FCC TEST REPORT

REPORT NO.: RF961130H07
MODEL NO.: SMC8014W-G, SMC8014WG, SMC8014WG-RES, SMC8014WG-TWC, SMC8014WG-BIZ, SMC8014WG-COX, SMC8014WG-TES, SMC8014WG-RRR
RECEIVED: Dec. 11, 2007
TESTED: Dec. 21, 2007 to Jan. 03, 2008
ISSUED: Jan. 09, 2008

APPLICANT: HitronTechnologies

ADDRESS: NO. 1-8, LISING 1ST RD., HSINCHU SCIENCE PARK, HSINCHU, 300, TAIWAN.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan, R.O.C.

Testing Laboratory 0536

ACCREDITED No. 2177-01

Table of Contents

1 CERTIFICATION

PRODUCT :	Broadband Wireless Gateway
BRAND NAME :	SMC
MODEL NO. :	SMC8014W-G, SMC8014WG, SMC8014WG-RES, SMC8014WG-TWC, SMC8014WG-BIZ, SMC8014WG-COX, SMC8014WG-TES, SMC8014WG-RRR
TESTED :	Dec. 21, 2007 to Jan. 03, 2008
APPLICANT :	HitronTechnologies
TEST SAMPLE :	R&D SAMPLE
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247)
	ANSI C63.4-2003

The above equipment (Model: SMC8014W-G) 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 : Sunny Wen , **DATE:** Jan. 09, 2008
(Sunny Wen, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Jan. 09, 2008
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Jan. 09, 2008
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -8.40 dB at 0.510 MHz
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 -4.36 dB at 4824.00 MHz
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:

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

Measurement	**Value**
Conducted emissions	2.44 dB
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz -18GHz)	2.33 dB
Radiated emissions (18GHz -40GHz)	2.55 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Broadband Wireless Gateway
MODEL NO.	SMC8014W-G, SMC8014WG, SMC8014WG-RES, SMC8014WG-TWC, SMC8014WG-BIZ, SMC8014WG-COX, SMC8014WG-TES, SMC8014WG-RRR
FCC ID	U4P-1350002
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
RADIO 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
CHANNEL SPACING	5MHz
OUTPUT POWER	802.11b: 95.499mW 802.11g: 165.959mW
ANTENNA TYPE	Dipole Antenna with Reverse SMA connector (Antenna gain : 3dBi)
DATA CABLE	RJ45 cable (unshielded, 1.8m) USB cable (shielded, 1.8m)
I/O PORT	CATV port x 1, USB port x 1, RJ45 port x 4

NOTE:

1. The EUT has eight different models names, which are identical to each other in all aspects except for the following :

Brand	Model No.	Difference
SMC	SMC8014W-G	For different marking.
	SMC8014WG	
	SMC8014WG-RES	
	SMC8014WG-TWC	
	SMC8014WG-BIZ	
	SMC8014WG-COX	
	SMC8014WG-TES	
	SMC8014WG-RRR	

From the above models, model: **SMC8014W-G** was selected as representative model for the test and its data was recorded in this report.

2. The EUT could be supplied with the following power adapter:

Brand:	Rong-Hong
Model No.:	RH48-1201250DU
Input power :	AC 120V, 60Hz, 30W Cable : 1.8m/Unshielded/without core
Output power :	DC 12V, 1250mA Cable : 1.8m/Unshielded/without core

3. The EUT complies with IEEE 802.11g standards, and backwards compatible with IEEE 802.11b products.

4. 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:

For 802.11b/g normal mode: Eleven channels are provided to this 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		

3.3 TEST MODE APPLICABLITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
-	√	√	√	√	NA

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)
802.11b	1 to 11	1	DSSS	DBPSK	1

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates 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	DSSS	DBPSK	1

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	CCK	11
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Broadband Wireless Gateway. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C. (15.247)
ANSI C63.4 : 2003

All tests have been performed and recorded as per the above standards.

3.5 DESCRIPTION OF SUPPORT UNITS

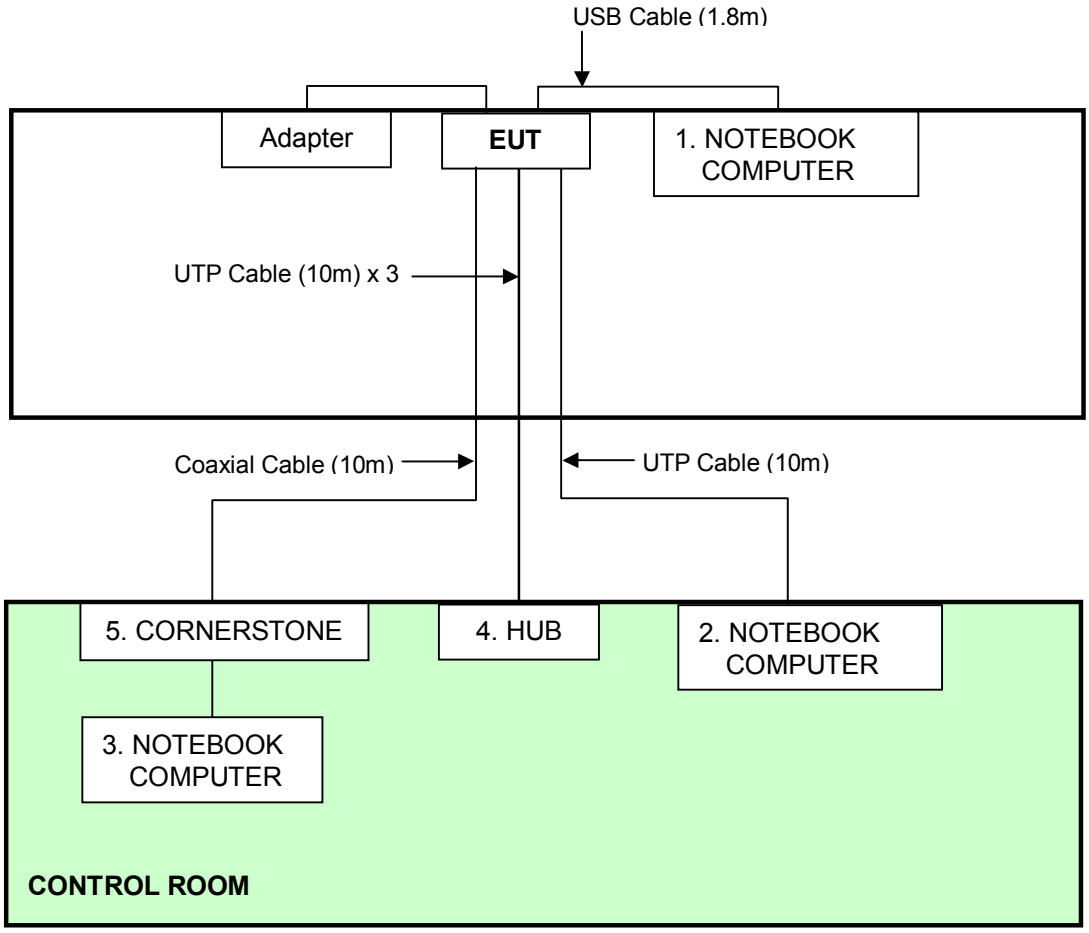
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	DoC
2	NOTEBOOK COMPUTER	DELL	PP01L	TW-09c748-12800-165-3171	DoC
3	NOTEBOOK COMPUTER	IBM	2655-GT1 A22E	NA	NA
4	HUB	AVSYS	110H8	01-20E-000002	DoC
5	CORNERSTONE	ARRIS	CMTS 1500	NA	NA

No.	Signal cable description
1	NA
2	NA
3	NA
4	NA
5	NA

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST



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. All emanations from a class B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 06, 2008
Line-Impedance Stabilization Network(for EUT)	KNW-407	8-1395-12	Aug. 19, 2008
Line-Impedance Stabilization Network(for Peripheral)	ENV-216	100072	Nov. 08, 2008
RF Cable (JETBAO)	RG5B/U-6m	COACAB-9KHz-30MHz	Aug. 15, 2008
50 ohms Terminator	50	3	Nov. 15, 2008
Software	ADT_Cond_V7.3.2	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 ADT Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.

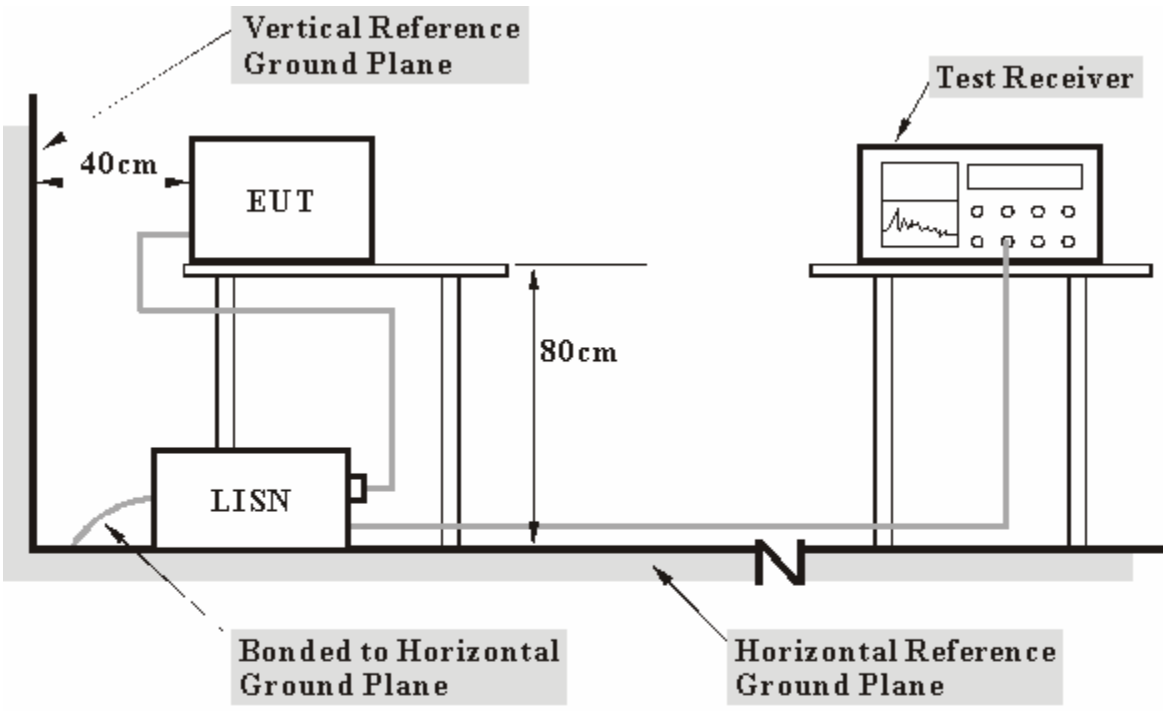
4.1.3 TEST PROCEDURES

a. The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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/HOST were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

4.1.5 EUT OPERATING CONDITIONS

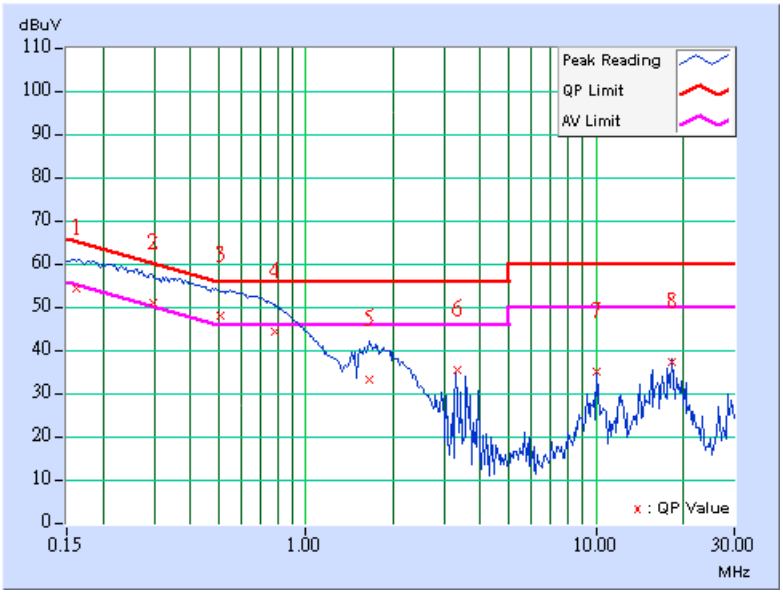
a. Placed the EUT on the testing table.
b. Prepared the computer system (support units 2, 3) to act as communication partner and placed them outside of testing area.
c. The communication partner runs test program ”Console Interface” to enable EUT under transmission/receiving condition continuously at specific channel frequency via wireless.

4.1.6 TEST RESULTS

INPUT POWER	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
PHASE	Line (L)	**TRANSFER RATE**	1Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH, 975hPa	**TESTED BY**	Moris Lin

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	0.163	0.35	53.74	-	54.09	-	65.33	55.33	-11.24	-
2	0.297	0.22	50.17	20.40	50.39	20.62	60.34	50.34	-9.94	-29.71
3	**0.510**	**0.14**	**47.46**	**27.23**	**47.60**	**27.37**	**56.00**	**46.00**	**-8.40**	**-18.63**
4	0.779	0.24	43.73	-	43.97	-	56.00	46.00	-12.03	-
5	1.661	0.29	32.61	-	32.90	-	56.00	46.00	-23.10	-
6	3.320	0.37	34.81	-	35.18	-	56.00	46.00	-20.82	-
7	10.060	0.55	34.32	-	34.87	-	60.00	50.00	-25.13	-
8	18.244	0.87	36.43	-	37.30	-	60.00	50.00	-22.70	-

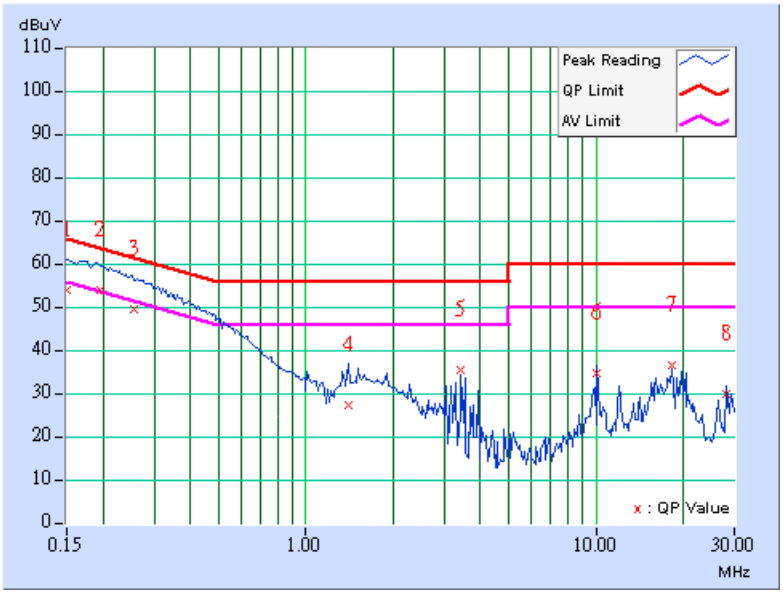
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



INPUT POWER	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
PHASE	Neutral (N)	**TRANSFER RATE**	1Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 68%RH, 975hPa	**TESTED BY**	Moris Lin

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	0.150	0.38	52.97	-	53.35	-	66.00	56.00	-12.65	-
2	0.196	0.36	53.03	-	53.39	-	63.79	53.79	-10.40	-
3	0.257	0.28	48.56	-	48.84	-	61.52	51.52	-12.68	-
4	1.396	0.30	26.40	-	26.70	-	56.00	46.00	-29.30	-
5	3.414	0.37	34.58	-	34.95	-	56.00	46.00	-21.05	-
6	10.061	0.54	33.87	-	34.41	-	60.00	50.00	-25.59	-
7	18.245	0.86	35.72	-	36.58	-	60.00	50.00	-23.42	-
8	28.332	0.96	28.87	-	29.83	-	60.00	50.00	-30.17	-

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
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 15, 2008
HP Pre_Amplifier	8449B	3008A01922	Oct. 04, 2008
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Mar. 26, 2008
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	July 26, 2008
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 25, 2008
R&S Loop Antenna	HFH2-Z2	881058/15	Nov. 29, 2008
RF Switches (ARNITSU)	CS-201	1565157	Aug. 13, 2008
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2008
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Aug. 13, 2008
Software	ADT_Radiated_V 7.6.15.8	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	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 horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824A-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=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 10 meter open area test site. 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.

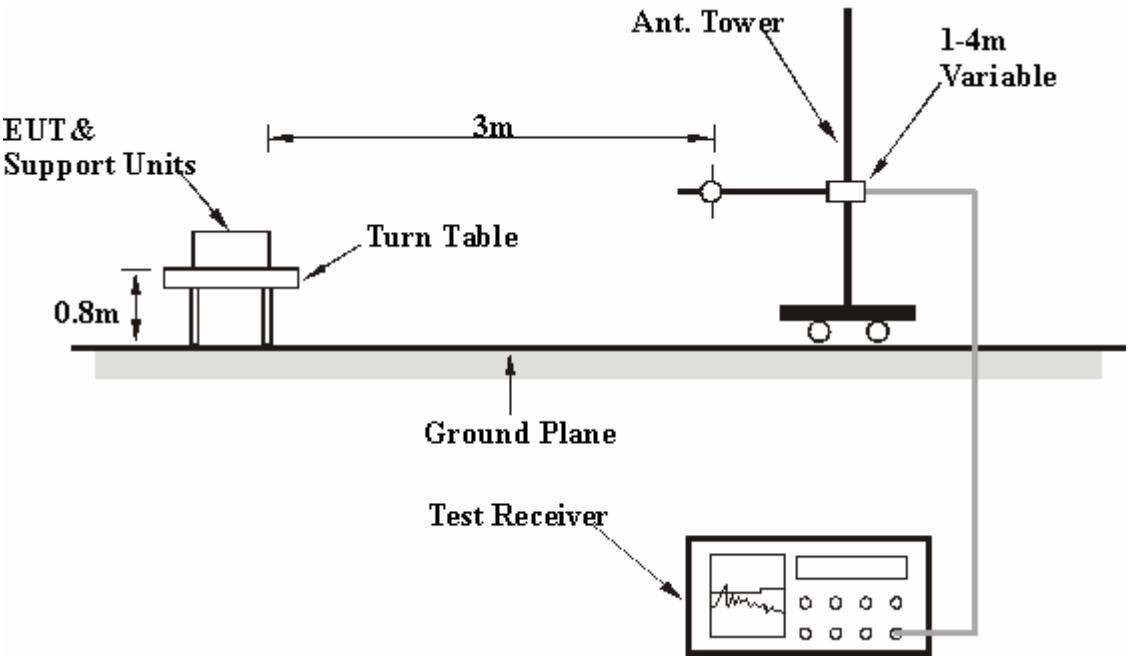
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin 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 is 1MHz and video bandwidth of test receiver/spectrum analyzer 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 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 TEST SETUP



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

4.2.5 EUT OPERATING CONDITIONS

Same as 4.1.5

4.2.6 TEST RESULTS

Below 1GHz Worst-Case Data

MODULATION TYPE	DSSS	**CHANNEL**	Channel 1
INPUT POWER	120Vac, 60 Hz	**FREQUENCY RANGE**	30-1000 MHz
ENVIRONMENTAL CONDITIONS	12deg. C, 56%RH, 975hPa	**TRANSFER RATE**	1Mbps
TESTED BY	Frank Liu	**DETECTOR FUNCTION**	Quasi-Peak, 120kHz

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	125.00	30.33 QP	43.50	-13.17	2.13 H	298	17.10	13.23
2	225.00	33.55 QP	46.00	-12.45	1.38 H	191	21.12	12.43
3	250.00	34.41 QP	46.00	-11.59	1.00 H	43	21.58	12.83
4	375.00	31.40 QP	46.00	-14.60	1.00 H	21	13.92	17.48
5	500.00	28.79 QP	46.00	-17.21	1.17 H	23	7.74	21.05
6	600.00	27.37 QP	46.00	-18.63	1.49 H	21	3.83	23.54
7	625.00	26.34 QP	46.00	-19.66	1.12 H	1	2.34	24.00
8	750.00	30.11 QP	46.00	-15.89	1.00 H	21	2.85	27.26
9	1000.00	29.18 QP	54.00	-24.82	1.00 H	258	-1.35	30.53

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	125.00	35.27 QP	43.50	-8.23	1.00 V	152	22.04	13.23
2	250.00	34.39 QP	46.00	-11.61	1.00 V	56	21.56	12.83
3	375.00	29.29 QP	46.00	-16.71	1.20 V	12	11.81	17.48
4	455.00	19.83 QP	46.00	-26.17	1.11 V	82	-0.17	20.00
5	500.00	29.09 QP	46.00	-16.91	1.00 V	356	8.04	21.05
6	525.00	30.66 QP	46.00	-15.34	1.00 V	82	9.69	20.97
7	625.00	24.70 QP	46.00	-21.30	1.00 V	209	0.70	24.00
8	750.00	29.53 QP	46.00	-16.47	1.16 V	306	2.27	27.26
9	875.00	28.49 QP	46.00	-17.51	1.26 V	75	-0.58	29.07
10	1000.00	29.40 QP	54.00	-24.60	1.28 V	149	-1.13	30.53

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.

4.2.7 TEST RESULTS

802.11b DSSS modulation

MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 62%RH, 975hPa	**TESTED BY**	Frank Liu

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	55.41 PK	74.00	-18.59	1.46 H	247	25.01	30.40
2	2390.00	43.98 AV	54.00	-10.02	1.46 H	247	13.58	30.40
3	*2412.00	100.20 PK			1.46 H	247	69.71	30.49
4	*2412.00	94.80 AV			1.46 H	247	64.31	30.49
5	4824.00	50.69 PK	74.00	-23.31	1.29 H	300	15.00	35.69
6	4824.00	43.86 AV	54.00	-10.14	1.29 H	300	8.17	35.69
7	7236.00	54.34 PK	74.00	-19.66	1.17 H	25	12.10	42.24
8	7236.00	40.36 AV	54.00	-13.64	1.17 H	25	-1.88	42.24

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.37 PK	74.00	-14.63	1.64 V	224	28.97	30.40
2	2390.00	47.77 AV	54.00	-6.23	1.64 V	224	17.37	30.40
3	*2412.00	110.00 PK			1.63 V	236	79.51	30.49
4	*2412.00	105.00 AV			1.63 V	236	74.51	30.49
5	4824.00	53.68 PK	74.00	-20.32	1.63 V	243	17.99	35.69
6	**4824.00**	**49.64 AV**	**54.00**	**-4.36**	**1.63 V**	**243**	**13.95**	**35.69**
7	7236.00	53.86 PK	74.00	-20.14	1.00 V	316	11.62	42.24
8	7236.00	40.27 AV	54.00	-13.73	1.00 V	316	-1.97	42.24

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

MODE	Channel 6	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 62%RH, 975hPa	**TESTED BY**	Frank Liu

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	100.60 PK			1.40 H	258	69.99	30.61
2	*2437.00	95.00 AV			1.40 H	258	64.39	30.61
3	4874.00	51.20 PK	74.00	-22.80	1.20 H	236	15.40	35.80
4	4874.00	44.20 AV	54.00	-9.80	1.20 H	236	8.40	35.80
5	7311.00	54.80 PK	74.00	-19.20	1.12 H	20	12.28	42.52
6	7311.00	40.80 AV	54.00	-13.20	1.12 H	20	-1.72	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	111.50 PK			1.61 V	236	80.89	30.61
2	*2437.00	106.80 AV			1.61 V	236	76.19	30.61
3	4874.00	53.83 PK	74.00	-20.17	1.33 V	251	18.03	35.80
4	4874.00	49.63 AV	54.00	-4.37	1.33 V	251	13.83	35.80
5	7311.00	54.07 PK	74.00	-19.93	1.05 V	321	11.55	42.52
6	7311.00	40.44 AV	54.00	-13.56	1.05 V	321	-2.08	42.52

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

MODE	Channel 11	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 62%RH, 975hPa	**TESTED BY**	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

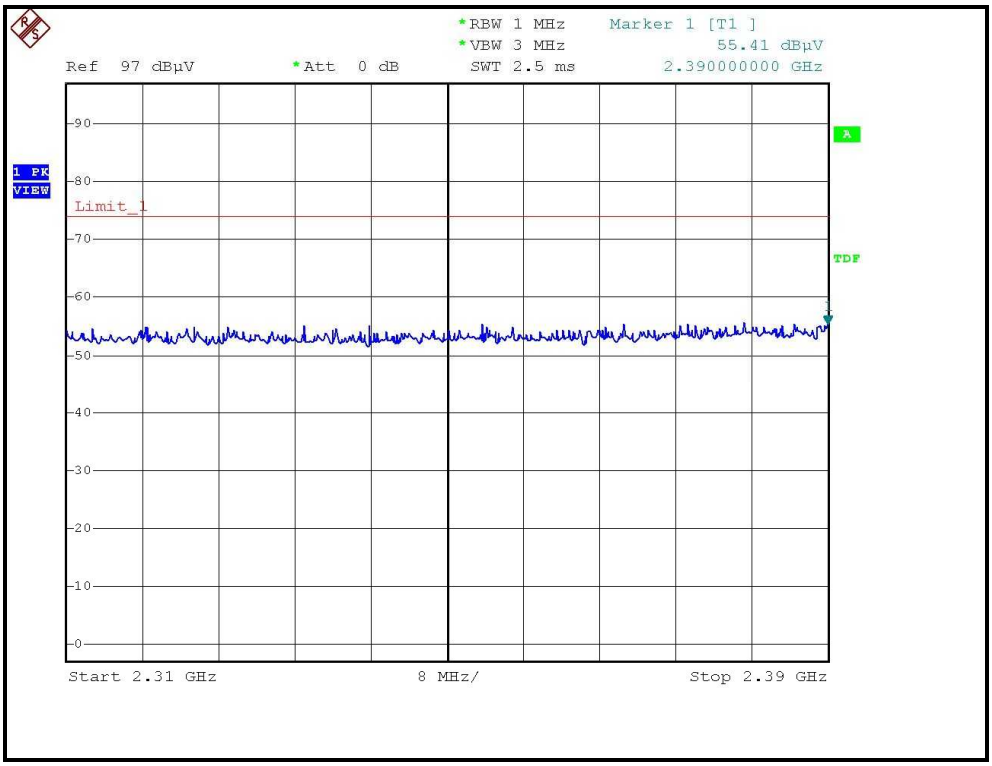
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	99.50 PK			1.32 H	256	68.78	30.72
2	*2462.00	94.00 AV			1.32 H	256	63.28	30.72
3	2483.50	53.88 PK	74.00	-20.12	1.32 H	256	23.06	30.82
4	2483.50	43.72 AV	54.00	-10.28	1.32 H	256	12.90	30.82
5	4924.00	51.40 PK	74.00	-22.60	1.14 H	238	15.50	35.90
6	4924.00	44.00 AV	54.00	-10.00	1.14 H	238	8.10	35.90
7	7386.00	54.00 PK	74.00	-20.00	1.06 H	36	11.20	42.80
8	7386.00	40.20 AV	54.00	-13.80	1.06 H	36	-2.60	42.80

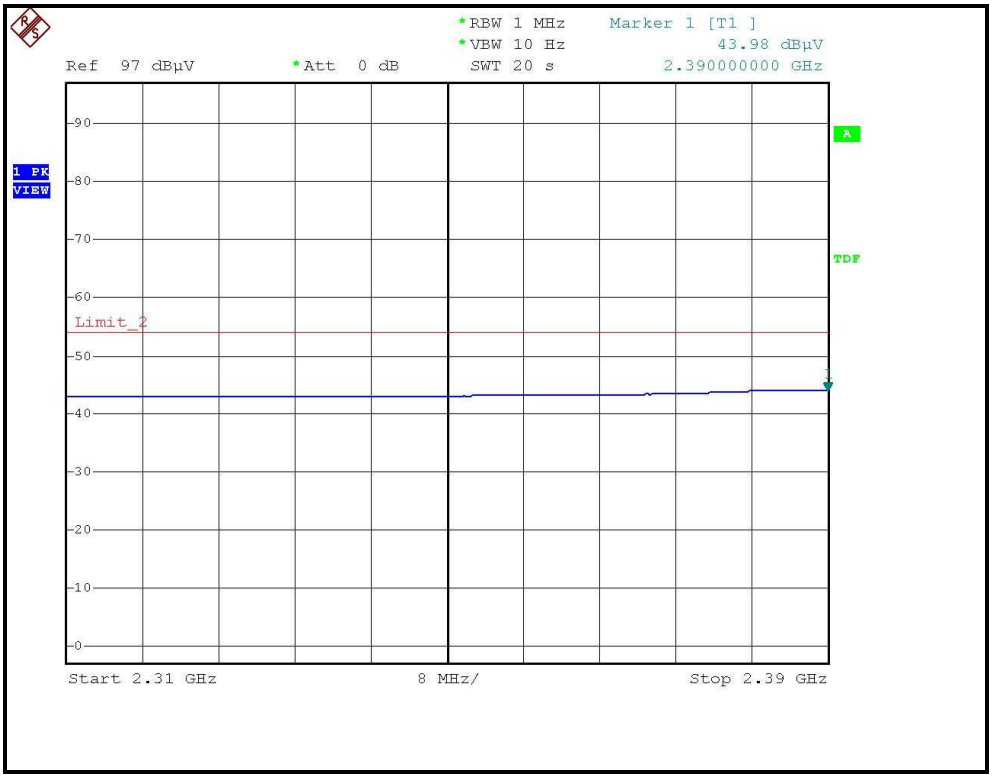
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	108.80 PK			1.61 V	181	78.08	30.72
2	*2462.00	103.80 AV			1.61 V	181	73.08	30.72
3	2483.50	59.39 PK	74.00	-14.61	1.64 V	110	28.57	30.82
4	2483.50	47.78 AV	54.00	-6.22	1.64 V	110	16.96	30.82
5	4924.00	53.28 PK	74.00	-20.72	1.50 V	91	17.38	35.90
6	4924.00	48.55 AV	54.00	-5.45	1.50 V	91	12.65	35.90
7	7386.00	54.16 PK	74.00	-19.84	1.10 V	279	11.36	42.80
8	7386.00	40.93 AV	54.00	-13.07	1.10 V	279	-1.87	42.80

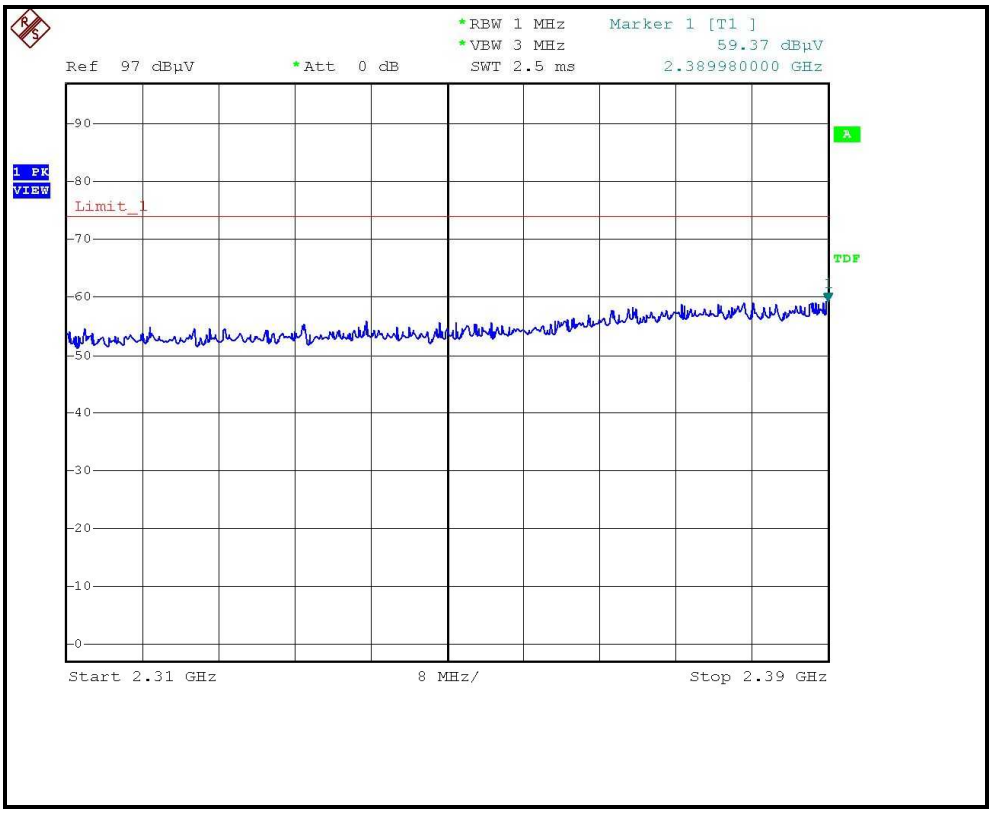
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247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

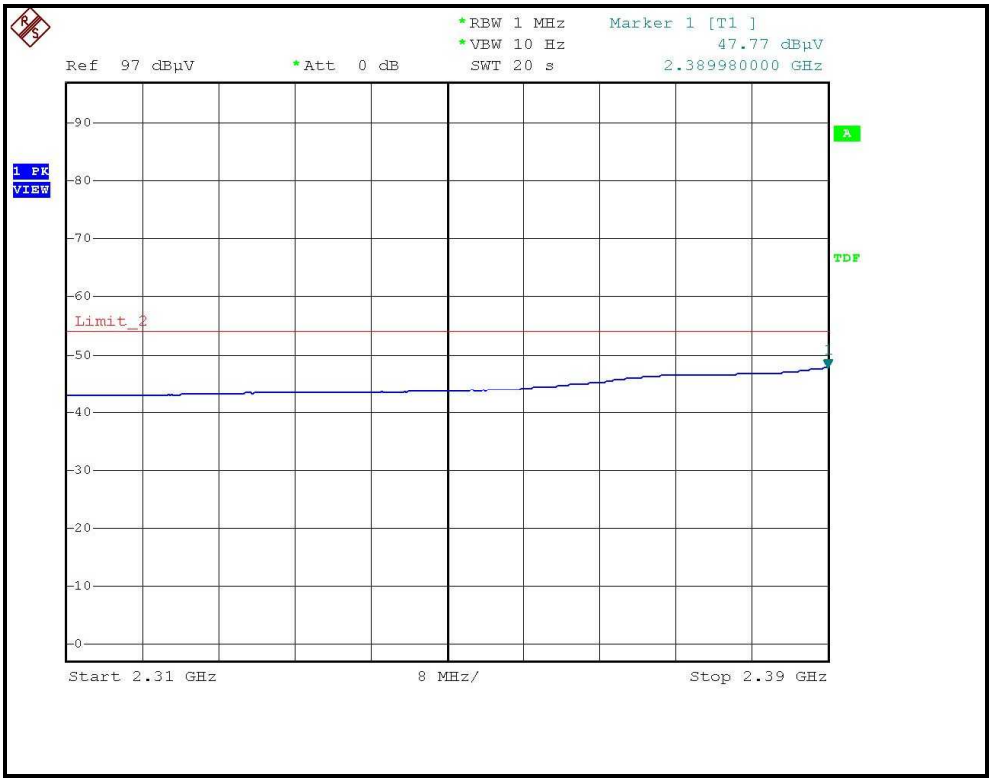
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)



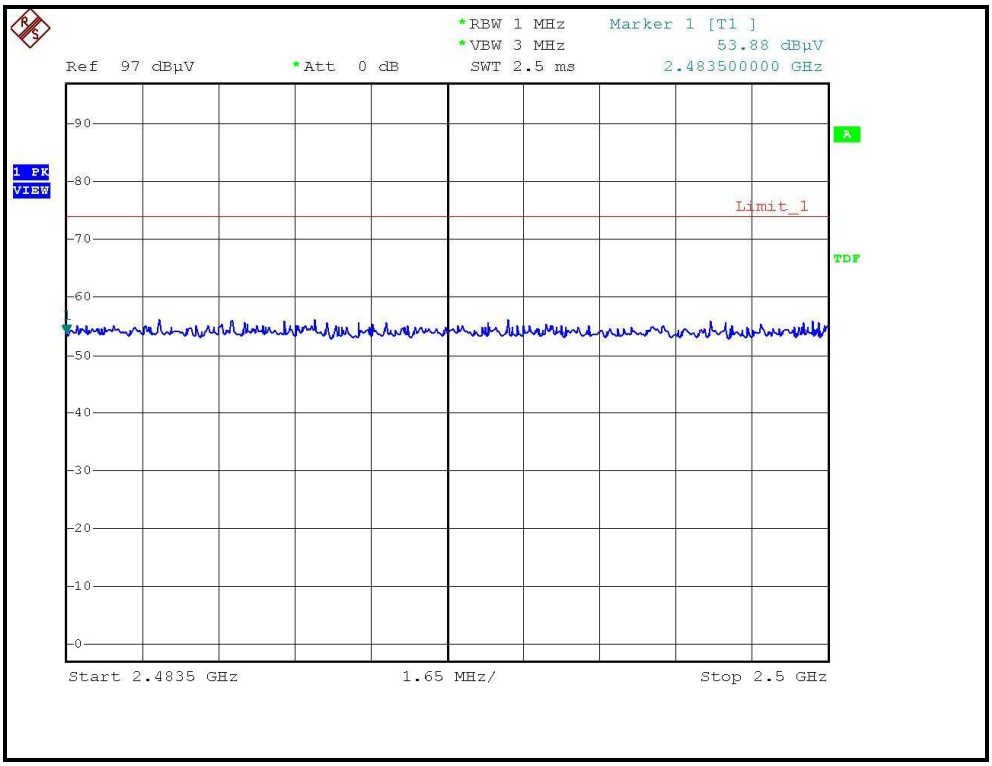


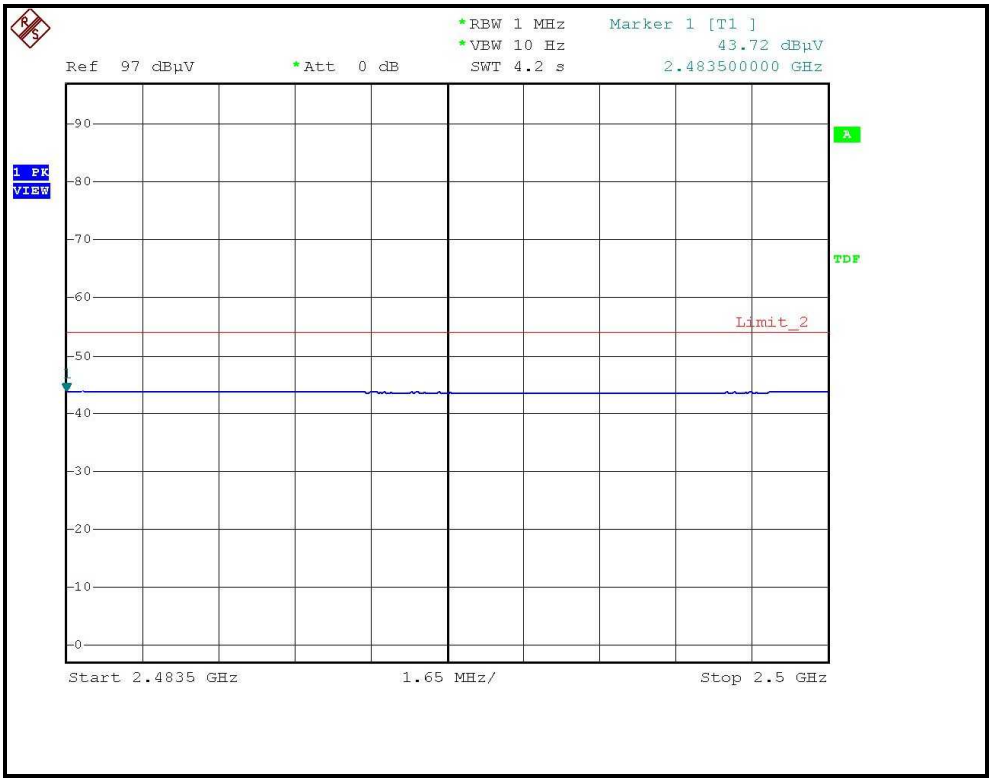
RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



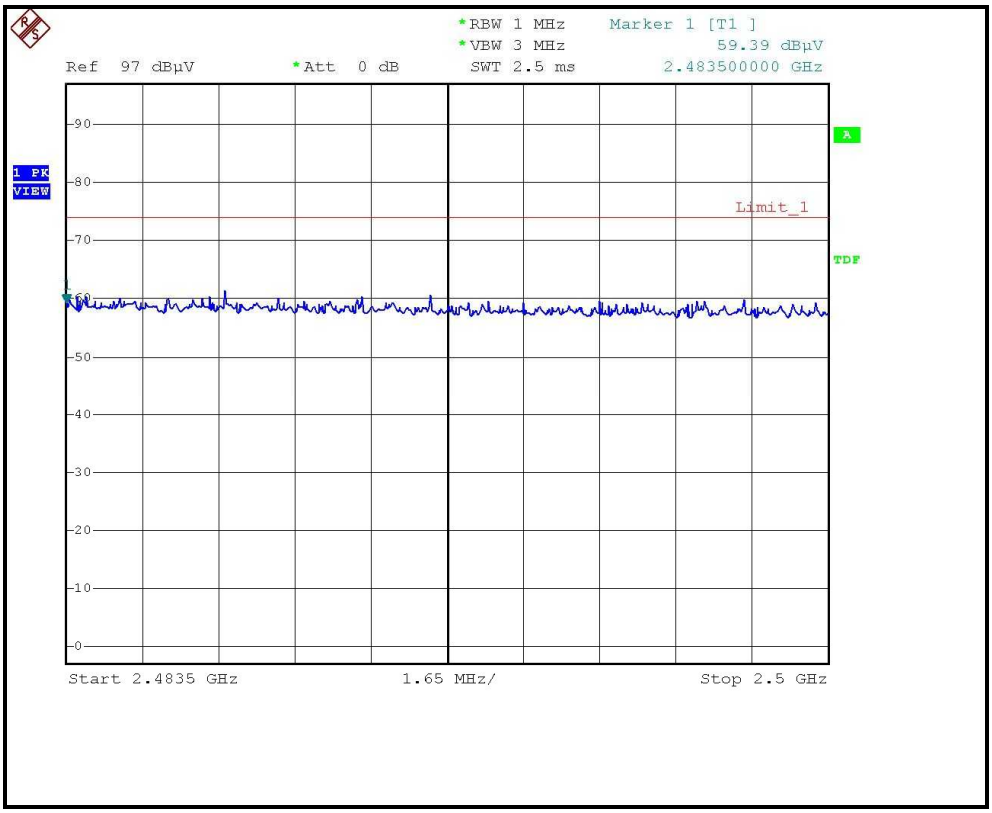


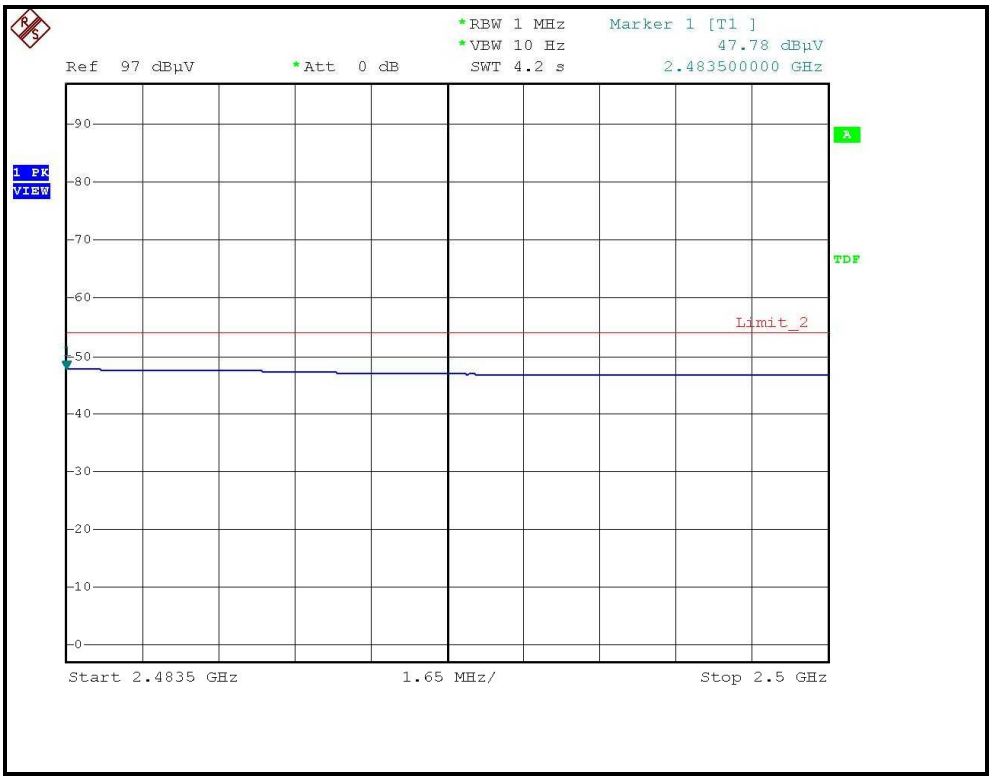
RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL)





RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)





4.2.8 TEST RESULTS

802.11g OFDM modulation

MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 62%RH, 975hPa	**TESTED BY**	Frank Liu

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	54.50 PK	74.00	-19.50	1.32 H	256	24.10	30.40
2	2390.00	43.15 AV	54.00	-10.85	1.32 H	256	12.75	30.40
3	*2412.00	97.20 PK			1.32 H	256	66.71	30.49
4	*2412.00	86.80 AV			1.32 H	256	56.31	30.49
5	4824.00	47.80 PK	74.00	-26.20	1.58 H	132	12.11	35.69
6	4824.00	40.60 AV	54.00	-13.40	1.58 H	132	4.91	35.69
7	7236.00	51.30 PK	74.00	-22.70	1.36 H	88	9.06	42.24
8	7236.00	38.20 AV	54.00	-15.80	1.36 H	88	-4.04	42.24

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.30 PK	74.00	-16.70	1.65 V	236	26.90	30.40
2	2390.00	45.13 AV	54.00	-8.87	1.65 V	236	14.73	30.40
3	*2412.00	107.00 PK			1.65 V	236	76.51	30.49
4	*2412.00	95.50 AV			1.65 V	236	65.01	30.49
5	4824.00	51.70 PK	74.00	-22.30	1.48 V	248	16.01	35.69
6	4824.00	48.40 AV	54.00	-5.60	1.48 V	248	12.71	35.69
7	7236.00	51.40 PK	74.00	-22.60	1.30 V	26	9.16	42.24
8	7236.00	38.00 AV	54.00	-16.00	1.30 V	26	-4.24	42.24

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

MODE	Channel 6	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 62%RH, 975hPa	**TESTED BY**	Frank Liu

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	97.40 PK			1.30 H	255	66.79	30.61
2	*2437.00	86.60 AV			1.30 H	255	55.99	30.61
3	4874.00	47.60 PK	74.00	-26.40	1.50 H	122	11.80	35.80
4	4874.00	40.50 AV	54.00	-13.50	1.50 H	122	4.70	35.80
5	7311.00	51.40 PK	74.00	-22.60	1.30 H	96	8.88	42.52
6	7311.00	38.20 AV	54.00	-15.80	1.30 H	96	-4.32	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.50 PK			1.60 V	236	79.89	30.61
2	*2437.00	99.16 AV			1.60 V	236	68.55	30.61
3	4874.00	51.20 PK	74.00	-22.80	1.45 V	236	15.40	35.80
4	4874.00	48.00 AV	54.00	-6.00	1.45 V	236	12.20	35.80
5	7311.00	51.80 PK	74.00	-22.20	1.26 V	33	9.28	42.52
6	7311.00	38.40 AV	54.00	-15.60	1.26 V	33	-4.12	42.52

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

MODE	Channel 11	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	22 deg. C, 62%RH, 975hPa	**TESTED BY**	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

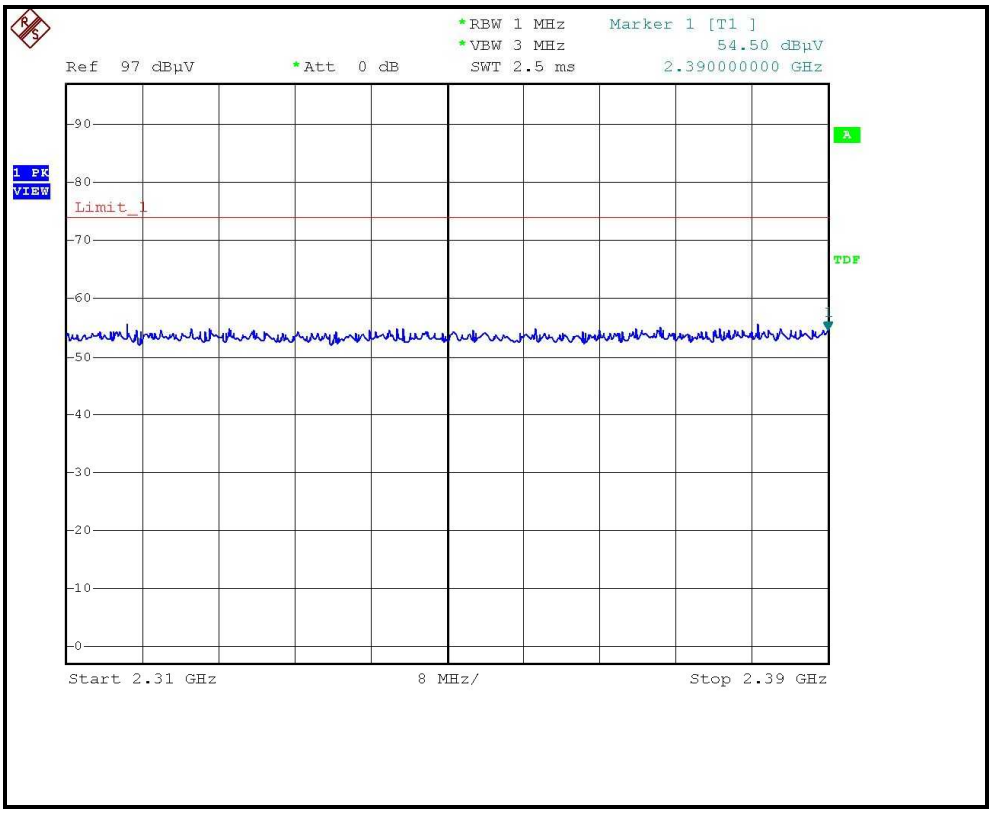
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	97.20 PK			1.32 H	258	66.48	30.72
2	*2462.00	86.00 AV			1.32 H	258	55.28	30.72
3	2483.50	53.62 PK	74.00	-20.38	1.37 H	233	22.80	30.82
4	2483.50	43.18 AV	54.00	-10.82	1.37 H	233	12.36	30.82
5	4924.00	47.40 PK	74.00	-26.60	1.48 H	128	11.50	35.90
6	4924.00	40.40 AV	54.00	-13.60	1.48 H	128	4.50	35.90
7	7386.00	51.20 PK	74.00	-22.80	1.33 H	76	8.40	42.80
8	7386.00	38.00 AV	54.00	-16.00	1.33 H	76	-4.80	42.80

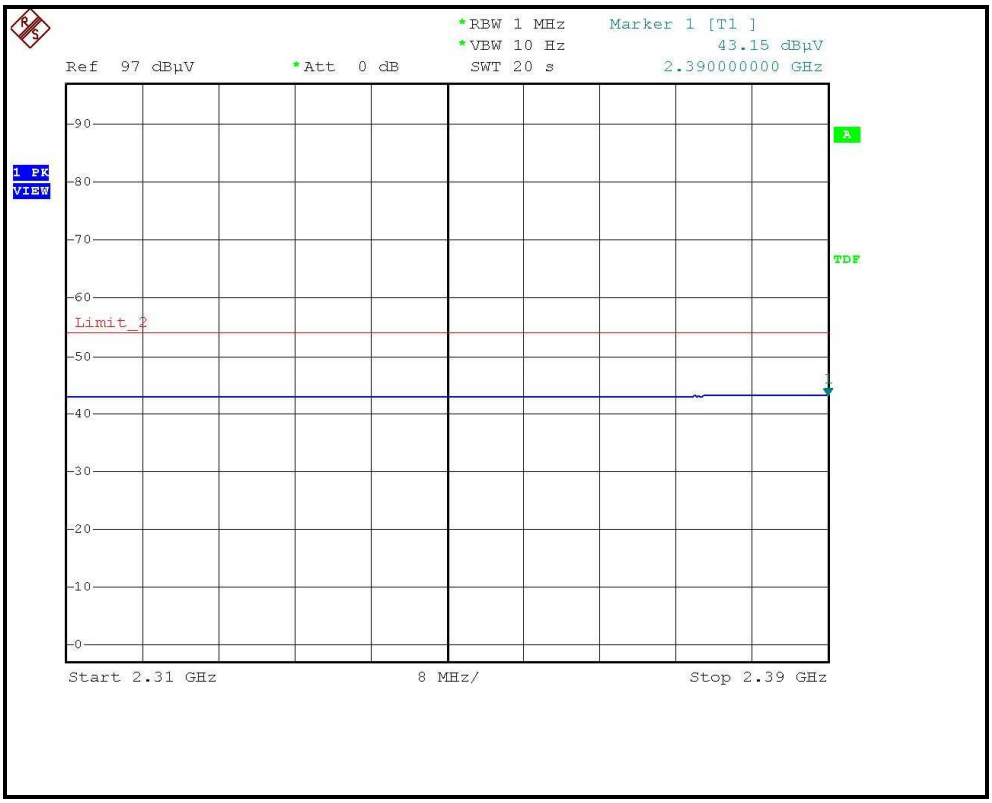
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.70 PK			1.60 V	237	74.98	30.72
2	*2462.00	95.00 AV			1.60 V	237	64.28	30.72
3	2483.50	56.42 PK	74.00	-17.58	1.55 V	237	25.60	30.82
4	2483.50	45.09 AV	54.00	-8.91	1.55 V	237	14.27	30.82
5	4924.00	51.60 PK	74.00	-22.40	1.34 V	252	15.70	35.90
6	4924.00	48.20 AV	54.00	-5.80	1.34 V	252	12.30	35.90
7	7386.00	51.50 PK	74.00	-22.50	1.45 V	22	8.70	42.80
8	7386.00	38.20 AV	54.00	-15.80	1.45 V	22	-4.60	42.80

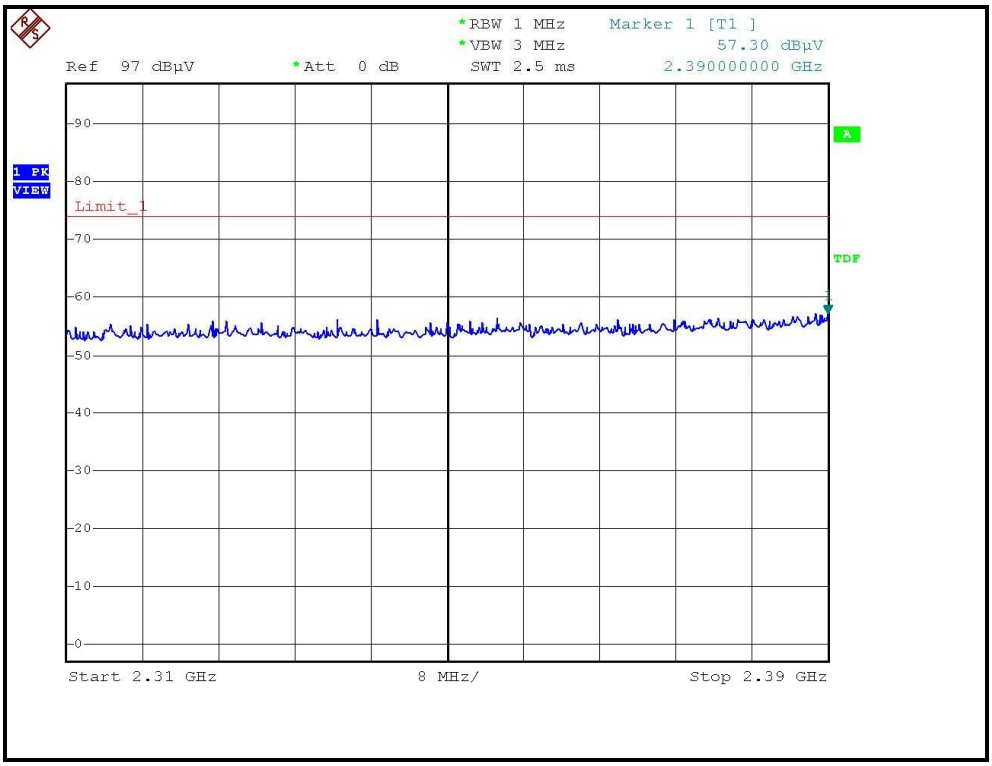
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247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

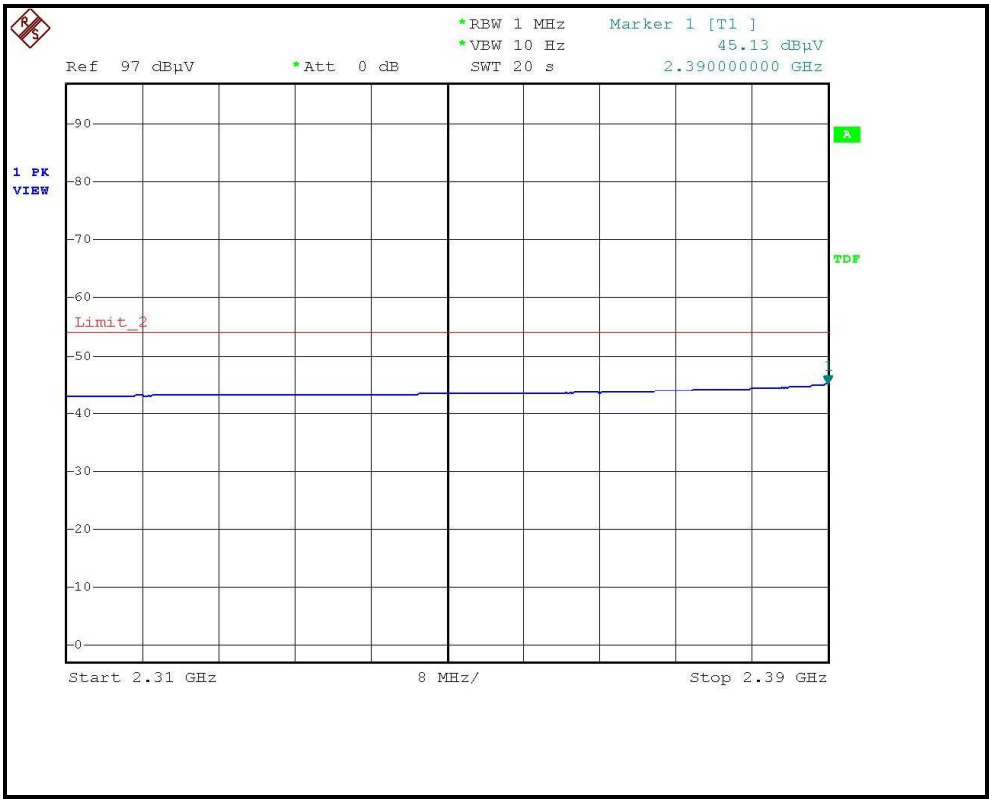
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)



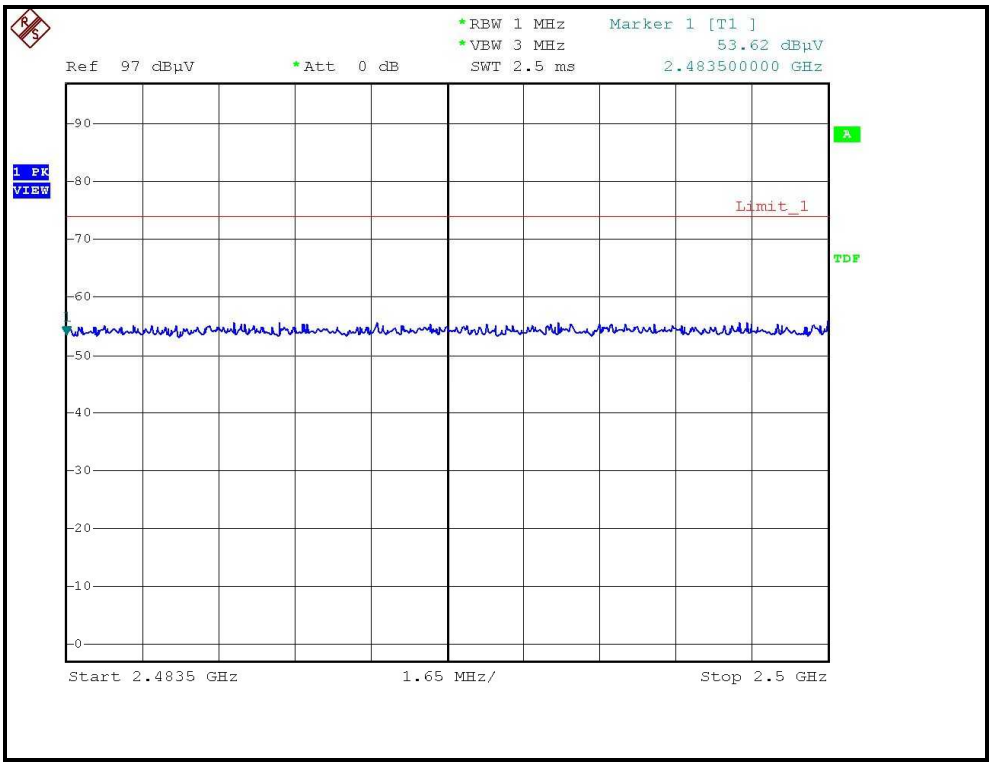


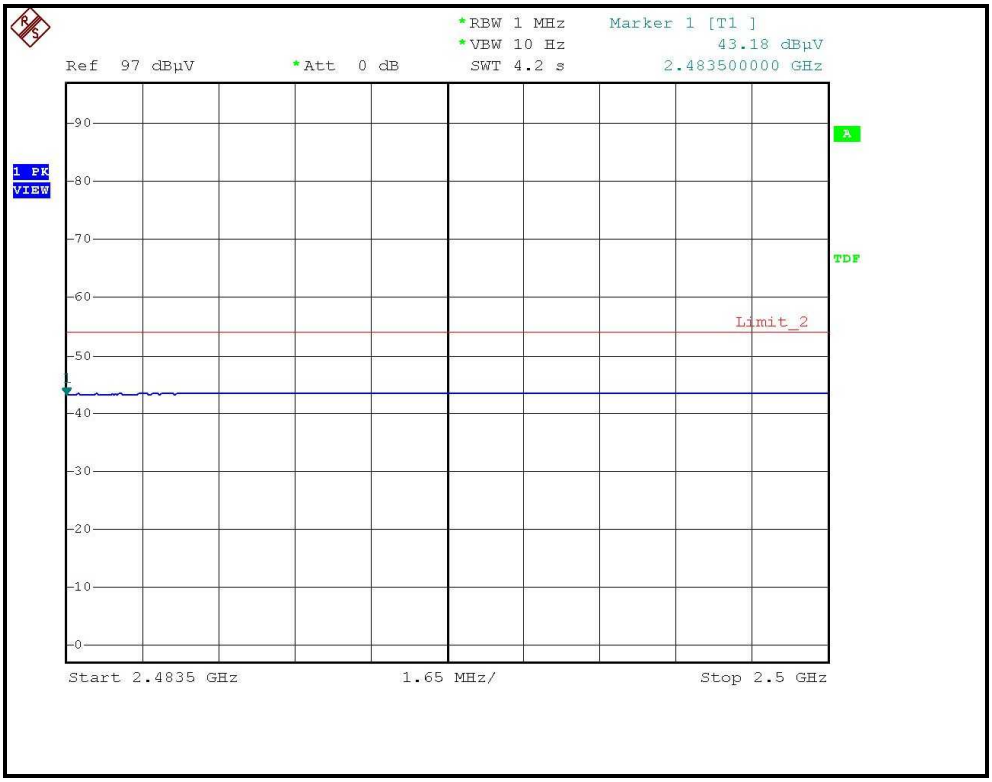
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)



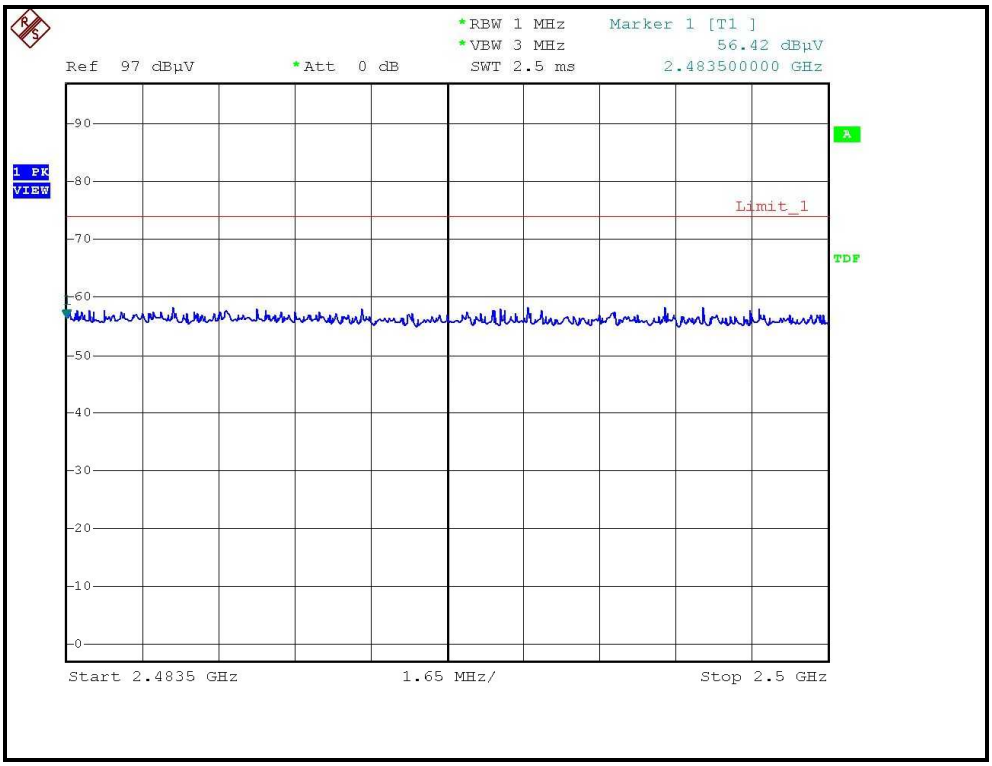


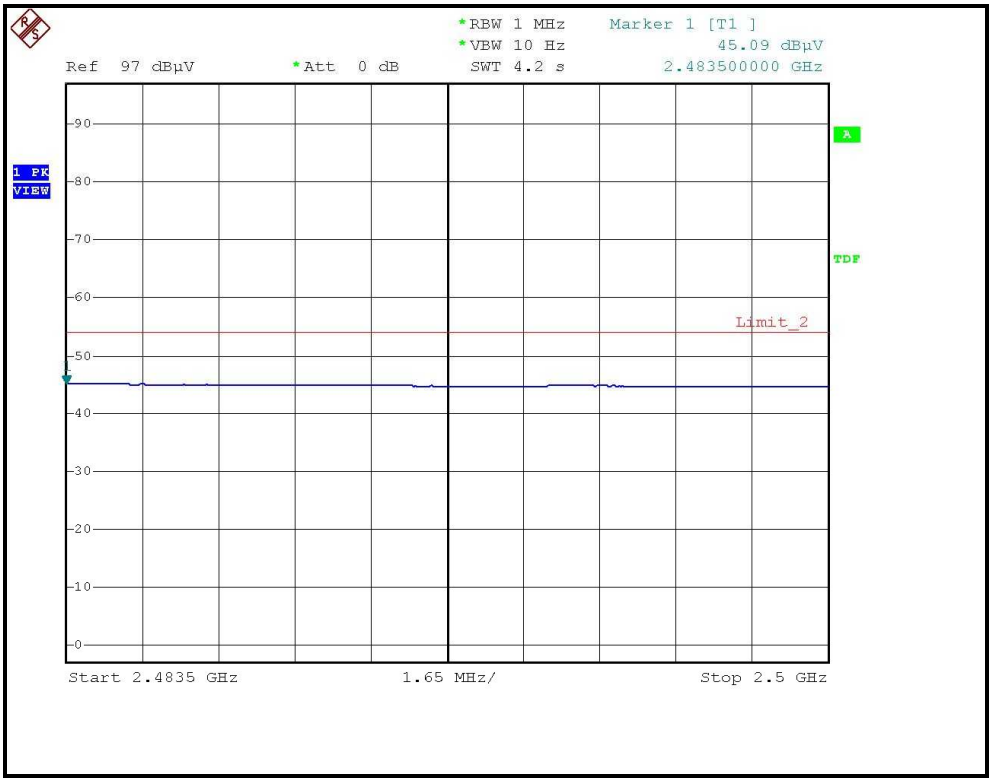
RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL)





RESTRICTED BANDEDGE (802.11g MODE, CH11, VERTICAL)





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
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 17, 2008

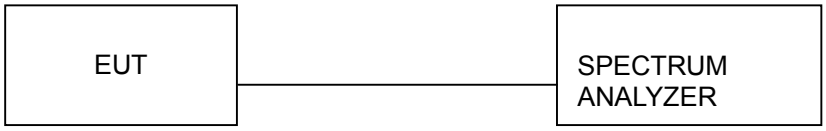
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. 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 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 TEST SETUP



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

4.3.5 EUT OPERATING CONDITIONS

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

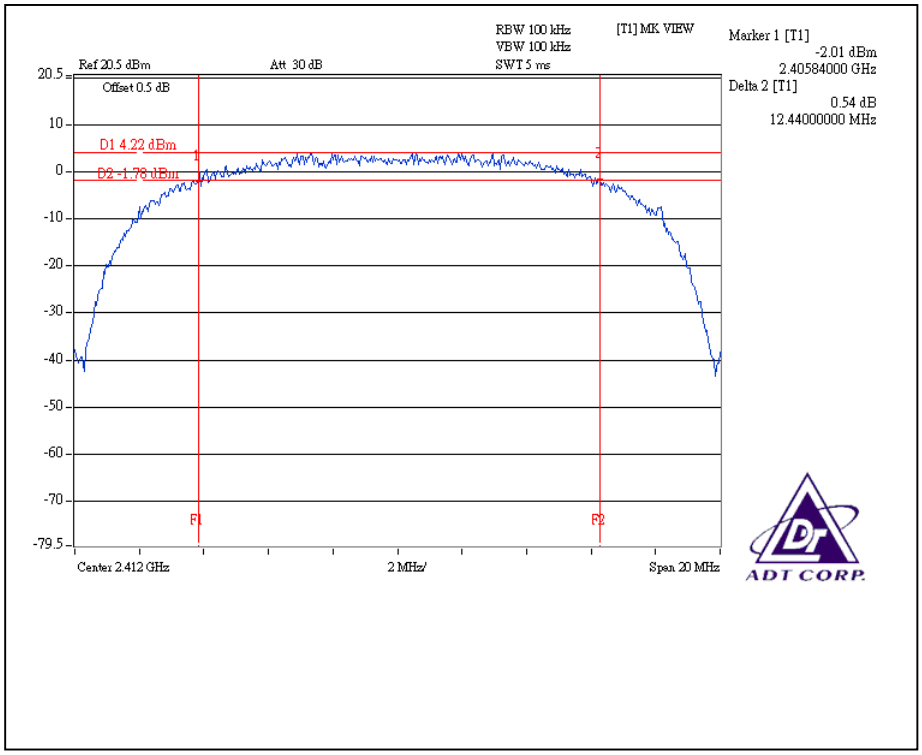
4.3.6 TEST RESULTS

802.11b DSSS modulation

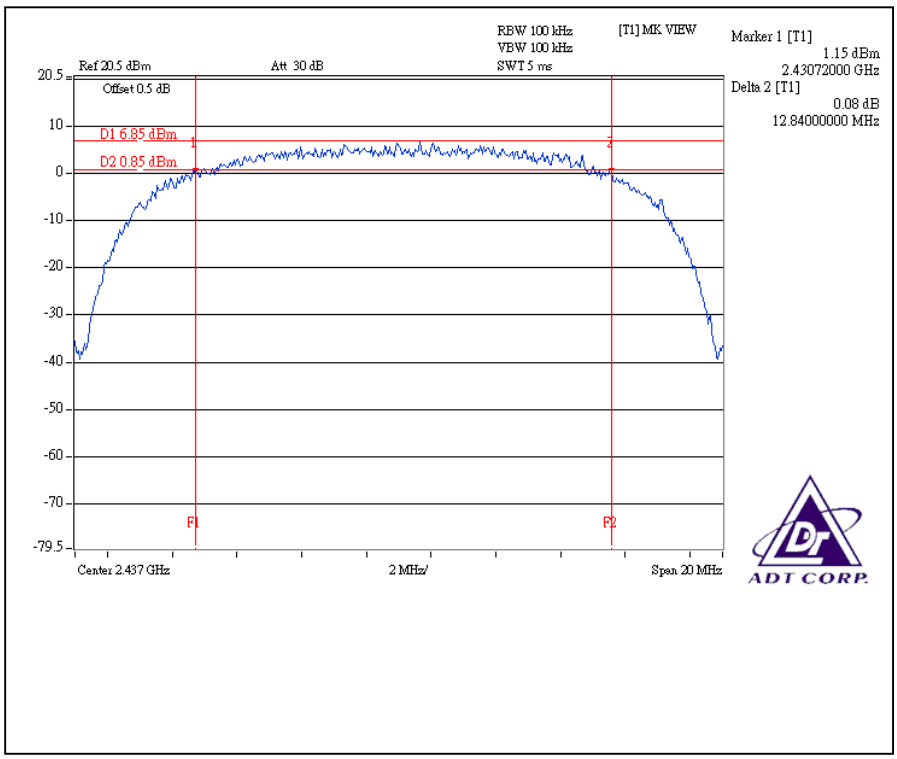
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 62 %RH, 975 hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.44	0.5	PASS
6	2437	12.84	0.5	PASS
11	2462	12.04	0.5	PASS

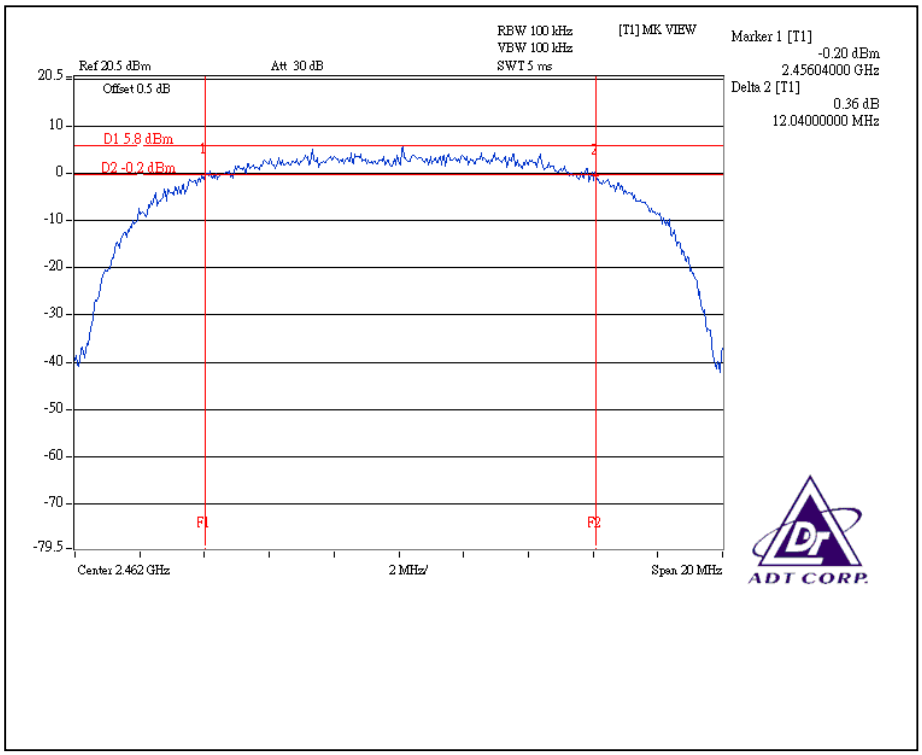
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.01 dBm
2.40584000 GHz
Delta 2 [T1]
0.54 dB
12.44000000 MHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
D1 4.22 dBm
D2 -1.78 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
1.15 dBm
2.43072000 GHz
Delta 2 [T1]
0.08 dB
12.84000000 MHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
D1 6.85 dBm
D2 0.85 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-0.20 dBm
2.45604000 GHz
Delta 2 [T1]
0.36 dB
12.04000000 MHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 5.8 dBm
D2 -0.2 dBm
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

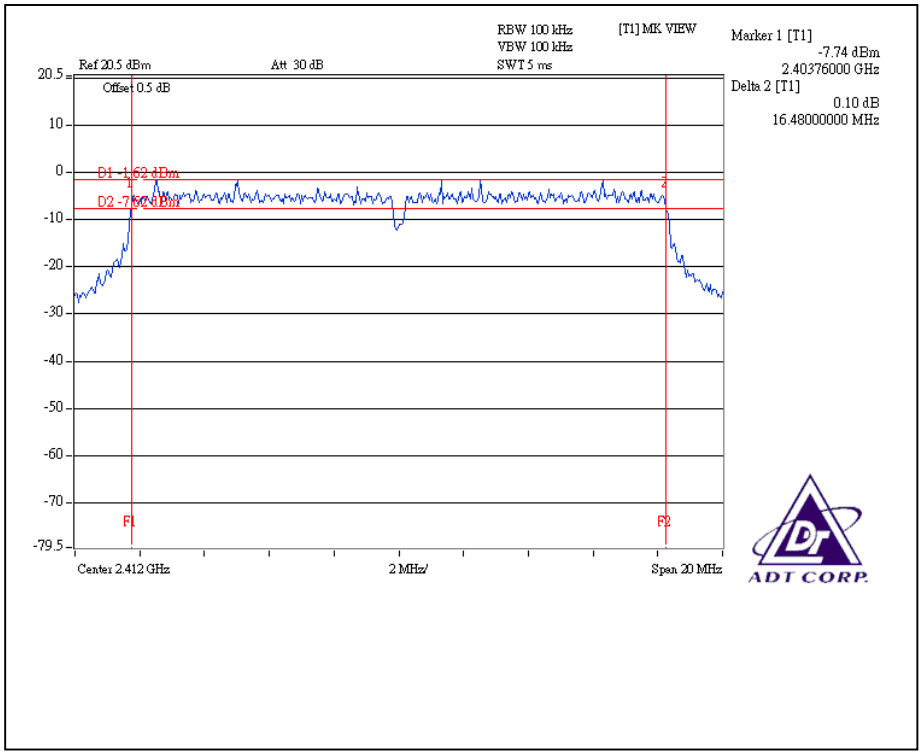
4.3.7 TEST RESULTS-OFDM

802.11g OFDM modulation

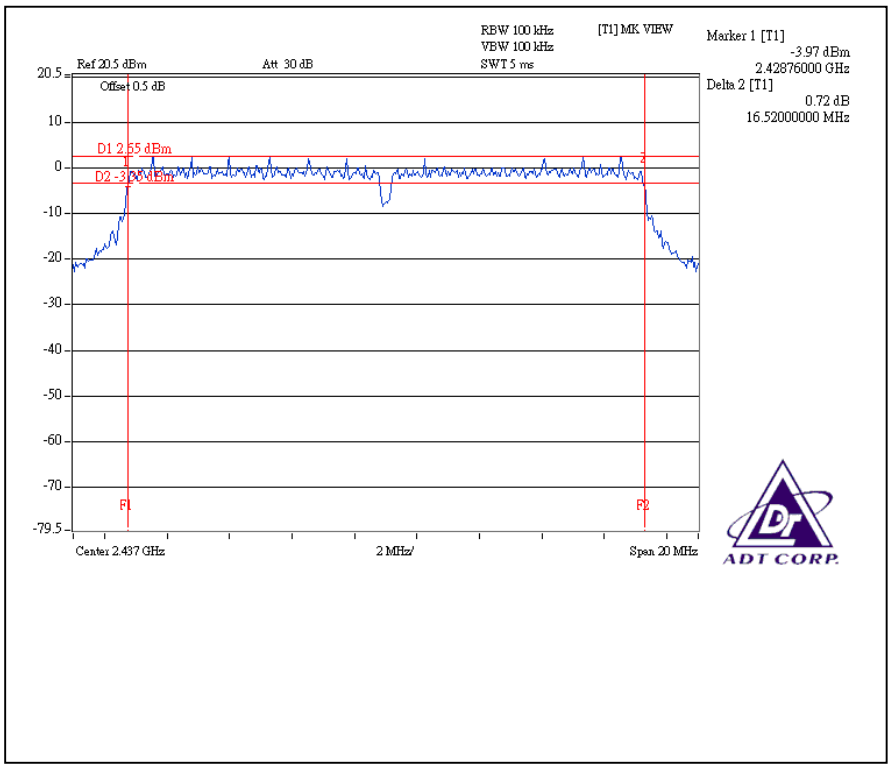
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 62 %RH, 975 hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.48	0.5	PASS
6	2437	16.52	0.5	PASS
11	2462	16.56	0.5	PASS

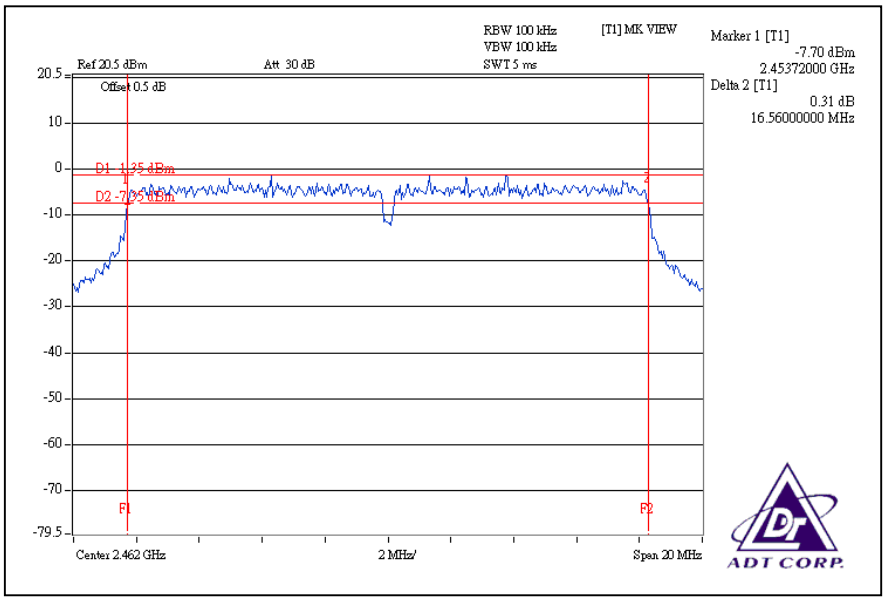
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.74 dBm
2.40376000 GHz
Delta 2 [T1]
0.10 dB
16.48000000 MHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
D1 -1.62 dBm
D2 -7.50 dBm
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-3.97 dBm
2.42876000 GHz
Delta 2 [T1]
0.72 dB
16.52000000 MHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
D1 2.55 dBm
D2 -3.17 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.70 dBm
2.45372000 GHz
Delta 2 [T1]
0.31 dB
16.56000000 MHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
D1 1.35 dBm
D2 -7.35 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

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

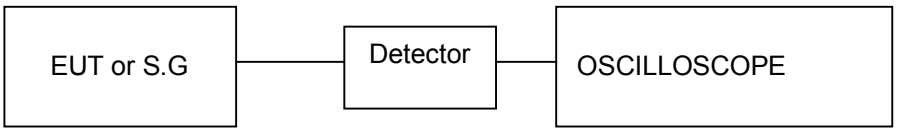
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 17, 2008
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 25, 2008
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Jul. 04, 2008
NARDA DETECTOR	4503A	FSCM99899	NA

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

4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the peak 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 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5

4.4.6 TEST RESULTS

802.11b DSSS modulation

MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 62 %RH, 975 hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	69.502	18.42	30	PASS
6	2437	95.499	19.80	30	PASS
11	2462	70.469	18.48	30	PASS

4.4.7 TEST RESULTS

802.11g OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 62 %RH, 975 hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	63.096	18.00	30	PASS
6	2437	165.959	22.20	30	PASS
11	2462	67.920	18.32	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 17, 2008

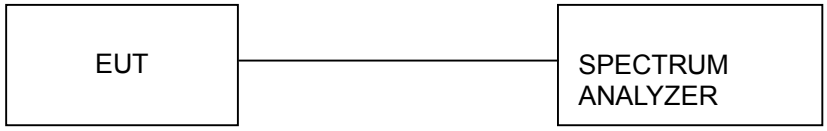
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. 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 3 kHz RBW and 30 kHz 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 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

Same as 4.3.5

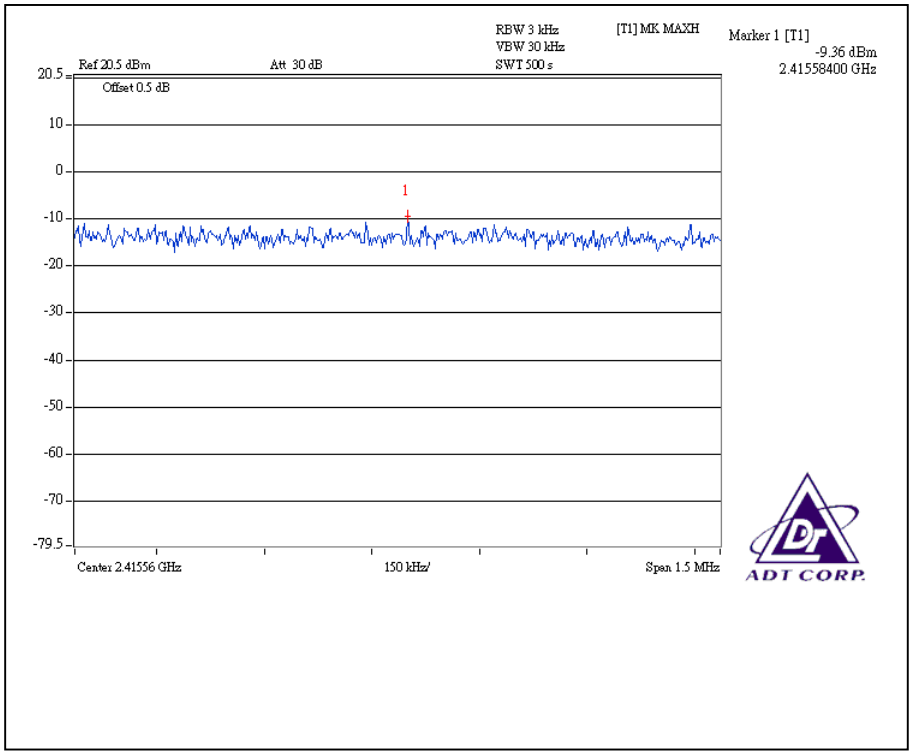
4.5.6 TEST RESULTS

802.11b DSSS modulation

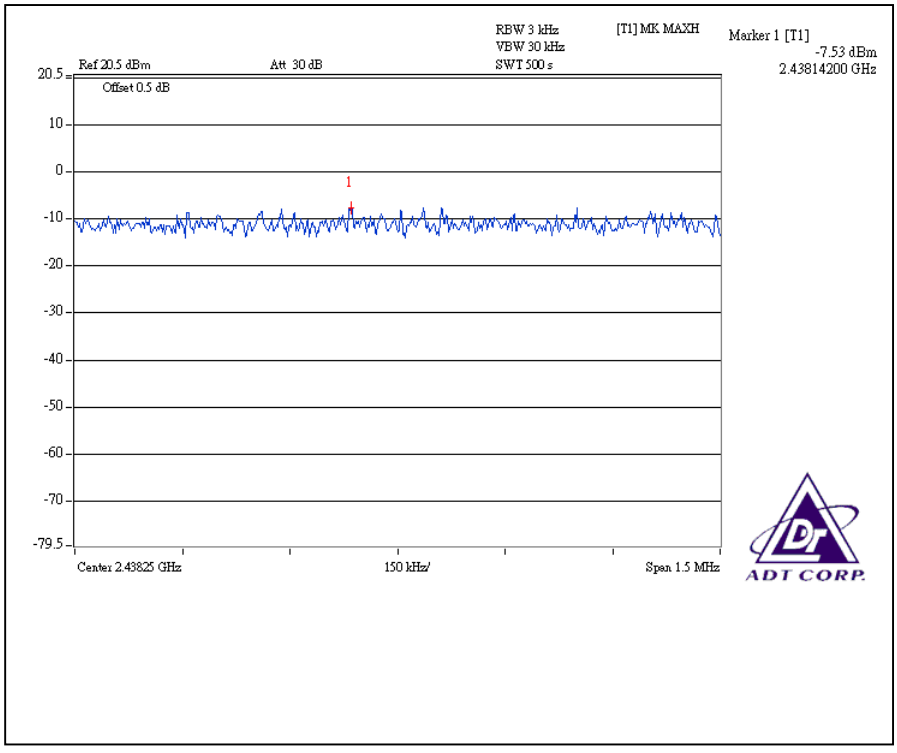
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 62 %RH, 975 hPa
TESTED BY	Phoenix Huang		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.36	8	PASS
6	2437	-7.53	8	PASS
11	2462	-9.87	8	PASS

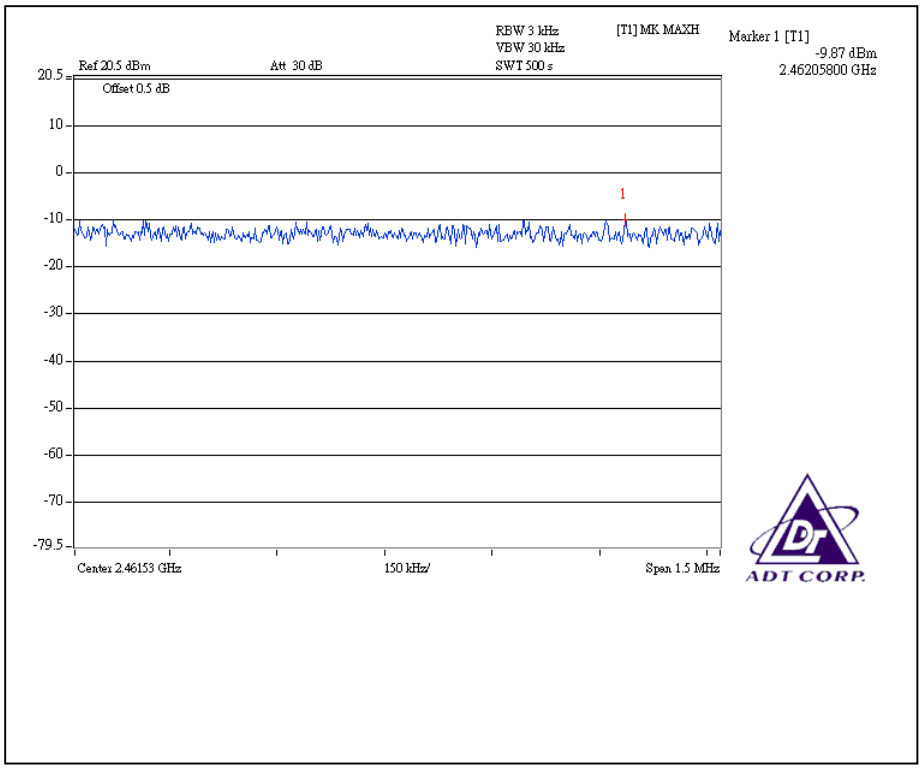
CH1


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-9.36 dBm
2.41558400 GHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.41556 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-7.53 dBm
2.43814200 GHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.43825 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-9.87 dBm
2.46205800 GHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
1
Center 2.46153 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

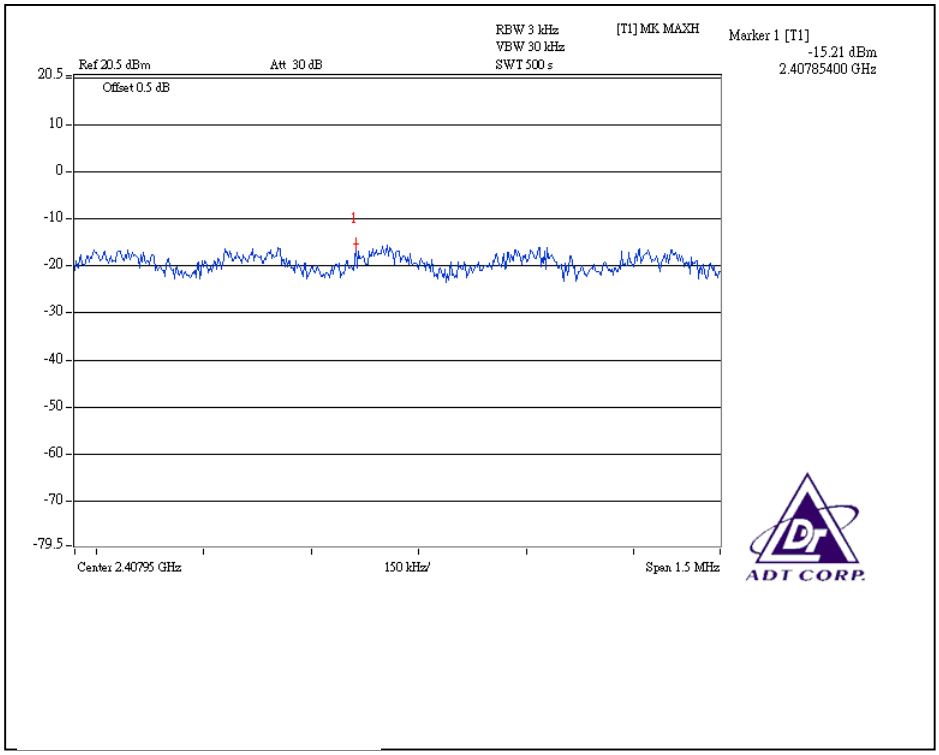
4.5.7 TEST RESULTS

802.11g OFDM modulation

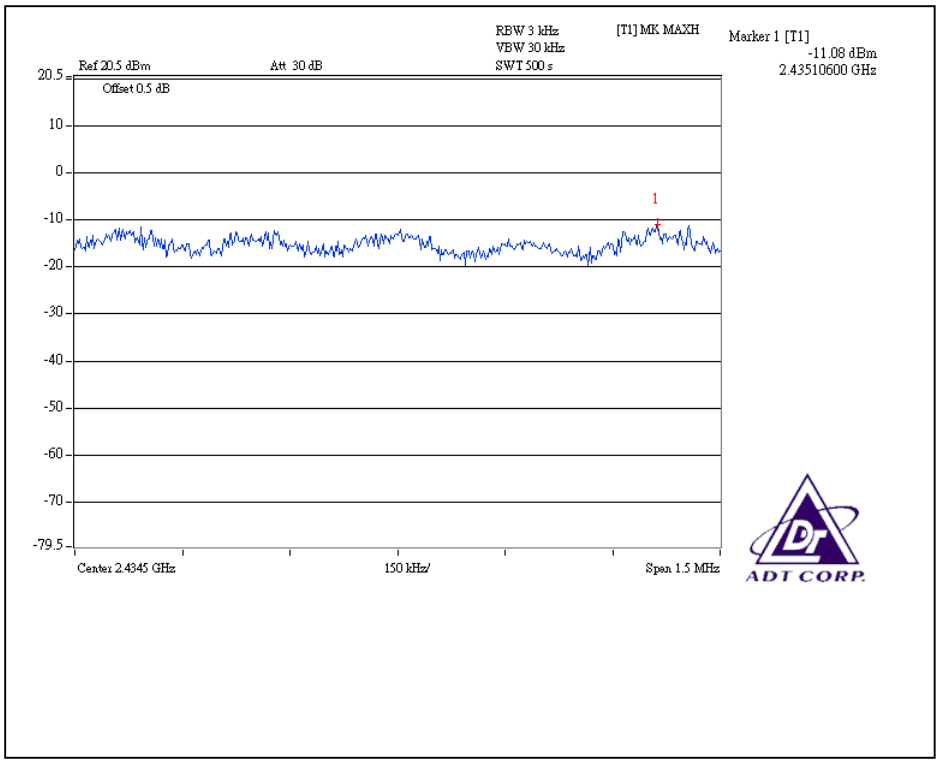
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 62 %RH, 975 hPa
TESTED BY	Phoenix Huang		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-15.21	8	PASS
6	2437	-11.08	8	PASS
11	2462	-14.49	8	PASS

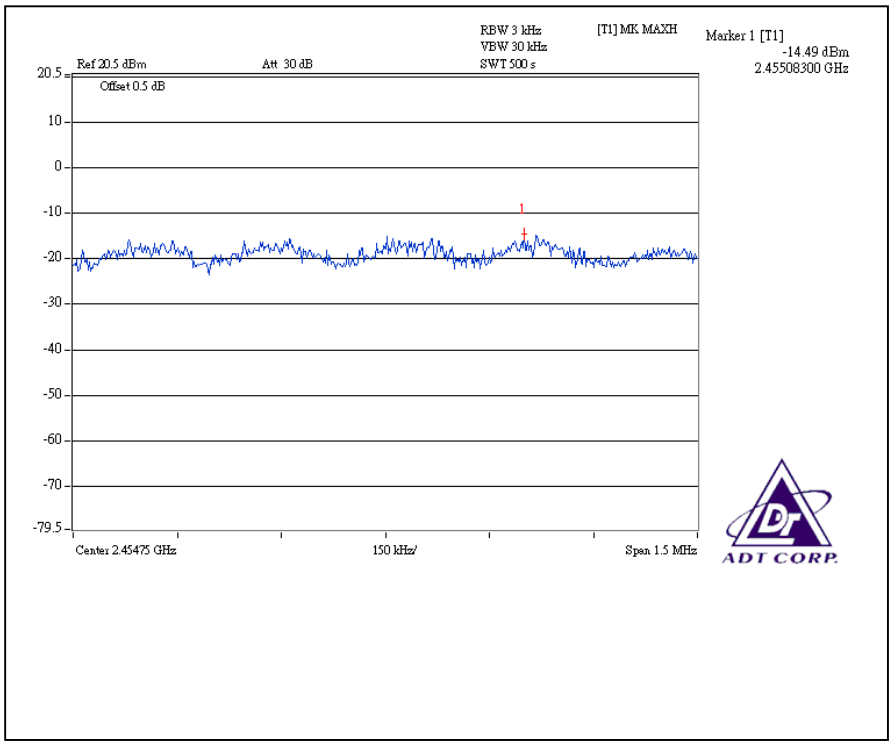
CH1


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.21 dBm
2.40785400 GHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.40795 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-11.08 dBm
2.43510600 GHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.4345 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-14.49 dBm
2.45508300 GHz
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Center 2.45475 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

4.6 CONDUCTED EMISSION AND BAND EDGES MEASUREMENT

4.6.1 LIMITS OF CONDTCTED EMISSION AND 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	FSP40	100036	Dec. 17, 2008

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. 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 (RBW = VBW = 100kHz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

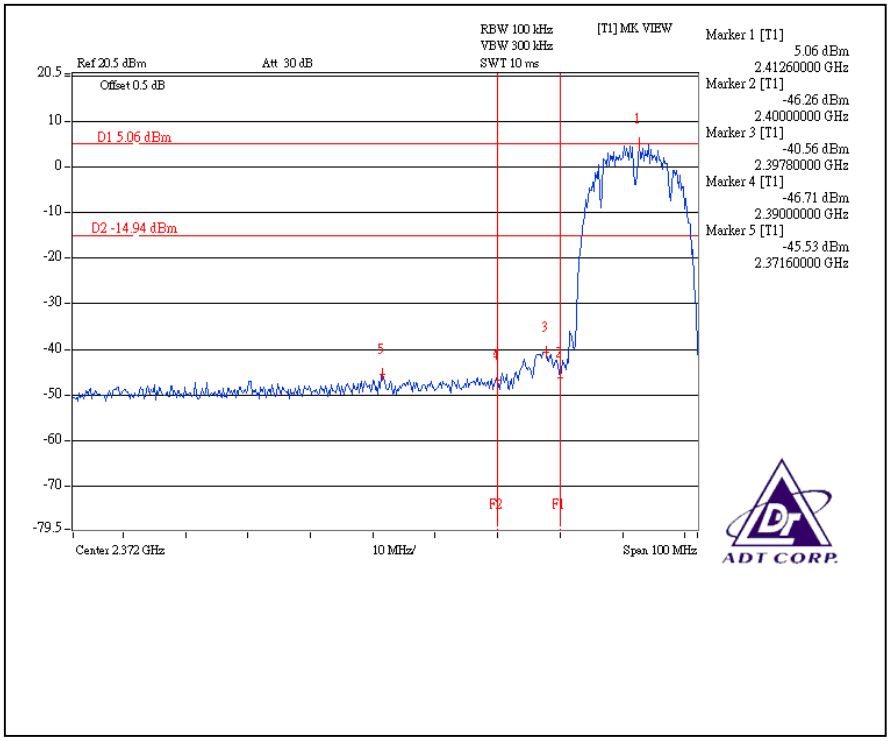
Same as Item 4.3.5

4.6.6 TEST RESULTS

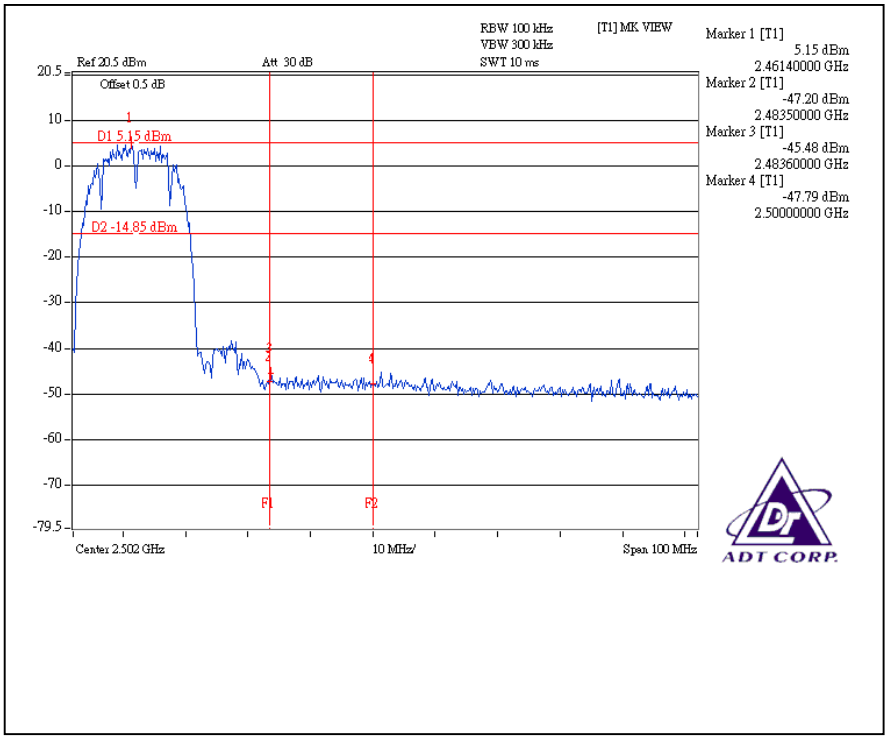
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

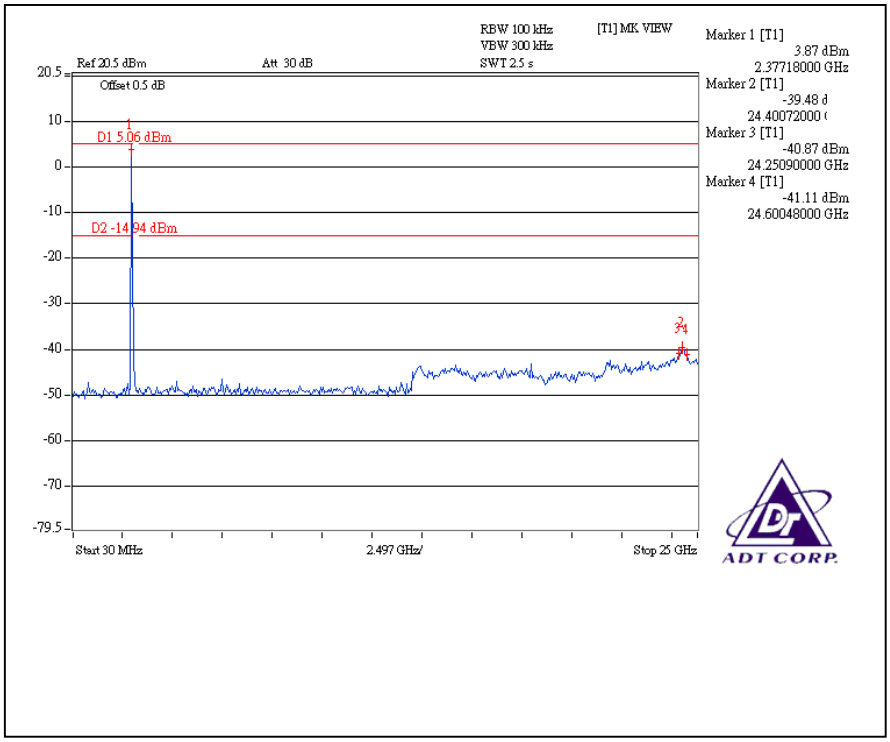
CH1



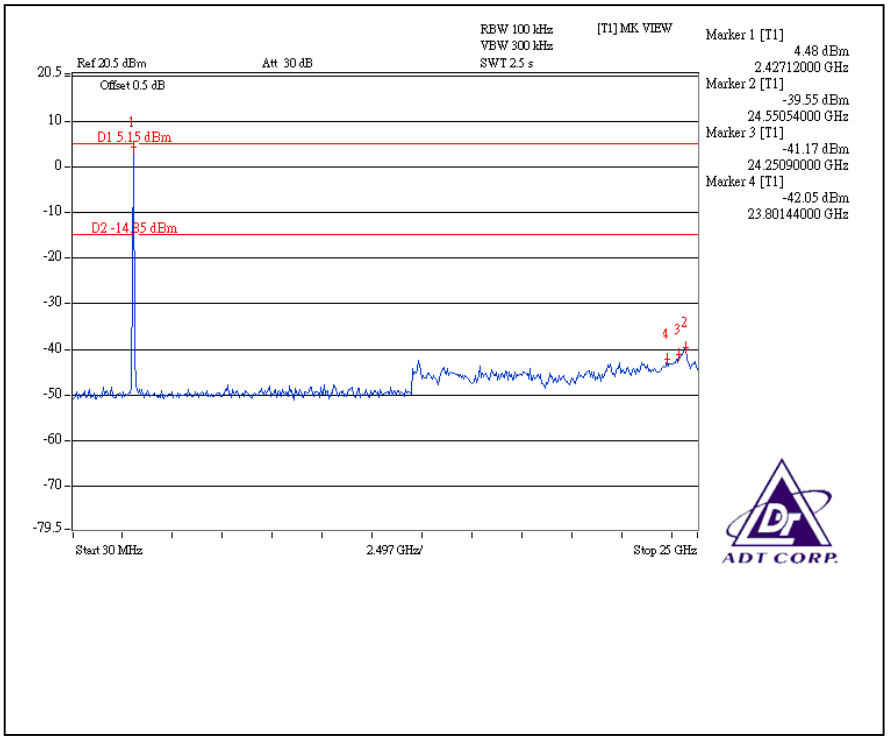
CH11



CH1

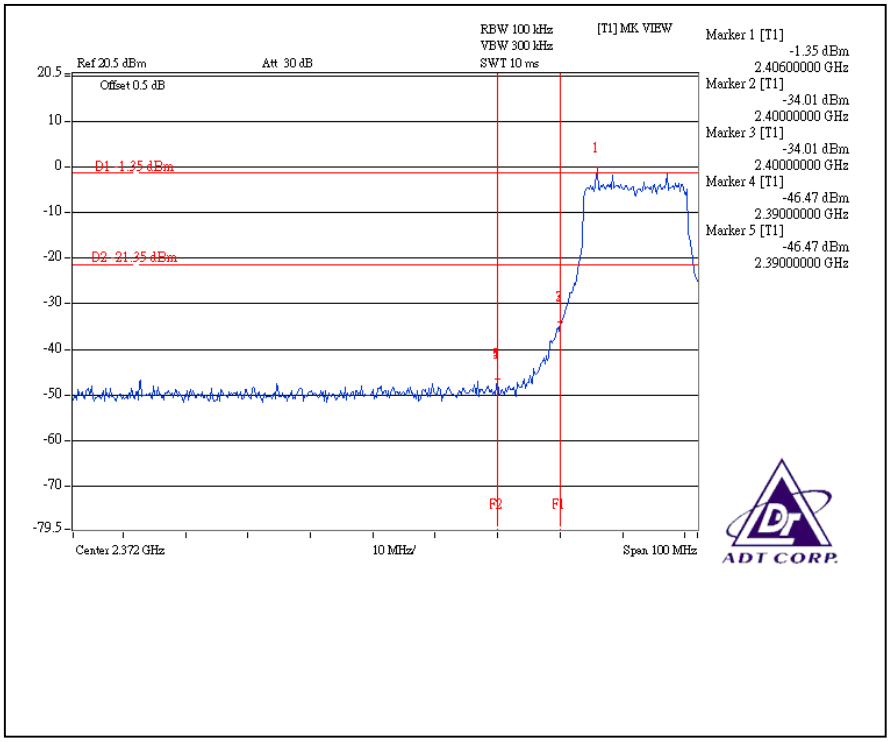

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
D1 5.06 dBm
D2 -14.94 dBm
Marker 1 [T1]
3.87 dBm
2.37718000 GHz
Marker 2 [T1]
-39.48 d
24.40072000 (
Marker 3 [T1]
-40.87 dBm
24.25090000 GHz
Marker 4 [T1]
-41.11 dBm
24.60048000 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

CH11

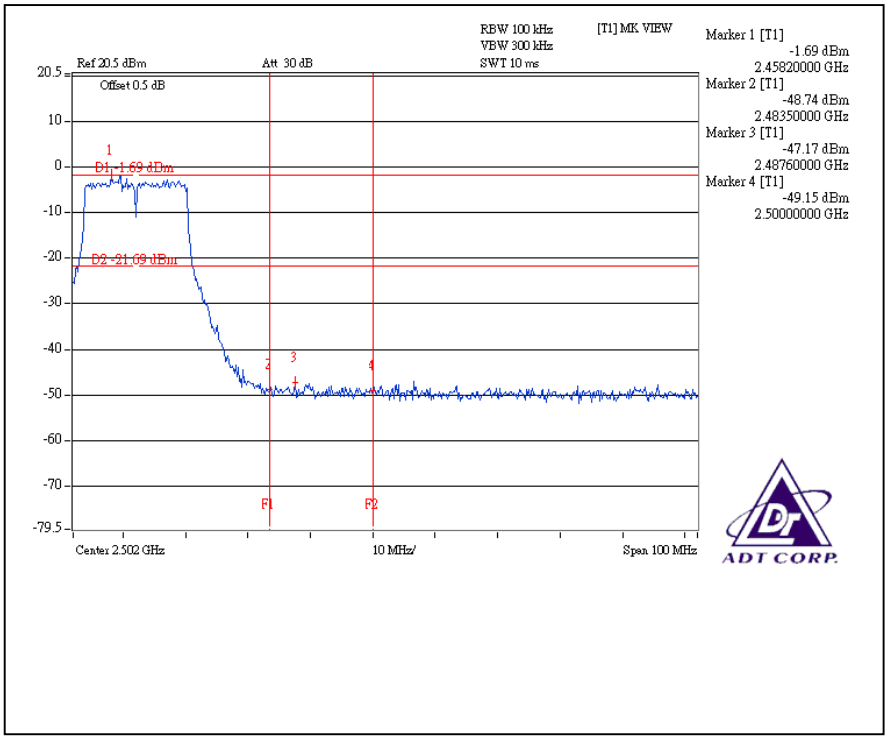

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
D1 5.15 dBm
D2 -14.85 dBm
Marker 1 [T1]
4.48 dBm
2.42712000 GHz
Marker 2 [T1]
-39.55 dBm
24.55054000 GHz
Marker 3 [T1]
-41.17 dBm
24.25090000 GHz
Marker 4 [T1]
-42.05 dBm
23.80144000 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

802.11g OFDM MODULATION:

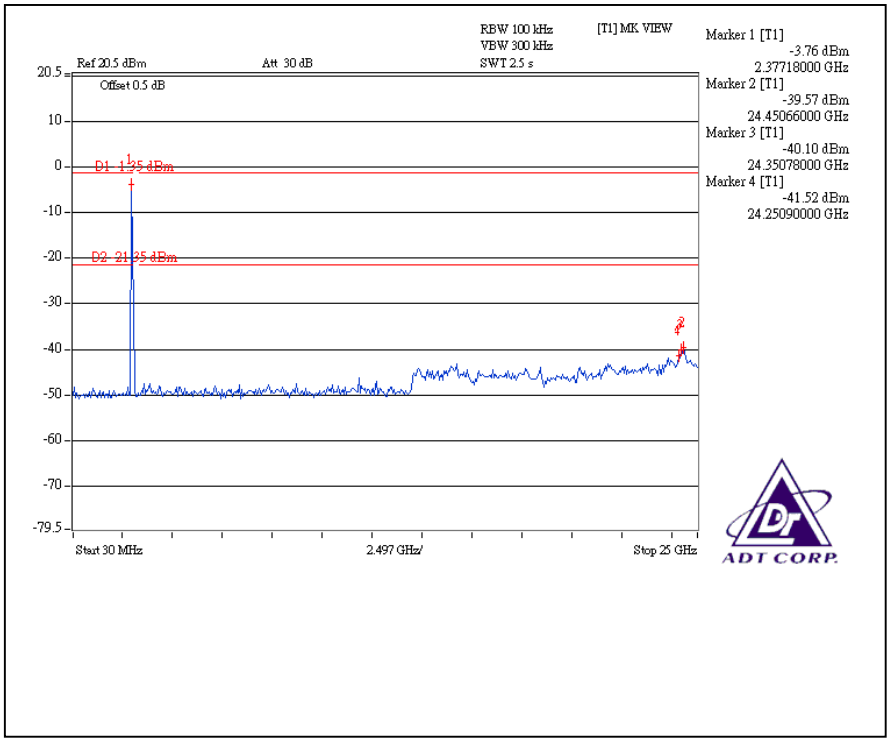
CH1



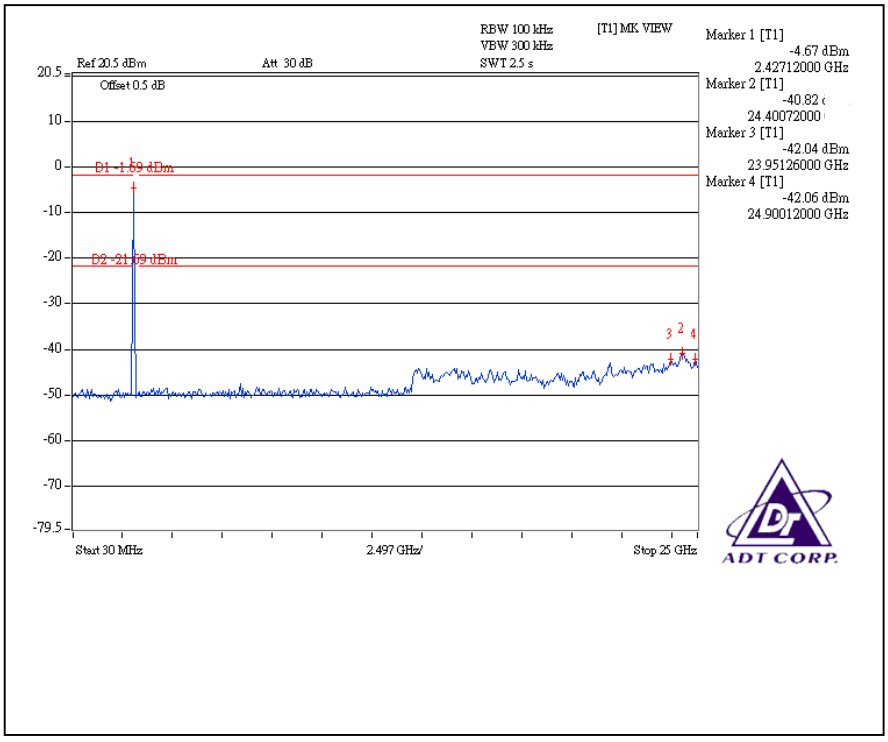
CH11



CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
D1 -1.35 dBm
D2 -21.35 dBm
Marker 1 [T1]
-3.76 dBm
2.37718000 GHz
Marker 2 [T1]
-39.57 dBm
24.45066000 GHz
Marker 3 [T1]
-40.10 dBm
24.35078000 GHz
Marker 4 [T1]
-41.52 dBm
24.25090000 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.5 dBm
Att 30 dB
Offset 0.5 dB
D1 -1.69 dBm
D2 -21.69 dBm
Marker 1 [T1]
-4.67 dBm
2.42712000 GHz
Marker 2 [T1]
-40.82
24.40072000
Marker 3 [T1]
-42.04 dBm
23.95126000 GHz
Marker 4 [T1]
-42.06 dBm
24.90012000 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

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 Reversed SMA connector. The maximum Gain of the antenna is 3dBi

5 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025:

USA	FCC, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA (MOU)
Russia	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

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

Email: service@adt.com.tw
Web Site: www.adt.com.tw

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

6 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.