

FCC TEST REPORT

REPORT NO.: RF990819C03B

MODEL NO.: CC61

FCC ID: YY3-017LRBT

RECEIVED: Aug. 19, 2010

TESTED: Aug. 31 ~ Oct. 08, 2010

ISSUED: Oct. 27, 2011

APPLICANT: HANDHELD GROUP AB

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ISSUED BY: Bureau Veritas Consumer Products Services

(H.K.) Ltd., Taoyuan Branch

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R.O.C.

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Report No.: RF990819C03B

Reference No.: 111026C08



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Oct. 27, 2011



1. CERTIFICATION

PRODUCT: 7 inch Handheld Tablet PC

MODEL: CC61

BRAND: Handheld

APPLICANT: HANDHELD GROUP AB

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: Aug. 31 ~ Oct. 08, 2010

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.4-2003 ANSI C63.10-2009

The above equipment (Model: CC61) 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 : A Jran Jan. DATE: Oct. 27, 2011

Andrea Hsia / Specialist

APPROVED BY : / ... DATE: Oct. 27, 2011

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 AND LIMIT	RESULT	REMARK				
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -13.39dB at 0.177MHz.				
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.				
15.247(b)	Maximum Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.				
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 799.55MHz.				
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.				
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.				
15.203	Antenna Requirement	PASS	Antenna connector is IPEX not a standard connector.				

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
	30MHz ~ 200MHz	3.34 dB
Radiated emissions	200MHz ~1000MHz	3.35 dB
Nadiated emissions	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	7 inch Handheld Tablet PC
MODEL NO.	CC61
FCC ID	YY3-017LRBT
NOMINAL VOLTAGE	12Vdc (adapter)
NOMINAL VOLTAGE	7.4Vdc (Battery)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS
MODULATION TIPE	64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
	802.11b:11/5.5/2/1Mbps
TRANSFER RATE	802.11g: 54/48/36/24/18/12/9/6Mbps
	802.11n: up to 150Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz)
NUMBER OF CHANNEL	7 for 802.11n (40MHz)
OUTPUT POWER	223.9mW
ANTENNA TYPE	Printed PCB antenna with 3.1dBi gain
ANTENNA CONNECTOR	IPEX
I/O PORTS	Refer to user's manual
DATA CABLE	NA
ACCESSORY DEVICES	Adapter, Battery

NOTE:

- 1. This report is issued as a duplicate report of BV ADT report no.: RF990819C03.The differences compared with original report are listing as below.
 - **Changed model, FCC ID.

2. 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

3. The EUT was powered by the following adapter & battery:

ADAPTER				
BRAND:	EDAC			
MODEL:	EA1050C-120			
INPUT: 100-240Vac, 50/60Hz, 1.8A				
OUTPUT:	12Vdc, 4.16A			
POWER LINE:	AC: 1.8m non-shielded cable with one core DC: 1.8m shielded cable without core			

^{**}Removed Bluetooth module.



BATTERY
RATTING: 7.4Vdc 2S1P, 2600mAh

4. The above EUT information was 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

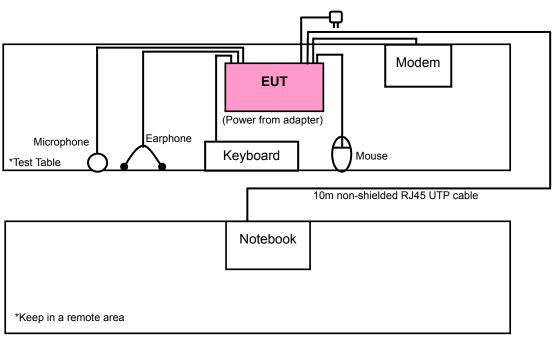
11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

TT GHAITHGIG ATG PTG	· onamiele are provided for edulitie, edulitie, deliting and edulitim (Leiminz).							
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
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE		APPLICA	ABLE TO	DESCRIPTION	
	RE≥1G	RE<1G	PLC	APCM	DESSAIL HON
-	V	√	V	V	-

Where

RE≥1G: Radiated Emission above 1GHz **PLC:** Power Line Conducted Emission

RE<1G: Radiated Emission below 1GHz

APCM: Antenna Port Conducted Measurement

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, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Z
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Z
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	Z
802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	Z

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
802.11g	1 to 11	1	OFDM	BPSK	6.0	Z

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.

MODE	AVAILABLE	TESTED	MODULATION	MODULATION	DATA RATE
	CHANNEL	CHANNEL	TECHNOLOGY	TYPE	(Mbps)
802.11g	1 to 11	1	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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5
802.11n (40MHz)	1 to 7	1, 7	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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY	
RE≥1G	26deg. C, 66%RH, 1008 hPa	120Vac, 60Hz	Frank Wang	
RE<1G	25deg. C, 66%RH, 1012 hPa	120Vac, 60Hz	Frank Wang	
PLC	25deg. C, 60%RH, 1008 hPa	120Vac, 60Hz	Frank Wang	
APCM	25deg. C, 65%RH, 1006 hPa	120Vac, 60Hz	David Huang	



3.3 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 C63.4-2003 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.

3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	MOUSE	DELL	MO56U0	513001542	FCC DoC Approved
2	USB KEYBOARD	DELL	SK-8115	MY-0DJ325-7161 9-857-0405	NA
3	MODEM	ACEEX	1414V/3	0401008270	IFAXDM1414
4	EARPHONE	PHILIPS	HL145	N/A	NA
5	MICROPHONE	Labtec	LVA7313	N/A	NA
6	NOTEBOOK	DELL	D820	21498926752	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS					
1	1.8m foil shielded wire, USB Connector, w/o core.					
2	1.8m foil shielded wire, USB Connector, w/o core.					
3	1.2m braid shielded wire, DB25 & DB9 connector, w/o core.					
4	1.2m shielded cable					
5	1m wrapped shielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core.					
6	10m RJ45 cable					

NOTE:

- 1. All power cords of the above support units are non shielded (1.8m).
- 2. Items 6 acted as communication partner to transfer data.



4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a). 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. As shown in 15.35(b), 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	100188	Dec. 21, 2009	Dec. 20, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Dec. 31, 2009	Dec. 30, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Apr. 27, 2010	Apr. 26, 2011
HORN Antenna SCHWARZBECK	9120D	9120D-405	Feb. 03, 2010	Feb. 02, 2011
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8447D	2944A10638	Dec. 21, 2009	Dec. 20, 2010
Preamplifier Agilent	8449B	3008A01964	Nov. 09, 2009	Nov. 08, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238141/4	May 14, 2010	May 13, 2011
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	12738/6	May 14, 2010	May 13, 2011
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

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. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

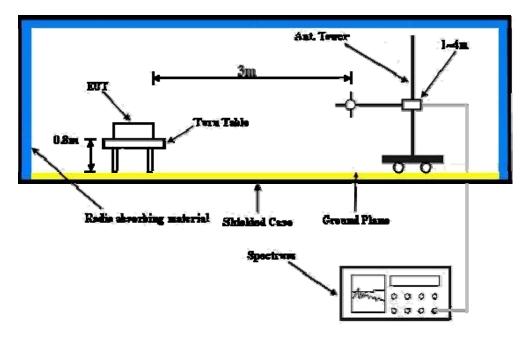
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution 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 notebook system outside of testing area to act as a communication partners.
- c. The communication partner connected with EUT via a RJ45 UTP cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- d. The communication partner sent data to EUT by command "PING".



4.1.7 TEST RESULTS

ABOVE 1GHz: 802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	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	56.5 PK	74.0	-17.5	1.05 H	0	26.00	30.50
2	2390.00	47.5 AV	54.0	-6.5	1.05 H	0	17.00	30.50
3	*2412.00	107.3 PK			1.05 H	0	76.70	30.60
4	*2412.00	102.4 AV			1.05 H	0	71.80	30.60
5	4824.00	56.4 PK	74.0	-17.6	1.24 H	227	20.30	36.10
6	4824.00	52.9 AV	54.0	-1.1	1.24 H	227	16.80	36.10
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 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	54.2 PK	74.0	-19.8	1.00 V	78	23.70	30.50
2	2390.00	45.2 AV	54.0	-8.8	1.00 V	78	14.70	30.50
3	*2412.00	102.5 PK			1.00 V	79	71.90	30.60
4	*2412.00	97.6 AV			1.00 V	79	67.00	30.60
5	4824.00	55.3 PK	74.0	-18.7	1.03 V	267	19.20	36.10
6	4824.00	52.0 AV	54.0	-2.0	1.03 V	267	15.90	36.10

- 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 (SYSTEM)	120Vac 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	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	107.0 PK			1.05 H	10	76.40	30.60	
2	*2437.00	102.2 AV			1.05 H	10	71.60	30.60	
3	4874.00	57.0 PK	74.0	-17.0	1.25 H	227	20.80	36.20	
4	4874.00	52.1 AV	54.0	-1.9	1.25 H	227	15.90	36.20	
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 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	102.4 PK			1.00 V	81	71.80	30.60	
1	*2437.00 *2437.00	102.4 PK 97.4 AV			1.00 V 1.00 V	81 81	71.80 66.80	30.60 30.60	
			74.0	-18.5					

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	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	106.0 PK			1.03 H	1	75.30	30.70	
2	*2462.00	101.3 AV			1.03 H	1	70.60	30.70	
3	2483.50	55.9 PK	74.0	-18.1	1.00 H	1	25.10	30.80	
4	2483.50	45.8 AV	54.0	-8.2	1.00 H	1	15.00	30.80	
5	4924.00	55.8 PK	74.0	-18.2	1.00 H	175	19.50	36.30	
6	4924.00	51.3 AV	54.0	-2.7	1.00 H	175	15.00	36.30	
		ANTENNA	POLARIT	/ & TEST DI	STANCE: V	ERTICAL A	T 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	101.1 PK			1.00 V	74	70.40	30.70	
2	*2462.00	96.4 AV			1.00 V	74	65.70	30.70	
3	2483.50	56.2 PK	74.0	-17.8	1.00 V	74	25.40	30.80	
4	2483.50	44.8 AV	54.0	-9.2	1.00 V	74	14.00	30.80	
5	4924.00	54.7 PK	74.0	-19.3	1.13 V	268	18.40	36.30	

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	2390.00	69.5 PK	74.0	-4.5	1.06 H	4	39.00	30.50	
2	2390.00	50.9 AV	54.0	-3.1	1.06 H	4	20.40	30.50	
3	*2412.00	108.9 PK			1.06 H	4	78.30	30.60	
4	*2412.00	98.2 AV			1.06 H	4	67.60	30.60	
5	4824.00	58.9 PK	74.0	-15.1	1.16 H	226	22.80	36.10	
6	4824.00	41.4 AV	54.0	-12.6	1.16 H	226	5.30	36.10	
		ANTENNA	POLARITY	Y & TEST DI	STANCE: V	ERTICAL A	T 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	66.5 PK	74.0	-7.5	1.00 V	80	36.00	30.50	
2	2390.00	48.0 AV	54.0	-6.0	1.00 V	80	17.50	30.50	
3	*2412.00	103.7 PK			1.00 V	80	73.10	30.60	
4	*2412.00	93.3 AV			1.00 V	80	62.70	30.60	
5	4824.00	57.1 PK	74.0	-16.9	1.01 V	282	21.00	36.10	
						· · · · · · · · · · · · · · · · · · ·			

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.3 PK			1.03 H	9	77.70	30.60
2	*2437.00	97.9 AV			1.03 H	9	67.30	30.60
3	4874.00	54.6 PK	74.0	-19.4	1.29 H	227	18.40	36.20
4	4874.00	38.6 AV	54.0	-15.4	1.29 H	227	2.40	36.20
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 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	104.0 PK			1.00 V	79	73.40	30.60
2	*2437.00 *2437.00	104.0 PK 93.2 AV			1.00 V 1.00 V	79 79	73.40 62.60	30.60 30.60
1 2 3			74.0	-18.9				

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	*2462.00	107.5 PK			1.04 H	33	76.80	30.70	
2	*2462.00	96.9 AV			1.04 H	33	66.20	30.70	
3	2483.50	63.6 PK	74.0	-10.4	1.04 H	33	32.80	30.80	
4	2483.50	46.0 AV	54.0	-8.0	1.04 H	33	15.20	30.80	
5	4924.00	51.5 PK	74.0	-22.5	1.00 H	173	15.20	36.30	
6	4924.00	36.9 AV	54.0	-17.1	1.00 H	173	0.60	36.30	
		ANTENNA	A POLARIT	/ & TEST DI	STANCE: V	ERTICAL A	T 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	102.4 PK			1.13 V	97	71.70	30.70	
2	*2462.00	92.0 AV			1.13 V	97	61.30	30.70	
3	2483.50	59.0 PK	74.0	-15.0	1.13 V	97	28.20	30.80	
4	2483.50	44.9 AV	54.0	-9.1	1.13 V	97	14.10	30.80	
4									
5	4924.00	51.9 PK	74.0	-22.1	1.13 V	273	15.60	36.30	

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	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	59.9 PK	74.0	-14.1	1.06 H	10	29.40	30.50
2	2390.00	47.2 AV	54.0	-6.8	1.06 H	10	16.70	30.50
3	*2412.00	107.5 PK			1.05 H	7	76.90	30.60
4	*2412.00	97.0 AV			1.05 H	7	66.40	30.60
5	4824.00	59.8 PK	74.0	-14.2	1.23 H	223	23.70	36.10
6	4824.00	40.1 AV	54.0	-13.9	1.23 H	223	4.00	36.10
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 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	58.0 PK	74.0	-16.0	1.00 V	81	27.50	30.50
2	2390.00	44.6 AV	54.0	-9.4	1.00 V	81	14.10	30.50
3	*2412.00	103.0 PK			1.00 V	79	72.40	30.60
4	*2412.00	92.3 AV			1.00 V	79	61.70	30.60
5	4824.00	58.0 PK	74.0	-16.0	1.28 V	277	21.90	36.10
6	4824.00	38.2 AV	54.0	-15.8	1.28 V	277	2.10	36.10

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	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	107.1 PK			1.04 H	10	76.50	30.60
2	*2437.00	97.1 AV			1.04 H	10	66.50	30.60
3	4874.00	50.5 PK	74.0	-23.5	1.23 H	224	14.30	36.20
4	4874.00	36.1 AV	54.0	-17.9	1.23 H	224	-0.10	36.20
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 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	103.1 PK			1.00 V	79	72.50	30.60
1	*2437.00 *2437.00	103.1 PK 91.8 AV			1.00 V 1.00 V	79 79	72.50 61.20	30.60 30.60
1 2 3			74.0	-24.3				

- 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 (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	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	106.3 PK			1.03 H	8	75.60	30.70
2	*2462.00	95.8 AV			1.03 H	8	65.10	30.70
3	2483.50	55.5 PK	74.0	-18.5	1.03 H	8	24.70	30.80
4	2483.50	45.3 AV	54.0	-8.7	1.03 H	8	14.50	30.80
5	4924.00	50.2 PK	74.0	-23.8	1.00 H	217	13.90	36.30
6	4924.00	35.7 AV	54.0	-18.3	1.00 H	217	-0.60	36.30
		ANTENNA	A POLARIT	/ & TEST DI	STANCE: V	ERTICAL A	T 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	102.4 PK			1.00 V	74	71.70	30.70
2	*2462.00	91.2 AV			1.00 V	74	60.50	30.70
3	2483.50	55.3 PK	74.0	-18.7	1.00 V	74	24.50	30.80
4	2483.50	44.7 AV	54.0	-9.3	1.00 V	74	13.90	30.80
-								
5	4924.00	50.6 PK	74.0	-23.4	1.10 V	284	14.30	36.30

- 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 1	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	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	59.0 PK	74.0	-15.0	1.07 H	9	28.50	30.50
2	2390.00	47.5 AV	54.0	-6.5	1.07 H	9	17.00	30.50
3	*2422.00	103.3 PK			1.06 H	7	72.70	30.60
4	*2422.00	92.3 AV			1.06 H	7	61.70	30.60
5	4844.00	49.1 PK	74.0	-24.9	1.35 H	223	12.90	36.20
6	4844.00	34.8 AV	54.0	-19.2	1.35 H	223	-1.40	36.20
		ANTENNA	A POLARIT	Y & TEST DI	STANCE: V	ERTICAL A	T 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	55.6 PK	74.0	-18.4	1.00 V	77	25.10	30.50
2	2390.00	44.9 AV	54.0	-9.1	1.00 V	77	14.40	30.50
3	*2422.00	95.2 PK			1.00 V	79	64.60	30.60
4	*2422.00	84.0 AV			1.00 V	79	53.40	30.60
5	4844.00	48.6 PK	74.0	-25.4	1.00 V	280	12.40	36.20
6	4844.00	34.2 AV	54.0	-19.8	1.00 V	280	-2.00	36.20

- 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 4	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	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	103.4 PK			1.07 H	9	72.80	30.60
2	*2437.00	92.3 AV			1.07 H	9	61.70	30.60
3	4874.00	49.0 PK	74.0	-25.0	1.25 H	221	12.80	36.20
4	4874.00	34.9 AV	54.0	-19.1	1.25 H	221	-1.30	36.20
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M	
NO.	FREQ. (MHz)	EMISSION LEVEL	LIMIT	MARGIN (dB)	ANTENNA	TABLE ANGLE	RAW VALUE	CORRECTION
	, ,	(dBuV/m)	(dBuV/m)	mAROIR (db)	HEIGHT (m)	(Degree)	(dBuV)	(dB/m)
1	*2437.00		(dBuV/m)	marcon (ab)	1.00 V		(dBuV) 64.20	
1 2		(dBuV/m)	(dBuV/m)		HEIGHT (m)	(Degree)	, ,	(dB/m)
	*2437.00	(dBuV/m) 94.8 PK	(dBuV/m) 74.0	-25.6	1.00 V	(Degree) 79	64.20	(dB/m) 30.60

- 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 7	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	26deg. C, 66%RH 1008 hPa	TESTED BY	Frank Wang	

	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	102.7 PK			1.04 H	9	72.00	30.70	
2	*2452.00	91.7 AV			1.04 H	9	61.00	30.70	
3	2483.50	56.8 PK	74.0	-17.2	1.05 H	9	26.00	30.80	
4	2483.50	46.0 AV	54.0	-8.0	1.05 H	9	15.20	30.80	
5	4904.00	48.3 PK	74.0	-25.7	1.32 H	277	12.10	36.20	
6	4904.00	34.5 AV	54.0	-19.5	1.32 H	277	-1.70	36.20	
		ANTENNA	POLARITY	Y & TEST DI	STANCE: V	ERTICAL A	T 3 M		
NO.	FREQ. (MHz)	EMISSION	LIMIT		ANTENNA	TABLE	RAW VALUE	CORRECTION	
	T NEQ. (WITZ)	LEVEL (dBuV/m)	(dBuV/m)	MARGIN (dB)	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m)	
1	*2452.00		(dBuV/m)	MARGIN (dB)	7 · · · · · · · · · · · · · · · · ·				
1 2	, ,	(dBuV/m)	(dBuV/m)	MARGIN (dB)	HEIGHT (m)	(Degree)	(dBuV)	(dB/m)	
•	*2452.00	(dBuV/m) 94.1 PK	(dBuV/m)	-18.1	HEIGHT (m)	(Degree)	(dBuV) 63.40	(dB/m) 30.70	
2	*2452.00 *2452.00	(dBuV/m) 94.1 PK 83.2 AV	(dBuV/m)		1.00 V 1.00 V	(Degree) 77 77	(dBuV) 63.40 52.50	(dB/m) 30.70 30.70	
2	*2452.00 *2452.00 2483.50	(dBuV/m) 94.1 PK 83.2 AV 55.9 PK	(dBuV/m)	-18.1	1.00 V 1.00 V 1.00 V	(Degree) 77 77 78	(dBuV) 63.40 52.50 25.10	(dB/m) 30.70 30.70 30.80	

- 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 1	FREQUENCY RANGE	Below 1000MHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak	
	25deg. C, 66%RH 1012 hPa	TESTED BY	Frank Wang	

	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	171.83	40.2 QP	43.5	-3.3	1.75 H	82	27.10	13.10	
2	249.60	41.7 QP	46.0	-4.3	1.00 H	190	28.90	12.80	
3	630.69	42.2 QP	46.0	-3.8	1.25 H	58	19.70	22.50	
4	768.73	42.6 QP	46.0	-3.4	1.25 H	298	18.30	24.30	
5	799.55	45.0 QP	46.0	-1.0	1.71 H	328	20.40	24.60	
6	935.94	40.9 QP	46.0	-5.1	1.25 H	58	14.40	26.50	
		ANTENNA	A POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 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)	
		, ,				(Degree)		(0.2/11)	
1	37.68	30.8 QP	40.0	-9.2	1.00 V	6	17.30	13.50	
1	37.68 433.09	,	40.0 46.0	-9.2 -2.1	1.00 V 1.18 V	, ,	17.30 25.90	, ,	
<u> </u>		30.8 QP				6		13.50	
2	433.09	30.8 QP 43.9 QP	46.0	-2.1	1.18 V	6 172	25.90	13.50 18.00	
2	433.09 630.69	30.8 QP 43.9 QP 40.6 QP	46.0 46.0	-2.1 -5.4	1.18 V 1.25 V	6 172 118	25.90 18.10	13.50 18.00 22.50	

- 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. 23, 2009	Nov. 22, 2010	
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2009	Dec. 30, 2010	
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Dec. 25, 2009	Dec. 24, 2010	
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 08, 2010	Jul. 07, 2011	
V-LISN SCHWARZBECK	NNBL 8226-2	8226-142	Jul. 12, 2010	Jul. 11, 2011	
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.

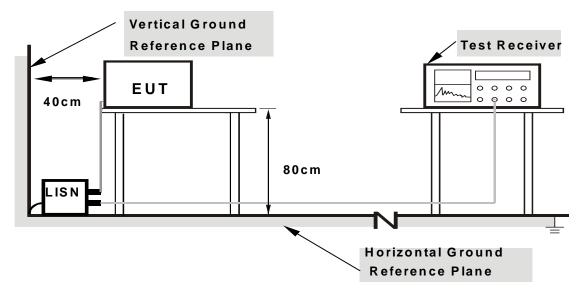
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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

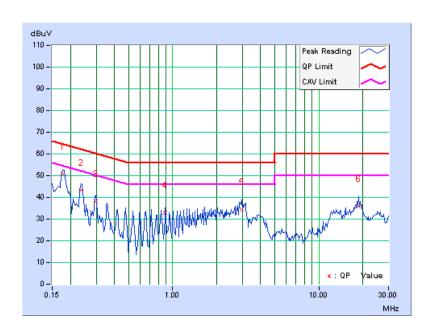
CONDUCTED WORST-CASE DATA: 802.11g

PHASE Line 1	6dB BANDWIDTH	9kHz
--------------	---------------	------

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB ((uV)]	[dB ((uV)]	[dB	(uV)]	(dl	B)
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	50.70	-	50.81	-	64.61	54.61	-13.79	-
2	0.236	0.11	43.08	-	43.19	-	62.24	52.24	-19.04	-
3	0.298	0.12	37.91	-	38.03	-	60.29	50.29	-22.26	-
4	0.892	0.17	32.83	-	33.00	-	56.00	46.00	-23.00	-
5	2.973	0.30	34.02	-	34.32	-	56.00	46.00	-21.68	-
6	18.789	1.39	34.40	-	35.79	-	60.00	50.00	-24.21	_

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

- 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
- 3. The emission levels of other frequencies were very low against the limit.
- 4. Margin value = Emission level Limit value
- 5. Correction factor = Insertion loss + Cable loss
- 6. Emission Level = Correction Factor + Reading Value.



Report No.: RF990819C03B Reference No.: 111026C08 32

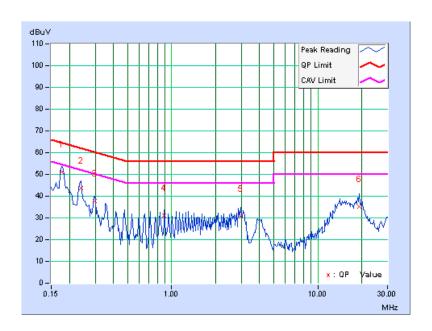


PHASE	Line 2	6dB BANDWIDTH	9kHz
	2.110 2		01(i 12

	Freq.	Corr.	Readin	g Value		sion vel	Lir	nit	Mar	gin
No		Factor	[dB ((uV)]	[dB ((uV)]	[dB	(uV)]	(dl	B)
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.10	51.12	-	51.22	-	64.61	54.61	-13.39	-
2	0.240	0.10	43.73	-	43.83	-	62.10	52.10	-18.27	-
3	0.298	0.11	37.69	-	37.80	-	60.29	50.29	-22.49	-
4	0.892	0.16	30.97	-	31.13	-	56.00	46.00	-24.87	-
5	2.969	0.28	30.49	-	30.77	-	56.00	46.00	-25.23	-
6	19.315	1.26	34.06	-	35.32	-	60.00	50.00	-24.68	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

- 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
- 3. The emission levels of other frequencies were very low against the limit.
- 4. Margin value = Emission level Limit value
- 5. Correction factor = Insertion loss + Cable loss
- 6. 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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP40	100039	Jan. 11, 2010	Jan. 10, 2011

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

4.3.3 TEST PROCEDURE

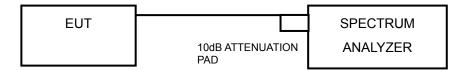
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



4.3.5 TEST SETUP



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.

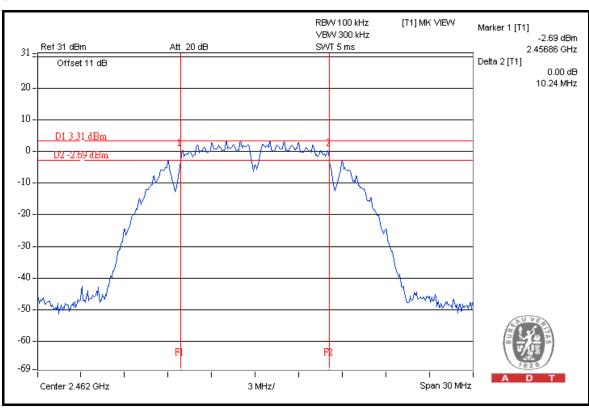


4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.23	0.5	PASS
6	2437	10.23	0.5	PASS
11	2462	10.24	0.5	PASS

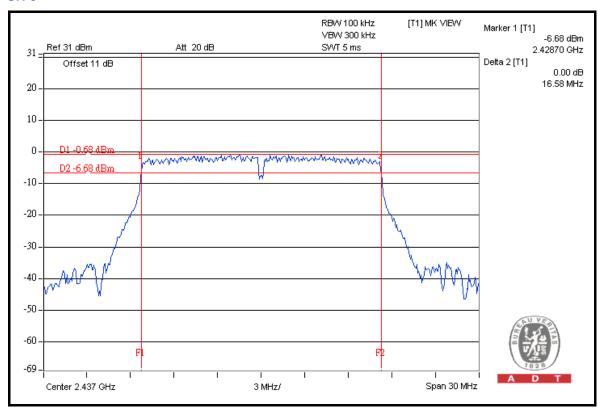
CH 11





802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.57	0.5	PASS
6	2437	16.58	0.5	PASS
11	2462	16.56	0.5	PASS

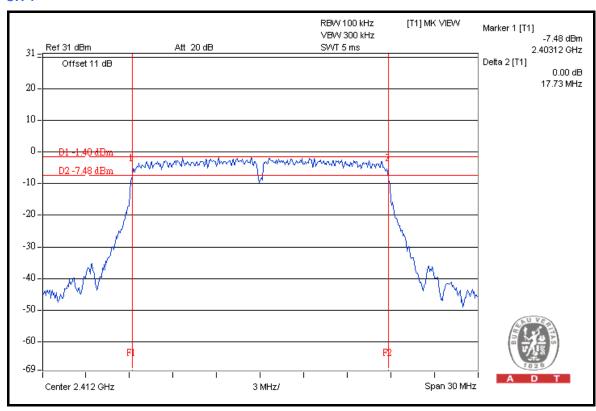




802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.73	0.5	PASS
6	2437	17.73	0.5	PASS
11	2462	17.71	0.5	PASS

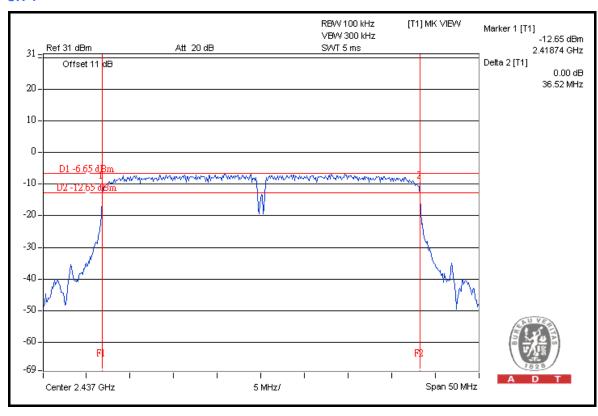
CH₁





802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2422	36.48	0.5	PASS
4	2437	36.52	0.5	PASS
7	2452	36.50	0.5	PASS





4.4 MAXIMUM OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

The Maximum Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
High Speed Peak Power Meter	ML2495A	0842014	Apr. 21, 2010	Apr. 20, 2011
Power Sensor	MA2411B	0738404	Apr. 21, 2010	Apr. 20, 2011

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. Measurement Bandwidth of ML2495A is 65MHz greater than 6dB bandwidth of emission.

4.4.3 TEST PROCEDURE

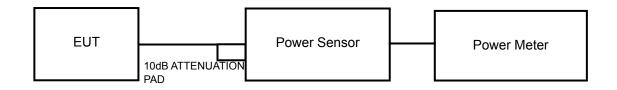
A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.



4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



4.4.7 TEST RESULTS

802.11b

CHAN.	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	58.9	17.7	30	PASS
6	2437	67.6	18.3	30	PASS
11	2462	64.6	18.1	30	PASS

802.11g

CHAN.	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	223.9	23.5	30	PASS
6	2437	218.8	23.4	30	PASS
11	2462	218.8	23.4	30	PASS

802.11n (20MHz)

CHAN.	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	199.5	23.0	30	PASS
6	2437	186.2	22.7	30	PASS
11	2462	158.5	22.0	30	PASS

802.11n (40MHz)

CHAN.	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2422	100.0	20.0	30	PASS
4	2437	104.7	20.2	30	PASS
7	2452	104.7	20.2	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 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP40	100039	Jan. 11, 2010	Jan. 10, 2011

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

4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 10kHz VBW, set sweep time = Auto , detector type =Peak . Trace average 100 traces in power averaging mode. The power spectral density was measured and recorded.

(Refer to PSD option2 of Measurement of Digital Transmission Systems Operating under Section 15.247)



4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

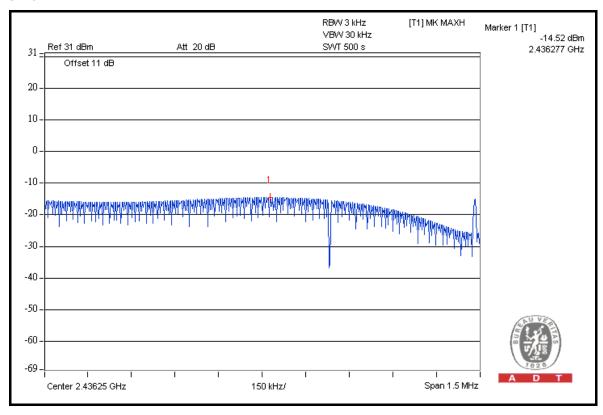


4.5.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-15.0	8	PASS
6	2437	-14.5	8	PASS
11	2462	-14.7	8	PASS

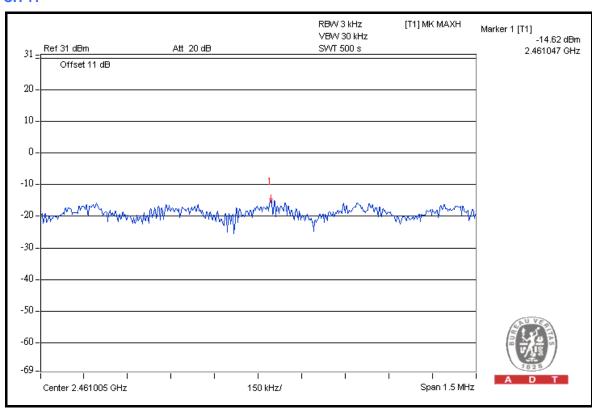
CH 6





802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-14.7	8	PASS
6	2437	-14.7	8	PASS
11	2462	-14.6	8	PASS

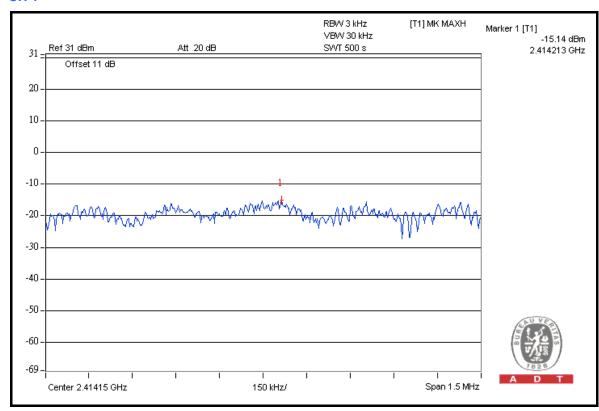




802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-15.1	8	PASS
6	2437	-15.2	8	PASS
11	2462	-16.1	8	PASS

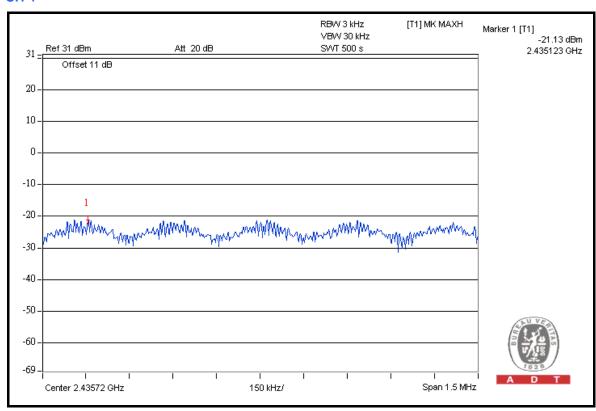
CH₁





802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2422	-21.6	8	PASS
4	2437	-21.1	8	PASS
7	2452	-21.4	8	PASS





4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
SPECTRUM ANALYZER	FSP40	100039	Jan. 11, 2010	Jan. 10, 2011

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kMHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.



4.6.6 TEST RESULTS

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	107.3	50.06	57.24	74.00
2412.00 (AV)	102.4	59.51	42.89	54.00

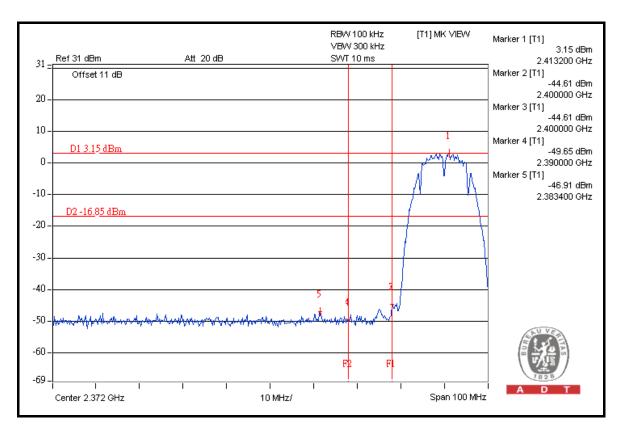
RESTRICT BAND (2483.5 ~ 2500 MHz)

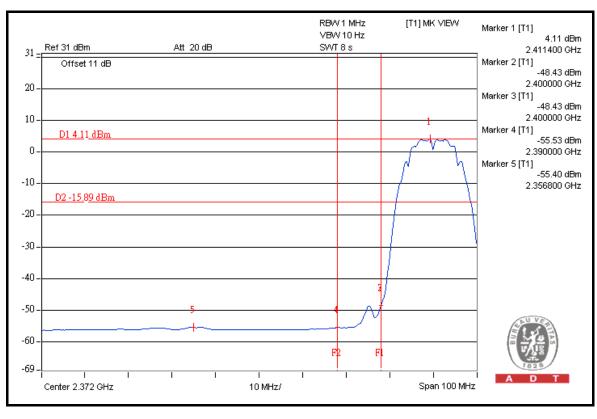
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	106.0	50.84	55.16	74.00
2462.00 (AV)	101.3	59.98	41.32	54.00

NOTE:

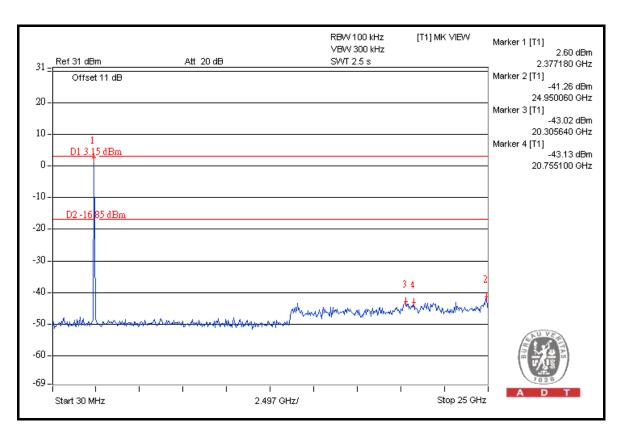
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

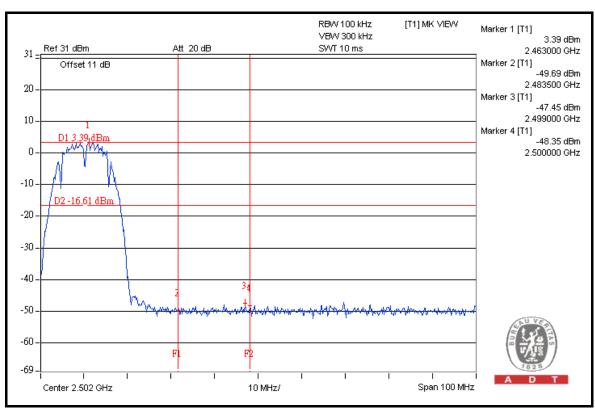




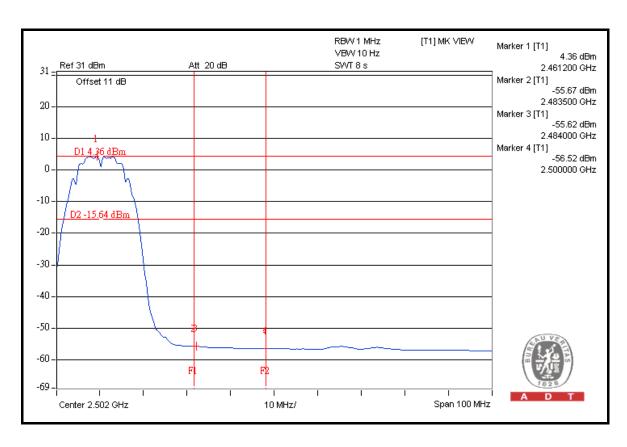


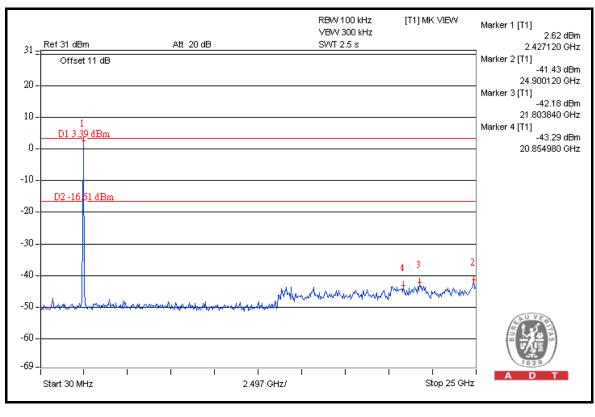














802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	108.9	46.12	62.78	74.00
2412.00 (AV)	98.2	50.80	47.40	54.00

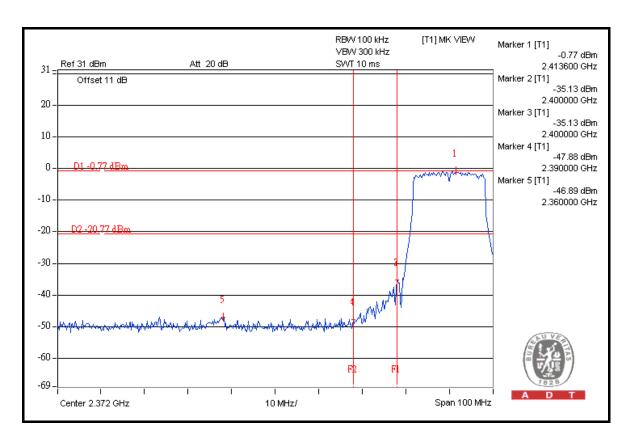
RESTRICT BAND (2483.5 ~ 2500 MHz)

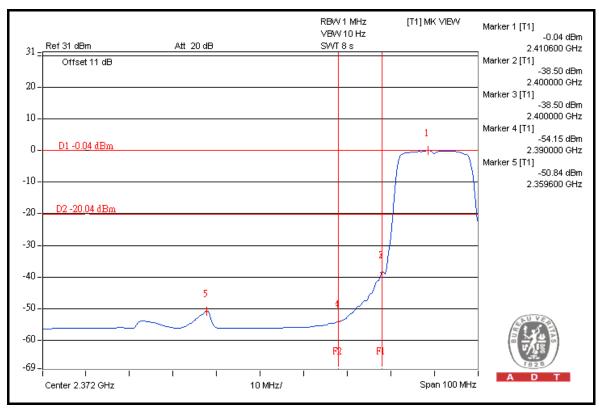
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	107.5	46.45	61.05	74.00
2462.00 (AV)	96.9	54.22	42.68	54.00

NOTE:

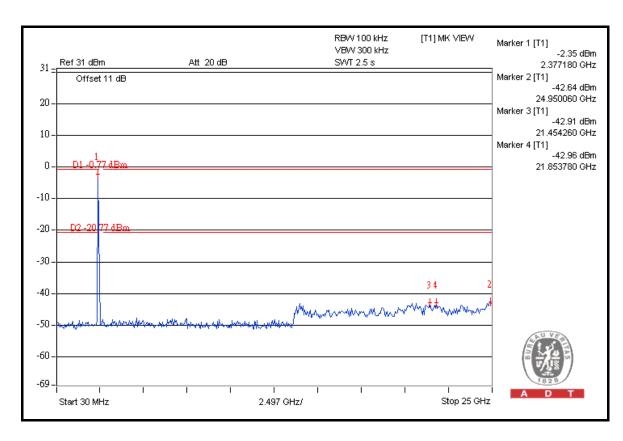
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

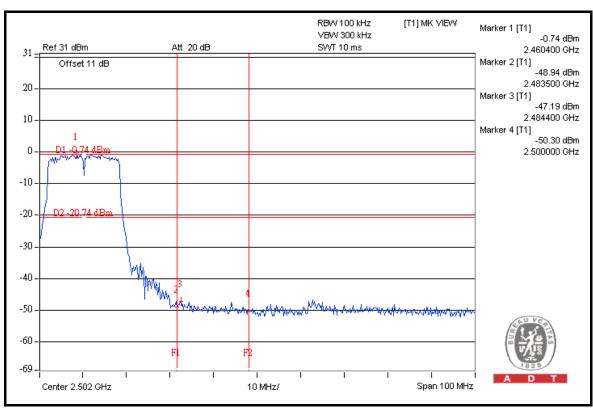




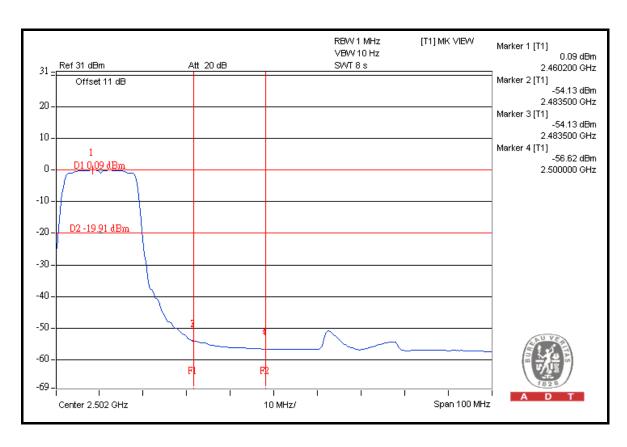


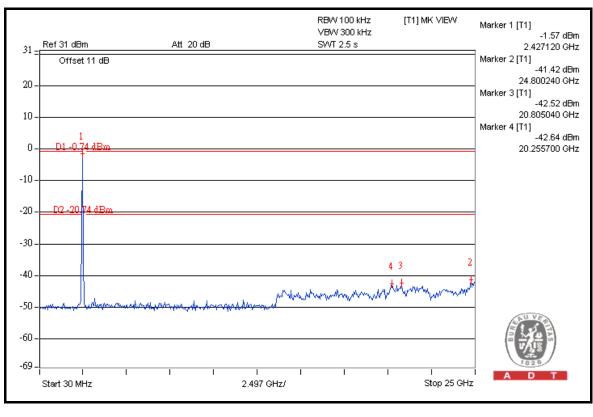














802.11n (20MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	107.5	46.07	61.43	74.00
2412.00 (AV)	97.0	49.90	47.10	54.00

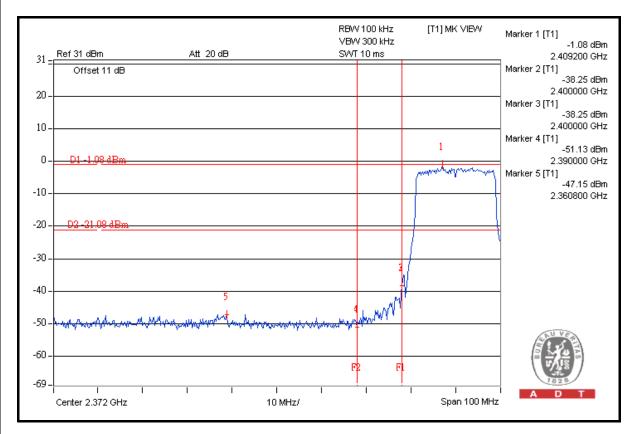
RESTRICT BAND (2483.5 ~ 2500 MHz)

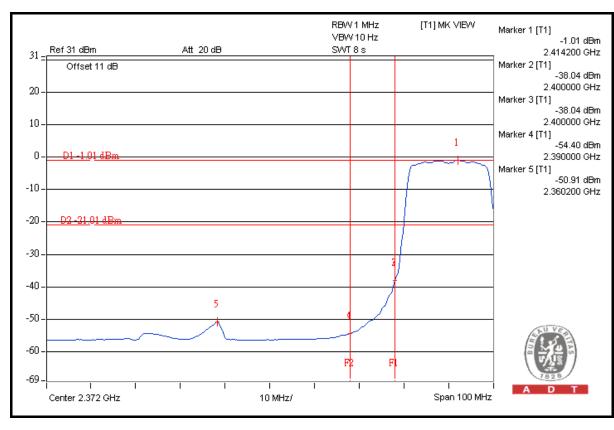
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	106.3	43.86	62.44	74.00
2462.00 (AV)	95.8	53.27	42.53	54.00

NOTE:

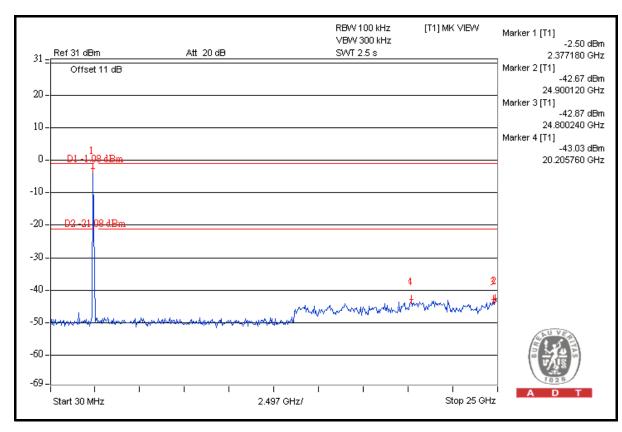
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

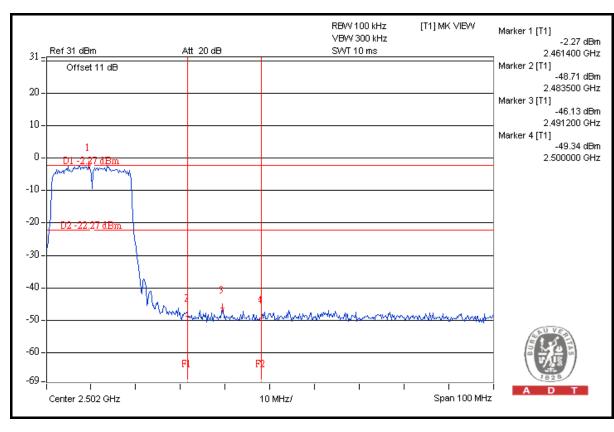




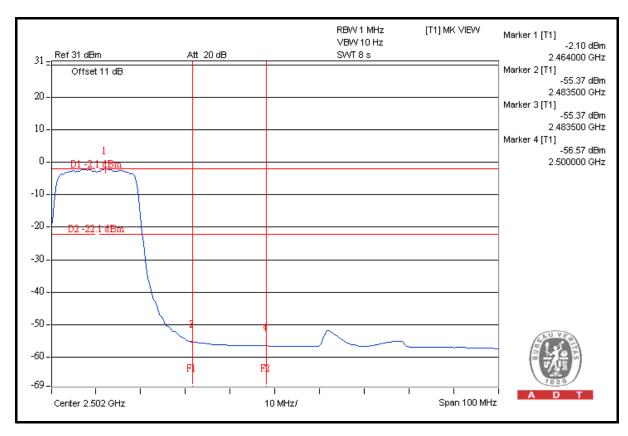


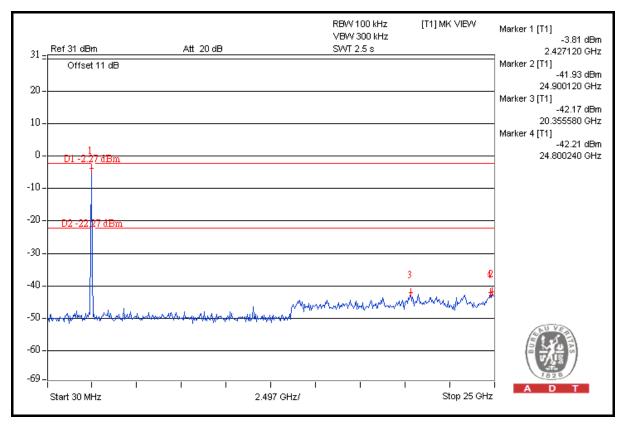














802.11n (40MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2422.00 (PK)	103.3	39.56	63.74	74.00
2422.00 (AV)	92.3	46.31	45.99	54.00

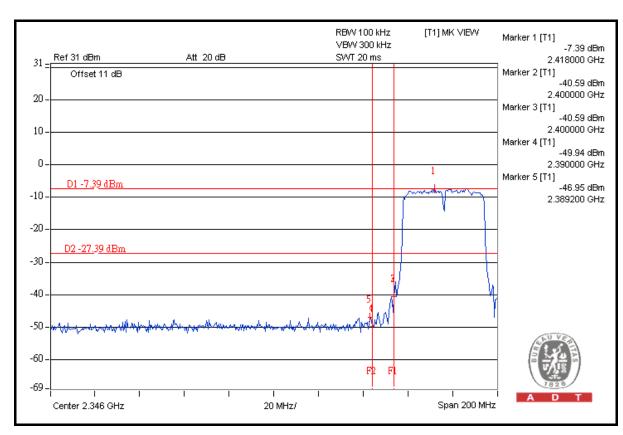
RESTRICT BAND (2483.5 ~ 2500 MHz)

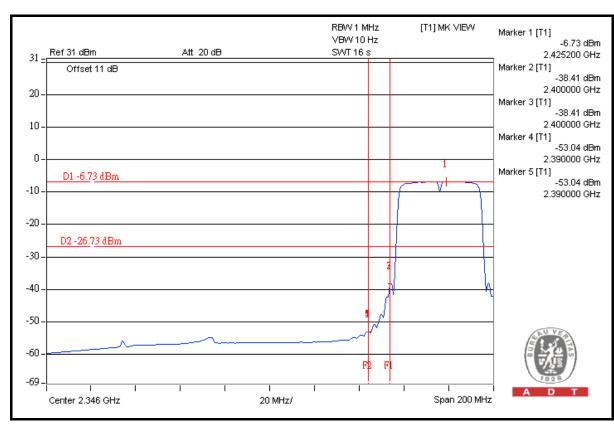
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	102.7	40.61	62.09	74.00
2452.00 (AV)	91.7	46.94	44.76	54.00

NOTE:

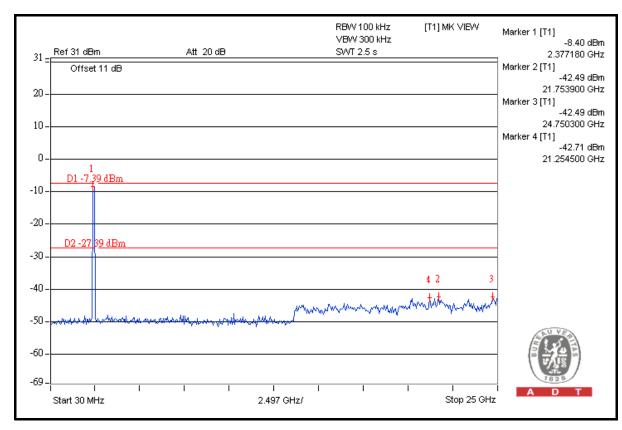
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

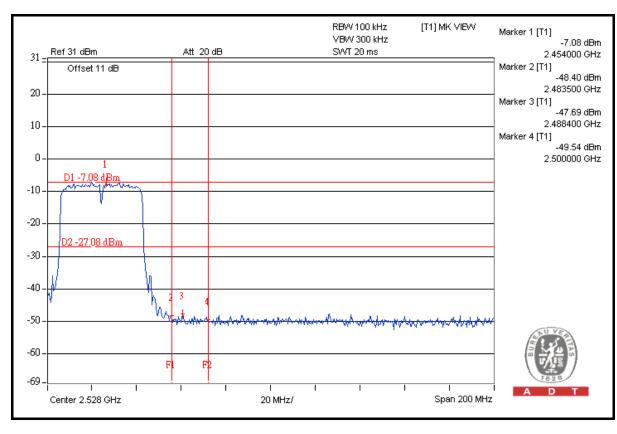




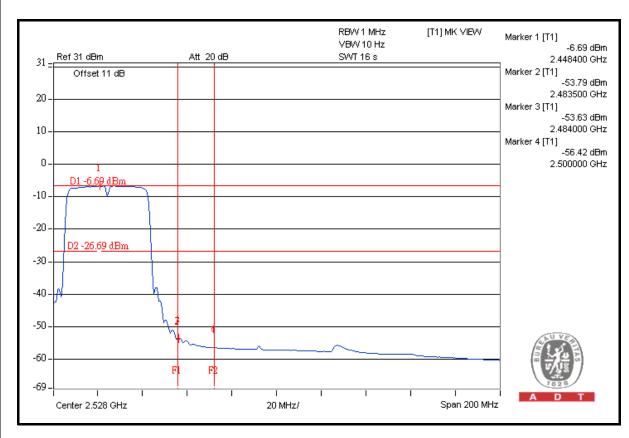


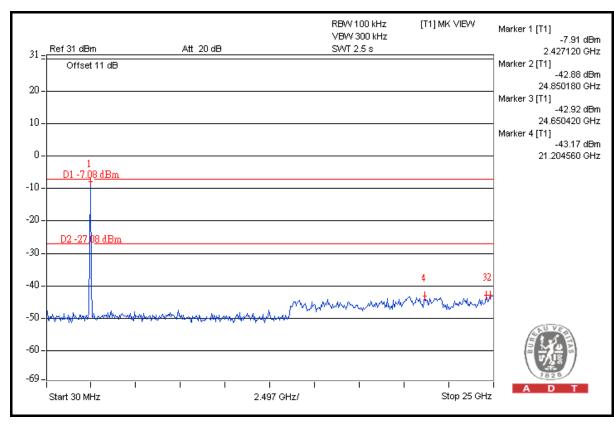














5. PHOTOGRAPHS OF THE TEST CONFIGURATION
Please refer to the attached file (Test Setup Photo).



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

Linko EMC/RF Lab: Hsin Chu EMC/RF Lab:

Tel: 886-2-26052180 Tel: 886-3-5935343 Fax: 886-2-26051924 Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/TPCI Lab:

Tel: 886-3-3183232 Fax: 886-3-3185050

Email: service.adt@tw.bureauveritas.com

Web Site: 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.

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