

# FCC RF Test Report

APPLICANT : DT Research Inc.  
EQUIPMENT : WLAN Module  
BRAND NAME : DT Research Inc.  
MODEL NAME : 600B  
FCC ID : YE3600B  
STANDARD : FCC Part 15 Subpart C §15.247  
CLASSIFICATION : (DTS) Digital Transmission System

The product was received on Feb. 22, 2013 and completely tested on Mar. 16, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown the compliance with the applicable technical standards.

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



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Reviewed by: Joseph Lin / Supervisor



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Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

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DTS v1.0

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### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(b)	RSS-210 A8.4	Power Output Measurement	≤ 30dBm	Pass	-
3.1.6	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 5.50 dB at 2483.770 MHz
3.3	15.207	RSS-Gen 7.2.4	AC Conducted Emission	15.207(a)	Pass	Under limit 18.90 dB at 29.510 MHz
3.3	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-



# 1 General Description

## 1.1 Applicant

DT Research Inc.  
6F, NO. 1, NingPo E. St., Taipei, 100 Taiwan, R.O.C.

## 1.2 Manufacturer

DT Research Inc.  
6F, NO. 1, NingPo E. St., Taipei, 100 Taiwan, R.O.C.

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	WLAN Module
Brand Name	DT Research Inc.
Model Name	600B
FCC ID	YE3600B
Installed into Mobile Tablet	Brand Name: DT Research Inc. Model Name: DT398 FCC ID: YE3800B
EUT supports Radios application	CDMA/EV-DO WLAN 11abgn / Bluetooth 2.1/3.0/4.0
EUT Stage	Production Unit

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

### 1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
<b>Tx/Rx Channel Frequency Range</b>	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n: 5745~5825MHz.
<b>Maximum Output Power to Antenna</b>	<p><b>&lt;2412 MHz ~ 2462 MHz &gt;</b></p> <p><b>&lt;Ant. 1&gt;</b> 802.11b : 19.45 dBm (0.0881 W) 802.11g : 21.83 dBm (0.1524 W)</p> <p><b>&lt;Ant. 2&gt;</b> 802.11b : 18.15 dBm (0.0653 W) 802.11g : 21.21 dBm (0.1321 W)</p> <p><b>&lt;SISO Ant. 1&gt;</b> 802.11n HT20 : 21.96 dBm (0.1570 W) 802.11n HT40 : 19.93 dBm (0.0984 W)</p> <p><b>&lt;SISO Ant. 2&gt;</b> 802.11n HT20 : 20.85 dBm (0.1216 W) 802.11n HT40 : 18.66 dBm (0.0735 W)</p> <p><b>&lt;MIMO Ant. 1+2&gt;</b> 802.11n HT20 : 22.76 dBm (0.1888 W) 802.11n HT40 : 22.47 dBm (0.1766 W)</p> <p><b>&lt;5745 MHz ~ 5825 MHz &gt;</b></p> <p><b>&lt;Ant. 1&gt;</b> 802.11a : 21.27 dBm (0.1340 W)</p> <p><b>&lt;Ant. 2&gt;</b> 802.11a : 22.16 dBm (0.1644 W)</p> <p><b>&lt;SISO Ant. 1&gt;</b> 802.11n HT20 : 21.33 dBm (0.1358 W) 802.11n HT40 : 21.56 dBm (0.1432 W)</p> <p><b>&lt;SISO Ant. 2&gt;</b> 802.11n HT20 : 22.04 dBm (0.1600 W) 802.11n HT40 : 22.56 dBm (0.1803 W)</p> <p><b>&lt;MIMO Ant. 1+2&gt;</b> 802.11n HT20 : 23.16 dBm (0.2070 W) 802.11n HT40 : 23.14 dBm (0.2061 W)</p>

Product Specification subjective to this standard			
Antenna Type	<b>Ant. 1 (Main Antenna):</b> 802.11b/g/n : PIFA Antenna type with gain 3.47 dBi 802.11a/n : PIFA Antenna type with gain 1.22 dBi		
	<b>Ant. 2 (Aux. Antenna):</b> 802.11b/g/n : PIFA Antenna type with gain 1.80 dBi 802.11a/n : PIFA Antenna type with gain 0.81 dBi		
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)		
Antenna Function for Transmitter		Ant. 1	Ant. 2
	802.11 b	V	V
	802.11 g	V	V
	802.11 a	V	V
	802.11 n SISO	V	V
	802.11 n MIMO	V	V
Note: MIMO mode is uncorrelated. Ant. 1 and Ant. 2 could not transmit simultaneously under 802.11 a/n SISO mode			

### 1.5 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
Test Site Location	No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978			
Test Site No.	<b>Sporton Site No.</b>			<b>FCC/IC Registration No.</b>
	TH02-HY	CO05-HY	03CH07-HY	722060/4086B-1

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



## 1.6 Applied Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v02
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v01r02.
- ♦ 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 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)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4	149	5745	159	5795
	151	5755	161	5805
	157	5785	165	5825



## 2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and antenna configurations as following table and the highest power data rates were chosen for full test in the following tables. Final Output Power equals to Measured Output Power adds the duty factor.

<Ant. 1>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	19.45	19.43	19.41	19.43

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.83	21.72	21.70	21.63	21.66	21.59	21.53	21.48

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.96	21.53	21.63	21.57	21.41	21.63	21.73	21.41

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	19.93	19.68	19.81	19.79	19.80	19.88	19.84	19.72

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.27	21.19	21.23	21.06	21.18	21.21	21.19	21.23

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.33	21.04	21.03	21.05	21.01	20.98	21.32	21.12

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.56	21.53	21.51	21.52	21.51	21.54	21.51	21.50



<Ant. 2>

802.11b				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	18.15	18.13	18.09	18.08

802.11g								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.12	21.03	20.94	20.88	20.82	20.75	20.53	20.58

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	20.85	20.47	20.51	20.46	20.48	20.68	20.79	20.53

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	18.66	18.49	18.31	18.59	18.23	18.61	18.62	18.55

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	22.16	22.01	22.11	21.94	22.12	22.05	22.06	22.12

5GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	22.04	21.9	21.8	21.85	21.86	21.91	21.77	21.79

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.56	22.51	22.54	22.52	22.48	22.46	22.55	22.51



MIMO <Ant. 1+2>

2.4GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	22.76	22.71	22.72	22.74	22.72	22.71	22.74	22.68

2.4GHz 802.11n HT40								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	22.47	22.24	22.19	22.44	22.42	22.34	22.35	22.41

5GHz 802.11n HT20								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	23.16	23.13	23.15	23.15	23.15	23.15	23.14	23.14

5GHz 802.11n HT40								
Data Rate (MHz)	MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15
Peak Power (dBm)	23.14	22.92	22.96	23.11	23.07	23.03	23.10	23.13

Note: MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.



### 2.3 Test Mode

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

**<2.4GHz>**

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	Output Power	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9
Radiated TCs	Radiated Band EDGE	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	6.5 Mbps	1/11
		802.11n HT40	13.5 Mbps	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	6.5 Mbps	1/6/11
		802.11n HT40	13.5 Mbps	3/6/9

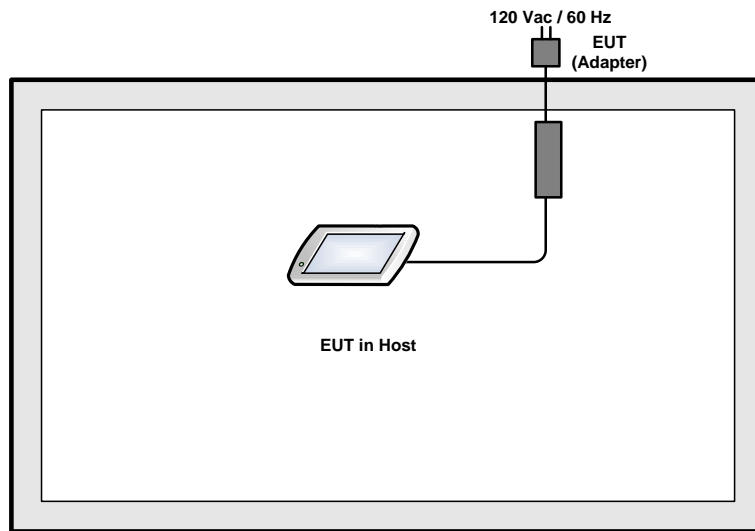
**<5GHz>**

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Conducted TCs	Output Power	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
		802.11n HT40	13.5 Mbps	151/159
Radiated TCs	Radiated Band EDGE	802.11a	6 Mbps	149/165
		802.11n HT20	6.5 Mbps	149/165
		802.11n HT40	13.5 Mbps	151/159
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	6.5 Mbps	149/157/165
		802.11n HT40	13.5 Mbps	151/159

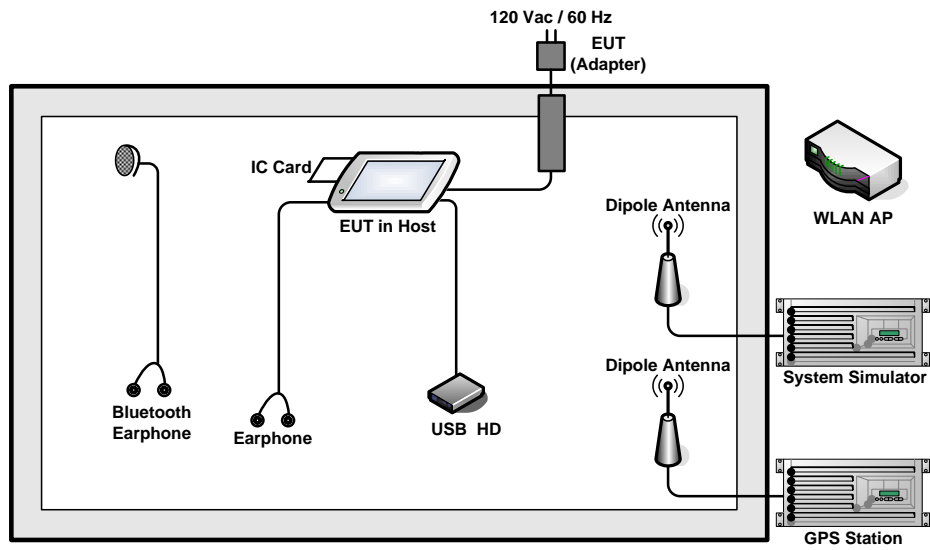
Test Cases	
AC Conducted Emission	Mode 1 : CDMA2000 BC1 Idle + WLAN (2.4G) Link + Bluetooth Link + GPS Rx + MPEG4 + H Patten + TC
<b>Remark:</b> TC stands for Test Configuration, and consists of USB Data Link with USB HD, Adapter, SD Card, Earphone, and IC Card.	

## 2.4 Connection Diagram of Test System

<WLAN Tx Mode>



<AC Conducted Emission Mode>



2.5 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	T&E	GS-50	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
4.	USB3.0 HD	WD	WDBPCK5000ABK-PESN	FCC DoC	Shielded, 0.5 m	N/A
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
6.	Earphone	Merry	EMC147-017	N/A	N/A	N/A
7.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
8.	IC Card	N/A	N/A	N/A	N/A	N/A



## **2.6 Measurement Results Explanation Example**

**For all conducted test items:**

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

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

*Offset = RF cable loss + attenuator factor.*

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

Example :

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



### 3 Test Result

#### 3.1 Peak Output Power Measurement

##### 3.1.1 Limit of Peak Output Power

For systems using digital modulation in the 2400-2483.5MHz and 5725-5850MHz, the limit for peak output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

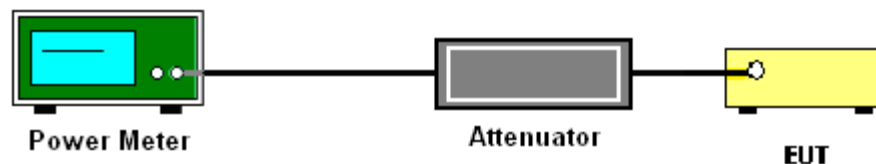
##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v02.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.
5. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v01r02.

##### 3.1.4 Test Setup





3.1.5 Test Result of Peak Output Power

Test Mode :	802.11b	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11b Peak Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
		Ant. 1	Ant. 2		
01	2412	19.19	18.15	30	Pass
06	2437	19.45	16.70	30	Pass
11	2462	19.27	17.50	30	Pass

Test Mode :	802.11g	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11g Peak Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
		Ant. 1	Ant. 2		
01	2412	20.29	19.87	30	Pass
06	2437	21.83	21.12	30	Pass
11	2462	20.37	19.54	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11n HT20 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant. 1+2		
01	2412	20.41	18.91	19.63	18.21	21.99	30	Pass
06	2437	21.96	20.85	20.28	19.15	22.76	30	Pass
11	2462	20.07	18.99	18.92	17.81	21.41	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11n HT40 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant. 1+2		
03	2422	17.32	16.08	16.68	14.58	18.77	30	Pass
06	2437	19.93	18.66	20.21	18.56	22.47	30	Pass
09	2452	16.87	16.55	16.34	14.15	18.39	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.

Test Mode :	802.11a	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11a Measured Output Power (dBm)		Max. Limits (dBm)	Pass/Fail
		Ant. 1	Ant. 2		
149	5745	21.27	22.16	30	Pass
157	5785	20.68	21.94	30	Pass
165	5825	20.61	22.01	30	Pass

Test Mode :	802.11n HT20	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11n HT20 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant. 1+2		
149	5745	21.33	22.04	20.34	19.96	23.16	30	Pass
157	5785	20.72	21.96	19.86	20.09	22.99	30	Pass
165	5825	20.71	21.99	19.91	20.08	23.01	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.



Test Mode :	802.11n HT40	Temperature :	24~26°C
Test Engineer :	Coyote Lin	Relative Humidity :	55~58%

Channel	Frequency (MHz)	802.11n HT40 Peak Output Power (dBm)					Max. Limits (dBm)	Pass/Fail
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant. 1+2		
151	5755	21.56	22.56	20.36	19.89	23.14	30	Pass
159	5795	20.71	22.34	19.86	19.86	22.87	30	Pass

Note : MIMO Ant 1+2 is a calculated result from sum of the power MIMO Ant 1 and MIMO Ant 2.



3.1.6 Test Result of Average output Power (Reporting Only)

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	98.74% for Ant. 1 99.16% for Ant. 2	<b>Duty Factor:</b>	0.06dB for Ant. 1 0.04dB for Ant. 2

Channel	Frequency (MHz)	802.11b Average Output Power (dBm)	
		Ant. 1	Ant. 2
01	2412	16.58	15.56
06	2437	16.88	13.96
11	2462	16.74	14.96

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	99.05% for Ant. 1 99.05% for Ant. 2	<b>Duty Factor:</b>	0.04dB for Ant. 1 0.04dB for Ant. 2

Channel	Frequency (MHz)	802.11g Average Output Power (dBm)	
		Ant. 1	Ant. 2
01	2412	12.85	12.05
06	2437	15.56	15.19
11	2462	12.93	11.66

<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	98.48% for SISO Ant. 1 98.98% for SISO Ant. 2 98.02% for MIMO Ant. 1 97.06% for MIMO Ant. 2	<b>Duty Factor:</b>	0.07dB for SISO Ant. 1 0.04dB for SISO Ant. 2 0.09dB for MIMO Ant. 1 0.13dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)				
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant.1+2
01	2412	11.86	10.42	11.74	10.70	14.26
06	2437	15.31	15.06	13.44	12.33	15.93
11	2462	11.52	10.67	10.95	9.79	13.42



<b>Test Mode :</b>	802.11n HT40	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	97.94% for SISO Ant. 1 96.94% for SISO Ant. 2 95.42% for MIMO Ant. 1 95.42% for MIMO Ant. 2	<b>Duty Factor:</b>	0.09dB for SISO Ant. 1 0.13dB for SISO Ant. 2 0.20dB for MIMO Ant. 1 0.20dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)				
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant.1+2
03	2422	9.15	7.99	7.60	6.28	10.00
06	2437	12.27	11.36	12.75	11.68	15.26
09	2452	8.60	8.74	7.13	5.92	9.58

**Note :**

1. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.
2. The average power is measured by power meter with average power sensor and is reporting only.

<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	98.58% for Ant. 1 99.05% for Ant. 2	<b>Duty Factor:</b>	0.06dB for Ant. 1 0.04dB for Ant. 2

Channel	Frequency (MHz)	802.11a Average Output Power (dBm)	
		Ant. 1	Ant. 2
149	5745	14.38	15.90
157	5785	14.36	15.71
165	5825	14.09	15.81



<b>Test Mode :</b>	802.11n HT20	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	98.98% for SISO Ant. 1 98.48% for SISO Ant. 2 97.06% for MIMO Ant. 1 97.06% for MIMO Ant. 2	<b>Duty Factor:</b>	0.04dB for SISO Ant. 1 0.07dB for SISO Ant. 2 0.13dB for MIMO Ant. 1 0.13dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT20 Average Output Power (dBm)				
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant.1+2
149	5745	14.68	15.72	13.59	13.04	16.33
157	5785	14.28	15.54	13.18	12.94	16.07
165	5825	14.26	15.66	13.29	13.34	16.32

<b>Test Mode :</b>	802.11n HT40	<b>Temperature :</b>	24~26°C
<b>Test Engineer :</b>	Coyote Lin	<b>Relative Humidity :</b>	55~58%
<b>Duty Cycle:</b>	96.94% for SISO Ant. 1 96.94% for SISO Ant. 2 94.70% for MIMO Ant. 1 95.42% for MIMO Ant. 2	<b>Duty Factor:</b>	0.13dB for SISO Ant. 1 0.13dB for SISO Ant. 2 0.24dB for MIMO Ant. 1 0.20dB for MIMO Ant. 2

Channel	Frequency (MHz)	802.11n HT40 Average Output Power (dBm)				
		SISO Ant. 1	SISO Ant. 2	MIMO Ant. 1	MIMO Ant. 2	MIMO Ant.1+2
151	5755	18.46	19.92	13.47	12.82	16.16
159	5795	17.49	19.77	13.23	12.83	16.04

**Note :**

1. MIMO Ant. 1+2 is a calculated result from sum of the power MIMO Ant. 1 and MIMO Ant. 2.
2. The average power is measured by power meter with average power sensor and is reporting only.

## 3.2 Radiated Band Edges and Spurious Emission Measurement

### 3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 KHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

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

### 3.2.2 Measuring Instruments

See list of measuring instruments of this test report.





3.2.3 Test Procedure

1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 KHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement.

For average measurement:

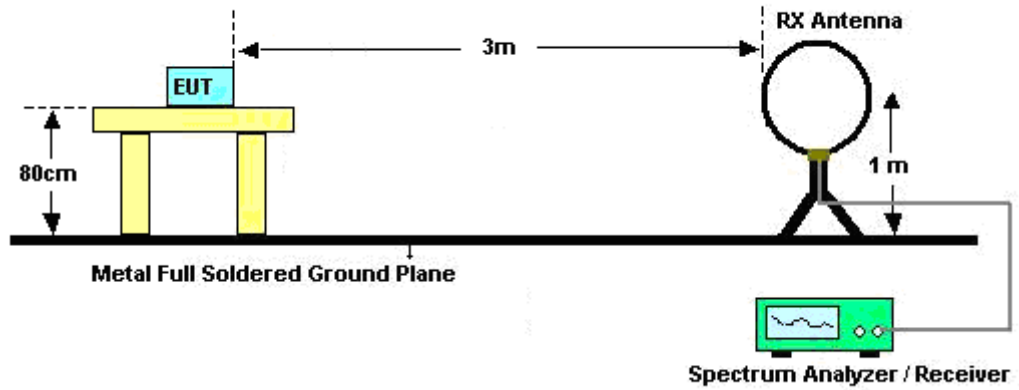
  - VBW = 10 Hz, when duty cycle is no less than 98 percent.
  - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Antenna	Band	Duty Cycle(%)	T(us)	1/T(KHz)	VBW Setting
1	802.11b	98.74	-	-	10Hz
1	802.11g	99.05	-	-	
1	2.4G 802.11n HT20	98.48	-	-	
2	2.4G 802.11n HT20	98.98	-	-	
1+2	2.4G 802.11n HT20 for Ant. 1	98.02	-	-	
1+2	2.4G 802.11n HT20 for Ant. 2	97.06	990	1.01	3kHz
1	2.4G 802.11n HT40	97.94	950	1.05	
1+2	2.4G 802.11n HT40 for Ant. 1	95.42	500	2.00	
1+2	2.4G 802.11n HT40 for Ant. 2	95.42	500	2.00	

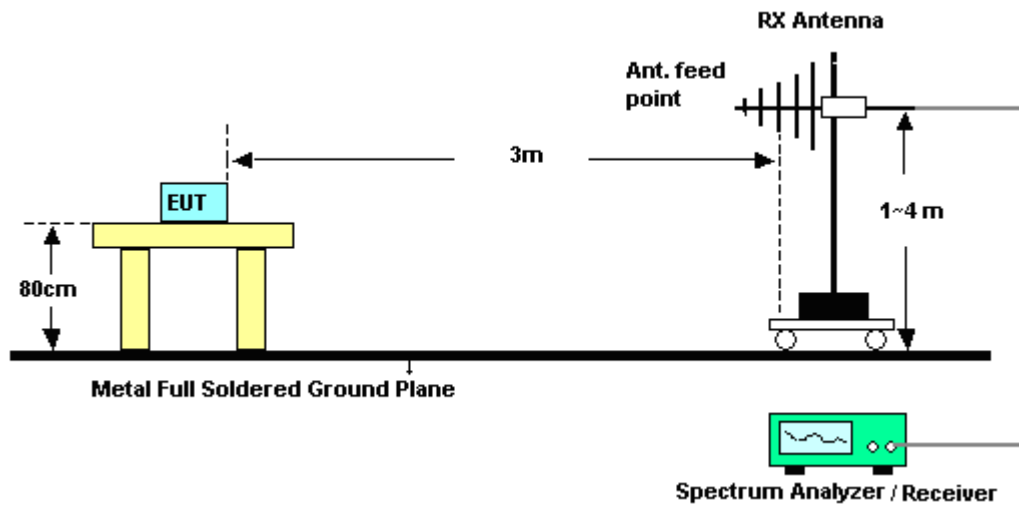
Note: For average measurement with duty cycle < 98%, use reduced VBW measurement method 4.2.3.2.3 in ANSI C63.10.

### 3.2.4 Test Setup

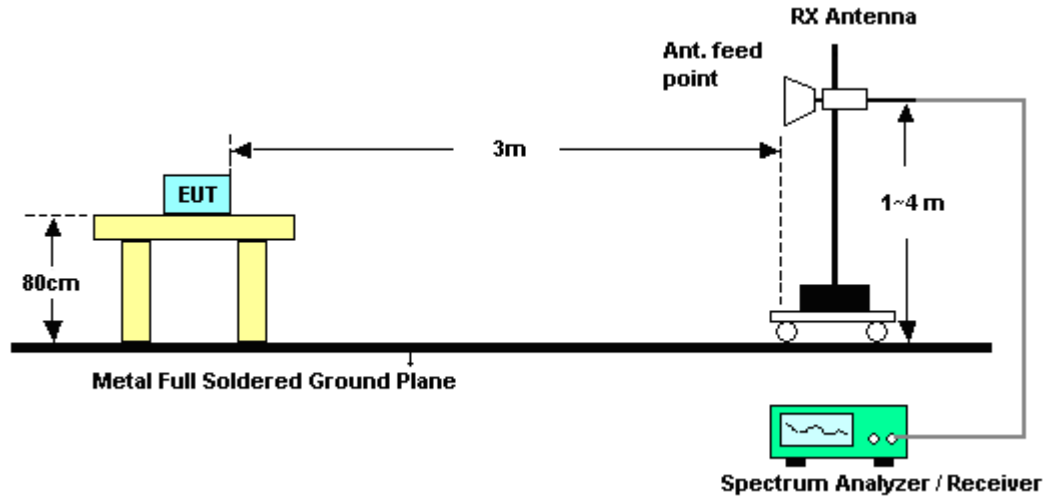
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



### 3.2.5 Test Results of Radiated Emissions (9KHz ~ 30MHz)

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.



3.2.6 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Gavin Wu

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
2389.38	58.9	-15.1	74	53.96	32.3	6.91	34.27	148	122	Peak
2390	39.12	-14.88	54	34.21	32.3	6.91	34.3	148	122	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
2389.2	56.33	-17.67	74	51.39	32.3	6.91	34.27	132	16	Peak
2389.38	37.65	-16.35	54	32.71	32.3	6.91	34.27	132	16	Average

Test Mode :	802.11b	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Gavin Wu

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
2483.65	62.35	-11.65	74	57.34	32.38	7.06	34.43	169	302	Peak
2483.5	45.38	-8.62	54	40.37	32.38	7.06	34.43	169	302	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
2483.59	59.32	-14.68	74	54.31	32.38	7.06	34.43	107	255	Peak
2483.5	42.01	-11.99	54	37	32.38	7.06	34.43	107	255	Average



Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Gavin Wu

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
2390	61.99	-12.01	74	57.08	32.3	6.91	34.3	148	122	Peak
2390	42.91	-11.09	54	38	32.3	6.91	34.3	148	122	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
2390	60.82	-13.18	74	55.91	32.3	6.91	34.3	109	263	Peak
2390	41.51	-12.49	54	36.6	32.3	6.91	34.3	109	263	Average

Test Mode :	802.11g	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Gavin Wu

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
2483.62	65.33	-8.67	74	60.32	32.38	7.06	34.43	169	299	Peak
2483.5	45.97	-8.03	54	40.96	32.38	7.06	34.43	169	299	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
2483.5	62.32	-11.68	74	57.31	32.38	7.06	34.43	107	262	Peak
2483.5	42.8	-11.2	54	37.79	32.38	7.06	34.43	107	262	Average



Test Mode :	802.11n HT20 for SISO Ant. 1	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Gavin Wu

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
2390	65.44	-8.56	74	60.53	32.3	6.91	34.3	147	123	Peak
2390	43.57	-10.43	54	38.66	32.3	6.91	34.3	147	123	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
2389.83	58.25	-15.75	74	53.34	32.3	6.91	34.3	162	320	Peak
2390	38.53	-15.47	54	33.62	32.3	6.91	34.3	162	320	Average

Test Mode :	802.11n HT20 for SISO Ant. 1	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Gavin Wu

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
2483.77	68.5	-5.5	74	63.49	32.38	7.06	34.43	169	302	Peak
2483.5	46.42	-7.58	54	41.41	32.38	7.06	34.43	169	302	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
2483.5	61.72	-12.28	74	56.71	32.38	7.06	34.43	107	254	Peak
2483.5	43.18	-10.82	54	38.17	32.38	7.06	34.43	107	254	Average



Test Mode :	802.11n HT20 for SISO Ant. 2	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	11	Test Engineer :	Gavin Wu

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
2483.5	59.94	-14.06	74	54.93	32.38	7.06	34.43	131	46	Peak
2483.5	41.25	-12.75	54	36.24	32.38	7.06	34.43	131	46	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
2485.03	60.12	-13.88	74	55.11	32.38	7.06	34.43	186	20	Peak
2483.5	41.38	-12.62	54	36.37	32.38	7.06	34.43	186	20	Average

Test Mode :	802.11n HT20 for MIMO Ant. 1+2	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	01	Test Engineer :	Gavin Wu

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
2389.56	65.24	-8.76	74	60.3	32.3	6.91	34.27	101	10	Peak
2390	48.56	-5.44	54	43.65	32.3	6.91	34.3	101	10	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
2390	60.47	-13.53	74	55.56	32.3	6.91	34.3	100	245	Peak
2390	44.31	-9.69	54	39.4	32.3	6.91	34.3	100	245	Average



<b>Test Mode :</b>	802.11n HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Band :</b>	High	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	11	<b>Test Engineer :</b>	Gavin Wu

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
2483.59	63.12	-10.88	74	58.11	32.38	7.06	34.43	182	130	Peak
2483.5	48.49	-5.51	54	43.48	32.38	7.06	34.43	182	130	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
2484.31	60.01	-13.99	74	55	32.38	7.06	34.43	186	165	Peak
2483.5	45.45	-8.55	54	40.44	32.38	7.06	34.43	186	165	Average





Test Mode :	802.11n HT40 for SISO Ant. 1	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	03	Test Engineer :	Gavin Wu

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
2389.29	61.37	-12.63	74	56.43	32.3	6.91	34.27	148	122	Peak
2389.92	45.91	-8.09	54	41	32.3	6.91	34.3	148	122	Average
2483.8	48.06	-25.94	74	43.05	32.38	7.06	34.43	148	122	Peak
2484.16	35.76	-18.24	54	30.75	32.38	7.06	34.43	148	122	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
2389.11	59.68	-14.32	74	54.74	32.3	6.91	34.27	110	78	Peak
2389.74	44.56	-9.44	54	39.62	32.3	6.91	34.27	110	78	Average
2499.73	48.03	-25.97	74	43.05	32.4	7.06	34.48	110	78	Peak
2494.99	35.81	-18.19	54	30.83	32.4	7.06	34.48	110	78	Average



<b>Test Mode :</b>	802.11n HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Band :</b>	High	<b>Relative Humidity :</b>	41~42%
<b>Test Channel :</b>	09	<b>Test Engineer :</b>	Gavin Wu

<b>ANTENNA POLARITY : HORIZONTAL</b>										
<b>Frequency ( MHz )</b>	<b>Level ( dBμV/m )</b>	<b>Over Limit ( dB )</b>	<b>Limit Line ( dBμV/m )</b>	<b>Read Level ( dBμV )</b>	<b>Antenna Factor ( dB )</b>	<b>Cable Loss ( dB )</b>	<b>Preamp Factor ( dB )</b>	<b>Ant Pos ( cm )</b>	<b>Table Pos ( deg )</b>	<b>Remark</b>
2370.93	47.77	-26.23	74	42.88	32.28	6.88	34.27	169	302	Peak
2388.3	36.16	-17.84	54	31.22	32.3	6.91	34.27	169	302	Average
2483.77	59.64	-14.36	74	54.63	32.38	7.06	34.43	169	302	Peak
2483.71	46.54	-7.46	54	41.53	32.38	7.06	34.43	169	302	Average

<b>ANTENNA POLARITY : VERTICAL</b>										
<b>Frequency ( MHz )</b>	<b>Level ( dBμV/m )</b>	<b>Over Limit ( dB )</b>	<b>Limit Line ( dBμV/m )</b>	<b>Read Level ( dBμV )</b>	<b>Antenna Factor ( dB )</b>	<b>Cable Loss ( dB )</b>	<b>Preamp Factor ( dB )</b>	<b>Ant Pos ( cm )</b>	<b>Table Pos ( deg )</b>	<b>Remark</b>
2352.48	47.43	-26.57	74	42.58	32.26	6.84	34.25	106	261	Peak
2389.38	35.98	-18.02	54	31.04	32.3	6.91	34.27	106	261	Average
2486.89	57.26	-16.74	74	52.25	32.38	7.06	34.43	106	261	Peak
2483.5	43.2	-10.8	54	38.19	32.38	7.06	34.43	106	261	Average



Test Mode :	802.11n HT40 for MIMO Ant. 1+2	Temperature :	22~23°C
Test Band :	Low	Relative Humidity :	41~42%
Test Channel :	03	Test Engineer :	Gavin Wu

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
2389.11	63.28	-10.72	74	58.34	32.3	6.91	34.27	100	11	Peak
2389.65	46.32	-7.68	54	41.38	32.3	6.91	34.27	100	11	Average
2485.9	50.22	-23.78	74	45.21	32.38	7.06	34.43	100	11	Peak
2485	36.38	-17.62	54	31.37	32.38	7.06	34.43	100	11	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
2389.83	58.28	-15.72	74	53.37	32.3	6.91	34.3	102	108	Peak
2389.74	42.68	-11.32	54	37.74	32.3	6.91	34.27	102	108	Average
2489.74	47.52	-26.48	74	42.49	32.4	7.06	34.43	102	108	Peak
2483.59	35.58	-18.42	54	30.57	32.38	7.06	34.43	102	108	Average



Test Mode :	802.11n HT40 for MIMO Ant. 1+2	Temperature :	22~23°C
Test Band :	High	Relative Humidity :	41~42%
Test Channel :	09	Test Engineer :	Gavin Wu

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
2385.51	48.59	-25.41	74	43.65	32.3	6.91	34.27	100	14	Peak
2384.43	37.12	-16.88	54	32.2	32.28	6.91	34.27	100	14	Average
2483.68	61.42	-12.58	74	56.41	32.38	7.06	34.43	100	14	Peak
2483.65	45.12	-8.88	54	40.11	32.38	7.06	34.43	100	14	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
2363.1	47.36	-26.64	74	42.47	32.26	6.88	34.25	100	107	Peak
2351.67	36.04	-17.96	54	31.19	32.26	6.84	34.25	100	107	Average
2483.74	56.98	-17.02	74	51.97	32.38	7.06	34.43	100	107	Peak
2483.53	40.88	-13.12	54	35.87	32.38	7.06	34.43	100	107	Average

3.2.7 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2410 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 108.36 dB<math>\mu</math>V/m - 20dB = 88.36 dB<math>\mu</math>V/m.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

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
2410	102.86	-	-	97.9	32.31	6.95	34.3	148	122	Average
2410	108.36	-	-	103.4	32.31	6.95	34.3	148	122	Peak
4824	41.92	-32.08	74	56.65	33.97	8.77	57.47	100	0	Peak
7236	42.06	-46.3	88.36	53.66	35.55	10.83	57.98	100	0	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2410 MHz is Fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

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
2410	99.38	-	-	94.42	32.31	6.95	34.3	132	16	Average
2410	104.94	-	-	99.98	32.31	6.95	34.3	132	16	Peak
4824	39.91	-34.09	74	57.16	33.97	8.77	59.99	100	0	Peak
7236	40.66	-44.28	84.94	53.67	35.55	10.83	59.39	100	0	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2436 MHz is Fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2436	101.67	-	-	96.7	32.33	6.99	34.35	145	128	Average
2436	107.33	-	-	102.36	32.33	6.99	34.35	145	128	Peak
4875	50.8	-23.2	74	65.51	33.95	8.82	57.48	100	0	Peak
7311	42.64	-31.36	74	54.21	35.54	10.91	58.02	100	0	Peak

<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2439 MHz is Fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2439	97.92	-	-	92.93	32.35	6.99	34.35	136	331	Average
2439	103.37	-	-	98.38	32.35	6.99	34.35	136	331	Peak
4875	45.22	-28.78	74	62.23	33.95	8.82	59.78	100	0	Peak
7311	40.63	-33.37	74	53.63	35.54	10.91	59.45	100	0	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
47.01	26.07	-13.93	40	47.78	9.3	0.67	31.68	100	343	Peak
129.36	25.62	-17.88	43.5	44.44	11.62	1.14	31.58	-	-	Peak
260.04	31.74	-14.26	46	48.67	12.74	1.59	31.26	-	-	Peak
388.2	28.95	-17.05	46	42.53	15.69	2.12	31.39	-	-	Peak
666.8	29.39	-16.61	46	36.59	20.33	2.87	30.4	-	-	Peak
907.6	28.75	-17.25	46	33	23.22	3.36	30.83	-	-	Peak
2464	103.43	-	-	98.43	32.37	7.02	34.39	169	302	Average
2464	108.81	-	-	103.81	32.37	7.02	34.39	169	302	Peak
4923	41.61	-32.39	74	56.29	33.93	8.87	57.48	100	0	Peak
7386	42.3	-31.7	74	53.87	35.52	10.99	58.08	100	0	Peak



<b>Test Mode :</b>	802.11b	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	29.44	-10.56	40	40.78	20	0.53	31.87	100	81	Peak
129.9	22.97	-20.53	43.5	41.79	11.6	1.15	31.57	-	-	Peak
196.05	21.42	-22.08	43.5	42.37	9.06	1.3	31.31	-	-	Peak
531	30.4	-15.6	46	40.4	18.61	2.51	31.12	-	-	Peak
624.1	33.41	-12.59	46	41.11	19.99	2.76	30.45	-	-	Peak
906.2	25.98	-20.02	46	30.27	23.19	3.35	30.83	-	-	Peak
2464	101.33	-	-	96.33	32.37	7.02	34.39	107	255	Average
2464	106.89	-	-	101.89	32.37	7.02	34.39	107	255	Peak
4923	40.08	-33.92	74	56.86	33.93	8.87	59.58	100	0	Peak
7386	41.25	-32.75	74	54.26	35.52	10.99	59.52	100	0	Peak





<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2410 MHz is fundamental signal which can be ignored..</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2410	96.31	-	-	91.35	32.31	6.95	34.3	148	122	Average
2410	107.39	-	-	102.43	32.31	6.95	34.3	148	122	Peak
4824	42.17	-31.83	74	56.9	33.97	8.77	57.47	100	0	Peak
7236	42.28	-45.11	87.39	53.88	35.55	10.83	57.98	100	0	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2410 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2410	92.99	-	-	88.03	32.31	6.95	34.3	109	263	Average
2410	103.92	-	-	98.96	32.31	6.95	34.3	109	263	Peak
4824	39.43	-34.57	74	56.68	33.97	8.77	59.99	100	0	Peak
7236	40.4	-43.52	83.92	53.41	35.55	10.83	59.39	100	0	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2437	97.15	-	-	92.16	32.35	6.99	34.35	148	297	Average
2437	107.64	-	-	102.65	32.35	6.99	34.35	148	297	Peak
4875	46.76	-27.24	74	61.47	33.95	8.82	57.48	100	0	Peak
7311	41.92	-32.08	74	53.49	35.54	10.91	58.02	100	0	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2436 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2436	94.79	-	-	89.82	32.33	6.99	34.35	110	333	Average
2436	105.81	-	-	100.84	32.33	6.99	34.35	110	333	Peak
4866	43.51	-30.49	74	60.58	33.96	8.82	59.85	100	0	Peak
7311	40.39	-33.61	74	53.39	35.54	10.91	59.45	100	0	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2463 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
47.01	26.51	-13.49	40	48.22	9.3	0.67	31.68	100	226	Peak
129.9	25.22	-18.28	43.5	44.04	11.6	1.15	31.57	-	-	Peak
260.04	31.63	-14.37	46	48.56	12.74	1.59	31.26	-	-	Peak
454.7	30.08	-15.92	46	41.78	17.15	2.31	31.16	-	-	Peak
647.2	29.02	-16.98	46	36.38	20.17	2.83	30.36	-	-	Peak
907.6	28.39	-17.61	46	32.64	23.22	3.36	30.83	-	-	Peak
2463	96.5	-	-	91.5	32.37	7.02	34.39	169	299	Average
2463	107.66	-	-	102.66	32.37	7.02	34.39	169	299	Peak
4923	41.31	-32.69	74	55.99	33.93	8.87	57.48	100	0	Peak
7386	42.92	-31.08	74	54.49	35.52	10.99	58.08	100	0	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2463 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30.27	29.21	-10.79	40	40.55	20	0.53	31.87	100	152	Peak
40.53	27.76	-12.24	40	46.01	12.9	0.63	31.78	-	-	Peak
129.36	22.28	-21.22	43.5	41.1	11.62	1.14	31.58	-	-	Peak
534.5	32.24	-13.76	46	42.18	18.68	2.52	31.14	-	-	Peak
624.1	34.31	-11.69	46	42.01	19.99	2.76	30.45	-	-	Peak
932.1	25.86	-20.14	46	29.7	23.58	3.42	30.84	-	-	Peak
2463	94	-	-	89	32.37	7.02	34.39	107	262	Average
2463	104.66	-	-	99.66	32.37	7.02	34.39	107	262	Peak
4923	39.52	-34.48	74	56.3	33.93	8.87	59.58	100	0	Peak
7386	41.32	-32.68	74	54.33	35.52	10.99	59.52	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2410 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2410	94.81	-	-	89.85	32.31	6.95	34.3	147	123	Average
2410	106.31	-	-	101.35	32.31	6.95	34.3	147	123	Peak
4824	41.98	-32.02	74	56.71	33.97	8.77	57.47	100	0	Peak
7236	42.21	-44.1	86.31	53.81	35.55	10.83	57.98	100	0	Peak

<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	<ol style="list-style-type: none"> <li>2410 MHz is fundamental signal which can be ignored.</li> <li>7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.</li> <li>Average measurement was not performed if peak level went lower than the average limit.</li> </ol>		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2410	91.29	-	-	86.33	32.31	6.95	34.3	162	320	Average
2410	102.54	-	-	97.58	32.31	6.95	34.3	162	320	Peak
4824	40.12	-33.88	74	57.37	33.97	8.77	59.99	100	0	Peak
7236	40.8	-41.74	82.54	53.81	35.55	10.83	59.39	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2436 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2436	96.92	-	-	91.95	32.33	6.99	34.35	146	129	Average
2436	108.1	-	-	103.13	32.33	6.99	34.35	146	129	Peak
4869	48.82	-25.18	74	63.53	33.95	8.82	57.48	100	0	Peak
7386	42.87	-31.13	74	54.44	35.52	10.99	58.08	100	0	Peak

<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2439 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2439	92.8	-	-	87.81	32.35	6.99	34.35	136	338	Average
2439	103.85	-	-	98.86	32.35	6.99	34.35	136	338	Peak
4872	45.66	-28.34	74	62.67	33.95	8.82	59.78	100	0	Peak
7386	40.01	-33.99	74	53.02	35.52	10.99	59.52	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
46.74	26.44	-13.56	40	47.75	9.7	0.67	31.68	100	222	Peak
129.36	25.08	-18.42	43.5	43.9	11.62	1.14	31.58	-	-	Peak
258.96	31.57	-14.43	46	48.52	12.72	1.58	31.25	-	-	Peak
452.6	30.95	-15.05	46	42.69	17.11	2.31	31.16	-	-	Peak
666.8	29.25	-16.75	46	36.45	20.33	2.87	30.4	-	-	Peak
895.7	28.78	-17.22	46	33.21	23.05	3.33	30.81	-	-	Peak
2464	95.53	-	-	90.53	32.37	7.02	34.39	169	302	Average
2464	106.56	-	-	101.56	32.37	7.02	34.39	169	302	Peak
4923	41.58	-32.42	74	56.26	33.93	8.87	57.48	100	0	Peak
7386	42.87	-31.13	74	54.44	35.52	10.99	58.08	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	29.52	-10.48	40	40.86	20	0.53	31.87	100	142	Peak
129.9	22.78	-20.72	43.5	41.6	11.6	1.15	31.57	-	-	Peak
196.05	21.26	-22.24	43.5	42.21	9.06	1.3	31.31	-	-	Peak
452.6	28.58	-17.42	46	40.32	17.11	2.31	31.16	-	-	Peak
624.1	33.53	-12.47	46	41.23	19.99	2.76	30.45	-	-	Peak
780.2	26.91	-19.09	46	32.32	21.79	3.11	30.31	-	-	Peak
2460	92.9	-	-	87.9	32.37	7.02	34.39	107	254	Average
2460	104.23	-	-	99.23	32.37	7.02	34.39	107	254	Peak
4923	39.94	-34.06	74	56.72	33.93	8.87	59.58	100	0	Peak
7386	40.01	-33.99	74	53.02	35.52	10.99	59.52	100	0	Peak





<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level (dBμV)	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
46.74	26.05	-13.95	40	47.36	9.7	0.67	31.68	-	-	Peak
241.14	27.03	-18.97	46	44.71	11.99	1.53	31.2	-	-	Peak
260.04	32.25	-13.75	46	49.18	12.74	1.59	31.26	102	204	Peak
388.2	29.23	-16.77	46	42.81	15.69	2.12	31.39	-	-	Peak
454.7	30.65	-15.35	46	42.35	17.15	2.31	31.16	-	-	Peak
899.2	29.3	-16.7	46	33.69	23.09	3.34	30.82	-	-	Peak
2464	92.33	-	-	87.33	32.37	7.02	34.39	131	46	Average
2464	103.91	-	-	98.91	32.37	7.02	34.39	131	46	Peak
4923	42.26	-31.74	74	56.94	33.93	8.87	57.48	100	0	Peak
7386	42.5	-31.5	74	54.07	35.52	10.99	58.08	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for SISO Ant. 2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2460 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	29.76	-10.24	40	41.1	20	0.53	31.87	110	196	Peak
39.99	28.24	-11.76	40	45.91	13.5	0.62	31.79	-	-	Peak
46.74	25.06	-14.94	40	46.37	9.7	0.67	31.68	-	-	Peak
484.8	29.38	-16.62	46	40.14	17.78	2.4	30.94	-	-	Peak
521.9	31.51	-14.49	46	41.61	18.46	2.49	31.05	-	-	Peak
624.1	34.41	-11.59	46	42.11	19.99	2.76	30.45	-	-	Peak
2460	92.04	-	-	87.04	32.37	7.02	34.39	186	20	Average
2460	102.91	-	-	97.91	32.37	7.02	34.39	186	20	Peak
4923	39.91	-34.09	74	56.69	33.93	8.87	59.58	100	0	Peak
7386	41.04	-32.96	74	54.05	35.52	10.99	59.52	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2416 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	22.34	-17.66	40	33.68	20	0.53	31.87	-	-	Peak
46.74	26	-14	40	47.31	9.7	0.67	31.68	-	-	Peak
260.04	32.11	-13.89	46	49.04	12.74	1.59	31.26	100	198	Peak
388.2	29.7	-16.3	46	43.28	15.69	2.12	31.39	-	-	Peak
452.6	30.23	-15.77	46	41.97	17.11	2.31	31.16	-	-	Peak
763.4	31.46	-14.54	46	37.26	21.55	3.08	30.43	-	-	Peak
2416	98.04	-	-	93.13	32.31	6.95	34.35	101	10	Average
2416	107.41	-	-	102.5	32.31	6.95	34.35	101	10	Peak
4824	41.74	-32.26	74	56.45	33.96	8.8	57.47	100	0	Peak
7236	41.9	-45.51	87.41	53.5	35.54	10.86	58	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2410 MHz is fundamental signal which can be ignored. 2. 7236 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	29.51	-10.49	40	40.85	20	0.53	31.87	109	254	Peak
39.45	27.07	-12.93	40	44.76	13.5	0.62	31.81	-	-	Peak
75.09	22.58	-17.42	40	46.54	6.94	0.85	31.75	-	-	Peak
452.6	30.89	-15.11	46	42.63	17.11	2.31	31.16	-	-	Peak
517.7	31.86	-14.14	46	41.99	18.4	2.49	31.02	-	-	Peak
624.1	33.85	-12.15	46	41.55	19.99	2.76	30.45	-	-	Peak
2410	93.15	-	-	88.19	32.31	6.95	34.3	100	245	Average
2410	103.41	-	-	98.45	32.31	6.95	34.3	100	245	Peak
4824	39.59	-34.41	74	56.75	33.96	8.8	59.92	100	0	Peak
7236	40.45	-42.96	83.41	53.47	35.54	10.86	59.42	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2439 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2439	101.29	-	-	96.3	32.35	6.99	34.35	100	13	Average
2439	111.26	-	-	106.27	32.35	6.99	34.35	100	13	Peak
4875	44.74	-29.26	74	59.45	33.95	8.82	57.48	100	0	Peak
7311	42.7	-31.3	74	54.27	35.54	10.91	58.02	100	0	Peak

<b>Test Mode :</b>	802.11n-HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2439 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2439	96.02	-	-	91.03	32.35	6.99	34.35	156	107	Average
2439	106.78	-	-	101.79	32.35	6.99	34.35	156	107	Peak
4875	41.62	-32.38	74	58.63	33.95	8.82	59.78	100	0	Peak
7311	41.2	-32.8	74	54.2	35.54	10.91	59.45	100	0	Peak



<b>Test Mode :</b>	802.11n-HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2464	97.82	-	-	92.82	32.37	7.02	34.39	182	130	Average
2464	108.98	-	-	103.98	32.37	7.02	34.39	182	130	Peak
4923	41.63	-32.37	74	56.31	33.93	8.87	57.48	100	0	Peak
7386	42.59	-31.41	74	54.16	35.52	10.99	58.08	100	0	Peak

<b>Test Mode :</b>	802.11n-HT20 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2464 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2464	94.76	-	-	89.76	32.37	7.02	34.39	186	165	Average
2464	104.75	-	-	99.75	32.37	7.02	34.39	186	165	Peak
4923	40.05	-33.95	74	56.83	33.93	8.87	59.58	100	0	Peak
7386	40.9	-33.1	74	53.91	35.52	10.99	59.52	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2424 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2424	89.2	-	-	84.27	32.33	6.95	34.35	148	122	Average
2424	99	-	-	94.07	32.33	6.95	34.35	148	122	Peak
4845	43.68	-30.32	74	58.39	33.96	8.8	57.47	100	0	Peak
7266	42.09	-31.91	74	53.69	35.54	10.86	58	100	0	Peak

<b>Test Mode :</b>	802.11n-HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2424 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2424	85.65	-	-	80.72	32.33	6.95	34.35	110	78	Average
2424	95.14	-	-	90.21	32.33	6.95	34.35	110	78	Peak
4845	40.28	-33.72	74	57.44	33.96	8.8	59.92	100	0	Peak
7266	40.94	-33.06	74	53.96	35.54	10.86	59.42	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2439 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2439	91.92	-	-	86.93	32.35	6.99	34.35	100	299	Average
2439	101.48	-	-	96.49	32.35	6.99	34.35	100	299	Peak
4875	42.14	-31.86	74	56.85	33.95	8.82	57.48	100	0	Peak
7311	41.62	-32.38	74	53.19	35.54	10.91	58.02	100	0	Peak

<b>Test Mode :</b>	802.11n-HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2439 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2439	89.66	-	-	84.67	32.35	6.99	34.35	111	257	Average
2439	99.02	-	-	94.03	32.35	6.99	34.35	111	257	Peak
4875	40.16	-33.84	74	57.17	33.95	8.82	59.78	100	0	Peak
7311	40.82	-33.18	74	53.82	35.54	10.91	59.45	100	0	Peak





<b>Test Mode :</b>	802.11n-HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2454 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
46.74	26.49	-13.51	40	47.8	9.7	0.67	31.68	100	252	Peak
129.36	25.46	-18.04	43.5	44.28	11.62	1.14	31.58	-	-	Peak
260.04	31.84	-14.16	46	48.77	12.74	1.59	31.26	-	-	Peak
452.6	31.97	-14.03	46	43.71	17.11	2.31	31.16	-	-	Peak
666.8	30.2	-15.8	46	37.4	20.33	2.87	30.4	-	-	Peak
901.3	28.62	-17.38	46	33	23.11	3.34	30.83	-	-	Peak
2454	89.48	-	-	84.48	32.37	7.02	34.39	169	302	Average
2454	99.02	-	-	94.02	32.37	7.02	34.39	169	302	Peak
4905	41.62	-32.38	74	56.3	33.93	8.87	57.48	100	0	Peak
7356	43.16	-30.84	74	54.73	35.53	10.96	58.06	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for SISO Ant. 1	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2454 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	29.28	-10.72	40	40.62	20	0.53	31.87	100	184	Peak
129.9	22.42	-21.08	43.5	41.24	11.6	1.15	31.57	-	-	Peak
196.05	21.12	-22.38	43.5	42.07	9.06	1.3	31.31	-	-	Peak
388.2	26.4	-19.6	46	39.98	15.69	2.12	31.39	-	-	Peak
624.1	33.45	-12.55	46	41.15	19.99	2.76	30.45	-	-	Peak
776.7	26.89	-19.11	46	32.37	21.75	3.1	30.33	-	-	Peak
2454	86.93	-	-	81.93	32.37	7.02	34.39	106	261	Average
2454	96.65	-	-	91.65	32.37	7.02	34.39	106	261	Peak
4905	39.98	-34.02	74	56.82	33.93	8.87	59.64	100	0	Peak
7356	40.98	-33.02	74	53.98	35.53	10.96	59.49	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2426 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2426	91.68	-	-	86.75	32.33	6.95	34.35	100	11	Average
2426	102.11	-	-	97.18	32.33	6.95	34.35	100	11	Peak
4845	41.62	-32.38	74	56.33	33.96	8.8	57.47	100	0	Peak
7266	42.83	-31.17	74	54.43	35.54	10.86	58	100	0	Peak

<b>Test Mode :</b>	802.11n-HT40 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	03	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2426 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2426	86.17	-	-	81.24	32.33	6.95	34.35	102	108	Average
2426	95.71	-	-	90.78	32.33	6.95	34.35	102	108	Peak
4845	40.09	-33.91	74	57.25	33.96	8.8	59.92	100	0	Peak
7266	40.12	-33.88	74	53.14	35.54	10.86	59.42	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2433 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
47.01	26.27	-13.73	40	47.98	9.3	0.67	31.68	-	-	Peak
129.36	24.64	-18.86	43.5	43.46	11.62	1.14	31.58	-	-	Peak
258.96	32.41	-13.59	46	49.36	12.72	1.58	31.25	110	207	Peak
454	29.73	-16.27	46	41.45	17.13	2.31	31.16	-	-	Peak
666.8	29.15	-16.85	46	36.35	20.33	2.87	30.4	-	-	Peak
776.7	29.04	-16.96	46	34.52	21.75	3.1	30.33	-	-	Peak
2433	99.79	-	-	94.82	32.33	6.99	34.35	100	11	Average
2433	109.87	-	-	104.94	32.33	6.95	34.35	100	11	Peak
4875	43.57	-30.43	74	58.28	33.95	8.82	57.48	100	0	Peak
7311	42.1	-31.9	74	53.67	35.54	10.91	58.02	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	06	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2437 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
30	29.49	-10.51	40	40.83	20	0.53	31.87	104	128	Peak
40.53	28.8	-11.2	40	47.05	12.9	0.63	31.78	-	-	Peak
74.01	22.49	-17.51	40	46.59	6.81	0.85	31.76	-	-	Peak
499.5	30.37	-15.63	46	40.73	18.08	2.45	30.89	-	-	Peak
538	32.18	-13.82	46	42.08	18.74	2.53	31.17	-	-	Peak
624.1	33.94	-12.06	46	41.64	19.99	2.76	30.45	-	-	Peak
2437	94.71	-	-	89.72	32.35	6.99	34.35	100	109	Average
2437	104.27	-	-	99.32	32.35	6.99	34.39	100	109	Peak
4872	43.19	-30.81	74	60.2	33.95	8.82	59.78	100	0	Peak
7311	41.71	-32.29	74	54.71	35.54	10.91	59.45	100	0	Peak



<b>Test Mode :</b>	802.11n-HT40 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2450 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2450	90.54	-	-	85.59	32.35	6.99	34.39	100	14	Average
2450	100.83	-	-	95.88	32.35	6.99	34.39	100	14	Peak
4905	42.78	-31.22	74	57.46	33.93	8.87	57.48	100	0	Peak
7356	41.28	-32.72	74	52.85	35.53	10.96	58.06	100	0	Peak

<b>Test Mode :</b>	802.11n-HT40 for MIMO Ant. 1+2	<b>Temperature :</b>	22~23°C
<b>Test Channel :</b>	09	<b>Relative Humidity :</b>	41~42%
<b>Test Engineer :</b>	Gavin Wu	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2450 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
2450	96.7	-	-	91.75	32.35	6.99	34.39	100	107	Average
2450	95.77	-	-	90.82	32.35	6.99	34.39	100	107	Peak
4905	43.15	-30.85	74	57.83	33.93	8.87	57.48	100	0	Peak
7356	42.03	-31.97	74	53.6	35.53	10.96	58.06	100	0	Peak

### 3.3 AC Conducted Emission Measurement

#### 3.3.1 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.

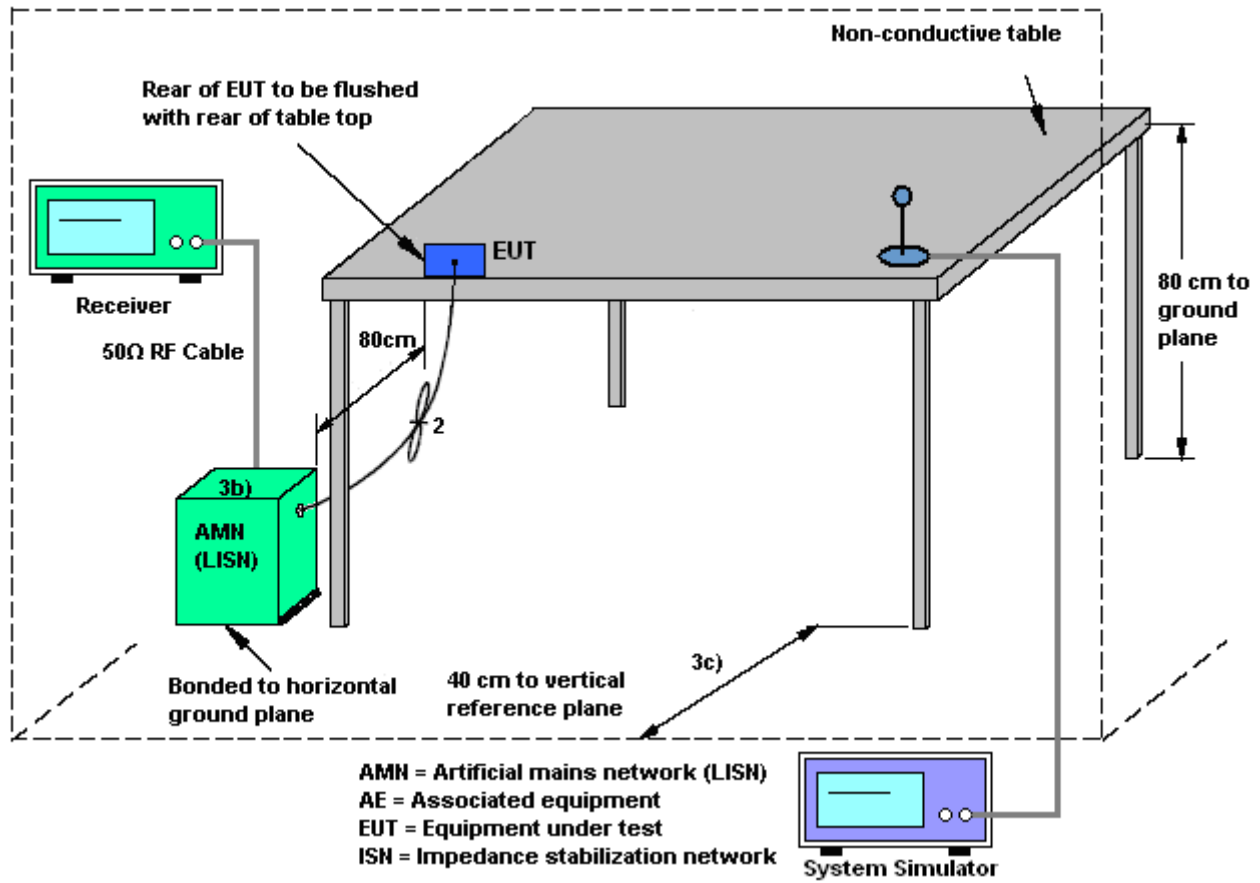
#### 3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

#### 3.3.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.10-2009.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 KHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

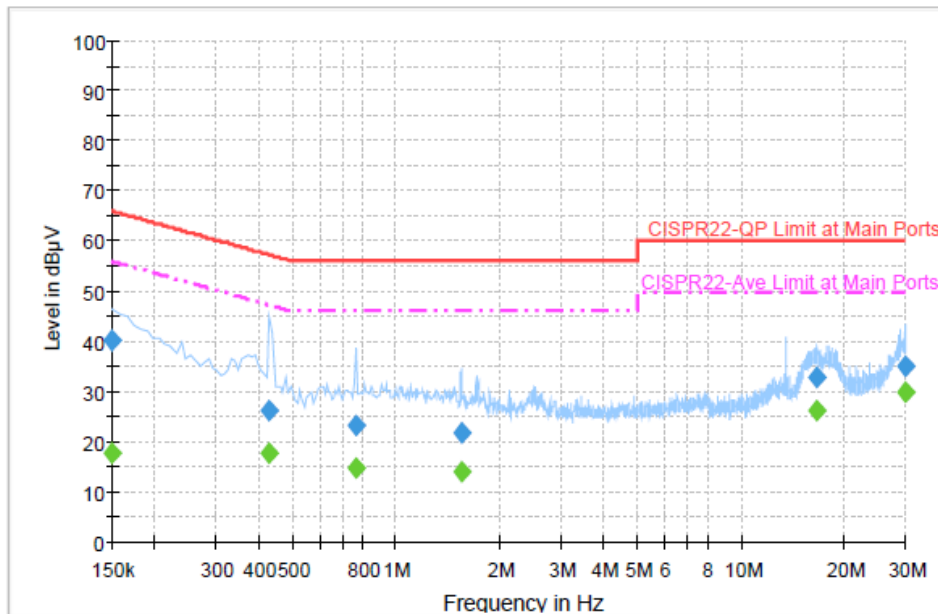
### 3.3.4 Test Setup





3.3.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	CDMA2000 BC1 Idle + WLAN (2.4G) Link + Bluetooth Link + GPS Rx + MPEG4 + H Patten + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



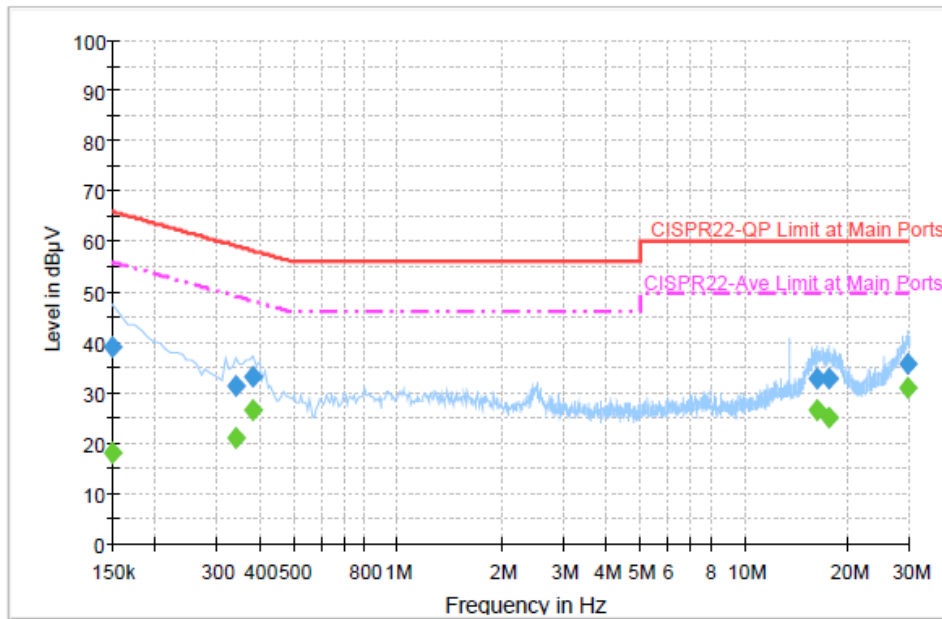
Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	40.1	Off	L1	19.4	25.9	66.0
0.430000	26.2	Off	L1	19.3	31.1	57.3
0.766000	23.1	Off	L1	19.4	32.9	56.0
1.550000	21.8	Off	L1	19.5	34.2	56.0
16.646000	32.8	Off	L1	19.8	27.2	60.0
29.830000	35.0	Off	L1	20.0	25.0	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	17.8	Off	L1	19.4	38.2	56.0
0.430000	17.6	Off	L1	19.3	29.7	47.3
0.766000	14.9	Off	L1	19.4	31.1	46.0
1.550000	14.2	Off	L1	19.5	31.8	46.0
16.646000	26.0	Off	L1	19.8	24.0	50.0
29.830000	30.0	Off	L1	20.0	20.0	50.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Slash Huang	Relative Humidity :	45~47%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	CDMA2000 BC1 Idle + WLAN (2.4G) Link + Bluetooth Link + GPS Rx + MPEG4 + H Patten + TC		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Final Result : QuasiPeak

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	39.2	Off	N	19.4	26.8	66.0
0.342000	31.5	Off	N	19.3	27.7	59.2
0.382000	33.2	Off	N	19.4	25.0	58.2
16.182000	32.9	Off	N	19.9	27.1	60.0
17.614000	33.0	Off	N	19.9	27.0	60.0
29.510000	35.9	Off	N	20.1	24.1	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	18.0	Off	N	19.4	38.0	56.0
0.342000	21.2	Off	N	19.3	28.0	49.2
0.382000	26.4	Off	N	19.4	21.8	48.2
16.182000	26.6	Off	N	19.9	23.4	50.0
17.614000	25.2	Off	N	19.9	24.8	50.0
29.510000	31.1	Off	N	20.1	18.9	50.0

### 3.4 Antenna Requirements

#### 3.4.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the Antenna exceeds 6 dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

#### 3.4.2 Antenna Connected Construction

Non-standard connector is used.

#### 3.4.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit. The EUT supports MIMO mode. The composite antenna gain is as following table.

	2.4GHz	5GHz
Composite gain (dBi)	2.47	1.02
PSD Array gain (dBi)	0.00	0.00
Power limit reduction	0.00	0.00
PSD limit reduction	0.00	0.00

*Power limit reduction = Composite gain – 6dBi, ( min = 0 )*

*PSD limit reduction = Composite gain + PSD Array gain – 6dBi, ( min = 0 )*

FCC KDB 662911 D01 Multiple Transmitter Output v01r02

For CDD transmissions, directional gain is calculated as

Directional gain =  $G_{ANT} + \text{Array Gain}$ , where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain =  $10 \log(N_{ANT}/N_{SS}=1)$  dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \leq 4$ ;

## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Mar. 29, 2013	Jun. 05, 2013	Conducted (TH02-HY)
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Sep. 08, 2012	Mar. 29, 2013	Sep. 07, 2013	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Sep. 08, 2012	Mar. 29, 2013	Sep. 07, 2013	Conducted (TH02-HY)
Power Meter	Agilent	E4416A	GB412923 44	300MHz~40GHz	Feb. 05, 2013	Mar. 06, 2013	Feb. 04, 2014	Conduction (CO05-HY)
Power Sensor	Agilent	E9327A	US404415 48	300MHz~40GHz	Feb. 05, 2013	Mar. 06, 2013	Feb. 04, 2014	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9KHz ~ 2.75GHz	Nov. 13, 2012	Mar. 06, 2013	Nov. 12, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100081	9KHz ~ 30MHz	Dec. 12, 2012	Mar. 06, 2013	Dec. 11, 2013	Conduction (CO05-HY)
Two-LISN	Rohde & Schwarz	ENV216	100080	9KHz ~ 30MHz	Dec. 06, 2012	Mar. 06, 2013	Dec. 05, 2013	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	Mar. 06, 2013	N/A	Conduction (CO05-HY)
System Simulator	R&S	CMU200	117995	N/A	Jul. 28, 2011	Mar. 06, 2013	Jul. 27, 2013	Conduction (CO05-HY)
GPS Station	T&E	GS-50	N/A	N/A	N/A	Mar. 06, 2013	N/A	Conduction (CO05-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 06, 2012	Mar. 15, 2013 ~ Mar. 16, 2013	Oct. 05, 2013	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz ~ 30GHz	Nov. 30, 2012	Mar. 15, 2013 ~ Mar. 16, 2013	Nov. 29, 2013	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 22, 2012	Mar. 15, 2013 ~ Mar. 16, 2013	Aug. 21, 2013	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A023 62	1GHz~ 26.5GHz	Dec. 01, 2012	Mar. 15, 2013 ~ Mar. 16, 2013	Nov. 30, 2013	Radiation (03CH07-HY)
Pre Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	159088	1GHz ~ 18GHz	Feb. 27, 2013	Mar. 15, 2013 ~ Mar. 16, 2013	Feb. 26, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10-1000MHz. 32dB.GAIN	Feb. 26, 2013	Mar. 15, 2013 ~ Mar. 16, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 03, 2012	Mar. 15, 2013 ~ Mar. 16, 2013	Sep. 02, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 251	15GHz ~ 40GHz	Sep. 28, 2012	Mar. 15, 2013 ~ Mar. 16, 2013	Sep. 27, 2013	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/00 1	9 kHz~30 MHz	Jul. 29, 2010	Mar. 15, 2013 ~ Mar. 16, 2013	Jul. 28, 2012	Radiation (03CH07-HY)



## 5 Uncertainty of Evaluation

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

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

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.72
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## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP322149-01 as below.