FCC TEST REPORT

REPORT NO.:	RF120521C27
MODEL NO.:	TL-MR3040
FCC ID:	TE7MR3040V1
IC:	8853A-MR3040V1
RECEIVED:	May 21, 2012
TESTED:	Jun. 01 ~ Jul. 07, 2012
ISSUED:	Aug. 27, 2012

APPLICANT:	TP-LINK TECHNOLOGIES CO., LTD.
ADDRESS:	Building 24 (floors 1, 3, 4, 5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
TEST LOCATION:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120521C27	Original release	Aug. 27, 2012

1. CERTIFICATION

PRODUCT:	Portable 3G/3.75G Battery Powered Wireless N Router
MODEL NO.:	TL-MR3040
BRAND:	TP-LINK
APPLICANT:	TP-LINK TECHNOLOGIES CO., LTD.
TESTED:	Jun. 01 ~ Jul. 07, 2012
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS:	**FCC Part 15, Subpart C (Section 15.247)**
	Canada RSS-210 Issue 8 (2010-12)
	Canada RSS-Gen Issue 3 (2010-12)
	ANSI C63.10-2009

The above equipment (model: TL-MR3040) 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 : Jemma Yang / Specialist , DATE : Aug. 27, 2012

APPROVED BY : Gary Chang / Technical Manager , DATE : Aug. 27, 2012

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); RSS-210; RSS-Gen				
Standard Section		Test Type and Limit	Result	Remark
FCC Part 15	CANADA STANDARD			
15.207	RSS-Gen 7.2.4	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -8.65dB at 0.65000MHz.
-	RSS-Gen 4.6	Occupied Bandwidth Measurement	PASS	Meet the requirement of limit.
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 4824.00MHz and 4874.00 MHz.
15.247(d)	RSS-210 A8.5	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	RSS-210 A8.2 (a)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	RSS-210 A8.4 (4)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	RSS-210 A8.2 (b)	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	3.34 dB
	200MHz ~1000MHz	3.35 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Portable 3G/3.75G Battery Powered Wireless N Router
MODEL NO.	TL-MR3040
POWER SUPPLY	5Vdc from adapter 5Vdc from host equipment 4.2Vdc from lithium battery
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	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
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
OUTPUT POWER	136.77 mW
ANTENNA TYPE	PCB antenna with 0dBi gain
ANTENNA CONNECTOR	N/A
DATA CABLE	1.1m shielded USB cable w/o core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter, Battery

NOTE:

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

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

2. The EUT consumes power from the following adapter and battery.

AC Adapter	**Brand Name**	HuntKey
	Model Name	HKA00605010-2B
	Power Rating	I/P:100-240Vac, 50/60Hz, 0.2A O/P: 5Vdc, 1.0A
Battery	**Brand Name**	TP-LINK
	Model Name	TBL-68A2000
	Power Rating	3.7Vdc, 2000mAh
	Type	Li-ion

3. 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 adapter
B	-	√	√	-	Power from host equipment

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.**
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	6.5
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

RADIATED EMISSION TEST (BELOW 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11g	1 to 11	6	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	802.11g	1 to 11	6	OFDM	BPSK	6.0

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	6.5
A	802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	13.5

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	6.5
A	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 71%RH	120Vac, 60Hz	Haru Yang
RE<1G	22deg. C, 71%RH	120Vac, 60Hz	Haru Yang
PLC	25deg. C, 65%RH	120Vac, 60Hz	Haru Yang
APCM	24deg. C, 66%RH	120Vac, 60Hz	Felix Soong

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	3G Dongle + SIM Card	D-LINK	DWM-152	NA	KA2WM152A3
2	Notebook	DELL	E5420	33MJMQ1	FCC DoC Approved

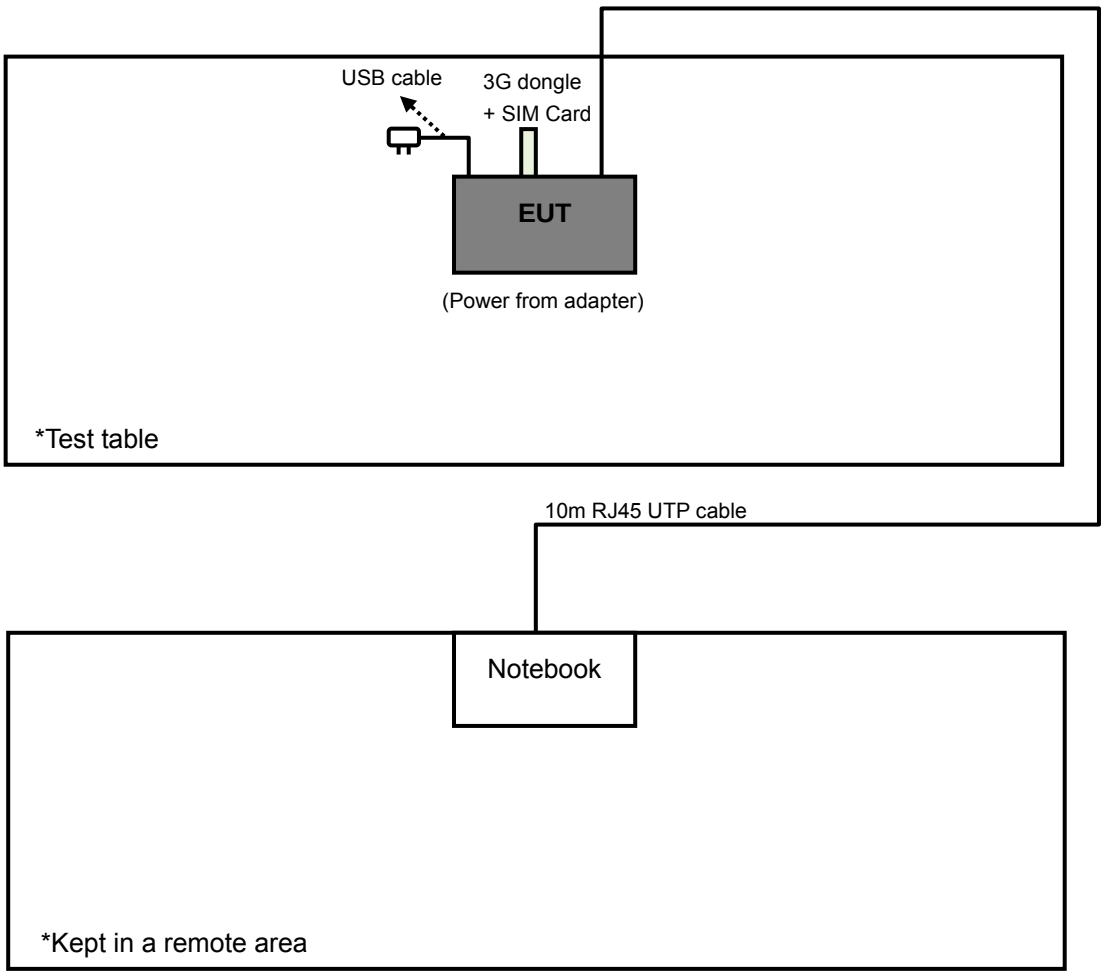
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	10m non-shielded RJ45 cable.

NOTE:

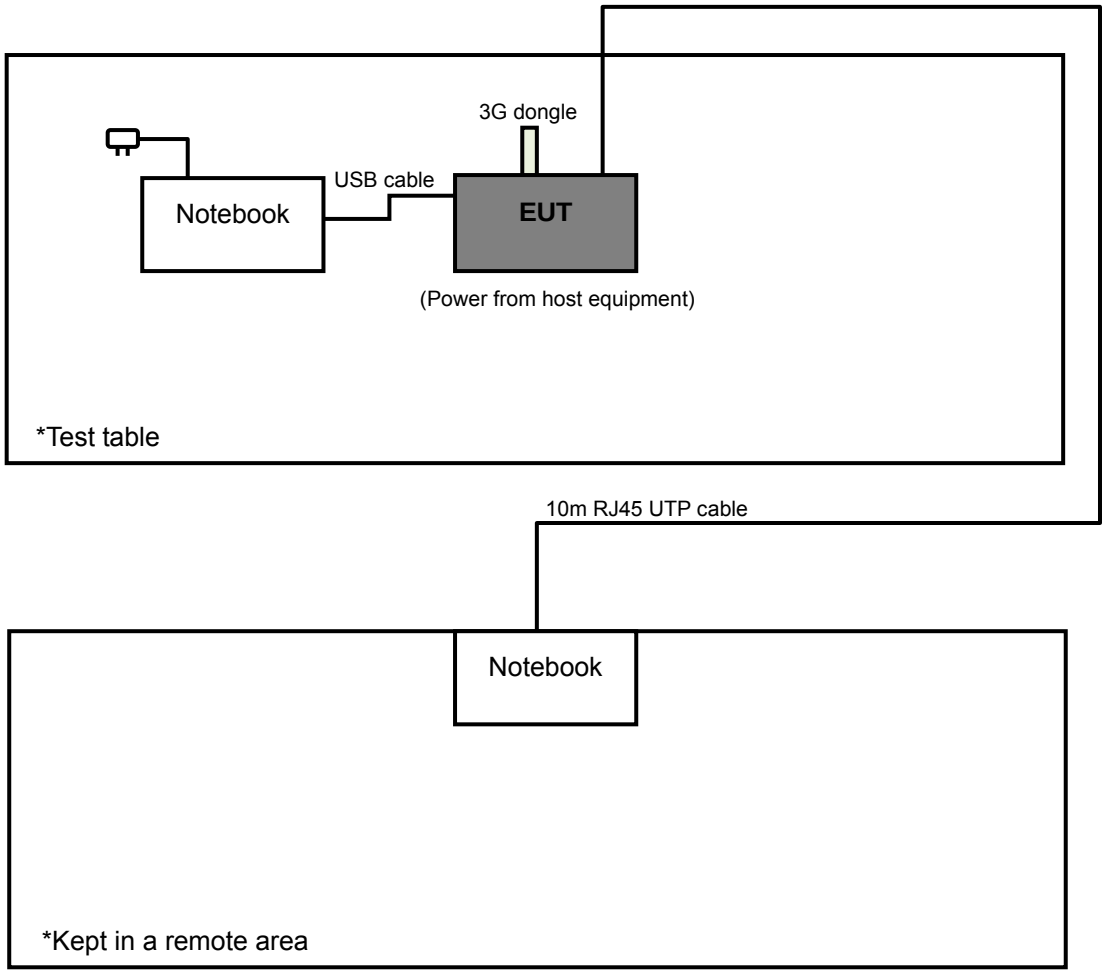
1. All power cords of the above support units are non shielded (1.8m).
2. Item 2 acted as communication partner to transfer data.
3. Item 1 was provided by the client.

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST

Adapter Mode



USB Mode


3G dongle
USB cable
Notebook
EUT
(Power from host equipment)
*Test table
10m RJ45 UTP cable
Notebook
*Kept in a remote area

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 v01
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)
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	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	Aug. 25, 2011	Aug. 24, 2012
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 11, 2012	Jul. 10, 2013
Preamplifier Agilent	8447D	2944A10633	Oct. 29, 2011	Oct. 28, 2012
Preamplifier Agilent	8449B	3008A01964	Oct. 29, 2011	Oct. 28, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250723/4	Aug. 30, 2011	Aug. 29, 2012
RF signal cable HUBER+SUHNNER	SUCOFLEX 106	12738/6+309224/4	Aug. 30, 2011	Aug. 29, 2012
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
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.

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.

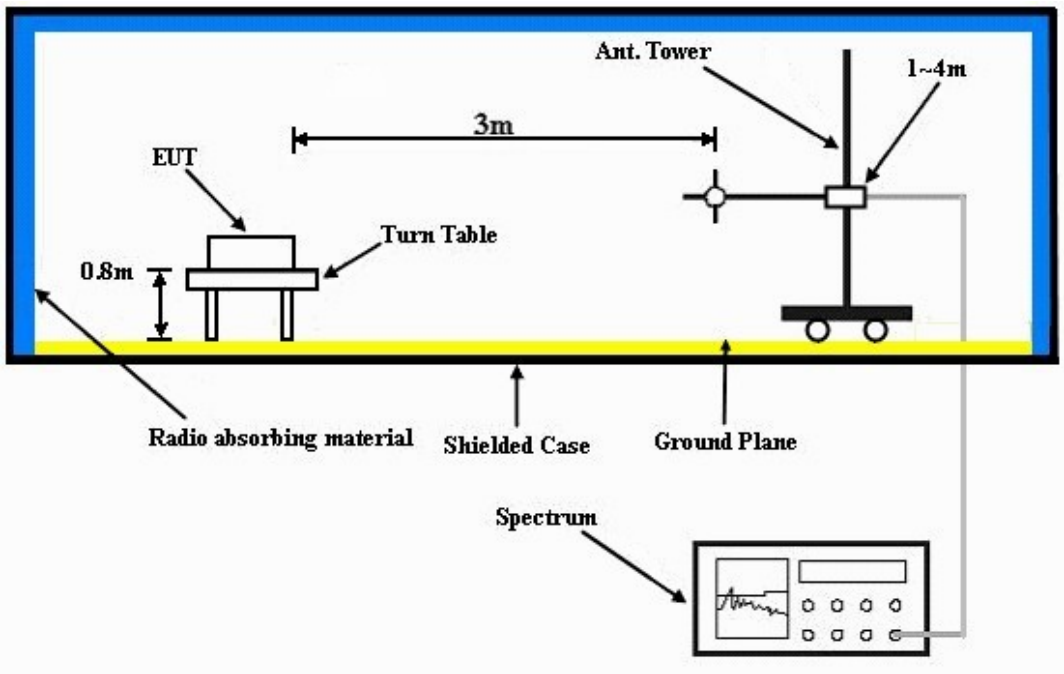
NOTE:

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

For Adapter Mode:

a. Placed the EUT on the testing table.
b. Prepared notebook to act as communication partner and placed it outside of testing area.
c. The communication partner connected to 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".
e. The necessary accessories enable the system in full functions.

For USB Mode:

a. The EUT connected to notebook via USB cable and placed them on the testing table.
b. Prepared another notebook to act as communication partner and placed it outside of testing area.
c. The communication partner connected to 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".
e. The necessary accessories enable the system in full functions.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	57.3 PK	74.0	-16.7	1.38 H	38	26.00	31.30
2	2390.00	47.8 AV	54.0	-6.2	1.38 H	38	16.50	31.30
3	*2412.00	107.6 PK			1.38 H	35	76.20	31.40
4	*2412.00	103.8 AV			1.38 H	35	72.40	31.40
5	4824.00	52.4 PK	74.0	-21.6	1.80 H	187	15.20	37.20
6	4824.00	48.6 AV	54.0	-5.4	1.80 H	187	11.40	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	55.3 PK	74.0	-18.7	1.71 V	137	24.00	31.30
2	2390.00	44.8 AV	54.0	-9.2	1.71 V	137	13.50	31.30
3	*2412.00	103.4 PK			1.71 V	137	72.00	31.40
4	*2412.00	99.4 AV			1.71 V	137	68.00	31.40
5	4824.00	55.7 PK	74.0	-18.3	1.00 V	189	18.50	37.20
6	**4824.00**	**53.0 AV**	**54.0**	**-1.0**	**1.00 V**	**189**	**15.80**	**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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	106.7 PK			1.37 H	20	75.20	31.50
2	*2437.00	102.9 AV			1.37 H	20	71.40	31.50
3	#3249.30	50.1 PK	86.7	-36.6	1.00 H	37	16.70	33.40
4	#3249.30	46.5 AV	82.9	-36.4	1.00 H	37	13.10	33.40
5	4874.00	52.0 PK	74.0	-22.0	1.79 H	181	14.70	37.30
6	4874.00	47.1 AV	54.0	-6.9	1.79 H	181	9.80	37.30
7	7311.00	50.1 PK	74.0	-23.9	1.26 H	317	6.60	43.50
8	7311.00	37.8 AV	54.0	-16.2	1.26 H	317	-5.70	43.50
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	*2437.00	100.4 PK			1.66 V	137	68.90	31.50
2	*2437.00	96.6 AV			1.66 V	137	65.10	31.50
3	#3250.00	51.7 PK	80.4	-28.7	1.79 V	142	18.30	33.40
4	#3250.00	47.8 AV	76.6	-28.8	1.79 V	142	14.40	33.40
5	4874.00	56.1 PK	74.0	-17.9	1.00 V	189	18.80	37.30
6	**4874.00**	**53.0 AV**	**54.0**	**-1.0**	**1.00 V**	**189**	**15.70**	**37.30**
7	7311.00	50.8 PK	74.0	-23.2	1.00 V	146	7.30	43.50
8	7311.00	38.2 AV	54.0	-15.8	1.00 V	146	-5.30	43.50

REMARKS:

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

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	104.7 PK			1.35 H	21	73.10	31.60
2	*2462.00	101.2 AV			1.35 H	21	69.60	31.60
3	2483.50	57.7 PK	74.0	-16.3	1.35 H	21	26.10	31.60
4	2483.50	45.0 AV	54.0	-9.0	1.35 H	21	13.40	31.60
5	4924.00	51.4 PK	74.0	-22.6	1.73 H	182	14.00	37.40
6	4924.00	47.2 AV	54.0	-6.8	1.73 H	182	9.80	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	98.2 PK			1.70 V	136	66.60	31.60
2	*2462.00	94.8 AV			1.70 V	136	63.20	31.60
3	2483.50	55.9 PK	74.0	-18.1	1.70 V	136	24.30	31.60
4	2483.50	43.8 AV	54.0	-10.2	1.70 V	136	12.20	31.60
5	4924.00	55.2 PK	74.0	-18.8	1.00 V	175	17.80	37.40
6	4924.00	52.6 AV	54.0	-1.4	1.00 V	175	15.20	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	70.0 PK	74.0	-4.0	1.38 H	17	38.70	31.30
2	2390.00	52.7 AV	54.0	-1.3	1.38 H	17	21.40	31.30
3	*2412.00	107.3 PK			1.38 H	36	75.90	31.40
4	*2412.00	94.3 AV			1.38 H	36	62.90	31.40
5	4824.00	47.6 PK	74.0	-26.4	1.80 H	180	10.40	37.20
6	4824.00	34.5 AV	54.0	-19.5	1.80 H	180	-2.70	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	62.7 PK	74.0	-11.3	1.69 V	136	31.40	31.30
2	2390.00	48.0 AV	54.0	-6.0	1.69 V	136	16.70	31.30
3	*2412.00	103.3 PK			1.69 V	136	71.90	31.40
4	*2412.00	90.0 AV			1.69 V	136	58.60	31.40
5	4824.00	50.1 PK	74.0	-23.9	1.00 V	178	12.90	37.20
6	4824.00	37.0 AV	54.0	-17.0	1.00 V	178	-0.20	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	61.4 PK	74.0	-12.6	1.38 H	20	30.10	31.30
2	2390.00	47.1 AV	54.0	-6.9	1.38 H	20	15.80	31.30
3	*2437.00	112.3 PK			1.38 H	19	80.80	31.50
4	*2437.00	98.9 AV			1.38 H	19	67.40	31.50
5	4874.00	64.0 PK	74.0	-10.0	1.80 H	179	26.70	37.30
6	4874.00	47.9 AV	54.0	-6.1	1.80 H	179	10.60	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	56.1 PK	74.0	-17.9	1.67 V	136	24.80	31.30
2	2390.00	44.2 AV	54.0	-9.8	1.67 V	136	12.90	31.30
3	*2437.00	105.1 PK			1.67 V	136	73.60	31.50
4	*2437.00	92.4 AV			1.67 V	136	60.90	31.50
5	4874.00	69.1 PK	74.0	-4.9	1.00 V	188	31.80	37.30
6	4874.00	52.9 AV	54.0	-1.1	1.00 V	188	15.60	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	108.5 PK			1.35 H	21	76.90	31.60
2	*2462.00	96.0 AV			1.35 H	21	64.40	31.60
3	2483.50	72.7 PK	74.0	-1.3	1.35 H	19	41.10	31.60
4	2483.50	52.5 AV	54.0	-1.5	1.35 H	19	20.90	31.60
5	4924.00	52.3 PK	74.0	-21.7	1.77 H	177	14.90	37.40
6	4924.00	38.1 AV	54.0	-15.9	1.77 H	177	0.70	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	102.7 PK			1.70 V	136	71.10	31.60
2	*2462.00	89.8 AV			1.70 V	136	58.20	31.60
3	2483.50	66.9 PK	74.0	-7.1	1.70 V	136	35.30	31.60
4	2483.50	47.9 AV	54.0	-6.1	1.70 V	136	16.30	31.60
5	4924.00	57.9 PK	74.0	-16.1	1.00 V	179	20.50	37.40
6	4924.00	42.6 AV	54.0	-11.4	1.00 V	179	5.20	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	69.7 PK	74.0	-4.3	1.11 H	23	38.40	31.30
2	2390.00	52.5 AV	54.0	-1.5	1.11 H	23	21.20	31.30
3	*2412.00	106.6 PK			1.11 H	21	75.20	31.40
4	*2412.00	93.8 AV			1.11 H	21	62.40	31.40
5	4824.00	46.5 PK	74.0	-27.5	1.77 H	193	9.30	37.20
6	4824.00	33.7 AV	54.0	-20.3	1.77 H	193	-3.50	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	62.9 PK	74.0	-11.1	1.70 V	136	31.60	31.30
2	2390.00	48.4 AV	54.0	-5.6	1.70 V	136	17.10	31.30
3	*2412.00	101.9 PK			1.70 V	136	70.50	31.40
4	*2412.00	89.0 AV			1.70 V	136	57.60	31.40
5	4824.00	49.9 PK	74.0	-24.1	1.00 V	189	12.70	37.20
6	4824.00	36.3 AV	54.0	-17.7	1.00 V	189	-0.90	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	57.4 PK	74.0	-16.6	1.39 H	19	26.10	31.30
2	2390.00	46.1 AV	54.0	-7.9	1.39 H	19	14.80	31.30
3	*2437.00	110.5 PK			1.37 H	22	79.00	31.50
4	*2437.00	97.4 AV			1.37 H	22	65.90	31.50
5	4874.00	60.2 PK	74.0	-13.8	1.97 H	180	22.90	37.30
6	4874.00	45.2 AV	54.0	-8.8	1.97 H	180	7.90	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	55.4 PK	74.0	-18.6	1.65 V	135	24.10	31.30
2	2390.00	43.9 AV	54.0	-10.1	1.65 V	135	12.60	31.30
3	*2437.00	103.7 PK			1.65 V	135	72.20	31.50
4	*2437.00	91.0 AV			1.65 V	135	59.50	31.50
5	4874.00	65.6 PK	74.0	-8.4	1.00 V	188	28.30	37.30
6	4874.00	51.0 AV	54.0	-3.0	1.00 V	188	13.70	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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			1.35 H	21	76.40	31.60
2	*2462.00	95.0 AV			1.35 H	21	63.40	31.60
3	2483.50	72.0 PK	74.0	-2.0	1.34 H	24	40.40	31.60
4	2483.50	52.9 AV	54.0	-1.1	1.34 H	24	21.30	31.60
5	4924.00	52.3 PK	74.0	-21.7	1.74 H	182	14.90	37.40
6	4924.00	37.3 AV	54.0	-16.7	1.74 H	182	-0.10	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	102.8 PK			1.68 V	136	71.20	31.60
2	*2462.00	89.8 AV			1.68 V	136	58.20	31.60
3	2483.50	65.4 PK	74.0	-8.6	1.68 V	136	33.80	31.60
4	2483.50	49.1 AV	54.0	-4.9	1.68 V	136	17.50	31.60
5	4924.00	58.9 PK	74.0	-15.1	1.10 V	191	21.50	37.40
6	4924.00	42.2 AV	54.0	-11.8	1.10 V	191	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	72.6 PK	74.0	-1.4	1.36 H	117	41.30	31.30
2	2390.00	52.2 AV	54.0	-1.8	1.36 H	117	20.90	31.30
3	*2422.00	102.1 PK			1.35 H	120	70.70	31.40
4	*2422.00	88.7 AV			1.35 H	120	57.30	31.40
5	4844.00	46.2 PK	74.0	-27.8	1.02 H	344	8.90	37.30
6	4844.00	33.4 AV	54.0	-20.6	1.02 H	344	-3.90	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	67.7 PK	74.0	-6.3	1.67 V	182	36.40	31.30
2	2390.00	48.1 AV	54.0	-5.9	1.67 V	182	16.80	31.30
3	*2422.00	97.8 PK			1.67 V	182	66.40	31.40
4	*2422.00	85.1 AV			1.67 V	182	53.70	31.40
5	4844.00	47.5 PK	74.0	-26.5	1.07 V	123	10.20	37.30
6	4844.00	33.6 AV	54.0	-20.4	1.07 V	123	-3.70	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	70.7 PK	74.0	-3.3	1.39 H	114	39.40	31.30
2	2390.00	52.4 AV	54.0	-1.6	1.39 H	114	21.10	31.30
3	*2437.00	105.2 PK			1.34 H	42	73.70	31.50
4	*2437.00	91.7 AV			1.34 H	42	60.20	31.50
5	4874.00	50.8 PK	74.0	-23.2	1.80 H	177	13.50	37.30
6	4874.00	35.9 AV	54.0	-18.1	1.80 H	177	-1.40	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	60.5 PK	74.0	-13.5	1.72 V	182	29.20	31.30
2	2390.00	50.3 AV	54.0	-3.7	1.72 V	182	19.00	31.30
3	*2437.00	101.9 PK			1.72 V	182	70.40	31.50
4	*2437.00	88.3 AV			1.72 V	182	56.80	31.50
5	4874.00	51.3 PK	74.0	-22.7	1.00 V	198	14.00	37.30
6	4874.00	37.0 AV	54.0	-17.0	1.00 V	198	-0.30	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.

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	22deg. C, 71%RH	TESTED BY	Haru Yang

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	102.5 PK			1.33 H	44	71.00	31.50
2	*2452.00	89.6 AV			1.33 H	44	58.10	31.50
3	2483.50	72.9 PK	74.0	-1.1	1.32 H	102	41.30	31.60
4	2483.50	51.2 AV	54.0	-2.8	1.32 H	102	19.60	31.60
5	4904.00	46.7 PK	74.0	-27.3	1.66 H	180	9.30	37.40
6	4904.00	34.8 AV	54.0	-19.2	1.66 H	180	-2.60	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	99.8 PK			1.69 V	184	68.30	31.50
2	*2452.00	86.1 AV			1.69 V	184	54.60	31.50
3	2483.50	68.8 PK	74.0	-5.2	1.69 V	184	37.20	31.60
4	2483.50	49.9 AV	54.0	-4.1	1.69 V	184	18.30	31.60
5	4904.00	50.4 PK	74.0	-23.6	1.00 V	199	13.00	37.40
6	4904.00	35.7 AV	54.0	-18.3	1.00 V	199	-1.70	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.

BELOW 1GHz WORST-CASE DATA：802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang
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	105.73	40.9 QP	43.5	-2.6	2.00 H	264	30.80	10.10
2	259.33	36.5 QP	46.0	-9.5	1.25 H	253	23.10	13.40
3	479.03	30.6 QP	46.0	-15.4	1.75 H	303	11.20	19.40
4	599.58	33.5 QP	46.0	-12.5	1.25 H	136	11.40	22.10
5	751.23	28.4 QP	46.0	-17.6	2.00 H	92	4.00	24.40
6	875.67	32.8 QP	46.0	-13.2	1.50 H	97	6.30	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	57.12	38.1 QP	40.0	-1.9	1.00 V	356	24.50	13.60
2	107.67	34.0 QP	43.5	-9.5	1.00 V	277	23.60	10.40
3	257.38	36.7 QP	46.0	-9.3	1.99 V	150	23.40	13.30
4	479.03	29.4 QP	46.0	-16.6	1.00 V	177	10.00	19.40
5	599.58	40.0 QP	46.0	-6.0	1.00 V	267	17.90	22.10
6	961.21	35.5 QP	54.0	-18.5	1.00 V	184	8.10	27.40

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang
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	109.62	40.6 QP	43.5	-2.9	1.50 H	285	30.00	10.60
2	166.00	35.6 QP	43.5	-7.9	1.50 H	208	21.80	13.80
3	259.33	41.0 QP	46.0	-5.0	1.00 H	308	27.60	13.40
4	374.04	36.3 QP	46.0	-9.7	1.00 H	191	19.40	16.90
5	599.58	36.6 QP	46.0	-9.4	1.50 H	163	14.50	22.10
6	786.23	31.9 QP	46.0	-14.1	1.50 H	7	6.60	25.30
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	107.67	37.6 QP	43.5	-5.9	1.00 V	214	27.20	10.40
2	259.33	29.4 QP	46.0	-16.6	1.50 V	188	16.00	13.40
3	374.04	31.8 QP	46.0	-14.2	1.00 V	171	14.90	16.90
4	500.42	30.5 QP	46.0	-15.5	1.00 V	197	10.50	20.00
5	599.58	34.7 QP	46.0	-11.3	1.50 V	142	12.60	22.10
6	840.67	31.8 QP	46.0	-14.2	1.24 V	212	5.70	26.10

REMARKS:

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

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 19, 2011	Nov. 18, 2012
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.

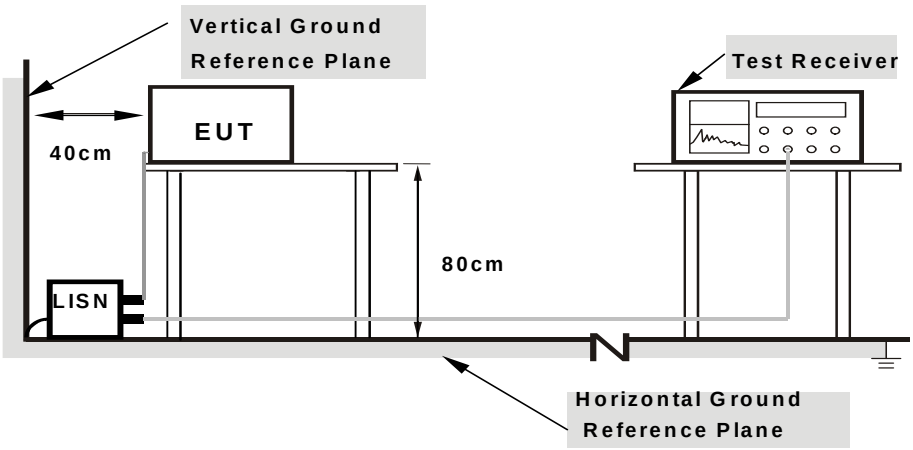
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

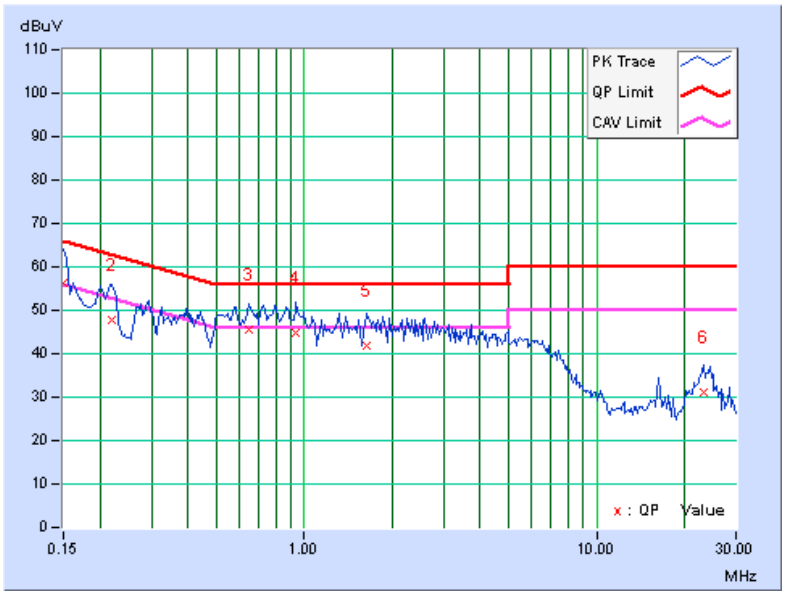
CONDUCTED WORST-CASE DATA：802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.17	56.19	42.11	56.36	42.28	66.00	56.00	-9.64	-13.72
2	0.22031	0.17	47.45	36.08	47.62	36.25	62.81	52.81	-15.18	-16.55
3	**0.65000**	**0.21**	**45.44**	**37.14**	**45.65**	**37.35**	**56.00**	**46.00**	**-10.35**	**-8.65**
4	0.93906	0.23	44.50	34.80	44.73	35.03	56.00	46.00	-11.27	-10.97
5	1.64453	0.28	41.58	33.00	41.86	33.28	56.00	46.00	-14.14	-12.72
6	23.12500	0.70	30.47	22.14	31.17	22.84	60.00	50.00	-28.83	-27.16

REMARKS:

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

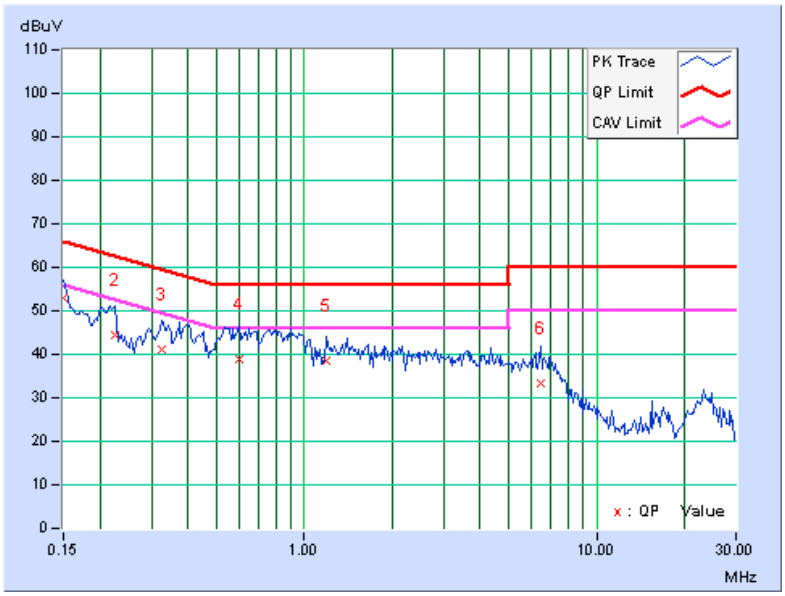


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	0.17	52.82	37.66	52.99	37.83	66.00	56.00	-13.01	-18.17
2	0.22422	0.15	44.30	30.11	44.45	30.26	62.66	52.66	-18.21	-22.40
3	0.32578	0.17	40.85	30.96	41.02	31.13	59.56	49.56	-18.54	-18.43
4	0.59922	0.18	38.59	27.88	38.77	28.06	56.00	46.00	-17.23	-17.94
5	1.19141	0.21	38.33	27.13	38.54	27.34	56.00	46.00	-17.46	-18.66
6	6.45313	0.46	32.81	23.99	33.27	24.45	60.00	50.00	-26.73	-25.55

REMARKS:

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

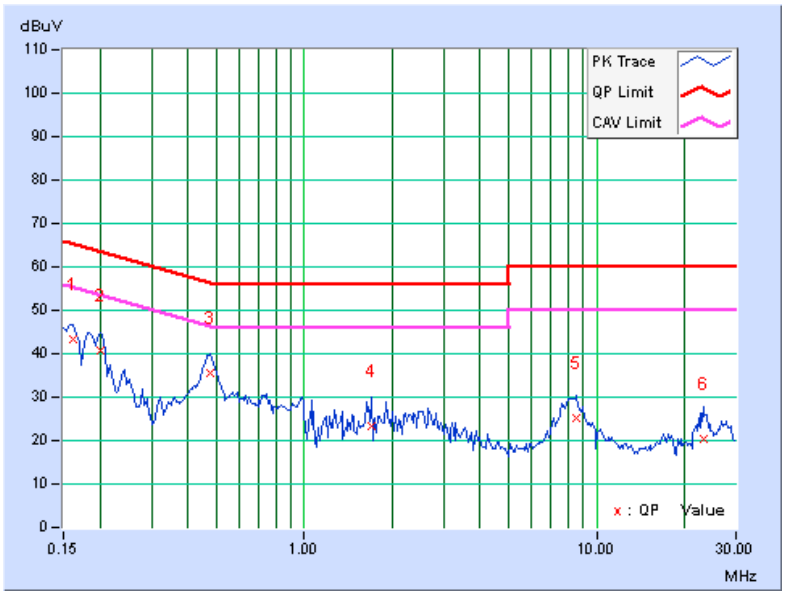


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.15	43.05	27.34	43.20	27.49	65.38	55.38	-22.18	-27.89
2	0.20078	0.15	40.60	23.85	40.75	24.00	63.58	53.58	-22.83	-29.58
3	0.47813	0.17	35.50	27.75	35.67	27.92	56.37	46.37	-20.70	-18.45
4	1.70703	0.24	22.93	13.73	23.17	13.97	56.00	46.00	-32.83	-32.03
5	8.57813	0.41	24.96	19.45	25.37	19.86	60.00	50.00	-34.63	-30.14
6	23.17188	0.60	19.89	7.59	20.49	8.19	60.00	50.00	-39.51	-41.81

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.

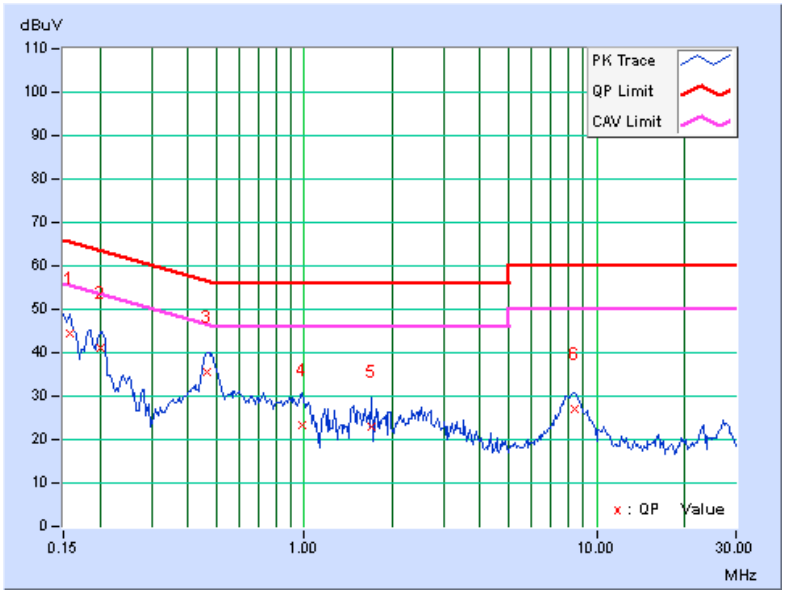


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.13	44.43	28.27	44.56	28.40	65.58	55.58	-21.02	-27.18
2	0.20078	0.14	40.99	24.88	41.13	25.02	63.58	53.58	-22.45	-28.56
3	0.46641	0.16	35.28	25.38	35.44	25.54	56.58	46.58	-21.13	-21.03
4	0.98203	0.19	23.20	12.69	23.39	12.88	56.00	46.00	-32.61	-33.12
5	1.69922	0.24	22.84	13.76	23.08	14.00	56.00	46.00	-32.92	-32.00
6	8.39844	0.45	26.65	21.14	27.10	21.59	60.00	50.00	-32.90	-28.41

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.

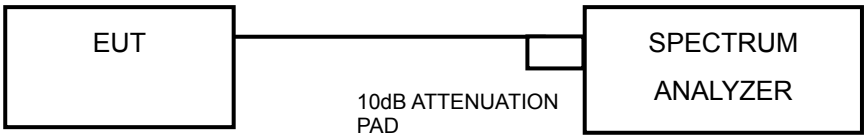


4.3 6dB BANDWIDTH MEASUREMENT

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) ≥ 3 x 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	10.30	0.5	PASS
11	2462	10.29	0.5	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.53	0.5	PASS
6	2437	16.56	0.5	PASS
11	2462	16.58	0.5	PASS

802.11n (20MHz)

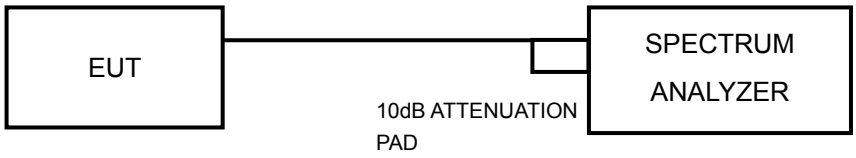
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.66	0.5	PASS
6	2437	17.77	0.5	PASS
11	2462	17.81	0.5	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	36.73	0.5	PASS
6	2437	36.95	0.5	PASS
9	2452	36.69	0.5	PASS

4.4 OCCUPIED BANDWIDTH MEASUREMENT

4.4.1 TEST SETUP



4.4.2 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.4.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 300 kHz VBW. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.6 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
1	2412	14.64	PASS
6	2437	14.04	PASS
11	2462	14.04	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
1	2412	17.16	PASS
6	2437	17.22	PASS
11	2462	17.22	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
1	2412	18.18	PASS
6	2437	18.30	PASS
11	2462	18.30	PASS

802.11n (40MHz)

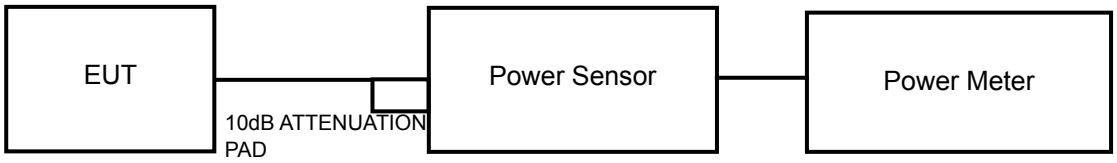
CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	PASS / FAIL
3	2422	38.08	PASS
6	2437	37.92	PASS
9	2452	37.92	PASS

4.5 CONDUCTED OUTPUT POWER

4.5.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

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 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.5.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	33.57	15.26	30	PASS
6	2437	23.23	13.66	30	PASS
11	2462	20.51	13.12	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	72.61	18.61	30	PASS
6	2437	136.77	21.36	30	PASS
11	2462	68.23	18.34	30	PASS

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	52.12	17.17	30	PASS
6	2437	132.43	21.22	30	PASS
11	2462	76.38	18.83	30	PASS

802.11n (40MHz)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
3	2422	60.53	17.82	30	PASS
6	2437	130.62	21.16	30	PASS
9	2452	71.12	18.52	30	PASS

4.6 AVERAGE OUTPUT POWER

4.6.1 FOR REFERENCE.

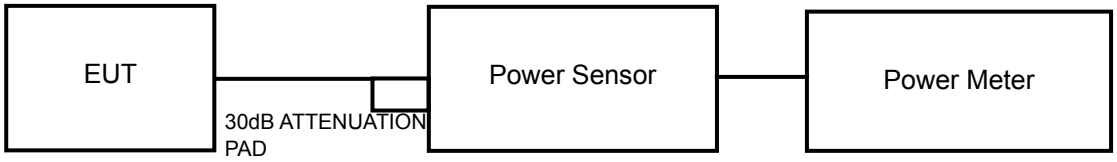
4.6.2 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.6.3 TEST PROCEDURES

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

4.6.4 TEST SETUP



4.6.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.6.6 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)
1	2412	12.88
6	2437	11.28
11	2462	10.61

802.11g

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)
1	2412	11.34
6	2437	14.70
11	2462	10.88

802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)
1	2412	9.38
6	2437	13.22
11	2462	11.34

802.11n (40MHz)

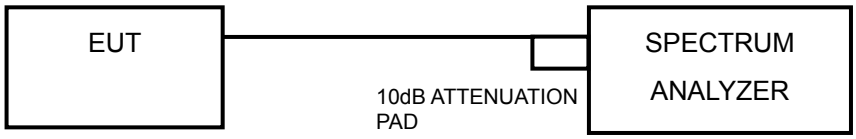
CHANNEL	FREQUENCY (MHz)	AVG. POWER (dBm)
3	2422	8.54
6	2437	12.37
9	2452	9.46

4.7 POWER SPECTRAL DENSITY MEASUREMENT

4.7.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.7.2 TEST SETUP



4.7.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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 = 10log(3 kHz/100kHz)

4.7.5 DEVIATION FROM TEST STANDARD

No deviation.

4.7.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.7.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	3.20	-12.03	8	PASS
6	2437	1.80	-13.43	8	PASS
11	2462	1.24	-13.99	8	PASS

802.11g

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-0.49	-15.72	8	PASS
6	2437	2.48	-12.75	8	PASS
11	2462	-0.95	-16.18	8	PASS

802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-2.43	-17.66	8	PASS
6	2437	1.58	-13.65	8	PASS
11	2462	-0.66	-15.89	8	PASS

802.11n (40MHz)

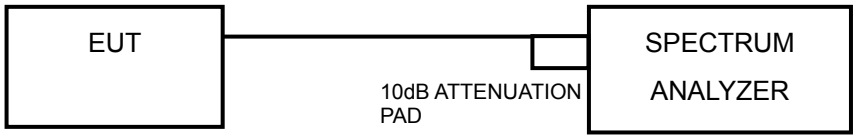
Channel	FREQ. (MHz)	PSD (dBm/100kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
3	2422	-5.74	-20.97	8	PASS
6	2437	-2.16	-17.39	8	PASS
9	2452	-4.83	-20.06	8	PASS

4.8 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

4.8.1 LIMITS OF CONDUCTED OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.8.2 TEST SETUP



4.8.3 TEST INSTRUMENTS

Refer to section 4.1.2 to get information of above instrument.

4.8.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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 OOBE

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

4.8.5 DEVIATION FROM TEST STANDARD

No deviation.

4.8.6 EUT OPERATING CONDITION

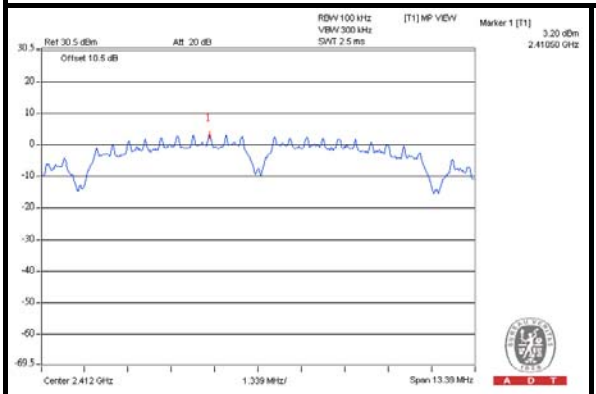
Same as Item 4.3.6

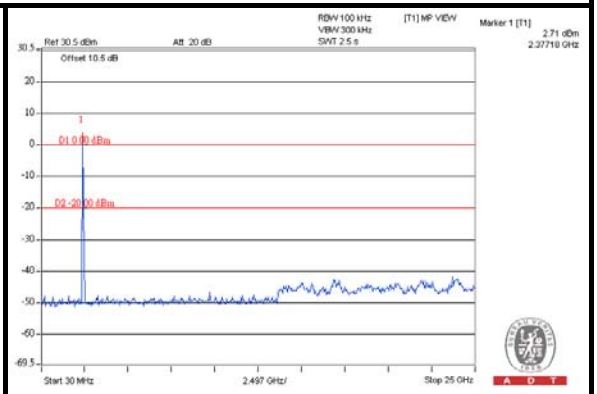
4.8.7 TEST RESULTS

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.

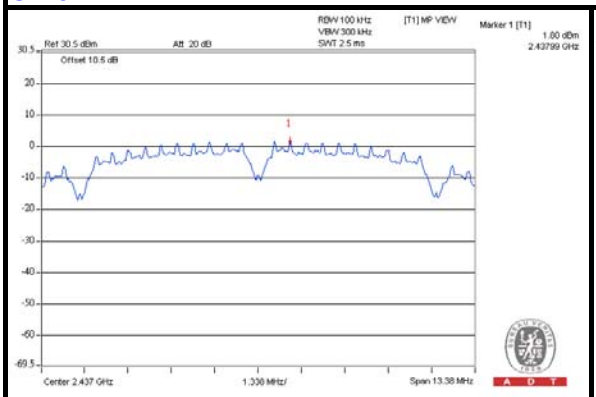
802.11b

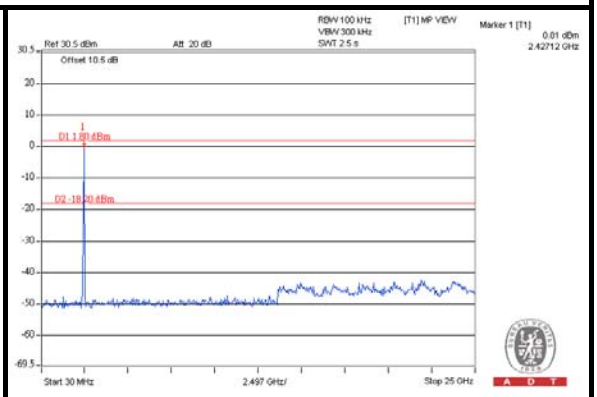
CH 1



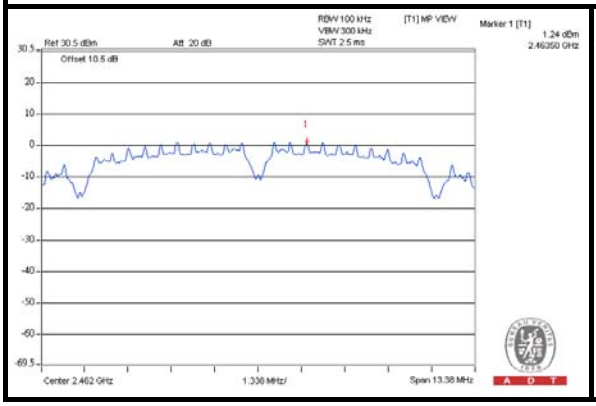


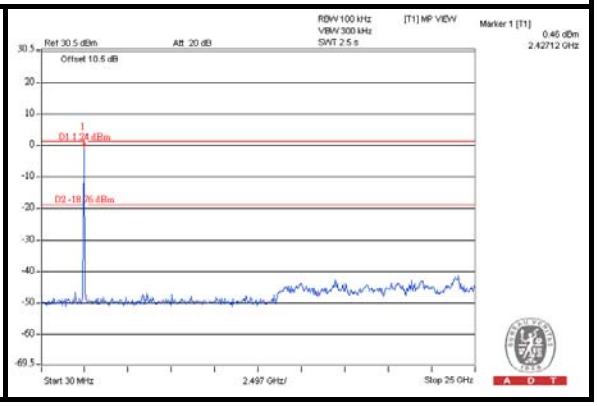
CH 6





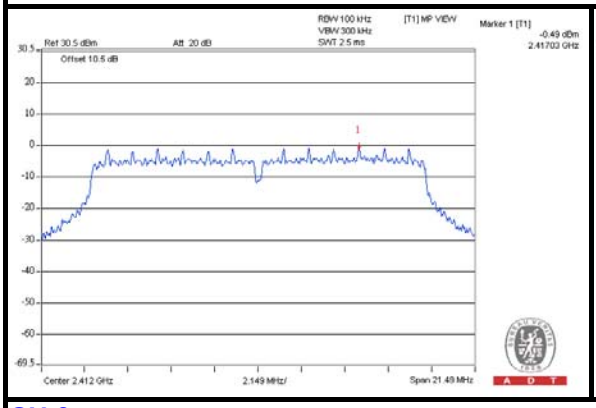
CH 11

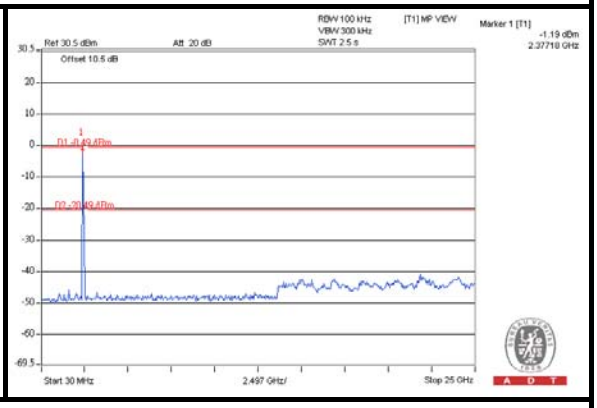




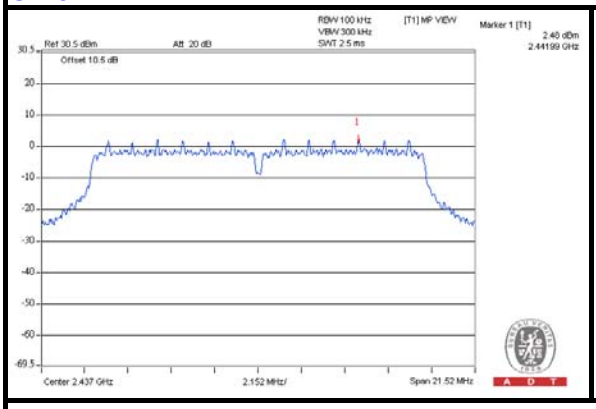
802.11g

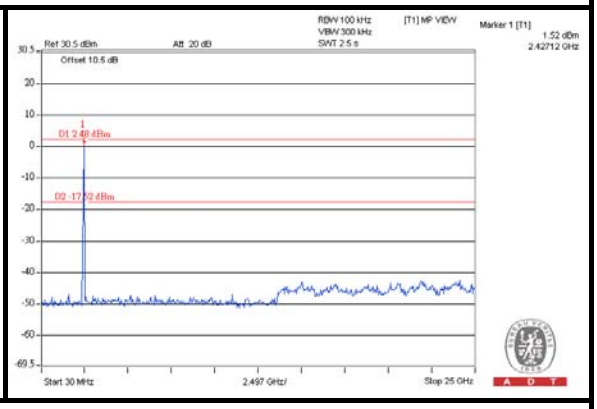
CH 1



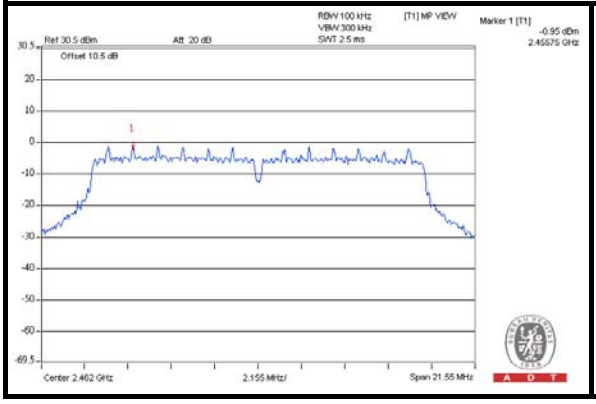


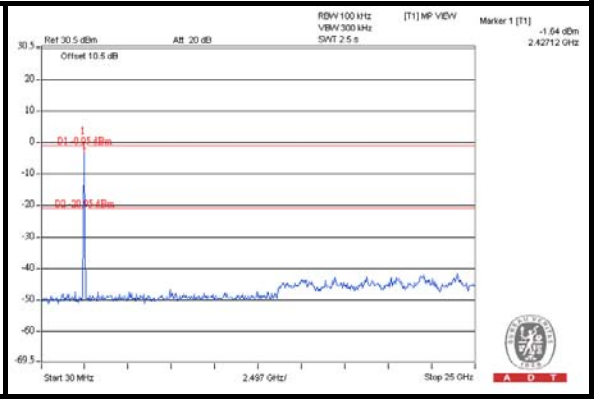
CH 6





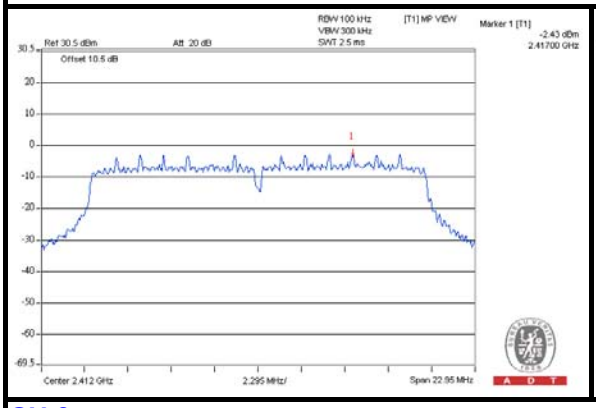
CH 11

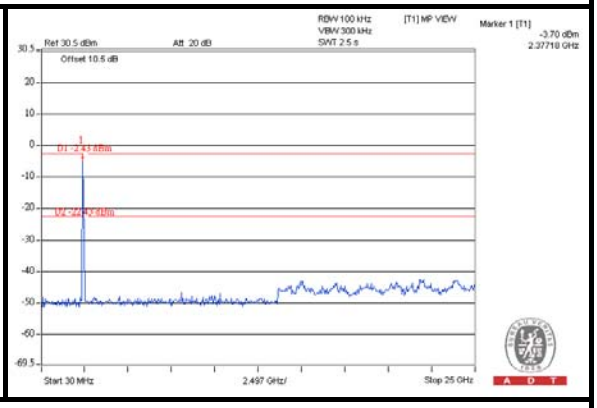




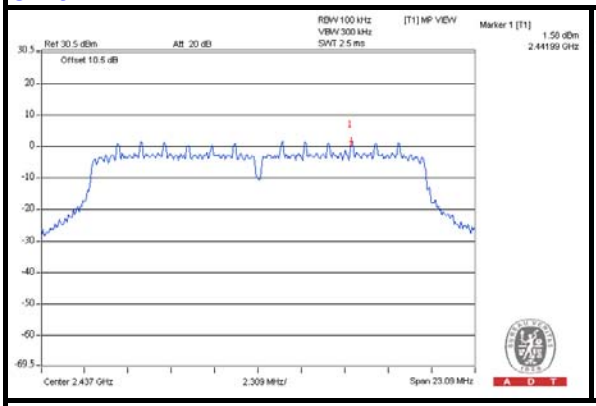
802.11n (20MHz)

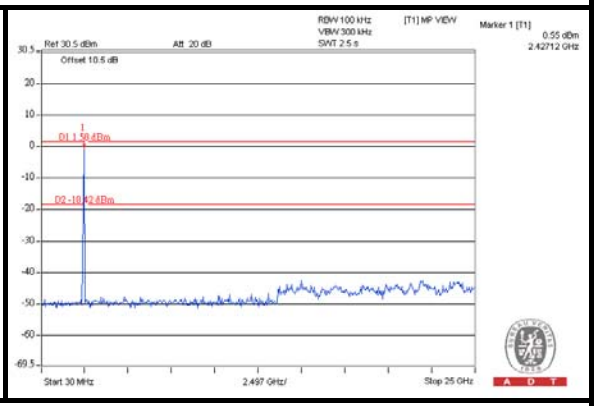
CH 1



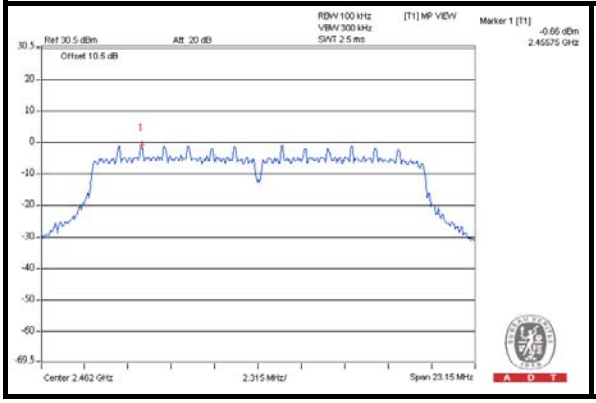


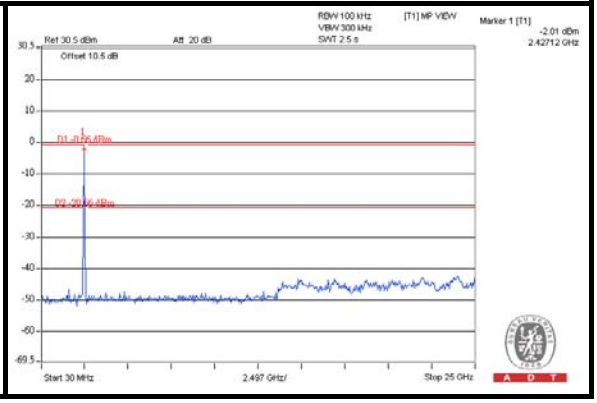
CH 6





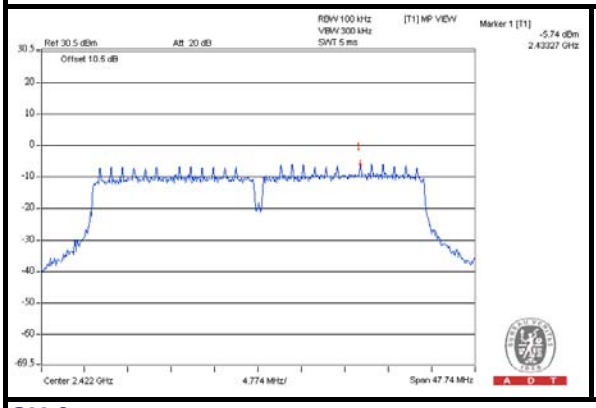
CH 11

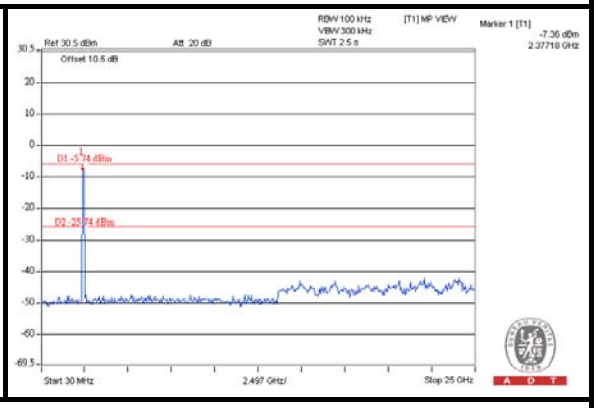




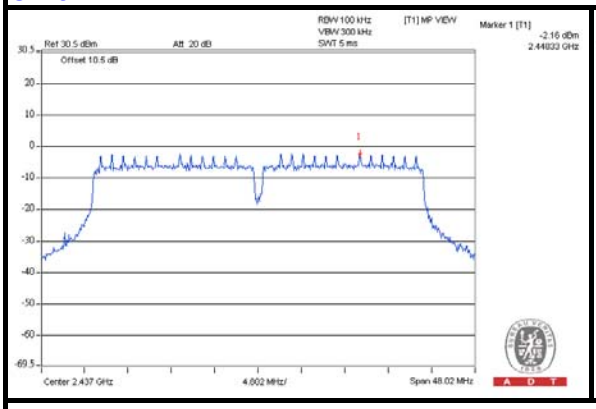
802.11n (40MHz)

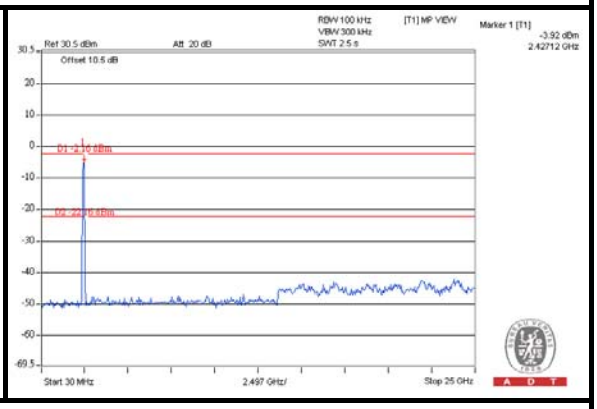
CH 3



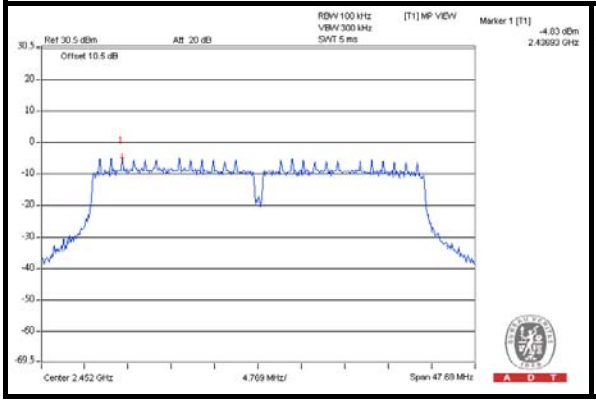


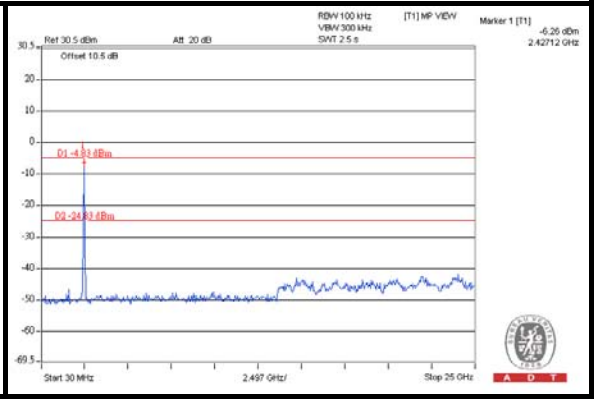
CH 6





CH 9





4.9 RECEIVER RADIATED EMISSION MEASUREMENT

4.9.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in RSS-Gen table 2 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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. As shown in RSS-Gen 7.2.3, 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.

4.9.2 TEST INSTRUMENTS

Same as 4.1.2

4.9.3 TEST PROCEDURES

Same as 4.1.3

4.9.4 DEVIATION FROM TEST STANDARD

No deviation.

4.9.5 TEST SETUP

Same as 4.1.5

4.9.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.9.7 TEST RESULTS

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang

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	1800.00	47.8 PK	74.0	-26.2	1.20 H	292	18.30	29.50
2	1800.00	44.4 AV	54.0	-9.6	1.20 H	292	14.90	29.50
3	2200.00	44.2 PK	74.0	-29.8	1.49 H	156	13.60	30.60
4	2200.00	38.7 AV	54.0	-15.3	1.49 H	156	8.10	30.60
5	3229.00	49.0 PK	74.0	-25.0	1.00 H	38	15.60	33.40
6	3229.00	44.5 AV	54.0	-9.5	1.00 H	38	11.10	33.40
7	4844.00	46.6 PK	74.0	-27.4	1.24 H	107	9.30	37.30
8	4844.00	33.4 AV	54.0	-20.6	1.24 H	107	-3.90	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	1800.00	48.1 PK	74.0	-25.9	1.00 V	243	18.60	29.50
2	1800.00	45.0 AV	54.0	-9.0	1.00 V	243	15.50	29.50
3	2200.00	44.7 PK	74.0	-29.3	1.00 V	130	14.10	30.60
4	2200.00	35.0 AV	54.0	-19.0	1.00 V	130	4.40	30.60
5	3229.00	52.0 PK	74.0	-22.0	1.53 V	133	18.60	33.40
6	3229.00	48.7 AV	54.0	-5.3	1.53 V	133	15.30	33.40
7	4844.00	47.2 PK	74.0	-26.8	1.00 V	185	9.90	37.30
8	4844.00	36.0 AV	54.0	-18.0	1.00 V	185	-1.30	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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang

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	1800.00	47.8 PK	74.0	-26.2	1.17 H	289	18.30	29.50
2	1800.00	44.8 AV	54.0	-9.2	1.17 H	289	15.30	29.50
3	2200.00	44.2 PK	74.0	-29.8	1.49 H	158	13.60	30.60
4	2200.00	38.3 AV	54.0	-15.7	1.49 H	158	7.70	30.60
5	3262.70	51.0 PK	74.0	-23.0	1.00 H	39	17.60	33.40
6	3262.70	47.5 AV	54.0	-6.5	1.00 H	39	14.10	33.40
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	1800.00	47.9 PK	74.0	-26.1	1.00 V	241	18.40	29.50
2	1800.00	44.7 AV	54.0	-9.3	1.00 V	241	15.20	29.50
3	2200.00	43.7 PK	74.0	-30.3	1.00 V	131	13.10	30.60
4	2200.00	34.6 AV	54.0	-19.4	1.00 V	131	4.00	30.60
5	3262.70	52.0 PK	74.0	-22.0	1.52 V	132	18.60	33.40
6	3262.70	48.4 AV	54.0	-5.6	1.52 V	132	15.00	33.40

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 12.5GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang

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	1800.00	47.6 PK	74.0	-26.4	1.16 H	290	18.10	29.50
2	1800.00	44.7 AV	54.0	-9.3	1.16 H	290	15.20	29.50
3	2200.00	43.7 PK	74.0	-30.3	1.48 H	157	13.10	30.60
4	2200.00	38.5 AV	54.0	-15.5	1.48 H	157	7.90	30.60
5	3296.00	47.6 PK	74.0	-26.4	1.00 H	120	14.10	33.50
6	3296.00	42.6 AV	54.0	-11.4	1.00 H	120	9.10	33.50
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	1800.00	47.6 PK	74.0	-26.4	1.00 V	238	18.10	29.50
2	1800.00	44.9 AV	54.0	-9.1	1.00 V	238	15.40	29.50
3	2200.00	43.9 PK	74.0	-30.1	1.00 V	133	13.30	30.60
4	2200.00	35.0 AV	54.0	-19.0	1.00 V	133	4.40	30.60
5	3296.00	52.8 PK	74.0	-21.2	1.07 V	133	19.30	33.50
6	3296.00	50.3 AV	54.0	-3.7	1.07 V	133	16.80	33.50

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.

BELOW 1GHz WORST-CASE DATA：802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang
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	107.67	40.1 QP	43.5	-3.4	1.50 H	260	29.70	10.40
2	199.05	31.8 QP	43.5	-11.7	1.25 H	140	20.70	11.10
3	257.38	40.4 QP	46.0	-5.6	1.00 H	234	27.10	13.30
4	399.31	30.3 QP	46.0	-15.7	1.00 H	139	12.80	17.50
5	599.58	29.7 QP	46.0	-16.3	1.50 H	149	7.60	22.10
6	961.21	39.7 QP	54.0	-14.3	1.25 H	106	12.30	27.40
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	57.12	37.5 QP	40.0	-2.5	1.00 V	20	23.90	13.60
2	107.67	34.6 QP	43.5	-8.9	1.00 V	283	24.20	10.40
3	261.27	28.4 QP	46.0	-17.6	1.75 V	206	14.90	13.50
4	339.04	32.3 QP	46.0	-13.7	1.25 V	57	16.30	16.00
5	500.42	30.3 QP	46.0	-15.7	1.00 V	133	10.30	20.00
6	961.21	35.1 QP	54.0	-18.9	1.00 V	186	7.70	27.40

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 71%RH	TESTED BY	Haru Yang
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	109.62	40.3 QP	43.5	-3.2	1.49 H	287	29.70	10.60
2	166.00	35.6 QP	43.5	-7.9	1.49 H	206	21.80	13.80
3	257.38	39.7 QP	46.0	-6.3	1.49 H	309	26.40	13.30
4	374.04	35.3 QP	46.0	-10.7	1.00 H	184	18.40	16.90
5	599.58	34.1 QP	46.0	-11.9	1.49 H	164	12.00	22.10
6	840.67	31.8 QP	46.0	-14.2	1.49 H	253	5.70	26.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	107.67	37.5 QP	43.5	-6.0	1.00 V	232	27.10	10.40
2	261.27	31.2 QP	46.0	-14.8	1.50 V	188	17.70	13.50
3	399.31	31.8 QP	46.0	-14.2	1.00 V	221	14.30	17.50
4	500.42	30.0 QP	46.0	-16.0	1.00 V	189	10.00	20.00
5	599.58	31.6 QP	46.0	-14.4	1.50 V	305	9.50	22.10
6	840.67	31.2 QP	46.0	-14.8	1.50 V	89	5.10	26.10

REMARKS:

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

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

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

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

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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.

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