

FCC TEST REPORT (For WLAN)

REPORT NO.: RF960312A13

MODEL NO.: 650-M

RECEIVED: March 12, 2007

TESTED: April 26 ~ May 31, 2007

ISSUED: June 1, 2007

APPLICANT : Socket Communications, Inc.

ADDRESS : 39700 Eureka Drive Newark, CA 94560-4808 USA

ISSUED BY : Advance Data Technology Corporation

LAB LOCATION: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang,
Taipei Hsien, Taiwan, R.O.C.

This test report consists of 64 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 CNLA, A2LA or any government agencies. The test results in the report only apply to the tested sample.



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	8
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	9
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS.....	11
3.4	DESCRIPTION OF SUPPORT UNITS.....	11
4	TEST TYPES AND RESULTS	12
4.1	CONDUCTED EMISSION MEASUREMENT	12
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	12
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	RADIATED EMISSION MEASUREMENT	21
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	21
4.2.2	TEST INSTRUMENTS	22
4.2.3	TEST PROCEDURES.....	23
4.2.4	DEVIATION FROM TEST STANDARD	23
4.2.5	TEST SETUP	24
4.2.6	EUT OPERATING CONDITIONS.....	24
4.2.7	TEST RESULTS.....	25
4.3	6dB BANDWIDTH MEASUREMENT	39
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	39
4.3.2	TEST INSTRUMENTS	39
4.3.3	TEST PROCEDURE	39
4.3.4	DEVIATION FROM TEST STANDARD	39
4.3.5	TEST SETUP	40
4.3.6	EUT OPERATING CONDITIONS.....	40
4.3.7	TEST RESULTS.....	41
4.4	MAXIMUM PEAK OUTPUT POWER	45
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	45
4.4.2	TEST INSTRUMENTS	45
4.4.3	TEST PROCEDURES.....	46
4.4.4	DEVIATION FROM TEST STANDARD	46
4.4.5	TEST SETUP	46
4.4.6	EUT OPERATING CONDITIONS.....	46
4.4.7	TEST RESULTS.....	47
4.5	POWER SPECTRAL DENSITY MEASUREMENT.....	48



4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	48
4.5.2	TEST INSTRUMENTS	48
4.5.3	TEST PROCEDURE	48
4.5.4	DEVIATION FROM TEST STANDARD	48
4.5.5	TEST SETUP	48
4.5.6	EUT OPERATING CONDITIONS	48
4.5.7	TEST RESULTS	49
4.6	BAND EDGES MEASUREMENT	53
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	53
4.6.2	TEST INSTRUMENTS	53
4.6.3	TEST PROCEDURE	53
4.6.4	DEVIATION FROM TEST STANDARD	53
4.6.5	EUT OPERATING CONDITION	53
4.6.6	TEST RESULTS	54
4.7	ANTENNA REQUIREMENT	62
4.7.1	STANDARD APPLICABLE	62
4.7.2	ANTENNA CONNECTED CONSTRUCTION	62
5	INFORMATION ON THE TESTING LABORATORIES	63
	APPENDIX-A	A-1



1 CERTIFICATION

PRODUCT: SoMo 650-M PMC
BRAND NAME: Socketmobile
MODELNO.: 650-M
APPLICANT: Socket Communications, Inc.
TESTED: April 26 ~ May 31, 2007
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003

The above equipment has been tested by **Advance Data Technology Corporation**, 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 : Annie Chang , **DATE:** June 1, 2007
(Annie Chang / Specialist)

TECHNICAL ACCEPTANCE : Jamison Chan , **DATE:** June 1, 2007
Responsible for RF (Jamison Chan / Senior Engineer)

APPROVED BY : Ken Liu , **DATE:** June 1, 2007
(Ken Liu / Deputy Manager)

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 -8.22dB at 0.181MHz.
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)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.23dB at 2390.000MHz.
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20 dB 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:

Measurement	Uncertainty
Conducted emissions	2.44 dB
Radiated emissions	3.75 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

PRODUCT	SoMo 650-M PMC
MODEL NO.	650-M
FCC ID	LUB650M-1
POWER SUPPLY	5Vdc from adapter or cradle 3.7Vdc from battery
MODULATION TYPE	Wireless LAN: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK for FHSS
MODULATION TECHNOLOGY	DSSS, OFDM, FHSS
TRANSFER RATE	Wireless LAN: 802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps Bluetooth: 1/2/3Mbps
FREQUENCY RANGE	Wireless LAN: 2412MHz ~ 2462MHz Bluetooth: 2402MHz ~ 2480MHz
NUMBER OF CHANNEL	Wireless LAN: 11 Bluetooth: 79
MAXIMUM OUTPUT POWER	Wireless LAN: 66.222mW for 802.11b 112.980mW for 802.11g Bluetooth: 0.585mW
ANTENNA TYPE	Wireless LAN: PIFA antenna with 0.202dBi gain Bluetooth: PIFA antenna with 1.55dBi gain
DATA CABLE	Refer to user's manual
I/O PORTS	1.2m USB cable with one core
ACCESSORY DEVICE	NA

NOTE:

1. The EUT is a PDA with 802.11b/g and Bluetooth function. The 802.11b/g and Bluetooth could transmit at the same time.
2. 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 of up to 54Mbps.

3. The EUT consumes power from switching power, battery or cradle as follows:

Item	Brand Name	Model No.	Power Rating
Adapter	PI	P015WA0508	AC I/P: 100-240V, 50/60Hz, 560mA DC O/P: 5V, 3A(1.5m + 1 core)
Battery 1	Socket	SoMo-650-2600	3.7Vdc, 2600mAh
Battery 2	Socket	SoMo-650-1200	3.7Vdc, 1200mAh
Cradle	Socket	650-M	5.0Vdc, 3.0A

The **Battery 1** was selected for the final test and its data was recorded in this report.

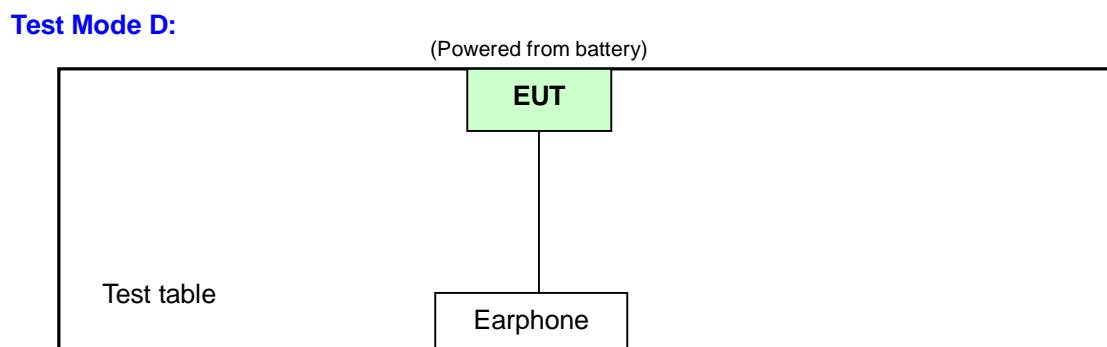
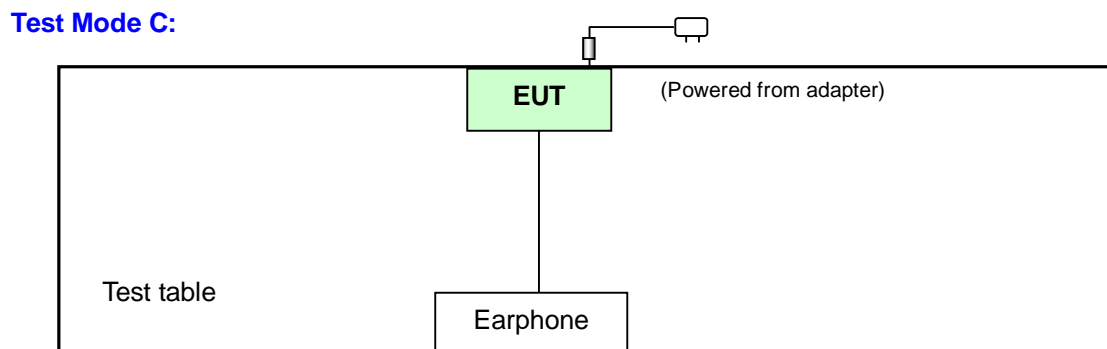
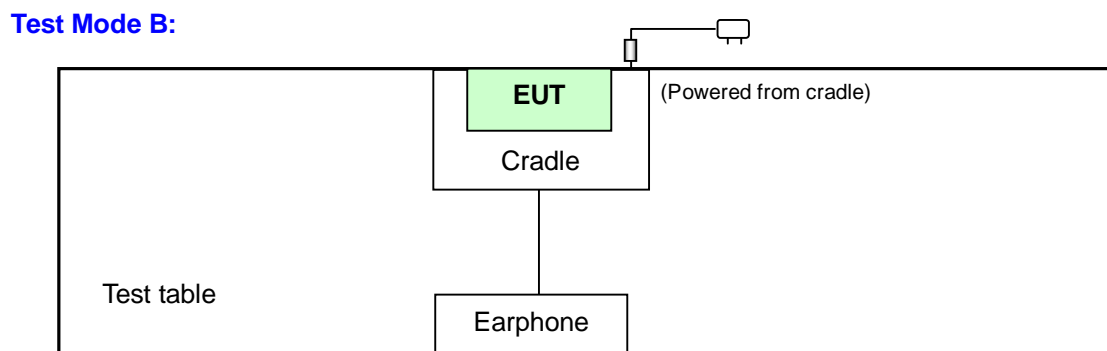
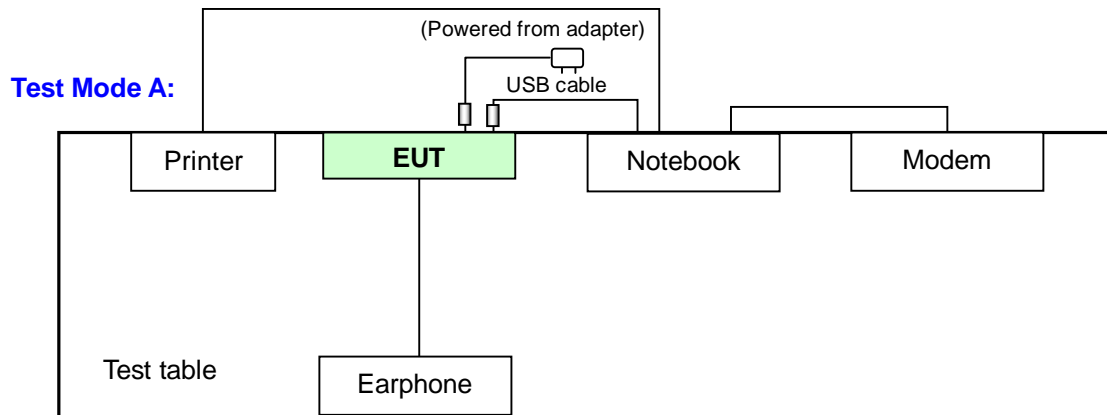
4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided to this EUT.

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

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT Configure Mode	Applicable to				Description
	PLC	RE<1G	RE [≥] 1G	APCM	
A	-	√	√	√	Link to Notebook (Powered from adapter)
B	√	√	-	-	EUT with cradle (Powered from cradle)
C	-	√	-	-	EUT with adapter (Powered from adapter)
D		√			EUT only (Powered from battery)

Where PLC: Power Line Conducted Emission RE<1G RE: Radiated Emission below 1GHz
 RE≥1G: Radiated Emission above 1GHz APCM: Antenna Port Conducted Measurement

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)
B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1

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, 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
A	802.11b	1 to 11	1	DSSS	DBPSK	1	X
A	802.11g	1 to 11	1	OFDM	BPSK	6	X
B	802.11b	1 to 11	1	DSSS	DBPSK	1	X
B	802.11g	1 to 11	1	OFDM	BPSK	6	X
C	802.11b	1 to 11	1	DSSS	DBPSK	1	X
C	802.11g	1 to 11	1	OFDM	BPSK	6	X
D	802.11b	1 to 11	1	DSSS	DBPSK	1	X
D	802.11g	1 to 11	1	OFDM	BPSK	6	X

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, 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
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	X
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	X

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
A	802.11b	1 to 11	1, 11	DSSS	DBPSK	1	X
A	802.11g	1 to 11	1, 11	OFDM	BPSK	6	X

ANTENNA PORT CONDUCTED 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
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	X
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	X



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.

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 COMPUTER	DELL	PP05L	20375526736	FCC DoC Approved
2	PRINTER	EPSON	LQ-300+	DCGY017054	FCC DoC Approved
3	MODEM	ACEEX	1414	980020520	IFAXDM1414
4	EARPHONE	PHS	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	1.2m data cable

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

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Nov. 23, 2007
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Nov. 21, 2007
LISN With Adapter (for EUT)	AD10	C10Ada-001	Nov. 21, 2007
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Nov. 07, 2007
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Oct. 26, 2007
Software	ADT_Cond_V7.3.2	NA	NA
Software	ADT_ISN_V7.3.2	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	Mar. 01, 2008
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Feb. 11, 2008

- 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 ADT Shielded Room No. 10.
 3. The VCCI Site Registration No. C-1852.

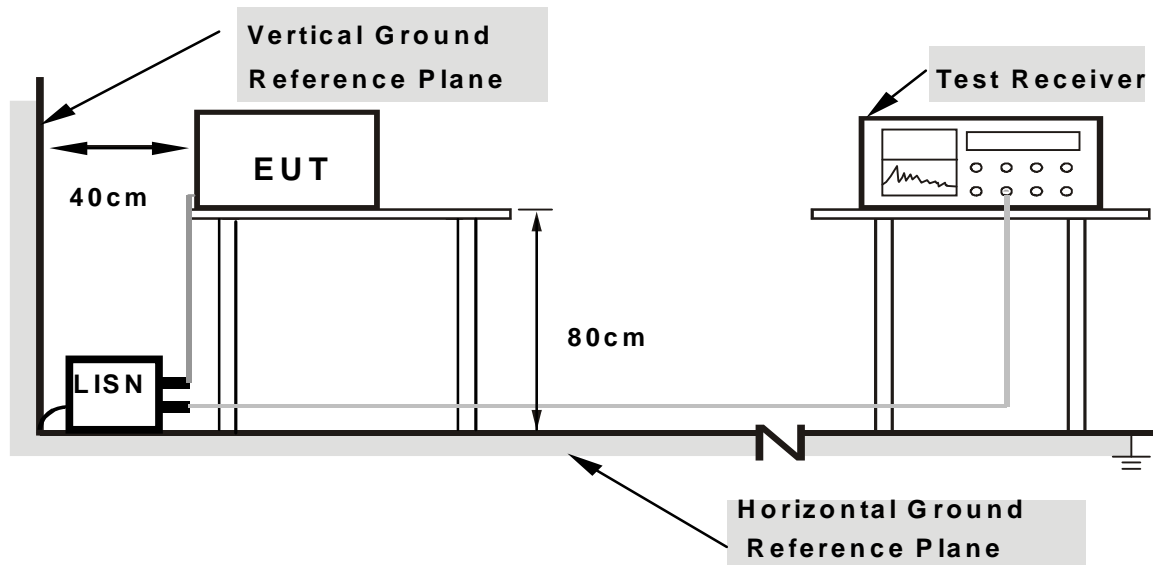
4.1.3 TEST PROCEDURES

- 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.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 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).

4.1.6 EUT OPERATING CONDITIONS

For Mode B:

- a. Connected the EUT with an AC adapter via cradle placed on testing table.
- b. EUT sent audio messages to earphone continuously.

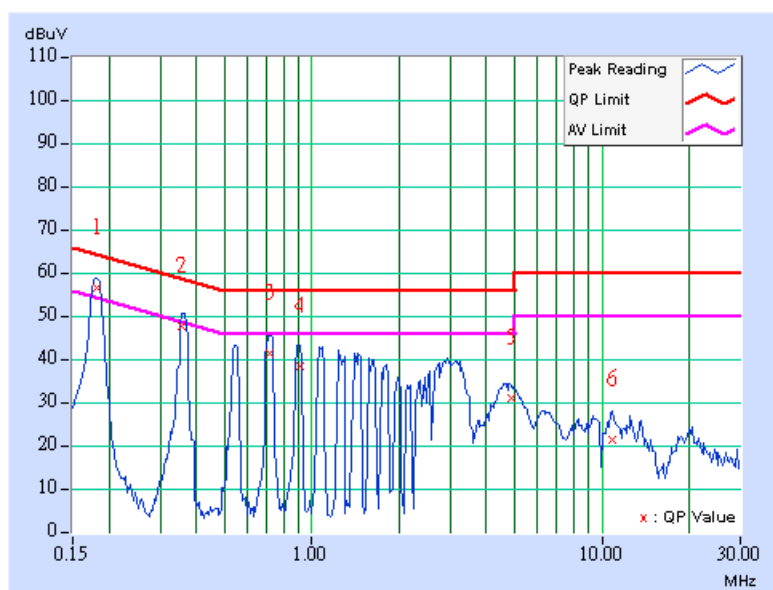
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA

TEST MIDE	B		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 1004hPa	PHASE	Line 1
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

No	Freq. [MHz]	Corr. Factor (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	0.181	0.20	56.01	44.72	56.21	44.92	64.43	54.43	-8.22	-9.51
2	0.357	0.20	47.07	-	47.27	-	58.80	48.80	-11.53	-
3	0.716	0.31	40.77	-	41.08	-	56.00	46.00	-14.92	-
4	0.908	0.37	37.88	-	38.25	-	56.00	46.00	-17.75	-
5	4.852	0.53	30.23	-	30.76	-	56.00	46.00	-25.24	-
6	10.918	0.77	20.57	-	21.34	-	60.00	50.00	-38.66	-

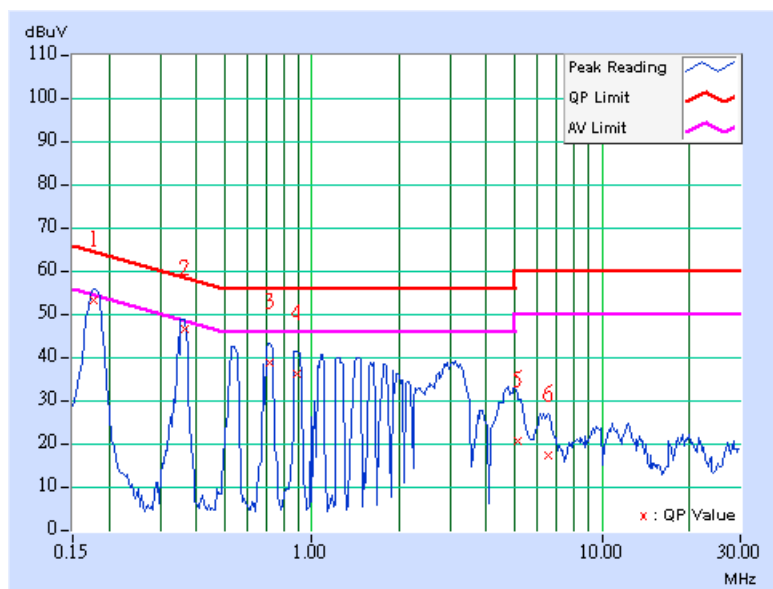
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



TEST MIDE	B		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 1004hPa	PHASE	Line 2
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

No	Freq. [MHz]	Corr. Factor (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	0.177	0.20	52.82	-	53.02	-	64.61	54.61	-11.59	-
2	0.365	0.20	46.30	-	46.50	-	58.62	48.62	-12.12	-
3	0.713	0.25	38.50	-	38.75	-	56.00	46.00	-17.25	-
4	0.888	0.28	36.02	-	36.30	-	56.00	46.00	-19.70	-
5	5.117	0.42	20.19	-	20.61	-	60.00	50.00	-39.39	-
6	6.500	0.44	17.06	-	17.50	-	60.00	50.00	-42.50	-

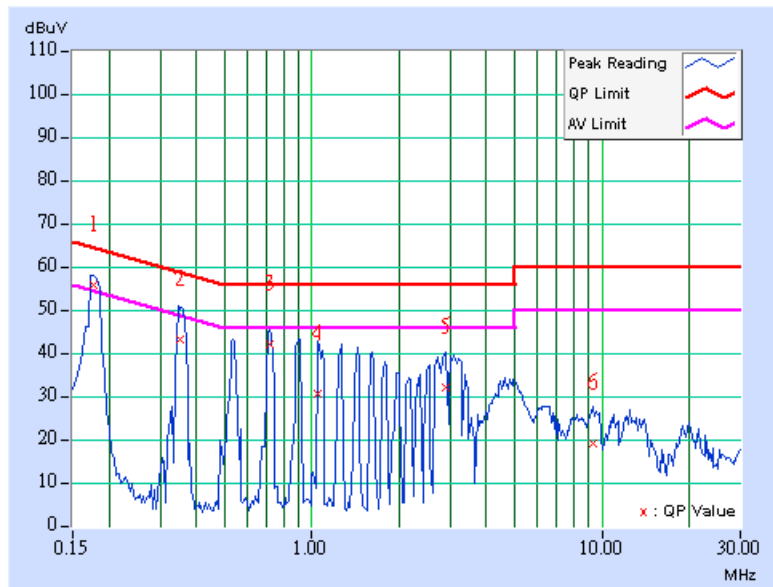
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



TEST MIDE	B		
MODULATION TYPE	DBPSK	CHANNEL	6
INPUT POWER	120Vac, 60 Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 1004hPa	PHASE	Line 1
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

No	Freq. [MHz]	Corr. Factor (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	0.177	0.20	55.19	44.05	55.39	44.25	64.61	54.61	-9.22	-10.36
2	0.349	0.20	42.59	-	42.79	-	58.98	48.98	-16.19	-
3	0.713	0.30	41.50	-	41.80	-	56.00	46.00	-14.20	-
4	1.051	0.40	30.14	-	30.54	-	56.00	46.00	-25.46	-
5	2.910	0.45	31.58	-	32.03	-	56.00	46.00	-23.97	-
6	9.301	0.68	18.61	-	19.29	-	60.00	50.00	-40.71	-

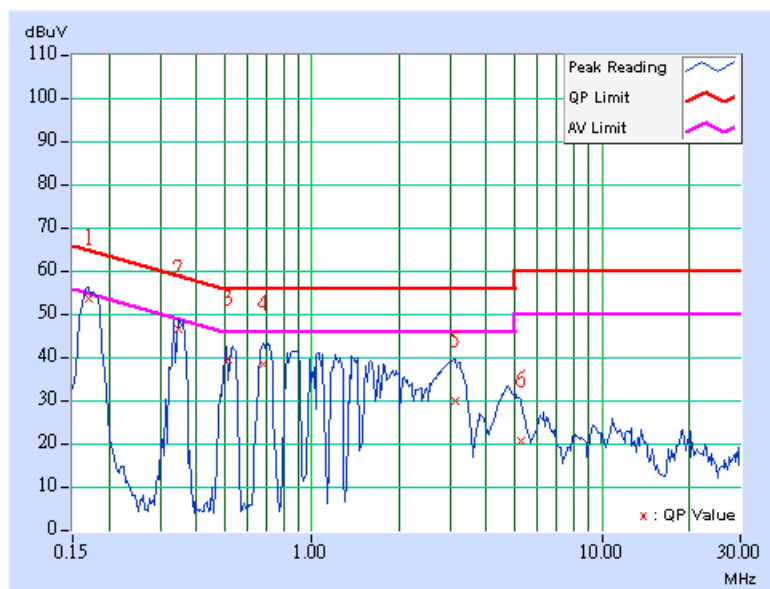
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



TEST MIDE	B		
MODULATION TYPE	DBPSK	CHANNEL	6
INPUT POWER	120Vac, 60 Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 1004hPa	PHASE	Line 2
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

No	Freq. [MHz]	Corr. Factor (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	0.170	0.20	53.44	-	53.64	-	64.98	54.98	-11.34	-
2	0.345	0.20	46.27	-	46.47	-	59.07	49.07	-12.60	-
3	0.513	0.22	39.23	-	39.45	-	56.00	46.00	-16.55	-
4	0.677	0.25	38.26	-	38.51	-	56.00	46.00	-17.49	-
5	3.109	0.36	29.69	-	30.05	-	56.00	46.00	-25.95	-
6	5.230	0.42	20.50	-	20.92	-	60.00	50.00	-39.08	-

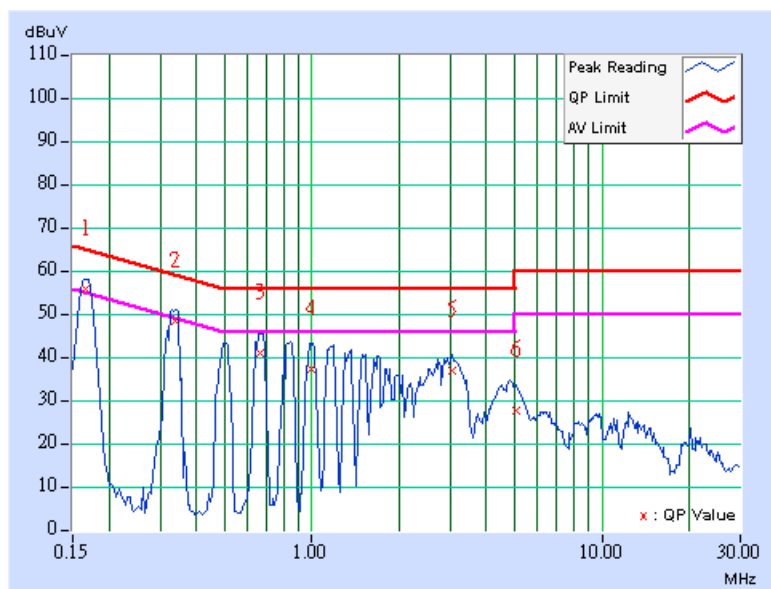
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



TEST MIDE	B		
MODULATION TYPE	DBPSK	CHANNEL	11
INPUT POWER	120Vac, 60 Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 1004hPa	PHASE	Line 1
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

No	Freq. [MHz]	Corr. Factor (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	0.166	0.20	55.28	43.69	55.48	43.89	65.18	55.18	-9.70	-11.29
2	0.338	0.20	48.11	-	48.31	-	59.26	49.26	-10.95	-
3	0.662	0.29	40.46	-	40.75	-	56.00	46.00	-15.25	-
4	0.998	0.40	36.76	-	37.16	-	56.00	46.00	-18.84	-
5	3.031	0.45	36.39	-	36.84	-	56.00	46.00	-19.16	-
6	5.086	0.54	27.24	-	27.78	-	60.00	50.00	-32.22	-

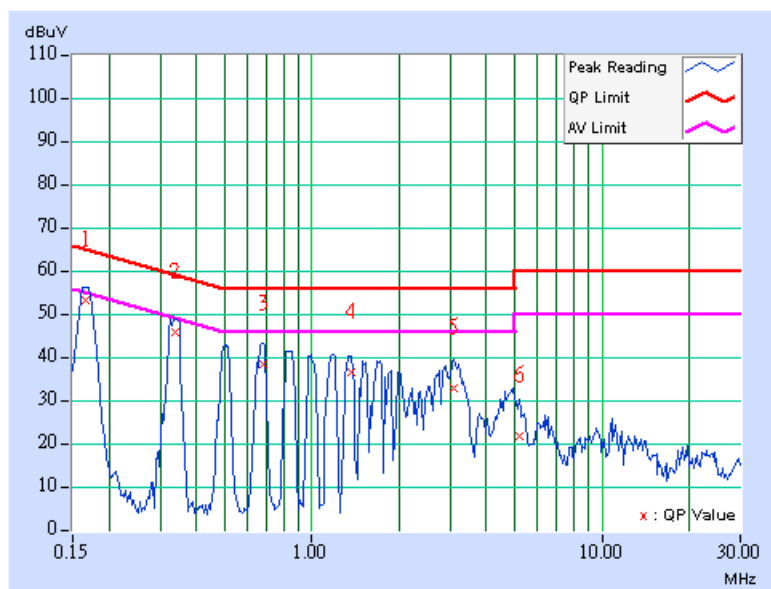
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



TEST MIDE	B		
MODULATION TYPE	DBPSK	CHANNEL	11
INPUT POWER	120Vac, 60 Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 70%RH, 1004hPa	PHASE	Line 2
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

No	Freq. [MHz]	Corr. Factor (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	0.166	0.20	52.91	-	53.11	-	65.18	55.18	-12.07	-
2	0.338	0.20	45.60	-	45.80	-	59.26	49.26	-13.46	-
3	0.677	0.25	38.18	-	38.43	-	56.00	46.00	-17.57	-
4	1.367	0.30	36.42	-	36.72	-	56.00	46.00	-19.28	-
5	3.086	0.35	32.71	-	33.06	-	56.00	46.00	-22.94	-
6	5.176	0.42	21.31	-	21.73	-	60.00	50.00	-38.27	-

- 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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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.



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	May 09, 2008
HP Preamplifier	8449B	3008A01924	Sep. 05, 2007
HP Preamplifier	8449B	3008A01638	Sep. 17, 2007
ROHDE & SCHWARZ TEST RECEIVER	ESI7	836697/012	Oct. 24, 2007
Schwarzbeck Antenna	VULB 9168	137	Oct. 01, 2007
Schwarzbeck Antenna	VHBA 9123	480	Apr. 18, 2008
EMCO Horn Antenna	3115	6714	Oct. 24, 2007
EMCO Horn Antenna	3115	9312-4192	Apr. 19, 2008
ADT. Turn Table	TT100	0306	NA
ADT. Tower	AT100	0306	NA
Software	ADT_Radiated_V7.6.15	NA	NA
SUHNER RF cable	SF104-26.5	CABLE-CH6-17m-01	Dec. 11, 2007
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Mar. 13, 2008

- 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 horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in ADT Chamber No. 6.
 4. The Industry Canada Reference No. IC 3789-6.

4.2.3 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 method or average method as specified and then reported in data sheet.

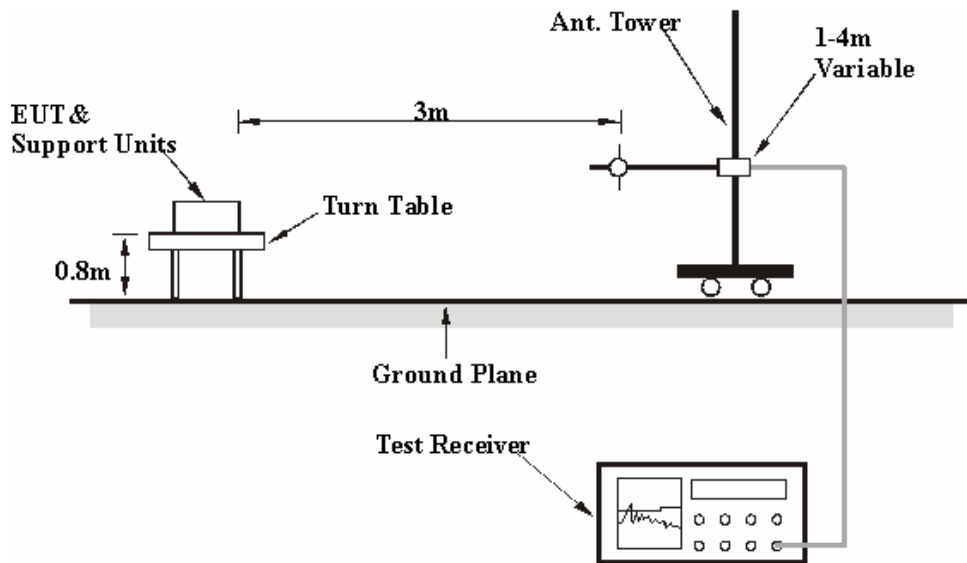
NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference-receiving antenna.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

For Mode A:

- Connected EUT into notebook system and placed on the testing table.
- The notebook system run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- EUT ran a test program to enable to transmit/receive condition continuously at specific channel frequency.
- The notebook system sent messages to modem.
- The notebook system sent messages to printer, and the printer printed them out.
- The notebook system sent "1kHz" audio messages to earphone via EUT.
- Steps c-g were repeated.

For Mode B~D:

- Set the EUT under transmission/receiving condition continuously at specific channel frequency.
- EUT sent audio messages to earphone continuously.

4.2.7 TEST RESULTS

RADIATED WORST-CASE DATA: 802.11b DSSS MODULATION (BELOW 1GHz)

TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

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	113.587	33.94 QP	43.50	-9.56	1.56 H	238	23.48	10.46
2	134.970	36.07 QP	43.50	-7.43	1.48 H	256	23.11	12.96
3	210.782	29.74 QP	43.50	-13.76	1.47 H	277	18.13	11.61
4	346.854	33.51 QP	46.00	-12.49	1.39 H	241	16.37	17.14
5	521.804	35.24 QP	46.00	-10.76	1.33 H	340	12.91	22.33
6	867.816	31.31 QP	46.00	-14.69	1.15 H	283	2.47	28.84

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	41.663	31.15 QP	40.00	-8.85	1.00 V	10	16.25	14.90
2	64.990	31.13 QP	40.00	-8.87	1.00 V	10	17.92	13.21
3	121.363	33.98 QP	43.50	-9.52	1.00 V	337	22.84	11.14
4	134.970	35.23 QP	43.50	-8.27	1.00 V	10	22.27	12.96
5	166.072	28.17 QP	43.50	-15.33	1.00 V	241	14.83	13.34
6	521.804	30.31 QP	46.00	-15.69	1.09 V	274	7.98	22.33

- 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.

TEST MODE	B		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64%RH, 9985Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

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	70.822	26.65 QP	40.00	-13.35	1.34 H	97	13.93	12.72
2	749.238	30.49 QP	46.00	-15.51	1.26 H	133	2.51	27.98
3	764.790	31.22 QP	46.00	-14.78	1.19 H	109	3.16	28.06
4	854.208	31.19 QP	46.00	-14.81	1.19 H	133	2.35	28.84
5	898.918	32.22 QP	46.00	-13.78	1.14 H	64	2.70	29.52
6	914.469	31.17 QP	46.00	-14.83	1.08 H	205	1.47	29.70
7	941.683	31.30 QP	46.00	-14.70	1.01 H	22	1.30	30.00

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	30.000	26.00 QP	40.00	-14.00	1.00 V	10	13.30	12.70
2	68.878	19.49 QP	40.00	-20.51	1.00 V	322	6.51	12.99
3	751.182	31.25 QP	46.00	-14.75	1.14 V	10	3.24	28.01
4	780.341	30.41 QP	46.00	-15.59	1.14 V	10	2.30	28.11
5	873.647	31.26 QP	46.00	-14.74	1.24 V	10	2.12	29.14
6	908.637	32.25 QP	46.00	-13.75	1.23 V	319	2.61	29.64
7	947.515	30.98 QP	46.00	-15.02	1.41 V	10	0.92	30.06

- 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.



TEST MODE	C		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64%RH, 9985Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

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	39.719	29.73 QP	40.00	-10.27	1.45 H	328	15.27	14.46
2	70.822	21.76 QP	40.00	-18.24	1.49 H	1	9.04	12.72
3	747.295	26.40 QP	46.00	-19.60	1.29 H	106	-1.49	27.89
4	764.790	27.20 QP	46.00	-18.80	1.27 H	112	-0.86	28.06
5	788.116	26.77 QP	46.00	-19.23	1.17 H	283	-1.36	28.13
6	863.928	26.91 QP	46.00	-19.09	1.12 H	67	-2.08	28.99
7	937.796	26.79 QP	46.00	-19.21	1.02 H	304	-3.17	29.96

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	31.944	26.77 QP	40.00	-13.23	1.00 V	10	13.79	12.98
2	86.373	23.90 QP	40.00	-16.10	1.00 V	352	13.65	10.25
3	764.790	26.20 QP	46.00	-19.80	1.14 V	235	-1.86	28.06
4	869.760	26.03 QP	46.00	-19.97	1.20 V	106	-3.05	29.08
5	887.255	26.19 QP	46.00	-19.81	1.25 V	115	-3.16	29.35
6	922.244	27.40 QP	46.00	-18.60	1.32 V	352	-2.38	29.78
7	943.627	27.41 QP	46.00	-18.59	1.45 V	286	-2.61	30.02

- 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.

TEST MODE	D		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	3.7Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

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	31.944	24.23 QP	40.00	-15.77	1.52 H	298	11.42	12.81
2	747.295	25.68 QP	46.00	-20.32	1.44 H	196	-2.00	27.68
3	776.453	25.81 QP	46.00	-20.19	1.39 H	187	-2.12	27.93
4	813.387	25.83 QP	46.00	-20.17	1.24 H	88	-2.32	28.15
5	830.882	25.48 QP	46.00	-20.52	1.23 H	196	-2.82	28.30
6	896.974	27.86 QP	46.00	-18.14	1.15 H	214	-1.61	29.47
7	937.796	28.66 QP	46.00	-17.34	1.09 H	151	-1.74	30.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.000	25.75 QP	40.00	-14.25	1.00 V	337	13.24	12.51
2	758.958	25.39 QP	46.00	-20.61	1.36 V	118	-2.45	27.84
3	788.116	25.90 QP	46.00	-20.10	1.27 V	37	-2.08	27.98
4	838.657	26.15 QP	46.00	-19.85	1.34 V	307	-2.21	28.36
5	873.647	26.47 QP	46.00	-19.53	1.47 V	85	-2.50	28.97
6	902.806	26.92 QP	46.00	-19.08	1.40 V	238	-2.68	29.60
7	918.357	28.00 QP	46.00	-18.00	1.55 V	46	-1.96	29.96
8	959.178	28.61 QP	46.00	-17.39	1.63 V	295	-2.00	30.61

- 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.



RADIATED WORST-CASE DATA: 802.11b DSSS MODULATION (ABOVE 1GHz)

TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.000	59.44 PK	74.00	-14.56	1.31 H	38	24.75	34.69
2	2386.000	48.22 AV	54.00	-5.78	1.31 H	38	13.53	34.69
3	*2412.000	109.55 PK			1.31 H	38	74.80	34.75
4	*2412.000	104.64 AV			1.31 H	38	69.89	34.75
5	4824.000	50.04 PK	74.00	-23.96	1.07 H	11	8.29	41.75
6	4824.000	40.80 AV	54.00	-13.20	1.07 H	11	-0.95	41.75

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	2386.000	57.98 PK	74.00	-16.02	1.26 V	340	23.29	34.69
2	2386.000	46.34 AV	54.00	-7.66	1.26 V	340	11.65	34.69
3	*2412.000	101.32 PK			1.26 V	340	66.57	34.75
4	*2412.000	96.41 AV			1.26 V	340	61.66	34.75
5	4824.000	47.89 PK	74.00	-26.11	1.00 V	312	6.14	41.75
6	4824.000	41.23 AV	54.00	-12.77	1.00 V	312	-0.52	41.75

- 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.

TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	6
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

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	*2437.000	109.39 PK			1.05 H	16	74.59	34.80
2	*2437.000	104.35 AV			1.05 H	16	69.55	34.80
3	4874.000	49.76 PK	74.00	-24.24	1.11 H	13	7.88	41.87
4	4874.000	39.76 AV	54.00	-14.24	1.11 H	13	-2.12	41.87

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	*2437.000	101.29 PK			1.25 V	340	66.49	34.80
2	*2437.000	95.88 AV			1.25 V	340	61.08	34.80
3	4874.000	49.65 PK	74.00	-24.35	1.24 V	350	7.77	41.87
4	4874.000	40.09 AV	54.00	-13.91	1.24 V	350	-1.79	41.87

- 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.

TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	11
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	TESTED BY	Jun Wu

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	*2462.000	109.01 PK			1.06 H	15	74.15	34.86
2	*2462.000	104.15 AV			1.06 H	15	69.29	34.86
3	2483.500	59.31 PK	74.00	-14.69	1.06 H	15	24.41	34.90
4	2483.500	47.08 AV	54.00	-6.92	1.06 H	15	12.18	34.90
5	4924.000	49.60 PK	74.00	-24.40	1.19 H	10	7.60	42.00
6	4924.000	39.42 AV	54.00	-14.58	1.19 H	10	-2.58	42.00

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	*2462.000	102.18 PK			1.88 V	4	67.32	34.86
2	*2462.000	97.28 AV			1.88 V	4	62.42	34.86
3	2483.500	59.55 PK	74.00	-14.45	1.88 V	4	24.65	34.90
4	2483.500	46.32 AV	54.00	-7.68	1.88 V	4	11.42	34.90
5	4924.000	48.72 PK	74.00	-25.28	1.22 V	22	6.72	42.00
6	4924.000	38.42 AV	54.00	-15.58	1.22 V	22	-3.58	42.00

- 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.



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

TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	121.363	31.87 QP	43.50	-11.63	1.58 H	238	20.73	11.14
2	134.970	36.22 QP	43.50	-7.28	1.47 H	262	23.26	12.96
3	208.838	29.56 QP	43.50	-13.94	1.42 H	283	18.02	11.54
4	346.854	33.42 QP	46.00	-12.58	1.39 H	244	16.28	17.14
5	521.804	35.23 QP	46.00	-10.77	1.28 H	328	12.90	22.33
6	799.780	35.02 QP	46.00	-10.98	1.22 H	196	6.98	28.04
7	867.816	31.36 QP	46.00	-14.64	1.16 H	286	2.52	28.84

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	41.663	31.22 QP	40.00	-8.78	1.00 V	139	16.32	14.90
2	64.990	30.91 QP	40.00	-9.09	1.00 V	166	17.70	13.21
3	134.970	33.36 QP	43.50	-10.14	1.00 V	4	20.40	12.96
4	162.184	28.22 QP	43.50	-15.28	1.00 V	202	14.64	13.58
5	521.804	29.31 QP	46.00	-16.69	1.28 V	232	6.98	22.33
6	867.816	29.73 QP	46.00	-16.27	1.50 V	49	0.88	28.84
7	900.862	30.12 QP	46.00	-15.88	1.50 V	124	0.56	29.56
8	953.347	29.37 QP	46.00	-16.63	1.42 V	28	-1.28	30.65

- 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.

TEST MODE	B		
MODULATION TYPE	BPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64%RH, 9985Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	37.776	26.24 QP	40.00	-13.76	1.47 H	10	12.21	14.03
2	68.878	23.11 QP	40.00	-16.89	1.42 H	343	10.12	12.99
3	747.295	30.51 QP	46.00	-15.49	1.36 H	247	2.62	27.89
4	764.790	31.87 QP	46.00	-14.13	1.29 H	277	3.81	28.06
5	811.443	30.25 QP	46.00	-15.75	1.14 H	175	1.94	28.31
6	912.525	31.26 QP	46.00	-14.74	1.10 H	19	1.58	29.68
7	951.403	31.25 QP	46.00	-14.75	1.02 H	112	1.15	30.10

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.000	26.89 QP	40.00	-13.11	1.00 V	91	14.19	12.70
2	64.990	20.57 QP	40.00	-19.43	1.00 V	97	7.11	13.46
3	842.545	30.14 QP	46.00	-15.86	1.21 V	10	1.45	28.69
4	863.928	31.28 QP	46.00	-14.72	1.32 V	217	2.29	28.99
5	895.030	32.20 QP	46.00	-13.80	1.41 V	10	2.74	29.46
6	933.908	31.11 QP	46.00	-14.89	1.36 V	193	1.20	29.91

- 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.

TEST MODE	C		
MODULATION TYPE	BPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64%RH, 9985Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	33.888	23.10 QP	40.00	-16.90	1.47 H	283	9.84	13.26
2	72.766	20.78 QP	40.00	-19.22	1.54 H	331	8.37	12.41
3	764.790	26.88 QP	46.00	-19.12	1.32 H	97	-1.18	28.06
4	815.331	26.16 QP	46.00	-19.84	1.21 H	52	-2.20	28.36
5	856.152	26.39 QP	46.00	-19.61	1.16 H	295	-2.48	28.87
6	891.142	26.71 QP	46.00	-19.29	1.14 H	151	-2.70	29.41
7	933.908	26.80 QP	46.00	-19.20	1.05 H	277	-3.11	29.91
8	957.234	27.79 QP	46.00	-18.21	1.02 H	343	-2.33	30.12

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	39.719	28.75 QP	40.00	-11.25	1.00 V	10	14.29	14.46
2	68.878	27.25 QP	40.00	-12.75	1.00 V	10	14.26	12.99
3	131.082	23.15 QP	43.50	-20.35	1.00 V	10	10.31	12.84
4	772.565	25.93 QP	46.00	-20.07	1.15 V	220	-2.15	28.08
5	797.836	25.54 QP	46.00	-20.46	1.26 V	10	-2.62	28.16
6	834.770	25.79 QP	46.00	-20.21	1.35 V	103	-2.80	28.59
7	873.647	26.70 QP	46.00	-19.30	1.41 V	211	-2.44	29.14
8	900.862	26.80 QP	46.00	-19.20	1.26 V	268	-2.75	29.55
9	922.244	26.62 QP	46.00	-19.38	1.52 V	112	-3.16	29.78

- 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.

TEST MODE	D		
MODULATION TYPE	BPSK	CHANNEL	1
INPUT POWER	3.7Vdc	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	30.000	24.84 QP	40.00	-15.16	1.63 H	190	12.33	12.51
2	749.238	25.49 QP	46.00	-20.51	1.52 H	178	-2.28	27.77
3	762.846	27.05 QP	46.00	-18.95	1.32 H	43	-0.81	27.86
4	784.228	26.41 QP	46.00	-19.59	1.24 H	241	-1.55	27.96
5	842.545	26.30 QP	46.00	-19.70	1.14 H	73	-2.10	28.40
6	858.096	26.79 QP	46.00	-19.21	1.09 H	238	-1.84	28.63
7	889.198	27.41 QP	46.00	-18.59	1.02 H	283	-1.90	29.31
8	928.076	27.78 QP	46.00	-18.22	1.04 H	136	-2.40	30.18

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	30.000	26.14 QP	40.00	-13.86	1.00 V	217	13.63	12.51
2	757.014	25.85 QP	46.00	-20.15	1.18 V	238	-1.98	27.83
3	805.611	25.19 QP	46.00	-20.81	1.24 V	22	-2.90	28.09
4	832.826	25.53 QP	46.00	-20.47	1.39 V	118	-2.79	28.32
5	861.984	26.11 QP	46.00	-19.89	1.52 V	10	-2.61	28.72
6	883.367	26.66 QP	46.00	-19.34	1.48 V	151	-2.52	29.18
7	926.132	27.38 QP	46.00	-18.62	1.33 V	136	-2.76	30.14

- 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.



RADIATED WORST-CASE DATA: 802.11g OFDM MODULATION (ABOVE 1GHz)

TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	1
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	2390.000	72.77 PK	74.00	-1.23	1.26 H	56	38.07	34.70
2	2390.000	51.63 AV	54.00	-2.37	1.26 H	56	16.93	34.70
3	*2412.000	109.11 PK			1.26 H	56	74.36	34.75
4	*2412.000	98.79 AV			1.26 H	56	64.04	34.75
5	4824.000	46.88 PK	74.00	-27.12	1.15 H	327	5.13	41.75
6	4824.000	35.71 AV	54.00	-18.29	1.15 H	327	-6.04	41.75

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	2390.000	65.98 PK	74.00	-8.02	1.03 V	26	31.28	34.70
2	2390.000	48.35 AV	54.00	-5.65	1.03 V	26	13.65	34.70
3	*2412.000	101.55 PK			1.03 V	26	66.80	34.75
4	*2412.000	90.73 AV			1.03 V	26	55.98	34.75
5	4824.000	49.72 PK	74.00	-24.28	1.00 V	310	7.97	41.75
6	4824.000	38.27 AV	54.00	-15.73	1.00 V	310	-3.48	41.75

- 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.

TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	6
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	*2437.000	111.73 PK			1.05 H	8	76.93	34.80
2	*2437.000	101.14 AV			1.05 H	8	66.34	34.80
3	4874.000	48.71 PK	74.00	-25.29	1.08 H	308	6.83	41.87
4	4874.000	36.32 AV	54.00	-17.68	1.08 H	308	-5.56	41.87

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	*2437.000	103.88 PK			1.60 V	17	69.08	34.80
2	*2437.000	92.71 AV			1.60 V	17	57.91	34.80
3	4874.000	49.35 PK	74.00	-24.65	1.41 V	320	7.47	41.87
4	4874.000	38.20 AV	54.00	-15.80	1.41 V	320	-3.68	41.87

- 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.

TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	11
INPUT POWER	120Vac, 60 Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 72%RH, 1005Pa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	TESTED BY	Jun Wu

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	*2462.000	106.87 PK			1.00 H	10	72.01	34.86
2	*2462.000	95.73 AV			1.00 H	10	60.87	34.86
3	2483.500	71.13 PK	74.00	-2.87	1.04 H	10	36.23	34.90
4	2483.500	47.41 AV	54.00	-6.59	1.04 H	10	12.51	34.90
5	4924.000	47.80 PK	74.00	-26.20	1.06 H	58	5.80	42.00
6	4924.000	35.70 AV	54.00	-18.30	1.06 H	58	-6.30	42.00

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	*2462.000	99.71 PK			1.16 V	312	64.85	34.86
2	*2462.000	89.28 AV			1.16 V	312	54.42	34.86
3	2483.500	64.56 PK	74.00	-9.44	1.16 V	312	29.66	34.90
4	2483.500	45.89 AV	54.00	-8.11	1.16 V	312	10.99	34.90
5	4924.000	49.58 PK	74.00	-24.42	1.01 V	193	7.58	42.00
6	4924.000	36.75 AV	54.00	-17.25	1.01 V	193	-5.25	42.00

- 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.

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.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 2008

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

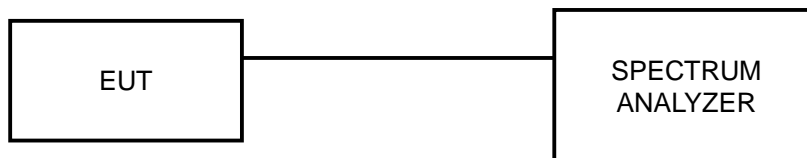
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100kHz 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



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

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.

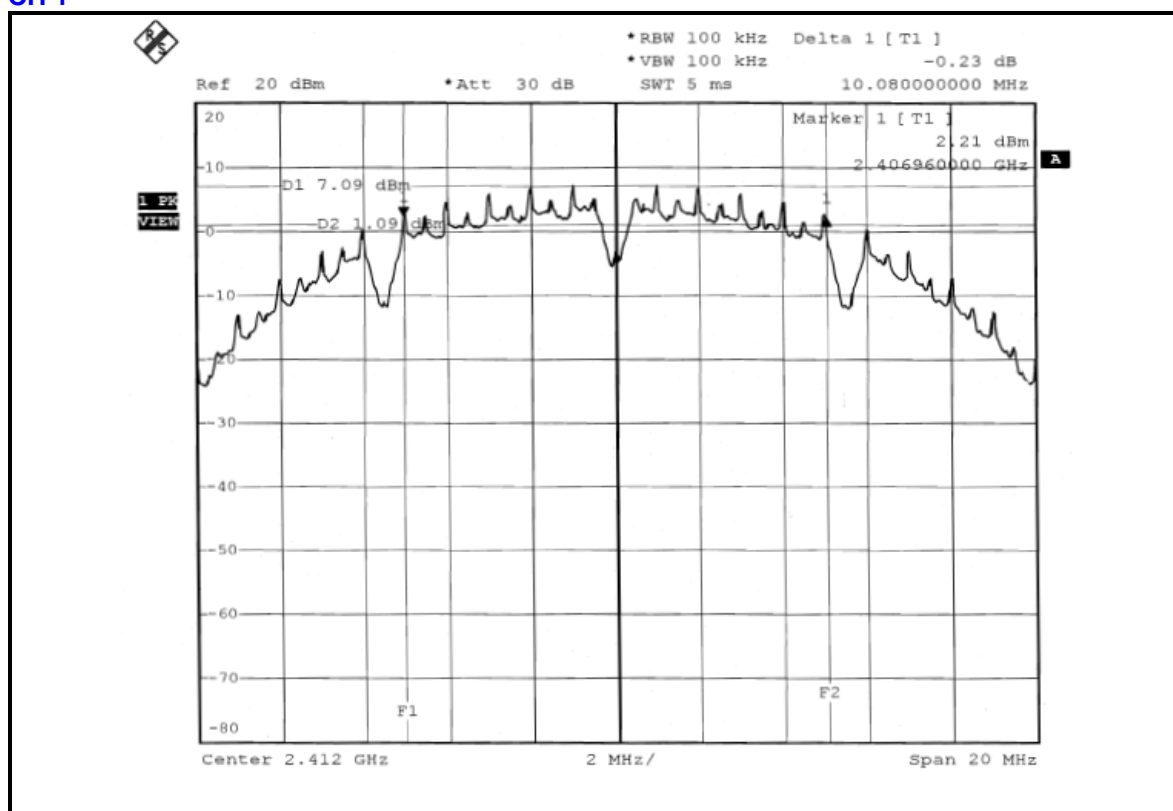
4.3.7 TEST RESULTS

802.11b DSSS MODULATION

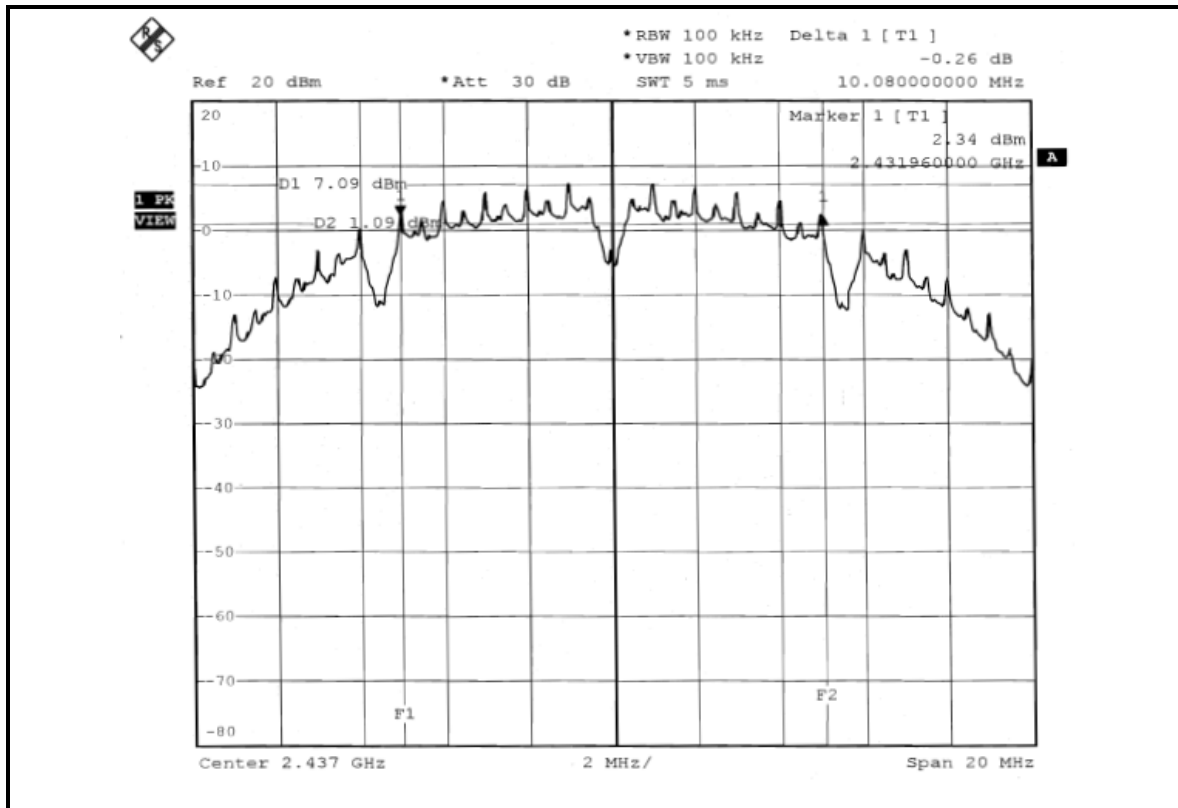
TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	1, 6, 11
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22 deg. C, 70%RH, 1003hPa
TRANSFER RATE	1Mbps	TESTED BY	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.08	0.5	PASS
6	2437	10.08	0.5	PASS
11	2462	9.56	0.5	PASS

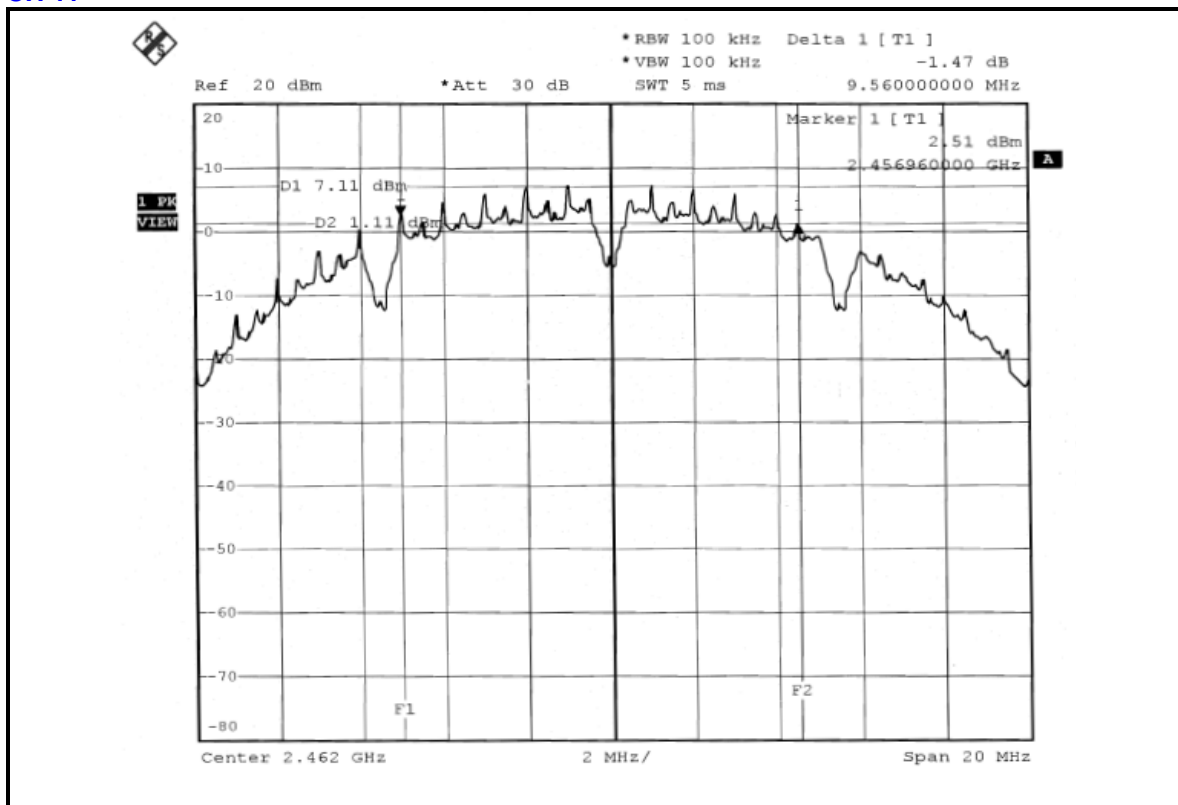
CH 1



CH 6



CH 11

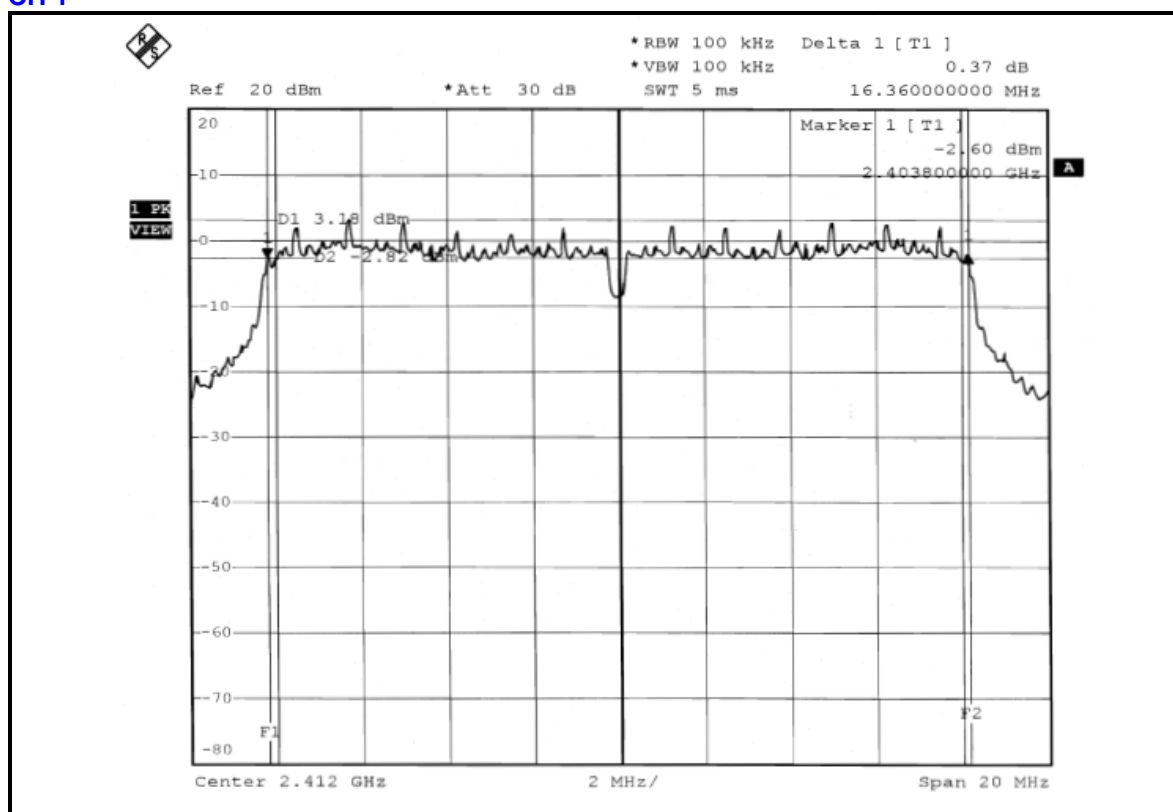


802.11g OFDM MODULATION

TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	1, 6, 11
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22 deg. C, 70%RH, 1003hPa
TRANSFER RATE	6Mbps	TESTED BY	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.36	0.5	PASS
6	2437	16.36	0.5	PASS
11	2462	16.36	0.5	PASS

CH 1





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 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Spectrum Analyzer	FSP 40	100036	Mar. 13, 2008
ROHDE & SCHWARZ Signal Generator	SMR 40	100231	Mar. 27, 2008
Tektronix Oscilloscope	TDS1012	C019167	Jan. 16, 2008
Narda Detector	4503A	FSCM99899	NA

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

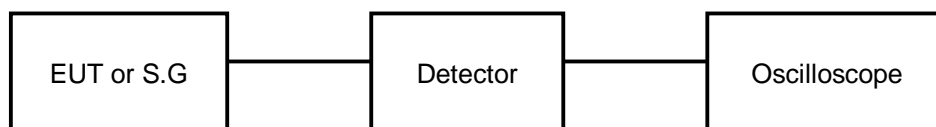
4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to peak the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same peak reading on oscilloscope. 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 4.3.6.

4.4.7 TEST RESULTS

802.11b DSSS MODULATION

TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	1, 6, 11
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23 deg. C, 66%RH, 996hPa
TRANSFER RATE	1Mbps	TESTED BY	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	63.096	18.00	30	PASS
6	2437	63.826	18.05	30	PASS
11	2462	66.222	18.21	30	PASS

802.11g OFDM MODULATION

TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	1, 6, 11
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23 deg. C, 66%RH, 996hPa
TRANSFER RATE	6Mbps	TESTED BY	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	80.538	19.06	30	PASS
6	2437	112.980	20.53	30	PASS
11	2462	45.290	16.56	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.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 2008

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

4.5.3 TEST PROCEDURE

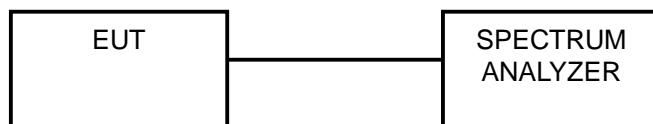
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 4.3.6.

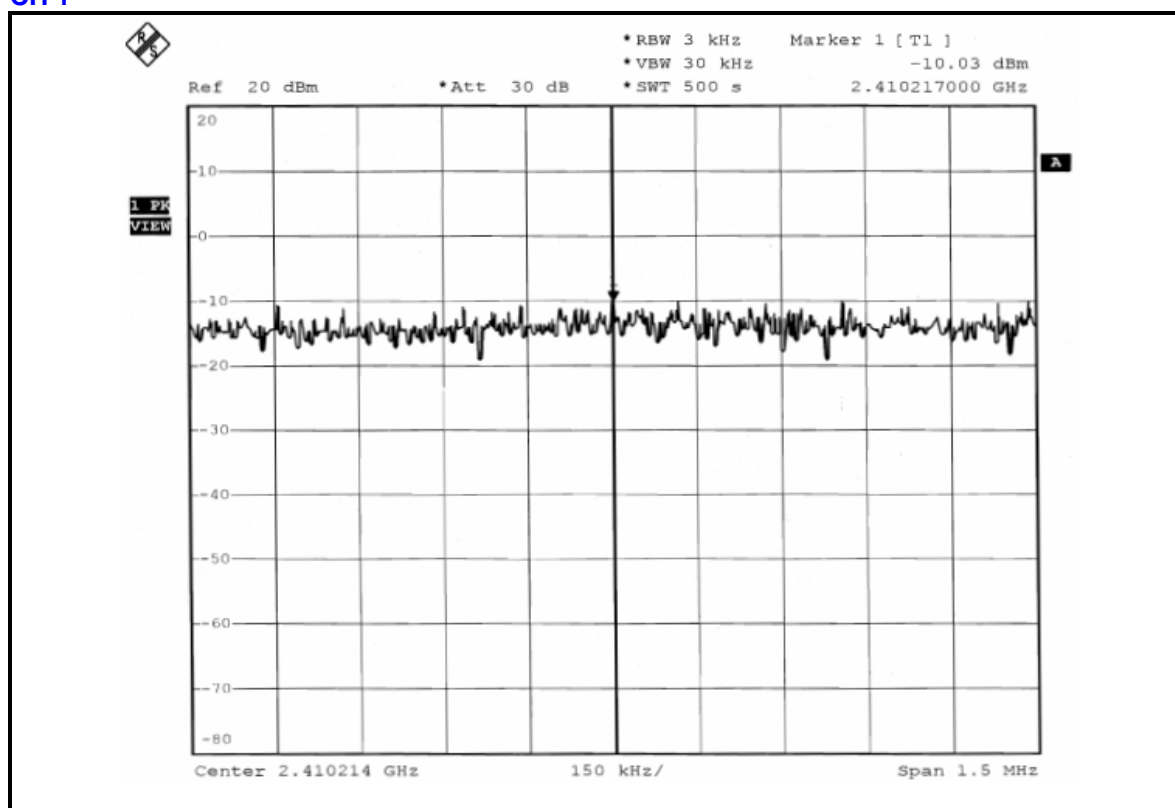
4.5.7 TEST RESULTS

802.11b DSSS MODULATION

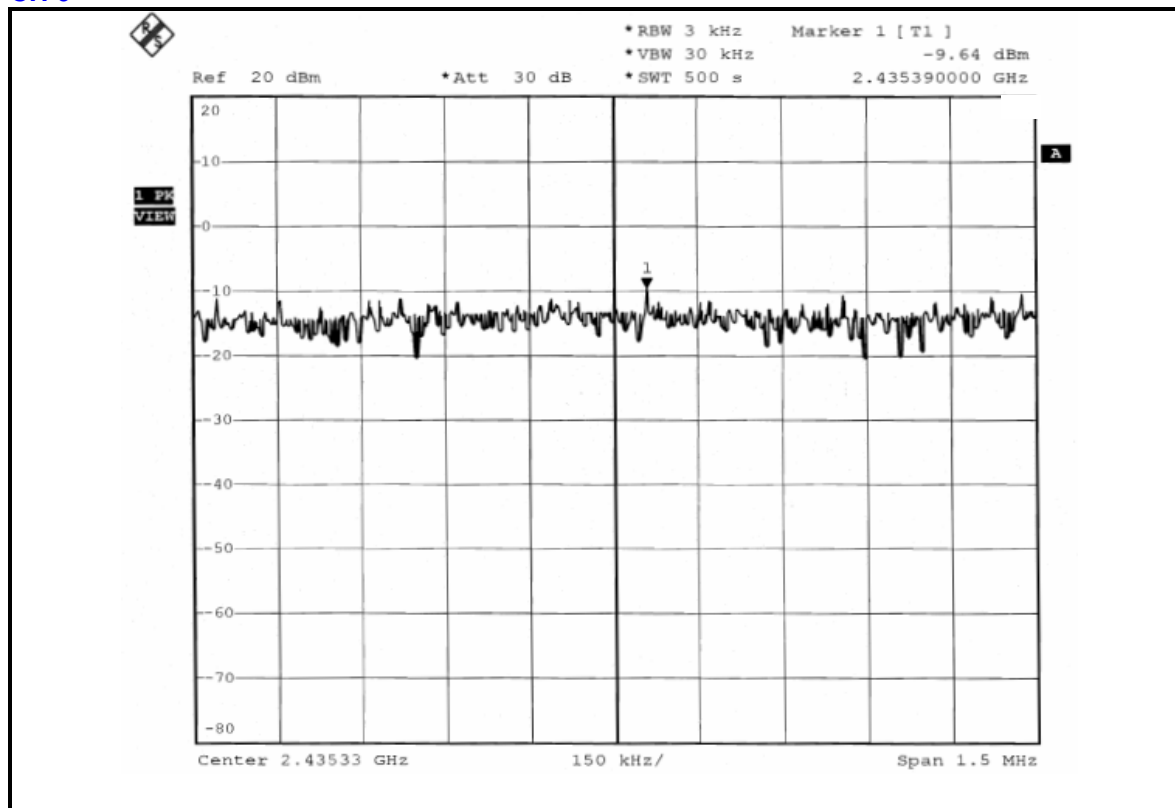
TEST MODE	A		
MODULATION TYPE	DBPSK	CHANNEL	1, 6, 11
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22 deg. C, 70%RH, 1003hPa
TRANSFER RATE	1Mbps	TESTED BY	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.03	8	PASS
6	2437	-9.64	8	PASS
11	2462	-10.46	8	PASS

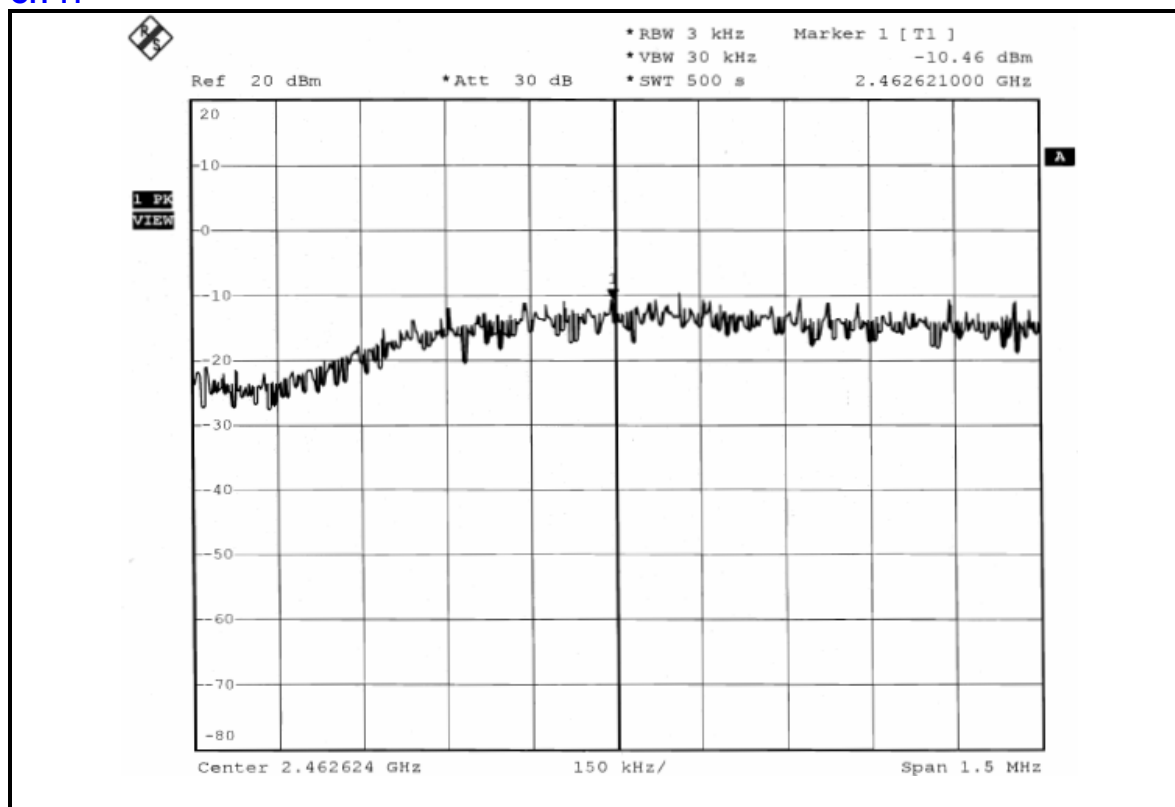
CH 1



CH 6



CH 11

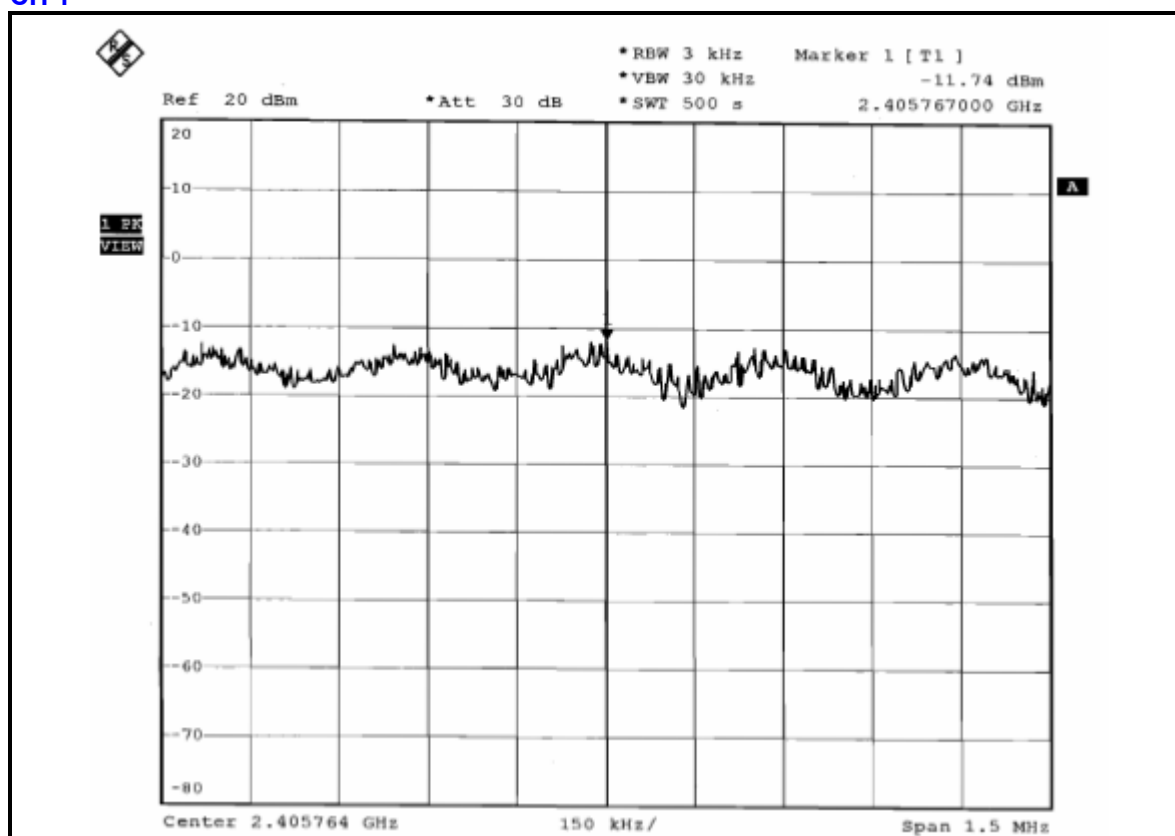


802.11g OFDM MODULATION

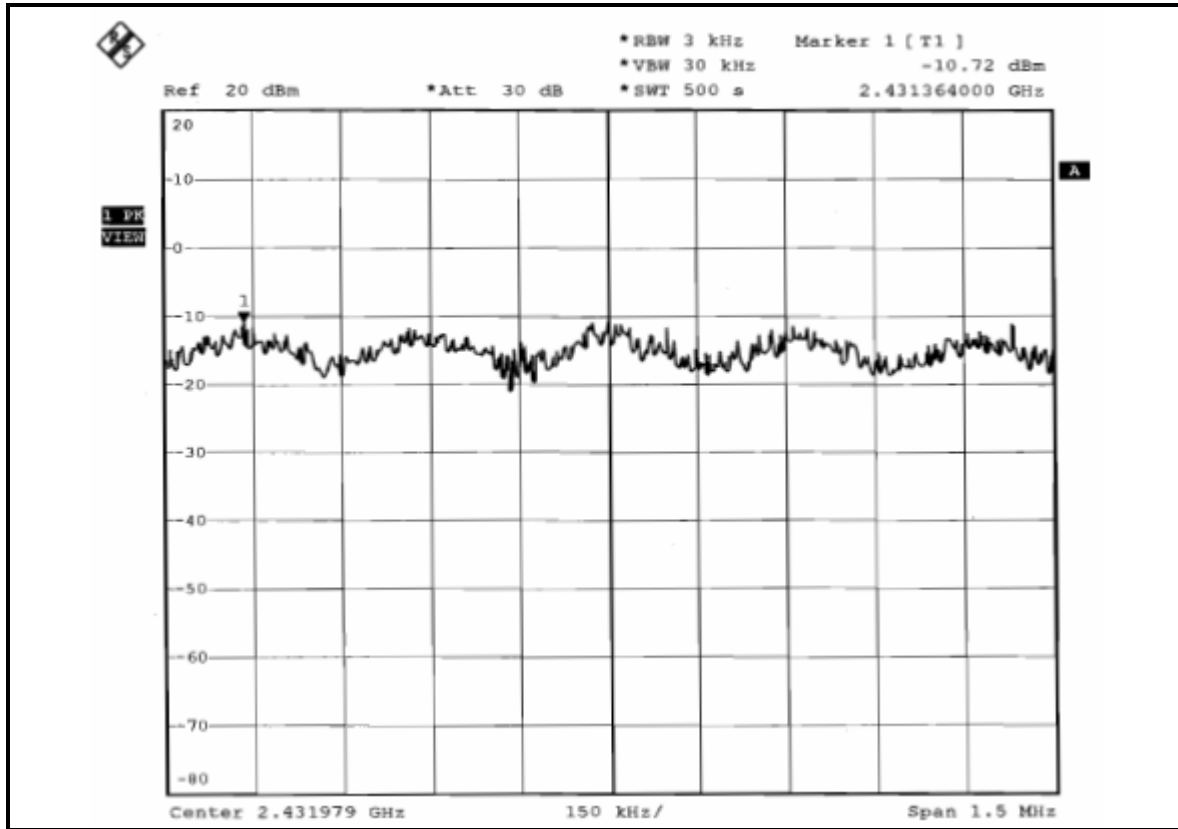
TEST MODE	A		
MODULATION TYPE	BPSK	CHANNEL	1, 6, 11
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22 deg. C, 70%RH, 1003hPa
TRANSFER RATE	6Mbps	TESTED BY	Jamison Chan

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.74	8	PASS
6	2437	-10.72	8	PASS
11	2462	-15.34	8	PASS

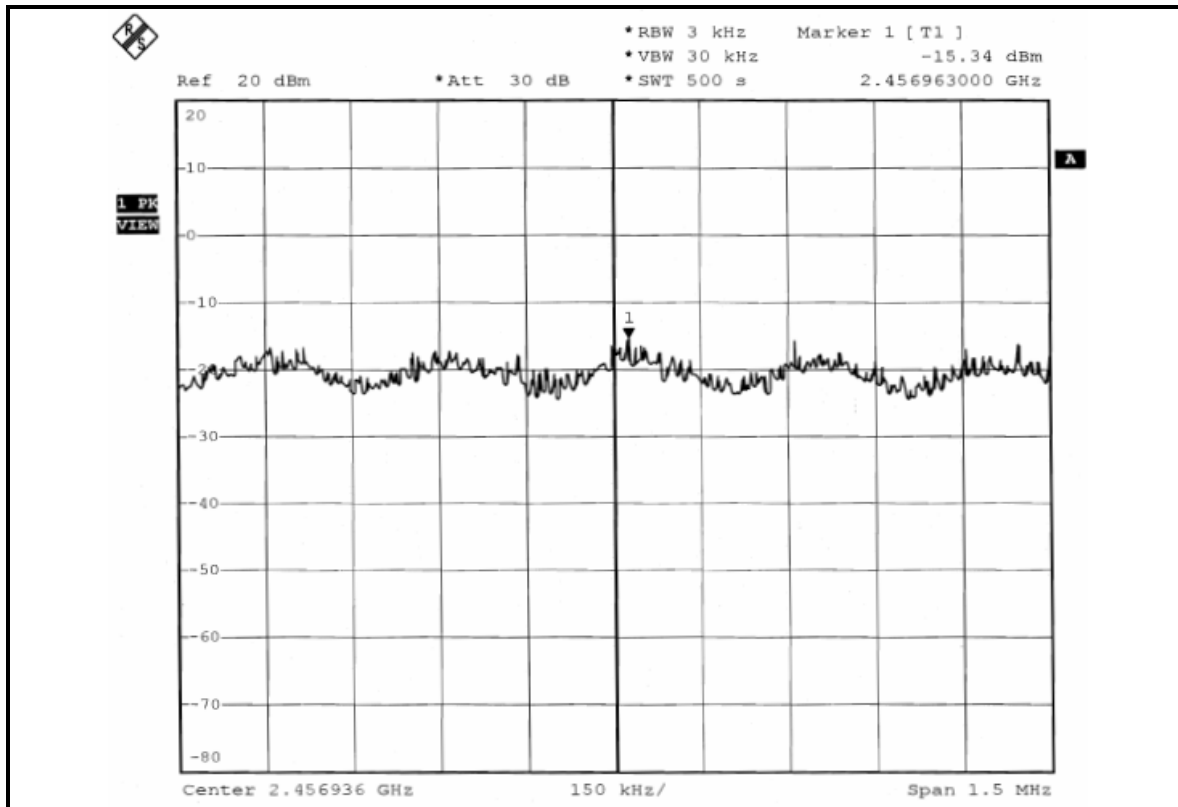
CH 1



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.	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP 40	100036	Mar. 13, 2008

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 with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz; Average RBW=1MHz, VBW=10Hz for 802.11b and VBW=1kHz for 802.11g) are attached on the following pages

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 EUT OPERATING CONDITION

Same as 4.3.6.

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).

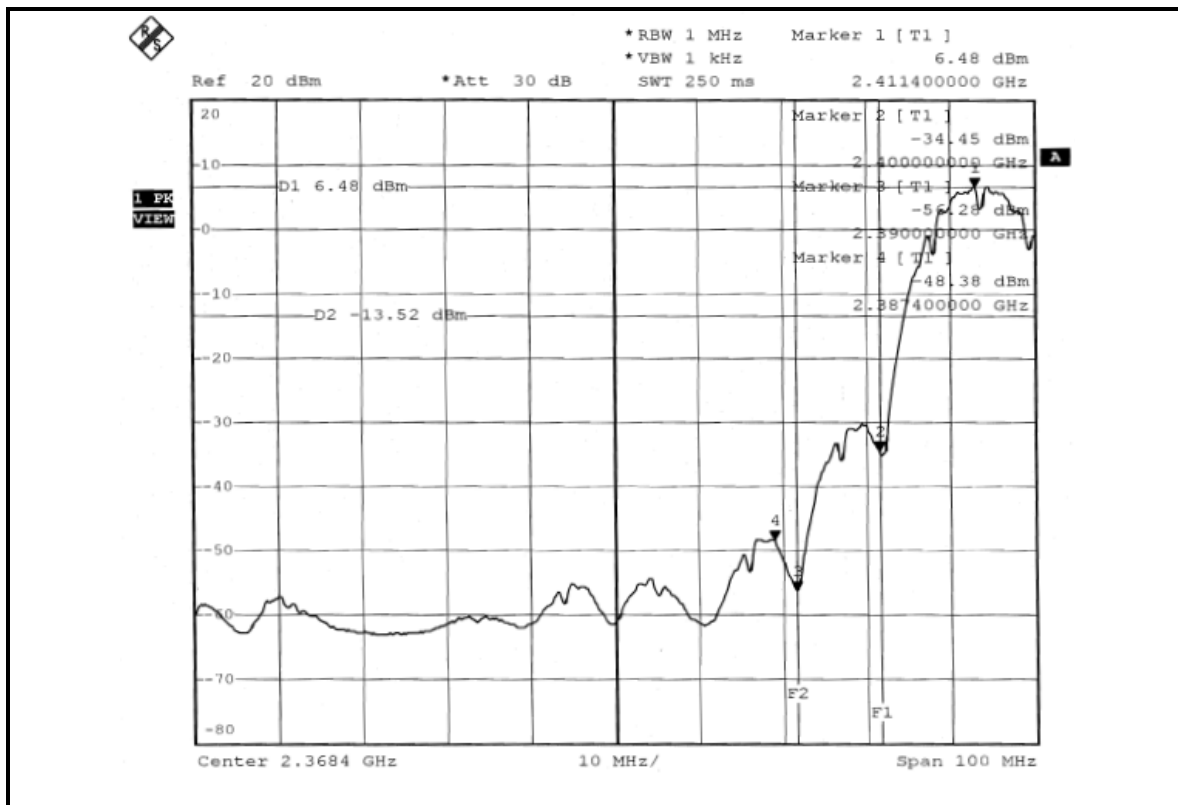
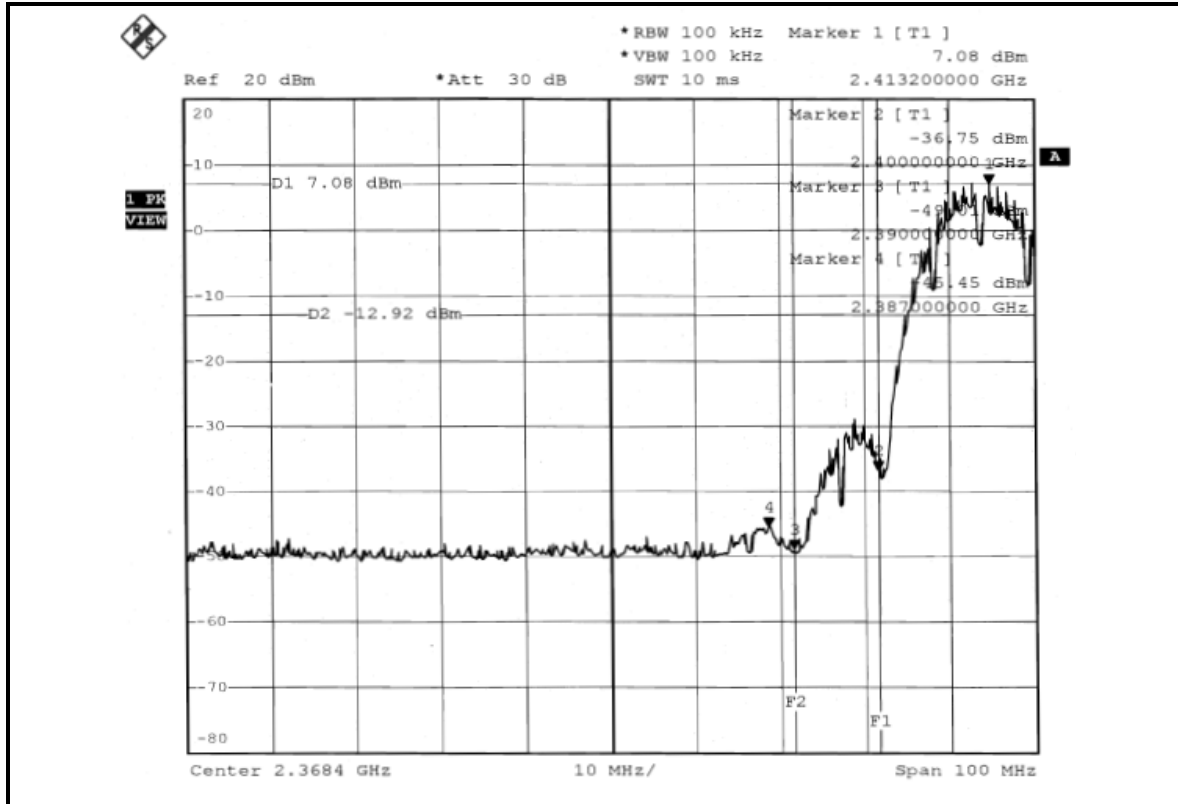
Mode A: 802.11b DSSS MODULATION

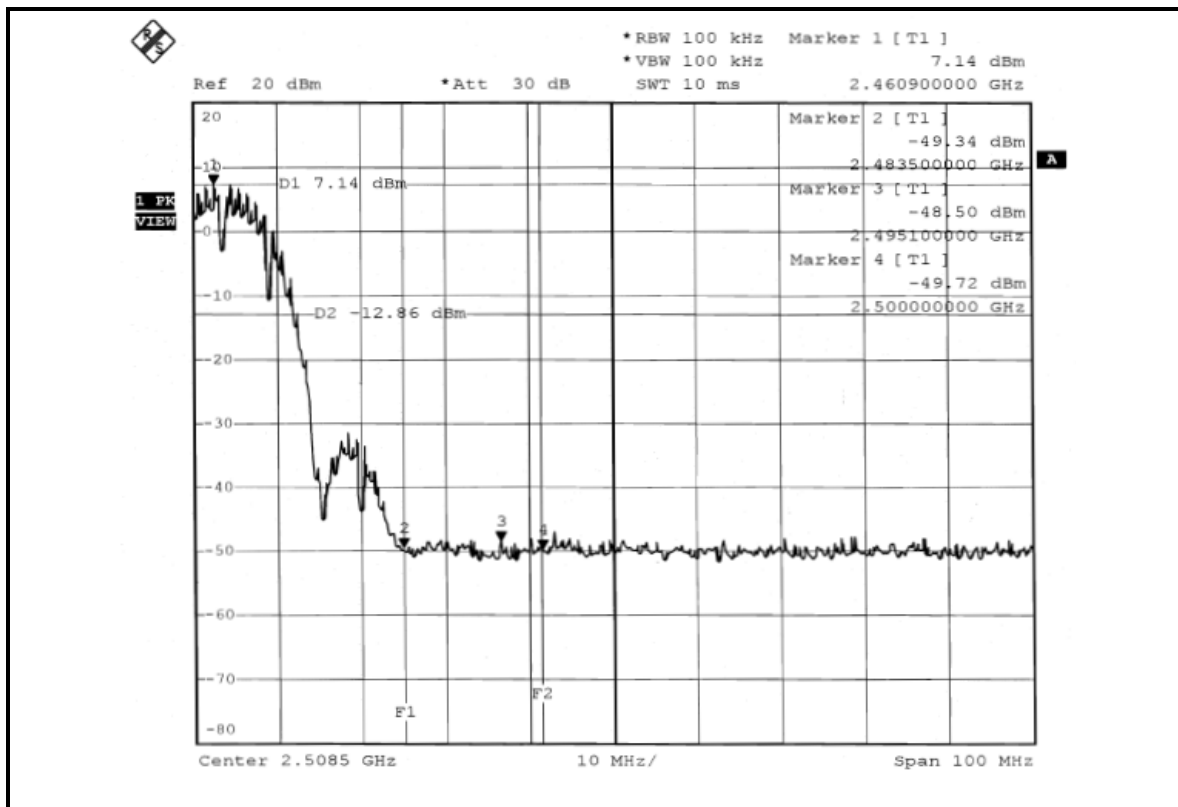
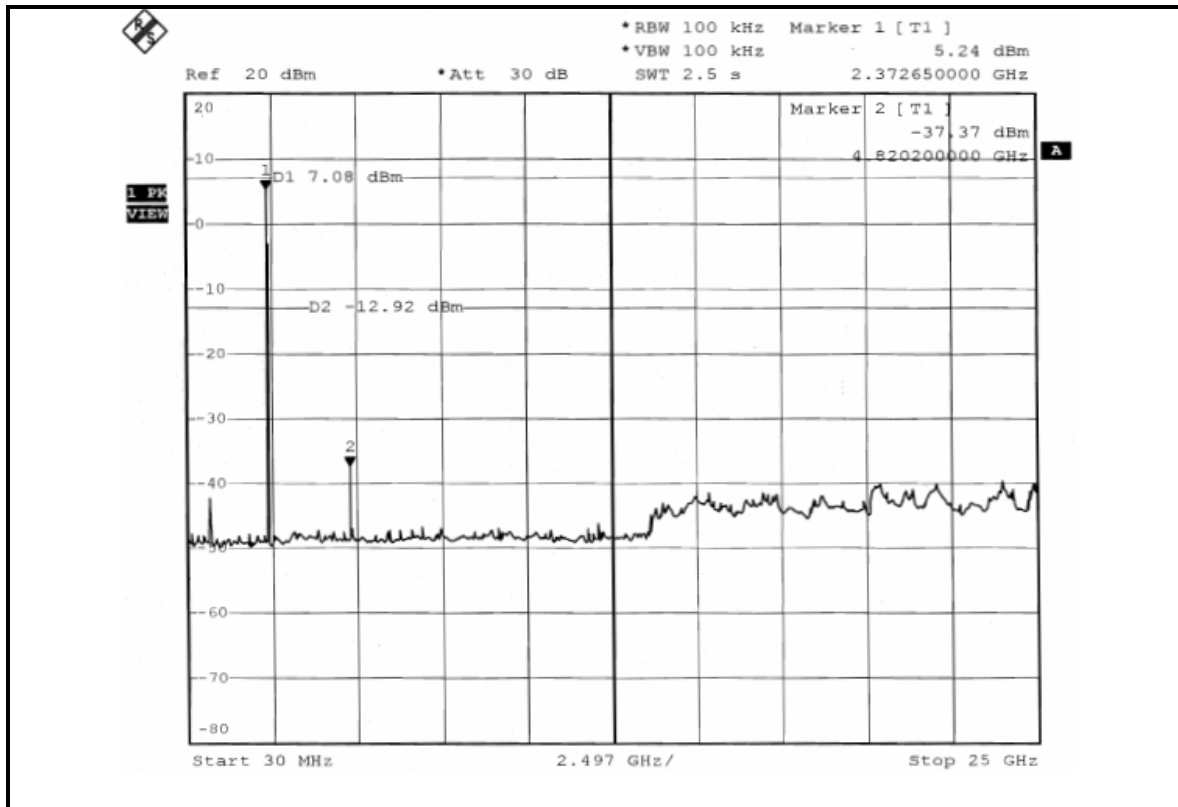
NOTE 1: The band edge emission plot on the next page shows 52.53dBc between carrier maximum power and local maximum emission in restrict band (2.3870GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 109.55dBuV/m (Peak), so the maximum field strength in restrict band is $109.55 - 52.53 = 57.02$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of on the next page shows 54.86dBc between carrier maximum power and local maximum emission in restrict band (2.3874GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.64dBuV/m (Average), so the maximum field strength in restrict band is $104.64 - 54.86 = 49.78$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 55.64dBc between carrier maximum power and local maximum emission in restrict band (2.4951GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.01dBuV/m (Peak), so the maximum field strength in restrict band is $109.01 - 55.64 = 53.37$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 62.33dBc between carrier maximum power and local maximum emission in restrict band (2.4883GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 104.15dBuV/m (Average), so the maximum field strength in restrict band is $104.15 - 62.33 = 41.82$ dBuV/m which is under 54dBuV/m limit.





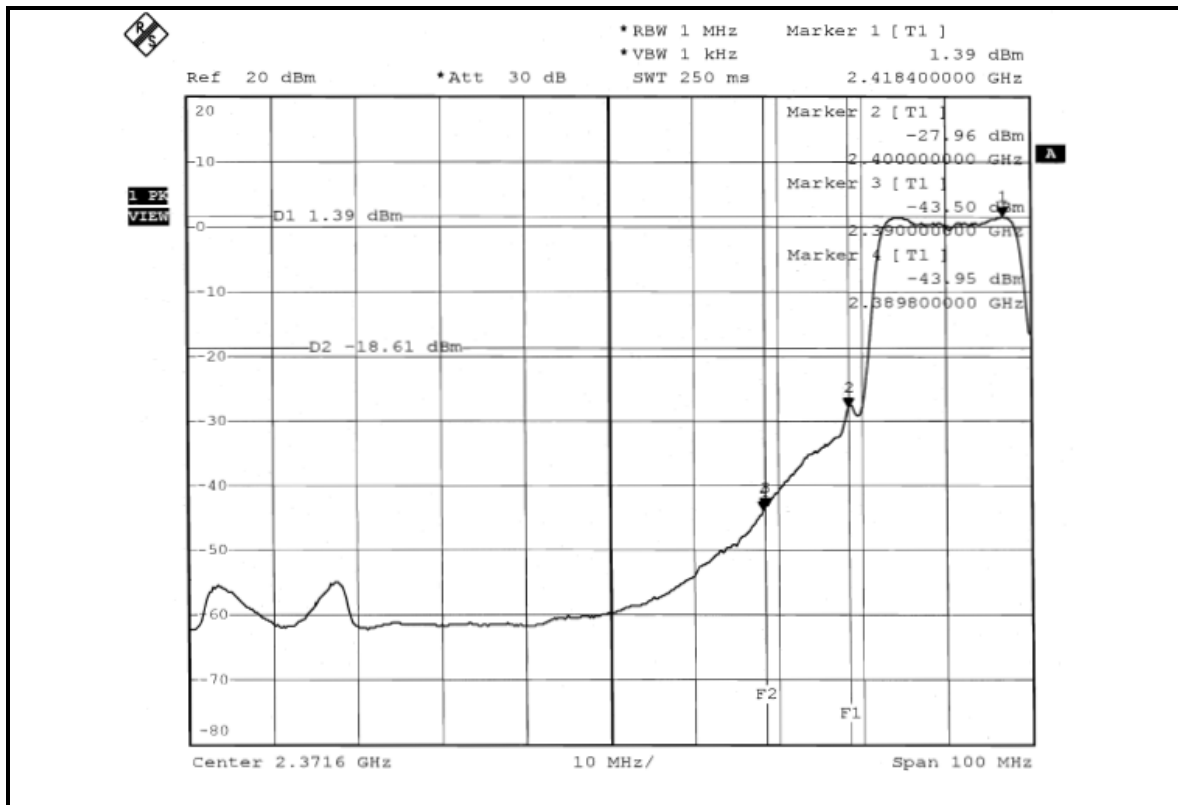
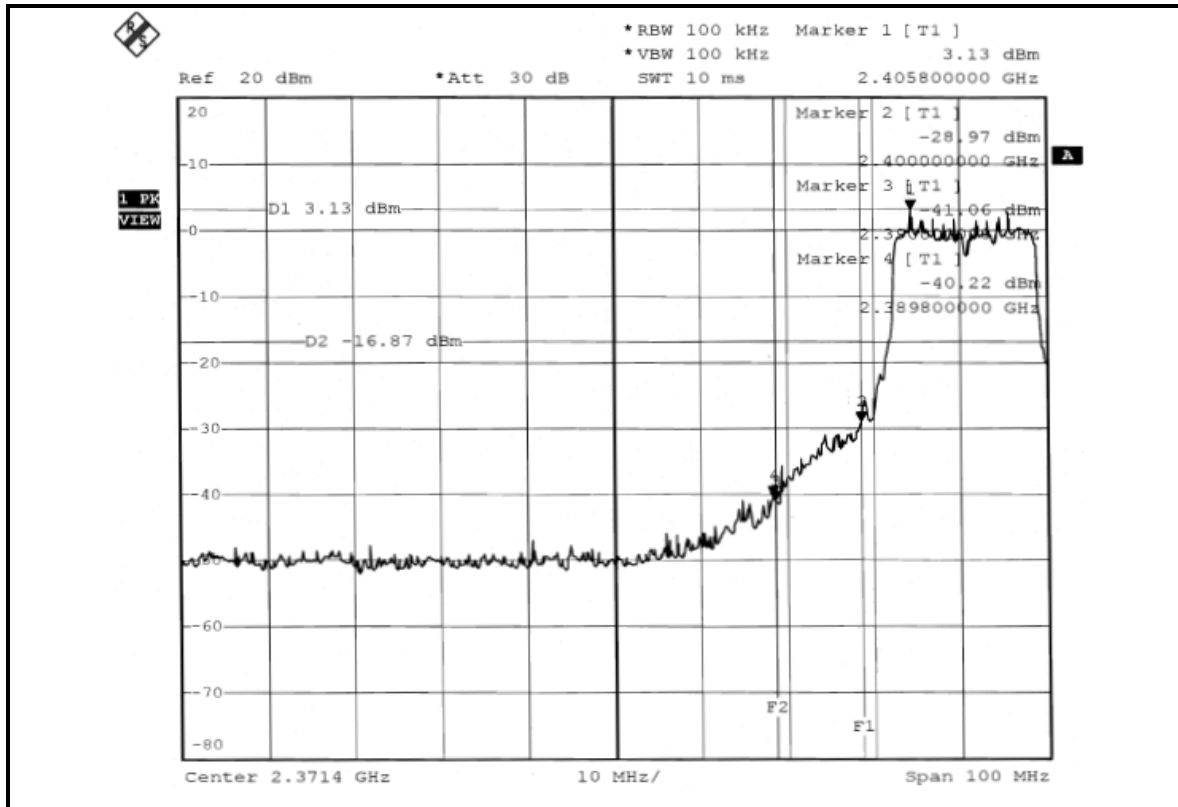
Mode A: 802.11g OFDM MODULATION

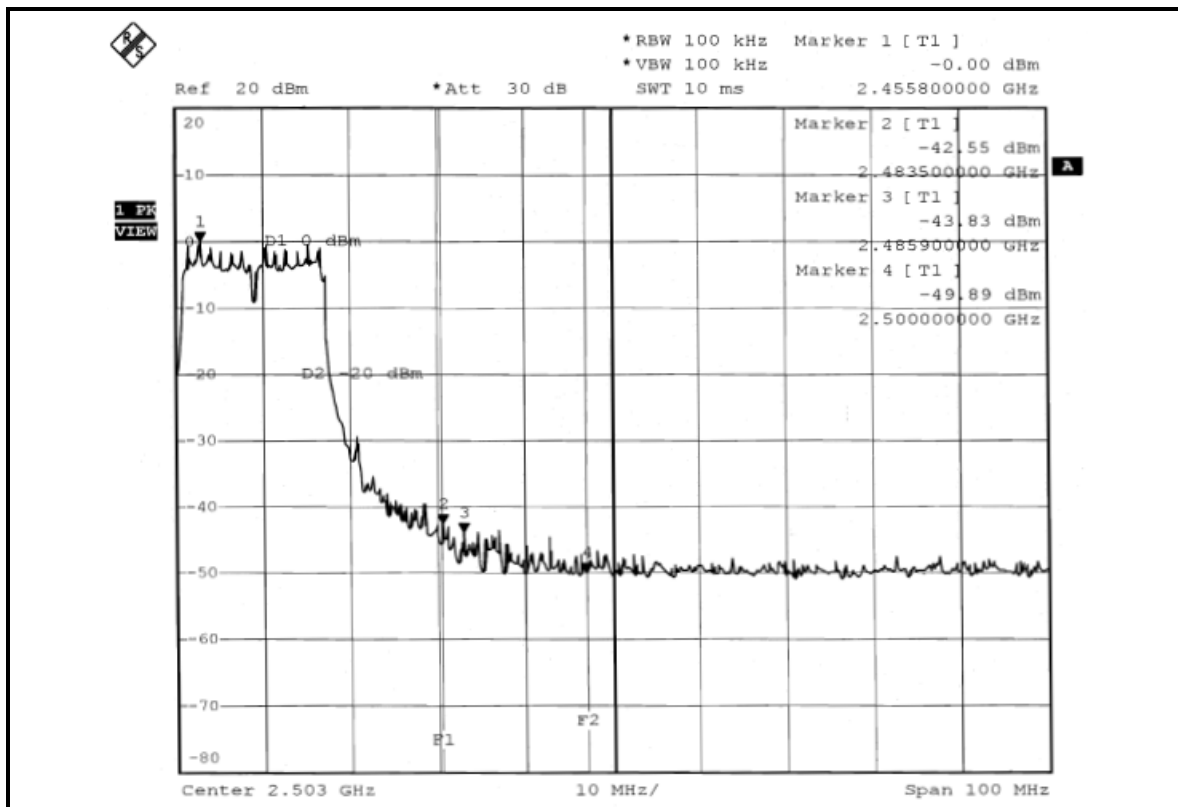
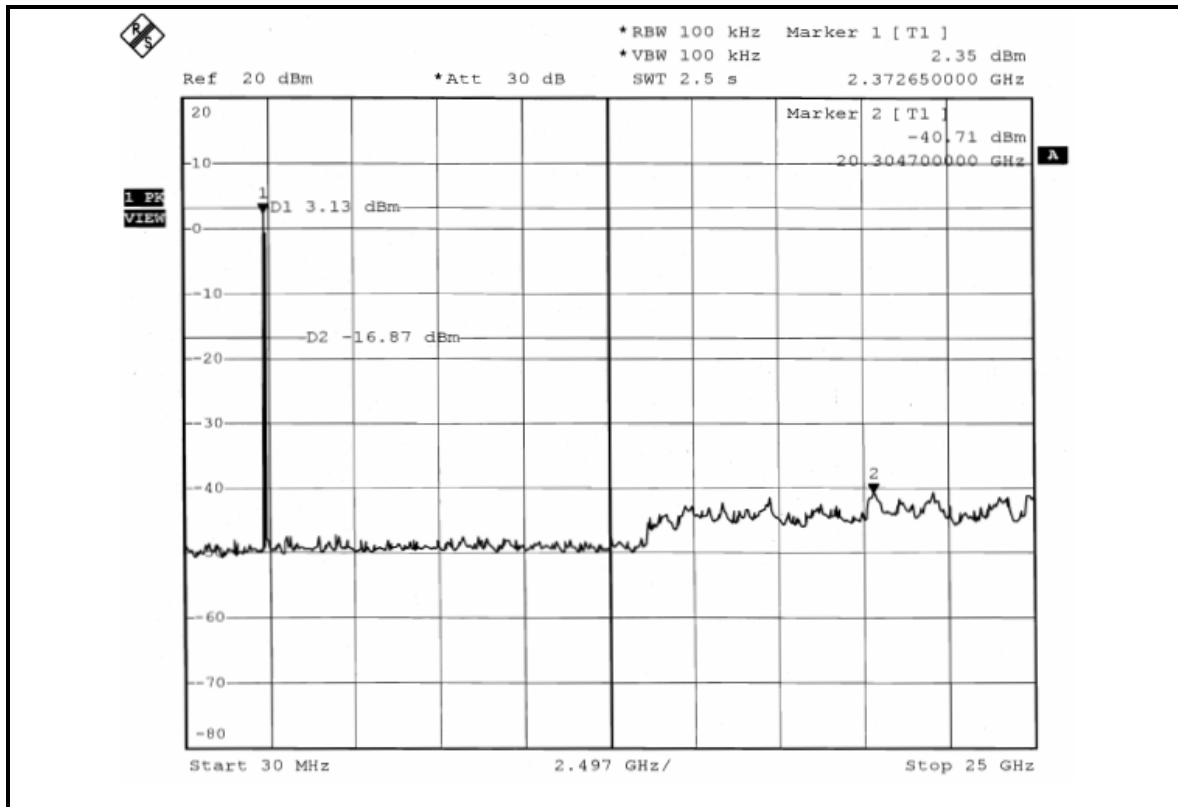
NOTE 1: The band edge emission plot on the next page shows 43.35dBc between carrier maximum power and local maximum emission in restrict band (2.3898GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 109.11dBuV/m (Peak), so the maximum field strength in restrict band is $109.11 - 43.35 = 65.76$ dBuV/m which is under 74dBuV/m limit.

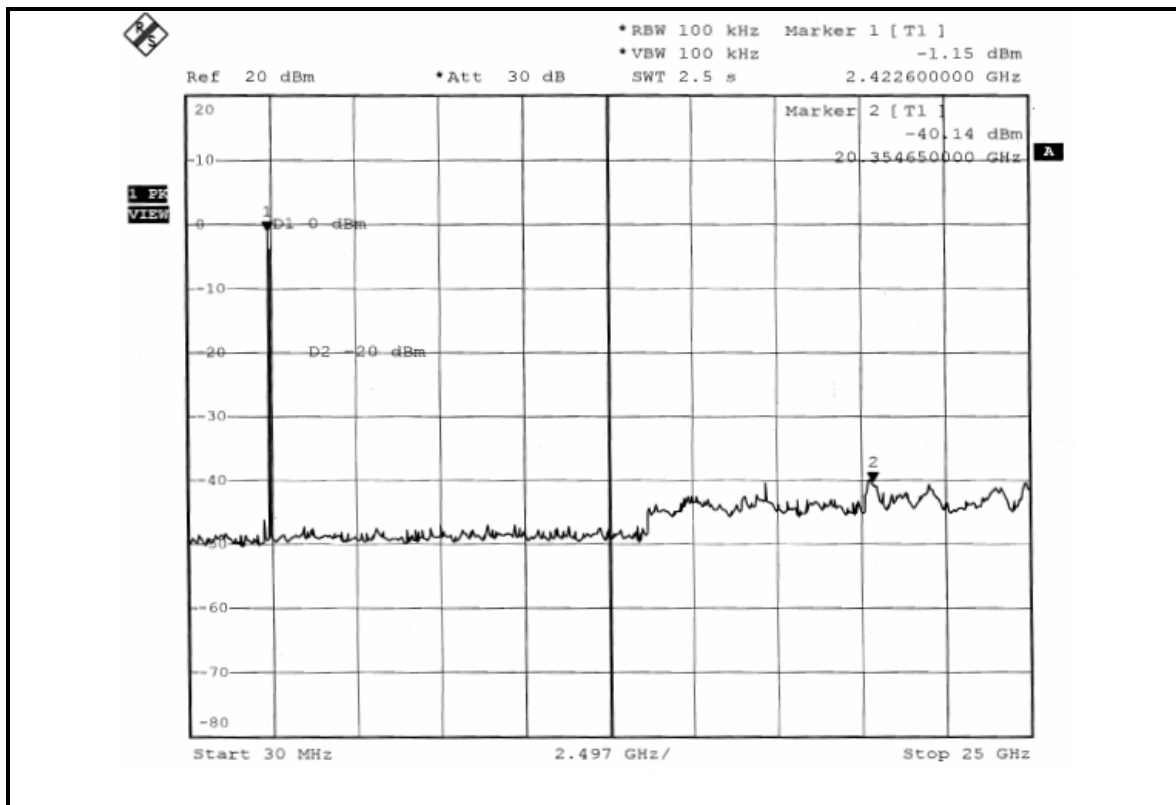
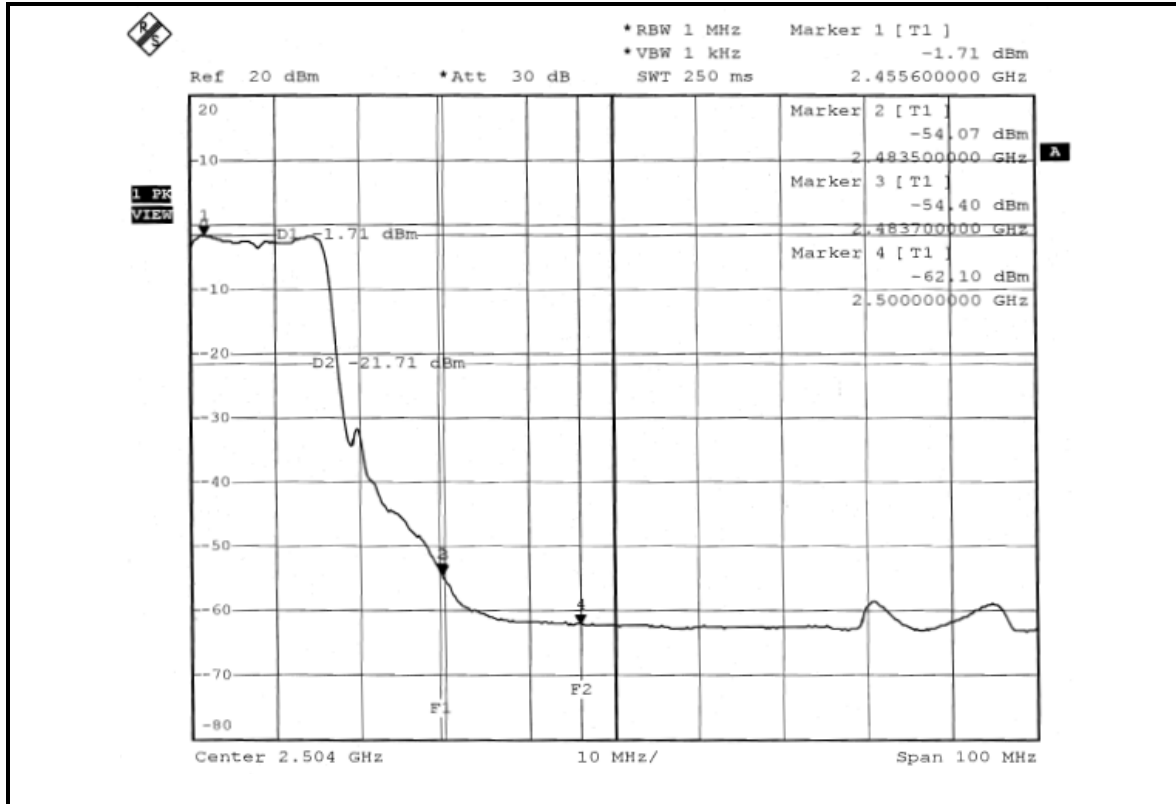
The band edge emission plot of on the next page shows 44.89dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 98.79dBuV/m (Average), so the maximum field strength in restrict band is $98.79 - 44.89 = 53.90$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on the next second page shows 42.55dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.87dBuV/m (Peak), so the maximum field strength in restrict band is $106.87 - 42.55 = 64.32$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 52.36dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 95.73dBuV/m (Average), so the maximum field strength in restrict band is $95.73 - 52.36 = 43.37$ dBuV/m which is under 54dBuV/m limit.







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 type used in this product is PIFA antenna without antenna connector. The maximum Gain of the antenna is 0.202dBi gain.



5 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., 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, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, NCC
Netherlands	Telefication
Singapore	PSB , 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.



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.