



FCC TEST REPORT

REPORT NO.: RF980114L01

MODEL NO.: SVG1501 (refer to item 3.1 for more details)

RECEIVED: Feb. 11, 2009

TESTED: Mar. 09 ~ Mar. 25, 2009

ISSUED: Mar. 27, 2009

APPLICANT: GENERAL INSTRUMENT OF TAIWAN, LTD.

ADDRESS: 1, Lane 232, Pao Chiao Road, Shin Dian, Taipei, Taiwan 231, R.O.C.

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.

This test report consists of 57 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.





A D T

TABLE OF CONTENTS

1. CERTIFICATION	4
2. SUMMARY OF TEST RESULTS.....	5
2.1 MEASUREMENT UNCERTAINTY	5
3. GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF EUT.....	6
3.2 DESCRIPTION OF TEST MODES.....	7
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST.....	7
3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	8
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	10
3.4 DESCRIPTION OF SUPPORT UNITS.....	10
4. TEST TYPES AND RESULTS.....	11
4.1 RADIATED EMISSION MEASUREMENT	11
4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT	11
4.1.2 TEST INSTRUMENTS	12
4.1.3 TEST PROCEDURES	13
4.1.4 DEVIATION FROM TEST STANDARD	13
4.1.5 TEST SETUP	14
4.1.6 EUT OPERATING CONDITIONS.....	14
4.1.7 TEST RESULTS	15
4.2 CONDUCTED EMISSION MEASUREMENT	23
4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	23
4.2.2 TEST INSTRUMENTS	23
4.2.3 TEST PROCEDURES	24
4.2.4 DEVIATION FROM TEST STANDARD	24
4.2.5 TEST SETUP	25
4.2.6 EUT OPERATING CONDITIONS.....	25
4.2.7 TEST RESULTS	26
4.3 6dB BANDWIDTH MEASUREMENT	30
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	30
4.3.2 TEST INSTRUMENTS	30
4.3.3 TEST PROCEDURE	30
4.3.4 DEVIATION FROM TEST STANDARD	30
4.3.5 TEST SETUP	31
4.3.6 EUT OPERATING CONDITIONS.....	31
4.3.7 TEST RESULTS	32
4.4 MAXIMUM PEAK OUTPUT POWER	36
4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT.....	36



A D T

4.4.2	INSTRUMENTS	36
4.4.3	TEST PROCEDURES.....	36
4.4.4	DEVIATION FROM TEST STANDARD	36
4.4.5	TEST SETUP	37
4.4.6	EUT OPERATING CONDITIONS.....	37
4.4.7	TEST RESULTS	38
4.5	POWER SPECTRAL DENSITY MEASUREMENT	39
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT.....	39
4.5.2	TEST INSTRUMENTS	39
4.5.3	TEST PROCEDURE	39
4.5.4	DEVIATION FROM TEST STANDARD	39
4.5.5	TEST SETUP	40
4.5.6	EUT OPERATING CONDITION	40
4.5.7	TEST RESULTS	41
4.6	BAND EDGES MEASUREMENT	45
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	45
4.6.2	TEST INSTRUMENTS	45
4.6.3	TEST PROCEDURE	45
4.6.4	DEVIATION FROM TEST STANDARD	45
4.6.5	EUT OPERATING CONDITION	45
4.6.6	TEST RESULTS	46
4.7	ANTENNA REQUIREMENT.....	54
4.7.1	STANDARD APPLICABLE	54
4.7.2	ANTENNA CONNECTED CONSTRUCTION.....	54
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION	55
6.	INFORMATION ON THE TESTING LABORATORIES.....	56
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	57



A D T

1. CERTIFICATION

PRODUCT: Wireless Voice Gateway

MODEL: SVG1501 (refer to item 3.1 for more details)

BRAND: Motorola

APPLICANT: GENERAL INSTRUMENT OF TAIWAN, LTD.

TESTED: Mar. 09 ~ Mar. 25, 2009

TEST SAMPLE: ENGINEERING SAMPLE

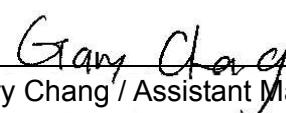
STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.4-2003

The above equipment (model: SVG1501U Diag) 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 : Mar. 27, 2009
Joanna Wang / Senior Specialist

**TECHNICAL
ACCEPTANCE** :  , DATE : Mar. 27, 2009
Responsible for RF Long Chen / Senior Engineer

APPROVED BY :  , DATE : Mar. 27, 2009
Gary Chang / Assistant Manager



A D T

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.08dB at 0.177MHz.
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak 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 -2.39dB at 2483.500MHz.
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.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44dB
Radiated emissions	30MHz ~ 200MHz	3.19dB
	200MHz ~1000MHz	3.21dB
	1GHz ~ 18GHz	2.26dB
	18GHz ~ 40GHz	1.94dB

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



A D T

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Voice Gateway
MODEL NO.	SVG1501 (refer to NOTE 1 for more details)
FCC ID	W5HSVG1501
POWER SUPPLY	14Vdc from 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
FREQUENCY RANGE	2412.0MHz ~ 2462.0MHz
NUMBER OF CHANNEL	11
MAXIMUM OUTPUT POWER	228.034mW
ANTENNA TYPE	Printed antenna with 2dBi gain (The top facing antenna) Printed antenna with 4dBi gain (The front facing antenna)
DATA CABLE	1.8m non-shielded Internet cable without core 1.5m non-shielded Diag cable without core 2.0m shielded USB cable without core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter

NOTE:

1. The models as below are identical to each other except for their model designation and port due to marketing requirement.

MODEL NO.	DIAG PORT	USB PORT
SVG1501	-	-
SVG1501 Diag	✓	-
SVG1501U	-	✓
SVG1501U Diag	✓	✓

*The model SVG1501U Diag was chosen for final test.

2. The EUT was powered by the following adapters:

ADAPTER 1	
BRAND:	LITEON
MODEL:	PA-1240-5M-ROHS
INPUT POWER:	100-240Vac, 2A, 50-60Hz
OUTPUT POWER:	14Vdc, 17A
POWER LINE:	1.8m non-shielded cable with one core

ADAPTER 2	
BRAND:	LEADER ELECTRONICS INC.
MODEL:	NU24-2140170-I3
INPUT POWER:	100-240Vac, 50-60Hz, 0.5A
OUTPUT POWER:	14Vdc, 17A
POWER LINE:	1.9m non-shielded cable with one core

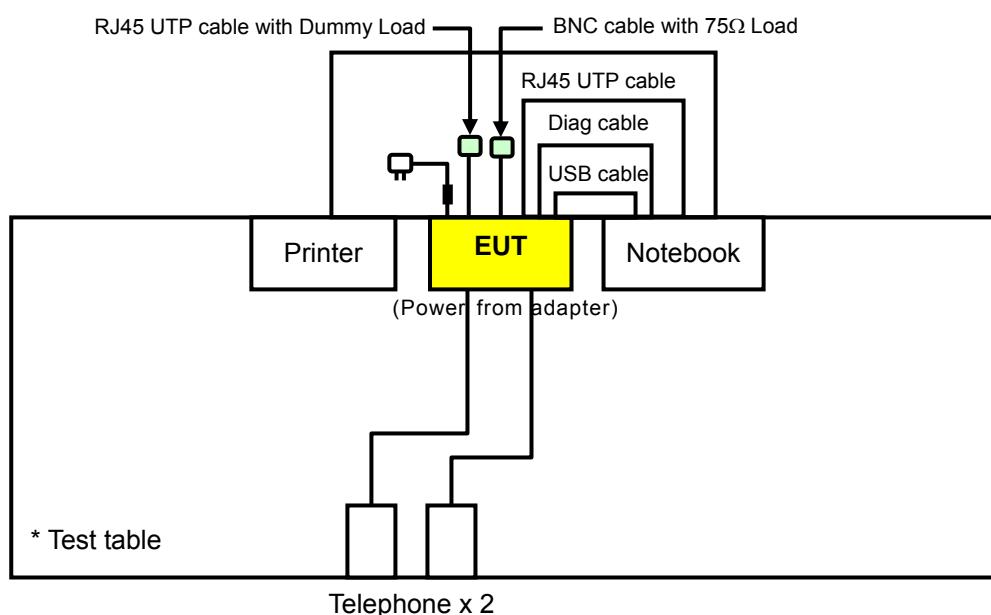
3. The front facing antenna with 4dBi gain was chosen for final test.
4. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b devices to the network. With its high-speed data transmissions up to 54Mbps.
5. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided to this EUT:

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		

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





A D T

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
A	✓	✓	✓	✓	Adapter: PA-1240-5M-ROHS
B	-	✓	✓	-	Adapter: NU24-2140170-I3

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

NOTE: “-“ means no effect.

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

POWER LINE CONDUCTED EMISSION TEST:

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

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



A D T

BANDEDGE MEASUREMENT:

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

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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



A D T

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	D600	CN-0G5152-48643-49C-8226	FCC DoC Approved
2	PRINTER	EPSON	LQ-300+	DCGY047265	FCC DoC Approved
3	TELEPHONE	WONDER	WD-303	1F01017	NA
4	TELEPHONE	WONDER	WD-303	5C17DA09345	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.5m RJ45 UTP cable.
2	1.8m braid shielded wire, DB25 connector, w/o core.
3	1.8m non-shielded cable, RJ11 connector, w/o core.
4	1.8m non-shielded cable, RJ11 connector, w/o core.

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

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 (dB_uV/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.



A D T

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, 2008	Dec. 28, 2009
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 08, 2008	Dec. 07, 2009
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Apr. 30, 2008	Apr. 29, 2009
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-408	Dec. 29, 2008	Dec. 28, 2009
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Jan. 06, 2009	Jan. 05, 2010
Preamplifier Agilent	8449B	3008A01960	Nov. 03, 2008	Nov. 02, 2009
Preamplifier Agilent	8447D	2944A10631	Nov. 03, 2008	Nov. 02, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	274041/4	Aug. 21, 2008	Aug. 20, 2009
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	283397/4	Aug. 21, 2008	Aug. 20, 2009
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.

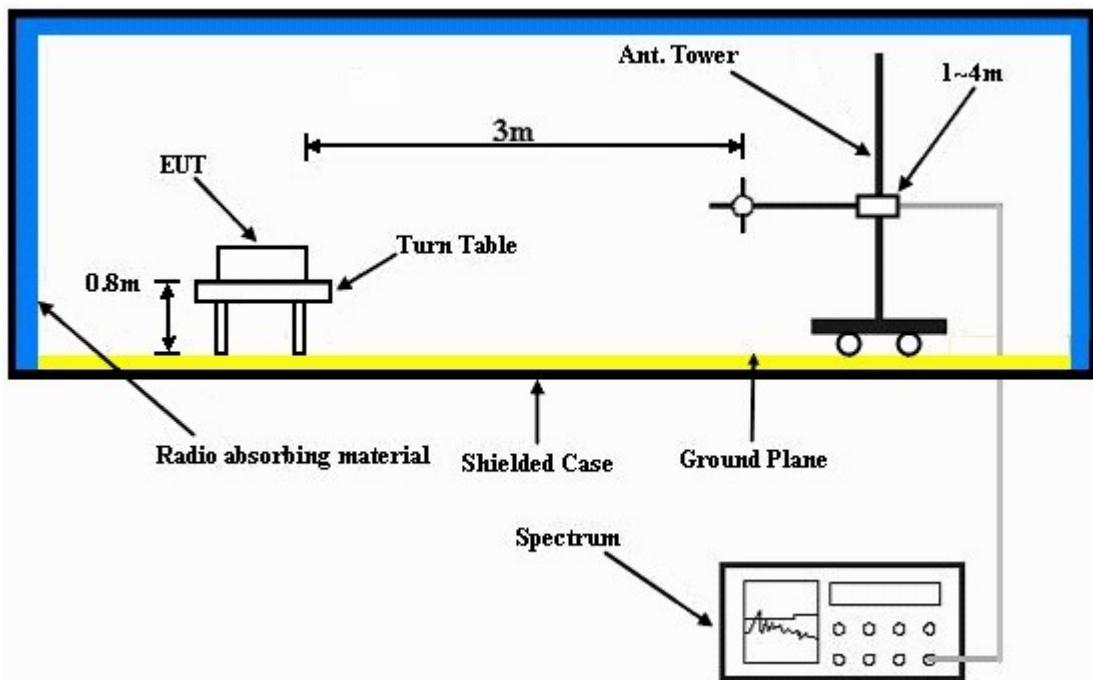
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz 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. Connected the EUT to notebook and placed on a testing table.
- b. The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the EUT in full functions.



A D T

4.1.7 TEST RESULTS

802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		FREQUENCY RANGE		1 ~ 25GHz
INPUT POWER		DETECTOR FUNCTION		Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		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	61.58 PK	74.00	-12.42	1.18 H	142	28.50	33.08
2	2390.00	50.18 AV	54.00	-3.82	1.18 H	142	17.10	33.08
3	*2412.00	107.14 PK			1.18 H	142	73.96	33.18
4	*2412.00	103.98 AV			1.18 H	142	70.80	33.18
5	#3216.00	45.80 PK	87.14	-41.34	1.00 H	225	10.24	35.56
6	#3216.00	36.01 AV	83.98	-47.97	1.00 H	225	0.45	35.56
7	4824.00	56.32 PK	74.00	-17.68	1.01 H	115	17.17	39.15
8	4824.00	48.87 AV	54.00	-5.13	1.01 H	115	9.72	39.15

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.20 PK	74.00	-11.80	1.00 V	11	29.12	33.08
2	2390.00	51.23 AV	54.00	-2.77	1.00 V	11	18.15	33.08
3	*2412.00	110.98 PK			1.01 V	16	77.80	33.18
4	*2412.00	106.24 AV			1.01 V	16	73.06	33.18
5	#3216.00	46.70 PK	90.98	-44.28	1.01 V	110	11.14	35.56
6	#3216.00	36.16 AV	86.24	-50.08	1.01 V	110	0.60	35.56
7	4824.00	56.08 PK	74.00	-17.92	1.01 V	128	16.93	39.15
8	4824.00	48.99 AV	54.00	-5.01	1.01 V	128	9.84	39.15

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		FREQUENCY RANGE		1 ~ 25GHz
INPUT POWER		DETECTOR FUNCTION		Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		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	*2437.00	107.67 PK			1.20 H	348	74.39	33.28
2	*2437.00	104.08 AV			1.20 H	348	70.80	33.28
3	#3249.00	46.50 PK	87.67	-41.17	1.07 H	291	10.96	35.54
4	#3249.00	37.22 AV	84.08	-46.86	1.07 H	291	1.68	35.54
5	4874.00	54.54 PK	74.00	-19.46	1.26 H	5	15.40	39.14
6	4874.00	46.79 AV	54.00	-7.21	1.26 H	5	7.65	39.14
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.02 PK			1.01 V	10	77.74	33.28
2	*2437.00	106.15 AV			1.01 V	10	72.87	33.28
3	#3249.00	47.28 PK	91.02	-43.74	1.22 V	16	11.74	35.54
4	#3249.00	37.49 AV	86.15	-48.66	1.22 V	16	1.95	35.54
5	4874.00	55.56 PK	74.00	-18.44	1.00 V	133	16.42	39.14
6	4874.00	48.75 AV	54.00	-5.25	1.00 V	133	9.61	39.14

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 11		FREQUENCY RANGE 1 ~ 25GHz
INPUT POWER		120Vac, 60 Hz		DETECTOR FUNCTION Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH 1016hPa		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	*2462.00	107.93 PK			1.12 H	277	74.55	33.38
2	*2462.00	104.24 AV			1.12 H	277	70.86	33.38
3	2483.50	60.00 PK	74.00	-14.00	1.11 H	277	26.54	33.46
4	2483.50	49.96 AV	54.00	-4.04	1.11 H	277	16.50	33.46
5	#3282.00	46.66 PK	87.93	-41.27	1.42 H	167	11.15	35.51
6	#3282.00	38.57 AV	84.24	-45.67	1.42 H	167	3.06	35.51
7	4924.00	51.58 PK	74.00	-22.42	1.12 H	127	12.22	39.35
8	4924.00	45.61 AV	54.00	-8.39	1.12 H	127	6.25	39.35

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.27 PK			1.00 V	8	77.89	33.38
2	*2462.00	106.06 AV			1.00 V	8	72.68	33.38
3	2483.50	62.27 PK	74.00	-11.73	1.00 V	7	28.81	33.46
4	2483.50	51.61 AV	54.00	-2.39	1.00 V	7	18.15	33.46
5	#3282.00	47.89 PK	91.27	-43.38	1.07 V	194	12.38	35.51
6	#3282.00	39.39 AV	86.06	-46.67	1.07 V	194	3.88	35.51
7	4924.00	53.17 PK	74.00	-20.83	1.10 V	126	13.81	39.35
8	4924.00	47.39 AV	54.00	-6.61	1.10 V	126	8.03	39.35

REMARKS:

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



A D T

802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 1		FREQUENCY RANGE 1 ~ 25GHz
INPUT POWER		120Vac, 60 Hz		DETECTOR FUNCTION Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH 1016hPa		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	65.32 PK	74.00	-8.68	1.00 H	165	32.24	33.08
2	2390.00	49.53 AV	54.00	-4.47	1.00 H	165	16.45	33.08
3	*2412.00	109.72 PK			1.00 H	165	76.54	33.18
4	*2412.00	95.03 AV			1.00 H	165	61.85	33.18
5	#3216.00	45.54 PK	89.72	-44.18	1.19 H	164	9.98	35.56
6	#3216.00	34.21 AV	75.03	-40.82	1.19 H	164	-1.35	35.56
7	4824.00	49.33 PK	74.00	-24.67	1.20 H	119	10.18	39.15
8	4824.00	39.74 AV	54.00	-14.26	1.20 H	119	0.59	39.15

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.37 PK	74.00	-3.63	1.00 V	12	37.29	33.08
2	2390.00	50.79 AV	54.00	-3.21	1.00 V	12	17.71	33.08
3	*2412.00	111.97 PK			1.00 V	11	78.79	33.18
4	*2412.00	97.45 AV			1.00 V	11	64.27	33.18
5	#3216.00	47.30 PK	91.97	-44.67	1.43 V	19	11.74	35.56
6	#3216.00	34.57 AV	77.45	-42.88	1.43 V	19	-0.99	35.56
7	4824.00	50.18 PK	74.00	-23.82	1.42 V	150	11.03	39.15
8	4824.00	40.45 AV	54.00	-13.55	1.42 V	150	1.30	39.15

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		FREQUENCY RANGE		1 ~ 25GHz
INPUT POWER		DETECTOR FUNCTION		Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		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	*2437.00	109.70 PK			1.10 H	189	76.42	33.28
2	*2437.00	95.10 AV			1.10 H	189	61.82	33.28
3	#3249.00	45.60 PK	89.70	-44.10	1.00 H	116	10.06	35.54
4	#3249.00	34.33 AV	75.10	-40.77	1.00 H	116	-1.21	35.54
5	4874.00	49.75 PK	74.00	-24.25	1.11 H	205	10.61	39.14
6	4874.00	40.34 AV	54.00	-13.66	1.11 H	205	1.20	39.14
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.95 PK			1.00 V	15	78.67	33.28
2	*2437.00	97.68 AV			1.00 V	15	64.40	33.28
3	#3249.00	47.55 PK	91.95	-44.40	1.21 V	5	12.01	35.54
4	#3249.00	34.09 AV	77.68	-43.59	1.21 V	5	-1.45	35.54
5	4874.00	51.10 PK	74.00	-22.90	1.08 V	122	11.95	39.14
6	4874.00	40.90 AV	54.00	-13.10	1.08 V	122	1.75	39.14

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL		
CHANNEL		Channel 11		FREQUENCY RANGE 1 ~ 25GHz
INPUT POWER		120Vac, 60 Hz		DETECTOR FUNCTION Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS		25deg. C, 65%RH 1016hPa		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	*2462.00	109.76 PK			1.01 H	200	76.38	33.38
2	*2462.00	95.14 AV			1.01 H	200	61.76	33.38
3	2483.50	66.16 PK	74.00	-7.84	1.01 H	200	32.70	33.46
4	2483.50	50.02 AV	54.00	-3.98	1.01 H	200	16.56	33.46
5	#3282.00	45.61 PK	89.76	-44.15	1.20 H	223	10.10	35.51
6	#3282.00	34.55 AV	75.14	-40.59	1.20 H	223	-0.96	35.51
7	4924.00	50.64 PK	74.00	-23.36	1.01 H	111	11.29	39.35
8	4924.00	40.76 AV	54.00	-13.24	1.01 H	111	1.41	39.35

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.92 PK			1.00 V	13	78.54	33.38
2	*2462.00	97.58 AV			1.00 V	13	64.20	33.38
3	2483.50	67.63 PK	74.00	-6.37	1.10 V	2	34.17	33.46
4	2483.50	50.89 AV	54.00	-3.11	1.10 V	2	17.43	33.46
5	#3282.00	46.63 PK	91.92	-45.29	1.04 V	19	11.12	35.51
6	#3282.00	36.23 AV	77.58	-41.35	1.04 V	19	0.72	35.51
7	4924.00	51.35 PK	74.00	-22.65	1.11 V	13	12.00	39.35
8	4924.00	42.65 AV	54.00	-11.35	1.11 V	13	3.30	39.35

REMARKS:

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



A D T

BELOW 1GHz WORST-CASE DATA : 802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL			
CHANNEL		Channel 6		FREQUENCY RANGE	
INPUT POWER		120Vac, 60 Hz		DETECTOR FUNCTION	
ENVIRONMENTAL CONDITIONS		21deg. C, 69%RH 1014hPa		TESTED BY	
TEST MODE		A			

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	109.62	33.02 QP	43.50	-10.48	1.25 H	160	22.05	10.97
2	162.11	36.48 QP	43.50	-7.02	1.25 H	292	22.34	14.13
3	249.60	34.18 QP	46.00	-11.82	1.00 H	319	20.50	13.68
4	300.16	35.88 QP	46.00	-10.12	1.00 H	214	21.10	14.78
5	399.31	33.16 QP	46.00	-12.84	1.00 H	10	15.87	17.29
6	751.23	36.73 QP	46.00	-9.27	1.00 H	208	10.86	25.87
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	31.84	35.13 QP	40.00	-4.87	1.00 V	355	22.56	12.57
2	129.06	36.90 QP	43.50	-6.60	1.00 V	130	24.27	12.63
3	149.21	38.23 QP	43.50	-5.27	1.00 V	185	23.58	14.65
4	177.67	37.50 QP	43.50	-6.00	2.00 V	94	24.46	13.04
5	597.63	33.81 QP	46.00	-12.19	1.00 V	91	10.75	23.06
6	733.73	39.56 QP	46.00	-6.44	1.25 V	115	13.90	25.66

REMARKS:

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



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 69%RH 1014hPa	TESTED BY	Sun Lin
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	109.62	37.71 QP	43.50	-5.79	3.00 H	127	26.75	10.97
2	125.03	40.25 QP	43.50	-3.25	2.52 H	61	27.86	12.39
3	155.69	39.98 QP	43.50	-3.52	2.70 H	96	25.51	14.47
4	177.38	39.92 QP	43.50	-3.58	1.94 H	25	26.83	13.09
5	199.05	40.05 QP	43.50	-3.45	2.50 H	136	28.69	11.36
6	309.88	36.16 QP	46.00	-9.84	2.50 H	139	21.13	15.03
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	41.34	32.12 QP	40.00	-7.88	1.00 V	34	19.51	12.61
2	72.67	34.02 QP	40.00	-5.98	1.00 V	148	22.31	11.71
3	113.50	37.82 QP	43.50	-5.68	1.00 V	82	26.43	11.39
4	160.17	35.75 QP	43.50	-7.75	1.00 V	10	21.52	14.23
5	500.42	36.70 QP	46.00	-9.30	2.00 V	184	16.20	20.50
6	731.79	38.81 QP	46.00	-7.19	1.25 V	115	13.18	25.63

REMARKS:

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



A D T

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
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	Nov. 19, 2008	Nov. 18, 2009
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 31, 2008	Dec. 30, 2009
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Jun. 13, 2008	Jun. 12, 2009
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Dec. 04, 2008	Dec. 03, 2009
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

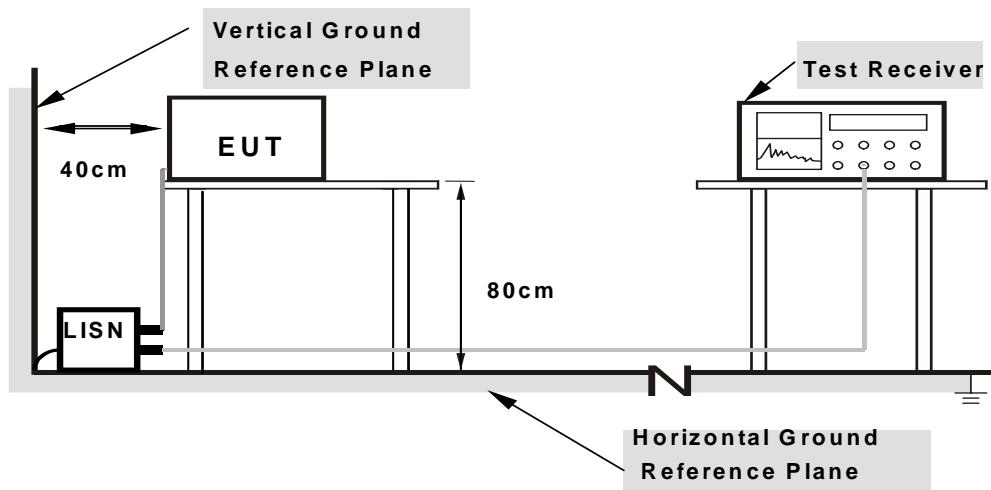
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

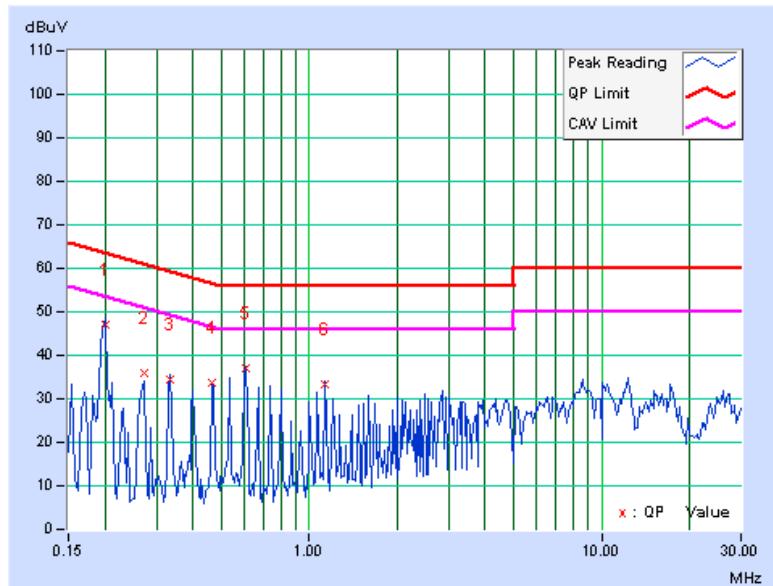
CONDUCTED WORST-CASE DATA: 802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH, 1014hPa	TESTED BY	Sun Lin
TEST MODE	A		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]	[dB (uV)]	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.13	47.04	-	47.17	-	63.58	53.58	-16.41	-
2	0.271	0.13	35.93	-	36.06	-	61.08	51.08	-25.02	-
3	0.334	0.14	34.12	-	34.26	-	59.36	49.36	-25.10	-
4	0.466	0.14	33.59	-	33.73	-	56.58	46.58	-22.84	-
5	0.603	0.15	36.91	-	37.06	-	56.00	46.00	-18.94	-
6	1.137	0.19	33.26	-	33.45	-	56.00	46.00	-22.55	-

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.

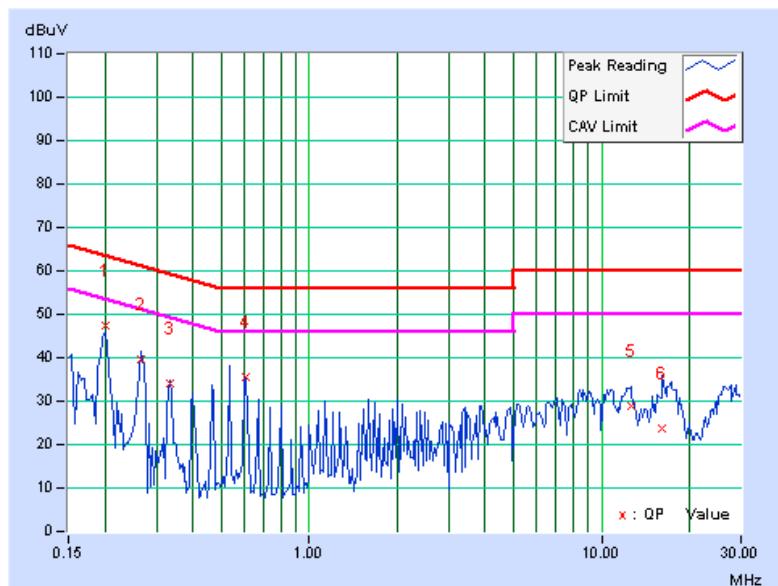


EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH, 1014hPa	TESTED BY	Sun Lin
TEST MODE	A		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			Factor [MHz]	(dB)	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	(dB)	(dB)
1	0.201	0.15	47.24	-	47.39	-	63.58	53.58	-16.19	-
2	0.267	0.15	39.60	-	39.75	-	61.20	51.20	-21.45	-
3	0.334	0.16	33.94	-	34.10	-	59.36	49.36	-25.26	-
4	0.603	0.17	35.36	-	35.53	-	56.00	46.00	-20.47	-
5	12.625	0.74	28.01	-	28.75	-	60.00	50.00	-31.25	-
6	16.102	0.86	22.72	-	23.58	-	60.00	50.00	-36.42	-

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.

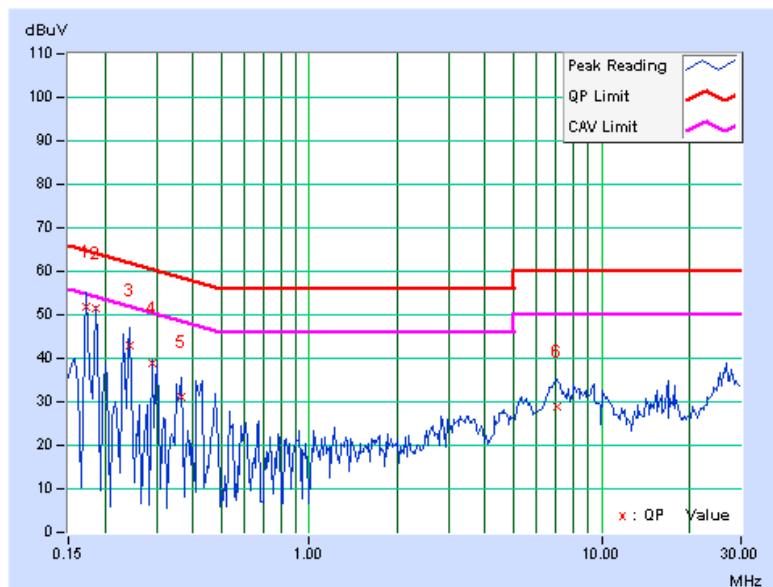


EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 1
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH, 1014hPa	TESTED BY	Sun Lin
TEST MODE	B		

No	Freq. [MHz]	Corr. (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.13	51.60	-	51.73	-	64.79	54.79	-13.06	-
2	0.185	0.13	51.51	-	51.64	-	64.25	54.25	-12.61	-
3	0.244	0.13	42.89	-	43.02	-	61.97	51.97	-18.95	-
4	0.291	0.13	38.65	-	38.78	-	60.51	50.51	-21.72	-
5	0.365	0.14	31.09	-	31.23	-	58.62	48.62	-27.39	-
6	7.043	0.52	28.46	-	28.98	-	60.00	50.00	-31.02	-

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.

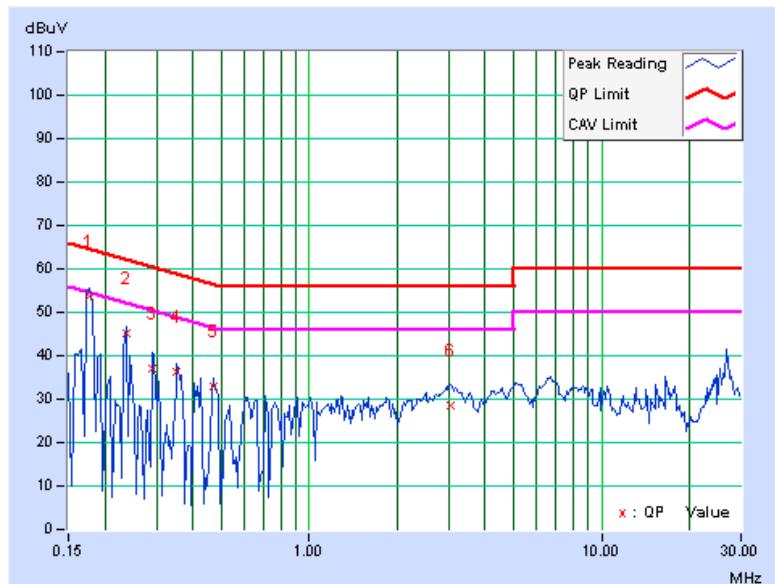


EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	INPUT POWER	120Vac, 60Hz
TRANSFER RATE	6.0Mbps	6dB BANDWIDTH	9kHz
ENVIRONMENTAL CONDITIONS	23deg. C, 69%RH, 1014hPa	TESTED BY	Sun Lin
TEST MODE	B		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			Factor	[dB (uV)]	[dB (uV)]	Q.P.	AV.	Q.P.	AV.	(dB)
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.15	53.38	-	53.53	-	64.61	54.61	-11.08	-
2	0.236	0.15	44.86	-	45.01	-	62.24	52.24	-17.23	-
3	0.291	0.15	36.87	-	37.02	-	60.51	50.51	-23.48	-
4	0.353	0.16	36.15	-	36.31	-	58.89	48.89	-22.58	-
5	0.470	0.16	32.91	-	33.07	-	56.51	46.51	-23.43	-
6	3.055	0.32	28.22	-	28.54	-	56.00	46.00	-27.46	-

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	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100041	Apr. 22, 2008	Apr. 21, 2009

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

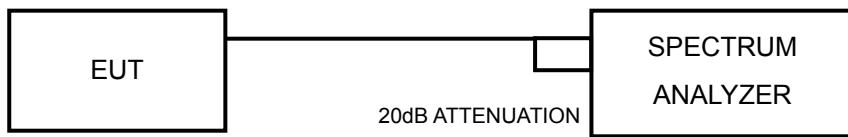
4.3.3 TEST PROCEDURE

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.



A D T

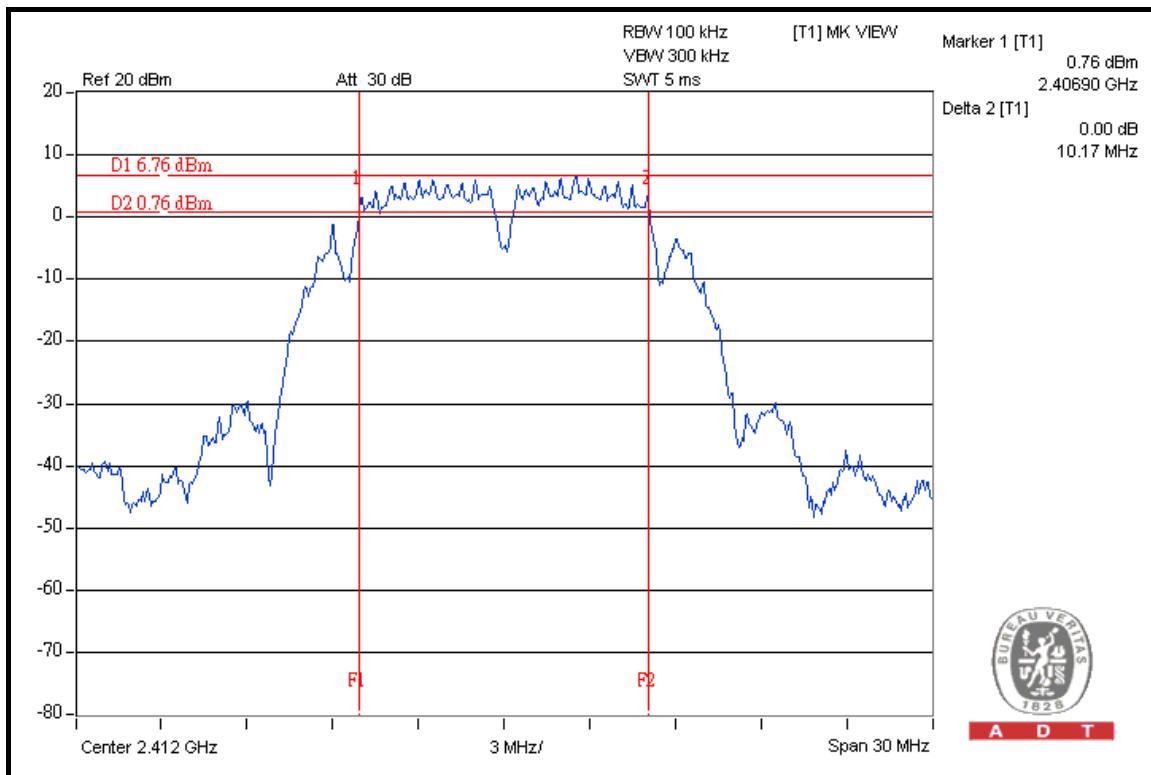
4.3.7 TEST RESULTS

802.11b DSSS MODULATION

MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 63%RH, 1020hPa
TESTED BY	Lori Chiu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.17	0.5	PASS
6	2437	10.17	0.5	PASS
11	2462	10.18	0.5	PASS

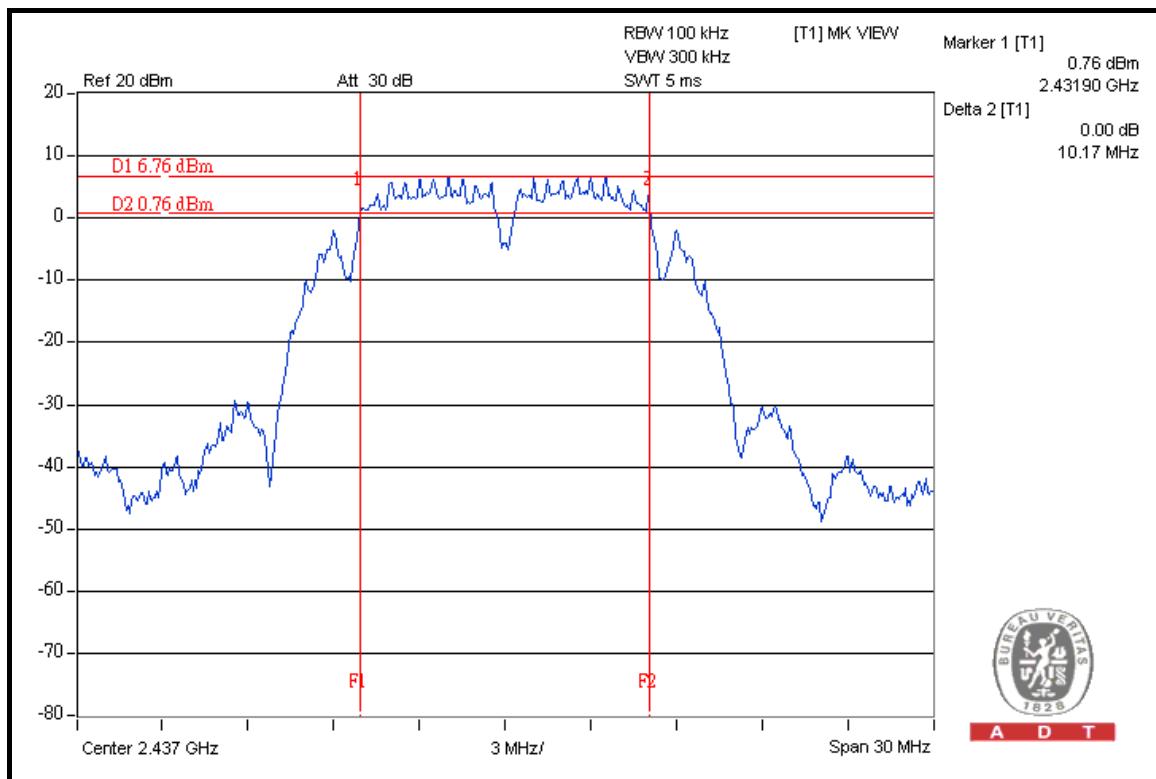
CH 1



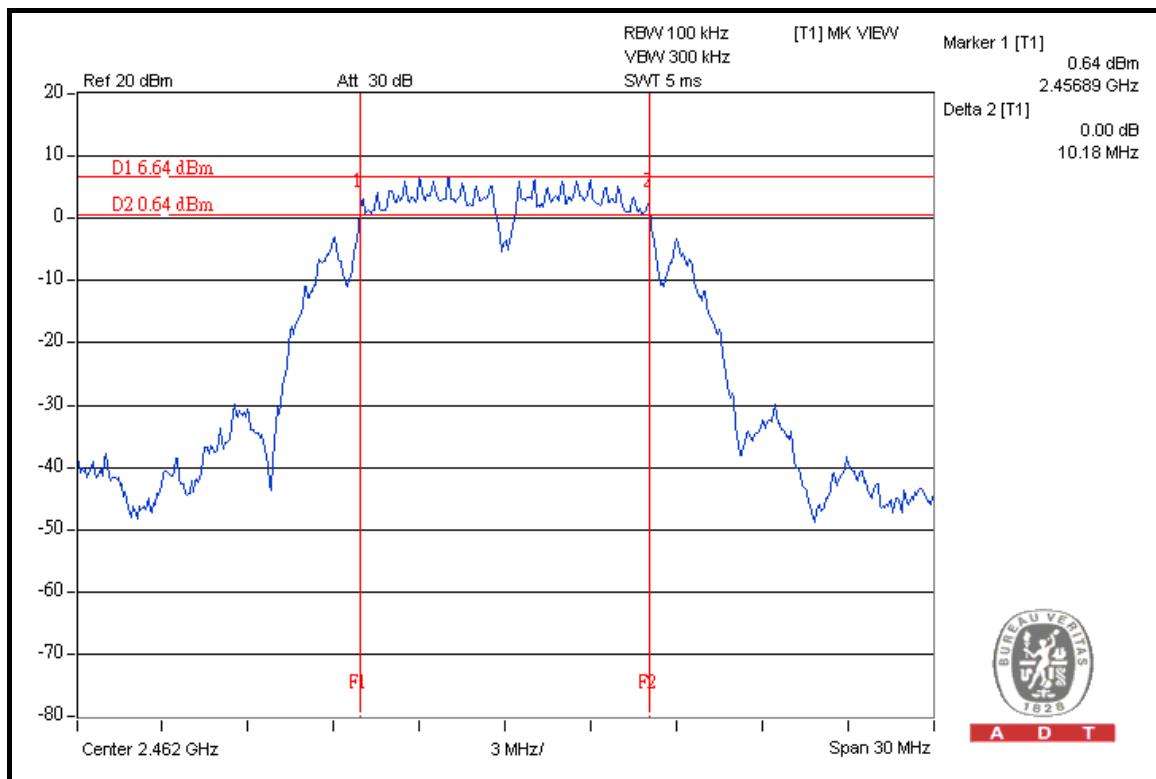


A D T

CH 6



CH 11





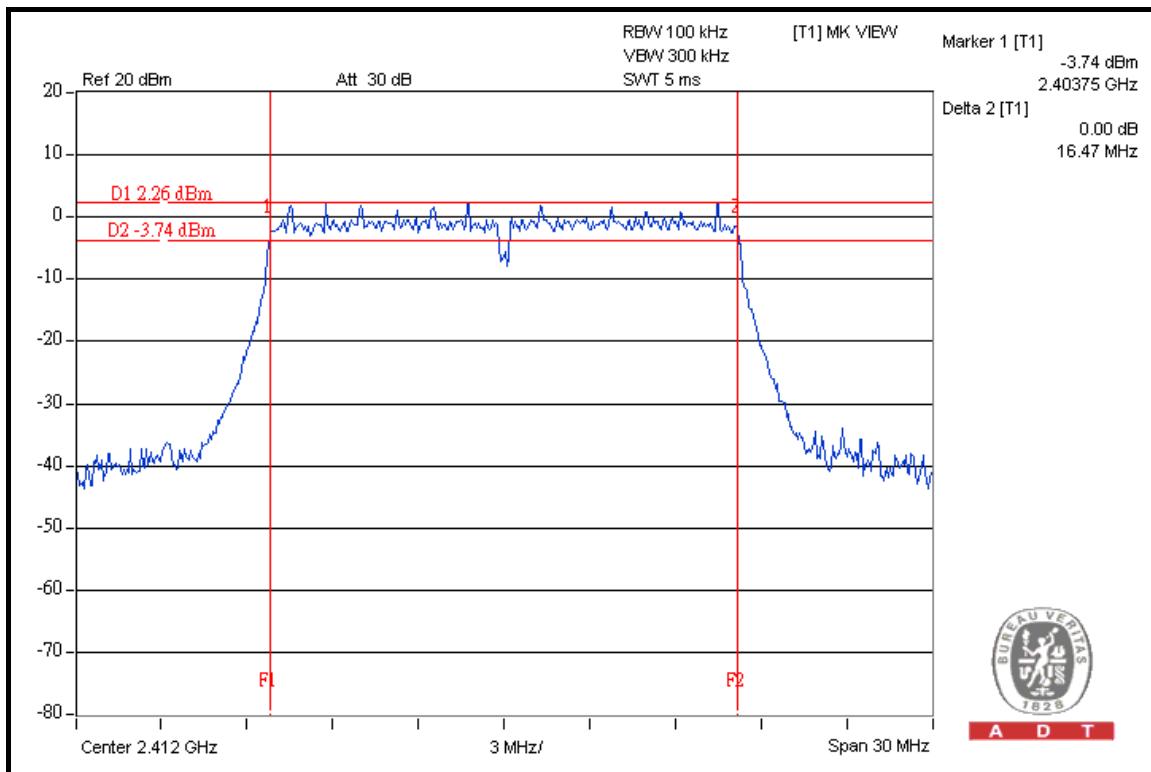
A D T

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 63%RH, 1020hPa
TESTED BY	Lori Chiu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.47	0.5	PASS
6	2437	16.40	0.5	PASS
11	2462	16.40	0.5	PASS

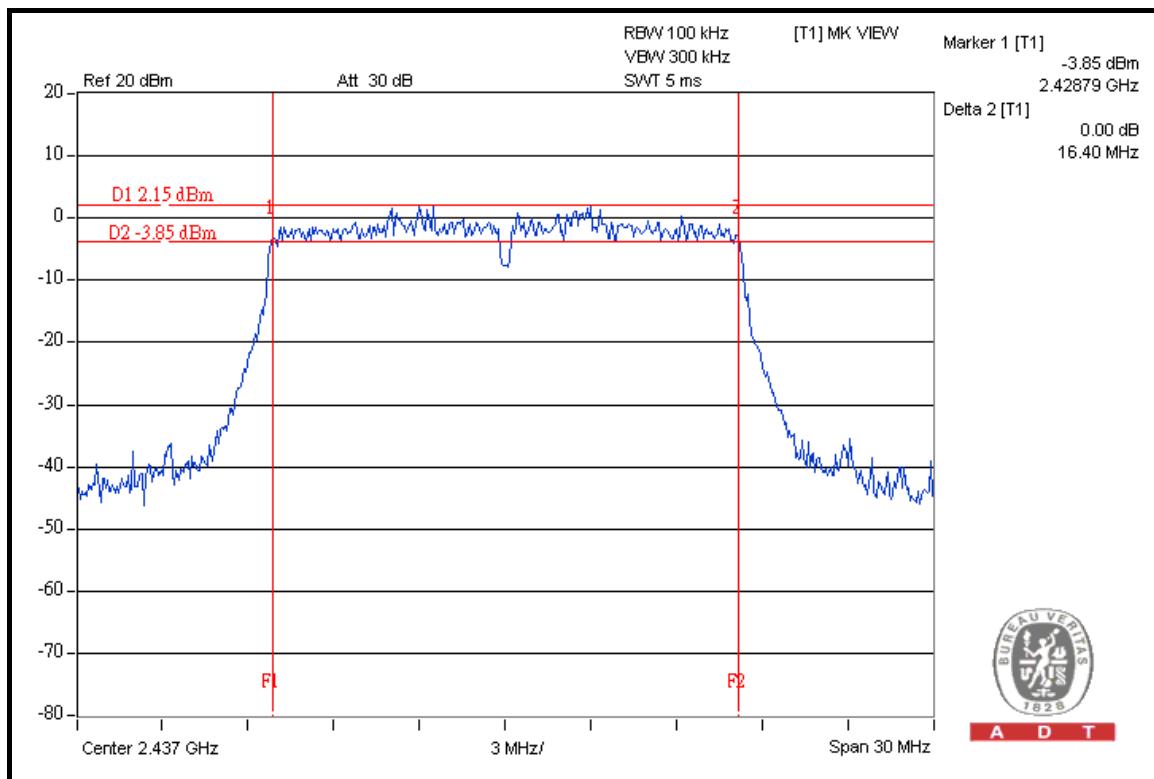
CH 1



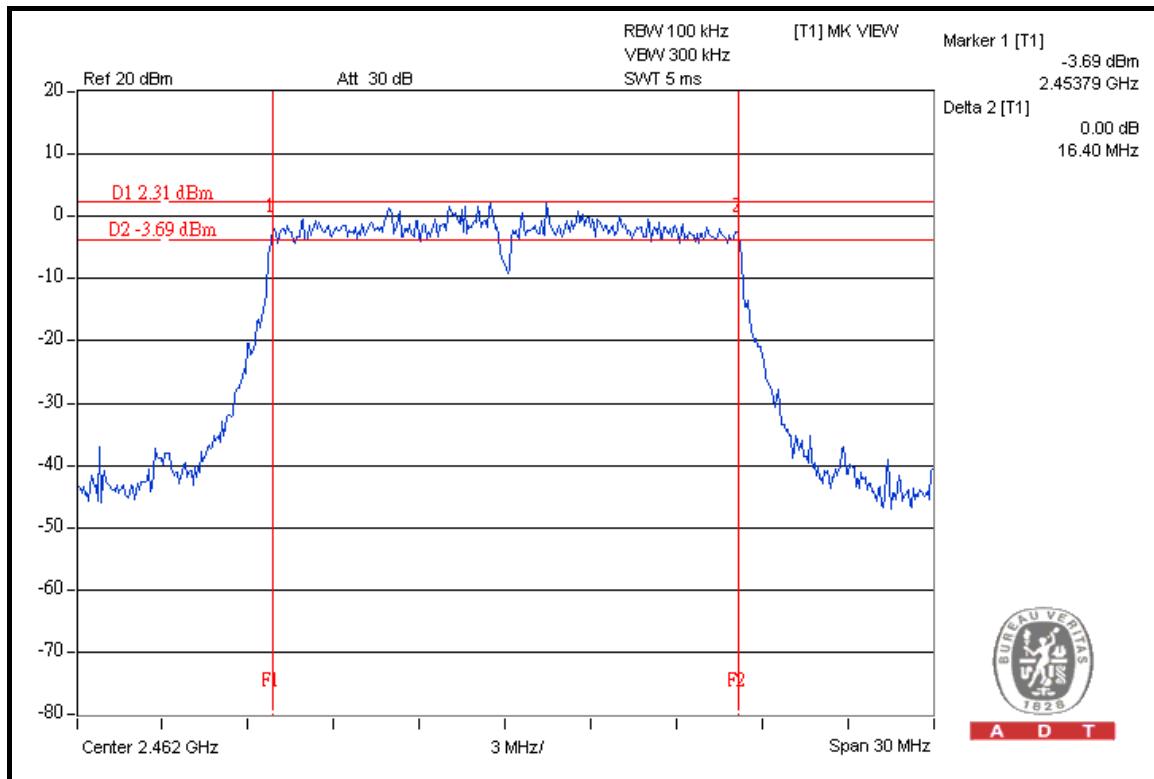


A D T

CH 6



CH 11





A D T

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	CALIBRATED UNTIL
High Speed Peak Power Meter	ML2495A	0824012	Aug. 04, 2008	Aug. 03, 2009
Power Sensor	MA2444B	0738138	Aug. 04, 2008	Aug. 03, 2009

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.

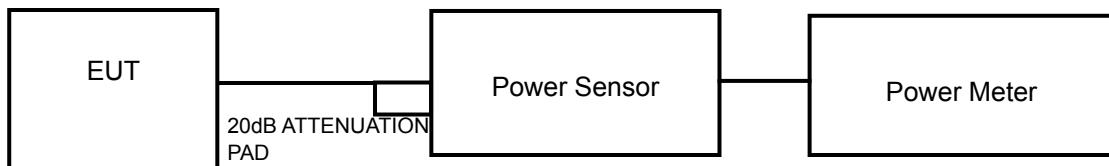
4.4.3 TEST PROCEDURES

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.



A D T

4.4.7 TEST RESULTS

802.11b DSSS MODULATION

MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 63%RH, 1020hPa
TESTED BY	Lori Chiu		

CHAN	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	127.057	21.04	30	PASS
6	2437	129.718	21.13	30	PASS
11	2462	128.233	21.08	30	PASS

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 63%RH, 1020hPa
TESTED BY	Lori Chiu		

CHAN	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	224.905	23.52	30	PASS
6	2437	228.034	23.58	30	PASS
11	2462	225.944	23.54	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	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100041	Apr. 22, 2008	Apr. 21, 2009

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.



A D T

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6.



A D T

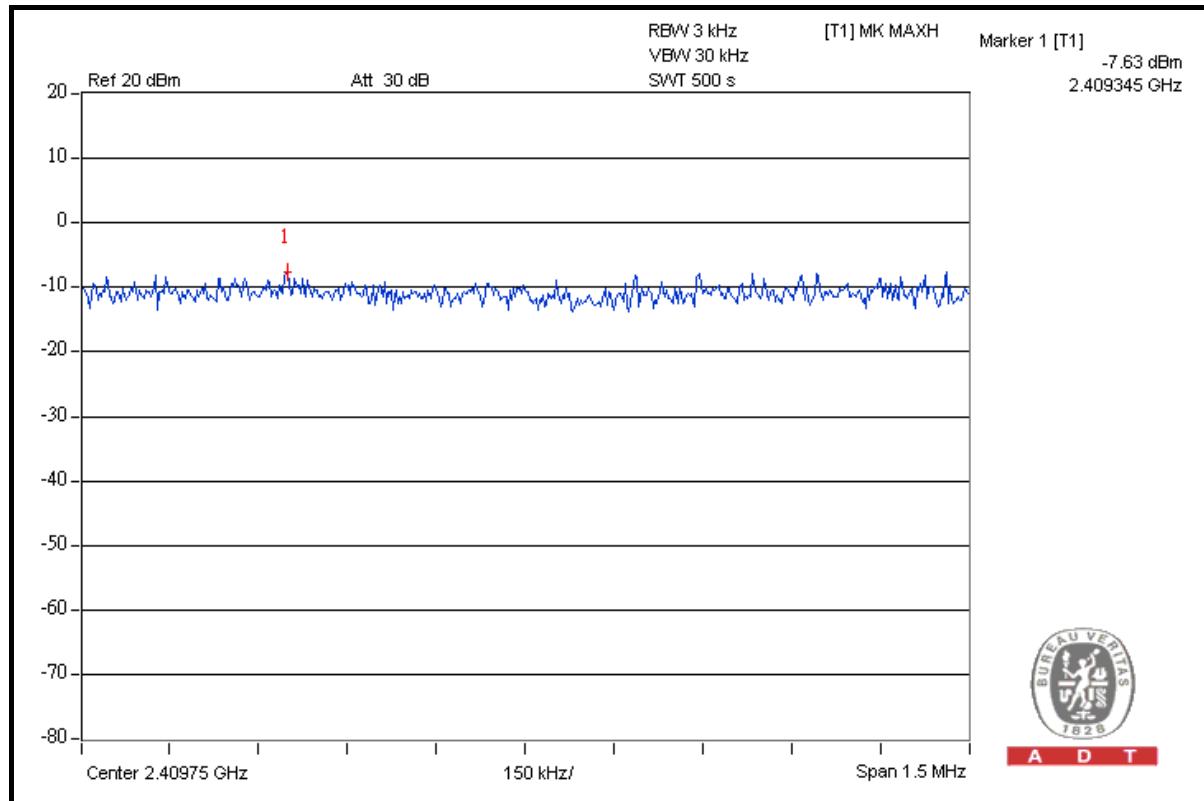
4.5.7 TEST RESULTS

802.11b DSSS MODULATION

MODULATION TYPE	DBPSK	TRANSFER RATE	1.0Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 63%RH, 1020hPa
TESTED BY	Lori Chiu		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-7.63	8	PASS
6	2437	-7.77	8	PASS
11	2462	-7.66	8	PASS

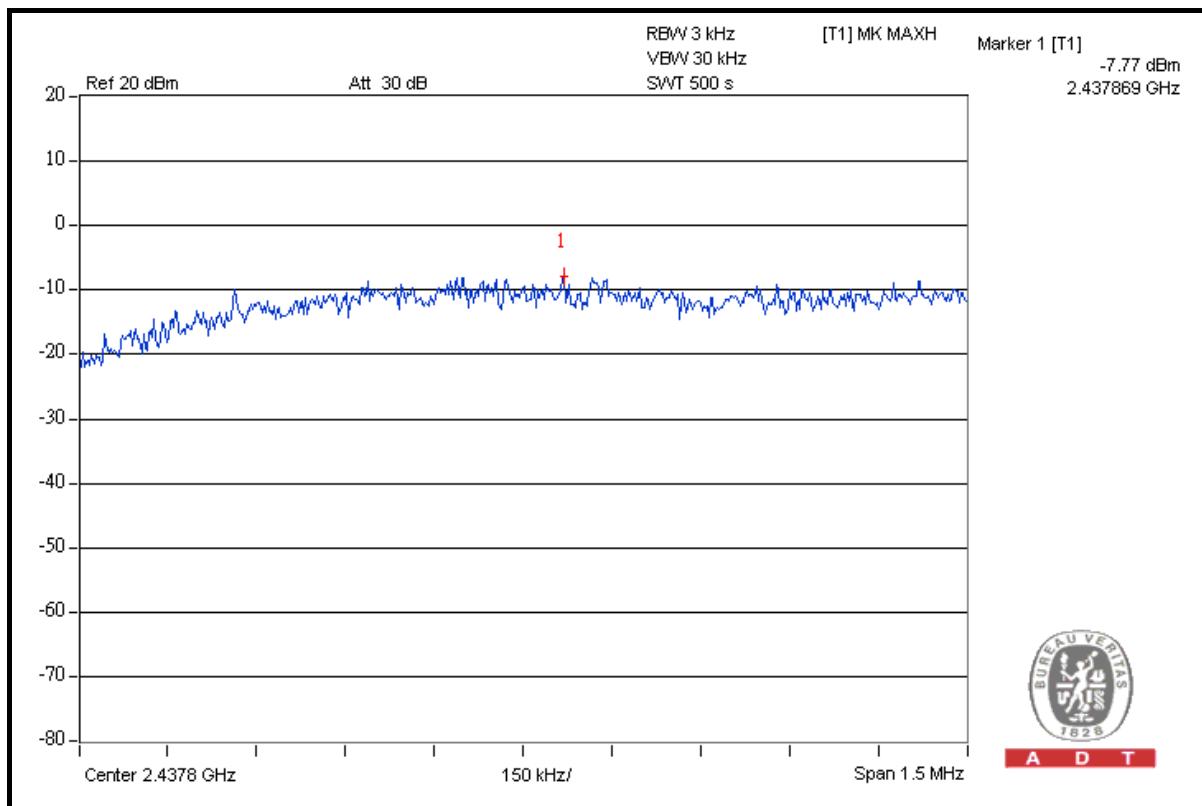
CH 1



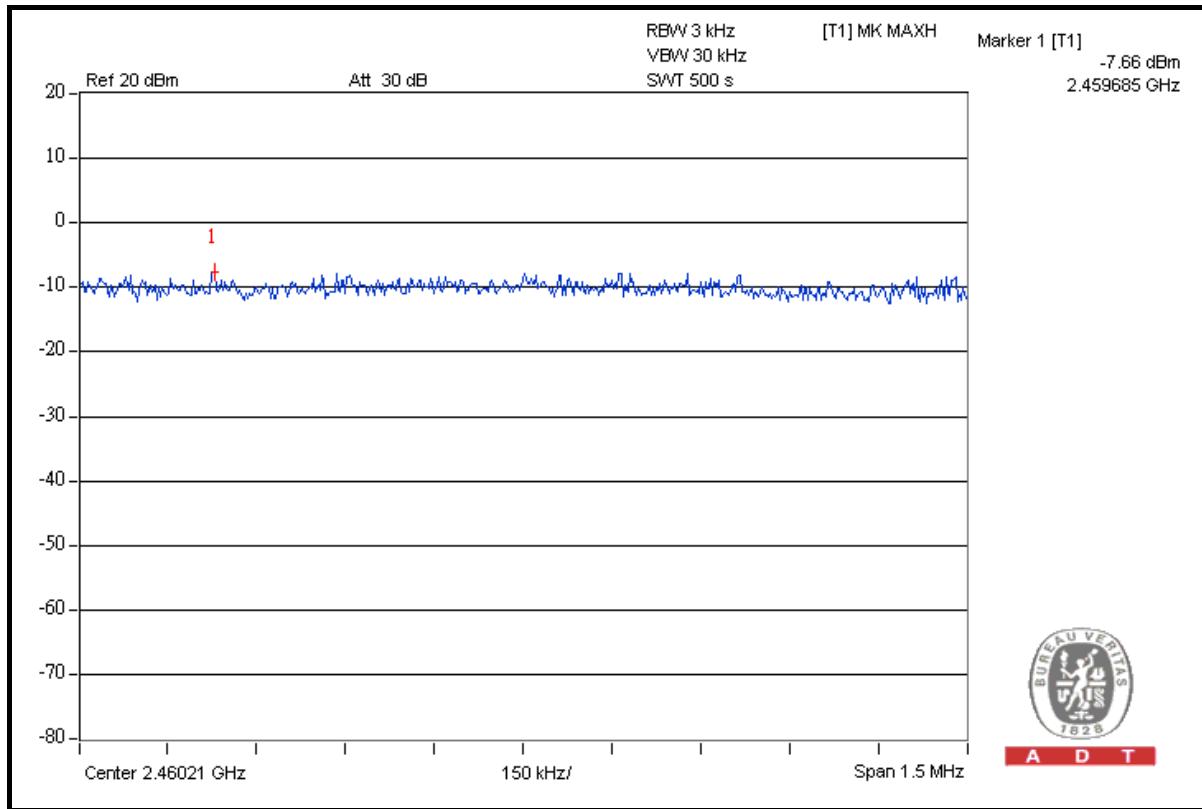


A D T

CH 6



CH 11





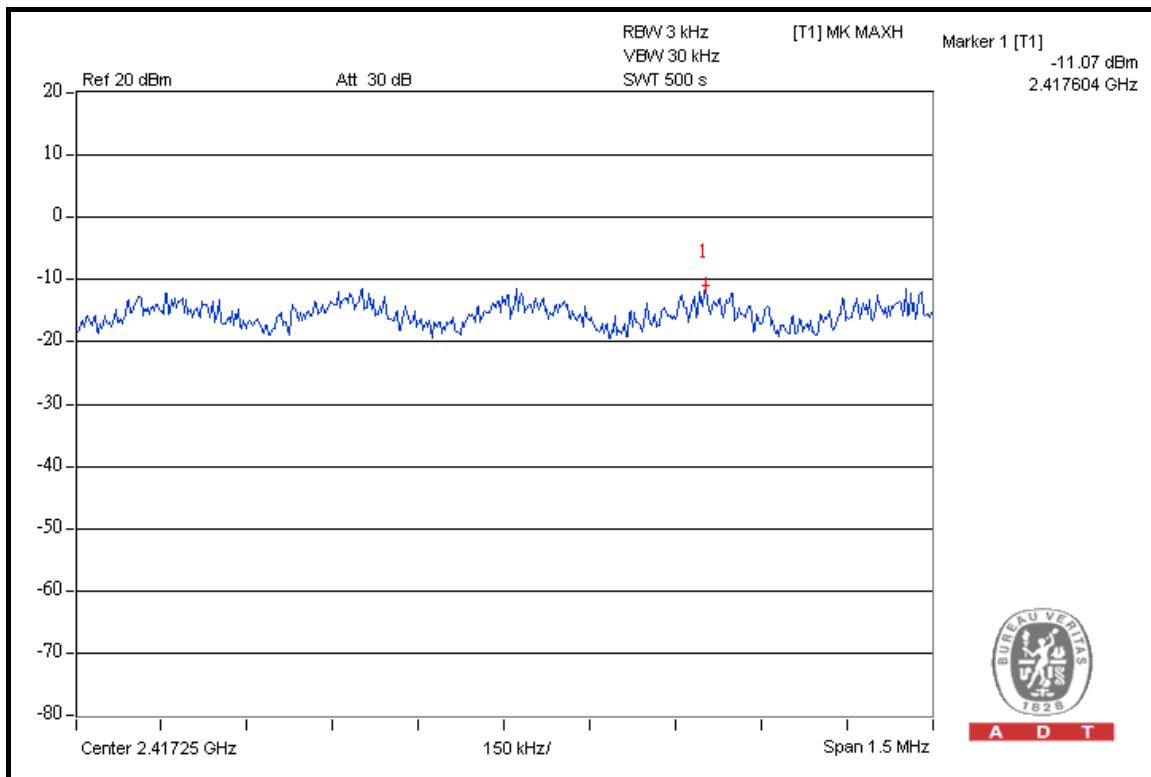
A D T

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6.0Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 63%RH, 1020hPa
TESTED BY	Lori Chiu		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.07	8	PASS
6	2437	-11.09	8	PASS
11	2462	-11.15	8	PASS

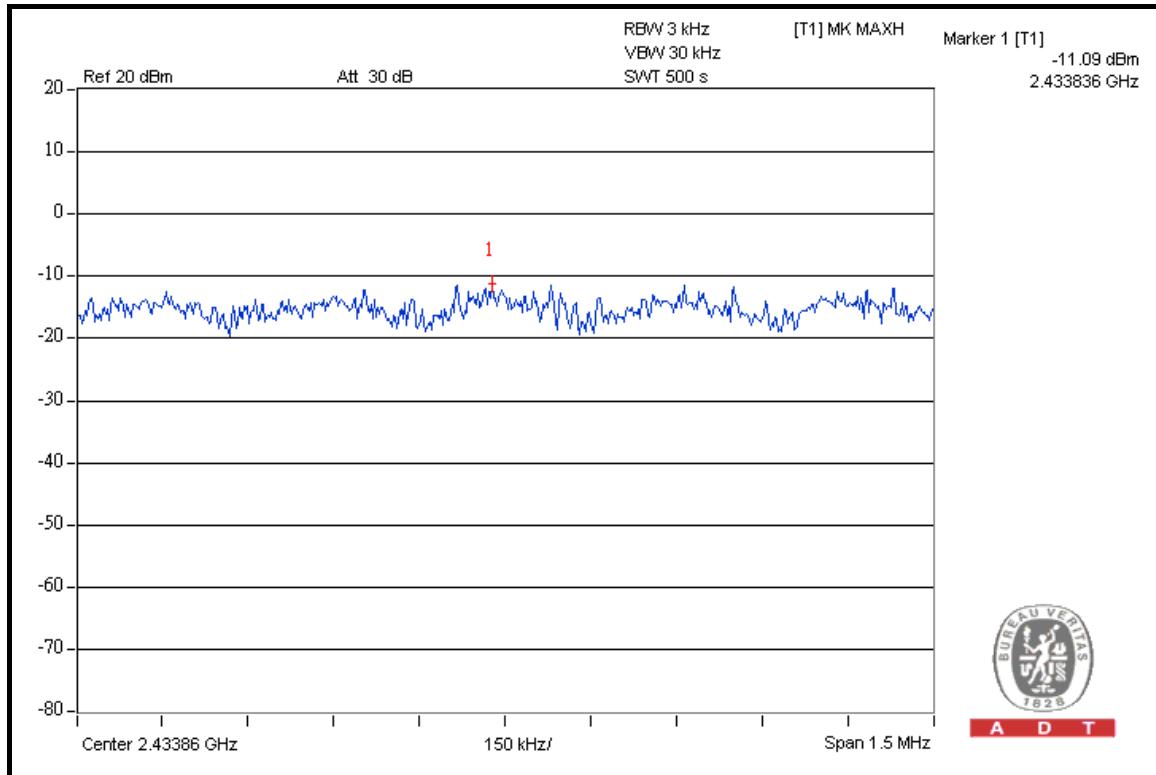
CH 1



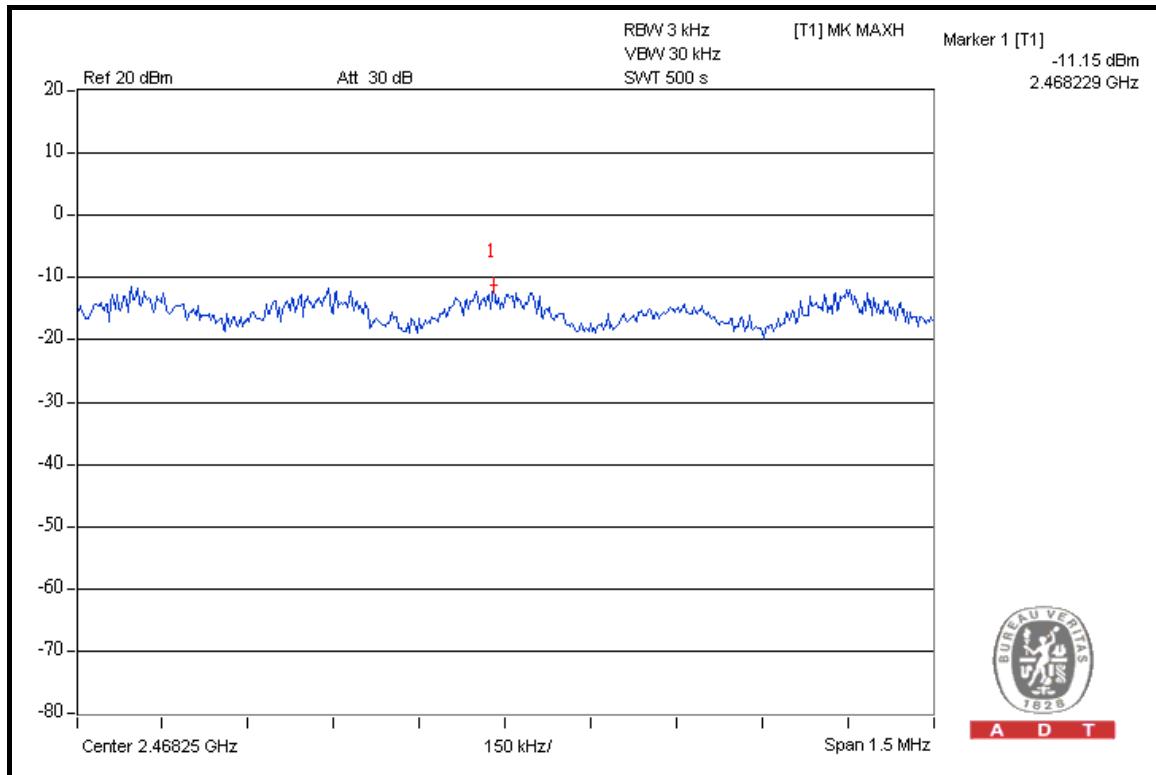


A D T

CH 6



CH 11





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	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100041	Apr. 22, 2008	Apr. 21, 2009

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. 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; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.



A D T

4.6.6 TEST RESULTS

The spectrum plots are attached on the following 12 images. 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 DSSS MODULATION

NOTE 1: The band edge emission plot on the next page shows 52.65dBc between carrier maximum power and local maximum emission in restrict band (2.38940GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 110.98dBuV/m (Peak), so the maximum field strength in restrict band is $110.98 - 52.65 = 58.33$ dBuV/m which is under 74dBuV/m limit.

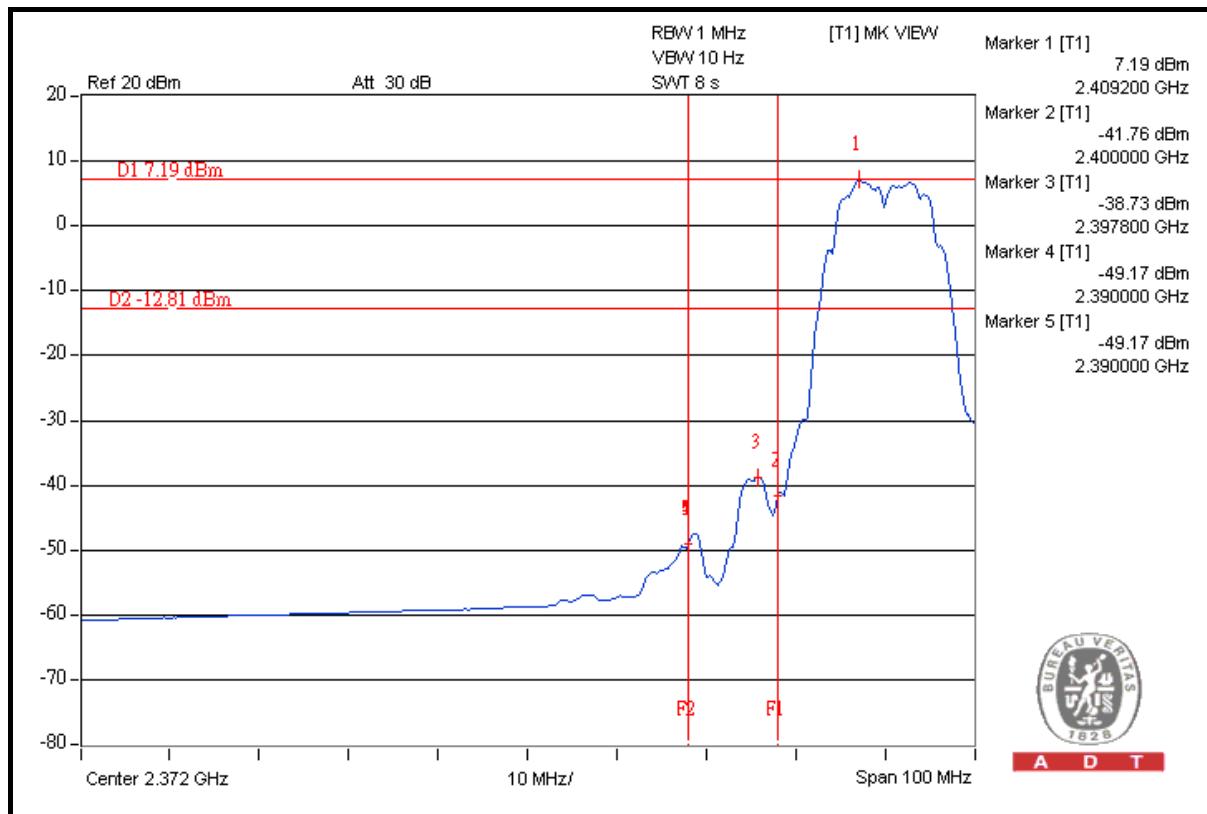
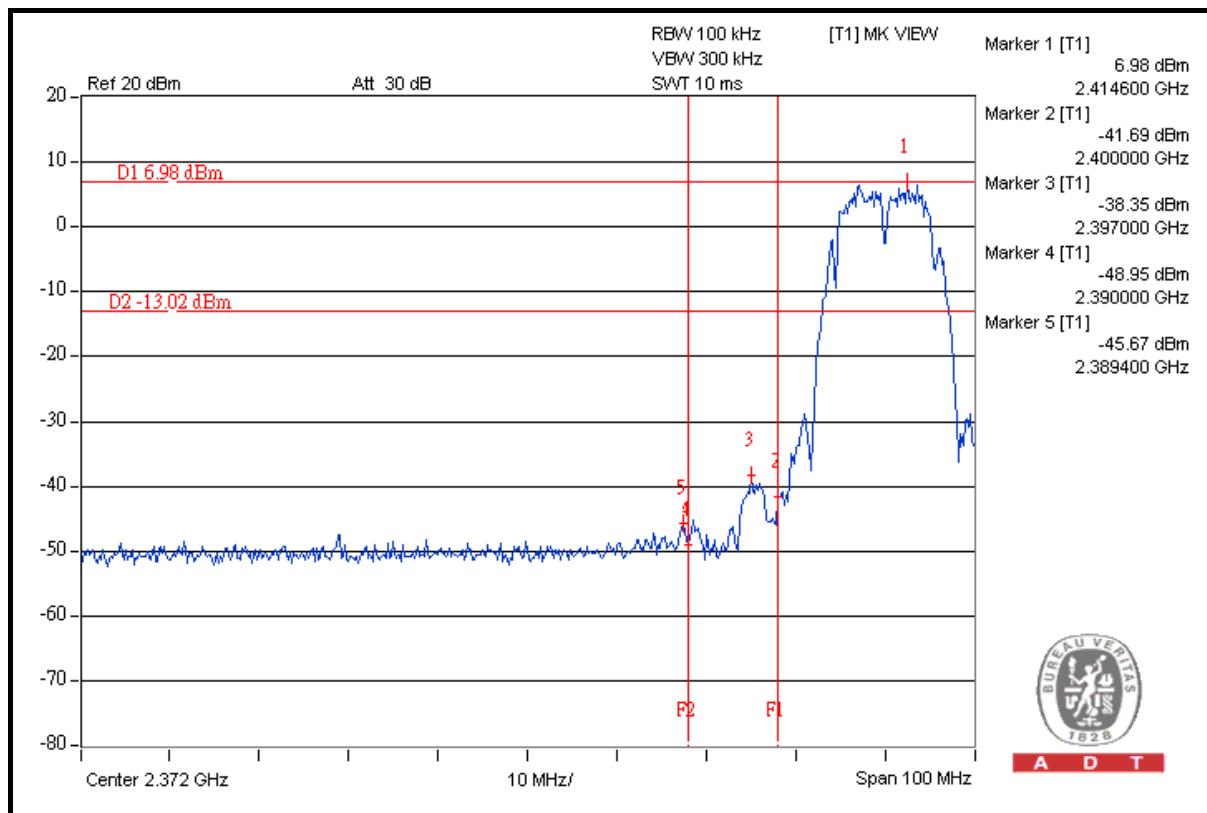
The band edge emission plot on the next page shows 56.36dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 106.24dBuV/m (Average), so the maximum field strength in restrict band is $106.24 - 56.36 = 49.88$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 53.11dBc between carrier maximum power and local maximum emission in restrict band (2.48760GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 111.27dBuV/m (Peak), so the maximum field strength in restrict band is $111.27 - 53.11 = 58.16$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 55.58dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 106.06dBuV/m (Average), so the maximum field strength in restrict band is $106.06 - 55.58 = 50.48$ dBuV/m which is under 54dBuV/m limit.

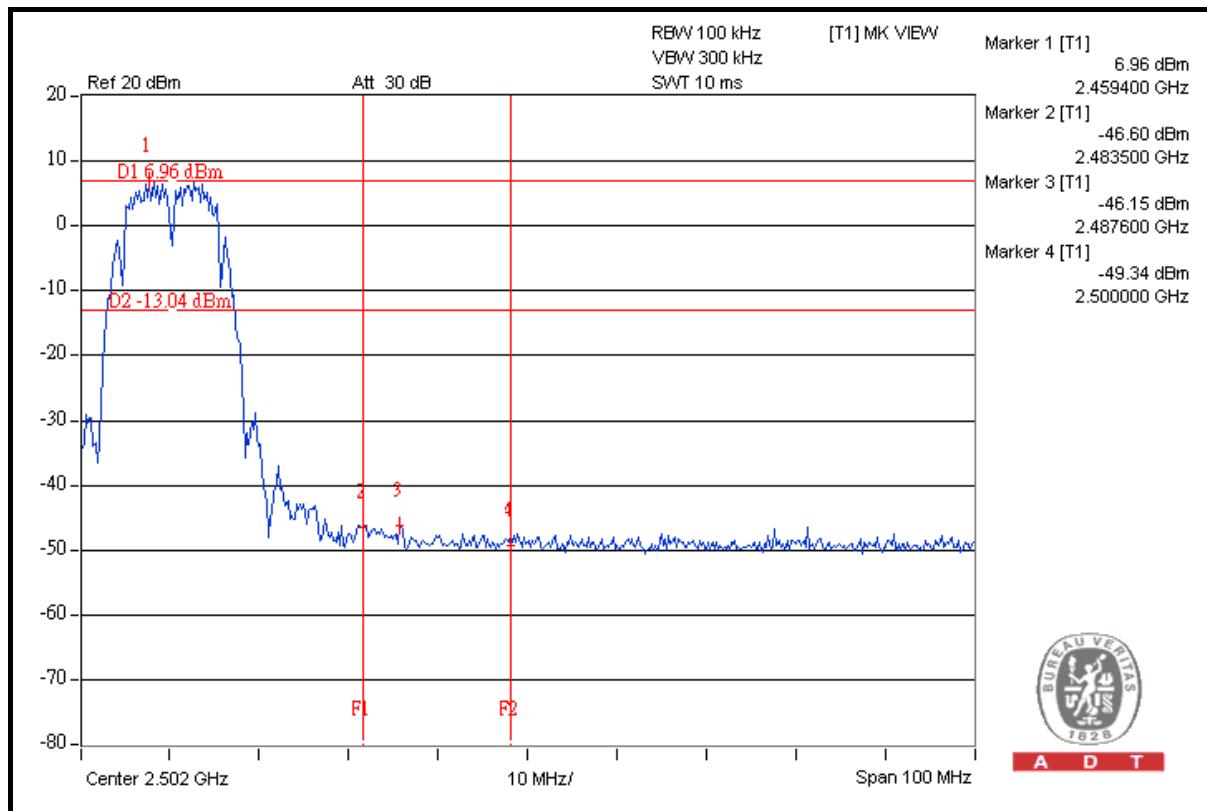
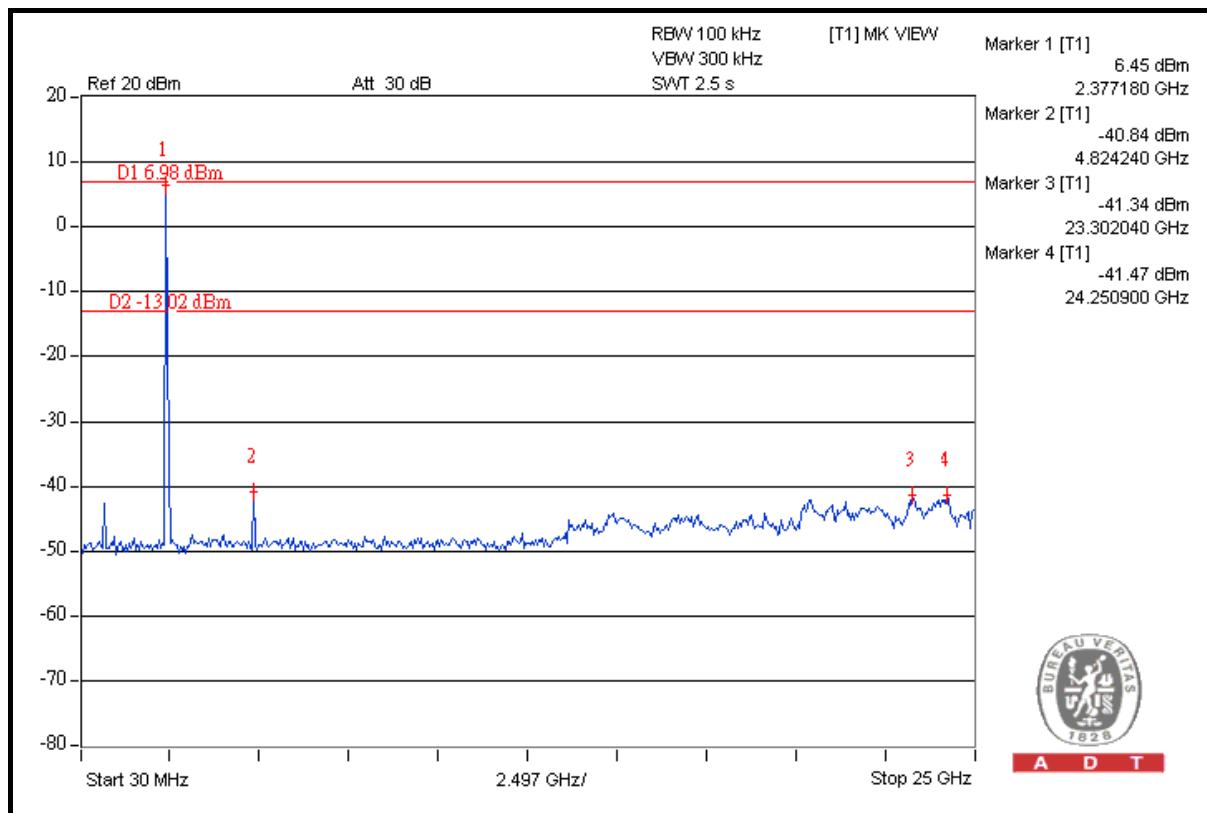


A D T



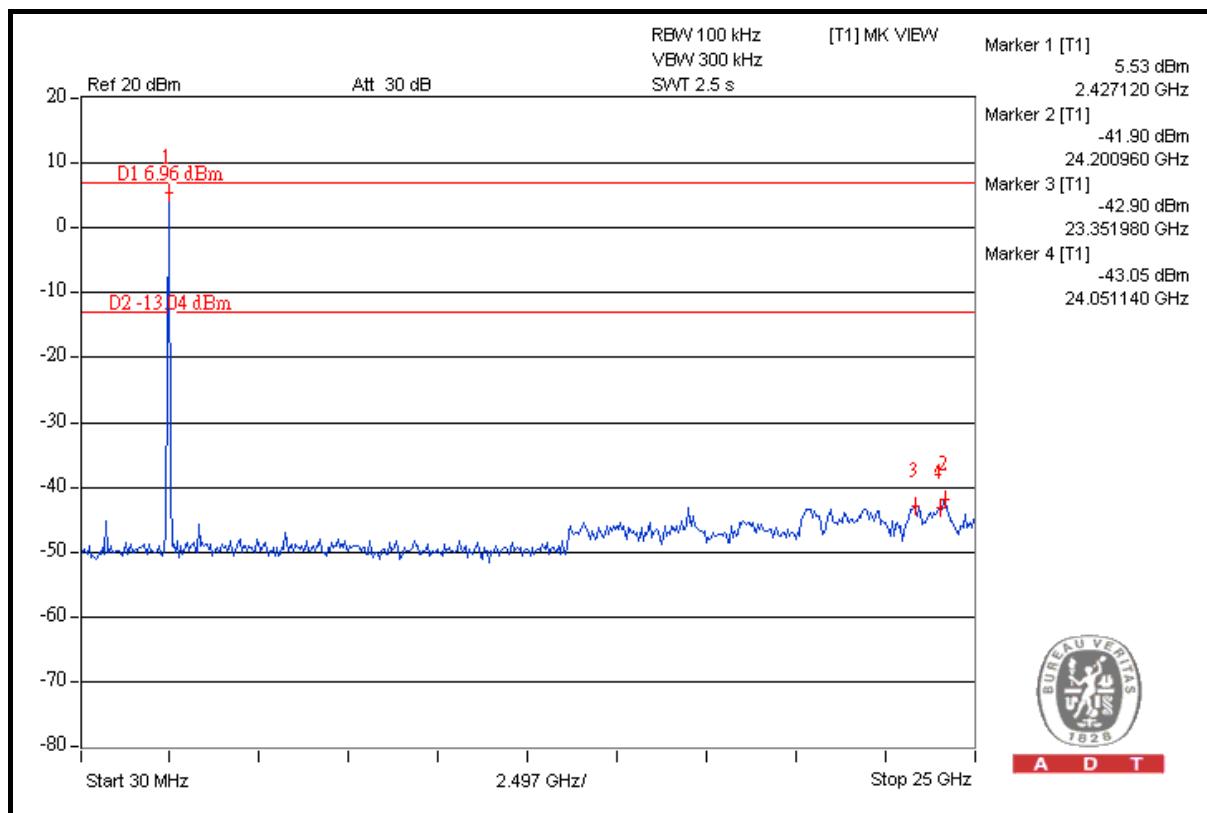
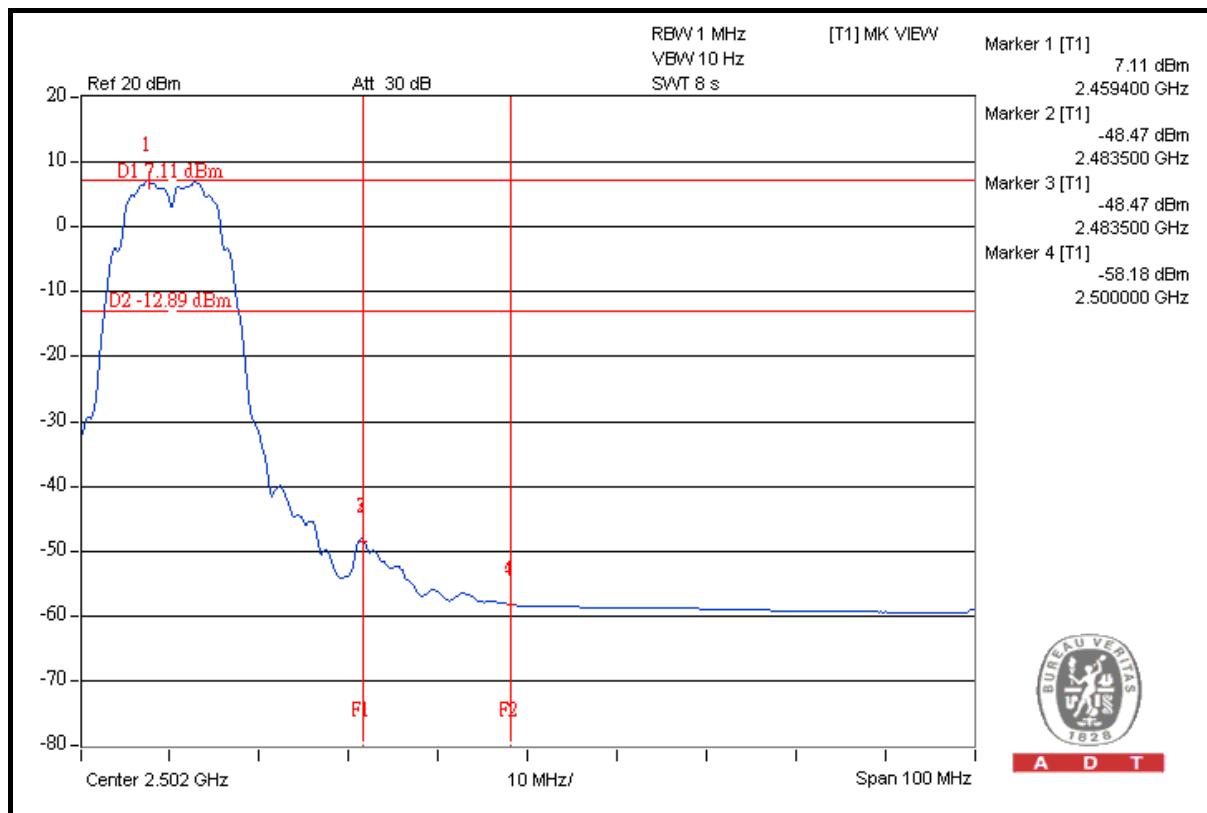


A D T





A D T





A D T

802.11g OFDM MODULATION

NOTE 1: The band edge emission plot on the next page shows 44.71dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 111.97dBuV/m (Peak), so the maximum field strength in restrict band is $111.97 - 44.71 = 67.26$ dBuV/m which is under 74dBuV/m limit.

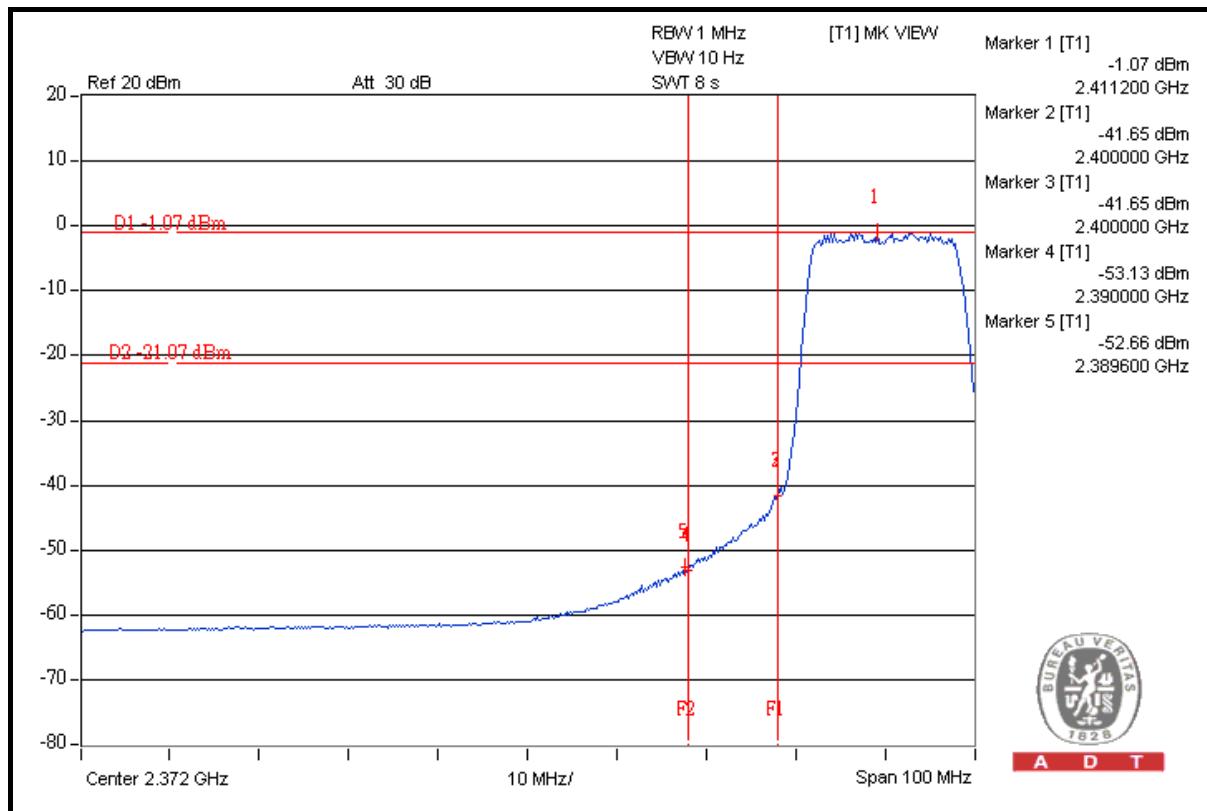
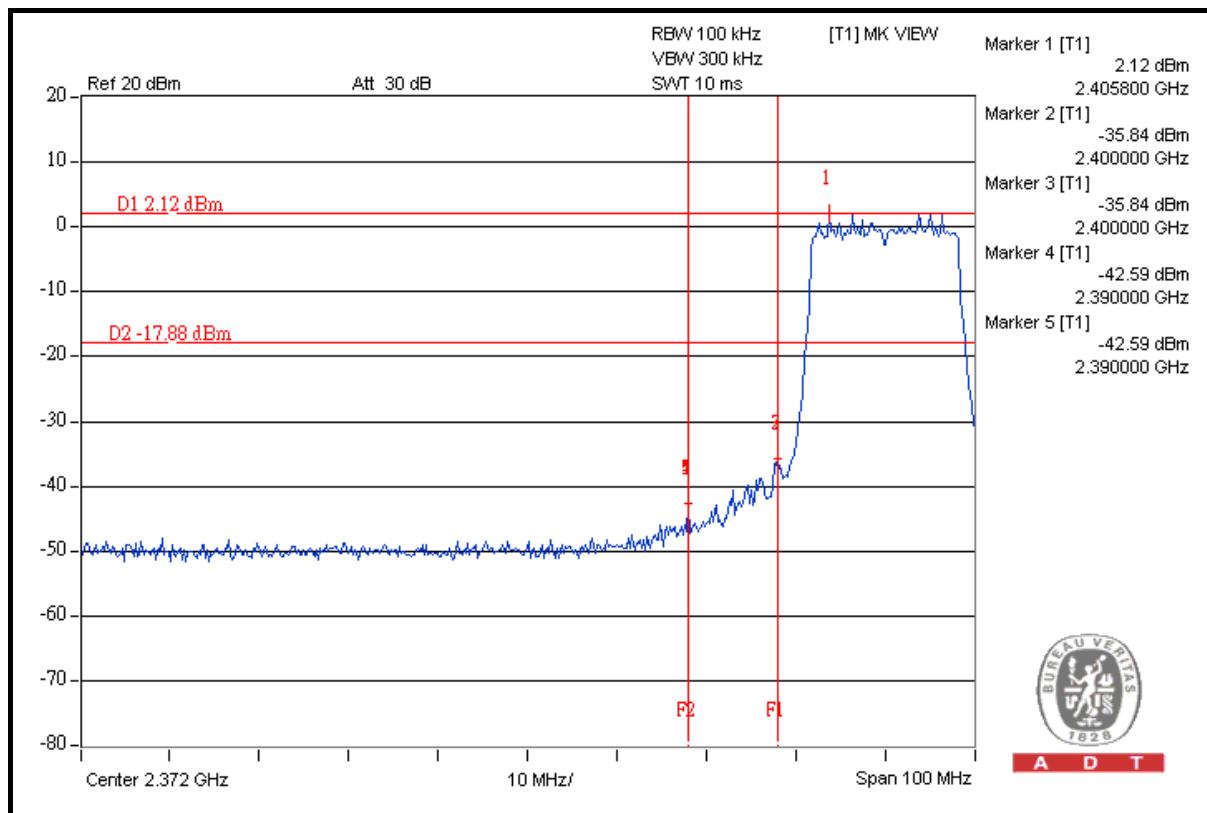
The band edge emission plot on the next page shows 51.59dBc between carrier maximum power and local maximum emission in restrict band (2.38960GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.1.7 is 97.45dBuV/m (Average), so the maximum field strength in restrict band is $97.45 - 51.59 = 45.86$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 49.44dBc between carrier maximum power and local maximum emission in restrict band (2.48440GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 111.92dBuV/m (Peak), so the maximum field strength in restrict band is $111.92 - 49.44 = 62.48$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 52.16dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.1.7 is 97.58dBuV/m (Average), so the maximum field strength in restrict band is $97.58 - 52.16 = 45.42$ dBuV/m which is under 54dBuV/m limit.

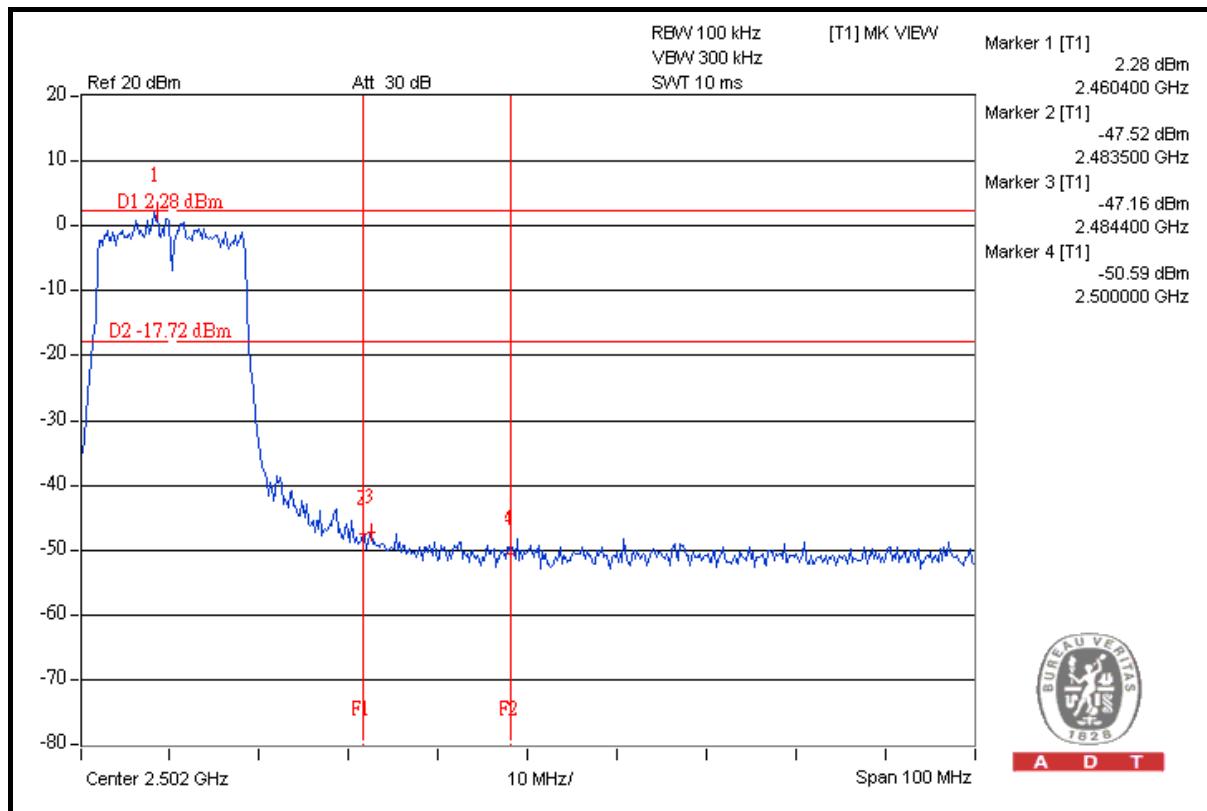
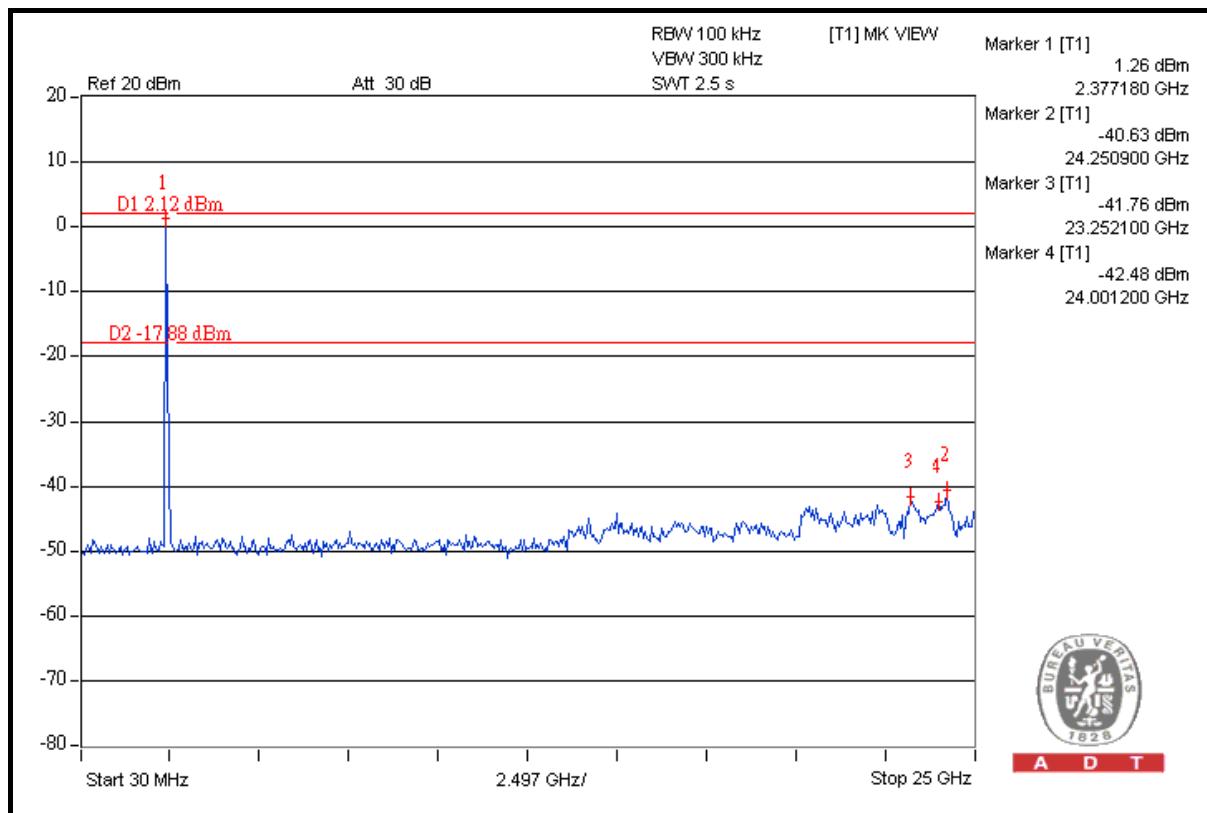


A D T



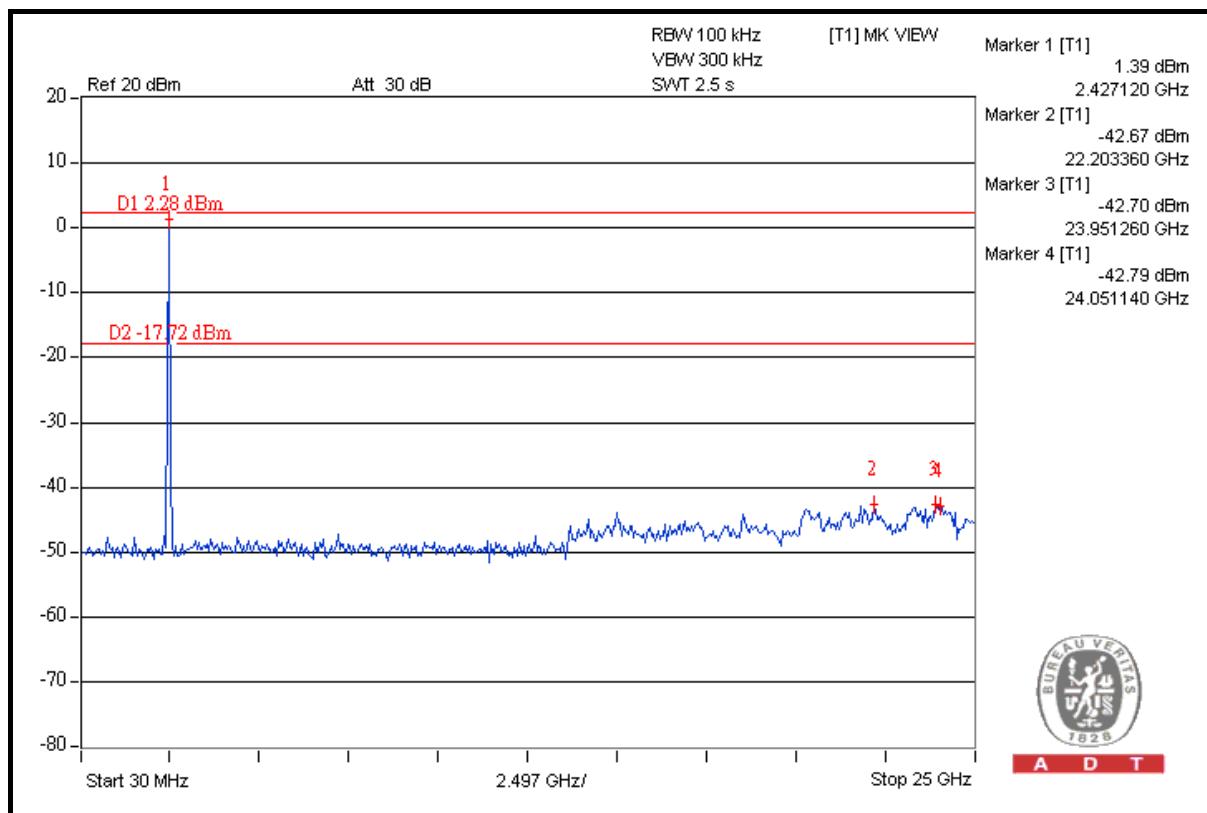
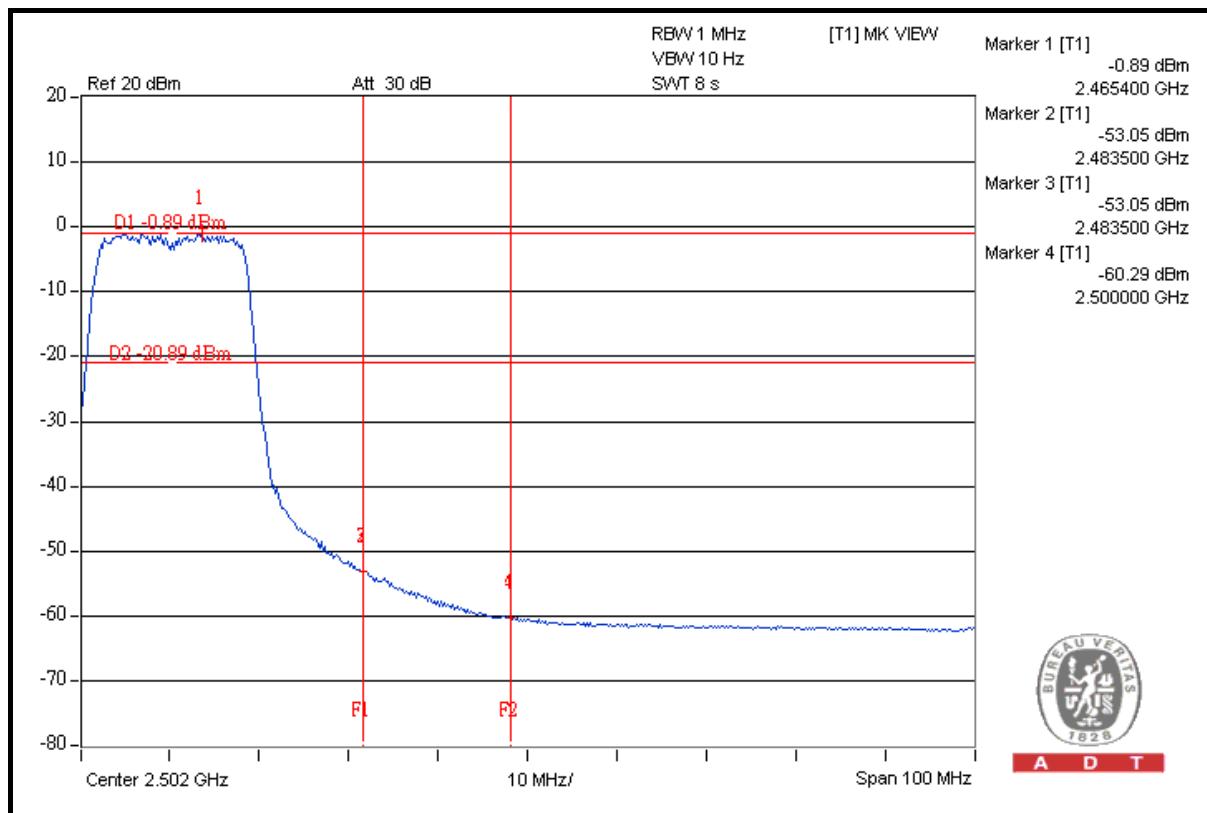


A D T





A D T





A D T

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Printed antenna without antenna connector. The maximum Gain of the antenna is 4dBi.



A D T

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 by the following approval agencies according to ISO/IEC 17025.

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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:

Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

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

Web Site: www.adt.com.tw

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



A D T

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 ---