FCC TEST REPORT (15.247)

REPORT NO.:	RF951128L10
MODEL NO.:	NWH3054A
RECEIVED:	Nov. 30, 2006
TESTED:	Dec. 14 ~ 16, 2006
ISSUED:	Dec. 18, 2006

APPLICANT:	SENAO INTERNATIONAL CO., LTD.
ADDRESS:	No.500, Fusing 3rd Rd., Hwa-Ya Technical Park, Kuei-Shan Hsiang, Taoyuan County 333, Taiwan, R.O.C.

ISSUED BY:	Advance Data Technology Corporation
LAB ADDRESS:	No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang 244, Taipei Hsien, Taiwan, R.O.C.
TEST LOCATION:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

0528

No.: 2177-01

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1. CERTIFICATION

PRODUCT:	IEEE802.11a/g/b NWH3054A WLAN mini-PCI
MODEL:	NWH3054A
BRAND:	Packet One
APPLICANT:	SENAO INTERNATIONAL CO., LTD.
TESTED:	Dec. 14 ~ 16, 2006
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 : Rennie Wang , **DATE:** Dec. 18, 2006

Rennie Wang

TECHNICAL ACCEPTANCE : Long Chen , **DATE:** Dec. 18, 2006

Responsible for RF

Long Chen

APPROVED BY : Gary Chang , **DATE:** Dec. 18, 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 (Section 15.247)			
Standard Section	**Test Type and Limit**	**Result**	**Remark**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -20.37dB at 0.217MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is –1.01dB at 3883.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.71 dB
	200MHz ~1000MHz	3.73 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	IEEE802.11a/g/b NWH3054A WLAN mini-PCI
MODEL NO.	NWH3054A
FCC ID	NI3-OC86706001
POWER SUPPLY	3.3Vdc from host equipment
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 802.11a: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.725 ~ 5.850GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 802.11a: 5
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz
OUTPUT POWER	45.082mW for 802.11b 79.983mW for 802.11g 57.412mW for 5.725 ~ 5.850GHz
ANTENNA TYPE	Patch antenna with 9.18dBi gain (for 2.4GHz) Patch antenna with 8.69dBi gain (for 5.0GHz)
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

11 channels are provided to the EUT:

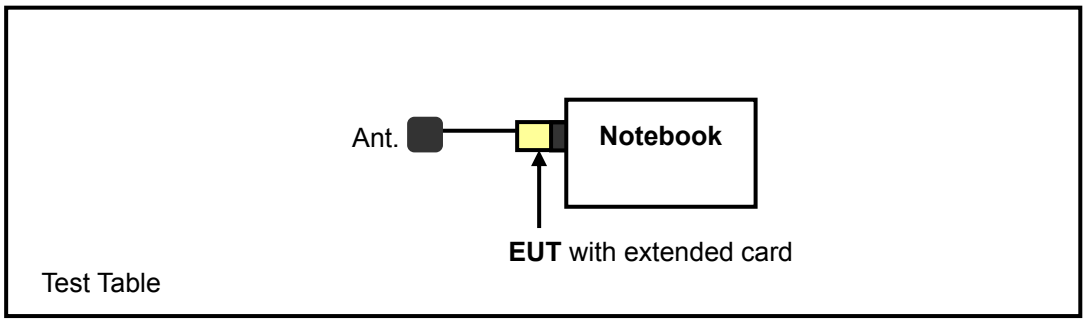
CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

Operated in 5725 ~ 5850MHz band:

5 channels are provided to this EUT:

CHANNEL	FREQUENCY
1	5745 MHz
2	5765 MHz
3	5785 MHz
4	5805 MHz
5	5825 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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
-	802.11a	1 to 5	1	OFDM	BPSK	6

Radiated Emission Test (Below 1 GHz):

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11g	1 to 11	11	OFDM	BPSK	6
-	802.11a	1 to 5	1	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.

EUT CONFIGURE MODE	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
-	802.11a	1 to 5	1, 3, 5	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.

EUT CONFIGURE MODE	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
-	802.11a	1 to 5	1, 5	OFDM	BPSK	6

Antenna Port Conducted Measurement:

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

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
-	802.11a	1 to 5	1, 3, 5	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	12130898320	E2K24CLNS

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

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

4. TEST TYPES AND RESULTS (FOR 802.11b & g 2412~2462MHz BAND)

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	Sep. 25, 2007
RF signal cable Woken	5D-FB	Cable-HYCO3-01	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 2.
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.

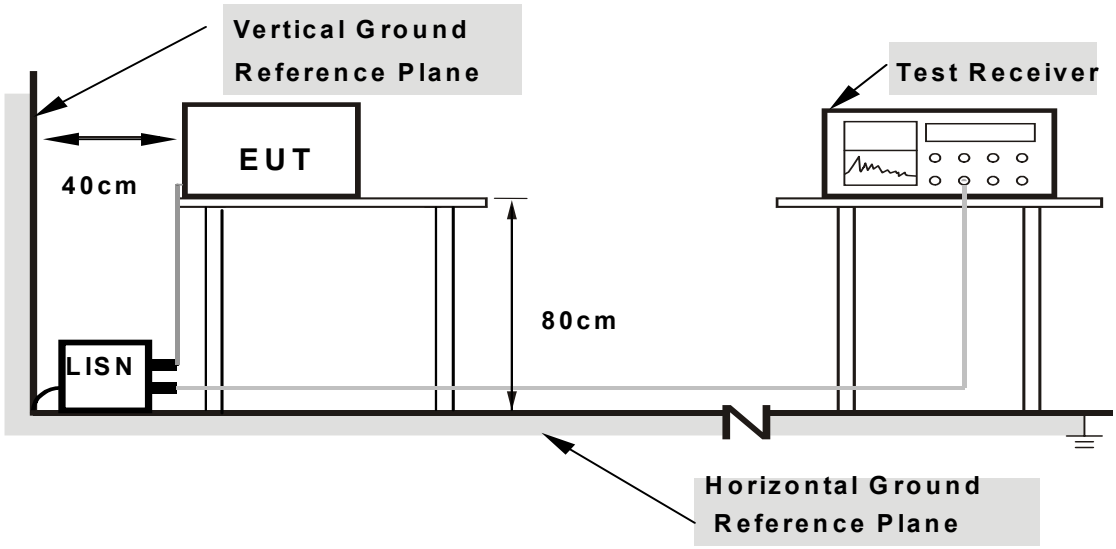
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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 attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

a. Connected the EUT to notebook via extended card and placed on a testing table.
b. The notebook ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
c. The necessary accessories enable the EUT in full functions.

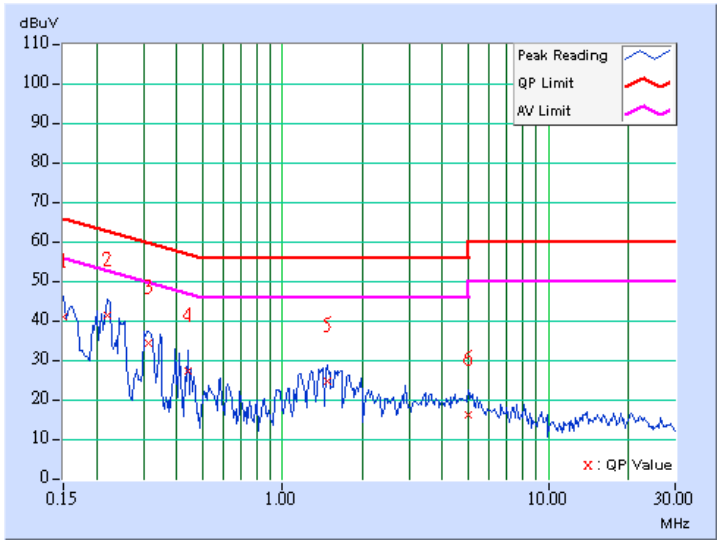
4.1.7 TEST RESULTS

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	**ENVIRONMENTAL CONDITIONS**	20deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	40.60	-	40.70	-	66.00	56.00	-25.30	-
2	0.220	0.10	41.14	-	41.24	-	62.81	52.81	-21.57	-
3	0.314	0.10	34.11	-	34.21	-	59.86	49.86	-25.65	-
4	0.439	0.10	27.11	-	27.21	-	57.08	47.08	-29.87	-
5	1.473	0.15	24.62	-	24.77	-	56.00	46.00	-31.23	-
6	4.992	0.37	15.75	-	16.12	-	56.00	46.00	-39.88	-

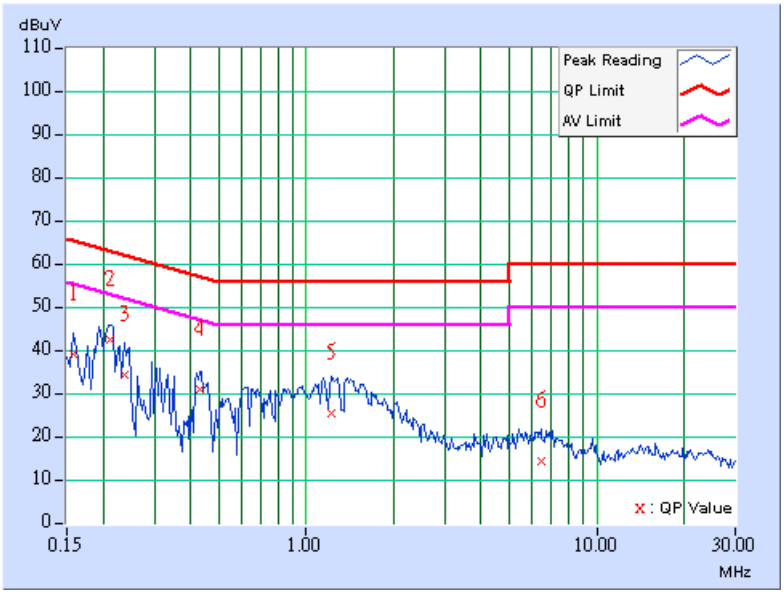
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	39.03	-	39.13	-	65.58	55.58	-26.45	-
2	0.213	0.10	42.15	-	42.25	-	63.11	53.11	-20.86	-
3	0.236	0.10	33.89	-	33.99	-	62.24	52.24	-28.25	-
4	0.431	0.11	30.77	-	30.88	-	57.23	47.23	-26.35	-
5	1.228	0.20	25.17	-	25.37	-	56.00	46.00	-30.63	-
6	6.453	0.41	13.86	-	14.27	-	60.00	50.00	-45.73	-

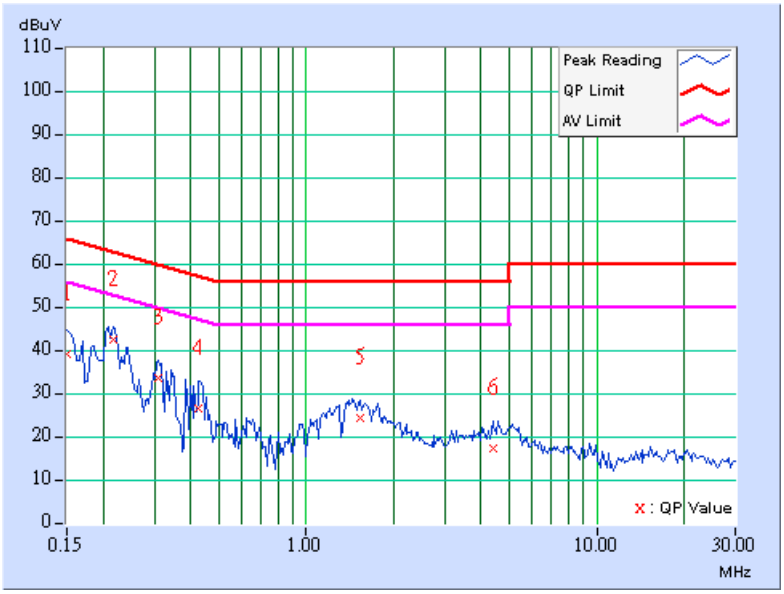
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	38.99	-	39.09	-	66.00	56.00	-26.91	-
2	0.216	0.10	42.27	-	42.37	-	62.96	52.96	-20.59	-
3	0.310	0.10	33.30	-	33.40	-	59.97	49.97	-26.57	-
4	0.427	0.10	26.17	-	26.27	-	57.30	47.30	-31.03	-
5	1.527	0.15	24.23	-	24.38	-	56.00	46.00	-31.62	-
6	4.387	0.37	17.16	-	17.53	-	56.00	46.00	-38.47	-

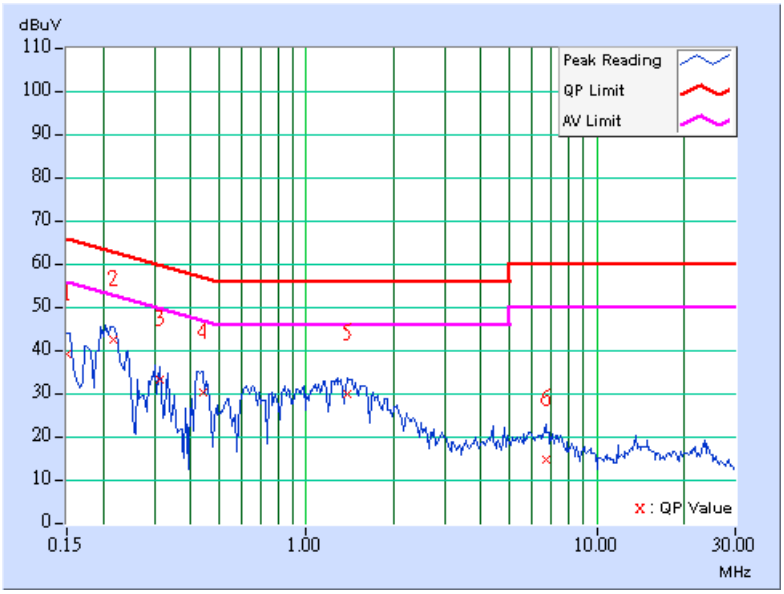
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	38.89	-	38.99	-	66.00	56.00	-27.01	-
2	0.216	0.10	42.29	-	42.39	-	62.96	52.96	-20.57	-
3	0.314	0.10	33.08	-	33.18	-	59.86	49.86	-26.68	-
4	0.439	0.11	30.14	-	30.25	-	57.08	47.08	-26.83	-
5	1.379	0.20	29.59	-	29.79	-	56.00	46.00	-26.21	-
6	6.676	0.41	14.56	-	14.97	-	60.00	50.00	-45.03	-

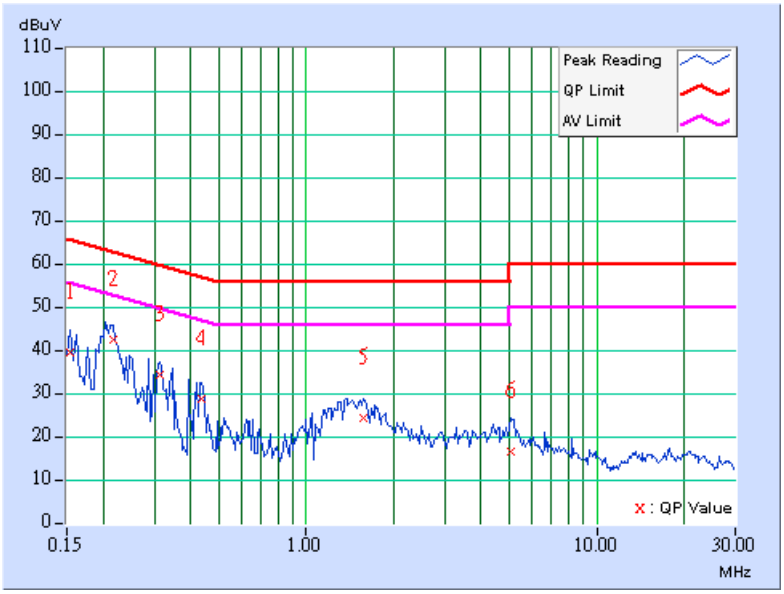
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	39.17	-	39.27	-	65.79	55.79	-26.52	-
2	0.216	0.10	42.23	-	42.33	-	62.96	52.96	-20.63	-
3	0.314	0.10	33.93	-	34.03	-	59.86	49.86	-25.83	-
4	0.435	0.10	28.67	-	28.77	-	57.15	47.15	-28.38	-
5	1.578	0.16	24.19	-	24.35	-	56.00	46.00	-31.65	-
6	5.047	0.37	16.28	-	16.65	-	60.00	50.00	-43.35	-

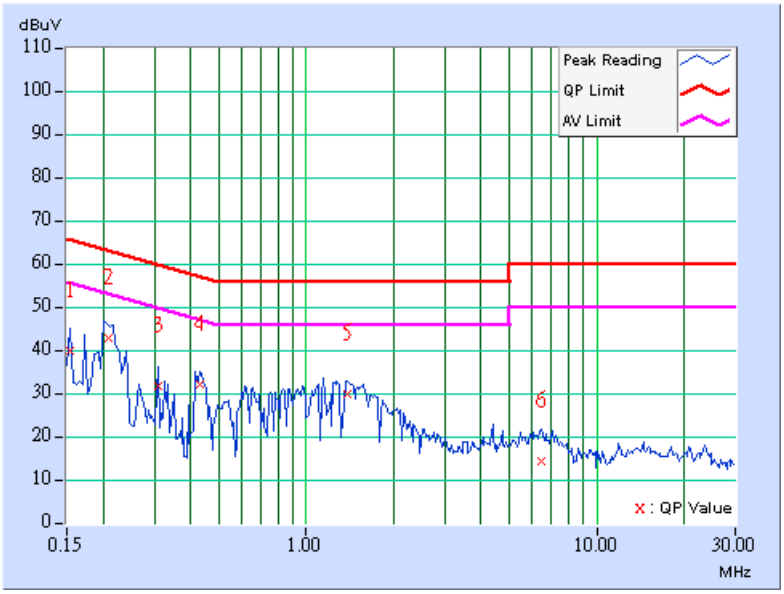
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	39.48	-	39.58	-	65.79	55.79	-26.21	-
2	0.208	0.10	42.52	-	42.62	-	63.27	53.27	-20.65	-
3	0.310	0.10	31.59	-	31.69	-	59.97	49.97	-28.28	-
4	0.431	0.11	31.66	-	31.77	-	57.23	47.23	-25.46	-
5	1.379	0.20	29.63	-	29.83	-	56.00	46.00	-26.17	-
6	6.457	0.41	14.00	-	14.41	-	60.00	50.00	-45.59	-

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	ESI7	100033	May. 22, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100025	Dec. 05, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	May 31, 2007
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 08, 2007
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 19, 2007
Preamplifier Agilent	8447D	2944A10633	Oct. 26, 2007
Preamplifier Agilent	8449B	3008A01964	Oct. 26, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	238137/4	Feb. 14, 2007
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	233233/4	Nov. 14, 2007
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	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 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The VCCI Site Registration No. is R-237.
5. The IC Site Registration No. is IC4924-3.

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.

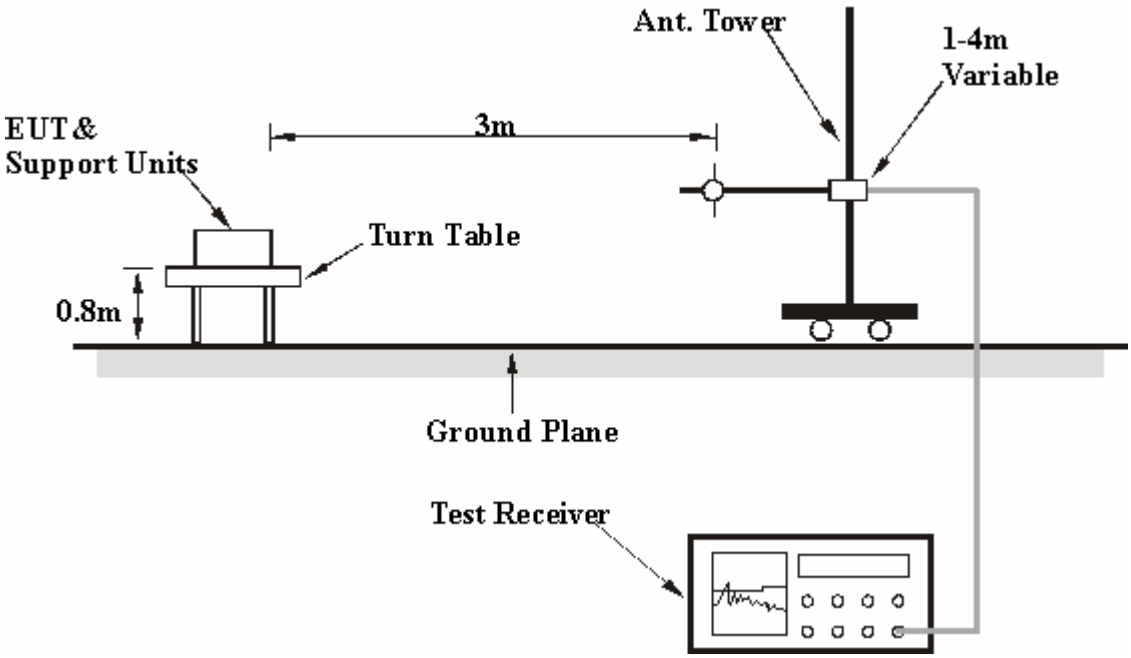
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth are 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

BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Quasi-Peak
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

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	131.08	31.10 QP	43.50	-12.40	1.50 H	163	17.85	13.26
2	166.07	37.16 QP	43.50	-6.34	1.50 H	169	23.11	14.05
3	199.12	29.89 QP	43.50	-13.61	1.50 H	169	18.55	11.34
4	331.30	33.00 QP	46.00	-13.00	1.50 H	169	17.03	15.97
5	663.71	34.96 QP	46.00	-11.04	1.25 H	256	11.21	23.76
6	865.87	31.49 QP	46.00	-14.51	1.00 H	172	4.33	27.16

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	64.99	26.63 QP	40.00	-13.37	1.25 V	259	13.30	13.34
2	115.53	29.08 QP	43.50	-14.42	1.25 V	163	16.99	12.09
3	166.07	26.73 QP	43.50	-16.77	1.25 V	67	12.68	14.05
4	333.25	31.73 QP	46.00	-14.27	1.50 V	133	15.71	16.02
5	399.34	25.77 QP	46.00	-20.23	1.25 V	28	8.14	17.62
6	601.50	29.21 QP	46.00	-16.79	1.00 V	298	6.71	22.49

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	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Morgan Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.28 PK	74.00	-17.72	1.00 H	30	23.84	32.44
2	2390.00	46.12 AV	54.00	-7.88	1.00 H	30	13.68	32.44
3	*2412.00	91.72 PK			1.00 H	30	59.19	32.53
4	*2412.00	87.02 AV			1.00 H	30	54.49	32.53
5	4824.00	45.35 PK	74.00	-28.65	1.03 H	356	6.07	39.28
6	4824.00	41.28 AV	54.00	-12.72	1.03 H	356	2.00	39.28

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	2291.00	57.69 PK	74.00	-16.31	1.14 V	360	25.70	31.99
2	2291.00	48.57 AV	54.00	-5.43	1.14 V	360	16.58	31.99
3	2390.00	56.98 PK	74.00	-17.02	1.14 V	3	24.54	32.44
4	2390.00	48.56 AV	54.00	-5.44	1.14 V	3	16.12	32.44
5	*2412.00	110.88 PK			1.12 V	4	78.35	32.53
6	*2412.00	106.01 AV			1.12 V	4	73.48	32.53
7	4824.00	57.01 PK	74.00	-16.99	1.15 V	355	17.73	39.28
8	4824.00	52.94 AV	54.00	-1.06	1.15 V	355	13.66	39.28

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.

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**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	90.78 PK			1.00 H	23	58.13	32.65
2	*2437.00	88.02 AV			1.00 H	23	55.37	32.65
3	4874.00	46.45 PK	74.00	-27.55	1.05 H	349	7.10	39.35
4	4874.00	42.20 AV	54.00	-11.80	1.05 H	349	2.85	39.35

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2361.00	59.15 PK	74.00	-14.85	1.10 V	352	26.85	32.30
2	2361.00	49.65 AV	54.00	-4.35	1.10 V	352	17.35	32.30
3	*2437.00	111.93 PK			1.18 V	6	79.28	32.65
4	*2437.00	107.04 AV			1.18 V	6	74.39	32.65
5	4874.00	56.66 PK	74.00	-17.34	1.12 V	354	17.31	39.35
6	4874.00	52.60 AV	54.00	-1.40	1.12 V	354	13.25	39.35

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

2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency.

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	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Morgan Chen

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	2339.50	58.69 PK	74.00	-15.31	1.00 H	15	26.48	32.21
2	2339.50	48.38 AV	54.00	-5.62	1.00 H	15	16.17	32.21
3	*2462.00	94.67 PK			1.00 H	25	61.91	32.76
4	*2462.00	90.35 AV			1.00 H	25	57.59	32.76
5	2483.50	57.22 PK	74.00	-16.78	1.00 H	23	24.36	32.86
6	2483.50	47.23 AV	54.00	-6.77	1.00 H	23	14.37	32.86
7	4924.00	45.12 PK	74.00	-28.88	1.05 H	342	5.70	39.42
8	4924.00	41.07 AV	54.00	-12.93	1.05 H	342	1.65	39.42

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	2339.50	60.06 PK	74.00	-13.94	1.12 V	357	27.85	32.21
2	2339.50	50.06 AV	54.00	-3.94	1.12 V	357	17.85	32.21
3	*2462.00	114.08 PK			1.12 V	358	81.32	32.76
4	*2462.00	109.62 AV			1.12 V	358	76.86	32.76
5	2483.50	58.97 PK	74.00	-15.03	1.11 V	352	26.11	32.86
6	2483.50	49.08 AV	54.00	-4.92	1.11 V	352	16.22	32.86
7	4924.00	56.33 PK	74.00	-17.67	1.11 V	1	16.91	39.42
8	4924.00	52.30 AV	54.00	-1.70	1.11 V	1	12.88	39.42

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.

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	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Morgan Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	42.58 PK	74.00	-31.42	1.23 H	40	10.14	32.44
2	2390.00	33.48 AV	54.00	-20.52	1.23 H	40	1.04	32.44
3	*2412.00	94.19 PK			1.33 H	44	61.66	32.53
4	*2412.00	83.55 AV			1.33 H	44	51.02	32.53
5	4824.00	47.60 PK	74.00	-26.40	1.00 H	54	8.32	39.28
6	4824.00	34.20 AV	54.00	-19.80	1.00 H	54	-5.08	39.28

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	2292.00	54.60 PK	74.00	-19.40	1.20 V	349	22.61	31.99
2	2292.00	46.16 AV	54.00	-7.84	1.20 V	349	14.17	31.99
3	2390.00	71.28 PK	74.00	-2.72	1.11 V	0	38.85	32.44
4	2390.00	52.44 AV	54.00	-1.56	1.11 V	0	20.00	32.44
5	*2412.00	112.89 PK			1.13 V	0	80.36	32.53
6	*2412.00	102.51 AV			1.13 V	0	69.98	32.53
7	4824.00	58.11 PK	74.00	-15.89	1.00 V	354	18.83	39.28
8	4824.00	44.61 AV	54.00	-9.39	1.00 V	354	5.33	39.28

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.

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**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	107.63 PK			1.00 H	34	74.98	32.65
2	*2437.00	95.84 AV			1.00 H	34	63.19	32.65
3	4874.00	54.90 PK	74.00	-19.10	1.00 H	87	15.55	39.35
4	4874.00	43.62 AV	54.00	-10.38	1.00 H	87	4.27	39.35

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2316.00	60.44 PK	74.00	-13.56	1.14 V	0	28.34	32.10
2	2316.00	49.79 AV	54.00	-4.21	1.14 V	0	17.69	32.10
3	*2437.00	116.24 PK			1.11 V	358	83.59	32.65
4	*2437.00	106.39 AV			1.11 V	358	73.74	32.65
5	4874.00	66.20 PK	74.00	-7.80	1.12 V	349	26.85	39.35
6	4874.00	52.18 AV	54.00	-1.82	1.12 V	349	12.83	39.35

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

2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency.

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**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	102.76 PK			1.15 H	40	70.00	32.76
2	*2462.00	93.78 AV			1.15 H	40	61.02	32.76
3	2483.50	40.80 PK	74.00	-33.20	1.00 H	45	7.94	32.86
4	2483.50	33.93 AV	54.00	-20.07	1.00 H	45	1.07	32.86
5	4924.00	50.49 PK	74.00	-23.51	1.00 H	39	11.07	39.42
6	4924.00	37.49 AV	54.00	-16.51	1.00 H	39	-1.93	39.42

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	2342.00	51.74 PK	74.00	-22.26	1.17 V	1	19.52	32.22
2	2342.00	43.13 AV	54.00	-10.87	1.17 V	1	10.91	32.22
3	*2462.00	113.49 PK			1.08 V	0	80.73	32.76
4	*2462.00	103.02 AV			1.08 V	0	70.26	32.76
5	2483.50	68.86 PK	74.00	-5.14	1.08 V	349	36.00	32.86
6	2483.50	52.54 AV	54.00	-1.46	1.08 V	349	19.68	32.86
7	4924.00	56.20 PK	74.00	-17.80	1.14 V	25	16.78	39.42
8	4924.00	41.23 AV	54.00	-12.77	1.14 V	25	1.81	39.42

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	100040	Jun. 07, 2007

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

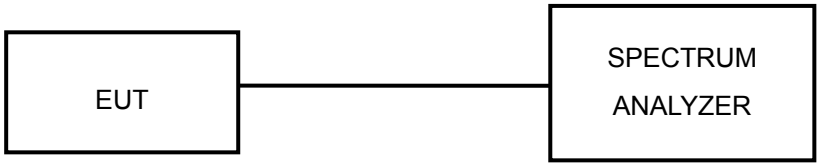
4.3.3 TEST PROCEDURE

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



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.

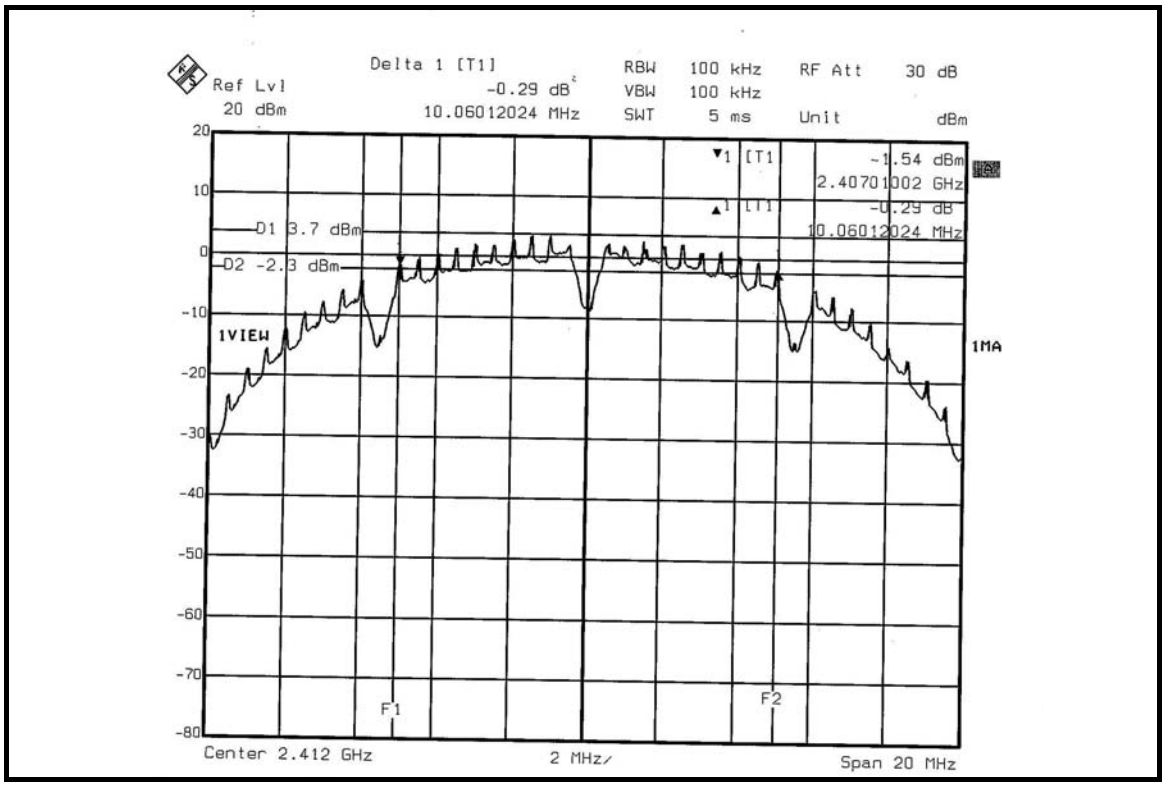
4.3.7 TEST RESULTS

802.11b DSSS MODULATION

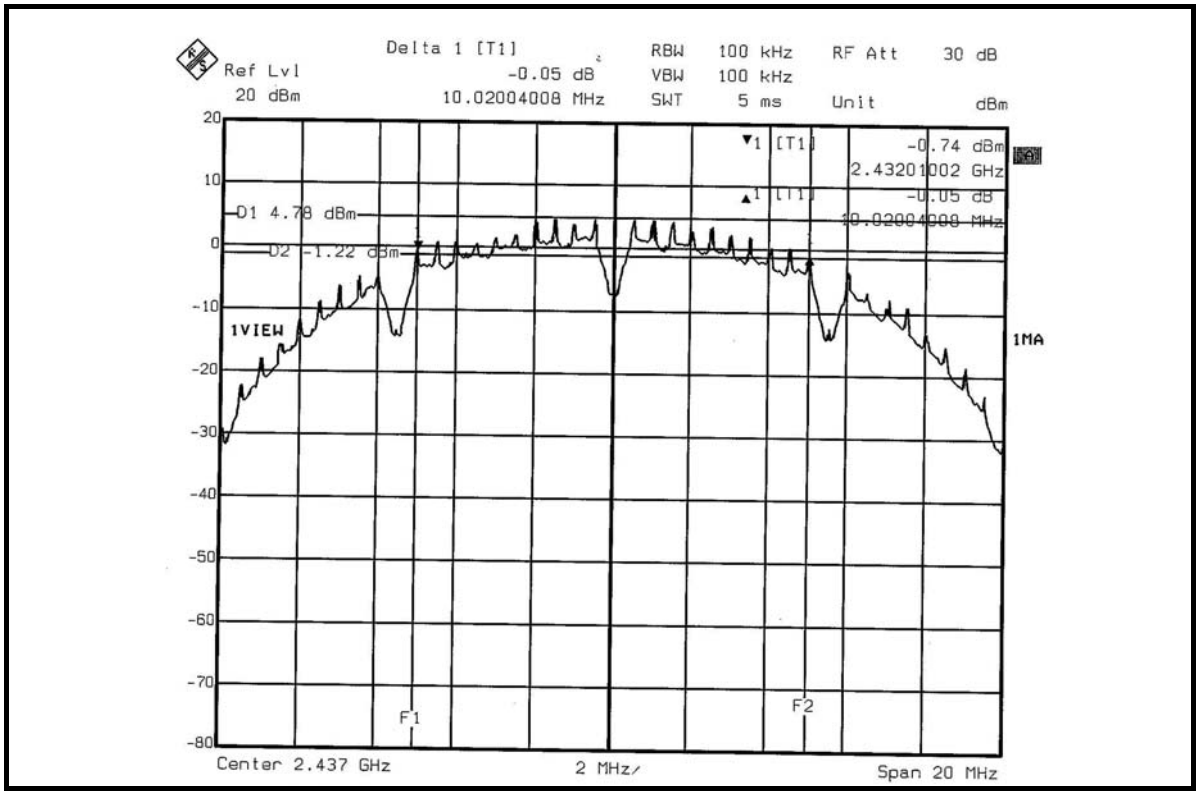
MODULATION TYPE	DBPSK	**TRANSFER RATE**	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 69%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.06	0.5	PASS
6	2437	10.02	0.5	PASS
11	2462	9.97	0.5	PASS

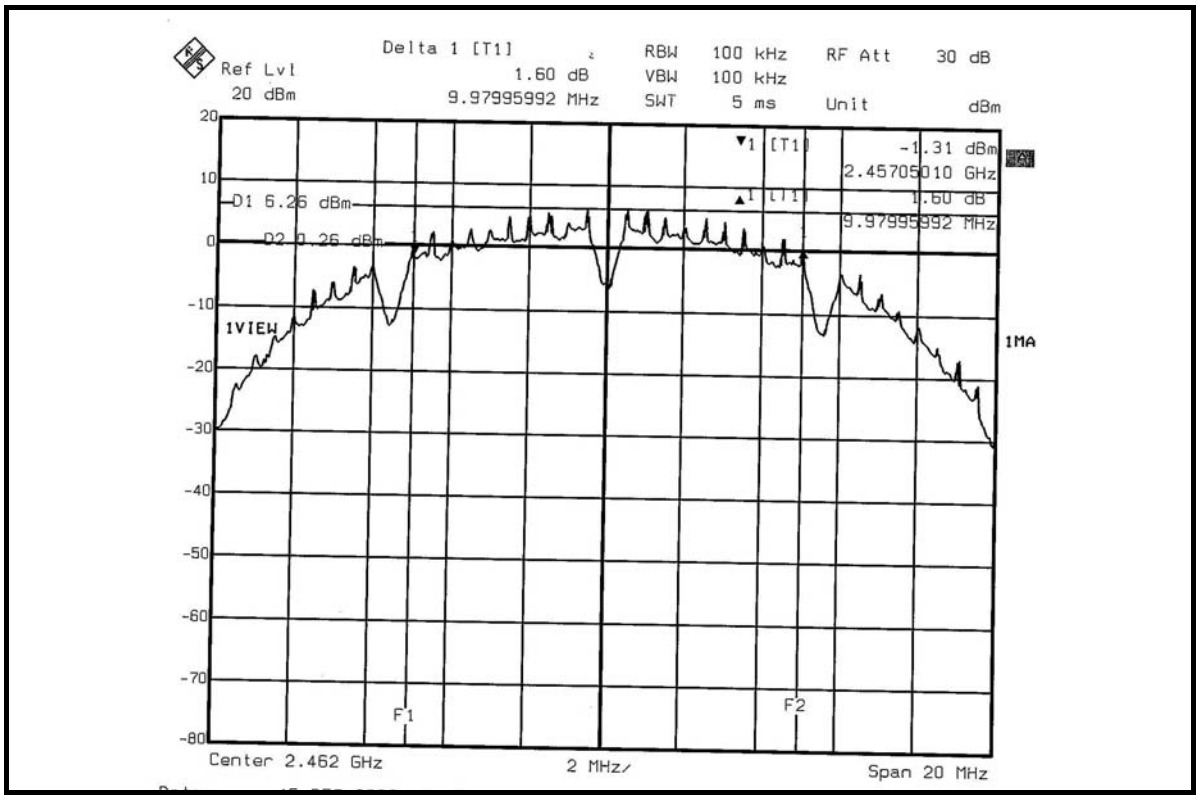
CH 1



CH 6


Delta 1 [T1]
-0.05 dB
10.02004008 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -0.74 dBm
2.43201002 GHz
▲1 [T1] -0.05 dB
10.02004008 MHz
D1 4.78 dBm
D2 -1.22 dBm
1VIEW
1MA
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11

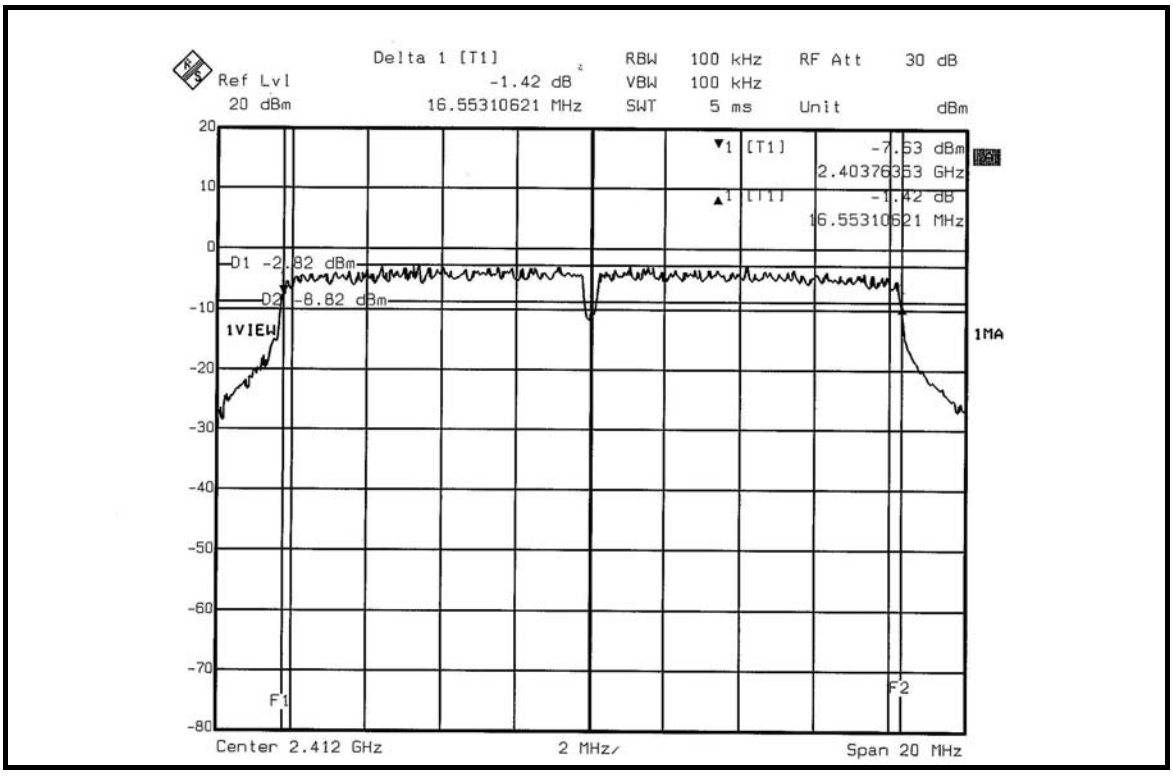

Delta 1 [T1]
1.60 dB
9.97995992 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -1.31 dBm
2.45705010 GHz
▲1 [T1] 1.60 dB
9.97995992 MHz
D1 6.26 dBm
D2 0.26 dBm
1VIEW
1MA
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

802.11g OFDM MODULATION

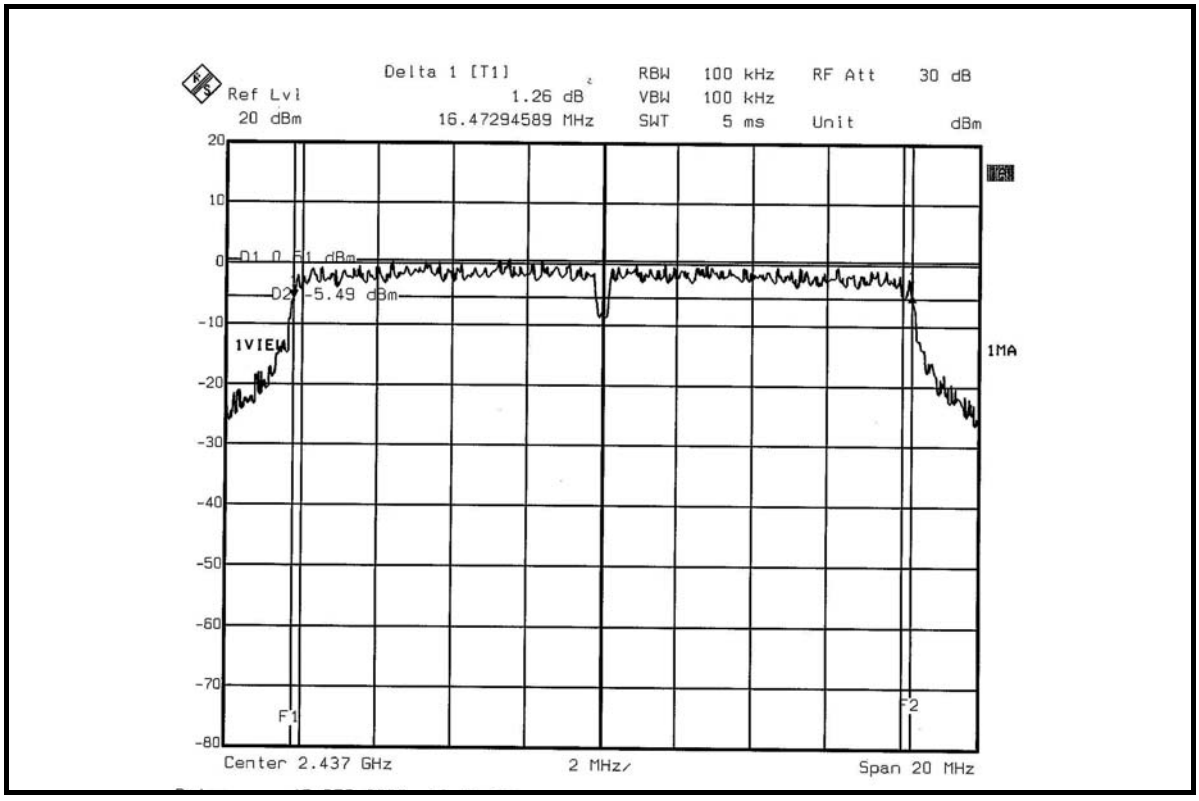
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 69%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.55	0.5	PASS
6	2437	16.47	0.5	PASS
11	2462	16.51	0.5	PASS

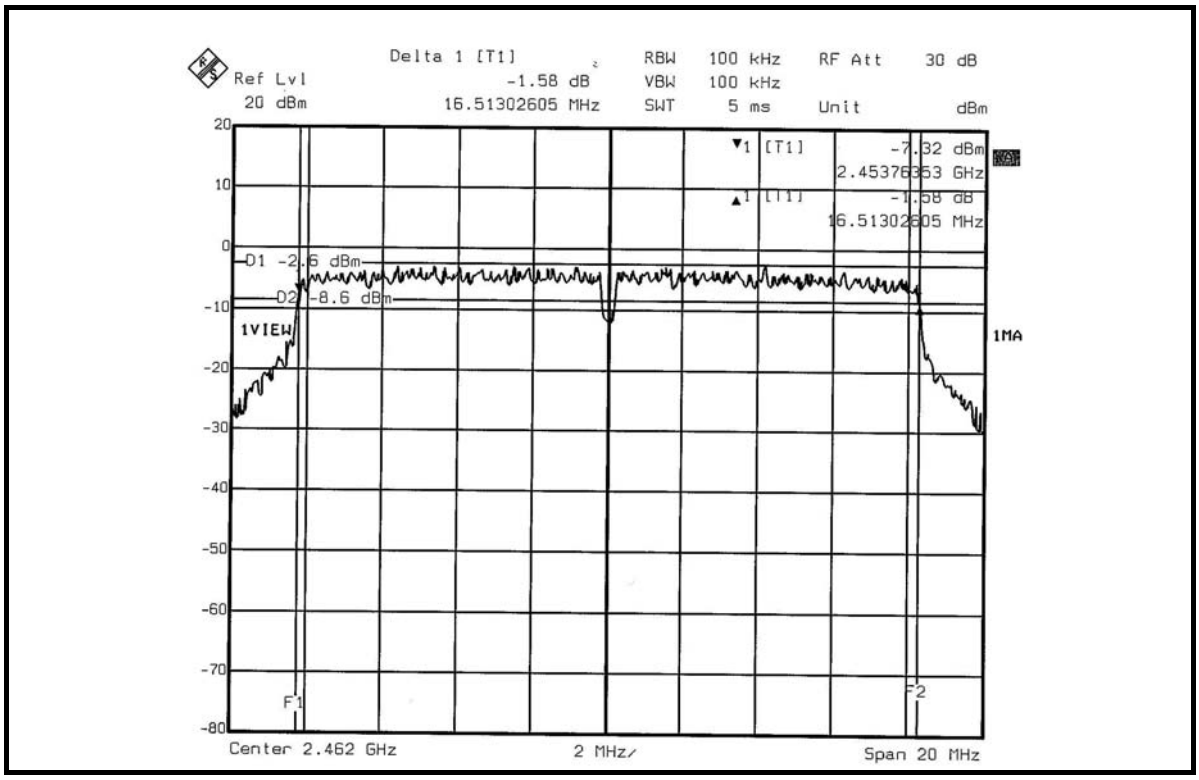
CH 1



CH 6


Delta 1 [T1]
1.26 dB
16.47294589 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D2 -5.49 dBm
1VIEW
1MA
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11


Delta 1 [T1]
-1.58 dB
16.51302605 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 -2.6 dBm
D2 -8.6 dBm
1VIEW
1MA
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 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP 40	100040	Jun. 07, 2007
ANRITSU SIGNAL GENERATOR	68247B	984703	May 08, 2007
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Jan. 16, 2007
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.

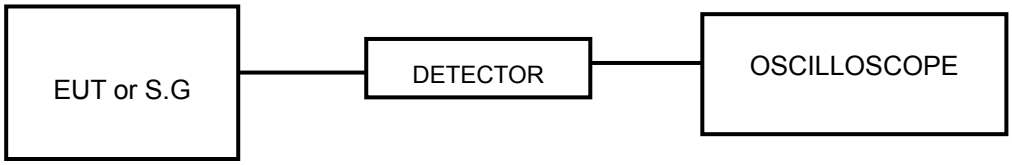
4.4.1 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read 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 reading on oscilloscope. Record the power level.

4.4.2 DEVIATION FROM TEST STANDARD

No deviation

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.3 TEST RESULTS

802.11b DSSS MODULATION

MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 69%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	25.177	14.01	26.82	PASS
6	2437	32.063	15.06	26.82	PASS
11	2462	45.082	16.54	26.82	PASS

NOTE: According to 15.247 (b) (3), the maximum antenna gain 9.18dBi is higher than 6dBi, so the limit of peak power shall be reduced by 3.18dB.

802.11g OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 69%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	40.087	16.03	26.82	PASS
6	2437	79.983	19.03	26.82	PASS
11	2462	40.644	16.09	26.82	PASS

NOTE: According to 15.247 (b) (3), the maximum antenna gain 9.18dBi is higher than 6dBi, so the limit of peak power shall be reduced by 3.18dB.

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	100040	Jun. 07, 2007

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

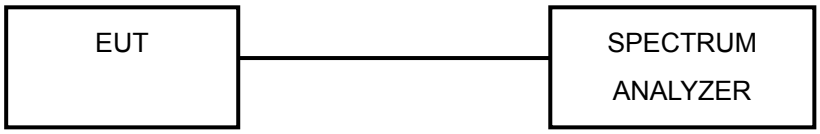
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

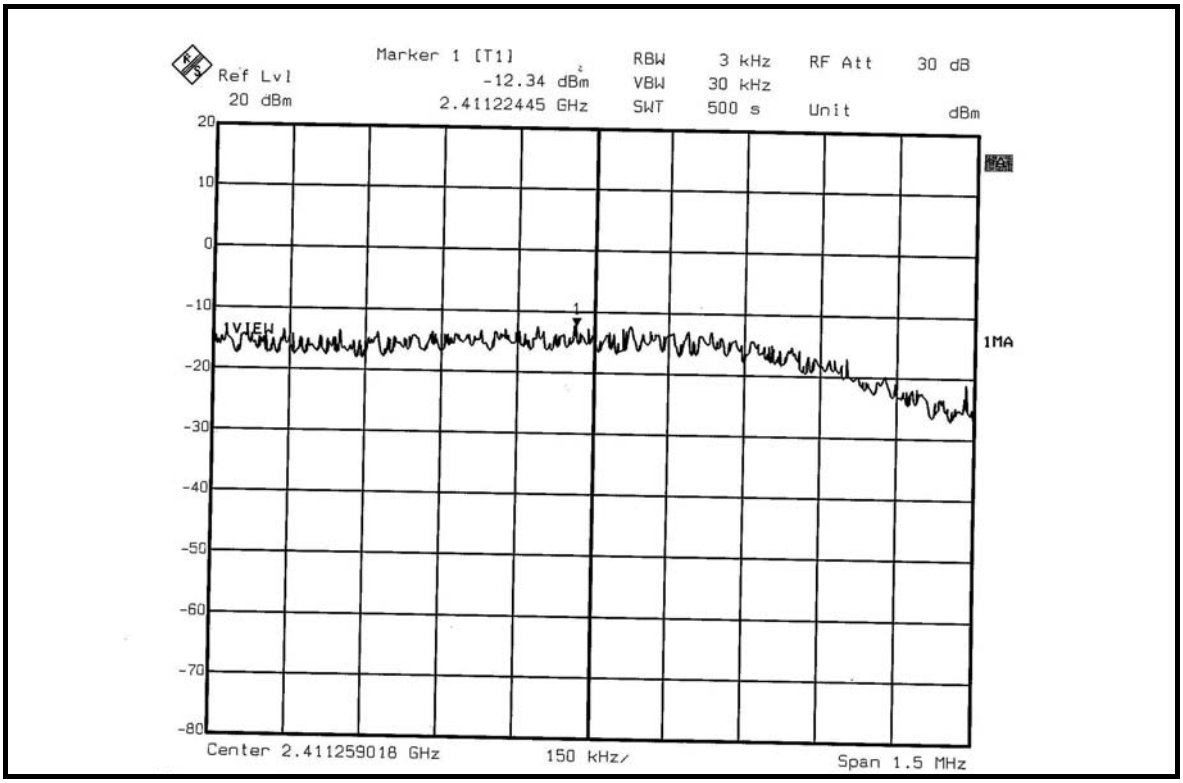
4.5.7 TEST RESULTS

802.11b DSSS MODULATION

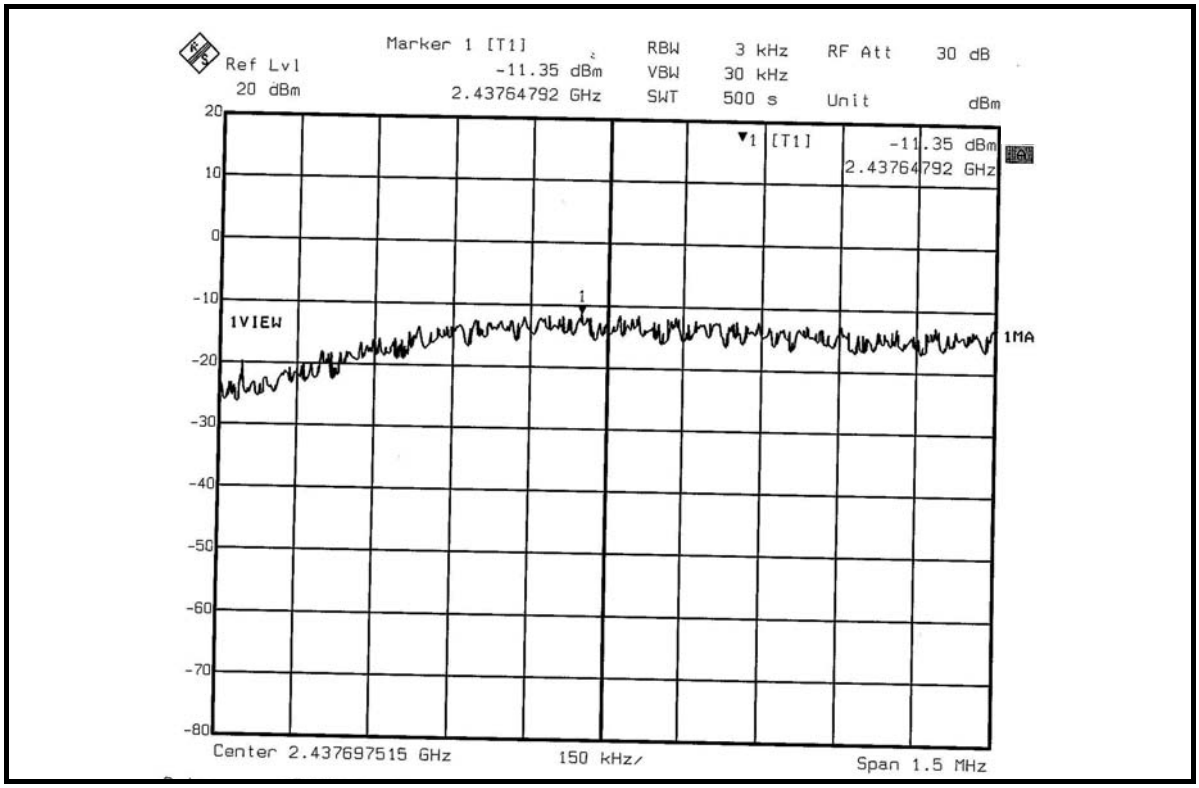
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 69%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-12.34	8	PASS
6	2437	-11.35	8	PASS
11	2462	-9.72	8	PASS

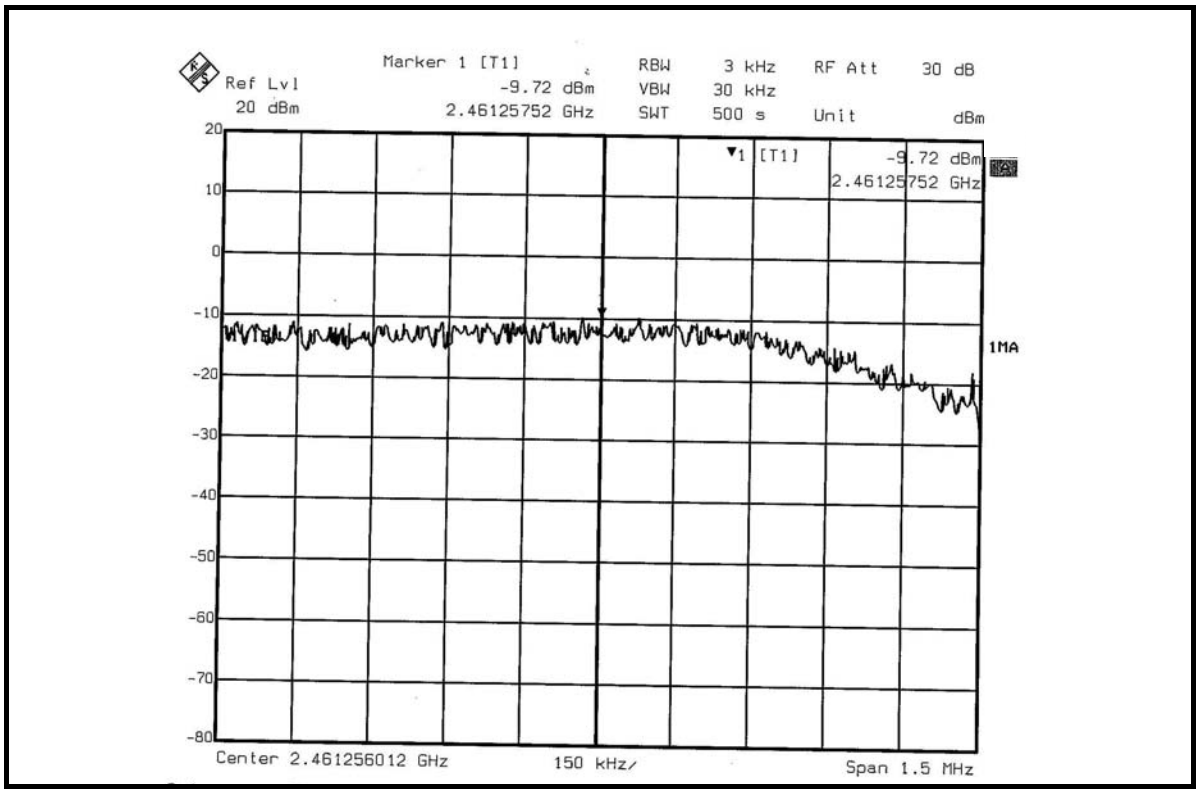
CH 1



CH 6


Marker 1 [T1]
-11.35 dBm
2.43764792 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1 [T1]
-11.35 dBm
2.43764792 GHz
1VIEW
1MA
Center 2.437697515 GHz
150 kHz/
Span 1.5 MHz

CH 11

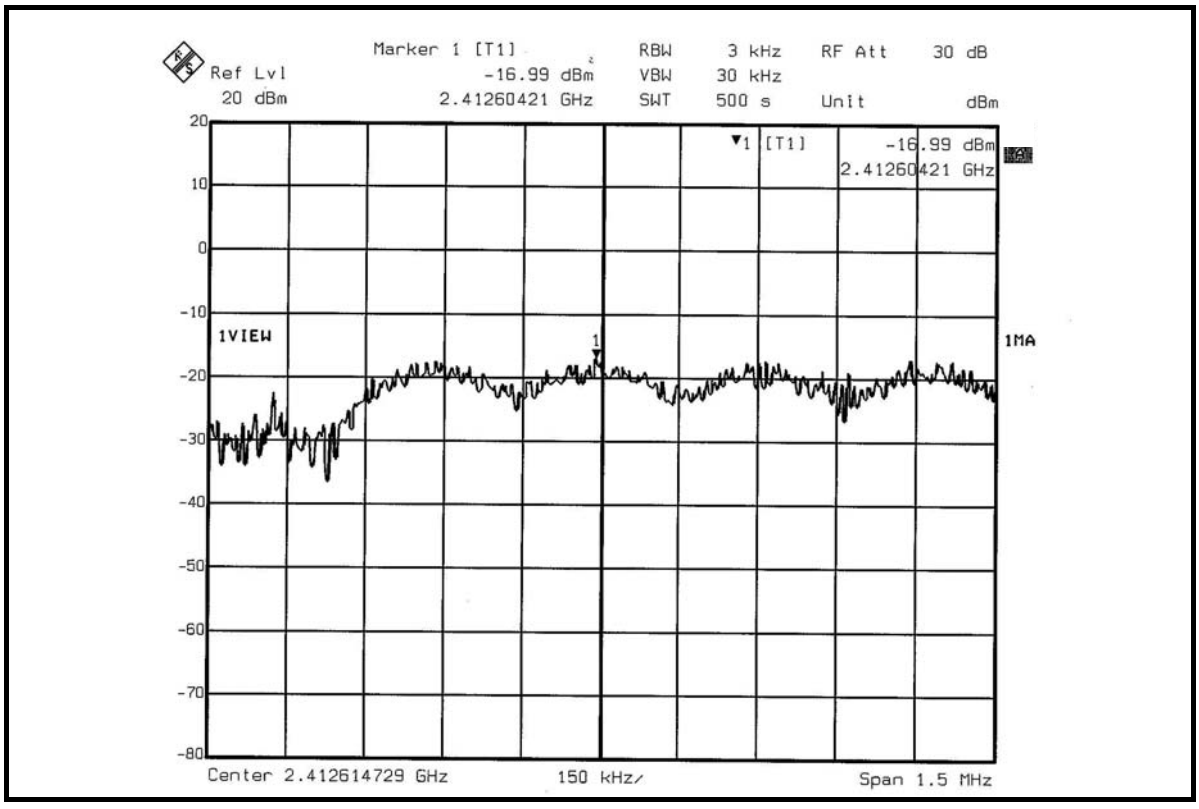

Marker 1 [T1]
-9.72 dBm
2.46125752 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1 [T1]
-9.72 dBm
2.46125752 GHz
1MA
Center 2.461256012 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM MODULATION

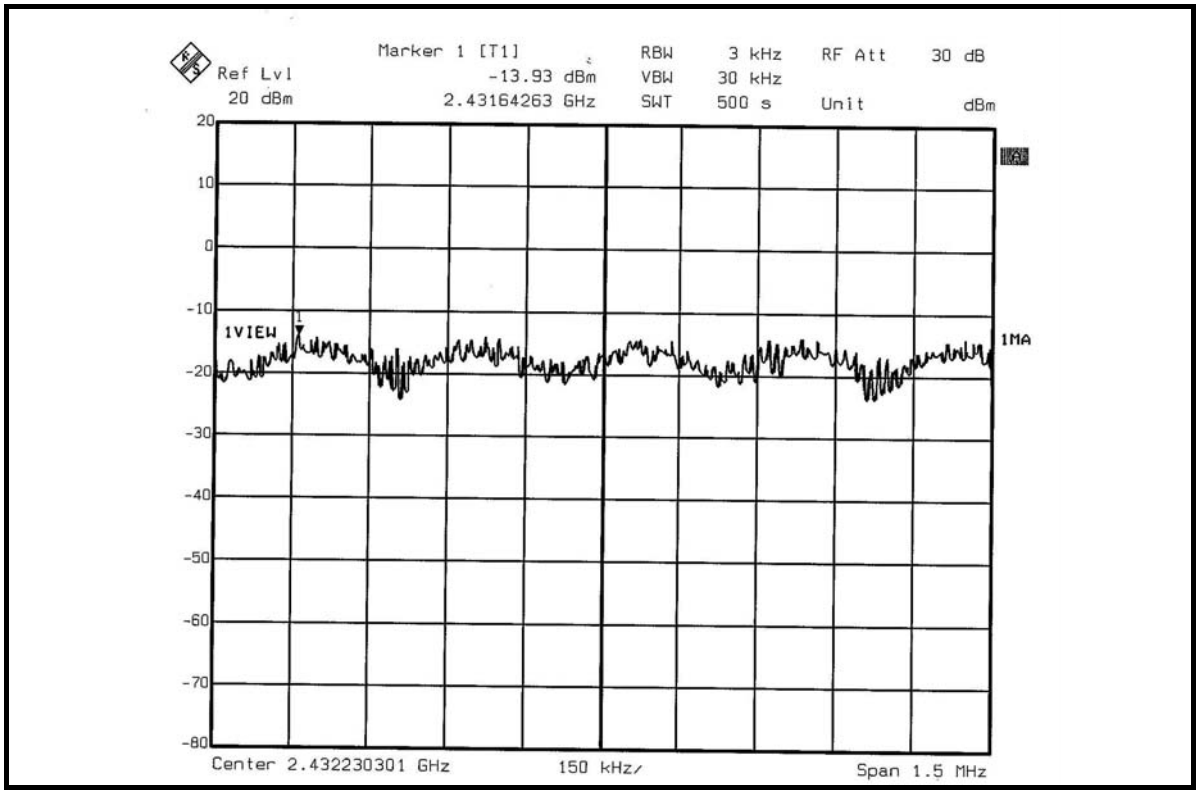
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 69%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-16.99	8	PASS
6	2437	-13.93	8	PASS
11	2462	-17.00	8	PASS

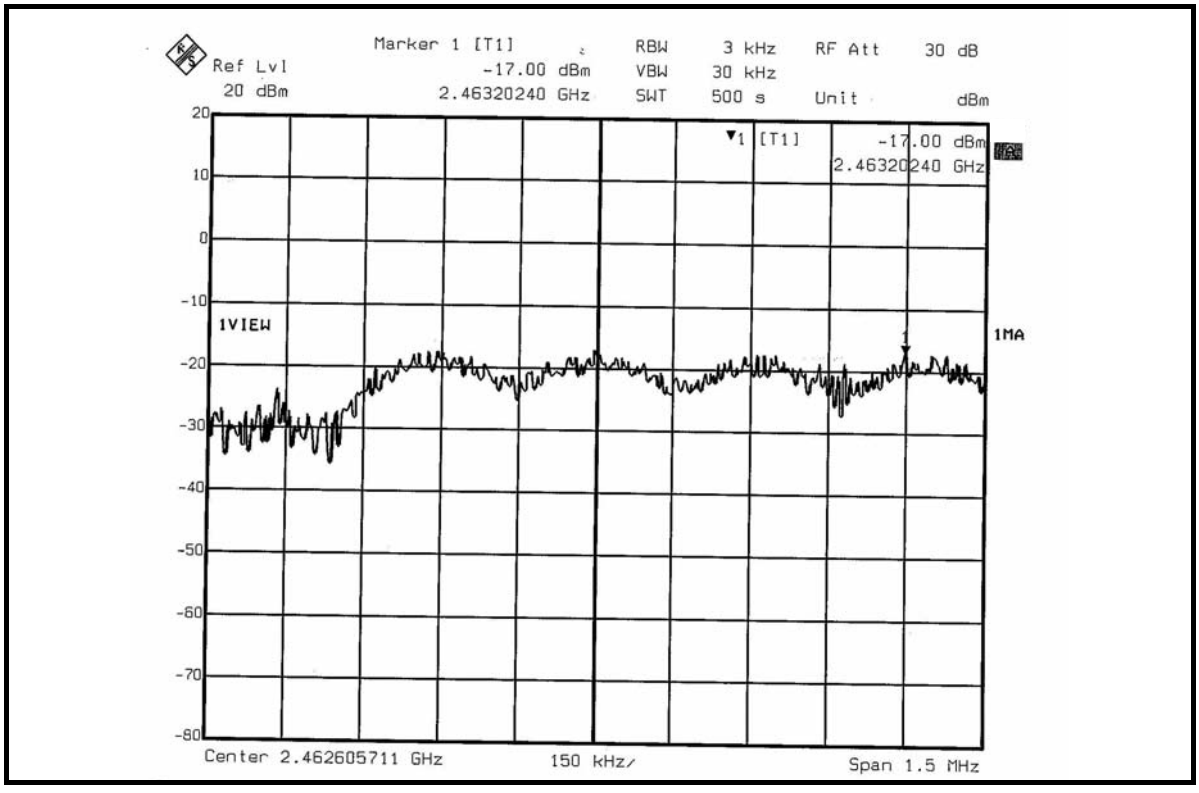
CH 1



CH 6


Marker 1 [T1]
-13.93 dBm
2.43164263 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1VIEW
1MA
Center 2.432230301 GHz
150 kHz/
Span 1.5 MHz

CH 11


Marker 1 [T1]
-17.00 dBm
2.46320240 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
[T1]
-17.00 dBm
2.46320240 GHz
1VIEW
1MA
Center 2.462605711 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
R&S SPECTRUM ANALYZER	FSP 40	100040	Jun. 07, 2007

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 100 MHz 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).

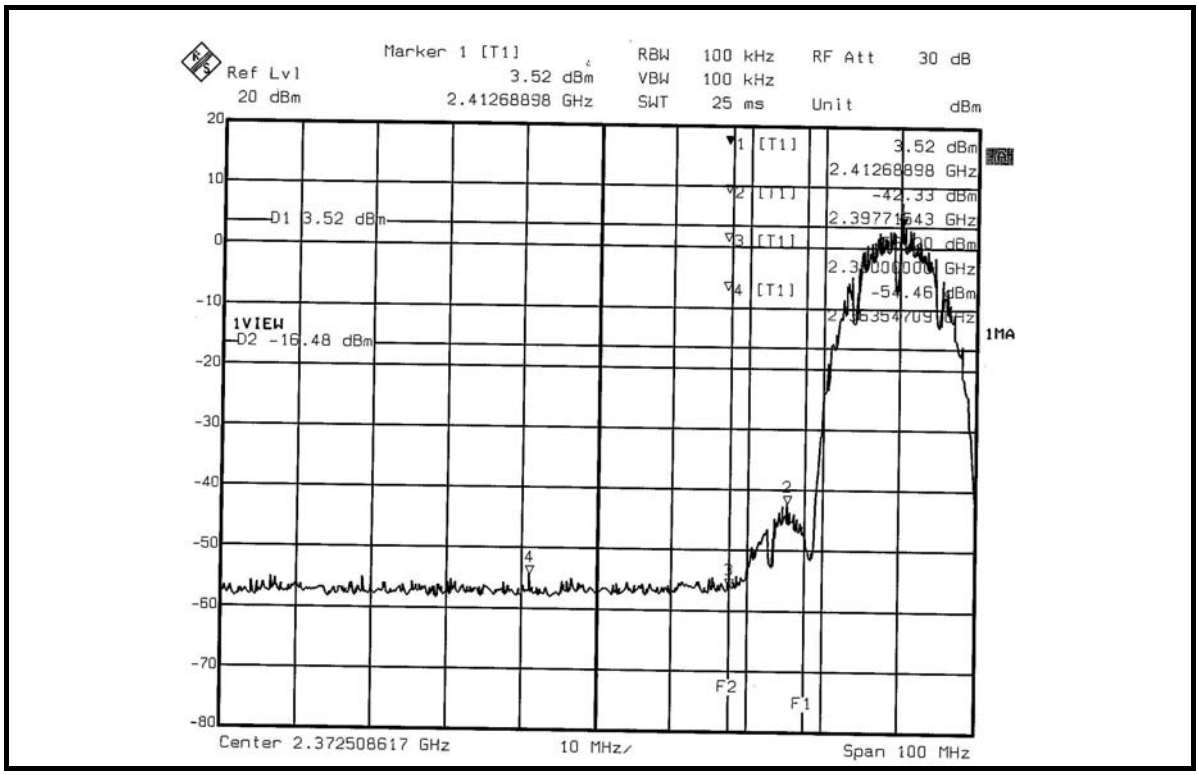
802.11b DSSS MODULATION

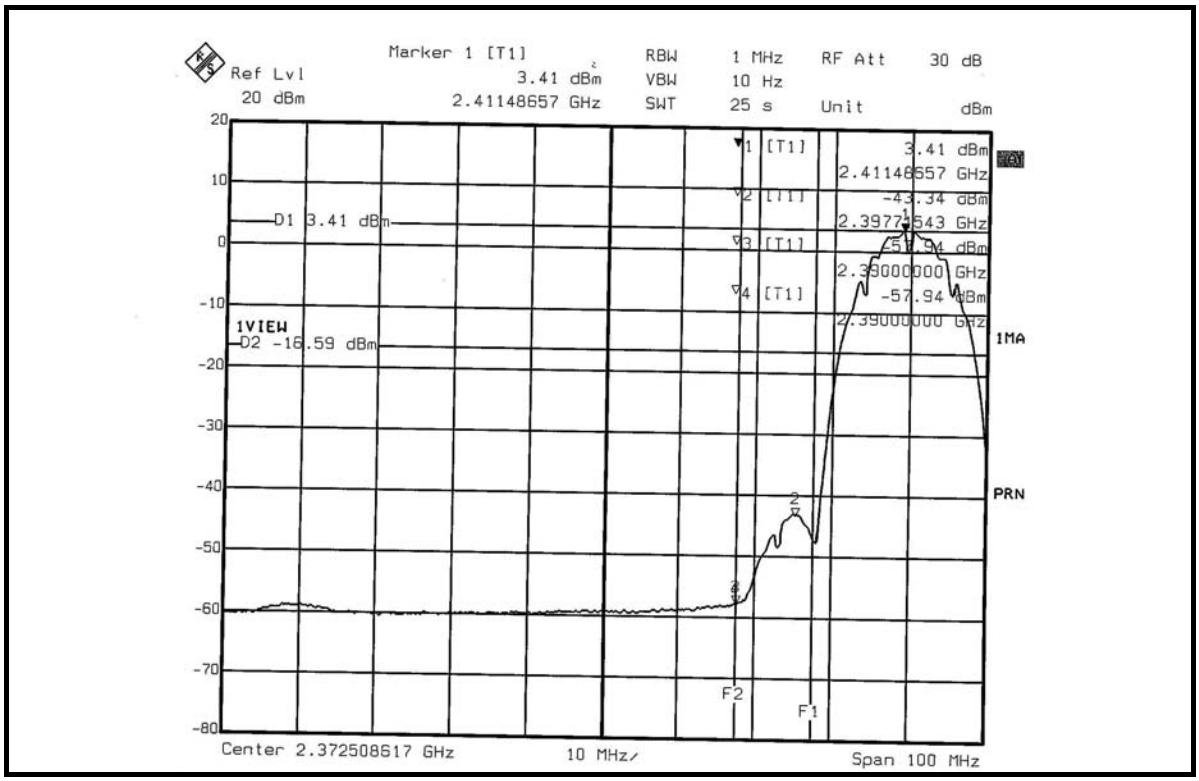
NOTE 1: The band edge emission plot on the next page shows 57.98dBc between carrier maximum power and local maximum emission in restrict band (2.36354GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 110.88dBuV/m (Peak), so the maximum field strength in restrict band is 110.88-57.98=52.90dBuV/m which is under 74dBuV/m limit.

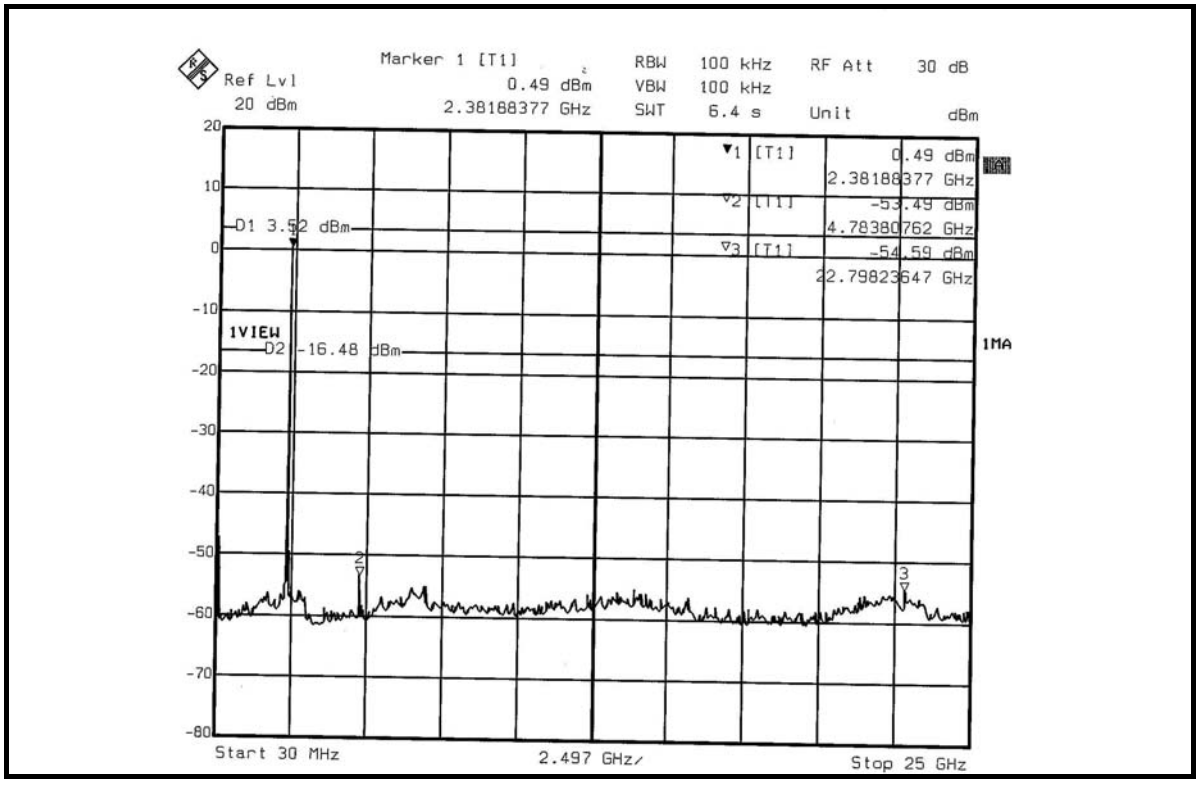
The band edge emission plot of on the next page shows 61.35dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.01dBuV/m (Average), so the maximum field strength in restrict band is 106.01-61.35=44.66dBuV/m which is under 54dBuV/m limit.

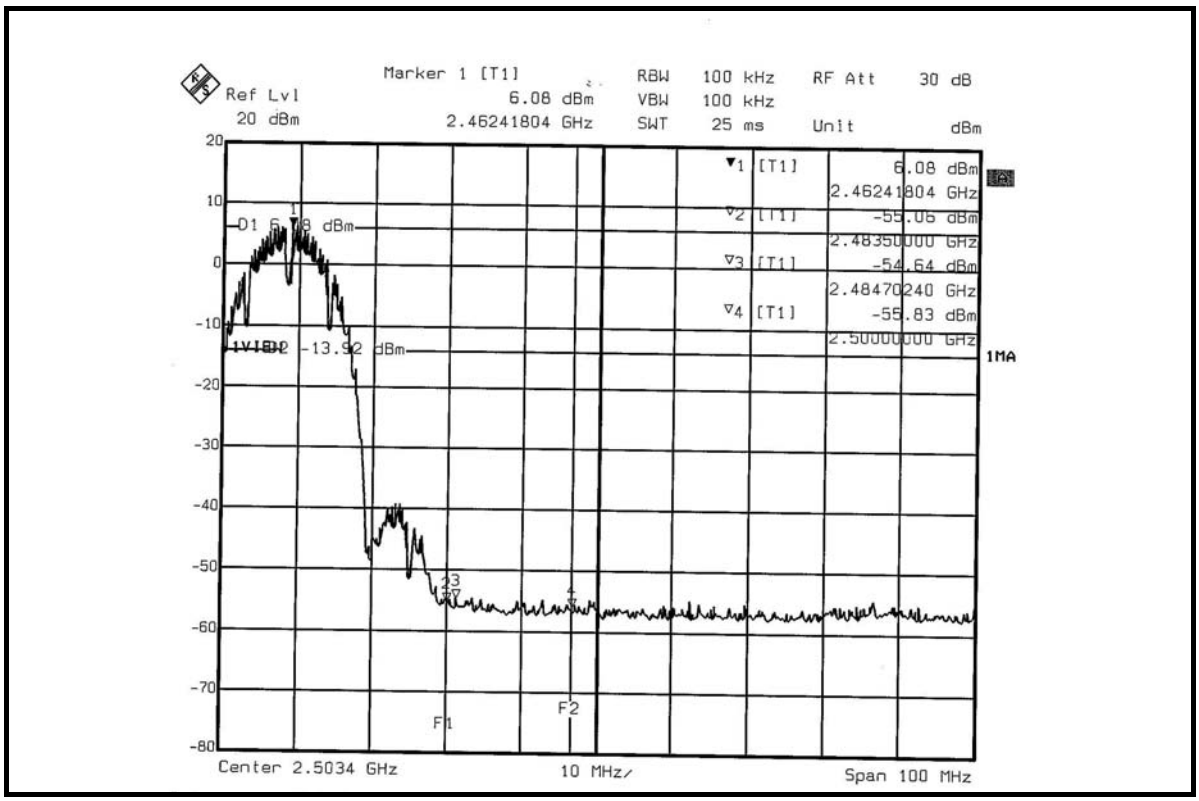
NOTE 2: The band edge emission plot on the next second page shows 60.72dBc between carrier maximum power and local maximum emission in restrict band (2.48472GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 114.08dBuV/m (Peak), so the maximum field strength in restrict band is 114.08-60.72=53.36dBuV/m which is under 74dBuV/m limit.

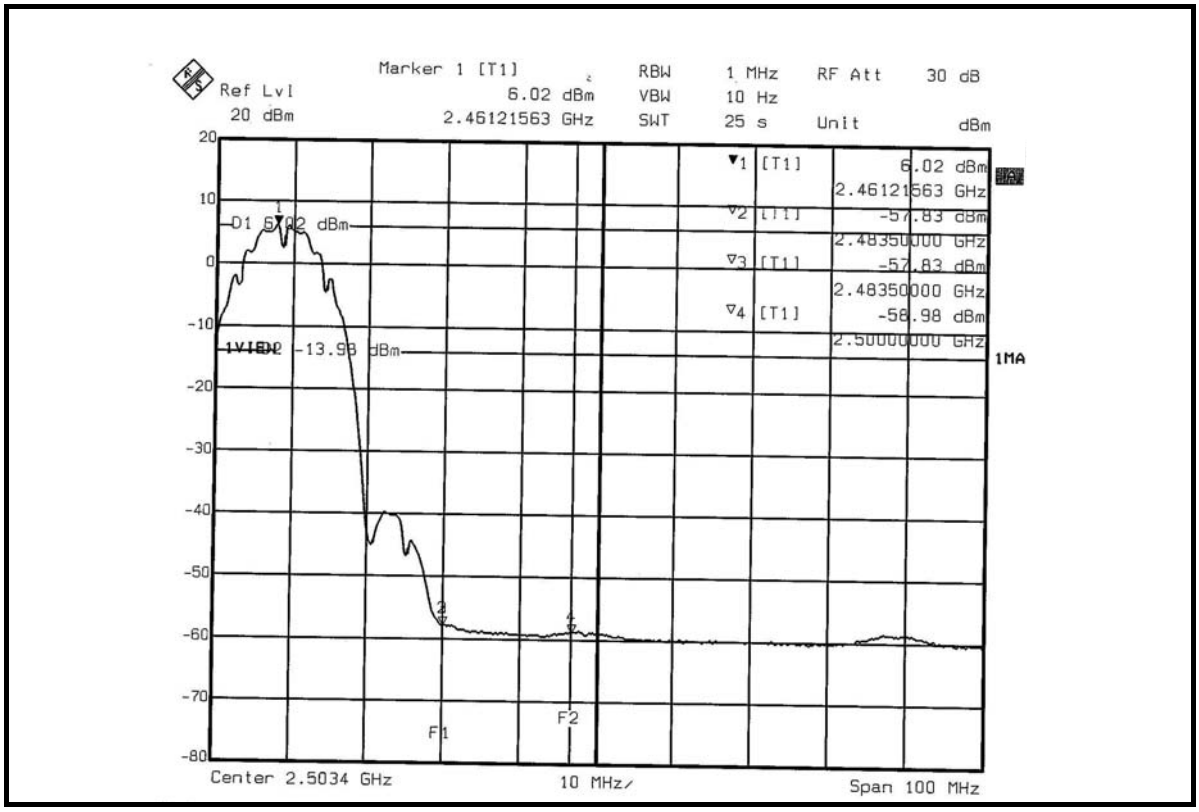
The band edge emission plot on the next third page shows 63.85dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.62dBuV/m (Average), so the maximum field strength in restrict band is 109.62-63.85=45.77dBuV/m which is under 54dBuV/m limit.

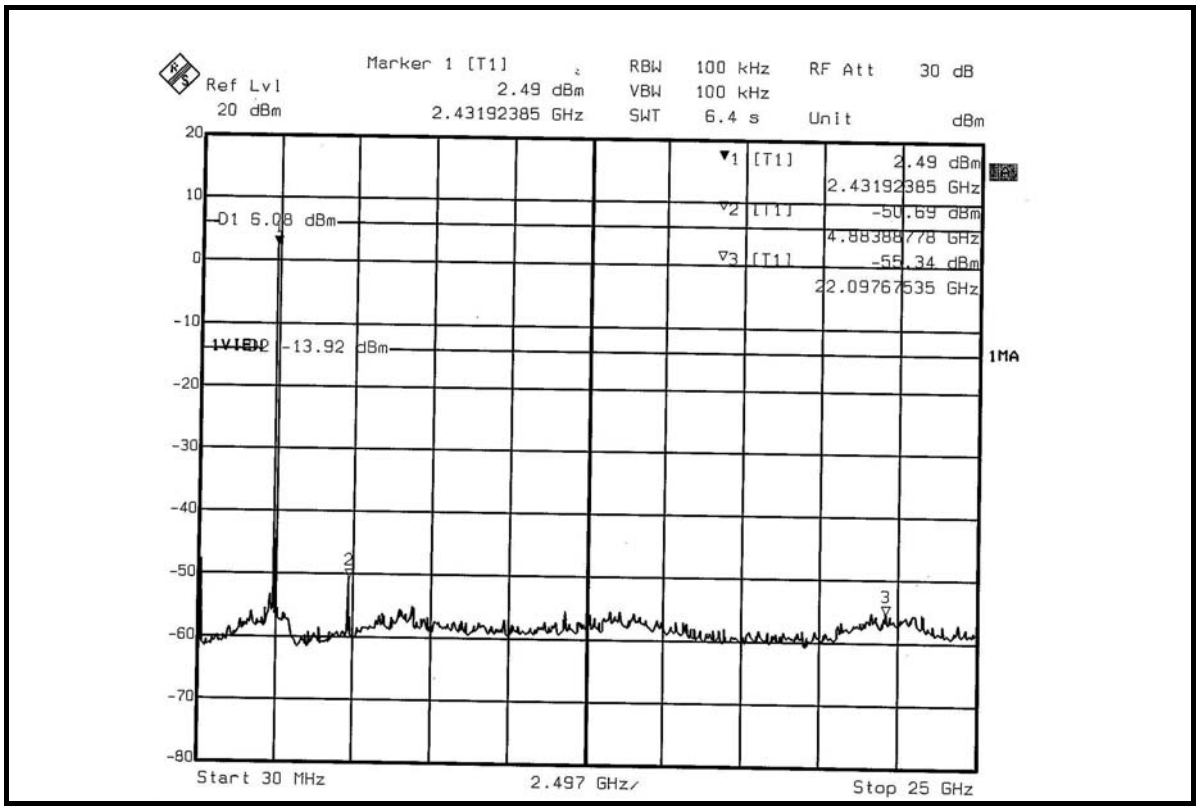

Marker 1 [T1]
3.52 dBm
2.41268898 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 3.52 dBm
1VIEW
D2 -16.48 dBm
1MA
Center 2.372508617 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
3.41 dBm
2.41148657 GHz
RBW 1 MHz
VBW 10 Hz
SWT 25 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 3.41 dBm
1VIEW
D2 -16.59 dBm
1MA
PRN
Center 2.372508617 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
0.49 dBm
2.38188377 GHz
RBW 100 kHz
VBW 100 kHz
SWT 6.4 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 3.52 dBm
D2 -16.48 dBm
1VIEW
1MA
Start 30 MHz
2.497 GHz/
Stop 25 GHz


Marker 1 [T1]
6.08 dBm
2.46241804 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 6.08 dBm
D2 -13.92 dBm
1VIEW
1MA
F1
F2
Center 2.5034 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
6.02 dBm
2.46121563 GHz
RBW 1 MHz
VBW 10 Hz
SWT 25 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 5.02 dBm
VID -13.98 dBm
▼1 [T1] 6.02 dBm
2.46121563 GHz
▽2 [T1] -57.83 dBm
2.48350000 GHz
▽3 [T1] -57.83 dBm
2.48350000 GHz
▽4 [T1] -58.98 dBm
2.50000000 GHz
1MA
F1
F2
Center 2.5034 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
2.49 dBm
2.43192385 GHz
RBW 100 kHz
VBW 100 kHz
SWT 6.4 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 5.08 dBm
VID -13.92 dBm
▼1 [T1] 2.49 dBm
2.43192385 GHz
▽2 [T1] -50.69 dBm
4.88388778 GHz
▽3 [T1] -55.34 dBm
22.09767535 GHz
1MA
Start 30 MHz
2.497 GHz/
Stop 25 GHz

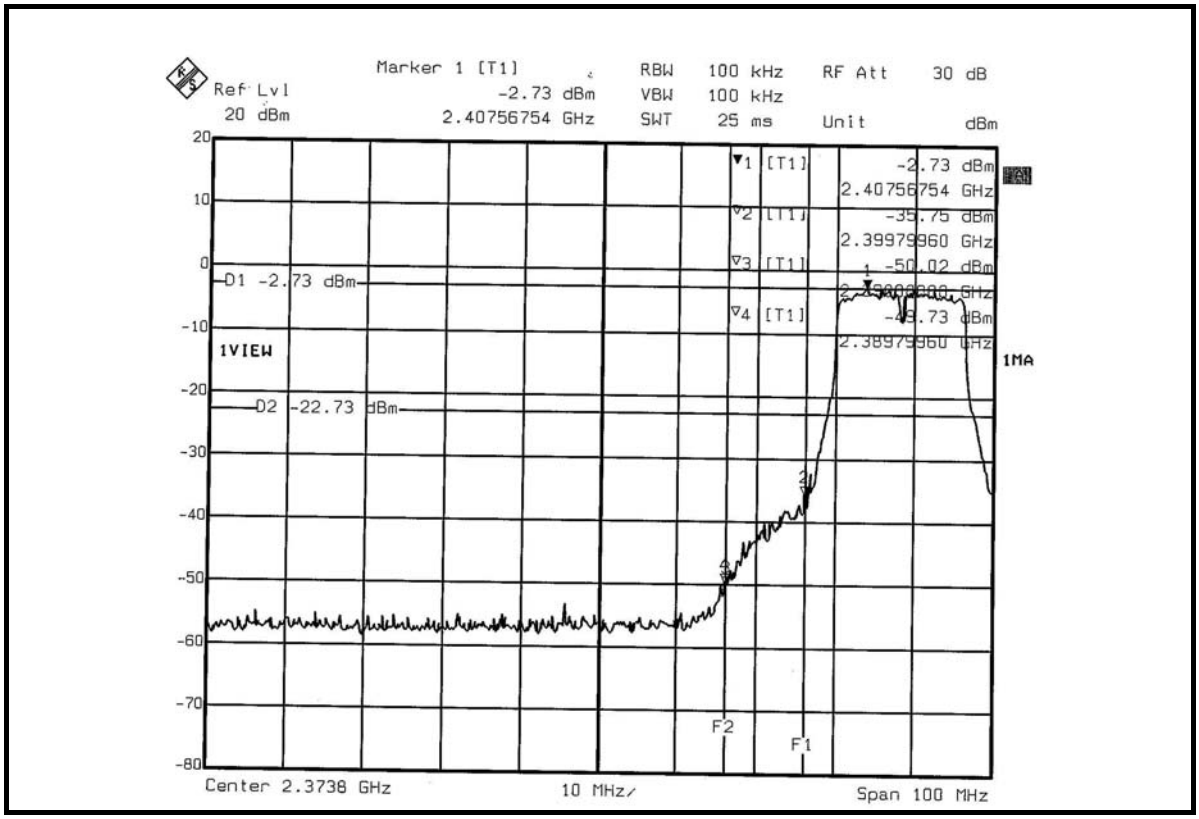
802.11g OFDM MODULATION

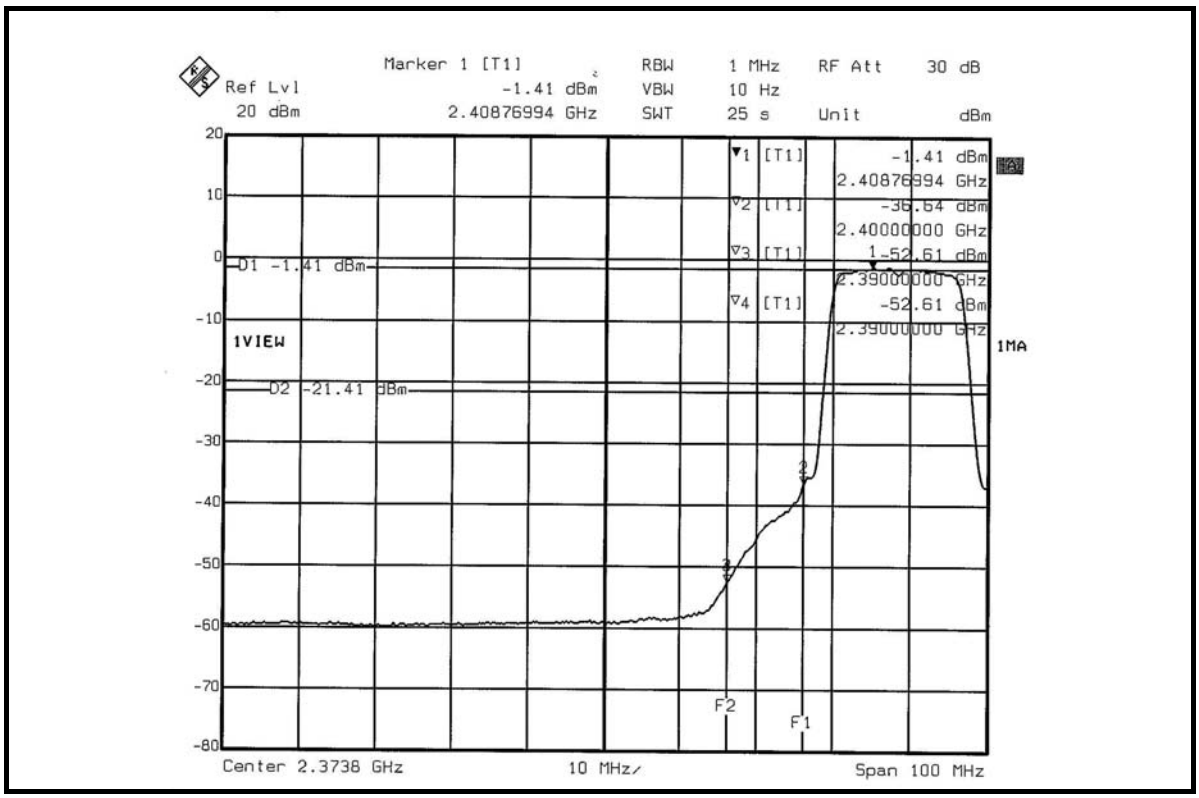
NOTE 1: The band edge emission plot on the next page shows 47.00dBc between carrier maximum power and local maximum emission in restrict band (2.38979GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 112.89dBuV/m (Peak), so the maximum field strength in restrict band is 112.89-47.00=65.89dBuV/m which is under 74dBuV/m limit.

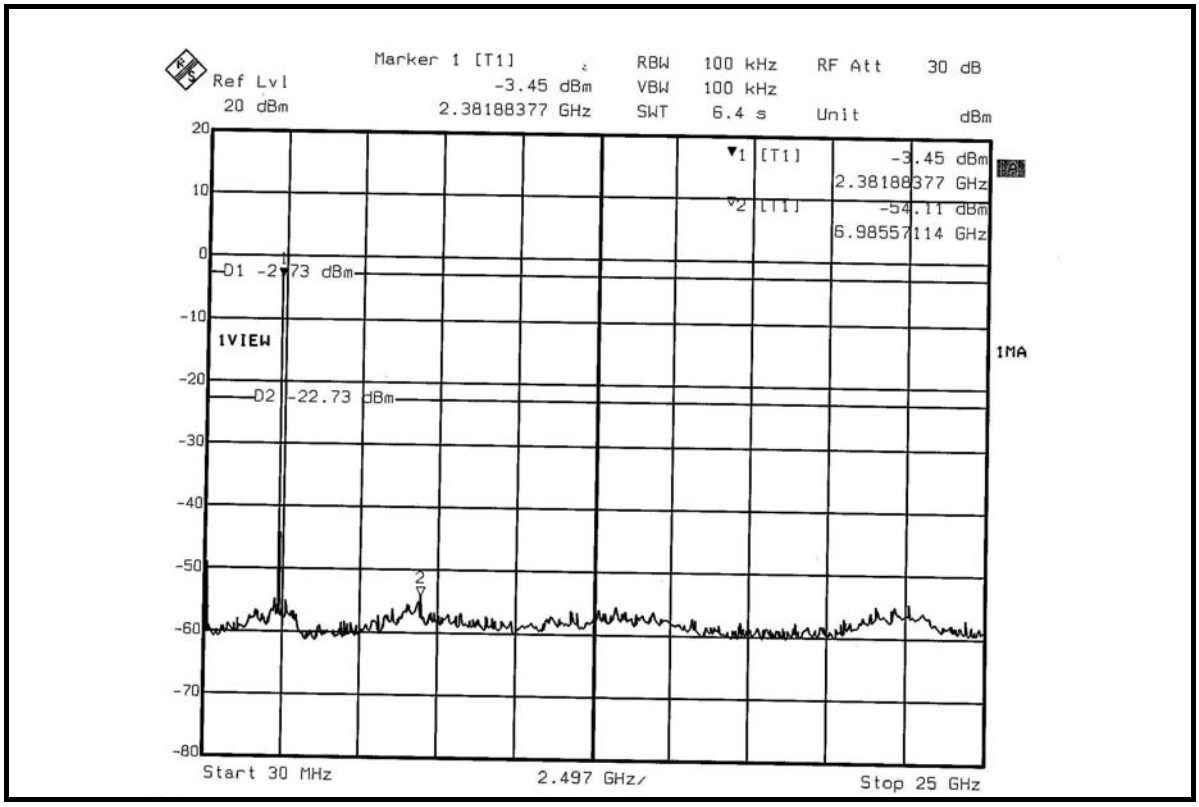
The band edge emission plot of on the next page shows 51.20dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 102.51dBuV/m (Average), so the maximum field strength in restrict band is 102.51-51.20=51.31dBuV/m which is under 54dBuV/m limit.

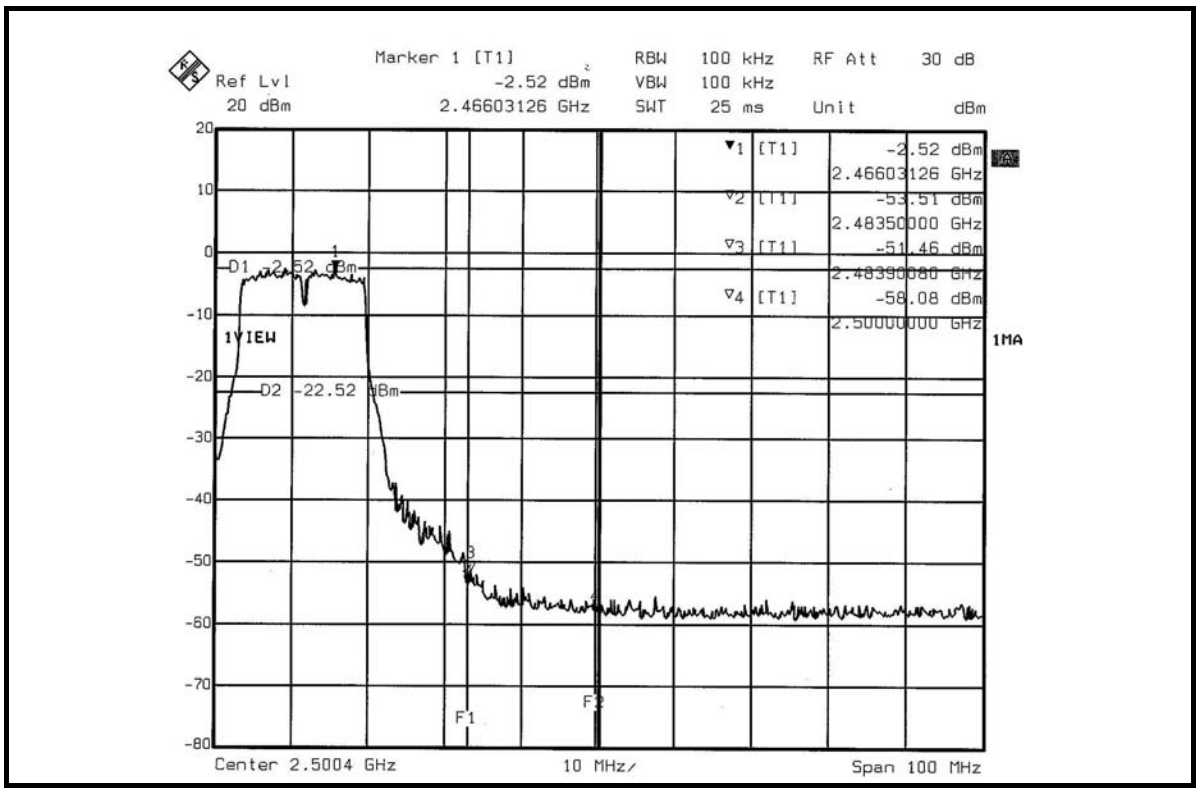
NOTE 2: The band edge emission plot on the next second page shows 48.94dBc between carrier maximum power and local maximum emission in restrict band (2.48390GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 113.49dBuV/m (Peak), so the maximum field strength in restrict band is 113.49-48.94=64.55dBuV/m which is under 74dBuV/m limit.

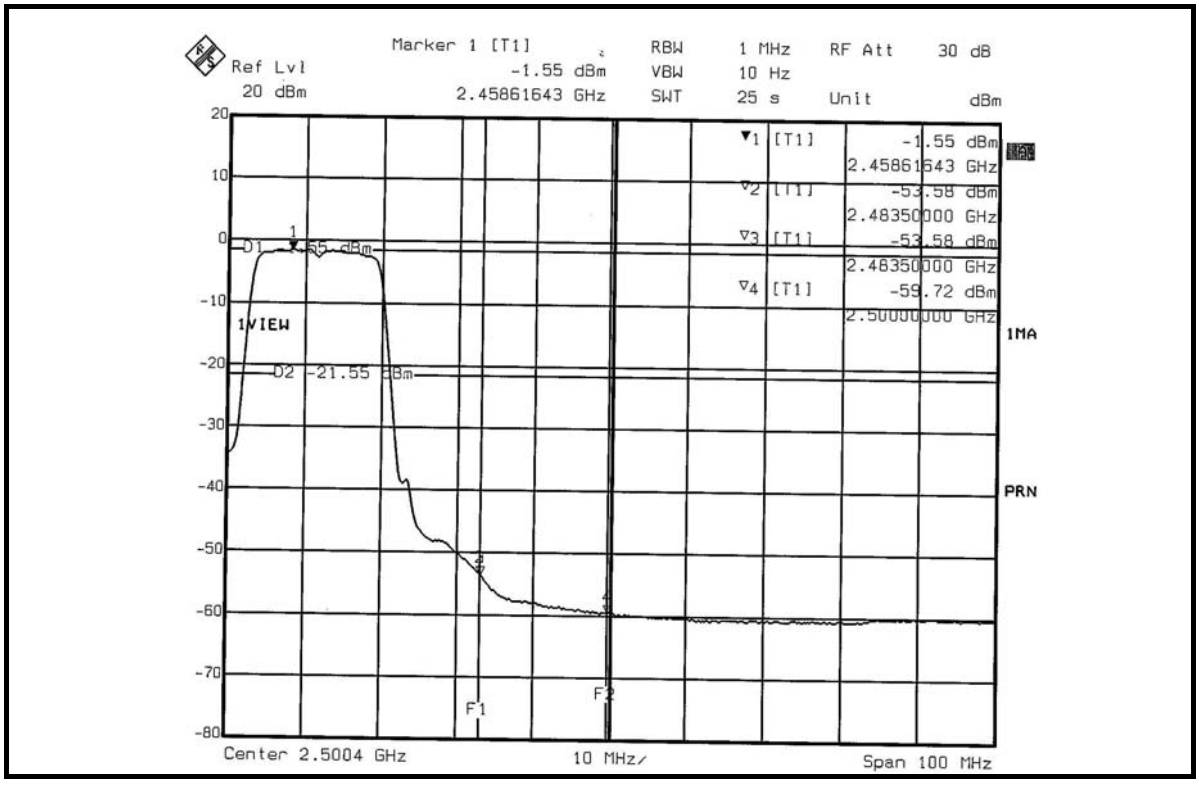
The band edge emission plot on the next third page shows 52.03dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 103.02dBuV/m (Average), so the maximum field strength in restrict band is 103.02-52.03=50.99dBuV/m which is under 54dBuV/m limit.

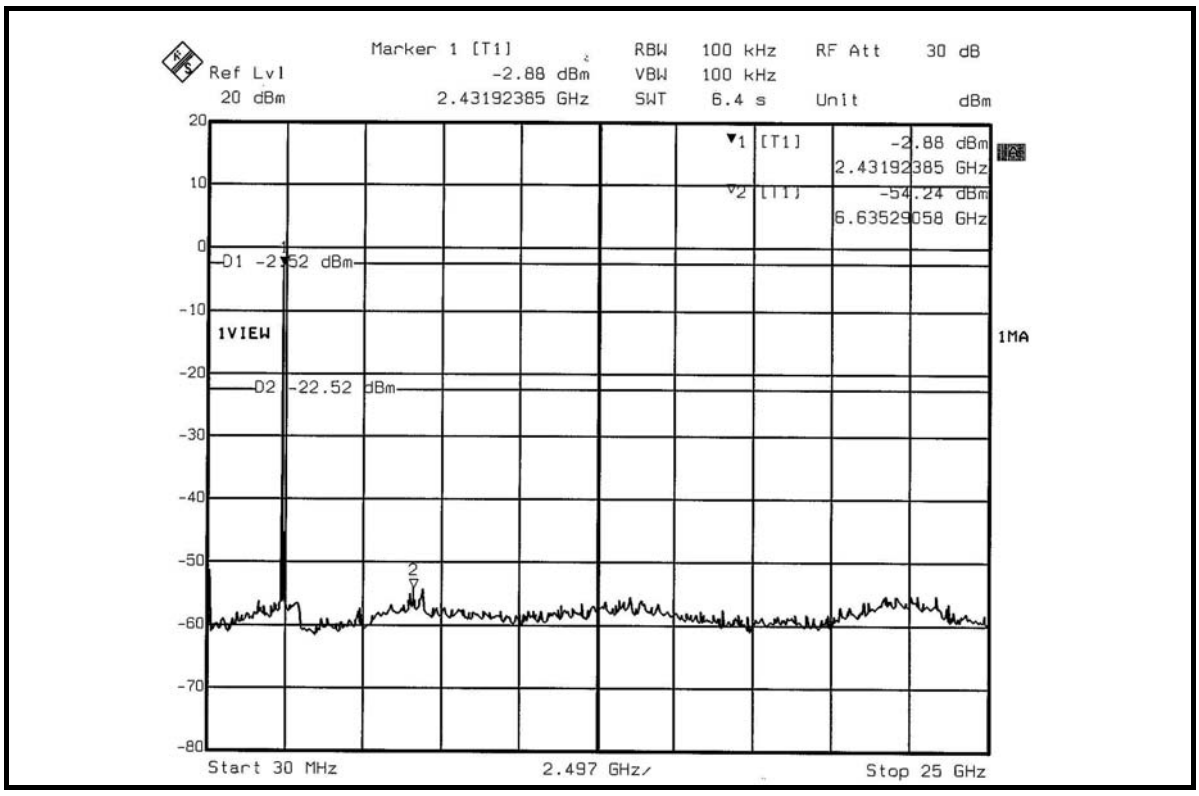

Marker 1 [T1]
-2.73 dBm
2.40756754 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -2.73 dBm
2.40756754 GHz
▽2 [T1] -35.75 dBm
2.39979960 GHz
▽3 [T1] 1 -50.02 dBm
▽4 [T1] -53.73 dBm
2.38979960 GHz
D1 -2.73 dBm
D2 -22.73 dBm
1VIEW
1MA
F2
F1
Center 2.3738 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-1.41 dBm
2.40876994 GHz
RBW 1 MHz
VBW 10 Hz
SWT 25 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -1.41 dBm
2.40876994 GHz
▽2 [T1] -36.64 dBm
2.40000000 GHz
▽3 [T1] 1 -52.61 dBm
▽4 [T1] -52.61 dBm
D1 -1.41 dBm
D2 -21.41 dBm
1VIEW
1MA
F2
F1
Center 2.3738 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-3.45 dBm
2.38188377 GHz
RBW 100 kHz
VBW 100 kHz
SWT 6.4 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -3.45 dBm
2.38188377 GHz
▽2 [T1] -54.11 dBm
6.98557114 GHz
D1 -2.73 dBm
D2 -22.73 dBm
1VIEW
1MA
Start 30 MHz
2.497 GHz/
Stop 25 GHz


Marker 1 [T1]
-2.52 dBm
2.46603126 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -2.52 dBm
2.46603126 GHz
▽2 [T1] -53.51 dBm
2.48350000 GHz
▽3 [T1] -51.46 dBm
2.48390080 GHz
▽4 [T1] -58.08 dBm
2.50000000 GHz
D1 -2.52 dBm
D2 -22.52 dBm
1VIEW
1MA
F1
F2
Center 2.5004 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-1.55 dBm
2.45861643 GHz
RBW 1 MHz
VBW 10 Hz
SWT 25 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -1.55 dBm
2.45861643 GHz
▽2 [T1] -53.58 dBm
2.48350000 GHz
▽3 [T1] -53.58 dBm
2.48350000 GHz
▽4 [T1] -59.72 dBm
2.50000000 GHz
D1 -1.55 dBm
D2 -21.55 dBm
1VIEW
1MA
PRN
F1
F2
Center 2.5004 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-2.88 dBm
2.43192385 GHz
RBW 100 kHz
VBW 100 kHz
SWT 6.4 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -2.88 dBm
2.43192385 GHz
▽2 [T1] -54.24 dBm
6.63529058 GHz
D1 -2.52 dBm
D2 -22.52 dBm
1VIEW
1MA
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 Patch antenna with I-PEX connector. The maximum Gain of the antenna is 9.18dBi.

5. TEST TYPES AND RESULTS (FOR 802.11a 5725~5850MHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.
1. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
2. 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.

5.1.2 TEST INSTRUMENTS

Same as 4.1.2

5.1.3 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.

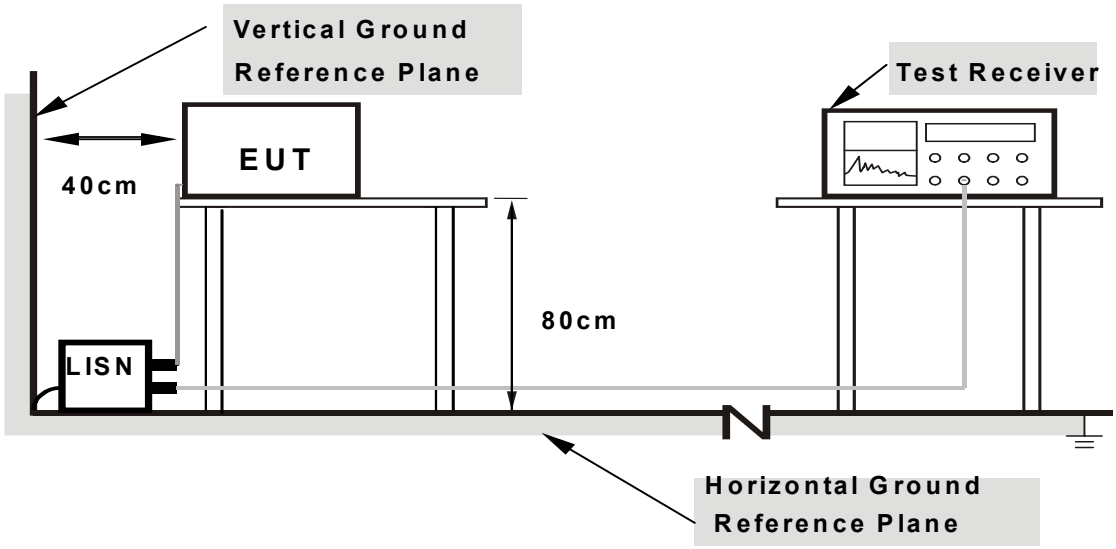
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit – 20dB) was not recorded.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

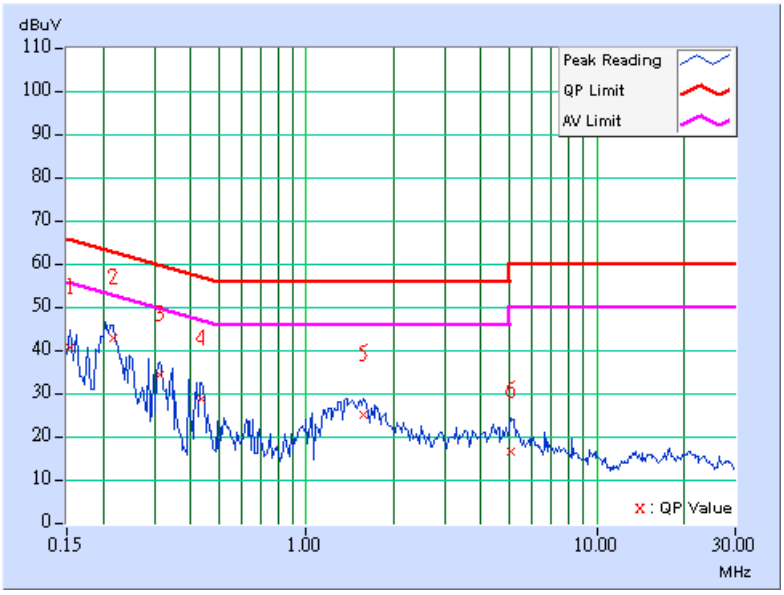
5.1.7 TEST RESULTS

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	**ENVIRONMENTAL CONDITIONS**	20deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Match Tsui

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.154	0.10	40.36	-	40.46	-	65.78	55.78	-25.32	-
2	**0.217**	**0.10**	**42.47**	**-**	**42.57**	**-**	**62.94**	**52.94**	**-20.37**	**-**
3	0.314	0.10	34.06	-	34.16	-	59.86	49.86	-25.70	-
4	0.436	0.10	28.67	-	28.77	-	57.14	47.14	-28.37	-
5	1.578	0.16	24.85	-	25.01	-	56.00	46.00	-30.99	-
6	5.047	0.37	16.47	-	16.84	-	60.00	50.00	-43.16	-

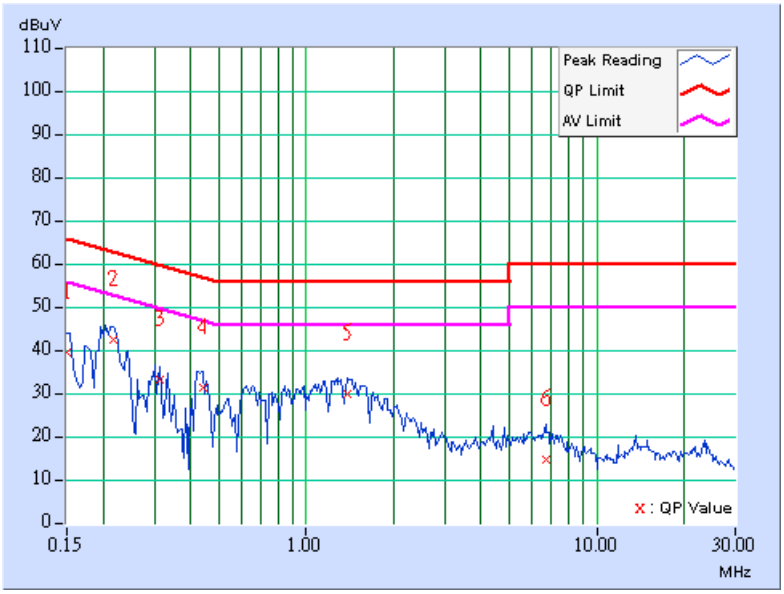
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	39.33	-	39.43	-	65.99	55.99	-26.56	-
2	0.217	0.10	42.29	-	42.39	-	62.94	52.94	-20.55	-
3	0.315	0.10	33.08	-	33.18	-	59.84	49.84	-26.66	-
4	0.439	0.11	31.21	-	31.32	-	57.08	47.08	-25.76	-
5	1.380	0.20	29.66	-	29.86	-	56.00	46.00	-26.14	-
6	6.676	0.41	14.56	-	14.97	-	60.00	50.00	-45.03	-

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.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 TEST INSTRUMENTS

Same as 4.2.2

5.2.3 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 camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

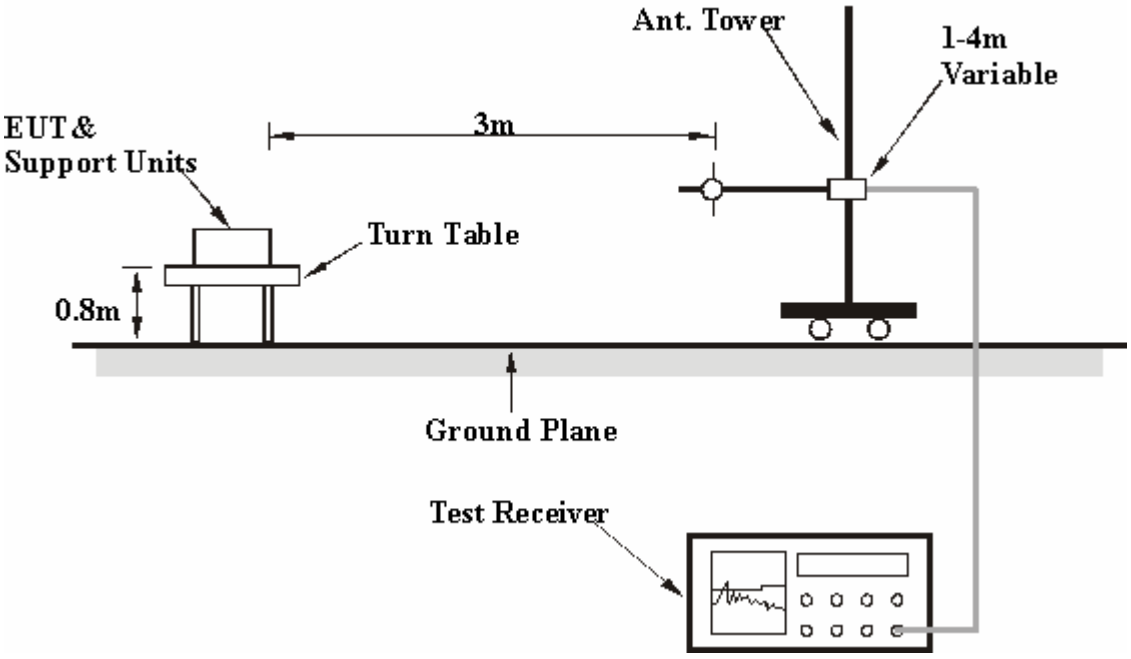
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Quasi-Peak
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

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	99.98	28.60 QP	43.50	-14.90	1.50 H	298	18.41	10.19
2	166.07	37.63 QP	43.50	-5.87	1.50 H	298	23.58	14.05
3	199.12	29.15 QP	43.50	-14.35	1.50 H	298	17.82	11.34
4	333.25	33.65 QP	46.00	-12.35	1.25 H	217	17.63	16.02
5	465.43	28.78 QP	46.00	-17.22	1.75 H	229	9.11	19.67
6	663.71	31.08 QP	46.00	-14.92	1.25 H	217	7.32	23.76

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	64.99	25.53 QP	40.00	-14.47	1.00 V	292	12.20	13.34
2	64.99	25.53 QP	40.00	-14.47	1.00 V	316	12.20	13.34
3	125.25	30.07 QP	43.50	-13.43	1.00 V	292	17.14	12.93
4	175.79	28.81 QP	43.50	-14.69	1.25 V	241	15.49	13.32
5	333.25	32.02 QP	46.00	-13.98	1.00 V	292	16.00	16.02
6	397.39	27.22 QP	46.00	-18.78	1.25 V	316	9.64	17.58

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.

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Morgan Chen

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	#3830.00	47.20 PK	74.00	-26.80	1.00 H	32	9.66	37.54
2	#3830.00	42.54 AV	54.00	-11.46	1.00 H	32	5.00	37.54
3	5725.00	71.65 PK	81.38	-9.73	1.00 H	22	30.99	40.66
4	5725.00	60.86 AV	71.20	-10.34	1.00 H	22	20.20	40.66
5	*5745.00	101.38 PK			1.17 H	6	60.68	40.70
6	*5745.00	91.20 AV			1.17 H	6	50.50	40.70
7	#11490.00	64.99 PK	74.00	-9.01	1.00 H	35	11.86	53.13
8	#11490.00	49.95 AV	54.00	-4.05	1.00 H	35	-3.18	53.13

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	#3830.00	55.64 PK	74.00	-18.36	1.36 V	14	18.10	37.54
2	#3830.00	52.54 AV	54.00	-1.46	1.36 V	14	15.00	37.54
3	5725.00	81.60 PK	94.91	-13.31	1.41 V	352	40.94	40.66
4	5725.00	66.06 AV	84.83	-18.77	1.41 V	352	25.40	40.66
5	*5745.00	114.91 PK			1.43 V	347	74.21	40.70
6	*5745.00	104.83 AV			1.43 V	347	64.13	40.70
7	#11490.00	66.02 PK	74.00	-7.98	1.00 V	3	12.89	53.13
8	#11490.00	50.50 AV	54.00	-3.50	1.00 V	3	-2.63	53.13

NOTE: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. "*" : Fundamental frequency
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

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	#3856.00	47.63 PK	74.00	-26.37	1.04 H	317	9.97	37.66
2	#3856.00	43.20 AV	54.00	-10.80	1.04 H	317	5.54	37.66
3	*5785.00	100.54 PK			1.06 H	35	59.74	40.80
4	*5785.00	90.29 AV			1.06 H	35	49.49	40.80
5	#11570.00	64.83 PK	74.00	-9.17	1.00 H	238	11.67	53.16
6	#11570.00	49.79 AV	54.00	-4.21	1.00 H	238	-3.37	53.16

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	#3856.00	56.23 PK	74.00	-17.77	1.00 V	0	18.57	37.66
2	#3856.00	52.70 AV	54.00	-1.30	1.00 V	0	15.04	37.66
3	*5785.00	114.02 PK			1.00 V	14	73.22	40.80
4	*5785.00	103.97 AV			1.00 V	14	63.18	40.80
5	#11570.00	66.84 PK	74.00	-7.16	1.00 V	36	13.68	53.16
6	#11570.00	50.64 AV	54.00	-3.36	1.00 V	36	-2.52	53.16

NOTE: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. "*" : Fundamental frequency
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	**ENVIRONMENTAL CONDITIONS**	25deg. C, 69%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Morgan Chen

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	#3883.00	45.93 PK	74.00	-28.07	1.03 H	68	8.14	37.79
2	#3883.00	42.99 AV	54.00	-11.01	1.03 H	68	5.20	37.79
3	*5825.00	100.32 PK			1.12 H	32	59.43	40.89
4	*5825.00	90.14 AV			1.12 H	32	49.25	40.89
5	5850.00	56.84 PK	80.32	-23.48	1.02 H	16	15.88	40.95
6	5850.00	44.74 AV	70.14	-25.40	1.02 H	16	3.79	40.95
7	#11650.00	65.07 PK	74.00	-8.93	1.00 H	48	11.92	53.15
8	#11650.00	50.20 AV	54.00	-3.80	1.00 H	48	-2.95	53.15

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#3883.00	56.18 PK	74.00	-17.82	1.47 V	355	18.39	37.79
2	**#3883.00**	**52.99 AV**	**54.00**	**-1.01**	**1.47 V**	**355**	**15.20**	**37.79**
3	*5825.00	113.17 PK			1.53 V	348	72.28	40.89
4	*5825.00	102.89 AV			1.53 V	348	62.00	40.89
5	5850.00	72.45 PK	93.17	-20.72	1.42 V	351	31.50	40.95
6	5850.00	60.67 AV	82.89	-22.22	1.42 V	351	19.72	40.95
7	#11650.00	65.90 PK	74.00	-8.10	1.00 V	36	12.75	53.15
8	#11650.00	52.00 AV	54.00	-2.00	1.00 V	36	-1.15	53.15

NOTE: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value
5. "*" : Fundamental frequency
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP 40	100040	Jun. 07, 2007

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

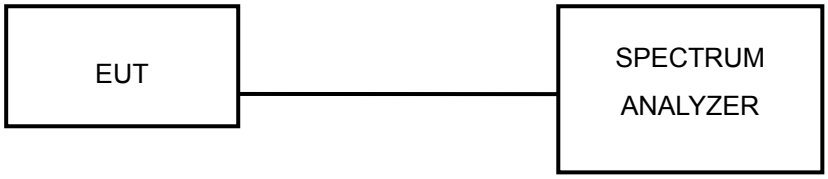
5.3.3 TEST PROCEDURE

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

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

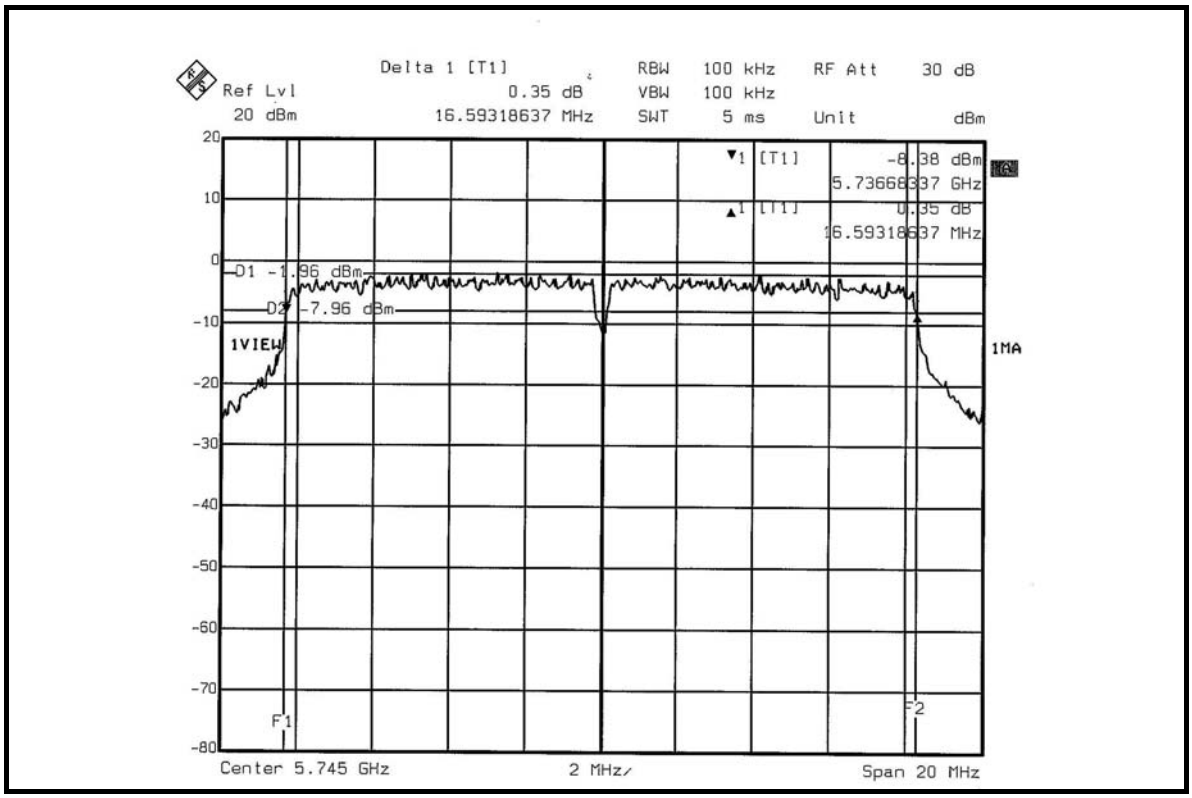
5.3.7 TEST RESULTS

802.11a OFDM MODULATION

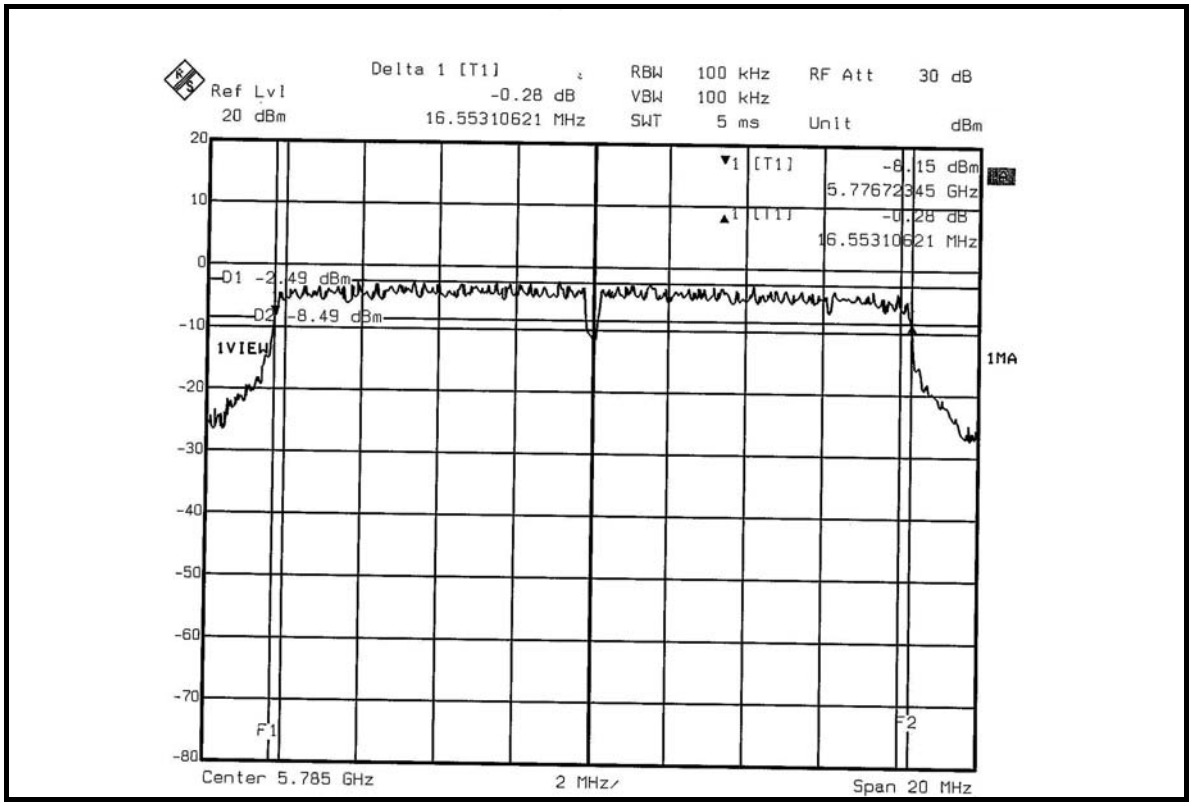
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 67%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	5745	16.59	0.5	PASS
3	5785	16.55	0.5	PASS
5	5825	16.55	0.5	PASS

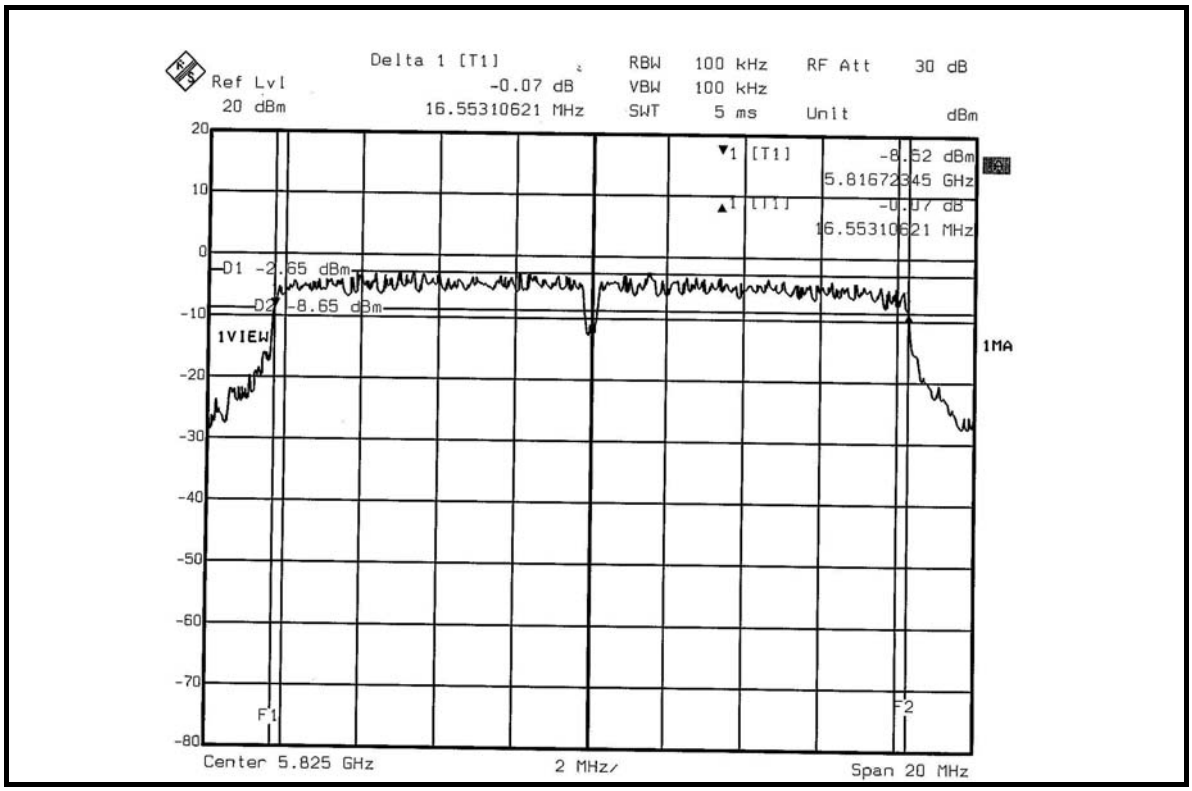
CH 1



CH 3


Delta 1 [T1]
-0.28 dB
16.55310621 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1 [T1] -8.15 dBm
5.77672345 GHz
1 [T1] -0.28 dB
16.55310621 MHz
D1 -2.49 dBm
D2 -8.49 dBm
1VIEW
1MA
F1
F2
Center 5.785 GHz
2 MHz/
Span 20 MHz

CH 5


Delta 1 [T1]
-0.07 dB
16.55310621 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1 [T1] -8.52 dBm
5.81672345 GHz
1 [T1] -0.07 dB
16.55310621 MHz
D1 -2.65 dBm
D2 -8.65 dBm
1VIEW
1MA
F1
F2
Center 5.825 GHz
2 MHz/
Span 20 MHz

5.4 MAXIMUM PEAK OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP 40	100040	Jun. 07, 2007
ANRITSU SIGNAL GENERATOR	68247B	984703	May 08, 2007
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Jan. 16, 2007
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..

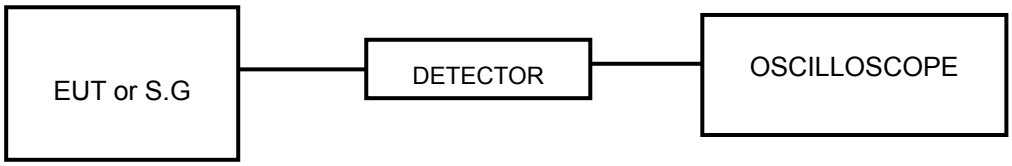
5.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read 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 reading on oscilloscope. Record the power level.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

5.4.7 TEST RESULTS

802.11a OFDM MODULATION

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 67%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	5745	57.412	17.59	27.31	PASS
3	5785	51.050	17.08	27.31	PASS
5	5825	44.875	16.52	27.31	PASS

NOTE: According to 15.247 (b) (3), the maximum antenna gain 8.69dBi is higher than 6dBi, so the limit of peak power shall be reduced by 2.69dB.

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP 40	100040	Jun. 07, 2007

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

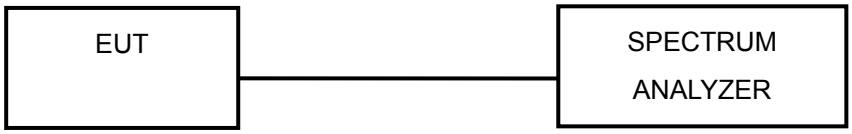
5.5.3 TEST PROCEDURE

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 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6

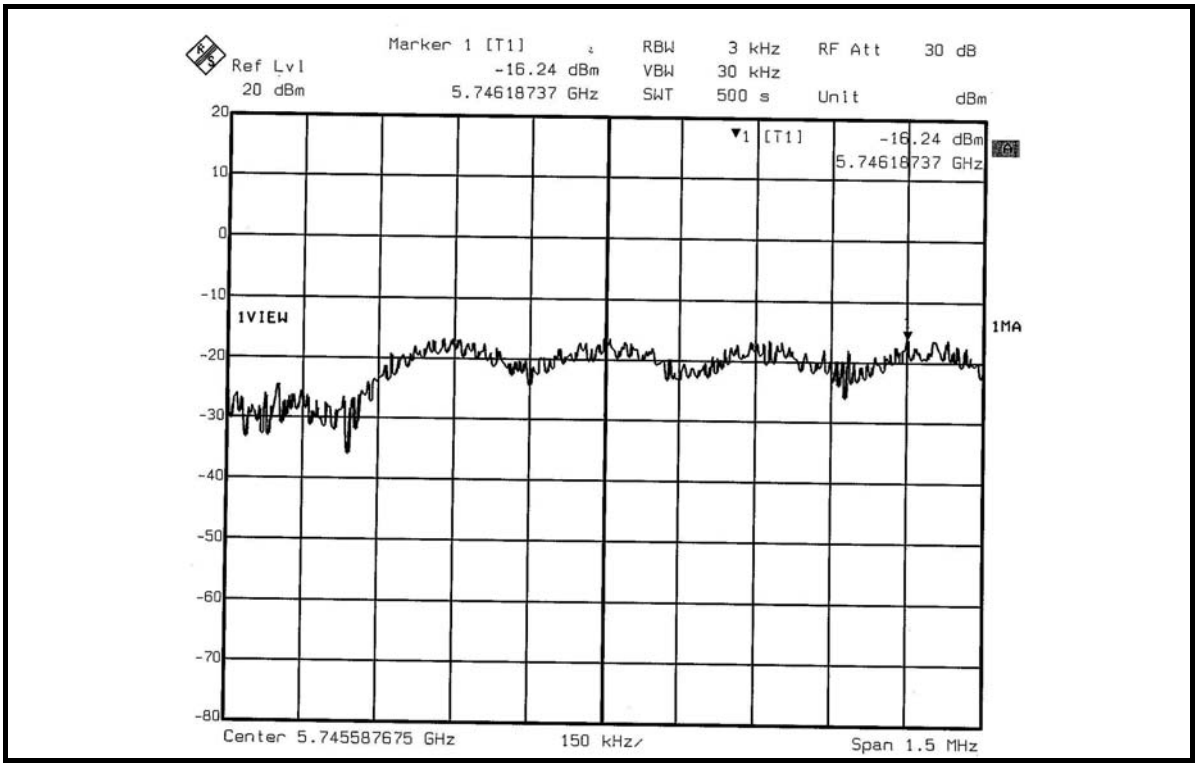
5.5.7 TEST RESULTS

802.11a OFDM MODULATION

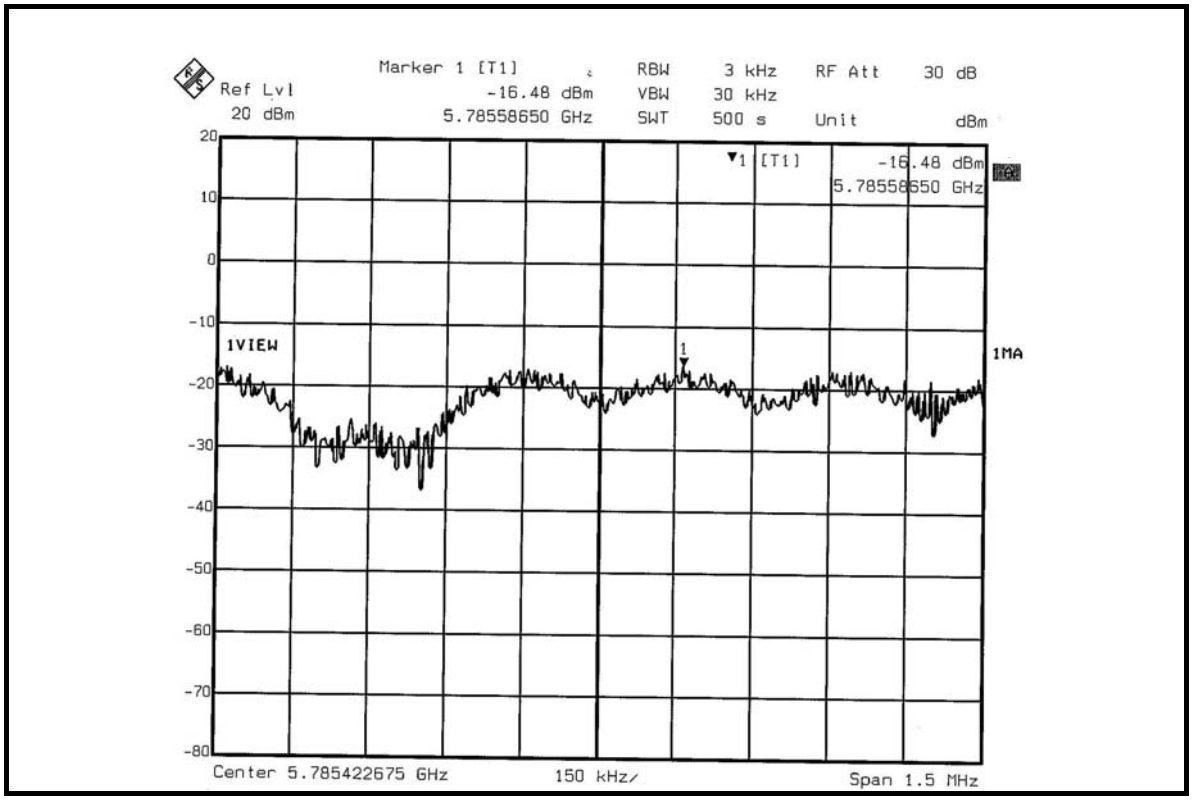
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 67%RH, 991hPa
TESTED BY	Morgan Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5745	-16.24	8	PASS
3	5785	-16.48	8	PASS
5	5825	-16.72	8	PASS

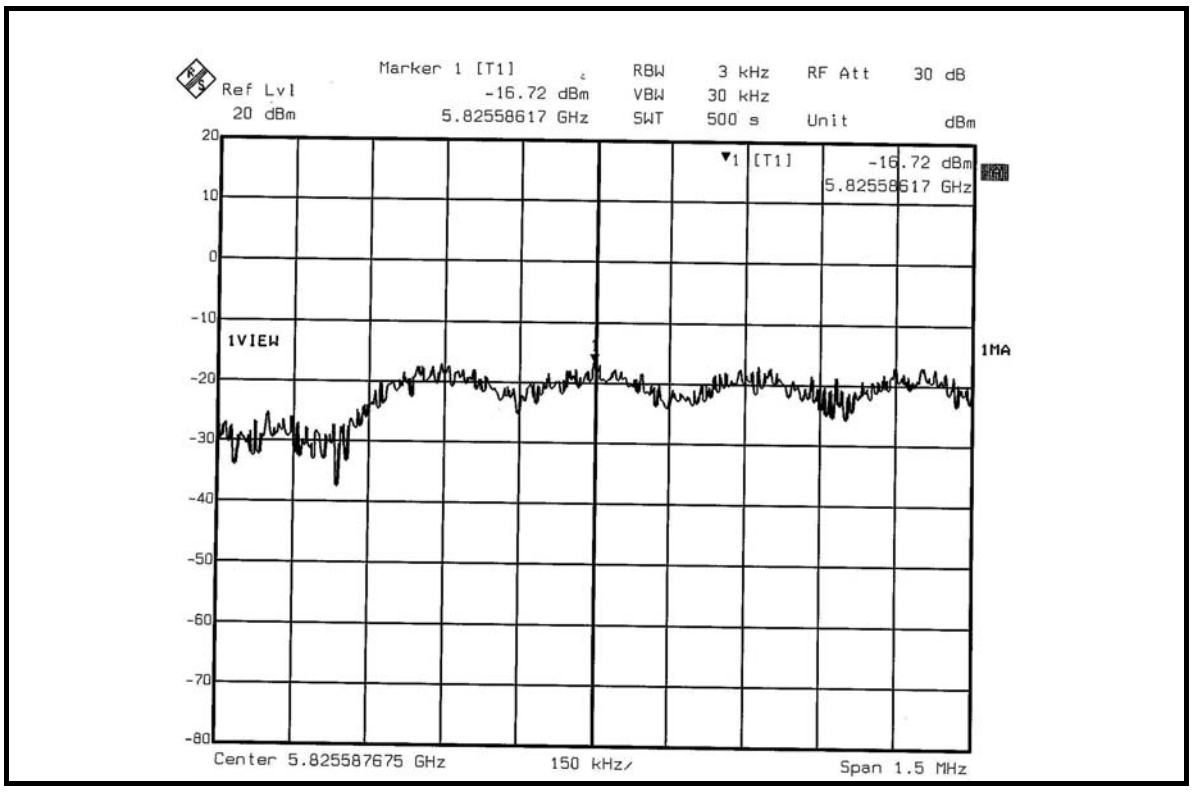
CH 1



CH 3


Marker 1 [T1]
-16.48 dBm
5.78558650 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1VIEW
1MA
Center 5.785422675 GHz
150 kHz/
Span 1.5 MHz

CH 5


Marker 1 [T1]
-16.72 dBm
5.82558617 GHz
RBW 3 kHz
VBW 30 kHz
SWT 500 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
1VIEW
1MA
Center 5.825587675 GHz
150 kHz/
Span 1.5 MHz

5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP 40	100040	Jun. 07, 2007

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

5.6.3 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 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

5.6.4 DEVIATION FROM TEST STANDARD

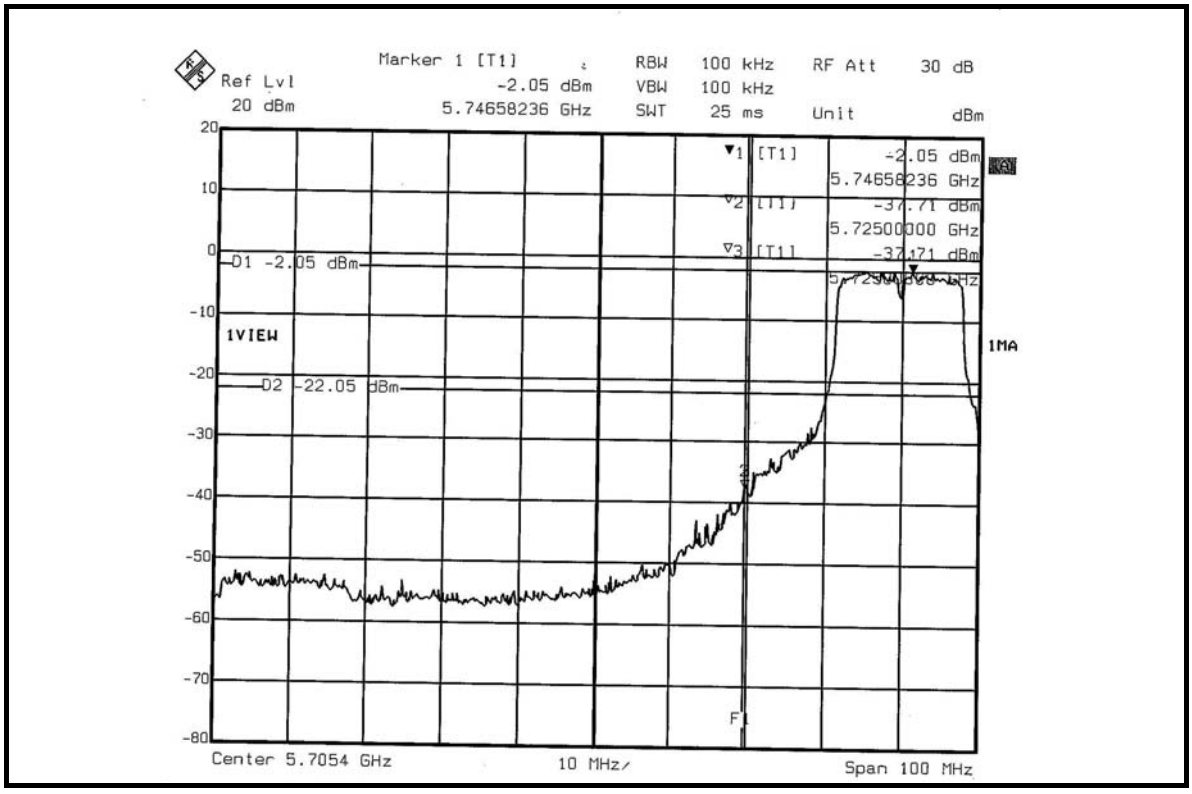
No deviation

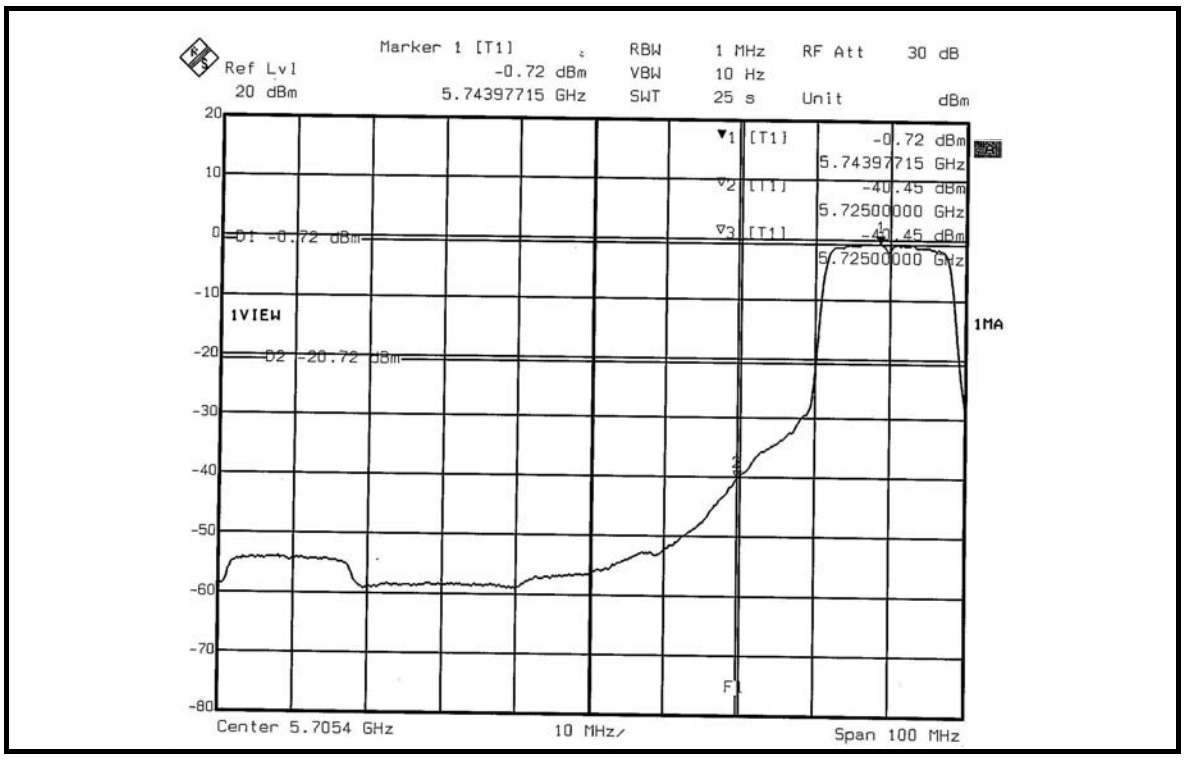
5.6.5 EUT OPERATING CONDITION

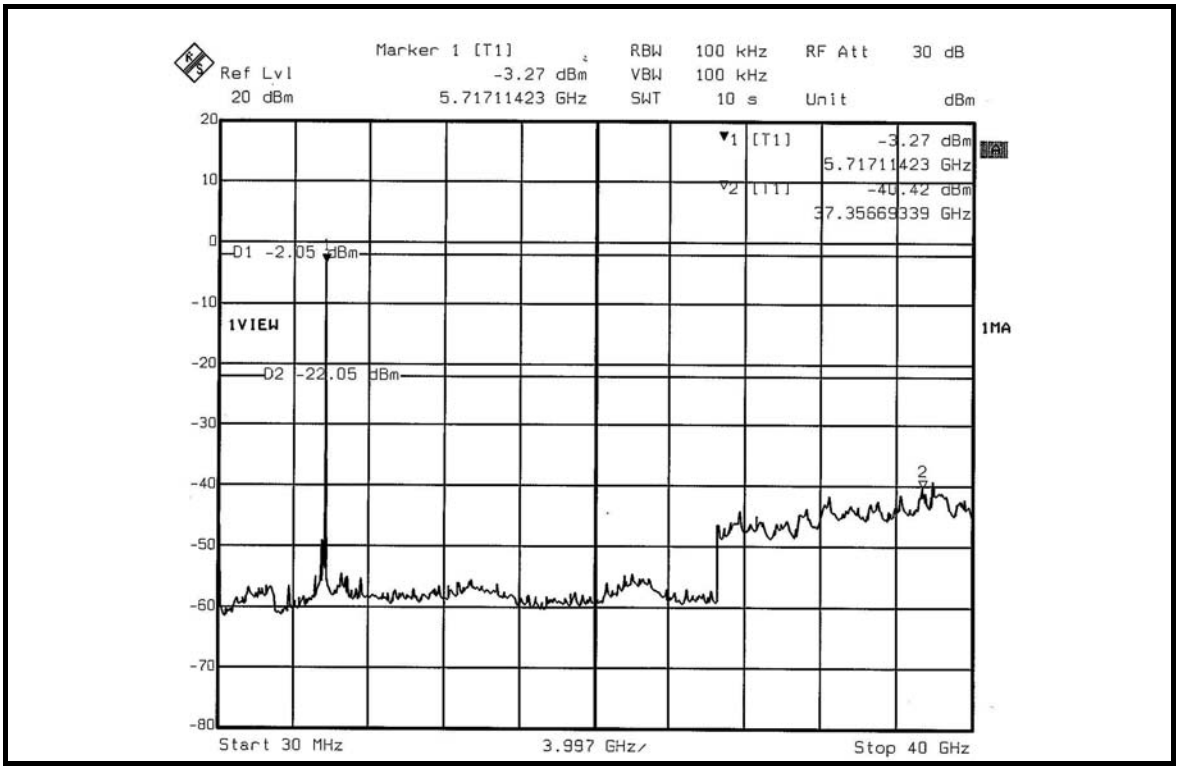
Same as Item 5.9.6

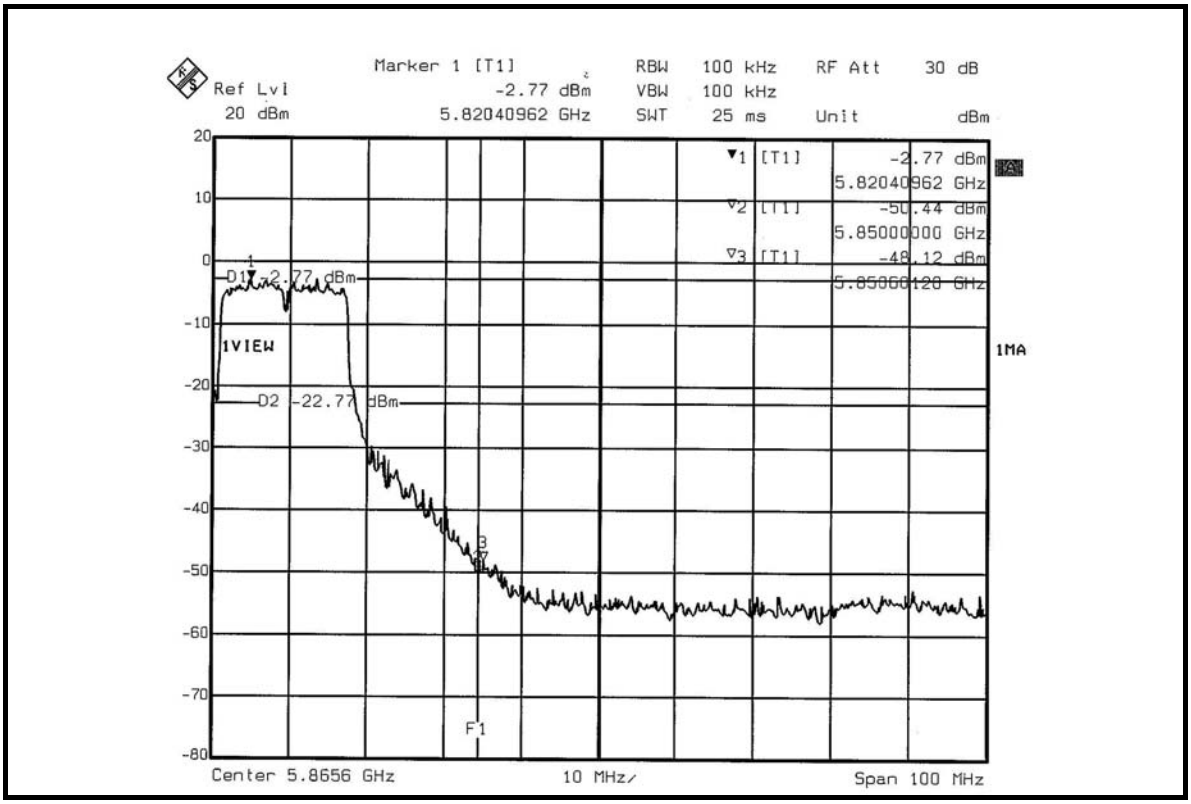
5.6.6 TEST RESULTS

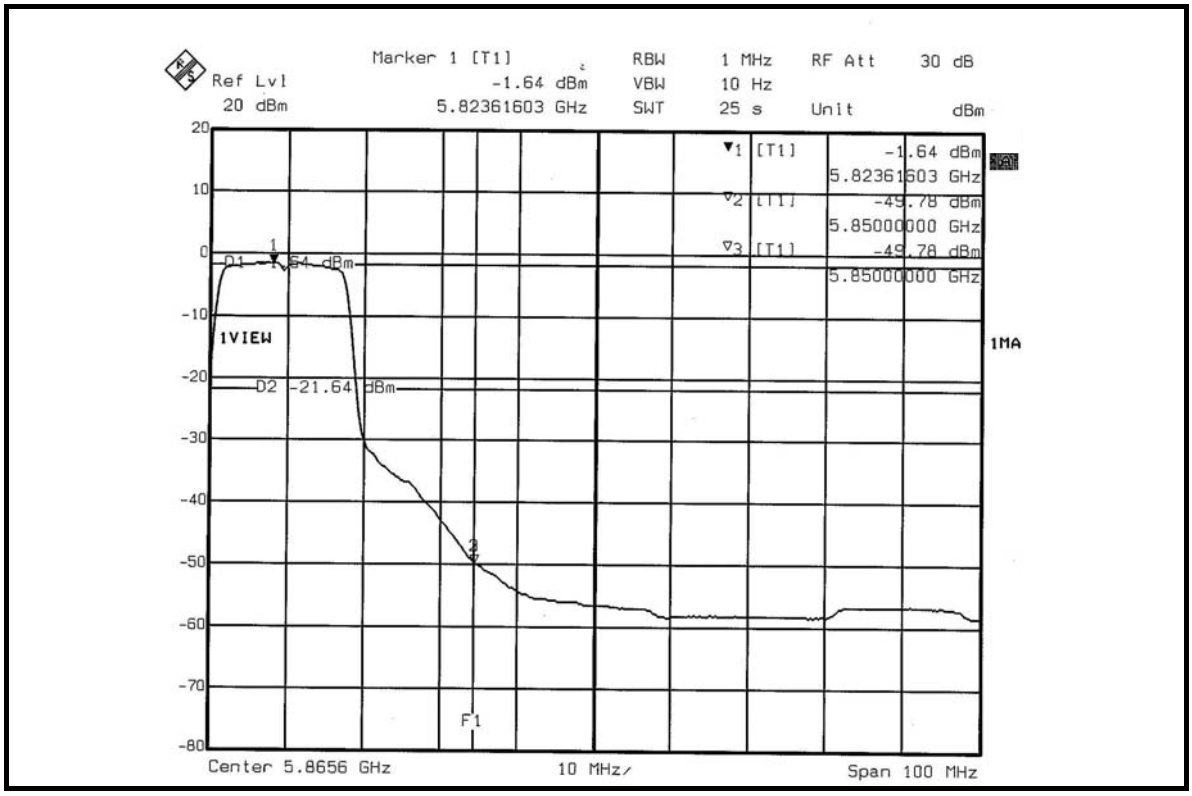
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

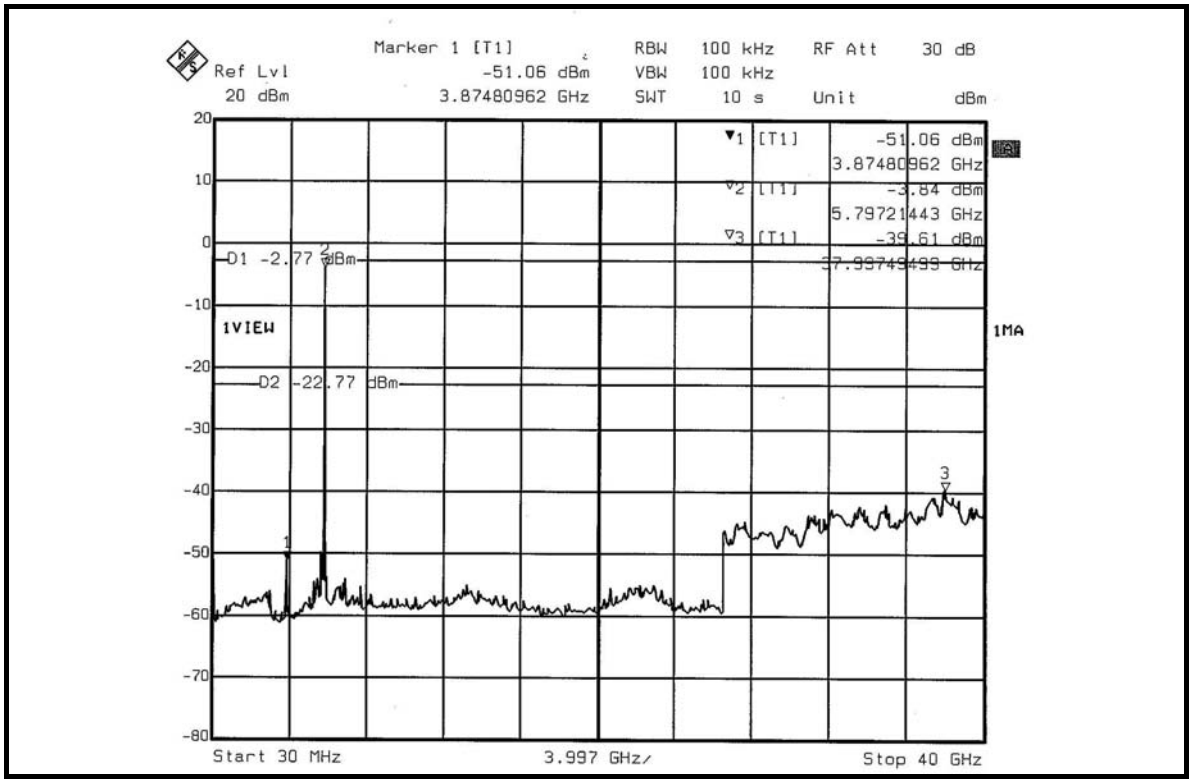

Marker 1 [T1]
-2.05 dBm
5.74658236 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 -2.05 dBm
D2 -22.05 dBm
1VIEW
1MA
Center 5.7054 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-0.72 dBm
5.74397715 GHz
RBW 1 MHz
VBW 10 Hz
SWT 25 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
D1 -0.72 dBm
D2 -20.72 dBm
1VIEW
1MA
Center 5.7054 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
Ref Lvl
20 dBm
-3.27 dBm
5.71711423 GHz
RBW 100 kHz
VBW 100 kHz
SWT 10 s
RF Att 30 dB
Unit dBm
▼1 [T1] -3.27 dBm
5.71711423 GHz
▽2 [T1] -40.42 dBm
37.35669339 GHz
D1 -2.05 dBm
D2 -22.05 dBm
1VIEW
1MA
Start 30 MHz
3.997 GHz/
Stop 40 GHz


Marker 1 [T1]
Ref Lvl
20 dBm
-2.77 dBm
5.82040962 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
▼1 [T1] -2.77 dBm
5.82040962 GHz
▽2 [T1] -50.44 dBm
5.85000000 GHz
▽3 [T1] -48.12 dBm
5.85060128 GHz
D1 -2.77 dBm
D2 -22.77 dBm
1VIEW
1MA
F1
Center 5.8656 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-1.64 dBm
5.82361603 GHz
RBW 1 MHz
VBW 10 Hz
SWT 25 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -1.64 dBm
5.82361603 GHz
▽2 [T1] -49.78 dBm
5.85000000 GHz
▽3 [T1] -49.78 dBm
5.85000000 GHz
D1 -1.64 dBm
D2 -21.64 dBm
1VIEW
1MA
F1
Center 5.8656 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
-51.06 dBm
3.87480962 GHz
RBW 100 kHz
VBW 100 kHz
SWT 10 s
RF Att 30 dB
Unit dBm
Ref Lvl
20 dBm
▼1 [T1] -51.06 dBm
3.87480962 GHz
▽2 [T1] -3.84 dBm
5.79721443 GHz
▽3 [T1] -39.61 dBm
37.99749499 GHz
D1 -2.77 dBm
D2 -22.77 dBm
1VIEW
1MA
Start 30 MHz
3.997 GHz/
Stop 40 GHz

5.7 ANTENNA REQUIREMENT

5.7.1 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(a), 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.

5.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Patch antenna with I-PEX connector. The maximum Gain of the antenna is 8.69dBi.

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, 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.