



A D T

# FCC TEST REPORT

**REPORT NO.:** RF120326C43  
**MODEL NO.:** WLN-2229, TEW-712BR  
**FCC ID:** NHPWLN2229  
**RECEIVED:** Mar. 19, 2012  
**TESTED:** Mar. 19 ~ Apr 10, 2012  
**ISSUED:** Apr. 12, 2012

**APPLICANT:** CAMEO COMMUNICATIONS, INC.

**ADDRESS:** No. 42, Sec. 6, Mincyuan E. Rd., Neihu District, Taipei City 114, Taiwan.

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

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

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

This test report consists of 53 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval or endorsement by TAF or any government agency. The test results in the report only apply to the tested sample.





# TABLE OF CONTENTS

RELEASE CONTROL RECORD .....	4
1. CERTIFICATION.....	5
2. SUMMARY OF TEST RESULTS .....	6
2.1 MEASUREMENT UNCERTAINTY .....	6
3. GENERAL INFORMATION.....	7
3.1 GENERAL DESCRIPTION OF EUT.....	7
3.2 DESCRIPTION OF TEST MODES.....	9
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	10
3.3 DESCRIPTION OF SUPPORT UNITS .....	12
3.3.1 CONFIGURATION OF SYSTEM UNDER TEST .....	13
3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	14
4. TEST TYPES AND RESULTS .....	15
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT .....	15
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT.....	15
4.1.2 TEST INSTRUMENTS.....	16
4.1.3 TEST PROCEDURES .....	17
4.1.4 DEVIATION FROM TEST STANDARD .....	17
4.1.5 TEST SETUP.....	18
4.1.6 EUT OPERATING CONDITIONS .....	18
4.1.7 TEST RESULTS .....	19
4.2 CONDUCTED EMISSION MEASUREMENT .....	33
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	33
4.2.2 TEST INSTRUMENTS.....	33
4.2.3 TEST PROCEDURES .....	34
4.2.4 DEVIATION FROM TEST STANDARD .....	34
4.2.5 TEST SETUP.....	34
4.2.6 EUT OPERATING CONDITIONS .....	34
4.2.7 TEST RESULTS .....	35
4.3 6dB BANDWIDTH MEASUREMENT .....	39
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	39
4.3.2 TEST SETUP.....	39
4.3.3 TEST INSTRUMENTS.....	39
4.3.4 TEST PROCEDURE.....	39
4.3.5 DEVIATION FROM TEST STANDARD .....	39
4.3.6 EUT OPERATING CONDITIONS .....	39
4.3.7 TEST RESULTS .....	40
4.4 CONDUCTED OUTPUT POWER .....	41
4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT .....	41
4.4.2 TEST SETUP.....	41
4.4.3 TEST INSTRUMENTS.....	41
4.4.4 TEST PROCEDURES .....	41
4.4.5 DEVIATION FROM TEST STANDARD .....	41
4.4.6 EUT OPERATING CONDITIONS .....	41
4.4.7 TEST RESULTS .....	42
4.5 POWER SPECTRAL DENSITY MEASUREMENT.....	43
4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT.....	43



A D T

4.5.2	TEST SETUP .....	43
4.5.3	TEST INSTRUMENTS.....	43
4.5.4	TEST PROCEDURE.....	43
4.5.5	DEVIATION FROM TEST STANDARD .....	43
4.5.6	EUT OPERATING CONDITION .....	43
4.5.7	TEST RESULTS .....	44
4.6	CONDUCTED OUT OF BAND EMISSION MEASUREMENT .....	45
4.6.1	LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT.....	45
4.6.2	TEST SETUP .....	45
4.6.3	TEST INSTRUMENTS.....	45
4.6.4	TEST PROCEDURE.....	45
4.6.5	DEVIATION FROM TEST STANDARD .....	46
4.6.6	EUT OPERATING CONDITION .....	46
4.6.7	TEST RESULTS .....	46
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION .....	51
6.	INFORMATION ON THE TESTING LABORATORIES.....	52
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	53



## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120326C43	Original release	Apr. 12, 2012



## 1. CERTIFICATION

**PRODUCT:** IEEE802.11n Wireless LAN Router  
**MODEL NO.:** WLN-2229, TEW-712BR  
**BRAND:** CAMEO, TRENDnet  
**APPLICANT:** CAMEO COMMUNICATIONS, INC.  
**TESTED:** Mar. 19 ~ Apr 10, 2012  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**STANDARDS:** **FCC Part 15, Subpart C (Section 15.247)**  
ANSI C63.10-2009

The above equipment (model: TEW-712BR) 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 : Evelyn Wu , DATE : Apr. 12, 2012  
Evelyn Wu / Specialist

APPROVED BY : Gary Chang , DATE : Apr. 12, 2012  
Gary Chang / Technical 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 -18.18dB at 0.19297MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 4874.00, 4924.00, 2390.00, 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	No antenna connector is used.

### 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	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	IEEE802.11n Wireless LAN Router
<b>MODEL NO.</b>	WLN-2229, TEW-712BR
<b>POWER SUPPLY</b>	5Vdc (adapter)
<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 802.11n: up to 150.0Mbps
<b>OPERATING FREQUENCY</b>	2412 ~ 2462MHz
<b>NUMBER OF CHANNEL</b>	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
<b>OUTPUT POWER</b>	238.8mW
<b>ANTENNA TYPE</b>	Dipole antenna with 2dBi gain
<b>ANTENNA CONNECTOR</b>	N/A
<b>DATA CABLE</b>	N/A
<b>I/O PORTS</b>	Refer to user's manual
<b>ACCESSORY DEVICES</b>	Adapter

**NOTE:**

1. The EUT provides one completed transmitter and one receiver.

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

2. Different model names and brands are used for marketing purpose only and there is no difference in electrical or mechanical configuration between the models.

BRAND	MODEL
CAMEO	WLN-2229
TRENDnet	TEW-712BR

\* Model TEW-712BR was selected as a representative model for final test.

3. The EUT consumes power from the following adapter.

ADAPTER 1	
<b>BRAND:</b>	AMIGO
<b>MODEL:</b>	AMS47-0501000FU
<b>INPUT:</b>	100-240Vac, 50/60Hz, 0.2A
<b>OUTPUT:</b>	5Vdc, 1.0A
<b>POWER LINE:</b>	1.5m non-shielded cable w/o core

ADAPTER 2	
<b>BRAND:</b>	SHENZHEN FRECOM ELECTRONICS
<b>MODEL:</b>	F05W-050100SPAU L.P.S
<b>INPUT:</b>	100-240Vac, 50/60Hz, 190mA
<b>OUTPUT:</b>	5Vdc, 1A
<b>POWER LINE:</b>	1.2m non-shielded cable w/o core

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





### 3.2 DESCRIPTION OF TEST MODES

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		

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adaptor 1
B	-	√	√	-	Power from adaptor 2

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

**NOTE:**  
The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.  
**NOTE:** "-" means no effect.

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

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

EUT CONFIGURE MODE	MODE	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 $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Anderson Hong Sun Lin
RE $<$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Sun Lin
PLC	25deg. C, 65%RH	120Vac, 60Hz	Anderson Hong
APCM	25deg. C, 65%RH	120Vac, 60Hz	Mark Liao

**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.

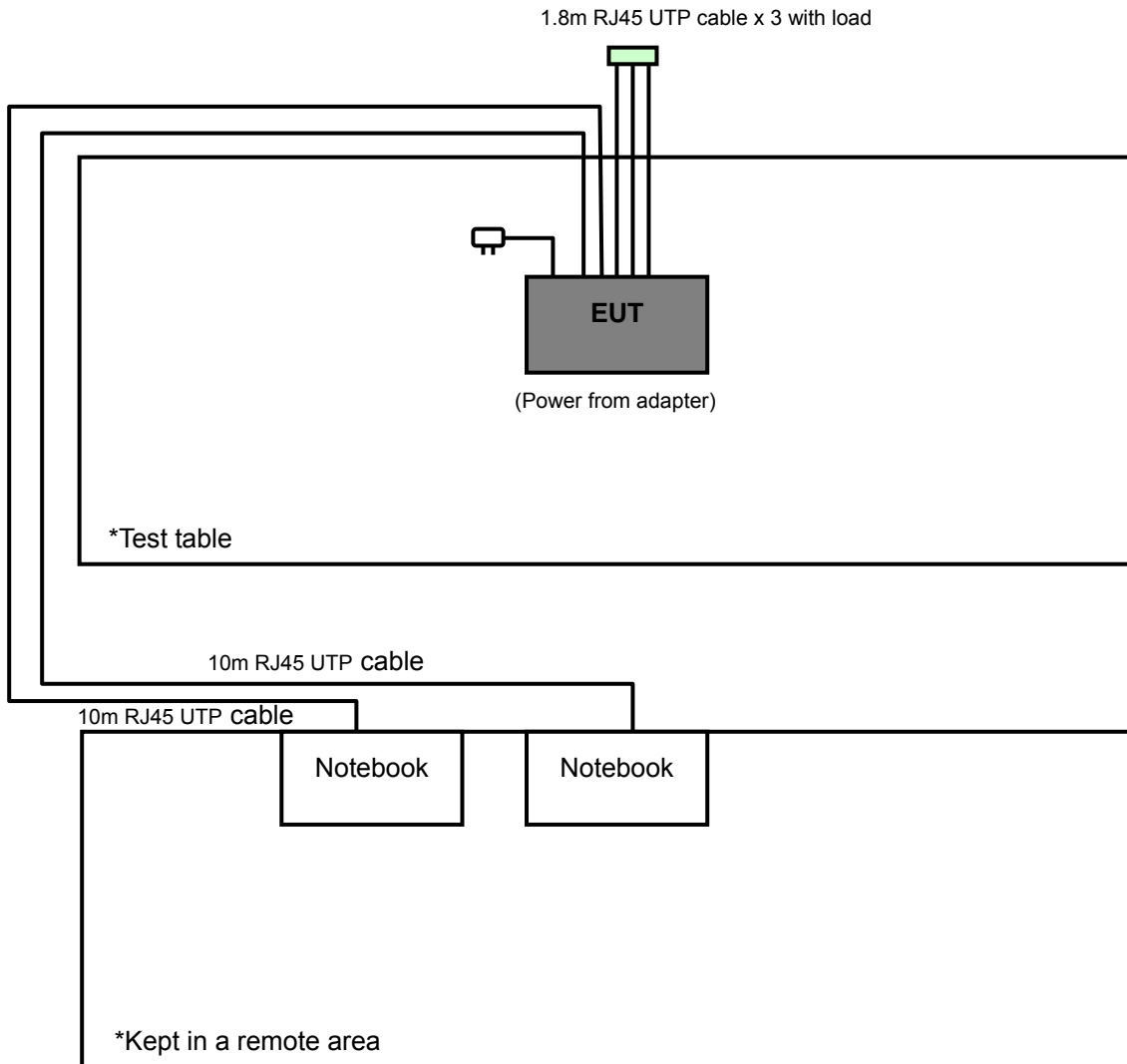
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	E5410	1HC2XM1	NA
2	NOTEBOOK	DELL	E5410	6RP2YM1	NA

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

**NOTE:**

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

### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST





### 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)**

ANSI C63.10-2009

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

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

## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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



#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 04, 2011	Aug. 03, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 20, 2011	Jul. 19, 2012
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2011	Apr. 18, 2012
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 04, 2011	Aug. 03, 2012
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 12, 2011	Apr. 11, 2012
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Sep. 06, 2011	Sep. 05, 2012
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	NA	NA	NA
High Speed Peak Power Meter	ML2495A	0842014	Apr. 26, 2011	Apr. 25, 2012
Power Sensor	MA2411B	0738404	Apr. 26, 2011	Apr. 25, 2012

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Chamber 9.
  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 460141.
  5. The IC Site Registration No. is IC 7450F-4.



#### 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. Height of receiving antenna 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.

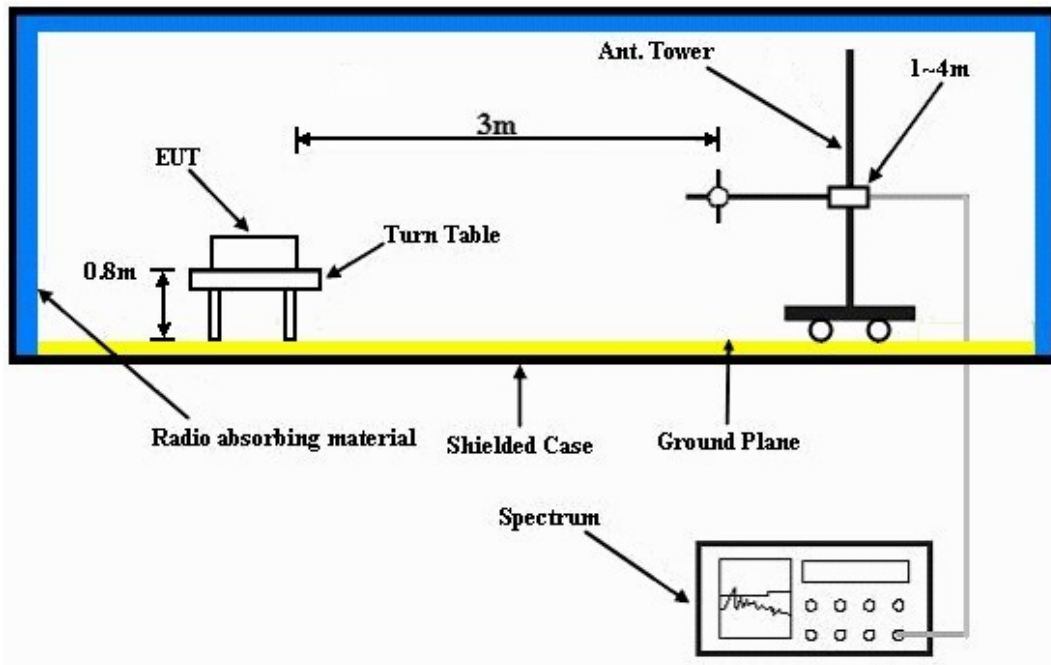
**NOTE:**

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 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz 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

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



A D T

### 4.1.7 TEST RESULTS

Above 1GHz: 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	Anderson Hong

#### 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	2326.00	57.3 PK	74.0	-16.7	1.00 H	181	26.20	31.10
2	2326.00	44.7 AV	54.0	-9.3	1.00 H	181	13.60	31.10
3	2376.00	58.1 PK	74.0	-15.9	1.09 H	222	26.80	31.30
4	2376.00	46.2 AV	54.0	-7.8	1.09 H	222	14.90	31.30
5	*2412.00	101.6 PK			1.08 H	223	70.20	31.40
6	*2412.00	97.5 AV			1.08 H	223	66.10	31.40
7	2498.00	59.4 PK	74.0	-14.6	1.31 H	223	27.60	31.80
8	2498.00	46.8 AV	54.0	-7.2	1.31 H	223	15.00	31.80
9	4824.00	53.3 PK	74.0	-20.7	1.53 H	46	15.80	37.50
10	4824.00	50.2 AV	54.0	-3.8	1.53 H	46	12.70	37.50

#### 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	2326.00	63.2 PK	74.0	-10.8	1.00 V	348	32.10	31.10
2	2326.00	49.0 AV	54.0	-5.0	1.00 V	348	17.90	31.10
3	2376.00	58.4 PK	74.0	-15.6	1.00 V	194	27.10	31.30
4	2376.00	47.9 AV	54.0	-6.1	1.00 V	194	16.60	31.30
5	*2412.00	105.7 PK			1.00 V	194	74.30	31.40
6	*2412.00	101.8 AV			1.00 V	194	70.40	31.40
7	2498.00	62.9 PK	74.0	-11.1	1.19 V	206	31.10	31.80
8	2498.00	49.8 AV	54.0	-4.2	1.19 V	206	18.00	31.80
9	4824.00	55.1 PK	74.0	-18.9	1.44 V	99	17.60	37.50
10	4824.00	52.9 AV	54.0	-1.1	1.44 V	99	15.40	37.50

#### 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.



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	Sun 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	2350.00	57.1 PK	74.0	-16.9	1.12 H	296	25.90	31.20
2	2350.00	46.0 AV	54.0	-8.0	1.12 H	296	14.80	31.20
3	*2437.00	100.0 PK			1.08 H	104	68.50	31.50
4	*2437.00	96.3 AV			1.08 H	104	64.80	31.50
5	4874.00	53.7 PK	74.0	-20.3	1.47 H	59	16.10	37.60
6	4874.00	50.5 AV	54.0	-3.5	1.47 H	59	12.90	37.60
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	2350.00	63.6 PK	74.0	-10.4	1.00 V	36	32.40	31.20
2	2350.00	49.4 AV	54.0	-4.6	1.00 V	36	18.20	31.20
3	*2437.00	104.5 PK			1.00 V	345	73.00	31.50
4	*2437.00	100.6 AV			1.00 V	345	69.10	31.50
5	4874.00	55.1 PK	74.0	-18.9	1.03 V	5	17.50	37.60
6	4874.00	53.0 AV	54.0	-1.0	1.03 V	5	15.40	37.60

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

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	2378.00	58.7 PK	74.0	-15.3	1.27 H	186	27.40	31.30
2	2378.00	45.6 AV	54.0	-8.4	1.27 H	186	14.30	31.30
3	*2462.00	101.9 PK			1.04 H	223	70.30	31.60
4	*2462.00	98.1 AV			1.04 H	223	66.50	31.60
5	2498.00	56.9 PK	74.0	-17.1	1.04 H	223	25.10	31.80
6	2498.00	45.6 AV	54.0	-8.4	1.04 H	223	13.80	31.80
7	4924.00	53.7 PK	74.0	-20.3	1.50 H	54	16.00	37.70
8	4924.00	50.7 AV	54.0	-3.3	1.50 H	54	13.00	37.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2378.00	63.7 PK	74.0	-10.3	1.00 V	193	32.40	31.30
2	2378.00	50.3 AV	54.0	-3.7	1.00 V	193	19.00	31.30
3	*2462.00	106.9 PK			1.00 V	198	75.30	31.60
4	*2462.00	103.0 AV			1.00 V	198	71.40	31.60
5	2498.00	57.5 PK	74.0	-16.5	1.00 V	198	25.70	31.80
6	2498.00	47.5 AV	54.0	-6.5	1.00 V	198	15.70	31.80
7	4924.00	55.4 PK	74.0	-18.6	1.21 V	349	17.70	37.70
8	4924.00	53.0 AV	54.0	-1.0	1.21 V	349	15.30	37.70

**REMARKS:**

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



A D T

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	Anderson Hong

**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	2326.00	58.1 PK	74.0	-15.9	1.00 H	190	27.00	31.10
2	2326.00	45.5 AV	54.0	-8.5	1.00 H	190	14.40	31.10
3	2390.00	66.8 PK	74.0	-7.2	1.08 H	221	35.40	31.40
4	2390.00	49.6 AV	54.0	-4.4	1.08 H	221	18.20	31.40
5	*2412.00	94.5 PK			1.08 H	221	63.10	31.40
6	*2412.00	84.2 AV			1.08 H	221	52.80	31.40
7	2498.00	58.8 PK	74.0	-15.2	1.32 H	220	27.00	31.80
8	2498.00	45.9 AV	54.0	-8.1	1.32 H	220	14.10	31.80
9	4824.00	46.8 PK	74.0	-27.2	1.50 H	44	9.30	37.50
10	4824.00	34.8 AV	54.0	-19.2	1.50 H	44	-2.70	37.50

**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	2326.00	60.7 PK	74.0	-13.3	1.00 V	180	29.60	31.10
2	2326.00	48.1 AV	54.0	-5.9	1.00 V	180	17.00	31.10
3	2390.00	70.9 PK	74.0	-3.1	1.00 V	198	39.50	31.40
4	2390.00	52.6 AV	54.0	-1.4	1.00 V	198	21.20	31.40
5	*2412.00	103.6 PK			1.00 V	198	72.20	31.40
6	*2412.00	92.8 AV			1.00 V	198	61.40	31.40
7	2498.00	61.3 PK	74.0	-12.7	1.19 V	205	29.50	31.80
8	2498.00	48.5 AV	54.0	-5.5	1.19 V	205	16.70	31.80
9	4924.00	49.5 PK	74.0	-24.5	1.43 V	99	11.80	37.70
10	4924.00	36.4 AV	54.0	-17.6	1.43 V	99	-1.30	37.70

**REMARKS:**

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



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	Anderson Hong

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	2354.00	56.9 PK	74.0	-17.1	1.01 H	193	25.70	31.20
2	2354.00	48.0 AV	54.0	-6.0	1.01 H	193	16.80	31.20
3	*2437.00	100.4 PK			1.00 H	348	68.90	31.50
4	*2437.00	89.3 AV			1.00 H	348	57.80	31.50
5	4874.00	56.4 PK	74.0	-17.6	1.56 H	228	18.80	37.60
6	4874.00	42.4 AV	54.0	-11.6	1.56 H	228	4.80	37.60
7	7311.00	51.9 PK	74.0	-22.1	1.05 H	56	8.20	43.70
8	7311.00	38.6 AV	54.0	-15.4	1.05 H	56	-5.10	43.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2354.00	63.7 PK	74.0	-10.3	1.00 V	31	32.50	31.20
2	2354.00	52.7 AV	54.0	-1.3	1.00 V	31	21.50	31.20
3	*2437.00	110.4 PK			1.00 V	12	78.90	31.50
4	*2437.00	99.7 AV			1.00 V	12	68.20	31.50
5	4874.00	61.4 PK	74.0	-12.6	1.02 V	8	23.80	37.60
6	4874.00	48.1 AV	54.0	-5.9	1.02 V	8	10.50	37.60
7	7311.00	55.6 PK	74.0	-18.4	1.00 V	22	11.90	43.70
8	7311.00	43.2 AV	54.0	-10.8	1.00 V	22	-0.50	43.70

**REMARKS:**

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



A D T

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	Anderson Hong

**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	2375.00	57.8 PK	74.0	-16.2	1.01 H	199	26.50	31.30
2	2375.00	45.3 AV	54.0	-8.7	1.01 H	199	14.00	31.30
3	*2462.00	93.8 PK			1.15 H	203	62.20	31.60
4	*2462.00	83.5 AV			1.15 H	203	51.90	31.60
5	2483.50	66.2 PK	74.0	-7.8	1.15 H	203	34.50	31.70
6	2483.50	49.2 AV	54.0	-4.8	1.15 H	203	17.50	31.70
7	4924.00	46.7 PK	74.0	-27.3	1.38 H	52	9.00	37.70
8	4924.00	34.5 AV	54.0	-19.5	1.38 H	52	-3.20	37.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2375.00	60.8 PK	74.0	-13.2	1.00 V	197	29.50	31.30
2	2375.00	49.1 AV	54.0	-4.9	1.00 V	197	17.80	31.30
3	*2462.00	104.1 PK			1.00 V	211	72.50	31.60
4	*2462.00	93.6 AV			1.00 V	211	62.00	31.60
5	2483.50	72.0 PK	74.0	-2.0	1.00 V	211	40.30	31.70
6	2483.50	52.8 AV	54.0	-1.2	1.00 V	211	21.10	31.70
7	4924.00	45.6 PK	74.0	-28.4	1.32 V	105	7.90	37.70
8	4924.00	34.3 AV	54.0	-19.7	1.32 V	105	-3.40	37.70

**REMARKS:**

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





A D T

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	Anderson Hong

**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	2331.00	57.8 PK	74.0	-16.2	1.32 H	47	26.60	31.20
2	2331.00	45.1 AV	54.0	-8.9	1.32 H	47	13.90	31.20
3	2390.00	66.1 PK	74.0	-7.9	1.01 H	198	34.70	31.40
4	2390.00	49.1 AV	54.0	-4.9	1.01 H	198	17.70	31.40
5	*2412.00	94.8 PK			1.01 H	198	63.40	31.40
6	*2412.00	84.3 AV			1.01 H	198	52.90	31.40
7	4824.00	46.5 PK	74.0	-27.5	1.43 H	58	9.00	37.50
8	4824.00	34.3 AV	54.0	-19.7	1.43 H	58	-3.20	37.50

**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	2331.00	60.7 PK	74.0	-13.3	1.07 V	205	29.50	31.20
2	2331.00	48.1 AV	54.0	-5.9	1.07 V	205	16.90	31.20
3	2390.00	68.0 PK	74.0	-6.0	1.00 V	171	36.60	31.40
4	<b>2390.00</b>	<b>53.0 AV</b>	<b>54.0</b>	<b>-1.0</b>	<b>1.00 V</b>	<b>171</b>	<b>21.60</b>	<b>31.40</b>
5	*2412.00	103.3 PK			1.00 V	171	71.90	31.40
6	*2412.00	93.2 AV			1.00 V	171	61.80	31.40
7	4824.00	48.7 PK	74.0	-25.3	1.03 V	286	11.20	37.50
8	4824.00	35.2 AV	54.0	-18.8	1.03 V	286	-2.30	37.50

**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.



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	Anderson Hong

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	2354.00	57.1 PK	74.0	-16.9	1.07 H	204	25.90	31.20
2	2354.00	47.9 AV	54.0	-6.1	1.07 H	204	16.70	31.20
3	*2437.00	100.2 PK			1.00 H	352	68.70	31.50
4	*2437.00	89.0 AV			1.00 H	352	57.50	31.50
5	4874.00	56.8 PK	74.0	-17.2	1.61 H	247	19.20	37.60
6	4874.00	42.7 AV	54.0	-11.3	1.61 H	247	5.10	37.60
7	7311.00	52.1 PK	74.0	-21.9	1.12 H	68	8.40	43.70
8	7311.00	38.9 AV	54.0	-15.1	1.12 H	68	-4.80	43.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2354.00	64.1 PK	74.0	-9.9	1.00 V	31	32.90	31.20
2	2354.00	52.5 AV	54.0	-1.5	1.00 V	31	21.30	31.20
3	*2437.00	110.2 PK			1.02 V	9	78.70	31.50
4	*2437.00	99.5 AV			1.02 V	9	68.00	31.50
5	4874.00	63.8 PK	74.0	-10.2	1.05 V	7	26.20	37.60
6	4874.00	49.4 AV	54.0	-4.6	1.05 V	7	11.80	37.60
7	7311.00	56.3 PK	74.0	-17.7	1.95 V	162	12.60	43.70
8	7311.00	43.1 AV	54.0	-10.9	1.95 V	162	-0.60	43.70

**REMARKS:**

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



A D T

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	Anderson Hong

**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	2375.00	57.3 PK	74.0	-16.7	1.02 H	182	26.00	31.30
2	2375.00	44.7 AV	54.0	-9.3	1.02 H	182	13.40	31.30
3	*2462.00	93.2 PK			1.18 H	189	61.60	31.60
4	*2462.00	82.8 AV			1.18 H	189	51.20	31.60
5	2483.50	65.8 PK	74.0	-8.2	1.18 H	189	34.10	31.70
6	2483.50	48.9 AV	54.0	-5.1	1.18 H	189	17.20	31.70
7	4924.00	46.9 PK	74.0	-27.1	1.32 H	45	9.20	37.70
8	4924.00	34.3 AV	54.0	-19.7	1.32 H	45	-3.40	37.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2375.00	60.5 PK	74.0	-13.5	1.02 V	207	29.20	31.30
2	2375.00	48.8 AV	54.0	-5.2	1.02 V	207	17.50	31.30
3	*2462.00	103.6 PK			1.00 V	214	72.00	31.60
4	*2462.00	92.7 AV			1.00 V	214	61.10	31.60
5	2483.50	70.2 PK	74.0	-3.8	1.00 V	214	38.50	31.70
<b>6</b>	<b>2483.50</b>	<b>53.0 AV</b>	<b>54.0</b>	<b>-1.0</b>	<b>1.00 V</b>	<b>214</b>	<b>21.30</b>	<b>31.70</b>
7	4924.00	45.8 PK	74.0	-28.2	1.36 V	122	8.10	37.70
8	4924.00	34.8 AV	54.0	-19.2	1.36 V	122	-2.90	37.70

**REMARKS:**

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



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	Anderson Hong

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	58.5 PK	74.0	-15.5	1.01 H	205	27.10	31.40
2	2390.00	45.8 AV	54.0	-8.2	1.01 H	205	14.40	31.40
3	*2422.00	90.2 PK			1.01 H	205	58.70	31.50
4	*2422.00	79.6 AV			1.01 H	205	48.10	31.50
5	4844.00	42.8 PK	74.0	-31.2	1.54 H	22	5.30	37.50
6	4844.00	33.1 AV	54.0	-20.9	1.54 H	22	-4.40	37.50
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	2390.00	68.3 PK	74.0	-5.7	1.00 V	198	36.90	31.40
2	2390.00	52.7 AV	54.0	-1.3	1.00 V	198	21.30	31.40
3	*2422.00	98.6 PK			1.00 V	198	67.10	31.50
4	*2422.00	87.9 AV			1.00 V	198	56.40	31.50
5	4844.00	43.4 PK	74.0	-30.6	1.48 V	102	5.90	37.50
6	4844.00	33.7 AV	54.0	-20.3	1.48 V	102	-3.80	37.50

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.



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	Anderson Hong

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	58.8 PK	74.0	-15.2	1.07 H	212	27.40	31.40
2	2390.00	45.6 AV	54.0	-8.4	1.07 H	212	14.20	31.40
3	*2437.00	94.1 PK			1.07 H	205	62.60	31.50
4	*2437.00	83.2 AV			1.07 H	205	51.70	31.50
5	2483.50	58.3 PK	74.0	-15.7	1.07 H	215	26.60	31.70
6	2483.50	45.3 AV	54.0	-8.7	1.07 H	215	13.60	31.70
7	4874.00	42.7 PK	74.0	-31.3	1.38 H	35	5.10	37.60
8	4874.00	32.8 AV	54.0	-21.2	1.38 H	35	-4.80	37.60
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	68.6 PK	74.0	-5.4	1.26 V	7	37.20	31.40
2	2390.00	52.7 AV	54.0	-1.3	1.26 V	7	21.30	31.40
3	*2437.00	101.6 PK			1.00 V	345	70.10	31.50
4	*2437.00	91.1 AV			1.00 V	345	59.60	31.50
5	2483.50	69.5 PK	74.0	-4.5	1.20 V	7	37.80	31.70
6	<b>2483.50</b>	<b>53.0 AV</b>	<b>54.0</b>	<b>-1.0</b>	<b>1.20 V</b>	<b>7</b>	<b>21.30</b>	<b>31.70</b>
7	4874.00	49.3 PK	74.0	-24.7	1.15 V	9	11.70	37.60
8	4874.00	35.3 AV	54.0	-18.7	1.15 V	9	-2.30	37.60

**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	Anderson Hong

**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	89.6 PK			1.00 H	196	58.00	31.60
2	*2452.00	78.7 AV			1.00 H	196	47.10	31.60
3	2483.50	58.2 PK	74.0	-15.8	1.00 H	196	26.50	31.70
4	2483.50	45.3 AV	54.0	-8.7	1.00 H	196	13.60	31.70
5	4904.00	43.2 PK	74.0	-30.8	1.47 H	25	5.60	37.60
6	4904.00	33.2 AV	54.0	-20.8	1.47 H	25	-4.40	37.60

**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	*2452.00	97.2 PK			1.00 V	212	65.60	31.60
2	*2452.00	86.9 AV			1.00 V	212	55.30	31.60
3	2483.50	70.3 PK	74.0	-3.7	1.00 V	212	38.60	31.70
<b>4</b>	<b>2483.50</b>	<b>53.0 AV</b>	<b>54.0</b>	<b>-1.0</b>	<b>1.00 V</b>	<b>212</b>	<b>21.30</b>	<b>31.70</b>
5	4904.00	43.7 PK	74.0	-30.3	1.38 V	89	6.10	37.60
6	4904.00	33.6 AV	54.0	-20.4	1.38 V	89	-4.00	37.60

**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

## 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	Anderson Hong
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.06	32.9 QP	43.5	-10.6	1.50 H	106	20.60	12.30
2	249.22	33.4 QP	46.0	-12.6	1.25 H	292	20.40	13.00
3	375.32	34.7 QP	46.0	-11.3	1.00 H	324	17.90	16.80
4	400.54	37.5 QP	46.0	-8.5	1.00 H	122	20.00	17.50
5	499.48	36.6 QP	46.0	-9.4	1.50 H	328	16.50	20.10
6	600.36	38.3 QP	46.0	-7.7	1.50 H	177	15.90	22.40
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	33.04	36.7 QP	40.0	-3.3	1.15 V	99	24.50	12.20
2	125.06	37.2 QP	43.5	-6.3	1.25 V	8	24.90	12.30
3	249.22	32.4 QP	46.0	-13.6	2.00 V	10	19.40	13.00
4	375.32	36.1 QP	46.0	-9.9	1.25 V	328	19.30	16.80
5	400.54	36.9 QP	46.0	-9.1	1.25 V	38	19.40	17.50
6	499.48	37.1 QP	46.0	-8.9	1.25 V	8	17.00	20.10

## REMARKS:

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



A D T

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	Sun 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	55.27	36.7 QP	40.0	-3.3	1.01 H	217	23.00	13.70
2	94.15	39.8 QP	43.5	-3.7	2.50 H	190	31.00	8.80
3	135.12	37.3 QP	43.5	-6.2	1.92 H	258	24.10	13.20
4	168.02	37.2 QP	43.5	-6.3	1.50 H	165	23.60	13.60
5	601.50	41.5 QP	46.0	-4.5	1.47 H	38	19.10	22.40
6	898.92	41.3 QP	46.0	-4.7	1.25 H	151	15.10	26.20
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	55.59	35.8 QP	40.0	-4.2	1.05 V	47	22.10	13.70
2	64.99	36.2 QP	40.0	-3.8	1.25 V	225	23.30	12.90
3	121.36	38.1 QP	43.5	-5.4	1.00 V	109	26.10	12.00
4	166.07	37.8 QP	43.5	-5.7	1.00 V	292	24.10	13.70
5	401.28	37.5 QP	46.0	-8.5	1.50 V	283	20.00	17.50
6	601.50	42.5 QP	46.0	-3.5	1.50 V	133	20.10	22.40

**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.





## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 19, 2011	Nov. 18, 2012
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 22, 2011	Dec. 21, 2012
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 30, 2011	Dec. 29, 2012
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jul. 07, 2011	Jul. 06, 2012
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jun. 30, 2011	Jun. 29, 2012
LISN ROHDE & SCHWARZ	ENV216	100072	Jun. 10, 2011	Jun. 09, 2012
Software ADT	ADT_Cond_ V7.3.7	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

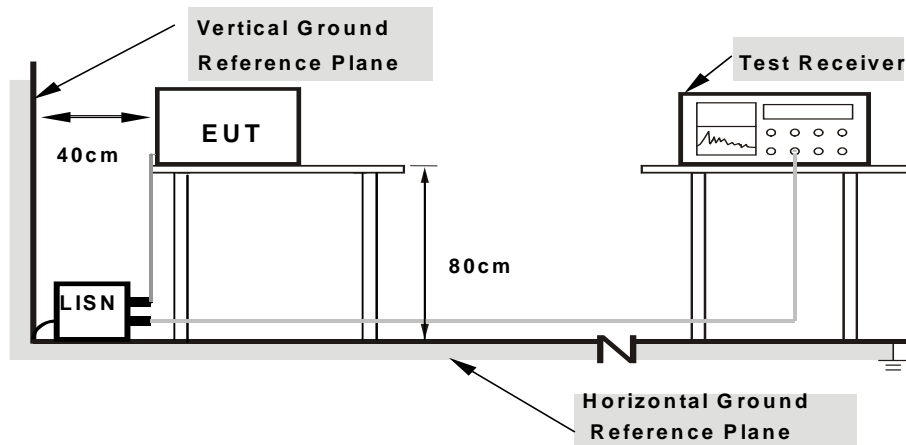
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

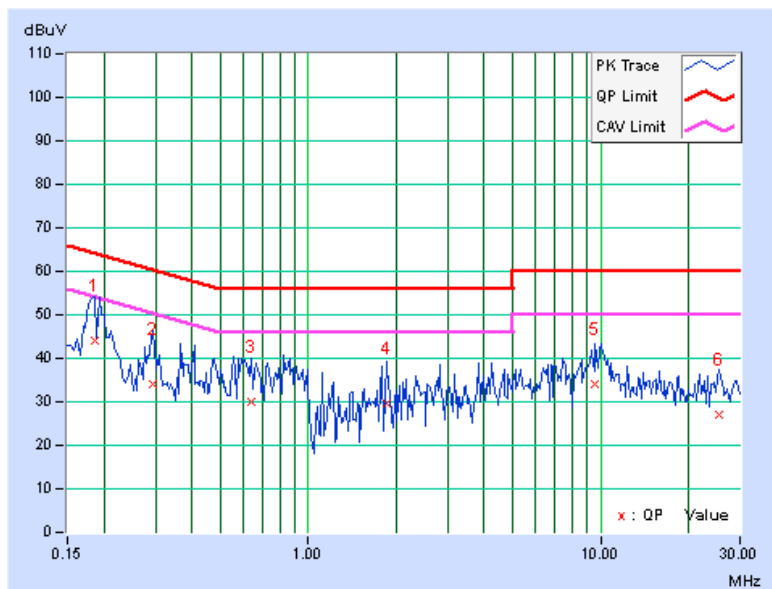
**CONDUCTED WORST-CASE DATA : 802.11n (20MHz)**

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	0.18516	0.15	43.98	22.88	44.13	23.03	64.25	54.25	-20.12	-31.22
2	0.29453	0.16	34.03	16.38	34.19	16.54	60.40	50.40	-26.21	-33.86
3	0.64219	0.18	29.87	13.88	30.05	14.06	56.00	46.00	-25.95	-31.94
4	1.84766	0.25	29.51	15.72	29.76	15.97	56.00	46.00	-26.24	-30.03
5	9.62109	0.42	33.81	21.55	34.23	21.97	60.00	50.00	-25.77	-28.03
6	25.32031	0.58	26.46	12.21	27.04	12.79	60.00	50.00	-32.96	-37.21

**REMARKS:**

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

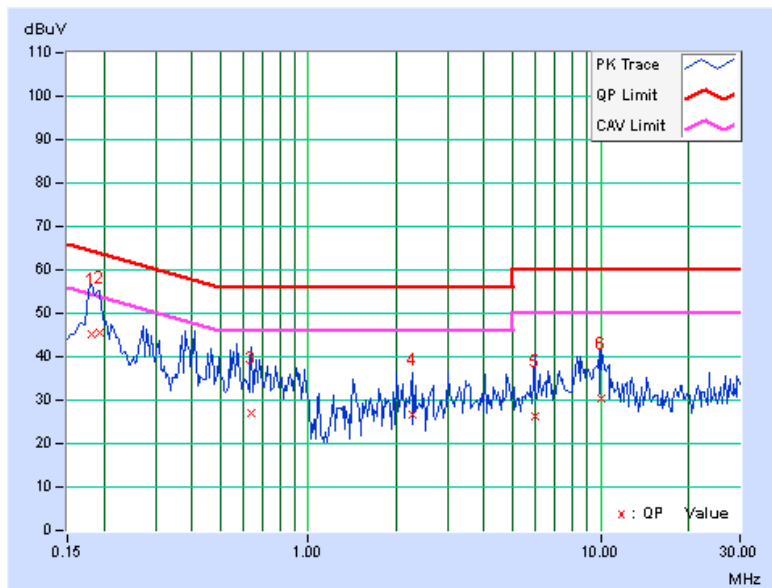


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. [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	0.18125	0.14	45.22	23.18	45.36	23.32	64.43	54.43	-19.07	-31.11
<b>2</b>	<b>0.19297</b>	<b>0.14</b>	<b>45.59</b>	<b>23.34</b>	<b>45.73</b>	<b>23.48</b>	<b>63.91</b>	<b>53.91</b>	<b>-18.18</b>	<b>-30.43</b>
3	0.64219	0.17	26.74	10.24	26.91	10.41	56.00	46.00	-29.09	-35.59
4	2.26563	0.27	26.51	12.26	26.78	12.53	56.00	46.00	-29.22	-33.47
5	5.94141	0.39	25.94	11.31	26.33	11.70	60.00	50.00	-33.67	-38.30
6	10.01563	0.48	29.72	16.20	30.20	16.68	60.00	50.00	-29.80	-33.32

**REMARKS:**

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

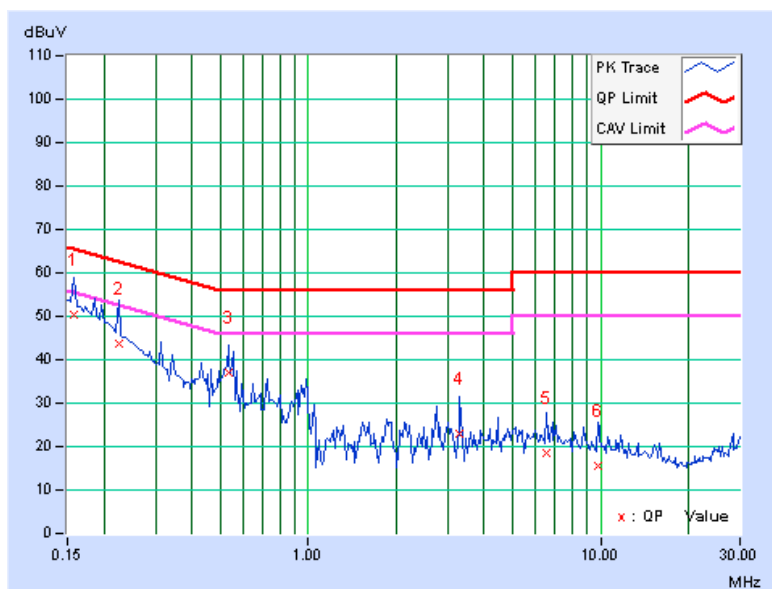


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq. [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	0.15781	0.15	50.26	35.73	50.41	35.88	65.58	55.58	-15.17	-19.70
2	0.22422	0.15	43.47	28.71	43.62	28.86	62.66	52.66	-19.04	-23.80
3	0.53281	0.17	36.91	30.22	37.08	30.39	56.00	46.00	-18.92	-15.61
4	3.30078	0.31	22.81	13.44	23.12	13.75	56.00	46.00	-32.88	-32.25
5	6.50391	0.38	18.03	10.07	18.41	10.45	60.00	50.00	-41.59	-39.55
6	9.83594	0.43	15.09	7.92	15.52	8.35	60.00	50.00	-44.48	-41.65

**REMARKS:**

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

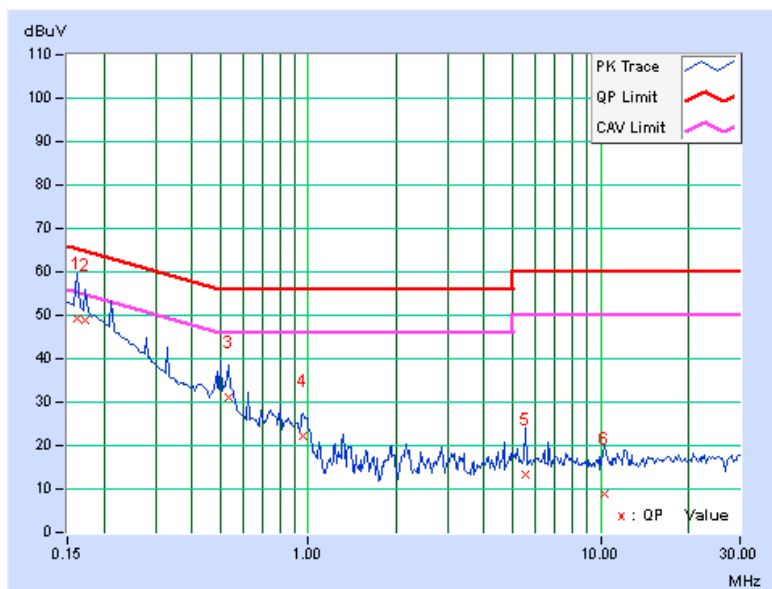


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

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	0.16172	0.13	49.27	34.14	49.40	34.27	65.38
2	0.17344	0.13	48.63	33.13	48.76	33.26	64.79	54.79	-16.03	-21.53
3	0.53281	0.17	30.87	21.44	31.04	21.61	56.00	46.00	-24.96	-24.39
4	0.96250	0.19	22.06	12.41	22.25	12.60	56.00	46.00	-33.75	-33.40
5	5.53125	0.38	12.83	2.19	13.21	2.57	60.00	50.00	-46.79	-47.43
6	10.26563	0.49	8.33	0.89	8.82	1.38	60.00	50.00	-51.18	-48.62

**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.

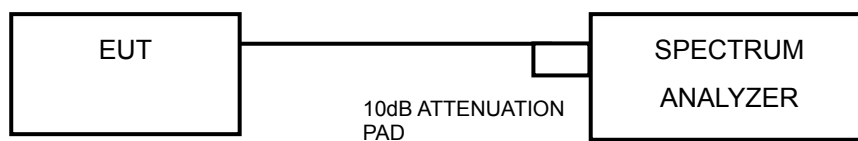


### 4.3 6dB BANDWIDTH MEASUREMENT

#### 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

- a. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
- b. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. 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
1	2412	10.30	0.5	PASS
6	2437	10.29	0.5	PASS
11	2462	10.30	0.5	PASS

#### 802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.59	0.5	PASS
6	2437	16.55	0.5	PASS
11	2462	16.56	0.5	PASS

#### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.74	0.5	PASS
6	2437	17.80	0.5	PASS
11	2462	17.76	0.5	PASS

#### 802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.91	0.5	PASS
6	2437	36.67	0.5	PASS
9	2452	36.64	0.5	PASS

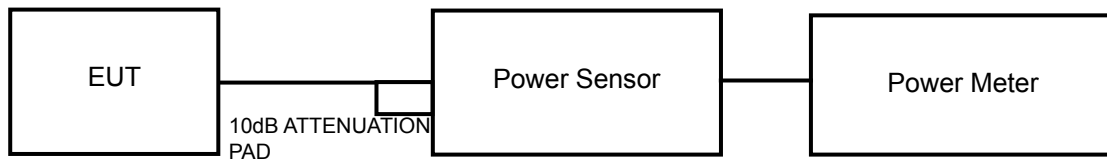


## 4.4 CONDUCTED OUTPUT POWER

### 4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

### 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.

### 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

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	50.2	17.01	30	PASS
6	2437	42.2	16.25	30	PASS
11	2462	54.0	17.32	30	PASS

##### 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	95.1	19.57	30	PASS
6	2437	224.4	23.51	30	PASS
11	2462	117.8	20.71	30	PASS

##### 802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	93.8	19.72	30	PASS
6	2437	238.8	23.78	30	PASS
11	2462	89.9	19.54	30	PASS

##### 802.11n (40MHz)

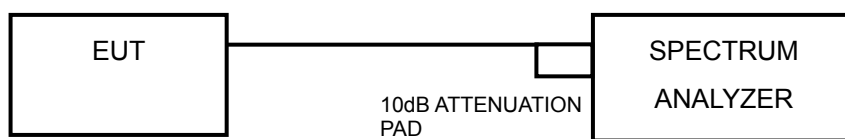
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	63.8	18.05	30	PASS
6	2437	116.7	20.67	30	PASS
9	2452	64.1	18.07	30	PASS

## 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

- a. Set the RBW = 100 kHz, VBW =300 kHz, Detector = peak.
- b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- c. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- d. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3 \text{ kHz}/100\text{kHz})$

### 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

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	5.12	-10.11	8	PASS
6	2437	4.53	-10.7	8	PASS
11	2462	5.64	-9.95	8	PASS

### 802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	0.80	-14.43	8	PASS
6	2437	4.63	-10.6	8	PASS
11	2462	1.85	-13.38	8	PASS

### 802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	1.29	-13.94	8	PASS
6	2437	5.18	-10.05	8	PASS
11	2462	1.05	-14.18	8	PASS

### 802.11n (40MHz)

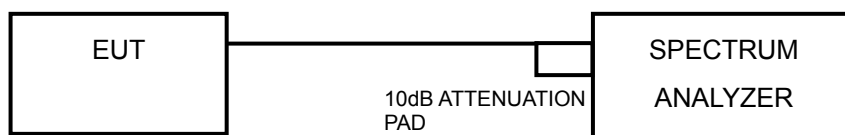
Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-4.80	-20.03	8	PASS
6	2437	-2.09	-17.32	8	PASS
9	2452	-4.78	-20.01	8	PASS

## 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.

## 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

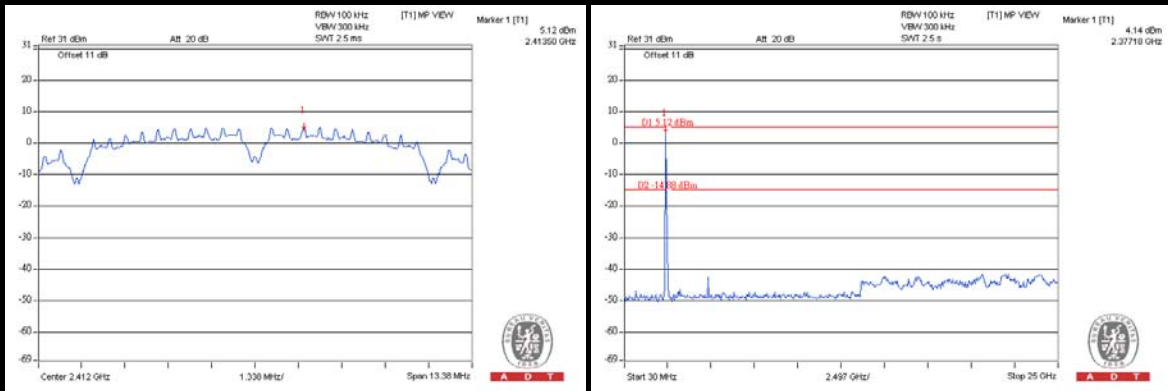
Same as Item 4.3.6

### 4.6.7 TEST RESULTS

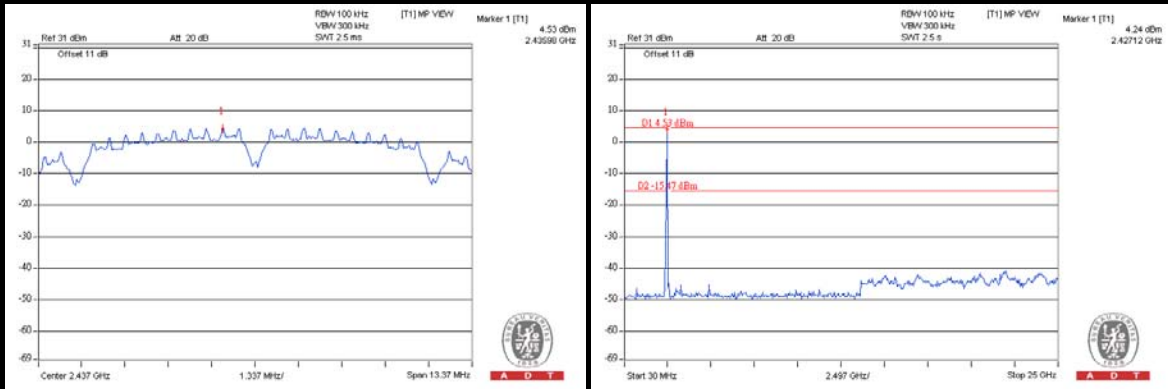
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

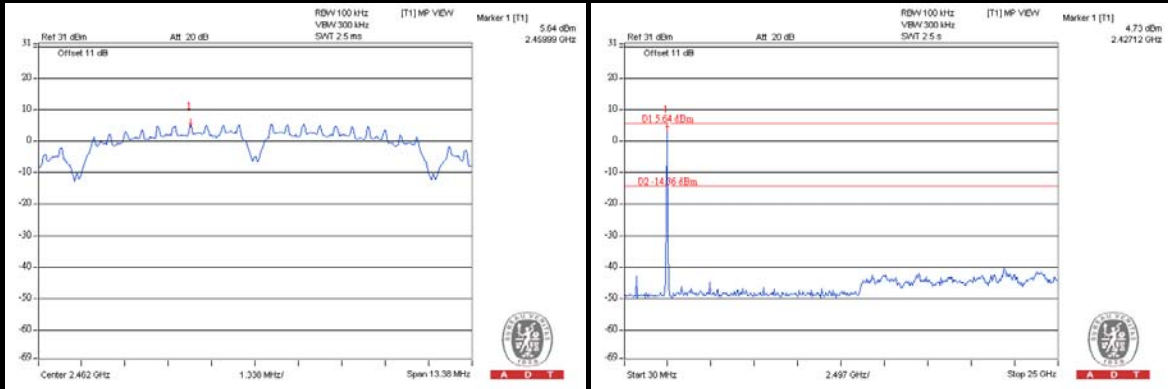
CH 1



CH 6

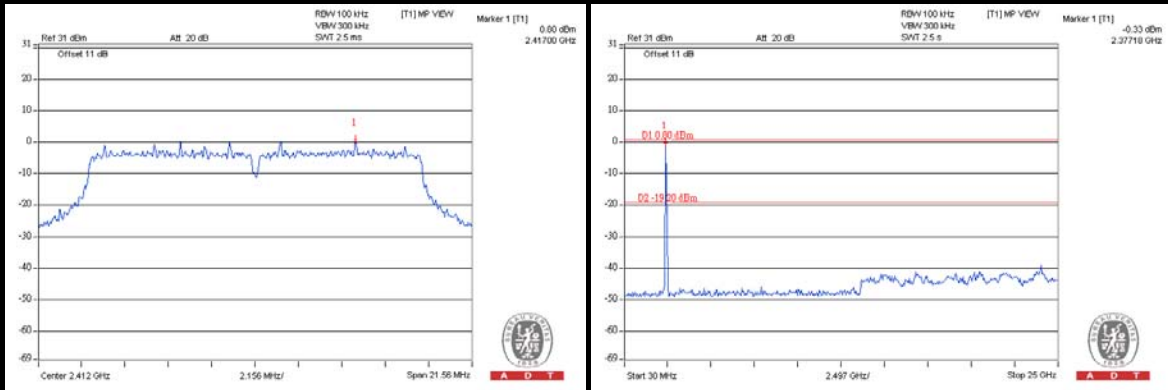


CH 11

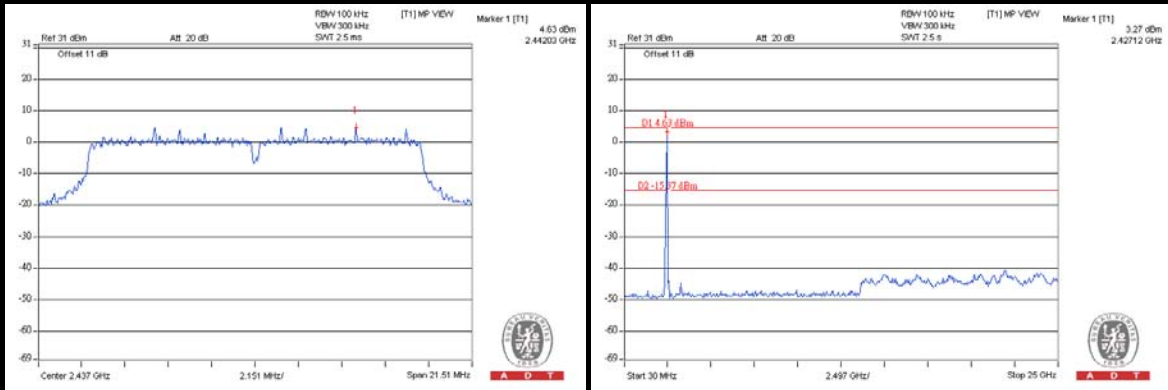


802.11g

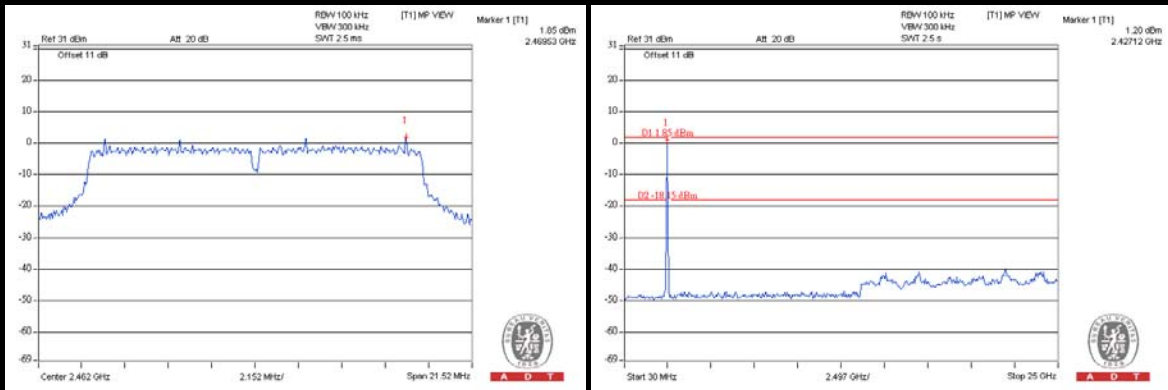
CH 1



CH 6



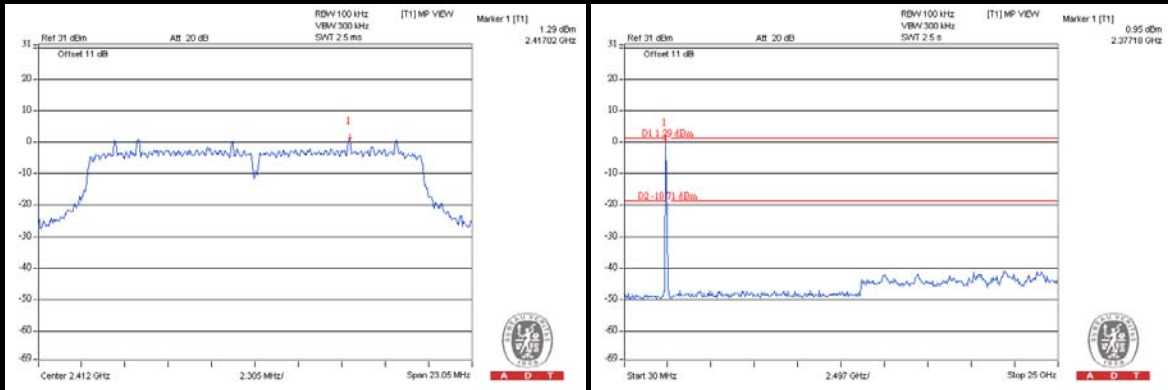
CH 11



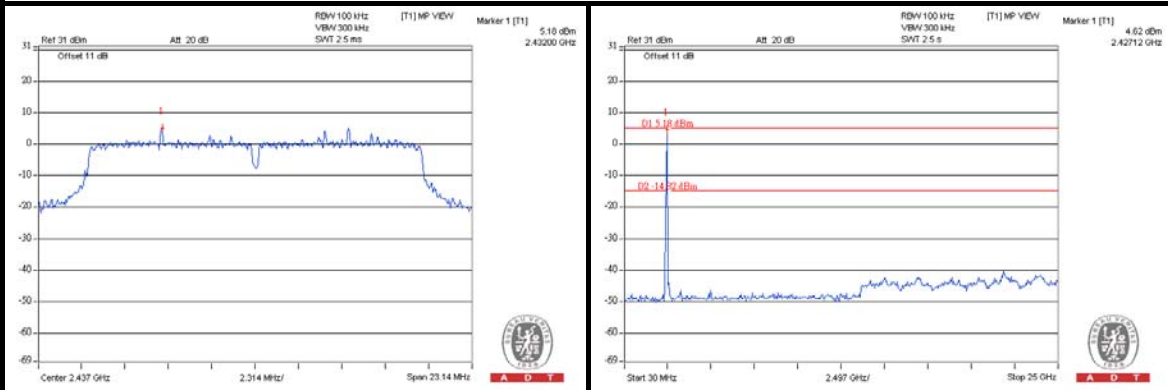


802.11n (20MHz)

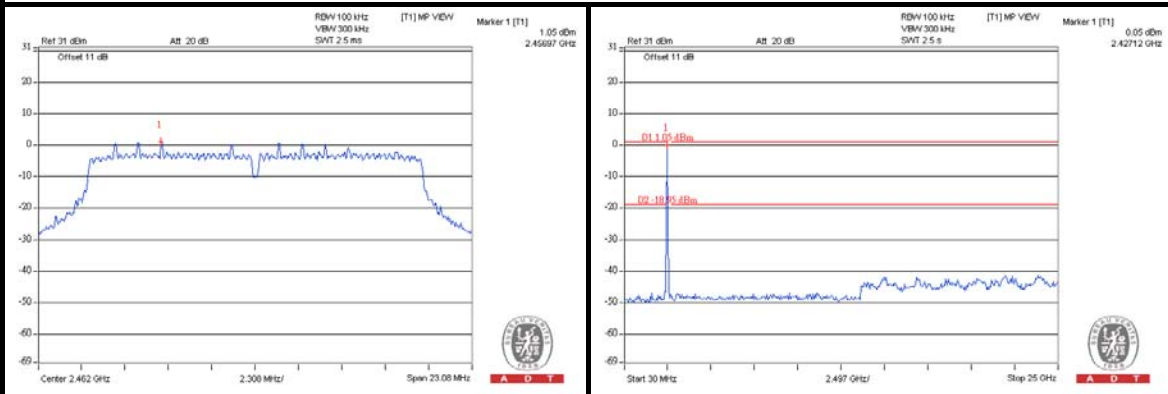
CH 1



CH 6

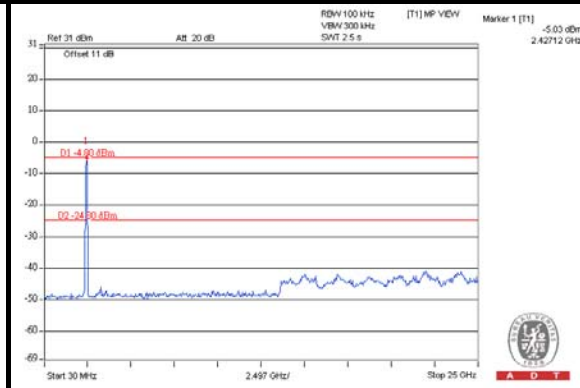
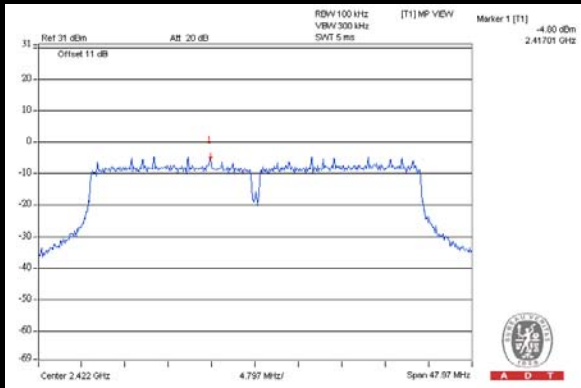


CH 11

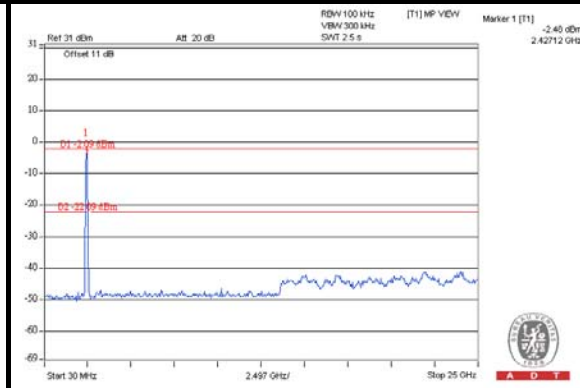
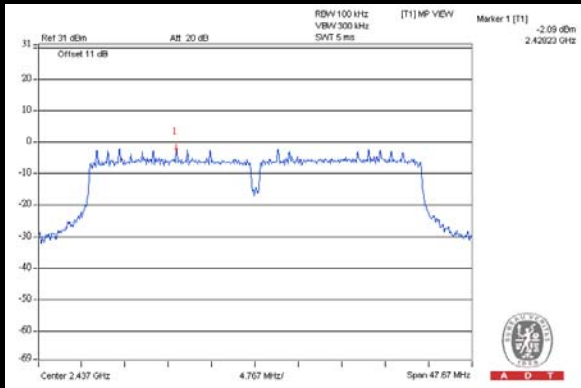


802.11n (40MHz)

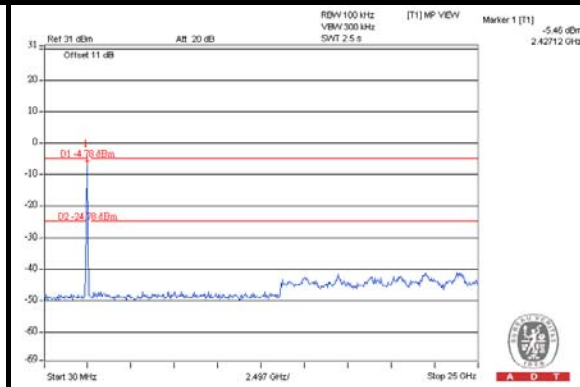
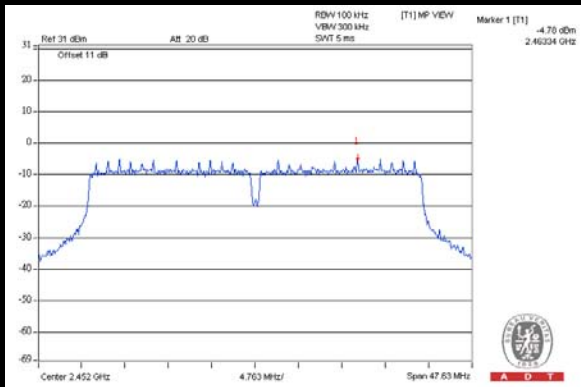
CH 3



CH 6



CH 9



## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



## 6. INFORMATION ON THE TESTING LABORATORIES

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

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5.phtml](http://www.adt.com.tw/index.5.phtml). 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.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also.

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

No any modifications are made to the EUT by the lab during the test.

**---END---**