



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF131023C29-1  
**MODEL NO.:** 0P6B200  
**FCC ID:** NM80P6B200  
**RECEIVED:** Oct. 23, 2013  
**TESTED:** Dec. 14, 2013 ~ Jan. 07, 2014  
**ISSUED:** Jan. 09, 2014

**APPLICANT:** HTC Corporation

**ADDRESS:** No. 23, Xinghua Rd., Taoyuan 330, Taiwan, R.O.C.

**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

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Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF131023C29-1	Original release	Jan. 09, 2014



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## 1. CERTIFICATION

**PRODUCT:** Smartphone  
**MODEL NO.:** 0P6B200  
**BRAND:** HTC  
**APPLICANT:** HTC Corporation  
**TESTED:** Dec. 14, 2013 ~ Jan. 07, 2014  
**TEST SAMPLE:** PRODUCTION UNIT  
**STANDARDS:** **FCC Part 15, Subpart E (Section 15.407)**  
ANSI C63.10-2009

The above equipment (model: 0P6B200) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** : Ivonne Wu , **DATE** : Jan. 09, 2014  
Ivonne Wu / Supervisor

**APPROVED BY** : Sam Chen , **DATE** : Jan. 09, 2014  
Sam Chen / Senior Project Engineer

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.407(b)(6)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.50dB at 13.55859MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.65dB at 5725.00MHz.
15.407(a/1/2)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Smartphone
<b>MODEL NO.</b>	0P6B200
<b>POWER SUPPLY</b>	5.0Vdc (adapter or host equipment) 3.8Vdc (Li-ion battery)
<b>MODULATION TYPE</b>	256QAM, 64QAM, 16QAM, QPSK, BPSK
<b>MODULATION TECHNOLOGY</b>	OFDM
<b>TRANSFER RATE</b>	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 135Mbps 802.11ac: up to V9
<b>OPERATING FREQUENCY</b>	5180 ~ 5240MHz, 5260 ~ 5320MHz & 5500 ~ 5700MHz
<b>NUMBER OF CHANNEL</b>	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
<b>OUTPUT POWER</b>	41.210mW for 5180 ~ 5240MHz 53.951mW for 5260 ~ 5320MHz 53.827mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	PIFA antenna with -3.5dBi gain (5180 ~ 5240MHz) PIFA antenna with -3dBi gain (5260 ~ 5320MHz) PIFA antenna with -3dBi gain (5500 ~ 5700MHz)
<b>ANTENNA CONNECTOR</b>	NA
<b>DATA CABLE</b>	Refer to Note as below
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Refer to Note as below

**NOTE:**

- The EUT's accessories list refers to Ext. Pho.
- There're 2 configurations for the EUT listed as below.  
Main Sample (A): Battery 1 + LCD Panel 1  
2<sup>nd</sup> Sample (B): Battery 2 + LCD Panel 2  
◇ Only the worst test data was presented in the report.
- The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.



### 3.2 DESCRIPTION OF TEST MODES

#### FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY
42	5210 MHz

#### FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY
58	5290MHz





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### FOR 5500 ~ 5700MHz

8 channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500MHz	116	5580MHz
104	5520MHz	132	5660MHz
108	5540MHz	136	5680MHz
112	5560MHz	140	5700MHz

3 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510MHz	134	5670MHz
110	5550MHz		

1 channel is provided for 802.11ac (80MHz):

CHANNEL	FREQUENCY
106	5530MHz

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Main sample
B	√	√	-	-	2 <sup>nd</sup> sample

Where **RE≥1G**: Radiated Emission above 1GHz

**RE<1G**: Radiated Emission below 1GHz

**PLC**: Power Line Conducted Emission

**APCM**: Antenna Port Conducted Measurement

**NOTE:** The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane** for 5180-5240MHz, and **Z-plane** for 5260-5320MHz and 5500-5700MHz.

#### **RADIATED EMISSION TEST (ABOVE 1GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5
	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	13.5
	802.11ac (80MHz)		58	58	OFDM	BPSK	V0
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
	802.11ac (80MHz)		106	106	OFDM	BPSK	V0
B	802.11n (20MHz)	5500-5700	100 to 140	140	OFDM	BPSK	6.0

#### **RADIATED EMISSION TEST (BELOW 1GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	48	OFDM	BPSK	6.0
	802.11n (20MHz)	5260-5320	52 to 64	64	OFDM	BPSK	6.5
		5500-5700	100 to 140	140	OFDM	BPSK	6.0
B	802.11n (20MHz)	5500-5700	100 to 140	140	OFDM	BPSK	6.0



**POWER LINE CONDUCTED EMISSION TEST:**

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11n (20MHz)	5500-5700	100 to 140	140	OFDM	BPSK	6.0

**BANDEDGE MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 48	OFDM	BPSK	6.5
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5
	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
	802.11a	5260-5320	52 to 64	52, 64	OFDM	BPSK	6.0
	802.11n (20MHz)		52 to 64	52, 64	OFDM	BPSK	6.5
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	13.5
	802.11ac (80MHz)		58	58	OFDM	BPSK	V0
	802.11a	5500-5700	100 to 140	100, 140	OFDM	BPSK	6.0
	802.11n (20MHz)		100 to 140	100, 140	OFDM	BPSK	6.5
	802.11n (40MHz)		102 to 134	102, 134	OFDM	BPSK	13.5
	802.11ac (80MHz)		106	106	OFDM	BPSK	V0



**ANTENNA PORT CONDUCTED MEASUREMENT:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 44, 48	OFDM	BPSK	6.0
	802.11n (20MHz)		36 to 48	36, 44, 48	OFDM	BPSK	6.5
	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	13.5
	802.11ac (80MHz)		42	42	OFDM	BPSK	V0
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	13.5
	802.11ac (80MHz)		58	58	OFDM	BPSK	V0
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
	802.11ac (80MHz)		106	106	OFDM	BPSK	V0

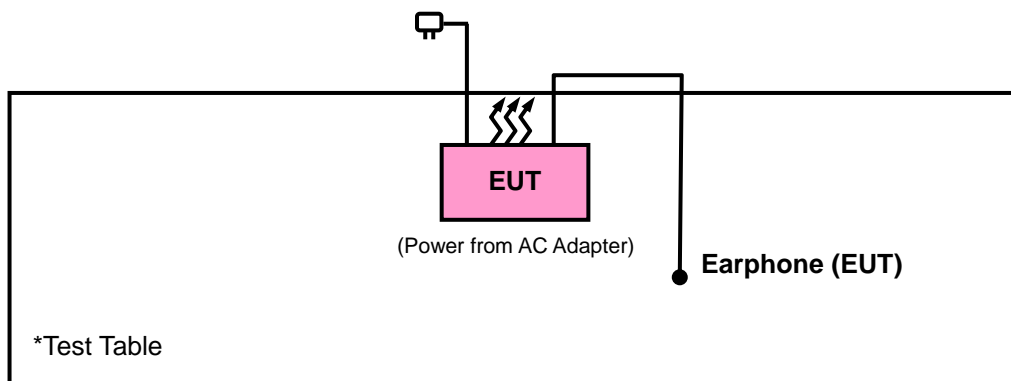
**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Kay Wu
PLC	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
APCM	25deg. C, 65%RH	120Vac, 60Hz	Demon Lin

### 3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

#### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST





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### 3.4 DUTY CYCLE TEST SIGNAL

#### MODULATION TYPE: BPSK

Duty cycle of test signal is > 98 %, duty factor is not required.

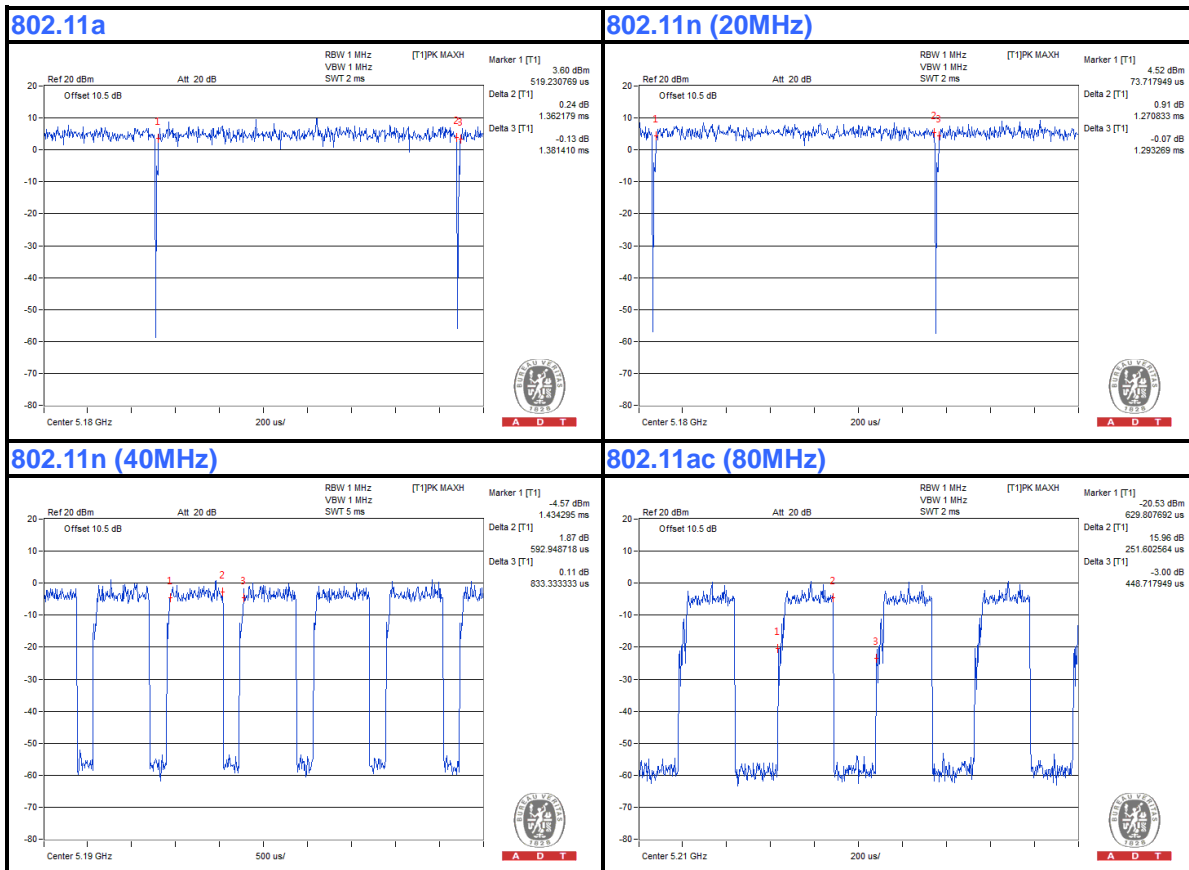
**802.11a:** Duty cycle =  $1.362/1.381 = 0.986$

**802.11n (20MHz):** Duty cycle =  $1.271/1.293 = 0.983$

If duty cycle is < 98%, duty factor shall be considered.

**802.11n (40MHz):** Duty cycle =  $592.95/833.33 = 0.711$ , Duty factor =  $10 * \log(1/0.711) = 1.48$

**802.11ac (80MHz):** Duty cycle =  $251.60/448.72 = 0.561$ , Duty factor =  $10 * \log(1/0.561) = 2.51$





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### MODULATION TYPE: QPSK

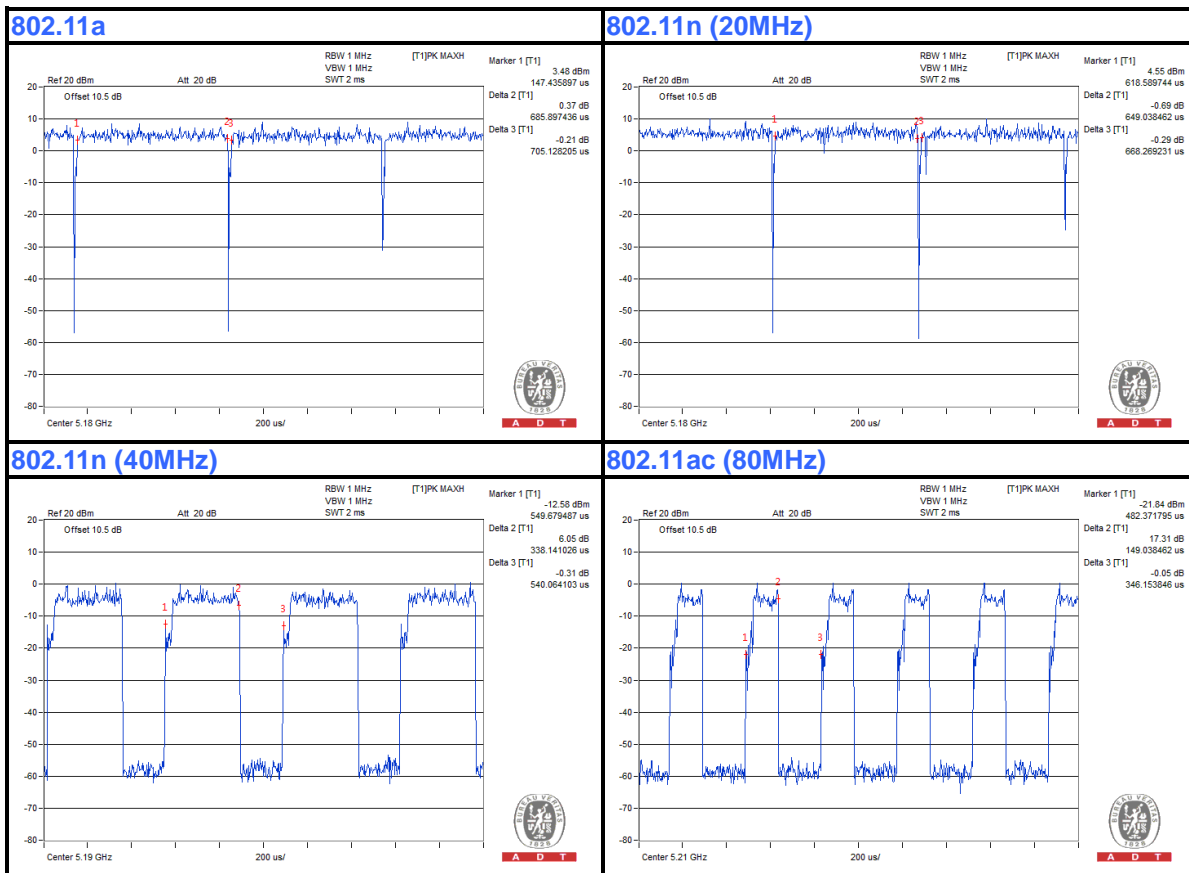
If duty cycle is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle =  $685.90/705.13 = 0.973$ , Duty factor =  $10 * \log(1/0.973) = 0.12$

**802.11n (20MHz):** Duty cycle =  $649.04/668.27 = 0.971$ , Duty factor =  $10 * \log(1/0.971) = 0.13$

**802.11n (40MHz):** Duty cycle =  $338.14/540.06 = 0.626$ , Duty factor =  $10 * \log(1/0.626) = 2.03$

**802.11ac (80MHz):** Duty cycle =  $149.04/346.15 = 0.430$ , Duty factor =  $10 * \log(1/0.430) = 3.66$





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### MODULATION TYPE: 16QAM

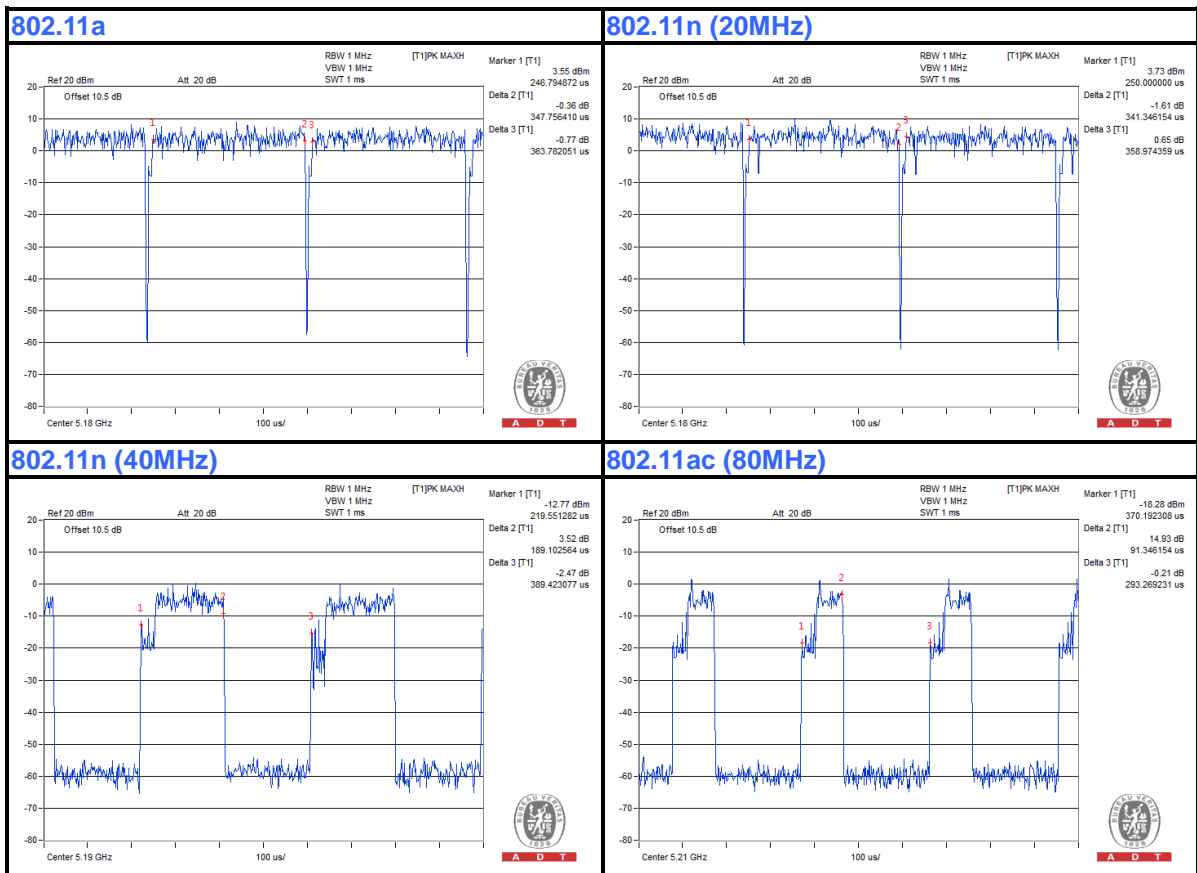
If duty cycle is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle = 347.76/363.78 = 0.956, Duty factor =  $10 * \log(1/0.956) = 0.20$

**802.11n (20MHz):** Duty cycle = 341.35/358.97 = 0.951, Duty factor =  $10 * \log(1/0.951) = 0.22$

**802.11n (40MHz):** Duty cycle = 189.10/389.42 = 0.485, Duty factor =  $10 * \log(1/0.485) = 3.14$

**802.11ac (80MHz):** Duty cycle = 91.35/293.27 = 0.311, Duty factor =  $10 * \log(1/0.311) = 5.07$







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### MODULATION TYPE: 64QAM

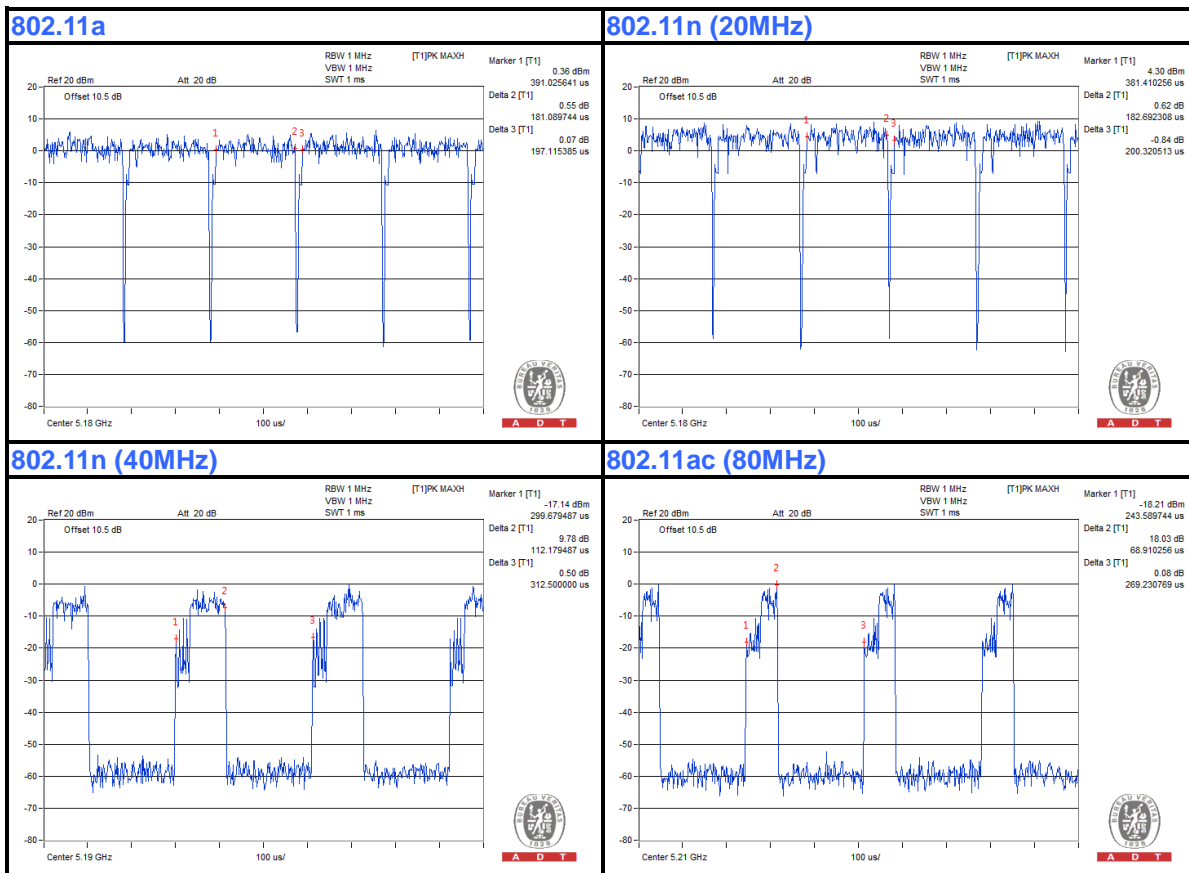
If duty cycle is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle = 181.09/197.11 = 0.919, Duty factor =  $10 * \log(1/0.919) = 0.37$

**802.11n (20MHz):** Duty cycle = 182.69/200.32 = 0.912, Duty factor =  $10 * \log(1/0.912) = 0.40$

**802.11n (40MHz):** Duty cycle = 112.18/312.50 = 0.359, Duty factor =  $10 * \log(1/0.359) = 4.45$

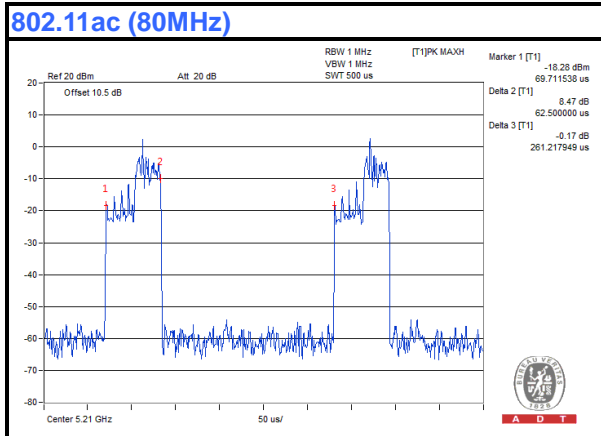
**802.11ac (80MHz):** Duty cycle = 68.91/269.23 = 0.256, Duty factor =  $10 * \log(1/0.256) = 5.92$



**MODULATION TYPE: 256QAM**

If duty cycle is < 98%, duty factor shall be considered.

**802.11ac (80MHz):** Duty cycle = 62.50/261.22 = 0.239, Duty factor = 10 \* log(1/0.239) = 6.21



**3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**

ANSI C63.10-2009

KDB 644545 D01 v01r02

KDB 789033 D01 General UNII Test Procedures v01r03

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

FREQUENCIES (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:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

#### 4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

APPLICABLE TO	LIMIT	
	FIELD STRENGTH AT 3m (dBµV/m)	
	PK	AV
	74	54
√	EIRP LIMIT (dBm)	EQUIVALENT FIELD STRENGTH AT 3m (dBµV/m)
	PK	PK
	-27	68.3

**NOTE:** The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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



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## 4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU-26	101645	Jul. 16, 2013	Jul. 15, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Jan. 07, 2013	Jan. 06, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 26, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2013	Oct. 17, 2014
RF signal cable Worken	RG-213	NA	Nov. 07, 2013	Nov. 06, 2014
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Power Meter	ML2495A	1232002	Aug. 23, 2013	Aug. 22, 2014
Power Sensor	MA2411B	1207325	Aug. 23, 2013	Aug. 22, 2014

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 10.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 690701.
6. The IC Site Registration No. is IC 7450F-10.

#### 4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

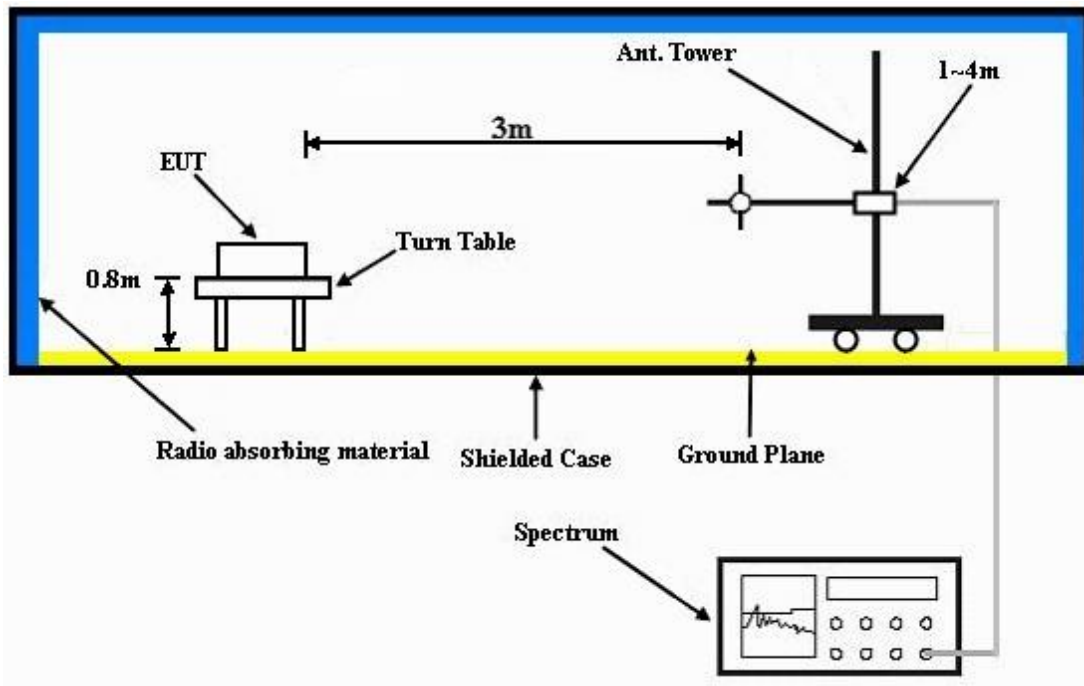
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.5 DEVIATION FROM TEST STANDARD

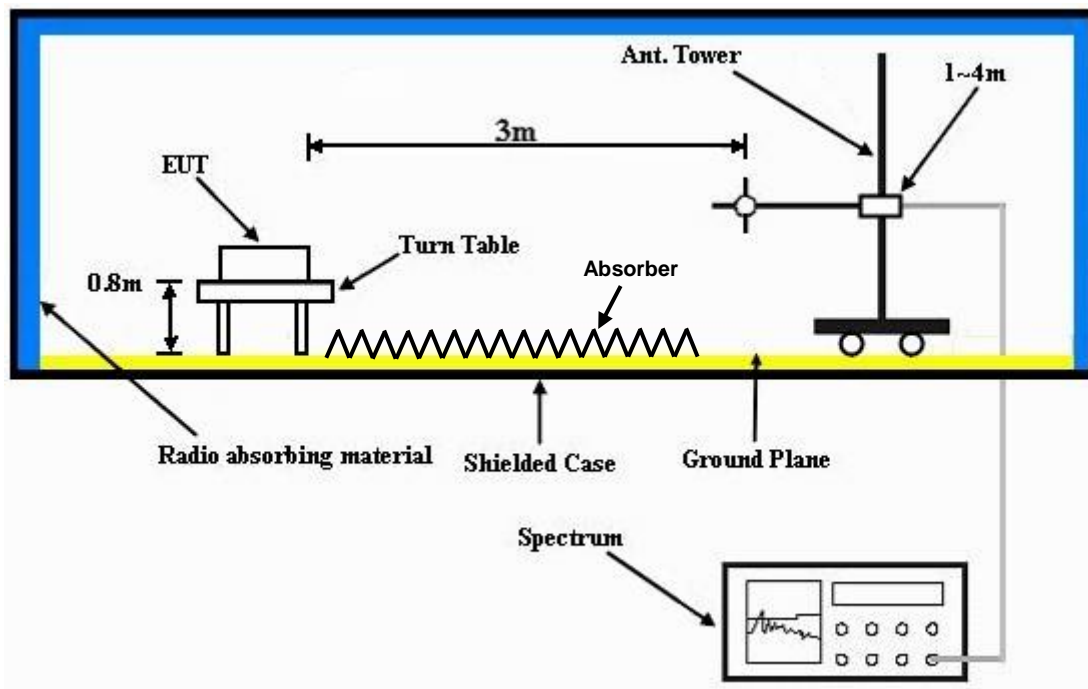
No deviation.

### 4.1.6 TEST SETUP

Frequency Range 30MHz ~ 1GHz



Frequency Range above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).



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#### 4.1.7 EUT OPERATING CONDITIONS

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.



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### 4.1.8 TEST RESULTS

#### ABOVE 1GHz WORST-CASE DATA

#### TEST MODE A

#### 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5130	46.11	37.55	54	-7.89	34.45	8.1	33.99	128	227	Average
5130	59.06	50.5	74	-14.94	34.45	8.1	33.99	128	227	Peak
5180	93.66	85.03			34.47	8.16	34	128	227	Average
5180	100.58	91.95			34.47	8.16	34	128	227	Peak
5452	46.53	37.57	54	-7.47	34.5	8.51	34.05	128	227	Average
5452	59.02	50.06	74	-14.98	34.5	8.51	34.05	128	227	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5026	44.91	36.5	54	-9.09	34.41	7.97	33.97	146	90	Average
5026	59.44	51.03	74	-14.56	34.41	7.97	33.97	146	90	Peak
5180	95.98	87.35			34.47	8.16	34	146	90	Average
5180	103.36	94.73			34.47	8.16	34	146	90	Peak
5372	46.44	37.56	54	-7.56	34.5	8.41	34.03	146	90	Average
5372	61	52.12	74	-13	34.5	8.41	34.03	146	90	Peak

#### REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5180MHz: Fundamental frequency.





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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 44	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5018	44.94	36.53	54	-9.06	34.41	7.97	33.97	127	227	Average
5018	58.72	50.31	74	-15.28	34.41	7.97	33.97	127	227	Peak
5220	93.17	84.46			34.49	8.22	34	127	227	Average
5220	100.84	92.13			34.49	8.22	34	127	227	Peak
5432	46.5	37.56	54	-7.5	34.5	8.48	34.04	127	227	Average
5432	59.23	50.29	74	-14.77	34.5	8.48	34.04	127	227	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5070	46.99	38.51	54	-7.01	34.43	8.03	33.98	142	92	Average
5070	60.95	52.47	74	-13.05	34.43	8.03	33.98	142	92	Peak
5220	96.97	88.26			34.49	8.22	34	142	92	Average
5220	103.49	94.78			34.49	8.22	34	142	92	Peak
5456	46.22	37.26	54	-7.78	34.5	8.51	34.05	142	92	Average
5456	61.11	52.15	74	-12.89	34.5	8.51	34.05	142	92	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5220MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5044	45.99	37.55	54	-8.01	34.42	8	33.98	132	230	Average
5044	58.75	50.31	74	-15.25	34.42	8	33.98	132	230	Peak
5240	93.19	84.45			34.49	8.26	34.01	132	230	Average
5240	100.87	92.13			34.49	8.26	34.01	132	230	Peak
5368	47.48	38.6	54	-6.52	34.5	8.41	34.03	132	230	Average
5368	59.51	50.63	74	-14.49	34.5	8.41	34.03	132	230	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5132	46.14	37.58	54	-7.86	34.45	8.1	33.99	142	92	Average
5132	59.33	50.77	74	-14.67	34.45	8.1	33.99	142	92	Peak
5240	96.17	87.43			34.49	8.26	34.01	142	92	Average
5240	103.83	95.09			34.49	8.26	34.01	142	92	Peak
5362	47.41	38.56	54	-6.59	34.5	8.38	34.03	142	92	Average
5362	59.5	50.65	74	-14.5	34.5	8.38	34.03	142	92	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5240MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5112	43.13	34.57	54	-10.87	34.45	8.1	33.99	100	285	Average
5112	58.18	49.62	74	-15.82	34.45	8.1	33.99	100	285	Peak
5260	92.55	83.8			34.5	8.26	34.01	100	285	Average
5260	99.75	91			34.5	8.26	34.01	100	285	Peak
5438	43.19	34.25	54	-10.81	34.5	8.48	34.04	100	285	Average
5438	57.61	48.67	74	-16.39	34.5	8.48	34.04	100	285	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5144	43.2	34.61	54	-10.8	34.46	8.13	34	100	50	Average
5144	58.73	50.14	74	-15.27	34.46	8.13	34	100	50	Peak
5260	96.75	88			34.5	8.26	34.01	100	50	Average
5260	103.64	94.89			34.5	8.26	34.01	100	50	Peak
5408	43.35	34.45	54	-10.65	34.5	8.44	34.04	100	50	Average
5408	57.77	48.87	74	-16.23	34.5	8.44	34.04	100	50	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5260MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5066	43.05	34.57	54	-10.95	34.43	8.03	33.98	100	307	Average
5066	58.34	49.86	74	-15.66	34.43	8.03	33.98	100	307	Peak
5300	92.64	83.84			34.5	8.32	34.02	100	307	Average
5300	99.67	90.87			34.5	8.32	34.02	100	307	Peak
5446	43.77	34.8	54	-10.23	34.5	8.51	34.04	100	307	Average
5446	57.87	48.9	74	-16.13	34.5	8.51	34.04	100	307	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5132	43.13	34.57	54	-10.87	34.45	8.1	33.99	100	48	Average
5132	57.9	49.34	74	-16.1	34.45	8.1	33.99	100	48	Peak
5300	97.3	88.5			34.5	8.32	34.02	100	48	Average
5300	105.16	96.36			34.5	8.32	34.02	100	48	Peak
5450	44.92	35.96	54	-9.08	34.5	8.51	34.05	100	48	Average
5450	58.18	49.22	74	-15.82	34.5	8.51	34.05	100	48	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5300MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5042	43.11	34.67	54	-10.89	34.42	8	33.98	100	320	Average
5042	57.56	49.12	74	-16.44	34.42	8	33.98	100	320	Peak
5320	92.87	84.04			34.5	8.35	34.02	100	320	Average
5320	100.72	91.89			34.5	8.35	34.02	100	320	Peak
5350	43.62	34.77	54	-10.38	34.5	8.38	34.03	100	320	Average
5350	58.25	49.4	74	-15.75	34.5	8.38	34.03	100	320	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5106	43.17	34.64	54	-10.83	34.45	8.07	33.99	100	48	Average
5106	57.46	48.93	74	-16.54	34.45	8.07	33.99	100	48	Peak
5320	96.9	88.07			34.5	8.35	34.02	100	48	Average
5320	104.91	96.08			34.5	8.35	34.02	100	48	Peak
5350	45.38	36.53	54	-8.62	34.5	8.38	34.03	100	48	Average
5350	61.74	52.89	74	-12.26	34.5	8.38	34.03	100	48	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5320MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5434	46.54	37.6	54	-7.46	34.5	8.48	34.04	114	300	Average
5434	57.49	48.55	74	-16.51	34.5	8.48	34.04	114	300	Peak
5470	58.8	49.84	68.3	-9.5	34.5	8.51	34.05	114	300	Peak
5500	96.67	87.65			34.5	8.57	34.05	114	300	Average
5500	103.32	94.3			34.5	8.57	34.05	114	300	Peak
5725	55.54	46.33	68.3	-12.76	34.67	8.65	34.11	114	300	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5446	46.58	37.61	54	-7.42	34.5	8.51	34.04	100	34	Average
5446	58.04	49.07	74	-15.96	34.5	8.51	34.04	100	34	Peak
5470	58.78	49.82	68.3	-9.52	34.5	8.51	34.05	100	34	Peak
5500	97.26	88.24			34.5	8.57	34.05	100	34	Average
5500	104.5	95.48			34.5	8.57	34.05	100	34	Peak
5725	56.27	47.06	68.3	-12.03	34.67	8.65	34.11	100	34	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5500MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5366	46.41	37.56	54	-7.59	34.5	8.38	34.03	114	299	Average
5366	59.54	50.69	74	-14.46	34.5	8.38	34.03	114	299	Peak
5470	58.09	49.13	68.3	-10.21	34.5	8.51	34.05	114	299	Peak
5580	96.89	87.8			34.57	8.6	34.08	114	299	Average
5580	103.8	94.71			34.57	8.6	34.08	114	299	Peak
5725	56.96	47.75	68.3	-11.34	34.67	8.65	34.11	114	299	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5410	46.51	37.61	54	-7.49	34.5	8.44	34.04	100	31	Average
5410	59.48	50.58	74	-14.52	34.5	8.44	34.04	100	31	Peak
5470	58.2	49.24	68.3	-10.1	34.5	8.51	34.05	100	31	Peak
5580	97.56	88.47			34.57	8.6	34.08	100	31	Average
5580	104.92	95.83			34.57	8.6	34.08	100	31	Peak
5725	57.84	48.63	68.3	-10.46	34.67	8.65	34.11	100	31	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5580MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5448	45.12	36.15	54	-8.88	34.5	8.51	34.04	114	315	Average
5448	60.11	51.14	74	-13.89	34.5	8.51	34.04	114	315	Peak
5470	57.85	48.89	68.3	-10.45	34.5	8.51	34.05	114	315	Peak
5700	95.5	86.3			34.66	8.64	34.1	114	315	Average
5700	102.46	93.26			34.66	8.64	34.1	114	315	Peak
5725	60.08	50.87	68.3	-8.22	34.67	8.65	34.11	114	315	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5438	46.54	37.6	54	-7.46	34.5	8.48	34.04	100	48	Average
5438	61.32	52.38	74	-12.68	34.5	8.48	34.04	100	48	Peak
5470	59.95	50.99	68.3	-8.35	34.5	8.51	34.05	100	48	Peak
5700	96.96	87.76			34.66	8.64	34.1	100	48	Average
5700	104.42	95.22			34.66	8.64	34.1	100	48	Peak
5725	62.08	52.87	68.3	-6.22	34.67	8.65	34.11	100	48	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5700MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band





A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5116	47.07	38.51	54	-6.93	34.45	8.1	33.99	128	226	Average
5116	58.45	49.89	74	-15.55	34.45	8.1	33.99	128	226	Peak
5180	93.97	85.34			34.47	8.16	34	128	226	Average
5180	101.04	92.41			34.47	8.16	34	128	226	Peak
5436	46.1	37.16	54	-7.9	34.5	8.48	34.04	128	226	Average
5436	59.25	50.31	74	-14.75	34.5	8.48	34.04	128	226	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5142	46.11	37.51	54	-7.89	34.46	8.13	33.99	146	92	Average
5142	60.85	52.25	74	-13.15	34.46	8.13	33.99	146	92	Peak
5180	96.88	88.25			34.47	8.16	34	146	92	Average
5180	104.33	95.7			34.47	8.16	34	146	92	Peak
5350	46.41	37.56	54	-7.59	34.5	8.38	34.03	146	92	Average
5350	60.17	51.32	74	-13.83	34.5	8.38	34.03	146	92	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5180MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 44	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5058	44.97	36.49	54	-9.03	34.43	8.03	33.98	129	231	Average
5058	59.41	50.93	74	-14.59	34.43	8.03	33.98	129	231	Peak
5220	94.23	85.52			34.49	8.22	34	129	231	Average
5220	101.51	92.8			34.49	8.22	34	129	231	Peak
5448	45.53	36.56	54	-8.47	34.5	8.51	34.04	129	231	Average
5448	59.87	50.9	74	-14.13	34.5	8.51	34.04	129	231	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5058	44.68	36.2	54	-9.32	34.43	8.03	33.98	142	91	Average
5058	59.05	50.57	74	-14.95	34.43	8.03	33.98	142	91	Peak
5220	96.97	88.26			34.49	8.22	34	142	91	Average
5220	104.62	95.91			34.49	8.22	34	142	91	Peak
5440	44.23	35.29	54	-9.77	34.5	8.48	34.04	142	91	Average
5440	59.84	50.9	74	-14.16	34.5	8.48	34.04	142	91	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5220MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5088	44.62	36.1	54	-9.38	34.43	8.07	33.98	128	230	Average
5088	58.79	50.27	74	-15.21	34.43	8.07	33.98	128	230	Peak
5240	94.84	86.1			34.49	8.26	34.01	128	230	Average
5240	101.59	92.85			34.49	8.26	34.01	128	230	Peak
5380	46.12	37.25	54	-7.88	34.5	8.41	34.04	128	230	Average
5380	59.03	50.16	74	-14.97	34.5	8.41	34.04	128	230	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5092	45.76	37.23	54	-8.24	34.44	8.07	33.98	143	91	Average
5092	58.69	50.16	74	-15.31	34.44	8.07	33.98	143	91	Peak
5240	96.92	88.18			34.49	8.26	34.01	143	91	Average
5240	104.06	95.32			34.49	8.26	34.01	143	91	Peak
5404	45.08	36.18	54	-8.92	34.5	8.44	34.04	143	91	Average
5404	59.96	51.06	74	-14.04	34.5	8.44	34.04	143	91	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5240MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5062	43	34.52	54	-11	34.43	8.03	33.98	100	285	Average
5062	58.21	49.73	74	-15.79	34.43	8.03	33.98	100	285	Peak
5260	93.41	84.66			34.5	8.26	34.01	100	285	Average
5260	101.31	92.56			34.5	8.26	34.01	100	285	Peak
5454	43.16	34.2	54	-10.84	34.5	8.51	34.05	100	285	Average
5454	57.3	48.34	74	-16.7	34.5	8.51	34.05	100	285	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5142	43.24	34.64	54	-10.76	34.46	8.13	33.99	102	48	Average
5142	57.59	48.99	74	-16.41	34.46	8.13	33.99	102	48	Peak
5260	97.51	88.76			34.5	8.26	34.01	102	48	Average
5260	105.53	96.78			34.5	8.26	34.01	102	48	Peak
5414	43.23	34.33	54	-10.77	34.5	8.44	34.04	102	48	Average
5414	57.98	49.08	74	-16.02	34.5	8.44	34.04	102	48	Peak

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 5260MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5076	42.96	34.48	54	-11.04	34.43	8.03	33.98	100	319	Average
5076	57.79	49.31	74	-16.21	34.43	8.03	33.98	100	319	Peak
5300	93.62	84.82			34.5	8.32	34.02	100	319	Average
5300	101.11	92.31			34.5	8.32	34.02	100	319	Peak
5418	43.92	35.02	54	-10.08	34.5	8.44	34.04	100	319	Average
5418	58.04	49.14	74	-15.96	34.5	8.44	34.04	100	319	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5082	43.08	34.56	54	-10.92	34.43	8.07	33.98	100	48	Average
5082	58.35	49.83	74	-15.65	34.43	8.07	33.98	100	48	Peak
5300	97.53	88.73			34.5	8.32	34.02	100	48	Average
5300	105.32	96.52			34.5	8.32	34.02	100	48	Peak
5352	45.68	36.83	54	-8.32	34.5	8.38	34.03	100	48	Average
5352	58.04	49.19	74	-15.96	34.5	8.38	34.03	100	48	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5300MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5034	43.02	34.58	54	-10.98	34.41	8	33.97	100	327	Average
5034	57.95	49.51	74	-16.05	34.41	8	33.97	100	327	Peak
5320	93.56	84.73			34.5	8.35	34.02	100	327	Average
5320	101	92.17			34.5	8.35	34.02	100	327	Peak
5350	45.1	36.25	54	-8.9	34.5	8.38	34.03	100	327	Average
5350	59.52	50.67	74	-14.48	34.5	8.38	34.03	100	327	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5126	43.14	34.58	54	-10.86	34.45	8.1	33.99	100	48	Average
5126	57.69	49.13	74	-16.31	34.45	8.1	33.99	100	48	Peak
5320	97.24	88.41			34.5	8.35	34.02	100	48	Average
5320	106.28	97.45			34.5	8.35	34.02	100	48	Peak
5350	46.23	37.38	54	-7.77	34.5	8.38	34.03	100	48	Average
5350	61.7	52.85	74	-12.3	34.5	8.38	34.03	100	48	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5320MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5366	46.09	37.24	54	-7.91	34.5	8.38	34.03	114	299	Average
5366	59.87	51.02	74	-14.13	34.5	8.38	34.03	114	299	Peak
5470	59.85	50.89	68.3	-8.45	34.5	8.51	34.05	114	299	Peak
5500	96.17	87.15			34.5	8.57	34.05	114	299	Average
5500	104.34	95.32			34.5	8.57	34.05	114	299	Peak
5725	58.81	49.6	68.3	-9.49	34.67	8.65	34.11	114	299	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5458	46.53	37.57	54	-7.47	34.5	8.51	34.05	100	35	Average
5458	61.22	52.26	74	-12.78	34.5	8.51	34.05	100	35	Peak
5470	61.41	52.45	68.3	-6.89	34.5	8.51	34.05	100	35	Peak
5500	98.17	89.15			34.5	8.57	34.05	100	35	Average
5500	105.33	96.31			34.5	8.57	34.05	100	35	Peak
5725	58.28	49.07	68.3	-10.02	34.67	8.65	34.11	100	35	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5500MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	45.53	36.57	54	-8.47	34.5	8.51	34.05	114	299	Average
5460	59.67	50.71	74	-14.33	34.5	8.51	34.05	114	299	Peak
5470	57.92	48.96	68.3	-10.38	34.5	8.51	34.05	114	299	Peak
5580	97.38	88.29			34.57	8.6	34.08	114	299	Average
5580	104.25	95.16			34.57	8.6	34.08	114	299	Peak
5725	57.99	48.78	68.3	-10.31	34.67	8.65	34.11	114	299	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5362	46.41	37.56	54	-7.59	34.5	8.38	34.03	100	31	Average
5362	59.87	51.02	74	-14.13	34.5	8.38	34.03	100	31	Peak
5470	55.99	47.03	68.3	-12.31	34.5	8.51	34.05	100	31	Peak
5580	98.05	88.96			34.57	8.6	34.08	100	31	Average
5580	105.76	96.67			34.57	8.6	34.08	100	31	Peak
5725	57.55	48.34	68.3	-10.75	34.67	8.65	34.11	100	31	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5580MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band





A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5452	44.53	35.57	54	-9.47	34.5	8.51	34.05	114	315	Average
5452	59.34	50.38	74	-14.66	34.5	8.51	34.05	114	315	Peak
5470	57.55	48.59	68.3	-10.75	34.5	8.51	34.05	114	315	Peak
5700	95.46	86.26			34.66	8.64	34.1	114	315	Average
5700	103.39	94.19			34.66	8.64	34.1	114	315	Peak
5725	62.03	52.82	68.3	-6.27	34.67	8.65	34.11	114	315	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5358	45.1	36.25	54	-8.9	34.5	8.38	34.03	100	47	Average
5358	59.4	50.55	74	-14.6	34.5	8.38	34.03	100	47	Peak
5470	58.51	49.55	68.3	-9.79	34.5	8.51	34.05	100	47	Peak
5700	97.35	88.15			34.66	8.64	34.1	100	47	Average
5700	105.08	95.88			34.66	8.64	34.1	100	47	Peak
5725	63.65	54.44	68.3	-4.65	34.67	8.65	34.11	100	47	Peak

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 5700MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5080	44.79	36.31	54	-9.21	34.43	8.03	33.98	128	225	Average
5080	59.9	51.42	74	-14.1	34.43	8.03	33.98	128	225	Peak
5190	87.23	78.57			34.47	8.19	34	128	225	Average
5190	94.25	85.59			34.47	8.19	34	128	225	Peak
5450	45.16	36.2	54	-8.84	34.5	8.51	34.05	128	225	Average
5450	59.3	50.34	74	-14.7	34.5	8.51	34.05	128	225	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5074	44.68	36.2	54	-9.32	34.43	8.03	33.98	146	91	Average
5074	59.75	51.27	74	-14.25	34.43	8.03	33.98	146	91	Peak
5190	89.19	80.53			34.47	8.19	34	146	91	Average
5190	97.41	88.75			34.47	8.19	34	146	91	Peak
5428	45.31	36.37	54	-8.69	34.5	8.48	34.04	146	91	Average
5428	59.08	50.14	74	-14.92	34.5	8.48	34.04	146	91	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5190MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5068	45.72	37.24	54	-8.28	34.43	8.03	33.98	127	230	Average
5068	58.64	50.16	74	-15.36	34.43	8.03	33.98	127	230	Peak
5230	87.47	78.77			34.49	8.22	34.01	127	230	Average
5230	94.62	85.92			34.49	8.22	34.01	127	230	Peak
5452	44.46	35.5	54	-9.54	34.5	8.51	34.05	127	230	Average
5452	59.58	50.62	74	-14.42	34.5	8.51	34.05	127	230	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5056	44.99	36.51	54	-9.01	34.43	8.03	33.98	143	91	Average
5056	60.07	51.59	74	-13.93	34.43	8.03	33.98	143	91	Peak
5230	90.61	81.91			34.49	8.22	34.01	143	91	Average
5230	97.87	89.17			34.49	8.22	34.01	143	91	Peak
5374	47.44	38.57	54	-6.56	34.5	8.41	34.04	143	91	Average
5374	61.69	52.82	74	-12.31	34.5	8.41	34.04	143	91	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5230MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5086	43.51	34.99	54	-10.49	34.43	8.07	33.98	100	319	Average
5086	57.72	49.2	74	-16.28	34.43	8.07	33.98	100	319	Peak
5270	87.13	78.35			34.5	8.29	34.01	100	319	Average
5270	94.78	86			34.5	8.29	34.01	100	319	Peak
5378	43.65	34.78	54	-10.35	34.5	8.41	34.04	100	319	Average
5378	58.85	49.98	74	-15.15	34.5	8.41	34.04	100	319	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5136	43.56	34.97	54	-10.44	34.45	8.13	33.99	100	49	Average
5136	57.85	49.26	74	-16.15	34.45	8.13	33.99	100	49	Peak
5270	90.36	81.58			34.5	8.29	34.01	100	49	Average
5270	98.28	89.5			34.5	8.29	34.01	100	49	Peak
5444	43.75	34.81	54	-10.25	34.5	8.48	34.04	100	49	Average
5444	58.03	49.09	74	-15.97	34.5	8.48	34.04	100	49	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5270MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 62	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5062	43.54	35.06	54	-10.46	34.43	8.03	33.98	100	319	Average
5062	58.11	49.63	74	-15.89	34.43	8.03	33.98	100	319	Peak
5310	87.33	78.53			34.5	8.32	34.02	100	319	Average
5310	94.73	85.93			34.5	8.32	34.02	100	319	Peak
5358	43.74	34.89	54	-10.26	34.5	8.38	34.03	100	319	Average
5358	57.69	48.84	74	-16.31	34.5	8.38	34.03	100	319	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5028	43.42	35.01	54	-10.58	34.41	7.97	33.97	100	47	Average
5028	58.76	50.35	74	-15.24	34.41	7.97	33.97	100	47	Peak
5310	91.2	82.4			34.5	8.32	34.02	100	47	Average
5310	98.72	89.92			34.5	8.32	34.02	100	47	Peak
5388	44.38	35.51	54	-9.62	34.5	8.41	34.04	100	47	Average
5388	59.02	50.15	74	-14.98	34.5	8.41	34.04	100	47	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5310MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5416	45.1	36.2	54	-8.9	34.5	8.44	34.04	114	299	Average
5416	58.64	49.74	74	-15.36	34.5	8.44	34.04	114	299	Peak
5470	57.01	48.05	68.3	-11.29	34.5	8.51	34.05	114	299	Peak
5510	91.21	82.19			34.51	8.57	34.06	114	299	Average
5510	98.38	89.36			34.51	8.57	34.06	114	299	Peak
5725	57.21	48	68.3	-11.09	34.67	8.65	34.11	114	299	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5444	44.23	35.29	54	-9.77	34.5	8.48	34.04	100	34	Average
5444	59.42	50.48	74	-14.58	34.5	8.48	34.04	100	34	Peak
5470	58.59	49.63	68.3	-9.71	34.5	8.51	34.05	100	34	Peak
5510	92.68	83.66			34.51	8.57	34.06	100	34	Average
5510	99.15	90.13			34.51	8.57	34.06	100	34	Peak
5725	57.58	48.37	68.3	-10.72	34.67	8.65	34.11	100	34	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5510MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5410	45.47	36.57	54	-8.53	34.5	8.44	34.04	114	299	Average
5410	59.42	50.52	74	-14.58	34.5	8.44	34.04	114	299	Peak
5470	58.95	49.99	68.3	-9.35	34.5	8.51	34.05	114	299	Peak
5550	91.19	82.13			34.54	8.59	34.07	114	299	Average
5550	98.04	88.98			34.54	8.59	34.07	114	299	Peak
5725	58.15	48.94	68.3	-10.15	34.67	8.65	34.11	114	299	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5418	45.47	36.57	54	-8.53	34.5	8.44	34.04	100	34	Average
5418	59.27	50.37	74	-14.73	34.5	8.44	34.04	100	34	Peak
5470	59.15	50.19	68.3	-9.15	34.5	8.51	34.05	100	34	Peak
5550	92.65	83.59			34.54	8.59	34.07	100	34	Average
5550	99.1	90.04			34.54	8.59	34.07	100	34	Peak
5725	58.17	48.96	68.3	-10.13	34.67	8.65	34.11	100	34	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5550MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5444	44.23	35.29	54	-9.77	34.5	8.48	34.04	110	299	Average
5444	59.23	50.29	74	-14.77	34.5	8.48	34.04	110	299	Peak
5470	57.31	48.35	68.3	-10.99	34.5	8.51	34.05	110	299	Peak
5670	92.16	83			34.63	8.63	34.1	110	299	Average
5670	98.17	89.01			34.63	8.63	34.1	110	299	Peak
5725	57.68	48.47	68.3	-10.62	34.67	8.65	34.11	110	299	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5452	45.11	36.15	54	-8.89	34.5	8.51	34.05	100	47	Average
5452	60.43	51.47	74	-13.57	34.5	8.51	34.05	100	47	Peak
5470	58.33	49.37	68.3	-9.97	34.5	8.51	34.05	100	47	Peak
5670	91.52	82.36			34.63	8.63	34.1	100	47	Average
5670	99.77	90.61			34.63	8.63	34.1	100	47	Peak
5725	59.93	50.72	68.3	-8.37	34.67	8.65	34.11	100	47	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5670MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band





A D T

802.11ac (80MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 42	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5054	44.96	36.51	54	-9.04	34.43	8	33.98	126	225	Average
5054	58.46	50.01	74	-15.54	34.43	8	33.98	126	225	Peak
5210	85.13	76.45			34.49	8.19	34	126	225	Average
5210	93.2	84.52			34.49	8.19	34	126	225	Peak
5404	44.96	36.06	54	-9.04	34.5	8.44	34.04	126	225	Average
5404	58.36	49.46	74	-15.64	34.5	8.44	34.04	126	225	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5040	44.99	36.54	54	-9.01	34.42	8	33.97	145	90	Average
5040	59.36	50.91	74	-14.64	34.42	8	33.97	145	90	Peak
5210	88.65	79.97			34.49	8.19	34	145	90	Average
5210	95.99	87.31			34.49	8.19	34	145	90	Peak
5448	45.53	36.56	54	-8.47	34.5	8.51	34.04	145	90	Average
5448	59.27	50.3	74	-14.73	34.5	8.51	34.04	145	90	Peak

REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5210MHz: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 58	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5072	44.29	35.81	54	-9.71	34.43	8.03	33.98	100	318	Average
5072	57.86	49.38	74	-16.14	34.43	8.03	33.98	100	318	Peak
5290	86.13	77.33			34.5	8.32	34.02	100	318	Average
5290	93.56	84.76			34.5	8.32	34.02	100	318	Peak
5438	44.48	35.54	54	-9.52	34.5	8.48	34.04	100	318	Average
5438	57.87	48.93	74	-16.13	34.5	8.48	34.04	100	318	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5064	44.33	35.85	54	-9.67	34.43	8.03	33.98	100	50	Average
5064	58.03	49.55	74	-15.97	34.43	8.03	33.98	100	50	Peak
5290	89.41	80.61			34.5	8.32	34.02	100	50	Average
5290	97.14	88.34			34.5	8.32	34.02	100	50	Peak
5362	44.92	36.07	54	-9.08	34.5	8.38	34.03	100	50	Average
5362	58.28	49.43	74	-15.72	34.5	8.38	34.03	100	50	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5290MHz: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 106	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5436	45.5	36.56	54	-8.5	34.5	8.48	34.04	111	301	Average
5436	59.81	50.87	74	-14.19	34.5	8.48	34.04	111	301	Peak
5470	62.48	53.52	68.3	-5.82	34.5	8.51	34.05	111	301	Peak
5530	88.44	79.4			34.53	8.58	34.07	111	301	Average
5530	96.54	87.5			34.53	8.58	34.07	111	301	Peak
5725	58.13	48.92	68.3	-10.17	34.67	8.65	34.11	111	301	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5396	44.2	35.3	54	-9.8	34.5	8.44	34.04	100	44	Average
5396	59.72	50.82	74	-14.28	34.5	8.44	34.04	100	44	Peak
5470	57.8	48.84	68.3	-10.5	34.5	8.51	34.05	100	44	Peak
5530	89.44	80.4			34.53	8.58	34.07	100	44	Average
5530	97.45	88.41			34.53	8.58	34.07	100	44	Peak
5725	57.58	48.37	68.3	-10.72	34.67	8.65	34.11	100	44	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5530MHz: Fundamental frequency.
- 5470MHz & 5725MHz: Out of restricted band



A D T

**TEST MODE B**

**802.11n (20MHz)**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	38.56	38.64	54	-15.44	31.56	5.44	37.08	105	40	Average
5460	50.25	50.33	74	-23.75	31.56	5.44	37.08	105	40	Peak
5470	51.55	51.61	74	-22.45	31.57	5.45	37.08	105	40	Peak
5700	90.46	90.39			31.9	5.57	37.4	105	40	Average
5700	100.75	100.68			31.9	5.57	37.4	105	40	Peak
5725	57.69	57.57	74	-16.31	31.96	5.59	37.43	105	40	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5460	38.23	38.31	54	-15.77	31.56	5.44	37.08	100	40	Average
5460	52.01	52.09	74	-21.99	31.56	5.44	37.08	100	40	Peak
5470	52.85	52.91	74	-21.15	31.57	5.45	37.08	100	40	Peak
5700	93.26	93.19			31.9	5.57	37.4	100	40	Average
5700	103.53	103.46			31.9	5.57	37.4	100	40	Peak
5725	59.63	59.51	74	-14.37	31.96	5.59	37.43	100	40	Peak

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
2. 5700MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



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**BELOW 1GHz WORST-CASE DATA:**

**TEST MODE A**

**802.11a**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
96.42	32.61	53.95	43.5	-10.89	9.42	1.28	32.04	149	88	Peak
163.92	25.95	46.18	43.5	-17.55	10.51	1.52	32.26	134	205	Peak
262.47	19.6	36.4	46	-26.4	13.37	1.94	32.11	155	198	Peak
407.8	18.86	30.71	46	-27.14	17.95	2.41	32.21	194	211	Peak
698.3	24.82	30.7	46	-21.18	23.1	3.11	32.09	144	98	Peak
919.5	28.89	30.74	46	-17.11	25.96	3.53	31.34	105	107	Peak

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
31.89	25.16	40.35	40	-14.84	16.33	0.74	32.26	108	238	Peak
95.34	25.19	46.56	43.5	-18.31	9.34	1.28	31.99	132	55	Peak
155.01	19.91	40.21	43.5	-23.59	10.45	1.52	32.27	112	178	Peak
391.7	18.11	30.47	46	-27.89	17.5	2.34	32.2	104	301	Peak
527.5	22.36	31.15	46	-23.64	20.66	2.7	32.15	166	109	Peak
708.1	25.27	31.07	46	-20.73	23.19	3.11	32.1	120	73	Peak

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value



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802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
96.69	32.23	53.63	43.5	-11.27	9.42	1.28	32.1	110	32	Peak
160.41	26.18	46.13	43.5	-17.32	10.8	1.52	32.27	199	81	Peak
259.23	19.8	36.67	46	-26.2	13.29	1.94	32.1	132	79	Peak
472.9	19.67	30.42	46	-26.33	18.81	2.56	32.12	194	302	Peak
703.9	24.61	30.45	46	-21.39	23.14	3.11	32.09	188	237	Peak
932.8	29.65	31.07	46	-16.35	26.2	3.62	31.24	146	108	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
32.43	24.7	40.25	40	-15.3	15.96	0.74	32.25	132	24	Peak
96.96	26.67	48.03	43.5	-16.83	9.46	1.28	32.1	164	73	Peak
156.36	21.21	41.39	43.5	-22.29	10.57	1.52	32.27	207	44	Peak
398.7	19.69	31.47	46	-26.31	18.1	2.34	32.22	108	312	Peak
608.7	23.59	31.52	46	-22.41	21.39	2.87	32.19	134	204	Peak
777.4	26.02	31.35	46	-19.98	23.5	3.27	32.1	116	79	Peak

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value



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802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
97.5	32.42	53.79	43.5	-11.08	9.5	1.28	32.15	205	318	Peak
167.43	26.55	47.06	43.5	-16.95	10.22	1.52	32.25	149	192	Peak
214.14	19.01	38.15	43.5	-24.49	11.45	1.65	32.24	134	72	Peak
520.5	21.47	30.4	46	-24.53	20.51	2.7	32.14	304	166	Peak
689.2	25.01	30.83	46	-20.99	23.23	3.05	32.1	120	77	Peak
927.2	29.18	30.64	46	-16.82	26.2	3.62	31.28	114	206	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
32.7	25.3	40.97	40	-14.7	15.84	0.74	32.25	135	79	Peak
48.63	18.64	41.73	40	-21.36	8.23	0.9	32.22	107	86	Peak
96.96	25.83	47.19	43.5	-17.67	9.46	1.28	32.1	155	208	Peak
540.1	21.46	30.45	46	-24.54	20.43	2.76	32.18	163	87	Peak
622.7	22.22	29.36	46	-23.78	22.1	2.93	32.17	107	98	Peak
918.8	28.56	30.41	46	-17.44	25.96	3.53	31.34	127	165	Peak

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
 Margin value = Emission level – Limit value



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**TEST MODE B**

**802.11n (20MHz)**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Johnson Liao

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
105.87	26.99	48.16	43.5	-16.51	9.62	1.1	31.89	100	215	Peak
139.35	29.18	47.19	43.5	-14.32	12.34	1.29	31.64	100	236	Peak
187.95	36.63	56.6	43.5	-6.87	10.19	1.54	31.7	100	139	Peak
493.9	22.89	34.65	46	-23.11	17.2	2.76	31.72	100	106	Peak
538	22.24	32.86	46	-23.76	18.19	2.91	31.72	100	194	Peak
833.4	29.64	34.95	46	-16.36	22.65	3.78	31.74	100	132	Peak

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
31.35	33.52	51.93	40	-6.48	12.14	0.57	31.12	100	154	Peak
64.02	33.57	52.78	40	-6.43	11.47	0.86	31.54	100	165	Peak
174.18	29.77	48.8	43.5	-13.73	11.28	1.47	31.78	100	182	Peak
528.2	22.06	32.89	46	-23.94	17.97	2.88	31.68	100	265	Peak
610.1	23.85	33.08	46	-22.15	19.73	3.12	32.08	100	118	Peak
801.9	27.09	32.57	46	-18.91	22.25	3.7	31.43	100	247	Peak

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
 Margin value = Emission level – Limit value



## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

**Tested Date: Dec. 25, 2013**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 17, 2013	Nov. 16, 2014
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100104	Dec. 06, 2013	Dec. 05, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 17, 2013	Jul. 16, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

#### 4.2.3 TEST PROCEDURES

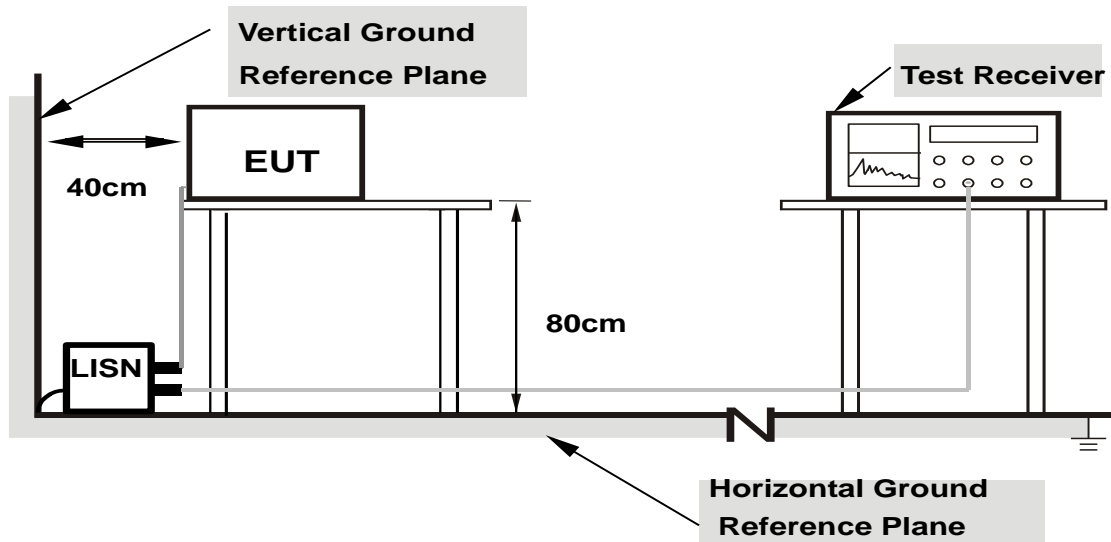
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

### 4.2.7 TEST RESULTS

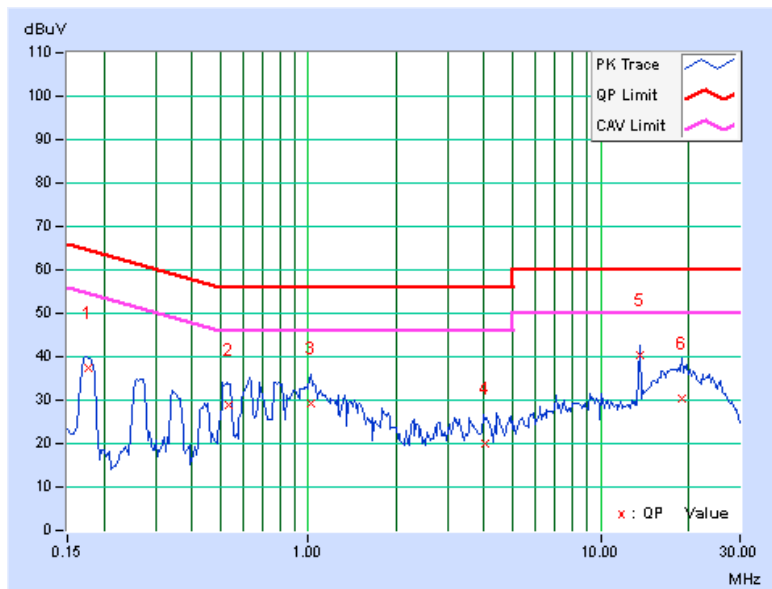
**CONDUCTED WORST-CASE DATA :**

<b>PHASE</b>	Line 1	<b>6dB BANDWIDTH</b>	9kHz
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No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17734	0.17	37.32	26.67	37.49	26.84	64.61	54.61	-27.12	-27.77
2	0.53672	0.22	28.84	16.34	29.06	16.56	56.00	46.00	-26.94	-29.44
3	1.01953	0.27	29.01	13.55	29.28	13.82	56.00	46.00	-26.72	-32.18
4	4.05078	0.37	19.67	11.15	20.04	11.52	56.00	46.00	-35.96	-34.48
5	13.56250	0.50	39.83	34.31	40.33	34.81	60.00	50.00	-19.67	-15.19
6	18.87109	0.62	29.77	19.45	30.39	20.07	60.00	50.00	-29.61	-29.93

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

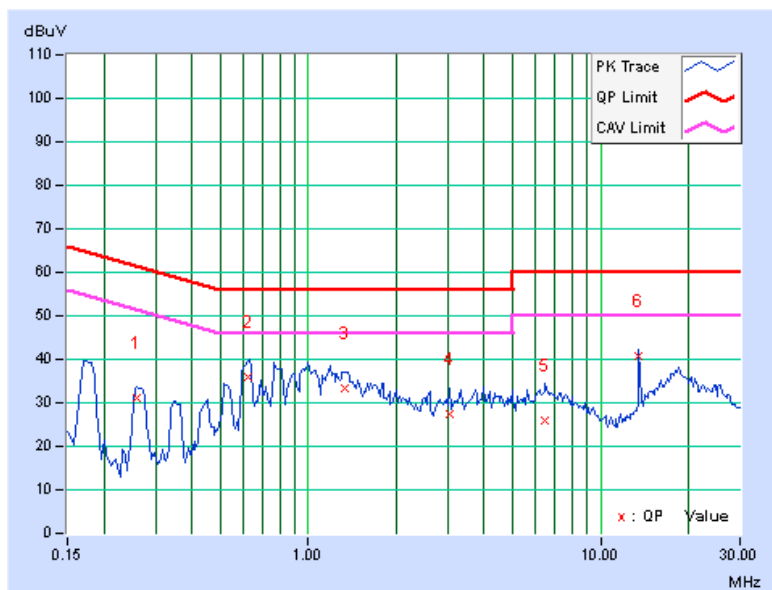


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.25938	0.20	30.90	23.15	31.10	23.35	61.45
2	0.61875	0.24	35.72	25.90	35.96	26.14	56.00	46.00	-20.04	-19.86
3	1.32813	0.25	32.98	21.37	33.23	21.62	56.00	46.00	-22.77	-24.38
4	3.03516	0.34	26.89	16.52	27.23	16.86	56.00	46.00	-28.77	-29.14
5	6.41406	0.43	25.41	16.18	25.84	16.61	60.00	50.00	-34.16	-33.39
6	13.55859	0.57	39.99	36.93	40.56	37.50	60.00	50.00	-19.44	-12.50

**REMARKS:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



### 4.3 PEAK TRANSMIT POWER MEASUREMENT

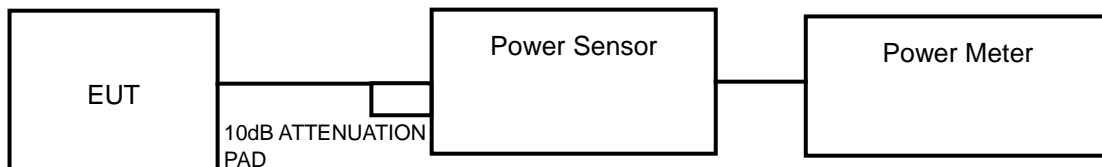
#### 4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.250 ~ 5.350GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.470 ~ 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB

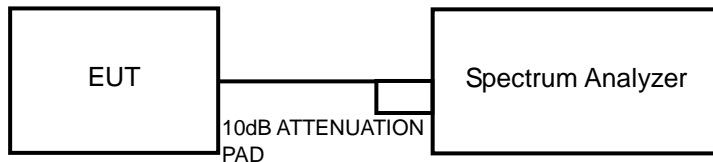
**NOTE:** Where B is the 26dB emission bandwidth in MHz.

#### 4.3.2 TEST SETUP

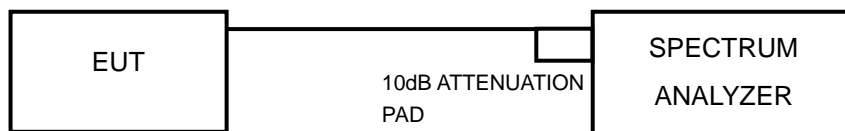
##### FOR POWER OUTPUT MEASUREMENT



or



##### FOR 26dB BANDWIDTH



#### 4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.3.4 TEST PROCEDURE

<802.11a, 802.11n (20MHz), 802.11n (40MHz)>

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

<802.11ac (80MHz)>

Method SA-1 is used to perform output power measurement, trigger and gating function of spectrum analyzer is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

#### FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

### 4.3.7 TEST RESULTS

#### POWER OUTPUT:

##### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	35.645	15.52	17	PASS
44	5220	37.154	15.70	17	PASS
48	5240	35.563	15.51	17	PASS
52	5260	35.975	15.56	24	PASS
60	5300	36.141	15.58	24	PASS
64	5320	37.931	15.79	24	PASS
100	5500	38.019	15.80	24	PASS
116	5580	36.644	15.64	24	PASS
140	5700	37.584	15.75	24	PASS

##### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	40.272	16.05	17	PASS
44	5220	40.926	16.12	17	PASS
48	5240	41.210	16.15	17	PASS
52	5260	53.580	17.29	24	PASS
60	5300	53.088	17.25	24	PASS
64	5320	53.951	17.32	24	PASS
100	5500	44.771	16.51	24	PASS
116	5580	45.082	16.54	24	PASS
140	5700	53.827	17.31	24	PASS





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### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	17.947	12.54	17	PASS
46	5230	18.493	12.67	17	PASS
54	5270	18.750	12.73	24	PASS
62	5310	18.450	12.66	24	PASS
102	5510	18.365	12.64	24	PASS
110	5550	18.323	12.63	24	PASS
134	5670	18.030	12.56	24	PASS

### 802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
42	5210	19.364	12.87	17	PASS
58	5290	19.724	12.95	24	PASS
106	5530	20.464	13.11	24	PASS

**26dB BANDWIDTH: 802.11a**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	24.88	PASS
44	5220	25.52	PASS
48	5240	26.47	PASS
52	5260	25.02	PASS
60	5300	27.52	PASS
64	5320	26.92	PASS
100	5500	24.93	PASS
116	5580	22.72	PASS
140	5700	23.35	PASS

**802.11n (20MHz)**

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	41.83	PASS
44	5220	42.84	PASS
48	5240	45.21	PASS
52	5260	44.77	PASS
60	5300	42.09	PASS
64	5320	42.99	PASS
100	5500	29.53	PASS
116	5580	37.76	PASS
140	5700	42.18	PASS

**802.11n (40MHz)**

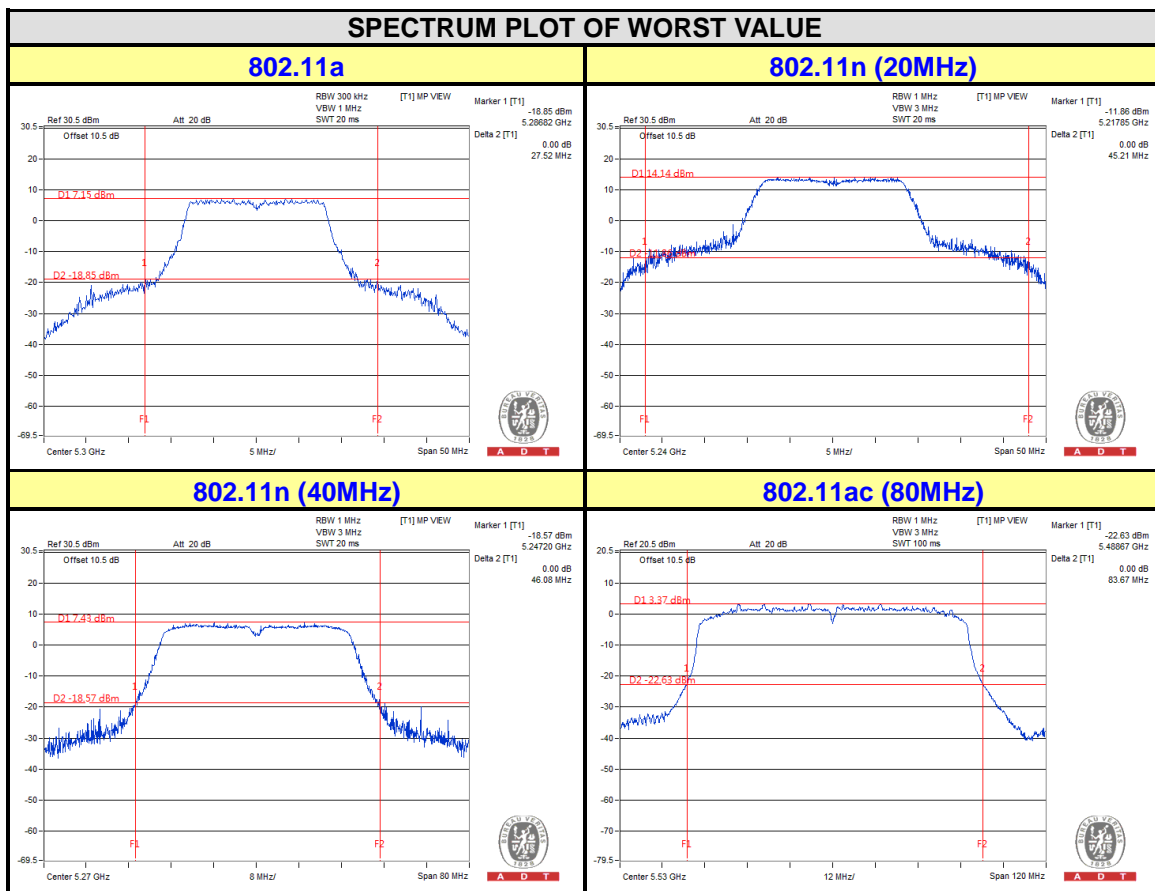
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
38	5190	45.97	PASS
46	5230	45.16	PASS
54	5270	46.08	PASS
62	5310	45.66	PASS
102	5510	45.72	PASS
110	5550	45.87	PASS
134	5670	45.47	PASS



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802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
42	5210	82.79	PASS
58	5290	83.17	PASS
106	5530	83.67	PASS

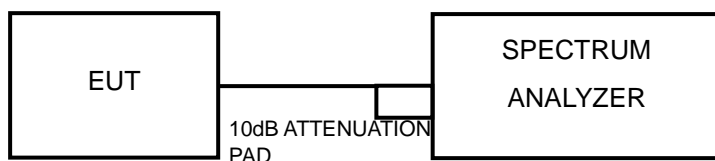


## 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

FREQUENCY BAND	LIMIT
5.150 ~ 5.250GHz	4dBm
5.250 ~ 5.350GHz	11dBm
5.470 ~ 5.725GHz	11dBm

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.4.4 TEST PROCEDURES

<802.11a, 802.11n (20MHz) >

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz, Detector = RMS
- 3) Sweep time = 4second.
- 4) Perform a single sweep.

<802.11n (40MHz), 802.11ac (80MHz)>

Using method SA-2 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1 MHz, Set VBW  $\geq$  3 MHz, Detector = RMS
- 3) Sweep time = 4second.
- 4) Perform a single sweep.
- 5) Record the max value and add  $10 \log (1/\text{duty cycle})$

#### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

#### 4.4.7 TEST RESULTS

##### 802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	2.85	4	PASS
44	5220	3.78	4	PASS
48	5240	3.88	4	PASS
52	5260	4.02	11	PASS
60	5300	3.84	11	PASS
64	5320	4.01	11	PASS
100	5500	4.05	11	PASS
116	5580	3.62	11	PASS
140	5700	3.18	11	PASS

##### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	3.48	4	PASS
44	5220	3.35	4	PASS
48	5240	3.52	4	PASS
52	5260	5.15	11	PASS
60	5300	5.19	11	PASS
64	5320	5.43	11	PASS
100	5500	4.51	11	PASS
116	5580	4.24	11	PASS
140	5700	4.93	11	PASS



**802.11n (40MHz)**

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
38	5190	-2.28	1.48	-0.80	4	PASS
46	5230	-2.32	1.48	-0.84	4	PASS
54	5270	-2.10	1.48	-0.62	11	PASS
62	5310	-2.12	1.48	-0.64	11	PASS
102	5510	-2.24	1.48	-0.76	11	PASS
110	5550	-2.02	1.48	-0.54	11	PASS
134	5670	-3.04	1.48	-1.56	11	PASS

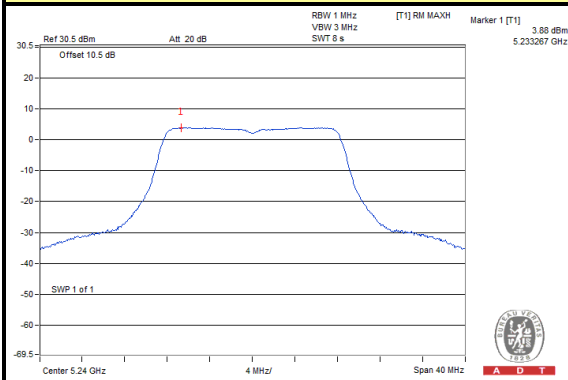
**NOTE:** Refer to section 3.3 for duty cycle spectrum plot.

**802.11ac (80MHz)**

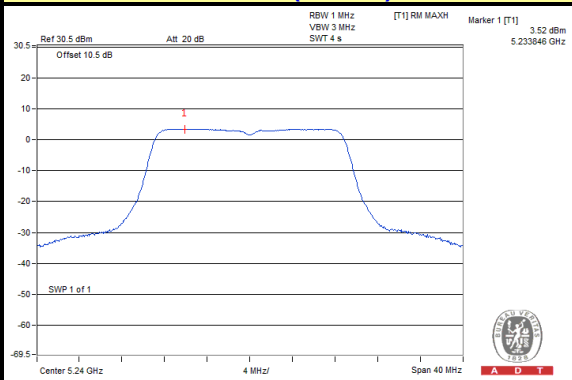
CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
42	5210	-4.55	2.51	-2.04	4	PASS
58	5290	-5.11	2.51	-2.60	11	PASS
106	5530	-5.22	2.51	-2.71	11	PASS

**SPECTRUM PLOT OF WORST VALUE**

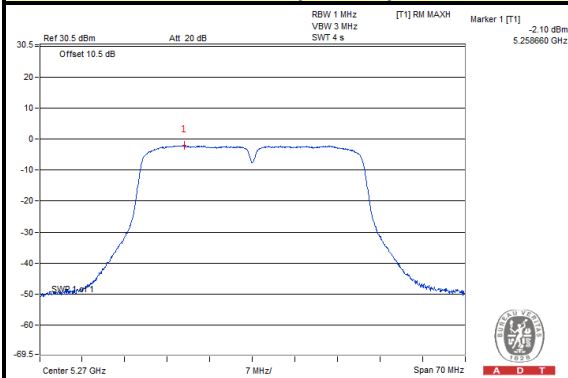
**802.11a**



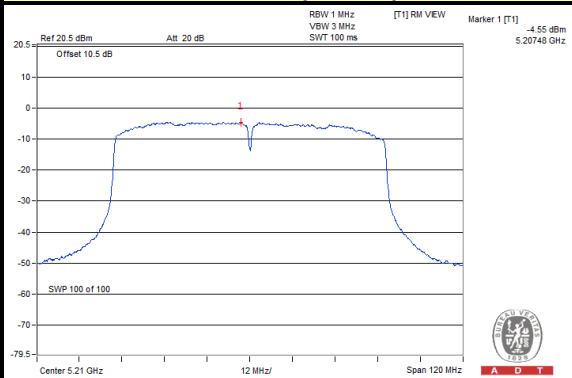
**802.11n (20MHz)**



**802.11n (40MHz)**



**802.11ac (80MHz)**

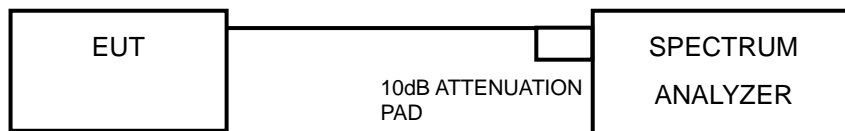


## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

Shall not exceed 13 dB.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

- a. Set the RBW = 1 kHz, VBW  $\geq$  3 MHz, Detector = peak.
- b. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
- c. Use the peak search function to find the peak of the spectrum.
- d. Measure the PPSD.
- e. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

Find the worst channel and modulation mode as above test procedure, and follow KDB 789033 D01 General UNII Test Procedures v01r03 and repeat step 1 to 5 for final testing of each modulation mode on a single channel (all modulation types) in a single operating band to compliance with the peak excursion requirement.

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6





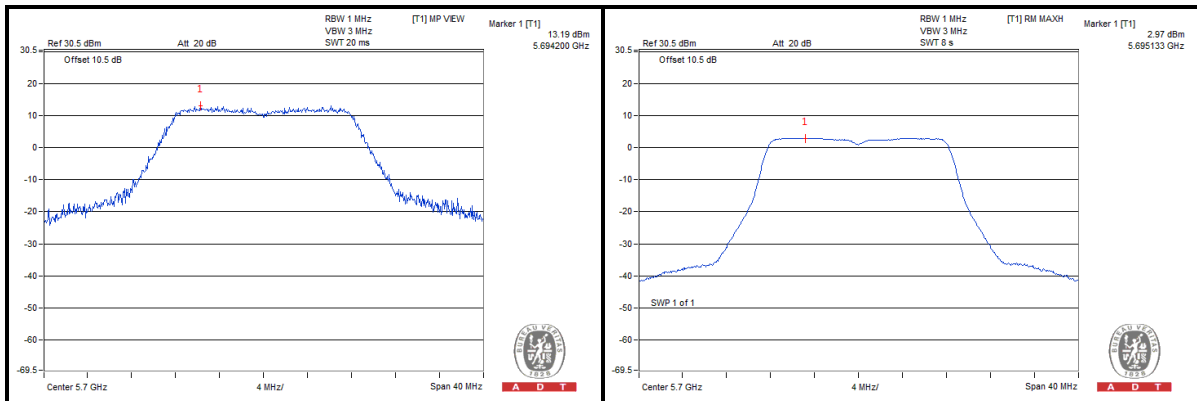
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### 4.5.7 TEST RESULTS

MODULATION MODE	MODULATION TYPE	CHANNEL FREQUENCY (MHz)	PEAK VALUE (dBm)	PPSD (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/ FAIL
802.11a	BPSK	5700	12.53	3.18	9.35	13	PASS
	QPSK		13.11	3.03	10.08	13	PASS
	16QAM		13.19	2.97	10.22	13	PASS
	64QAM		10.96	1.04	9.92	13	PASS
802.11n (20MHz)	BPSK	5320	14.54	5.43	9.11	13	PASS
	QPSK		15.27	5.38	9.89	13	PASS
	16QAM		15.35	5.35	10.00	13	PASS
	64QAM		12.71	2.67	10.04	13	PASS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11n (40MHz)	BPSK	5270	7.17	-2.10	-0.62	7.79	13	PASS
	QPSK		7.88	-1.90	0.13	7.75	13	PASS
	16QAM		8.41	-2.03	1.11	7.30	13	PASS
	64QAM		8.77	-2.09	2.36	6.41	13	PASS
802.11ac (80MHz)	BPSK	5530	3.40	-5.22	-2.71	6.11	13	PASS
	QPSK		3.48	-5.22	-1.56	5.04	13	PASS
	16QAM		3.32	-4.92	0.15	3.17	13	PASS
	64QAM		3.56	-4.72	1.20	2.36	13	PASS
	256QAM		3.89	-4.86	1.35	2.54	13	PASS

**NOTE:** Refer to section 3.3 for duty cycle spectrum plot.

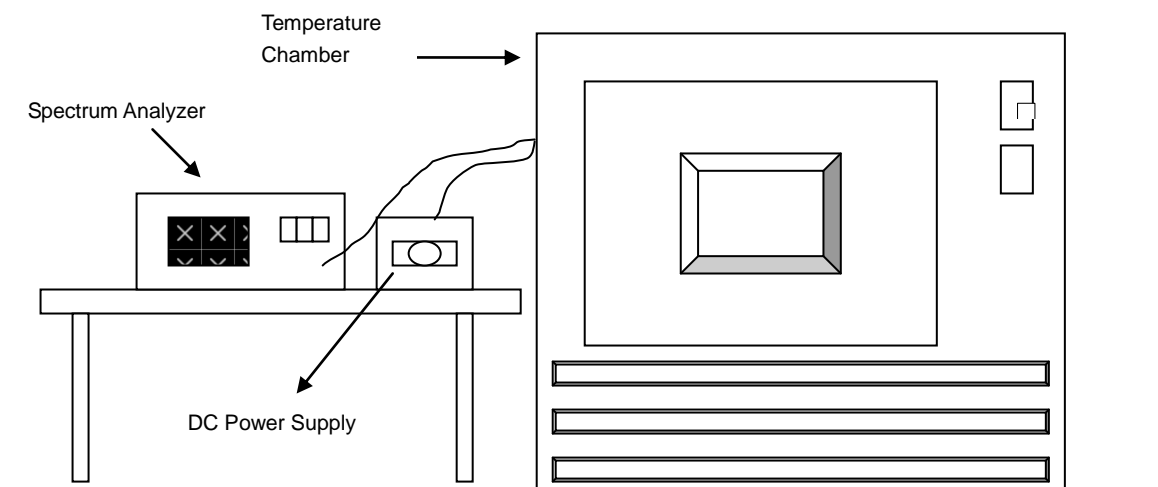


## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation.

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.6.4 TEST PROCEDURE

- a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
- c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

#### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.



#### 4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	3.8	5320.015122	2.842	5320.015242	2.865	5320.014849	2.791	5320.014924	2.805
40	3.8	5320.015773	2.965	5320.015413	2.897	5320.015280	2.872	5320.015875	2.984
30	3.8	5320.016994	3.194	5320.016858	3.169	5320.017027	3.201	5320.016728	3.144
20	3.8	5320.017948	3.374	5320.017999	3.383	5320.018255	3.431	5320.017966	3.377
10	3.8	5320.019440	3.654	5320.019585	3.681	5320.019498	3.665	5320.019599	3.684
0	3.8	5320.017966	3.377	5320.017674	3.322	5320.018339	3.447	5320.017710	3.329
-10	3.8	5320.016426	3.088	5320.016769	3.152	5320.016735	3.146	5320.017013	3.198
-20	3.8	5320.015926	2.994	5320.015701	2.951	5320.015733	2.957	5320.016073	3.021
-30	3.8	5320.014835	2.789	5320.014935	2.807	5320.015103	2.839	5320.014932	2.807

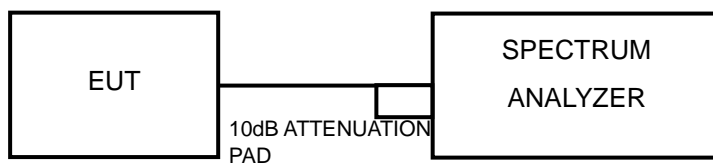
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	3.6	5320.017570	3.303	5320.017273	3.247	5320.017510	3.291	5320.017310	3.254
	3.8	5320.017948	3.374	5320.017999	3.383	5320.018255	3.431	5320.017966	3.377
	4.35	5320.019210	3.611	5320.019205	3.610	5320.019408	3.648	5320.019331	3.634

## 4.7 20dBc BANDWIDTH MEASUREMENT

### 4.7.1 LIMITS OF 20dBc Bandwidth MEASUREMENT

20dBc point shall not overlap in 5150~5700MHz.

### 4.7.2 TEST SETUP



### 4.7.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.7.4 TEST PROCEDURES

789033 D01 General UNII Test Procedures v01r03

#### **Emission bandwidth**

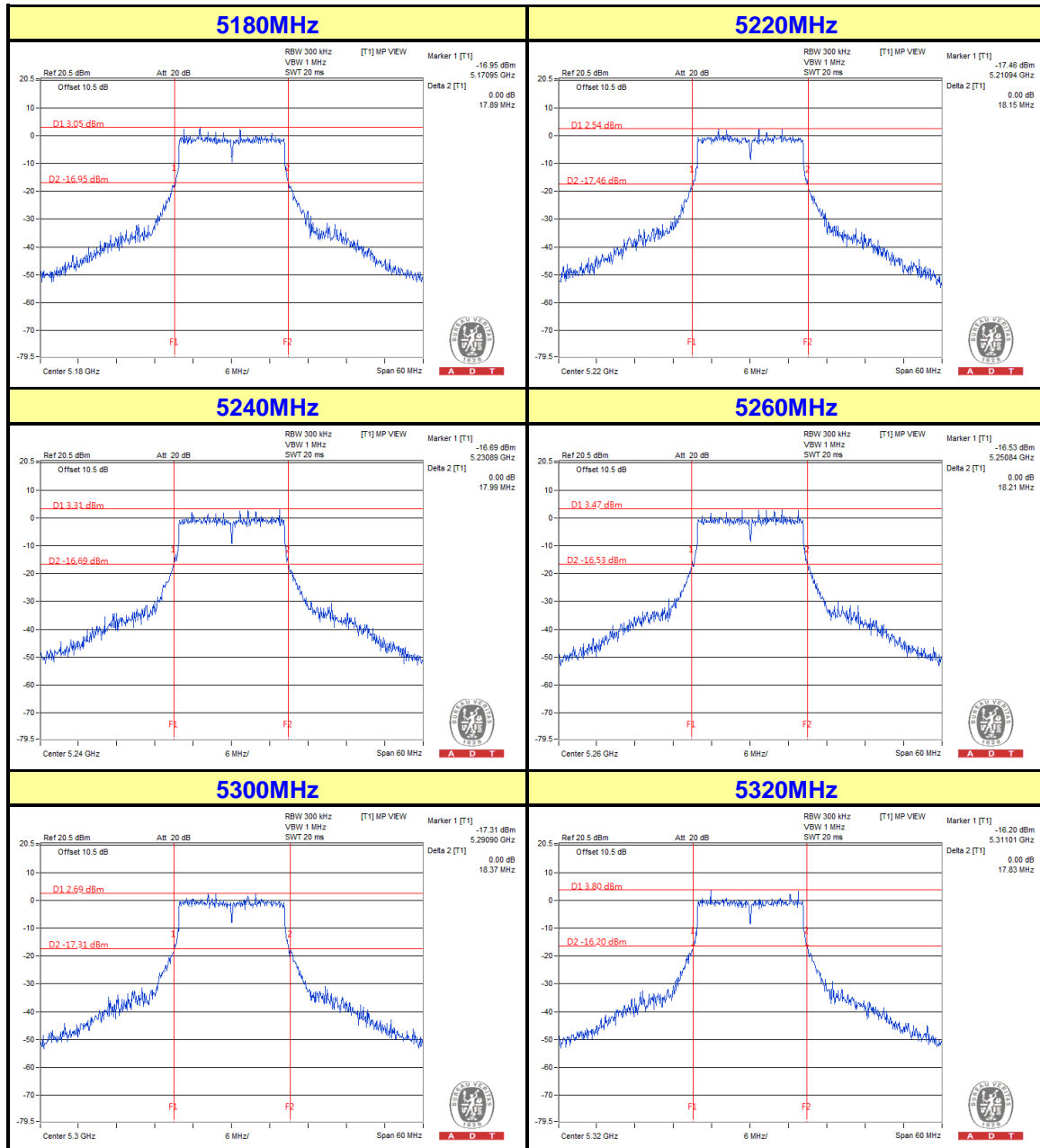
- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak
- 4) Trace mode = max hold.
- 5) Measurement the maximum width of the emission that is 20dB down from the peak of the emission. Compare this with RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.



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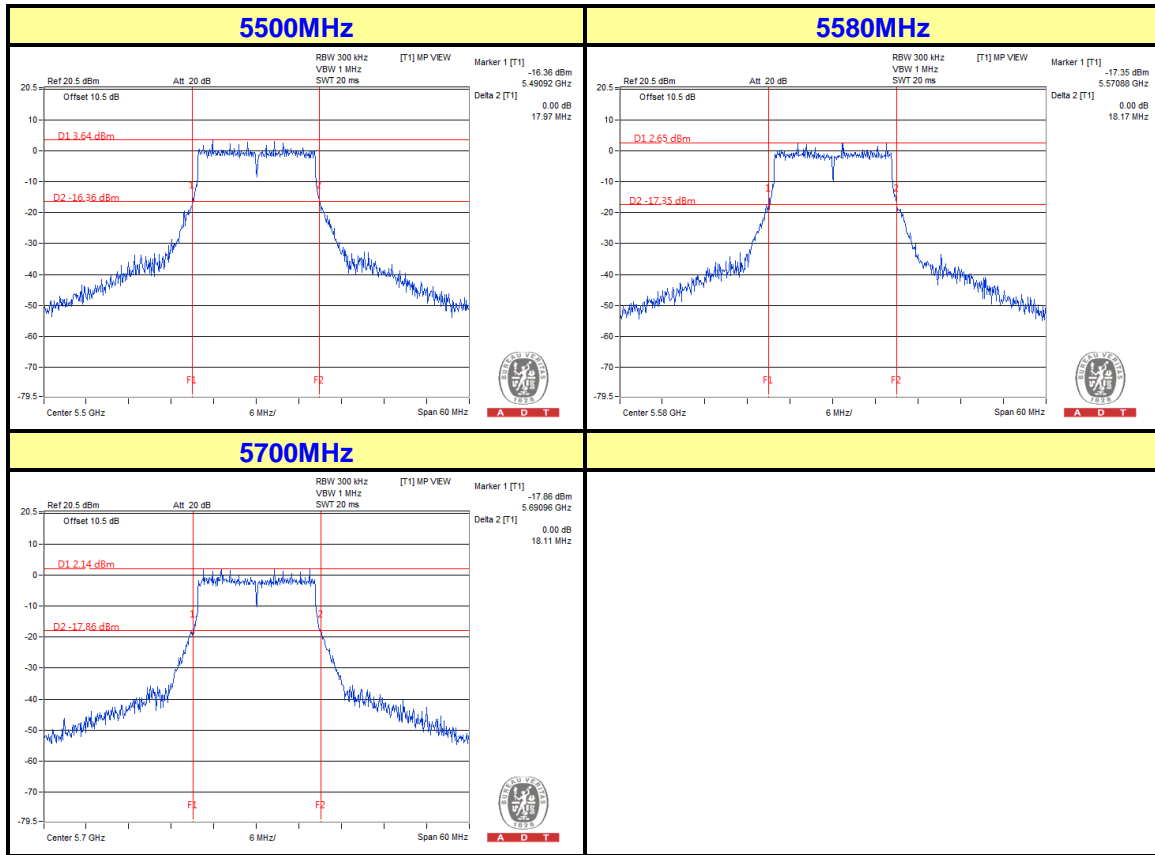
### 4.7.5 TEST RESULTS

802.11a





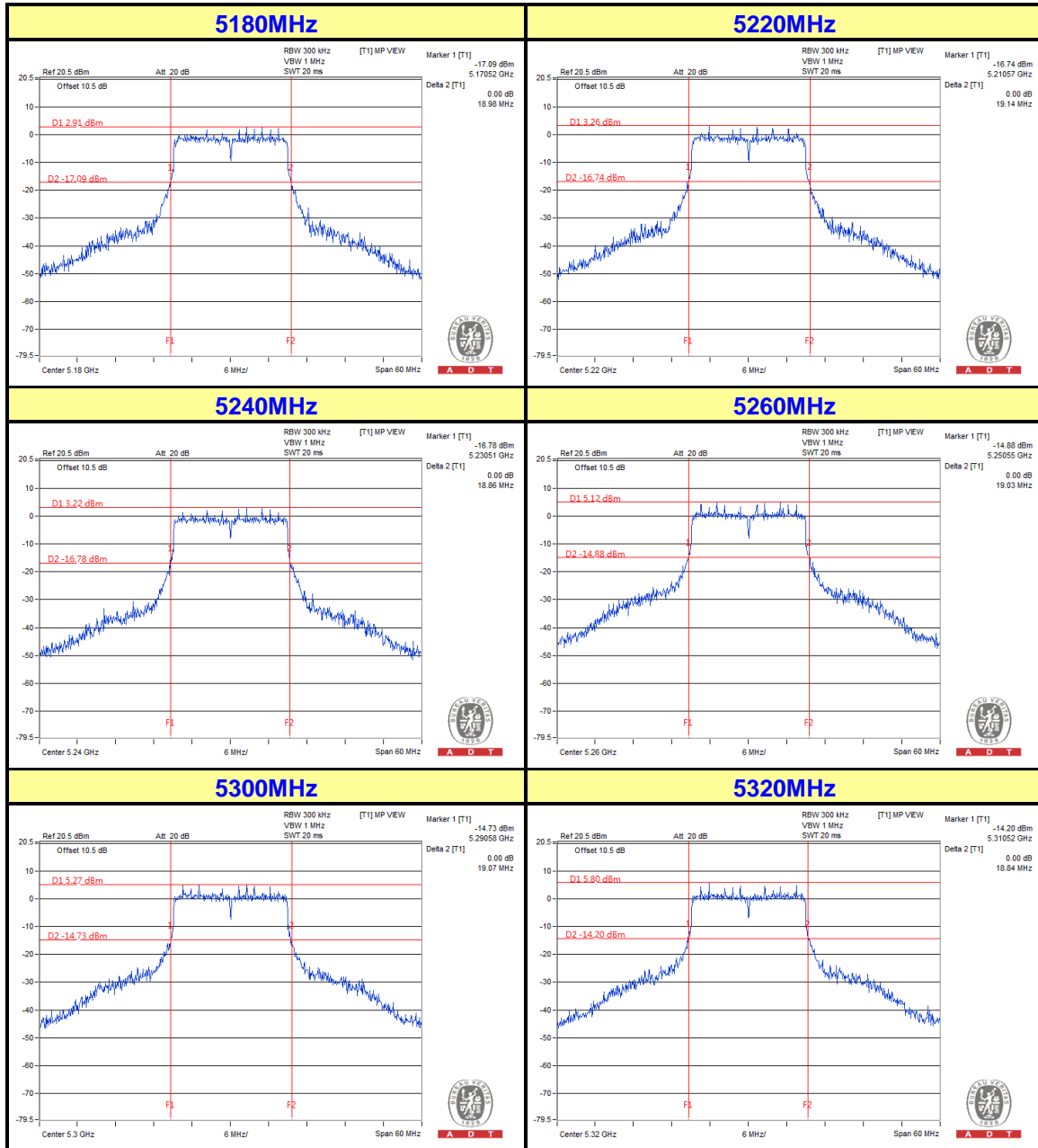
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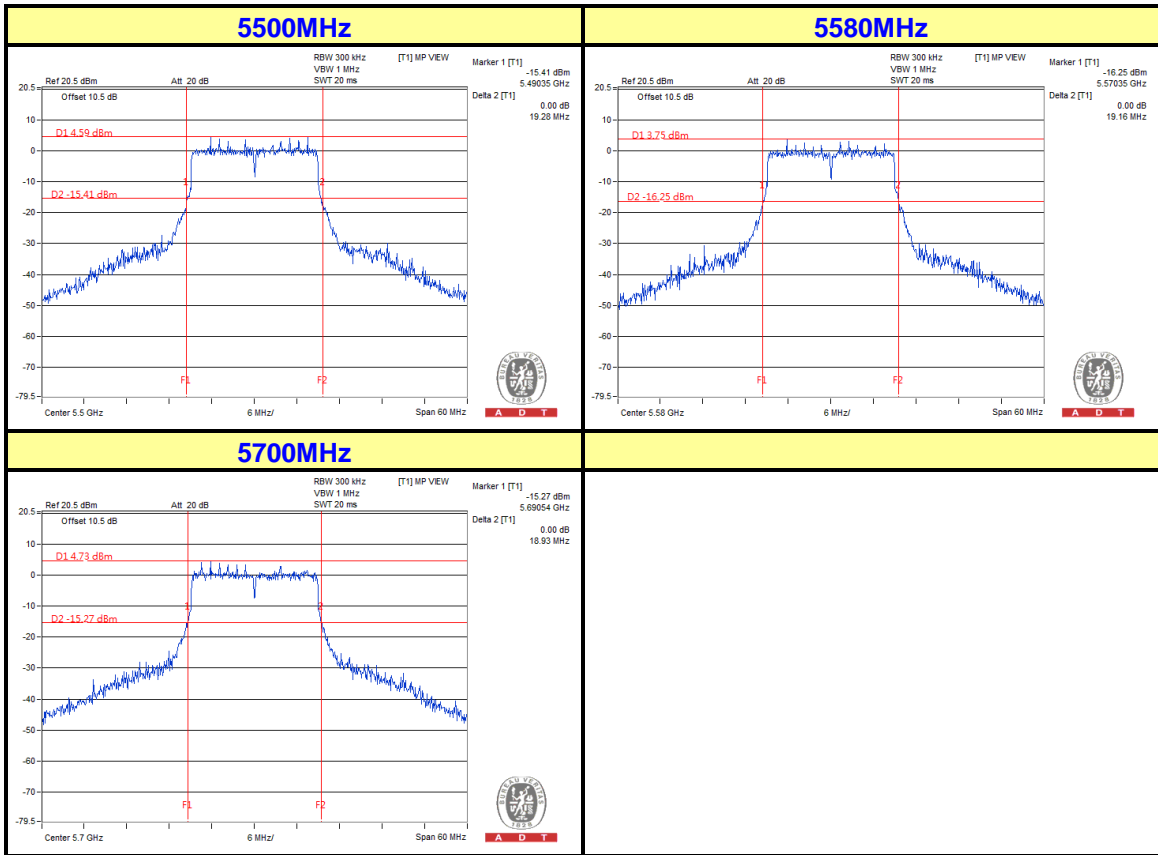
### 802.11n (20MHz)







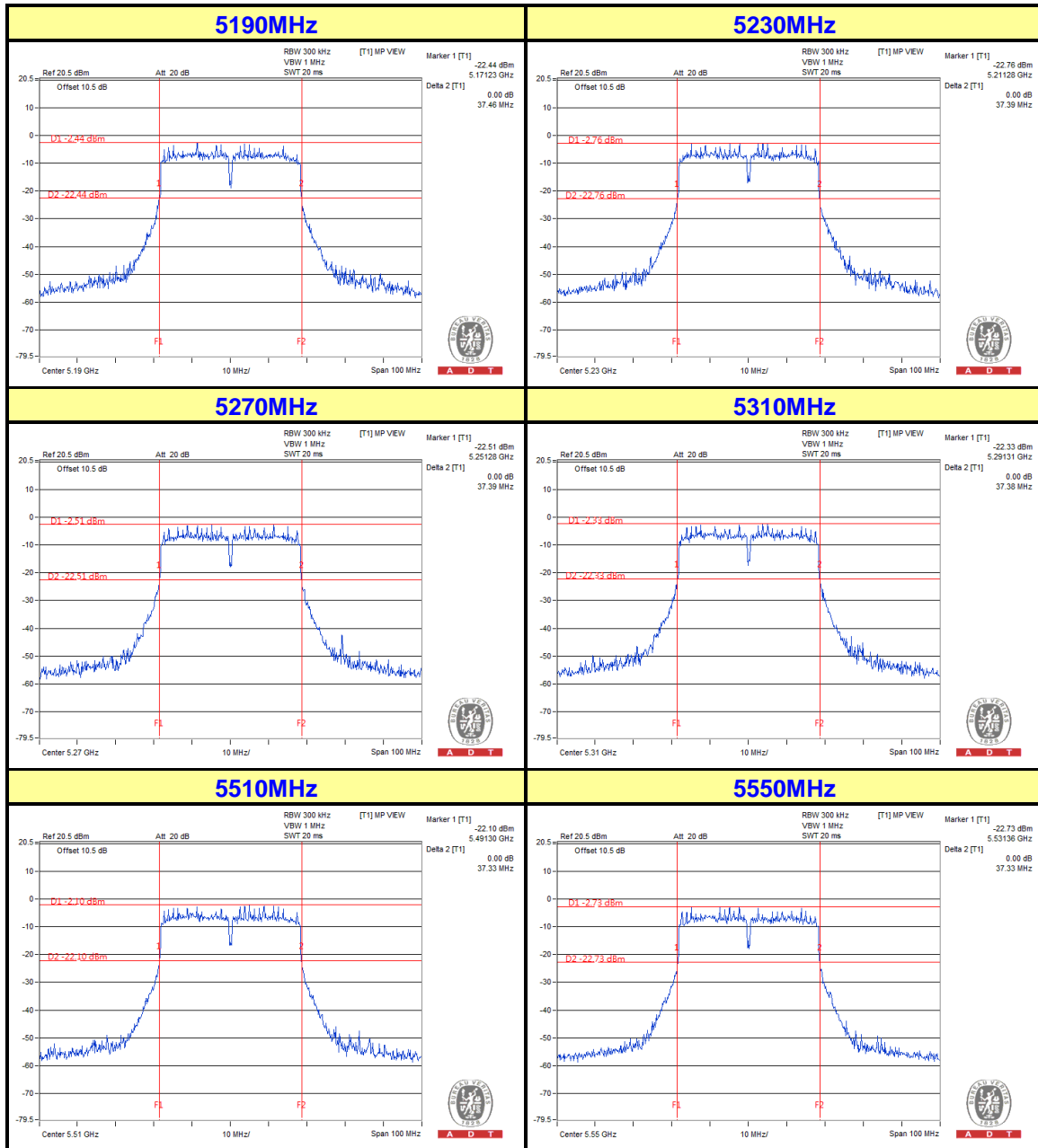
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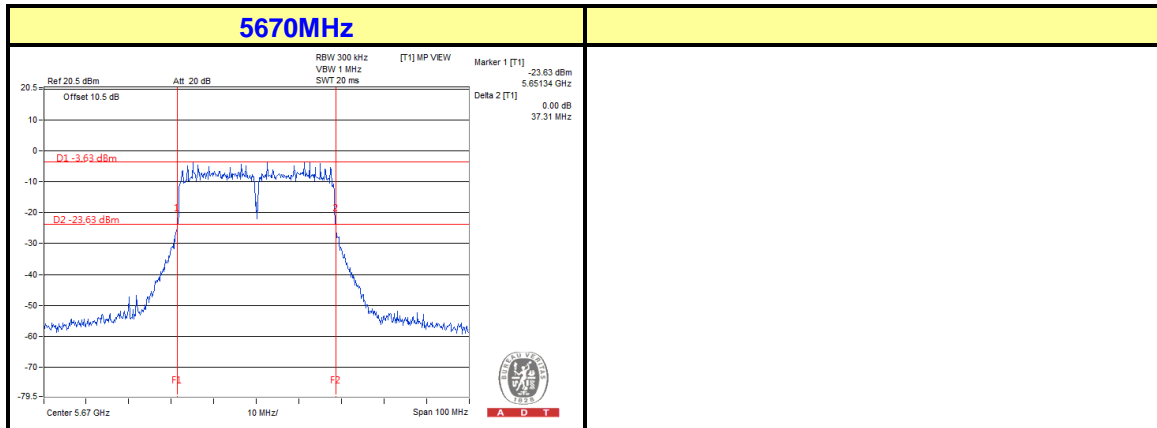
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### 802.11n (40MHz)





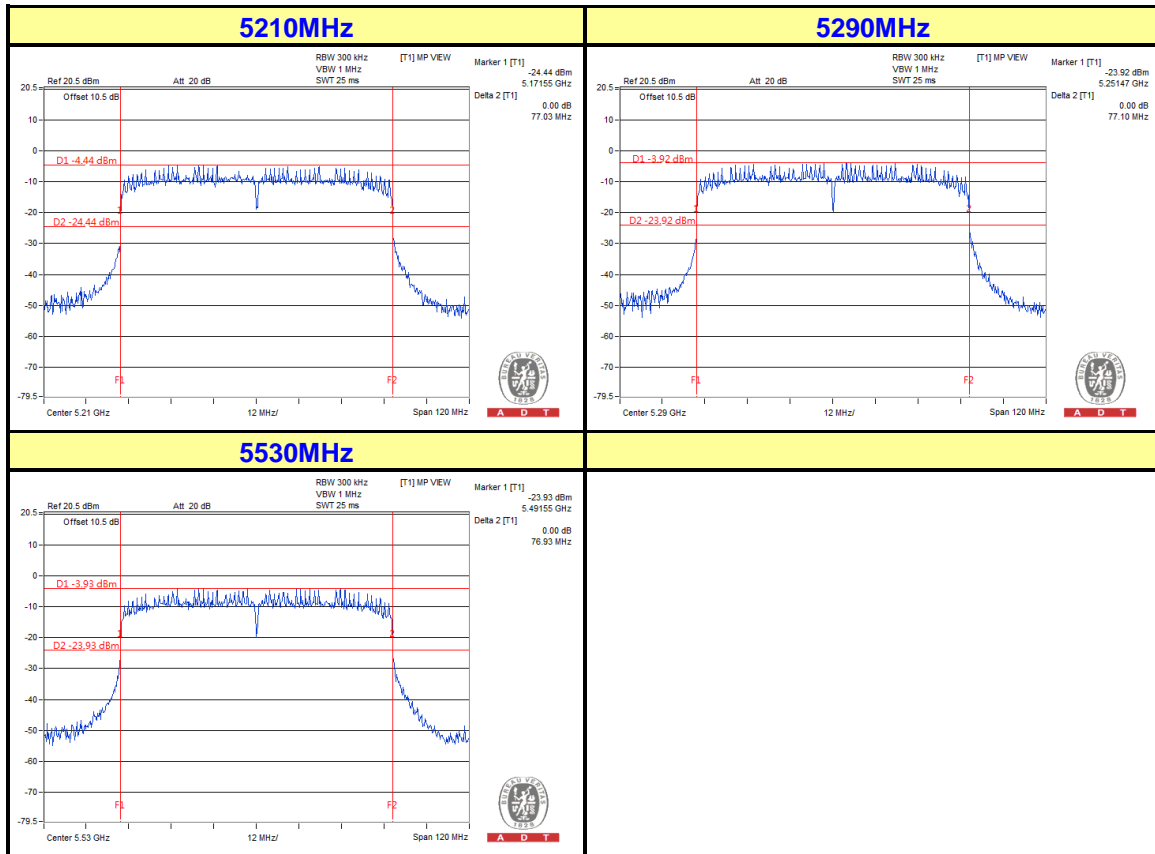
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### 802.11ac (80MHz)





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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

## 6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26051924

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.



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## 7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---