FCC TEST REPORT

REPORT NO.: RF950215L16

MODEL NO.: DWL-G710

RECEIVED: Jan. 24, 2006

TESTED: Jan. 24 ~ Feb. 17, 2006

ISSUED: Feb. 20, 2006

APPLICANT: D-Link Corporation

ADDRESS: 17595 Mt. Herrmann, Fountain Valley, CA 92708, U.S.A.

ISSUED BY: Advance Data Technology Corporation

LAB ADDRESS: 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd., Kueishan, Taoyuan, Taiwan, R.O.C.

ACCREDITED
No. 2177-01

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Table of Contents

1 CERTIFICATION

PRODUCT :	Wireless Range Extender
MODEL NO.:	DWL-G710
BRAND:	D-Link
APPLICANT :	D-Link Corporation
TESTED:	Jan. 24 ~ Feb. 17, 2006
TEST SAMPLE:	ENGINEERING SAMPLE
STANDARDS :	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment have 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 : Jessie Wang , **DATE:** Feb. 20, 2006

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Feb. 20, 2006
Responsible for RF

APPROVED BY : Gary Chang , **DATE:** Feb. 20, 2006
Gary Chang / Supervisor

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 –12.37dB at 2.387MHz.
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 –2.64dB at 59.16MHz.
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	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.73 dB
	200MHz ~1000MHz	3.74 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 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	Wireless Range Extender
MODEL NO.	DWL-G710
FCC ID	KA2DWLG710B1
POWER SUPPLY	5Vdc from AC adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
MAXIMUM OUTPUT POWER	57.016mW
ANTENNA TYPE	Dipole antenna with 2dBi gain
I/O PORTS	RJ45
DATA CABLE	NA
ASSOCIATED DEVICES	NA

NOTE:

1. Printed antenna of EUT is just for receiver function only.
2. The EUT is powered by the following adapter.

Brand	D-Link
Model	JTA0302A
Input Power	100-120Vac, 50-60Hz, 0.5A
Output Power	5Vdc, 2A
Power Cord	DC 1.8m shielded cable without core

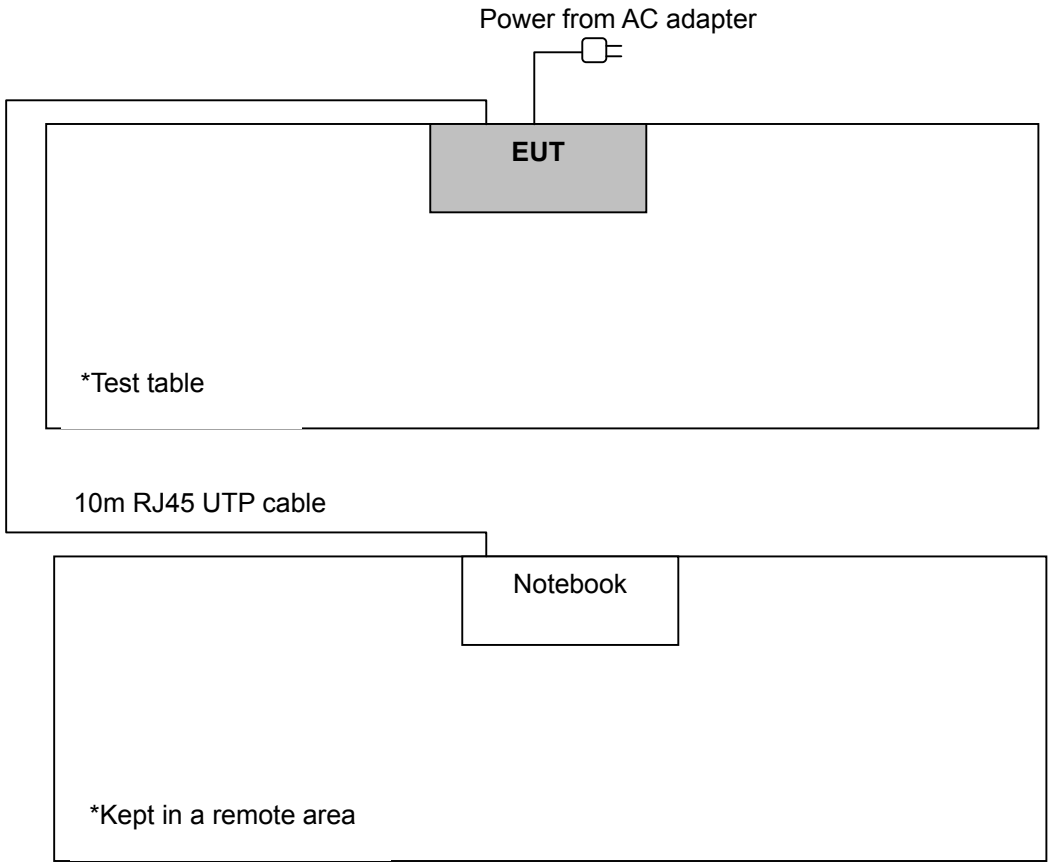
3. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b devices to the network. With its high-speed data transmissions of up to 54Mbps.
4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided to this EUT for normal mode.

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

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	
-	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **RE<1G:** 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.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
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.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6

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.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6

Bandedge Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1
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.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6

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 COMPUTER	DELL	PP05L	16484462992	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE:
1. All power cords of the above support units are non shielded (1.8m).
2. Item 1 acted as communication partners to transfer data.

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 02, 2006
RF signal cable Woken	5D-FB	Cable-HyC02-01	Jan. 06, 2007
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 09, 2007
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 22, 2007
Software ADT	ADT_Cond_V3	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 3.
3. The VCCI Site Registration No. is C-2047.

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.

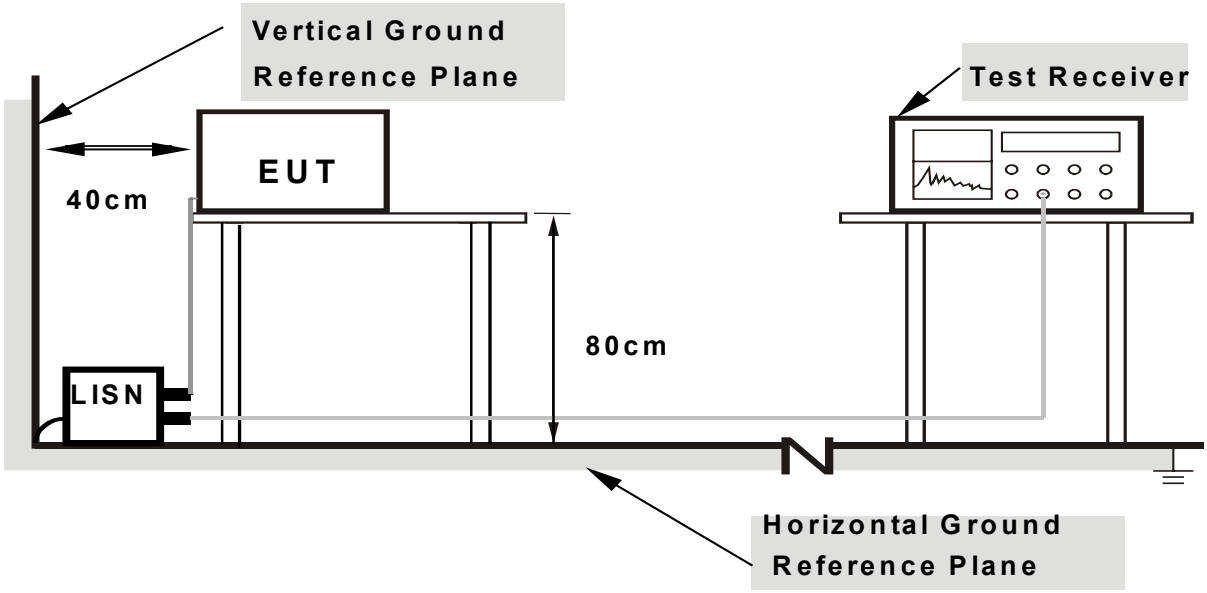
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

a. The EUT connected with notebook system via a RJ45 cable.
b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
c. The notebook system sent "H" messages to its screen.
d. Steps c were repeated.

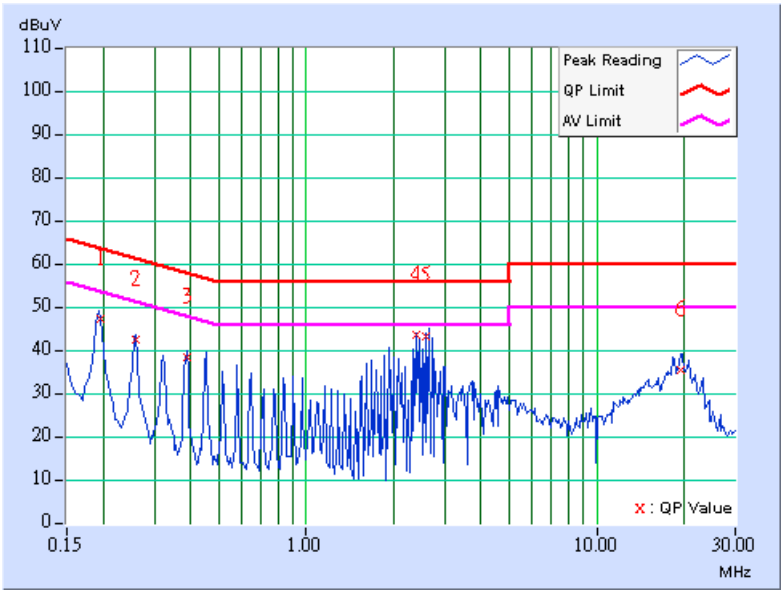
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**PHASE**	Line 1
MODULATION TYPE	BPSK	**6dB BANDWIDTH**	9 kHz
TRANSFER RATE	6Mbps	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	**TESTED BY**	Lori Chiu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.195	0.10	46.66	-	46.76	-	63.83	53.83	-17.07	-
2	0.259	0.10	42.05	-	42.15	-	61.45	51.45	-19.30	-
3	0.388	0.10	38.09	-	38.19	-	58.10	48.10	-19.91	-
4	2.384	0.23	43.25	-	43.48	-	56.00	46.00	-12.52	-
5	2.578	0.25	42.82	-	43.07	-	56.00	46.00	-12.93	-
6	19.591	0.57	34.98	-	35.55	-	60.00	50.00	-24.45	-

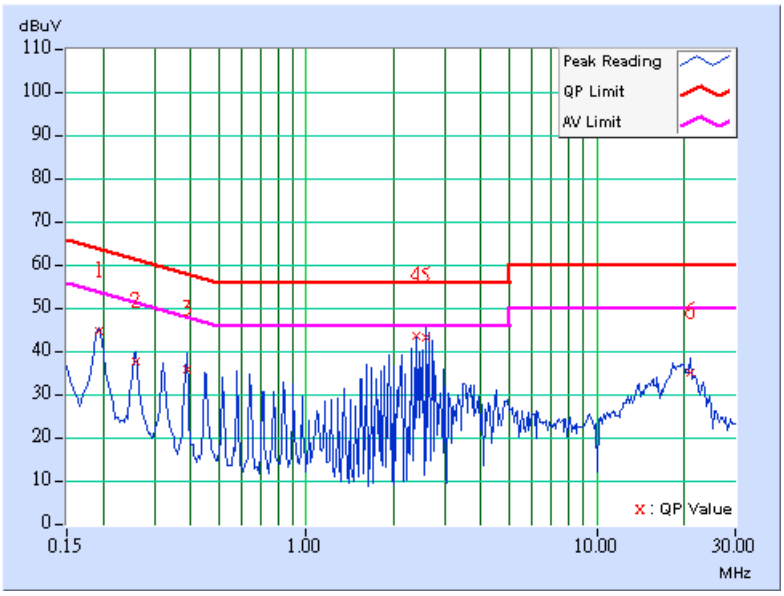
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	TESTED BY	Lori Chiu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	44.07	-	44.17	-	63.90	53.90	-19.73	-
2	0.259	0.10	37.24	-	37.34	-	61.45	51.45	-24.11	-
3	0.388	0.10	35.47	-	35.57	-	58.10	48.10	-22.53	-
4	2.383	0.23	43.11	-	43.34	-	56.00	46.00	-12.66	-
5	2.576	0.25	42.90	-	43.15	-	56.00	46.00	-12.85	-
6	20.995	0.61	34.51	-	35.12	-	60.00	50.00	-24.88	-

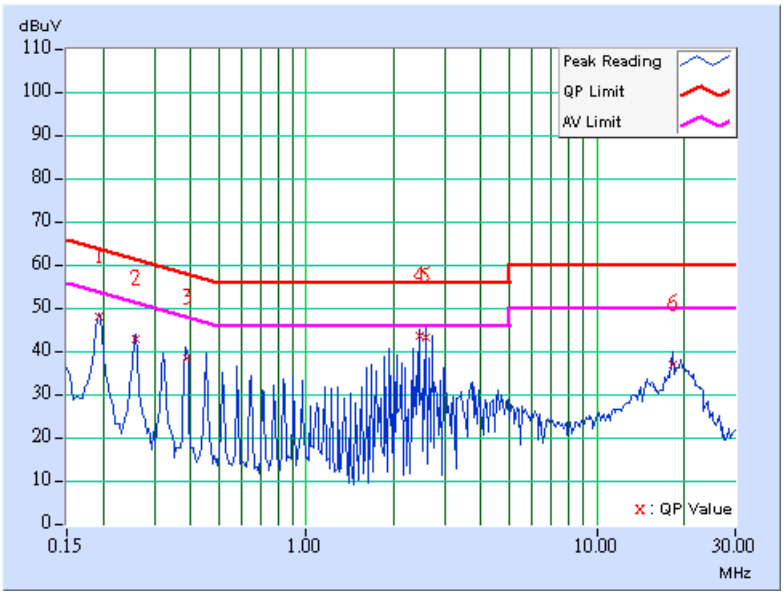
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	TESTED BY	Lori Chiu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	47.49	-	47.59	-	63.91	53.91	-16.32	-
2	0.259	0.10	42.49	-	42.59	-	61.45	51.45	-18.86	-
3	0.388	0.10	37.91	-	38.01	-	58.10	48.10	-20.09	-
4	2.450	0.24	43.16	-	43.40	-	56.00	46.00	-12.60	-
5	2.579	0.25	42.84	-	43.09	-	56.00	46.00	-12.91	-
6	18.244	0.58	36.34	-	36.92	-	60.00	50.00	-23.08	-

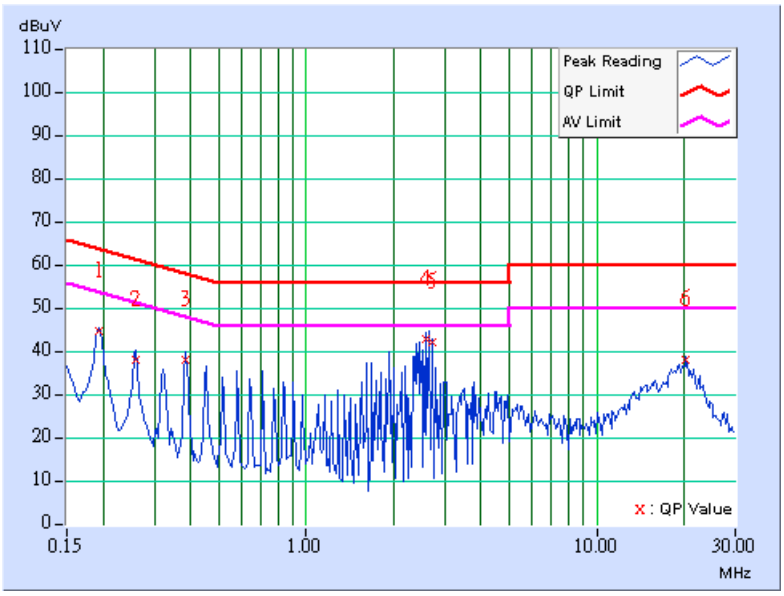
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	TESTED BY	Lori Chiu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	44.15	-	44.25	-	63.91	53.91	-19.66	-
2	0.259	0.10	37.49	-	37.59	-	61.45	51.45	-23.86	-
3	0.386	0.10	37.42	-	37.52	-	58.14	48.14	-20.62	-
4	2.582	0.25	42.29	-	42.54	-	56.00	46.00	-13.46	-
5	2.709	0.26	41.80	-	42.06	-	56.00	46.00	-13.94	-
6	20.259	0.57	37.67	-	38.24	-	60.00	50.00	-21.76	-

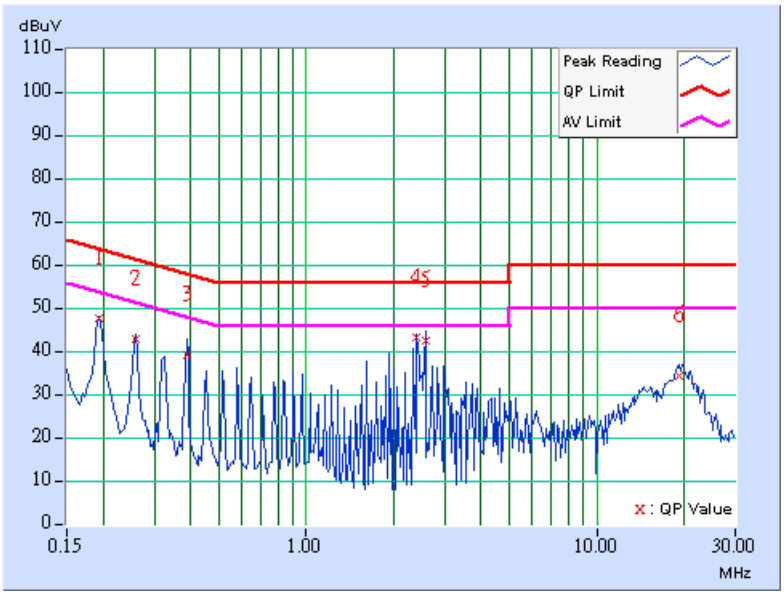
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	TESTED BY	Lori Chiu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	47.06	-	47.16	-	63.91	53.91	-16.75	-
2	0.259	0.10	42.37	-	42.47	-	61.45	51.45	-18.98	-
3	0.388	0.10	38.58	-	38.68	-	58.10	48.10	-19.42	-
4	2.391	0.23	42.81	-	43.04	-	56.00	46.00	-12.96	-
5	2.583	0.25	41.90	-	42.15	-	56.00	46.00	-13.85	-
6	19.176	0.57	34.04	-	34.61	-	60.00	50.00	-25.39	-

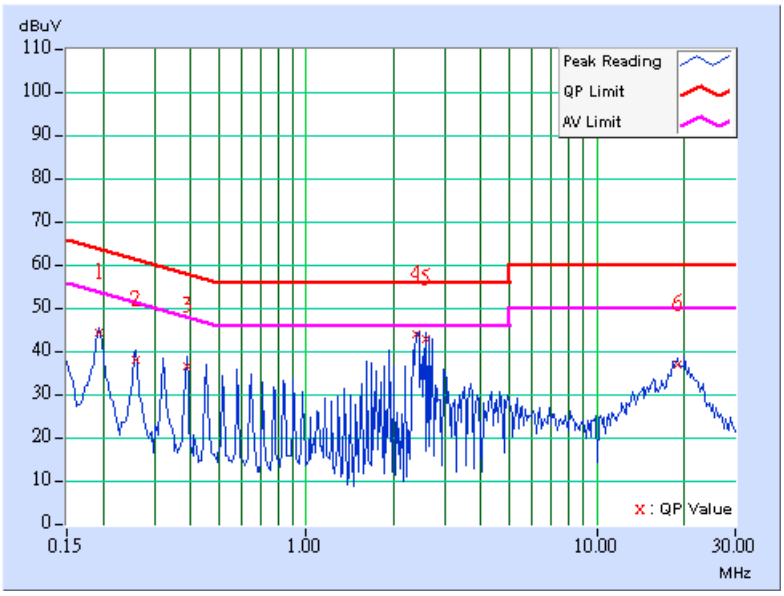
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 991hPa	TESTED BY	Lori Chiu

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	43.82	-	43.92	-	63.91	53.91	-19.99	-
2	0.259	0.10	37.46	-	37.56	-	61.45	51.45	-23.89	-
3	0.388	0.10	36.02	-	36.12	-	58.10	48.10	-21.98	-
4	**2.387**	**0.23**	**43.40**	**-**	**43.63**	**-**	**56.00**	**46.00**	**-12.37**	**-**
5	2.582	0.25	42.23	-	42.48	-	56.00	46.00	-13.52	-
6	18.914	0.58	36.45	-	37.03	-	60.00	50.00	-22.97	-

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



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
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Dec. 20, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Nov. 27, 2006
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Jan. 15, 2007
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-407	Jan. 22, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170147	Jan. 26, 2007
Preamplifier Agilent	8449B	3008A01961	Oct. 23, 2006
Preamplifier Agilent	8447D	2944A10629	Oct. 27, 2006
RF signal cable HUBER+SUHNER	SUCOFLEX 104	214380/4	Jan. 16, 2007
RF signal cable HUBER+SUHNER	SUCOFLEX 104	219266/4	Jan. 16, 2007
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA
Turn Table ADT.	TT100.	TT93021702	NA
Controller ADT.	SC100.	SC93021702	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 1.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC4924-2.

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

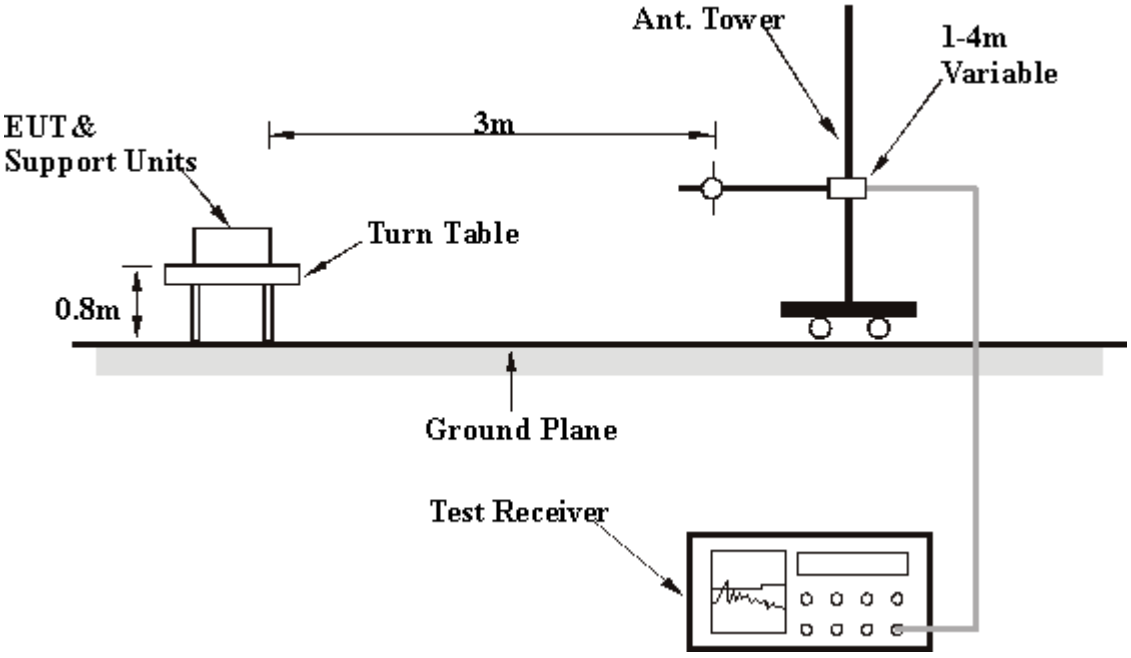
NOTE:

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 and video bandwidth of test receiver/spectrum analyzer is 1 MHz 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.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

RADIATED WORST-CASE DATA: BELOW 1GHz

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Quasi-Peak
TRANSFER RATE	6Mbps	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 64%RH, 991hPa	**TESTED BY**	Match Tsui

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	117.47	35.73 QP	43.50	-7.77	2.00 H	193	25.15	10.58
2	319.64	36.32 QP	46.00	-9.68	2.00 H	163	20.45	15.88
3	479.04	38.52 QP	46.00	-7.48	1.50 H	160	18.92	19.60
4	519.86	39.63 QP	46.00	-6.37	2.00 H	181	19.13	20.50
5	640.38	38.00 QP	46.00	-8.00	2.00 H	121	15.07	22.92
6	681.20	40.81 QP	46.00	-5.19	2.00 H	175	17.09	23.72
7	700.64	37.00 QP	46.00	-9.00	2.00 H	136	12.84	24.16
8	799.78	41.89 QP	46.00	-4.11	2.00 H	121	15.90	26.00
9	902.81	37.85 QP	46.00	-8.15	2.00 H	163	10.64	27.21

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	**59.16**	**37.36 QP**	**40.00**	**-2.64**	**1.00 V**	**82**	**23.75**	**13.61**
2	82.48	36.83 QP	40.00	-3.17	1.00 V	256	26.64	10.19
3	115.53	39.67 QP	43.50	-3.83	1.00 V	256	29.27	10.40
4	479.04	36.23 QP	46.00	-9.77	1.00 V	256	16.63	19.60
5	519.86	39.00 QP	46.00	-7.00	1.00 V	112	18.50	20.50
6	640.38	38.68 QP	46.00	-7.32	1.00 V	49	15.75	22.92
7	681.20	39.83 QP	46.00	-6.17	2.00 V	226	16.11	23.72
8	799.78	43.22 QP	46.00	-2.78	1.00 V	49	17.22	26.00

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.

802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	DBPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	**ENVIRONMENTAL CONDITIONS**	20deg. C, 64%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

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	1600.00	42.33 PK	74.00	-31.67	1.64 H	360	14.22	28.11
1	1600.00	37.60 AV	54.00	-16.40	1.64 H	360	9.49	28.11
2	1920.00	43.49 PK	77.26	-33.77	1.37 H	45	14.38	29.10
2	1920.00	39.36 AV	73.56	-34.20	1.37 H	45	10.25	29.10
3	*2142.00	97.26 PK			1.17 H	22	67.09	30.17
3	*2142.00	93.56 AV			1.17 H	22	63.39	30.17
4	2390.00	51.79 PK	74.00	-22.21	1.17 H	22	20.57	31.22
4	2390.00	43.63 AV	54.00	-10.37	1.17 H	22	12.41	31.22
5	4824.00	47.47 PK	74.00	-26.53	1.06 H	320	10.47	37.00
5	4824.00	41.15 AV	54.00	-12.85	1.06 H	320	4.15	37.00

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	1600.00	45.24 PK	74.00	-28.76	1.57 V	360	17.13	28.11
1	1600.00	42.59 AV	54.00	-11.41	1.57 V	360	14.48	28.11
2	1920.00	44.69 PK	87.14	-42.45	1.63 V	105	15.58	29.10
2	1920.00	41.49 AV	84.02	-42.53	1.63 V	105	12.38	29.10
3	2390.00	54.08 PK	74.00	-19.92	1.12 V	47	22.86	31.22
3	2390.00	44.47 AV	54.00	-9.53	1.12 V	47	13.25	31.22
4	*2412.00	107.14 PK			1.12 V	44	75.83	31.31
4	*2412.00	104.02 AV			1.12 V	44	72.71	31.31
5	3376.00	46.99 PK	74.00	-27.01	1.00 V	188	13.81	33.19
5	3376.00	39.33 AV	54.00	-14.67	1.00 V	188	6.15	33.19
6	4824.00	49.69 PK	74.00	-24.31	1.02 V	224	12.69	37.00
6	4824.00	44.29 AV	54.00	-9.71	1.02 V	224	7.29	37.00

RMARKS: 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	DBPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	**ENVIRONMENTAL CONDITIONS**	21deg. C, 90%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

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	1920.00	51.76 PK	77.19	-25.43	1.00 H	3	22.66	29.10
1	1920.00	42.86 AV	73.55	-30.69	1.00 H	3	13.76	29.10
2	*2437.00	97.19 PK			1.34 H	59	65.79	31.40
2	*2437.00	93.55 AV			1.34 H	59	62.15	31.40
3	4874.00	48.08 PK	74.00	-25.92	1.04 H	315	10.94	37.14
3	4874.00	41.31 AV	54.00	-12.69	1.04 H	315	4.17	37.14

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	1600.00	53.40 PK	74.00	-20.60	1.05 V	9	25.29	28.11
1	1600.00	45.14 AV	54.00	-8.86	1.05 V	9	17.03	28.11
2	1920.00	54.64 PK	87.28	-32.64	1.22 V	344	25.54	29.10
2	1920.00	46.60 AV	84.03	-37.70	1.22 V	344	17.50	29.10
3	*2437.00	107.28 PK			1.39 V	360	75.88	31.40
3	*2437.00	104.03 AV			1.39 V	360	72.63	31.40
4	3411.00	49.13 PK	87.28	-38.15	1.16 V	177	15.89	33.25
4	3411.00	42.19 AV	84.03	-41.84	1.16 V	177	8.95	33.25
5	4874.00	50.11 PK	74.00	-23.89	1.09 V	22	12.97	37.14
5	4874.00	44.98 AV	54.00	-9.02	1.09 V	22	7.84	37.14

RMARKS: 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	DBPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	1Mbps	**ENVIRONMENTAL CONDITIONS**	21deg. C, 90%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

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	1920.00	54.35 PK	77.68	-23.33	1.06 H	360	25.25	29.10
1	1920.00	42.97 AV	73.99	-31.02	1.06 H	360	13.87	29.10
2	*2462.00	97.68 PK			1.65 H	136	66.18	31.50
2	*2462.00	93.99 AV			1.65 H	136	62.49	31.50
3	2483.50	52.99 PK	74.00	-21.01	1.65 H	136	21.40	31.59
3	2483.50	43.92 AV	54.00	-10.08	1.65 H	136	12.33	31.59
4	4924.00	47.42 PK	74.00	-26.58	1.03 H	23	10.15	37.27
4	4924.00	39.22 AV	54.00	-14.78	1.03 H	23	1.95	37.27

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	1600.00	52.37 PK	74.00	-21.63	1.06 V	7	24.26	28.11
1	1600.00	44.97 AV	54.00	-9.03	1.06 V	7	16.86	28.11
2	1920.00	53.10 PK	87.54	-34.44	1.22 V	314	24.00	29.10
2	1920.00	46.13 AV	84.24	-38.11	1.22 V	314	17.03	29.10
3	*2462.00	107.54 PK			1.12 V	347	76.04	31.50
3	*2462.00	104.24 AV			1.12 V	347	72.74	31.50
4	2483.50	54.87 PK	74.00	-19.13	1.12 V	347	23.28	31.59
4	2483.50	45.34 AV	54.00	-8.66	1.12 V	347	13.75	31.59
5	3446.00	49.68 PK	87.54	-37.86	1.34 V	225	16.39	33.29
5	3446.00	42.75 AV	84.24	-41.49	1.34 V	225	9.46	33.29
6	4924.00	50.18 PK	74.00	-23.82	1.12 V	272	12.91	37.27
6	4924.00	45.03 AV	54.00	-8.97	1.12 V	272	7.76	37.27

RMARKS: 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.

802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	20deg. C, 64%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

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	1280.00	46.18 PK	78.09	-31.91	1.17 H	14	18.65	27.53
1	1280.00	43.35 AV	69.35	-26.00	1.17 H	14	15.82	27.53
2	2390.00	59.64 PK	74.00	-14.36	1.41 H	65	28.42	31.22
2	2390.00	45.48 AV	54.00	-8.52	1.41 H	65	14.26	31.22
3	*2412.00	98.09 PK			1.43 H	64	66.78	31.31
3	*2412.00	89.35 AV			1.43 H	64	58.04	31.31
4	4824.00	46.21 PK	74.00	-27.79	1.26 H	91	9.21	37.00
4	4824.00	34.03 AV	54.00	-19.97	1.26 H	91	-2.97	37.00

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	1600.00	45.49 PK	74.00	-28.51	1.10 V	133	17.38	28.11
1	1600.00	42.94 AV	54.00	-11.06	1.10 V	133	14.83	28.11
2	1920.00	47.45 PK	88.14	-40.69	1.13 V	137	18.34	29.10
2	1920.00	45.24 AV	79.09	-33.85	1.13 V	137	16.13	29.10
3	2390.00	68.30 PK	74.00	-5.70	1.27 V	350	37.08	31.22
3	2390.00	51.19 AV	54.00	-2.81	1.27 V	350	19.97	31.22
4	*2412.00	108.14 PK			1.25 V	360	76.83	31.31
4	*2412.00	99.09 AV			1.25 V	360	67.78	31.31
5	4824.00	48.59 PK	74.00	-25.41	1.13 V	142	11.59	37.00
5	4824.00	35.23 AV	54.00	-18.77	1.13 V	142	-1.77	37.00

RMARKS: 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	20deg. C, 64%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

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	1600.00	41.64 PK	74.00	-32.36	1.17 H	360	13.53	28.11
1	1600.00	37.74 AV	54.00	-16.26	1.17 H	360	9.63	28.11
2	1920.00	43.82 PK	78.43	-34.61	1.32 H	45	14.71	29.10
2	1920.00	39.98 AV	69.51	-29.53	1.32 H	45	10.87	29.10
3	*2437.00	98.43 PK			1.12 H	23	67.03	31.40
3	*2437.00	89.51 AV			1.12 H	23	58.11	31.40
4	4874.00	46.27 PK	74.00	-27.73	1.25 H	90	9.13	37.14
4	4874.00	33.86 AV	54.00	-20.14	1.25 H	90	-3.28	37.14

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	1600.00	46.32 PK	74.00	-27.68	1.57 V	355	18.21	28.11
1	1600.00	43.92 AV	54.00	-10.08	1.57 V	355	15.81	28.11
2	1920.00	46.24 PK	88.37	-42.13	1.27 V	327	17.13	29.10
2	1920.00	43.43 AV	79.46	-36.03	1.27 V	327	14.32	29.10
3	*2437.00	108.37 PK			1.13 V	360	76.97	31.40
3	*2437.00	99.46 AV			1.13 V	360	68.06	31.40
4	4874.00	46.83 PK	74.00	-27.17	1.06 V	244	9.56	37.27
4	4874.00	35.16 AV	54.00	-18.84	1.06 V	244	-2.11	37.27

RMARKS: 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	20deg. C, 64%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

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	1600.00	42.07 PK	74.00	-31.93	1.67 H	360	13.96	28.11
1	1600.00	38.04 AV	54.00	-15.96	1.67 H	360	9.93	28.11
2	1920.00	42.63 PK	78.25	-35.62	1.31 H	360	13.52	29.10
2	1920.00	39.33 AV	69.31	-29.98	1.31 H	360	10.22	29.10
3	*2462.00	98.25 PK			1.30 H	224	66.75	31.50
3	*2462.00	89.31 AV			1.30 H	224	57.81	31.50
4	2483.50	56.80 PK	74.00	-17.20	1.30 H	222	25.21	31.59
4	2483.50	45.67 AV	54.00	-8.33	1.30 H	222	14.08	31.59

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	1600.00	52.70 PK	74.00	-21.30	1.00 V	133	24.59	28.11
1	1600.00	44.34 AV	54.00	-9.66	1.00 V	133	16.23	28.11
2	1920.00	53.26 PK	88.58	-35.32	1.00 V	279	24.16	29.10
2	1920.00	44.51 AV	79.55	-35.04	1.00 V	279	15.41	29.10
3	*2462.00	108.58 PK			1.24 V	340	77.08	31.50
3	*2462.00	99.55 AV			1.24 V	340	68.05	31.50
4	2483.50	67.75 PK	74.00	-6.25	1.20 V	360	36.16	31.59
4	2483.50	50.47 AV	54.00	-3.53	1.20 V	360	18.88	31.59

RMARKS: 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	FSEK30	100049	Aug. 14, 2006

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

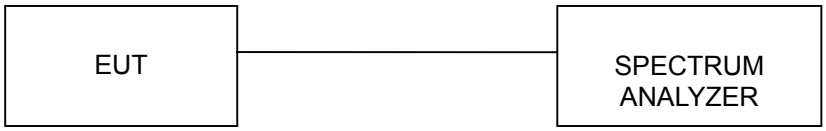
4.3.3 TEST PROCEDURE

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.

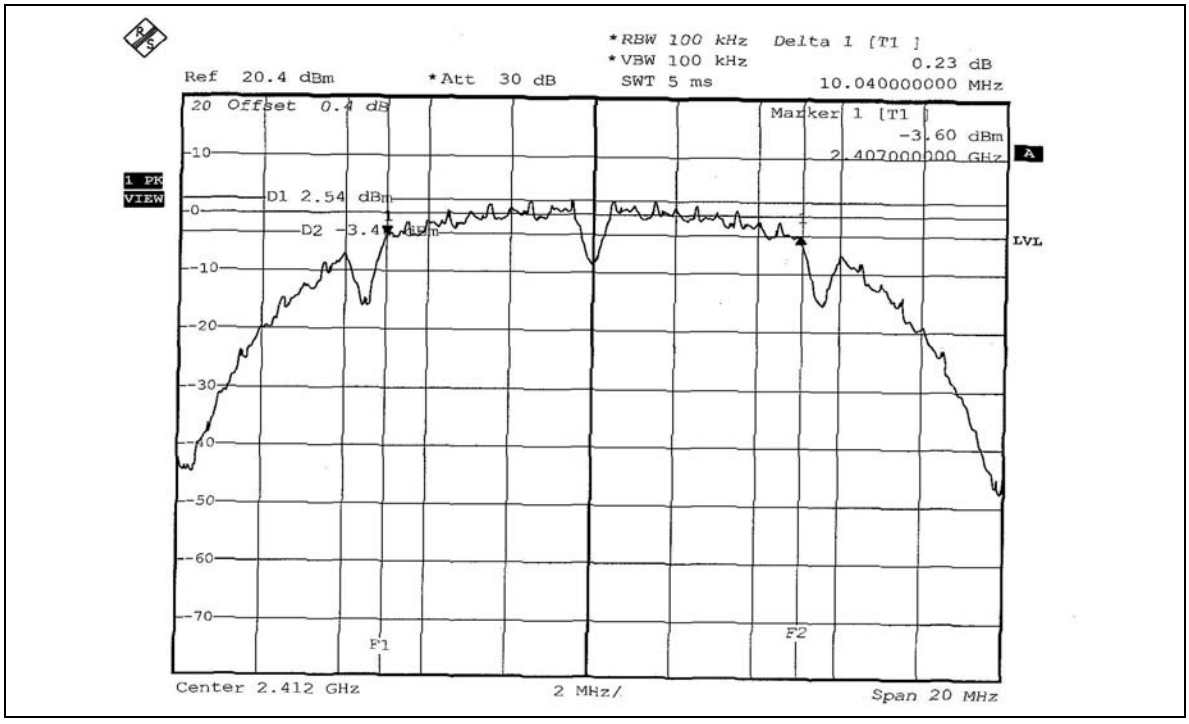
4.3.7 TEST RESULTS

802.11b DSSS MODULATION

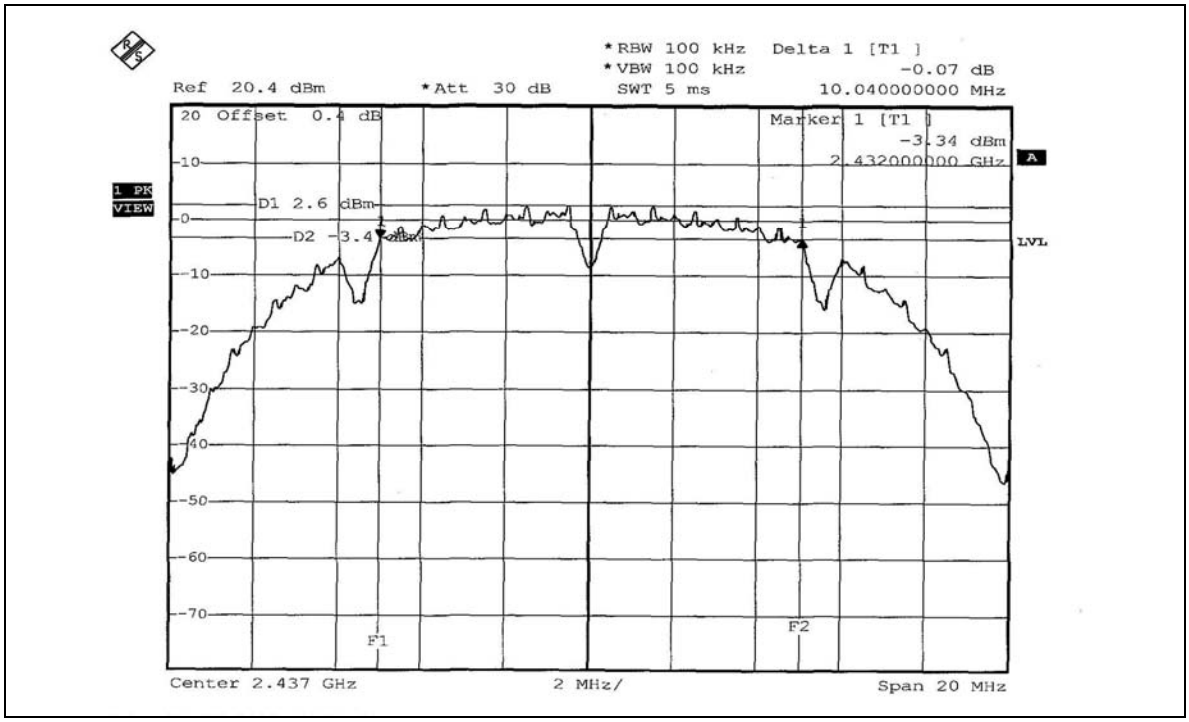
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 66%RH, 991hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.04	0.5	PASS
6	2437	10.04	0.5	PASS
11	2462	10.12	0.5	PASS

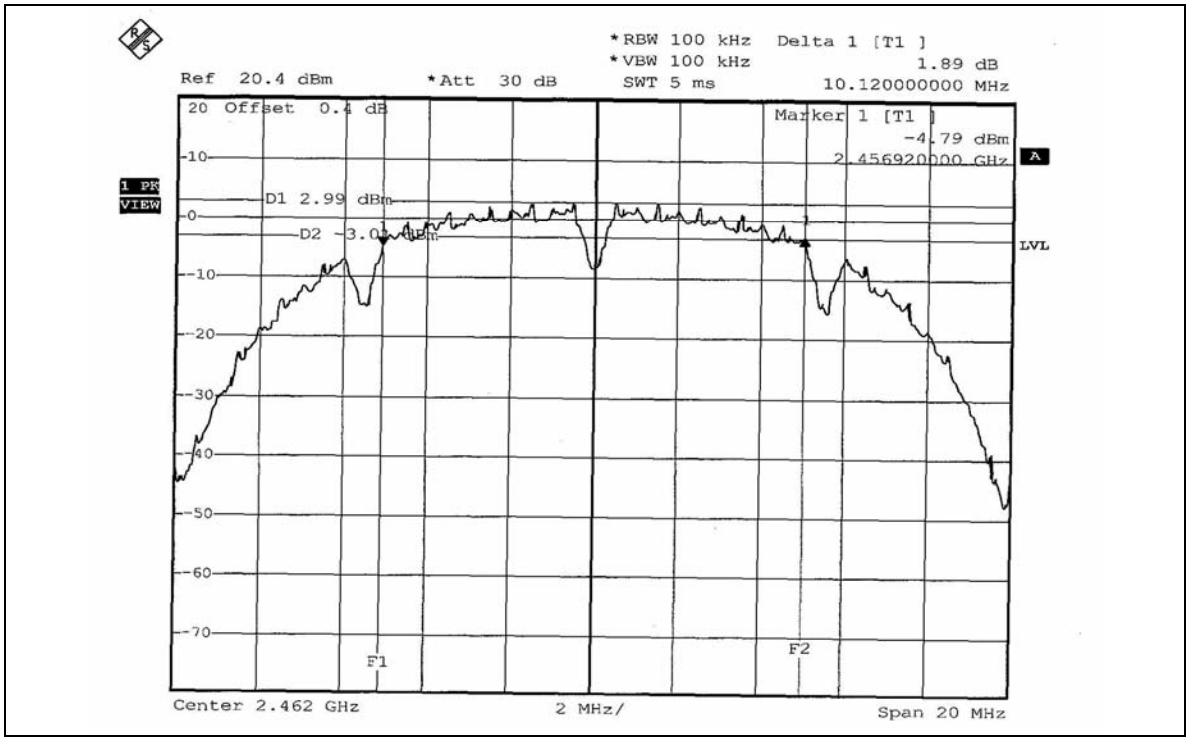
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.23 dB
10.040000000 MHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 1 [T1]
-3.60 dBm
2.407000000 GHz
1 PK
VIEW
D1 2.54 dBm
D2 -3.4 dBm
A
LVL
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.07 dB
10.040000000 MHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 1 [T1]
-3.34 dBm
2.432000000 GHz
1 PK
VIEW
D1 2.6 dBm
D2 -3.4 dBm
A
LVL
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH11

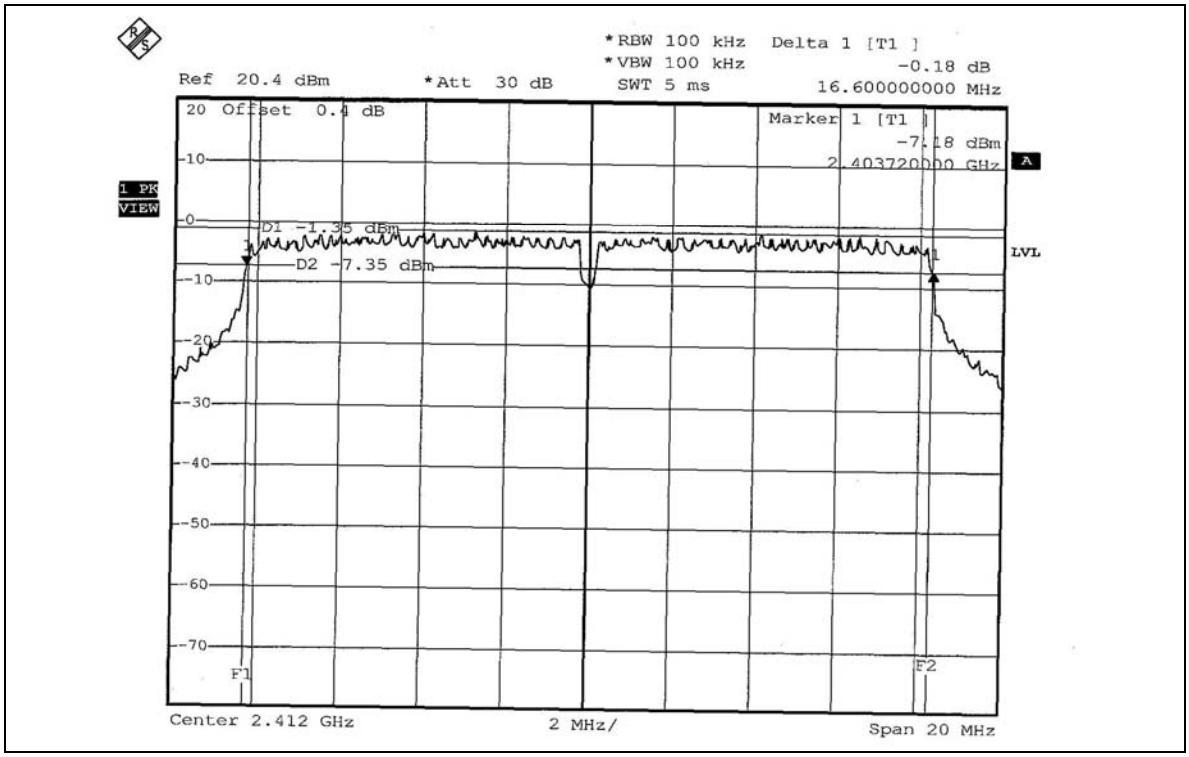

*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
1.89 dB
10.120000000 MHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 1 [T1]
-4.79 dBm
2.456920000 GHz
1 PK VIEW
D1 2.99 dBm
D2 -3.0 dBm
LVL
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

802.11g OFDM MODULATION

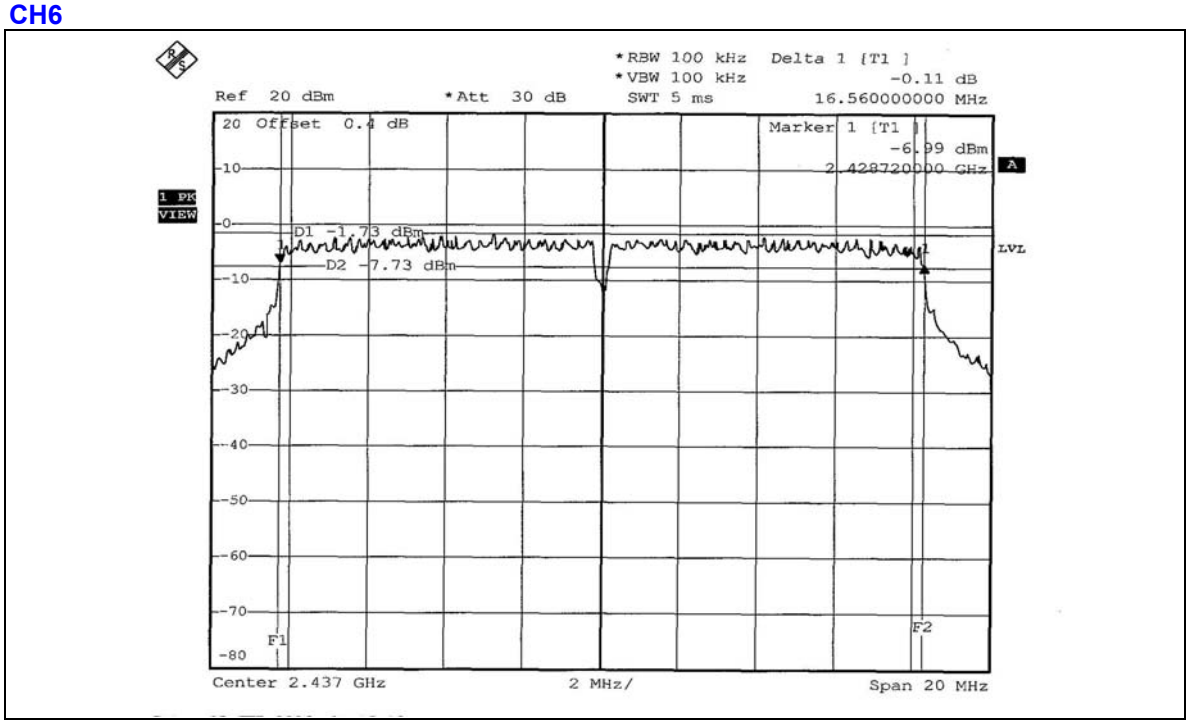
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 66%RH, 991hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.60	0.5	PASS
6	2437	16.56	0.5	PASS
11	2462	16.56	0.5	PASS

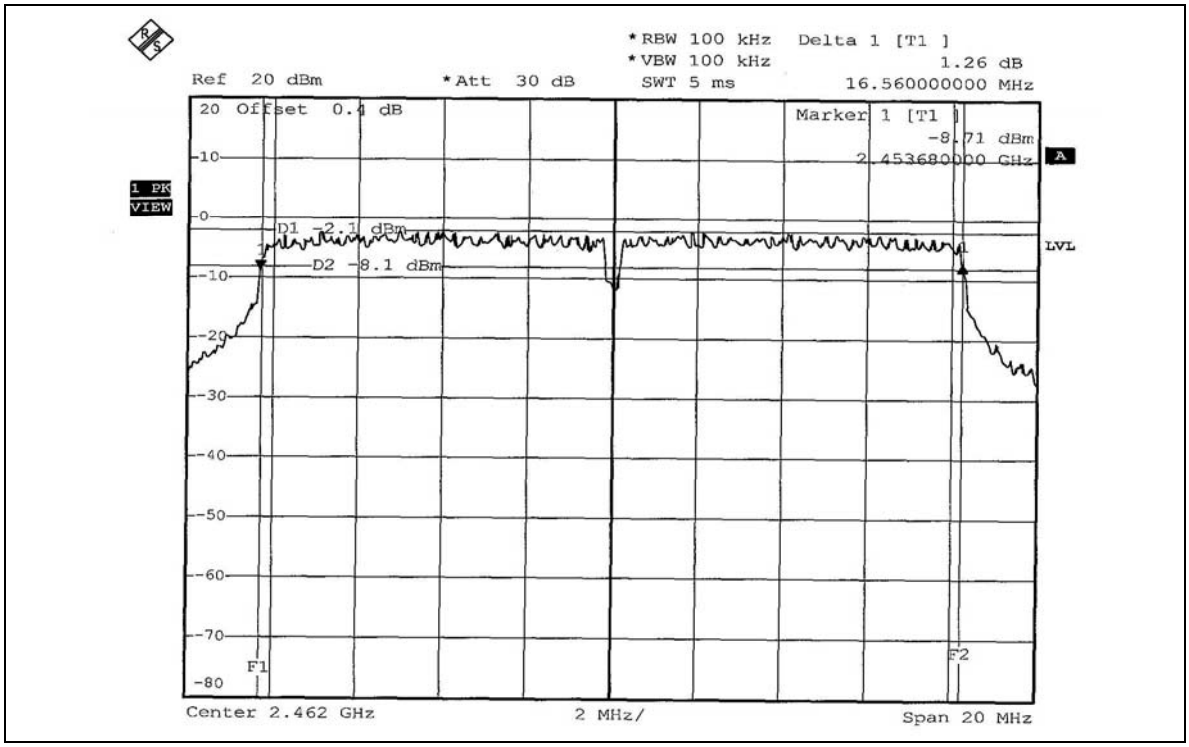
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.18 dB
16.600000000 MHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 1 [T1]
-7.18 dBm
2.403720000 GHz
1 PK VIEW
D1 -1.35 dBm
D2 -7.35 dBm
LVL
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.11 dB
16.560000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 1 [T1]
-6.99 dBm
2.428720000 GHz
1 PK VIEW
D1 -1.73 dBm
D2 -7.73 dBm
LVL
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
1.26 dB
16.560000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 1 [T1]
-8.71 dBm
2.453680000 GHz
1 PK
VIEW
A
LVL
D1 -2.1 dBm
D2 -8.1 dBm
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

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
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2006
DIGITAL RT OSCILLOSCOPE	TDS1012	C037299	Nov. 28, 2006
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 Item 4.3.6

4.4.7 TEST RESULTS

802.11b DSSS MODULATION

MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 66%RH, 991hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	44.771	16.51	30	PASS
6	2437	45.186	16.55	30	PASS
11	2462	44.668	16.50	30	PASS

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 66%RH, 991hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	56.364	17.51	30	PASS
6	2437	56.754	17.54	30	PASS
11	2462	57.016	17.56	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
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

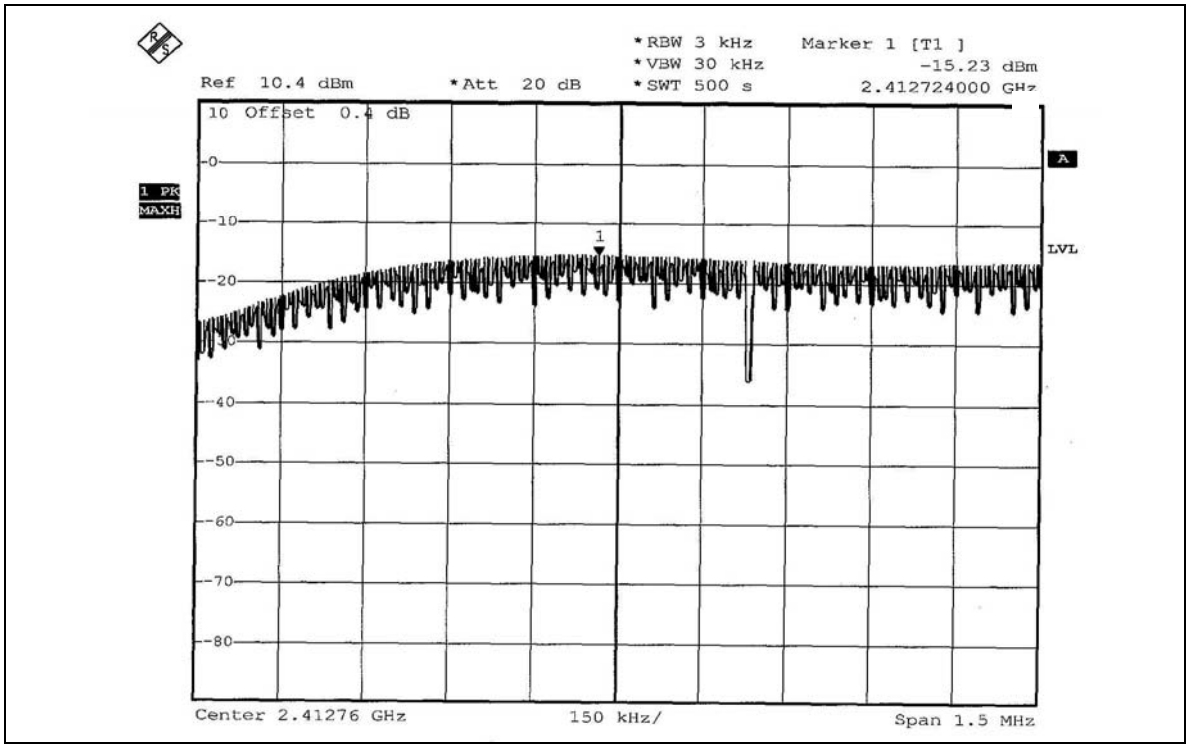
4.5.7 TEST RESULTS

802.11b DSSS MODULATION

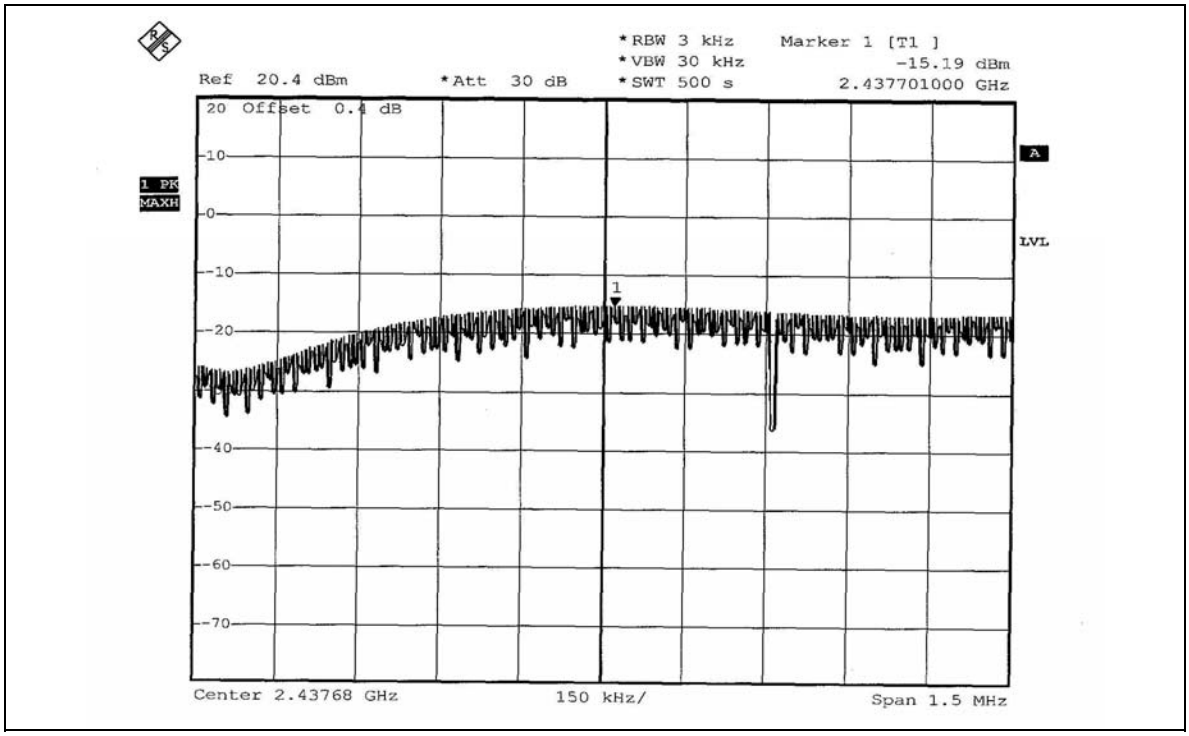
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 66%RH, 991hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-15.23	8	PASS
6	2437	-15.19	8	PASS
11	2462	-15.55	8	PASS

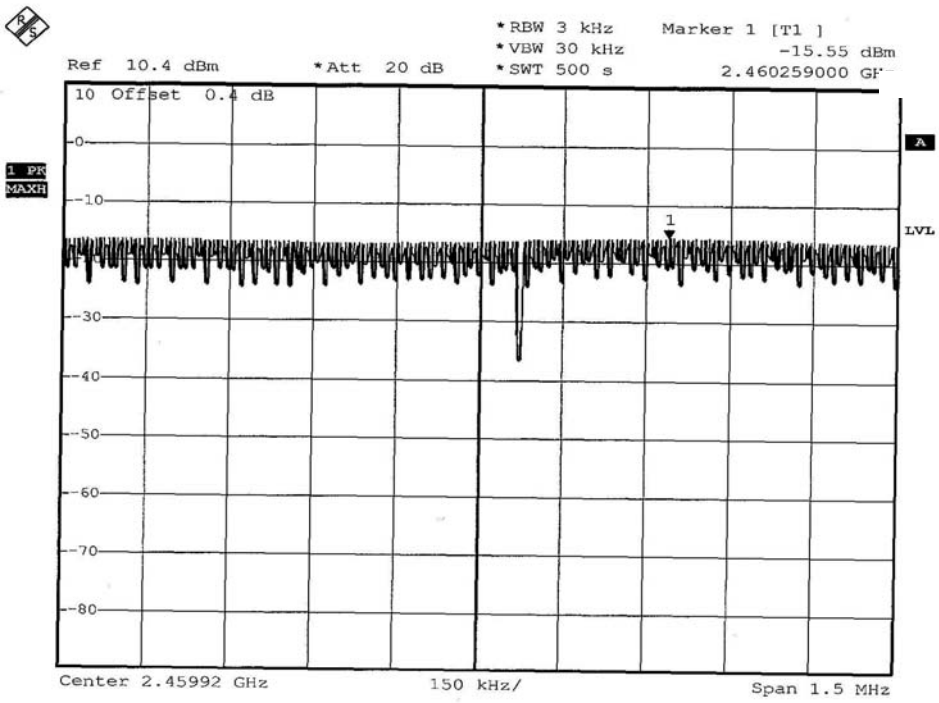
CH1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-15.23 dBm
2.412724000 GHz
Ref 10.4 dBm
*Att 20 dB
10 Offset 0.4 dB
1 PK
MAXH
A
LVL
Center 2.41276 GHz
150 kHz/
Span 1.5 MHz

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-15.19 dBm
2.437701000 GHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
1 PK
MAXH
A
LVL
Center 2.43768 GHz
150 kHz/
Span 1.5 MHz

CH11

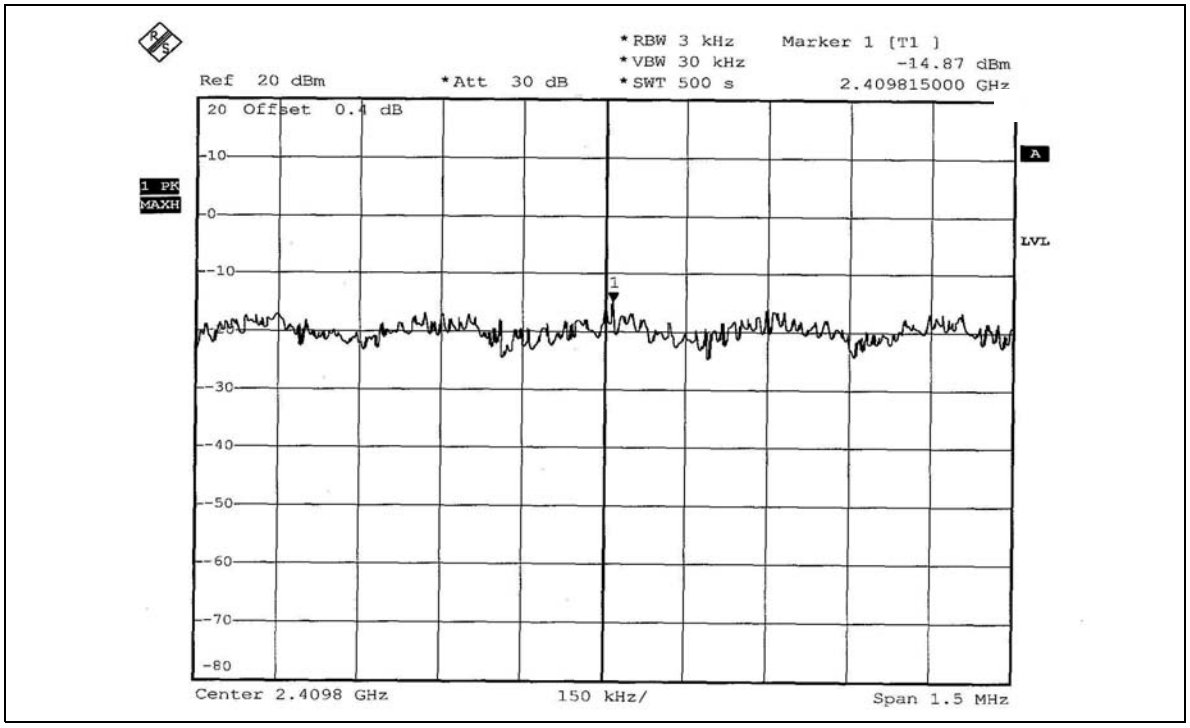

*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-15.55 dBm
2.460259000 GH
Ref 10.4 dBm
*Att 20 dB
10 Offset 0.4 dB
1 PR
MAXH
A
LVL
-0
-10
-30
-40
-50
-60
-70
-80
Center 2.45992 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM MODULATION

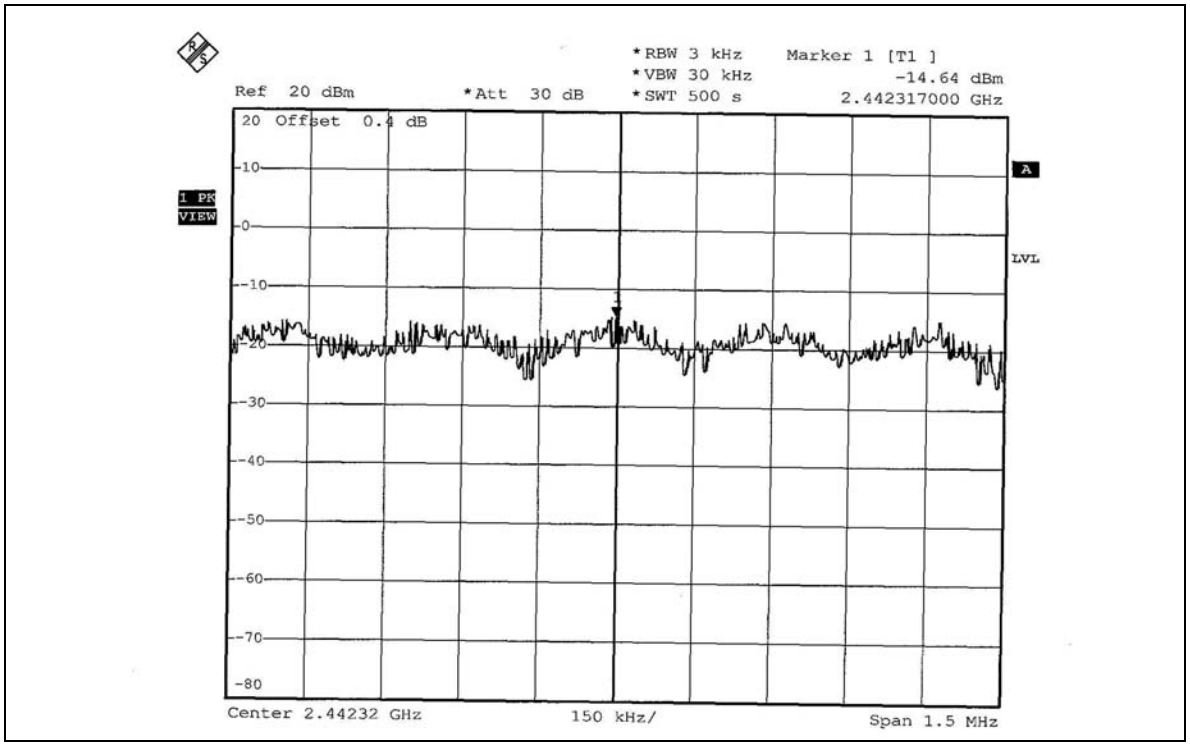
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26deg.C, 66%RH, 991hPa
TESTED BY	Match Tsui		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-14.87	8	PASS
6	2437	-14.64	8	PASS
11	2462	-14.19	8	PASS

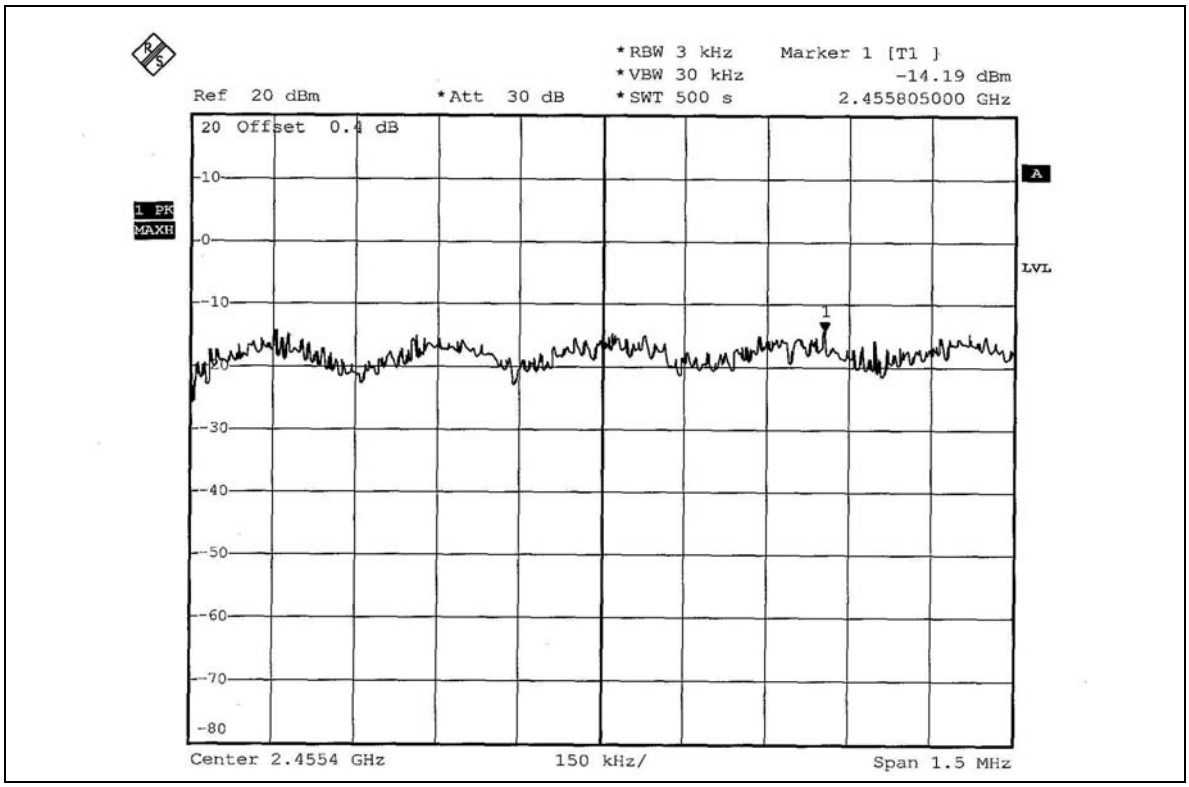
CH1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-14.87 dBm
2.409815000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
1 PK
MAXH
A
LVL
-10
0
-10
-30
-40
-50
-60
-70
-80
Center 2.4098 GHz
150 kHz/
Span 1.5 MHz

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-14.64 dBm
2.442317000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
1 PK
VIEW
A
LVL
-10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.44232 GHz
150 kHz/
Span 1.5 MHz

CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-14.19 dBm
2.455805000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
1 PK
MAXH
A
LVL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4554 GHz
150 kHz/
Span 1.5 MHz

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
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded. The spectrum plots (Peak RBW=VBW=100kHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

The spectrum plots are attached on the following 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

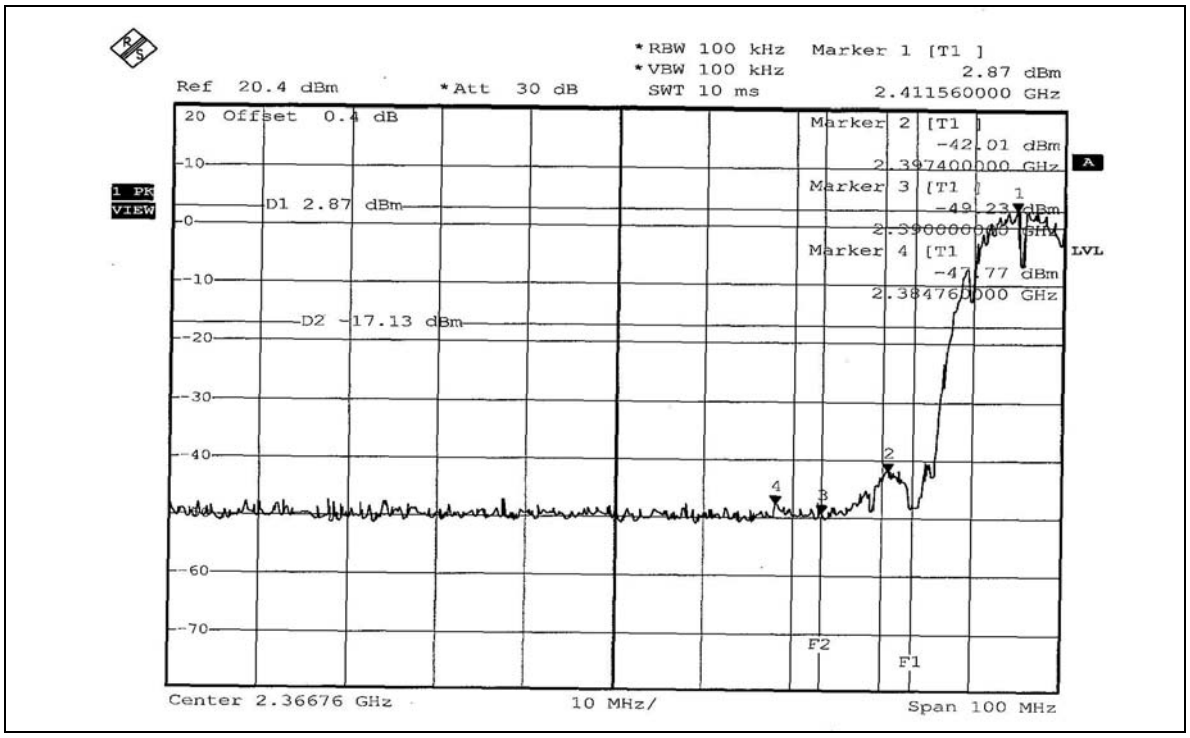
NOTE 1: The band edge emission plot of DSSS technique on the next page shows 50.64dBc between carrier maximum power and local maximum emission in restrict band (2.38476GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 107.14dBuV/m (Peak), so the maximum field strength in restrict band is 107.14 – 50.64 = 56.50dBuV/m which is under 74dBuV/m limit.

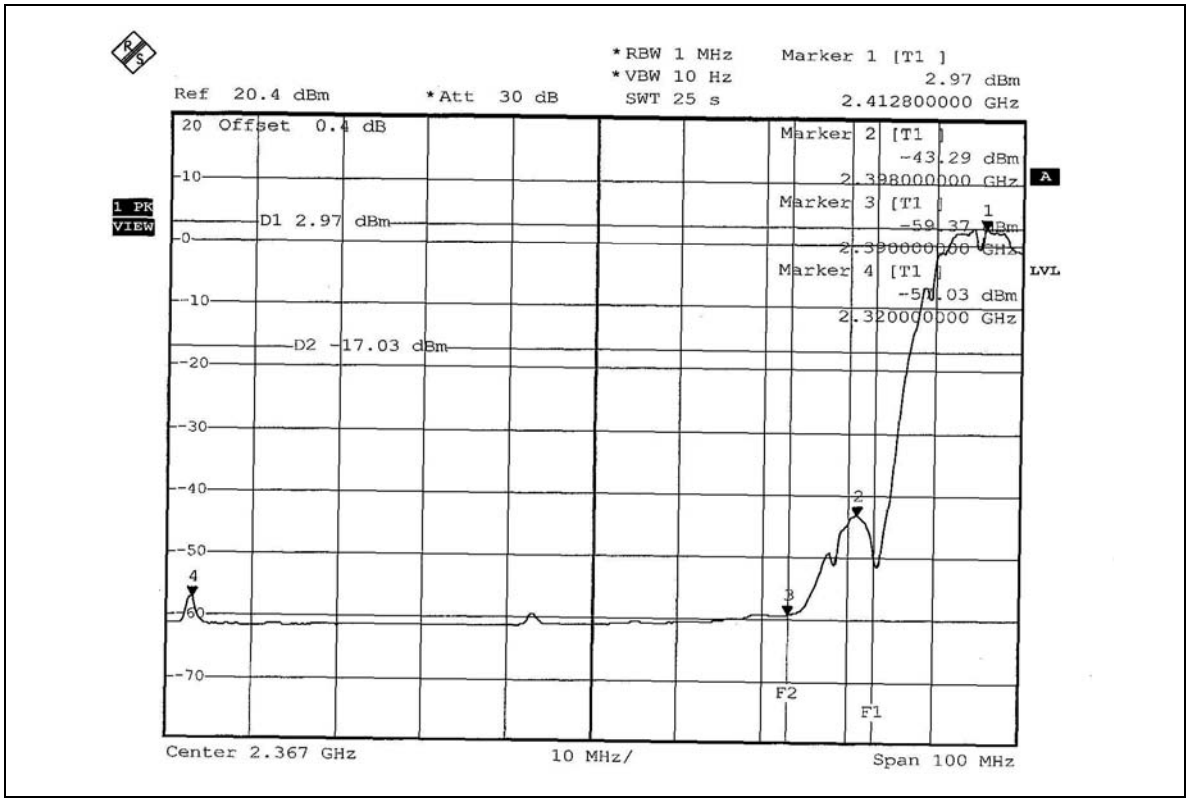
The band edge emission plot of DSSS technique on the next page shows 60.00dBc between carrier maximum power and local maximum emission in restrict band (2.32000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.02dBuV/m (Average), so the maximum field strength in restrict band is 104.02 – 60.00 = 44.02dBuV/m which is under 54dBuV/m limit.

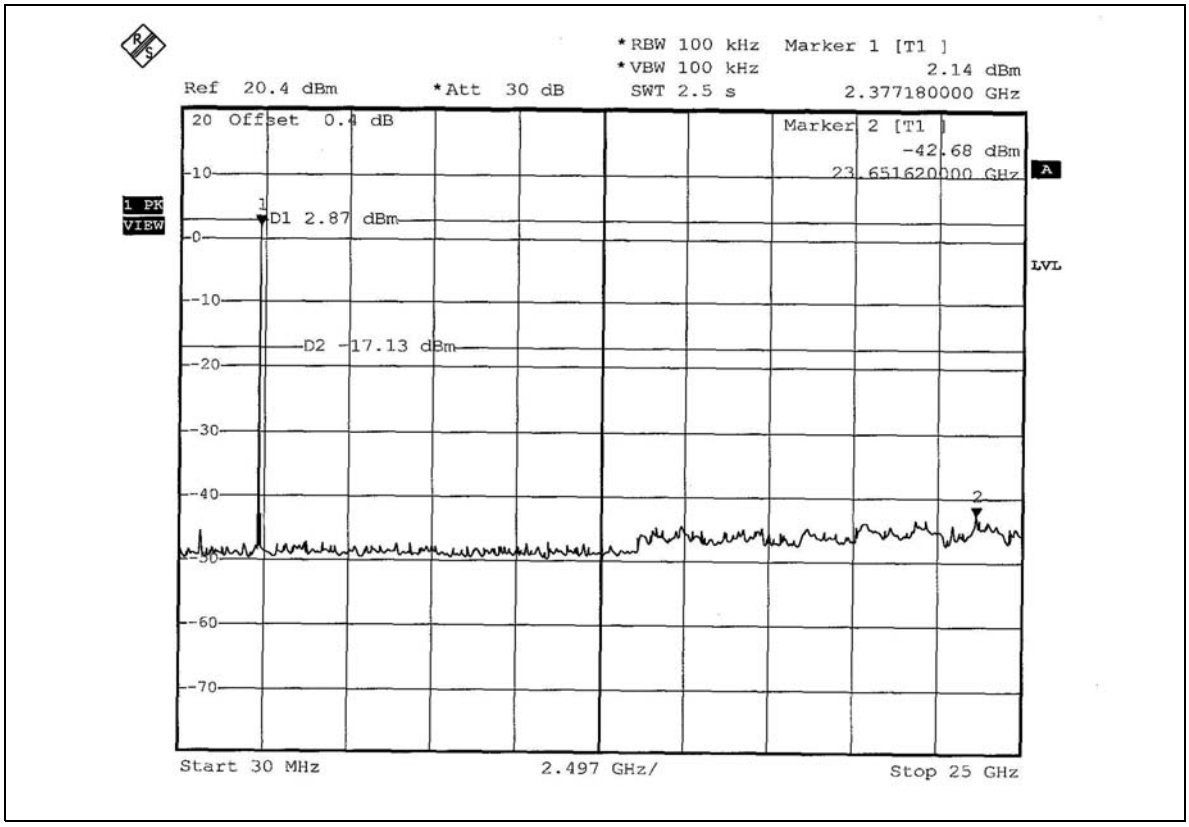
NOTE 2: The band edge emission plot of DSSS technique on the next second page shows 51.51dBc between carrier maximum power and local maximum emission in restrict band (2.49030GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 107.54dBuV/m (Peak), so the maximum field strength in restrict band is 107.54 – 51.51 = 56.03dBuV/m which is under 74dBuV/m limit.

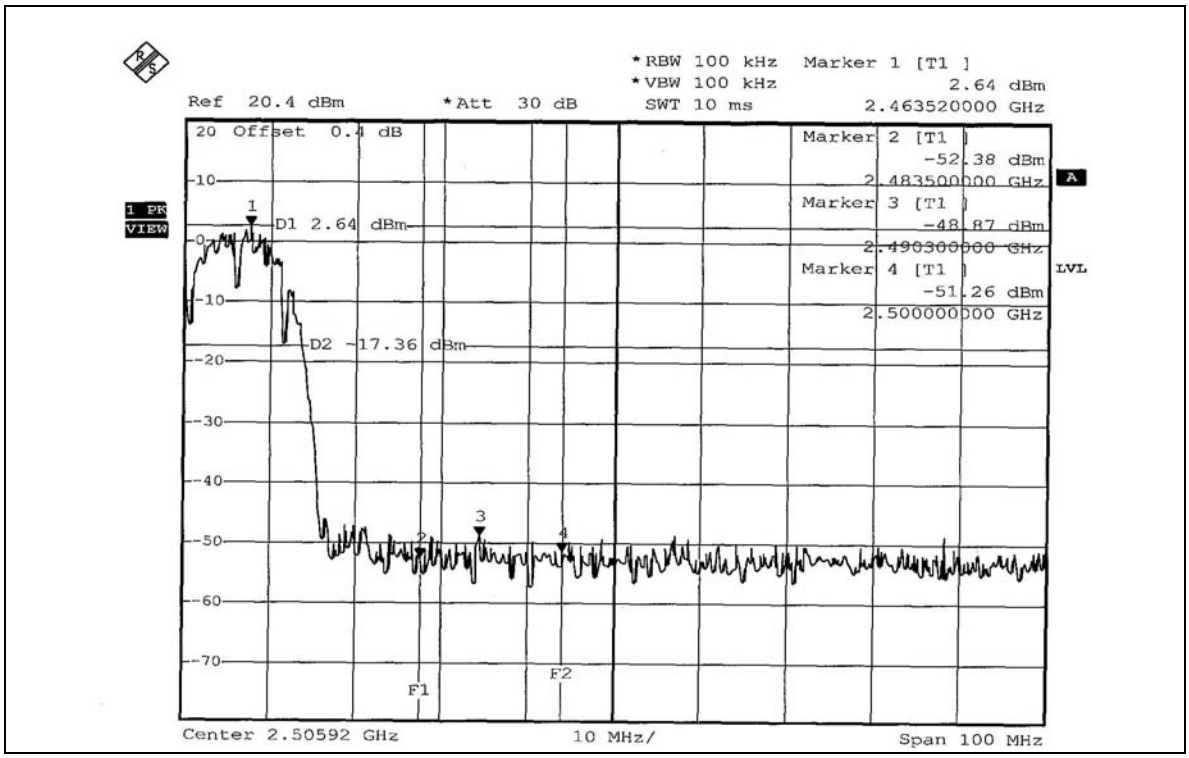
The band edge emission plot of DSSS technique on the next third page shows 60.96dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 104.24dBuV/m (Average), so the maximum field strength in restrict band is 104.24 – 60.96 = 43.28dBuV/m which is under 54dBuV/m limit.

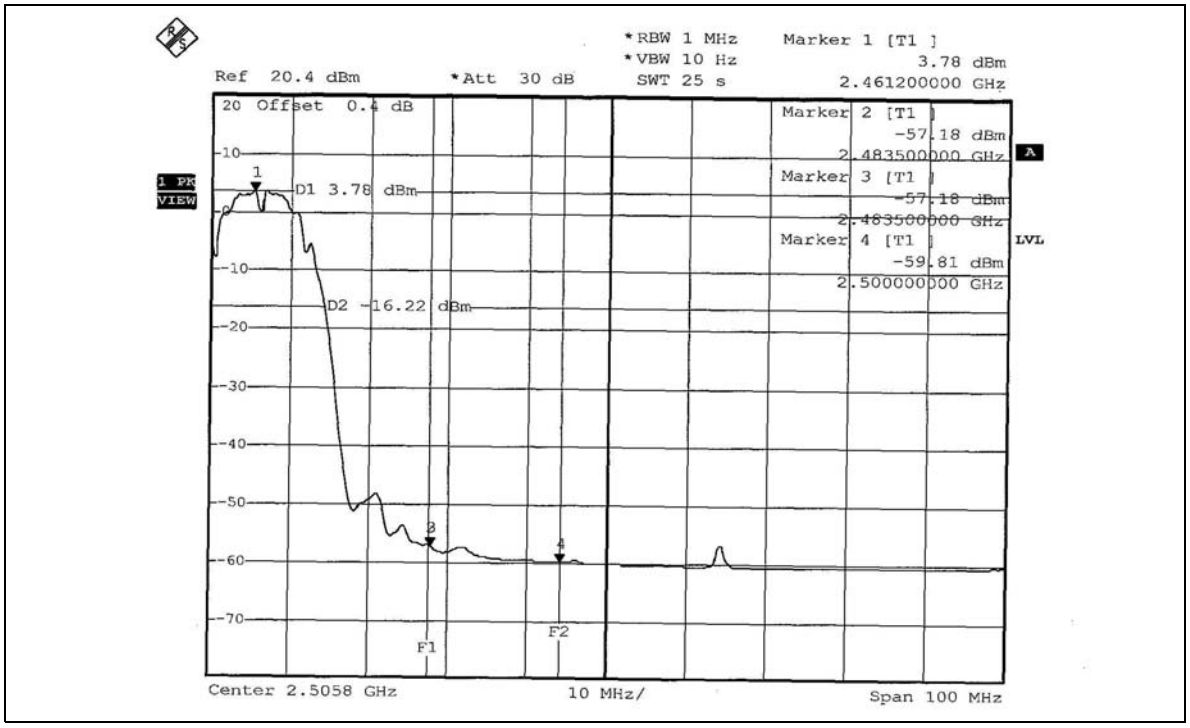
802.11b DSSS MODULATION

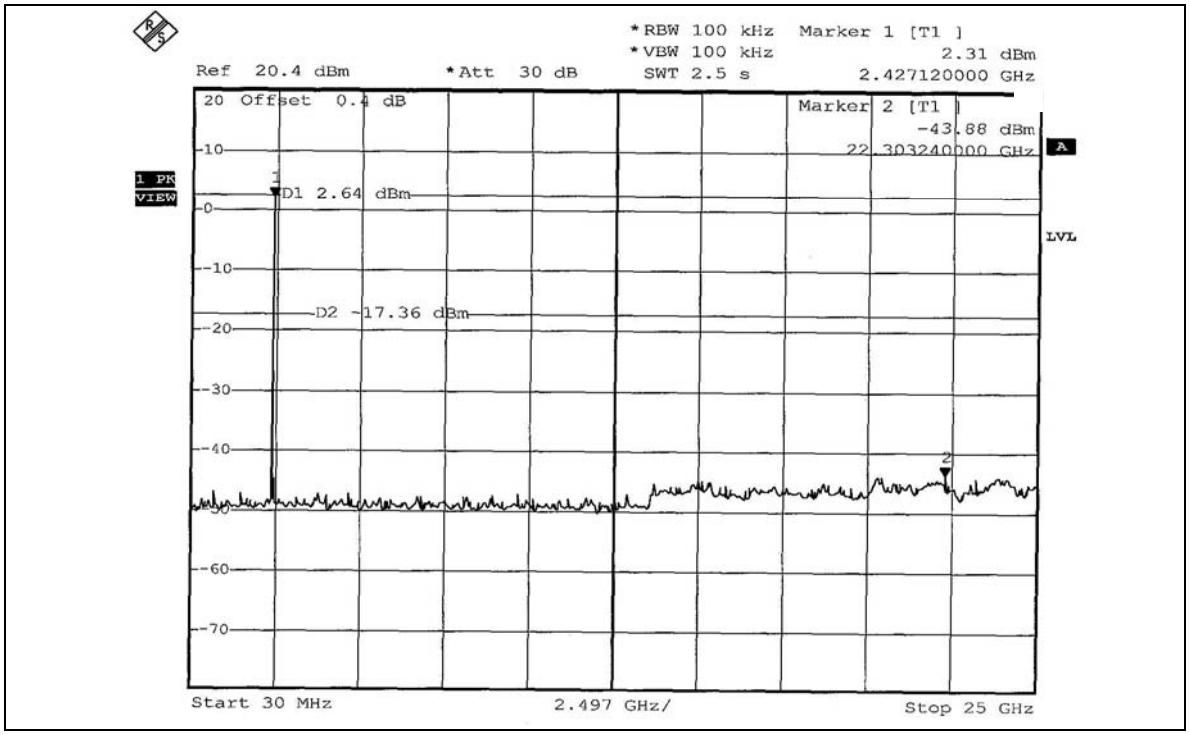





*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
2.14 dBm
2.377180000 GHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-42.68 dBm
23.651620000 GHz
1 PK
VIEW
D1 2.87 dBm
D2 -17.13 dBm
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
2.64 dBm
2.463520000 GHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-52.38 dBm
2.483500000 GHz
Marker 3 [T1]
-48.87 dBm
2.490300000 GHz
Marker 4 [T1]
-51.26 dBm
2.500000000 GHz
1 PK
VIEW
D1 2.64 dBm
D2 -17.36 dBm
A
LVL
F1
F2
Center 2.50592 GHz
10 MHz/
Span 100 MHz


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
3.78 dBm
2.461200000 GHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-57.18 dBm
2.483500000 GHz
Marker 3 [T1]
-57.18 dBm
2.483500000 GHz
Marker 4 [T1]
-59.81 dBm
2.500000000 GHz
1 PK VIEW
D1 3.78 dBm
D2 -16.22 dBm
F1
F2
A
LVL
Center 2.5058 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
2.31 dBm
2.427120000 GHz
Ref 20.4 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-43.68 dBm
22.303240000 GHz
1 PK VIEW
D1 2.64 dBm
D2 -17.36 dBm
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION

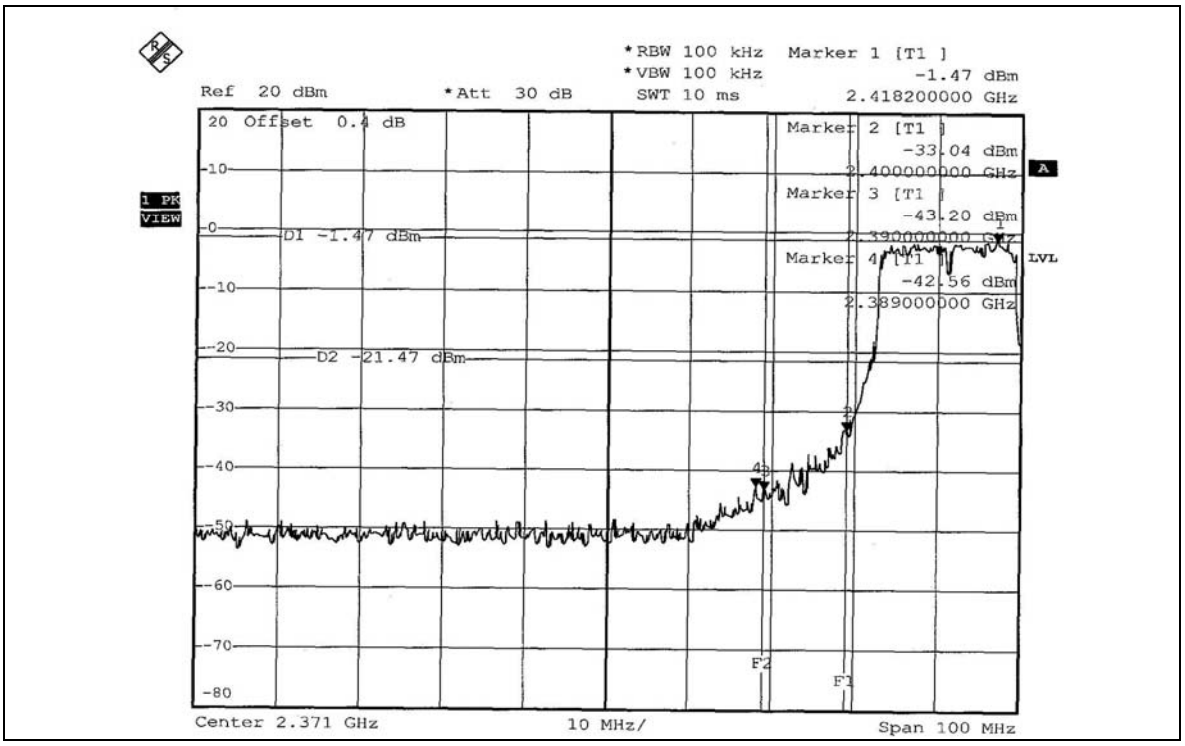
NOTE 1: The band edge emission plot of OFDM technique on the next page shows 41.09dBc between carrier maximum power and local maximum emission in restrict band (2.38900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.14dBuV/m (Peak), so the maximum field strength in restrict band is 108.14 – 41.09 = 67.05dBuV/m which is under 74dBuV/m limit.

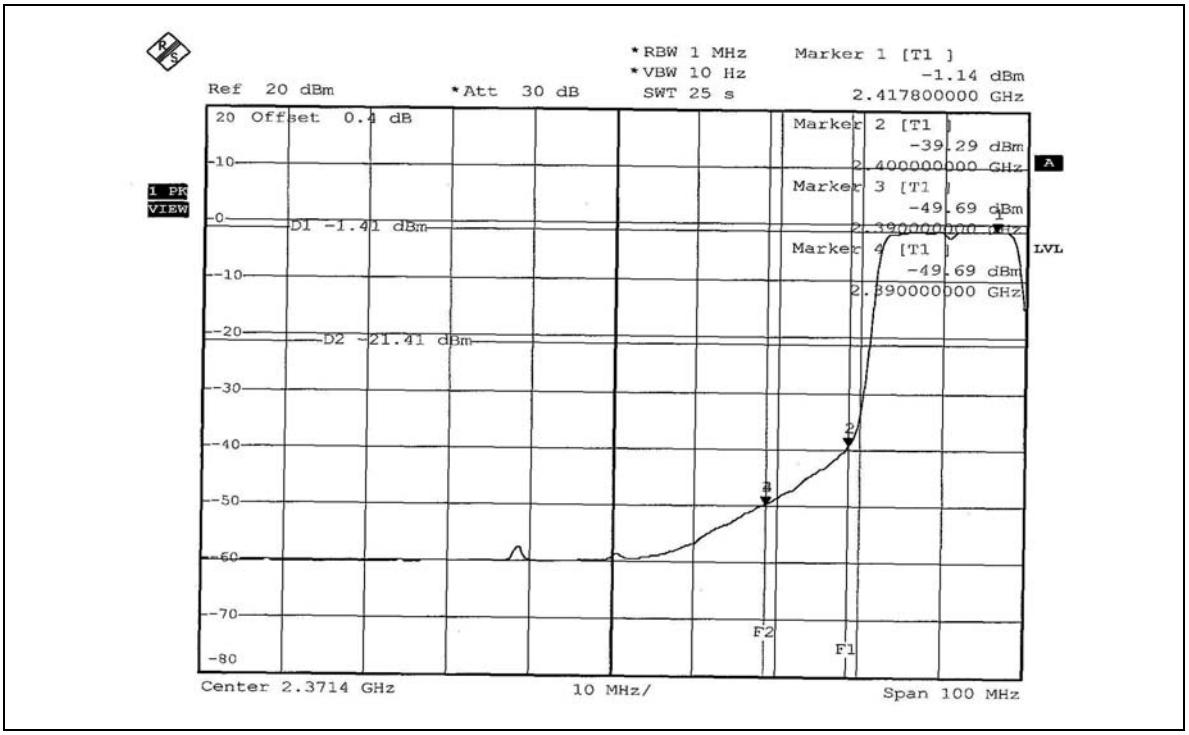
The band edge emission plot of OFDM technique on the next page shows 48.55dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.09dBuV/m (Average), so the maximum field strength in restrict band is 99.09 – 48.55 = 50.54dBuV/m which is under 54dBuV/m limit.

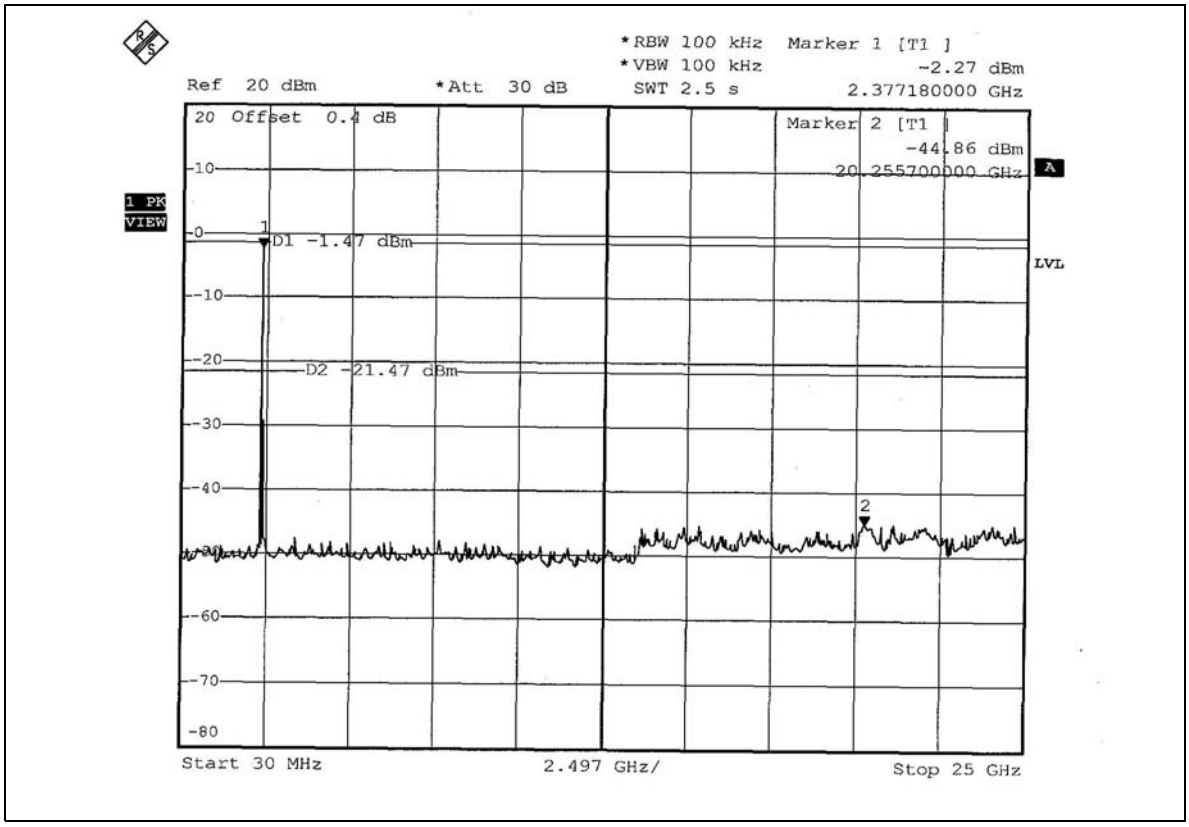
NOTE 2: The band edge emission plot of OFDM technique on the next second page shows 40.68dBc between carrier maximum power and local maximum emission in restrict band (2.48520GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 108.58dBuV/m (Peak), so the maximum field strength in restrict band is 108.58 – 40.68 = 67.90dBuV/m which is under 74dBuV/m limit.

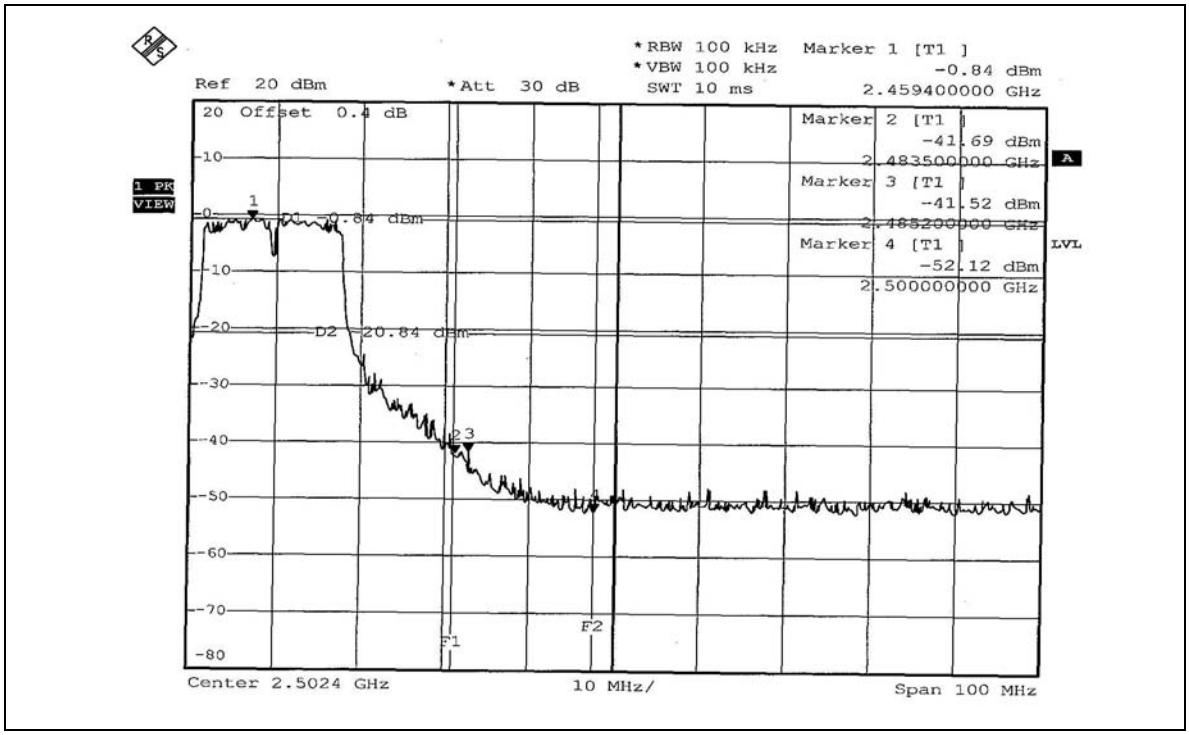
The band edge emission plot of OFDM technique on the next third page shows 48.04dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 99.55dBuV/m (Average), so the maximum field strength in restrict band is 99.55 – 48.04 = 51.51dBuV/m which is under 54dBuV/m limit.

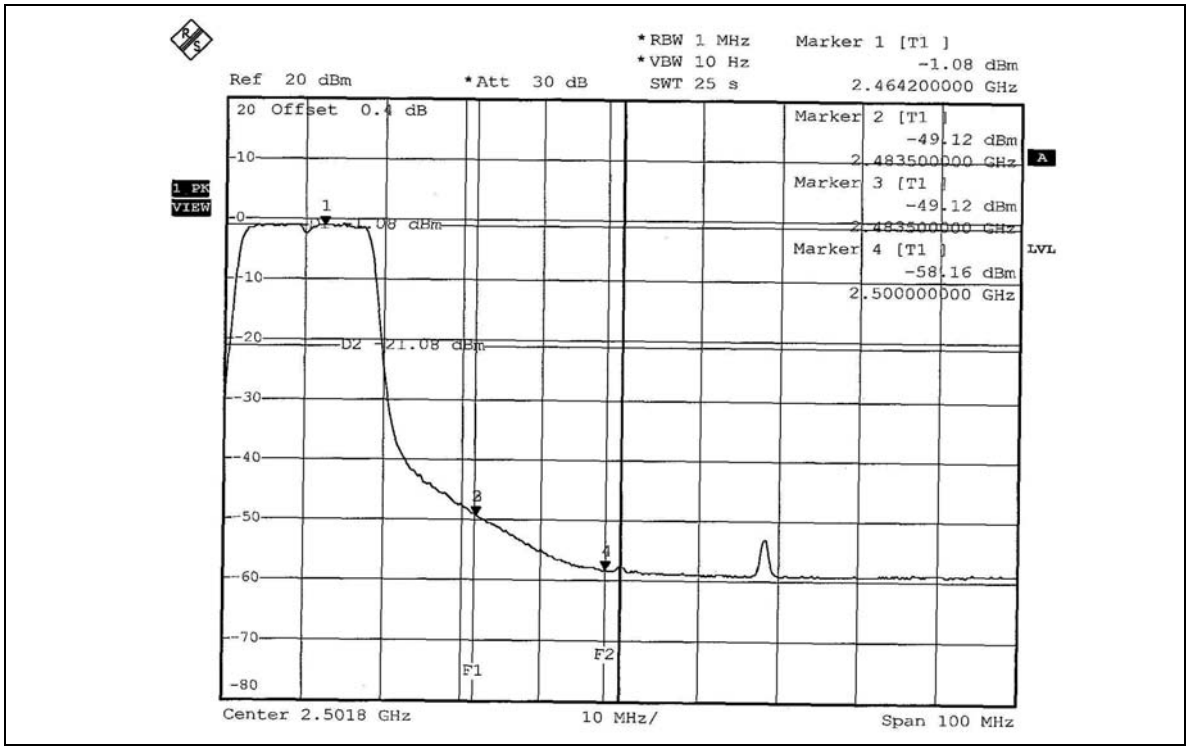
802.11g OFDM MODULATION

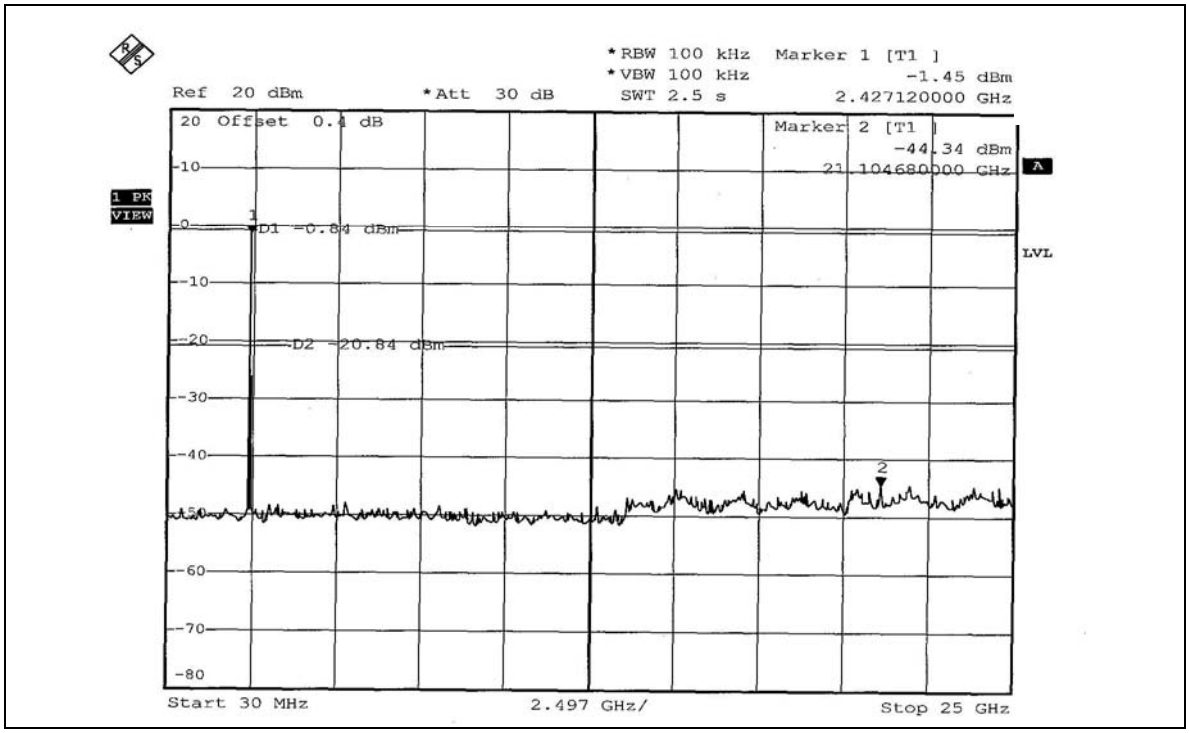





*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-2.27 dBm
2.377180000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-44.86 dBm
20.255700000 GHz
1 PK
VIEW
D1 -1.47 dBm
D2 -21.47 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-0.84 dBm
2.459400000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-41.69 dBm
2.483500000 GHz
Marker 3 [T1]
-41.52 dBm
2.485200000 GHz
Marker 4 [T1]
-52.12 dBm
2.500000000 GHz
1 PK
VIEW
D1 -0.84 dBm
D2 -20.84 dBm
LVL
F1
F2
Center 2.5024 GHz
10 MHz/
Span 100 MHz


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-1.08 dBm
2.464200000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-49.12 dBm
2.483500000 GHz
Marker 3 [T1]
-49.12 dBm
2.483500000 GHz
Marker 4 [T1]
-58.16 dBm
2.500000000 GHz
1 PK
VIEW
A
LVL
D2 -21.08 dBm
F1
F2
Center 2.5018 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
-1.45 dBm
2.427120000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 0.4 dB
Marker 2 [T1]
-44.34 dBm
21.104680000 GHz
1 PK
VIEW
A
LVL
D1 -0.84 dBm
D2 -20.84 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz

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.

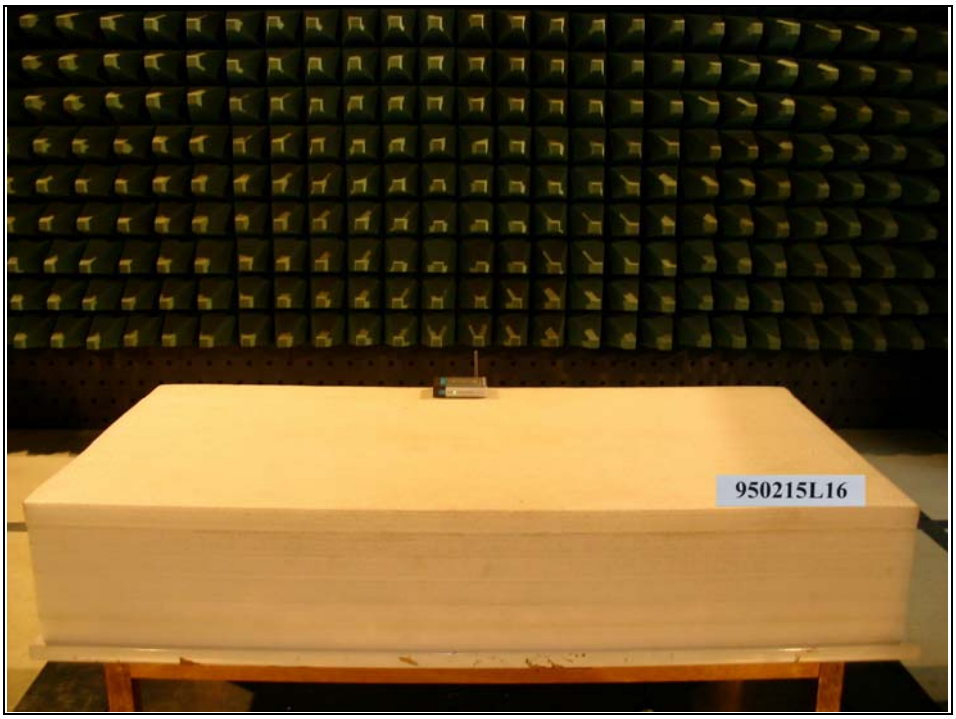
4.7.2 ANTENNA CONNECTED CONSTRUCTION

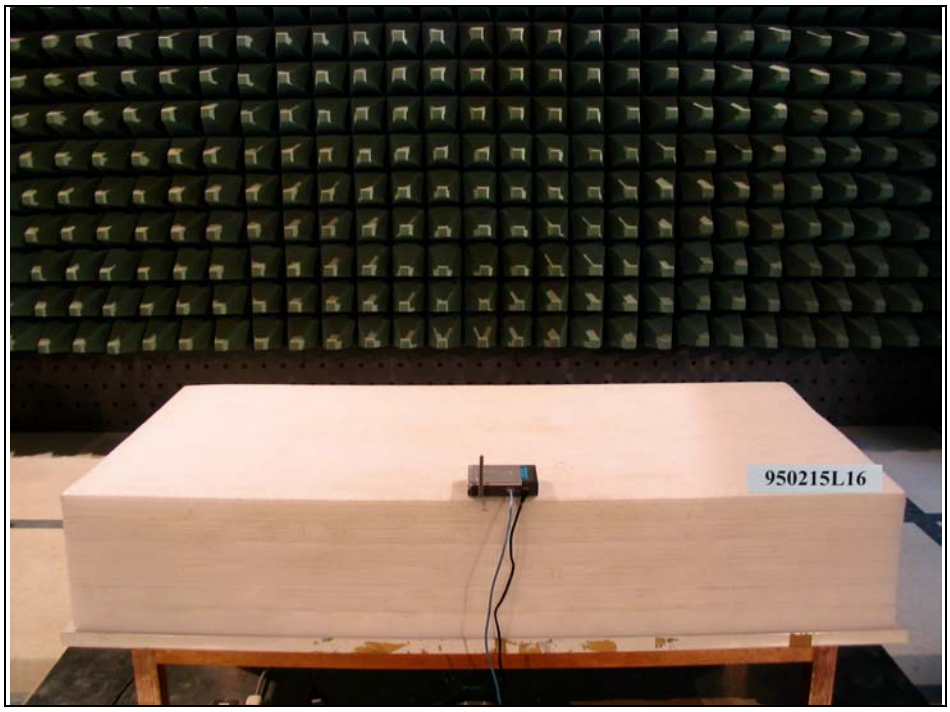
The antenna used in this product is Dipole antenna with RSMA antenna connector. The maximum Gain of the antenna is 2dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST





6 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, DGT
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: 886-2-26052943

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

Linko RF Lab.
Tel: 886-3-3270910
Fax: 886-3-3270892

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.