



# FCC RF Test Report

**APPLICANT** : ZTE CORPORATION  
**EQUIPMENT** : LTE uFi  
**BRAND NAME** : ZTE  
**MODEL NAME** : MF97B  
**FCC ID** : SRQ-MF97B  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on Oct. 21, 2014 and testing was completed on Jan. 21, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China**



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### SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	2.1049 15.403(i)	99% Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤11 dBm	Pass	-
3.4	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 5.8 dB at 5150.000/ 5149.850 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 15.81 dB at 0.170 MHz
3.6	15.407(g)	Frequency Stability	Within Operation Band	Pass	-
3.7	15.407(c)	Automatically Discontinue Transmission	Discontinue Transmission	Pass	-
3.8	15.203 & 15.407(a)	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

## 1.2 Manufacturer

**ZTE CORPORATION**

ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P. R. China

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	LTE uFi
Brand Name	ZTE
Model Name	MF97B
FCC ID	SRQ-MF97B
EUT supports Radios application	WCDMA/HSPA/HSPA+(Downlink Only)/LTE/ WLAN 2.4GHz 802. 11b/g/n HT20/HT40/ WLAN 5GHz 802. 11a/n HT20/HT40/ Bluetooth v2.1 + EDR/Bluetooth v4.0 LE
HW Version	d96C
SW Version	MF97BV1.0.0B01
EUT Stage	Identical Prototype

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



### 1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard			
<b>Tx/Rx Channel Frequency Range</b>	5180 MHz ~ 5240 MHz		
<b>Maximum Output Power</b>	802.11a : 15.68 dBm / 0.0370 W 802.11n HT20 : 17.35 dBm / 0.0543 W 802.11n HT40 : 15.00 dBm / 0.0316 W		
<b>Maximum 99% Occupied Bandwidth</b>	802.11a : 18.50 MHz 802.11n HT20 : 19.25 MHz 802.11n HT40 : 37.00 MHz		
<b>Antenna Type / Gain</b>	Chain Port 0 : PIFA Antenna with gain 2.7 dBi Chain Port 1 : PIFA Antenna with gain 2.7 dBi		
<b>Type of Modulation</b>	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)		
<b>Antenna Function Description</b>		Chain Port 0	Chain Port 1
	802.11a	V	V
	802.11n SISO	V	V
	802.11n MIMO	V	V



### 1.5 Modification of EUT

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

### 1.6 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China			
	TEL: +86-0512-5790-0158			
	FAX: +86-0512-5790-0958			
<b>Test Site No.</b>	<b>Sporton Site No.</b>			<b>FCC Registration No.</b>
	TH01-KS	03CH01-KS	CO01-KS	149928

### 1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ♦ ANSI C63.10-2009

**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 (X/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 and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5150-5250 MHz Band 1 (U-NII-1)	36	5180	44	5220
	<b>38</b>	<b>5190</b>	<b>46</b>	<b>5230</b>
	40	5200	48	5240

**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.

WLAN 5GHz 802.11a Average Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
			6Mbps								
CH 36	5180	0	15.07	CH 48	15.53	15.39	15.46	15.60	15.63	15.54	15.58
CH 44	5220	0	15.37								
CH 48	5240	0	15.68								
CH 36	5180	1	12.58	CH 36	12.29	12.38	12.46	12.53	12.39	12.48	12.54
CH 44	5220	1	12.00								
CH 48	5240	1	12.21								

WLAN 5GHz 802.11n-HT20 Output Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
			MCS0								
CH 36	5180	0	15.30	CH 48	15.15	15.09	15.37	15.38	15.53	15.45	15.50
CH 44	5220	0	15.39								
CH 48	5240	0	15.53								
CH 36	5180	1	12.70	CH 36	12.34	12.47	12.56	12.67	12.59	12.65	12.65
CH 44	5220	1	11.85								
CH 48	5240	1	11.97								
CH 36	5180	0+1(0)	15.19	CH 48	15.44	15.49	15.27	15.40	15.11	15.08	15.15
CH 44	5220	0+1(0)	15.53								
CH 48	5240	0+1(0)	15.65								
CH 36	5180	0+1(1)	12.40	CH 48	12.18	11.92	12.31	12.15	12.17	11.93	11.96
CH 44	5220	0+1(1)	11.99								
CH 48	5240	0+1(1)	12.45								
CH 36	5180	0+1	17.03	CH 48	17.12	17.07	17.05	17.08	16.89	16.79	16.85
CH 44	5220	0+1	17.12								
CH 48	5240	0+1	17.35								



WLAN 5GHz 802.11n-HT40 Output Power (dBm)											
Power vs. Channel				Power vs. Data Rate							
Channel	Frequency (MHz)	Chain Port	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	0	13.44	CH 46	13.46	13.55	13.67	13.85	13.65	13.65	13.66
CH 46	5230	0	13.89								
CH 38	5190	1	10.76	CH 38	10.28	10.39	10.68	10.64	10.71	10.63	10.67
CH 46	5230	1	10.48								
CH 38	5190	0+1(0)	13.27	CH 38	12.99	12.98	13.00	13.00	13.02	12.92	12.97
CH 46	5230	0+1(0)	13.13								
CH 38	5190	0+1(1)	10.16	CH 38	10.01	9.82	9.79	10.10	9.96	10.02	10.00
CH 46	5230	0+1(1)	9.91								
CH 38	5190	0+1	15.00	CH 38	14.76	14.69	14.70	14.79	14.76	14.72	14.74
CH 46	5230	0+1	14.82								

Note: Chain Port 0+1 is a calculated result from sum of the power Chain Port 0+1(0) and Chain Port 0+1(1).



### 2.3 Test Mode

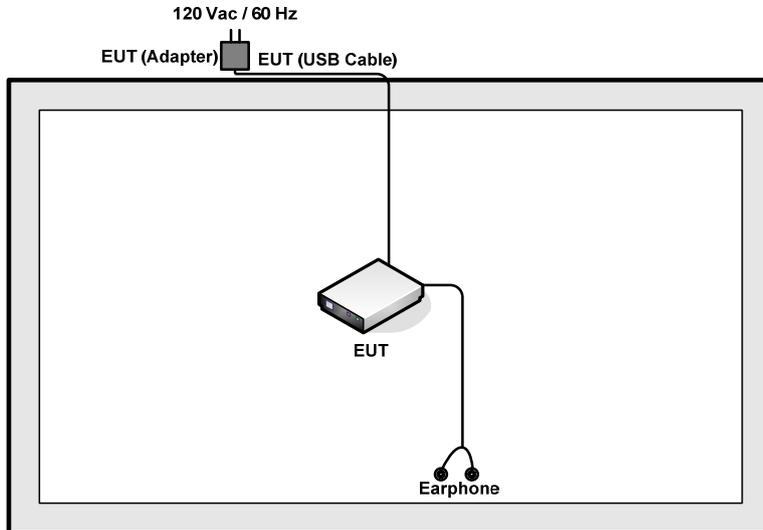
Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
Conducted TCs	Test Items	Mode	Data rate	Test Channel
	Conducted TCs	99% BW Power Spectral Density	802.11a	6 Mbps
802.11n HT20			MCS0	L/M/H
802.11n HT40			MCS0	L/H
Output Power		802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
		802.11n HT40	MCS0	L/H
Frequency Stability	802.11a	6 Mbps	L	
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/H
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (5G) Link + Earphone + USB Cable (Charging from Adapter)			
<b>Remark:</b> For radiated TCs, the tests were performed with adapter, earphone and USB cable.				

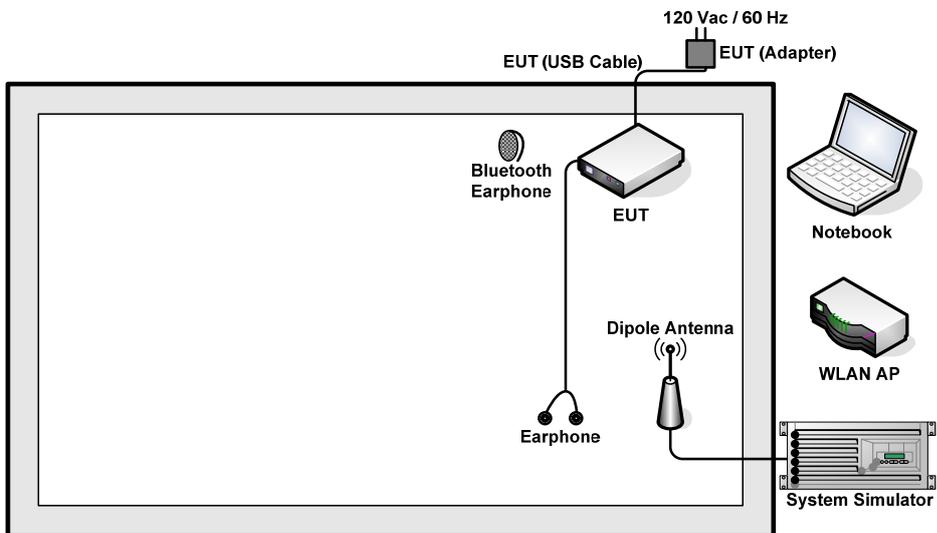
Ch. #		Band I : 5150-5250 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	36	36	38
M	Middle	44	44	-
H	High	48	48	46

## 2.4 Connection Diagram of Test System

### <WLAN Tx Mode>



### <AC Conducted Emission Mode>



## 2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
3.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	Notebook	Lenovo	G480	PRC4	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
5.	Earphone	Lenovo	SH100	N/A	Unshielded, 1.2 m	N/A
6.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 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.

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 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.

*Offset = RF cable loss.*

Following shows an offset computation example with cable loss 7.5 dB.

$$\begin{aligned} \text{Offset (dB)} &= \text{RF cable loss (dB)} \\ &= 7.5 \text{ (dB)} \end{aligned}$$

### 3 Test Result

#### 3.1 99% Bandwidth Measurement

##### 3.1.1 Description of 99% Occupied Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

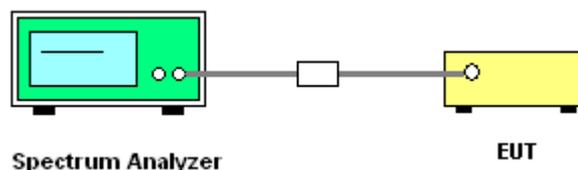
##### 3.1.2 Measuring Instruments

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 D02 General UNII Test Procedures New Rules v01.  
Section C) Emission bandwidth
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.  
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.
7. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1MHz and set the Video bandwidth (VBW)  $\geq 3 * RBW$ .
8. Measure and record the results in the test report.

##### 3.1.4 Test Setup

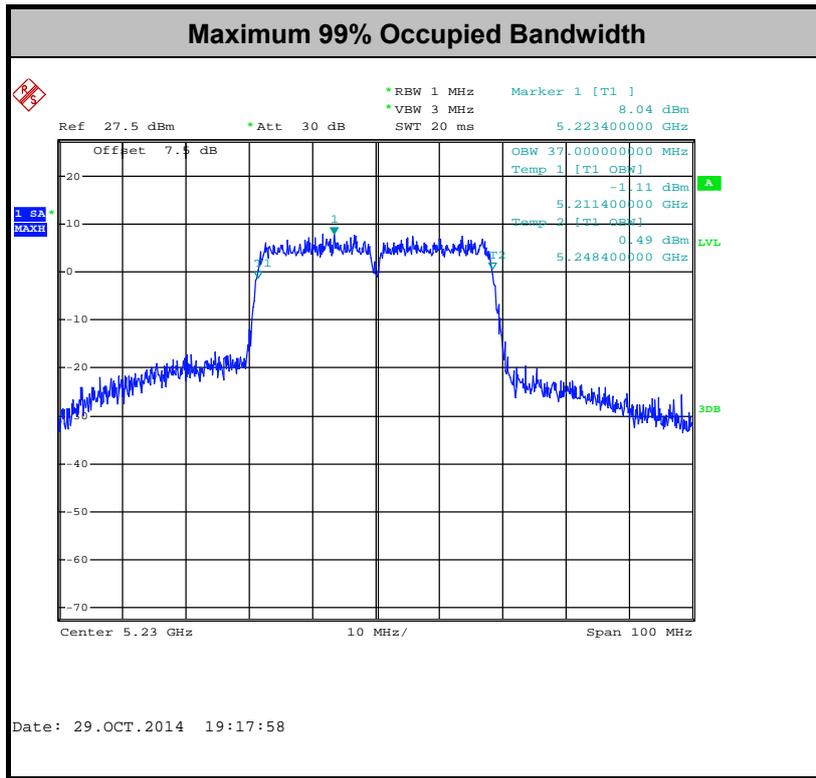




3.1.5 Test Result of 99% Occupied Bandwidth

Test Band :	5GHz band 1	Temperature :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	99% Bandwidth (MHz)		99% Bandwidth EIRP Limit (dBm)	
					Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1
11a	6Mbps	1	36	5180	18.50	-	22.67	-
11a	6Mbps	1	44	5220	18.40	-	22.65	-
11a	6Mbps	1	48	5240	18.30	-	22.62	-
HT20	MCS0	1	36	5180	19.05	-	22.80	-
HT20	MCS0	1	44	5220	19.05	-	22.80	-
HT20	MCS0	1	48	5240	19.05	-	22.80	-
HT40	MCS0	1	38	5190	36.60	-	23.01	-
HT40	MCS0	1	46	5230	36.80	-	23.01	-
HT20	MCS0	2	36	5180	19.20	18.95	22.78	
HT20	MCS0	2	44	5220	19.00	18.90	22.76	
HT20	MCS0	2	48	5240	19.25	18.90	22.76	
HT40	MCS0	2	38	5190	36.70	36.70	23.01	
HT40	MCS0	2	46	5230	37.00	36.70	23.01	





3.1.6 Test Result of 20dB Occupied Bandwidth

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	20dB Bandwidth (MHz)		20dB Bandwidth Upper Frequency (FH) (MHz)		Upper Limit Line (MHz)	Pass/Fail
					Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1		
11a	6Mbps	1	48	5240	19.65	-	5249.90	-	5250	Pass
HT20	MCS0	1	48	5240	20.25	-	5250.00	-		Pass
HT40	MCS0	1	46	5230	39.96	-	5249.89	-		Pass
HT20	MCS0	2	48	5240	19.75	-	5249.90	-		Pass
HT40	MCS0	2	46	5230	39.87		5249.98			5249.98

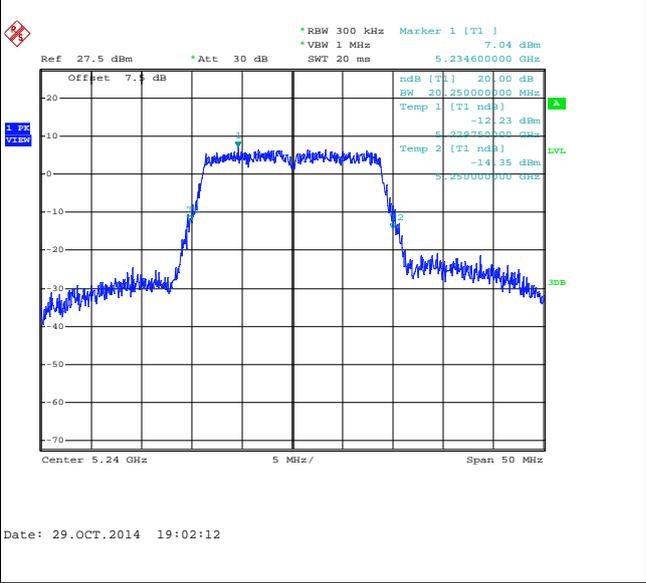
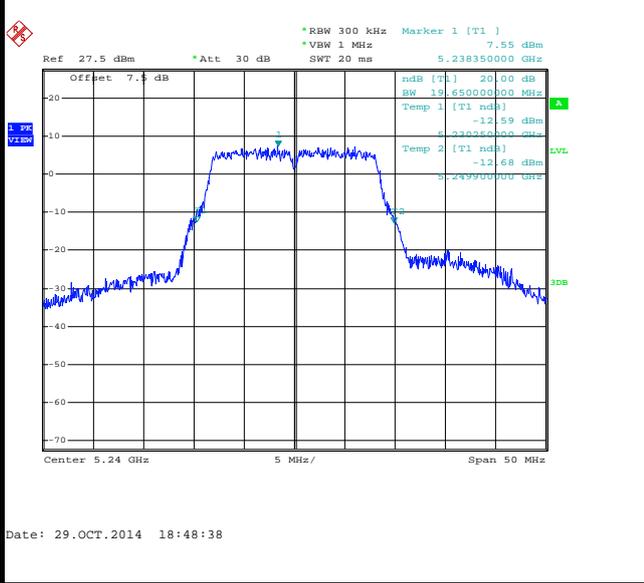


Number of TX = 1, Chain Port 0

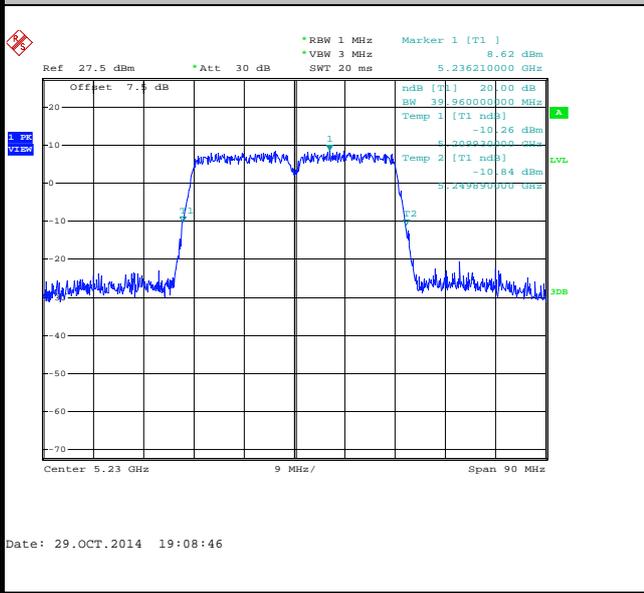
20dB Occupied Bandwidth

802.11a CH48 5240MHz

802.11n HT20 CH48 5240MHz

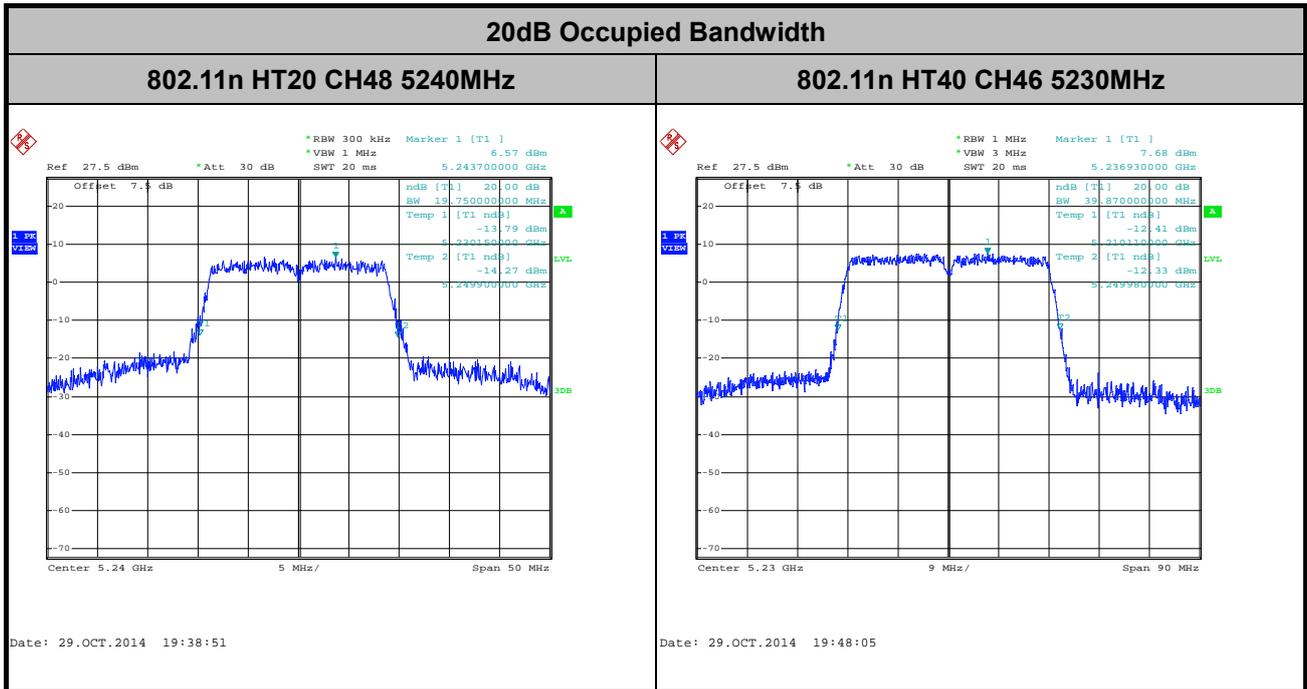


802.11n HT40 CH46 5230MHz





Number of TX = 2, Chain Port 0





## **3.2 Maximum Conducted Output Power Measurement**

### **3.2.1 Limit of Maximum Conducted Output Power**

**<FCC 14-30 CFR 15.407>**

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

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.

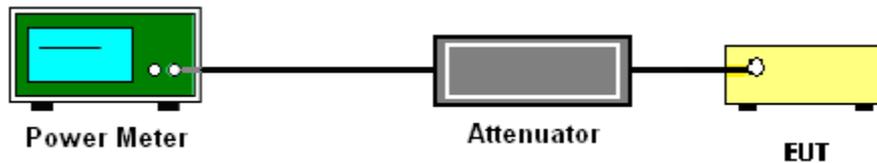
### 3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.

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 :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Power Limit (dBm)		DG (dBi)		Pass /Fail
					Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	Sum Power	Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	
11a	6Mbps	1	36	5180	0.29	0.29	15.07	12.58	-	24.00	24.00	2.70	2.70	Pass
11a	6Mbps	1	44	5220	0.29	0.29	15.37	12.00	-	24.00	24.00	2.70	2.70	Pass
11a	6Mbps	1	48	5240	0.29	0.29	15.68	12.21	-	24.00	24.00	2.70	2.70	Pass
HT20	MCS0	1	36	5180	0.32	0.31	15.30	12.70	-	24.00	24.00	2.70	2.70	Pass
HT20	MCS0	1	44	5220	0.32	0.31	15.39	11.85	-	24.00	24.00	2.70	2.70	Pass
HT20	MCS0	1	48	5240	0.32	0.31	15.53	11.97	-	24.00	24.00	2.70	2.70	Pass
HT40	MCS0	1	38	5190	0.60	0.61	13.44	10.76	-	24.00	24.00	2.70	2.70	Pass
HT40	MCS0	1	46	5230	0.60	0.61	13.89	10.48	-	24.00	24.00	2.70	2.70	Pass
HT20	MCS0	2	36	5180	0.31	0.31	15.19	12.40	17.03	24.00	24.00	2.70	2.70	Pass
HT20	MCS0	2	44	5220	0.31	0.31	15.53	11.99	17.12	24.00	24.00	2.70	2.70	Pass
HT20	MCS0	2	48	5240	0.31	0.31	15.65	12.45	17.35	24.00	24.00	2.70	2.70	Pass
HT40	MCS0	2	38	5190	0.60	0.65	13.27	10.16	15.00	24.00	24.00	2.70	2.70	Pass
HT40	MCS0	2	46	5230	0.60	0.65	13.13	9.91	14.82	24.00	24.00	2.70	2.70	Pass

Note:

- Final Output Power equals to Measured Output Power adds the duty factor.
- Sum Power is a calculated result from sum of the Chain Port 0+1(0) and Chain Port 0+1(1)



### **3.3 Power Spectral Density Measurement**

#### **3.3.1 Limit of Power Spectral Density**

**<FCC 14-30 CFR 15.407>**

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

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.

#### **3.3.2 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 D02 General UNII Test Procedures New Rules v01.  
Section F) Maximum power spectral density.

#### # Method SA-2 #

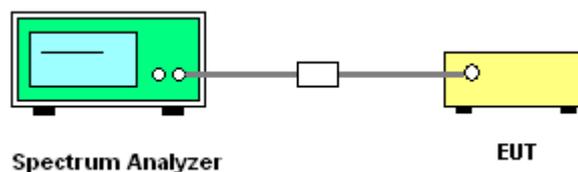
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. The testing follows Method SA-2 of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.
  - 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.
4. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

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

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

### 3.3.4 Test Setup



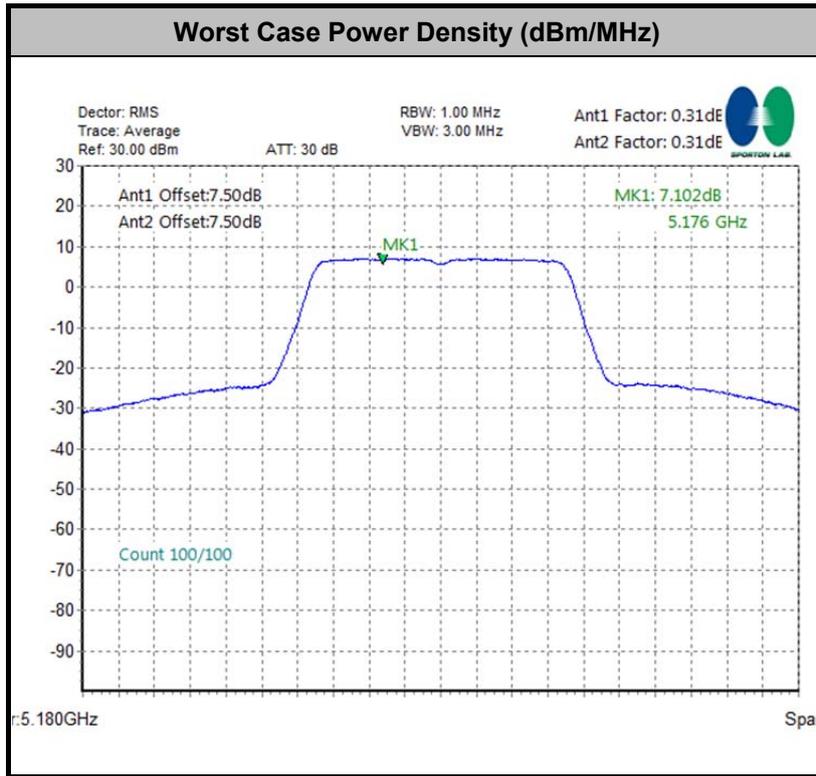


3.3.5 Test Result of Power Spectral Density

Test Band :	5GHz band 1	Temperature :	24~25°C
Test Engineer :	Issac Song	Relative Humidity :	49~51%

Mod.	Data Rate	N <sub>TX</sub>	CH.	Freq. (MHz)	Duty Factor (dB)		Average Power Density (dBm/MHz)			Average PSD Limit (dBm)		DG (dBi)		Pass /Fail
					Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	Sum Power	Chain Port 0	Chain Port 1	Chain Port 0	Chain Port 1	
11a	6Mbps	1	36	5180	0.29	0.29	6.15	-	-	11.00	11.00	2.70	2.70	Pass
11a	6Mbps	1	44	5220	0.29	0.29	6.03	-	-	11.00	11.00	2.70	2.70	Pass
11a	6Mbps	1	48	5240	0.29	0.29	6.83	-	-	11.00	11.00	2.70	2.70	Pass
HT20	MCS0	1	36	5180	0.32	0.31	5.74	-	-	11.00	11.00	2.70	2.70	Pass
HT20	MCS0	1	44	5220	0.32	0.31	5.99	-	-	11.00	11.00	2.70	2.70	Pass
HT20	MCS0	1	48	5240	0.32	0.31	6.45	-	-	11.00	11.00	2.70	2.70	Pass
HT40	MCS0	1	38	5190	0.60	0.61	0.75	-	-	11.00	11.00	2.70	2.70	Pass
HT40	MCS0	1	46	5230	0.60	0.61	1.15	-	-	11.00	11.00	2.70	2.70	Pass
HT20	MCS0	2	36	5180	0.31	0.31	-	-	7.10	11.00	5.71	5.71	Pass	
HT20	MCS0	2	44	5220	0.31	0.31	-	-	6.93	11.00	5.71	5.71	Pass	
HT20	MCS0	2	48	5240	0.31	0.31	-	-	7.08	11.00	5.71	5.71	Pass	
HT40	MCS0	2	38	5190	0.60	0.65	-	-	1.78	11.00	5.71	5.71	Pass	
HT40	MCS0	2	46	5230	0.60	0.65	-	-	1.95	11.00	5.71	5.71	Pass	

Note: Sum PSD is a bin-by-bin combined result of Chain Port 0+1(0) and Chain Port 0+1(1).





### 3.4 Unwanted Emissions 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.

#### 3.4.1 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.
- (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.

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

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

- (3) KDB789033 v01 G)2)c) 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.

#### 3.4.2 Measuring Instruments

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



3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01. Section G) 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

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

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

- 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.

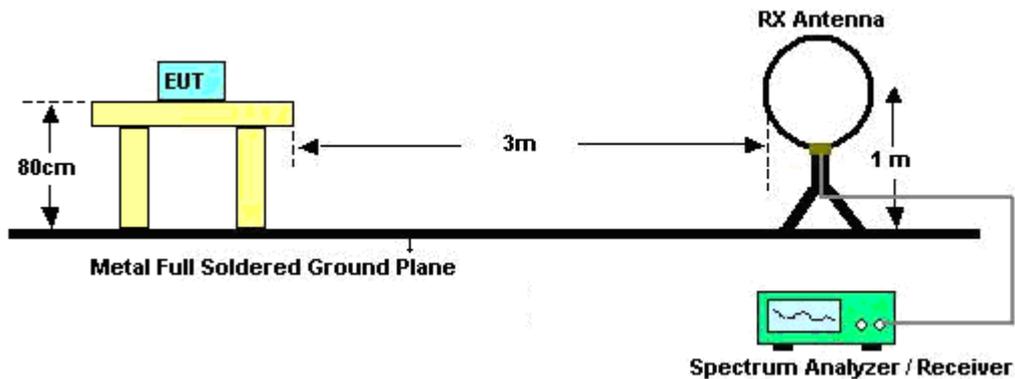
Chain Port	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
0	802.11a	93.464	1.430	0.699	1kHz
1	802.11a	93.464	1.430	0.699	1kHz
0+1	802.11n HT20	93.056	1.340	0.746	1kHz
0+1	802.11n HT40	87.080	0.674	1.484	3kHz

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- 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.
- 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.

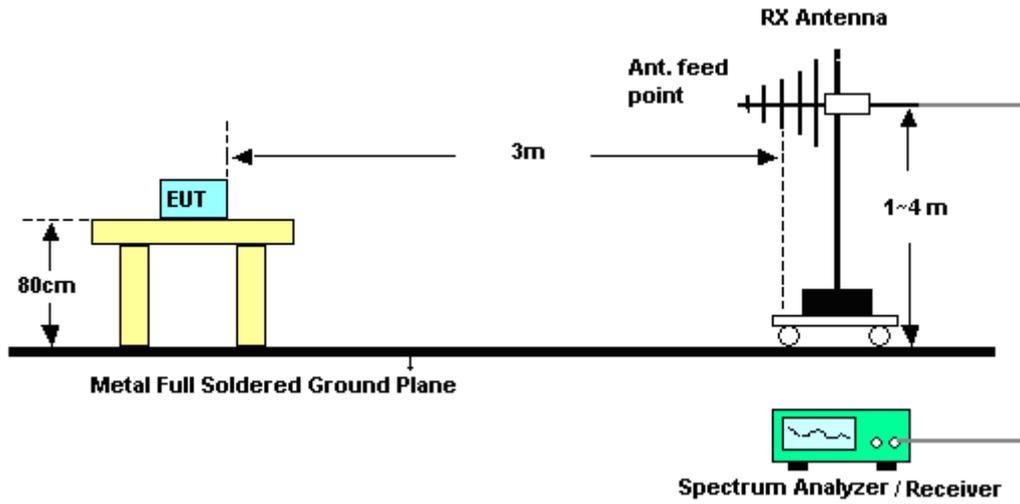
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level 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.

### 3.4.4 Test Setup

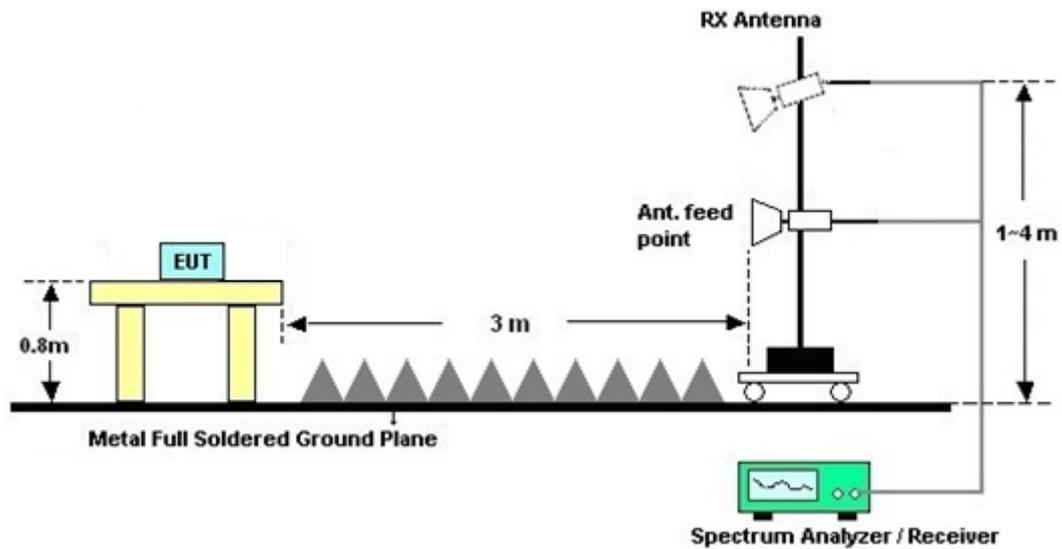
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.4.5 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.



3.4.6 Test Result of Radiated Band Edges

Test Mode :	802.11a-Chain Port 0	Temperature :	21~22°C
Test Channel :	36	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5148.55	55.52	-18.48	74	49.33	35.04	9.01	37.86	104	116	Peak
5149.8	43.3	-10.7	54	37.11	35.04	9.01	37.86	104	116	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
5145.35	55.07	-18.93	74	48.88	35.04	9.01	37.86	191	113	Peak
5149.65	42.96	-11.04	54	36.77	35.04	9.01	37.86	191	113	Average

Test Mode :	802.11a-Chain Port 0	Temperature :	21~22°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5382.6	53.98	-20.02	74	48.9	35.12	9.27	39.31	124	118	Peak
5439.9	41.86	-12.14	54	36.6	35.14	9.36	39.24	124	118	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
5386.1	53.04	-20.96	74	47.96	35.12	9.27	39.31	182	112	Peak
5357.2	41.67	-12.33	54	36.41	35.11	9.23	39.08	182	112	Average



Test Mode :	802.11a-Chain Port 1	Temperature :	21~22°C
Test Channel :	36	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5142.5	56.27	-17.73	74	50.08	35.04	9.01	37.86	102	99	Peak
5149.8	43.7	-10.3	54	37.51	35.04	9.01	37.86	102	99	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
5148.45	56.3	-17.7	74	50.11	35.04	9.01	37.86	101	178	Peak
5149.1	42.62	-11.38	54	36.43	35.04	9.01	37.86	101	178	Average

Test Mode :	802.11a-Chain Port 1	Temperature :	21~22°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5371.8	53.9	-20.1	74	48.72	35.11	9.27	39.2	200	99	Peak
5368.1	41.87	-12.13	54	36.69	35.11	9.27	39.2	200	99	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
5380.6	54.02	-19.98	74	48.94	35.12	9.27	39.31	176	164	Peak
5359.15	41.74	-12.26	54	36.48	35.11	9.23	39.08	176	164	Average



Test Mode :	802.11n HT20-Chain Port 0+1	Temperature :	21~22°C
Test Channel :	36	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5149.05	62.7	-11.3	74	56.51	35.04	9.01	37.86	179	312	Peak
5149.9	44.53	-9.47	54	38.34	35.04	9.01	37.86	179	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
5148.4	60.9	-13.1	74	54.71	35.04	9.01	37.86	188	0	Peak
5149.7	44.38	-9.62	54	38.19	35.04	9.01	37.86	188	0	Average

Test Mode :	802.11n HT20-Chain Port 0+1	Temperature :	21~22°C
Test Channel :	48	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5375.7	54.18	-19.82	74	49	35.11	9.27	39.2	197	289	Peak
5352.7	41.9	-12.1	54	36.64	35.11	9.23	39.08	197	289	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
5353.8	54.11	-19.89	74	48.85	35.11	9.23	39.08	200	0	Peak
5389.15	41.92	-12.08	54	36.84	35.12	9.27	39.31	198	0	Average



Test Mode :	802.11n HT40-Chain Port 0+1	Temperature :	21~22°C
Test Channel :	38	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5150	62.4	-11.6	74	56.21	35.04	9.01	37.86	165	307	Peak
5150	48.2	-5.8	54	42.01	35.04	9.01	37.86	165	307	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
5144.05	63.38	-10.62	74	57.19	35.04	9.01	37.86	200	355	Peak
5149.85	48.2	-5.8	54	42.01	35.04	9.01	37.86	200	355	Average

Test Mode :	802.11n HT40-Chain Port 0+1	Temperature :	21~22°C
Test Channel :	46	Relative Humidity :	42~43%
Test Engineer :	Jack Wang		

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
5379.8	54.31	-19.69	74	49.23	35.12	9.27	39.31	200	309	Peak
5351.9	42.09	-11.91	54	36.83	35.11	9.23	39.08	200	309	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
5391.2	54.37	-19.63	74	49.29	35.12	9.27	39.31	100	23	Peak
5370.55	42.19	-11.81	54	37.01	35.11	9.27	39.2	100	23	Average



3.4.7 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.

Table with 4 rows: Test Mode (802.11a-Chain Port 0), Test Channel (36), Test Engineer (Jack Wang), and Remark (5180 MHz is fundamental signal which can be ignored. 10350 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209).

Table with 11 columns: Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB), Cable Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Remark. Rows include data for 5180, 9057, and 10350 MHz.

Table with 4 rows: Test Mode (802.11a-Chain Port 0), Test Channel (36), Test Engineer (Jack Wang), and Remark (5180 MHz is fundamental signal which can be ignored. 10359 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209).

Table with 11 columns: Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB), Cable Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Remark. Rows include data for 5180 and 10359 MHz.



<b>Test Mode :</b>	802.11a-Chain Port 0	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5220 MHz is fundamental signal which can be ignored. 2. 10449 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	101.54	-	-	95.56	35.06	9.1	38.18	129	117	Peak
5220	90.45	-	-	84.47	35.06	9.1	38.18	129	117	Average
10449	37.8	-36.2	74	59.93	1.54	13.18	36.85	100	45	Peak

<b>Test Mode :</b>	802.11a-Chain Port 0	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5220 MHz is fundamental signal which can be ignored. 2. 10449 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	98.59	-	-	92.61	35.06	9.1	38.18	169	109	Peak
5220	87.31	-	-	81.33	35.06	9.1	38.18	169	109	Average
10449	39.03	-34.97	74	61.16	1.54	13.18	36.85	100	69	Peak



<b>Test Mode :</b>	802.11a-Chain Port 0	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5240 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	101	-	-	95.12	35.07	9.1	38.29	124	118	Peak
5240	90.02	-	-	84.14	35.07	9.1	38.29	124	118	Average
10479	38.57	-35.43	74	60.72	1.56	13.2	36.91	100	22	Peak

<b>Test Mode :</b>	802.11a-Chain Port 0	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5240 MHz is fundamental signal which can be ignored. 2. 10491 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	98.03	-	-	92.15	35.07	9.1	38.29	182	112	Peak
5240	86.66	-	-	80.78	35.07	9.1	38.29	182	112	Average
10491	38.65	-35.35	74	60.8	1.56	13.2	36.91	100	124	Peak



<b>Test Mode :</b>	802.11a-Chain Port 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Nick Su	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	101.71	-	-	95.6	35.05	9.06	38	102	99	Peak
5180	90.53	-	-	84.42	35.05	9.06	38	102	99	Average
10360	39.13	-34.87	74	61.29	1.46	13.15	36.77	100	66	Peak

<b>Test Mode :</b>	802.11a-Chain Port 1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	103.2	-	-	97.09	35.05	9.06	38	101	178	Peak
5180	91.99	-	-	85.88	35.05	9.06	38	101	178	Average
10360	40.95	-33.05	74	63.11	1.46	13.15	36.77	100	98	Peak



<b>Test Mode :</b>	802.11a-Chain Port 1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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	102.41	-	-	96.43	35.06	9.1	38.18	200	101	Peak
5220	91.36	-	-	85.38	35.06	9.1	38.18	200	101	Average
10440	38.05	-35.95	74	60.16	1.53	13.18	36.82	100	69	Peak

<b>Test Mode :</b>	802.11a-Chain Port 1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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	103.12	-	-	97.14	35.06	9.1	38.18	176	175	Peak
5220	92.06	-	-	86.08	35.06	9.1	38.18	176	175	Average
10440	39.45	-34.55	74	61.56	1.53	13.18	36.82	100	49	Peak



<b>Test Mode :</b>	802.11a-Chain Port 1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5240 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	102.57	-	-	96.69	35.07	9.1	38.29	200	99	Peak
5240	91.64	-	-	85.76	35.07	9.1	38.29	200	99	Average
10479	38.1	-35.9	74	60.25	1.56	13.2	36.91	100	0	Peak

<b>Test Mode :</b>	802.11a-Chain Port 1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5240 MHz is fundamental signal which can be ignored. 2. 10479 MHz is not within a restricted band, and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	103.51	-	-	97.63	35.07	9.1	38.29	176	164	Peak
5240	92.34	-	-	86.46	35.07	9.1	38.29	176	164	Average
10479	38.66	-35.34	74	60.81	1.56	13.2	36.91	100	46	Peak



<b>Test Mode :</b>	802.11n HT20-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5180 MHz is fundamental signal which can be ignored. 2. 10365 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
5180	103.02	-	-	96.91	35.05	9.06	38	179	312	Peak
5180	90.91	-	-	84.8	35.05	9.06	38	179	312	Average
10365	38.91	-35.09	74	61.07	1.46	13.15	36.77	100	15	Peak

<b>Test Mode :</b>	802.11n HT20-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5180 MHz is fundamental signal which can be ignored. 2. 10362 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
5180	103.27	-	-	97.16	35.05	9.06	38	188	0	Peak
5180	91.23	-	-	85.12	35.05	9.06	38	188	0	Average
10362	41.34	-32.66	74	63.5	1.46	13.15	36.77	100	23	Peak



<b>Test Mode :</b>	802.11n HT20-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	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	103.36	-	-	97.38	35.06	9.1	38.18	200	315	Peak
5220	91.38	-	-	85.4	35.06	9.1	38.18	200	315	Average
10440	38.65	-35.35	74	60.76	1.53	13.18	36.82	100	310	Peak

<b>Test Mode :</b>	802.11n HT20-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	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	103.44	-	-	97.46	35.06	9.1	38.18	200	0	Peak
5220	92.05	-	-	86.07	35.06	9.1	38.18	200	0	Average
10440	40.94	-33.06	74	63.05	1.53	13.18	36.82	100	0	Peak



<b>Test Mode :</b>	802.11n HT20-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5240 MHz is fundamental signal which can be ignored. 2. 10482 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	102.57	-	-	96.69	35.07	9.1	38.29	197	289	Peak
5240	90.91	-	-	85.03	35.07	9.1	38.29	197	289	Average
10482	39.71	-34.29	74	61.86	1.56	13.2	36.91	100	31	Peak

<b>Test Mode :</b>	802.11n HT20-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5240 MHz is fundamental signal which can be ignored. 2. 10476 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	103.71	-	-	97.89	35.08	9.14	38.4	199	0	Peak
5240	91.53	-	-	85.71	35.08	9.14	38.4	199	0	Average
10476	40.31	-33.69	74	62.44	1.55	13.2	36.88	100	0	Peak



<b>Test Mode :</b>	802.11n HT40-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	38	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5190 MHz is fundamental signal which can be ignored. 2. 10377 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
52.31	17.88	-22.12	40	41.52	8.18	0.79	32.61	-	-	Peak
98.87	16.57	-26.93	43.5	36.97	11.19	1.04	32.63	-	-	Peak
131.85	25.06	-18.44	43.5	44.87	11.55	1.23	32.59	120	135	Peak
154.16	21.37	-22.13	43.5	40.94	11.55	1.44	32.56	-	-	Peak
185.2	23.3	-20.2	43.5	43.96	10.36	1.44	32.46	-	-	Peak
212.36	23.07	-20.43	43.5	43.57	10.38	1.61	32.49	-	-	Peak
5190	98.86	-	-	92.75	35.05	9.06	38	165	307	Peak
5190	87.65	-	-	81.54	35.05	9.06	38	165	307	Average
10377	36.07	-17.93	54	58.19	1.48	13.17	36.77	100	68	Peak



<b>Test Mode :</b>	802.11n HT40-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	38	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5190 MHz is fundamental signal which can be ignored. 2. 10386 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
30.97	22.38	-17.62	40	35.54	18.71	0.79	32.66	-	-	Peak
51.34	22.59	-17.41	40	45.97	8.44	0.79	32.61	195	301	Peak
88.2	23.98	-19.52	43.5	45.58	9.98	1.04	32.62	-	-	Peak
130.88	25.21	-18.29	43.5	45.03	11.55	1.23	32.6	-	-	Peak
152.22	22.66	-20.84	43.5	42.15	11.63	1.44	32.56	-	-	Peak
181.32	29.63	-13.87	43.5	50.14	10.51	1.44	32.46	-	-	Peak
5190	98.65	-	-	92.54	35.05	9.06	38	200	355	Peak
5190	87.18	-	-	81.07	35.05	9.06	38	200	355	Average
10386	36.52	-17.48	54	58.64	1.48	13.17	36.77	100	54	Peak



<b>Test Mode :</b>	802.11n HT40-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	46	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5230 MHz is fundamental signal which can be ignored. 2. 10461 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	98.43	-	-	92.55	35.07	9.1	38.29	200	309	Peak
5230	86.64	-	-	80.76	35.07	9.1	38.29	200	309	Average
10461	35.53	-38.47	74	57.66	1.55	13.2	36.88	100	123	Peak

<b>Test Mode :</b>	802.11n HT40-Chain Port 0+1	<b>Temperature :</b>	21~22°C
<b>Test Channel :</b>	46	<b>Relative Humidity :</b>	42~43%
<b>Test Engineer :</b>	Jack Wang	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5230 MHz is fundamental signal which can be ignored. 2. 10461 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	98.05	-	-	92.17	35.07	9.1	38.29	100	23	Peak
5230	85.96	-	-	80.08	35.07	9.1	38.29	100	23	Average
10461	35.14	-38.86	74	57.27	1.55	13.2	36.88	100	67	Peak



### 3.5 AC Conducted Emission Measurement

#### 3.5.1 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 $\mu$ 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.

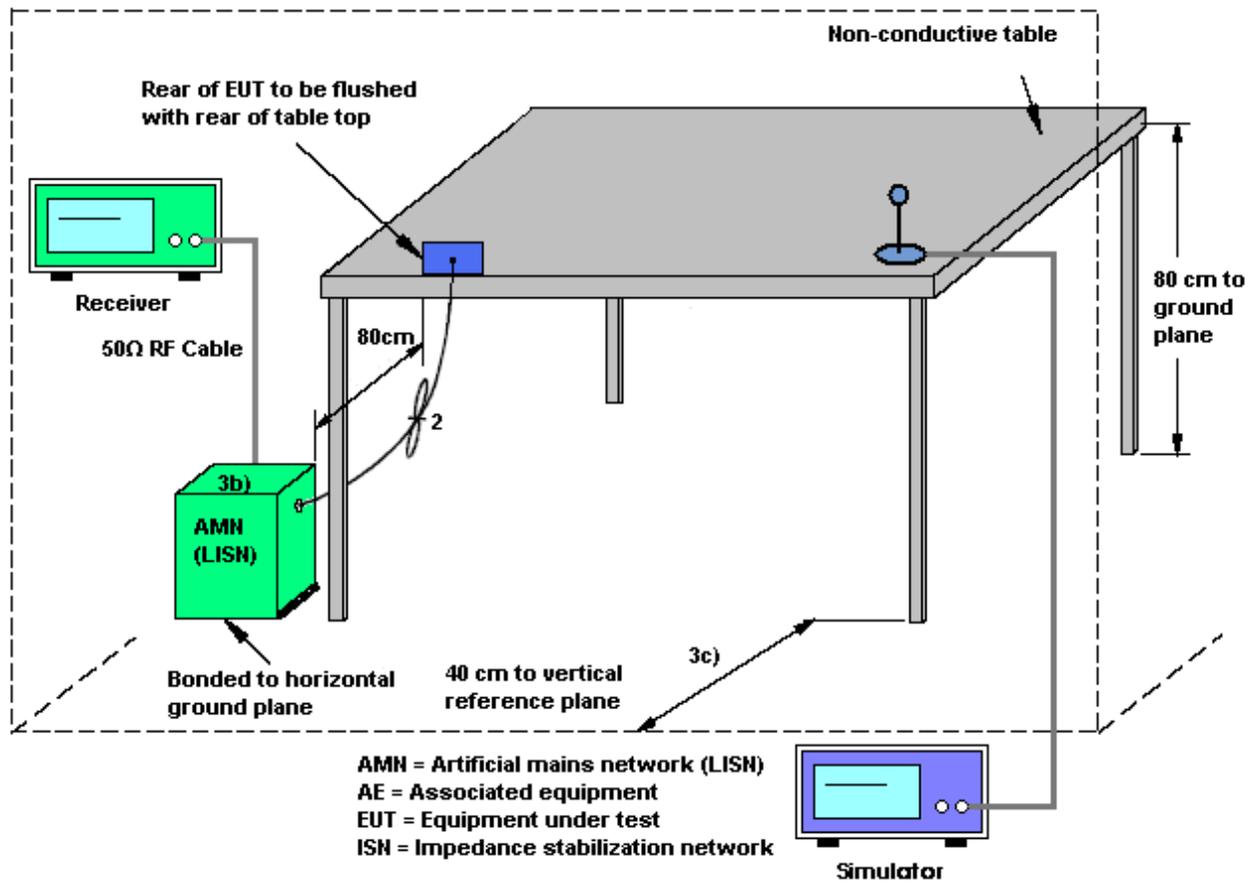
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 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.

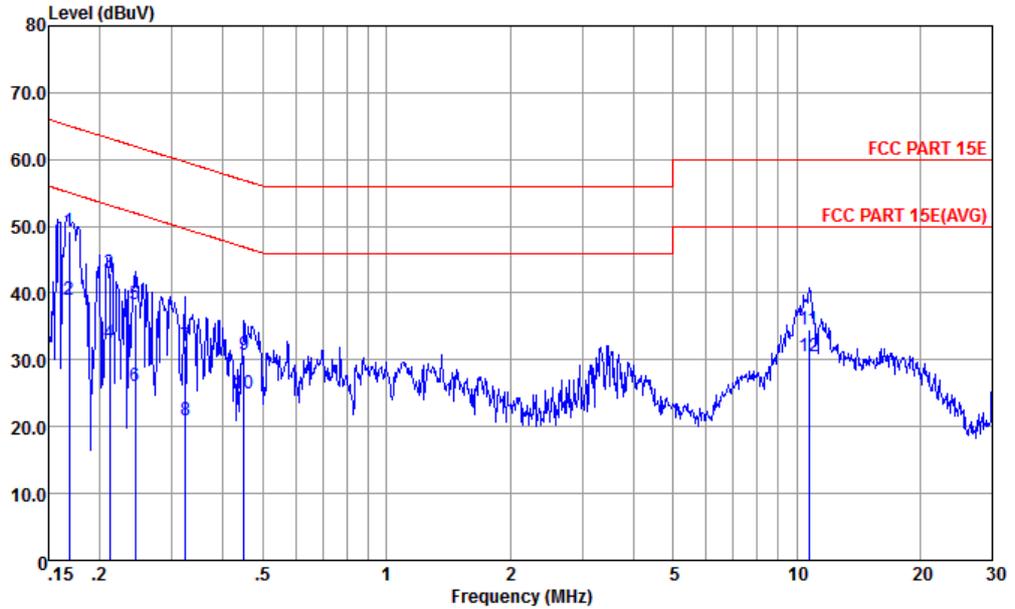
### 3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Eligah Wang	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5G) Link + Earphone + USB Cable (Charging from Adapter)		

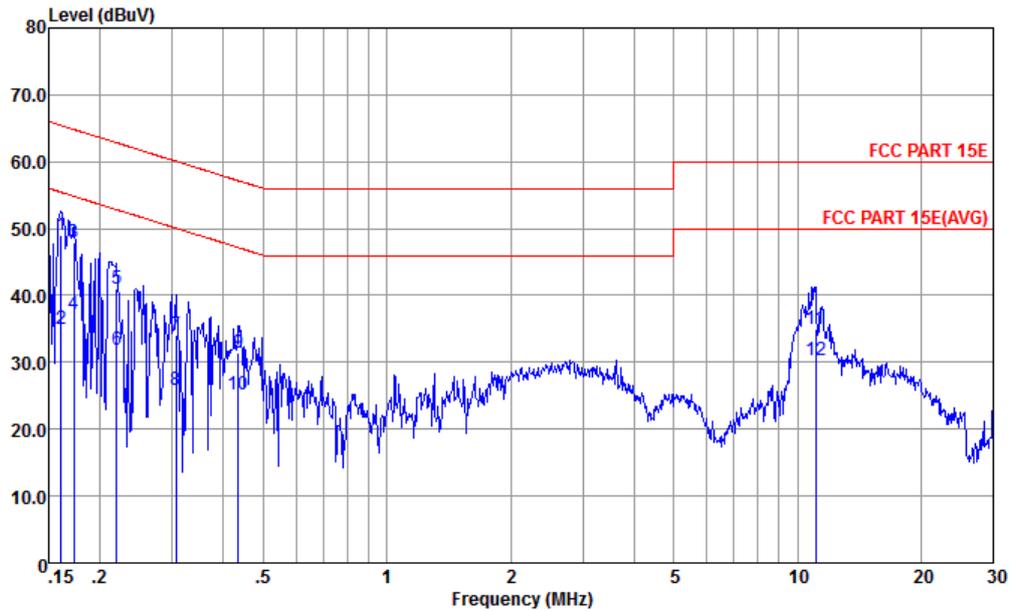


Site : CO01-KS  
Condition : FCC PART 15E LISN-L20140306 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.17	49.22	-16.81	65.03	37.20	1.60	10.42	QP
2	0.17	39.02	-16.01	55.03	27.00	1.60	10.42	Average
3	0.21	42.98	-20.16	63.14	31.50	0.97	10.51	QP
4	0.21	32.58	-20.56	53.14	21.10	0.97	10.51	Average
5	0.24	38.22	-23.73	61.95	26.81	0.89	10.52	QP
6	0.24	26.02	-26.93	51.95	14.61	0.89	10.52	Average
7	0.32	32.04	-27.58	59.62	20.90	0.55	10.59	QP
8	0.32	21.04	-28.58	49.62	9.90	0.55	10.59	Average
9	0.45	30.67	-26.22	56.89	19.80	0.25	10.62	QP
10	0.45	24.97	-21.92	46.89	14.10	0.25	10.62	Average
11	10.73	34.56	-25.44	60.00	23.40	0.20	10.96	QP
12	10.73	30.46	-19.54	50.00	19.30	0.20	10.96	Average



Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Eligah Wang	Relative Humidity :	41~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (5G) Link + Earphone + USB Cable (Charging from Adapter)		



Site : CO01-KS  
 Condition : FCC PART 15E LISN-N20140306 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.16	48.92	-16.51	65.43	36.80	1.73	10.39	QP
2	0.16	35.02	-20.41	55.43	22.90	1.73	10.39	Average
3	0.17	47.99	-16.82	64.81	36.10	1.45	10.44	QP
4	0.17	37.28	-17.53	54.81	25.39	1.45	10.44	Average
5	0.22	40.97	-21.86	62.83	29.50	0.96	10.51	QP
6	0.22	31.77	-21.06	52.83	20.30	0.96	10.51	Average
7	0.31	34.18	-25.88	60.06	22.90	0.70	10.58	QP
8	0.31	25.88	-24.18	50.06	14.60	0.70	10.58	Average
9	0.44	31.48	-25.67	57.15	20.50	0.36	10.62	QP
10	0.44	25.18	-21.97	47.15	14.20	0.36	10.62	Average
11	11.08	35.08	-24.92	60.00	23.89	0.22	10.97	QP
12	11.08	30.38	-19.62	50.00	19.19	0.22	10.97	Average

## 3.6 Frequency Stability Measurement

### 3.6.1 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.

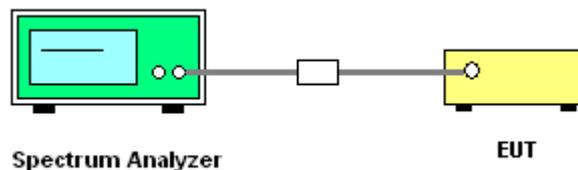
### 3.6.2 Measuring Instruments

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

### 3.6.3 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.

### 3.6.4 Test Setup





3.6.5 Test Result of Frequency Stability

Test Band :	5GHz band 1	Test Engineer :	Issac Song
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Mod.	Data Rate	NTX	Channel	Freq. (MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.5
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	4.2
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.8
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	-10	3.8
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	50	3.8

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



## **3.7 Automatically Discontinue Transmission**

### **3.7.1 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.

### **3.7.2 Measuring Instruments**

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

### **3.7.3 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.

### 3.8 Antenna Requirements

#### 3.8.1 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.

#### 3.8.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

#### 3.8.3 Antenna Gain

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

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

where

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

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

$N_{ANT}$  = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$  if the  $k$ th antenna is being fed by spatial stream  $j$ , or zero if it is not;  
 $G_k$  is the gain in dBi of the  $k$ th antenna.

The EUT supports CDD mode.

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

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



	<b>Chain Port 0</b>	<b>Chain Port 1</b>	<b>DG for Power (dBi)</b>	<b>DG for PSD (dBi)</b>	<b>Power Limit Reduction (dB)</b>	<b>PSD Limit Reduction (dB)</b>
<b>Band I</b>	2.70	2.70	2.70	5.71	0.00	0.00

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

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



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Oct. 28, 2014	Oct. 29, 2014	Oct. 27, 2015	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV30	101338	9kHz~30GHz	May 04, 2014	Oct. 29, 2014	May 03, 2015	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	30MHz~40GHz	Feb. 27, 2014	Oct. 29, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Feb. 27, 2014	Oct. 29, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 25, 2014	Oct. 29, 2014	Oct. 24, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Oct. 25, 2014	Jan. 21, 2015	Oct. 24, 2015	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Oct. 28, 2014	Jan. 21, 2015	Oct. 27, 2015	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 13, 2014	Jan. 21, 2015	Nov. 12, 2015	Radiation (03CH01-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30Mhz-2Ghz	Sep. 13, 2014	Jan. 21, 2015	Sep. 12, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Jan. 21, 2015	Nov. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Jan. 21, 2015	Nov. 07, 2015	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 10, 2014	Jan. 21, 2015	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Jan. 21, 2015	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02371	1GHz~26.5GHz	Oct. 28, 2014	Jan. 21, 2015	Oct. 27, 2015	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jan. 21, 2015	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jan. 21, 2015	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jan. 21, 2015	NCR	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 04, 2014	Jan. 07, 2015	May 03, 2015	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 25, 2014	Jan. 07, 2015	Oct. 24, 2015	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 25, 2014	Jan. 07, 2015	Oct. 24, 2015	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 25, 2014	Jan. 07, 2015	Oct. 24, 2015	Conduction (CO01-KS)



## 5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.3 dB
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	2.5 dB
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