

FCC TEST REPORT

REPORT NO.: RF970725H05

MODEL NO.: AR690W

RECEIVED: July 25, 2008

TESTED: July 25 to Aug. 19, 2008

ISSUED: Aug. 20, 2008

APPLICANT: Alpha Networks Inc.

ADDRESS: No.8 Li-shing 7th Rd., Science-based
Industrial Park, Hsinchu, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

TEST LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung
Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien,
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1. CERTIFICATION

PRODUCT: Wireless 300N Gigabit Router
BRAND NAME: AirLink101
MODEL NO.: AR690W
TEST SAMPLE: MASS-PRODUCTION
TESTED: July 25 to Aug. 19, 2008
APPLICANT: Alpha Networks Inc.
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: AR690W) 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 : Carol Liao , **DATE:** Aug. 20, 2008
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Aug. 20, 2008
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Aug. 20, 2008
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -15.78dB at 0.197MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.56dB at 2488.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless 300N Gigabit Router
MODEL NO.	AR690W
FCC ID	RRK-WRGN20
POWER SUPPLY	DC 5V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps HT20 MCS0~7 (400ns GI): 72.2 / 65 / 57.8 / 43.3 / 28.9 / 21.7 / 14.4 / 7.2Mbps. HT20 MCS8~15 (400ns GI): 144.444 / 130 / 115.556 / 86.667 / 57.778 / 43.333 / 28.889 / 14.444Mbps. HT40 MCS0~7 (400ns GI): 150 / 135 / 120 / 90 / 60 / 45 / 30 / 15Mbps. HT40 MCS8~15 (400ns GI): 300 / 270 / 240 / 180 / 120 / 90 / 60 / 30Mbps.
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 81.283mW 802.11g: 75.858mW draft 802.11n (20MHz): 113.778mW draft 802.11n (40MHz): 100.238mW
ANTENNA TYPE	Please see note 1 (on next page)
DATA CABLE	NA
I/O PORT	LAN Port x 4, WAN Port x 1,

NOTE:

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

Transmitter Circuit	Antenna Type	Gain (dBi)	Antenna Connector	Note
Chain(0)	Dipole	1.8	I-PEX	TX & RX function
Chain(1)	Dipole	1.8	I-PEX	TX & RX function
Chain(2)	Dipole	1.8	I-PEX	Only RX function

2. The EUT incorporates a MIMO function with 802.11b, 802.11g, draft 802.11n. Physically, it provides two completed transmitter and three completed receivers.
3. The EUT is 2 * 3 spatial MIMO (2Tx & 3Rx) without beam forming function. The antenna configurations are two transmitter antennas and three receiver antennas, as there are 3 Dipole antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 3 antennas. The 11b/g legacy mode is limited to single transmitter only.
4. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
5. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g products.
6. The EUT operates in the 2.4GHz frequency spectrum with data rate up to 300Mbps.
7. The EUT must be supplied with a power adapter as following:

Brand:	JENTEC TECHNOLOGY CO., LTD.
Model No.:	AF1805-A
Input power :	100-120V, 0.4A, 50-60Hz
Output power :	+5V, 3A Cable : unshielded , 1.8m

8. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b and draft 802.11n technique devices to the network.
9. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided for 802.11b, 802.11g, draft 802.11n (20MHz):

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

Seven channels are provided for draft 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	
-	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	CHAIN(0) (TX)	CHAIN(1) (TX)
A	802.11 b	√	
B	802.11g	√	
C	DRAFT 802.11n(20MHz)	√	√
D	DRAFT 802.11n(40MHz)	√	√

Note:

1. The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
2. Antenna 1 and Antenna 2 are Dipole.

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)	TX COMBINATION
802.11b	1 to 11	1	DSSS	DBPSK	1	A

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)	TX COMBINATION
802.11b	1 to 11	1	DSSS	DBPSK	1	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)	TX COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	14.444	C
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	30	D

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)	TX COMBINATION
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	14.444	C
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	30	D

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)	TX COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	CCK	11	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	14.444	C
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	30	D

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless 300N Gigabit Router. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247)

ANSI C63.4-2003

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

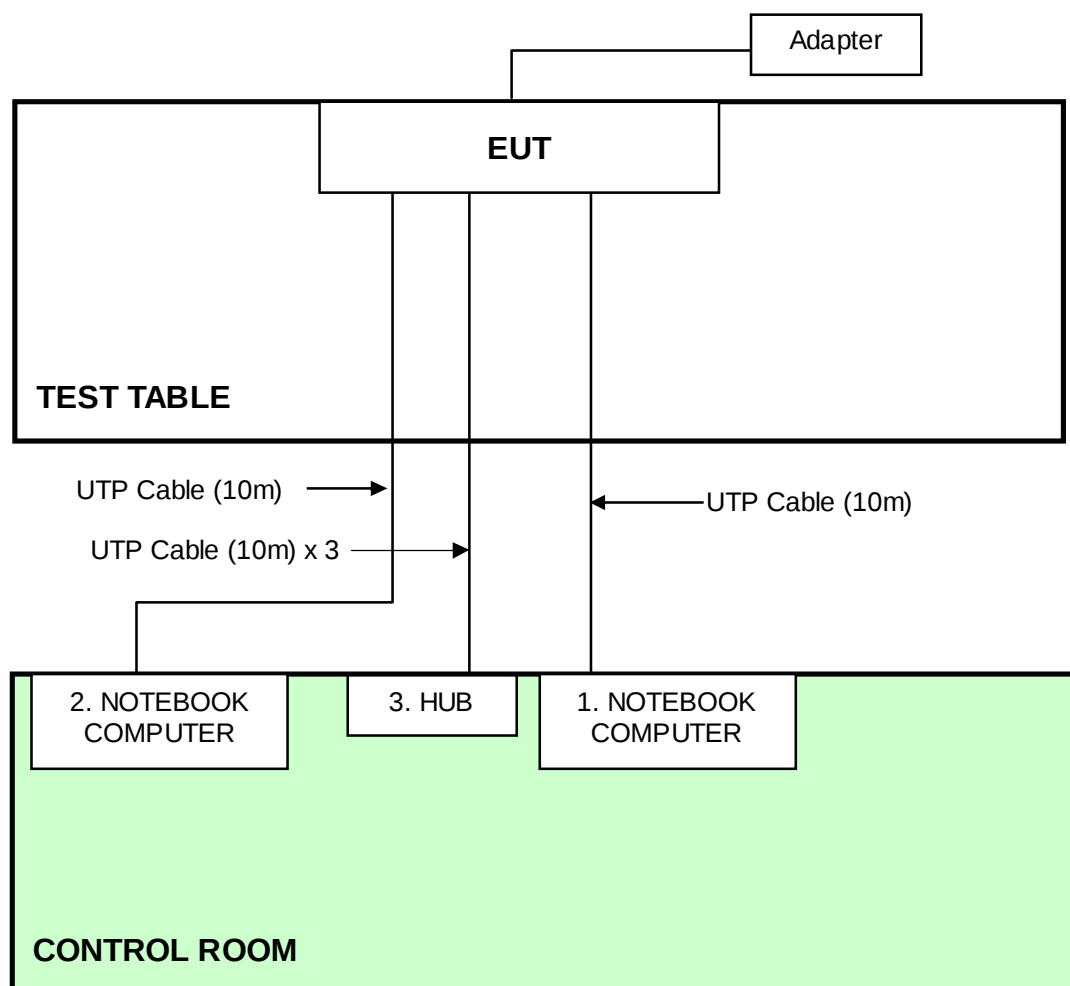
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	CN-04Y212-48643-38E-0145	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	FCC DoC
3	HUB	AVSYS	110H8	01-20E-000002	DoC

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

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

3.5 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	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 10, 2009
Line-Impedance Stabilization Network(for EUT)	KNW-407	8-1395-12	May. 06, 2009
Line-Impedance Stabilization Network(for Peripheral)	ENV-216	100072	Jun. 12, 2009
RF Cable (JYEBAO)	5DFB	COACAB-001	Jul. 23, 2009
50 ohms Terminator	50	3	Nov. 15, 2008
Software	ADT Cond V7.3.2	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in ADT Shielded Room No. A.
 3. The VCCI Con A Registration No. is C-817.

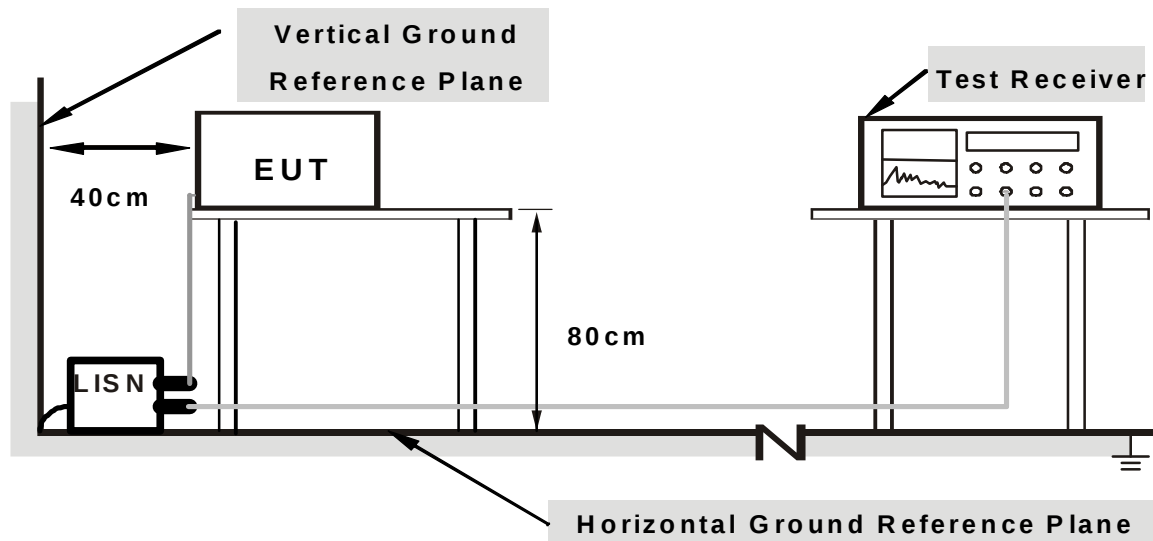
4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared other computer systems (support unit 1 ~ 3) to act as communication partners and placed them outside of testing area.
3. The communication partner run test program "RT2880QA.exe" to enable EUT under specific wireless channel transmitting condition.

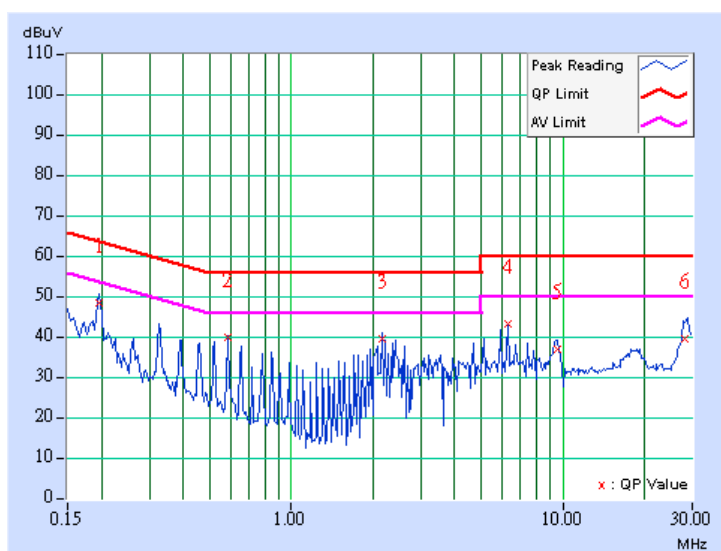
4.1.7 TEST RESULTS

802.11b DSSS MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	DBPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	1Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 965hPa	TESTED BY	Max Tseng

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.51	47.45	-	47.96	-	63.74	53.74	-15.78	-
2	0.588	0.42	38.77	-	39.19	-	56.00	46.00	-16.81	-
3	2.156	0.47	38.64	-	39.11	-	56.00	46.00	-16.89	-
4	6.277	0.54	42.30	-	42.84	-	60.00	50.00	-17.16	-
5	9.539	0.62	36.11	-	36.73	-	60.00	50.00	-23.27	-
6	27.979	1.05	38.76	-	39.81	-	60.00	50.00	-20.19	-

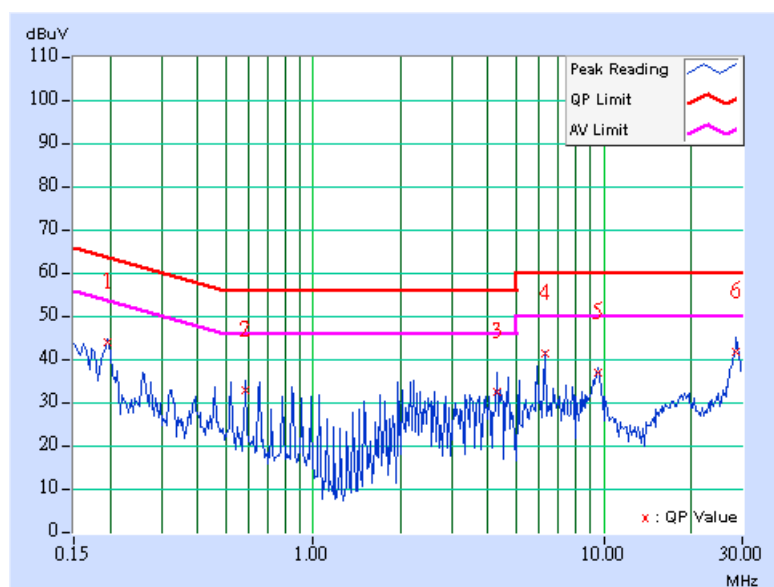
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Neutral (N)
MODULATION TYPE	DBPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	1Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 965hPa	TESTED BY	Max Tseng

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.26	43.33	-	43.59	-	63.74	53.74	-20.15	-
2	0.588	0.19	32.17	-	32.36	-	56.00	46.00	-23.64	-
3	4.316	0.27	31.77	-	32.04	-	56.00	46.00	-23.96	-
4	6.281	0.32	40.73	-	41.05	-	60.00	50.00	-18.95	-
5	9.539	0.42	36.11	-	36.53	-	60.00	50.00	-23.47	-
6	28.625	0.87	41.14	-	42.01	-	60.00	50.00	-17.99	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 15, 2009
HP Pre_Amplifier	8449B	3008A01922	Oct. 04, 2008
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Mar. 31, 2009
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 16, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 27, 2009
RF Switches (ARNITSU)	CS-201	1565157	Aug. 13, 2009
RF CABLE (Chaintek)	SF102	22054-2	Dec. 06. 2008
RF Cable	8DFB	STCCAB-30M-1 GHz	Oct. 09, 2008
Software	ADT_Radiated_V 7.6.15.8	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 3789C-3.

4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic. 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 the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

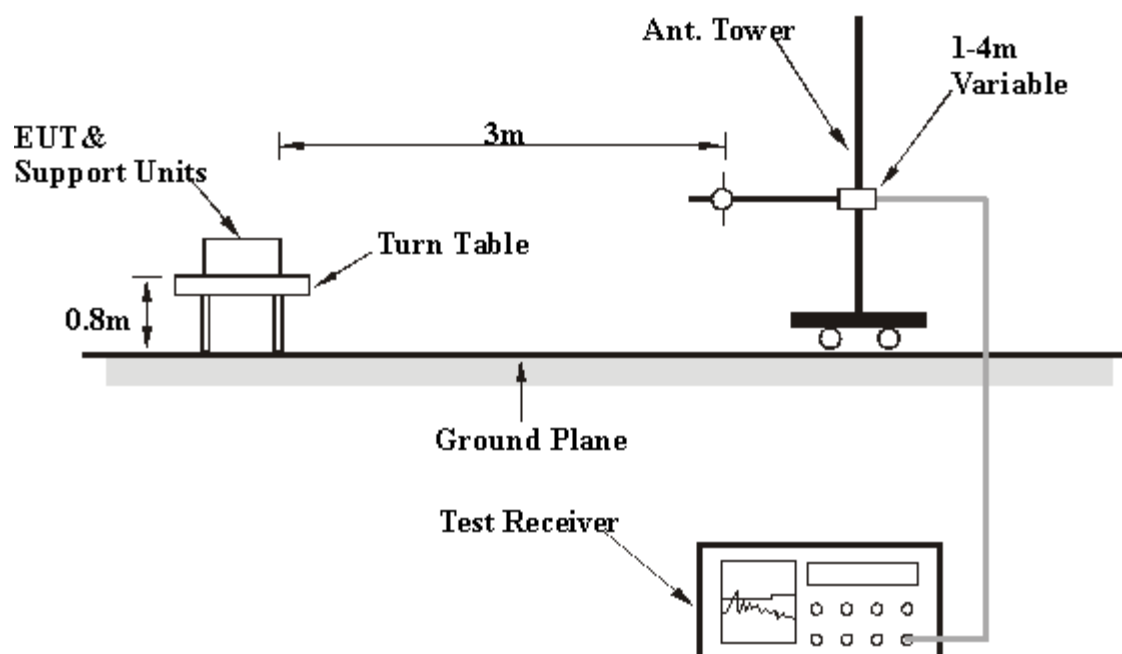
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) 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 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

Below 1GHz Test Data

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : 802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30deg. C, 55%RH 965hPa	TESTED BY	Rex 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	250.01	37.44 QP	46.00	-8.56	1.22 H	21	24.61	12.83
2	375.00	29.82 QP	46.00	-16.18	1.00 H	43	12.34	17.48
3	400.00	28.86 QP	46.00	-17.14	1.05 H	21	10.81	18.05
4	500.02	40.13 QP	46.00	-5.87	1.00 H	12	19.08	21.05
5	625.02	42.19 QP	46.00	-3.81	1.16 H	0	18.19	24.00
6	750.03	42.97 QP	46.00	-3.03	1.00 H	299	15.71	27.26
7	800.00	41.64 QP	46.00	-4.36	1.26 H	215	13.59	28.05
8	875.03	40.22 QP	46.00	-5.78	1.17 H	229	11.15	29.07
9	1000.03	39.00 QP	54.00	-15.00	1.01 H	166	8.47	30.53

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	46.42	34.01 QP	40.00	-5.99	1.00 V	21	18.11	15.90
2	120.11	35.69 QP	43.50	-7.81	1.00 V	99	22.81	12.88
3	125.01	36.66 QP	43.50	-6.84	1.00 V	195	23.43	13.23
4	250.01	40.90 QP	46.00	-5.10	1.00 V	348	28.07	12.83
5	375.00	37.77 QP	46.00	-8.23	1.00 V	332	20.29	17.48
6	500.02	41.05 QP	46.00	-4.95	1.11 V	293	20.00	21.05
7	625.02	42.59 QP	46.00	-3.41	1.00 V	272	18.59	24.00
8	750.02	42.36 QP	46.00	-3.64	1.16 V	16	15.10	27.26
9	875.03	39.13 QP	46.00	-6.87	1.19 V	285	10.06	29.07
10	1000.03	35.54 QP	54.00	-18.46	1.17 V	102	5.01	30.53

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.

Above 1GHz Test Data

4.2.8 TEST RESULTS

802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	2386.32	56.14 PK	74.00	-17.86	1.20 H	342	26.09	30.05
2	2386.32	45.04 AV	54.00	-8.96	1.20 H	342	14.99	30.05
3	*2412.00	98.00 PK			1.50 H	66	67.85	30.15
4	*2412.00	92.40 AV			1.50 H	66	62.25	30.15
5	4824.00	46.20 PK	74.00	-27.80	1.51 H	300	10.74	35.46
6	4824.00	36.20 AV	54.00	-17.80	1.51 H	300	0.74	35.46
7	7236.00	55.04 PK	74.00	-18.96	1.42 H	248	13.19	41.85
8	7236.00	44.13 AV	54.00	-9.87	1.42 H	248	2.28	41.85
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	2386.00	61.65 PK	74.00	-12.35	1.07 V	110	31.60	30.05
2	2386.00	52.25 AV	54.00	-1.75	1.07 V	110	22.20	30.05
3	*2412.00	110.50 PK			1.00 V	268	80.35	30.15
4	*2412.00	106.00 AV			1.00 V	268	75.85	30.15
5	4824.00	47.20 PK	74.00	-26.80	1.26 V	280	11.74	35.46
6	4824.00	37.20 AV	54.00	-16.80	1.26 V	280	1.74	35.46
7	7236.00	57.00 PK	74.00	-17.00	1.03 V	329	15.15	41.85
8	7236.00	48.60 AV	54.00	-5.40	1.03 V	329	6.75	41.85

- 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.
 5. “ * “: Fundamental frequency.
 6. “#”: The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	99.10 PK			1.39 H	222	68.86	30.24
2	*2437.00	93.95 AV			1.39 H	222	63.71	30.24
3	4874.00	47.04 PK	74.00	-26.96	1.60 H	300	11.49	35.55
4	4874.00	37.80 AV	54.00	-16.20	1.60 H	300	2.25	35.55
5	7311.00	54.01 PK	74.00	-19.99	1.29 H	213	11.97	42.04
6	7311.00	43.30 AV	54.00	-10.70	1.29 H	213	1.26	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.30 PK			1.00 V	267	80.06	30.24
2	*2437.00	106.20 AV			1.00 V	267	75.96	30.24
3	4874.00	47.30 PK	74.00	-26.70	1.40 V	36	11.75	35.55
4	4874.00	38.20 AV	54.00	-15.80	1.40 V	36	2.65	35.55
5	7311.00	55.80 PK	74.00	-18.20	1.26 V	127	13.76	42.04
6	7311.00	47.80 AV	54.00	-6.20	1.26 V	127	5.76	42.04

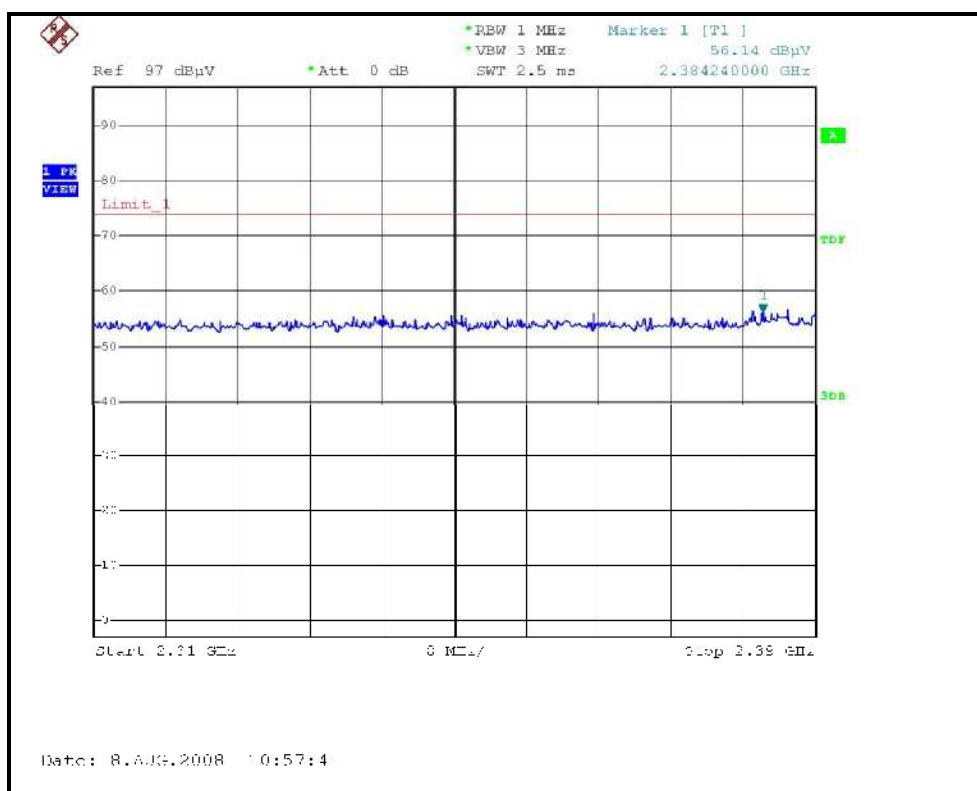
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex Huang

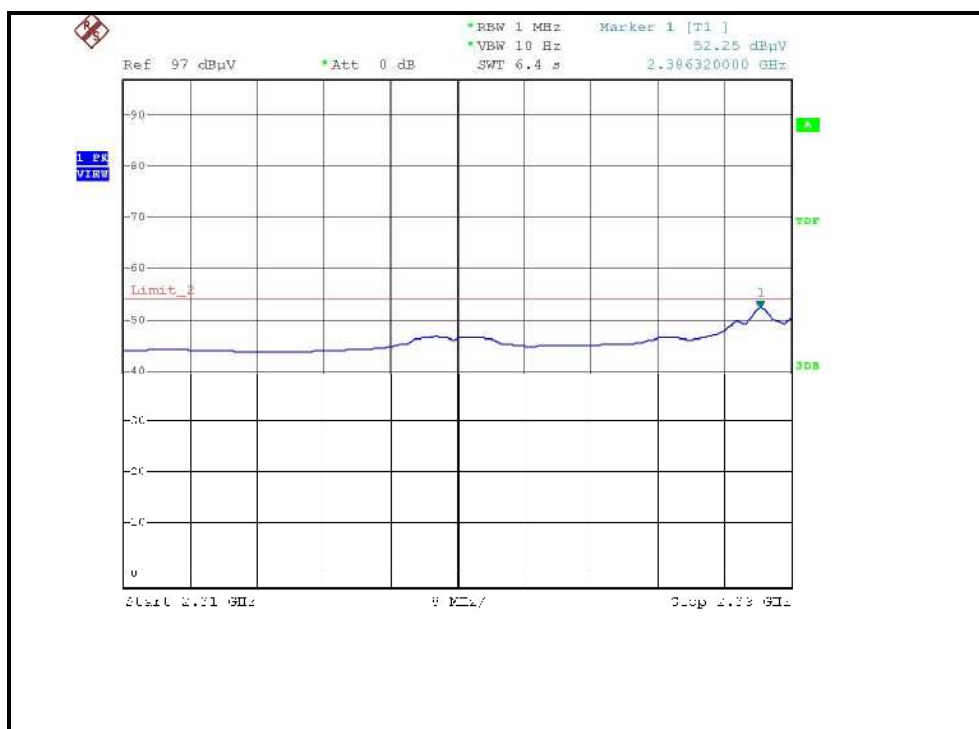
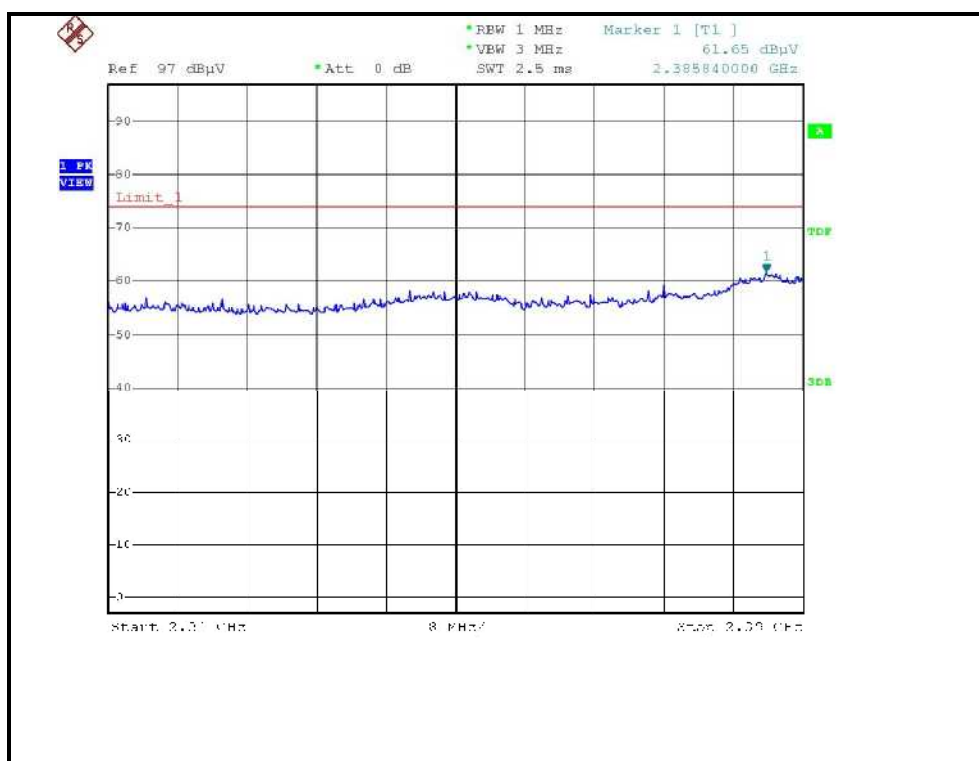
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.27 PK			1.39 H	171	69.93	30.34
2	*2462.00	94.85 AV			1.39 H	171	64.51	30.34
3	2487.89	56.60 PK	74.00	-17.40	1.40 H	170	26.16	30.44
4	2487.89	44.50 AV	54.00	-9.50	1.40 H	170	14.06	30.44
5	4924.00	47.30 PK	74.00	-26.70	1.24 H	279	11.67	35.63
6	4924.00	37.90 AV	54.00	-16.10	1.24 H	279	2.27	35.63
7	7386.00	53.81 PK	74.00	-20.19	1.56 H	93	11.58	42.23
8	7386.00	43.42 AV	54.00	-10.58	1.56 H	93	1.19	42.23
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	110.00 PK			1.00 V	267	79.66	30.34
2	*2462.00	105.60 AV			1.00 V	267	75.26	30.34
3	2488.00	63.55 PK	74.00	-10.45	1.00 V	14	33.11	30.44
4	2488.00	53.44 AV	54.00	-0.56	1.00 V	14	23.00	30.44
5	4924.00	49.00 PK	74.00	-25.00	1.26 V	85	13.37	35.63
6	4924.00	41.30 AV	54.00	-12.70	1.26 V	85	5.67	35.63
7	7386.00	57.60 PK	74.00	-16.40	1.24 V	127	15.37	42.23
8	7386.00	49.00 AV	54.00	-5.00	1.24 V	127	6.77	42.23

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

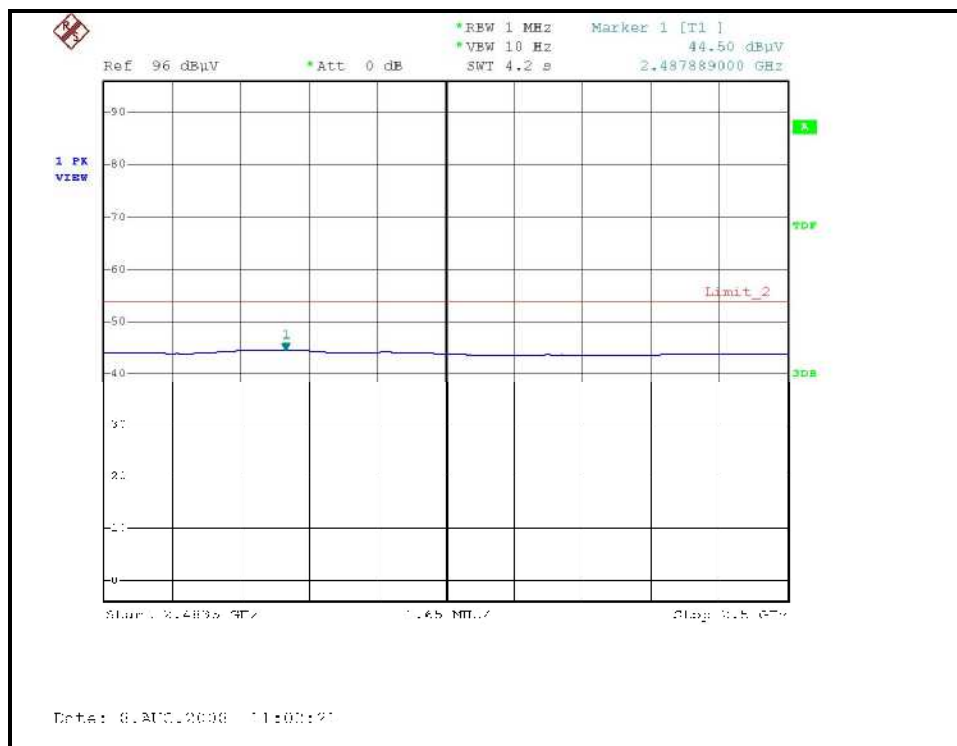
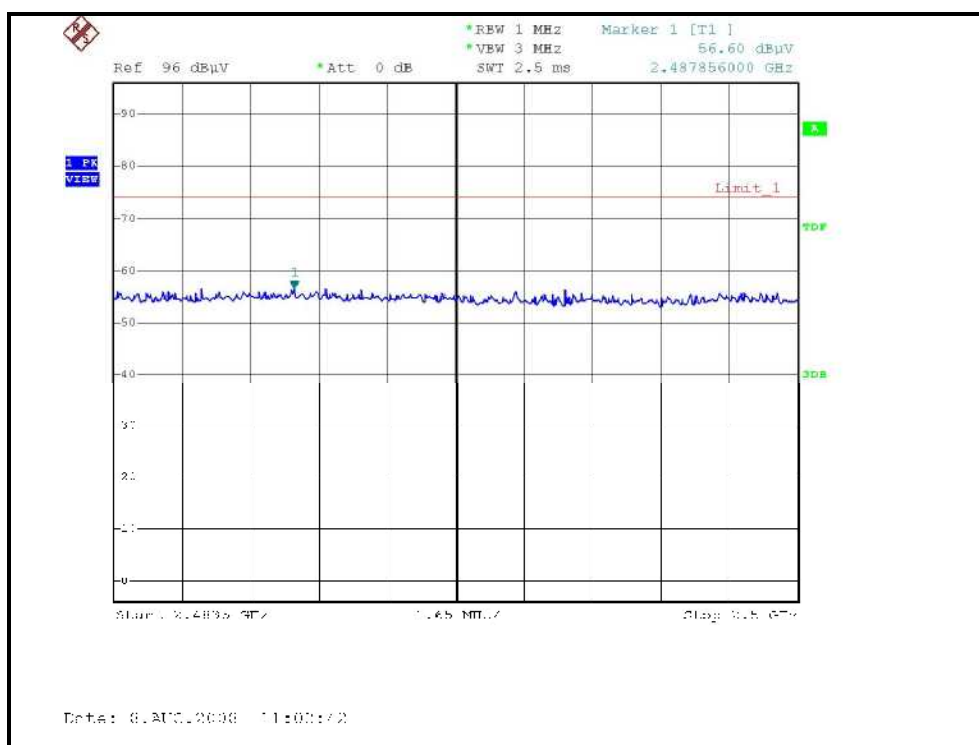
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)



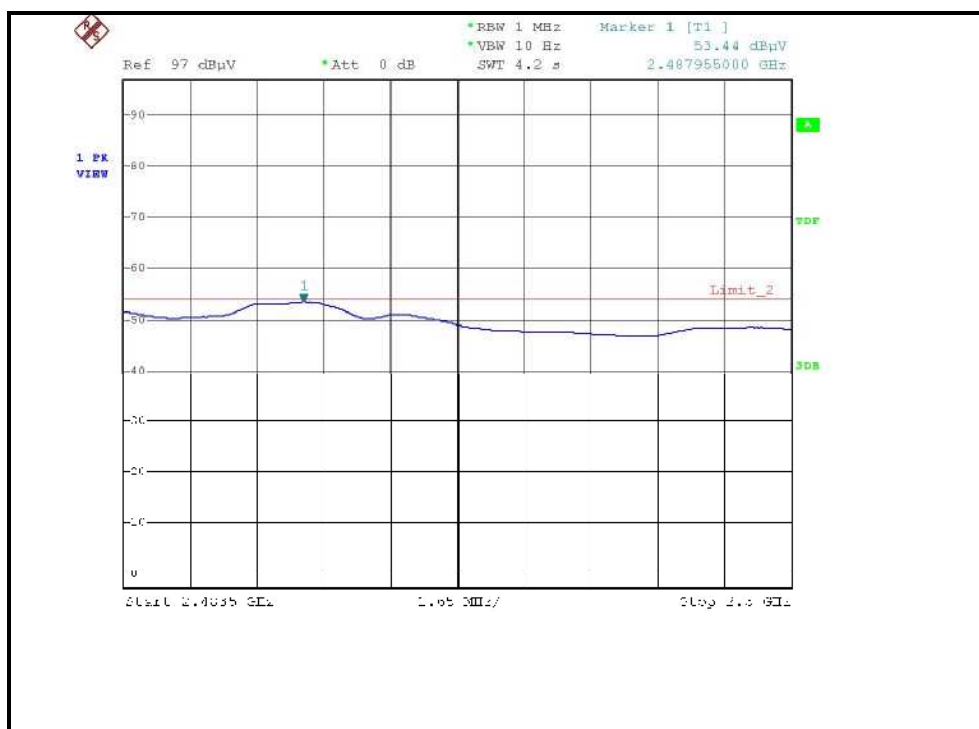
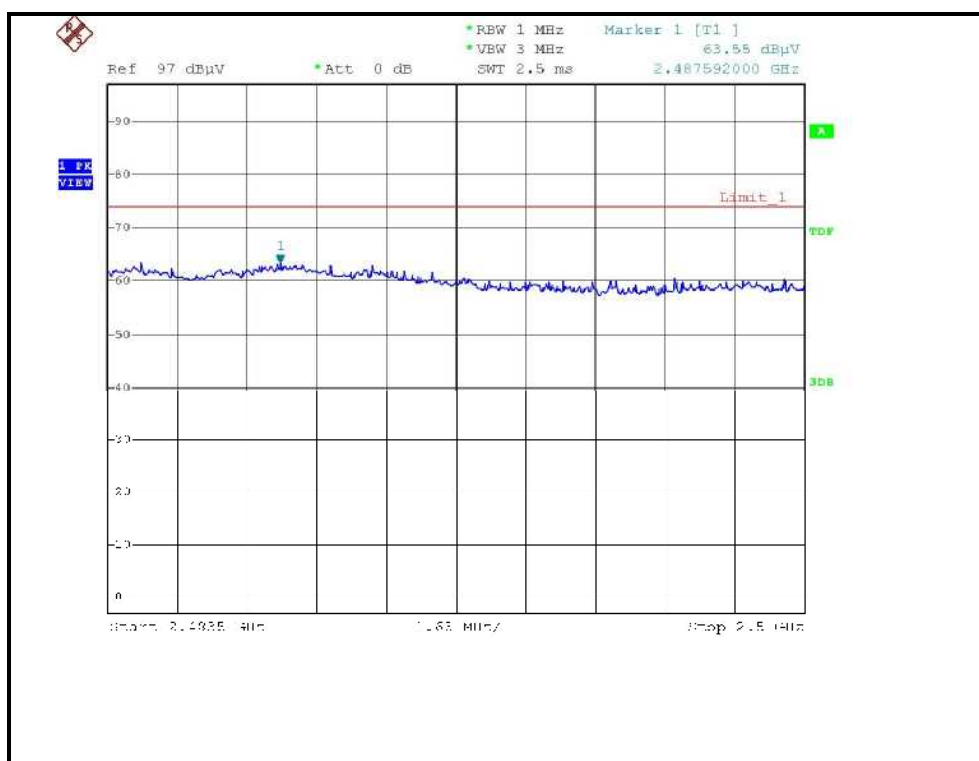
RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)



802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	57.43 PK	74.00	-16.57	1.37 H	216	27.37	30.06
2	2390.00	44.37 AV	54.00	-9.63	1.37 H	216	14.31	30.06
3	*2412.00	98.37 PK			1.32 H	240	68.22	30.15
4	*2412.00	88.20 AV			1.32 H	240	58.05	30.15
5	4824.00	44.10 PK	74.00	-29.90	1.00 H	231	8.64	35.46
6	4824.00	31.20 AV	54.00	-22.80	1.00 H	231	-4.26	35.46
7	7236.00	55.70 PK	74.00	-18.30	1.20 H	249	13.85	41.85
8	7236.00	41.40 AV	54.00	-12.60	1.20 H	249	-0.45	41.85
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	2390.00	68.45 PK	74.00	-5.55	1.00 V	241	38.39	30.06
2	2390.00	53.04 AV	54.00	-0.96	1.00 V	241	22.98	30.06
3	*2412.00	111.80 PK			1.00 V	267	81.65	30.15
4	*2412.00	101.40 AV			1.00 V	267	71.25	30.15
5	4824.00	44.80 PK	74.00	-29.20	1.26 V	37	9.34	35.46
6	4824.00	31.70 AV	54.00	-22.30	1.26 V	37	-3.76	35.46
7	7236.00	54.00 PK	74.00	-20.00	1.04 V	295	12.15	41.85
8	7236.00	40.50 AV	54.00	-13.50	1.04 V	295	-1.35	41.85

- 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.
 5. “ * “: Fundamental frequency.
 6. “#”: The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	99.66 PK			1.29 H	153	69.42	30.24
2	*2437.00	89.30 AV			1.29 H	153	59.06	30.24
3	4874.00	44.40 PK	74.00	-29.60	1.02 H	233	8.85	35.55
4	4874.00	31.40 AV	54.00	-22.60	1.02 H	233	-4.15	35.55
5	7311.00	55.90 PK	74.00	-18.10	1.18 H	254	13.86	42.04
6	7311.00	41.50 AV	54.00	-12.50	1.18 H	254	-0.54	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.60 PK			1.00 V	327	81.36	30.24
2	*2437.00	101.50 AV			1.00 V	327	71.26	30.24
3	4874.00	45.10 PK	74.00	-28.90	1.13 V	29	9.55	35.55
4	4874.00	31.80 AV	54.00	-22.20	1.13 V	29	-3.75	35.55
5	7311.00	55.30 PK	74.00	-18.70	1.03 V	297	13.26	42.04
6	7311.00	41.30 AV	54.00	-12.70	1.03 V	297	-0.74	42.04

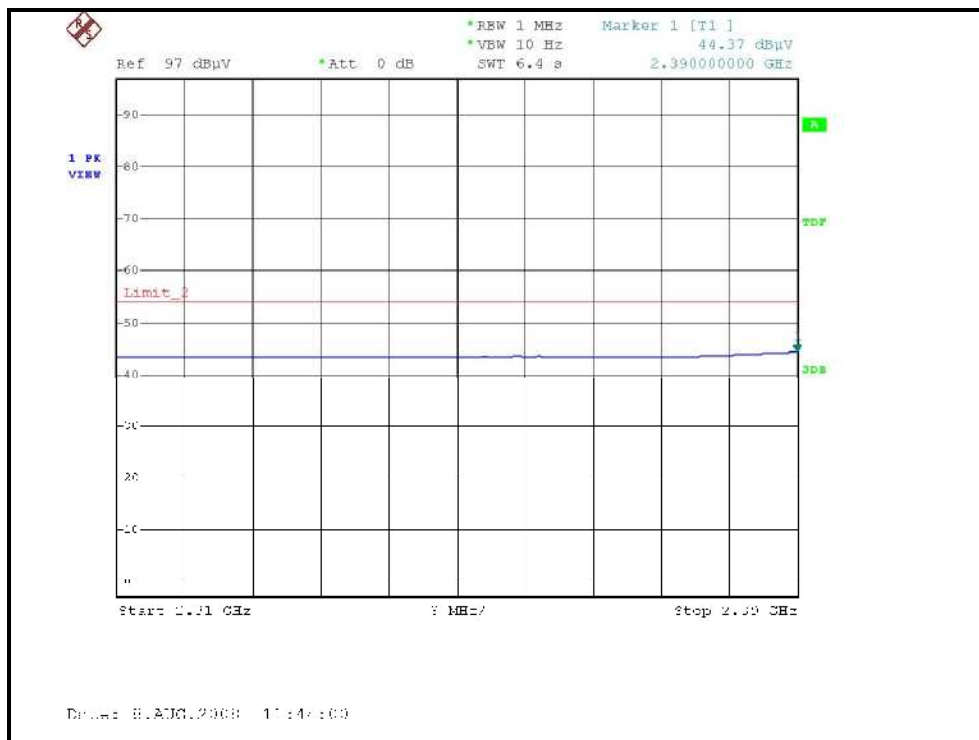
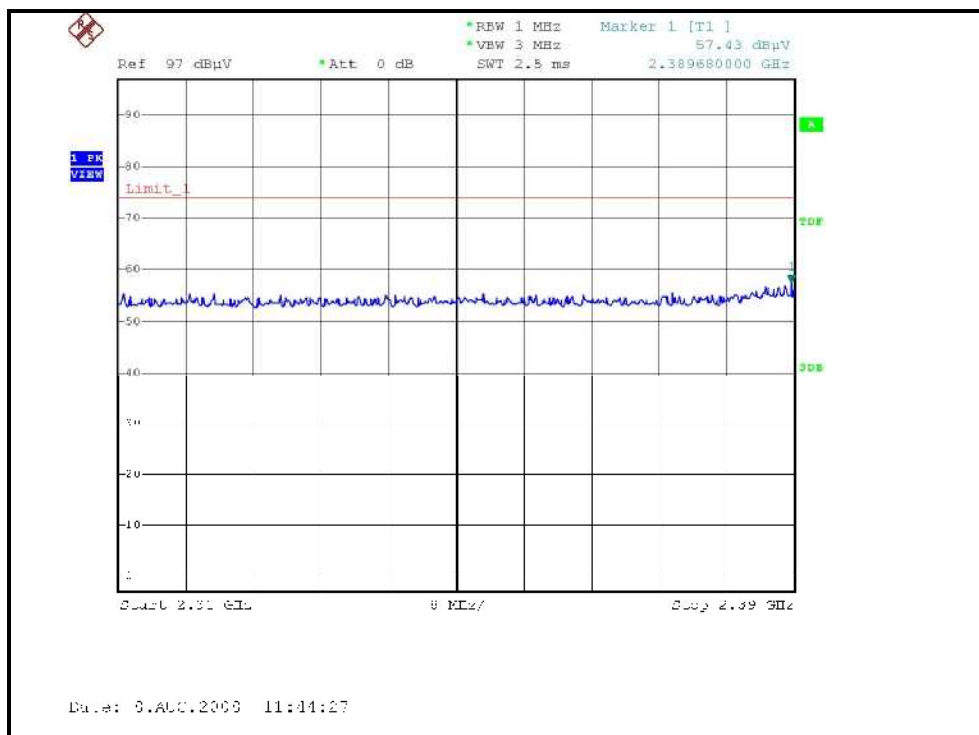
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex Huang

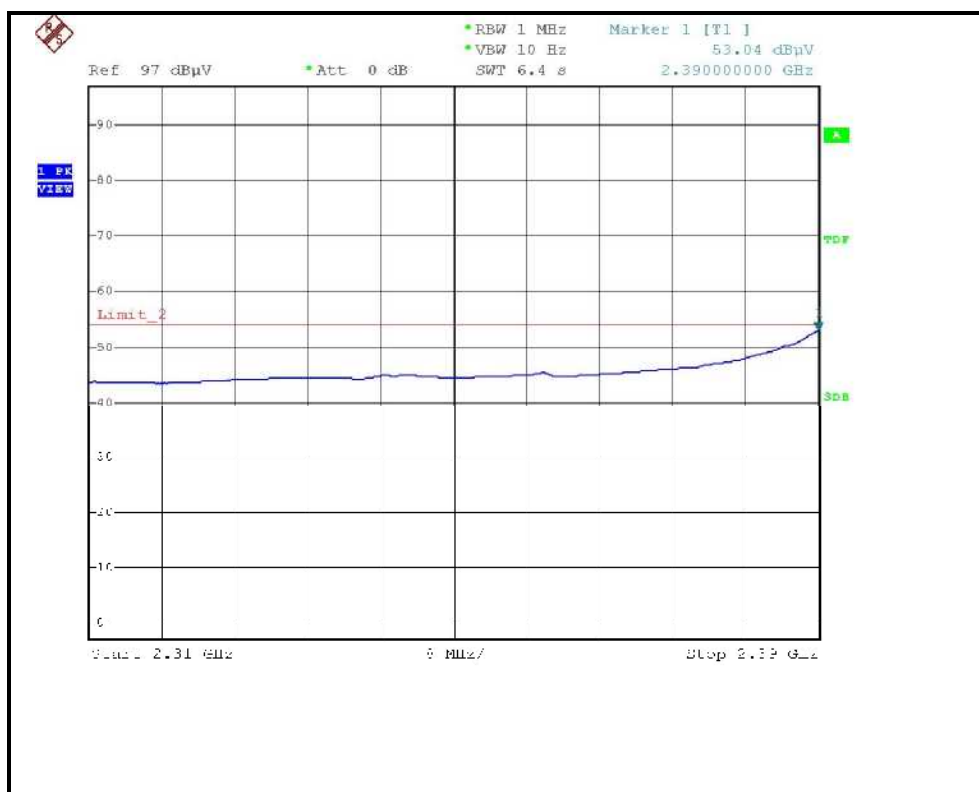
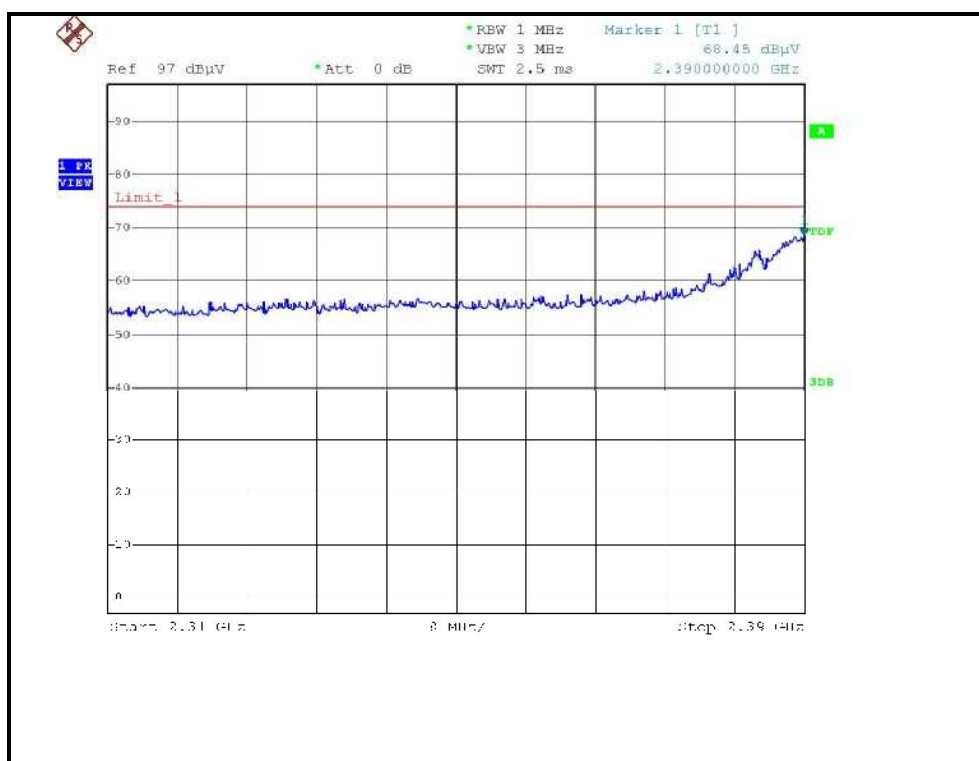
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.30 PK			1.30 H	170	68.96	30.34
2	*2462.00	88.50 AV			1.30 H	170	58.16	30.34
3	2483.50	57.40 PK	74.00	-16.60	1.30 H	170	26.97	30.43
4	2483.50	45.40 AV	54.00	-8.60	1.30 H	170	14.97	30.43
5	4924.00	44.70 PK	74.00	-29.30	1.04 H	212	9.07	35.63
6	4924.00	31.80 AV	54.00	-22.20	1.04 H	212	-3.83	35.63
7	7386.00	56.10 PK	74.00	-17.90	1.19 H	257	13.87	42.23
8	7386.00	41.70 AV	54.00	-12.30	1.19 H	257	-0.53	42.23
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	111.80 PK			1.00 V	343	81.46	30.34
2	*2462.00	101.60 AV			1.00 V	343	71.26	30.34
3	2483.50	68.88 PK	74.00	-5.12	1.00 V	341	38.45	30.43
4	2483.50	52.95 AV	54.00	-1.05	1.00 V	341	22.52	30.43
5	4924.00	45.60 PK	74.00	-28.40	1.11 V	284	9.97	35.63
6	4924.00	32.20 AV	54.00	-21.80	1.11 V	284	-3.43	35.63
7	7386.00	57.60 PK	74.00	-16.40	1.14 V	126	15.37	42.23
8	7386.00	43.60 AV	54.00	-10.40	1.14 V	126	1.37	42.23

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

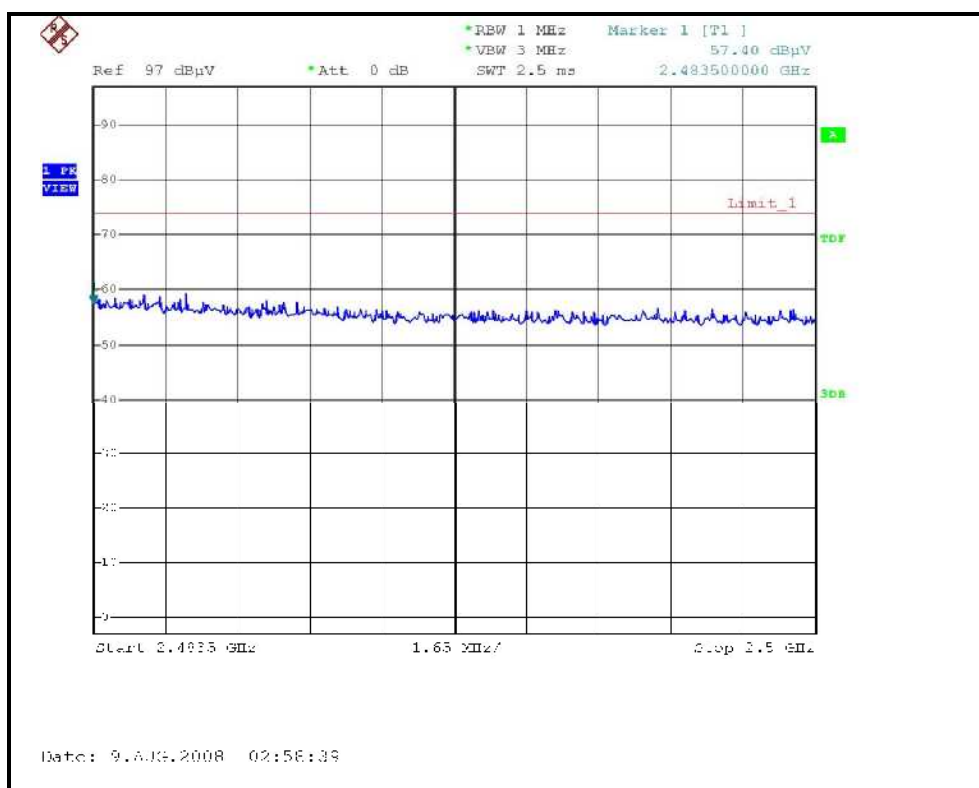
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)



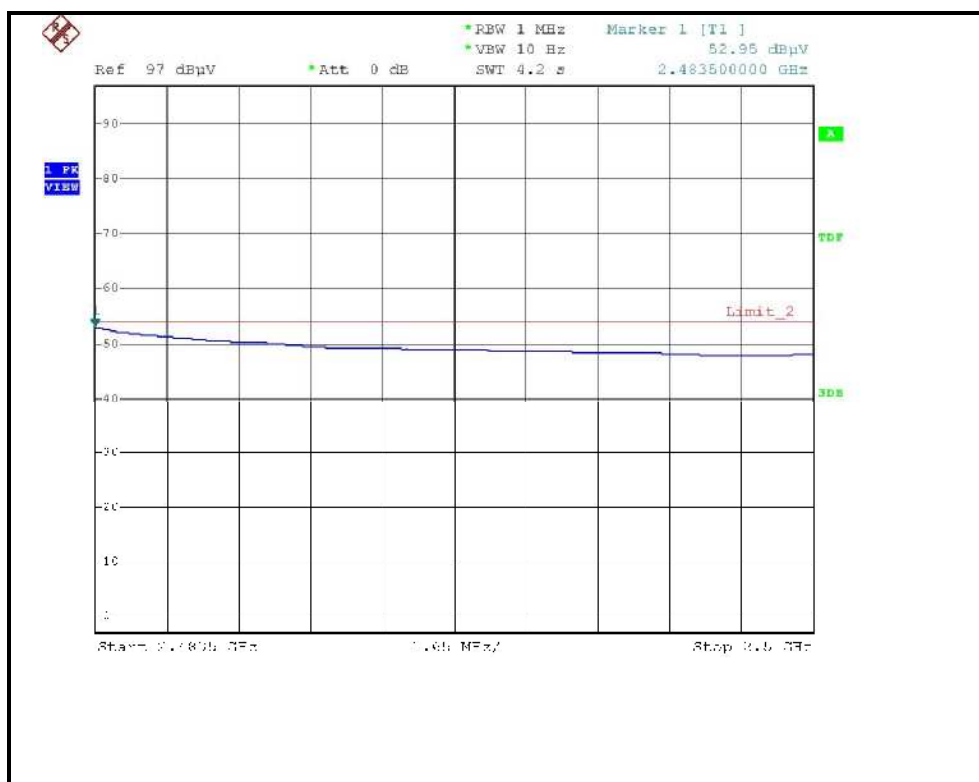
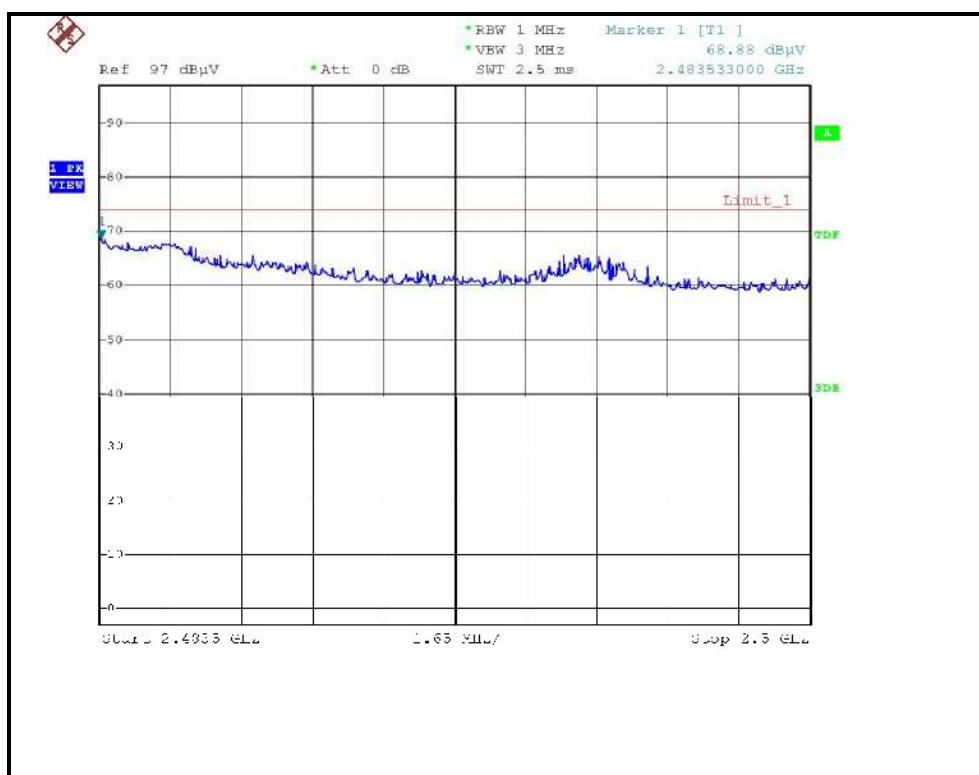
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11g MODE, CH11, VERTICAL)



DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	56.03 PK	74.00	-17.97	1.05 H	321	25.97	30.06
2	2390.00	45.01 AV	54.00	-8.99	1.05 H	321	14.95	30.06
3	*2412.00	99.40 PK			1.05 H	321	69.25	30.15
4	*2412.00	88.30 AV			1.05 H	321	58.15	30.15
5	4824.00	44.30 PK	74.00	-29.70	1.21 H	107	8.84	35.46
6	4824.00	31.80 AV	54.00	-22.20	1.21 H	107	-3.66	35.46
7	7236.00	51.90 PK	74.00	-22.10	1.00 H	25	10.05	41.85
8	7236.00	38.90 AV	54.00	-15.10	1.00 H	25	-2.95	41.85
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	2390.00	66.89 PK	74.00	-7.11	1.04 V	341	36.83	30.06
2	2390.00	52.89 AV	54.00	-1.11	1.04 V	341	22.83	30.06
3	*2412.00	111.80 PK			1.00 V	342	81.65	30.15
4	*2412.00	100.40 AV			1.00 V	342	70.25	30.15
5	4824.00	45.20 PK	74.00	-28.80	1.21 V	273	9.74	35.46
6	4824.00	32.10 AV	54.00	-21.90	1.21 V	273	-3.36	35.46
7	7236.00	55.30 PK	74.00	-18.70	1.14 V	144	13.45	41.85
8	7236.00	40.50 AV	54.00	-13.50	1.14 V	144	-1.35	41.85

- 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.
 5. " * ": Fundamental frequency.
 6. "#": The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	100.66 PK			1.00 H	322	70.42	30.24
2	*2437.00	89.90 AV			1.00 H	322	59.66	30.24
3	4874.00	45.20 PK	74.00	-28.80	1.27 H	109	9.65	35.55
4	4874.00	32.10 AV	54.00	-21.90	1.27 H	109	-3.45	35.55
5	7311.00	52.30 PK	74.00	-21.70	1.00 H	27	10.26	42.04
6	7311.00	39.30 AV	54.00	-14.70	1.00 H	27	-2.74	42.04
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	114.10 PK			1.00 V	327	83.86	30.24
2	*2437.00	103.10 AV			1.00 V	327	72.86	30.24
3	4874.00	46.00 PK	74.00	-28.00	1.20 V	256	10.45	35.55
4	4874.00	32.60 AV	54.00	-21.40	1.20 V	256	-2.95	35.55
5	7311.00	55.40 PK	74.00	-18.60	1.14 V	125	13.36	42.04
6	7311.00	41.00 AV	54.00	-13.00	1.14 V	125	-1.04	42.04

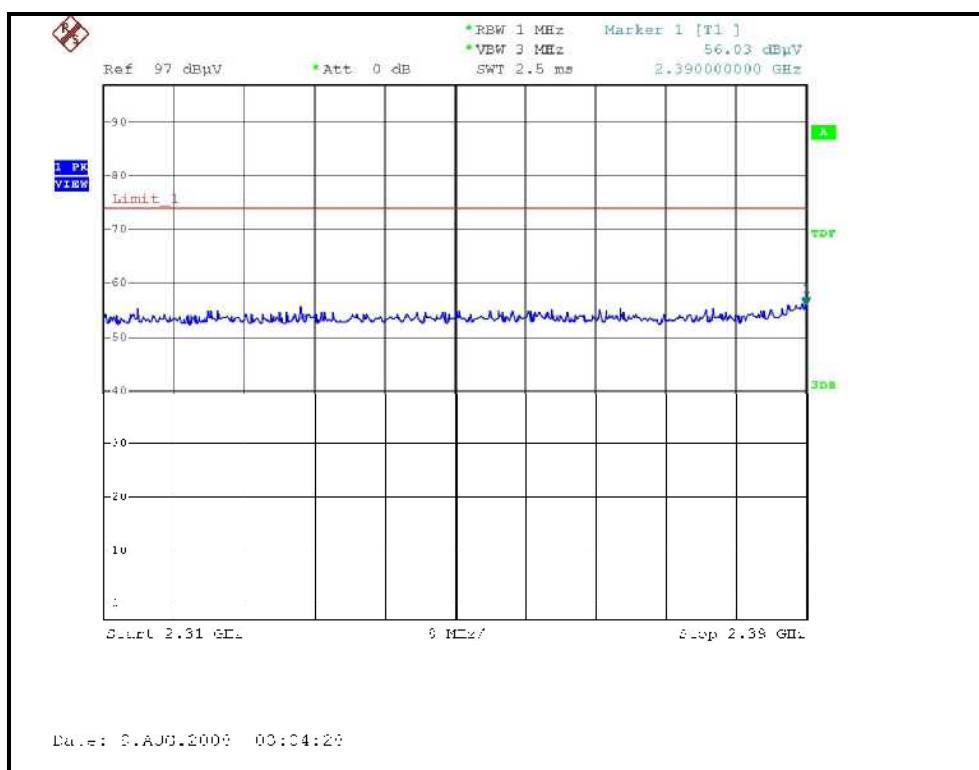
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex Huang

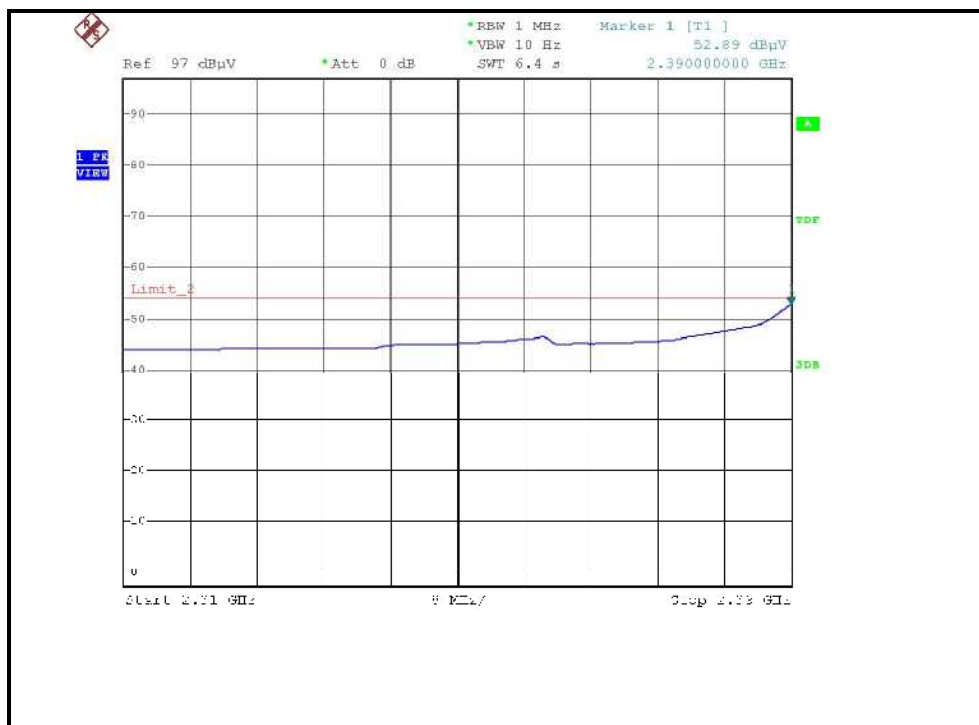
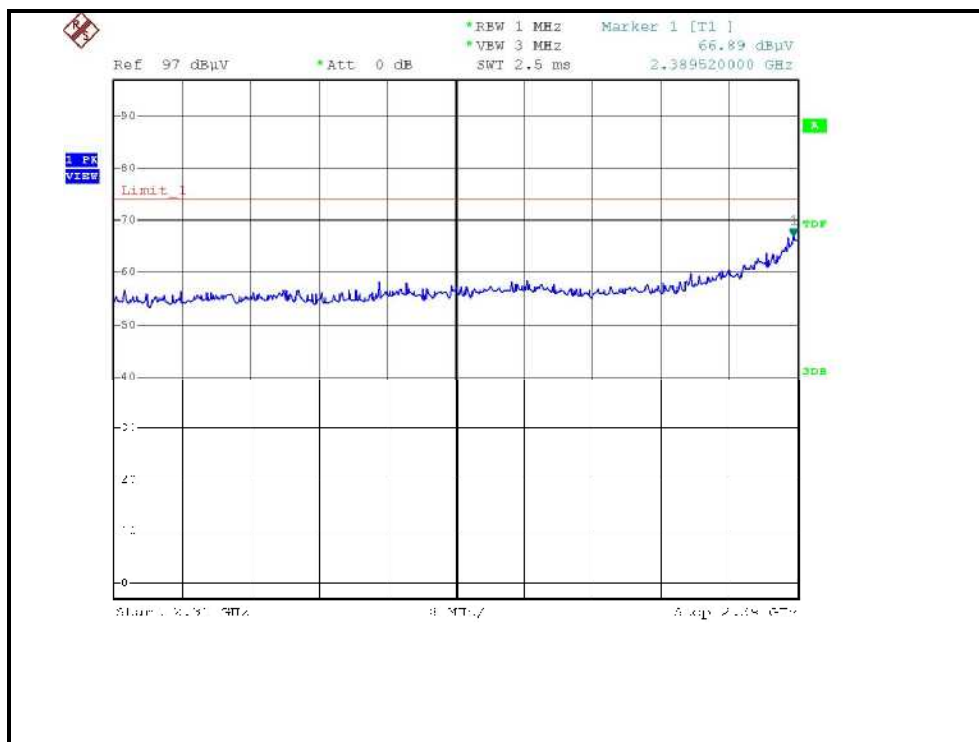
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.60 PK			1.00 H	321	70.26	30.34
2	*2462.00	88.70 AV			1.00 H	321	58.36	30.34
3	2483.50	59.33 PK	74.00	-14.67	1.00 H	321	28.90	30.43
4	2483.50	44.29 AV	54.00	-9.71	1.00 H	321	13.86	30.43
5	4924.00	44.10 PK	74.00	-29.90	1.11 H	109	8.47	35.63
6	4924.00	31.40 AV	54.00	-22.60	1.11 H	109	-4.23	35.63
7	7386.00	51.80 PK	74.00	-22.20	1.00 H	22	9.57	42.23
8	7386.00	38.60 AV	54.00	-15.40	1.00 H	22	-3.63	42.23
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	112.80 PK			1.00 V	344	82.46	30.34
2	*2462.00	101.20 AV			1.00 V	344	70.86	30.34
3	2483.50	67.26 PK	74.00	-6.74	1.00 V	341	36.83	30.43
4	2483.50	52.98 AV	54.00	-1.02	1.00 V	341	22.55	30.43
5	4924.00	45.00 PK	74.00	-29.00	1.19 V	243	9.37	35.63
6	4924.00	31.80 AV	54.00	-22.20	1.19 V	243	-3.83	35.63
7	7386.00	54.90 PK	74.00	-19.10	1.13 V	156	12.67	42.23
8	7386.00	40.20 AV	54.00	-13.80	1.13 V	156	-2.03	42.23

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

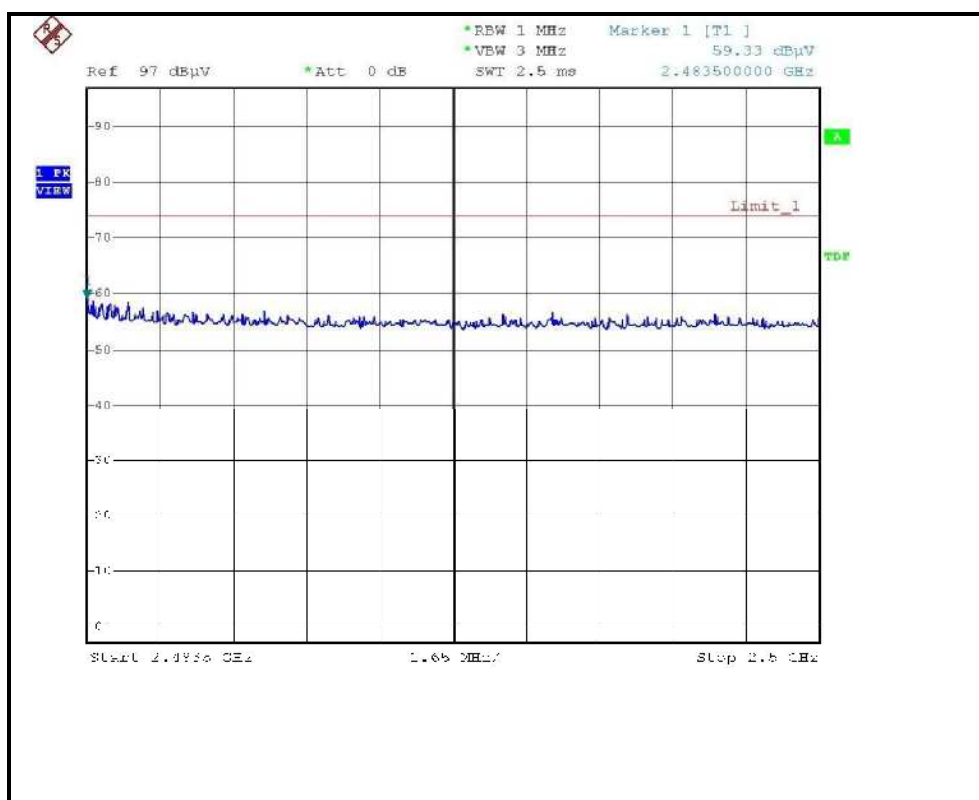
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH1, HORIZONTAL)



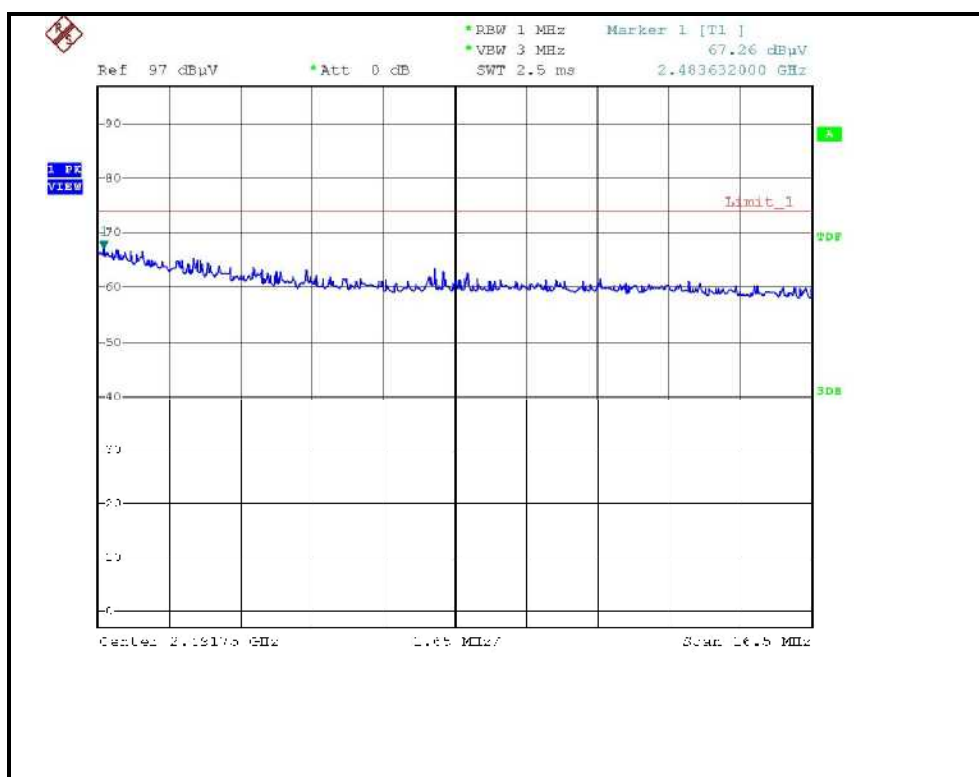
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)



RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH11, HORIZONTAL)



RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, VERTICAL)



DRAFT 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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	56.76 PK	74.00	-17.24	1.04 H	322	26.70	30.06
2	2390.00	45.09 AV	54.00	-8.91	1.04 H	322	15.03	30.06
3	*2422.00	94.70 PK			1.04 H	322	64.51	30.19
4	*2422.00	83.80 AV			1.04 H	322	53.61	30.19
5	4844.00	41.30 PK	74.00	-32.70	1.27 H	109	5.80	35.50
6	4844.00	29.50 AV	54.00	-24.50	1.27 H	109	-6.00	35.50
7	7266.00	47.30 PK	74.00	-26.70	1.00 H	24	5.37	41.93
8	7266.00	34.30 AV	54.00	-19.70	1.00 H	24	-7.63	41.93
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	64.76 PK	74.00	-9.24	1.02 V	341	34.70	30.06
2	2390.00	52.71 AV	54.00	-1.29	1.02 V	341	22.65	30.06
3	*2422.00	107.20 PK			1.00 V	344	77.01	30.19
4	*2422.00	95.90 AV			1.00 V	344	65.71	30.19
5	4844.00	42.10 PK	74.00	-31.90	1.26 V	223	6.60	35.50
6	4844.00	30.60 AV	54.00	-23.40	1.26 V	223	-4.90	35.50
7	7266.00	50.30 PK	74.00	-23.70	1.28 V	144	8.37	41.93
8	7266.00	36.20 AV	54.00	-17.80	1.28 V	144	-5.73	41.93

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex 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			1.00 H	322	67.36	30.24
2	*2437.00	87.40 AV			1.00 H	322	57.16	30.24
3	4874.00	42.60 PK	74.00	-31.40	1.24 H	111	7.05	35.55
4	4874.00	30.40 AV	54.00	-23.60	1.24 H	111	-5.15	35.55
5	7311.00	50.10 PK	74.00	-23.90	1.00 H	32	8.06	42.04
6	7311.00	36.40 AV	54.00	-17.60	1.00 H	32	-5.64	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.20 PK			1.00 V	347	79.96	30.24
2	*2437.00	98.30 AV			1.00 V	347	68.06	30.24
3	4874.00	44.20 PK	74.00	-29.80	1.27 V	244	8.65	35.55
4	4874.00	31.50 AV	54.00	-22.50	1.27 V	244	-4.05	35.55
5	7311.00	52.00 PK	74.00	-22.00	1.35 V	122	9.96	42.04
6	7311.00	38.40 AV	54.00	-15.60	1.35 V	122	-3.64	42.04

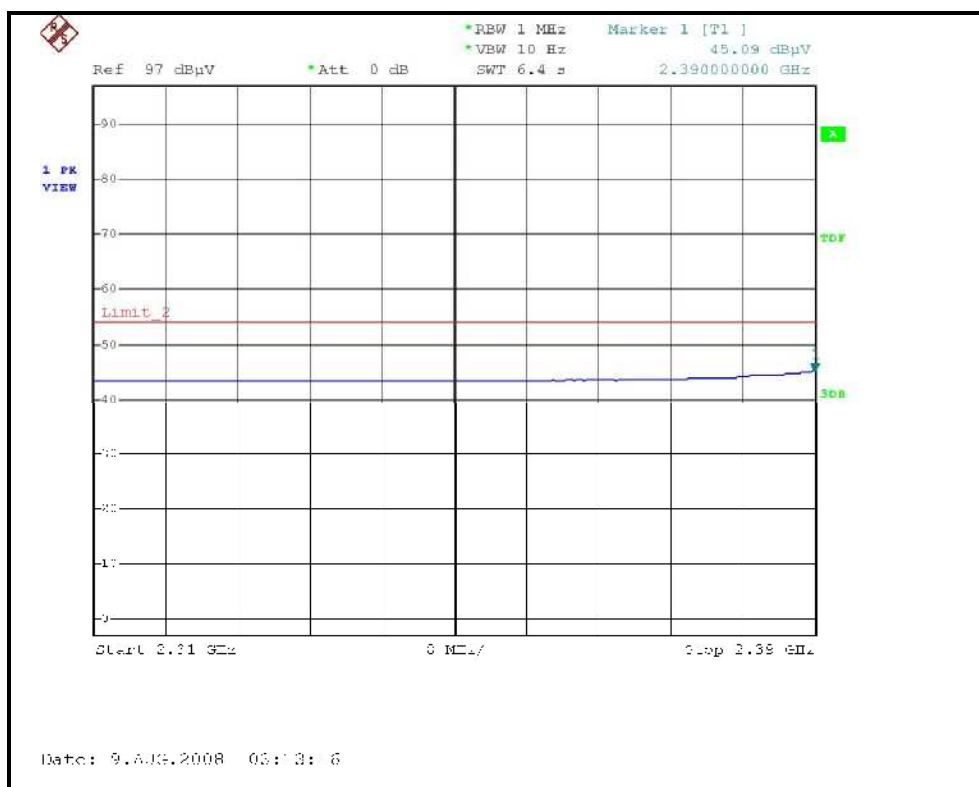
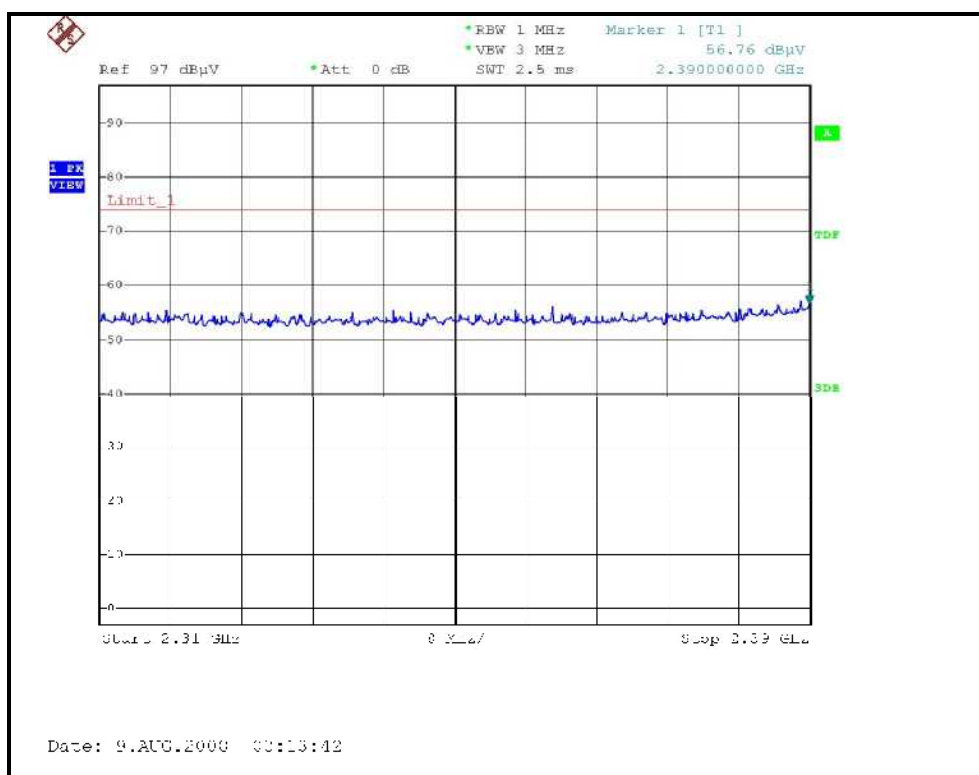
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ”: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 57%RH 965hPa	TESTED BY	Rex Huang

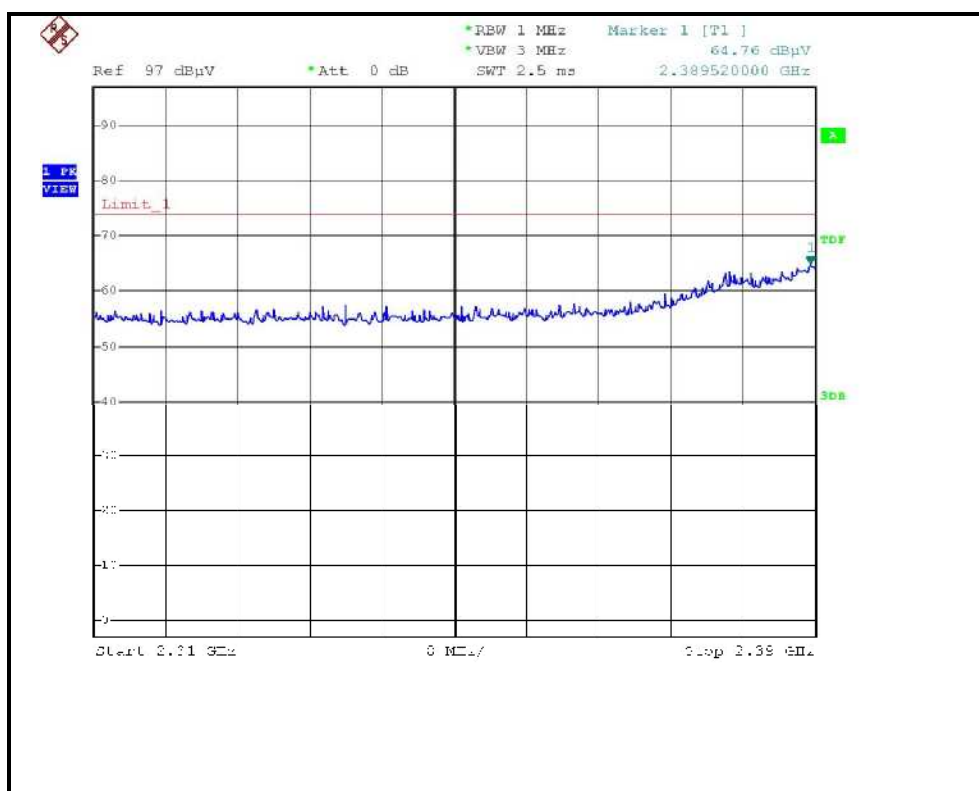
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	96.20 PK			1.00 H	321	65.90	30.30
2	*2452.00	84.80 AV			1.00 H	321	54.50	30.30
3	2483.50	54.74 PK	74.00	-19.26	1.00 H	321	24.31	30.43
4	2483.50	44.23 AV	54.00	-9.77	1.00 H	321	13.80	30.43
5	4904.00	41.10 PK	74.00	-32.90	1.10 H	121	5.50	35.60
6	4904.00	29.70 AV	54.00	-24.30	1.10 H	121	-5.90	35.60
7	7356.00	47.40 PK	74.00	-26.60	1.00 H	39	5.24	42.16
8	7356.00	34.60 AV	54.00	-19.40	1.00 H	39	-7.56	42.16
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	128.50 PK			1.00 V	344	98.20	30.30
2	*2452.00	96.40 AV			1.00 V	344	66.10	30.30
3	2483.50	67.09 PK	74.00	-6.91	1.00 V	341	36.66	30.43
4	2483.50	53.08 AV	54.00	-0.92	1.00 V	341	22.65	30.43
5	4904.00	42.00 PK	74.00	-32.00	1.29 V	231	6.40	35.60
6	4904.00	30.40 AV	54.00	-23.60	1.29 V	231	-5.20	35.60
7	7356.00	50.40 PK	74.00	-23.60	1.37 V	133	8.24	42.16
8	7356.00	36.40 AV	54.00	-17.60	1.37 V	133	-5.76	42.16

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

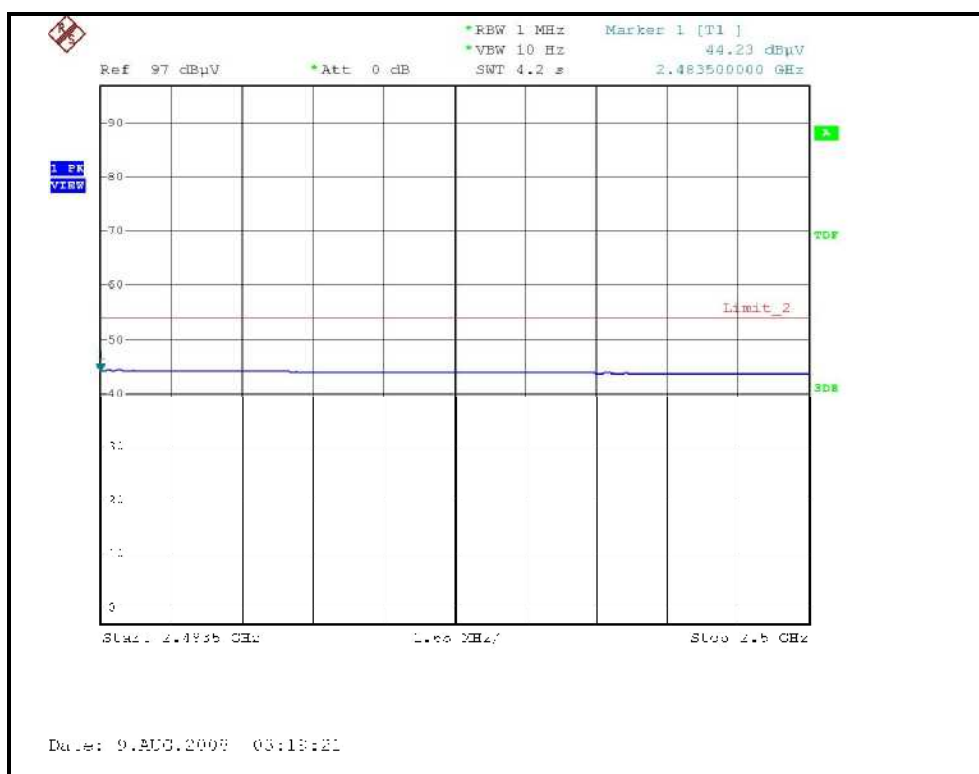
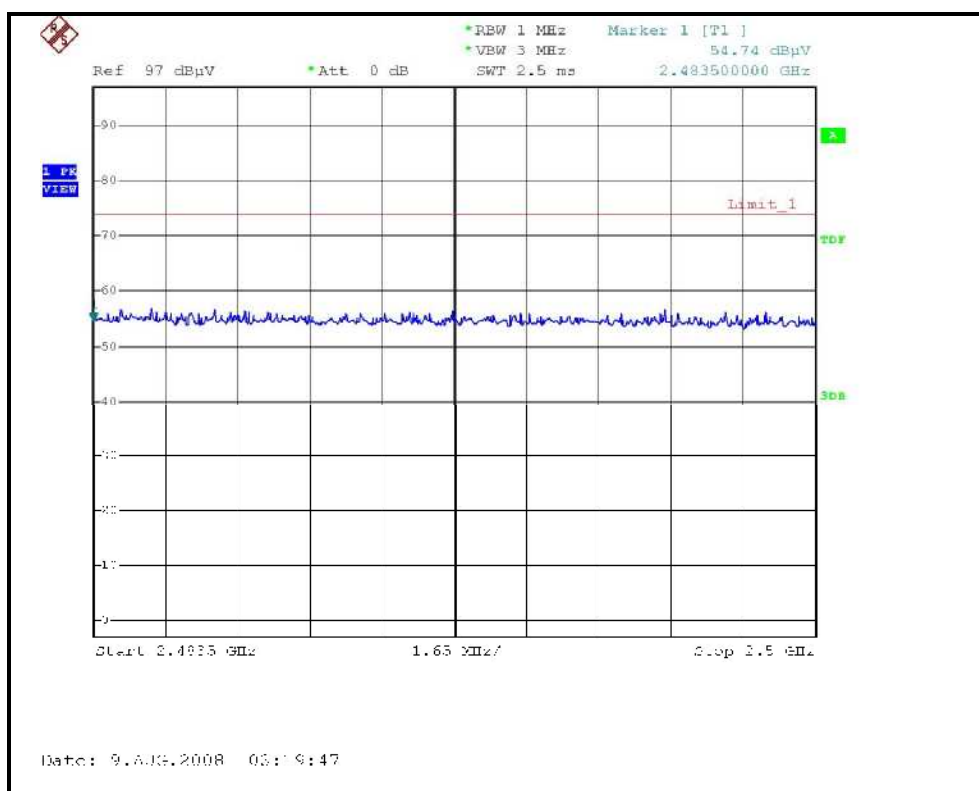
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH1, HORIZONTAL)



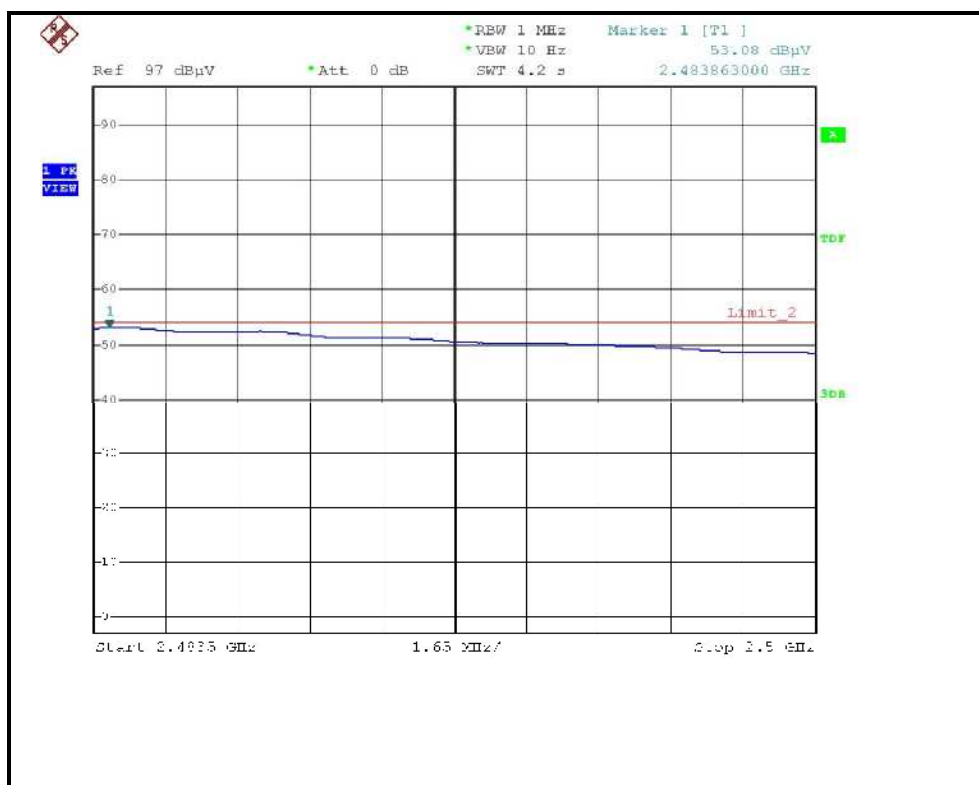
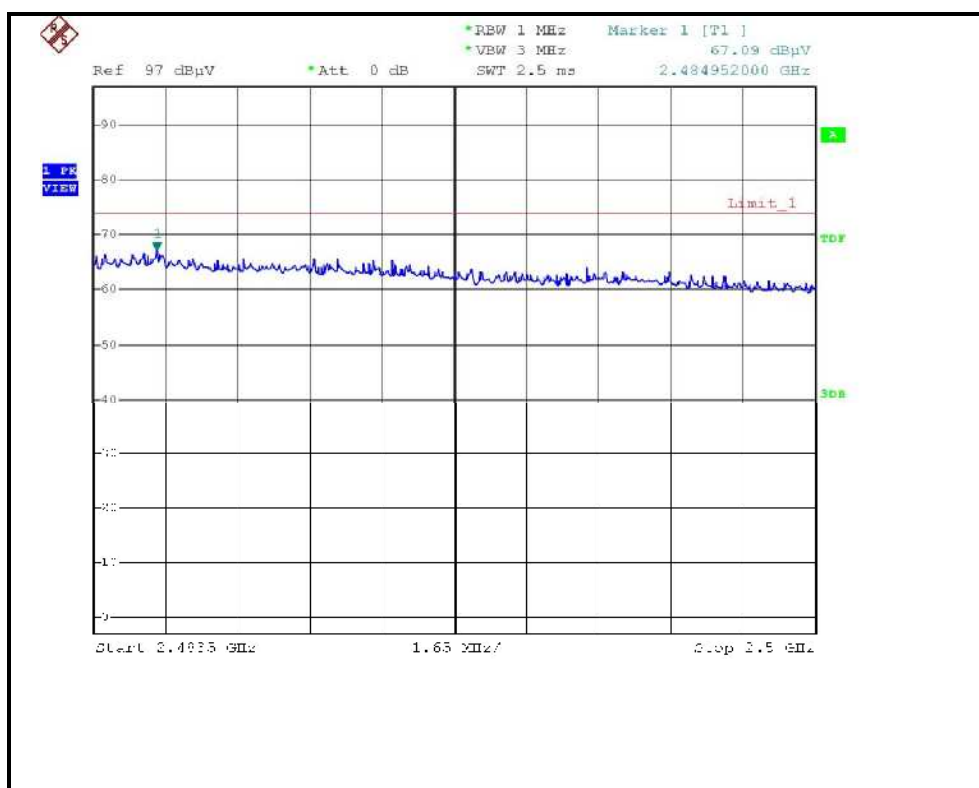
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH1, VERTICAL)



RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, HORIZONTAL)



RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, VERTICAL)



4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

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

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

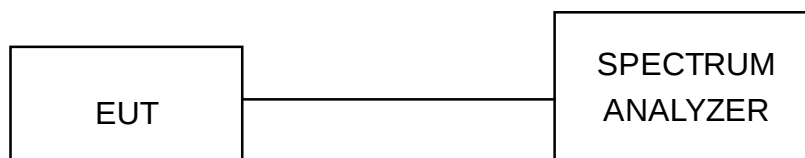
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

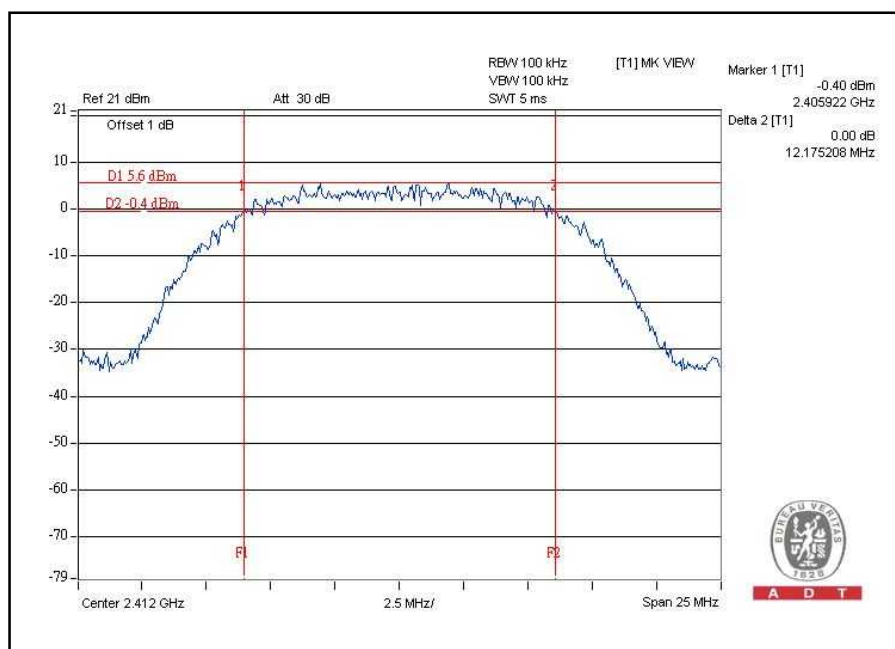
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

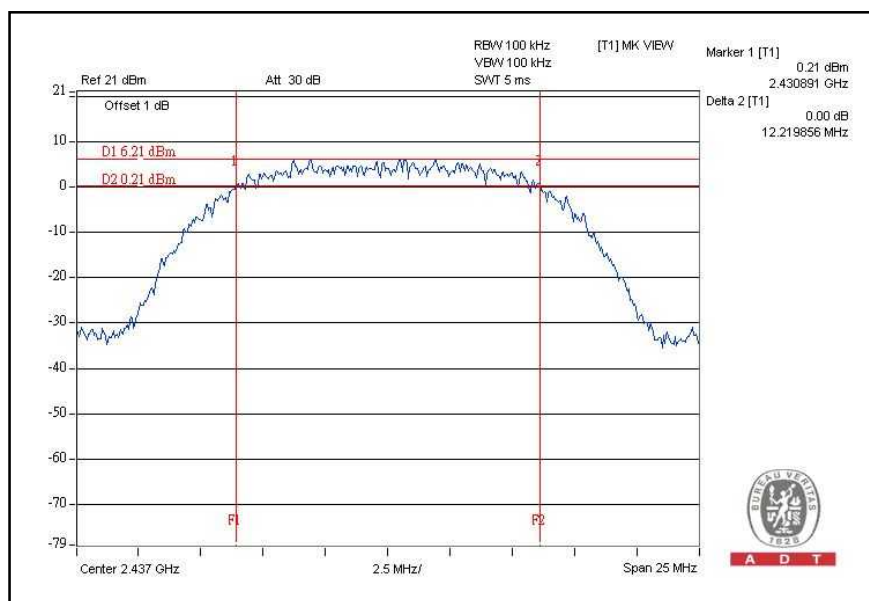
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.18	0.5	PASS
6	2437	12.22	0.5	PASS
11	2462	12.21	0.5	PASS

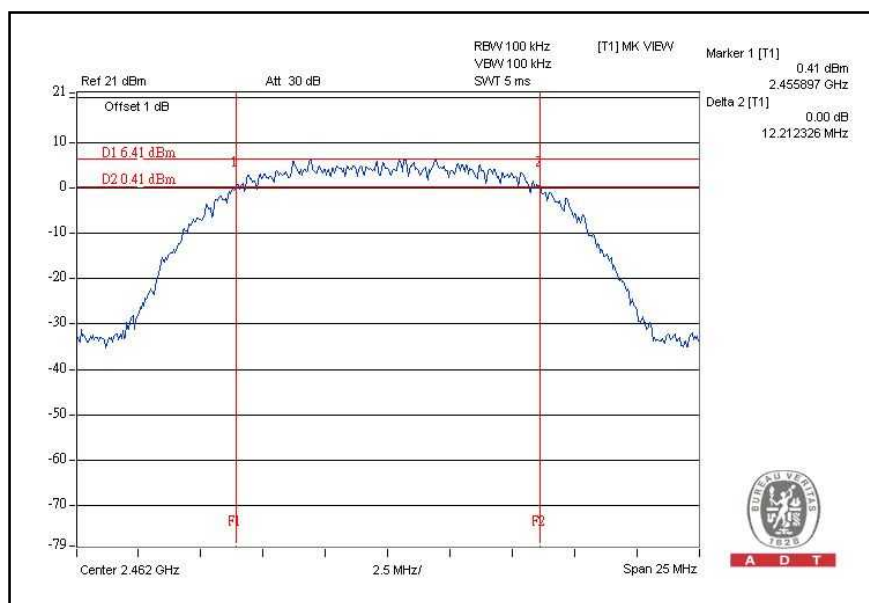
CH1



CH6



CH11

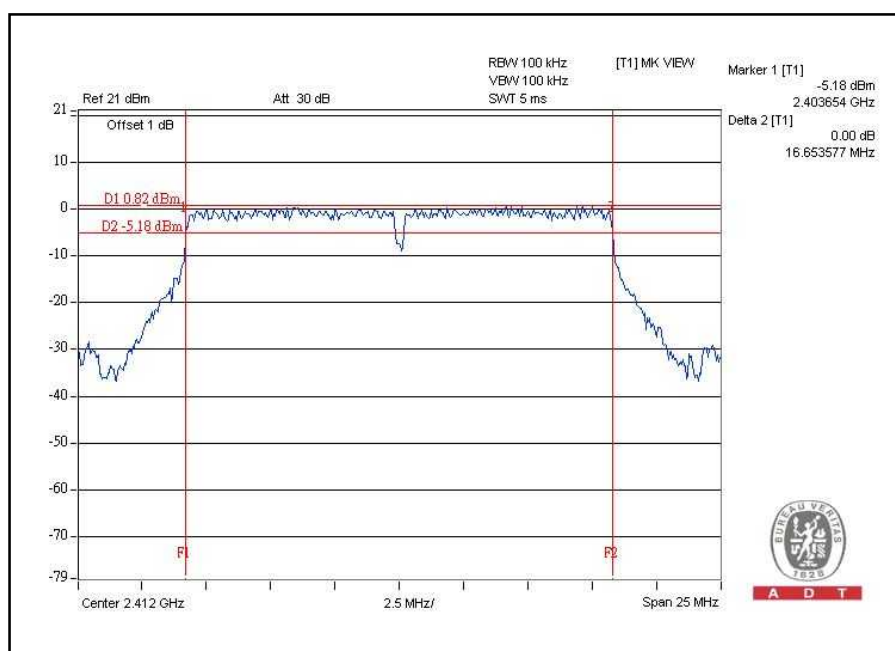


802.11g OFDM MODULATION:

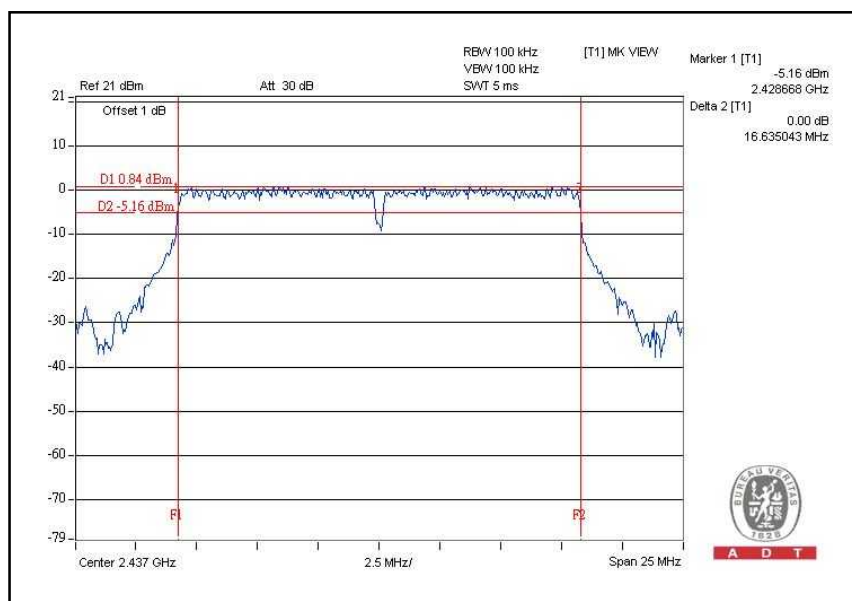
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.65	0.5	PASS
6	2437	16.64	0.5	PASS
11	2462	16.60	0.5	PASS

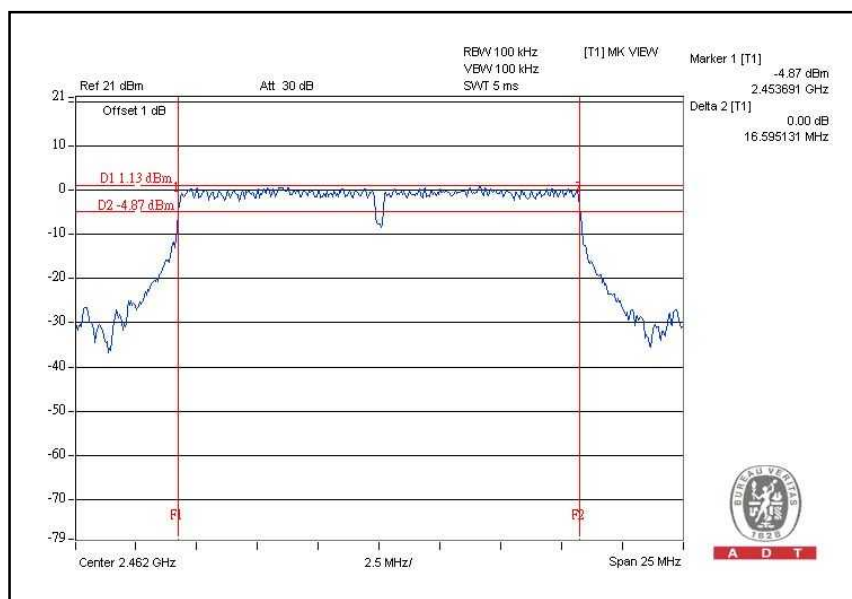
CH1



CH6



CH11

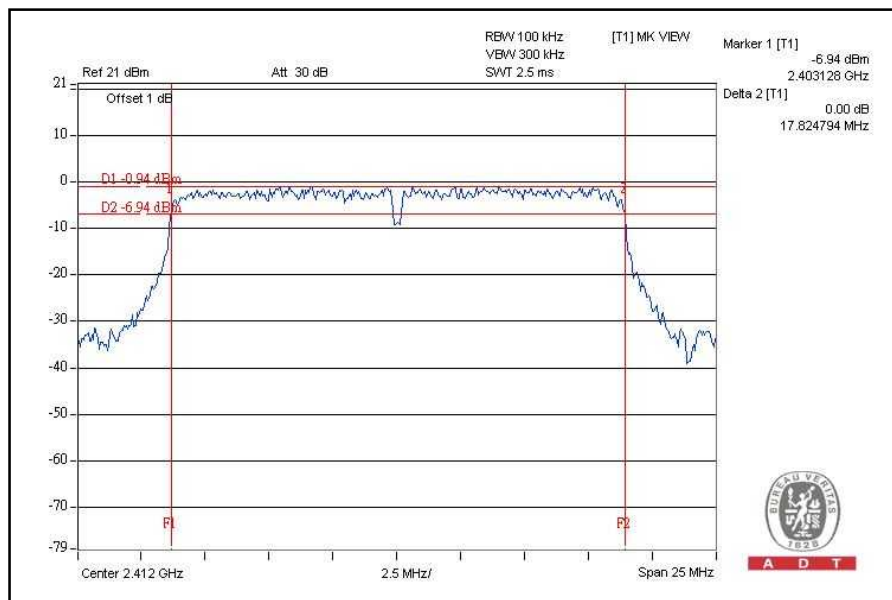


DRAFT 802.11n (20MHz) OFDM MODULATION:

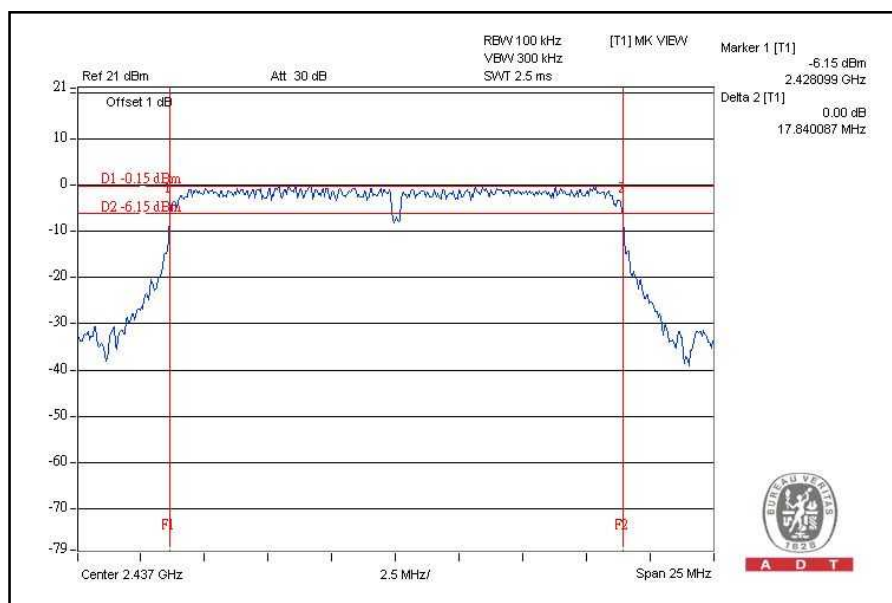
MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	17.82	17.72	0.5	PASS
6	2437	17.84	17.71	0.5	PASS
11	2462	17.76	17.72	0.5	PASS

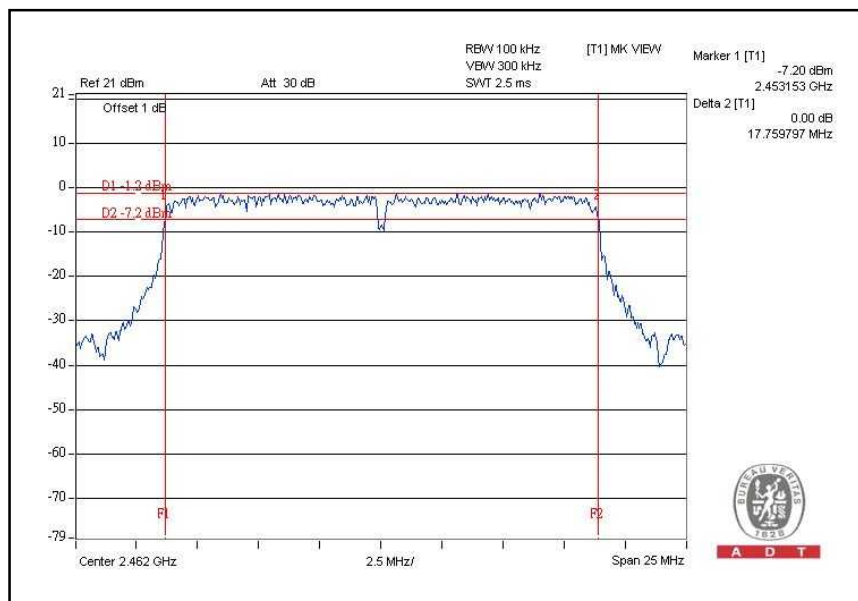
For Chain(0): CH1



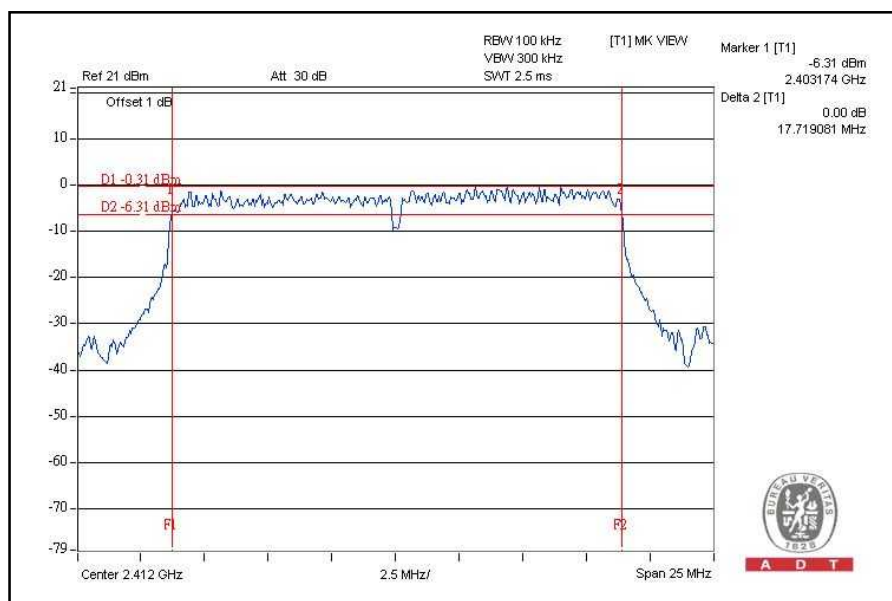
CH6



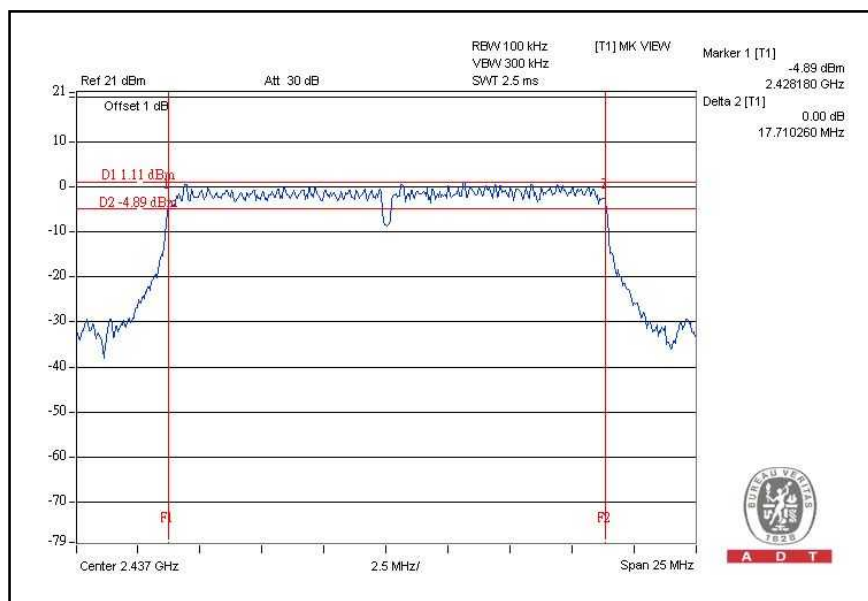
CH11



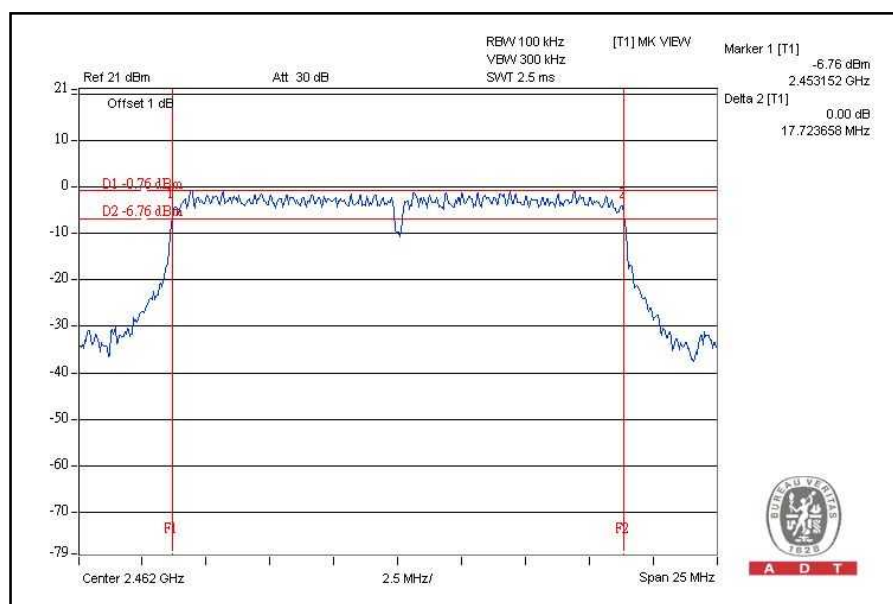
For CHAIN(1): CH1



CH6



CH11

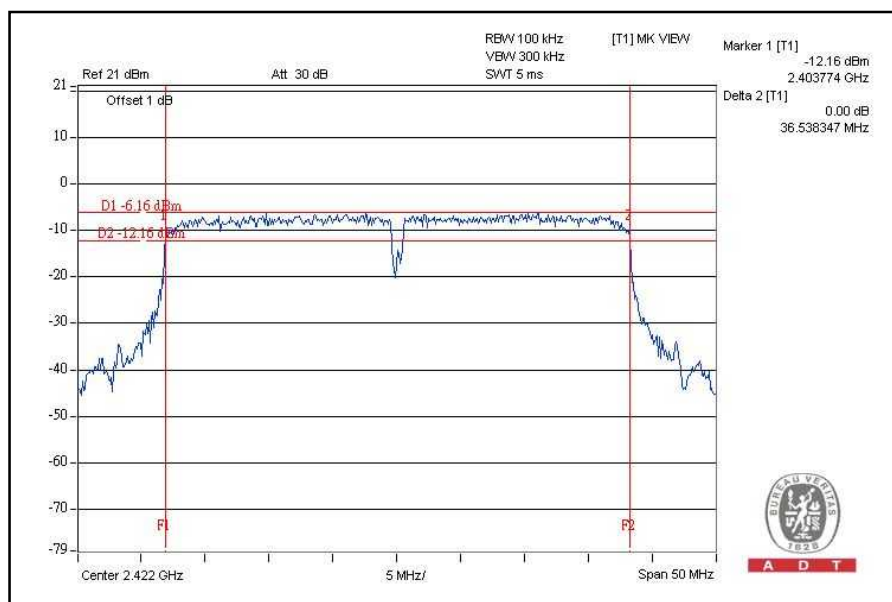


DRAFT 802.11n (40MHz) OFDM MODULATION:

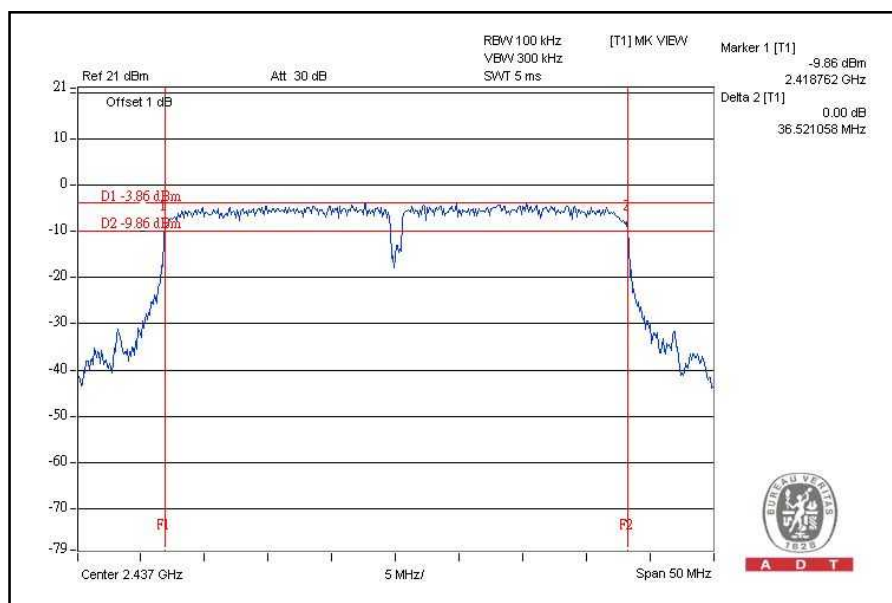
MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2422	36.54	36.22	0.5	PASS
4	2437	36.52	36.46	0.5	PASS
7	2452	36.57	36.43	0.5	PASS

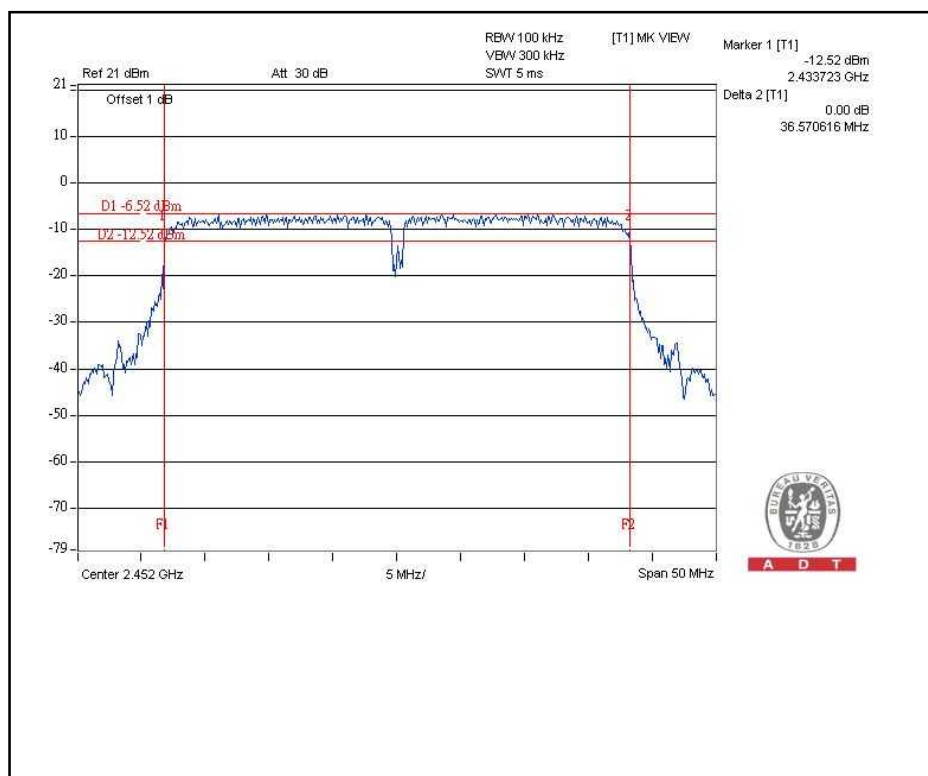
For Chain (0): CH1



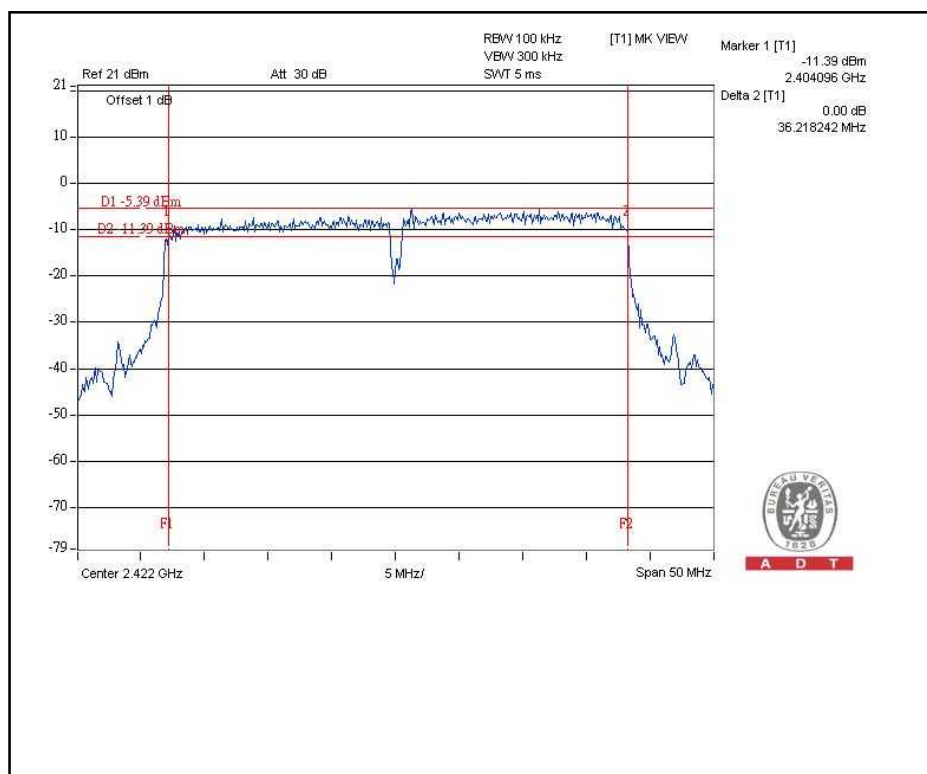
CH4



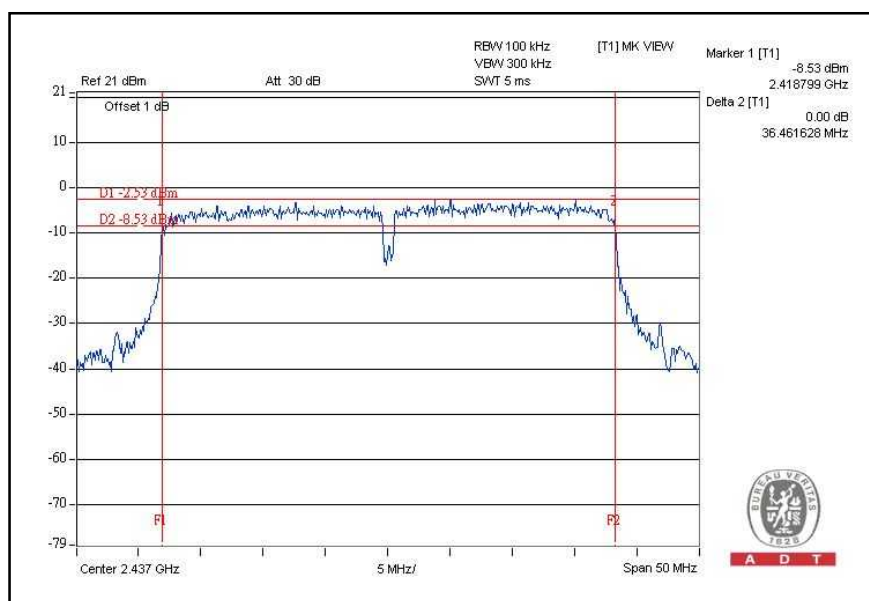
CH7



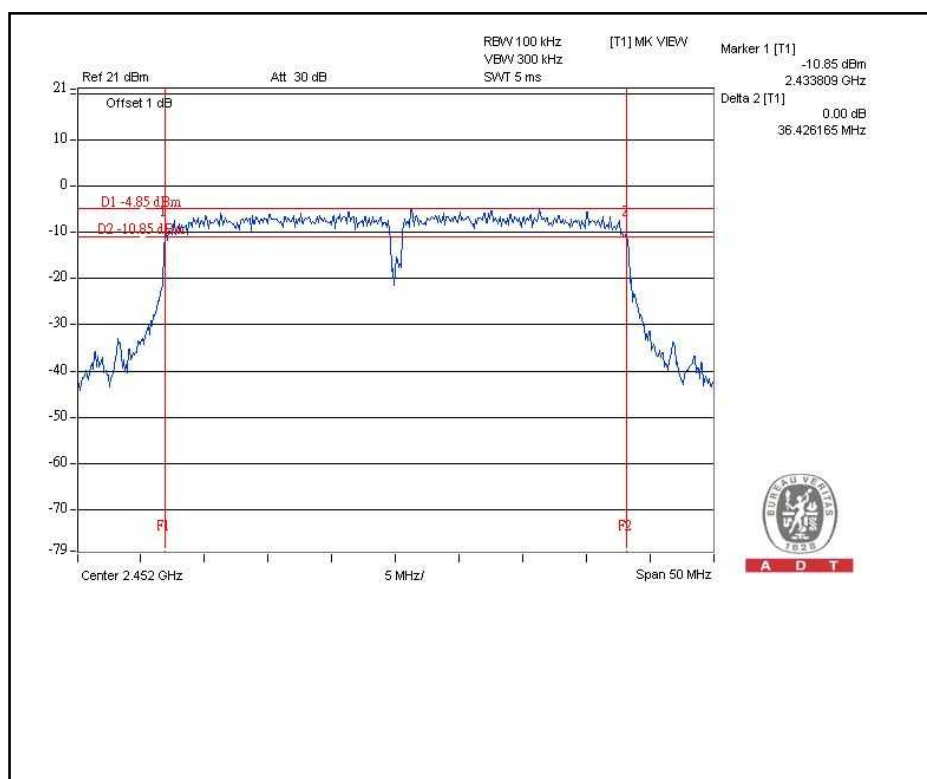
For Chain (1): CH1



CH4



CH7



4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 17, 2008
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 25, 2008
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	July 15, 2009
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 response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b DSSS MODULATION:

MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	69.183	18.40	30	PASS
6	2437	79.433	19.00	30	PASS
11	2462	81.283	19.10	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	75.858	18.80	30	PASS
6	2437	75.858	18.80	30	PASS
11	2462	75.858	18.80	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	48.978	43.652	16.90	16.40	92.630	19.67	30	PASS
6	2437	56.234	57.544	17.50	17.60	113.778	20.56	30	PASS
11	2462	46.774	44.668	16.70	16.50	91.442	19.61	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	26Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	30.200	31.623	14.80	15.00	61.823	17.91	30	PASS
4	2437	50.119	50.119	17.00	17.00	100.238	20.01	30	PASS
7	2452	27.542	29.512	14.40	14.70	57.054	17.56	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.5.3 TEST PROCEDURE

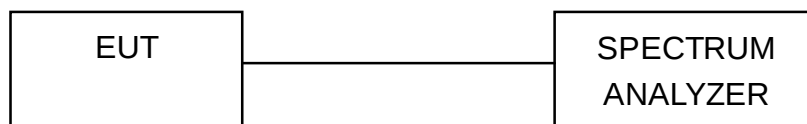
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

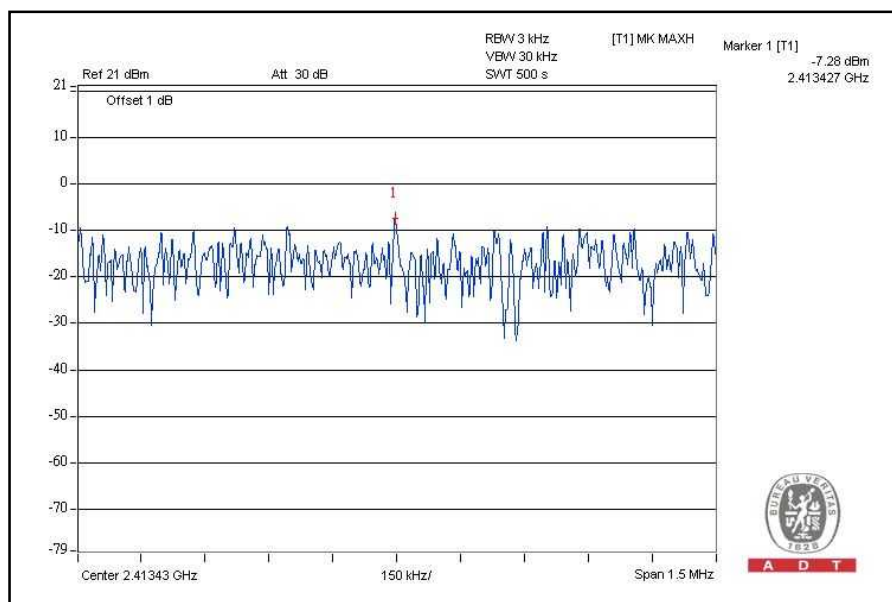
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

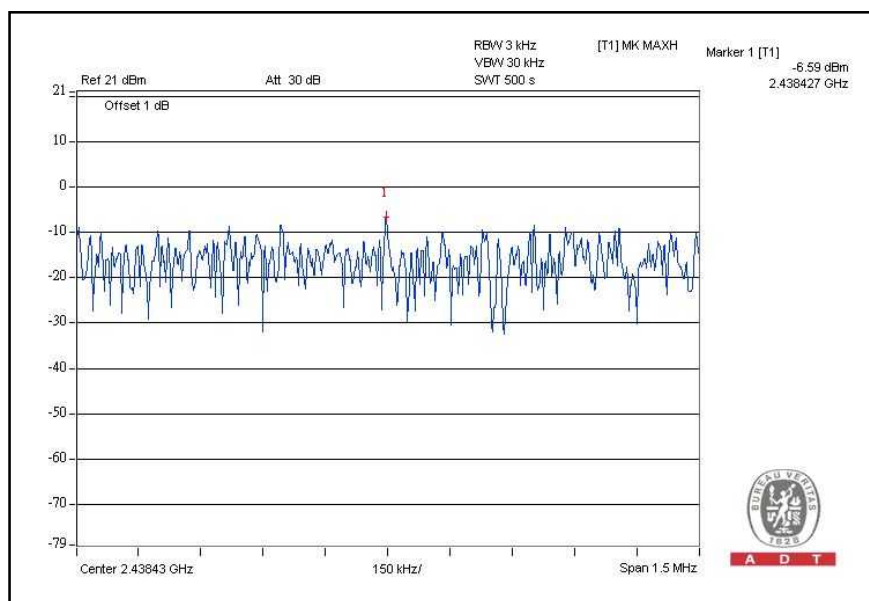
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.28	8	PASS
6	2437	-6.59	8	PASS
11	2462	-6.47	8	PASS

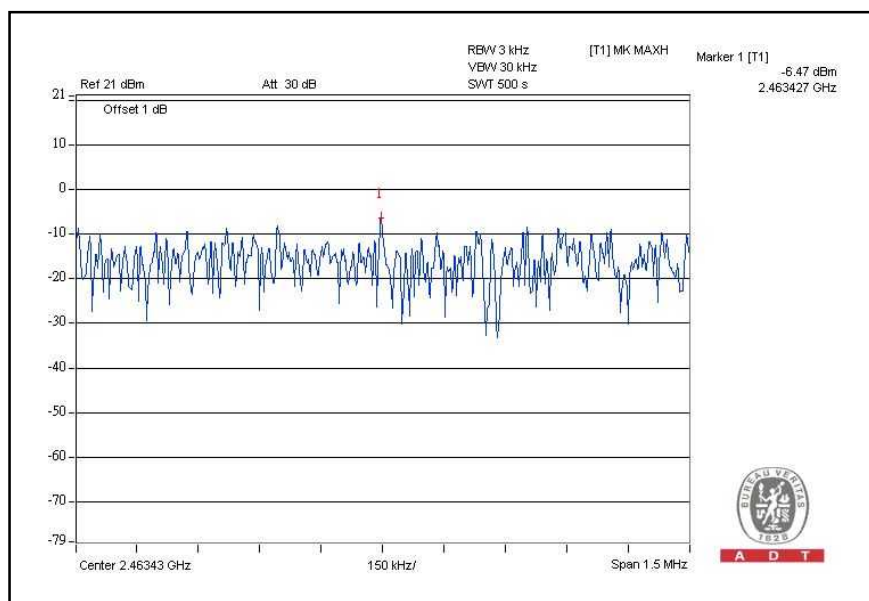
CH1



CH6



CH11

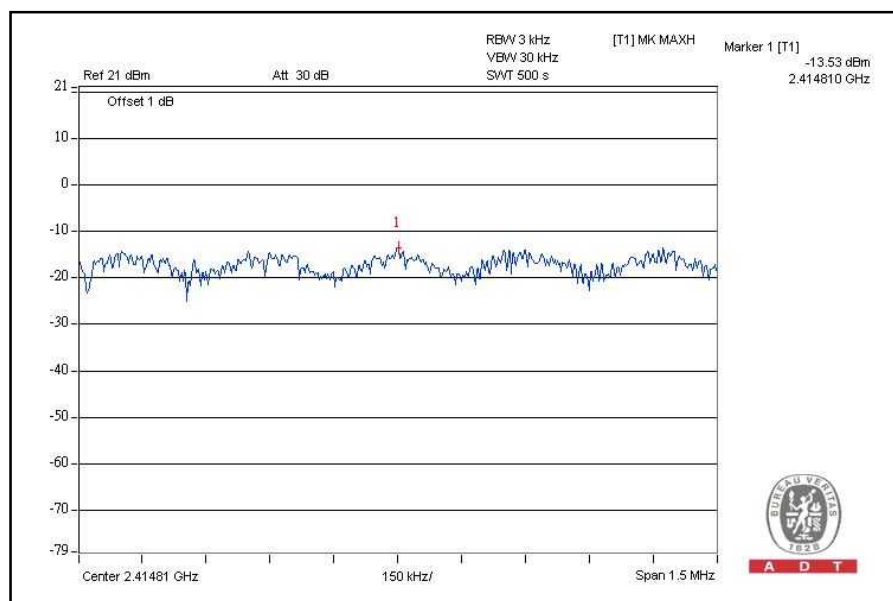


802.11g OFDM MODULATION:

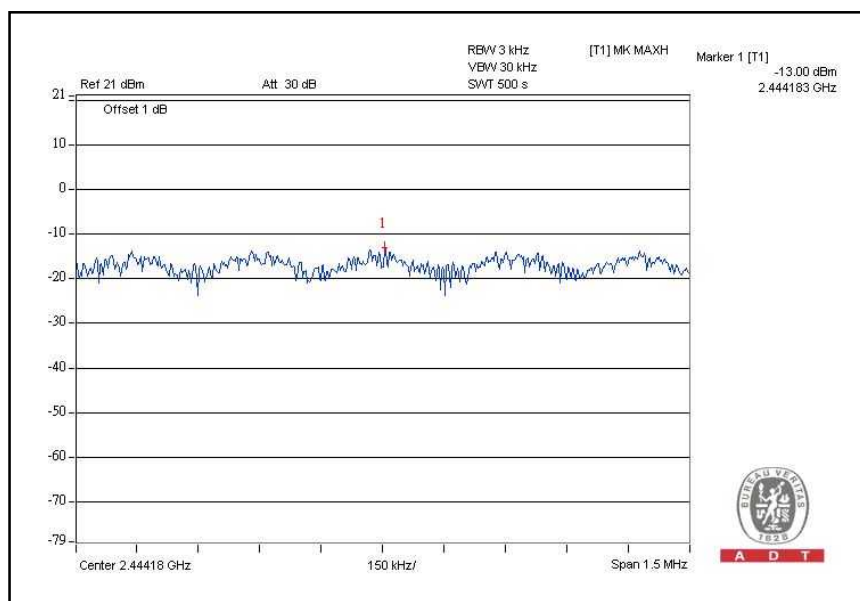
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-13.53	8	PASS
6	2437	-13.00	8	PASS
11	2462	-12.94	8	PASS

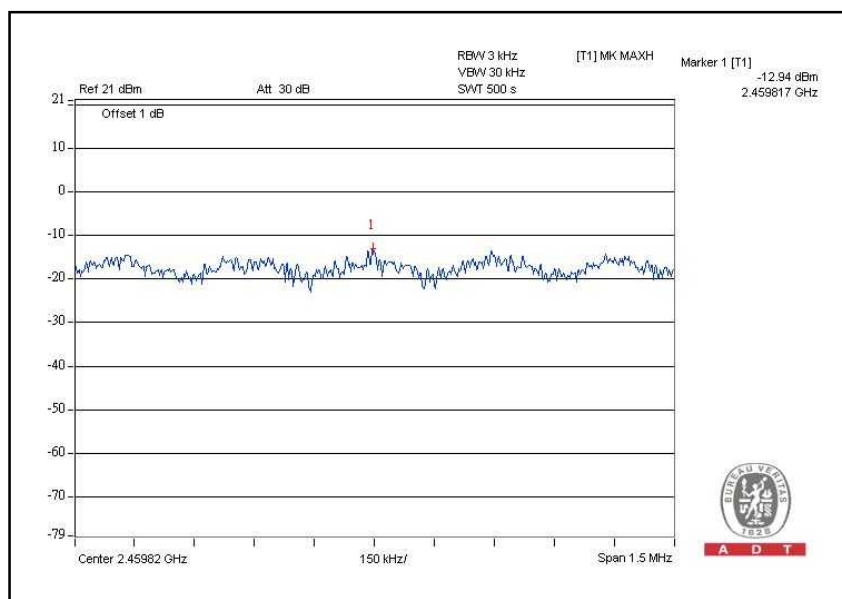
CH1



CH6



CH11

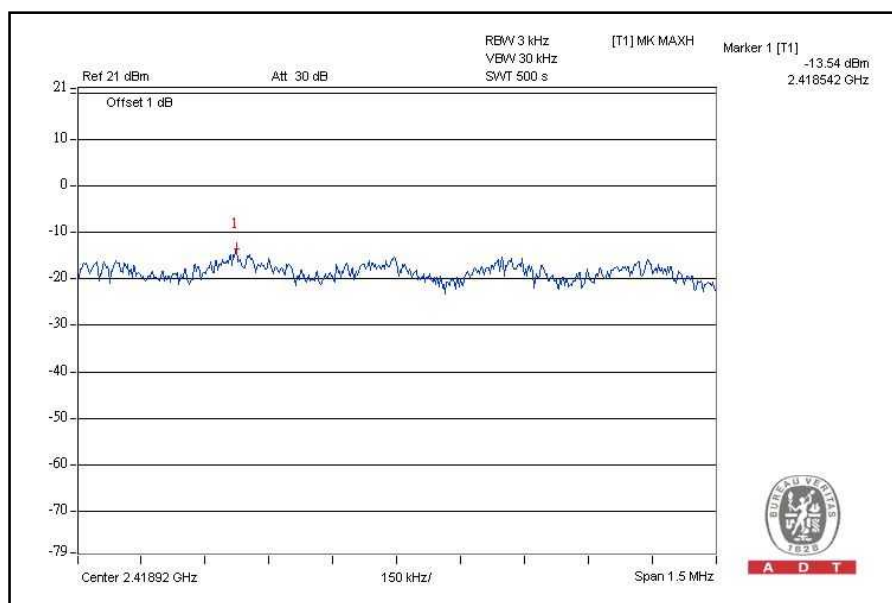


DRAFT 802.11n (20MHz) OFDM MODULATION:

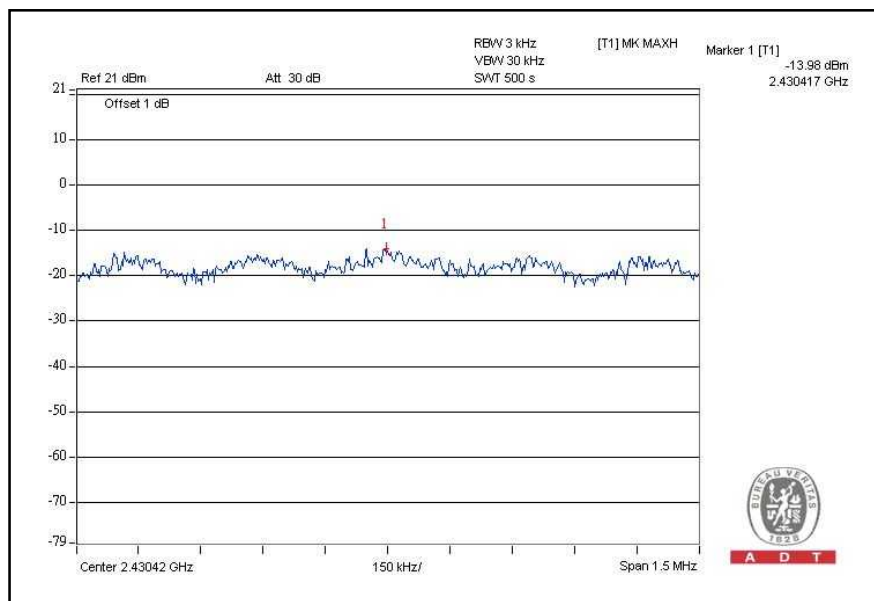
MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	0.044	0.040	-13.54	-14.02	0.084	-10.76	8	PASS
6	2437	0.040	0.052	-13.98	-12.87	0.092	-10.36	8	PASS
11	2462	0.039	0.034	-14.11	-14.64	0.073	-11.37	8	PASS

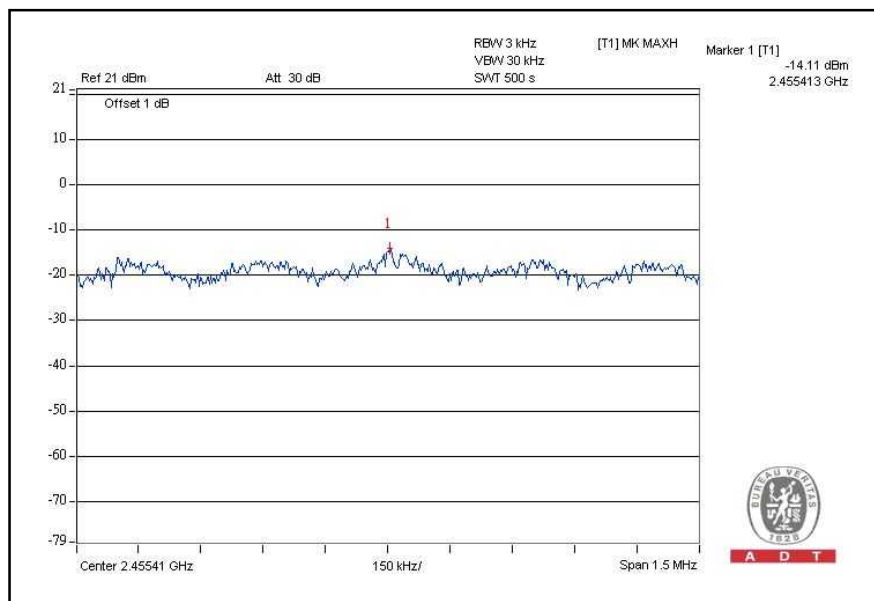
For Chain(0): CH1



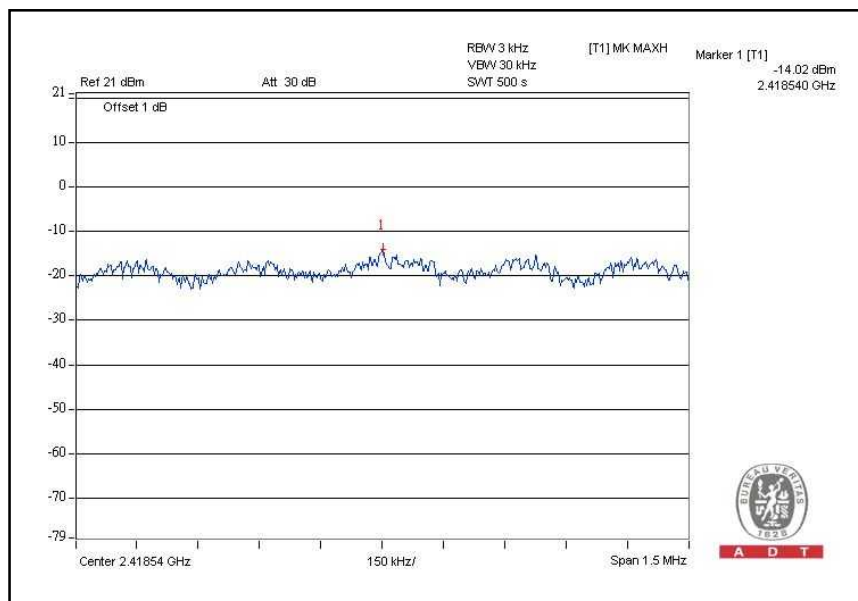
CH6



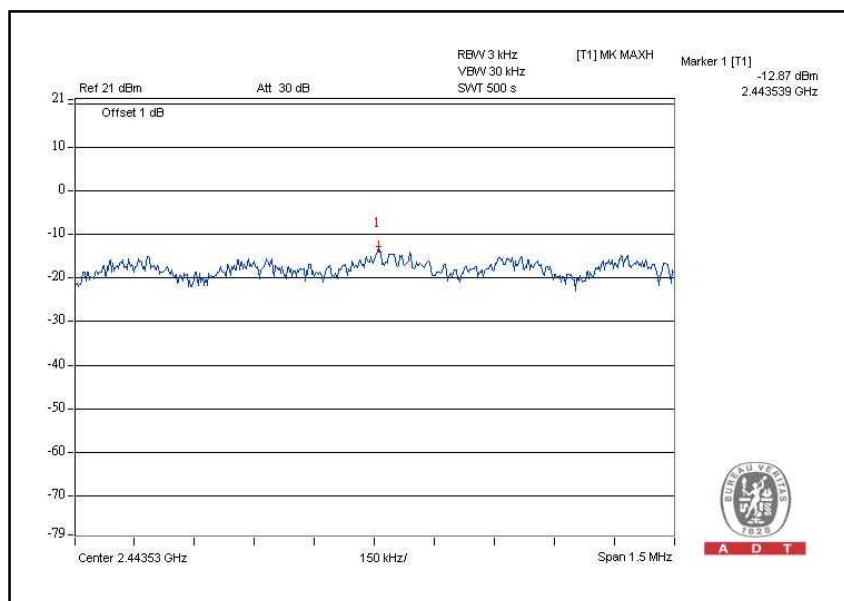
CH11



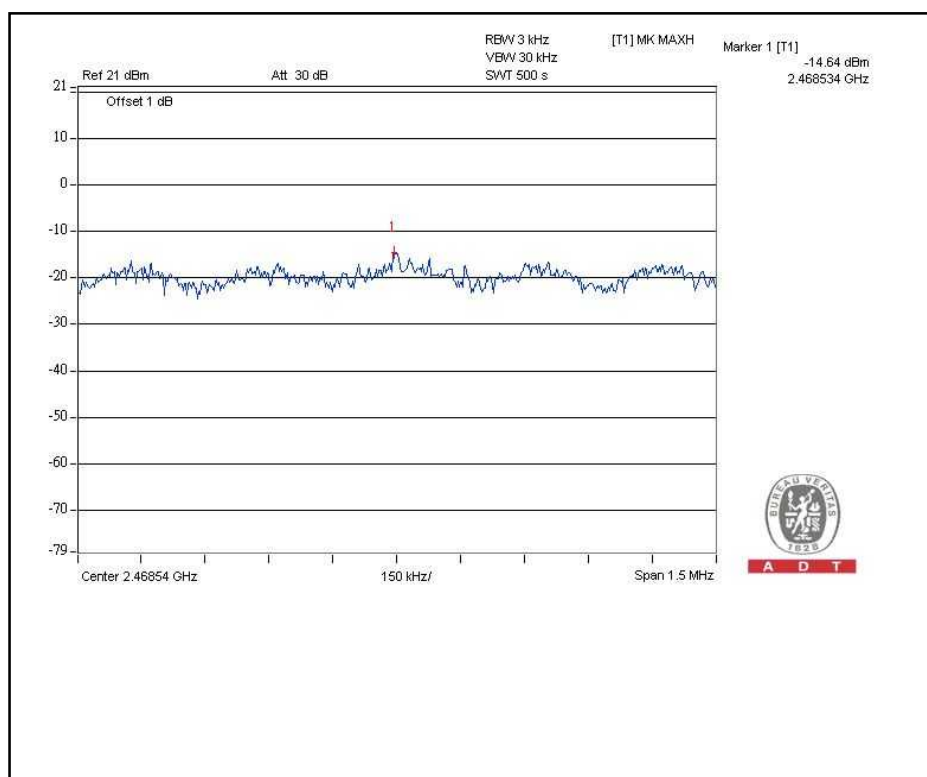
For Chain (1): CH1



CH6



CH11

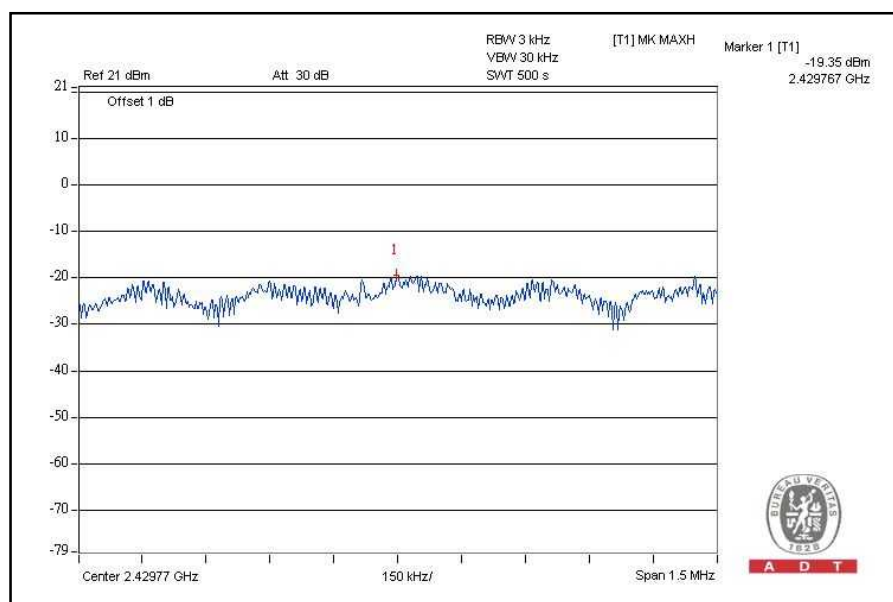


DRAFT 802.11n (40MHz) OFDM MODULATION:

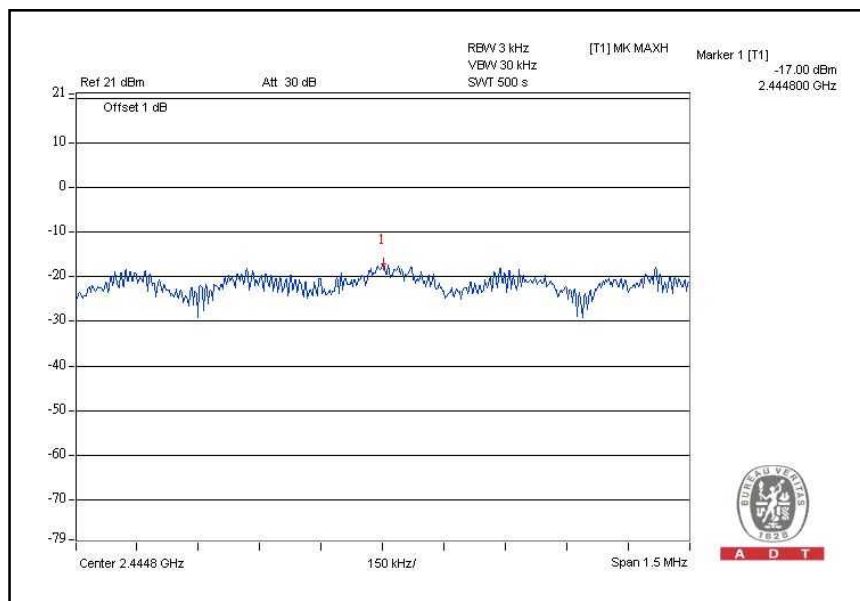
MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	0.012	0.008	-19.35	-20.86	0.020	-16.99	8	PASS
4	2437	0.020	0.023	-17.00	-16.45	0.043	-13.67	8	PASS
7	2452	0.013	0.011	-19.03	-19.47	0.024	-16.20	8	PASS

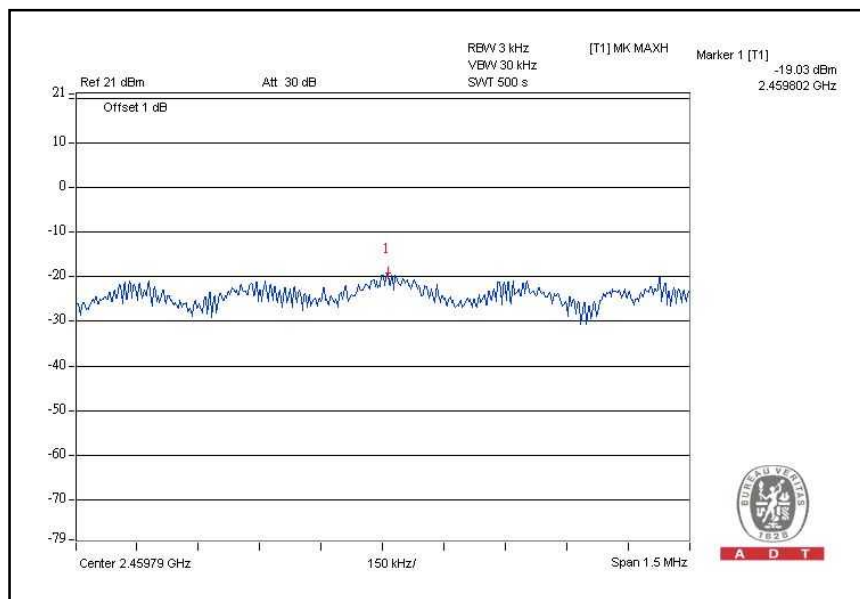
For Chain (0): CH1



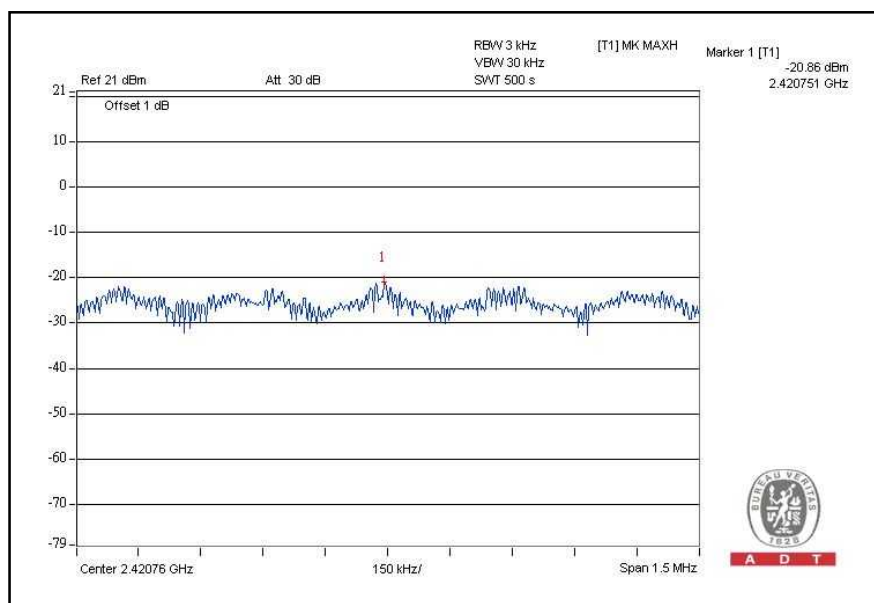
CH4



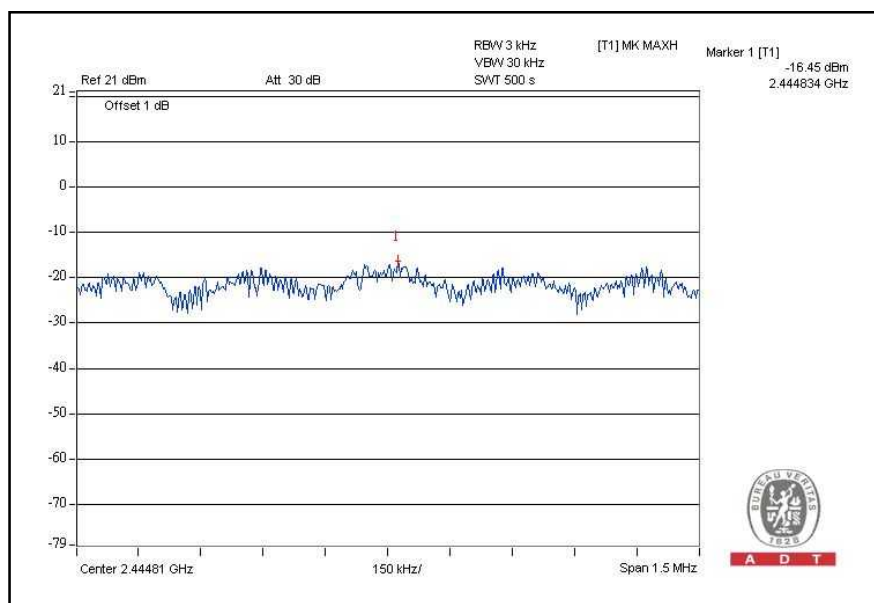
CH7



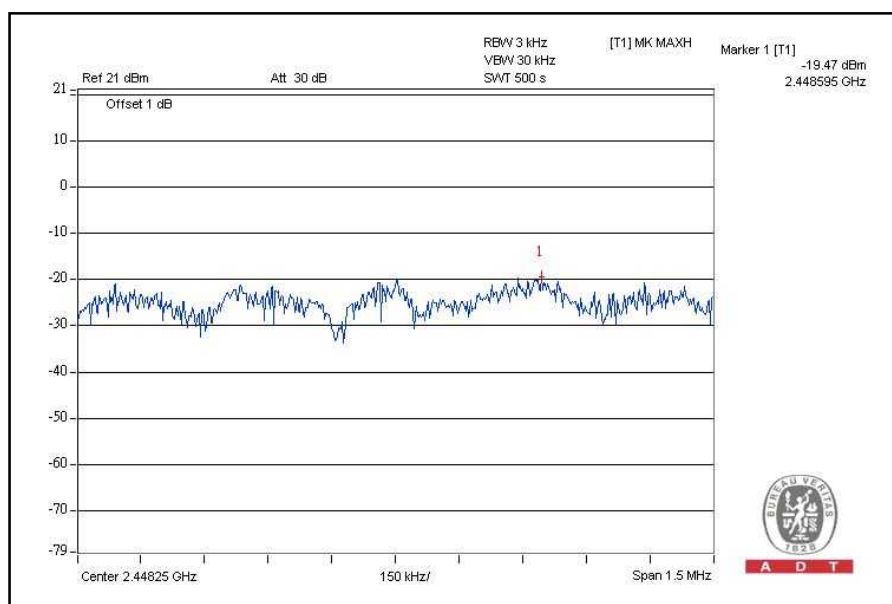
For Chain (1): CH1



CH4



CH7



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

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

NOTE:

- 1.The measurement uncertainty is less than $\pm 2.6\text{dB}$, 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 loss cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges were measured and recorded.

The spectrum plots (RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

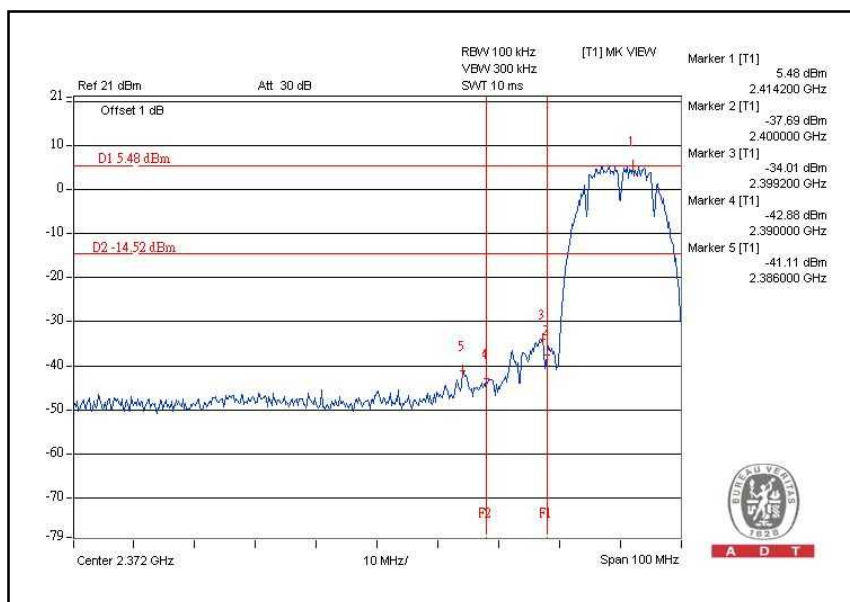
Same as Item 4.3.6

4.6.6 TEST RESULTS

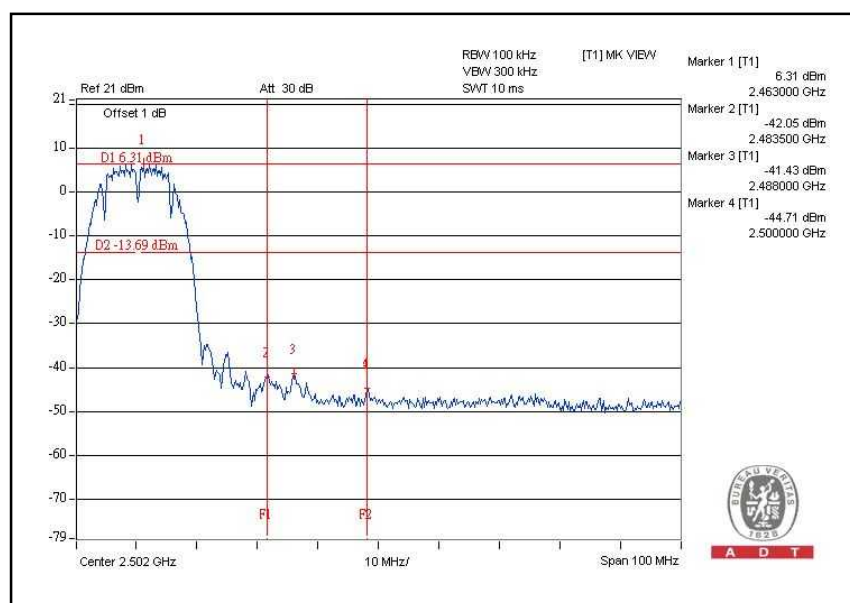
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

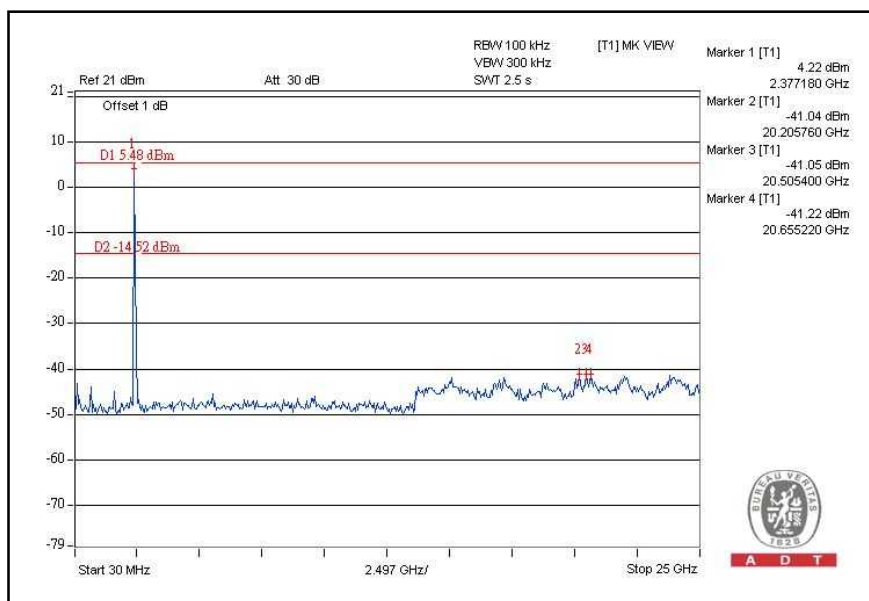
CH1



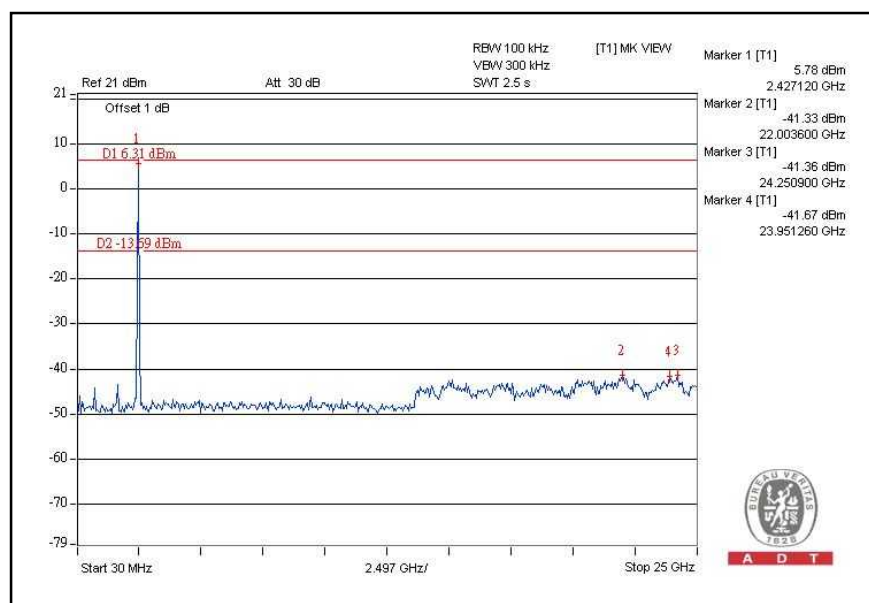
CH11



CH1

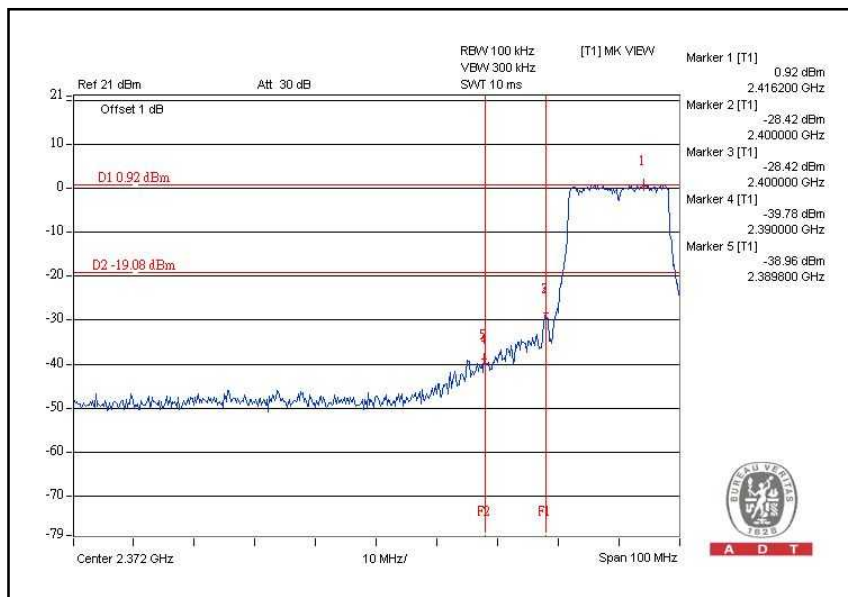


CH11

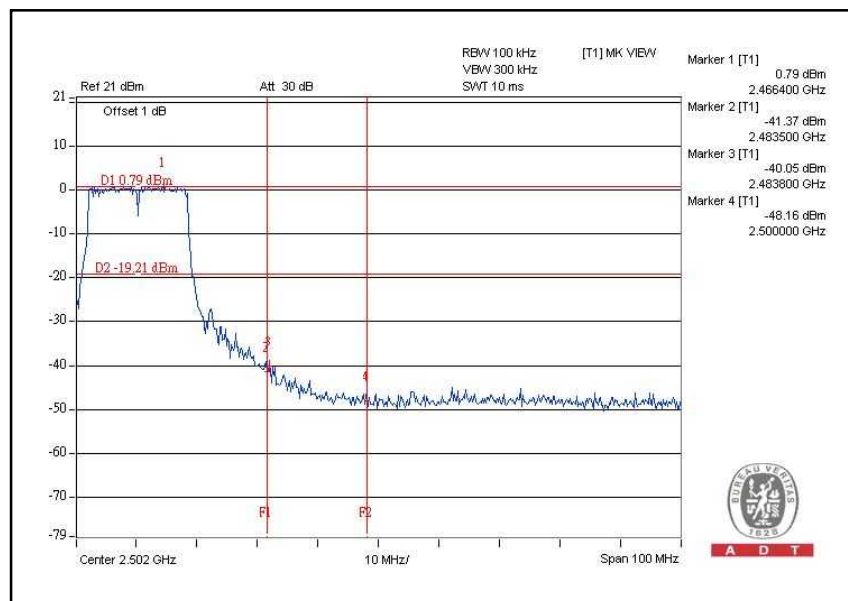


802.11g OFDM MODULATION:

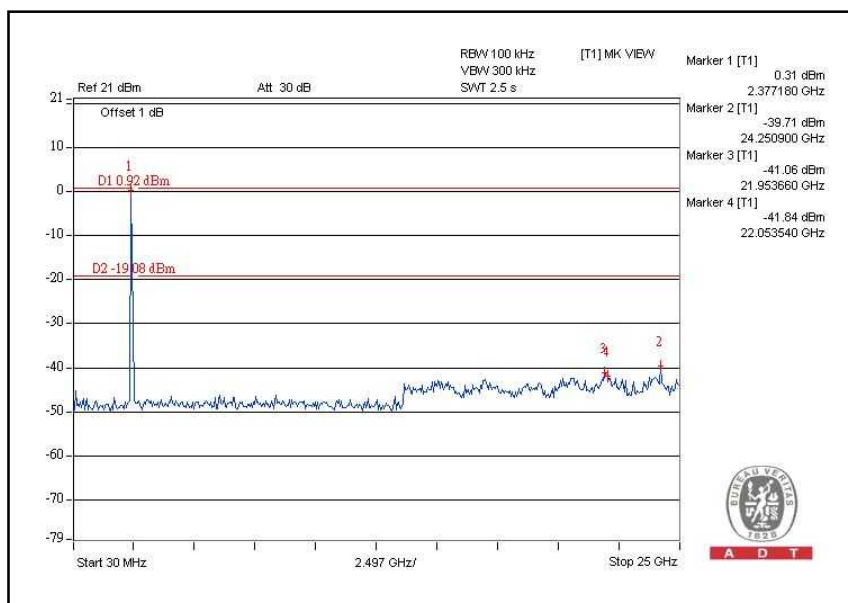
CH 1



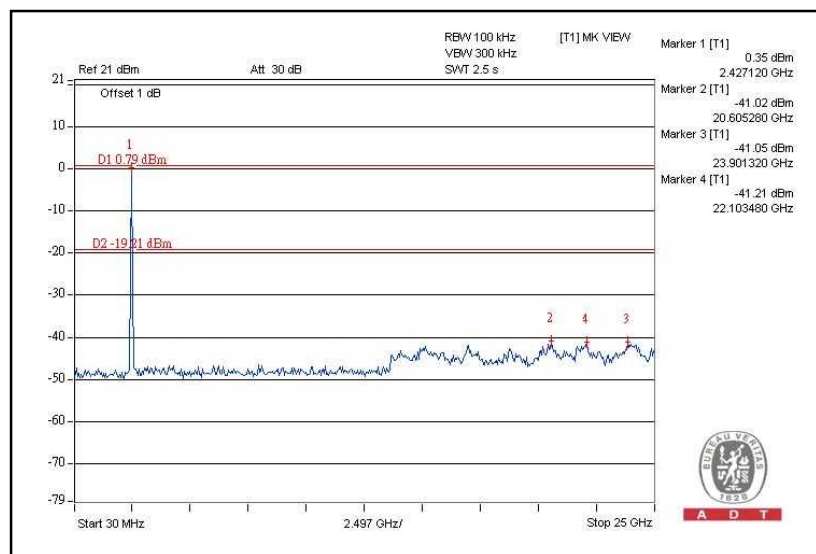
CH11



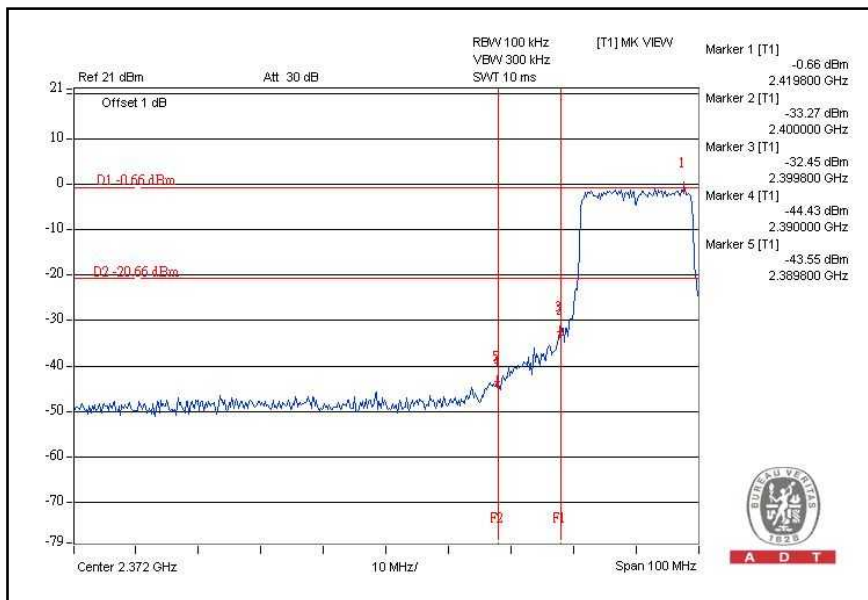
CH1



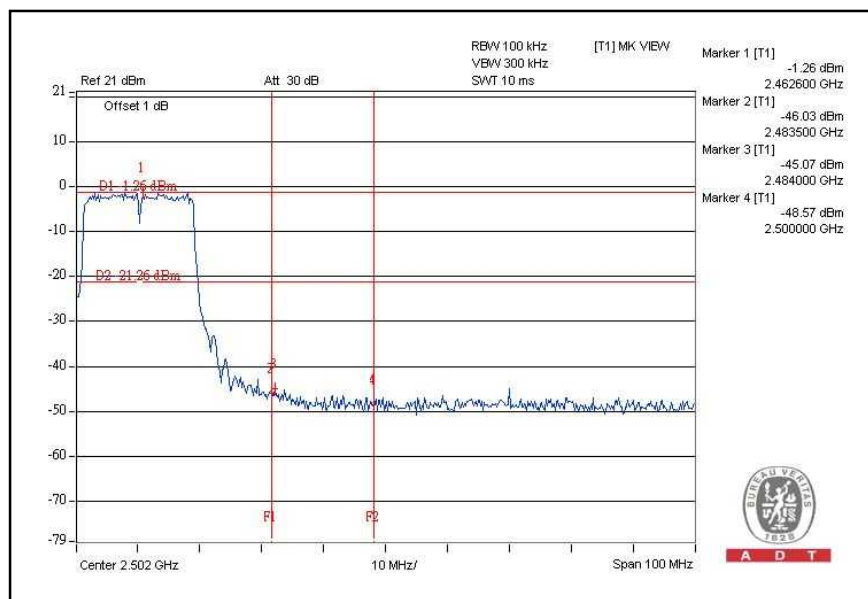
CH11



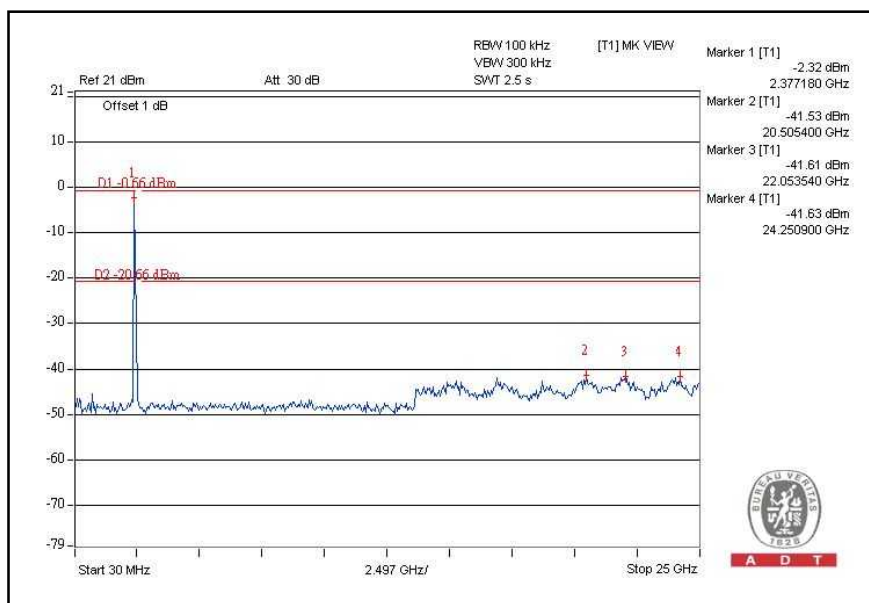
DRAFT 802.11n (20MHz) OFDM MODULATION: For Chain (0):CH1



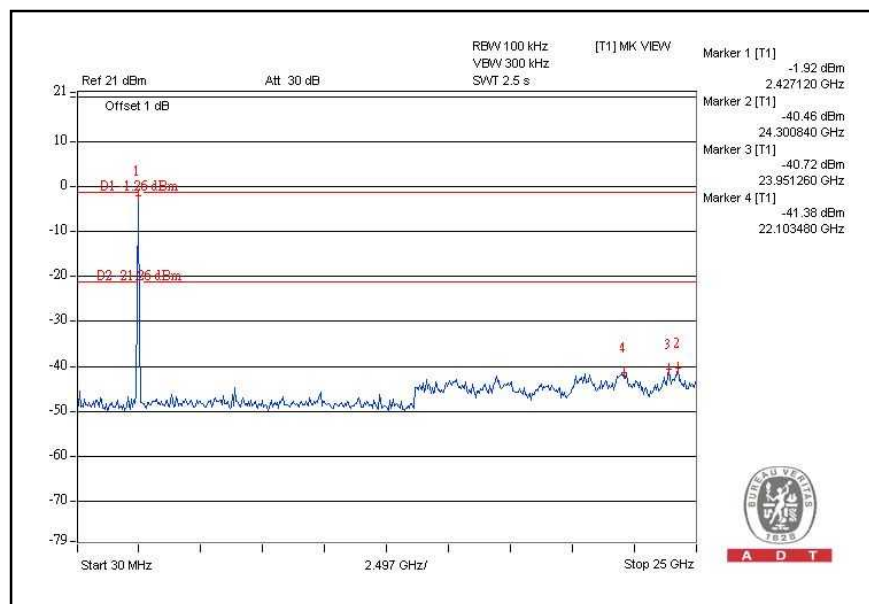
CH11



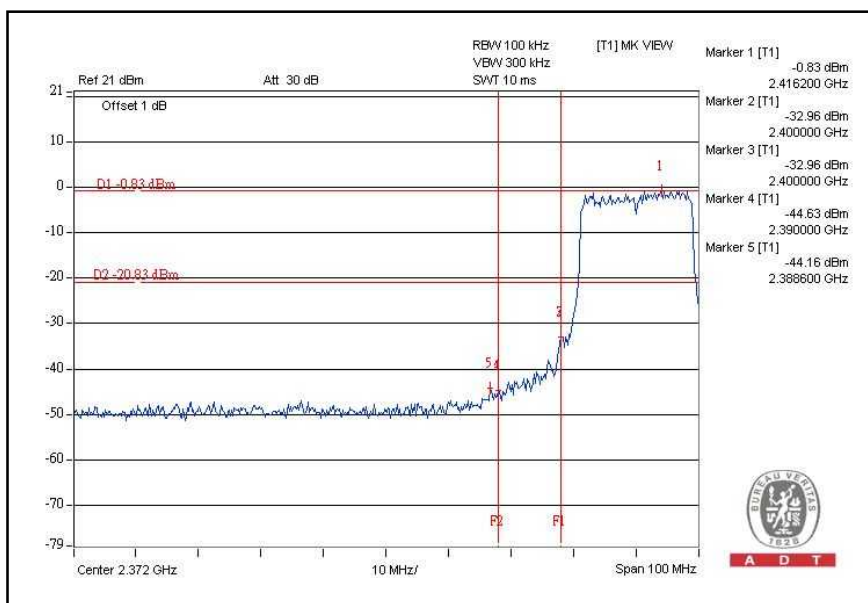
CH1



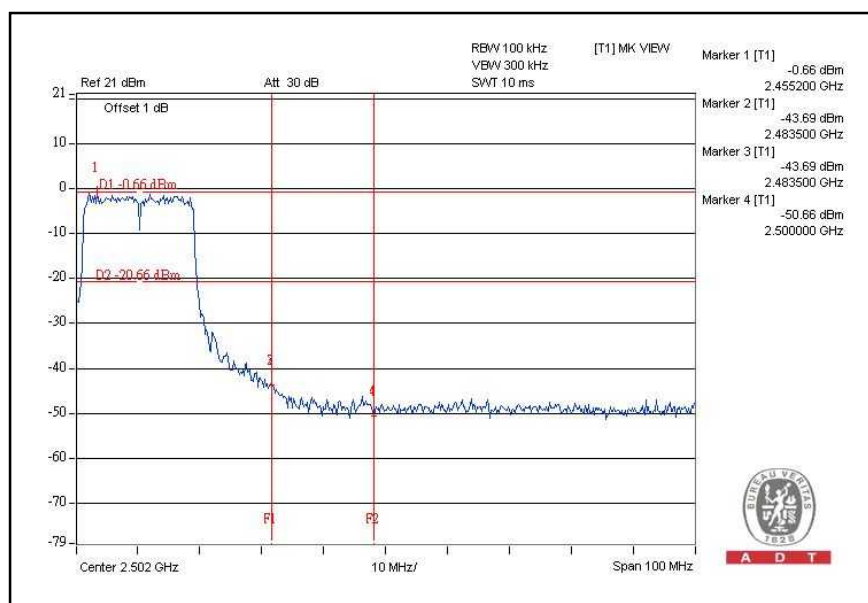
CH11



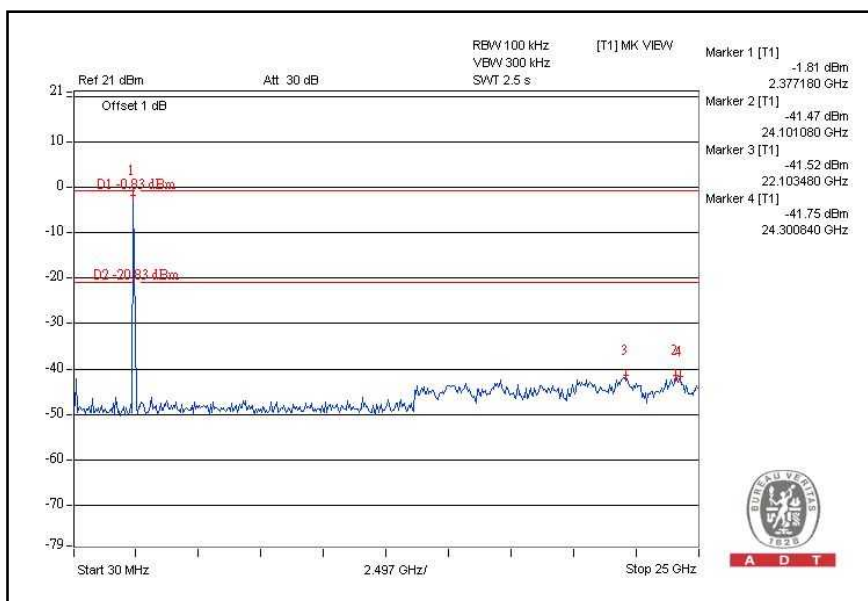
For Chain (1):CH1



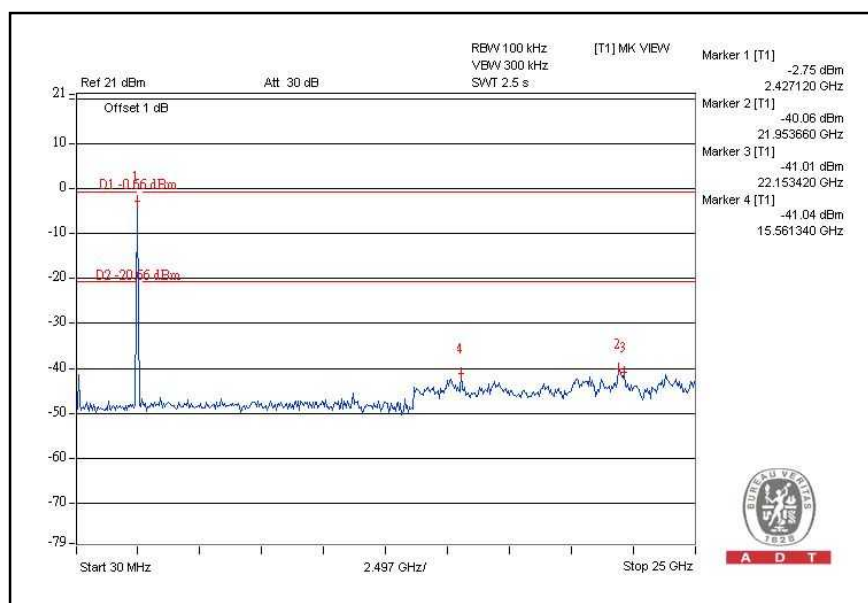
CH11



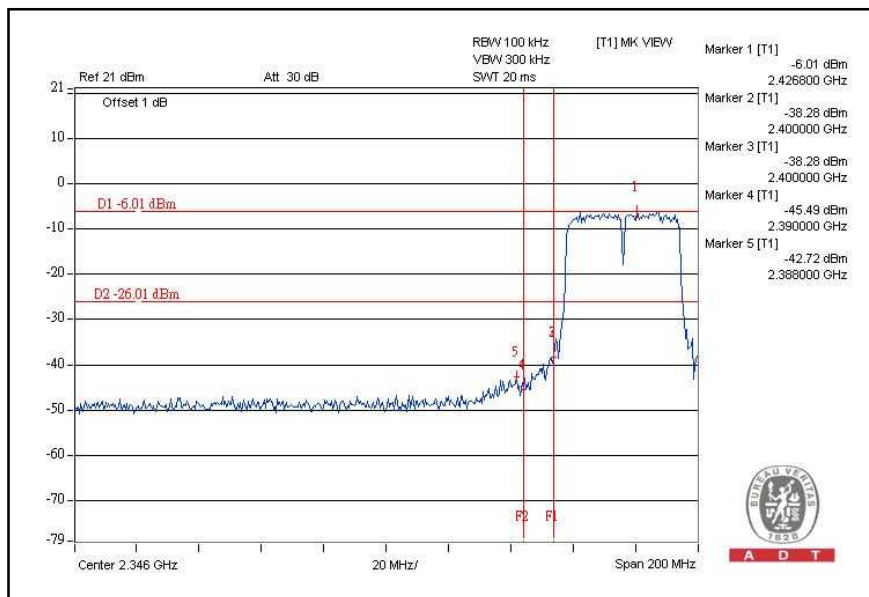
CH1



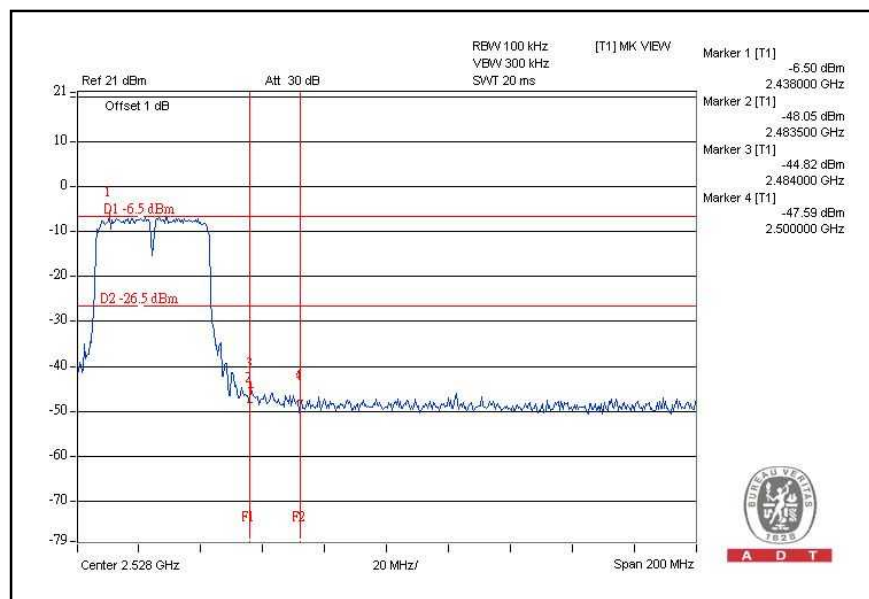
CH11



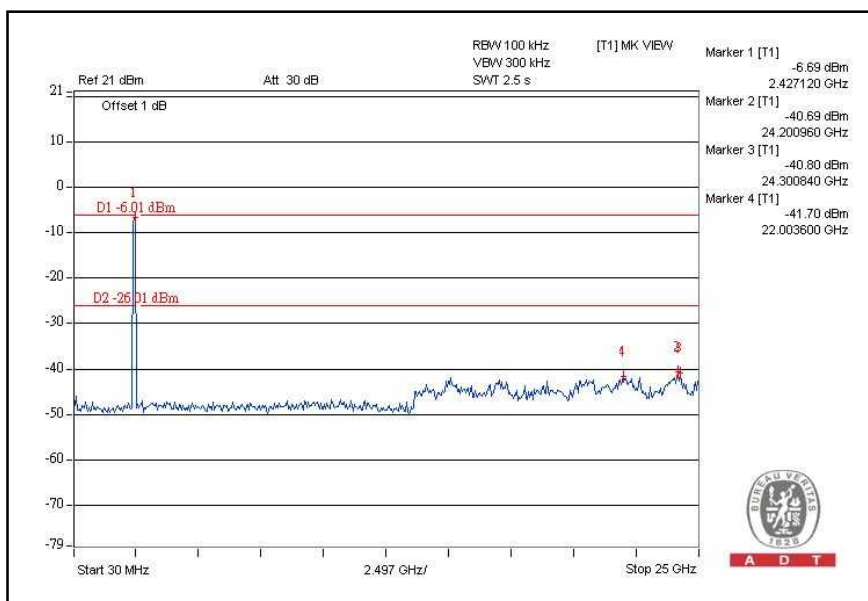
DRAFT 802.11n (40MHz) OFDM MODULATION: For Chain (0):CH1



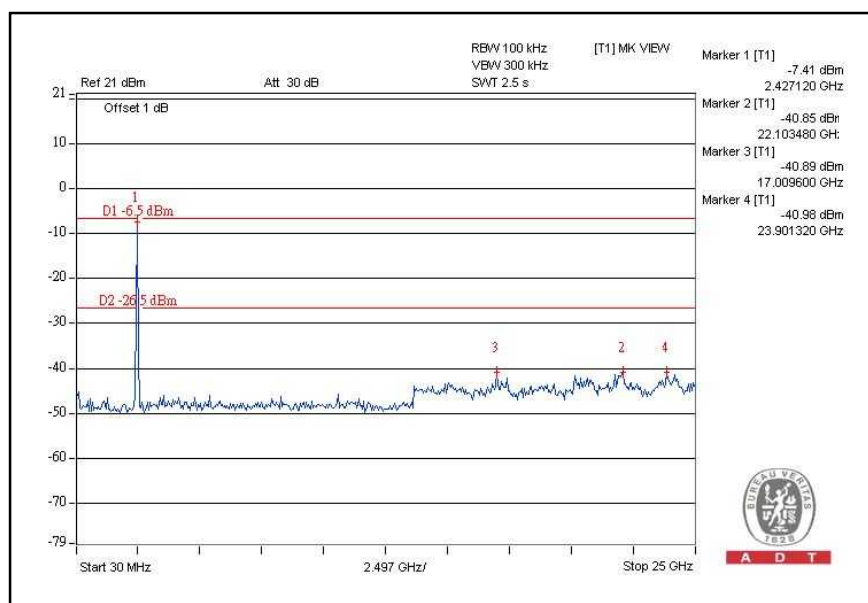
CH7



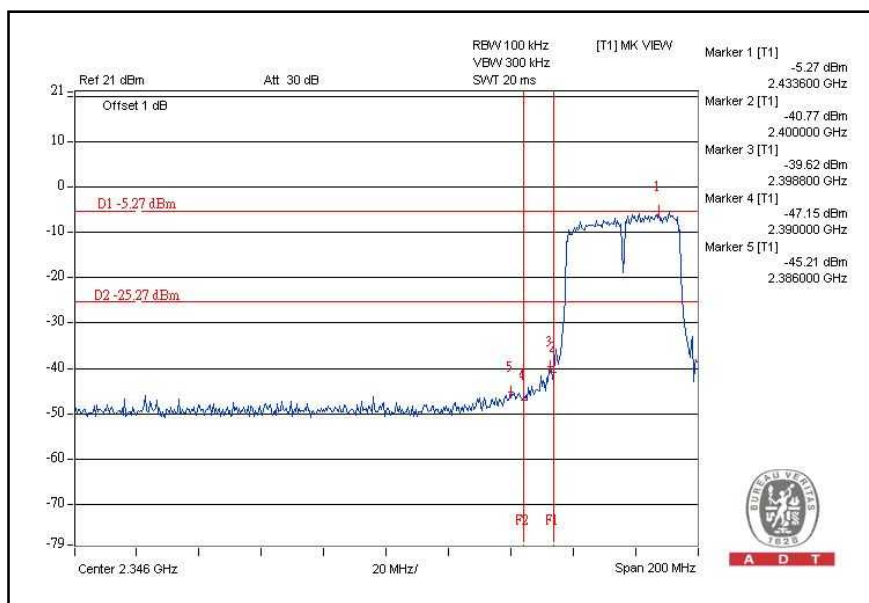
CH1



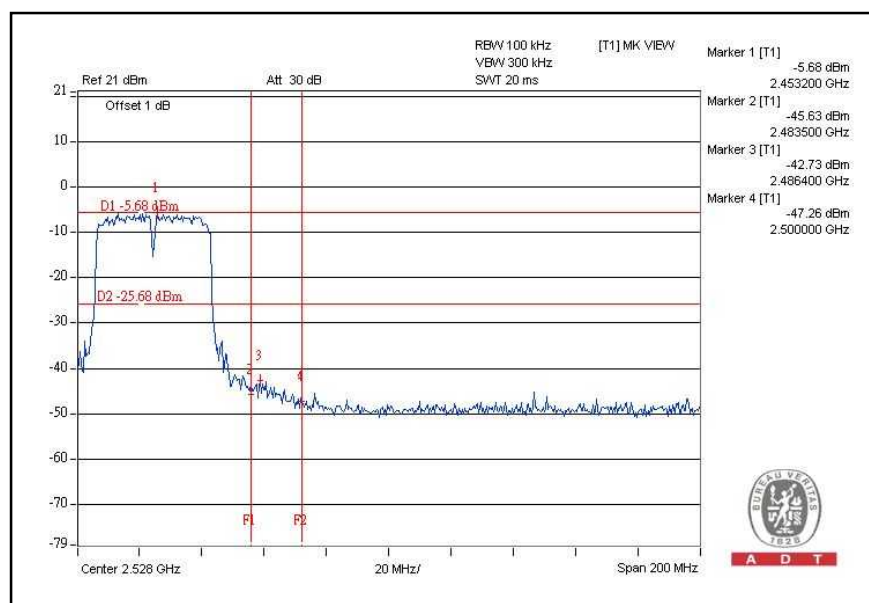
CH7



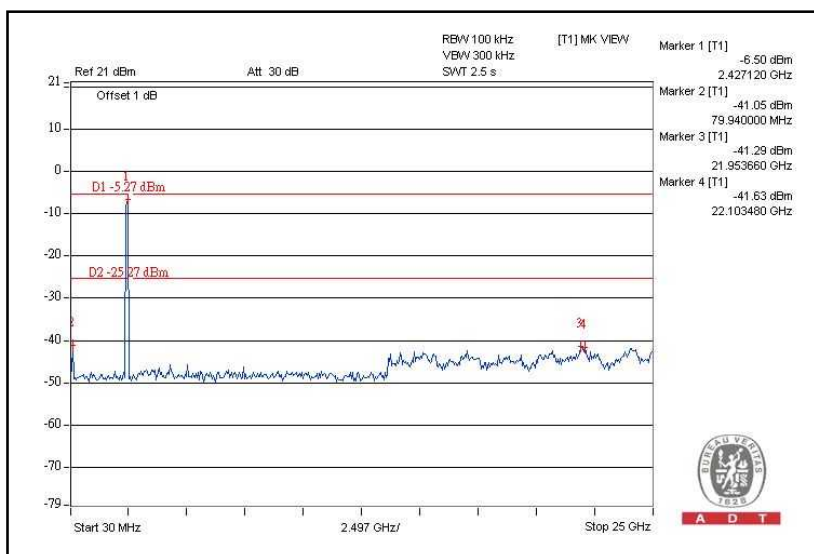
For Chain (1):CH1



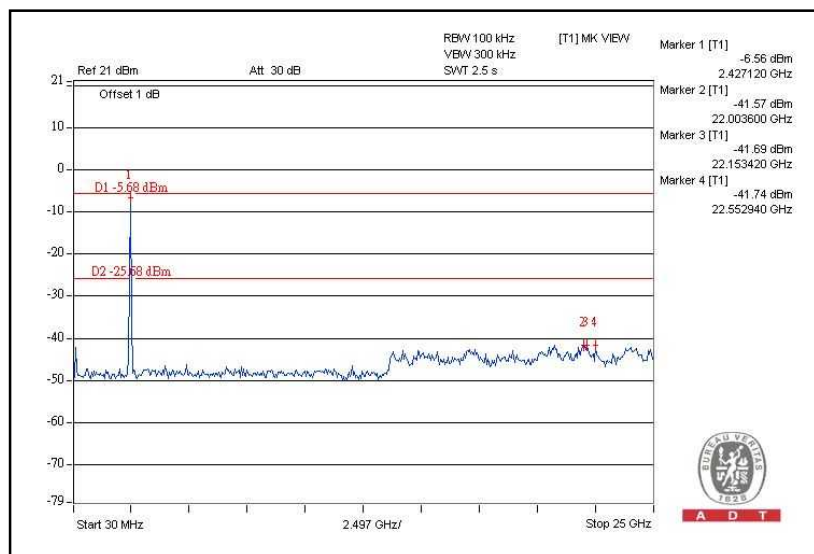
CH7



CH1



CH7



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 three antennas provided to this EUT, please refer to the following table:

Transmitter Circuit	Antenna Type	Gain (dBi)	Antenna Connector	Note
Chain(0)	Dipole	1.8	I-PEX	TX & RX function
Chain(1)	Dipole	1.8	I-PEX	TX & RX function
Chain(2)	Dipole	1.8	I-PEX	Only RX function

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

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

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Hwa Ya EMC/RF/Safety Telecom Lab:

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Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

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.

---END---