FCC TEST REPORT

REPORT NO.: RF960205H09
MODEL NO.: SY 832
RECEIVED: Feb. 05, 2007
TESTED: Feb. 08 to March 06, 2007
ISSUED: March 28, 2007

APPLICANT: UNIVERSAL MICROELECTRONICS CO., LTD.

ADDRESS: 3, 27TH RD., TAICHUNG INDUSTRIAL PARK
TAICHUNG, TAIWAN, R.O.C.

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.

0536

No. 2177-01

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1 CERTIFICATION

PRODUCT :	WiFi video handset
BRAND NAME :	UMEC
MODEL NO. :	SY 832
TESTED:	Feb. 08 to March 06, 2007
APPLICANT :	UNIVERSAL MICROELECTRONICS CO., LTD.
TEST ITEM:	ENGINEERING SAMPLE
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247) ANSI C63.4-2003

The above equipment (Model: SY 832) 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 : Midoli Peng , **DATE:** March 28, 2007
(Midoli Peng)

TECHNICAL ACCEPTANCE : Moris Lin , **DATE:** March 28, 2007
Responsible for RF
(Moris Lin)

APPROVED BY : Hank Chung , **DATE:** March 28, 2007
(Hank Chung, 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 –13.37 dB at 1.595 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 –3.0 dB at 4824.00 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

Note: The Bluetooth test data please refer RF960205H09 & SA960205H09 for Bluetooth.

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**
Radiated emissions (30MHz-1GHz)	2.53 dB
Radiated emissions (1GHz ~18GHz)	3.89 dB
Radiated emissions (18GHz ~20GHz)	2.21 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	WiFi video handset
MODEL NO.	SY 832
FCC ID	HTO-SY832
POWER SUPPLY	DC 5V from power adapter or 3.7V from battery
MODULATION TYPE	For 2.4GHz : CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	For Bluetooth : GFSK
RADIO TECHNOLOGY	For 2.4GHz : DSSS, OFDM
	For Bluetooth : FHSS
TRANSFER RATE	For 2.4GHz : 802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
	For Bluetooth : 1 Mbits/s
FREQUENCY RANGE	For 2.4GHz :2412MHz ~ 2462MHz
	For Bluetooth :2402MHz ~ 2480MHz
NUMBER OF CHANNEL	For 2.4GHz : 11
	For Bluetooth :79
OUTPUT POWER (For 2.4GHz)	802.11b: 20.845mW 802.11g: 22.387mW
OUTPUT POWER (For Bluetooth)	1.622 mW
ANTENNA TYPE	For 2.4GHz : PIFA Antenna (Antenna gain : - 3.0dBi)
	For Bluetooth : Chip antenna with 2dBi antenna gain
DATA CABLE	NA
I/O PORT	NA

NOTE:

1. The EUT was powered by following power adapter or battery:

Power adapter	
Brand:	UMEC
Model No.:	UP0101G-05PA
Input power :	AC 100-240V, 50/60Hz, 0.4A MAX
Output power :	DC 5V 1.6A
Battery	
Brand:	HELIX CO., LTD.
Model No.:	HNP-120B
Power Spec:	3.7V, 1700 mAh

2. The EUT was pre-tested under the following test modes for three different axes placements:

Test Mode	Description
Mode A	**X-Y plane**
Mode B	Z-X plane
Mode C	Z-Y plane

From the above modes, the worst emission level was found in **Mode A**. Therefore only the test data of the modes were recorded in this report individually.

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

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

5. Bluetooth technology is used for the EUT. **<The Bluetooth test data please refer RF960205H09 & SA960205H09 for Bluetooth>**

6. 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	CCK	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	CCK	1

☒ The EUT was pre-tested with the following modes:

Test Mode	Description
Mode A	With adapter
Mode B	With battery

The worst case was found in Mode A.

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 WiFi video handset. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

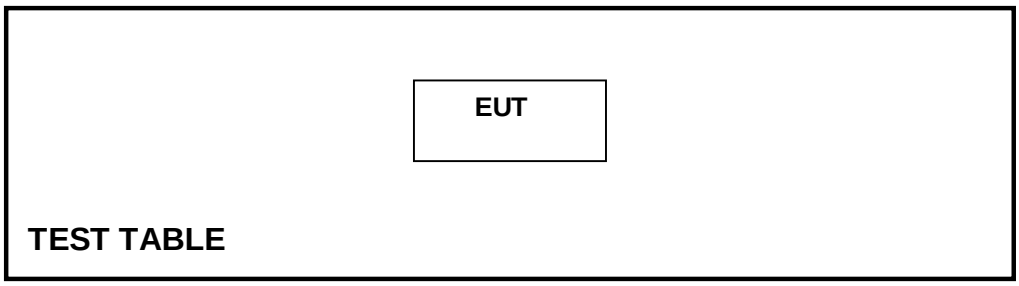
47 CFR Part 15, Subpart C. (15.247)
ANSI C63.4 : 2003

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.

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)	ENV-216	100072	Oct. 20, 2007
Line-Impedance Stabilization Network(for Peripheral)	KNW-407	8-1395-12	Aug. 15, 2007
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 19, 2007
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.

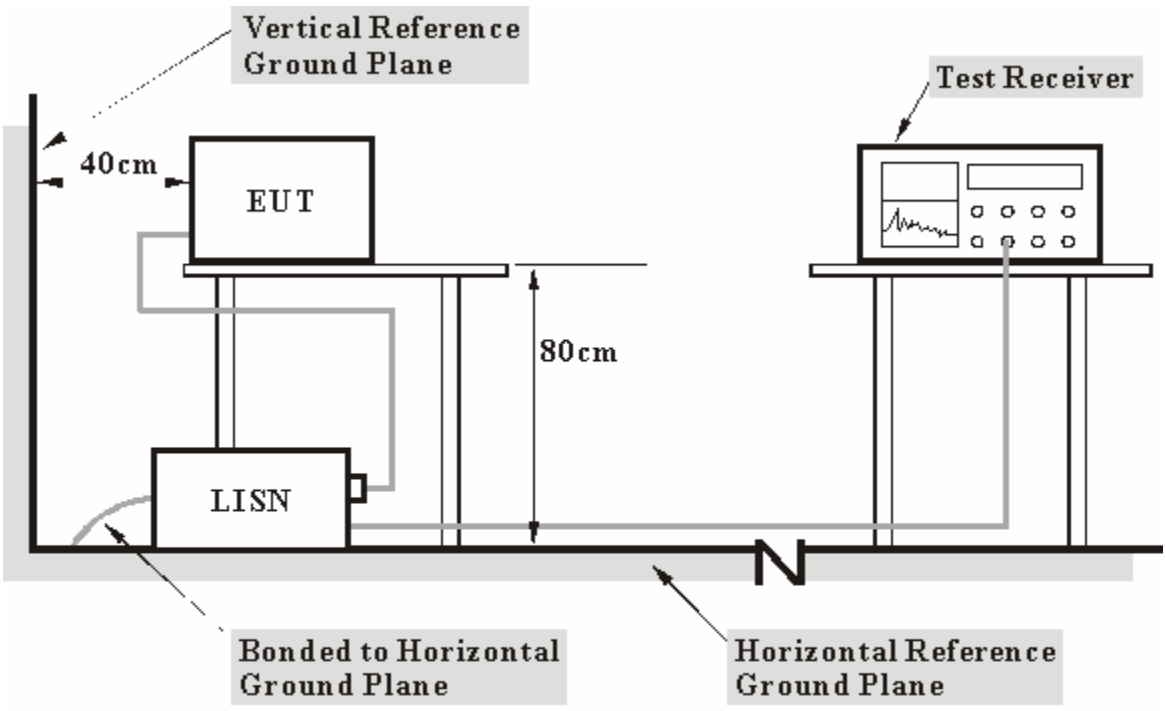
4.1.3 TEST PROCEDURES

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

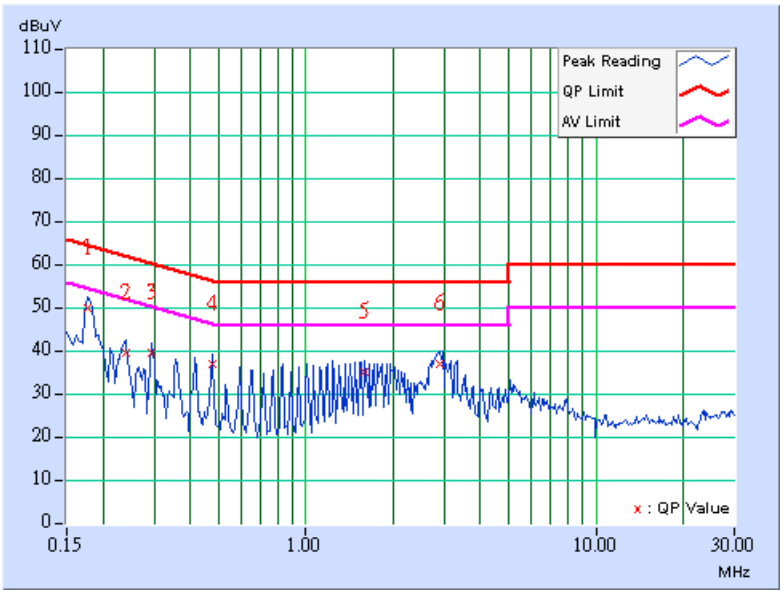
Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

4.1.6 TEST RESULTS

INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
PHASE	Line (L)	**TRANSFER RATE**	1Mbps
ENVIRONMENTAL CONDITIONS	14deg. C, 60%RH, 960hPa	**TESTED BY**	Wen Yu

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	0.177	9.78	39.98	-	49.76	-	64.61	54.61	-14.85	-
2	0.240	9.80	29.79	-	39.59	-	62.10	52.10	-22.51	-
3	0.295	9.80	29.56	-	39.36	-	60.40	50.40	-21.04	-
4	0.474	9.81	27.31	-	37.12	-	56.44	46.44	-19.32	-
5	1.599	9.90	25.38	-	35.28	-	56.00	46.00	-20.72	-
6	2.904	9.90	27.31	-	37.21	-	56.00	46.00	-18.79	-

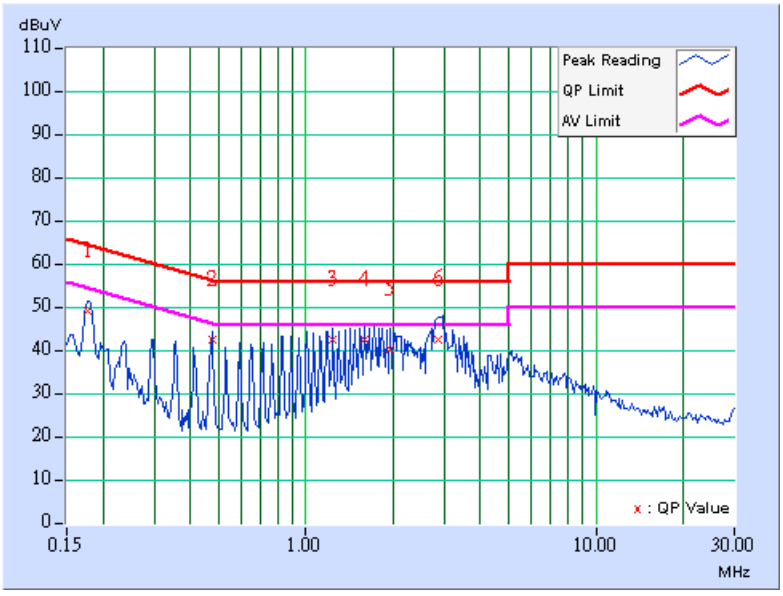
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



INPUT POWER (SYSTEM)	120Vac, 60 Hz	**6dB BANDWIDTH**	9 kHz
PHASE	Neutral (N)	**TRANSFER RATE**	1Mbps
ENVIRONMENTAL CONDITIONS	14deg. C, 60%RH, 960hPa	**TESTED BY**	Wen Yu

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	0.177	9.80	39.31	-	49.11	-	64.61	54.61	-15.50	-
2	0.474	9.81	32.74	-	42.55	-	56.44	46.44	-13.89	-
3	1.240	9.92	32.49	-	42.41	-	56.00	46.00	-13.59	-
4	**1.595**	**9.96**	**32.67**	**-**	**42.63**	**-**	**56.00**	**46.00**	**-13.37**	**-**
5	1.947	9.99	30.55	-	40.54	-	56.00	46.00	-15.46	-
6	2.845	10.00	32.52	-	42.52	-	56.00	46.00	-13.48	-

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, 2007
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2007
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB 9168	138	Dec. 11, 2007
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 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, 2007
Software	ADT_Radiated_V 5.14	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.

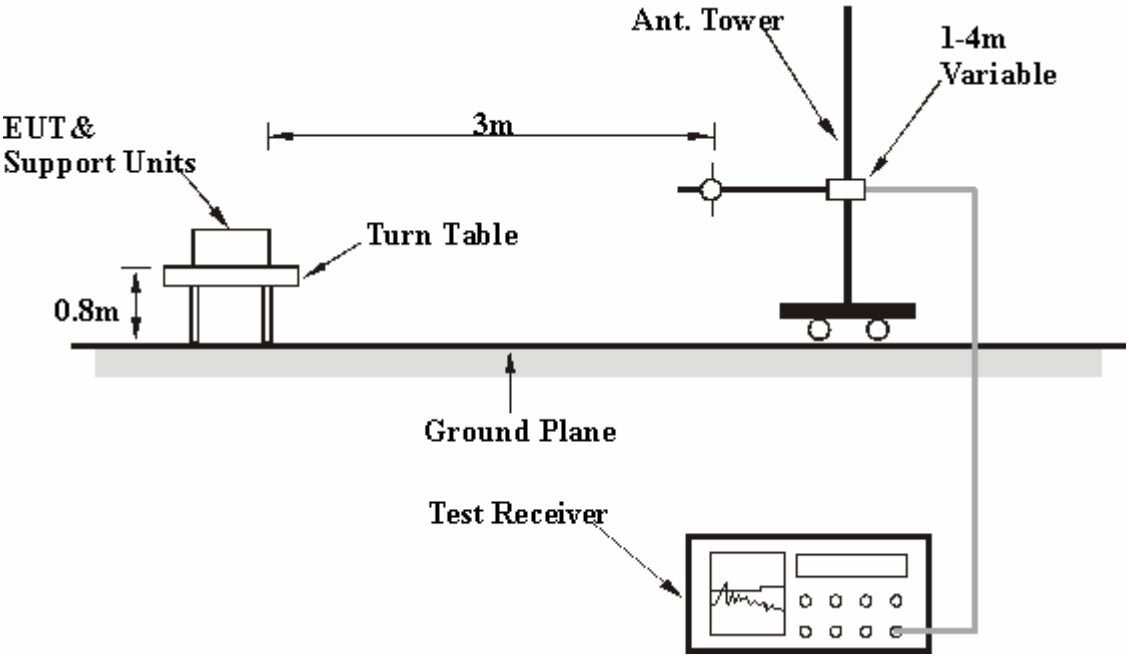
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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	DSSS	**CHANNEL**	Channel 1
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	30-1000 MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 64%RH, 960hPa	**TRANSFER RATE**	1Mbps
DETECTOR FUNCTION	Quasi-Peak, 120kHz	**TESTED BY**	Tony Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	71.93	30.30 QP	40.00	-9.70	1.22 H	321	18.20	12.10
2	122.92	27.40 QP	43.50	-16.10	1.42 H	76	15.30	12.10
3	133.01	35.40 QP	43.50	-8.10	1.21 H	265	22.50	12.90
4	186.20	39.60 QP	43.50	-3.90	1.34 H	70	27.10	12.60
5	239.39	38.30 QP	46.00	-7.70	1.02 H	291	25.00	13.30
6	292.54	40.90 QP	46.00	-5.10	1.00 H	34	24.40	16.50
7	345.89	41.50 QP	46.00	-4.50	1.00 H	229	24.10	17.30
8	718.13	32.20 QP	46.00	-13.80	1.01 H	160	5.80	26.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	61.88	35.70 QP	40.00	-4.30	1.17 V	21	22.20	13.50
2	109.92	17.90 QP	43.50	-25.60	1.15 V	156	7.30	10.70
3	239.75	24.00 QP	46.00	-22.00	1.91 V	4	10.70	13.30
4	292.75	32.50 QP	46.00	-13.50	1.42 V	6	16.10	16.50
5	346.00	29.30 QP	46.00	-16.70	1.40 V	8	12.00	17.30
6	505.65	33.70 QP	46.00	-12.30	1.00 V	48	11.80	21.90
7	718.38	31.20 QP	46.00	-14.80	1.40 V	3	4.80	26.40

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 - DSSS

802.11b DSSS modulation

MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 960hPa	**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	2390.00	56.60 PK	74.00	-17.40	1.29 H	199	24.70	31.90
1	2390.00	45.40 AV	54.00	-8.60	1.29 H	199	13.50	31.90
2	*2412.00	99.30 PK			1.29 H	198	67.30	32.00
2	*2412.00	93.70 AV			1.29 H	198	61.70	32.00
3	4824.00	53.40 PK	74.00	-20.60	1.39 H	324	17.40	36.00
3	4824.00	50.50 AV	54.00	-3.50	1.39 H	324	14.50	36.00
4	7236.00	51.60 PK	74.00	-22.40	1.12 H	198	9.40	42.20
4	7236.00	38.50 AV	54.00	-15.50	1.12 H	198	-3.70	42.20

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	56.30 PK	74.00	-17.70	1.47 V	113	24.40	31.90
1	2390.00	45.30 AV	54.00	-8.70	1.47 V	113	13.40	31.90
2	*2412.00	99.50 PK			1.47 V	113	67.50	32.00
2	*2412.00	94.60 AV			1.47 V	113	62.60	32.00
3	4824.00	53.80 PK	74.00	-20.20	1.15 V	334	17.80	36.00
3	**4824.00**	**51.00 AV**	**54.00**	**-3.00**	**1.15 V**	**334**	**15.00**	**36.00**
4	7236.00	53.20 PK	74.00	-20.80	1.25 V	164	11.00	42.20
4	7236.00	39.50 AV	54.00	-14.50	1.25 V	164	-2.70	42.20

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 (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 960hPa	**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	*2437.00	101.60 PK			1.44 H	112	69.50	32.10
1	*2437.00	96.30 AV			1.44 H	112	64.20	32.10
2	4874.00	51.50 PK	74.00	-22.50	1.16 H	48	15.40	36.10
2	4874.00	47.00 AV	54.00	-7.00	1.16 H	48	10.90	36.10
3	7311.00	51.10 PK	74.00	-22.90	1.12 H	250	8.60	42.50
3	7311.00	39.20 AV	54.00	-14.80	1.12 H	250	-3.30	42.50

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	102.10 PK			1.52 V	194	70.00	32.10
1	*2437.00	96.70 AV			1.52 V	194	64.60	32.10
2	4874.00	51.40 PK	74.00	-22.60	1.16 V	262	15.30	36.10
2	4874.00	47.40 AV	54.00	-6.60	1.16 V	262	11.30	36.10
3	7311.00	51.40 PK	74.00	-22.60	1.25 V	247	8.90	42.50
3	7311.00	39.60 AV	54.00	-14.40	1.25 V	247	-2.90	42.50

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

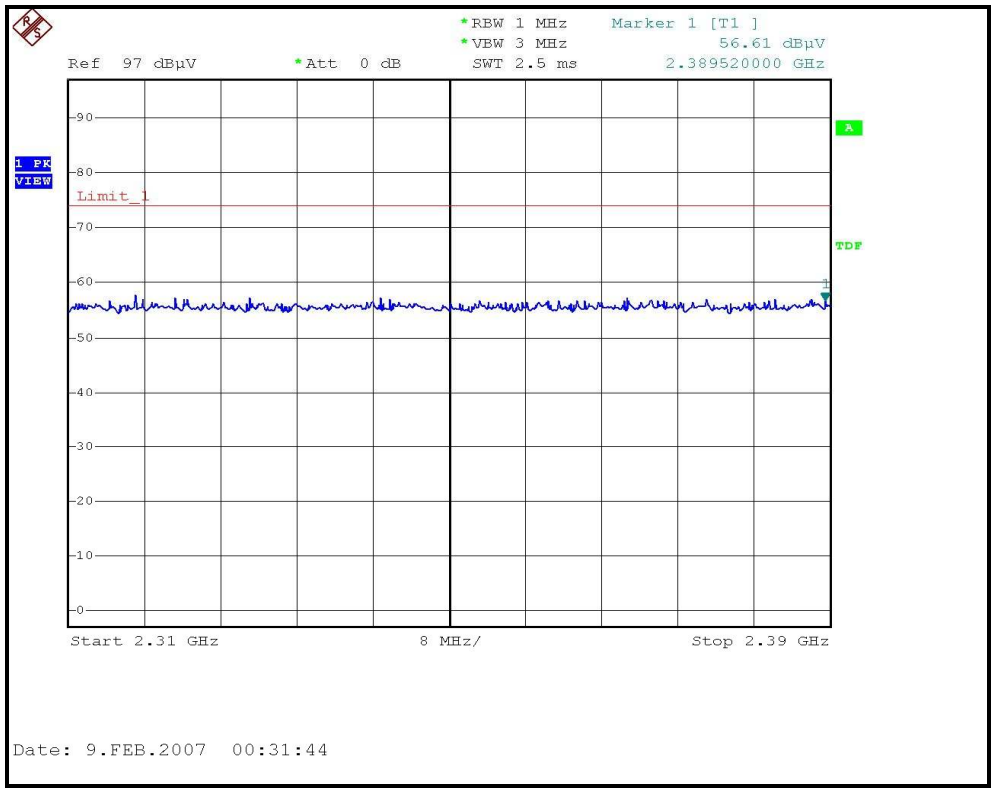
MODE	Channel 11	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 960hPa	**TESTED BY**	Phoenix Huang

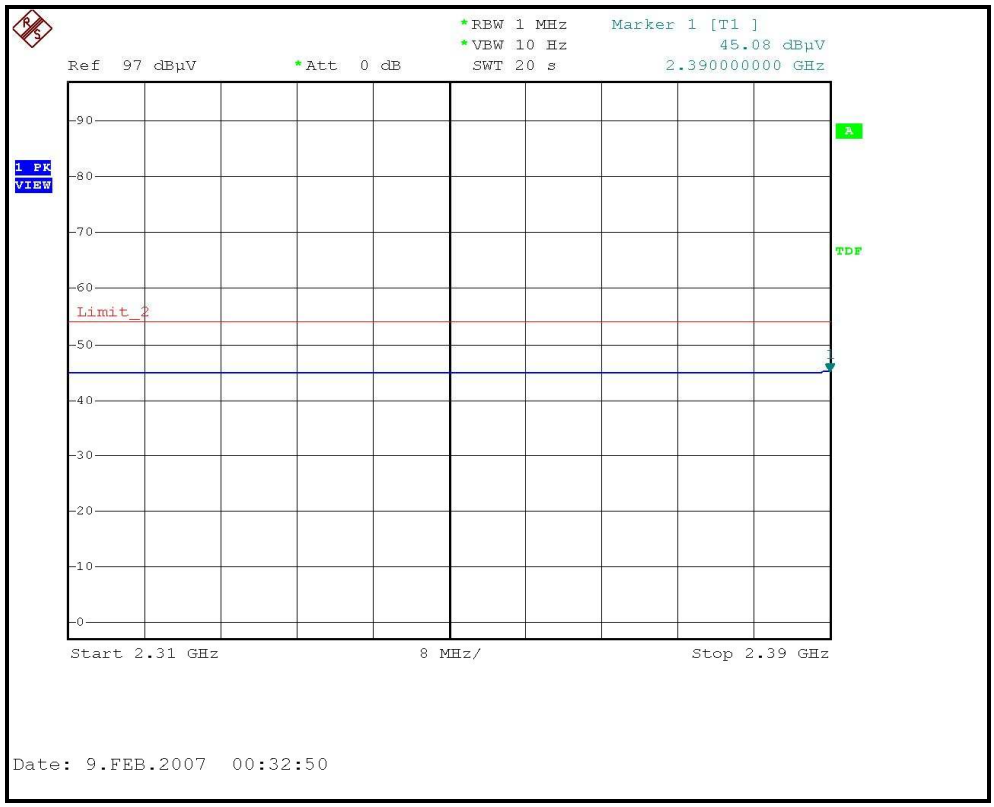
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	101.10 PK			1.82 H	227	68.90	32.20
1	*2462.00	96.40 AV			1.82 H	227	64.20	32.20
2	2483.50	57.60 PK	74.00	-16.40	1.82 H	226	25.30	32.30
2	2483.50	45.60 AV	54.00	-8.40	1.82 H	226	13.30	32.30
3	4924.00	54.10 PK	74.00	-19.90	1.32 H	321	17.90	36.20
3	4924.00	50.90 AV	54.00	-3.10	1.32 H	321	14.70	36.20
4	7386.00	52.10 PK	74.00	-21.90	1.25 H	307	9.30	42.80
4	7386.00	39.50 AV	54.00	-14.50	1.25 H	307	-3.30	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	100.30 PK			1.45 V	110	68.10	32.20
1	*2462.00	95.30 AV			1.45 V	110	63.10	32.20
2	2483.50	57.20 PK	74.00	-16.80	1.68 V	138	24.90	32.30
2	2483.50	45.30 AV	54.00	-8.70	1.68 V	138	13.00	32.30
3	4924.00	53.70 PK	74.00	-20.30	1.11 V	314	17.50	36.20
3	4924.00	50.50 AV	54.00	-3.50	1.11 V	314	14.30	36.20
4	7386.00	50.70 PK	74.00	-23.30	1.18 V	232	7.90	42.80
4	7386.00	38.90 AV	54.00	-15.10	1.18 V	232	-3.90	42.80

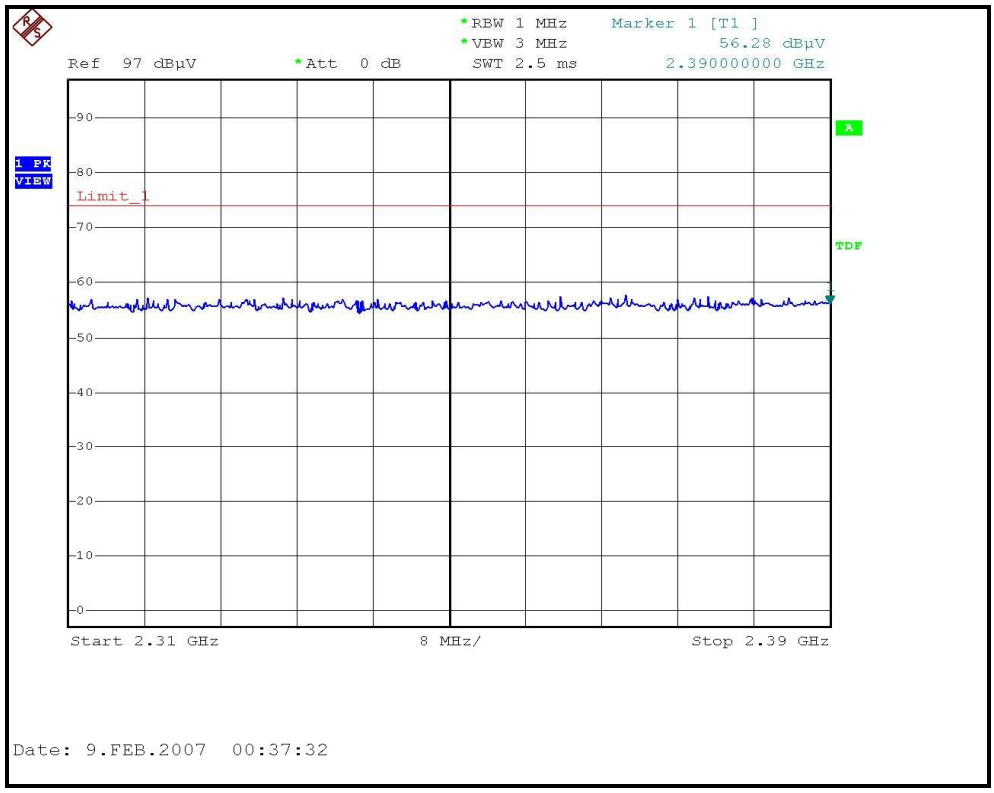
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247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

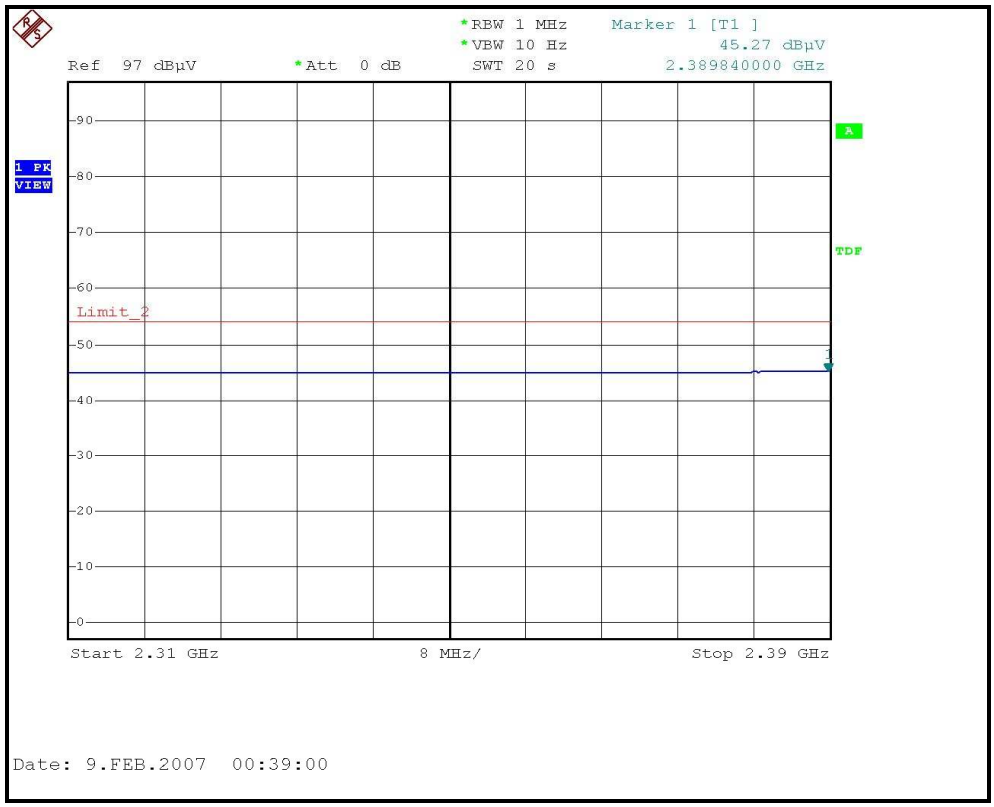
RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)



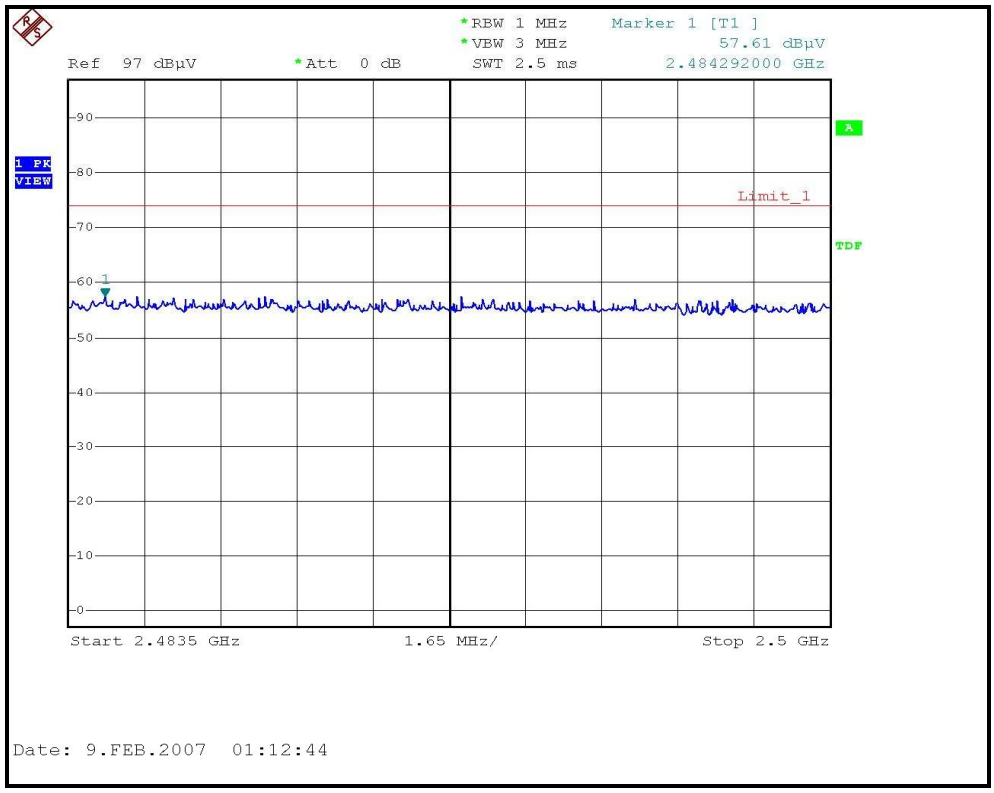


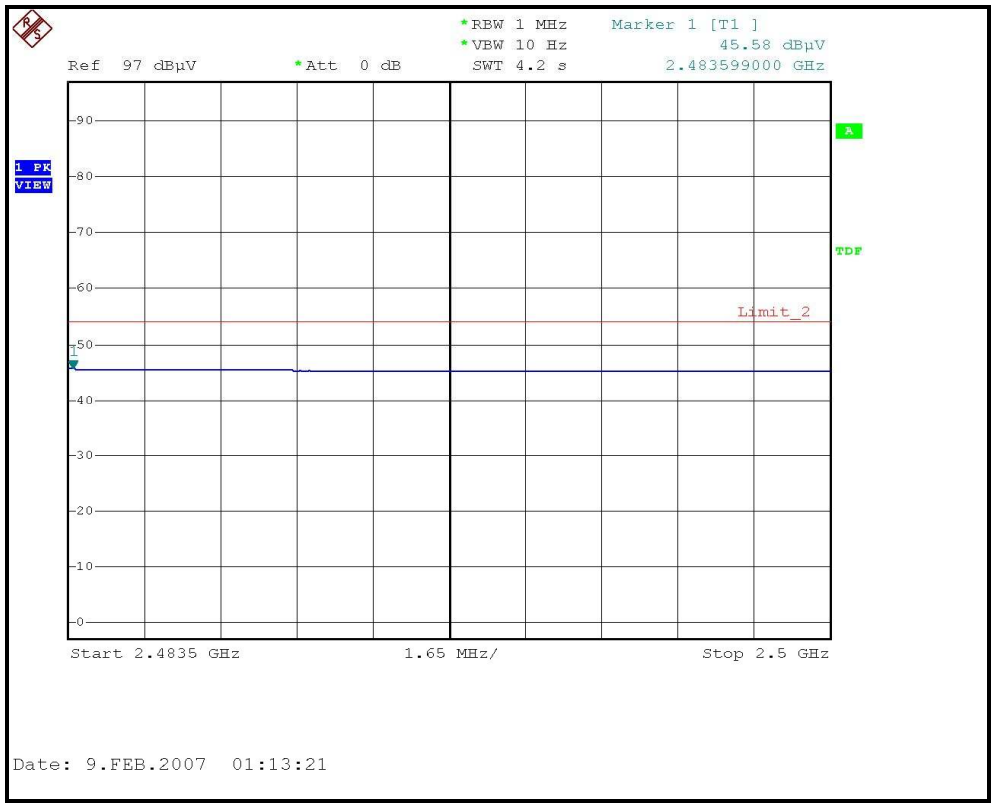
RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL)



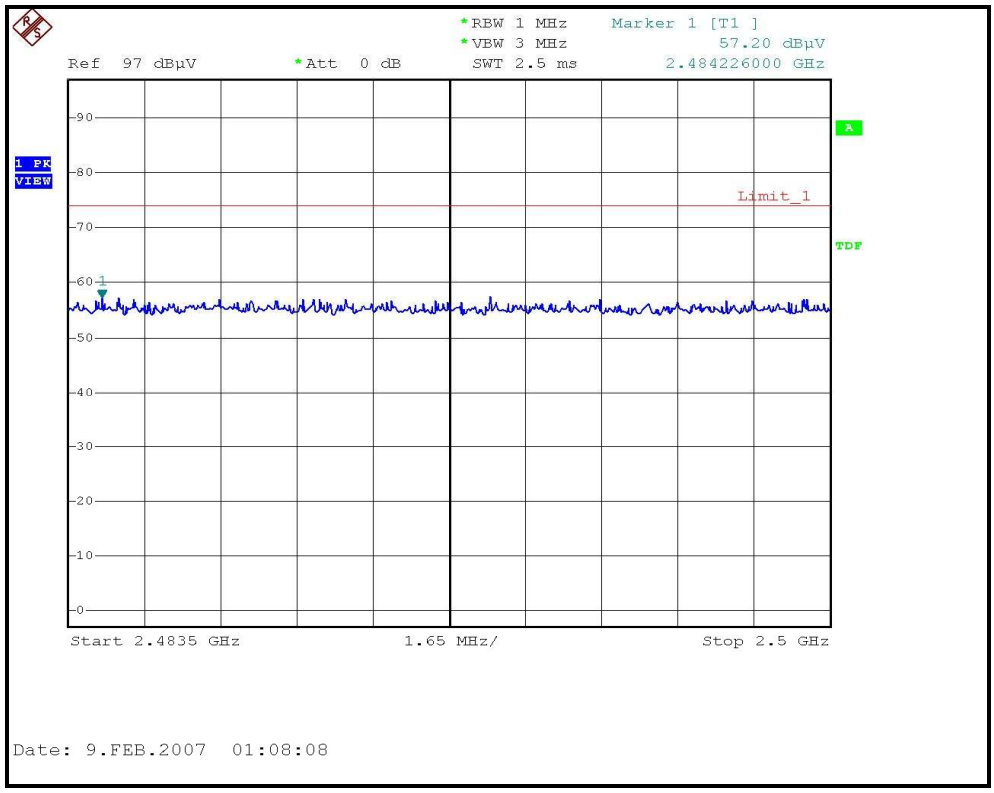


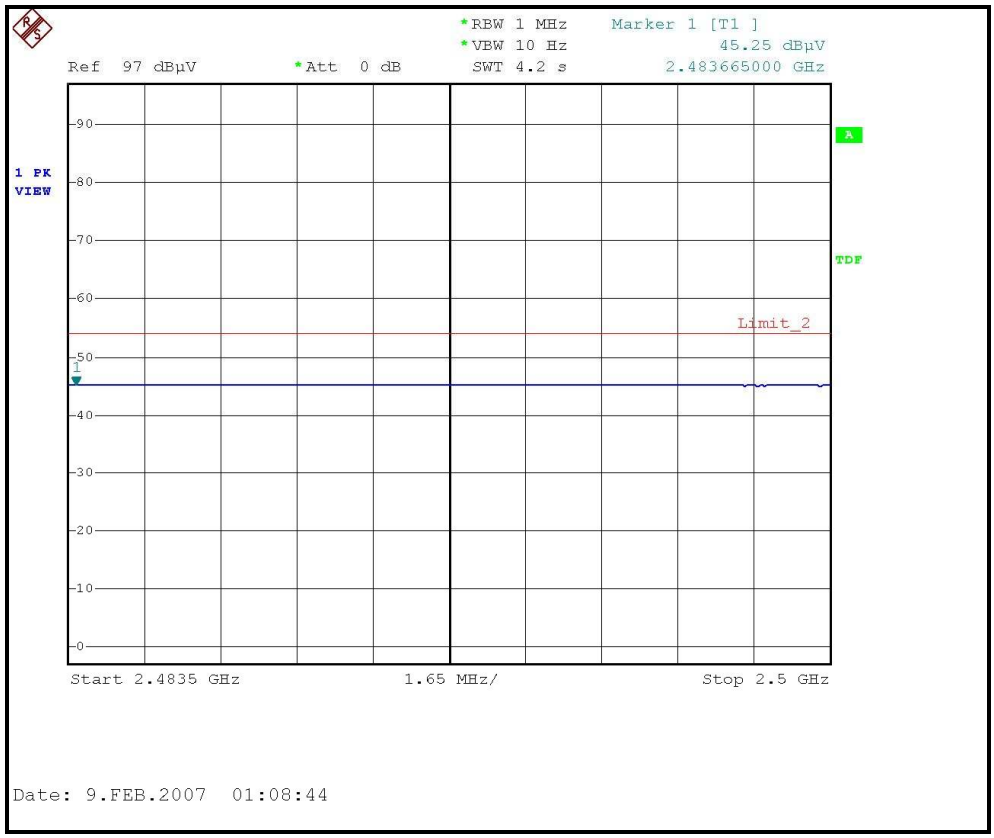
RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)





RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





4.2.8 TEST RESULTS - OFDM

802.11g Normal OFDM modulation

MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 960hPa	**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	2390.00	58.90 PK	74.00	-15.10	1.61 H	192	27.00	31.90
1	2390.00	45.80 AV	54.00	-8.20	1.61 H	192	13.90	31.90
2	*2412.00	100.10 PK			1.60 H	193	68.10	32.00
2	*2412.00	90.00 AV			1.60 H	193	58.00	32.00
3	4824.00	49.20 PK	74.00	-24.80	1.36 H	322	13.20	36.00
3	4824.00	35.50 AV	54.00	-18.50	1.36 H	322	-0.50	36.00
4	7236.00	53.10 PK	74.00	-20.90	1.19 H	228	10.90	42.20
4	7236.00	38.70 AV	54.00	-15.30	1.19 H	228	-3.50	42.20

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	58.70 PK	74.00	-15.30	1.49 V	112	26.80	31.90
1	2390.00	45.30 AV	54.00	-8.70	1.49 V	112	13.40	31.90
2	*2412.00	99.60 PK			1.48 V	113	67.60	32.00
2	*2412.00	89.10 AV			1.48 V	113	57.10	32.00
3	4824.00	47.70 PK	74.00	-26.30	1.16 V	328	11.70	36.00
3	4824.00	35.10 AV	54.00	-18.90	1.16 V	328	-0.90	36.00
4	7236.00	54.20 PK	74.00	-19.80	1.11 V	185	12.00	42.20
4	7236.00	38.40 AV	54.00	-15.60	1.11 V	185	-3.80	42.20

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 (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 960hPa	**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	*2437.00	97.60 PK			1.32 H	0	65.50	32.10
1	*2437.00	87.50 AV			1.32 H	0	55.40	32.10
2	4874.00	49.00 PK	74.00	-25.00	1.32 H	324	12.90	36.10
2	4874.00	36.30 AV	54.00	-17.70	1.32 H	324	0.20	36.10
3	7311.00	52.50 PK	74.00	-21.50	1.41 H	172	10.00	42.50
3	7311.00	39.50 AV	54.00	-14.50	1.41 H	172	-3.00	42.50

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	96.20 PK			1.01 V	110	64.10	32.10
1	*2437.00	85.60 AV			1.01 V	110	53.50	32.10
2	4874.00	47.50 PK	74.00	-26.50	1.17 V	18	11.40	36.10
2	4874.00	37.60 AV	54.00	-16.40	1.17 V	18	1.50	36.10
3	7311.00	53.20 PK	74.00	-20.80	1.25 V	125	10.70	42.50
3	7311.00	38.90 AV	54.00	-15.10	1.25 V	125	-3.60	42.50

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 (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 65%RH, 960hPa	**TESTED BY**	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

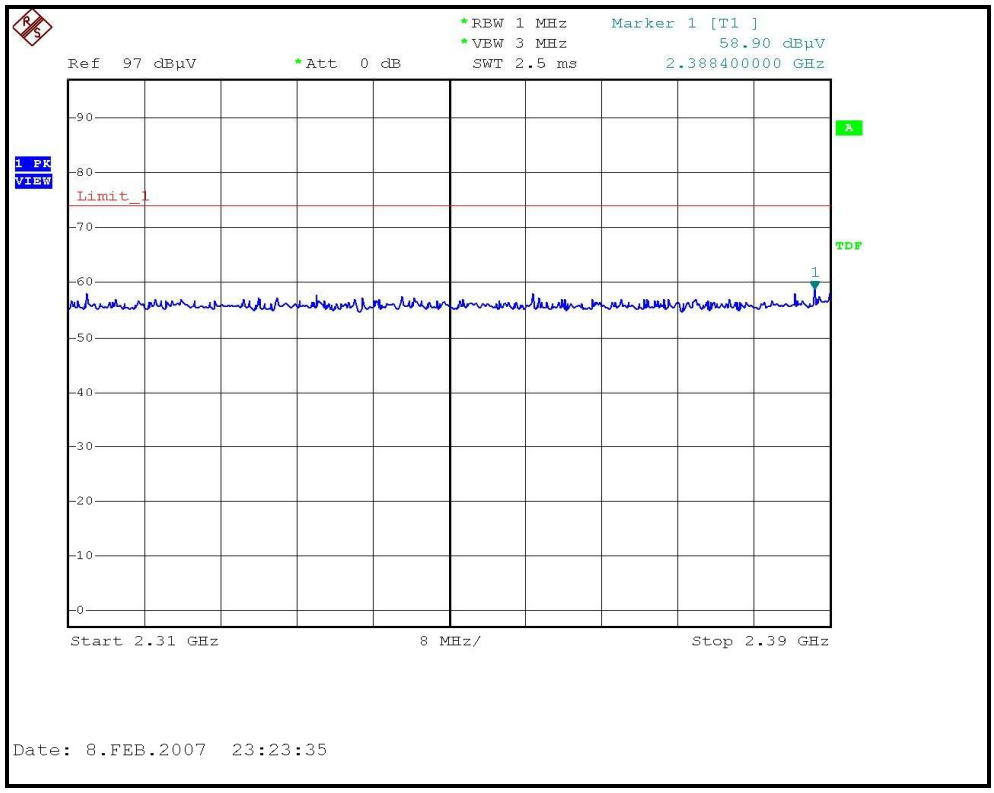
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	97.90 PK			1.21 H	0	65.70	32.20
1	*2462.00	87.70 AV			1.21 H	0	55.50	32.20
2	2483.50	60.50 PK	74.00	-13.50	1.21 H	0	28.20	32.30
2	2483.50	46.00 AV	54.00	-8.00	1.21 H	0	13.70	32.30
3	4924.00	48.50 PK	74.00	-25.50	1.32 H	326	12.30	36.20
3	4924.00	35.60 AV	54.00	-18.40	1.32 H	326	-0.60	36.20
4	7386.00	51.20 PK	74.00	-22.80	1.44 H	174	8.40	42.80
4	7386.00	39.10 AV	54.00	-14.90	1.44 H	174	-3.70	42.80

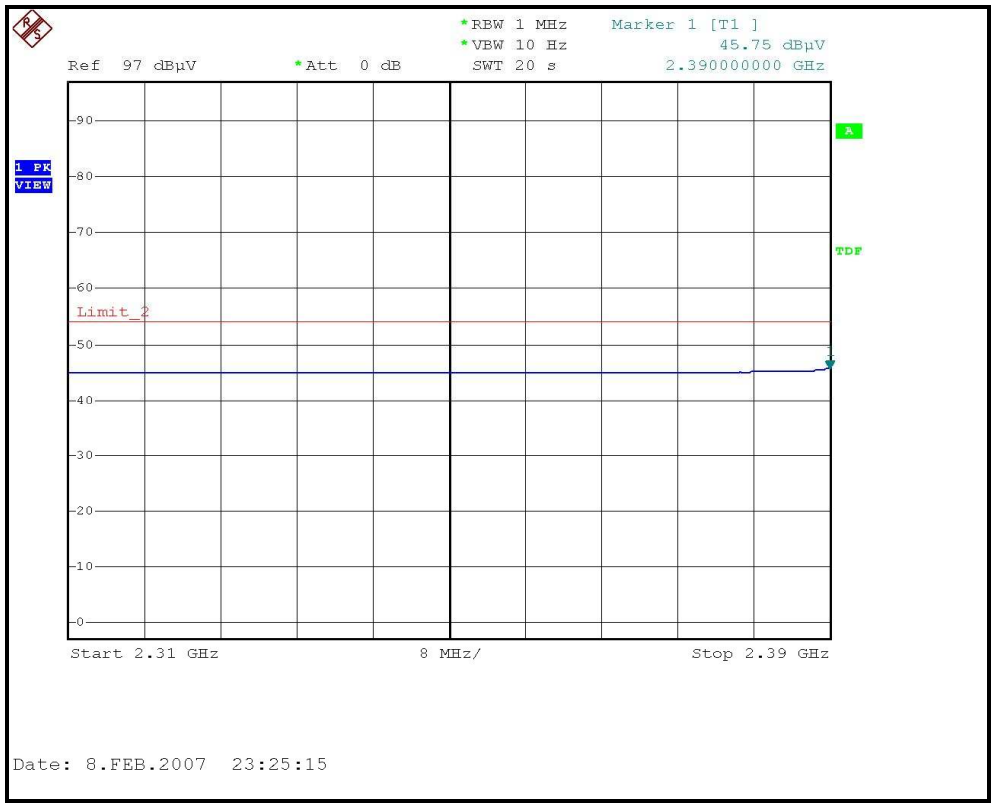
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

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	87.20 PK			1.40 V	103	55.00	32.20
1	*2462.00	97.20 AV			1.40 V	103	65.00	32.20
2	2483.50	59.20 PK	74.00	-14.80	1.40 V	103	26.90	32.30
2	2483.50	45.90 AV	54.00	-8.10	1.40 V	103	13.60	32.30
3	4924.00	46.80 PK	74.00	-27.20	1.17 V	3	10.60	36.20
3	4924.00	33.80 AV	54.00	-20.20	1.17 V	3	-2.40	36.20
4	7386.00	50.60 PK	74.00	-23.40	1.27 V	201	7.80	42.80
4	7386.00	39.20 AV	54.00	-14.80	1.27 V	201	-3.60	42.80

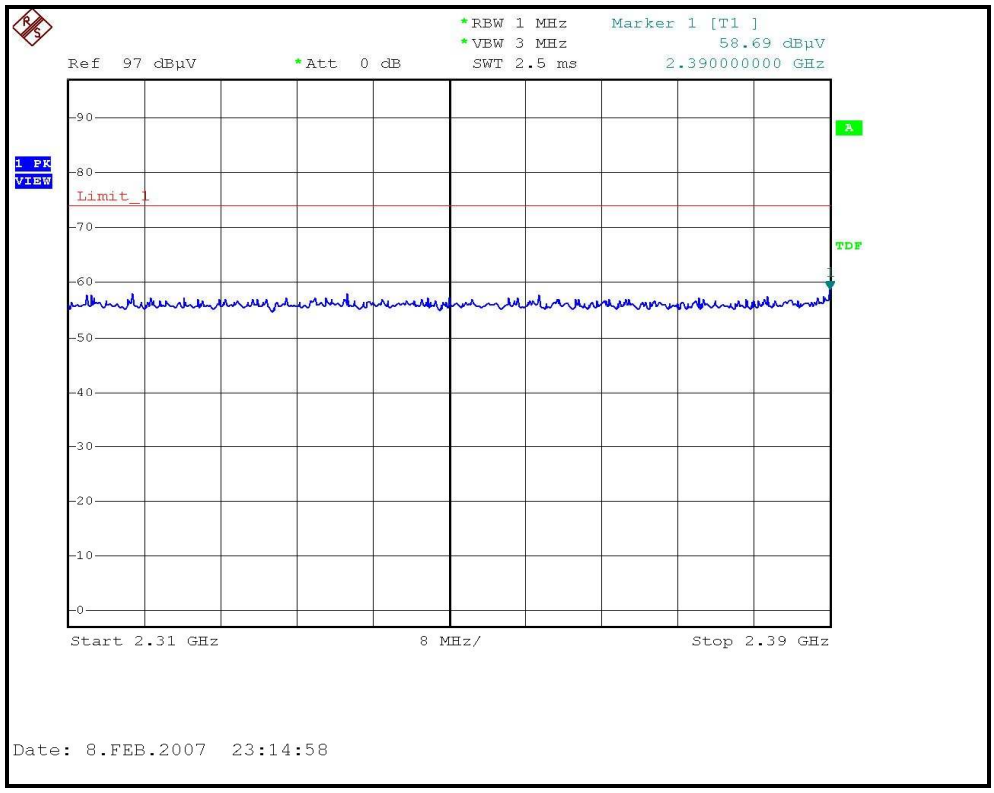
REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247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

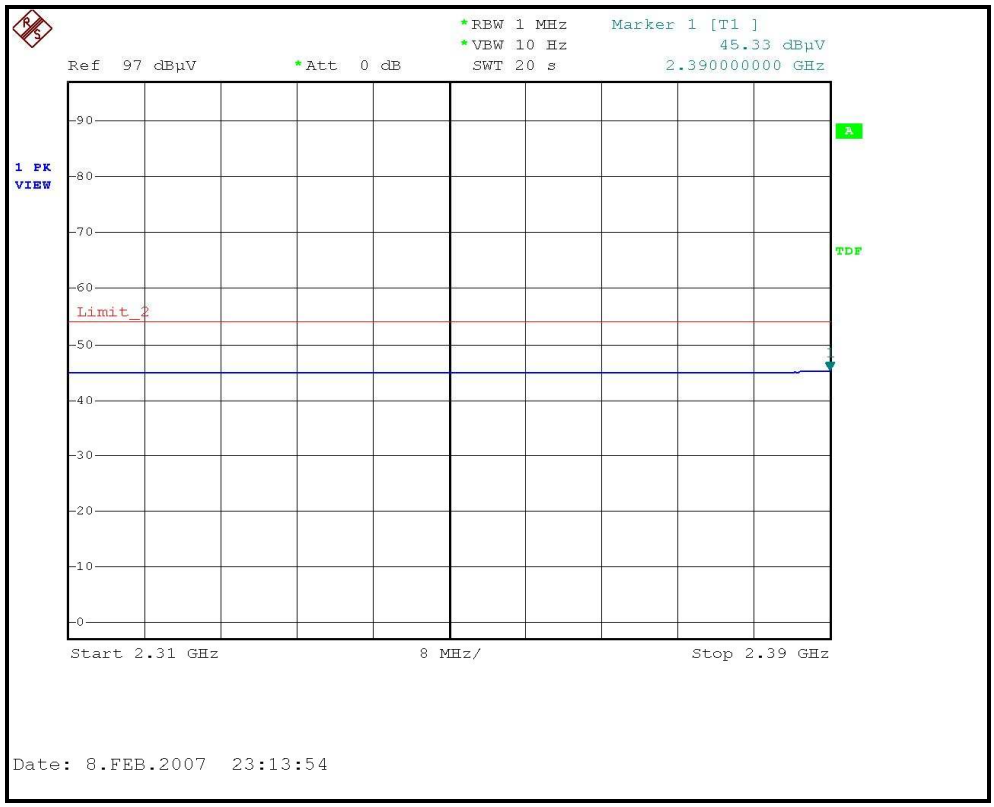
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)



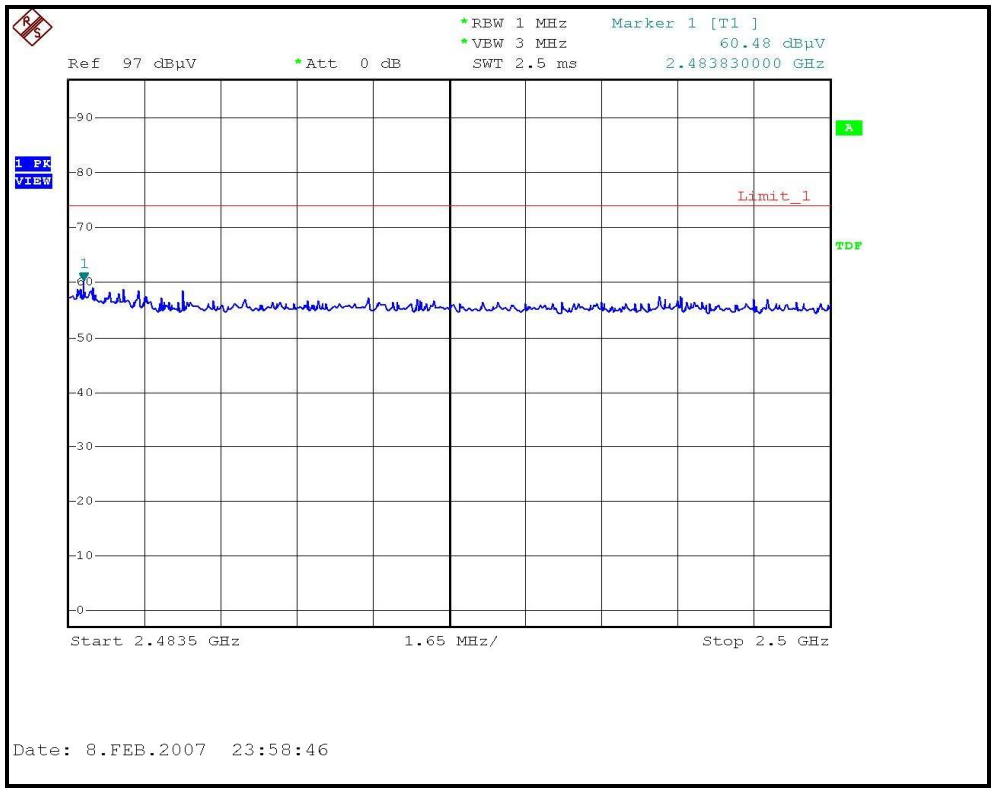


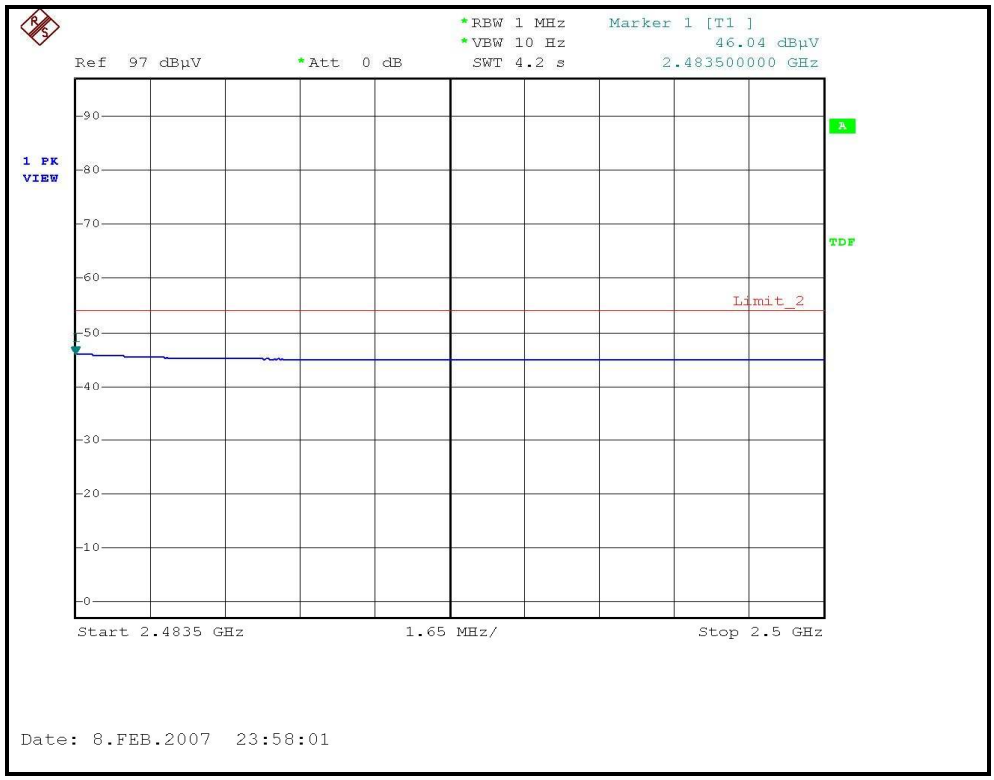
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



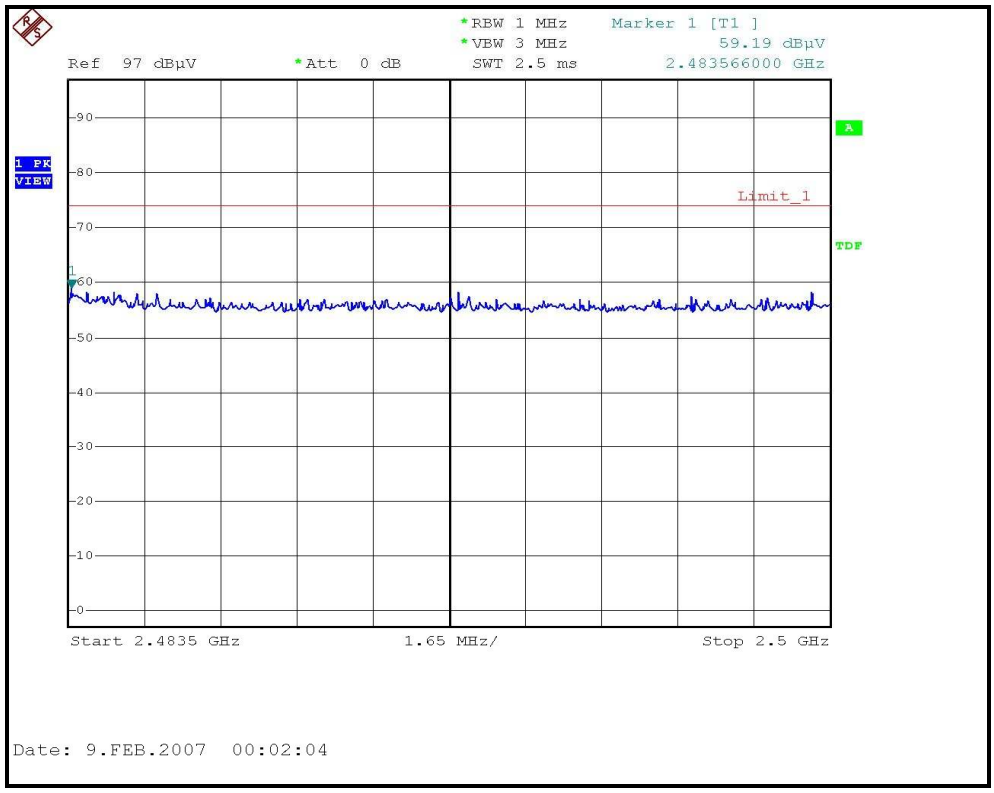


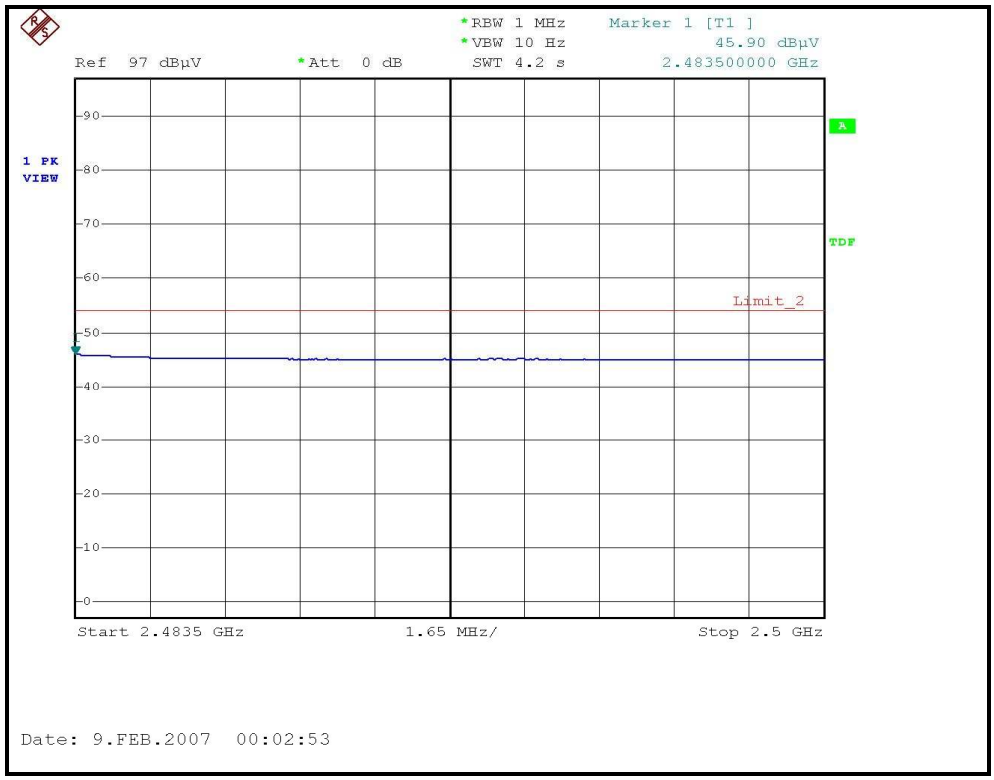
RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)





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. 21, 2007

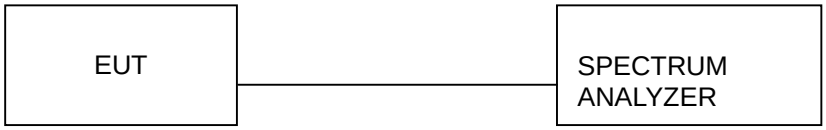
NOTE:

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.

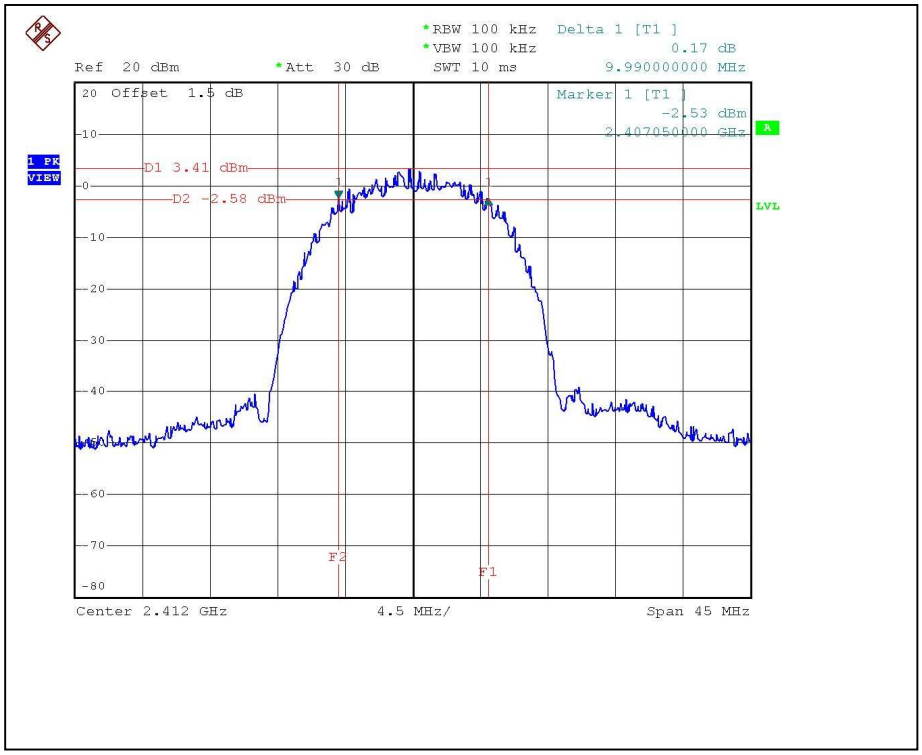
4.3.6 TEST RESULTS –DSSS

802.11b DSSS modulation

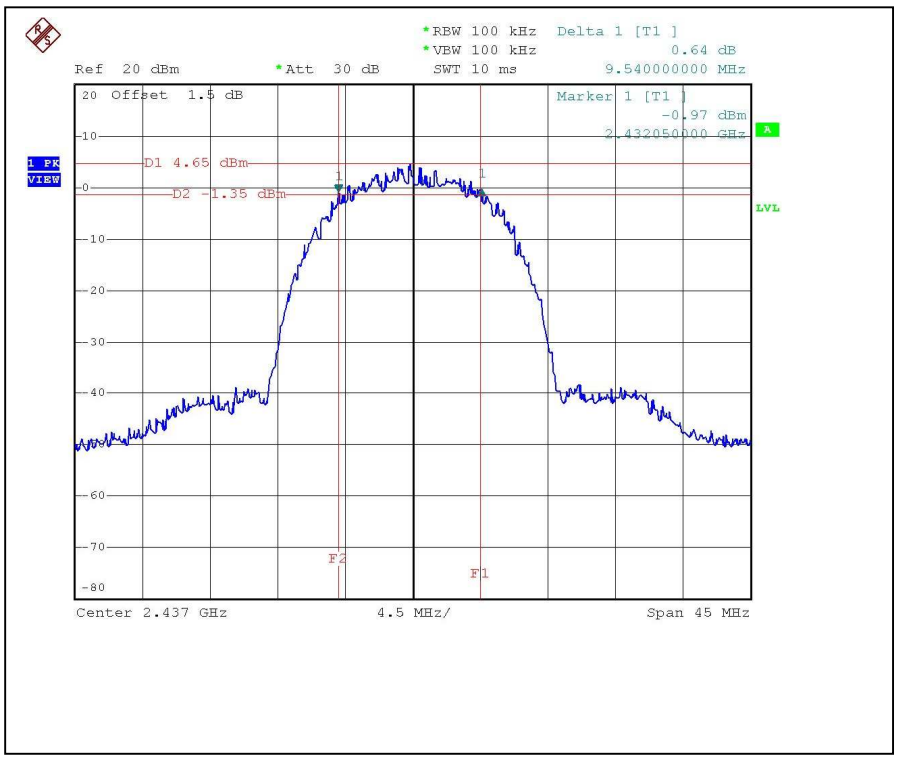
MODULATION TYPE	CCK	**TRANSFER RATE**	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 65%RH, 960hPa
TESTED BY	Eric Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	9.99	0.5	PASS
6	2437	9.54	0.5	PASS
11	2462	9.54	0.5	PASS

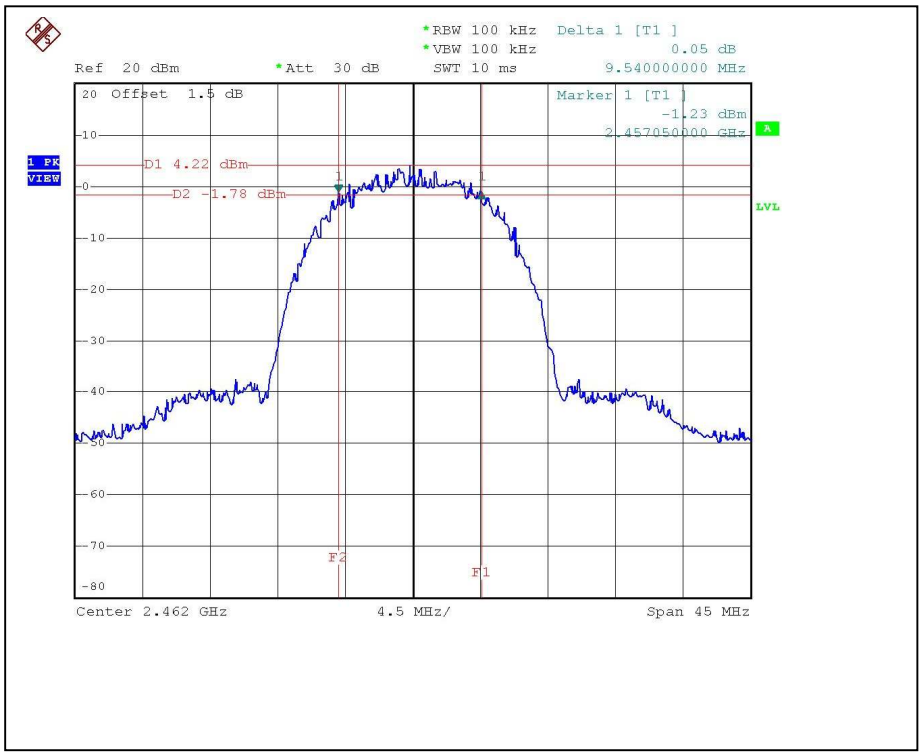
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
0.17 dB
9.990000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-2.53 dBm
2.407050000 GHz
D1 3.41 dBm
D2 -2.58 dBm
1 PK VIEW
A
LVL
F2
F1
Center 2.412 GHz
4.5 MHz/
Span 45 MHz

CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
0.64 dB
9.540000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-0.97 dBm
2.432050000 GHz
D1 4.65 dBm
D2 -1.35 dBm
1 PK VIEW
A
LVL
F2
F1
Center 2.437 GHz
4.5 MHz/
Span 45 MHz

CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 10 ms
Delta 1 [T1]
0.05 dB
9.540000000 MHz
Marker 1 [T1]
-1.23 dBm
2.457050000 GHz
20 Offset 1.5 dB
D1 4.22 dBm
D2 -1.78 dBm
1 PK
VIEW
A
LVL
F2
F1
Center 2.462 GHz
4.5 MHz/
Span 45 MHz

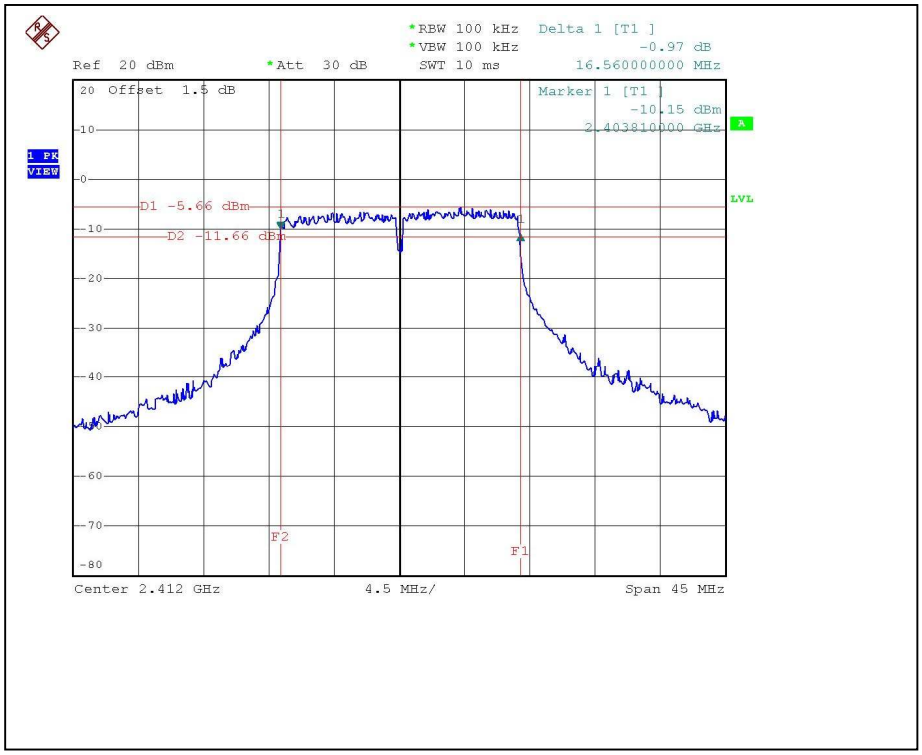
4.3.7 TEST RESULTS-OFDM

802.11g OFDM modulation

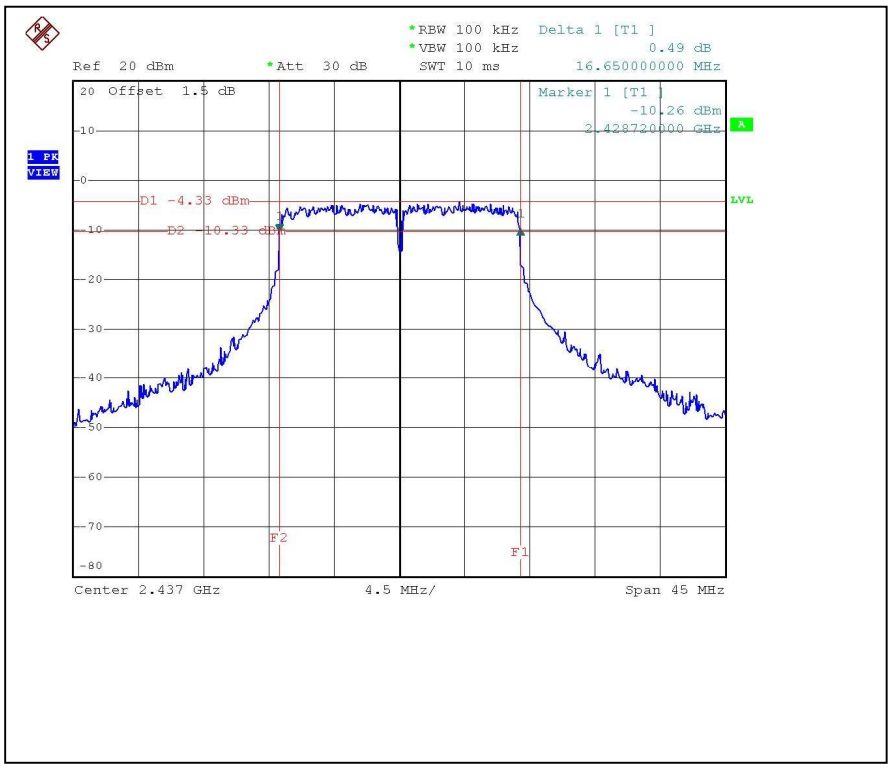
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 65%RH, 961hPa
TESTED BY	Eric Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.56	0.5	PASS
6	2437	16.65	0.5	PASS
11	2462	16.65	0.5	PASS

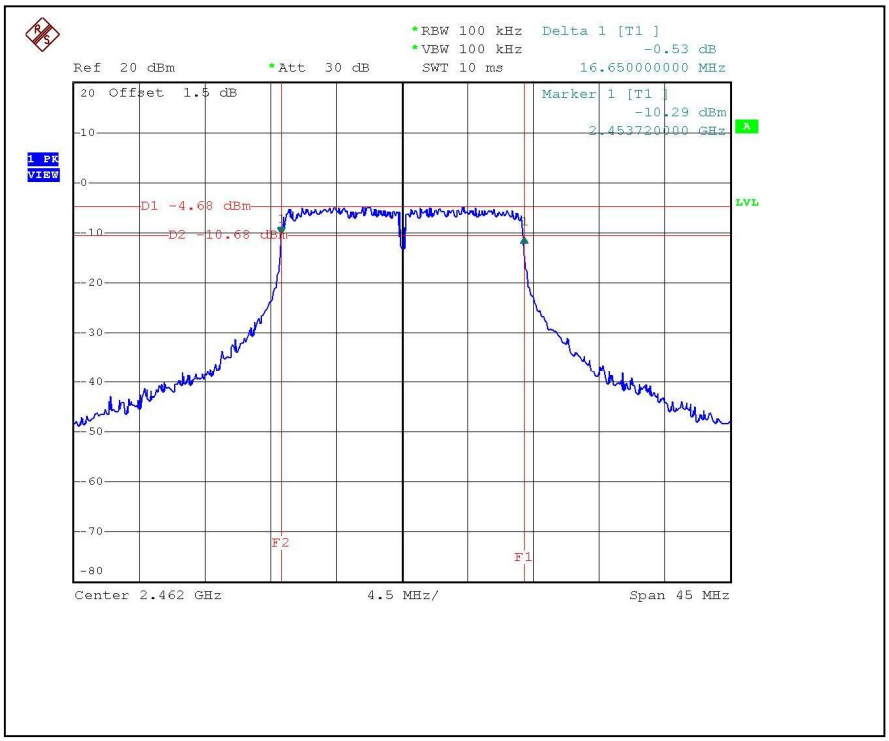
CH1


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 10 ms
Delta 1 [T1]
-0.97 dB
16.560000000 MHz
20 Offset 1.5 dB
Marker 1 [T1]
-10.15 dBm
2.403810000 GHz
1 PK VIEW
LVL
D1 -5.66 dBm
D2 -11.66 dBm
F2
F1
Center 2.412 GHz
4.5 MHz/
Span 45 MHz

CH6


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 10 ms
Delta 1 [T1]
0.49 dB
16.650000000 MHz
20 Offset 1.5 dB
Marker 1 [T1]
-10.26 dBm
2.428720000 GHz
1 PK VIEW
LVL
D1 -4.33 dBm
D2 -10.33 dBm
F2
F1
Center 2.437 GHz
4.5 MHz/
Span 45 MHz

CH11


*RBW 100 kHz
Delta 1 [T1]
*VBW 100 kHz
-0.53 dB
Ref 20 dBm
*Att 30 dB
SWT 10 ms
16.650000000 MHz
20 Offset 1.5 dB
Marker 1 [T1]
-10.29 dBm
2.453720000 GHz
1 PK
VIEW
D1 -4.68 dBm
D2 -10.68 dBm
LVL
F2
F1
Center 2.462 GHz
4.5 MHz/
Span 45 MHz

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 TEST INSTRUMENTS

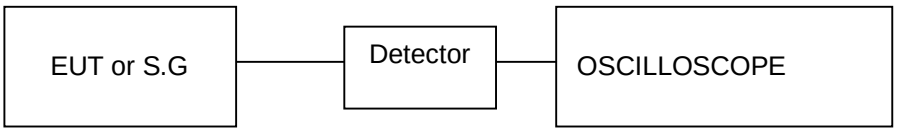
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 21, 2007
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2007
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Jun. 21, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

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

4.4.3 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 (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 65%RH, 960hPa
TESTED BY	Eric Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	14.388	11.58	30	PASS
6	2437	20.845	13.19	30	PASS
11	2462	20.464	13.11	30	PASS

4.4.7 TEST RESULTS –OFDM

802.11g OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 65%RH, 960hPa
TESTED BY	Eric Lee		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.849	12.00	30	PASS
6	2437	22.387	13.50	30	PASS
11	2462	22.182	13.46	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

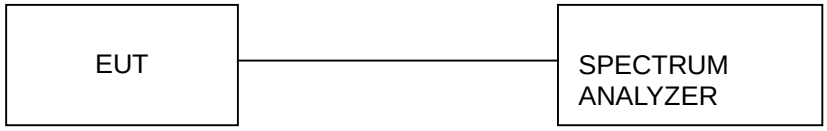
NOTE:

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

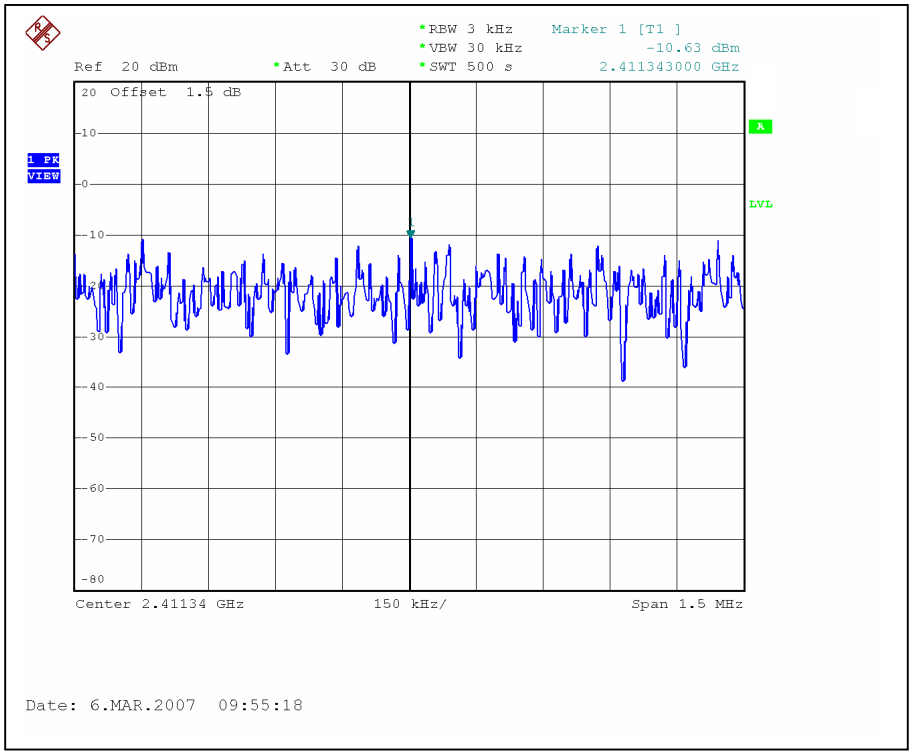
4.5.6 TEST RESULTS –DSSS

802.11b DSSS modulation

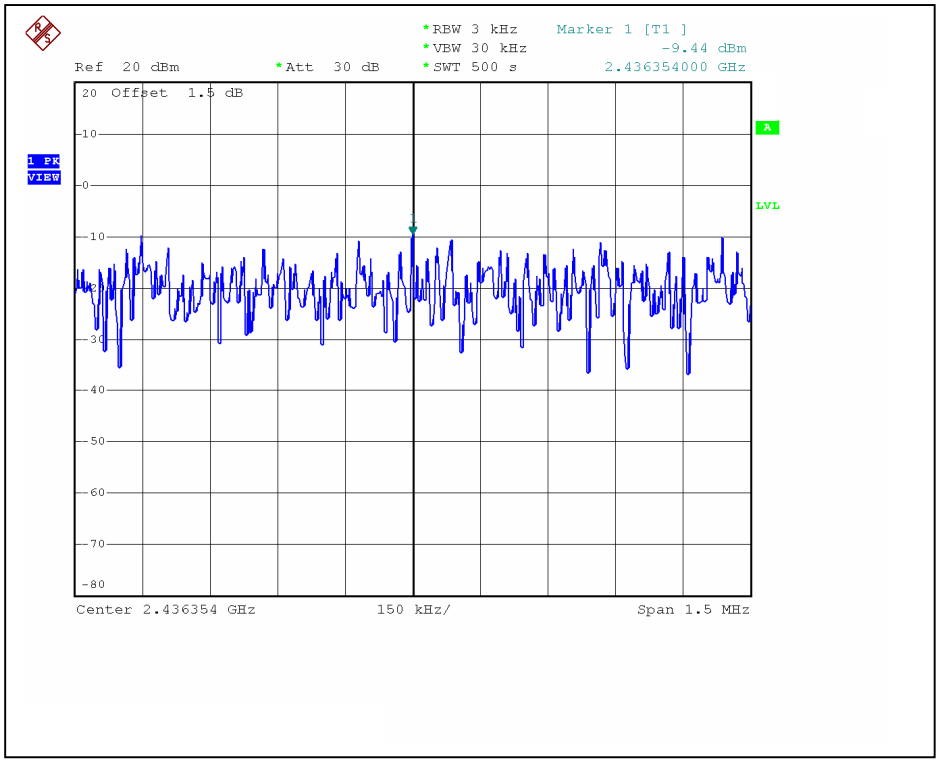
MODULATION TYPE	CCK	**TRANSFER RATE**	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 65%RH, 960hPa
TESTED BY	Eric Lee		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.63	8	PASS
6	2437	-9.44	8	PASS
11	2462	-9.87	8	PASS

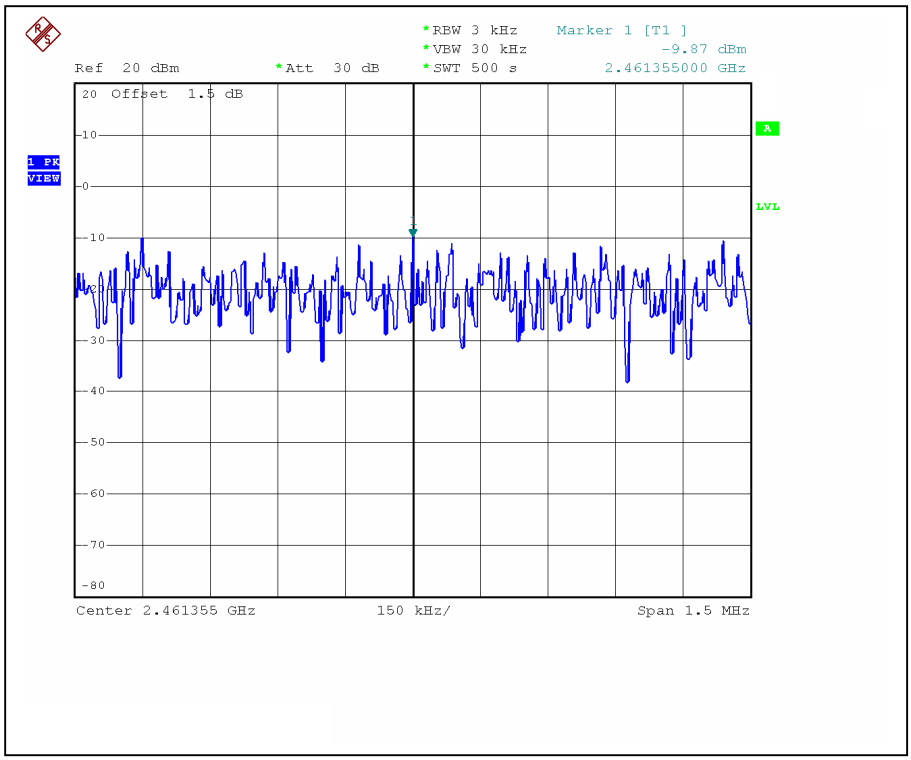
CH1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.63 dBm
2.411343000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
1 PK VIEW
A
LVL
10
0
-10
-30
-40
-50
-60
-70
-80
Center 2.41134 GHz
150 kHz/
Span 1.5 MHz
Date: 6.MAR.2007 09:55:18

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.44 dBm
2.436354000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
1 PK VIEW
A
LVL
10
0
-10
-30
-40
-50
-60
-70
-80
Center 2.436354 GHz
150 kHz/
Span 1.5 MHz

CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.87 dBm
2.461355000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
1 PK
VIEW
A
LVL
10
0
-10
-30
-40
-50
-60
-70
-80
Center 2.461355 GHz
150 kHz/
Span 1.5 MHz

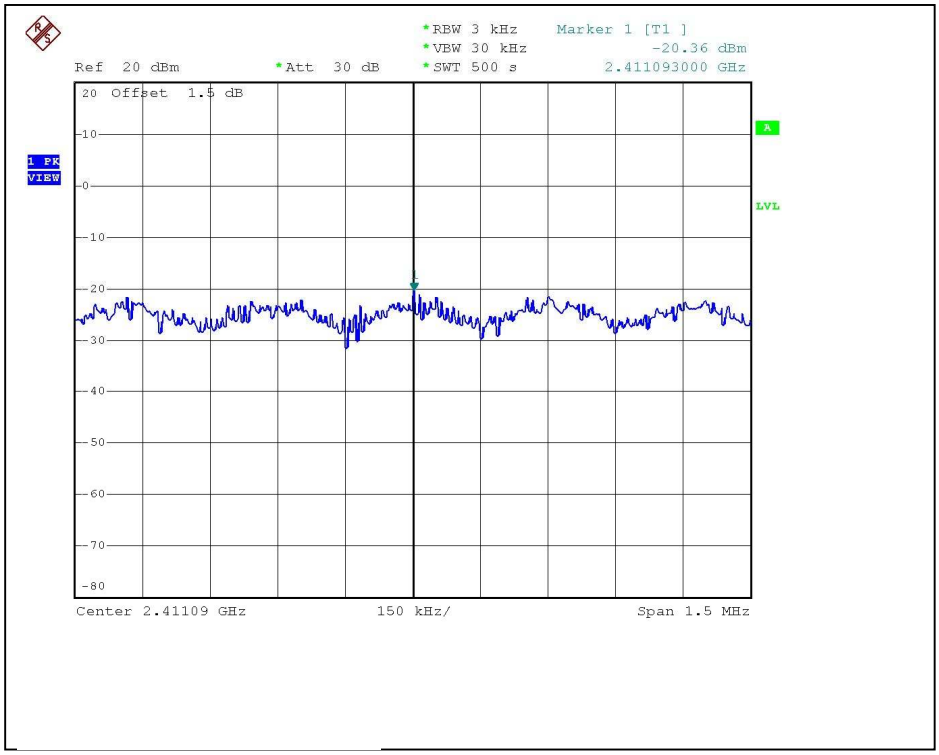
4.5.7 TEST RESULTS –OFDM

802.11g OFDM modulation

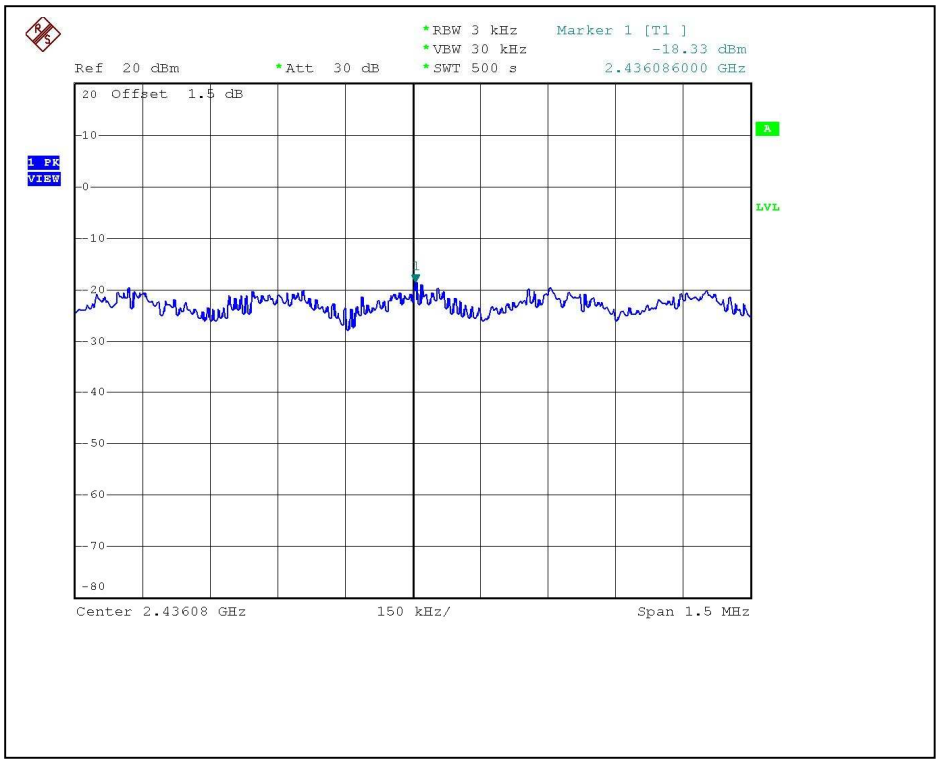
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 65%RH, 961hPa
TESTED BY	Eric Lee		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-20.36	8	PASS
6	2437	-18.33	8	PASS
11	2462	-18.00	8	PASS

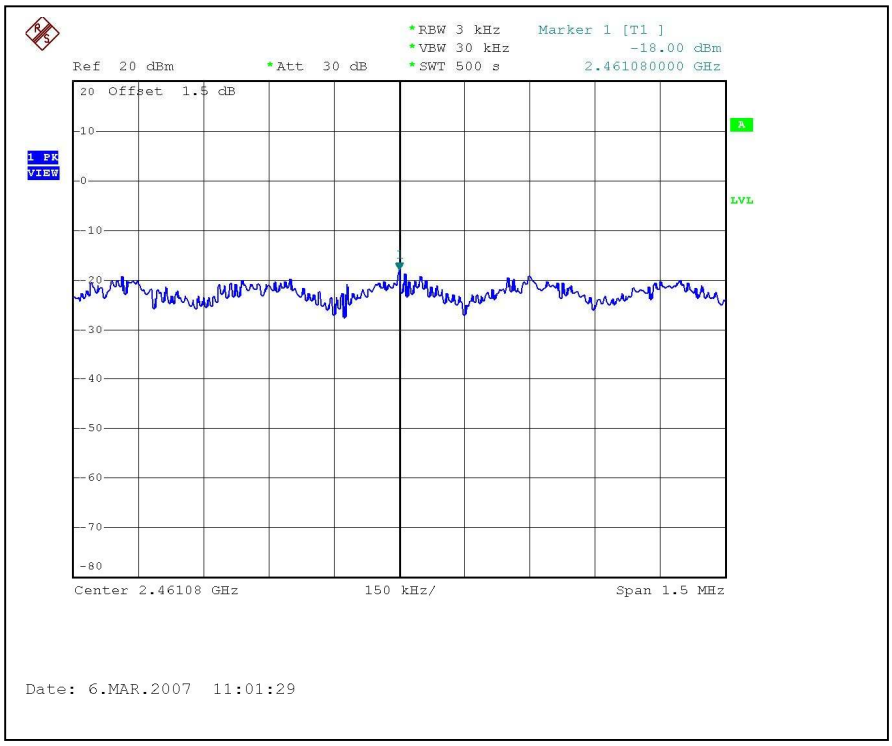
CH1


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-20.36 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.411093000 GHz
20 Offset 1.5 dB
1 PK VIEW
A
LVL
Center 2.41109 GHz
150 kHz/
Span 1.5 MHz

CH6


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-18.33 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.436086000 GHz
20 Offset 1.5 dB
1 PK VIEW
A
LVL
Center 2.43608 GHz
150 kHz/
Span 1.5 MHz

CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-18.00 dBm
2.461080000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
1 PK VIEW
A
LVL
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.46108 GHz
150 kHz/
Span 1.5 MHz
Date: 6.MAR.2007 11:01:29

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

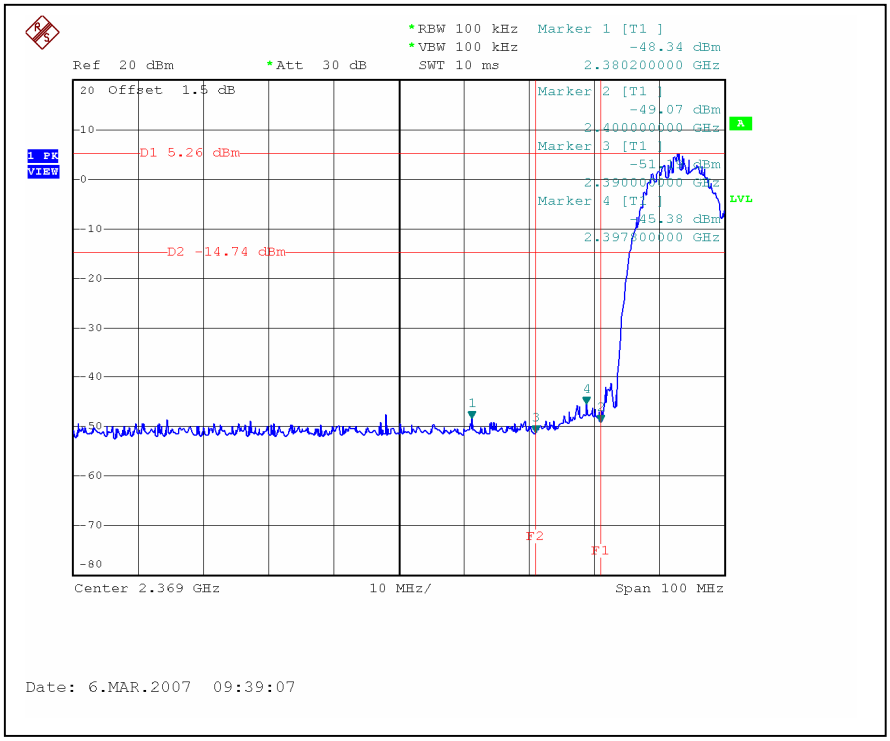
Same as Item 4.3.6

4.6.6 TEST RESULTS

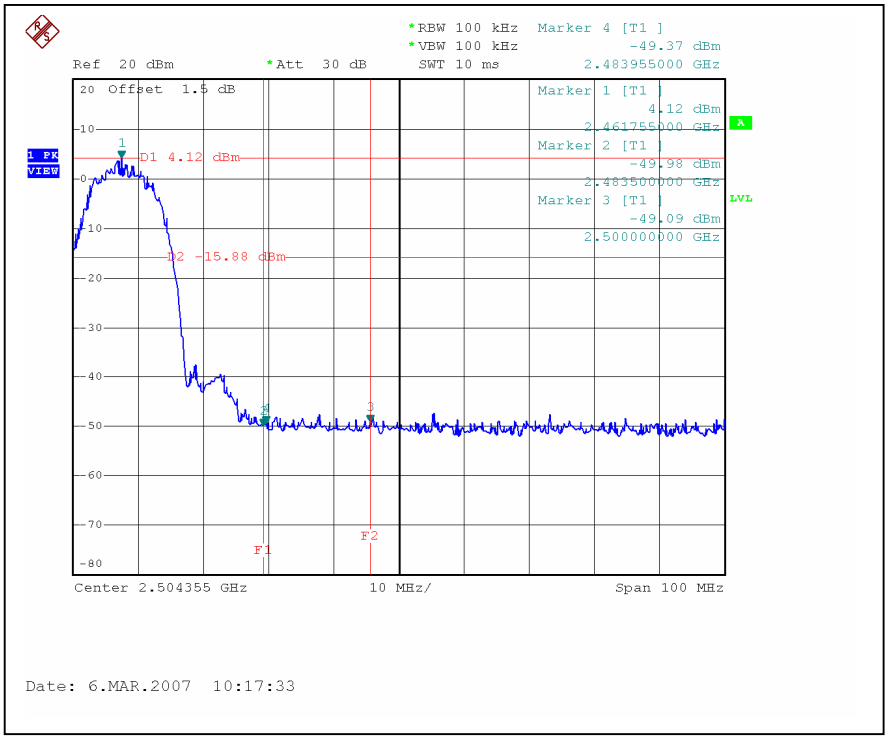
The spectrum plots are attached on the following 12 images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

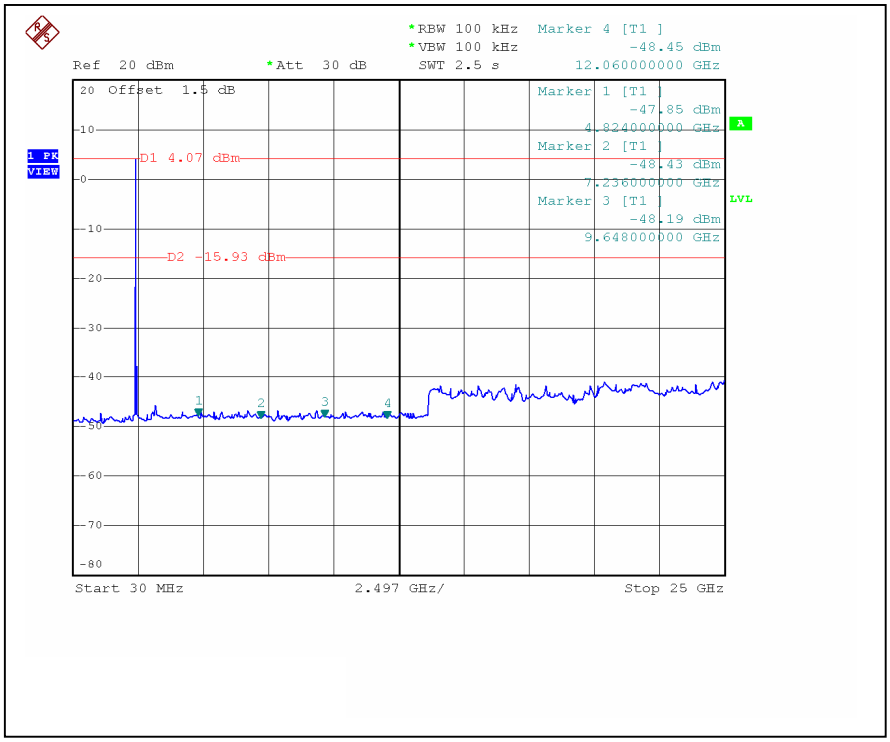
CH1



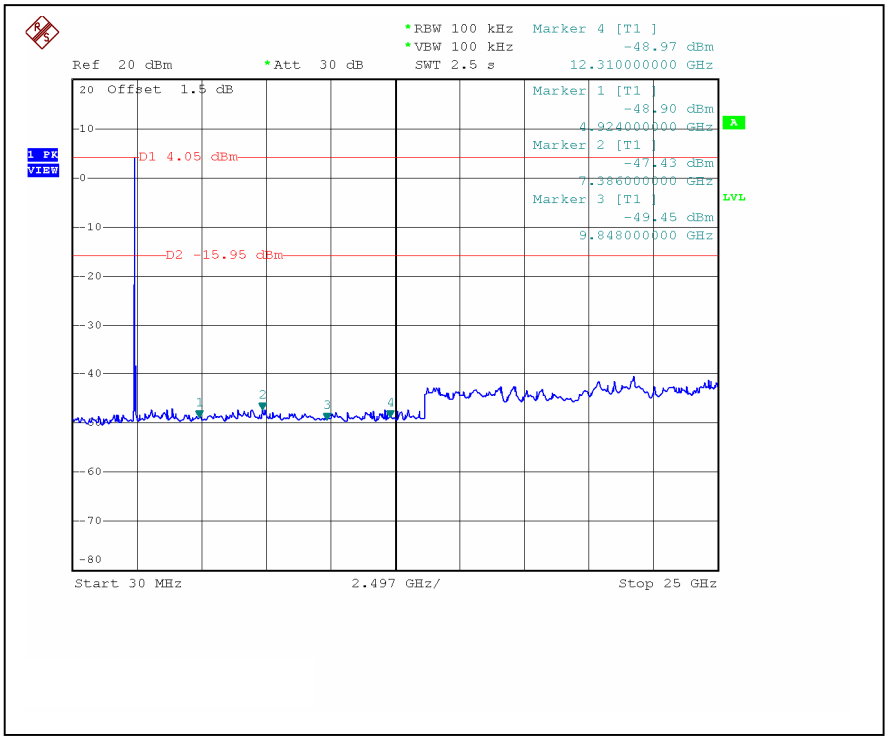
CH11



CH1

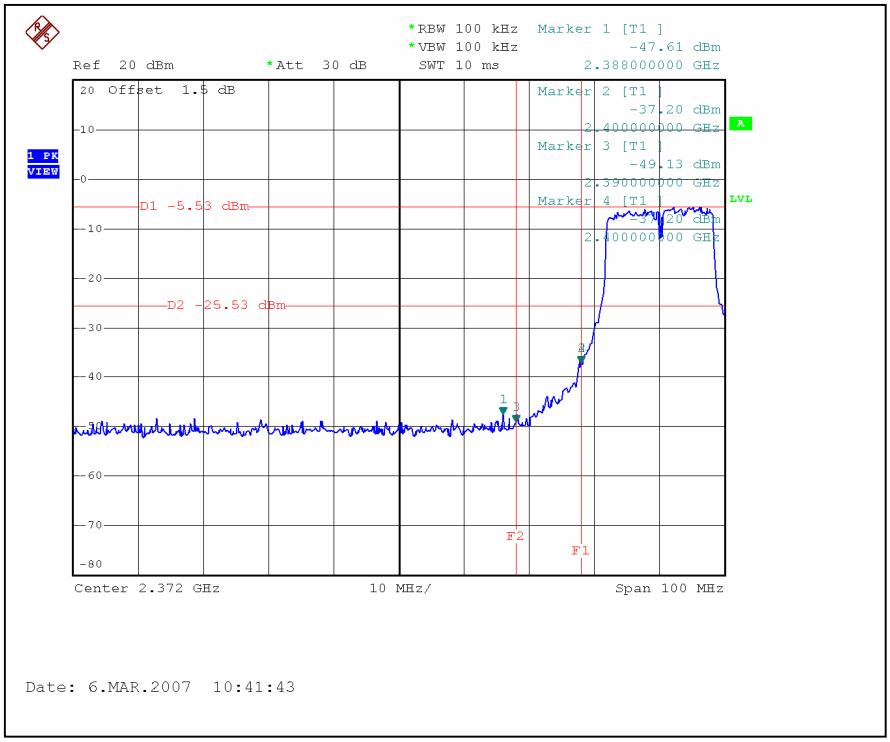

*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 4 [T1]
-48.45 dBm
12.060000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-47.85 dBm
4.824000000 GHz
Marker 2 [T1]
-48.43 dBm
7.236000000 GHz
Marker 3 [T1]
-48.19 dBm
9.648000000 GHz
1 PK
VIEW
D1 4.07 dBm
D2 -15.93 dBm
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

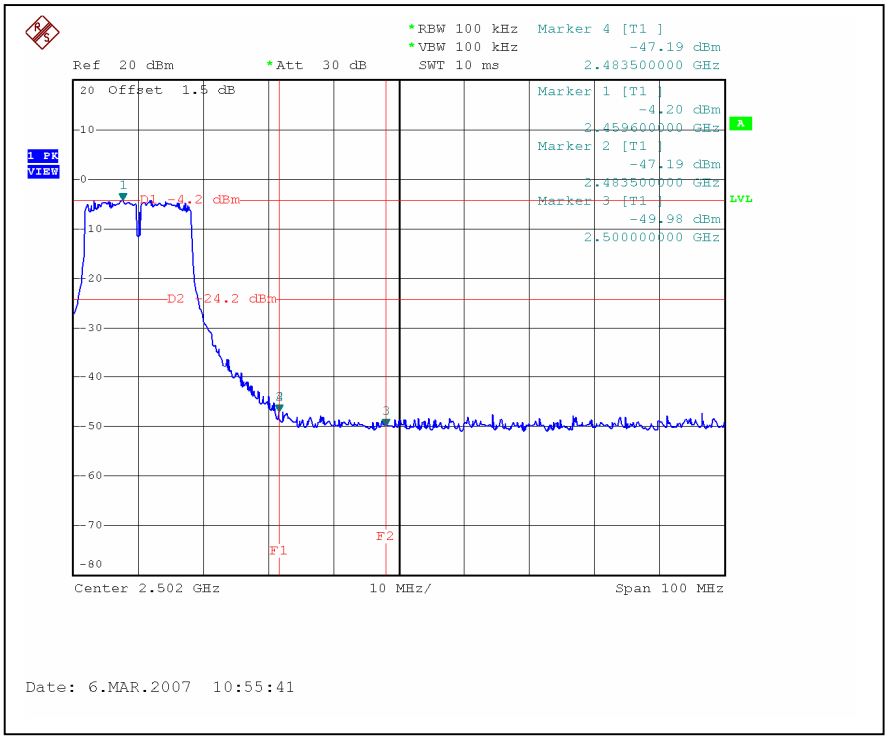

*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 4 [T1]
-48.97 dBm
12.310000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1.5 dB
Marker 1 [T1]
-48.90 dBm
4.924000000 GHz
Marker 2 [T1]
-47.43 dBm
7.386000000 GHz
Marker 3 [T1]
-49.45 dBm
9.848000000 GHz
1 PK
VIEW
D1 4.05 dBm
D2 -15.95 dBm
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION:

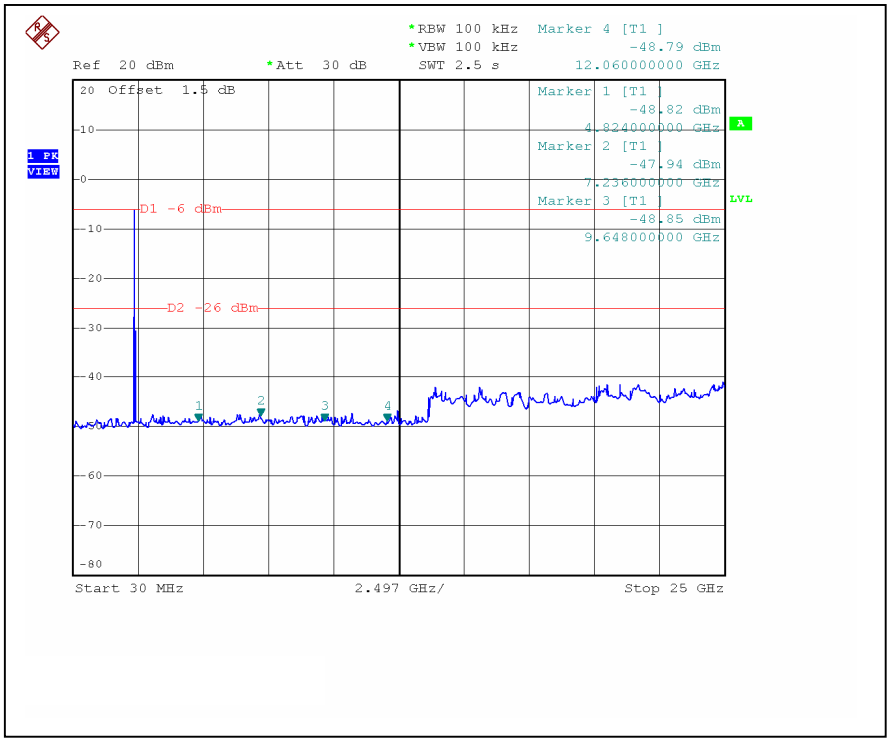
CH1



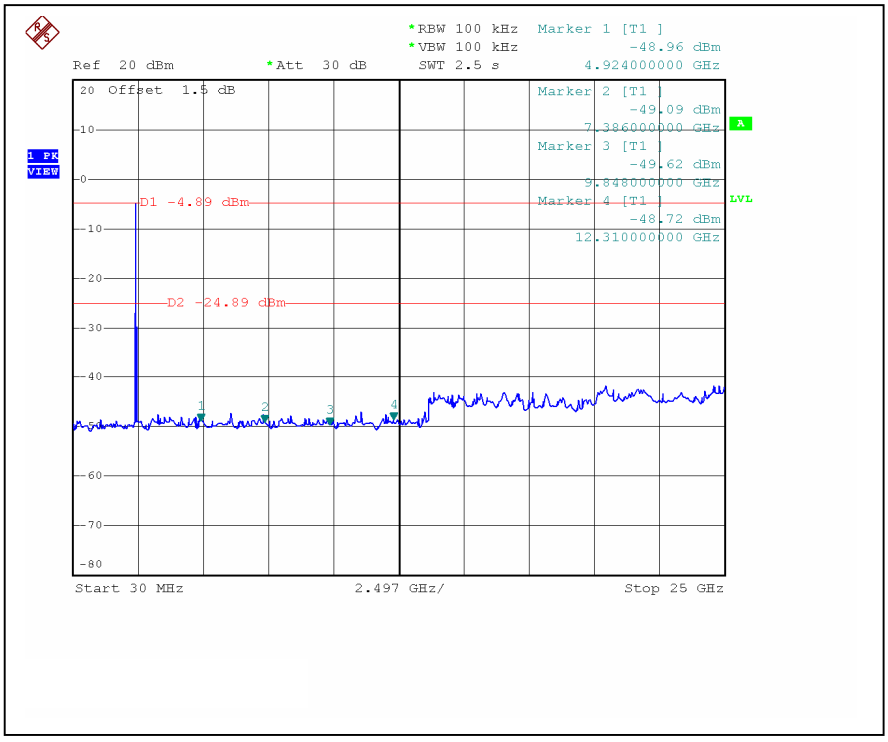
CH11



CH1


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 4 [T1]
-48.79 dBm
12.060000000 GHz
20 Offset 1.5 dB
Marker 1 [T1]
-48.82 dBm
4.824000000 GHz
Marker 2 [T1]
-47.94 dBm
7.236000000 GHz
Marker 3 [T1]
-48.85 dBm
9.648000000 GHz
1 PK VIEW
D1 -6 dBm
D2 -26 dBm
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 1 [T1]
-48.96 dBm
4.924000000 GHz
20 Offset 1.5 dB
Marker 2 [T1]
-49.09 dBm
7.386000000 GHz
Marker 3 [T1]
-49.62 dBm
9.848000000 GHz
Marker 4 [T1]
-48.72 dBm
12.310000000 GHz
1 PK VIEW
D1 -4.89 dBm
D2 -24.89 dBm
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna with Murata micro-coaxial 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.	CNLA, BSMI, NCC
Netherlands	Telefication
Singapore	PSB, GOST-ASIA (MOU)
Russia	CERTIS (MOU)

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

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

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.

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.