FCC TEST REPORT (15.407)

REPORT NO.:	RF140102C03A
MODEL NO.:	AP102
FCC ID:	U2M-AP102
RECEIVED:	Jan. 13, 2014
TESTED:	Jan. 14 ~ Feb. 17, 2014
ISSUED:	Feb. 18, 2014

APPLICANT:	Senao Networks, Inc.
ADDRESS:	3F, No. 529, Chung Cheng Rd., Hsintien, Taipei, Taiwan

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.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140102C03A	Original release	Feb. 18, 2014

1. CERTIFICATION

PRODUCT: Wireless 802.11abgn Access Point
MODEL: AP102
BRAND: WatchGuard
APPLICANT: Senao Networks, Inc.
TESTED: Jan. 14 ~ Feb. 17, 2014
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.10-2009

The above equipment (model: AP102) 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 :** Feb. 18, 2014
Celine Chou / Specialist

APPROVED BY : Ken Liu **, DATE :** Feb. 18, 2014
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 -6.95dB at 0.35723MHz.
15.407(b/1/2/3) (b)(6)	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 5725.00, 5470.00, 5350.00, 16650.00 and 49.34MHz.
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 I-PEX 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

EUT	Wireless 802.11abgn Access Point
MODEL NO.	AP102
POWER SUPPLY	12Vdc from adapter 48Vdc from POE
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
OPERATING FREQUENCY	5260 ~ 5320MHz & 5500 ~ 5700MHz
NUMBER OF CHANNEL	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)
OUTPUT POWER	94.223mW for 5260 ~ 5320MHz 110.075mW for 5500 ~ 5700MHz
ANTENNA TYPE	PIFA antenna with 6dBi gain
ANTENNA CONNECTOR	I-PEX
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of BV ADT report no.: RF140102C03. The difference compared with the original report is adding 5.26GHz to 5.32GHz and 5.50GHz 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) MCS 0-15	2TX
802.11n (40MHz) MCS 0-15	2TX

3. The EUT consumes power from the following adapter.

ADAPTER	
BRAND:	Powertron Electronics Corp.
MODEL:	PA1015-2I
INPUT:	100-240Vac, 50-60Hz, 0.4A
OUTPUT:	12Vdc, 1.25A
POWER LINE:	1.5m cable without core attached on adapter

4. The following POE & POE's adapter are supports only.

POE	
BRAND	EnGenius
MODEL	EPE-48GR
INPUT POWER	48Vdc, 0.8A, 38.4W Max

ADAPTER For POE USED	
BRAND	Powertron Electronics Corp.
MODEL	PA1024-4HU
INPUT POWER	100-240Vac, 50-60Hz, 0.6A
OUTPUT POWER	48Vdc, 0.42A, 21W Max
POWER LINE	1.5m cable without core attached on adapter

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

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≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Powered by adapter
B	-	√	√	-	Powered by POE

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

NOTE:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
2. "-" 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	7.2
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
A	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)
A & B	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)
A & B	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)
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	7.2
A	802.11n (40MHz)		54 to 62	54, 62	OFDM	BPSK	15.0
A	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.0
A	802.11n (20MHz)		100 to 140	100, 116, 140	OFDM	BPSK	7.2
A	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	25deg. C, 65%RH	120Vac, 60Hz	Chris Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz 48Vdc	Chris Lin
PLC	25deg. C, 68%RH	120Vac, 60Hz 48Vdc	Sun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jun Wu

3.3 DUTY CYCLE OF TEST SIGNAL

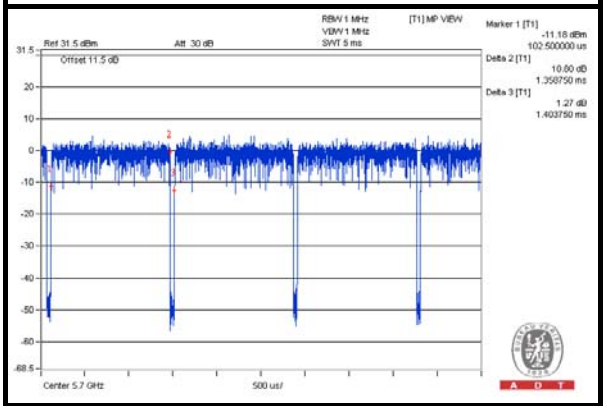
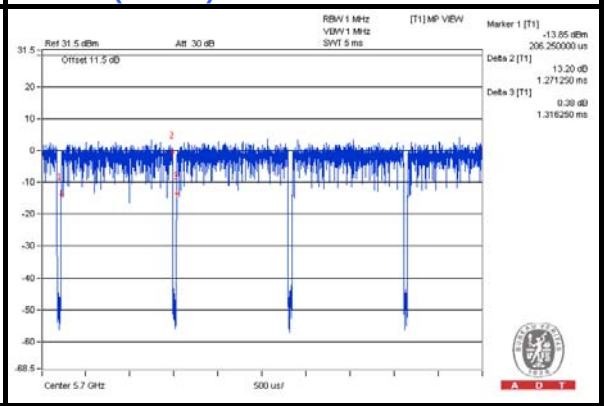
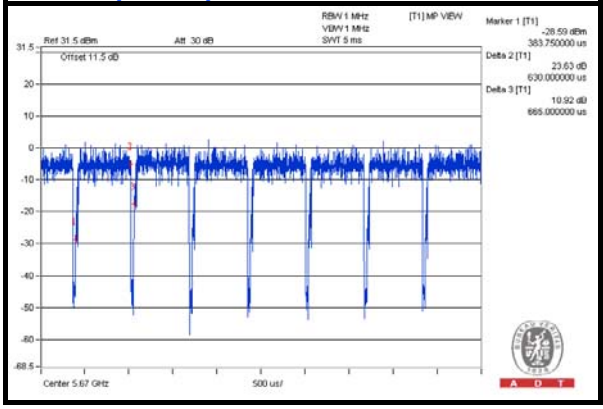
MODULATION TYPE: BPSK

Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 1.359/1.404 = 0.968, Duty factor = 10 * log(1/0.968) = 0.14

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 = 0.630/0.665 = 0.947, Duty factor = 10 * log(1/0.947) = 0.23

802.11a	802.11n (20MHz)
	
802.11n (40MHz)	
	

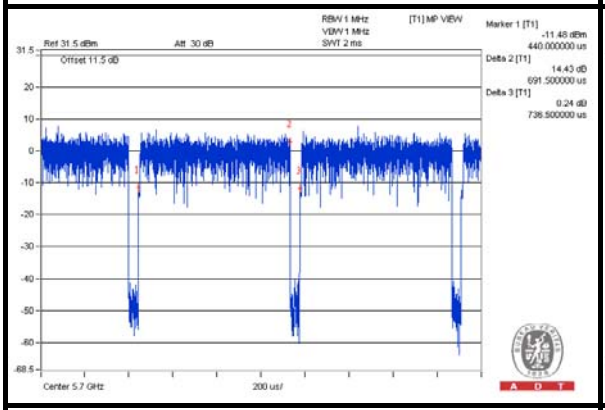
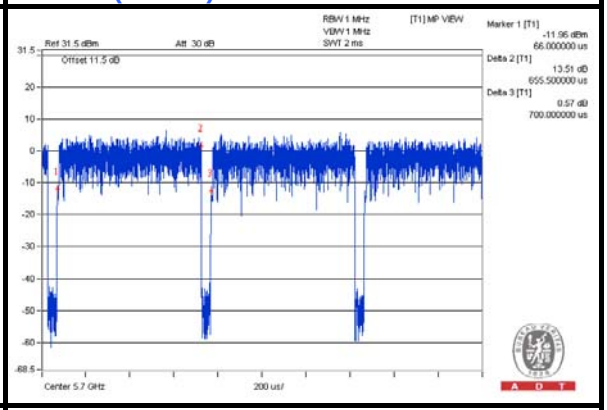
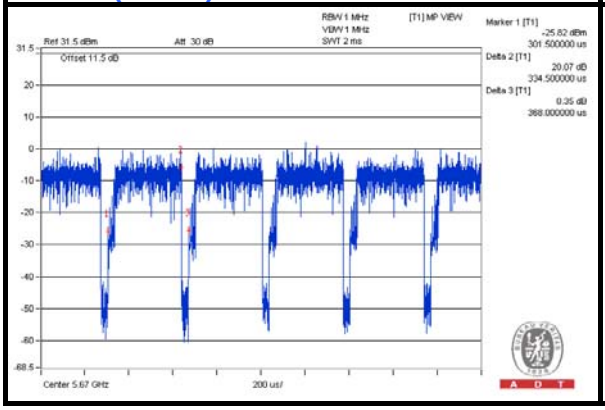
MODULATION TYPE: QPSK

Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 0.691/0.736 = 0.939, Duty factor = 10 * log(1/0.939) = 0.27

802.11n (20MHz): Duty cycle = 0.656/0.700 = 0.936, Duty factor = 10 * log(1/0.936) = 0.29

802.11n (40MHz): Duty cycle = 0.335/0.368 = 0.908, Duty factor = 10 * log(1/0.908) = 0.42

802.11a	802.11n (20MHz)
	
802.11n (40MHz)	
	

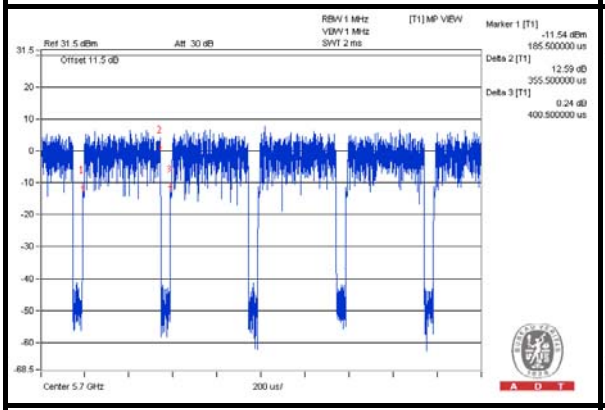
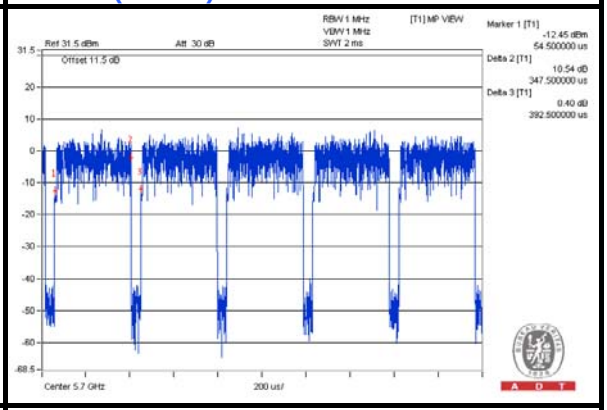
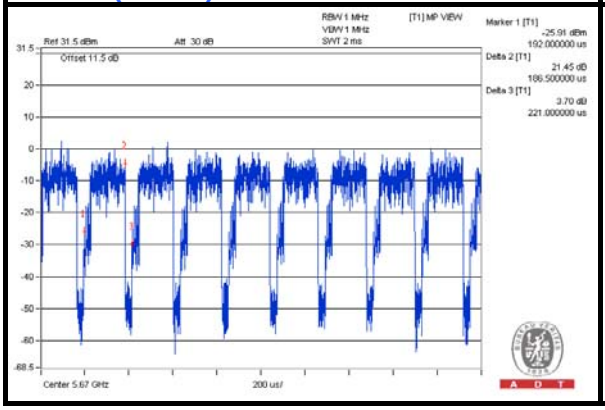
MODULATION TYPE: 16QAM

Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 0.356/0.401 = 0.890, Duty factor = 10 * log(1/0.890) = 0.51

802.11n (20MHz): Duty cycle = 0.348/0.393 = 0.885, Duty factor = 10 * log(1/0.885) = 0.53

802.11n (40MHz): Duty cycle = 0.187/0.221 = 0.846, Duty factor = 10 * log(1/0.846) = 0.73

802.11a	802.11n (20MHz)
	
802.11n (40MHz)	
	

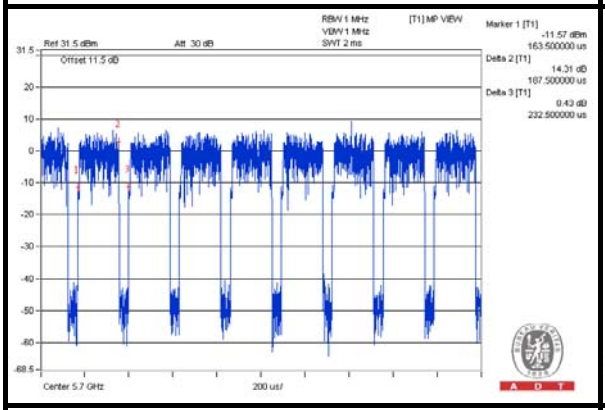
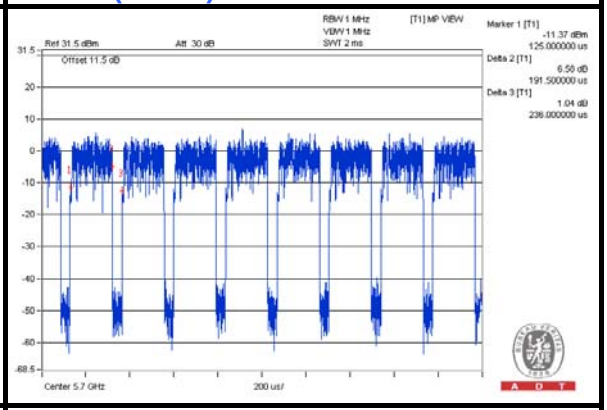
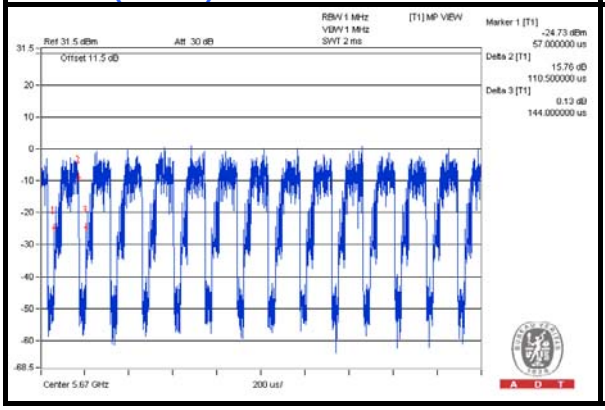
MODULATION TYPE: 64QAM

Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 0.188/0.233 = 0.807, Duty factor = 10 * log(1/0.807) = 0.93

802.11n (20MHz): Duty cycle = 0.192/0.236 = 0.814, Duty factor = 10 * log(1/0.814) = 0.90

802.11n (40MHz): Duty cycle = 0.111/0.144 = 0.771, Duty factor = 10 * log(1/0.771) = 1.13

802.11a	802.11n (20MHz)
	
802.11n (40MHz)	
	

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.

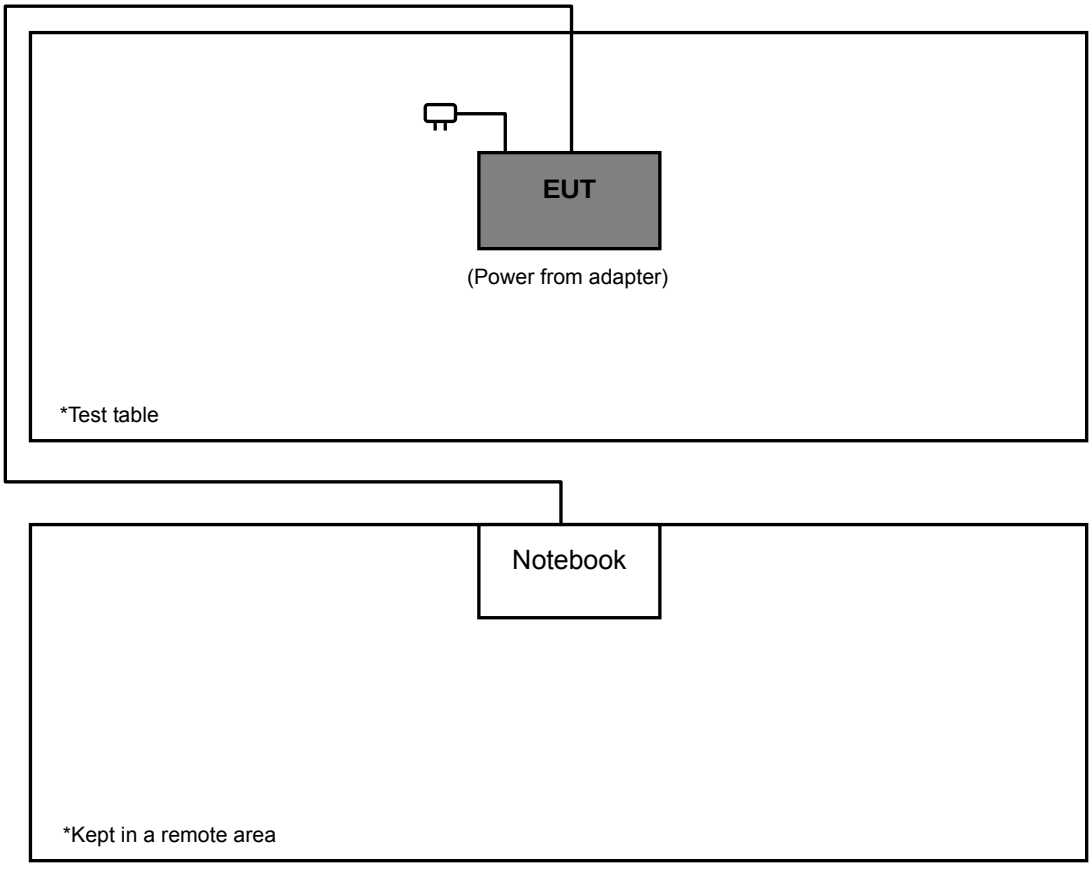
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	E5410	1HC2XM1	FCC Doc Approved
2	POE	EnGenius	EPE-48GR	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	3m LAN cable for mode A only, 1.8m LAN cable for mode B only
2	3m LAN cable for mode B only

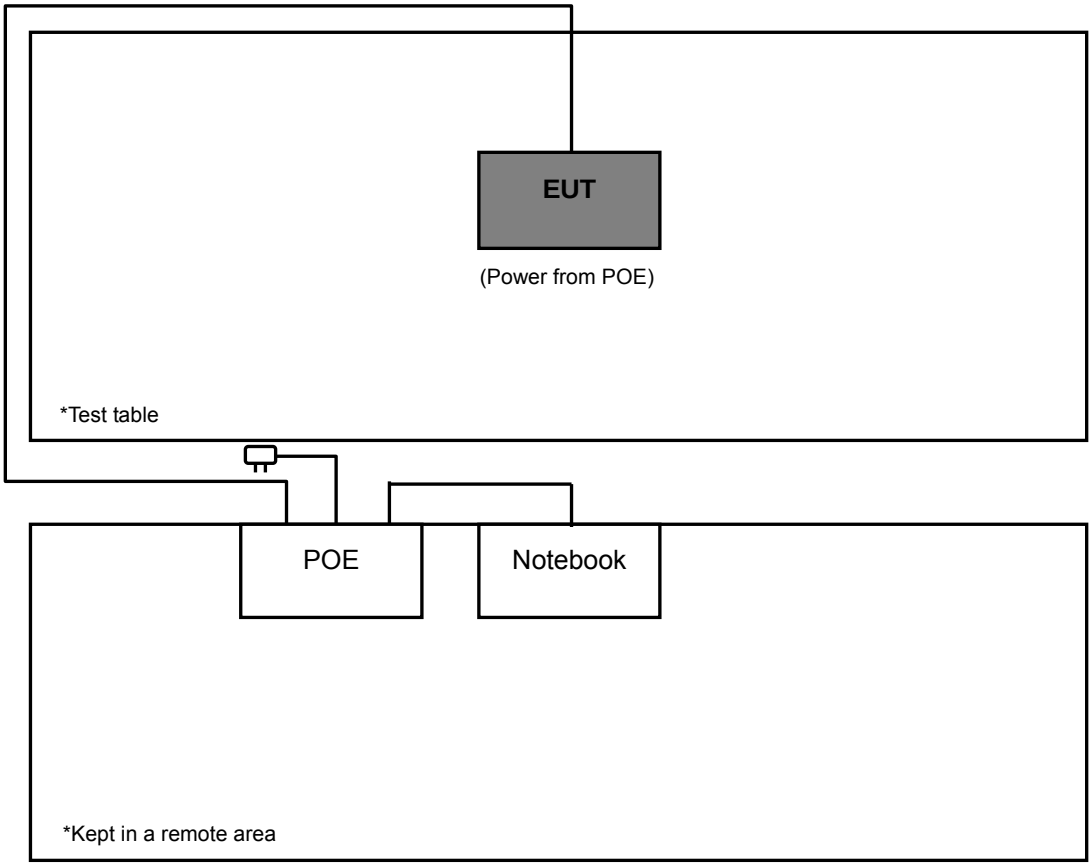
NOTE:
1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1-2 acted as a communication partner to transfer data.
3. Item 2 was provided by client and for mode B tested only.

3.4.1 CONFIGURATION OF SYSTEM UNDER TEST

TEST MODE A



TEST MODE B


EUT
(Power from POE)
*Test table
POE
Notebook
*Kept in a remote area

3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
789033 D01 General UNII Test Procedures v01 r03
662911 D01 Multiple Transmitter Output v02r01
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:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/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	100187	Jan. 02, 2014	Jan. 01, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jan. 31, 2013	Jan. 30, 2014
			Jan. 31, 2014	Jan. 30, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Mar. 20, 2013	Mar. 19, 2014
HORN Antenna SCHWARZBECK	9120D	209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 07, 2013	Oct. 06, 2014
Preamplifier Agilent	8449B	3008A01964	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	214378/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/4	Aug. 26, 2013	Aug. 25, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	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 BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 18, 2013	Oct. 17, 2014
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 13, 2013	Jun. 12, 2014

NOTE:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

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 camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

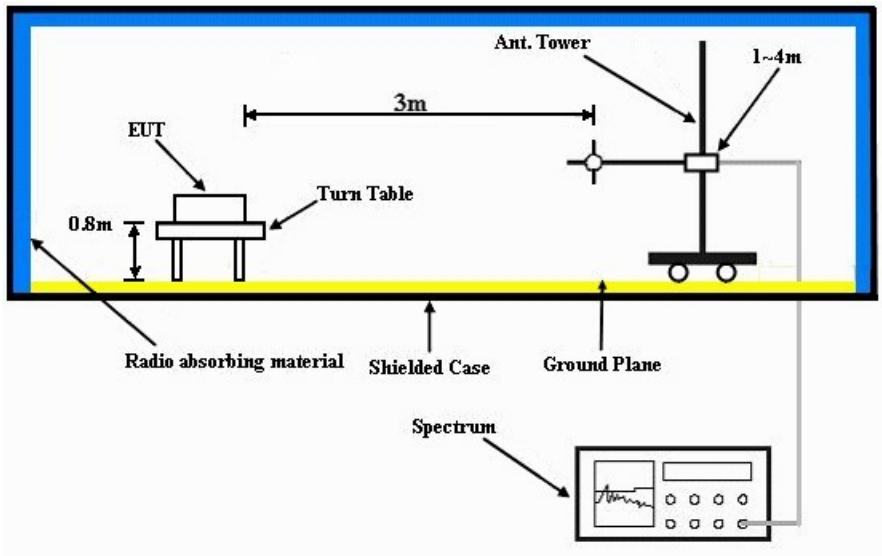
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T(Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 DEVIATION FROM TEST STANDARD

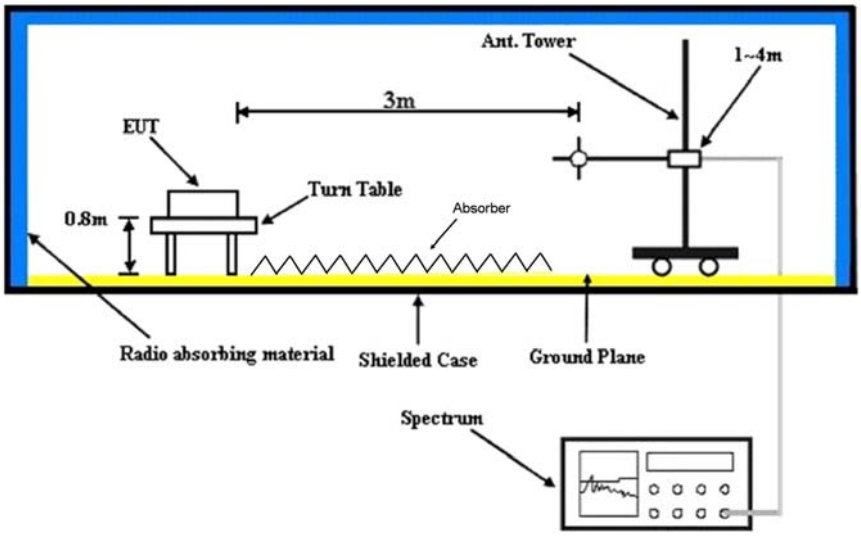
No deviation.

4.1.6 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.7 EUT OPERATING CONDITION

a. Placed the EUT on the testing table.
b. Prepared notebook to act as communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a LAN cable and ran 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	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	5104.00	57.2 PK	74.0	-16.8	1.03 H	16	52.10	5.10
2	5104.00	46.6 AV	54.0	-7.4	1.03 H	16	41.50	5.10
3	5150.00	56.3 PK	74.0	-17.7	1.10 H	20	51.20	5.10
4	5150.00	43.8 AV	54.0	-10.2	1.10 H	20	38.70	5.10
5	*5260.00	112.5 PK			1.01 H	19	74.60	37.90
6	*5260.00	102.8 AV			1.01 H	19	64.90	37.90
7	#10520.00	61.0 PK	74.0	-13.0	1.15 H	84	41.60	19.40
8	#10520.00	48.4 AV	54.0	-5.6	1.15 H	84	29.00	19.40
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	5104.00	59.9 PK	74.0	-14.1	1.00 V	0	54.80	5.10
2	5104.00	48.9 AV	54.0	-5.1	1.00 V	0	43.80	5.10
3	5150.00	58.8 PK	74.0	-15.2	1.05 V	10	53.70	5.10
4	5150.00	45.6 AV	54.0	-8.4	1.05 V	10	40.50	5.10
5	*5260.00	112.6 PK			1.10 V	325	74.70	37.90
6	*5260.00	102.8 AV			1.10 V	325	64.90	37.90
7	#10520.00	62.4 PK	74.0	-11.6	1.01 V	10	43.00	19.40
8	#10520.00	49.6 AV	54.0	-4.4	1.01 V	10	30.20	19.40

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) – Pre-Amplifier 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	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	5104.00	57.1 PK	74.0	-16.9	1.10 H	20	52.00	5.10
2	5104.00	46.4 AV	54.0	-7.6	1.10 H	20	41.30	5.10
3	*5300.00	111.2 PK			1.00 H	25	73.30	37.90
4	*5300.00	101.8 AV			1.00 H	25	63.90	37.90
5	10600.00	61.0 PK	74.0	-13.0	1.32 H	258	42.00	19.00
6	10600.00	47.4 AV	54.0	-6.6	1.32 H	258	28.40	19.00
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	5104.00	59.1 PK	74.0	-14.9	1.10 V	21	54.00	5.10
2	5104.00	48.9 AV	54.0	-5.1	1.10 V	21	43.80	5.10
3	*5300.00	112.2 PK			1.08 V	323	74.30	37.90
4	*5300.00	102.6 AV			1.08 V	323	64.70	37.90
5	10600.00	62.6 PK	74.0	-11.4	1.17 V	59	43.60	19.00
6	10600.00	49.6 AV	54.0	-4.4	1.17 V	59	30.60	19.00

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) – Pre-Amplifier 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	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	5014.00	57.8 PK	74.0	-16.2	1.00 H	203	52.60	5.20
2	5014.00	46.8 AV	54.0	-7.2	1.00 H	203	41.60	5.20
3	*5320.00	112.0 PK			1.00 H	23	74.00	38.00
4	*5320.00	102.8 AV			1.00 H	23	64.80	38.00
5	5350.00	68.9 PK	74.0	-5.1	1.08 H	37	63.50	5.40
6	5350.00	50.8 AV	54.0	-3.2	1.08 H	37	45.40	5.40
7	5374.00	62.5 PK	74.0	-11.5	1.10 H	30	57.10	5.40
8	5374.00	51.5 AV	54.0	-2.5	1.10 H	30	46.10	5.40
9	10640.00	60.4 PK	74.0	-13.6	1.33 H	148	41.60	18.80
10	10640.00	47.5 AV	54.0	-6.5	1.33 H	148	28.70	18.80
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	5104.00	59.0 PK	74.0	-15.0	1.00 V	0	53.90	5.10
2	5104.00	49.0 AV	54.0	-5.0	1.00 V	0	43.90	5.10
3	*5320.00	112.5 PK			1.07 V	322	74.50	38.00
4	*5320.00	102.5 AV			1.07 V	322	64.50	38.00
5	5350.00	68.8 PK	74.0	-5.2	1.02 V	290	63.40	5.40
6	5350.00	48.6 AV	54.0	-5.4	1.02 V	290	43.20	5.40
7	5374.00	60.1 PK	74.0	-13.9	1.00 V	288	54.70	5.40
8	5374.00	49.8 AV	54.0	-4.2	1.00 V	288	44.40	5.40
9	10640.00	59.8 PK	74.0	-14.2	1.00 V	6	41.00	18.80
10	10640.00	48.2 AV	54.0	-5.8	1.00 V	6	29.40	18.80

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) – Pre-Amplifier 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	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	5457.00	64.1 PK	74.0	-9.9	1.02 H	33	58.50	5.60
2	5457.00	49.3 AV	54.0	-4.7	1.02 H	33	43.70	5.60
3	5460.00	61.5 PK	74.0	-12.5	1.16 H	309	55.90	5.60
4	5460.00	43.6 AV	54.0	-10.4	1.16 H	309	38.00	5.60
5	#5470.00	70.2 PK	74.0	-3.8	1.16 H	309	64.50	5.70
6	#5470.00	49.4 AV	54.0	-4.6	1.16 H	309	43.70	5.70
7	*5500.00	109.9 PK			1.32 H	31	71.60	38.30
8	*5500.00	100.0 AV			1.32 H	31	61.70	38.30
9	11000.00	60.9 PK	74.0	-13.1	1.00 H	318	41.10	19.80
10	11000.00	47.1 AV	54.0	-6.9	1.00 H	318	27.30	19.80
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	5456.00	62.8 PK	74.0	-11.2	1.01 V	9	57.20	5.60
2	5456.00	51.3 AV	54.0	-2.7	1.01 V	9	45.70	5.60
3	5460.00	64.9 PK	74.0	-9.1	1.01 V	15	59.30	5.60
4	5460.00	45.8 AV	54.0	-8.2	1.01 V	15	40.20	5.60
5	#5470.00	71.8 PK	74.0	-2.2	1.01 V	15	66.10	5.70
6	#5470.00	52.2 AV	54.0	-1.8	1.01 V	15	46.50	5.70
7	*5500.00	112.2 PK			1.00 V	7	73.90	38.30
8	*5500.00	102.7 AV			1.00 V	7	64.40	38.30
9	11000.00	60.8 PK	74.0	-13.2	1.01 V	195	41.00	19.80
10	11000.00	46.8 AV	54.0	-7.2	1.01 V	195	27.00	19.80

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) – Pre-Amplifier 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	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	5440.00	57.2 PK	74.0	-16.8	1.15 H	96	51.60	5.60
2	5440.00	45.9 AV	54.0	-8.1	1.15 H	96	40.30	5.60
3	*5580.00	112.5 PK			1.02 H	31	74.20	38.30
4	*5580.00	102.8 AV			1.02 H	31	64.50	38.30
5	11160.00	63.5 PK	74.0	-10.5	1.14 H	85	43.60	19.90
6	11160.00	49.9 AV	54.0	-4.1	1.14 H	85	30.00	19.90
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	5400.00	61.1 PK	74.0	-12.9	1.03 V	9	55.70	5.40
2	5400.00	49.7 AV	54.0	-4.3	1.03 V	9	44.30	5.40
3	*5580.00	117.0 PK			1.00 V	358	78.70	38.30
4	*5580.00	106.8 AV			1.00 V	358	68.50	38.30
5	11160.00	66.5 PK	74.0	-7.5	1.00 V	184	46.60	19.90
6	11160.00	52.4 AV	54.0	-1.6	1.00 V	184	32.50	19.90

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) – Pre-Amplifier 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 140	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	*5700.00	110.4 PK			1.22 H	296	71.90	38.50
2	*5700.00	100.6 AV			1.22 H	296	62.10	38.50
3	#5725.00	70.4 PK	74.0	-3.6	1.00 H	29	64.40	6.00
4	**#5725.00**	**53.0 AV**	**54.0**	**-1.0**	**1.00 H**	**29**	**47.00**	**6.00**
5	11400.00	62.5 PK	74.0	-11.5	1.47 H	52	42.50	20.00
6	11400.00	48.4 AV	54.0	-5.6	1.47 H	52	28.40	20.00
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	*5700.00	112.3 PK			1.07 V	9	73.80	38.50
2	*5700.00	102.2 AV			1.07 V	9	63.70	38.50
3	#5725.00	69.9 PK	74.0	-4.1	1.07 V	320	63.90	6.00
4	**#5725.00**	**53.0 AV**	**54.0**	**-1.0**	**1.07 V**	**320**	**47.00**	**6.00**
5	11400.00	63.6 PK	74.0	-10.4	1.18 V	56	43.60	20.00
6	11400.00	50.2 AV	54.0	-3.8	1.18 V	56	30.20	20.00

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) – Pre-Amplifier 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	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	5104.00	58.9 PK	74.0	-15.1	1.25 H	42	53.80	5.10
2	5104.00	47.7 AV	54.0	-6.3	1.25 H	42	42.60	5.10
3	5150.00	57.7 PK	74.0	-16.3	1.19 H	63	52.60	5.10
4	5150.00	45.6 AV	54.0	-8.4	1.19 H	63	40.50	5.10
5	*5260.00	112.5 PK			1.00 H	19	74.60	37.90
6	*5260.00	102.7 AV			1.00 H	19	64.80	37.90
7	#10520.00	62.8 PK	74.0	-11.2	1.18 H	57	43.40	19.40
8	#10520.00	49.7 AV	54.0	-4.3	1.18 H	57	30.30	19.40
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	5104.00	57.2 PK	74.0	-16.8	1.13 V	297	52.10	5.10
2	5104.00	46.5 AV	54.0	-7.5	1.13 V	297	41.40	5.10
3	5150.00	56.4 PK	74.0	-17.6	1.20 V	310	51.30	5.10
4	5150.00	44.1 AV	54.0	-9.9	1.20 V	310	39.00	5.10
5	*5260.00	112.5 PK			1.00 V	18	74.60	37.90
6	*5260.00	102.4 AV			1.00 V	18	64.50	37.90
7	#10520.00	62.2 PK	74.0	-11.8	1.33 V	225	42.80	19.40
8	#10520.00	48.0 AV	54.0	-6.0	1.33 V	225	28.60	19.40

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) – Pre-Amplifier 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	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	5104.00	58.4 PK	74.0	-15.6	1.29 H	18	53.30	5.10
2	5104.00	46.9 AV	54.0	-7.1	1.29 H	18	41.80	5.10
3	*5300.00	111.5 PK			1.00 H	26	73.60	37.90
4	*5300.00	101.8 AV			1.00 H	26	63.90	37.90
5	5353.00	62.4 PK	74.0	-11.6	1.00 H	25	57.00	5.40
6	5353.00	51.4 AV	54.0	-2.6	1.00 H	25	46.00	5.40
7	10600.00	61.5 PK	74.0	-12.5	1.17 H	159	42.50	19.00
8	10600.00	48.0 AV	54.0	-6.0	1.17 H	159	29.00	19.00
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	5104.00	59.1 PK	74.0	-14.9	1.00 V	0	54.00	5.10
2	5104.00	49.0 AV	54.0	-5.0	1.00 V	0	43.90	5.10
3	*5300.00	112.0 PK			1.07 V	326	74.10	37.90
4	*5300.00	101.9 AV			1.07 V	326	64.00	37.90
5	5352.00	63.2 PK	74.0	-10.8	1.16 V	307	57.80	5.40
6	5352.00	51.9 AV	54.0	-2.1	1.16 V	307	46.50	5.40
7	10600.00	62.6 PK	74.0	-11.4	1.19 V	306	43.60	19.00
8	10600.00	50.2 AV	54.0	-3.8	1.19 V	306	31.20	19.00

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) – Pre-Amplifier 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	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	5104.00	56.8 PK	74.0	-17.2	1.33 H	62	51.70	5.10
2	5104.00	46.3 AV	54.0	-7.7	1.33 H	62	41.20	5.10
3	*5320.00	111.9 PK			1.00 H	18	73.90	38.00
4	*5320.00	101.7 AV			1.00 H	18	63.70	38.00
5	5350.00	69.4 PK	74.0	-4.6	1.23 H	332	64.00	5.40
6	5350.00	51.4 AV	54.0	-2.6	1.23 H	332	46.00	5.40
7	10640.00	61.3 PK	74.0	-12.7	1.30 H	148	42.50	18.80
8	10640.00	48.6 AV	54.0	-5.4	1.30 H	148	29.80	18.80
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	5104.00	58.9 PK	74.0	-15.1	1.12 V	355	53.80	5.10
2	5104.00	48.9 AV	54.0	-5.1	1.12 V	355	43.80	5.10
3	*5320.00	112.6 PK			1.07 V	325	74.60	38.00
4	*5320.00	101.9 AV			1.07 V	325	63.90	38.00
5	5350.00	70.2 PK	74.0	-3.8	1.06 V	335	64.80	5.40
6	5350.00	52.3 AV	54.0	-1.7	1.06 V	335	46.90	5.40
7	10640.00	62.0 PK	74.0	-12.0	1.23 V	58	43.20	18.80
8	10640.00	47.5 AV	54.0	-6.5	1.23 V	58	28.70	18.80

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) – Pre-Amplifier 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	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	5104.00	58.3 PK	74.0	-15.7	1.05 H	62	53.20	5.10
2	5104.00	46.3 AV	54.0	-7.7	1.05 H	62	41.20	5.10
3	5456.00	60.8 PK	74.0	-13.2	1.06 H	29	55.20	5.60
4	5456.00	49.4 AV	54.0	-4.6	1.06 H	29	43.80	5.60
5	5460.00	60.0 PK	74.0	-14.0	1.24 H	33	54.40	5.60
6	5460.00	44.8 AV	54.0	-9.2	1.24 H	33	39.20	5.60
7	#5470.00	71.0 PK	74.0	-3.0	1.24 H	33	65.30	5.70
8	#5470.00	49.2 AV	54.0	-4.8	1.24 H	33	43.50	5.70
9	*5500.00	109.9 PK			1.06 H	30	71.60	38.30
10	*5500.00	99.4 AV			1.06 H	30	61.10	38.30
11	11000.00	60.0 PK	74.0	-14.0	1.05 H	62	40.20	19.80
12	11000.00	47.3 AV	54.0	-6.7	1.05 H	62	27.50	19.80
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	5104.00	60.0 PK	74.0	-14.0	1.11 V	344	54.90	5.10
2	5104.00	48.9 AV	54.0	-5.1	1.11 V	344	43.80	5.10
3	5456.00	63.1 PK	74.0	-10.9	1.02 V	7	57.50	5.60
4	5456.00	50.9 AV	54.0	-3.1	1.02 V	7	45.30	5.60
5	5460.00	59.2 PK	74.0	-14.8	1.02 V	360	53.60	5.60
6	5460.00	45.8 AV	54.0	-8.2	1.02 V	360	40.20	5.60
7	**#5470.00**	**73.0 PK**	**74.0**	**-1.0**	**1.02 V**	**360**	**67.30**	**5.70**
8	#5470.00	50.4 AV	54.0	-3.6	1.02 V	360	44.70	5.70
9	*5500.00	112.6 PK			1.01 V	7	74.30	38.30
10	*5500.00	102.2 AV			1.01 V	7	63.90	38.30
11	11000.00	60.9 PK	74.0	-13.1	1.02 V	51	41.10	19.80
12	11000.00	49.3 AV	54.0	-4.7	1.02 V	51	29.50	19.80

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) – Pre-Amplifier 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	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	*5580.00	114.4 PK			1.03 H	34	76.10	38.30
2	*5580.00	104.1 AV			1.03 H	34	65.80	38.30
3	11160.00	66.3 PK	74.0	-7.7	1.14 H	325	46.40	19.90
4	11160.00	50.9 AV	54.0	-3.1	1.14 H	325	31.00	19.90
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	*5580.00	116.3 PK			1.00 V	16	78.00	38.30
2	*5580.00	106.2 AV			1.00 V	16	67.90	38.30
3	11160.00	67.7 PK	74.0	-6.3	1.05 V	198	47.80	19.90
4	11160.00	51.7 AV	54.0	-2.3	1.05 V	198	31.80	19.90

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) – Pre-Amplifier 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 140	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	*5700.00	108.9 PK			1.00 H	35	70.40	38.50
2	*5700.00	98.9 AV			1.00 H	35	60.40	38.50
3	#5725.00	71.0 PK	74.0	-3.0	1.25 H	35	65.00	6.00
4	#5725.00	51.3 AV	54.0	-2.7	1.25 H	35	45.30	6.00
5	11400.00	61.5 PK	74.0	-12.5	1.06 H	64	41.50	20.00
6	11400.00	47.5 AV	54.0	-6.5	1.06 H	64	27.50	20.00
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	*5700.00	112.3 PK			1.08 V	9	73.80	38.50
2	*5700.00	102.2 AV			1.08 V	9	63.70	38.50
3	#5725.00	72.7 PK	74.0	-1.3	1.07 V	360	66.70	6.00
4	#5725.00	52.8 AV	54.0	-1.2	1.07 V	360	46.80	6.00
5	11400.00	61.5 PK	74.0	-12.5	1.02 V	62	41.50	20.00
6	11400.00	50.5 AV	54.0	-3.5	1.02 V	62	30.50	20.00

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) – Pre-Amplifier 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	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	5104.00	57.6 PK	74.0	-16.4	1.02 H	18	52.50	5.10
2	5104.00	46.8 AV	54.0	-7.2	1.02 H	18	41.70	5.10
3	5150.00	57.0 PK	74.0	-17.0	1.10 H	25	51.90	5.10
4	5150.00	45.7 AV	54.0	-8.3	1.10 H	25	40.60	5.10
5	*5270.00	111.3 PK			1.30 H	43	73.40	37.90
6	*5270.00	101.0 AV			1.30 H	43	63.10	37.90
7	#10540.00	61.9 PK	74.0	-12.1	1.13 H	69	42.60	19.30
8	#10540.00	47.9 AV	54.0	-6.1	1.13 H	69	28.60	19.30
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	5104.00	58.0 PK	74.0	-16.0	1.08 V	10	52.90	5.10
2	5104.00	48.7 AV	54.0	-5.3	1.08 V	10	43.60	5.10
3	5150.00	58.8 PK	74.0	-15.2	1.10 V	20	53.70	5.10
4	5150.00	46.0 AV	54.0	-8.0	1.10 V	20	40.90	5.10
5	*5270.00	112.9 PK			1.18 V	8	75.00	37.90
6	*5270.00	102.7 AV			1.18 V	8	64.80	37.90
7	#10540.00	63.3 PK	74.0	-10.7	1.32 V	69	44.00	19.30
8	#10540.00	49.5 AV	54.0	-4.5	1.32 V	69	30.20	19.30

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) – Pre-Amplifier 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	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	5104.00	58.2 PK	74.0	-15.8	1.14 H	19	53.10	5.10
2	5104.00	47.2 AV	54.0	-6.8	1.14 H	19	42.10	5.10
3	*5310.00	106.8 PK			1.00 H	25	68.80	38.00
4	*5310.00	96.5 AV			1.00 H	25	58.50	38.00
5	**5350.00**	**73.0 PK**	**74.0**	**-1.0**	**1.00 H**	**14**	**67.60**	**5.40**
6	5350.00	72.8 PK	74.0	-1.2	1.00 H	14	67.40	5.40
7	10620.00	61.0 PK	74.0	-13.0	1.55 H	230	42.10	18.90
8	10620.00	47.4 AV	54.0	-6.6	1.55 H	230	28.50	18.90
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	5104.00	58.6 PK	74.0	-15.4	1.10 V	350	53.50	5.10
2	5104.00	48.8 AV	54.0	-5.2	1.10 V	350	43.70	5.10
3	*5310.00	106.5 PK			1.08 V	325	68.60	37.90
4	*5310.00	96.4 AV			1.08 V	325	58.50	37.90
5	**5350.00**	**73.0 PK**	**74.0**	**-1.0**	**1.00 V**	**289**	**67.60**	**5.40**
6	5350.00	51.0 AV	54.0	-3.0	1.00 V	289	45.60	5.40
7	10620.00	62.5 PK	74.0	-11.5	1.25 V	69	43.60	18.90
8	10620.00	49.0 AV	54.0	-5.0	1.25 V	69	30.10	18.90

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) – Pre-Amplifier 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	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	62.7 PK	74.0	-11.3	1.13 H	44	57.10	5.60
2	5460.00	47.4 AV	54.0	-6.6	1.13 H	44	41.80	5.60
3	#5470.00	71.2 PK	74.0	-2.8	1.12 H	40	65.50	5.70
4	#5470.00	50.1 AV	54.0	-3.9	1.12 H	40	44.40	5.70
5	*5510.00	103.3 PK			1.13 H	41	65.00	38.30
6	*5510.00	93.3 AV			1.13 H	41	55.00	38.30
7	11020.00	63.3 PK	74.0	-10.7	1.00 H	151	43.40	19.90
8	11020.00	49.4 AV	54.0	-4.6	1.00 H	151	29.50	19.90
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	5460.00	63.0 PK	74.0	-11.0	1.01 V	12	57.40	5.60
2	5460.00	48.5 AV	54.0	-5.5	1.01 V	12	42.90	5.60
3	#5470.00	72.8 PK	74.0	-1.2	1.02 V	358	67.10	5.70
4	#5470.00	51.2 AV	54.0	-2.8	1.02 V	358	45.50	5.70
5	*5510.00	106.3 PK			1.00 V	7	68.00	38.30
6	*5510.00	95.7 AV			1.00 V	7	57.40	38.30
7	11020.00	62.1 PK	74.0	-11.9	1.06 V	281	42.20	19.90
8	11020.00	48.8 AV	54.0	-5.2	1.06 V	281	28.90	19.90

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) – Pre-Amplifier 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	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	62.4 PK	74.0	-11.6	1.34 H	30	56.80	5.60
2	5460.00	50.0 AV	54.0	-4.0	1.34 H	30	44.40	5.60
3	#5470.00	63.9 PK	74.0	-10.1	1.31 H	35	58.20	5.70
4	#5470.00	46.9 AV	54.0	-7.1	1.31 H	35	41.20	5.70
5	*5550.00	101.6 PK			1.31 H	35	63.30	38.30
6	*5550.00	91.1 AV			1.31 H	35	52.80	38.30
7	11100.00	62.9 PK	74.0	-11.1	1.10 H	303	43.10	19.80
8	11100.00	50.3 AV	54.0	-3.7	1.10 H	303	30.50	19.80
9	#16650.00	64.7 PK	74.0	-9.3	1.00 H	150	43.60	21.10
10	#16650.00	51.8 AV	54.0	-2.2	1.00 H	150	30.70	21.10
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	5460.00	65.5 PK	74.0	-8.5	1.01 V	9	59.90	5.60
2	5460.00	49.3 AV	54.0	-4.7	1.01 V	9	43.70	5.60
3	#5470.00	69.6 PK	74.0	-4.4	1.01 V	9	63.90	5.70
4	#5470.00	52.6 AV	54.0	-1.4	1.01 V	9	46.90	5.70
5	*5550.00	111.7 PK			1.00 V	0	73.40	38.30
6	*5550.00	101.8 AV			1.00 V	0	63.50	38.30
7	11100.00	64.8 PK	74.0	-9.2	1.00 V	200	45.00	19.80
8	11100.00	50.7 AV	54.0	-3.3	1.00 V	200	30.90	19.80
9	#16650.00	66.5 PK	74.0	-7.5	1.07 V	151	45.40	21.10
10	**#16650.00**	**53.0 AV**	**54.0**	**-1.0**	**1.07 V**	**151**	**31.90**	**21.10**

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) – Pre-Amplifier 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	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	*5670.00	105.6 PK			1.01 H	28	67.20	38.40
2	*5670.00	96.4 AV			1.01 H	28	58.00	38.40
3	#5725.00	66.3 PK	74.0	-7.7	1.02 H	35	60.30	6.00
4	#5725.00	49.2 AV	54.0	-4.8	1.02 H	35	43.20	6.00
5	11340.00	62.0 PK	74.0	-12.0	1.09 H	83	42.10	19.90
6	11340.00	48.4 AV	54.0	-5.6	1.09 H	83	28.50	19.90
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	*5670.00	109.4 PK			1.00 V	5	71.00	38.40
2	*5670.00	98.9 AV			1.00 V	5	60.50	38.40
3	#5725.00	69.7 PK	74.0	-4.3	1.07 V	1	63.70	6.00
4	#5725.00	52.3 AV	54.0	-1.7	1.07 V	1	46.30	6.00
5	11340.00	63.0 PK	74.0	-11.0	1.00 V	235	43.10	19.90
6	11340.00	49.3 AV	54.0	-4.7	1.00 V	235	29.40	19.90

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) – Pre-Amplifier 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：802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 110	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
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	57.07	30.4 QP	40.0	-9.6	2.00 H	41	45.30	-14.90
2	124.98	31.2 QP	43.5	-12.3	1.51 H	213	47.00	-15.80
3	237.52	39.5 QP	46.0	-6.5	1.25 H	95	54.60	-15.10
4	450.97	28.0 QP	46.0	-18.0	2.00 H	358	37.30	-9.30
5	625.60	31.5 QP	46.0	-14.5	1.25 H	202	37.00	-5.50
6	751.73	31.4 QP	46.0	-14.6	1.00 H	185	34.40	-3.00
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	51.24	38.3 QP	40.0	-1.7	1.00 V	352	52.60	-14.30
2	105.58	33.6 QP	43.5	-9.9	1.00 V	116	51.60	-18.00
3	239.46	37.7 QP	46.0	-8.3	2.00 V	144	52.50	-14.80
4	499.48	29.9 QP	46.0	-16.1	1.00 V	179	38.20	-8.30
5	625.60	32.4 QP	46.0	-13.6	1.00 V	344	37.90	-5.50
6	825.46	31.4 QP	46.0	-14.6	1.24 V	209	33.10	-1.70

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) – Pre-Amplifier 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 110	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
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	125.17	32.2 QP	43.5	-11.3	2.00 H	186	48.00	-15.80
2	249.60	35.8 QP	46.0	-10.2	1.01 H	89	50.00	-14.20
3	374.04	39.9 QP	46.0	-6.1	1.01 H	212	50.80	-10.90
4	500.42	33.1 QP	46.0	-12.9	2.00 H	113	41.40	-8.30
5	624.85	41.6 QP	46.0	-4.4	1.25 H	207	47.10	-5.50
6	875.67	41.5 QP	46.0	-4.5	1.01 H	192	42.50	-1.00
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	**49.34**	**39.0 QP**	**40.0**	**-1.0**	**1.49 V**	**18**	**53.70**	**-14.70**
2	64.90	35.0 QP	40.0	-5.0	1.00 V	68	50.20	-15.20
3	125.17	34.4 QP	43.5	-9.1	1.00 V	25	50.20	-15.80
4	374.04	36.3 QP	46.0	-9.7	1.00 V	211	47.20	-10.90
5	624.85	42.8 QP	46.0	-3.2	1.00 V	9	48.30	-5.50
6	875.67	40.5 QP	46.0	-5.5	1.00 V	147	41.50	-1.00

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) – Pre-Amplifier 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 (dBμV)	
	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. 29, 2013	Nov. 28, 2014
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 17, 2013	Jul. 16, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 04, 2013	Feb. 03, 2014
			Feb. 04, 2014	Feb. 03, 2015
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 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.

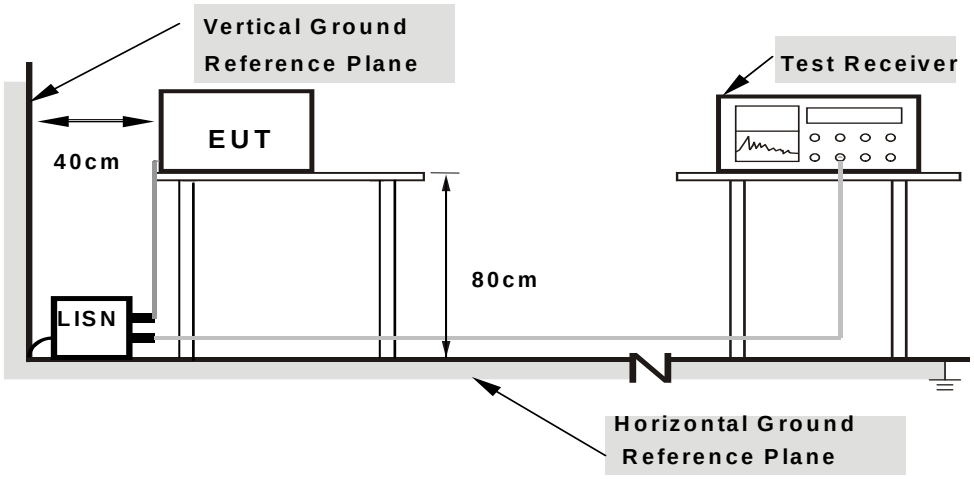
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

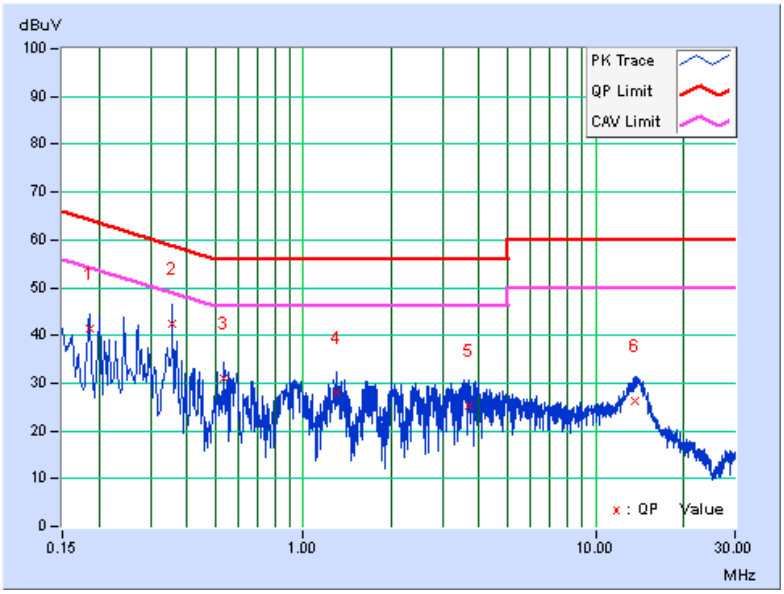
CONDUCTED WORST-CASE DATA：802.11n (40MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18519	0.10	41.16	24.23	41.26	24.33	64.25	54.25	-22.99	-29.92
2	0.35723	0.12	42.32	28.33	42.44	28.45	58.79	48.79	-16.36	-20.35
3	0.53709	0.12	30.71	17.73	30.83	17.85	56.00	46.00	-25.17	-28.15
4	1.29954	0.15	27.76	15.10	27.91	15.25	56.00	46.00	-28.09	-30.75
5	3.66900	0.22	25.01	11.07	25.23	11.29	56.00	46.00	-30.77	-34.71
6	13.65514	0.64	25.76	9.29	26.40	9.93	60.00	50.00	-33.60	-40.07

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

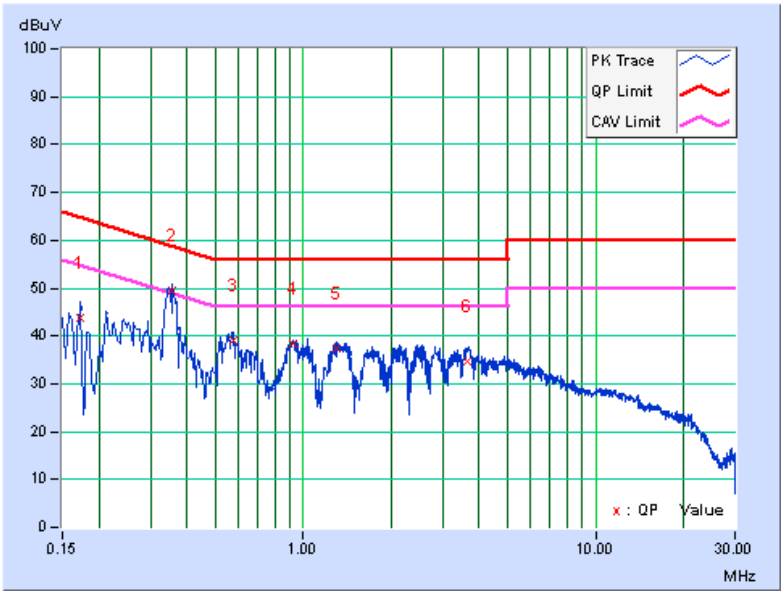


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17328	0.11	43.62	30.39	43.73	30.50	64.80	54.80	-21.07	-24.30
2	**0.35723**	**0.13**	**49.26**	**41.72**	**49.39**	**41.85**	**58.79**	**48.79**	**-9.41**	**-6.95**
3	0.57317	0.13	38.86	30.83	38.99	30.96	56.00	46.00	-17.01	-15.04
4	0.92343	0.14	38.27	29.69	38.41	29.83	56.00	46.00	-17.59	-16.17
5	1.29954	0.15	37.12	28.85	37.27	29.00	56.00	46.00	-18.73	-17.00
6	3.63381	0.20	34.60	26.62	34.80	26.82	56.00	46.00	-21.20	-19.18

REMARKS:

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

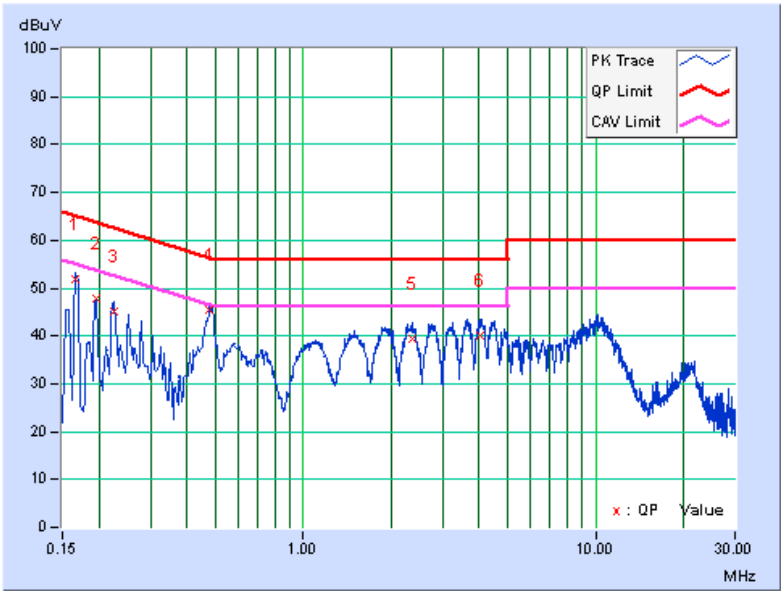


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16569	0.10	51.62	36.38	51.72	36.48	65.17	55.17	-13.45	-18.69
2	0.19510	0.10	47.71	33.91	47.81	34.01	63.82	53.82	-16.01	-19.81
3	0.22434	0.10	44.91	32.54	45.01	32.64	62.66	52.66	-17.64	-20.01
4	0.47844	0.12	45.45	36.77	45.57	36.89	56.37	46.37	-10.79	-9.47
5	2.37479	0.18	39.25	34.20	39.43	34.38	56.00	46.00	-16.57	-11.62
6	4.01308	0.23	39.82	34.76	40.05	34.99	56.00	46.00	-15.95	-11.01

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

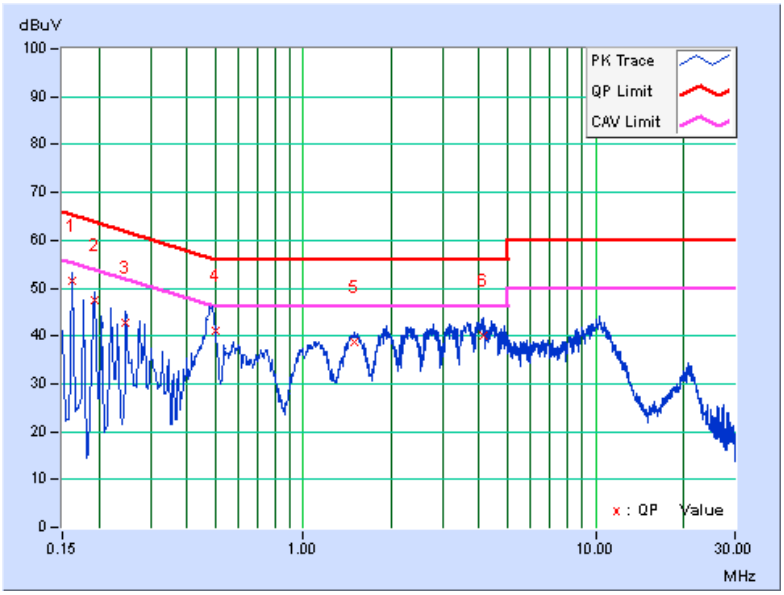


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16173	0.11	51.25	34.97	51.36	35.08	65.37	55.37	-14.01	-20.29
2	0.19301	0.11	47.41	33.78	47.52	33.89	63.91	53.91	-16.39	-20.02
3	0.24775	0.11	42.55	31.11	42.66	31.22	61.83	51.83	-19.17	-20.61
4	0.50000	0.13	40.99	32.16	41.12	32.29	56.00	46.00	-14.88	-13.71
5	1.49954	0.15	38.63	32.60	38.78	32.75	56.00	46.00	-17.22	-13.25
6	4.11865	0.21	39.85	34.83	40.06	35.04	56.00	46.00	-15.94	-10.96

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
5.250 ~ 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.

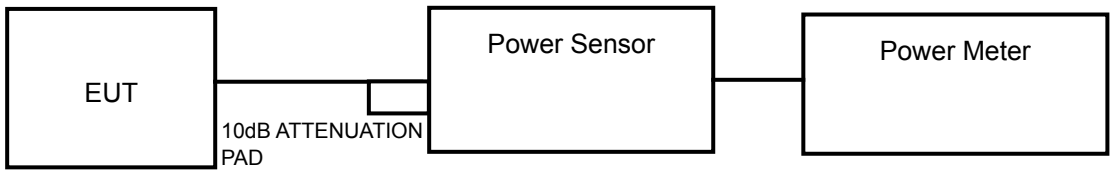
Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 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 ≥ 5.

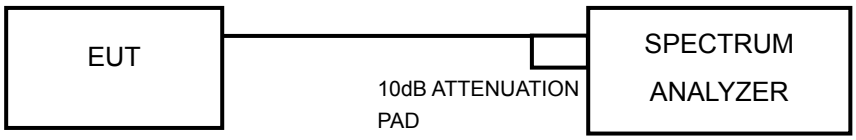
For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

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	16.50	16.29	87.228	19.41	24	PASS
60	5300	16.15	16.30	83.868	19.24	24	PASS
64	5320	15.86	16.19	80.139	19.04	24	PASS
100	5500	14.97	15.43	66.319	18.22	24	PASS
116	5580	16.82	17.34	102.284	20.10	24	PASS
140	5700	13.67	14.34	50.445	17.03	24	PASS

NOTE:
CHAIN 0
1. 11dBm + 10log (33.79) = 26.29 > 24dBm
2. 11dBm + 10log (31.66) = 26.01 > 24dBm
3. 11dBm + 10log (34.18) = 26.34 > 24dBm
4. 11dBm + 10log (29.37) = 25.68 > 24dBm
5. 11dBm + 10log (37.15) = 26.70 > 24dBm
6. 11dBm + 10log (30.02) = 25.77 > 24dBm

CHAIN 1
1. 11dBm + 10log (29.32) = 25.67 > 24dBm
2. 11dBm + 10log (24.89) = 24.96 > 24dBm
3. 11dBm + 10log (29.88) = 25.75 > 24dBm
4. 11dBm + 10log (26.83) = 25.29 > 24dBm
5. 11dBm + 10log (40.19) = 27.04 > 24dBm
6. 11dBm + 10log (27.05) = 25.32 > 24dBm

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	16.28	17.14	**94.223**	19.74	24	PASS
60	5300	16.17	16.77	88.934	19.49	24	PASS
64	5320	15.46	16.77	82.690	19.17	24	PASS
100	5500	13.03	13.53	42.633	16.30	24	PASS
116	5580	16.94	17.69	108.180	20.34	24	PASS
140	5700	12.62	13.16	38.982	15.91	24	PASS

NOTE:
CHAIN 0
1. 11dBm + 10log (34.04) = 26.32 > 24dBm
2. 11dBm + 10log (33.08) = 26.20 > 24dBm
3. 11dBm + 10log (27.22) = 25.35 > 24dBm
4. 11dBm + 10log (24.94) = 24.97 > 24dBm
5. 11dBm + 10log (40.75) = 27.10 > 24dBm
6. 11dBm + 10log (24.19) = 24.84 > 24dBm

CHAIN 1
1. 11dBm + 10log (29.15) = 25.65 > 24dBm
2. 11dBm + 10log (25.14) = 25.00 > 24dBm
3. 11dBm + 10log (25.64) = 25.09 > 24dBm
4. 11dBm + 10log (24.19) = 24.84 > 24dBm
5. 11dBm + 10log (39.25) = 26.94 > 24dBm
6. 11dBm + 10log (24.48) = 24.89 > 24dBm

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	16.57	16.57	90.788	19.58	24	PASS
62	5310	13.26	13.26	42.368	16.27	24	PASS
102	5510	10.56	10.56	22.752	13.57	24	PASS
110	5550	17.01	17.77	**110.075**	20.42	24	PASS
134	5670	13.32	13.72	45.028	16.53	24	PASS

NOTE:
CHAIN 0
1. 11dBm + 10log (78.35) = 29.94 > 24dBm
2. 11dBm + 10log (59.80) = 28.77 > 24dBm
3. 11dBm + 10log (49.08) = 27.91 > 24dBm
4. 11dBm + 10log (85.17) = 30.30 > 24dBm
5. 11dBm + 10log (71.33) = 29.53 > 24dBm

CHAIN 1
1. 11dBm + 10log (72.65) = 29.61 > 24dBm
2. 11dBm + 10log (46.86) = 27.71 > 24dBm
3. 11dBm + 10log (47.68) = 27.78 > 24dBm
4. 11dBm + 10log (91.36) = 30.61 > 24dBm
5. 11dBm + 10log (74.21) = 29.70 > 24dBm

26dB BANDWIDTH:

802.11a

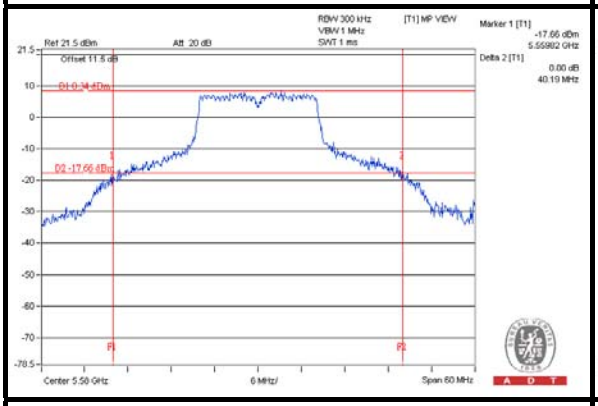
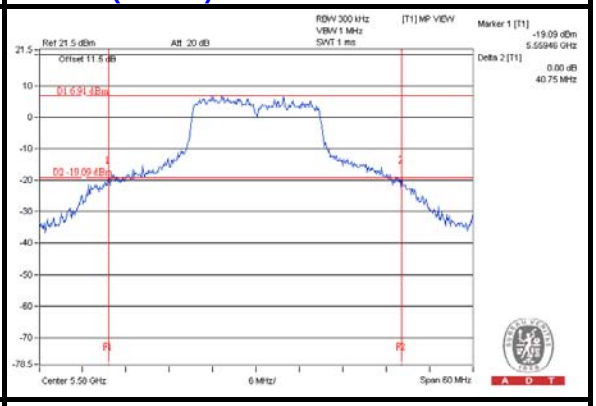
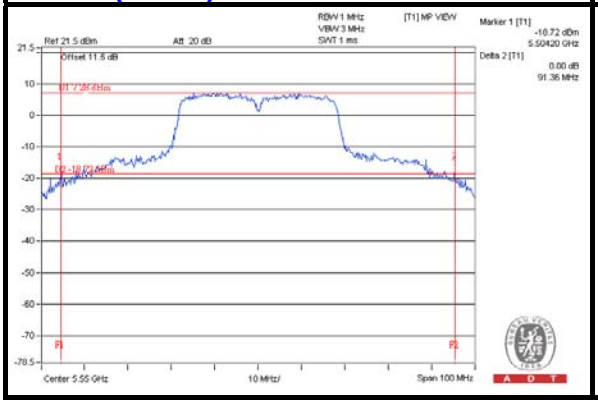
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	33.79	29.32	PASS
60	5300	31.66	24.89	PASS
64	5320	34.18	29.88	PASS
100	5500	29.37	26.83	PASS
116	5580	37.15	40.19	PASS
140	5700	30.02	27.05	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
52	5260	34.04	29.15	PASS
60	5300	33.08	25.14	PASS
64	5320	27.22	25.64	PASS
100	5500	24.94	24.19	PASS
116	5580	40.75	39.25	PASS
140	5700	24.19	24.48	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc BANDWIDTH (MHz)		PASS / FAIL
		CHAIN 0	CHAIN 1	
54	5270	78.35	72.65	PASS
62	5310	59.80	46.86	PASS
102	5510	49.08	47.68	PASS
110	5550	85.17	91.36	PASS
134	5670	71.33	74.21	PASS

SPECTRUM PLOT OF WORST VALUE	
802.11a	802.11n (20MHz)
	
802.11n (40MHz)	
	

EUT MAXIMUM CONDUCTED POWER

802.11a

FREQUENCY BAND (MHz)	MAX. POWER	
	OUTPUT POWER (mW)	OUTPUT POWER (dBm)
5250~5350	87.228	19.41
5470~5725	102.284	20.10

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	94.223	19.74
5470~5725	108.180	20.34

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	90.788	19.58
5470~5725	110.075	20.42

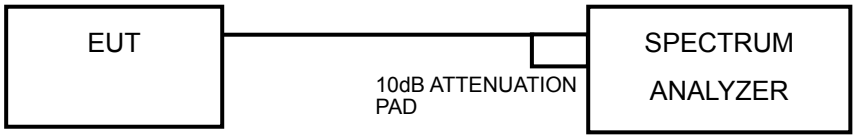
NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

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-2

1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
2) Set RBW = 30 KHz, Set VBW ≥ 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					
52	5260	1.81	3.96	6.03	0.14	6.17	7.99	PASS
60	5300	0.87	3.15	5.17	0.14	5.31	7.99	PASS
64	5320	1.31	3.05	5.28	0.14	5.42	7.99	PASS
100	5500	-0.73	0.01	2.67	0.14	2.81	7.99	PASS
116	5580	1.00	2.73	4.96	0.14	5.10	7.99	PASS
140	5700	-0.41	-0.33	2.64	0.14	2.78	7.99	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 = 6dBi + 10log(2) = 9.01dBi > 6dBi , so the power density limit shall be reduced to 11-(9.01-6) = 7.99dBm.
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					
52	5260	1.53	2.82	5.23	0.15	5.38	7.99	PASS
60	5300	1.52	1.84	4.69	0.15	4.84	7.99	PASS
64	5320	0.68	1.90	4.34	0.15	4.49	7.99	PASS
100	5500	-2.36	-2.43	0.62	0.15	0.77	7.99	PASS
116	5580	1.54	2.07	4.82	0.15	4.97	7.99	PASS
140	5700	-0.84	-1.71	1.76	0.15	1.91	7.99	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 = 6dBi + 10log(2) = 9.01dBi > 6dBi , so the power density limit shall be reduced to 11-(9.01-6) = 7.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (40MHz)

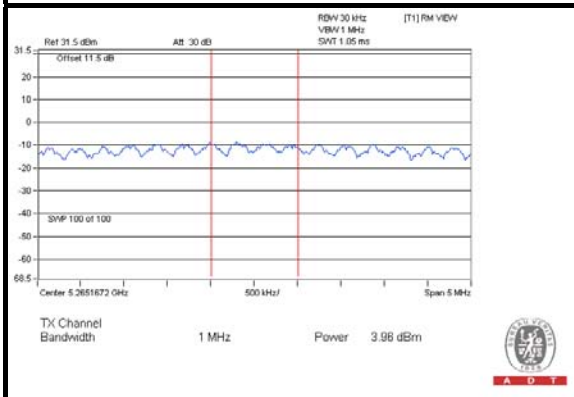
CHAN.	CHAN. FREQ. (MHz)	PSD (dBm)		TOTAL PSD W/O DUTY FACTOR (dBm)	DUTY FACTOR	TOTAL PSD WITH DUTY FACTOR (dBm)	MAX. LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1					
54	5270	-0.84	-0.73	2.23	0.23	2.46	7.99	PASS
62	5310	-4.34	-3.63	-0.96	0.23	-0.73	7.99	PASS
102	5510	-8.17	-8.12	-5.13	0.23	-4.90	7.99	PASS
110	5550	-1.52	-0.99	1.76	0.23	1.99	7.99	PASS
134	5670	-3.93	-4.07	-0.99	0.23	-0.76	7.99	PASS

NOTE:

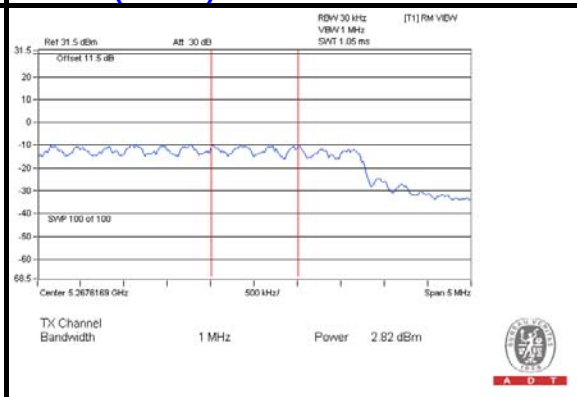
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 6dBi + 10log(2) = 9.01dBi > 6dBi , so the power density limit shall be reduced to 11-(9.01-6) = 7.99dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

SPECTRUM PLOT OF WORST VALUE

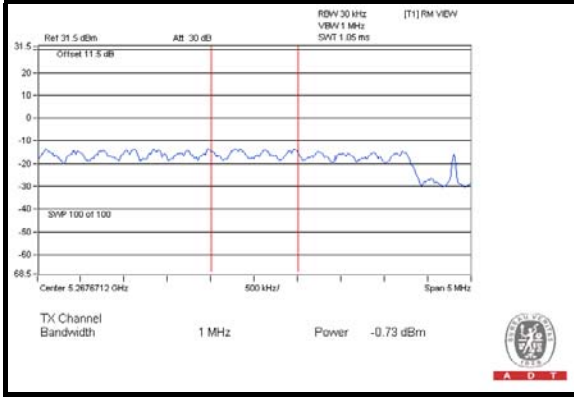
802.11a



802.11n (20MHz)



802.11n (40MHz)

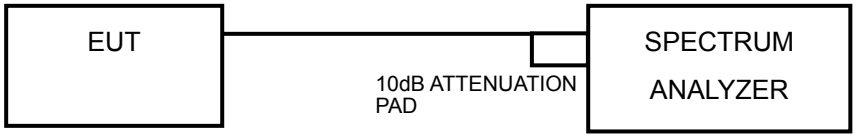


4.5 PEAK POWER EXCURSION MEASUREMENT

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 ≥ 3 MHz, Detector = peak.
2) Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
3) Use the peak search function to find the peak of the spectrum.
4) Measure the PPSD.
5) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.
   Find the worst channel and modulation mode as above test procedure, and follow KDB 789033 D01 General UNII Test Procedures v01r03 and repeat step 1 to 5 for final testing of each modulation mode on a single channel (all modulation types) in a single operating band to compliance with the peak excursion requirement.

4.5.5 DEVIATION FROM TEST STANDARD

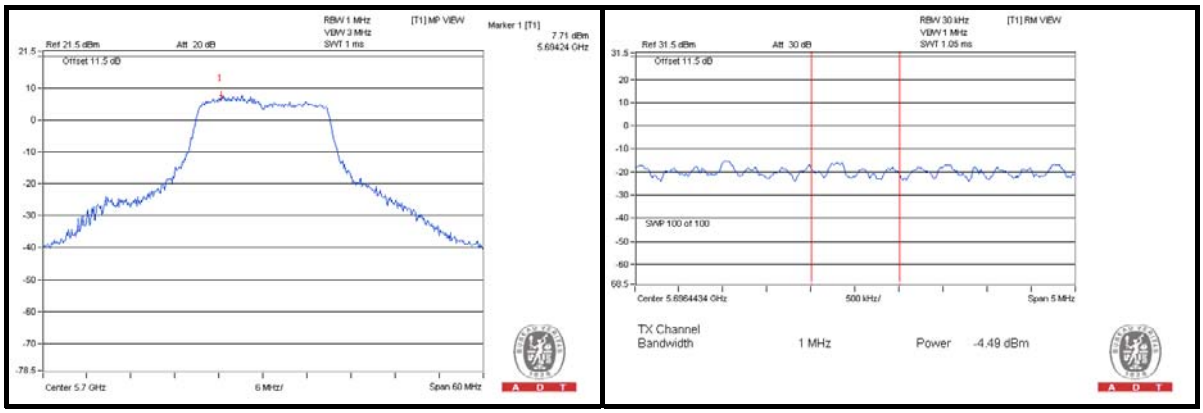
No deviation.

4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

4.5.7 TEST RESULTS

MODULATION MODE	MODULATION TYPE	CHAN. FREQ. (MHz)	PEAK VALUE (dBm)	PPSD WITHOUT DUTY FACTOR (dBm)	PPSD WITH DUTY FACTOR (dBm)	PEAK EXCURSION (dB)	LIMIT (dB)	PASS /FAIL
802.11a	BPSK	5700	8.24	-0.41	-0.27	8.51	13	PASS
	QPSK		7.89	-1.12	-0.85	8.74	13	PASS
	16QAM		8.63	-2.35	-1.84	10.47	13	PASS
	64QAM		8.21	-3.33	-2.40	10.61	13	PASS
802.11n (20MHz)	BPSK	5700	6.42	-1.71	-1.56	7.98	13	PASS
	QPSK		7.29	-2.05	-1.76	9.05	13	PASS
	16QAM		7.50	-2.80	-2.27	9.77	13	PASS
	64QAM		7.71	-4.49	-3.59	11.30	13	PASS
802.11n (40MHz)	BPSK	5670	3.62	-4.07	-3.84	7.46	13	PASS
	QPSK		5.13	-4.77	-4.35	9.48	13	PASS
	16QAM		4.90	-5.13	-4.40	9.30	13	PASS
	64QAM		4.69	-5.79	-4.66	9.35	13	PASS

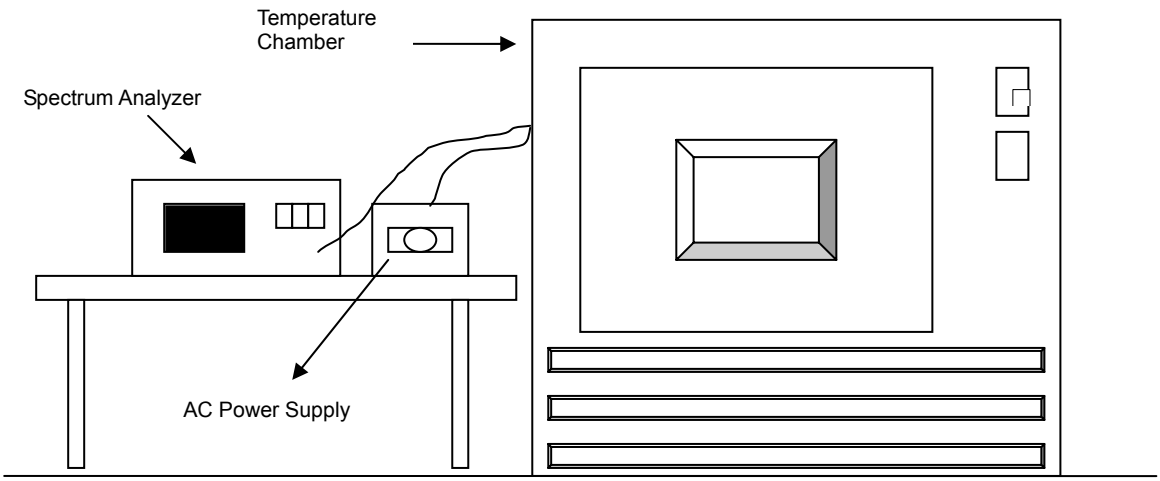


4.6 FREQUENCY STABILITY

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

FREQUEMCY STABILITY VERSUS TEMP.									
OPERATING FREQUENCY: 5300MHz									
TEMP. (℃)	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 (%)
55	120	5300.0266	0.00050	5300.0296	0.00056	5300.0263	0.00050	5300.0293	0.00055
50	120	5300.0207	0.00039	5300.021	0.00040	5300.0197	0.00037	5300.0219	0.00041
40	120	5300.0036	0.00007	5300.0055	0.00010	5300.0017	0.00003	5300.0032	0.00006
30	120	5300.0011	0.00002	5299.9946	-0.00010	5299.9934	-0.00012	5300.0002	0.00000
20	120	5299.982	-0.00034	5299.9804	-0.00037	5299.9761	-0.00045	5299.9791	-0.00039
10	120	5299.9871	-0.00024	5299.9863	-0.00026	5299.9837	-0.00031	5299.9854	-0.00028
0	120	5299.9869	-0.00025	5299.9778	-0.00042	5299.9802	-0.00037	5299.9822	-0.00034
-10	120	5300.0265	0.00050	5300.0255	0.00048	5300.031	0.00058	5300.0226	0.00043
-20	120	5299.9794	-0.00039	5299.9761	-0.00045	5299.9828	-0.00032	5299.9778	-0.00042

FREQUEMCY STABILITY VERSUS VOLTAGE									
OPERATING FREQUENCY: 5300MHz									
TEMP. (℃)	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	5300.0012	0.00002	5299.995	-0.00009	5299.9924	-0.00014	5300.0007	0.00001
	120	5300.0011	0.00002	5299.9946	-0.00010	5299.9934	-0.00012	5300.0002	0.00000
	102	5300.0007	0.00001	5299.9947	-0.00010	5299.9934	-0.00012	5300.0007	0.00001

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:
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Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
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Email: service.adt@tw.bureauveritas.com
Web Site: 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---