



FCC TEST REPORT

REPORT NO.: RF970908H05

MODEL NO.: DIR-605, DIR-615

RECEIVED: Sep. 08, 2008

TESTED: Sep. 17 to Oct. 29, 2008

ISSUED: Oct. 30, 2008

APPLICANT: D-Link Co.

ADDRESS: No.289, Shinhu 3rd Rd., Neihu District, Taipei
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ISSUED BY: Advance Data Technology Corporation

TEST LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung
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1. CERTIFICATION

PRODUCT: Wireless N Router
BRAND NAME: D-Link
MODEL NO.: DIR-605, DIR-615
TEST SAMPLE: MASS-PRODUCTION
TESTED: Sep. 17 to Oct. 29, 2008
APPLICANT: D-Link Co.
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: DIR-605) 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:** Oct. 30, 2008
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Oct. 30, 2008
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Oct. 30, 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 -15.34dB at 0.193MHz
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 -0.51dB at 2386.80MHz
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	2.45 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 N Router
MODEL NO.	DIR-605, DIR-615
FCC ID	KA2DIR605B1
POWER SUPPLY	DC 5V from switching 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: 90.782mW 802.11g: 72.778mW draft 802.11n (20MHz): 721.737mW draft 802.11n (40MHz): 393.700mW
ANTENNA TYPE	Please see note 2 (on next page)
DATA CABLE	NA
I/O PORT	LAN Port x 4, INTERNET Port x 1

NOTE:

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

Brand	Model Name	Description
D-Link	DIR-605	With different surface.
	DIR-615	

From the above models, model: **DIR-605** was selected as representative model for the test and its data was recorded in this report.

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

Transmitter Circuit	Antenna Type	Gain (dBi)	Antenna Connector
Chain(0)	Dipole	2.0	I-PEX MHF
Chain(1)	Dipole	2.0	I-PEX MHF

3. The EUT incorporates a MIMO function with 802.11b, 802.11g, draft 802.11n. Physically, the EUT provides two completed transmitter and two completed receivers.
4. The EUT is 2 * 2 spatial MIMO without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 Dipole antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas. The 11b/g legacy mode is limited to single transmitter only.
5. 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.
6. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g products.
7. The EUT operates in the 2.4GHz frequency spectrum with data rate up to 300Mbps.
8. The EUT must be supplied with a power adapter as following:

Brand:	D-Link
Model No.:	AF1805-A
Input power :	AC100-120V, 0.4A, 50-60Hz, 2PIN
Output power :	DC 5.0V, 2.5A Cable:1.8m/unshielded/without core



9. 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.
10. 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

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 ≥ 1G	APCM	
-	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)
A	802.11 b	ü	
B	802.11 g	ü	
C	DRAFT 802.11n(20MHz) for MCS0~7	ü	ü
D	DRAFT 802.11n(20MHz) for MCS8~15	ü	ü
E	DRAFT 802.11n(40MHz) for MCS0~7	ü	ü
F	DRAFT 802.11n(40MHz) for MCS8~15	ü	ü

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. From above mode, the different modes were chosen for pretest.
3. Mode A, B, D & F the worst modes, was selected as representative mode for the report.

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
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	14.444	D

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
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	14.444	D

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	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	30	F

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	D
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	30	F

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	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	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	30	F



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless N 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

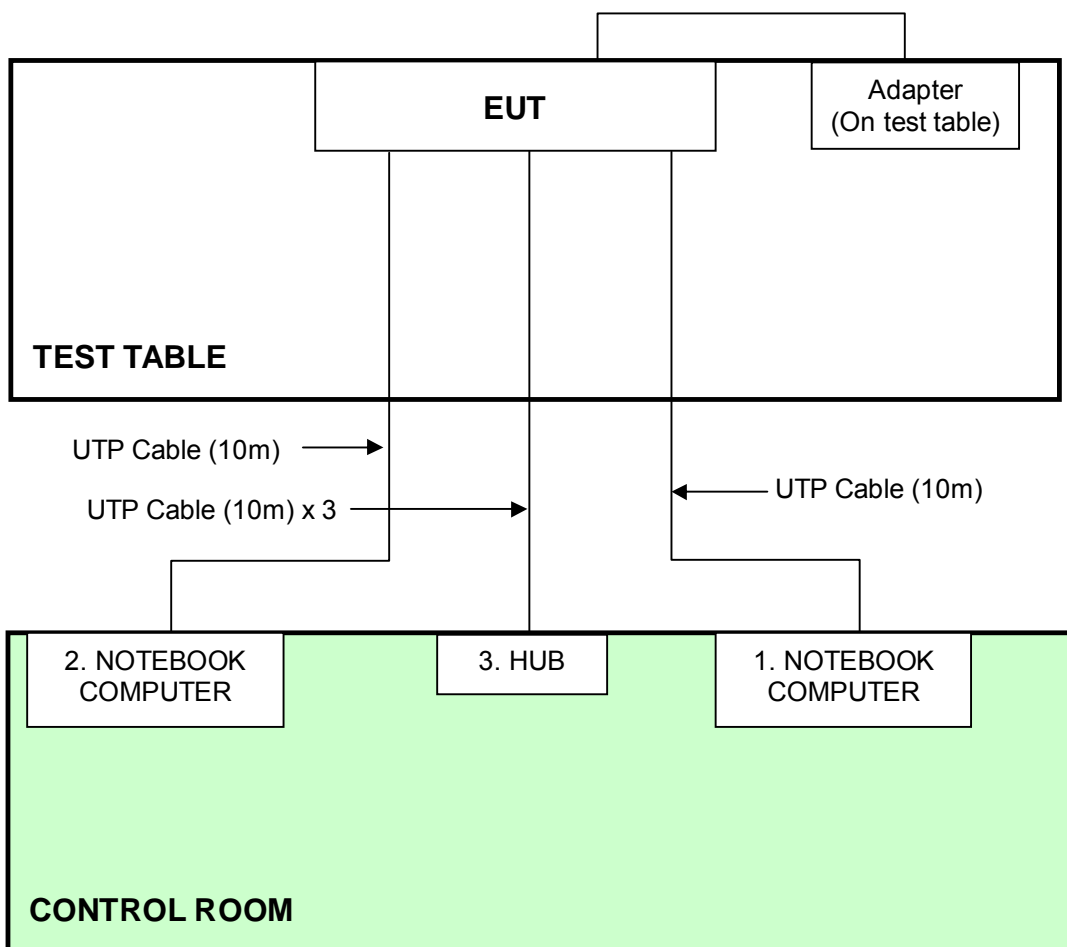
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

For Conducted test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PPT	17044664176	E2K24GBRL
2	NOTEBOOK COMPUTER	DELL	PP18L	12252644560	FCC DoC
3	NuStreams	XTRAMUS	NuStreams-600	05NS06C00004	FCC DoC
For Radiated test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5C A-0448	PIW632500516610
2	NOTEBOOK COMPUTER	DELL	PP21L	CN-0GD366-70166-5B 3-09ZX	QDS-BRCM1016
3	HUB	AVSYS	110H8	01-20E-000006	FCC DoC

For Conducted test	
No.	Signal cable description
1	NA
2	NA
3	NA
For Radiated test	
No.	Signal cable description
1	NA
2	NA
3	NA

Note: 1. All power cords of the above support units are unshielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. Support units 1-3 were kept in the control room during the test.

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	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 DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 11, 2008	Mar. 10, 2009
Line-Impedance Stabilization Network(for EUT)	KNW-407	8-1395-12	May 07, 2008	May 06, 2009
Line-Impedance Stabilization Network(for Peripheral)	ENV-216	100072	June 13, 2008	June 12, 2009
RF Cable (JYEBAO)	5DFB	COACAB-001	July 24, 2008	July 23, 2009
50 ohms Terminator	50	3	Nov. 16, 2007	Nov. 15, 2008
Software	ADT_Cond_V7.3.2	NA	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.

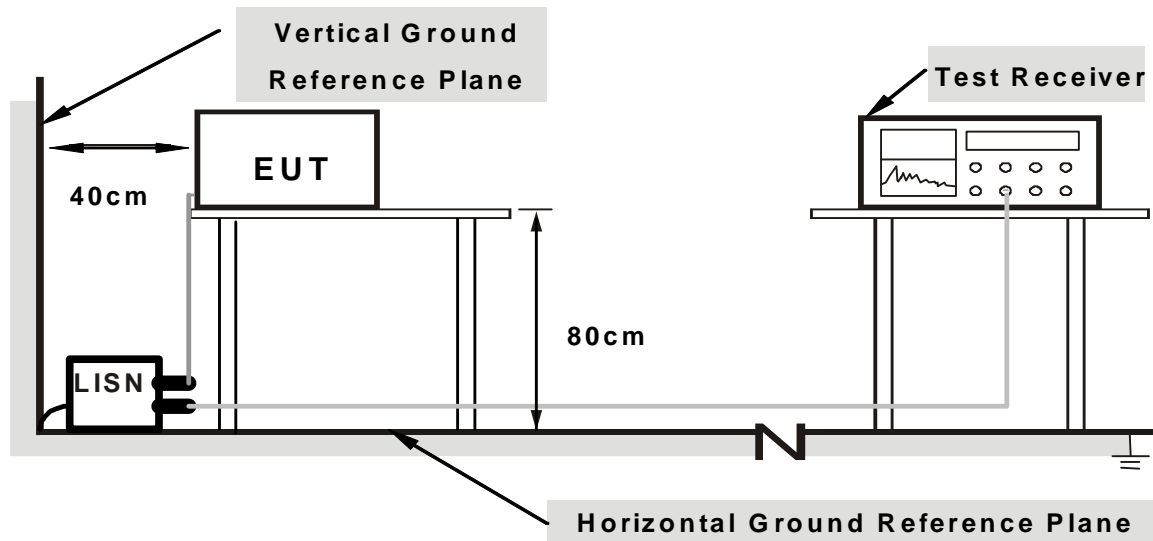
4.1.3 TEST PROCEDURES

- 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 units 1 ~ 3) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “RT3052QA V1.0.0.0” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

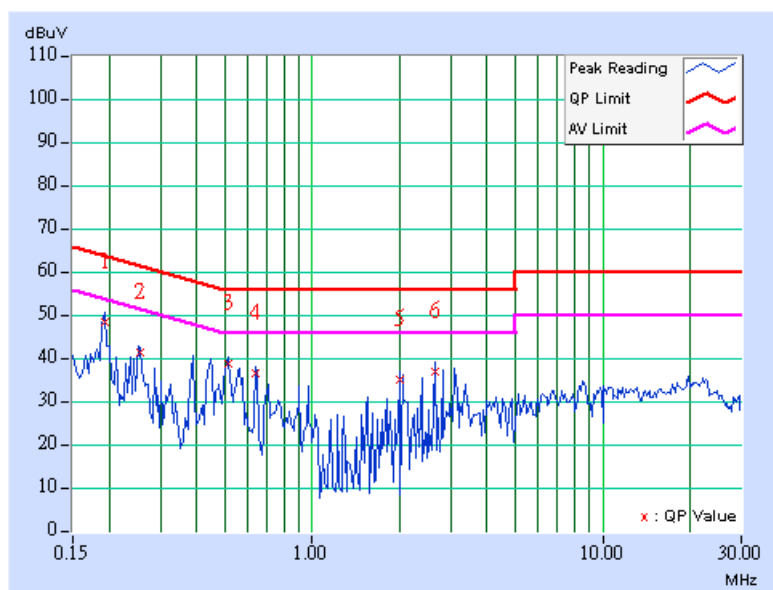
4.1.7 TEST RESULTS

DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	14.444Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	30deg. C, 60%RH, 965hPa	TESTED BY	Andy Ho

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	0.193	0.52	48.05	-	48.57	-	63.91
2	0.256	0.47	41.05	-	41.52	-	61.57	51.57	-20.04	-
3	0.513	0.41	38.58	-	38.99	-	56.00	46.00	-17.01	-
4	0.642	0.43	36.23	-	36.66	-	56.00	46.00	-19.34	-
5	1.993	0.47	34.85	-	35.32	-	56.00	46.00	-20.68	-
6	2.635	0.47	36.62	-	37.09	-	56.00	46.00	-18.91	-

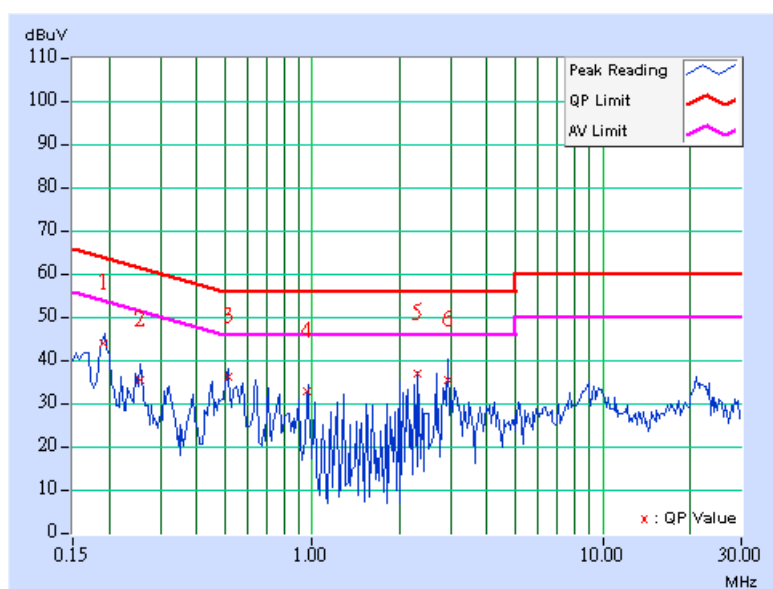
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	14.444Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	30deg. C, 60%RH, 965hPa	TESTED BY	Andy Ho

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	0.191	0.27	43.79	-	44.06	-	63.98	53.98	-19.92
2	0.255	0.23	35.45	-	35.68	-	61.58	51.58	-25.90	-
3	0.513	0.18	35.96	-	36.14	-	56.00	46.00	-19.86	-
4	0.964	0.23	32.58	-	32.81	-	56.00	46.00	-23.19	-
5	2.314	0.25	36.95	-	37.20	-	56.00	46.00	-18.80	-
6	2.949	0.25	35.37	-	35.62	-	56.00	46.00	-20.38	-

- 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 DATE	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 16, 2008	July 15, 2009
HP Pre_Amplifier	8449B	3008A0192 2	Sep. 25, 2008	Sep. 24, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	April 01, 2008	Mar. 31, 2009
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 30, 2008	April 29, 2009
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2007	Dec. 16, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA91701 53	Jan. 28, 2008	Jan. 27, 2009
RF Switches	EMH-011	08009	Oct. 07, 2008	Oct. 06, 2009
RF CABLE (Chaintek)	SF102	22054-2	Dec. 07, 2007	Dec. 06, 2008
RF Cable	8DFB	STCCAB-30 M-1GHz	Oct. 07, 2008	Oct. 06, 2009
Software	ADT_Radiated _V7.6.15.8	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	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 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.

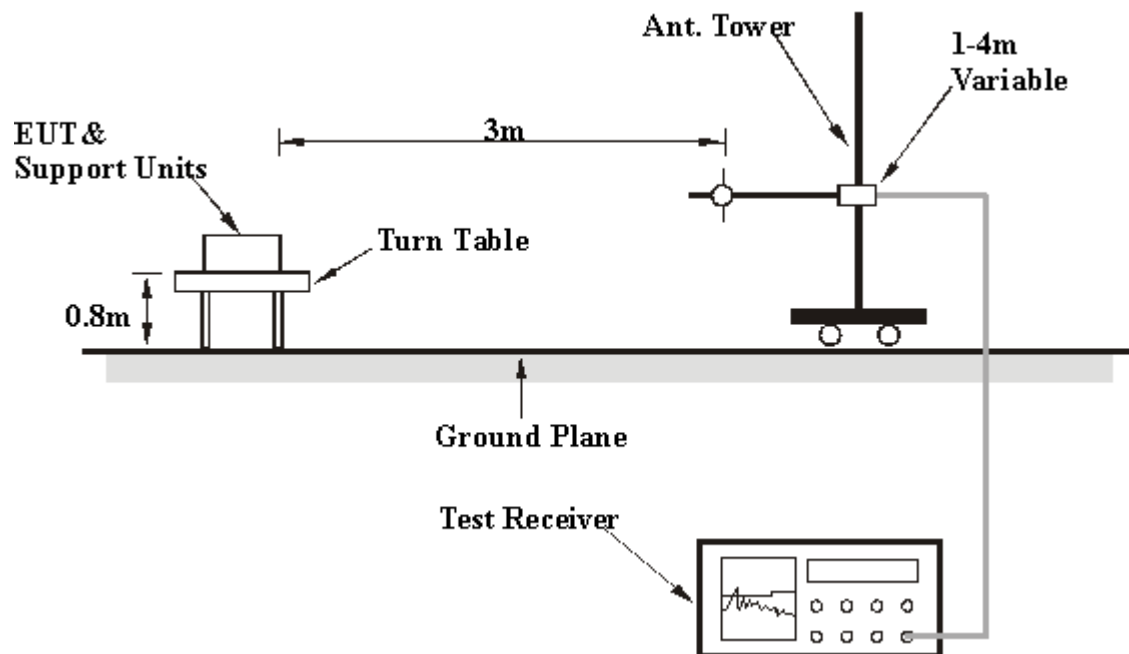
NOTE:

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

- a. Placed the EUT on testing table.
- b. Prepared other computer systems (support units 1 ~ 3) to act as communication partners and placed them outside of testing area.
- c. The communication partners run test program “RT3052QA V1.0.0.0” to enable EUT under transmission/receiving condition continuously via UTP cables.



Below 1GHz Test Data

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : DRAFT 802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.14	34.62 QP	43.50	-8.88	1.52 H	67	21.16	13.46
2	128.06	38.21 QP	43.50	-5.29	2.24 H	88	24.59	13.62
3	250.11	44.23 QP	46.00	-1.77	1.00 H	289	29.73	14.50
4	256.10	44.70 QP	46.00	-1.30	1.05 H	277	30.01	14.69
5	384.12	39.63 QP	46.00	-6.37	2.18 H	42	20.12	19.51
6	500.07	42.13 QP	46.00	-3.87	1.62 H	47	20.82	21.31
7	512.13	37.21 QP	46.00	-8.79	2.17 H	277	15.65	21.56
8	640.07	42.88 QP	46.00	-3.12	1.25 H	329	18.59	24.29
9	895.96	43.26 QP	46.00	-2.74	1.02 H	66	13.75	29.51
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	124.98	30.26 QP	43.50	-13.24	1.00 V	39	16.14	14.12
2	128.04	33.21 QP	43.50	-10.29	1.02 V	186	18.92	14.29
3	250.12	43.26 QP	46.00	-2.74	1.44 V	33	27.84	15.42
4	256.08	32.12 QP	46.00	-13.88	1.44 V	28	16.52	15.60
5	500.12	41.26 QP	46.00	-4.74	1.03 V	115	18.60	22.66
6	511.97	37.25 QP	46.00	-8.75	1.03 V	187	14.30	22.95
7	639.97	42.15 QP	46.00	-3.85	1.06 V	277	16.47	25.68
8	767.85	34.16 QP	46.00	-11.84	1.03 V	267	5.17	28.99
9	895.96	37.15 QP	46.00	-8.85	1.12 V	229	6.19	30.96

- 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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2386.00	56.19 PK	74.00	-17.81	1.32 H	172	26.14	30.05
2	2386.00	45.51 AV	54.00	-8.49	1.32 H	172	15.46	30.05
3	*2412.00	101.70 PK			1.32 H	178	71.55	30.15
4	*2412.00	97.24 AV			1.32 H	178	67.09	30.15
5	4824.00	52.42 PK	74.00	-21.58	1.85 H	317	16.96	35.46
6	4824.00	48.41 AV	54.00	-5.59	1.85 H	317	12.95	35.46
7	#7236.00	55.95 PK	81.70	-25.75	1.81 H	318	14.10	41.85
8	#7236.00	47.01 AV	77.24	-30.23	1.81 H	318	5.16	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	2386.80	61.26 PK	74.00	-12.74	1.05 V	6	31.21	30.05
2	2386.80	53.49 AV	54.00	-0.51	1.05 V	6	23.44	30.05
3	*2412.00	109.05 PK			1.00 V	8	78.90	30.15
4	*2412.00	104.81 AV			1.00 V	8	74.66	30.15
5	4824.00	55.71 PK	74.00	-18.29	1.38 V	183	20.25	35.46
6	4824.00	53.40 AV	54.00	-0.60	1.38 V	183	17.94	35.46
7	#7236.00	59.05 PK	89.05	-30.00	1.79 V	92	17.20	41.85
8	#7236.00	51.40 AV	84.81	-33.41	1.79 V	92	9.55	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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	100.88 PK			1.34 H	169	70.64	30.24
2	*2437.00	96.12 AV			1.34 H	169	65.88	30.24
3	4874.00	51.09 PK	74.00	-22.91	1.87 H	294	15.54	35.55
4	4874.00	47.09 AV	54.00	-6.91	1.87 H	294	11.54	35.55
5	7311.00	55.73 PK	74.00	-18.27	1.42 H	298	13.69	42.04
6	7311.00	45.38 AV	54.00	-8.62	1.42 H	298	3.34	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	110.10 PK			1.00 V	108	79.86	30.24
2	*2437.00	105.23 AV			1.00 V	108	74.99	30.24
3	4874.00	55.94 PK	74.00	-18.06	1.39 V	186	20.39	35.55
4	4874.00	53.45 AV	54.00	-0.55	1.39 V	186	17.90	35.55
5	7311.00	57.20 PK	74.00	-16.80	1.79 V	146	15.16	42.04
6	7311.00	49.52 AV	54.00	-4.48	1.79 V	146	7.48	42.04

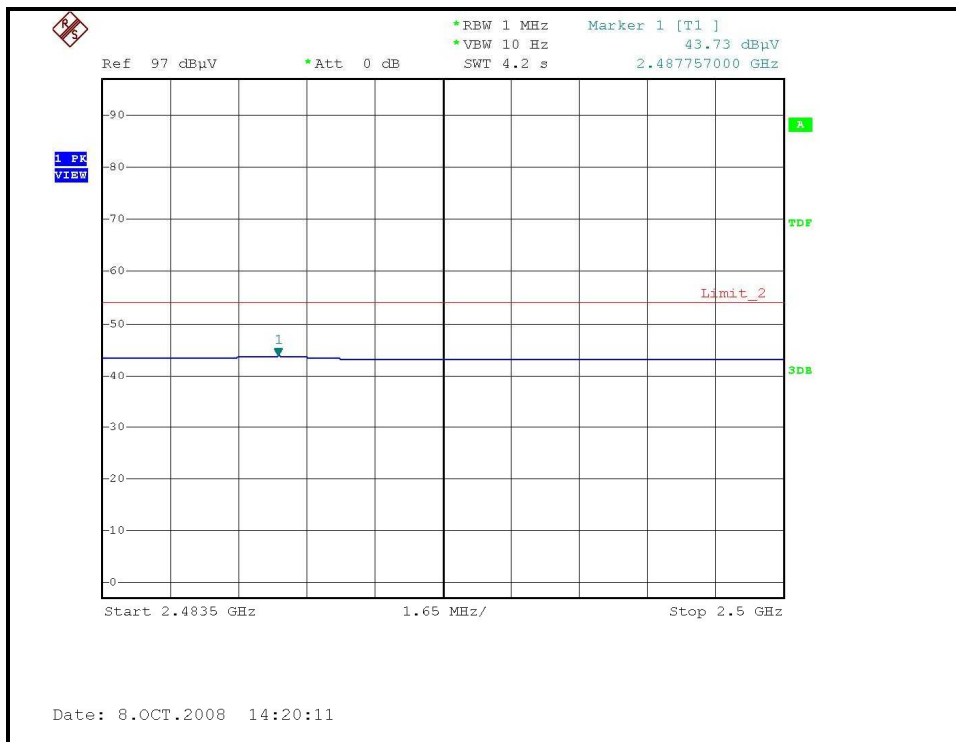
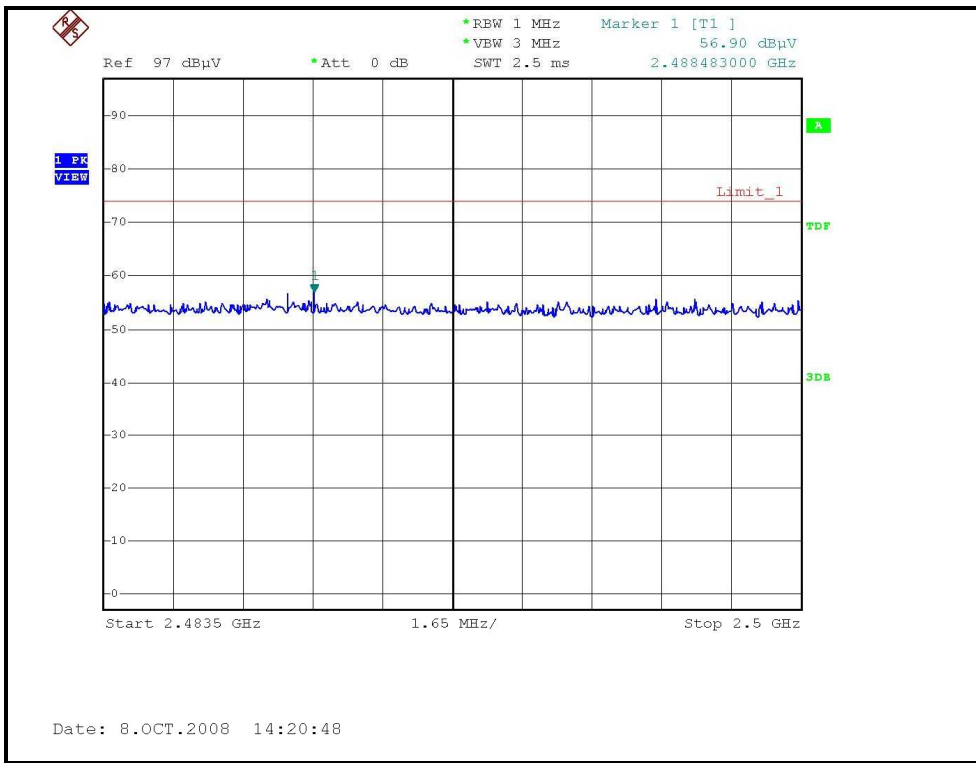
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	99.21 PK			1.24 H	169	68.87	30.34
2	*2462.00	94.33 AV			1.24 H	169	63.99	30.34
3	2487.00	56.90 PK	74.00	-17.10	1.27 H	166	26.46	30.44
4	2487.00	43.73 AV	54.00	-10.27	1.27 H	166	13.29	30.44
5	4924.00	51.92 PK	74.00	-22.08	1.71 H	286	16.29	35.63
6	4924.00	48.27 AV	54.00	-5.73	1.71 H	286	12.64	35.63
7	7386.00	55.67 PK	74.00	-18.33	1.76 H	297	13.44	42.23
8	7386.00	46.09 AV	54.00	-7.91	1.76 H	297	3.86	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	105	79.66	30.34
2	*2462.00	105.23 AV			1.00 V	105	74.89	30.34
3	2487.00	61.31 PK	74.00	-12.69	1.00 V	106	30.87	30.44
4	2487.00	51.48 AV	54.00	-2.52	1.00 V	106	21.04	30.44
5	4924.00	55.84 PK	74.00	-18.16	1.52 V	186	20.21	35.63
6	4924.00	53.48 AV	54.00	-0.52	1.52 V	186	17.85	35.63
7	7386.00	57.05 PK	74.00	-16.95	1.99 V	143	14.82	42.23
8	7386.00	49.00 AV	54.00	-5.00	1.99 V	143	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,CH11, HORIZONTAL)



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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	63.80 PK	74.00	-10.20	1.33 H	170	33.74	30.06
2	2390.00	45.75 AV	54.00	-8.25	1.33 H	170	15.69	30.06
3	*2412.00	106.77 PK			1.34 H	169	76.62	30.15
4	*2412.00	95.99 AV			1.34 H	169	65.84	30.15
5	4824.00	48.83 PK	74.00	-25.17	1.85 H	318	13.37	35.46
6	4824.00	34.92 AV	54.00	-19.08	1.85 H	318	-0.54	35.46
7	#7236.00	57.86 PK	86.77	-28.91	1.82 H	318	16.01	41.85
8	#7236.00	43.15 AV	75.99	-32.84	1.82 H	318	1.30	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	68.88 PK	74.00	-5.12	1.00 V	75	38.82	30.06
2	2390.00	52.69 AV	54.00	-1.31	1.00 V	75	22.63	30.06
3	*2412.00	113.20 PK			1.00 V	70	83.05	30.15
4	*2412.00	102.25 AV			1.00 V	70	72.10	30.15
5	4824.00	54.41 PK	74.00	-19.59	1.20 V	190	18.95	35.46
6	4824.00	40.39 AV	54.00	-13.61	1.20 V	190	4.93	35.46
7	#7236.00	64.30 PK	93.20	-28.90	1.60 V	91	22.45	41.85
8	#7236.00	49.33 AV	82.25	-32.92	1.60 V	91	7.48	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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2385.00	56.45 PK	74.00	-17.55	1.32 H	165	26.41	30.04
2	2385.00	44.50 AV	54.00	-9.50	1.32 H	165	14.46	30.04
3	*2437.00	105.84 PK			1.33 H	170	75.60	30.24
4	*2437.00	95.31 AV			1.33 H	170	65.07	30.24
5	2489.00	56.32 PK	74.00	-17.68	1.00 H	327	25.87	30.45
6	2489.00	44.57 AV	54.00	-9.43	1.00 H	327	14.12	30.45
7	4874.00	50.72 PK	74.00	-23.28	1.87 H	293	15.17	35.55
8	4874.00	36.20 AV	54.00	-17.80	1.87 H	293	0.65	35.55
9	7311.00	59.24 PK	74.00	-14.76	1.39 H	302	17.20	42.04
10	7311.00	44.14 AV	54.00	-9.86	1.39 H	302	2.10	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	2385.00	61.92 PK	74.00	-12.08	1.00 V	272	31.88	30.04
2	2385.00	50.18 AV	54.00	-3.82	1.00 V	272	20.14	30.04
3	*2437.00	115.47 PK			1.00 V	327	85.23	30.24
4	*2437.00	104.93 AV			1.00 V	327	74.69	30.24
5	2489.00	63.49 PK	74.00	-10.51	1.00 V	87	33.04	30.45
6	2489.00	51.25 AV	54.00	-2.75	1.00 V	87	20.80	30.45
7	4874.00	55.78 PK	74.00	-18.22	1.48 V	199	20.23	35.55
8	4874.00	41.93 AV	54.00	-12.07	1.48 V	199	6.38	35.55
9	7311.00	65.05 PK	74.00	-8.95	1.68 V	190	23.01	42.04
10	7311.00	50.10 AV	54.00	-3.90	1.68 V	190	8.06	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.

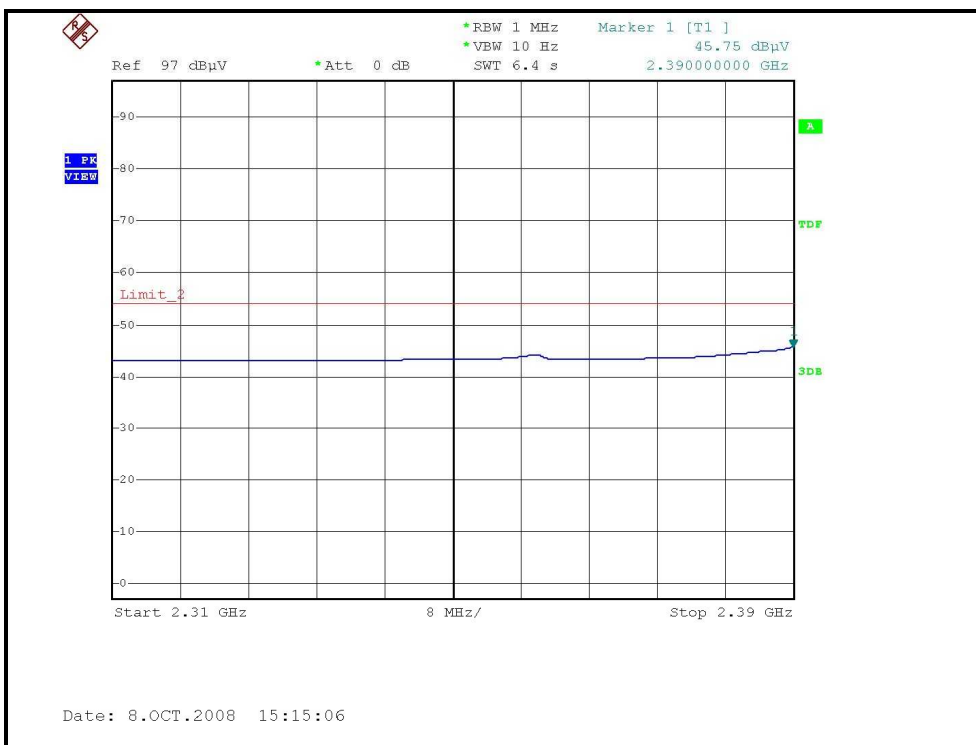
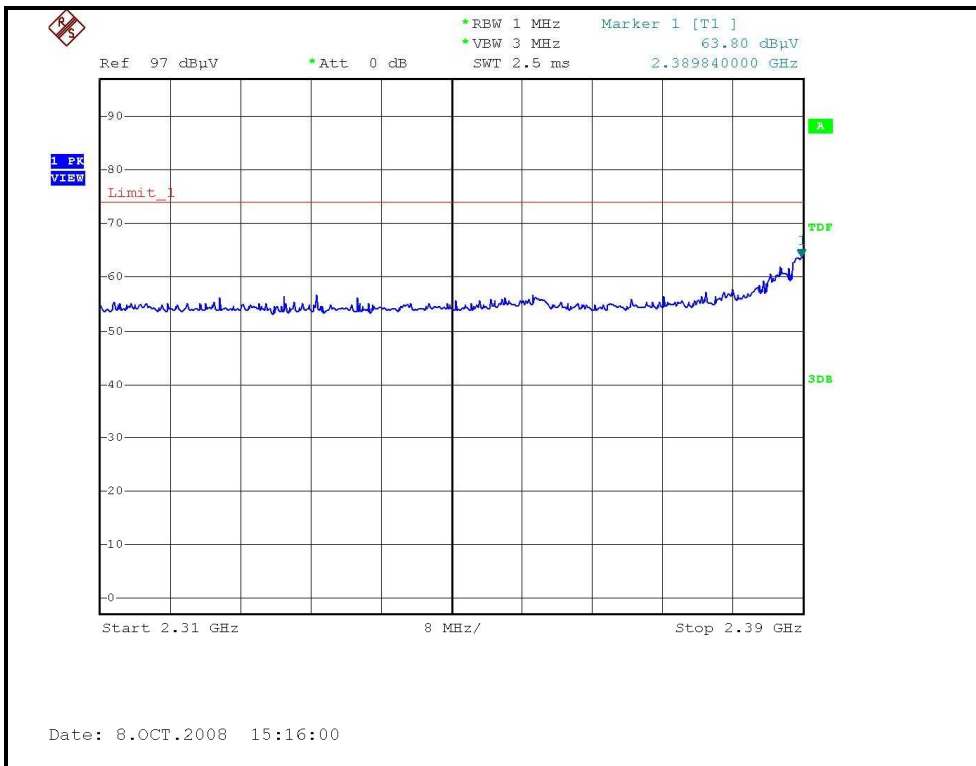


EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

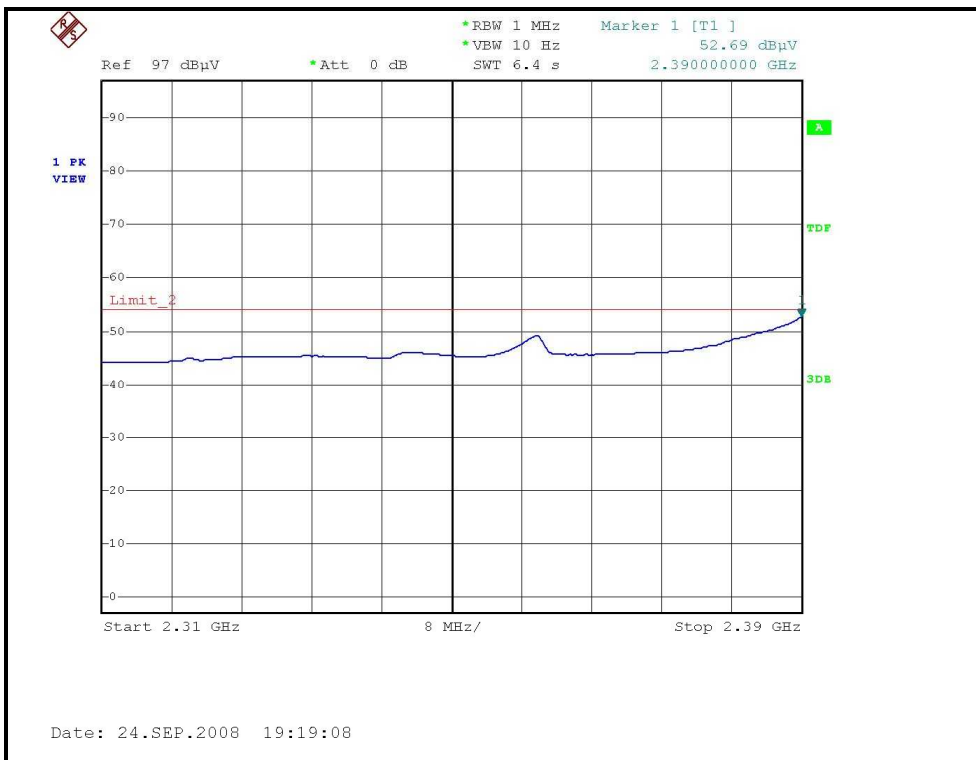
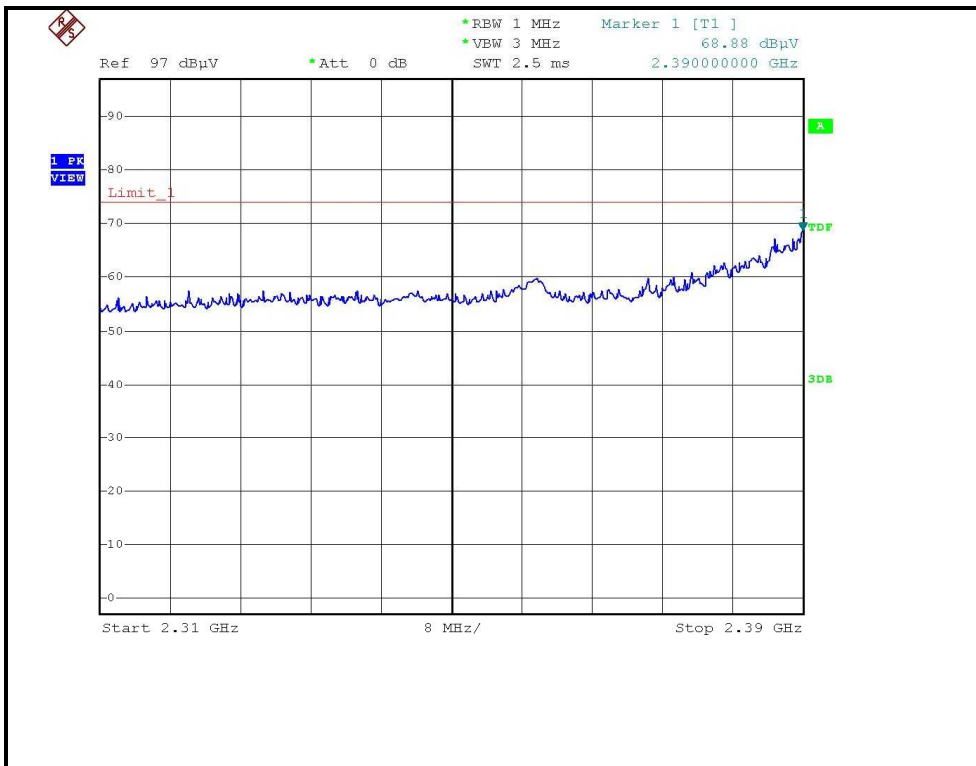
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.38 PK			1.24 H	170	73.04	30.34
2	*2462.00	93.13 AV			1.24 H	170	62.79	30.34
3	2483.50	61.40 PK	74.00	-12.60	1.26 H	166	30.97	30.43
4	2483.50	44.64 AV	54.00	-9.36	1.26 H	166	14.21	30.43
5	4924.00	51.13 PK	74.00	-22.87	1.71 H	287	15.50	35.63
6	4924.00	36.95 AV	54.00	-17.05	1.71 H	287	1.32	35.63
7	7386.00	60.91 PK	74.00	-13.09	1.76 H	297	18.68	42.23
8	7386.00	45.48 AV	54.00	-8.52	1.76 H	297	3.25	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	113.63 PK			1.00 V	106	83.29	30.34
2	*2462.00	102.72 AV			1.00 V	106	72.38	30.34
3	2483.50	69.63 PK	74.00	-4.37	1.00 V	105	39.20	30.43
4	2483.50	53.16 AV	54.00	-0.84	1.00 V	105	22.73	30.43
5	4924.00	56.80 PK	74.00	-17.20	1.44 V	187	21.17	35.63
6	4924.00	42.81 AV	54.00	-11.19	1.44 V	187	7.18	35.63
7	7386.00	64.08 PK	74.00	-9.92	2.03 V	193	21.85	42.23
8	7386.00	48.93 AV	54.00	-5.07	2.03 V	193	6.70	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)





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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	65.52 PK	74.00	-8.48	1.43 H	171	35.46	30.06
2	2390.00	44.60 AV	54.00	-9.40	1.43 H	171	14.54	30.06
3	*2412.00	105.26 PK			1.34 H	170	75.11	30.15
4	*2412.00	93.62 AV			1.34 H	170	63.47	30.15
5	4824.00	47.55 PK	74.00	-26.45	1.86 H	317	12.09	35.46
6	4824.00	33.72 AV	54.00	-20.28	1.86 H	317	-1.74	35.46
7	#7236.00	55.63 PK	85.26	-29.63	1.81 H	319	13.78	41.85
8	#7236.00	39.96 AV	73.62	-33.66	1.81 H	319	-1.89	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	2320.00	59.71 PK	74.00	-14.29	1.00 V	359	29.92	29.79
2	2320.00	50.86 AV	54.00	-3.14	1.00 V	359	21.07	29.79
3	2360.00	62.91 PK	74.00	-11.09	1.00 V	116	32.97	29.94
4	2360.00	51.67 AV	54.00	-2.33	1.00 V	116	21.73	29.94
5	2390.00	68.69 PK	74.00	-5.31	1.00 V	278	38.63	30.06
6	2390.00	53.10 AV	54.00	-0.90	1.00 V	278	23.04	30.06
7	*2412.00	115.07 PK			1.00 V	249	84.92	30.15
8	*2412.00	100.94 AV			1.00 V	249	70.79	30.15
9	4824.00	53.61 PK	74.00	-20.39	1.19 V	204	18.15	35.46
10	4824.00	38.83 AV	54.00	-15.17	1.19 V	204	3.37	35.46
11	#7236.00	61.93 PK	95.07	-33.14	1.62 V	95	20.08	41.85
12	#7236.00	47.93 AV	80.94	-33.01	1.62 V	95	6.08	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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2360.00	65.10 PK	74.00	-8.90	1.43 H	91	35.16	29.94
2	2360.00	43.10 AV	54.00	-10.90	1.43 H	91	13.16	29.94
3	2385.00	65.20 PK	74.00	-8.80	1.42 H	174	35.16	30.04
4	2385.00	43.60 AV	54.00	-10.40	1.42 H	174	13.56	30.04
5	*2437.00	107.40 PK			1.33 H	169	77.16	30.24
6	*2437.00	95.40 AV			1.33 H	169	65.16	30.24
7	4874.00	48.92 PK	74.00	-25.08	1.87 H	290	13.37	35.55
8	4874.00	35.24 AV	54.00	-18.76	1.87 H	290	-0.31	35.55
9	7311.00	57.53 PK	74.00	-16.47	1.40 H	298	15.49	42.04
10	7311.00	42.01 AV	54.00	-11.99	1.40 H	298	-0.03	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	2360.00	61.00 PK	74.00	-13.00	1.00 V	9	31.06	29.94
2	2360.00	52.86 AV	54.00	-1.14	1.00 V	9	22.92	29.94
3	2385.00	64.94 PK	74.00	-9.06	1.00 V	262	34.90	30.04
4	2385.00	53.10 AV	54.00	-0.90	1.00 V	262	23.06	30.04
5	*2437.00	116.87 PK			1.02 V	334	86.63	30.24
6	*2437.00	105.55 AV			1.02 V	334	75.31	30.24
7	4874.00	54.65 PK	74.00	-19.35	1.41 V	193	19.10	35.55
8	4874.00	41.02 AV	54.00	-12.98	1.41 V	193	5.47	35.55
9	7311.00	62.90 PK	74.00	-11.10	1.68 V	174	20.86	42.04
10	7311.00	47.72 AV	54.00	-6.28	1.68 V	174	5.68	42.04

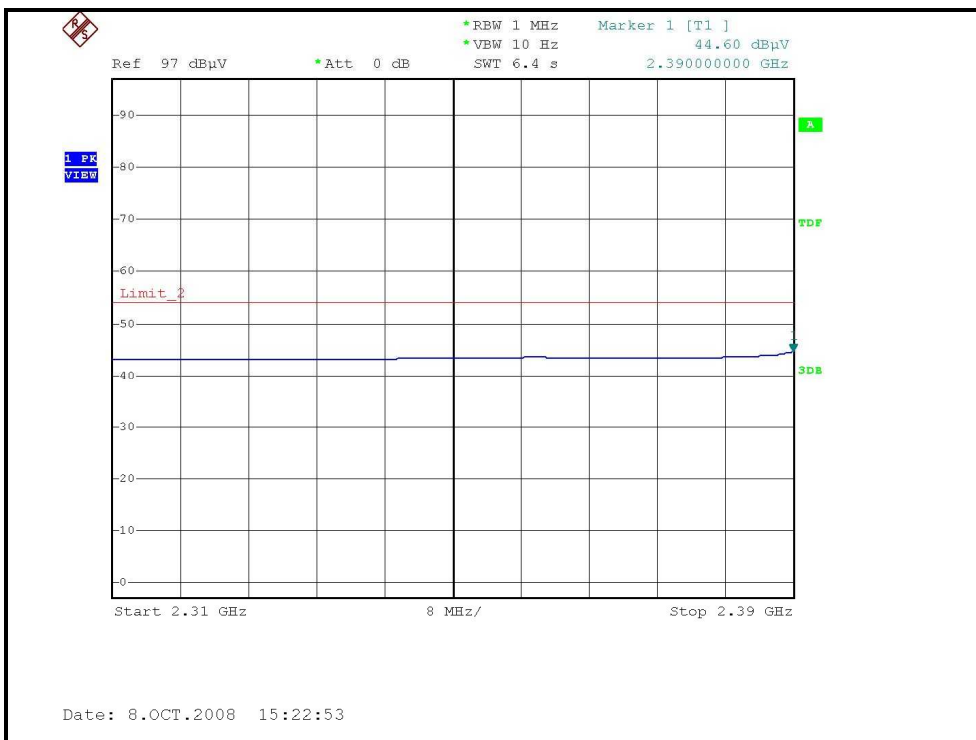
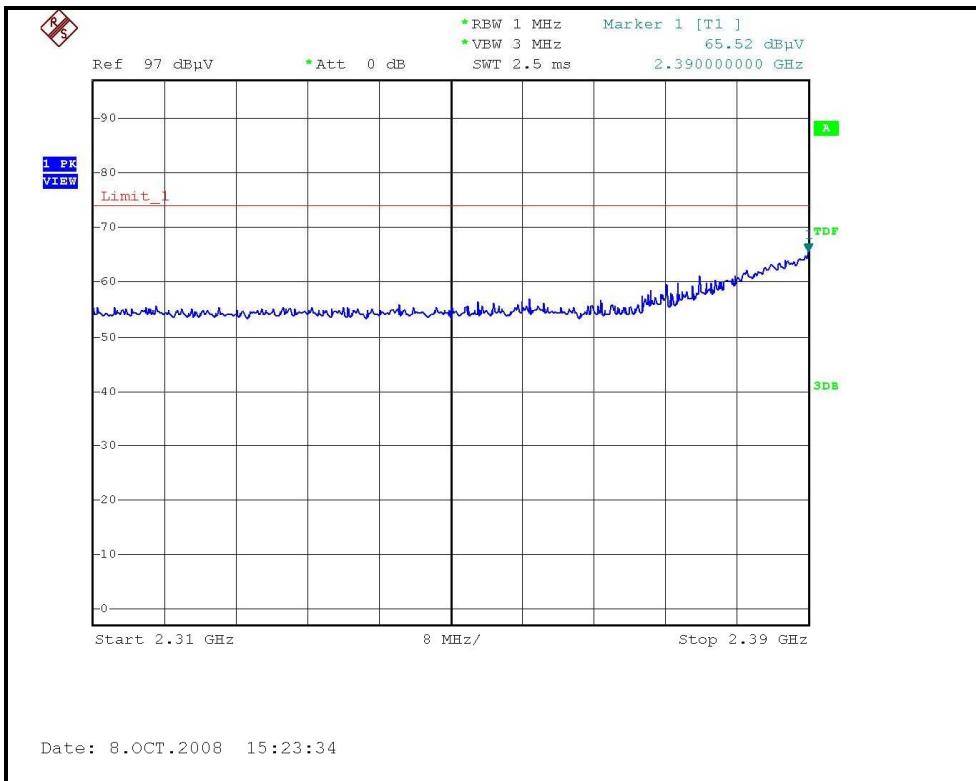
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

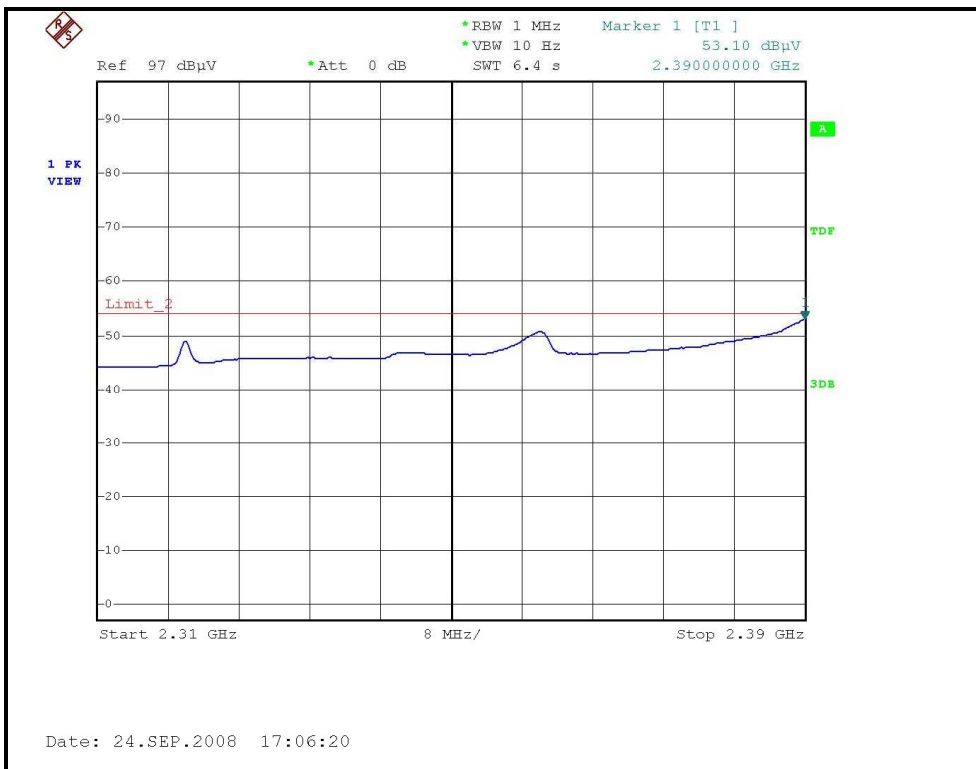
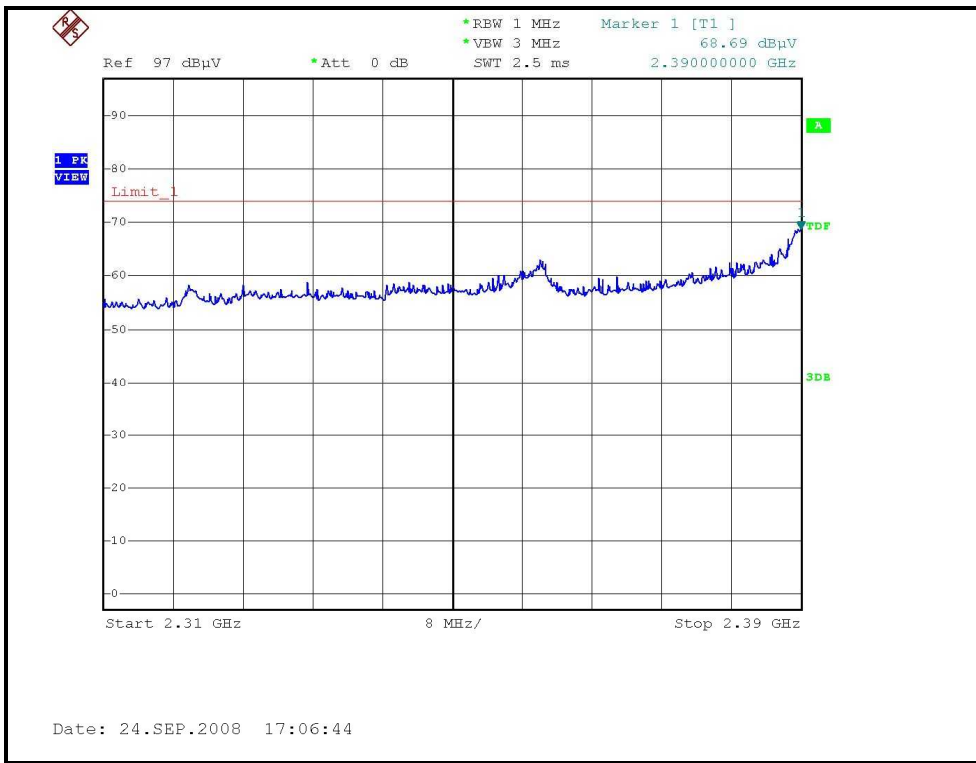
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.93 PK			1.25 H	168	73.59	30.34
2	*2462.00	93.04 AV			1.25 H	168	62.70	30.34
3	2483.50	61.38 PK	74.00	-12.62	1.26 H	167	30.95	30.43
4	2483.50	44.19 AV	54.00	-9.81	1.26 H	167	13.76	30.43
5	4924.00	50.39 PK	74.00	-23.61	1.71 H	287	14.76	35.63
6	4924.00	36.22 AV	54.00	-17.78	1.71 H	287	0.59	35.63
7	7386.00	57.76 PK	74.00	-16.24	1.76 H	294	15.53	42.23
8	7386.00	42.82 AV	54.00	-11.18	1.76 H	294	0.59	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	2360.00	59.81 PK	74.00	-14.19	1.00 V	278	29.87	29.94
2	2360.00	52.34 AV	54.00	-1.66	1.00 V	278	22.40	29.94
3	*2462.00	115.40 PK			1.00 V	278	85.06	30.34
4	*2462.00	103.27 AV			1.00 V	278	72.93	30.34
5	2483.50	65.22 PK	74.00	-8.78	1.00 V	83	34.79	30.43
6	2483.50	52.10 AV	54.00	-1.90	1.00 V	83	21.67	30.43
7	4924.00	55.40 PK	74.00	-18.60	1.43 V	188	19.77	35.63
8	4924.00	41.69 AV	54.00	-12.31	1.43 V	188	6.06	35.63
9	7386.00	63.39 PK	74.00	-10.61	2.03 V	194	21.16	42.23
10	7386.00	46.95 AV	54.00	-7.05	2.03 V	194	4.72	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)





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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2280.00	53.10 PK	74.00	-20.90	1.34 H	129	23.47	29.63
2	2280.00	43.20 AV	54.00	-10.80	1.34 H	129	13.57	29.63
3	2320.00	53.20 PK	74.00	-20.80	1.21 H	127	23.41	29.79
4	2320.00	44.20 AV	54.00	-9.80	1.21 H	127	14.41	29.79
5	2360.00	53.80 PK	74.00	-20.20	1.27 H	130	23.86	29.94
6	2360.00	43.60 AV	54.00	-10.40	1.27 H	130	13.66	29.94
7	2388.00	62.34 PK	74.00	-11.66	1.67 H	169	32.29	30.05
8	2388.00	44.99 AV	54.00	-9.01	1.67 H	169	14.94	30.05
9	*2422.00	99.19 PK			1.34 H	170	69.00	30.19
10	*2422.00	88.31 AV			1.34 H	170	58.12	30.19
11	4844.00	47.10 PK	74.00	-26.90	1.57 H	203	11.60	35.50
12	4844.00	33.20 AV	54.00	-20.80	1.57 H	203	-2.30	35.50
13	7266.00	51.30 PK	74.00	-22.70	1.64 H	84	9.37	41.93
14	7266.00	38.20 AV	54.00	-15.80	1.64 H	84	-3.73	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 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2280.00	59.29 PK	74.00	-14.71	1.00 V	10	29.66	29.63
2	2280.00	50.71 AV	54.00	-3.29	1.00 V	10	21.08	29.63
3	2320.00	60.61 PK	74.00	-13.39	1.00 V	359	30.82	29.79
4	2320.00	48.50 AV	54.00	-5.50	1.00 V	359	18.71	29.79
5	2360.00	61.17 PK	74.00	-12.83	1.00 V	248	31.23	29.94
6	2360.00	53.38 AV	54.00	-0.62	1.00 V	248	23.44	29.94
7	2390.00	65.69 PK	74.00	-8.31	1.00 V	248	35.63	30.06
8	2390.00	53.23 AV	54.00	-0.77	1.00 V	248	23.17	30.06
9	*2422.00	109.17 PK			1.00 V	22	78.98	30.19
10	*2422.00	98.33 AV			1.00 V	22	68.14	30.19
11	4844.00	48.10 PK	74.00	-25.90	1.61 V	195	12.60	35.50
12	4844.00	34.40 AV	54.00	-19.60	1.61 V	195	-1.10	35.50
13	7266.00	53.30 PK	74.00	-20.70	1.61 V	94	11.37	41.93
14	7266.00	40.60 AV	54.00	-13.40	1.61 V	94	-1.33	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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2280.00	55.00 PK	74.00	-19.00	1.24 H	240	25.37	29.63
2	2280.00	43.60 AV	54.00	-10.40	1.24 H	240	13.97	29.63
3	2320.00	54.20 PK	74.00	-19.80	1.70 H	169	24.41	29.79
4	2320.00	43.10 AV	54.00	-10.90	1.70 H	169	13.31	29.79
5	2360.00	53.10 PK	74.00	-20.90	1.35 H	168	23.16	29.94
6	2360.00	43.20 AV	54.00	-10.80	1.35 H	168	13.26	29.94
7	*2437.00	99.70 PK			1.33 H	12	69.46	30.24
8	*2437.00	88.50 AV			1.33 H	12	58.26	30.24
9	4874.00	48.40 PK	74.00	-25.60	1.46 H	212	12.85	35.55
10	4874.00	34.50 AV	54.00	-19.50	1.46 H	212	-1.05	35.55
11	7311.00	52.20 PK	74.00	-21.80	1.59 H	82	10.16	42.04
12	7311.00	39.10 AV	54.00	-14.90	1.59 H	82	-2.94	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 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2280.00	58.82 PK	74.00	-15.18	1.06 V	9	29.19	29.63
2	2280.00	49.67 AV	54.00	-4.33	1.06 V	9	20.04	29.63
3	2320.00	59.50 PK	74.00	-14.50	1.07 V	8	29.71	29.79
4	2320.00	49.29 AV	54.00	-4.71	1.07 V	8	19.50	29.79
5	2360.00	61.06 PK	74.00	-12.94	1.00 V	9	31.12	29.94
6	2360.00	51.35 AV	54.00	-2.65	1.00 V	9	21.41	29.94
7	*2437.00	110.04 PK			1.04 V	334	79.80	30.24
8	*2437.00	98.80 AV			1.04 V	334	68.56	30.24
9	4874.00	48.90 PK	74.00	-25.10	1.62 V	189	13.35	35.55
10	4874.00	35.10 AV	54.00	-18.90	1.62 V	189	-0.45	35.55
11	7311.00	56.50 PK	74.00	-17.50	1.67 V	98	14.46	42.04
12	7311.00	42.40 AV	54.00	-11.60	1.67 V	98	0.36	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	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

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	2280.00	55.80 PK	74.00	-18.20	1.25 H	241	26.17	29.63
2	2280.00	45.10 AV	54.00	-8.90	1.25 H	241	15.47	29.63
3	2320.00	54.70 PK	74.00	-19.30	1.79 H	164	24.91	29.79
4	2320.00	44.60 AV	54.00	-9.40	1.79 H	164	14.81	29.79
5	2360.00	49.60 PK	74.00	-24.40	1.47 H	219	19.66	29.94
6	2360.00	45.60 AV	54.00	-8.40	1.47 H	219	15.66	29.94
7	*2452.00	100.25 PK			1.35 H	169	69.95	30.30
8	*2452.00	89.61 AV			1.35 H	169	59.31	30.30
9	2483.50	64.85 PK	74.00	-9.15	1.25 H	168	34.42	30.43
10	2483.50	44.07 AV	54.00	-9.93	1.25 H	168	13.64	30.43
11	4904.00	49.60 PK	74.00	-24.40	1.51 H	218	14.00	35.60
12	4904.00	35.10 AV	54.00	-18.90	1.51 H	218	-0.50	35.60
13	7356.00	52.80 PK	74.00	-21.20	1.64 H	74	10.64	42.16
14	7356.00	40.20 AV	54.00	-13.80	1.64 H	74	-1.96	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.

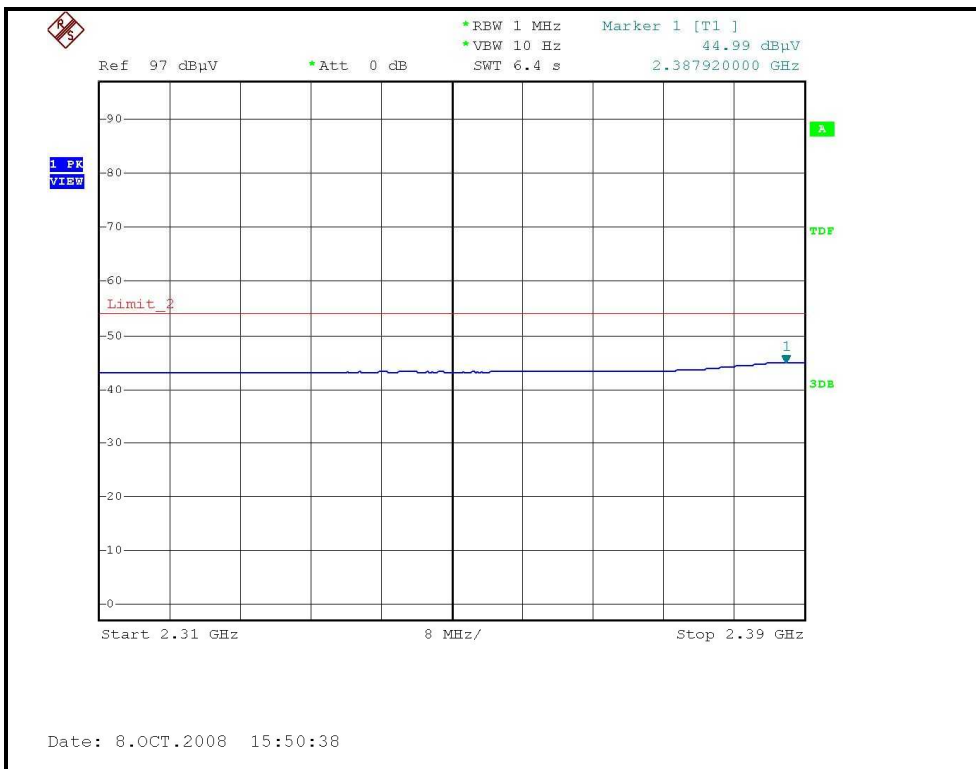
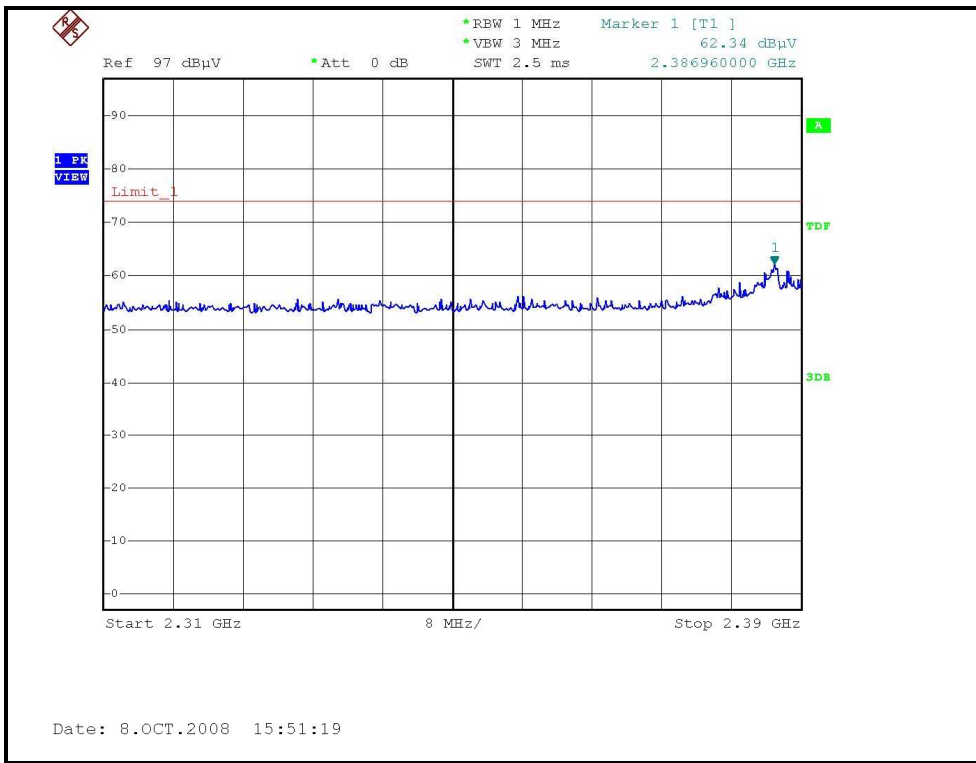


EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH 965hPa	TESTED BY	Wen Yu

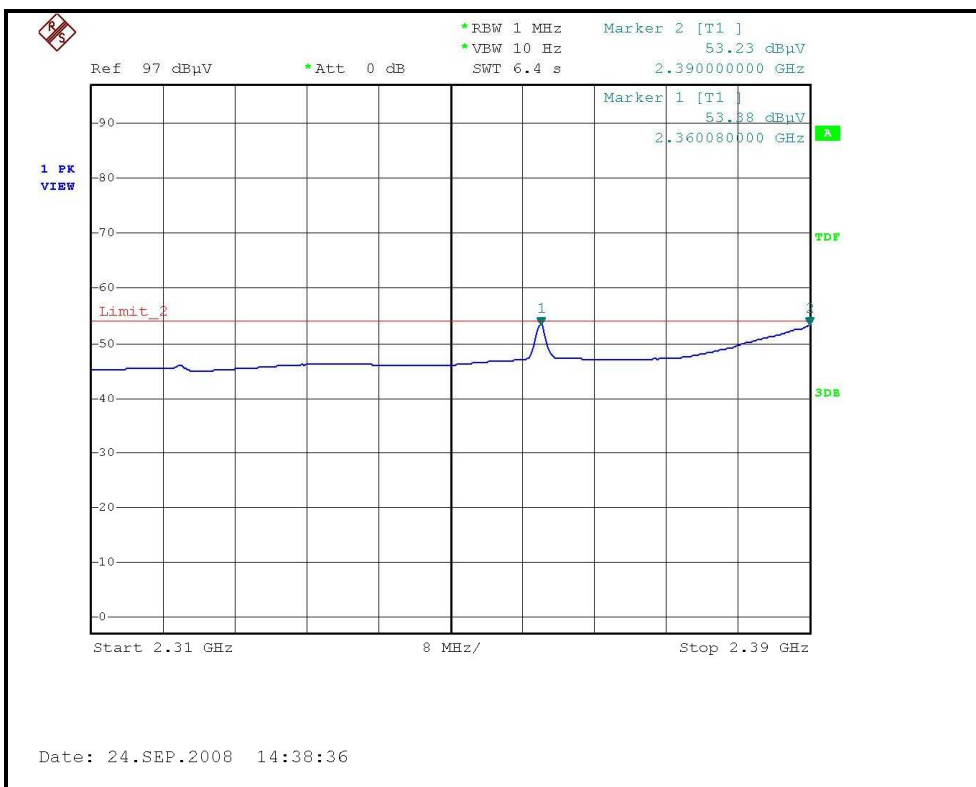
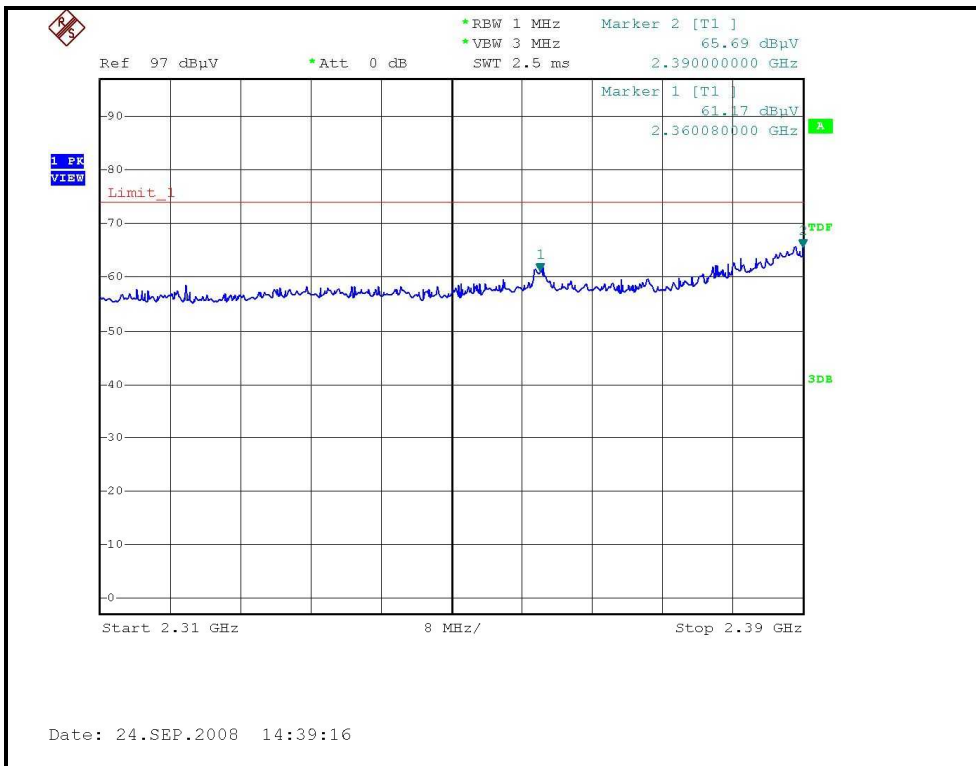
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2280.00	57.80 PK	74.00	-16.20	1.00 V	8	28.17	29.63
2	2280.00	48.00 AV	54.00	-6.00	1.00 V	8	18.37	29.63
3	2320.00	60.18 PK	74.00	-13.82	1.00 V	2	30.39	29.79
4	2320.00	52.70 AV	54.00	-1.30	1.00 V	2	22.91	29.79
5	2360.00	59.50 PK	74.00	-14.50	1.00 V	21	29.56	29.94
6	2360.00	47.60 AV	54.00	-6.40	1.00 V	21	17.66	29.94
7	*2462.00	110.40 PK			1.00 V	279	80.06	30.34
8	*2462.00	98.50 AV			1.00 V	279	68.16	30.34
9	2483.50	67.84 PK	74.00	-6.16	1.00 V	278	37.41	30.43
10	2483.50	53.00 AV	54.00	-1.00	1.00 V	278	22.57	30.43
11	4904.00	49.30 PK	74.00	-24.70	1.64 V	191	13.70	35.60
12	4904.00	36.40 AV	54.00	-17.60	1.64 V	191	0.80	35.60
13	7356.00	57.40 PK	74.00	-16.60	1.61 V	95	15.24	42.16
14	7356.00	43.40 AV	54.00	-10.60	1.61 V	95	1.24	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)





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 DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 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.

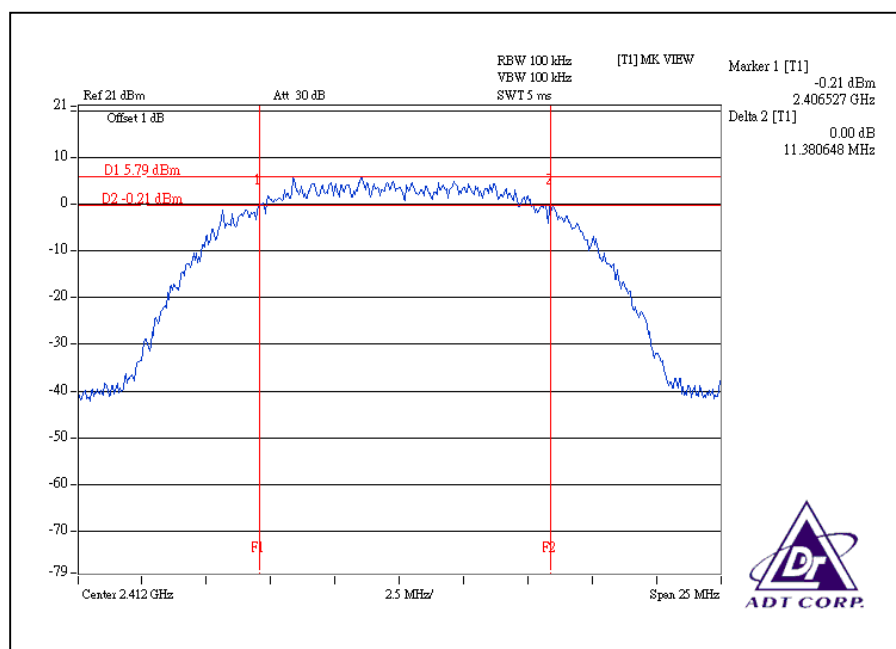
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

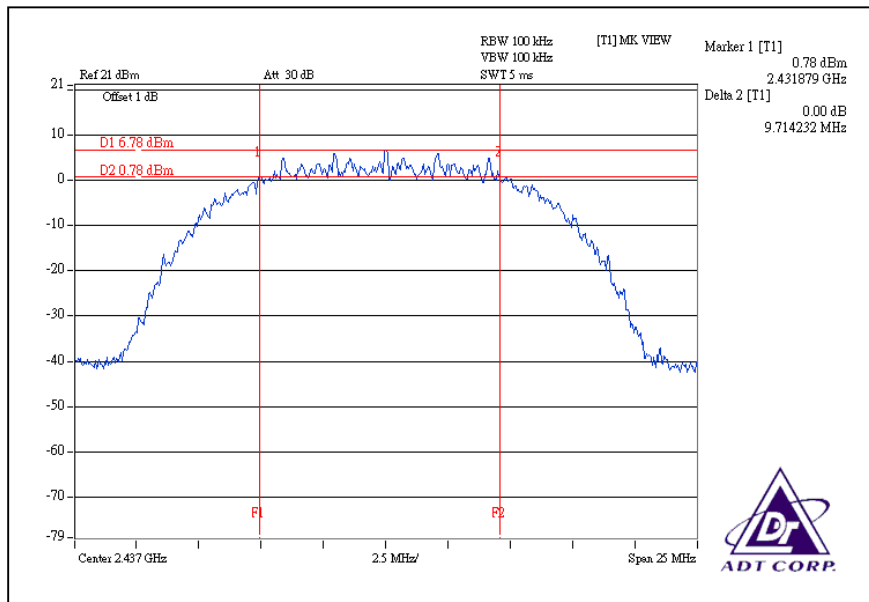
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	11.38	0.5	PASS
6	2437	9.71	0.5	PASS
11	2462	8.43	0.5	PASS

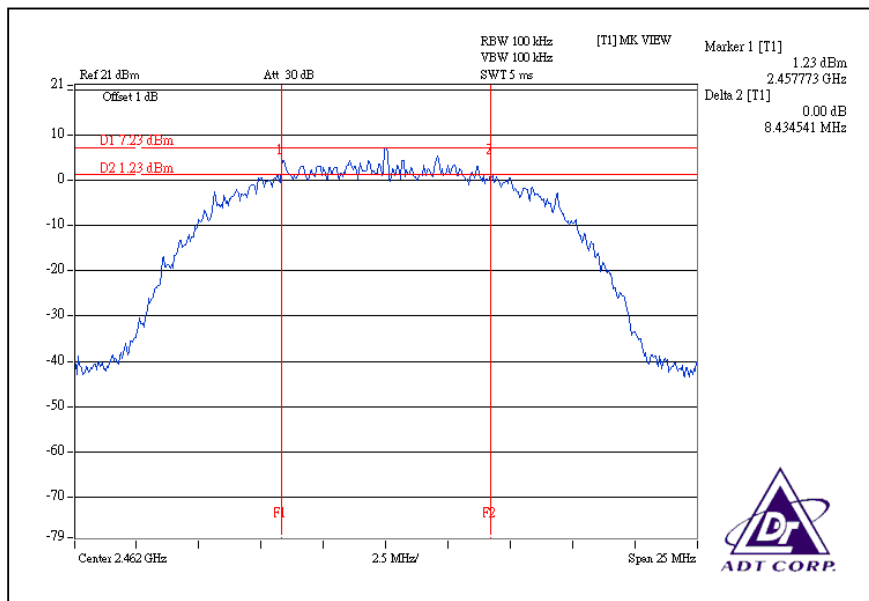
CH1



CH6



CH11

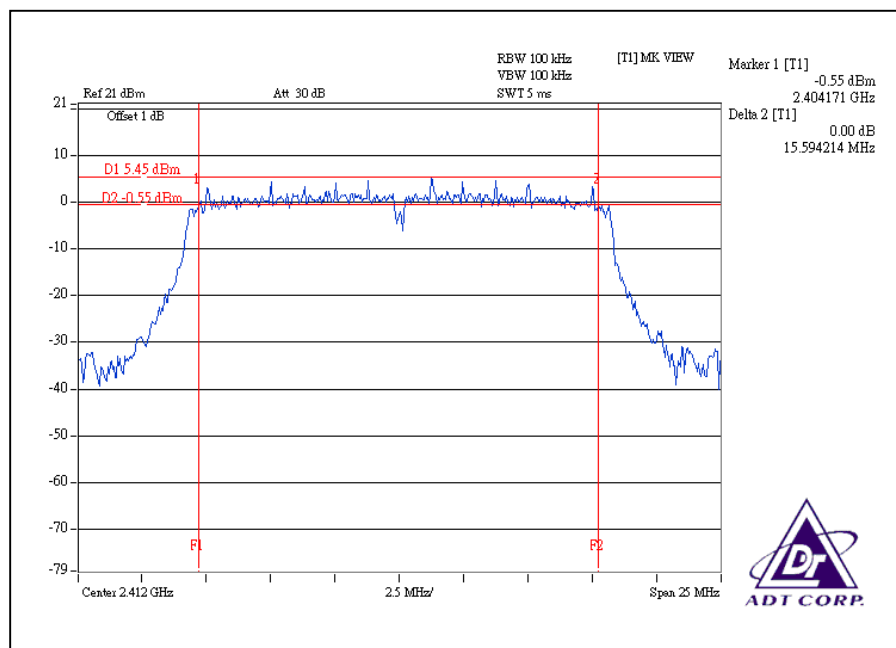


802.11g OFDM MODULATION:

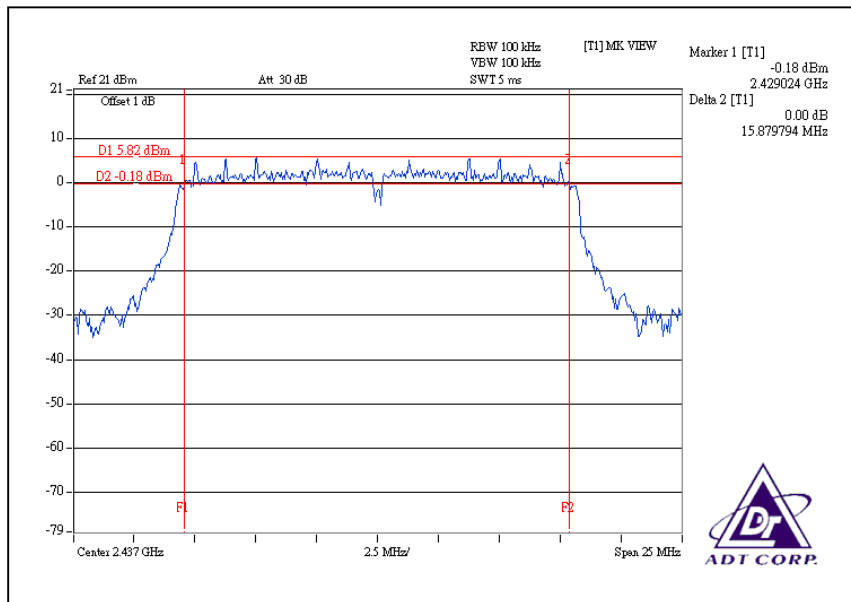
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.59	0.5	PASS
6	2437	15.88	0.5	PASS
11	2462	15.83	0.5	PASS

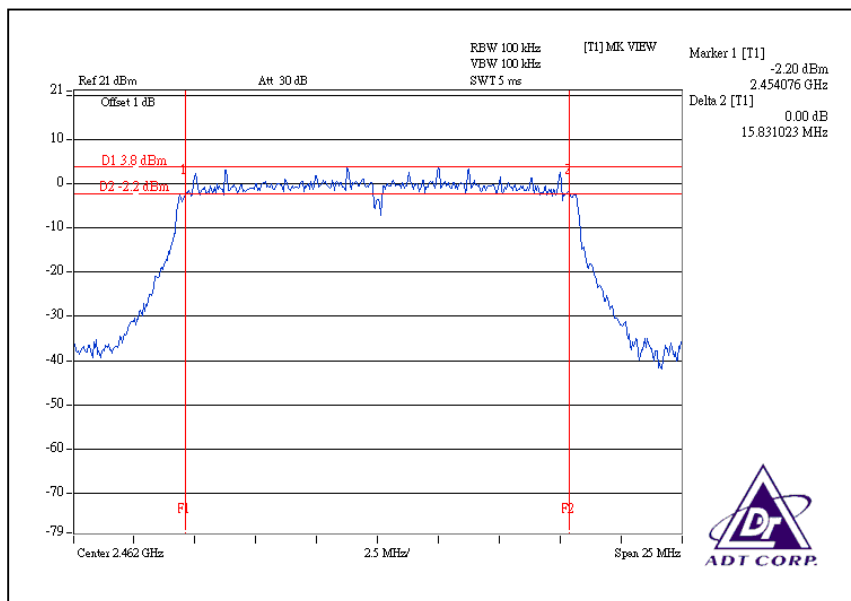
CH1



CH6



CH11

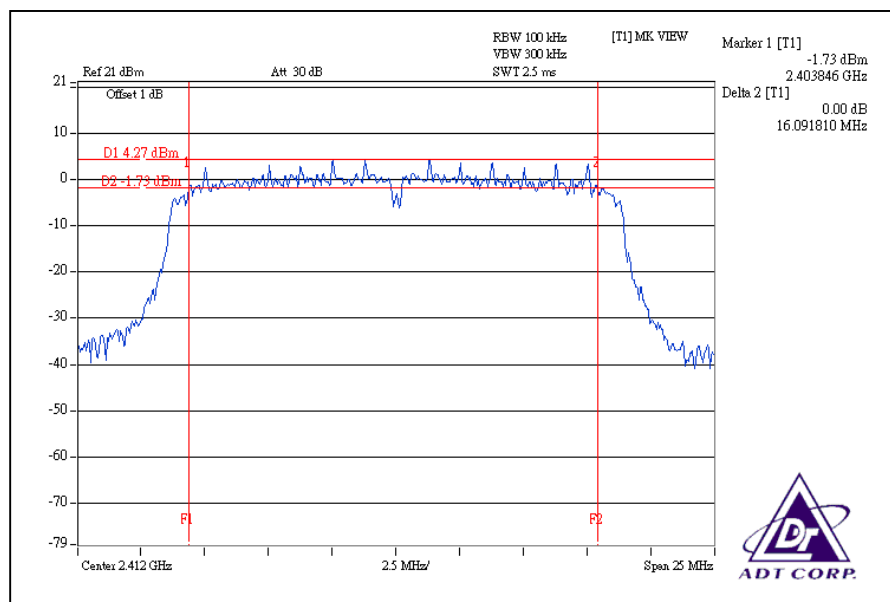


DRAFT 802.11n (20MHz) OFDM MODULATION:

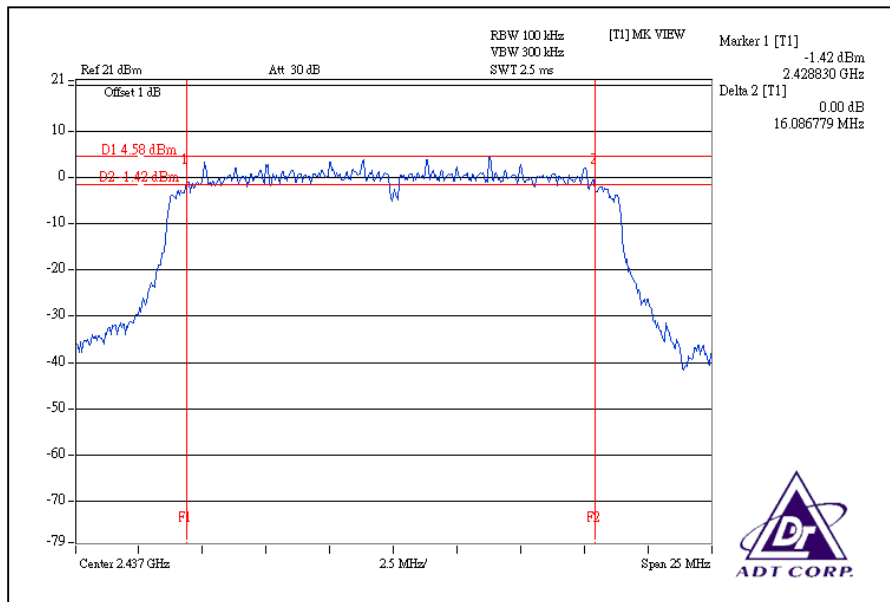
MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.09	15.8	0.5	PASS
6	2437	16.09	16.43	0.5	PASS
11	2462	15.79	15.82	0.5	PASS

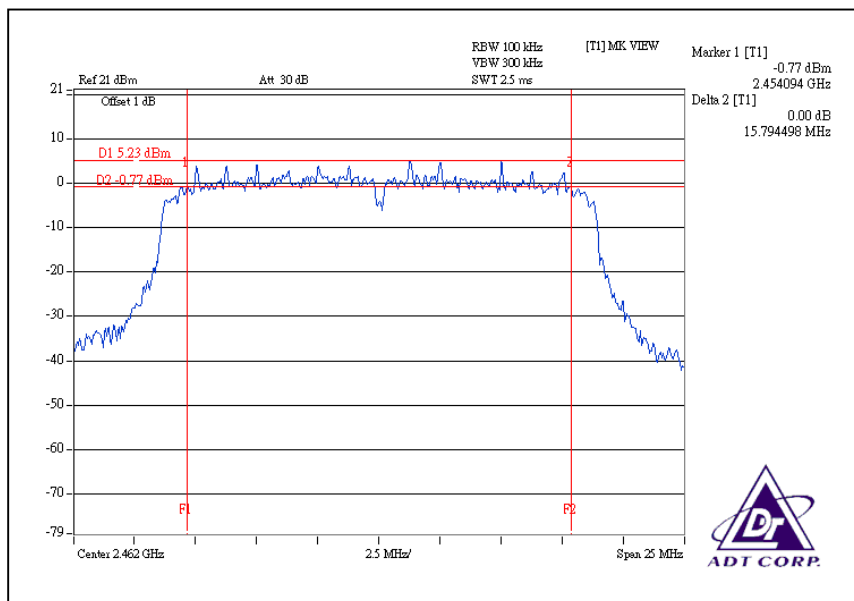
For Chain(0): CH1



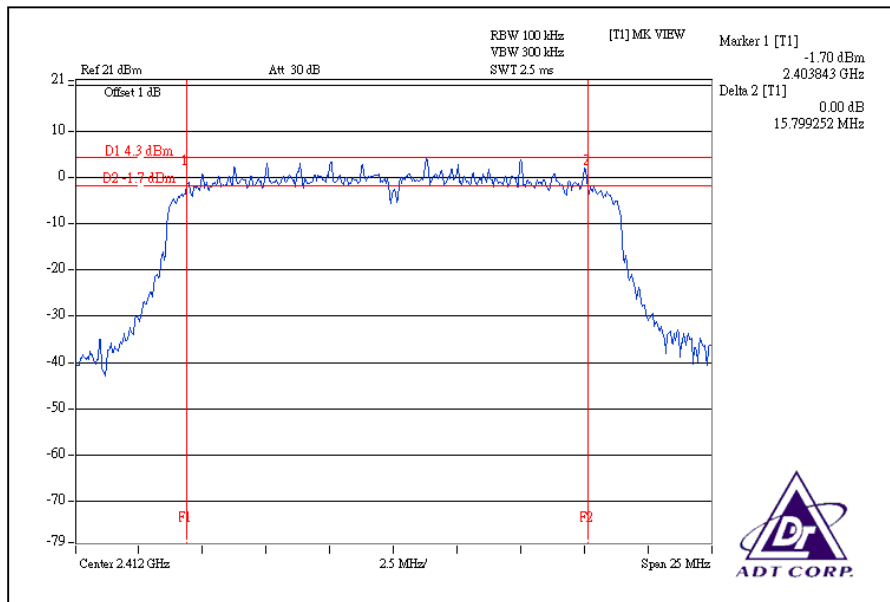
CH6



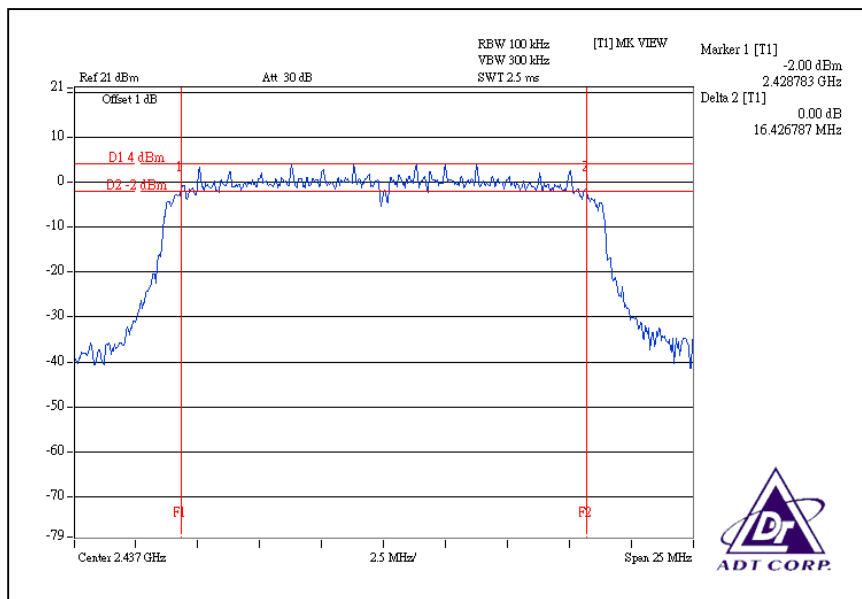
CH11



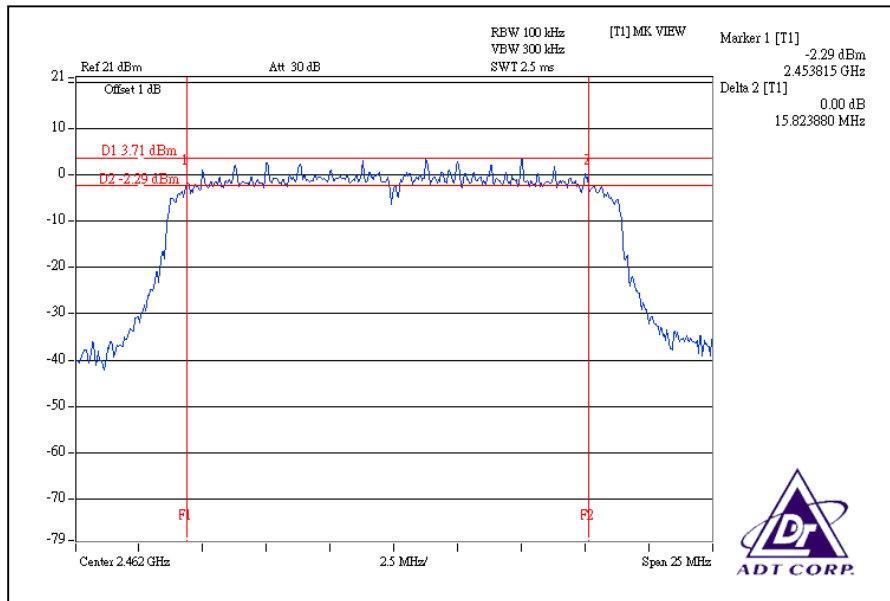
For CHAIN(1): CH1



CH6



CH11

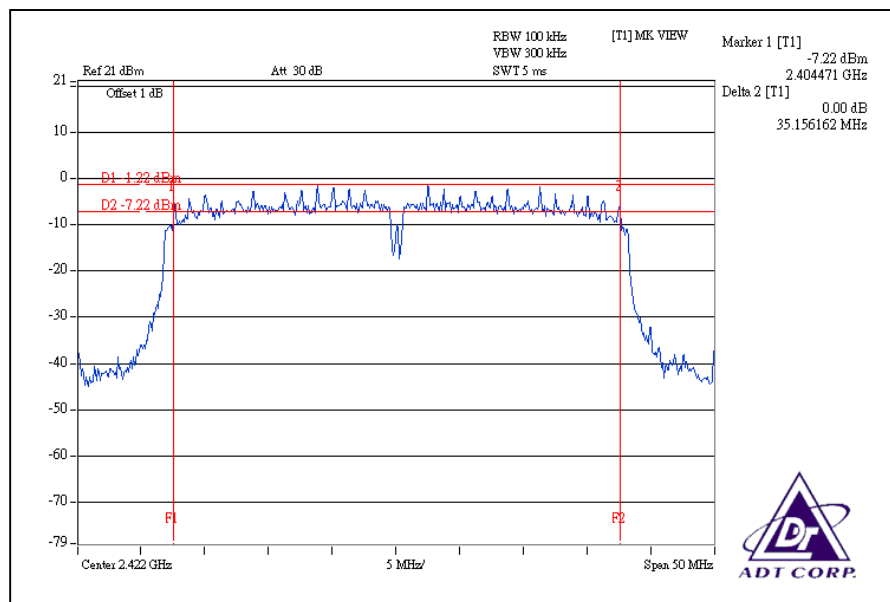


DRAFT 802.11n (40MHz) OFDM MODULATION:

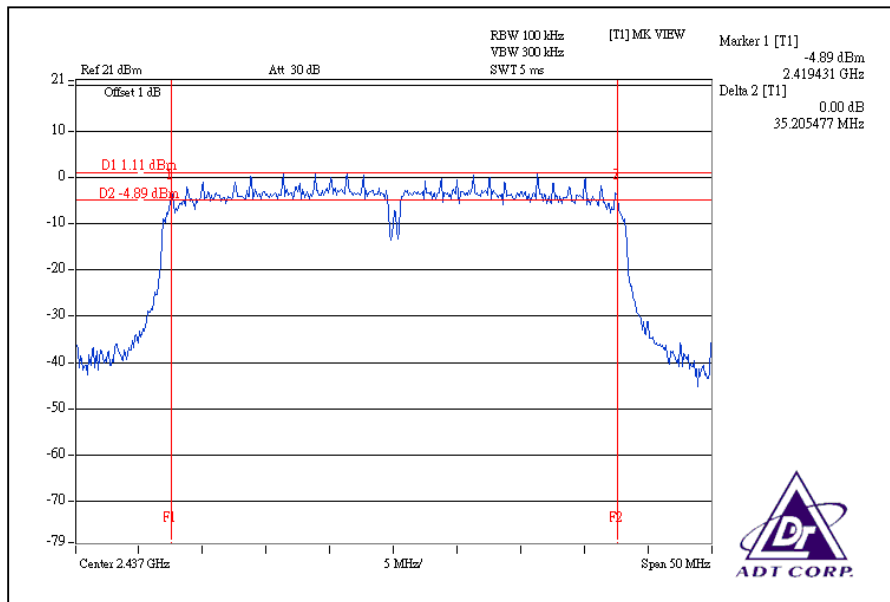
MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2422	35.16	35.17	0.5	PASS
4	2437	35.21	35.19	0.5	PASS
7	2452	35.16	35.19	0.5	PASS

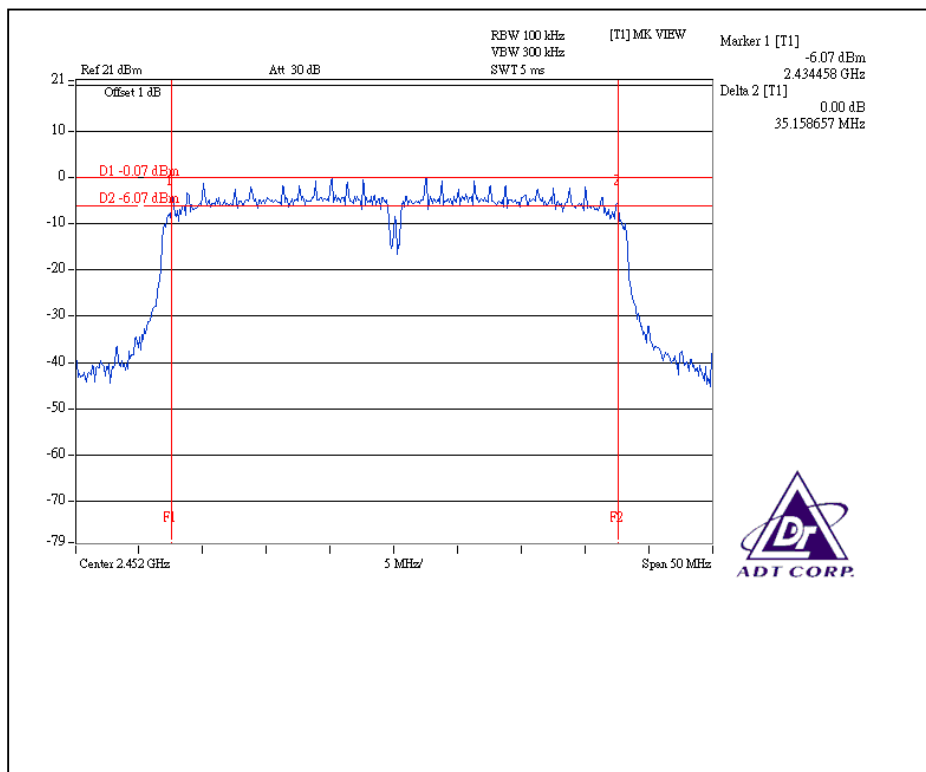
For Chain (0): CH1



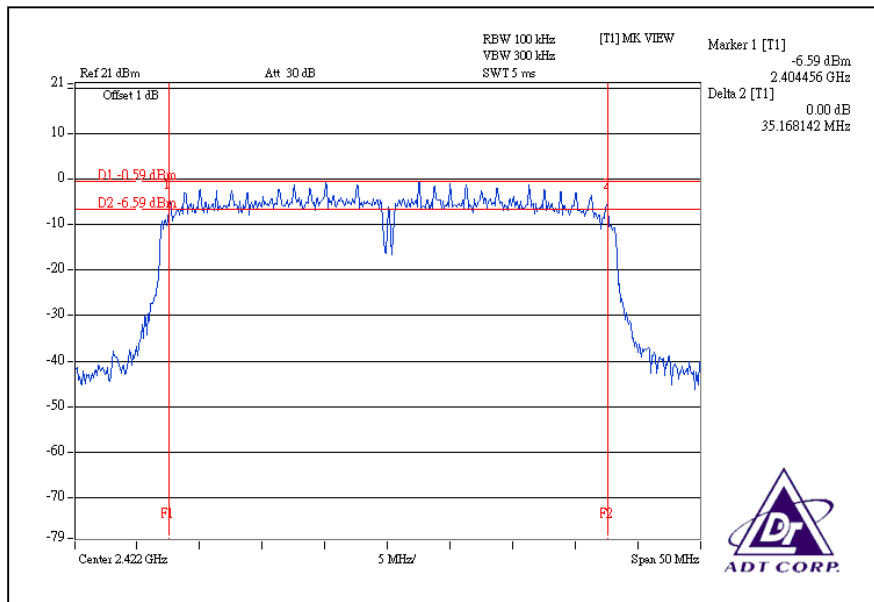
CH4



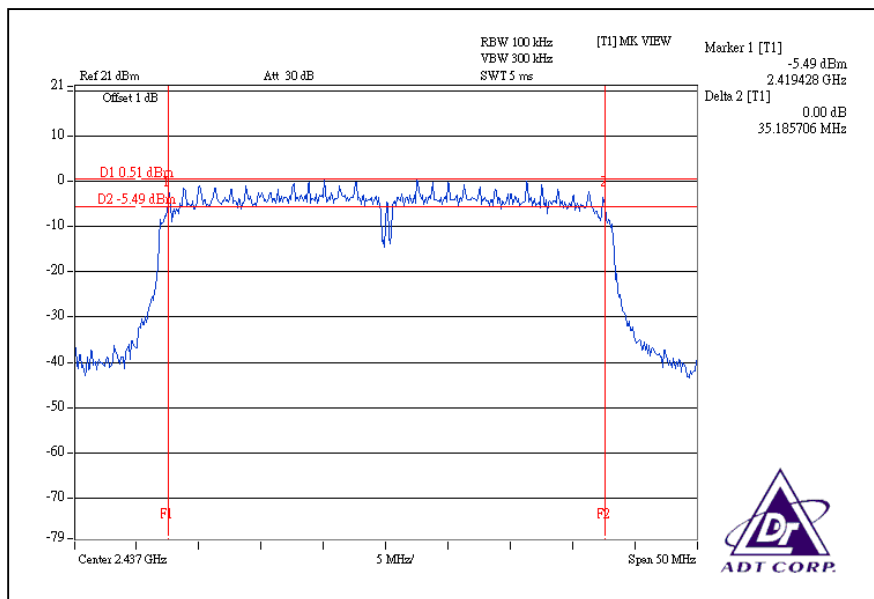
CH7



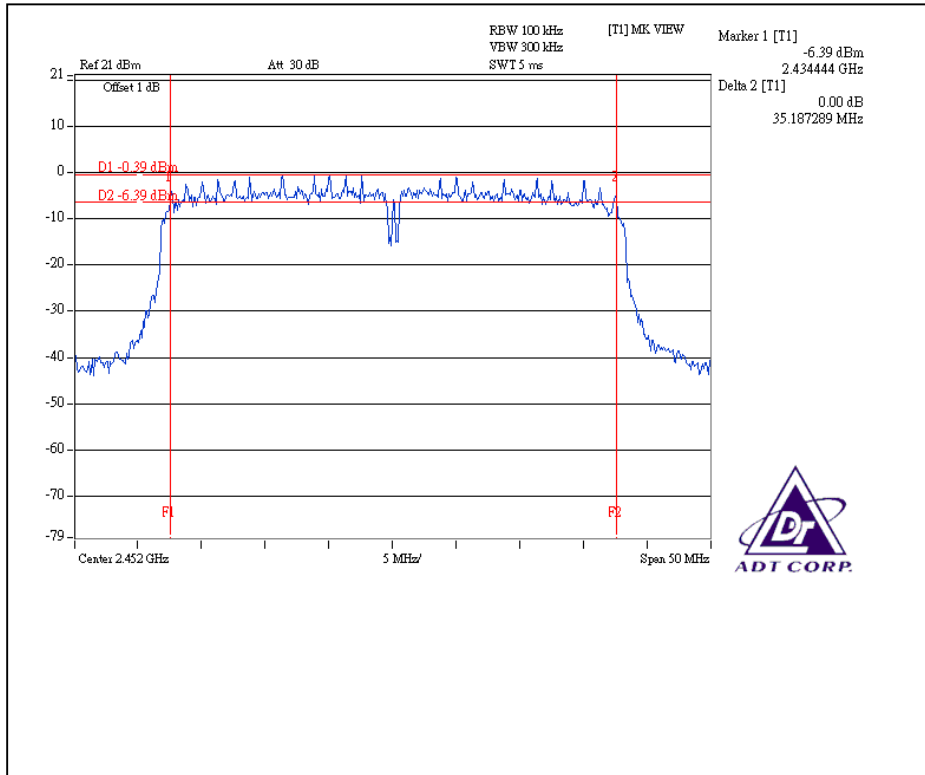
For Chain (1): CH1



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 DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 13, 2008	Aug. 12, 2009
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 26, 2007	Dec. 25, 2008
Anritsu Power Meter	ML2495A	0824006	June 14, 2008	June 13, 2009
Pulse Power Sensor	MA2411B	0738172	April 17, 2008	April 16, 2009

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	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	90.782	19.58	30	PASS
6	2437	72.778	18.62	30	PASS
11	2462	67.143	18.27	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	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	55.590	17.45	30	PASS
6	2437	72.778	18.62	30	PASS
11	2462	39.811	16.00	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	Phoenix 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	306.196	292.415	24.86	24.66	598.611	27.77	30	PASS
6	2437	405.509	316.228	26.08	25.00	721.737	28.58	30	PASS
11	2462	301.995	293.765	24.80	24.68	595.760	27.75	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	Phoenix 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	114.288	116.681	20.58	20.67	230.969	23.64	30	PASS
4	2437	207.491	186.209	23.17	22.70	393.700	25.95	30	PASS
7	2452	166.341	140.605	22.21	21.48	306.946	24.87	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 DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

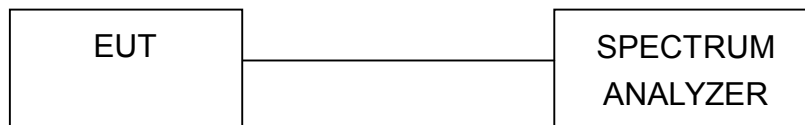
4.5.3 TEST PROCEDURE

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

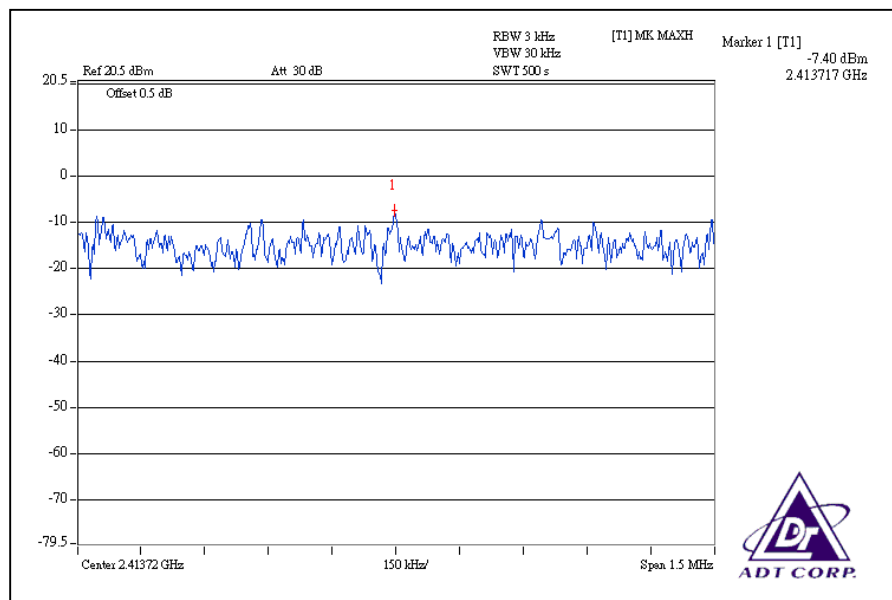
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

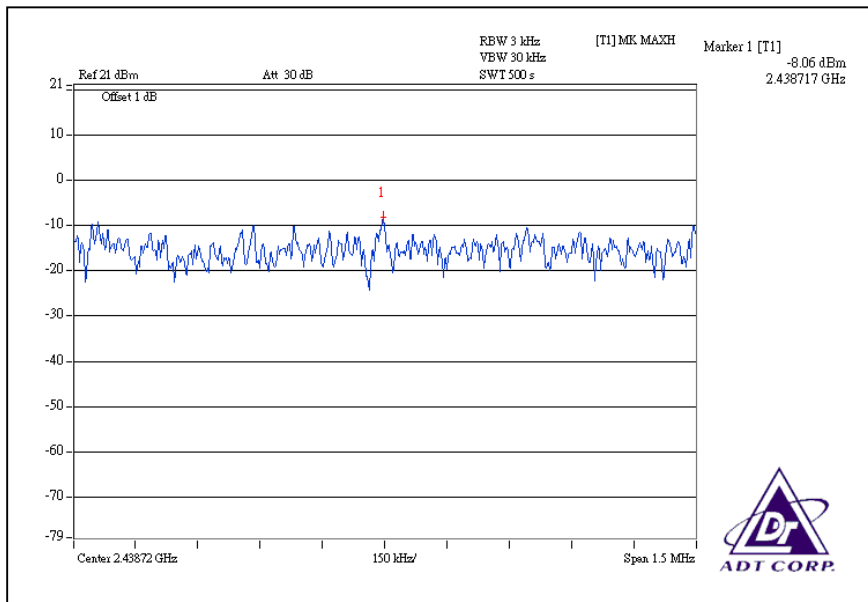
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.40	8	PASS
6	2437	-8.06	8	PASS
11	2462	-8.96	8	PASS

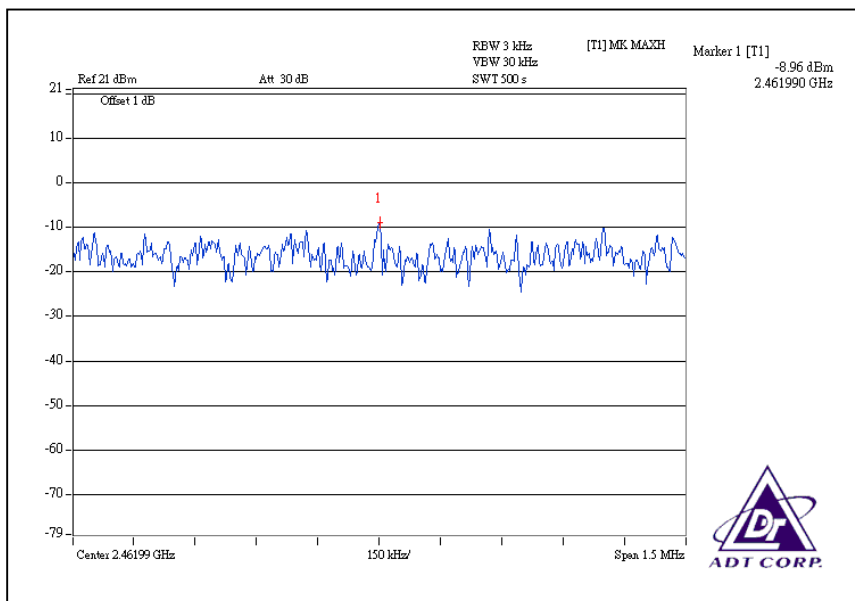
CH1



CH6



CH11

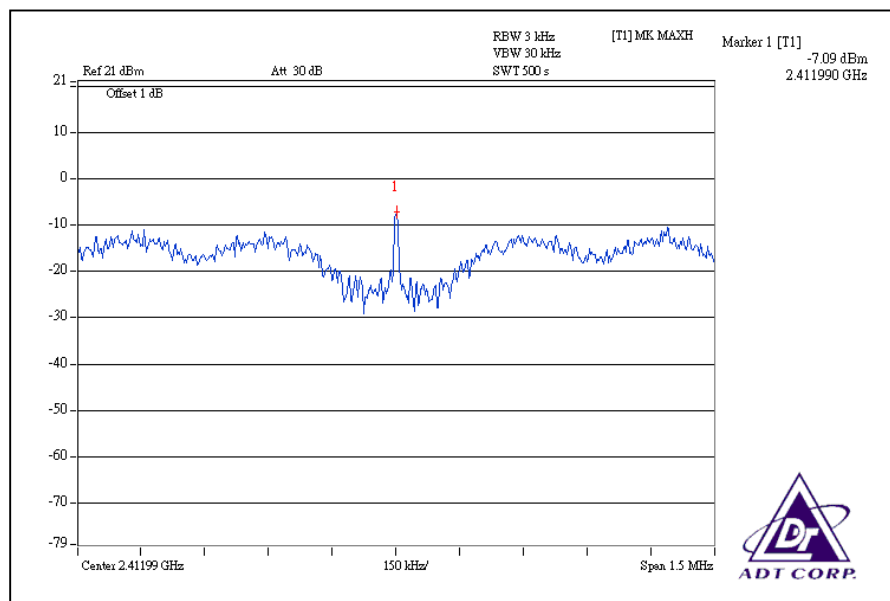


802.11g OFDM MODULATION:

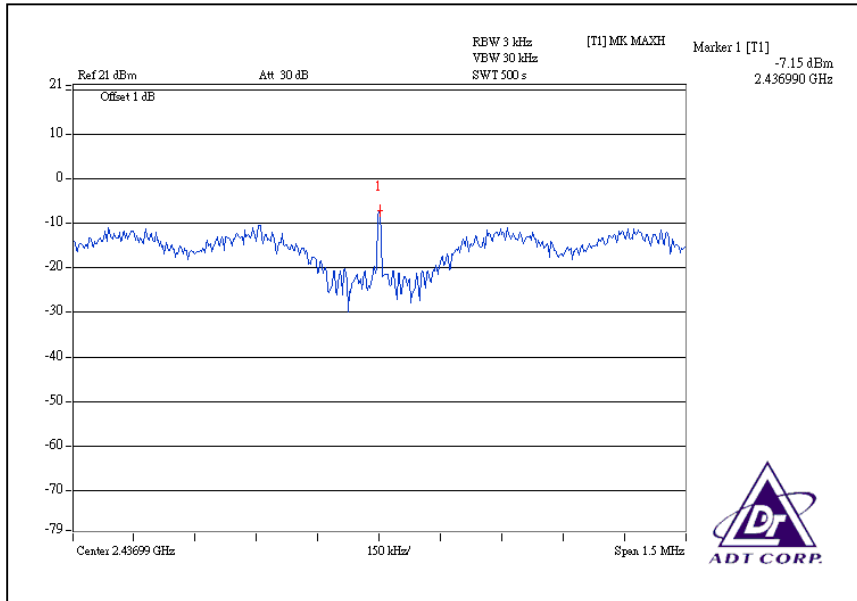
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.09	8	PASS
6	2437	-7.15	8	PASS
11	2462	-9.11	8	PASS

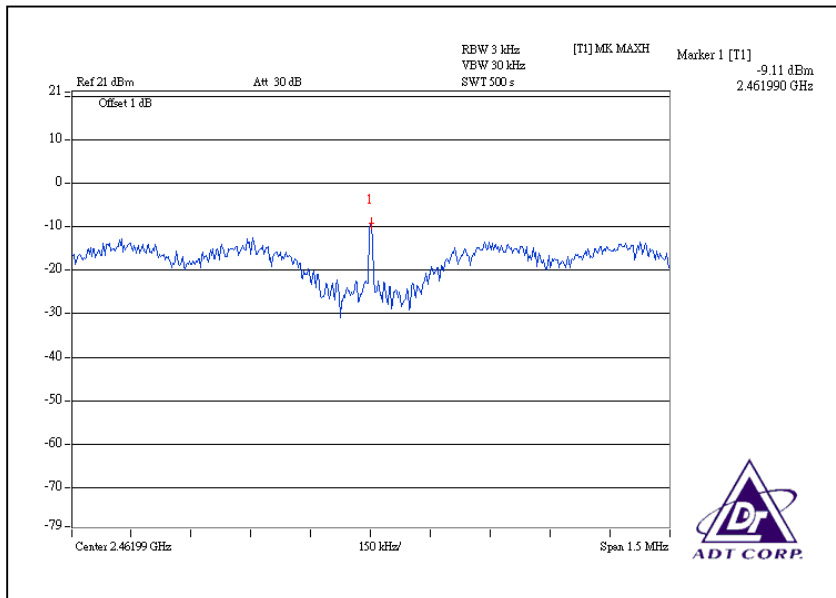
CH1



CH6



CH11

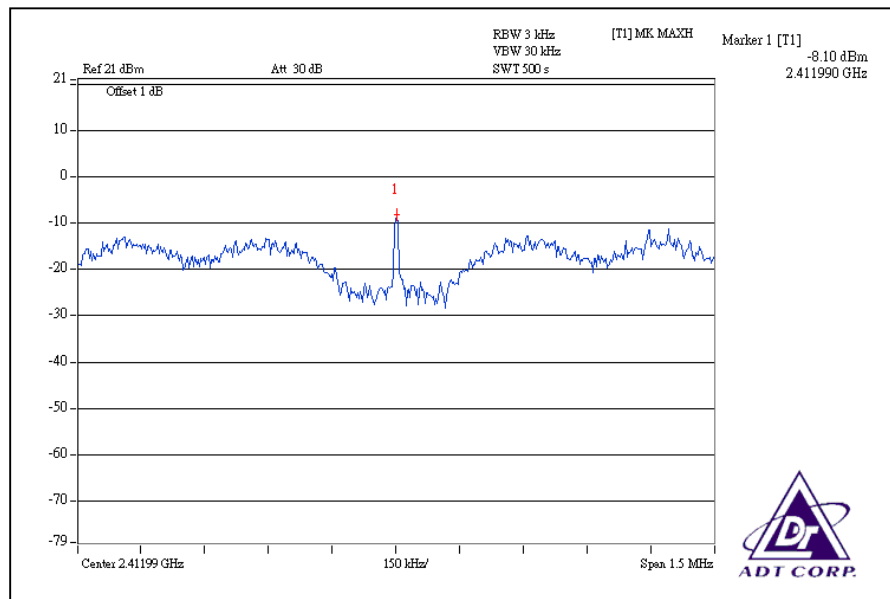


DRAFT 802.11n (20MHz) OFDM MODULATION:

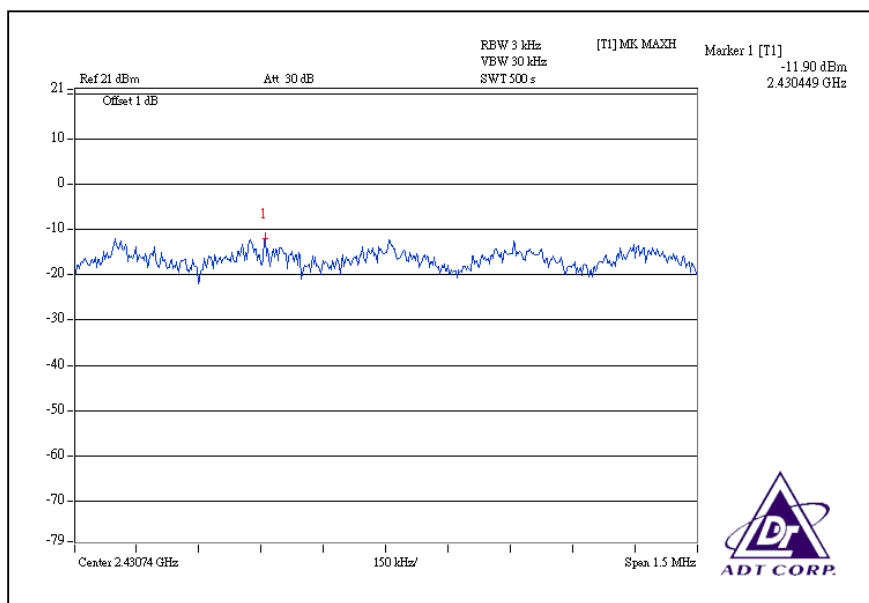
MODULATION TYPE	BPSK	TRANSFER RATE	14.444Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

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	0.155	0.242	-8.10	-6.16	0.397	-4.01	8	PASS
6	2437	0.065	0.249	-11.90	-6.03	0.314	-5.03	8	PASS
11	2462	0.164	0.190	-7.86	-7.22	0.354	-4.51	8	PASS

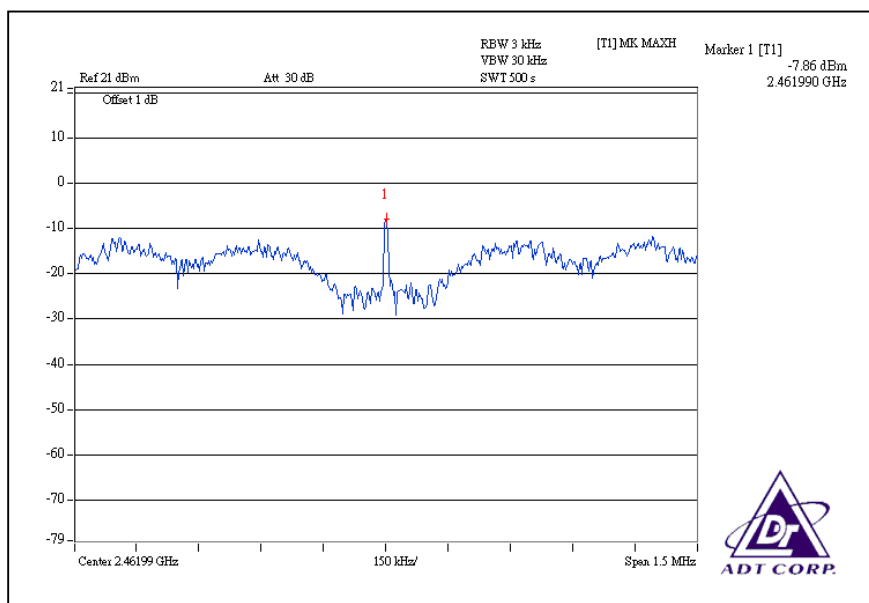
For Chain(0): CH1



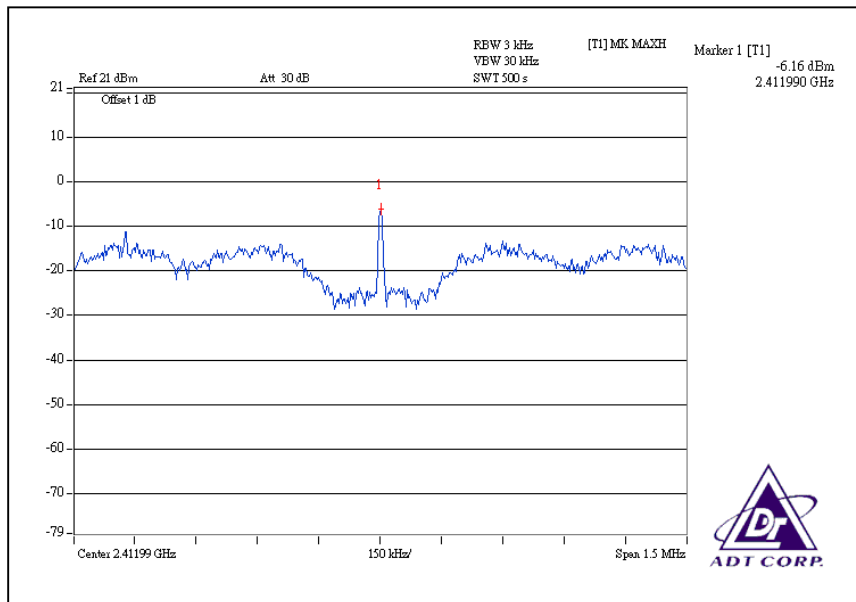
CH6



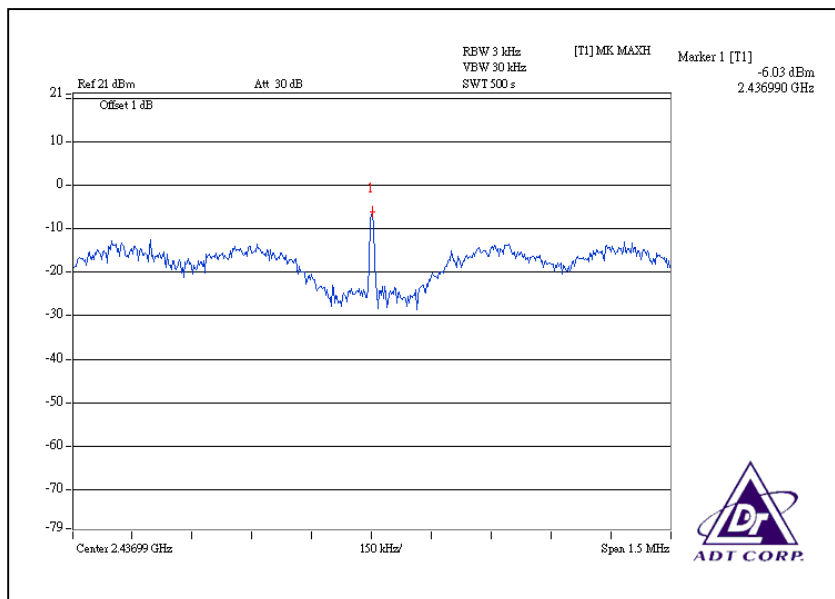
CH11



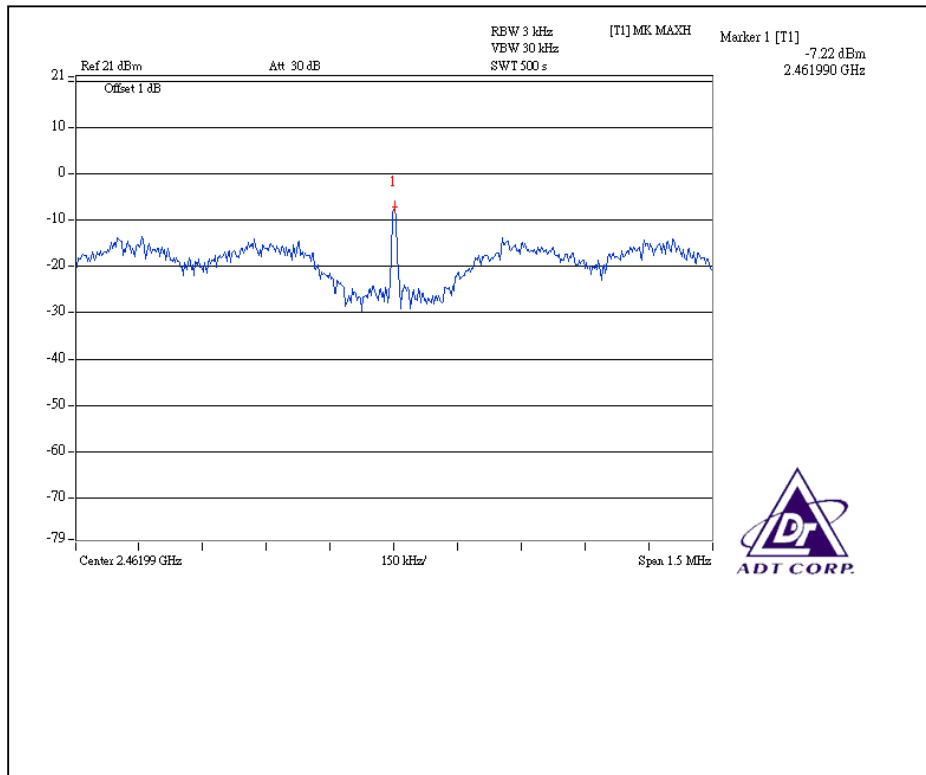
For Chain (1): CH1



CH6



CH11

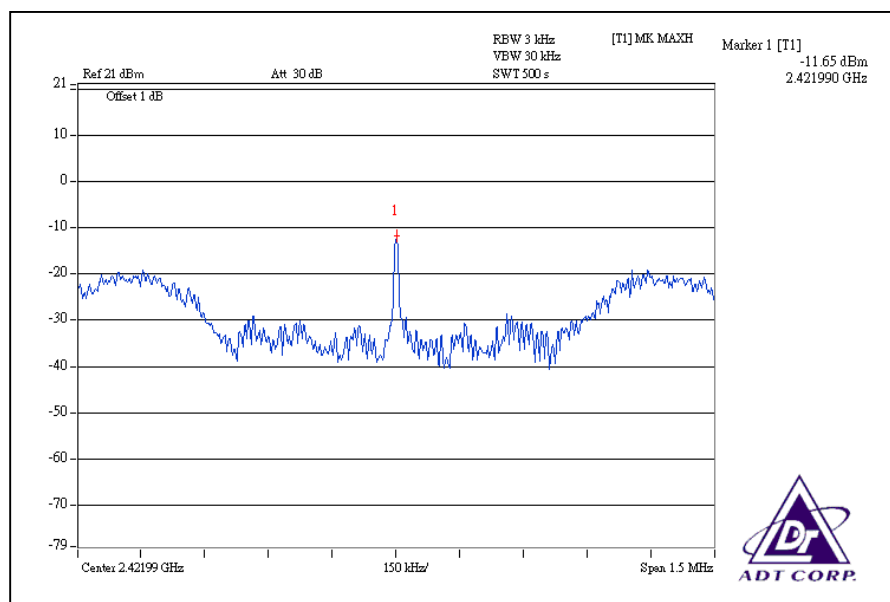


DRAFT 802.11n (40MHz) OFDM MODULATION:

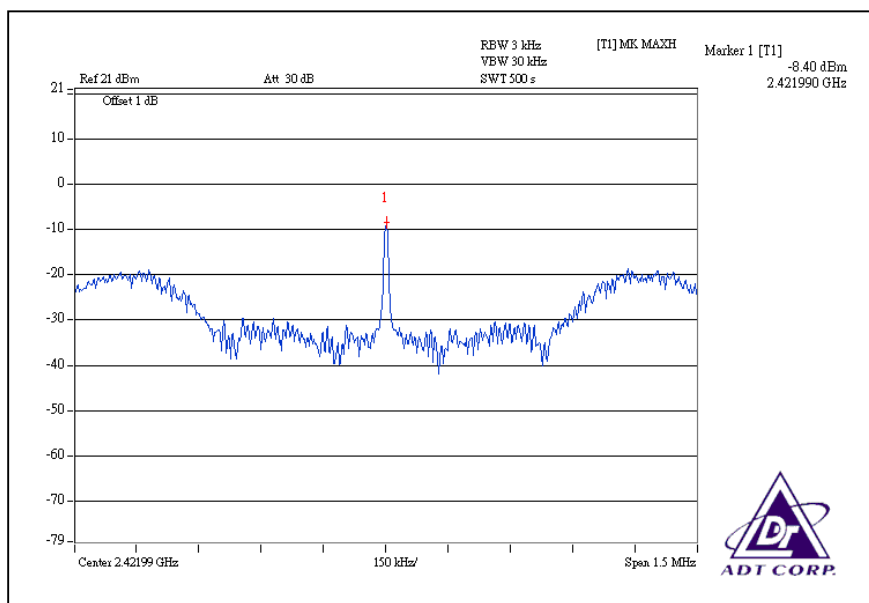
MODULATION TYPE	BPSK	TRANSFER RATE	30Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

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	0.068	0.145	-11.65	-8.40	0.213	-6.72	8	PASS
4	2437	0.092	0.193	-9.34	-7.13	0.285	-5.45	8	PASS
7	2452	0.064	0.163	-10.94	-7.88	0.227	-6.44	8	PASS

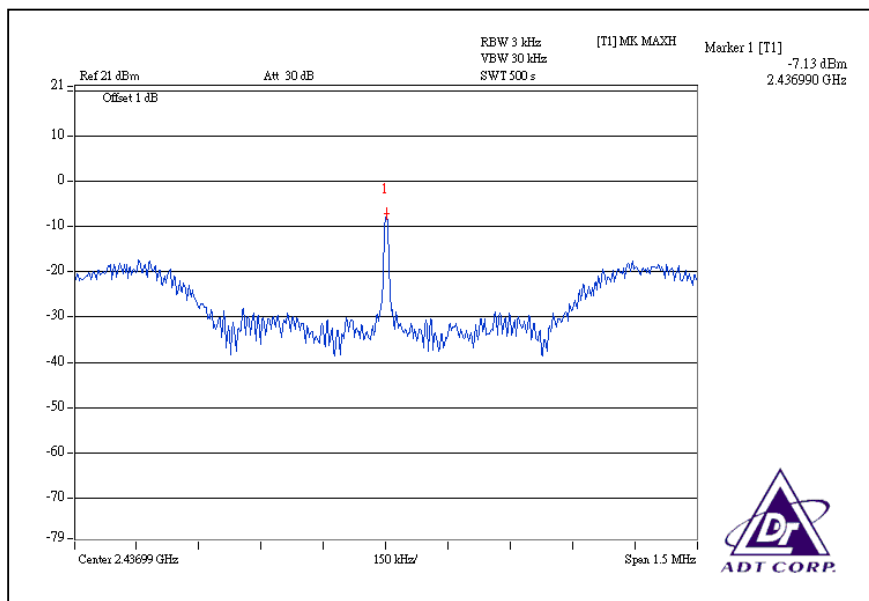
For Chain (0): CH1



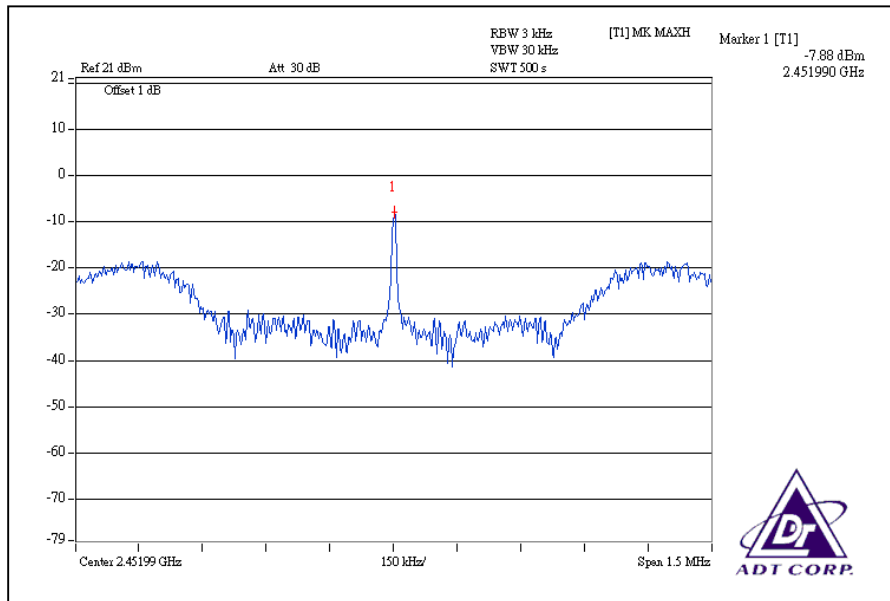
For Chain (1): CH1



CH4



CH7





4.6 OUTBAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUTBAND EMISSION 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 DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 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 was 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

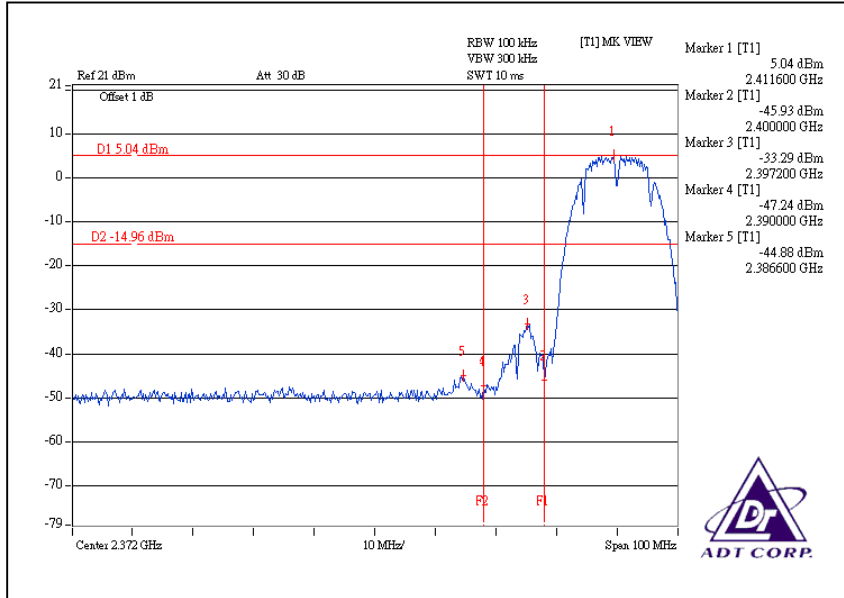
4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

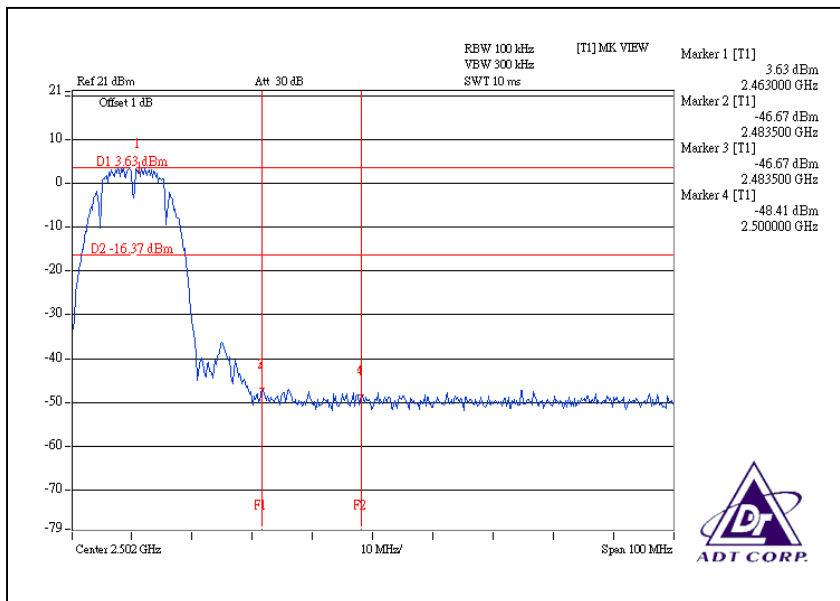
4.6.6 TEST RESULTS

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).

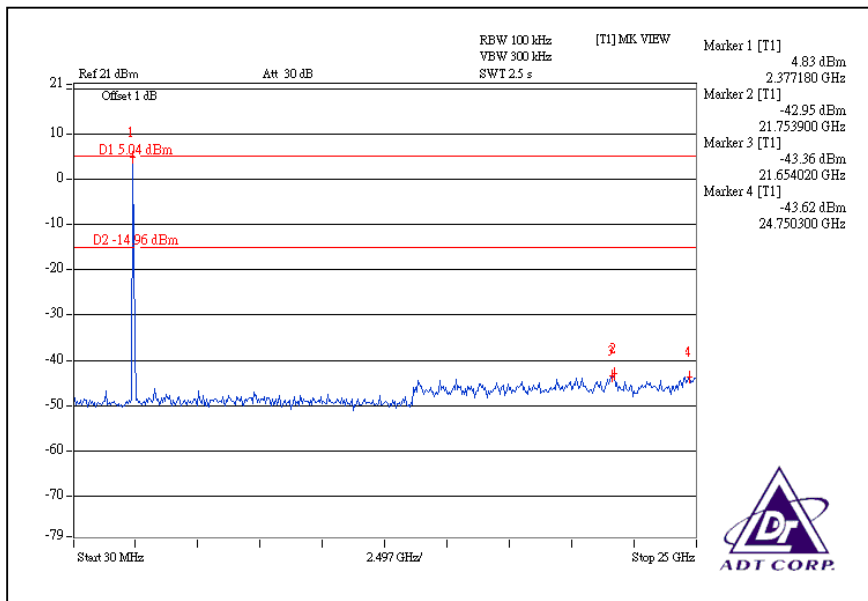
802.11b DSSS MODULATION: CH1



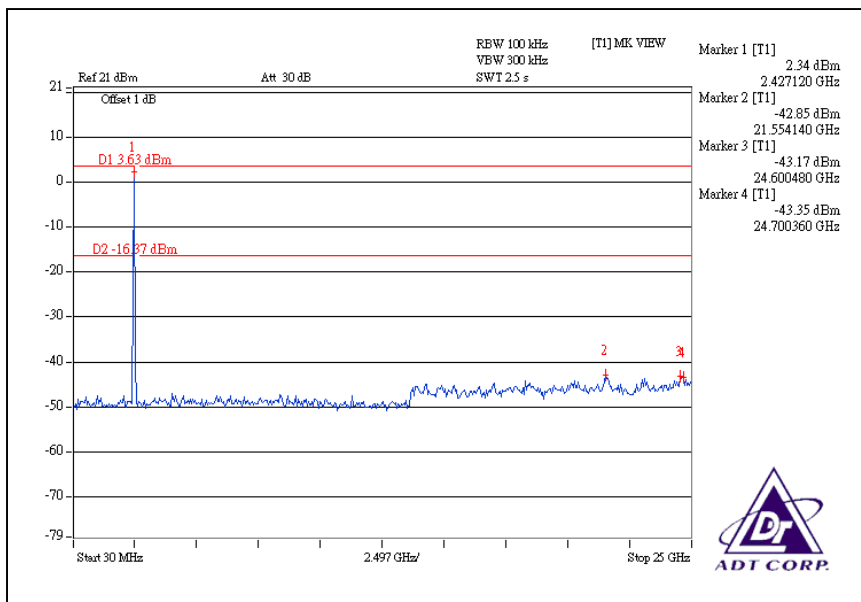
CH11



CH1

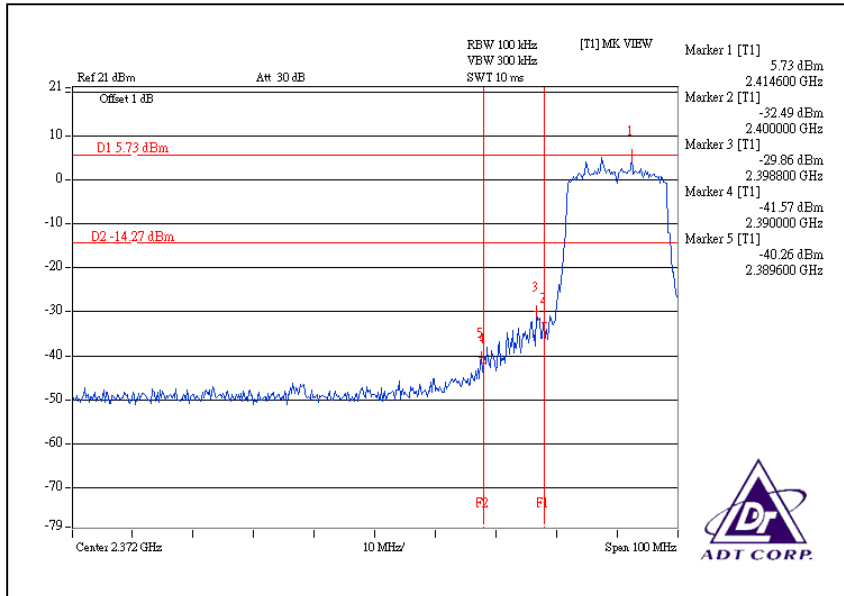


CH11

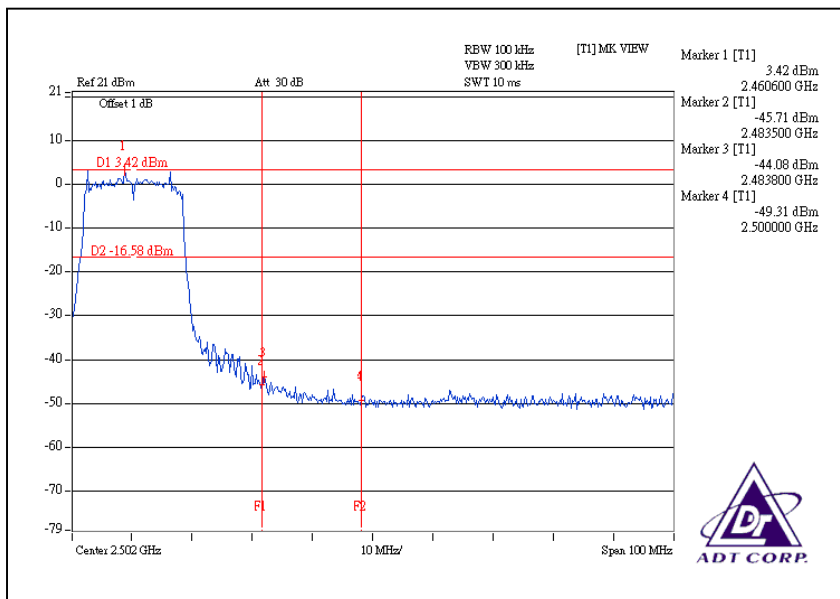


802.11g OFDM MODULATION:

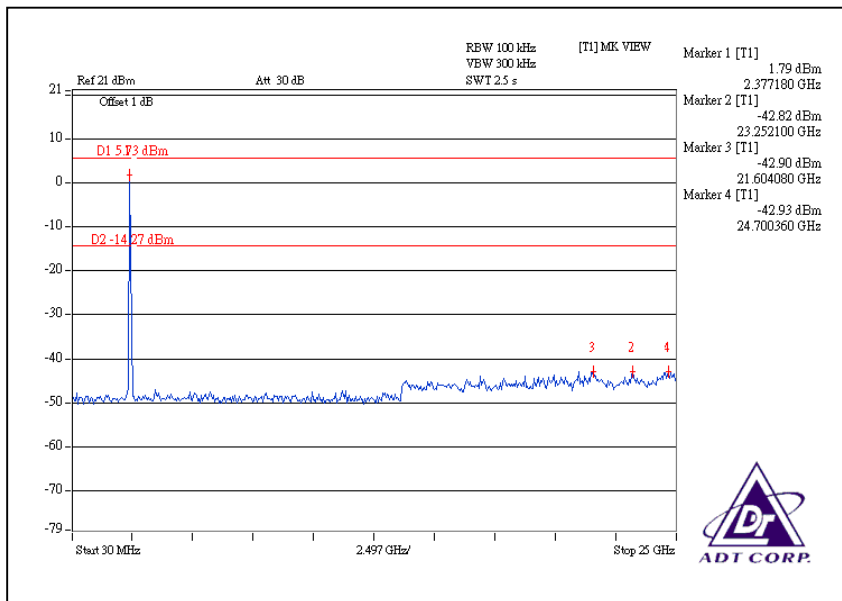
CH 1



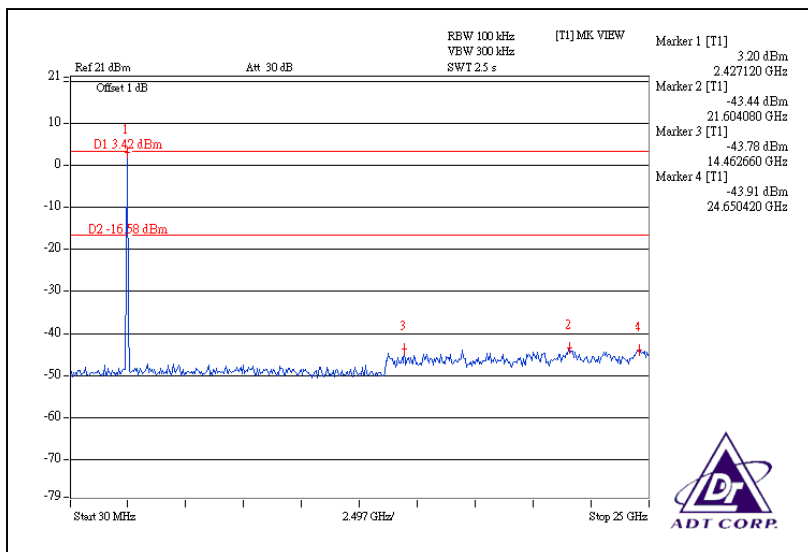
CH11



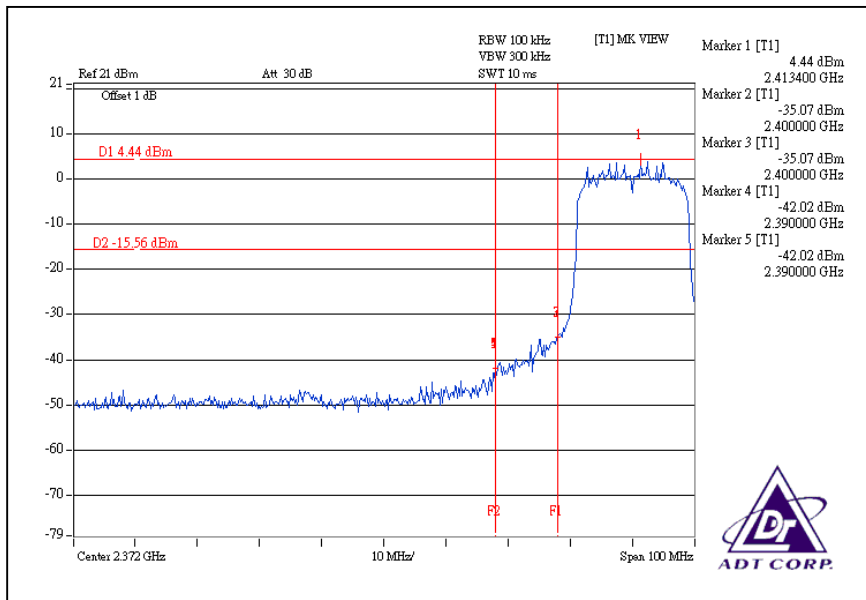
CH1



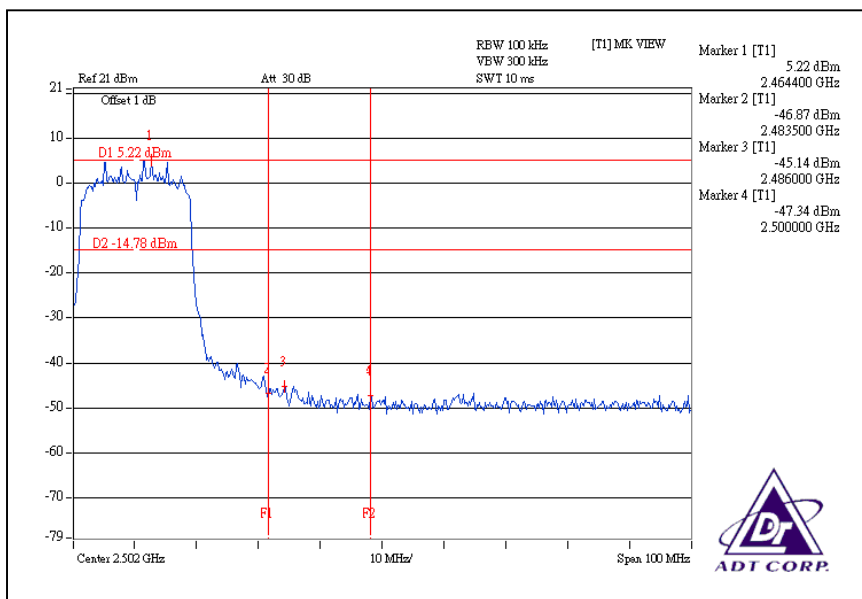
CH11



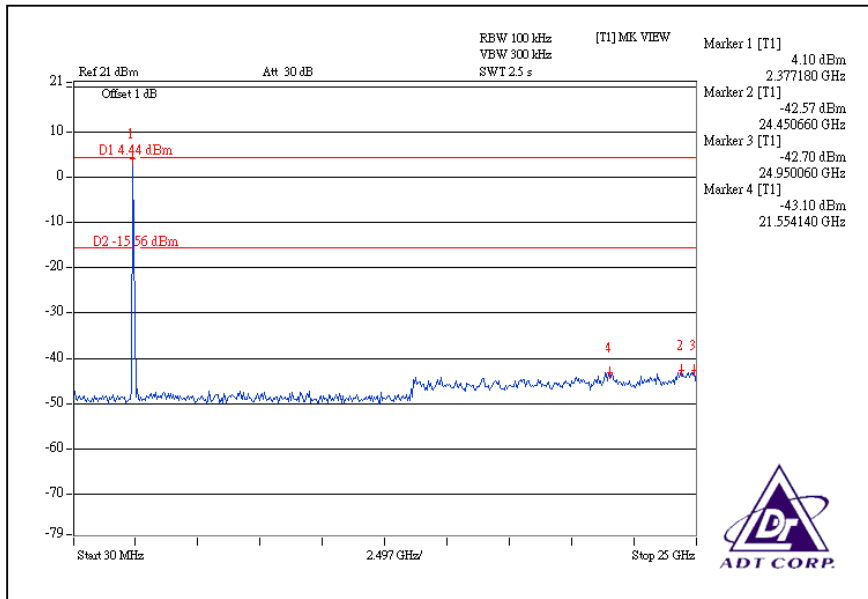
DRAFT 802.11n (20MHz) OFDM MODULATION: For Chain (0):CH1



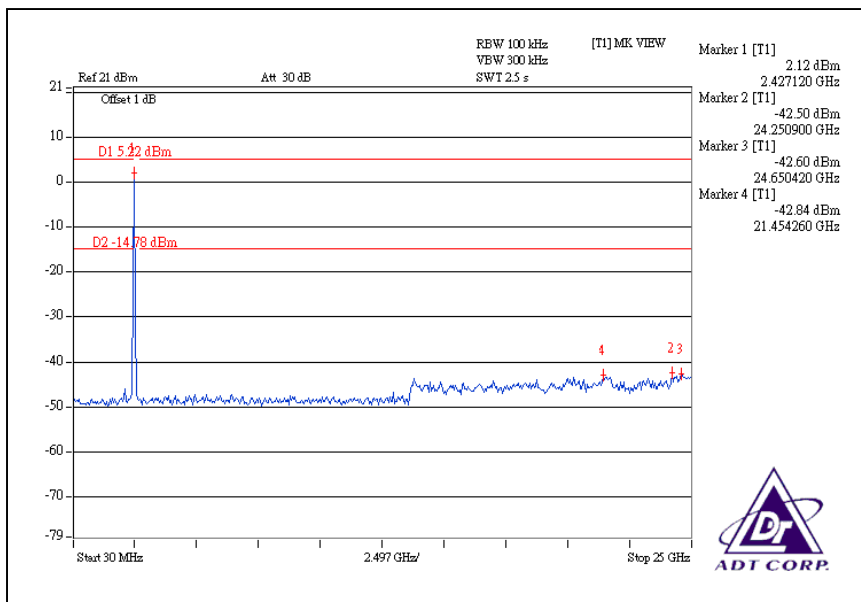
CH11



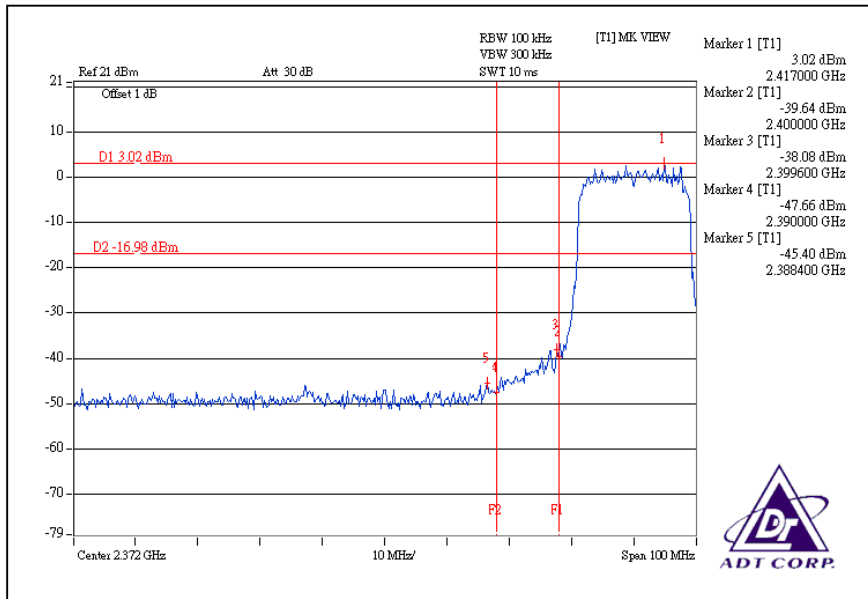
CH1



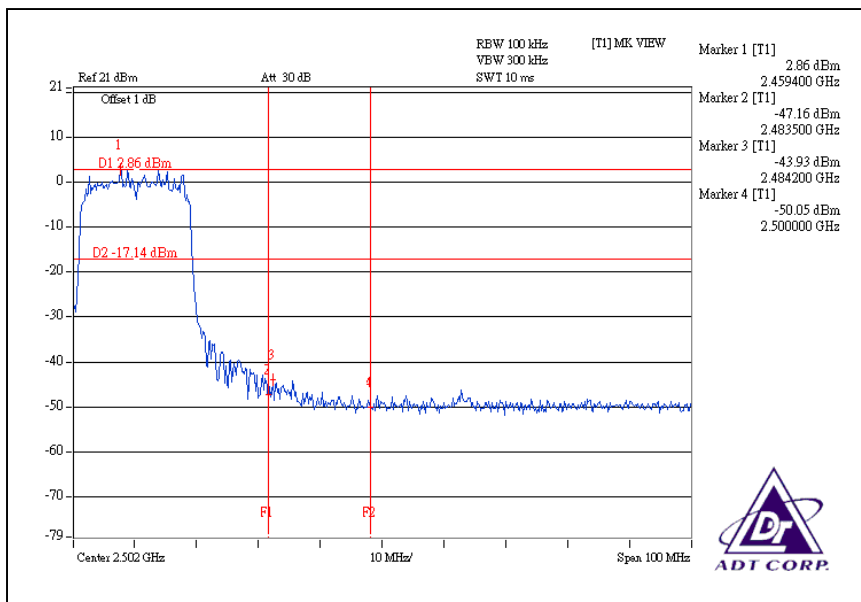
CH11



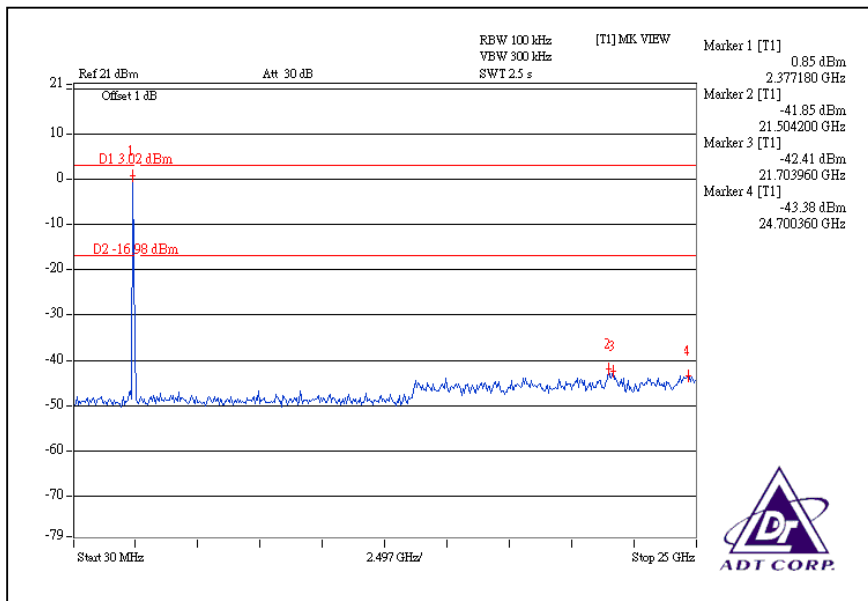
For Chain (1):CH1



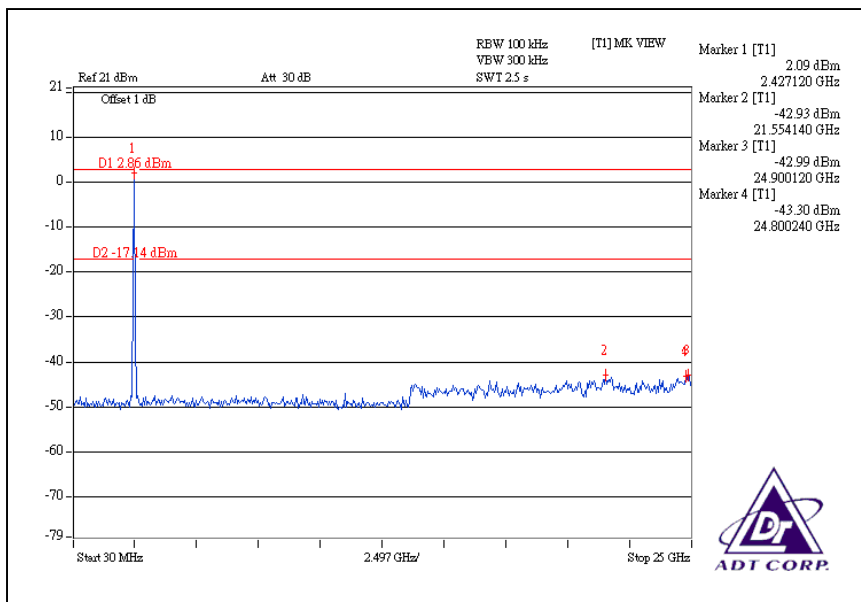
CH11



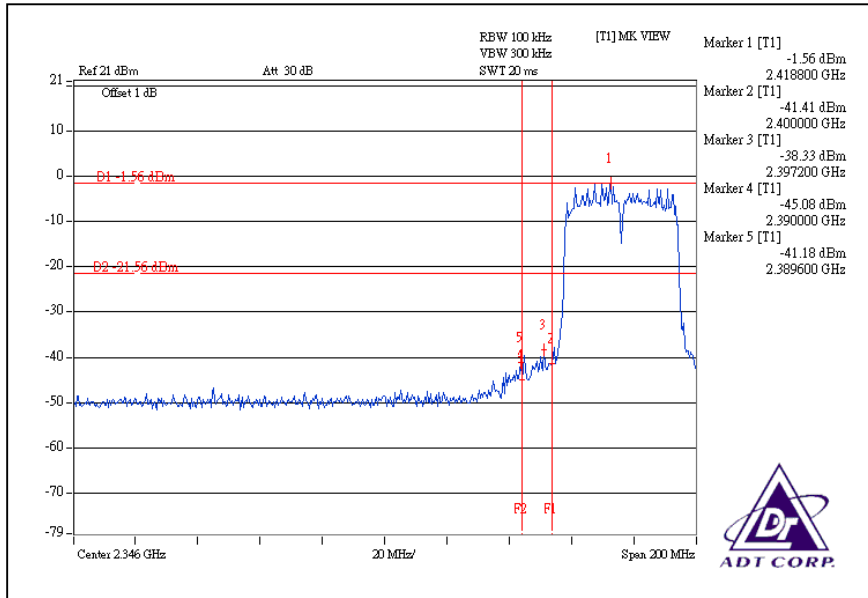
CH1



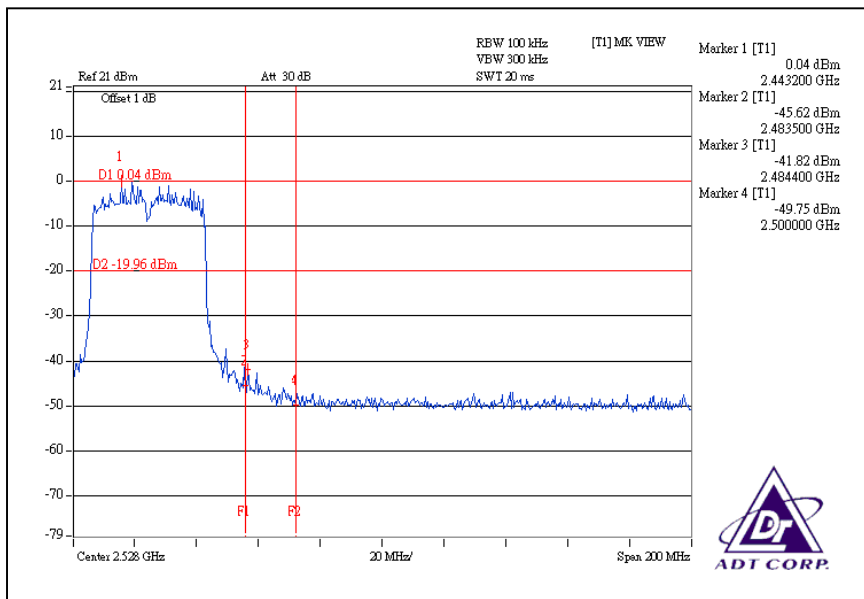
CH11



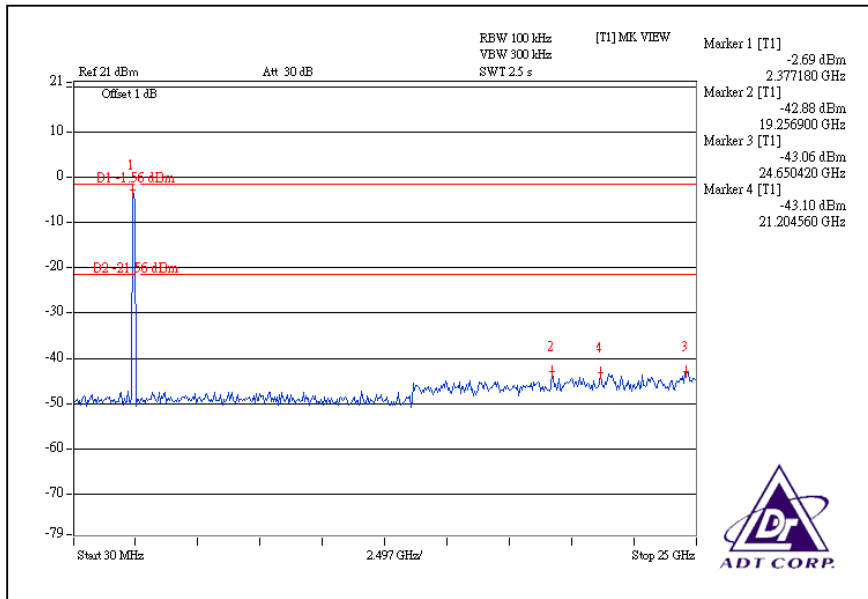
DRAFT 802.11n (40MHz) OFDM MODULATION:
For Chain (0):CH1



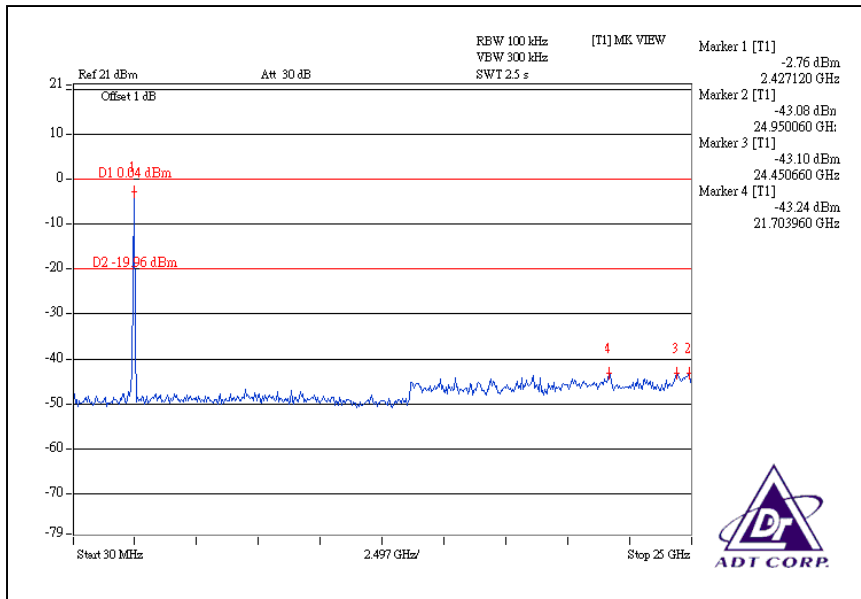
CH7



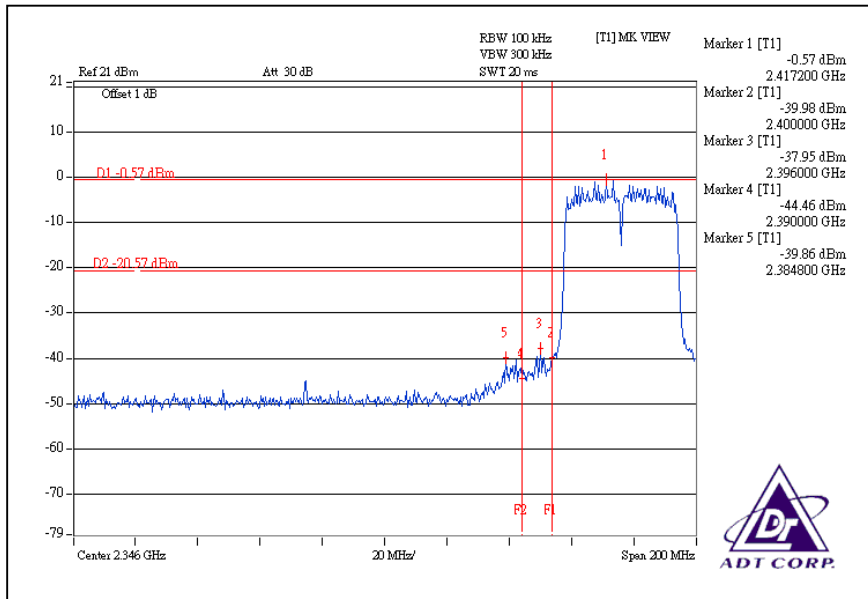
CH1



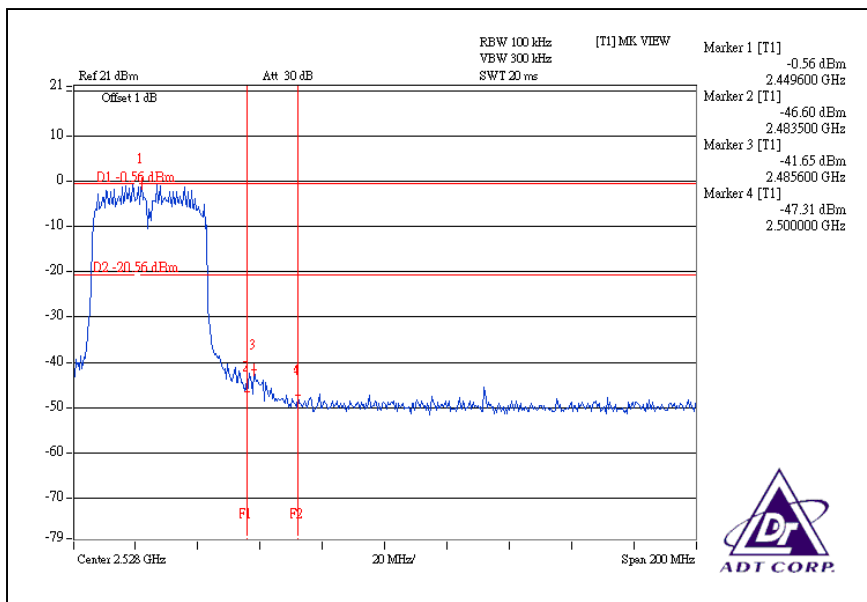
CH7



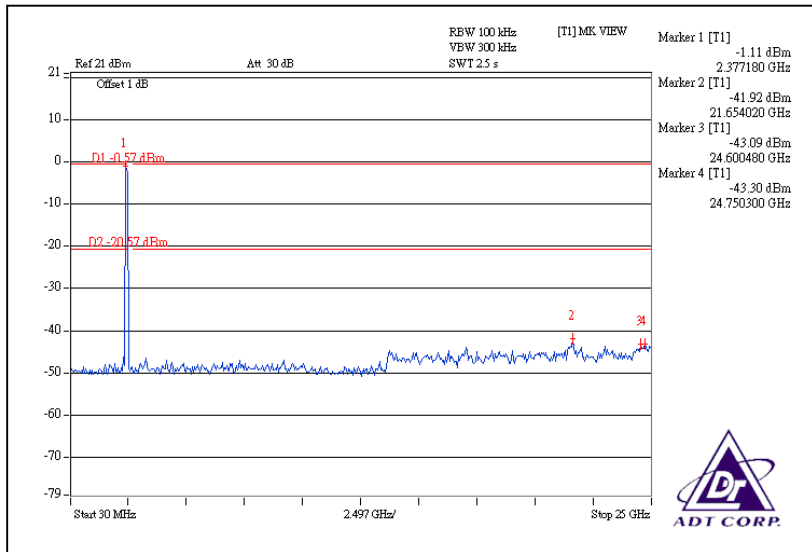
For Chain (1):CH1



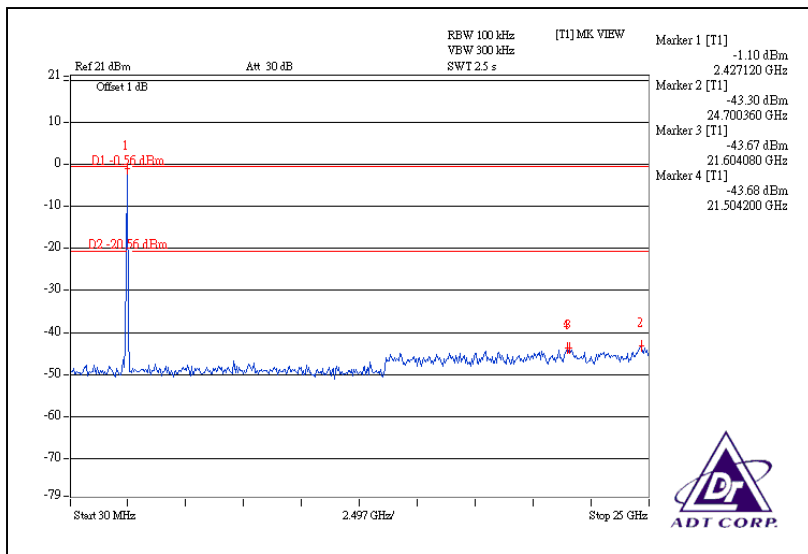
CH7



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

Transmitter Circuit	Antenna Type	Gain (dBi)	Antenna Connector
Chain(0)	Dipole	2.0	I-PEX MHF
Chain(1)	Dipole	2.0	I-PEX MHF



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

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

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---