

# FCC TEST REPORT (15.407)

**REPORT NO.:** RF130814C33-4

**MODEL NO.:** NeverLost® 6 Tablet

**FCC ID:** 2AA4L-HTZNLTABLET

**RECEIVED:** Aug. 14, 2013

**TESTED:** Sep. 03, 2013 ~ Sep. 09, 2013

**ISSUED:** Sep. 16, 2013

**APPLICANT:** MiTAC International Corp.

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Taipei 11568, Taiwan, R.O.C.

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

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**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei  
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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130814C33-4	Original release	Sep. 16, 2013

## 1. CERTIFICATION

**PRODUCT:** Automotive Navigation Device

**MODEL:** NeverLost® 6 Tablet

**BRAND:** Hertz

**APPLICANT:** MiTAC International Corp.

**TESTED:** Sep. 03, 2013 ~ Sep. 09, 2013

**TEST SAMPLE:** Production Unit

**STANDARDS:** FCC Part 15, Subpart E (Section 15.407)

ANSI C63.10-2009

The above equipment (model: NeverLost® 6 Tablet) 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** : Vera Huang , **DATE** : Sep. 16, 2013

Vera Huang / Specialist

**APPROVED BY** : Sam chen , **DATE** : Sep. 16, 2013

Sam Chen / Assistant Manager

## 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	N/A	Without AC power port of the EUT.
15.407(b/1/2/3) (b)(6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.04dB at 5725MHz.
15.407(a/1/2)	Max Average Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

**NOTE:** "NA" means Not Applicable.

### 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	3.34 dB
	200MHz ~1000MHz	3.35 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>	Automotive Navigation Device
<b>MODEL NO.</b>	NeverLost® 6 Tablet
<b>POWER SUPPLY</b>	3.7Vdc (battery)
<b>MODULATION TYPE</b>	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 300.0Mbps
<b>OPERATING FREQUENCY</b>	5180 ~ 5240MHz, 5260 ~ 5320MHz & 5500 ~ 5700MHz
<b>NUMBER OF CHANNEL</b>	5180 ~ 5240MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz) 5500 ~ 5700MHz: 8 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz)
<b>OUTPUT POWER</b>	30.832mW for 5180 ~ 5240MHz 59.020mW for 5260 ~ 5320MHz 32.434mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	PIFA antenna with 3.3dBi gain (5180 ~ 5240MHz) PIFA antenna with 3.2dBi gain (5260 ~ 5320MHz) PIFA antenna with 3.9dBi gain (5500 ~ 5700MHz)
<b>ANTENNA CONNECTOR</b>	NA
<b>DATA CABLE</b>	Refer to Note as below
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Refer to Note as below

**NOTE:**

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11a	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

2. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	DESCRIPTION
Battery	Tian Yu	N425	Rating: 3.7Vdc, 920mAh
WWAN Module	CINTERION	PHS8-P	--
WLAN Module	nFore	NF3301	--
NFC Module	Jogtek	TM-007A	--
BT Module	nFore	NF3301	--

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



### 3.2 DESCRIPTION OF TEST MODES

#### FOR 5180 ~ 5240MHz

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

#### 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

#### FOR 5500 ~ 5700MHz

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

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

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

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

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE $\geq$ 1G	RE<1G	APCM	
A	√	-	√	Chain 0 only
B	-	-	√	Chain 1 only
C	√	√	√	Chain 0 + Chain 1

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz  
**APCM**: Antenna Port Conducted Measurement

#### NOTE:

The antenna of the EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Y-plane.

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

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
C	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
C	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
C	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
C	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
C	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
C	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0

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

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
C	802.11n (40MHz)	5260-5320	54 to 62	54	OFDM	BPSK	15.0

### ANTENNA PORT CONDUCTED MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.0
C	802.11n (20MHz)		36 to 48	36, 40, 48	OFDM	BPSK	7.2
C	802.11n (40MHz)		38 to 46	38, 46	OFDM	BPSK	15.0
A, B	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
C	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
C	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
A, B	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
C	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
C	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0

### TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	David Huang
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

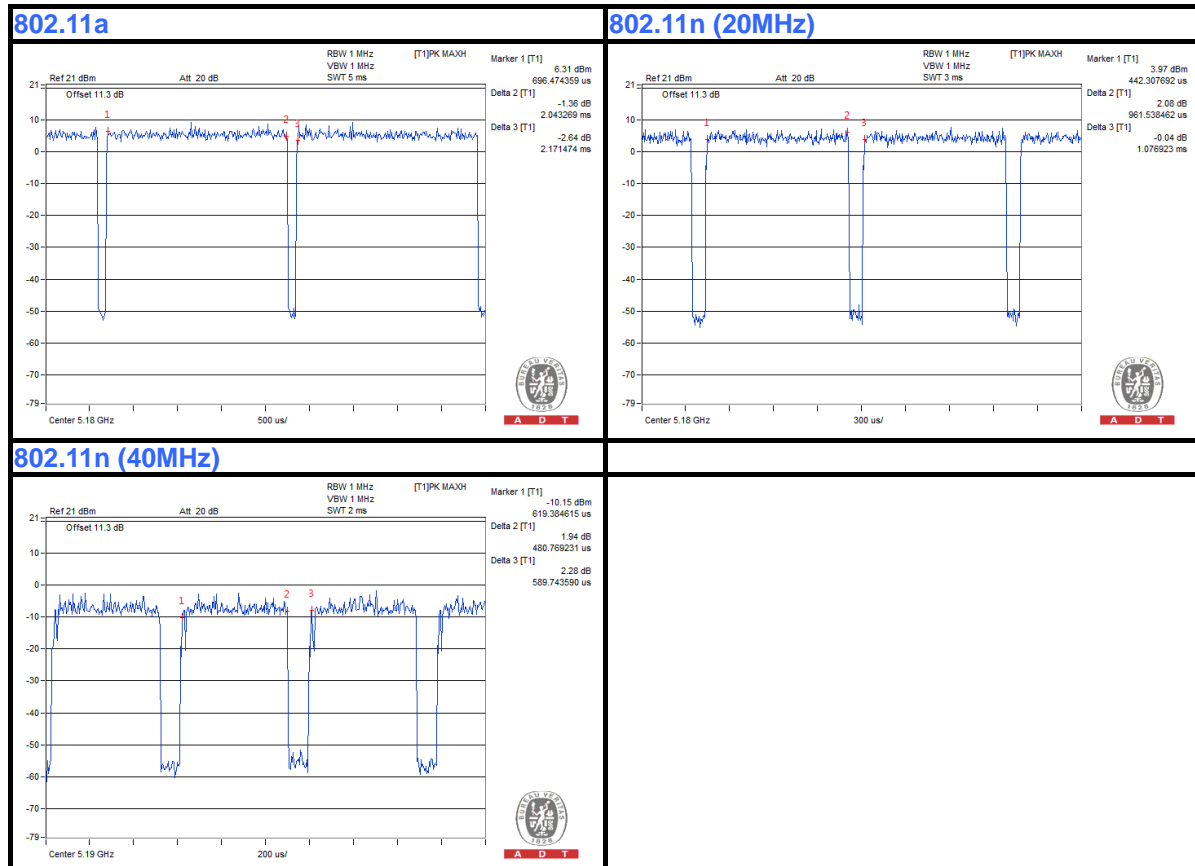
### 3.3 DUTY CYCLE OF TEST SIGNAL

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

**802.11a:** Duty cycle =  $2.043/2.171 = 0.941$ , Duty factor =  $10 * \log(1/0.941) = 0.26$

**802.11n (20MHz):** Duty cycle =  $0.962/1.077 = 0.893$ , Duty factor =  $10 * \log(1/0.893) = 0.49$

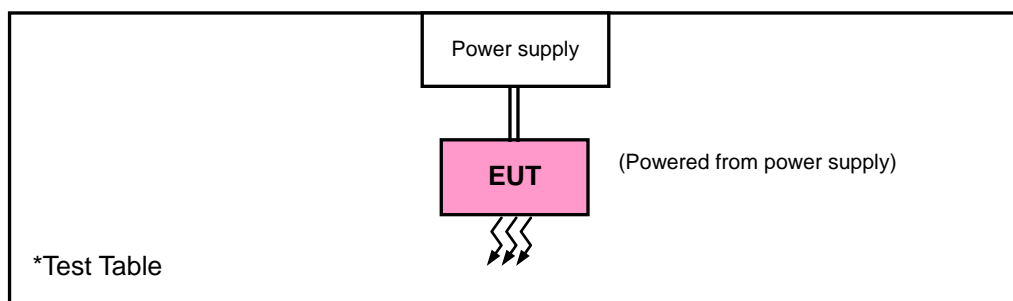
**802.11n (40MHz):** Duty cycle =  $480.769/589.744 = 0.815$ , Duty factor =  $10 * \log(1/0.815) = 0.89$



### 3.4 DESCRIPTION OF SUPPORT UNITS

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

#### 3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



### 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 D01 General UNII Test Procedures v01 r03**

**662911 D01 Multiple Transmitter Output v02**

**ANSI C63.10-2009**

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

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

## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

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

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

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

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

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

#### 4.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 15, 2013	Apr. 14, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 184045	980116	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable Worken	RG-213	NA	Dec. 29, 2012	Dec. 28, 2013
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Power Meter	ML2495A	1012010	Jul. 31, 2013	Jul. 30, 2014
Power Sensor	MA2411B	1315050	Jul. 31, 2013	Jul. 30, 2014

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

#### 4.1.4 TEST PROCEDURES

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

**NOTE:**

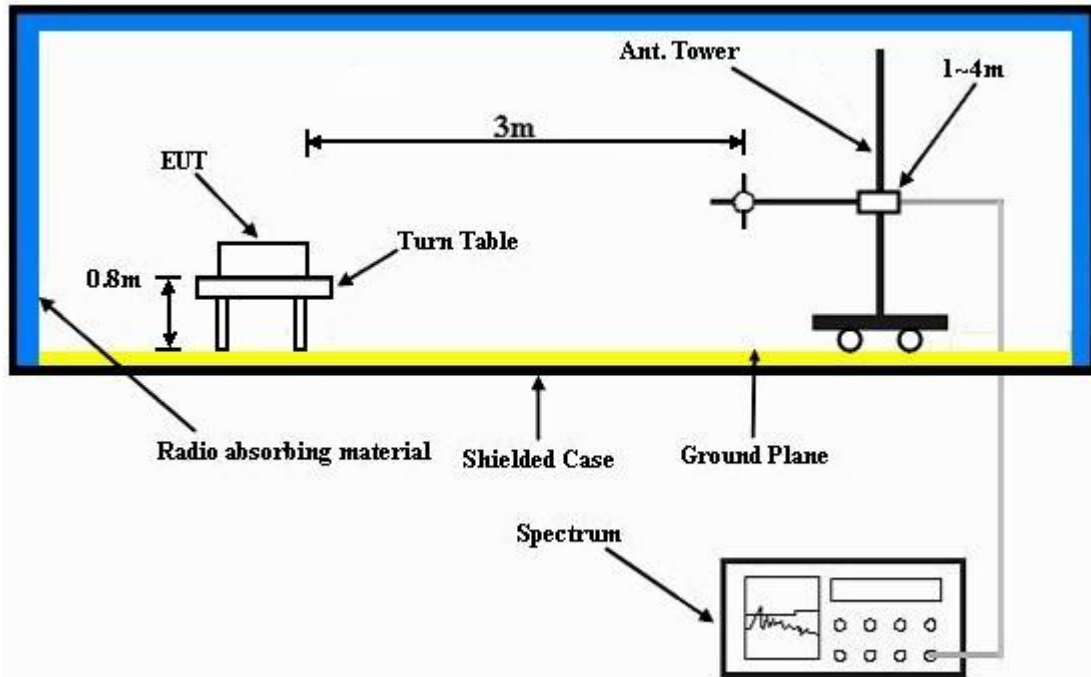
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution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



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

#### 4.1.7 EUT OPERATING CONDITION

- Plugged the EUT into a notebook through a convertible board and placed on a test table.
- The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

## 4.1.8 TEST RESULTS

### ABOVE 1GHz DATA :

#### MODE A

#### 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5150	48.35	49.06	54	-5.65	31.32	5.29	37.32	113	117	Average
5150	64.41	65.12	74	-9.59	31.32	5.29	37.32	113	117	Peak
5180	96.79	97.47			31.35	5.31	37.34	113	117	Average
5180	106.03	106.71			31.35	5.31	37.34	113	117	Peak
5426	38.98	39.16	54	-15.02	31.53	5.42	37.13	113	117	Average
5426	60.24	60.42	74	-13.76	31.53	5.42	37.13	113	117	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	51.91	52.62	54	-2.09	31.32	5.29	37.32	102	155	Average
5148	67.93	68.64	74	-6.07	31.32	5.29	37.32	102	155	Peak
5180	99.29	99.97			31.35	5.31	37.34	102	155	Average
5180	108.56	109.24			31.35	5.31	37.34	102	155	Peak
5390	38.39	38.65	54	-15.61	31.51	5.41	37.18	102	155	Average
5390	60.91	61.17	74	-13.09	31.51	5.41	37.18	102	155	Peak

#### REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5066	41.06	41.8	54	-12.94	31.25	5.26	37.25	110	119	Average
5066	59.62	60.36	74	-14.38	31.25	5.26	37.25	110	119	Peak
5220	99.17	99.83			31.37	5.33	37.36	110	119	Average
5220	108.11	108.77			31.37	5.33	37.36	110	119	Peak
5352	39.98	40.29	54	-14.02	31.48	5.39	37.18	110	119	Average
5352	60.6	60.91	74	-13.4	31.48	5.39	37.18	110	119	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5096	42.89	43.62	54	-11.11	31.28	5.27	37.28	101	152	Average
5096	60.14	60.87	74	-13.86	31.28	5.27	37.28	101	152	Peak
5220	100.4	101.06			31.37	5.33	37.36	101	152	Average
5220	109.22	109.88			31.37	5.33	37.36	101	152	Peak
5404	39.68	39.93	54	-14.32	31.52	5.41	37.18	101	152	Average
5404	59.57	59.82	74	-14.43	31.52	5.41	37.18	101	152	Peak

**REMARKS:**

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



A D T

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

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
5094	40.51	41.24	54	-13.49	31.28	5.27	37.28	110	119	Average
5094	60.47	61.2	74	-13.53	31.28	5.27	37.28	110	119	Peak
5240	99.93	100.52			31.39	5.34	37.32	110	119	Average
5240	108.63	109.22			31.39	5.34	37.32	110	119	Peak
5430	40.74	40.9	54	-13.26	31.55	5.42	37.13	110	119	Average
5430	59.85	60.01	74	-14.15	31.55	5.42	37.13	110	119	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
5130	40.95	41.66	54	-13.05	31.31	5.28	37.3	100	153	Average
5130	60.88	61.59	74	-13.12	31.31	5.28	37.3	100	153	Peak
5240	100.77	101.36			31.39	5.34	37.32	100	153	Average
5240	109.5	110.09			31.39	5.34	37.32	100	153	Peak
5360	40.55	40.86	54	-13.45	31.48	5.39	37.18	100	153	Average
5360	59.73	60.04	74	-14.27	31.48	5.39	37.18	100	153	Peak

**REMARKS:**

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

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

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	40.37	41.08	54	-13.63	31.32	5.29	37.32	110	118	Average
5148	60.15	60.86	74	-13.85	31.32	5.29	37.32	110	118	Peak
5260	99.75	100.27			31.41	5.34	37.27	110	118	Average
5260	109.12	109.64			31.41	5.34	37.27	110	118	Peak
5442	41.1	41.24	54	-12.9	31.55	5.44	37.13	110	118	Average
5442	60.68	60.82	74	-13.32	31.55	5.44	37.13	110	118	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	40.43	41.14	54	-13.57	31.32	5.29	37.32	100	156	Average
5148	59.38	60.09	74	-14.62	31.32	5.29	37.32	100	156	Peak
5260	100.87	101.39			31.41	5.34	37.27	100	156	Average
5260	110.32	110.84			31.41	5.34	37.27	100	156	Peak
5418	41.15	41.38	54	-12.85	31.53	5.42	37.18	100	156	Average
5418	59.8	60.03	74	-14.2	31.53	5.42	37.18	100	156	Peak

#### REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5070	39.49	40.25	54	-14.51	31.25	5.26	37.27	110	122	Average
5070	60.7	61.46	74	-13.3	31.25	5.26	37.27	110	122	Peak
5300	99.35	99.73			31.44	5.37	37.19	110	122	Average
5300	108.1	108.48			31.44	5.37	37.19	110	122	Peak
5348	44.51	44.82	54	-9.49	31.48	5.39	37.18	110	122	Average
5348	61.62	61.93	74	-12.38	31.48	5.39	37.18	110	122	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
5038	39.82	40.57	54	-14.18	31.24	5.25	37.24	100	153	Average
5038	60.53	61.28	74	-13.47	31.24	5.25	37.24	100	153	Peak
5300	100.12	100.5			31.44	5.37	37.19	100	153	Average
5300	109.07	109.45			31.44	5.37	37.19	100	153	Peak
5360	44.78	45.09	54	-9.22	31.48	5.39	37.18	100	153	Average
5360	60.71	61.02	74	-13.29	31.48	5.39	37.18	100	153	Peak

**REMARKS:**

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



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

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
5108	38.07	38.79	54	-15.93	31.29	5.27	37.28	109	123	Average
5108	60.45	61.17	74	-13.55	31.29	5.27	37.28	109	123	Peak
5320	96.61	96.97			31.45	5.38	37.19	109	123	Average
5320	106.08	106.44			31.45	5.38	37.19	109	123	Peak
5354	47.01	47.32	54	-6.99	31.48	5.39	37.18	109	123	Average
5354	62.89	63.2	74	-11.11	31.48	5.39	37.18	109	123	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
5094	39.16	39.89	54	-14.84	31.28	5.27	37.28	100	158	Average
5094	60.31	61.04	74	-13.69	31.28	5.27	37.28	100	158	Peak
5320	97.91	98.27			31.45	5.38	37.19	100	158	Average
5320	107.25	107.61			31.45	5.38	37.19	100	158	Peak
5350	47.8	48.11	54	-6.2	31.48	5.39	37.18	100	158	Average
5350	63.49	63.8	74	-10.51	31.48	5.39	37.18	100	158	Peak

**REMARKS:**

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



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5452	48.03	48.11	54	-5.97	31.56	5.44	37.08	115	131	Average
5452	63.3	63.38	74	-10.7	31.56	5.44	37.08	115	131	Peak
5470	66.24	66.3	68.3	-2.06	31.57	5.45	37.08	115	131	Peak
5500	96.89	96.86			31.6	5.46	37.03	115	131	Average
5500	107.01	106.98			31.6	5.46	37.03	115	131	Peak
5725	59.33	59.21	68.3	-8.97	31.96	5.59	37.43	115	131	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	47.05	47.13	54	-6.95	31.56	5.44	37.08	111	114	Average
5450	62.42	62.5	74	-11.58	31.56	5.44	37.08	111	114	Peak
5470	66.35	66.41	68.3	-1.95	31.57	5.45	37.08	111	114	Peak
5500	95.82	95.79			31.6	5.46	37.03	111	114	Average
5500	105.15	105.12			31.6	5.46	37.03	111	114	Peak
5725	59.77	59.65	68.3	-8.53	31.96	5.59	37.43	111	114	Peak

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin Value = Emission Level - Limit Value
2. 5500MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5410	41.48	41.73	54	-12.52	31.52	5.41	37.18	113	129	Average
5410	60.12	60.37	74	-13.88	31.52	5.41	37.18	113	129	Peak
5470	58.37	58.43	68.3	-9.93	31.57	5.45	37.08	113	129	Peak
5580	99.24	99.19			31.71	5.5	37.16	113	129	Average
5580	108.15	108.1			31.71	5.5	37.16	113	129	Peak
5725	58.47	58.35	68.3	-9.83	31.96	5.59	37.43	113	129	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
5398	39.3	39.55	54	-14.7	31.52	5.41	37.18	109	116	Average
5398	59.56	59.81	74	-14.44	31.52	5.41	37.18	109	116	Peak
5470	58.98	59.04	68.3	-9.32	31.57	5.45	37.08	109	116	Peak
5580	96.85	96.8			31.71	5.5	37.16	109	116	Average
5580	106.66	106.61			31.71	5.5	37.16	109	116	Peak
5725	58.84	58.72	68.3	-9.46	31.96	5.59	37.43	109	116	Peak

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin Value = Emission Level - Limit Value
2. 5580MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



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

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
5368	41.7	41.99	54	-12.3	31.49	5.4	37.18	100	128	Average
5368	59.8	60.09	74	-14.2	31.49	5.4	37.18	100	128	Peak
5470	58.54	58.6	68.3	-9.76	31.57	5.45	37.08	100	128	Peak
5700	96.58	96.51			31.9	5.57	37.4	100	128	Average
5700	106.02	105.95			31.9	5.57	37.4	100	128	Peak
5725	67.26	67.14	68.3	-1.04	31.96	5.59	37.43	100	128	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5410	39.36	39.61	54	-14.64	31.52	5.41	37.18	101	190	Average
5410	59.74	59.99	74	-14.26	31.52	5.41	37.18	101	190	Peak
5470	58.62	58.68	68.3	-9.68	31.57	5.45	37.08	101	190	Peak
5700	95.57	95.5			31.9	5.57	37.4	101	190	Average
5700	106.85	106.78			31.9	5.57	37.4	101	190	Peak
5725	66.42	66.3	68.3	-1.88	31.96	5.59	37.43	101	190	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

## MODE C

### 802.11n (20MHz)

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

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	47.47	48.18	54	-6.53	31.32	5.29	37.32	114	119	Average
5148	64.12	64.83	74	-9.88	31.32	5.29	37.32	114	119	Peak
5180	97.34	98.02			31.35	5.31	37.34	114	119	Average
5180	107.22	107.9			31.35	5.31	37.34	114	119	Peak
5438	39.6	39.74	54	-14.4	31.55	5.44	37.13	114	119	Average
5438	61.16	61.3	74	-12.84	31.55	5.44	37.13	114	119	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
5150	51.2	51.91	54	-2.8	31.32	5.29	37.32	102	195	Average
5150	67.83	68.54	74	-6.17	31.32	5.29	37.32	102	195	Peak
5180	99.91	100.59			31.35	5.31	37.34	102	195	Average
5180	109.1	109.78			31.35	5.31	37.34	102	195	Peak
5354	39.03	39.34	54	-14.97	31.48	5.39	37.18	102	195	Average
5354	60.06	60.37	74	-13.94	31.48	5.39	37.18	102	195	Peak

#### REMARKS:

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

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

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
5110	41.4	42.12	54	-12.6	31.29	5.27	37.28	113	120	Average
5110	60.65	61.37	74	-13.35	31.29	5.27	37.28	113	120	Peak
5220	98.27	98.93			31.37	5.33	37.36	113	120	Average
5220	107.49	108.15			31.37	5.33	37.36	113	120	Peak
5456	39.78	39.86	54	-14.22	31.56	5.44	37.08	113	120	Average
5456	60.18	60.26	74	-13.82	31.56	5.44	37.08	113	120	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	41.55	42.26	54	-12.45	31.31	5.28	37.3	100	194	Average
5132	59.71	60.42	74	-14.29	31.31	5.28	37.3	100	194	Peak
5220	99.99	100.65			31.37	5.33	37.36	100	194	Average
5220	109.07	109.73			31.37	5.33	37.36	100	194	Peak
5438	39.7	39.84	54	-14.3	31.55	5.44	37.13	100	194	Average
5438	59.66	59.8	74	-14.34	31.55	5.44	37.13	100	194	Peak

**REMARKS:**

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



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

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	40.56	41.3	54	-13.44	31.27	5.26	37.27	112	121	Average
5084	60.07	60.81	74	-13.93	31.27	5.26	37.27	112	121	Peak
5240	98.6	99.19			31.39	5.34	37.32	112	121	Average
5240	107.88	108.47			31.39	5.34	37.32	112	121	Peak
5406	40.29	40.54	54	-13.71	31.52	5.41	37.18	112	121	Average
5406	60.57	60.82	74	-13.43	31.52	5.41	37.18	112	121	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
5120	40.72	41.45	54	-13.28	31.29	5.28	37.3	100	197	Average
5120	60.54	61.27	74	-13.46	31.29	5.28	37.3	100	197	Peak
5240	100.79	101.38			31.39	5.34	37.32	100	197	Average
5240	109.81	110.4			31.39	5.34	37.32	100	197	Peak
5396	40.41	40.66	54	-13.59	31.52	5.41	37.18	100	197	Average
5396	60.46	60.71	74	-13.54	31.52	5.41	37.18	100	197	Peak

**REMARKS:**

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5070	40.02	40.78	54	-13.98	31.25	5.26	37.27	110	120	Average
5070	59.24	60	74	-14.76	31.25	5.26	37.27	110	120	Peak
5260	98.78	99.3			31.41	5.34	37.27	110	120	Average
5260	107.99	108.51			31.41	5.34	37.27	110	120	Peak
5352	41.18	41.49	54	-12.82	31.48	5.39	37.18	110	120	Average
5352	60.54	60.85	74	-13.46	31.48	5.39	37.18	110	120	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
5098	40.68	41.41	54	-13.32	31.28	5.27	37.28	101	195	Average
5098	59.75	60.48	74	-14.25	31.28	5.27	37.28	101	195	Peak
5260	100.29	100.81			31.41	5.34	37.27	101	195	Average
5260	109.61	110.13			31.41	5.34	37.27	101	195	Peak
5454	40.79	40.87	54	-13.21	31.56	5.44	37.08	101	195	Average
5454	60.36	60.44	74	-13.64	31.56	5.44	37.08	101	195	Peak

**REMARKS:**

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

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

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	39.57	40.34	54	-14.43	31.23	5.24	37.24	111	122	Average
5036	60.4	61.17	74	-13.6	31.23	5.24	37.24	111	122	Peak
5300	98.81	99.19			31.44	5.37	37.19	111	122	Average
5300	107.89	108.27			31.44	5.37	37.19	111	122	Peak
5376	44.12	44.41	54	-9.88	31.49	5.4	37.18	111	122	Average
5376	60.12	60.41	74	-13.88	31.49	5.4	37.18	111	122	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5014	39.68	40.46	54	-14.32	31.21	5.24	37.23	100	196	Average
5014	59.19	59.97	74	-14.81	31.21	5.24	37.23	100	196	Peak
5300	100.22	100.6			31.44	5.37	37.19	100	196	Average
5300	109.52	109.9			31.44	5.37	37.19	100	196	Peak
5452	44.74	44.82	54	-9.26	31.56	5.44	37.08	100	196	Average
5452	60.73	60.81	74	-13.27	31.56	5.44	37.08	100	196	Peak

#### REMARKS:

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



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

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	39.73	40.5	54	-14.27	31.23	5.24	37.24	111	119	Average
5036	59.82	60.59	74	-14.18	31.23	5.24	37.24	111	119	Peak
5320	97.36	97.72			31.45	5.38	37.19	111	119	Average
5320	106.72	107.08			31.45	5.38	37.19	111	119	Peak
5348	47.6	47.91	54	-6.4	31.48	5.39	37.18	111	119	Average
5348	63.68	63.99	74	-10.32	31.48	5.39	37.18	111	119	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5074	39.48	40.22	54	-14.52	31.27	5.26	37.27	100	202	Average
5074	60.07	60.81	74	-13.93	31.27	5.26	37.27	100	202	Peak
5320	99.38	99.74			31.45	5.38	37.19	100	202	Average
5320	108.53	108.89			31.45	5.38	37.19	100	202	Peak
5350	50.99	51.3	54	-3.01	31.48	5.39	37.18	100	202	Average
5350	67.6	67.91	74	-6.4	31.48	5.39	37.18	100	202	Peak

**REMARKS:**

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





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

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
5456	46.53	46.61	54	-7.47	31.56	5.44	37.08	100	125	Average
5456	65.12	65.2	74	-8.88	31.56	5.44	37.08	100	125	Peak
5470	64.98	65.04	68.3	-3.32	31.57	5.45	37.08	100	125	Peak
5500	96.52	96.49			31.6	5.46	37.03	100	125	Average
5500	105.88	105.85			31.6	5.46	37.03	100	125	Peak
5725	59.79	59.67	68.3	-8.51	31.96	5.59	37.43	100	125	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	46.42	46.5	54	-7.58	31.56	5.44	37.08	100	246	Average
5460	63.66	63.74	74	-10.34	31.56	5.44	37.08	100	246	Peak
5470	66.26	66.32	68.3	-2.04	31.57	5.45	37.08	100	246	Peak
5500	97.81	97.78			31.6	5.46	37.03	100	246	Average
5500	107.48	107.45			31.6	5.46	37.03	100	246	Peak
5725	58.23	58.11	68.3	-10.07	31.96	5.59	37.43	100	246	Peak

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin Value = Emission Level - Limit Value
2. 5500MHz: Fundamental frequency.
3. 5470MHz & 5725MHz: Out of restricted band



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

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
5388	43.53	43.79	54	-10.47	31.51	5.41	37.18	110	125	Average
5388	60.13	60.39	74	-13.87	31.51	5.41	37.18	110	125	Peak
5470	58.84	58.9	68.3	-9.46	31.57	5.45	37.08	110	125	Peak
5580	98.35	98.3			31.71	5.5	37.16	110	125	Average
5580	107.99	107.94			31.71	5.5	37.16	110	125	Peak
5725	59.12	59	68.3	-9.18	31.96	5.59	37.43	110	125	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	39.42	39.58	54	-14.58	31.55	5.42	37.13	111	235	Average
5432	60.32	60.48	74	-13.68	31.55	5.42	37.13	111	235	Peak
5470	58.25	58.31	68.3	-10.05	31.57	5.45	37.08	111	235	Peak
5580	100.18	100.13			31.71	5.5	37.16	111	235	Average
5580	110.33	110.28			31.71	5.5	37.16	111	235	Peak
5725	58.58	58.46	68.3	-9.72	31.96	5.59	37.43	111	235	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

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

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
5400	44.71	44.96	54	-9.29	31.52	5.41	37.18	100	124	Average
5400	60.27	60.52	74	-13.73	31.52	5.41	37.18	100	124	Peak
5470	57.63	57.69	68.3	-10.67	31.57	5.45	37.08	100	124	Peak
5700	95.91	95.84			31.9	5.57	37.4	100	124	Average
5700	105.13	105.06			31.9	5.57	37.4	100	124	Peak
5725	66.62	66.5	68.3	-1.68	31.96	5.59	37.43	100	124	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	40.42	40.68	54	-13.58	31.51	5.41	37.18	121	233	Average
5388	59.8	60.06	74	-14.2	31.51	5.41	37.18	121	233	Peak
5470	57.48	57.54	68.3	-10.82	31.57	5.45	37.08	121	233	Peak
5700	96.79	96.72			31.9	5.57	37.4	121	233	Average
5700	106.69	106.62			31.9	5.57	37.4	121	233	Peak
5725	66.92	66.8	68.3	-1.38	31.96	5.59	37.43	121	233	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



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## 802.11n (40MHz)

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

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
5142	47.04	47.73	54	-6.96	31.32	5.29	37.3	100	114	Average
5142	64.03	64.72	74	-9.97	31.32	5.29	37.3	100	114	Peak
5190	92.3	92.97			31.35	5.32	37.34	100	114	Average
5190	101.38	102.05			31.35	5.32	37.34	100	114	Peak
5406	39.76	40.01	54	-14.24	31.52	5.41	37.18	100	114	Average
5406	59.55	59.8	74	-14.45	31.52	5.41	37.18	100	114	Peak
ANTENNA POLARITY & test distance: VERTICAL at 3 m										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5148	52.59	53.3	54	-1.41	31.32	5.29	37.32	100	198	Average
5148	68.45	69.16	74	-5.55	31.32	5.29	37.32	100	198	Peak
5190	95.68	96.35			31.35	5.32	37.34	100	198	Average
5190	105.97	106.64			31.35	5.32	37.34	100	198	Peak
5400	40.03	40.28	54	-13.97	31.52	5.41	37.18	100	198	Average
5400	60.19	60.44	74	-13.81	31.52	5.41	37.18	100	198	Peak

## REMARKS:

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

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

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
5022	41.64	42.41	54	-12.36	31.23	5.24	37.24	113	120	Average
5022	60.45	61.22	74	-13.55	31.23	5.24	37.24	113	120	Peak
5230	93.54	94.14			31.39	5.33	37.32	113	120	Average
5230	102.97	103.57			31.39	5.33	37.32	113	120	Peak
5382	39.89	40.16	54	-14.11	31.51	5.4	37.18	113	120	Average
5382	59.7	59.97	74	-14.3	31.51	5.4	37.18	113	120	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
5102	41.81	42.54	54	-12.19	31.28	5.27	37.28	100	198	Average
5102	59.36	60.09	74	-14.64	31.28	5.27	37.28	100	198	Peak
5230	95.1	95.7			31.39	5.33	37.32	100	198	Average
5230	105.43	106.03			31.39	5.33	37.32	100	198	Peak
5448	40.54	40.67	54	-13.46	31.56	5.44	37.13	100	198	Average
5448	60.43	60.56	74	-13.57	31.56	5.44	37.13	100	198	Peak

#### REMARKS:

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



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

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
5140	40.92	41.61	54	-13.08	31.32	5.29	37.3	102	122	Average
5140	60.32	61.01	74	-13.68	31.32	5.29	37.3	102	122	Peak
5270	96.03	96.54			31.41	5.35	37.27	102	122	Average
5270	105.58	106.09			31.41	5.35	37.27	102	122	Peak
5348	40.48	40.79	54	-13.52	31.48	5.39	37.18	102	122	Average
5348	61.28	61.59	74	-12.72	31.48	5.39	37.18	102	122	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
5122	43.6	44.33	54	-10.4	31.29	5.28	37.3	100	192	Average
5122	60.33	61.06	74	-13.67	31.29	5.28	37.3	100	192	Peak
5270	98.78	99.29			31.41	5.35	37.27	100	192	Average
5270	108.4	108.91			31.41	5.35	37.27	100	192	Peak
5348	48.21	48.52	54	-5.79	31.48	5.39	37.18	100	192	Average
5348	63.66	63.97	74	-10.34	31.48	5.39	37.18	100	192	Peak

**REMARKS:**

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5044	39.24	40	54	-14.76	31.24	5.25	37.25	102	122	Average
5044	60.07	60.83	74	-13.93	31.24	5.25	37.25	102	122	Peak
5310	92.64	93.01			31.45	5.37	37.19	102	122	Average
5310	101.83	102.2			31.45	5.37	37.19	102	122	Peak
5352	47.07	47.38	54	-6.93	31.48	5.39	37.18	102	122	Average
5352	64.52	64.83	74	-9.48	31.48	5.39	37.18	102	122	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
5116	40.19	40.9	54	-13.81	31.29	5.28	37.28	100	193	Average
5116	60.65	61.36	74	-13.35	31.29	5.28	37.28	100	193	Peak
5310	95.46	95.83			31.45	5.37	37.19	100	193	Average
5310	105.65	106.02			31.45	5.37	37.19	100	193	Peak
5350	50.86	51.17	54	-3.14	31.48	5.39	37.18	100	193	Average
5350	70.66	70.97	74	-3.34	31.48	5.39	37.18	100	193	Peak

**REMARKS:**

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

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

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	50.46	50.54	54	-3.54	31.56	5.44	37.08	100	130	Average
5460	66.92	67	74	-7.08	31.56	5.44	37.08	100	130	Peak
5470	67.08	67.14	68.3	-1.22	31.57	5.45	37.08	100	130	Peak
5510	92.11	92.11			31.6	5.46	37.06	100	130	Average
5510	102.59	102.59			31.6	5.46	37.06	100	130	Peak
5725	60.13	60.01	68.3	-8.17	31.96	5.59	37.43	100	130	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	50.69	50.77	54	-3.31	31.56	5.44	37.08	100	279	Average
5460	67.44	67.52	74	-6.56	31.56	5.44	37.08	100	279	Peak
5470	66.91	66.97	68.3	-1.39	31.57	5.45	37.08	100	279	Peak
5510	94.3	94.3			31.6	5.46	37.06	100	279	Average
5510	105.08	105.08			31.6	5.46	37.06	100	279	Peak
5725	58.85	58.73	68.3	-9.45	31.96	5.59	37.43	100	279	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



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

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
5420	42.22	42.45	54	-11.78	31.53	5.42	37.18	100	132	Average
5420	59.89	60.12	74	-14.11	31.53	5.42	37.18	100	132	Peak
5470	59.44	59.5	68.3	-8.86	31.57	5.45	37.08	100	132	Peak
5550	92.73	92.65			31.68	5.49	37.09	100	132	Average
5550	102.32	102.24			31.68	5.49	37.09	100	132	Peak
5725	59.68	59.56	68.3	-8.62	31.96	5.59	37.43	100	132	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
5416	41.25	41.48	54	-12.75	31.53	5.42	37.18	100	234	Average
5416	61.41	61.64	74	-12.59	31.53	5.42	37.18	100	234	Peak
5470	58.48	58.54	68.3	-9.82	31.57	5.45	37.08	100	234	Peak
5550	93.65	93.57			31.68	5.49	37.09	100	234	Average
5550	103.46	103.38			31.68	5.49	37.09	100	234	Peak
5725	58.75	58.63	68.3	-9.55	31.96	5.59	37.43	100	234	Peak

#### REMARKS:

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



A D T

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

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
5368	45.8	46.09	54	-8.2	31.49	5.4	37.18	100	133	Average
5368	60.07	60.36	74	-13.93	31.49	5.4	37.18	100	133	Peak
5470	57.26	57.32	68.3	-11.04	31.57	5.45	37.08	100	133	Peak
5670	92.73	92.63			31.88	5.56	37.34	100	133	Average
5670	101.73	101.63			31.88	5.56	37.34	100	133	Peak
5725	63.67	63.55	68.3	-4.63	31.96	5.59	37.43	100	133	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
5384	43.29	43.56	54	-10.71	31.51	5.4	37.18	100	230	Average
5384	59.85	60.12	74	-14.15	31.51	5.4	37.18	100	230	Peak
5470	58.63	58.69	68.3	-9.67	31.57	5.45	37.08	100	230	Peak
5670	93.93	93.83			31.88	5.56	37.34	100	230	Average
5670	102.53	102.43			31.88	5.56	37.34	100	230	Peak
5725	64	63.88	68.3	-4.3	31.96	5.59	37.43	100	230	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

## BELOW 1GHz WORST-CASE DATA :

### MODE C

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-Peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	David Huang

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
49.71	23.79	41.23	40	-16.21	13.08	0.76	31.28	100	176	Peak
153.39	16.13	33.74	43.5	-27.37	12.72	1.36	31.69	100	122	Peak
228	25.81	41.46	46	-20.19	13.98	2.2	31.83	100	138	Peak
260.04	15.71	33.93	46	-30.29	11.77	1.86	31.85	100	113	Peak
703.9	26.86	34.32	46	-19.14	20.87	3.44	31.77	100	147	Peak
958.7	29	32.98	46	-17	23.84	4.09	31.91	100	194	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
47.01	26.05	43.24	40	-13.95	13.28	0.75	31.22	100	328	Peak
152.85	15.44	33.05	43.5	-28.06	12.72	1.36	31.69	100	264	Peak
285.96	22.19	39.39	46	-23.81	12.54	1.99	31.73	100	156	Peak
351.8	24.29	39.74	46	-21.71	14.19	2.23	31.87	100	192	Peak
650.7	25.04	33.59	46	-20.96	20.22	3.24	32.01	100	128	Peak
932.8	28.29	32.53	46	-17.71	23.69	4.04	31.97	100	284	Peak

### REMARKS:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor  
Margin Value = Emission Level - Limit Value

## 4.2 PEAK TRANSMIT POWER MEASUREMENT

### 4.2.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

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

Per KDB 662911 D01 Multiple Transmitter Output v01r02 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

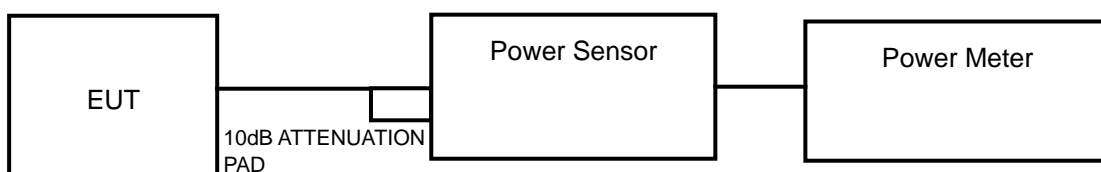
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any NANT;

Array Gain =  $5 \log(NANT/NSS)$  dB or 3 dB, whichever is less for 20-MHz channel widths with  $NANT \geq 5$ .

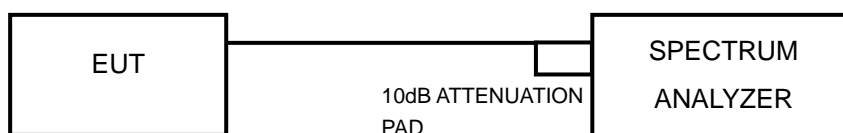
For power measurements on all other devices: Array Gain =  $10 \log(NANT/NSS)$  dB.

### 4.2.2 TEST SETUP

#### FOR POWER OUTPUT MEASUREMENT



#### FOR 26dB BANDWIDTH



### 4.2.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.2.4 TEST PROCEDURE

#### FOR AVERAGE POWER MEASUREMENT

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.

#### 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%.

### 4.2.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.2.6 EUT OPERATING CONDITIONS

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

## 4.2.7 TEST RESULTS

### POWER OUTPUT:

#### MODE A

##### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	22.856	13.59	17	PASS
44	5220	21.827	13.39	17	PASS
48	5240	21.429	13.31	17	PASS
52	5260	21.979	13.72	24	PASS
60	5300	22.131	13.75	24	PASS
64	5320	22.909	13.90	24	PASS
100	5500	25.704	13.80	24	PASS
116	5580	26.853	14.19	24	PASS
140	5700	17.338	12.39	24	PASS

#### MODE B

##### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	22.646	13.55	17	PASS
44	5220	24.044	13.81	17	PASS
48	5240	24.774	13.94	17	PASS
52	5260	25.942	13.84	24	PASS
60	5300	27.925	14.16	24	PASS
64	5320	27.416	14.08	24	PASS
100	5500	24.547	13.90	24	PASS
116	5580	21.380	13.30	24	PASS
140	5700	9.506	9.78	24	PASS

## MODE C

### 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
36	5180	11.44	11.79	29.040	14.63	17	PASS
44	5220	11.43	12.08	30.061	14.78	17	PASS
48	5240	11.47	12.26	30.832	14.89	17	PASS
52	5260	12.74	13.31	40.179	16.04	24	PASS
60	5300	13.18	13.44	42.855	16.32	24	PASS
64	5320	13.29	13.44	43.451	16.38	24	PASS
100	5500	12.04	11.83	31.261	14.95	24	PASS
116	5580	12.68	11.22	31.769	15.02	24	PASS
140	5700	13.25	10.54	32.434	15.11	24	PASS

### 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
38	5190	10.81	11.06	24.831	13.95	17	PASS
46	5230	11.13	11.45	26.915	14.30	17	PASS
54	5270	14.22	15.14	59.020	17.71	24	PASS
62	5310	11.25	11.77	28.379	14.53	24	PASS
102	5510	11.50	11.13	27.102	14.33	24	PASS
110	5550	11.67	10.82	26.792	14.28	24	PASS
134	5670	12.33	9.96	27.040	14.32	24	PASS

## 26dB BANDWIDTH:

### MODE A

#### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	21.45	PASS
44	5220	21.78	PASS
48	5240	21.53	PASS
52	5260	21.69	PASS
60	5300	21.78	PASS
64	5320	20.61	PASS
100	5500	24.15	PASS
116	5580	28.37	PASS
140	5700	26.75	PASS

### MODE B

#### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)	PASS / FAIL
36	5180	26.22	PASS
44	5220	36.17	PASS
48	5240	27.32	PASS
52	5260	28.82	PASS
60	5300	37.46	PASS
64	5320	38.91	PASS
100	5500	39.78	PASS
116	5580	38.66	PASS
140	5700	19.99	PASS



## MODE C

### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
36	5180	22.83	21.66	PASS
44	5220	20.48	22.42	PASS
48	5240	21.05	22.66	PASS
52	5260	20.42	24.66	PASS
60	5300	20.70	23.36	PASS
64	5320	20.53	22.31	PASS
100	5500	22.71	20.66	PASS
116	5580	29.26	25.03	PASS
140	5700	24.31	37.91	PASS

### 802.11n (40MHz)

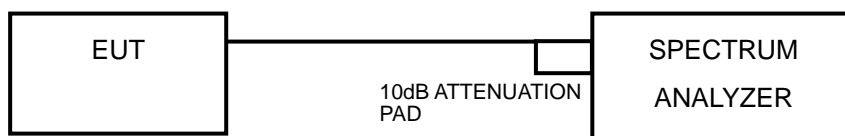
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
38	5190	46.16	51.23	PASS
46	5230	46.18	57.06	PASS
54	5270	60.58	97.31	PASS
62	5310	48.43	54.61	PASS
102	5510	46.23	64.02	PASS
110	5550	48.21	72.00	PASS
134	5670	72.39	50.10	PASS

### 4.3 PEAK POWER SPECTRAL DENSITY MEASUREMENT

#### 4.3.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

#### 4.3.2 TEST SETUP



#### 4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.3.4 TEST PROCEDURES

Using method SA-1

- 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 = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value

#### 4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

### 4.3.7 TEST RESULTS

#### MODE A

##### 802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	2.59	4	PASS
44	5220	2.61	4	PASS
48	5240	2.66	4	PASS
52	5260	2.90	11	PASS
60	5300	3.45	11	PASS
64	5320	3.64	11	PASS
100	5500	4.12	11	PASS
116	5580	4.43	11	PASS
140	5700	2.15	11	PASS

#### MODE B

##### 802.11a

CHANNEL	FREQUENCY (MHz)	PSD (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	2.68	4	PASS
44	5220	3.14	4	PASS
48	5240	3.34	4	PASS
52	5260	3.69	11	PASS
60	5300	4.05	11	PASS
64	5320	4.19	11	PASS
100	5500	3.83	11	PASS
116	5580	3.32	11	PASS
140	5700	-0.69	11	PASS

## MODE C

### 802.11n (20MHz)

CH.	CHAN. FREQ. (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR	PSD W/ DUTY FACTOR (dBm)		TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1		CHAIN 0	CHAIN 1			
36	5180	-0.54	-1.84	0.49	-0.05	-1.35	2.36	3.69	PASS
44	5220	-0.52	-1.07	0.49	-0.03	-0.58	2.72	3.69	PASS
48	5240	-0.61	-0.69	0.49	-0.12	-0.20	2.85	3.69	PASS
52	5260	1.49	2.25	0.49	1.98	2.74	5.39	10.79	PASS
60	5300	2.04	2.84	0.49	2.53	3.33	5.96	10.79	PASS
64	5320	2.16	2.98	0.49	2.65	3.47	6.09	10.79	PASS
100	5500	2.62	1.89	0.49	3.11	2.38	5.77	10.09	PASS
116	5580	3.00	2.12	0.49	3.49	2.61	6.08	10.09	PASS
140	5700	1.43	2.21	0.49	1.92	2.70	5.34	10.09	PASS

**NOTE:** 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

**2. For 5180~5240MHz:**

Directional gain =  $3.3\text{dBi} + 10\log(2) = 6.31\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(6.31-6) = 3.69\text{dBm}$ .

**For 5260~5320MHz:**

Directional gain =  $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.21-6) = 10.79\text{dBm}$ .

**For 5500~5700MHz:**

Directional gain =  $3.9\text{dBi} + 10\log(2) = 6.91\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.91-6) = 10.09\text{dBm}$ .

**3. Refer to section 3.3 for duty cycle spectrum plot.**

### 802.11n (40MHz)

CH.	CHAN. FREQ. (MHz)	PSD W/O DUTY FACTOR (dBm)		DUTY FACTOR	PSD W/ DUTY FACTOR (dBm)		TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1		CHAIN 0	CHAIN 1			
38	5190	-6.73	-6.12	0.89	-5.84	-5.23	-2.52	3.69	PASS
46	5230	-6.69	-5.25	0.89	-5.80	-4.36	-2.01	3.69	PASS
54	5270	-2.50	-0.68	0.89	-1.61	0.21	2.40	10.79	PASS
62	5310	-4.65	-3.38	0.89	-3.76	-2.49	-0.07	10.79	PASS
102	5510	-5.08	-5.64	0.89	-4.19	-4.75	-1.45	10.09	PASS
110	5550	-4.99	-5.82	0.89	-4.10	-4.93	-1.49	10.09	PASS
134	5670	-3.95	-5.39	0.89	-3.06	-4.50	-0.71	10.09	PASS

**NOTE:** 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

**2. For 5180~5240MHz:**

Directional gain =  $3.3\text{dBi} + 10\log(2) = 6.31\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $4-(6.31-6) = 3.69\text{dBm}$ .

**For 5260~5320MHz:**

Directional gain =  $3.2\text{dBi} + 10\log(2) = 6.21\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.21-6) = 10.79\text{dBm}$ .

**For 5500~5700MHz:**

Directional gain =  $3.9\text{dBi} + 10\log(2) = 6.91\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11-(6.91-6) = 10.09\text{dBm}$ .

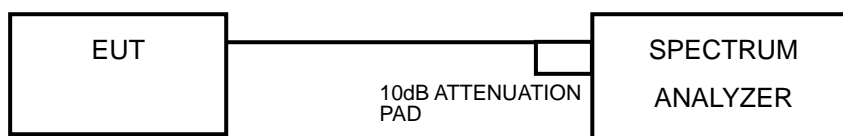
**3. Refer to section 3.3 for duty cycle spectrum plot.**

## 4.4 PEAK POWER EXCURSION MEASUREMENT

### 4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.4.4 TEST PROCEDURE

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

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

### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.2.6

#### 4.4.7 TEST RESULTS

##### MODE A

###### 802.11a

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11a	BPSK	5180	13.63	4.17	4.43	9.20	13	PASS
	QPSK		14.09	4.18	4.44	9.65	13	PASS
	16QAM		14.75	4.00	4.26	10.49	13	PASS
	64QAM		14.60	3.57	3.83	10.77	13	PASS

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

##### MODE B

###### 802.11a

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11a	BPSK	5180	13.28	3.79	4.05	9.23	13	PASS
	QPSK		14.21	3.93	4.19	10.02	13	PASS
	16QAM		13.98	3.62	3.88	10.10	13	PASS
	64QAM		13.79	2.99	3.25	10.54	13	PASS

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



## MODE C

### 802.11n (20MHz)

Modulation Mode	Modulation type	Channel Frequency (MHz)	PEAK VALUE (dBm)		PPSD WITHOUT DUTY FACTOR (dBm)		PPSD WITH DUTY FACTOR (dBm)	
			CHAIN0	CHAIN1	CHAIN0	CHAIN1	CHAIN0	CHAIN1
HT 20	BPSK	5320	12.28	13.05	2.16	2.98	2.65	3.47
	QPSK		12.81	13.00	2.04	2.65	2.53	3.14
	16QAM		12.28	13.59	1.43	2.05	1.92	2.54
	64QAM		12.86	13.13	0.68	1.30	1.17	1.79

PEAK Excursion (dB)		LIMIT (dB)	PASS /FAIL
CHAIN0	CHAIN1		
9.63	9.58	13	PASS
10.28	9.86	13	PASS
10.36	11.05	13	PASS
11.69	11.34	13	PASS

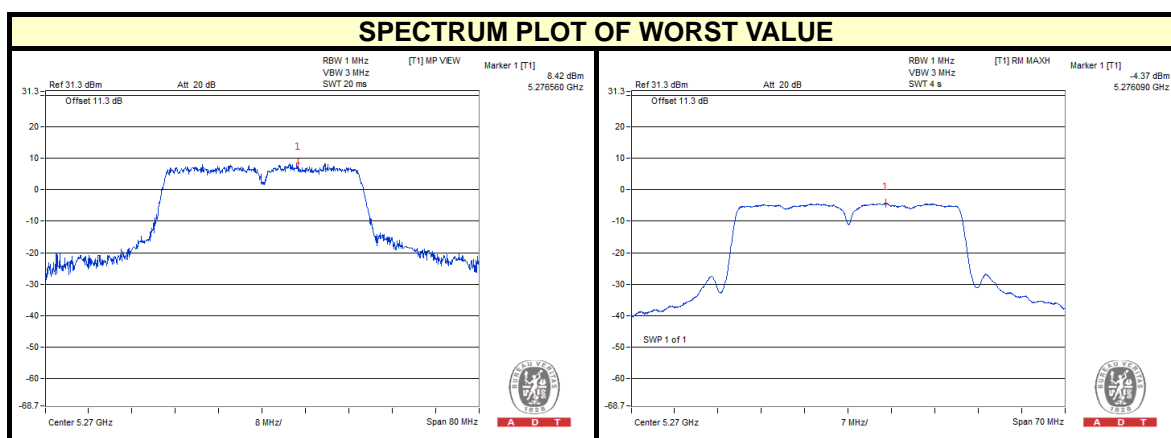
**NOTE:** Refer to section 3.3 for duty cycle spectrum plot.

# 802.11n (40MHz)

Modulation Mode	Modulation type	Channel Frequency (MHz)	PEAK VALUE (dBm)		PPSD WITHOUT DUTY FACTOR (dBm)		PPSD WITH DUTY FACTOR (dBm)	
			CHAIN0	CHAIN1	CHAIN0	CHAIN1	CHAIN0	CHAIN1
HT 40	BPSK	5270	7.43	9.67	-2.50	-0.68	-1.61	0.21
	QPSK		8.49	9.83	-2.98	-0.96	-2.09	-0.07
	16QAM		8.45	9.74	-3.55	-1.49	-2.66	-0.60
	64QAM		8.42	9.75	-4.37	-2.41	-3.48	-1.52

PEAK Excursion (dB)		LIMIT (dB)	PASS /FAIL
CHAIN0	CHAIN1		
9.04	9.46	13	PASS
10.58	9.90	13	PASS
11.11	10.34	13	PASS
11.90	11.27	13	PASS

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

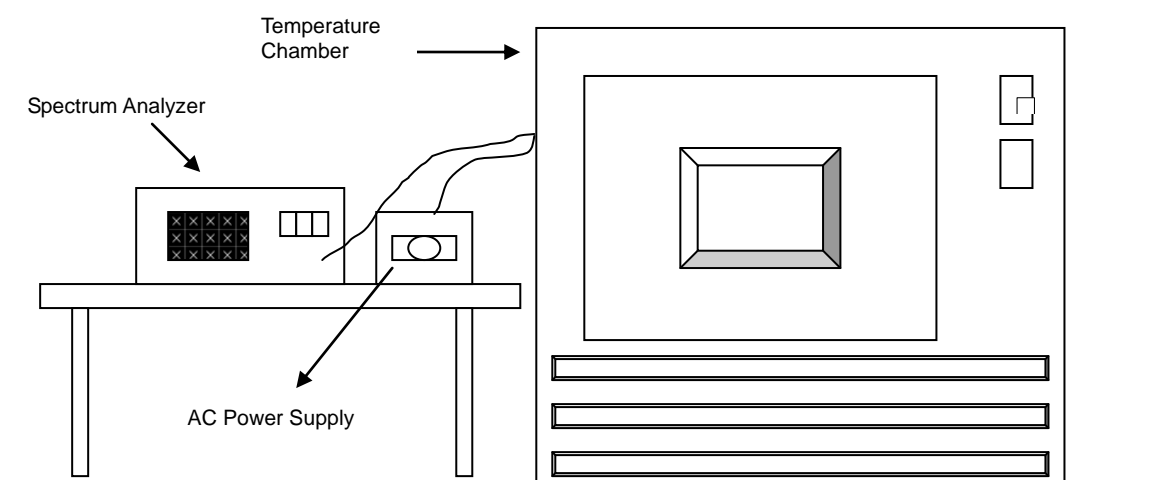


## 4.5 FREQUENCY STABILITY

### 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. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 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.

#### 4.5.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	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)
80	13.8	5320.014943	2.809	5320.014924	2.805	5320.015110	2.840	5320.014795	2.781
70	13.8	5320.015174	2.852	5320.016326	3.069	5320.015982	3.004	5320.015990	3.006
60	13.8	5320.015062	2.831	5320.017145	3.223	5320.017114	3.217	5320.017003	3.196
50	13.8	5320.014791	2.780	5320.018468	3.471	5320.018423	3.463	5320.018287	3.437
40	13.8	5320.016133	3.033	5320.016375	3.078	5320.016244	3.053	5320.016395	3.082
30	13.8	5320.016855	3.168	5320.017001	3.196	5320.016954	3.187	5320.016832	3.164
20	13.8	5320.018156	3.413	5320.018551	3.487	5320.017926	3.370	5320.018399	3.458
10	13.8	5320.019109	3.592	5320.019170	3.603	5320.019373	3.642	5320.019608	3.686
0	13.8	5320.018287	3.437	5320.018268	3.434	5320.018164	3.414	5320.018443	3.467
-10	13.8	5320.016527	3.107	5320.016689	3.137	5320.016772	3.153	5320.016572	3.115
-20	13.8	5320.015704	2.952	5320.016230	3.051	5320.015928	2.994	5320.016115	3.029
-30	13.8	5320.015295	2.875	5320.015216	2.860	5320.015342	2.884	5320.015740	2.959

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5320MHz									
TEMP. (°C)	POWER SUPPLY (Vac)	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	9.0	5320.017652	3.318	5320.017952	3.374	5320.017433	3.277	5320.017944	3.373
	13.8	5320.018156	3.413	5320.018551	3.487	5320.017926	3.370	5320.018399	3.458
	16.00	5320.019000	3.571	5320.019257	3.620	5320.019023	3.576	5320.019410	3.648

## 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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**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.

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

No modifications were made to the EUT by the lab during the test.

**---END---**