



FCC TEST REPORT

REPORT NO.: RF960829H01

MODEL NO.: W403, LCS-8031N, ENLWI-N,
PEAB-WL-N-PCI, WIRE-CNL-N-PCI-300,
AWPCI046N

RECEIVED: Aug. 29, 2007

TESTED: Sep. 06 to 10, 2007

ISSUED: Sep. 20, 2007

APPLICANT: NETRONIX , INC.

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Hsin-Chu,302,Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

TEST LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung
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No. 2177-01

Table of Contents

1.	CERTIFICATION	4
2.	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY	6
3.	GENERAL INFORMATION	7
3.1	GENERAL DESCRIPTION OF EUT	7
3.2	DESCRIPTION OF TEST MODES	9
3.2.1	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:	10
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	13
3.4	DESCRIPTION OF SUPPORT UNITS	14
3.5	CONFIGURATION OF SYSTEM UNDER TEST	15
4.	TEST TYPES AND RESULTS	16
4.1	CONDUCTED EMISSION MEASUREMENT	16
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	16
4.1.2	TEST INSTRUMENTS	16
4.1.3	TEST PROCEDURES	17
4.1.4	DEVIATION FROM TEST STANDARD	17
4.1.5	TEST SETUP	18
4.1.6	EUT OPERATING CONDITIONS	18
4.1.7	TEST RESULTS	19
4.2	RADIATED EMISSION MEASUREMENT	25
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	25
4.2.2	TEST INSTRUMENTS	26
4.2.3	TEST PROCEDURES	27
4.2.4	DEVIATION FROM TEST STANDARD	27
4.2.5	TEST SETUP	28
4.2.6	EUT OPERATING CONDITIONS	28
	Below 1GHz Test Data	29
4.2.7	TEST RESULTS	29
	Above 1GHz Test Data	30
4.2.8	TEST RESULTS	30
4.3	6dB BANDWIDTH MEASUREMENT	58
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	58
4.3.2	TEST INSTRUMENTS	58
4.3.3	TEST PROCEDURE	59
4.3.4	DEVIATION FROM TEST STANDARD	59
4.3.5	TEST SETUP	59



4.3.6	EUT OPERATING CONDITIONS.....	59
4.3.7	TEST RESULTS.....	60
4.4	MAXIMUM PEAK OUTPUT POWER.....	72
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT.....	72
4.4.2	INSTRUMENTS.....	72
4.4.3	TEST PROCEDURES.....	73
4.4.4	DEVIATION FROM TEST STANDARD.....	73
4.4.5	TEST SETUP.....	73
4.4.6	EUT OPERATING CONDITIONS.....	73
4.4.7	TEST RESULTS.....	74
4.5	POWER SPECTRAL DENSITY MEASUREMENT.....	76
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT.....	76
4.5.2	TEST INSTRUMENTS.....	76
4.5.3	TEST PROCEDURE.....	77
4.5.4	DEVIATION FROM TEST STANDARD.....	77
4.5.5	TEST SETUP.....	77
4.5.6	EUT OPERATING CONDITION.....	77
4.5.7	TEST RESULTS.....	78
4.6	BAND EDGES MEASUREMENT.....	90
4.6.1	LIMITS OF BAND EDGES MEASUREMENT.....	90
4.6.2	TEST INSTRUMENTS.....	90
4.6.3	TEST PROCEDURE.....	90
4.6.4	DEVIATION FROM TEST STANDARD.....	91
4.6.5	EUT OPERATING CONDITION.....	91
4.6.6	TEST RESULTS.....	91
4.7	ANTENNA REQUIREMENT.....	104
4.7.1	STANDARD APPLICABLE.....	104
4.7.2	ANTENNA CONNECTED CONSTRUCTION.....	104
5.	INFORMATION ON THE TESTING LABORATORIES.....	105
6.	APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	106



1. CERTIFICATION

PRODUCT: Wireless 802.11n PCI Card
BRAND NAME: NETRONIX, Longshine, Encore, Peabird, Connectland, ALFA
MODEL NO.: W403, LCS-8031N, ENLWI-N, PEAB-WL-N-PCI, WIRE-CNL-N-PCI-300, AWPCI046N
TEST SAMPLE: MASS-PRODUCTION
TESTED: Sep. 06 to 10, 2007
APPLICANT: NETRONIX , INC.
STANDARDS: FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment (Model: W403) 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 : Claire Kuan , **DATE:** Sep. 20, 2007
(Claire Kuan, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Sep. 20, 2007
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Sep. 20, 2007
(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 -25.86dB at 21.094MHz
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 -0.10dB at 2483.76MHz
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	2.41 dB
Radiated emissions (30MHz-1GHz)	3.89 dB
Radiated emissions (1GHz -18GHz)	2.21 dB
Radiated emissions (18GHz -40GHz)	1.88 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless 802.11n PCI Card
MODEL NO.	W403, LCS-8031N, ENLWI-N, PEAB-WL-N-PCI, WIRE-CNL-N-PCI-300, AWPCI046N
FCC ID	NOI-W403
POWER SUPPLY	DC 5V from host equipment
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 Draft 802.11n (20MHz): 130/117/104/78/72.2/65/57.8/52/43.3/28.9/21.7/14.4/7.2 Mbps Draft 802.11n (40MHz): 300/270/240/243/216/ 180/162/150/135/120/90/60/45/30/15Mbps
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: 60.256mW 802.11g: 50.933mW draft 802.11n (20MHz): 101.634mW draft 802.11n (40MHz): 91.524mW
ANTENNA TYPE	Please see note 2 (on next page)
DATA CABLE	NA
I/O PORT	NA

NOTE:

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

Brand	Model No.	Different
NETRONIX	W403	For Marketing required
Longshine	LCS-8031N	
Encore	ENLWI-N	
Peabird	PEAB-WL-N-PCI	
Connectland	WIRE-CNL-N-PCI-300	
ALFA	AWPCI046N	

From the above models, model: **W403** was selected as representative model for the test and its data was recorded in this report.

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

Transmitter Circuit	Antenna Type	Antenna Connector	Gain(dBi)
Chain(0)	Dipole	RPSMA	1.8
Chain(1)	Dipole	RPSMA	1.8
Chain(2)	Dipole	RPSMA	1.8

3. The EUT incorporates a MIMO function with 802.11b, 802.11g, draft 802.11n. Physically, the EUT provides two completed transmit and three receivers.
4. The EUT is 2 * 3 spatial MIMO 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.
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, 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 ≥ 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)	TX CHAIN(2)
A	802.11 b, g			ü
B	DRAFT 802.11n(20MHz)			ü
C	DRAFT 802.11n(20MHz)	ü		ü
D	DRAFT 802.11n(40MHz)			ü
E	DRAFT 802.11n(40MHz)	ü		ü

Note:

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.

Mode A, C, E 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
802.11b	1 to 11	1	DSSS	CCK	1	A
Draft 802.11n (20MHz)	1 to 11	1	OFDM	BPSK	6.5	C
Draft 802.11n (40MHz)	1 to 7	1	OFDM	BPSK	13.5	E

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
Draft 802.11n (20MHz)	1 to 11	1	OFDM	BPSK	6.5	C

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	CCK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	A
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	C
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	E

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	CCK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	A
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	C
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	13.5	E

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	A
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	C
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	E



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless 802.11n PCI Card. 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

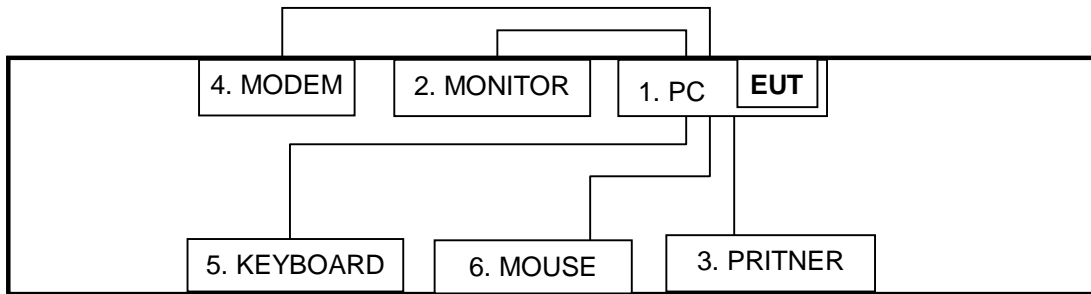
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	DELL	DH8	8H90618	NA
2	MONITOR	ADI	G1000	240058T00100081	HP
3	PRINTER	HP	C2642A	MY79J1D00G	B94C2642X
4	MODEM	ACEEX	1414	0206026779	IFAXDM1414
5	KEYBOARD	BTC	KB-5200T	F24800406	E5XKB5122WTH0110
6	MOUSE	BTC	M851	G00347024440	E5XMSM860

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core.
3	1.8 m braid shielded wire, terminated with DB25 connector via metallic frame, w/o core.
4	1.0 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	1.8 m foil shielded wire, terminal by frame, PS2 Connector, w/o core.
6	1.8 m foil shielded wire, terminal by frame, PS2 Connector, w/o core.

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 (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 UNTIL
Test Receiver	ESCS 30	847124/029	Mar. 28, 2008
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Nov. 26, 2007
Line-Impedance Stabilization Network(for Peripheral)	ESH3-Z5	848773/004	Oct. 26, 2007
RF Cable (JETBAO)	RG233/U	Cable_CB_01	Dec. 09, 2007
Terminator	50	2	Oct. 30, 2007
Software	ADT_Cond_V7.3.2	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in ADT Shielded Room No. B.
 3. The VCCI Con B Registration No. is C-2193.

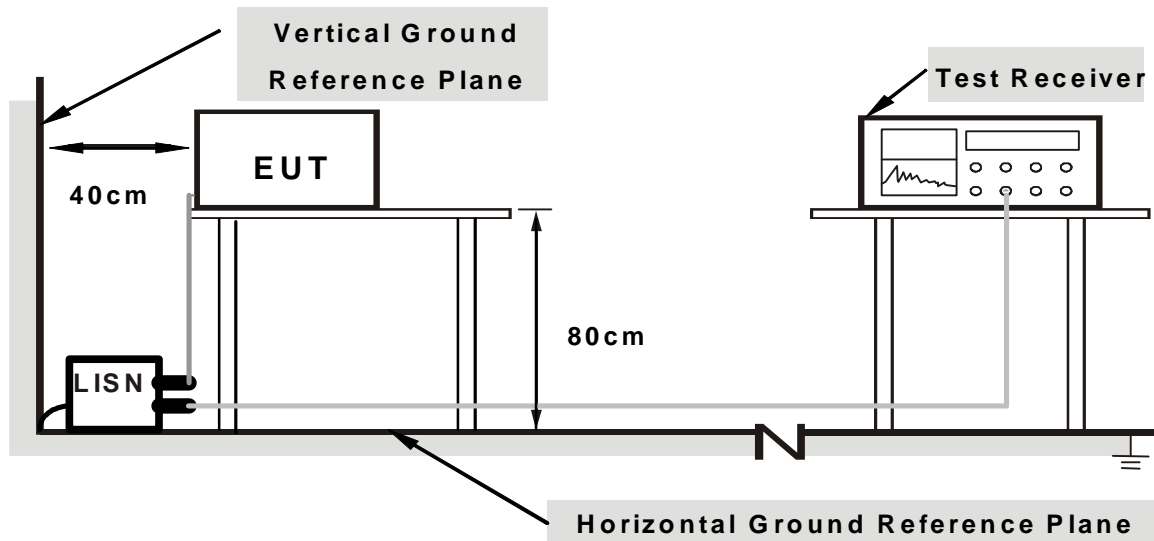
4.1.3 TEST PROCEDURES

- 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. Plug the EUT into test board and placed on the testing table.
2. The support unit 1 (PC) ran a test program “QA_RT2860_V1_1_0_1” to enable EUT under transmission condition continuously at specific channel frequency.

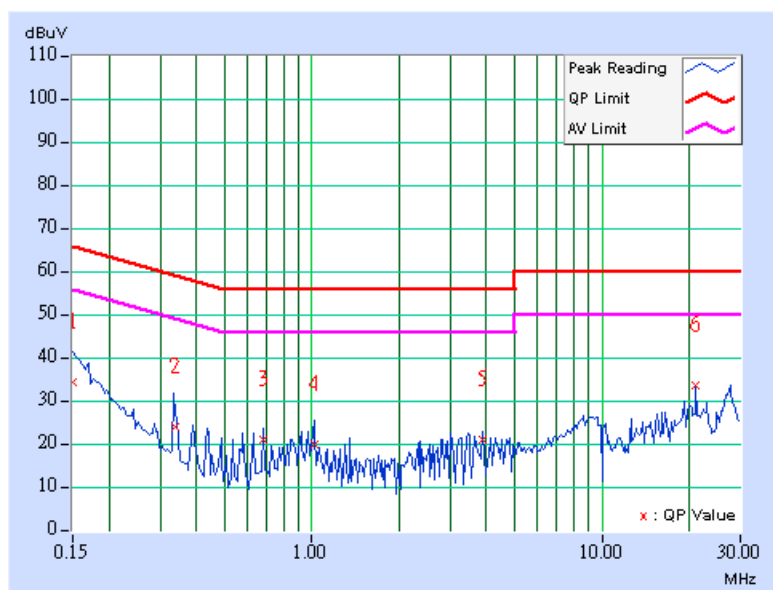
4.1.7 TEST RESULTS

802.11b DSSS MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	CCK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	1Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 59%RH, 955hPa	TESTED BY	Tony Chen

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	0.150	0.40	33.36	-	33.76	-	66.00
2	0.337	0.40	23.22	-	23.62	-	59.27	49.27	-35.65	-
3	0.677	0.40	20.00	-	20.40	-	56.00	46.00	-35.60	-
4	1.017	0.40	19.08	-	19.48	-	56.00	46.00	-36.52	-
5	3.902	0.60	20.24	-	20.84	-	56.00	46.00	-35.16	-
6	21.102	1.00	32.62	-	33.62	-	60.00	50.00	-26.38	-

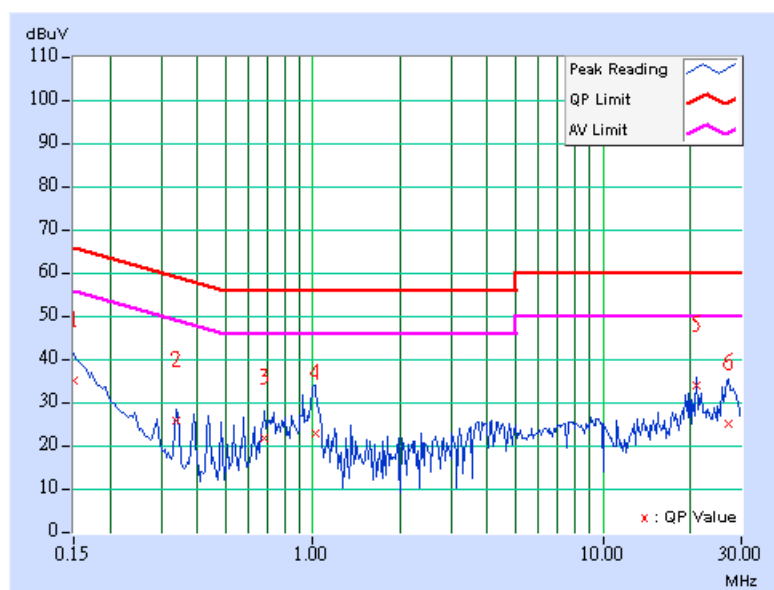
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Neutral (N)
MODULATION TYPE	CCK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	1Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 59%RH, 955hPa	TESTED BY	Tony Chen

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	0.150	0.20	33.67	-	33.87	-	66.00
2	0.338	0.20	24.53	-	24.73	-	59.26	49.26	-34.53	-
3	0.681	0.25	20.47	-	20.72	-	56.00	46.00	-35.28	-
4	1.021	0.30	21.65	-	21.95	-	56.00	46.00	-34.05	-
5	21.102	1.32	32.68	-	34.00	-	60.00	50.00	-26.00	-
6	27.184	1.40	23.85	-	25.25	-	60.00	50.00	-34.75	-

- 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.

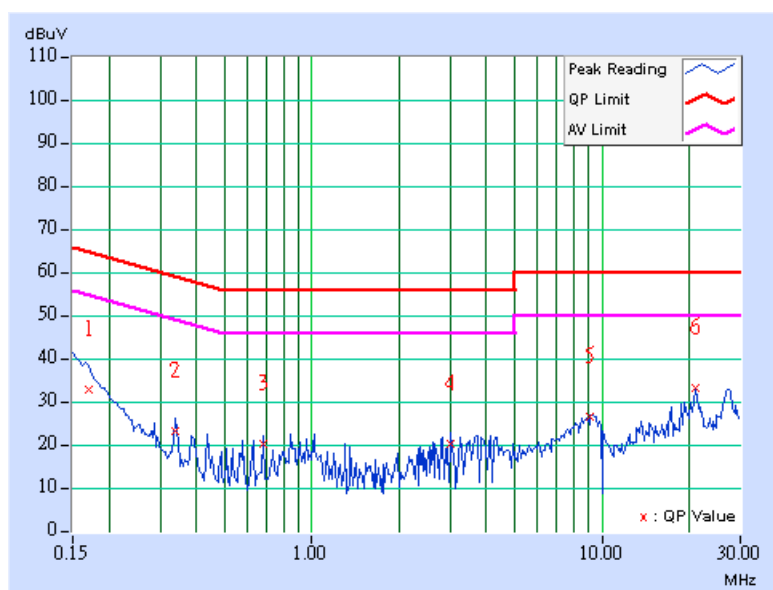


DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 59%RH, 955hPa	TESTED BY	Tony Chen

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	0.170	0.40	32.00	-	32.40	-	64.94
2	0.338	0.40	22.27	-	22.67	-	59.26	49.26	-36.59	-
3	0.677	0.40	19.42	-	19.82	-	56.00	46.00	-36.18	-
4	3.000	0.55	19.35	-	19.90	-	56.00	46.00	-36.10	-
5	9.117	0.77	25.49	-	26.26	-	60.00	50.00	-33.74	-
6	21.102	1.00	32.40	-	33.40	-	60.00	50.00	-26.60	-

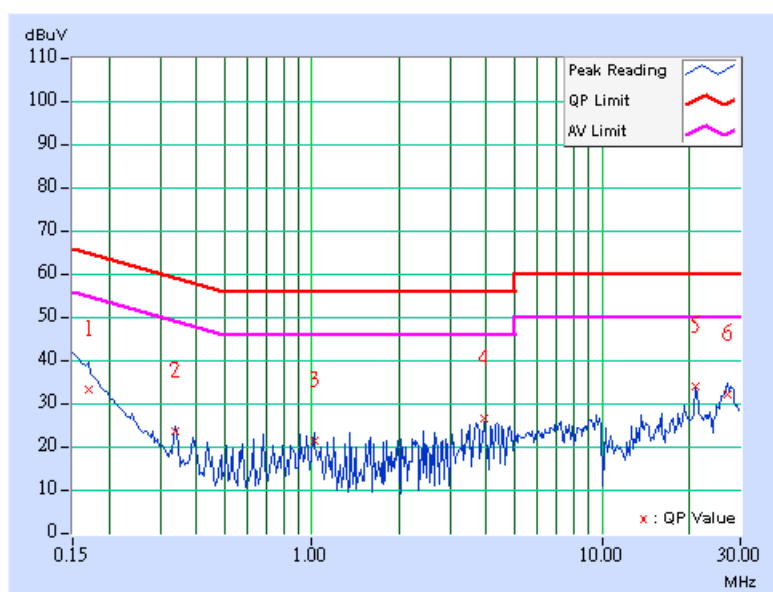
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 59%RH, 955hPa	TESTED BY	Tony Chen

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	0.170	0.20	31.82	-	32.02	-	64.98
2	0.338	0.20	22.44	-	22.64	-	59.26	49.26	-36.62	-
3	1.021	0.30	19.90	-	20.20	-	56.00	46.00	-35.80	-
4	3.910	0.50	25.41	-	25.91	-	56.00	46.00	-30.09	-
5	21.094	1.32	32.82	-	34.14	-	60.00	50.00	-25.86	-
6	27.088	1.40	30.93	-	32.33	-	60.00	50.00	-27.67	-

- 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.

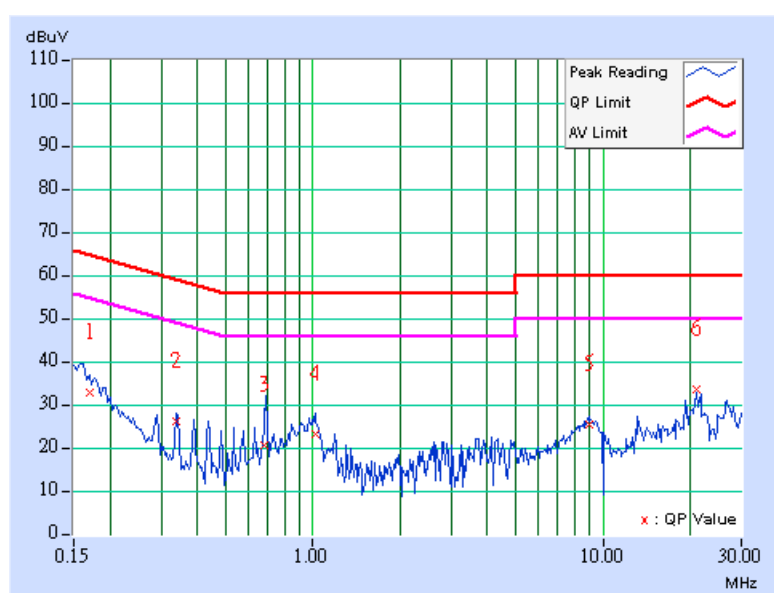


DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 59%RH, 955hPa	TESTED BY	Tony Chen

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	0.171	0.40	32.12	-	32.52	-	64.93
2	0.338	0.40	25.34	-	25.74	-	59.26	49.26	-33.52	-
3	0.684	0.40	19.91	-	20.31	-	56.00	46.00	-35.69	-
4	1.021	0.40	22.36	-	22.76	-	56.00	46.00	-33.24	-
5	8.961	0.77	24.45	-	25.22	-	60.00	50.00	-34.78	-
6	21.102	1.00	32.58	-	33.58	-	60.00	50.00	-26.42	-

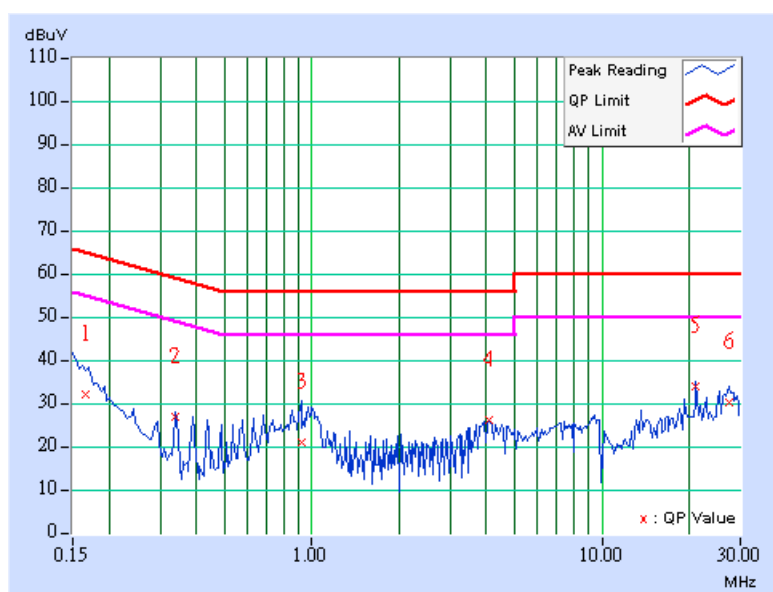
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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 3	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	27deg. C, 59%RH, 955hPa	TESTED BY	Tony Chen

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	0.167	0.20	30.86	-	31.06	-	65.12	55.12	-34.06
2	0.338	0.20	25.64	-	25.84	-	59.26	49.26	-33.42	-
3	0.920	0.29	19.86	-	20.15	-	56.00	46.00	-35.85	-
4	4.082	0.51	25.07	-	25.58	-	56.00	46.00	-30.42	-
5	21.090	1.32	32.62	-	33.94	-	60.00	50.00	-26.06	-
6	27.383	1.40	29.00	-	30.40	-	60.00	50.00	-29.60	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 15, 2008
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2008
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB 9168	138	July 26, 2008
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 25, 2008
TRILOG Broad Band Antenna	VULB 9168	138	July 26, 2008
R&S Loop Antenna	HFH2-Z2	881058/15	Nov. 29, 2007
RF Switches (ARNITSU)	CS-201	1565157	Aug. 13, 2008
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2007
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Aug. 13, 2008
Software	ADT_Radiated_V 7.6.15.7	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in ADT Open Site No. C.
 4. The FCC Site Registration No. is 656396.
 5. The VCCI Site Registration No. is R-1626.
 6. The CANADA Site Registration No. is IC 4824A-3.
 7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~40GHz)	1.88 dB

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.

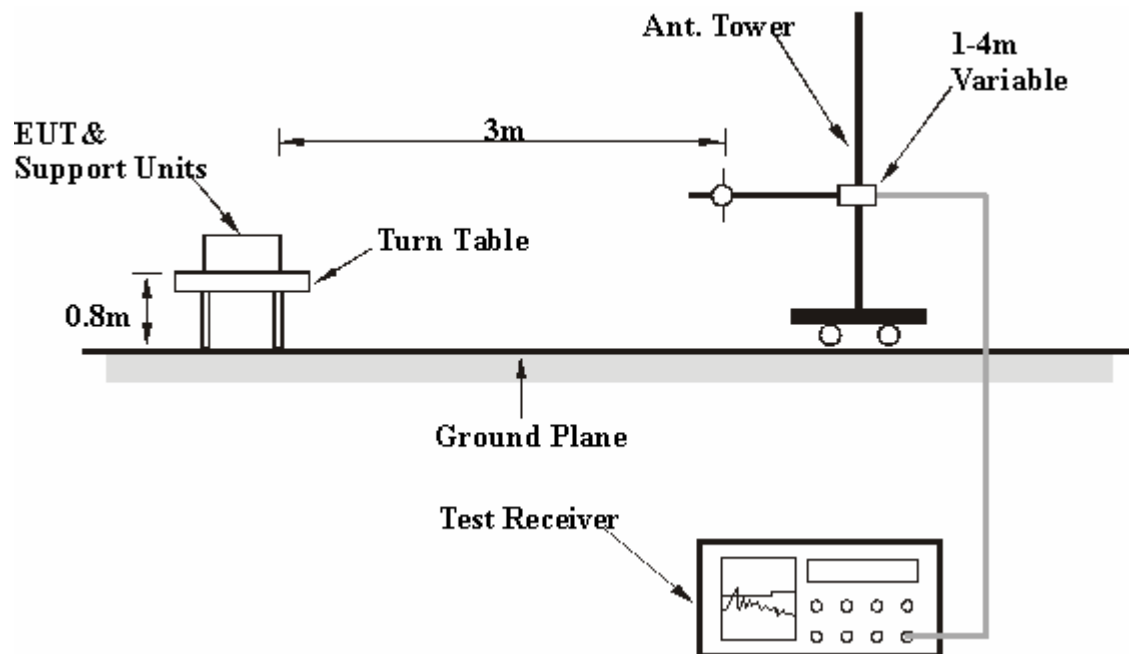
NOTE:

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

1. Plug the EUT into test board and placed on the testing table.
2. The support unit 1 (PC) ran a test program “QA_RT2860_V1_1_0_1” to enable EUT under transmission condition continuously at specific channel frequency.

Below 1GHz Test Data

4.2.7 TEST RESULTS

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	802.11n (20MHz)	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	120.02	29.09 QP	43.50	-14.41	1.65 H	61	17.27	11.82
2	199.94	26.19 QP	43.50	-17.31	1.48 H	120	14.59	11.60
3	240.05	27.87 QP	46.00	-18.13	1.15 H	255	14.52	13.35
4	300.22	27.48 QP	46.00	-18.52	1.00 H	135	10.65	16.83
5	400.00	22.12 QP	46.00	-23.88	1.02 H	293	3.10	19.02
6	480.08	24.11 QP	46.00	-21.89	1.00 H	70	2.86	21.25
7	720.13	31.48 QP	46.00	-14.52	1.00 H	156	5.06	26.42
8	960.17	36.92 QP	54.00	-17.08	1.36 H	240	7.03	29.89

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	120.02	31.44 QP	43.50	-12.06	1.00 V	348	19.62	11.82
2	200.25	31.39 QP	43.50	-12.11	1.00 V	347	19.78	11.61
3	240.05	26.26 QP	46.00	-19.74	1.00 V	287	12.91	13.35
4	300.20	29.52 QP	46.00	-16.48	1.00 V	157	12.69	16.83
5	400.05	22.84 QP	46.00	-23.16	1.00 V	201	3.82	19.02
6	480.07	27.18 QP	46.00	-18.82	1.00 V	123	5.93	21.25
7	720.12	29.99 QP	46.00	-16.01	1.62 V	149	3.57	26.42
8	960.16	38.02 QP	54.00	-15.98	1.00 V	161	8.13	29.89

- 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
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1608.00	47.10 PK	74.00	-26.90	1.07 H	297	18.99	28.11
2	1608.00	43.80 AV	54.00	-10.20	1.07 H	297	15.69	28.11
3	2386.00	59.00 PK	74.00	-15.00	1.14 H	150	28.70	30.30
4	2386.00	48.80 AV	54.00	-5.20	1.14 H	150	18.50	30.30
5	*2412.00	106.50 PK			1.14 H	150	76.09	30.41
6	*2412.00	101.90 AV			1.14 H	150	71.49	30.41
7	4824.00	49.80 PK	74.00	-24.20	1.28 H	320	14.01	35.79
8	4824.00	43.70 AV	54.00	-10.30	1.28 H	320	7.91	35.79
9	7236.00	52.00 PK	74.00	-22.00	1.21 H	267	10.40	41.60
10	7236.00	38.40 AV	54.00	-15.60	1.21 H	267	-3.20	41.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1608.00	50.90 PK	74.00	-23.10	1.00 V	356	22.79	28.11
2	1608.00	49.00 AV	54.00	-5.00	1.00 V	356	20.89	28.11
3	2386.00	61.00 PK	74.00	-13.00	1.60 V	76	30.70	30.30
4	2386.00	50.90 AV	54.00	-3.10	1.60 V	76	20.60	30.30
5	*2412.00	108.60 PK			1.60 V	76	78.19	30.41
6	*2412.00	104.30 AV			1.60 V	76	73.89	30.41
7	4824.00	50.80 PK	74.00	-23.20	1.11 V	357	15.01	35.79
8	4824.00	44.70 AV	54.00	-9.30	1.11 V	357	8.91	35.79
9	7236.00	51.90 PK	74.00	-22.10	1.00 V	284	10.30	41.60
10	7236.00	38.20 AV	54.00	-15.80	1.00 V	284	-3.40	41.60

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	1624.60	47.70 PK	74.00	-26.30	1.07 H	297	19.57	28.13
2	1624.60	44.50 AV	54.00	-9.50	1.07 H	297	16.37	28.13
3	*2437.00	106.30 PK			1.15 H	143	75.78	30.52
4	*2437.00	101.90 AV			1.15 H	143	71.38	30.52
5	4874.00	48.50 PK	74.00	-25.50	1.29 H	327	12.58	35.92
6	4874.00	40.00 AV	54.00	-14.00	1.29 H	327	4.08	35.92
7	7311.00	52.30 PK	74.00	-21.70	1.24 H	269	10.49	41.81
8	7311.00	38.50 AV	54.00	-15.50	1.24 H	269	-3.31	41.81

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1624.60	50.70 PK	74.00	-23.30	1.00 V	356	22.57	28.13
2	1624.60	48.60 AV	54.00	-5.40	1.00 V	356	20.47	28.13
3	*2437.00	109.30 PK			1.23 V	39	78.78	30.52
4	*2437.00	104.90 AV			1.23 V	39	74.38	30.52
5	4874.00	50.50 PK	74.00	-23.50	1.23 V	39	14.58	35.92
6	4874.00	44.30 AV	54.00	-9.70	1.23 V	39	8.38	35.92
7	7311.00	52.20 PK	74.00	-21.80	1.00 V	284	10.39	41.81
8	7311.00	38.40 AV	54.00	-15.60	1.00 V	284	-3.41	41.81

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

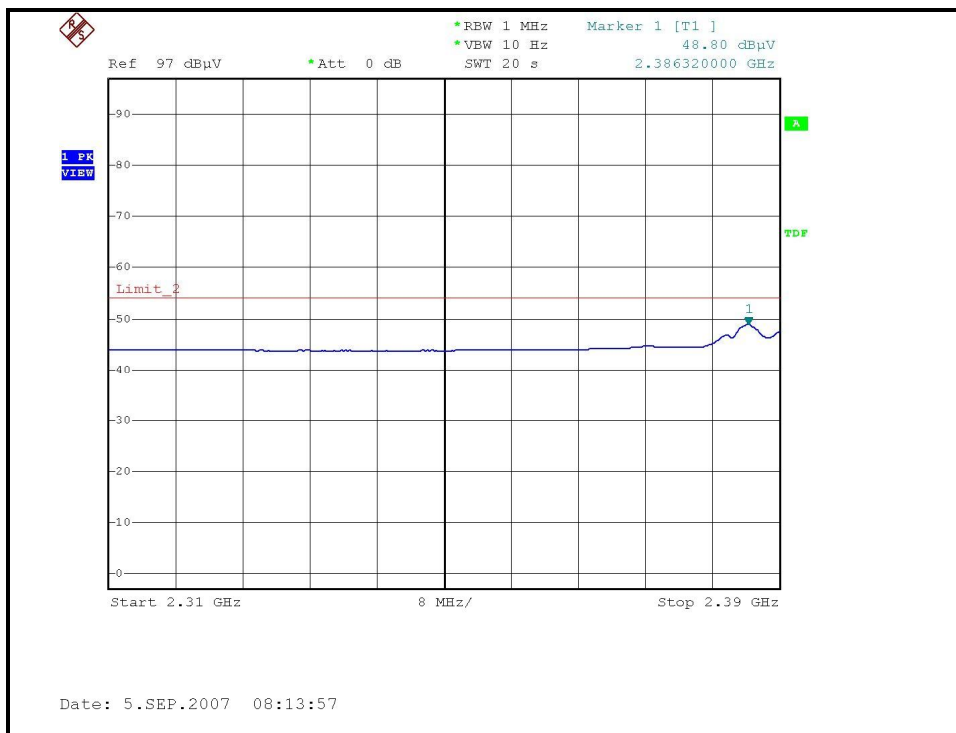
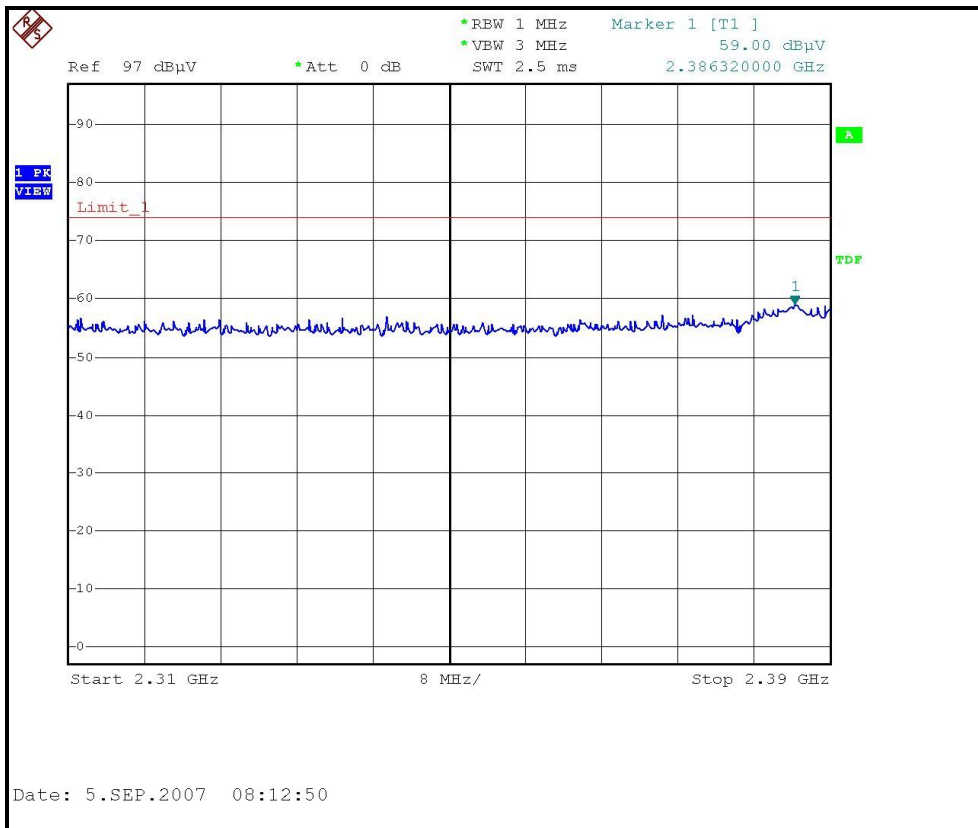
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1	*2462.00	106.20 PK			1.16 H	140	75.57	30.63
2	*2462.00	101.80 AV			1.16 H	140	71.17	30.63
3	2488.00	62.20 PK	74.00	-11.80	1.16 H	140	31.46	30.74
4	2488.00	50.60 AV	54.00	-3.40	1.16 H	140	19.86	30.74
5	4924.00	48.30 PK	74.00	-25.70	1.29 H	304	12.24	36.06
6	4924.00	39.80 AV	54.00	-14.20	1.29 H	304	3.74	36.06
7	7386.00	51.50 PK	74.00	-22.50	1.27 H	258	9.49	42.01
8	7386.00	37.90 AV	54.00	-16.10	1.27 H	258	-4.11	42.01

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

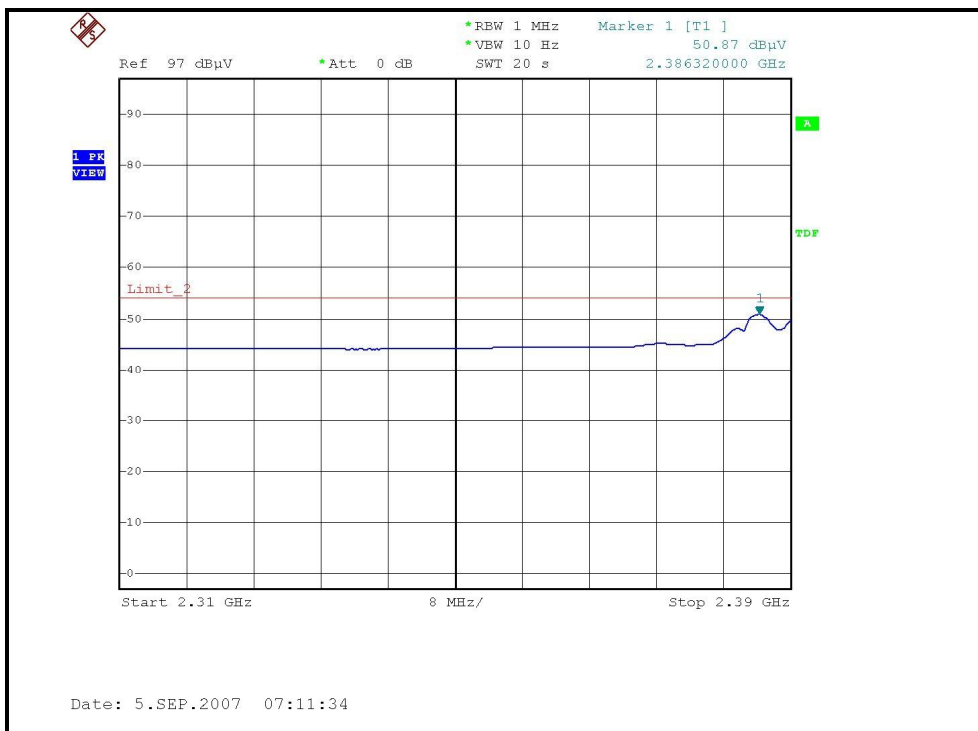
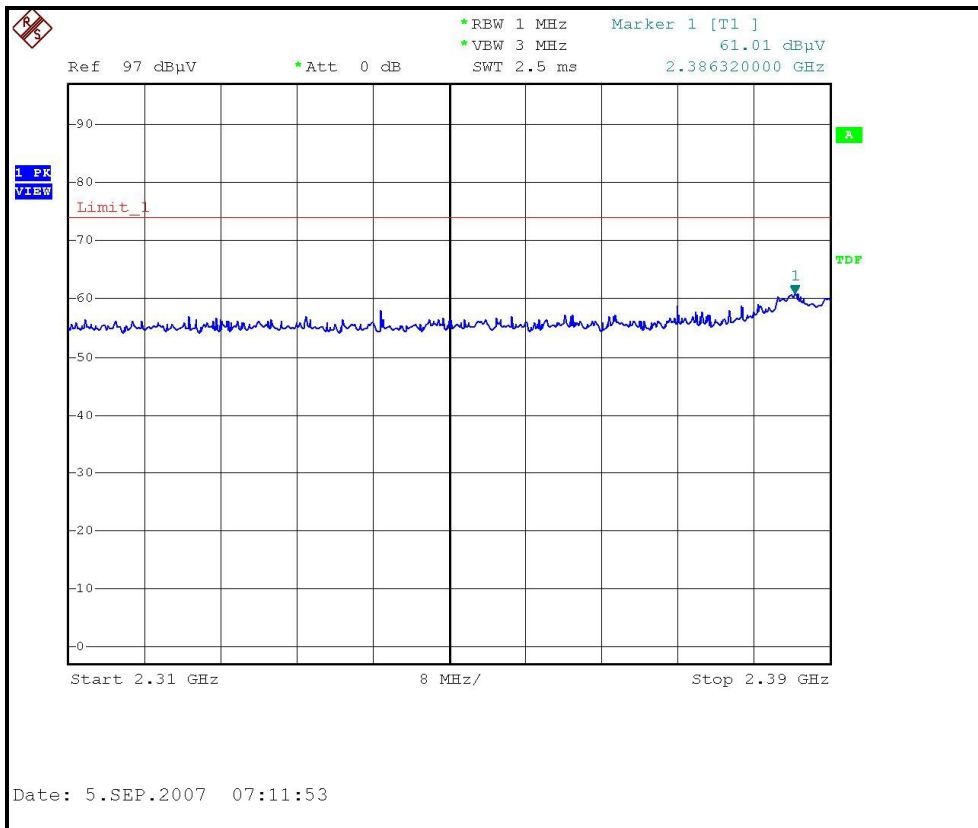
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.50 PK			1.54 V	77	78.87	30.63
2	*2462.00	105.00 AV			1.54 V	77	74.37	30.63
3	2488.00	64.80 PK	74.00	-9.20	1.54 V	77	34.06	30.74
4	2488.00	53.40 AV	54.00	-0.60	1.54 V	77	22.66	30.74
5	4924.00	49.30 PK	74.00	-24.70	1.06 V	21	13.24	36.06
6	4924.00	41.40 AV	54.00	-12.60	1.06 V	21	5.34	36.06
7	7386.00	51.40 PK	74.00	-22.60	1.00 V	283	9.39	42.01
8	7386.00	38.10 AV	54.00	-15.90	1.00 V	283	-3.91	42.01

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

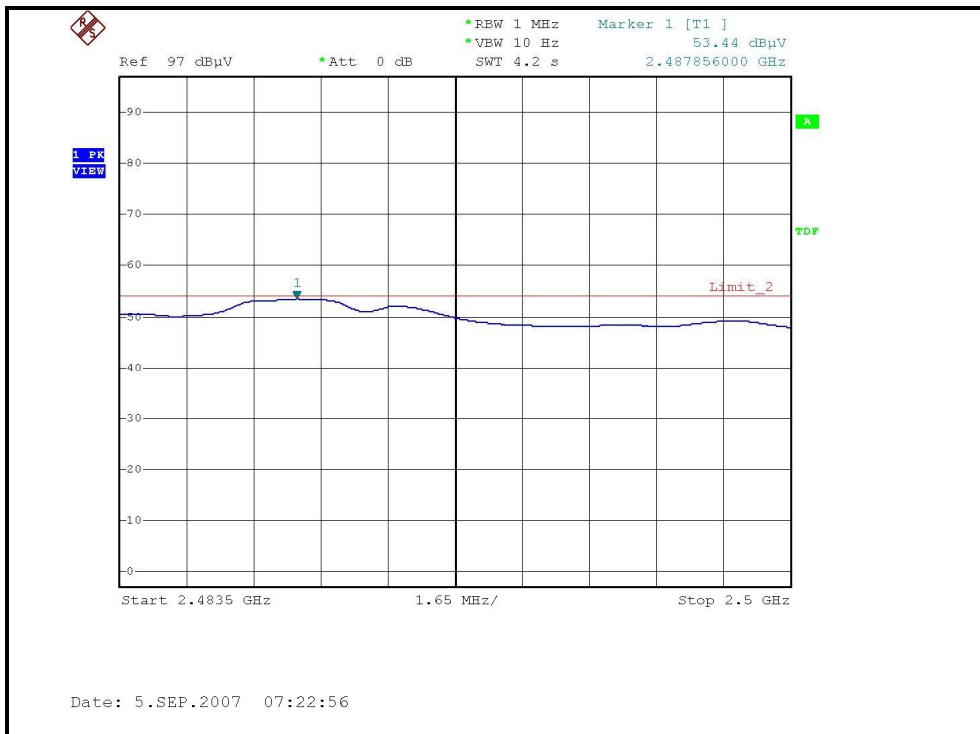
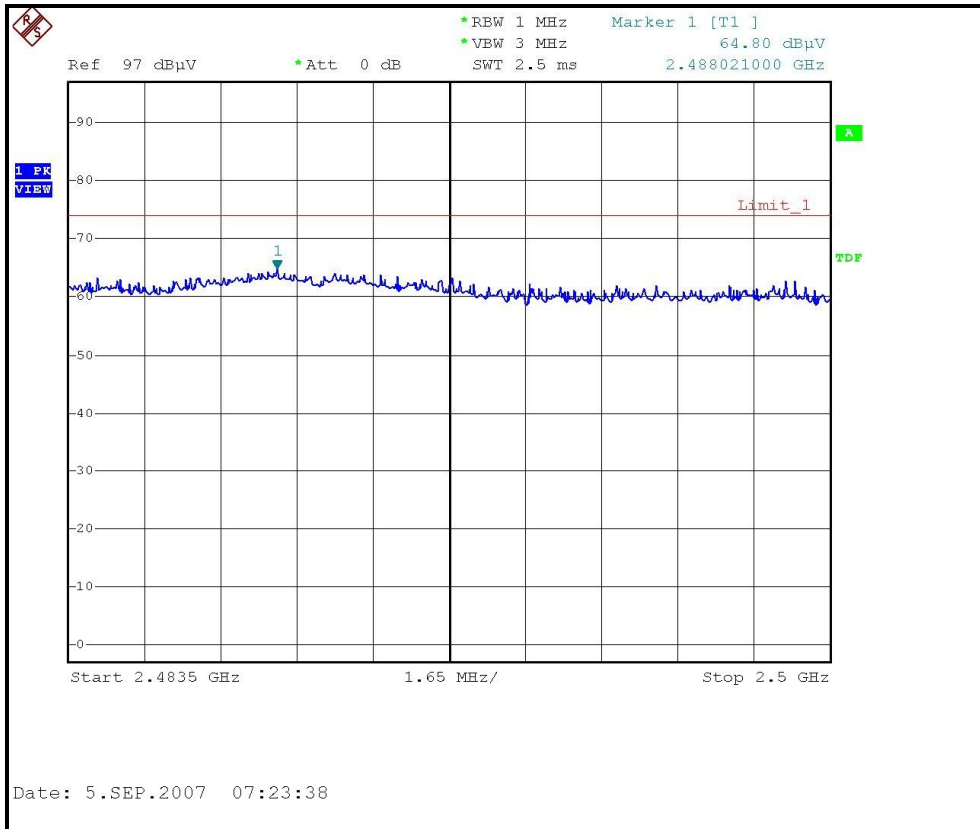
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)



RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)



802.11g OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	63.30 PK	74.00	-10.70	1.14 H	150	32.98	30.32
2	2390.00	47.60 AV	54.00	-6.40	1.14 H	150	17.28	30.32
3	*2412.00	106.10 PK			1.14 H	150	75.69	30.41
4	*2412.00	95.80 AV			1.14 H	150	65.39	30.41
5	4824.00	46.80 PK	74.00	-27.20	1.29 H	321	11.01	35.79
6	4824.00	32.90 AV	54.00	-21.10	1.29 H	321	-2.89	35.79
7	7236.00	51.80 PK	74.00	-22.20	1.22 H	263	10.20	41.60
8	7236.00	37.80 AV	54.00	-16.20	1.22 H	263	-3.80	41.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.30 PK	74.00	-5.70	1.59 V	76	37.98	30.32
2	2390.00	49.90 AV	54.00	-4.10	1.59 V	76	19.58	30.32
3	*2412.00	109.20 PK			1.59 V	76	78.79	30.41
4	*2412.00	98.50 AV			1.59 V	76	68.09	30.41
5	4824.00	47.30 PK	74.00	-26.70	1.11 V	357	11.51	35.79
6	4824.00	33.40 AV	54.00	-20.60	1.11 V	357	-2.39	35.79
7	7236.00	51.90 PK	74.00	-22.10	1.00 V	284	10.30	41.60
8	7236.00	37.50 AV	54.00	-16.50	1.00 V	284	-4.10	41.60

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	106.10 PK			1.14 H	144	75.58	30.52
2	*2437.00	96.10 AV			1.14 H	144	65.58	30.52
3	4874.00	46.60 PK	74.00	-27.40	1.30 H	325	10.68	35.92
4	4874.00	32.60 AV	54.00	-21.40	1.30 H	325	-3.32	35.92
5	7311.00	51.90 PK	74.00	-22.10	1.23 H	268	10.09	41.81
6	7311.00	37.70 AV	54.00	-16.30	1.23 H	268	-4.11	41.81

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.40 PK			1.57 V	77	78.88	30.52
2	*2437.00	98.60 AV			1.57 V	77	68.08	30.52
3	4874.00	47.10 PK	74.00	-26.90	1.23 V	38	11.18	35.92
4	4874.00	33.30 AV	54.00	-20.70	1.23 V	38	-2.62	35.92
5	7311.00	52.10 PK	74.00	-21.90	1.01 V	285	10.29	41.81
6	7311.00	37.90 AV	54.00	-16.10	1.01 V	285	-3.91	41.81

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

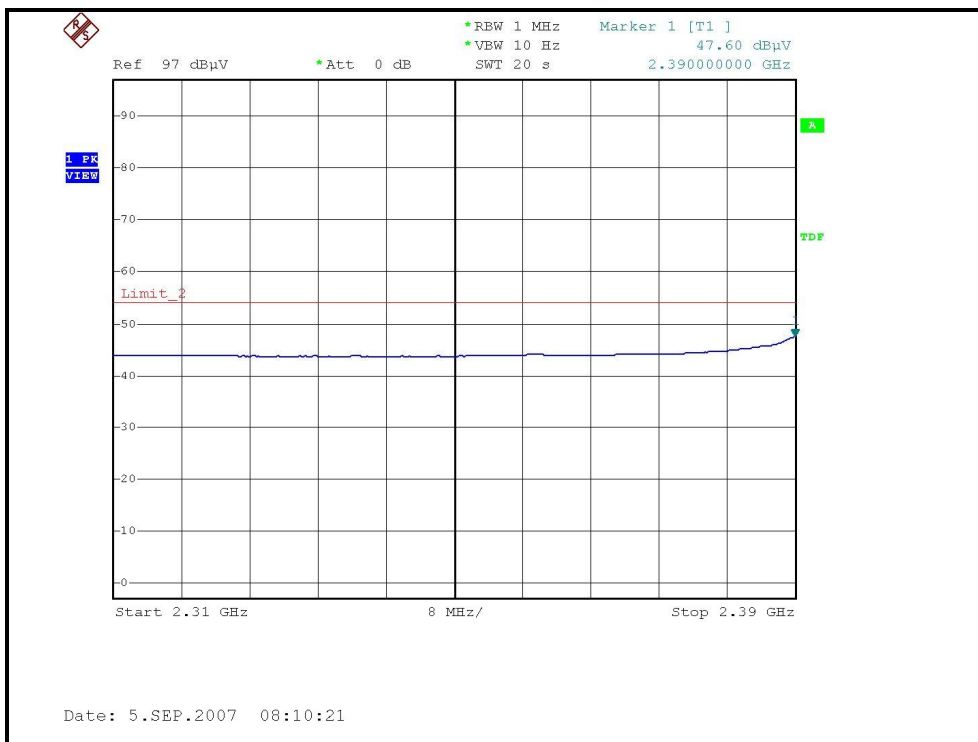
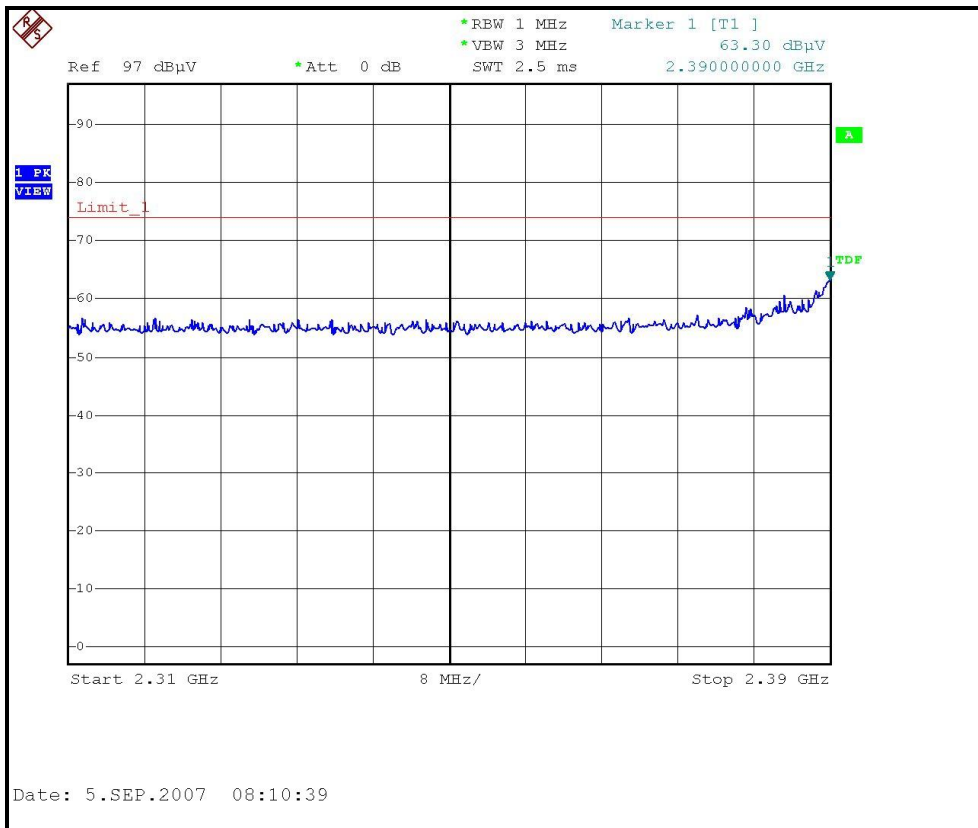
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	TESTED BY	Rex Huang

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	106.70 PK			1.16 H	141	76.07	30.63
2	*2462.00	96.20 AV			1.16 H	141	65.57	30.63
3	2483.50	67.50 PK	74.00	-6.50	1.16 H	141	36.78	30.72
4	2483.50	49.70 AV	54.00	-4.30	1.16 H	141	18.98	30.72
5	4924.00	46.50 PK	74.00	-27.50	1.29 H	303	10.44	36.06
6	4924.00	32.40 AV	54.00	-21.60	1.29 H	303	-3.66	36.06
7	7386.00	51.50 PK	74.00	-22.50	1.29 H	256	9.49	42.01
8	7386.00	37.50 AV	54.00	-16.50	1.29 H	256	-4.51	42.01

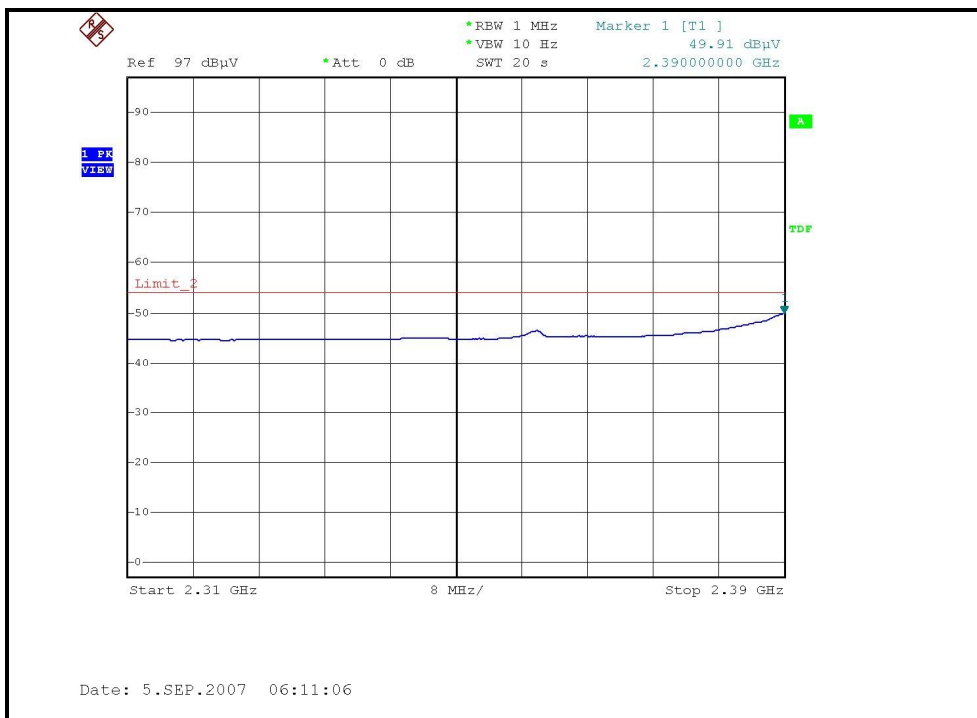
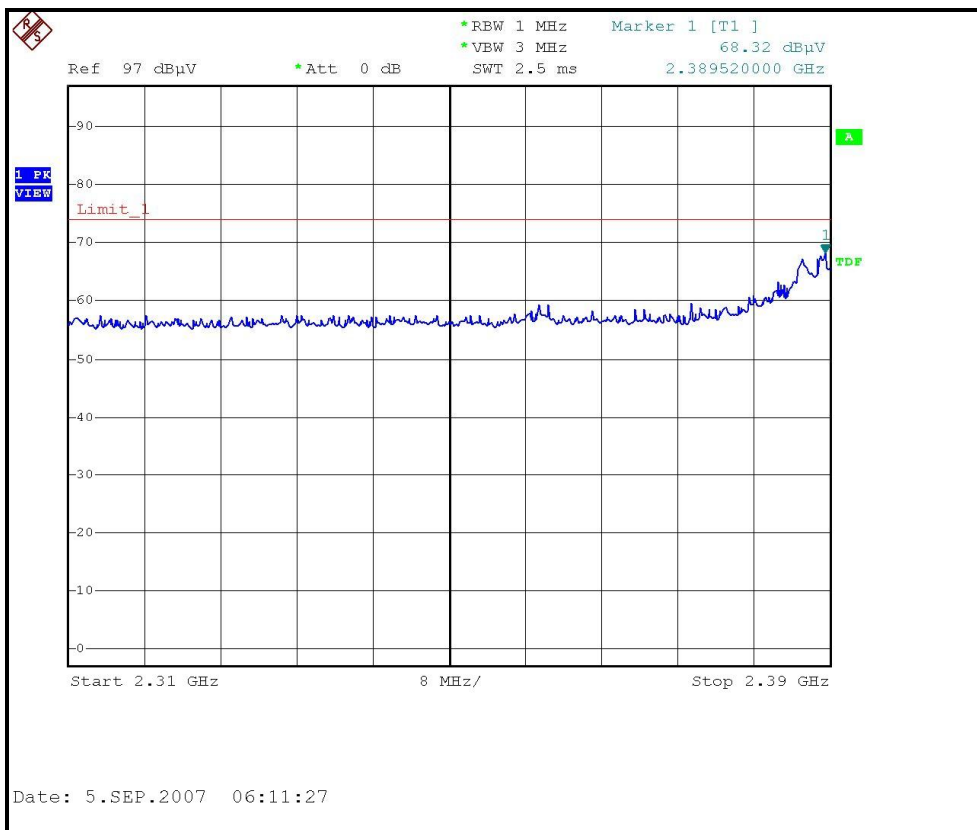
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.10 PK			1.57 V	78	79.47	30.63
2	*2462.00	99.60 AV			1.57 V	78	68.97	30.63
3	2483.50	70.90 PK	74.00	-3.10	1.57 V	78	40.18	30.72
4	2483.50	52.70 AV	54.00	-1.30	1.57 V	78	21.98	30.72
5	4924.00	47.00 PK	74.00	-27.00	1.08 V	102	10.94	36.06
6	4924.00	33.10 AV	54.00	-20.90	1.08 V	102	-2.96	36.06
7	7386.00	51.20 PK	74.00	-22.80	1.00 V	284	9.19	42.01
8	7386.00	37.30 AV	54.00	-16.70	1.00 V	284	-4.71	42.01

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

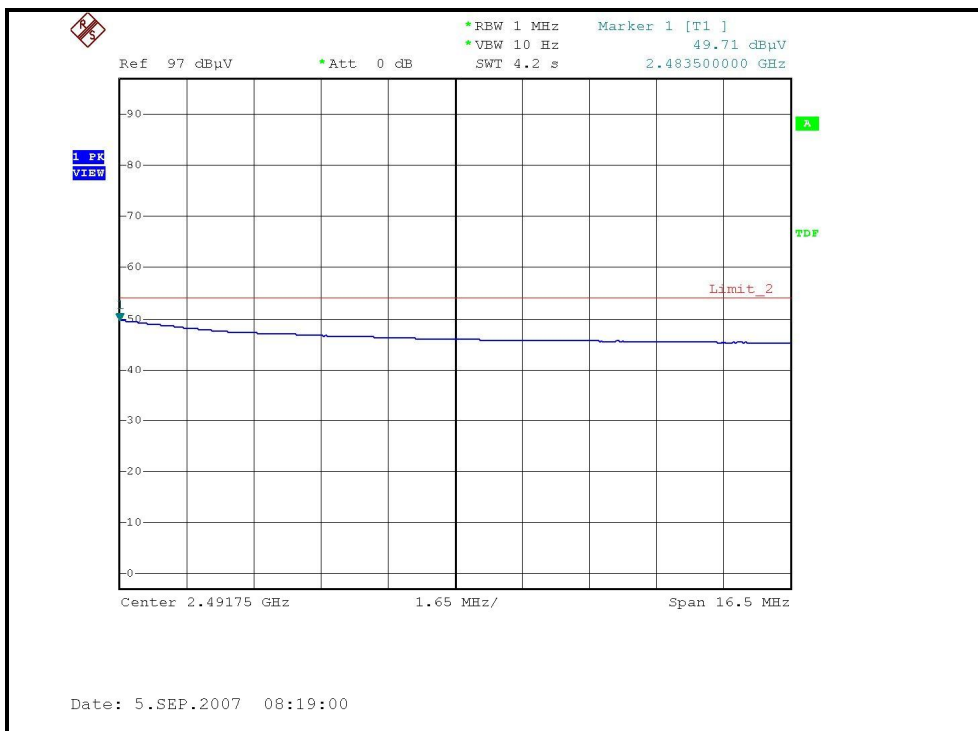
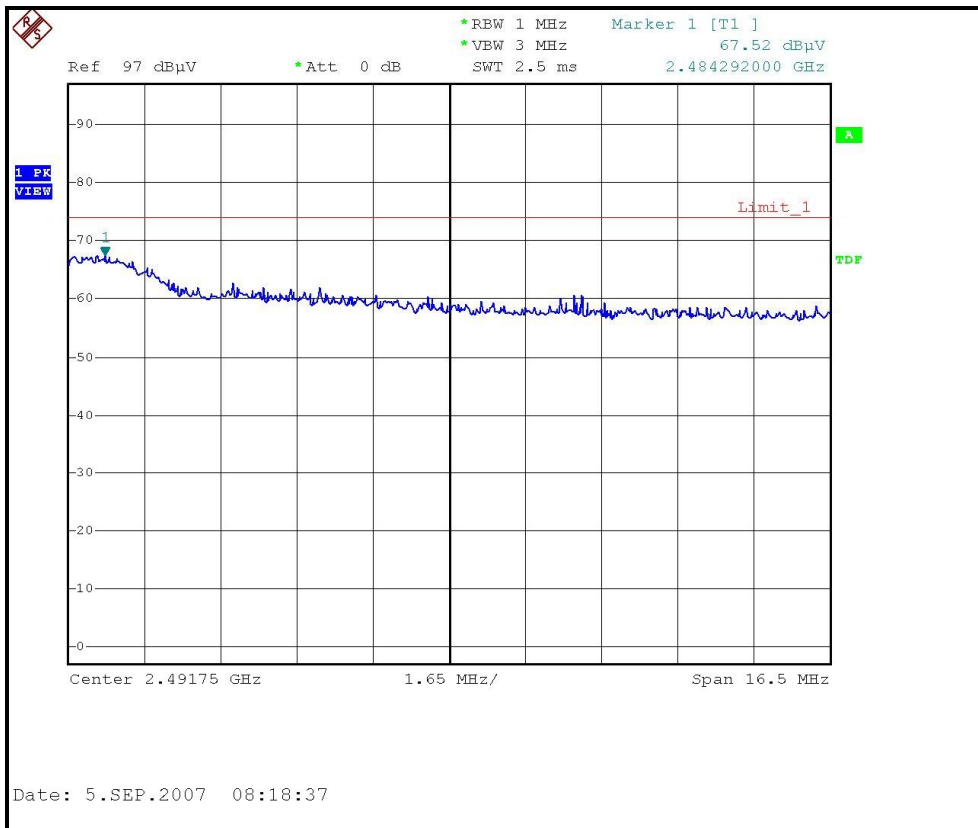
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)



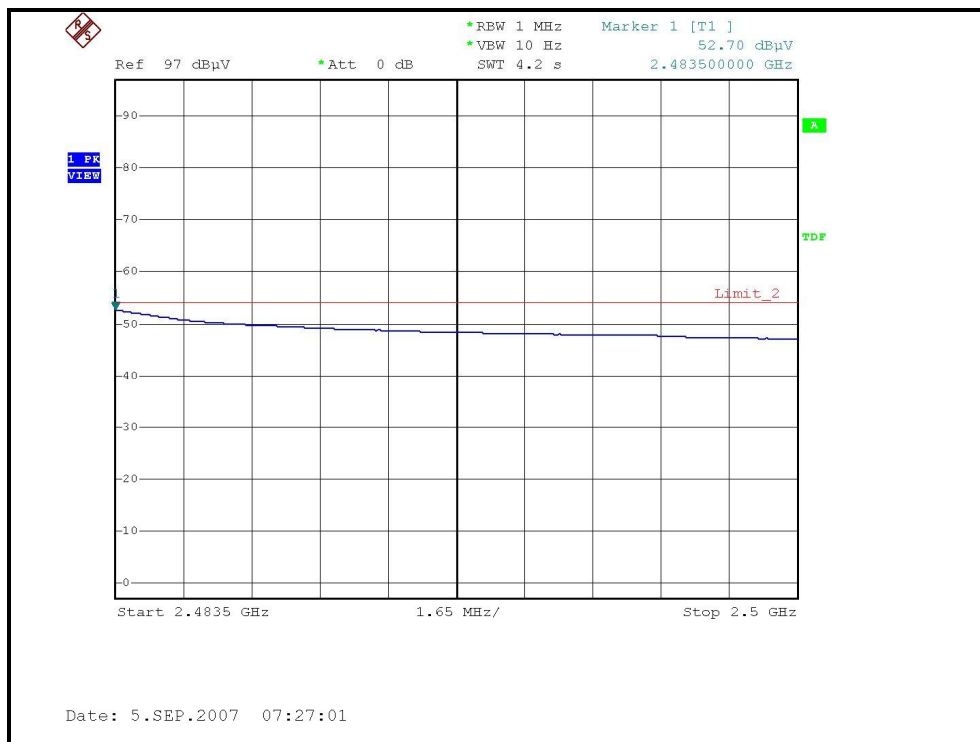
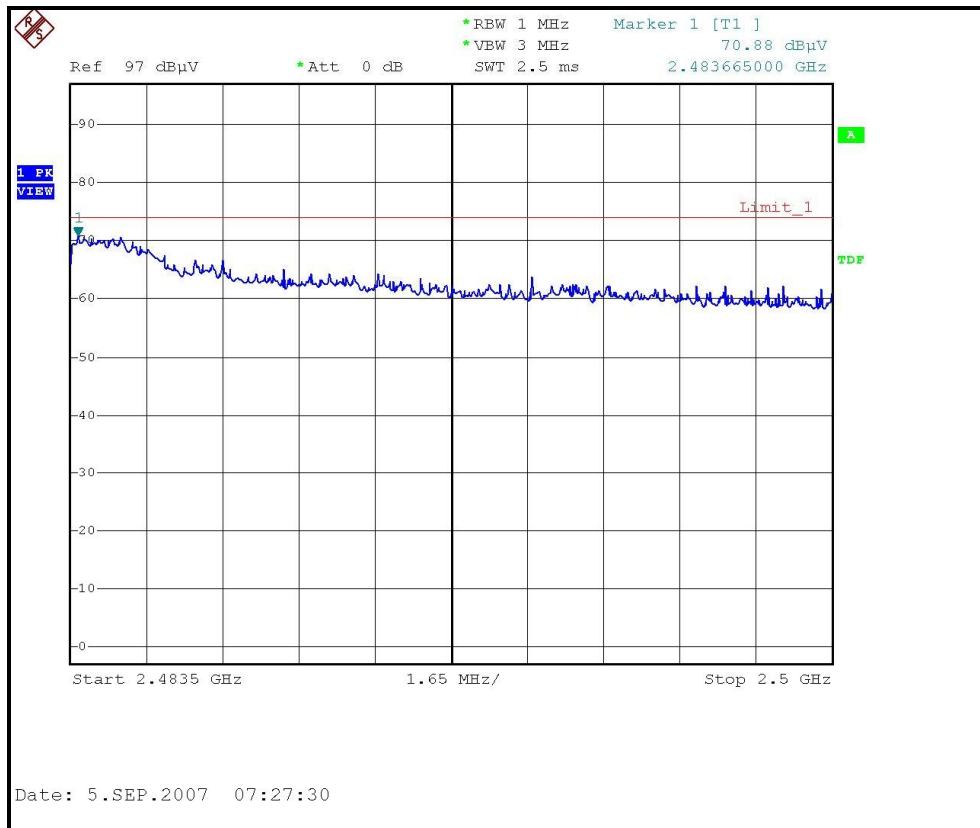
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)



RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)



RESTRICTED BANDEDGE (802.11g MODE, CH11, VERTICAL)



DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	69.00 PK	74.00	-5.00	1.46 H	154	38.68	30.32
2	2390.00	50.00 AV	54.00	-4.00	1.46 H	154	19.68	30.32
3	2412.00	111.50 PK			1.70 H	286	81.09	30.41
4	2412.00	100.80 AV			1.70 H	286	70.39	30.41
5	4824.00	54.00 PK	74.00	-20.00	1.40 H	358	18.21	35.79
6	4824.00	39.00 AV	54.00	-15.00	1.40 H	358	3.21	35.79
7	7236.00	53.20 PK	74.00	-20.80	1.24 H	330	11.60	41.60
8	7236.00	39.80 AV	54.00	-14.20	1.24 H	330	-1.80	41.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	72.80 PK	74.00	-1.20	1.30 V	227	42.48	30.32
2	2390.00	52.30 AV	54.00	-1.70	1.30 V	227	21.98	30.32
3	2412.00	113.40 PK			1.57 V	100	82.99	30.41
4	2412.00	102.60 AV			1.57 V	100	72.19	30.41
5	4824.00	56.90 PK	74.00	-17.10	1.33 V	36	21.11	35.79
6	4824.00	41.90 AV	54.00	-12.10	1.33 V	36	6.11	35.79
7	7236.00	52.70 PK	74.00	-21.30	1.67 V	332	11.10	41.60
8	7236.00	40.30 AV	54.00	-13.70	1.67 V	332	-1.30	41.60

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	111.80 PK			1.47 H	284	81.28	30.52
2	*2437.00	101.10 AV			1.47 H	284	70.58	30.52
3	4874.00	53.20 PK	74.00	-20.80	1.29 H	51	17.28	35.92
4	4874.00	38.60 AV	54.00	-15.40	1.29 H	51	2.68	35.92
5	7311.00	52.70 PK	74.00	-21.30	1.45 H	304	10.89	41.81
6	7311.00	39.60 AV	54.00	-14.40	1.45 H	304	-2.21	41.81

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	112.60 PK			1.33 V	94	82.08	30.52
2	*2437.00	102.10 AV			1.33 V	94	71.58	30.52
3	4874.00	56.40 PK	74.00	-17.60	1.34 V	35	20.48	35.92
4	4874.00	41.30 AV	54.00	-12.70	1.34 V	35	5.38	35.92
5	7311.00	52.90 PK	74.00	-21.10	1.65 V	303	11.09	41.81
6	7311.00	40.20 AV	54.00	-13.80	1.65 V	303	-1.61	41.81

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

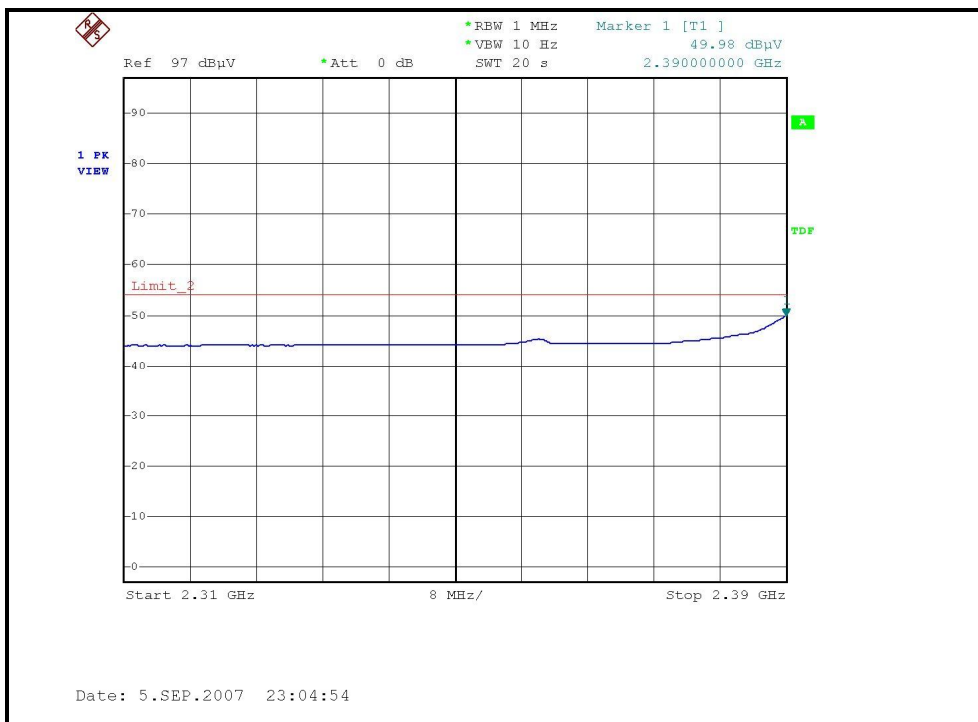
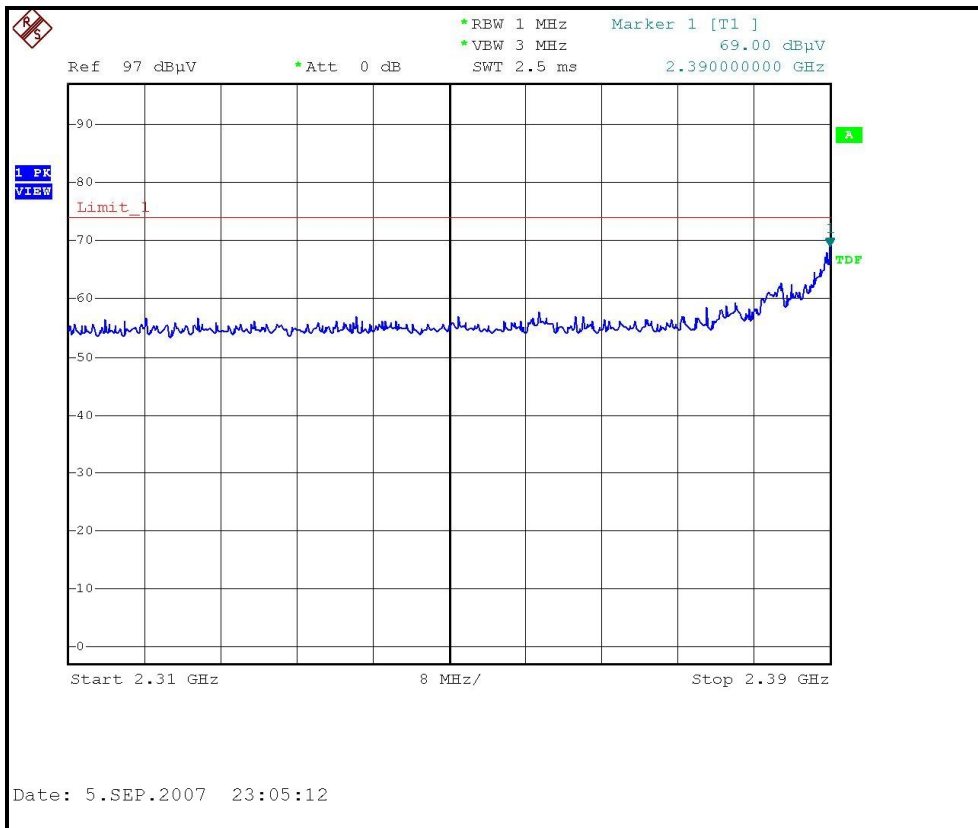
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	TESTED BY	Rex Huang

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	112.10 PK			1.49 H	287	81.47	30.63
2	*2462.00	101.20 AV			1.49 H	287	70.57	30.63
3	2483.50	67.50 PK	74.00	-6.50	1.45 H	119	36.78	30.72
4	2483.50	50.70 AV	54.00	-3.30	1.45 H	119	19.98	30.72
5	4924.00	53.50 PK	74.00	-20.50	1.36 H	57	17.44	36.06
6	4924.00	38.70 AV	54.00	-15.30	1.36 H	57	2.64	36.06
7	7386.00	52.90 PK	74.00	-21.10	1.41 H	325	10.89	42.01
8	7386.00	39.70 AV	54.00	-14.30	1.41 H	325	-2.31	42.01

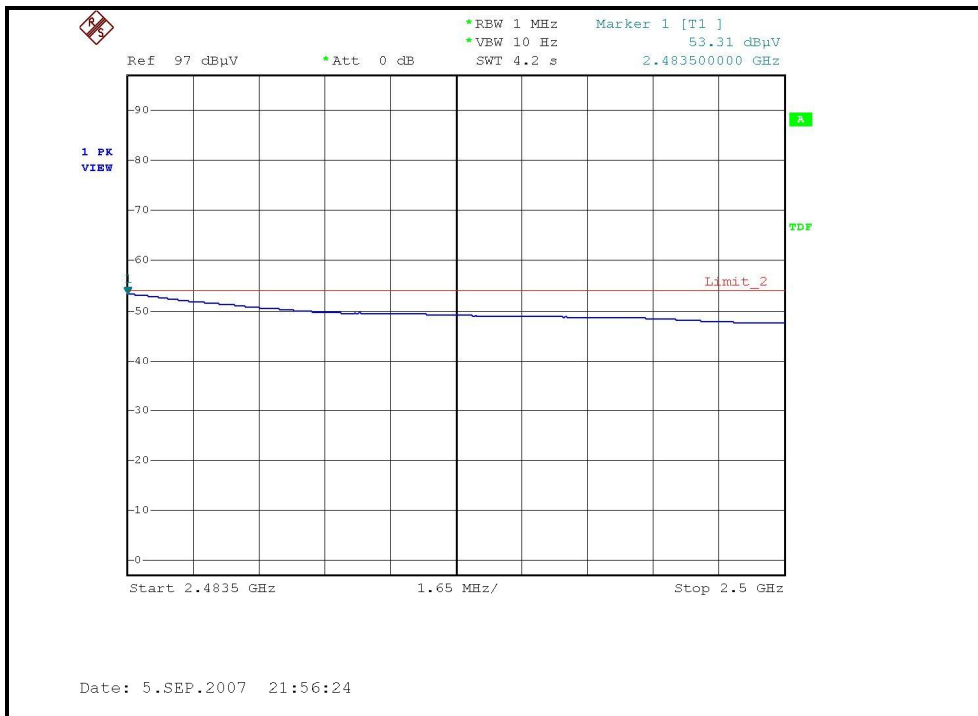
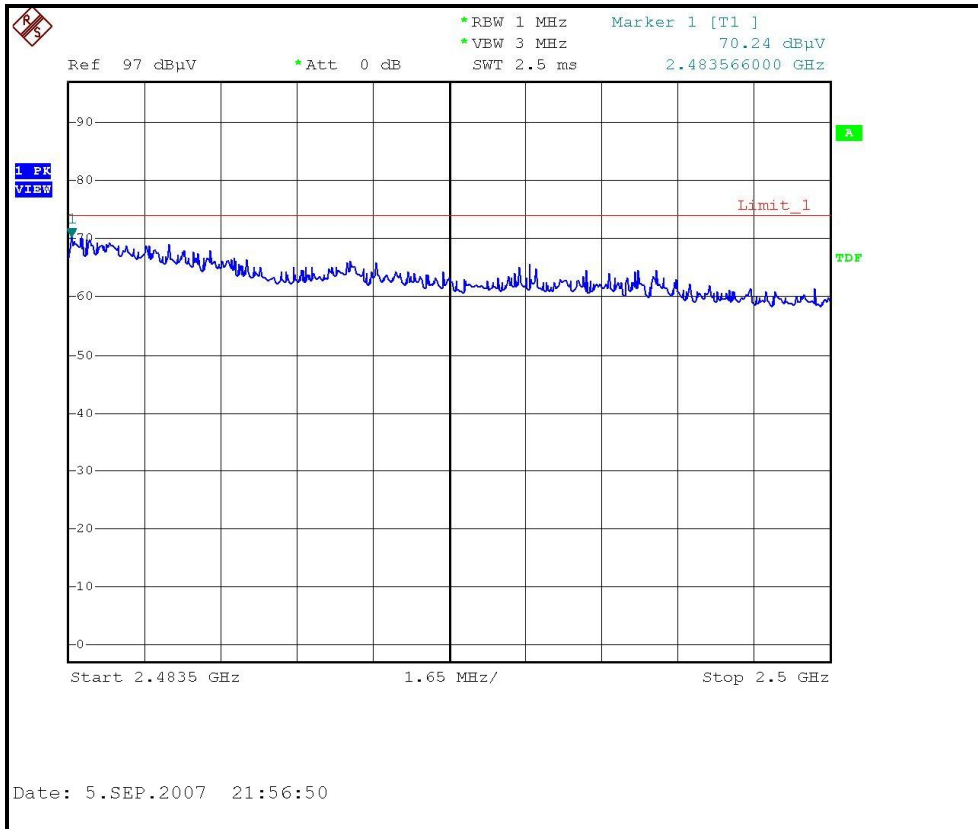
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.80 PK			1.32 V	84	82.17	30.63
2	*2462.00	101.90 AV			1.32 V	84	71.27	30.63
3	2483.50	70.20 PK	74.00	-3.80	1.52 V	101	39.48	30.72
4	2483.50	53.30 AV	54.00	-0.70	1.52 V	101	22.58	30.72
5	4924.00	56.80 PK	74.00	-17.20	1.36 V	39	20.74	36.06
6	4924.00	41.50 AV	54.00	-12.50	1.36 V	39	5.44	36.06
7	7386.00	53.20 PK	74.00	-20.80	1.57 V	311	11.19	42.01
8	7386.00	40.50 AV	54.00	-13.50	1.57 V	311	-1.51	42.01

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

RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH1, 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
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	64.60 PK	74.00	-9.40	1.46 H	151	34.28	30.32
2	2390.00	51.10 AV	54.00	-2.90	1.46 H	151	20.78	30.32
3	*2422.00	107.40 PK			1.49 H	284	76.95	30.45
4	*2422.00	96.50 AV			1.49 H	284	66.05	30.45
5	4844.00	48.10 PK	74.00	-25.90	1.36 H	57	12.26	35.84
6	4844.00	35.40 AV	54.00	-18.60	1.36 H	57	-0.44	35.84
7	7266.00	51.20 PK	74.00	-22.80	1.45 H	182	9.52	41.68
8	7266.00	38.70 AV	54.00	-15.30	1.45 H	182	-2.98	41.68

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	2389.68	69.50 PK	74.00	-4.50	1.36 V	226	39.18	30.32
2	2389.68	53.70 AV	54.00	-0.30	1.36 V	226	23.38	30.32
3	*2422.00	108.80 PK			1.57 V	107	78.35	30.45
4	*2422.00	98.30 AV			1.57 V	107	67.85	30.45
5	4844.00	58.20 PK	74.00	-15.80	1.34 V	37	22.36	35.84
6	4844.00	36.30 AV	54.00	-17.70	1.34 V	37	0.46	35.84
7	7266.00	52.10 PK	74.00	-21.90	1.47 V	326	10.42	41.68
8	7266.00	40.00 AV	54.00	-14.00	1.47 V	326	-1.68	41.68

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	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	109.00 PK			1.49 H	286	78.48	30.52
2	*2437.00	98.50 AV			1.49 H	286	67.98	30.52
3	4874.00	49.20 PK	74.00	-24.80	1.30 H	54	13.28	35.92
4	4874.00	36.50 AV	54.00	-17.50	1.30 H	54	0.58	35.92
5	7311.00	52.00 PK	74.00	-22.00	1.43 H	175	10.19	41.81
6	7311.00	39.50 AV	54.00	-14.50	1.43 H	175	-2.31	41.81

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.30 PK			1.33 V	95	79.78	30.52
2	*2437.00	99.80 AV			1.33 V	95	69.28	30.52
3	4874.00	51.80 PK	74.00	-22.20	1.35 V	34	15.88	35.92
4	4874.00	39.50 AV	54.00	-14.50	1.35 V	34	3.58	35.92
5	7311.00	52.70 PK	74.00	-21.30	1.56 V	319	10.89	41.81
6	7311.00	40.20 AV	54.00	-13.80	1.56 V	319	-1.61	41.81

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

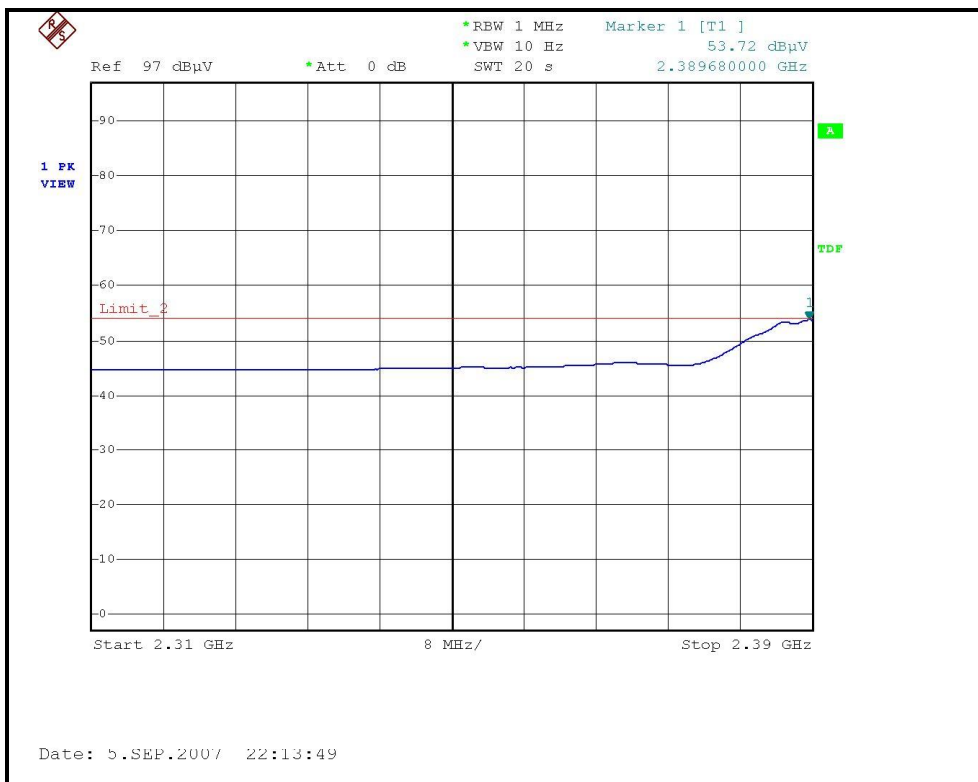
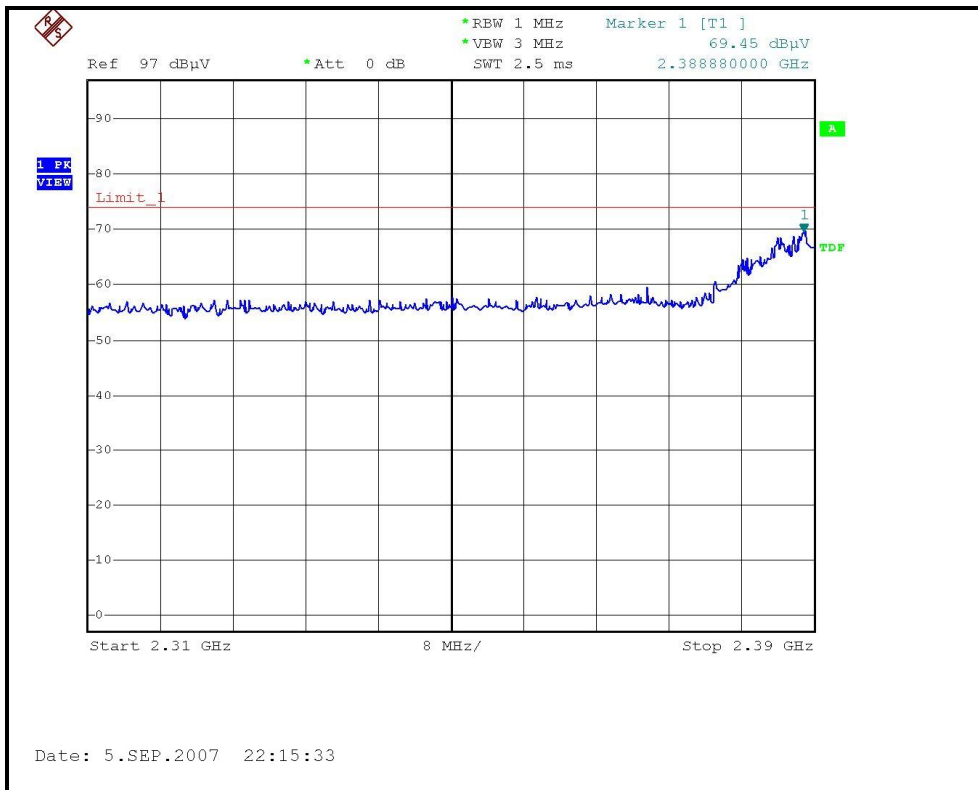
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 66%RH, 955hPa	TESTED BY	Rex Huang

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	108.20 PK			1.48 H	289	77.62	30.58
2	2452.00	97.50 AV			1.48 H	289	66.92	30.58
3	2483.50	66.10 PK	74.00	-7.90	1.69 H	290	35.38	30.72
4	2483.50	52.80 AV	54.00	-1.20	1.69 H	290	22.08	30.72
5	4904.00	48.50 PK	74.00	-25.50	1.33 H	60	12.50	36.00
6	4904.00	35.60 AV	54.00	-18.40	1.33 H	60	-0.40	36.00
7	7356.00	51.40 PK	74.00	-22.60	1.41 H	190	9.47	41.93
8	7356.00	38.80 AV	54.00	-15.20	1.41 H	190	-3.13	41.93

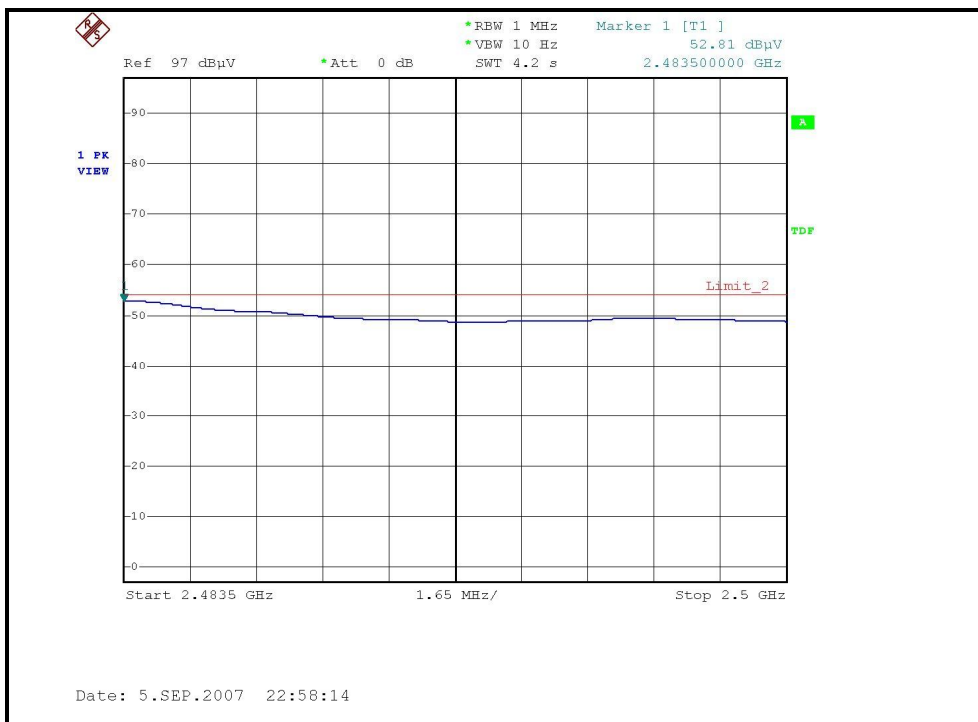
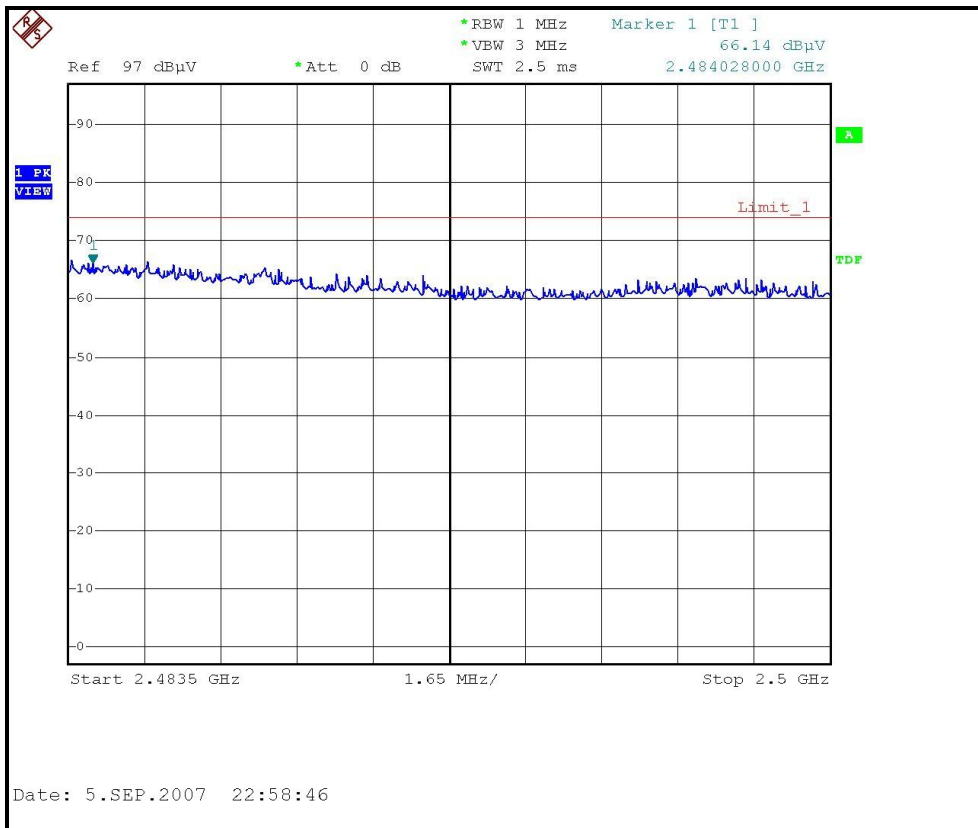
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2452.00	109.00 PK			1.53 V	99	78.42	30.58
2	2452.00	98.70 AV			1.53 V	99	68.12	30.58
3	2483.76	69.50 PK	74.00	-4.50	1.53 V	100	38.78	30.72
4	2483.76	53.90 AV	54.00	-0.10	1.53 V	100	23.18	30.72
5	4924.00	58.50 PK	74.00	-15.50	1.42 V	45	22.44	36.06
6	4924.00	36.50 AV	54.00	-17.50	1.42 V	45	0.44	36.06
7	7386.00	52.00 PK	74.00	-22.00	1.36 V	320	9.99	42.01
8	7386.00	39.40 AV	54.00	-14.60	1.36 V	320	-2.61	42.01

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

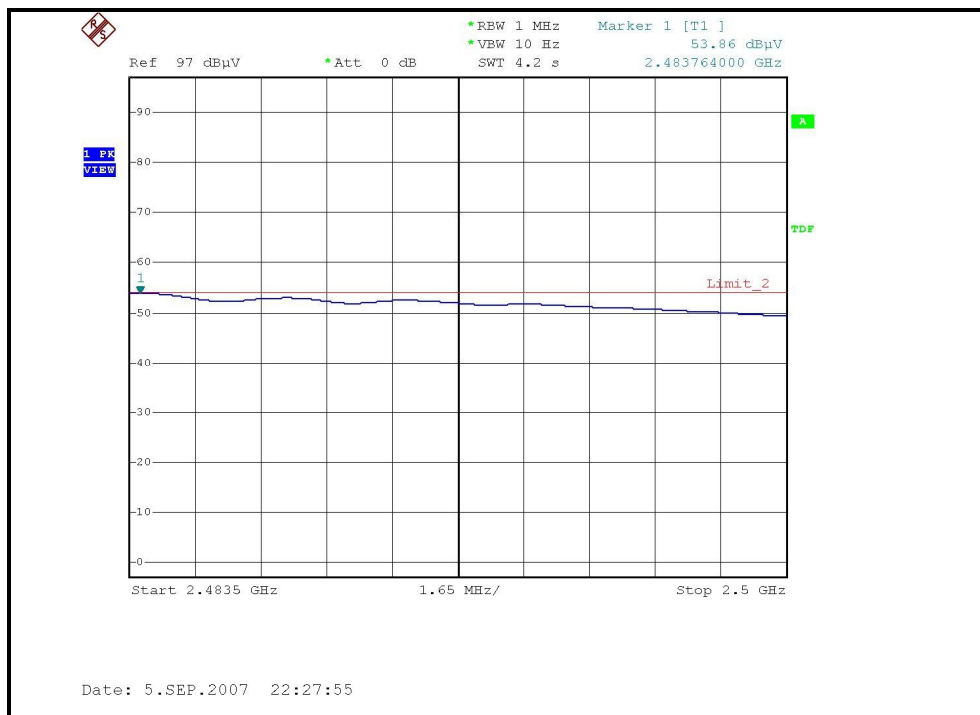
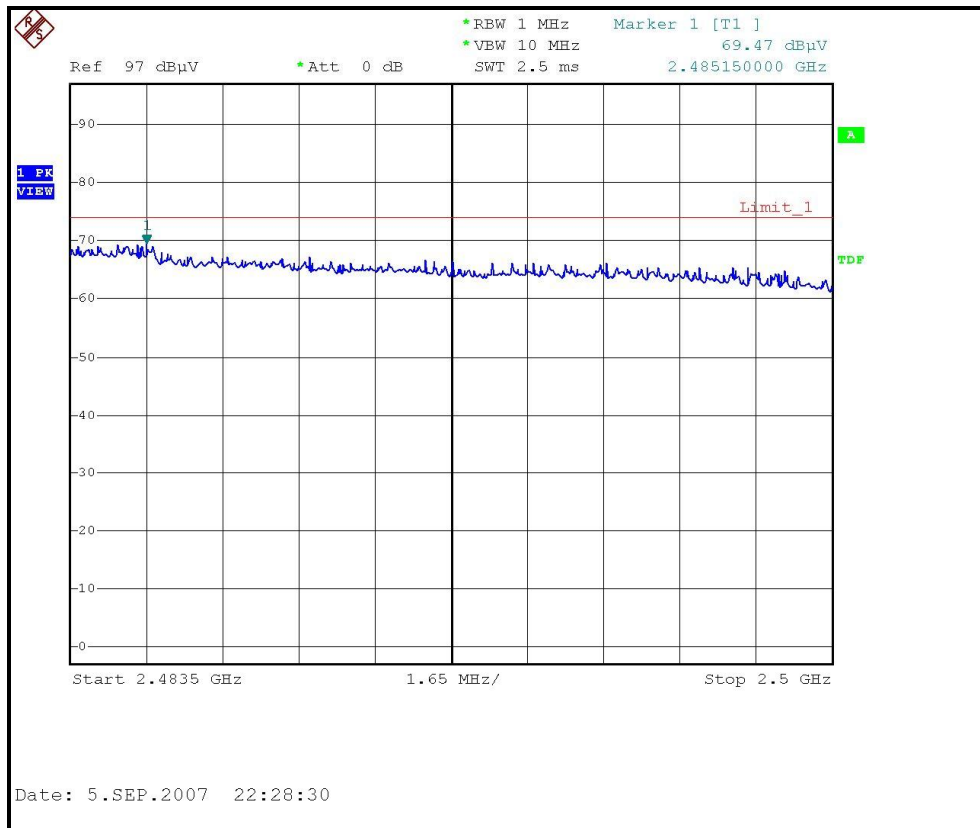
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH1, VERTICAL)



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	100037	Sep. 19, 2008

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.

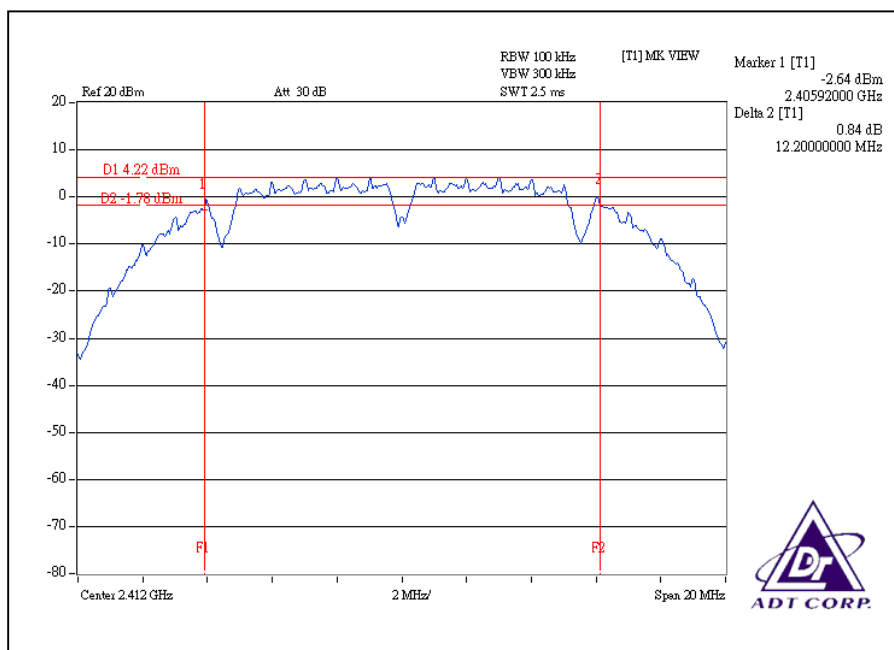
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

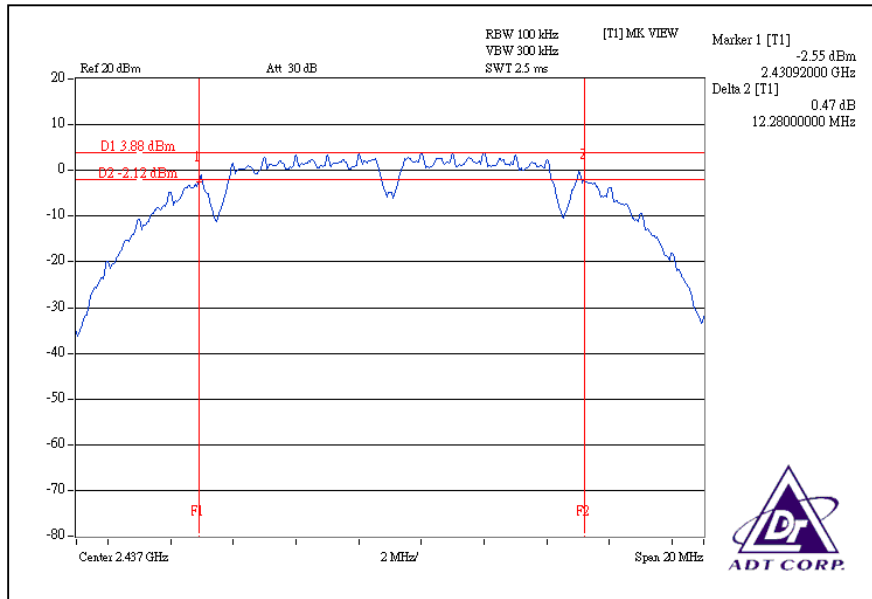
MODULATION TYPE	CCK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	12.2	0.5	PASS
6	2437	12.28	0.5	PASS
11	2462	12.28	0.5	PASS

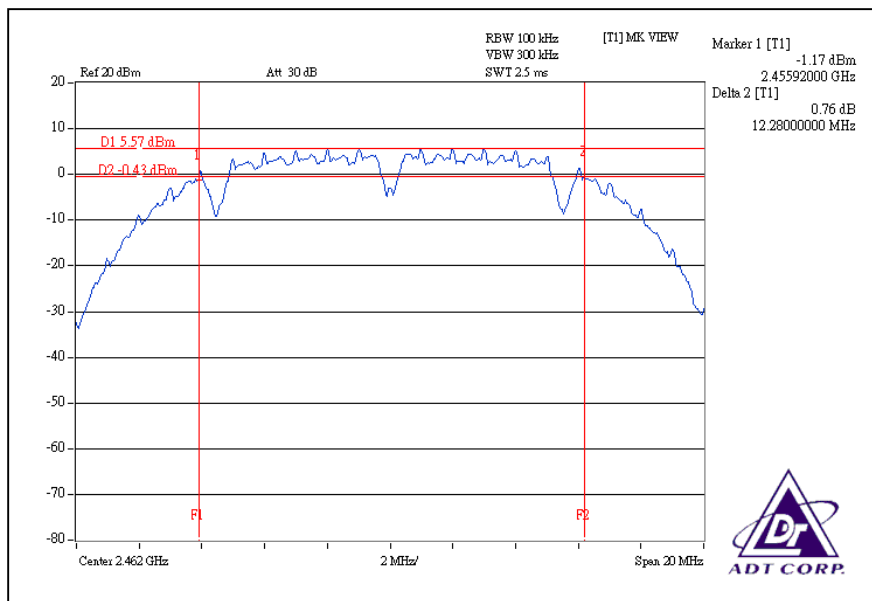
CH1



CH6



CH11

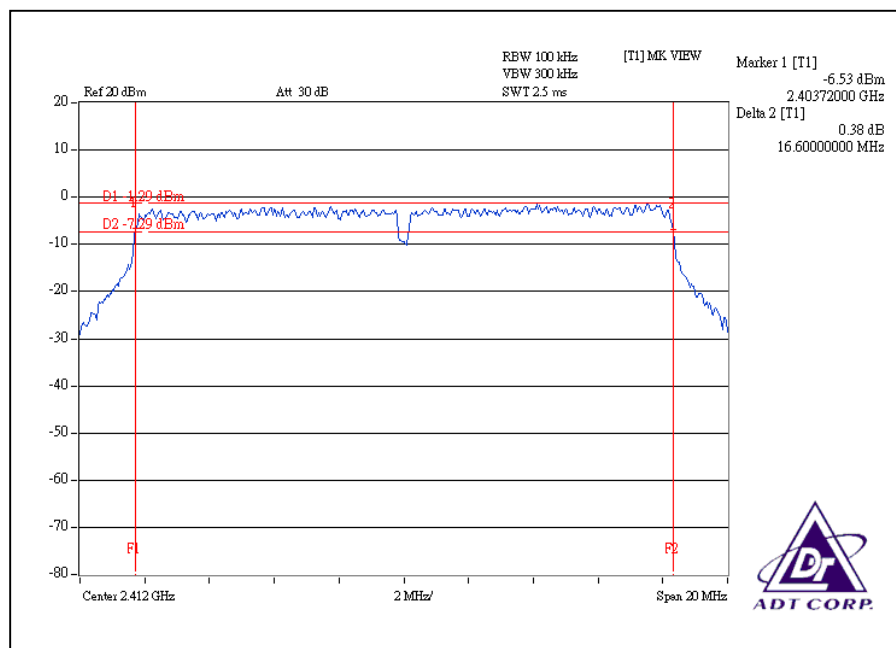


802.11g OFDM MODULATION:

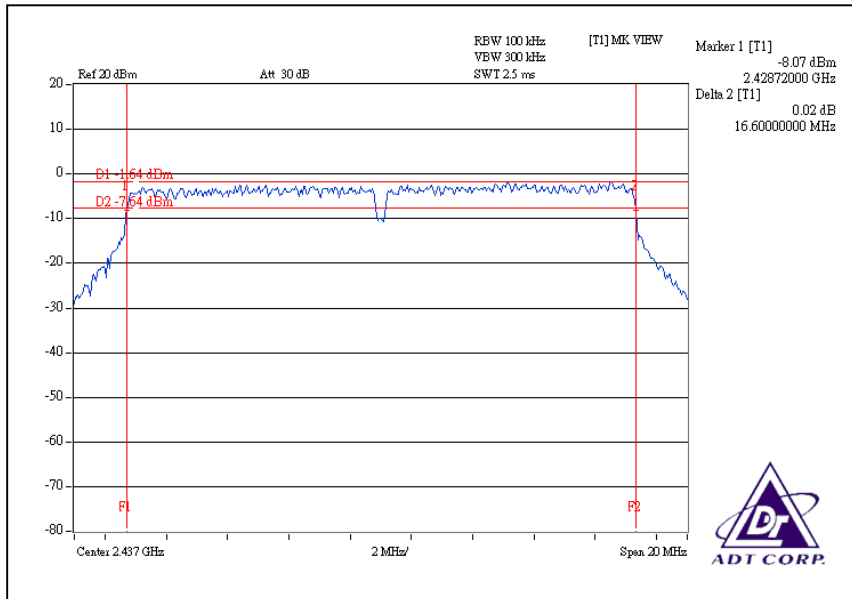
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.6	0.5	PASS
6	2437	16.6	0.5	PASS
11	2462	16.6	0.5	PASS

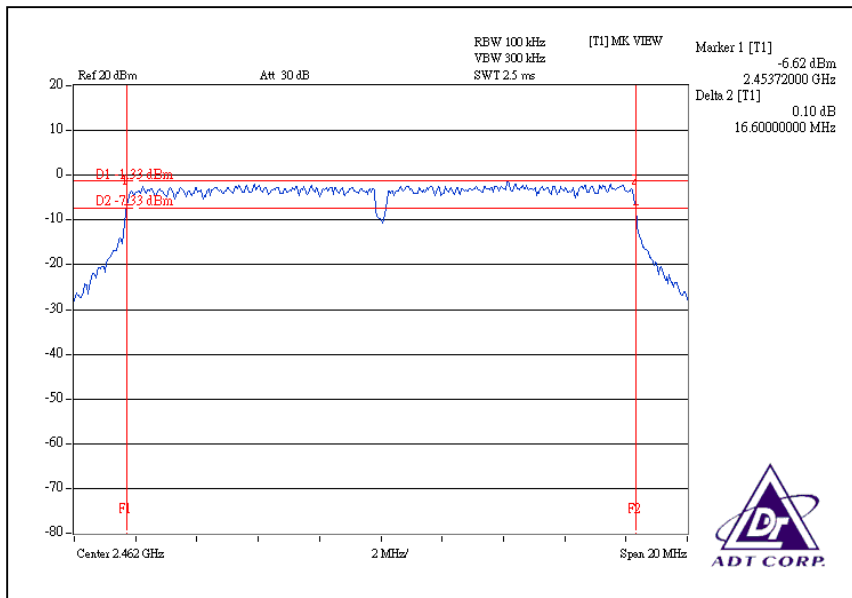
CH1



CH6



CH11

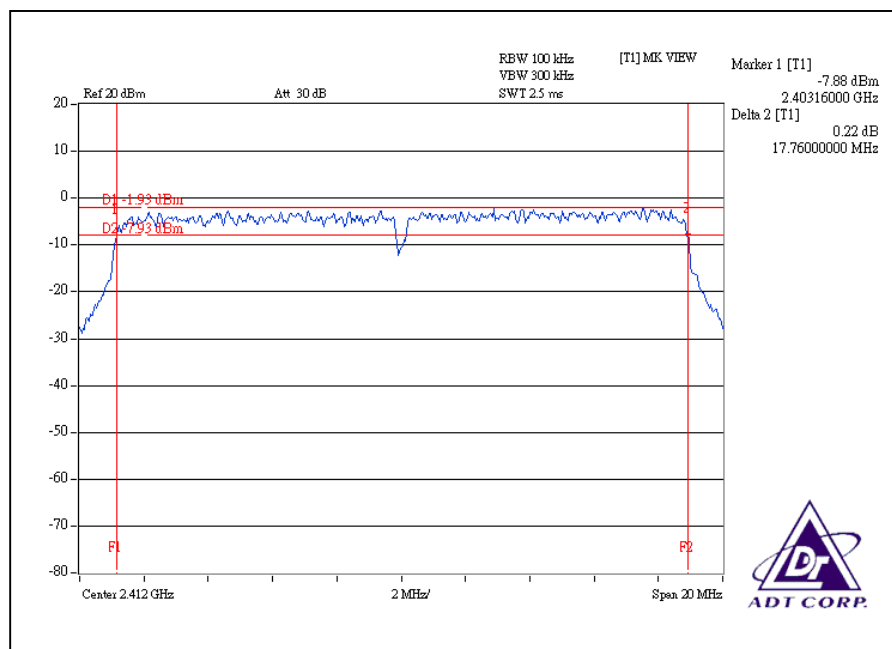


DRAFT 802.11n (20MHz) OFDM MODULATION:

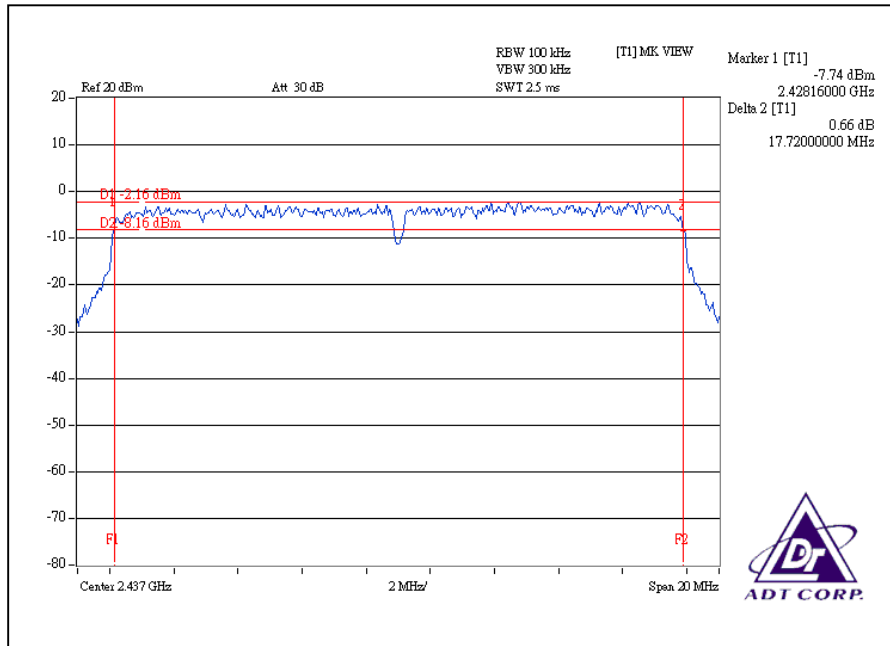
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(2)		
1	2412	17.76	17.76	0.5	PASS
6	2437	17.72	17.72	0.5	PASS
11	2462	17.76	17.76	0.5	PASS

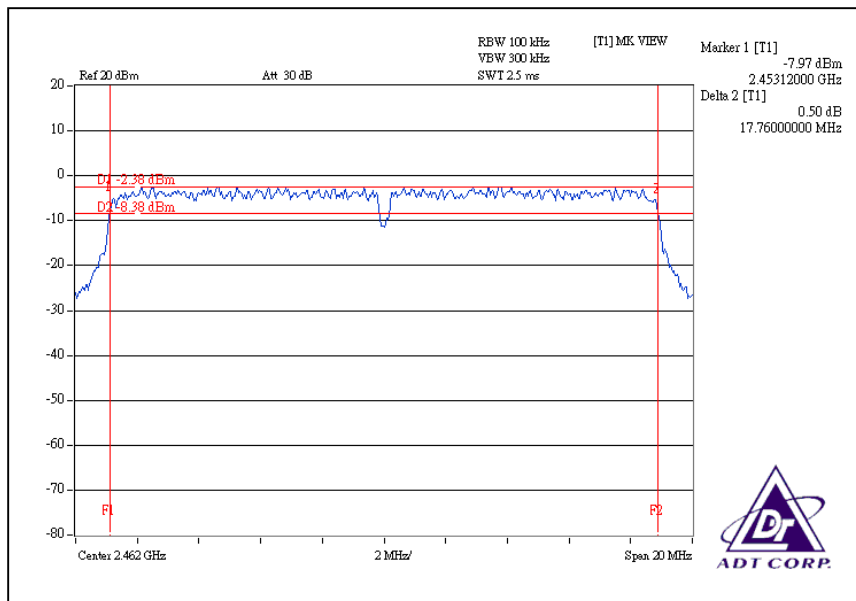
For Chain(0): CH1



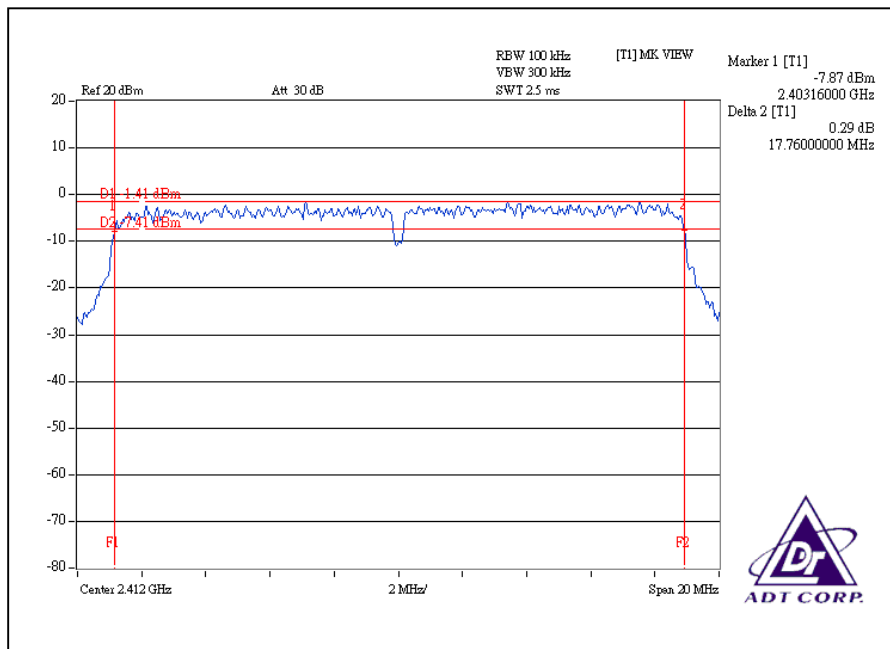
CH6



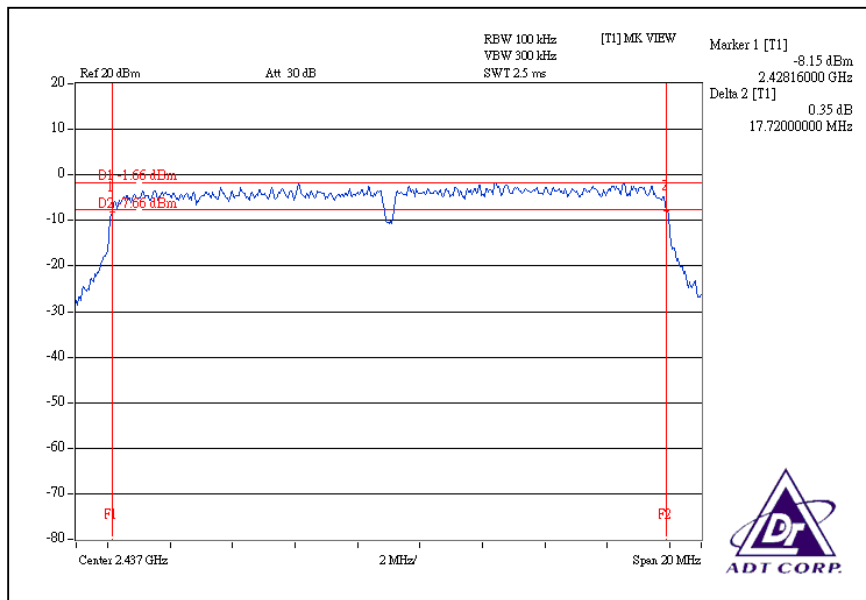
CH11



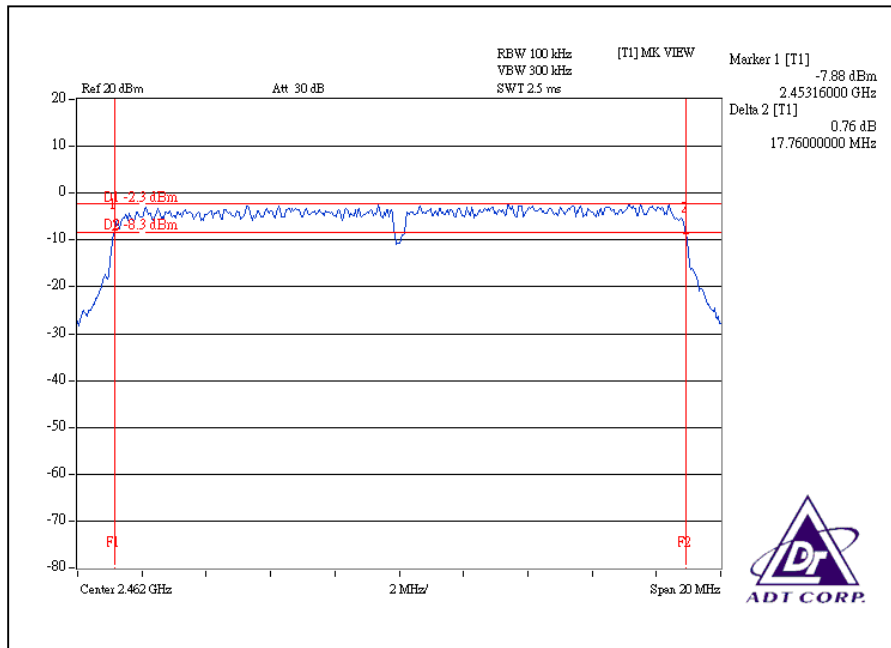
For CHAIN(2): CH1



CH6



CH11

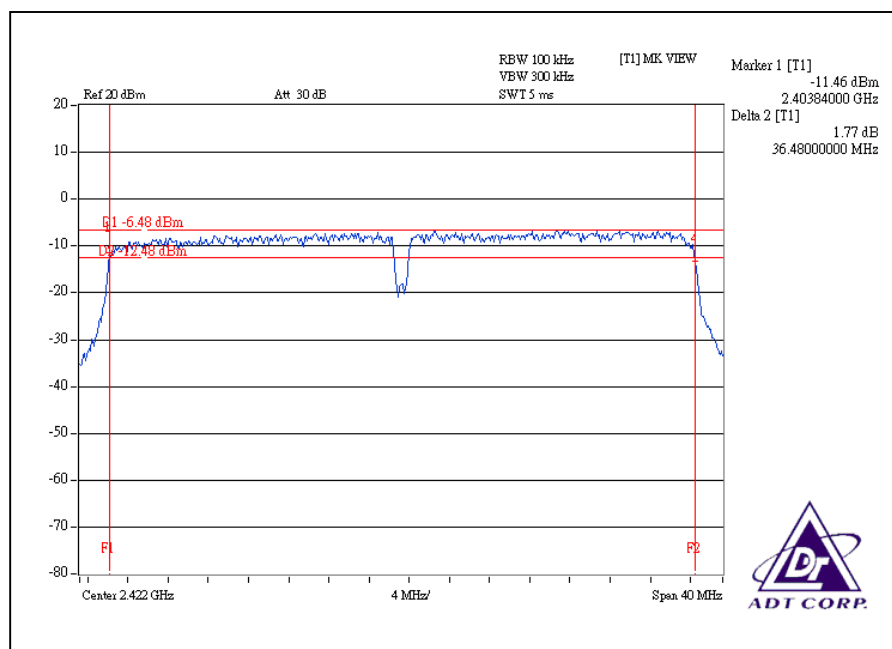


DRAFT 802.11n (40MHz) OFDM MODULATION:

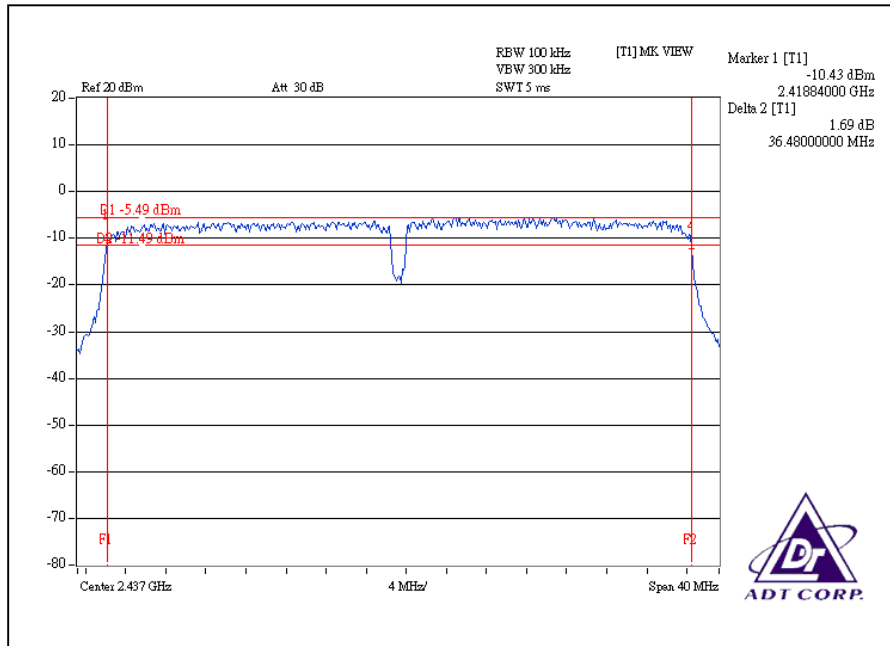
MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(2)		
1	2422	36.48	36.48	0.5	PASS
4	2437	36.48	36.48	0.5	PASS
7	2452	36.48	36.56	0.5	PASS

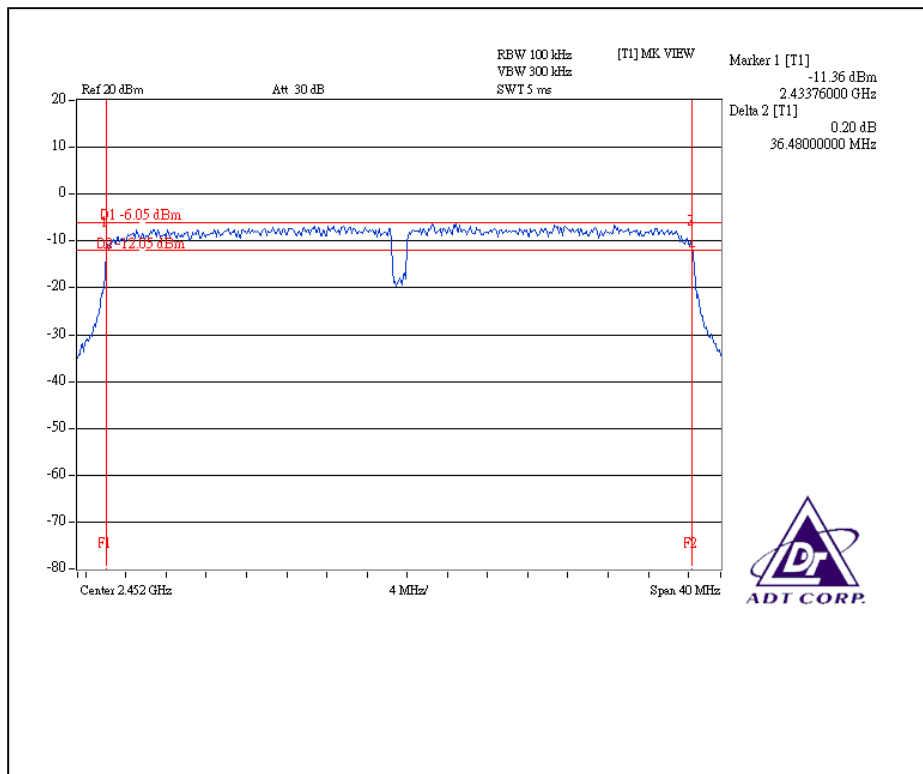
For Chain (0): CH1



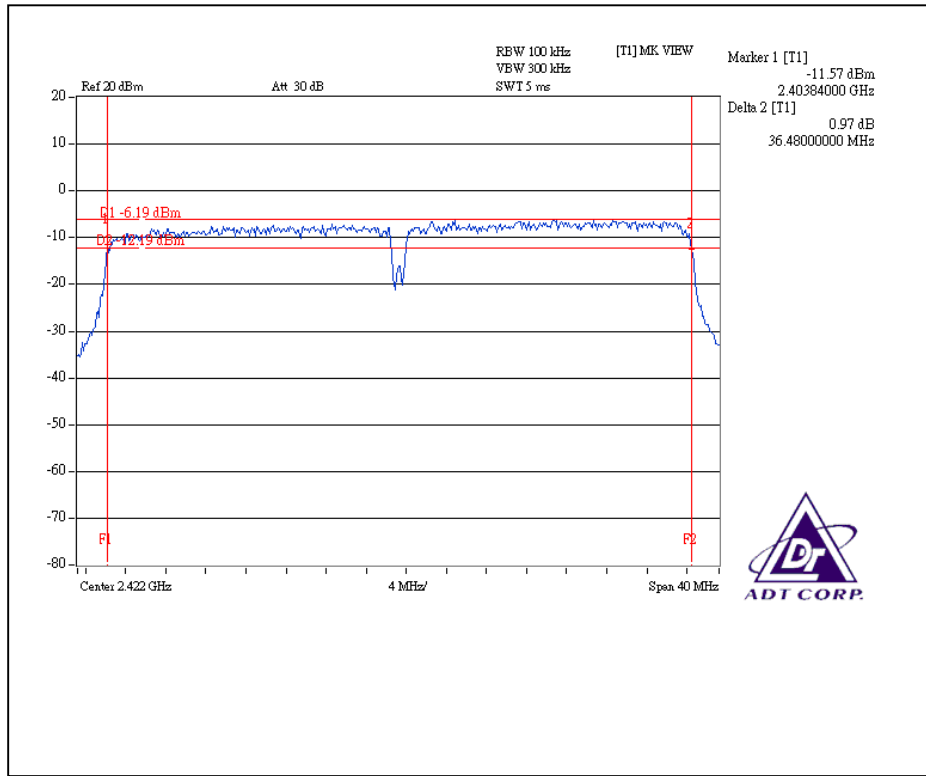
CH4



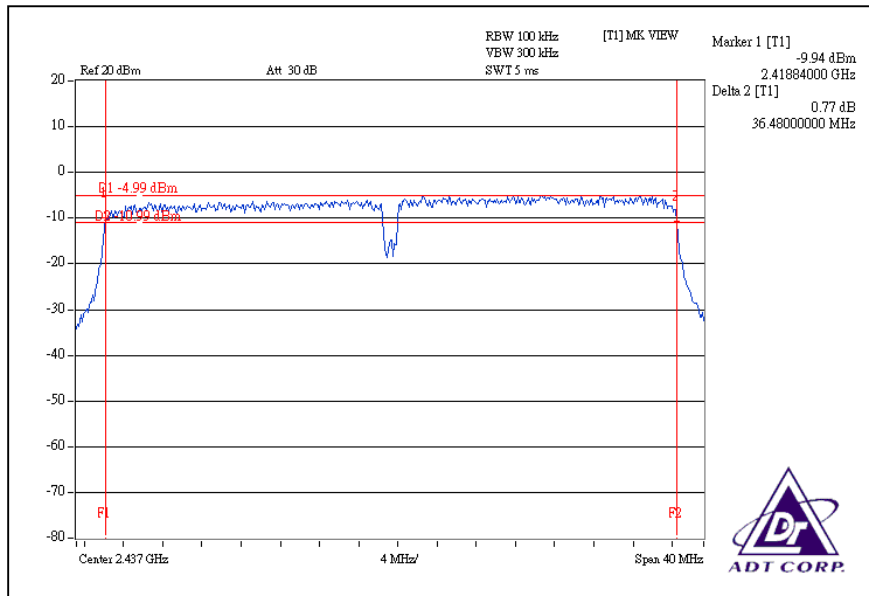
CH7



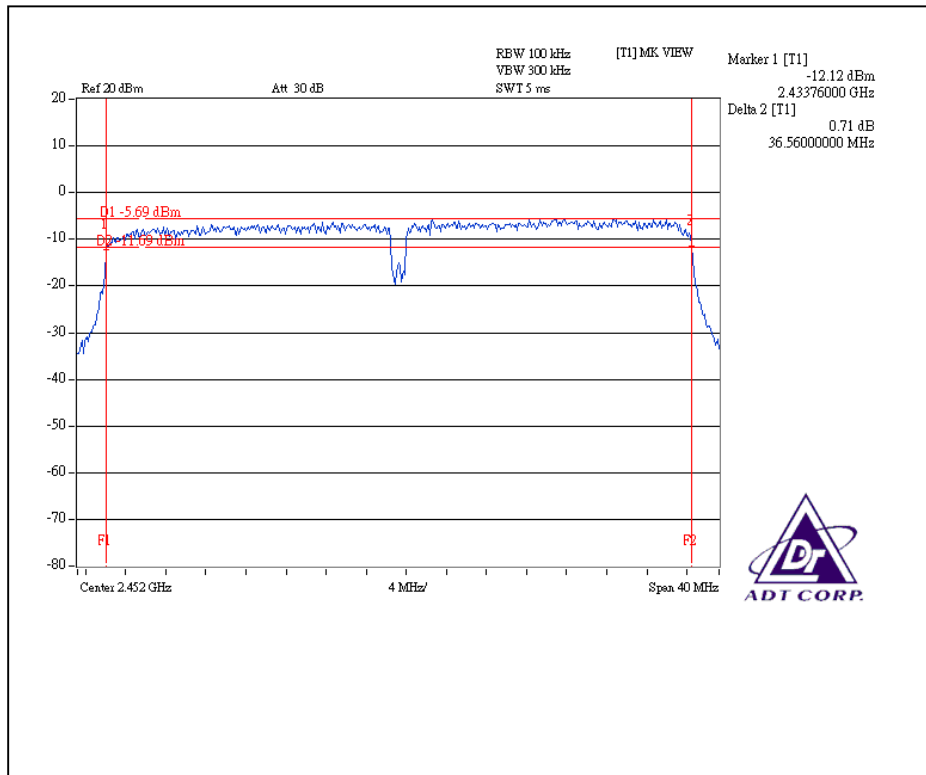
For Chain (2): CH1



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	100037	Sep. 20, 2007
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2007
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Aug. 15, 2008
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

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

4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the 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	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	60.256	17.80	30	PASS
6	2437	59.566	17.75	30	PASS
11	2462	56.105	17.49	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	49.545	16.95	30	PASS
6	2437	46.666	16.69	30	PASS
11	2462	50.933	17.07	30	PASS



DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

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(2)	CHAIN(0)	CHAIN(2)				
1	2412	17.03	17.09	50.47	51.17	101.634	20.1	30	PASS
6	2437	16.89	16.70	48.87	46.88	95.747	19.8	30	PASS
11	2462	17.11	16.74	51.40	47.21	98.611	19.9	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 955hPa
TESTED BY	Wen Yu		

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(2)	CHAIN(0)	CHAIN(2)				
1	2422	15.40	15.40	34.67	34.67	69.347	18.4	30	PASS
4	2437	16.63	16.58	46.03	45.50	91.524	19.6	30	PASS
7	2452	15.70	16.10	37.15	40.74	77.892	18.9	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	100037	Sep. 06, 2008

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.

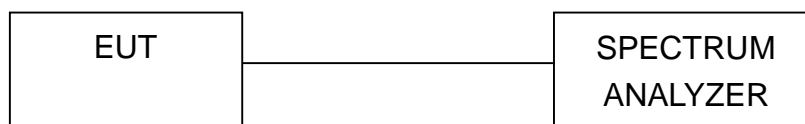
4.5.3 TEST PROCEDURE

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

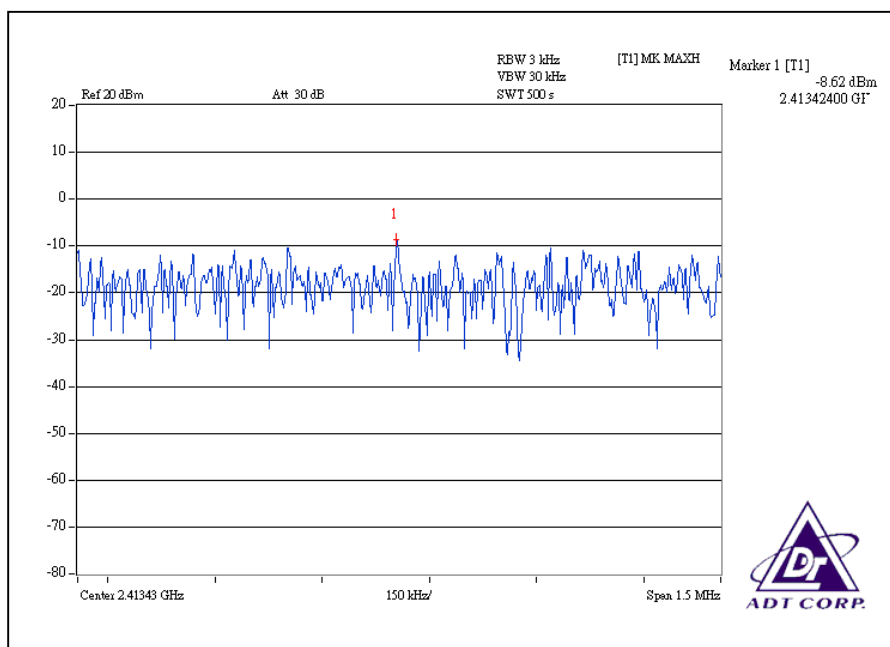
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

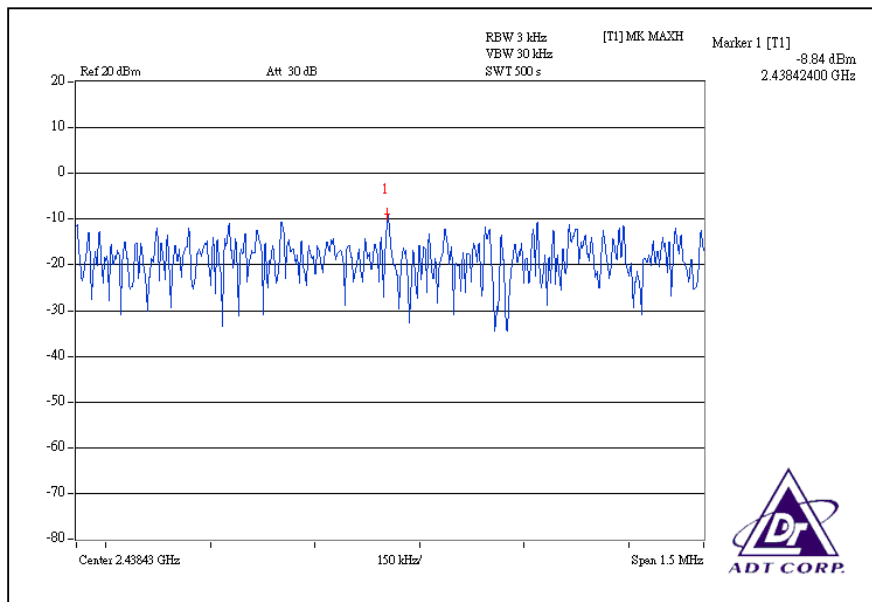
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 955hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-8.62	8	PASS
6	2437	-8.84	8	PASS
11	2462	-7.28	8	PASS

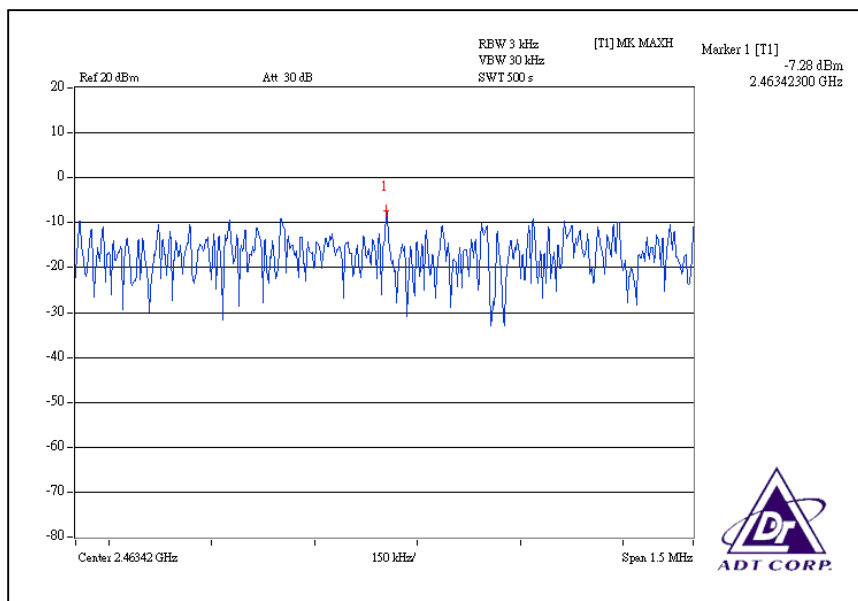
CH1



CH6



CH11

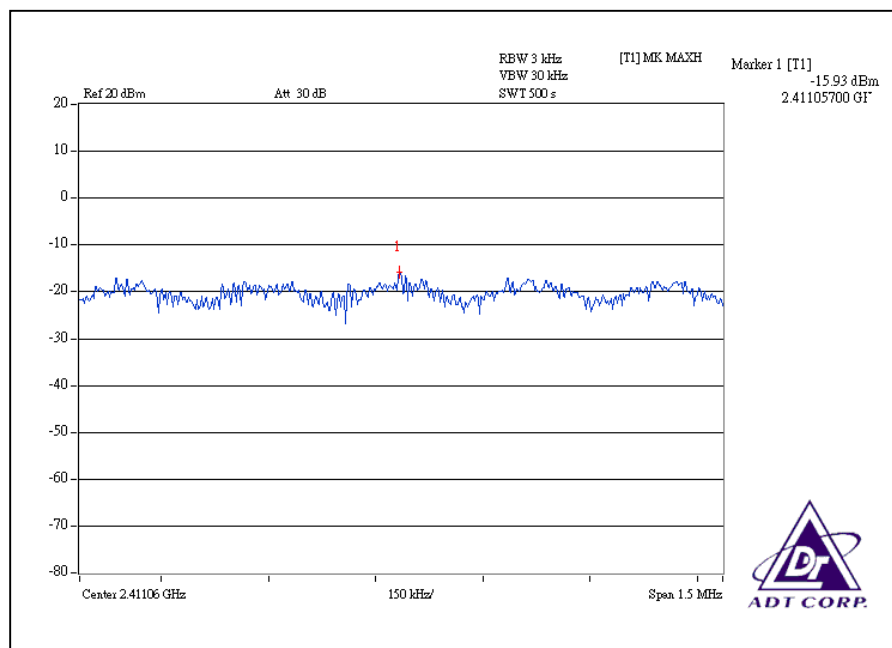


802.11g OFDM MODULATION:

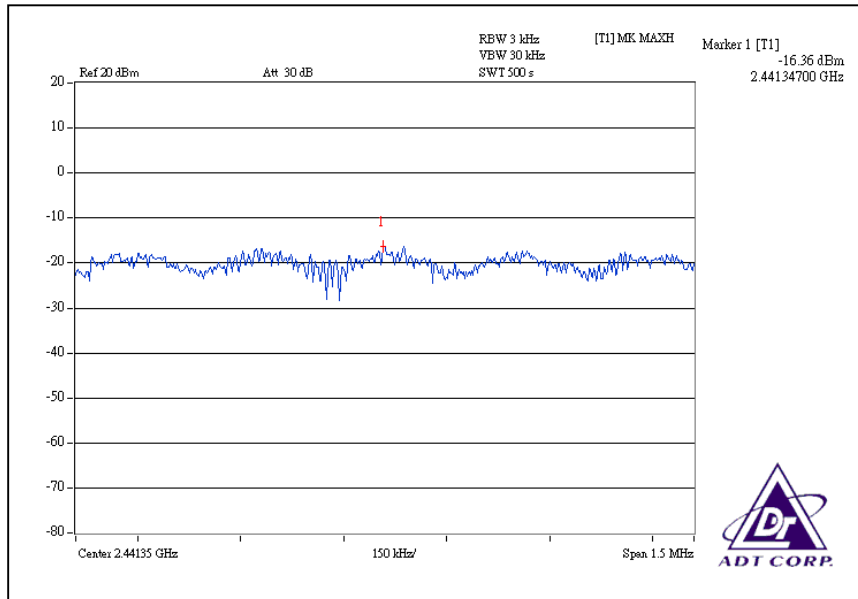
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-15.93	8	PASS
6	2437	-16.36	8	PASS
11	2462	-16.04	8	PASS

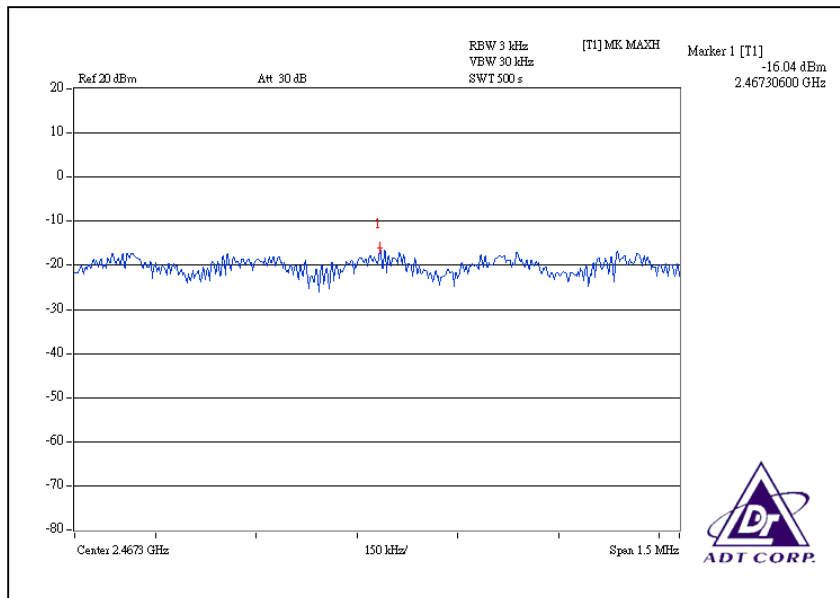
CH1



CH6



CH11

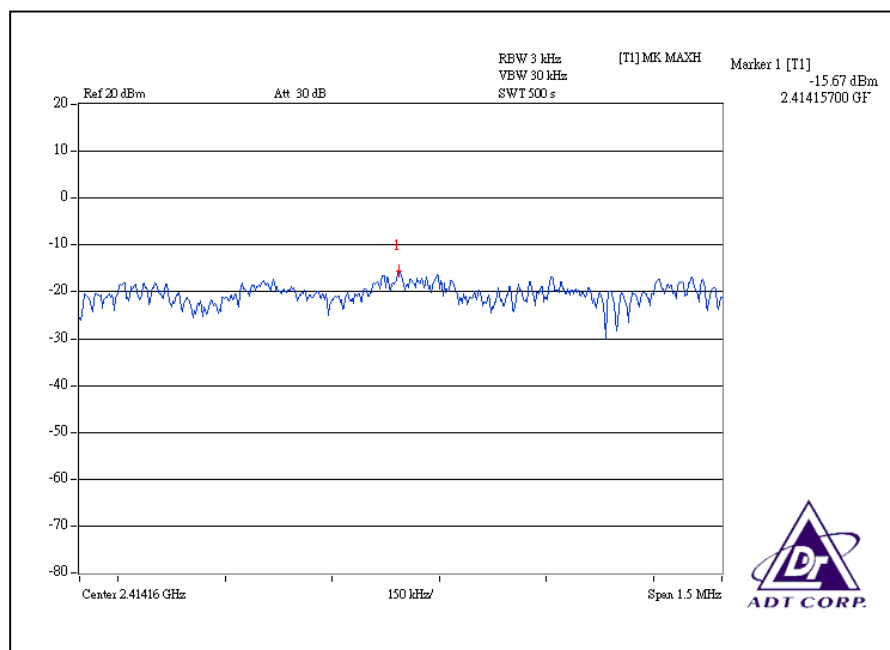


DRAFT 802.11n (20MHz) OFDM MODULATION:

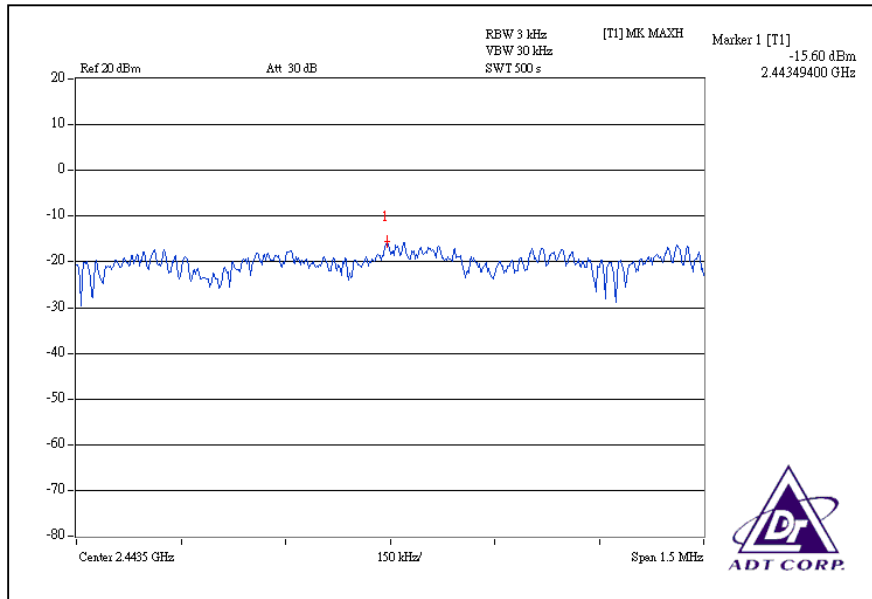
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	28 deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(2)		
1	2412	-15.67	-15.10	8	PASS
6	2437	-15.60	-15.27	8	PASS
11	2462	-16.43	-15.65	8	PASS

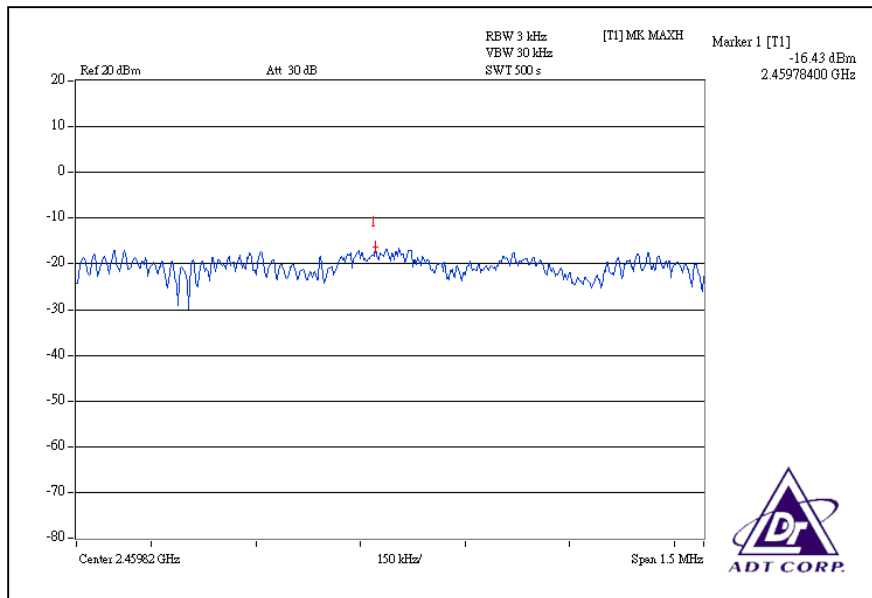
For Chain(0): CH1



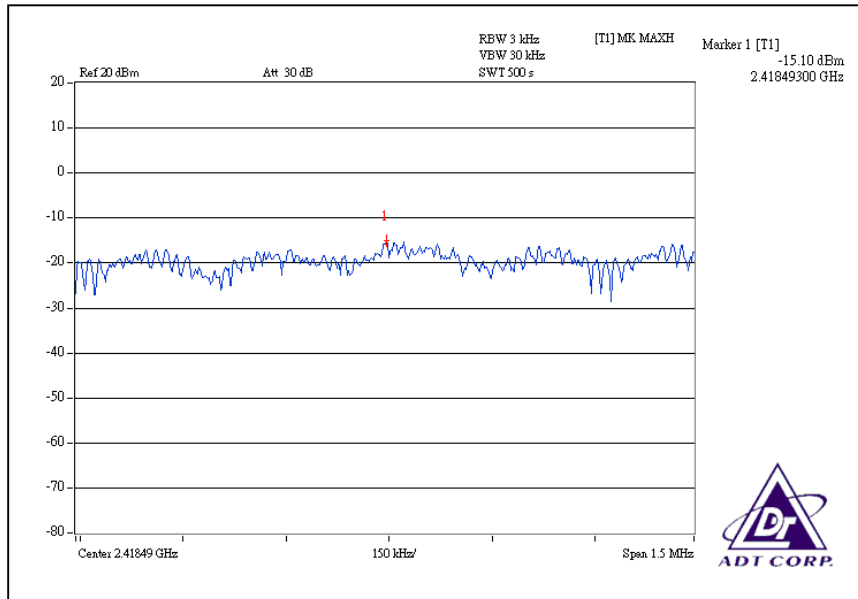
CH6



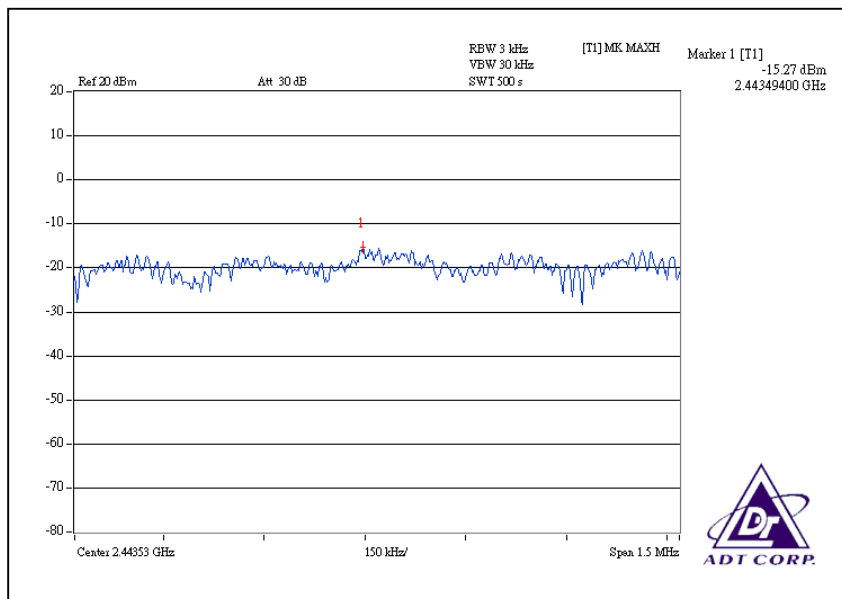
CH11



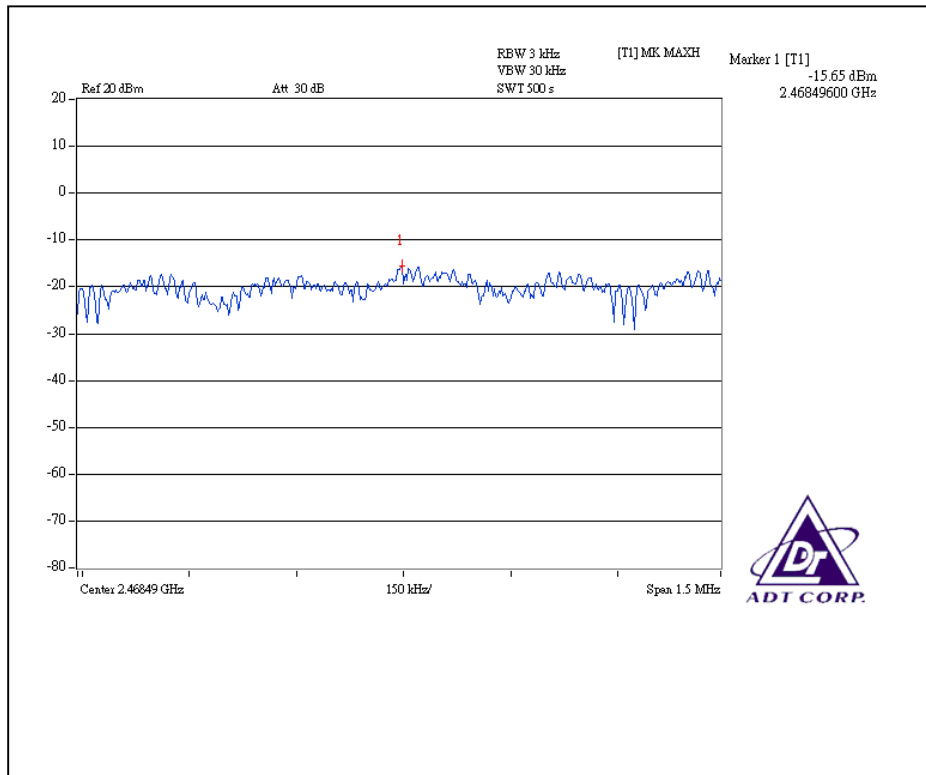
For Chain (2): CH1



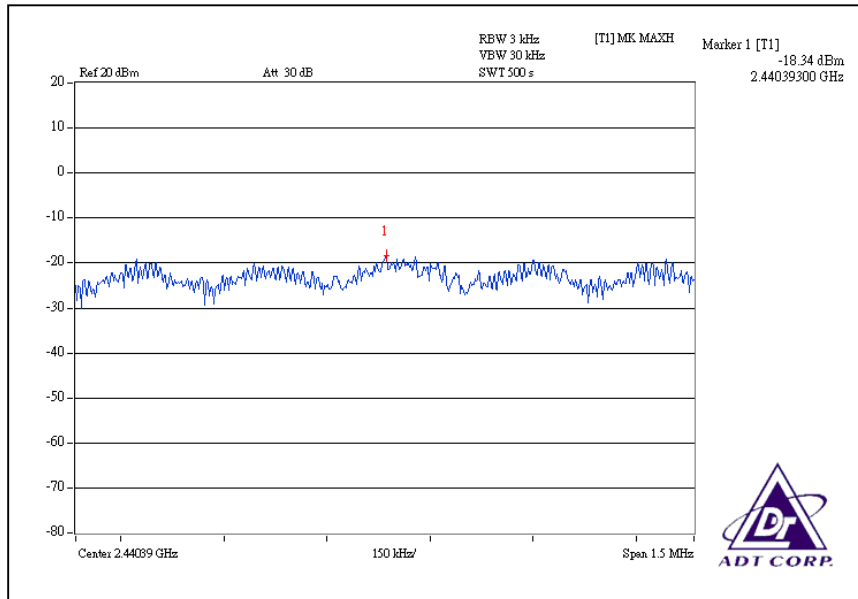
CH6



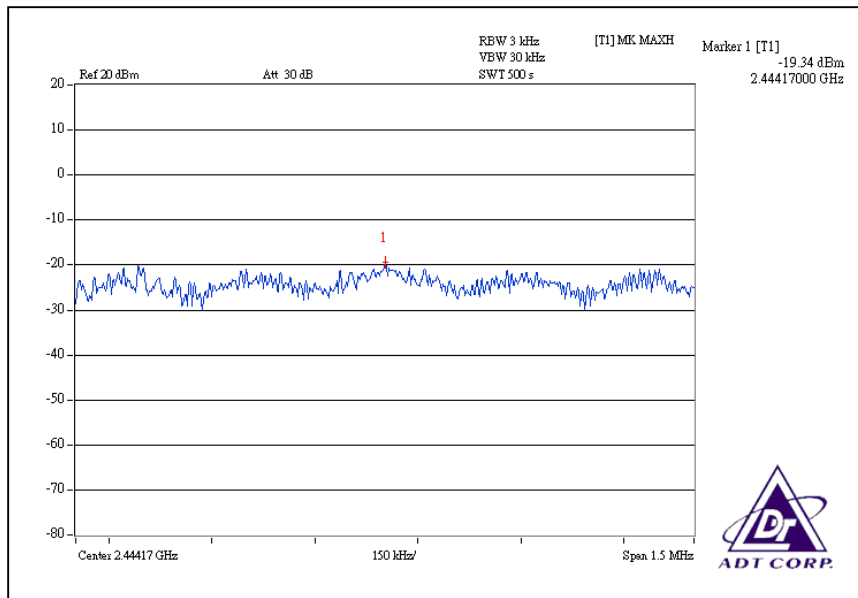
CH11



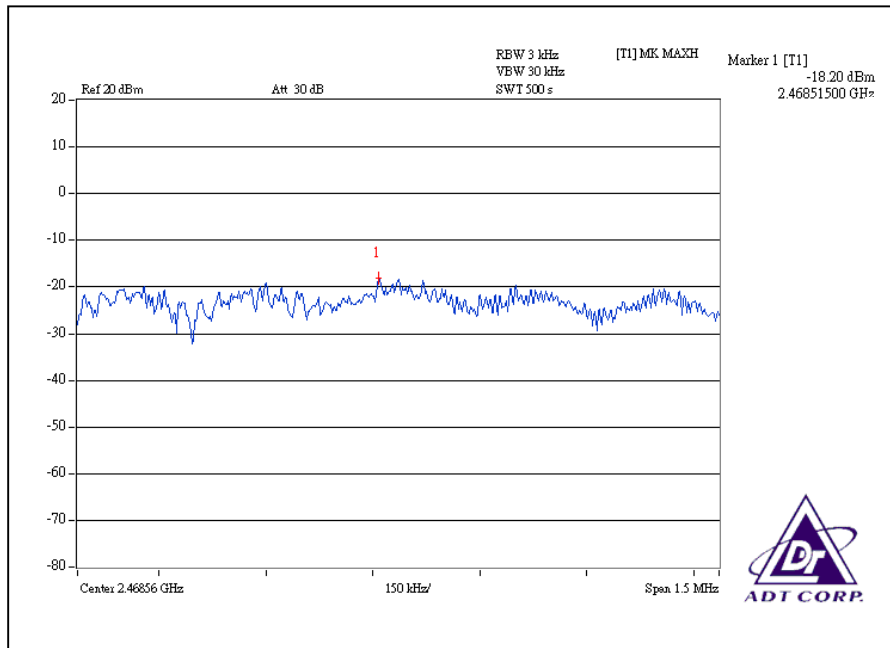
CH4



CH7



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	100037	Sep. 06, 2008

NOTE:

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

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

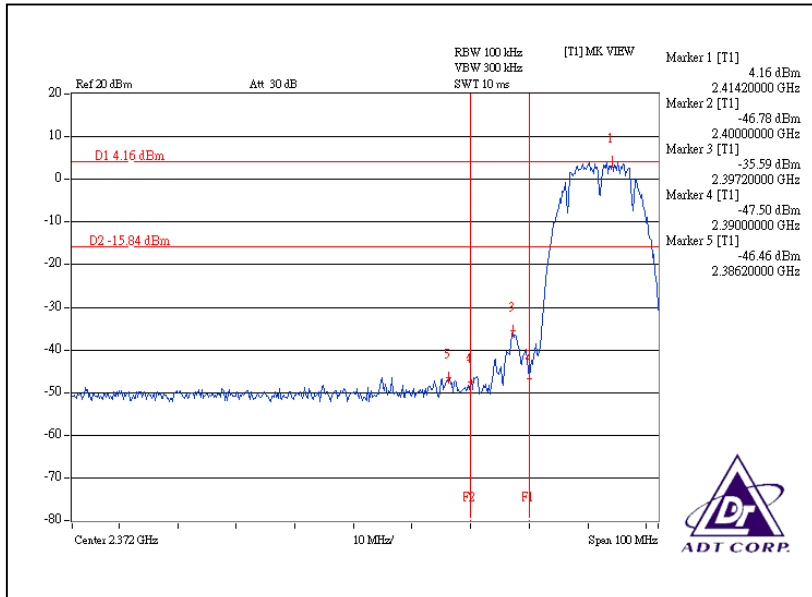
4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

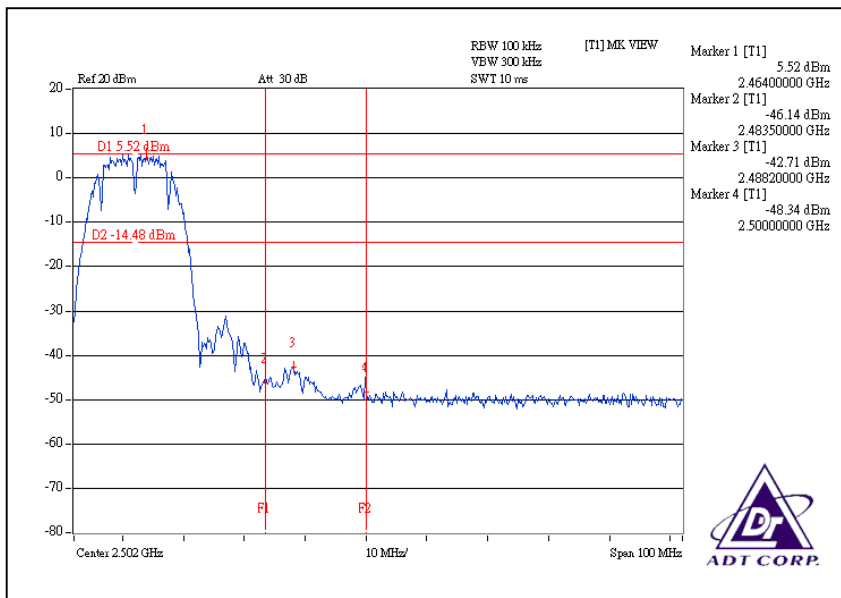
4.6.6 TEST RESULTS

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

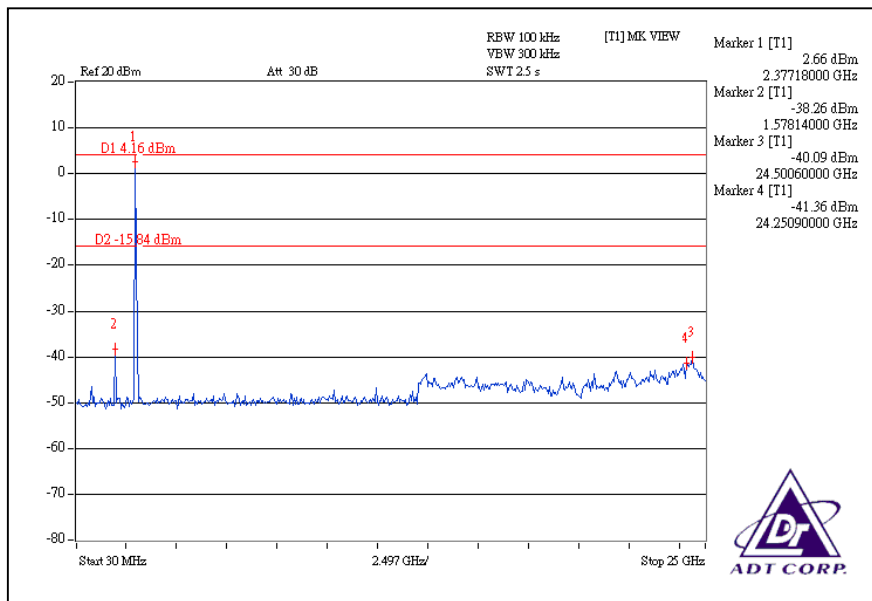
802.11b DSSS MODULATION: CH1



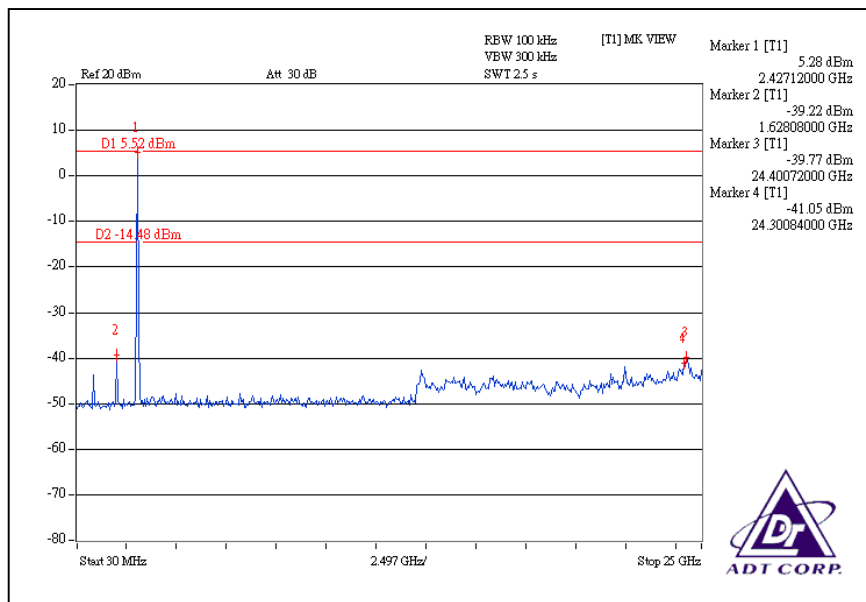
CH11



CH1

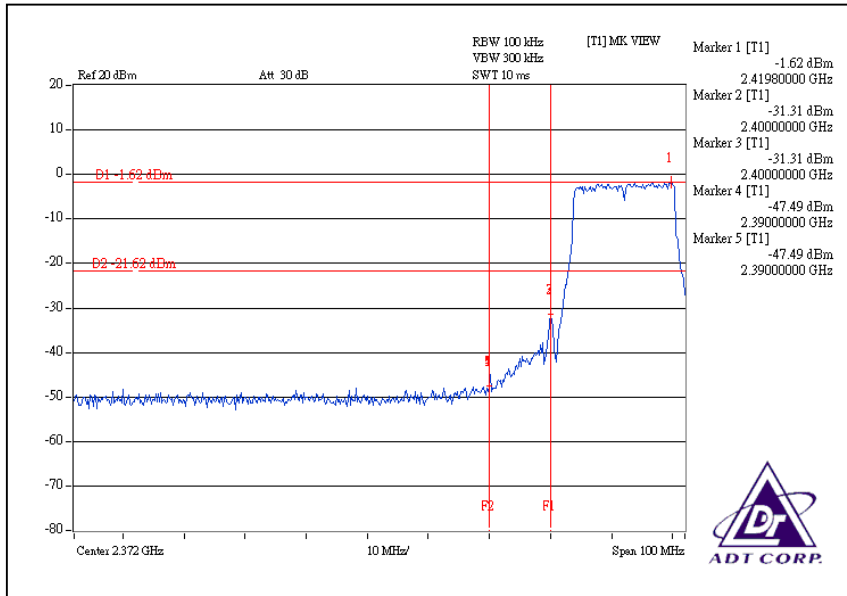


CH11

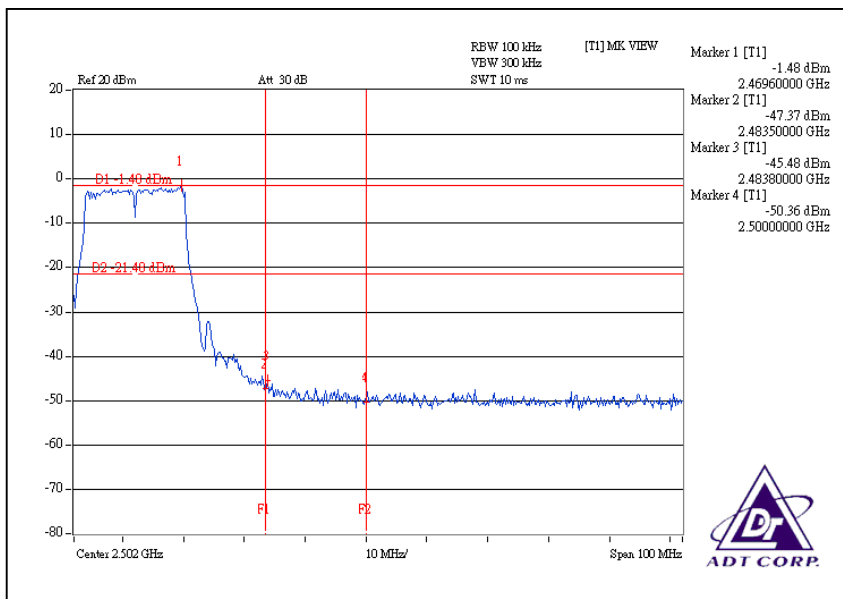


802.11g OFDM MODULATION:

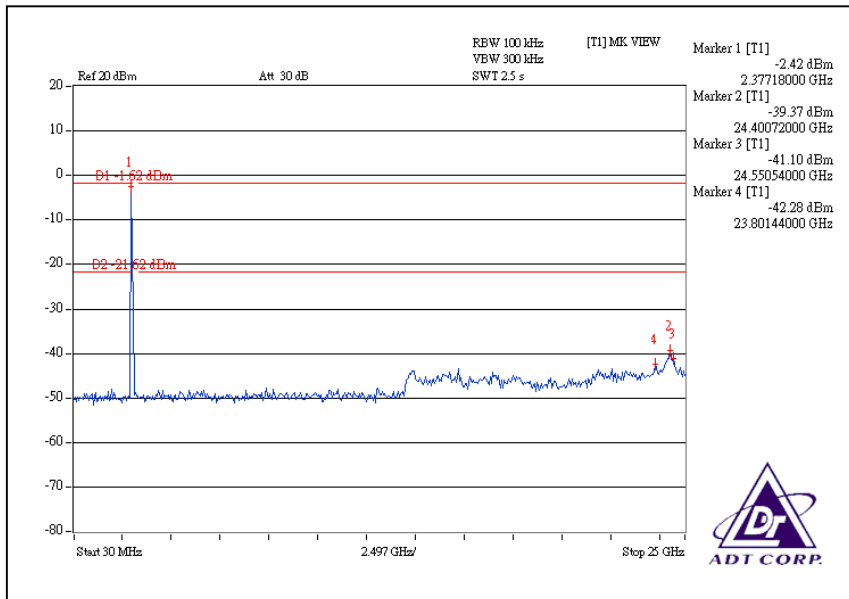
CH 1



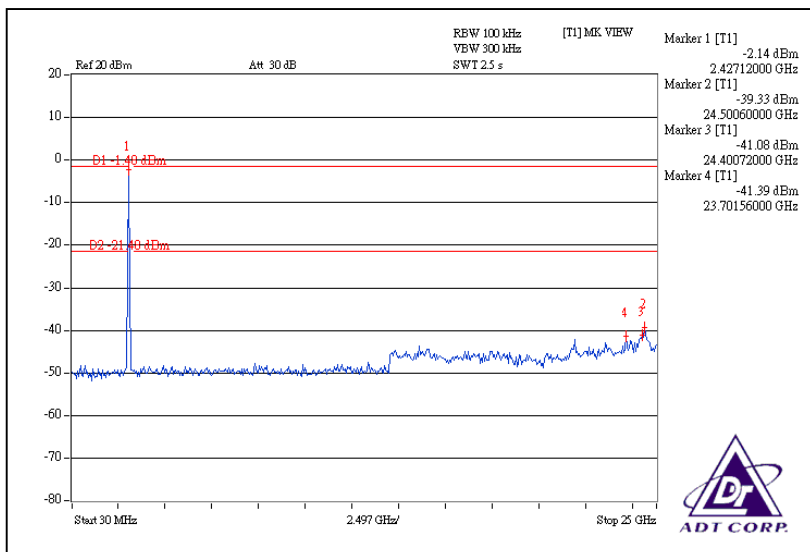
CH11



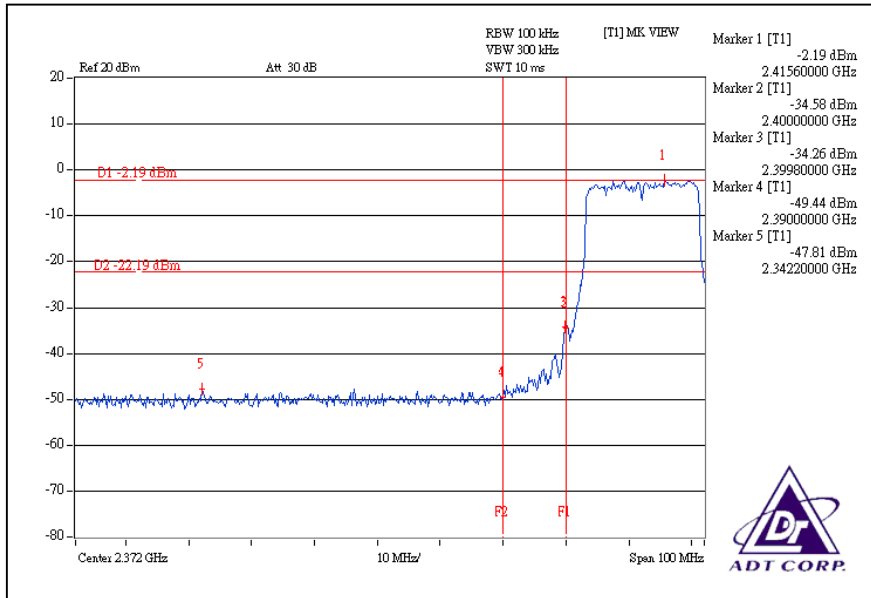
CH1



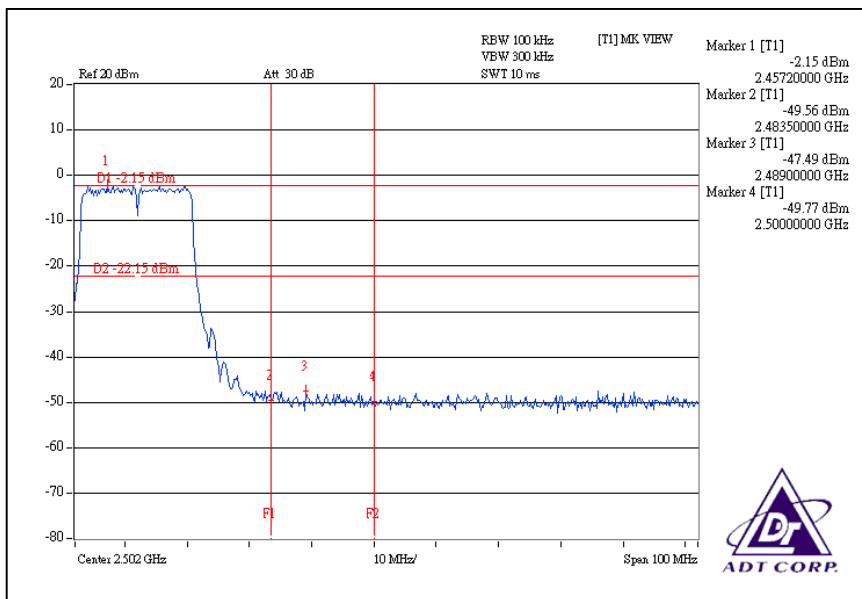
CH11



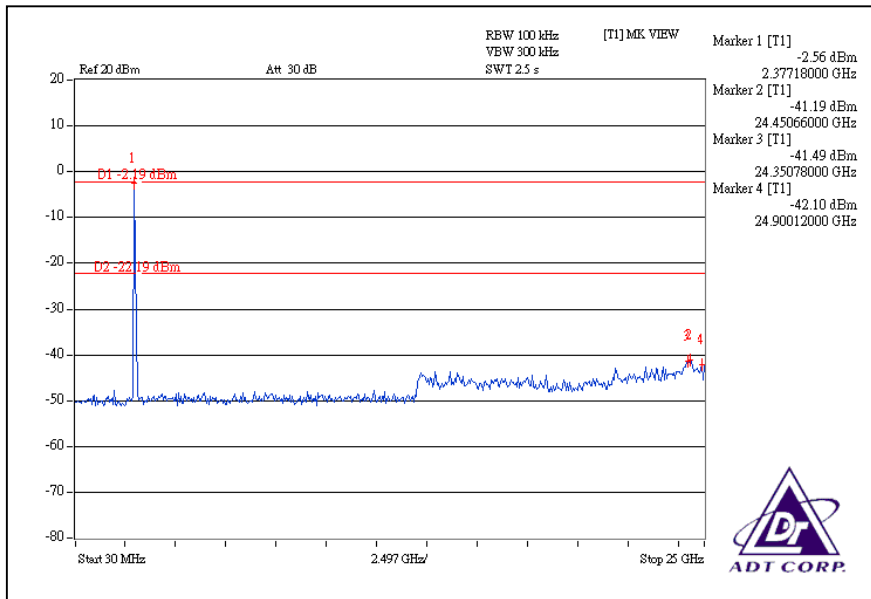
DRAFT 802.11n (20MHz) OFDM MODULATION: For Chain (0):CH1



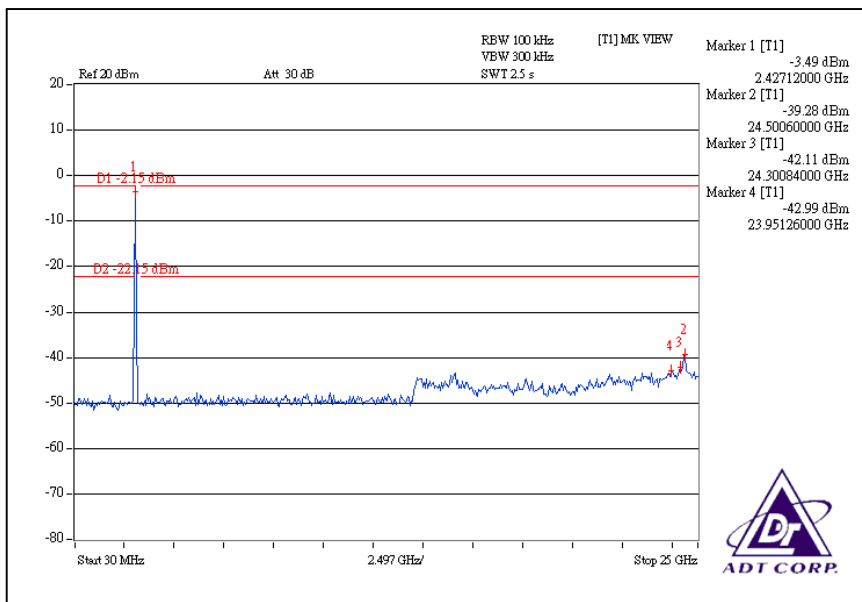
CH11



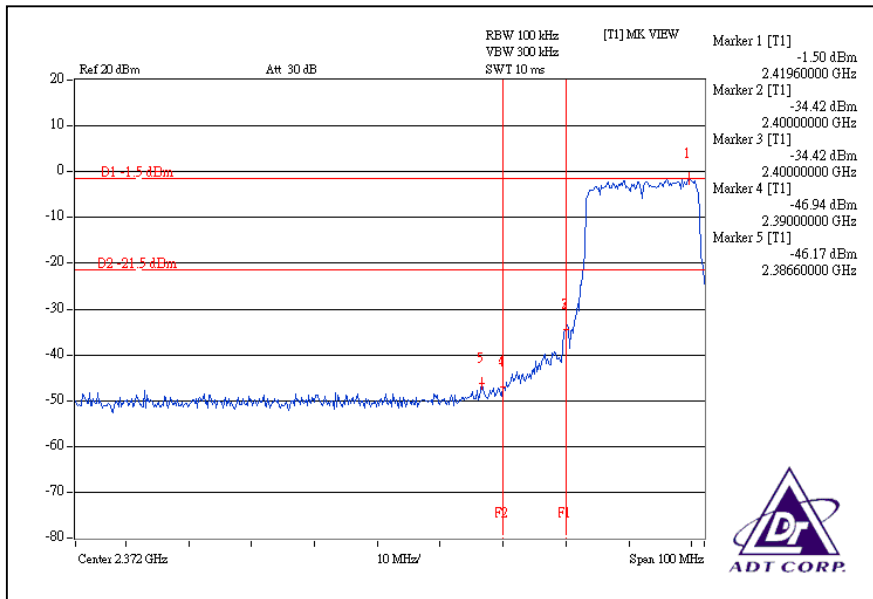
CH1



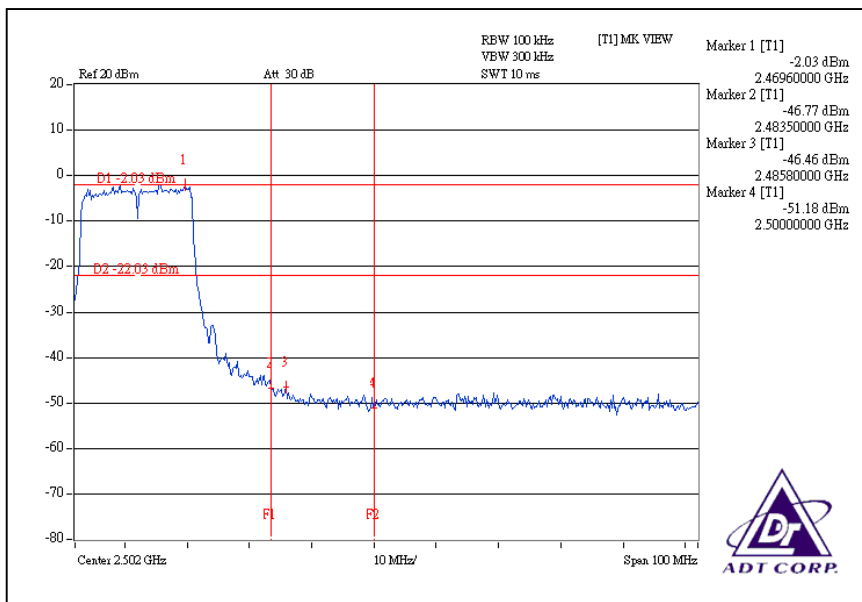
CH11



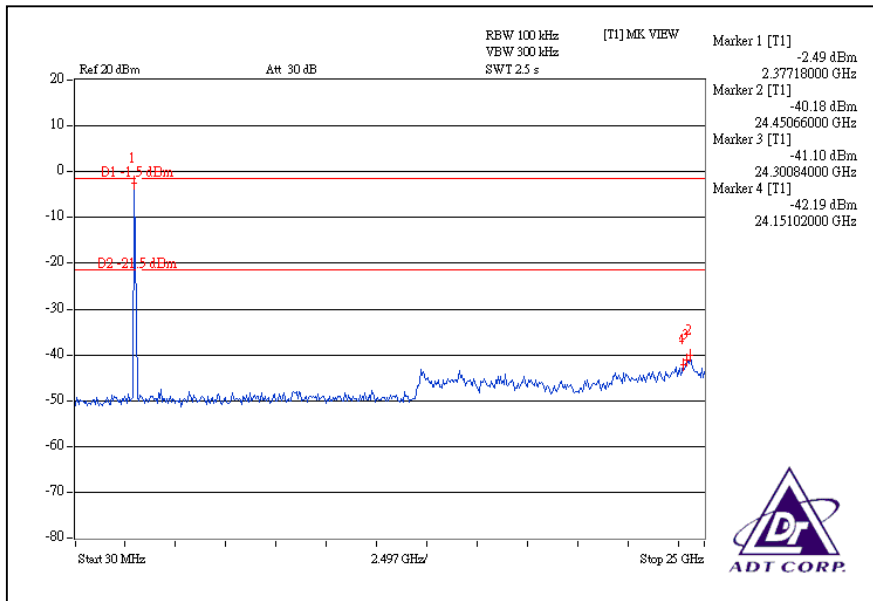
For Chain (2):CH1



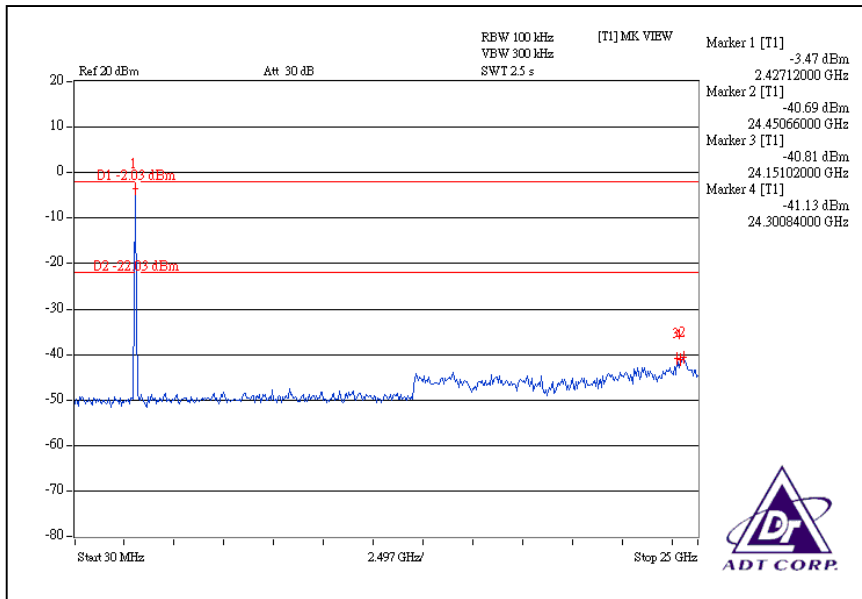
CH11



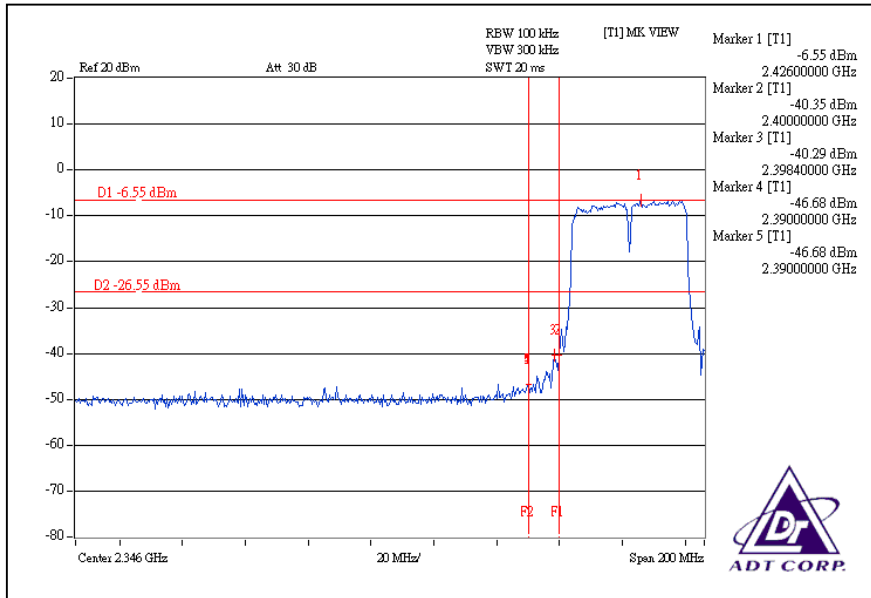
CH1



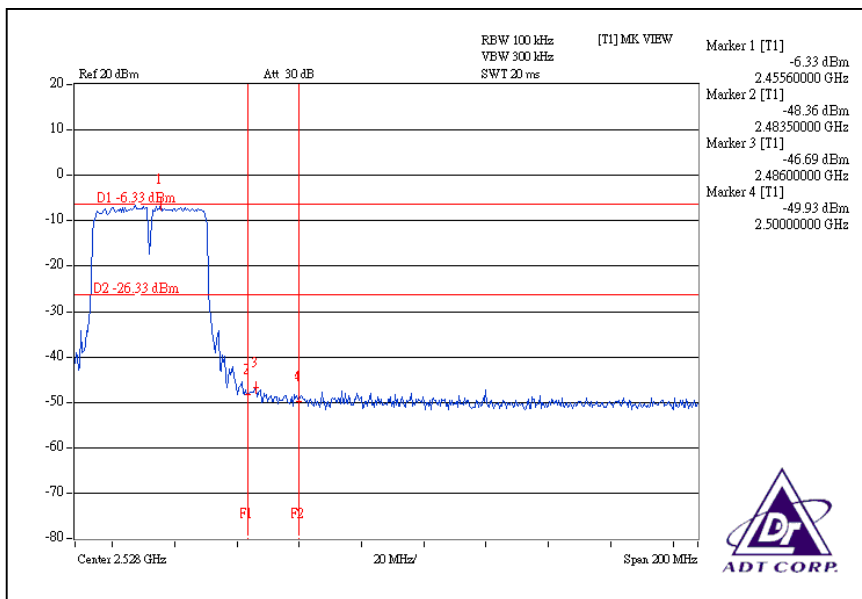
CH11



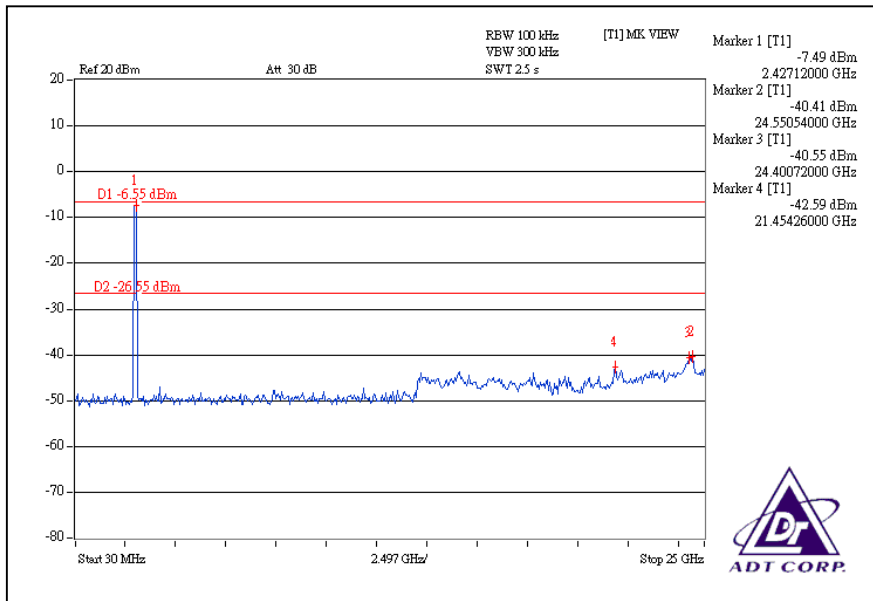
DRAFT 802.11n (40MHz) OFDM MODULATION:
For Chain (0):CH1



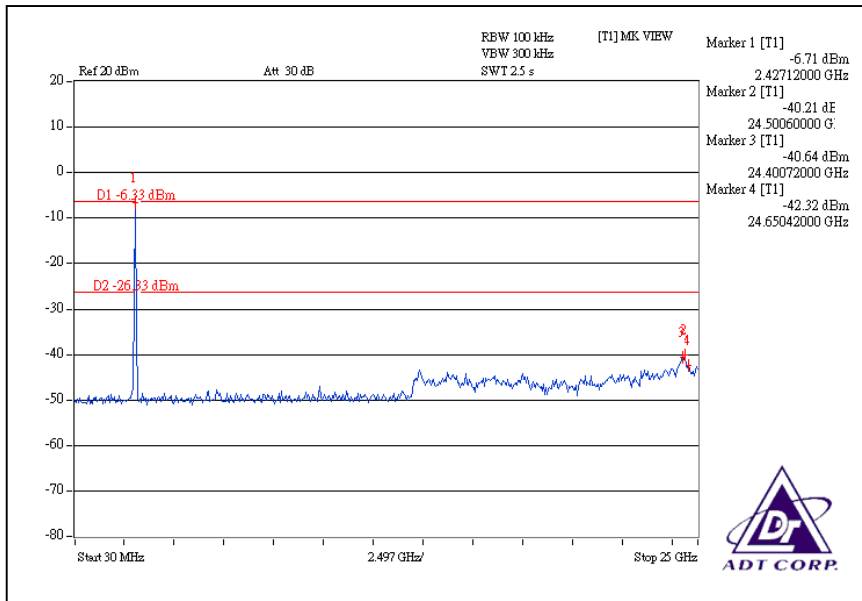
CH7



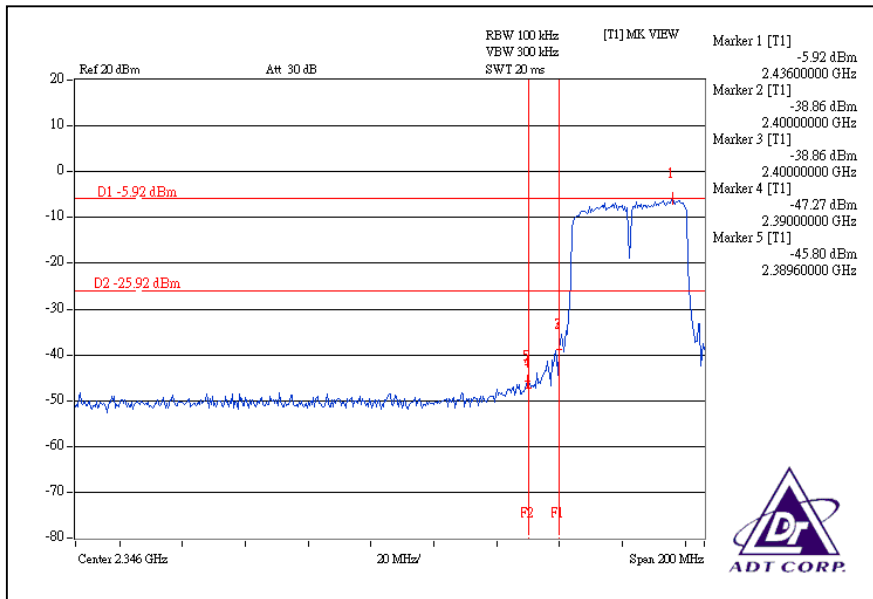
CH1



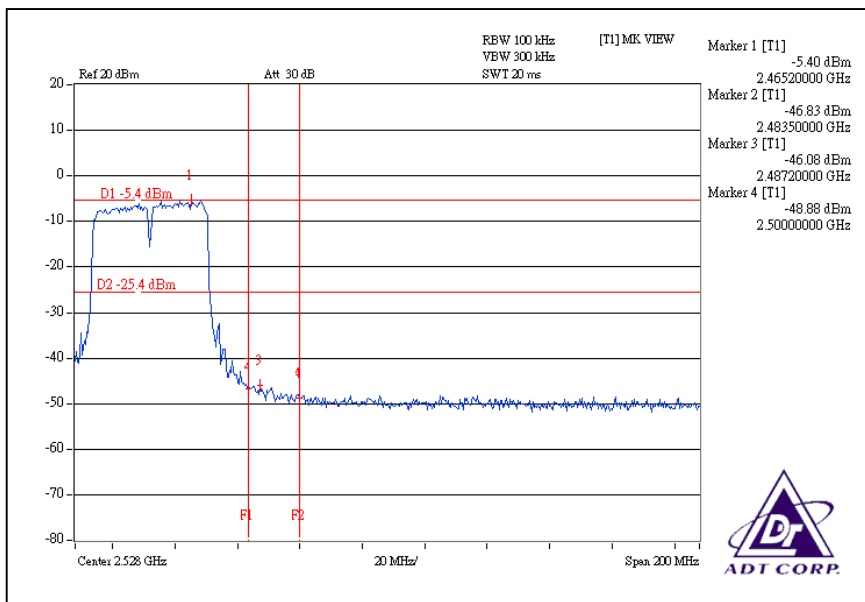
CH7



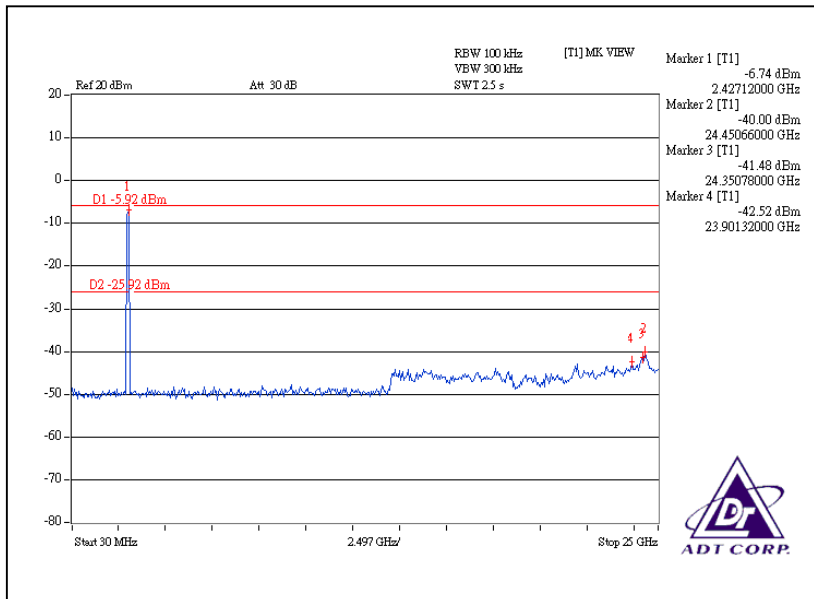
For Chain (2):CH1



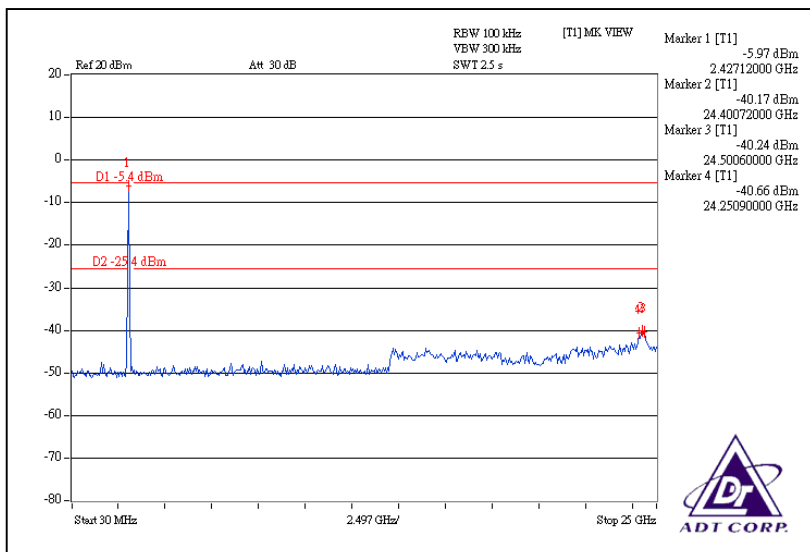
CH7



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	Antenna Connector	Gain(dBi)
Chain(0)	Dipole	RPSMA	1.8
Chain(1)	Dipole	RPSMA	1.8
Chain(2)	Dipole	RPSMA	1.8



5. INFORMATION ON THE TESTING LABORATORIES

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

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

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

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

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.