

FCC TEST REPORT

REPORT NO.: RF981130L12

MODEL NO.: WFB-100A

RECEIVED: Nov. 30, 2009

TESTED: Dec. 16, 2009 ~ Jan. 07, 2010

ISSUED: Jan. 15, 2010

APPLICANT: Brickcom Corporation

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ISSUED BY: Bureau Veritas Consumer Products Services

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R.O.C.

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1. CERTIFICATION

PRODUCT: Megapixel Wireless Fixed Box Network Camera

MODEL: WFB-100A

BRAND: Brickcom

APPLICANT: Brickcom Corporation

TESTED: Dec. 16, 2009 ~ Jan. 07, 2010

TEST SAMPLE: ENGINEERING SAMPLE

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

ANSI C63.4-2003

The above equipment (Model: WFB-100A) 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: Leggy (Van. 15, 2010

Peggy Chen / Specialist

TECHNICAL ACCEPTANCE :

ACCEPTANCE : Jan. 15, 2010

Responsible for RF Long Chern / Senior Engineer

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	T TEST TYPE AND LIMIT I RESULT		REMARK	
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -7.28dB at 0.236MHz.	
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 -1.1dB at 2483.5 & 162.11 & 539.3 & 720.12 & 900.94MHz.	
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 R-SMA 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	150kHz~30MHz	2.44 dB
	30MHz ~ 200MHz	2.93 dB
Radiated emissions	200MHz ~1000MHz	2.95 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	Megapixel Wireless Fixed Box Network Camera	
MODEL NO.	WFB-100A	
FCC ID	XV4-WFB-100A	
POWER SUPPLY	12Vdc or 24Vac (adapter)	
FOWER SOFFEI	48Vdc (POE)	
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS	
MODULATION TIFE	64QAM, 16QAM, QPSK, BPSK for OFDM	
MODULATION TECHNOLOGY	DSSS, OFDM	
	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps	
TRANSFER RATE	802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps	
	802.11n: Up to 150Mbps	
OPERATING FREQUENCY	2412 ~ 2462MHz	
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz)	
NOMBER OF CHANNEE	7 for 802.11n (40MHz)	
OUTPUT POWER	354.8mW	
ANTENNA TYPE	Dipole antenna with 2dBi gain	
ANTENNA CONNECTOR	R-SMA	
I/O PORTS	Refer to users' manual	
DATA CABLE	NA	
ACCESSORY DEVICES	Adapter	

NOTE:

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

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

2. The EUT was powered by the following adapters:

ADAPTER 1	
BRAND:	OEM
MODEL:	ADS0128-W 120100
INPUT:	100-240Vac, 50-60Hz, 0.5A
OUTPUT:	12Vdc, 1A
POWER LINE:	1.5m non-shielded cable without core
I CALBED.	Without switch Has L-type and I-type connector



ADAPTER 2	
BRAND:	DVE
MODEL:	DSA-12G-12 FUS 120120
INPUT:	100-240Vac, 50-60Hz, 0.3A
OUTPUT:	12Vdc, 1A
POWER LINE:	1.5m non-shielded cable without core
OTHER:	Without switch Has L-type and I-type connector

ADAPTER 3	
BRAND:	LEI
MODEL:	MU12-G120100-A1
INPUT:	100-240Vac, 50-60Hz, 0.5A
OUTPUT:	12Vdc, 1A
POWER LINE:	1.5m non-shielded cable without core
OTHER:	Without switch Has L-type and I-type connector

3. The following POE and adapter are for support units only.

POE 1	
BRAND:	PowerDsine [™] 3001
MODEL:	PD-3001/AC
INPUT:	100-250Vac, 50/60Hz, 0.5A
OUTPUT:	48Vdc, 0.35A

ADAPTER 4	
BRAND:	OEM
MODEL:	AA-241A
INPUT:	120Vac, 60Hz, 33W
OUTPUT:	24Vac, 1A

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	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		

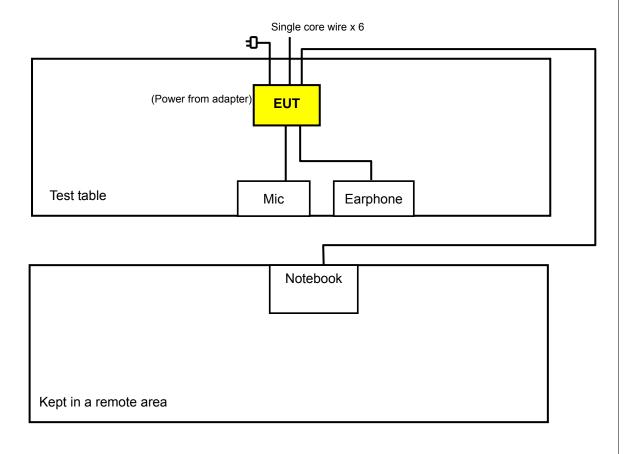
7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		



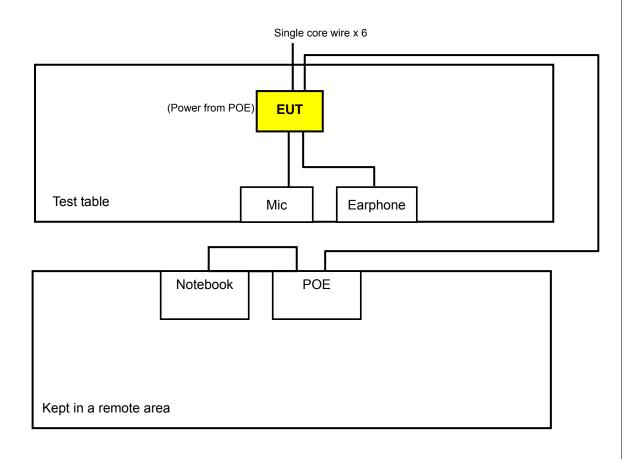
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Test Mode A∼C, E





Test Mode D





3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE	APPLICABLE TO				DESCRIPTION	
MODE	RE≥1G	RE<1G	PLC	APCM	2-200.W 110W	
Α	√	\checkmark	√	√	Power from adapter 1	
В	-	\checkmark	√	-	Power from adapter 2	
С	-	\checkmark	√	-	Power from adapter 3	
D	-	\checkmark	√	-	Power from POE	
E	-	V	√	-	Power from adapter 4	

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

RE<1G: Radiated Emission below 1GHz
APCM: Antenna Port Conducted Measurement

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, 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		DATA RATE (Mbps)	AXIS
Α	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0	Х
Α	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	Х
А	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	Х
А	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	Х

RADIATED EMISSION TEST (BELOW 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, 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	_	MODULATION TECHNOLOGY		DATA RATE (Mbps)	AXIS
A ~ E	802.11g	1 to 11	6	OFDM	BPSK	6.0	Х

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		MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A~E	802.11g	1 to 11	6	OFDM	BPSK	6.0

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BANDEDGE MEASUREMENT:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, 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)	AXIS
А	802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0	Х
А	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0	Х
А	802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	Х
Α	802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	13.5	Χ

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
Α	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
Α	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
Α	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	25deg. C, 65%RH, 1006 hPa	120Vac, 60Hz	Mark Liao
RE<1G	25deg. C, 65%RH, 1006 hPa	120Vac, 60Hz	Mark Liao
PLC	20deg. C, 65%RH, 1005 hPa	120Vac, 60Hz	Daniel Lin
APCM	25deg. C, 65%RH, 1006 hPa	120Vac, 60Hz	Mark Liao



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	MICROPHONE	Labtec	LVA7313	NA	NA
2	EARPHONE	PHILIPS	HL145	NA	NA
3	NOTEBOOK	DELL	D531	CN-0XM006-486 43-81U-2973	QDS-BRCM1020
4	POE	PowerDsine [™] 3001	PD-3001/AC	NA	NA
5	ADAPTER	OEM	AA-241A	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.0m wrapped shielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core.
2	1.2m shielded cable
3	10 m RJ45 UTP cable (for test mode A~C, E) 10 m RJ45 STP cable (for test mode D)
4	NA
5	NA

NOTE:

- 1. All power cords of the above support units are non shielded (1.8m).
- 2. Item 3, 4 act as communication partners to transfer data.
- 3. Item 4, 5 were provided by client.



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	ESI7	838496/016	Dec. 29, 2009	Dec. 28, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	May. 13, 2009	May. 12, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01961	Nov. 04, 2009	Nov. 03, 2010
Preamplifier Agilent	8447D	2944A10738	Nov. 04, 2009	Nov. 03, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 28, 2009	Aug. 27, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 28, 2009	Aug. 27, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 4.
- 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 IC7450F-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:

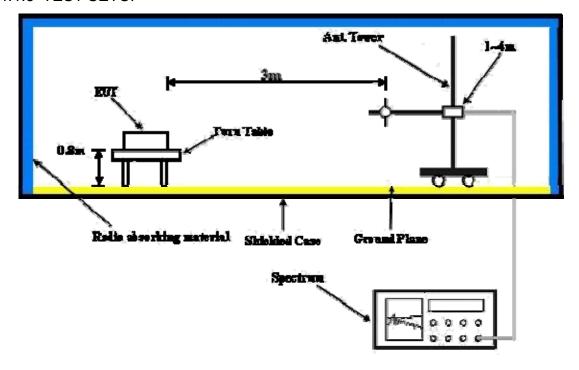
- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution 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 the testing table.
- b. Prepared the notebook computer and placed it outside of testing area to act as a communication partner for EUT.
- c. The EUT ran a test program (provided by manufacturer) to enable all functions under transmission condition continuously at specific channel frequency.
- d. The necessary accessories enable the system in full functions.



4.1.7 TEST RESULTS

802.11b

EUT TEST CONDITION		MEASUREMENT DETAI	L
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao

		ANTENNA	POLARITY	& TEST DIS	TANCE: HO	RIZONTAL	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	1.92 H	314	24.80	33.50								
2	2390.00	47.7 AV	54.0	-6.3	1.92 H	314	14.20	33.50								
3	*2412.00	104.6 PK			1.92 H	314	71.00	33.60								
4	*2412.00	100.2 AV			1.92 H	314	66.60	33.60								
5	4824.00	49.7 PK	74.0	-24.3	1.03 H	130	9.70	40.00								
6	4824.00	36.7 AV	54.0	-17.3	1.03 H	130	-3.30	40.00								
		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	2390.00	61.1 PK	74.0	-12.9	1.15 V	138	27.60	33.50								
2	2390.00	52.4 AV	54.0	-1.6	1.15 V	138	18.90	33.50								
3	*2412.00	111.6 PK			1.14 V	187	78.00	33.60								
3	*2412.00 *2412.00	111.6 PK 107.1 AV			1.14 V 1.14 V	187 187	78.00 73.50	33.60 33.60								
			74.0	-23.4												

- 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	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	

	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	105.4 PK			1.90 H	61	71.70	33.70		
2	*2437.00	101.2 AV			1.90 H	61	67.50	33.70		
3	4874.00	49.4 PK	74.0	-24.6	1.12 H	19	9.30	40.10		
4	4874.00	36.3 AV	54.0	-17.7	1.12 H	19	-3.80	40.10		
	ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M									
		ANTENNA	POLARIT	Y & TEST DI	STANCE: V	ERTICAL A	T 3 M			
NO.	FREQ. (MHz)	EMISSION	LIMIT (dBuV/m)	Y & TEST DI	STANCE: V ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	T 3 M RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)		
NO .	FREQ. (MHz) *2437.00	EMISSION LEVEL	LIMIT		ANTENNA	TABLE ANGLE	RAW VALUE	FACTOR		
	,	EMISSION LEVEL (dBuV/m)	LIMIT		ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	FACTOR (dB/m)		
1	*2437.00	EMISSION LEVEL (dBuV/m) 112.9 PK	LIMIT		ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	FACTOR (dB/m) 33.63		

- 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)	
	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	

		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	104.8 PK			1.84 H	316	71.00	33.80
2	*2462.00	100.4 AV			1.84 H	316	66.60	33.80
3	2483.50	59.2 PK	74.0	-14.8	1.84 H	316	25.40	33.80
4	2483.50	48.4 AV	54.0	-5.6	1.84 H	316	14.60	33.80
5	4924.00	48.9 PK	74.0	-25.1	1.05 H	210	8.70	40.20
6	4924.00	36.5 AV	54.0	-17.5	1.05 H	210	-3.70	40.20
		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	111.8 PK			1.15 V	147	78.00	33.80
2	*2462.00	107.2 AV			1.15 V	147	73.40	33.80
3	2483.50	60.8 PK	74.0	-13.2	1.15 V	147	27.00	33.80
4	2483.50	50.3 AV	54.0	-3.7	1.15 V	147	16.50	33.80
5	4924.00	50.2 PK	74.0	-23.8	1.12 V	156	10.00	40.20
6	4924.00	37.1 AV	54.0	-16.9	1.12 V	156	-3.10	40.20

- 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.



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)	
	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	

		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	60.7 PK	74.0	-13.3	1.02 H	313	27.20	33.50
2	2390.00	47.4 AV	54.0	-6.6	1.02 H	313	13.90	33.50
3	*2412.00	103.6 PK			1.02 H	313	70.00	33.60
4	*2412.00	93.8 AV			1.02 H	313	60.20	33.60
5	4824.00	49.7 PK	74.0	-24.3	1.08 H	153	9.70	40.00
6	4824.00	36.7 AV	54.0	-17.3	1.08 H	153	-3.30	40.00
		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	69.6 PK	74.0	-4.4	1.15 V	138	36.10	33.50
2	2390.00	50.5 AV	54.0	-3.5	1.15 V	138	17.00	33.50
3	*2412.00	111.7 PK			1.10 V	227	78.10	33.60
4	*2412.00	101.5 AV			1.10 V	227	67.90	33.60
4 5	*2412.00 4824.00	101.5 AV 50.3 PK	74.0	-23.7	1.10 V 1.18 V	93	67.90 10.30	33.60 40.00

- 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	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	

	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	104.8 PK			1.03 H	42	71.10	33.70			
2	*2437.00	94.3 AV			1.03 H	42	60.60	33.70			
3	4874.00	49.9 PK	74.0	-24.1	1.11 H	167	9.80	40.10			
4	4874.00	36.8 AV	54.0	-17.2	1.11 H	167	-3.30	40.10			
		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)			
NO.	FREQ. (MHz) *2437.00	LEVEL		MARGIN (dB)		ANGLE		FACTOR			
	` ,	LEVEL (dBuV/m)		MARGIN (dB)	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m)			
1	*2437.00	LEVEL (dBuV/m) 112.6 PK		MARGIN (dB) -23.5	HEIGHT (m) 1.12 V	ANGLE (Degree)	(dBuV) 78.90	FACTOR (dB/m) 33.70			

- 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	EUT TEST CONDITION		L
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao

		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	104.4 PK			1.00 H	157	70.60	33.80
2	*2462.00	94.4 AV			1.00 H	157	60.60	33.80
3	2483.50	63.4 PK	74.0	-10.6	1.00 H	157	29.60	33.80
4	2483.50	48.1 AV	54.0	-5.9	1.00 H	157	14.30	33.80
5	4924.00	49.6 PK	74.0	-24.4	1.02 H	288	9.40	40.20
6	4924.00	36.5 AV	54.0	-17.5	1.02 H	288	-3.70	40.20
		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	112.8 PK			1.06 V	250	79.00	33.80
2	*2462.00	102.6 AV			1.06 V	250	68.80	33.80
3	2483.50	72.7 PK	74.0	-1.3	1.06 V	128	38.90	33.80
4	2483.50	52.5 AV	54.0	-1.5	1.06 V	128	18.70	33.80
5	4924.00	50.1 PK	74.0	-23.9	1.12 V	63	9.90	40.20
6	4924.00	37.2 AV	54.0	-16.8	1.12 V	63	-3.00	40.20

- 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.



802.11n (20MHz)

EUT TEST CONDITION		L	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao

		ANTENNA	DOL A DITY	o TECT DIC	TANCE, UO	DIZONTAL	ATOM	
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	& TEST DIS	ANTENNA HEIGHT (m)	TABLE ANGLE	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.6 PK	74.0	-11.4	1.04 H	(Degree)	29.10	33.50
2	2390.00	47.9 AV	54.0	-6.1	1.04 H	211	14.40	33.50
3	*2412.00	103.4 PK	04.0	0.1	1.04 H	211	69.80	33.60
4	*2412.00	93.1 AV			1.04 H	211	59.50	33.60
5	4824.00	49.9 PK	74.0	-24.1	1.15 H	158	9.90	40.00
6	4824.00	36.9 AV	54.0	-17.1	1.15 H	158	-3.10	40.00
		ANTENNA	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	72.5 PK	74.0	-1.5	1.11 V	280	39.00	33.50
2	2390.00	52.4 AV	54.0	-1.6	1.11 V	280	18.90	33.50
3	*2412.00	111.1 PK			1.13 V	213	77.50	33.60
4	*2412.00	101.2 AV			1.13 V	213	67.60	33.60
5	4824.00	50.5 PK	74.0	-23.5	1.24 V	175	10.50	40.00
6	4824.00	38.5 AV	54.0	-15.5	1.24 V	175	-1.50	40.00

- 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	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	

	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	104.4 PK			1.03 H	206	70.70	33.70		
2	*2437.00	93.8 AV			1.03 H	206	60.10	33.70		
3	4874.00	50.2 PK	74.0	-23.8	1.05 H	20	10.10	40.10		
4	4874.00	37.0 AV	54.0	-17.0	1.05 H	20	-3.10	40.10		
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M			
NO.	EMISSION LIMIT ANTENNA TABLE RAW VALUE CORRECT									
1	*2437.00	111.2 PK			1.07 V	240	77.50	33.70		
2	*2437.00	101.2 AV			1.07 V	240	67.50	33.70		
3	4874.00	50.7 PK	74.0	-23.3	1.28 V	122	10.60	40.10		
4	4874.00	37.7 AV	54.0	-16.3	1.28 V	122	-2.40	40.10		

- 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	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	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao		

		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	104.1 PK			1.00 H	43	70.30	33.80
2	*2462.00	94.0 AV			1.00 H	43	60.20	33.80
3	2483.50	61.8 PK	74.0	-12.2	1.00 H	43	28.00	33.80
4	2483.50	48.0 AV	54.0	-6.0	1.00 H	43	14.20	33.80
5	4924.00	49.8 PK	74.0	-24.2	1.28 H	213	9.60	40.20
6	4924.00	36.8 AV	54.0	-17.2	1.28 H	213	-3.40	40.20
		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	111.4 PK			1.07 V	274	77.60	33.80
2								
	*2462.00	101.4 AV			1.07 V	274	67.60	33.80
3	*2462.00 2483.50	101.4 AV 72.9 PK	74.0	-1.1	1.07 V 1.06 V	274 101	67.60 39.10	33.80 33.80
		-	74.0 54.0	-1.1 -1.8				
3	2483.50	72.9 PK			1.06 V	101	39.10	33.80

- 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.



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	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	

		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	59.2 PK	74.0	-14.8	1.04 H	206	25.70	33.50	
2	2390.00	47.7 AV	54.0	-6.3	1.04 H	206	14.20	33.50	
3	*2422.00	98.6 PK			1.04 H	206	65.00	33.60	
4	*2422.00	88.8 AV			1.04 H	206	55.20	33.60	
5	4844.00	49.1 PK	74.0	-24.9	1.03 H	255	9.10	40.00	
6	4844.00	36.6 AV	54.0	-17.4	1.03 H	255	-3.40	40.00	
		ANTENNA	POLARIT	/ & 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 .	FREQ. (MHz) 2390.00	LEVEL		MARGIN (dB)	7	ANGLE		FACTOR	
	, ,	LEVEL (dBuV/m)	(dBuV/m)	, ,	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m)	
1	2390.00	LEVEL (dBuV/m) 61.6 PK	(dBuV/m) 74.0	-12.4	HEIGHT (m)	ANGLE (Degree)	(dBuV) 28.10	FACTOR (dB/m) 33.50	
1 2	2390.00 2390.00	LEVEL (dBuV/m) 61.6 PK 50.3 AV	(dBuV/m) 74.0	-12.4	1.09 V 1.09 V	ANGLE (Degree) 235 235	(dBuV) 28.10 16.80	FACTOR (dB/m) 33.50 33.50	
1 2 3	2390.00 2390.00 *2422.00	LEVEL (dBuV/m) 61.6 PK 50.3 AV 106.6 PK	(dBuV/m) 74.0	-12.4	1.09 V 1.09 V 1.13 V	ANGLE (Degree) 235 235 230	(dBuV) 28.10 16.80 73.00	FACTOR (dB/m) 33.50 33.60	

- 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	CONDITION MEASUREMENT DETAIL		
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao

		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	100.4 PK			1.03 H	205	66.70	33.70	
2	*2437.00	90.2 AV			1.03 H	205	56.50	33.70	
3	4874.00	49.4 PK	74.0	-24.6	1.08 H	182	9.30	40.10	
4	4874.00	36.9 AV	54.0	-17.1	1.08 H	182	-3.20	40.10	
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M		
NO.	EMISSION LIMIT ANTENNA TABLE RAW VALUE CORRECTION								
1	*2437.00	108.2 PK			1.09 V	225	74.50	33.70	
2	*2437.00	98.1 AV			1.09 V	225	64.40	33.70	
3	4874.00	49.0 PK	74.0	-25.0	1.05 V	46	8.90	40.10	
	4874.00	36.7 AV	54.0	-17.3	1.05 V	46	-3.40	40.10	

- 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	NDITION MEASUREMENT DETAIL		
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao

		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	*2452.00	98.6 PK			1.00 H	41	64.90	33.70
2	*2452.00	88.8 AV			1.00 H	41	55.10	33.70
3	2483.50	58.7 PK	74.0	-15.3	1.00 H	41	24.90	33.80
4	2483.50	48.0 AV	54.0	-6.0	1.00 H	41	14.20	33.80
5	4904.00	49.3 PK	74.0	-24.7	1.25 H	210	9.10	40.20
6	4904.00	36.8 AV	54.0	-17.2	1.25 H	210	-3.40	40.20
		ANTENNA	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	*2452.00	106.8 PK			1.07 V	257	73.10	33.70
2	*2452.00	96.6 AV			1.07 V	257	62.90	33.70
3	2483.50	62.0 PK	74.0	-12.0	1.07 V	243	28.20	33.80
4	2483.50	50.7 AV	54.0	-3.3	1.07 V	243	16.90	33.80
5	4904.00	49.0 PK	74.0	-25.0	1.18 V	43	8.80	40.20
6	4904.00	36.8 AV	54.0	-17.2	1.18 V	43	-3.40	40.20

- 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.



BELOW 1GHz WORST-CASE DATA: 802.11g

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

	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	162.11	42.4 QP	43.5	-1.1	1.75 H	109	28.30	14.10		
2	251.55	44.6 QP	46.0	-1.4	1.25 H	4	31.30	13.30		
3	323.49	44.0 QP	46.0	-2.0	1.00 H	127	27.80	16.20		
4	504.31	44.5 QP	46.0	-1.5	1.75 H	343	23.60	20.90		
5	720.12	43.3 QP	46.0	-2.7	1.00 H	103	18.40	24.90		
6	900.94	44.6 QP	46.0	-1.4	1.00 H	10	16.30	28.30		
		ANTENNA	POLARITY	/ & TEST DI	STANCE: V	ERTICAL A	T 3 M			
	NO. FREQ. (MHz) EMISSION LIMIT (dBuV/m) MARGIN (dB) ANTENNA HEIGHT (m) TABLE RAW VALUE (dBuV) FACTOR									
NO.	FREQ. (MHz)			MARGIN (dB)	7			CORRECTION FACTOR (dB/m)		
NO .	FREQ. (MHz) 251.55	LEVEL		MARGIN (dB)	7	ANGLE		FACTOR		
	, ,	LEVEL (dBuV/m)	(dBuV/m)	,	HEIGHT (m)	ANGLE (Degree)	(dBuV)	FACTOR (dB/m)		
1	251.55	LEVEL (dBuV/m) 43.8 QP	(dBuV/m) 46.0	-2.2	HEIGHT (m)	ANGLE (Degree)	(dBuV) 30.50	FACTOR (dB/m) 13.30		
1 2	251.55 504.31	LEVEL (dBuV/m) 43.8 QP 43.1 QP	(dBuV/m) 46.0 46.0	-2.2 -2.9	1.00 V 1.25 V	ANGLE (Degree) 55 337	(dBuV) 30.50 22.20	FACTOR (dB/m) 13.30 20.90		
1 2 3	251.55 504.31 540.00	LEVEL (dBuV/m) 43.8 QP 43.1 QP 44.6 QP	(dBuV/m) 46.0 46.0 46.0	-2.2 -2.9 -1.4	1.00 V 1.25 V 1.28 V	ANGLE (Degree) 55 337 120	(dBuV) 30.50 22.20 22.80	FACTOR (dB/m) 13.30 20.90 21.80		

- 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.



EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL Channel 6		FREQUENCY RANGE	Below 1000MHz	
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak	
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH 1006 hPa	TESTED BY	Mark Liao	
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	251.55	44.8 QP	46.0	-1.2	1.25 H	331	31.50	13.30		
2	432.37	43.2 QP	46.0	-2.8	1.00 H	151	24.20	19.00		
3	504.31	44.7 QP	46.0	-1.3	1.75 H	346	23.80	20.90		
4	720.12	44.6 QP	46.0	-1.4	1.25 H	127	19.70	24.90		
5	900.94	44.5 QP	46.0	-1.5	1.00 H	10	16.20	28.30		
6	935.94	44.8 QP	46.0	-1.2	1.00 H	196	16.20	28.60		
		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	251.55	42.9 QP	46.0	-3.1	1.00 V	103	29.60	13.30		
2	539.30	44.8 QP	46.0	-1.2	1.25 V	28	23.00	21.80		
3	720.12	44.9 QP	46.0	-1.1	1.25 V	31	20.00	24.90		
4	792.06	44.1 QP	46.0	-1.9	2.00 V	22	17.80	26.30		
5	900.94	44.9 QP	46.0	-1.1	1.00 V	10	16.60	28.30		
6	972.88	44.4 QP	54.0	-9.6	1.25 V	109	15.40	29.00		

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



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

	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	162.11	42.4 QP	43.5	-1.1	1.75 H	73	28.30	14.10		
2	251.55	42.5 QP	46.0	-3.5	1.50 H	322	29.20	13.30		
3	432.37	43.8 QP	46.0	-2.2	1.00 H	145	24.80	19.00		
4	504.31	44.2 QP	46.0	-1.8	1.50 H	340	23.30	20.90		
5	720.12	44.7 QP	46.0	-1.3	1.25 H	115	19.80	24.90		
6	899.96	44.8 QP	46.0	-1.2	1.00 H	22	16.50	28.30		
		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	161.00	42.2 QP	43.5	-1.3	1.77 V	52	28.00	14.20		
2	251.55	44.6 QP	46.0	-1.4	1.00 V	10	31.30	13.30		
3	323.49	42.1 QP	46.0	-3.9	1.00 V	115	25.90	16.20		
4	504.31	44.6 QP	46.0	-1.4	1.75 V	1	23.70	20.90		
5	720.12	42.6 QP	46.0	-3.4	1.25 V	118	17.70	24.90		
6	900.00	44.8 QP	46.0	-1.2	1.05 V	26	16.50	28.30		

- 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.



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

	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	94.06	42.1 QP	43.5	-1.4	2.00 H	97	33.20	8.90		
2	197.11	42.2 QP	43.5	-1.3	2.50 H	247	30.50	11.70		
3	251.55	44.8 QP	46.0	-1.2	1.50 H	7	31.50	13.30		
4	412.92	44.1 QP	46.0	-1.9	1.00 H	91	25.70	18.40		
5	467.36	42.6 QP	46.0	-3.4	1.75 H	343	22.70	19.90		
6	900.94	44.9 QP	46.0	-1.1	1.00 H	28	16.60	28.30		
		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	197.11	40.5 QP	43.5	-3.0	1.00 V	79	28.80	11.70		
2	251.55	44.6 QP	46.0	-1.4	1.25 V	70	31.30	13.30		
2 3	251.55 539.30	44.6 QP 44.9 QP	46.0 46.0	-1.4 -1.1	1.25 V 1.50 V	70 43	31.30 23.10	13.30 21.80		
3	539.30	44.9 QP	46.0	-1.1	1.50 V	43	23.10	21.80		

- 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.



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

	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	251.00	44.5 QP	46.0	-1.5	1.02 H	21	31.20	13.30		
2	323.49	41.0 QP	46.0	-5.0	1.00 H	130	24.80	16.20		
3	412.92	43.1 QP	46.0	-2.9	2.50 H	61	24.70	18.40		
4	539.30	39.6 QP	46.0	-6.4	1.75 H	121	17.80	21.80		
5	685.13	42.0 QP	46.0	-4.0	1.25 H	319	17.70	24.30		
6	829.00	43.4 QP	46.0	-2.6	1.00 H	358	16.40	27.00		
		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	45.00	38.8 QP	40.0	-1.2	1.04 V	321	24.60	14.20		
2	250.00	44.7 QP	46.0	-1.3	1.01 V	23	31.50	13.20		
3	539.30	43.7 QP	46.0	-2.3	1.25 V	325	21.90	21.80		
4	558.75	42.1 QP	46.0	-3.9	1.25 V	79	19.80	22.30		
5	792.06	44.6 QP	46.0	-1.4	1.50 V	109	18.30	26.30		
6	972.88	44.7 QP	54.0	-9.3	1.00 V	121	15.70	29.00		

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



4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 24, 2009	Sep. 23, 2010
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2009	Dec. 30, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Aug. 24, 2009	Aug. 23, 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 2.
- 3. The VCCI Site Registration No. is C-2047.



4.2.3 TEST PROCEDURES

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

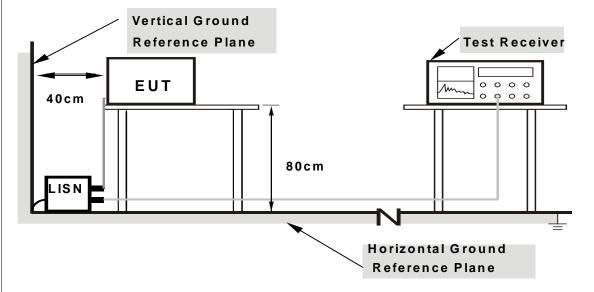
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.



4.2.5 TEST SETUP



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

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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.



4.2.7 TEST RESULTS

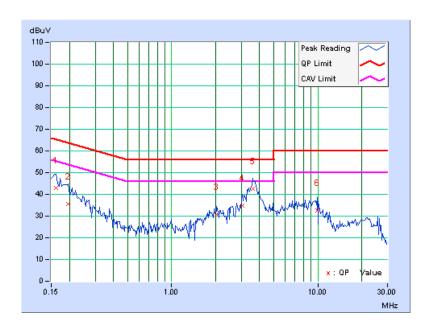
CONDUCTED WORST-CASE DATA: 802.11g

PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	No Freq. Corr. Factor		Reading Value		Emission Level		Limit		Margin	
NO			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.13	42.90	-	43.03	-	65.38	55.38	-22.35	_
2	0.197	0.13	35.39	-	35.52	-	63.74	53.74	-28.22	-
3	2.031	0.19	30.66	-	30.85	-	56.00	46.00	-25.15	-
4	3.059	0.24	34.70	-	34.94	-	56.00	46.00	-21.06	-
5	3.578	0.26	42.24	-	42.50	-	56.00	46.00	-13.50	-
6	9.883	0.43	32.30	-	32.73	-	60.00	50.00	-27.27	-

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.

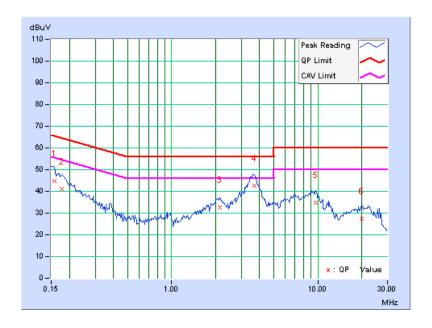




PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Fred I	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
No 1 1 1 1		i actor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.13	44.86	-	44.99	-	65.58	55.58	-20.59	-
2	0.177	0.13	41.10	-	41.23	-	64.61	54.61	-23.38	-
3	2.137	0.21	32.28	-	32.49	-	56.00	46.00	-23.51	-
4	3.668	0.28	42.20	-	42.48	-	56.00	46.00	-13.52	-
5	9.742	0.49	34.37	-	34.86	-	60.00	50.00	-25.14	-
6	20.055	0.82	26.54	-	27.36	-	60.00	50.00	-32.64	-

- 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.

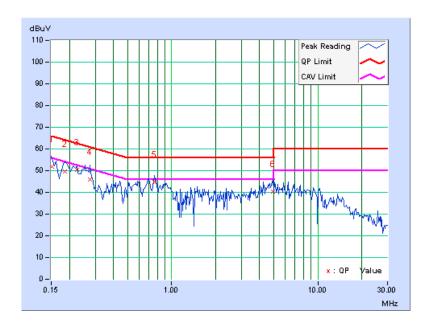




PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	В		

No Freq.		eq. Corr.		Reading Value		Emission Level		Limit		Margin	
NO		Factor		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.152	0.13	51.70	-	51.83	-	65.91	55.91	-14.08	-	
2	0.185	0.13	49.52	-	49.65	-	64.25	54.25	-14.60	-	
3	0.224	0.13	50.15	-	50.28	-	62.66	52.66	-12.38	-	
4	0.275	0.13	45.85	-	45.98	-	60.97	50.97	-14.98	-	
5	0.763	0.16	44.64	-	44.80	-	56.00	46.00	-11.20	-	
6	4.922	0.30	39.90	-	40.20	-	56.00	46.00	-15.80	-	

- 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.

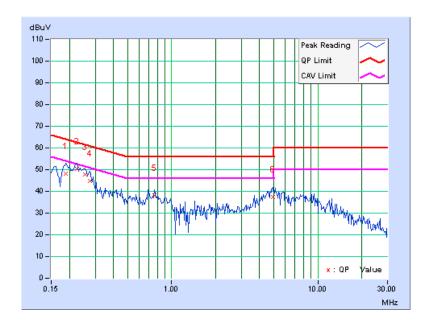




PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	В		

No	Freq. Corr. Reading Value			Emission Level		Limit		Margin		
NO		i actor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.189	0.13	48.08	-	48.21	-	64.08	54.08	-15.87	-
2	0.224	0.13	50.34	-	50.47	-	62.66	52.66	-12.19	-
3	0.255	0.14	47.71	-	47.85	-	61.58	51.58	-13.73	-
4	0.275	0.14	44.63	-	44.77	-	60.97	50.97	-16.20	-
5	0.763	0.16	37.87	-	38.03	-	56.00	46.00	-17.97	-
6	4.922	0.33	36.98	-	37.31	-	56.00	46.00	-18.69	-

- **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.

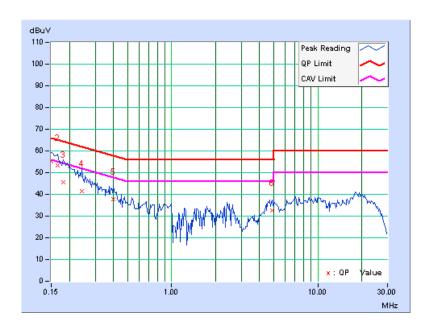




PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	С		

No	Frea I	Freq.	Corr. Factor	Readin	g Value	Emis Le	sion vel	Lir	nit	Mar	gin
No 11041		i actor	[dB ([dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.150	0.13	55.09	-	55.22	-	66.00	56.00	-10.78	-	
2	0.166	0.13	53.35	-	53.48	-	65.18	55.18	-11.70	-	
3	0.181	0.13	45.26	-	45.39	-	64.43	54.43	-19.04	-	
4	0.244	0.13	41.21	-	41.34	-	61.97	51.97	-20.63	-	
5	0.400	0.14	37.82	-	37.96	-	57.85	47.85	-19.89	-	
6	4.871	0.30	32.34	-	32.64	-	56.00	46.00	-23.36	-	

- 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.

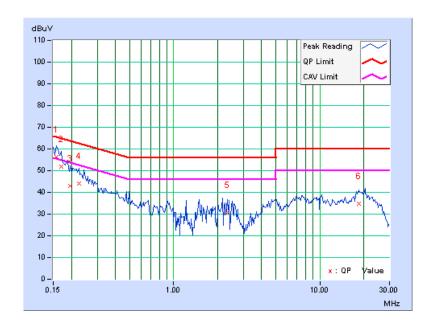




PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	С		

No	No Freq. Corr. Factor		Reading Value			Emission Level		Limit		Margin	
NO			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)		
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	
1	0.158	0.13	56.00	44.78	56.13	44.91	65.58	55.58	-9.45	-10.67	
2	0.170	0.13	51.55	-	51.68	-	64.98	54.98	-13.30	-	
3	0.197	0.13	42.99	-	43.12	-	63.74	53.74	-20.62	-	
4	0.224	0.13	44.02	-	44.15	-	62.66	52.66	-18.51	-	
5	2.320	0.22	30.48	-	30.70	-	56.00	46.00	-25.30	-	
6	18.410	0.77	34.07	-	34.84	-	60.00	50.00	-25.16	-	

- 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.

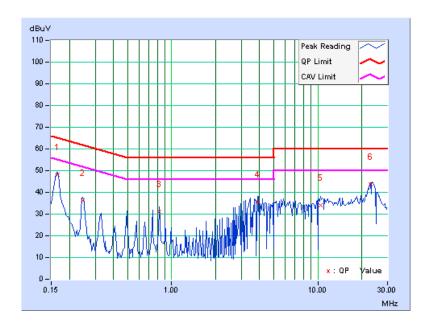




PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	D		

No	Freq. Corr.		Reading Value		Emission Level		Limit		Margin	
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	0.166	0.13	47.88	-	48.01	-	65.18	55.18	-17.17	-
2	0.248	0.13	36.32	-	36.45	-	61.84	51.84	-25.38	-
3	0.822	0.16	31.08	-	31.24	-	56.00	46.00	-24.76	-
4	3.867	0.27	35.41	-	35.68	-	56.00	46.00	-20.32	-
5	10.453	0.44	33.71	-	34.15	-	60.00	50.00	-25.85	-
6	22.883	0.65	43.11	-	43.76	-	60.00	50.00	-16.24	-

- 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.

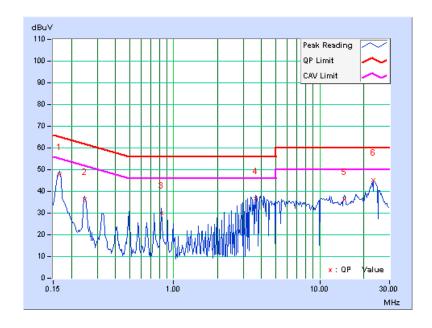




PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	D		

No	Freq. Corr.				Emission Level		Limit		Margin	
NO		1 actor	[dB ((uV)]	[dB ((uV)]	[dB	(uV)]	(dl	3)
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.13	47.64	-	47.77	-	65.18	55.18	-17.41	_
2	0.248	0.13	36.32	-	36.45	-	61.84	51.84	-25.38	-
3	0.822	0.16	30.00	-	30.16	-	56.00	46.00	-25.84	-
4	3.625	0.28	36.45	-	36.73	-	56.00	46.00	-19.27	_
5	14.746	0.66	35.61	-	36.27	-	60.00	50.00	-23.73	-
6	23.391	0.80	44.57	-	45.37	-	60.00	50.00	-14.63	_

- 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.

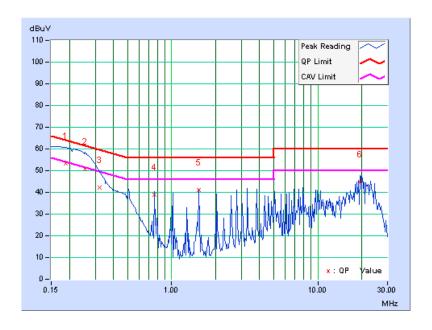




PHASE	Line 1	6dB BANDWIDTH	9kHz
TEST MODE	E		

No	Freq. Corr.		Reading Value		Emission Level		Limit		Margin	
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	0.189	0.13	53.11	-	53.24	-	64.08	54.08	-10.84	-
2	0.255	0.13	50.69	-	50.82	-	61.58	51.58	-10.75	-
3	0.322	0.14	42.04	-	42.18	-	59.66	49.66	-17.48	-
4	0.763	0.16	38.56	-	38.72	-	56.00	46.00	-17.28	-
5	1.527	0.18	40.86	-	41.04	-	56.00	46.00	-14.96	-
6	19.582	0.66	44.00	-	44.66	-	60.00	50.00	-15.34	-

- 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.

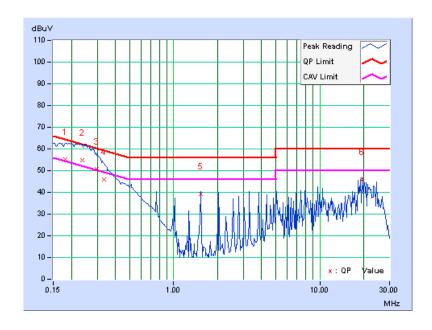




PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	E		

No	Freq. Corr.		Reading Value		Emission Level		Limit		Margin	
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	0.181	0.13	55.00	25.51	55.13	25.64	64.43	54.43	-9.30	-28.79
2	0.236	0.13	54.82	24.75	54.95	24.88	62.24	52.24	-7.28	-27.35
3	0.298	0.14	50.64	20.68	50.78	20.82	60.29	50.29	-9.51	-29.47
4	0.334	0.14	45.86	-	46.00	-	59.36	49.36	-13.36	-
5	1.527	0.19	39.12	-	39.31	-	56.00	46.00	-16.69	-
6	19.578	0.81	44.95	-	45.76	-	60.00	50.00	-14.24	-

- 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
R&S SPECTRUM ANALYZER	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

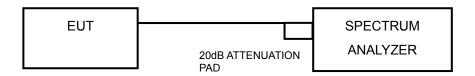
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

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.

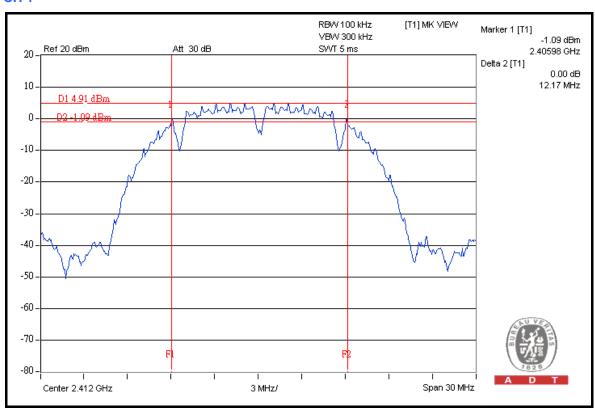


4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.17	0.5	PASS
6	2437	12.16	0.5	PASS
11	2462	12.16	0.5	PASS

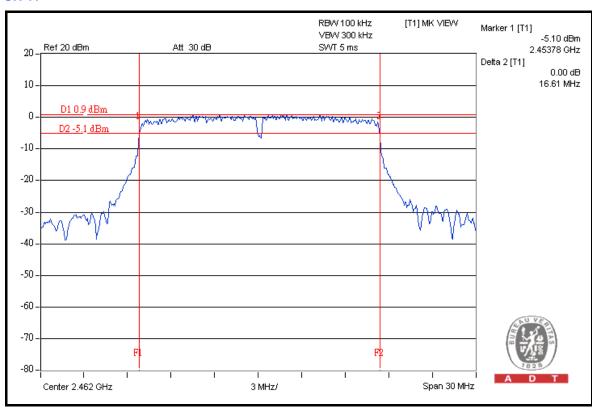
CH₁





802.11g

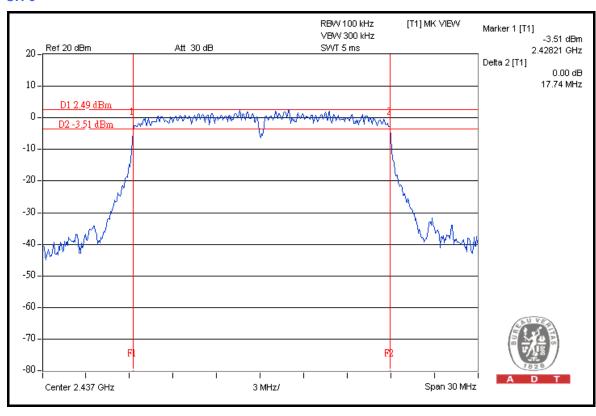
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.52	0.5	PASS
6	2437	16.54	0.5	PASS
11	2462	16.61	0.5	PASS





802.11n (20MHz)

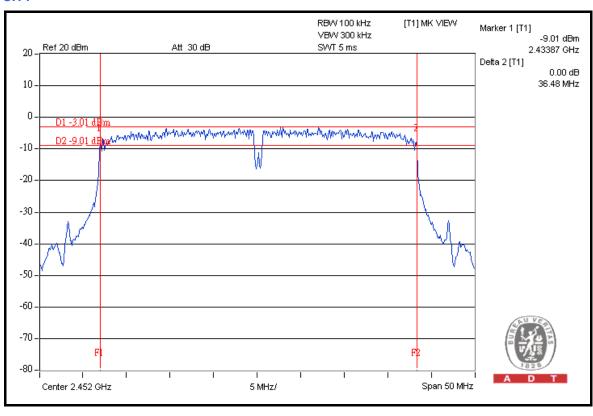
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.72	0.5	PASS
6	2437	17.74	0.5	PASS
11	2462	17.69	0.5	PASS





802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2422	36.38	0.5	PASS
4	2437	36.35	0.5	PASS
7	2452	36.48	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	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 PROCEDURE

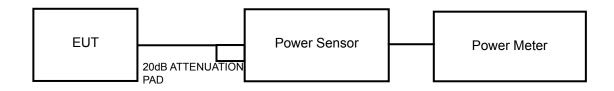
A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.



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	112.2	20.5	30	PASS
6	2437	138.0	21.4	30	PASS
11	2462	117.5	20.7	30	PASS

802.11g

CHAN	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	331.1	25.2	30	PASS
6	2437	354.8	25.5	30	PASS
11	2462	354.8	25.5	30	PASS

802.11n (20MHz)

CHAN	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2412	323.6	25.1	30	PASS
6	2437	354.8	25.5	30	PASS
11	2462	338.8	25.3	30	PASS

802.11n (40MHz)

CHAN	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (mW)	POWER OUTPUT (dBm)	POWER LIMIT (dBm)	PASS/FAIL
1	2422	204.2	23.1	30	PASS
4	2437	288.4	24.6	30	PASS
7	2452	199.5	23.0	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
R&S SPECTRUM ANALYZER	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

- 1. Follow DTS measurement (PSD Option 2), the transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer. Locate and zoom in on emission peak(s) within the pass band.
- 2. Set RBW = 3 kHz /VBW > 9 kHz and sweep time to Automatic.
- 3. Detector use peak mode and a video trigger with the trigger level set to enable triggering only on full power pulses.
- 4. Trace average 100 traces in power averaging mode. The power spectral density was measured and recorded.



4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

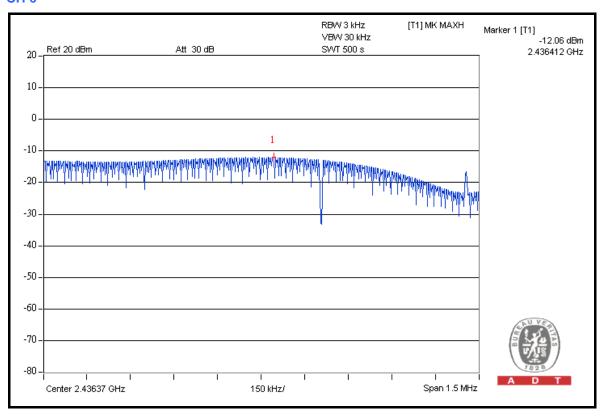
Same as Item 4.3.6



4.5.7 TEST RESULTS

802.11b

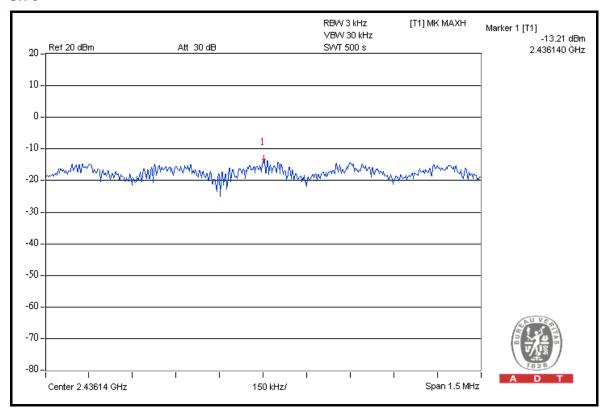
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-13.0	8	PASS
6	2437	-12.1	8	PASS
11	2462	-13.0	8	PASS





802.11g

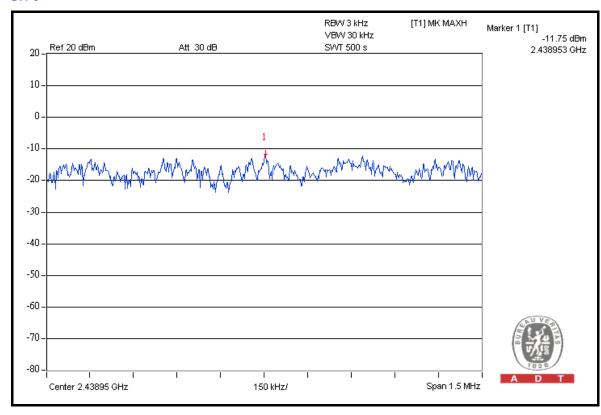
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-13.4	8	PASS
6	2437	-13.2	8	PASS
11	2462	-13.3	8	PASS





802.11n (20MHz)

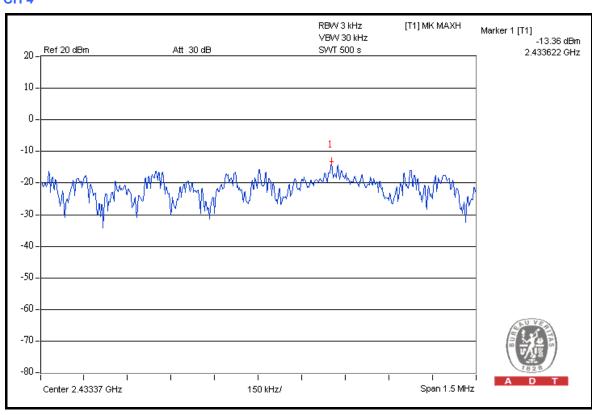
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-12.2	8	PASS
6	2437	-11.8	8	PASS
11	2462	-11.8	8	PASS





802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2422	-15.0	8	PASS
4	2437	-13.4	8	PASS
7	2452	-15.1	8	PASS





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).

Note: Follow DTS measurement, If the device complies with the use of power option 2 the attenuation under this paragraph shall be 30 dB instead of 20 dB.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Dec. 29, 2009	Dec. 28, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	May. 13, 2009	May. 12, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 29, 2009	Apr. 28, 2010
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-209	Jul. 01, 2009	Jun. 30, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01961	Nov. 04, 2009	Nov. 03, 2010
Preamplifier Agilent	8447D	2944A10738	Nov. 04, 2009	Nov. 03, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 28, 2009	Aug. 27, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 28, 2009	Aug. 27, 2010
Software ADT.	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA	NA
Turn Table ADT.	TT100.	TT93021704	NA	NA
Turn Table Controller ADT.	SC100.	SC93021704	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)

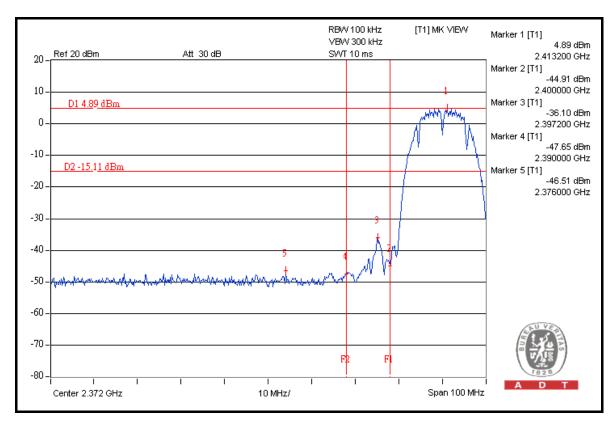
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	111.6	51.40	60.20	74.00
2412.00 (AV)	107.1	55.82	51.28	54.00

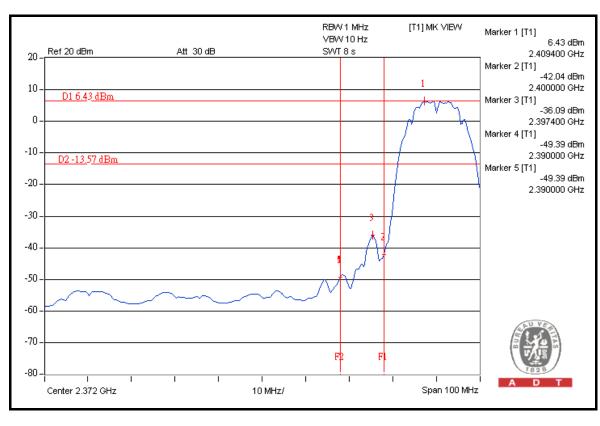
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	111.8	51.51	60.29	74.00
2462.00 (AV)	107.2	57.45	49.75	54.00

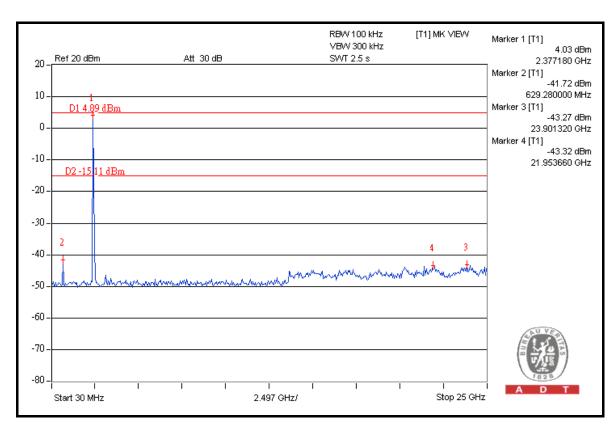
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

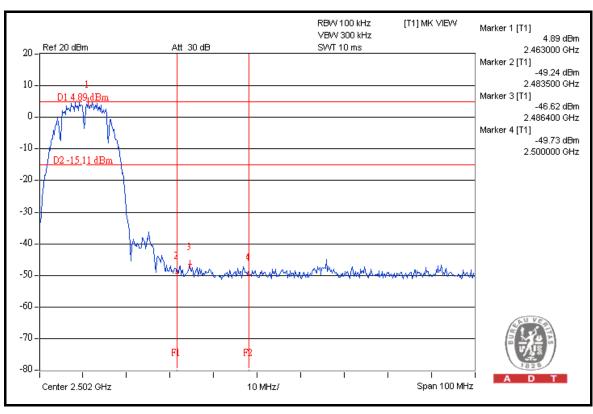




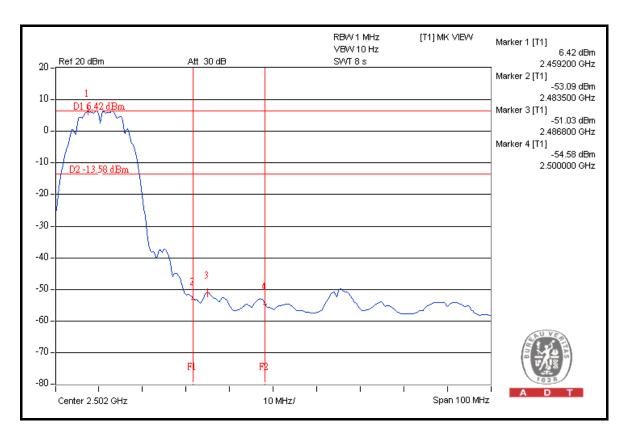


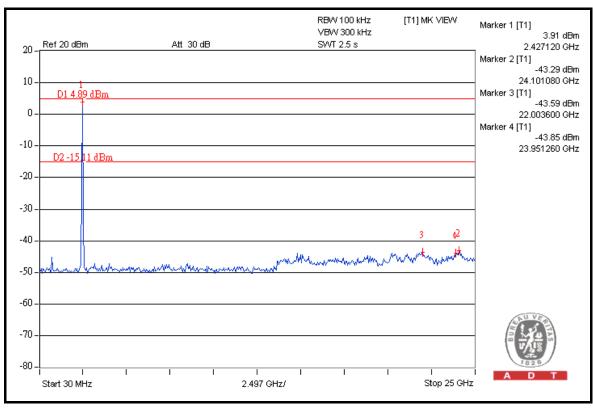














802.11g

RESTRICT BAND (2310 ~ 2390 MHz)

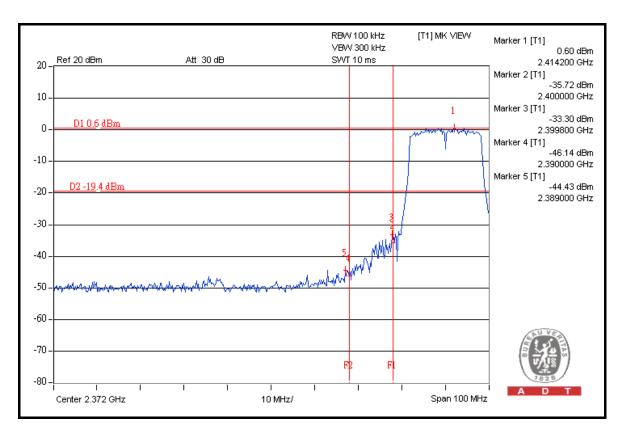
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	111.7	45.03	66.67	74.00
2412.00 (AV)	101.5	51.85	49.65	54.00

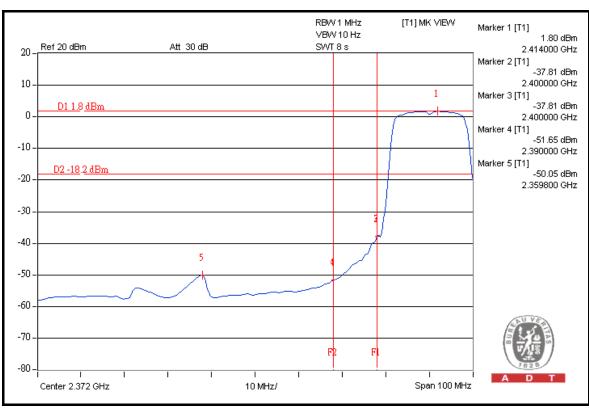
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	112.8	43.87	68.93	74.00
2462.00 (AV)	102.6	52.85	49.75	54.00

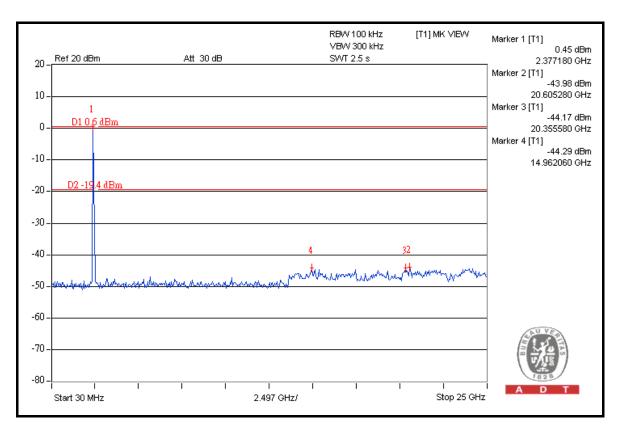
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

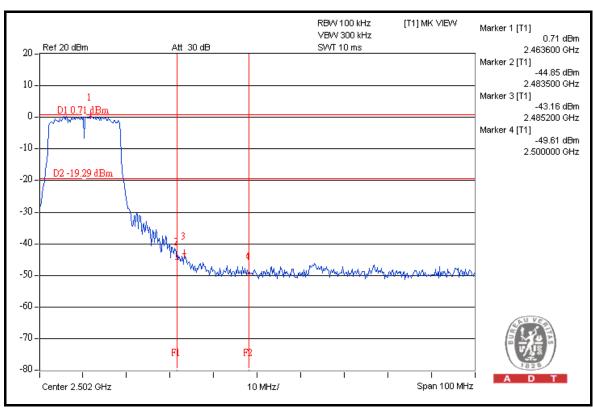




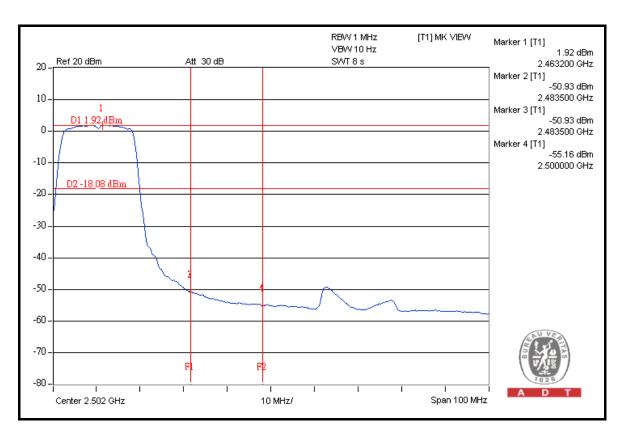


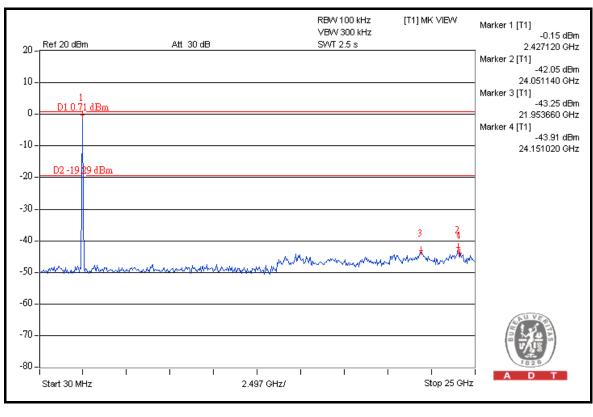














802.11n (20MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

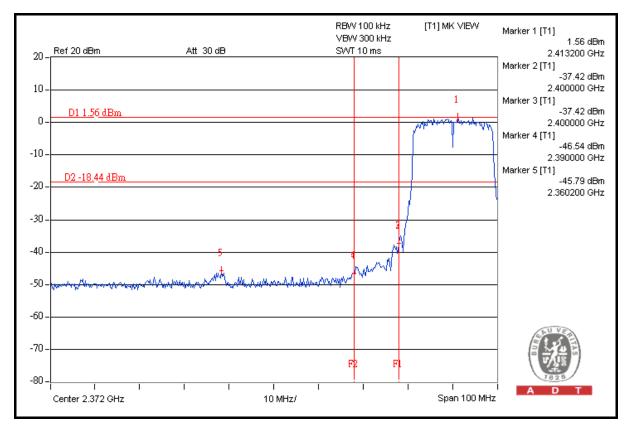
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2412.00 (PK)	111.1	47.35	63.75	74.00
2412.00 (AV)	101.2	51.38	49.82	54.00

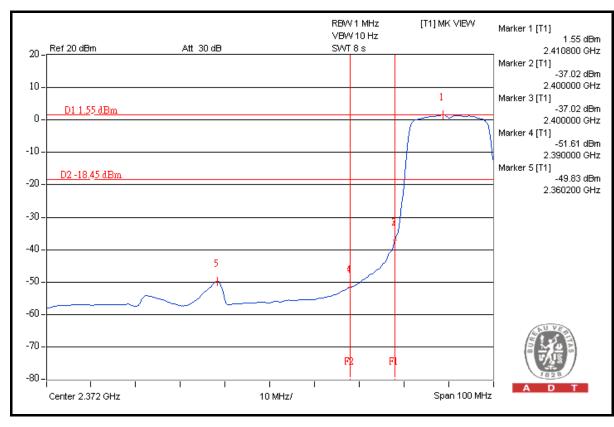
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2462.00 (PK)	111.4	45.42	65.98	74.00
2462.00 (AV)	101.4	51.90	49.50	54.00

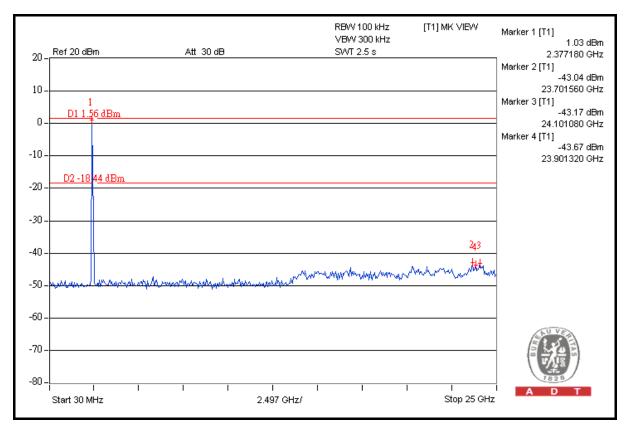
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

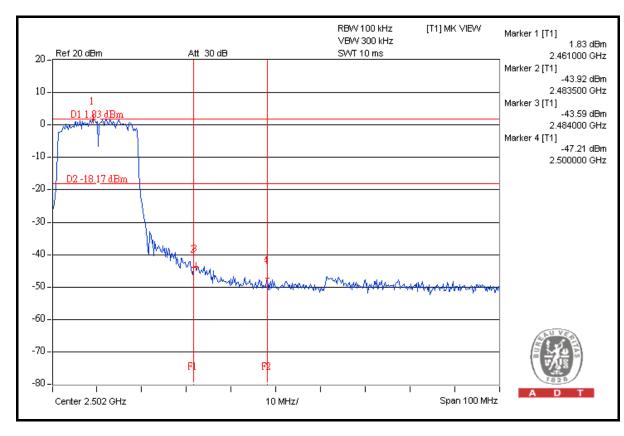




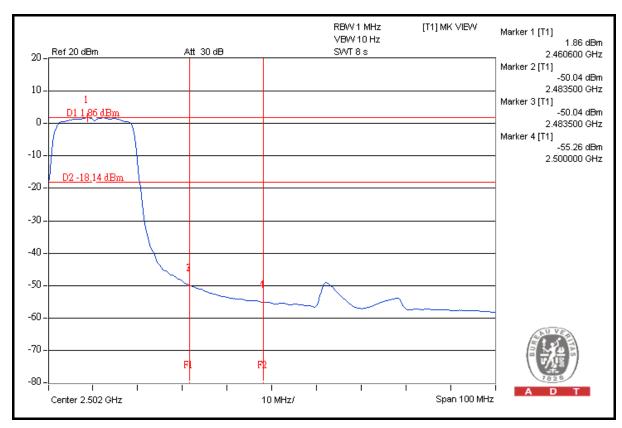


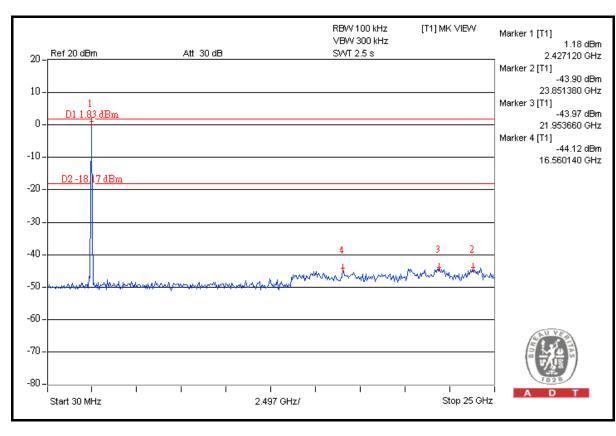














802.11n (40MHz)

RESTRICT BAND (2310 ~ 2390 MHz)

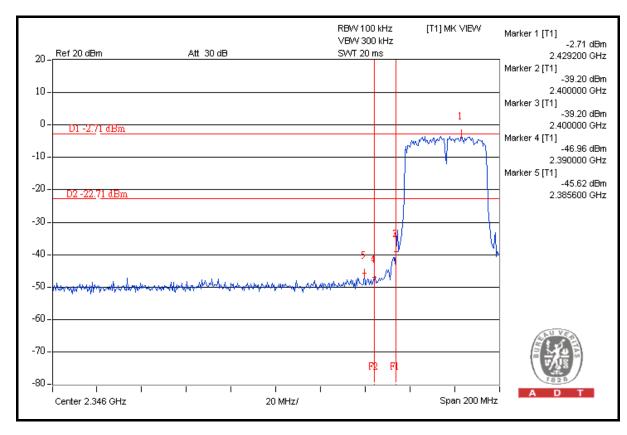
FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2422.00 (PK)	106.6	42.91	63.69	74.00
2422.00 (AV)	96.7	47.41	49.29	54.00

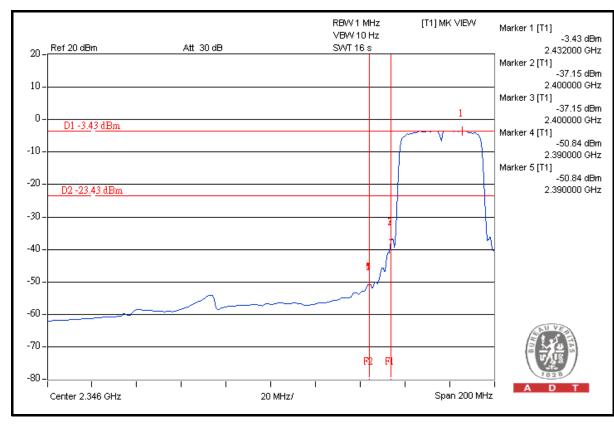
RESTRICT BAND (2483.5 ~ 2500 MHz)

FREQUENCY (MHz)	FUNDAMENTAL EMISSION (dBuV/m)	DELTA (dB)	MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m)	LIMIT (dBuV/m)
2452.00 (PK)	106.8	43.89	62.91	74.00
2452.00 (AV)	96.6	47.39	49.21	54.00

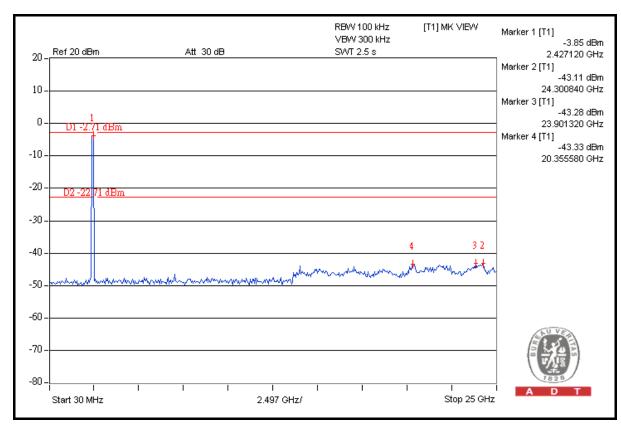
- 1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- 2. Maximum field strength in restrict band = Fundamental emission Delta.

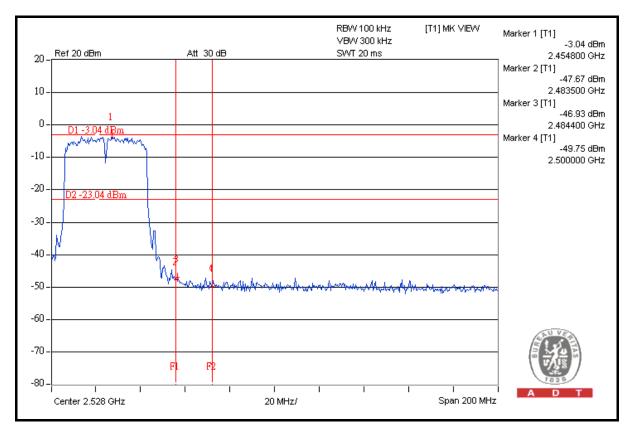




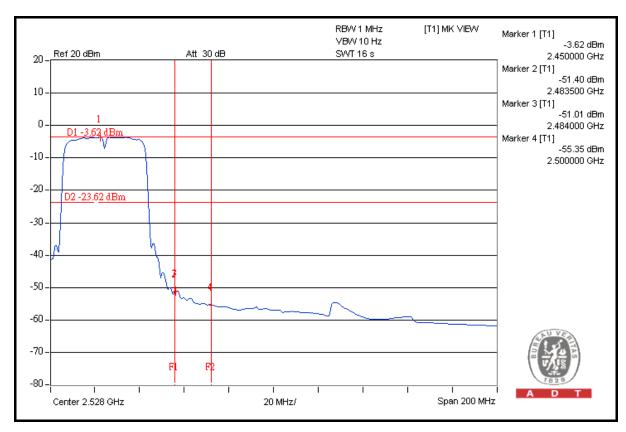


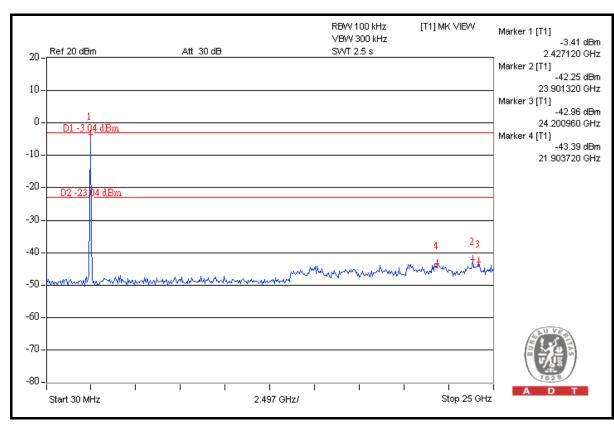














5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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 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---