FCC TEST REPORT

REPORT NO.: RF951114H01
MODEL NO.: WRT150N
RECEIVED: Nov. 14, 2006
TESTED: Nov. 09 to 23, 2006
ISSUED: Nov. 29, 2006

APPLICANT: Cisco-Linksys LLC

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

ISSUED BY: Advance Data Technology Corporation

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0536

No. 2177-01

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1. CERTIFICATION

PRODUCT : Wireless-N Home Router
MODEL NO.: WRT150N
BRAND: Linksys
APPLICANT : Cisco-Linksys LLC
TESTED: Nov. 09 to 23, 2006
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS : FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment (Model: WRT150N) 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:** Nov. 29, 2006
(Midoli Peng)

TECHNICAL ACCEPTANCE : _____ , **DATE:** Nov. 29, 2006
Responsible for RF
(Hank Chung)

APPROVED BY : _____ , **DATE:** Nov. 29, 2006
(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			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is –10.73dB at 0.302MHz.
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)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is –0.40dB at 2483.50MHz.
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.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless-N Home Router
MODEL NO.	WRT150N
FCC ID	Q87-WRT150N
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	2412MHz ~ 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: 79.433mW 802.11g: 176.891mW draft 802.11n (20MHz): 189.476mW draft 802.11n (40MHz): 158.080mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORTS	WAN Port x 1, LAN Port x 4

NOTE:

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

No.	Antenna Type	Gain (dBi)	Antenna Connector
1	Dipole	1.8	NA
2	Dipole	1.8	NA

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

3. The EUT is 2 * 2 spatial MIMO without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 dipole antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas.

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

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

6. The EUT operates in the 2.4GHz frequency spectrum with data rate up to 270Mbps.

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

Adapter 1:	
Brand:	Linksys
Model No.:	AM-1201000D41
Input power :	AC120V, 60Hz, 23W
Output power :	DC12V, 1A Cable:1.8m/unshielded/without core
Adapter 2:	
Brand:	Linksys
Model No.:	D12-1000
Input power :	AC120V, 60Hz,190mA
Output power :	DC12V, 1A Cable:1.8m/unshielded/without core
Adapter 3:	
Brand:	Linksys
Model No.:	LS120V10AE
Input power :	AC100V-240V, 0.5A, 60Hz cable length: 0.5m/unshielded/without core
Output power :	12VDC, 1A cable length:1.8m/unshielded/without core

8. For conducted and radiated test (Below 1 GHz), the EUT was pre-tested under following test mode, and the test data was recorded in this report:

Pre-test Mode	Description
Mode A	802.11b
Mode B	802.11g
Mode C	Draft 802.11n (20MHz)
Mode D	Draft 802.11n (40MHz)

The worst emission level was found in mode D. The final test was executed under test mode with highest emission and recorded in this report individually.

9. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

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

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

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

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	ANTENNA 1	ANTENNA 2
A	802.11 b	√	
B			√
C	802.11g	√	√
D	DRAFT 802.11n(20MHz)	√	√
E	DRAFT 802.11n(40MHz)	√	√

Note:
1. The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
2. Antenna 1 and Antenna 2 are Dipole.
3. From above mode, the different modes was chosen for pretest.
4. Mode A, C, D, E, the worst modes, was selected as representative mode for the report.

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

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
Draft 802.11n (40MHz)	1 to 7	7	OFDM	BPSK	13.5	E

☒ The EUT was tested with the following modes:

Test Mode	Description
Mode 1	Adapter 1
Mode 2	Adapter 2
Mode 3	Adapter 3

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
Draft 802.11n (40MHz)	1 to 7	7	OFDM	BPSK	13.5	E

☒ For spurious emissions (below 1GHz), the EUT was pre-tested in chamber as the following test modes:

Test Mode	Description
Mode 1	Adapter 1
Mode 2	Adapter 2
Mode 3	Adapter 3

Mode 1, the worse case one, was chosen for final test.

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	CCK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	C
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	E

☒ For spurious emissions (Above 1GHz), the EUT was pre-tested in chamber as the following test modes:

Test Mode	Description
Mode 1	Adapter 1
Mode 2	Adapter 2
Mode 3	Adapter 3

Mode 1, the worse case one, was chosen for final test.

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
802.11b	1 to 11	1, 11	DSSS	CCK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	C
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	D
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	13.5	E

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	CCK	11	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	C
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5	E

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. 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

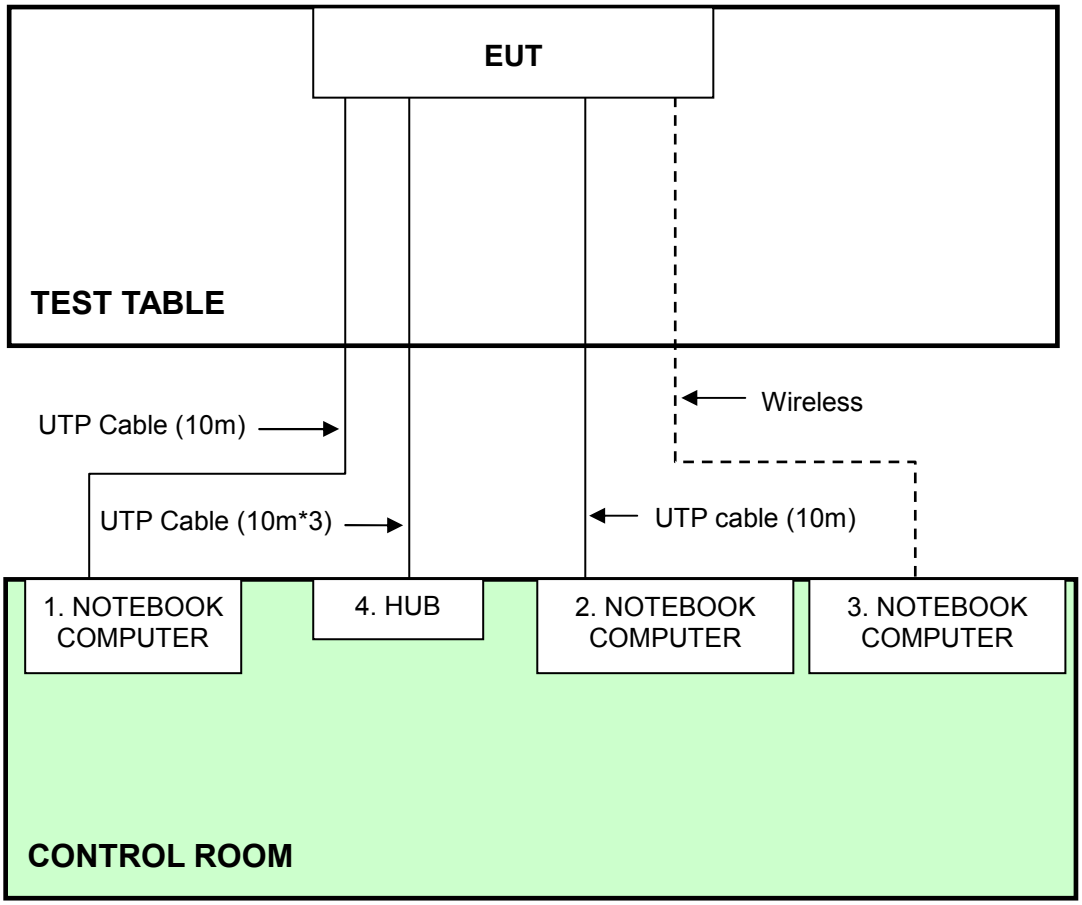
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	Dell	PP01L	TW-09c748-12800-165-3171	DoC
2	NOTEBOOK COMPUTER	Dell	PP01L	TW-0791UH-12800-0CK-3735	DoC
3	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
4	Switch HUB	AVSYS	110H8	01-20E-000002	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



NOTE: 1. Support unit 1-4 were kept in the control room during the test.
2. Please refer to the photos of test configuration in Item 5 also.

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver	ESCS 30	847124/029	Dec. 15, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Dec. 12, 2006
Line-Impedance Stabilization Network(for Peripheral)	KNW-407	8/1395/12	Jul. 18, 2007
RF Cable (JETBAO)	RG233/U	Cable_CB_01	Dec. 09, 2006
Terminator	50	2	Oct. 19, 2007
Software	ADT_Cond_V7.3.2	NA	NA

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

4.1.3 TEST PROCEDURES

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

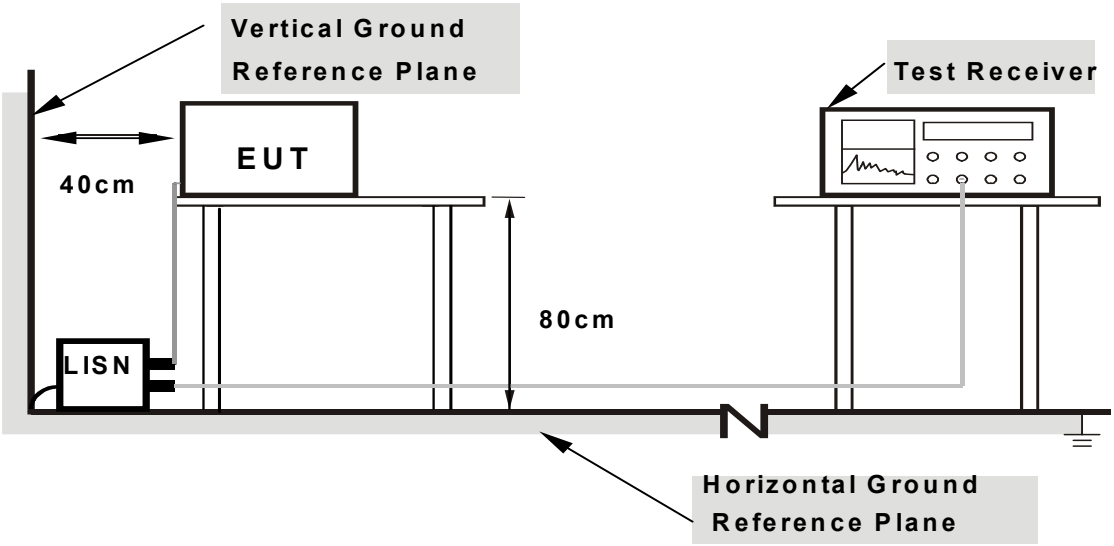
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was 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

a. Placed the EUT on testing table.

b. Prepared other computer systems (support unit 1 ~ 3) to act as communication partners and placed them outside of testing area.

c. The communication partners run test program “Ping Test & MFTEST” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable and wireless transmission.

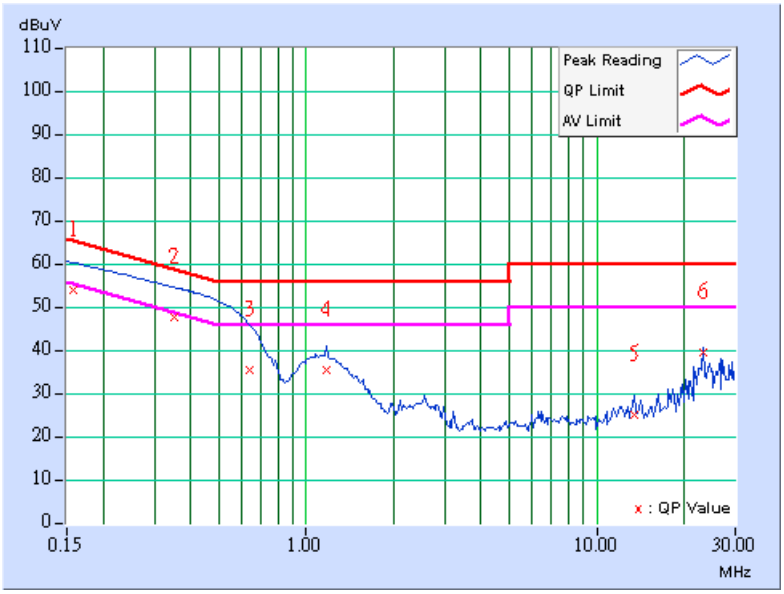
4.1.7 TEST RESULTS

DRAFT 802.11n (40MHz) OFDM MODULATION: (MODE 1)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH, 971hPa	TESTED BY	Sky Liao

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	0.158	9.60	43.93	-	53.53	-	65.58	55.58	-12.05	-
2	0.349	9.60	37.55	-	47.15	-	58.98	48.98	-11.83	-
3	0.638	9.60	25.44	-	35.04	-	56.00	46.00	-20.96	-
4	1.175	9.62	25.29	-	34.91	-	56.00	46.00	-21.09	-
5	13.418	10.04	15.13	-	25.17	-	60.00	50.00	-34.83	-
6	23.129	10.10	29.59	-	39.69	-	60.00	50.00	-20.31	-

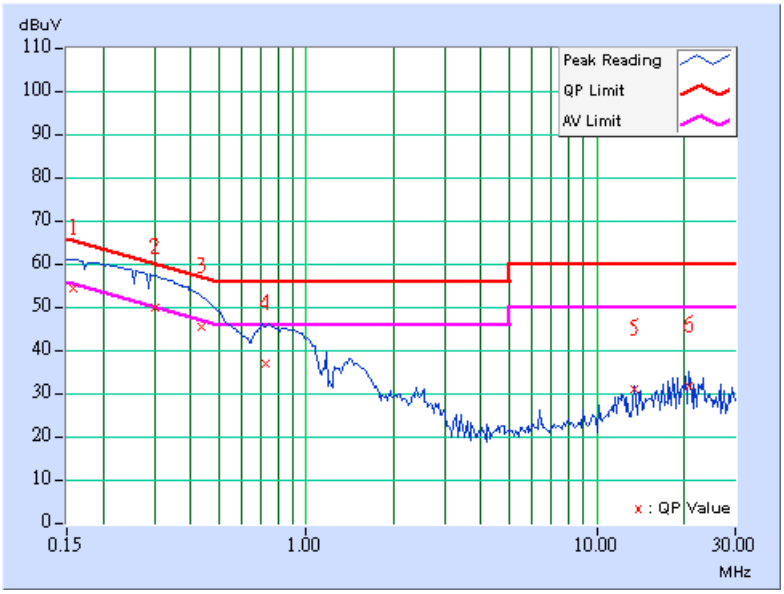
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH, 971hPa	TESTED BY	Sky Liao

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	0.158	9.60	44.29	-	53.89	-	65.58	55.58	-11.69	-
2	**0.302**	**9.60**	**39.85**	**-**	**49.45**	**-**	**60.18**	**50.18**	**-10.73**	**-**
3	0.435	9.60	35.64	-	45.24	-	57.15	47.15	-11.91	-
4	0.728	9.60	27.05	-	36.65	-	56.00	46.00	-19.35	-
5	13.420	9.97	20.84	-	30.81	-	60.00	50.00	-29.19	-
6	20.809	10.10	21.63	-	31.73	-	60.00	50.00	-28.27	-

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

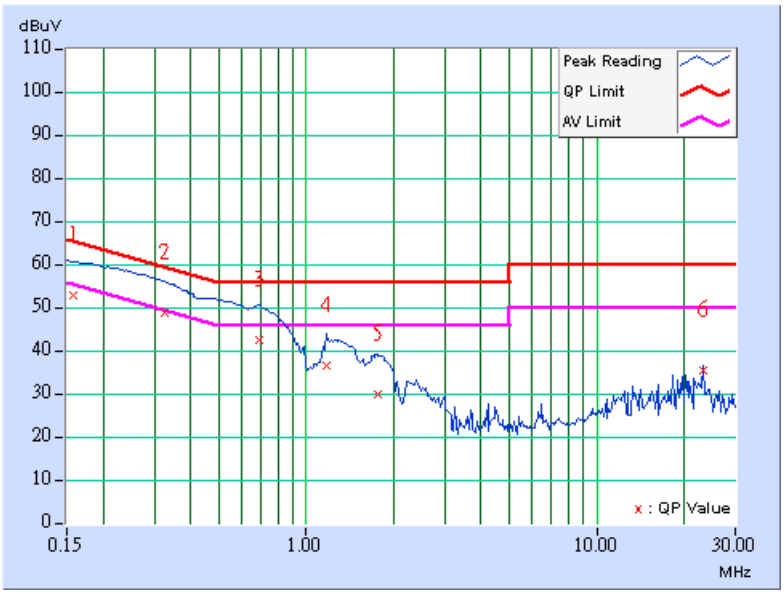


DRAFT 802.11n (40MHz) OFDM MODULATION: (MODE 2)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH, 971hPa	TESTED BY	Sky Liao

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	0.158	9.60	42.88	-	52.48	-	65.58	55.58	-13.10	-
2	0.326	9.60	38.96	-	48.56	-	59.56	49.56	-11.00	-
3	0.685	9.60	32.60	-	42.20	-	56.00	46.00	-13.80	-
4	1.173	9.62	26.74	-	36.36	-	56.00	46.00	-19.64	-
5	1.759	9.68	19.93	-	29.61	-	56.00	46.00	-26.39	-
6	23.129	10.10	25.37	-	35.47	-	60.00	50.00	-24.53	-

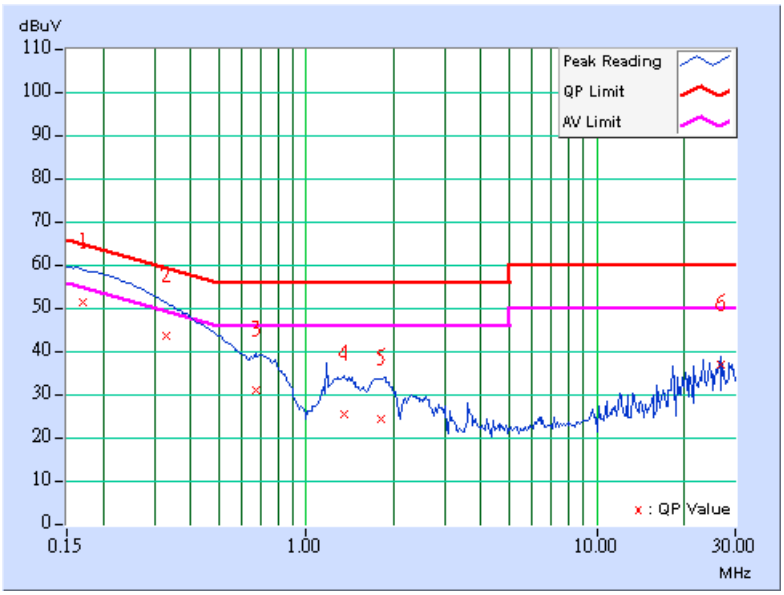
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH, 971hPa	TESTED BY	Sky Liao

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	0.170	9.60	41.25	-	50.85	-	64.98	54.98	-14.13	-
2	0.330	9.60	33.67	-	43.27	-	59.46	49.46	-16.19	-
3	0.670	9.60	21.15	-	30.75	-	56.00	46.00	-25.25	-
4	1.349	9.63	15.55	-	25.18	-	56.00	46.00	-30.82	-
5	1.818	9.68	14.22	-	23.90	-	56.00	46.00	-32.10	-
6	26.609	10.10	27.02	-	37.12	-	60.00	50.00	-22.88	-

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

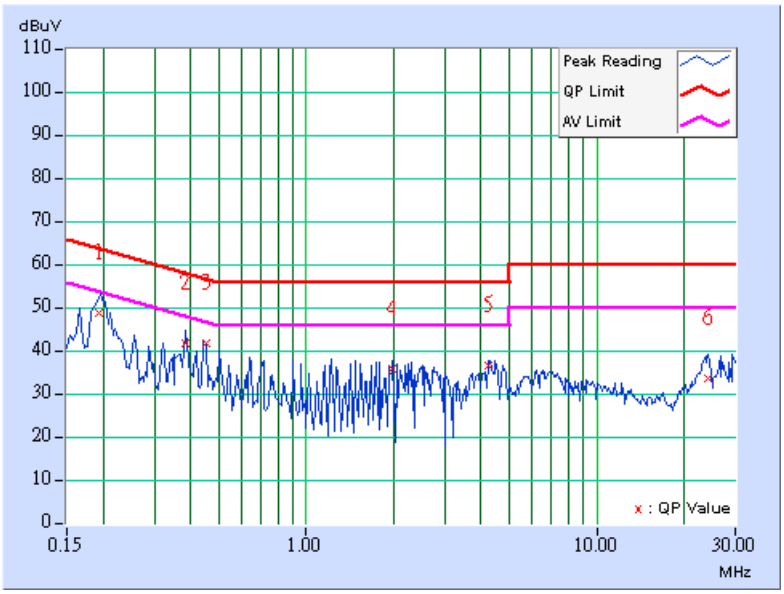


DRAFT 802.11n (40MHz) OFDM MODULATION: (MODE 3)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH, 971hPa	TESTED BY	Sky Liao

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	0.194	9.60	38.85	-	48.45	-	63.85	53.85	-15.40	-
2	0.386	9.60	31.79	-	41.39	-	58.16	48.16	-16.77	-
3	0.450	9.60	31.80	-	41.40	-	56.87	46.87	-15.47	-
4	1.990	9.70	25.84	-	35.54	-	56.00	46.00	-20.46	-
5	4.240	9.71	26.72	-	36.43	-	56.00	46.00	-19.57	-
6	24.281	10.10	23.44	-	33.54	-	60.00	50.00	-26.46	-

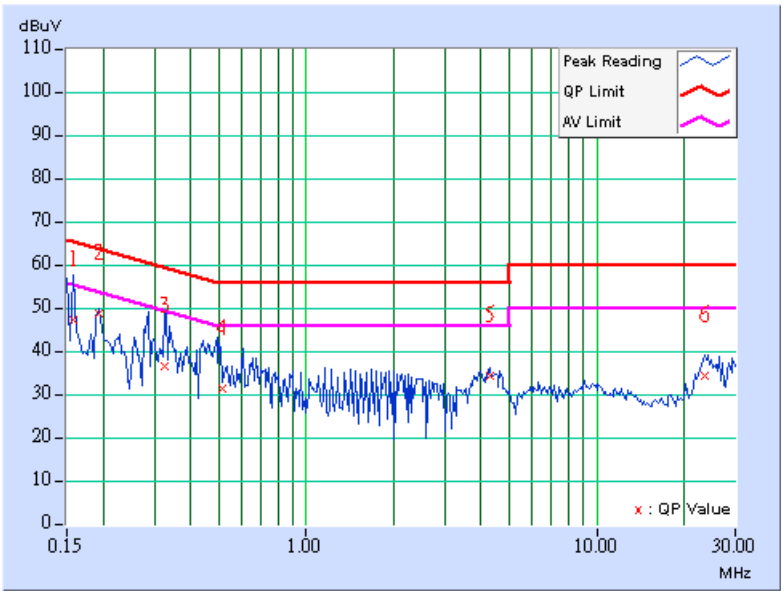
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13.5Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH, 971hPa	TESTED BY	Sky Liao

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	0.158	9.60	37.40	-	47.00	-	65.58	55.58	-18.58	-
2	0.193	9.60	38.90	-	48.50	-	63.91	53.91	-15.41	-
3	0.325	9.60	26.47	-	36.07	-	59.58	49.58	-23.51	-
4	0.513	9.60	21.32	-	30.92	-	56.00	46.00	-25.08	-
5	4.321	9.71	24.38	-	34.09	-	56.00	46.00	-21.91	-
6	23.613	10.10	24.16	-	34.26	-	60.00	50.00	-25.74	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400 / F(kHz)	300
0.490 ~ 1.705	24000 / F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 03, 2007
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2007
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB9168	138	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 27, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2007
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
R&S Loop Antenna	HFH2-Z2	881058/15	Nov. 29, 2007
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2007
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Jul. 15, 2007
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Biconical and Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824A-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

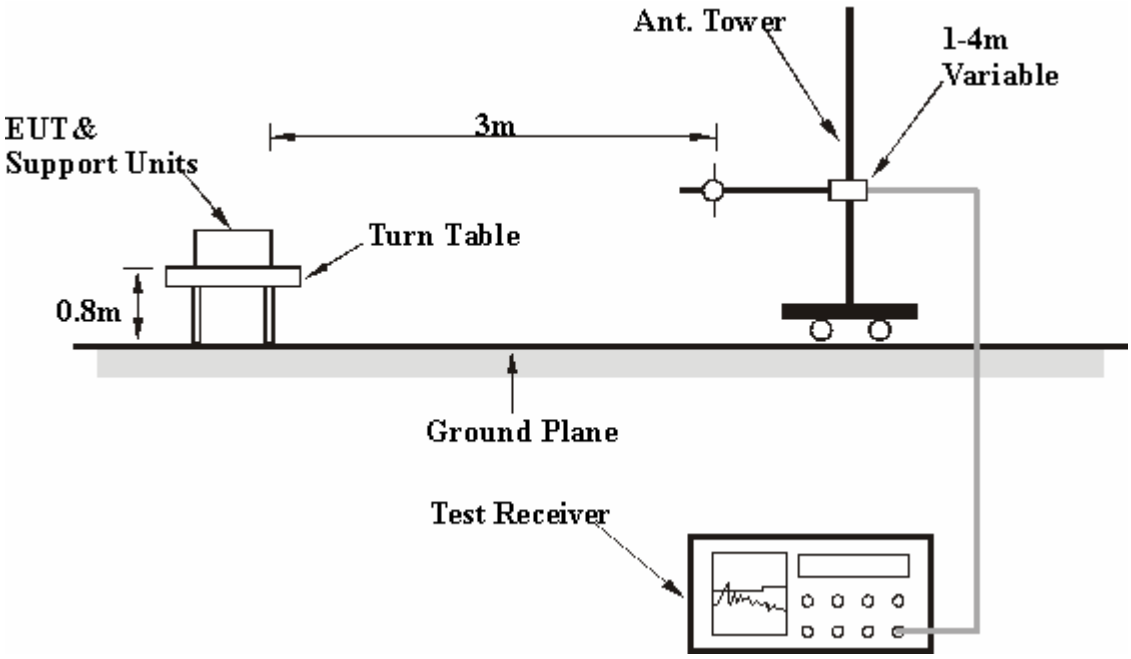
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as item 4.1.6

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK for draft 802.11n (40MHz)	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 971hPa	**TESTED BY**	Phoenix Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	125.02	34.30 QP	43.50	-9.20	1.52 H	274	22.10	12.20
2	175.02	29.70 QP	43.50	-13.80	1.49 H	279	16.50	13.30
3	198.00	38.40 QP	43.50	-5.10	1.32 H	300	26.70	11.70
4	275.00	32.80 QP	46.00	-13.20	1.17 H	316	17.10	15.60
5	375.04	41.70 QP	46.00	-4.30	1.00 H	7	23.50	18.20
6	396.01	41.30 QP	46.00	-4.70	1.00 H	282	22.50	18.90
7	533.39	39.10 QP	46.00	-6.90	1.48 H	317	16.40	22.70
8	639.99	36.60 QP	46.00	-9.40	1.27 H	42	11.70	24.90
9	799.99	38.20 QP	46.00	-7.80	1.07 H	218	10.70	27.60
10	831.55	37.00 QP	46.00	-9.00	1.00 H	336	8.90	28.10

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	33.33	36.30 QP	40.00	-3.70	1.00 V	305	24.00	12.30
2	60.23	36.70 QP	40.00	-3.30	1.00 V	61	23.00	13.70
3	69.11	35.90 QP	40.00	-4.10	1.00 V	268	23.20	12.70
4	125.00	34.50 QP	43.50	-9.00	1.00 V	198	22.30	12.20
5	175.00	34.40 QP	43.50	-9.10	1.00 V	143	21.10	13.30
6	200.02	31.60 QP	43.50	-11.90	1.18 V	226	20.00	11.60
7	225.03	35.90 QP	46.00	-10.10	1.01 V	282	23.20	12.70
8	396.01	39.40 QP	46.00	-6.60	1.07 V	29	20.50	18.90
9	639.99	36.60 QP	46.00	-9.40	1.03 V	209	11.60	24.90
10	799.99	33.10 QP	46.00	-12.90	1.00 V	187	5.60	27.60

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

802.11b DSSS MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

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	61.50 PK	74.00	-12.50	1.09 H	343	29.80	31.70
1	2390.00	50.80 AV	54.00	-3.20	1.09 H	343	19.10	31.70
2	*2412.00	108.60 PK			1.09 H	343	76.80	31.80
2	*2412.00	104.40 AV			1.09 H	343	72.60	31.80
3	3216.00	52.20 PK	88.60	-36.40	1.22 H	65	18.50	33.70
3	3216.00	44.10 AV	84.40	-40.30	1.22 H	65	10.40	33.70
4	4824.00	51.10 PK	74.00	-22.90	1.04 H	105	13.60	37.50
4	4824.00	44.40 AV	54.00	-9.60	1.04 H	105	6.90	37.50
5	7236.00	48.70 PK	74.00	-25.30	1.02 H	107	4.50	44.20
5	7236.00	36.20 AV	54.00	-17.80	1.02 H	107	-8.00	44.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2387.00	61.40 PK	74.00	-12.60	1.00 V	158	29.70	31.70
1	2387.00	52.60 AV	54.00	-1.40	1.00 V	158	20.90	31.70
2	*2412.00	111.70 PK			1.00 V	155	79.90	31.80
2	*2412.00	107.50 AV			1.00 V	155	75.70	31.80
3	3216.00	52.00 PK	91.70	-39.70	1.19 V	8	18.30	33.70
3	3216.00	46.10 AV	87.50	-41.40	1.19 V	8	12.40	33.70
4	4824.00	55.70 PK	74.00	-18.30	1.09 V	345	18.20	37.50
4	4824.00	51.90 AV	54.00	-2.10	1.09 V	345	14.40	37.50
5	7236.00	60.20 PK	74.00	-13.80	1.72 V	9	16.00	44.20
5	7236.00	51.50 AV	54.00	-2.50	1.72 V	9	7.30	44.20

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.60 PK			1.10 H	342	74.70	31.90
1	*2437.00	102.50 AV			1.10 H	342	70.60	31.90
2	3249.30	51.80 PK	86.60	-34.80	1.40 H	71	18.10	33.70
2	3249.30	45.50 AV	82.50	-37.00	1.40 H	71	11.80	33.70
3	4874.00	51.20 PK	74.00	-22.80	1.11 H	109	13.60	37.60
3	4874.00	44.80 AV	54.00	-9.20	1.11 H	109	7.20	37.60
4	7311.00	48.20 PK	74.00	-25.80	1.39 H	144	3.70	44.50
4	7311.00	35.10 AV	54.00	-18.90	1.39 H	144	-9.40	44.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.90 PK			1.71 V	325	76.00	31.90
1	*2437.00	104.00 AV			1.71 V	325	72.10	31.90
2	3249.00	53.70 PK	87.90	-34.20	1.17 V	351	20.00	33.70
2	3249.00	50.10 AV	84.00	-33.90	1.17 V	351	16.40	33.70
3	4874.00	53.20 PK	74.00	-20.80	1.44 V	275	15.60	37.60
3	4874.00	47.70 AV	54.00	-6.30	1.44 V	275	10.10	37.60
4	7311.00	58.40 PK	74.00	-15.60	1.57 V	2	13.90	44.50
4	7311.00	49.70 AV	54.00	-4.30	1.57 V	2	5.20	44.50

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

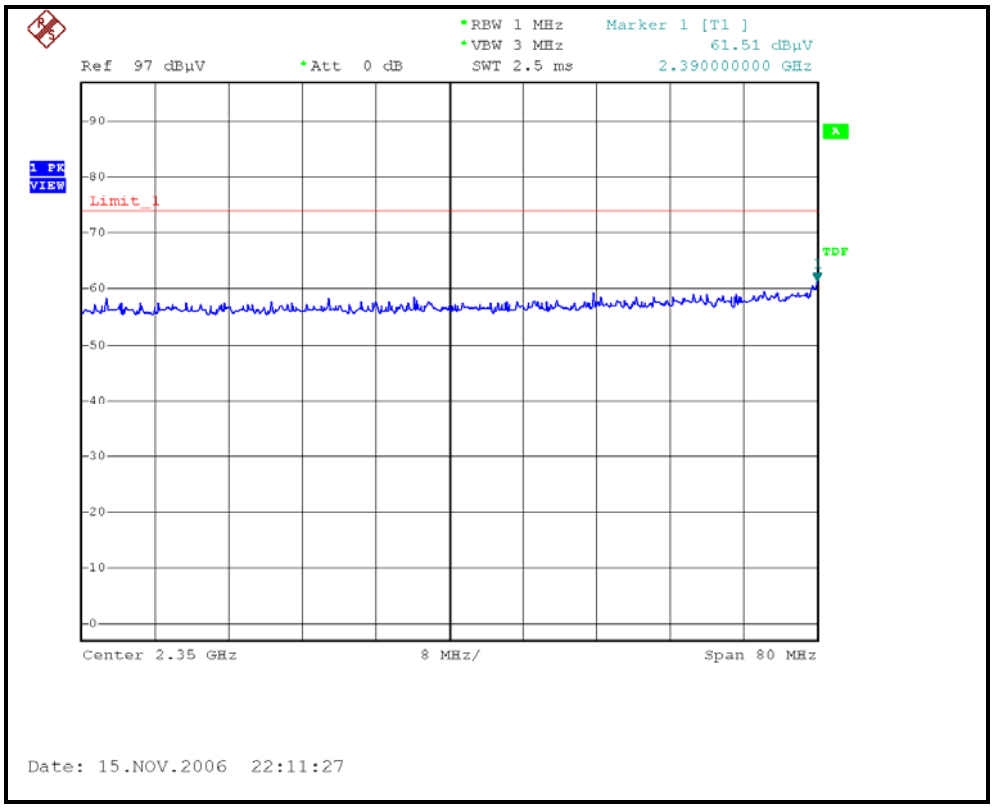
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

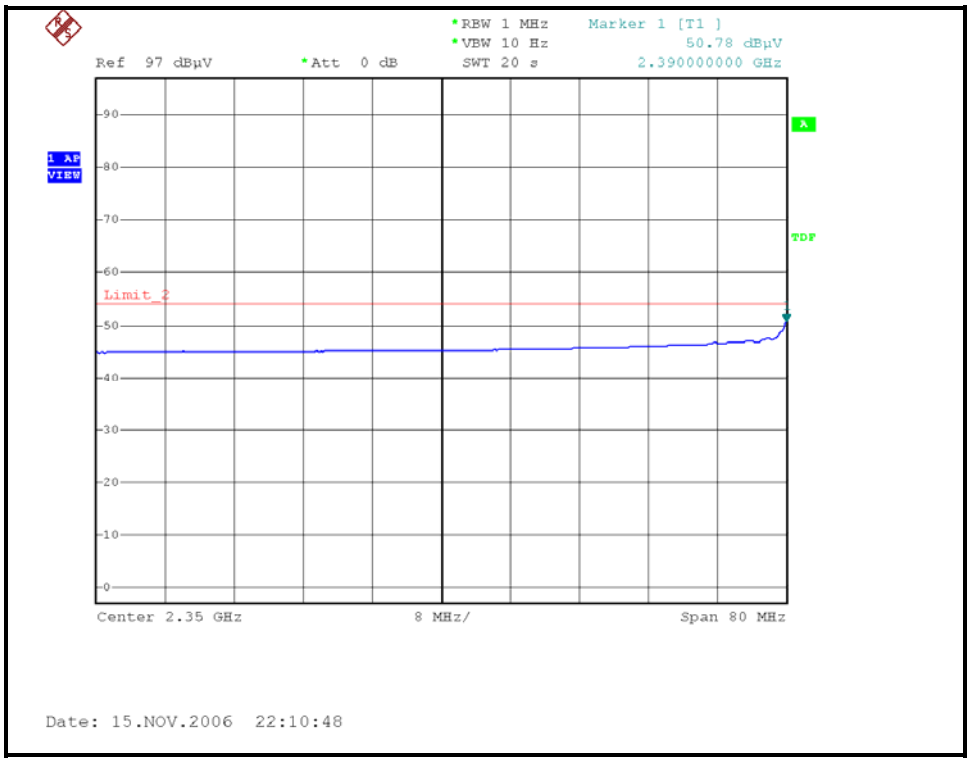
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.00 PK			1.02 H	342	74.00	32.00
1	*2462.00	102.20 AV			1.02 H	342	70.10	32.00
2	2486.20	59.50 PK	74.00	-14.50	1.02 H	342	27.30	32.10
2	2486.20	49.00 AV	54.00	-5.00	1.02 H	342	16.80	32.10
3	3282.50	55.00 PK	86.00	-31.00	1.00 H	83	21.20	33.80
3	3282.50	49.60 AV	82.20	-32.60	1.00 H	83	15.80	33.80
4	4924.00	50.40 PK	74.00	-23.60	1.00 H	36	12.70	37.70
4	4924.00	43.50 AV	54.00	-10.50	1.00 H	36	5.80	37.70
5	7386.00	47.50 PK	74.00	-26.50	1.23 H	143	2.70	44.80
5	7386.00	35.40 AV	54.00	-18.60	1.23 H	143	-9.40	44.80

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	108.70 PK			1.00 V	206	76.70	32.00
1	*2462.00	104.70 AV			1.00 V	206	72.70	32.00
2	2484.00	60.10 PK	74.00	-13.90	1.00 V	205	28.00	32.10
2	2484.00	51.50 AV	54.00	-2.50	1.00 V	205	19.40	32.10
3	3282.00	55.80 PK	88.70	-32.90	1.18 V	352	22.00	33.80
3	3282.00	53.20 AV	84.70	-31.50	1.18 V	352	19.40	33.80
4	4924.00	53.20 PK	74.00	-20.80	1.81 V	5	15.50	37.70
4	4924.00	47.30 AV	54.00	-6.70	1.81 V	5	9.60	37.70
5	7386.00	57.80 PK	74.00	-16.20	1.39 V	3	13.00	44.80
5	7386.00	48.40 AV	54.00	-5.60	1.39 V	3	3.60	44.80

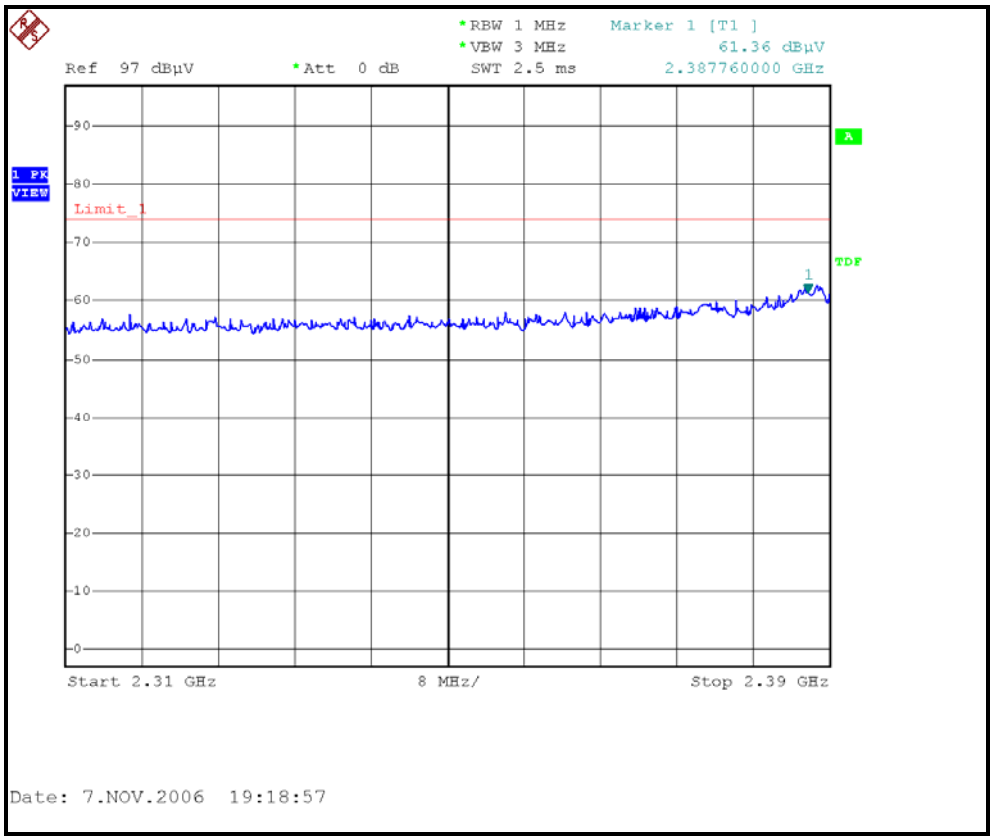
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per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

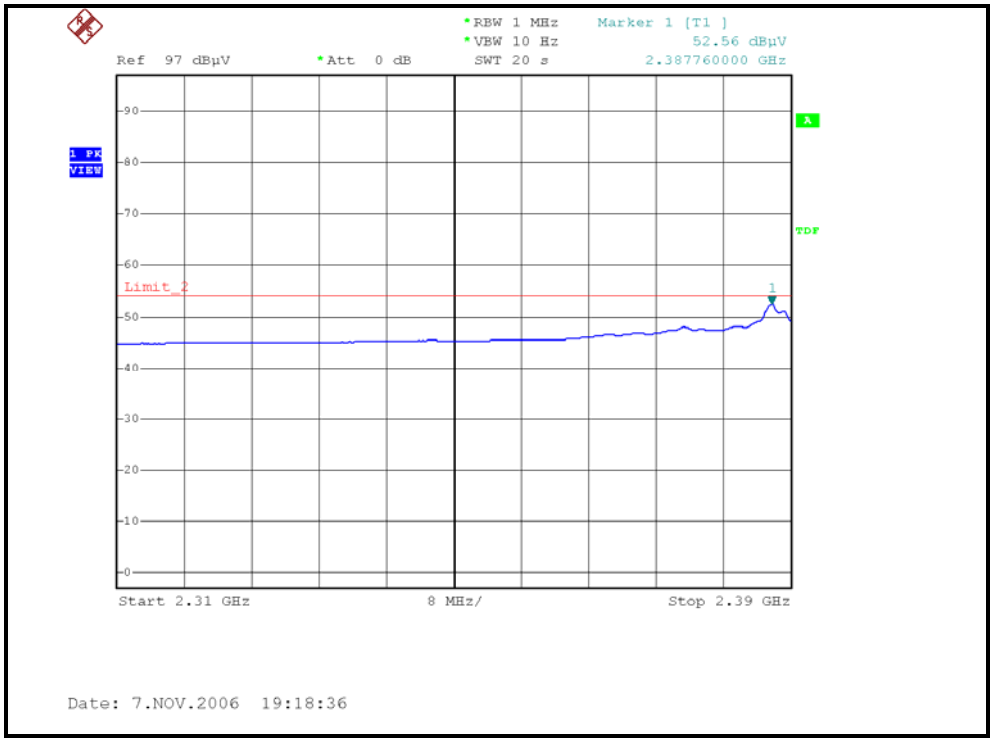
RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)



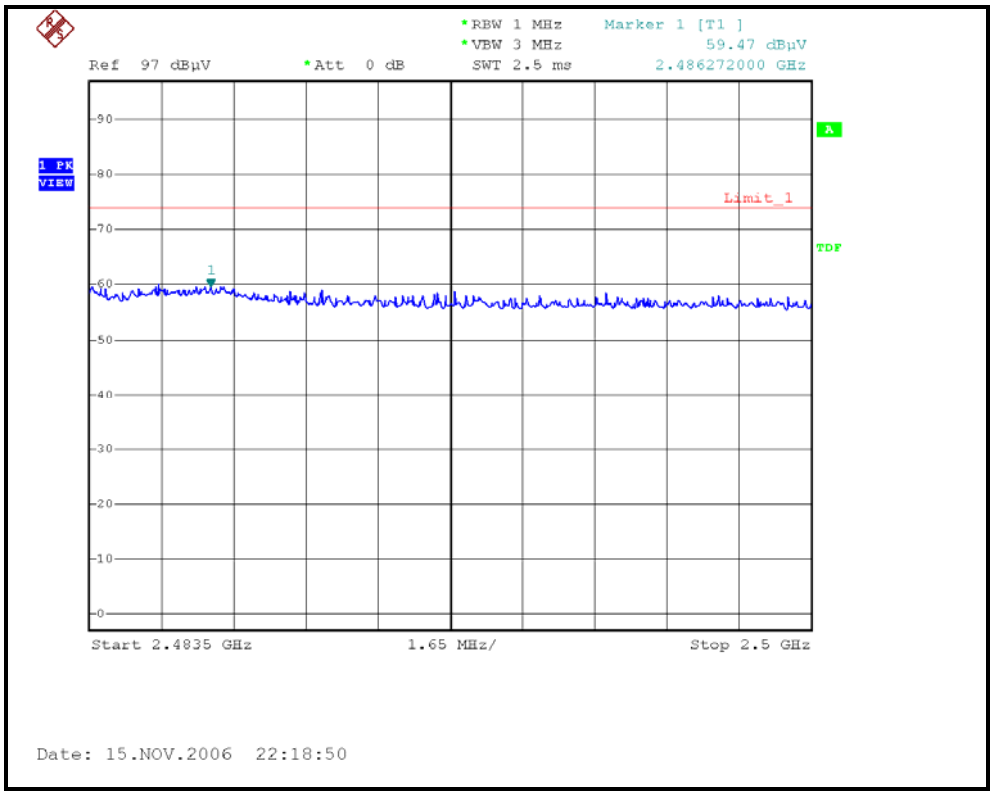


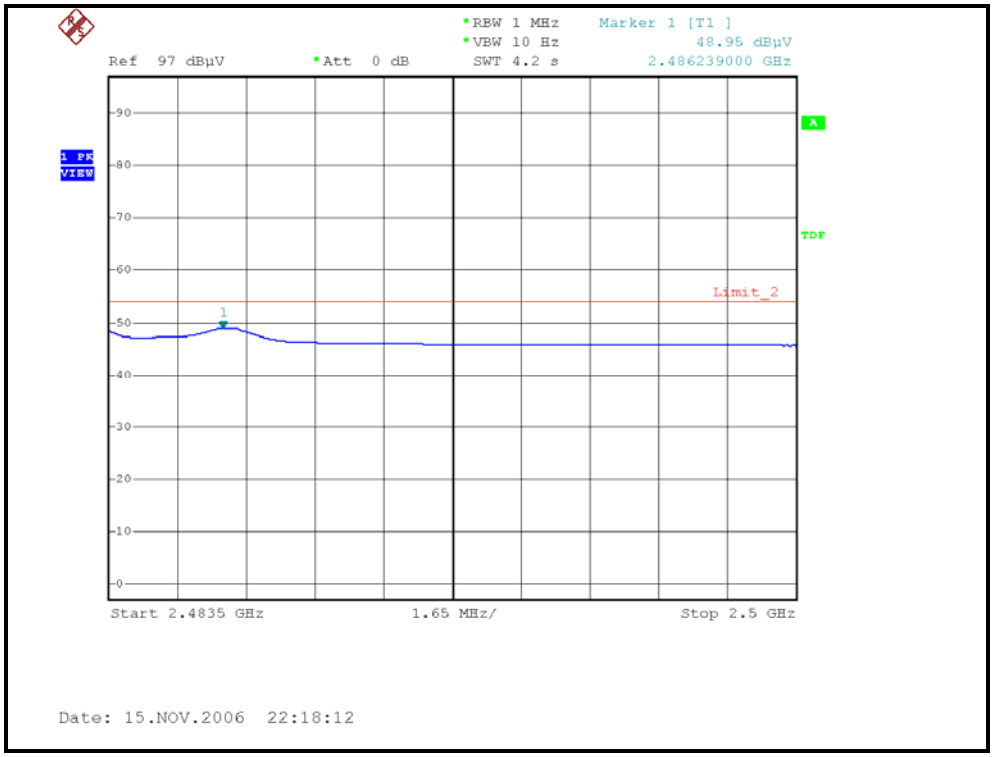
RESTRICTED BANDEDGE (802.11b MODE,CH1, VERTICAL)



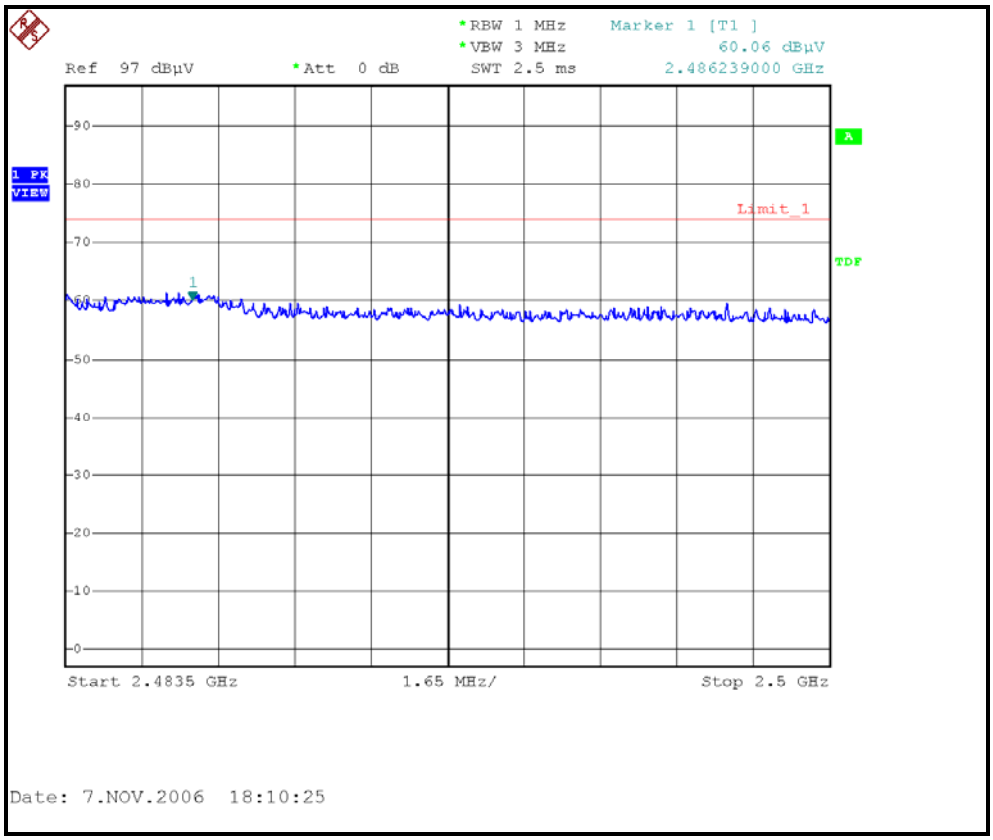


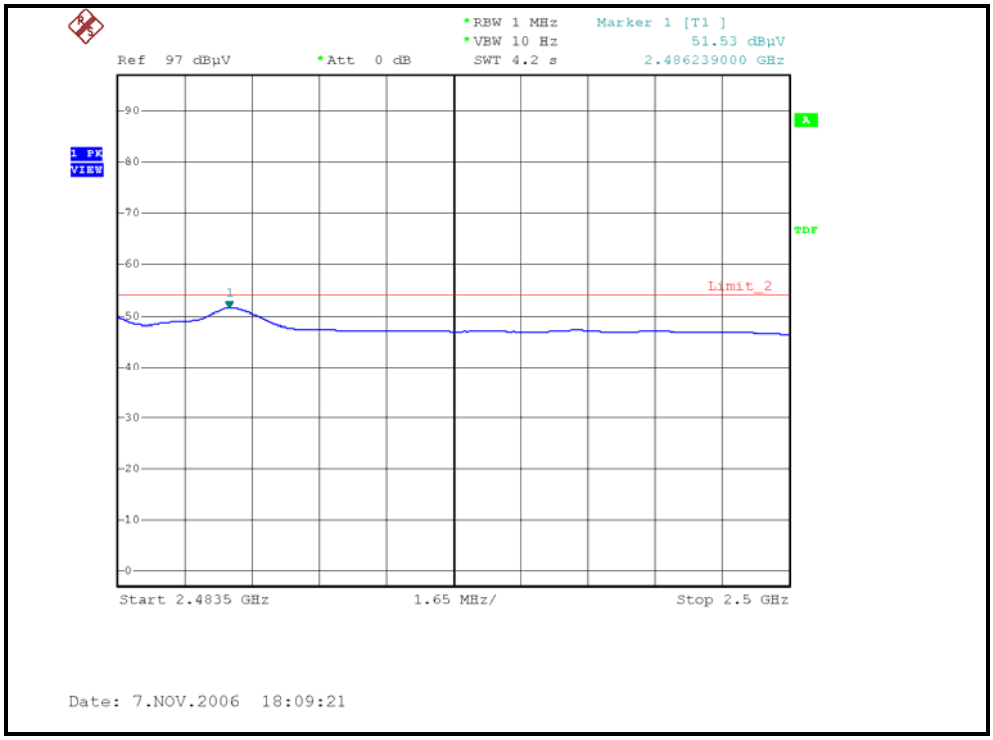
RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)





RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





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	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

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	67.50 PK	74.00	-6.50	1.06 H	343	35.80	31.70
1	2390.00	47.80 AV	54.00	-6.20	1.06 H	343	16.10	31.70
2	*2412.00	108.40 PK			1.06 H	343	76.60	31.80
2	*2412.00	93.60 AV			1.06 H	343	61.80	31.80
3	3216.00	52.40 PK	88.40	-36.00	1.21 H	64	18.70	33.70
3	3216.00	45.70 AV	73.60	-27.90	1.21 H	64	12.00	33.70
4	4824.00	49.80 PK	74.00	-24.20	1.11 H	103	12.30	37.50
4	4824.00	44.30 AV	54.00	-9.70	1.11 H	103	6.80	37.50
5	7236.00	47.20 PK	74.00	-26.80	1.38 H	141	3.00	44.20
5	7236.00	36.30 AV	54.00	-17.70	1.38 H	141	-7.90	44.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.40 PK	74.00	-5.60	1.00 V	156	36.70	31.70
1	2390.00	50.80 AV	54.00	-3.20	1.00 V	156	19.10	31.70
2	*2412.00	113.90 PK			1.00 V	160	82.10	31.80
2	*2412.00	105.00 AV			1.00 V	160	73.20	31.80
3	3216.00	53.60 PK	93.90	-40.30	1.26 V	0	19.90	33.70
3	3216.00	48.50 AV	85.00	-36.50	1.26 V	0	14.80	33.70
4	4824.00	51.70 PK	74.00	-22.30	1.09 V	6	14.20	37.50
4	4824.00	47.50 AV	54.00	-6.50	1.09 V	6	10.00	37.50
5	7236.00	48.20 PK	74.00	-25.80	1.93 V	207	4.00	44.20
5	7236.00	39.20 AV	54.00	-14.80	1.93 V	207	-5.00	44.20

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

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	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

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	107.30 PK			1.04 H	340	75.40	31.90
1	*2437.00	92.60 AV			1.04 H	340	60.70	31.90
2	3249.30	52.40 PK	87.30	-34.90	1.00 H	79	18.70	33.70
2	3249.30	46.90 AV	72.60	-25.70	1.00 H	79	13.20	33.70
3	4874.00	50.30 PK	74.00	-23.70	1.11 H	103	12.70	37.60
3	4874.00	44.10 AV	54.00	-9.90	1.11 H	103	6.50	37.60
4	7311.00	46.20 PK	74.00	-27.80	1.79 H	117	1.70	44.50
4	7311.00	33.20 AV	54.00	-20.80	1.79 H	117	-11.30	44.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	114.00 PK			1.00 V	202	82.10	31.90
1	*2437.00	105.20 AV			1.00 V	202	73.30	31.90
2	3249.30	55.70 PK	94.00	-38.30	1.31 V	352	22.00	33.70
2	3249.30	52.30 AV	85.20	-32.90	1.31 V	352	18.60	33.70
3	4874.00	52.10 PK	74.00	-21.90	1.06 V	2	14.50	37.60
3	4874.00	47.70 AV	54.00	-6.30	1.06 V	2	10.10	37.60
4	7311.00	47.60 PK	74.00	-26.40	2.10 V	1	3.10	44.50
4	7311.00	37.10 AV	54.00	-16.90	2.10 V	1	-7.40	44.50

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

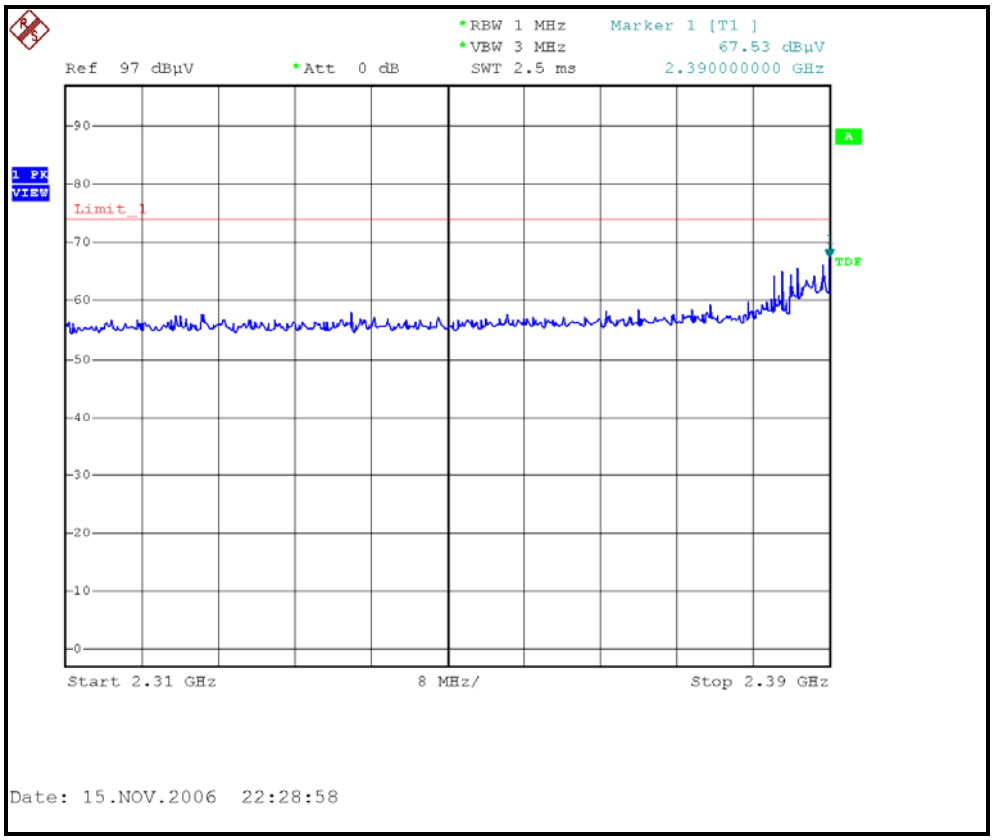
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

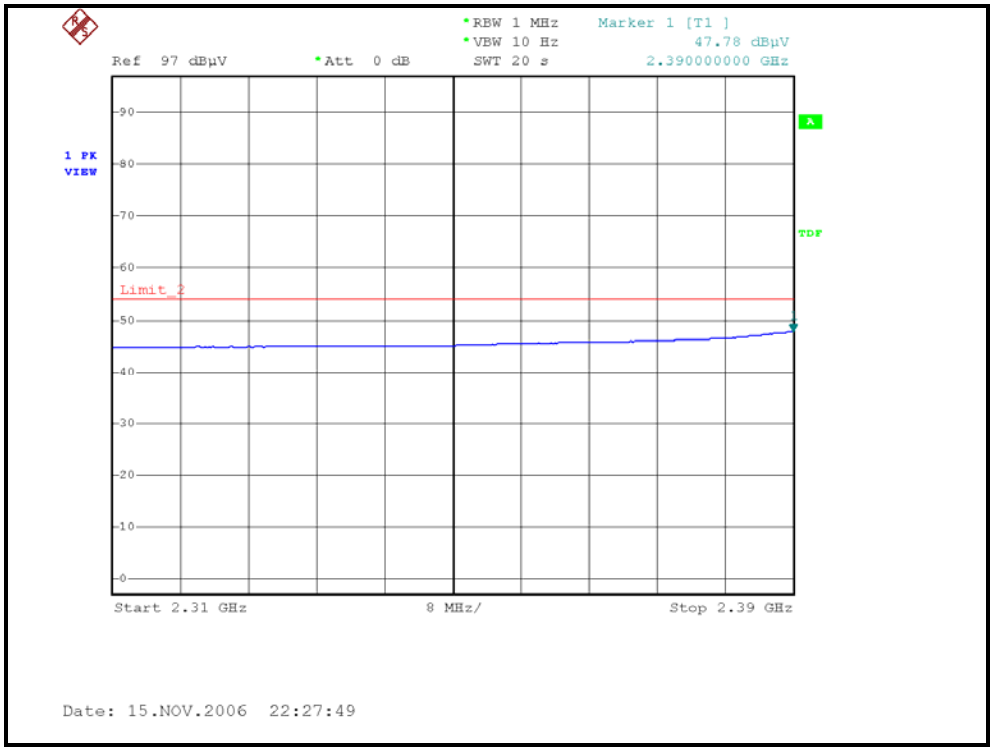
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.30 PK			1.02 H	339	74.30	32.00
1	*2462.00	91.30 AV			1.02 H	339	59.30	32.00
2	2483.50	64.70 PK	74.00	-9.30	1.02 H	339	32.50	32.10
2	2483.50	47.00 AV	54.00	-7.00	1.02 H	339	14.80	32.10
3	3282.50	54.50 PK	86.30	-31.80	1.00 H	82	20.70	33.80
3	3282.50	49.90 AV	71.30	-21.40	1.00 H	82	16.10	33.80
4	4924.00	50.30 PK	74.00	-23.70	1.09 H	28	12.60	37.70
4	4924.00	43.30 AV	54.00	-10.70	1.09 H	28	5.60	37.70
5	7386.00	46.90 PK	74.00	-27.10	1.18 H	145	2.10	44.80
5	7386.00	34.10 AV	54.00	-19.90	1.18 H	145	-10.70	44.80

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	113.50 PK			1.00 V	209	81.50	32.00
1	*2462.00	103.30 AV			1.00 V	209	71.30	32.00
2	2483.50	64.50 PK	74.00	-9.50	1.00 V	208	32.40	32.10
2	2483.50	50.10 AV	54.00	-3.90	1.00 V	208	18.00	32.10
3	3282.50	57.20 PK	93.50	-36.30	1.28 V	351	23.40	33.80
3	3282.50	54.40 AV	83.30	-28.90	1.28 V	351	20.60	33.80
4	4924.00	55.10 PK	74.00	-18.90	1.07 V	291	17.40	37.70
4	4924.00	52.30 AV	54.00	-1.70	1.07 V	291	14.60	37.70
5	7386.00	50.50 PK	74.00	-23.50	1.22 V	351	5.70	44.80
5	7386.00	36.00 AV	54.00	-18.00	1.22 V	351	-8.80	44.80

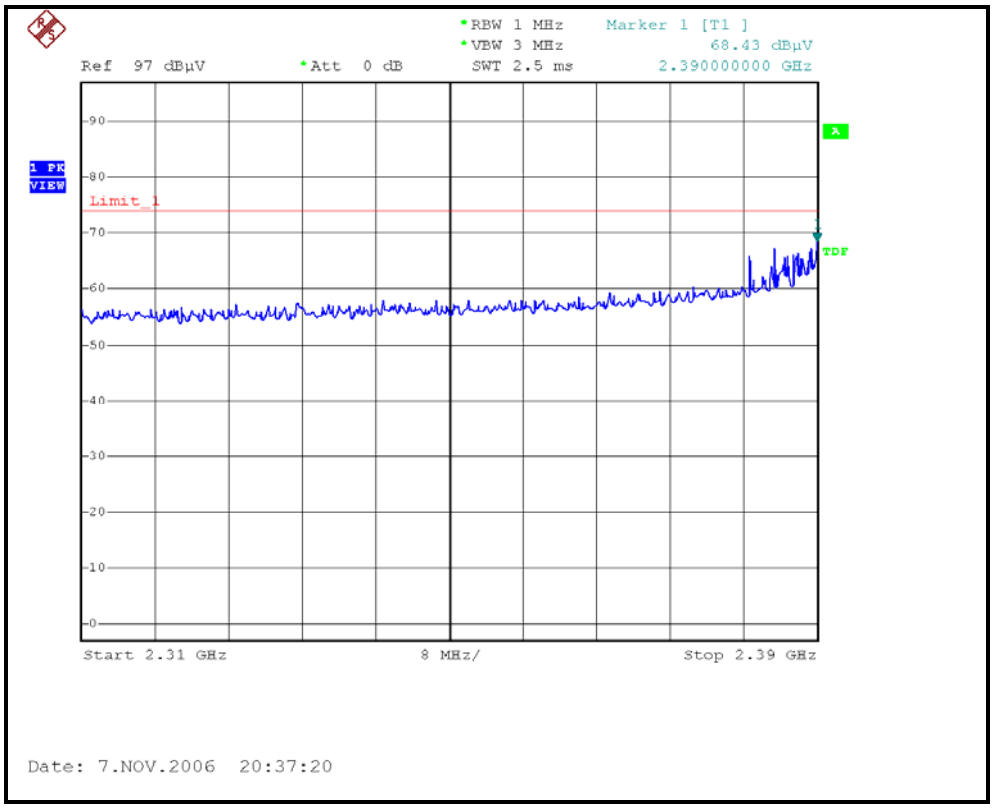
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per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

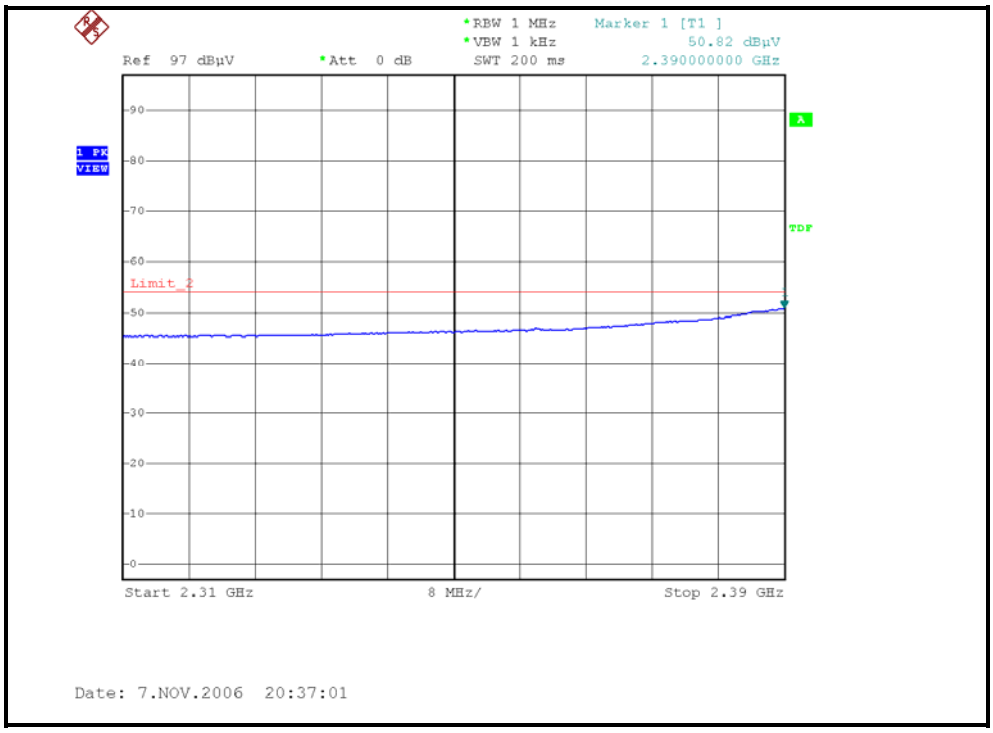
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)



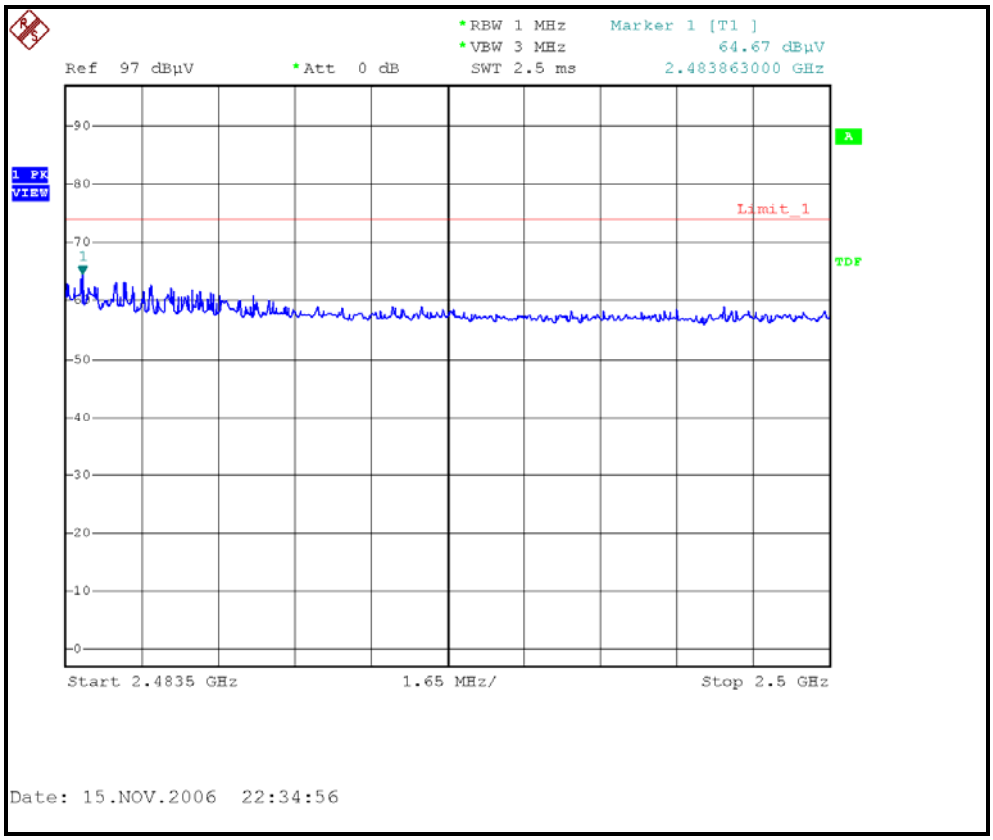


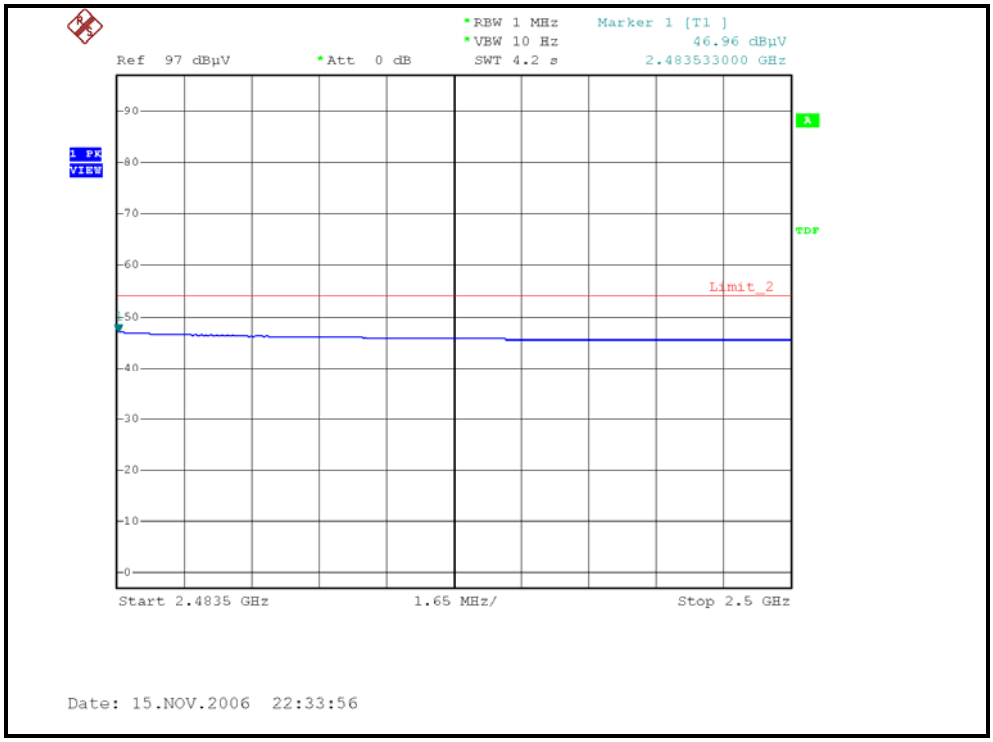
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



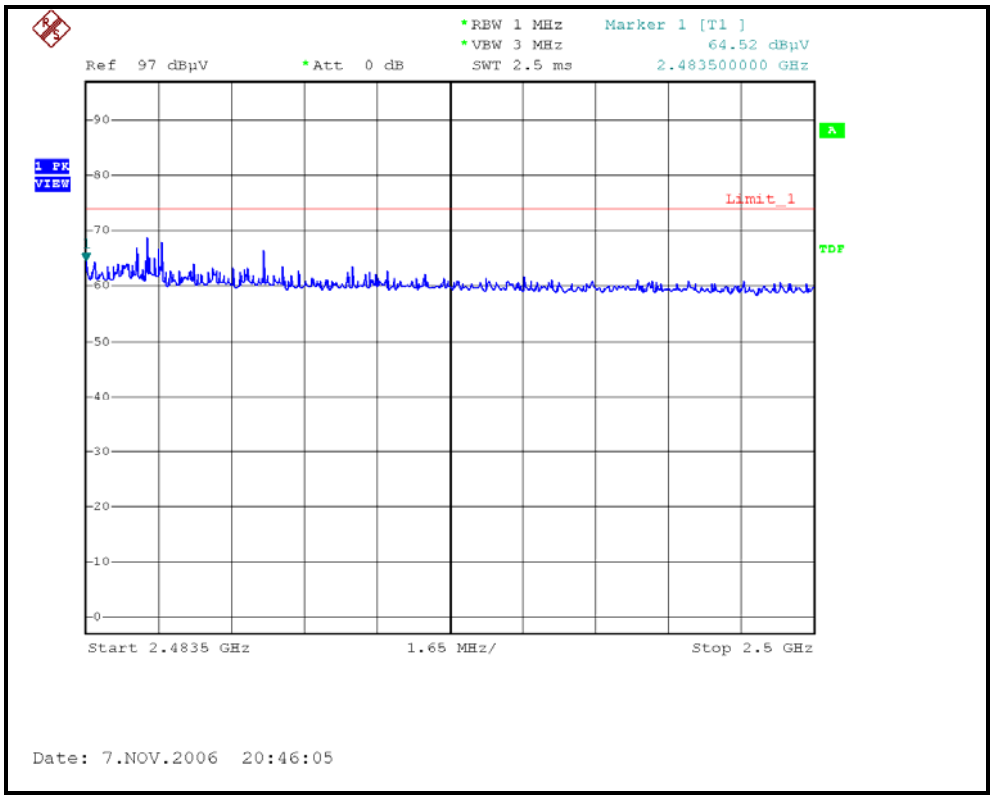


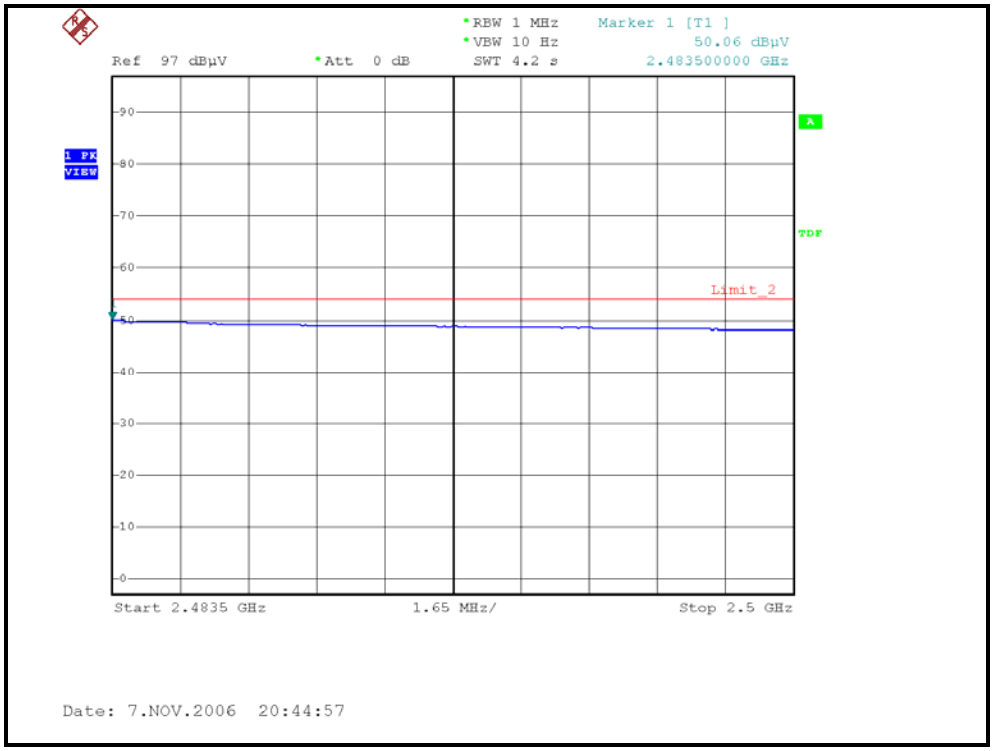
RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)





RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.10 PK	74.00	-4.90	1.07 H	341	37.40	31.70
1	2390.00	48.40 AV	54.00	-5.60	1.07 H	341	16.70	31.70
2	*2412.00	108.50 PK			1.07 H	341	76.70	31.80
2	*2412.00	93.90 AV			1.07 H	341	62.10	31.80
3	3216.00	52.10 PK	88.50	-36.40	1.21 H	39	18.40	33.70
3	3216.00	45.50 AV	73.90	-28.40	1.21 H	39	11.80	33.70
4	4824.00	52.50 PK	74.00	-21.50	1.10 H	94	15.00	37.50
4	4824.00	42.50 AV	54.00	-11.50	1.10 H	94	5.00	37.50
5	7236.00	47.00 PK	74.00	-27.00	1.24 H	337	2.80	44.20
5	7236.00	35.10 AV	54.00	-18.90	1.24 H	337	-9.10	44.20

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.70 PK	74.00	-6.30	1.00 V	155	36.00	31.70
1	2390.00	49.70 AV	54.00	-4.30	1.00 V	155	18.00	31.70
2	*2412.00	111.00 PK			1.00 V	155	79.20	31.80
2	*2412.00	99.80 AV			1.00 V	155	68.00	31.80
3	3216.00	54.20 PK	91.00	-36.80	1.30 V	354	20.50	33.70
3	3216.00	49.90 AV	79.80	-29.90	1.30 V	354	16.20	33.70
4	4824.00	52.10 PK	74.00	-21.90	1.08 V	7	14.60	37.50
4	4824.00	47.30 AV	54.00	-6.70	1.08 V	7	9.80	37.50
5	7236.00	53.50 PK	74.00	-20.50	1.93 V	6	9.30	44.20
5	7236.00	40.30 AV	54.00	-13.70	1.93 V	6	-3.90	44.20

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

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	108.00 PK			1.06 H	343	76.10	31.90
1	*2437.00	92.60 AV			1.06 H	343	60.70	31.90
2	3249.30	55.40 PK	88.00	-32.60	1.30 H	352	21.70	33.70
2	3249.30	51.80 AV	72.60	-20.80	1.30 H	352	18.10	33.70
3	4874.00	51.80 PK	74.00	-22.20	1.06 H	353	14.20	37.60
3	4874.00	47.30 AV	54.00	-6.70	1.06 H	353	9.70	37.60
4	7311.00	58.20 PK	74.00	-15.80	1.52 H	271	13.70	44.50
4	7311.00	37.80 AV	54.00	-16.20	1.52 H	271	-6.70	44.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.50 PK			1.06 V	185	79.60	31.90
1	*2437.00	100.60 AV			1.06 V	185	68.70	31.90
2	3249.30	52.70 PK	91.50	-38.80	1.17 V	67	19.00	33.70
2	3249.30	46.70 AV	80.60	-33.90	1.17 V	67	13.00	33.70
3	4874.00	49.70 PK	74.00	-24.30	1.09 V	111	12.10	37.60
3	4874.00	43.90 AV	54.00	-10.10	1.09 V	111	6.30	37.60
4	7311.00	46.10 PK	74.00	-27.90	1.32 V	144	1.60	44.50
4	7311.00	36.70 AV	54.00	-17.30	1.32 V	144	-7.80	44.50

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

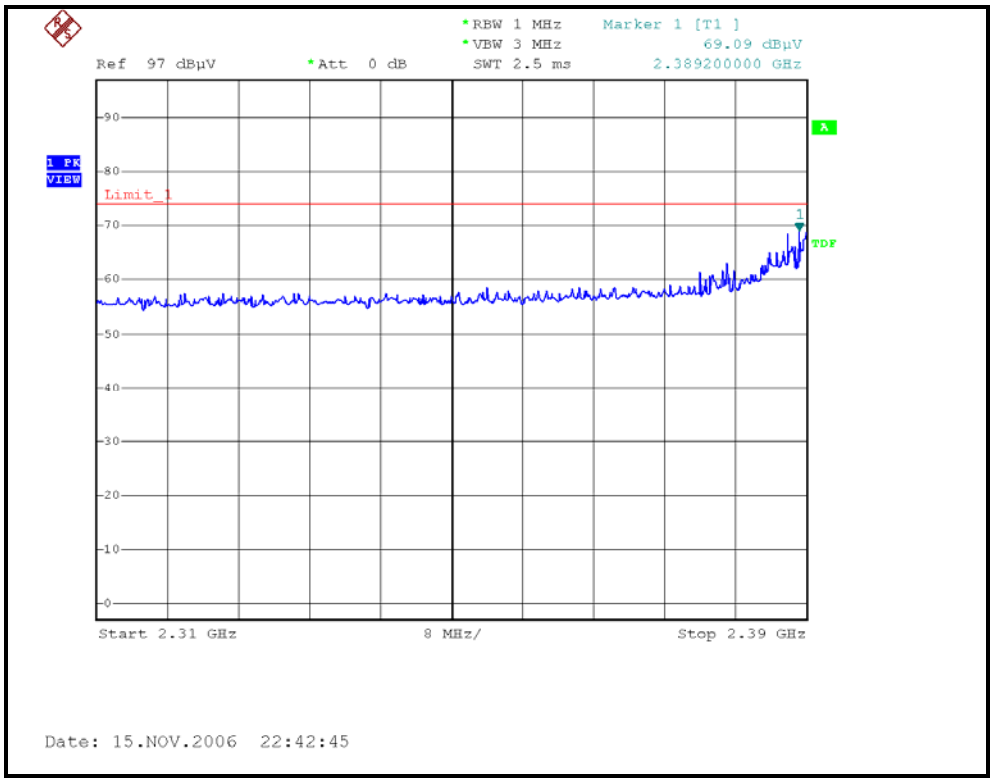
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

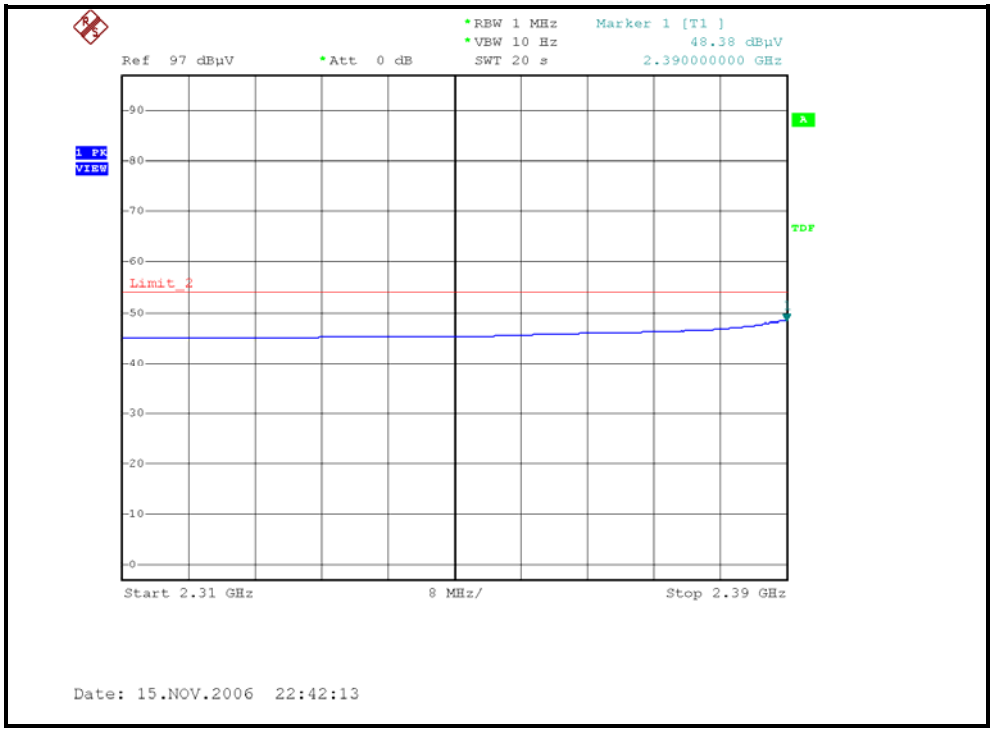
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	107.00 PK			1.02 H	340	75.00	32.00
1	*2462.00	91.20 AV			1.02 H	340	59.20	32.00
2	2483.50	58.80 PK	74.00	-15.20	1.02 H	340	26.70	32.10
2	2483.50	47.30 AV	54.00	-6.70	1.02 H	340	15.20	32.10
3	3282.50	54.20 PK	87.00	-32.80	1.36 H	67	20.40	33.80
3	3282.50	49.40 AV	71.20	-21.80	1.36 H	67	15.60	33.80
4	4924.00	50.30 PK	74.00	-23.70	1.18 H	39	12.60	37.70
4	4924.00	42.50 AV	54.00	-11.50	1.18 H	39	4.80	37.70
5	7386.00	49.20 PK	74.00	-24.80	1.49 H	69	4.40	44.80
5	7386.00	34.10 AV	54.00	-19.90	1.49 H	69	-10.70	44.80

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	110.70 PK			1.00 V	209	78.70	32.00
1	*2462.00	99.80 AV			1.00 V	209	67.80	32.00
2	2483.50	66.50 PK	74.00	-7.50	1.00 V	210	34.40	32.10
2	2483.50	49.40 AV	54.00	-4.60	1.00 V	210	17.30	32.10
3	3282.50	56.80 PK	90.70	-33.90	1.27 V	351	23.00	33.80
3	3282.50	53.90 AV	79.80	-25.90	1.27 V	351	20.10	33.80
4	4924.00	55.10 PK	74.00	-18.90	1.07 V	292	17.40	37.70
4	4924.00	52.10 AV	54.00	-1.90	1.07 V	292	14.40	37.70
5	7386.00	54.50 PK	74.00	-19.50	1.76 V	351	9.70	44.80
5	7386.00	36.70 AV	54.00	-17.30	1.76 V	351	-8.10	44.80

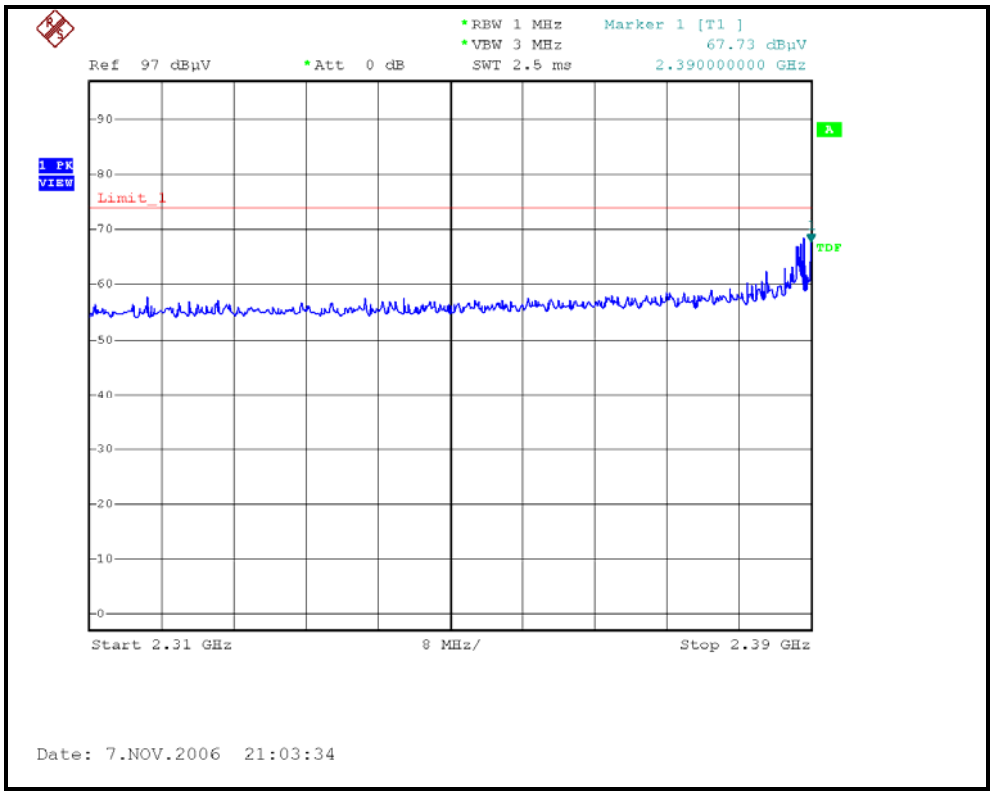
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per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

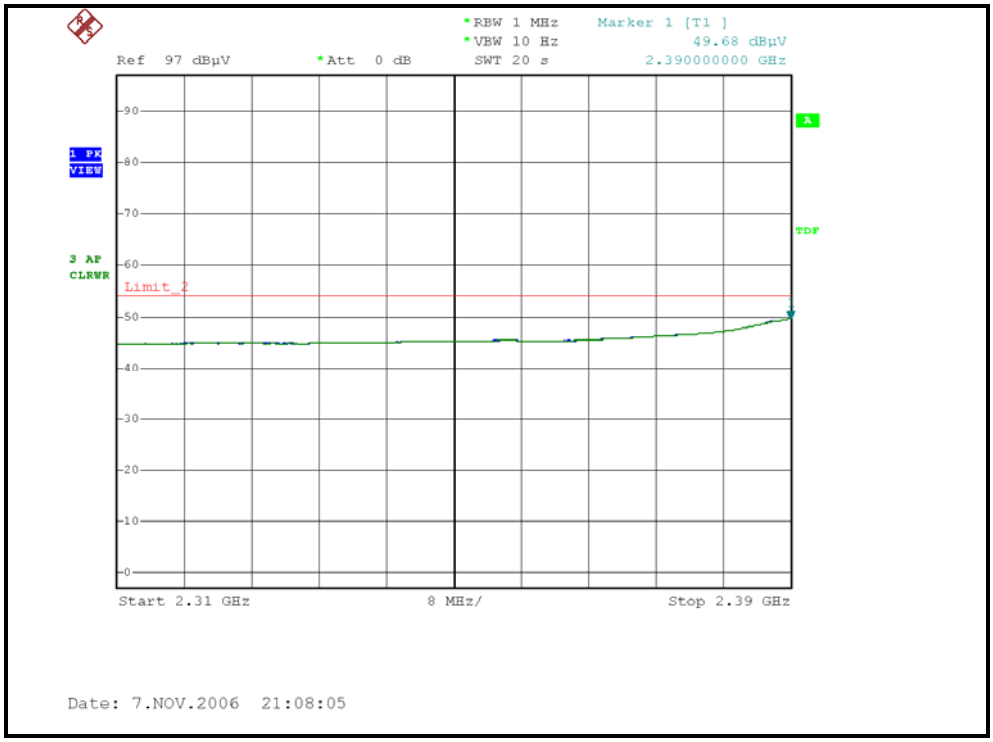
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, HORIZONTAL)



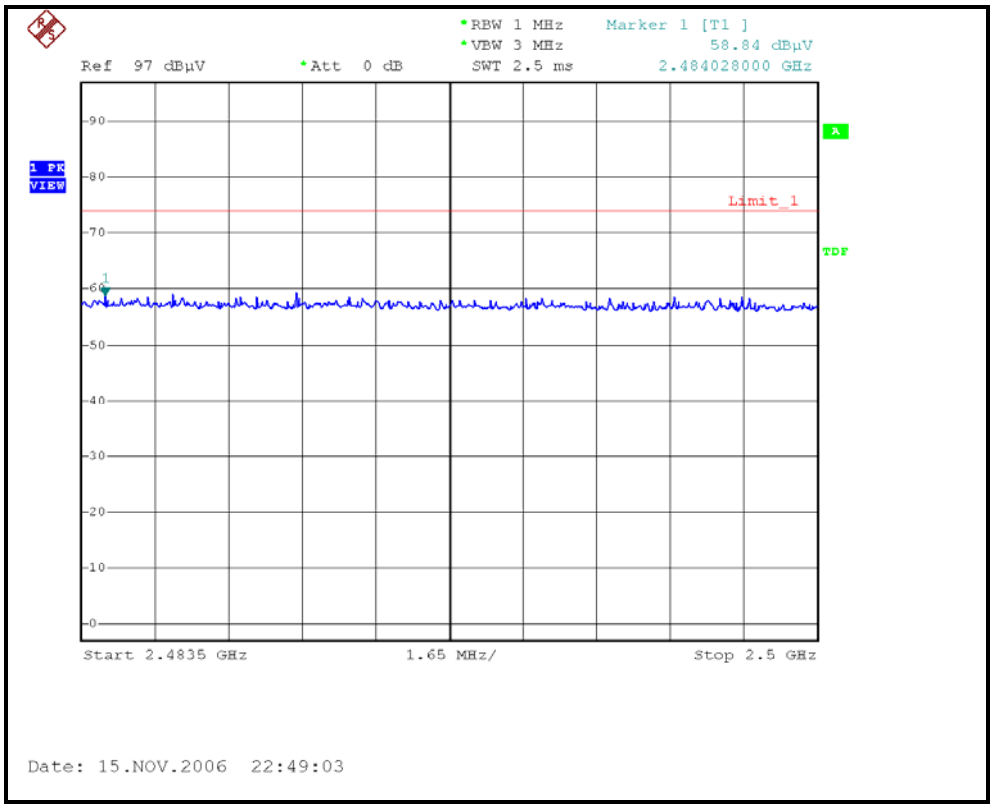


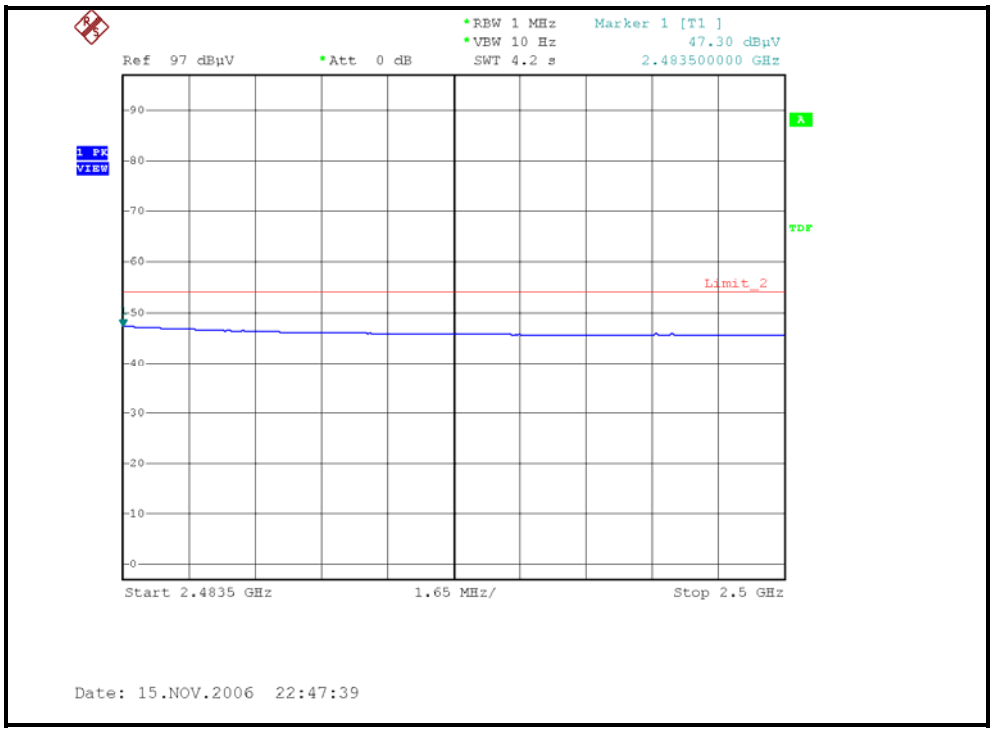
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)



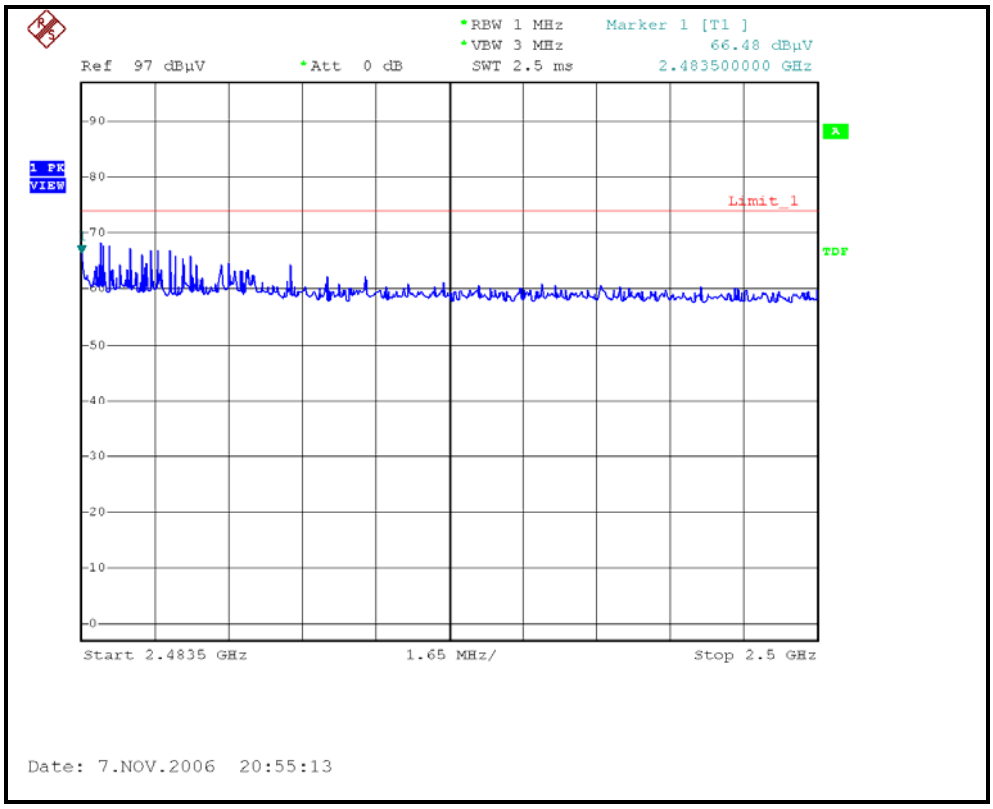


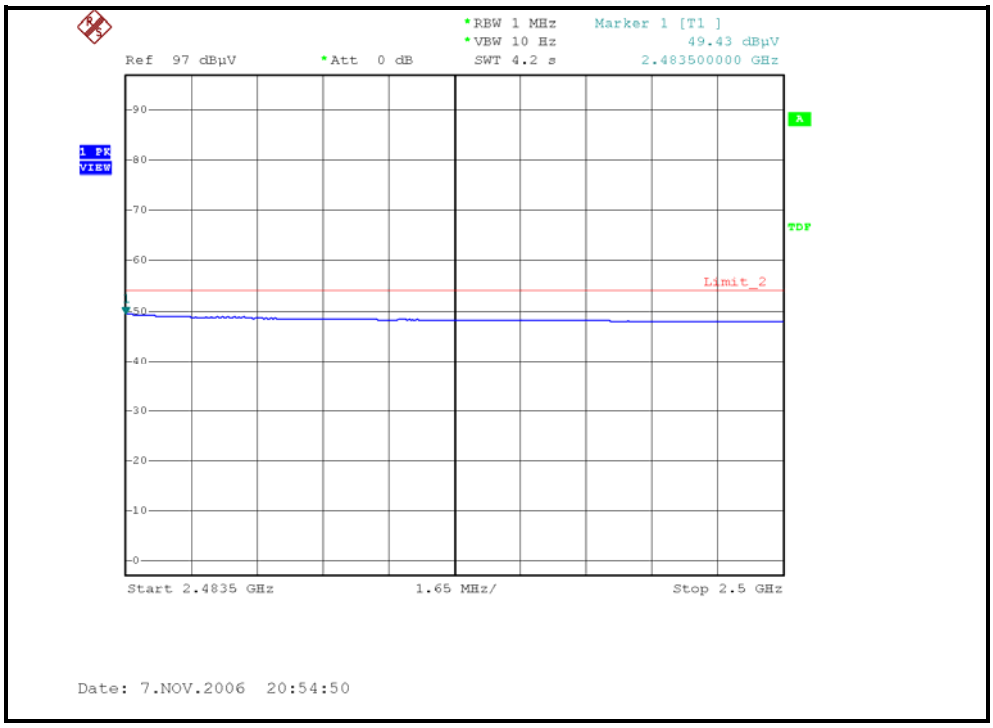
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, HORIZONTAL)





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	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

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	67.70 PK	74.00	-6.30	1.05 H	342	36.10	31.70
1	2388.00	48.90 AV	54.00	-5.10	1.05 H	342	17.20	31.70
2	*2422.00	107.50 PK			1.05 H	342	75.60	31.80
2	*2422.00	95.70 AV			1.05 H	342	63.90	31.80
3	3229.30	52.10 PK	87.50	-35.40	1.01 H	78	18.40	33.70
3	3229.30	47.20 AV	75.70	-28.50	1.01 H	78	13.50	33.70
4	4844.00	49.90 PK	74.00	-24.10	1.00 H	102	12.40	37.50
4	4844.00	42.90 AV	54.00	-11.10	1.00 H	102	5.40	37.50
5	7266.00	47.50 PK	74.00	-26.50	1.35 H	112	3.20	44.30
5	7266.00	34.10 AV	54.00	-19.90	1.35 H	112	-10.20	44.30

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.00	68.30 PK	74.00	-5.70	1.00 V	155	36.60	31.70
1	2389.00	53.00 AV	54.00	-1.00	1.00 V	155	21.30	31.70
2	*2422.00	110.50 PK			1.00 V	157	78.70	31.80
2	*2422.00	101.50 AV			1.00 V	157	69.70	31.80
3	3229.30	55.00 PK	91.50	-36.50	1.30 V	335	21.30	33.70
3	3229.30	50.40 AV	81.50	-31.10	1.30 V	335	16.70	33.70
4	4844.00	51.90 PK	74.00	-22.10	1.07 V	353	14.40	37.50
4	4844.00	46.70 AV	54.00	-7.30	1.07 V	353	9.20	37.50
5	7266.00	47.80 PK	74.00	-26.20	2.00 V	342	3.50	44.30
5	7266.00	35.90 AV	54.00	-18.10	2.00 V	342	-8.40	44.30

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	**TESTED BY**	Moris Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*2437.00	106.10 PK			1.09 H	342	74.20	31.90
1	*2437.00	93.30 AV			1.09 H	342	61.40	31.90
2	3249.50	53.50 PK	86.10	-32.60	1.18 H	67	19.80	33.70
2	3249.50	47.80 AV	73.30	-25.50	1.18 H	67	14.10	33.70
3	4874.00	50.10 PK	74.00	-23.90	1.10 H	102	12.50	37.60
3	4874.00	42.50 AV	54.00	-11.50	1.10 H	102	4.90	37.60
4	7311.00	47.10 PK	74.00	-26.90	1.40 H	113	2.60	44.50
4	7311.00	34.20 AV	54.00	-19.80	1.40 H	113	-10.30	44.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*2437.00	110.00 PK			1.00 V	162	78.10	31.90
1	*2437.00	100.60 AV			1.00 V	162	68.70	31.90
2	3249.50	55.70 PK	90.00	-34.30	1.29 V	350	22.00	33.70
2	3249.50	52.30 AV	80.60	-28.30	1.29 V	350	18.60	33.70
3	4874.00	51.90 PK	74.00	-22.10	1.06 V	1	14.30	37.60
3	4874.00	46.10 AV	54.00	-7.90	1.06 V	1	8.50	37.60
4	7311.00	47.20 PK	74.00	-26.80	1.50 V	322	2.70	44.50
4	7311.00	36.20 AV	54.00	-17.80	1.50 V	322	-8.30	44.50

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

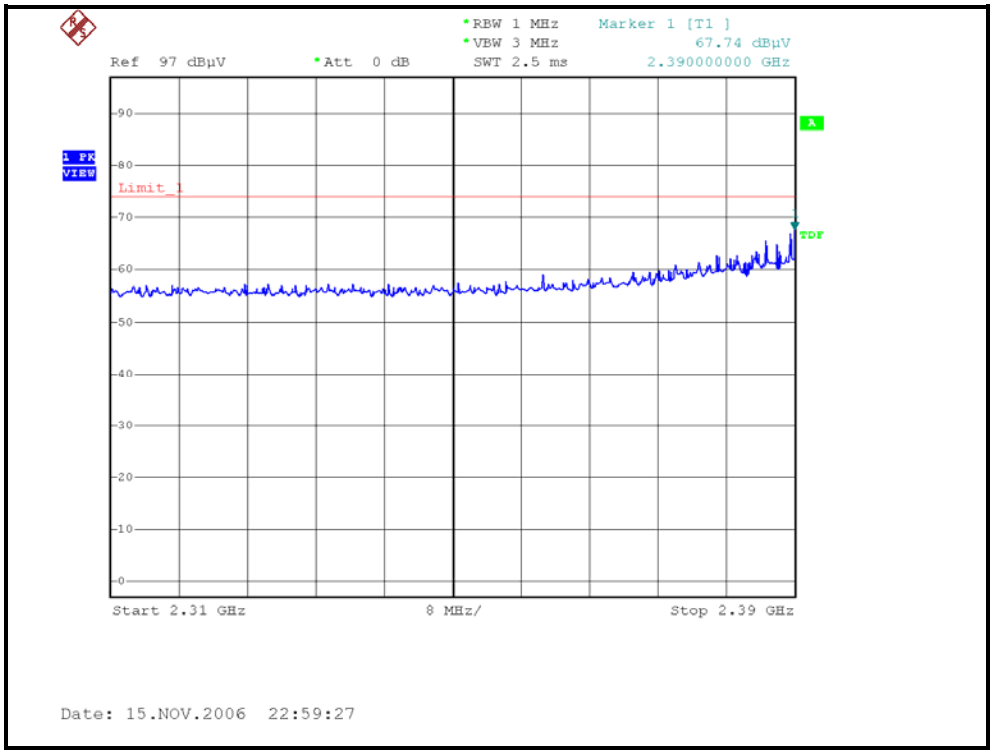
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 68%RH, 971hPa	TESTED BY	Moris Lin

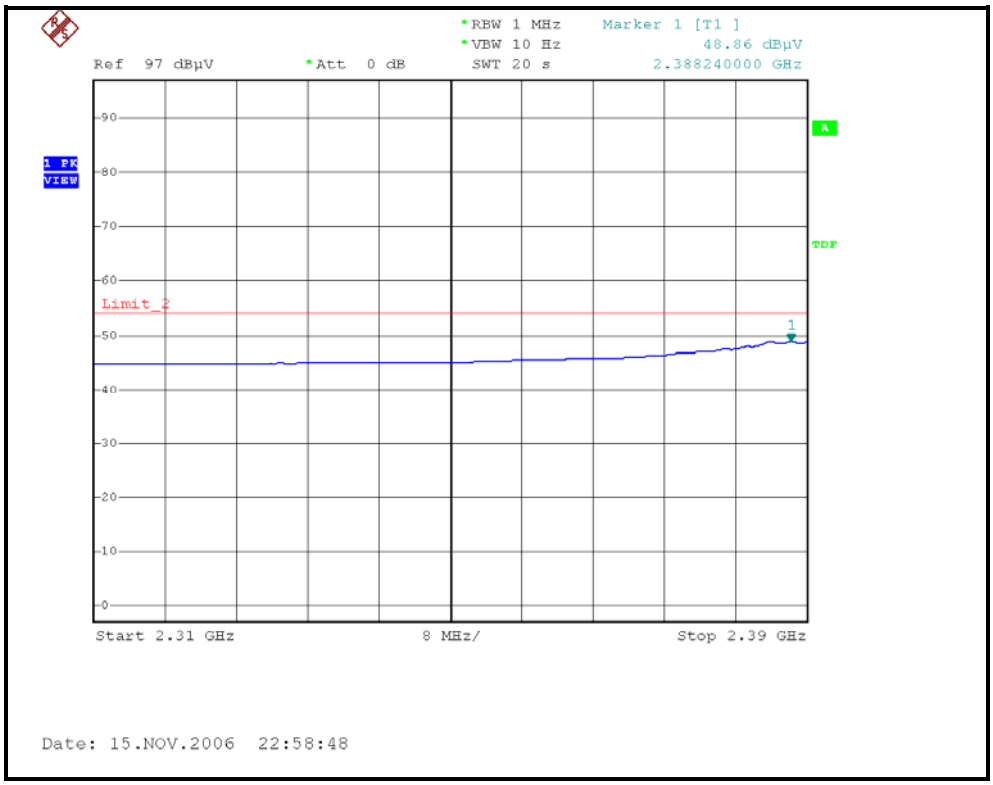
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	104.20 PK			1.05 H	341	72.20	32.00
1	*2452.00	91.50 AV			1.05 H	341	59.60	32.00
2	2483.50	58.30 PK	74.00	-15.70	1.05 H	341	26.20	32.10
2	2483.50	45.80 AV	54.00	-8.20	1.05 H	341	13.60	32.10
3	3269.30	52.70 PK	84.20	-31.50	1.22 H	254	18.90	33.80
3	3269.30	47.50 AV	71.50	-24.00	1.22 H	254	13.70	33.80
4	4904.00	51.20 PK	74.00	-22.80	1.00 H	28	13.60	37.60
4	4904.00	42.20 AV	54.00	-11.80	1.00 H	28	4.60	37.60
5	7356.00	49.80 PK	74.00	-24.20	1.36 H	14	5.10	44.70
5	7356.00	34.50 AV	54.00	-19.50	1.36 H	14	-10.20	44.70

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	108.00 PK			1.72 V	38	76.00	32.00
1	*2452.00	98.00 AV			1.72 V	38	66.00	32.00
2	2483.50	67.90 PK	74.00	-6.10	1.00 V	208	35.80	32.10
2	**2483.50**	**53.60 AV**	**54.00**	**-0.40**	**1.00 V**	**208**	**21.50**	**32.10**
3	3269.30	56.50 PK	88.00	-31.50	1.27 V	7	22.70	33.80
3	3269.30	53.50 AV	78.00	-24.50	1.27 V	7	19.70	33.80
4	4904.00	52.70 PK	74.00	-21.30	1.16 V	2	15.10	37.60
4	4904.00	47.80 AV	54.00	-6.20	1.16 V	2	10.20	37.60
5	7356.00	47.70 PK	74.00	-26.30	1.55 V	55	3.00	44.70
5	7356.00	36.60 AV	54.00	-17.40	1.55 V	55	-8.10	44.70

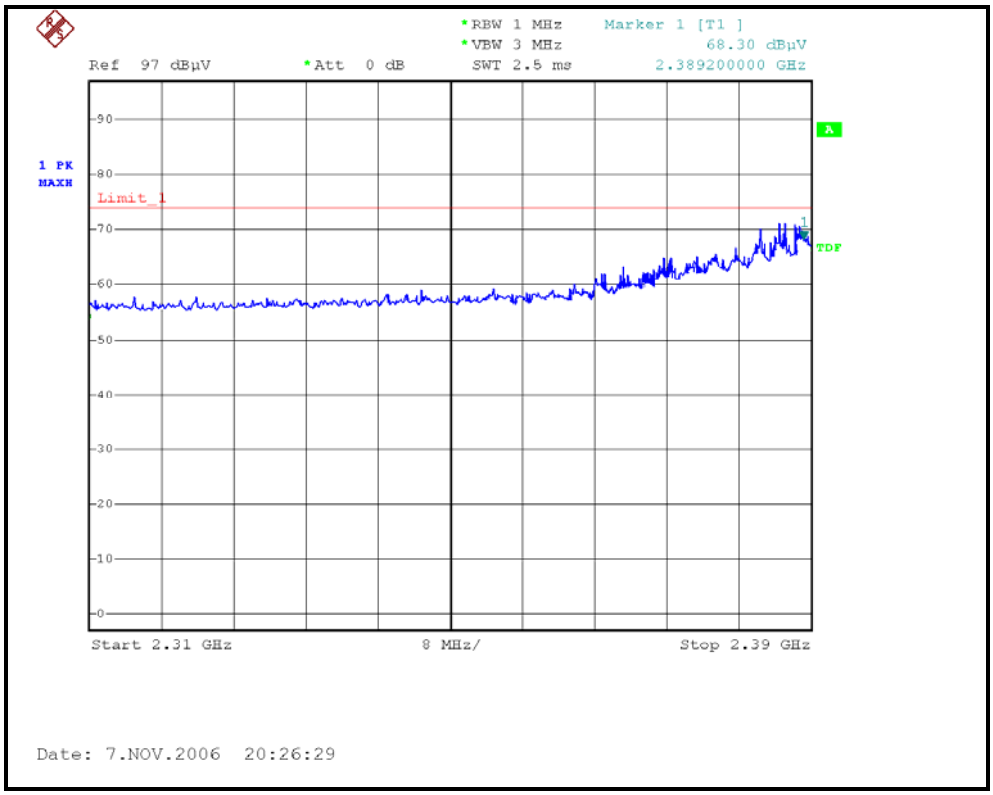
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. The limit value is defined as per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

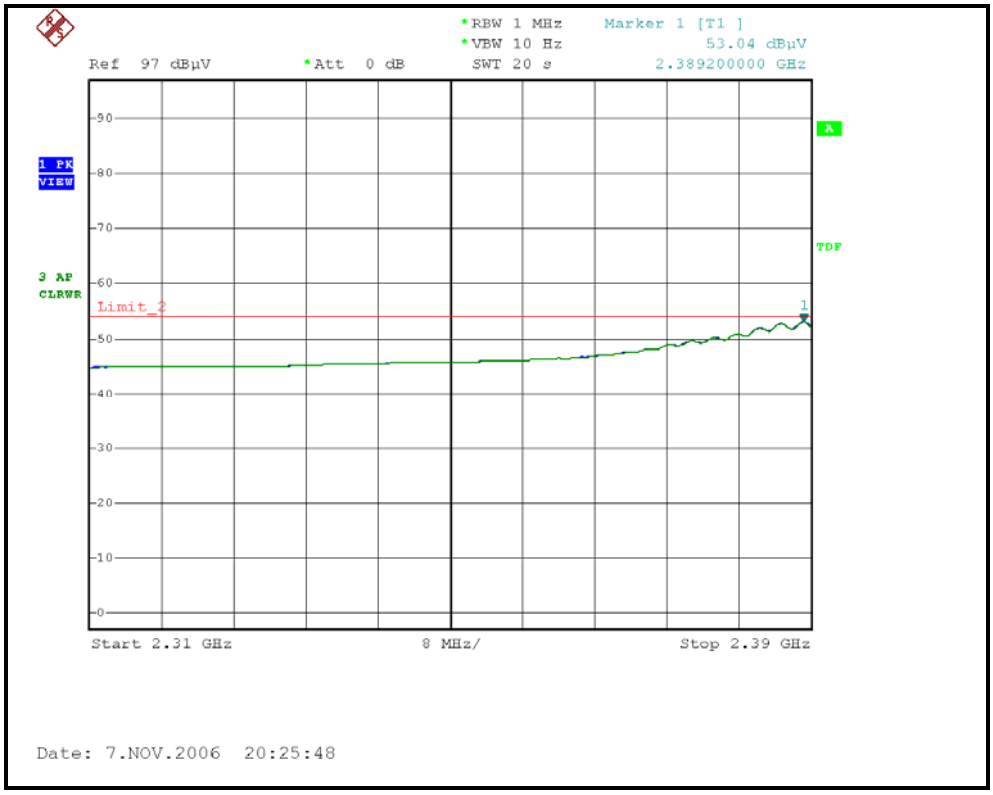
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, HORIZONTAL)



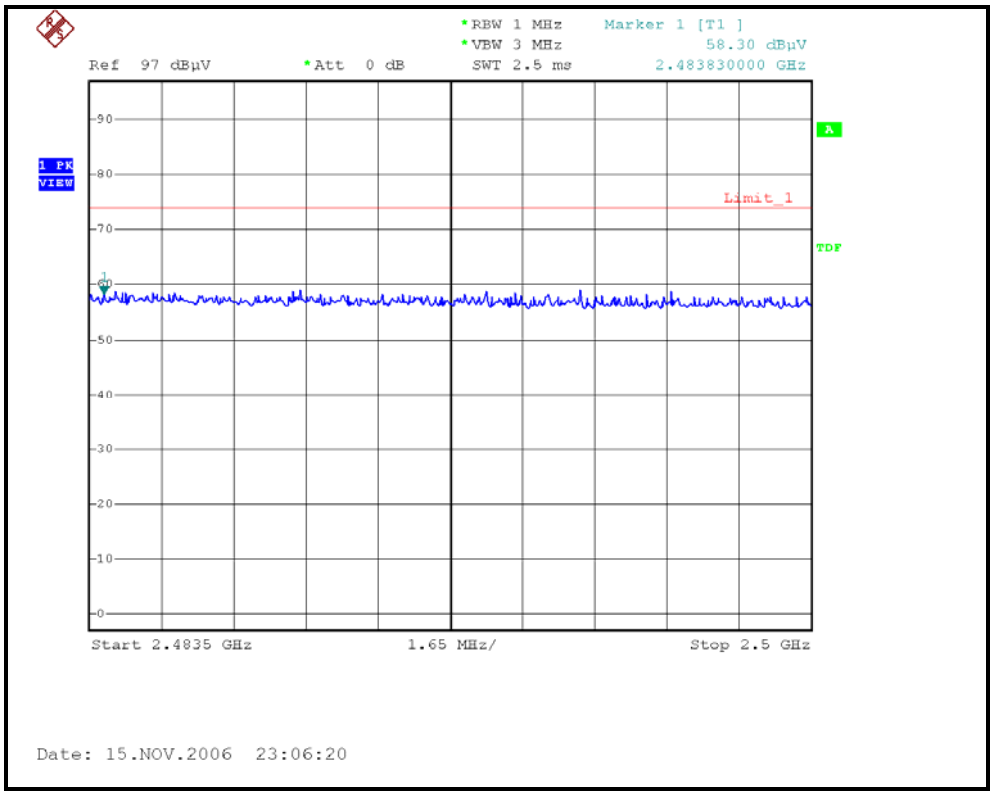


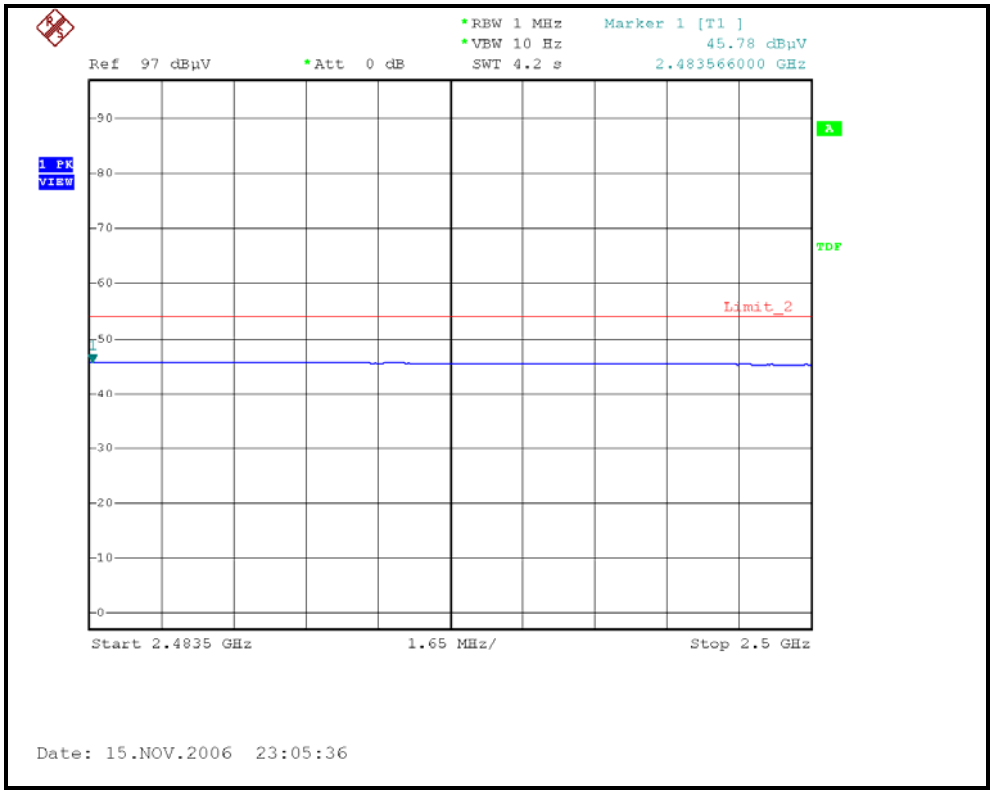
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)



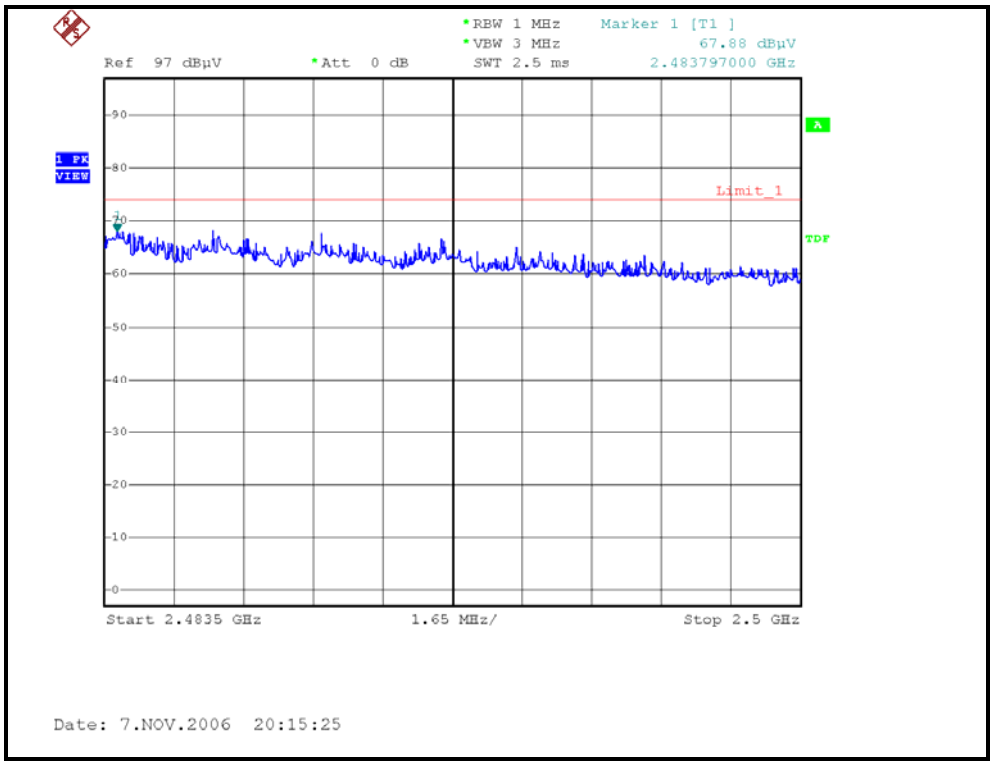


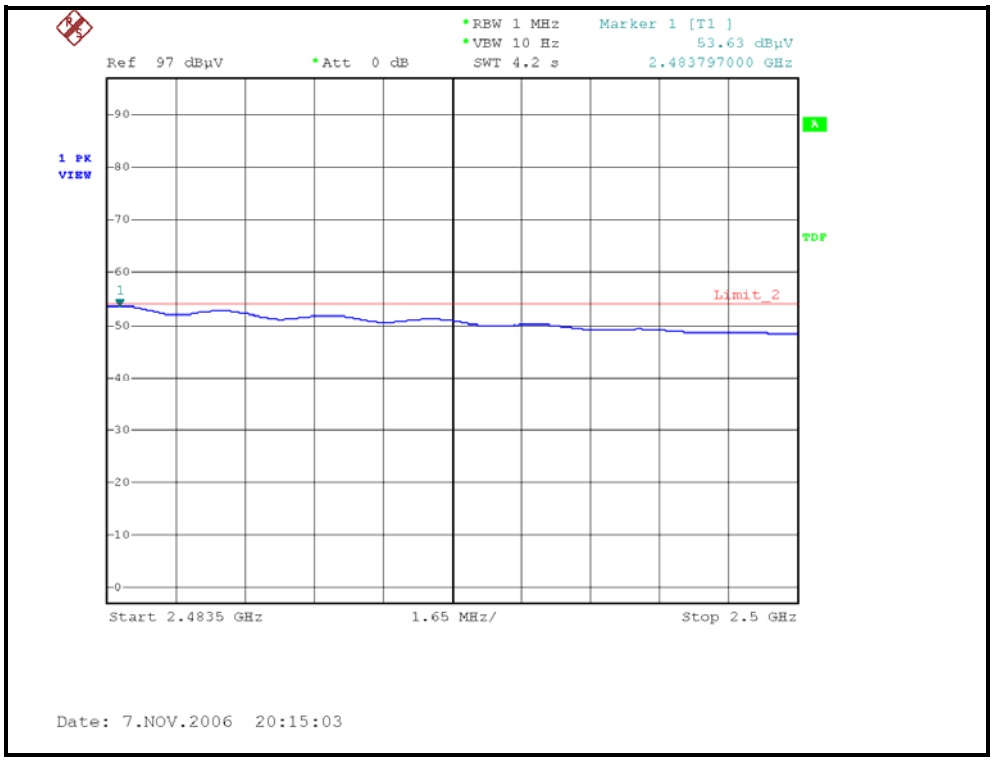
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, HORIZONTAL)





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	100036	Nov. 23, 2007

NOTE:

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

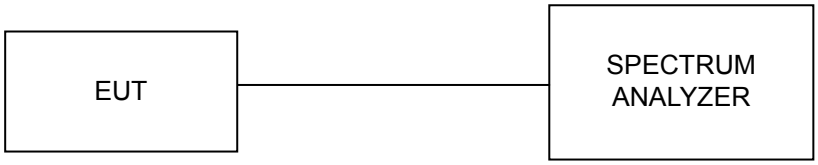
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

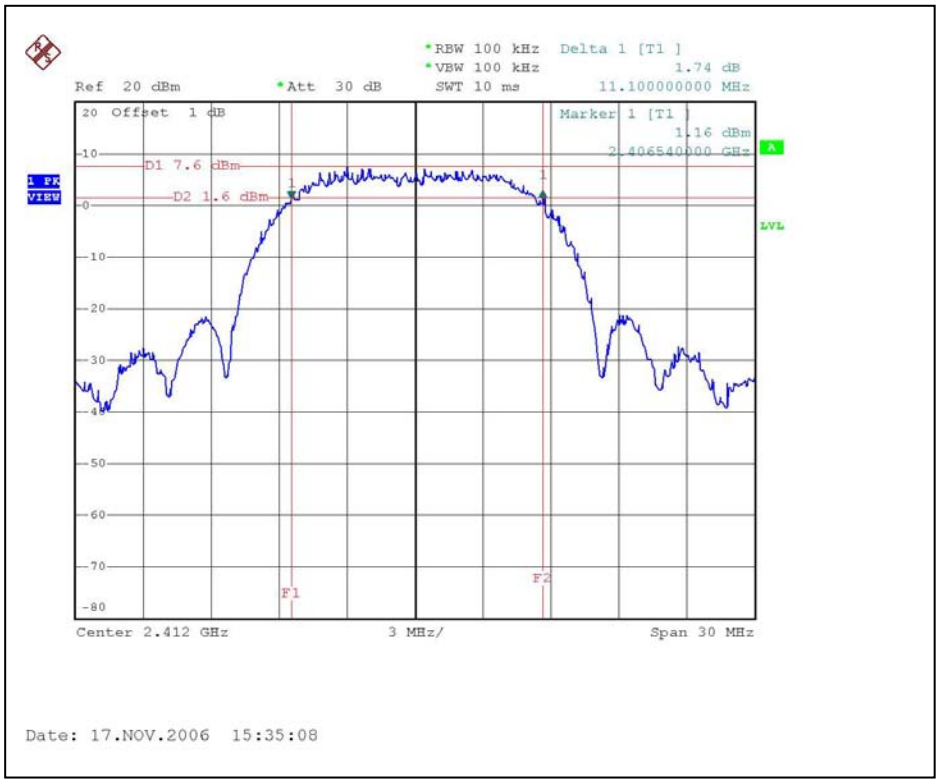
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

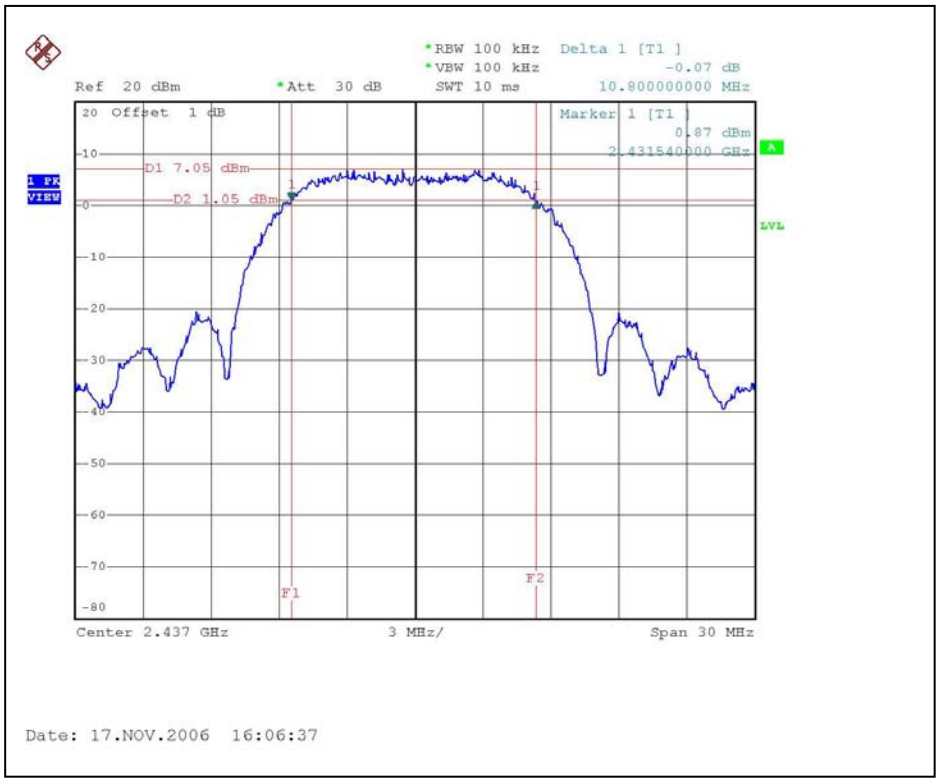
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 62%RH, 971hPa
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	11.10	0.5	PASS
6	2437	10.80	0.5	PASS
11	2462	11.16	0.5	PASS

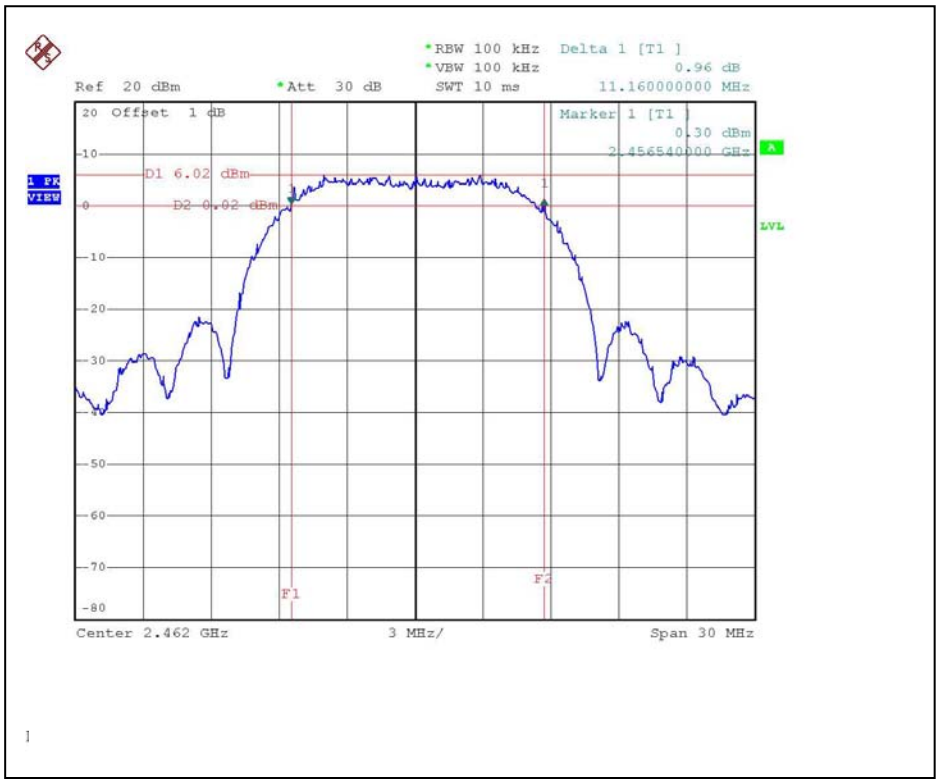
CH1



CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.07 dB
10.800000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
0.87 dBm
2.431540000 GHz
D1 7.05 dBm
D2 1.05 dBm
1 PK VIEW
A
LVL
F1
F2
Center 2.437 GHz
3 MHz/
Span 30 MHz
Date: 17.NOV.2006 16:06:37

CH11

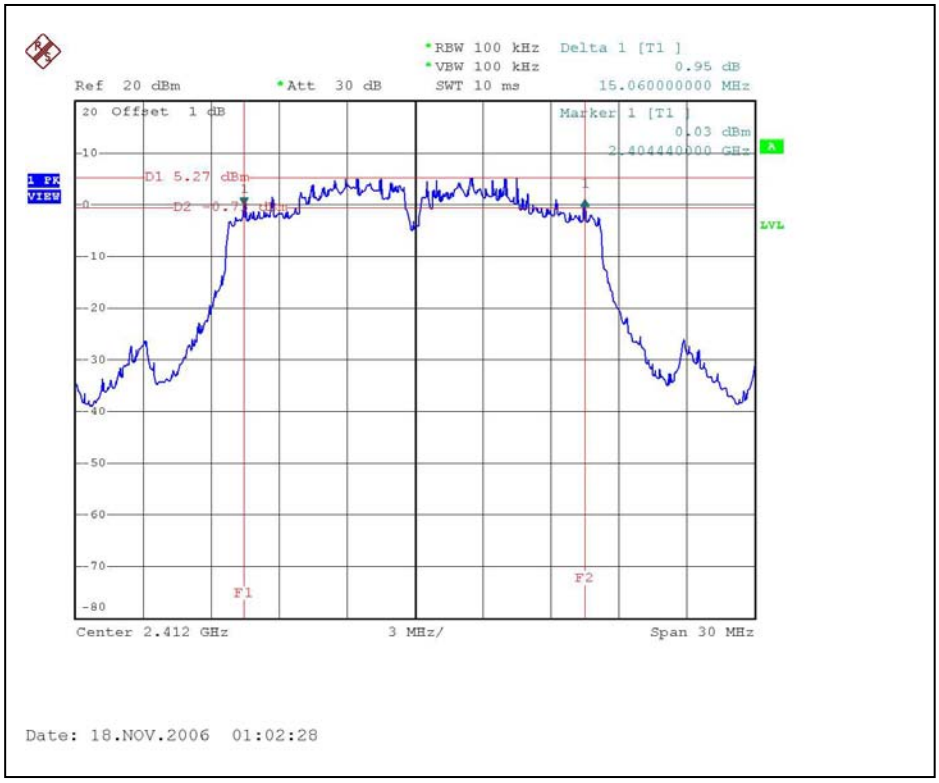

*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
0.96 dB
11.160000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
0.30 dBm
2.456540000 GHz
D1 6.02 dBm
D2 0.02 dBm
1 PK VIEW
A
LVL
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

802.11g OFDM MODULATION:

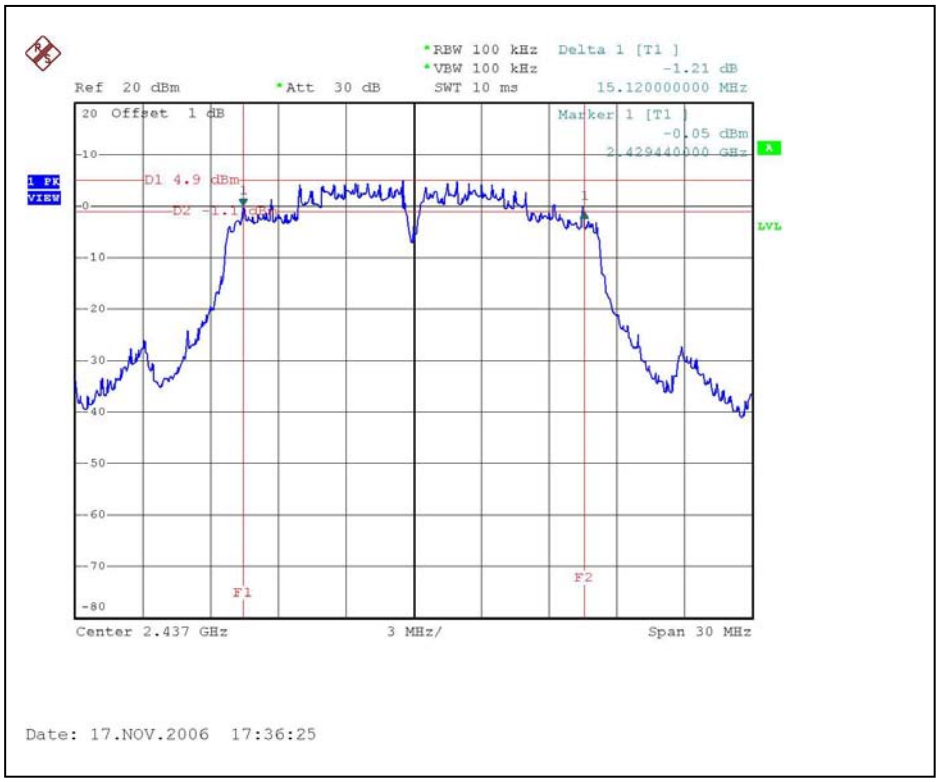
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 62%RH, 971hPa
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	15.06	16.44	0.5	PASS
6	2437	15.12	16.38	0.5	PASS
11	2462	15.06	15.12	0.5	PASS

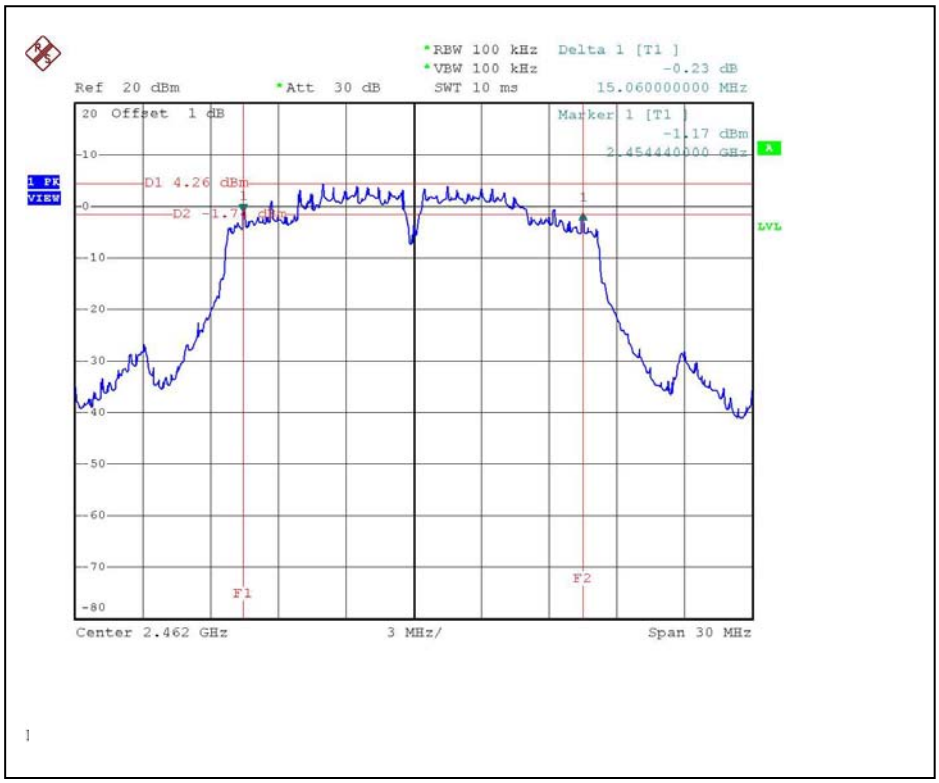
FOR CHAIN 0: CH1



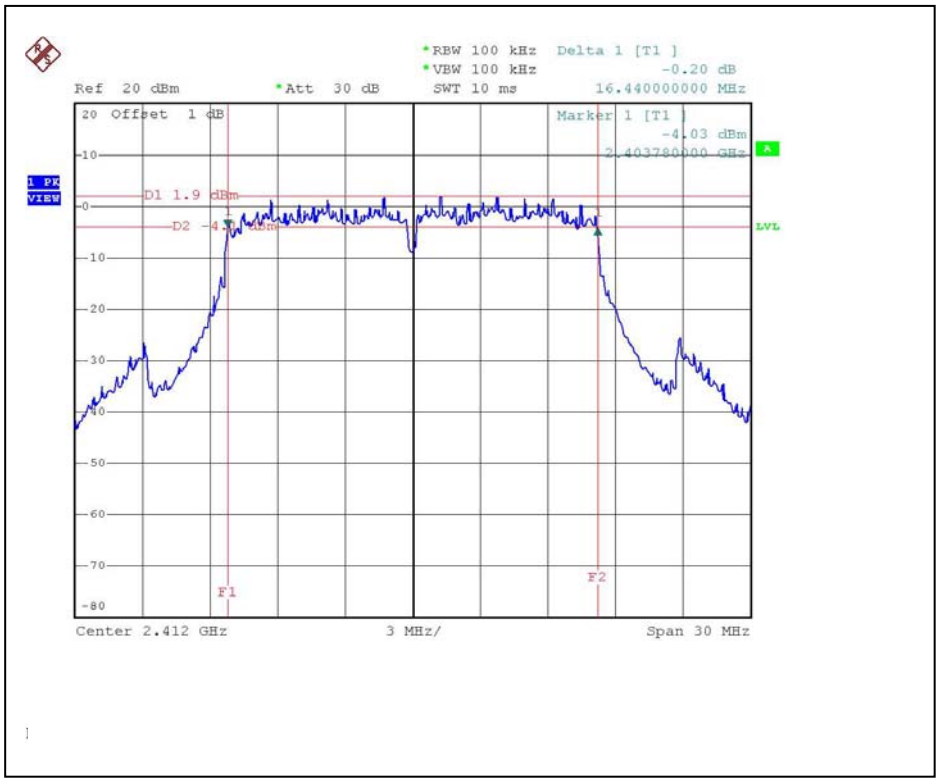
CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-1.21 dB
15.120000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-0.05 dBm
2.429440000 GHz
D1 4.9 dBm
D2 -1.1 dBm
F1
F2
Center 2.437 GHz
3 MHz/
Span 30 MHz
Date: 17.NOV.2006 17:36:25

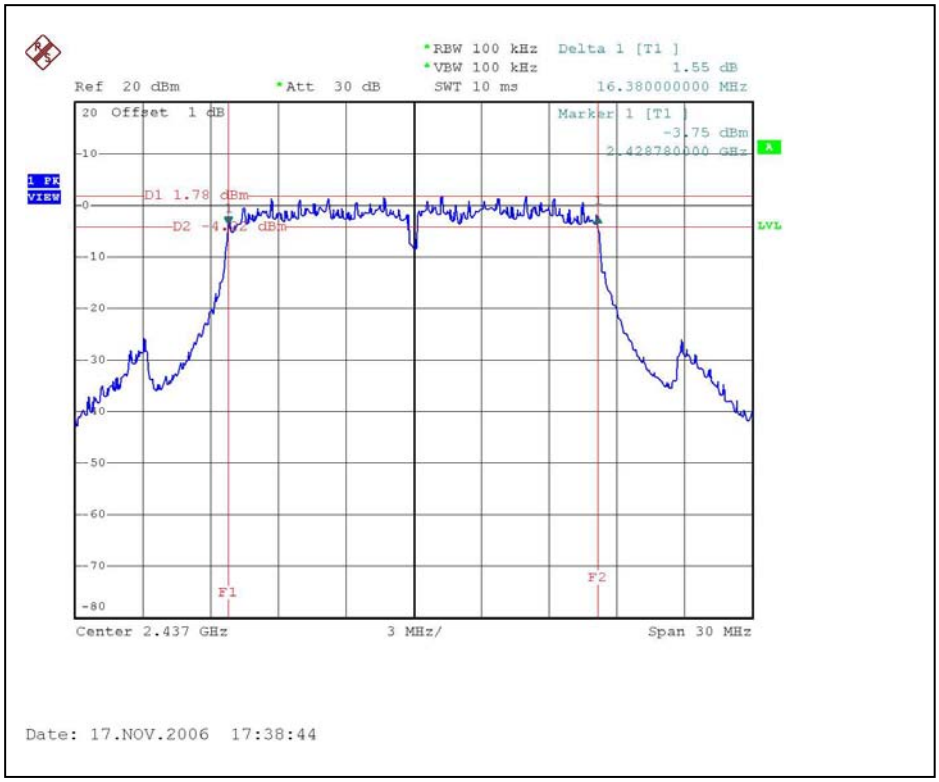
CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.23 dB
15.060000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-1.17 dBm
2.454440000 GHz
D1 4.26 dBm
D2 -1.7 dBm
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

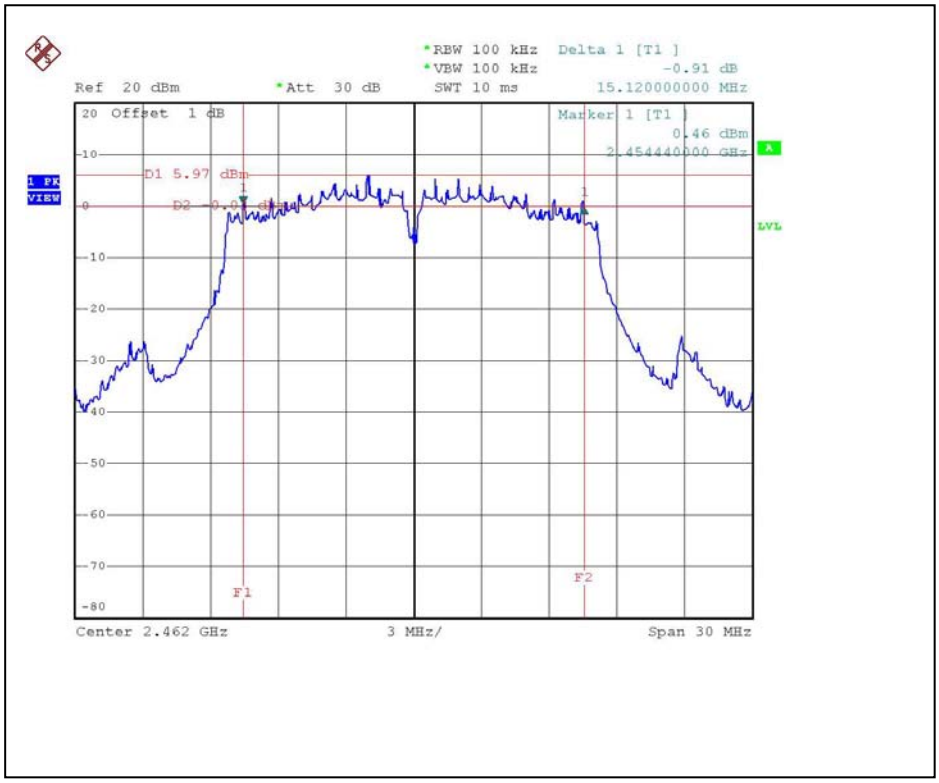
FOR CHAIN 1: CH1



CH6



CH11

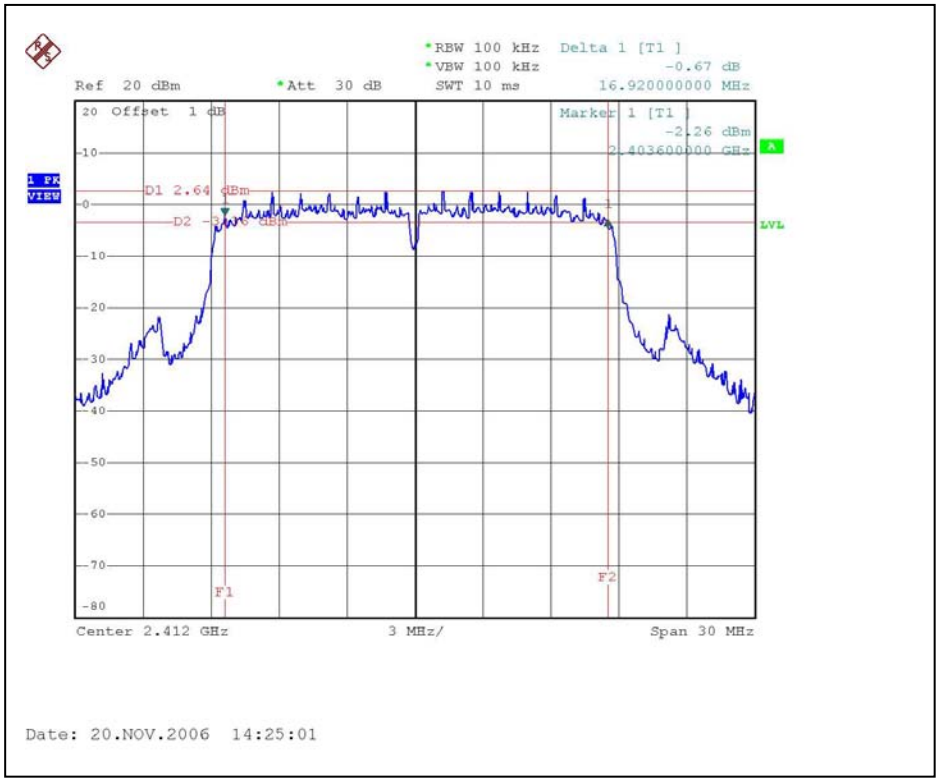

RBW 100 kHz
VBW 100 kHz
Delta 1 [T1]
-0.91 dB
15.120000000 MHz
Ref 20 dBm
Att 30 dB
SWT 10 ms
20 Offset 1 dB
Marker 1 [T1]
0.46 dBm
2.454440000 GHz
D1 5.97 dBm
D2 -9.03 dBm
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION:

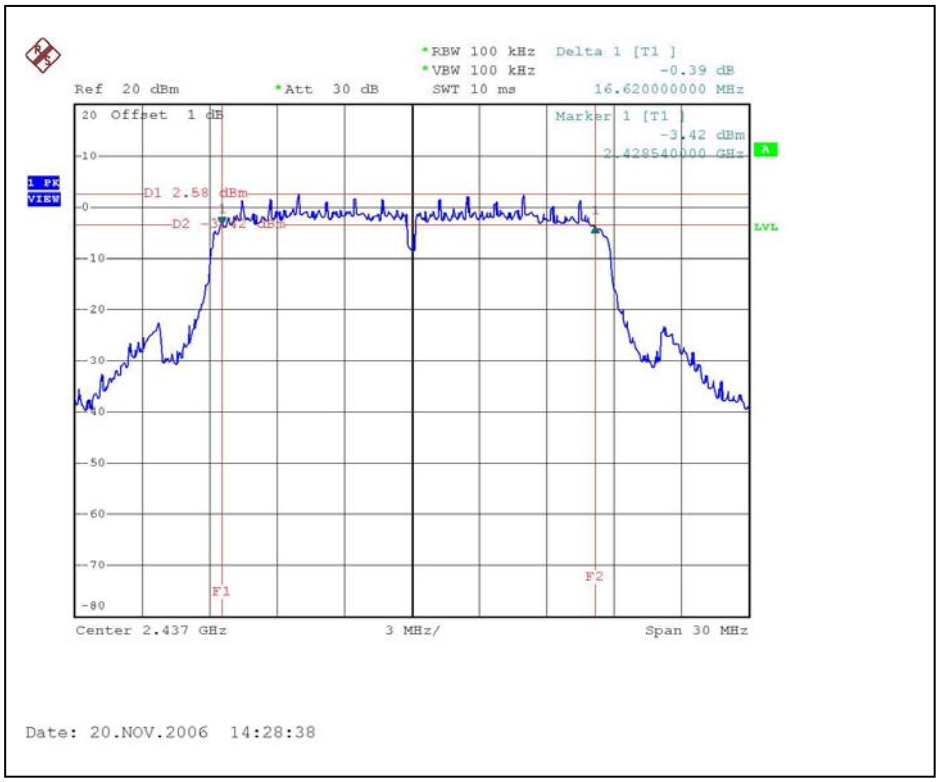
MODULATION TYPE	BPSK	**TRANSFER RATE**	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 62%RH, 971hPa
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.92	17.16	0.5	PASS
6	2437	16.62	16.56	0.5	PASS
11	2462	16.92	16.92	0.5	PASS

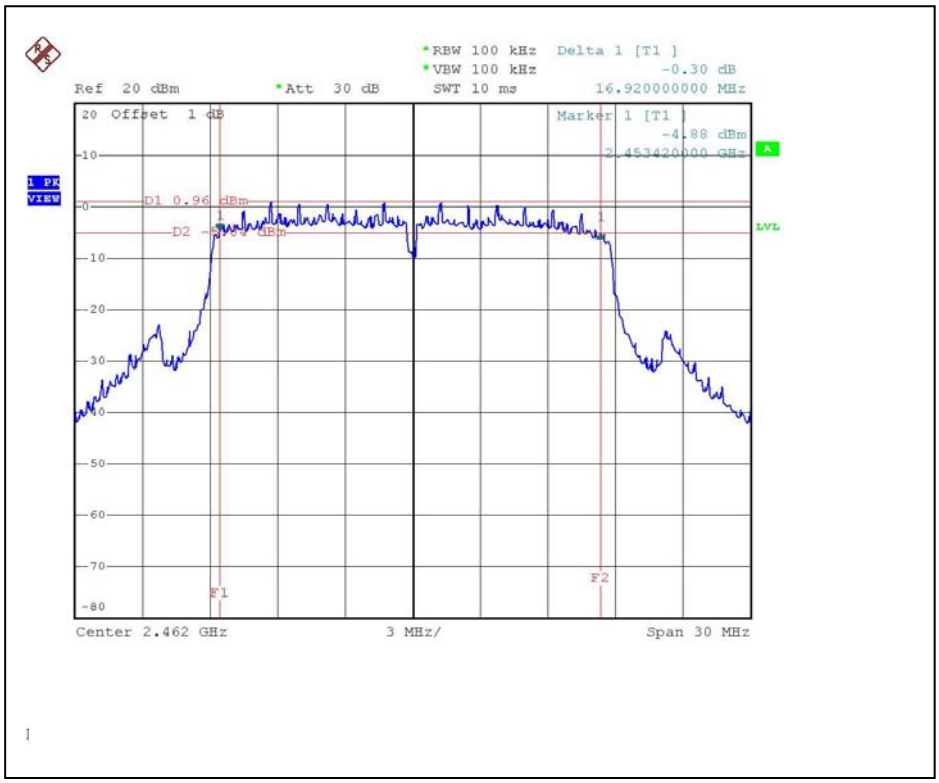
FOR CHAIN 0: CH1



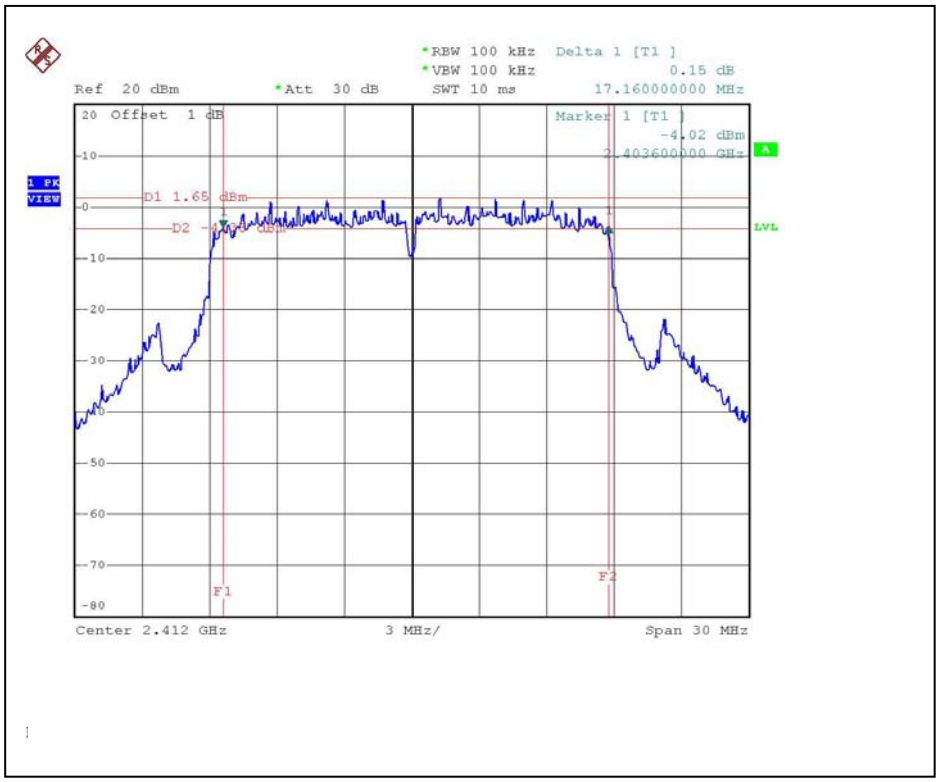
CH6


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.39 dB
16.620000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-3.42 dBm
2.428540000 GHz
1 PK VIEW
D1 2.58 dBm
D2 -3.42 dBm
LVL
F1
F2
Center 2.437 GHz
3 MHz/
Span 30 MHz
Date: 20.NOV.2006 14:28:38

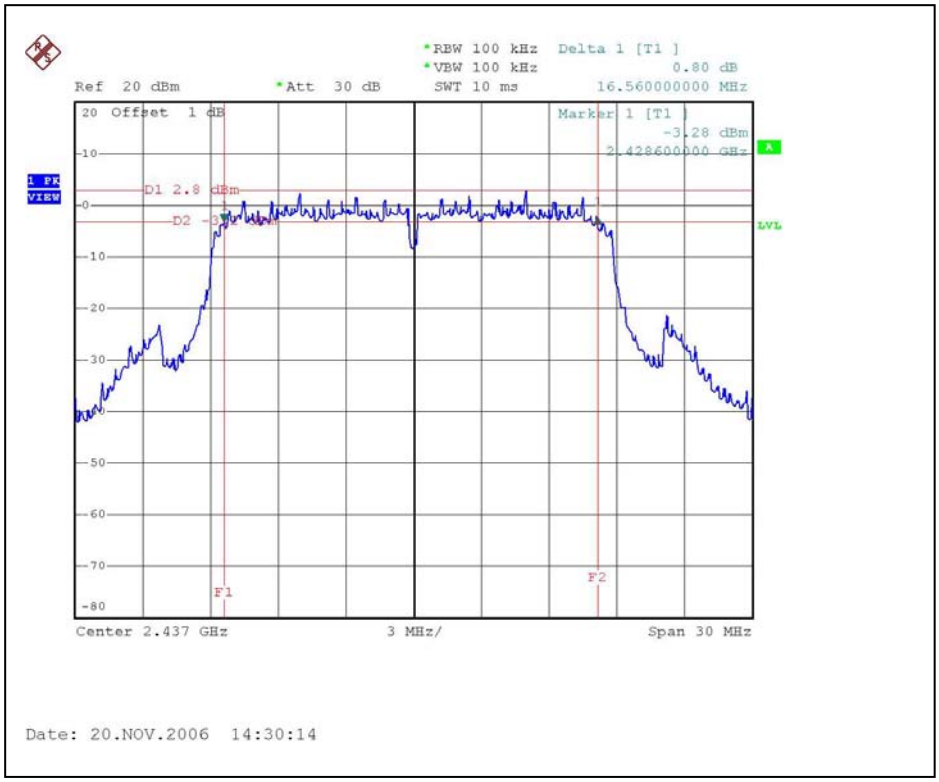
CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.30 dB
16.920000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-4.88 dBm
2.453420000 GHz
1 PK VIEW
D1 0.96 dBm
D2 -3.96 dBm
LVL
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

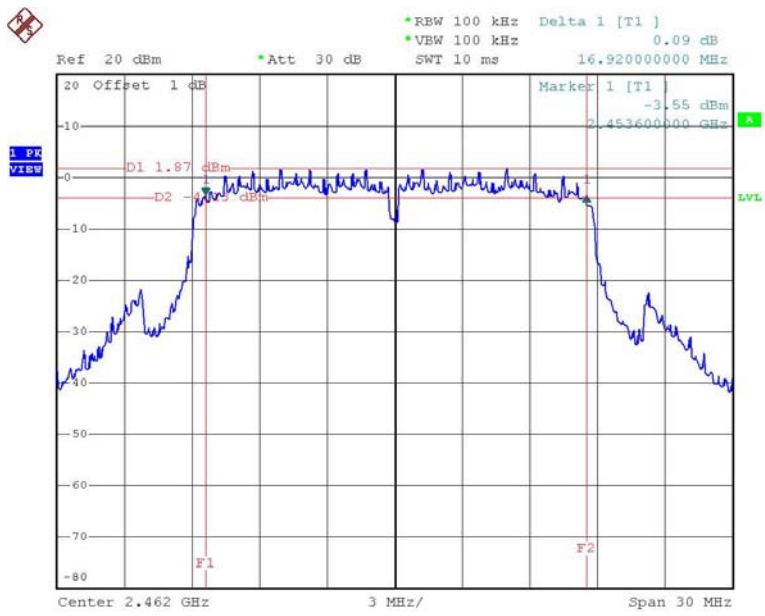
FOR CHAIN 1: CH1



CH6



CH11



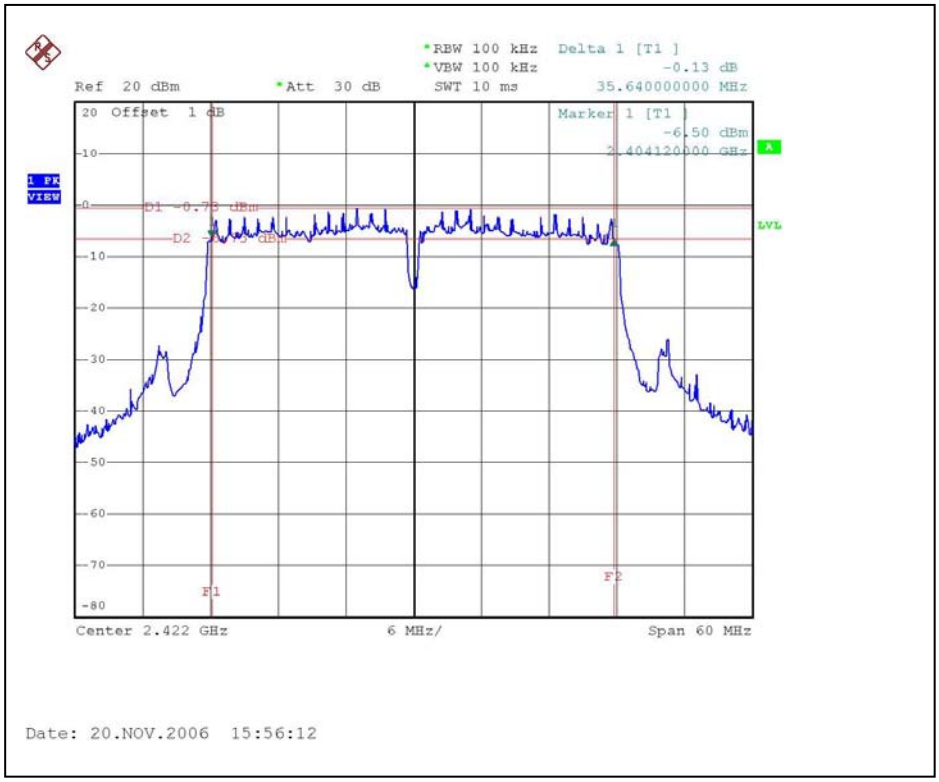
RBW 100 kHz
VBW 100 kHz
Delta 1 [T1]
0.09 dB
Ref 20 dBm
Att 30 dB
SWT 10 ms
16.920000000 MHz
20 Offset 1 dB
Marker 1 [T1]
-3.55 dBm
2.453600000 GHz
1 PK
VIEW
D1 1.87 dBm
D2
LVL
F1
F2
Center 2.462 GHz
3 MHz/
Span 30 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION:

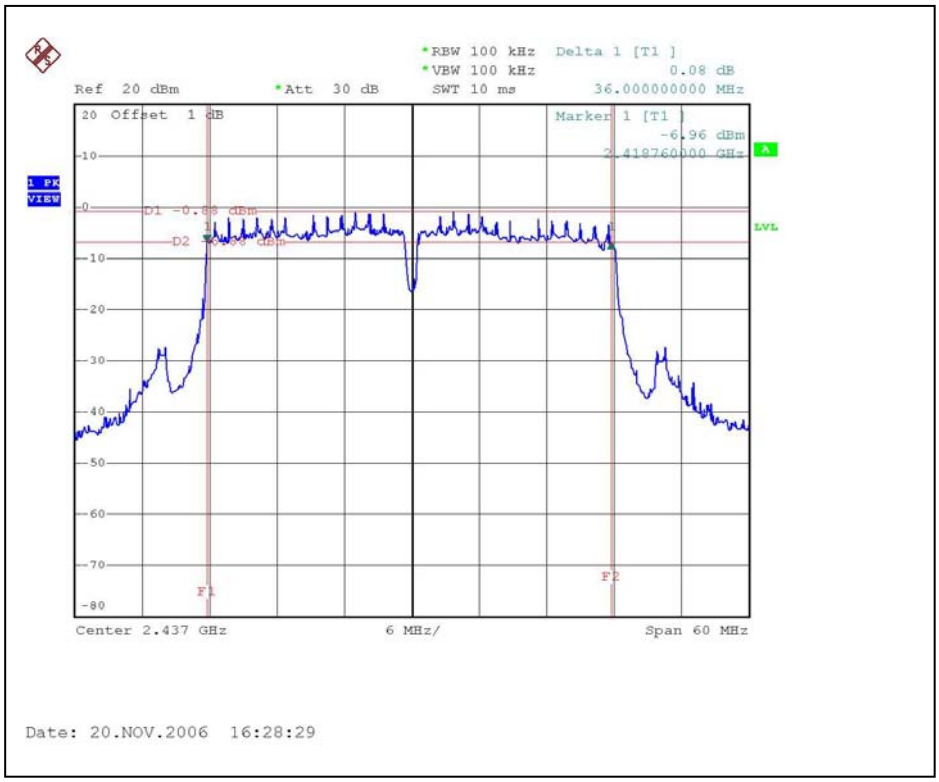
MODULATION TYPE	BPSK	**TRANSFER RATE**	13.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 62%RH, 971hPa
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	35.64	35.88	0.5	PASS
4	2437	36.00	35.76	0.5	PASS
7	2452	35.88	35.88	0.5	PASS

FOR CHAIN 0: CH1

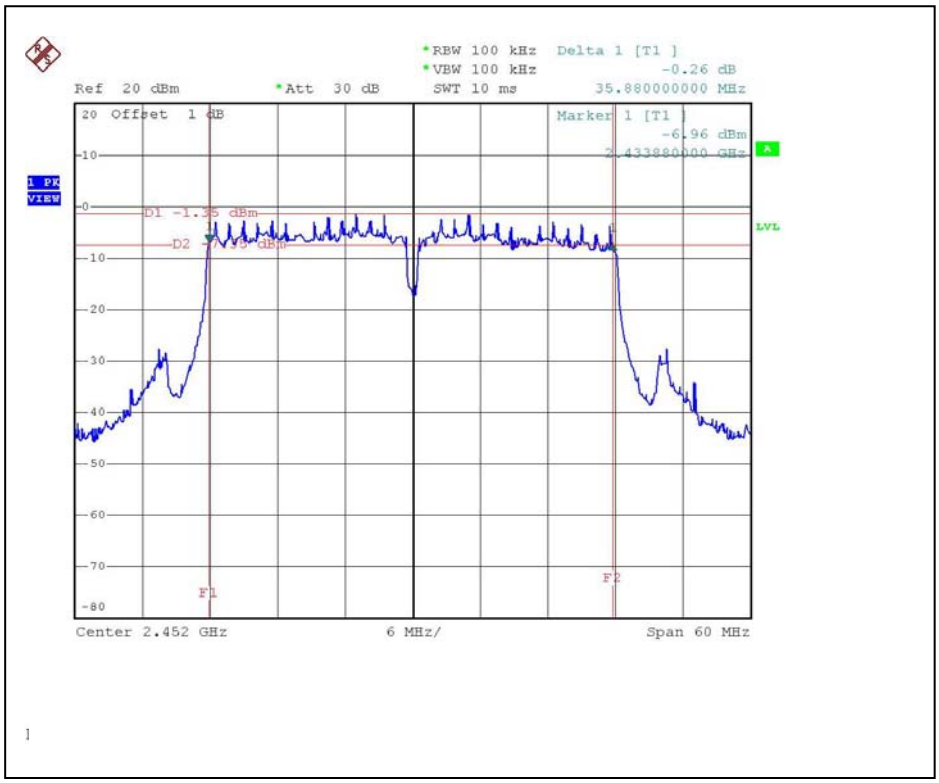


CH4



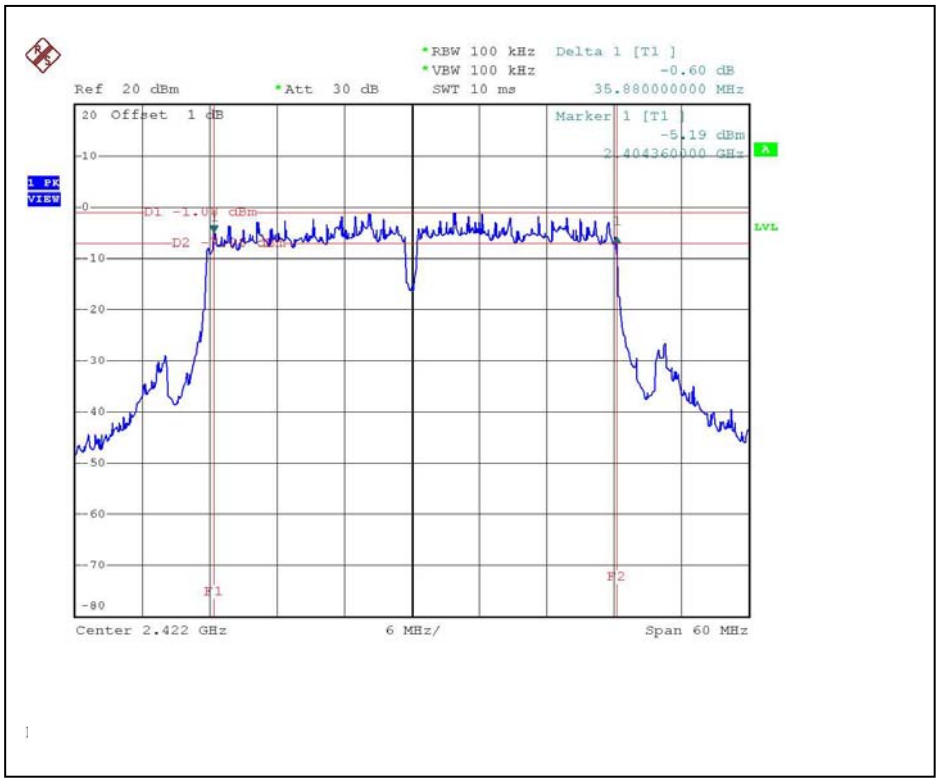
*RBW 100 kHz
*VBW 100 kHz
Delta 1 [T1]
0.08 dB
Ref 20 dBm
*Att 30 dB
SWT 10 ms
36.000000000 MHz
20 Offset 1 dB
Marker 1 [T1]
-6.96 dBm
2.418760000 GHz
1 PK
VIEW
LVL
F1
F2
Center 2.437 GHz
6 MHz/
Span 60 MHz
Date: 20.NOV.2006 16:28:29

CH7

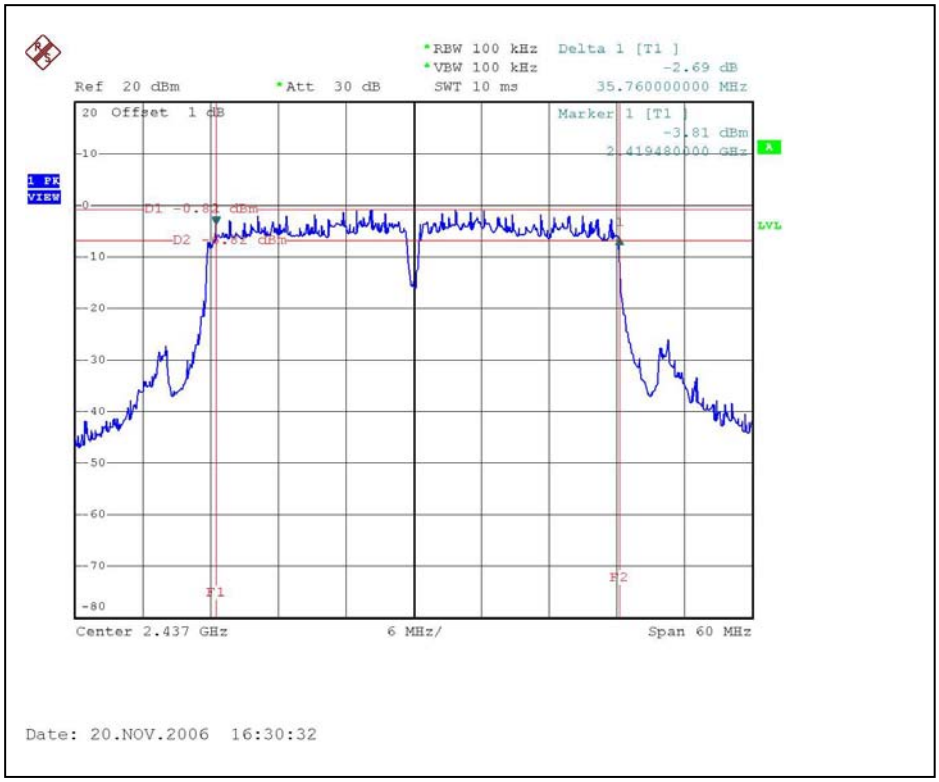


*RBW 100 kHz
*VBW 100 kHz
Delta 1 [T1]
-0.26 dB
Ref 20 dBm
*Att 30 dB
SWT 10 ms
35.880000000 MHz
20 Offset 1 dB
Marker 1 [T1]
-6.96 dBm
2.433880000 GHz
1 PK
VIEW
LVL
F1
F2
Center 2.452 GHz
6 MHz/
Span 60 MHz

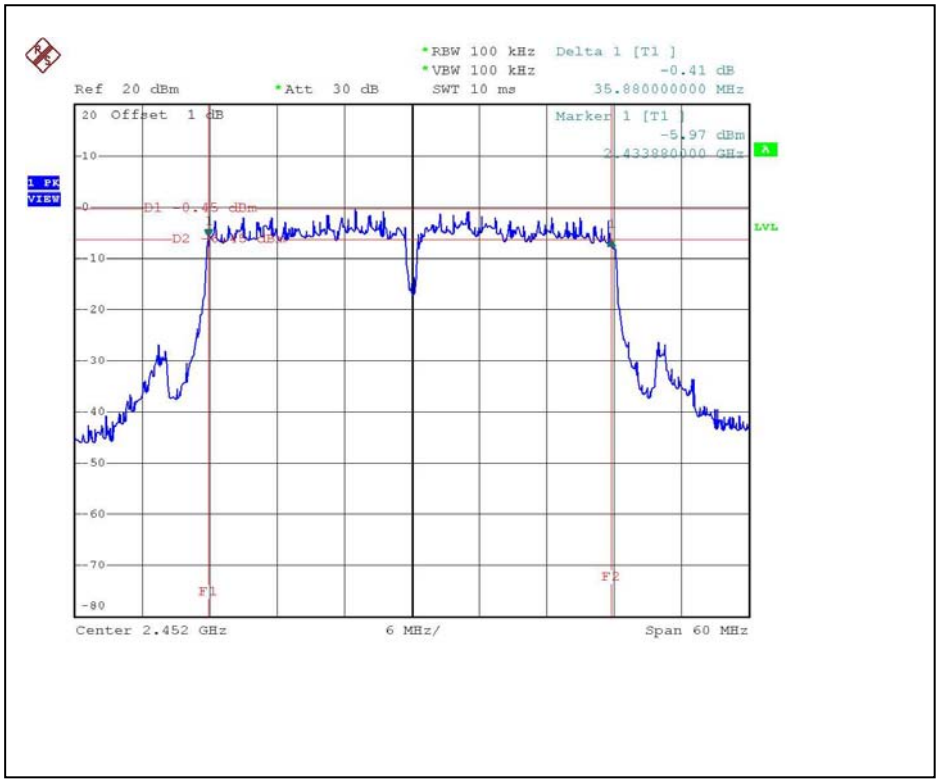
FOR CHAIN 1: CH1



CH4



CH7


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.41 dB
35.880000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-5.97 dBm
2.433880000 GHz
1 PK
VIEW
A
LVL
D1 -0.45 dBm
D2
F1
F2
Center 2.452 GHz
6 MHz/
Span 60 MHz

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2007
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2006
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	July 14, 2007
NARDA DETECTOR	4503A	FSCM99899	NA

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

4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b DSSS MODULATION:

MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 68%RH, 971hPa
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	79.433	19.00	30	PASS
6	2437	75.858	18.80	30	PASS
11	2462	60.256	17.80	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 68%RH, 971hPa
TESTED BY	Sky Liao		

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	97.27	79.62	19.88	19.01	176.891	22.5	30	PASS
6	2437	94.69	82.04	19.76	19.14	176.724	22.5	30	PASS
11	2462	74.64	66.83	18.73	18.25	141.479	21.5	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**TRANSFER RATE**	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 62%RH, 971hPa
TESTED BY	Sky Liao		

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	93.76	95.72	19.72	19.81	189.476	22.8	30	PASS
6	2437	97.05	79.80	19.87	19.02	176.850	22.5	30	PASS
11	2462	74.82	83.18	18.74	19.20	157.993	22.0	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**TRANSFER RATE**	13.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 62%RH, 971hPa
TESTED BY	Sky Liao		

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	90.78	67.30	19.58	18.28	158.080	22.0	30	PASS
4	2437	85.51	66.68	19.32	18.24	152.187	21.8	30	PASS
7	2452	79.07	72.95	18.98	18.63	152.014	21.8	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2007

NOTE:

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

4.5.3 TEST PROCEDURE

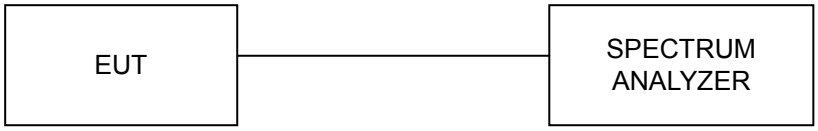
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

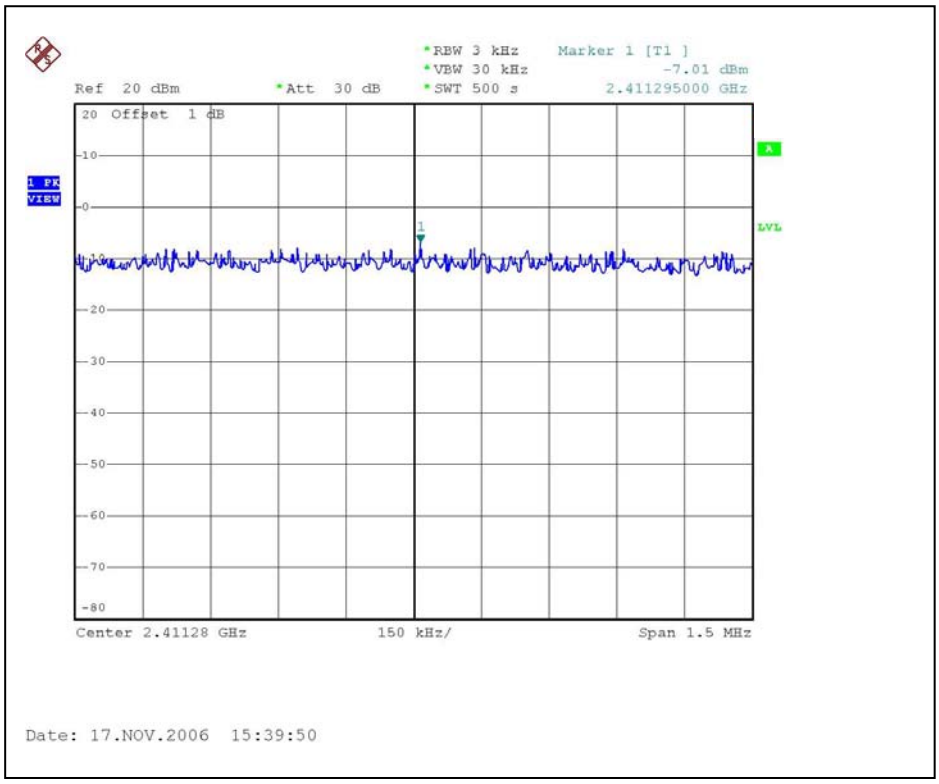
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

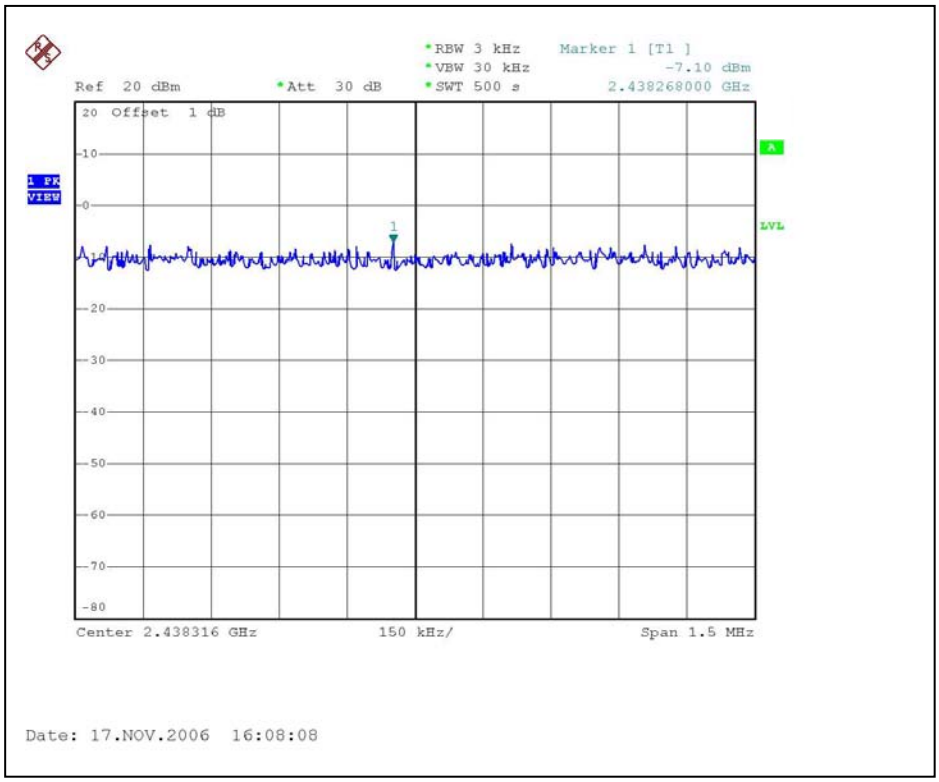
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 971hPa
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.01	8	PASS
6	2437	-7.10	8	PASS
11	2462	-7.59	8	PASS

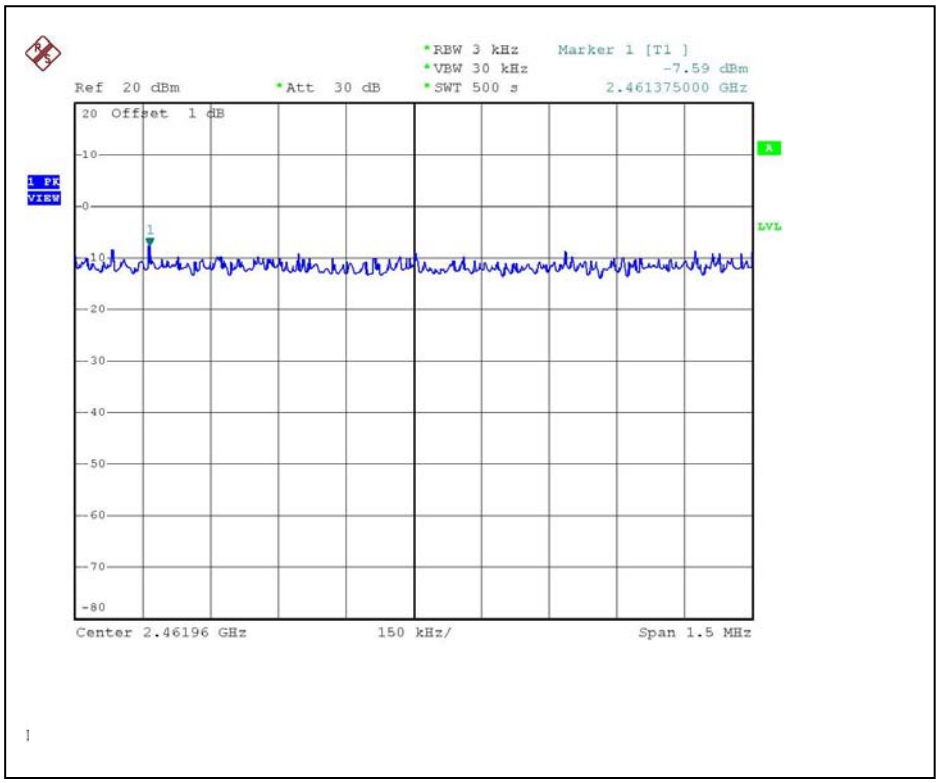
CH1



CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-7.10 dBm
2.438268000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
1 PK VIEW
A
LVL
Center 2.438316 GHz
150 kHz/
Span 1.5 MHz
Date: 17.NOV.2006 16:08:08

CH11

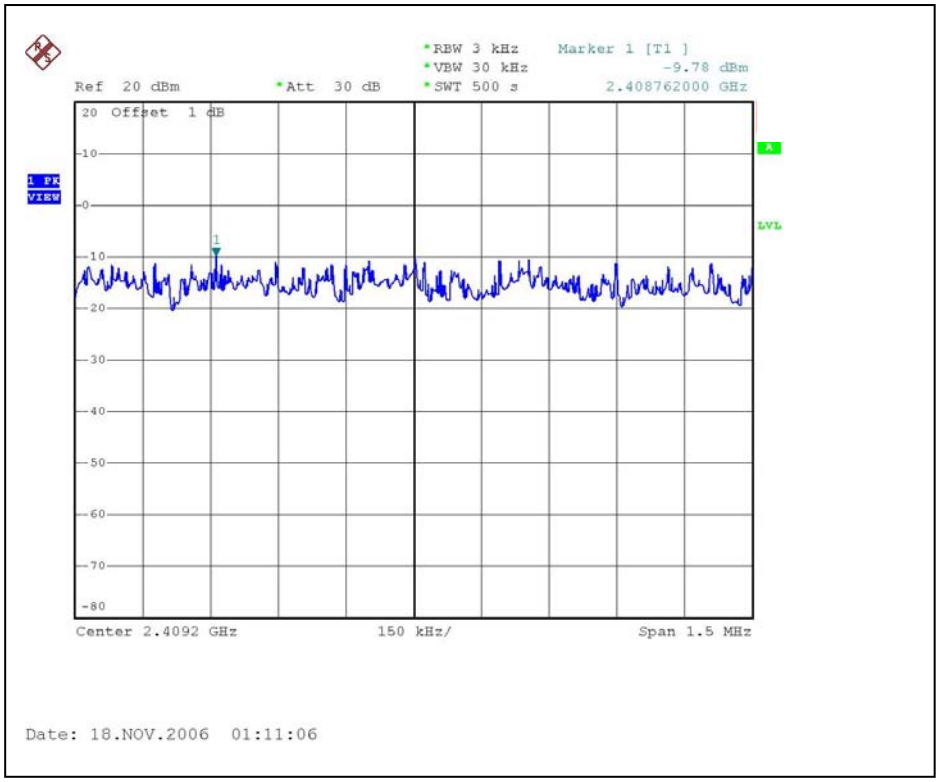

RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-7.59 dBm
2.461375000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
1 PK VIEW
A
LVL
Center 2.46196 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM MODULATION:

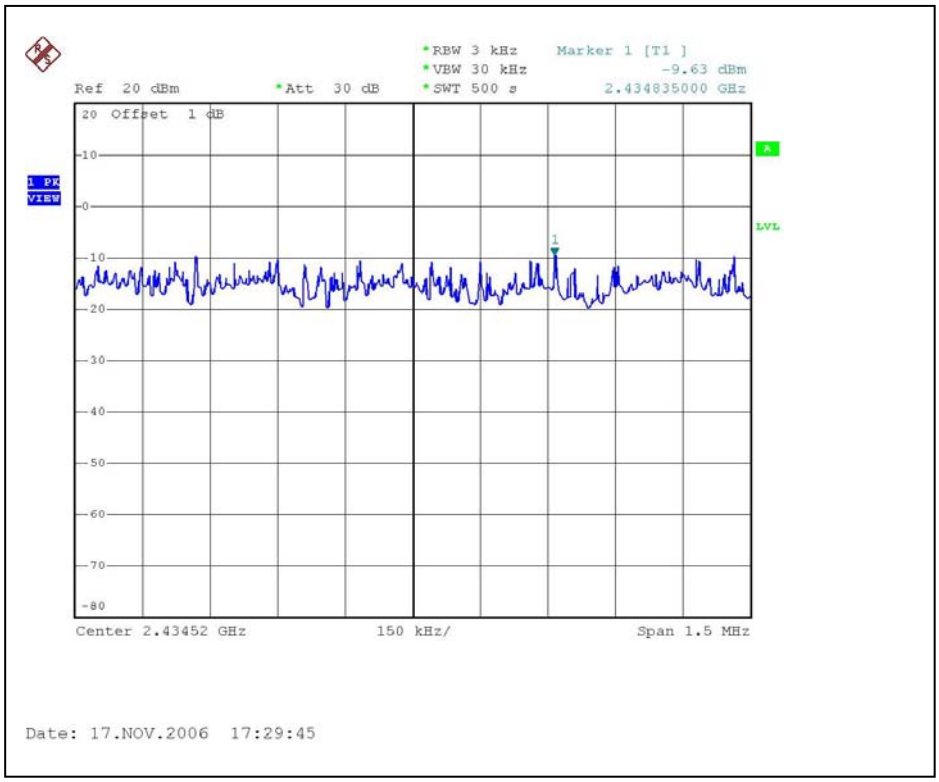
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 62%RH, 971hP
TESTED BY	Sky Liao		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	-9.78	-12.37	8	PASS
6	2437	-9.63	-11.15	8	PASS
11	2462	-9.75	-9.94	8	PASS

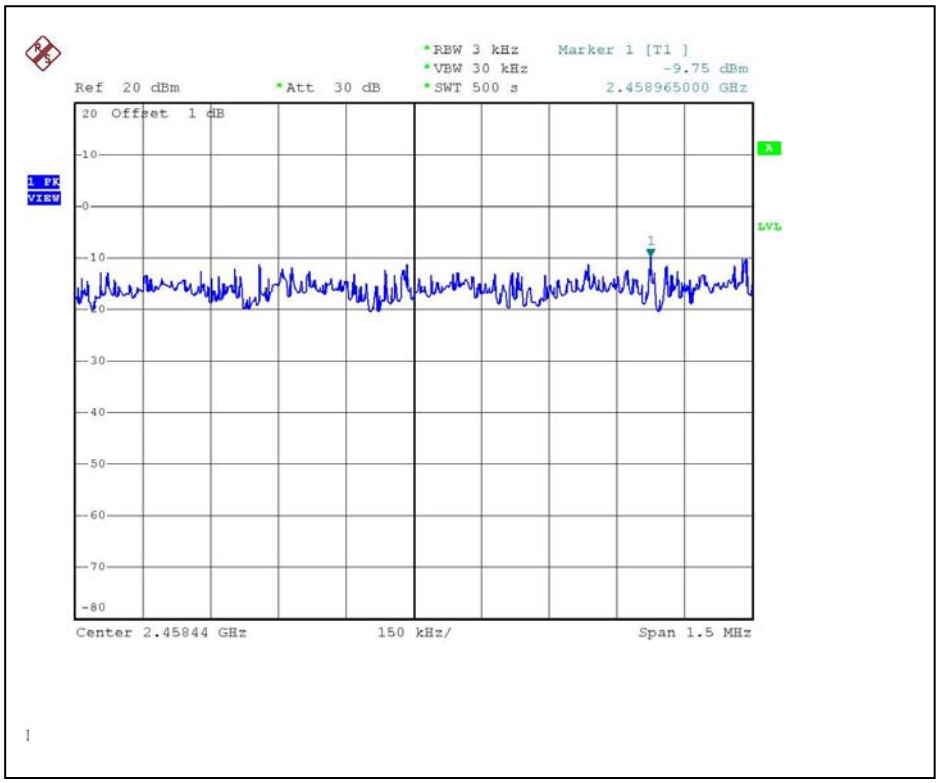
FOR CHAIN 0: CH1



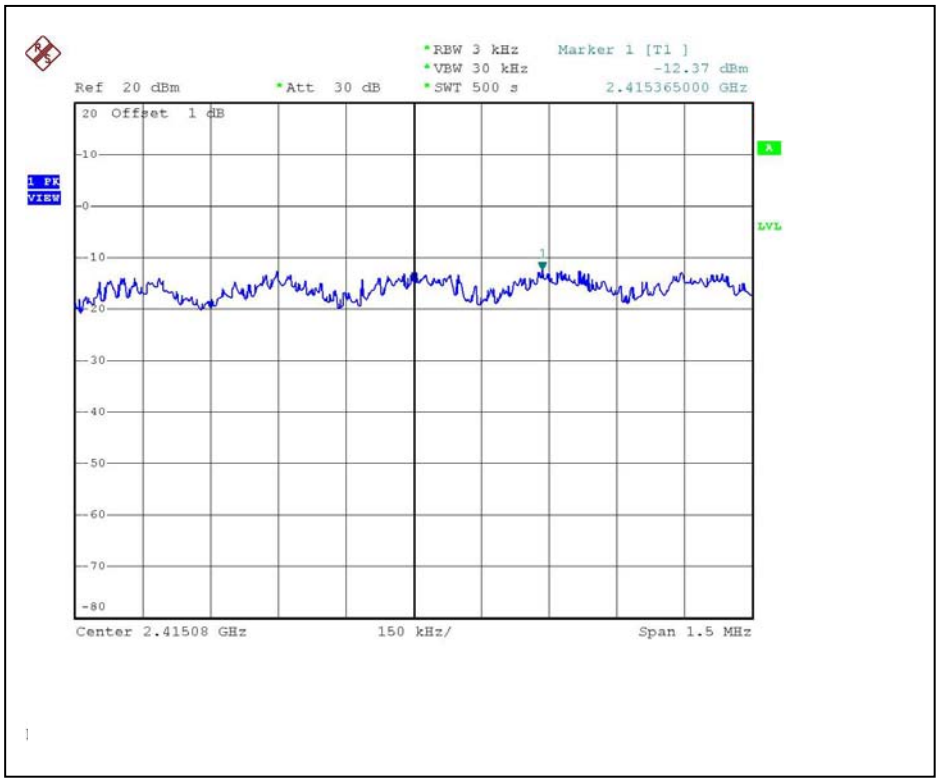
CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.63 dBm
2.434835000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 PK VIEW
A
LVL
Center 2.43452 GHz
150 kHz/
Span 1.5 MHz
Date: 17.NOV.2006 17:29:45

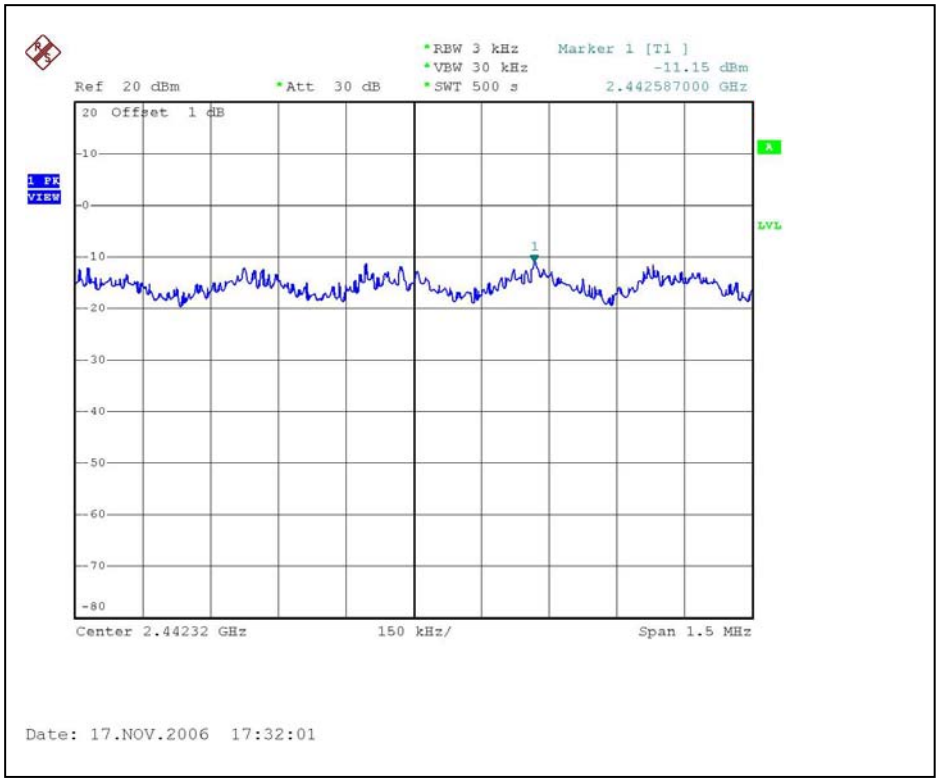
CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.75 dBm
2.458965000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 PK VIEW
A
LVL
Center 2.45844 GHz
150 kHz/
Span 1.5 MHz

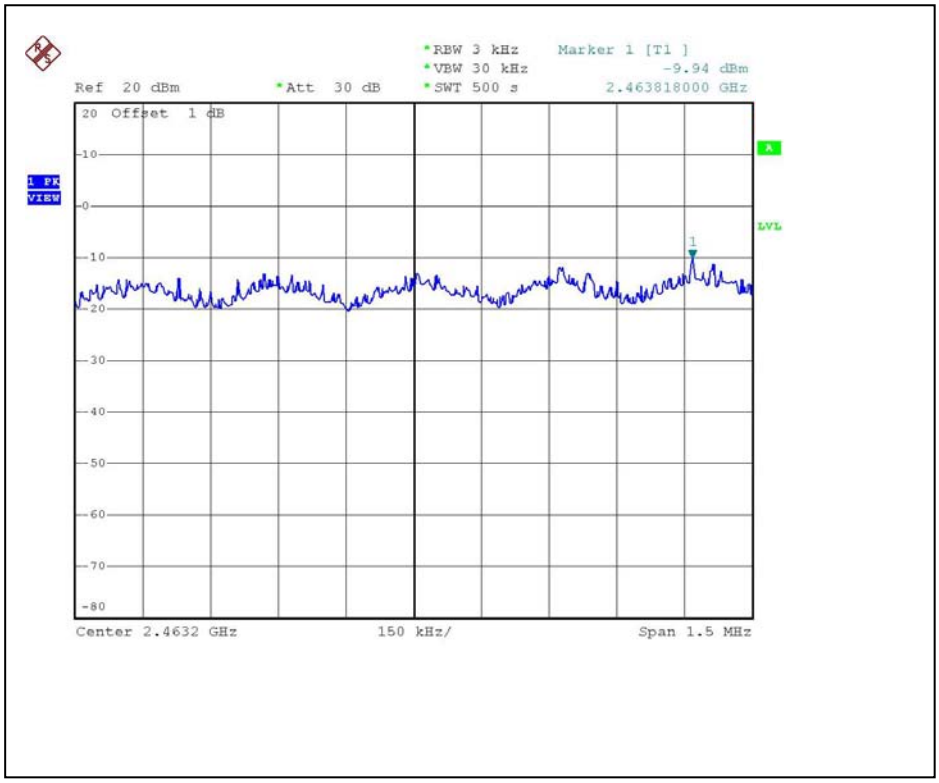
FOR CHAIN 1: CH1



CH6



CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.94 dBm
2.463818000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 PK
VIEW
A
LVL
Center 2.4632 GHz
150 kHz/
Span 1.5 MHz