

# Variant FCC RF Test Report

**APPLICANT** : Yulong Computer Telecommunication  
Scientific (Shenzhen) Co., Ltd.

**EQUIPMENT** : Mobile Phone

**BRAND NAME** : Vodafone Smart 4G

**MODEL NAME** : Coolpad 8860U

**MARKETING NAME** : Vodafone Smart 4G

**FCC ID** : R38YL8860UO

**STANDARD** : FCC Part 15 Subpart C §15.247

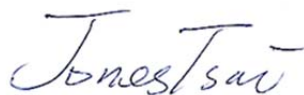
**CLASSIFICATION** : (DTS) Digital Transmission System

This is a variant report which is only valid together with the original test report. The product was received on Aug. 29, 2013 and testing was completed on Sep. 14, 2013. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and shown to be compliant with the applicable technical standards.

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



Reviewed by: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL (SHENZHEN) INC.**

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



## **TABLE OF CONTENTS**

<b>REVISION HISTORY.....</b>	<b>3</b>
<b>SUMMARY OF TEST RESULT .....</b>	<b>4</b>
<b>1 GENERAL DESCRIPTION .....</b>	<b>5</b>
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 .....	5
1.6 Testing Site.....	6
1.7 Applied Standards .....	6
<b>2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST .....</b>	<b>7</b>
2.1 Test Mode.....	7
2.2 Connection Diagram of Test System.....	8
2.3 Description of RF Function Operation Test Setup.....	8
<b>3 TEST RESULT.....</b>	<b>9</b>
3.1 Radiated Band Edges and Spurious Emission Measurement .....	9
<b>4 LIST OF MEASURING EQUIPMENT .....</b>	<b>27</b>
<b>5 UNCERTAINTY OF EVALUATION .....</b>	<b>28</b>
<b>APPENDIX A. SETUP PHOTOGRAPHS</b>	



### REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR340403-01C	Rev. 01	EUT is variant version of Coolpad 8860U (FCC ID: R38YL8860U which supports NFC function), and now the variant sample with FCC ID: R38YL8860UO is not support NFC function. Due to the similarity, the parent sample RF performance is representative and part of test data (Sporton Report Number FR340403C for FCC ID: R38YL8860U) is referenced; only the worst case of Spurious Emission was verified for the differences for the variant sample.	Sep. 17, 2013



## SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 4.02 dB at 2388.840 MHz



# 1 General Description

## 1.1 Applicant

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

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

## 1.2 Manufacturer

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

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

## 1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Vodafone Smart 4G
Model Name	Coolpad 8860U
Marketing Name	Vodafone Smart 4G
FCC ID	R38YL8860UO
EUT supports Radios application	GSM/GPRS/EGPRS/LTE/WLAN 802.11abgn HT 20/ Bluetooth v3.0 + EDR/Bluetooth v4.0
HW Version	T3
SW Version	082.12.T3.130819.CP8860U
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	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz 802.11a/n: 5745~5805MHz.
Antenna Type	802.11b/g/n : PIFA Antenna 802.11a/n : PIFA Antenna
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

## 1.5 Modification of EUT

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



### 1.6 Testing Site

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

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

### 1.7 Applied Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01
- 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

### 2.1 Test Mode

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

<2.4GHz>

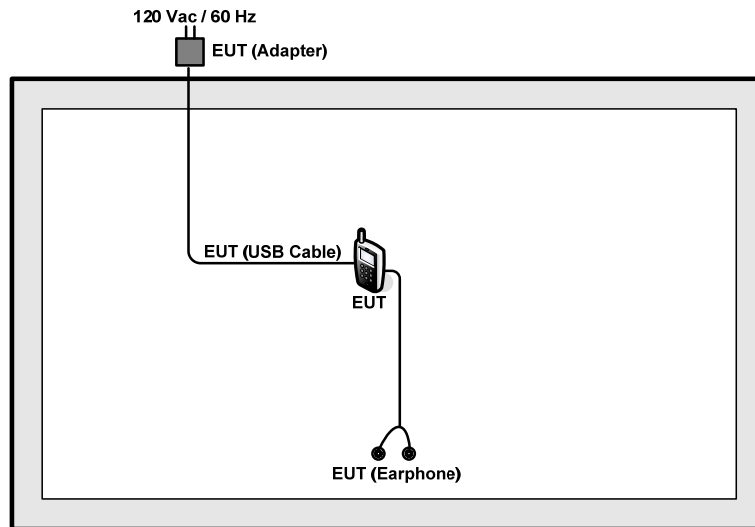
Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	11
		802.11g	54 Mbps	11
		802.11n HT20	MCS7	1
	Radiated Spurious Emission	802.11b	1 Mbps	11
		802.11g	54 Mbps	11
		802.11n HT20	MCS7	1

<5GHz>

Test Cases				
	Test Items	Mode	Data Rate	Test Channel
Radiated TCs	Radiated Band Edge	802.11a	54 Mbps	149
		802.11n HT20	MCS7	149
	Radiated Spurious Emission	802.11a	54 Mbps	149
		802.11n HT20	MCS7	149

**Remark:** For Radiated TCs, all the test modes are performed with Battery 1.

## 2.2 Connection Diagram of Test System



## 2.3 Description of RF Function Operation Test Setup

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



### 3 Test Result

#### 3.1 Radiated Band Edges and Spurious Emission Measurement

##### 3.1.1 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

##### 3.1.2 Measuring Instruments

See list of measuring instruments of this test report.



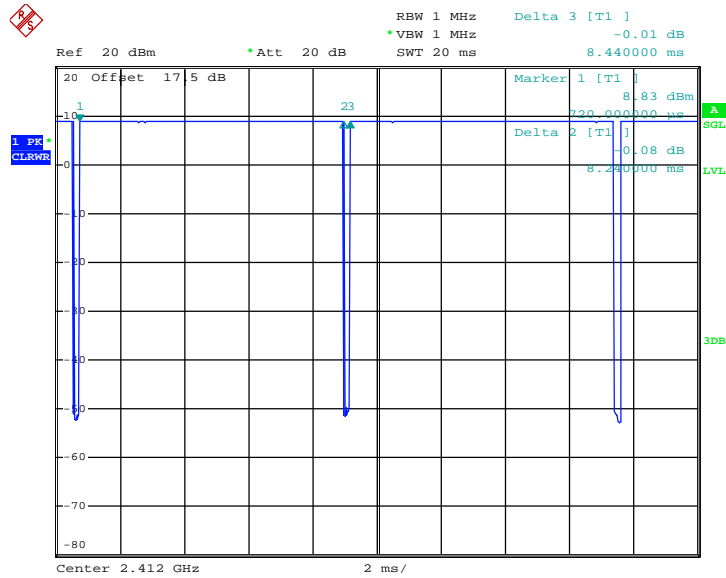
3.1.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r01.
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.

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	97.630	8.240	0.121	300Hz
802.11g	46.417	0.174	5.760	10kHz
2.4GHz 802.11n HT20	44.751	0.162	6.173	10kHz
802.11a	45.722	0.171	5.848	10kHz
5GHz 802.11n HT20	44.475	0.161	6.211	10kHz



2.4GHz 802.11b Duty Cycle

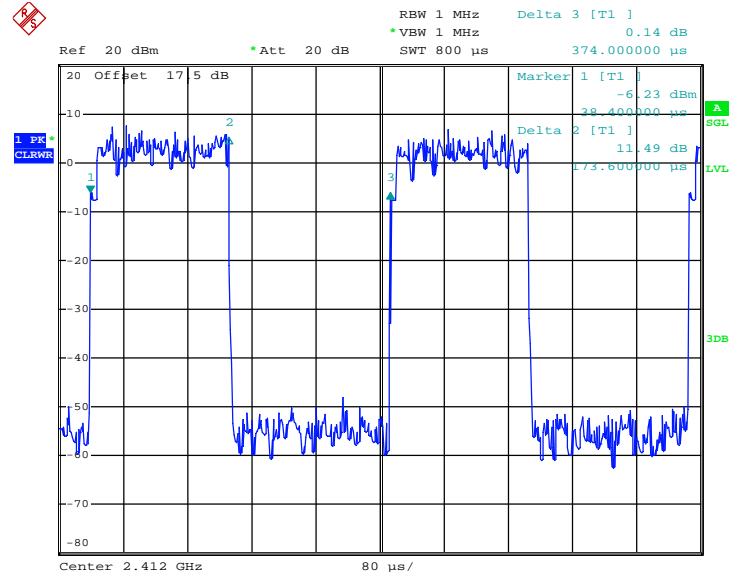


**Note:**

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



### 2.4GHz 802.11g Duty Cycle

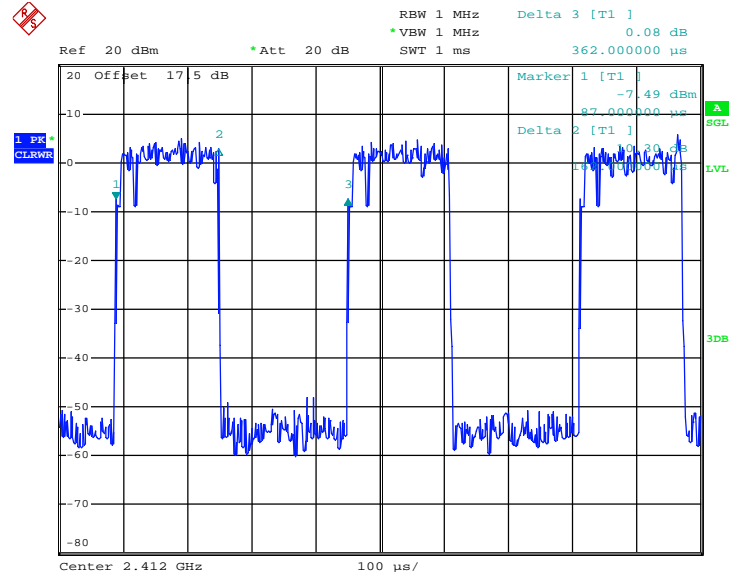


**Note:**

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



### 2.4GHz 802.11n HT20 Duty Cycle

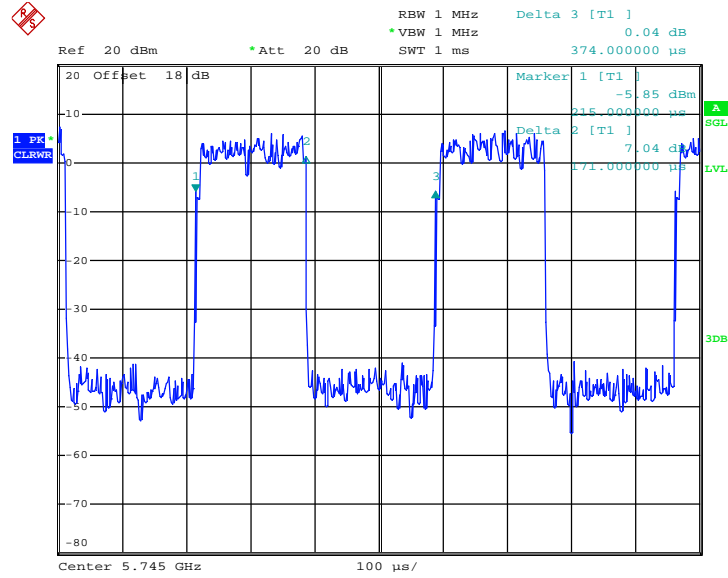


**Note:**

The total loss is 17.5dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.



5GHz 802.11a Duty Cycle

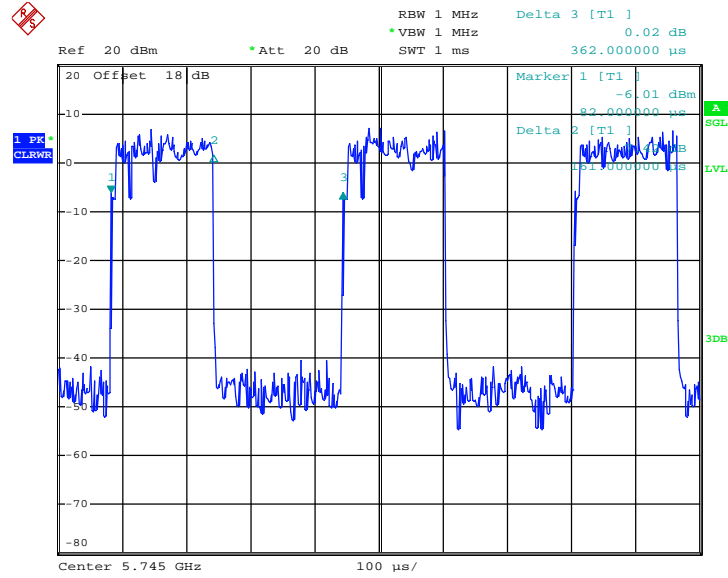


**Note:**

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



5GHz 802.11n HT20 Duty Cycle

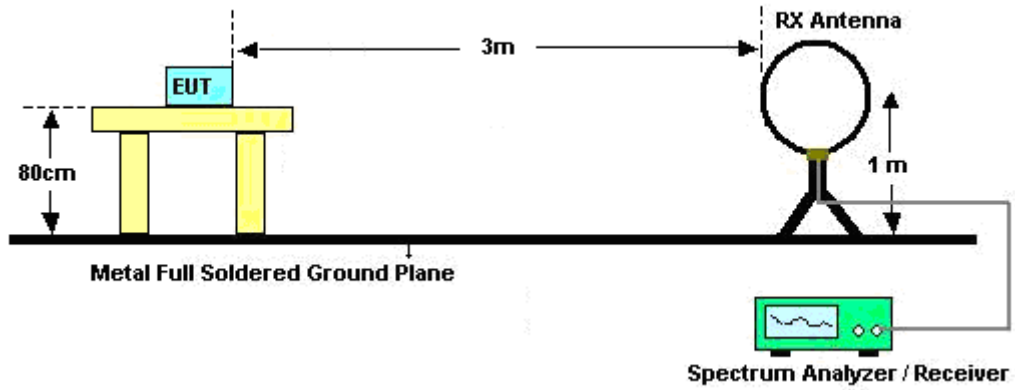


**Note:**

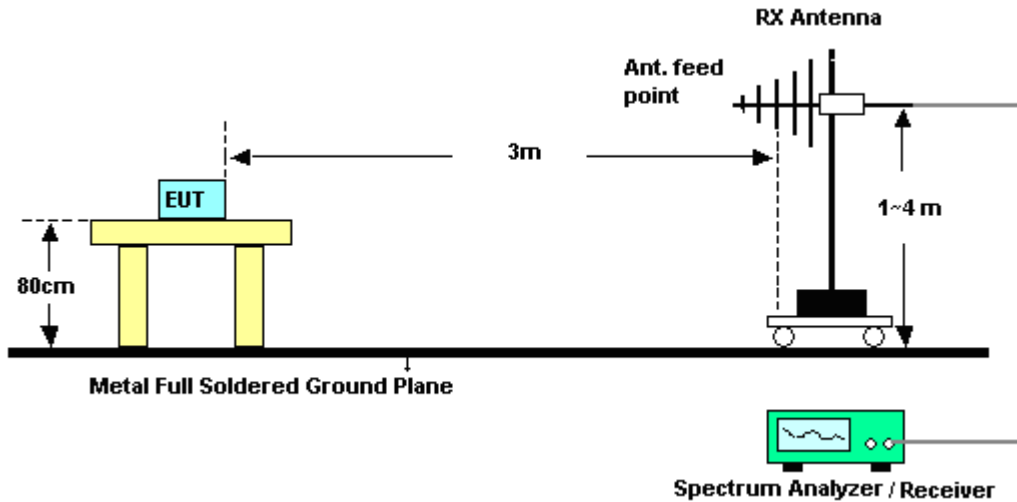
The total loss is 18dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

### 3.1.4 Test Setup

For radiated emissions below 30MHz

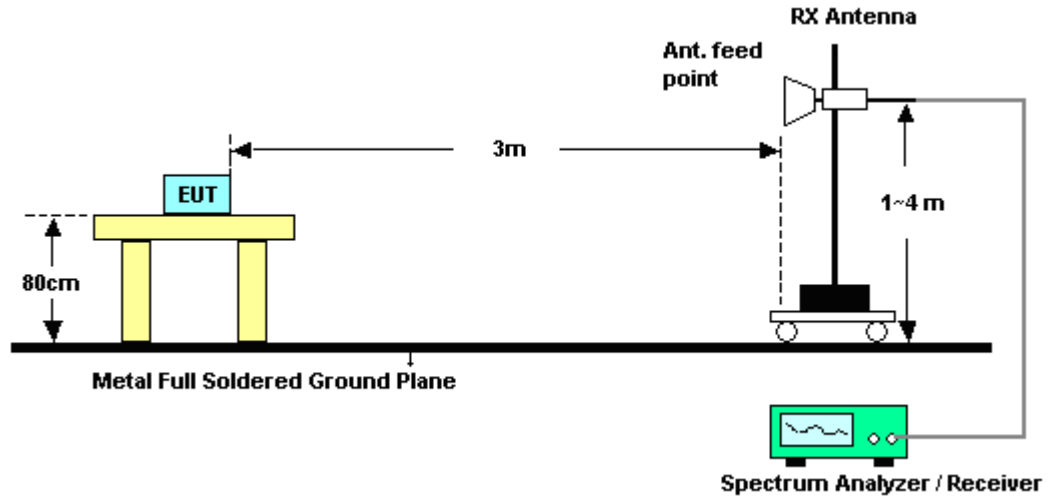


For radiated emissions from 30MHz to 1GHz





For radiated emissions above 1GHz



### 3.1.5 Test Results of Radiated Spurious 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.



3.1.6 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~52%
Test Channel :	11	Test Engineer :	Leo Liao

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
2489.29	46.67	-27.33	74	38.43	32.29	5.71	29.76	109	315	Peak
2486.98	35.66	-18.34	54	27.44	32.27	5.71	29.76	109	315	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
2485.45	47.41	-26.59	74	39.19	32.27	5.71	29.76	125	95	Peak
2486.89	36.59	-17.41	54	28.37	32.27	5.71	29.76	125	95	Average

Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	49~52%
Test Channel :	11	Test Engineer :	Leo Liao

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
2484.22	61.04	-12.96	74	52.82	32.27	5.71	29.76	121	319	Peak
2484.28	48.61	-5.39	54	40.39	32.27	5.71	29.76	121	319	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
2483.95	65.1	-8.9	74	56.88	32.27	5.71	29.76	107	71	Peak
2484.07	49.24	-4.76	54	41.02	32.27	5.71	29.76	107	71	Average



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~52%
Test Channel :	01	Test Engineer :	Leo Liao

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	63.99	-10.01	74	56.05	32.14	5.59	29.79	147	319	Peak
2388.84	49.98	-4.02	54	42.04	32.14	5.59	29.79	147	319	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	59.18	-14.82	74	51.2	32.14	5.62	29.78	121	304	Peak
2388.66	45.97	-8.03	54	38.03	32.14	5.59	29.79	121	304	Average

Test Mode :	802.11a	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~52%
Test Channel :	149	Test Engineer :	Leo Liao

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
5745	101.69	-	-	87.76	34.18	9.14	29.39	106	307	Peak
5745	94.58	-	-	80.65	34.18	9.14	29.39	106	307	Average
5725	75.05	-6.64	81.69	61.16	34.15	9.13	29.39	106	307	Peak

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5745	104.86	-	-	90.93	34.18	9.14	29.39	100	64	Peak
5745	97.97	-	-	84.04	34.18	9.14	29.39	100	64	Average
5725	76.01	-8.85	84.86	62.12	34.15	9.13	29.39	100	65	Peak

**Remark:** 5725 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.  
For example, 101.69 dBμV/m - 20dB = 81.69 dBμV/m.



Test Mode :	5GHz 802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	49~52%
Test Channel :	149	Test Engineer :	Leo Liao

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
5745	99.15	-	-	85.22	34.18	9.14	29.39	108	294	Peak
5745	92.87	-	-	78.94	34.18	9.14	29.39	108	294	Average
5725	75.03	-4.12	79.15	61.14	34.15	9.13	29.39	108	294	Peak

ANTENNA POLARITY : VERTICAL										
Frequency ( MHz )	Level ( dBμV/m )	Over Limit ( dB )	Limit Line ( dBμV/m )	Read Level ( dBμV )	Antenna Factor ( dB )	Cable Loss ( dB )	Preamp Factor ( dB )	Ant Pos ( cm )	Table Pos ( deg )	Remark
5745	104.97	-	-	91.04	34.18	9.14	29.39	100	45	Peak
5745	96.99	-	-	83.06	34.18	9.14	29.39	100	45	Average
5725	76.69	-8.28	84.97	62.8	34.15	9.13	29.39	100	46	Peak

Remark: 5725 MHz is not within a restricted band, and its limit line is 20dB below the highest emission level.



3.1.7 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> 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.

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	49~52%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	1. 2462 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
2462	99.55	-	-	91.39	32.24	5.68	29.76	109	315	Peak
2462	97.37	-	-	89.21	32.24	5.68	29.76	109	315	Average
4924	36.85	-37.15	74	51.55	33.92	8.46	57.08	135	245	Peak
7386	41.21	-32.79	74	52.89	35.35	10.02	57.05	134	325	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	49~52%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	1. 2462 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
2462	101.7	-	-	93.54	32.24	5.68	29.76	125	95	Peak
2462	99.75	-	-	91.59	32.24	5.68	29.76	125	95	Average
4924	36.99	-37.01	74	51.69	33.92	8.46	57.08	135	214	Peak
7386	40.02	-33.98	74	51.7	35.35	10.02	57.05	168	258	Peak



<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2462 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
2462	103.35	-	-	95.19	32.24	5.68	29.76	121	319	Peak
2462	96.01	-	-	87.85	32.24	5.68	29.76	121	319	Average
4924	37.21	-36.79	74	51.91	33.92	8.46	57.08	152	236	Peak
7386	38.54	-35.46	74	50.22	35.35	10.02	57.05	120	150	Peak

<b>Test Mode :</b>	802.11g	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	11	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2462 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
2462	105.58	-	-	97.42	32.24	5.68	29.76	107	71	Peak
2462	97.25	-	-	89.09	32.24	5.68	29.76	107	71	Average
4924	37.35	-36.65	74	52.05	33.92	8.46	57.08	158	258	Peak
7386	39.02	-34.98	74	50.7	35.35	10.02	57.05	165	321	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236MHz is not within a restricted band, and its limit line is 20dB below the highest emission level. For example, 102.65dB $\mu$ V/m - 20dB = 82.65 dB $\mu$ V/m. 3. Average measurement was not performed if peak level went lower than the average limit.		

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
173.56	20.6	-22.9	43.5	39.96	9.47	1.59	30.42	-	-	Peak
266.68	27.89	-18.11	46	43.07	13.03	1.9	30.11	-	-	Peak
359.8	29.71	-16.29	46	42.32	15.02	2.17	29.8	-	-	Peak
557.68	34.81	-11.19	46	42.66	18.73	2.67	29.25	-	-	Peak
770.11	36.35	-9.65	46	41.82	20.4	3.1	28.97	105	352	Peak
864.2	31.74	-14.26	46	36.05	21.24	3.3	28.85	-	-	Peak
2412	102.65	-	-	94.64	32.17	5.62	29.78	147	319	Peak
2412	94.33	-	-	86.32	32.17	5.62	29.78	147	319	Average
4824	37.02	-36.98	74	52.24	33.68	8.36	57.26	105	198	Peak
7236	39.55	-43.1	82.65	51.53	35.29	9.97	57.24	189	185	Peak



<b>Test Mode :</b>	2.4GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	01	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 2412 MHz is fundamental signal which can be ignored. 2. 7236MHz 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
110.51	19.66	-23.84	43.5	36.77	12.2	1.32	30.63	-	-	Peak
264.74	22.15	-23.85	46	37.27	13.1	1.9	30.12	-	-	Peak
352.04	26.38	-19.62	46	39.38	14.68	2.15	29.83	-	-	Peak
547.98	32.24	-13.76	46	40.14	18.72	2.65	29.27	-	-	Peak
663.41	33.25	-12.75	46	40.21	19.28	2.88	29.12	-	-	Peak
762.35	34.04	-11.96	46	39.62	20.32	3.08	28.98	165	254	Peak
2412	100.9	-	-	92.89	32.17	5.62	29.78	121	304	Peak
2412	92.96	-	-	84.95	32.17	5.62	29.78	121	304	Average
4824	38.55	-35.45	74	53.77	33.68	8.36	57.26	123	352	Peak
7236	39.02	-41.88	80.9	51	35.29	9.97	57.24	158	254	Peak





<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	1. 5745MHz is fundamental signal which can be ignored. 2. 17235MHz 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
5745	101.69	-	-	87.76	34.18	9.14	29.39	106	307	Peak
5745	94.58	-	-	80.65	34.18	9.14	29.39	106	307	Average
11490	43.86	-30.14	74	47.78	39.11	13.39	56.42	145	265	Peak
17235	41.33	-40.36	81.69	40.4	39.82	17.5	56.39	174	321	Peak

<b>Test Mode :</b>	802.11a	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Vertical
<b>Remark :</b>	1. 5745 MHz is fundamental signal which can be ignored. 2. 17235MHz 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
5745	104.86	-	-	90.93	34.18	9.14	29.39	100	64	Peak
5745	97.97	-	-	84.04	34.18	9.14	29.39	100	64	Average
11490	43.79	-30.21	74	47.71	39.11	13.39	56.42	158	258	Peak
17235	42.01	-42.85	84.86	41.08	39.82	17.5	56.39	174	321	Peak



<b>Test Mode :</b>	5GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Horizontal
<b>Remark :</b>	<ol style="list-style-type: none"> <li>5745 MHz is fundamental signal which can be ignored.</li> <li>17235MHz 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
5745	99.15	-	-	85.22	34.18	9.14	29.39	108	294	Peak
5745	92.87	-	-	78.94	34.18	9.14	29.39	108	294	Average
11490	43.97	-30.03	74	47.89	39.11	13.39	56.42	156	236	Peak
17235	41.35	-37.8	79.15	40.42	39.82	17.5	56.39	158	263	Peak

<b>Test Mode :</b>	5GHz 802.11n HT20	<b>Temperature :</b>	24~25°C
<b>Test Channel :</b>	149	<b>Relative Humidity :</b>	49~52%
<b>Test Engineer :</b>	Leo Liao	<b>Polarization :</b>	Vertical
<b>Remark :</b>	<ol style="list-style-type: none"> <li>5745 MHz is fundamental signal which can be ignored.</li> <li>17235MHz 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
5745	104.97	-	-	91.04	34.18	9.14	29.39	100	45	Peak
5745	96.99	-	-	83.06	34.18	9.14	29.39	100	45	Average
11490	43.85	-30.15	74	47.77	39.11	13.39	56.42	189	253	Peak
17235	42.54	-42.43	84.97	41.61	39.82	17.5	56.39	174	321	Peak



## 4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	Apr. 04, 2013	Sep. 14, 2013	Apr. 03, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Sep. 14, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Nov. 03, 2012	Sep. 14, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9 kHz~3000MHz GAIN 30db	Mar. 28, 2013	Sep. 14, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Sep. 14, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Nov. 23, 2012	Sep. 14, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2012	Sep. 14, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronic	EM 1000	N/A	0~360 degree	N/A	Sep. 14, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM Electronic	EM 1000	N/A	1 m~4 m	N/A	Sep. 14, 2013	N/A	Radiation (03CH01-SZ)



## 5 Uncertainty of Evaluation

### 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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