FCC TEST REPORT

REPORT NO.: RF960723H07
MODEL NO.: SVG2500, SVG2500 Diagnostic
RECEIVED: July 23, 2007
TESTED: July 23 to Aug. 21, 2007
ISSUED: Aug. 22, 2007

APPLICANT: Motorola Inc.

ADDRESS: 101 Tournament Drive, Horsham, PA 19044 USA.

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

No. 2177-01

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1 CERTIFICATION

PRODUCT :	SURFboard Voice Gateway
BRAND NAME :	Motorola
MODEL NO. :	SVG2500, SVG2500 Diagnostic
TESTED:	July 23 to Aug. 21, 2007
APPLICANT :	Motorola Inc.
TEST ITEM:	R&D SAMPLE
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247) ANSI C63.4-2003

The above equipment (Model: SVG2500 Diagnostic) 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 : _____ , **DATE:** Aug. 22, 2007
(Midoli Peng, Specialist)

TECHNICAL ACCEPTANCE : _____ , **DATE:** Aug. 22, 2007
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : _____ , **DATE:** Aug. 22, 2007
(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 –19.76 dB at 0.193 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(c)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –0.10 dB at 4924.00 MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	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	2.41 dB
Radiated emissions (30MHz-1GHz)	3.89 dB
Radiated emissions (1GHz -18GHz)	2.21 dB
Radiated emissions (18GHz -40GHz)	1.88 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	SURFboard Voice Gateway
MODEL NO.	SVG2500, SVG2500 Diagnostic
FCC ID	ACQSVG2500
POWER SUPPLY	DC 1.4V from power adapter or 10.8V from Battery
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: 60.256mW 802.11g: 71.945mW
ANTENNA TYPE	Please see note 1
DATA CABLE	USB cable(Shielded, 1.8m)
I/O PORT	DOCSIS 2.0 cable modem x1 USB 1.1 x1 Ethernet x4 VoIP x2 Mini-PCI for WLAN 11b/g function x1 DIAG x1**(Only for model : SVG2500 Diagnostic)**

NOTE:

1. There are two antennas provided to this EUT, please refer to the following table:

No.	Antenna Type	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Cable Length (cm)	Connector	Note
1	Dipole	2	0.95	1.05	164	Reversed SMA	Main antenna
2	Dipole	2	1.17	0.83	257	Reversed SMA	Auxiliary antenna

2. The EUT has two model names which are identical to each other in all aspects except for the followings:

Brand	Model Name	Description
Motorola	SVG2500	
	SVG2500 Diagnostic	base on SVG2500 with adding RS-232 transceiver on board to PC COM port by using the audio jack on rear panel.

From the above models, model: **SVG2500 Diagnostic** was selected as representative model for the test and its data was recorded in this report.

3. The EUT was powered by following power adapter or Li-Ion battery:

Power adapter	
Brand:	Lite On
Model No.:	PA-1240-5M-ROHS
Input power :	AC100-240V,2A,50/60Hz
Output power :	DC14V,1.7A Cable:1.8m/unshielded/without core

Battery (Lithium Ion)	
Brand:	Motorola
Model No.:	515757-001
Rating :	10.8V

4. The EUT was pre-tested in chamber as the following test modes:

Test Mode	Power
Mode 1	**With Adapter**
Mode 2	With Battery

Mode 1, the worse case one, was chosen for final test.

5. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.

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

7. 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)
802.11g	1 to 11	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.

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

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

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a SURFboard Voice 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

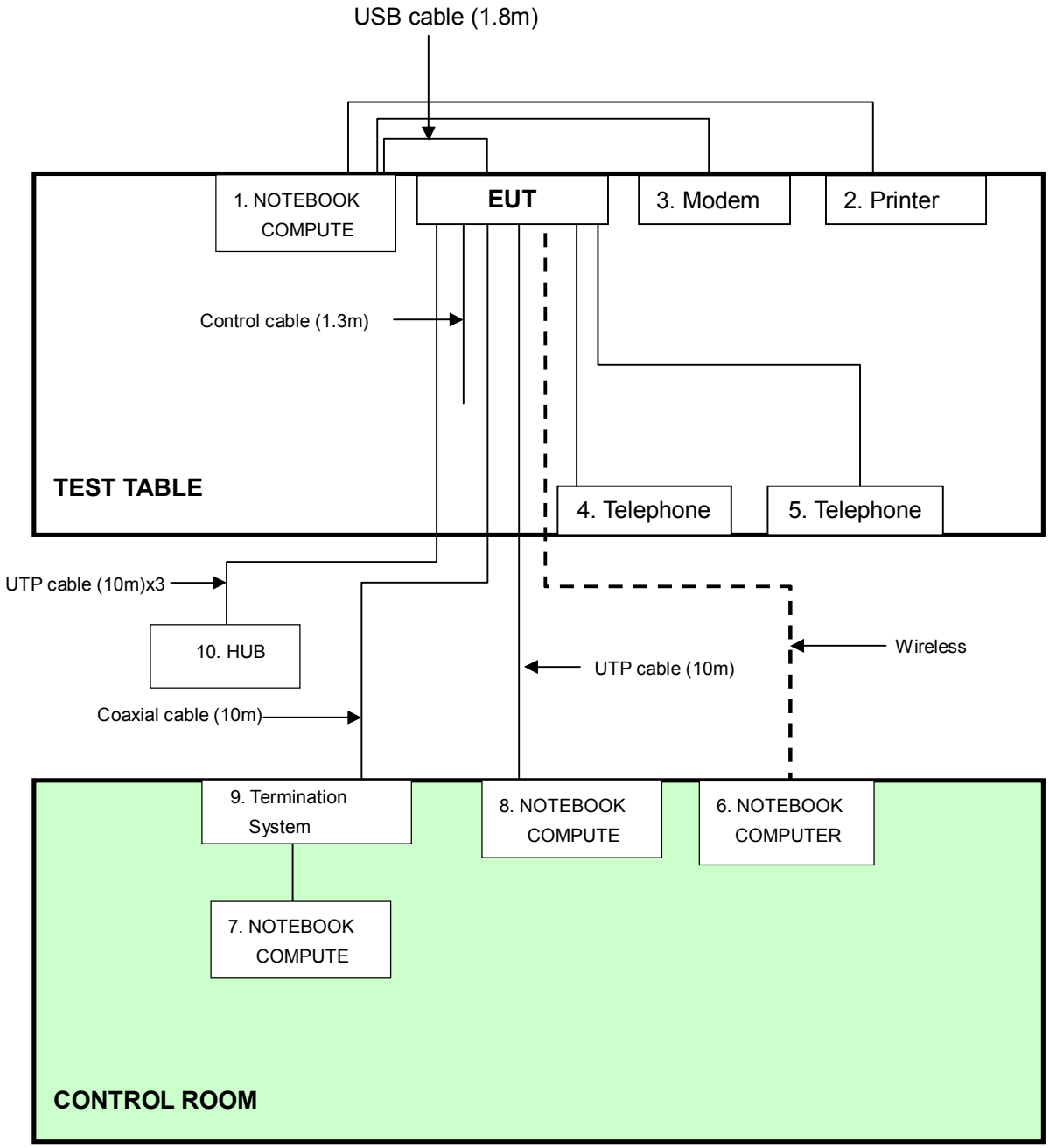
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	CN-04Y212-48643-38 E-0145	NA
2	PRINTER	HP	C2642A	MY79J1D00G	B94C2642X
3	MODEM	ACEEX	1414	0206026779	IFAXDM1414
4	TELEPHONE	HTT	HTT-806	9543663	FCC DoC
5	TELEPHONE	HTT	HTT-806	9543716	FCC DoC
6	NOTEBOOK COMPUTER	DELL	PP21L	CN-0GD366-70166-5 B3-09ZX	QDS-BRCM1016
7	NOTEBOOK COMPUTER	Dell	PP01L	TW-09c748-12800-16 5-3171	FCC DoC
8	Termination System	MOTOROLA	BSR2000	NA	NA
9	HUB	AVSYS	110H8	01-20E-000002	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.6 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
3	1.3 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	1.3 m nonshielded telephone wire, terminated with RJ11 connector, w/o core
5	1.3 m nonshielded telephone wire, terminated with RJ11 connector, w/o core
6	NA
7	NA
8	NA
9	NA

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. Support units 6 ~ 9 were kept in the control room during the 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)	ENV-216	100072	Oct. 20, 2007
Line-Impedance Stabilization Network(for Peripheral)	KNW-407	8-1395-12	Aug. 15, 2008
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 19, 2008
Terminator	50	1	Oct. 30, 2007
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.

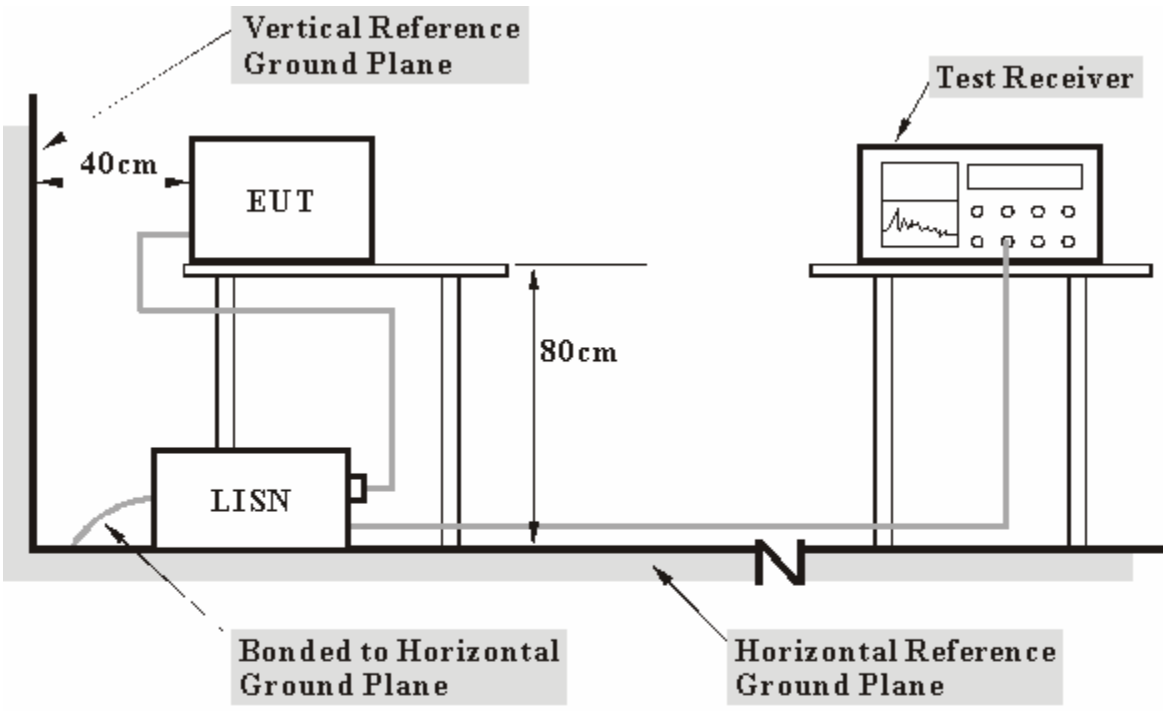
4.1.3 TEST PROCEDURES

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. Turn on the power of all equipment.

b. The support units 1 act as a Server PC system to communicate with EUT via USB cable.

c. The support unit 4 and 5 (Telephone) keep in linking via EUT.

d. Prepared other computer systems (support unit 6-9) to act as communication partners and placed them outside of testing area.

e. The communication partners run test program “MFGTEST and Ping .exe” to enable EUT under transmission/receiving condition continuously via UTP cable, Coaxial cable.

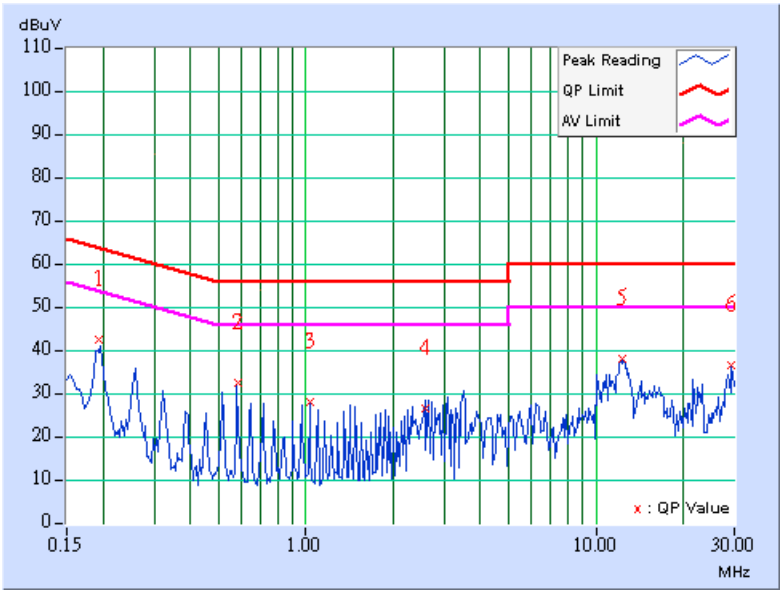
f. Repeat steps b-e.

4.1.6 TEST RESULTS

INPUT POWER	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
PHASE	Line (L)	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 951hPa	**TESTED BY**	Jerry Fan

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	0.194	0.41	41.64	-	42.05	-	63.85	53.85	-21.80	-
2	0.583	0.30	31.57	-	31.87	-	56.00	46.00	-24.13	-
3	1.035	0.30	27.18	-	27.48	-	56.00	46.00	-28.52	-
4	2.584	0.33	25.62	-	25.95	-	56.00	46.00	-30.05	-
5	12.339	0.64	37.05	-	37.69	-	60.00	50.00	-22.31	-
6	29.234	1.00	35.51	-	36.51	-	60.00	50.00	-23.49	-

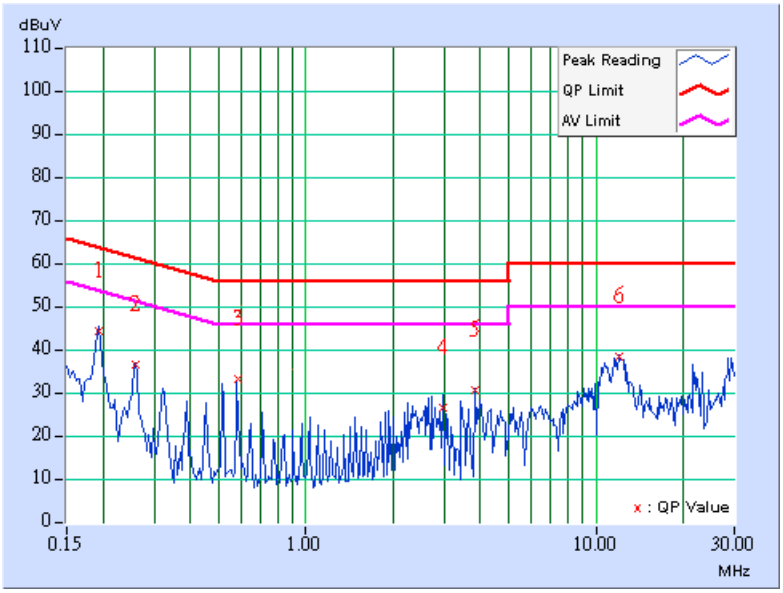
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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**	6Mbps
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 951hPa	**TESTED BY**	Jerry Fan

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.193**	**0.41**	**43.74**	**-**	**44.15**	**-**	**63.91**	**53.91**	**-19.76**	**-**
2	0.259	0.37	35.99	-	36.36	-	61.45	51.45	-25.09	-
3	0.582	0.30	32.67	-	32.97	-	56.00	46.00	-23.03	-
4	2.971	0.40	26.12	-	26.52	-	56.00	46.00	-29.48	-
5	3.813	0.40	30.07	-	30.47	-	56.00	46.00	-25.53	-
6	11.949	0.68	37.91	-	38.59	-	60.00	50.00	-21.41	-

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 03, 2008
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2007
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB 9168	138	July 17, 2008
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 25, 2008
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2007
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Jul. 15, 2008
Software	ADT_Radiated_V 7.6.15.7	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 (36 months for Biconical and Periodic Antenna)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.

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.

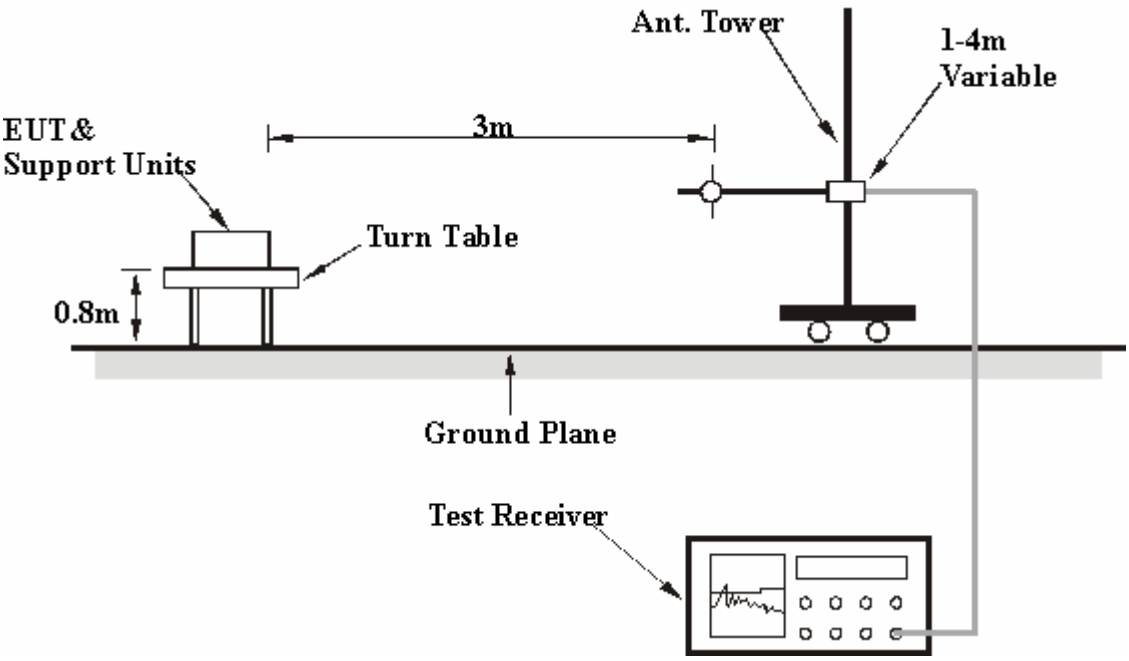
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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	OFDM	**CHANNEL**	Channel 1
INPUT POWER	120Vac, 60 Hz	**FREQUENCY RANGE**	30-1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 68%RH, 951hPa	**TRANSFER RATE**	6Mbps
TESTED BY	Sky Liao	**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	125.01	30.67 QP	43.50	-12.83	1.48 H	17	18.45	12.22
2	200.00	31.34 QP	43.50	-12.16	1.26 H	305	19.74	11.60
3	300.00	41.30 QP	46.00	-4.70	1.00 H	259	24.47	16.83
4	375.00	38.96 QP	46.00	-7.04	1.00 H	98	20.76	18.20
5	400.00	41.42 QP	46.00	-4.58	1.00 H	347	22.40	19.02
6	500.00	32.27 QP	46.00	-13.73	1.00 H	145	10.51	21.76
7	625.00	42.24 QP	46.00	-3.76	1.38 H	357	17.49	24.75
8	700.00	42.89 QP	46.00	-3.11	1.16 H	34	17.09	25.80
9	800.00	40.45 QP	46.00	-5.55	1.10 H	76	12.89	27.56
10	900.00	35.94 QP	46.00	-10.06	1.56 H	38	7.09	28.85

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	125.01	32.80 QP	43.50	-10.70	1.00 V	156	20.58	12.22
2	200.01	32.77 QP	43.50	-10.73	1.00 V	210	21.17	11.60
3	299.99	35.72 QP	46.00	-10.28	1.59 V	357	18.89	16.83
4	375.00	31.88 QP	46.00	-14.12	1.31 V	336	13.68	18.20
5	400.00	43.66 QP	46.00	-2.34	1.00 V	340	24.64	19.02
6	499.99	30.41 QP	46.00	-15.59	1.00 V	296	8.65	21.76
7	624.99	39.46 QP	46.00	-6.54	1.00 V	245	14.71	24.75
8	699.99	37.32 QP	46.00	-8.68	1.00 V	105	11.52	25.80
9	800.00	41.46 QP	46.00	-4.54	1.00 V	89	13.90	27.56
10	900.00	34.04 QP	46.00	-11.96	1.86 V	95	5.19	28.85

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

MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	24 deg. C, 63%RH, 951hPa	**TESTED BY**	Phoenix Huang

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	1608.00	45.00 PK	74.00	-29.00	1.12 H	44	16.89	28.11
2	1608.00	41.10 AV	54.00	-12.90	1.12 H	44	12.99	28.11
3	2389.90	58.30 PK	74.00	-15.70	1.34 H	258	27.98	30.32
4	2389.90	45.84 AV	54.00	-8.16	1.34 H	258	15.52	30.32
5	*2412.00	99.60 PK			1.36 H	255	69.19	30.41
6	*2412.00	94.80 AV			1.36 H	255	64.39	30.41
7	4824.00	48.90 PK	74.00	-25.10	1.55 H	275	13.11	35.79
8	4824.00	41.70 AV	54.00	-12.30	1.55 H	275	5.91	35.79
9	7236.00	52.00 PK	74.00	-22.00	1.52 H	57	10.40	41.60
10	7236.00	40.20 AV	54.00	-13.80	1.52 H	57	-1.40	41.60

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	1608.00	45.20 PK	74.00	-28.80	1.41 V	156	17.09	28.11
2	1608.00	42.30 AV	54.00	-11.70	1.41 V	156	14.19	28.11
3	2389.50	59.49 PK	74.00	-14.51	1.10 V	19	29.18	30.31
4	2389.50	48.70 AV	54.00	-5.30	1.10 V	19	18.39	30.31
5	*2412.00	108.00 PK			1.08 V	341	77.59	30.41
6	*2412.00	103.00 AV			1.08 V	341	72.59	30.41
7	4824.00	51.50 PK	74.00	-22.50	1.45 V	52	15.71	35.79
8	4824.00	48.30 AV	54.00	-5.70	1.45 V	52	12.51	35.79
9	7236.00	52.70 PK	74.00	-21.30	1.45 V	52	11.10	41.60
10	7236.00	48.30 AV	54.00	-5.70	1.45 V	52	6.70	41.60

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	24 deg. C, 63%RH, 951hPa	**TESTED BY**	Phoenix Huang

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	1624.70	45.80 PK	74.00	-28.20	1.07 H	47	17.67	28.13
2	1624.70	41.50 AV	54.00	-12.50	1.07 H	47	13.37	28.13
3	*2437.00	99.60 PK			1.48 H	111	69.08	30.52
4	*2437.00	94.70 AV			1.48 H	111	64.18	30.52
5	4874.00	50.20 PK	74.00	-23.80	1.52 H	45	14.28	35.92
6	4874.00	43.70 AV	54.00	-10.30	1.52 H	45	7.78	35.92
7	7311.00	52.80 PK	74.00	-21.20	1.76 H	204	10.99	41.81
8	7311.00	40.70 AV	54.00	-13.30	1.76 H	204	-1.11	41.81

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	1624.70	45.60 PK	74.00	-28.40	1.33 V	165	17.47	28.13
2	1624.70	42.50 AV	54.00	-11.50	1.33 V	165	14.37	28.13
3	*2437.00	108.00 PK			1.49 V	111	77.48	30.52
4	*2437.00	103.20 AV			1.49 V	111	72.68	30.52
5	4874.00	52.70 PK	74.00	-21.30	1.32 V	272	16.78	35.92
6	4874.00	50.00 AV	54.00	-4.00	1.32 V	272	14.08	35.92
7	7311.00	54.40 PK	74.00	-19.60	1.72 V	265	12.59	41.81
8	7311.00	43.60 AV	54.00	-10.40	1.72 V	265	1.79	41.81

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	24 deg. C, 63%RH, 951hPa	**TESTED BY**	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

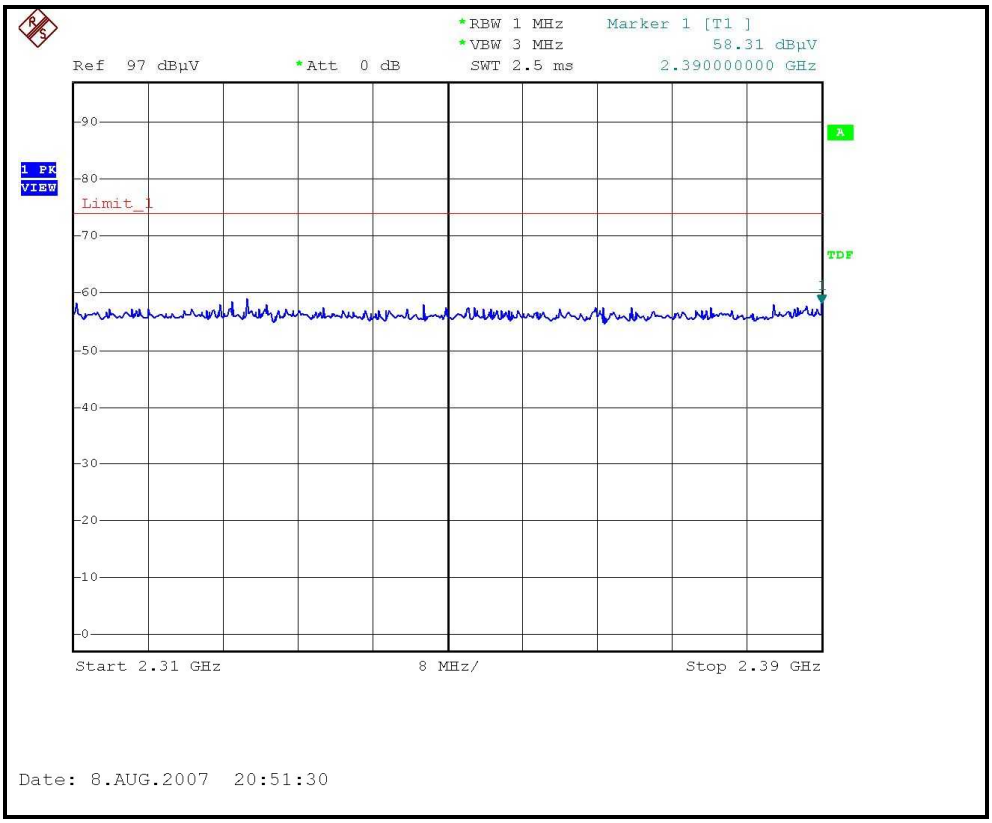
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1641.30	45.50 PK	74.00	-28.50	1.10 H	49	17.35	28.15
2	1641.30	41.90 AV	54.00	-12.10	1.10 H	49	13.75	28.15
3	*2462.00	99.80 PK			2.01 H	288	69.17	30.63
4	*2462.00	94.80 AV			2.01 H	288	64.17	30.63
5	2483.50	58.20 PK	74.00	-15.80	1.78 H	274	27.48	30.72
6	2483.50	46.80 AV	54.00	-7.20	1.78 H	274	16.08	30.72
7	4924.00	51.60 PK	74.00	-22.40	1.67 H	131	15.54	36.06
8	4924.00	46.50 AV	54.00	-7.50	1.67 H	131	10.44	36.06
9	7386.00	51.50 PK	74.00	-22.50	1.50 H	123	9.49	42.01
10	7386.00	40.10 AV	54.00	-13.90	1.50 H	123	-1.91	42.01

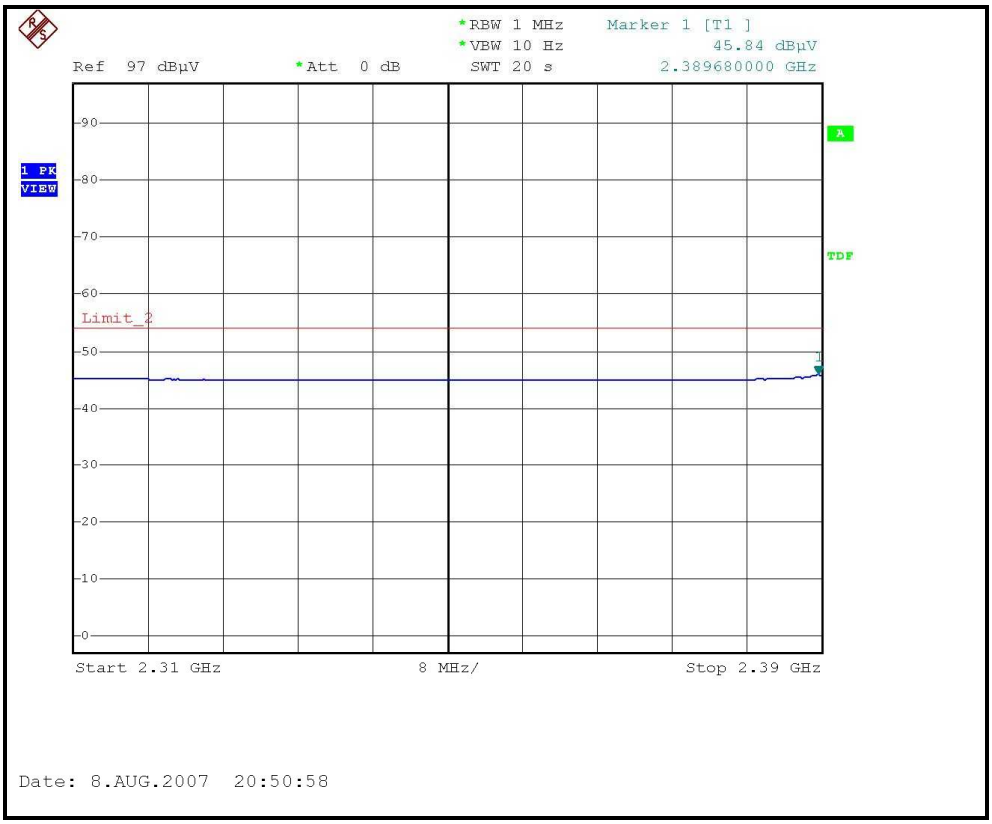
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

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	1641.30	46.20 PK	74.00	-27.80	1.25 V	337	18.05	28.15
2	1641.30	44.20 AV	54.00	-9.80	1.25 V	337	16.05	28.15
3	*2462.00	109.00 PK			1.44 V	112	78.37	30.63
4	*2462.00	104.40 AV			1.44 V	112	73.77	30.63
5	2483.50	61.10 PK	74.00	-12.90	1.42 V	111	30.38	30.72
6	2483.50	51.60 AV	54.00	-2.40	1.42 V	111	20.88	30.72
7	4924.00	56.50 PK	74.00	-17.50	1.31 V	14	20.44	36.06
8	**4924.00**	**53.90 AV**	**54.00**	**-0.10**	**1.31 V**	**14**	**17.84**	**36.06**
9	7386.00	54.00 PK	74.00	-20.00	1.50 V	13	11.99	42.01
10	7386.00	42.00 AV	54.00	-12.00	1.50 V	13	-0.01	42.01

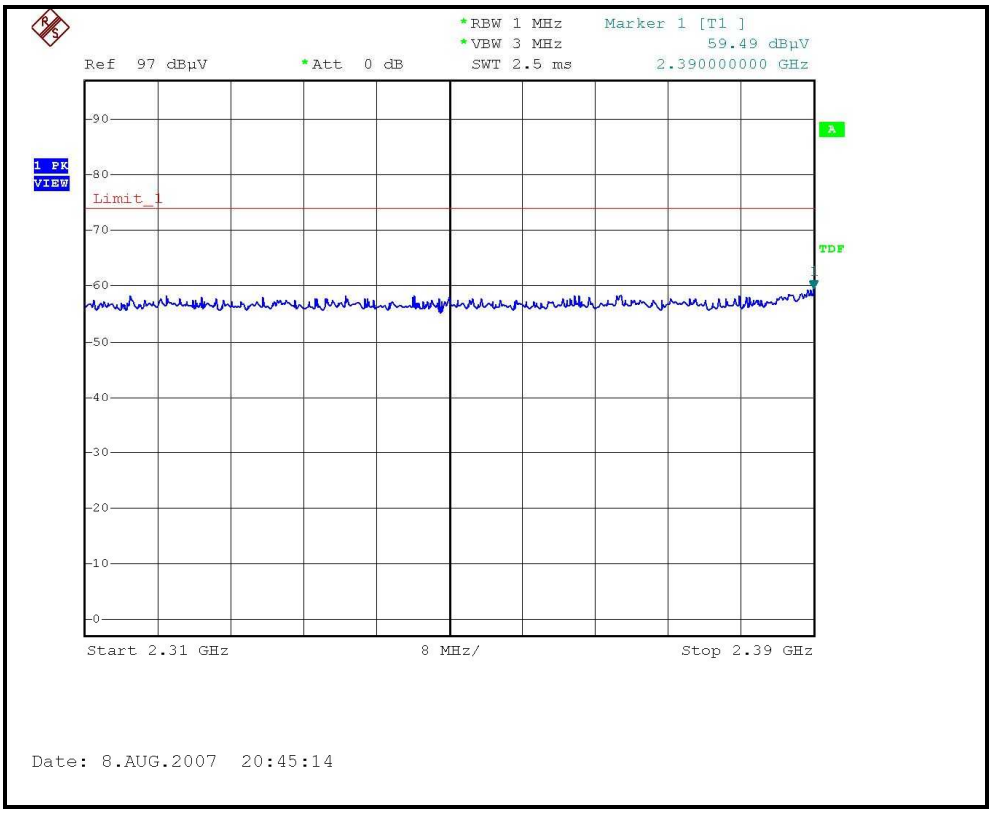
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247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

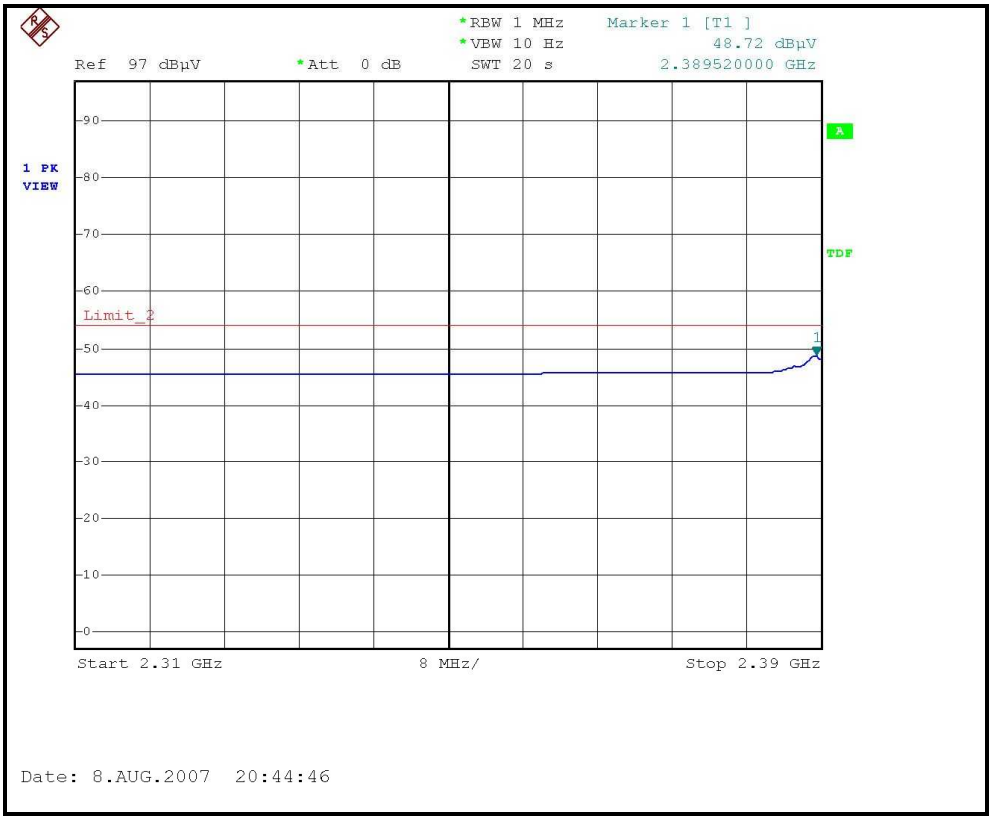
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)





RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)





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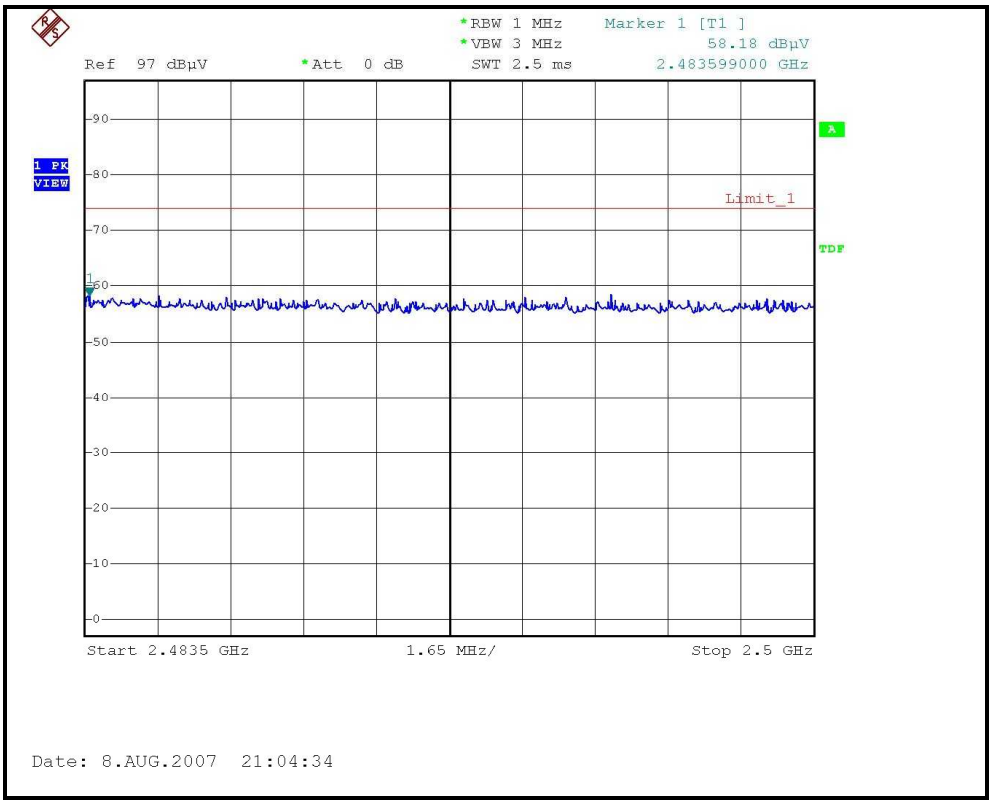
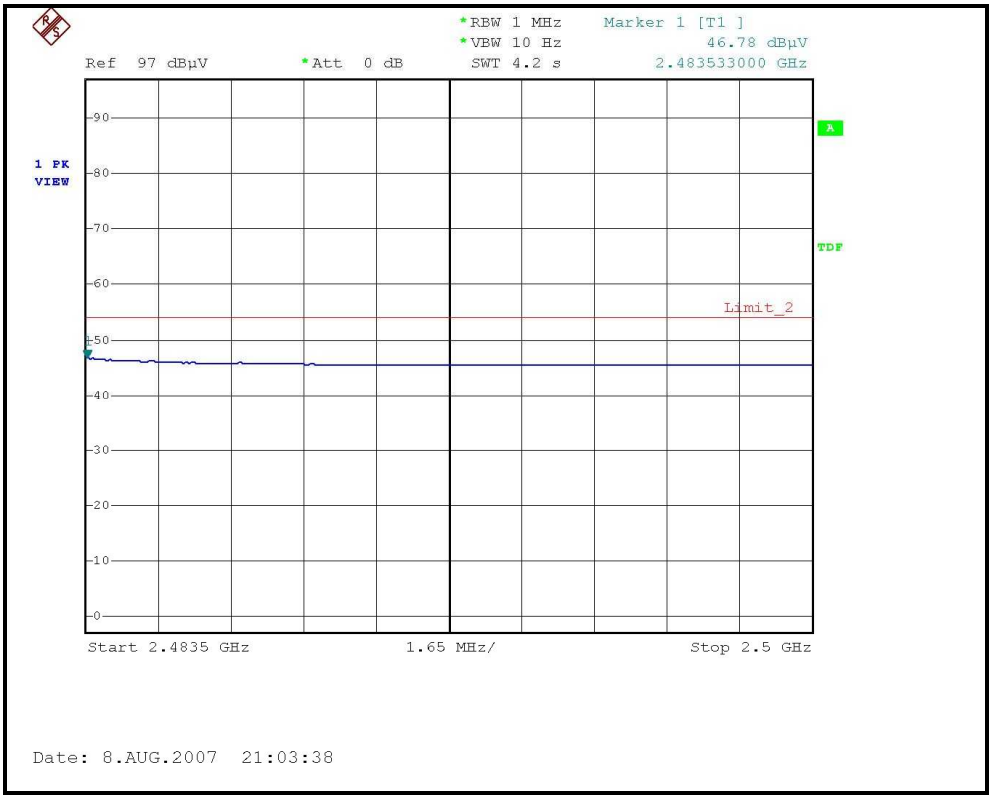
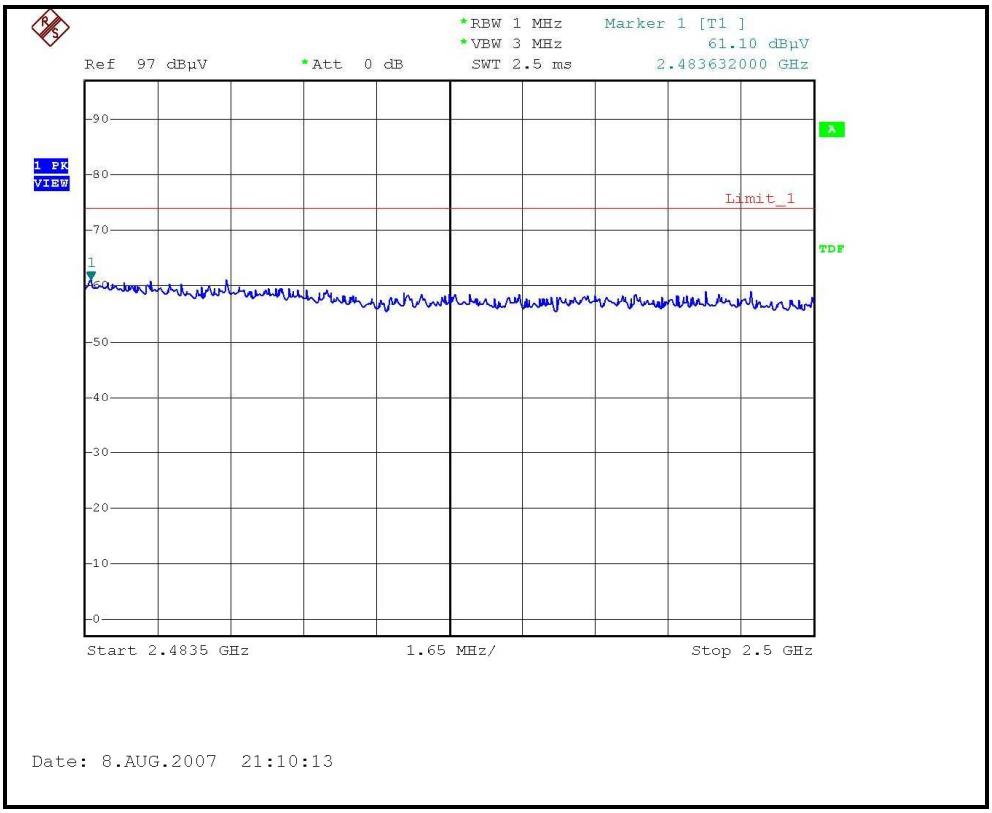
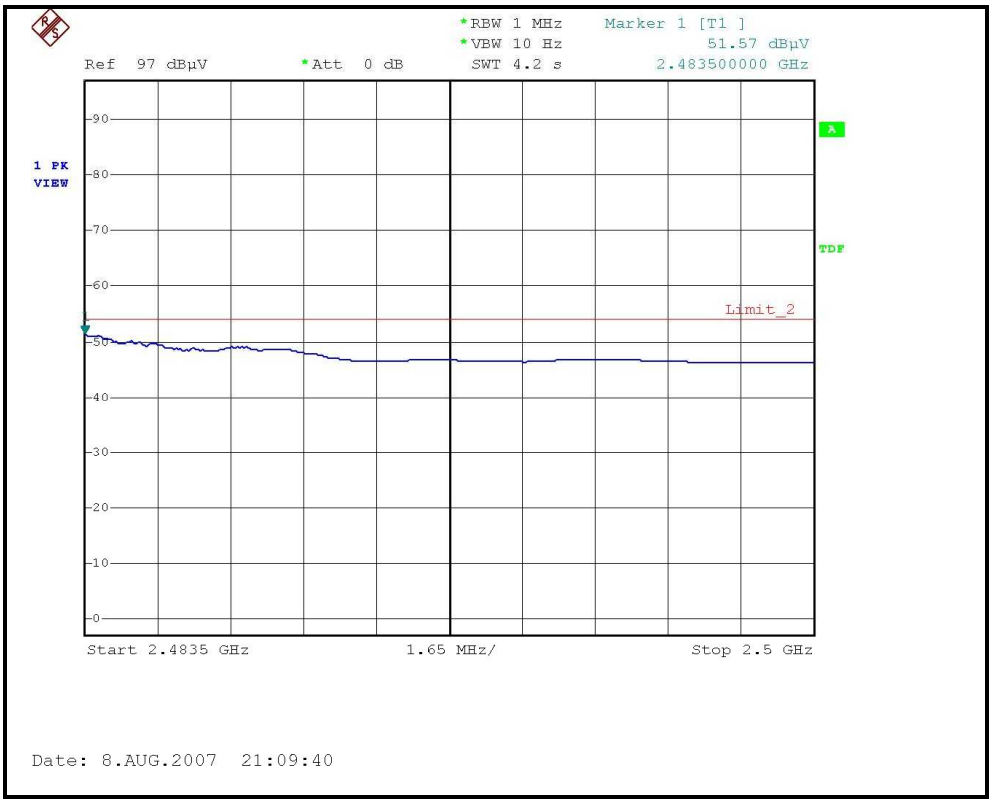




RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)





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	24 deg. C, 63%RH, 951hPa	**TESTED BY**	Phoenix Huang

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	1608.00	43.10 PK	74.00	-30.90	1.06 H	47	14.99	28.11
2	1608.00	39.20 AV	54.00	-14.80	1.06 H	47	11.09	28.11
3	2390.00	57.90 PK	74.00	-16.10	1.35 H	98	27.58	30.32
4	2390.00	44.40 AV	54.00	-9.60	1.35 H	98	14.08	30.32
5	*2412.00	103.20 PK			2.01 H	289	72.79	30.41
6	*2412.00	91.40 AV			2.01 H	289	60.99	30.41
7	4824.00	47.50 PK	74.00	-26.50	1.53 H	56	11.71	35.79
8	4824.00	34.00 AV	54.00	-20.00	1.53 H	56	-1.79	35.79
9	7236.00	51.80 PK	74.00	-22.20	1.21 H	43	10.20	41.60
10	7236.00	37.30 AV	54.00	-16.70	1.21 H	43	-4.30	41.60

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	1608.00	46.40 PK	74.00	-27.60	1.67 V	355	18.29	28.11
2	1608.00	45.20 AV	54.00	-8.80	1.67 V	355	17.09	28.11
3	2390.00	61.90 PK	74.00	-12.10	1.43 V	123	31.58	30.32
4	2390.00	46.30 AV	54.00	-7.70	1.43 V	123	15.98	30.32
5	*2412.00	108.90 PK			1.75 V	123	78.49	30.41
6	*2412.00	97.30 AV			1.75 V	123	66.89	30.41
7	4824.00	50.70 PK	74.00	-23.30	1.45 V	41	14.91	35.79
8	4824.00	35.20 AV	54.00	-18.80	1.45 V	41	-0.59	35.79
9	7236.00	52.50 PK	74.00	-21.50	1.25 V	251	10.90	41.60
10	7236.00	39.50 AV	54.00	-14.50	1.25 V	251	-2.10	41.60

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	24 deg. C, 63%RH, 951hPa	**TESTED BY**	Phoenix Huang

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	1624.60	42.80 PK	74.00	-31.20	1.26 H	311	14.67	28.13
2	1624.60	38.70 AV	54.00	-15.30	1.26 H	311	10.57	28.13
3	*2437.00	101.60 PK			1.57 H	308	71.08	30.52
4	*2437.00	89.80 AV			1.57 H	308	59.28	30.52
5	4874.00	47.30 PK	74.00	-26.70	1.50 H	59	11.38	35.92
6	4874.00	34.20 AV	54.00	-19.80	1.50 H	59	-1.72	35.92
7	7311.00	51.30 PK	74.00	-22.70	1.18 H	44	9.49	41.81
8	7311.00	39.70 AV	54.00	-14.30	1.18 H	44	-2.11	41.81

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	1624.67	45.70 PK	74.00	-28.30	1.30 V	166	17.57	28.13
2	1624.67	42.50 AV	54.00	-11.50	1.30 V	166	14.37	28.13
3	*2437.00	108.80 PK			1.74 V	123	78.28	30.52
4	*2437.00	97.00 AV			1.74 V	123	66.48	30.52
5	4874.00	50.90 PK	74.00	-23.10	1.58 V	49	14.98	35.92
6	4874.00	35.70 AV	54.00	-18.30	1.58 V	49	-0.22	35.92
7	7311.00	55.10 PK	74.00	-18.90	1.63 V	265	13.29	41.81
8	7311.00	39.80 AV	54.00	-14.20	1.63 V	265	-2.01	41.81

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	24 deg. C, 63%RH, 951hPa	**TESTED BY**	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

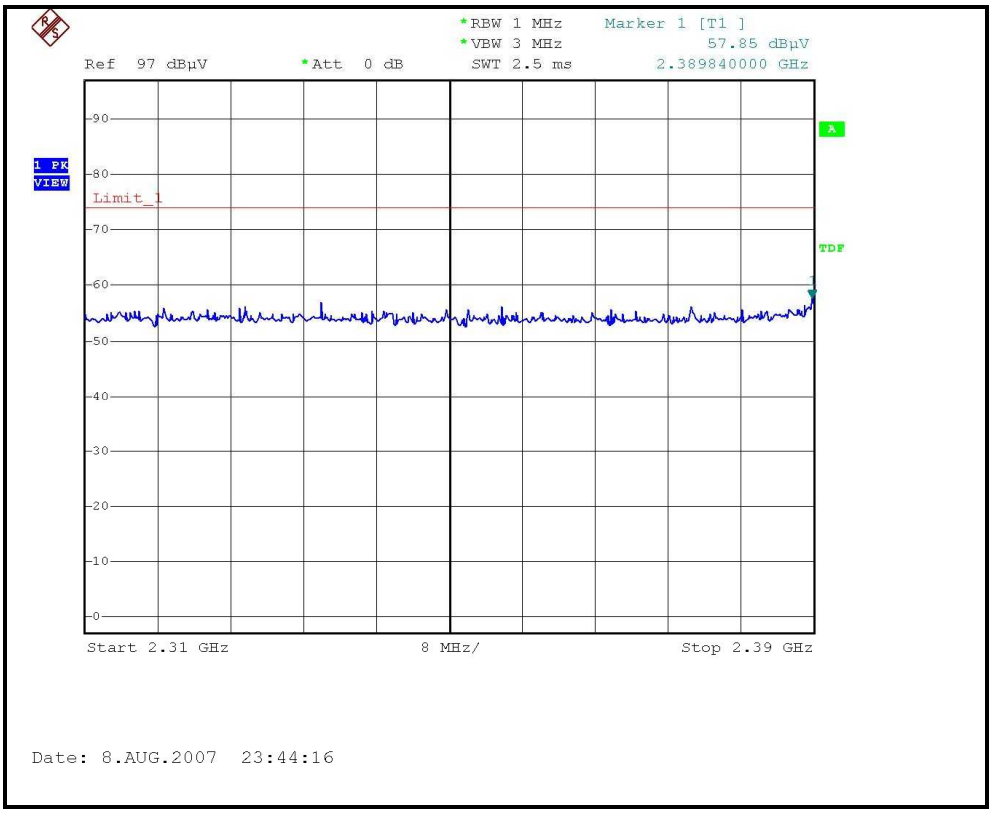
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1641.35	43.50 PK	74.00	-30.50	1.45 H	2	15.35	28.15
2	1641.35	39.30 AV	54.00	-14.70	1.45 H	2	11.15	28.15
3	*2462.00	101.50 PK			1.91 H	288	70.87	30.63
4	*2462.00	90.30 AV			1.91 H	288	59.67	30.63
5	2483.60	57.40 PK	74.00	-16.60	1.92 H	138	26.68	30.72
6	2483.60	44.30 AV	54.00	-9.70	1.92 H	138	13.58	30.72
7	4924.00	50.20 PK	74.00	-23.80	1.53 H	62	14.14	36.06
8	4924.00	35.40 AV	54.00	-18.60	1.53 H	62	-0.66	36.06
9	7386.00	53.60 PK	74.00	-20.40	1.26 H	47	11.59	42.01
10	7386.00	39.90 AV	54.00	-14.10	1.26 H	47	-2.11	42.01

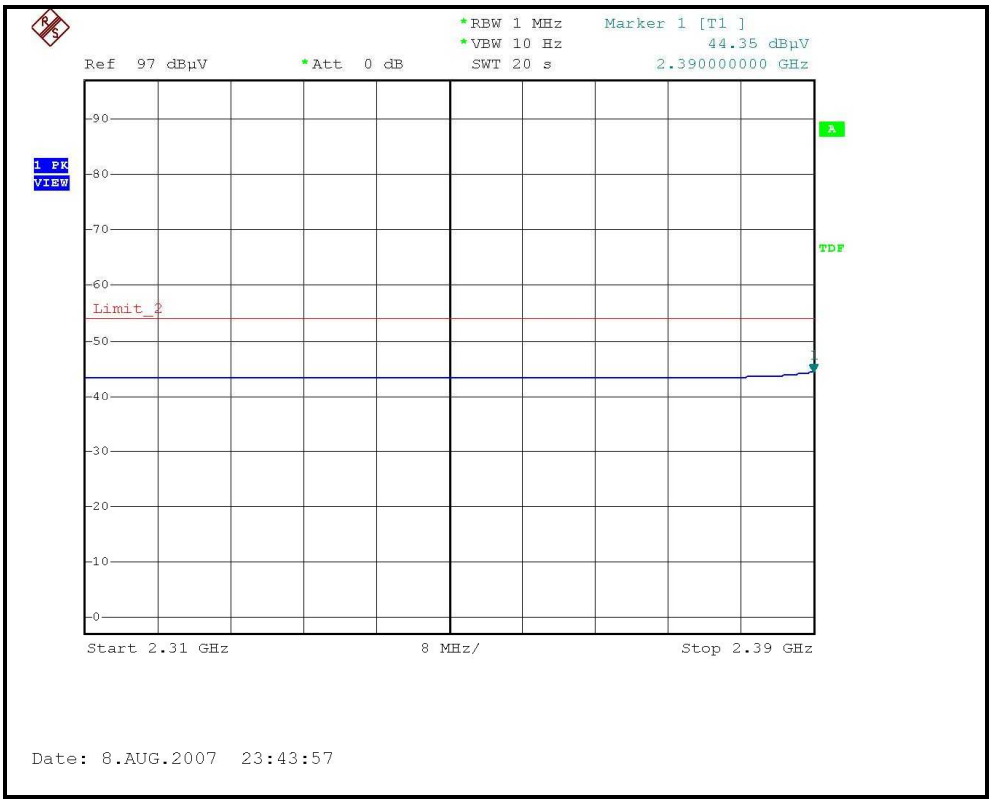
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

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	1641.34	46.70 PK	74.00	-27.30	1.29 V	167	18.55	28.15
2	1641.34	43.90 AV	54.00	-10.10	1.29 V	167	15.75	28.15
3	*2462.00	109.10 PK			1.44 V	112	78.47	30.63
4	*2462.00	97.40 AV			1.44 V	112	66.77	30.63
5	2483.50	62.00 PK	74.00	-12.00	1.45 V	112	31.28	30.72
6	2483.50	46.70 AV	54.00	-7.30	1.45 V	112	15.98	30.72
7	4924.00	54.30 PK	74.00	-19.70	1.31 V	41	18.24	36.06
8	4924.00	37.90 AV	54.00	-16.10	1.31 V	41	1.84	36.06
9	7386.00	55.60 PK	74.00	-18.40	1.57 V	267	13.59	42.01
10	7386.00	40.30 AV	54.00	-13.70	1.57 V	267	-1.71	42.01

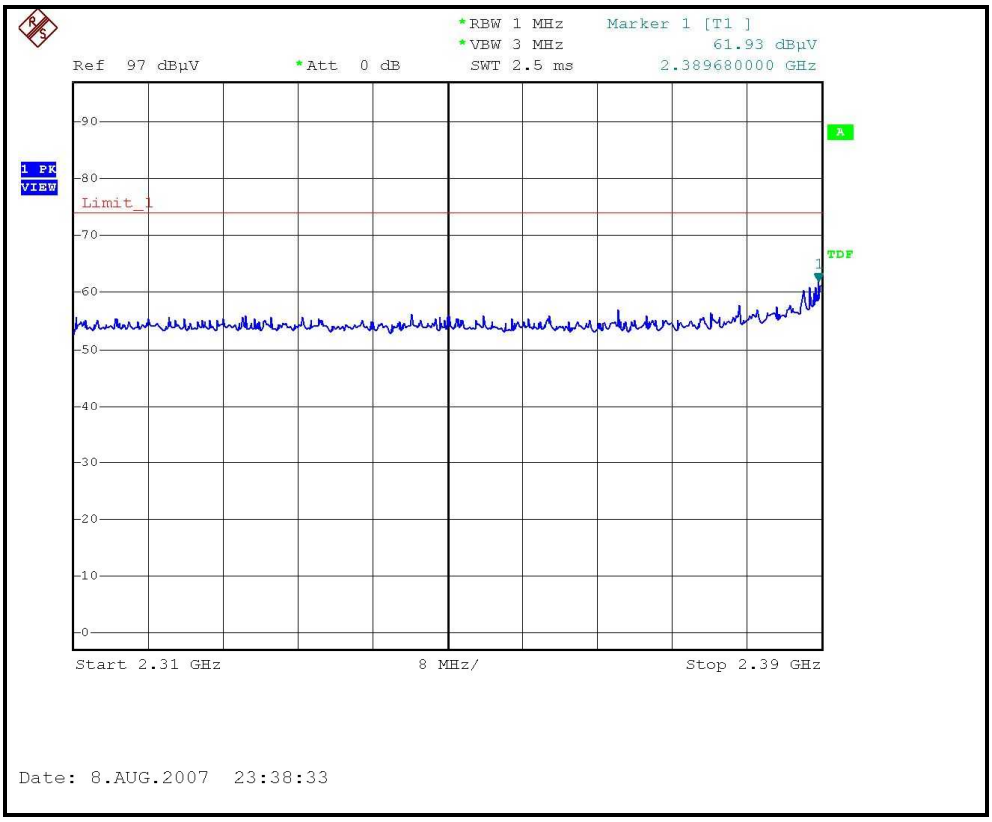
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247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

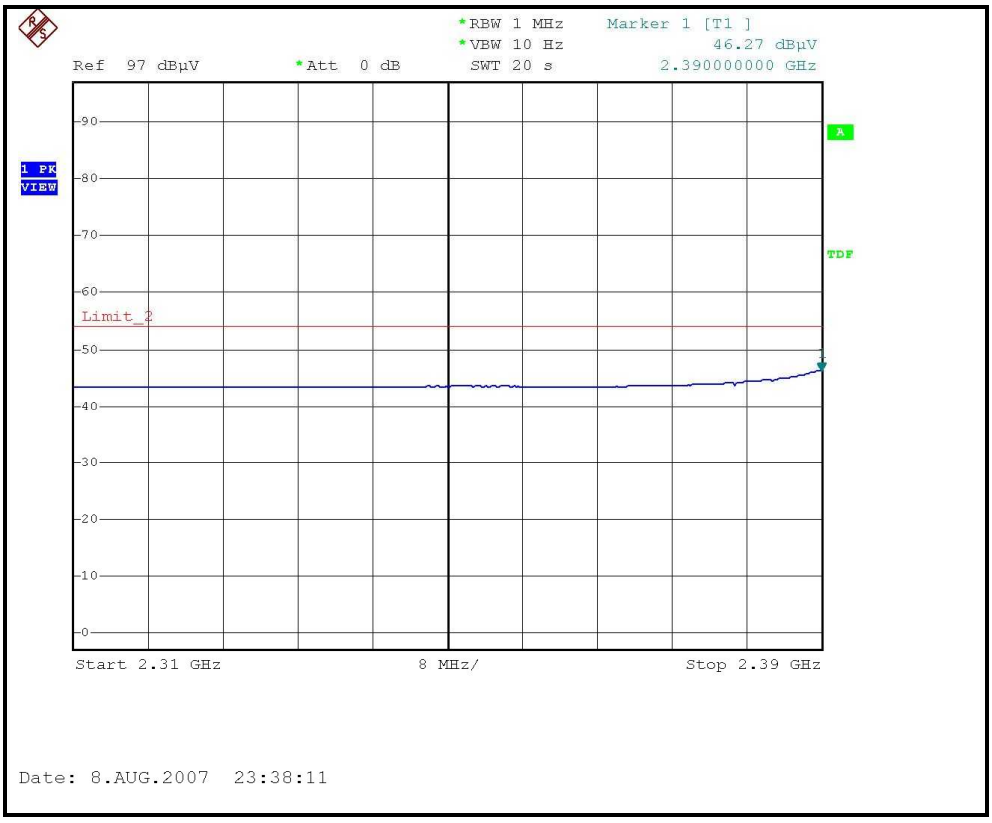
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)



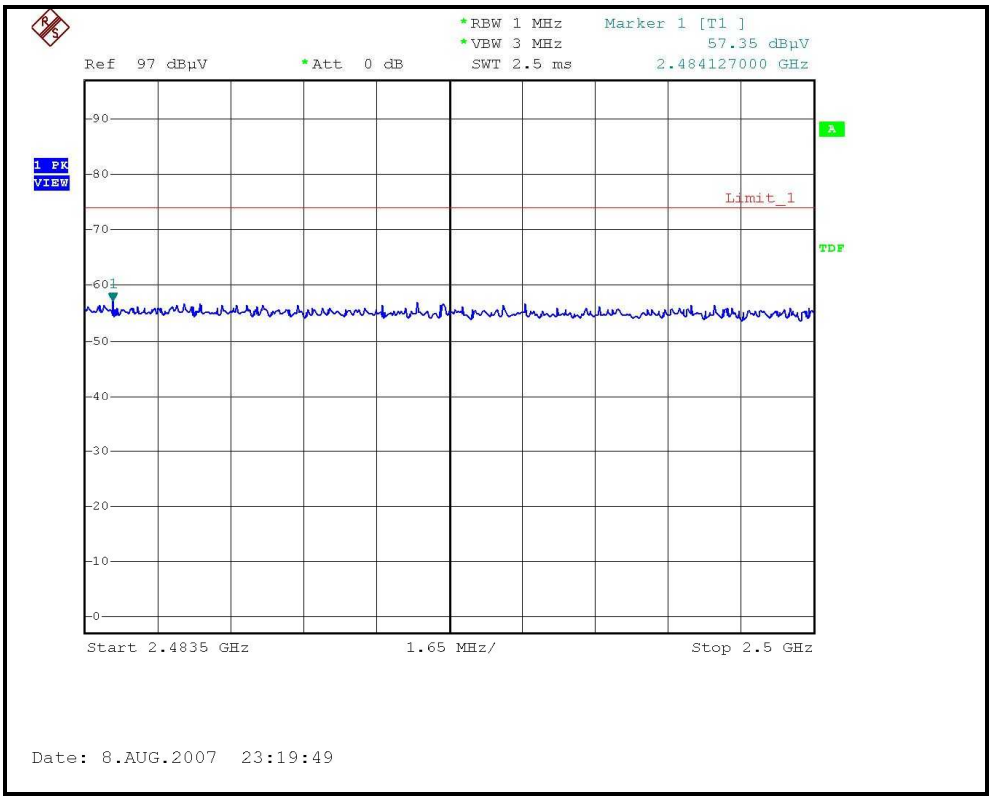


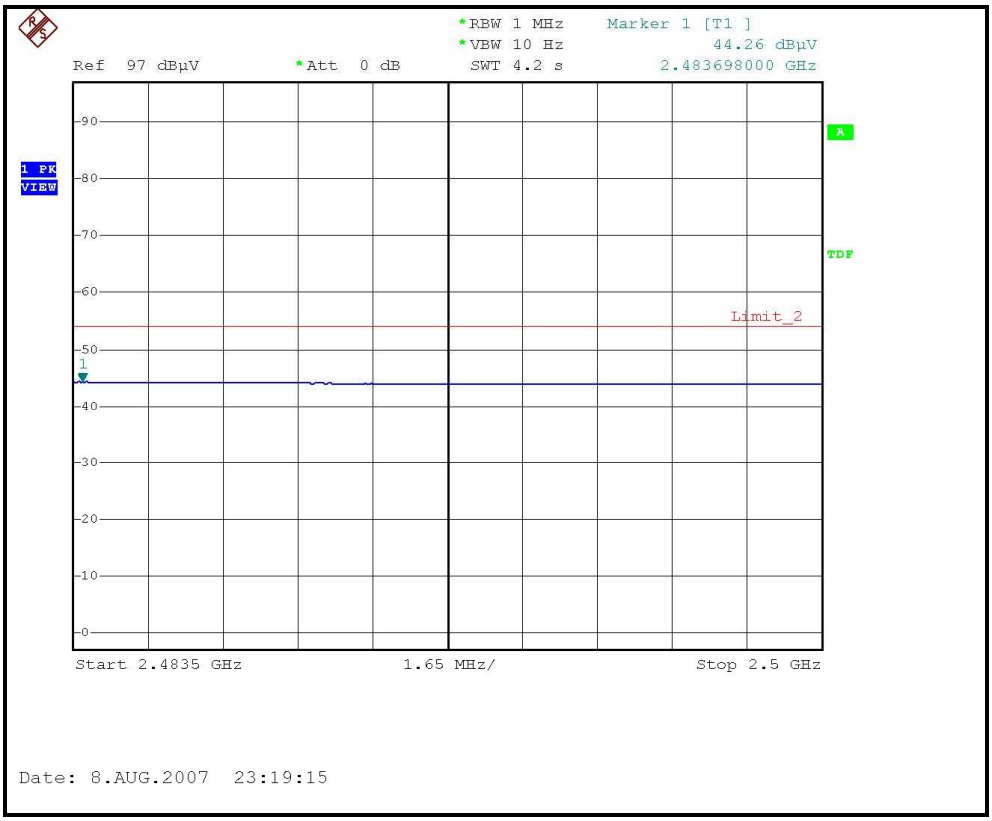
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)



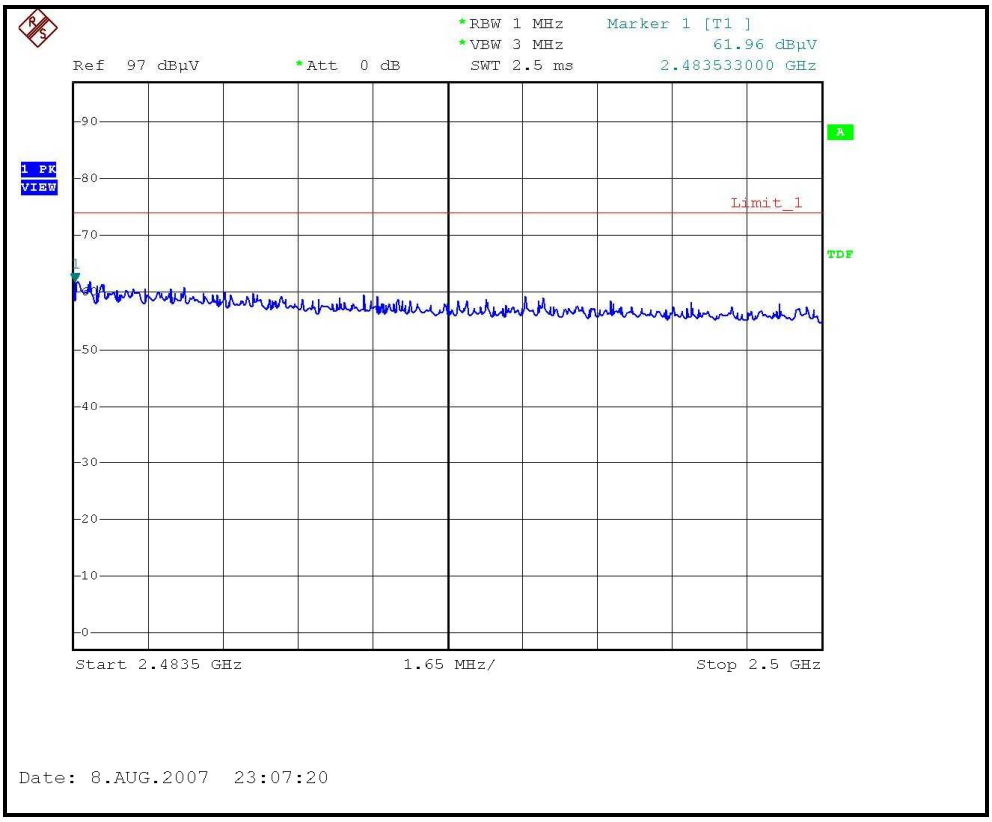


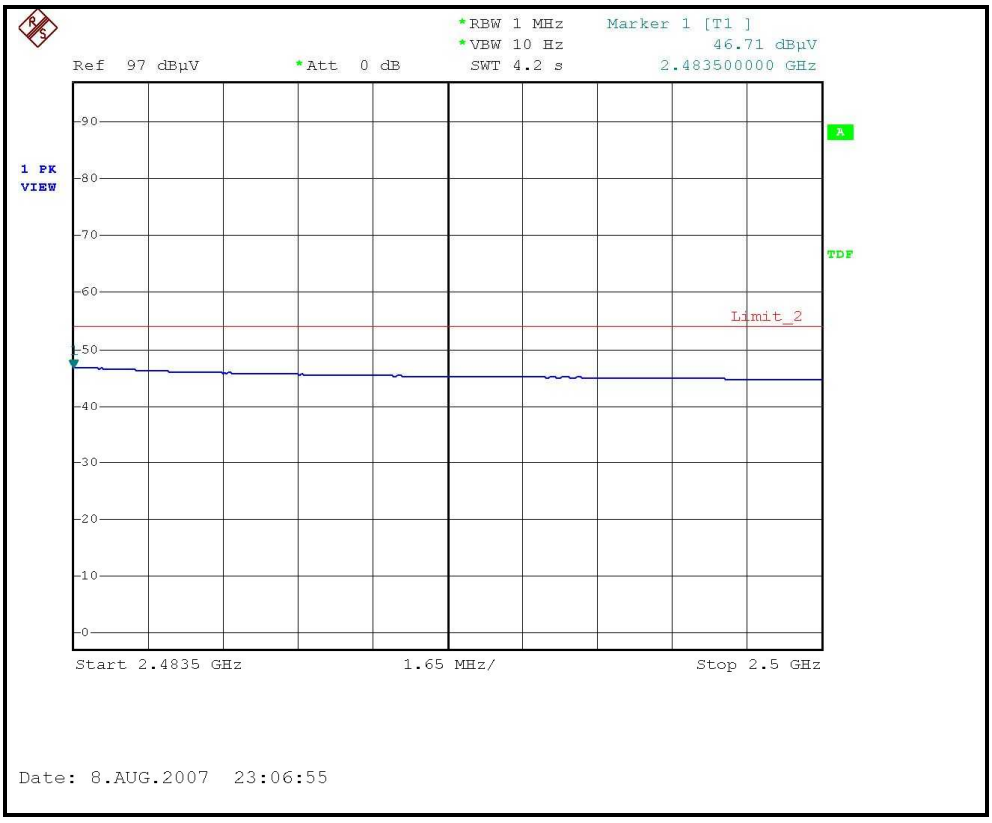
RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL)





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. 21, 2007

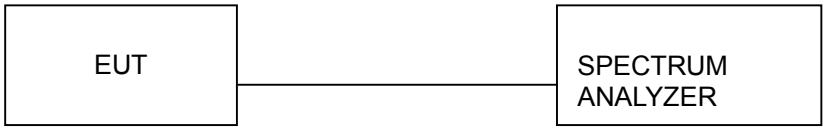
NOTE:

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.

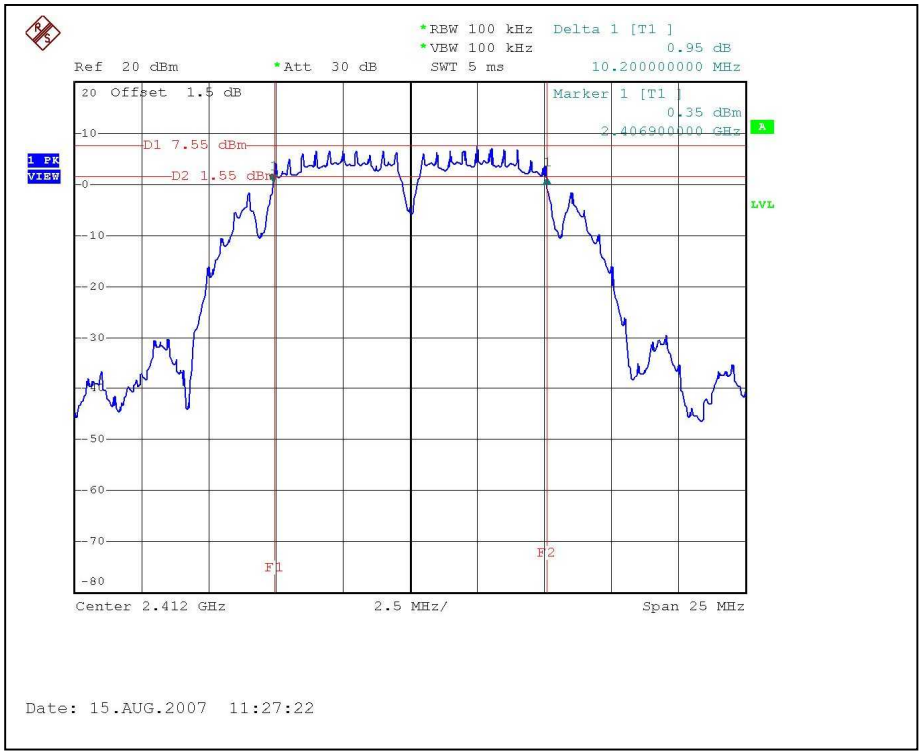
4.3.6 TEST RESULTS –DSSS

802.11b DSSS modulation

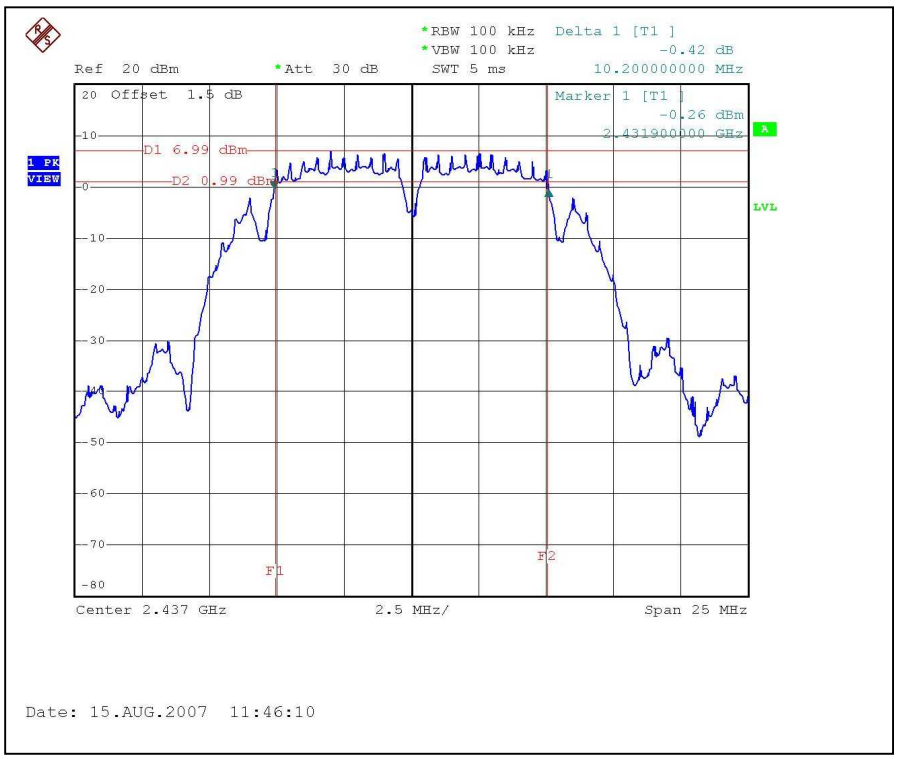
MODULATION TYPE	CCK	**TRANSFER RATE**	1Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 62 %RH, 951 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.2	0.5	PASS
6	2437	10.2	0.5	PASS
11	2462	10.2	0.5	PASS

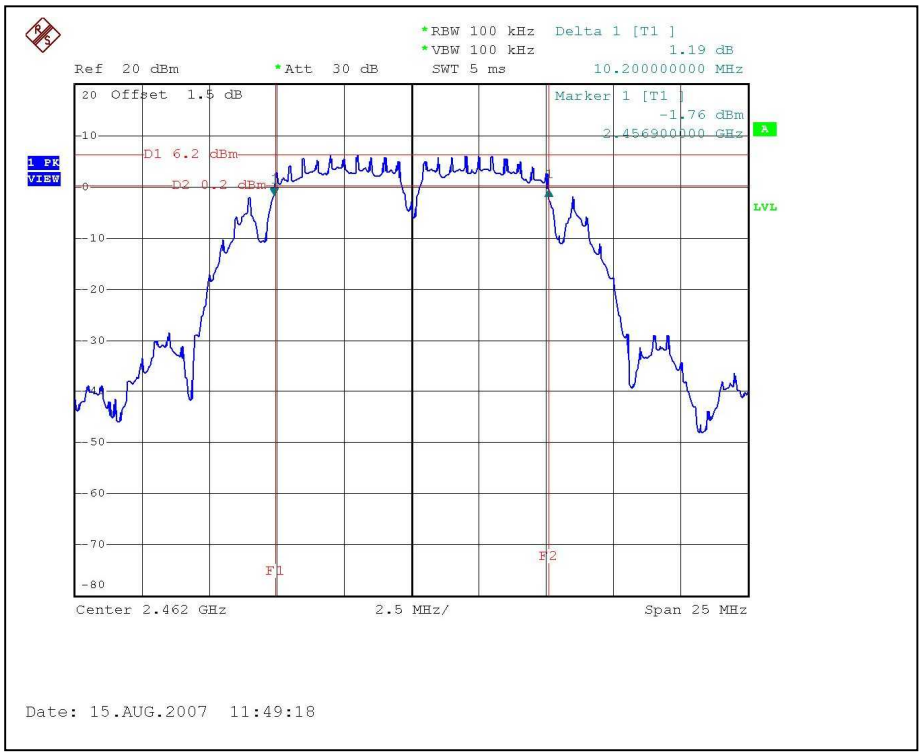
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.95 dB
10.200000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
0.35 dBm
2.406900000 GHz
D1 7.55 dBm
D2 1.55 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.412 GHz
2.5 MHz/
Span 25 MHz
Date: 15.AUG.2007 11:27:22

CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.42 dB
10.200000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-0.26 dBm
2.431900000 GHz
D1 6.99 dBm
D2 0.99 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz
Date: 15.AUG.2007 11:46:10

CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
1.19 dB
10.200000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-1.76 dBm
2.456900000 GHz
D1 6.2 dBm
D2 0.2 dBm
1 PK
VIEW
LVL
Center 2.462 GHz
2.5 MHz/
Span 25 MHz
Date: 15.AUG.2007 11:49:18

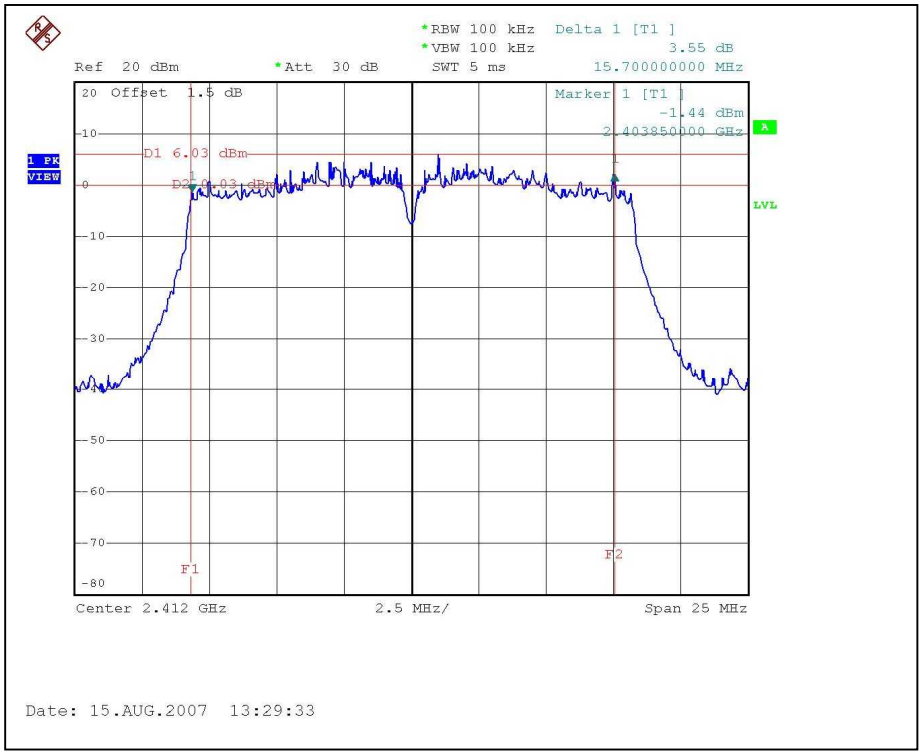
4.3.7 TEST RESULTS-OFDM

802.11g OFDM modulation

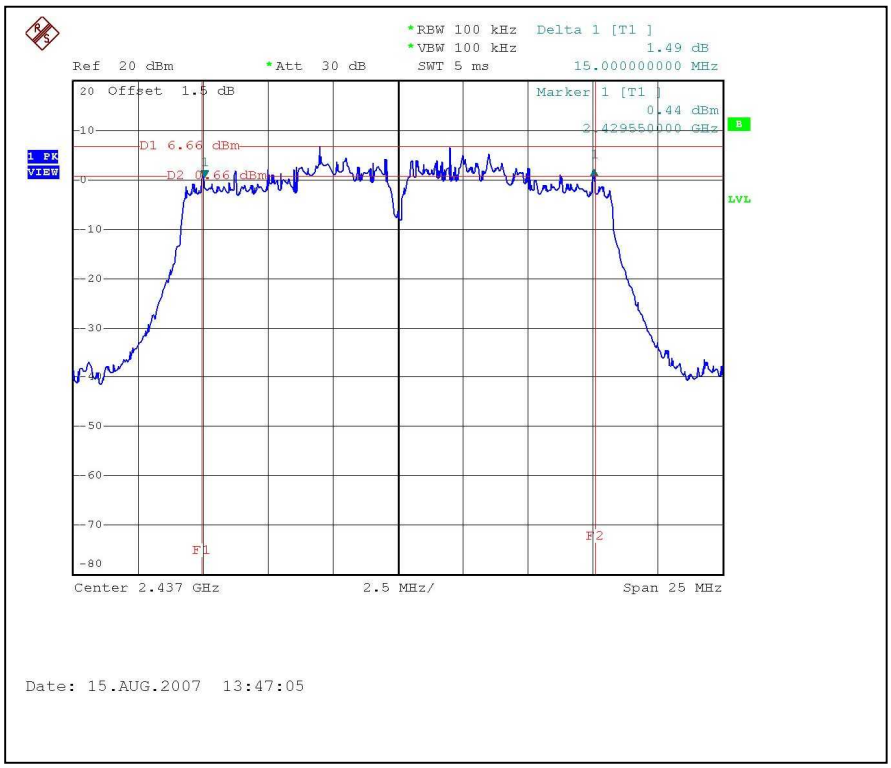
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 62 %RH, 951 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	15.7	0.5	PASS
6	2437	15.0	0.5	PASS
11	2462	15.7	0.5	PASS

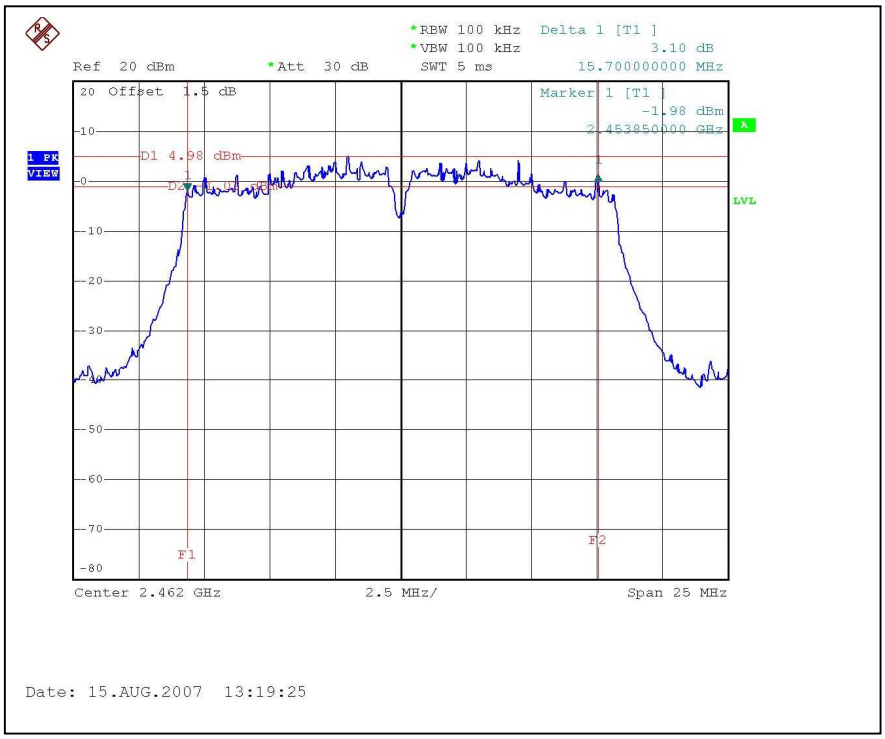
CH1


*RBW 100 kHz
Delta 1 [T1]
*VBW 100 kHz
3.55 dB
Ref 20 dBm
*Att 30 dB
SWT 5 ms
15.700000000 MHz
20 Offset 1.5 dB
Marker 1 [T1]
-1.44 dBm
2.403850000 GHz
D1 6.03 dBm
D2 0.03 dBm
1 PK VIEW
LVL
F1
F2
Center 2.412 GHz
2.5 MHz/
Span 25 MHz
Date: 15.AUG.2007 13:29:33

CH6


*RBW 100 kHz
Delta 1 [T1]
*VBW 100 kHz
1.49 dB
Ref 20 dBm
*Att 30 dB
SWT 5 ms
15.000000000 MHz
20 Offset 1.5 dB
Marker 1 [T1]
0.44 dBm
2.429550000 GHz
D1 6.66 dBm
D2 0.66 dBm
1 PK VIEW
LVL
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz
Date: 15.AUG.2007 13:47:05

CH11


*RBW 100 kHz
Delta 1 [T1]
*VBW 100 kHz
3.10 dB
Ref 20 dBm
*Att 30 dB
SWT 5 ms
15.700000000 MHz
20 Offset 1.5 dB
Marker 1 [T1]
-1.98 dBm
2.453850000 GHz
1 PK VIEW
D1 4.98 dBm
LVL
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz
Date: 15.AUG.2007 13:19:25

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

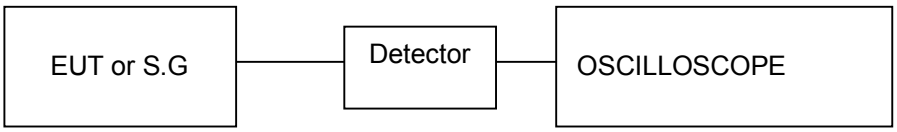
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 21, 2007
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2007
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Jul. 04, 2008
NARDA DETECTOR	4503A	FSCM99899	NA

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 – DSSS

802.11b DSSS modulation

MODULATION TYPE	CCK	**TRANSFER RATE**	1Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 62 %RH, 951 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	56.234	17.5	30	PASS
6	2437	56.234	17.5	30	PASS
11	2462	60.256	17.8	30	PASS

4.4.7 TEST RESULTS –OFDM

802.11g OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 62 %RH, 951 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	68.865	18.38	30	PASS
6	2437	69.502	18.42	30	PASS
11	2462	71.945	18.57	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. 21, 2007

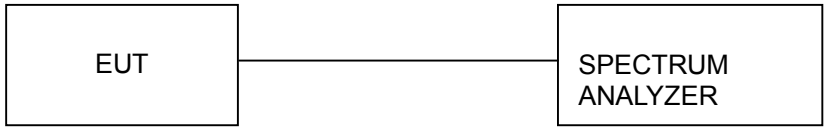
NOTE:

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

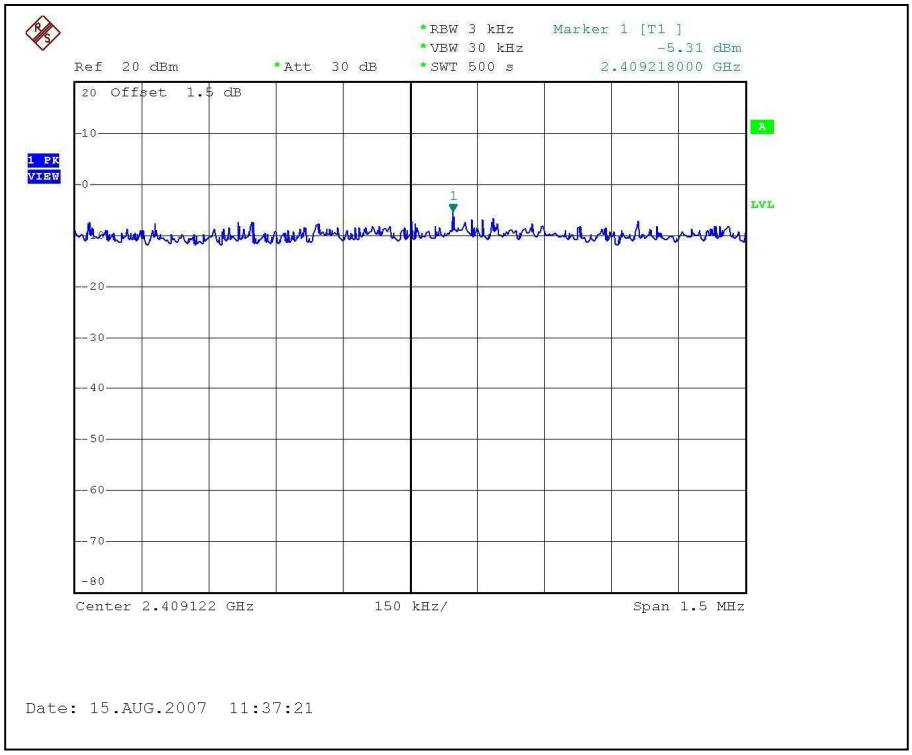
4.5.6 TEST RESULTS –DSSS

802.11b DSSS modulation

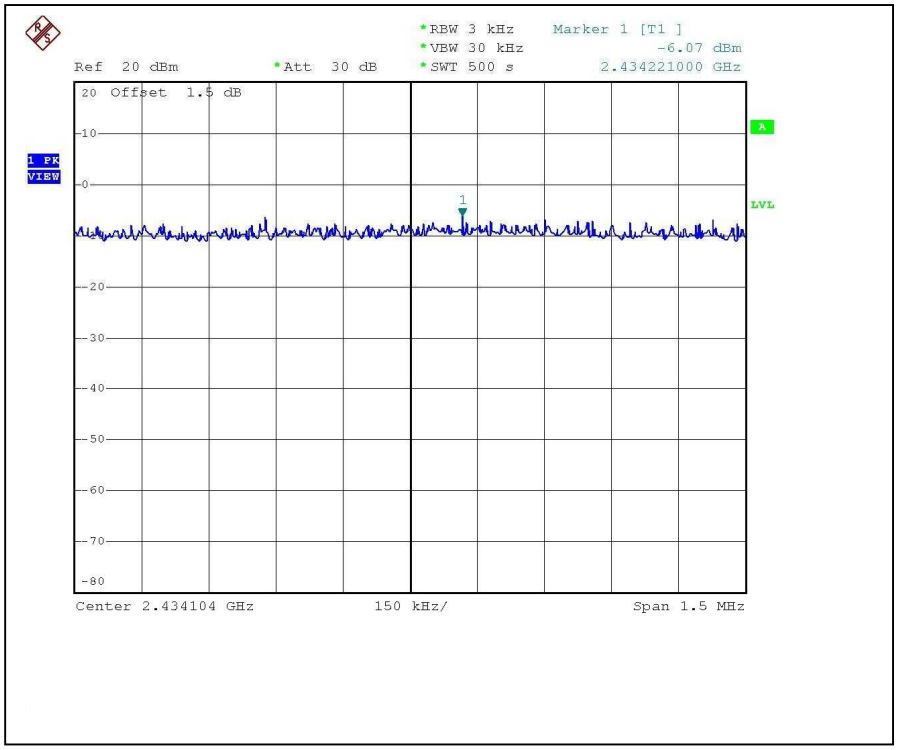
MODULATION TYPE	CCK	**TRANSFER RATE**	1Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 62 %RH, 951 hPa
TESTED BY	Tony Chen		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-5.31	8	PASS
6	2437	-6.07	8	PASS
11	2462	-5.57	8	PASS

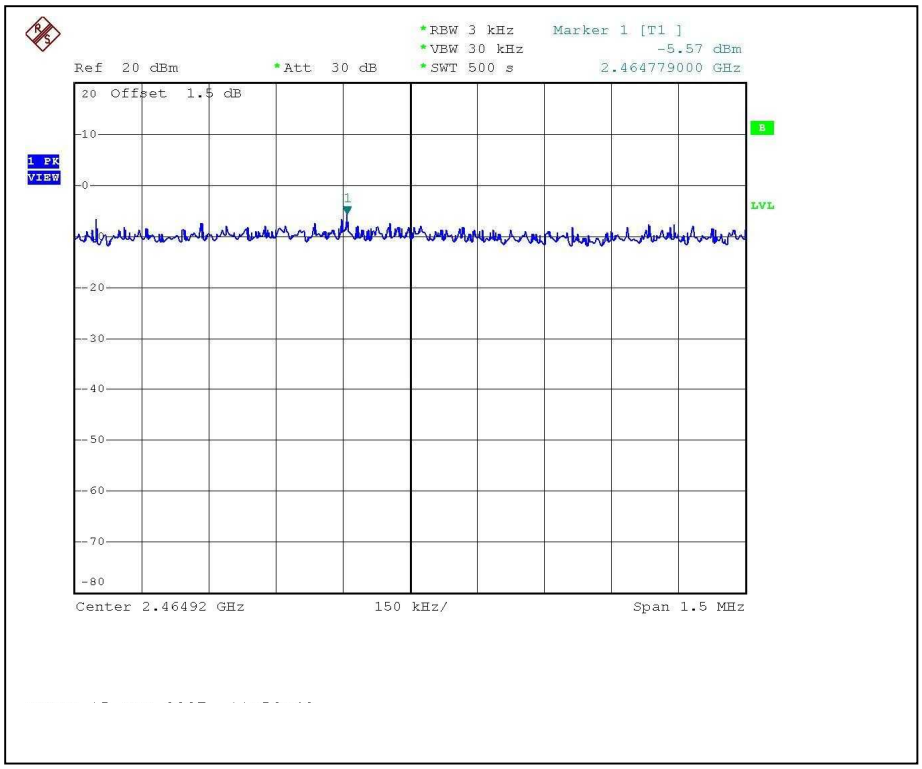
CH1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-5.31 dBm
2.409218000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
1 PK VIEW
A
LVL
Center 2.409122 GHz
150 kHz/
Span 1.5 MHz
Date: 15.AUG.2007 11:37:21

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-6.07 dBm
2.434221000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
1 PK VIEW
A
LVL
Center 2.434104 GHz
150 kHz/
Span 1.5 MHz

CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-5.57 dBm
2.464779000 GHz
Ref 20 dBm
*Att 30 dB
Offset 1.5 dB
1 PK
VIEW
LVL
Center 2.46492 GHz
150 kHz/
Span 1.5 MHz

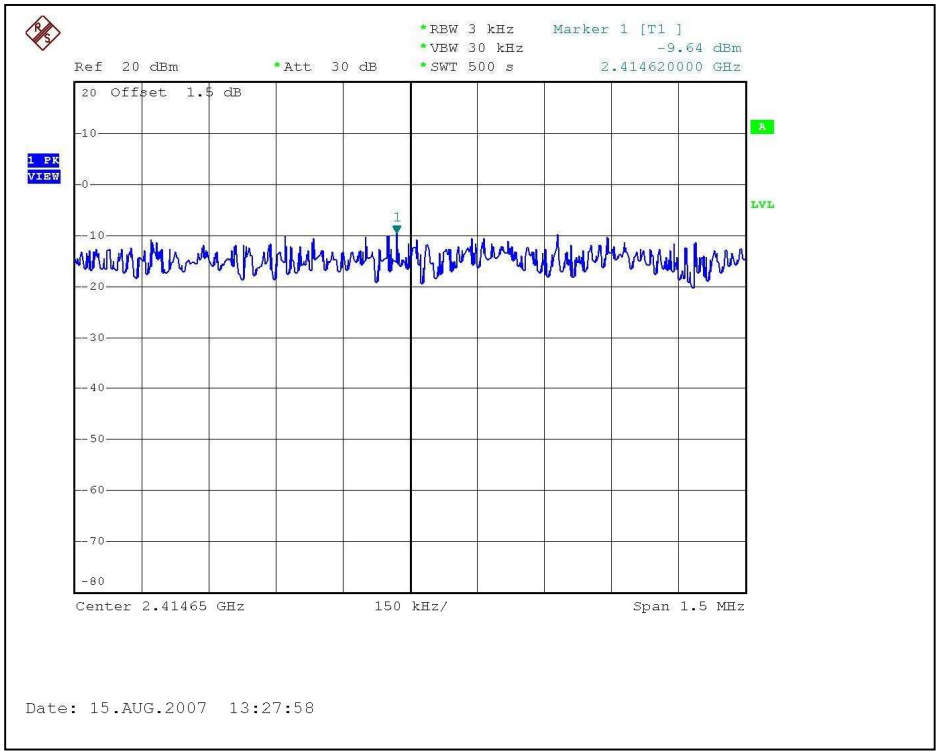
4.5.7 TEST RESULTS –OFDM

802.11g OFDM modulation

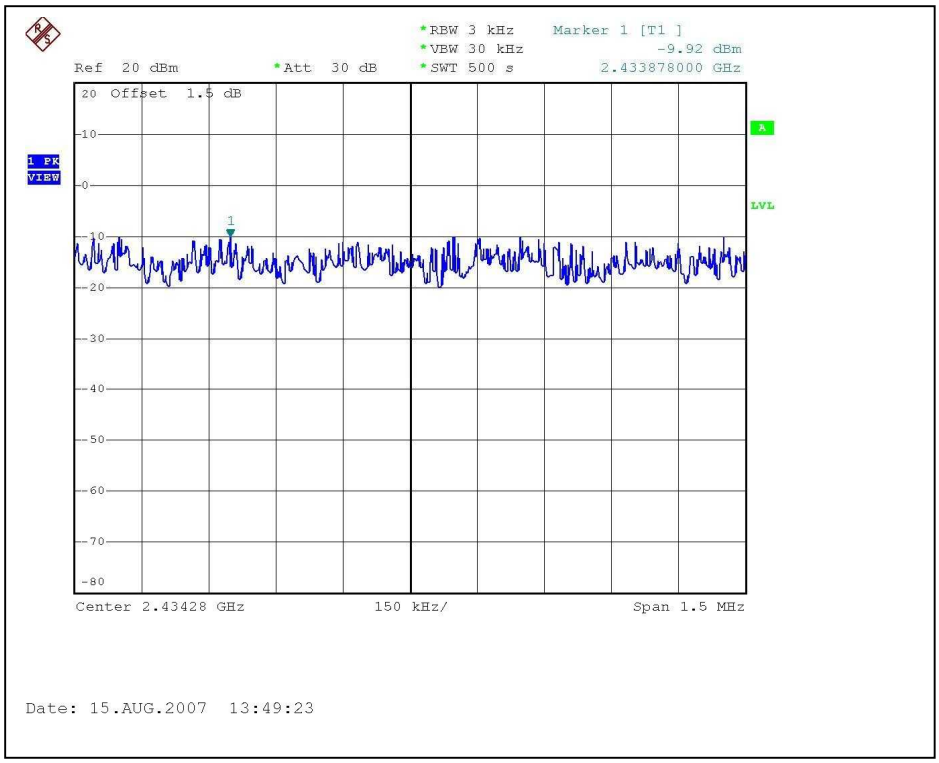
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 62 %RH, 951 hPa
TESTED BY	Tony Chen		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.64	8	PASS
6	2437	-9.92	8	PASS
11	2462	-9.93	8	PASS

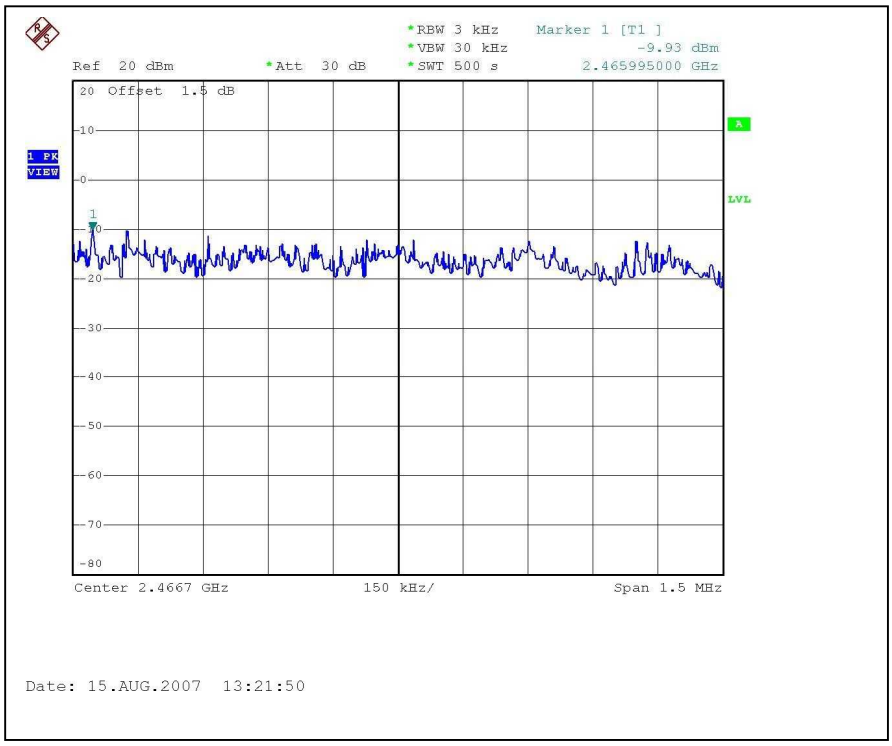
CH1


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-9.64 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.414620000 GHz
20 Offset 1.5 dB
1 PK VIEW
A
LVL
Center 2.41465 GHz
150 kHz/
Span 1.5 MHz
Date: 15.AUG.2007 13:27:58

CH6


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-9.92 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.433878000 GHz
20 Offset 1.5 dB
1 PK VIEW
A
LVL
Center 2.43428 GHz
150 kHz/
Span 1.5 MHz
Date: 15.AUG.2007 13:49:23

CH11


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-9.93 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.465995000 GHz
20 Offset 1.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1 PK
VIEW
A
LVL
Center 2.4667 GHz
150 kHz/
Span 1.5 MHz
Date: 15.AUG.2007 13:21:50

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. 21, 2007

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

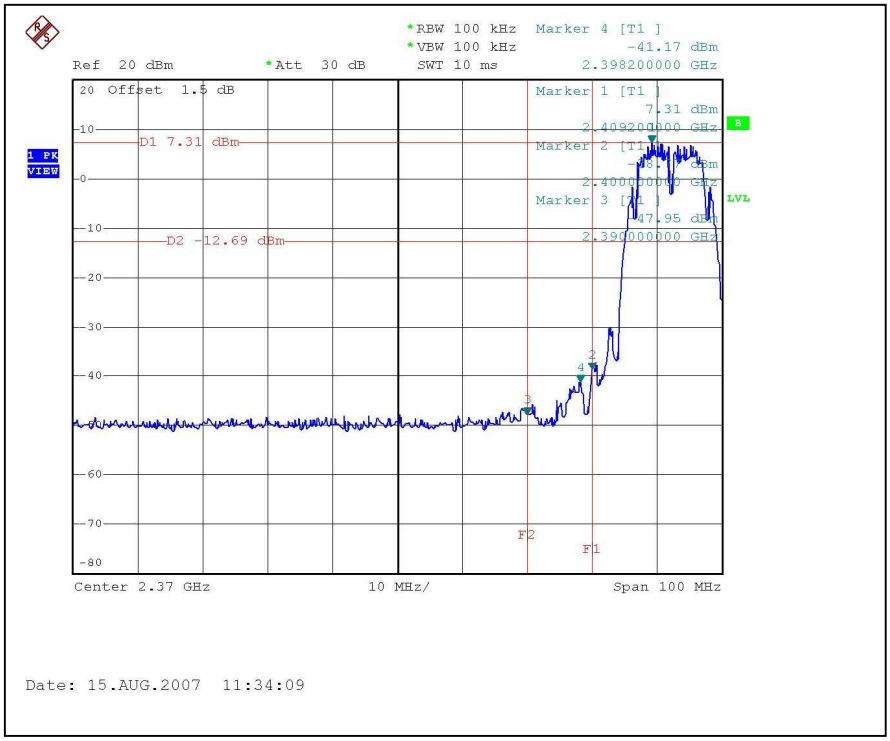
Same as Item 4.3.5

4.6.6 TEST RESULTS

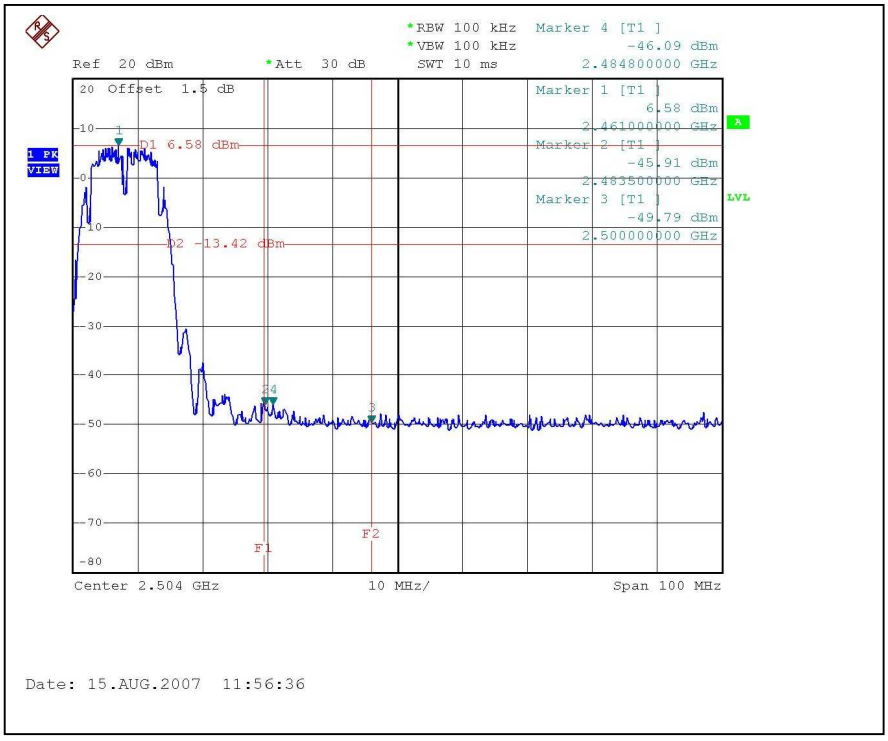
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

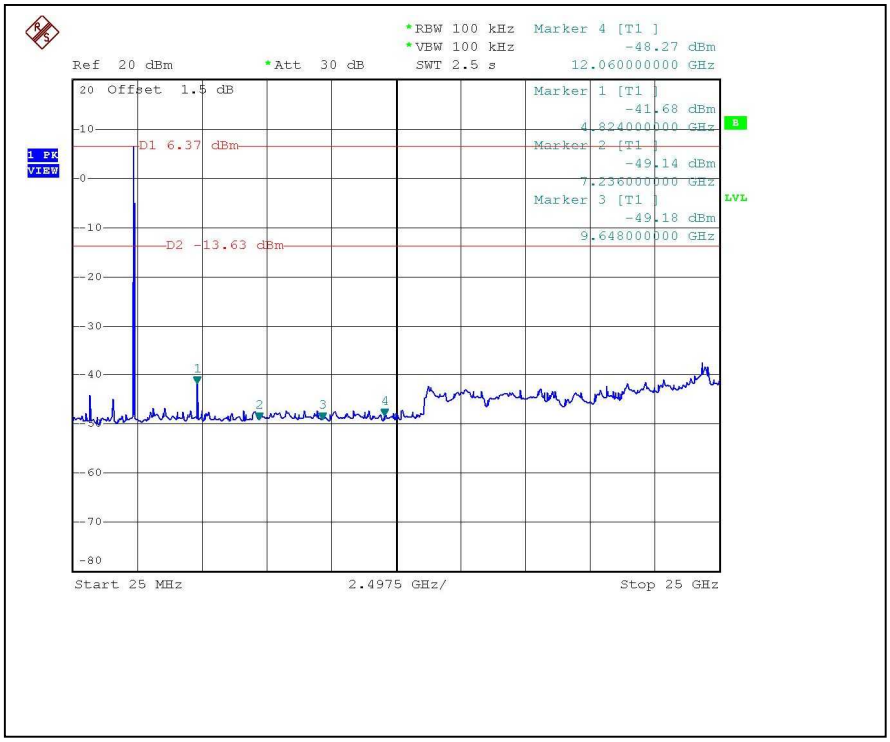
CH1



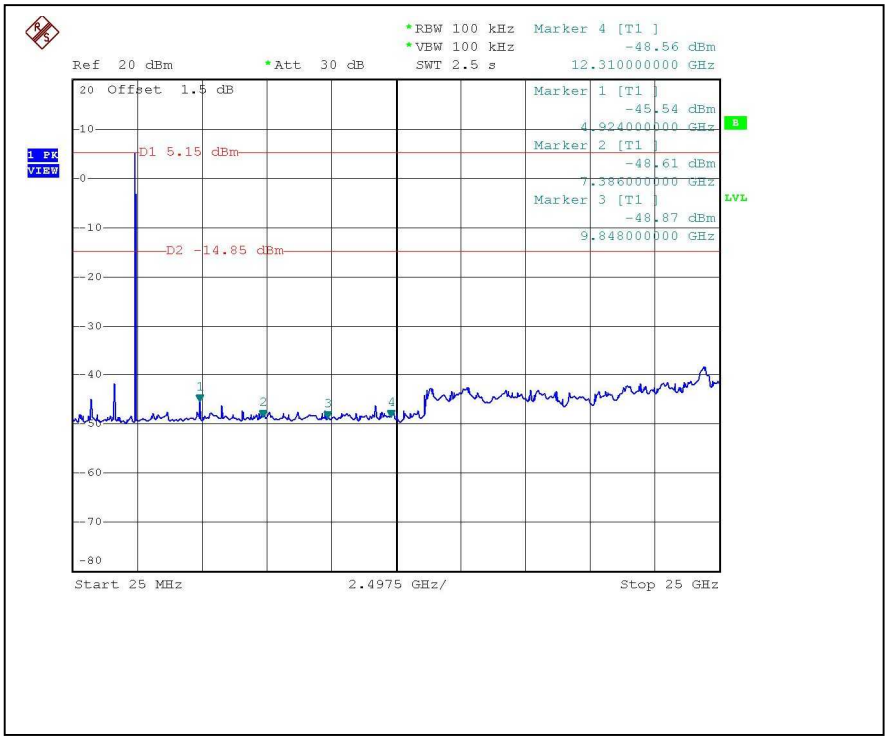
CH11



CH1

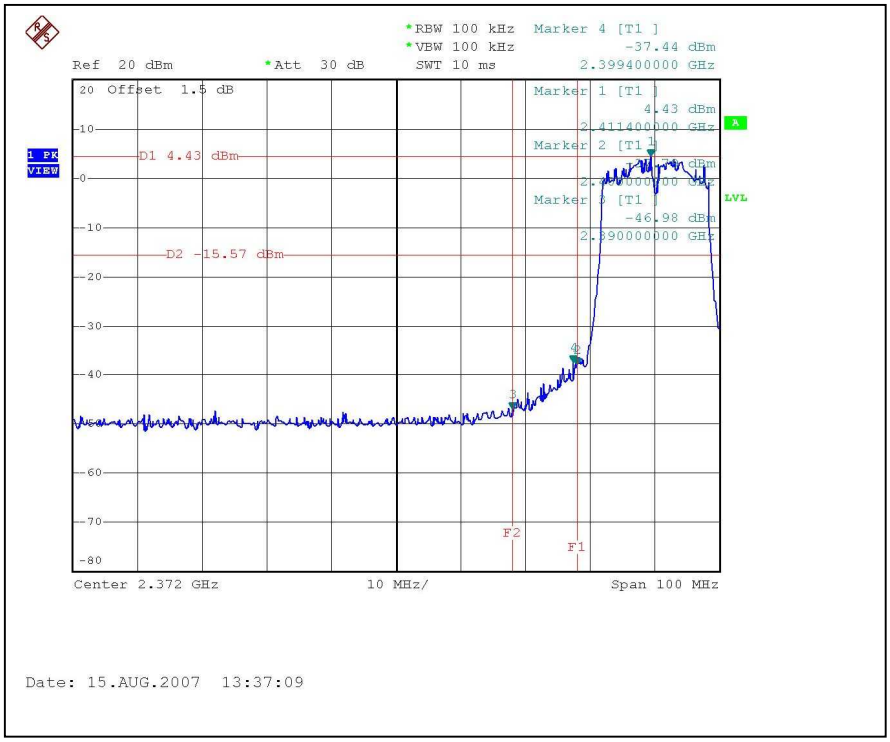

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 4 [T1]
-48.27 dBm
12.060000000 GHz
20 Offset 1.5 dB
Marker 1 [T1]
-41.68 dBm
4.824000000 GHz
Marker 2 [T1]
-49.14 dBm
7.236000000 GHz
Marker 3 [T1]
-49.18 dBm
9.648000000 GHz
D1 6.37 dBm
D2 -13.63 dBm
1 PK
VIEW
B
LVL
Start 25 MHz
2.4975 GHz/
Stop 25 GHz

CH11

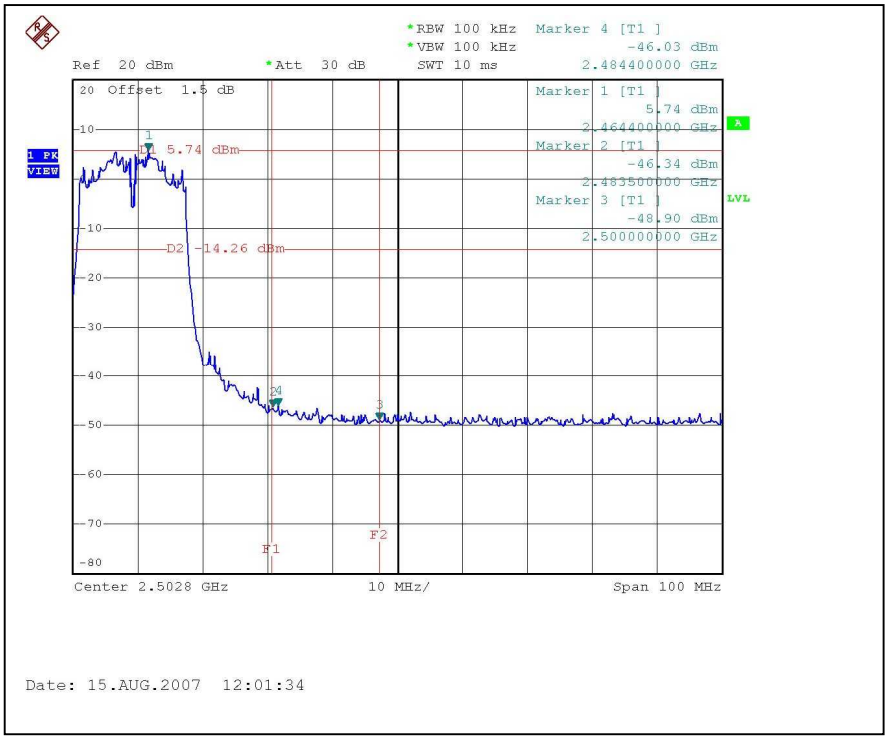

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 4 [T1]
-48.56 dBm
12.310000000 GHz
20 Offset 1.5 dB
Marker 1 [T1]
-45.54 dBm
4.924000000 GHz
Marker 2 [T1]
-48.61 dBm
7.386000000 GHz
Marker 3 [T1]
-48.87 dBm
9.848000000 GHz
D1 5.15 dBm
D2 -14.85 dBm
1 PK
VIEW
B
LVL
Start 25 MHz
2.4975 GHz/
Stop 25 GHz

802.11g OFDM MODULATION:

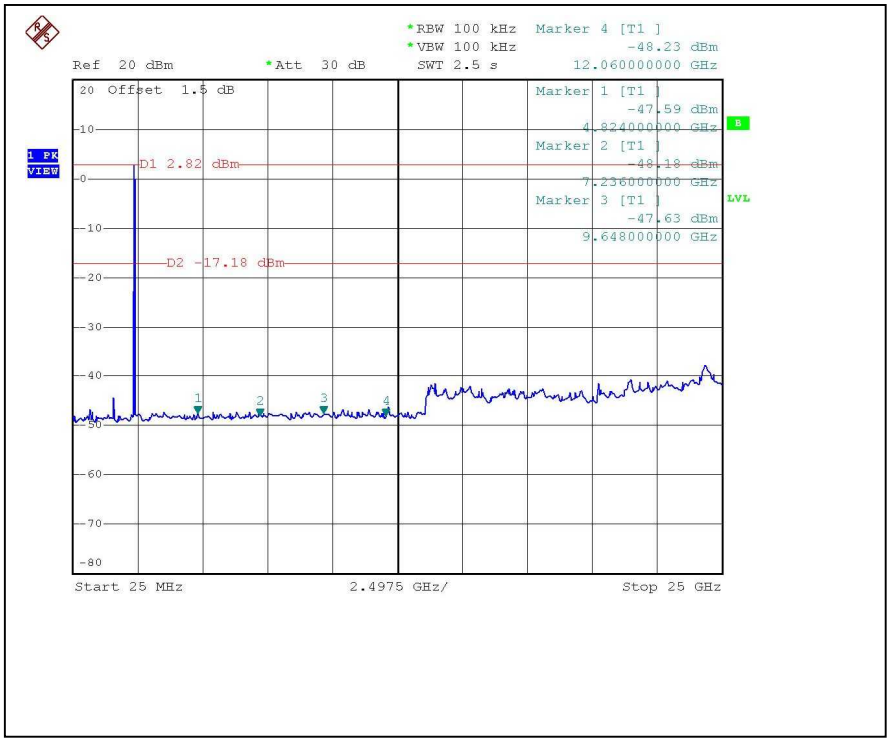
CH1



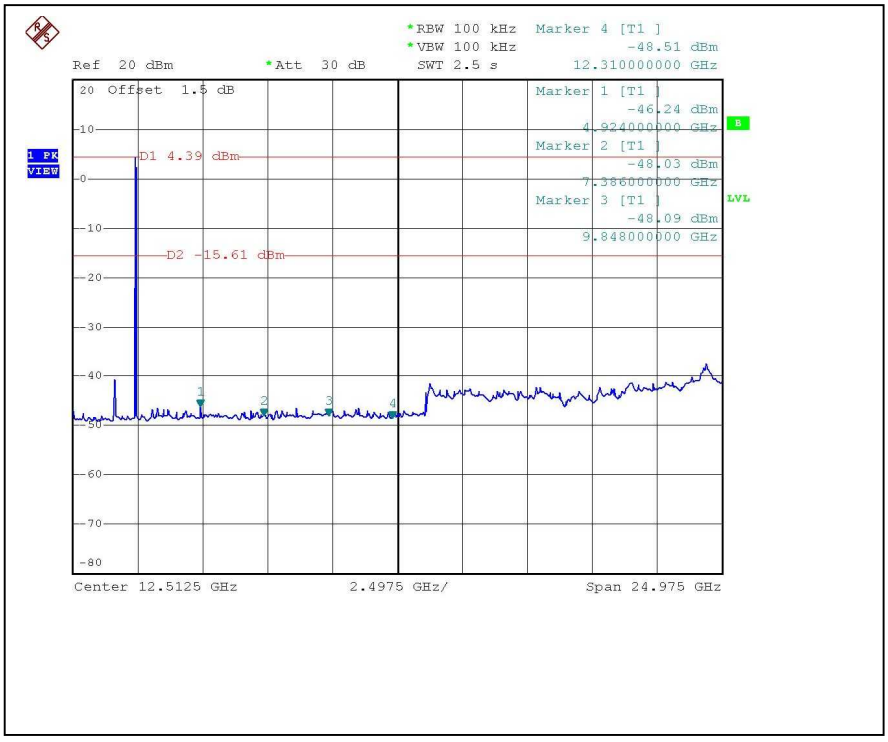
CH11



CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 4 [T1]
-48.23 dBm
12.060000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-47.59 dBm
4.824000000 GHz
Marker 2 [T1]
-48.18 dBm
7.236000000 GHz
Marker 3 [T1]
-47.63 dBm
9.648000000 GHz
1 PK
VIEW
D1 2.82 dBm
D2 -17.18 dBm
Start 25 MHz
2.4975 GHz/
Stop 25 GHz

CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 4 [T1]
-48.51 dBm
12.310000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-46.24 dBm
4.924000000 GHz
Marker 2 [T1]
-48.03 dBm
7.386000000 GHz
Marker 3 [T1]
-48.09 dBm
9.848000000 GHz
1 PK
VIEW
D1 4.39 dBm
D2 -15.61 dBm
Center 12.5125 GHz
2.4975 GHz/
Span 24.975 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

There are two antennas provided to this EUT, please refer to the following table:

No.	Antenna Type	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Cable Length (cm)	Connector	Note
1	Dipole	2	0.95	1.05	164	Reversed SMA	Main antenna
2	Dipole	2	1.17	0.83	257	Reversed SMA	Auxiliary antenna

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	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:
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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.