



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF140221C18-5  
**MODEL NO.:** E6782  
**FCC ID:** V65E6782  
**RECEIVED:** Feb. 21, 2014  
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**ISSUED:** Mar. 21, 2014

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140221C18-5	Original release	Mar. 21, 2014



## 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 -1.28dB at 13.55859MHz.
15.407(b/1/2/3)(b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -4.13dB at 79.68MHz.
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  $k = 2$ .



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	PDA Phone
<b>MODEL NO.</b>	E6782
<b>POWER SUPPLY</b>	5.0Vdc (adapter or host equipment) 3.8Vdc (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 MCS7 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>	18.836mW for 5180 ~ 5240MHz 19.679mW for 5260 ~ 5320MHz 17.989mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	Monopole antenna with -1dBi gain (5180 ~ 5240MHz) Monopole antenna with -1dBi gain (5260 ~ 5320MHz) Monopole antenna with -1dBi 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



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**NOTE:**

1. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
Adapter	Kyocera	SCP-43ADT	I/P: 100-240Vac, 50/60Hz, 300mA O/P: 5Vdc, 1500mA
Battery	Kyocera	SCP-60LBPS	3.8Vdc, 3000Ah
USB Cable	Kyocera	SCP-15SDC	1.2m cable

2. The EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX
802.11ac (80MHz)	1TX

3. 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

#### WLAN 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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### WLAN 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



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### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE $<$ 1G	PLC	APCM	
-	√	√	√	√	-

Where **RE $\geq$ 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 **Z-plane**.

#### **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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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	MCS0
802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
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	MCS0
802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	MCS0
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	MCS0
802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	MCS0
802.11ac (80MHz)		106	106	OFDM	BPSK	V0

#### **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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (80MHz)	5500-5700	106	106	OFDM	BPSK	V0



**POWER LINE CONDUCTED EMISSION TEST:**

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11ac (80MHz)	5500-5700	106	106	OFDM	BPSK	V0

**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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	5180-5240	36 to 48	36, 48	OFDM	BPSK	6.0
802.11n (20MHz)		36 to 48	36, 48	OFDM	BPSK	MCS0
802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
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	MCS0
802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	MCS0
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	MCS0
802.11n (40MHz)		102 to 134	102, 134	OFDM	BPSK	MCS0
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.

MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
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	MCS0
802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	MCS0
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	MCS0
802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	MCS0
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	MCS0
802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	MCS0
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	Harry Hsueh
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Harry Hsueh
PLC	25deg. C, 65%RH	120Vac, 60Hz	Peter Weng
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

### 3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

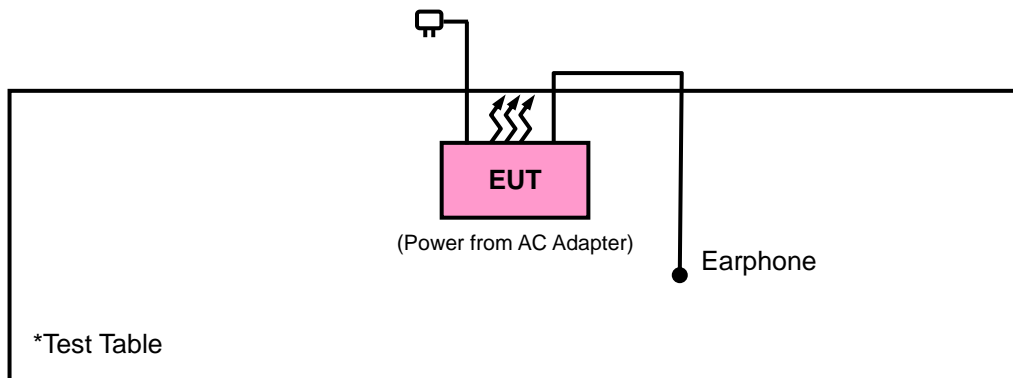
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Earphone	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

**NOTE:**

1. All power cords of the above support units are non shielded (1.8m).

#### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.4 DUTY CYCLE TEST SIGNAL

#### MODULATION TYPE: BPSK

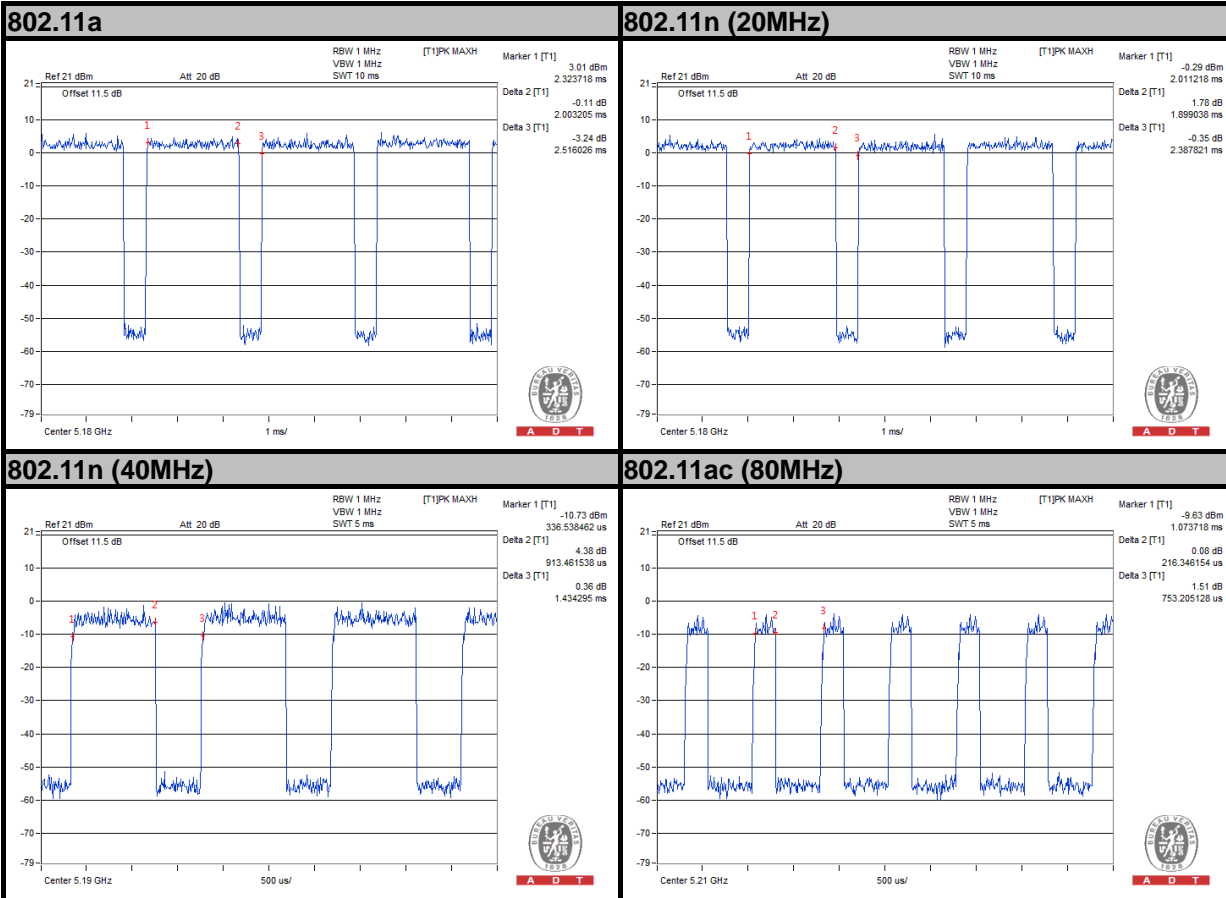
If duty cycle is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle = 2.003/2.516 = 0.796, Duty factor =  $10 * \log(1/0.796) = 0.99$

**802.11n (20MHz):** Duty cycle = 1.899/2.387 = 0.796, Duty factor =  $10 * \log(1/0.796) = 0.99$

**802.11n (40MHz):** Duty cycle = 0.913/1.434 = 0.637, Duty factor =  $10 * \log(1/0.637) = 1.96$

**802.11ac (80MHz):** Duty cycle = 0.216/0.753 = 0.287, Duty factor =  $10 * \log(1/0.287) = 5.42$





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### MODULATION TYPE: QPSK

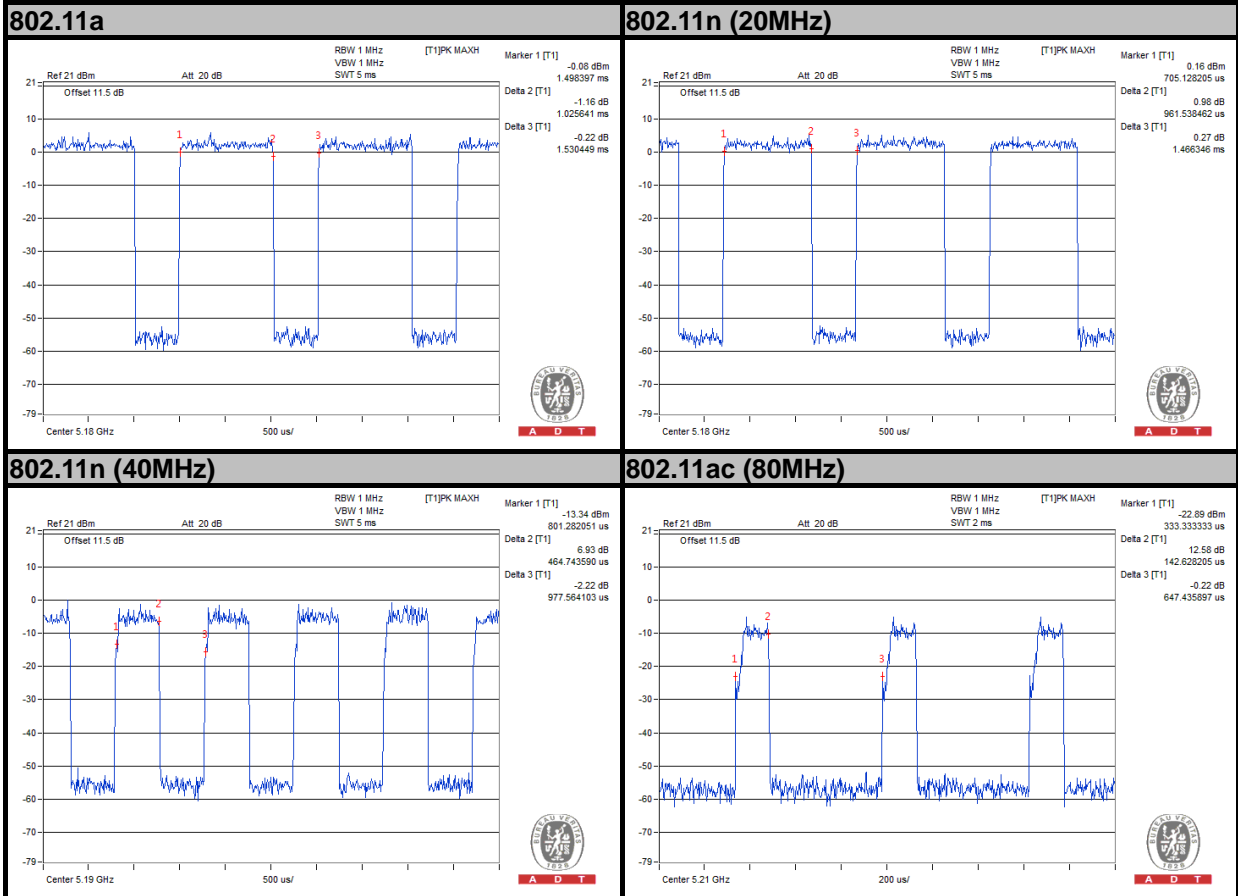
If duty cycle is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle = 1.025/1.53 = 0.67, Duty factor = 10 \* log(1/0.67) = 1.74

**802.11n (20MHz):** Duty cycle = 0.961/1.466 = 0.656, Duty factor = 10 \* log(1/0.656) = 1.83

**802.11n (40MHz):** Duty cycle = 0.464/0.977 = 0.475, Duty factor = 10 \* log(1/0.475) = 3.23

**802.11ac (80MHz):** Duty cycle = 0.142/0.647 = 0.219, Duty factor = 10 \* log(1/0.219) = 6.6







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### MODULATION TYPE: 16QAM

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

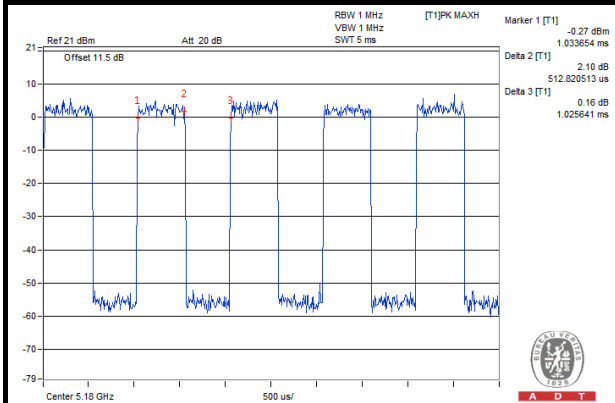
**802.11a:** Duty cycle =  $0.512/1.025 = 0.5$ , Duty factor =  $10 * \log(1/0.5) = 3.01$

**802.11n (20MHz):** Duty cycle =  $0.488/1.001 = 0.488$ , Duty factor =  $10 * \log(1/0.488) = 3.12$

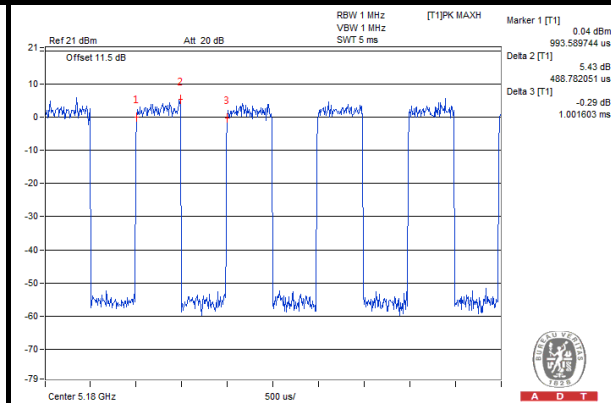
**802.11n (40MHz):** Duty cycle =  $0.24/0.753 = 0.319$ , Duty factor =  $10 * \log(1/0.319) = 4.96$

**802.11ac (80MHz):** Duty cycle =  $0.091/0.592 = 0.154$ , Duty factor =  $10 * \log(1/0.154) = 8.12$

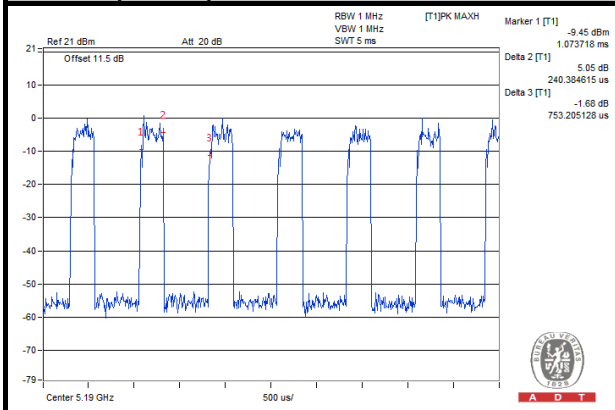
#### 802.11a



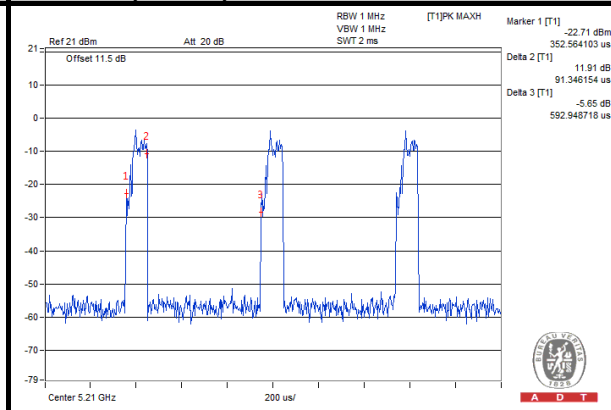
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)





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### MODULATION TYPE: 64QAM

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

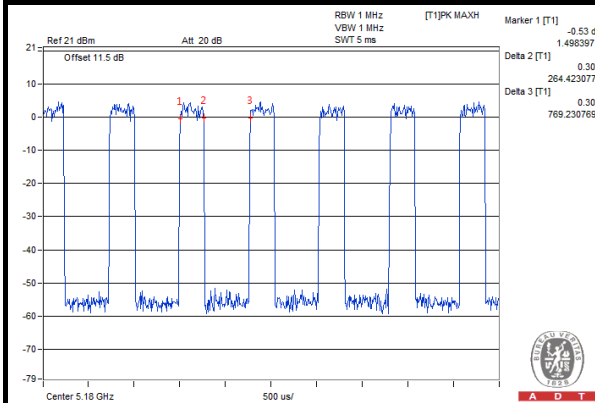
**802.11a:** Duty cycle =  $0.264/0.769 = 0.343$ , Duty factor =  $10 * \log(1/0.343) = 4.65$

**802.11n (20MHz):** Duty cycle =  $0.264/0.769 = 0.343$ , Duty factor =  $10 * \log(1/0.343) = 4.65$

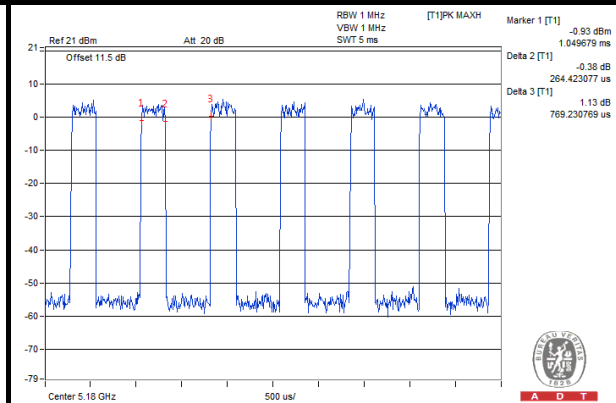
**802.11n (40MHz):** Duty cycle =  $0.144/0.649 = 0.222$ , Duty factor =  $10 * \log(1/0.222) = 6.54$

**802.11ac (80MHz):** Duty cycle =  $0.065/0.57 = 0.114$ , Duty factor =  $10 * \log(1/0.114) = 9.43$

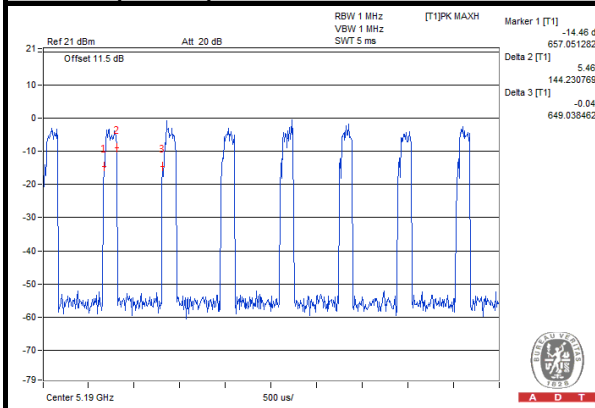
#### 802.11a



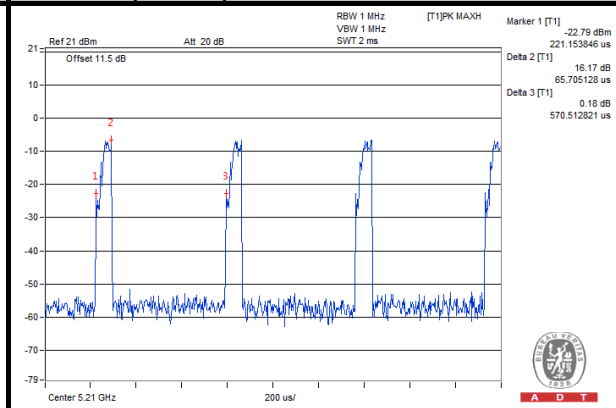
#### 802.11n (20MHz)



#### 802.11n (40MHz)



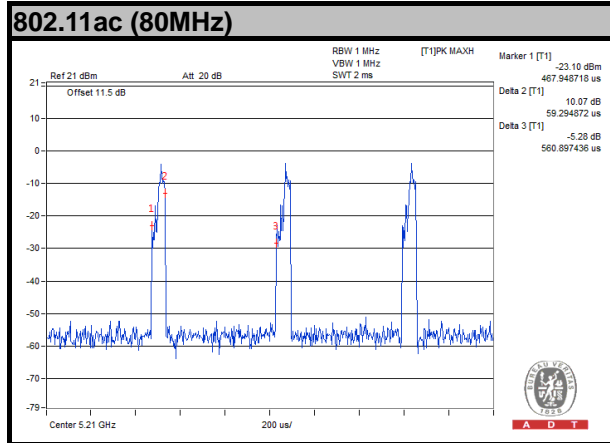
#### 802.11ac (80MHz)



**MODULATION TYPE: 256QAM**

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

**802.11ac (80MHz):** Duty cycle = 0.059/0.56 = 0.105, Duty factor =  $10 * \log(1/0.105) = 9.79$



### 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)**

**KDB 789033 D01 General UNII Test Procedures v01r03**

**ANSI C63.10-2009**

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



## 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:

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



### 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	FSU43	101261	Dec. 21, 2013	Dec. 20, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D- 209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 18, 2013	Dec. 17, 2014
Loop Antenna	3127-836	00099258	Aug. 09, 2013	Aug. 08, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 26, 2013	Dec. 25, 2014
Preamplifier EMCI	EMC 184045	980116	Jan. 13, 2014	Jan. 12, 2015
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2013	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:

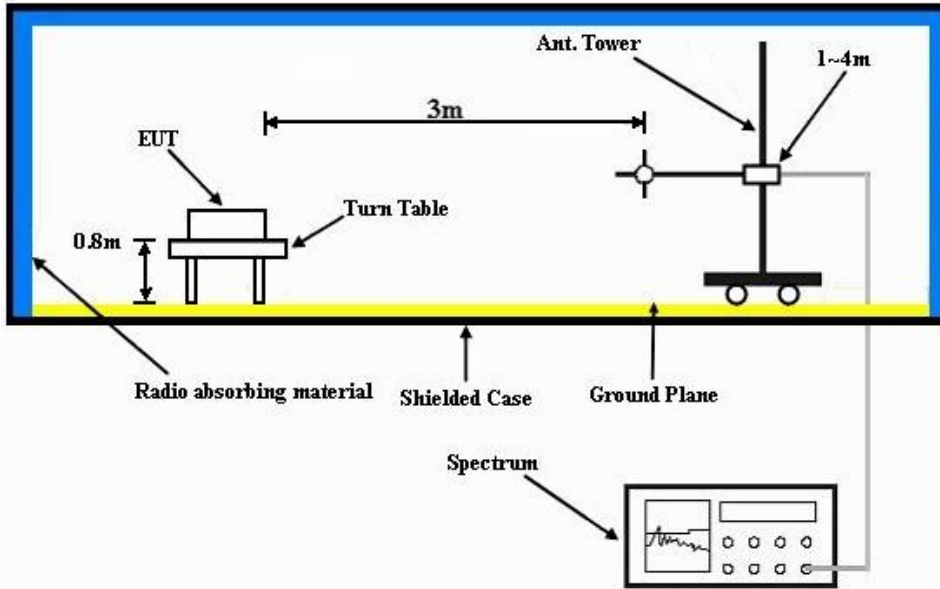
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency 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

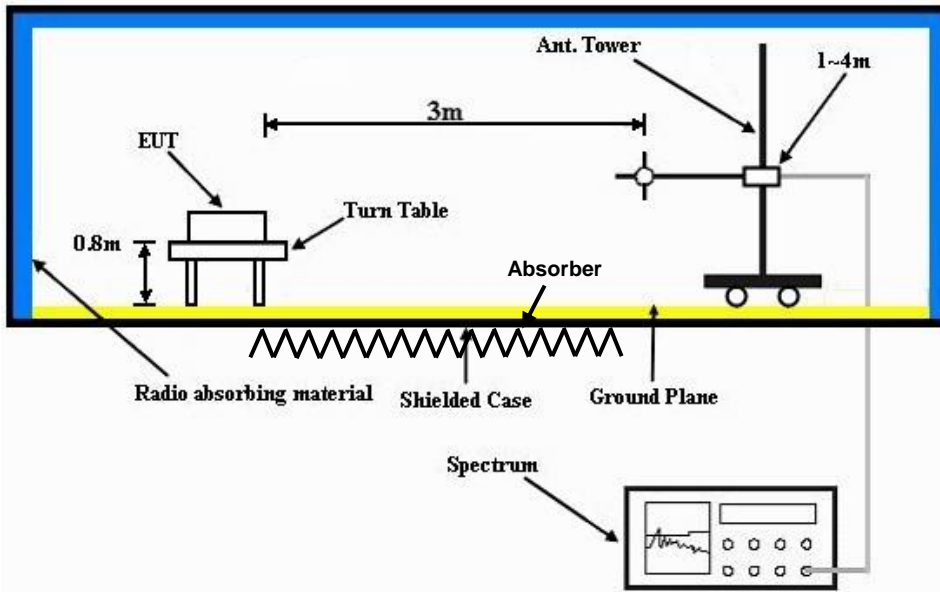
No deviation.

### 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).

### 4.1.7 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- 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

##### 802.11a

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

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	45.95	37.51	54	-8.05	34.42	8	33.98	109	270	Average
5042	59.29	50.85	74	-14.71	34.42	8	33.98	109	270	Peak
5180	96.12	87.49			34.47	8.16	34	109	270	Average
5180	103.68	95.05			34.47	8.16	34	109	270	Peak
5356	46.55	37.7	54	-7.45	34.5	8.38	34.03	109	270	Average
5356	59.18	50.33	74	-14.82	34.5	8.38	34.03	109	270	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
5072	47.98	39.5	54	-6.02	34.43	8.03	33.98	108	281	Average
5072	60	51.52	74	-14	34.43	8.03	33.98	108	281	Peak
5180	100.27	91.64			34.47	8.16	34	108	281	Average
5180	107	98.37			34.47	8.16	34	108	281	Peak
5350	47	38.15	54	-7	34.5	8.38	34.03	108	281	Average
5350	59.21	50.36	74	-14.79	34.5	8.38	34.03	108	281	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5038	44.53	36.08	54	-9.47	34.42	8	33.97	113	298	Average
5038	58.62	50.17	74	-15.38	34.42	8	33.97	113	298	Peak
5220	97.75	89.04			34.49	8.22	34	113	298	Average
5220	103.49	94.78			34.49	8.22	34	113	298	Peak
5424	44.23	35.29	54	-9.77	34.5	8.48	34.04	113	298	Average
5424	58.64	49.7	74	-15.36	34.5	8.48	34.04	113	298	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
5078	45.99	37.51	54	-8.01	34.43	8.03	33.98	109	290	Average
5078	59.15	50.67	74	-14.85	34.43	8.03	33.98	109	290	Peak
5220	99.81	91.1			34.49	8.22	34	109	290	Average
5220	106.83	98.12			34.49	8.22	34	109	290	Peak
5416	45.05	36.15	54	-8.95	34.5	8.44	34.04	109	290	Average
5416	59.77	50.87	74	-14.23	34.5	8.44	34.04	109	290	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5020	45.91	37.5	54	-8.09	34.41	7.97	33.97	113	302	Average
5020	58.54	50.13	74	-15.46	34.41	7.97	33.97	113	302	Peak
5240	97.91	89.17			34.49	8.26	34.01	113	302	Average
5240	104.96	96.22			34.49	8.26	34.01	113	302	Peak
5452	45.13	36.17	54	-8.87	34.5	8.51	34.05	113	302	Average
5452	59.24	50.28	74	-14.76	34.5	8.51	34.05	113	302	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
5134	46.15	37.56	54	-7.85	34.45	8.13	33.99	107	282	Average
5134	59.73	51.14	74	-14.27	34.45	8.13	33.99	107	282	Peak
5240	100.98	92.24			34.49	8.26	34.01	107	282	Average
5240	107.43	98.69			34.49	8.26	34.01	107	282	Peak
5452	44.26	35.3	54	-9.74	34.5	8.51	34.05	107	282	Average
5452	59.82	50.86	74	-14.18	34.5	8.51	34.05	107	282	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5122	45.39	37.19	54	-8.61	34.09	8.1	33.99	107	267	Average
5122	58.74	50.54	74	-15.26	34.09	8.1	33.99	107	267	Peak
5260	96.83	88.37			34.21	8.26	34.01	107	267	Average
5260	103.05	94.59			34.21	8.26	34.01	107	267	Peak
5378	44.82	36.14	54	-9.18	34.31	8.41	34.04	107	267	Average
5378	59.51	50.83	74	-14.49	34.31	8.41	34.04	107	267	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
5096	44.71	36.55	54	-9.29	34.08	8.07	33.99	109	285	Average
5096	59.22	51.06	74	-14.78	34.08	8.07	33.99	109	285	Peak
5260	101.04	92.58			34.21	8.26	34.01	109	285	Average
5260	107.73	99.27			34.21	8.26	34.01	109	285	Peak
5356	46.23	37.6	54	-7.77	34.28	8.38	34.03	109	285	Average
5356	59.02	50.39	74	-14.98	34.28	8.38	34.03	109	285	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	44.63	36.51	54	-9.37	34.07	8.03	33.98	105	267	Average
5076	58.4	50.28	74	-15.6	34.07	8.03	33.98	105	267	Peak
5300	96.08	87.54			34.24	8.32	34.02	105	267	Average
5300	103.78	95.24			34.24	8.32	34.02	105	267	Peak
5428	46.33	37.56	54	-7.67	34.33	8.48	34.04	105	267	Average
5428	59.25	50.48	74	-14.75	34.33	8.48	34.04	105	267	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
5048	45.57	37.51	54	-8.43	34.04	8	33.98	110	273	Average
5048	58.75	50.69	74	-15.25	34.04	8	33.98	110	273	Peak
5300	100.08	91.54			34.24	8.32	34.02	110	273	Average
5300	107.22	98.68			34.24	8.32	34.02	110	273	Peak
5446	44.97	36.14	54	-9.03	34.36	8.51	34.04	110	273	Average
5446	59.35	50.52	74	-14.65	34.36	8.51	34.04	110	273	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5036	45.59	37.53	54	-8.41	34.03	8	33.97	106	267	Average
5036	58.43	50.37	74	-15.57	34.03	8	33.97	106	267	Peak
5320	96.13	87.55			34.25	8.35	34.02	106	267	Average
5320	103.19	94.61			34.25	8.35	34.02	106	267	Peak
5374	45.23	36.57	54	-8.77	34.29	8.41	34.04	106	267	Average
5374	58.96	50.3	74	-15.04	34.29	8.41	34.04	106	267	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
5014	44.55	36.54	54	-9.45	34.01	7.97	33.97	106	285	Average
5014	58.7	50.69	74	-15.3	34.01	7.97	33.97	106	285	Peak
5320	101.73	93.15			34.25	8.35	34.02	106	285	Average
5320	108.6	100.02			34.25	8.35	34.02	106	285	Peak
5372	48.23	39.56	54	-5.77	34.29	8.41	34.03	106	285	Average
5372	60.56	51.89	74	-13.44	34.29	8.41	34.03	106	285	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5402	47.29	38.57	54	-6.71	34.32	8.44	34.04	108	298	Average
5402	60.01	51.29	74	-13.99	34.32	8.44	34.04	108	298	Peak
5470	58.97	50.14	68.3	-9.33	34.37	8.51	34.05	108	298	Peak
5500	96.56	87.64			34.4	8.57	34.05	108	298	Average
5500	104.21	95.29			34.4	8.57	34.05	108	298	Peak
5725	57.68	48.52	68.3	-10.62	34.62	8.65	34.11	108	298	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
5448	46.39	37.56	54	-7.61	34.36	8.51	34.04	100	320	Average
5448	59.46	50.63	74	-14.54	34.36	8.51	34.04	100	320	Peak
5470	57.89	49.06	68.3	-10.41	34.37	8.51	34.05	100	320	Peak
5500	100.73	91.81			34.4	8.57	34.05	100	320	Average
5500	107.43	98.51			34.4	8.57	34.05	100	320	Peak
5725	58.28	49.12	68.3	-10.02	34.62	8.65	34.11	100	320	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5358	45.79	37.16	54	-8.21	34.28	8.38	34.03	101	308	Average
5358	60.07	51.44	74	-13.93	34.28	8.38	34.03	101	308	Peak
5470	58.18	49.35	68.3	-10.12	34.37	8.51	34.05	101	308	Peak
5580	96.64	87.65			34.47	8.6	34.08	101	308	Average
5580	103.19	94.2			34.47	8.6	34.08	101	308	Peak
5725	57.9	48.74	68.3	-10.4	34.62	8.65	34.11	101	308	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
5390	45.25	36.57	54	-8.75	34.31	8.41	34.04	100	337	Average
5390	59.79	51.11	74	-14.21	34.31	8.41	34.04	100	337	Peak
5470	57.42	48.59	68.3	-10.88	34.37	8.51	34.05	100	337	Peak
5580	100.33	91.34			34.47	8.6	34.08	100	337	Average
5580	107.56	98.57			34.47	8.6	34.08	100	337	Peak
5725	57.01	47.85	68.3	-11.29	34.62	8.65	34.11	100	337	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5382	45.25	36.57	54	-8.75	34.31	8.41	34.04	107	269	Average
5382	59.58	50.9	74	-14.42	34.31	8.41	34.04	107	269	Peak
5470	56.98	48.15	68.3	-11.32	34.37	8.51	34.05	107	269	Peak
5700	95.76	86.63			34.59	8.64	34.1	107	269	Average
5700	102.85	93.72			34.59	8.64	34.1	107	269	Peak
5725	57.02	47.86	68.3	-11.28	34.62	8.65	34.11	107	269	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
5368	45.23	36.56	54	-8.77	34.29	8.41	34.03	100	326	Average
5368	60.19	51.52	74	-13.81	34.29	8.41	34.03	100	326	Peak
5470	58.58	49.75	68.3	-9.72	34.37	8.51	34.05	100	326	Peak
5700	98.43	89.3			34.59	8.64	34.1	100	326	Average
5700	105.91	96.78			34.59	8.64	34.1	100	326	Peak
5725	59.34	50.18	68.3	-8.96	34.62	8.65	34.11	100	326	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5070	48.66	40.18	54	-5.34	34.43	8.03	33.98	114	292	Average
5070	61.24	52.76	74	-12.76	34.43	8.03	33.98	114	292	Peak
5180	97.19	88.56			34.47	8.16	34	114	292	Average
5180	104.36	95.73			34.47	8.16	34	114	292	Peak
5442	45.01	36.07	54	-8.99	34.5	8.48	34.04	114	292	Average
5442	59.47	50.53	74	-14.53	34.5	8.48	34.04	114	292	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
5124	48.67	40.11	54	-5.33	34.45	8.1	33.99	109	284	Average
5124	59.93	51.37	74	-14.07	34.45	8.1	33.99	109	284	Peak
5180	100.27	91.64			34.47	8.16	34	109	284	Average
5180	107.82	99.19			34.47	8.16	34	109	284	Peak
5438	46.18	37.24	54	-7.82	34.5	8.48	34.04	109	284	Average
5438	59.18	50.24	74	-14.82	34.5	8.48	34.04	109	284	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5120	45.06	36.5	54	-8.94	34.45	8.1	33.99	104	300	Average
5120	58.51	49.95	74	-15.49	34.45	8.1	33.99	104	300	Peak
5220	96.93	88.22			34.49	8.22	34	104	300	Average
5220	103.51	94.8			34.49	8.22	34	104	300	Peak
5460	44.53	35.57	54	-9.47	34.5	8.51	34.05	104	300	Average
5460	59.04	50.08	74	-14.96	34.5	8.51	34.05	104	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
5100	45.03	36.51	54	-8.97	34.44	8.07	33.99	110	270	Average
5100	59.28	50.76	74	-14.72	34.44	8.07	33.99	110	270	Peak
5220	100.69	91.98			34.49	8.22	34	110	270	Average
5220	107.15	98.44			34.49	8.22	34	110	270	Peak
5372	46.13	37.25	54	-7.87	34.5	8.41	34.03	110	270	Average
5372	60	51.12	74	-14	34.5	8.41	34.03	110	270	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5150	45.79	37.2	54	-8.21	34.46	8.13	34	104	292	Average
5150	59.08	50.49	74	-14.92	34.46	8.13	34	104	292	Peak
5240	98.72	89.98			34.49	8.26	34.01	104	292	Average
5240	105.3	96.56			34.49	8.26	34.01	104	292	Peak
5450	45.15	36.19	54	-8.85	34.5	8.51	34.05	104	292	Average
5450	58.79	49.83	74	-15.21	34.5	8.51	34.05	104	292	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	44.73	36.2	54	-9.27	34.45	8.07	33.99	107	281	Average
5106	59.28	50.75	74	-14.72	34.45	8.07	33.99	107	281	Peak
5240	101.05	92.31			34.49	8.26	34.01	107	281	Average
5240	108	99.26			34.49	8.26	34.01	107	281	Peak
5418	45.1	36.2	54	-8.9	34.5	8.44	34.04	107	281	Average
5418	59.73	50.83	74	-14.27	34.5	8.44	34.04	107	281	Peak

**REMARKS:**

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



A D T

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

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
5078	44.63	36.51	54	-9.37	34.07	8.03	33.98	102	282	Average
5078	59.36	51.24	74	-14.64	34.07	8.03	33.98	102	282	Peak
5260	96.59	88.13			34.21	8.26	34.01	102	282	Average
5260	104.86	96.4			34.21	8.26	34.01	102	282	Peak
5438	45.36	36.57	54	-8.64	34.35	8.48	34.04	102	282	Average
5438	59.51	50.72	74	-14.49	34.35	8.48	34.04	102	282	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
5054	45.57	37.51	54	-8.43	34.04	8	33.98	111	268	Average
5054	58.92	50.86	74	-15.08	34.04	8	33.98	111	268	Peak
5260	100.03	91.57			34.21	8.26	34.01	111	268	Average
5260	107.62	99.16			34.21	8.26	34.01	111	268	Peak
5412	44.3	35.57	54	-9.7	34.33	8.44	34.04	111	268	Average
5412	60.2	51.47	74	-13.8	34.33	8.44	34.04	111	268	Peak

**REMARKS:**

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



A D T

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

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
5126	44.34	36.12	54	-9.66	34.11	8.1	33.99	112	298	Average
5126	59	50.78	74	-15	34.11	8.1	33.99	112	298	Peak
5300	96.68	88.14			34.24	8.32	34.02	112	298	Average
5300	104.35	95.81			34.24	8.32	34.02	112	298	Peak
5388	45.25	36.57	54	-8.75	34.31	8.41	34.04	112	298	Average
5388	59.03	50.35	74	-14.97	34.31	8.41	34.04	112	298	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	45.57	37.5	54	-8.43	34.04	8	33.97	109	267	Average
5040	59.51	51.44	74	-14.49	34.04	8	33.97	109	267	Peak
5300	99.53	90.99			34.24	8.32	34.02	109	267	Average
5300	107.16	98.62			34.24	8.32	34.02	109	267	Peak
5396	43.97	35.25	54	-10.03	34.32	8.44	34.04	109	267	Average
5396	58.84	50.12	74	-15.16	34.32	8.44	34.04	109	267	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5060	44.61	36.51	54	-9.39	34.05	8.03	33.98	109	298	Average
5060	58.41	50.31	74	-15.59	34.05	8.03	33.98	109	298	Peak
5320	95.87	87.29			34.25	8.35	34.02	109	298	Average
5320	103.32	94.74			34.25	8.35	34.02	109	298	Peak
5372	47.23	38.56	54	-6.77	34.29	8.41	34.03	109	298	Average
5372	60.09	51.42	74	-13.91	34.29	8.41	34.03	109	298	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
5018	44.5	36.49	54	-9.5	34.01	7.97	33.97	109	269	Average
5018	59	50.99	74	-15	34.01	7.97	33.97	109	269	Peak
5320	99.7	91.12			34.25	8.35	34.02	109	269	Average
5320	107.22	98.64			34.25	8.35	34.02	109	269	Peak
5372	47.23	38.56	54	-6.77	34.29	8.41	34.03	109	269	Average
5372	59.72	51.05	74	-14.28	34.29	8.41	34.03	109	269	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	46.39	37.56	54	-7.61	34.36	8.51	34.04	101	308	Average
5448	58.69	49.86	74	-15.31	34.36	8.51	34.04	101	308	Peak
5470	56.88	48.05	68.3	-11.42	34.37	8.51	34.05	101	308	Peak
5500	96.61	87.69			34.4	8.57	34.05	101	308	Average
5500	103.46	94.54			34.4	8.57	34.05	101	308	Peak
5725	57.09	47.93	68.3	-11.21	34.62	8.65	34.11	101	308	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
5422	46.33	37.56	54	-7.67	34.33	8.48	34.04	100	329	Average
5422	59.32	50.55	74	-14.68	34.33	8.48	34.04	100	329	Peak
5470	57.12	48.29	68.3	-11.18	34.37	8.51	34.05	100	329	Peak
5500	100.54	91.62			34.4	8.57	34.05	100	329	Average
5500	107.09	98.17			34.4	8.57	34.05	100	329	Peak
5725	58.05	48.89	68.3	-10.25	34.62	8.65	34.11	100	329	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5450	44.97	36.15	54	-9.03	34.36	8.51	34.05	100	311	Average
5450	58.9	50.08	74	-15.1	34.36	8.51	34.05	100	311	Peak
5470	57.81	48.98	68.3	-10.49	34.37	8.51	34.05	100	311	Peak
5580	96.32	87.33			34.47	8.6	34.08	100	311	Average
5580	103.2	94.21			34.47	8.6	34.08	100	311	Peak
5725	57.83	48.67	68.3	-10.47	34.62	8.65	34.11	100	311	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
5454	46.37	37.55	54	-7.63	34.36	8.51	34.05	100	344	Average
5454	58.79	49.97	74	-15.21	34.36	8.51	34.05	100	344	Peak
5470	57.46	48.63	68.3	-10.84	34.37	8.51	34.05	100	344	Peak
5580	100.55	91.56			34.47	8.6	34.08	100	344	Average
5580	107.16	98.17			34.47	8.6	34.08	100	344	Peak
5725	57.12	47.96	68.3	-11.18	34.62	8.65	34.11	100	344	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5390	46.25	37.57	54	-7.75	34.31	8.41	34.04	102	296	Average
5390	59.31	50.63	74	-14.69	34.31	8.41	34.04	102	296	Peak
5470	57.52	48.69	68.3	-10.78	34.37	8.51	34.05	102	296	Peak
5700	96.49	87.36			34.59	8.64	34.1	102	296	Average
5700	103.2	94.07			34.59	8.64	34.1	102	296	Peak
5725	57.44	48.28	68.3	-10.86	34.62	8.65	34.11	102	296	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
5356	45.19	36.56	54	-8.81	34.28	8.38	34.03	105	324	Average
5356	58.26	49.63	74	-15.74	34.28	8.38	34.03	105	324	Peak
5470	57.08	48.25	68.3	-11.22	34.37	8.51	34.05	105	324	Peak
5700	98.49	89.36			34.59	8.64	34.1	105	324	Average
5700	105.67	96.54			34.59	8.64	34.1	105	324	Peak
5725	58.51	49.35	68.3	-9.79	34.62	8.65	34.11	105	324	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 (40MHz)**

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

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	46.99	38.55	54	-7.01	34.42	8	33.98	104	292	Average
5044	59.2	50.76	74	-14.8	34.42	8	33.98	104	292	Peak
5190	94.63	85.97			34.47	8.19	34	104	292	Average
5190	101.33	92.67			34.47	8.19	34	104	292	Peak
5426	45.61	36.67	54	-8.39	34.5	8.48	34.04	104	292	Average
5426	58.73	49.79	74	-15.27	34.5	8.48	34.04	104	292	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
5148	48.47	39.88	54	-5.53	34.46	8.13	34	108	281	Average
5148	59.6	51.01	74	-14.4	34.46	8.13	34	108	281	Peak
5190	96.96	88.3			34.47	8.19	34	108	281	Average
5190	103.43	94.77			34.47	8.19	34	108	281	Peak
5420	45.49	36.55	54	-8.51	34.5	8.48	34.04	108	281	Average
5420	58.97	50.03	74	-15.03	34.5	8.48	34.04	108	281	Peak

**REMARKS:**

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



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

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
5122	44.75	36.55	54	-9.25	34.09	8.1	33.99	101	292	Average
5122	58.12	49.92	74	-15.88	34.09	8.1	33.99	101	292	Peak
5230	93.27	84.87			34.19	8.22	34.01	101	292	Average
5230	100.18	91.78			34.19	8.22	34.01	101	292	Peak
5448	46.09	37.26	54	-7.91	34.36	8.51	34.04	101	292	Average
5448	58.66	49.83	74	-15.34	34.36	8.51	34.04	101	292	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
5112	44.75	36.55	54	-9.25	34.09	8.1	33.99	107	354	Average
5112	58.69	50.49	74	-15.31	34.09	8.1	33.99	107	354	Peak
5230	95.49	87.09			34.19	8.22	34.01	107	354	Average
5230	102.03	93.63			34.19	8.22	34.01	107	354	Peak
5420	45.83	37.06	54	-8.17	34.33	8.48	34.04	107	354	Average
5420	59.48	50.71	74	-14.52	34.33	8.48	34.04	107	354	Peak

**REMARKS:**

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



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

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	45.61	37.51	54	-8.39	34.05	8.03	33.98	112	298	Average
5058	58.79	50.69	74	-15.21	34.05	8.03	33.98	112	298	Peak
5270	94.19	85.7			34.21	8.29	34.01	112	298	Average
5270	101.31	92.82			34.21	8.29	34.01	112	298	Peak
5454	44.99	36.17	54	-9.01	34.36	8.51	34.05	112	298	Average
5454	59.66	50.84	74	-14.34	34.36	8.51	34.05	112	298	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	43.47	35.22	54	-10.53	34.11	8.13	33.99	112	267	Average
5136	58.84	50.59	74	-15.16	34.11	8.13	33.99	112	267	Peak
5270	96.55	88.06			34.21	8.29	34.01	112	267	Average
5270	103.68	95.19			34.21	8.29	34.01	112	267	Peak
5380	43.58	34.9	54	-10.42	34.31	8.41	34.04	112	267	Average
5380	59.4	50.72	74	-14.6	34.31	8.41	34.04	112	267	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5102	44.67	36.51	54	-9.33	34.08	8.07	33.99	101	292	Average
5102	58.62	50.46	74	-15.38	34.08	8.07	33.99	101	292	Peak
5310	94.1	85.55			34.25	8.32	34.02	101	292	Average
5310	101.09	92.54			34.25	8.32	34.02	101	292	Peak
5452	44.39	35.57	54	-9.61	34.36	8.51	34.05	101	292	Average
5452	59.26	50.44	74	-14.74	34.36	8.51	34.05	101	292	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
5050	44.57	36.51	54	-9.43	34.04	8	33.98	100	266	Average
5050	60.14	52.08	74	-13.86	34.04	8	33.98	100	266	Peak
5310	96.67	88.12			34.25	8.32	34.02	100	266	Average
5310	104.67	96.12			34.25	8.32	34.02	100	266	Peak
5348	48.19	39.56	54	-5.81	34.28	8.38	34.03	100	266	Average
5348	62.17	53.54	74	-11.83	34.28	8.38	34.03	100	266	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
5440	46.03	37.24	54	-7.97	34.35	8.48	34.04	101	266	Average
5440	58.94	50.15	74	-15.06	34.35	8.48	34.04	101	266	Peak
5470	58.31	49.48	68.3	-9.99	34.37	8.51	34.05	101	266	Peak
5510	92.94	84.03			34.4	8.57	34.06	101	266	Average
5510	100.3	91.39			34.4	8.57	34.06	101	266	Peak
5725	57.46	48.3	68.3	-10.84	34.62	8.65	34.11	101	266	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
5402	45.33	36.61	54	-8.67	34.32	8.44	34.04	100	360	Average
5402	59.52	50.8	74	-14.48	34.32	8.44	34.04	100	360	Peak
5470	59.68	50.85	68.3	-8.62	34.37	8.51	34.05	100	360	Peak
5510	96.65	87.74			34.4	8.57	34.06	100	360	Average
5510	103.5	94.59			34.4	8.57	34.06	100	360	Peak
5725	57.48	48.32	68.3	-10.82	34.62	8.65	34.11	100	360	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



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

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
5374	45.23	36.57	54	-8.77	34.29	8.41	34.04	100	309	Average
5374	59.14	50.48	74	-14.86	34.29	8.41	34.04	100	309	Peak
5470	58.77	49.94	68.3	-9.53	34.37	8.51	34.05	100	309	Peak
5550	91.7	82.73			34.45	8.59	34.07	100	309	Average
5550	99.4	90.43			34.45	8.59	34.07	100	309	Peak
5725	58.18	49.02	68.3	-10.12	34.62	8.65	34.11	100	309	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
5456	45.02	36.2	54	-8.98	34.36	8.51	34.05	100	343	Average
5456	59.04	50.22	74	-14.96	34.36	8.51	34.05	100	343	Peak
5470	57.75	48.92	68.3	-10.55	34.37	8.51	34.05	100	343	Peak
5550	96.98	88.01			34.45	8.59	34.07	100	343	Average
5550	103.56	94.59			34.45	8.59	34.07	100	343	Peak
5725	57.94	48.78	68.3	-10.36	34.62	8.65	34.11	100	343	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



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

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
5432	44.97	36.18	54	-9.03	34.35	8.48	34.04	103	297	Average
5432	59.31	50.52	74	-14.69	34.35	8.48	34.04	103	297	Peak
5470	57.57	48.74	68.3	-10.73	34.37	8.51	34.05	103	297	Peak
5670	93.83	84.73			34.57	8.63	34.1	103	297	Average
5670	100.87	91.77			34.57	8.63	34.1	103	297	Peak
5725	59.55	50.39	68.3	-8.75	34.62	8.65	34.11	103	297	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
5380	44.82	36.14	54	-9.18	34.31	8.41	34.04	102	308	Average
5380	59.54	50.86	74	-14.46	34.31	8.41	34.04	102	308	Peak
5470	57.9	49.07	68.3	-10.4	34.37	8.51	34.05	102	308	Peak
5670	95.84	86.74			34.57	8.63	34.1	102	308	Average
5670	102.57	93.47			34.57	8.63	34.1	102	308	Peak
5725	57.28	48.12	68.3	-11.02	34.62	8.65	34.11	102	308	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





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**802.11ac (80MHz)**

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

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
5150	48.77	40.52	54	-5.23	34.12	8.13	34	104	292	Average
5150	59.51	51.26	74	-14.49	34.12	8.13	34	104	292	Peak
5210	90.22	81.86			34.17	8.19	34	104	292	Average
5210	97.54	89.18			34.17	8.19	34	104	292	Peak
5448	45.43	36.6	54	-8.57	34.36	8.51	34.04	104	292	Average
5448	59.59	50.76	74	-14.41	34.36	8.51	34.04	104	292	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	47.71	39.61	54	-6.29	34.05	8.03	33.98	107	356	Average
5056	58.74	50.64	74	-15.26	34.05	8.03	33.98	107	356	Peak
5210	91.63	83.27			34.17	8.19	34	107	356	Average
5210	99.82	91.46			34.17	8.19	34	107	356	Peak
5440	46.39	37.6	54	-7.61	34.35	8.48	34.04	107	356	Average
5440	59.31	50.52	74	-14.69	34.35	8.48	34.04	107	356	Peak

**REMARKS:**

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



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

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	44.57	36.51	54	-9.43	34.04	8	33.98	102	292	Average
5044	58.66	50.6	74	-15.34	34.04	8	33.98	102	292	Peak
5290	92.07	83.54			34.23	8.32	34.02	102	292	Average
5290	99.56	91.03			34.23	8.32	34.02	102	292	Peak
5414	46.44	37.71	54	-7.56	34.33	8.44	34.04	102	292	Average
5414	59.33	50.6	74	-14.67	34.33	8.44	34.04	102	292	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
5054	45.57	37.51	54	-8.43	34.04	8	33.98	100	266	Average
5054	58.71	50.65	74	-15.29	34.04	8	33.98	100	266	Peak
5290	93.27	84.74			34.23	8.32	34.02	100	266	Average
5290	101.8	93.27			34.23	8.32	34.02	100	266	Peak
5382	46.25	37.57	54	-7.75	34.31	8.41	34.04	100	266	Average
5382	59.53	50.85	74	-14.47	34.31	8.41	34.04	100	266	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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	45.35	36.56	54	-8.65	34.35	8.48	34.04	100	265	Average
5434	59.64	50.85	74	-14.36	34.35	8.48	34.04	100	265	Peak
5470	57.37	48.54	68.3	-10.93	34.37	8.51	34.05	100	265	Peak
5530	89.89	80.96			34.42	8.58	34.07	100	265	Average
5530	96.25	87.32			34.42	8.58	34.07	100	265	Peak
5725	57.93	48.77	68.3	-10.37	34.62	8.65	34.11	100	265	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	48.65	39.83	54	-5.35	34.36	8.51	34.05	100	331	Average
5458	60.15	51.33	74	-13.85	34.36	8.51	34.05	100	331	Peak
5470	63.08	54.25	68.3	-5.22	34.37	8.51	34.05	100	331	Peak
5530	93.7	84.77			34.42	8.58	34.07	100	331	Average
5530	100.71	91.78			34.42	8.58	34.07	100	331	Peak
5725	57.96	48.8	68.3	-10.34	34.62	8.65	34.11	100	331	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



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

**802.11ac (80MHz)**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 106	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Kay Wu

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
88.32	35.45	57.32	43.5	-8.05	8.83	1.11	31.81	166	125	Peak
143.67	31.13	52.41	43.5	-12.37	9.61	1.38	32.27	145	124	Peak
179.85	32.15	52.42	43.5	-11.35	10.36	1.61	32.24	175	330	Peak
320.3	34.03	49.09	46	-11.97	14.94	2.11	32.11	155	201	Peak
406.4	24.3	36.18	46	-21.7	17.99	2.34	32.21	123	125	Peak
563.9	19.94	29.12	46	-26.06	20.2	2.82	32.2	156	201	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
<b>79.68</b>	<b>35.87</b>	<b>58.58</b>	<b>40</b>	<b>-4.13</b>	<b>8.39</b>	<b>1.11</b>	<b>32.21</b>	<b>166</b>	<b>201</b>	<b>Peak</b>
143.67	26.17	47.45	43.5	-17.33	9.61	1.38	32.27	132	102	Peak
179.58	27.6	47.87	43.5	-15.9	10.36	1.61	32.24	155	102	Peak
365.1	24.99	38.51	46	-21.01	16.33	2.26	32.11	165	125	Peak
502.3	22.86	33.14	46	-23.14	19.19	2.63	32.1	145	124	Peak
643.7	23.69	30.75	46	-22.31	22.1	2.99	32.15	175	102	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

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. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 23, 2013	Dec. 22, 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

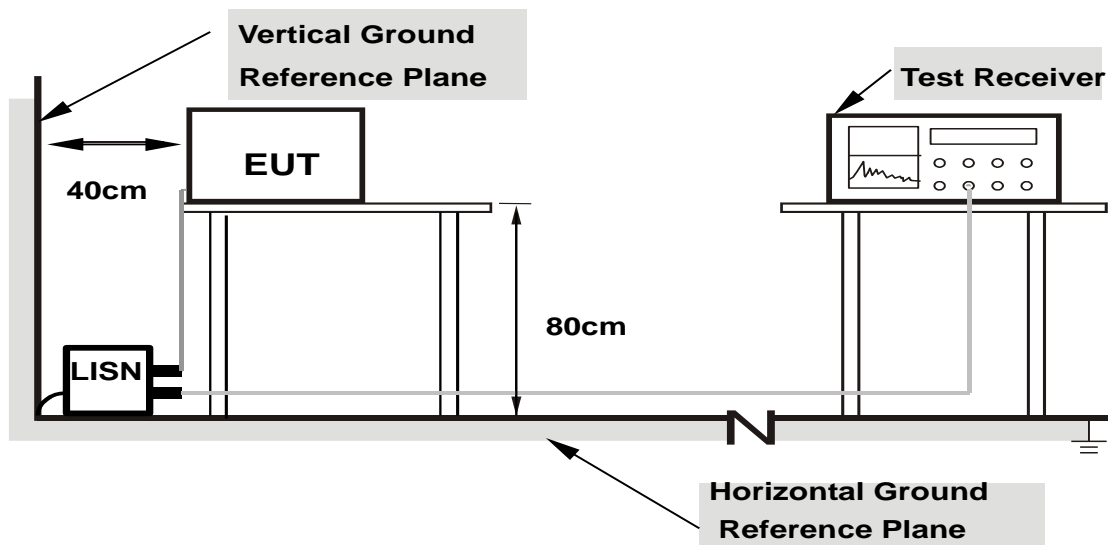
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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

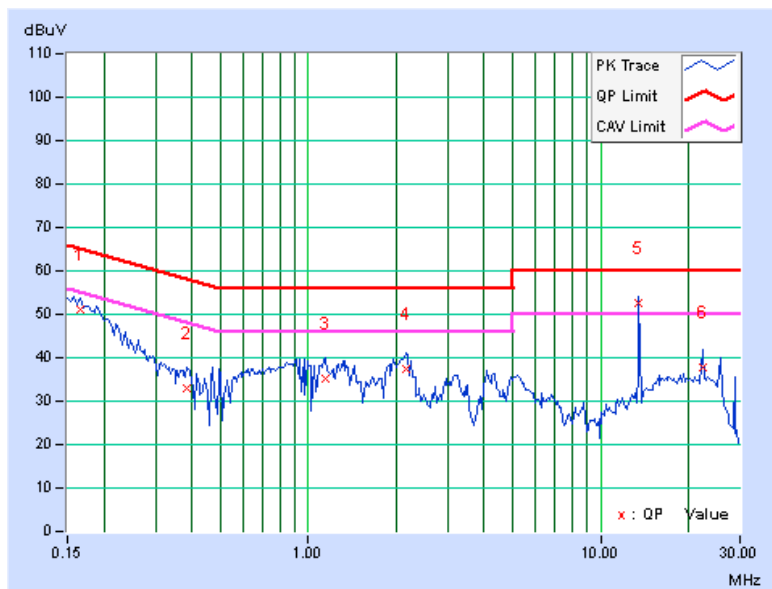
#### CONDUCTED WORST-CASE DATA :

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.27	50.85	34.55	51.12	34.82	65.18	55.18	-14.06	-20.36
2	0.38438	0.30	32.71	22.43	33.01	22.73	58.18	48.18	-25.18	-25.46
3	1.14453	0.34	34.89	24.42	35.23	24.76	56.00	46.00	-20.77	-21.24
4	2.15625	0.37	36.99	26.30	37.36	26.67	56.00	46.00	-18.64	-19.33
<b>5</b>	<b>13.55859</b>	<b>0.52</b>	<b>52.12</b>	<b>48.20</b>	<b>52.64</b>	<b>48.72</b>	<b>60.00</b>	<b>50.00</b>	<b>-7.36</b>	<b>-1.28</b>
6	22.39844	0.56	37.26	30.95	37.82	31.51	60.00	50.00	-22.18	-18.49

#### 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

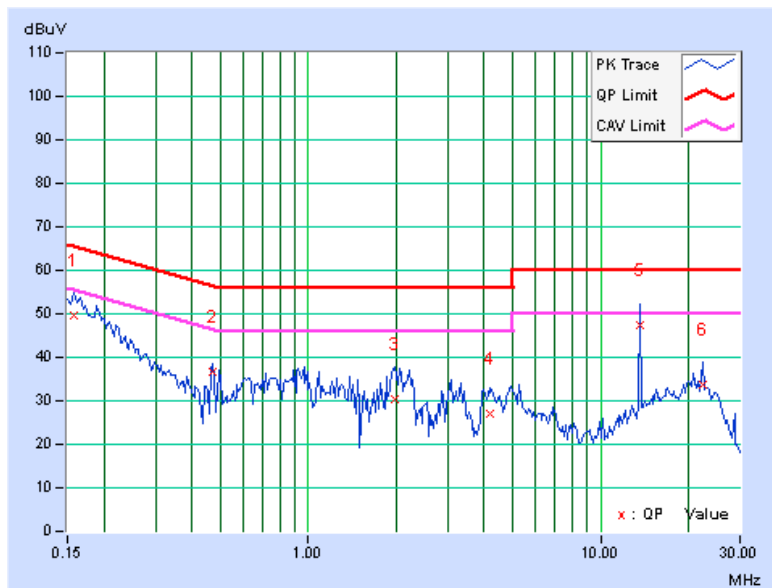


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

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	0.15781	0.27	49.40	33.53	49.67	33.80	65.58
2	0.47031	0.30	36.25	29.53	36.55	29.83	56.51	46.51	-19.95	-16.67
3	1.98438	0.37	29.95	19.31	30.32	19.68	56.00	46.00	-25.68	-26.32
4	4.16406	0.44	26.45	15.71	26.89	16.15	56.00	46.00	-29.11	-29.85
5	13.56250	0.55	46.84	41.86	47.39	42.41	60.00	50.00	-12.61	-7.59
6	22.40234	0.60	33.09	24.73	33.69	25.33	60.00	50.00	-26.31	-24.67

**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

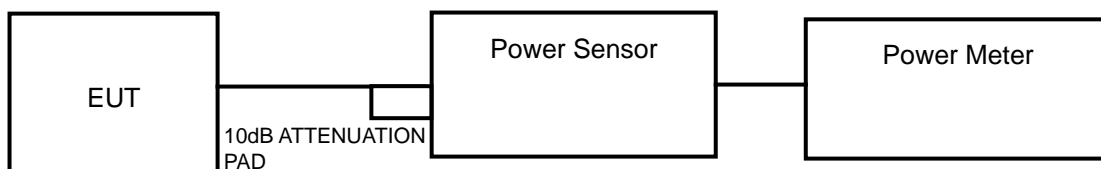
#### 4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

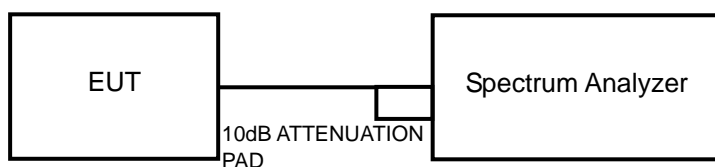
**NOTE:** Where B is the 26dB emission bandwidth in MHz.

#### 4.3.2 TEST SETUP

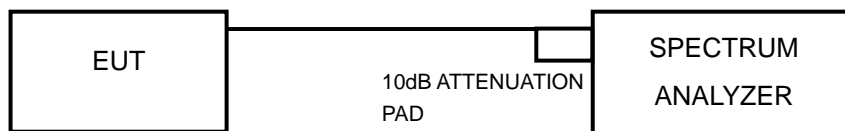
##### FOR POWER OUTPUT MEASUREMENT



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**

##### **FOR AVERAGE POWER MEASUREMENT**

<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.



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### 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	18.836	12.75	17	PASS
44	5220	17.783	12.50	17	PASS
48	5240	18.621	12.70	17	PASS
52	5260	18.750	12.73	24	PASS
60	5300	17.865	12.52	24	PASS
64	5320	19.588	12.92	24	PASS
100	5500	17.989	12.55	24	PASS
116	5580	17.824	12.51	24	PASS
140	5700	17.179	12.35	24	PASS

##### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	18.365	12.64	17	PASS
44	5220	17.865	12.52	17	PASS
48	5240	18.707	12.72	17	PASS
52	5260	18.450	12.66	24	PASS
60	5300	17.824	12.51	24	PASS
64	5320	19.679	12.94	24	PASS
100	5500	17.906	12.53	24	PASS
116	5580	17.701	12.48	24	PASS
140	5700	17.620	12.46	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	14.421	11.59	17	PASS
46	5230	14.060	11.48	17	PASS
54	5270	14.689	11.67	24	PASS
62	5310	16.444	12.16	24	PASS
102	5510	16.368	12.14	24	PASS
110	5550	15.740	11.97	24	PASS
134	5670	15.276	11.84	24	PASS

### 802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
42	5210	10.864	10.36	17	PASS
58	5290	12.706	11.04	24	PASS
106	5530	13.932	11.44	24	PASS



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## 26dB BANDWIDTH

### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	22.51	PASS
44	5220	22.40	PASS
48	5240	22.65	PASS
52	5260	22.62	PASS
60	5300	22.31	PASS
64	5320	22.57	PASS
100	5500	22.48	PASS
116	5580	22.57	PASS
140	5700	22.58	PASS

### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	22.88	PASS
44	5220	23.02	PASS
48	5240	22.69	PASS
52	5260	22.88	PASS
60	5300	22.78	PASS
64	5320	23.13	PASS
100	5500	22.84	PASS
116	5580	22.63	PASS
140	5700	23.00	PASS

### 802.11n (40MHz)

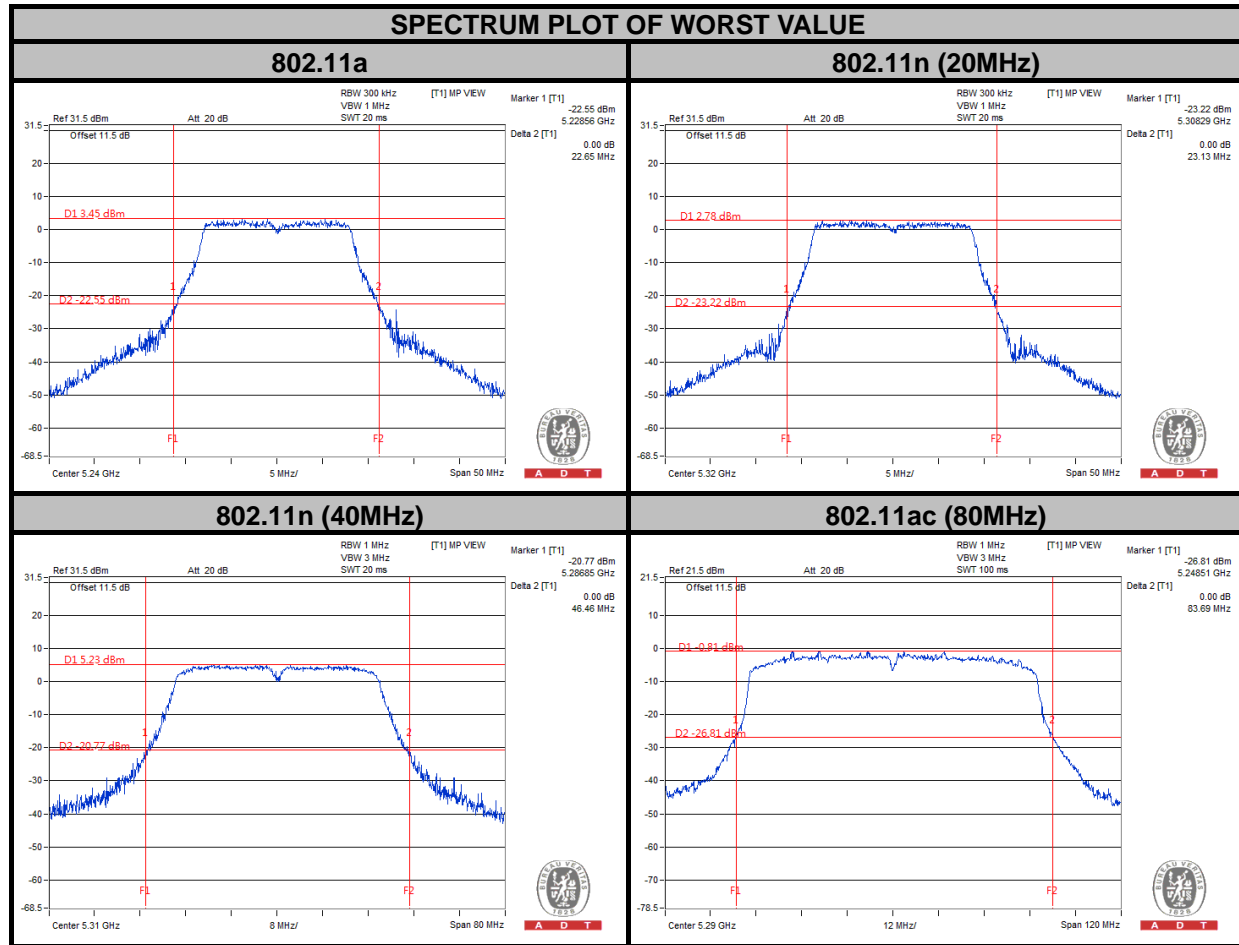
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
38	5190	45.12	PASS
46	5230	46.06	PASS
54	5270	45.78	PASS
62	5310	46.46	PASS
102	5510	44.74	PASS
110	5550	45.34	PASS
134	5670	45.44	PASS



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802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
42	5210	83.27	PASS
58	5290	83.69	PASS
106	5530	83.05	PASS

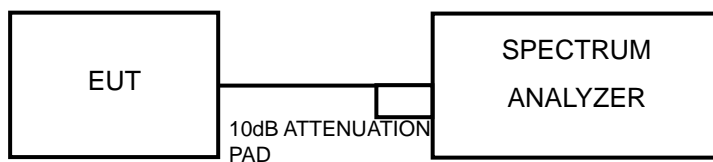


## 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 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), 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/duty cycle)

<802.11ac (80MHz)>

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.

### 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 W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	-0.94	0.99	0.05	4	PASS
44	5220	-1.55	0.99	-0.56	4	PASS
48	5240	-0.64	0.99	0.35	4	PASS
52	5260	-0.86	0.99	0.13	11	PASS
60	5300	-0.93	0.99	0.06	11	PASS
64	5320	-0.44	0.99	0.55	11	PASS
100	5500	-0.49	0.99	0.50	11	PASS
116	5580	-0.50	0.99	0.49	11	PASS
140	5700	-1.34	0.99	-0.35	11	PASS

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

#### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	-0.92	0.99	0.07	4	PASS
44	5220	-1.62	0.99	-0.63	4	PASS
48	5240	-0.78	0.99	0.21	4	PASS
52	5260	-1.43	0.99	-0.44	11	PASS
60	5300	-1.00	0.99	-0.01	11	PASS
64	5320	-0.67	0.99	0.32	11	PASS
100	5500	-0.63	0.99	0.36	11	PASS
116	5580	-0.81	0.99	0.18	11	PASS
140	5700	-1.58	0.99	-0.59	11	PASS

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





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### 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	-5.76	1.96	-3.80	4	PASS
46	5230	-5.74	1.96	-3.78	4	PASS
54	5270	-5.25	1.96	-3.29	11	PASS
62	5310	-5.65	1.96	-3.69	11	PASS
102	5510	-4.66	1.96	-2.70	11	PASS
110	5550	-4.57	1.96	-2.61	11	PASS
134	5670	-5.52	1.96	-3.56	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	-8.90	5.42	-3.48	4	PASS
58	5290	-8.49	5.42	-3.07	11	PASS
106	5530	-7.43	5.42	-2.01	11	PASS

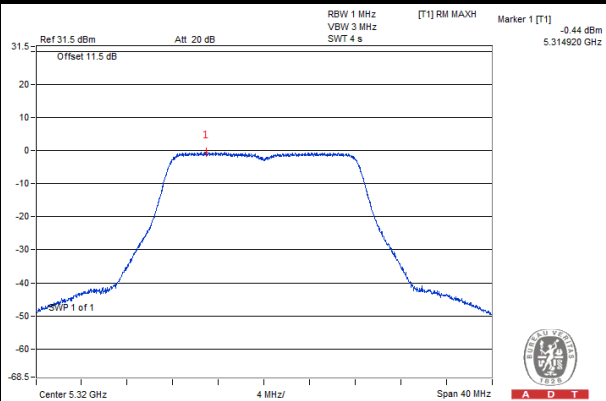
**NOTE:** Refer to section 3.3 for duty cycle spectrum plot.



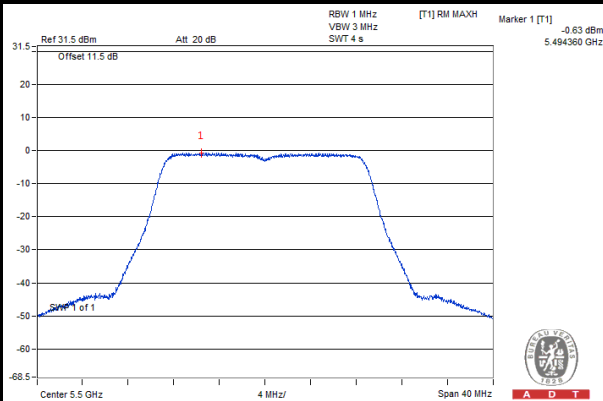
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### SPECTRUM PLOT OF WORST VALUE

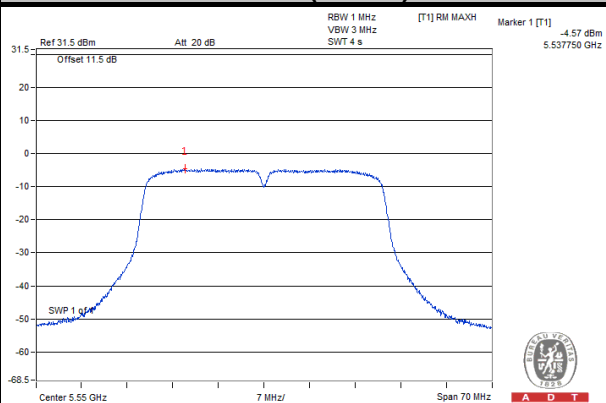
#### 802.11a



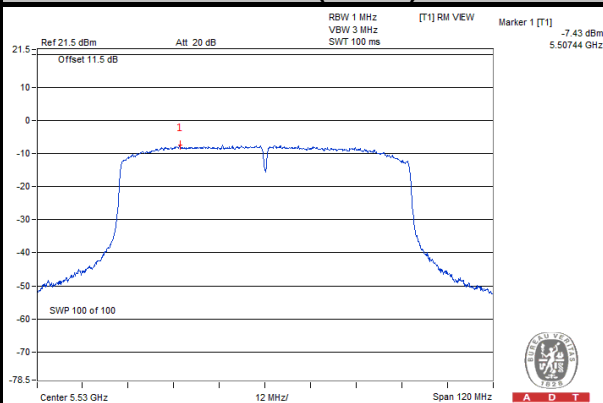
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)

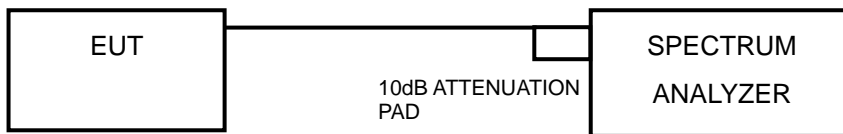


## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 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

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

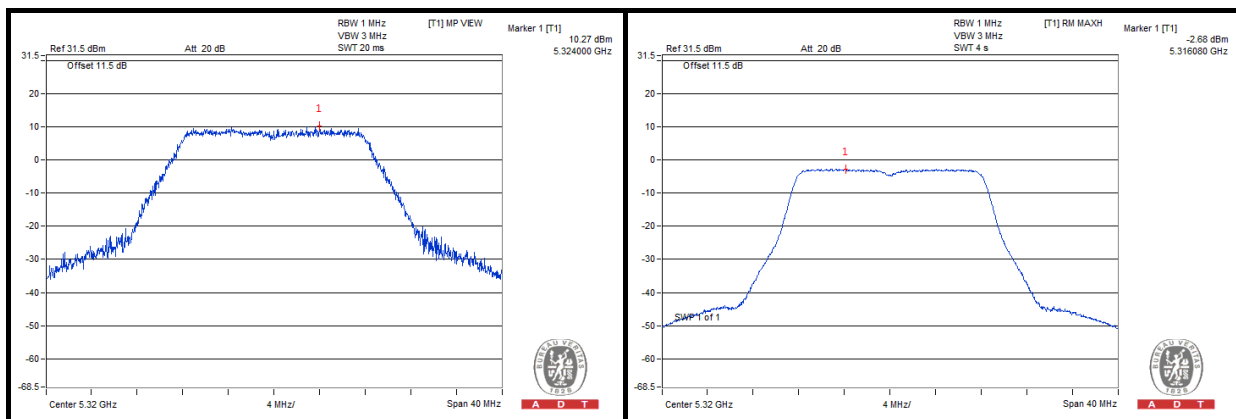


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### 4.5.7 TEST RESULTS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS/FAIL
802.11a	BPSK	5320	10.29	-0.44	0.55	9.74	13	PASS
	QPSK		9.21	-0.96	0.78	8.43	13	PASS
	16QAM		10.27	-2.68	0.33	9.94	13	PASS
	64QAM		10.09	-4.25	0.39	9.70	13	PASS
802.11n (20MHz)	BPSK	5320	8.72	-0.67	0.32	8.40	13	PASS
	QPSK		10.03	-1.41	0.42	9.61	13	PASS
	16QAM		9.21	-3.13	-0.01	9.22	13	PASS
	64QAM		10.49	-4.01	0.63	9.86	13	PASS
802.11n (40MHz)	BPSK	5310	5.26	-5.65	-3.69	8.95	13	PASS
	QPSK		6.51	-6.47	-3.24	9.75	13	PASS
	16QAM		6.23	-8.00	-3.04	9.27	13	PASS
	64QAM		6.34	-9.35	-2.82	9.16	13	PASS
802.11ac (80MHz)	BPSK	5530	0.40	-7.43	-2.01	2.41	13	PASS
	QPSK		0.50	-7.52	-0.95	1.45	13	PASS
	16QAM		0.36	-7.14	0.98	-0.62	13	PASS
	64QAM		0.19	-7.77	0.35	-0.16	13	PASS
	256QAM		0.49	-7.92	1.47	-0.98	13	PASS

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

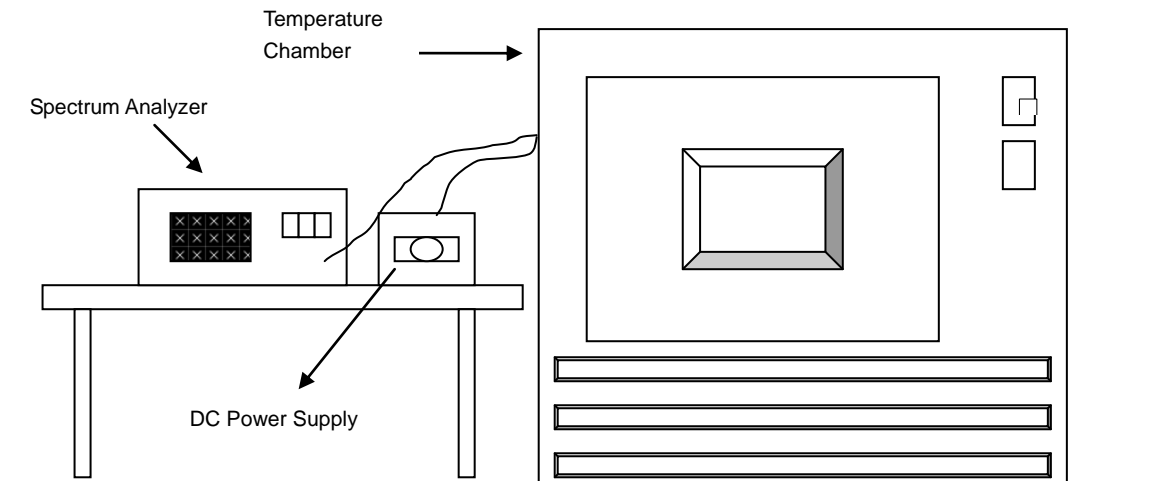


## 4.6 FREQUENCY STABILITY

### 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

- 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.
- 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.
- 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.



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#### 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	5320.041108	7.727	5320.041647	7.828	5320.041123	7.730	5320.041185	7.742
40	3.8	5320.041943	7.884	5320.041895	7.875	5320.041826	7.862	5320.042315	7.954
30	3.8	5320.043006	8.084	5320.043404	8.159	5320.042981	8.079	5320.042992	8.081
20	3.8	5320.043769	8.227	5320.044037	8.278	5320.044474	8.360	5320.044021	8.275
10	3.8	5320.045438	8.541	5320.045820	8.613	5320.045842	8.617	5320.045154	8.488
0	3.8	5320.044162	8.301	5320.044145	8.298	5320.044182	8.305	5320.044538	8.372
-10	3.8	5320.042615	8.010	5320.042687	8.024	5320.042662	8.019	5320.042870	8.058
-20	3.8	5320.042476	7.984	5320.041890	7.874	5320.042476	7.984	5320.041729	7.844
-30	3.8	5320.040983	7.704	5320.041219	7.748	5320.040949	7.697	5320.040719	7.654

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	3.4	5320.043783	8.230	5320.043450	8.167	5320.043559	8.188	5320.043441	8.166
	3.8	5320.043769	8.227	5320.044037	8.278	5320.044474	8.360	5320.044021	8.275
	4.35	5320.045605	8.572	5320.045006	8.460	5320.045176	8.492	5320.045125	8.482



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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:

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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.

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