



# FCC RF Test Report

**APPLICANT** : ZTE CORPORATION  
**EQUIPMENT** : CDMA/LTE Multi-mode Digital Mobile Phone  
**BRAND NAME** : ZTE  
**MODEL NAME** : ZTE N9515  
**FCC ID** : SRQ-ZTEN9515  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

The product was received on May 09, 2014 and testing was completed on Jun. 11, 2014. 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.C.**



# TABLE OF CONTENTS

**REVISION HISTORY..... 3**

**SUMMARY OF TEST RESULT ..... 4**

**1 GENERAL DESCRIPTION ..... 5**

    1.1 Applicant ..... 5

    1.2 Manufacturer ..... 5

    1.3 Feature of Equipment Under Test ..... 5

    1.4 Product Specification of Equipment Under Test ..... 5

    1.5 Modification of EUT ..... 6

    1.6 Testing Location ..... 6

    1.7 Applicable Standards ..... 6

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST ..... 7**

    2.1 Carrier Frequency Channel ..... 7

    2.2 Pre-Scanned RF Power ..... 8

    2.3 Test Mode ..... 9

    2.4 Connection Diagram of Test System ..... 10

    2.5 Support Unit used in test configuration and system ..... 11

    2.6 EUT Operation Test Setup ..... 11

    2.7 Measurement Results Explanation Example ..... 12

**3 TEST RESULT ..... 13**

    3.1 26dB & 99% Occupied Bandwidth Measurement ..... 13

    3.2 Maximum Conducted Output Power Measurement ..... 16

    3.3 Power Spectral Density Measurement ..... 19

    3.4 Unwanted Radiated Emission Measurement ..... 22

    3.5 AC Conducted Emission Measurement ..... 35

    3.6 Frequency Stability Measurement ..... 39

    3.7 Automatically Discontinue Transmission ..... 41

    3.8 Antenna Requirements ..... 42

**4 LIST OF MEASURING EQUIPMENTS ..... 43**

**5 UNCERTAINTY OF EVALUATION ..... 44**

**APPENDIX A. SETUP PHOTOGRAPHS**





## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.403(i)	26dB Bandwidth	-	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	$\leq 17$ dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	$\leq 4$ dBm	Pass	-
3.4	15.407(b)	Unwanted Emissions	$\leq -17, -27$ dBm/MHz & 15.209(a)	Pass	Under limit 13.04 dB at 52.310 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 16.89 dB at 6.630 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 & Specification	
<b>Equipment</b>	CDMA/LTE Multi-mode Digital Mobile Phone
<b>Brand Name</b>	ZTE
<b>Model Name</b>	ZTE N9515
<b>FCC ID</b>	SRQ-ZTEN9515
<b>EUT supports Radios application</b>	CDMA/EV-DO/LTE/ WLAN 2.4GHz 802. 11b/g/n HT20/ WLAN 5GHz 802. 11a/n HT20/ Bluetooth v3.0+EDR/Bluetooth v4.0 LE
<b>HW Version</b>	cwcA
<b>SW Version</b>	N9515V1.0.0B01
<b>EUT Stage</b>	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 Frequency Range</b>	5180 MHz ~ 5240 MHz
<b>Maximum Output Power to Antenna</b>	802.11a : 13.89 dBm / 0.0245 W 802.11n HT20 : 13.09 dBm / 0.0204 W
<b>Antenna Type</b>	Dipole Antenna with gain 4.00 dBi
<b>Type of Modulation</b>	OFDM (BPSK / QPSK / 16QAM / 64QAM)

## 1.5 Modification of EUT

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

## 1.6 Testing Location

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.			
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. 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

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

## 1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01
- ♦ 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 (X plane) were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

### 2.1 Carrier Frequency Channel

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



## 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 RF Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	Data Rate	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps								
CH 36	5180	13.89	CH 36	13.54	12.38	12.72	13.61	13.30	13.85	13.26
CH 44	5220	13.57								
CH 48	5240	13.47								

WLAN 5GHz 802.11n-HT20 RF Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0								
CH 36	5180	13.09	CH 36	12.97	13.08	12.91	13.06	12.95	13.03	13.03
CH 44	5220	12.74								
CH 48	5240	12.85								



## 2.3 Test Mode

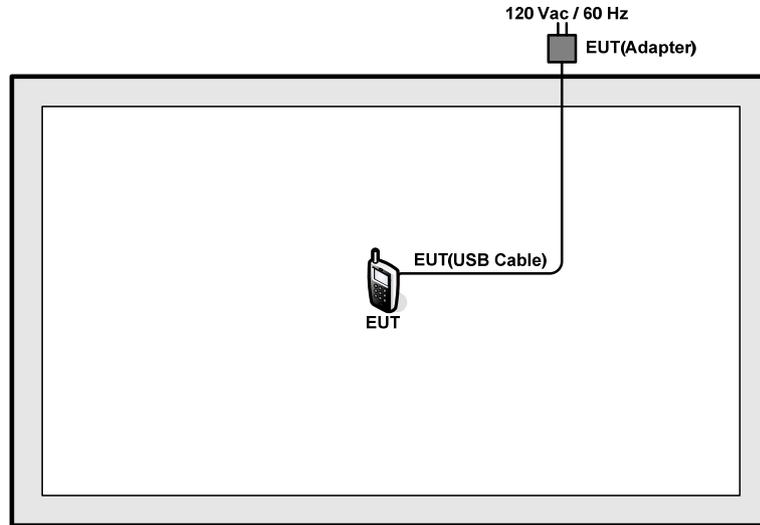
Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
	Test Items	Mode	Data rate	Test Channel
Conducted TCs	26dB BW	802.11a	6 Mbps	L/M/H
	Power Spectral Density	802.11n HT20	MCS0	L/M/H
	Output Power	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/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
	Radiated Spurious Emission	802.11a	6 Mbps	L/M/H
		802.11n HT20	MCS0	L/M/H
AC Conducted Emission	Mode 1 : CDMA2000 BC0 Idle + Bluetooth Link + WLAN 5GHz Link + USB Cable (Charging from Adapter)			
<b>Remark:</b> For radiated TCs, the tests were performed with adapter and USB cable.				

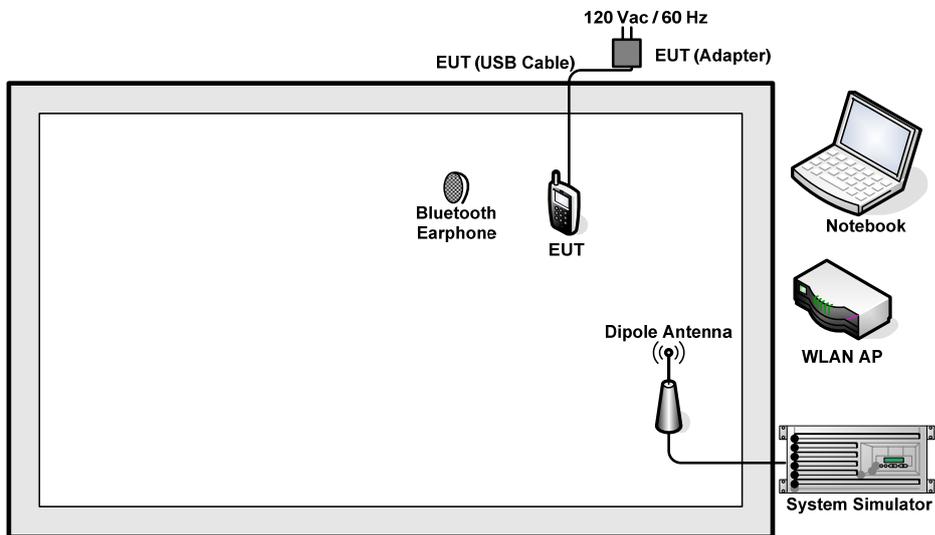
Ch. #		5GHz Band I	
		802.11a	802.11n HT20
L	Low	36	36
M	Middle	44	44
H	High	48	48

## 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.	WLAN AP	D-Link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
3.	DC Power Supply	GWINSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
4.	Notebook	Acer	MS2204	QDS-BRCM1018	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 0.9 m
5.	Bluetooth Earphone	Lenovo	LBH505	N/A	N/A	N/A

## 2.6 EUT Operation Test Setup

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

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



## **2.7 Measurement Results Explanation Example**

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss 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 7.1 dB.

$$\begin{aligned} \text{Offset (dB)} &= \text{RF cable loss (dB)} \\ &= 7.1 \text{ (dB)} \end{aligned}$$

### 3 Test Result

#### 3.1 26dB Bandwidth Measurement

##### 3.1.1 Description of 26dB Bandwidth

This section is for reporting purpose only.

There is no restriction limits for bandwidth.

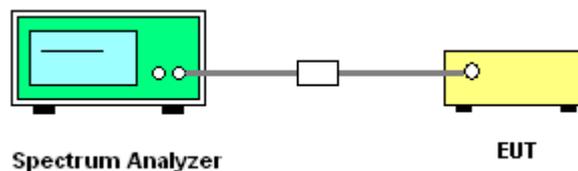
##### 3.1.2 Measuring Instruments

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. Measure and record the results in the test report.

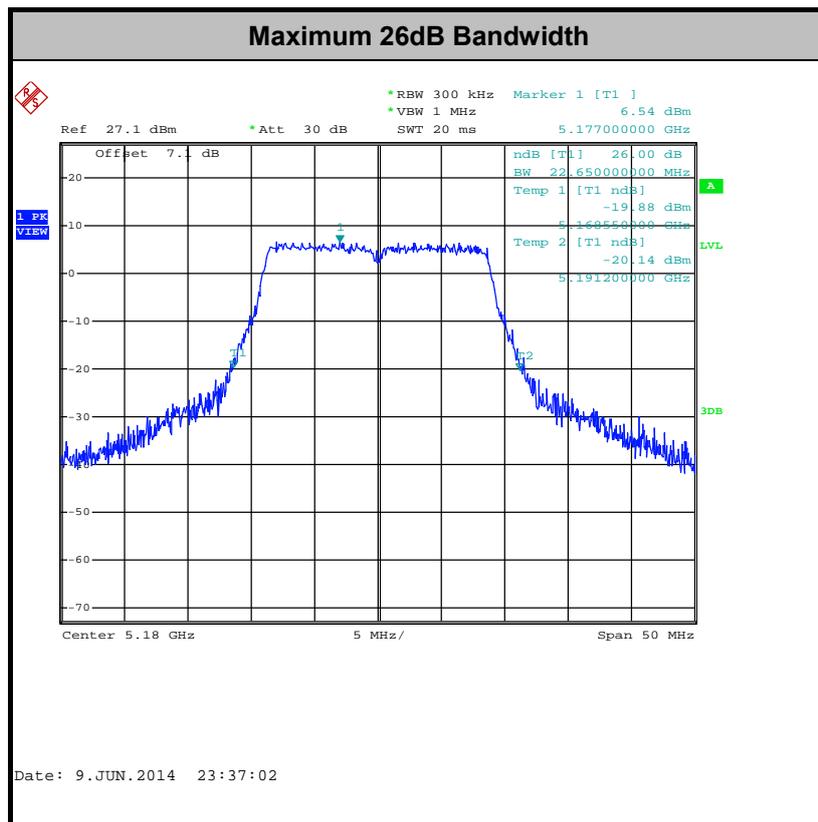
##### 3.1.4 Test Setup



### 3.1.5 Test Result of 26dB Bandwidth Plots

Test Band :	5GHz band 1	Temperature :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

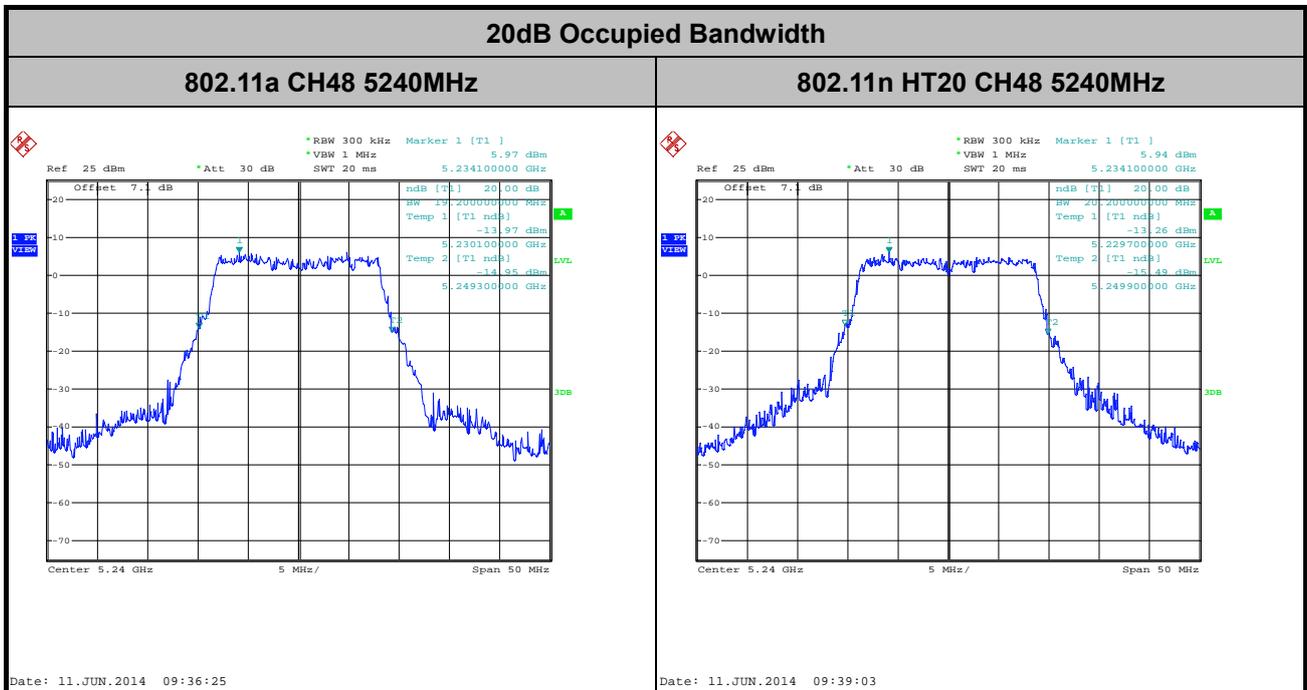
Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	26dB Bandwidth (MHz)	FCC 26dB Bandwidth Power Limit (dBm)
11a	6Mbps	1	36	5180	22.25	16.99
11a	6Mbps	1	44	5220	22.20	16.99
11a	6Mbps	1	48	5240	21.75	16.99
HT20	MCS0	1	36	5180	22.65	16.99
HT20	MCS0	1	44	5220	22.50	16.99
HT20	MCS0	1	48	5240	22.10	16.99





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
11a	6Mbps	1	48	5240	19.20	5249.30	5250	Pass
HT20	MCS0	1	48	5240	20.20	5249.90		Pass





## **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.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

### **3.2.2 Measuring Instruments**

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

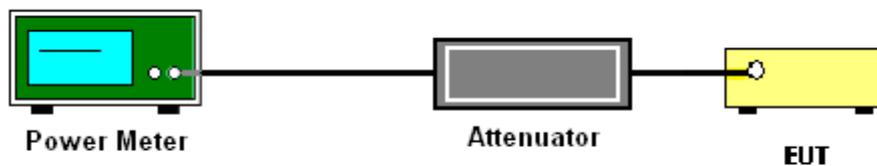
### 3.2.3 Test Procedures

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 :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

Mod.	Data Rate	N <sub>TX</sub>	Channel	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	-	Pass/Fail
11a	6Mbps	1	36	5180	0.58	13.89	24.00	4.00	-	Pass
11a	6Mbps	1	44	5220	0.58	13.57	24.00	4.00		Pass
11a	6Mbps	1	48	5240	0.58	13.47	24.00	4.00		Pass
HT20	MCS0	1	36	5180	0.61	13.09	24.00	4.00		Pass
HT20	MCS0	1	44	5220	0.61	12.74	24.00	4.00		Pass
HT20	MCS0	1	48	5240	0.61	12.85	24.00	4.00		Pass

Note: Final Output Power equals to Measured Output Power adds the duty factor.



### **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.

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

#### **3.3.2 Measuring Instruments**

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

### 3.3.3 Test Procedures

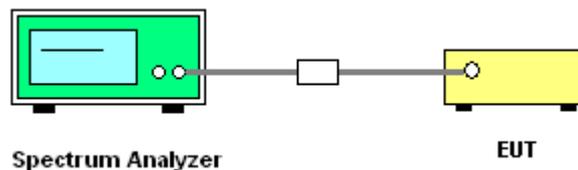
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01.  
Section F) Maximum power spectral density.

#### # 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.

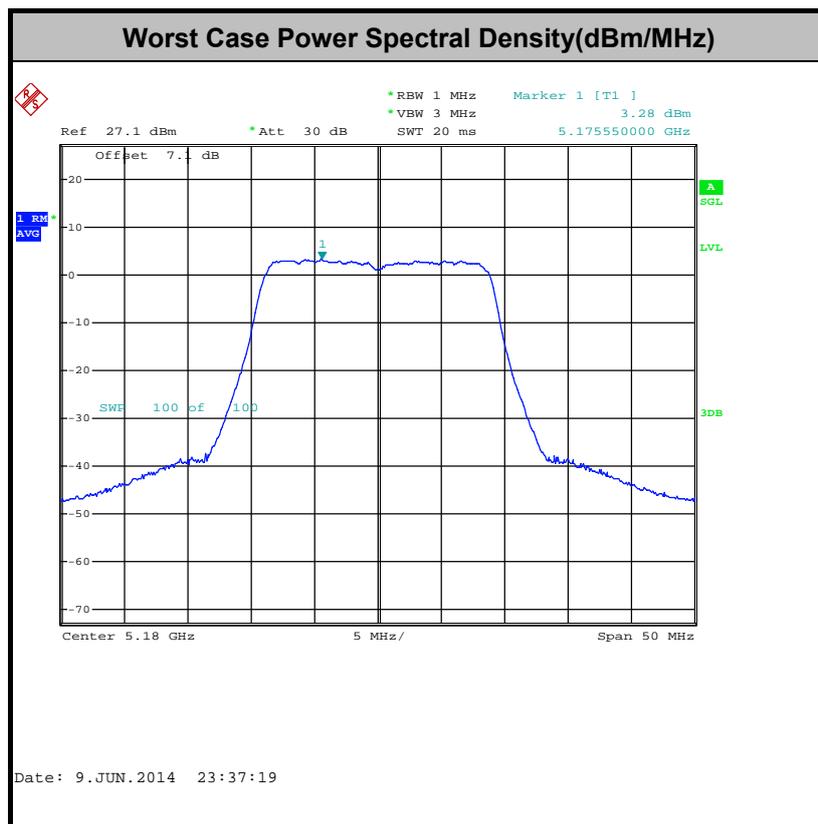
### 3.3.4 Test Setup



### 3.3.5 Test Result of Power Spectral Density

Test Band :	5GHz band 1	Temperature :	23~24°C
Test Engineer :	Adonis Li	Relative Humidity :	47~48%

Mod.	Data Rate	N <sub>TX</sub>	CH	Freq. (MHz)	Duty Factor (dB)	Average Power Density (dBm/MHz)	Average PSD Limit (dBm)	DG (dBi)	EIRP PSD Limit (dBm)	Pass/Fail
11a	6Mbps	1	36	5180	0.58	3.33	4.00	4.00	10	Pass
11a	6Mbps	1	44	5220	0.58	2.55	4.00	4.00	10	Pass
11a	6Mbps	1	48	5240	0.58	2.80	4.00	4.00	10	Pass
HT20	MCS0	1	36	5180	0.61	3.89	4.00	4.00	10	Pass
HT20	MCS0	1	44	5220	0.61	3.57	4.00	4.00	10	Pass
HT20	MCS0	1	48	5240	0.61	3.41	4.00	4.00	10	Pass



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

### 3.4 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.

#### 3.4.1 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.

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

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

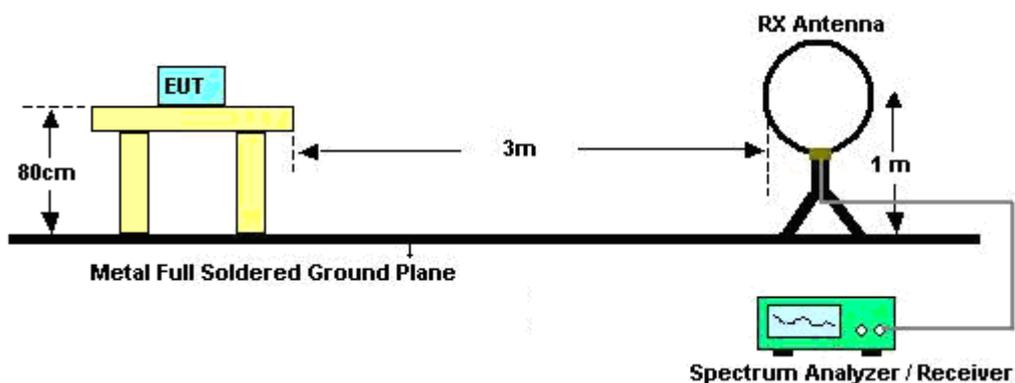
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- $VBW \geq 1/T$ , when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11a	87.44	1.36	0.73	1kHz
802.11n HT20	86.97	1.28	0.78	1kHz

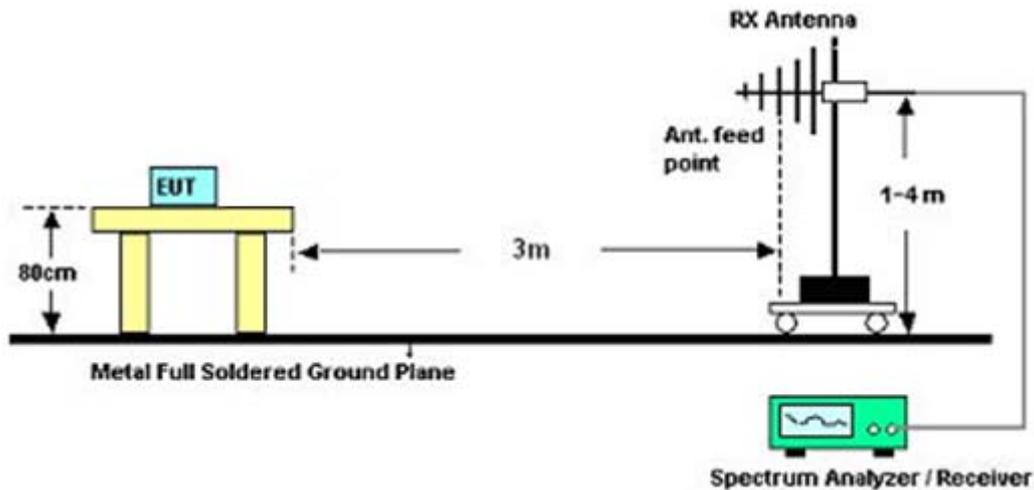
2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters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

### 3.4.4 Test Setup

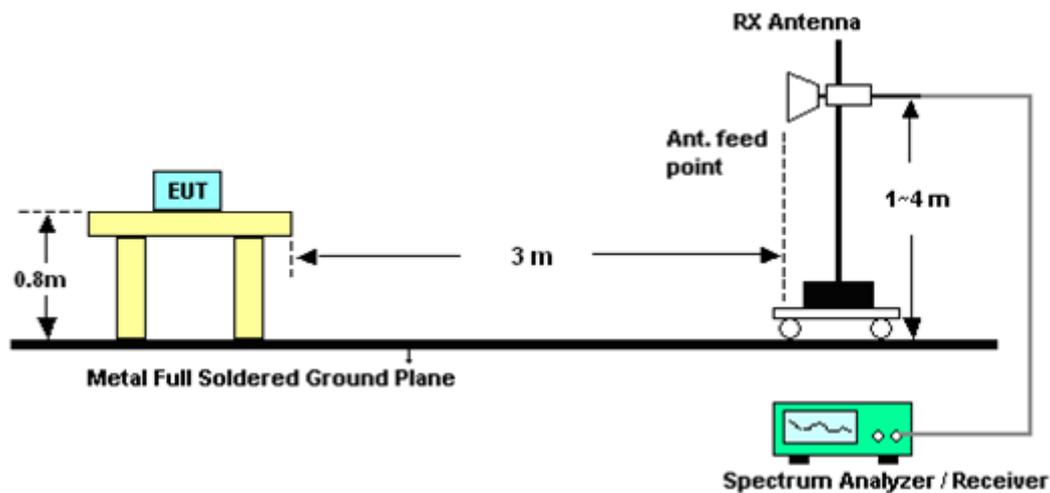
For radiated emissions below 30MHz



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

3.4.6.1 Test Result of Radiated Band Edges

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

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
5127.4	52.61	-21.39	74	45.77	35.24	5.38	33.78	100	321	Peak
5127.65	40	-14	54	33.16	35.24	5.38	33.78	100	321	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
5110.9	53.34	-20.66	74	46.51	35.23	5.38	33.78	108	208	Peak
5127.65	39.7	-14.3	54	32.86	35.24	5.38	33.78	108	208	Average

Test Mode :	802.11a	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

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
5388.05	53.67	-20.33	74	46.6	35.34	5.45	33.72	101	332	Peak
5352.45	39.79	-14.21	54	32.75	35.32	5.45	33.73	101	332	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
5380.1	52.94	-21.06	74	45.87	35.34	5.45	33.72	104	230	Peak
5350.25	39.77	-14.23	54	32.73	35.32	5.45	33.73	104	230	Average



Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	36	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

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
5111.55	52.79	-21.21	74	45.96	35.23	5.38	33.78	101	329	Peak
5128.4	40.06	-13.94	54	33.22	35.24	5.38	33.78	101	329	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
5126.2	53.49	-20.51	74	46.65	35.24	5.38	33.78	136	229	Peak
5128.35	40.02	-13.98	54	33.18	35.24	5.38	33.78	136	229	Average

Test Mode :	802.11n HT20	Temperature :	22~23°C
Test Channel :	48	Relative Humidity :	40~41%
Test Engineer :	Jun Liu		

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
5384.3	52.94	-21.06	74	45.87	35.34	5.45	33.72	100	321	Peak
5352.6	39.69	-14.31	54	32.65	35.32	5.45	33.73	100	321	Average

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5354.4	52.8	-21.2	74	45.76	35.32	5.45	33.73	107	227	Peak
5350.15	39.7	-14.3	54	32.66	35.32	5.45	33.73	107	227	Average

**3.4.6.2 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.

<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5180	100.62	-	-	93.74	35.26	5.39	33.77	100	321	Peak
5180	88.4	-	-	81.52	35.26	5.39	33.77	100	321	Average
10359	34.57	-39.43	74	59.88	1.46	7.72	34.49	100	163	Peak

<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dB $\mu$ V/m )	Over Limit ( dB )	Limit Line ( dB $\mu$ V/m )	Read Level ( dB $\mu$ V )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5180	99.92	-	-	93.04	35.26	5.39	33.77	108	208	Peak
5180	88.06	-	-	81.18	35.26	5.39	33.77	108	208	Average
10359	34.82	-39.18	74	60.13	1.46	7.72	34.49	100	85	Peak



<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	101.32	-	-	94.41	35.27	5.4	33.76	113	330	Peak
5220	89.16	-	-	82.25	35.27	5.4	33.76	113	330	Average
10440	33	-41	74	58.15	1.53	7.76	34.44	110	49	Peak

<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	98.87	-	-	91.96	35.27	5.4	33.76	107	204	Peak
5220	87.85	-	-	80.94	35.27	5.4	33.76	107	204	Average
10440	33.24	-40.76	74	58.39	1.53	7.76	34.44	100	285	Peak



<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	101.14	-	-	94.2	35.28	5.41	33.75	100	332	Peak
5240	89.68	-	-	82.74	35.28	5.41	33.75	100	332	Average
10479	33.46	-40.54	74	58.52	1.56	7.79	34.41	110	51	Peak

<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	3. 5240 MHz is fundamental signal which can be ignored. 4. 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	100.64	-	-	93.7	35.28	5.41	33.75	104	230	Peak
5240	89.17	-	-	82.23	35.28	5.41	33.75	104	230	Average
10479	33.24	-40.76	74	58.3	1.56	7.79	34.41	100	205	Peak



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	25.96	-14.04	40	41.76	17.29	0.49	33.58	145	112	Peak
127.97	16.57	-26.93	43.5	37.4	11.72	1.04	33.59	-	-	Peak
232.73	21.91	-24.09	46	42.87	11.11	1.41	33.48	-	-	Peak
424.79	17.71	-28.29	46	32.93	16.15	1.89	33.26	-	-	Peak
749.74	22.17	-23.83	46	32.59	19.9	2.46	32.78	-	-	Peak
883.6	22.79	-23.21	46	32.15	20.47	2.68	32.51	-	-	Peak
5180	99.75	-	-	92.87	35.26	5.39	33.77	101	329	Peak
5180	88.21	-	-	81.33	35.26	5.39	33.77	101	329	Average
10359	34.69	-39.31	74	60	1.46	7.72	34.49	100	158	Peak



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	36	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5180 MHz is fundamental signal which can be ignored. 2. 10359 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( 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	26.96	-13.04	40	52.86	7.01	0.67	33.58	100	0	Peak
192.96	22.73	-20.77	43.5	46.38	8.64	1.27	33.56	-	-	Peak
228.85	22.3	-23.7	46	43.57	10.83	1.39	33.49	-	-	Peak
363.68	18.75	-27.25	46	35.55	14.83	1.72	33.35	-	-	Peak
562.53	22.05	-23.95	46	34.37	18.52	2.16	33	-	-	Peak
650.8	25.72	-20.28	46	37.45	18.91	2.31	32.95	-	-	Peak
5180	99.55	-	-	92.67	35.26	5.39	33.77	136	229	Peak
5180	87.79	-	-	80.91	35.26	5.39	33.77	136	229	Average
10359	35.23	-38.77	74	60.54	1.46	7.72	34.49	100	201	Peak



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	100.27	-	-	93.36	35.27	5.4	33.76	112	320	Peak
5220	88.7	-	-	81.79	35.27	5.4	33.76	112	320	Average
10440	33.07	-40.93	74	58.22	1.53	7.76	34.44	100	41	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	44	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	100.87	-	-	93.96	35.27	5.4	33.76	106	272	Peak
5220	88.94	-	-	82.03	35.27	5.4	33.76	106	272	Average
10440	32.87	-41.13	74	58.02	1.53	7.76	34.44	100	89	Peak



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	101.81	-	-	94.87	35.28	5.41	33.75	100	321	Peak
5240	89.99	-	-	83.05	35.28	5.41	33.75	100	321	Average
10479	32.02	-41.98	74	57.08	1.56	7.79	34.41	100	105	Peak

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	48	<b>Relative Humidity :</b>	40~41%
<b>Test Engineer :</b>	Jun Liu	<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	101.14	-	-	94.2	35.28	5.41	33.75	107	227	Peak
5240	89.58	-	-	82.64	35.28	5.41	33.75	107	227	Average
10479	34.48	-39.52	74	59.54	1.56	7.79	34.41	100	261	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.

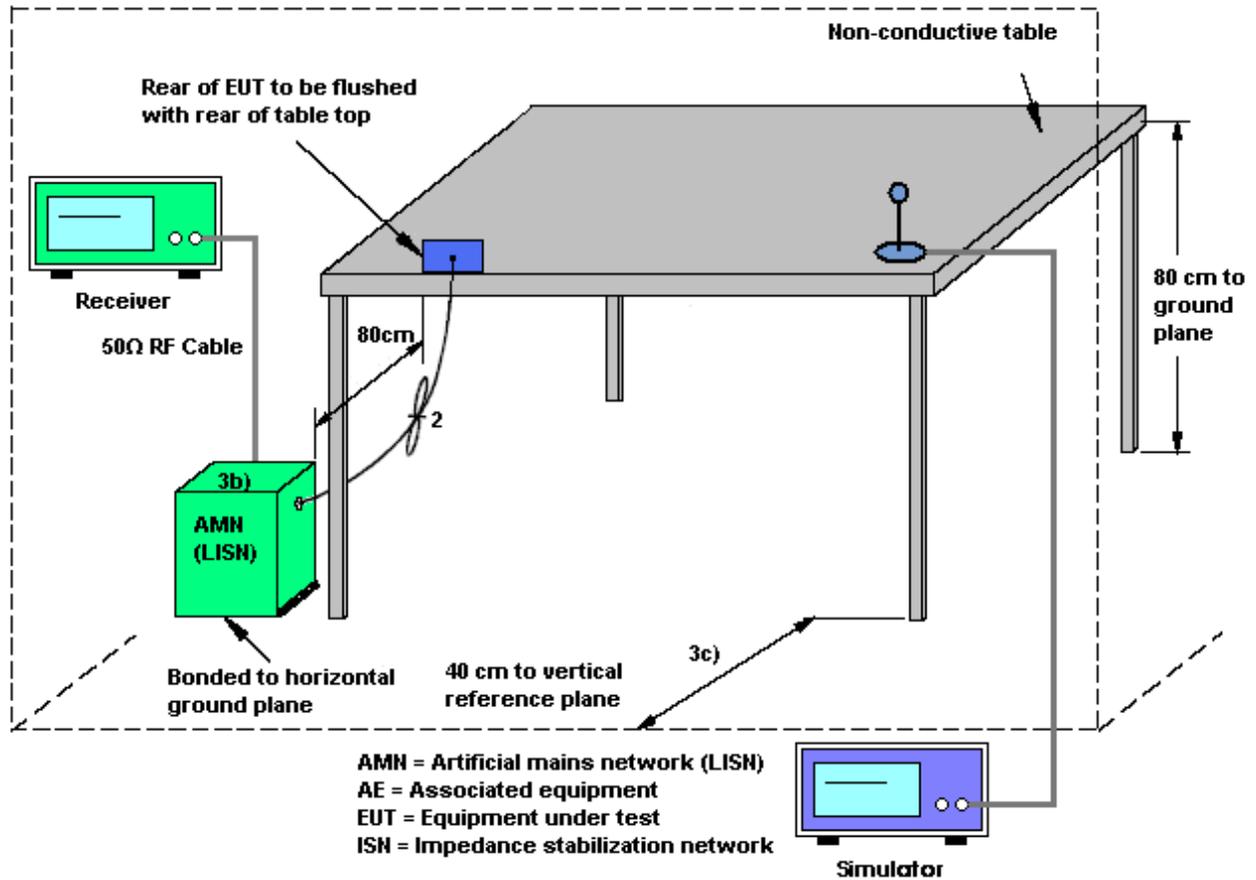
### 3.5.2 Measuring Instruments

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.

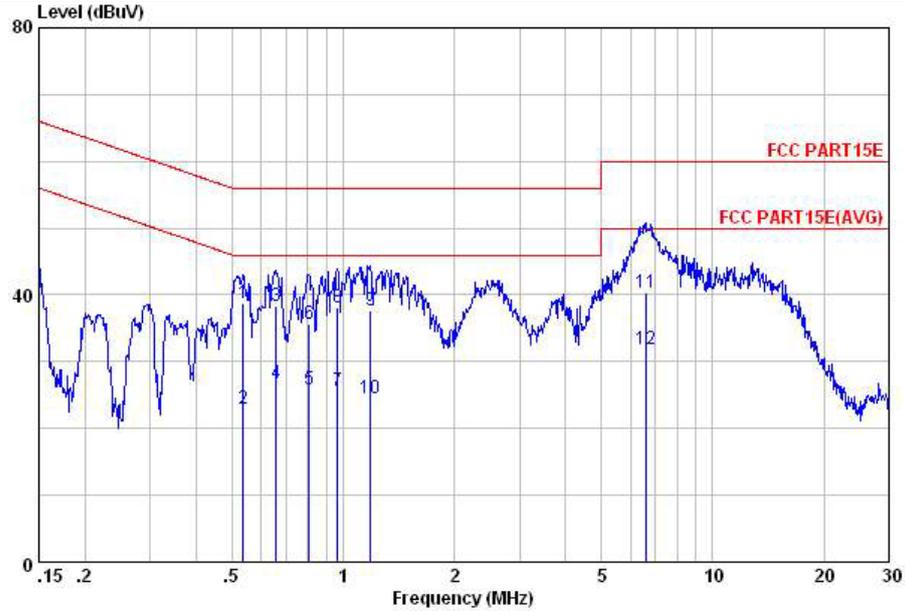
### 3.5.4 Test Setup





3.5.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Eligah Wang	Relative Humidity :	37~39%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC0 Idle + Bluetooth Link + WLAN 5GHz Link + USB Cable (Charging from Adapter)		

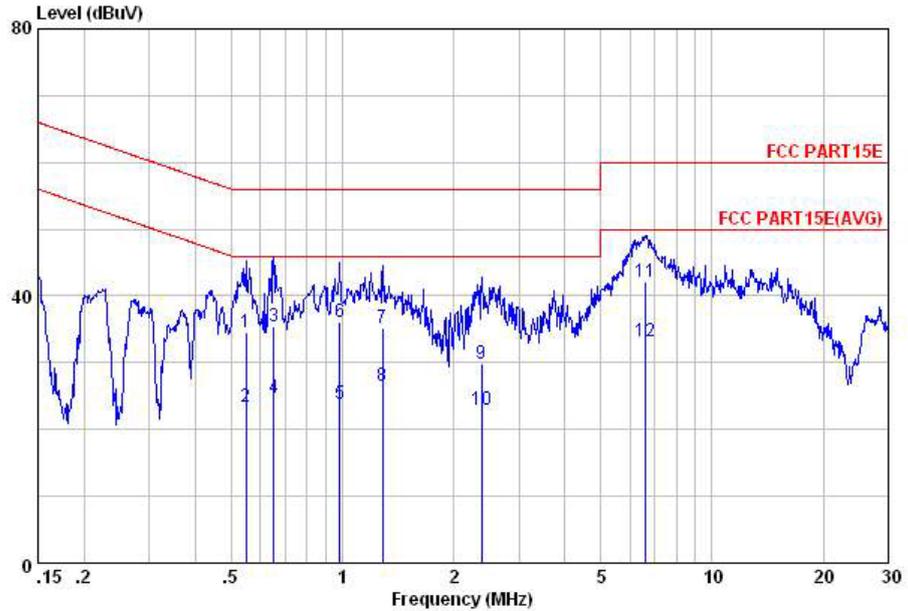


Site : C001-KS  
 Condition: FCC PART15E LISN-L20130306 LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.53	38.76	-17.24	56.00	28.30	0.20	10.26	QP
2	0.53	23.06	-22.94	46.00	12.60	0.20	10.26	Average
3	0.66	38.32	-17.68	56.00	27.90	0.20	10.22	QP
4	0.66	26.72	-19.28	46.00	16.30	0.20	10.22	Average
5	0.81	25.96	-20.04	46.00	15.60	0.16	10.20	Average
6	0.81	35.66	-20.34	56.00	25.30	0.16	10.20	QP
7	0.96	25.59	-20.41	46.00	15.30	0.11	10.18	Average
8	0.96	38.19	-17.81	56.00	27.90	0.11	10.18	QP
9	1.18	37.58	-18.42	56.00	27.30	0.10	10.18	QP
10	1.18	24.58	-21.42	46.00	14.30	0.10	10.18	Average
11	6.59	40.41	-19.59	60.00	29.90	0.20	10.31	QP
12	6.59	31.81	-18.19	50.00	21.30	0.20	10.31	Average



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Eligah Wang	Relative Humidity :	37~39%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC0 Idle + Bluetooth Link + WLAN 5GHz Link + USB Cable (Charging from Adapter)		



Site : C001-KS  
 Condition: FCC PART15E LISN-N20130306 NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.55	34.43	-21.57	56.00	23.90	0.28	10.25	QP
2	0.55	23.33	-22.67	46.00	12.80	0.28	10.25	Average
3	0.65	35.34	-20.66	56.00	24.90	0.22	10.22	QP
4	0.65	24.74	-21.26	46.00	14.30	0.22	10.22	Average
5	0.98	23.88	-22.12	46.00	13.60	0.10	10.18	Average
6	0.98	36.18	-19.82	56.00	25.90	0.10	10.18	QP
7	1.28	35.18	-20.82	56.00	24.90	0.10	10.18	QP
8	1.28	26.58	-19.42	46.00	16.30	0.10	10.18	Average
9	2.38	29.91	-26.09	56.00	19.60	0.11	10.20	QP
10	2.38	22.91	-23.09	46.00	12.60	0.11	10.20	Average
11	6.63	42.11	-17.89	60.00	31.60	0.20	10.31	QP
12	6.63	33.11	-16.89	50.00	22.60	0.20	10.31	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.

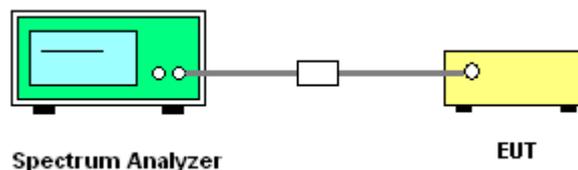
### 3.6.2 Measuring Instruments

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 1,2,3	Test Engineer :	Adonis Li
-------------	-----------------	-----------------	-----------

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	5180.025	0.025	4.83	20	3.5
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	20	4.35
11a	6Mbps	1	36	5180	5180.000	0.000	0.00	20	3.8
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	-10	3.8
11a	6Mbps	1	36	5180	5179.975	-0.025	-4.83	55	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**

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	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Jun. 09, 2014~ Jun. 11, 2014	Dec. 27, 2014	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	30MHz~40GHz	Feb. 27, 2014	Jun. 09, 2014~ Jun. 11, 2014	Feb. 26, 2015	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Feb. 27, 2014	Jun. 09, 2014~ Jun. 11, 2014	Feb. 26, 2015	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 05, 2013	Jun.08, 2014	Nov. 04, 2014	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 28, 2013	Jun.08, 2014	Dec. 27, 2014	Radiation (03CH01-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 09, 2013	Jun.08, 2014	Oct. 08, 2014	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Jan. 08, 2014	Jun.08, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75959	1GHz~18GHz	Jan. 08, 2014	Jun.08, 2014	Jan. 07, 2015	Radiation (03CH01-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 18, 2013	Jun. 08, 2014	Nov. 17, 2014	Radiation (03CH01-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA1702 49	15GHz~40GHz	Mar. 10, 2014	Jun.08, 2014	Mar. 09, 2015	Radiation (03CH01-KS)
Amplifier	com-power	PA-103A	161073	1MHz~1GHz	May 04, 2014	Jun. 08, 2014	May 03, 2015	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A023 71	1GHz~26.5GHz	Dec. 10, 2013	Jun.08, 2014	Dec. 09, 2014	Radiation (03CH01-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Jun. 08, 2014	NCR	Radiation (03CH01-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jun.08, 2014	NCR	Radiation (03CH01-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jun. 08, 2014	NCR	Radiation (03CH01-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	May 04, 2014	Jun. 11, 2014	May 03, 2015	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Dec. 10, 2013	Jun. 11, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Dec. 10, 2013	Jun. 11, 2014	Dec. 09, 2014	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP00000 0811	AC 0V~300V, 45Hz~1000Hz	Nov. 12, 2013	Jun. 11, 2014	Nov. 11, 2014	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
---	-----

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

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