



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 E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

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. 16, 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.



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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(b)	Unwanted Emissions	$\leq -17, -27$ dBm (depend on band)&15.209(a)	Pass	Under limit 2.28 dB at 5725.080 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 & Specification	
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 Frequency Range	WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz
Antenna Type	PIFA Antenna
Type of Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)



1.5 Modification of EUT

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

1.6 Testing Site

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

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

1.7 Applied Standards

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

- FCC Part 15 Subpart E
- FCC KDB 789033 D01 General UNII Test Procedures v01r03
- ANSI C63.4-2003

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.



2 Test Configuration of Equipment Under Test

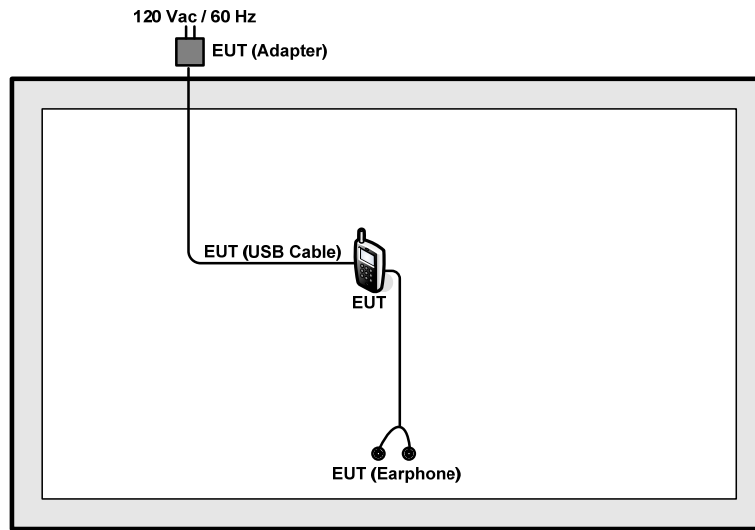
2.1 Test Mode

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

Test Cases				
	Test Items	Mode	Data rate	Test Channel
Radiated TCs	Radiated Band Edge	802.11a	54 Mbps	36/64/140
		802.11n HT20	MCS7	36/64/140
	Radiated Spurious Emission	802.11a	54 Mbps	36/64/140
		802.11n HT20	MCS7	36/64/140

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

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Agilent	E5515C	N/A	N/A	Unshielded, 1.8 m

2.4 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 Unwanted Radiated Emission Measurement

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

3.1.1 Limit of Unwanted Emissions

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

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

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

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

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

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

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

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



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

3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

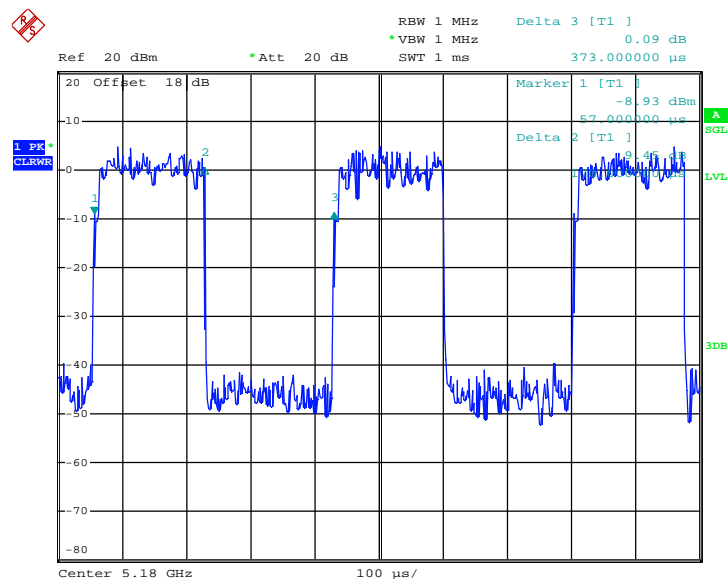
1. The testing follows FCC KDB 789033 D01 General UNII Test Procedures v01r03. Section H) Unwanted emissions measurement.
 - (1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - (2) Procedure for Peak Unwanted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

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

2. The EUT was placed on a rotatable table top 0.8 meter above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.

6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5GHz 802.11a Duty Cycle

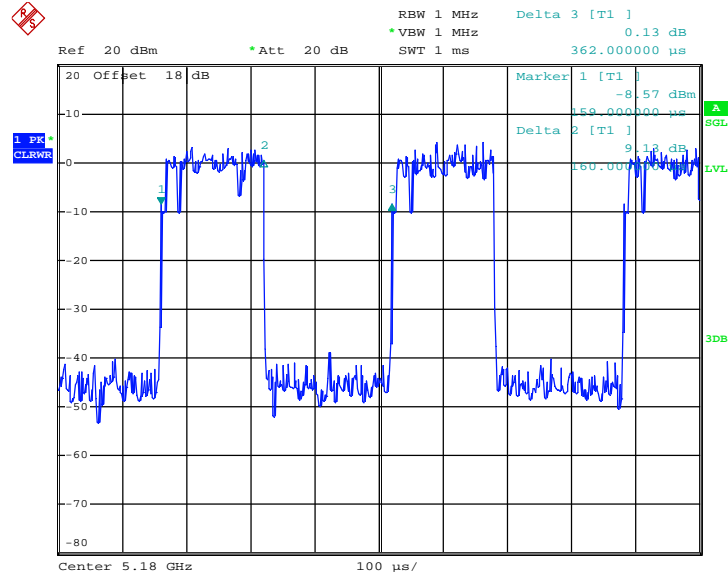


Note:

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

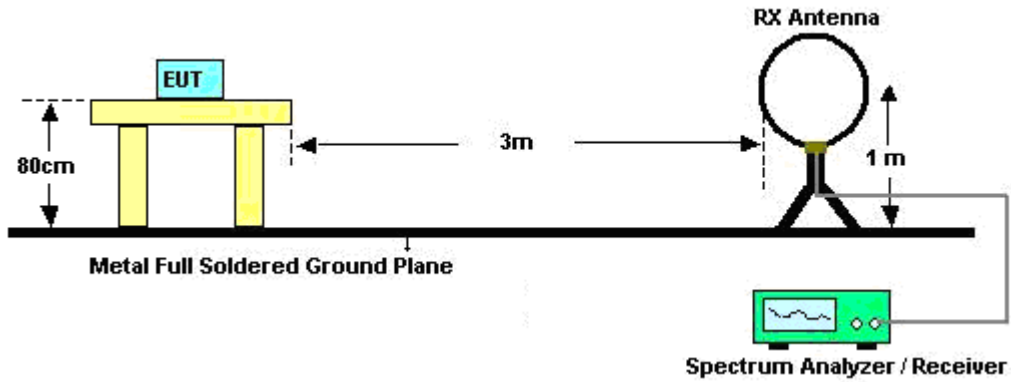


Note:

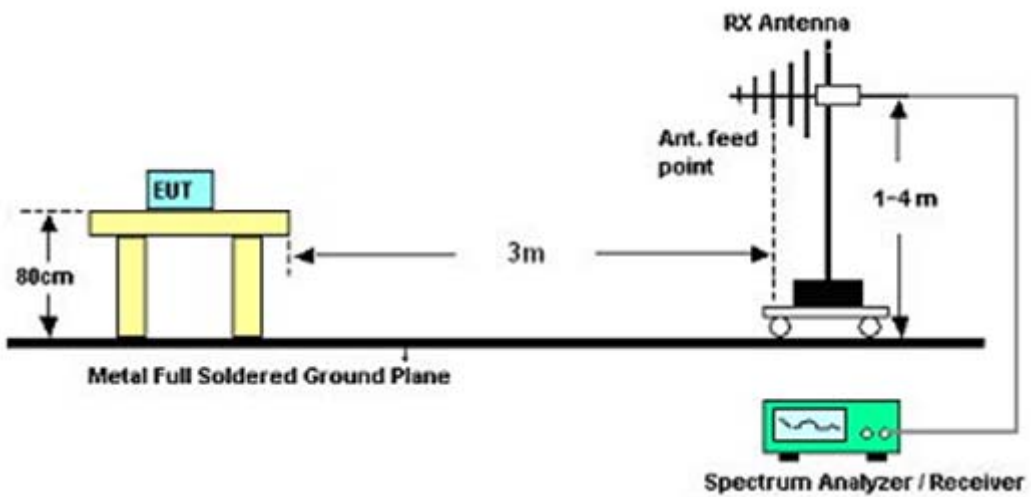
The total loss is 18dB of the RF cable and attenuator, and has been compensated to the spectrum analyzer by setting into the amplitude level offset. That means the measured result shown on the spectrum analyzer has added the total loss and been compliance with the limit line.

3.1.4 Test Setup

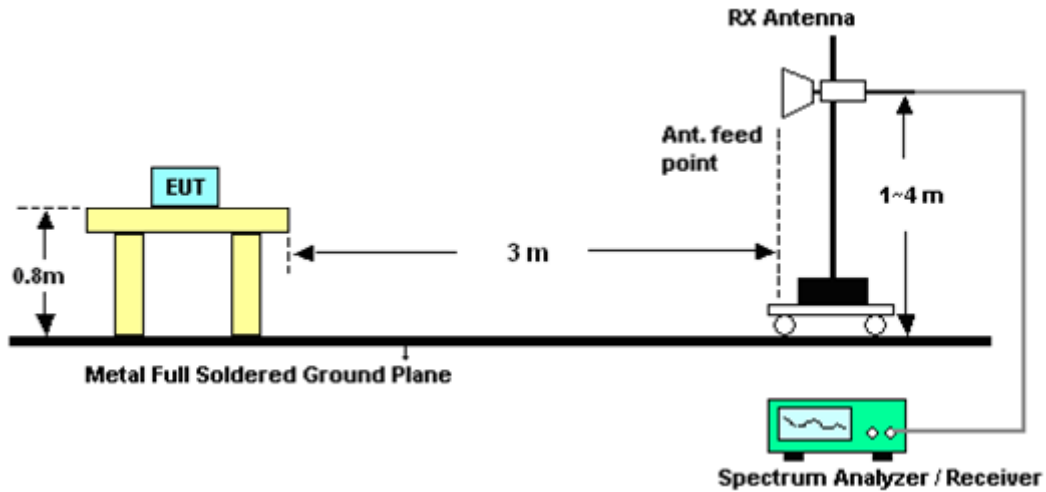
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.1.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.



3.1.6 Test Result

3.1.6.1 Test Result of Radiated Band Edges

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	36	Relative Humidity :	48~49%
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
5146.7	53.85	-20.15	74	40.52	34	8.69	29.36	124	304	Peak
5149.1	43.86	-10.14	54	30.53	34	8.69	29.36	124	304	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.35	58.22	-15.78	74	44.89	34	8.69	29.36	101	63	Peak
5149.85	47.85	-6.15	54	34.52	34	8.69	29.36	101	63	Average

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	64	Relative Humidity :	48~49%
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
5350.44	53.85	-20.15	74	40.44	33.88	8.9	29.37	100	286	Peak
5350.66	43.99	-10.01	54	30.58	33.88	8.9	29.37	100	286	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5350.88	60.22	-13.78	74	46.81	33.88	8.9	29.37	124	39	Peak
5350.55	49.85	-4.15	54	36.44	33.88	8.9	29.37	124	39	Average



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	140	Relative Humidity :	48~49%
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
5725	61.02	-7.28	68.3	47.13	34.15	9.13	29.39	100	291	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	62.95	-5.35	68.3	49.06	34.15	9.13	29.39	102	70	Peak

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

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	36	Relative Humidity :	48~49%
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
5149.1	54.99	-19.01	74	41.66	34	8.69	29.36	100	291	Peak
5149.25	46.03	-7.97	54	32.7	34	8.69	29.36	100	291	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5148.95	60.85	-13.15	74	47.52	34	8.69	29.36	114	75	Peak
5150	51.01	-2.99	54	37.68	34	8.69	29.36	114	75	Average



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	64	Relative Humidity :	48~49%
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
5350.44	54.85	-19.15	74	41.44	33.88	8.9	29.37	111	285	Peak
5350.99	45.95	-8.05	54	32.54	33.88	8.9	29.37	111	285	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5351.32	62.01	-11.99	74	48.6	33.88	8.9	29.37	100	75	Peak
5350	50.9	-3.1	54	37.49	33.88	8.9	29.37	100	75	Average

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	140	Relative Humidity :	48~49%
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
5725.08	66.02	-2.28	68.3	52.13	34.15	9.13	29.39	100	305	Peak

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5725	65.85	-2.45	68.3	51.96	34.15	9.13	29.39	104	44	Peak

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



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

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

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	100.35	-	-	87.01	33.98	8.72	29.36	124	304	Peak
5180	92.98	-	-	79.64	33.98	8.72	29.36	124	304	Average
10360	42.97	-31.03	74	50.38	36.65	12.85	56.91	158	250	Peak
15540	42.9	-31.1	74	43.95	39.52	16.2	56.77	110	125	Peak

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	106.97	-	-	93.63	33.98	8.72	29.36	101	63	Peak
5180	99.16	-	-	85.82	33.98	8.72	29.36	101	63	Average
10360	42.13	-31.87	74	49.54	36.65	12.85	56.91	152	260	Peak
15540	43.12	-30.88	74	44.17	39.52	16.2	56.77	194	285	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	64	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	99.99	-	-	86.61	33.9	8.85	29.37	100	286	Peak
5320	92.85	-	-	79.47	33.9	8.85	29.37	100	286	Average
10640	43.12	-30.88	74	50.38	36.57	13.01	56.84	152	135	Peak
15960	43.9	-30.1	74	44.61	39.96	16.44	57.11	173	245	Peak

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	64	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	108.01	-	-	94.63	33.9	8.85	29.37	124	39	Peak
5320	101.21	-	-	87.83	33.9	8.85	29.37	124	39	Average
10640	42.22	-31.78	74	49.48	36.57	13.01	56.84	152	135	Peak
15960	44.03	-29.97	74	44.74	39.96	16.44	57.11	173	245	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	140	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	<ol style="list-style-type: none"> 5700 MHz is fundamental signal which can be ignored. 17100 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. Average measurement was not performed if peak level went lower than the average limit. 		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5700	103.85	-	-	90.02	34.09	9.12	29.38	100	291	Peak
5700	95.97	-	-	82.14	34.09	9.12	29.38	100	291	Average
11400	43.16	-30.84	74	47.55	38.71	13.37	56.47	147	285	Peak
17100	40.22	-33.78	74	39.26	40.03	17.43	56.5	165	246	Peak

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	140	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	<ol style="list-style-type: none"> 5700 MHz is fundamental signal which can be ignored. 17100 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. Average measurement was not performed if peak level went lower than the average limit. 		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5700	104.97	-	-	91.14	34.09	9.12	29.38	102	70	Peak
5700	97.25	-	-	83.42	34.09	9.12	29.38	102	70	Average
11400	44.87	-29.13	74	49.26	38.71	13.37	56.47	147	285	Peak
17100	38.88	-35.12	74	37.92	40.03	17.43	56.5	165	246	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	102.26	-	-	88.92	33.98	8.72	29.36	100	291	Peak
5180	94.35	-	-	81.01	33.98	8.72	29.36	100	291	Average
10360	43.02	-30.98	74	50.43	36.65	12.85	56.91	152	260	Peak
15540	44.32	-29.68	74	45.37	39.52	16.2	56.77	189	238	Peak

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	36	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	1. 5180 MHz is fundamental signal which can be ignored. 2. 10360 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5180	107.01	-	-	93.67	33.98	8.72	29.36	114	75	Peak
5180	99.21	-	-	85.87	33.98	8.72	29.36	114	75	Average
10360	42.85	-31.15	74	50.26	36.65	12.85	56.91	159	320	Peak
15540	42.96	-31.04	74	44.01	39.52	16.2	56.77	175	210	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	64	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	100.86	-	-	87.48	33.9	8.85	29.37	111	285	Peak
5320	94.04	-	-	80.66	33.9	8.85	29.37	111	285	Average
10640	43.01	-30.99	74	50.27	36.57	13.01	56.84	152	135	Peak
15960	43.98	-30.02	74	44.69	39.96	16.44	57.11	173	245	Peak

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	64	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	1. 5320 MHz is fundamental signal which can be ignored. 2. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
5320	105.78	-	-	92.4	33.9	8.85	29.37	100	75	Peak
5320	98.87	-	-	85.49	33.9	8.85	29.37	100	75	Average
10640	42.35	-31.65	74	49.61	36.57	13.01	56.84	152	135	Peak
15960	44.03	-29.97	74	44.74	39.96	16.44	57.11	173	245	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	140	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Horizontal
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
173.56	20.6	-22.9	43.5	39.96	9.47	1.59	30.42	-	-	Peak
266.68	25.89	-20.11	46	41.07	13.03	1.9	30.11	-	-	Peak
399.57	28.34	-17.66	46	39.22	16.5	2.29	29.67	-	-	Peak
460.68	30.76	-15.24	46	40.95	16.84	2.43	29.46	-	-	Peak
546.04	33.64	-12.36	46	41.71	18.56	2.64	29.27	-	-	Peak
772.05	34.59	-11.41	46	40.01	20.44	3.11	28.97	100	352	Peak
5700	100.85	-	-	87.02	34.09	9.12	29.38	100	305	Peak
5700	92.97	-	-	79.14	34.09	9.12	29.38	100	305	Average
11400	43.85	-30.15	74	48.24	38.71	13.37	56.47	147	285	Peak
17100	40.21	-33.79	74	39.25	40.03	17.43	56.5	165	246	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	140	Relative Humidity :	48~49%
Test Engineer :	Leo Liao	Polarization :	Vertical
Remark :	1. 5700 MHz is fundamental signal which can be ignored. 2. 17100 MHz is not within a restricted band and satisfies both the average and peak limits of 15.209. 3. Average measurement was not performed if peak level went lower than the average limit.		

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
173.56	19.6	-23.9	43.5	38.96	9.47	1.59	30.42	-	-	Peak
266.68	23.89	-22.11	46	39.07	13.03	1.9	30.11	-	-	Peak
354.95	27.43	-18.57	46	40.24	14.85	2.16	29.82	-	-	Peak
460.68	28.76	-17.24	46	38.95	16.84	2.43	29.46	-	-	Peak
553.8	30.96	-15.04	46	38.76	18.8	2.66	29.26	-	-	Peak
770.11	34.35	-11.65	46	39.82	20.4	3.1	28.97	135	311	Peak
5700	104.01	-	-	90.18	34.09	9.12	29.38	104	44	Peak
5700	97.15	-	-	83.32	34.09	9.12	29.38	104	44	Average
11400	44.98	-29.02	74	49.37	38.71	13.37	56.47	147	285	Peak
17100	38.21	-35.79	74	37.25	40.03	17.43	56.5	165	246	Peak



4 List of Measuring Equipments

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. 16, 2013	Apr. 03, 2014	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 12, 2012	Sep. 16, 2013	Oct. 11, 2013	Radiation (03CH01-SZ)
Bilog Antenna	SCHAFFNER	CBL6112B	2614	30MHz~2GHz	Nov. 03, 2012	Sep. 16, 2013	Nov. 02, 2013	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9 kHz~3000MHz GAIN 30db	Mar. 28, 2013	Sep. 16, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	Mar. 28, 2013	Sep. 16, 2013	Mar. 27, 2014	Radiation (03CH01-SZ)
SHF-EHF-Horn	Schwarzbeck	BBHA9170	BBHA9170249	14GHz~40GHz	Nov. 23, 2012	Sep. 16, 2013	Nov. 22, 2013	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 22, 2012	Sep. 16, 2013	Oct. 21, 2013	Radiation (03CH01-SZ)
Turn Table	EM Electronic	EM 1000	N/A	0~360 degree	N/A	Sep. 16, 2013	N/A	Radiation (03CH01-SZ)
Antenna Mast	EM electronic	EM 1000	N/A	1 m~4 m	N/A	Sep. 16, 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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