

# FCC TEST REPORT (15.407)

**REPORT NO.:** RF120618C25J  
**MODEL NO.:** SS-300-AT-C-55  
**FCC ID:** U2M-CAP4200AG  
**RECEIVED:** Jan. 03, 2012  
**TESTED:** Jan. 03 ~ Feb. 21, 2013  
**ISSUED:** Mar. 05, 2013

**APPLICANT:** Senao Networks, Inc.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120618C25J	Original release	Mar. 05, 2013

## 1. CERTIFICATION

**PRODUCT:** Wireless 802.11abgn Access Point

**MODEL:** SS-300-AT-C-55

**BRAND:** AirTight Networks, Inc.

**APPLICANT:** Senao Networks, Inc.


**TESTED:** Jan. 03 ~ Feb. 21, 2013

**TEST SAMPLE:** ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: SS-300-AT-C-55) 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 :** Mar. 05, 2013  
Pettie Chen / Senior Specialist

**APPROVED BY :**  , **DATE :** Mar. 05, 2013  
Ken Liu / Senior 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	PASS	Meet the requirement of limit. Minimum passing margin is -1.81dB at 5.89063MHz.
15.407(b)(1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 374.04, 5350.00, 5470.00, 5725.00MHz.
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	Antenna connector is UFL not a standard connector.

### 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>	Wireless 802.11abgn Access Point
<b>MODEL NO.</b>	SS-300-AT-C-55
<b>POWER SUPPLY</b>	12Vdc (adapter) 48Vdc (PoE)
<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>	5260 ~ 5320MHz & 5500 ~ 5700MHz
<b>NUMBER OF CHANNEL</b>	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>	176.534mW for 5260 ~ 5320MHz 161.523mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	PIFA antenna with 4dBi gain
<b>ANTENNA CONNECTOR</b>	UFL
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	RJ45
<b>ACCESSORY DEVICE</b>	Adapter

#### NOTE:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report to the original BVADT Report no. RF120618C25H-1. The difference compared with the original report is adding frequency band (only for PIFA antenna device) from 5.26 to 5.32GHz and 5.50 to 5.70GHz by software.
2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

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

3. The EUT consumes power from the following adapter.

<b>BRAND:</b>	Powertron
<b>MODEL:</b>	PA1015-2I/PA1015-2I120125
<b>INPUT:</b>	100-240Vac, 50-60Hz, 0.4A
<b>OUTPUT:</b>	12Vdc, 1.25A, 15W
<b>POWER LINE:</b>	1.5m non-shielded, w/o core

4. 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 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	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from PoE

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

**NOTE:**

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

**NOTE:** "-" means no effect.

#### **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	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	13.5
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	13.5

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

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

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11a	5260-5320	36 to 64	52	OFDM	BPSK	6.0
A, B	802.11a	5500-5700	100 to 140	116	OFDM	BPSK	6.0

### **POWER LINE CONDUCTED EMISSION TEST:**

- ☒ 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	5260-5320	36 to 64	52	OFDM	BPSK	6.0
A, B	802.11a	5500-5700	100 to 140	116	OFDM	BPSK	6.0

### **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.

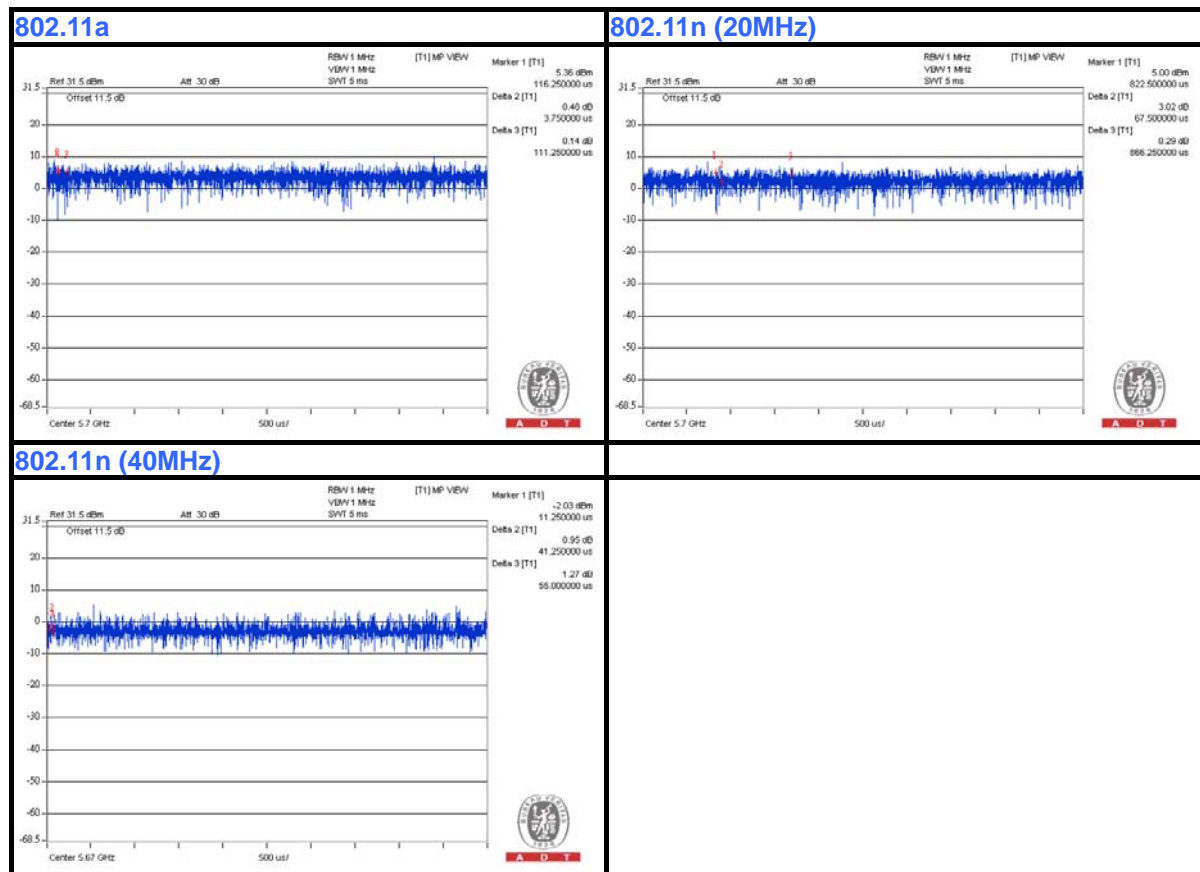
EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
A	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	13.5
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
A	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	13.5

### **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
RE $<$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
PLC	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
APCM	23deg. C, 65%RH	120Vac, 60Hz	Frank Liu

### 3.3 DUTY CYCLE OF TEST SIGNAL

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



### 3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	DELL	E5420	33MLMQ1	FCC DoC Approved
2	POE	I.T.E	PENB1032E4800F02	NA	NA

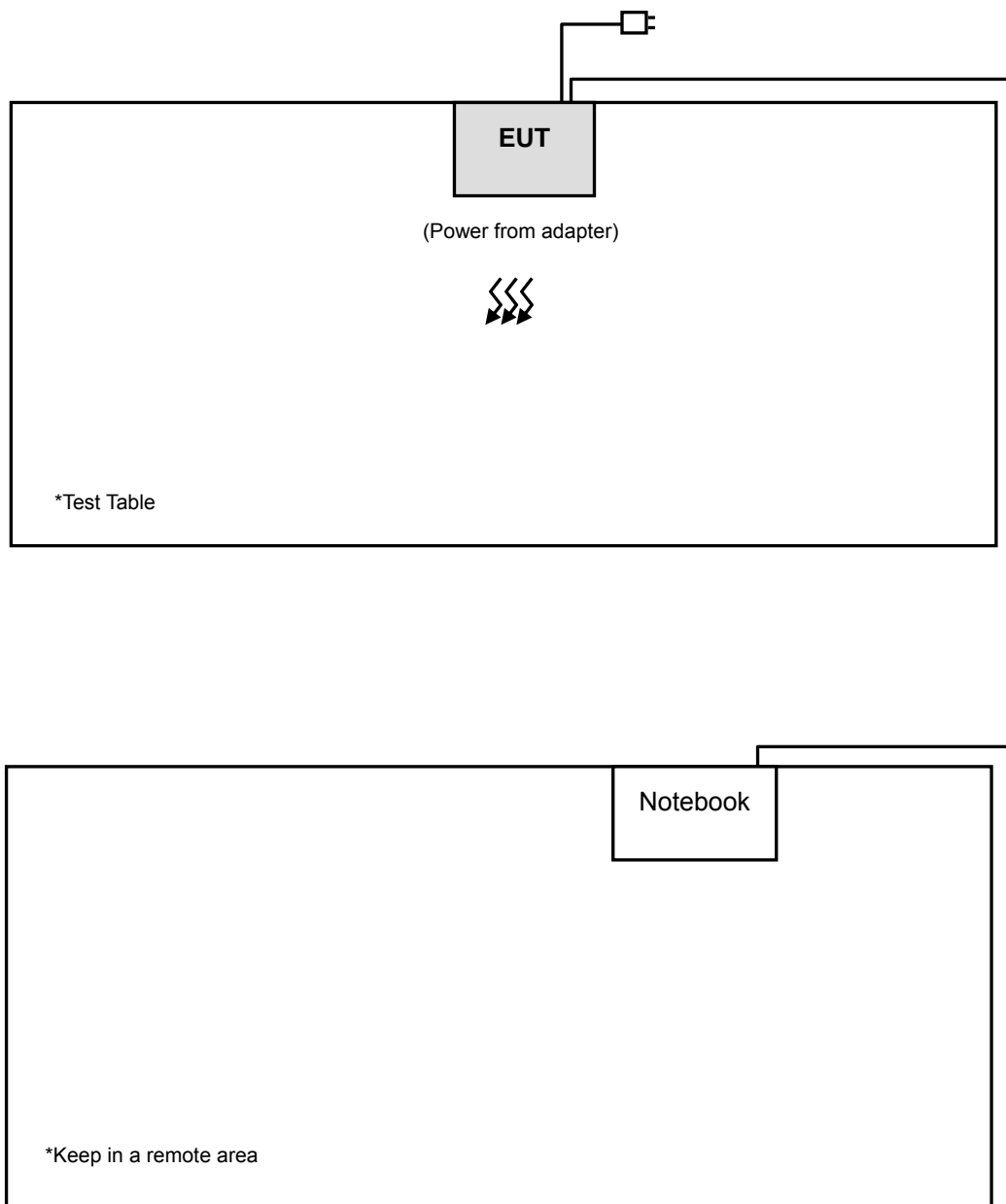
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	3m RJ45 UTP cable
2	3m RJ45 UTP cable

#### NOTE:

1. All power cords of the above support units are non-shielded (1.8 m).
2. Item 1, 2 acted as a communication partner to transfer data.

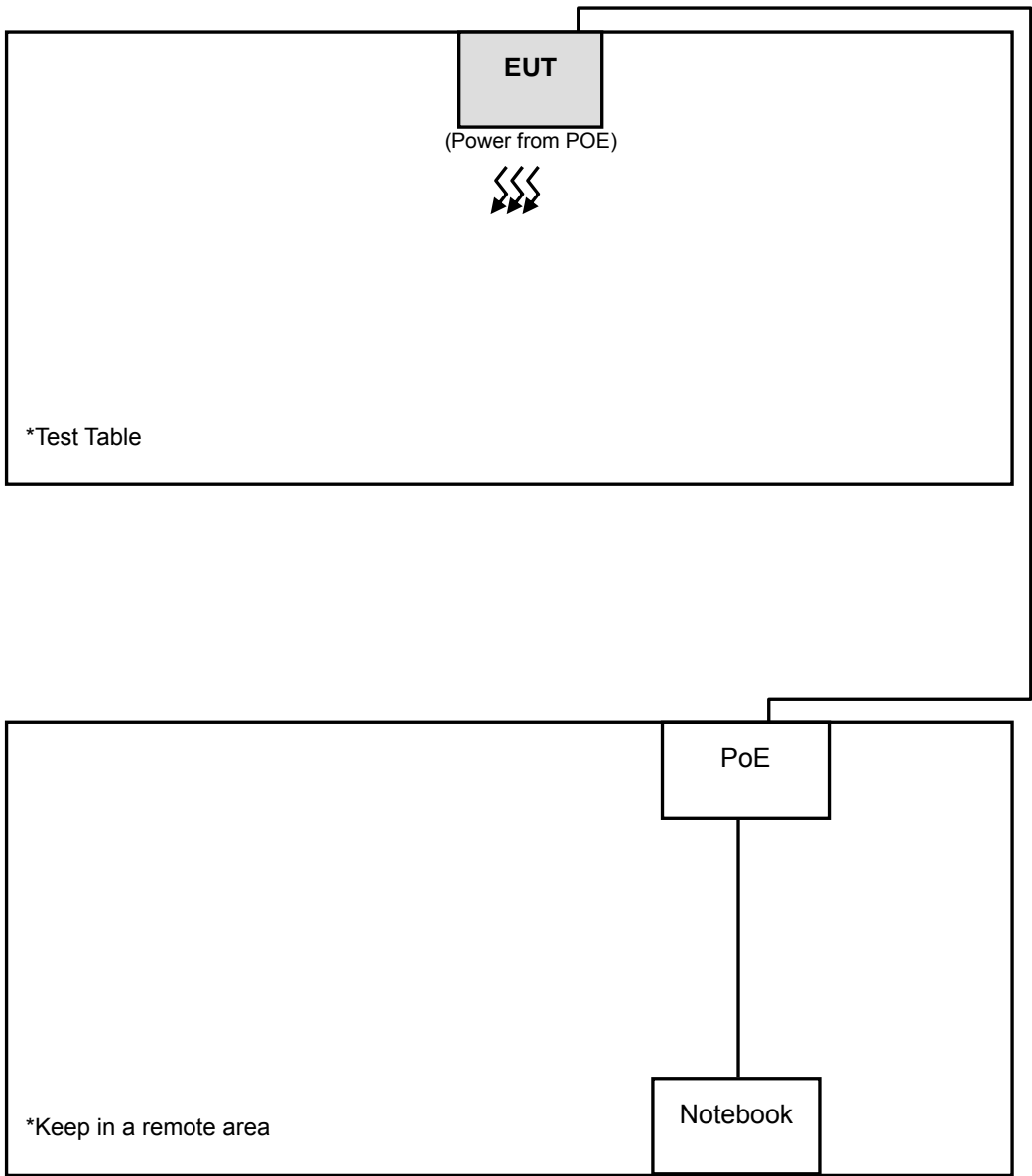
### 3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

#### Test Mode A





Test Mode B



### 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 r02**

**662911 D01 Multiple Transmitter Output v01 r02**

**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	ESIB7	100212	Aug. 06, 2012	Aug. 05, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jan. 31, 2013	Jan. 30, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	9120D	209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8449B	3008A01964	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250723/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/4	Aug. 28, 2012	Aug. 27, 2013
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100	TT93021703	NA	NA
Turn Table Controller ADT.	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0824011	Jul. 30, 2012	Jul. 29, 2013
Power Sensor	MA2411B	0738171	Jul. 30, 2012	Jul. 29, 2013

- 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 4.
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 460141.
6. The IC Site Registration No. is IC7450F-4.



#### 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.

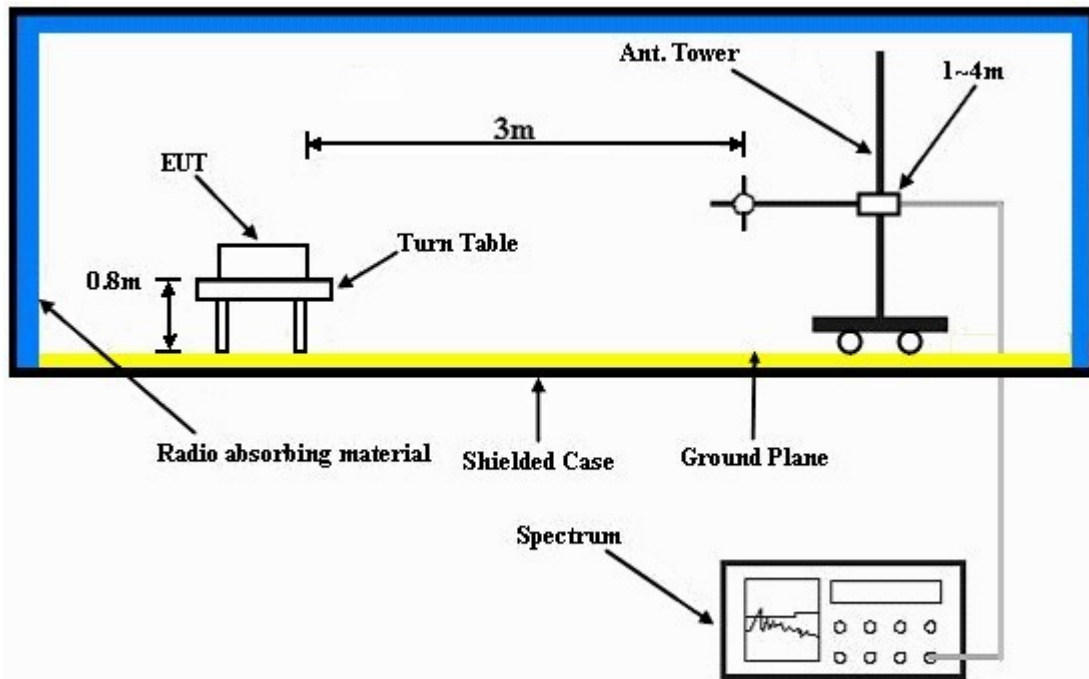
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for 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 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

- Placed the EUT on the testing table.
- Prepared notebook to act as communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".
- The necessary accessories enable the system in full functions.

#### 4.1.8 TEST RESULTS

##### ABOVE 1GHz DATA :

##### 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.8 PK	74.0	-19.2	1.24 H	152	16.90	37.90
2	5150.00	42.9 AV	54.0	-11.1	1.24 H	152	5.00	37.90
3	*5260.00	111.9 PK			1.15 H	180	73.90	38.00
4	*5260.00	101.1 AV			1.15 H	180	63.10	38.00
5	#10520.00	56.0 PK	74.0	-18.0	1.22 H	202	7.40	48.60
6	#10520.00	45.1 AV	54.0	-8.9	1.22 H	202	-3.50	48.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.6 PK	74.0	-17.4	1.49 V	360	18.70	37.90
2	5150.00	47.5 AV	54.0	-6.5	1.49 V	360	9.60	37.90
3	*5260.00	115.9 PK			1.62 V	350	77.90	38.00
4	*5260.00	106.1 AV			1.62 V	350	68.10	38.00
5	#10520.00	60.3 PK	74.0	-13.7	1.67 V	162	11.70	48.60
6	#10520.00	47.3 AV	54.0	-6.7	1.67 V	162	-1.30	48.60

##### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* ”: Fundamental frequency.
6. “#”: The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	110.3 PK			1.15 H	180	72.20	38.10
2	*5300.00	100.4 AV			1.15 H	180	62.30	38.10
3	10600.00	57.5 PK	74.0	-16.5	1.09 H	62	8.80	48.70
4	10600.00	44.8 AV	54.0	-9.2	1.09 H	62	-3.90	48.70
5	15900.00	56.3 PK	74.0	-17.7	1.15 H	148	8.20	48.10
6	15900.00	44.8 AV	54.0	-9.2	1.15 H	148	-3.30	48.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	115.7 PK			1.10 V	354	77.60	38.10
2	*5300.00	105.8 AV			1.10 V	354	67.70	38.10
3	10600.00	60.3 PK	74.0	-13.7	1.19 V	128	11.60	48.70
4	10600.00	47.5 AV	54.0	-6.5	1.19 V	128	-1.20	48.70
5	15900.00	60.0 PK	74.0	-14.0	1.10 V	148	11.90	48.10
6	15900.00	46.8 AV	54.0	-7.2	1.10 V	148	-1.30	48.10

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* ”: Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	109.5 PK			1.01 H	176	71.40	38.10
2	*5320.00	98.9 AV			1.01 H	176	60.80	38.10
3	5350.00	60.5 PK	74.0	-13.5	1.10 H	174	22.30	38.20
4	5350.00	45.1 AV	54.0	-8.9	1.10 H	174	6.90	38.20
5	5365.00	58.6 PK	74.0	-15.4	1.01 H	184	20.40	38.20
6	5365.00	47.6 AV	54.0	-6.4	1.01 H	184	9.40	38.20
7	10640.00	57.8 PK	74.0	-16.2	1.19 H	108	9.00	48.80
8	10640.00	45.2 AV	54.0	-8.8	1.19 H	108	-3.60	48.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	113.4 PK			1.10 V	149	75.30	38.10
2	*5320.00	104.6 AV			1.10 V	149	66.50	38.10
3	5350.00	66.0 PK	74.0	-8.0	1.25 V	160	27.80	38.20
4	5350.00	48.6 AV	54.0	-5.4	1.25 V	160	10.40	38.20
5	5364.00	63.6 PK	74.0	-10.4	1.19 V	151	25.40	38.20
6	5364.00	52.7 AV	54.0	-1.3	1.19 V	151	14.50	38.20
7	10640.00	60.4 PK	74.0	-13.6	1.18 V	63	11.60	48.80
8	10640.00	47.7 AV	54.0	-6.3	1.18 V	63	-1.10	48.80

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.5 PK	74.0	-16.5	1.38 H	182	19.20	38.30
2	5460.00	45.1 AV	54.0	-8.9	1.38 H	182	6.80	38.30
3	#5470.00	64.8 PK	74.0	-9.2	1.38 H	182	26.50	38.30
4	#5470.00	46.1 AV	54.0	-7.9	1.38 H	182	7.80	38.30
5	*5500.00	107.9 PK			1.00 H	181	69.50	38.40
6	*5500.00	98.2 AV			1.00 H	181	59.80	38.40
7	11000.00	57.5 PK	74.0	-16.5	1.08 H	147	7.90	49.60
8	11000.00	46.3 AV	54.0	-7.7	1.08 H	147	-3.30	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.8 PK	74.0	-12.2	1.05 V	164	23.50	38.30
2	5460.00	47.5 AV	54.0	-6.5	1.05 V	164	9.20	38.30
3	#5470.00	71.7 PK	74.0	-2.3	1.05 V	164	33.40	38.30
4	#5470.00	52.2 AV	54.0	-1.8	1.05 V	164	13.90	38.30
5	*5500.00	115.4 PK			1.15 V	163	77.00	38.40
6	*5500.00	105.4 AV			1.15 V	163	67.00	38.40
7	11000.00	61.8 PK	74.0	-12.2	1.00 V	85	12.20	49.60
8	11000.00	48.7 AV	54.0	-5.3	1.00 V	85	-0.90	49.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. “#”:The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	111.5 PK			1.69 H	180	73.00	38.50
2	*5580.00	101.3 AV			1.69 H	180	62.80	38.50
3	11160.00	59.0 PK	74.0	-15.0	1.16 H	84	9.30	49.70
4	11160.00	46.9 AV	54.0	-7.1	1.16 H	84	-2.80	49.70
5	#16740.00	60.6 PK	74.0	-13.4	1.09 H	65	9.30	51.30
6	#16740.00	48.2 AV	54.0	-5.8	1.09 H	65	-3.10	51.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	116.4 PK			1.02 V	345	77.90	38.50
2	*5580.00	106.6 AV			1.02 V	345	68.10	38.50
3	11160.00	59.6 PK	74.0	-14.4	1.48 V	128	9.90	49.70
4	11160.00	48.5 AV	54.0	-5.5	1.48 V	128	-1.20	49.70
5	#16740.00	66.3 PK	74.0	-7.7	1.08 V	65	15.00	51.30
6	#16740.00	52.6 AV	54.0	-1.4	1.08 V	65	1.30	51.30

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	104.4 PK			1.55 H	160	65.60	38.80
2	*5700.00	95.2 AV			1.55 H	160	56.40	38.80
3	#5725.00	65.5 PK	74.0	-8.5	1.60 H	180	26.70	38.80
4	#5725.00	46.6 AV	54.0	-7.4	1.60 H	180	7.80	38.80
5	11400.00	59.0 PK	74.0	-15.0	1.09 H	74	9.40	49.60
6	11400.00	46.5 AV	54.0	-7.5	1.09 H	74	-3.10	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	110.9 PK			1.01 V	149	72.10	38.80
2	*5700.00	101.2 AV			1.01 V	149	62.40	38.80
3	#5725.00	71.4 PK	74.0	-2.6	1.02 V	149	32.60	38.80
4	#5725.00	52.9 AV	54.0	-1.1	1.02 V	149	14.10	38.80
5	11400.00	61.6 PK	74.0	-12.4	1.26 V	147	12.00	49.60
6	11400.00	49.0 AV	54.0	-5.0	1.26 V	147	-0.60	49.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* ”: Fundamental frequency.
6. “ # ”: The radiated frequency is out the restricted band.



# 802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.6 PK	74.0	-17.4	1.60 H	189	18.70	37.90
2	5150.00	45.0 AV	54.0	-9.0	1.60 H	189	7.10	37.90
3	*5260.00	110.3 PK			1.41 H	177	72.30	38.00
4	*5260.00	101.0 AV			1.41 H	177	63.00	38.00
5	#10520.00	55.4 PK	74.0	-18.6	1.09 H	62	6.80	48.60
6	#10520.00	44.9 AV	54.0	-9.1	1.09 H	62	-3.70	48.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.7 PK	74.0	-18.3	1.26 V	360	17.80	37.90
2	5150.00	45.0 AV	54.0	-9.0	1.26 V	360	7.10	37.90
3	*5260.00	113.8 PK			1.41 V	0	75.80	38.00
4	*5260.00	104.2 AV			1.41 V	0	66.20	38.00
5	#10520.00	59.6 PK	74.0	-14.4	1.19 V	63	11.00	48.60
6	#10520.00	47.1 AV	54.0	-6.9	1.19 V	63	-1.50	48.60

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. “#”:The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	109.8 PK			1.26 H	178	71.70	38.10
2	*5300.00	100.0 AV			1.26 H	178	61.90	38.10
3	10600.00	57.5 PK	74.0	-16.5	1.19 H	62	8.80	48.70
4	10600.00	45.4 AV	54.0	-8.6	1.19 H	62	-3.30	48.70
5	15900.00	54.4 PK	74.0	-19.6	1.18 H	74	6.30	48.10
6	15900.00	42.9 AV	54.0	-11.1	1.18 H	74	-5.20	48.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	114.6 PK			1.09 V	360	76.50	38.10
2	*5300.00	104.7 AV			1.09 V	360	66.60	38.10
3	10600.00	60.3 PK	74.0	-13.7	1.88 V	152	11.60	48.70
4	10600.00	47.6 AV	54.0	-6.4	1.88 V	152	-1.10	48.70
5	15900.00	55.5 PK	74.0	-18.5	1.34 V	126	7.40	48.10
6	15900.00	45.0 AV	54.0	-9.0	1.34 V	126	-3.10	48.10

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* ”: Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	110.8 PK			1.20 H	179	72.70	38.10
2	*5320.00	101.1 AV			1.20 H	179	63.00	38.10
3	5350.00	65.8 PK	74.0	-8.2	1.26 H	179	27.60	38.20
4	5350.00	51.1 AV	54.0	-2.9	1.26 H	179	12.90	38.20
5	10640.00	56.8 PK	74.0	-17.2	1.19 H	52	8.00	48.80
6	10640.00	45.7 AV	54.0	-8.3	1.19 H	52	-3.10	48.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	111.2 PK			1.00 V	347	73.10	38.10
2	*5320.00	102.7 AV			1.00 V	347	64.60	38.10
3	5350.00	68.5 PK	74.0	-5.5	1.40 V	155	30.30	38.20
4	5350.00	50.8 AV	54.0	-3.2	1.40 V	155	12.60	38.20
5	5362.00	64.0 PK	74.0	-10.0	1.31 V	144	25.80	38.20
6	5362.00	52.6 AV	54.0	-1.4	1.31 V	144	14.40	38.20
7	10640.00	60.4 PK	74.0	-13.6	1.19 V	107	11.60	48.80
8	10640.00	47.4 AV	54.0	-6.6	1.19 V	107	-1.40	48.80

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.8 PK	74.0	-17.2	1.10 H	175	18.50	38.30
2	5460.00	45.1 AV	54.0	-8.9	1.10 H	175	6.80	38.30
3	#5470.00	63.9 PK	74.0	-10.1	1.10 H	175	25.60	38.30
4	#5470.00	47.2 AV	54.0	-6.8	1.10 H	175	8.90	38.30
5	*5500.00	107.2 PK			1.00 H	180	68.80	38.40
6	*5500.00	98.0 AV			1.00 H	180	59.60	38.40
7	11000.00	58.7 PK	74.0	-15.3	1.18 H	65	9.10	49.60
8	11000.00	46.4 AV	54.0	-7.6	1.18 H	65	-3.20	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	60.9 PK	74.0	-13.1	1.16 V	354	22.60	38.30
2	5460.00	45.2 AV	54.0	-8.8	1.16 V	354	6.90	38.30
3	#5470.00	70.6 PK	74.0	-3.4	1.16 V	354	32.30	38.30
4	#5470.00	52.5 AV	54.0	-1.5	1.16 V	354	14.20	38.30
5	*5500.00	114.2 PK			1.30 V	163	75.80	38.40
6	*5500.00	104.4 AV			1.30 V	163	66.00	38.40
7	11000.00	61.8 PK	74.0	-12.2	1.16 V	82	12.20	49.60
8	11000.00	48.3 AV	54.0	-5.7	1.16 V	82	-1.30	49.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	109.9 PK			1.07 H	183	71.40	38.50
2	*5580.00	100.6 AV			1.07 H	183	62.10	38.50
3	11160.00	59.1 PK	74.0	-14.9	1.19 H	65	9.40	49.70
4	11160.00	46.6 AV	54.0	-7.4	1.19 H	65	-3.10	49.70
5	#16740.00	61.9 PK	74.0	-12.1	1.15 H	139	10.60	51.30
6	#16740.00	50.2 AV	54.0	-3.8	1.15 H	139	-1.10	51.30
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	115.9 PK			1.01 V	346	77.40	38.50
2	*5580.00	105.9 AV			1.01 V	346	67.40	38.50
3	11160.00	61.7 PK	74.0	-12.3	1.25 V	63	12.00	49.70
4	11160.00	48.9 AV	54.0	-5.1	1.25 V	63	-0.80	49.70
5	#16740.00	63.9 PK	74.0	-10.1	1.88 V	152	12.60	51.30
6	#16740.00	51.5 AV	54.0	-2.5	1.88 V	152	0.20	51.30

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	103.8 PK			1.18 H	159	65.00	38.80
2	*5700.00	94.1 AV			1.18 H	159	55.30	38.80
3	#5725.00	66.9 PK	74.0	-7.1	1.32 H	170	28.10	38.80
4	#5725.00	47.6 AV	54.0	-6.4	1.32 H	170	8.80	38.80
5	11400.00	56.5 PK	74.0	-17.5	1.09 H	45	6.90	49.60
6	11400.00	47.0 AV	54.0	-7.0	1.09 H	45	-2.60	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	110.1 PK			1.36 V	152	71.30	38.80
2	*5700.00	100.8 AV			1.36 V	152	62.00	38.80
3	#5725.00	71.9 PK	74.0	-2.1	1.60 V	148	33.10	38.80
4	#5725.00	52.5 AV	54.0	-1.5	1.60 V	148	13.70	38.80
5	11400.00	61.6 PK	74.0	-12.4	1.28 V	65	12.00	49.60
6	11400.00	49.0 AV	54.0	-5.0	1.28 V	65	-0.60	49.60

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* ”: Fundamental frequency.
6. “#”: The radiated frequency is out the restricted band.

# 802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.0 PK	74.0	-17.0	1.25 H	178	19.10	37.90
2	5150.00	44.6 AV	54.0	-9.4	1.25 H	178	6.70	37.90
3	*5270.00	106.7 PK			1.15 H	167	68.70	38.00
4	*5270.00	96.3 AV			1.15 H	167	58.30	38.00
5	#10540.00	56.5 PK	74.0	-17.5	1.19 H	65	7.80	48.70
6	#10540.00	44.9 AV	54.0	-9.1	1.19 H	65	-3.80	48.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.6 PK	74.0	-16.4	1.10 V	347	19.70	37.90
2	5150.00	46.8 AV	54.0	-7.2	1.10 V	347	8.90	37.90
3	*5270.00	112.2 PK			1.10 V	0	74.20	38.00
4	*5270.00	101.8 AV			1.10 V	0	63.80	38.00
5	#10540.00	60.2 PK	74.0	-13.8	1.19 V	74	11.50	48.70
6	#10540.00	47.5 AV	54.0	-6.5	1.19 V	74	-1.20	48.70

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	101.0 PK			1.42 H	183	62.90	38.10
2	*5320.00	90.4 AV			1.42 H	183	52.30	38.10
3	5350.00	64.8 PK	74.0	-9.2	1.55 H	196	26.60	38.20
4	5350.00	45.7 AV	54.0	-8.3	1.55 H	196	7.50	38.20
5	10620.00	56.4 PK	74.0	-17.6	1.09 H	55	7.60	48.80
6	10620.00	45.3 AV	54.0	-8.7	1.09 H	55	-3.50	48.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	106.7 PK			1.08 V	357	68.60	38.10
2	*5310.00	96.8 AV			1.08 V	357	58.70	38.10
3	5350.00	72.9 PK	74.0	-1.1	1.21 V	175	34.70	38.20
4	5350.00	49.2 AV	54.0	-4.8	1.21 V	175	11.00	38.20
5	10620.00	59.9 PK	74.0	-14.1	1.18 V	63	11.10	48.80
6	10620.00	47.3 AV	54.0	-6.7	1.18 V	63	-1.50	48.80

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* ”: Fundamental frequency.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.0 PK	74.0	-16.0	1.47 H	182	19.70	38.30
2	5460.00	45.1 AV	54.0	-8.9	1.47 H	182	6.80	38.30
3	#5470.00	69.3 PK	74.0	-4.7	1.47 H	182	31.00	38.30
4	#5470.00	50.8 AV	54.0	-3.2	1.47 H	182	12.50	38.30
5	*5510.00	101.7 PK			1.39 H	181	63.30	38.40
6	*5510.00	91.8 AV			1.39 H	181	53.40	38.40
7	11020.00	58.7 PK	74.0	-15.3	1.08 H	147	9.10	49.60
8	11020.00	46.8 AV	54.0	-7.2	1.08 H	147	-2.80	49.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	60.6 PK	74.0	-13.4	1.00 V	165	22.30	38.30
2	5460.00	46.1 AV	54.0	-7.9	1.00 V	165	7.80	38.30
3	#5470.00	72.1 PK	74.0	-1.9	1.00 V	165	33.80	38.30
4	#5470.00	52.9 AV	54.0	-1.1	1.00 V	165	14.60	38.30
5	*5510.00	108.7 PK			1.29 V	178	70.30	38.40
6	*5510.00	98.7 AV			1.29 V	178	60.30	38.40
7	11020.00	59.7 PK	74.0	-14.3	1.33 V	145	10.10	49.60
8	11020.00	48.6 AV	54.0	-5.4	1.33 V	145	-1.00	49.60

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	106.8 PK			1.26 H	184	68.40	38.40
2	*5550.00	97.9 AV			1.26 H	184	59.50	38.40
3	11100.00	58.5 PK	74.0	-15.5	1.32 H	47	8.80	49.70
4	11100.00	46.5 AV	54.0	-7.5	1.32 H	47	-3.20	49.70
5	#16650.00	60.4 PK	74.0	-13.6	1.15 H	74	9.40	51.00
6	#16650.00	48.0 AV	54.0	-6.0	1.15 H	74	-3.00	51.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	111.5 PK			1.61 V	344	73.10	38.40
2	*5550.00	102.7 AV			1.61 V	344	64.30	38.40
3	11100.00	61.1 PK	74.0	-12.9	1.08 V	65	11.40	49.70
4	11100.00	51.5 AV	54.0	-2.5	1.08 V	65	1.80	49.70
5	#16650.00	60.3 PK	74.0	-13.7	1.09 V	66	9.30	51.00
6	#16650.00	50.3 AV	54.0	-3.7	1.09 V	66	-0.70	51.00

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	102.9 PK			1.50 H	159	64.20	38.70
2	*5670.00	93.1 AV			1.50 H	159	54.40	38.70
3	#5725.00	62.4 PK	74.0	-11.6	1.60 H	180	23.60	38.80
4	#5725.00	47.9 AV	54.0	-6.1	1.60 H	180	9.10	38.80
5	11340.00	58.9 PK	74.0	-15.1	1.13 H	54	9.20	49.70
6	11340.00	46.5 AV	54.0	-7.5	1.13 H	54	-3.20	49.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	109.4 PK			1.14 V	156	70.70	38.70
2	*5670.00	98.6 AV			1.14 V	156	59.90	38.70
3	#5725.00	70.1 PK	74.0	-3.9	1.23 V	178	31.30	38.80
4	#5725.00	52.7 AV	54.0	-1.3	1.23 V	178	13.90	38.80
5	11340.00	59.7 PK	74.0	-14.3	1.17 V	65	10.00	49.70
6	11340.00	48.9 AV	54.0	-5.1	1.17 V	65	-0.80	49.70

#### REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " \* ": Fundamental frequency.
6. "#": The radiated frequency is out the restricted band.

# BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	37.7 QP	43.5	-5.8	1.49 H	97	25.60	12.10
2	224.33	37.6 QP	46.0	-8.4	2.00 H	111	25.50	12.10
3	374.04	44.8 QP	46.0	-1.2	1.00 H	106	27.90	16.90
4	624.94	44.3 QP	46.0	-1.7	1.28 H	291	21.50	22.80
5	675.40	42.8 QP	46.0	-3.2	2.00 H	237	19.50	23.30
6	875.67	43.1 QP	46.0	-2.9	1.49 H	105	16.50	26.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.87	35.6 QP	40.0	-4.4	1.07 V	250	21.80	13.80
2	125.17	37.8 QP	43.5	-5.7	1.25 V	6	25.70	12.10
3	374.04	43.1 QP	46.0	-2.9	1.25 V	156	26.20	16.90
4	500.42	41.1 QP	46.0	-4.9	1.00 V	194	21.00	20.10
5	624.85	41.9 QP	46.0	-4.1	1.25 V	34	19.10	22.80
6	834.84	41.1 QP	46.0	-4.9	2.00 V	105	15.00	26.10

## REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	30.5 QP	40.0	-9.5	1.99 H	23	16.90	13.60
2	224.33	34.5 QP	46.0	-11.5	1.50 H	99	22.40	12.10
3	374.04	34.6 QP	46.0	-11.4	1.00 H	102	17.70	16.90
4	500.42	31.8 QP	46.0	-14.2	1.50 H	114	11.70	20.10
5	675.40	38.5 QP	46.0	-7.5	1.00 H	100	15.20	23.30
6	825.11	33.3 QP	46.0	-12.7	1.00 H	100	7.40	25.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.23	34.7 QP	40.0	-5.3	1.25 V	333	21.00	13.70
2	148.50	26.3 QP	43.5	-17.2	2.00 V	167	12.50	13.80
3	333.21	31.1 QP	46.0	-14.9	2.00 V	106	15.20	15.90
4	374.04	29.7 QP	46.0	-16.3	1.25 V	140	12.80	16.90
5	500.42	32.8 QP	46.0	-13.2	1.00 V	193	12.70	20.10
6	675.40	30.9 QP	46.0	-15.1	1.25 V	349	7.60	23.30

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	38.5 QP	43.5	-5.0	1.50 H	56	26.40	12.10
2	374.04	44.9 QP	46.0	-1.1	1.00 H	112	28.00	16.90
3	500.42	40.2 QP	46.0	-5.8	2.00 H	125	20.10	20.10
4	624.85	44.4 QP	46.0	-1.6	1.24 H	136	21.60	22.80
5	675.40	43.4 QP	46.0	-2.6	1.00 H	330	20.10	23.30
6	875.67	40.9 QP	46.0	-5.1	1.00 H	302	14.30	26.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	51.29	38.3 QP	40.0	-1.7	1.00 V	18	24.60	13.70
2	125.17	38.0 QP	43.5	-5.5	1.00 V	232	25.90	12.10
3	374.04	43.0 QP	46.0	-3.0	1.25 V	151	26.10	16.90
4	500.42	39.6 QP	46.0	-6.4	1.00 V	195	19.50	20.10
5	624.85	41.7 QP	46.0	-4.3	1.25 V	33	18.90	22.80
6	875.67	38.9 QP	46.0	-7.1	1.00 V	102	12.30	26.60

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	31.0 QP	40.0	-9.0	1.50 H	7	17.40	13.60
2	226.27	29.9 QP	46.0	-16.1	1.50 H	82	17.70	12.20
3	374.04	34.9 QP	46.0	-11.1	1.00 H	127	18.00	16.90
4	675.40	43.4 QP	46.0	-2.6	1.25 H	311	20.10	23.30
5	825.11	33.3 QP	46.0	-12.7	1.00 H	101	7.40	25.90
6	883.44	42.1 QP	46.0	-3.9	2.00 H	21	15.40	26.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.23	36.5 QP	40.0	-3.5	1.00 V	257	22.80	13.70
2	158.22	28.1 QP	43.5	-15.4	1.00 V	97	14.10	14.00
3	333.21	30.8 QP	46.0	-15.2	1.24 V	352	14.90	15.90
4	500.42	34.4 QP	46.0	-11.6	1.24 V	234	14.30	20.10
5	675.40	38.6 QP	46.0	-7.4	1.24 V	319	15.30	23.30
6	881.50	43.5 QP	46.0	-2.5	1.99 V	39	16.80	26.70

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
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

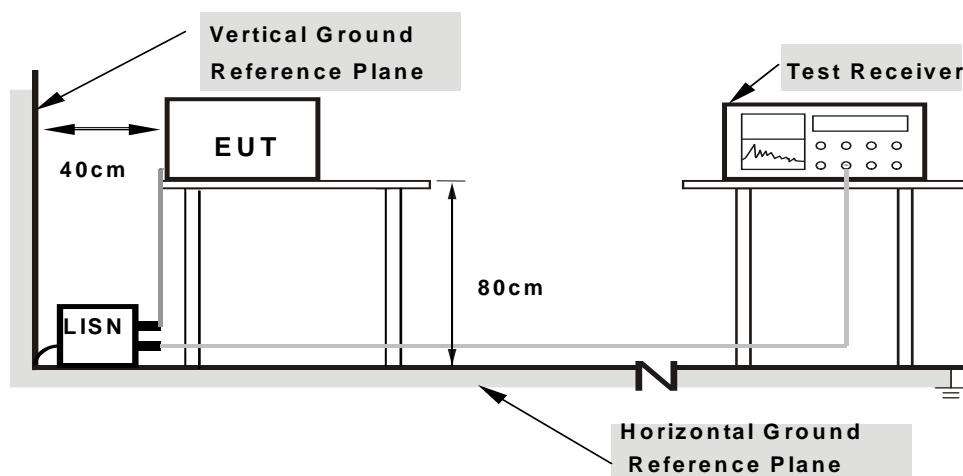
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



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

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

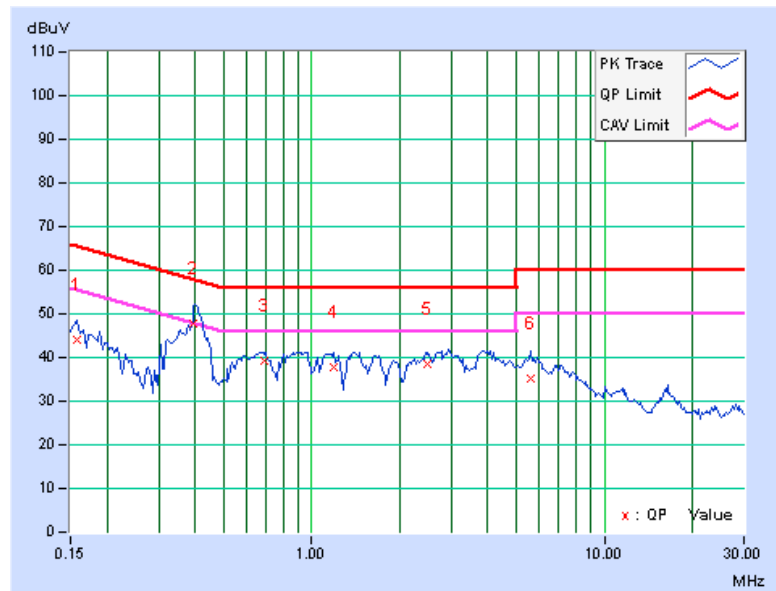
## 4.2.7 TEST RESULTS

### CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.17	43.78	36.30	43.95	36.47	65.58	55.58	-21.62	-19.10
2	0.39609	0.21	47.39	42.13	47.60	42.34	57.93	47.93	-10.34	-5.60
3	0.69297	0.24	39.18	32.15	39.42	32.39	56.00	46.00	-16.58	-13.61
4	1.19141	0.27	37.49	31.45	37.76	31.72	56.00	46.00	-18.24	-14.28
5	2.49219	0.30	38.30	32.03	38.60	32.33	56.00	46.00	-17.40	-13.67
6	5.62109	0.39	34.79	29.06	35.18	29.45	60.00	50.00	-24.82	-20.55

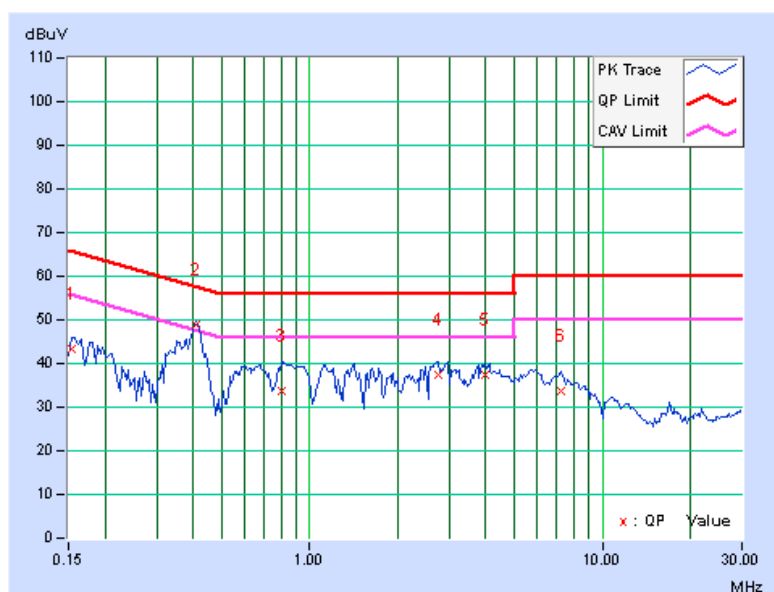
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. The emission levels of other frequencies were very low against the limit.
  3. Margin value = Emission level - Limit value
  4. Correction factor = Insertion loss + Cable loss
  5. Emission Level = Correction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



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	0.18	43.07	31.61	43.25	31.79	65.79	55.79	-22.53	-23.99
2	0.40781	0.25	48.76	40.33	49.01	40.58	57.69	47.69	-8.68	-7.11
3	0.80625	0.24	33.29	25.73	33.53	25.97	56.00	46.00	-22.47	-20.03
4	2.75000	0.32	37.02	30.32	37.34	30.64	56.00	46.00	-18.66	-15.36
5	3.97266	0.39	36.90	30.42	37.29	30.81	56.00	46.00	-18.71	-15.19
6	7.21484	0.44	33.41	27.83	33.85	28.27	60.00	50.00	-26.15	-21.73

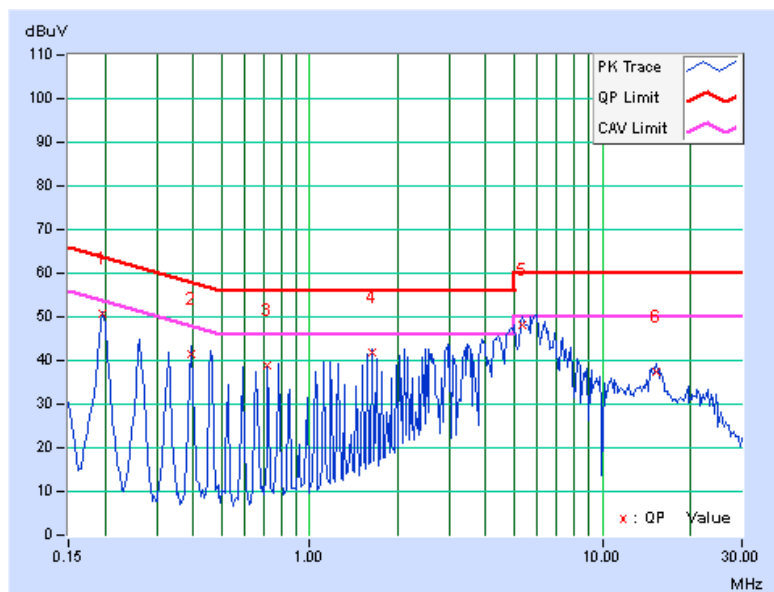
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction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



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.17	50.60	40.73	50.77	40.90	63.74	53.74	-12.97	-12.84
2	0.39219	0.21	41.24	41.01	41.45	41.22	58.02	48.02	-16.57	-6.80
3	0.72031	0.24	38.73	37.90	38.97	38.14	56.00	46.00	-17.03	-7.86
4	1.64063	0.28	41.68	40.97	41.96	41.25	56.00	46.00	-14.04	-4.75
5	5.31641	0.38	47.59	46.62	47.97	47.00	60.00	50.00	-12.03	-3.00
6	15.22266	0.54	37.02	33.95	37.56	34.49	60.00	50.00	-22.44	-15.51

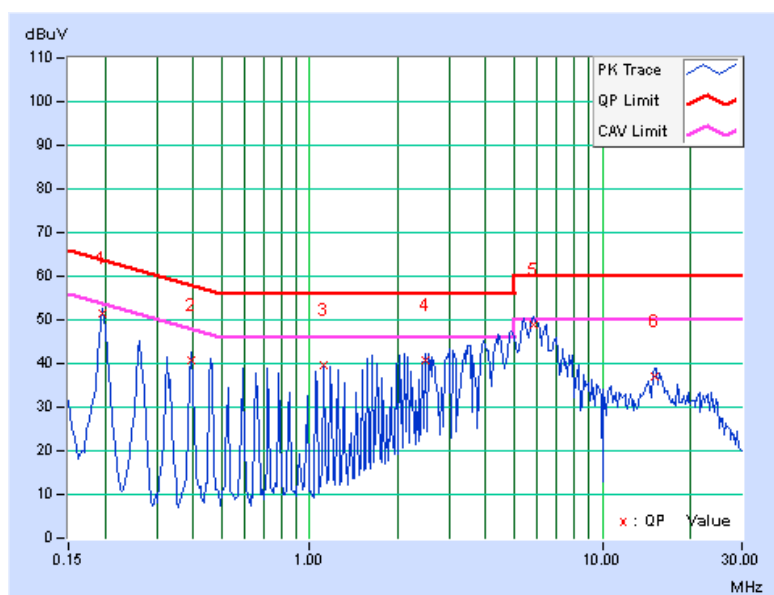
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction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



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 52	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.18	51.31	41.01	51.49	41.19	63.74	53.74	-12.25	-12.55
2	0.39609	0.25	40.34	39.74	40.59	39.99	57.93	47.93	-17.35	-7.95
3	1.11719	0.24	39.45	38.98	39.69	39.22	56.00	46.00	-16.31	-6.78
4	2.49219	0.31	40.56	40.15	40.87	40.46	56.00	46.00	-15.13	-5.54
5	5.84375	0.42	48.40	47.72	48.82	48.14	60.00	50.00	-11.18	-1.86
6	15.16406	0.61	36.61	33.82	37.22	34.43	60.00	50.00	-22.78	-15.57

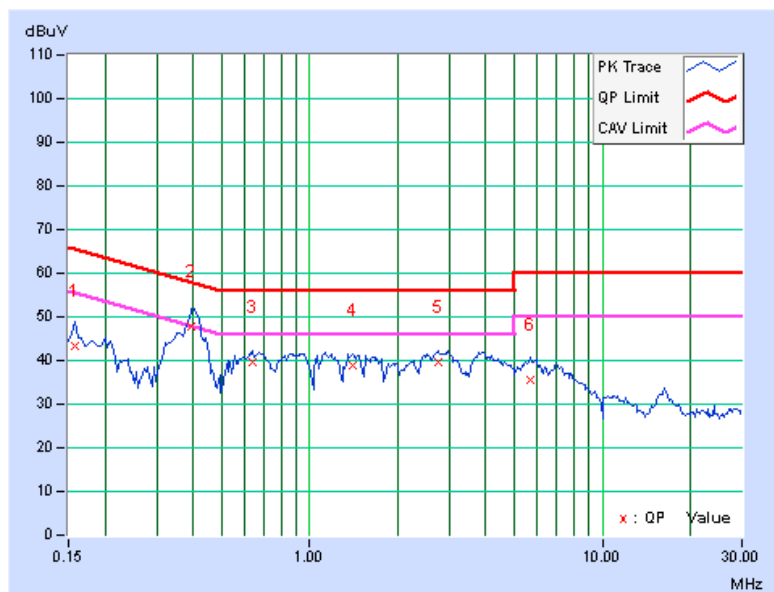
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction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



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.17	43.08	35.88	43.25	36.05	65.58	55.58	-22.32	-19.52
2	0.39609	0.21	47.73	42.78	47.94	42.99	57.93	47.93	-10.00	-4.95
3	0.64219	0.23	39.28	33.74	39.51	33.97	56.00	46.00	-16.49	-12.03
4	1.40625	0.27	38.78	33.02	39.05	33.29	56.00	46.00	-16.95	-12.71
5	2.75391	0.31	39.28	33.06	39.59	33.37	56.00	46.00	-16.41	-12.63
6	5.69141	0.39	35.11	29.87	35.50	30.26	60.00	50.00	-24.50	-19.74

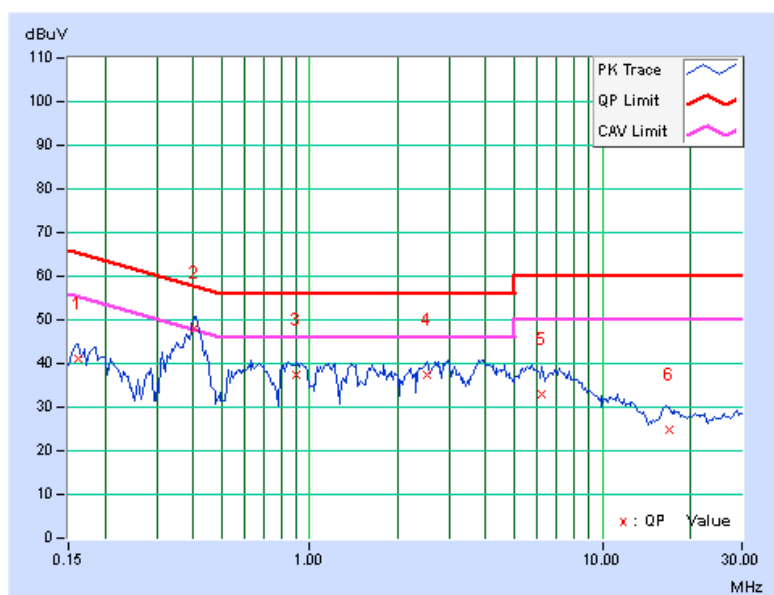
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction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



PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	A

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.18	40.78	31.96	40.96	32.14	65.38	55.38	-24.41	-23.23
2	0.40391	0.25	47.80	41.58	48.05	41.83	57.77	47.77	-9.72	-5.94
3	0.90391	0.23	37.17	31.73	37.40	31.96	56.00	46.00	-18.60	-14.04
4	2.51563	0.31	37.27	29.42	37.58	29.73	56.00	46.00	-18.42	-16.27
5	6.21875	0.42	32.60	26.80	33.02	27.22	60.00	50.00	-26.98	-22.78
6	17.00391	0.66	24.15	19.46	24.81	20.12	60.00	50.00	-35.19	-29.88

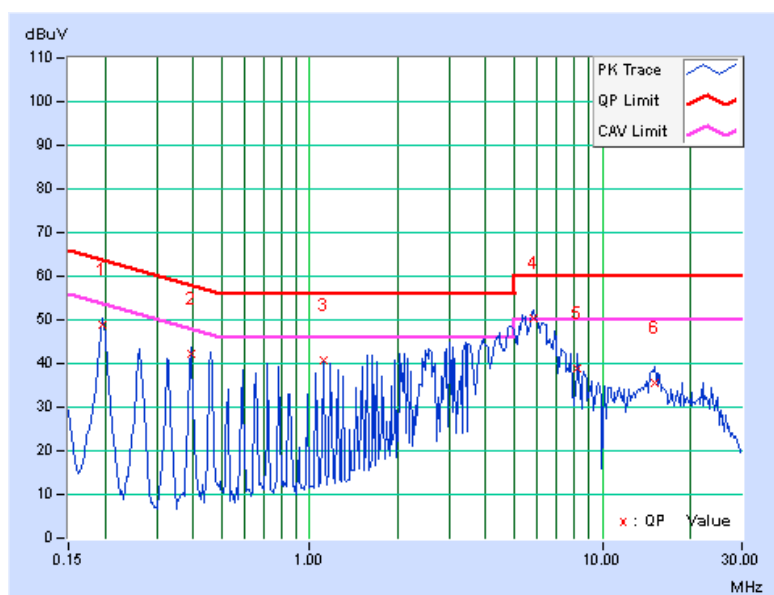
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.  
2. The emission levels of other frequencies were very low against the limit.  
3. Margin value = Emission level - Limit value  
4. Correction factor = Insertion loss + Cable loss  
5. Emission Level = Correction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



PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.17	48.71	39.08	48.88	39.25	63.74	53.74	-14.86	-14.49
2	0.39219	0.21	42.04	41.96	42.25	42.17	58.02	48.02	-15.77	-5.85
3	1.11328	0.27	40.65	40.08	40.92	40.35	56.00	46.00	-15.08	-5.65
4	5.82813	0.39	49.95	47.45	50.34	47.84	60.00	50.00	-9.66	-2.16
5	8.25391	0.41	38.36	35.57	38.77	35.98	60.00	50.00	-21.23	-14.02
6	15.19922	0.54	35.05	31.53	35.59	32.07	60.00	50.00	-24.41	-17.93

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

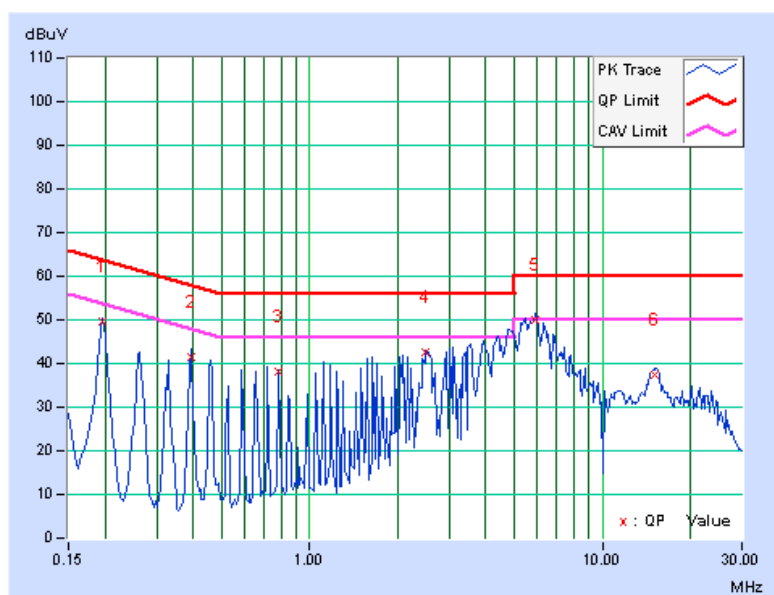




PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 116	TEST MODE	B

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.18	49.38	39.54	49.56	39.72	63.74	53.74	-14.18	-14.02
2	0.39219	0.25	41.14	41.11	41.39	41.36	58.02	48.02	-16.63	-6.66
3	0.78672	0.24	38.06	37.47	38.30	37.71	56.00	46.00	-17.70	-8.29
4	2.48828	0.31	42.38	41.39	42.69	41.70	56.00	46.00	-13.31	-4.30
5	5.89063	0.42	49.47	47.77	49.89	48.19	60.00	50.00	-10.11	-1.81
6	15.18750	0.61	36.73	35.53	37.34	36.14	60.00	50.00	-22.66	-13.86

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



### 4.3 PEAK TRANSMIT POWER MEASUREMENT

#### 4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

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

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  $NANT \leq 4$ ;

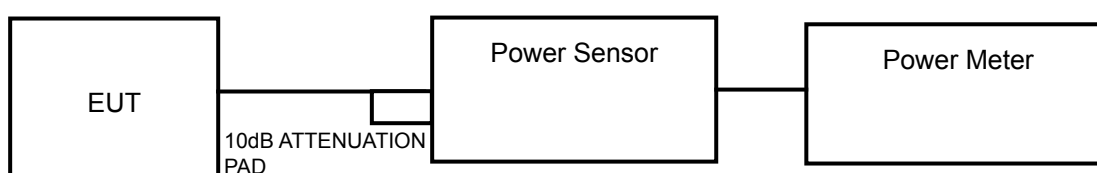
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any NANT;

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

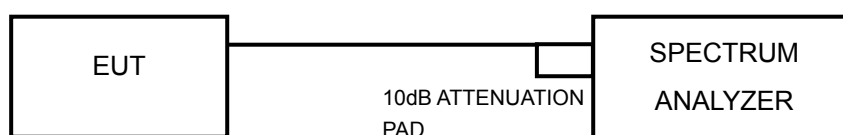
For power measurements on all other devices: Array Gain =  $10 \log(NANT/NSS)$  dB.

#### 4.3.2 TEST SETUP

##### FOR POWER OUTPUT MEASUREMENT



##### 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

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%.

#### 4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.6 EUT OPERATING CONDITIONS

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

#### 4.3.7 TEST RESULTS

##### POWER OUTPUT:

##### 802.11a

CHAN.	CHAN. FREQ. (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
52	5260	17.40	19.30	140.068	21.46	24	PASS
60	5300	17.20	19.10	133.764	21.26	24	PASS
64	5320	15.93	17.49	95.279	19.79	24	PASS
100	5500	15.38	17.47	90.361	19.56	24	PASS
116	5580	18.30	18.40	136.791	21.36	24	PASS
140	5700	14.46	15.48	63.243	18.01	24	PASS

##### 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				
52	5260	17.30	19.10	134.986	21.30	24	PASS
60	5300	17.20	19.20	135.657	21.32	24	PASS
64	5320	16.06	17.86	101.459	20.06	24	PASS
100	5500	15.25	17.09	84.665	19.28	24	PASS
116	5580	18.20	18.30	133.677	21.26	24	PASS
140	5700	13.85	14.95	55.527	17.45	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				
54	5270	18.35	20.34	176.534	22.47	24	PASS
62	5310	13.25	15.53	56.862	17.55	24	PASS
102	5510	11.84	13.84	39.486	15.96	24	PASS
110	5550	18.67	19.44	161.523	22.08	24	PASS
134	5670	15.42	16.21	76.617	18.84	24	PASS

## 26dB BANDWIDTH:

### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	34.53	32.96	PASS
60	5300	31.69	32.62	PASS
64	5320	20.72	21.18	PASS
100	5500	23.63	25.37	PASS
116	5580	38.96	36.35	PASS
140	5700	22.23	21.73	PASS

### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	34.55	33.07	PASS
60	5300	32.30	30.50	PASS
64	5320	23.93	23.03	PASS
100	5500	28.01	26.11	PASS
116	5580	41.14	36.76	PASS
140	5700	22.60	23.79	PASS

### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
54	5270	85.15	84.23	PASS
62	5310	51.05	54.50	PASS
102	5510	48.48	48.49	PASS
110	5550	93.73	91.58	PASS
134	5670	52.02	66.24	PASS

## EUT MAXIMUM CONDUCTED POWER

### 802.11a

FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	140.068	21.46
5470~5725	136.791	21.36

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

### 802.11n (20MHz)

FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	135.657	21.32
5470~5725	133.677	21.26

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

### 802.11n (40MHz)

FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	176.534	22.47
5470~5725	161.523	22.08

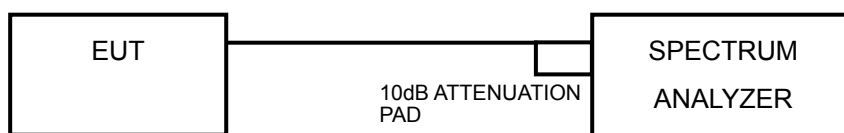
**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

## 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.4.4 TEST PROCEDURES

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

### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

#### 4.4.7 TEST RESULTS

##### 802.11a

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
52	5260	5.33	7.37	9.48	9.99	PASS
60	5300	5.13	7.12	9.25	9.99	PASS
64	5320	4.01	5.24	7.68	9.99	PASS
100	5500	2.65	5.14	7.08	9.99	PASS
116	5580	6.52	6.80	9.67	9.99	PASS
140	5700	2.04	2.80	5.45	9.99	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. Directional gain =  $4\text{dBi} + 10\log(2) = 7.01\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (7.01 - 6) = 9.99\text{dBm}$ .

##### 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
52	5260	5.18	8.06	9.86	9.99	PASS
60	5300	5.75	7.39	9.66	9.99	PASS
64	5320	3.67	4.70	7.23	9.99	PASS
100	5500	3.84	5.14	7.55	9.99	PASS
116	5580	6.68	6.27	9.49	9.99	PASS
140	5700	1.11	2.41	4.82	9.99	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. Directional gain =  $4\text{dBi} + 10\log(2) = 7.01\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (7.01 - 6) = 9.99\text{dBm}$ .



### 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL POWER DENSITY (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1			
54	5270	2.04	5.37	7.03	9.99	PASS
62	5310	-2.32	-0.18	1.89	9.99	PASS
102	5510	-3.27	-1.12	0.95	9.99	PASS
110	5550	3.91	3.84	6.89	9.99	PASS
134	5670	-0.90	0.57	2.91	9.99	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.

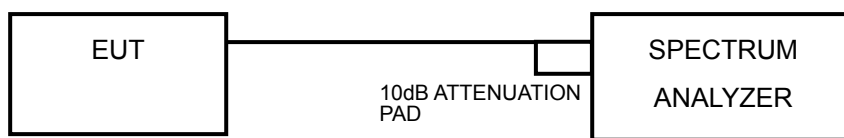
2. Directional gain =  $4\text{dBi} + 10\log(2) = 7.01\text{dBi} > 6\text{dBi}$  , so the power density limit shall be reduced to  $11 - (7.01 - 6) = 9.99\text{dBm}$ .

## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

- 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.

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

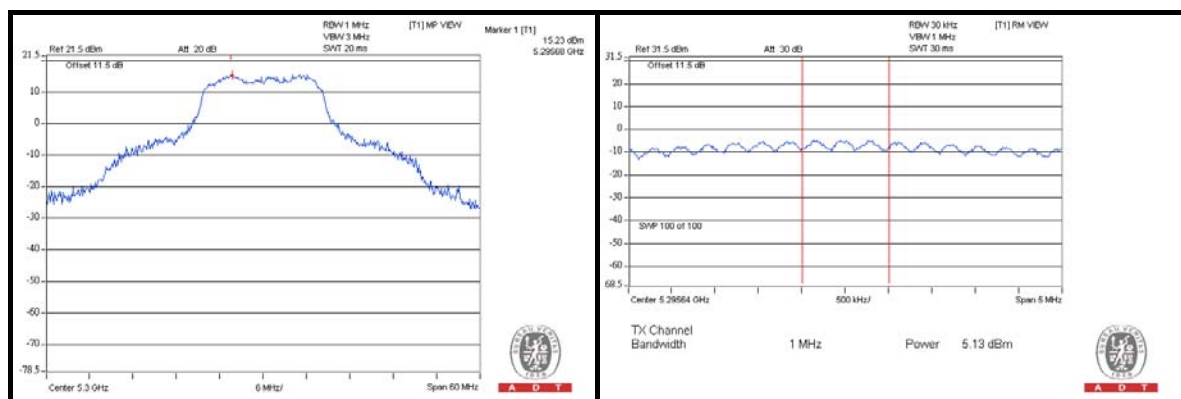
### 4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

## 4.5.7 TEST RESULTS

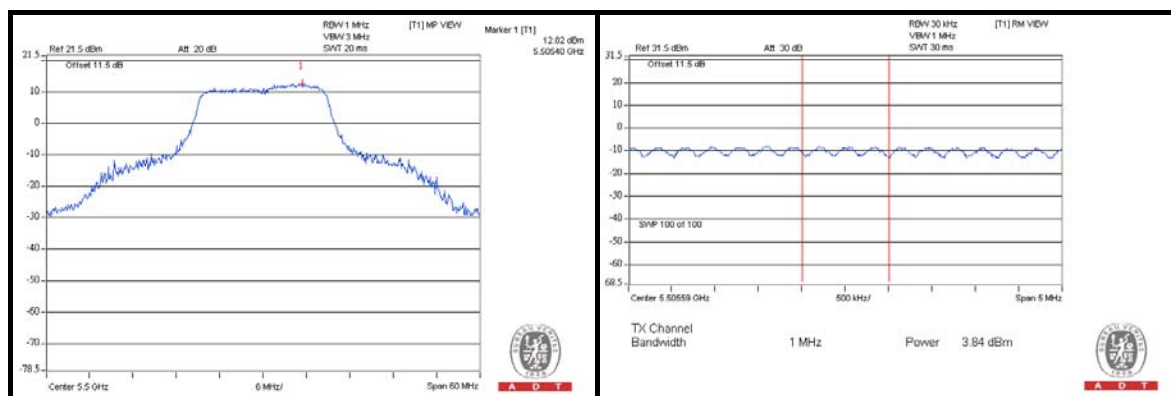
### 802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
52	5260	15.17	16.98	5.33	7.37	9.84	9.61	13	PASS
60	5300	15.23	16.99	5.13	7.12	10.10	9.87	13	PASS
64	5320	12.07	13.95	4.01	5.24	8.06	8.71	13	PASS
100	5500	11.11	13.92	2.65	5.14	8.46	8.78	13	PASS
116	5580	15.40	16.02	6.52	6.80	8.88	9.22	13	PASS
140	5700	10.99	12.09	2.04	2.80	8.95	9.29	13	PASS



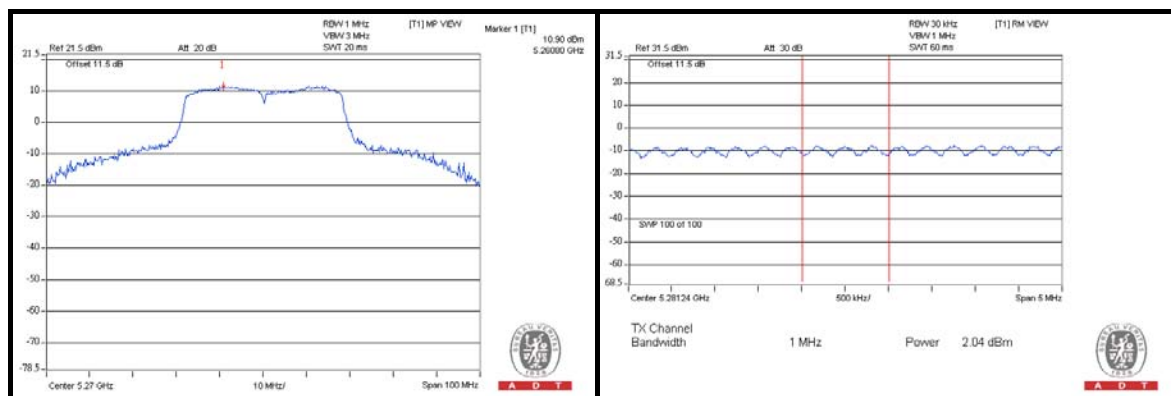
### 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
52	5260	13.85	15.88	5.18	8.06	8.67	7.82	13	PASS
60	5300	13.49	15.40	5.75	7.39	7.74	8.01	13	PASS
64	5320	11.16	12.69	3.67	4.70	7.49	7.99	13	PASS
100	5500	12.82	13.21	3.84	5.14	8.98	8.07	13	PASS
116	5580	14.68	15.18	6.68	6.27	8.00	8.91	13	PASS
140	5700	9.54	10.30	1.11	2.41	8.43	7.89	13	PASS



### 802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)		PPSD (dBm)		PEAK EXCURSION (dB)		LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1	CHAIN 0	CHAIN 1		
54	5270	10.90	13.36	2.04	5.37	8.86	7.99	13	PASS
62	5310	5.86	7.99	-2.32	-0.18	8.18	8.17	13	PASS
102	5510	4.72	6.96	-3.27	-1.12	7.99	8.08	13	PASS
110	5550	10.25	12.10	3.91	3.84	6.34	8.26	13	PASS
134	5670	6.08	8.91	-0.90	0.57	6.98	8.34	13	PASS

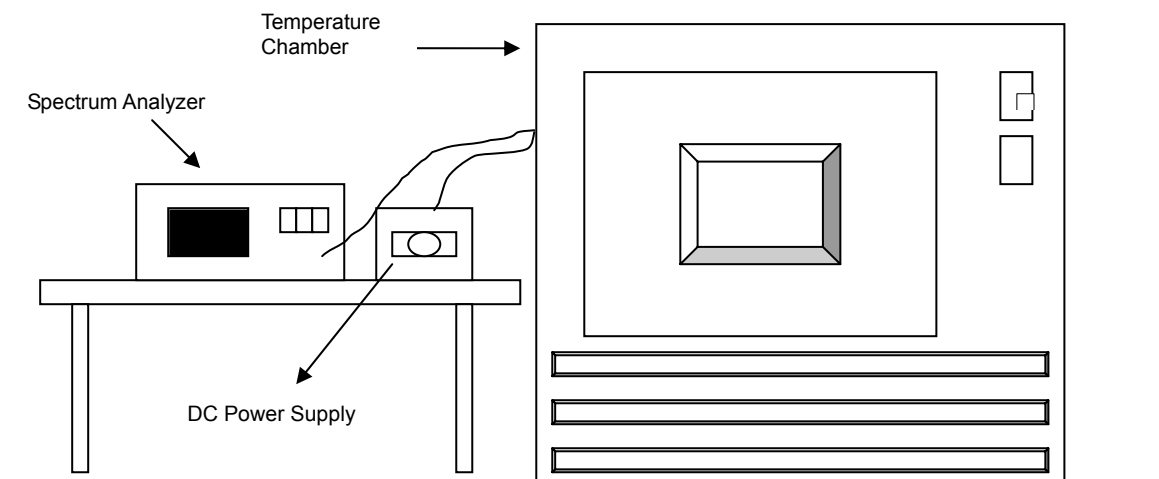


## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.6.4 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal DC 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.

#### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.6 EUT OPERATING CONDITION

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

#### 4.6.7 TEST RESULTS

FREQUENCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5260MHz									
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	3.7	5260.0213	4.0494	5260.0227	4.3156	5260.0177	3.3650	5260.0213	4.0494
40	3.7	5259.9937	-1.1977	5259.9937	-1.1977	5259.9878	-2.3194	5259.9837	-3.0989
30	3.7	5259.9796	-3.8783	5259.9732	-5.0951	5259.9795	-3.8973	5259.9734	-5.0570
20	3.7	5259.9808	-3.6502	5259.9796	-3.8783	5259.9821	-3.4030	5259.9852	-2.8137
10	3.7	5259.9791	-3.9734	5259.974	-4.9430	5259.9802	-3.7643	5259.9783	-4.1255
0	3.7	5260.0023	0.4373	5260.0045	0.8555	5259.997	-0.5703	5259.9955	-0.8555
-10	3.7	5259.9817	-3.4791	5259.9815	-3.5171	5259.9777	-4.2395	5259.9822	-3.3840
-20	3.7	5259.9949	-0.9696	5259.9853	-2.7947	5259.9844	-2.9658	5259.9932	-1.2928

FREQUENCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5260MHz									
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	4.255	5259.9815	-3.5171	5259.981	-3.6122	5259.9825	-3.3270	5259.9859	-2.6806
	3.7	5259.9808	-3.6502	5259.9796	-3.8783	5259.9821	-3.4030	5259.9852	-2.8137
	3.145	5259.9806	-3.6882	5259.9809	-3.6312	5259.9823	-3.3650	5259.9858	-2.6996



## 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---**