



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF120420C08C R1

**MODEL NO.:** WNDR4300

**FCC ID:** PY312100187

**RECEIVED:** Jun. 21, 2012

**TESTED:** Dec. 24, 2012 ~ Apr. 25, 2013

**ISSUED:** Apr. 26, 2013

**APPLICANT:** NETGEAR, INC.

**ADDRESS:** 350 East Plumeria Drive San Jose, CA 95134

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

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

**TEST LOCATION:** No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei  
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120420C08C	Original release	Mar. 26, 2013
RF120420C08C R1	Re-evaluated conducted power of EUT	Apr. 26, 2013



# 1. CERTIFICATION

**PRODUCT:** N750 Wireless Dual Band Gigabit Router

**MODEL:** WNDR4300

**BRAND:** NETGEAR

**APPLICANT:** NETGEAR, INC.

**TESTED:** Dec. 24, 2012 ~ Apr. 25, 2013

**TEST SAMPLE:** ENGINEERING SAMPLE

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

ANSI C63.10-2009

The above equipment (model: WNDR4300) 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 :** Celine Chou , **DATE :** Apr. 26, 2013  
Celine Chou / Specialist

**APPROVED BY :** Ken Liu , **DATE :** Apr. 26, 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 -18.58dB at 0.18910MHz.
15.407(b/1/2/3) (b)(6)	Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.5dB at 5350.00MHz.
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	2.93 dB
	200MHz ~ 1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	N750 Wireless Dual Band Gigabit Router
<b>MODEL NO.</b>	WNDR4300
<b>POWER SUPPLY</b>	12Vdc (Adapter)
<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 450.0Mbps
<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: 7 for 802.11a, 802.11n (20MHz) 3 for 802.11n (40MHz)
<b>OUTPUT POWER</b>	170.882mW for 5260 ~ 5320MHz 181.147mW for 5500 ~ 5700MHz
<b>ANTENNA TYPE</b>	Printed antenna with 2.50dBi gain
<b>ANTENNA CONNECTOR</b>	UFL
<b>DATA CABLE</b>	N/A
<b>I/O PORTS</b>	RJ45, USB
<b>ACCESSORY DEVICES</b>	Adapter

**NOTE:**

1. This report is prepared for FCC class II permissive change. The difference compared with the original report is adding frequency band 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 three completed transmitters and three receivers.

<b>MODULATION MODE</b>	<b>TX FUNCTION</b>
802.11b	2TX
802.11g	2TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX
802.11a	3TX
802.11an (20MHz)	3TX
802.11an (40MHz)	3TX

3. The EUT uses following adapters:

<b>ADAPTER 1</b>	
<b>BRAND</b>	NETGEAR
<b>MODEL</b>	MU30-5120250-A1
<b>P/N</b>	332-10234-01
<b>INPUT POWER</b>	100-240Vac, 50/60Hz, 0.8A
<b>OUTPUT POWER</b>	12Vdc, 2.5A
<b>POWER LINE</b>	1.8m non-shielded cable without core

<b>ADAPTER 2</b>	
<b>BRAND</b>	NETGEAR
<b>MODEL</b>	P030WF120B 11200-6LF
<b>P/N</b>	332-10200-02
<b>INPUT POWER</b>	100-240Vac, 50/60Hz, 1.0A
<b>OUTPUT POWER</b>	12Vdc, 2.5A
<b>POWER LINE</b>	1.8m non-shielded cable without core

\*Adapter 1 was the worst for the final tests.

4. The EUT has disabled the 5600-5650MHz band by S/W to avoid 5600-5650MHz band for FCC certification.
5. 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

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

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

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

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

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

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

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

**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)
-	802.11n (40MHz)	5260-5320	54 to 62	54	OFDM	BPSK	15.0
-	802.11n (40MHz)	5500-5700	102 to 134	110	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)
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-	802.11n (20MHz)		52 to 64	52, 60, 64	OFDM	BPSK	7.2
-	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
-	802.11n (40MHz)		102 to 134	102, 110, 134	OFDM	BPSK	15.0

**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	19deg. C, 68%RH	120Vac, 60Hz	Cedric Wu
	25deg. C, 66%RH		Chris Lin
RE<1G	19deg. C, 68%RH	120Vac, 60Hz	Cedric Wu
PLC	24deg. C, 64%RH	120Vac, 60Hz	Cedric Wu
APCM	25deg. C, 60%RH	120Vac, 60Hz	Nick Chen

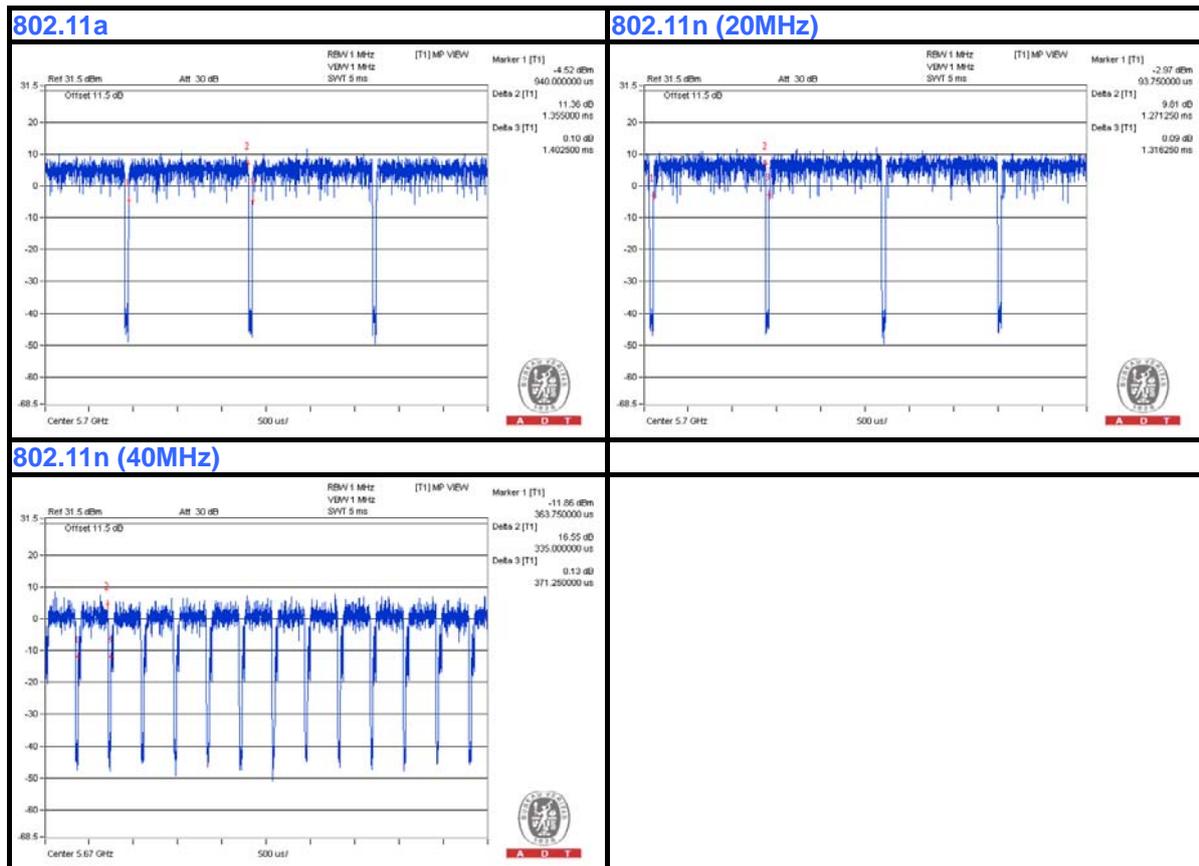
### 3.3 DUTY CYCLE OF TEST SIGNAL

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

**802.11a:** Duty cycle = 1.355/1.402 = 0.966, Duty factor =  $10 * \log(1/0.966) = 0.15$

**802.11n (20MHz):** Duty cycle = 1.271/1.316 = 0.966, Duty factor =  $10 * \log(1/0.966) = 0.15$

**802.11n (40MHz):** Duty cycle = 0.335/0.371 = 0.903, Duty factor =  $10 * \log(1/0.903) = 0.44$



### 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.

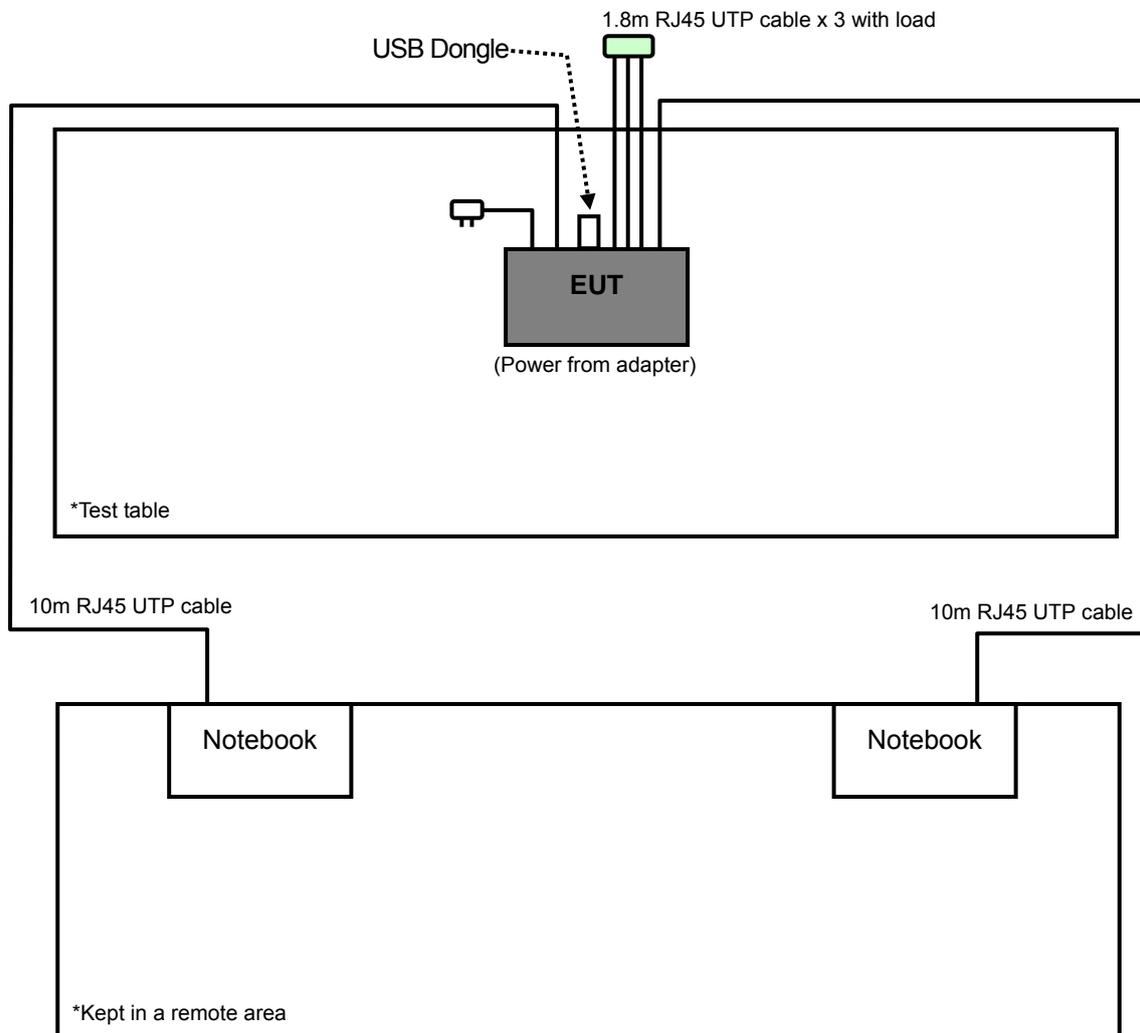
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	USB DONGLE	Transcend	N/A	N/A	N/A
2	NOTEBOOK	DELL	E5410	1HC2XM1	FCC DoC Approved
3	NOTEBOOK	DELL	E5410	6RP2YM1	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	10m RJ45 UTP cable
3	10m RJ45 UTP cable

**NOTE:**

1. All power cords of the above support units are non shielded (1.8m).
2. Items 2~3 acted as communication partners to transfer data.

### 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 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

**Tested Date: Dec. 24, ~ Dec. 26, 2012**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2012	Apr. 18, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jan. 28, 2013	Jan. 27, 2014
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 03, 2012	Apr. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9120 D	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	8449B	3008A01911	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10638	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295013/4 283403/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 11, 2012	Aug. 10, 2013
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	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 9.
  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 215374.
  6. The IC Site Registration No. is IC 7450F-9.



**Tested Date: Apr. 23 ~ Apr. 25, 2013**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Aug. 21, 2012	Aug. 20, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU 43	100115	Oct. 25, 2012	Oct. 24, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Dec. 22, 2012	Dec. 21, 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	8449B	3008A01961	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8447D	2944A10738	Oct. 23, 2012	Oct. 22, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309220/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250724/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	295012/4	Aug. 28, 2012	Aug. 27, 2013
Software BV ADT	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table BV ADT	TT100.	TT93021704	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021704	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0824011	Jul. 30, 2011	Jul. 29, 2012
Power Sensor	MA2411B	0738171	Jul. 30, 2011	Jul. 29, 2012

- 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.

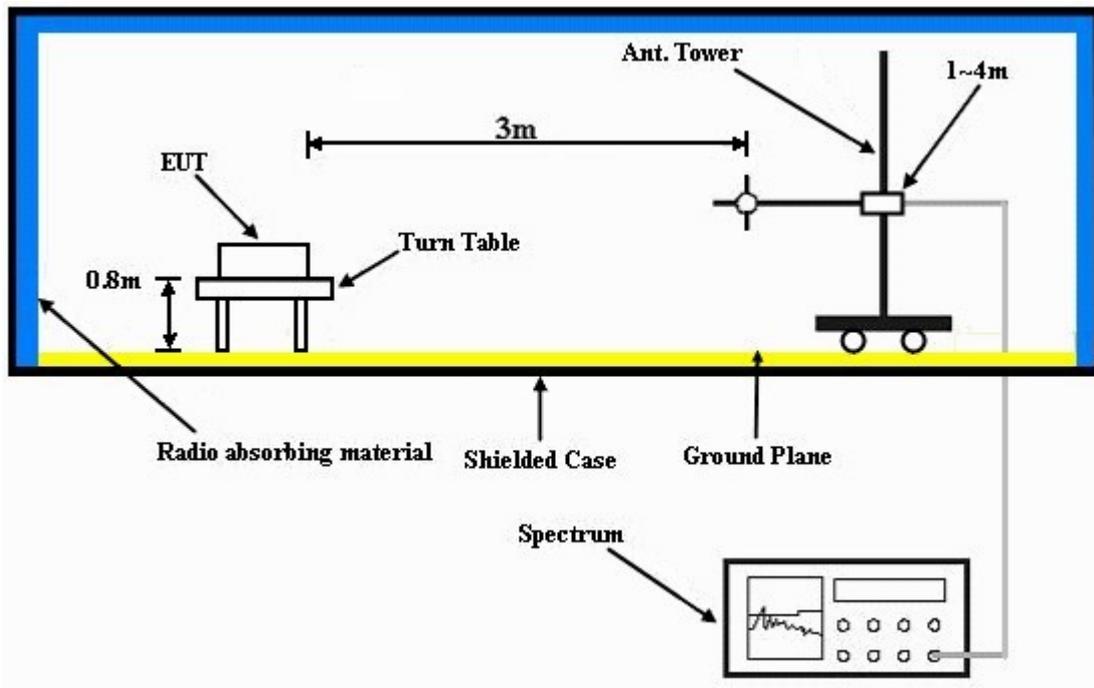
**NOTE:**

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

- a. Placed the EUT on the testing table.
- b. Prepared two notebooks to act as communication partners and placed them outside of testing area.
- c. 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.
- d. The communication partner sent data to EUT by command "PING".

#### 4.1.8 TEST RESULTS

#### ABOVE 1GHz DATA :

#### 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	56.0 PK	74.0	-18.0	1.10 H	300	18.50	37.50
2	5000.00	45.0 AV	54.0	-9.0	1.10 H	300	7.50	37.50
3	5150.00	54.6 PK	74.0	-19.4	1.04 H	260	16.80	37.80
4	5150.00	44.8 AV	54.0	-9.2	1.04 H	260	7.00	37.80
5	*5260.00	112.5 PK			1.00 H	256	74.60	37.90
6	*5260.00	99.9 AV			1.00 H	256	62.00	37.90
7	#10520.00	54.7 PK	74.0	-19.3	1.00 H	50	5.60	49.10
8	#10520.00	41.8 AV	54.0	-12.2	1.00 H	50	-7.30	49.10
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	5000.00	58.7 PK	74.0	-15.3	1.24 V	13	21.20	37.50
2	5000.00	51.7 AV	54.0	-2.3	1.24 V	13	14.20	37.50
3	5150.00	54.5 PK	74.0	-19.5	1.09 V	57	16.70	37.80
4	5150.00	41.8 AV	54.0	-12.2	1.09 V	57	4.00	37.80
5	*5260.00	114.7 PK			1.09 V	60	76.80	37.90
6	*5260.00	104.8 AV			1.09 V	60	66.90	37.90
7	#10520.00	55.2 PK	74.0	-18.8	1.00 V	210	6.10	49.10
8	#10520.00	42.4 AV	54.0	-11.6	1.00 V	210	-6.70	49.10

#### 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.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.8 PK	74.0	-18.2	1.12 H	299	18.30	37.50
2	5000.00	44.9 AV	54.0	-9.1	1.12 H	299	7.40	37.50
3	*5300.00	113.0 PK			1.07 H	265	75.00	38.00
4	*5300.00	102.6 AV			1.07 H	265	64.60	38.00
5	10600.00	55.1 PK	74.0	-18.9	1.00 H	55	6.10	49.00
6	10600.00	42.3 AV	54.0	-11.7	1.00 H	55	-6.70	49.00
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	5000.00	58.5 PK	74.0	-15.5	1.24 V	11	21.00	37.50
2	5000.00	50.2 AV	54.0	-3.8	1.24 V	11	12.70	37.50
3	*5300.00	114.2 PK			1.07 V	59	76.20	38.00
4	*5300.00	102.1 AV			1.07 V	59	64.10	38.00
5	10600.00	55.6 PK	74.0	-18.4	1.00 V	222	6.60	49.00
6	10600.00	42.8 AV	54.0	-11.2	1.00 V	222	-6.20	49.00

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	56.4 PK	74.0	-17.6	1.14 H	300	18.90	37.50
2	5000.00	44.8 AV	54.0	-9.2	1.14 H	300	7.30	37.50
3	*5320.00	112.6 PK			1.04 H	265	74.60	38.00
4	*5320.00	102.2 AV			1.04 H	265	64.20	38.00
5	5350.00	63.0 PK	74.0	-11.0	1.05 H	264	24.90	38.10
6	5350.00	47.0 AV	54.0	-7.0	1.05 H	264	8.90	38.10
7	10640.00	54.4 PK	74.0	-19.6	1.00 H	47	5.20	49.20
8	10640.00	41.5 AV	54.0	-12.5	1.00 H	47	-7.70	49.20
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	5000.00	58.7 PK	74.0	-15.3	1.23 V	1	21.20	37.50
2	5000.00	50.1 AV	54.0	-3.9	1.23 V	1	12.60	37.50
3	*5320.00	113.6 PK			1.06 V	60	75.60	38.00
4	*5320.00	104.2 AV			1.06 V	60	66.20	38.00
5	5350.00	68.0 PK	74.0	-6.0	1.06 V	49	29.90	38.10
6	5350.00	47.6 AV	54.0	-6.4	1.06 V	49	9.50	38.10
7	10640.00	54.9 PK	74.0	-19.1	1.00 V	205	5.70	49.20
8	10640.00	42.0 AV	54.0	-12.0	1.00 V	205	-7.20	49.20

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.1 PK	74.0	-18.9	1.21 H	302	17.60	37.50
2	5000.00	44.4 AV	54.0	-9.6	1.21 H	302	6.90	37.50
3	5460.00	57.0 PK	74.0	-17.0	1.04 H	261	18.70	38.30
4	5460.00	44.5 AV	54.0	-9.5	1.04 H	261	6.20	38.30
5	#5470.00	61.4 PK	74.0	-12.6	1.04 H	265	23.10	38.30
6	#5470.00	45.2 AV	54.0	-8.8	1.04 H	265	6.90	38.30
7	*5500.00	111.2 PK			1.02 H	263	72.90	38.30
8	*5500.00	100.6 AV			1.02 H	263	62.30	38.30
9	11000.00	52.1 PK	74.0	-21.9	1.00 H	80	2.40	49.70
10	11000.00	40.3 AV	54.0	-13.7	1.00 H	80	-9.40	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	5000.00	58.3 PK	74.0	-15.7	1.24 V	1	20.80	37.50
2	5000.00	50.6 AV	54.0	-3.4	1.24 V	1	13.10	37.50
3	5460.00	58.1 PK	74.0	-15.9	1.03 V	105	19.80	38.30
4	5460.00	46.8 AV	54.0	-7.2	1.03 V	105	8.50	38.30
5	#5470.00	65.1 PK	74.0	-8.9	1.02 V	121	26.80	38.30
6	#5470.00	47.4 AV	54.0	-6.6	1.02 V	121	9.10	38.30
7	*5500.00	112.9 PK			1.01 V	106	74.60	38.30
8	*5500.00	103.3 AV			1.01 V	106	65.00	38.30
9	11000.00	53.9 PK	74.0	-20.1	1.00 V	222	4.20	49.70
10	11000.00	42.1 AV	54.0	-11.9	1.00 V	222	-7.60	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 of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.3 PK	74.0	-18.7	1.13 H	300	17.80	37.50
2	5000.00	44.6 AV	54.0	-9.4	1.13 H	300	7.10	37.50
3	*5580.00	110.9 PK			1.00 H	262	72.50	38.40
4	*5580.00	100.2 AV			1.00 H	262	61.80	38.40
5	11160.00	52.5 PK	74.0	-21.5	1.00 H	88	3.00	49.50
6	11160.00	40.8 AV	54.0	-13.2	1.00 H	88	-8.70	49.50
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	5000.00	57.6 PK	74.0	-16.4	1.24 V	359	20.10	37.50
2	5000.00	39.7 AV	54.0	-14.3	1.24 V	359	2.20	37.50
3	*5580.00	113.0 PK			1.00 V	111	74.60	38.40
4	*5580.00	103.0 AV			1.00 V	111	64.60	38.40
5	11160.00	54.3 PK	74.0	-19.7	1.00 V	230	4.80	49.50
6	11160.00	42.5 AV	54.0	-11.5	1.00 V	230	-7.00	49.50

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	109.5 PK			1.00 H	263	70.80	38.70
2	*5700.00	98.3 AV			1.00 H	263	59.60	38.70
3	#5725.00	59.4 PK	74.0	-14.6	1.00 H	260	20.70	38.70
4	#5725.00	44.9 AV	54.0	-9.1	1.00 H	260	6.20	38.70
5	11400.00	51.4 PK	74.0	-22.6	1.00 H	77	2.00	49.40
6	11400.00	39.8 AV	54.0	-14.2	1.00 H	77	-9.60	49.40
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	111.8 PK			1.00 V	153	73.10	38.70
2	*5700.00	101.8 AV			1.00 V	153	63.10	38.70
3	#5725.00	67.5 PK	74.0	-6.5	1.00 V	155	28.80	38.70
4	#5725.00	46.6 AV	54.0	-7.4	1.00 V	155	7.90	38.70
5	11400.00	53.2 PK	74.0	-20.8	1.00 V	215	3.80	49.40
6	11400.00	41.4 AV	54.0	-12.6	1.00 V	215	-8.00	49.40

**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 of the restricted band.



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802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	56.0 PK	74.0	-18.0	1.23 H	304	18.50	37.50
2	5000.00	45.6 AV	54.0	-8.4	1.23 H	304	8.10	37.50
3	5150.00	54.4 PK	74.0	-19.6	1.00 H	298	16.60	37.80
4	5150.00	41.0 AV	54.0	-13.0	1.00 H	298	3.20	37.80
5	*5260.00	111.5 PK			1.00 H	268	73.60	37.90
6	*5260.00	101.6 AV			1.00 H	268	63.70	37.90
7	#10520.00	54.5 PK	74.0	-19.5	1.00 H	70	5.40	49.10
8	#10520.00	41.6 AV	54.0	-12.4	1.00 H	70	-7.50	49.10
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	5000.00	58.4 PK	74.0	-15.6	1.24 V	20	20.90	37.50
2	5000.00	51.4 AV	54.0	-2.6	1.24 V	20	13.90	37.50
3	5150.00	53.7 PK	74.0	-20.3	1.00 V	64	15.90	37.80
4	5150.00	41.4 AV	54.0	-12.6	1.00 V	64	3.60	37.80
5	*5260.00	113.7 PK			1.00 V	60	75.80	37.90
6	*5260.00	104.1 AV			1.00 V	60	66.20	37.90
7	#10520.00	56.9 PK	74.0	-17.1	1.00 V	14	7.80	49.10
8	#10520.00	43.6 AV	54.0	-10.4	1.00 V	14	-5.50	49.10

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.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.8 PK	74.0	-18.2	1.12 H	300	18.30	37.50
2	5000.00	44.7 AV	54.0	-9.3	1.12 H	300	7.20	37.50
3	*5300.00	111.9 PK			1.08 H	261	73.90	38.00
4	*5300.00	102.4 AV			1.08 H	261	64.40	38.00
5	10600.00	54.9 PK	74.0	-19.1	1.00 H	76	5.90	49.00
6	10600.00	41.9 AV	54.0	-12.1	1.00 H	76	-7.10	49.00
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	5000.00	59.0 PK	74.0	-15.0	1.24 V	1	21.50	37.50
2	5000.00	51.3 AV	54.0	-2.7	1.24 V	1	13.80	37.50
3	*5300.00	114.1 PK			1.08 V	60	76.10	38.00
4	*5300.00	104.1 AV			1.08 V	60	66.10	38.00
5	10600.00	57.2 PK	74.0	-16.8	1.00 V	20	8.20	49.00
6	10600.00	44.0 AV	54.0	-10.0	1.00 V	20	-5.00	49.00

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.1 PK	74.0	-18.9	1.20 H	298	17.60	37.50
2	5000.00	44.7 AV	54.0	-9.3	1.20 H	298	7.20	37.50
3	*5320.00	112.3 PK			1.06 H	268	74.30	38.00
4	*5320.00	101.9 AV			1.06 H	268	63.90	38.00
5	5350.00	60.8 PK	74.0	-13.2	1.05 H	267	22.70	38.10
6	5350.00	47.2 AV	54.0	-6.8	1.05 H	267	9.10	38.10
7	10640.00	54.3 PK	74.0	-19.7	1.00 H	66	5.10	49.20
8	10640.00	41.4 AV	54.0	-12.6	1.00 H	66	-7.80	49.20
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	5000.00	57.8 PK	74.0	-16.2	1.24 V	1	20.30	37.50
2	5000.00	49.9 AV	54.0	-4.1	1.24 V	1	12.40	37.50
3	*5320.00	114.2 PK			1.07 V	59	76.20	38.00
4	*5320.00	104.2 AV			1.07 V	59	66.20	38.00
5	5350.00	64.8 PK	74.0	-9.2	1.07 V	58	26.70	38.10
6	5350.00	47.1 AV	54.0	-6.9	1.07 V	58	9.00	38.10
7	10640.00	56.7 PK	74.0	-17.3	1.00 V	9	7.50	49.20
8	10640.00	43.4 AV	54.0	-10.6	1.00 V	9	-5.80	49.20

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.0 PK	74.0	-19.0	1.22 H	301	17.50	37.50
2	5000.00	44.0 AV	54.0	-10.0	1.22 H	301	6.50	37.50
3	5460.00	57.1 PK	74.0	-16.9	1.04 H	264	18.80	38.30
4	5460.00	44.7 AV	54.0	-9.3	1.04 H	264	6.40	38.30
5	#5470.00	71.7 PK	74.0	-2.3	1.01 H	267	33.40	38.30
6	#5470.00	45.4 AV	54.0	-8.6	1.01 H	267	7.10	38.30
7	*5500.00	109.9 PK			1.02 H	258	71.60	38.30
8	*5500.00	100.0 AV			1.02 H	258	61.70	38.30
9	11000.00	52.3 PK	74.0	-21.7	1.00 H	100	2.60	49.70
10	11000.00	40.5 AV	54.0	-13.5	1.00 H	100	-9.20	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	5000.00	57.6 PK	74.0	-16.4	1.23 V	359	20.10	37.50
2	5000.00	50.1 AV	54.0	-3.9	1.23 V	359	12.60	37.50
3	5460.00	59.3 PK	74.0	-14.7	1.03 V	119	21.00	38.30
4	5460.00	46.4 AV	54.0	-7.6	1.03 V	119	8.10	38.30
5	#5470.00	64.7 PK	74.0	-9.3	1.02 V	103	26.40	38.30
6	#5470.00	48.2 AV	54.0	-5.8	1.02 V	103	9.90	38.30
7	*5500.00	112.1 PK			1.02 V	101	73.80	38.30
8	*5500.00	102.8 AV			1.02 V	101	64.50	38.30
9	11000.00	54.2 PK	74.0	-19.8	1.00 V	230	4.50	49.70
10	11000.00	42.1 AV	54.0	-11.9	1.00 V	230	-7.60	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 of the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 116	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	54.9 PK	74.0	-19.1	1.22 H	302	17.40	37.50
2	5000.00	44.1 AV	54.0	-9.9	1.22 H	302	6.60	37.50
3	*5580.00	109.0 PK			1.00 H	273	70.60	38.40
4	*5580.00	99.5 AV			1.00 H	273	61.10	38.40
5	11560.00	52.8 PK	74.0	-21.2	1.00 H	114	3.60	49.20
6	11560.00	40.8 AV	54.0	-13.2	1.00 H	114	-8.40	49.20
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	5000.00	57.5 PK	74.0	-16.5	1.24 V	1	20.00	37.50
2	5000.00	50.2 AV	54.0	-3.8	1.24 V	1	12.70	37.50
3	*5580.00	113.1 PK			1.00 V	110	74.70	38.40
4	*5580.00	103.3 AV			1.00 V	110	64.90	38.40
5	11560.00	54.6 PK	74.0	-19.4	1.00 V	243	5.40	49.20
6	11560.00	42.6 AV	54.0	-11.4	1.00 V	243	-6.60	49.20

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	54.9 PK	74.0	-19.1	1.14 H	300	17.40	37.50
2	5000.00	44.6 AV	54.0	-9.4	1.14 H	300	7.10	37.50
3	*5700.00	109.5 PK			1.00 H	264	70.80	38.70
4	*5700.00	98.9 AV			1.00 H	264	60.20	38.70
5	#5725.00	66.6 PK	74.0	-7.4	1.00 H	263	27.90	38.70
6	#5725.00	47.4 AV	54.0	-6.6	1.00 H	263	8.70	38.70
7	11400.00	52.0 PK	74.0	-22.0	1.00 H	97	2.60	49.40
8	11400.00	40.3 AV	54.0	-13.7	1.00 H	97	-9.10	49.40
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	5000.00	58.5 PK	74.0	-15.5	1.24 V	358	21.00	37.50
2	5000.00	51.8 AV	54.0	-2.2	1.24 V	358	14.30	37.50
3	*5700.00	111.5 PK			1.01 V	152	72.80	38.70
4	*5700.00	101.7 AV			1.01 V	152	63.00	38.70
5	#5725.00	67.6 PK	74.0	-6.4	1.01 V	150	28.90	38.70
6	#5725.00	49.8 AV	54.0	-4.2	1.01 V	150	11.10	38.70
7	11400.00	53.9 PK	74.0	-20.1	1.00 V	219	4.50	49.40
8	11400.00	41.9 AV	54.0	-12.1	1.00 V	219	-7.50	49.40

**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 of the restricted band.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	56.9 PK	74.0	-17.1	1.15 H	299	19.40	37.50
2	5000.00	45.7 AV	54.0	-8.3	1.15 H	299	8.20	37.50
3	5150.00	54.3 PK	74.0	-19.7	1.00 H	250	16.50	37.80
4	5150.00	41.4 AV	54.0	-12.6	1.00 H	250	3.60	37.80
5	*5270.00	110.5 PK			1.00 H	255	72.50	38.00
6	*5270.00	99.9 AV			1.00 H	255	61.90	38.00
7	#10540.00	56.1 PK	74.0	-17.9	1.00 H	110	7.00	49.10
8	#10540.00	42.7 AV	54.0	-11.3	1.00 H	110	-6.40	49.10

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	5000.00	59.5 PK	74.0	-14.5	1.01 V	3	22.00	37.50
2	5000.00	51.8 AV	54.0	-2.2	1.01 V	3	14.30	37.50
3	5150.00	53.4 PK	74.0	-20.6	1.00 V	45	15.60	37.80
4	5150.00	41.8 AV	54.0	-12.2	1.00 V	45	4.00	37.80
5	*5270.00	111.7 PK			1.00 V	59	73.70	38.00
6	*5270.00	100.1 AV			1.00 V	59	62.10	38.00
7	#10540.00	57.4 PK	74.0	-16.6	1.00 V	260	8.30	49.10
8	#10540.00	44.1 AV	54.0	-9.9	1.00 V	260	-5.00	49.10

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.
6. " # ": The radiated frequency is out of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 62	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	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	*5310.00	104.4 PK			1.01 H	279	65.00	39.40
2	*5310.00	94.8 AV			1.01 H	279	55.40	39.40
3	5350.00	66.8 PK	74.0	-7.2	1.01 H	78	27.40	39.40
4	5350.00	49.4 AV	54.0	-4.6	1.01 H	78	10.00	39.40
5	10620.00	59.2 PK	74.0	-14.8	1.48 H	52	7.70	51.50
6	10620.00	46.1 AV	54.0	-7.9	1.48 H	52	-5.40	51.50
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	111.1 PK			1.00 V	273	71.70	39.40
2	*5310.00	99.9 AV			1.00 V	273	60.50	39.40
3	5350.00	69.4 PK	74.0	-4.6	1.00 V	298	30.00	39.40
4	<b>5350.00</b>	<b>53.5 AV</b>	<b>54.0</b>	<b>-0.5</b>	<b>1.00 V</b>	<b>298</b>	<b>14.10</b>	<b>39.40</b>
5	10620.00	58.9 PK	74.0	-15.1	1.12 V	128	7.40	51.50
6	10620.00	45.8 AV	54.0	-8.2	1.12 V	128	-5.70	51.50

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	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	56.1 PK	74.0	-17.9	1.01 H	256	16.50	39.60
2	5460.00	43.7 AV	54.0	-10.3	1.01 H	256	4.10	39.60
3	#5470.00	60.4 PK	74.0	-13.6	1.01 H	256	20.80	39.60
4	#5470.00	46.9 AV	54.0	-7.1	1.01 H	256	7.30	39.60
5	*5510.00	105.6 PK			1.00 H	69	65.90	39.70
6	*5510.00	93.9 AV			1.00 H	69	54.20	39.70
7	11020.00	60.1 PK	74.0	-13.9	1.52 H	169	6.90	53.20
8	11020.00	46.3 AV	54.0	-7.7	1.52 H	169	-6.90	53.20
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	63.7 PK	74.0	-10.3	1.00 V	261	24.10	39.60
2	5460.00	48.4 AV	54.0	-5.6	1.00 V	261	8.80	39.60
3	#5470.00	68.7 PK	74.0	-5.3	1.00 V	261	29.10	39.60
4	#5470.00	53.2 AV	54.0	-0.8	1.00 V	261	13.60	39.60
5	*5510.00	109.7 PK			1.00 V	269	70.00	39.70
6	*5510.00	99.1 AV			1.00 V	269	59.40	39.70
7	11020.00	59.1 PK	74.0	-14.9	1.34 V	144	5.90	53.20
8	11020.00	48.6 AV	54.0	-5.4	1.34 V	144	-4.60	53.20

**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 of the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	54.5 PK	74.0	-19.5	1.15 H	301	17.00	37.50
2	5000.00	43.7 AV	54.0	-10.3	1.15 H	301	6.20	37.50
3	*5550.00	109.0 PK			1.00 H	266	70.60	38.40
4	*5550.00	96.8 AV			1.00 H	266	58.40	38.40
5	11100.00	51.9 PK	74.0	-22.1	1.00 H	94	2.40	49.50
6	11100.00	40.2 AV	54.0	-13.8	1.00 H	94	-9.30	49.50
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	5000.00	56.9 PK	74.0	-17.1	1.22 V	11	19.40	37.50
2	5000.00	49.1 AV	54.0	-4.9	1.22 V	11	11.60	37.50
3	*5550.00	112.6 PK			1.00 V	108	74.20	38.40
4	*5550.00	101.5 AV			1.00 V	108	63.10	38.40
5	11100.00	53.8 PK	74.0	-20.2	1.00 V	245	4.30	49.50
6	11100.00	42.8 AV	54.0	-11.2	1.00 V	245	-6.70	49.50

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	5000.00	55.5 PK	74.0	-18.5	1.13 H	295	18.00	37.50
2	5000.00	44.4 AV	54.0	-9.6	1.13 H	295	6.90	37.50
3	*5670.00	107.1 PK			1.00 H	270	68.50	38.60
4	*5670.00	96.4 AV			1.00 H	270	57.80	38.60
5	#5725.00	62.2 PK	74.0	-11.8	1.14 H	282	23.50	38.70
6	#5725.00	46.4 AV	54.0	-7.6	1.14 H	282	7.70	38.70
7	11340.00	52.4 PK	74.0	-21.6	1.00 H	127	2.90	49.50
8	11340.00	39.8 AV	54.0	-14.2	1.00 H	127	-9.70	49.50
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	5000.00	57.6 PK	74.0	-16.4	1.13 V	4	20.10	37.50
2	5000.00	50.2 AV	54.0	-3.8	1.13 V	4	12.70	37.50
3	*5670.00	113.1 PK			1.07 V	105	74.50	38.60
4	*5670.00	102.2 AV			1.07 V	105	63.60	38.60
5	#5725.00	67.4 PK	74.0	-6.6	1.06 V	100	28.70	38.70
6	#5725.00	52.4 AV	54.0	-1.6	1.06 V	100	13.70	38.70
7	11340.00	54.3 PK	74.0	-19.7	1.00 V	251	4.80	49.50
8	11340.00	41.5 AV	54.0	-12.5	1.00 V	251	-8.00	49.50

**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 of the restricted band.



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**BELOW 1GHz WORST-CASE DATA : 802.11n (40MHz)**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	101.78	28.8 QP	43.5	-14.7	1.50 H	112	19.60	9.20
2	161.92	26.0 QP	43.5	-17.5	1.50 H	284	12.30	13.70
3	249.22	25.2 QP	46.0	-20.8	1.25 H	67	12.30	12.90
4	499.48	29.0 QP	46.0	-17.0	1.50 H	75	9.00	20.00
5	625.58	37.3 QP	46.0	-8.7	1.25 H	111	14.70	22.60
6	749.74	33.2 QP	46.0	-12.8	1.00 H	346	9.00	24.20

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	47.46	31.2 QP	40.0	-8.8	1.00 V	242	17.70	13.50
2	82.38	32.9 QP	40.0	-7.1	1.24 V	24	23.90	9.00
3	138.64	25.5 QP	43.5	-18.0	1.00 V	153	12.60	12.90
4	400.54	25.7 QP	46.0	-20.3	1.24 V	235	8.30	17.40
5	600.36	35.9 QP	46.0	-10.1	1.00 V	291	13.50	22.40
6	749.74	32.1 QP	46.0	-13.9	1.24 V	33	7.90	24.20

**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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	19deg. C, 68%RH	TESTED BY	Cedric Wu

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	76.56	26.3 QP	40.0	-13.7	1.24 H	83	16.00	10.30
2	144.46	26.1 QP	43.5	-17.4	1.00 H	311	12.80	13.30
3	249.22	25.3 QP	46.0	-20.7	1.00 H	73	12.40	12.90
4	499.48	28.6 QP	46.0	-17.4	1.24 H	15	8.60	20.00
5	600.36	30.4 QP	46.0	-15.6	1.24 H	278	8.00	22.40
6	875.84	33.5 QP	46.0	-12.5	1.75 H	64	7.40	26.10
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	47.46	31.8 QP	40.0	-8.2	1.75 V	241	18.30	13.50
2	101.78	32.1 QP	43.5	-11.4	1.00 V	48	22.90	9.20
3	140.58	24.6 QP	43.5	-18.9	1.00 V	110	11.50	13.10
4	375.32	22.0 QP	46.0	-24.0	1.24 V	354	5.20	16.80
5	625.58	34.4 QP	46.0	-11.6	1.50 V	117	11.80	22.60
6	749.74	32.4 QP	46.0	-13.6	1.00 V	10	8.20	24.20
7	875.84	33.7 QP	46.0	-12.3	1.00 V	185	7.60	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.

## 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	100289	Nov. 16, 2012	Nov. 15, 2013
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 02, 2012	Jul. 01, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 04, 2012	Feb. 03, 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 1.
3. The VCCI Site Registration No. is C-2040.

### 4.2.3 TEST PROCEDURES

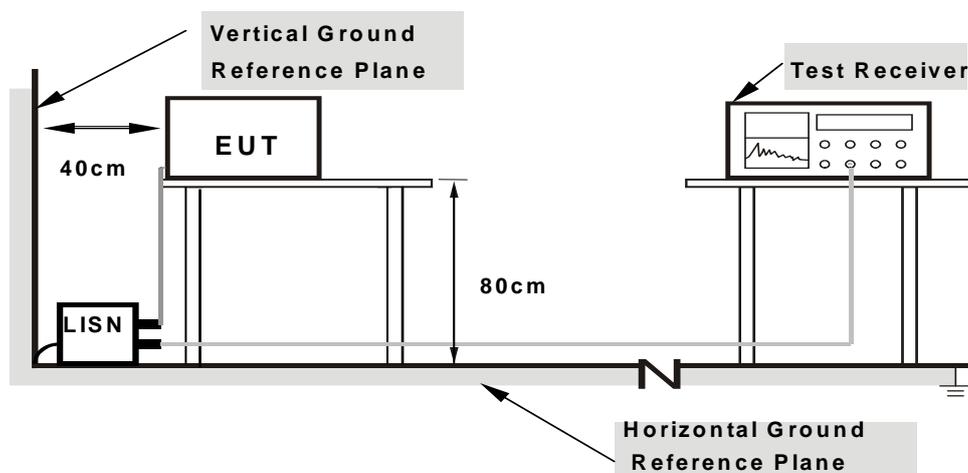
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.2.5 TEST SETUP



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

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

### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

## 4.2.7 TEST RESULTS

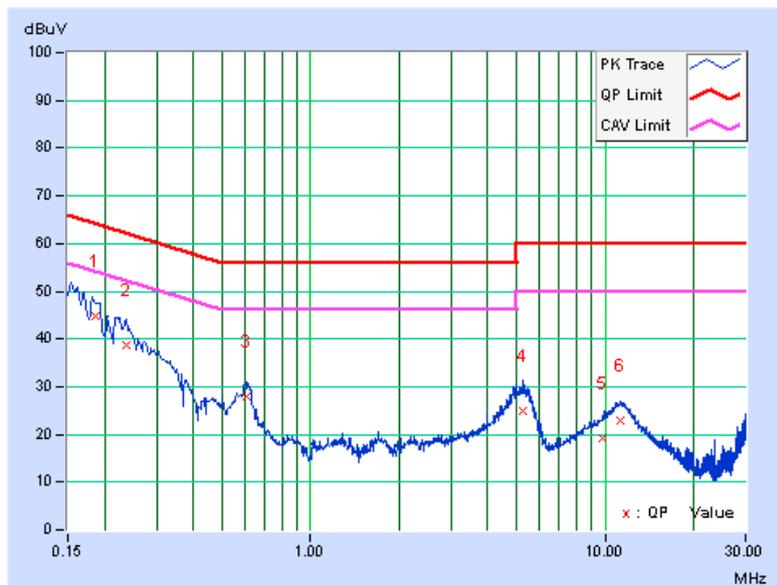
### CONDUCTED WORST-CASE DATA : 802.11n (40MHz)

<b>PHASE</b>	Line 1	<b>6dB BANDWIDTH</b>	9kHz
<b>CHANNEL</b>	Channel 54		

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	0.18606	0.07	44.85	27.21	44.92	27.28	64.21	54.21	-19.29	-26.93
2	0.23586	0.08	38.52	20.57	38.60	20.65	62.24	52.24	-23.64	-31.59
3	0.60418	0.09	28.02	19.99	28.11	20.08	56.00	46.00	-27.89	-25.92
4	5.23300	0.20	24.63	17.98	24.83	18.18	60.00	50.00	-35.17	-31.82
5	9.75296	0.26	18.83	12.04	19.09	12.30	60.00	50.00	-40.91	-37.70
6	11.21921	0.28	22.73	17.27	23.01	17.55	60.00	50.00	-36.99	-32.45

#### REMARKS:

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





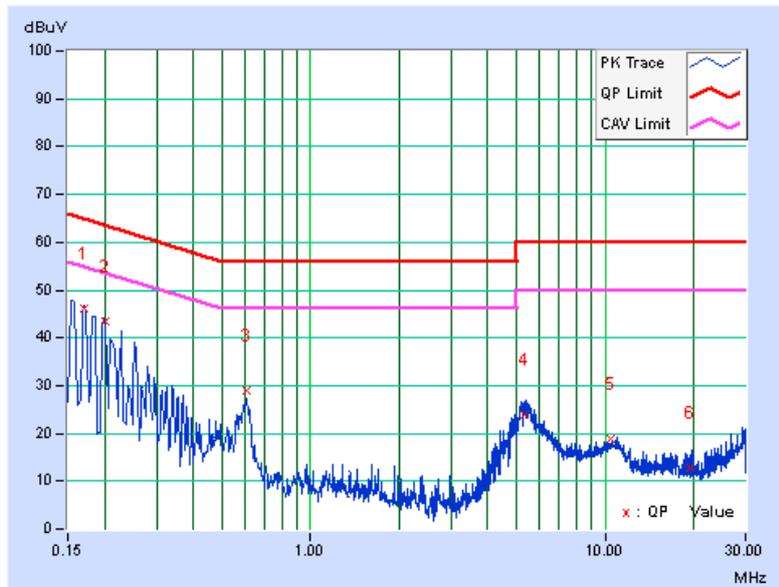
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PHASE	Line 2	6dB BANDWIDTH	9kHz
CHANNEL	Channel 54		

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	0.16967	0.07	46.00	25.81	46.07	25.88	64.98	54.98	-18.91	-29.10
2	0.20083	0.08	43.49	24.74	43.57	24.82	63.58	53.58	-20.01	-28.76
3	0.60418	0.09	29.01	20.99	29.10	21.08	56.00	46.00	-26.90	-24.92
4	5.30729	0.23	23.58	17.40	23.81	17.63	60.00	50.00	-36.19	-32.37
5	10.39811	0.32	18.61	13.55	18.93	13.87	60.00	50.00	-41.07	-36.13
6	19.37938	0.36	12.45	7.38	12.81	7.74	60.00	50.00	-47.19	-42.26

**REMARKS:**

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





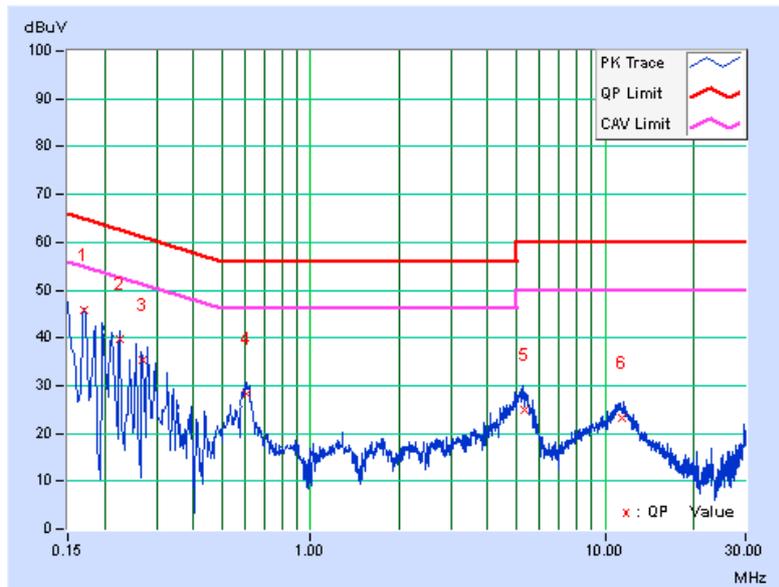
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PHASE	Line 1	6dB BANDWIDTH	9kHz
CHANNEL	Channel 110		

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	0.16967	0.06	45.64	25.21	45.70	25.27	64.98	54.98	-19.28	-29.71
2	0.22434	0.08	39.65	22.23	39.73	22.31	62.66	52.66	-22.93	-30.35
3	0.26765	0.08	35.27	17.98	35.35	18.06	61.19	51.19	-25.84	-33.13
4	0.60418	0.09	28.08	19.97	28.17	20.06	56.00	46.00	-27.83	-25.94
5	5.29947	0.20	24.73	17.84	24.93	18.04	60.00	50.00	-35.07	-31.96
6	11.36779	0.28	23.05	17.73	23.33	18.01	60.00	50.00	-36.67	-31.99

**REMARKS:**

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





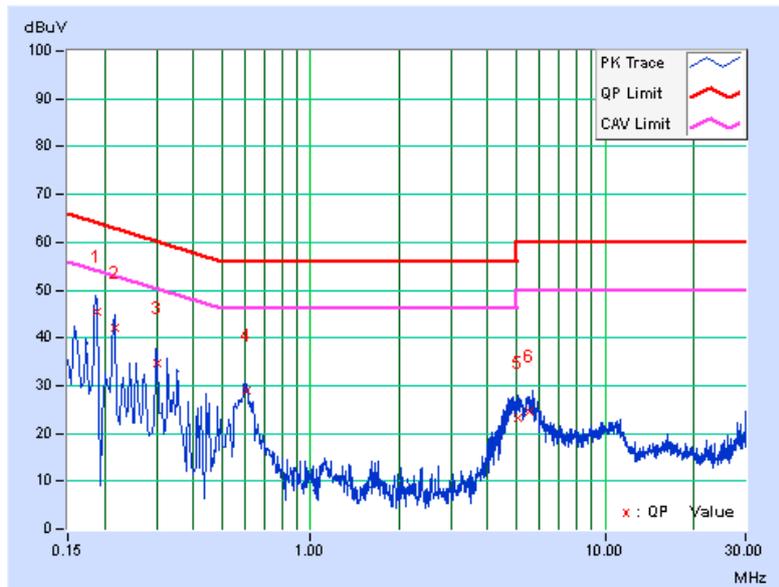
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<b>PHASE</b>	Line 2	<b>6dB BANDWIDTH</b>	9kHz
<b>CHANNEL</b>	Channel 110		

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	0.18910	0.08	45.42	27.51	45.50	27.59	64.08	54.08	-18.58	-26.49
2	0.21565	0.08	41.89	23.69	41.97	23.77	62.98	52.98	-21.02	-29.22
3	0.30249	0.07	34.71	20.63	34.78	20.70	60.17	50.17	-25.39	-29.47
4	0.60418	0.09	28.95	20.92	29.04	21.01	56.00	46.00	-26.96	-24.99
5	5.03359	0.23	22.97	15.23	23.20	15.46	60.00	50.00	-36.80	-34.54
6	5.50279	0.24	24.21	18.11	24.45	18.35	60.00	50.00	-35.55	-31.65

**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;

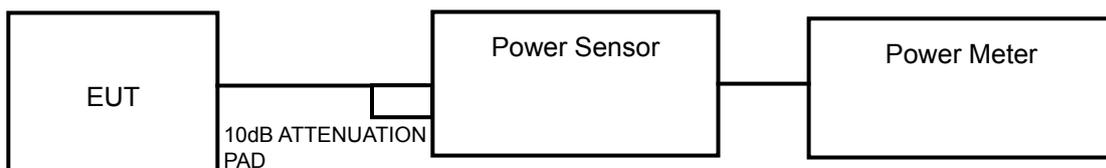
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq$  40 MHz for any NANT;

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	CHAIN 2				
52	5260	15.27	15.01	16.10	106.085	20.26	24	PASS
60	5300	15.87	15.50	16.57	119.512	20.77	24	PASS
64	5320	15.67	15.21	16.40	113.739	20.56	24	PASS
100	5500	15.44	15.15	16.89	116.594	20.67	24	PASS
116	5580	15.72	15.04	15.70	106.394	20.27	24	PASS
140	5700	15.97	15.21	15.81	110.833	20.45	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	CHAIN 2				
52	5260	15.72	15.41	16.60	117.788	20.71	24	PASS
60	5300	16.01	16.07	17.28	133.816	21.27	24	PASS
64	5320	16.04	15.62	16.88	125.407	20.98	24	PASS
100	5500	15.61	15.44	16.12	112.313	20.50	24	PASS
116	5580	16.26	15.47	15.88	116.230	20.65	24	PASS
140	5700	16.29	15.23	16.16	117.208	20.69	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	CHAIN 2				
54	5270	17.07	16.93	18.49	<b>170.882</b>	22.33	24	PASS
62	5310	12.52	12.15	13.85	58.537	17.67	24	PASS
102	5510	11.39	10.75	11.63	40.212	16.04	24	PASS
110	5550	18.19	17.11	18.05	<b>181.147</b>	22.58	24	PASS
134	5670	17.91	16.79	17.70	168.439	22.26	24	PASS



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## 26dB BANDWIDTH:

### 802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
52	5260	24.78	24.11	23.75	PASS
60	5300	25.83	24.63	24.63	PASS
64	5320	24.62	24.27	24.19	PASS
100	5500	25.08	23.91	23.93	PASS
116	5580	25.39	23.85	23.36	PASS
140	5700	24.77	24.65	23.65	PASS

### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
52	5260	26.03	25.18	25.39	PASS
60	5300	26.13	25.39	25.37	PASS
64	5320	26.00	25.19	25.00	PASS
100	5500	26.60	25.73	24.69	PASS
116	5580	26.48	25.70	24.72	PASS
140	5700	25.70	25.44	22.84	PASS

### 802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)			PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	
54	5270	54.05	54.21	50.93	PASS
62	5310	53.44	52.01	52.46	PASS
102	5510	52.10	51.82	52.43	PASS
110	5550	54.43	52.66	55.04	PASS
134	5670	52.33	52.50	50.31	PASS

## EUT HIGHEST CONDUCTED POWER

### 802.11a

FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	119.512	20.77
5470~5725	116.594	20.67

### 802.11n (20MHz)

FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	133.816	21.27
5470~5725	117.208	20.69

### 802.11n (40MHz)

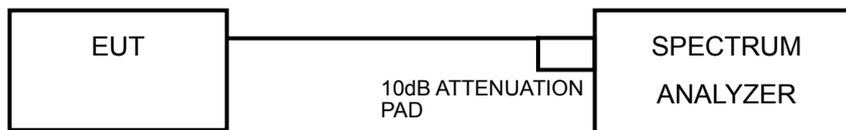
FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	170.882	22.33
5470~5725	181.147	22.58

## 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-2

- 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 and add 10 log (1/duty cycle)

### 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 PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
52	5260	2.91	1.78	2.44	7.17	0.15	7.32	9.73	PASS
60	5300	3.48	2.04	3.60	7.87	0.15	8.02	9.73	PASS
64	5320	3.31	2.42	3.34	7.82	0.15	7.97	9.73	PASS
100	5500	3.74	2.55	4.44	8.42	0.15	8.57	9.73	PASS
116	5580	3.95	3.28	3.89	8.49	0.15	8.64	9.73	PASS
140	5700	3.63	2.52	4.77	8.51	0.15	8.66	9.73	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 = 2.5dBi + 10log(3) = 7.27dBi > 6dBi ,so the power density limit shall be reduced to 11-(7.27-6) = 9.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

##### 802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)			TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
52	5260	3.19	2.06	2.82	7.49	0.15	7.64	9.73	PASS
60	5300	3.56	1.77	3.49	7.79	0.15	7.94	9.73	PASS
64	5320	3.69	1.87	3.32	7.80	0.15	7.95	9.73	PASS
100	5500	3.35	1.73	3.91	7.86	0.15	8.01	9.73	PASS
116	5580	3.93	1.93	4.24	8.25	0.15	8.40	9.73	PASS
140	5700	4.02	3.24	4.47	8.71	0.15	8.86	9.73	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 = 2.5dBi + 10log(3) = 7.27dBi > 6dBi ,so the power density limit shall be reduced to 11-(7.27-6) = 9.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

**802.11n (40MHz)**

CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)			TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1	CHAIN 2					
54	5270	0.07	-0.88	0.60	4.74	0.44	5.18	9.73	PASS
62	5310	-3.12	-4.35	-3.51	1.14	0.44	1.58	9.73	PASS
102	5510	-4.29	-5.81	-4.16	0.08	0.44	0.52	9.73	PASS
110	5550	1.82	-0.09	1.57	5.95	0.44	6.39	9.73	PASS
134	5670	1.54	0.24	1.52	5.91	0.44	6.35	9.73	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 =  $2.5\text{dBi} + 10\log(3) = 7.27\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (7.27 - 6) = 9.73\text{dBm}$ .
3. Refer to section 3.3 for duty cycle spectrum plot.

## 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

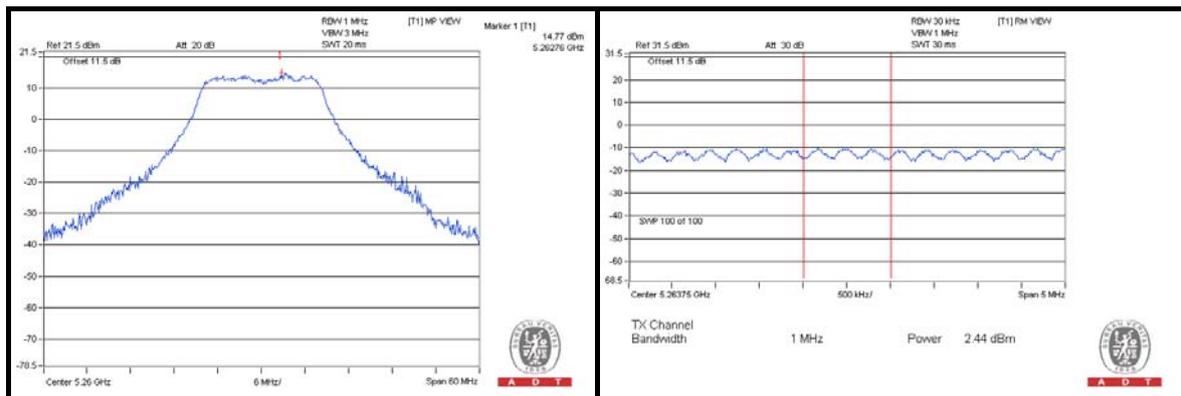


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## 4.5.7 TEST RESULTS

### 802.11a

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)			PPSD WITHOUT DUTY FACTOR (dBm)			PPSD WITH DUTY FACTOR (dBm)			PEAK EXCURSION (dB)			LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2		
52	5260	13.26	13.30	14.77	2.91	1.78	2.44	3.06	1.93	2.59	10.20	11.37	12.18	13	PASS
60	5300	14.25	13.44	15.58	3.48	2.04	3.60	3.63	2.19	3.75	10.62	11.25	11.83	13	PASS
64	5320	14.24	13.43	14.61	3.31	2.42	3.34	3.46	2.57	3.49	10.78	10.86	11.12	13	PASS
100	5500	14.53	13.83	15.93	3.74	2.55	4.44	3.89	2.70	4.59	10.64	11.13	11.34	13	PASS
116	5580	14.52	14.05	15.25	3.95	3.28	3.89	4.10	3.43	4.04	10.42	10.62	11.21	13	PASS
140	5700	14.45	14.23	15.40	3.63	2.52	4.77	3.78	2.67	4.92	10.67	11.56	10.48	13	PASS

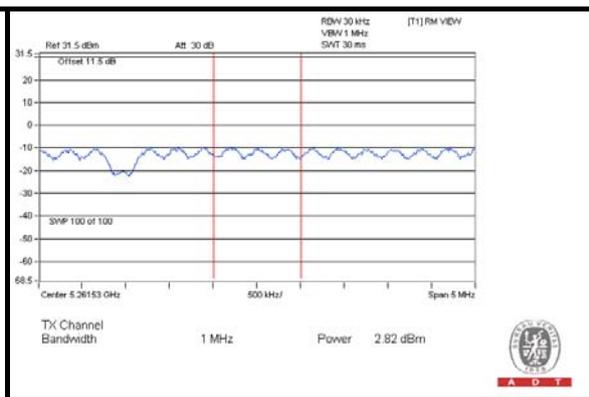
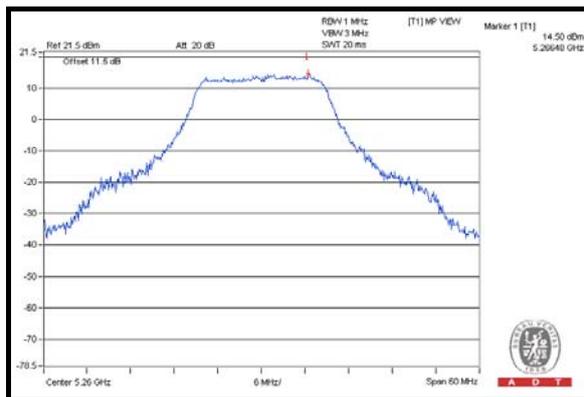




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802.11n (20MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)			PPSD WITHOUT DUTY FACTOR (dBm)			PPSD WITH DUTY FACTOR (dBm)			PEAK EXCURSION (dB)			LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2		
52	5260	14.34	13.09	14.50	3.19	2.06	2.82	3.34	2.21	2.97	11.00	10.88	11.53	13	PASS
60	5300	14.57	13.11	14.24	3.56	1.77	3.49	3.71	1.92	3.64	10.86	11.19	10.60	13	PASS
64	5320	14.31	13.00	14.46	3.69	1.87	3.32	3.84	2.02	3.47	10.47	10.98	10.99	13	PASS
100	5500	14.33	12.84	15.11	3.35	1.73	3.91	3.50	1.88	4.06	10.83	10.96	11.05	13	PASS
116	5580	14.85	13.09	15.33	3.93	1.93	4.24	4.08	2.08	4.39	10.77	11.01	10.94	13	PASS
140	5700	14.69	14.52	15.40	4.02	3.24	4.47	4.17	3.39	4.62	10.52	11.13	10.78	13	PASS

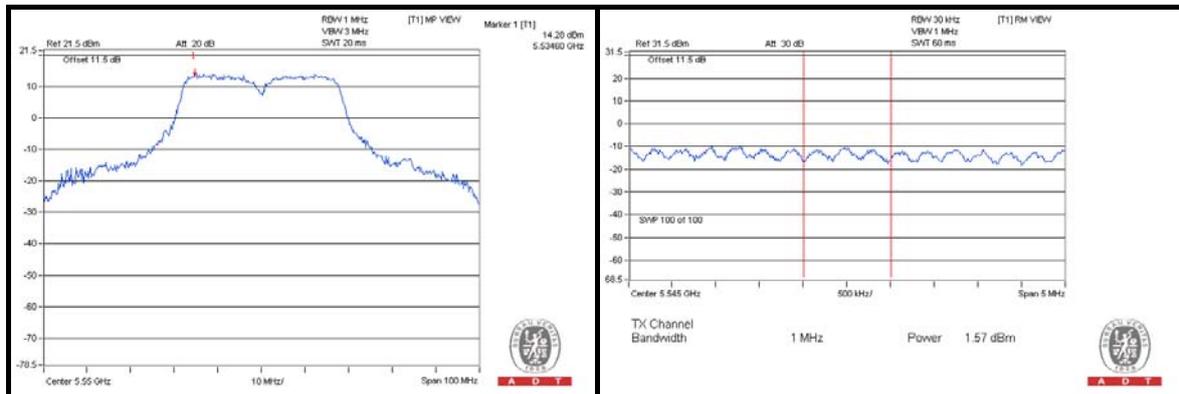




A D T

802.11n (40MHz)

CHAN.	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)			PPSD WITHOUT DUTY FACTOR (dBm)			PPSD WITH DUTY FACTOR (dBm)			PEAK EXCURSION (dB)			LIMIT (dB)	PASS/ FAIL
		CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2	CHAIN 0	CHAIN 1	CHAIN 2		
54	5270	12.42	11.49	12.24	0.07	-0.88	0.60	0.51	-0.44	1.04	11.91	11.93	11.20	13	PASS
62	5310	8.83	7.45	8.09	-3.12	-4.35	-3.51	-2.68	-3.91	-3.07	11.51	11.36	11.16	13	PASS
102	5510	7.88	6.60	7.54	-4.29	-5.81	-4.16	-3.85	-5.37	-3.72	11.73	11.97	11.26	13	PASS
110	5550	14.05	11.84	14.28	1.82	-0.09	1.57	2.26	0.35	2.01	11.79	11.49	12.27	13	PASS
134	5670	14.22	12.67	13.91	1.54	0.24	1.52	1.98	0.68	1.96	12.24	11.99	11.95	13	PASS

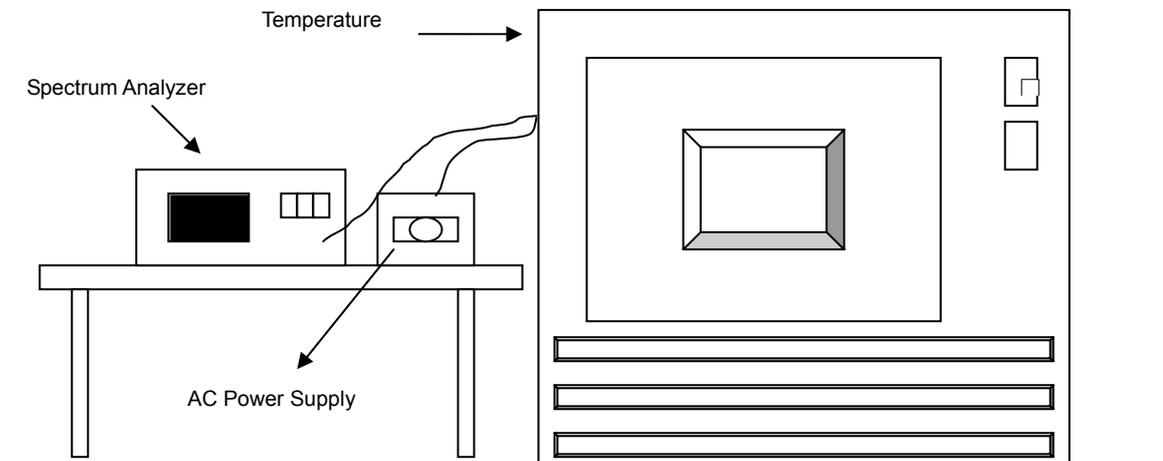


## 4.6 FREQUENCY STABILITY

### 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 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.

#### 4.6.5 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 (Vac)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
60	120	5260.0227	0.00043	5260.0222	0.00042	5260.0176	0.00033	5260.0274	0.00052
50	120	5260.019	0.00036	5260.0228	0.00043	5260.0177	0.00034	5260.0281	0.00053
40	120	5259.9936	-0.00012	5259.9959	-0.00008	5259.9878	-0.00023	5259.9913	-0.00017
30	120	5260.0178	0.00034	5260.0093	0.00018	5260.0171	0.00033	5260.0145	0.00028
20	120	5260.0265	0.00050	5260.0246	0.00047	5260.0296	0.00056	5260.0279	0.00053
10	120	5260.0212	0.00040	5260.0163	0.00031	5260.0209	0.00040	5260.0236	0.00045
0	120	5259.9779	-0.00042	5259.9823	-0.00034	5259.9825	-0.00033	5259.982	-0.00034
-10	120	5260.023	0.00044	5260.0155	0.00029	5260.0215	0.00041	5260.0148	0.00028
-20	120	5260.0172	0.00033	5260.0217	0.00041	5260.0137	0.00026	5260.0165	0.00031
-30	120	5260.0212	0.00040	5260.0274	0.00052	5260.0225	0.00043	5260.0200	0.00038

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 (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5260.026	0.00049	5260.0235	0.00045	5260.0299	0.00057	5260.0288	0.00055
	120	5260.0265	0.00050	5260.0246	0.00047	5260.0296	0.00056	5260.0279	0.00053
	102	5260.0262	0.00050	5260.0246	0.00047	5260.0295	0.00056	5260.0282	0.00054

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 6. INFORMATION ON THE TESTING LABORATORIES

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

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

**Linko EMC/RF Lab:**  
Tel: 886-2-26052180  
Fax: 886-2-26051924

**Hsin Chu EMC/RF Lab:**  
Tel: 886-3-5935343  
Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety Telecom Lab:**  
Tel: 886-3-3183232  
Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)  
**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---