

FCC TEST REPORT

REPORT NO.: RF981215L24

MODEL NO.: VA121V-Q

RECEIVED: Dec. 15, 2009

TESTED: May 17 ~ May 26, 2010

ISSUED: Jun. 03, 2010

APPLICANT: Vololink Pty Ltd

ADDRESS: Level 2, 541 Blackburn Road, Mount Waverley,

Victoria, 3149, Australia

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.)

Ltd., Taoyuan Branch

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang,

Taipei Hsien 244, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei

Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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TABLE OF CONTENTS

1.	CERTIFICATION	4
2.	SUMMARY OF TEST RESULTS	
2.1	MEASUREMENT UNCERTAINTY	5
3.	GENERAL INFORMATION	
3.1	GENERAL DESCRIPTION OF EUT	
3.2	DESCRIPTION OF TEST MODES	
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	8
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	9
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	
3.4	DESCRIPTION OF SUPPORT UNITS	.12
4.	TEST TYPES AND RESULTS	
4.1	RADIATED EMISSION MEASUREMENT	.13
4.1.1	LIMITS OF RADIATED EMISSION MEASUREMENT	.13
4.1.2	TEST INSTRUMENTS	.14
4.1.3	TEST PROCEDURES	15
4.1.4	DEVIATION FROM TEST STANDARD	.15
4.1.5	TEST SETUP	.16
4.1.6	EUT OPERATING CONDITIONS	16
4.1.7	TEST RESULTS	.17
4.2	CONDUCTED EMISSION MEASUREMENT	40
4.2.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	40
4.2.2	TEST INSTRUMENTS	40
4.2.3	TEST PROCEDURES	41
4.2.4	DEVIATION FROM TEST STANDARD	.41
4.2.5	TEST SETUP	42
4.2.6	EUT OPERATING CONDITIONS	42
4.2.7	TEST RESULTS	43
4.3	6dB BANDWIDTH MEASUREMENT	47
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	47
4.3.2	TEST INSTRUMENTS	47
4.3.3	TEST PROCEDURE	47
4.3.4	DEVIATION FROM TEST STANDARD	47
4.3.5	TEST SETUP	48
4.3.6	EUT OPERATING CONDITIONS	48
4.3.7	TEST RESULTS	49
4.4	MAXIMUM OUTPUT POWER	53
4.4.1	LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT	53
4.4.2	INSTRUMENTS	.53



4.4.3	TEST PROCEDURES	.53
4.4.4	DEVIATION FROM TEST STANDARD	.54
4.4.5	TEST SETUP	.54
4.4.6	EUT OPERATING CONDITIONS	.54
4.4.7	TEST RESULTS	.55
4.5	POWER SPECTRAL DENSITY MEASUREMENT	.56
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	.56
4.5.2	TEST INSTRUMENTS	.56
4.5.3	TEST PROCEDURE	.56
4.5.4	DEVIATION FROM TEST STANDARD	
4.5.5	TEST SETUP	.57
4.5.6	EUT OPERATING CONDITION	
4.5.7	TEST RESULTS	
4.6	BAND EDGES MEASUREMENT	.62
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	
4.6.2	TEST INSTRUMENTS	.62
4.6.3	TEST PROCEDURE	.63
4.6.4	DEVIATION FROM TEST STANDARD	
4.6.5	EUT OPERATING CONDITION	.63
4.6.6	TEST RESULTS	.64
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION	.80
6.	INFORMATION ON THE TESTING LABORATORIES	.81
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGE	ES
	TO THE EUT BY THE LAB	.82



1. CERTIFICATION

PRODUCT: VoloAccess; 3G+ Convergent Wireless Terminal

MODEL: VA121V-Q

BRAND: Vololink

APPLICANT: Vololink Pty Ltd

TEST SAMPLE: ENGINEERING SAMPLE

TESTED: May 17 ~ May 26, 2010

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

ANSI C63.4-2003

The above equipment (Model: VA121V-Q) 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 : _______, DATE : _______, Jun. 03, 2010

Pettie Chen / Specialist

TECHNICAL

ACCEPTANCE : Long Chery Senior Engineer , DATE : ____

APPROVED BY: Jun. 03, 2010

Gary Chang / Assistant 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	15.207 AC Power Conducted Emission		Meet the requirement of limit. Minimum passing margin is -16.44dB at 0.611MHz.		
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 -1.1dB at 30.93 & 2390.00 & 2483.50 & 2491.00 & 7311.00 & 7386.00 MHz.		
15.247(e) Power Spectral Density Limit: max. 8dBm		PASS	Meet the requirement of limit.		
Band Edge Measurement 15.247(d) Limit: 20dB less than the peak value of fundamental frequency		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	
	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	VoloAccess; 3G+ Convergent Wireless Terminal		
MODEL NO.	VA121V-Q		
FCC ID	X7PVA12X		
POWER SUPPLY	12Vdc (Adapter)		
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 300.0Mbps		
OPERATING FREQUENCY	2412 ~ 2462MHz		
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)		
OUTPUT POWER	597.4mW		
ANTENNA TYPE	PCBA antenna with 1.5dBi gain PIFA antenna with 1.5dBi gain		
ANTENNA CONNECTOR	NA		
DATA CABLE	1.4m non-shielded RJ45 cable without core		
I/O PORTS	RJ45, USB, RJ11		
ACCESSORY DEVICES	Adapter		

NOTE:

1. The EUT is a VoloAccess; 3G+ Convergent Wireless Terminal. The functions of EUT listed as below:

	TEST STANDARD	REFERENCE REPORT
WLAN 802.11b/g/n	FCC Part 15, Subpart C (Section 15.247) RF981215L2	
GSM 850 / WCDMA 850	FCC Part 22	RF981215L24-1
PCS 1900 / WCDMA 1900	FCC Part 24	RF981215L24-2

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

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX



3. The EUT were powered by the following adapters:

Adapter 1	
BRAND:	UNIFIVE
MODEL:	UTI324-1220
INPUT:	100-240Vac, 50-60Hz, 0.6A
OUTPUT:	12Vdc, 2A
	DC 1.9m non-shielded cable without core AC 1.8m non-shielded cable without core

Adapter 2	
BRAND:	UNIFIVE
MODEL:	UTL324-1220
INPUT:	100-240Vac, 50/60Hz, 0.6A
OUTPUT:	12Vdc, 2A
POWER LINE:	DC 1.9m non-shielded cable without core

^{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):

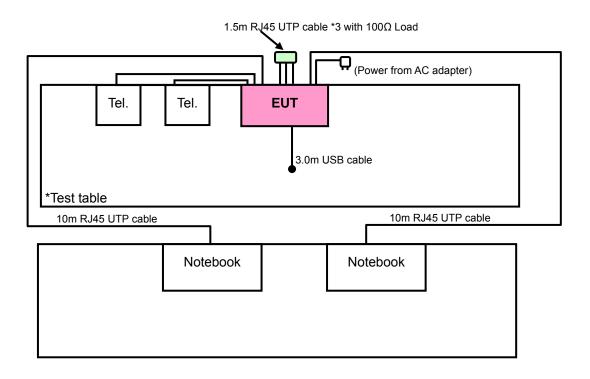
CHANNEL	CHANNEL FREQUENCY		FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

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

CHANNEL	CHANNEL FREQUENCY		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	APPLICABLE TO			DESCRIPTION	
MODE	RE≥1G	RE<1G	PLC	APCM	DESCRIPTION
Α	√	\checkmark	\checkmark	\checkmark	Power from Adapter 1
В	-	\checkmark	\checkmark	-	Power from Adapter 2

Where **RE≥1G**: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

RE<1G: Radiated Emission below 1GHz

NOTE: "-" means no effect.

RADIATED EMISSION TEST (ABOVE 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis 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)	ANT. AXIS
Α	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Z
Α	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Z
А	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	Z
А	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0	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, XYZ axis 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)	ANT. AXIS
A, B	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	7.2	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.

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

BANDEDGE MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
Α	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
Α	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
А	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2
А	802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	15.0

ANTENNA PORT CONDUCTED MEASUREMENT:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
Α	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
А	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
А	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2
А	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	15.0



TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G (For 802.11b/g)	18deg. C, 68%RH, 1006 hPa	120Vac, 60Hz	Lori Chiu
RE≥1G (For 802.11n)	22deg. C, 66%RH, 1006 hPa	120Vac, 60Hz	Lori Chiu
RE<1G	25deg. C, 65%RH, 1006 hPa	120Vac, 60Hz	Brad Wu
PLC	23deg. C, 58%RH, 1005 hPa	120Vac, 60Hz	Ariel Lin
APCM	22deg. C, 66%RH, 1008 hPa	120Vac, 60Hz	Lori Chiu

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

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	NOTEBOOK	DELL	D531	CN-0XM006-486 43-81U-2786	QDS-BRCM1020
2	NOTEBOOK	DELL	D820	21498926752	FCC DoC Approved
3	TELEPHONE	WONDER	WD-303	1F01520	N/A
4	TELEPHONE	WONDER	WD-303	1F01007	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS						
1	10m RJ45 UTP cable						
2	10m RJ45 UTP cable						
3	1.8 m non-shielded cable, RJ11 connector, w/o core.						
4	1.8 m non-shielded cable, RJ11 connector, w/o core.						

NOTE 1: All power cords of the above support units are non shielded (1.8m).

NOTE 2: Item 1, 2 acted as communication partners to transfer data.



4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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	100040	Jul. 07, 2009	Jul. 06, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Aug. 10, 2009	Aug. 09, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01910	Sep. 11, 2009	Sep. 10, 2010
Preamplifier Agilent	8447D	2944A10638	Dec. 21, 2009	Dec. 20, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 17, 2009	Aug. 16, 2010
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA

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

- 2. The test was performed in HwaYa Chamber 9.
- 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
- 4. The FCC Site Registration No. is 460141.
- 5. The IC Site Registration No. is IC 7450F-4.



4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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:

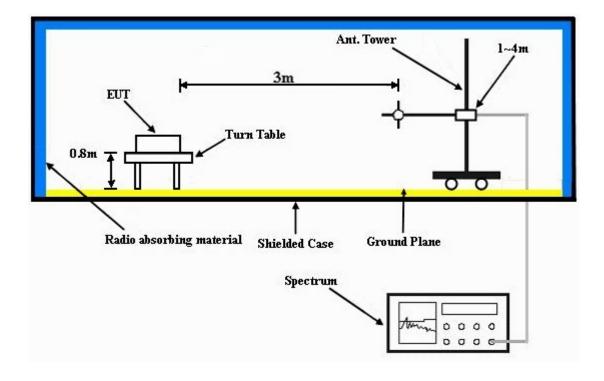
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution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



4.1.7 TEST RESULTS

802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

	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	2386.00	56.6 PK	74.0	-17.4	1.03 H	259	24.30	32.30		
2	2386.00	47.0 AV	54.0	-7.0	1.03 H	259	14.70	32.30		
3	*2412.00	100.2 PK			1.03 H	259	67.80	32.40		
4	*2412.00	96.2 AV			1.03 H	259	63.80	32.40		
5	2490.00	59.0 PK	74.0	-15.0	1.08 H	263	26.40	32.60		
6	2490.00	49.8 AV	54.0	-4.2	1.08 H	263	17.20	32.60		
7	4824.00	52.3 PK	74.0	-21.7	1.16 H	342	13.90	38.40		
8	4824.00	46.0 AV	54.0	-8.0	1.16 H	342	7.60	38.40		
9	#7236.00	56.0 PK	80.2	-24.2	1.13 H	60	11.50	44.50		
10	#7236.00	42.8 AV	76.2	-33.4	1.13 H	60	-1.70	44.50		

- 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.
- 5. " * ": Fundamental frequency.
- 6. "#":The radiated frequency is out the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL			
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)		
ENVIRONMENTAL CONDITIONS	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu		

		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	2386.00	57.3 PK	74.0	-16.7	1.18 V	248	25.00	32.30
2	2386.00	48.0 AV	54.0	-6.0	1.18 V	248	15.70	32.30
3	*2412.00	105.3 PK			1.18 V	248	72.90	32.40
4	*2412.00	102.4 AV			1.18 V	248	70.00	32.40
5	2491.00	61.6 PK	74.0	-12.4	1.14 V	249	29.00	32.60
6	2491.00	52.9 AV	54.0	-1.1	1.14 V	249	20.30	32.60
7	4824.00	49.0 PK	74.0	-25.0	1.12 V	117	10.60	38.40
8	4824.00	37.2 AV	54.0	-16.8	1.12 V	117	-1.20	38.40
9	#7236.00	61.1 PK	85.3	-24.2	1.14 V	31	16.60	44.50
10	#7236.00	53.0 AV	82.4	-29.4	1.14 V	31	8.50	44.50

- 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.
- 5. " * ": Fundamental frequency.
- 6. "#":The radiated frequency is out the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

		ANTENNA	POLARITY	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	100.9 PK			1.05 H	239	68.50	32.40				
2	*2437.00	97.0 AV			1.05 H	239	64.60	32.40				
3	4874.00	52.4 PK	74.0	-21.6	1.37 H	359	13.90	38.50				
4	4874.00	47.2 AV	54.0	-6.8	1.37 H	359	8.70	38.50				
5	7311.00	56.3 PK	74.0	-17.7	1.00 H	69	11.60	44.70				
6	7311.00	44.6 AV	54.0	-9.4	1.00 H	69	-0.10	44.70				
		ANTENNA	A POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M					
	NO. FREQ. (MHz) EMISSION LEVEL LIMIT (dBuV/m) MARGIN (dB) ANTENNA HEIGHT (m) TABLE RAW VALUE (dBuV) FACTOR											
NO.	FREQ. (MHz)			MARGIN (dB)	7			CORRECTION FACTOR (dB/m)				
NO .	*2437.00	LEVEL		MARGIN (dB)	7	ANGLE		FACTOR				
		LEVEL (dBuV/m)		MARGIN (dB)	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m)				
1	*2437.00	LEVEL (dBuV/m) 105.7 PK		MARGIN (dB) -24.8	HEIGHT (m)	ANGLE (Degree)	(dBuV) 73.30	FACTOR (dB/m) 32.40				
1 2	*2437.00 *2437.00	LEVEL (dBuV/m) 105.7 PK 102.8 AV	(dBuV/m)		1.00 V 1.00 V	ANGLE (Degree) 235 235	(dBuV) 73.30 70.40	FACTOR (dB/m) 32.40 32.40				
1 2 3	*2437.00 *2437.00 4874.00	LEVEL (dBuV/m) 105.7 PK 102.8 AV 49.2 PK	(dBuV/m)	-24.8	1.00 V 1.00 V 1.48 V	ANGLE (Degree) 235 235 129	(dBuV) 73.30 70.40 10.70	FACTOR (dB/m) 32.40 32.40 38.50				

- 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.
- 5. " * ": Fundamental frequency.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	101.5 PK			1.02 H	275	69.10	32.40
2	*2462.00	97.6 AV			1.02 H	275	65.20	32.40
3	2488.00	58.4 PK	74.0	-15.6	1.01 H	277	25.80	32.60
4	2488.00	47.6 AV	54.0	-6.4	1.01 H	277	15.00	32.60
5	4924.00	52.6 PK	74.0	-21.4	1.03 H	12	14.00	38.60
6	4924.00	47.4 AV	54.0	-6.6	1.03 H	12	8.80	38.60
7	7386.00	55.2 PK	74.0	-18.8	1.35 H	75	10.30	44.90
8	7386.00	45.7 AV	54.0	-8.3	1.35 H	75	0.80	44.90
		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	*2462.00	106.2 PK			1.15 V	244	73.70	32.50
2	*2462.00	103.3 AV			1.15 V	244	70.80	32.50
3	2488.00	58.7 PK	74.0	-15.3	1.15 V	244	26.10	32.60
4	2488.00	49.2 AV	54.0	-4.8	1.15 V	244	16.60	32.60
5	4924.00	48.8 PK	74.0	-25.2	1.12 V	70	10.20	38.60
6	4924.00	36.8 AV	54.0	-17.2	1.12 V	70	-1.80	38.60
7	7386.00	60.7 PK	74.0	-13.3	1.09 V	336	15.80	44.90
8	7386.00	52.9 AV	54.0	-1.1	1.09 V	336	8.00	44.90

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	2360.00	58.8 PK	74.0	-15.2	1.02 H	256	26.60	32.20
2	2360.00	47.8 AV	54.0	-6.2	1.02 H	256	15.60	32.20
3	2390.00	61.1 PK	74.0	-12.9	1.20 H	256	28.80	32.30
4	2390.00	49.2 AV	54.0	-4.8	1.20 H	256	16.90	32.30
5	*2412.00	102.2 PK			1.02 H	256	69.80	32.40
6	*2412.00	92.5 AV			1.02 H	256	60.10	32.40
7	2488.00	61.5 PK	74.0	-12.5	1.02 H	256	28.90	32.60
8	2488.00	49.9 AV	54.0	-4.1	1.02 H	256	17.30	32.60
9	4824.00	49.6 PK	74.0	-24.4	1.27 H	3	11.20	38.40
10	4824.00	37.8 AV	54.0	-16.2	1.27 H	3	-0.60	38.40

- 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 1		FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	2360.00	60.4 PK	74.0	-13.6	1.02 V	233	28.20	32.20
2	2360.00	50.9 AV	54.0	-3.1	1.02 V	233	18.70	32.20
3	2390.00	66.6 PK	74.0	-7.4	1.00 V	232	34.30	32.30
4	2390.00	52.9 AV	54.0	-1.1	1.00 V	232	20.60	32.30
5	*2412.00	108.5 PK			1.00 V	235	76.10	32.40
6	*2412.00	98.4 AV			1.00 V	235	66.00	32.40
7	2488.00	63.5 PK	74.0	-10.5	1.00 V	235	30.90	32.60
8	2488.00	52.8 AV	54.0	-1.2	1.00 V	235	20.20	32.60
9	4824.00	48.9 PK	74.0	-25.1	1.20 V	223	10.50	38.40
10	4824.00	37.1 AV	54.0	-16.9	1.20 V	223	-1.30	38.40

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

		ANTENNA I	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	2385.00	58.8 PK	74.0	-15.2	1.00 H	271	26.50	32.30
2	2385.00	47.4 AV	54.0	-6.6	1.00 H	271	15.10	32.30
3	*2437.00	102.4 PK			1.00 H	272	70.00	32.40
4	*2437.00	92.8 AV			1.00 H	272	60.40	32.40
5	2488.00	58.5 PK	74.0	-15.5	1.02 H	272	25.90	32.60
6	2488.00	49.1 AV	54.0	-4.9	1.02 H	272	16.50	32.60
7	4874.00	50.3 PK	74.0	-23.7	1.32 H	183	11.80	38.50
8	4874.00	37.9 AV	54.0	-16.1	1.32 H	183	-0.60	38.50
9	7311.00	57.1 PK	74.0	-16.9	1.41 H	89	12.40	44.70
10	7311.00	45.2 AV	54.0	-8.8	1.41 H	89	0.50	44.70

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

	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	2385.00	60.1 PK	74.0	-13.9	1.02 V	236	27.80	32.30	
2	2385.00	50.5 AV	54.0	-3.5	1.02 V	236	18.20	32.30	
3	*2437.00	108.8 PK			1.00 V	228	76.40	32.40	
4	*2437.00	98.7 AV			1.00 V	228	66.30	32.40	
5	2488.00	61.1 PK	74.0	-12.9	1.00 V	233	28.50	32.60	
6	2488.00	51.2 AV	54.0	-2.8	1.00 V	233	18.60	32.60	
7	4874.00	49.4 PK	74.0	-24.6	1.25 V	360	10.90	38.50	
8	4874.00	37.7 AV	54.0	-16.3	1.25 V	360	-0.80	38.50	
9	7311.00	67.0 PK	74.0	-7.0	1.66 V	334	22.30	44.70	
10	7311.00	52.9 AV	54.0	-1.1	1.66 V	334	8.20	44.70	

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	18deg. C, 68%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	102.7 PK			1.00 H	277	70.20	32.50
2	*2462.00	93.1 AV			1.00 H	277	60.60	32.50
3	2483.50	66.2 PK	74.0	-7.8	1.00 H	275	33.60	32.60
4	2483.50	50.3 AV	54.0	-3.7	1.00 H	275	17.70	32.60
5	4924.00	50.9 PK	74.0	-23.1	1.28 H	177	12.30	38.60
6	4924.00	38.1 AV	54.0	-15.9	1.28 H	177	-0.50	38.60
7	7386.00	57.4 PK	74.0	-16.6	1.36 H	76	12.50	44.90
8	7386.00	45.5 AV	54.0	-8.5	1.36 H	76	0.60	44.90
		ANTENNA	A 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	*2462.00	109.0 PK			1.02 V	232	76.50	32.50
2	*2462.00	98.9 AV			1.02 V	232	66.40	32.50
3	2483.50	68.6 PK	74.0	-5.4	1.00 V	234	36.00	32.60
4	2483.50	52.9 AV	54.0	-1.1	1.00 V	234	20.30	32.60
5	4924.00	48.1 PK	74.0	-25.9	1.43 V	285	9.50	38.60
6	4924.00	37.4 AV	54.0	-16.6	1.43 V	285	-1.20	38.60
U	102 1.00	37.4 AV	00					
7	7386.00	68.0 PK	74.0	-6.0	1.20 V	339	23.10	44.90

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

	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	2360.00	57.3 PK	74.0	-16.7	1.21 H	28	25.10	32.20	
2	2360.00	46.5 AV	54.0	-7.5	1.21 H	28	14.30	32.20	
3	2390.00	64.7 PK	74.0	-9.3	1.23 H	260	32.40	32.30	
4	2390.00	48.5 AV	54.0	-5.5	1.23 H	260	16.20	32.30	
5	*2412.00	103.6 PK			1.23 H	260	71.20	32.40	
6	*2412.00	92.9 AV			1.23 H	260	60.50	32.40	
7	2490.00	60.4 PK	74.0	-13.6	1.18 H	262	27.80	32.60	
8	2490.00	48.5 AV	54.0	-5.5	1.18 H	262	15.90	32.60	
9	4824.00	53.2 PK	74.0	-20.8	1.00 H	0	14.80	38.40	
10	4824.00	38.7 AV	54.0	-15.3	1.00 H	0	0.30	38.40	
11	#7236.00	64.0 PK	83.6	-19.6	1.00 H	47	19.50	44.50	
12	#7236.00	46.7 AV	72.9	-26.2	1.00 H	47	2.20	44.50	

- 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.
- 5. " * ": Fundamental frequency.
- 6. "#":The radiated frequency is out the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 1 FREQUENCY RANGE		1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

		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)
1	2360.00	62.4 PK	74.0	-11.6	1.03 V	162	30.20	32.20
2	2360.00	52.5 AV	54.0	-1.5	1.03 V	162	20.30	32.20
3	2390.00	68.1 PK	74.0	-5.9	1.00 V	208	35.80	32.30
4	2390.00	50.8 AV	54.0	-3.2	1.00 V	208	18.50	32.30
5	*2412.00	110.2 PK			1.08 V	140	77.80	32.40
6	*2412.00	99.2 AV			1.08 V	140	66.80	32.40
7	2490.00	62.8 PK	74.0	-11.2	1.18 V	200	30.20	32.60
8	2490.00	50.7 AV	54.0	-3.3	1.18 V	200	18.10	32.60
9	4824.00	49.4 PK	74.0	-24.6	1.10 V	250	11.00	38.40
10	4824.00	35.2 AV	54.0	-18.8	1.10 V	250	-3.20	38.40
11	#7236.00	69.6 PK	90.2	-20.6	1.08 V	12	25.10	44.50
12	#7236.00	51.9 AV	79.2	-27.3	1.08 V	12	7.40	44.50

- 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.
- 5. " * ": Fundamental frequency.
- 6. "#":The radiated frequency is out the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	2320.00	57.4 PK	74.0	-16.6	1.30 H	201	25.40	32.00
2	2320.00	45.8 AV	54.0	-8.2	1.30 H	201	13.80	32.00
3	2360.00	57.8 PK	74.0	-16.2	1.29 H	200	25.60	32.20
4	2360.00	45.9 AV	54.0	-8.1	1.29 H	200	13.70	32.20
5	*2437.00	104.1 PK			1.32 H	200	71.70	32.40
6	*2437.00	93.3 AV			1.32 H	200	60.90	32.40
7	2489.00	60.5 PK	74.0	-13.5	1.30 H	202	27.90	32.60
8	2489.00	44.6 AV	54.0	-9.4	1.30 H	202	12.00	32.60
9	4874.00	54.2 PK	74.0	-19.8	1.00 H	350	15.70	38.50
10	4874.00	38.6 AV	54.0	-15.4	1.00 H	350	0.10	38.50
11	7311.00	64.5 PK	74.0	-9.5	1.01 H	147	19.80	44.70
12	7311.00	47.6 AV	54.0	-6.4	1.01 H	147	2.90	44.70

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	2320.00	60.4 PK	74.0	-13.6	1.06 V	172	28.40	32.00
2	2320.00	51.5 AV	54.0	-2.5	1.06 V	172	19.50	32.00
3	2360.00	61.7 PK	74.0	-12.3	1.04 V	161	29.50	32.20
4	2360.00	51.5 AV	54.0	-2.5	1.04 V	161	19.30	32.20
5	*2437.00	110.6 PK			1.00 V	182	78.20	32.40
6	*2437.00	100.0 AV			1.00 V	182	67.60	32.40
7	2489.00	63.5 PK	74.0	-10.5	1.00 V	185	30.90	32.60
8	2489.00	50.8 AV	54.0	-3.2	1.00 V	185	18.20	32.60
9	4874.00	49.3 PK	74.0	-24.7	1.10 V	107	10.80	38.50
10	4874.00	35.4 AV	54.0	-18.6	1.10 V	107	-3.10	38.50
11	7311.00	70.3 PK	74.0	-3.7	1.07 V	352	25.60	44.70
12	7311.00	52.6 AV	54.0	-1.4	1.07 V	352	7.90	44.70

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

		ANTENNA I	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	2360.00	57.1 PK	74.0	-16.9	1.33 H	200	24.90	32.20
2	2360.00	44.4 AV	54.0	-9.6	1.33 H	200	12.20	32.20
3	*2462.00	104.5 PK			1.23 H	225	72.00	32.50
4	*2462.00	93.7 AV			1.23 H	225	61.20	32.50
5	2483.50	64.3 PK	74.0	-9.7	1.23 H	225	31.70	32.60
6	2483.50	49.7 AV	54.0	-4.3	1.23 H	225	17.10	32.60
7	4924.00	53.6 PK	74.0	-20.4	1.00 H	10	15.00	38.60
8	4924.00	38.8 AV	54.0	-15.2	1.00 H	10	0.20	38.60
9	7386.00	63.9 PK	74.0	-10.1	1.03 H	356	19.00	44.90
10	7386.00	46.6 AV	54.0	-7.4	1.03 H	356	1.70	44.90

- 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.



INPLIT POWER		MEASUREMENT DETAIL			
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz		
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)		
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu		

		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	2360.00	59.2 PK	74.0	-14.8	1.41 V	215	27.00	32.20
2	2360.00	48.6 AV	54.0	-5.4	1.41 V	215	16.40	32.20
3	*2462.00	111.1 PK			1.35 V	217	78.60	32.50
4	*2462.00	100.3 AV			1.35 V	217	67.80	32.50
5	2483.50	66.5 PK	74.0	-7.5	1.31 V	233	33.90	32.60
6	2483.50	52.3 AV	54.0	-1.7	1.31 V	233	19.70	32.60
7	4924.00	47.4 PK	74.0	-26.6	1.11 V	19	8.80	38.60
8	4924.00	35.7 AV	54.0	-18.3	1.11 V	19	-2.90	38.60
9	7386.00	69.7 PK	74.0	-4.3	1.21 V	312	24.80	44.90
10	7386.00	51.2 AV	54.0	-2.8	1.21 V	312	6.30	44.90

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M									
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
1	2390.00	58.3 PK	74.0	-15.7	1.43 H	63	26.00	32.30		
2	2390.00	47.1 AV	54.0	-6.9	1.43 H	63	14.80	32.30		
3	*2422.00	96.8 PK			1.43 H	63	64.40	32.40		
4	*2422.00	86.3 AV			1.43 H	63	53.90	32.40		
5	4844.00	46.9 PK	74.0	-27.1	1.13 H	46	8.50	38.40		
6	4844.00	35.6 AV	54.0	-18.4	1.13 H	46	-2.80	38.40		
7	7266.00	54.4 PK	74.0	-19.6	1.09 H	200	9.80	44.60		
8	7266.00	41.2 AV	54.0	-12.8	1.09 H	200	-3.40	44.60		

- 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 1	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

		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	2320.00	59.4 PK	74.0	-14.6	1.05 V	153	27.40	32.00
2	2320.00	48.9 AV	54.0	-5.1	1.05 V	153	16.90	32.00
3	2360.00	59.8 PK	74.0	-14.2	1.03 V	161	27.60	32.20
4	2360.00	49.0 AV	54.0	-5.0	1.03 V	161	16.80	32.20
5	2390.00	65.9 PK	74.0	-8.1	1.00 V	207	33.60	32.30
6	2390.00	52.6 AV	54.0	-1.4	1.00 V	207	20.30	32.30
7	*2422.00	104.4 PK			1.00 V	179	72.00	32.40
8	*2422.00	93.7 AV			1.00 V	179	61.30	32.40
9	4844.00	47.2 PK	74.0	-26.8	1.05 V	110	8.80	38.40
10	4844.00	34.2 AV	54.0	-19.8	1.05 V	110	-4.20	38.40
11	7266.00	58.6 PK	74.0	-15.4	1.09 V	14	14.00	44.60
12	7266.00	45.1 AV	54.0	-8.9	1.09 V	14	0.50	44.60

- 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 4	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

	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	2320.00	56.1 PK	74.0	-17.9	1.32 H	110	24.10	32.00	
2	2320.00	44.7 AV	54.0	-9.3	1.32 H	110	12.70	32.00	
3	2390.00	55.3 PK	74.0	-18.7	1.30 H	106	23.00	32.30	
4	2390.00	44.6 AV	54.0	-9.4	1.30 H	106	12.30	32.30	
5	*2437.00	101.2 PK			1.32 H	105	68.80	32.40	
6	*2437.00	89.6 AV			1.32 H	105	57.20	32.40	
7	4874.00	50.7 PK	74.0	-23.3	1.05 H	55	12.20	38.50	
8	4874.00	38.7 AV	54.0	-15.3	1.05 H	55	0.20	38.50	
9	7311.00	64.9 PK	74.0	-9.1	1.36 H	261	20.20	44.70	
10	7311.00	49.8 AV	54.0	-4.2	1.36 H	261	5.10	44.70	

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

	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	2320.00	61.2 PK	74.0	-12.8	1.07 V	172	29.20	32.00		
2	2320.00	52.2 AV	54.0	-1.8	1.07 V	172	20.20	32.00		
3	2390.00	60.5 PK	74.0	-13.5	1.07 V	172	28.20	32.30		
4	2390.00	48.6 AV	54.0	-5.4	1.07 V	172	16.30	32.30		
5	*2437.00	108.0 PK			1.01 V	182	75.60	32.40		
6	*2437.00	97.6 AV			1.01 V	182	65.20	32.40		
7	4874.00	48.2 PK	74.0	-25.8	1.00 V	0	9.70	38.50		
8	4874.00	36.6 AV	54.0	-17.4	1.00 V	0	-1.90	38.50		
9	7311.00	67.3 PK	74.0	-6.7	1.00 V	14	22.60	44.70		
10	7311.00	52.8 AV	54.0	-1.2	1.00 V	14	8.10	44.70		

- 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, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

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	97.5 PK			1.33 H	100	65.00	32.50			
2	*2452.00	87.1 AV			1.33 H	100	54.60	32.50			
3	2483.50	58.6 PK	74.0	-15.4	1.35 H	101	26.00	32.60			
4	2483.50	48.0 AV	54.0	-6.0	1.35 H	101	15.40	32.60			
5	4904.00	47.5 PK	74.0	-26.5	1.22 H	145	9.00	38.50			
6	4904.00	34.1 AV	54.0	-19.9	1.22 H	145	-4.40	38.50			
7	7356.00	55.1 PK	74.0	-18.9	1.30 H	2	10.30	44.80			
8	7356.00	41.3 AV	54.0	-12.7	1.30 H	2	-3.50	44.80			

- 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.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)	
ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1006 hPa	TESTED BY	Lori Chiu	

		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)
1	2320.00	58.2 PK	74.0	-15.8	1.05 V	160	26.20	32.00
2	2320.00	48.4 AV	54.0	-5.6	1.05 V	160	16.40	32.00
3	2360.00	59.2 PK	74.0	-14.8	1.04 V	159	27.00	32.20
4	2360.00	50.3 AV	54.0	-3.7	1.04 V	159	18.10	32.20
5	*2452.00	105.2 PK			1.00 V	183	72.70	32.50
6	*2452.00	94.4 AV			1.00 V	183	61.90	32.50
7	2483.50	66.2 PK	74.0	-7.8	1.00 V	168	33.60	32.60
8	2483.50	52.8 AV	54.0	-1.2	1.00 V	168	20.20	32.60
9	4904.00	47.6 PK	74.0	-26.4	1.00 V	101	9.10	38.50
10	4904.00	34.3 AV	54.0	-19.7	1.00 V	101	-4.20	38.50
11	7356.00	58.3 PK	74.0	-15.7	1.00 V	16	13.50	44.80
12	7356.00	44.5 AV	54.0	-9.5	1.00 V	16	-0.30	44.80

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 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: 802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Brad Wu	
TEST MODE	Α			

		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	125.17	28.6 QP	43.5	-14.9	1.50 H	271	16.80	11.80
2	249.60	39.2 QP	46.0	-6.8	1.00 H	91	25.30	13.90
3	383.76	32.8 QP	46.0	-13.2	1.00 H	148	15.40	17.40
4	541.25	37.6 QP	46.0	-8.4	1.50 H	331	16.30	21.30
5	640.41	36.7 QP	46.0	-9.3	1.00 H	202	13.10	23.60
6	897.05	38.8 QP	46.0	-7.2	1.50 H	235	10.90	27.90
		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	30.93	38.9 QP	40.0	-1.1	1.00 V	19	26.10	12.80
2	72.67	38.2 QP	40.0	-1.8	1.50 V	280	26.30	11.90
3	249.60	37.9 QP	46.0	-8.1	1.50 V	16	24.00	13.90
4	383.76	36.0 QP	46.0	-10.0	1.50 V	55	18.60	17.40
5	541.25	36.8 QP	46.0	-9.2	1.00 V	10	15.50	21.30
6	640.41	37.2 QP	46.0	-8.8	2.00 V	115	13.60	23.60

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz	
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Brad Wu	
TEST MODE	В			

	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	68.79	30.4 QP	40.0	-9.6	1.50 H	67	17.10	13.30	
2	249.60	40.9 QP	46.0	-5.1	1.00 H	262	27.00	13.90	
3	383.76	37.4 QP	46.0	-8.6	1.00 H	292	20.00	17.40	
4	512.08	35.3 QP	46.0	-10.7	1.50 H	37	14.60	20.70	
5	640.41	37.2 QP	46.0	-8.8	1.00 H	154	13.60	23.60	
6	712.35	32.8 QP	46.0	-13.2	1.00 H	334	7.60	25.20	
		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)	
1	24.81	36.7 QP	40.0	-3.3	1.00 V	195	24.20	12.50	
2	68.79	35.6 QP	40.0	-4.4	1.00 V	10	22.30	13.30	
3	249.60	39.5 QP	46.0	-6.5	1.00 V	100	25.60	13.90	
4	383.76	36.2 QP	46.0	-9.8	1.50 V	277	18.80	17.40	
5	564.58	35.4 QP	46.0	-10.6	1.50 V	358	13.60	21.80	
6	640.41	37.6 QP	46.0	-8.4	1.00 V	73	14.00	23.60	

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

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



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	Quasi-peak Average 66 to 56 56 to 46 56 46			
	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	100291	Dec. 16, 2009	Dec. 15, 2010
RF signal cable Woken	5D-FB	Cable-HYC01-01	Nov. 12, 2009	Nov. 11, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jun. 18, 2009	Jun. 17, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul., 29, 2009	Jul. 28, 2010
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 1.
- 3. The VCCI Site Registration No. is C-2040.



4.2.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit 20dB) was not recorded.

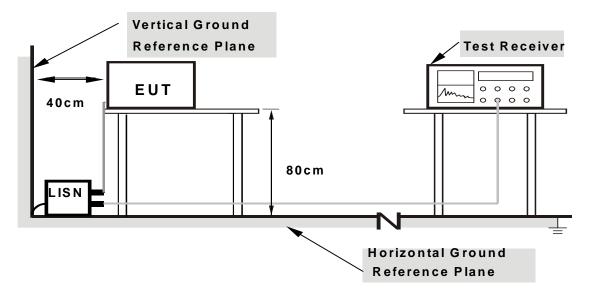
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.



4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



4.2.7 TEST RESULTS

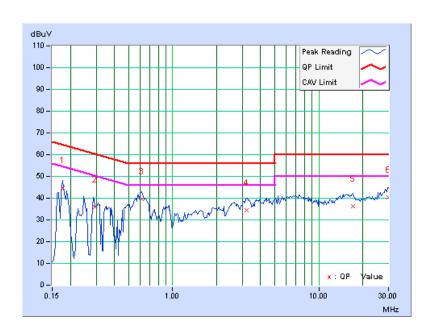
CONDUCTED WORST-CASE DATA: 802.11n (20MHz)

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq. Corr.		Freq. Corr. Reading Value Emission Level			Lir	nit	Margin		
NO		1 actor	[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	44.55	-	44.66	-	64.61	54.61	-19.94	-
2	0.293	0.12	35.83	-	35.95	-	60.44	50.44	-24.49	-
3	0.611	0.15	39.41	-	39.56	-	56.00	46.00	-16.44	-
4	3.207	0.31	34.25	-	34.56	-	56.00	46.00	-21.44	-
5	17.070	1.24	34.90	-	36.14	-	60.00	50.00	-23.86	-
6	29.969	2.07	38.12	-	40.19	-	60.00	50.00	-19.81	-

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.



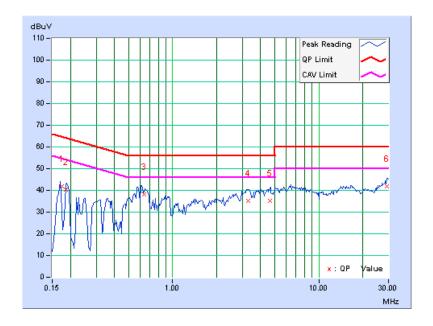


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr. Factor	Readin	g Value Emission Limit Margin		Limit		gin		
NO		1 actor	[dB ((uV)]	[dB ((uV)]	[dB	(uV)]	(dl	B)
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.175	0.10	41.81	-	41.91	-	64.71	54.71	-22.80	-
2	0.185	0.10	40.45	-	40.55	-	64.25	54.25	-23.70	-
3	0.636	0.14	38.09	-	38.23	-	56.00	46.00	-17.77	-
4	3.283	0.29	35.08	-	35.37	-	56.00	46.00	-20.63	-
5	4.650	0.35	34.77	-	35.12	-	56.00	46.00	-20.88	-
6	29.234	1.76	40.27	-	42.03	-	60.00	50.00	-17.97	-

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.



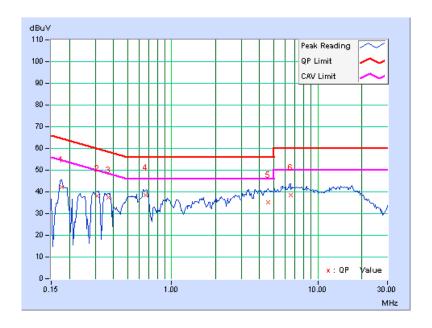


PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	В		

No	No Freq. Corr. Factor		Readin	g Value	Emis Le		Lir	nit	Mar	gin
INO		i actor	[dB ((uV)]	[dB ((uV)]	[dB	(uV)]	(dl	3)
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.176	0.11	42.16	-	42.27	-	64.67	54.67	-22.39	-
2	0.310	0.12	37.87	-	37.99	-	59.97	49.97	-21.97	-
3	0.372	0.13	37.14	-	37.27	-	58.45	48.45	-21.19	-
4	0.664	0.15	38.33	-	38.48	-	56.00	46.00	-17.52	-
5	4.547	0.38	34.86	-	35.24	-	56.00	46.00	-20.76	-
6	6.490	0.47	37.91	-	38.38	-	60.00	50.00	-21.62	-

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.



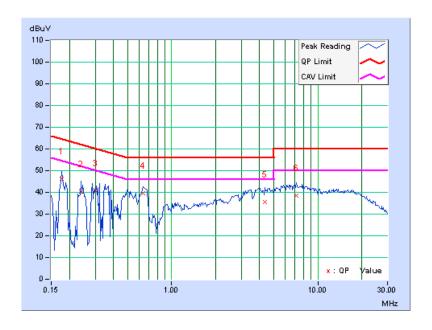


PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	В		

No	Freq. Corr.		Factor Leve			Lir	nit	Mar	gin	
NO		i actor	[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	46.08	-	46.18	-	64.61	54.61	-18.43	-
2	0.240	0.10	40.16	-	40.26	-	62.10	52.10	-21.84	-
3	0.303	0.11	40.64	-	40.75	-	60.17	50.17	-19.42	-
4	0.638	0.14	39.38	-	39.52	-	56.00	46.00	-16.48	-
5	4.367	0.33	35.33	-	35.66	-	56.00	46.00	-20.34	-
6	7.148	0.45	38.12	-	38.57	-	60.00	50.00	-21.43	-

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 R&S	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

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

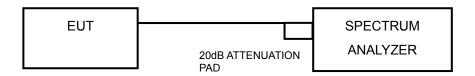
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

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.

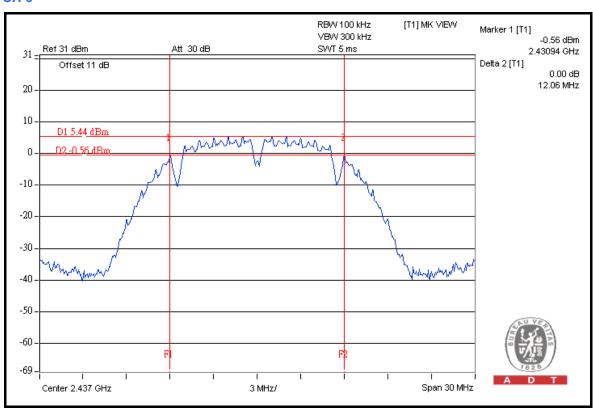


4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	BANDWIDTH MINIMUM LIMIT	
1	2412	11.15	0.5	PASS
6	2437	12.06	0.5	PASS
11	2462	11.16	0.5	PASS

CH 6

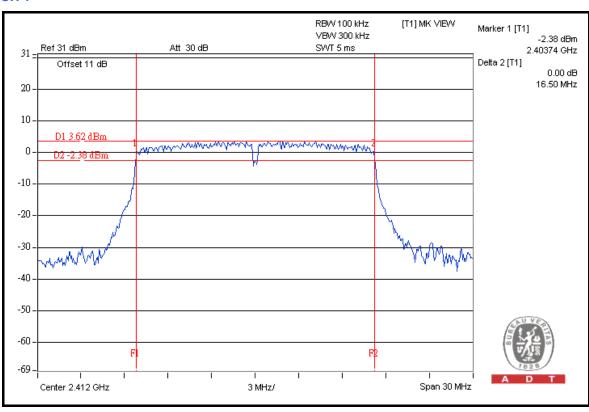




802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	BANDWIDTH MINIMUM LIMIT	
1	2412	16.50	0.5	PASS
6	2437	16.48	0.5	PASS
11	2462	16.47	0.5	PASS

CH₁

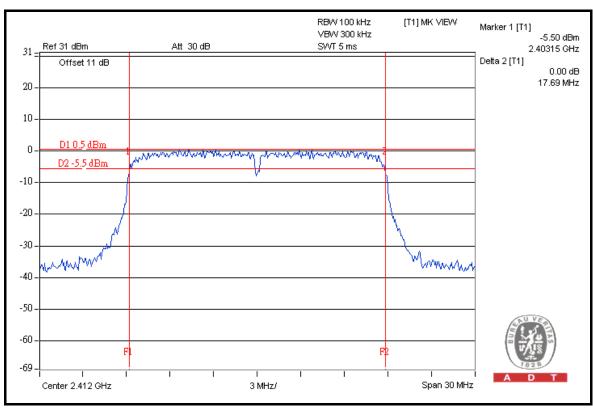




802.11n (20MHz)

CHANNE	CHANNEL	· · · · · · · · · · · · · · · · · · ·		MINIMUM	DACC / FAII
CHANNEL	FREQUENCY (MHz)	CHAIN 0	CHAIN 1	LIMIT (MHz)	PASS / FAIL
1	2412	17.69	17.42	0.5	PASS
6	2437	17.18	16.96	0.5	PASS
11	2462	17.62	17.34	0.5	PASS

FOR CHAIN 0: CH 1

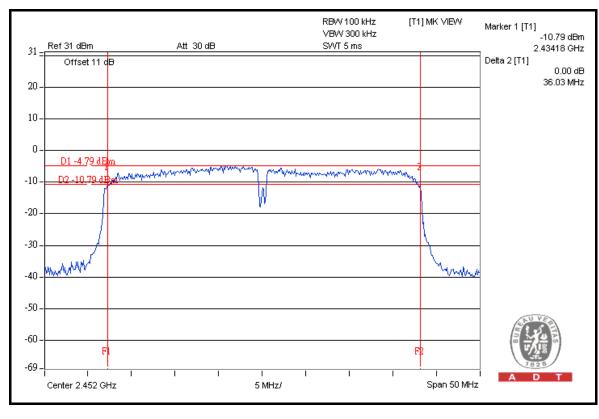




802.11n (40MHz)

CHANNE	CHANNEL	•		MINIMUM	DACC / FAII
CHANNEL	FREQUENCY (MHz)	CHAIN 0	CHAIN 1	LIMIT (MHz)	PASS / FAIL
1	2422	35.53	34.66	0.5	PASS
4	2437	35.69	35.73	0.5	PASS
7	2452	36.03	35.57	0.5	PASS

FOR CHAIN 0: CH 7





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	0824012	Aug. 10, 2009	Aug. 09, 2010
Power Sensor	MA2411B	0738138	Aug. 10, 2009	Aug. 09, 2010

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 PROCEDURES

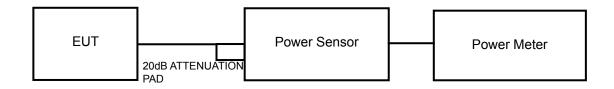
A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.



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

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	74.1	18.7	30	PASS
6	2437	81.3	19.1	30	PASS
11	2462	70.8	18.5	30	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	467.7	26.7	30	PASS
6	2437	446.7	26.5	30	PASS
11	2462	446.7	26.5	30	PASS

802.11n (20MHz)

CHAN.	CHAN. FREQ.	POWER OU	TPUT (dBm)	TOTAL POWER	TOTAL POWER	POWER LIMIT	PASS /
CHAN.	(MHz)	CHAIN 0	CHAIN 1	(mW)	(dBm)	(dBm)	FAIL
1	2412	24.2	23.5	486.9	26.9	30	PASS
6	2437	24.9	24.6	597.4	27.8	30	PASS
11	2462	23.8	22.2	405.8	26.1	30	PASS

802.11n (40MHz)

CHAN.	CHAN. FREQ.	POWER OU	TPUT (dBm)	TOTAL POWER	TOTAL POWER	POWER LIMIT	PASS /
CHAN.	(MHz)	CHAIN 0	CHAIN 1	(mW)	(dBm)	(dBm)	FAIL
1	2422	19.3	18.1	149.7	21.8	30	PASS
4	2437	24.7	24.8	597.1	27.8	30	PASS
7	2452	20.1	20.0	202.3	23.1	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 R&S	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010

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 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

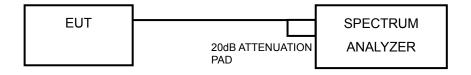
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.



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

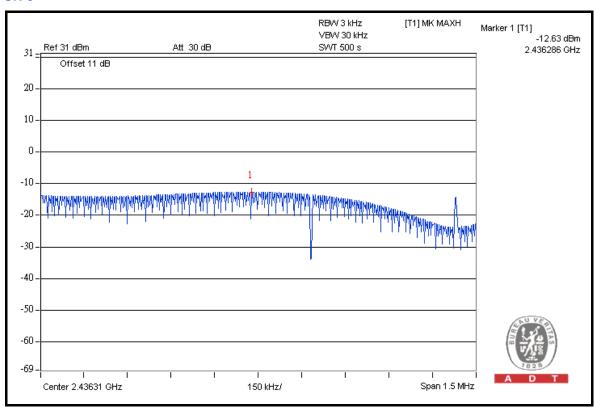


4.5.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-12.96	8	PASS
6	2437	-12.63	8	PASS
11	2462	-13.11	8	PASS

CH 6

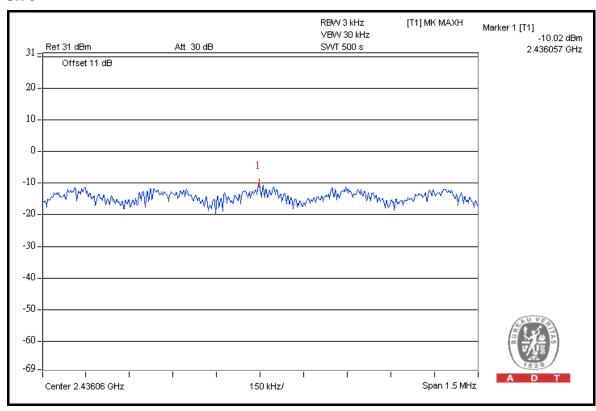




802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.04	8	PASS
6	2437	-10.02	8	PASS
11	2462	-10.32	8	PASS

CH 6

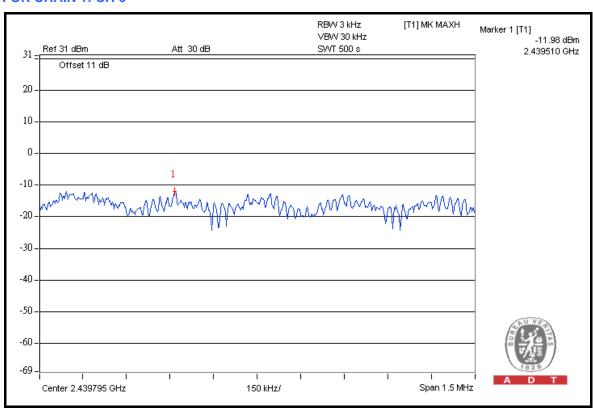




802.11n (20MHz)

CHAN.	CHAN. FREQ.	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY	MAX. LIMIT (dBm)	PASS / FAIL
	(MHz)	CHAIN 0	CHAIN 1	(dBm)	LIMIT (dBIII)	
1	2412	-12.81	-12.91	-9.83	8	PASS
6	2437	-12.11	-11.98	-9.03	8	PASS
11	2462	-13.08	-14.28	-10.60	8	PASS

FOR CHAIN 1: CH 6

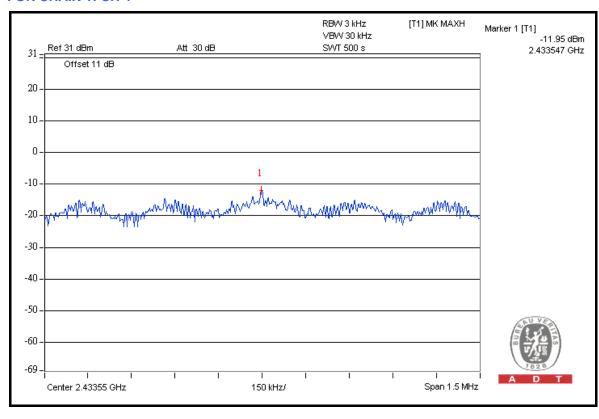




802.11n (40MHz)

CHAN.	CHAN. FREQ.	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY	MAX. LIMIT (dBm)	PASS / FAIL	
	(MHz)	CHAIN 0	CHAIN 1	(dBm)	LIMIT (GBIII)		
1	2422	-20.76	-18.45	-16.38	8	PASS	
4	2437	-15.39	-11.95	-10.32	8	PASS	
7	2452	-19.76	-16.51	-14.81	8	PASS	

FOR CHAIN 1: CH 4





4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB 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			
FOR CONDUCTED MEASUREMENT							
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010			
FOR RADIATED MEASUR	REMENT						
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Dec. 21, 2009	Dec. 20, 2010			
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010			
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011			
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Aug. 10, 2009	Aug. 09, 2010			
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010			
Preamplifier Agilent	8449B	3008A01910	Sep. 11, 2009	Sep. 10, 2010			
Preamplifier Agilent	8447D	2944A10638	Dec. 21, 2009	Dec. 20, 2010			
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 14, 2010	May 13, 2011			
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 17, 2009	Aug. 16, 2010			
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA			
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA			
Turn Table EMCO	2087-2.03	NA	NA	NA			
Antenna Tower &Turn Table Controller EMCO	2090	NA	NA	NA			

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

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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. Set both RBW and VBW of spectrum analyzer to 100kHz and 300kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.6.4 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 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b

RESTRICT BAND (2310 ~ 2390 MHz)

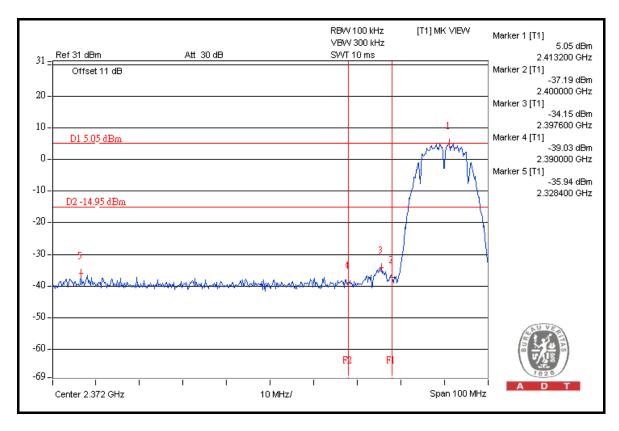
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	105.3	40.99	64.31	74.00
2412.00 (AV)	102.4	55.28	47.12	54.00

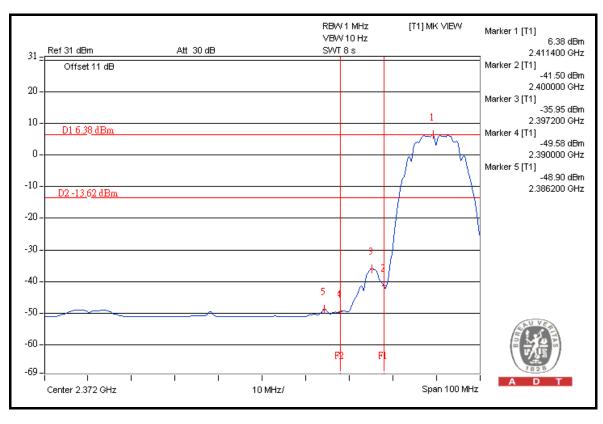
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	106.2	42.78	63.42	74.00
2462.00 (AV)	103.3	56.47	46.83	54.00

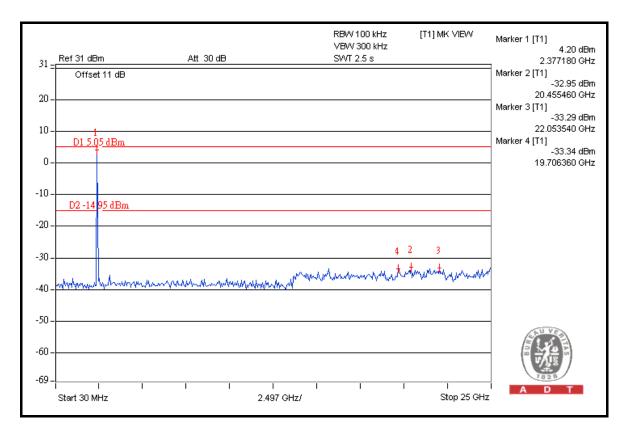
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

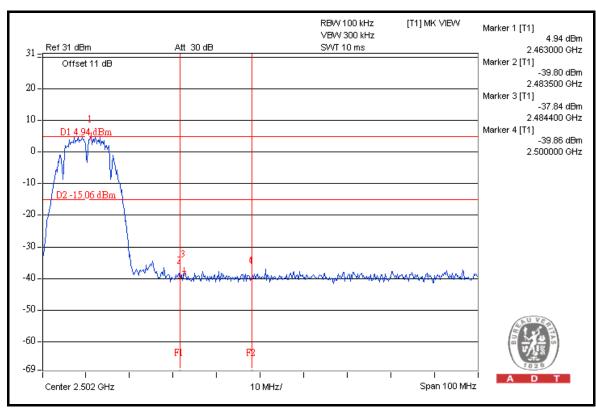




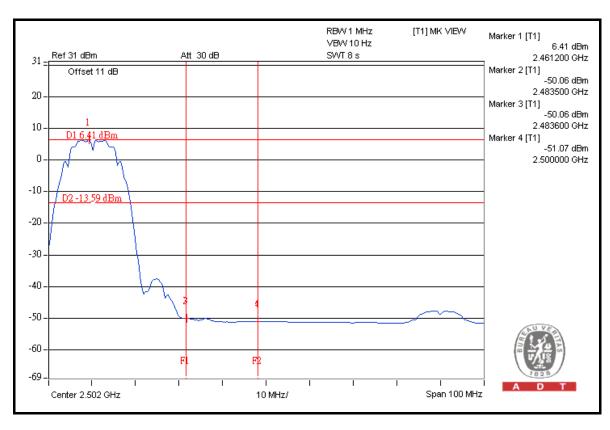


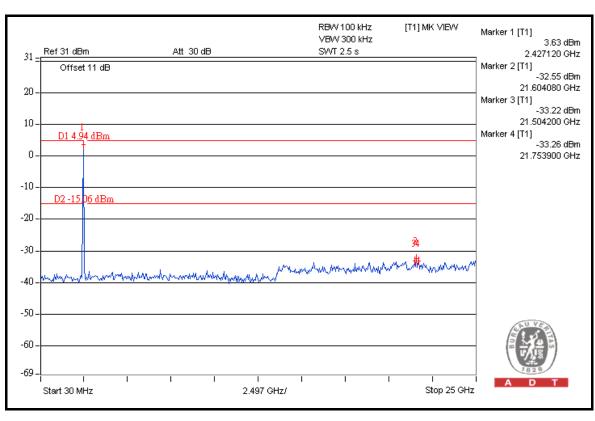














802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

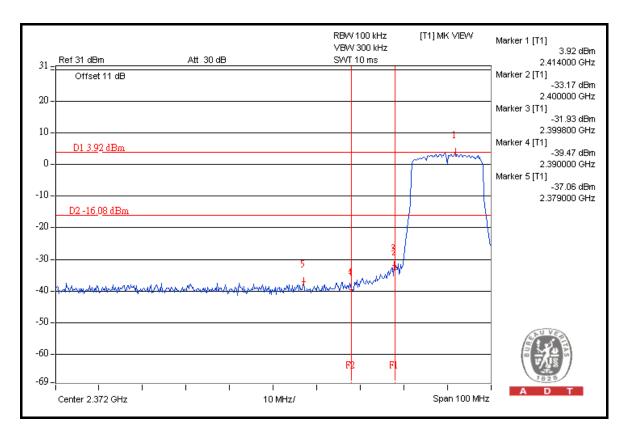
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	108.5	40.98	67.52	74.00
2412.00 (AV)	98.40	49.86	48.54	54.00

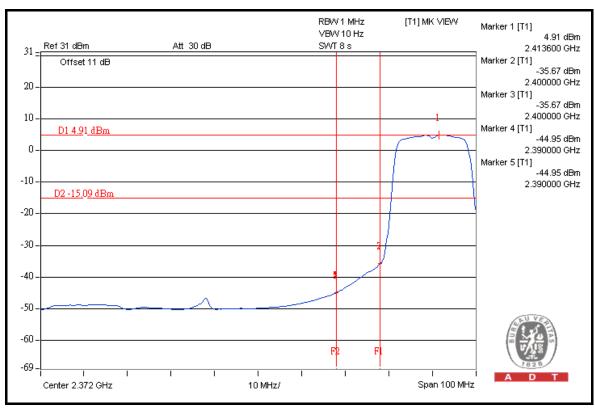
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	109.0	40.28	68.72	74.00
2462.00 (AV)	98.9	49.79	49.11	54.00

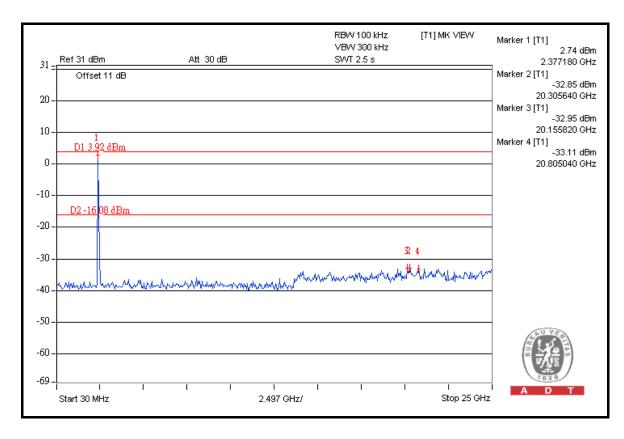
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

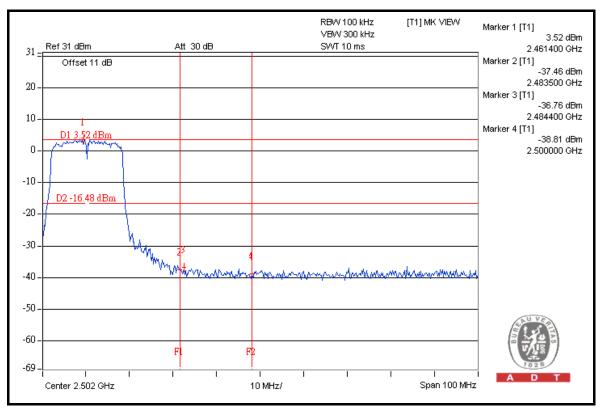




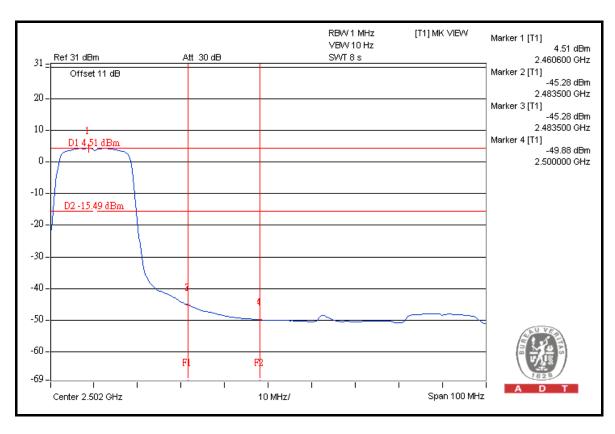


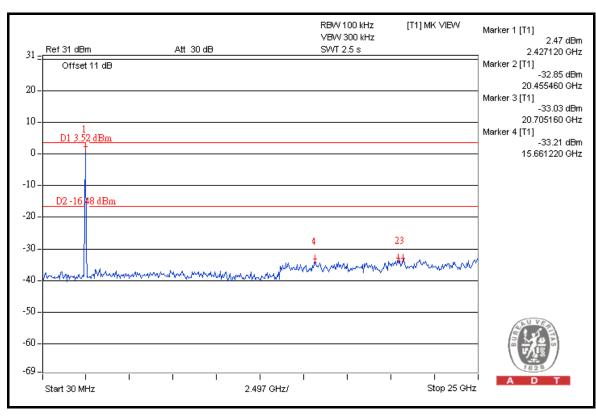














802.11n (20MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

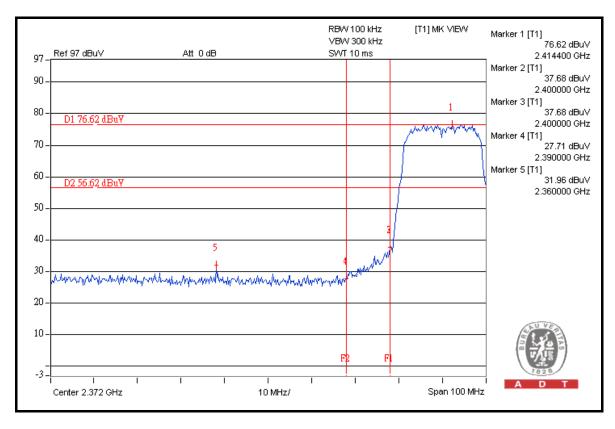
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	110.2	44.66	65.54	74.00
2412.00 (AV)	99.2	49.04	50.16	54.00

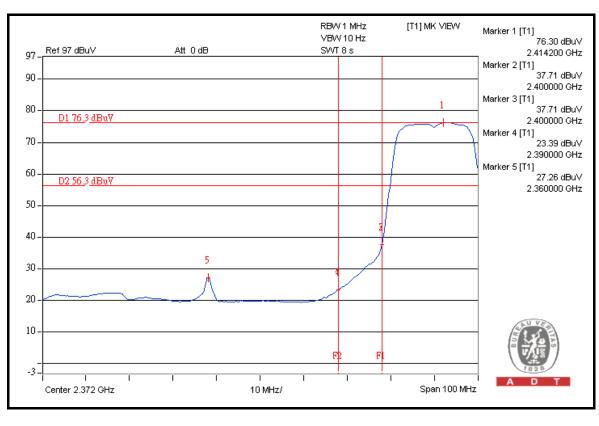
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	111.1	47.41	63.69	74.00
2462.00 (AV)	100.3	51.93	48.37	54.00

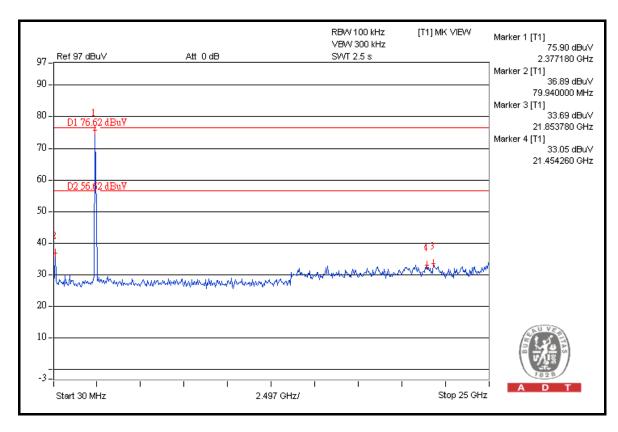
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

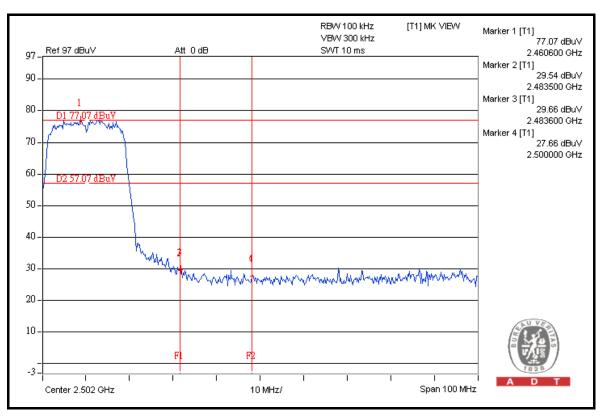




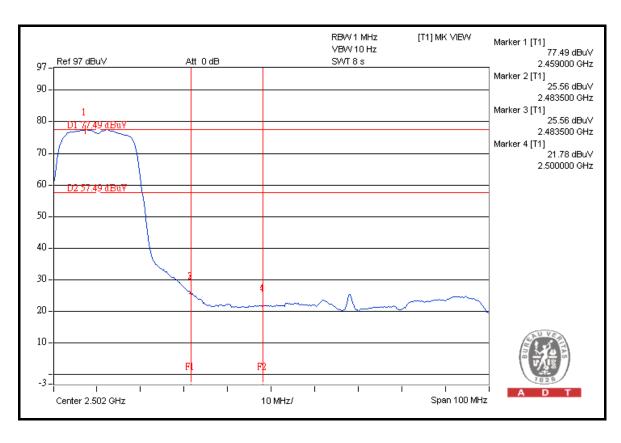


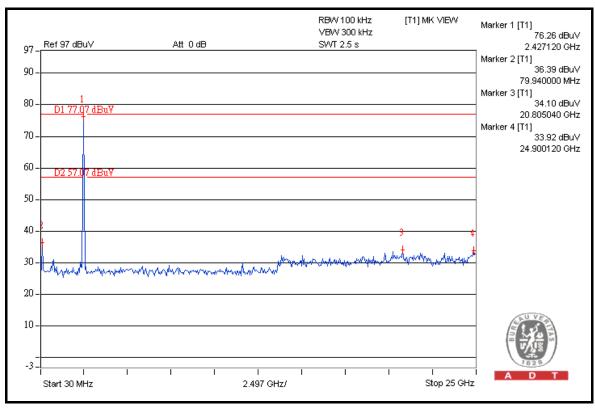














802.11n (40MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

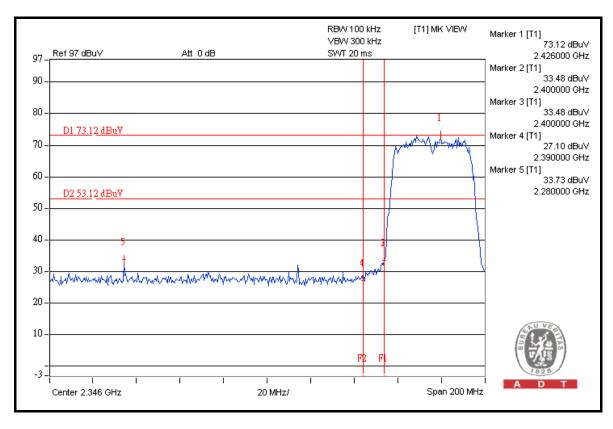
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2422.00 (PK)	104.4	39.39	65.01	74.00
2422.00 (AV)	93.7	42.11	51.59	54.00

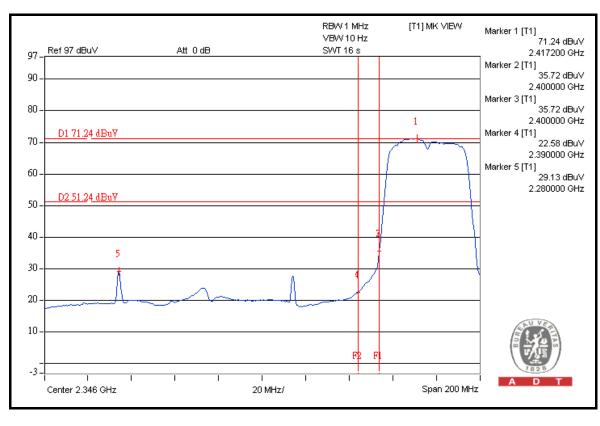
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	105.2	44.31	60.89	74.00
2452.00 (AV)	94.4	47.87	46.53	54.00

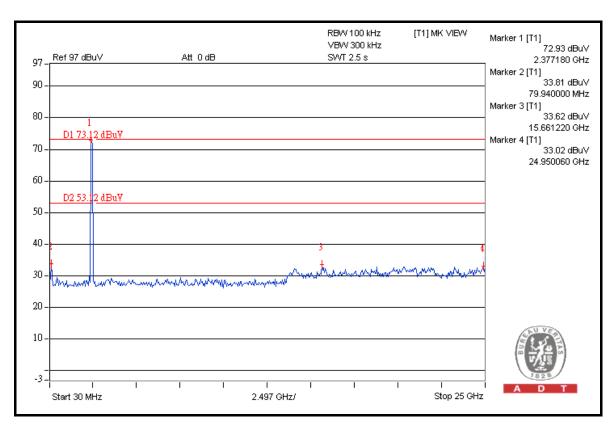
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

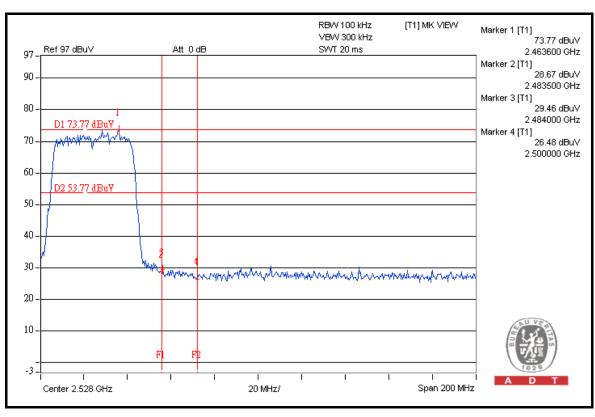




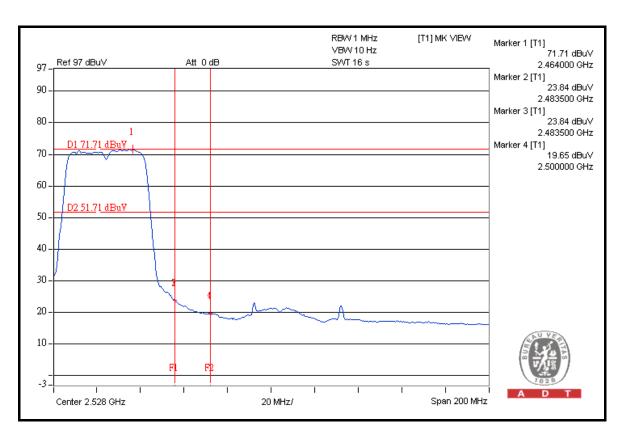


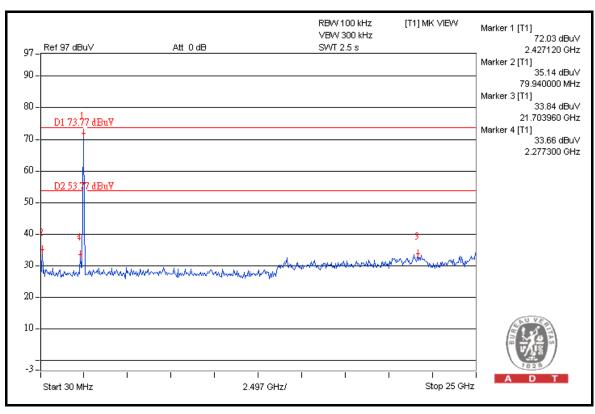














	A D T
5. PHOTOGRAPHS OF THE TEST CONFIGURATION	
Please refer to the attached file (Test Setup Photo).	

Report No.: RF981215L24 80 Report Format Version 3.0.1



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

Hwa Ya EMC/RF/Safety Telecom Lab:

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

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.

---END---