



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF150311C27-8  
**MODEL NAME:** HTV31  
**FCC ID:** NM8HTV31  
**RECEIVED:** Mar. 11, 2015  
**TESTED:** Mar. 16, 2015 ~ Mar. 31, 2015  
**ISSUED:** Apr. 14, 2015

**APPLICANT:** HTC Corporation

**ADDRESS:** 1F, 6-3 Baoqiang Road, Xindian District, New Taipei City, Taiwan 231

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

**LAB ADDRESS:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan ( R.O.C )

**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 333, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD


ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150311C27-8	Original release	Apr. 14, 2015

## 1. CERTIFICATION

**PRODUCT:** Smartphone  
**MODEL:** HTV31  
**BRAND:** HTC  
**APPLICANT:** HTC Corporation  
**TESTED:** Mar. 16, 2015 ~ Mar. 31, 2015  
**TEST SAMPLE:** Identical Prototype  
**STANDARDS:** **FCC Part 15, Subpart E (Section 15.407)**  
ANSI C63.10-2013

The above equipment (model: HTV31) 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** :  , **DATE** : Apr. 14, 2015  
Ivonne Wu / Supervisor

**APPROVED BY** :  , **DATE** : Apr. 14, 2015  
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 -11.88dB at 0.49766MHz.
15.407(b/1/2/3) (b)(6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.8dB at 5725.00MHz.
15.407(a/1/2/3)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(e)	6dB bandwidth	PASS	Meet the requirement of limit. (U-NII-3 Band only)
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 NAME</b>	HTV31
<b>POWER SUPPLY</b>	5.0Vdc (adapter or host equipment) 3.83Vdc (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 MCS7 802.11ac: up to V9
<b>OPERATING FREQUENCY</b>	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz, 5745 ~ 5825MHz
<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: 11 for 802.11a, 802.11n (20MHz) 5 for 802.11n (40MHz) 2 for 802.11ac (80MHz) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 1 for 802.11ac (80MHz)
<b>OUTPUT POWER</b>	38.55mW for 5180 ~ 5240MHz 42.85mW for 5260 ~ 5320MHz 42.17mW for 5500 ~ 5700MHz 40.83mW for 5745 ~ 5825MHz
<b>ANTENNA TYPE</b>	PIFA antenna with -1.3dBi gain (5180 ~ 5240MHz) PIFA antenna with -0.8dBi gain (5260 ~ 5320MHz) PIFA antenna with -0.7dBi gain (5500 ~ 5700MHz) PIFA antenna with -0.8dBi gain (5745 ~ 5825MHz)
<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:**

1. The EUT's accessories list refers to Ext. Pho.
2. 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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500MHz	124	5620MHz
104	5520MHz	128	5640MHz
108	5540MHz	132	5660MHz
112	5560MHz	136	5680MHz
116	5580MHz	140	5700MHz
120	5600MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510MHz	126	5630MHz
110	5550MHz	134	5670MHz
118	5590MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530MHz	122	5610MHz

### FOR 5.0GHz (5745 ~ 5825MHz):

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz

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

CHANNEL	FREQUENCY
155	5775MHz



### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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 **X-plane** for 5180~5240MHz, and **Y-plane** for 5260~5320MHz & 5500-5700MHz & 5745~5825MHz.

#### 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)
-	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
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0
	802.11ac (80MHz)		155	155	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.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (40MHz)	5180-5240	38 to 46	38	OFDM	BPSK	MCS0
-	802.11n (20MHz)	5260-5320	52 to 64	64	OFDM	BPSK	MCS0
-	802.11a	5500-5700	100 to 140	140	OFDM	BPSK	6.0
-	802.11n (20MHz)	5745-5825	149 to 161	149	OFDM	BPSK	MCS0

**POWER LINE CONDUCTED EMISSION TEST:**

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11a	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)
-	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
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0
	802.11ac (80MHz)		155	155	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)
-	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
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.0
	802.11n (20MHz)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
	802.11n (40MHz)		151 to 159	151, 159	OFDM	BPSK	MCS0
	802.11ac (80MHz)		155	155	OFDM	BPSK	V0

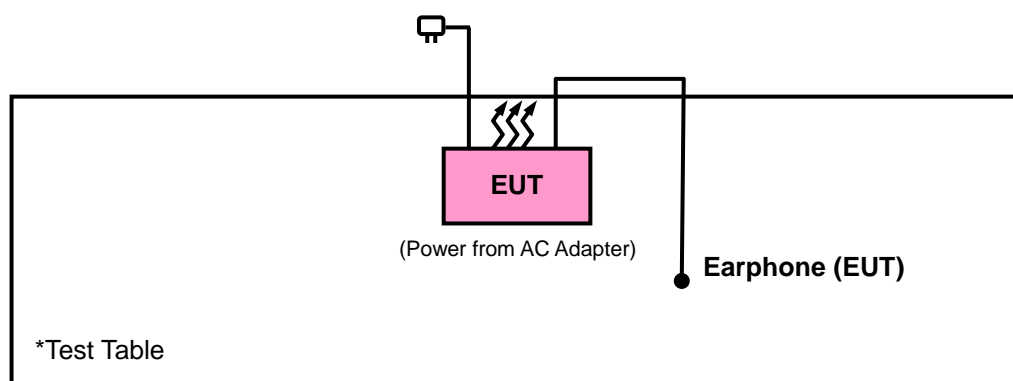
**TEST CONDITION:**

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	Toby Tien
APCM	25deg. C, 65%RH	120Vac, 60Hz	Dylan Yang

### 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

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

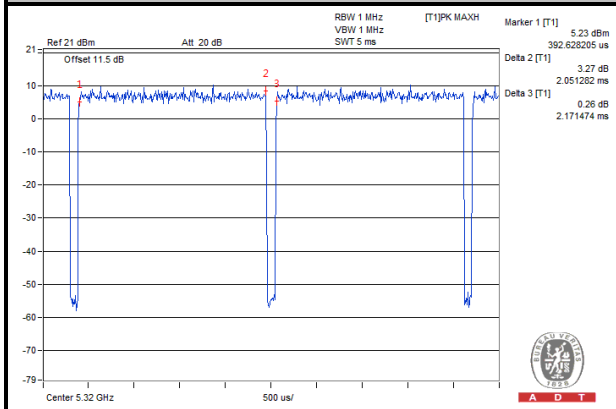
**802.11a:** Duty cycle = 2.051/2.171 = 0.945, Duty factor =  $10 * \log(1/0.945) = 0.25$

**802.11n (20MHz):** Duty cycle = 1.915/2.035 = 0.941, Duty factor =  $10 * \log(1/0.941) = 0.26$

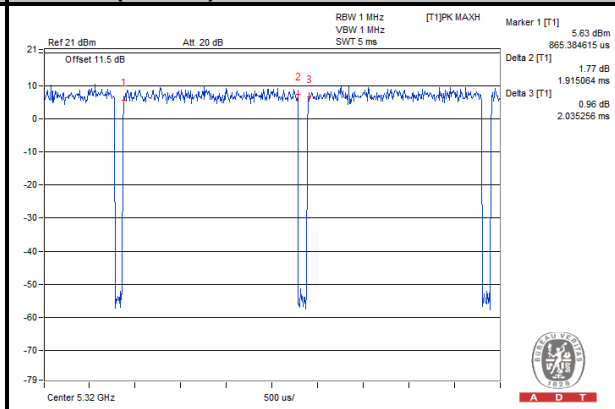
**802.11n (40MHz):** Duty cycle = 913.46/1049.68 = 0.870, Duty factor =  $10 * \log(1/0.870) = 0.60$

**802.11ac (80MHz):** Duty cycle = 435.90/560.90 = 0.777, Duty factor =  $10 * \log(1/0.777) = 1.10$

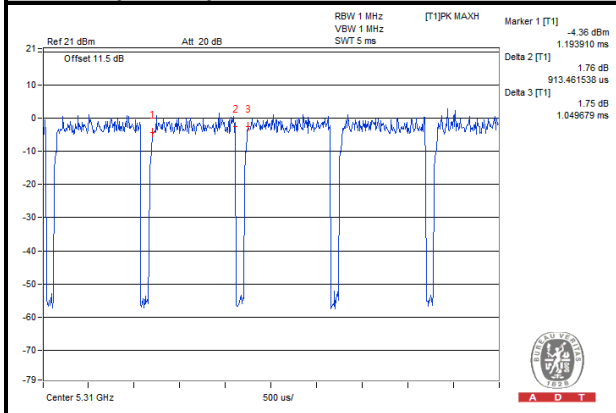
**802.11a**



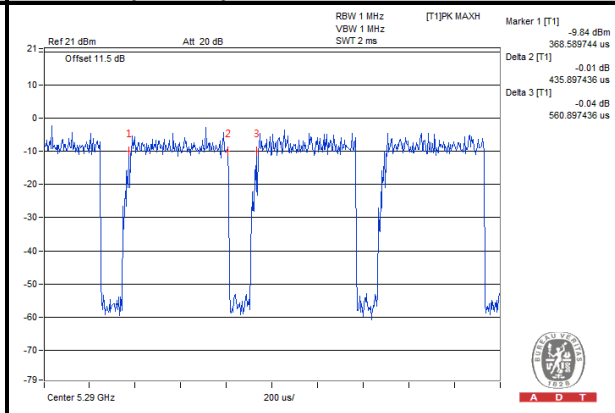
**802.11n (20MHz)**



**802.11n (40MHz)**



**802.11ac (80MHz)**



**MODULATION TYPE: QPSK**

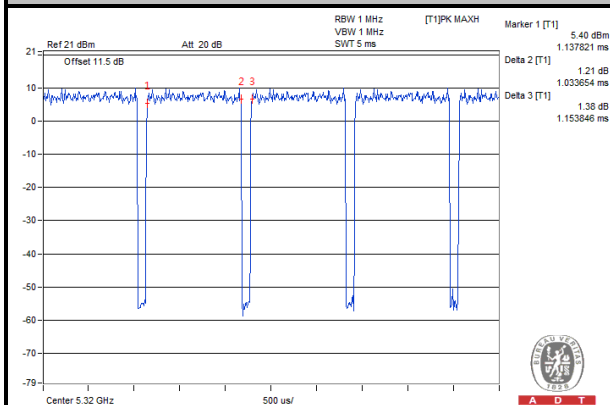
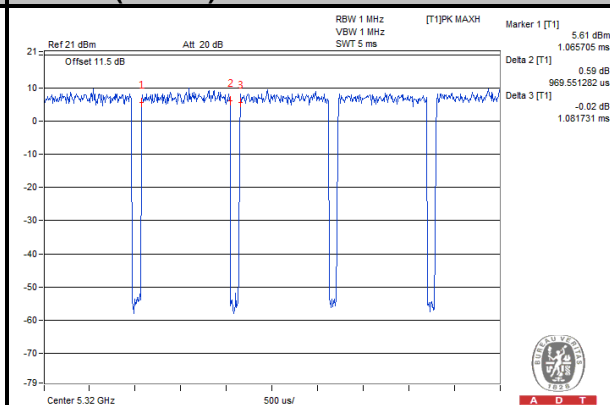
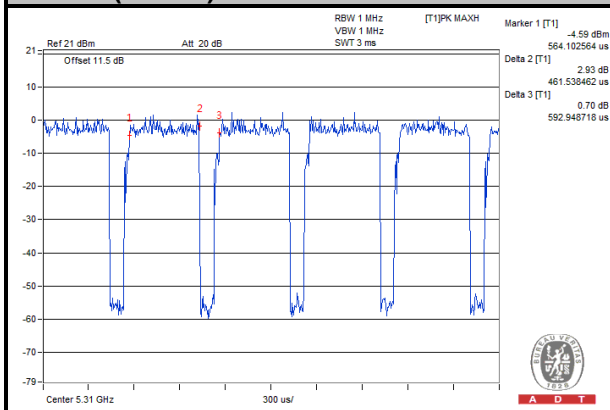
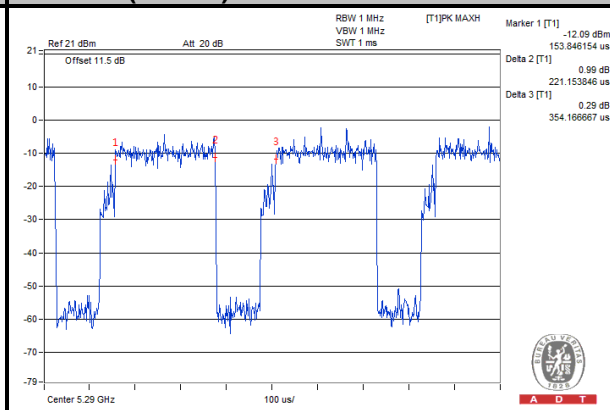
If duty cycle is < 98%, duty factor shall be considered.

**802.11a:** Duty cycle = 1.034/1.154 = 0.896, Duty factor =  $10 \cdot \log(1/0.896) = 0.48$

**802.11n (20MHz):** Duty cycle = 969.55/1081.73 = 0.896, Duty factor =  $10 \cdot \log(1/0.896) = 0.48$

**802.11n (40MHz):** Duty cycle = 461.54/592.95 = 0.778, Duty factor =  $10 \cdot \log(1/0.778) = 1.09$

**802.11ac (80MHz):** Duty cycle = 221.15/354.17 = 0.624, Duty factor =  $10 \cdot \log(1/0.624) = 2.05$

**802.11a**

**802.11n (20MHz)**

**802.11n (40MHz)**

**802.11ac (80MHz)**




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### MODULATION TYPE: 16QAM

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

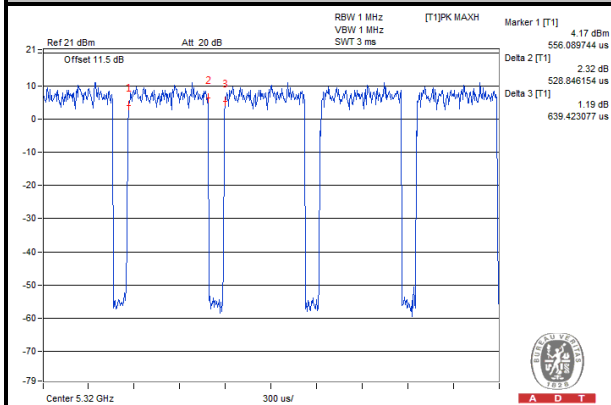
**802.11a:** Duty cycle = 528.85/639.42 = 0.827, Duty factor =  $10 * \log(1/0.827) = 0.82$

**802.11n (20MHz):** Duty cycle = 508.01/615.38 = 0.826, Duty factor =  $10 * \log(1/0.826) = 0.83$

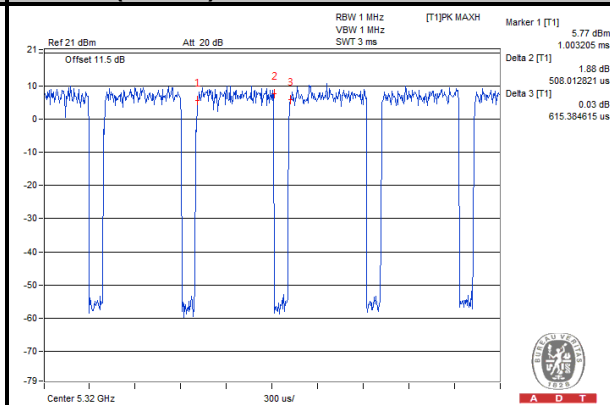
**802.11n (40MHz):** Duty cycle = 230.77/366.99 = 0.629, Duty factor =  $10 * \log(1/0.629) = 2.01$

**802.11ac (80MHz):** Duty cycle = 115.38/248.40 = 0.464, Duty factor =  $10 * \log(1/0.464) = 3.33$

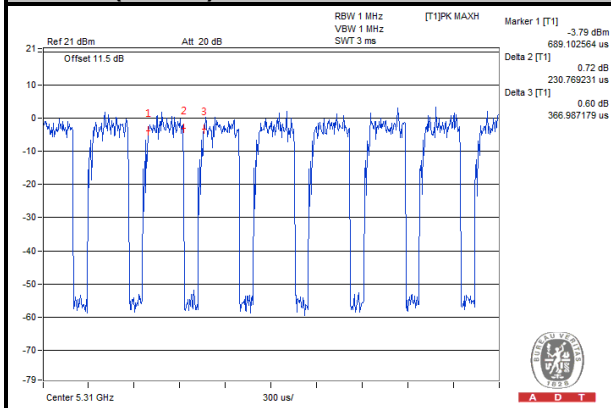
#### 802.11a



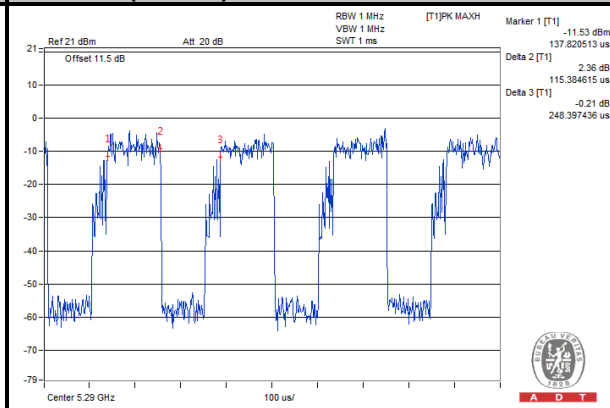
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)







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### MODULATION TYPE: 64QAM

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

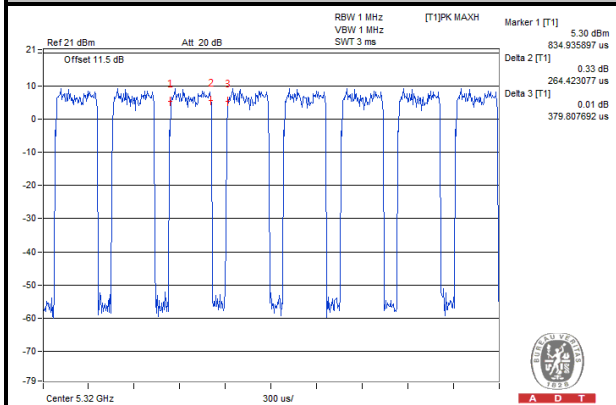
**802.11a:** Duty cycle = 264.42/379.81 = 0.696, Duty factor = 10 \* log(1/0.696) = 1.57

**802.11n (20MHz):** Duty cycle = 262.82/375.00 = 0.701, Duty factor = 10 \* log(1/0.701) = 1.54

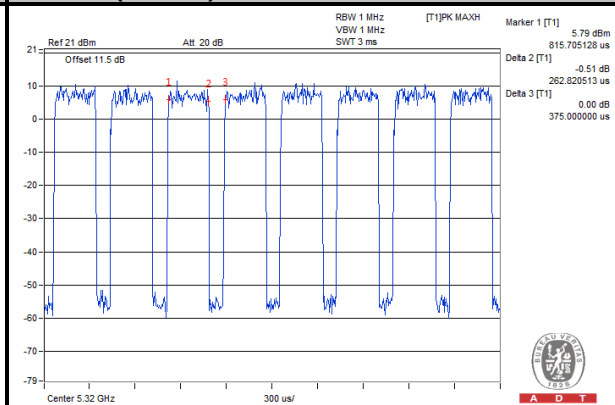
**802.11n (40MHz):** Duty cycle = 121.79/253.21 = 0.481, Duty factor = 10 \* log(1/0.481) = 3.18

**802.11ac (80MHz):** Duty cycle = 64.10/197.12 = 0.325, Duty factor = 10 \* log(1/0.325) = 4.88

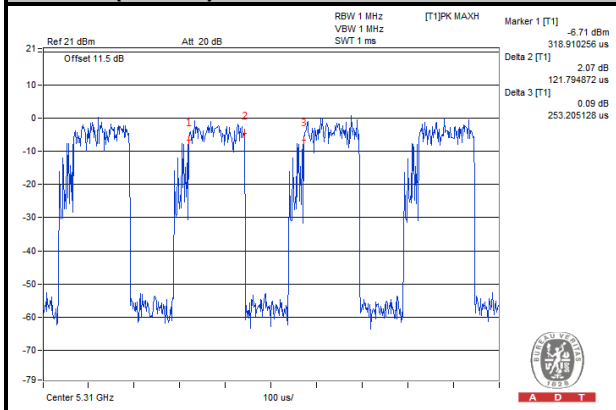
#### 802.11a



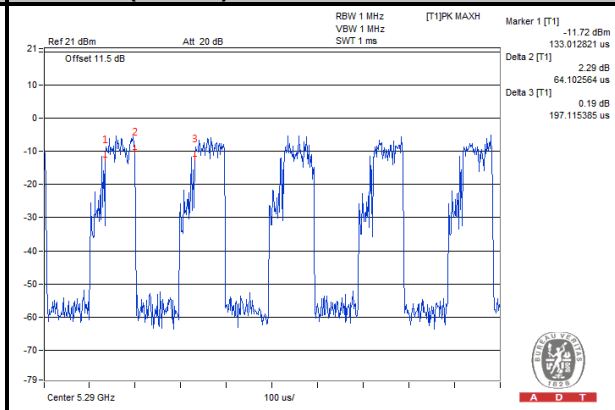
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)



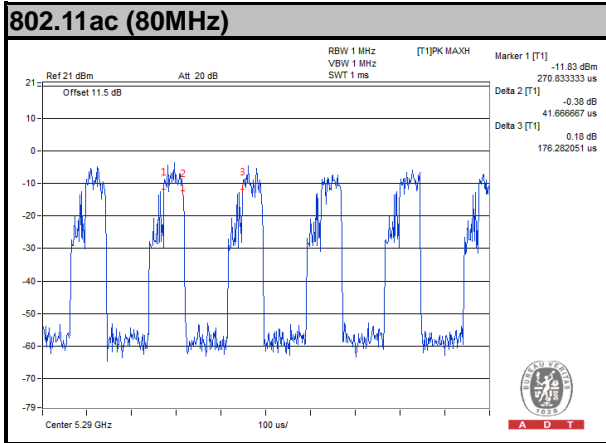


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**MODULATION TYPE: 256QAM**

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

**802.11ac (80MHz):** Duty cycle = 41.67/176.28 = 0.236, Duty factor =  $10 * \log(1/0.236) = 6.26$





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### 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)**

**789033 D02 General UNII Test Procedures New Rules v01**

**644545 D01 Guidance for IEEE 802 11ac v01r02**

ANSI C63.10-2013

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

**NOTE:** The EUT 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	
789033 D02 General UNII Test Procedures New Rules v01	FIELD STRENGTH AT 3m	
	PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
APPLICABLE TO	EIRP LIMIT	EQUIVALENT FIELD STRENGTH AT 3m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBµV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)	PK: -27 (dBm/MHz) <sup>*1</sup> PK: -17 (dBm/MHz) <sup>*2</sup>	PK: 68.2 (dBµV/m) <sup>*1</sup> PK: 78.2 (dBµV/m) <sup>*2</sup>

**NOTE:** <sup>\*1</sup> beyond 10MHz of the band edge <sup>\*2</sup> within 10 MHz of band edge

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

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



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#### 4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver Agilent	N9038A	MY51210203	Jan. 21, 2015	Jan. 21, 2016
Spectrum Analyzer Agilent	N9010A	MY52220314	Sep. 03, 2014	Sep. 02, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 04, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Feb. 09, 2015	Feb. 09, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Feb. 04, 2015	Feb. 04, 2016
Loop Antenna	EM-6879	269	Aug. 13, 2014	Aug. 12, 2015
Preamplifier EMCI	EMC 012645	980115	Dec. 12, 2014	Dec. 11, 2015
Preamplifier EMCI	EMC 184045	980116	Jan. 09, 2015	Jan. 08, 2016
Preamplifier EMCI	EMC 330H	980112	Dec. 27, 2014	Dec. 26, 2015
Power Meter Anritsu	ML2495A	1232002	Sep. 17, 2014	Sep. 16, 2015
Power Sensor Anritsu	MA2411B	1207325	Sep. 17, 2014	Sep. 16, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 18, 2014	Oct. 17, 2015
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Nov. 07, 2014	Nov. 06, 2015
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
Bluetooth Tester	CBT	100980	Apr. 18, 2013	Apr. 17, 2015

**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 Chamber 10.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 690701.

5. 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 (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. 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:

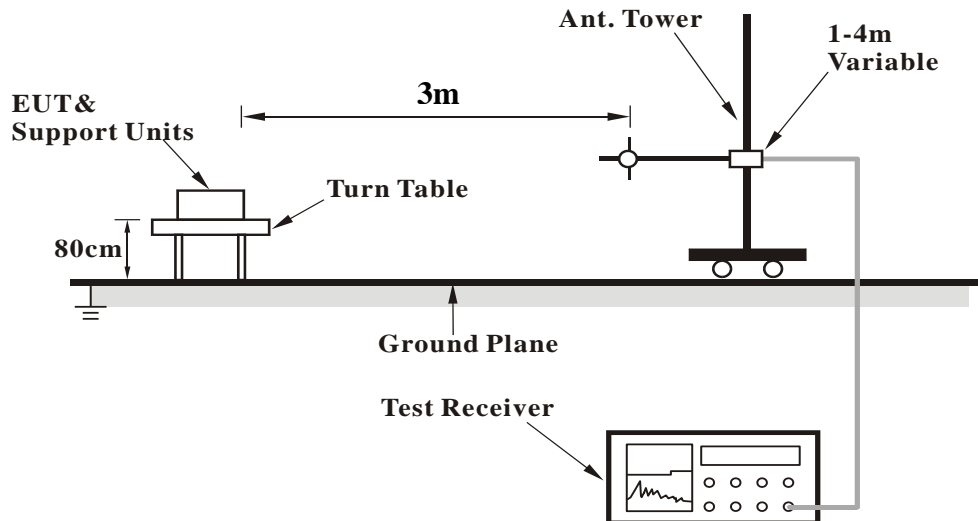
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency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

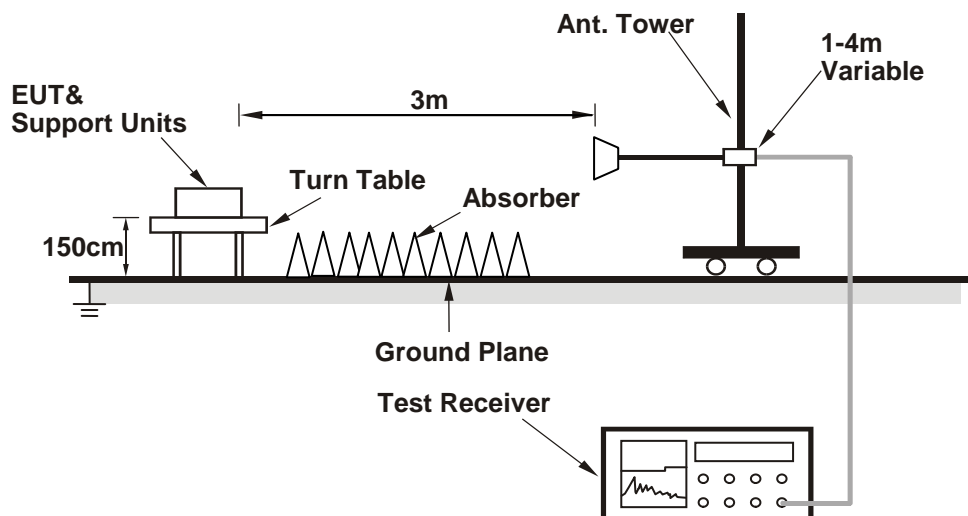
No deviation.

#### 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	Harry Hsueh

**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	45.82	37.57	54	-8.18	34.12	8.13	34	226	25	Average
5150	57.6	49.35	74	-16.4	34.12	8.13	34	226	25	Peak
5180	100.77	92.46			34.15	8.16	34	226	25	Average
5180	109	100.69			34.15	8.16	34	226	25	Peak
5438	44.05	35.26	54	-9.95	34.35	8.48	34.04	226	25	Average
5438	57.59	48.8	74	-16.41	34.35	8.48	34.04	226	25	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
5076	43.66	35.54	54	-10.34	34.07	8.03	33.98	254	352	Average
5076	57.06	48.94	74	-16.94	34.07	8.03	33.98	254	352	Peak
5180	94.89	86.58			34.15	8.16	34	254	352	Average
5180	103.16	94.85			34.15	8.16	34	254	352	Peak
5434	44.05	35.26	54	-9.95	34.35	8.48	34.04	254	352	Average
5434	57.16	48.37	74	-16.84	34.35	8.48	34.04	254	352	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	Harry Hsueh

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	43.05	34.85	54	-10.95	34.09	8.1	33.99	218	26	Average
5116	58.34	50.14	74	-15.66	34.09	8.1	33.99	218	26	Peak
5220	100.51	92.12			34.17	8.22	34	218	26	Average
5220	109.07	100.68			34.17	8.22	34	218	26	Peak
5428	43.81	35.04	54	-10.19	34.33	8.48	34.04	218	26	Average
5428	57.51	48.74	74	-16.49	34.33	8.48	34.04	218	26	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
5128	43.31	35.09	54	-10.69	34.11	8.1	33.99	261	335	Average
5128	57.59	49.37	74	-16.41	34.11	8.1	33.99	261	335	Peak
5220	96.06	87.67			34.17	8.22	34	261	335	Average
5220	103.7	95.31			34.17	8.22	34	261	335	Peak
5458	43.87	35.05	54	-10.13	34.36	8.51	34.05	261	335	Average
5458	57.75	48.93	74	-16.25	34.36	8.51	34.05	261	335	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	Harry Hsueh

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
5100	42.8	34.64	54	-11.2	34.08	8.07	33.99	219	25	Average
5100	57.26	49.1	74	-16.74	34.08	8.07	33.99	219	25	Peak
5240	102	93.56			34.19	8.26	34.01	219	25	Average
5240	109.74	101.3			34.19	8.26	34.01	219	25	Peak
5380	43.92	35.24	54	-10.08	34.31	8.41	34.04	219	25	Average
5380	57.66	48.98	74	-16.34	34.31	8.41	34.04	219	25	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
5088	42.66	34.5	54	-11.34	34.07	8.07	33.98	283	337	Average
5088	56.84	48.68	74	-17.16	34.07	8.07	33.98	283	337	Peak
5240	95.99	87.55			34.19	8.26	34.01	283	337	Average
5240	103.89	95.45			34.19	8.26	34.01	283	337	Peak
5372	43.75	35.08	54	-10.25	34.29	8.41	34.03	283	337	Average
5372	57.66	48.99	74	-16.34	34.29	8.41	34.03	283	337	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	Harry Hsueh

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	43.05	34.85	54	-10.95	34.09	8.1	33.99	143	23	Average
5120	59.05	50.85	74	-14.95	34.09	8.1	33.99	143	23	Peak
5260	96.7	88.24			34.21	8.26	34.01	143	23	Average
5260	104.87	96.41			34.21	8.26	34.01	143	23	Peak
5372	43.7	35.03	54	-10.3	34.29	8.41	34.03	143	23	Average
5372	60.06	51.39	74	-13.94	34.29	8.41	34.03	143	23	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	43.06	34.84	54	-10.94	34.11	8.1	33.99	122	291	Average
5124	59.05	50.83	74	-14.95	34.11	8.1	33.99	122	291	Peak
5260	102.59	94.13			34.21	8.26	34.01	122	291	Average
5260	110.3	101.84			34.21	8.26	34.01	122	291	Peak
5386	43.84	35.16	54	-10.16	34.31	8.41	34.04	122	291	Average
5386	59.43	50.75	74	-14.57	34.31	8.41	34.04	122	291	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	Harry Hsueh

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
5134	43.09	34.84	54	-10.91	34.11	8.13	33.99	143	23	Average
5134	59.39	51.14	74	-14.61	34.11	8.13	33.99	143	23	Peak
5300	96.08	87.54			34.24	8.32	34.02	143	23	Average
5300	104.44	95.9			34.24	8.32	34.02	143	23	Peak
5380	43.61	34.93	54	-10.39	34.31	8.41	34.04	143	23	Average
5380	59.54	50.86	74	-14.46	34.31	8.41	34.04	143	23	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
5062	42.95	34.85	54	-11.05	34.05	8.03	33.98	122	280	Average
5062	59.83	51.73	74	-14.17	34.05	8.03	33.98	122	280	Peak
5300	102.42	93.88			34.24	8.32	34.02	122	280	Average
5300	110.41	101.87			34.24	8.32	34.02	122	280	Peak
5360	44.23	35.6	54	-9.77	34.28	8.38	34.03	122	280	Average
5360	60.84	52.21	74	-13.16	34.28	8.38	34.03	122	280	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	Harry Hsueh

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
5030	43.26	35.2	54	-10.74	34.03	8	33.97	143	23	Average
5030	59.22	51.16	74	-14.78	34.03	8	33.97	143	23	Peak
5320	96.49	87.91			34.25	8.35	34.02	143	23	Average
5320	104.85	96.27			34.25	8.35	34.02	143	23	Peak
5408	44.33	35.61	54	-9.67	34.32	8.44	34.04	143	23	Average
5408	59.72	51	74	-14.28	34.32	8.44	34.04	143	23	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	43.09	34.84	54	-10.91	34.11	8.13	33.99	122	59	Average
5136	59.89	51.64	74	-14.11	34.11	8.13	33.99	122	59	Peak
5320	102.83	94.25			34.25	8.35	34.02	122	59	Average
5320	110.41	101.83			34.25	8.35	34.02	122	59	Peak
5350	48.25	39.62	54	-5.75	34.28	8.38	34.03	122	59	Average
5350	60.04	51.41	74	-13.96	34.28	8.38	34.03	122	59	Peak

**REMARKS:**

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



A D T

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	Harry Hsueh

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	44.71	35.89	54	-9.29	34.36	8.51	34.05	111	354	Average
5460	57.68	48.86	74	-16.32	34.36	8.51	34.05	111	354	Peak
5470	60.68	51.85	68.2	-7.52	34.37	8.51	34.05	111	354	Peak
5500	98.39	89.47			34.4	8.57	34.05	111	354	Average
5500	106.09	97.17			34.4	8.57	34.05	111	354	Peak
5725	56.8	47.64	68.2	-11.4	34.62	8.65	34.11	111	354	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	46.19	37.37	54	-7.81	34.36	8.51	34.05	100	24	Average
5456	59.48	50.66	74	-14.52	34.36	8.51	34.05	100	24	Peak
5470	65.18	56.35	68.2	-3.02	34.37	8.51	34.05	100	24	Peak
5500	102.43	93.51			34.4	8.57	34.05	100	24	Average
5500	110.6	101.68			34.4	8.57	34.05	100	24	Peak
5725	56.68	47.52	68.2	-11.52	34.62	8.65	34.11	100	24	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5426	43.01	34.24	54	-10.99	34.33	8.48	34.04	110	353	Average
5426	57.52	48.75	74	-16.48	34.33	8.48	34.04	110	353	Peak
5470	56.96	48.13	68.2	-11.24	34.37	8.51	34.05	110	353	Peak
5580	98.5	89.51			34.47	8.6	34.08	110	353	Average
5580	106.56	97.57			34.47	8.6	34.08	110	353	Peak
5725	56.51	47.35	68.2	-11.69	34.62	8.65	34.11	110	353	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
5432	43	34.21	54	-11	34.35	8.48	34.04	106	24	Average
5432	57.65	48.86	74	-16.35	34.35	8.48	34.04	106	24	Peak
5470	56.77	47.94	68.2	-11.43	34.37	8.51	34.05	106	24	Peak
5580	102.83	93.84			34.47	8.6	34.08	106	24	Average
5580	110.88	101.89			34.47	8.6	34.08	106	24	Peak
5725	56.3	47.14	68.2	-11.9	34.62	8.65	34.11	106	24	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	Harry Hsueh

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	43.08	34.29	54	-10.92	34.35	8.48	34.04	106	3	Average
5436	57.65	48.86	74	-16.35	34.35	8.48	34.04	106	3	Peak
5470	56.33	47.5	68.2	-11.87	34.37	8.51	34.05	106	3	Peak
5700	96.75	87.62			34.59	8.64	34.1	106	3	Average
5700	104.28	95.15			34.59	8.64	34.1	106	3	Peak
5725	61.4	52.24	68.2	-6.8	34.62	8.65	34.11	106	3	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	43.09	34.26	54	-10.91	34.36	8.51	34.04	102	22	Average
5446	57.64	48.81	74	-16.36	34.36	8.51	34.04	102	22	Peak
5470	56.44	47.61	68.2	-11.76	34.37	8.51	34.05	102	22	Peak
5700	101.09	91.96			34.59	8.64	34.1	102	22	Average
5700	108.67	99.54			34.59	8.64	34.1	102	22	Peak
5725	66.4	57.24	68.2	-1.8	34.62	8.65	34.11	102	22	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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5710	59.41	50.26	68.2	-8.79	34.61	8.65	34.11	103	285	Peak
*5724	68.79	59.63	78.2	-9.41	34.62	8.65	34.11	103	285	Peak
5745	98.49	89.3			34.64	8.66	34.11	103	285	Average
5745	105.87	96.68			34.64	8.66	34.11	103	285	Peak
*5854	58.61	49.29	78.2	-19.59	34.76	8.7	34.14	103	285	Peak
*5862	58.72	49.39	68.2	-9.48	34.76	8.71	34.14	103	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
*5714	60.26	51.11	68.2	-7.94	34.61	8.65	34.11	110	328	Peak
*5724	72.12	62.96	78.2	-6.08	34.62	8.65	34.11	110	328	Peak
5745	101.3	92.11			34.64	8.66	34.11	110	328	Average
5745	109.03	99.84			34.64	8.66	34.11	110	328	Peak
*5854	59.59	50.27	78.2	-18.61	34.76	8.7	34.14	110	328	Peak
*5864	58.9	49.57	68.2	-9.3	34.76	8.71	34.14	110	328	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- :: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5708	59.53	50.38	68.2	-8.67	34.61	8.65	34.11	103	280	Peak
*5720	59.77	50.61	78.2	-18.43	34.62	8.65	34.11	103	280	Peak
5785	99.21	89.98			34.68	8.68	34.13	103	280	Average
5785	106.87	97.64			34.68	8.68	34.13	103	280	Peak
*5852	60.35	51.05	78.2	-17.85	34.74	8.7	34.14	103	280	Peak
*5870	59.15	49.82	68.2	-9.05	34.76	8.71	34.14	103	280	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
*5714	59.88	50.73	68.2	-8.32	34.61	8.65	34.11	110	329	Peak
*5718	59.95	50.79	78.2	-18.25	34.62	8.65	34.11	110	329	Peak
5785	103.21	93.98			34.68	8.68	34.13	110	329	Average
5785	110.71	101.48			34.68	8.68	34.13	110	329	Peak
*5858	59.83	50.51	78.2	-18.37	34.76	8.7	34.14	110	329	Peak
*5866	60.71	51.38	68.2	-7.49	34.76	8.71	34.14	110	329	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- \*: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5712	58.55	49.4	68.2	-9.65	34.61	8.65	34.11	103	284	Peak
*5718	58.42	49.26	78.2	-19.78	34.62	8.65	34.11	103	284	Peak
5825	99.28	89.99			34.73	8.69	34.13	103	284	Average
5825	106.89	97.6			34.73	8.69	34.13	103	284	Peak
*5854	60.14	50.82	78.2	-18.06	34.76	8.7	34.14	103	284	Peak
*5862	58.95	49.62	68.2	-9.25	34.76	8.71	34.14	103	284	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
*5714	58.51	49.36	68.2	-9.69	34.61	8.65	34.11	109	329	Peak
*5718	58.63	49.47	78.2	-19.57	34.62	8.65	34.11	109	329	Peak
5825	102.28	92.99			34.73	8.69	34.13	109	329	Average
5825	110.41	101.12			34.73	8.69	34.13	109	329	Peak
*5852	64.91	55.61	78.2	-13.29	34.74	8.7	34.14	109	329	Peak
*5870	60.45	51.12	68.2	-7.75	34.76	8.71	34.14	109	329	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- \*: 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	Harry Hsueh

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	47.77	39.52	54	-6.23	34.12	8.13	34	226	25	Average
5150	60.88	52.63	74	-13.12	34.12	8.13	34	226	25	Peak
5180	101.17	92.86			34.15	8.16	34	226	25	Average
5180	109.53	101.22			34.15	8.16	34	226	25	Peak
5424	43.92	35.15	54	-10.08	34.33	8.48	34.04	226	25	Average
5424	58.32	49.55	74	-15.68	34.33	8.48	34.04	226	25	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
5066	42.5	34.4	54	-11.5	34.05	8.03	33.98	254	352	Average
5066	57.27	49.17	74	-16.73	34.05	8.03	33.98	254	352	Peak
5180	95.86	87.55			34.15	8.16	34	254	352	Average
5180	103.78	95.47			34.15	8.16	34	254	352	Peak
5460	43.75	34.93	54	-10.25	34.36	8.51	34.05	254	352	Average
5460	56.91	48.09	74	-17.09	34.36	8.51	34.05	254	352	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	Harry Hsueh

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
5056	43.32	35.22	54	-10.68	34.05	8.03	33.98	220	28	Average
5056	59.63	51.53	74	-14.37	34.05	8.03	33.98	220	28	Peak
5220	101.95	93.56			34.17	8.22	34	220	28	Average
5220	109.7	101.31			34.17	8.22	34	220	28	Peak
5434	44.08	35.29	54	-9.92	34.35	8.48	34.04	220	28	Average
5434	59.35	50.56	74	-14.65	34.35	8.48	34.04	220	28	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	43.41	35.19	54	-10.59	34.11	8.1	33.99	261	335	Average
5132	60.49	52.27	74	-13.51	34.11	8.1	33.99	261	335	Peak
5220	95.51	87.12			34.17	8.22	34	261	335	Average
5220	103.32	94.93			34.17	8.22	34	261	335	Peak
5460	43.98	35.16	54	-10.02	34.36	8.51	34.05	261	335	Average
5460	60.9	52.08	74	-13.1	34.36	8.51	34.05	261	335	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	Harry Hsueh

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	43.28	35.22	54	-10.72	34.04	8	33.98	225	25	Average
5042	59.07	51.01	74	-14.93	34.04	8	33.98	225	25	Peak
5240	101.56	93.12			34.19	8.26	34.01	225	25	Average
5240	109.85	101.41			34.19	8.26	34.01	225	25	Peak
5354	43.52	34.89	54	-10.48	34.28	8.38	34.03	225	25	Average
5354	58.96	50.33	74	-15.04	34.28	8.38	34.03	225	25	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	43.35	35.13	54	-10.65	34.11	8.1	33.99	261	335	Average
5126	59.4	51.18	74	-14.6	34.11	8.1	33.99	261	335	Peak
5240	95.67	87.23			34.19	8.26	34.01	261	335	Average
5240	103.34	94.9			34.19	8.26	34.01	261	335	Peak
5424	44.02	35.25	54	-9.98	34.33	8.48	34.04	261	335	Average
5424	60.42	51.65	74	-13.58	34.33	8.48	34.04	261	335	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	Harry Hsueh

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	43.56	35.5	54	-10.44	34.03	8	33.97	143	23	Average
5036	59.68	51.62	74	-14.32	34.03	8	33.97	143	23	Peak
5260	96.33	87.87			34.21	8.26	34.01	143	23	Average
5260	104.22	95.76			34.21	8.26	34.01	143	23	Peak
5372	43.7	35.03	54	-10.3	34.29	8.41	34.03	143	23	Average
5372	59.34	50.67	74	-14.66	34.29	8.41	34.03	143	23	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	43.69	35.52	54	-10.31	34.09	8.07	33.99	122	292	Average
5106	59.91	51.74	74	-14.09	34.09	8.07	33.99	122	292	Peak
5260	103.03	94.57			34.21	8.26	34.01	122	292	Average
5260	110.76	102.3			34.21	8.26	34.01	122	292	Peak
5428	43.67	34.9	54	-10.33	34.33	8.48	34.04	122	292	Average
5428	59.94	51.17	74	-14.06	34.33	8.48	34.04	122	292	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	Harry Hsueh

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
5134	43.1	34.85	54	-10.9	34.11	8.13	33.99	141	24	Average
5134	60.04	51.79	74	-13.96	34.11	8.13	33.99	141	24	Peak
5300	96.46	87.92			34.24	8.32	34.02	141	24	Average
5300	104.89	96.35			34.24	8.32	34.02	141	24	Peak
5362	43.46	34.82	54	-10.54	34.29	8.38	34.03	141	24	Average
5362	59.68	51.04	74	-14.32	34.29	8.38	34.03	141	24	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	43.07	34.97	54	-10.93	34.05	8.03	33.98	116	58	Average
5058	58.88	50.78	74	-15.12	34.05	8.03	33.98	116	58	Peak
5300	103.12	94.58			34.24	8.32	34.02	116	58	Average
5300	110.84	102.3			34.24	8.32	34.02	116	58	Peak
5370	45.27	36.6	54	-8.73	34.29	8.41	34.03	116	58	Average
5370	60.21	51.54	74	-13.79	34.29	8.41	34.03	116	58	Peak

**REMARKS:**

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





A D T

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	Harry Hsueh

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	43.61	35.55	54	-10.39	34.04	8	33.98	141	24	Average
5054	58.99	50.93	74	-15.01	34.04	8	33.98	141	24	Peak
5320	96.46	87.88			34.25	8.35	34.02	141	24	Average
5320	104.83	96.25			34.25	8.35	34.02	141	24	Peak
5372	46.56	37.89	54	-7.44	34.29	8.41	34.03	141	24	Average
5372	59.82	51.15	74	-14.18	34.29	8.41	34.03	141	24	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
5138	43.36	35.11	54	-10.64	34.11	8.13	33.99	102	60	Average
5138	59.35	51.1	74	-14.65	34.11	8.13	33.99	102	60	Peak
5320	102.46	93.88			34.25	8.35	34.02	102	60	Average
5320	110.55	101.97			34.25	8.35	34.02	102	60	Peak
5350	50.25	41.62	54	-3.75	34.28	8.38	34.03	102	60	Average
5350	63.53	54.9	74	-10.47	34.28	8.38	34.03	102	60	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	Harry Hsueh

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
5408	44	35.28	54	-10	34.32	8.44	34.04	111	352	Average
5408	57.71	48.99	74	-16.29	34.32	8.44	34.04	111	352	Peak
5470	58.69	49.86	68.2	-9.51	34.37	8.51	34.05	111	352	Peak
5500	98.3	89.38			34.4	8.57	34.05	111	352	Average
5500	106.16	97.24			34.4	8.57	34.05	111	352	Peak
5725	57.11	47.95	68.2	-11.09	34.62	8.65	34.11	111	352	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	45.21	36.39	54	-8.79	34.36	8.51	34.05	100	24	Average
5458	58.51	49.69	74	-15.49	34.36	8.51	34.05	100	24	Peak
5470	62.59	53.76	68.2	-5.61	34.37	8.51	34.05	100	24	Peak
5500	102.21	93.29			34.4	8.57	34.05	100	24	Average
5500	110.12	101.2			34.4	8.57	34.05	100	24	Peak
5725	56.33	47.17	68.2	-11.87	34.62	8.65	34.11	100	24	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5384	42.88	34.2	54	-11.12	34.31	8.41	34.04	110	353	Average
5384	58.22	49.54	74	-15.78	34.31	8.41	34.04	110	353	Peak
5470	57.01	48.18	68.2	-11.19	34.37	8.51	34.05	110	353	Peak
5580	98.42	89.43			34.47	8.6	34.08	110	353	Average
5580	106.57	97.58			34.47	8.6	34.08	110	353	Peak
5725	56.7	47.54	68.2	-11.5	34.62	8.65	34.11	110	353	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
5388	42.96	34.28	54	-11.04	34.31	8.41	34.04	105	24	Average
5388	58.87	50.19	74	-15.13	34.31	8.41	34.04	105	24	Peak
5470	56.29	47.46	68.2	-11.91	34.37	8.51	34.05	105	24	Peak
5580	101.77	92.78			34.47	8.6	34.08	105	24	Average
5580	110.15	101.16			34.47	8.6	34.08	105	24	Peak
5725	56.81	47.65	68.2	-11.39	34.62	8.65	34.11	105	24	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	Harry Hsueh

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
5422	42.96	34.19	54	-11.04	34.33	8.48	34.04	106	3	Average
5422	57.85	49.08	74	-16.15	34.33	8.48	34.04	106	3	Peak
5470	55.38	46.55	68.2	-12.82	34.37	8.51	34.05	106	3	Peak
5700	96.55	87.42			34.59	8.64	34.1	106	3	Average
5700	104.16	95.03			34.59	8.64	34.1	106	3	Peak
5725	60.65	51.49	68.2	-7.55	34.62	8.65	34.11	106	3	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
5414	42.98	34.25	54	-11.02	34.33	8.44	34.04	102	30	Average
5414	57.74	49.01	74	-16.26	34.33	8.44	34.04	102	30	Peak
5470	55.88	47.05	68.2	-12.32	34.37	8.51	34.05	102	30	Peak
5700	101.07	91.94			34.59	8.64	34.1	102	30	Average
5700	108.93	99.8			34.59	8.64	34.1	102	30	Peak
5725	66.36	57.2	68.2	-1.84	34.62	8.65	34.11	102	30	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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
*5712	61.03	51.88	68.2	-7.17	34.61	8.65	34.11	102	280	Peak
*5722	69.33	60.17	78.2	-8.87	34.62	8.65	34.11	102	280	Peak
5745	97.83	88.64			34.64	8.66	34.11	102	280	Average
5745	105.49	96.3			34.64	8.66	34.11	102	280	Peak
*5852	58.43	49.13	78.2	-19.77	34.74	8.7	34.14	102	280	Peak
*5862	58.34	49.01	68.2	-9.86	34.76	8.71	34.14	102	280	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
*5712	64.29	55.14	68.2	-3.91	34.61	8.65	34.11	104	334	Peak
*5724	76.15	66.99	78.2	-2.05	34.62	8.65	34.11	104	334	Peak
5745	101.53	92.34			34.64	8.66	34.11	104	334	Average
5745	109.58	100.39			34.64	8.66	34.11	104	334	Peak
*5854	58.61	49.29	78.2	-19.59	34.76	8.7	34.14	104	334	Peak
*5866	59.56	50.23	68.2	-8.64	34.76	8.71	34.14	104	334	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5745MHz: Fundamental frequency.
- :: Out of restricted band



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5710	59.6	50.45	68.2	-8.6	34.61	8.65	34.11	120	287	Peak
*5720	60.99	51.83	78.2	-17.21	34.62	8.65	34.11	120	287	Peak
5785	98.92	89.69			34.68	8.68	34.13	120	287	Average
5785	106.67	97.44			34.68	8.68	34.13	120	287	Peak
*5860	60.74	51.42	78.2	-17.46	34.76	8.7	34.14	120	287	Peak
*5862	60.69	51.36	68.2	-7.51	34.76	8.71	34.14	120	287	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
*5714	60.15	51	68.2	-8.05	34.61	8.65	34.11	110	334	Peak
*5722	59.11	49.95	78.2	-19.09	34.62	8.65	34.11	110	334	Peak
5785	103.21	93.98			34.68	8.68	34.13	110	334	Average
5785	110.75	101.52			34.68	8.68	34.13	110	334	Peak
*5858	59.2	49.88	78.2	-19	34.76	8.7	34.14	110	334	Peak
*5864	59	49.67	68.2	-9.2	34.76	8.71	34.14	110	334	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5785MHz: Fundamental frequency.
- \*: Out of restricted band



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5706	58.71	49.56	68.2	-9.49	34.61	8.65	34.11	120	287	Peak
*5716	59.49	50.34	78.2	-18.71	34.61	8.65	34.11	120	287	Peak
5825	99.38	90.09			34.73	8.69	34.13	120	287	Average
5825	106.76	97.47			34.73	8.69	34.13	120	287	Peak
*5852	61.79	52.49	78.2	-16.41	34.74	8.7	34.14	120	287	Peak
*5870	59.47	50.14	68.2	-8.73	34.76	8.71	34.14	120	287	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
*5708	58.13	48.98	68.2	-10.07	34.61	8.65	34.11	109	327	Peak
*5724	58.89	49.73	78.2	-19.31	34.62	8.65	34.11	109	327	Peak
5825	102.42	93.13			34.73	8.69	34.13	109	327	Average
5825	110.21	100.92			34.73	8.69	34.13	109	327	Peak
*5852	73.15	63.85	78.2	-5.05	34.74	8.7	34.14	109	327	Peak
*5862	61.09	51.76	68.2	-7.11	34.76	8.71	34.14	109	327	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5825MHz: Fundamental frequency.
- \*: 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	Harry Hsueh

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	50.57	42.32	54	-3.43	34.12	8.13	34	226	27	Average
5150	62.04	53.79	74	-11.96	34.12	8.13	34	226	27	Peak
5190	99.56	91.22			34.15	8.19	34	226	27	Average
5190	107.81	99.47			34.15	8.19	34	226	27	Peak
5434	43.68	34.89	54	-10.32	34.35	8.48	34.04	226	27	Average
5434	57.77	48.98	74	-16.23	34.35	8.48	34.04	226	27	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
5042	43.28	35.22	54	-10.72	34.04	8	33.98	250	346	Average
5042	61.43	53.37	74	-12.57	34.04	8	33.98	250	346	Peak
5190	93.56	85.22			34.15	8.19	34	250	346	Average
5190	101.02	92.68			34.15	8.19	34	250	346	Peak
5408	43.65	34.93	54	-10.35	34.32	8.44	34.04	250	346	Average
5408	59.9	51.18	74	-14.1	34.32	8.44	34.04	250	346	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	Harry Hsueh

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
5016	43.22	35.21	54	-10.78	34.01	7.97	33.97	206	26	Average
5016	60.09	52.08	74	-13.91	34.01	7.97	33.97	206	26	Peak
5230	99.98	91.58			34.19	8.22	34.01	206	26	Average
5230	107.44	99.04			34.19	8.22	34.01	206	26	Peak
5400	43.76	35.04	54	-10.24	34.32	8.44	34.04	206	26	Average
5400	59.21	50.49	74	-14.79	34.32	8.44	34.04	206	26	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	43.56	35.34	54	-10.44	34.11	8.1	33.99	264	352	Average
5126	59.99	51.77	74	-14.01	34.11	8.1	33.99	264	352	Peak
5230	93.63	85.23			34.19	8.22	34.01	264	352	Average
5230	101.35	92.95			34.19	8.22	34.01	264	352	Peak
5414	43.66	34.93	54	-10.34	34.33	8.44	34.04	264	352	Average
5414	60.02	51.29	74	-13.98	34.33	8.44	34.04	264	352	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5084	43.37	35.21	54	-10.63	34.07	8.07	33.98	239	304	Average
5084	62.52	54.36	74	-11.48	34.07	8.07	33.98	239	304	Peak
5270	93.73	85.24			34.21	8.29	34.01	239	304	Average
5270	101.29	92.8			34.21	8.29	34.01	239	304	Peak
5446	43.97	35.14	54	-10.03	34.36	8.51	34.04	239	304	Average
5446	63.13	54.3	74	-10.87	34.36	8.51	34.04	239	304	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
5008	42.84	34.83	54	-11.16	34.01	7.97	33.97	102	278	Average
5008	59.14	51.13	74	-14.86	34.01	7.97	33.97	102	278	Peak
5270	99.36	90.87			34.21	8.29	34.01	102	278	Average
5270	107.19	98.7			34.21	8.29	34.01	102	278	Peak
5364	44.24	35.6	54	-9.76	34.29	8.38	34.03	102	278	Average
5364	59.2	50.56	74	-14.8	34.29	8.38	34.03	102	278	Peak

**REMARKS:**

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



A D T

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	Harry Hsueh

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	42.94	34.88	54	-11.06	34.04	8	33.98	219	305	Average
5042	58.82	50.76	74	-15.18	34.04	8	33.98	219	305	Peak
5310	93.7	85.15			34.25	8.32	34.02	219	305	Average
5310	101.32	92.77			34.25	8.32	34.02	219	305	Peak
5458	44.74	35.92	54	-9.26	34.36	8.51	34.05	219	305	Average
5458	59.18	50.36	74	-14.82	34.36	8.51	34.05	219	305	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	43.8	35.55	54	-10.2	34.11	8.13	33.99	103	58	Average
5134	59.4	51.15	74	-14.6	34.11	8.13	33.99	103	58	Peak
5310	99.43	90.88			34.25	8.32	34.02	103	58	Average
5310	107.81	99.26			34.25	8.32	34.02	103	58	Peak
5350	48.09	39.46	54	-5.91	34.28	8.38	34.03	103	58	Average
5350	59.5	50.87	74	-14.5	34.28	8.38	34.03	103	58	Peak

**REMARKS:**

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



A D T

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	Harry Hsueh

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
5430	43.53	34.74	54	-10.47	34.35	8.48	34.04	111	352	Average
5430	57.92	49.13	74	-16.08	34.35	8.48	34.04	111	352	Peak
5470	57.67	48.84	68.2	-10.53	34.37	8.51	34.05	111	352	Peak
5510	95.48	86.57			34.4	8.57	34.06	111	352	Average
5510	103.41	94.5			34.4	8.57	34.06	111	352	Peak
5725	56.86	47.7	68.2	-11.34	34.62	8.65	34.11	111	352	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
5450	44.28	35.46	54	-9.72	34.36	8.51	34.05	100	25	Average
5450	57.63	48.81	74	-16.37	34.36	8.51	34.05	100	25	Peak
5470	60.24	51.41	68.2	-7.96	34.37	8.51	34.05	100	25	Peak
5510	99.87	90.96			34.4	8.57	34.06	100	25	Average
5510	107.85	98.94			34.4	8.57	34.06	100	25	Peak
5725	57.23	48.07	68.2	-10.97	34.62	8.65	34.11	100	25	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
5424	43.24	34.47	54	-10.76	34.33	8.48	34.04	110	355	Average
5424	57.69	48.92	74	-16.31	34.33	8.48	34.04	110	355	Peak
5470	56.54	47.71	68.2	-11.66	34.37	8.51	34.05	110	355	Peak
5550	95.5	86.53			34.45	8.59	34.07	110	355	Average
5550	103.45	94.48			34.45	8.59	34.07	110	355	Peak
5725	57.74	48.58	68.2	-10.46	34.62	8.65	34.11	110	355	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	43.37	34.54	54	-10.63	34.36	8.51	34.04	104	68	Average
5446	57.8	48.97	74	-16.2	34.36	8.51	34.04	104	68	Peak
5470	56.99	48.16	68.2	-11.21	34.37	8.51	34.05	104	68	Peak
5550	99.7	90.73			34.45	8.59	34.07	104	68	Average
5550	107.24	98.27			34.45	8.59	34.07	104	68	Peak
5725	56.63	47.47	68.2	-11.57	34.62	8.65	34.11	104	68	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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	43.38	34.65	54	-10.62	34.33	8.44	34.04	107	7	Average
5416	58.22	49.49	74	-15.78	34.33	8.44	34.04	107	7	Peak
5470	55.23	46.4	68.2	-12.97	34.37	8.51	34.05	107	7	Peak
5670	94.97	85.87			34.57	8.63	34.1	107	7	Average
5670	103.14	94.04			34.57	8.63	34.1	107	7	Peak
5725	55.79	46.63	68.2	-12.41	34.62	8.65	34.11	107	7	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
5440	43.69	34.9	54	-10.31	34.35	8.48	34.04	102	30	Average
5440	57.34	48.55	74	-16.66	34.35	8.48	34.04	102	30	Peak
5470	55.68	46.85	68.2	-12.52	34.37	8.51	34.05	102	30	Peak
5670	99.13	90.03			34.57	8.63	34.1	102	30	Average
5670	107.05	97.95			34.57	8.63	34.1	102	30	Peak
5725	56.33	47.17	68.2	-11.87	34.62	8.65	34.11	102	30	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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5714	60.7	51.55	68.2	-7.5	34.61	8.65	34.11	101	285	Peak
*5718	62.32	53.16	78.2	-15.88	34.62	8.65	34.11	101	285	Peak
5755	95.55	86.34			34.66	8.66	34.11	101	285	Average
5755	103.42	94.21			34.66	8.66	34.11	101	285	Peak
*5858	59.18	49.86	78.2	-19.02	34.76	8.7	34.14	101	285	Peak
*5862	59.49	50.16	68.2	-8.71	34.76	8.71	34.14	101	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
*5710	63.65	54.5	68.2	-4.55	34.61	8.65	34.11	110	336	Peak
*5716	66.38	57.23	78.2	-11.82	34.61	8.65	34.11	110	336	Peak
5755	99.57	90.36			34.66	8.66	34.11	110	336	Average
5755	107.15	97.94			34.66	8.66	34.11	110	336	Peak
*5858	59.31	49.99	78.2	-18.89	34.76	8.7	34.14	110	336	Peak
*5868	59.68	50.35	68.2	-8.52	34.76	8.71	34.14	110	336	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5755MHz: Fundamental frequency.
- \*: Out of restricted band



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5706	58.58	49.43	68.2	-9.62	34.61	8.65	34.11	103	289	Peak
*5724	58.28	49.12	78.2	-19.92	34.62	8.65	34.11	103	289	Peak
5795	95.23	85.99			34.69	8.68	34.13	103	289	Average
5795	103.07	93.83			34.69	8.68	34.13	103	289	Peak
*5860	59.02	49.7	78.2	-19.18	34.76	8.7	34.14	103	289	Peak
*5870	58.96	49.63	68.2	-9.24	34.76	8.71	34.14	103	289	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
*5706	58.8	49.65	68.2	-9.4	34.61	8.65	34.11	116	333	Peak
*5720	58.98	49.82	78.2	-19.22	34.62	8.65	34.11	116	333	Peak
5795	99.23	89.99			34.69	8.68	34.13	116	333	Average
5795	107.06	97.82			34.69	8.68	34.13	116	333	Peak
*5856	59.9	50.58	78.2	-18.3	34.76	8.7	34.14	116	333	Peak
*5870	58.76	49.43	68.2	-9.44	34.76	8.71	34.14	116	333	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5795MHz: Fundamental frequency.
- \*: 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	Harry Hsueh

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
5148	50.06	41.81	54	-3.94	34.12	8.13	34	208	28	Average
5148	59.12	50.87	74	-14.88	34.12	8.13	34	208	28	Peak
5210	97.06	88.7			34.17	8.19	34	208	28	Average
5210	105.06	96.7			34.17	8.19	34	208	28	Peak
5386	43.95	35.27	54	-10.05	34.31	8.41	34.04	208	28	Average
5386	58.83	50.15	74	-15.17	34.31	8.41	34.04	208	28	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	45.65	37.55	54	-8.35	34.05	8.03	33.98	264	350	Average
5064	59.87	51.77	74	-14.13	34.05	8.03	33.98	264	350	Peak
5210	91.48	83.12			34.17	8.19	34	264	350	Average
5210	99.07	90.71			34.17	8.19	34	264	350	Peak
5408	44.33	35.61	54	-9.67	34.32	8.44	34.04	264	350	Average
5408	59.79	51.07	74	-14.21	34.32	8.44	34.04	264	350	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	Harry Hsueh

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	43.63	35.51	54	-10.37	34.07	8.03	33.98	122	238	Average
5078	59.45	51.33	74	-14.55	34.07	8.03	33.98	122	238	Peak
5290	90.4	81.87			34.23	8.32	34.02	122	238	Average
5290	98.91	90.38			34.23	8.32	34.02	122	238	Peak
5350	43.75	35.12	54	-10.25	34.28	8.38	34.03	122	238	Average
5350	59.13	50.5	74	-14.87	34.28	8.38	34.03	122	238	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	43.1	34.85	54	-10.9	34.11	8.13	33.99	111	42	Average
5134	59.3	51.05	74	-14.7	34.11	8.13	33.99	111	42	Peak
5290	97.11	88.58			34.23	8.32	34.02	111	42	Average
5290	105.48	96.95			34.23	8.32	34.02	111	42	Peak
5362	44.53	35.89	54	-9.47	34.29	8.38	34.03	111	42	Average
5362	60.23	51.59	74	-13.77	34.29	8.38	34.03	111	42	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	Harry Hsueh

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
5438	46.78	37.99	54	-7.22	34.35	8.48	34.04	110	355	Average
5438	59.08	50.29	74	-14.92	34.35	8.48	34.04	110	355	Peak
5470	58.59	49.76	68.2	-9.61	34.37	8.51	34.05	110	355	Peak
5530	93.02	84.09			34.42	8.58	34.07	110	355	Average
5530	101.17	92.24			34.42	8.58	34.07	110	355	Peak
5725	56.94	47.78	68.2	-11.26	34.62	8.65	34.11	110	355	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	48.84	40.02	54	-5.16	34.36	8.51	34.05	112	59	Average
5460	60.59	51.77	74	-13.41	34.36	8.51	34.05	112	59	Peak
5470	62.73	53.9	68.2	-5.47	34.37	8.51	34.05	112	59	Peak
5530	97.84	88.91			34.42	8.58	34.07	112	59	Average
5530	105.66	96.73			34.42	8.58	34.07	112	59	Peak
5725	55.87	46.71	68.2	-12.33	34.62	8.65	34.11	112	59	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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 155	FREQUENCY RANGE	1GHz ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

**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
*5714	60.1	50.95	68.2	-8.1	34.61	8.65	34.11	103	286	Peak
*5722	61.61	52.45	78.2	-16.59	34.62	8.65	34.11	103	286	Peak
5775	92.2	82.97			34.68	8.67	34.12	103	286	Average
5775	100.53	91.3			34.68	8.67	34.12	103	286	Peak
*5858	59.15	49.83	78.2	-19.05	34.76	8.7	34.14	103	286	Peak
*5868	59.75	50.42	68.2	-8.45	34.76	8.71	34.14	103	286	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
*5714	61.41	52.26	68.2	-6.79	34.61	8.65	34.11	103	332	Peak
*5720	60.63	51.47	78.2	-17.57	34.62	8.65	34.11	103	332	Peak
5775	95.87	86.64			34.68	8.67	34.12	103	332	Average
5775	104.07	94.84			34.68	8.67	34.12	103	332	Peak
*5852	61.13	51.83	78.2	-17.07	34.74	8.7	34.14	103	332	Peak
*5864	59.37	50.04	68.2	-8.83	34.76	8.71	34.14	103	332	Peak

**REMARKS:**

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin value = Emission level – Limit value
- 5775MHz: Fundamental frequency.
- \*: Out of restricted band



A D T

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

**802.11n (40MHz)**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
30	28.78	42.51	40	-11.22	17.8	0.74	32.27	135	283	Peak
98.58	30.24	51.59	43.5	-13.26	9.58	1.28	32.21	101	162	Peak
198.48	29.88	49.72	43.5	-13.62	10.84	1.61	32.29	126	156	Peak
416.9	26.88	38.86	46	-19.12	17.81	2.41	32.2	189	311	Peak
521.2	23.73	32.66	46	-22.27	20.51	2.7	32.14	167	239	Peak
668.2	25.51	31.41	46	-20.49	23.18	3.05	32.13	122	328	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
30.54	29.78	43.99	40	-10.22	17.31	0.74	32.26	178	217	QP
48.63	30.37	53.46	40	-9.63	8.23	0.9	32.22	115	132	Peak
96.69	27.15	48.55	43.5	-16.35	9.42	1.28	32.1	107	47	Peak
416.9	27.64	39.62	46	-18.36	17.81	2.41	32.2	147	168	Peak
521.2	26.34	35.27	46	-19.66	20.51	2.7	32.14	178	325	Peak
851.6	27.84	32.38	46	-18.16	23.8	3.44	31.78	161	268	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
31.35	27.66	42.36	40	-12.34	16.82	0.74	32.26	129	203	Peak
97.23	30.04	51.4	43.5	-13.46	9.46	1.28	32.1	108	338	Peak
197.67	30.14	50.03	43.5	-13.36	10.79	1.61	32.29	106	97	Peak
416.9	27.11	39.09	46	-18.89	17.81	2.41	32.2	123	245	Peak
521.2	24.67	33.6	46	-21.33	20.51	2.7	32.14	139	111	Peak
799.8	26.47	30.61	46	-19.53	24.6	3.32	32.06	153	345	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
30	29.56	43.29	40	-10.44	17.8	0.74	32.27	156	292	QP
55.11	26.09	50.15	40	-13.91	7.27	0.9	32.23	114	305	Peak
97.23	27.78	49.14	43.5	-15.72	9.46	1.28	32.1	197	27	Peak
416.9	27.13	39.11	46	-18.87	17.81	2.41	32.2	175	297	Peak
521.2	26.63	35.56	46	-19.37	20.51	2.7	32.14	115	186	Peak
923.7	28.65	30.23	46	-17.35	26.2	3.53	31.31	149	281	Peak

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



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802.11a

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

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
96.96	29.68	51.04	43.5	-13.82	9.46	1.28	32.1	164	194	Peak
131.52	28.31	49.95	43.5	-15.19	9.22	1.38	32.24	129	291	Peak
197.4	30.12	50.01	43.5	-13.38	10.79	1.61	32.29	185	276	Peak
416.9	26.89	38.87	46	-19.11	17.81	2.41	32.2	112	234	Peak
521.2	24.15	33.08	46	-21.85	20.51	2.7	32.14	108	79	Peak
916	27.95	29.83	46	-18.05	25.96	3.53	31.37	142	202	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
30	28.88	42.61	40	-11.12	17.8	0.74	32.27	188	61	QP
96.96	27.75	49.11	43.5	-15.75	9.46	1.28	32.1	186	316	Peak
198.75	21.16	41	43.5	-22.34	10.84	1.61	32.29	197	293	Peak
416.9	26.69	38.67	46	-19.31	17.81	2.41	32.2	153	352	Peak
521.2	25.81	34.74	46	-20.19	20.51	2.7	32.14	155	126	Peak
794.2	26.39	30.96	46	-19.61	24.23	3.27	32.07	195	289	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 149	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Harry Hsueh

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
30	25.51	39.24	40	-14.49	17.8	0.74	32.27	189	245	Peak
96.96	29.27	50.63	43.5	-14.23	9.46	1.28	32.1	185	215	Peak
199.29	30.06	49.87	43.5	-13.44	10.84	1.65	32.3	174	303	Peak
416.9	27.46	39.44	46	-18.54	17.81	2.41	32.2	125	347	Peak
521.2	24.22	33.15	46	-21.78	20.51	2.7	32.14	155	226	Peak
916	29.07	30.95	46	-16.93	25.96	3.53	31.37	137	198	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
30.54	30.41	44.62	40	-9.59	17.31	0.74	32.26	183	63	QP
54.84	26.54	50.57	40	-13.46	7.3	0.9	32.23	152	102	Peak
96.69	27.5	48.9	43.5	-16	9.42	1.28	32.1	138	168	Peak
416.9	27.59	39.57	46	-18.41	17.81	2.41	32.2	168	289	Peak
521.2	25.33	34.26	46	-20.67	20.51	2.7	32.14	112	284	Peak
955.2	28.52	29.75	46	-17.48	26.12	3.67	31.02	153	211	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	Apr. 24, 2014	Apr. 23, 2015
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2014	Dec. 29, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 10, 2014	Jul. 09, 2015
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

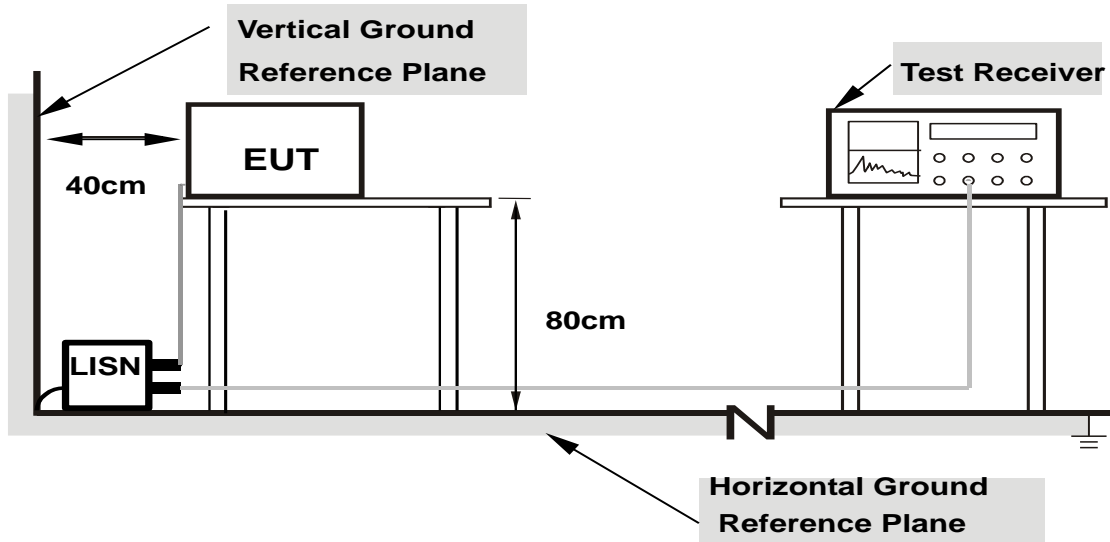
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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 section 4.1.6.

#### 4.2.7 TEST RESULTS

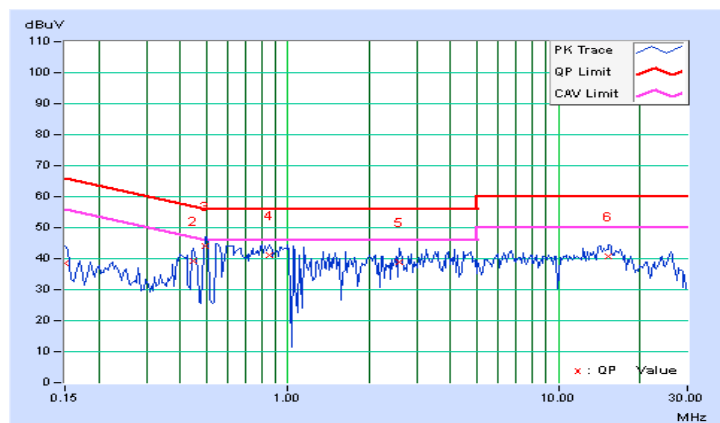
##### CONDUCTED WORST-CASE DATA :

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Toby Tien	Test Date	2015/3/26

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.16	38.52	26.05	38.68	26.21	66.00	56.00	-27.32	-29.79
2	0.44688	0.18	39.15	27.05	39.33	27.23	56.93	46.93	-17.60	-19.70
3	0.49766	0.19	43.97	33.75	44.16	33.94	56.04	46.04	-11.88	-12.10
4	0.85703	0.22	40.99	26.09	41.21	26.31	56.00	46.00	-14.79	-19.69
5	2.59375	0.29	38.70	23.73	38.99	24.02	56.00	46.00	-17.01	-21.98
6	15.33594	0.54	40.15	25.28	40.69	25.82	60.00	50.00	-19.31	-24.18

##### 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





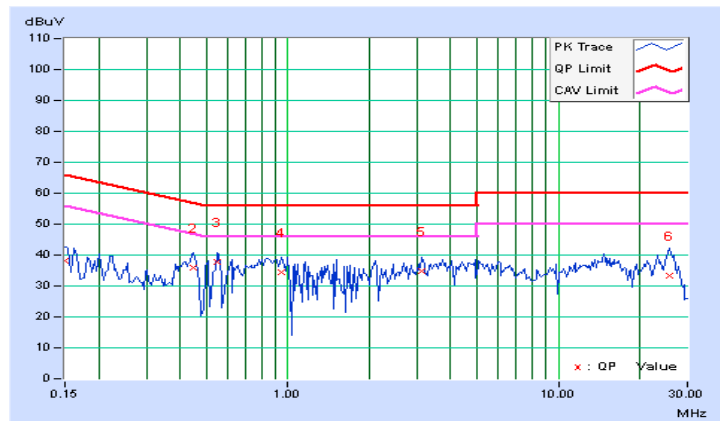
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Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 65%RH
Tested by	Toby Tien	Test Date	2015/3/26

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.17	37.89	17.34	38.06	17.51	66.00	56.00	-27.94	-38.49
2	0.44688	0.20	35.76	25.81	35.96	26.01	56.93	46.93	-20.97	-20.92
3	0.54844	0.21	37.68	29.74	37.89	29.95	56.00	46.00	-18.11	-16.05
4	0.95078	0.24	34.31	25.28	34.55	25.52	56.00	46.00	-21.45	-20.48
5	3.12500	0.34	34.40	22.59	34.74	22.93	56.00	46.00	-21.26	-23.07
6	25.73828	0.65	32.84	16.84	33.49	17.49	60.00	50.00	-26.51	-32.51

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 TRANSMIT POWER MEASUREMENT

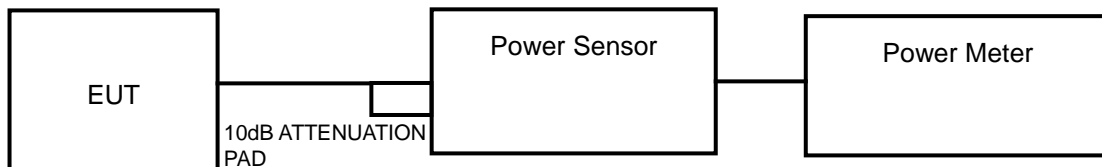
#### 4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

OPERATION BAND	EUT CATEGORY		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√	---	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√	---	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√	---	1 Watt (30 dBm)

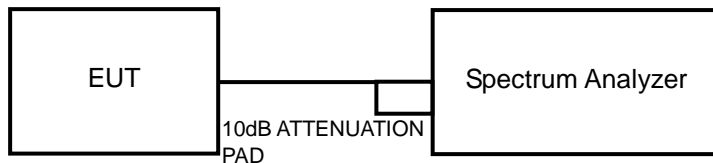
**NOTE:** Where B is the 26dB emission bandwidth in MHz.

#### 4.3.2 TEST SETUP

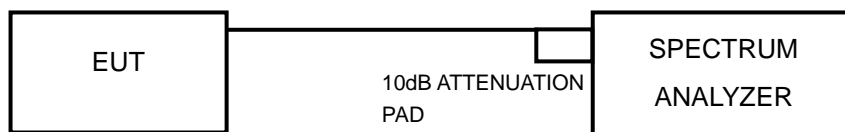
##### FOR POWER OUTPUT MEASUREMENT



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)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	38.02	15.80	24	PASS
44	5220	37.76	15.77	24	PASS
48	5240	38.55	15.86	24	PASS
52	5260	38.73	15.88	23.78	PASS
60	5300	41.98	16.23	24	PASS
64	5320	38.28	15.83	24	PASS
100	5500	41.98	16.23	24	PASS
116	5580	42.17	16.25	23.77	PASS
140	5700	26.36	14.21	24	PASS
149	5745	35.24	15.47	30	PASS
157	5785	40.83	16.11	30	PASS
165	5825	40.74	16.1	30	PASS

##### NOTE:

###### For U-NII-2A, U-NII-2C Band:

1.  $11\text{dBm} + 10\log(18.95) = 23.78\text{ dBm} < 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(21.93) = 24.41\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(21.82) = 24.39\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(21.85) = 24.39\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(18.93) = 23.77\text{ dBm} < 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(21.84) = 24.39\text{ dBm} > 24\text{dBm}$ .





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### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	35.97	15.56	24	PASS
44	5220	37.15	15.70	24	PASS
48	5240	37.93	15.79	24	PASS
52	5260	41.11	16.14	23.86	PASS
60	5300	42.85	16.32	24	PASS
64	5320	42.27	16.26	24	PASS
100	5500	40.93	16.12	24	PASS
116	5580	41.21	16.15	23.86	PASS
140	5700	22.08	13.44	24	PASS
149	5745	34.59	15.39	30	PASS
157	5785	40.55	16.08	30	PASS
165	5825	40.36	16.06	30	PASS

#### NOTE:

##### For U-NII-2A, U-NII-2C Band:

1.  $11\text{dBm} + 10\log(19.33) = 23.86\text{ dBm} < 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(22.05) = 24.43\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(22.09) = 24.44\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(22.19) = 24.46\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(19.30) = 23.86\text{ dBm} < 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(22.11) = 24.45\text{ dBm} > 24\text{dBm}$ .



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### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
38	5190	21.48	13.32	24	PASS
46	5230	21.53	13.33	24	PASS
54	5270	20.23	13.06	24	PASS
62	5310	22.13	13.45	24	PASS
102	5510	20.80	13.18	24	PASS
110	5550	21.13	13.25	24	PASS
134	5670	18.71	12.72	24	PASS
151	5755	20.14	13.04	30	PASS
159	5795	20.80	13.18	30	PASS

**NOTE:**

**For U-NII-2A, U-NII-2C Band:**

1.  $11\text{dBm} + 10\log(41.42) = 27.17\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(41.83) = 27.21\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(41.57) = 27.19\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(41.68) = 27.20\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(41.56) = 27.19\text{ dBm} > 24\text{dBm}$ .

### 802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	MAX. CONDUCTED POWER (mW)	MAX. CONDUCTED POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
42	5210	13.00	11.14	24	PASS
58	5290	13.03	11.15	24	PASS
106	5530	12.74	11.05	24	PASS
155	5775	10.74	10.31	30	PASS

**NOTE:**

**For U-NII-2A, U-NII-2C Band:**

1.  $11\text{dBm} + 10\log(82.76) = 30.18\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(82.59) = 30.17\text{ dBm} > 24\text{dBm}$ .



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## 26dB BANDWIDTH

### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
52	5260	18.95	PASS
60	5300	21.93	PASS
64	5320	21.82	PASS
100	5500	21.85	PASS
116	5580	18.93	PASS
140	5700	21.84	PASS

### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
52	5260	19.33	PASS
60	5300	22.05	PASS
64	5320	22.09	PASS
100	5500	22.19	PASS
116	5580	19.30	PASS
140	5700	22.11	PASS

### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
54	5270	41.42	PASS
62	5310	41.83	PASS
102	5510	41.57	PASS
110	5550	41.68	PASS
134	5670	41.56	PASS

### 802.11ac (80MHz)

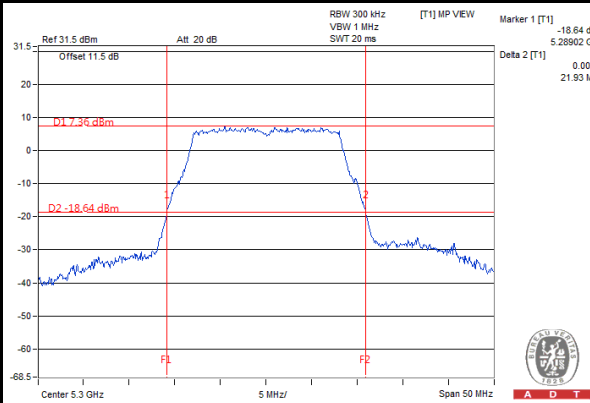
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
58	5290	82.76	PASS
106	5530	82.59	PASS



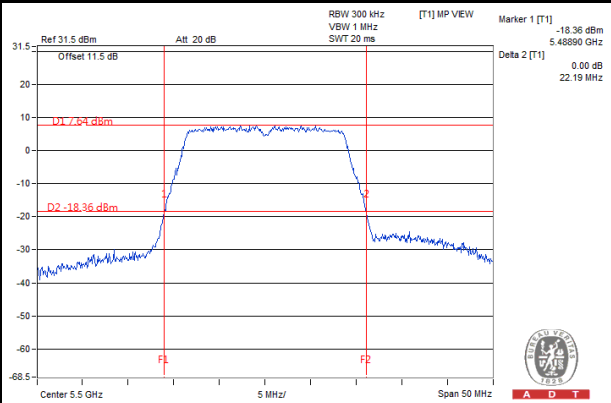
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### SPECTRUM PLOT OF WORST VALUE

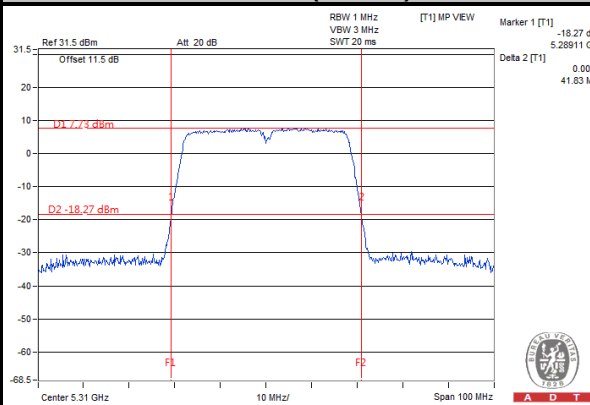
#### 802.11a



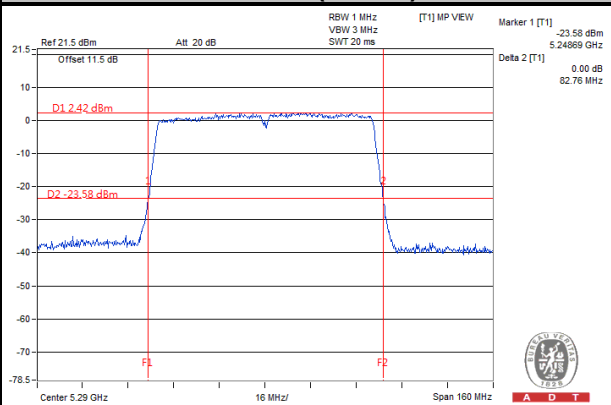
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)





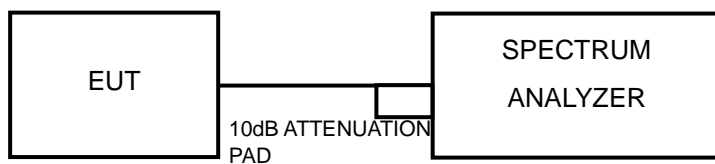
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## 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
	√	Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√	---	11dBm/ MHz
U-NII-2C	√	---	11dBm/ MHz
U-NII-3	√	---	30dBm/ 500kHz

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.



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#### 4.4.4 TEST PROCEDURES

##### For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-2 alternative

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW  $\geq$  1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = 4 second.
- 5) Perform a single sweep.
- 6) Record the max value and add 10 log (1/duty cycle)

##### For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW  $\geq$  3 RBW, Detector = RMS
- 3) Sweep time = auto, trigger set to "free run".
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value and add 10 log (1/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

##### For U-NII-1, U-NII-2A, U-NII-2C Band

###### 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	3.29	0.25	3.54	11	PASS
44	5220	3.13	0.25	3.38	11	PASS
48	5240	3.26	0.25	3.51	11	PASS
52	5260	3.22	0.25	3.47	11	PASS
60	5300	3.90	0.25	4.15	11	PASS
64	5320	4.02	0.25	4.27	11	PASS
100	5500	4.59	0.25	4.84	11	PASS
116	5580	4.27	0.25	4.52	11	PASS
140	5700	2.35	0.25	2.60	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	2.68	0.26	2.94	11	PASS
44	5220	2.63	0.26	2.89	11	PASS
48	5240	2.83	0.26	3.09	11	PASS
52	5260	3.64	0.26	3.90	11	PASS
60	5300	3.87	0.26	4.13	11	PASS
64	5320	3.93	0.26	4.19	11	PASS
100	5500	4.06	0.26	4.32	11	PASS
116	5580	3.77	0.26	4.03	11	PASS
140	5700	1.37	0.26	1.63	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	-2.92	0.60	-2.32	11	PASS
46	5230	-2.78	0.60	-2.18	11	PASS
54	5270	-2.82	0.60	-2.22	11	PASS
62	5310	-1.92	0.60	-1.32	11	PASS
102	5510	-1.95	0.60	-1.35	11	PASS
110	5550	-2.15	0.60	-1.55	11	PASS
134	5670	-3.33	0.60	-2.73	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	-9.48	1.10	-8.38	11	PASS
58	5290	-9.46	1.10	-8.36	11	PASS
106	5530	-9.52	1.10	-8.42	11	PASS

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

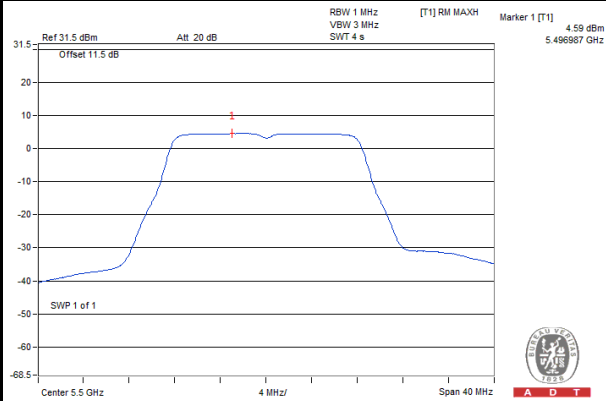




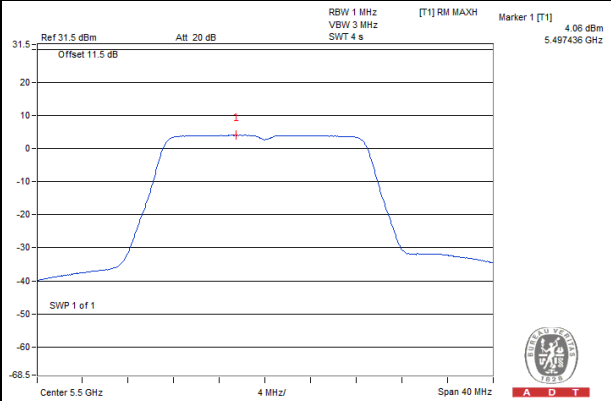
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### SPECTRUM PLOT OF WORST VALUE

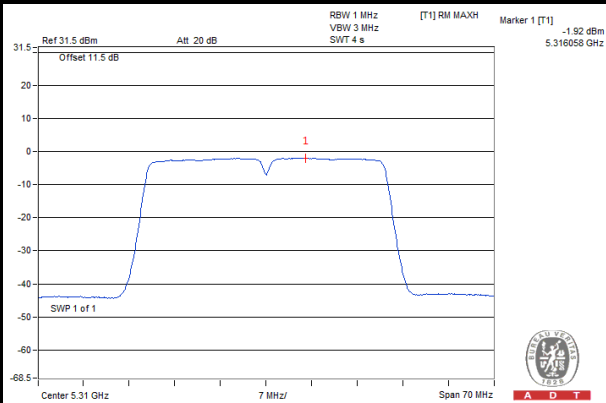
#### 802.11a



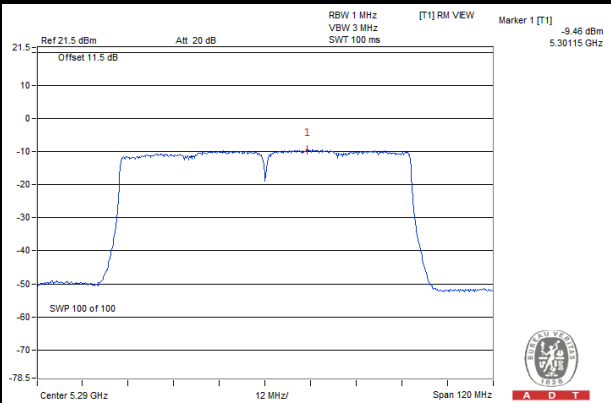
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)





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### For U-NII-3 Band

#### 802.11a

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
149	5745	0.01	0.25	0.26	30	PASS
157	5785	0.38	0.25	0.63	30	PASS
165	5825	0.89	0.25	1.14	30	PASS

#### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
149	5745	-0.37	0.26	-0.11	30	PASS
157	5785	0.11	0.26	0.37	30	PASS
165	5825	0.43	0.26	0.69	30	PASS

#### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
151	5755	-6.10	0.60	-5.50	30	PASS
159	5795	-5.60	0.60	-5.00	30	PASS

#### 802.11ac (80MHz)

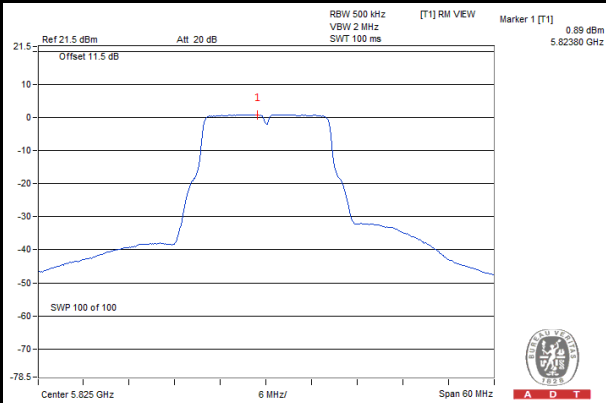
CHANNEL	FREQUENCY (MHz)	PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	PSD WITH DUTY FACTOR (dBm)	LIMIT (dBm/500kHz)	PASS/FAIL
155	5775	-10.55	1.10	-9.45	30	PASS



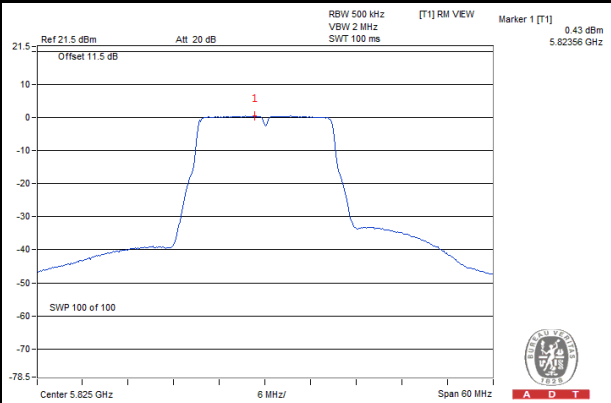
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### SPECTRUM PLOT OF WORST VALUE

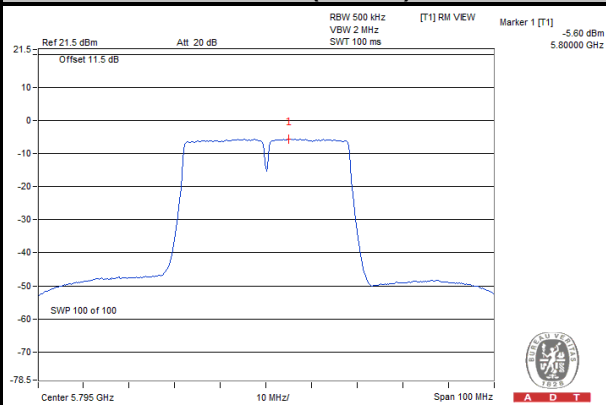
#### 802.11a



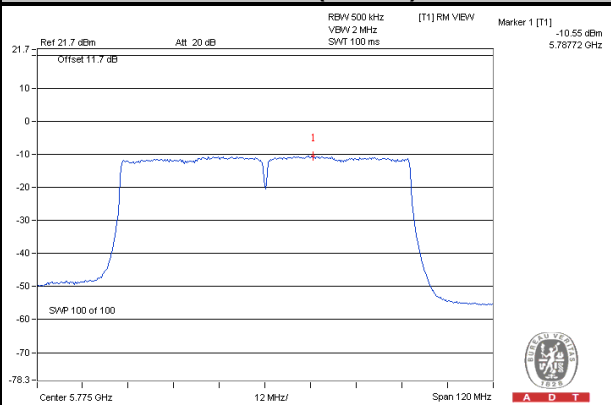
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 802.11ac (80MHz)

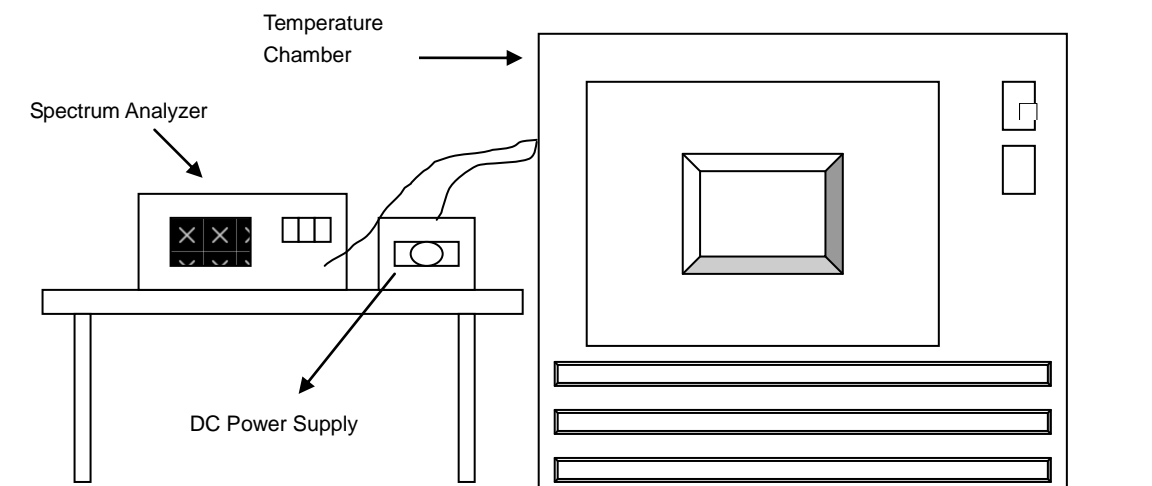


## 4.5 FREQUENCY STABILITY

### 4.5.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

### 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. 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.

#### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.5.6 EUT OPERATING CONDITION

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



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#### 4.5.7 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	3.83	5320.053999	10.150	5320.054193	10.187	5320.053965	10.144	5320.054153	10.179
40	3.83	5320.054125	10.174	5320.053777	10.108	5320.053759	10.105	5320.053805	10.114
30	3.83	5320.055510	10.434	5320.055678	10.466	5320.055899	10.507	5320.055777	10.484
20	3.83	5320.056656	10.650	5320.056158	10.556	5320.056098	10.545	5320.056136	10.552
10	3.83	5320.057427	10.795	5320.057475	10.804	5320.057329	10.776	5320.057313	10.773
0	3.83	5320.056012	10.529	5320.056242	10.572	5320.055950	10.517	5320.056291	10.581
-10	3.83	5320.054502	10.245	5320.054444	10.234	5320.054385	10.223	5320.054453	10.236
-20	3.83	5320.054434	10.232	5320.054428	10.231	5320.054701	10.282	5320.054224	10.192
-30	3.83	5320.053627	10.080	5320.053335	10.025	5320.052999	9.962	5320.053437	10.045

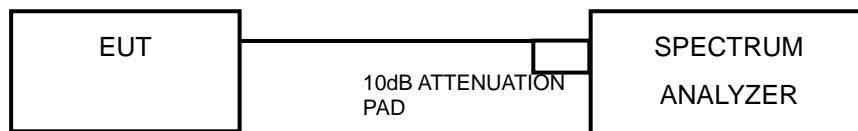
FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vdc)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
20	3.5	5320.056057	10.537	5320.055925	10.512	5320.055768	10.483	5320.055921	10.511
	3.83	5320.056656	10.650	5320.056158	10.556	5320.056098	10.545	5320.056136	10.552
	4.40	5320.057820	10.868	5320.057215	10.755	5320.057394	10.788	5320.057929	10.889

## 4.6 6dB BANDWIDTH MEASUREMENT

### 4.6.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

### 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

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.6.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



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#### 4.6.7 TEST RESULTS

##### 802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	16.39	0.5	PASS
157	5785	16.41	0.5	PASS
165	5825	16.38	0.5	PASS

##### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
149	5745	17.64	0.5	PASS
157	5785	17.64	0.5	PASS
165	5825	17.64	0.5	PASS

##### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
151	5755	36.42	0.5	PASS
159	5795	36.42	0.5	PASS

##### 802.11ac (80MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
155	5775	75.89	0.5	PASS

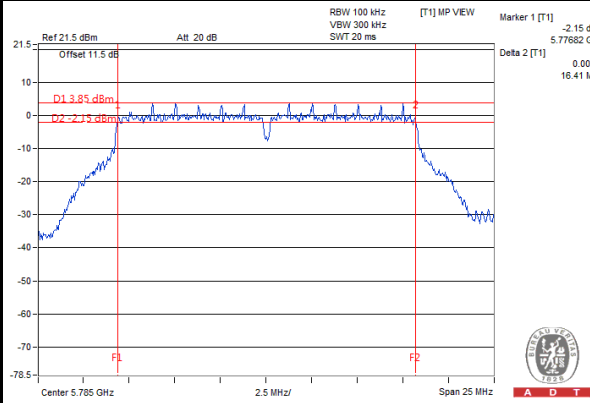




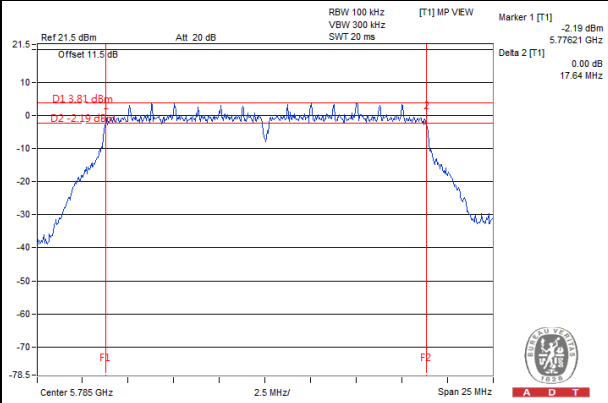
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### SPECTRUM PLOT OF WORST VALUE

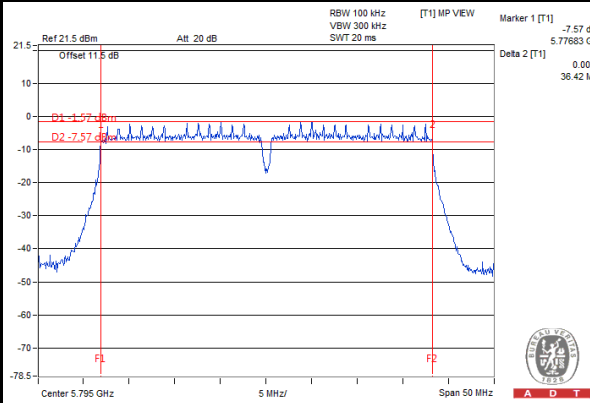
#### 802.11a



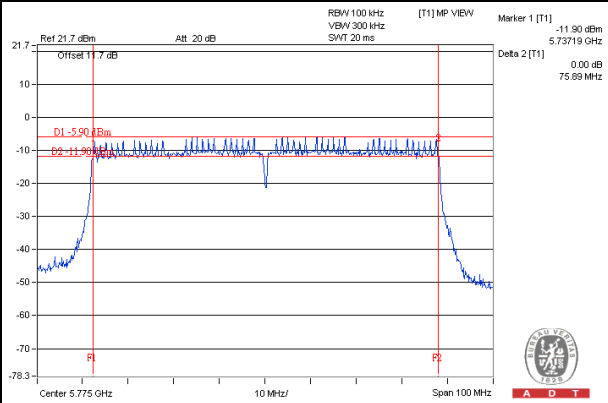
#### 802.11n (20MHz)



#### 802.11n (40MHz)



#### 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:

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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---