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# FCC TEST REPORT (15.247)

**REPORT NO.:** RF121129C07

**MODEL NO.:** CAP-2100AG  
(Refer to item 3.1 for more details)

**FCC ID:** U2M-CAP2100AG

**RECEIVED:** Nov. 14, 2012

**TESTED:** Nov. 15 ~ Dec. 06, 2012

**ISSUED:** Dec. 10, 2012

**APPLICANT:** Senao Networks, Inc.

**ADDRESS:** 3F, No. 529, Chung Cheng Rd., Hsintien,  
Taipei, Taiwan, R.O.C.

**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
RF121129C07	Original release	Dec. 10, 2012



## 1. CERTIFICATION

**PRODUCT:** Wireless 802.11abgn Access Point  
**MODEL NO.:** CAP-2100AG (Refer to item 3.1 for more details)  
**BRAND:** Senao Networks (Refer to item 3.1 for more details)  
**APPLICANT:** Senao Networks, Inc.  
**TESTED:** Nov. 15 ~ Dec. 06, 2012  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**  
ANSI C63.10-2009

The above equipment (model: CAP-2100AG) 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 :** Dec. 10, 2012  
Celine Chou / Specialist

**APPROVED BY :** Ken Liu , **DATE :** Dec. 10, 2012  
Ken Liu / Manager



## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -3.26dB at 0.38438MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 2483.50MHz.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is UFL not a standard connector.

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Wireless 802.11abgn Access Point
<b>MODEL NO.</b>	CAP-2100AG (Refer to Note for more details)
<b>NOMINAL VOLTAGE</b>	12Vdc (adapter) 48Vdc (PoE)
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps
<b>OPERATING FREQUENCY</b>	<b>2.4GHz:</b> 2412 ~ 2462MHz <b>5.0GHz:</b> 5745 ~ 5825MHz
<b>NUMBER OF CHANNEL</b>	<b>2.4GHz:</b> 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) <b>5.0GHz:</b> 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
<b>OUTPUT POWER</b>	482.738mW for 2412 ~ 2462MHz 404.145mW for 5745 ~ 5825MHz
<b>ANTENNA TYPE</b>	<b>2.4GHz:</b> embedded antenna with 2dBi gain <b>5.0GHz:</b> embedded antenna with 4dBi gain
<b>ANTENNA CONNECTOR</b>	UFL
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Adapter

**NOTE:**

1. The following models are electrically identical, different model names and brand names are for marketing purpose.

BRAND	MODEL
Senao Networks	CAP-2100AG
WatchGuard	AP100





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

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

- 3. The EUT consumes power from the following adapter.

<b>BRAND:</b>	Powertron
<b>MODEL:</b>	PA1015-2I/PA1015-2I120125
<b>INPUT:</b>	100-240Vac, 50-60Hz, 0.4A
<b>OUTPUT:</b>	12Vdc, 1.25A, 15W
<b>POWER LINE:</b>	1.5m non-shielded cable without core

- 4. The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

#### FOR 2.4GHz:

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

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

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

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

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

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
151	5755MHz	159	5795MHz



### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

#### FOR 2.4GHz:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from PoE

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

**NOTE 1:** The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

**NOTE 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A & B	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2

#### 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A & B	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2



**BANDEDGE MEASUREMENT:**

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 9	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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
A	802.11n (40MHz)	3 to 9	3, 6, 9	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, 60%RH	120Vac, 60Hz 48Vdc	Antony Lee
APCM	24deg. C, 64%RH	120Vac, 60Hz	Frank Liu



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

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from 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 **X-plane**.

**NOTE 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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A & B	802.11a	149 to 165	149	OFDM	BPSK	6.0

**POWER LINE CONDUCTED EMISSION TEST:**

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A & B	802.11a	149 to 165	149	OFDM	BPSK	6.0



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**BANDEDGE MEASUREMENT:**

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6.0
A	802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2
A	802.11n (40MHz)	151 to 159	151, 159	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, 60%RH	120Vac, 60Hz 48Vdc	Antony Lee
APCM	24deg. C, 64%RH	120Vac, 60Hz	Frank Liu



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### 3.3 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	E5420	33MLMQ1	FCC DoC Approved
2	POE	EnGenius	EPE-48GR	NA	NA
3	Adapter	Powertron	PA1030-4HC	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	3m RJ45 UTP cable
2	3m RJ45 UTP cable
3	1.5m non-shielded w/o core

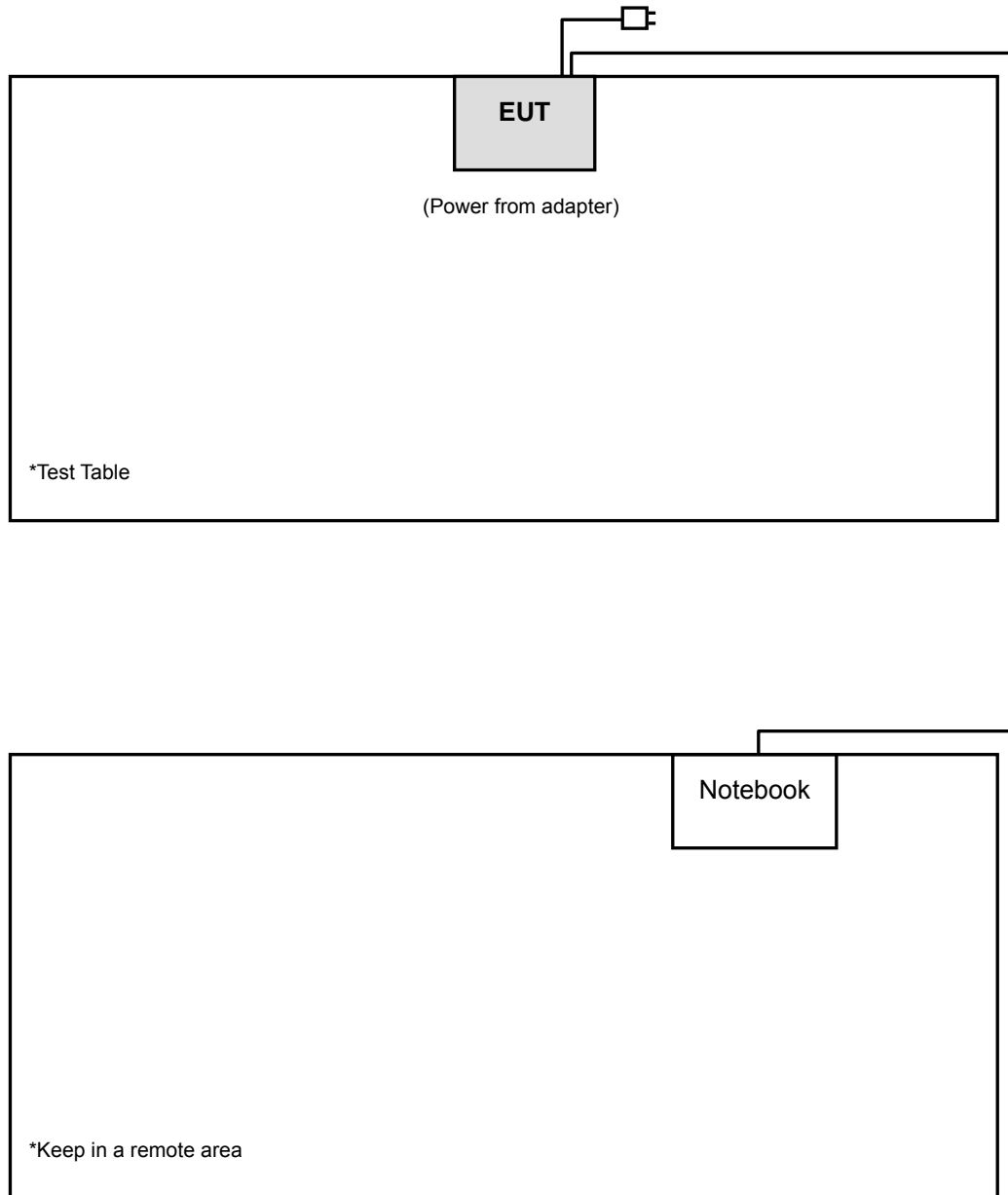
**NOTE:**

1. All power cords of the above support units are non-shielded (1.8 m).
2. Item 1, 2 acted as a communication partner to transfer data.
3. Item 2, 3 was provided by client.



### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST

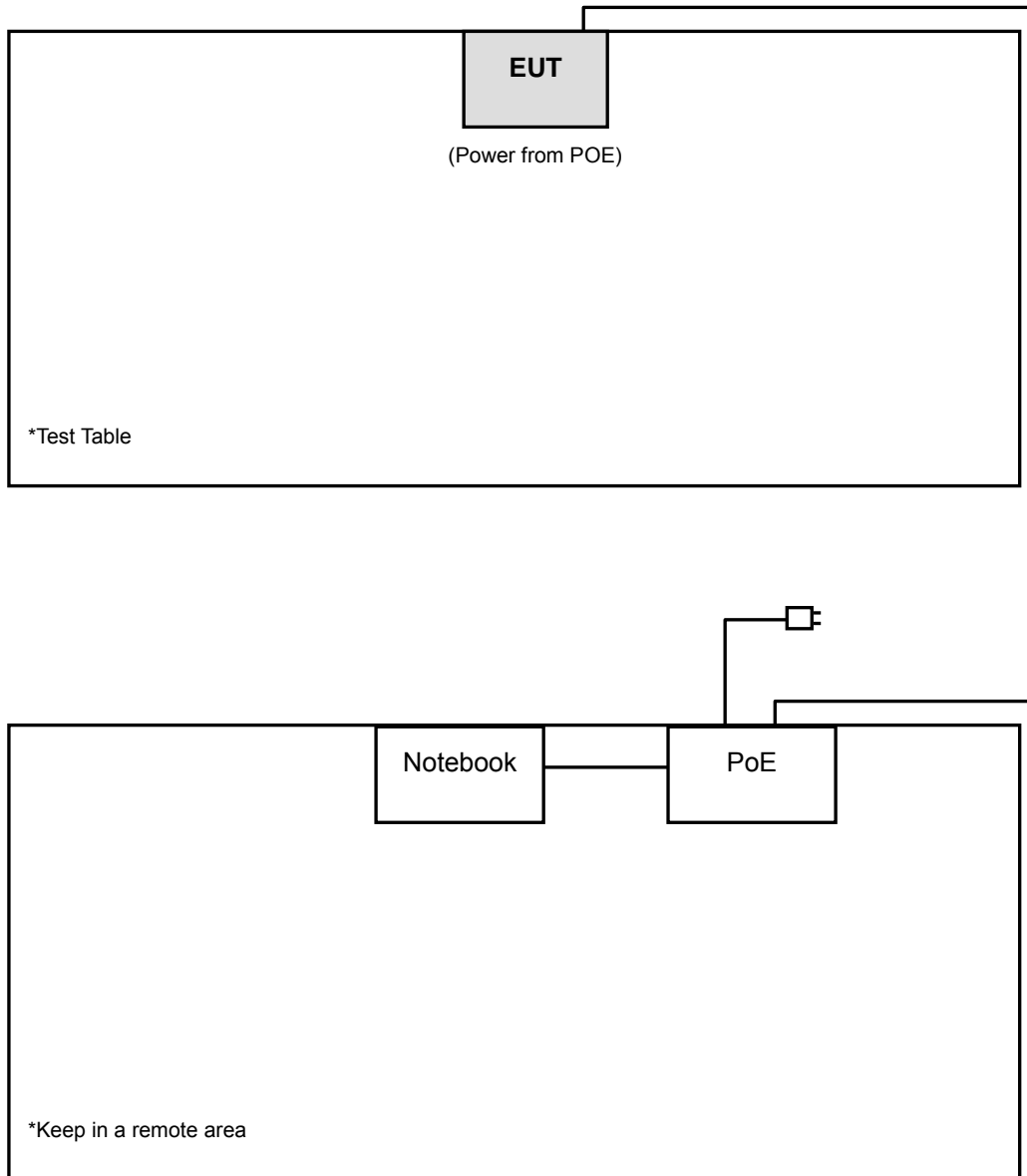
#### TEST MODE A







## TEST MODE B





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### **3.4 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 C (15.247)**

**558074 D01 DTS Meas Guidance v02**

**662911 D01 Multiple Transmitter Output v01 r02**

**ANSI C63.10-2009**

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



## 4. TEST TYPES AND RESULTS (FOR 2.4GHz BAND)

### 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. Other emissions shall be at least 20dB below the highest level of the desired power:

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.



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#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	Aug. 06, 2012	Aug. 05, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Feb. 03, 2012	Feb. 02, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 06, 2012	Apr. 05, 2013
HORN Antenna SCHWARZBECK	9120D	209	Sep. 03, 2012	Sep. 02, 2013
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier Agilent	8447D	2944A10633	Oct. 25, 2012	Oct. 24, 2013
Preamplifier Agilent	8449B	3008A01964	Oct. 25, 2012	Oct. 24, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250723/4	Aug. 28, 2012	Aug. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/ 4	Aug. 28, 2012	Aug. 27, 2013
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA	NA
Turn Table ADT.	TT100	TT93021703	NA	NA
Turn Table Controller ADT.	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 25, 2012	Oct. 24, 2013
High Speed Peak Power Meter	ML2495A	0842014	Apr. 28, 2012	Apr. 27, 2013
Power Sensor	MA2411B	0738404	Apr. 28, 2012	Apr. 27, 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 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.



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#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

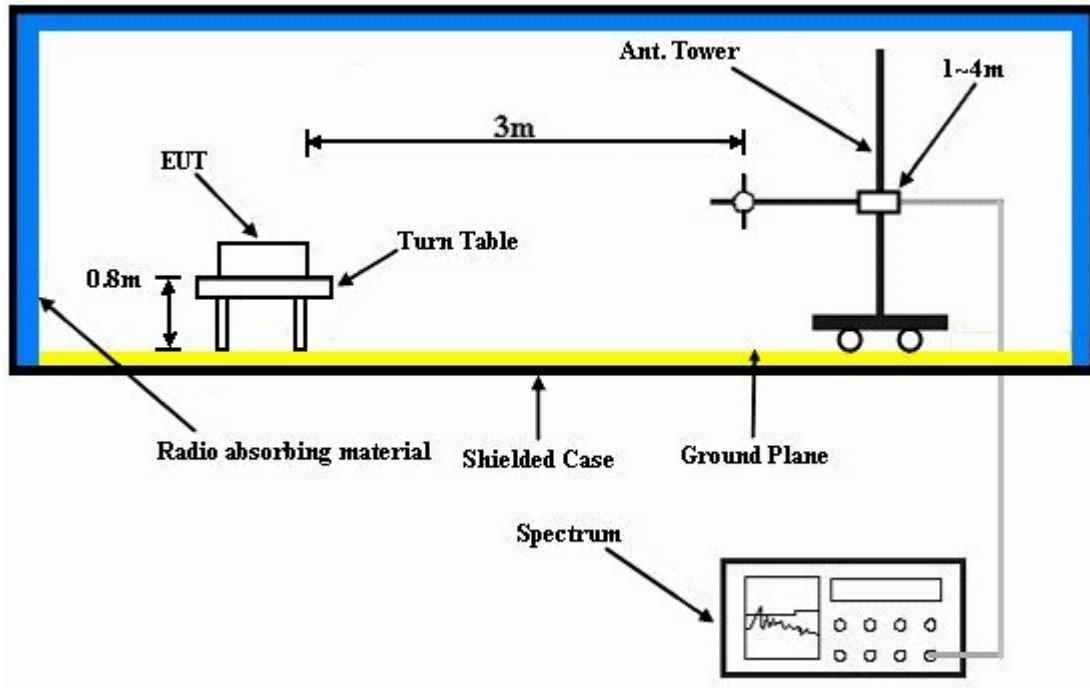
**NOTE:**

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 100kHz and video bandwidth is 300kHz 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.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



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

#### 4.1.6 EUT OPERATING CONDITIONS

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



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### 4.1.7 TEST RESULTS

#### 802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.7 PK	74.0	-18.3	1.08 H	355	24.50	31.20
2	2390.00	41.6 AV	54.0	-12.4	1.08 H	355	10.40	31.20
3	*2412.00	102.3 PK			1.08 H	355	71.00	31.30
4	*2412.00	98.0 AV			1.08 H	355	66.70	31.30
5	4824.00	54.0 PK	74.0	-20.0	1.03 H	346	16.80	37.20
6	4824.00	50.3 AV	54.0	-3.7	1.03 H	346	13.10	37.20
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	2390.00	60.3 PK	74.0	-13.7	1.20 V	18	29.10	31.20
2	2390.00	43.8 AV	54.0	-10.2	1.20 V	18	12.60	31.20
3	*2412.00	106.6 PK			1.20 V	16	75.30	31.30
4	*2412.00	102.4 AV			1.20 V	16	71.10	31.30
5	4824.00	55.8 PK	74.0	-18.2	1.22 V	172	18.60	37.20
6	4824.00	52.5 AV	54.0	-1.5	1.22 V	172	15.30	37.20

#### 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 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	101.6 PK			1.10 H	0	70.20	31.40
2	*2437.00	97.3 AV			1.10 H	0	65.90	31.40
3	4874.00	52.0 PK	74.0	-22.0	1.01 H	342	14.70	37.30
4	4874.00	47.0 AV	54.0	-7.0	1.01 H	342	9.70	37.30
5	7311.00	51.9 PK	74.0	-22.1	1.00 H	0	8.30	43.60
6	7311.00	38.6 AV	54.0	-15.4	1.00 H	0	-5.00	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.6 PK			1.14 V	263	74.20	31.40
2	*2437.00	101.8 AV			1.14 V	263	70.40	31.40
3	4874.00	55.3 PK	74.0	-18.7	1.61 V	134	18.00	37.30
4	4874.00	52.0 AV	54.0	-2.0	1.61 V	134	14.70	37.30
5	7311.00	52.2 PK	74.0	-21.8	1.00 V	155	8.60	43.60
6	7311.00	37.8 AV	54.0	-16.2	1.00 V	155	-5.80	43.60

**REMARKS:**

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





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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.2 PK			1.34 H	355	72.70	31.50
2	*2462.00	99.5 AV			1.34 H	355	68.00	31.50
3	2483.50	61.7 PK	74.0	-12.3	1.34 H	355	30.20	31.50
4	2483.50	41.9 AV	54.0	-12.1	1.34 H	355	10.40	31.50
5	4924.00	51.8 PK	74.0	-22.2	1.39 H	218	14.40	37.40
6	4924.00	46.4 AV	54.0	-7.6	1.39 H	218	9.00	37.40
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	*2462.00	107.6 PK			1.41 V	31	76.10	31.50
2	*2462.00	103.2 AV			1.41 V	31	71.70	31.50
3	2483.50	67.5 PK	74.0	-6.5	1.44 V	153	36.00	31.50
4	2483.50	43.8 AV	54.0	-10.2	1.44 V	153	12.30	31.50
5	4924.00	55.0 PK	74.0	-19.0	1.09 V	170	17.60	37.40
6	4924.00	52.4 AV	54.0	-1.6	1.09 V	170	15.00	37.40

**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.



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802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.5 PK	74.0	-4.5	1.12 H	359	38.30	31.20
2	2390.00	51.9 AV	54.0	-2.1	1.12 H	359	20.70	31.20
3	*2412.00	107.4 PK			1.09 H	3	76.10	31.30
4	*2412.00	95.2 AV			1.09 H	3	63.90	31.30
5	4824.00	63.6 PK	74.0	-10.4	1.14 H	342	26.40	37.20
6	4824.00	44.6 AV	54.0	-9.4	1.14 H	342	7.40	37.20
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	2390.00	71.5 PK	74.0	-2.5	1.19 V	132	40.30	31.20
2	2390.00	52.3 AV	54.0	-1.7	1.19 V	132	21.10	31.20
3	*2412.00	111.0 PK			1.20 V	15	79.70	31.30
4	*2412.00	98.7 AV			1.20 V	15	67.40	31.30
5	4824.00	69.3 PK	74.0	-4.7	1.20 V	5	32.10	37.20
6	4824.00	48.4 AV	54.0	-5.6	1.20 V	5	11.20	37.20

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 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.8 PK			1.09 H	351	77.40	31.40
2	*2437.00	96.6 AV			1.09 H	351	65.20	31.40
3	4874.00	65.6 PK	74.0	-8.4	1.00 H	346	28.30	37.30
4	4874.00	46.1 AV	54.0	-7.9	1.00 H	346	8.80	37.30
5	7311.00	52.2 PK	74.0	-21.8	1.00 H	240	8.60	43.60
6	7311.00	39.0 AV	54.0	-15.0	1.00 H	240	-4.60	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.5 PK			1.40 V	109	81.10	31.40
2	*2437.00	100.2 AV			1.40 V	109	68.80	31.40
3	4874.00	71.5 PK	74.0	-2.5	1.19 V	172	34.20	37.30
4	4874.00	52.0 AV	54.0	-2.0	1.19 V	172	14.70	37.30
5	7311.00	51.6 PK	74.0	-22.4	1.00 V	308	8.00	43.60
6	7311.00	38.7 AV	54.0	-15.3	1.00 V	308	-4.90	43.60

**REMARKS:**

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.0 PK			1.07 H	359	76.50	31.50
2	*2462.00	95.6 AV			1.07 H	359	64.10	31.50
3	2483.50	69.8 PK	74.0	-4.2	1.05 H	0	38.30	31.50
4	2483.50	50.2 AV	54.0	-3.8	1.05 H	0	18.70	31.50
5	4924.00	58.4 PK	74.0	-15.6	1.10 H	346	21.00	37.40
6	4924.00	41.5 AV	54.0	-12.5	1.10 H	346	4.10	37.40
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	*2462.00	111.0 PK			1.18 V	20	79.50	31.50
2	*2462.00	98.5 AV			1.18 V	20	67.00	31.50
3	2483.50	72.1 PK	74.0	-1.9	1.13 V	127	40.60	31.50
4	2483.50	51.6 AV	54.0	-2.4	1.13 V	127	20.10	31.50
5	4924.00	63.5 PK	74.0	-10.5	1.08 V	174	26.10	37.40
6	4924.00	44.5 AV	54.0	-9.5	1.08 V	174	7.10	37.40

**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.



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802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.3 PK	74.0	-5.7	1.14 H	357	37.10	31.20
2	2390.00	49.1 AV	54.0	-4.9	1.14 H	357	17.90	31.20
3	*2412.00	106.6 PK			1.11 H	0	75.30	31.30
4	*2412.00	94.0 AV			1.11 H	0	62.70	31.30
5	4824.00	62.3 PK	74.0	-11.7	1.02 H	347	25.10	37.20
6	4824.00	41.8 AV	54.0	-12.2	1.02 H	347	4.60	37.20
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	2390.00	71.1 PK	74.0	-2.9	1.46 V	326	39.90	31.20
2	2390.00	52.4 AV	54.0	-1.6	1.46 V	326	21.20	31.20
3	*2412.00	110.3 PK			1.19 V	342	79.00	31.30
4	*2412.00	97.6 AV			1.19 V	342	66.30	31.30
5	4824.00	67.6 PK	74.0	-6.4	1.06 V	171	30.40	37.20
6	4824.00	46.5 AV	54.0	-7.5	1.06 V	171	9.30	37.20

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 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.6 PK			1.32 H	1	77.20	31.40
2	*2437.00	96.2 AV			1.32 H	1	64.80	31.40
3	4874.00	66.8 PK	74.0	-7.2	1.37 H	217	29.50	37.30
4	4874.00	46.6 AV	54.0	-7.4	1.37 H	217	9.30	37.30
5	7311.00	52.0 PK	74.0	-22.0	1.05 H	124	8.40	43.60
6	7311.00	38.8 AV	54.0	-15.2	1.05 H	124	-4.80	43.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	112.8 PK			1.14 V	84	81.40	31.40
2	*2437.00	99.7 AV			1.14 V	84	68.30	31.40
3	4874.00	70.0 PK	74.0	-4.0	1.21 V	173	32.70	37.30
4	4874.00	51.3 AV	54.0	-2.7	1.21 V	173	14.00	37.30
5	7311.00	51.7 PK	74.0	-22.3	1.00 V	3	8.10	43.60
6	7311.00	38.4 AV	54.0	-15.6	1.00 V	3	-5.20	43.60

**REMARKS:**

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.4 PK			1.08 H	360	75.90	31.50
2	*2462.00	94.8 AV			1.08 H	360	63.30	31.50
3	2483.50	71.4 PK	74.0	-2.6	1.03 H	0	39.90	31.50
4	2483.50	49.7 AV	54.0	-4.3	1.03 H	0	18.20	31.50
5	4924.00	54.5 PK	74.0	-19.5	1.14 H	8	17.10	37.40
6	4924.00	38.5 AV	54.0	-15.5	1.14 H	8	1.10	37.40
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	*2462.00	109.9 PK			1.13 V	55	78.40	31.50
2	*2462.00	97.3 AV			1.13 V	55	65.80	31.50
3	2483.50	72.9 PK	74.0	-1.1	1.10 V	282	41.40	31.50
4	2483.50	51.4 AV	54.0	-2.6	1.10 V	282	19.90	31.50
5	4924.00	61.3 PK	74.0	-12.7	1.15 V	42	23.90	37.40
6	4924.00	42.2 AV	54.0	-11.8	1.15 V	42	4.80	37.40

**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.



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.2 PK	74.0	-2.8	1.12 H	357	40.00	31.20
2	2390.00	50.5 AV	54.0	-3.5	1.12 H	357	19.30	31.20
3	*2422.00	100.4 PK			1.10 H	0	69.10	31.30
4	*2422.00	91.5 AV			1.10 H	0	60.20	31.30
5	4844.00	52.2 PK	74.0	-21.8	1.16 H	352	14.90	37.30
6	4844.00	35.7 AV	54.0	-18.3	1.16 H	352	-1.60	37.30
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	2390.00	72.7 PK	74.0	-1.3	1.19 V	212	41.50	31.20
2	2390.00	52.5 AV	54.0	-1.5	1.19 V	212	21.30	31.20
3	*2422.00	104.7 PK			1.19 V	34	73.40	31.30
4	*2422.00	95.5 AV			1.19 V	34	64.20	31.30
5	4844.00	58.2 PK	74.0	-15.8	1.21 V	17	20.90	37.30
6	4844.00	40.6 AV	54.0	-13.4	1.21 V	17	3.30	37.30

REMARKS:

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





A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.2 PK	74.0	-6.8	1.12 H	355	36.00	31.20
2	2390.00	50.3 AV	54.0	-3.7	1.12 H	355	19.10	31.20
3	*2437.00	103.0 PK			1.33 H	360	71.60	31.40
4	*2437.00	93.4 AV			1.33 H	360	62.00	31.40
5	4874.00	56.2 PK	74.0	-17.8	1.16 H	342	18.90	37.30
6	4874.00	38.1 AV	54.0	-15.9	1.16 H	342	0.80	37.30
7	7311.00	50.9 PK	74.0	-23.1	1.00 H	243	7.30	43.60
8	7311.00	39.4 AV	54.0	-14.6	1.00 H	243	-4.20	43.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.1 PK	74.0	-5.9	1.46 V	302	36.90	31.20
2	2390.00	52.3 AV	54.0	-1.7	1.46 V	302	21.10	31.20
3	*2437.00	107.0 PK			1.19 V	319	75.60	31.40
4	*2437.00	97.7 AV			1.19 V	319	66.30	31.40
5	4874.00	61.4 PK	74.0	-12.6	1.08 V	174	24.10	37.30
6	4874.00	43.8 AV	54.0	-10.2	1.08 V	174	6.50	37.30
7	7311.00	51.1 PK	74.0	-22.9	1.00 V	115	7.50	43.60
8	7311.00	39.7 AV	54.0	-14.3	1.00 V	115	-3.90	43.60

**REMARKS:**

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	101.0 PK			1.08 H	0	69.60	31.40
2	*2452.00	91.5 AV			1.08 H	0	60.10	31.40
3	2483.50	70.6 PK	74.0	-3.4	1.07 H	6	39.10	31.50
4	2483.50	48.1 AV	54.0	-5.9	1.07 H	6	16.60	31.50
5	4904.00	49.9 PK	74.0	-24.1	1.26 H	341	12.50	37.40
6	4904.00	35.3 AV	54.0	-18.7	1.26 H	341	-2.10	37.40
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	*2452.00	104.2 PK			1.13 V	286	72.80	31.40
2	*2452.00	95.0 AV			1.13 V	286	63.60	31.40
3	2483.50	72.5 PK	74.0	-1.5	1.10 V	259	41.00	31.50
4	2483.50	52.8 AV	54.0	-1.2	1.10 V	259	21.30	31.50
5	4904.00	54.7 PK	74.0	-19.3	1.20 V	25	17.30	37.40
6	4904.00	37.8 AV	54.0	-16.2	1.20 V	25	0.40	37.40

**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.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	218.50	43.5 QP	46.0	-2.5	1.25 H	250	31.80	11.70
2	374.04	41.4 QP	46.0	-4.6	1.00 H	110	24.50	16.90
3	500.42	38.0 QP	46.0	-8.0	1.50 H	116	18.00	20.00
4	624.85	43.8 QP	46.0	-2.2	1.25 H	137	21.50	22.30
5	751.23	33.6 QP	46.0	-12.4	1.00 H	127	9.20	24.40
6	875.67	38.2 QP	46.0	-7.8	1.00 H	321	11.70	26.50
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	49.34	37.8 QP	40.0	-2.2	1.00 V	5	23.80	14.00
2	101.84	33.8 QP	43.5	-9.7	1.00 V	144	24.10	9.70
3	216.55	30.9 QP	46.0	-15.1	1.50 V	292	19.20	11.70
4	374.04	39.9 QP	46.0	-6.1	1.24 V	152	23.00	16.90
5	624.85	41.7 QP	46.0	-4.3	1.24 V	158	19.40	22.30
6	875.67	36.8 QP	46.0	-9.2	1.24 V	337	10.30	26.50

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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	48Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	30.8 QP	40.0	-9.2	2.00 H	93	17.20	13.60
2	216.55	39.0 QP	46.0	-7.0	1.25 H	242	27.30	11.70
3	374.04	37.4 QP	46.0	-8.6	1.00 H	63	20.50	16.90
4	624.85	35.4 QP	46.0	-10.6	1.25 H	127	13.10	22.30
5	751.23	31.5 QP	46.0	-14.5	1.00 H	124	7.10	24.40
6	875.67	38.4 QP	46.0	-7.6	1.50 H	139	11.90	26.50
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	61.01	34.2 QP	40.0	-5.8	1.00 V	50	20.80	13.40
2	216.55	30.0 QP	46.0	-16.0	1.50 V	284	18.30	11.70
3	374.04	35.4 QP	46.0	-10.6	1.24 V	141	18.50	16.90
4	624.85	34.8 QP	46.0	-11.2	1.50 V	155	12.50	22.30
5	675.40	30.1 QP	46.0	-15.9	1.50 V	85	7.30	22.80
6	875.67	37.1 QP	46.0	-8.9	1.24 V	343	10.60	26.50

**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.



## 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	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 29, 2011	Dec. 28, 2012
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The test was performed in HwaYa Shielded Room 2.  
3. The VCCI Site Registration No. is C-2047.

#### 4.2.3 TEST PROCEDURES

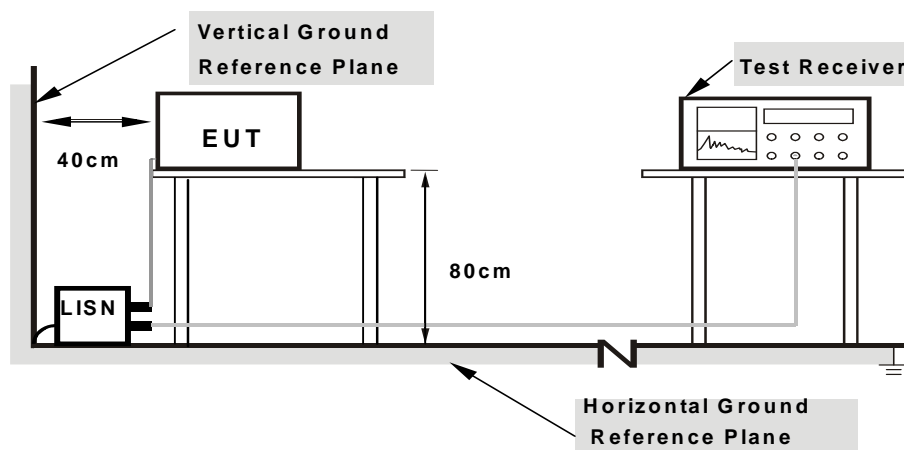
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

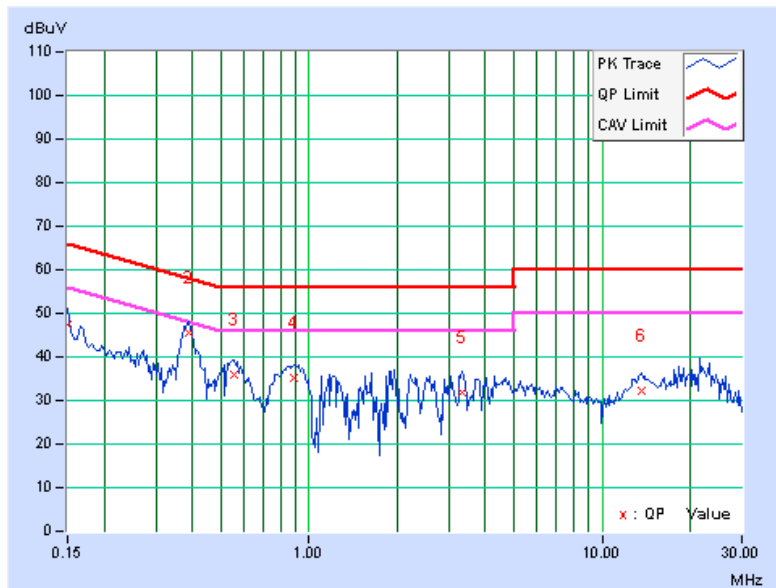
**CONDUCTED WORST-CASE DATA : 802.11n (20MHz)**

<b>PHASE</b>	Line 1	<b>6dB BANDWIDTH</b>	9kHz
<b>TEST MODE</b>	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.16	47.19	32.46	47.35	32.62	66.00	56.00	-18.65	-23.38
2	0.38828	0.18	45.46	35.56	45.64	35.74	58.10	48.10	-12.46	-12.36
3	0.55625	0.19	35.75	24.77	35.94	24.96	56.00	46.00	-20.06	-21.04
4	0.88438	0.20	34.82	23.00	35.02	23.20	56.00	46.00	-20.98	-22.80
5	3.33203	0.35	31.37	23.58	31.72	23.93	56.00	46.00	-24.28	-22.07
6	13.62891	0.57	31.66	27.53	32.23	28.10	60.00	50.00	-27.77	-21.90

**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.





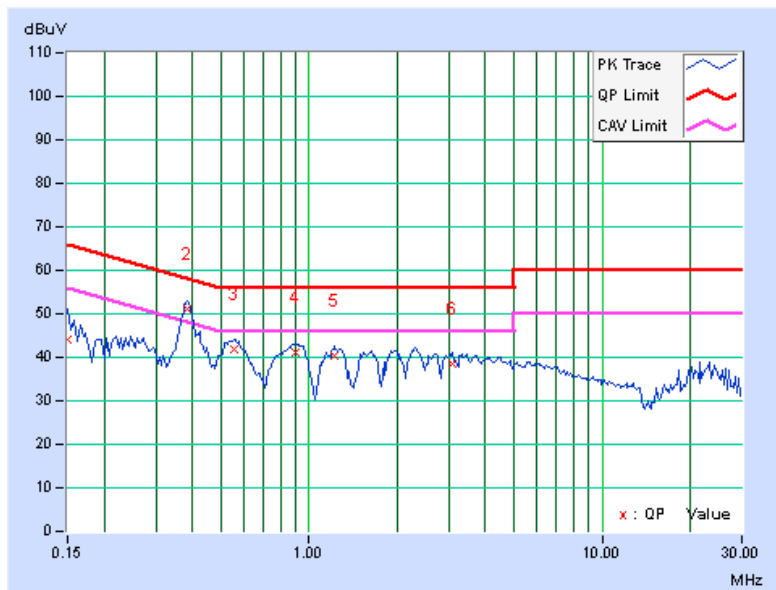
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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.14	44.03	28.79	44.17	28.93	66.00	56.00	-21.83	-27.07
2	<b>0.38438</b>	<b>0.18</b>	<b>51.02</b>	<b>44.75</b>	<b>51.20</b>	<b>44.93</b>	<b>58.18</b>	<b>48.18</b>	<b>-6.99</b>	<b>-3.26</b>
3	0.55625	0.19	41.57	34.90	41.76	35.09	56.00	46.00	-14.24	-10.91
4	0.90391	0.21	40.75	33.84	40.96	34.05	56.00	46.00	-15.04	-11.95
5	1.22656	0.24	40.03	33.39	40.27	33.63	56.00	46.00	-15.73	-12.37
6	3.08594	0.36	38.14	30.44	38.50	30.80	56.00	46.00	-17.50	-15.20

**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.







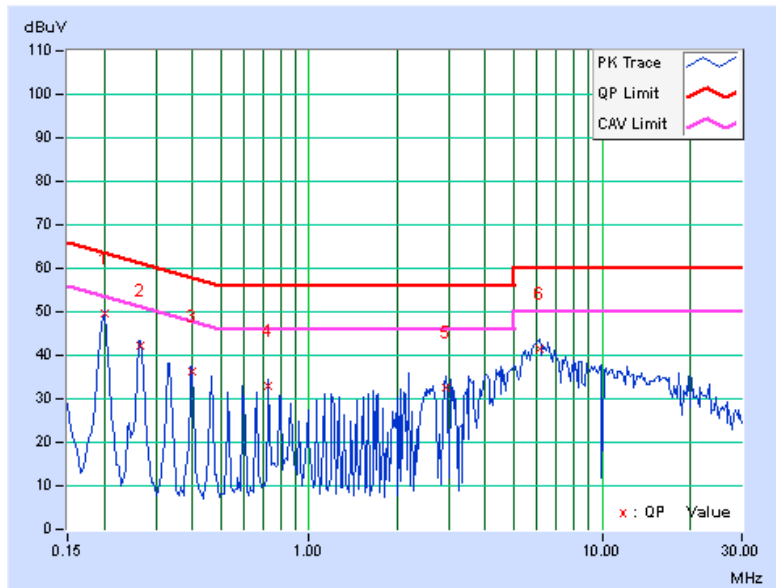
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PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20078	0.18	49.54	38.14	49.72	38.32	63.58	53.58	-13.86	-15.26
2	0.26719	0.18	41.92	31.68	42.10	31.86	61.20	51.20	-19.10	-19.34
3	0.39863	0.18	35.96	33.64	36.14	33.82	57.88	47.88	-21.74	-14.06
4	0.72940	0.20	32.74	29.95	32.94	30.15	56.00	46.00	-23.06	-15.85
5	2.91797	0.33	32.31	29.73	32.64	30.06	56.00	46.00	-23.36	-15.94
6	6.10156	0.41	41.22	39.85	41.63	40.26	60.00	50.00	-18.37	-9.74

**REMARKS:**

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





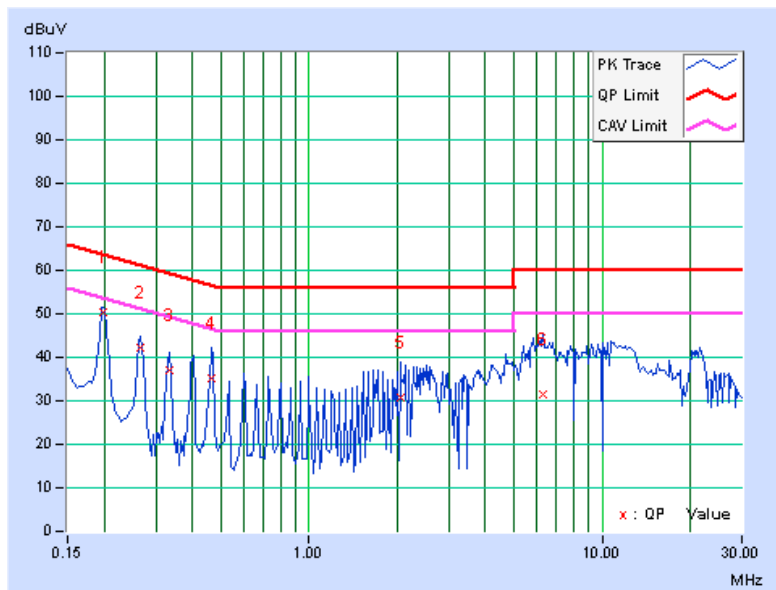
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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19942	0.15	50.20	38.08	50.35	38.23	63.63	53.63	-13.28	-15.40
2	0.26719	0.16	42.08	31.01	42.24	31.17	61.20	51.20	-18.96	-20.03
3	0.33359	0.17	36.78	29.24	36.95	29.41	59.36	49.36	-22.41	-19.95
4	0.46513	0.18	34.96	33.81	35.14	33.99	56.60	46.60	-21.46	-12.61
5	2.05859	0.30	30.54	29.80	30.84	30.10	56.00	46.00	-25.16	-15.90
6	6.30859	0.47	30.89	28.09	31.36	28.56	60.00	50.00	-28.64	-21.44

**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.

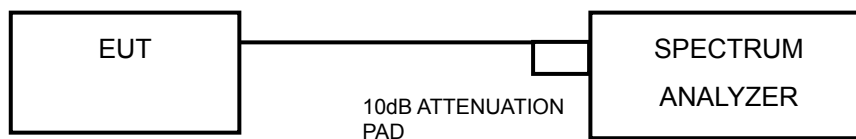


### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST SETUP



#### 4.3.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 TEST PROCEDURE

- Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
- Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

#### 4.3.5 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 lowest, middle and highest channel frequencies individually.



### 4.3.7 TEST RESULTS

#### 802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	10.14	10.12	0.5	PASS
6	2437	10.14	10.09	0.5	PASS
11	2462	10.14	10.13	0.5	PASS

#### 802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.43	16.48	0.5	PASS
6	2437	16.47	16.45	0.5	PASS
11	2462	16.44	16.48	0.5	PASS

#### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	17.64	17.70	0.5	PASS
6	2437	17.64	17.63	0.5	PASS
11	2462	17.64	17.67	0.5	PASS

#### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	36.45	36.46	0.5	PASS
6	2437	36.11	36.48	0.5	PASS
9	2452	36.46	36.48	0.5	PASS

## 4.4 CONDUCTED OUTPUT POWER

### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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

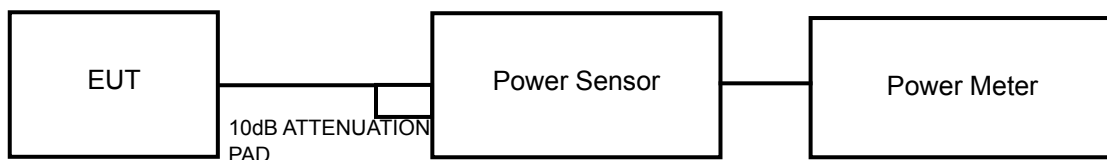
Array Gain = 0 dB (i.e., no array gain) for  $NANT \leq 4$ ;

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.

### 4.4.2 TEST SETUP



### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 4.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the peak power level.



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#### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



## 4.4.7 TEST RESULTS

## 802.11b

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	14.40	14.52	55.856	17.47	30	PASS
6	2437	14.54	14.31	55.422	17.44	30	PASS
11	2462	15.51	15.33	69.682	18.43	30	PASS

## 802.11g

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	21.80	23.74	387.948	25.89	30	PASS
6	2437	21.96	23.22	366.930	25.65	30	PASS
11	2462	22.52	24.78	479.257	26.81	30	PASS

## 802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	23.60	23.51	453.475	26.57	30	PASS
6	2437	22.52	24.83	482.738	<b>26.84</b>	30	PASS
11	2462	21.72	23.44	369.394	25.67	30	PASS

## 802.11n (40MHz)

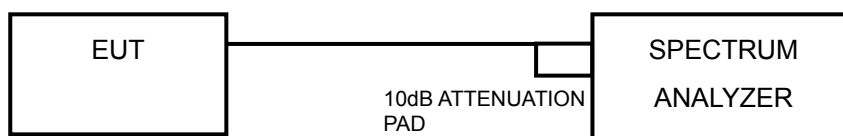
CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	19.33	19.71	179.245	22.53	30	PASS
6	2437	19.86	20.14	200.104	23.01	30	PASS
9	2452	21.09	22.39	301.909	24.80	30	PASS

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

- Set the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

### 4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6





### 4.5.7 TEST RESULTS

#### 802.11b

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-11.19	3.01	-8.18	8	PASS
	6	2437	-11.73	3.01	-8.72	8	PASS
	11	2462	-10.32	3.01	-7.31	8	PASS
1	1	2412	-11.70	3.01	-8.69	8	PASS
	6	2437	-10.52	3.01	-7.51	8	PASS
	11	2462	-9.83	3.01	-6.82	8	PASS

**NOTE:** Directional gain =  $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$  , so the power density limit unnecessary to reduced.

#### 802.11g

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-10.33	3.01	-7.32	8	PASS
	6	2437	-10.99	3.01	-7.98	8	PASS
	11	2462	-8.22	3.01	-5.21	8	PASS
1	1	2412	-9.25	3.01	-6.24	8	PASS
	6	2437	-9.85	3.01	-6.84	8	PASS
	11	2462	-7.81	3.01	-4.80	8	PASS

**NOTE:** Directional gain =  $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$  , so the power density limit unnecessary to reduced.



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### 802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	1	2412	-10.15	3.01	-7.14	8	PASS
	6	2437	-8.87	3.01	-5.86	8	PASS
	11	2462	-11.57	3.01	-8.56	8	PASS
1	1	2412	-11.23	3.01	-8.22	8	PASS
	6	2437	-8.18	3.01	-5.17	8	PASS
	11	2462	-11.08	3.01	-8.07	8	PASS

**NOTE:** Directional gain =  $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$  , so the power density limit unnecessary to reduced.

### 802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	3	2422	-17.49	3.01	-14.48	8	PASS
	6	2437	-15.41	3.01	-12.40	8	PASS
	9	2452	-14.77	3.01	-11.76	8	PASS
1	3	2422	-17.69	3.01	-14.68	8	PASS
	6	2437	-13.38	3.01	-10.37	8	PASS
	9	2452	-13.32	3.01	-10.31	8	PASS

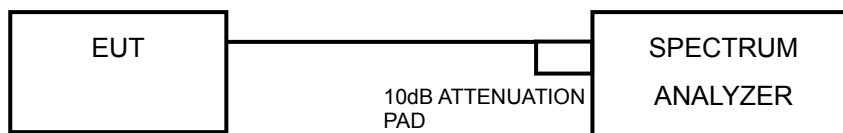
**NOTE:** Directional gain =  $2\text{dBi} + 10\log(2) = 5.01\text{dBi} < 6\text{dBi}$  , so the power density limit unnecessary to reduced.

## 4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 4.6.4 TEST PROCEDURE

#### MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW  $\geq$  300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



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## MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW  $\geq$  300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

### 4.6.7 TEST RESULTS

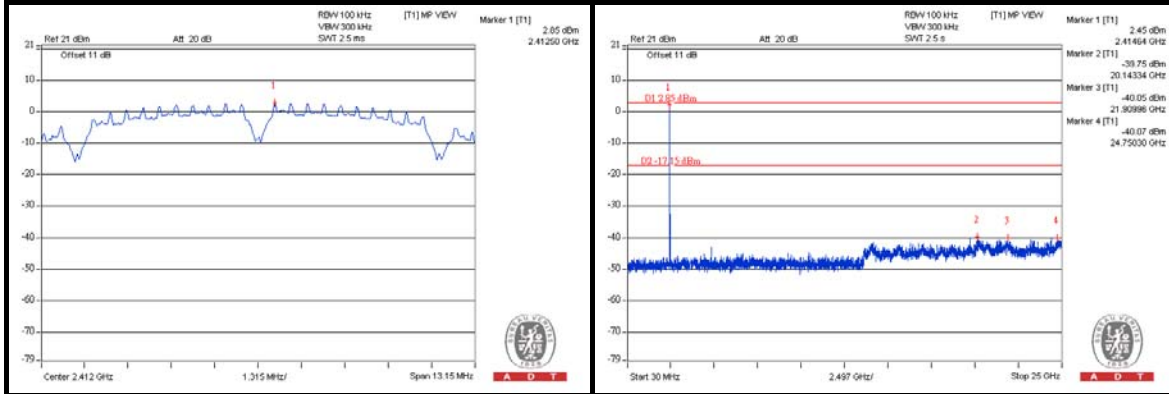
The conducted emission test is performed on each TX port of operating mode without summing or adding  $10\log(N)$  since the limit is relative emission limit. Only worst data of each operating mode is presented.

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

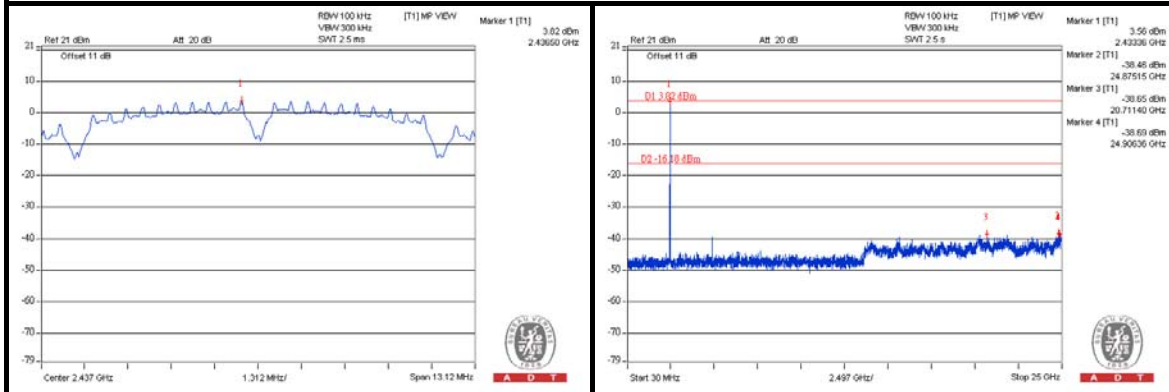
### 4.6.8 TEST RESULTS

#### 802.11b

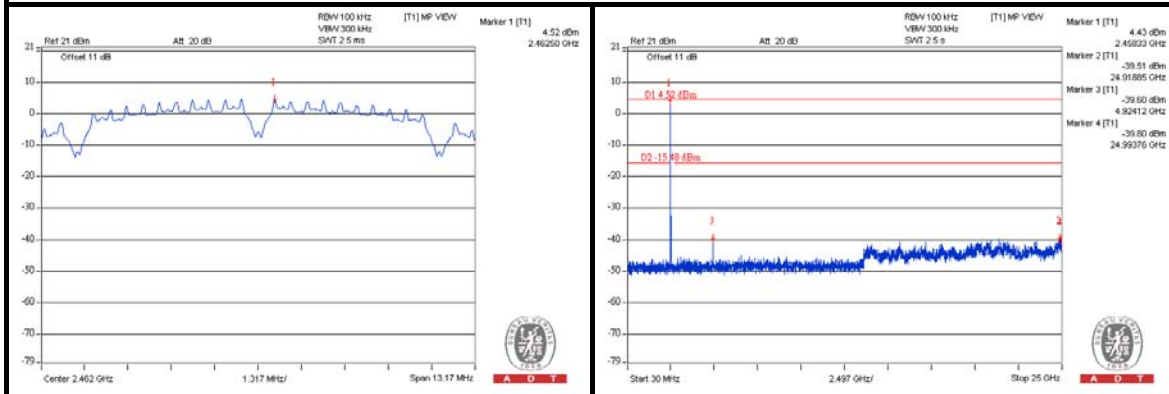
##### CH 1



##### CH 6



##### CH 11

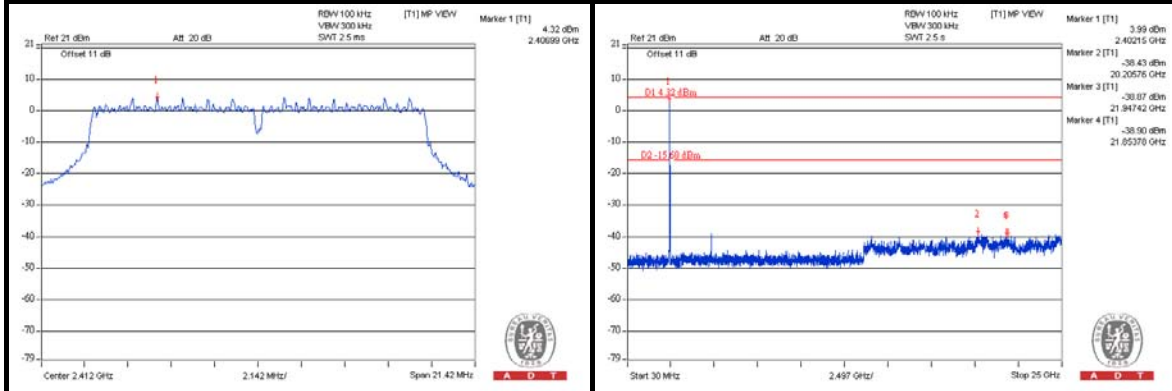




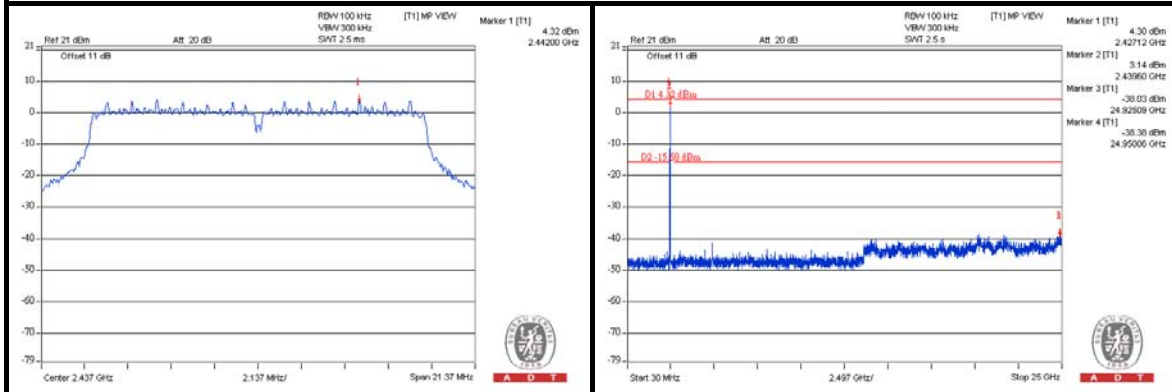
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### 802.11g

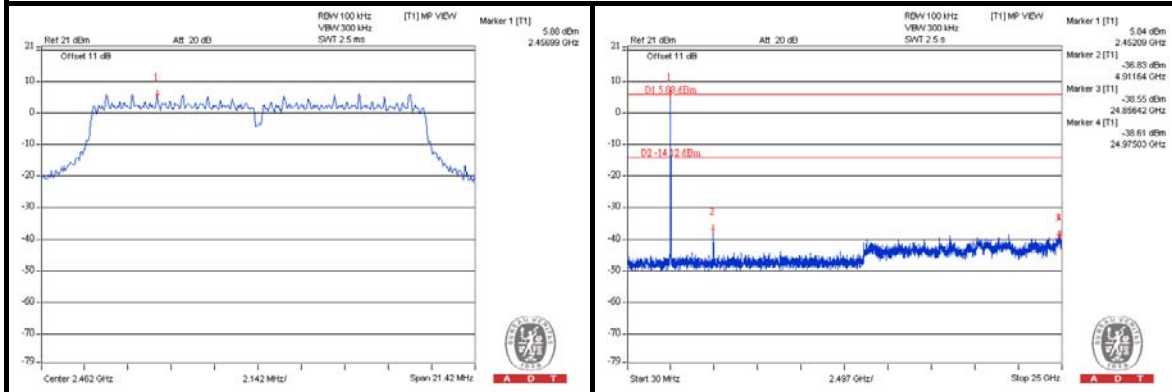
#### CH 1



#### CH 6

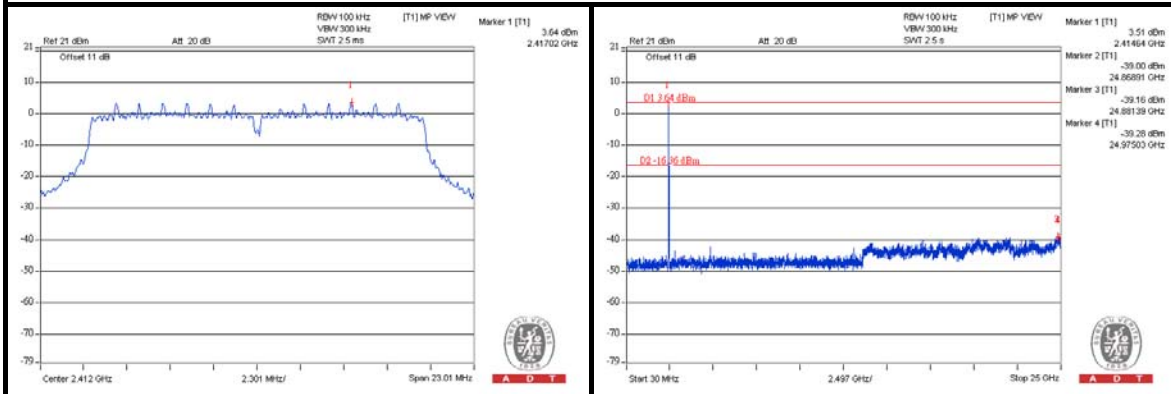


#### CH 11

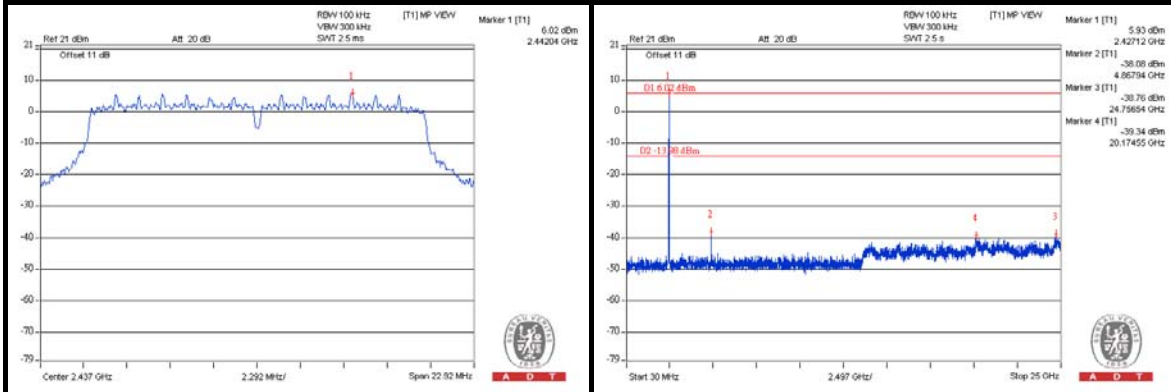


802.11n (20MHz)

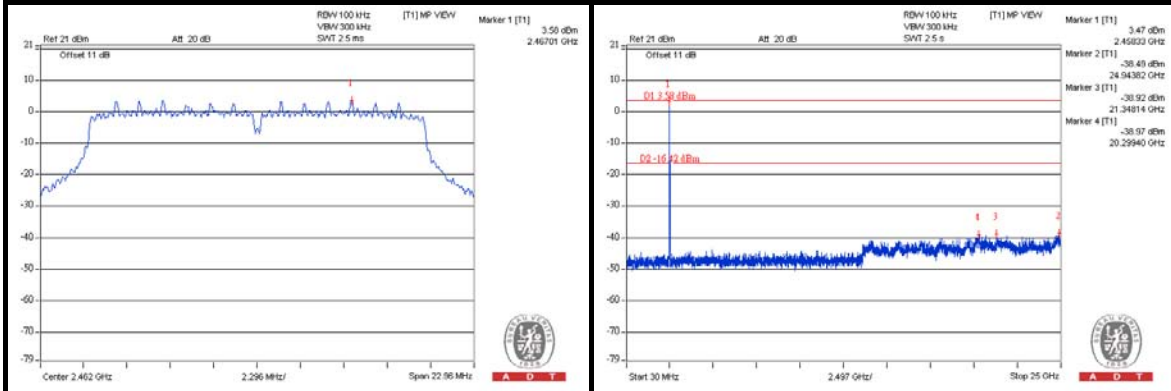
CH 1



CH 6



CH 11

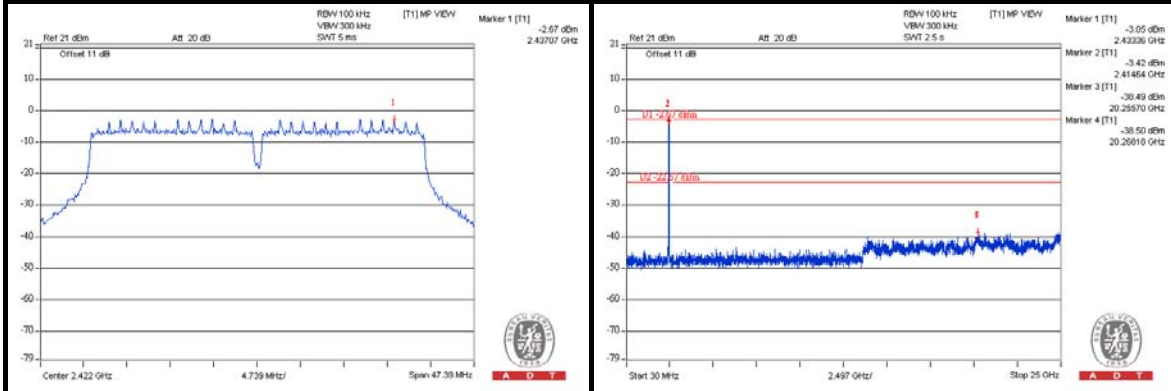




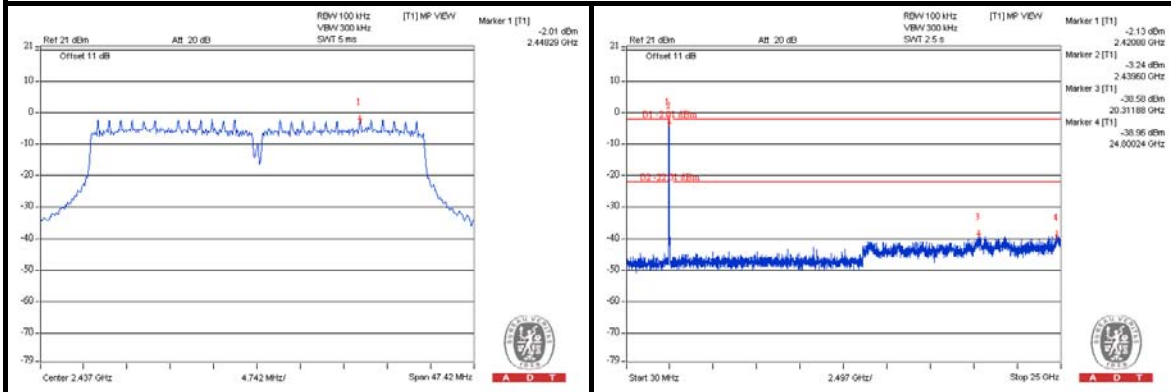
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### 802.11n (40MHz)

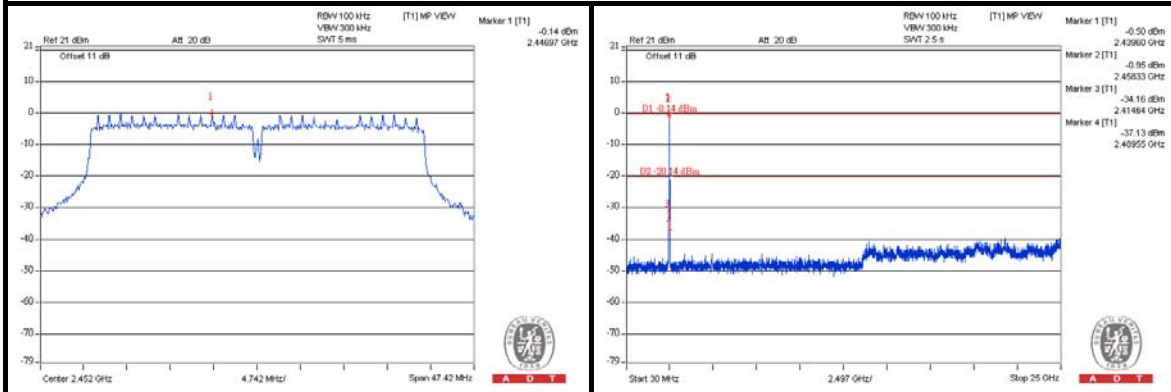
#### CH 3



#### CH 6



#### CH 9







## 5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

### 5.1 RADIATED EMISSION MEASUREMENT

#### 5.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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.



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### 5.1.2 TEST INSTRUMENTS

Same as item 4.1.2.

### 5.1.3 TEST PROCEDURES

Same as item 4.1.3.

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.1.5 TEST SETUP

Same as item 4.1.5.

### 5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



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## 5.1.7 TEST RESULTS

### 802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	87.2 PK	94.2	-7.0	1.00 H	246	48.50	38.70
2	#5725.00	76.7 AV	83.7	-7.0	1.00 H	246	38.00	38.70
3	*5745.00	114.2 PK			1.58 H	297	75.50	38.70
4	*5745.00	103.7 AV			1.58 H	297	65.00	38.70
5	11490.00	59.4 PK	74.0	-14.6	1.18 H	46	9.90	49.50
6	11490.00	46.7 AV	54.0	-7.3	1.18 H	46	-2.80	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	#5725.00	86.9 PK	96.9	-10.0	1.00 V	246	48.20	38.70
2	#5725.00	76.6 AV	85.7	-9.1	1.00 V	246	37.90	38.70
3	*5745.00	116.9 PK			1.83 V	257	78.20	38.70
4	*5745.00	105.7 AV			1.83 V	257	67.00	38.70
5	11490.00	63.4 PK	74.0	-10.6	1.41 V	360	13.90	49.50
6	11490.00	49.5 AV	54.0	-4.5	1.41 V	360	0.00	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 limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	114.1 PK			1.51 H	139	75.30	38.80
2	*5785.00	103.8 AV			1.51 H	139	65.00	38.80
3	11570.00	59.0 PK	74.0	-15.0	1.43 H	352	9.60	49.40
4	11570.00	46.0 AV	54.0	-8.0	1.43 H	352	-3.40	49.40
5	#17355.00	63.9 PK	94.1	-30.2	1.27 H	193	10.90	53.00
6	#17355.00	51.0 AV	83.8	-32.8	1.27 H	193	-2.00	53.00
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	*5785.00	114.2 PK			1.51 V	54	75.40	38.80
2	*5785.00	103.5 AV			1.51 V	54	64.70	38.80
3	11570.00	62.8 PK	74.0	-11.2	1.38 V	22	13.40	49.40
4	11570.00	49.5 AV	54.0	-4.5	1.38 V	22	0.10	49.40
5	#17355.00	65.7 PK	94.2	-28.5	1.00 V	360	12.70	53.00
6	#17355.00	53.0 AV	83.5	-30.5	1.00 V	360	0.00	53.00

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	114.9 PK			1.58 H	294	76.00	38.90
2	*5825.00	104.0 AV			1.58 H	294	65.10	38.90
3	#5850.00	86.2 PK	94.9	-8.7	1.68 H	76	47.30	38.90
4	#5850.00	75.3 AV	84.0	-8.7	1.68 H	76	36.40	38.90
5	11650.00	62.0 PK	74.0	-12.0	1.29 H	64	12.70	49.30
6	11650.00	48.9 AV	54.0	-5.1	1.29 H	64	-0.40	49.30
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	*5825.00	117.2 PK			1.82 V	57	78.30	38.90
2	*5825.00	106.6 AV			1.82 V	57	67.70	38.90
3	#5850.00	88.5 PK	97.2	-8.7	1.68 V	76	49.60	38.90
4	#5850.00	77.9 AV	86.6	-8.7	1.68 V	76	39.00	38.90
5	11650.00	65.5 PK	74.0	-8.5	1.31 V	102	16.20	49.30
6	11650.00	52.4 AV	54.0	-1.6	1.31 V	102	3.10	49.30

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



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### 802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	90.2 PK	94.2	-4.0	2.03 H	263	51.50	38.70
2	#5725.00	79.7 AV	83.7	-4.0	2.03 H	263	41.00	38.70
3	*5745.00	114.2 PK			1.58 H	294	75.50	38.70
4	*5745.00	103.7 AV			1.58 H	294	65.00	38.70
5	11490.00	59.0 PK	74.0	-15.0	1.39 H	300	9.50	49.50
6	11490.00	46.3 AV	54.0	-7.7	1.39 H	300	-3.20	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	#5725.00	90.5 PK	94.5	-4.0	2.03 V	263	51.80	38.70
2	#5725.00	80.5 AV	84.5	-4.0	2.03 V	263	41.80	38.70
3	*5745.00	114.5 PK			2.00 V	256	75.80	38.70
4	*5745.00	104.5 AV			2.30 V	252	65.80	38.70
5	11490.00	61.1 PK	74.0	-12.9	1.33 V	192	11.60	49.50
6	11490.00	49.1 AV	54.0	-4.9	1.33 V	192	-0.40	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 limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	113.4 PK			1.39 H	140	74.60	38.80
2	*5785.00	103.3 AV			1.39 H	140	64.50	38.80
3	11570.00	59.0 PK	74.0	-15.0	1.32 H	302	9.60	49.40
4	11570.00	46.5 AV	54.0	-7.5	1.32 H	302	-2.90	49.40
5	#17355.00	66.8 PK	93.4	-26.6	1.25 H	131	13.80	53.00
6	#17355.00	53.0 AV	83.3	-30.3	1.25 H	131	0.00	53.00
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	*5785.00	115.0 PK			1.53 V	59	76.20	38.80
2	*5785.00	104.8 AV			1.53 V	59	66.00	38.80
3	11570.00	62.4 PK	74.0	-11.6	1.05 V	193	13.00	49.40
4	11570.00	49.3 AV	54.0	-4.7	1.05 V	193	-0.10	49.40
5	#17355.00	65.3 PK	95.0	-29.7	1.00 V	19	12.30	53.00
6	#17355.00	53.0 AV	84.8	-31.8	1.00 V	19	0.00	53.00

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	112.6 PK			1.52 H	135	73.70	38.90
2	*5825.00	102.3 AV			1.52 H	135	63.40	38.90
3	#5850.00	78.6 PK	92.6	-14.0	1.78 H	50	39.70	38.90
4	#5850.00	68.3 AV	82.3	-14.0	1.78 H	50	29.40	38.90
5	11650.00	57.8 PK	74.0	-16.2	1.31 H	261	8.50	49.30
6	11650.00	45.2 AV	54.0	-8.8	1.31 H	261	-4.10	49.30
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	*5825.00	114.3 PK			1.60 V	58	75.40	38.90
2	*5825.00	104.4 AV			1.60 V	58	65.50	38.90
3	#5850.00	80.3 PK	94.3	-14.0	1.78 V	50	41.40	38.90
4	#5850.00	70.4 AV	84.4	-14.0	1.78 V	50	31.50	38.90
5	11650.00	65.5 PK	74.0	-8.5	1.33 V	100	16.20	49.30
6	11650.00	52.3 AV	54.0	-1.7	1.33 V	100	3.00	49.30

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ \* “: Fundamental frequency.
6. The limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.





A D T

802.11n (40MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5725.00	86.1 PK	89.1	-3.0	1.58 H	258	47.40	38.70
2	#5725.00	76.2 AV	79.2	-3.0	1.58 H	258	37.50	38.70
3	*5755.00	109.1 PK			1.58 H	296	70.40	38.70
4	*5755.00	99.2 AV			1.58 H	296	60.50	38.70
5	11510.00	58.9 PK	74.0	-15.1	1.27 H	296	9.40	49.50
6	11510.00	46.0 AV	54.0	-8.0	1.27 H	296	-3.50	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	#5725.00	87.1 PK	90.1	-3.0	1.58 V	258	48.40	38.70
2	#5725.00	77.2 AV	80.2	-3.0	1.58 V	258	38.50	38.70
3	*5755.00	110.1 PK			1.38 V	55	71.40	38.70
4	*5755.00	100.2 AV			1.38 V	55	61.50	38.70
5	11510.00	61.6 PK	74.0	-12.4	1.00 V	191	12.10	49.50
6	11510.00	48.1 AV	54.0	-5.9	1.00 V	191	-1.40	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 limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



A D T

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	111.8 PK			1.57 H	298	73.00	38.80
2	*5795.00	101.4 AV			1.57 H	298	62.60	38.80
3	#5850.00	78.6 PK	91.8	-13.2	1.51 H	52	39.70	38.90
4	#5850.00	70.2 AV	81.4	-11.2	1.51 H	52	31.30	38.90
5	11590.00	58.5 PK	74.0	-15.5	1.28 H	190	9.10	49.40
6	11590.00	46.1 AV	54.0	-7.9	1.28 H	190	-3.30	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	*5795.00	113.4 PK			1.56 V	60	74.60	38.80
2	*5795.00	102.9 AV			1.56 V	60	64.10	38.80
3	#5850.00	80.2 PK	93.4	-13.2	1.51 V	52	41.30	38.90
4	#5850.00	69.7 AV	82.9	-13.2	1.51 V	52	30.80	38.90
5	11590.00	61.2 PK	74.0	-12.8	1.03 V	189	11.80	49.40
6	11590.00	48.1 AV	54.0	-5.9	1.03 V	189	-1.30	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 limit value is defined as per 15.247.
7. "#":The radiated frequency is out the restricted band.



A D T

BELOW 1GHz WORST-CASE DATA : 802.11a

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	109.62	32.5 QP	43.5	-11.0	1.25 H	280	21.90	10.60
2	218.50	44.0 QP	46.0	-2.0	1.25 H	249	32.30	11.70
3	374.04	39.9 QP	46.0	-6.1	1.00 H	119	23.00	16.90
4	500.42	39.4 QP	46.0	-6.6	1.50 H	141	19.40	20.00
5	624.85	43.0 QP	46.0	-3.0	1.25 H	137	20.70	22.30
6	875.67	37.7 QP	46.0	-8.3	1.00 H	135	11.20	26.50
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	53.23	37.4 QP	40.0	-2.6	1.25 V	15	23.60	13.80
2	218.50	33.0 QP	46.0	-13.0	1.50 V	295	21.30	11.70
3	374.04	39.1 QP	46.0	-6.9	1.25 V	134	22.20	16.90
4	500.42	34.8 QP	46.0	-11.2	1.99 V	136	14.80	20.00
5	624.85	40.0 QP	46.0	-6.0	1.00 V	246	17.70	22.30
6	875.67	36.9 QP	46.0	-9.1	1.25 V	222	10.40	26.50

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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	48Vdc	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Chris Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	57.12	32.1 QP	40.0	-7.9	1.99 H	9	18.50	13.60
2	249.60	34.7 QP	46.0	-11.3	1.00 H	91	21.70	13.00
3	374.04	37.5 QP	46.0	-8.5	1.00 H	102	20.60	16.90
4	500.42	32.2 QP	46.0	-13.8	1.50 H	124	12.20	20.00
5	624.85	36.8 QP	46.0	-9.2	1.25 H	197	14.50	22.30
6	875.67	39.1 QP	46.0	-6.9	1.50 H	109	12.60	26.50
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	53.23	35.7 QP	40.0	-4.3	1.00 V	15	21.90	13.80
2	64.90	34.2 QP	40.0	-5.8	1.00 V	15	21.30	12.90
3	249.60	31.3 QP	46.0	-14.7	2.00 V	151	18.30	13.00
4	374.04	34.7 QP	46.0	-11.3	1.25 V	137	17.80	16.90
5	624.85	33.4 QP	46.0	-12.6	1.25 V	163	11.10	22.30
6	875.67	36.6 QP	46.0	-9.4	1.25 V	218	10.10	26.50

**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.

## 5.2 CONDUCTED EMISSION MEASUREMENT

### 5.2.1 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.

### 5.2.2 TEST INSTRUMENTS

Same as item 4.2.2.

### 5.2.3 TEST PROCEDURES

Same as item 4.2.3.

### 5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.2.5 TEST SETUP

Same as item 4.2.5.

### 5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6



A D T

## 5.2.7 TEST RESULTS

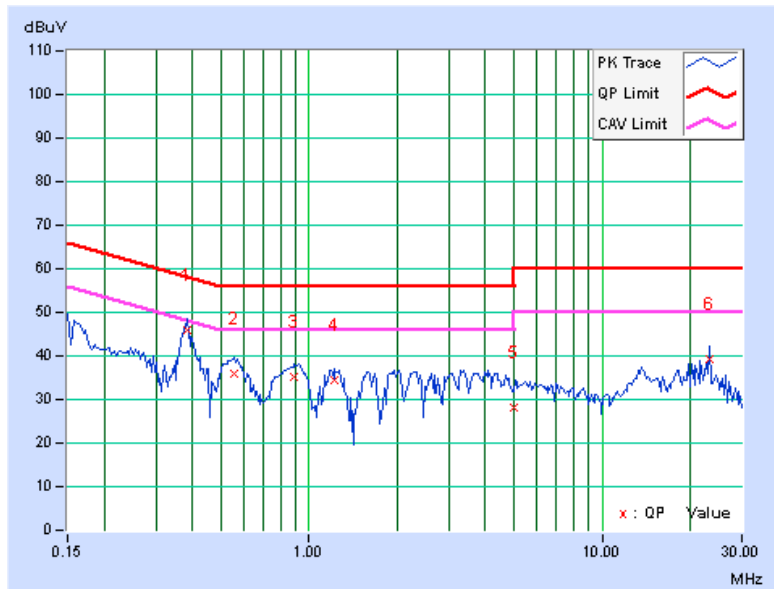
### CONDUCTED WORST-CASE DATA : 802.11a

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.38438	0.18	45.68	36.01	45.86	36.19	58.18
2	0.55625	0.19	35.79	24.85	35.98	25.04	56.00	46.00	-20.02	-20.96
3	0.89219	0.20	34.99	23.40	35.19	23.60	56.00	46.00	-20.81	-22.40
4	1.21875	0.23	34.11	22.34	34.34	22.57	56.00	46.00	-21.66	-23.43
5	5.00000	0.39	27.69	19.71	28.08	20.10	56.00	46.00	-27.92	-25.90
6	23.12891	0.69	38.54	35.50	39.23	36.19	60.00	50.00	-20.77	-13.81

#### 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.





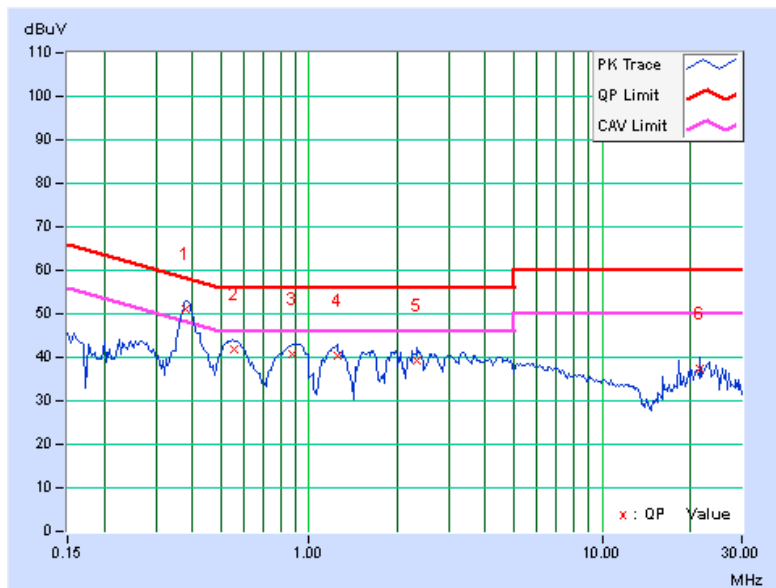
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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.38047	0.18	51.02	44.40	51.20	44.58	58.27	48.27	-7.07	-3.69
2	0.55234	0.19	41.61	34.42	41.80	34.61	56.00	46.00	-14.20	-11.39
3	0.88047	0.21	40.56	33.78	40.77	33.99	56.00	46.00	-15.23	-12.01
4	1.24609	0.24	40.10	33.72	40.34	33.96	56.00	46.00	-15.66	-12.04
5	2.33203	0.32	39.06	32.44	39.38	32.76	56.00	46.00	-16.62	-13.24
6	21.66406	0.78	36.77	32.62	37.55	33.40	60.00	50.00	-22.45	-16.60

**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.





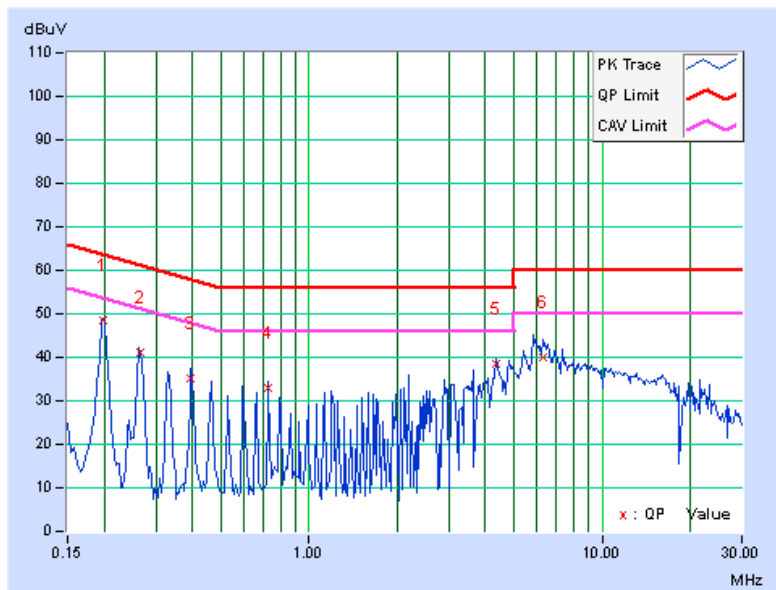
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PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.19942	0.18	48.22	37.95	48.40	38.13	63.63	53.63	-15.23
2	0.26456	0.18	41.11	31.13	41.29	31.31	61.29	51.29	-20.00	-19.98
3	0.39609	0.18	35.01	33.56	35.19	33.74	57.93	47.93	-22.74	-14.19
4	0.72940	0.20	32.63	29.79	32.83	29.99	56.00	46.00	-23.17	-16.01
5	4.37109	0.38	38.28	35.20	38.66	35.58	56.00	46.00	-17.34	-10.42
6	6.29297	0.42	39.70	38.04	40.12	38.46	60.00	50.00	-19.88	-11.54

**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.







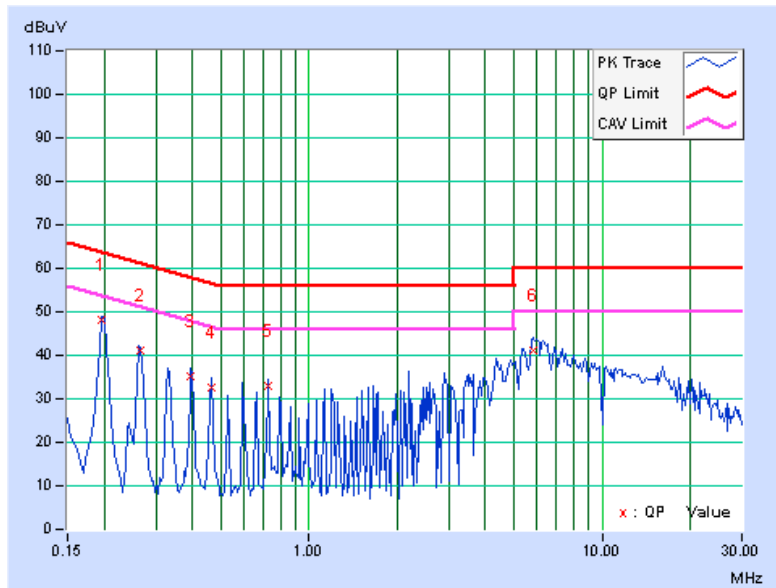
A D T

PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19687	0.15	48.09	37.72	48.24	37.87	63.74	53.74	-15.50	-15.87
2	0.26583	0.16	40.98	30.97	41.14	31.13	61.25	51.25	-20.11	-20.12
3	0.39609	0.18	35.07	33.52	35.25	33.70	57.93	47.93	-22.69	-14.24
4	0.46250	0.18	32.59	31.84	32.77	32.02	56.65	46.65	-23.87	-14.62
5	0.72813	0.20	32.90	30.04	33.10	30.24	56.00	46.00	-22.90	-15.76
6	5.83203	0.46	40.71	38.64	41.17	39.10	60.00	50.00	-18.83	-10.90

**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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### **5.3 6dB BANDWIDTH MEASUREMENT**

#### **5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT**

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

#### **5.3.2 TEST SETUP**

Same as item 4.3.2.

#### **5.3.3 TEST INSTRUMENTS**

Refer to section 4.1.2 to get information of above instrument.

#### **5.3.4 TEST PROCEDURE**

Same as item 4.3.4.

#### **5.3.5 DEVIATION FROM TEST STANDARD**

No deviation.

#### **5.3.6 EUT OPERATING CONDITIONS**

Same as item 4.3.6.



### 5.3.7 TEST RESULTS

#### 802.11a

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.14	15.33	0.5	PASS
157	5785	16.40	16.43	0.5	PASS
165	5825	15.16	16.43	0.5	PASS

#### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	17.64	17.62	0.5	PASS
157	5785	15.43	17.63	0.5	PASS
165	5825	17.35	15.11	0.5	PASS

#### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	36.04	35.85	0.5	PASS
159	5795	36.11	36.26	0.5	PASS



## 5.4 CONDUCTED OUTPUT POWER

### 5.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 5725 –5850 MHz bands: 1 Watt (30dBm)

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.

### 5.4.2 TEST SETUP

Same as Item 4.4.2.

### 5.4.3 INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 5.4.4 TEST PROCEDURES

Same as Item 4.4.4.

### 5.4.5 DEVIATION FROM TEST STANDARD

No deviation.

### 5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



## 5.4.7 TEST RESULTS

## 802.11a

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	23.26	22.84	404.145	<b>26.07</b>	30	PASS
157	5785	23.13	22.44	380.977	25.81	30	PASS
165	5825	23.58	22.41	402.215	26.04	30	PASS

## 802.11n (20MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
149	5745	23.28	22.79	402.922	26.05	30	PASS
157	5785	23.00	21.83	351.931	25.46	30	PASS
165	5825	23.32	22.50	392.611	25.94	30	PASS

## 802.11n (40MHz)

CHAN.	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
151	5755	22.67	21.19	316.449	25.00	30	PASS
159	5795	23.14	22.64	389.717	25.91	30	PASS



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## **5.5 POWER SPECTRAL DENSITY MEASUREMENT**

### **5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT**

The Maximum of Power Spectral Density Measurement is 8dBm.

### **5.5.2 TEST SETUP**

Same as item 4.5.2.

### **5.5.3 TEST INSTRUMENTS**

Refer to section 4.1.2 to get information of above instrument.

### **5.5.4 TEST PROCEDURE.**

Same as item 4.5.4.

### **5.5.5 DEVIATION FROM TEST STANDARD**

No deviation.

### **5.5.6 EUT OPERATING CONDITION**

Same as item 4.3.6.



### 5.5.7 TEST RESULTS

#### 802.11a

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-5.30	3.01	-2.29	6.99	PASS
	157	5785	-5.13	3.01	-2.12	6.99	PASS
	165	5825	-5.21	3.01	-2.20	6.99	PASS
1	149	5745	-4.56	3.01	-1.55	6.99	PASS
	157	5785	-6.45	3.01	-3.44	6.99	PASS
	165	5825	-5.90	3.01	-2.89	6.99	PASS

**NOTE:** Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

#### 802.11n (20MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	149	5745	-5.48	3.01	-2.47	6.99	PASS
	157	5785	-5.93	3.01	-2.92	6.99	PASS
	165	5825	-6.62	3.01	-3.61	6.99	PASS
1	149	5745	-5.29	3.01	-2.28	6.99	PASS
	157	5785	-5.02	3.01	-2.01	6.99	PASS
	165	5825	-6.01	3.01	-3.00	6.99	PASS

**NOTE:** Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.

#### 802.11n (40MHz)

TX chain	Channel	FREQ. (MHz)	PSD (dBm/3kHz)	10 log (N=3) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	151	5755	-10.06	3.01	-7.05	6.99	PASS
	159	5795	-8.03	3.01	-5.02	6.99	PASS
1	151	5755	-9.99	3.01	-6.98	6.99	PASS
	159	5795	-7.97	3.01	-4.96	6.99	PASS

**NOTE:** Directional gain = 4dBi + 10log(2) = 7.01dBi > 6dBi , so the power density limit shall be reduced to 8-(7.01-6) = 6.99dBm.



## 5.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

### 5.6.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 5.6.2 TEST SETUP

Same as Item 4.6.2

### 5.6.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

### 5.6.4 TEST PROCEDURE

Same as Item 4.6.4

### 5.6.5 DEVIATION FROM TEST STANDARD

No deviation.

### 5.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

### 5.6.7 TEST RESULTS

The conducted emission test is performed on each TX port of operating mode without summing or adding  $10\log(N)$  since the limit is relative emission limit. Only worst data of each operating mode is presented.

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

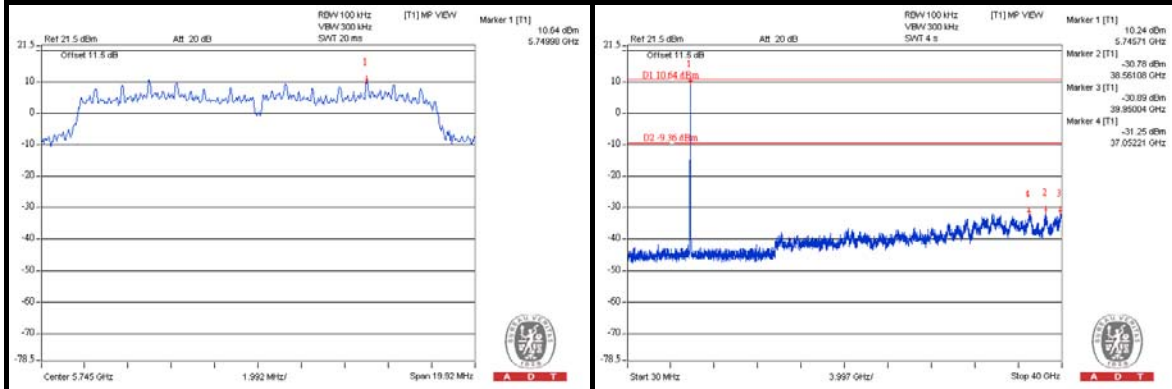




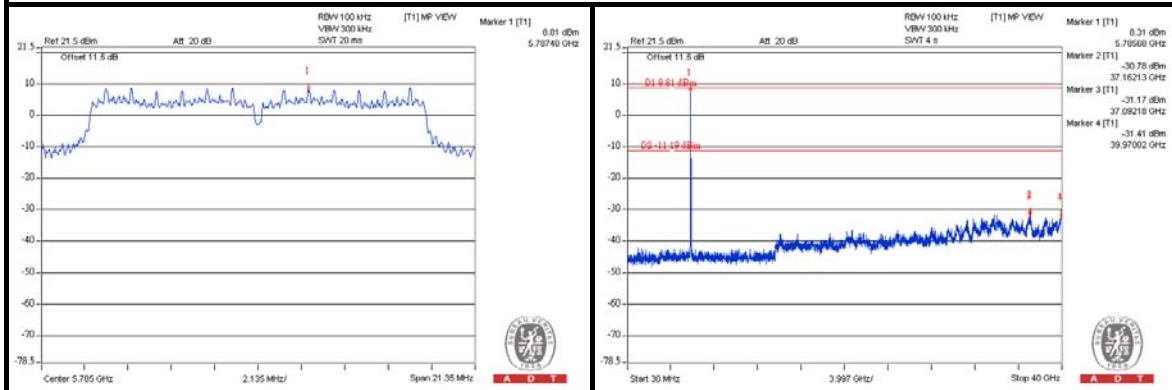
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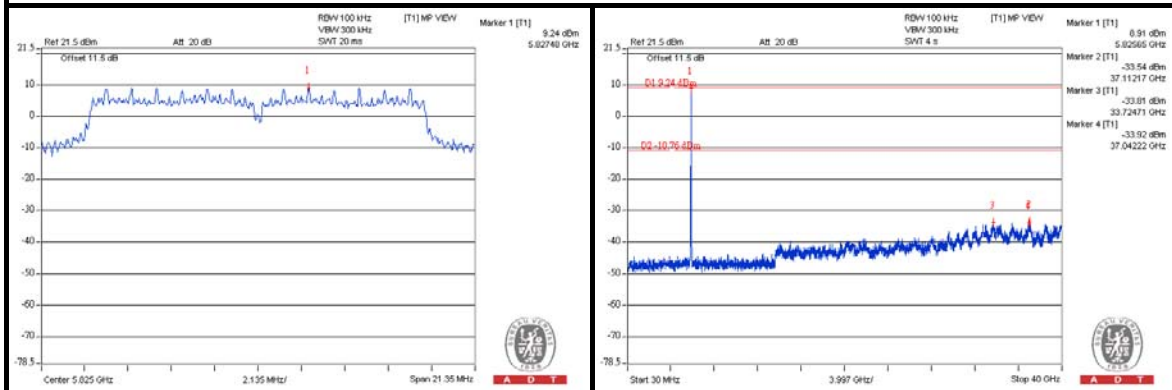
### CH 149



### CH 157



### CH 165

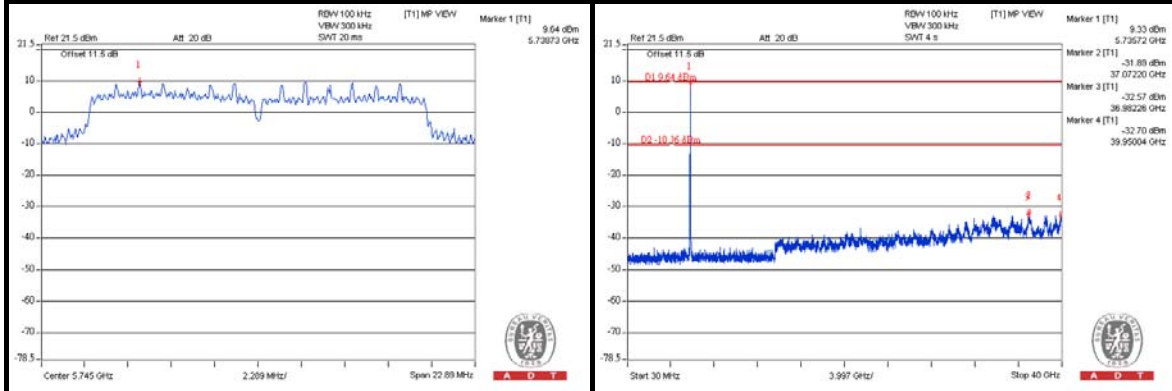




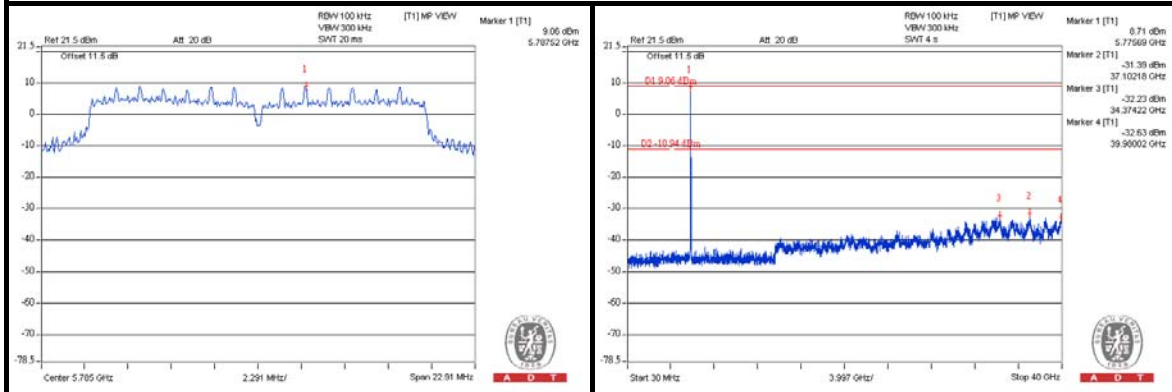
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### 802.11n (20MHz)

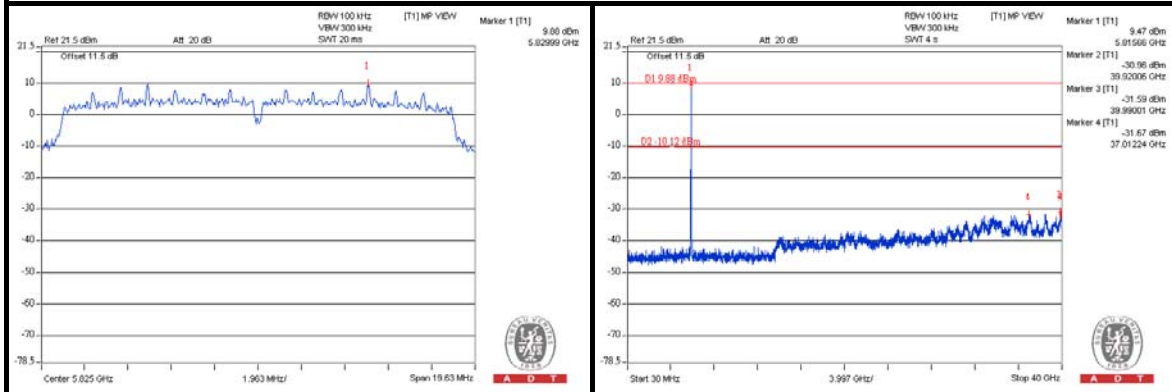
#### CH 149



#### CH 157



#### CH 165

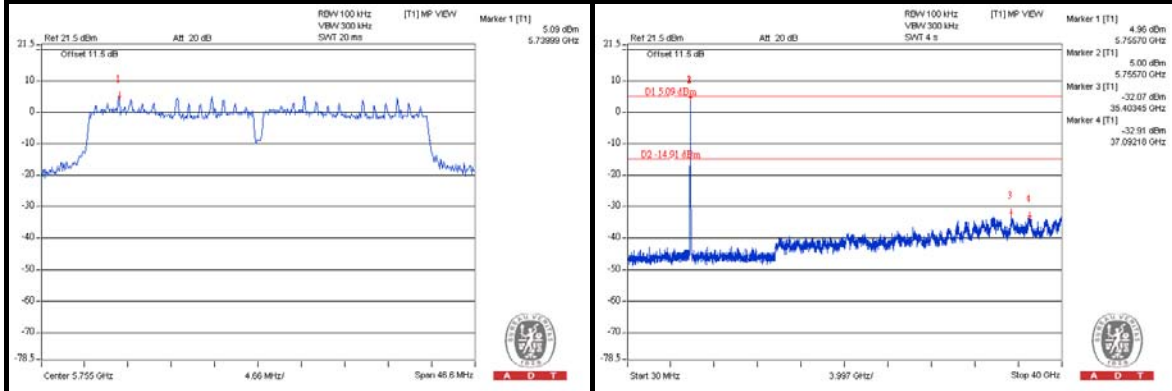




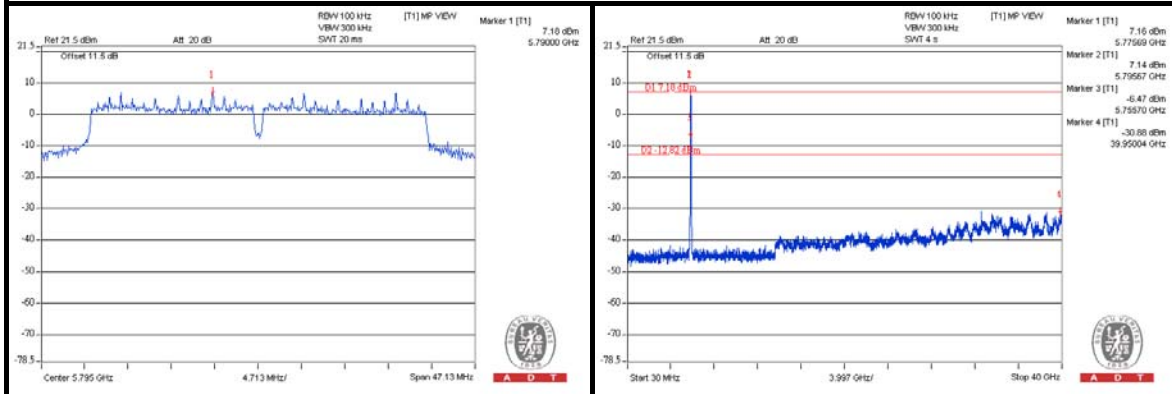
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### 802.11n (40MHz)

#### CH 151



#### CH 159





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## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 7. 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.



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## **8. 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---**