



FCC RF Test Report

APPLICANT : Broadcom Corporation
EQUIPMENT : Broadcom 802.11a/b/g/n/ac WLAN + Bluetooth 4.0
NGFF2230 Mini Card
BRAND NAME : Broadcom
MODEL NAME : BCM943162ZP
FCC ID : QDS-BRCM1075
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

This is a partial report. The product was received on May 27, 2014 and testing was completed on Jun. 30, 2014. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

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

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR452709-01C	Rev. 01	Initial issue of report	Jul. 28, 2014



SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	RSS-210 A8.5	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 0.40 dB at 2390.010 MHz
3.2	15.203 & 15.247(b)	RSS-210 A8.4	Antenna Requirement	N/A	Pass	-



1 General Description

1.1 Applicant

Broadcom Corporation

1700 Technology Drive, San Jose, CA95110

1.2 Manufacturer

Broadcom Corporation

190 Mathilda Place Sunnyvale CA 94086 U.S.A.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Broadcom 802.11a/b/g/n/ac WLAN + Bluetooth 4.0 NGFF2230 Mini Card
Brand Name	Broadcom
Model Name	BCM943162ZP
FCC ID	QDS-BRCM1075
Installed into Notebook	Brand Name: lenovo Model Name: TP00067A
EUT supports Radios application	WLAN 11b/g/n (HT20/HT40) WLAN 11ac VHT20/VHT40/VHT80 Bluetooth v4.0EDR/LE
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 subjective to this standard

Product Specification subjective to this standard			
Tx/Rx Channel Frequency Range	2412 MHz ~ 2462 MHz		
Maximum (Peak) Output Power to antenna	<Ant. 1> <2412 MHz ~ 2462 MHz > 802.11b : 18.56 dBm (0.0718 W) 802.11g : 22.72 dBm (0.1871 W) 802.11n HT20 : 23.00 dBm (0.1995 W) 802.11n HT40 : 23.00 dBm (0.1995 W) <5745 MHz ~ 5825 MHz > 802.11a : 21.63 dBm (0.1455 W) 802.11n HT20 : 21.41 dBm (0.1384 W) 802.11n HT40 : 21.19 dBm (0.1315 W) 802.11ac VHT20 : 21.62 dBm (0.1452 W) 802.11ac VHT40 : 21.04 dBm (0.1271 W) 802.11ac VHT80 : 19.99 dBm (0.0998 W) <Ant. 2> <2412 MHz ~ 2462 MHz > 802.11b : 18.34 dBm (0.0682 W) 802.11g : 22.46 dBm (0.1762 W) 802.11n HT20 : 22.55 dBm (0.1799 W) 802.11n HT40 : 22.07 dBm (0.1611 W) <5745 MHz ~ 5825 MHz > 802.11a : 21.66 dBm (0.1466 W) 802.11n HT20 : 21.62 dBm (0.1452 W) 802.11n HT40 : 21.25 dBm (0.1334 W) 802.11ac VHT20 : 21.62 dBm (0.1452 W) 802.11ac VHT40 : 21.03 dBm (0.1268 W) 802.11ac VHT80 : 19.90 dBm (0.0977 W)		
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)		
Antenna Function for Transmitter		Chain Port 0 Ant. 1	Chain Port 1 Ant. 2
	802.11 a/b/g	V	V
	802.11 n/ac SISO	V	V

Lonestar Antenna Information			
Antenna 1	Manufacturer	Speed	
	Antenna Type	Main: PIFA Antenna	Aux.: PIFA Antenna
	Antenna P/N	DC330018300	DC330018310
	Peak gain	Main Antenna : WLAN(2.4GHz):0.29dBi WLAN(5GHz):0.97dBi	Aux. Antenna : WLAN(2.4GHz):-0.11dBi Bluetooth :-0.11dBi WLAN(5GHz):0.34dBi
Antenna 2	Manufacturer	Yageo	
	Antenna Type	Main:PIFA Antenna	Aux.: PIFA Antenna
	Antenna P/N	DC330018100	DC330018110
	Peak gain	Main Antenna : WLAN(2.4GHz):1.92dBi WLAN(5GHz):1.26dBi	Aux. Antenna : WLAN (2.4GHz) :-2.84dBi Bluetooth : -2.84dBi WLAN(5GHz):-0.73dBi

1.5 Modification of EUT

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

1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	TH02-HY	03CH06-HY

1.7 Applicable Standards

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

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
- ANSI C63.4-2003

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

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: radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

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

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

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
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	157	5785
	151	5755	159	5795
	153	5765	161	5805
	155	5775	165	5825



2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

<Ant. 1>

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	18.56	18.48	18.52	18.45

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	22.72	22.33	22.26	22.15	22.55	22.59	22.71	22.46

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	23.00	22.92	22.84	22.88	22.79	22.73	22.88	22.92

2.4GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	23.00	22.84	22.91	22.78	22.81	22.87	22.85	22.90

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.63	21.60	21.58	21.53	21.37	21.32	21.61	21.59

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.41	21.33	21.40	21.35	21.37	21.38	21.29	21.35

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.19	21.13	21.11	21.10	21.08	21.07	21.01	21.18

5GHz 802.11ac VHT20 mode									
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Peak Power (dBm)	21.62	21.58	21.60	21.51	21.56	21.53	21.48	21.43	21.35



5GHz 802.11ac VHT40 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Peak Power (dBm)	21.04	21.00	20.96	20.98	20.85	20.88	20.87	20.84	20.94	20.96

5GHz 802.11ac VHT80 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Peak Power (dBm)	19.99	19.84	19.87	19.94	19.95	19.86	19.85	19.85	19.85	19.83

<Ant. 2>

2.4GHz 802.11b mode				
Data Rate (MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power (dBm)	18.34	18.28	18.25	18.32

2.4GHz 802.11g mode								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	22.46	22.38	22.44	22.31	22.37	22.40	22.36	22.41

2.4GHz 802.11n HT20 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.55	22.49	22.51	22.47	22.43	22.40	22.38	22.45

2.4GHz 802.11n HT40 mode								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	22.07	22.04	22.02	21.93	22.05	21.97	22.03	21.94

802.11a								
Data Rate (MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power (dBm)	21.66	21.60	21.63	21.56	21.58	21.61	21.54	21.52

5GHz 802.11n HT20								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.62	21.58	21.53	21.60	21.54	21.43	21.46	21.48

5GHz 802.11n HT40								
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power (dBm)	21.25	21.20	21.23	21.16	21.19	21.14	21.12	21.15



5GHz 802.11ac VHT20 mode									
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
Peak Power (dBm)	21.62	21.58	21.54	21.58	21.50	21.44	21.42	21.45	21.56

5GHz 802.11ac VHT40 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Peak Power (dBm)	21.03	21.00	20.99	20.94	20.92	20.88	20.86	20.89	20.85	20.91

5GHz 802.11ac VHT80 mode										
Data Rate (MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9
Peak Power (dBm)	19.90	19.70	19.74	19.73	19.75	19.72	19.65	19.80	19.68	19.74

2.3 Test Mode

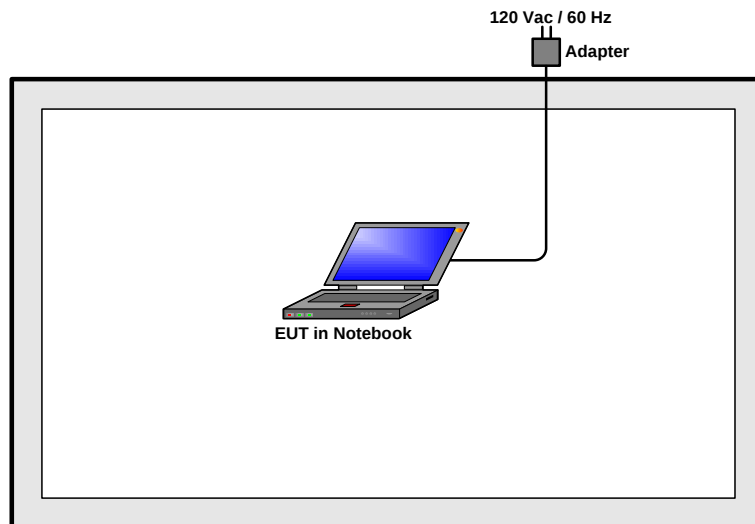
Final results of test modes, data rates and test channels are shown as following table.

Test Cases				
Radiated TCs	Radiated Band Edge	802.11b	1 Mbps	1/11
		802.11g	6 Mbps	1/11
		802.11n HT20	MCS0	1/11
		802.11n HT40	MCS0	3/9
	Radiated Spurious Emission	802.11b	1 Mbps	1/6/11
		802.11g	6 Mbps	1/6/11
		802.11n HT20	MCS0	1/6/11
		802.11n HT40	MCS0	3/6/9

<5GHz>

Test Cases				
Conducted TCs	Test Items	Mode	Data Rate	Test Channel
	Radiated Spurious Emission	802.11a	6 Mbps	149/157/165
		802.11n HT20	MCS0	149/157/165
		802.11n HT40	MCS0	151/159
		802.11ac VHT20	MCS0	149/157/165
		802.11ac VHT40	MCS0	151/159
		802.11ac VHT80	MCS0	155

2.4 Connection Diagram of Test System



2.5 EUT Operation Test Setup

The programmed RF utility "artgui", is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

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

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



3.1.3 Test Procedures

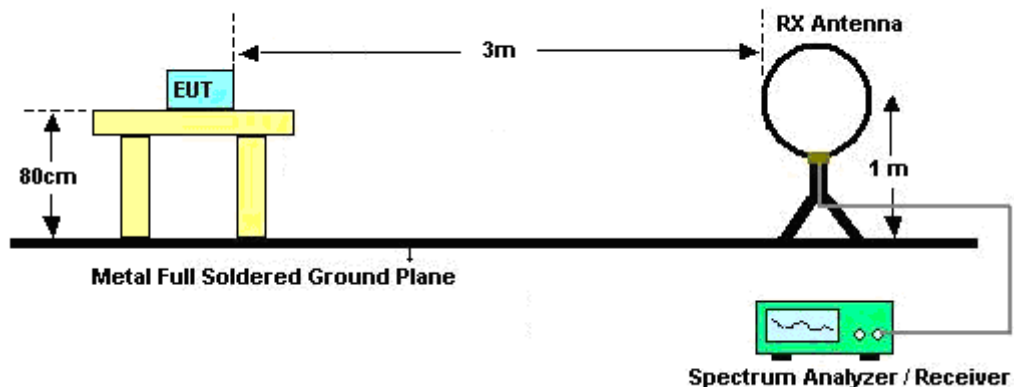
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the 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 - Preamplifier 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 $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.For average measurement:
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



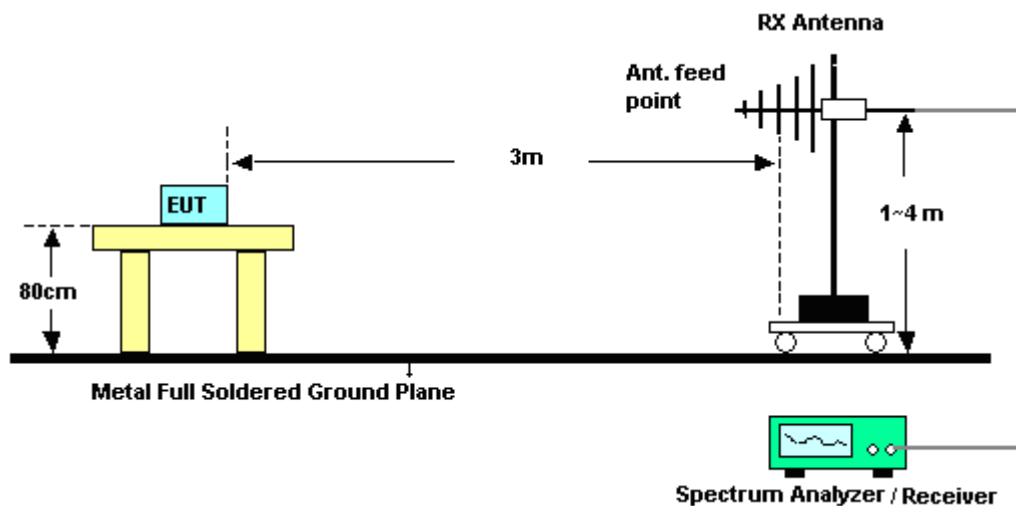
Antenna	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1	802.11b	94.95	12420	0.080515298	100Hz
2	802.11b	95.41	12480	0.080128205	100Hz
1	802.11g	94.51	2064	0.484496124	1kHz
2	802.11g	95.03	2064	0.484496124	1kHz
1	2.4GHz 802.11n HT20 for Ant 1	95.07	1930	0.518134715	1kHz
2	2.4GHz 802.11n HT20 for Ant 2	95.07	1930	0.518134715	1kHz
1	2.4GHz 802.11n HT40 for Ant 1	90.29	948	1.054852321	3kHz
2	2.4GHz 802.11n HT40 for Ant 2	90.29	948	1.054852321	3kHz
1	802.11a	95.03	2064	0.484496124	1kHz
2	802.11a	94.95	2070	0.483091787	1kHz
1	5GHz 802.11n HT20 for Ant 1	95.07	1930	0.518134715	1kHz
2	5GHz 802.11n HT20 for Ant 2	95.07	1930	0.518134715	1kHz
1	5GHz 802.11n HT40 for Ant 1	90.29	948	1.054852321	3kHz
2	5GHz 802.11n HT40 for Ant 2	90.29	948	1.054852321	3kHz
1	5GHz 802.11ac VHT20 for Ant 1	98.48	1940	0.515463918	10Hz
2	5GHz 802.11ac VHT20 for Ant 2	98.47	1930	0.518134715	10Hz
1	5GHz 802.11ac VHT40 for Ant 1	96.36	954	1.048218029	3kHz
2	5GHz 802.11ac VHT40 for Ant 2	96.97	960	1.041666667	3kHz
1	5GHz 802.11ac VHT40 for Ant 1	93.55	464	2.155172414	3kHz
2	5GHz 802.11ac VHT40 for Ant 2	93.55	464	2.155172414	3kHz

3.1.4 Test Setup

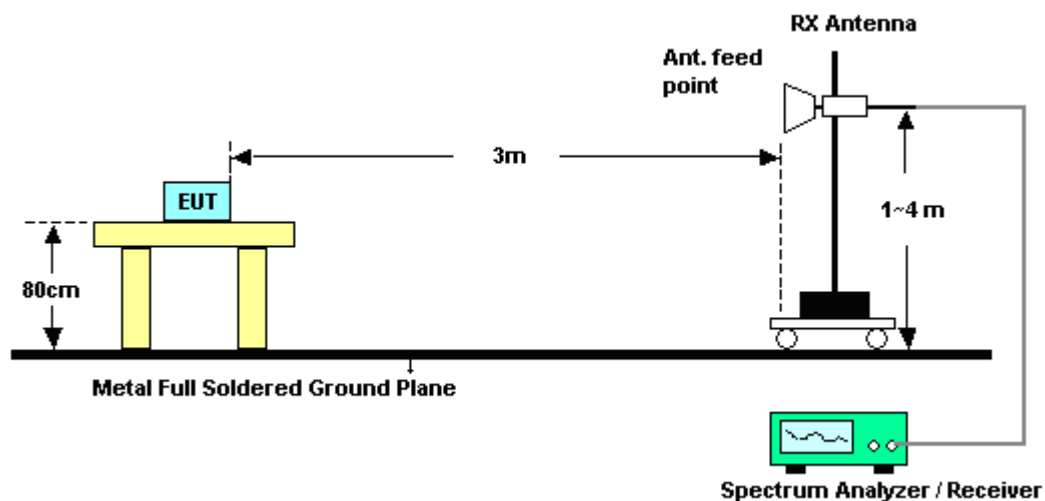
For radiated emissions below 30MHz



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

<Ant. 1>

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Abi Lin and Donny Tang

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	52.85	-21.15	74	49.13	31.92	6.45	34.65	100	122	Peak
2389.74	41.12	-12.88	54	37.4	31.92	6.45	34.65	100	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
2388.12	52.76	-21.24	74	49.04	31.92	6.45	34.65	100	304	Peak
2390.01	42.26	-11.74	54	38.53	31.92	6.45	34.64	100	304	Average

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Abi Lin and Donny Tang

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	56.64	-17.36	74	52.69	31.99	6.59	34.63	108	300	Peak
2483.5	47.22	-6.78	54	43.27	31.99	6.59	34.63	108	300	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
2484.34	50.78	-23.22	74	46.83	31.99	6.59	34.63	100	305	Peak
2483.5	39.34	-14.66	54	35.39	31.99	6.59	34.63	100	305	Average



Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Abi Lin and Donny Tang

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
2390.01	68.66	-5.34	74	64.93	31.92	6.45	34.64	114	307	Peak
2390.01	53.6	-0.4	54	49.87	31.92	6.45	34.64	114	307	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.92	60.64	-13.36	74	56.91	31.92	6.45	34.64	179	136	Peak
2390.01	46.4	-7.6	54	42.67	31.92	6.45	34.64	179	136	Average

Test Mode :	802.11g	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Abi Lin and Donny Tang

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
2483.92	63.61	-10.39	74	59.66	31.99	6.59	34.63	136	303	Peak
2483.53	48.91	-5.09	54	44.96	31.99	6.59	34.63	136	303	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	58.96	-15.04	74	55.01	31.99	6.59	34.63	142	147	Peak
2483.5	43.54	-10.46	54	39.59	31.99	6.59	34.63	142	147	Average



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	01	Test Engineer :	Abi Lin and Donny Tang

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
2389.74	71.64	-2.36	74	67.92	31.92	6.45	34.65	143	298	Peak
2390.01	53.31	-0.69	54	49.58	31.92	6.45	34.64	143	298	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
2389.56	64.41	-9.59	74	60.69	31.92	6.45	34.65	179	138	Peak
2389.92	48.38	-5.62	54	44.65	31.92	6.45	34.64	179	138	Average

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Abi Lin and Donny Tang

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
2483.56	66.45	-7.55	74	62.5	31.99	6.59	34.63	137	299	Peak
2483.59	50.72	-3.28	54	46.77	31.99	6.59	34.63	137	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
2484.85	60.48	-13.52	74	56.53	31.99	6.59	34.63	172	136	Peak
2483.5	44.54	-9.46	54	40.59	31.99	6.59	34.63	172	136	Average



Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Band :	Low	Relative Humidity :	46~47%
Test Channel :	03	Test Engineer :	Abi Lin and Donny Tang

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
2388.66	67.13	-6.87	74	63.41	31.92	6.45	34.65	138	299	Peak
2389.38	53.57	-0.43	54	49.85	31.92	6.45	34.65	138	299	Average
2488.24	55.32	-18.68	74	51.36	32	6.59	34.63	138	299	Peak
2486.35	42.57	-11.43	54	38.62	31.99	6.59	34.63	138	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
2384.07	61.92	-12.08	74	58.22	31.9	6.45	34.65	180	151	Peak
2389.74	48.42	-5.58	54	44.7	31.92	6.45	34.65	180	151	Average
2485.24	50.09	-23.91	74	46.14	31.99	6.59	34.63	180	151	Peak
2496.64	38.75	-15.25	54	34.79	32	6.59	34.63	180	151	Average



Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	09	Test Engineer :	Abi Lin and Donny Tang

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
2387.67	64	-10	74	60.28	31.92	6.45	34.65	141	300	Peak
2389.38	48.68	-5.32	54	44.96	31.92	6.45	34.65	141	300	Average
2498.35	68.92	-5.08	74	64.96	32	6.59	34.63	141	300	Peak
2491.39	53.82	-0.18	54	49.86	32	6.59	34.63	141	300	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
2381.28	58.5	-15.5	74	54.8	31.9	6.45	34.65	142	151	Peak
2381.91	42.64	-11.36	54	38.94	31.9	6.45	34.65	142	151	Average
2493.76	62.6	-11.4	74	58.64	32	6.59	34.63	142	151	Peak
2494.39	48.24	-5.76	54	44.28	32	6.59	34.63	142	151	Average

<Ant. 2>

Test Mode :	802.11b	Temperature :	24~25°C
Test Band :	High	Relative Humidity :	46~47%
Test Channel :	11	Test Engineer :	Abi Lin and Donny Tang

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
2486.05	50.42	-23.58	74	46.47	31.99	6.59	34.63	100	244	Peak
2483.5	39.58	-14.42	54	35.63	31.99	6.59	34.63	100	244	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
2484.34	53.24	-20.76	74	49.29	31.99	6.59	34.63	100	146	Peak
2483.5	45.03	-8.97	54	41.08	31.99	6.59	34.63	100	146	Average

3.1.7 Test Result of Radiated Spurious 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.

<Ant. 1>

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	2412 MHz is fundamental signal which can be ignored.		

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
2412	100.42	-	-	96.64	31.93	6.49	34.64	100	122	Average
2412	104.97	-	-	101.19	31.93	6.49	34.64	100	122	Peak
4824	48.68	-5.32	54	64.92	34.4	10.17	60.81	200	294	Average
4824	51.08	-22.92	74	67.32	34.4	10.17	60.81	200	294	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	1. 2412 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
2412	99.48	-	-	95.7	31.93	6.49	34.64	100	304	Average
2412	103.93	-	-	100.15	31.93	6.49	34.64	100	304	Peak
4824	48.59	-25.41	74	64.83	34.4	10.17	60.81	100	0	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 2438 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
2438	97.59	-	-	93.75	31.96	6.52	34.64	100	243	Average
2438	101.59	-	-	97.75	31.96	6.52	34.64	100	243	Peak
4875	49.39	-4.61	54	65.53	34.37	10.18	60.69	200	312	Average
4875	52.03	-21.97	74	68.17	34.37	10.18	60.69	200	312	Peak
7311	46.64	-27.36	74	60.61	35.61	10.94	60.52	100	0	Peak

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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	99.74	-	-	95.9	31.96	6.52	34.64	100	112	Average
2437	104.29	-	-	100.45	31.96	6.52	34.64	100	112	Peak
4875	49.96	-24.04	74	66.1	34.37	10.18	60.69	100	0	Peak
7311	47.41	-26.59	74	61.38	35.61	10.94	60.52	100	0	Peak



Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	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
37.29	13.94	-26.06	40	31.07	13.94	0.72	31.79	-	-	Peak
149.88	13.39	-30.11	43.5	33.1	10.7	1.34	31.75	-	-	Peak
203.34	24.35	-19.15	43.5	45.39	9.16	1.55	31.75	200	145	Peak
304.9	21.7	-24.3	46	38.21	13.29	1.92	31.72	-	-	Peak
556.9	21.38	-24.62	46	31.45	19.36	2.57	32	-	-	Peak
827.1	24.77	-21.23	46	32.91	20.55	3.15	31.84	-	-	Peak
2462	104.11	-	-	100.22	31.97	6.56	34.64	108	300	Average
2462	108.73	-	-	104.84	31.97	6.56	34.64	108	300	Peak
4923	50.08	-3.92	54	66.11	34.34	10.2	60.57	200	315	Average
4923	51.46	-22.54	74	67.49	34.34	10.2	60.57	200	315	Peak
7386	45.25	-28.75	74	59.33	35.56	10.92	60.56	100	0	Peak



Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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
67.26	16.22	-23.78	40	40.81	6.26	0.92	31.77	-	-	Peak
180.93	20.38	-23.12	43.5	41.44	9.24	1.45	31.75	-	-	Peak
233.04	21.32	-24.68	46	40.84	10.56	1.66	31.74	-	-	Peak
528.9	20.71	-25.29	46	31.89	18.27	2.52	31.97	-	-	Peak
814.5	25.06	-20.94	46	33.54	20.3	3.11	31.89	-	-	Peak
878.2	25.92	-20.08	46	33.33	20.9	3.31	31.62	120	323	Peak
2464	97.09	-	-	93.2	31.97	6.56	34.64	100	305	Average
2464	101.5	-	-	97.61	31.97	6.56	34.64	100	305	Peak
4923	49.96	-24.04	74	65.99	34.34	10.2	60.57	100	0	Peak
7386	47.05	-26.95	74	61.13	35.56	10.92	60.56	100	0	Peak



Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 2414 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
2414	101.41	-	-	97.63	31.93	6.49	34.64	114	307	Average
2414	111.96	-	-	108.18	31.93	6.49	34.64	114	307	Peak
4824	46.61	-27.39	74	62.85	34.4	10.17	60.81	100	0	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	1. 2410 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
2410	94.93	-	-	91.15	31.93	6.49	34.64	179	136	Average
2410	105.14	-	-	101.36	31.93	6.49	34.64	179	136	Peak
4824	44.48	-29.52	74	60.72	34.4	10.17	60.81	100	0	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 2438 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
2438	101.31	-	-	97.49	31.94	6.52	34.64	138	300	Average
2438	111.96	-	-	108.14	31.94	6.52	34.64	138	300	Peak
4878	48.86	-25.14	74	64.99	34.37	10.19	60.69	100	0	Peak
7308	47.92	-26.08	74	61.89	35.61	10.94	60.52	100	0	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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	97.02	-	-	93.2	31.94	6.52	34.64	179	149	Average
2436	107.24	-	-	103.42	31.94	6.52	34.64	179	149	Peak
4878	48.96	-25.04	74	65.09	34.37	10.19	60.69	100	0	Peak
7314	47.86	-26.14	74	61.83	35.61	10.94	60.52	100	0	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	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
2460	99.73	-	-	95.84	31.97	6.56	34.64	136	303	Average
2460	109.99	-	-	106.1	31.97	6.56	34.64	136	303	Peak
4932	49.47	-24.53	74	65.49	34.34	10.21	60.57	100	0	Peak
7386	45.58	-28.42	74	59.66	35.56	10.92	60.56	100	0	Peak

Test Mode :	802.11g	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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	95.69	-	-	91.79	31.97	6.56	34.63	142	147	Average
2464	106.16	-	-	102.26	31.97	6.56	34.63	142	147	Peak
4923	47.5	-26.5	74	63.53	34.34	10.2	60.57	100	0	Peak
7386	44.43	-29.57	74	58.51	35.56	10.92	60.56	100	0	Peak



Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 2414 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
2414	99.64	-	-	95.86	31.93	6.49	34.64	143	298	Average
2414	110.12	-	-	106.34	31.93	6.49	34.64	143	298	Peak
4833	47.15	-26.85	74	63.39	34.4	10.17	60.81	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	01	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	1. 2410 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
2410	94.32	-	-	90.53	31.94	6.49	34.64	179	138	Average
2410	104.78	-	-	100.99	31.94	6.49	34.64	179	138	Peak
4824	43.65	-30.35	74	59.89	34.4	10.17	60.81	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 2438 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
2438	101	-	-	97.18	31.94	6.52	34.64	139	300	Average
2438	110.96	-	-	107.14	31.94	6.52	34.64	139	300	Peak
4875	49.13	-24.87	74	65.27	34.37	10.18	60.69	100	0	Peak
7311	46.49	-27.51	74	60.46	35.61	10.94	60.52	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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	96.86	-	-	93.04	31.94	6.52	34.64	178	148	Average
2436	106.85	-	-	103.03	31.94	6.52	34.64	178	148	Peak
4878	47.44	-26.56	74	63.57	34.37	10.19	60.69	100	0	Peak
7314	47.69	-26.31	74	61.66	35.61	10.94	60.52	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	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	99.94	-	-	96.05	31.97	6.56	34.64	137	299	Average
2464	110.23	-	-	106.34	31.97	6.56	34.64	137	299	Peak
4923	50.27	-23.73	74	66.3	34.34	10.2	60.57	100	0	Peak
7386	43.38	-30.62	74	57.46	35.56	10.92	60.56	100	0	Peak

Test Mode :	2.4GHz 802.11n HT20	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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
2460	94.7	-	-	90.81	31.97	6.56	34.64	172	136	Average
2460	105.07	-	-	101.18	31.97	6.56	34.64	172	136	Peak
4920	49.08	-24.92	74	65.11	34.34	10.2	60.57	100	0	Peak
7386	44.71	-29.29	74	58.79	35.56	10.92	60.56	100	0	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	03	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	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	94.59	-	-	90.77	31.94	6.52	34.64	138	299	Average
2424	104.14	-	-	100.32	31.94	6.52	34.64	138	299	Peak
4845	42.41	-31.59	74	58.62	34.39	10.17	60.77	100	0	Peak
7266	44.79	-29.21	74	58.72	35.63	10.95	60.51	100	0	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	03	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	1. 2420 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
2420	89.46	-	-	85.68	31.93	6.49	34.64	180	151	Average
2420	99.09	-	-	95.31	31.93	6.49	34.64	180	151	Peak
4845	42.75	-31.25	74	58.96	34.39	10.17	60.77	100	0	Peak
7266	44.39	-29.61	74	58.32	35.63	10.95	60.51	100	0	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	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
200.1	29.01	-14.49	43.5	50.02	9.2	1.54	31.75	-	-	Peak
234.66	29.26	-16.74	46	48.53	10.8	1.67	31.74	-	-	Peak
300	36.74	-9.26	46	53.35	13.2	1.91	31.72	100	225	Peak
373.5	33.14	-12.86	46	47.85	14.96	2.12	31.79	-	-	Peak
497.4	34.24	-11.76	46	45.94	17.77	2.46	31.93	-	-	Peak
872.6	30.37	-15.63	46	37.82	20.9	3.29	31.64	-	-	Peak
2436	97.98	-	-	94.16	31.94	6.52	34.64	138	300	Average
2436	108.03	-	-	104.21	31.94	6.52	34.64	138	300	Peak
4875	47.09	-26.91	74	63.23	34.37	10.18	60.69	100	0	Peak
7311	44	-30	74	57.97	35.61	10.94	60.52	100	0	Peak



Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	06	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	1. 2438 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
83.46	30.57	-9.43	40	53.8	7.52	1.01	31.76	100	215	Peak
206.85	28.15	-15.35	43.5	49.2	9.14	1.56	31.75	-	-	Peak
299.46	27.88	-18.12	46	44.49	13.2	1.91	31.72	-	-	Peak
499.5	34.13	-11.87	46	45.79	17.79	2.48	31.93	-	-	Peak
623.4	33.48	-12.52	46	43.08	19.67	2.78	32.05	-	-	Peak
900.6	33.92	-12.08	46	40.98	21.09	3.37	31.52	-	-	Peak
2438	92.9	-	-	89.08	31.94	6.52	34.64	178	149	Average
2438	102.83	-	-	99.01	31.94	6.52	34.64	178	149	Peak
4875	42.59	-31.41	74	58.73	34.37	10.18	60.69	100	0	Peak
7311	44.59	-29.41	74	58.56	35.61	10.94	60.52	100	0	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	09	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	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
2454	97.43	-	-	93.59	31.96	6.52	34.64	141	300	Average
2454	107.07	-	-	103.23	31.96	6.52	34.64	141	300	Peak
4904	44.91	-29.09	74	60.97	34.35	10.2	60.61	100	0	Peak
7356	43.18	-30.82	74	57.22	35.58	10.92	60.54	100	0	Peak

Test Mode :	2.4GHz 802.11n HT40	Temperature :	24~25°C
Test Channel :	09	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	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	93.41	-	-	89.51	31.97	6.56	34.63	142	151	Average
2450	103.84	-	-	99.94	31.97	6.56	34.63	142	151	Peak
4904	43.63	-30.37	74	59.69	34.35	10.2	60.61	100	0	Peak
7356	43.34	-30.66	74	57.38	35.58	10.92	60.54	100	0	Peak

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5745 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
1196	50.03	-23.97	74	78.72	27.86	4.14	60.69	100	0	Peak
1998	54.03	-19.97	74	77.03	31.6	5.9	60.5	100	0	Peak
2798	26.06	-27.94	54	47.23	32.42	7.21	60.8	100	36	Average
2798	53.26	-20.74	74	74.43	32.42	7.21	60.8	100	36	Peak
5745	102.75	-	-	90.31	35.04	11.39	33.99	108	268	Average
5745	112.67	-	-	100.23	35.04	11.39	33.99	108	268	Peak
11487	49.25	-24.75	74	58.94	37.79	11.04	58.52	100	0	Peak

Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5745 MHz is fundamental signal which can be ignored.		

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
1196	50.61	-23.39	74	79.3	27.86	4.14	60.69	100	0	Peak
1994	55.87	-18.13	74	79.06	31.47	5.84	60.5	100	0	Peak
2798	27.39	-26.61	54	48.56	32.42	7.21	60.8	100	138	Average
2798	54.74	-19.26	74	75.91	32.42	7.21	60.8	100	138	Peak
5745	100.81	-	-	88.37	35.04	11.39	33.99	100	258	Average
5745	110.67	-	-	98.28	35.04	11.34	33.99	100	258	Peak
11493	44.19	-9.81	54	53.88	37.79	11.04	58.52	140	306	Average
11493	57.02	-16.98	74	66.71	37.79	11.04	58.52	140	306	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5785 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
1198	51.06	-22.94	74	79.75	27.86	4.14	60.69	100	0	Peak
1996	54.7	-19.3	74	77.7	31.6	5.9	60.5	100	0	Peak
2800	26.68	-27.32	54	47.85	32.42	7.21	60.8	100	37	Average
2800	52.04	-21.96	74	73.21	32.42	7.21	60.8	100	37	Peak
5785	97.97	-	-	85.46	35.08	11.43	34	100	313	Average
5785	107.83	-	-	95.32	35.08	11.43	34	100	313	Peak
11571	48.74	-25.26	74	58.27	37.92	11.09	58.54	100	0	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5785 MHz is fundamental signal which can be ignored.		

Frequency (MHz)	Level (dB μ V/m)	Over Limit (dB)	Limit Line (dB μ V/m)	Read Level (dB μ V)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1200	50.17	-23.83	74	78.86	27.86	4.14	60.69	100	0	Peak
1994	54.6	-19.4	74	77.79	31.47	5.84	60.5	100	0	Peak
2798	28.1	-25.9	54	49.27	32.42	7.21	60.8	100	138	Average
2798	54.52	-19.48	74	75.69	32.42	7.21	60.8	100	138	Peak
5785	99.98	-	-	87.47	35.08	11.43	34	100	258	Average
5785	109.41	-	-	96.85	35.09	11.47	34	100	258	Peak
11574	44.48	-9.52	54	54	37.92	11.1	58.54	142	326	Average
11574	55.66	-18.34	74	65.18	37.92	11.1	58.54	142	326	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5825 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
1196	50.72	-23.28	74	79.41	27.86	4.14	60.69	100	0	Peak
1996	52.68	-21.32	74	75.68	31.6	5.9	60.5	100	0	Peak
2794	27.01	-26.99	54	48.18	32.42	7.21	60.8	100	55	Average
2794	52.8	-21.2	74	73.97	32.42	7.21	60.8	100	55	Peak
5825	95.01	-	-	82.37	35.13	11.51	34	100	318	Average
5825	105.67	-	-	93.03	35.13	11.51	34	100	318	Peak
11650	47.02	-26.98	74	56.41	38.05	11.14	58.58	100	0	Peak



Test Mode :	802.11a	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5825 MHz is fundamental signal which can be ignored.		

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
1196	49.72	-24.28	74	78.41	27.86	4.14	60.69	100	0	Peak
1996	54.82	-19.18	74	77.82	31.6	5.9	60.5	100	0	Peak
2794	27.48	-26.52	54	48.65	32.42	7.21	60.8	100	143	Average
2794	53.74	-20.26	74	74.91	32.42	7.21	60.8	100	143	Peak
5825	99.79	-	-	87.15	35.13	11.51	34	100	259	Average
5825	109.82	-	-	97.18	35.13	11.51	34	100	259	Peak
11652	41.43	-12.57	54	50.8	38.08	11.14	58.59	142	333	Average
11652	53.99	-20.01	74	63.36	38.08	11.14	58.59	142	333	Peak

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5745 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
134.22	14.28	-29.22	43.5	33.18	11.56	1.29	31.75	-	-	Peak
227.64	23.49	-22.51	46	43.58	10	1.65	31.74	-	-	Peak
277.32	25.69	-20.31	46	42.74	12.85	1.83	31.73	-	-	Peak
458.2	22.11	-23.89	46	34.52	17.14	2.33	31.88	-	-	Peak
797	27.54	-18.46	46	36.4	20.03	3.06	31.95	100	315	Peak
916.7	24.34	-21.66	46	31.29	21.06	3.36	31.37	-	-	Peak
1196	50.39	-23.61	74	79.08	27.86	4.14	60.69	100	0	Peak
1982	52.01	-21.99	74	75.2	31.47	5.84	60.5	100	0	Peak
2790	27.44	-26.56	54	48.61	32.4	7.21	60.78	100	32	Average
2790	52.67	-21.33	74	73.84	32.4	7.21	60.78	100	32	Peak
5745	98.59	-	-	86.15	35.04	11.39	33.99	100	317	Average
5745	108.47	-	-	96.03	35.04	11.39	33.99	100	317	Peak
11490	48.29	-25.71	74	57.98	37.79	11.04	58.52	-	-	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	149	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5745 MHz is fundamental signal which can be ignored.		

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
79.68	13.86	-26.14	40	37.63	7	0.99	31.76	-	-	Peak
202.53	25.52	-17.98	43.5	46.55	9.17	1.55	31.75	134	280	Peak
245.46	24.08	-21.92	46	42.16	11.95	1.71	31.74	-	-	Peak
414.8	20	-26	46	33.06	16.55	2.23	31.84	-	-	Peak
706	24.76	-21.24	46	34.41	19.46	2.91	32.02	-	-	Peak
892.2	27.1	-18.9	46	34.37	20.94	3.35	31.56	-	-	Peak
1194	51.87	-22.13	74	80.58	27.86	4.14	60.71	100	0	Peak
1998	55.38	-18.62	74	78.38	31.6	5.9	60.5	100	0	Peak
2792	26.94	-27.06	54	48.11	32.4	7.21	60.78	100	38	Average
2792	54.07	-19.93	74	75.24	32.4	7.21	60.78	100	38	Peak
5745	99.92	-	-	87.48	35.04	11.39	33.99	100	237	Average
5745	109.81	-	-	97.37	35.04	11.39	33.99	100	237	Peak
11490	45.99	-8.01	54	55.68	37.79	11.04	58.52	100	332	Average
11490	55.15	-18.85	74	64.84	37.79	11.04	58.52	100	332	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5785 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
1198	48.68	-25.32	74	77.37	27.86	4.14	60.69	100	0	Peak
1996	51.52	-22.48	74	74.52	31.6	5.9	60.5	100	0	Peak
2792	50.95	-23.05	74	72.12	32.4	7.21	60.78	100	0	Peak
5785	97.07	-	-	84.56	35.08	11.43	34	100	317	Average
5785	107.02	-	-	94.51	35.08	11.43	34	100	317	Peak
11571	47.46	-26.54	74	56.99	37.92	11.09	58.54	100	0	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	157	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5785 MHz is fundamental signal which can be ignored.		

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
1198	48	-26	74	76.69	27.86	4.14	60.69	100	0	Peak
1998	60.16	-13.84	74	83.16	31.6	5.9	60.5	100	0	Peak
2796	27.84	-26.16	54	49.01	32.42	7.21	60.8	100	161	Average
2796	55.28	-18.72	74	76.45	32.42	7.21	60.8	100	161	Peak
5785	99.51	-	-	87	35.08	11.43	34	100	238	Average
5785	107.82	-	-	95.31	35.08	11.43	34	100	238	Peak
11570	43.23	-10.77	54	52.76	37.92	11.09	58.54	100	348	Average
11570	53.94	-20.06	74	63.49	37.89	11.09	58.53	100	348	Peak



Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5825 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
1200	49.42	-24.58	74	78.11	27.86	4.14	60.69	100	0	Peak
1996	53.59	-20.41	74	76.59	31.6	5.9	60.5	100	0	Peak
2798	26.79	-27.21	54	47.96	32.42	7.21	60.8	100	51	Average
2798	52	-22	74	73.17	32.42	7.21	60.8	100	51	Peak
5825	101.28	-	-	88.64	35.13	11.51	34	106	263	Average
5825	111.52	-	-	98.88	35.13	11.51	34	106	263	Peak
11649	45.92	-28.08	74	55.31	38.05	11.14	58.58	100	0	Peak

Test Mode :	802.11n HT20	Temperature :	24~25°C
Test Channel :	165	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5825 MHz is fundamental signal which can be ignored.		

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
1194	50.87	-23.13	74	79.58	27.86	4.14	60.71	100	0	Peak
1996	55.53	-18.47	74	78.53	31.6	5.9	60.5	100	0	Peak
2798	27.66	-26.34	54	48.83	32.42	7.21	60.8	100	141	Average
2798	55.34	-18.66	74	76.51	32.42	7.21	60.8	100	141	Peak
5825	99.4	-	-	86.76	35.13	11.51	34	100	256	Average
5825	109.59	-	-	96.95	35.13	11.51	34	100	256	Peak
11650	41.35	-12.65	54	50.74	38.05	11.14	58.58	100	359	Average
11650	52.96	-21.04	74	62.33	38.08	11.14	58.59	100	359	Peak

Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Channel :	151	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5755 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
1196	49.79	-24.21	74	78.48	27.86	4.14	60.69	100	0	Peak
1996	52.24	-21.76	74	75.24	31.6	5.9	60.5	100	0	Peak
2792	50.51	-23.49	74	71.68	32.4	7.21	60.78	100	0	Peak
5755	96.09	-	-	83.63	35.06	11.39	33.99	100	317	Average
5755	106.75	-	-	94.31	35.04	11.39	33.99	100	317	Peak
11510	47.75	-26.25	74	57.44	37.79	11.04	58.52	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Channel :	151	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5755 MHz is fundamental signal which can be ignored.		

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
1200	50.08	-23.92	74	78.77	27.86	4.14	60.69	100	0	Peak
2000	57.01	-16.99	74	80.01	31.6	5.9	60.5	100	0	Peak
2790	28.2	-25.8	54	49.37	32.4	7.21	60.78	100	139	Average
2790	54.43	-19.57	74	75.6	32.4	7.21	60.78	100	139	Peak
5755	96.57	-	-	84.11	35.06	11.39	33.99	100	239	Average
5755	107.49	-	-	95.04	35.06	11.39	34	100	239	Peak
11510	44.37	-9.63	54	54.01	37.8	11.06	58.5	100	350	Average
11510	54.09	-19.91	74	63.75	37.8	11.04	58.5	100	350	Peak



Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5795 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
1198	47.61	-26.39	74	76.3	27.86	4.14	60.69	100	0	Peak
1998	53.01	-20.99	74	76.01	31.6	5.9	60.5	100	0	Peak
2796	27.79	-26.21	54	48.96	32.42	7.21	60.8	100	38	Average
2796	50.9	-23.1	74	72.07	32.42	7.21	60.8	100	38	Peak
5795	94.43	-	-	81.87	35.09	11.47	34	100	316	Average
5795	104.1	-	-	91.59	35.08	11.43	34	100	316	Peak
11589	45.72	-28.28	74	55.21	37.96	11.1	58.55	100	0	Peak

Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5795 MHz is fundamental signal which can be ignored.		

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
1198	49.31	-24.69	74	78	27.86	4.14	60.69	100	0	Peak
1992	58.62	-15.38	74	81.81	31.47	5.84	60.5	100	0	Peak
2798	28.04	-25.96	54	49.21	32.42	7.21	60.8	100	144	Average
2798	53.43	-20.57	74	74.6	32.42	7.21	60.8	100	144	Peak
5795	96.78	-	-	84.22	35.09	11.47	34	100	238	Average
5795	106.19	-	-	93.63	35.09	11.47	34	100	238	Peak
11592	41.07	-12.93	54	50.56	37.96	11.1	58.55	131	349	Average
11592	54.55	-19.45	74	64.04	37.96	11.1	58.55	131	349	Peak

Test Mode :	802.11ac VHT80	Temperature :	24~25°C
Test Channel :	155	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5775 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
1198	50.03	-23.97	74	78.72	27.86	4.14	60.69	100	0	Peak
2000	52.16	-21.84	74	75.16	31.6	5.9	60.5	100	0	Peak
2798	28.38	-25.62	54	49.55	32.42	7.21	60.8	100	45	Average
2798	52.33	-21.67	74	73.5	32.42	7.21	60.8	100	45	Peak
5775	93.47	-	-	80.96	35.08	11.43	34	100	316	Average
5775	102.24	-	-	89.8	35.04	11.39	33.99	100	316	Peak
11550	45.3	-28.7	74	54.85	37.89	11.09	58.53	100	0	Peak

Test Mode :	802.11ac VHT80	Temperature :	24~25°C
Test Channel :	155	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	5775 MHz is fundamental signal which can be ignored.		

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
1196	50.65	-23.35	74	79.34	27.86	4.14	60.69	100	0	Peak
1998	57.31	-16.69	74	80.31	31.6	5.9	60.5	100	0	Peak
2796	27.88	-26.12	54	49.05	32.42	7.21	60.8	100	150	Average
2796	53.63	-20.37	74	74.8	32.42	7.21	60.8	100	150	Peak
5775	93.98	-	-	81.47	35.08	11.43	34	100	257	Average
5775	103.25	-	-	90.8	35.06	11.39	34	100	257	Peak
11550	45.59	-28.41	74	55.14	37.89	11.09	58.53	100	0	Peak

<Ant. 2>

Test Mode :	802.11b	Temperature :	24~25°C
Test Channel :	11	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Horizontal
Remark :	1. 5795 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
34.86	25.42	-14.58	40	41.02	15.5	0.69	31.79	-	-	Peak
100.2	22.88	-20.62	43.5	42.73	10.8	1.1	31.75	-	-	Peak
237.9	29.48	-16.52	46	48.38	11.16	1.68	31.74	-	-	Peak
373.5	34.13	-11.87	46	48.84	14.96	2.12	31.79	-	-	Peak
499.5	36.64	-9.36	46	48.3	17.79	2.48	31.93	102	301	Peak
900.6	29.84	-16.16	46	36.9	21.09	3.37	31.52	-	-	Peak
2462	98.89	-	-	95	31.97	6.56	34.64	100	244	Average
2462	103.33	-	-	99.44	31.97	6.56	34.64	100	244	Peak
4926	47.2	-26.8	74	63.22	34.34	10.21	60.57	100	0	Peak
7386	43.68	-30.32	74	57.76	35.56	10.92	60.56	100	0	Peak



Test Mode :	802.11n HT40	Temperature :	24~25°C
Test Channel :	159	Relative Humidity :	46~47%
Test Engineer :	Abi Lin and Donny Tang	Polarization :	Vertical
Remark :	1. 5795 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
100.2	17.91	-25.59	43.5	37.76	10.8	1.1	31.75	-	-	Peak
199.56	24.15	-19.35	43.5	45.16	9.2	1.54	31.75	-	-	Peak
237.36	27.33	-18.67	46	46.23	11.16	1.68	31.74	-	-	Peak
497.4	35.51	-10.49	46	47.21	17.77	2.46	31.93	110	250	Peak
623.4	33.83	-12.17	46	43.43	19.67	2.78	32.05	-	-	Peak
900.6	34.94	-11.06	46	42	21.09	3.37	31.52	-	-	Peak
2464	100.47	-	-	96.58	31.97	6.56	34.64	100	146	Average
2464	104.82	-	-	100.93	31.97	6.56	34.64	100	146	Peak
4926	46.42	-27.58	74	62.44	34.34	10.21	60.57	100	0	Peak
7386	42.95	-31.05	74	57.03	35.56	10.92	60.56	100	0	Peak



3.2 Antenna Requirements

3.2.1 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.

3.2.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.2.3 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.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Power Meter	Anritsu	ML2495A	1036004	300MHz~40GHz	Aug. 17, 2013	May 27, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Aug. 17, 2013	May 27, 2014	Aug. 16, 2014	Conducted (TH02-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9kHz ~ 26.5GHz	Dec. 02, 2013	Jun. 21, 2014 ~ Jun. 30, 2014	Dec. 01, 2014	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/0003	20MHz ~ 1000MHz	May 06, 2014	Jun. 21, 2014 ~ Jun. 30, 2014	May 05, 2015	Radiation (03CH06-HY)
Bilog Antenna	Schaffner	CBL6112B	2885	30MHz ~ 2GHz	Oct. 10, 2013	Jun. 21, 2014 ~ Jun. 30, 2014	Oct. 09, 2014	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz ~ 18GHz	Aug. 02, 2013	Jun. 21, 2014 ~ Jun. 30, 2014	Aug. 01, 2014	Radiation (03CH06-HY)
Amplifier	SONOMA	310N	186713	9kHz ~ 1GHz	Apr. 16, 2014	Jun. 21, 2014 ~ Jun. 30, 2014	Apr. 15, 2015	Radiation (03CH06-HY)
Pre Amplifier	EMCI	EMC051845	SN980048	1GHz ~ 18GHz	Jul. 18, 2013	Jun. 21, 2014 ~ Jun. 30, 2014	Jul. 17, 2014	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Oct. 03, 2013	Jun. 21, 2014 ~ Jun. 30, 2014	Oct. 02, 2014	Radiation (03CH06-HY)
Preamplifier	Agilent	8449B	3008A01917	1GHz ~ 26.5GHz	Apr. 10, 2014	Jun. 21, 2014 ~ Jun. 30, 2014	Apr. 09, 2015	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 ~ 360 degree	N/A	Jun. 21, 2014 ~ Jun. 30, 2014	N/A	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1 m ~ 4 m	N/A	Jun. 21, 2014 ~ Jun. 30, 2014	N/A	Radiation (03CH06-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	860004/0001	9 kHz~30 MHz	Jul. 03, 2012	Jun. 21, 2014 ~ Jun. 30, 2014	Jul. 03, 2014	Radiation (03CH06-HY)



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50
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