FCC TEST REPORT

REPORT NO.: RF961113H02
MODEL NO.: WRT310N
RECEIVED: Nov. 13, 2007
TESTED: Nov. 13 to 24, 2007
ISSUED: Dec. 04, 2007

APPLICANT: Cisco-Linksys LLC

ADDRESS: 121 Theory Drive Irvine, CA 92617(USA)

ISSUED BY: Advance Data Technology Corporation

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

No. 2177-01

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1. CERTIFICATION

PRODUCT:	Wireless-N Gigabit Router
BRAND NAME:	Linksys
MODEL NO.:	WRT310N
TESTED:	Nov. 13 to 24, 2007
APPLICANT:	Cisco-Linksys LLC
STANDARDS:	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment (Model: WRT310N) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** Dec. 04, 2007
(Midoli Peng, Specialist)

TECHNICAL ACCEPTANCE : _____ , **DATE:** Dec. 04, 2007
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : _____ , **DATE:** Dec. 04, 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 -3.25dB at 0.197MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.11dB at 2484.45MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless-N Gigabit Router
MODEL NO.	WRT310N
FCC ID	Q87-WRT310N
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps Draft 802.11n (20MHz): 130 / 117 / 104 / 78 / 65 / 58.5 / 52 / 39 / 26 / 19.5 /13 / 6.5Mbps Draft 802.11n (40MHz): 270 / 243 / 216 / 162 / 135 / 121.5 / 108 / 81 /54 / 40.5 / 27 / 13.5Mbps
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: 112.202mW 802.11g: 178.250mW draft 802.11n (20MHz): 186.650mW draft 802.11n (40MHz): 182.402mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORT	Internet Port x 1, Ethernet Port x 4

NOTE:

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

No.	Antenna Type	Antenna Connector	Gain(dBi)	
CHAIN(0)	PIFA	NA	1.5	
CHAIN(2)	PIFA	NA	2.2	For Rx only
CHAIN(1)	PIFA	NA	1.5	

2. The EUT incorporates a MIMO function with 802.11b, 802.11g, draft 802.11n. Physically, the EUT provides two completed transmit and three completed receivers.

3. 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 PIFA antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 3 antennas.

4. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.

5. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g products.

6. The EUT must be supplied with a power adapter and following two different models could be chosen:

Adapter 1	
Brand:	Linksys (ENG)
Model No.:	AD12V/1A-SW
Input power :	AC100-240V, 0.5A, 50-60Hz
Output power :	DC12V, 1A Cable:1.8m/unshielded/without core
Adapter 2	
Brand:	Linksys (ENERTRONIX)
Model No.:	AD12V/1A-SW
Input power :	AC100-240V, 0.5A, 50-60Hz
Output power :	DC12V, 1A Cable:1.8m/unshielded/without core

7. 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.

8. 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)
A	802.11 b	✓	
B	802.11 g	✓	
C		✓	✓
D	DRAFT 802.11n(20MHz)	✓	
E		✓	✓
F	DRAFT 802.11n(40MHz)	✓	
G		✓	✓

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, C, E, G 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	1	OFDM	BPSK	13	E

☒ For conducted emissions, the EUT was tested as the following test modes:

Test Mode	Description
Mode A	Adapter 1
Mode B	Adapter 2

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	1	OFDM	BPSK	13	E

☒ For spurious emissions, the EUT was pre-tested in chamber as the following test modes:

Test Mode	Description
Mode A	Adapter 1
Mode B	**Adapter 2**

The worst adapter was found in Adapter 2. Their test data were recorded in this report individually.

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	C
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	E
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27	G

☒ For spurious emissions, the EUT was pre-tested in chamber as the following test modes:

Test Mode	Description
Mode A	Adapter 1
Mode B	**Adapter 2**

The worst adapter was found in Adapter 2. Their test data were recorded in this report individually.

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	C
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	13	E
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	27	G

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	C
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	E
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27	G

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C. (15.247)
ANSI C63.4-2003

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

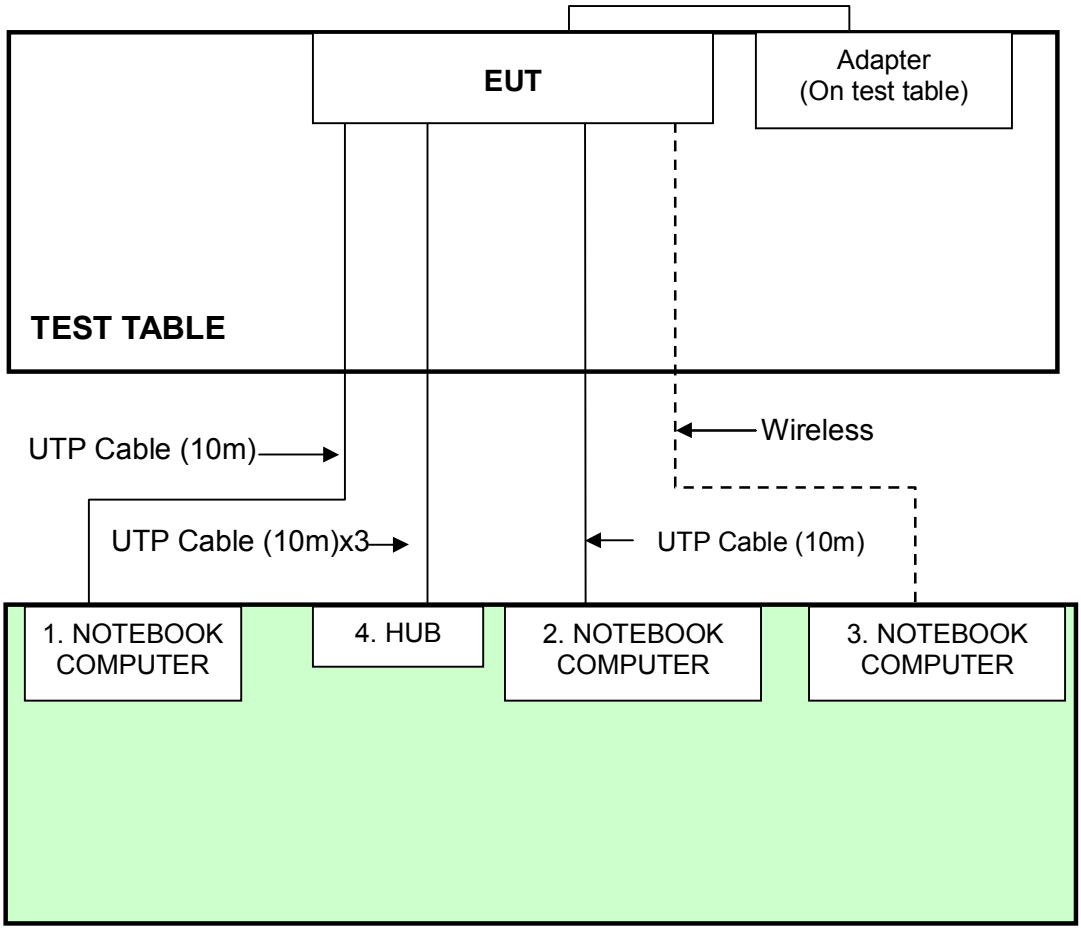
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
3	NOTEBOOK COMPUTER	DELL	PP05L	CN-04Y212-48643-38E-0145	FCC DoC
4	Switch HUB	AVSYS	110H8	01-20E-000002	FCC DoC

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

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

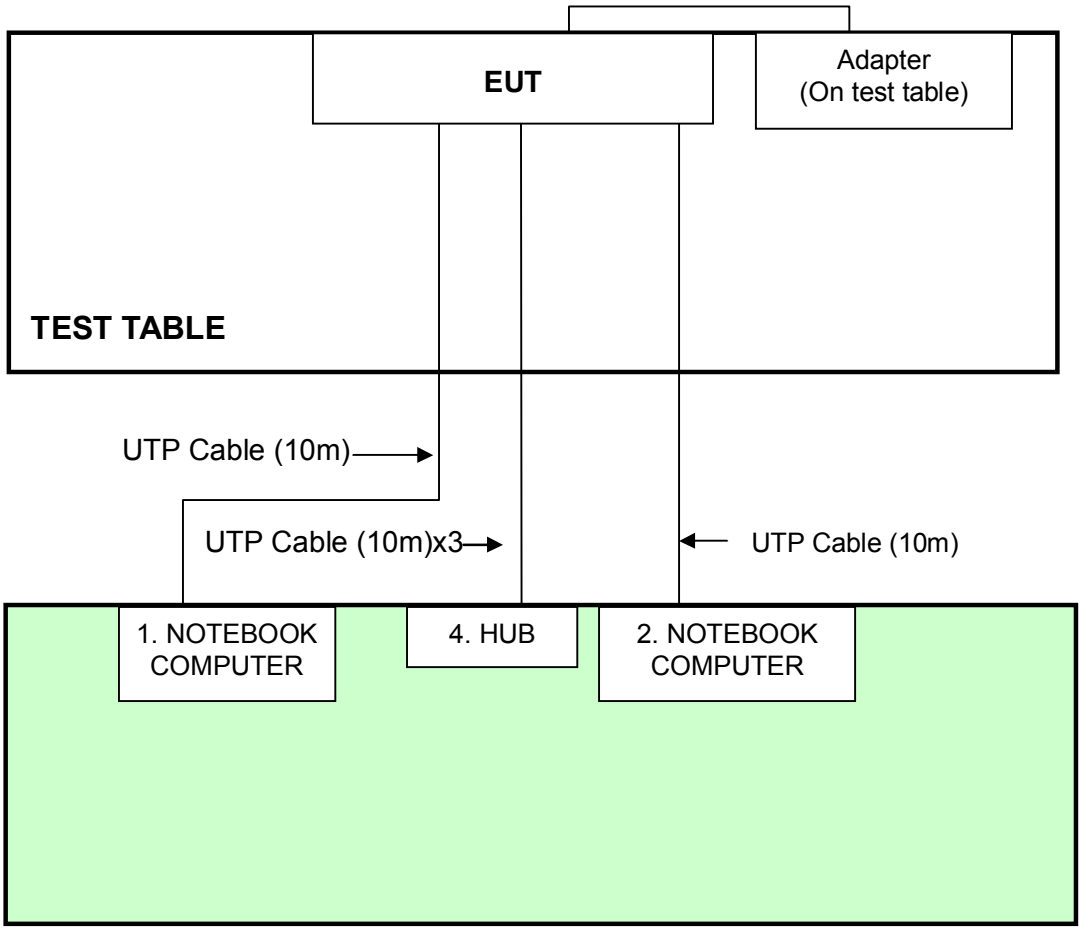
3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted test:



NOTE: 1. Support units 1-4 were kept in the control room during the test.

For Other test:



NOTE: 1. Support units 1-2 & 4 were kept in the control room during the test.

4.TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 06, 2008
Line-Impedance Stabilization Network(for EUT)	ENV-216	100072	Nov. 08, 2008
Line-Impedance Stabilization Network(for Peripheral)	KNW-407	8-1395-12	Aug. 19, 2008
RF Cable (JETBAO)	RG5B/U-6m	COACAB-9KHz-30MHz	Aug. 15, 2008
Terminator	50	1	Oct. 30, 2008
Software	ADT_Cond_V7.3.2	NA	NA

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

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

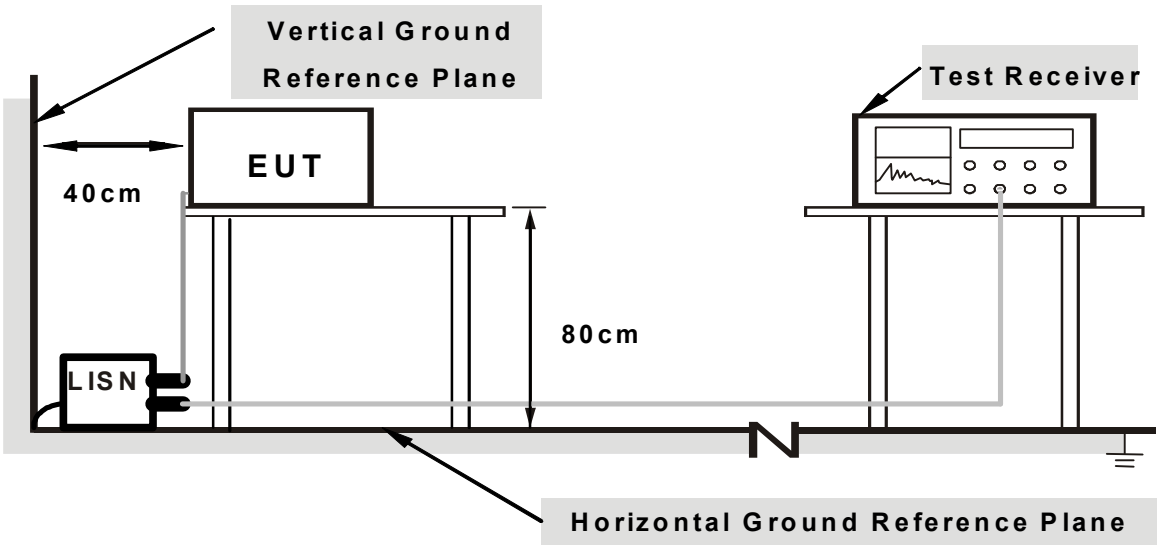
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Prepared other computer systems (support unit 1 ~ 3) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “MFGTEST” to enable EUT under transmission/receiving condition continuously via UTP cables and wireless transmission.

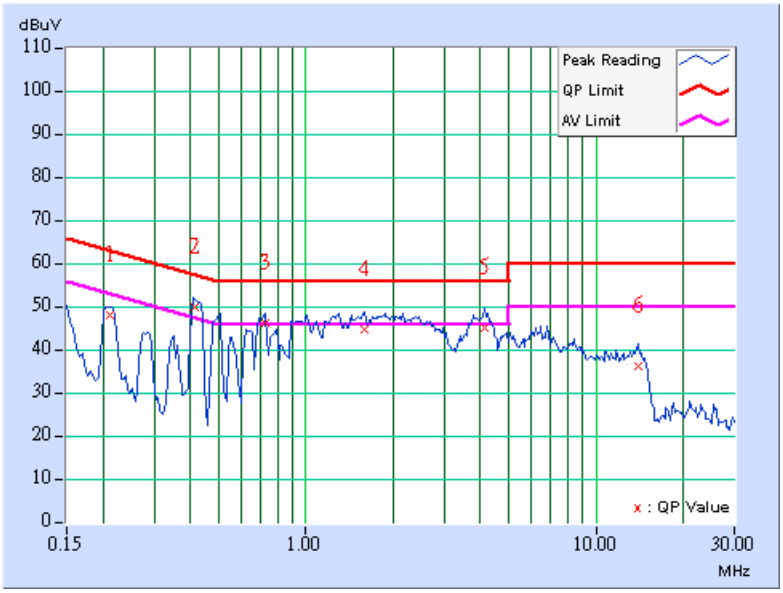
4.1.7 TEST RESULTS

802.11n (20MHz) OFDM MODULATION: WITH ADAPTER 1

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 955hPa	TESTED BY	Eagle Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.213	0.30	47.00	-	47.30	-	63.11	53.11	-15.81	-
2	0.412	0.30	49.00	41.15	49.30	41.45	57.61	47.61	-8.31	-6.16
3	0.724	0.35	45.46	-	45.81	-	56.00	46.00	-10.19	-
4	1.595	0.40	43.82	-	44.22	-	56.00	46.00	-11.78	-
5	4.117	0.41	44.31	-	44.72	-	56.00	46.00	-11.28	-
6	13.922	1.01	35.14	-	36.15	-	60.00	50.00	-23.85	-

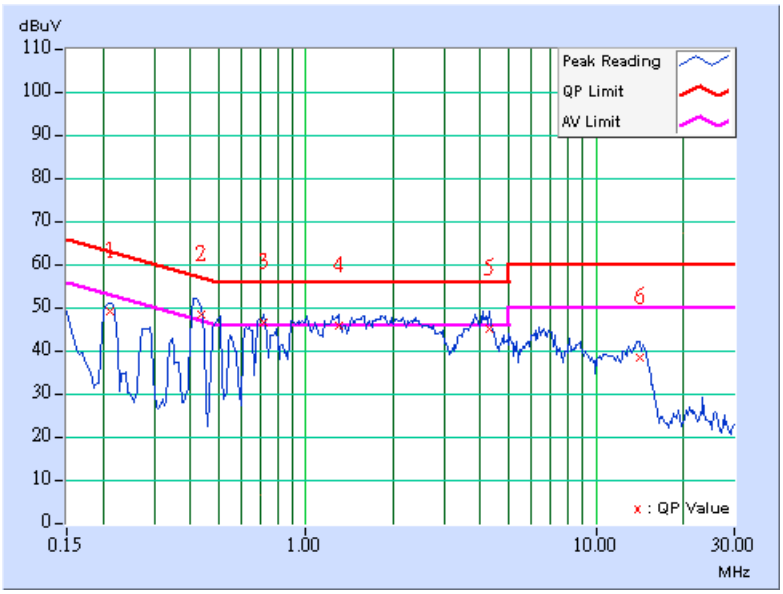
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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	13Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 955hPa	TESTED BY	Eagle Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.210	0.30	48.28	-	48.58	-	63.19	53.19	-14.61	-
2	0.436	0.31	47.55	35.86	47.86	36.17	57.14	47.14	-9.29	-10.98
3	0.720	0.35	45.64	-	45.99	-	56.00	46.00	-10.01	-
4	1.298	0.40	44.74	-	45.14	-	56.00	46.00	-10.86	-
5	4.289	0.51	44.12	-	44.63	-	56.00	46.00	-11.37	-
6	14.164	1.13	37.33	-	38.46	-	60.00	50.00	-21.54	-

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.

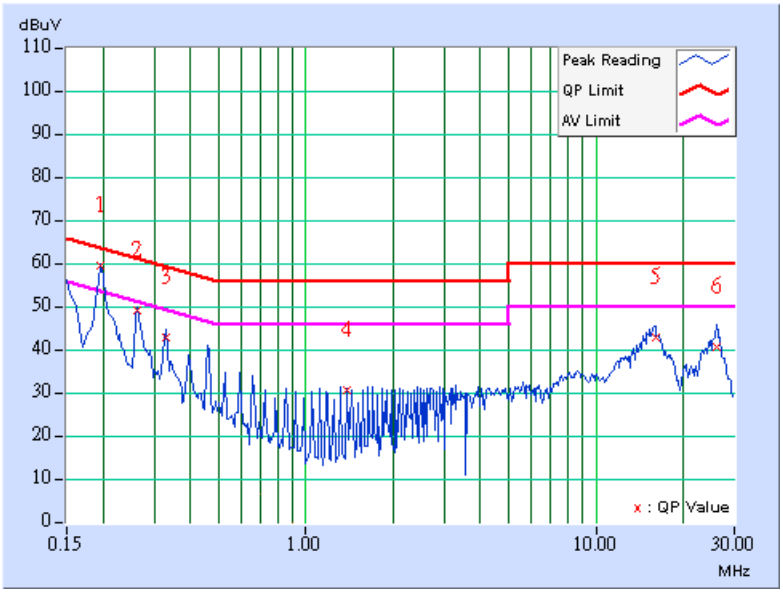


802.11n (20MHz) OFDM MODULATION: WITH ADAPTER 2

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 962hPa	TESTED BY	Eagle Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.197**	**0.30**	**58.37**	**50.19**	**58.67**	**50.49**	**63.74**	**53.74**	**-5.07**	**-3.25**
2	0.263	0.30	48.13	-	48.43	-	61.33	51.33	-12.90	-
3	0.330	0.30	41.68	-	41.98	-	59.46	49.46	-17.48	-
4	1.380	0.40	29.56	-	29.96	-	56.00	46.00	-26.04	-
5	16.035	1.12	41.88	-	43.00	-	60.00	50.00	-17.00	-
6	25.957	1.26	39.34	-	40.60	-	60.00	50.00	-19.40	-

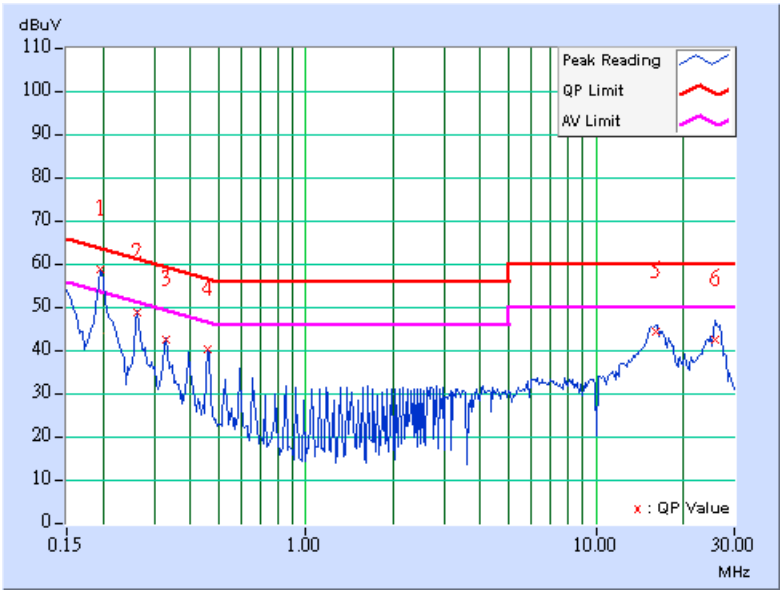
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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	13Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 962hPa	TESTED BY	Eagle Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.30	57.55	49.42	57.85	49.72	63.74	53.74	-5.89	-4.02
2	0.263	0.30	47.45	-	47.75	-	61.33	51.33	-13.58	-
3	0.328	0.30	40.95	-	41.25	-	59.49	49.49	-18.24	-
4	0.460	0.31	38.75	-	39.06	-	56.70	46.70	-17.64	-
5	16.025	1.24	42.90	-	44.14	-	60.00	50.00	-15.86	-
6	25.745	1.49	41.03	-	42.52	-	60.00	50.00	-17.48	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 15, 2008
HP Pre_Amplifier	8449B	3008A01922	Oct. 04, 2008
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Mar. 26, 2008
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
RF Switches (ARNITSU)	CS-201	1565157	Aug. 13, 2008
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2008
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.

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.

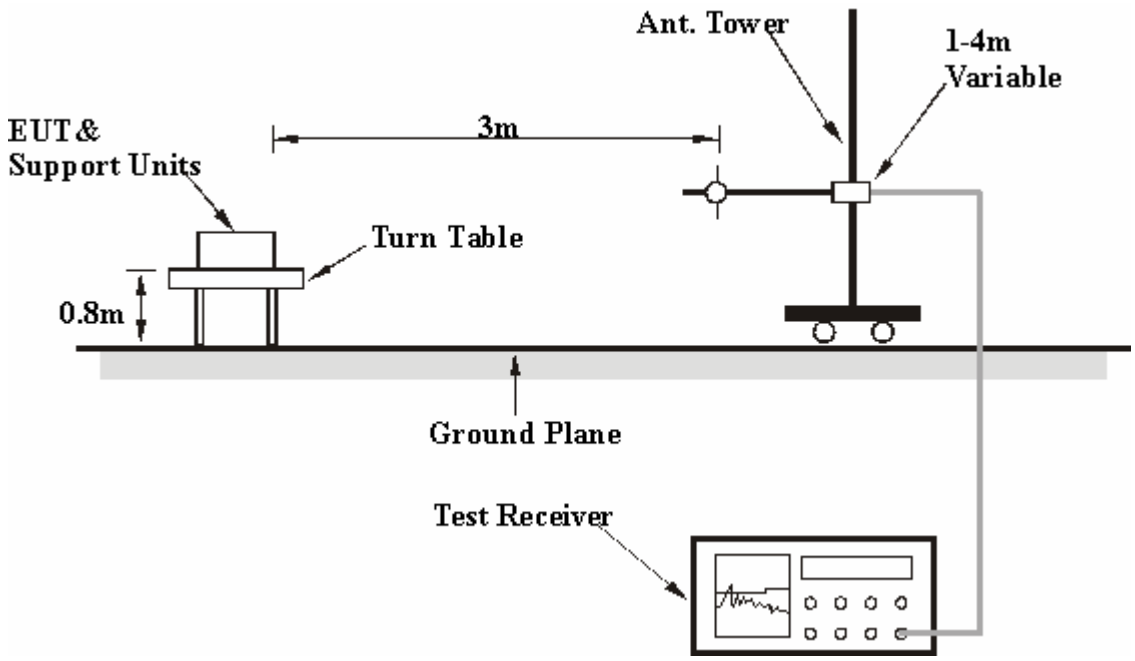
NOTE:

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. Placed the EUT on testing table.
2. Prepared other computer systems (support unit 1 ~ 2) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “MFGTEST” to enable EUT under transmission/receiving condition continuously via UTP cables.

Below 1GHz Test Data

4.2.7 TEST RESULTS

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	13Mbps	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	26deg. C, 64%RH, 955hPa	TESTED BY	Sky Liao

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	125.00	36.34 QP	43.50	-7.16	1.47 H	69	23.11	13.23
2	300.00	42.25 QP	46.00	-3.75	1.00 H	305	25.66	16.59
3	375.00	40.04 QP	46.00	-5.96	1.00 H	321	22.56	17.48
4	600.00	40.85 QP	46.00	-5.15	1.34 H	326	17.31	23.54
5	750.00	38.18 QP	46.00	-7.82	1.00 H	35	10.92	27.26
6	875.00	43.37 QP	46.00	-2.63	1.00 H	36	14.30	29.07

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	39.09 QP	43.50	-4.41	1.00 V	119	25.86	13.23
2	250.00	34.90 QP	46.00	-11.10	1.00 V	276	22.07	12.83
3	300.00	33.31 QP	46.00	-12.69	1.66 V	1	16.72	16.59
4	375.00	35.72 QP	46.00	-10.28	1.56 V	106	18.24	17.48
5	600.00	36.02 QP	46.00	-9.98	1.00 V	110	12.48	23.54
6	750.00	35.85 QP	46.00	-10.15	1.49 V	311	8.59	27.26
7	875.00	38.82 QP	46.00	-7.18	1.82 V	293	9.75	29.07

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	DBPSK	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TRANSFER RATE	1Mbps	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	2388.00	56.21 PK	74.00	-17.79	1.37 H	339	25.82	30.39
2	2388.00	44.08 AV	54.00	-9.92	1.37 H	339	13.69	30.39
3	*2412.00	94.50 PK			1.37 H	339	64.01	30.49
4	*2412.00	90.20 AV			1.37 H	339	59.71	30.49
5	4824.00	51.50 PK	74.00	-22.50	1.65 H	50	15.81	35.69
6	4824.00	47.00 AV	54.00	-7.00	1.65 H	50	11.31	35.69
7	7236.00	52.10 PK	74.00	-21.90	1.36 H	72	9.86	42.24
8	7236.00	39.30 AV	54.00	-14.70	1.36 H	72	-2.94	42.24
9	14472.00	62.10 PK	74.00	-11.90	1.41 H	279	12.87	49.23
10	14472.00	48.80 AV	54.00	-5.20	1.41 H	279	-0.43	49.23

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	2387.76	60.34 PK	74.00	-13.66	1.10 V	177	29.96	30.38
2	2387.76	50.93 AV	54.00	-3.07	1.10 V	177	20.55	30.38
3	*2412.00	111.00 PK			1.10 V	177	80.51	30.49
4	*2412.00	107.00 AV			1.10 V	177	76.51	30.49
5	4824.00	53.70 PK	74.00	-20.30	1.46 V	15	18.01	35.69
6	4824.00	50.10 AV	54.00	-3.90	1.46 V	15	14.41	35.69
7	7236.00	52.20 PK	74.00	-21.80	1.38 V	8	9.96	42.24
8	7236.00	39.20 AV	54.00	-14.80	1.38 V	8	-3.04	42.24
9	14472.00	62.40 PK	74.00	-11.60	1.32 V	335	13.17	49.23
10	14472.00	51.30 AV	54.00	-2.70	1.32 V	335	2.07	49.23

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. 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	DBPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	96.50 PK			1.38 H	338	65.89	30.61
2	*2437.00	91.60 AV			1.38 H	338	60.99	30.61
3	4874.00	51.60 PK	74.00	-22.40	1.32 H	1	15.80	35.80
4	4874.00	46.70 AV	54.00	-7.30	1.32 H	1	10.90	35.80
5	7311.00	53.50 PK	74.00	-20.50	1.24 H	20	10.98	42.52
6	7311.00	39.60 AV	54.00	-14.40	1.24 H	20	-2.92	42.52

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	113.90 PK			1.00 V	280	83.29	30.61
2	*2437.00	108.60 AV			1.00 V	280	77.99	30.61
3	4874.00	53.70 PK	74.00	-20.30	1.48 V	6	17.90	35.80
4	4874.00	50.30 AV	54.00	-3.70	1.48 V	6	14.50	35.80
5	7311.00	53.60 PK	74.00	-20.40	1.20 V	28	11.08	42.52
6	7311.00	39.80 AV	54.00	-14.20	1.20 V	28	-2.72	42.52

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	DBPSK	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TRANSFER RATE	1Mbps	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%RH, 955hPa	**TESTED BY**	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

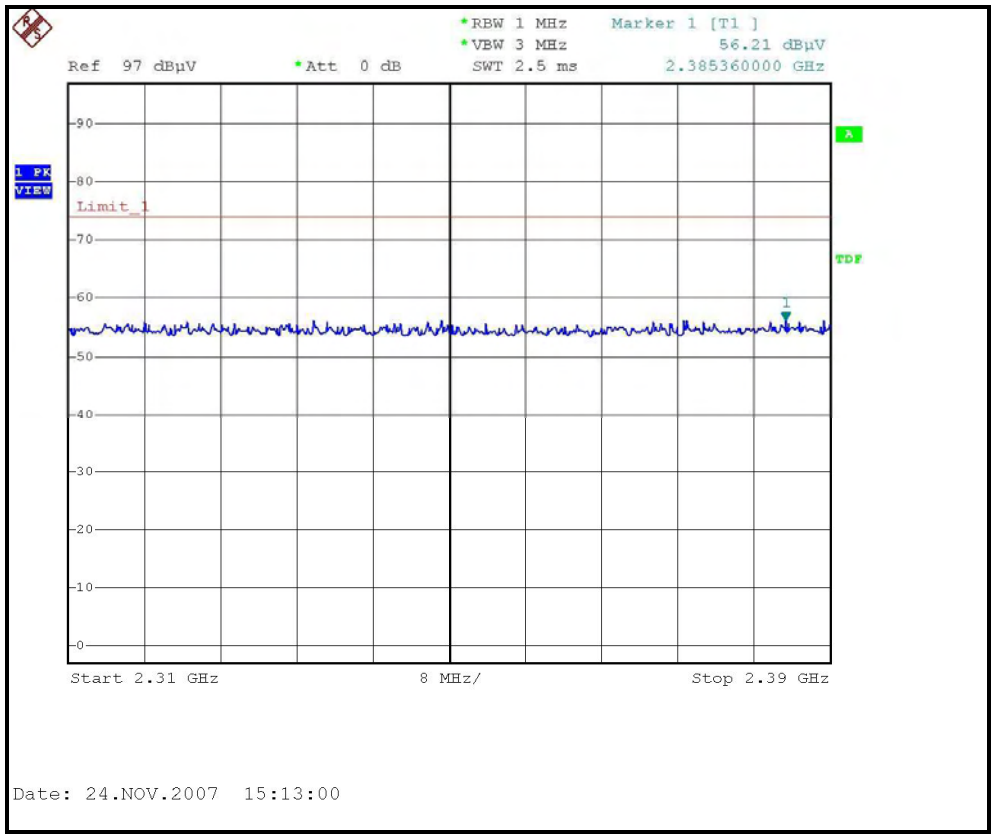
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	96.70 PK			1.40 H	293	65.98	30.72
2	*2462.00	90.20 AV			1.40 H	293	59.48	30.72
3	2483.50	55.60 PK	74.00	-18.40	1.32 H	293	24.78	30.82
4	2483.50	44.47 AV	54.00	-9.53	1.32 H	293	13.65	30.82
5	4924.00	49.00 PK	74.00	-25.00	1.62 H	2	13.10	35.90
6	4924.00	42.00 AV	54.00	-12.00	1.62 H	2	6.10	35.90
7	7386.00	52.60 PK	74.00	-21.40	1.48 H	85	9.80	42.80
8	7386.00	39.10 AV	54.00	-14.90	1.48 H	85	-3.70	42.80

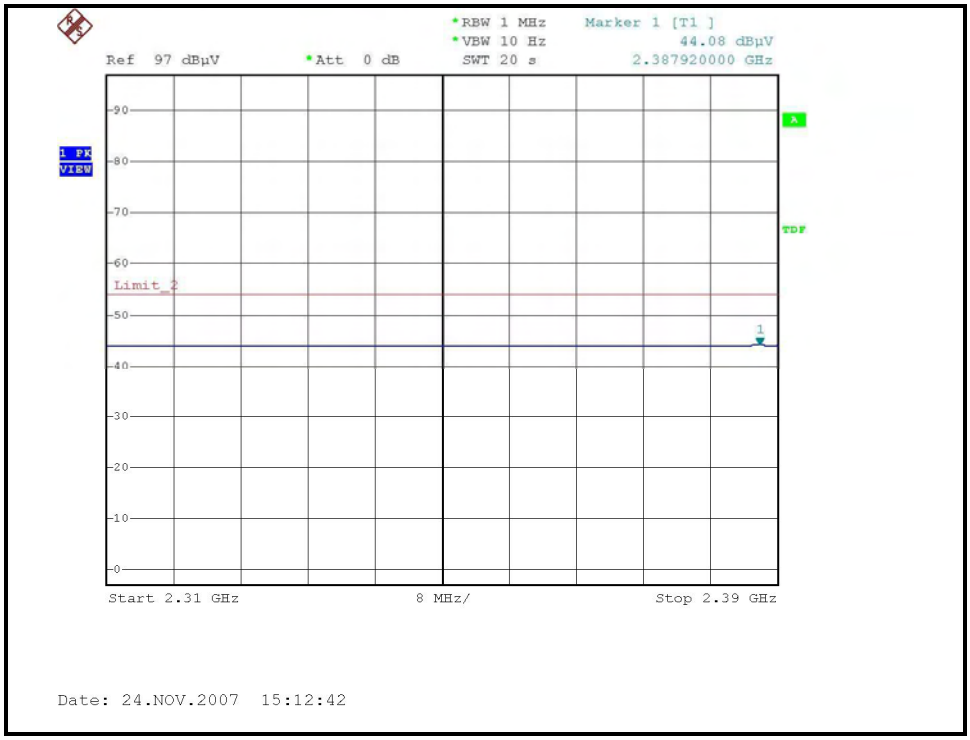
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.60 PK			1.04 V	267	80.88	30.72
2	*2462.00	107.30 AV			1.04 V	267	76.58	30.72
3	2486.30	63.60 PK	74.00	-10.40	1.00 V	267	32.77	30.83
4	2486.30	53.83 AV	54.00	-0.17	1.00 V	267	23.00	30.83
5	4924.00	51.10 PK	74.00	-22.90	1.60 V	2	15.20	35.90
6	4924.00	46.00 AV	54.00	-8.00	1.60 V	2	10.10	35.90
7	7386.00	52.40 PK	74.00	-21.60	1.10 V	12	9.60	42.80
8	7386.00	39.00 AV	54.00	-15.00	1.10 V	12	-3.80	42.80

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

RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)





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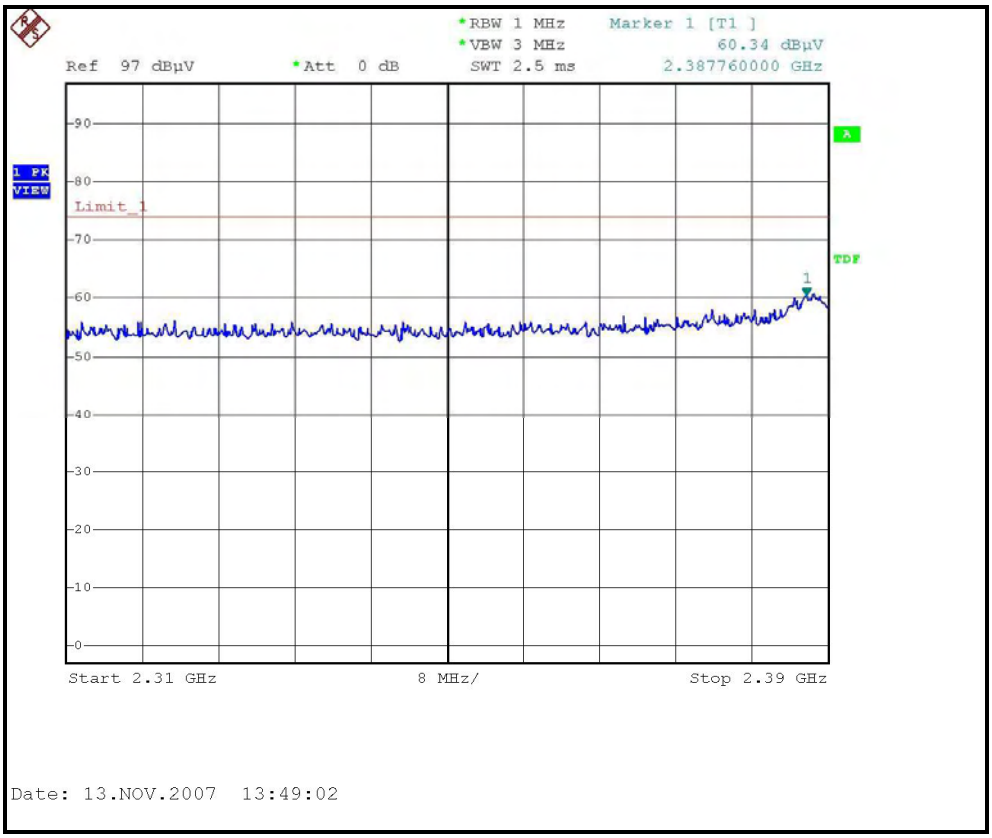

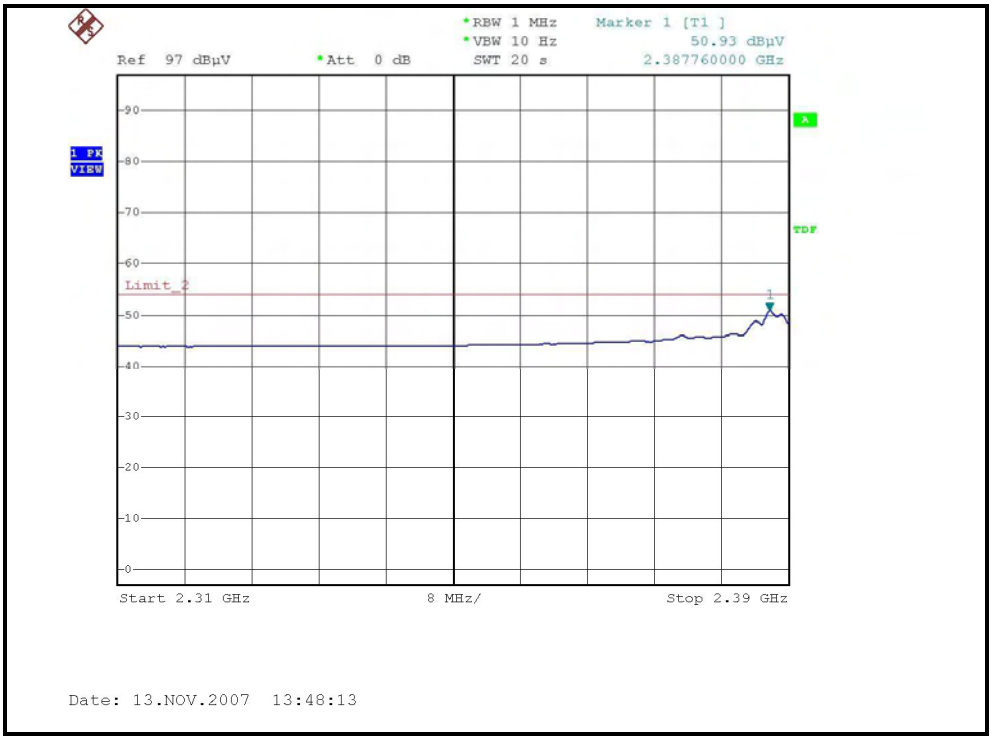

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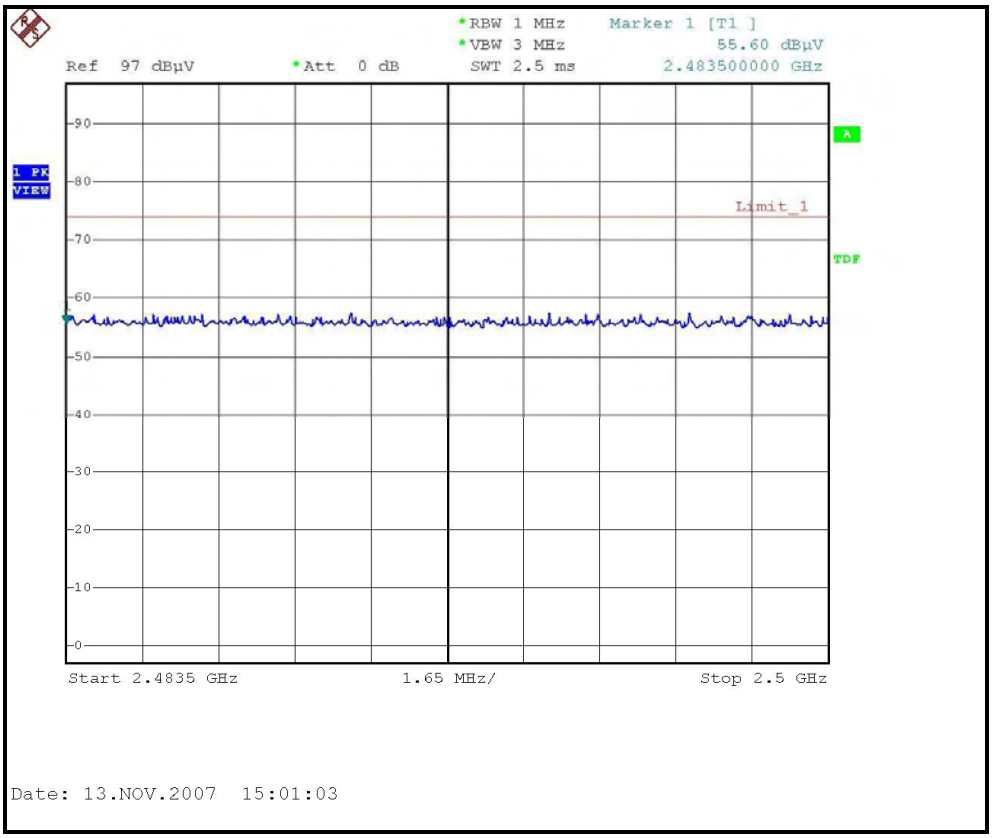

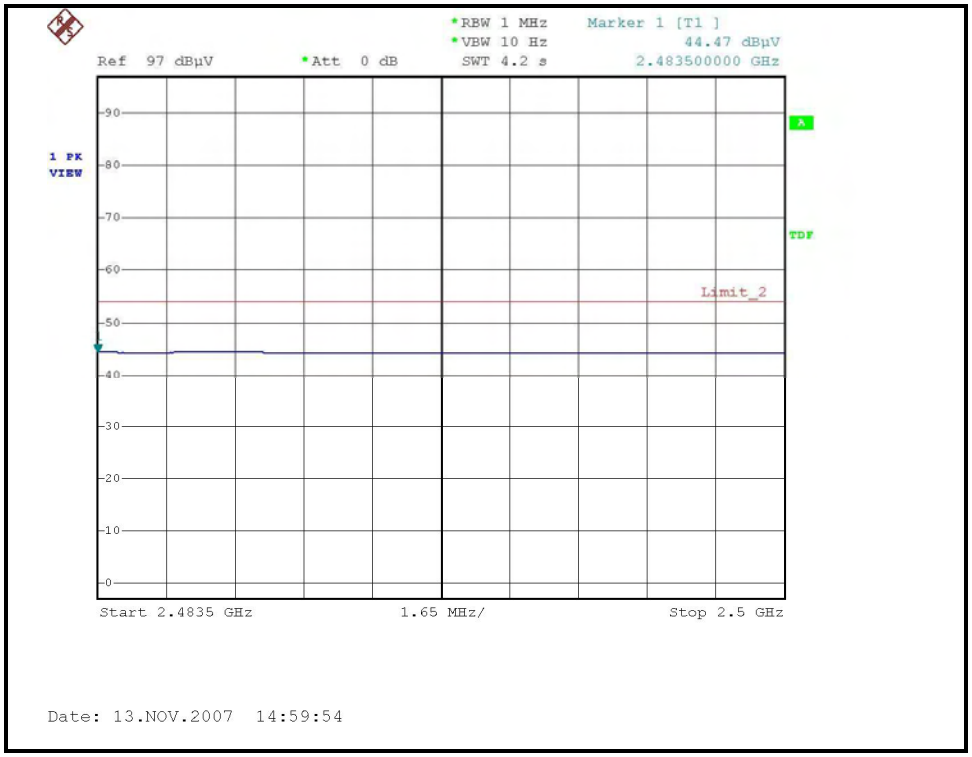

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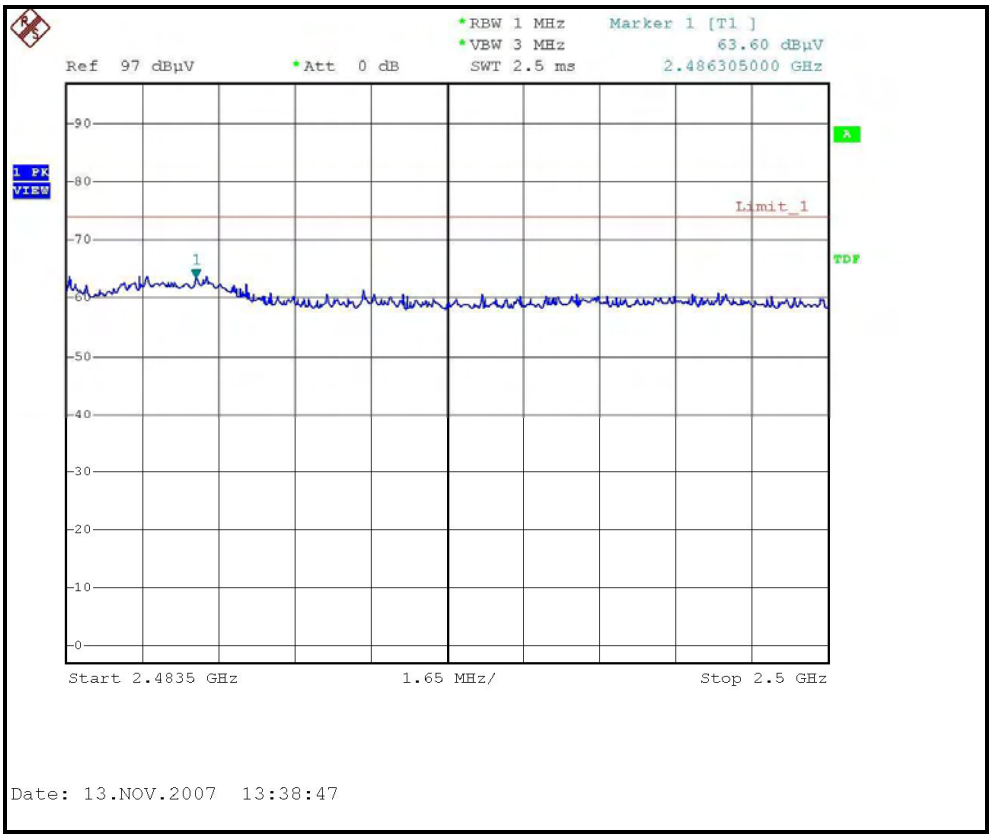
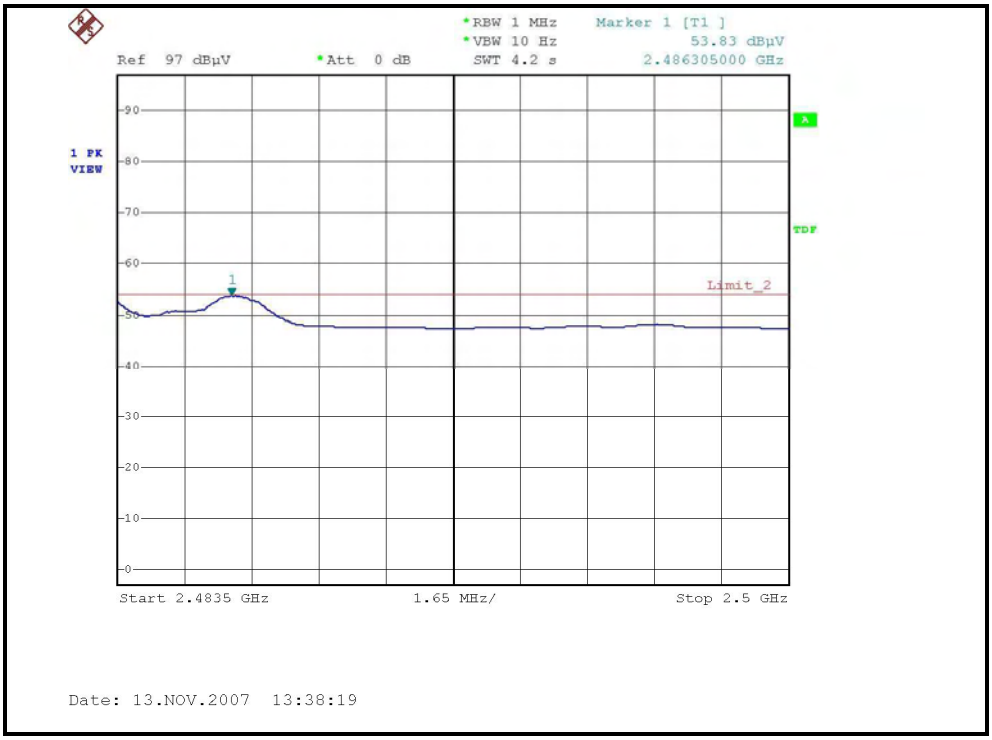




802.11g OFDM MODULATION:

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	23deg. C, 60%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	58.35 PK	74.00	-15.65	1.33 H	296	27.95	30.40
2	2390.00	44.48 AV	54.00	-9.52	1.33 H	296	14.08	30.40
3	*2412.00	101.30 PK			1.33 H	296	70.81	30.49
4	*2412.00	91.30 AV			1.33 H	296	60.81	30.49
5	4824.00	51.10 PK	74.00	-22.90	1.76 H	11	15.41	35.69
6	4824.00	44.90 AV	54.00	-9.10	1.76 H	11	9.21	35.69
7	7236.00	52.30 PK	74.00	-21.70	1.27 H	245	10.06	42.24
8	7236.00	39.30 AV	54.00	-14.70	1.27 H	245	-2.94	42.24

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	67.67 PK	74.00	-6.33	1.13 V	165	37.27	30.40
2	2390.00	50.71 AV	54.00	-3.29	1.13 V	165	20.31	30.40
3	*2412.00	115.70 PK			1.13 V	165	85.21	30.49
4	*2412.00	103.40 AV			1.13 V	165	72.91	30.49
5	4824.00	51.60 PK	74.00	-22.40	1.27 V	70	15.91	35.69
6	4824.00	46.70 AV	54.00	-7.30	1.27 V	70	11.01	35.69
7	7236.00	52.60 PK	74.00	-21.40	1.31 V	279	10.36	42.24
8	7236.00	39.40 AV	54.00	-14.60	1.31 V	279	-2.84	42.24

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	23deg. C, 60%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	101.20 PK			1.32 H	297	70.59	30.61
2	*2437.00	91.10 AV			1.32 H	297	60.49	30.61
3	4874.00	51.00 PK	74.00	-23.00	1.74 H	9	15.20	35.80
4	4874.00	44.30 AV	54.00	-9.70	1.74 H	9	8.50	35.80
5	7311.00	52.30 PK	74.00	-21.70	1.31 H	243	9.78	42.52
6	7311.00	39.20 AV	54.00	-14.80	1.31 H	243	-3.32	42.52

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	115.80 PK			1.12 V	167	85.19	30.61
2	*2437.00	103.60 AV			1.12 V	167	72.99	30.61
3	4874.00	51.40 PK	74.00	-22.60	1.26 V	83	15.60	35.80
4	4874.00	46.30 AV	54.00	-7.70	1.26 V	83	10.50	35.80
5	7311.00	52.40 PK	74.00	-21.60	1.32 V	284	9.88	42.52
6	7311.00	39.30 AV	54.00	-14.70	1.32 V	284	-3.22	42.52

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	23deg. C, 60%RH, 955hPa	**TESTED BY**	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

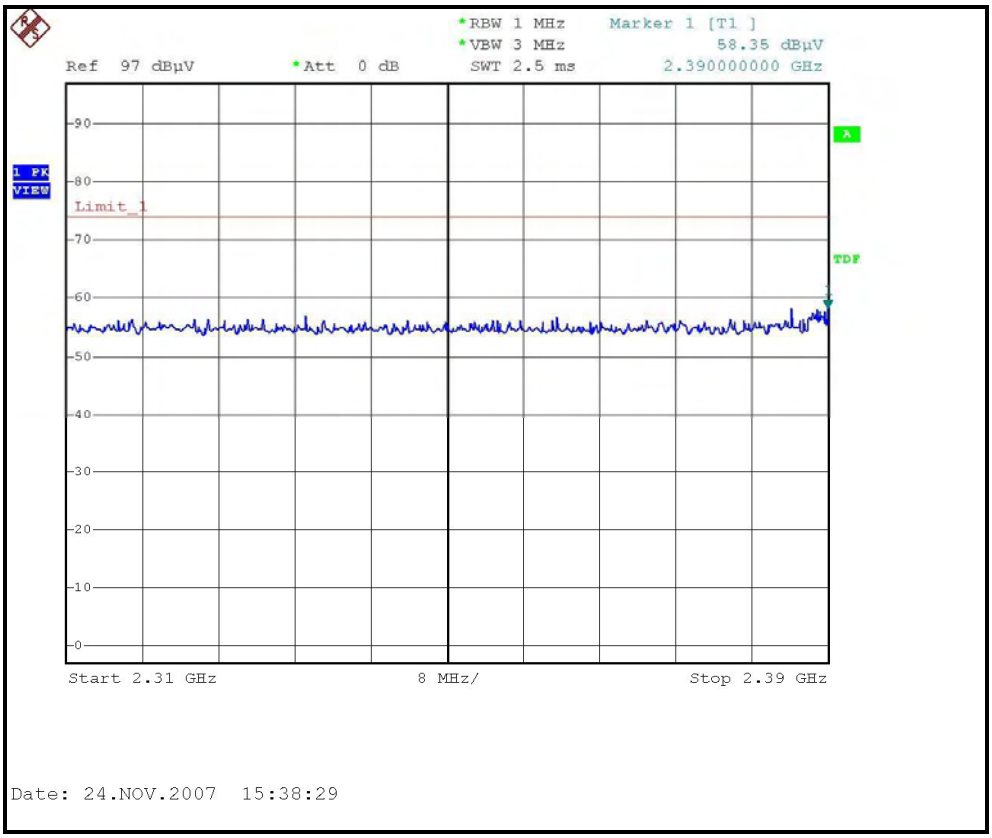
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	100.30 PK			1.33 H	294	69.58	30.72
2	*2462.00	89.50 AV			1.33 H	294	58.78	30.72
3	2483.50	58.64 PK	74.00	-15.36	1.33 H	294	27.82	30.82
4	2483.50	45.06 AV	54.00	-8.94	1.33 H	294	14.24	30.82
5	4924.00	51.20 PK	74.00	-22.80	1.72 H	6	15.30	35.90
6	4924.00	44.70 AV	54.00	-9.30	1.72 H	6	8.80	35.90
7	7386.00	54.40 PK	74.00	-19.60	1.29 H	237	11.60	42.80
8	7386.00	40.10 AV	54.00	-13.90	1.29 H	237	-2.70	42.80

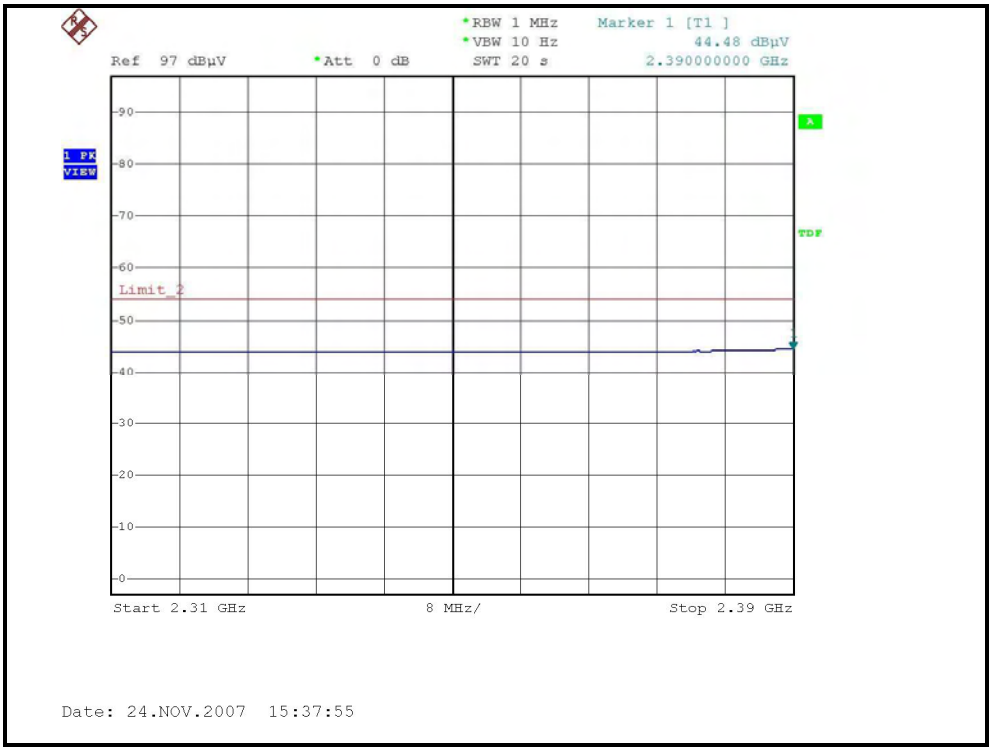
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	113.40 PK			1.06 V	166	82.68	30.72
2	*2462.00	101.80 AV			1.06 V	166	71.08	30.72
3	2483.50	70.41 PK	74.00	-3.59	1.06 V	166	39.59	30.82
4	2483.50	53.32 AV	54.00	-0.68	1.06 V	166	22.50	30.82
5	4924.00	51.20 PK	74.00	-22.80	1.25 V	74	15.30	35.90
6	4924.00	46.10 AV	54.00	-7.90	1.25 V	74	10.20	35.90
7	7386.00	52.50 PK	74.00	-21.50	1.31 V	278	9.70	42.80
8	7386.00	39.60 AV	54.00	-14.40	1.31 V	278	-3.20	42.80

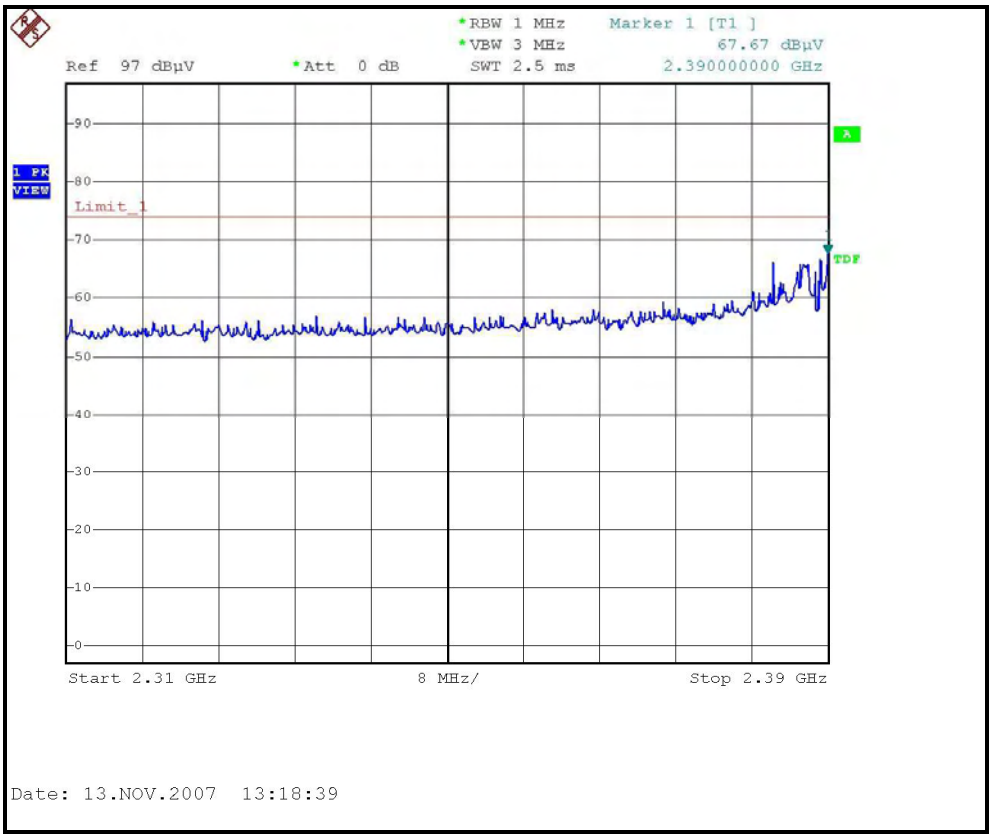
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per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

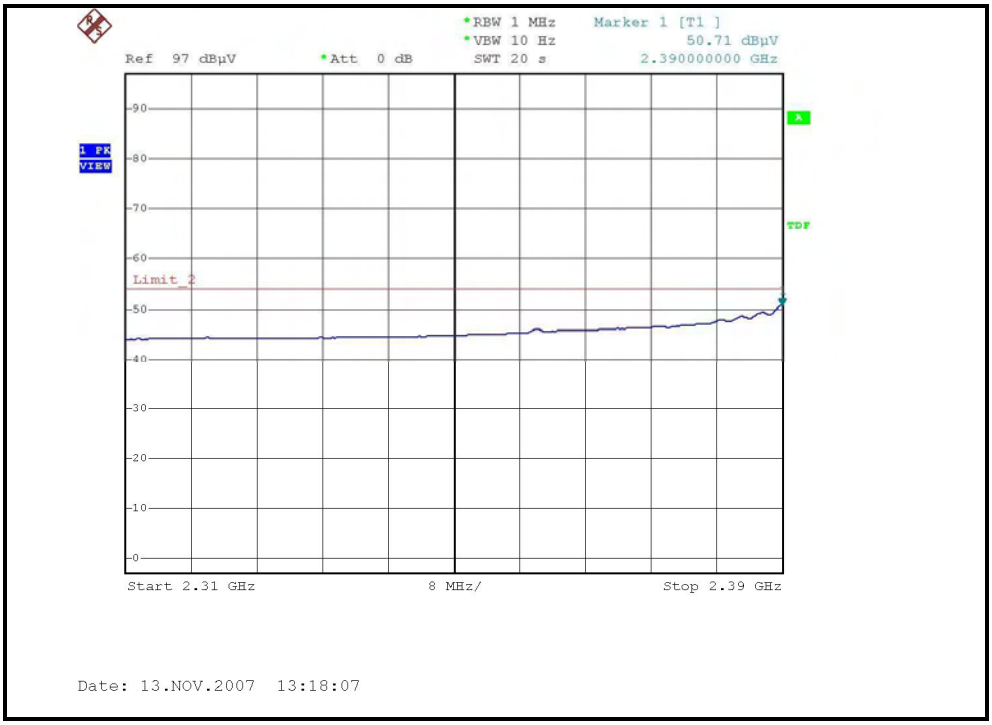
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)





RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)





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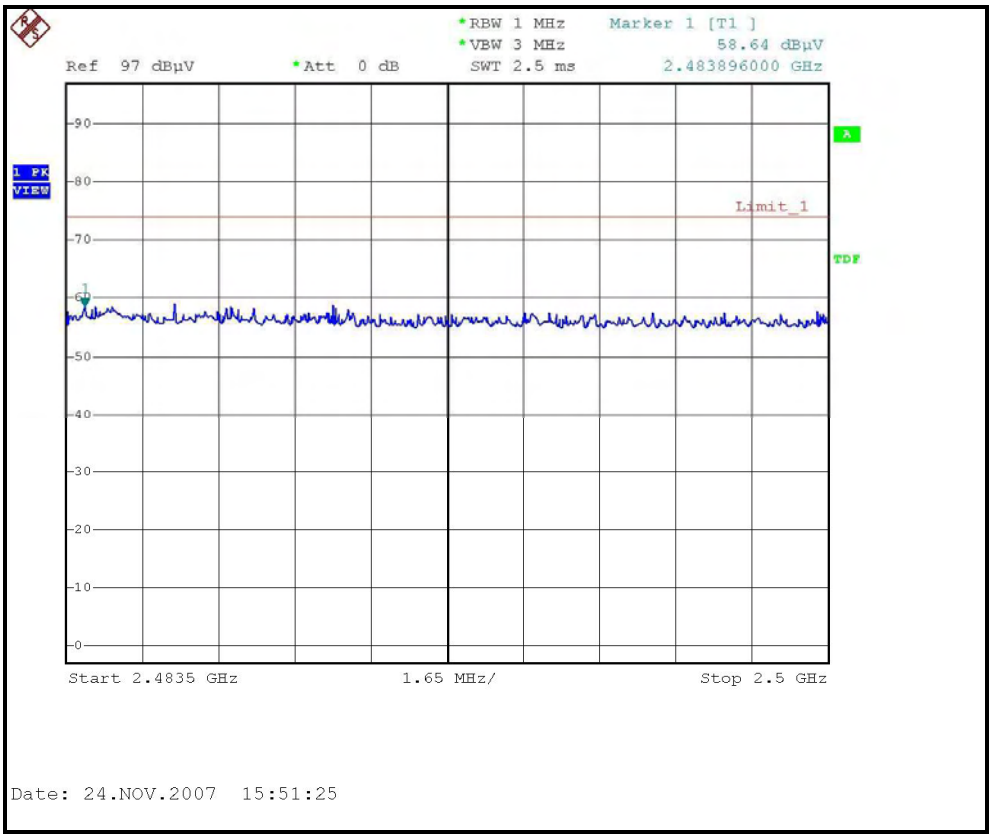
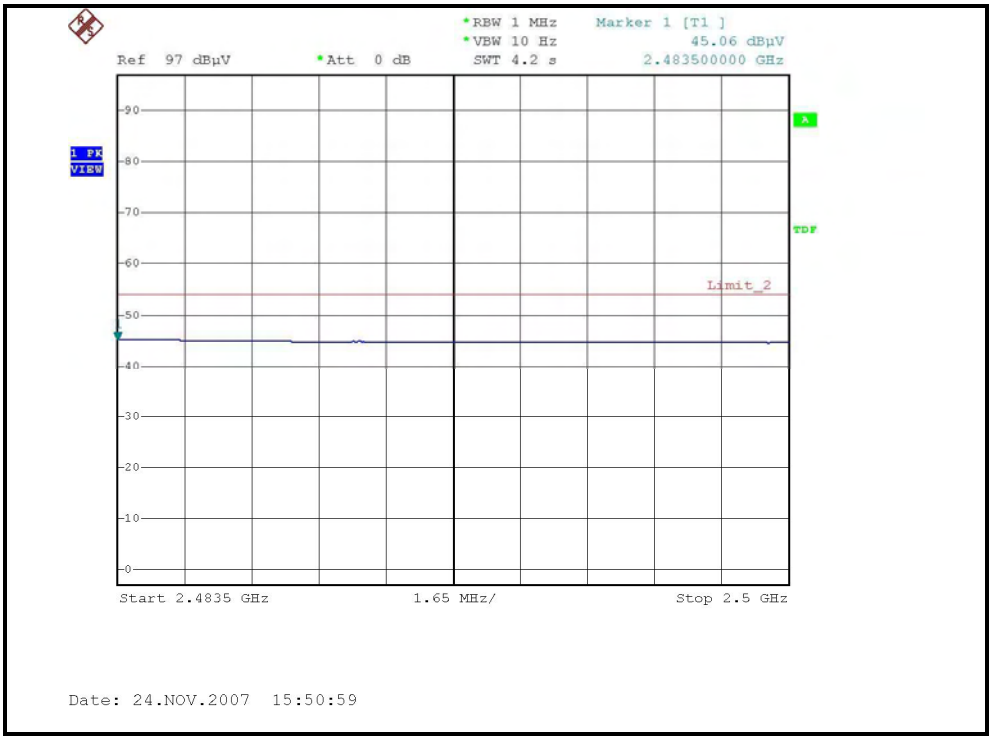
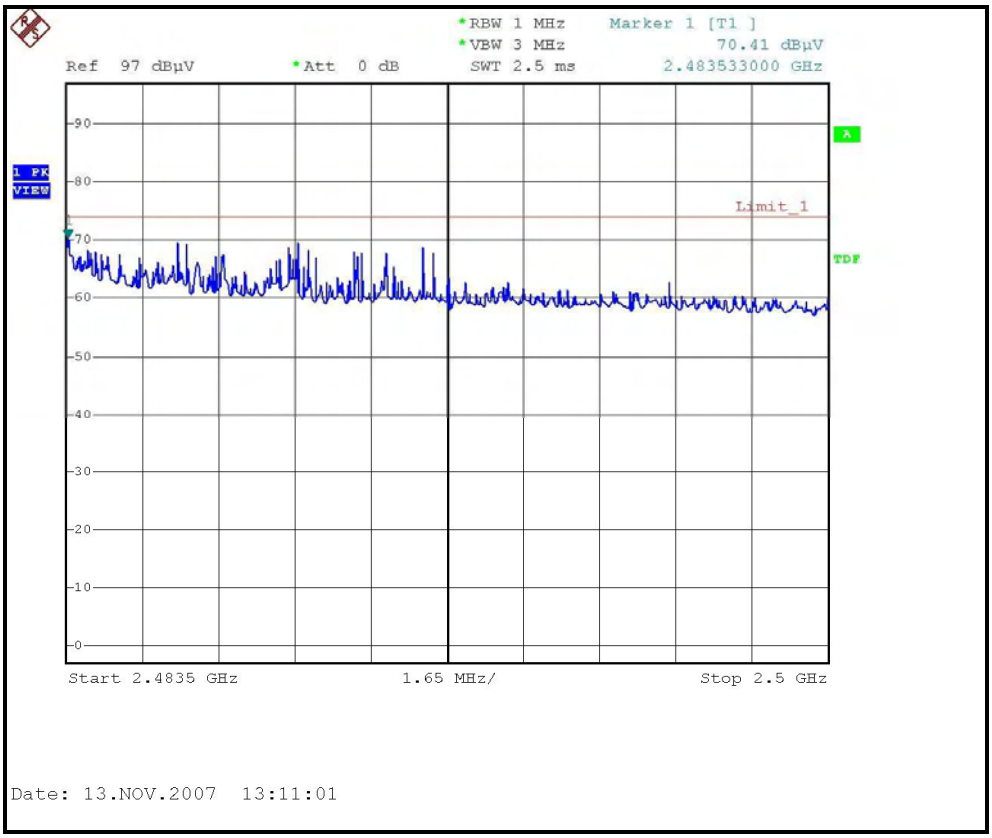
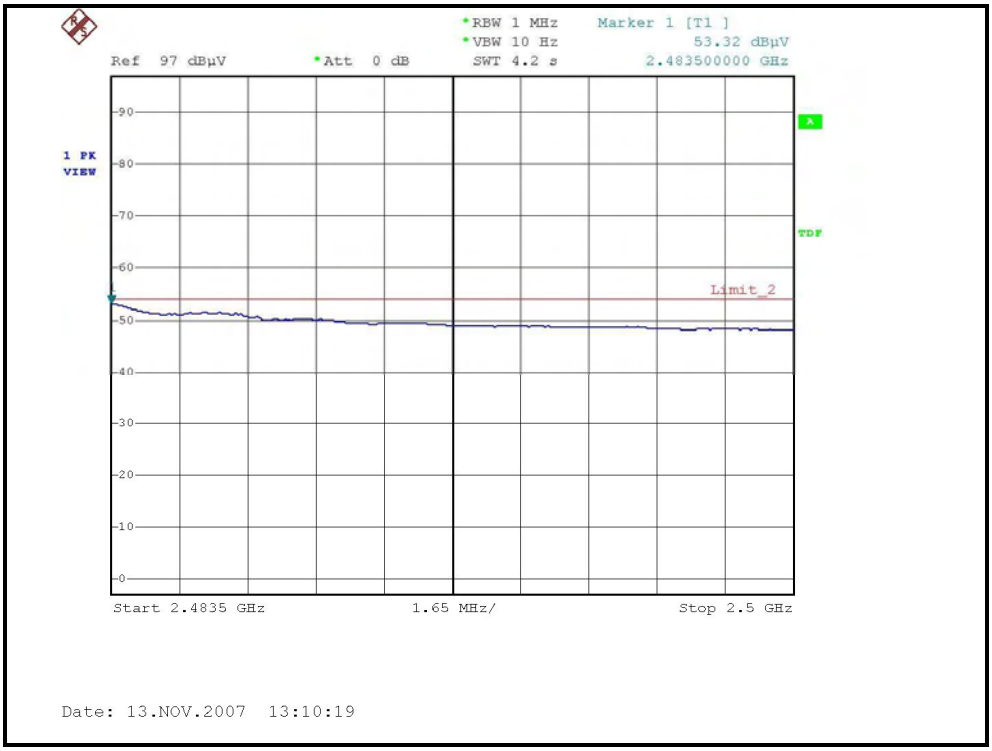




RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





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	13Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	58.36 PK	74.00	-15.64	1.33 H	297	27.96	30.40
2	2390.00	44.76 AV	54.00	-9.24	1.33 H	297	14.36	30.40
3	*2412.00	101.80 PK			1.33 H	297	71.31	30.49
4	*2412.00	89.80 AV			1.33 H	297	59.31	30.49
5	4824.00	51.20 PK	74.00	-22.80	1.68 H	14	15.51	35.69
6	4824.00	44.50 AV	54.00	-9.50	1.68 H	14	8.81	35.69
7	7236.00	52.30 PK	74.00	-21.70	1.24 H	285	10.06	42.24
8	7236.00	39.30 AV	54.00	-14.70	1.24 H	285	-2.94	42.24

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	69.42 PK	74.00	-4.58	1.13 V	190	39.02	30.40
2	2390.00	49.92 AV	54.00	-4.08	1.13 V	190	19.52	30.40
3	*2412.00	113.60 PK			1.13 V	190	83.11	30.49
4	*2412.00	99.90 AV			1.13 V	190	69.41	30.49
5	4824.00	51.40 PK	74.00	-22.60	1.29 V	67	15.71	35.69
6	4824.00	46.50 AV	54.00	-7.50	1.29 V	67	10.81	35.69
7	7236.00	52.50 PK	74.00	-21.50	1.31 V	278	10.26	42.24
8	7236.00	39.40 AV	54.00	-14.60	1.31 V	278	-2.84	42.24

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	13Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	101.50 PK			1.33 H	296	70.89	30.61
2	*2437.00	89.60 AV			1.33 H	296	58.99	30.61
3	4874.00	50.90 PK	74.00	-23.10	1.73 H	12	15.10	35.80
4	4874.00	44.30 AV	54.00	-9.70	1.73 H	12	8.50	35.80
5	7311.00	52.40 PK	74.00	-21.60	1.21 H	273	9.88	42.52
6	7311.00	39.20 AV	54.00	-14.80	1.21 H	273	-3.32	42.52

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	113.40 PK			1.11 V	173	82.79	30.61
2	*2437.00	99.60 AV			1.11 V	173	68.99	30.61
3	4874.00	51.50 PK	74.00	-22.50	1.27 V	73	15.70	35.80
4	4874.00	46.70 AV	54.00	-7.30	1.27 V	73	10.90	35.80
5	7311.00	52.70 PK	74.00	-21.30	1.32 V	257	10.18	42.52
6	7311.00	39.30 AV	54.00	-14.70	1.32 V	257	-3.22	42.52

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	13Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%RH, 955hPa	**TESTED BY**	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

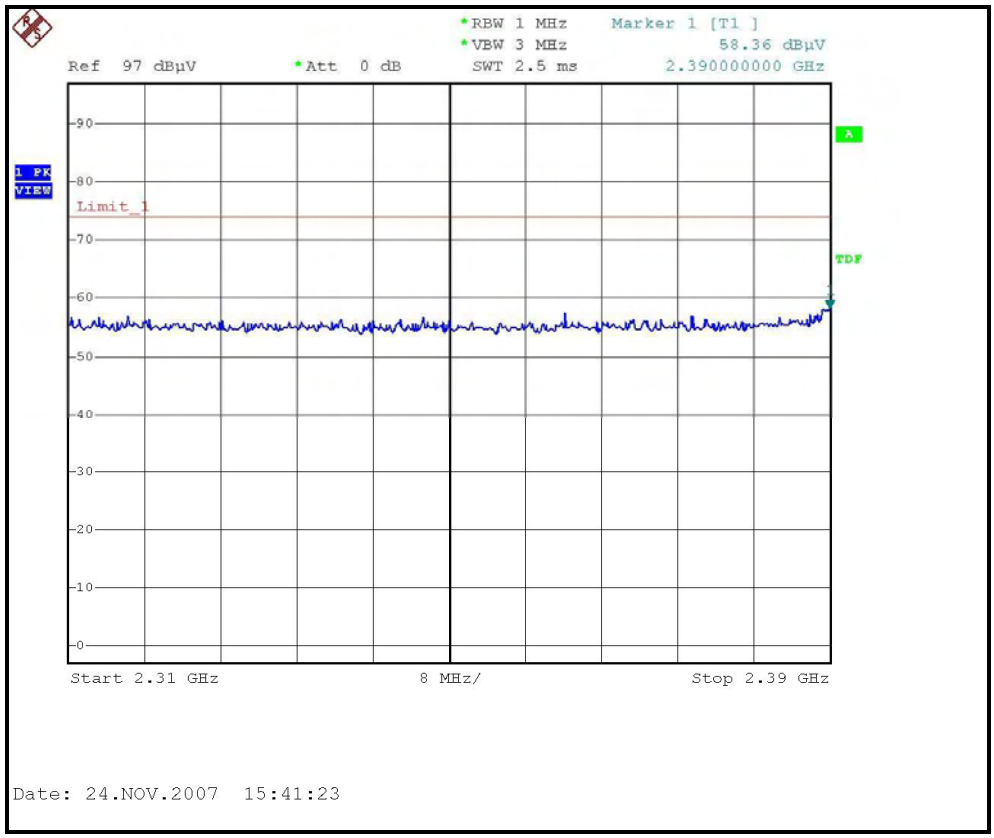
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	100.20 PK			1.33 H	295	69.48	30.72
2	*2462.00	88.30 AV			1.33 H	295	57.58	30.72
3	2483.50	62.74 PK	74.00	-11.26	1.33 H	295	31.92	30.82
4	2483.50	45.80 AV	54.00	-8.20	1.33 H	295	14.98	30.82
5	4924.00	51.10 PK	74.00	-22.90	1.72 H	6	15.20	35.90
6	4924.00	44.80 AV	54.00	-9.20	1.72 H	6	8.90	35.90
7	7386.00	52.10 PK	74.00	-21.90	1.27 H	242	9.30	42.80
8	7386.00	39.10 AV	54.00	-14.90	1.27 H	242	-3.70	42.80

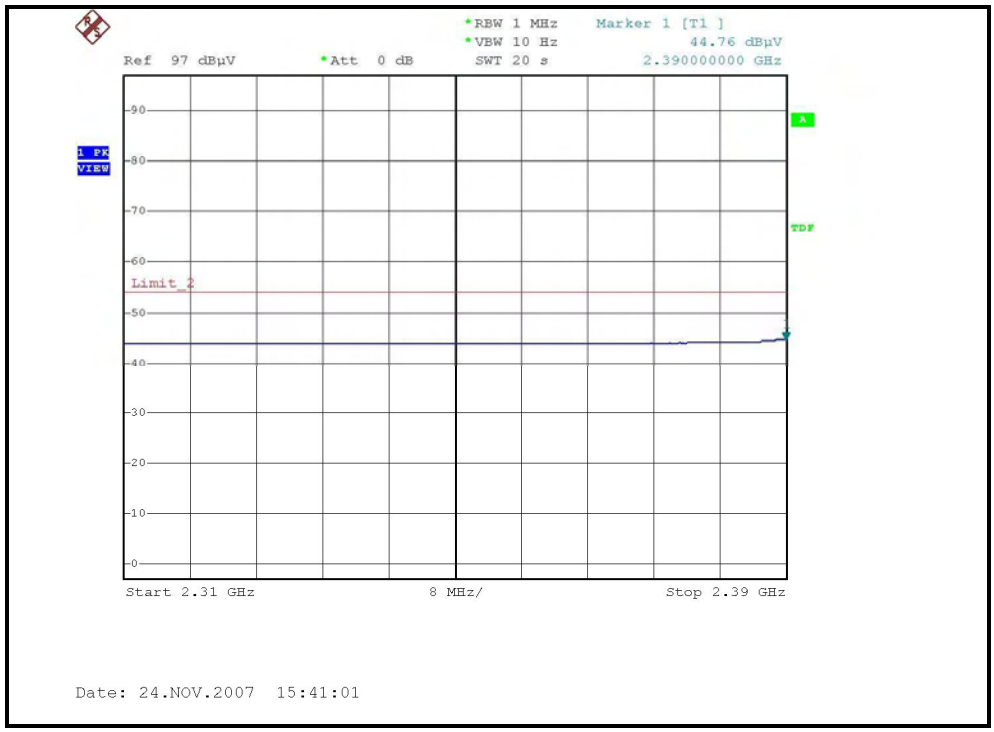
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.90 PK			1.00 V	113	81.18	30.72
2	*2462.00	97.80 AV			1.00 V	113	67.08	30.72
3	2483.50	65.68 PK	74.00	-8.32	1.04 V	90	34.86	30.82
4	2483.50	51.15 AV	54.00	-2.85	1.04 V	90	20.33	30.82
5	4924.00	51.20 PK	74.00	-22.80	1.24 V	84	15.30	35.90
6	4924.00	46.10 AV	54.00	-7.90	1.24 V	84	10.20	35.90
7	7386.00	52.30 PK	74.00	-21.70	1.35 V	249	9.50	42.80
8	7386.00	39.40 AV	54.00	-14.60	1.35 V	249	-3.40	42.80

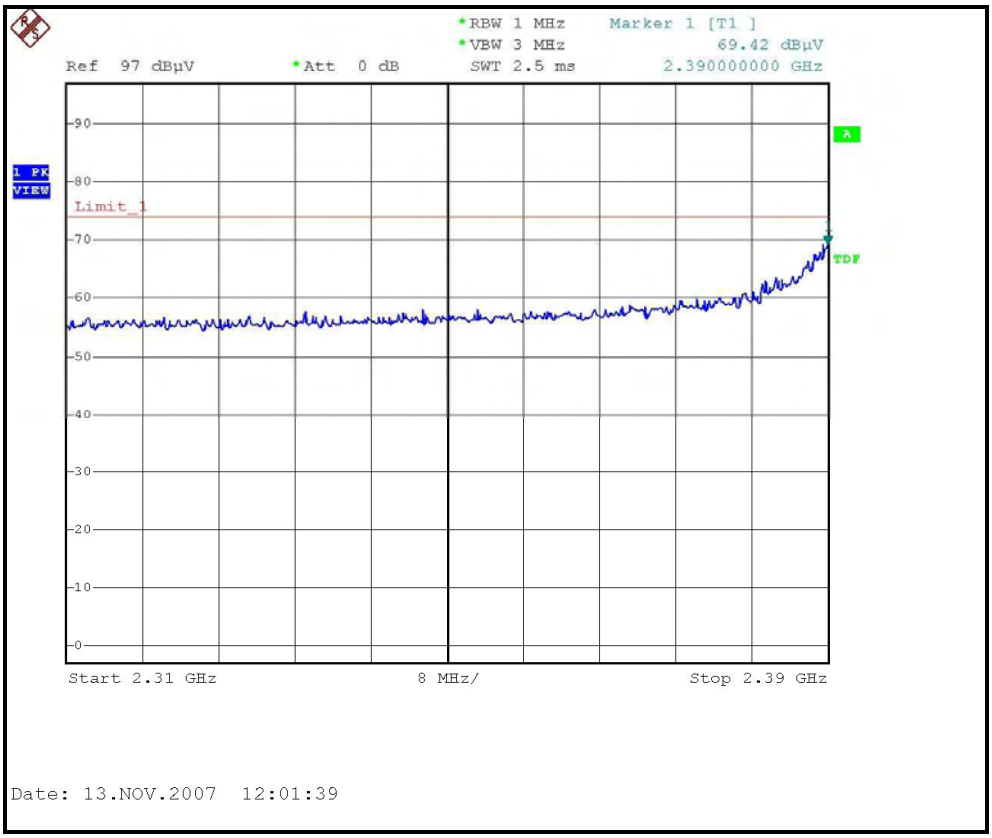
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per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

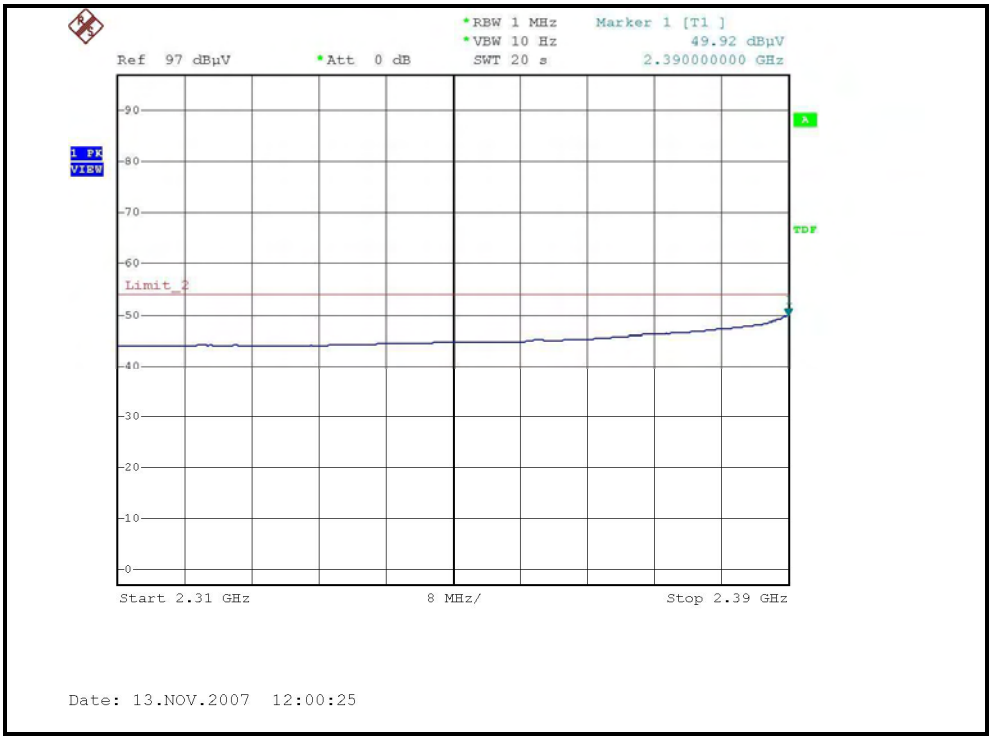
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, HORIZONTAL)



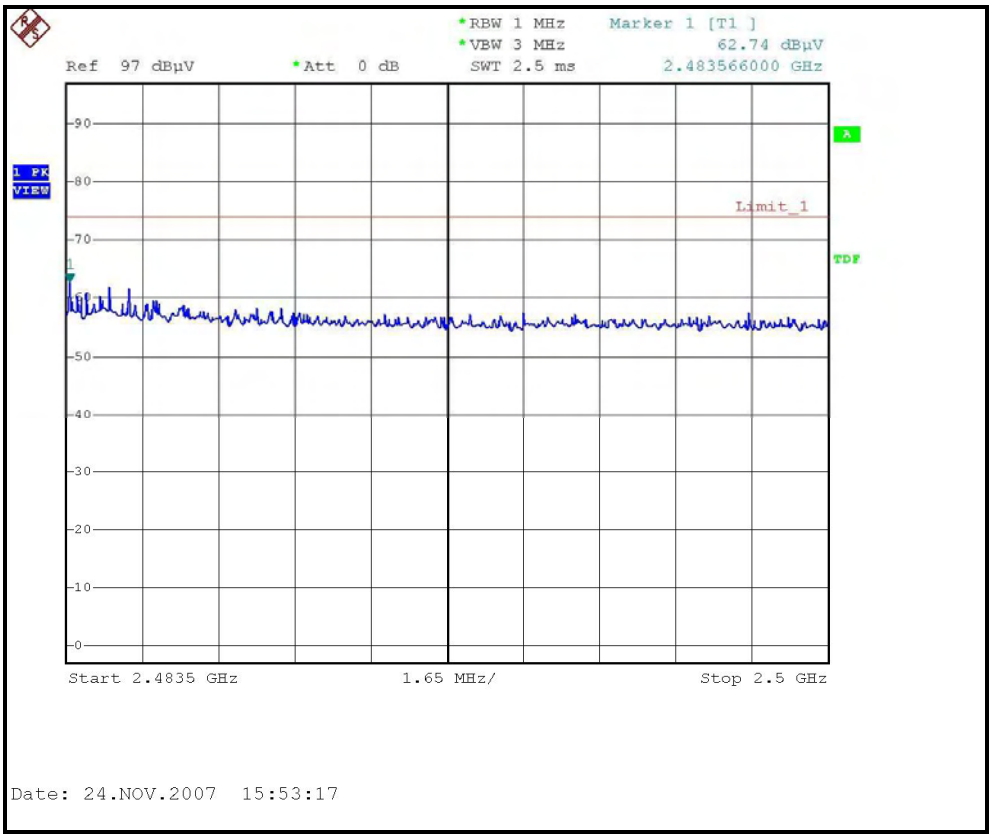


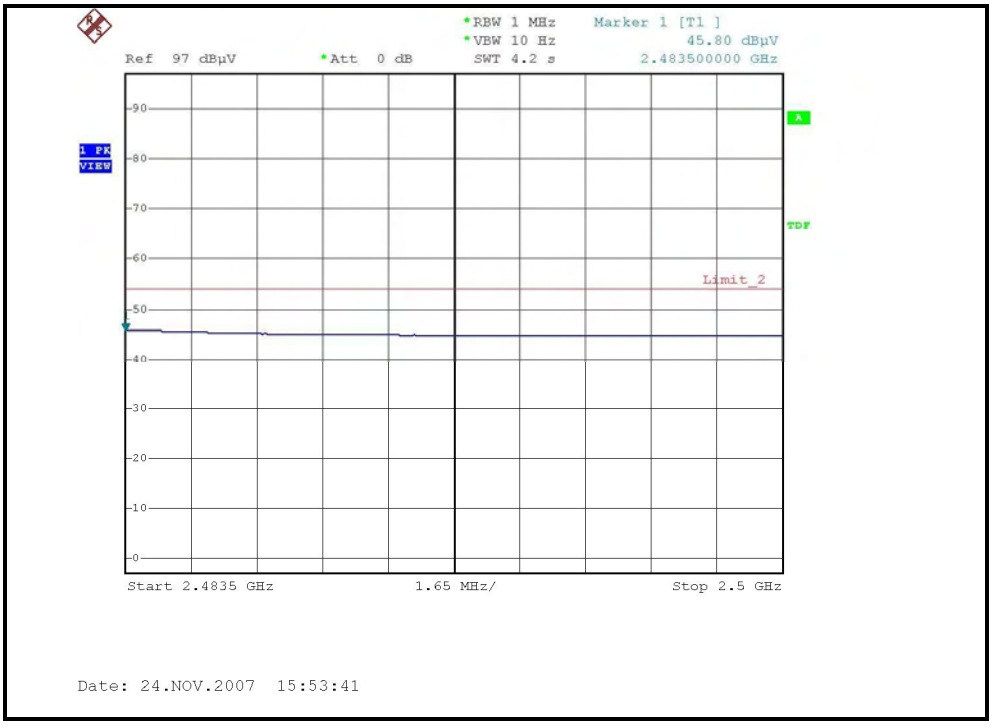
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)



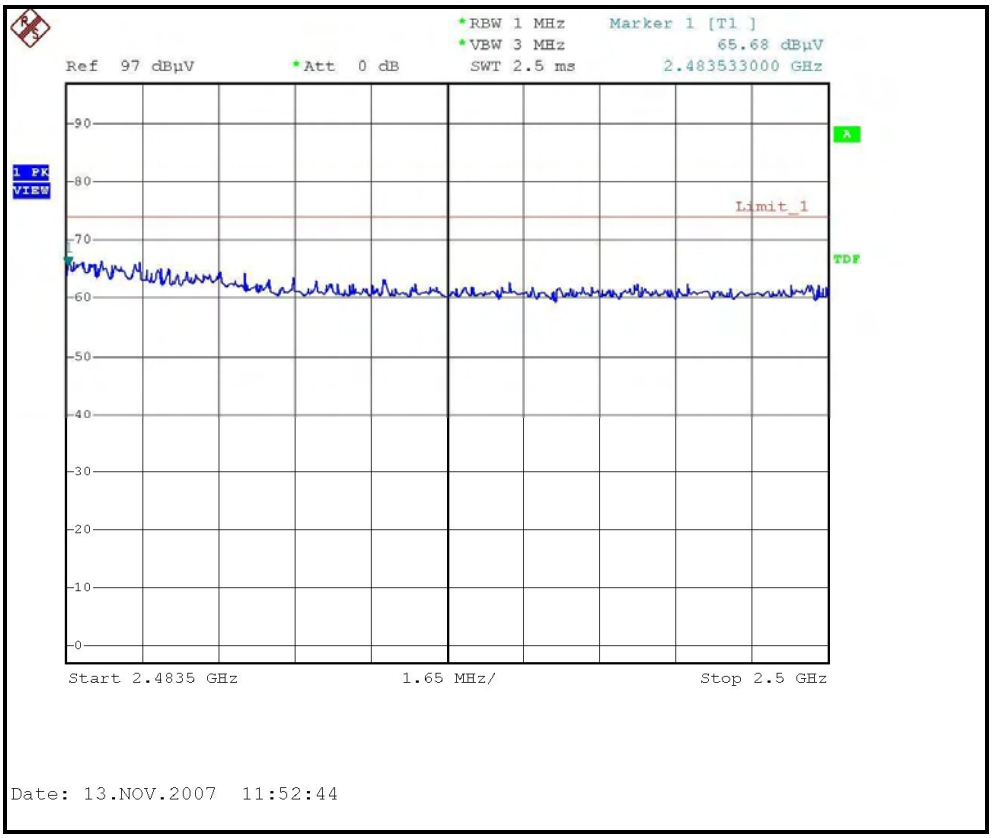


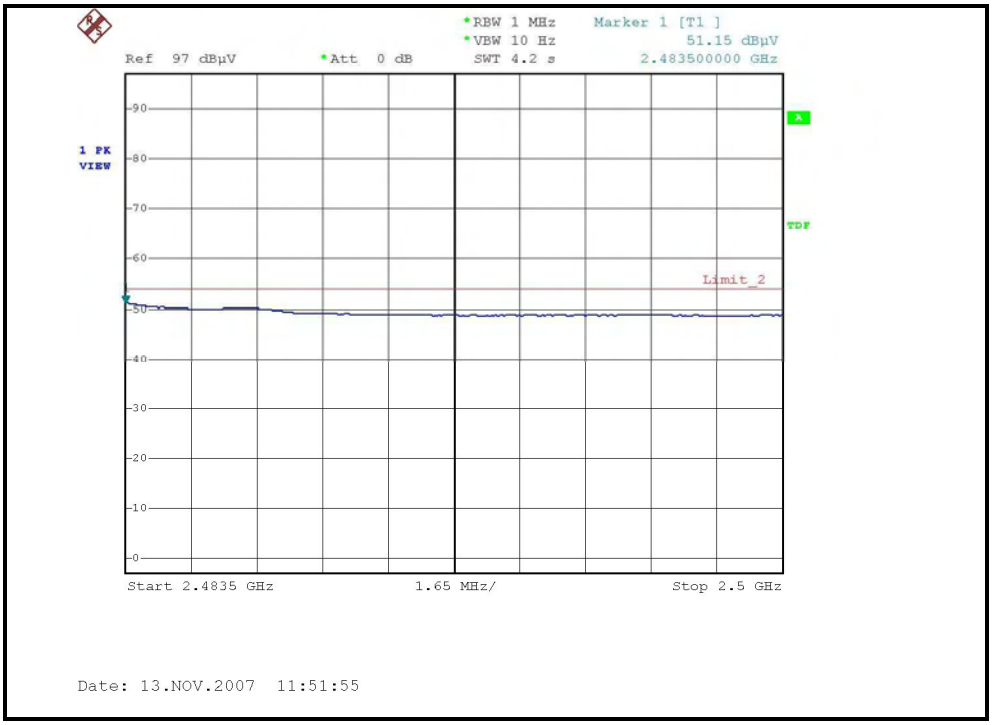
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, HORIZONTAL)





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





DRAFT 802.11n (40MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	27Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	57.58 PK	74.00	-16.42	1.33 H	297	27.18	30.40
2	2390.00	44.51 AV	54.00	-9.49	1.33 H	297	14.11	30.40
3	*2422.00	97.40 PK			1.33 H	297	66.86	30.54
4	*2422.00	84.90 AV			1.33 H	297	54.36	30.54
5	4844.00	50.10 PK	74.00	-23.90	1.74 H	3	14.36	35.74
6	4844.00	43.70 AV	54.00	-10.30	1.74 H	3	7.96	35.74
7	7266.00	52.20 PK	74.00	-21.80	1.37 H	262	9.85	42.35
8	7266.00	39.10 AV	54.00	-14.90	1.37 H	262	-3.25	42.35

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	62.60 PK	74.00	-11.40	1.13 V	180	32.20	30.40
2	2390.00	49.01 AV	54.00	-4.99	1.13 V	180	18.61	30.40
3	*2422.00	109.50 PK			1.10 V	192	78.96	30.54
4	*2422.00	94.70 AV			1.10 V	192	64.16	30.54
5	4844.00	51.40 PK	74.00	-22.60	1.28 V	74	15.66	35.74
6	4844.00	46.20 AV	54.00	-7.80	1.28 V	74	10.46	35.74
7	7266.00	52.70 PK	74.00	-21.30	1.26 V	273	10.35	42.35
8	7266.00	39.40 AV	54.00	-14.60	1.26 V	273	-2.95	42.35

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	27Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	98.30 PK			1.34 H	298	67.69	30.61
2	*2437.00	85.90 AV			1.34 H	298	55.29	30.61
3	4874.00	50.40 PK	74.00	-23.60	1.76 H	8	14.60	35.80
4	4874.00	44.30 AV	54.00	-9.70	1.76 H	8	8.50	35.80
5	7311.00	52.10 PK	74.00	-21.90	1.34 H	283	9.58	42.52
6	7311.00	39.30 AV	54.00	-14.70	1.34 H	283	-3.22	42.52

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	110.70 PK			1.10 V	189	80.09	30.61
2	*2437.00	96.10 AV			1.10 V	189	65.49	30.61
3	4874.00	51.20 PK	74.00	-22.80	1.29 V	67	15.40	35.80
4	4874.00	46.30 AV	54.00	-7.70	1.29 V	67	10.50	35.80
5	7311.00	52.40 PK	74.00	-21.60	1.34 V	281	9.88	42.52
6	7311.00	39.20 AV	54.00	-14.80	1.34 V	281	-3.32	42.52

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	27Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 60%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	98.20 PK			1.43 H	10	67.53	30.67
2	*2452.00	84.40 AV			1.43 H	10	53.73	30.67
3	2483.50	57.56 PK	74.00	-16.44	1.43 H	10	26.74	30.82
4	2483.50	45.40 AV	54.00	-8.60	1.43 H	10	14.58	30.82
5	4904.00	50.70 PK	74.00	-23.30	1.71 H	9	14.84	35.86
6	4904.00	44.50 AV	54.00	-9.50	1.71 H	9	8.64	35.86
7	7356.00	52.60 PK	74.00	-21.40	1.33 H	275	9.92	42.68
8	7356.00	39.50 AV	54.00	-14.50	1.33 H	275	-3.18	42.68

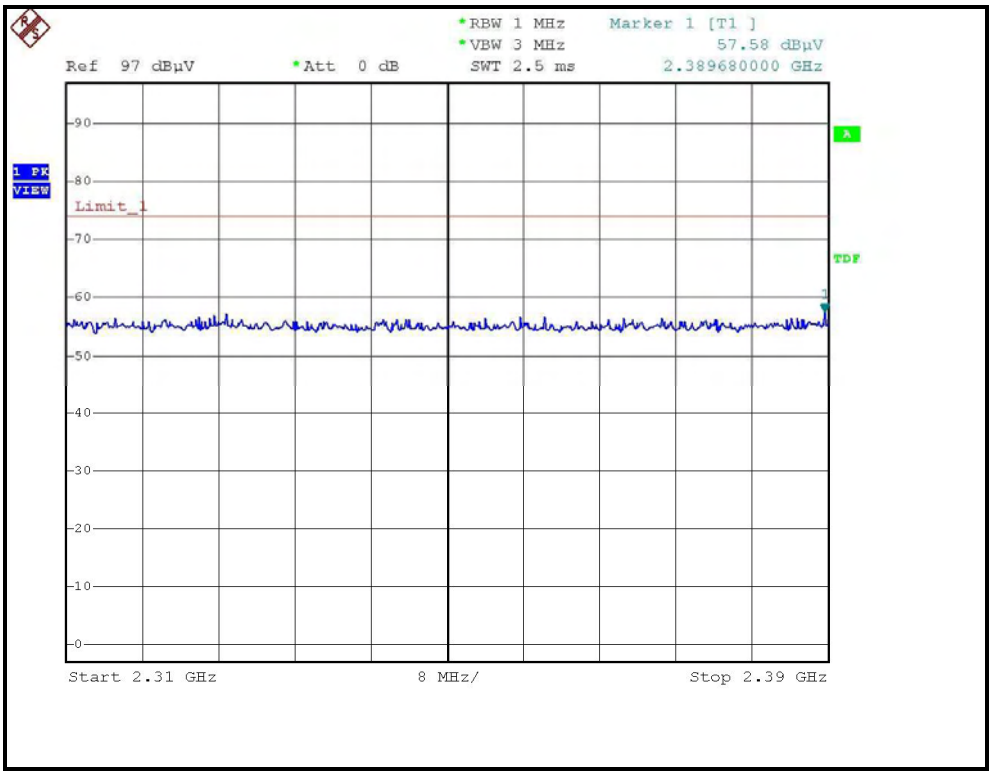
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

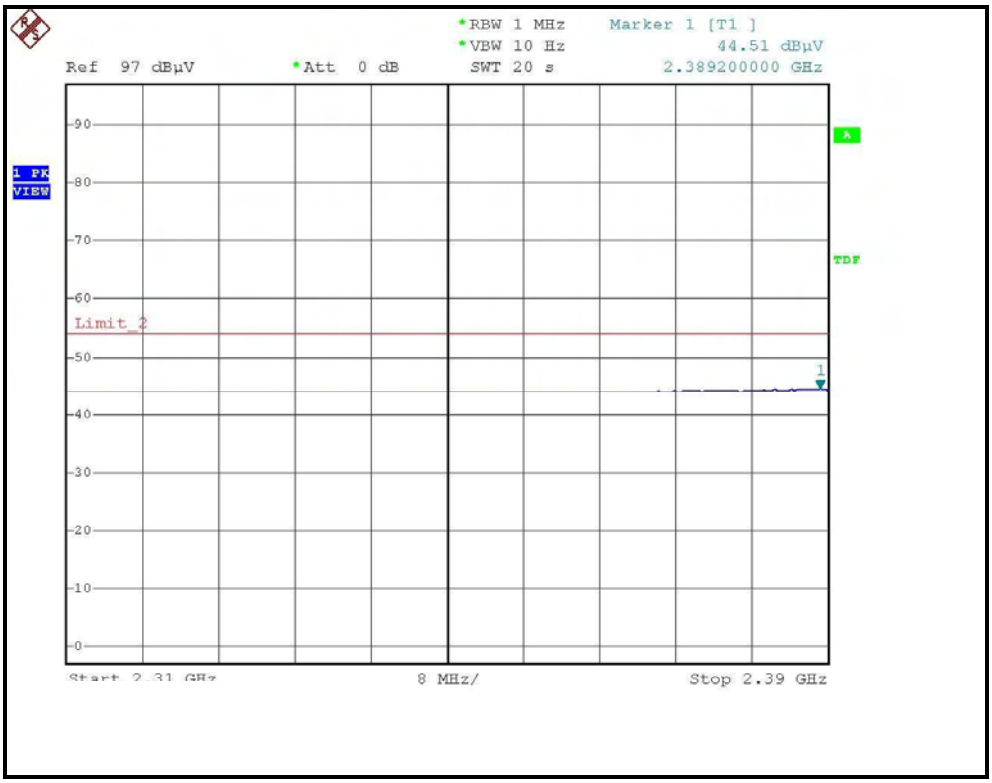
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	109.00 PK			1.08 V	170	78.33	30.67
2	*2452.00	94.15 AV			1.08 V	170	63.48	30.67
3	2484.45	69.65 PK	74.00	-4.35	1.08 V	170	38.83	30.82
4	**2484.45**	**53.89 AV**	**54.00**	**-0.11**	**1.08 V**	**170**	**23.07**	**30.82**
5	4904.00	51.40 PK	74.00	-22.60	1.28 V	66	15.54	35.86
6	4904.00	46.60 AV	54.00	-7.40	1.28 V	66	10.74	35.86
7	7356.00	52.50 PK	74.00	-21.50	1.32 V	253	9.82	42.68
8	7356.00	39.40 AV	54.00	-14.60	1.32 V	253	-3.28	42.68

REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).

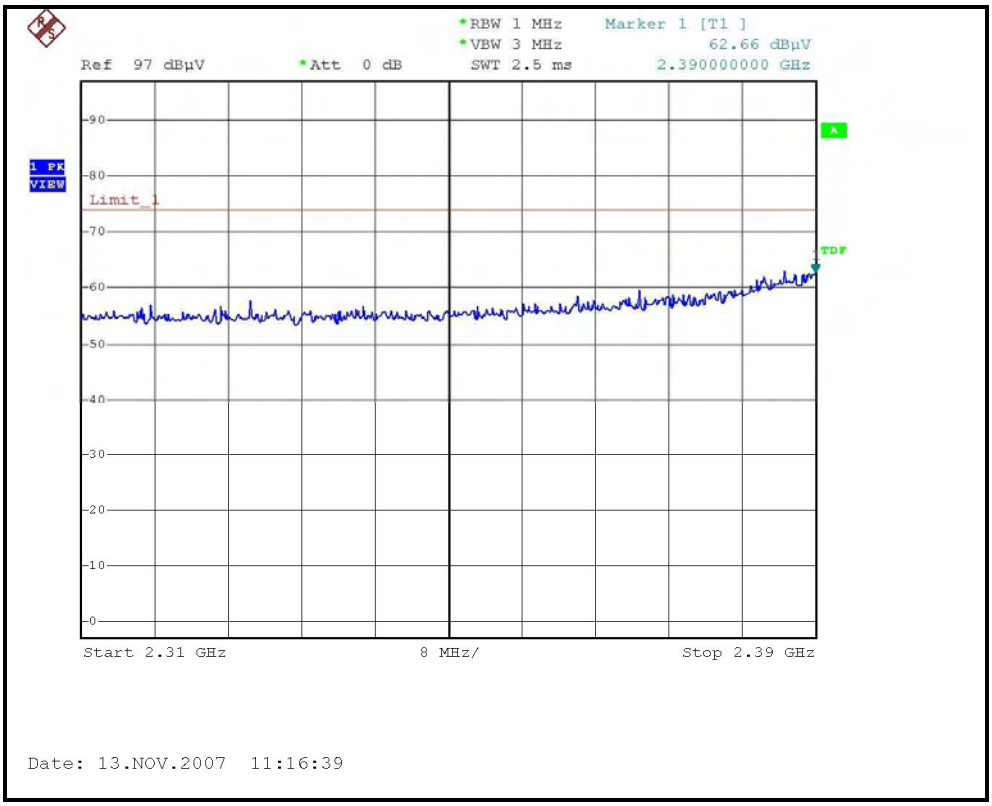
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per 15.247.
6. " * ": Fundamental frequency.

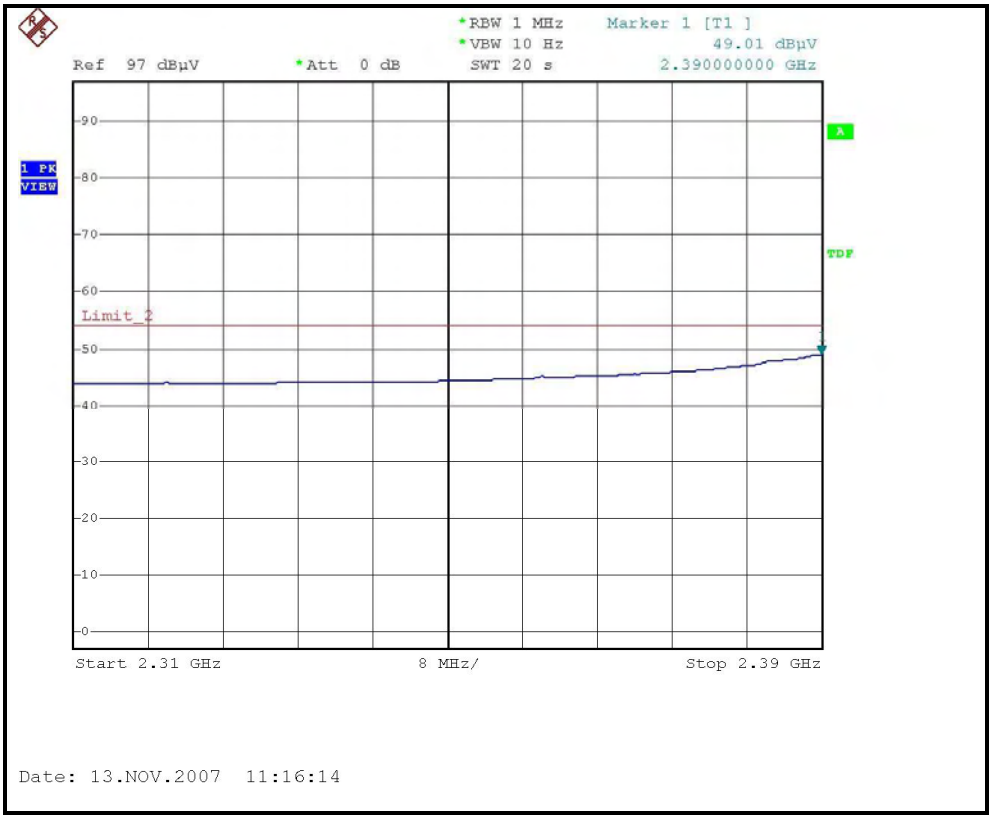
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, HORIZONTAL)



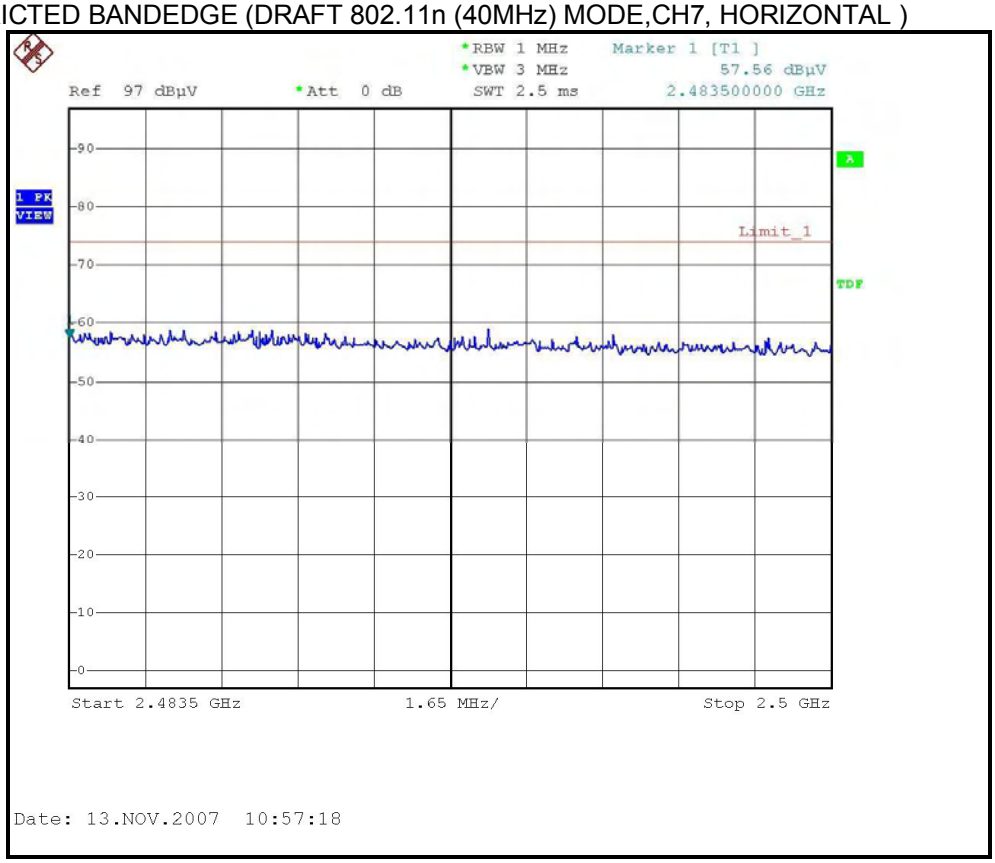


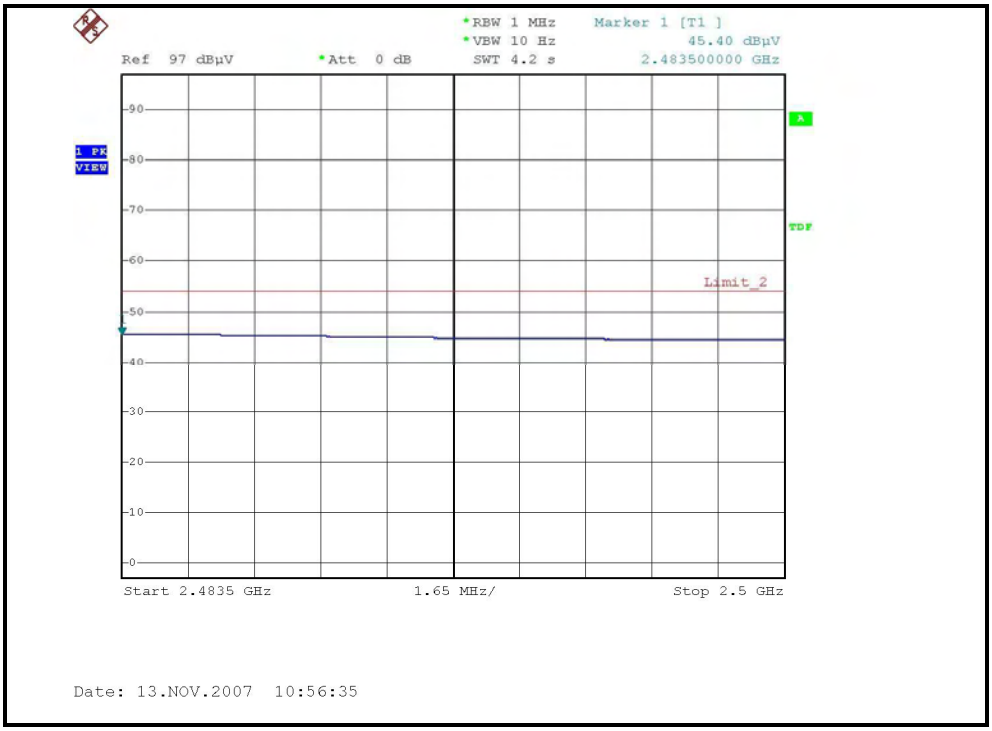
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)



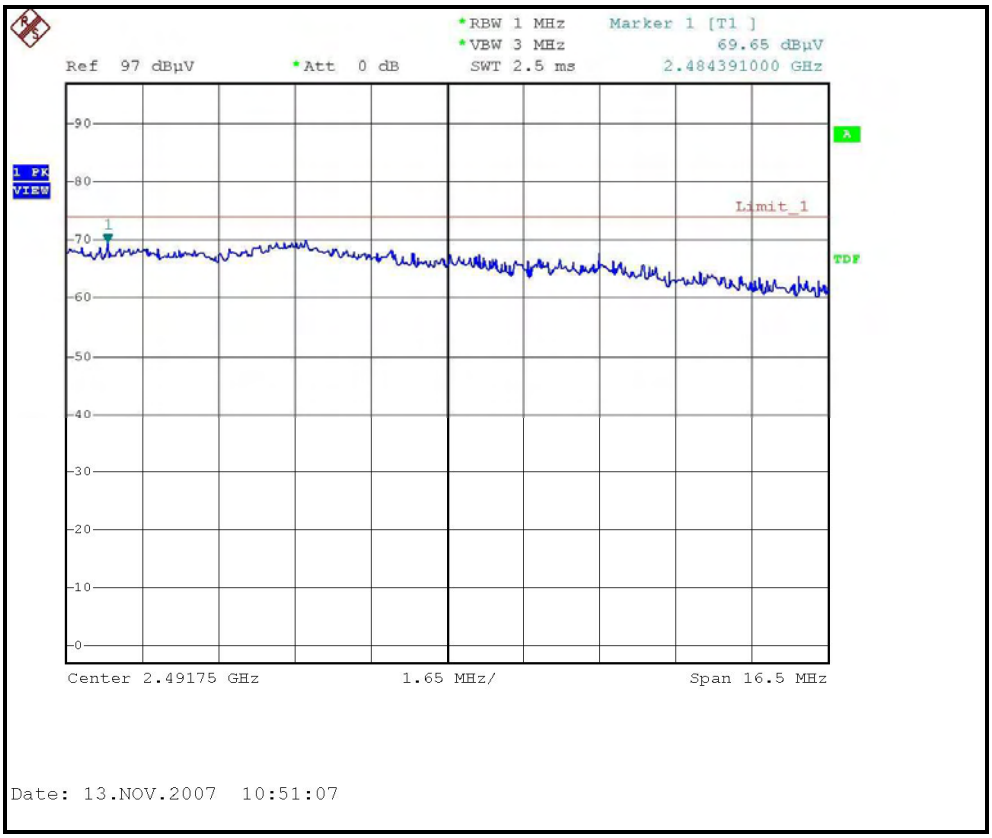


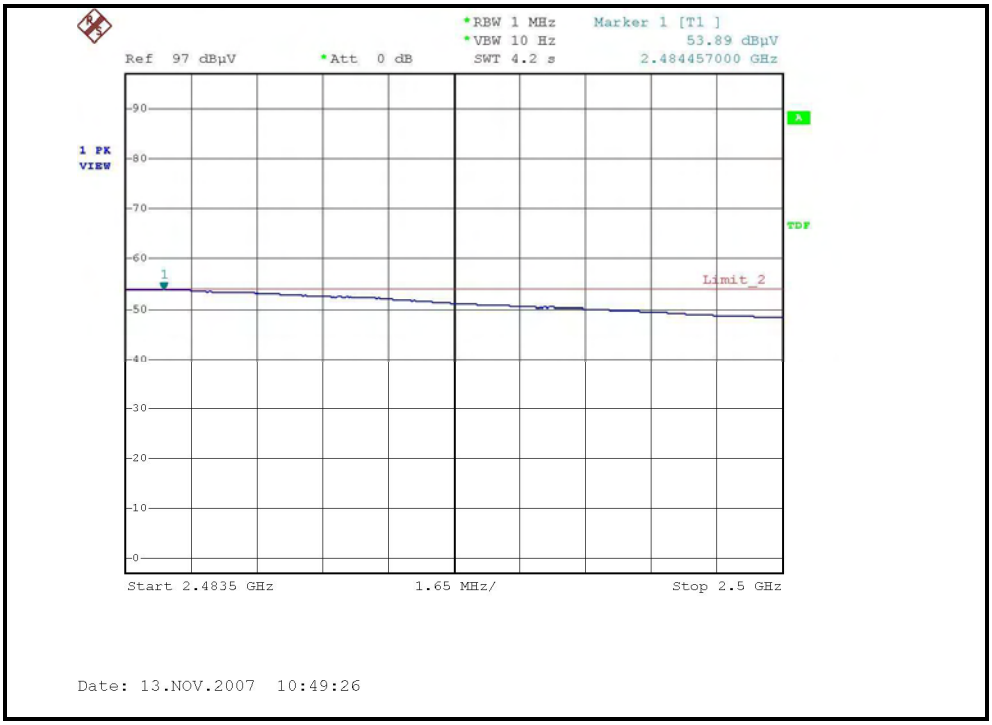
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, HORIZONTAL)





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





4.3 6DB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 12, 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.

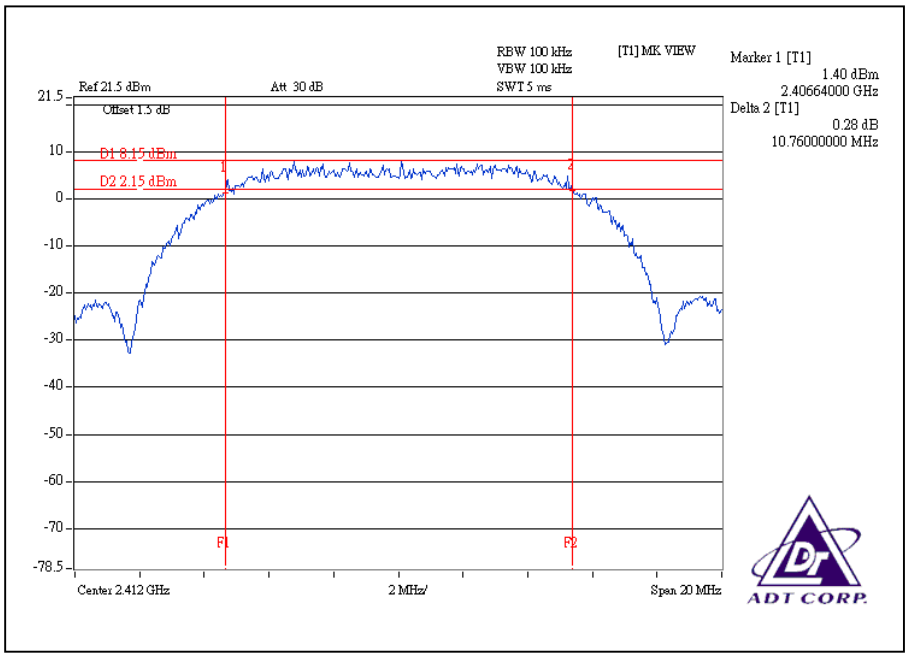
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

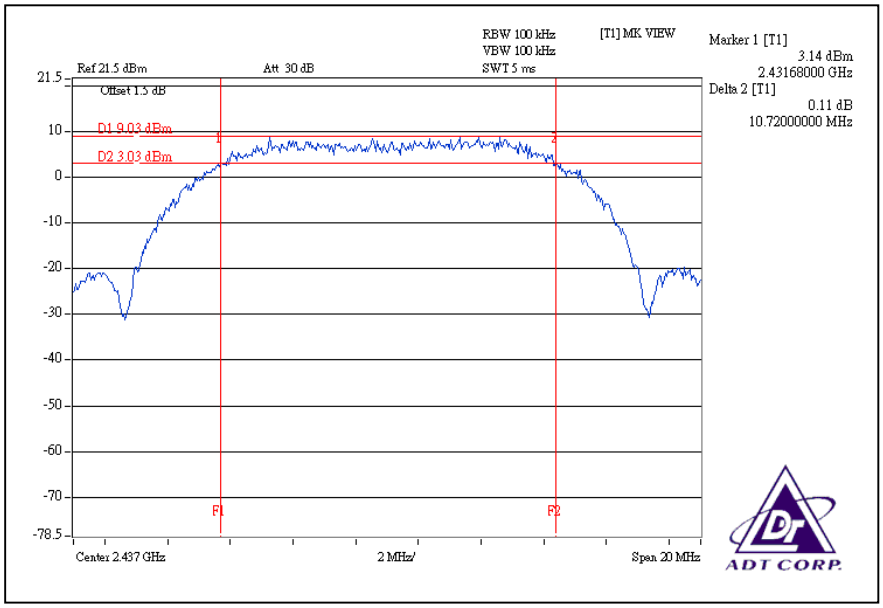
MODULATION TYPE	CCK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.76	0.5	PASS
6	2437	10.72	0.5	PASS
11	2462	10.68	0.5	PASS

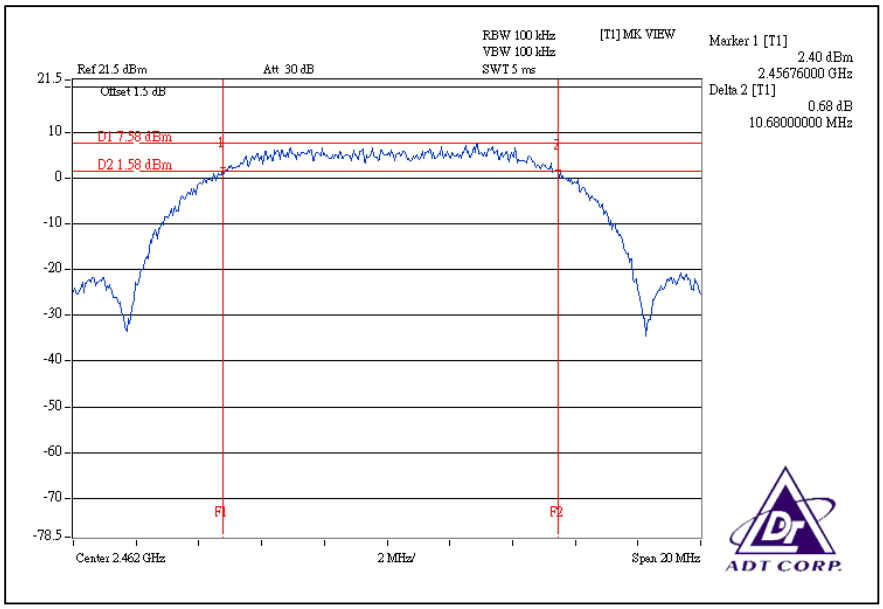
CH1



CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
3.14 dBm
2.43168000 GHz
Delta 2 [T1]
0.11 dB
10.72000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 9.03 dBm
D2 3.03 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

CH11

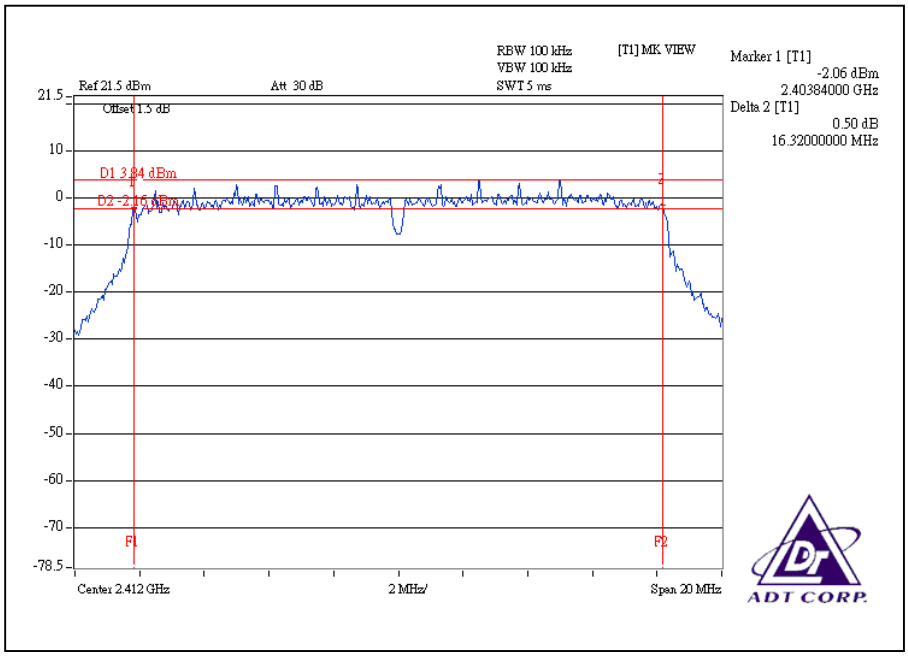

RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
2.40 dBm
2.45676000 GHz
Delta 2 [T1]
0.68 dB
10.68000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 7.58 dBm
D2 1.58 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

802.11g OFDM MODULATION:

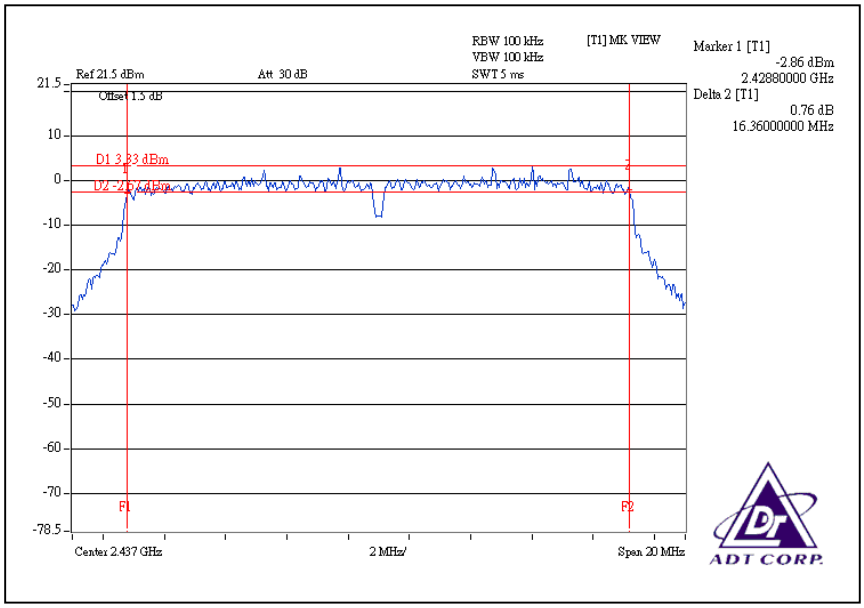
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 955hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.32	16.40	0.5	PASS
6	2437	16.36	16.36	0.5	PASS
11	2462	16.36	16.36	0.5	PASS

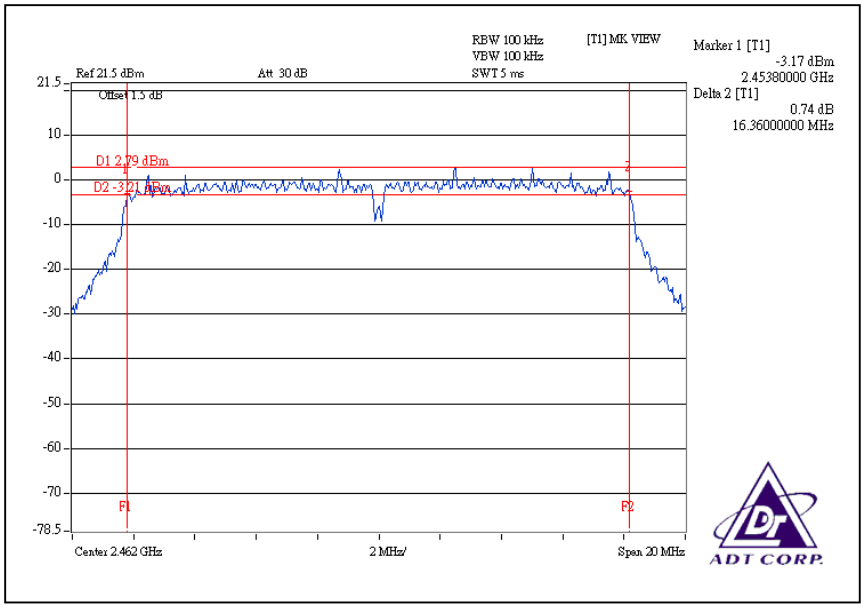
For Chain(0): CH1



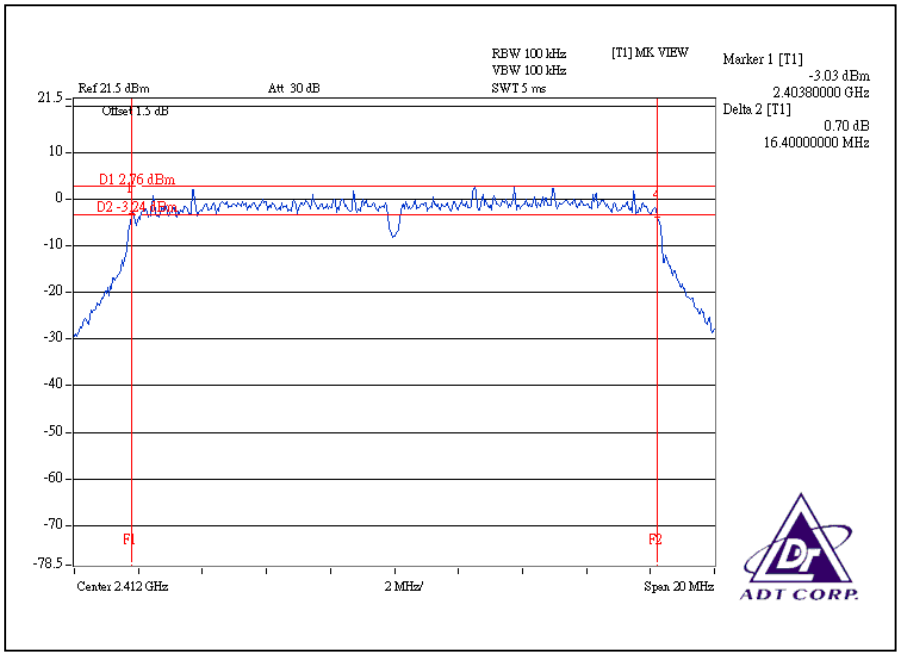
CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.86 dBm
2.42880000 GHz
Delta 2 [T1]
0.76 dB
16.36000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 3.23 dBm
D2 -2.67 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

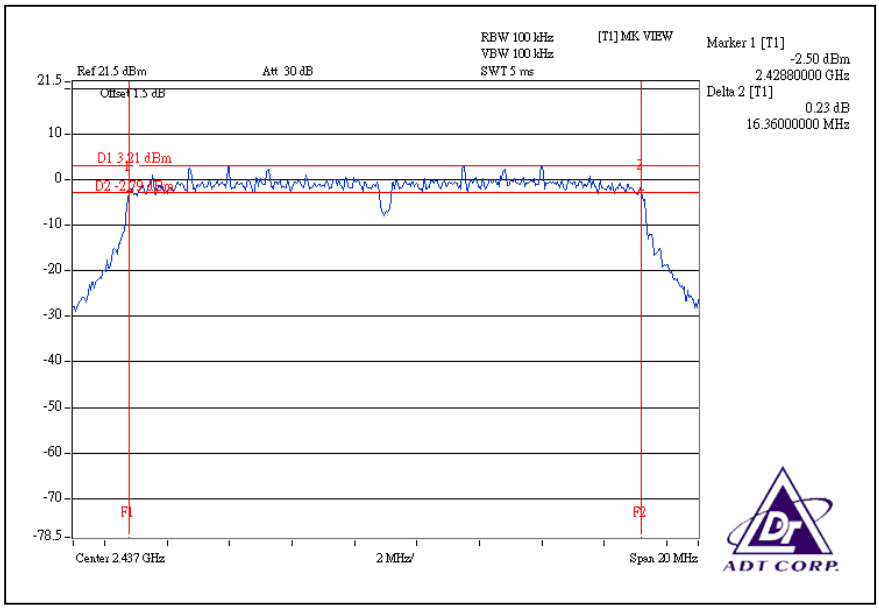
CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-3.17 dBm
2.45380000 GHz
Delta 2 [T1]
0.74 dB
16.36000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 2.79 dBm
D2 -3.21 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

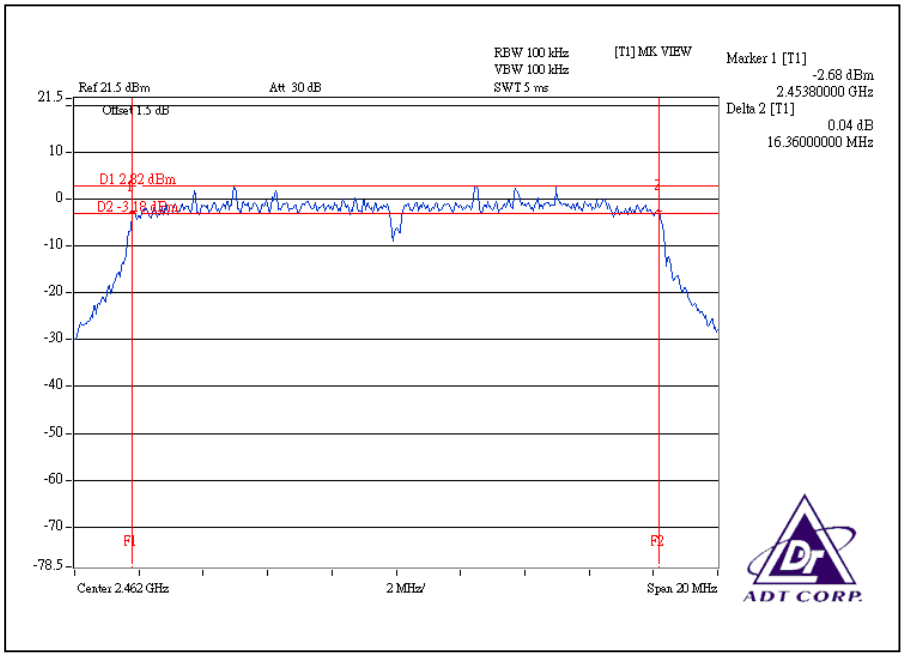
For CHAIN(1): CH1



CH6



CH11

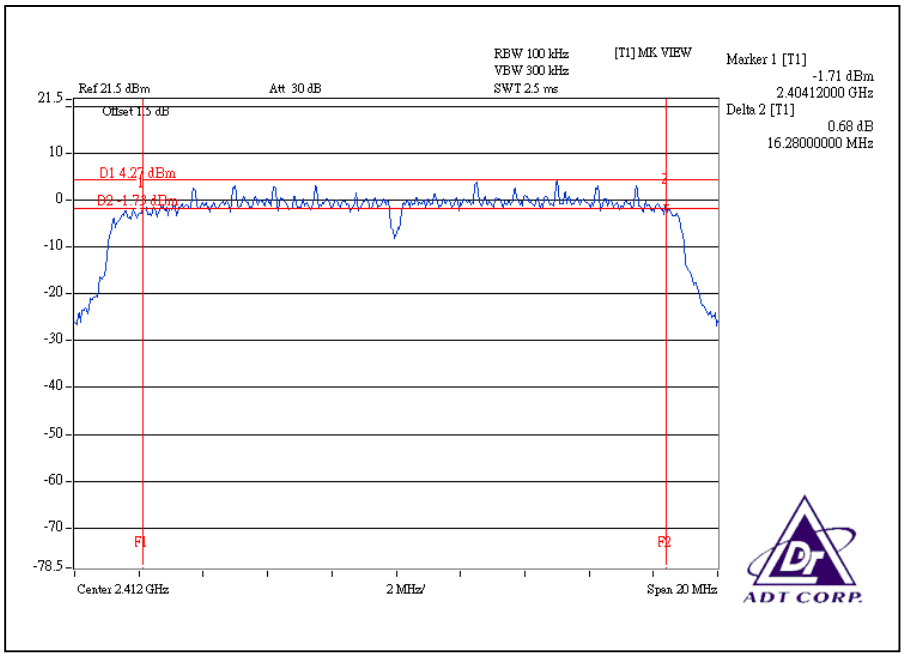

RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.68 dBm
2.45380000 GHz
Delta 2 [T1]
0.04 dB
16.36000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
D1 2.82 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

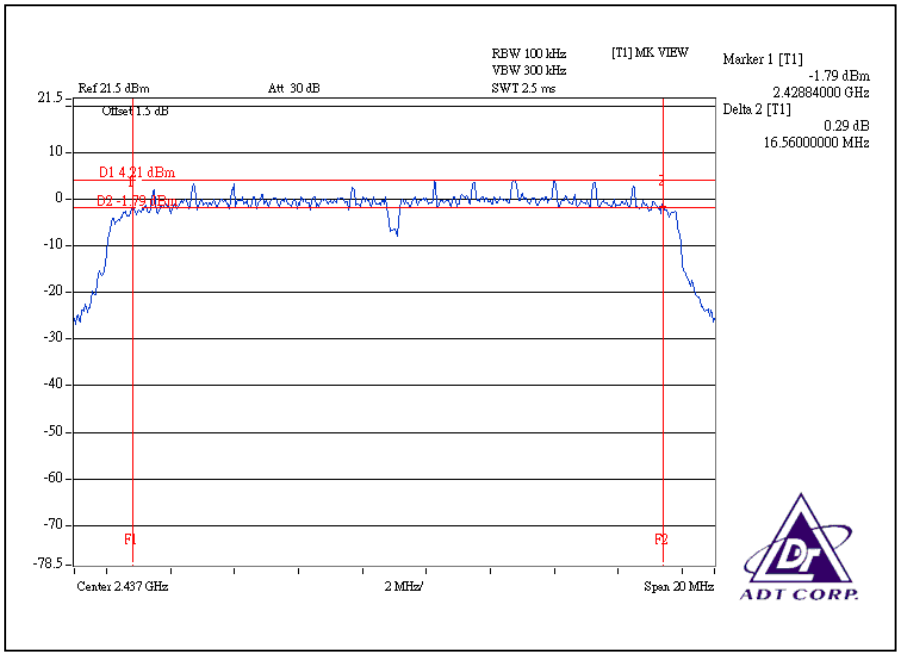
MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	16.28	16.32	0.5	PASS
6	2437	16.56	16.32	0.5	PASS
11	2462	16.64	16.52	0.5	PASS

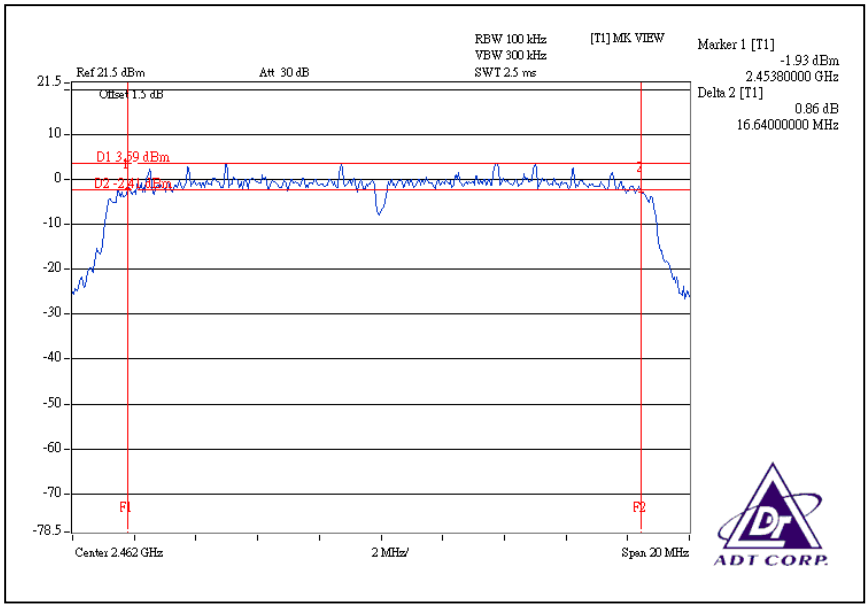
For Chain(0): CH1



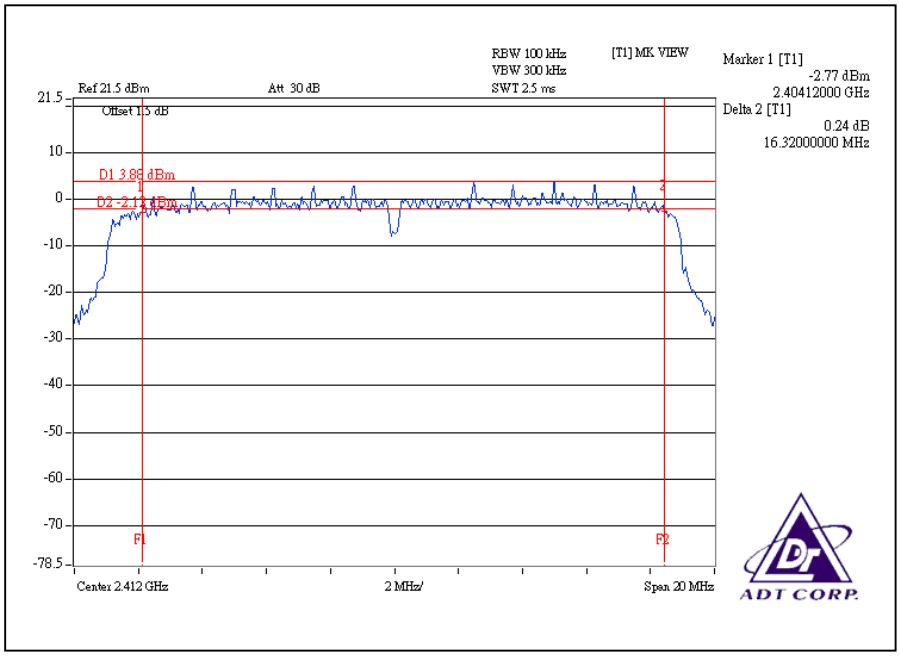
CH6


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-1.79 dBm
2.42884000 GHz
Delta 2 [T1]
0.29 dB
16.56000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 4.21 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

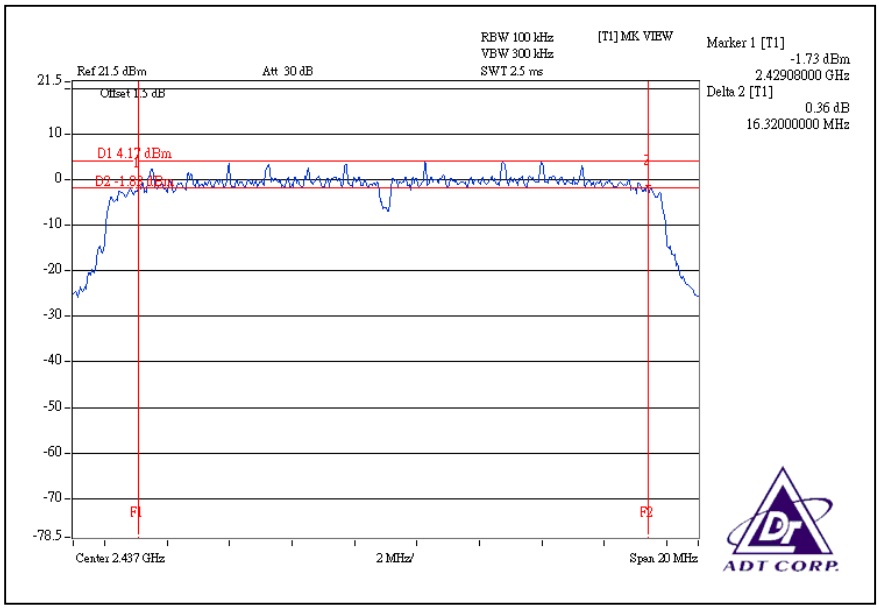
CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-1.93 dBm
2.45380000 GHz
Delta 2 [T1]
0.86 dB
16.64000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 3.59 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

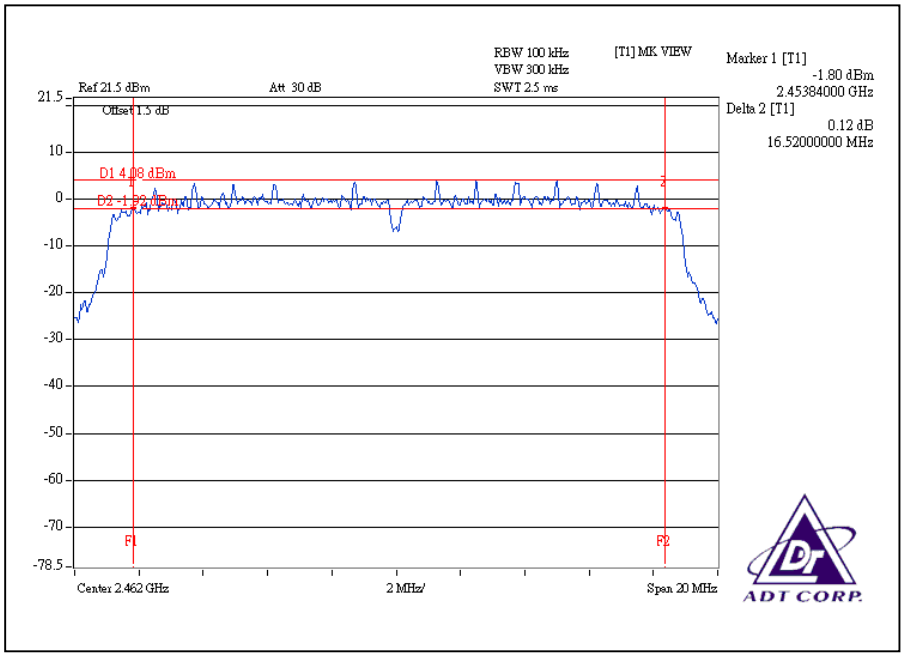
For CHAIN(1): CH1



CH6



CH11

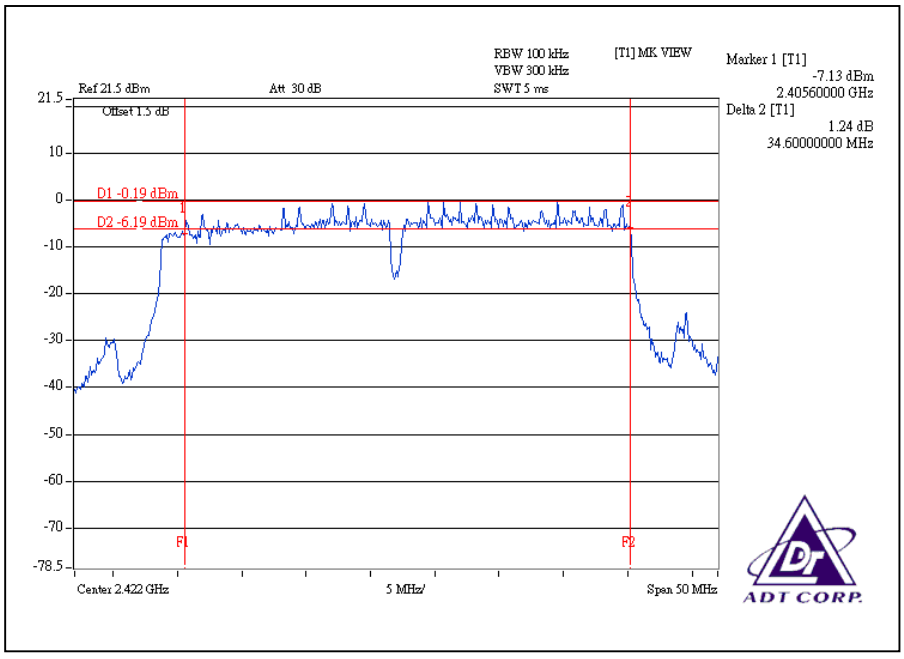

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-1.80 dBm
2.45384000 GHz
Delta 2 [T1]
0.12 dB
16.52000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
D1 4.08 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

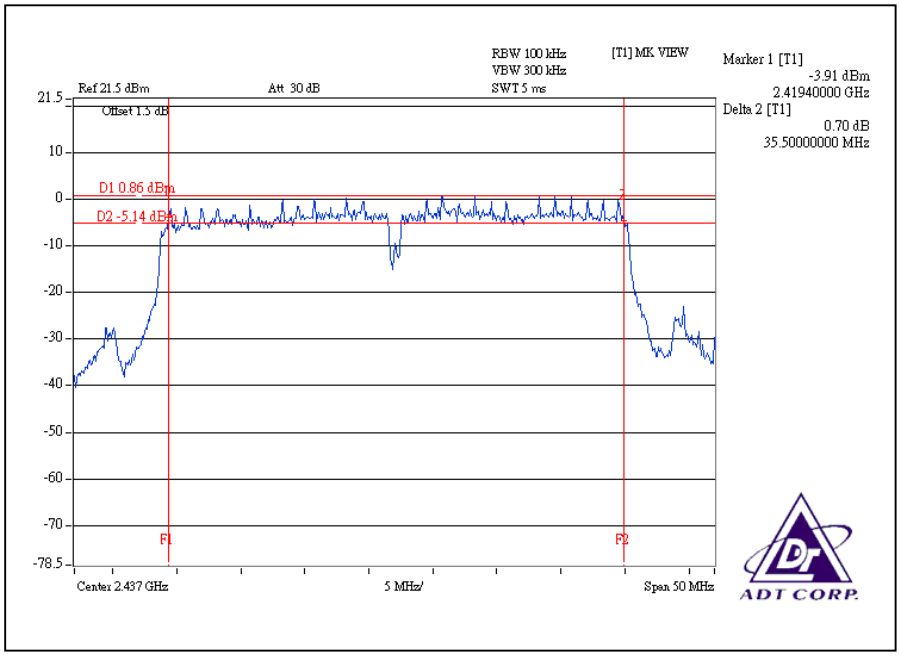
MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2422	34.6	35.8	0.5	PASS
4	2437	35.5	35.6	0.5	PASS
7	2452	35.6	35.5	0.5	PASS

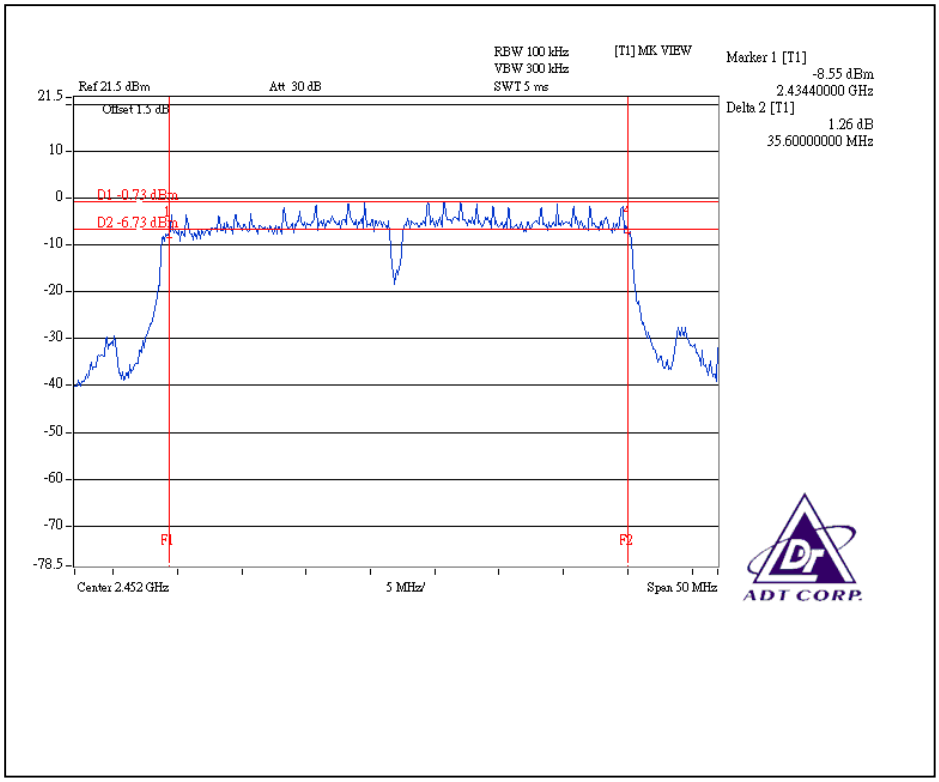
For Chain (0): CH1



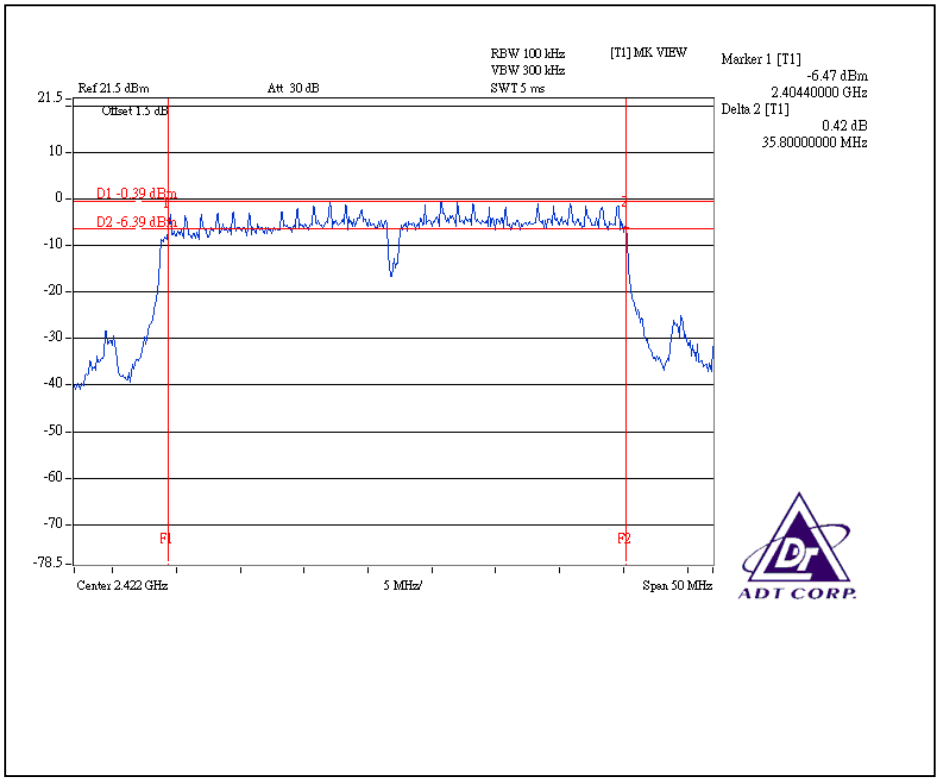
CH4


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-3.91 dBm
2.41940000 GHz
Delta 2 [T1]
0.70 dB
35.50000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 0.86 dBm
D2 -5.14 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.437 GHz
5 MHz/
Span 50 MHz
ADT CORP.

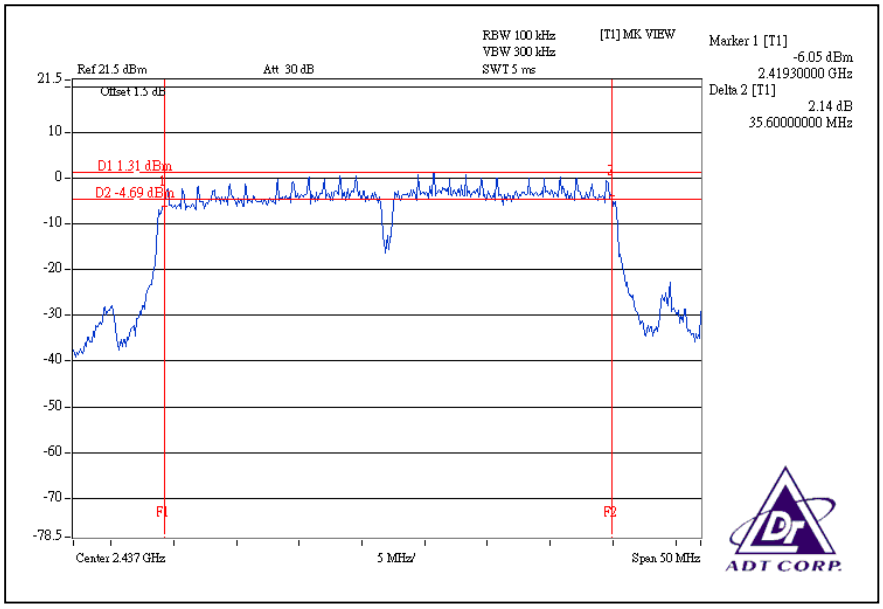
CH7


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-8.55 dBm
2.43440000 GHz
Delta 2 [T1]
1.26 dB
35.60000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 -0.73 dBm
D2 -6.73 dBm
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
F1
F2
Center 2.452 GHz
5 MHz/
Span 50 MHz
ADT CORP.

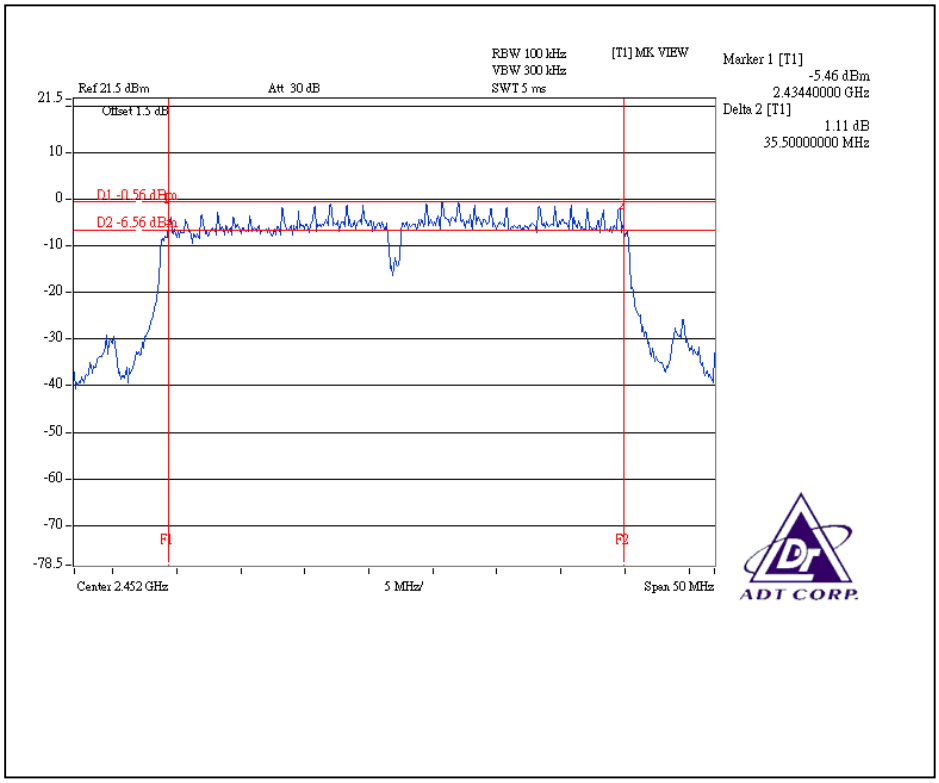
For Chain (1): CH1



CH4



CH7


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-5.46 dBm
2.43440000 GHz
Delta 2 [T1]
1.11 dB
35.50000000 MHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
D1 -1.56 dBm
D2 -6.56 dBm
F1
F2
Center 2.452 GHz
5 MHz/
Span 50 MHz
ADT CORP.

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	Aug. 12, 2008
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	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	89.125	19.50	30	PASS
6	2437	112.202	20.50	30	PASS
11	2462	75.858	18.80	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	89.125	85.114	19.50	19.30	174.239	22.41	30	PASS
6	2437	89.125	89.125	19.50	19.50	178.250	22.51	30	PASS
11	2462	83.176	83.176	19.20	19.20	166.352	22.21	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	89.125	89.125	19.50	19.50	178.250	22.51	30	PASS
6	2437	93.325	93.325	19.70	19.70	186.650	22.71	30	PASS
11	2462	87.096	89.125	19.40	19.50	176.221	22.46	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	67.608	67.608	18.30	18.30	135.216	21.31	30	PASS
4	2437	91.201	91.201	19.60	19.60	182.402	22.61	30	PASS
7	2452	63.096	63.096	18.00	18.00	126.192	21.01	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	Aug. 12, 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.

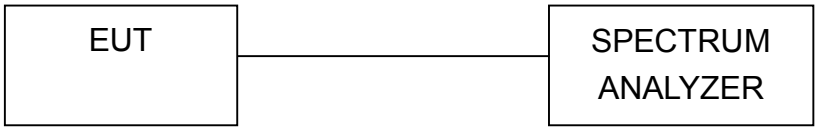
4.5.3 TEST PROCEDURE

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

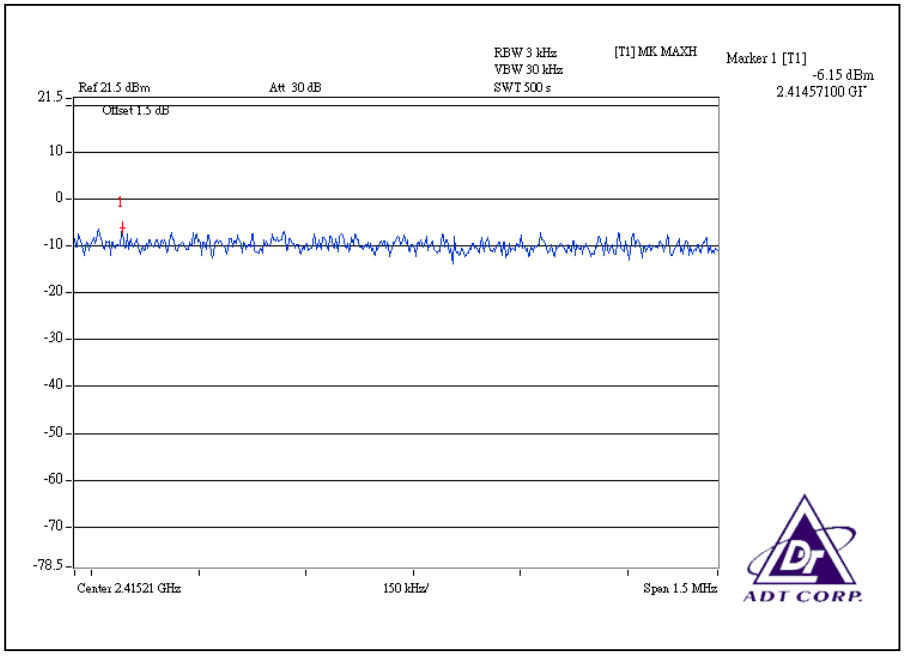
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

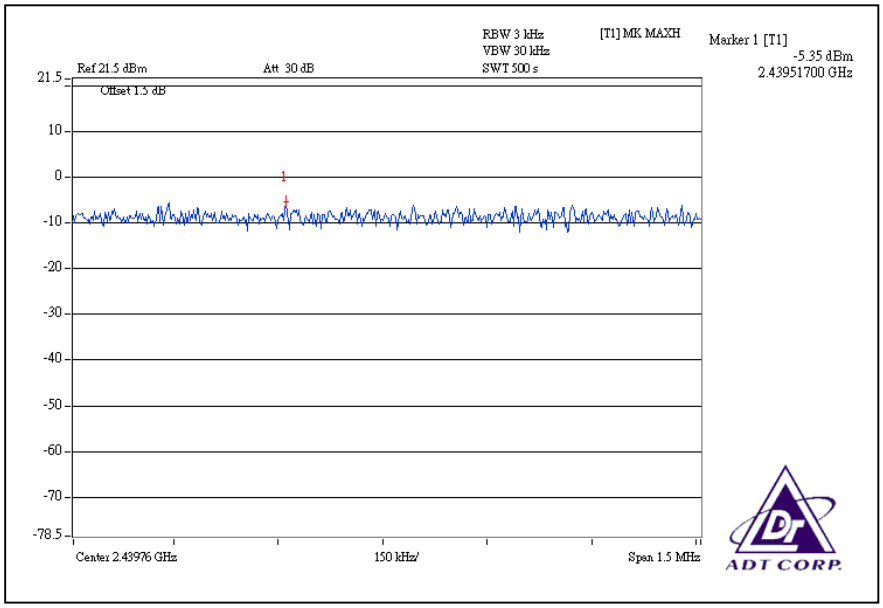
MODULATION TYPE	CCK	TRANSFER RATE	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-6.15	8	PASS
6	2437	-5.35	8	PASS
11	2462	-6.23	8	PASS

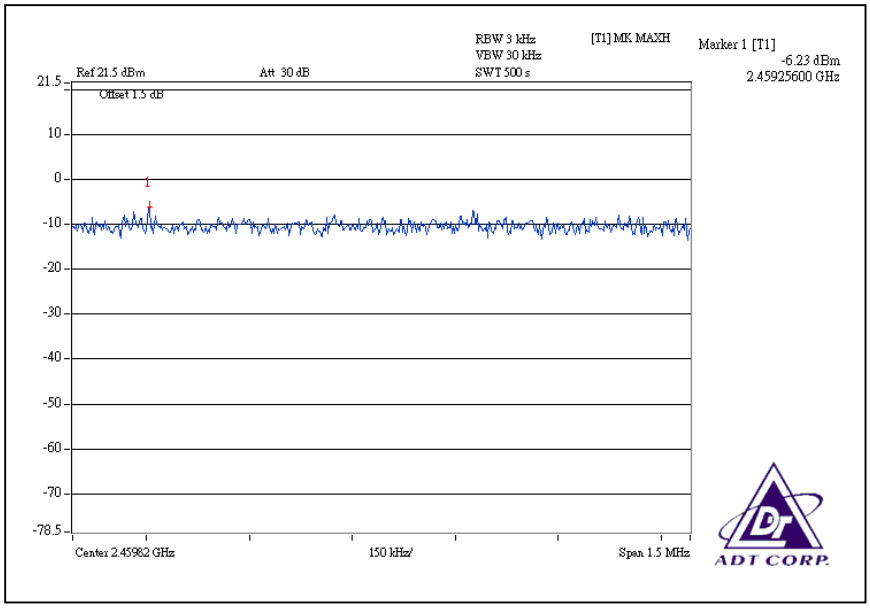
CH1



CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-5.35 dBm
2.43951700 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.43976 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

CH11

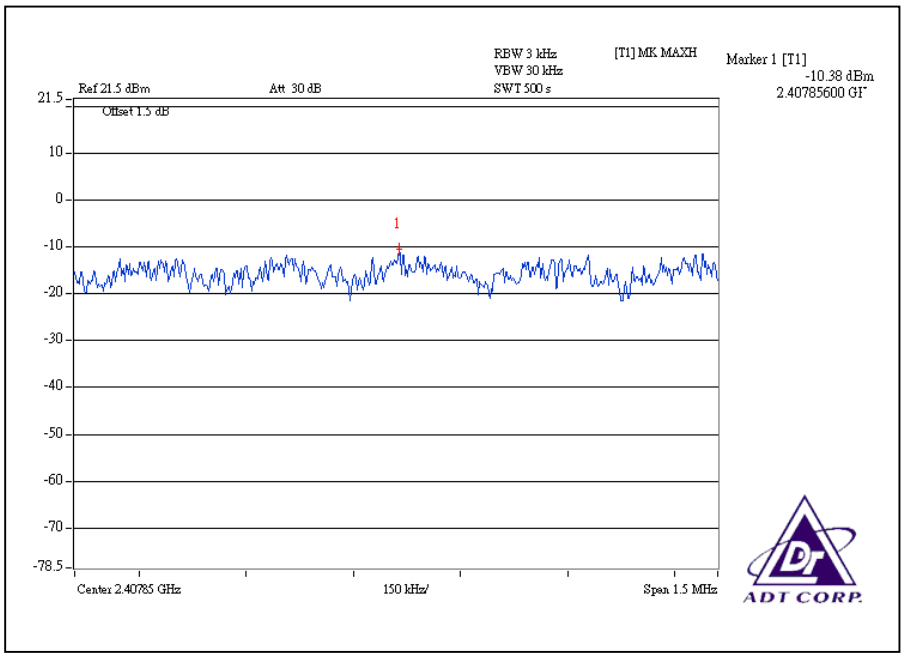

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-6.23 dBm
2.45925600 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.45982 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

802.11g OFDM MODULATION:

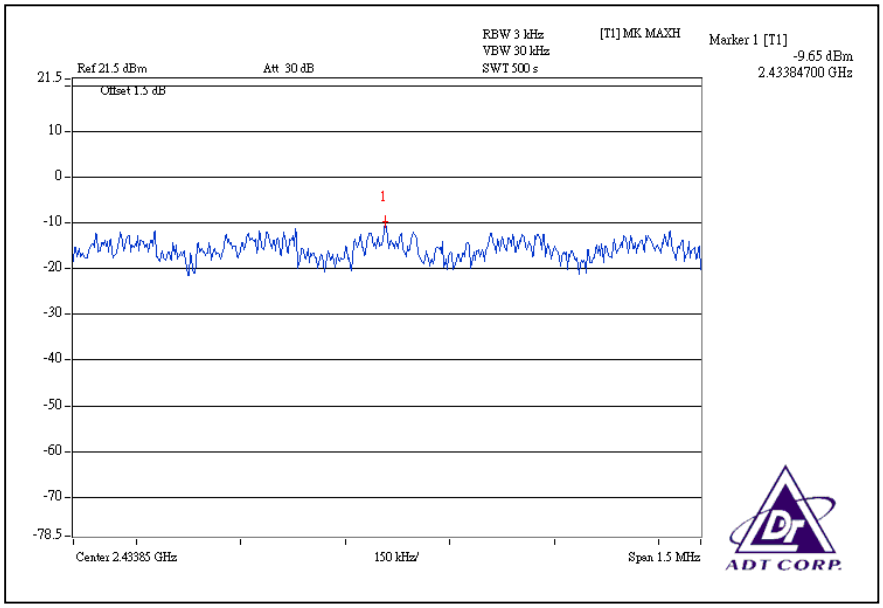
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	0.092	0.080	-10.38	-10.96	0.172	-7.64	8	PASS
6	2437	0.108	0.085	-9.65	-10.72	0.193	-7.14	8	PASS
11	2462	0.098	0.098	-10.10	-10.07	0.196	-7.08	8	PASS

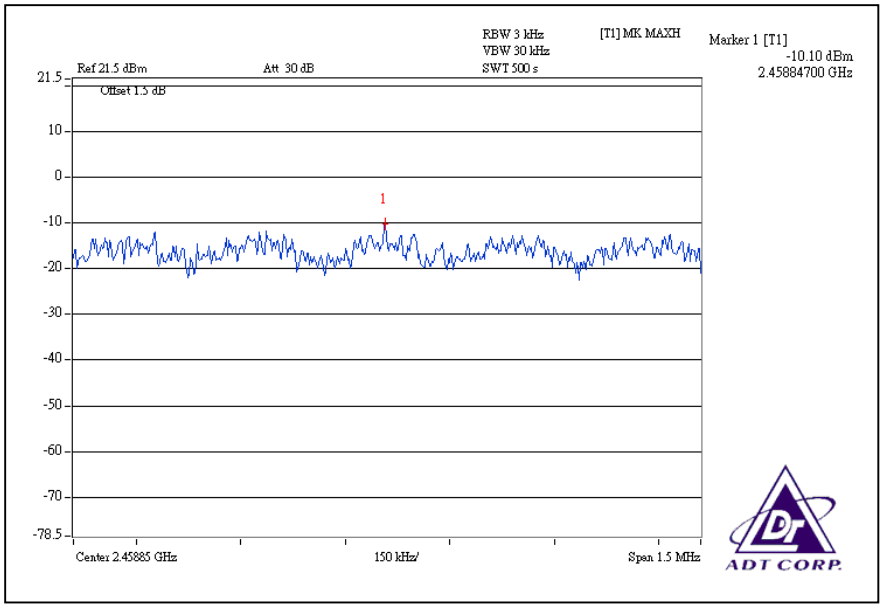
For Chain(0): CH1



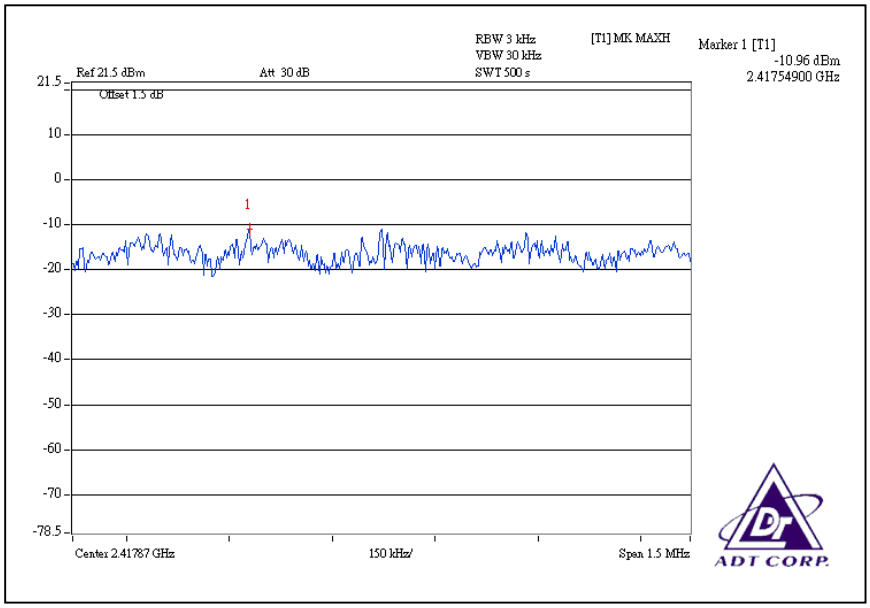
CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-9.65 dBm
2.43384700 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.43385 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

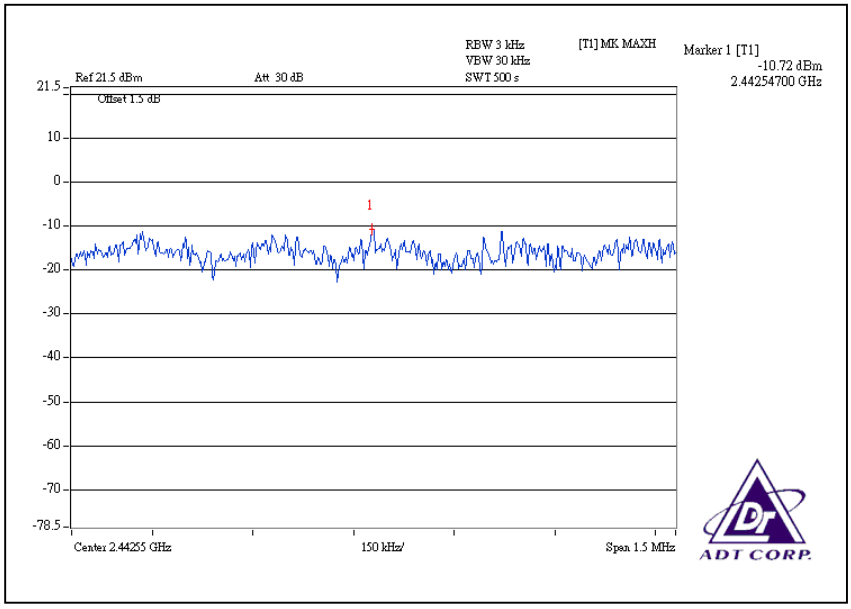
CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-10.10 dBm
2.45884700 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.45885 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

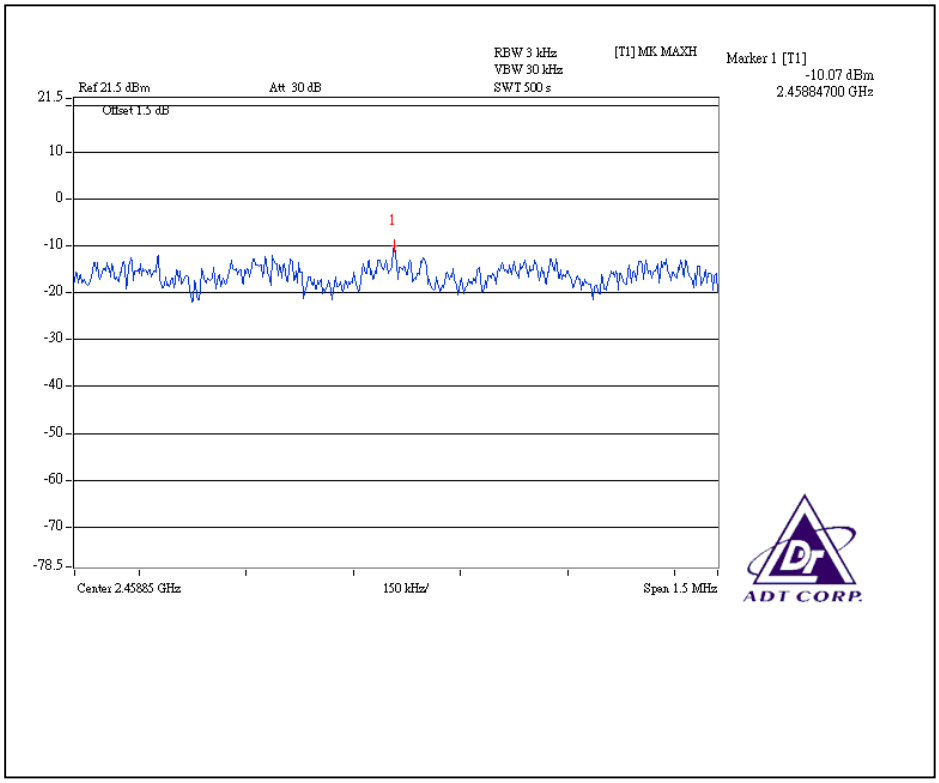
For Chain (1): CH1



CH6



CH11

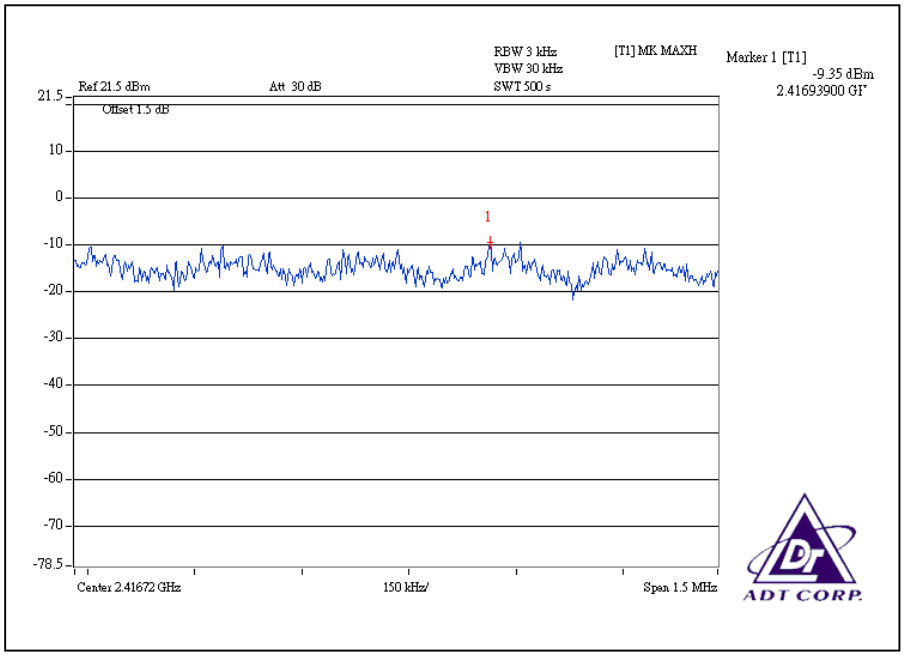

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-10.07 dBm
2.45884700 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
1
Center 2.45885 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

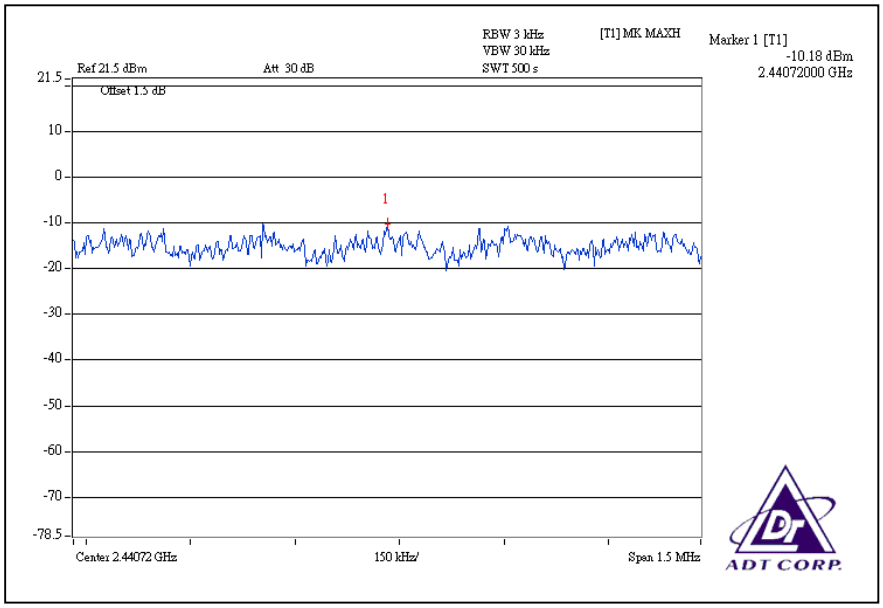
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23 deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	0.116	0.099	-9.35	-10.04	0.215	-6.68	8	PASS
6	2437	0.096	0.121	-10.18	-9.16	0.217	-6.64	8	PASS
11	2462	0.119	0.072	-9.25	-11.45	0.191	-7.19	8	PASS

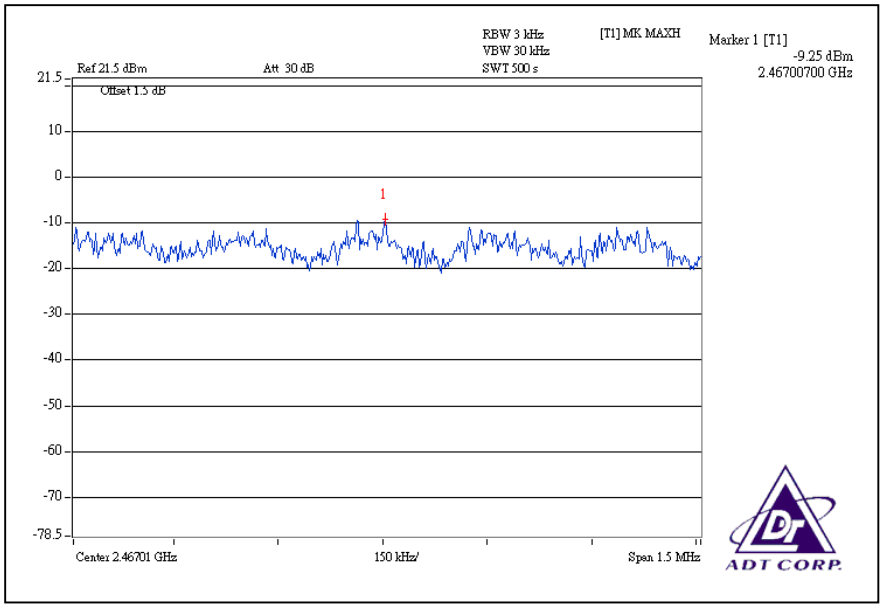
For Chain(0): CH1



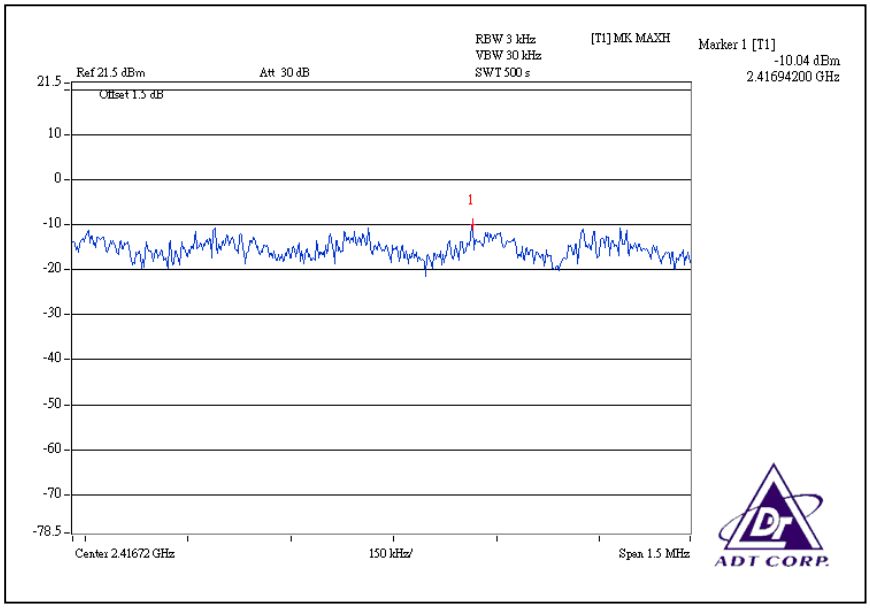
CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-10.18 dBm
2.44072000 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.44072 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

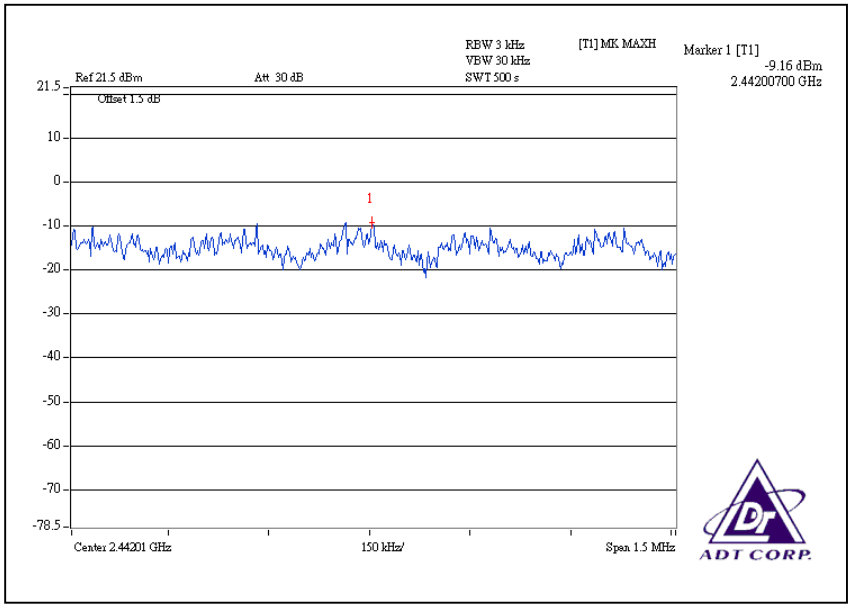
CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-9.25 dBm
2.46700700 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.46701 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

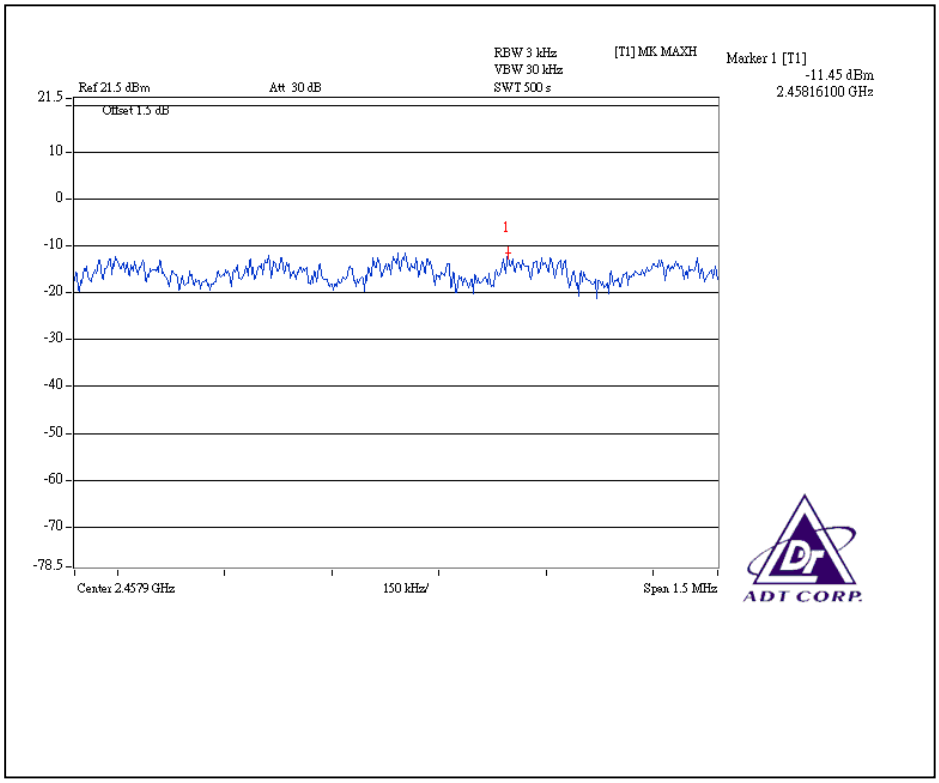
For Chain (1): CH1



CH6



CH11

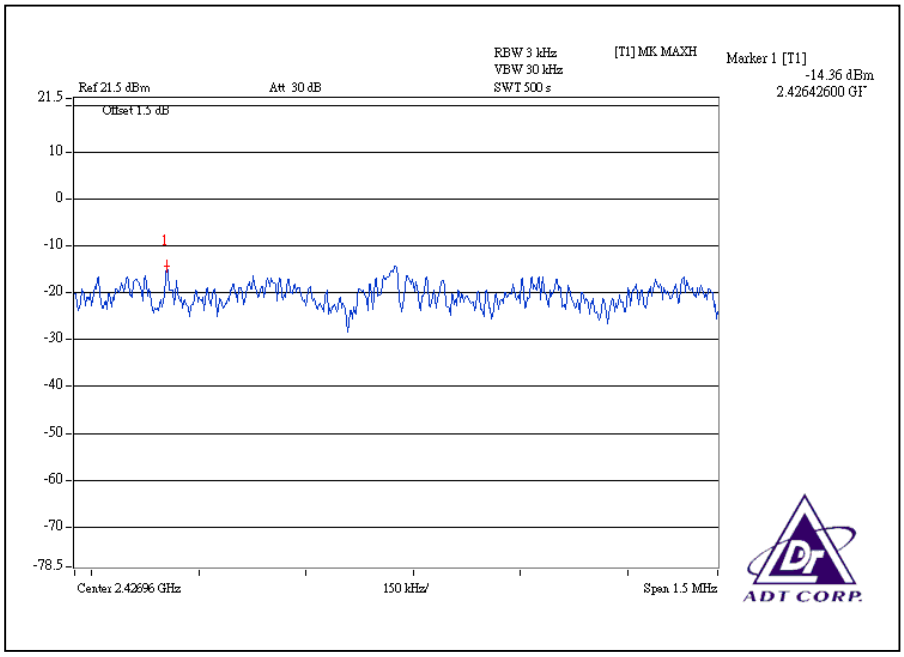

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-11.45 dBm
2.45816100 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
1
Center 2.4579 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

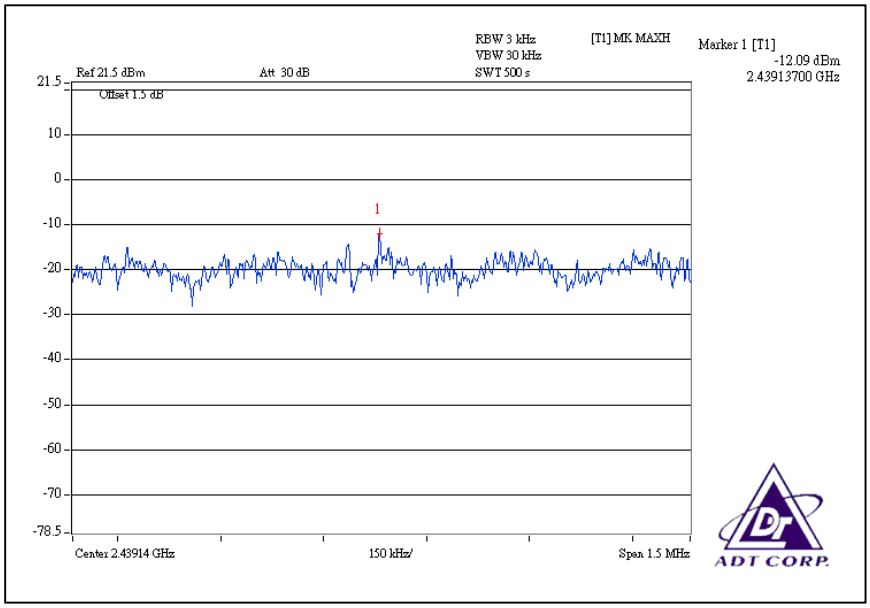
MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 955hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	0.037	0.043	-14.36	-13.64	0.080	-10.97	8	PASS
4	2437	0.062	0.061	-12.09	-12.14	0.123	-9.10	8	PASS
7	2452	0.024	0.024	-16.20	-16.23	0.048	-13.19	8	PASS

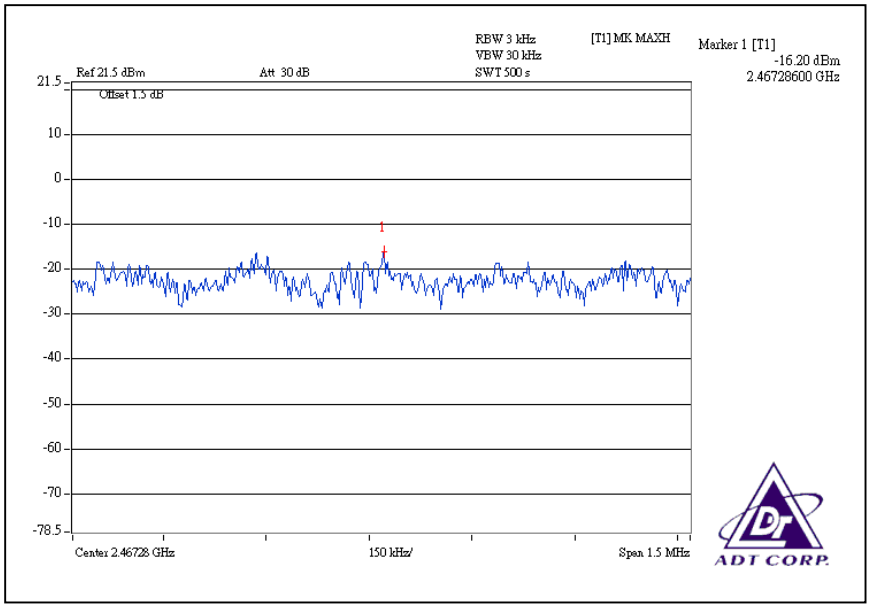
For Chain (0): CH1



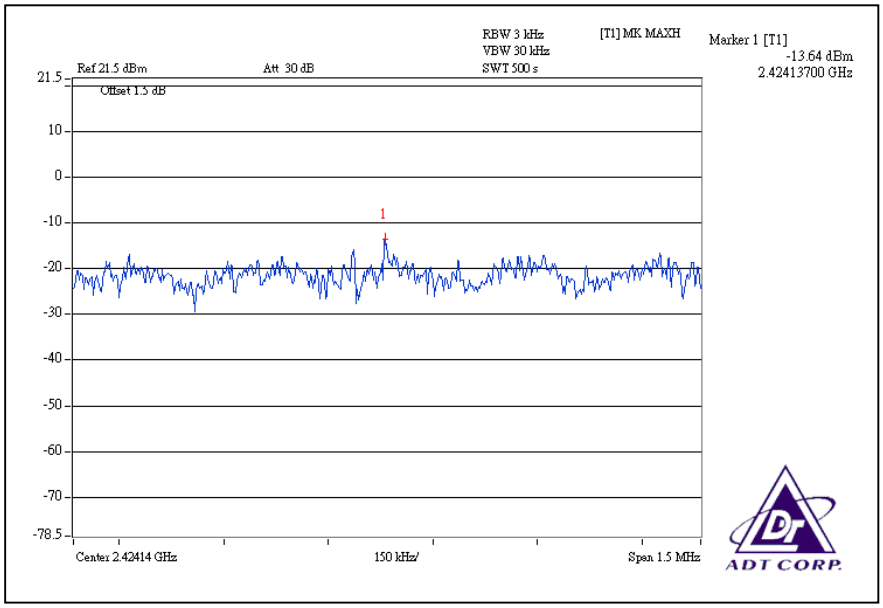
CH4


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-12.09 dBm
2.43913700 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.43914 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

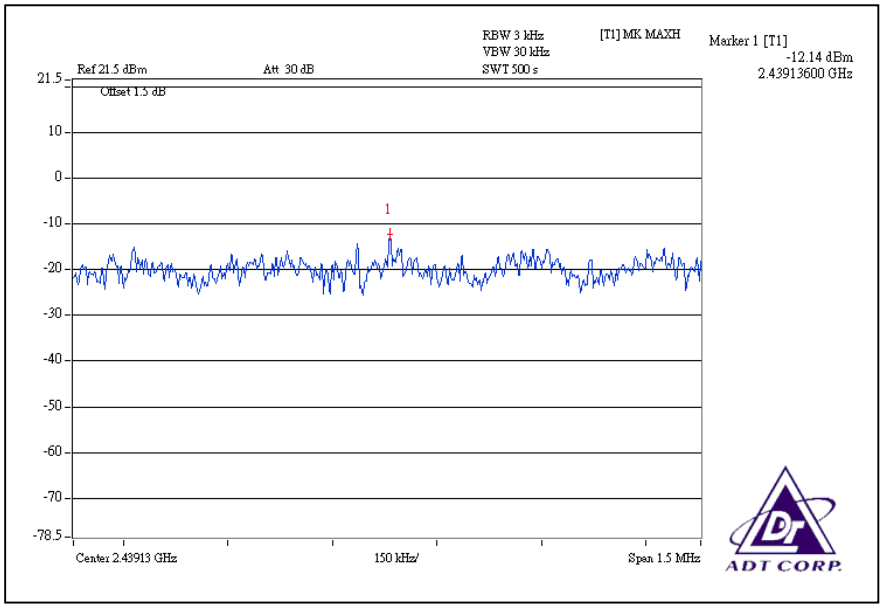
CH7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.20 dBm
2.46728600 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.46728 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

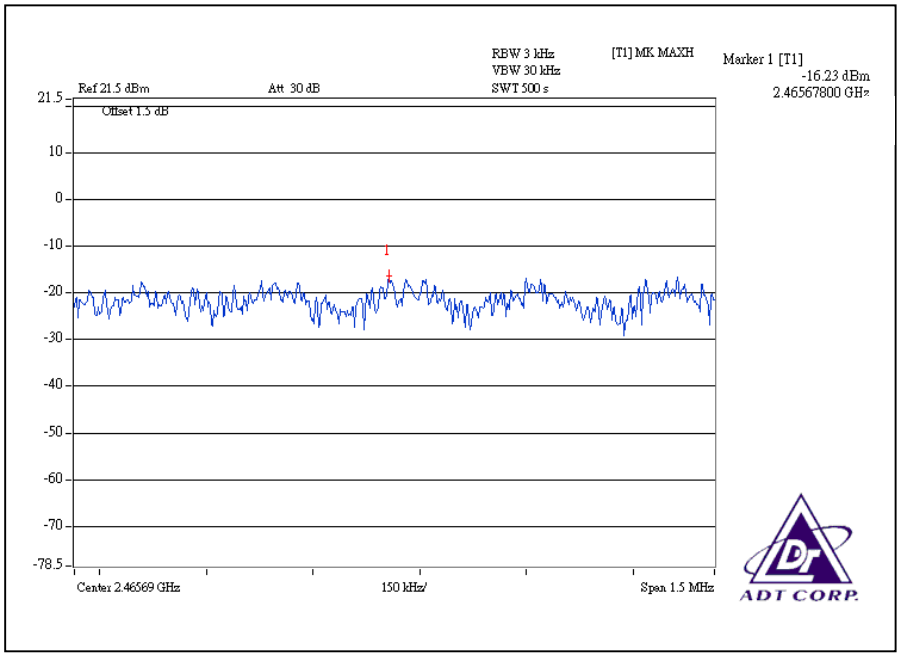
For Chain (1): CH1



CH4



CH7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.23 dBm
2.46567800 GHz
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Center 2.46569 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

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	Aug. 12, 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.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

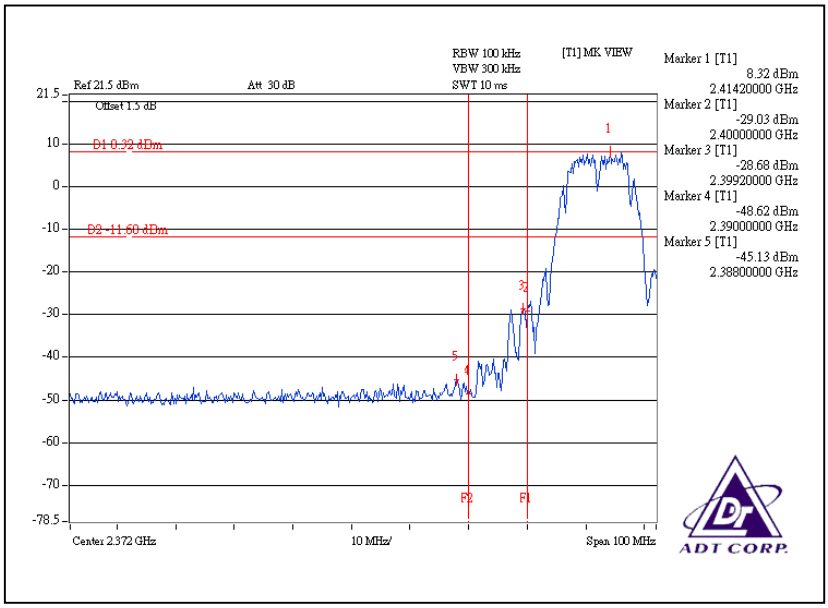
Same as Item 4.3.6

4.6.6 TEST RESULTS

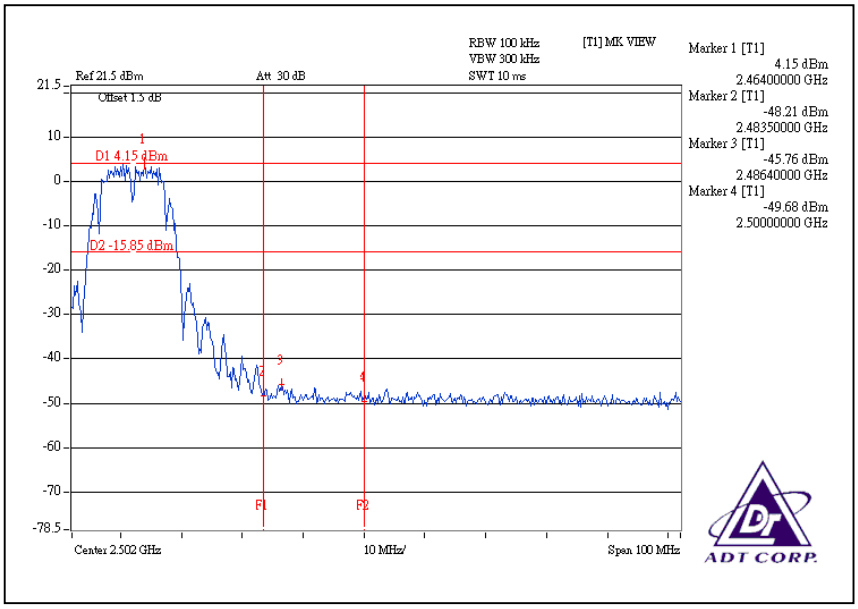
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

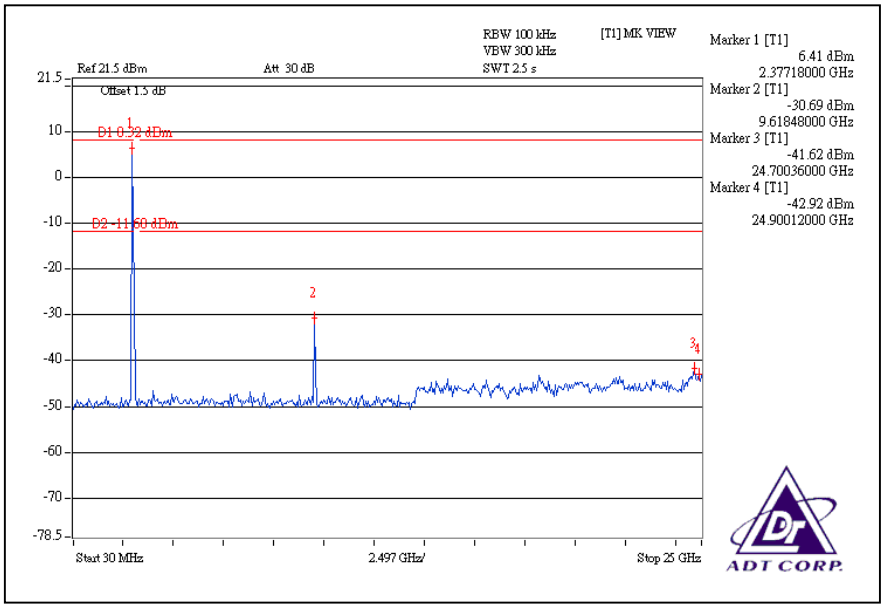
CH1



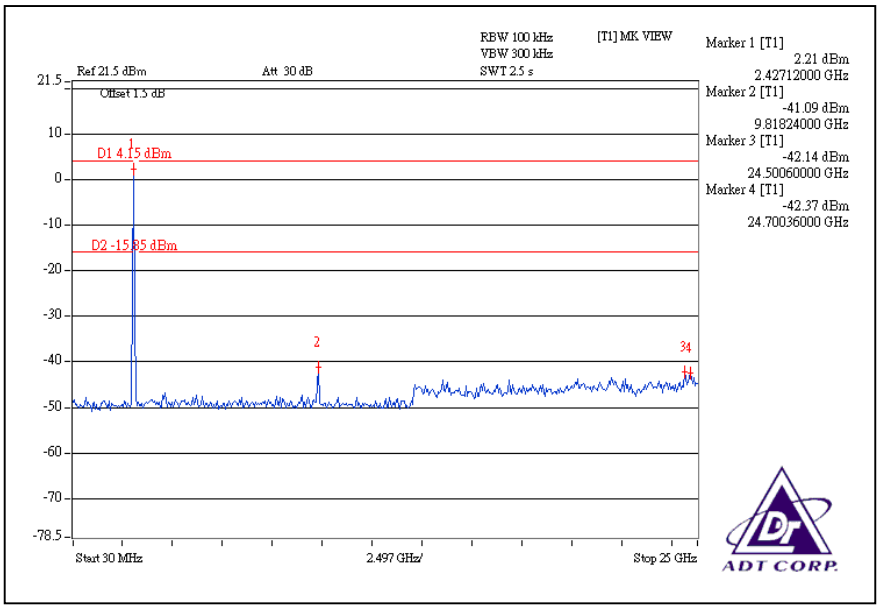
CH11



CH1

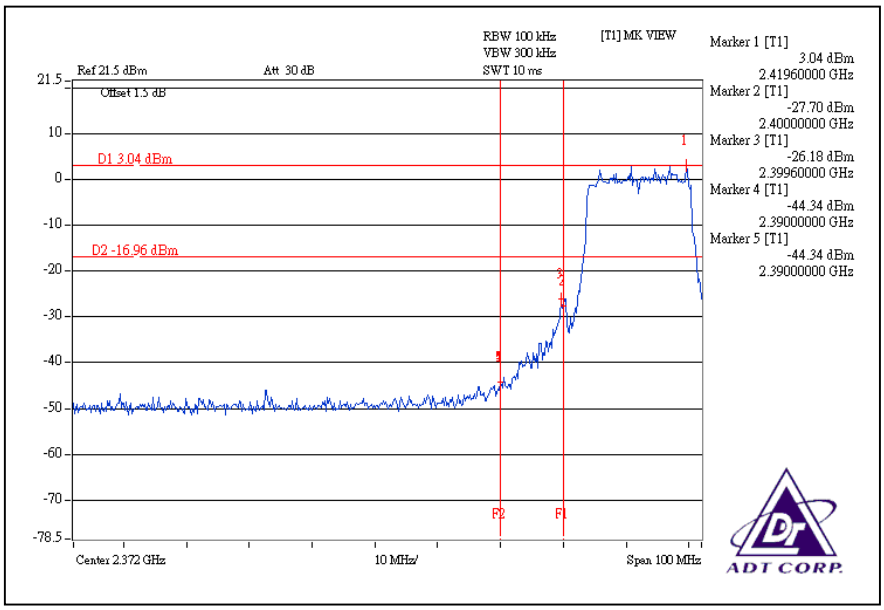

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 0.92 dBm
D2 -11.60 dBm
Marker 1 [T1]
6.41 dBm
2.37718000 GHz
Marker 2 [T1]
-30.69 dBm
9.61848000 GHz
Marker 3 [T1]
-41.62 dBm
24.70036000 GHz
Marker 4 [T1]
-42.92 dBm
24.90012000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

CH11

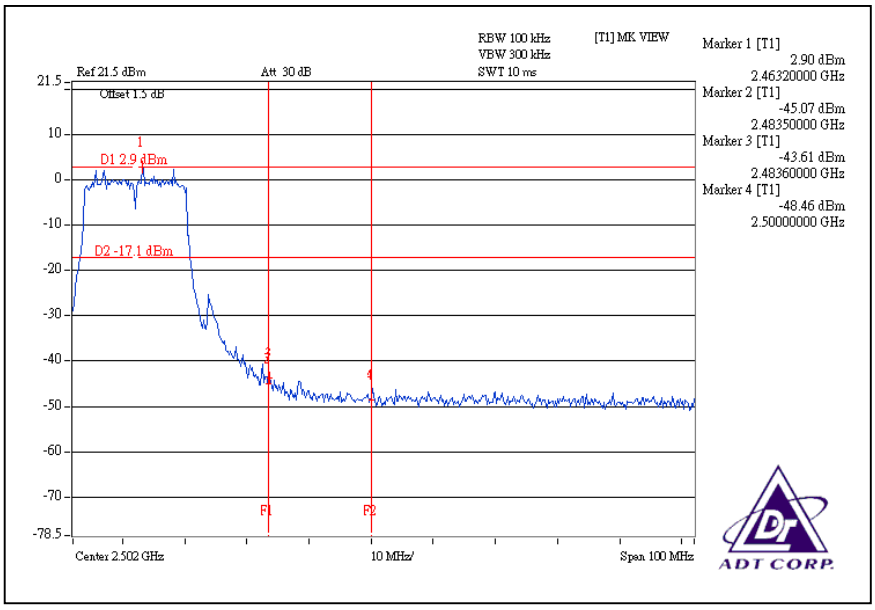

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 4.15 dBm
D2 -15.85 dBm
Marker 1 [T1]
2.21 dBm
2.42712000 GHz
Marker 2 [T1]
-41.09 dBm
9.81824000 GHz
Marker 3 [T1]
-42.14 dBm
24.50060000 GHz
Marker 4 [T1]
-42.37 dBm
24.70036000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

802.11g OFDM MODULATION:

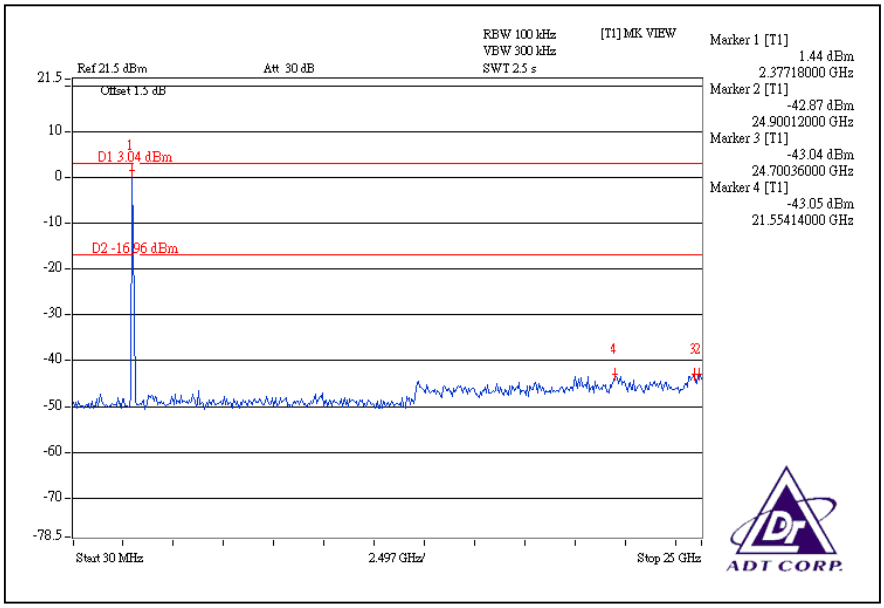
For Chain (0):CH1



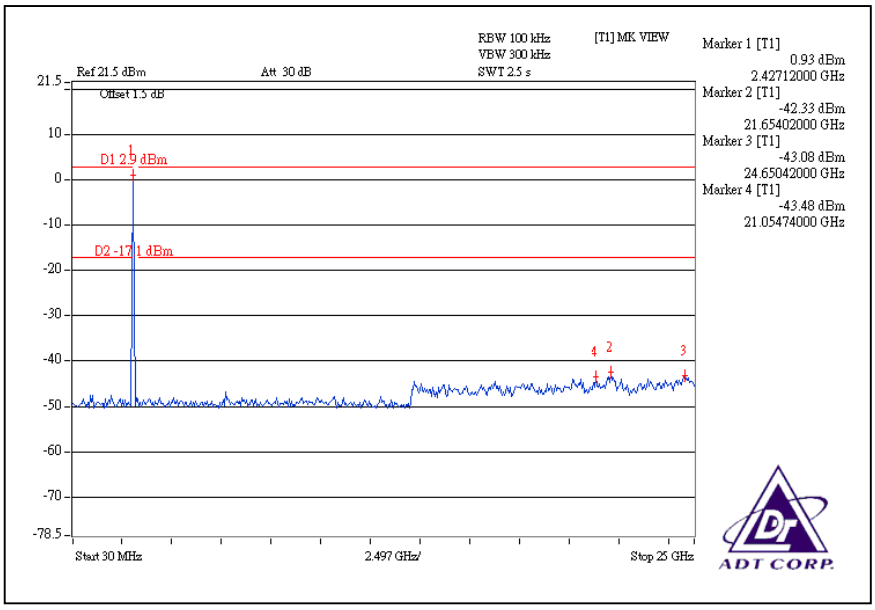
CH11



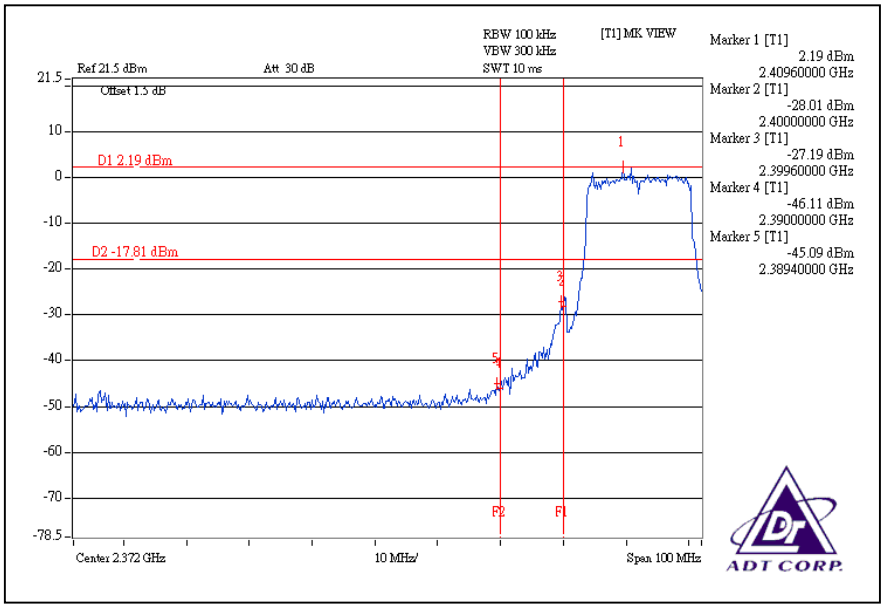
CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 3.04 dBm
D2 -16.96 dBm
Marker 1 [T1]
1.44 dBm
2.37718000 GHz
Marker 2 [T1]
-42.87 dBm
24.90012000 GHz
Marker 3 [T1]
-43.04 dBm
24.70036000 GHz
Marker 4 [T1]
-43.05 dBm
21.55414000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

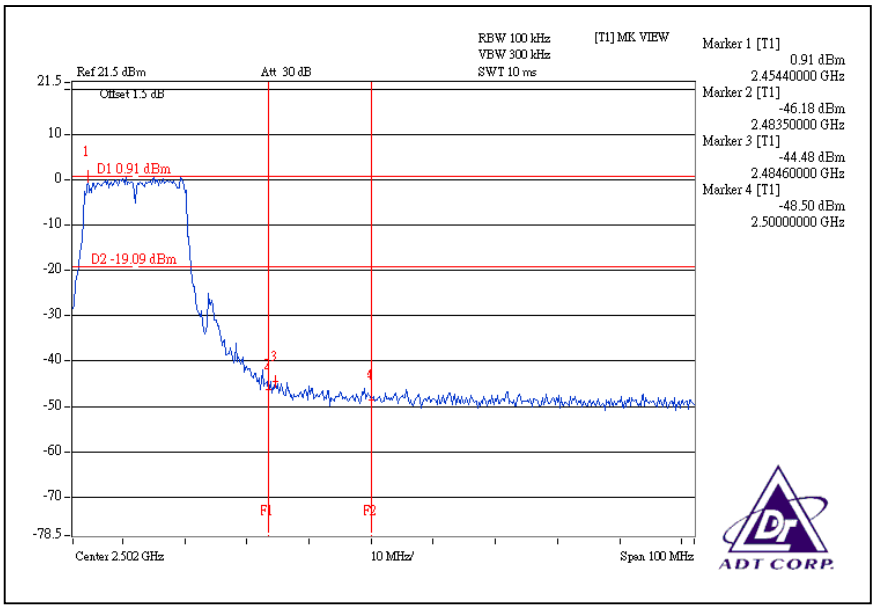
CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 2.5 dBm
D2 -17.1 dBm
Marker 1 [T1]
0.93 dBm
2.42712000 GHz
Marker 2 [T1]
-42.33 dBm
21.65402000 GHz
Marker 3 [T1]
-43.08 dBm
24.65042000 GHz
Marker 4 [T1]
-43.48 dBm
21.05474000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

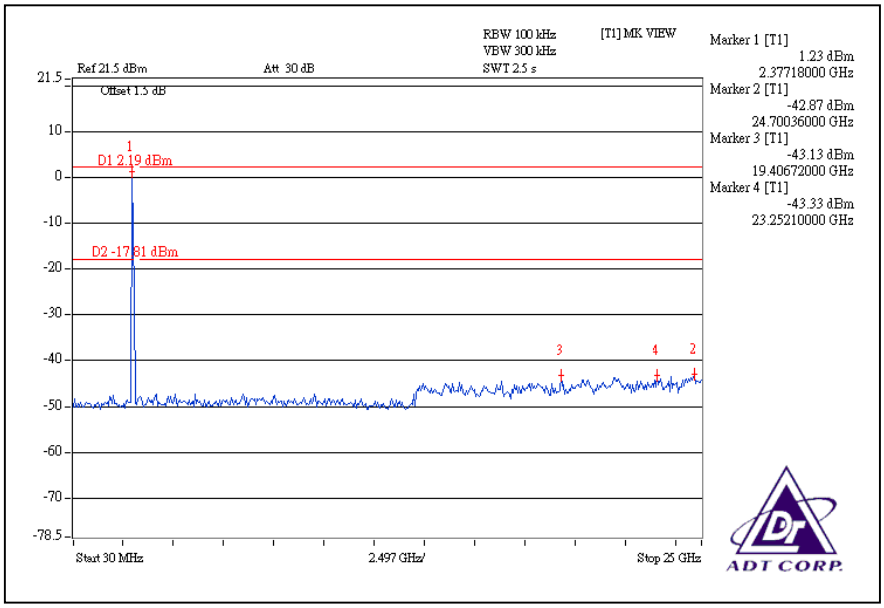
For Chain (1):CH1



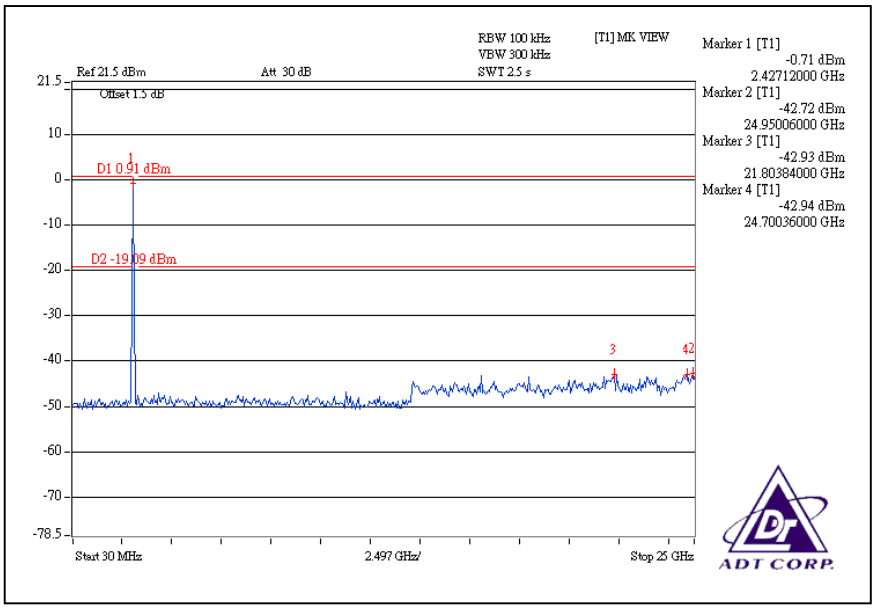
CH11



CH1

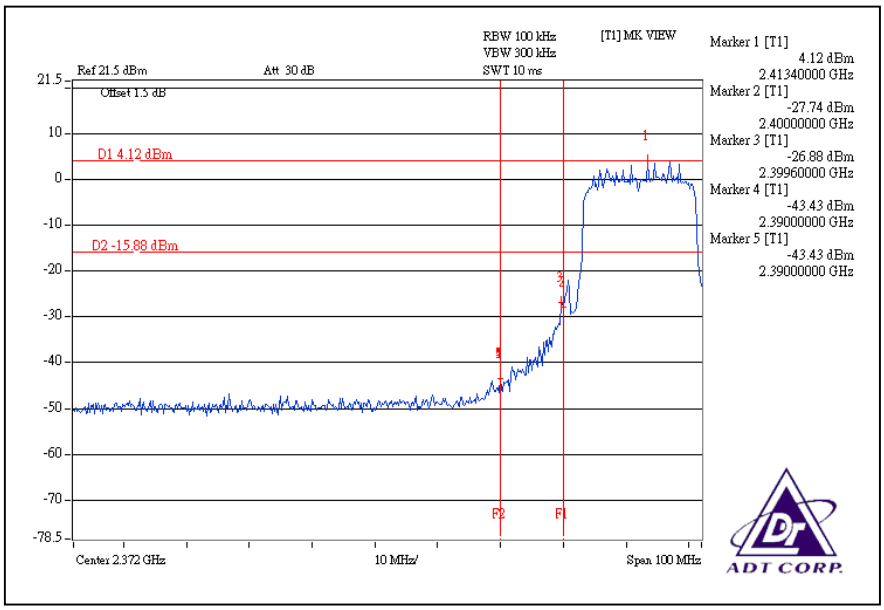

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 2.19 dBm
D2 -17.81 dBm
Marker 1 [T1]
1.23 dBm
2.37718000 GHz
Marker 2 [T1]
-42.87 dBm
24.70036000 GHz
Marker 3 [T1]
-43.13 dBm
19.40672000 GHz
Marker 4 [T1]
-43.33 dBm
23.25210000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

CH11

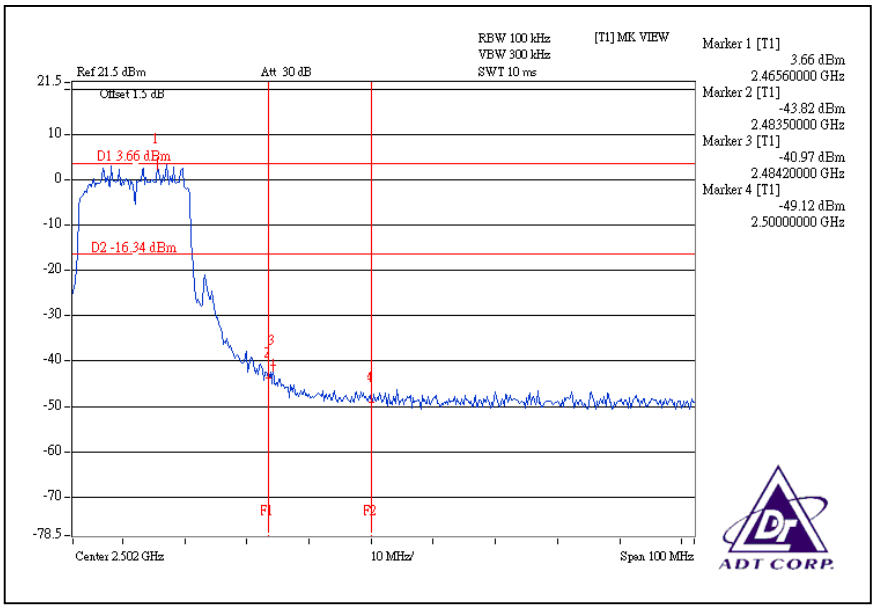

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 0.91 dBm
D2 -19.09 dBm
Marker 1 [T1]
-0.71 dBm
2.42712000 GHz
Marker 2 [T1]
-42.72 dBm
24.95006000 GHz
Marker 3 [T1]
-42.93 dBm
21.80384000 GHz
Marker 4 [T1]
-42.94 dBm
24.70036000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

DRAFT 802.11n (20MHz) OFDM MODULATION:

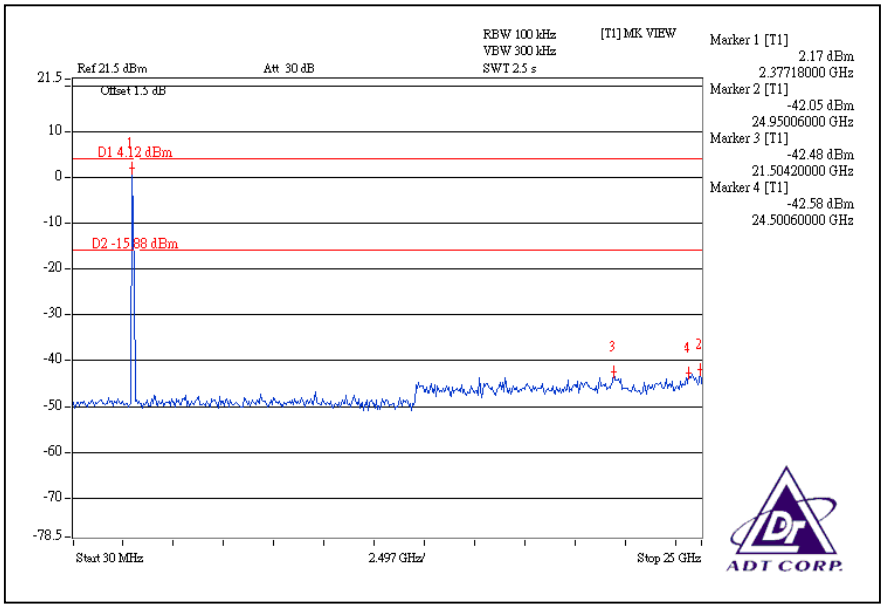
For Chain (0):CH1



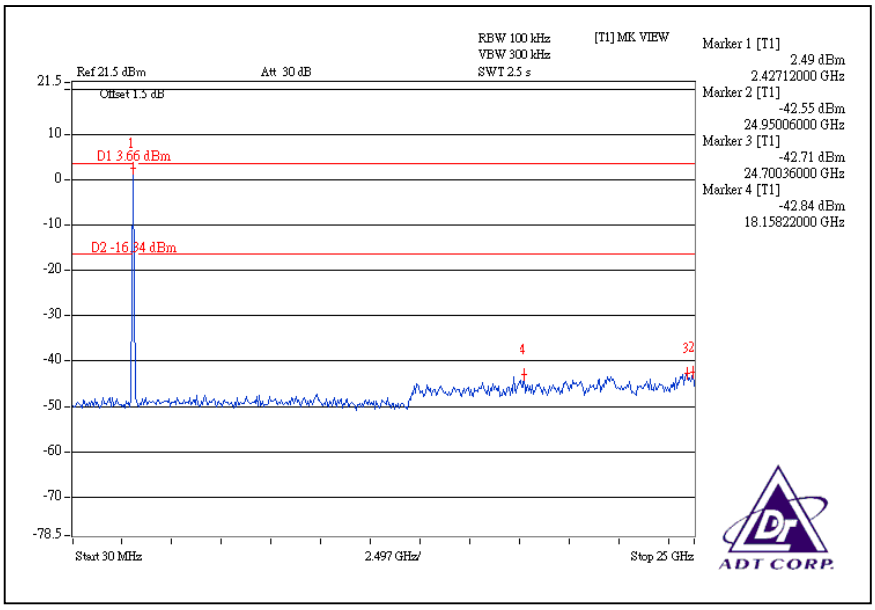
CH11



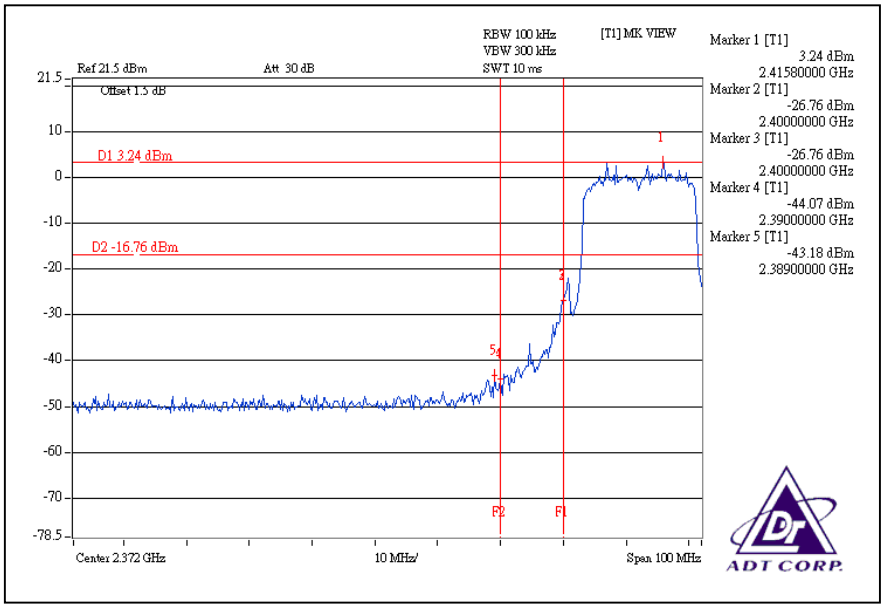
CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 4.12 dBm
D2 -15.88 dBm
Marker 1 [T1]
2.17 dBm
2.37718000 GHz
Marker 2 [T1]
-42.05 dBm
24.95006000 GHz
Marker 3 [T1]
-42.48 dBm
21.50420000 GHz
Marker 4 [T1]
-42.58 dBm
24.50060000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

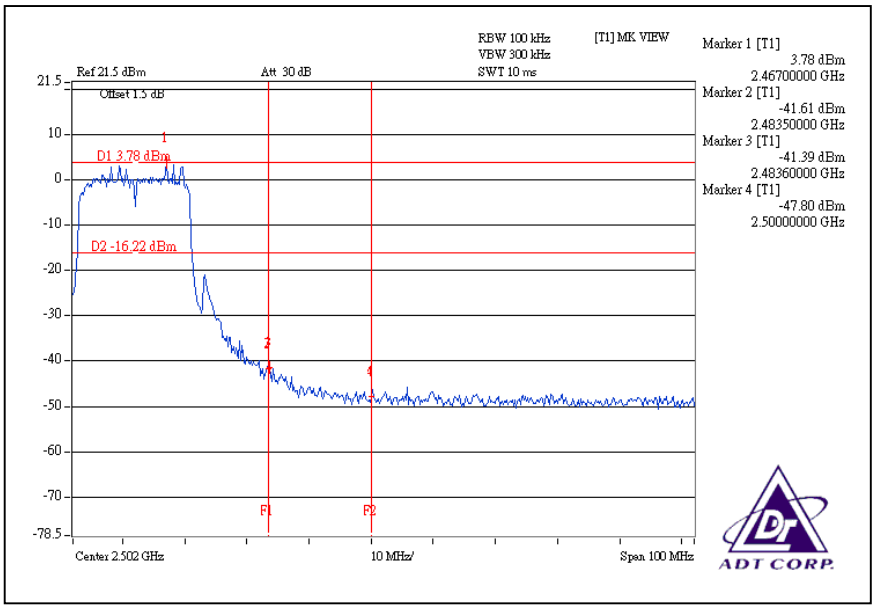
CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 3.66 dBm
D2 -16.34 dBm
Marker 1 [T1]
2.49 dBm
2.42712000 GHz
Marker 2 [T1]
-42.55 dBm
24.95006000 GHz
Marker 3 [T1]
-42.71 dBm
24.70036000 GHz
Marker 4 [T1]
-42.84 dBm
18.15822000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

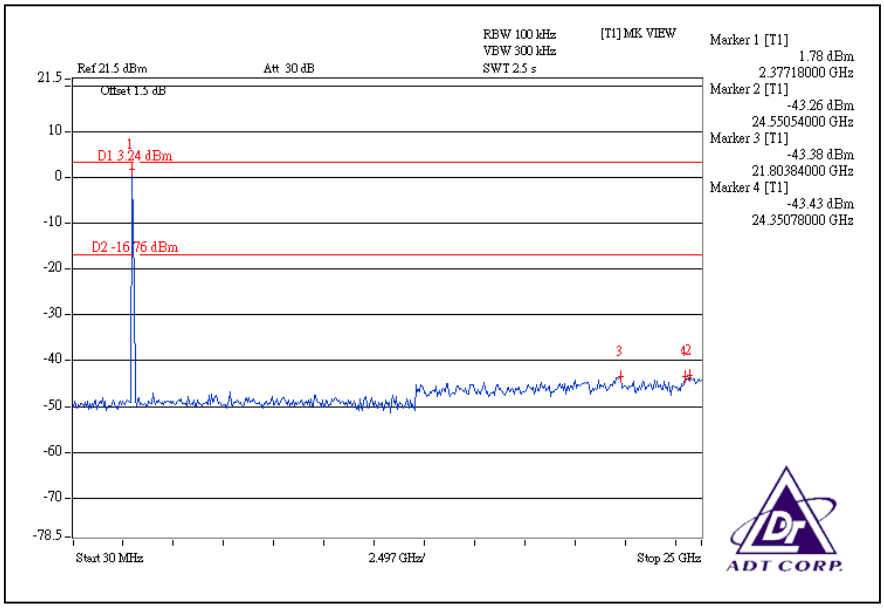
For Chain (1):CH1



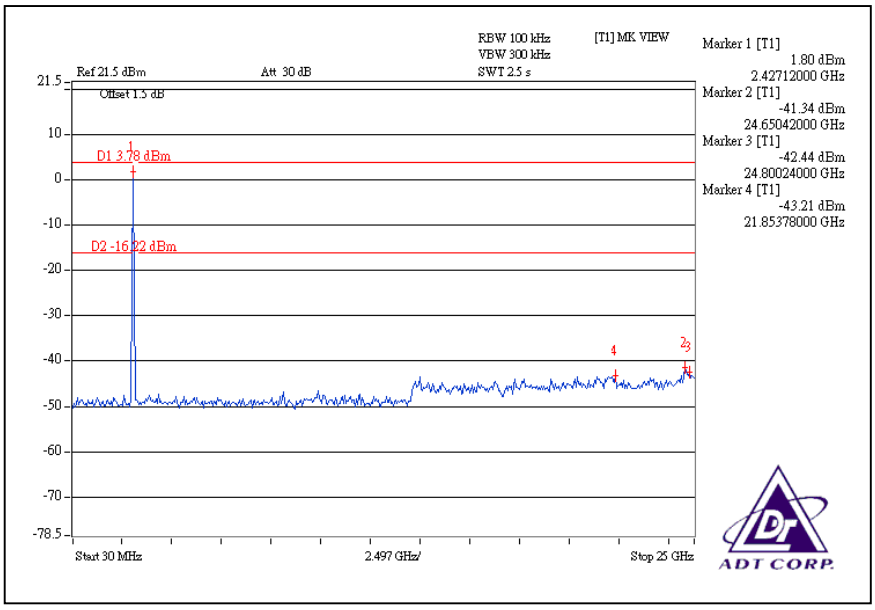
CH11



CH1

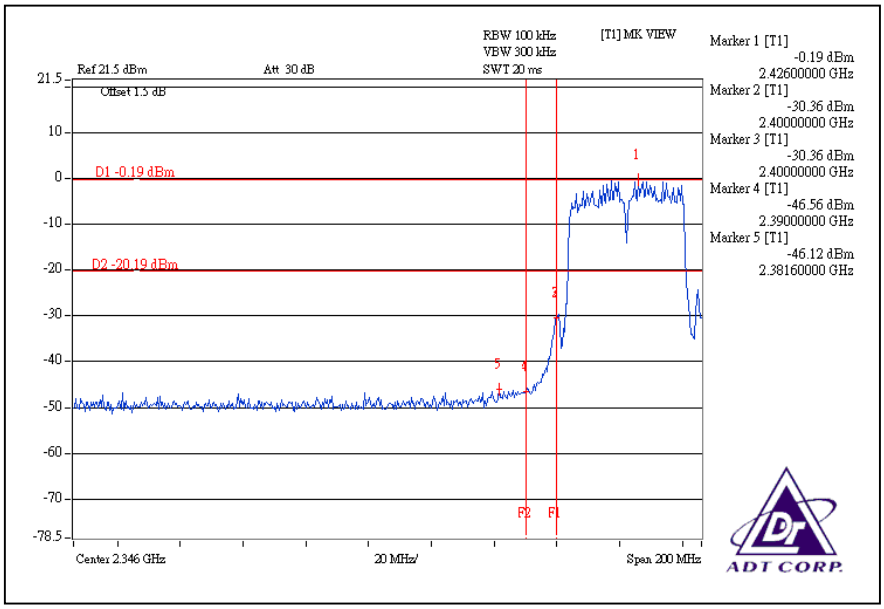

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 3.24 dBm
D2 -16.76 dBm
Marker 1 [T1]
1.78 dBm
2.37718000 GHz
Marker 2 [T1]
-43.26 dBm
24.55054000 GHz
Marker 3 [T1]
-43.38 dBm
21.80384000 GHz
Marker 4 [T1]
-43.43 dBm
24.35078000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

CH11

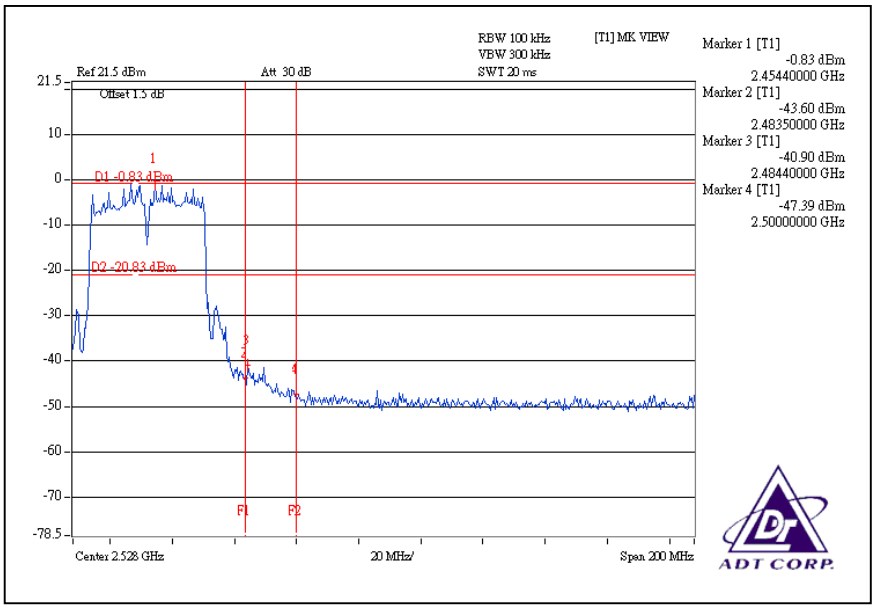

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 3.78 dBm
D2 -16.22 dBm
Marker 1 [T1]
1.80 dBm
2.42712000 GHz
Marker 2 [T1]
-41.34 dBm
24.65042000 GHz
Marker 3 [T1]
-42.44 dBm
24.80024000 GHz
Marker 4 [T1]
-43.21 dBm
21.85378000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

DRAFT 802.11n (40MHz) OFDM MODULATION:

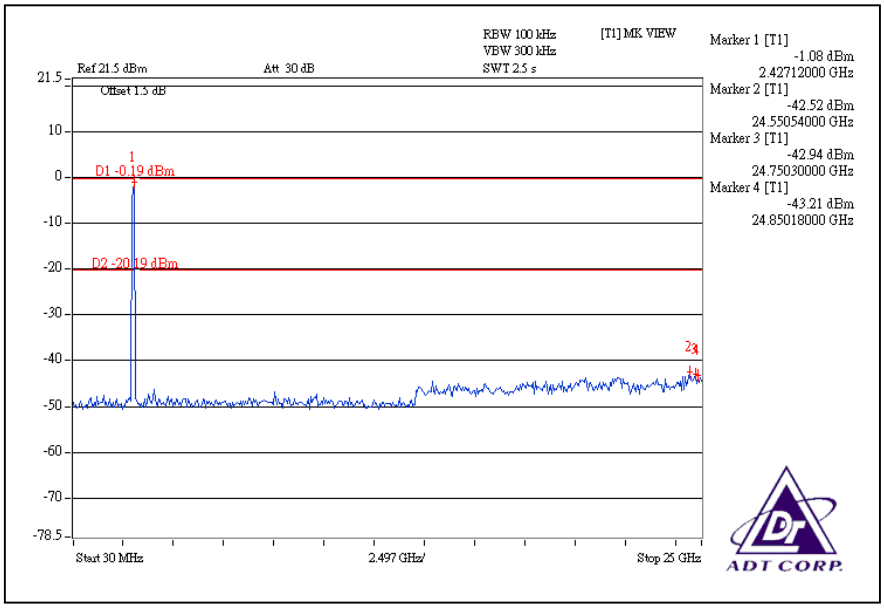
For Chain (0):CH1



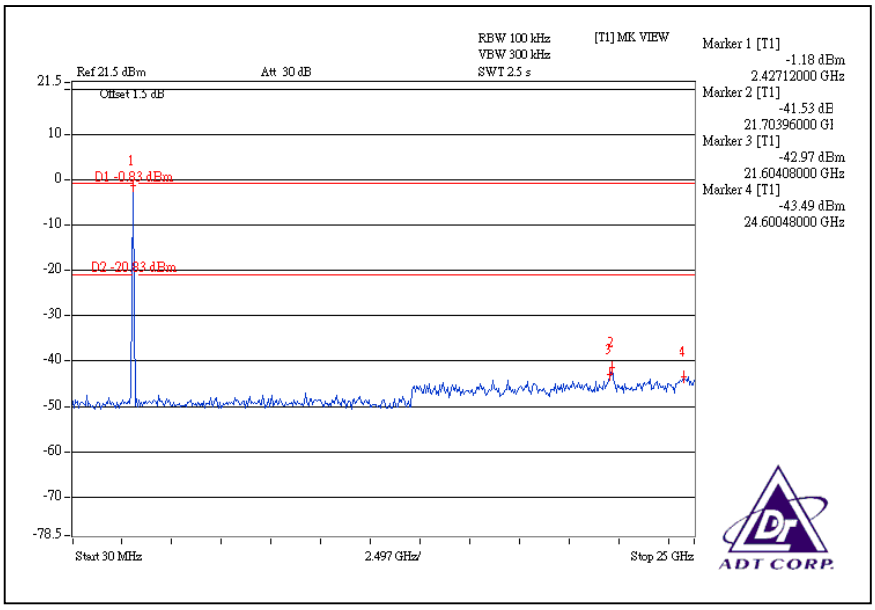
CH7



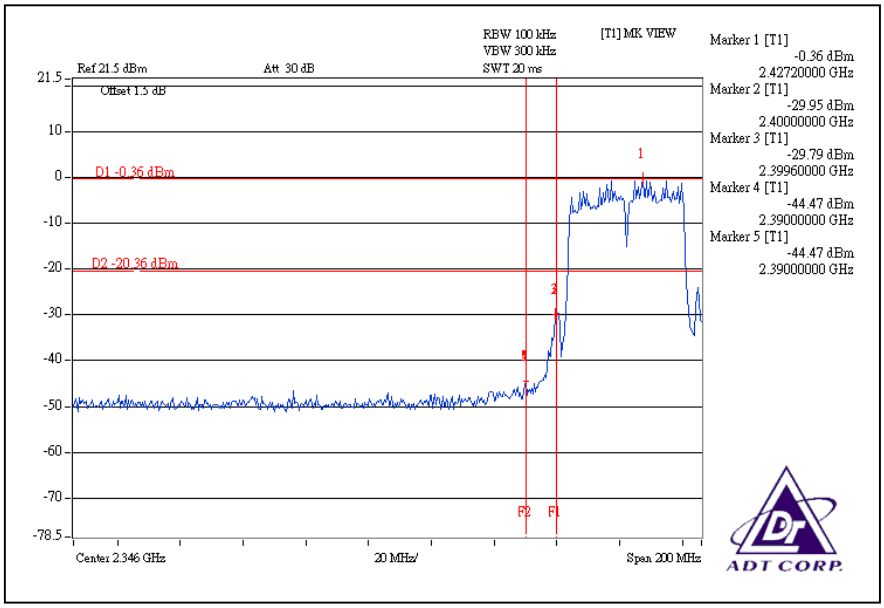
CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 -0.19 dBm
D2 -20.19 dBm
Marker 1 [T1]
-1.08 dBm
2.42712000 GHz
Marker 2 [T1]
-42.52 dBm
24.55054000 GHz
Marker 3 [T1]
-42.94 dBm
24.75030000 GHz
Marker 4 [T1]
-43.21 dBm
24.85018000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

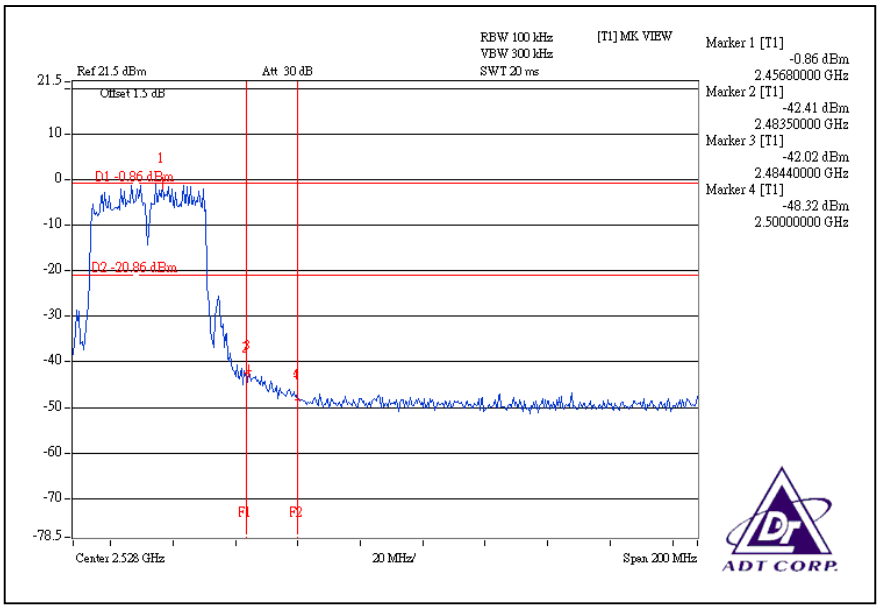
CH7


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 -0.83 dBm
D2 -20.83 dBm
Marker 1 [T1]
-1.18 dBm
2.42712000 GHz
Marker 2 [T1]
-41.53 dE
21.70396000 GI
Marker 3 [T1]
-42.97 dBm
21.60408000 GHz
Marker 4 [T1]
-43.49 dBm
24.60048000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

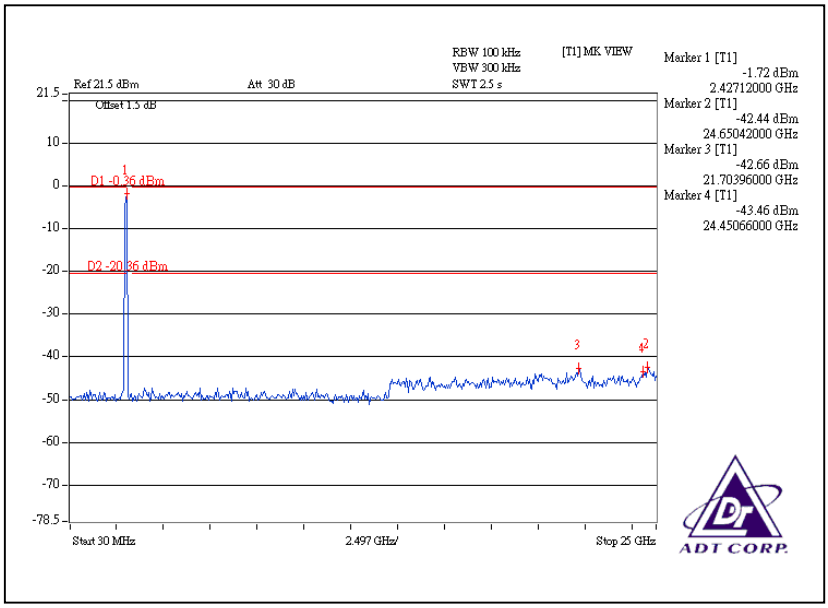
For Chain (1):CH1



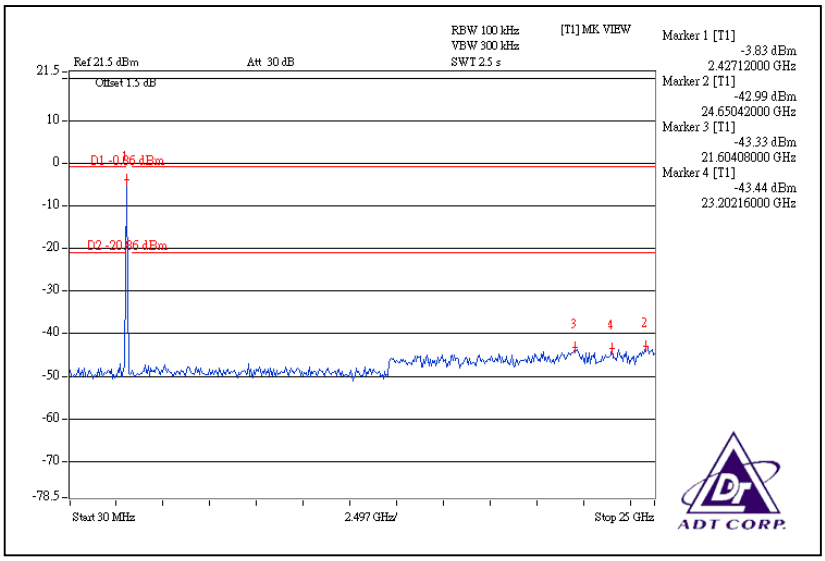
CH7



CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 -0.36 dBm
D2 -20.36 dBm
Marker 1 [T1]
-1.72 dBm
2.42712000 GHz
Marker 2 [T1]
-42.44 dBm
24.65042000 GHz
Marker 3 [T1]
-42.66 dBm
21.70396000 GHz
Marker 4 [T1]
-43.46 dBm
24.45066000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

CH7


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 21.5 dBm
Att 30 dB
Offset 1.5 dB
D1 -0.36 dBm
D2 -20.36 dBm
Marker 1 [T1]
-3.83 dBm
2.42712000 GHz
Marker 2 [T1]
-42.99 dBm
24.65042000 GHz
Marker 3 [T1]
-43.33 dBm
21.60408000 GHz
Marker 4 [T1]
-43.44 dBm
23.20216000 GHz
21.5
10
0
-10
-20
-30
-40
-50
-60
-70
-78.5
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

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:

No.	Antenna Type	Antenna Connector	Gain(dBi)	
CHAIN(0)	PIFA	NA	1.5	
CHAIN(2)	PIFA	NA	2.2	For Rx only
CHAIN(1)	PIFA	NA	1.5	

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.