.93	40.03	17.43	56.5	165	246	Peak



Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 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
173.56	20.6	-22.9	43.5	39.96	9.47	1.59	30.42	-	-	Peak
266.68	25.89	-20.11	46	41.07	13.03	1.9	30.11	-	-	Peak
354.95	29.43	-16.57	46	42.24	14.85	2.16	29.82	-	-	Peak
460.68	30.76	-15.24	46	40.95	16.84	2.43	29.46	-	-	Peak
546.04	33.64	-12.36	46	41.71	18.56	2.64	29.27	158	265	Peak
770.11	32.35	-13.65	46	37.82	20.4	3.1	28.97	-	-	Peak
5700	103.88	-	-	90.05	34.09	9.12	29.38	104	44	Peak
5700	96.72	-	-	82.89	34.09	9.12	29.38	104	44	Average
11400	44.48	-29.52	74	48.87	38.71	13.37	56.47	147	285	Peak
17100	39.16	-34.84	74	38.2	40.03	17.43	56.5	165	246	Peak



<Battery 2>

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 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
5700	100.71	-	-	86.88	34.09	9.12	29.38	100	321	Peak
5700	93.28	-	-	79.45	34.09	9.12	29.38	100	321	Average
11400	43.38	-30.62	74	47.77	38.71	13.37	56.47	147	285	Peak
17100	39.89	-34.11	74	38.93	40.03	17.43	56.5	165	246	Peak

Test Mode :	802.11n HT20	Temperature :	23~25°C
Test Channel :	140	Relative Humidity :	49~53%
Test Engineer :	Gavin Zhang	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 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
5700	103.7	-	-	89.87	34.09	9.12	29.38	104	54	Peak
5700	96.3	-	-	82.47	34.09	9.12	29.38	100	54	Average
11400	44.48	-29.52	74	48.87	38.71	13.37	56.47	147	285	Peak
17100	39.16	-34.84	74	38.2	40.03	17.43	56.5	165	246	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.

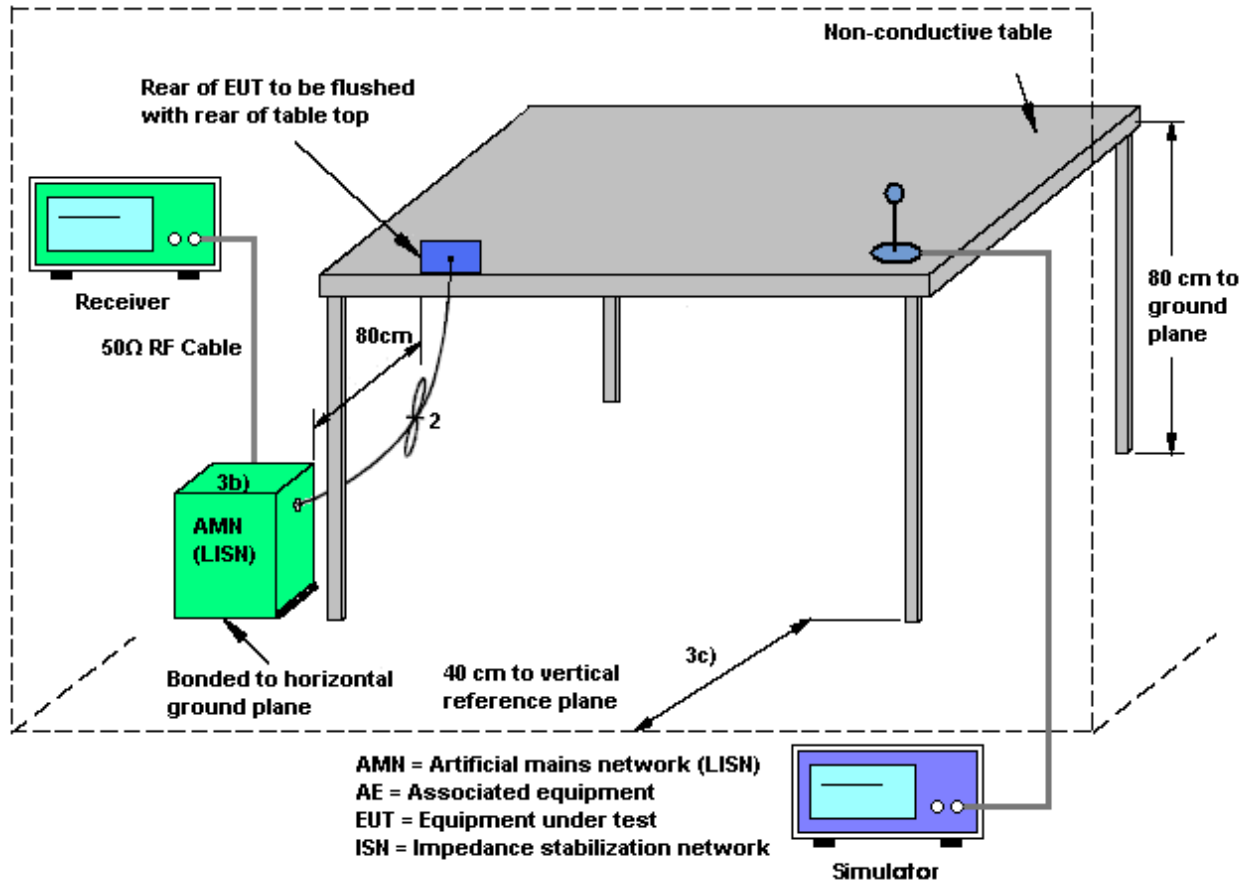
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

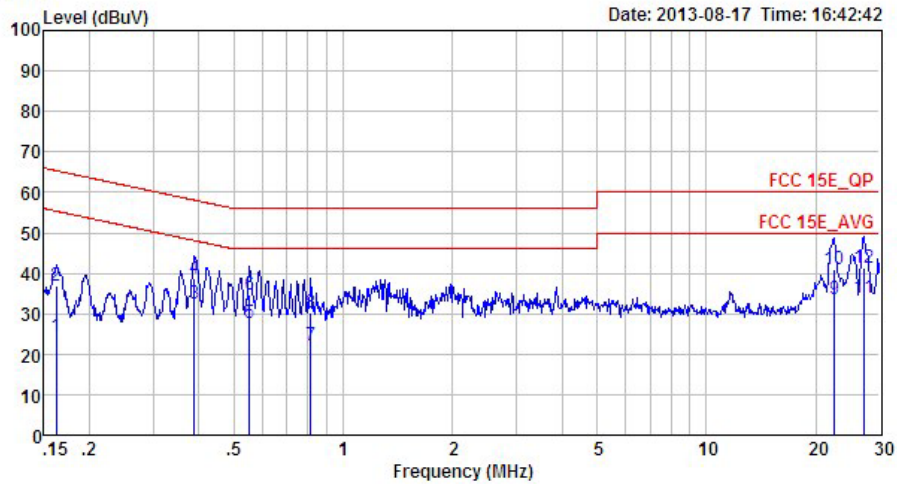
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 2	Temperature :	24~25°C
Test Engineer :	Henry Chen	Relative Humidity :	48~49%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + WLAN(5GHz) Link + Bluetooth Link + USB Cable (Charging from Adapter) + Earphone + Battery 2		

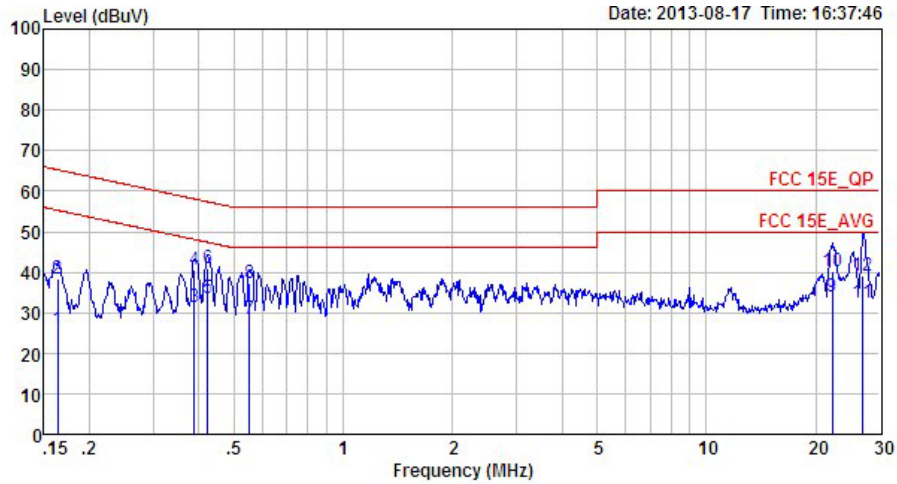


Site : CO01-SZ
 Condition: FCC 15E_QP LISN_L_2000601 LINE
 Mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	24.38	-30.96	55.34	14.30	0.03	10.05	Average
2	0.16	36.88	-28.46	65.34	26.80	0.03	10.05	QP
3 *	0.39	32.40	-15.68	48.08	22.31	0.02	10.07	Average
4	0.39	38.70	-19.38	58.08	28.61	0.02	10.07	QP
5	0.55	27.51	-18.49	46.00	17.40	0.02	10.09	Average
6	0.55	34.61	-21.39	56.00	24.50	0.02	10.09	QP
7	0.81	22.23	-23.77	46.00	12.10	0.02	10.11	Average
8	0.81	30.43	-25.57	56.00	20.30	0.02	10.11	QP
9	22.54	33.59	-16.41	50.00	22.71	0.43	10.45	Average
10	22.54	40.89	-19.11	60.00	30.01	0.43	10.45	QP
11	27.13	34.00	-16.00	50.00	22.99	0.58	10.43	Average
12	27.13	41.20	-18.80	60.00	30.19	0.58	10.43	QP



Test Mode :	Mode 2	Temperature :	24~25°C
Test Engineer :	Henry Chen	Relative Humidity :	48~49%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + WLAN(5GHz) Link + Bluetooth Link + USB Cable (Charging from Adapter) + Earphone + Battery 2		



Site : C001-SZ
 Condition: FCC 15E_QP LISN_N_2000601 NEUTRAL
 Mode : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	25.67	-29.63	55.30	15.60	0.02	10.05	Average
2	0.16	38.47	-26.83	65.30	28.40	0.02	10.05	QP
3	0.39	31.19	-16.89	48.08	21.10	0.02	10.07	Average
4	0.39	40.59	-17.49	58.08	30.50	0.02	10.07	QP
5 *	0.42	33.69	-13.68	47.37	23.59	0.02	10.08	Average
6	0.42	40.79	-16.58	57.37	30.69	0.02	10.08	QP
7	0.55	28.50	-17.50	46.00	18.39	0.02	10.09	Average
8	0.55	37.20	-18.80	56.00	27.09	0.02	10.09	QP
9	22.18	34.09	-15.91	50.00	23.00	0.62	10.47	Average
10	22.18	40.19	-19.81	60.00	29.10	0.62	10.47	QP
11	26.98	32.52	-17.48	50.00	21.20	0.89	10.43	Average
12	26.98	39.12	-20.88	60.00	27.80	0.89	10.43	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.

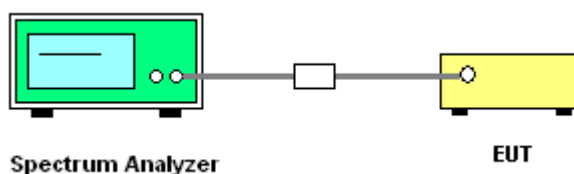
3.7.2 Measuring Instruments

See list of measuring instruments 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 :	5.2GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Frequency (MHz)	Low Frequency (MHz)	High Frequency (MHz)	Mid Frequency (MHz)	Frequency Stability (ppm)
11a	54Mbps	1	36	5180	5171.85	5188.35	5180.10	19.30501931
11a	54Mbps	1	44	5220	5211.75	5228.35	5220.05	9.578544061
11a	54Mbps	1	48	5240	5231.75	5248.35	5240.05	9.541984733
HT20	MCS7	1	36	5180	5171.15	5188.95	5180.05	9.652509652
HT20	MCS7	1	44	5220	5211.10	5229.00	5220.05	9.578544061
HT20	MCS7	1	48	5240	5231.15	5248.95	5240.05	9.541984733

Test Band :	5.3GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Frequency (MHz)	Low Frequency (MHz)	High Frequency (MHz)	Mid Frequency (MHz)	Frequency Stability (ppm)
11a	54Mbps	1	52	5260	5251.75	5268.35	5260.05	9.505703422
11a	54Mbps	1	60	5300	5291.75	5308.35	5300.05	9.433962264
11a	54Mbps	1	64	5320	5311.75	5328.35	5320.05	9.398496241
HT20	MCS7	1	52	5260	5251.15	5268.95	5260.05	9.505703422
HT20	MCS7	1	60	5300	5291.15	5308.95	5300.05	9.433962264
HT20	MCS7	1	64	5320	5311.15	5328.95	5320.05	9.39849624



Test Band :	5.5GHz Band	Temperature :	24~26°C
Test Engineer :	Fly Chen	Relative Humidity :	50~53%

Mod.	Data Rate	N _{TX}	Channel	Frequency (MHz)	Low Frequency (MHz)	High Frequency (MHz)	Mid Frequency (MHz)	Frequency Stability (ppm)
11a	54Mbps	1	100	5500	5491.75	5508.35	5500.05	9.090909091
11a	54Mbps	1	116	5580	5571.85	5588.35	5580.10	17.92114695
11a	54Mbps	1	140	5700	5691.75	5708.35	5700.05	8.771929825
HT20	MCS7	1	100	5500	5491.15	5508.95	5500.05	9.090909091
HT20	MCS7	1	116	5580	5571.15	5588.95	5580.05	8.960573477
HT20	MCS7	1	140	5700	5691.15	5708.95	5700.05	8.771929824

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

See list of measuring instruments 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 Connected Construction

Non-standard connector used.

3.9.3 Antenna Gain

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

4 List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP30	101400	9kHz~30GHz	Mar. 28, 2013	Jul. 26, 2013~ Sep. 12, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	N/A	Mar. 28, 2013	Jul. 26, 2013~ Sep. 12, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Power Sensor	Anritsu	MA2411B	1207253	N/A	Mar. 28, 2013	Jul. 26, 2013~ Sep. 12, 2013	Mar. 27, 2014	Conducted (TH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	Apr. 04, 2013	Jul. 10, 2013~ Sep. 12, 2013	Apr. 03, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Jul. 10, 2013~ Sep. 12, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Nov. 03, 2012	Jul. 10, 2013~ Sep. 12, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9 kHz~3000MHz GAIN 30db	Mar. 28, 2013	Jul. 10, 2013~ Sep. 12, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Jul. 10, 2013~ Sep. 12, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Nov. 23, 2012	Jul. 10, 2013~ Sep. 12, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2012	Jul. 10, 2013~ Sep. 12, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronic	EM 1000	N/A	0~360 degree	N/A	Jul. 10, 2013~ Sep. 12, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM electronic	EM 1000	N/A	1 m~4 m	N/A	Jul. 10, 2013~ Sep. 12, 2013	N/A	Radiation (03CH01-SZ)
AC LISN	ETS-LINDGREN	3816/2SH	00103912	0.1MHz~108MHz	Feb. 28, 2013	Aug. 17, 2013	Feb. 27, 2014	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	ETS-LINDGREN	3816/2SH	00103892	0.1MHz~108MHz	Feb. 28, 2013	Aug. 17, 2013	Feb. 27, 2014	Conduction (CO01-SZ)
ESCIO TEST Receiver	R&S	1142.8007.0 3	100724	9kHz~3GHz	Mar. 08, 2013	Aug. 17, 2013	Mar. 07, 2014	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891 N/A	N/A	Oct. 12, 2012	Aug. 17, 2013	Oct. 11, 2013	Conduction (CO01-SZ)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.54
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Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

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