



FCC TEST REPORT

REPORT NO.: RF960530H03

MODEL NO.: WRT150N V1.1

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TESTED: June 06 to 25, 2007

ISSUED: June 27, 2007

APPLICANT: Cisco-Linksys LLC

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No. 2177-01

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1. CERTIFICATION

PRODUCT : Wireless-N Home Router
MODEL NO.: WRT150N V1.1
BRAND: Linksys
APPLICANT : Cisco-Linksys LLC
TESTED: June 06 to 25, 2007
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS : FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: WRT150N V1.1) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Carol Liao , **DATE:** June 27, 2007
(Carol Liao, Specialist)

TECHNICAL
ACCEPTANCE : Hank Chung , **DATE:** June 27, 2007
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** June 27, 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			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -5.19dB at 0.474MHz.
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 -0.54dB 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 V1.1
FCC ID	Q87-WRT150NV11
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: 66.834mW 802.11g: 166.353mW draft 802.11n (20MHz): 162.566mW draft 802.11n (40MHz): 158.866mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORTS	WAN Port x 1, LAN Port x 4

NOTE:

- 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

- 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: (ENG)	
Brand:	Linksys
Model No.:	AD12V/1A-SW
Input power :	100-240V ,0.5A ,50-60Hz
Output power :	DC12V, 1A Cable:1.8m/unshielded/without core
Adapter 2: (ENERTRONIX)	
Brand:	Linksys
Model No.:	AD12V/1A-SW
Input power :	100-240V ,0.5A ,50-60Hz
Output power :	DC12V, 1A Cable: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 ³ 1G	APCM	
-	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

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

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 2, 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 2, 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

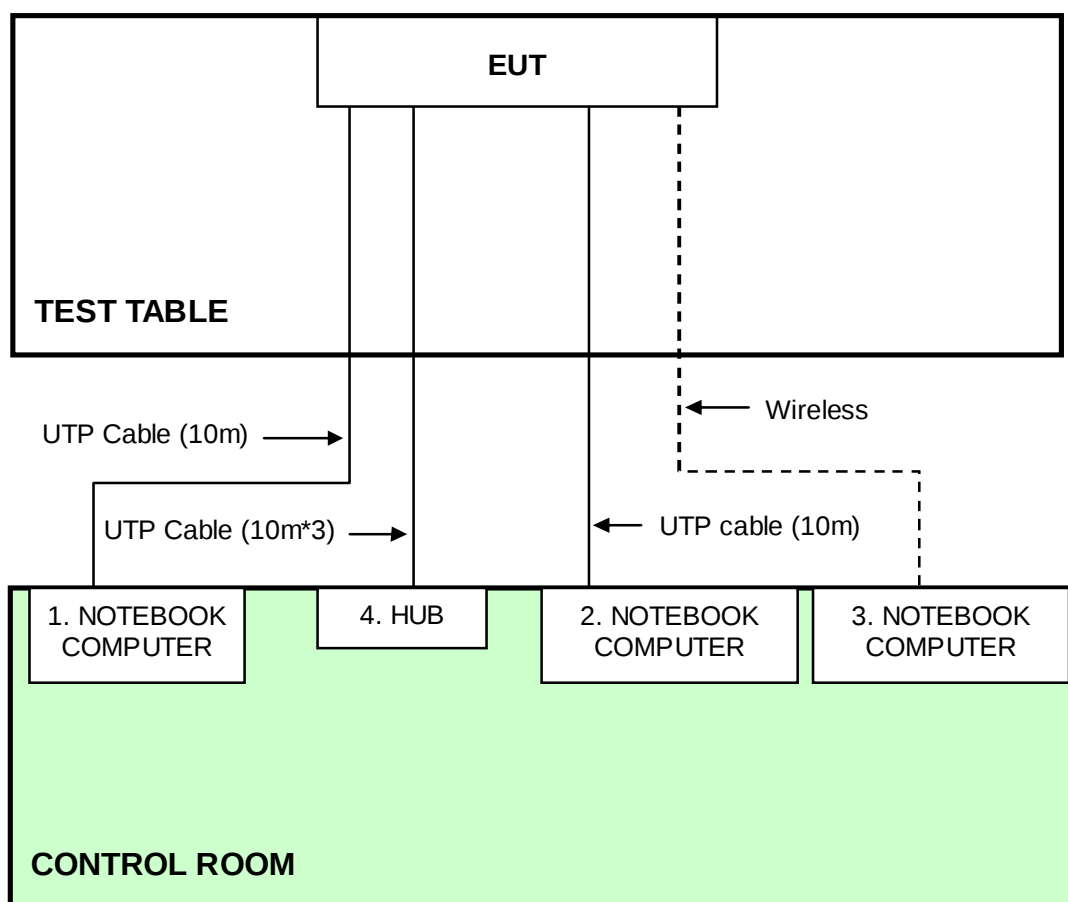
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	DoC
2	NOTEBOOK COMPUTER	HP	HSTNN-S19C	WFY93-WQ98K-BH 87F-KD366-RB773	DoC
3	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166- 5CA-0448	PIW632500516610
4	Switch HUB	AVSYS	110H8	01-20E-000006	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.

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 06, 2008
Line-Impedance Stabilization Network(for EUT)	ENV-216	100072	Oct. 20, 2007
Line-Impedance Stabilization Network(for Peripheral)	KNW-407	8-1395-12	Aug. 15, 2007
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 19, 2007
Terminator	50	1	Oct. 30, 2007
Software	ADT_Cond_V7.3.2	NA	NA

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

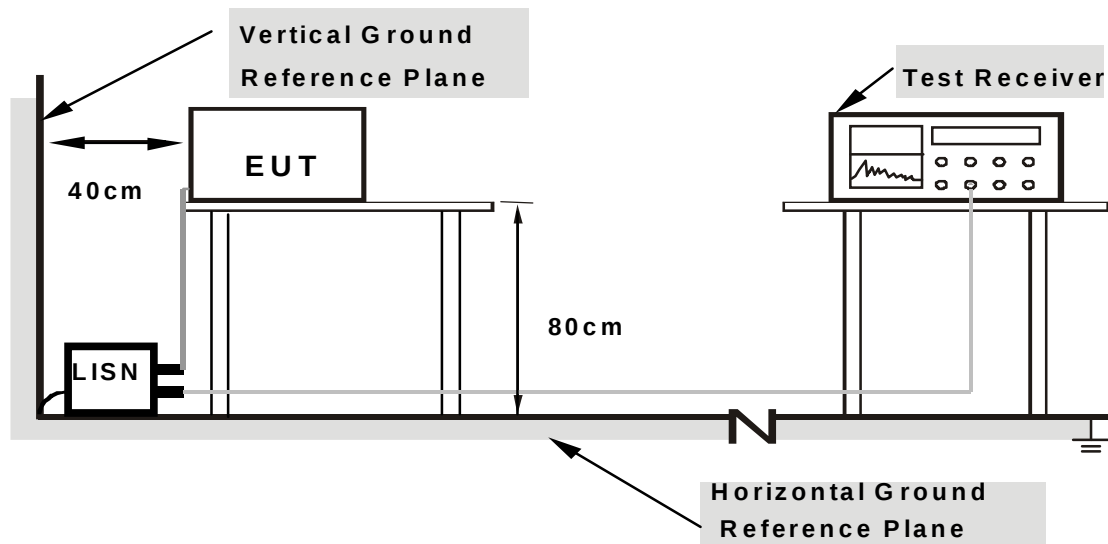
4.1.3 TEST PROCEDURES

- 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) 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 cm 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.

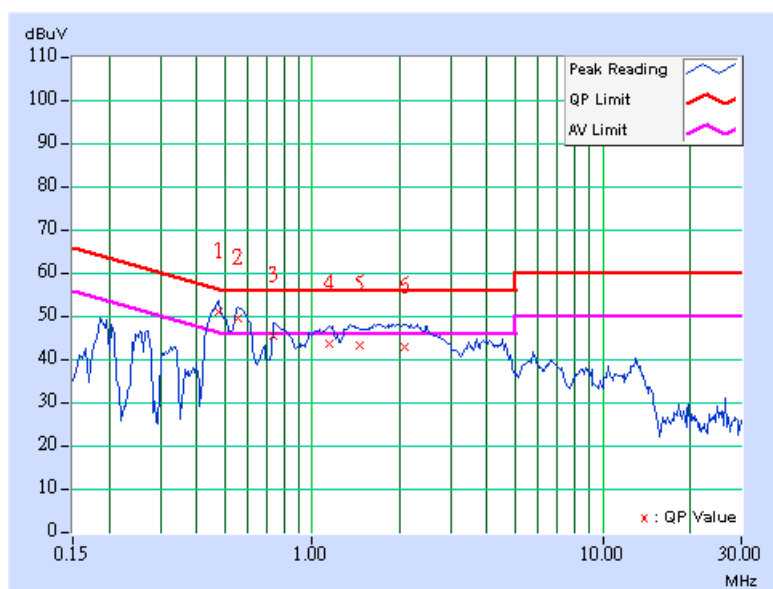
4.1.7 TEST RESULTS

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	25deg. C, 60%RH, 960hPa	TESTED BY	Max Tseng

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.474	0.30	50.95	36.28	51.25	36.58	56.44	46.44	-5.19	-9.86
2	0.556	0.30	49.23	35.29	49.53	35.59	56.00	46.00	-6.47	-10.41
3	0.736	0.30	45.17	-	45.47	-	56.00	46.00	-10.53	-
4	1.146	0.30	43.45	-	43.75	-	56.00	46.00	-12.25	-
5	1.455	0.30	43.04	-	43.34	-	56.00	46.00	-12.66	-
6	2.084	0.30	42.82	-	43.12	-	56.00	46.00	-12.88	-

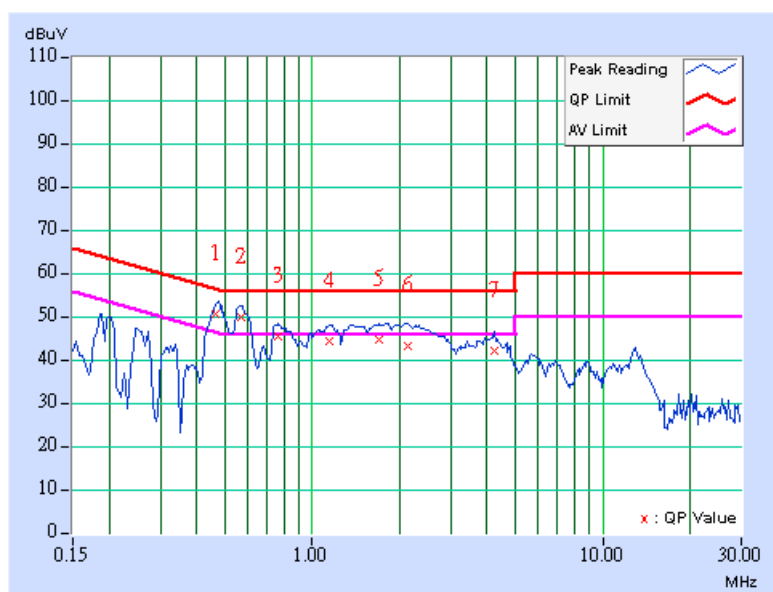
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



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	25deg. C, 60%RH, 960hPa	TESTED BY	Max Tseng

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.466	0.30	50.40	37.07	50.70	37.37	56.58	46.58	-5.88	-9.21
2	0.568	0.30	49.45	35.22	49.75	35.52	56.00	46.00	-6.25	-10.48
3	0.759	0.30	45.29	-	45.59	-	56.00	46.00	-10.41	-
4	1.142	0.31	44.07	-	44.38	-	56.00	46.00	-11.62	-
5	1.701	0.37	44.25	-	44.62	-	56.00	46.00	-11.38	-
6	2.138	0.40	42.95	-	43.35	-	56.00	46.00	-12.65	-
7	4.254	0.41	41.79	-	42.20	-	56.00	46.00	-13.80	-

- 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.

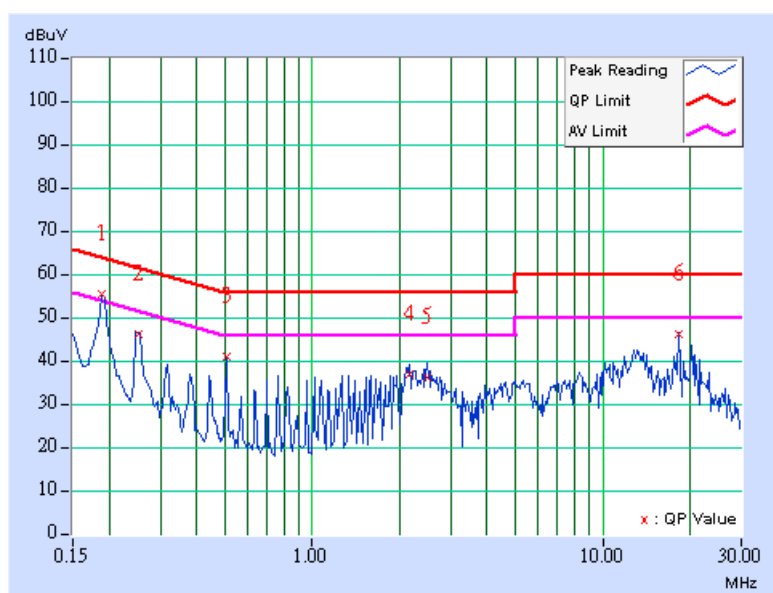


DRAFT 802.11n (40MHz) OFDM MODULATION: (MODE 2)

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	25deg. C, 60%RH, 960hPa	TESTED BY	Timmy Hu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.189	9.79	45.15	36.77	54.94	46.56	64.06	54.06	-9.12	-7.50
2	0.252	9.80	35.90	-	45.70	-	61.71	51.71	-16.01	-
3	0.505	9.82	30.75	-	40.57	-	56.00	46.00	-15.43	-
4	2.162	9.90	26.43	-	36.33	-	56.00	46.00	-19.67	-
5	2.482	9.90	25.73	-	35.63	-	56.00	46.00	-20.37	-
6	18.242	10.46	36.01	-	46.47	-	60.00	50.00	-13.53	-

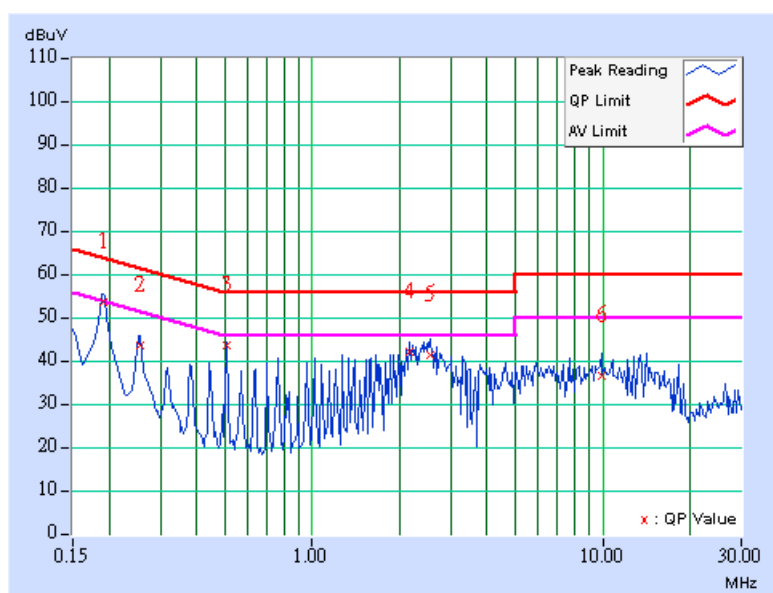
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = 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	25deg. C, 60%RH, 960hPa	TESTED BY	Timmy Hu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.192	9.79	43.58	-	53.37	-	63.96	53.96	-10.58	-
2	0.255	9.80	33.78	-	43.58	-	61.58	51.58	-18.00	-
3	0.509	9.82	33.75	-	43.57	-	56.00	46.00	-12.43	-
4	2.162	9.90	31.94	-	41.84	-	56.00	46.00	-14.16	-
5	2.537	9.90	31.55	-	41.45	-	56.00	46.00	-14.55	-
6	9.934	10.10	26.54	-	36.64	-	60.00	50.00	-23.36	-

- 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. 10, 2007
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 04, 2008
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
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 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 (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)	3.89 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.

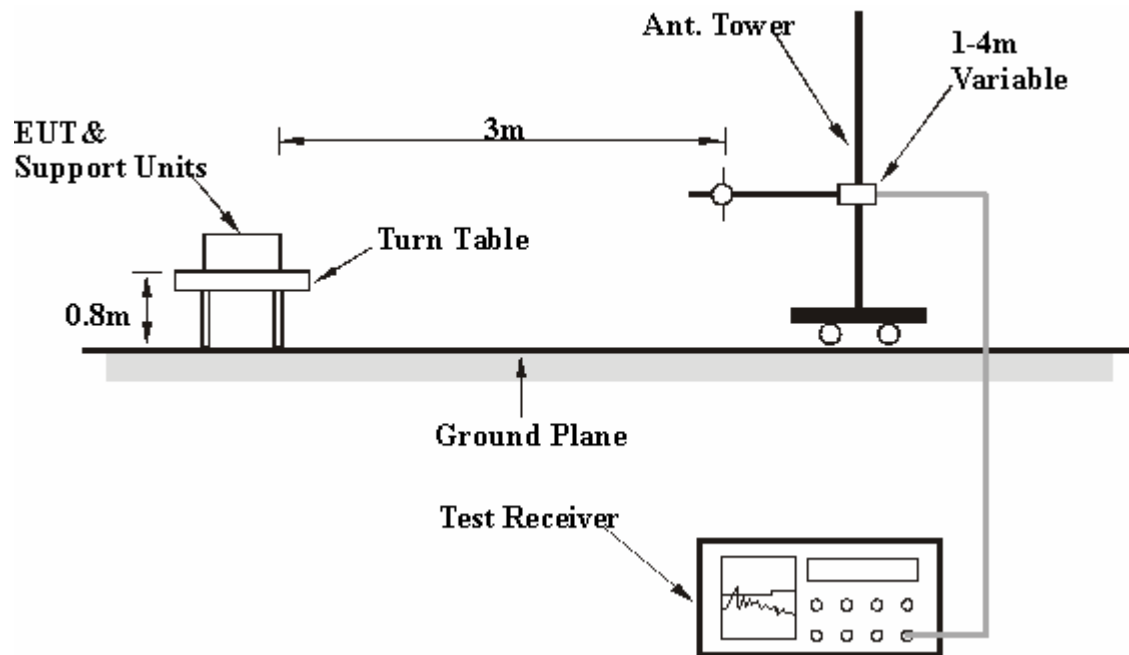
NOTE:

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.
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	26deg. C, 64%RH, 960hPa	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	125.01	32.16 QP	43.50	-11.34	1.48 H	258	19.94	12.22
2	266.67	40.59 QP	46.00	-5.41	1.00 H	8	25.70	14.89
3	300.00	36.33 QP	46.00	-9.67	1.00 H	282	19.50	16.83
4	333.34	35.92 QP	46.00	-10.08	1.00 H	41	18.72	17.20
5	400.00	41.13 QP	46.00	-4.87	1.00 H	305	22.11	19.02
6	466.67	31.58 QP	46.00	-14.42	1.00 H	235	10.67	20.91
7	500.00	35.51 QP	46.00	-10.49	1.00 H	307	13.75	21.76
8	600.00	38.76 QP	46.00	-7.24	1.40 H	334	14.28	24.48
9	666.67	34.64 QP	46.00	-11.36	1.18 H	16	9.35	25.29
10	733.34	34.39 QP	46.00	-11.61	1.04 H	42	7.56	26.83
11	866.67	36.15 QP	46.00	-9.85	1.00 H	10	7.60	28.55

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	31.95 QP	43.50	-11.55	1.00 V	242	19.73	12.22
2	266.67	33.12 QP	46.00	-12.88	1.42 V	45	18.23	14.89
3	333.33	33.00 QP	46.00	-13.00	1.22 V	5	15.80	17.20
4	375.00	34.62 QP	46.00	-11.38	1.06 V	324	16.42	18.20
5	400.00	42.57 QP	46.00	-3.43	1.00 V	1	23.55	19.02
6	466.67	27.72 QP	46.00	-18.28	1.24 V	141	6.81	20.91
7	500.00	30.99 QP	46.00	-15.01	1.60 V	334	9.23	21.76
8	600.00	35.57 QP	46.00	-10.43	1.32 V	7	11.09	24.48
9	733.34	29.56 QP	46.00	-16.44	1.22 V	0	2.73	26.83
10	866.67	31.60 QP	46.00	-14.40	1.42 V	126	3.05	28.55

- 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, 65%RH, 960hPa	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	2387.70	56.45 PK	74.00	-17.55	1.54 H	250	26.07	30.38
2	2387.70	46.08 AV	54.00	-7.92	1.54 H	250	15.70	30.38
3	*2412.00	101.60 PK			1.45 H	258	71.11	30.49
4	*2412.00	97.10 AV			1.45 H	258	66.61	30.49
5	3216.00	46.80 PK	81.60	-34.80	1.00 H	21	14.57	32.23
6	3216.00	41.40 AV	77.10	-35.70	1.00 H	21	9.17	32.23
7	4824.00	49.90 PK	74.00	-24.10	1.93 H	262	14.21	35.69
8	4824.00	43.60 AV	54.00	-10.40	1.93 H	262	7.91	35.69
9	7236.00	52.00 PK	74.00	-22.00	1.75 H	173	9.76	42.24
10	7236.00	39.10 AV	54.00	-14.90	1.75 H	173	-3.14	42.24
11	14472.00	61.20 PK	74.00	-12.80	1.15 H	36	11.97	49.23
12	14472.00	48.30 AV	54.00	-5.70	1.15 H	36	-0.93	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	2387.70	63.41 PK	74.00	-10.59	1.01 V	26	33.03	30.38
2	2387.70	52.48 AV	54.00	-1.52	1.01 V	26	22.10	30.38
3	*2412.00	109.30 PK			1.01 V	26	78.81	30.49
4	*2412.00	104.90 AV			1.01 V	26	74.41	30.49
5	3216.00	55.60 PK	89.30	-33.70	1.20 V	100	23.37	32.23
6	3216.00	51.10 AV	84.90	-33.80	1.20 V	100	18.87	32.23
7	4824.00	50.60 PK	74.00	-23.40	1.17 V	195	14.91	35.69
8	4824.00	46.50 AV	54.00	-7.50	1.17 V	195	10.81	35.69
9	7236.00	53.30 PK	74.00	-20.70	1.18 V	260	11.06	42.24
10	7236.00	41.30 AV	54.00	-12.70	1.18 V	260	-0.94	42.24
11	14472.00	62.10 PK	74.00	-11.90	1.13 V	218	12.87	49.23
12	14472.00	49.00 AV	54.00	-5.00	1.13 V	218	-0.23	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	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 960hPa	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	*2437.00	101.20 PK			1.42 H	255	70.59	30.61
2	*2437.00	97.00 AV			1.42 H	255	66.39	30.61
3	3249.00	49.00 PK	81.20	-32.20	1.00 H	19	16.74	32.26
4	3249.00	44.20 AV	77.00	-32.80	1.00 H	19	11.94	32.26
5	4874.00	49.10 PK	74.00	-24.90	1.93 H	339	13.30	35.80
6	4874.00	41.30 AV	54.00	-12.70	1.93 H	339	5.50	35.80
7	7311.00	53.10 PK	74.00	-20.90	1.88 H	127	10.58	42.52
8	7311.00	39.80 AV	54.00	-14.20	1.88 H	127	-2.72	42.52
9	14622.00	61.70 PK	81.20	-19.50	1.35 H	2	12.22	49.48
10	14622.00	48.30 AV	77.00	-28.70	1.35 H	2	-1.18	49.48

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	108.50 PK			1.00 V	27	77.89	30.61
2	*2437.00	104.40 AV			1.00 V	27	73.79	30.61
3	3249.00	55.00 PK	88.50	-46.50	1.18 V	100	22.74	32.26
4	3249.00	51.00 AV	84.40	-33.40	1.18 V	100	18.74	32.26
5	4874.00	53.10 PK	74.00	-20.90	1.28 V	347	17.30	35.80
6	4874.00	48.20 AV	54.00	-5.80	1.28 V	347	12.40	35.80
7	7311.00	54.90 PK	74.00	-19.10	1.41 V	174	12.38	42.52
8	7311.00	43.60 AV	54.00	-10.40	1.41 V	174	1.08	42.52
9	14622.00	63.80 PK	88.50	-24.70	1.70 V	292	14.32	49.48
10	14622.00	49.30 AV	84.40	-35.10	1.70 V	292	-0.18	49.48

- 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.

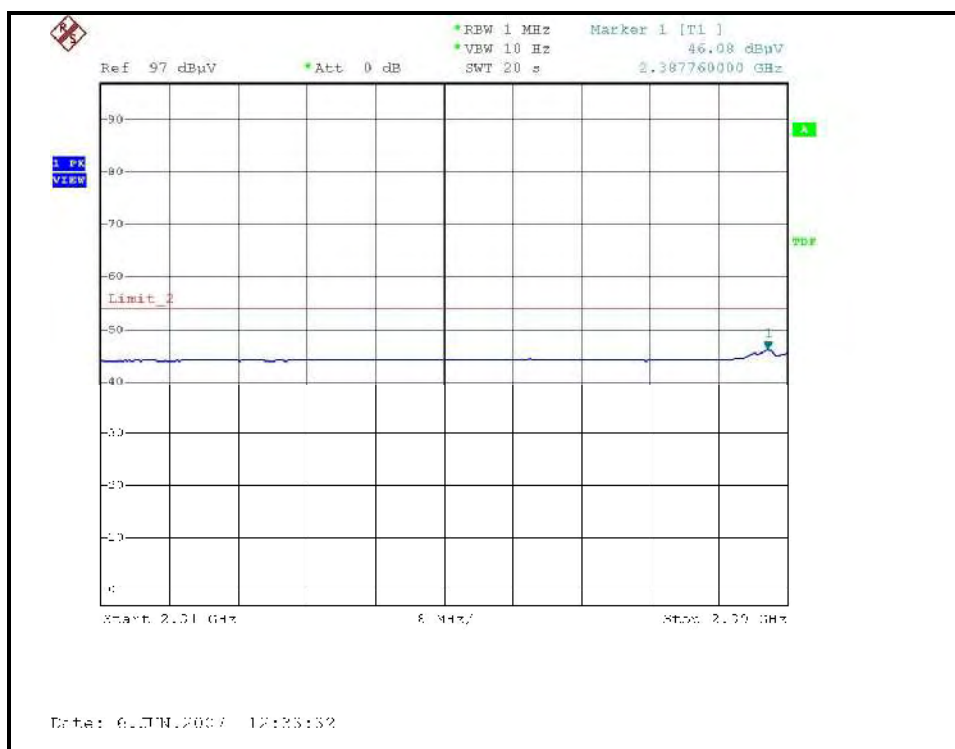
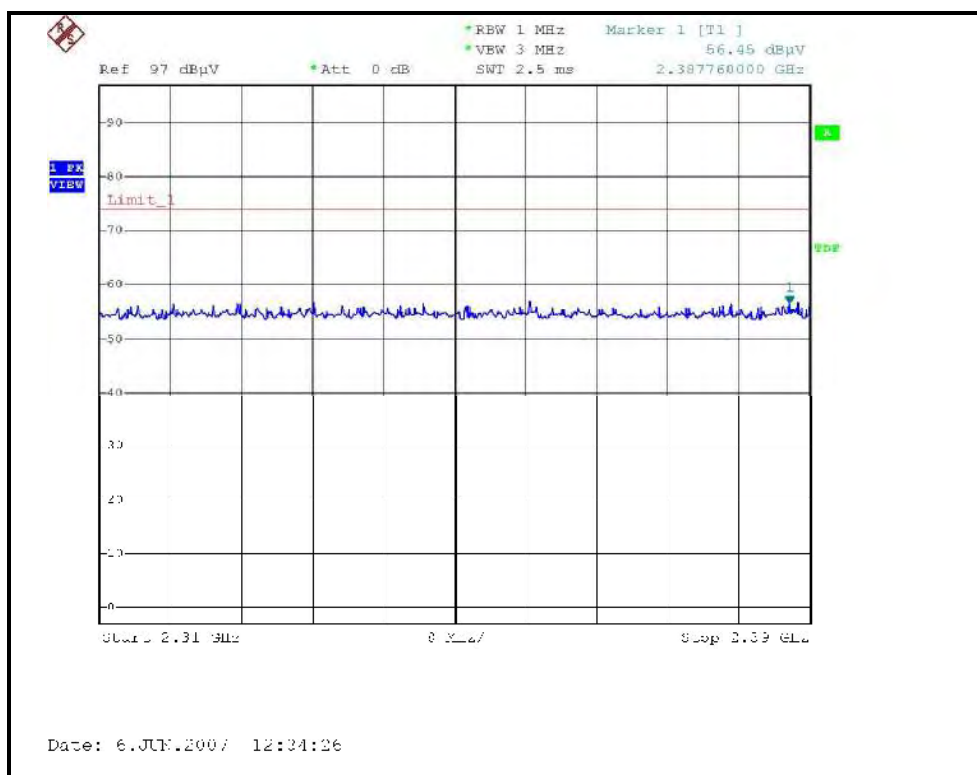
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	1Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 960hPa	TESTED BY	Sky Liao

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	*2462.00	99.90 PK			1.01 H	105	69.18	30.72
2	*2462.00	95.20 AV			1.01 H	105	64.48	30.72
3	2486.30	56.87 PK	74.00	-17.13	1.80 H	50	26.04	30.83
4	2486.30	46.03 AV	54.00	-7.97	1.80 H	50	15.20	30.83
5	3282.00	49.30 PK	79.90	-30.60	1.00 H	21	17.01	32.29
6	3282.00	44.60 AV	75.20	-30.60	1.00 H	21	12.31	32.29
7	4924.00	48.70 PK	74.00	-25.30	1.78 H	37	12.80	35.90
8	4924.00	40.80 AV	54.00	-13.20	1.78 H	37	4.90	35.90
9	7386.00	52.90 PK	74.00	-21.10	1.60 H	180	10.10	42.80
10	7386.00	40.10 AV	54.00	-13.90	1.60 H	180	-2.70	42.80
11	14772.00	63.20 PK	79.90	-16.70	1.25 H	8	13.49	49.71
12	14772.00	49.50 AV	75.20	-25.70	1.25 H	8	-0.21	49.71

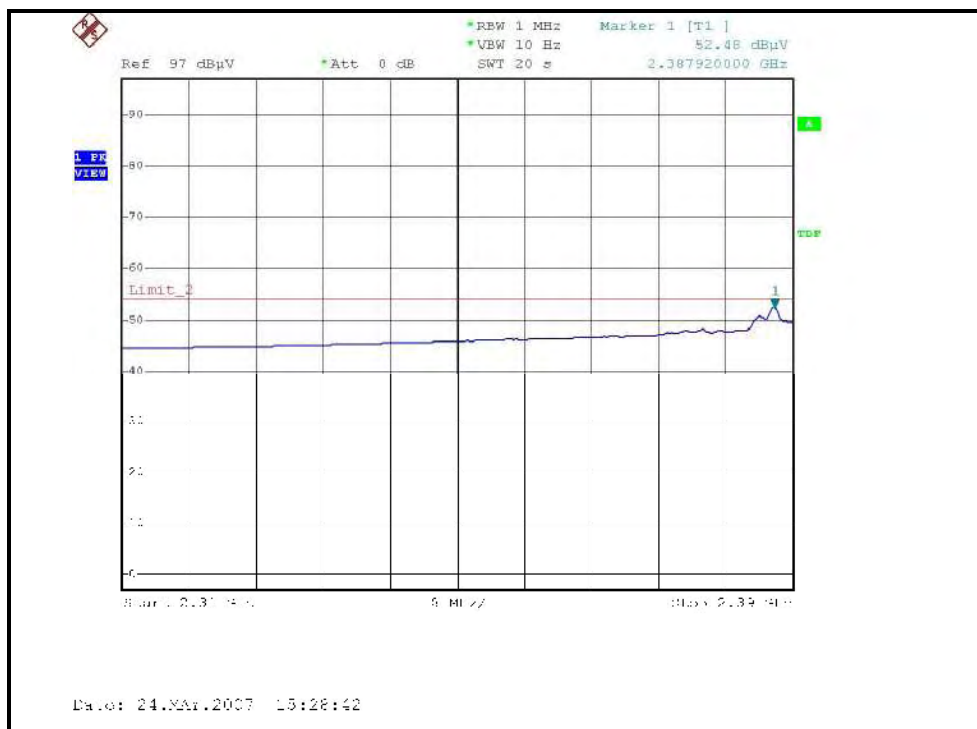
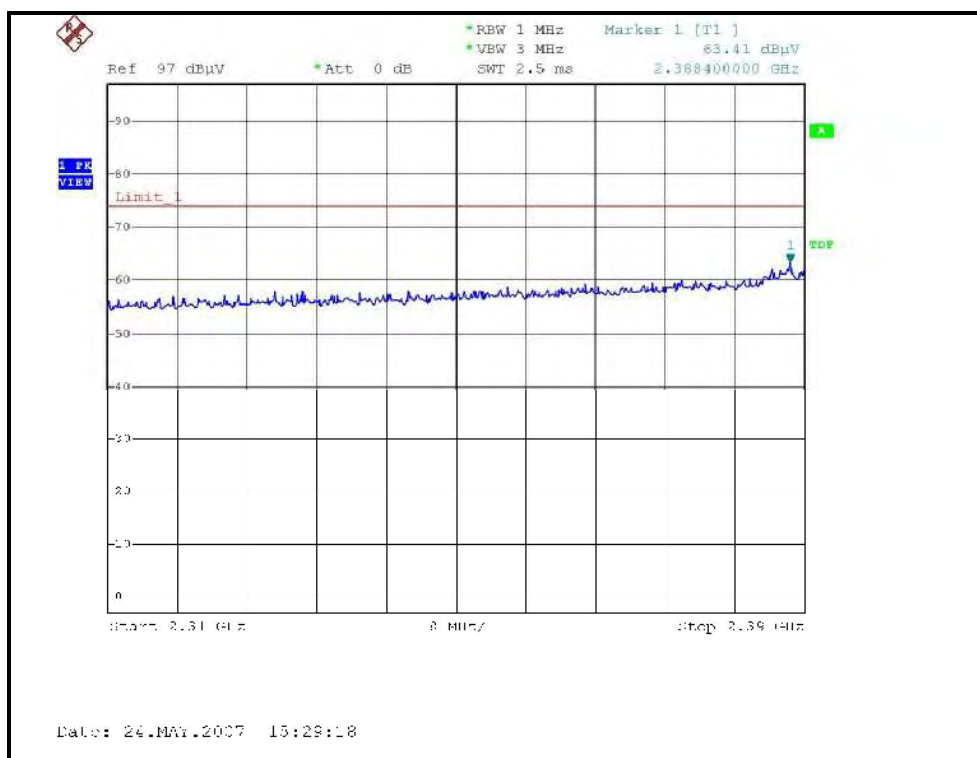
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.80 PK			1.00 V	30	78.08	30.72
2	*2462.00	104.20 AV			1.00 V	30	73.48	30.72
3	2486.30	60.71 PK	74.00	-13.29	1.00 V	16	29.88	30.83
4	2486.30	52.51 AV	54.00	-1.49	1.00 V	16	21.68	30.83
5	3282.00	53.60 PK	88.80	-35.20	1.24 V	72	21.31	32.29
6	3282.00	51.10 AV	84.20	-33.10	1.24 V	72	18.81	32.29
7	4924.00	53.70 PK	74.00	-20.30	1.34 V	160	17.80	35.90
8	4924.00	50.20 AV	54.00	-3.80	1.34 V	160	14.30	35.90
9	7386.00	54.13 PK	74.00	-19.87	1.50 V	197	11.33	42.80
10	7386.00	43.00 AV	54.00	-11.00	1.50 V	197	0.20	42.80
11	14772.00	64.50 PK	88.80	-24.30	1.62 V	290	14.79	49.71
12	14772.00	49.50 AV	84.20	-34.70	1.62 V	290	-0.21	49.71

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.

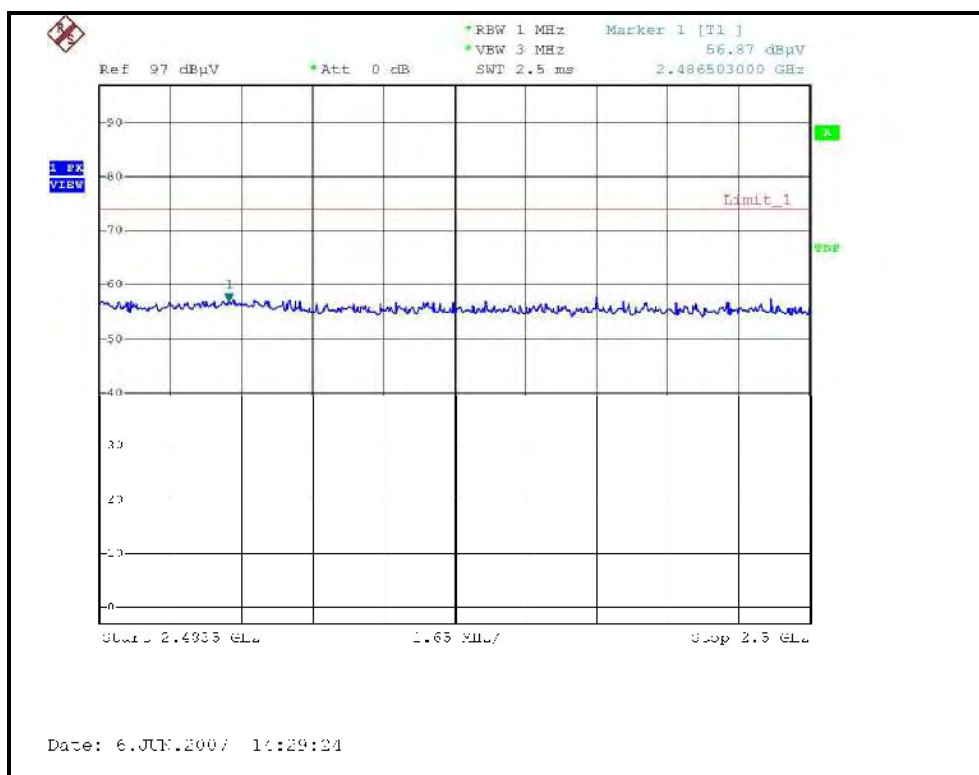
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)



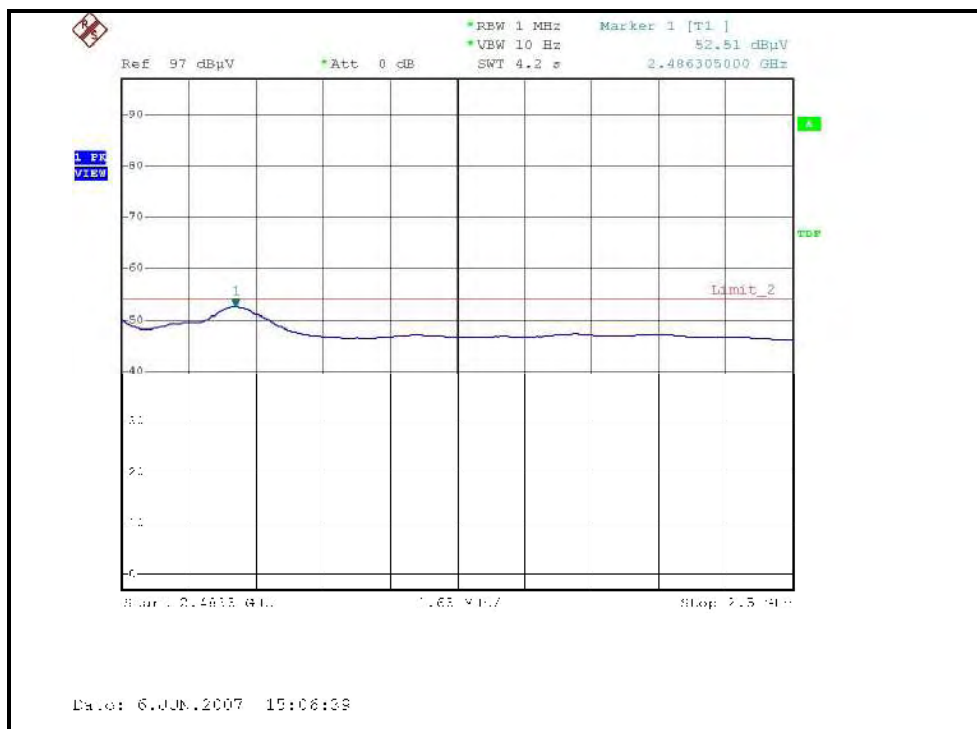
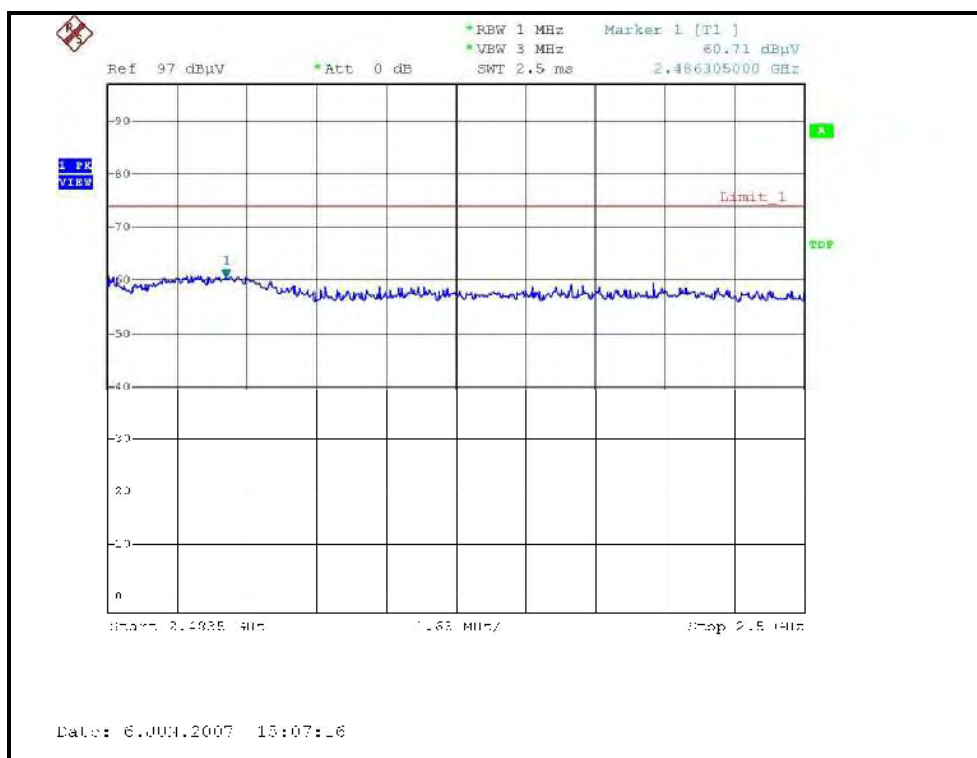
RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



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, 65%RH, 960hPa	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	2390.00	55.77 PK	74.00	-18.23	1.67 H	35	25.37	30.40
2	2390.00	44.16 AV	54.00	-9.84	1.67 H	35	13.76	30.40
3	*2412.00	103.40 PK			1.33 H	155	72.91	30.49
4	*2412.00	94.10 AV			1.33 H	155	63.61	30.49
5	3216.00	48.80 PK	83.40	-34.60	1.53 H	134	16.57	32.23
6	3216.00	44.90 AV	74.10	-29.20	1.53 H	134	12.67	32.23
7	4824.00	47.80 PK	74.00	-26.20	1.54 H	265	12.11	35.69
8	4824.00	38.00 AV	54.00	-16.00	1.54 H	265	2.31	35.69
9	7236.00	58.20 PK	74.00	-15.80	1.52 H	115	15.96	42.24
10	7236.00	39.70 AV	54.00	-14.30	1.52 H	115	-2.54	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	65.16 PK	74.00	-8.84	1.05 V	348	34.76	30.40
2	2390.00	50.07 AV	54.00	-3.93	1.05 V	348	19.67	30.40
3	*2412.00	112.00 PK			1.00 V	321	81.51	30.49
4	*2412.00	101.40 AV			1.00 V	321	70.91	30.49
5	3216.00	55.80 PK	92.00	-36.20	1.50 V	293	23.57	32.23
6	3216.00	51.70 AV	81.40	-29.70	1.50 V	293	19.47	32.23
7	4824.00	51.70 PK	74.00	-22.30	1.50 V	176	16.01	35.69
8	4824.00	46.20 AV	54.00	-7.80	1.50 V	176	10.51	35.69
9	7236.00	65.90 PK	74.00	-8.10	1.48 V	355	23.66	42.24
10	7236.00	42.18 AV	54.00	-11.82	1.48 V	355	-0.06	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	20deg. C, 65%RH, 960hPa	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	*2437.00	105.30 PK			1.45 H	174	74.69	30.61
2	*2437.00	94.40 AV			1.45 H	174	63.79	30.61
3	3249.00	49.00 PK	85.30	-36.30	1.36 H	138	16.74	32.26
4	3249.00	45.20 AV	74.40	-29.20	1.36 H	138	12.94	32.26
5	4874.00	48.00 PK	74.00	-26.00	1.42 H	255	12.20	35.80
6	4874.00	38.20 AV	54.00	-15.80	1.42 H	255	2.40	35.80
7	7311.00	58.20 PK	74.00	-15.80	1.58 H	105	15.68	42.52
8	7311.00	39.50 AV	54.00	-14.50	1.58 H	105	-3.02	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	112.80 PK			1.07 V	334	82.19	30.61
2	*2437.00	102.60 AV			1.07 V	334	71.99	30.61
3	3249.00	55.20 PK	92.80	-37.60	1.00 V	343	22.94	32.26
4	3249.00	51.30 AV	82.60	-31.30	1.00 V	343	19.04	32.26
5	4874.00	53.50 PK	74.00	-20.50	1.08 V	178	17.70	35.80
6	4874.00	46.20 AV	54.00	-7.80	1.08 V	178	10.40	35.80
7	7311.00	72.30 PK	74.00	-1.70	1.27 V	31	29.78	42.52
8	7311.00	49.30 AV	54.00	-4.70	1.27 V	31	6.78	42.52

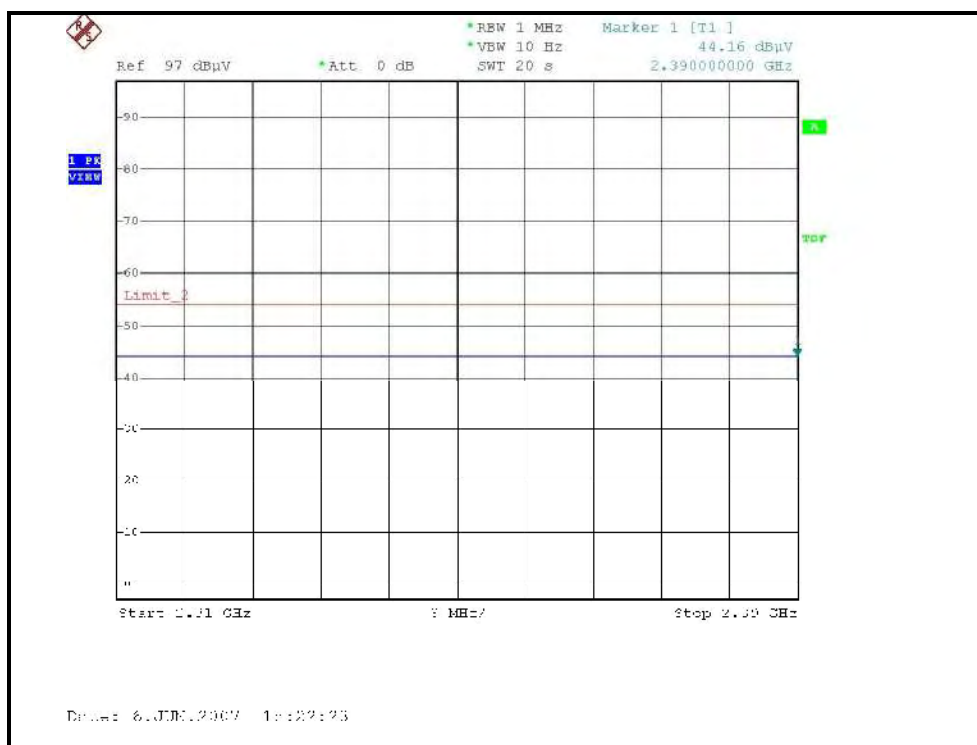
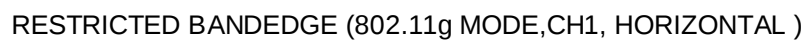
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as 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	20deg. C, 65%RH, 960hPa	TESTED BY	Sky Liao

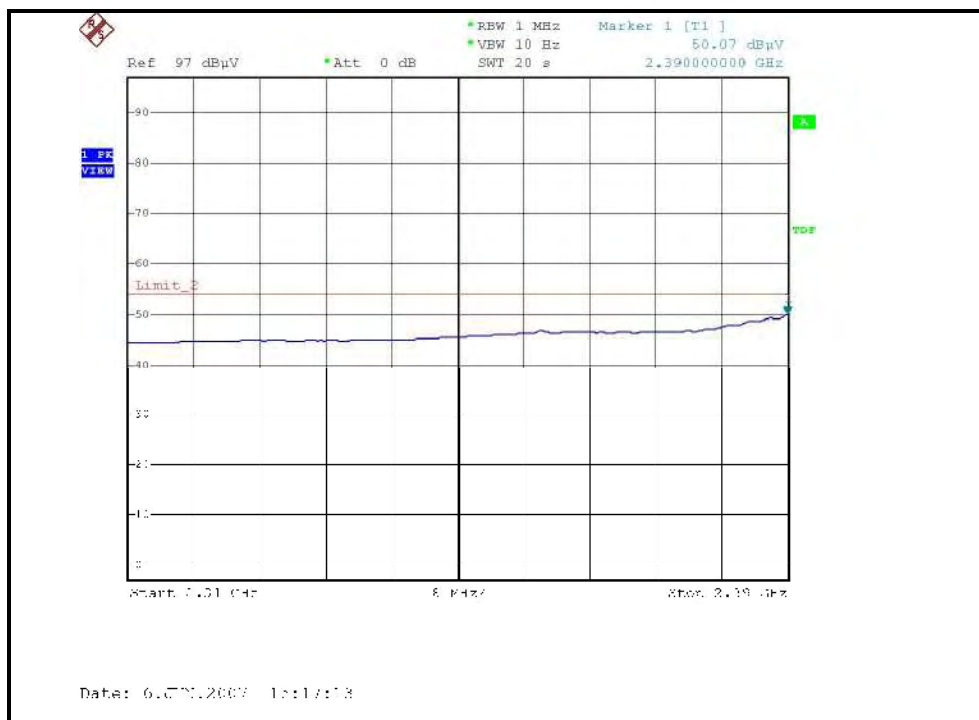
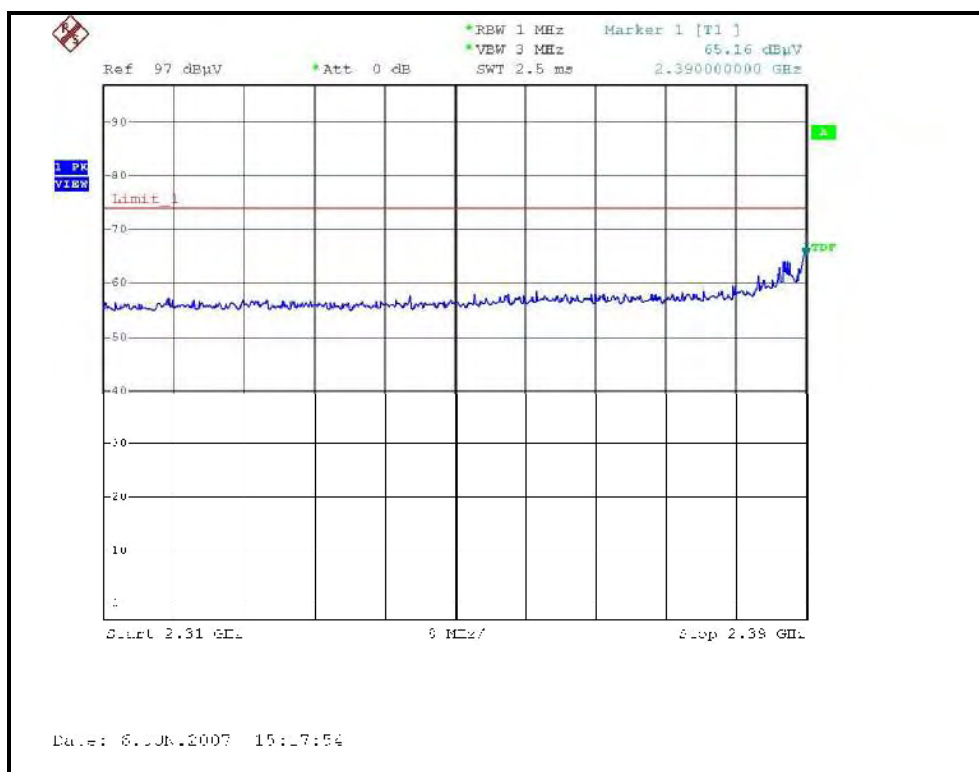
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.50 PK			1.35 H	173	73.78	30.72
2	*2462.00	94.30 AV			1.35 H	173	63.58	30.72
3	2483.50	61.33 PK	74.00	-12.67	1.36 H	176	30.51	30.82
4	2483.50	47.40 AV	54.00	-6.60	1.36 H	176	16.58	30.82
5	3282.00	49.40 PK	84.50	-35.10	1.18 H	126	17.11	32.29
6	3282.00	45.00 AV	74.30	-29.30	1.18 H	126	12.71	32.29
7	4924.00	48.40 PK	74.00	-25.60	1.35 H	228	12.50	35.90
8	4924.00	38.60 AV	54.00	-15.40	1.35 H	228	2.70	35.90
9	7386.00	58.50 PK	74.00	-15.50	1.44 H	100	15.70	42.80
10	7386.00	39.80 AV	54.00	-14.20	1.44 H	100	-3.00	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	112.30 PK			1.07 V	336	81.58	30.72
2	*2462.00	101.90 AV			1.07 V	336	71.18	30.72
3	2483.50	70.62 PK	74.00	-3.38	1.07 V	335	39.80	30.82
4	2483.50	53.15 AV	54.00	-0.85	1.07 V	335	22.33	30.82
5	3282.00	55.50 PK	92.30	-36.80	1.28 V	292	23.21	32.29
6	3282.00	51.00 AV	81.90	-30.90	1.28 V	292	18.71	32.29
7	4924.00	52.30 PK	74.00	-21.70	1.45 V	185	16.40	35.90
8	4924.00	46.30 AV	54.00	-7.70	1.45 V	185	10.40	35.90
9	7386.00	71.10 PK	74.00	-2.90	1.35 V	97	28.30	42.80
10	7386.00	47.30 AV	54.00	-6.70	1.35 V	97	4.50	42.80

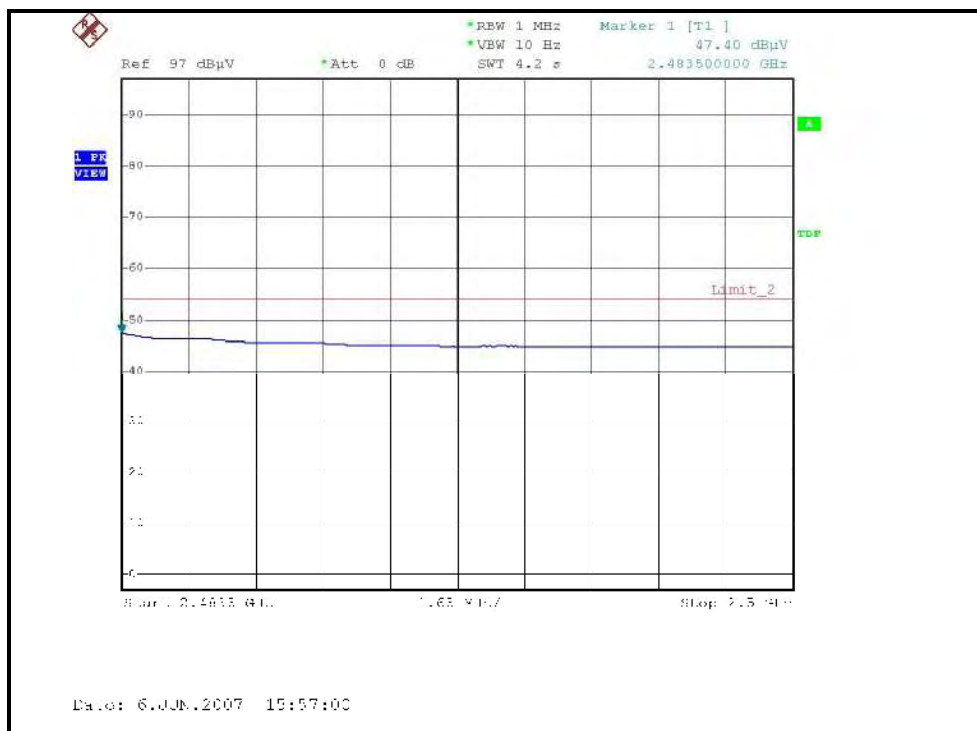
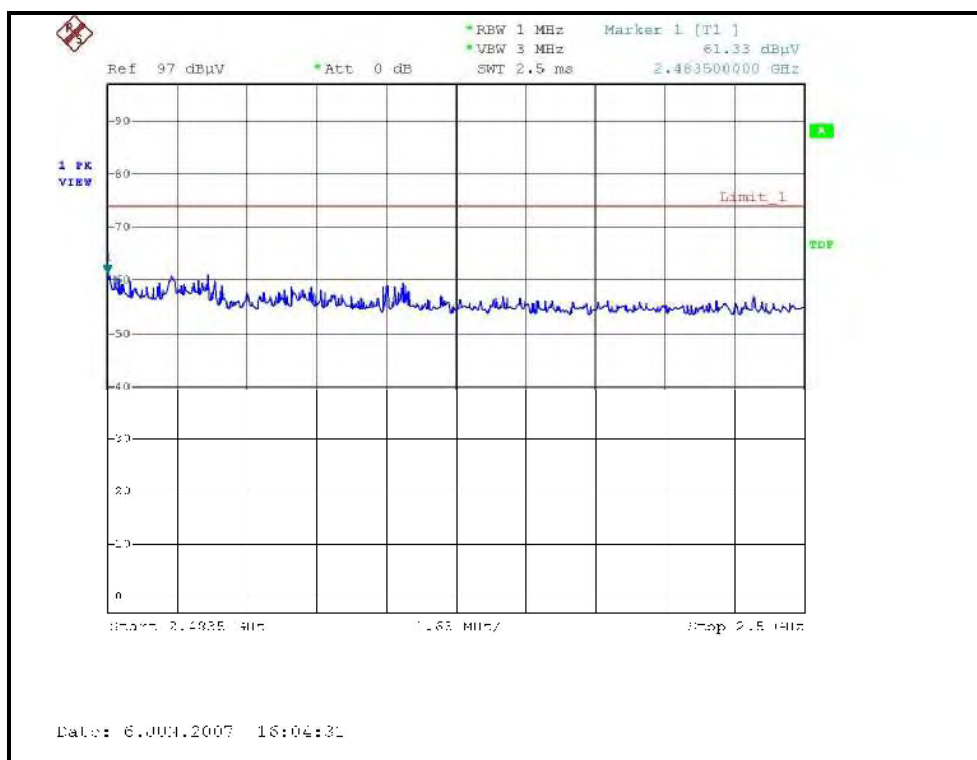
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as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



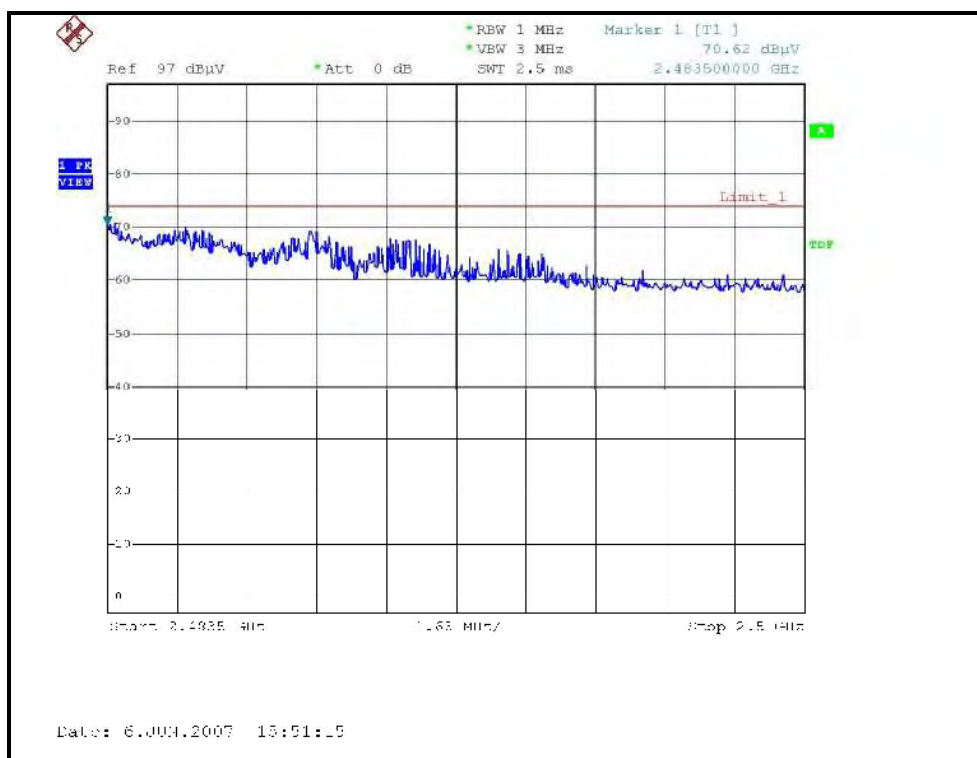
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)



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, 65%RH, 960hPa	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	2390.00	60.92 PK	74.00	-13.08	1.00 H	18	30.52	30.40
2	2390.00	45.46 AV	54.00	-8.54	1.00 H	18	15.06	30.40
3	*2412.00	102.20 PK			1.00 H	17	71.71	30.49
4	*2412.00	90.80 AV			1.00 H	17	60.31	30.49
5	3216.00	49.60 PK	82.20	-32.60	1.83 H	125	17.37	32.23
6	3216.00	44.60 AV	70.80	-26.20	1.83 H	125	12.37	32.23
7	4824.00	51.70 PK	74.00	-22.30	1.86 H	250	16.01	35.69
8	4824.00	43.90 AV	54.00	-10.10	1.86 H	250	8.21	35.69
9	7236.00	64.20 PK	74.00	-9.80	1.48 H	61	21.96	42.24
10	7236.00	42.10 AV	54.00	-11.90	1.48 H	61	-0.14	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	71.31 PK	74.00	-2.69	1.00 V	204	40.91	30.40
2	2390.00	51.24 AV	54.00	-2.76	1.00 V	204	20.84	30.40
3	*2412.00	112.00 PK			1.00 V	204	81.51	30.49
4	*2412.00	101.10 AV			1.00 V	204	70.61	30.49
5	3216.00	55.00 PK	92.00	-37.00	1.00 V	65	22.77	32.23
6	3216.00	51.00 AV	81.10	-30.10	1.00 V	65	18.77	32.23
7	4824.00	53.60 PK	74.00	-20.40	1.45 V	180	17.91	35.69
8	4824.00	50.00 AV	54.00	-4.00	1.45 V	180	14.31	35.69
9	7236.00	70.60 PK	74.00	-3.40	1.36 V	112	28.36	42.24
10	7236.00	46.40 AV	54.00	-7.60	1.36 V	112	4.16	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	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 960hPa	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	*2437.00	102.50 PK			1.00 H	28	71.89	30.61
2	*2437.00	90.90 AV			1.00 H	28	60.29	30.61
3	3249.00	49.80 PK	82.50	-32.70	1.80 H	226	17.54	32.26
4	3249.00	44.80 AV	70.90	-26.10	1.80 H	226	12.54	32.26
5	4874.00	52.00 PK	74.00	-22.00	1.80 H	226	16.20	35.80
6	4874.00	44.00 AV	54.00	-10.00	1.80 H	226	8.20	35.80
7	7311.00	64.50 PK	74.00	-9.50	1.42 H	45	21.98	42.52
8	7311.00	42.50 AV	54.00	-11.50	1.42 H	45	-0.02	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	114.60 PK			1.05 V	21	83.99	30.61
2	*2437.00	102.10 AV			1.05 V	21	71.49	30.61
3	3249.00	54.80 PK	94.60	-39.80	1.05 V	152	22.54	32.26
4	3249.00	51.00 AV	82.10	-31.10	1.05 V	152	18.74	32.26
5	4874.00	53.90 PK	74.00	-20.10	1.42 V	176	18.10	35.80
6	4874.00	50.20 AV	54.00	-3.80	1.42 V	176	14.40	35.80
7	7311.00	70.90 PK	74.00	-3.10	1.26 V	110	28.38	42.52
8	7311.00	46.80 AV	54.00	-7.20	1.26 V	110	4.28	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.

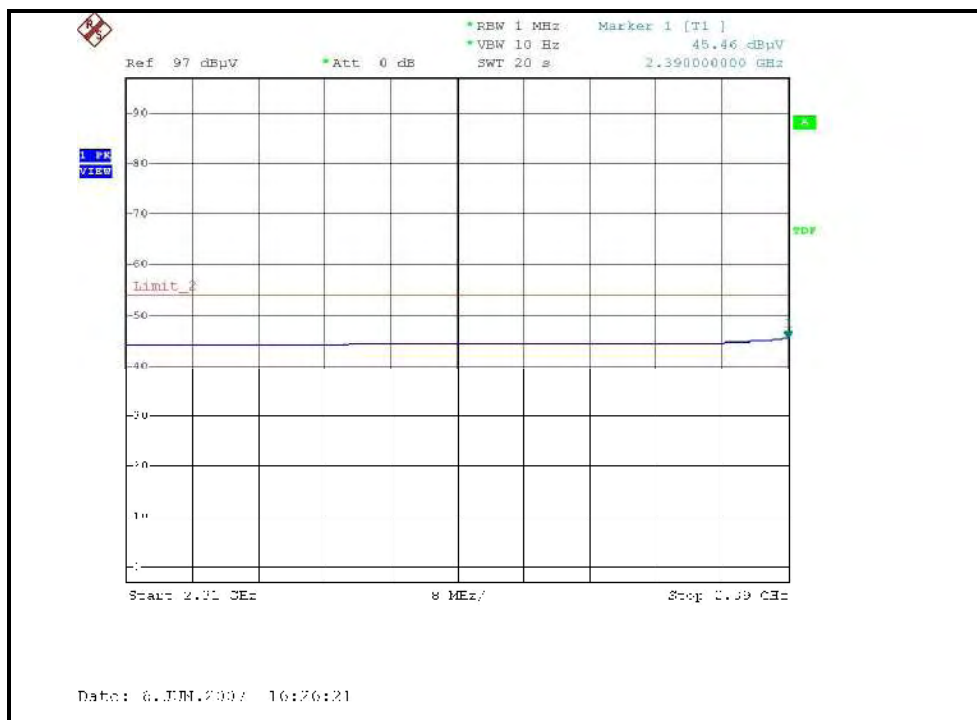
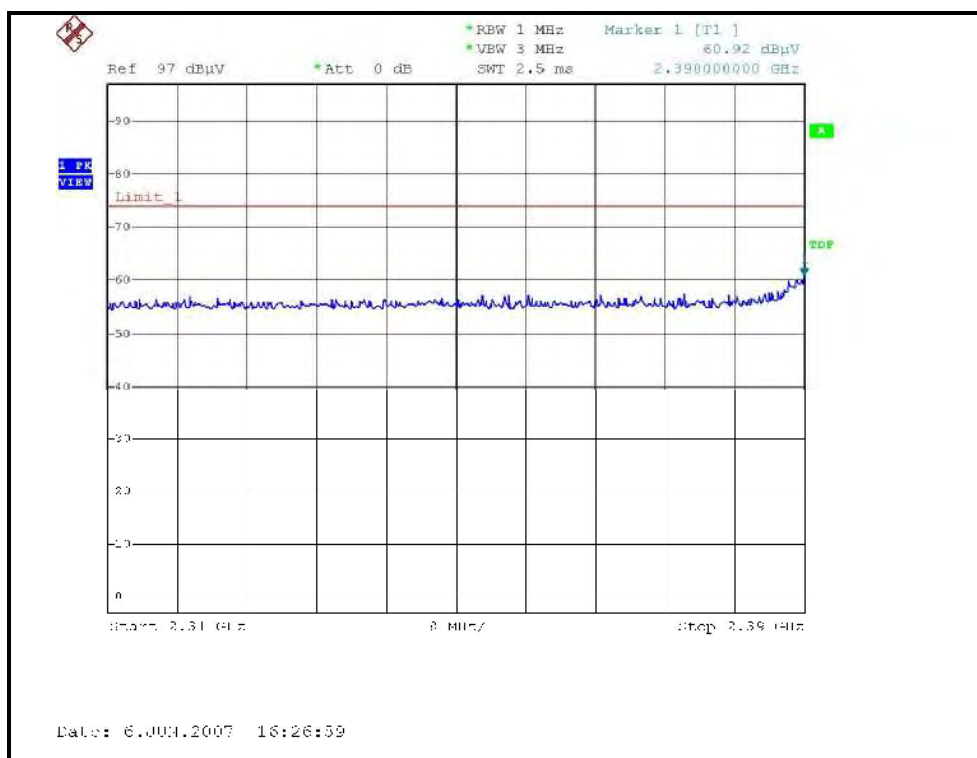
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	6.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 960hPa	TESTED BY	Sky Liao

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	*2462.00	102.30 PK			1.26 H	21	71.58	30.72
2	*2462.00	90.70 AV			1.26 H	21	59.98	30.72
3	2483.50	62.64 PK	74.00	-11.36	1.16 H	24	31.82	30.82
4	2483.50	46.88 AV	54.00	-7.12	1.16 H	24	16.06	30.82
5	3282.00	49.90 PK	82.30	-32.40	1.65 H	120	17.61	32.29
6	3282.00	44.90 AV	70.70	-25.80	1.65 H	120	12.61	32.29
7	4924.00	52.20 PK	74.00	-21.80	1.72 H	212	16.30	35.90
8	4924.00	44.30 AV	54.00	-9.70	1.72 H	212	8.40	35.90
9	7386.00	64.60 PK	74.00	-9.40	1.38 H	72	21.80	42.80
10	7386.00	42.60 AV	54.00	-11.40	1.38 H	72	-0.20	42.80

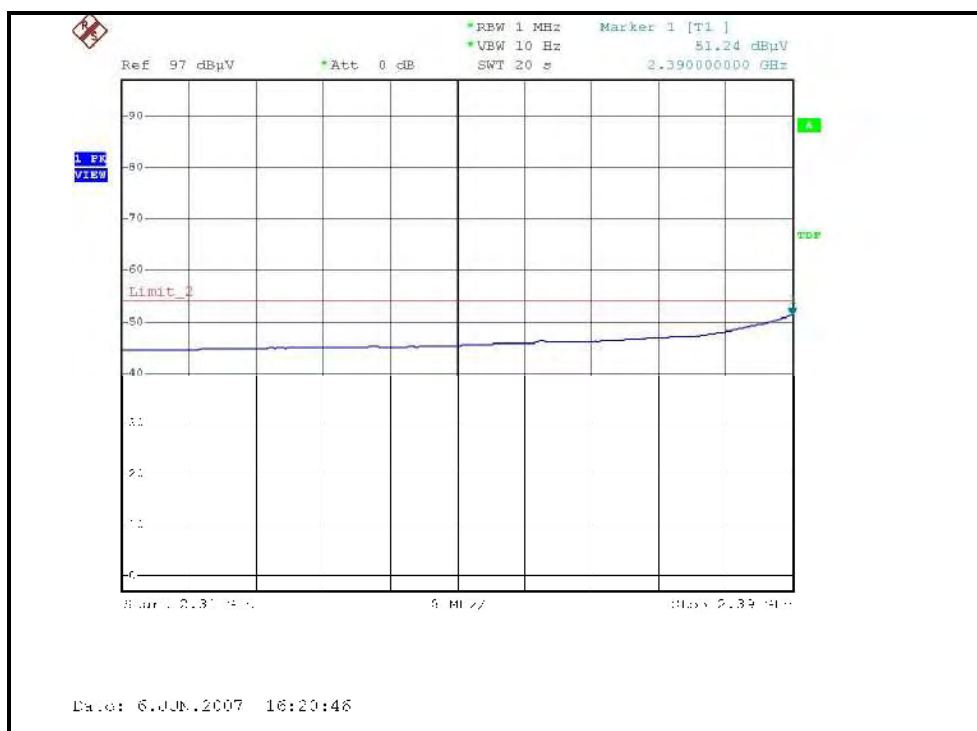
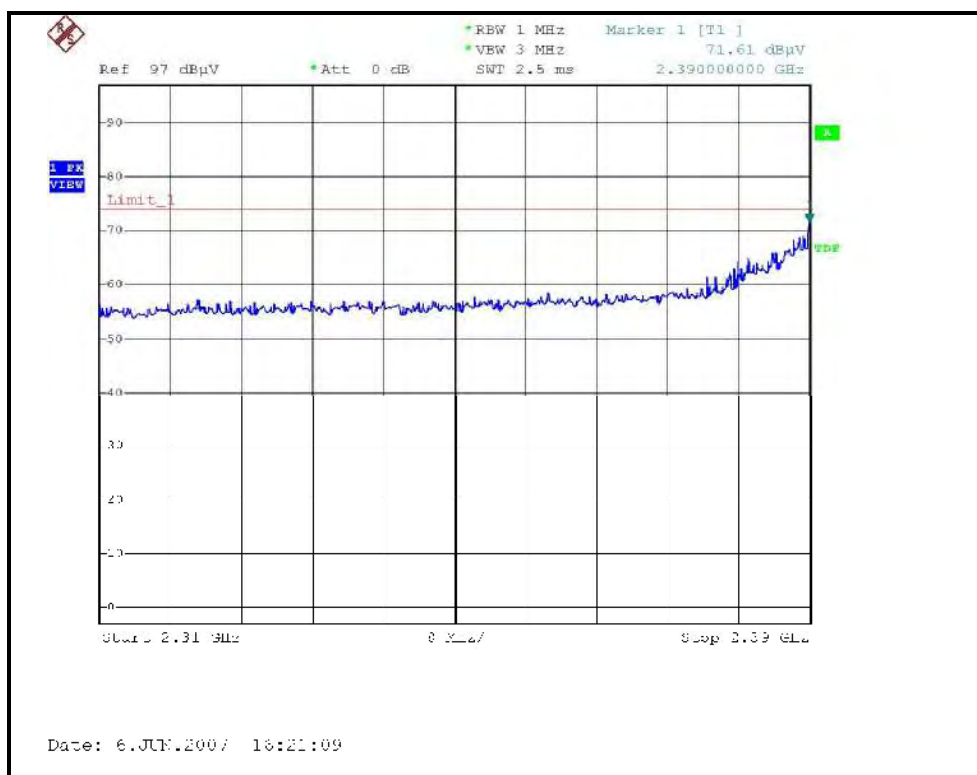
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.70 PK			1.01 V	337	83.98	30.72
2	*2462.00	101.00 AV			1.01 V	337	70.28	30.72
3	2483.50	72.55 PK	74.00	-1.45	1.08 V	332	41.73	30.82
4	2483.50	53.46 AV	54.00	-0.54	1.08 V	332	22.64	30.82
5	3282.00	55.40 PK	94.70	-39.30	1.06 V	165	23.11	32.29
6	3282.00	51.80 AV	81.00	-29.20	1.06 V	165	19.51	32.29
7	4924.00	54.30 PK	74.00	-19.70	1.30 V	180	18.40	35.90
8	4924.00	50.90 AV	54.00	-3.10	1.30 V	180	15.00	35.90
9	7386.00	70.80 PK	74.00	-3.20	1.25 V	117	28.00	42.80
10	7386.00	46.60 AV	54.00	-7.40	1.25 V	117	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.

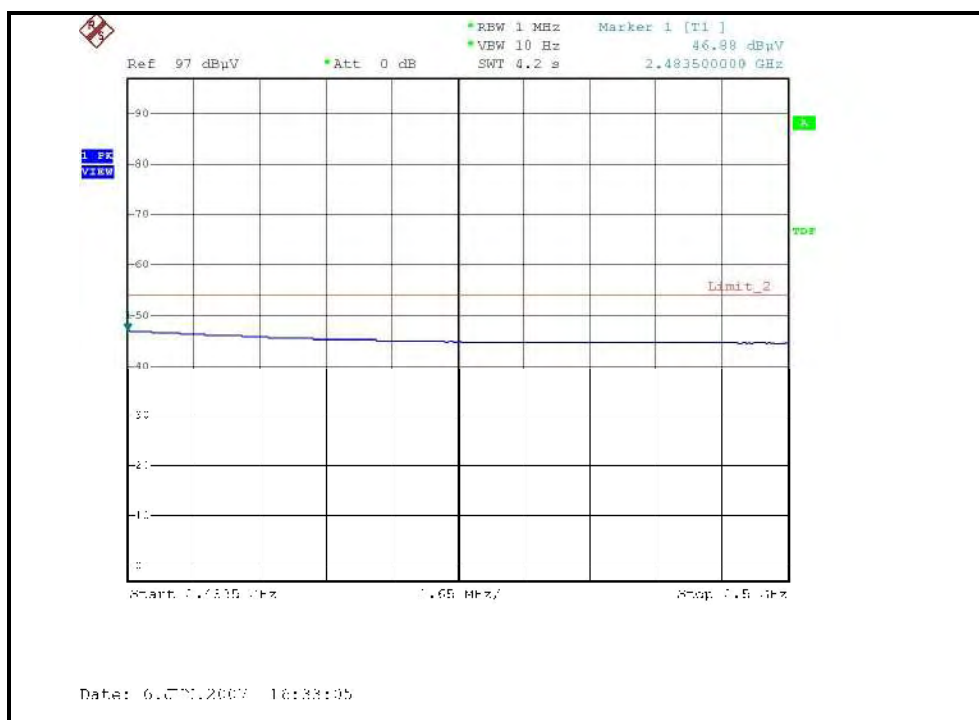
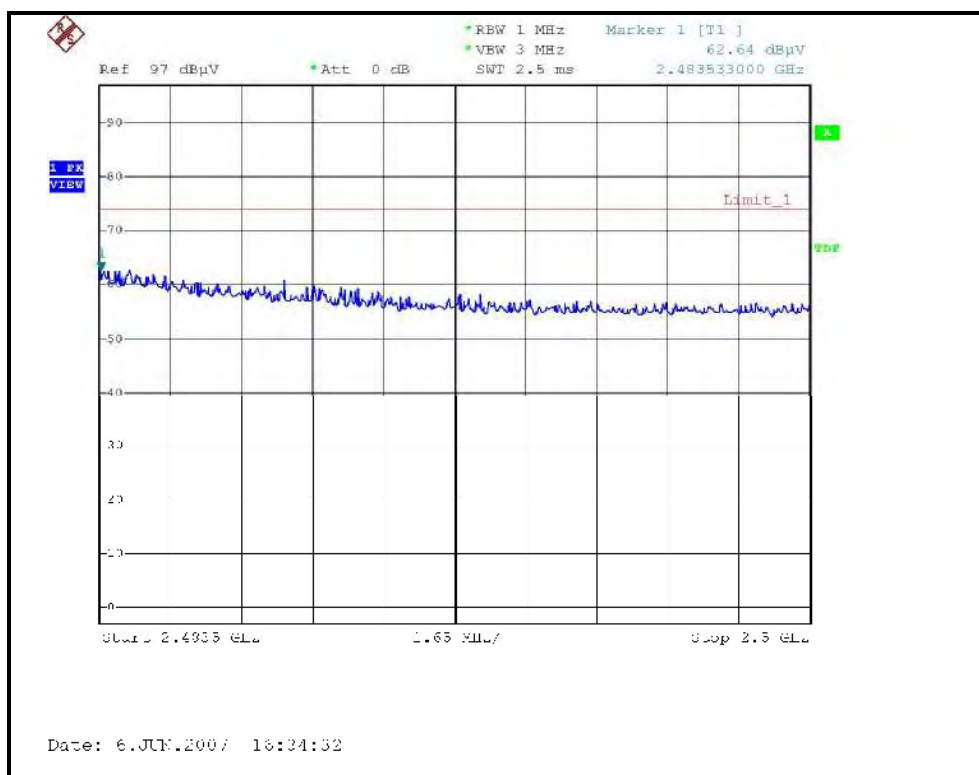
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH1, HORIZONTAL)



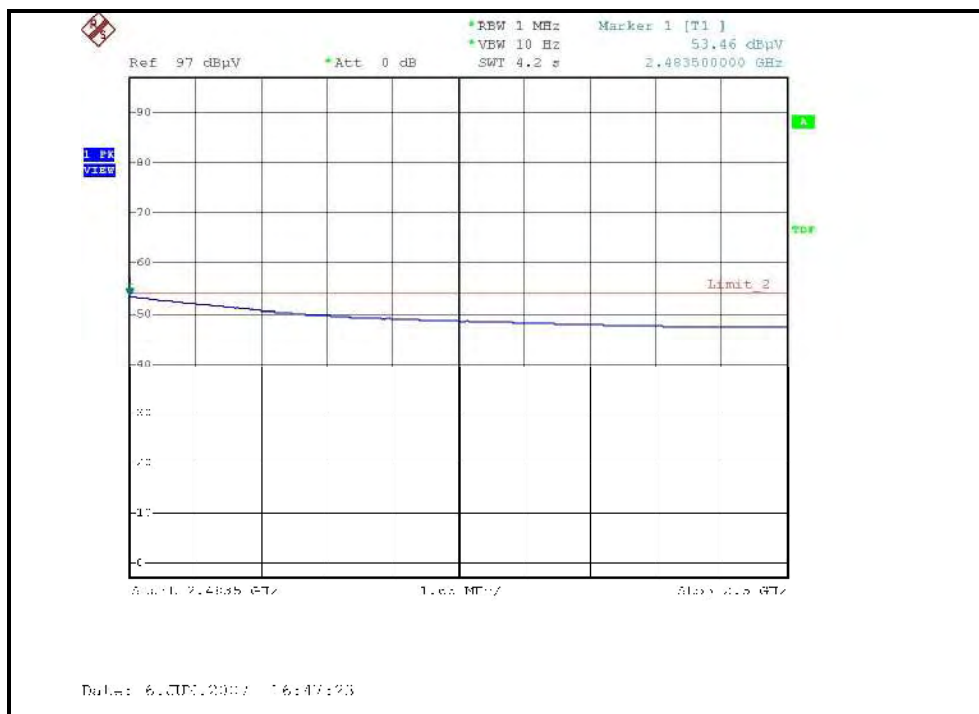
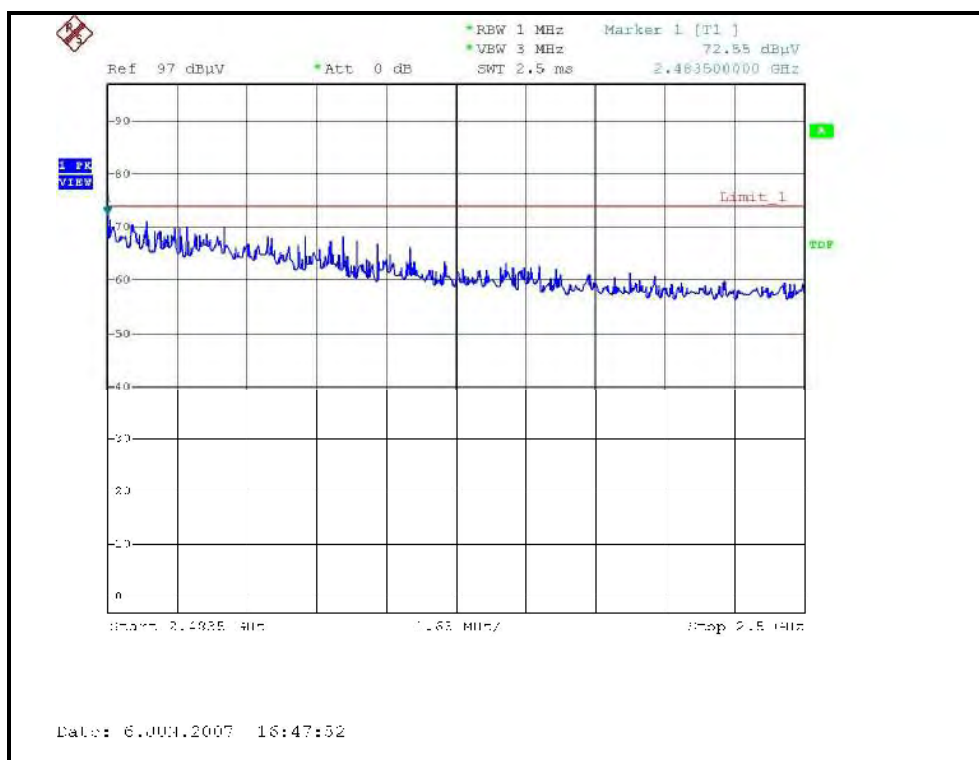
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)



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, 65%RH, 960hPa	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	2389.60	62.21 PK	74.00	-11.79	1.00 H	77	31.82	30.39
2	2389.60	45.87 AV	54.00	-8.13	1.00 H	77	15.48	30.39
3	*2422.00	99.70 PK			1.00 H	117	69.16	30.54
4	*2422.00	85.40 AV			1.00 H	117	54.86	30.54
5	3229.00	48.20 PK	79.70	-31.50	1.26 H	156	15.96	32.24
6	3229.00	43.00 AV	65.40	-22.40	1.26 H	156	10.76	32.24
7	4844.00	46.20 PK	74.00	-27.80	1.00 H	215	10.46	35.74
8	4844.00	34.60 AV	54.00	-19.40	1.00 H	215	-1.14	35.74
9	7266.00	53.50 PK	74.00	-20.50	1.25 H	15	11.15	42.35
10	7266.00	39.20 AV	54.00	-14.80	1.25 H	15	-3.15	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	2389.30	68.05 PK	74.00	-5.95	1.62 V	278	37.66	30.39
2	2389.30	51.92 AV	54.00	-2.08	1.62 V	278	21.53	30.39
3	*2422.00	110.40 PK			1.60 V	275	79.86	30.54
4	*2422.00	95.60 AV			1.60 V	275	65.06	30.54
5	3229.00	55.50 PK	90.40	-34.90	1.20 V	100	23.26	32.24
6	3229.00	51.50 AV	75.60	-24.10	1.20 V	100	19.26	32.24
7	4844.00	51.10 PK	74.00	-22.90	1.08 V	172	15.36	35.74
8	4844.00	45.40 AV	54.00	-8.60	1.08 V	172	9.66	35.74
9	7266.00	60.20 PK	74.00	-13.80	1.42 V	14	17.85	42.35
10	7266.00	41.00 AV	54.00	-13.00	1.42 V	14	-1.35	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	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 960hPa	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	*2437.00	98.20 PK			1.04 H	120	67.59	30.61
2	*2437.00	87.50 AV			1.04 H	120	56.89	30.61
3	3249.00	48.50 PK	78.20	-29.70	1.32 H	175	16.24	32.26
4	3249.00	43.50 AV	67.50	-24.00	1.32 H	175	11.24	32.26
5	4874.00	46.40 PK	74.00	-27.60	1.05 H	223	10.60	35.80
6	4874.00	35.00 AV	54.00	-19.00	1.05 H	223	-0.80	35.80
7	7311.00	53.80 PK	74.00	-20.20	1.32 H	8	11.28	42.52
8	7311.00	39.50 AV	54.00	-14.50	1.32 H	8	-3.02	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	110.50 PK			1.00 V	20	79.89	30.61
2	*2437.00	96.40 AV			1.00 V	20	65.79	30.61
3	3249.00	55.00 PK	90.50	-35.50	1.00 V	344	22.74	32.26
4	3249.00	51.40 AV	76.40	-25.00	1.00 V	344	19.14	32.26
5	4874.00	50.80 PK	74.00	-23.20	1.06 V	108	15.00	35.80
6	4874.00	45.70 AV	54.00	-8.30	1.06 V	108	9.90	35.80
7	7311.00	59.30 PK	74.00	-14.70	1.50 V	21	16.78	42.52
8	7311.00	41.40 AV	54.00	-12.60	1.50 V	21	-1.12	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.

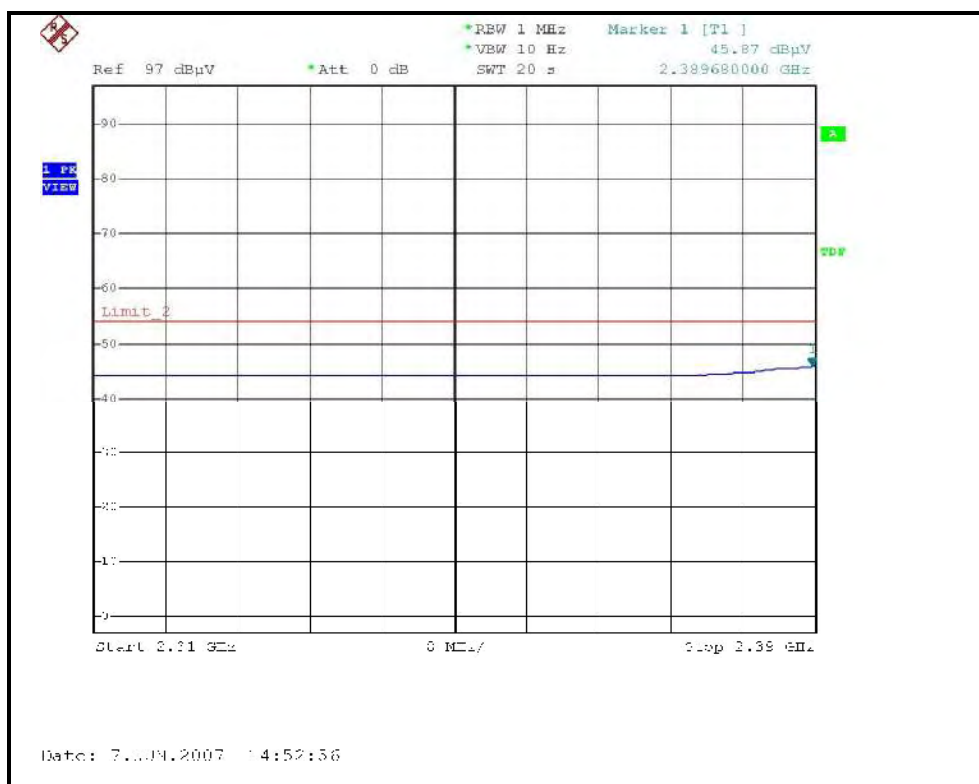
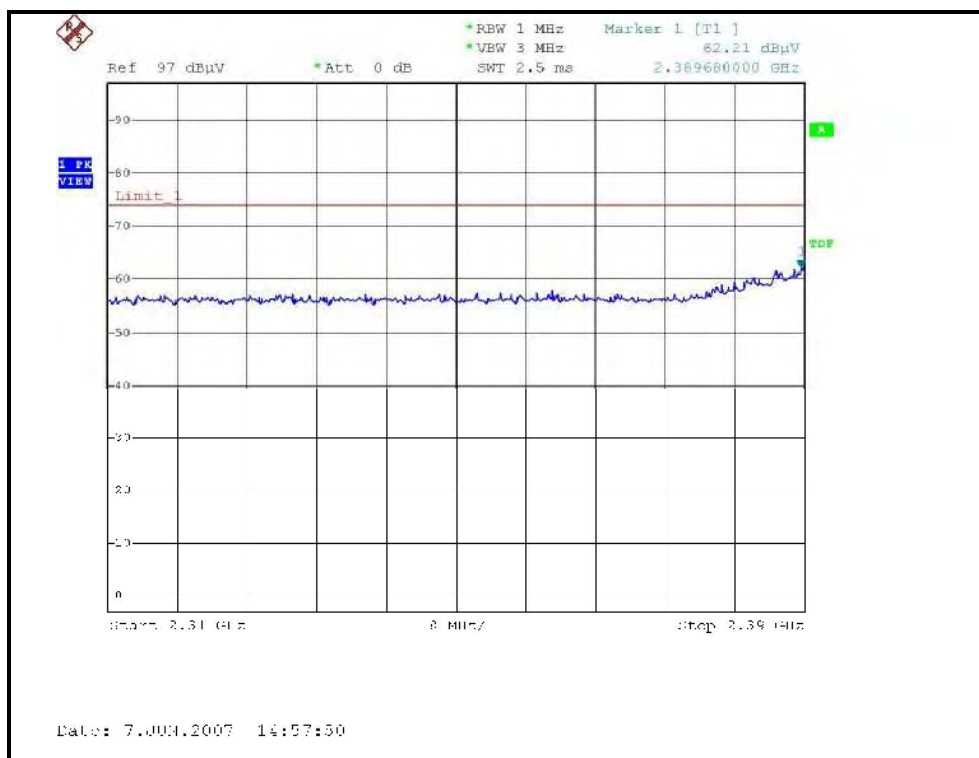
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
MODULATION TYPE	BPSK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TRANSFER RATE	13.5Mbps	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH, 960hPa	TESTED BY	Sky Liao

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	*2452.00	95.50 PK			1.30 H	17	64.83	30.67
2	*2452.00	83.70 AV			1.30 H	17	53.03	30.67
3	2483.50	58.70 PK	74.00	-15.30	1.30 H	20	27.88	30.82
4	2483.50	45.62 AV	54.00	-8.38	1.30 H	20	14.80	30.82
5	3269.00	48.60 PK	75.50	-26.90	1.25 H	146	16.32	32.28
6	3269.00	43.20 AV	63.70	-20.50	1.25 H	146	10.92	32.28
7	4904.00	46.20 PK	74.00	-27.80	1.02 H	215	10.34	35.86
8	4904.00	35.20 AV	54.00	-18.80	1.02 H	215	-0.66	35.86
9	7356.00	54.20 PK	74.00	-19.80	1.16 H	12	11.52	42.68
10	7356.00	39.60 AV	54.00	-14.40	1.16 H	12	-3.08	42.68

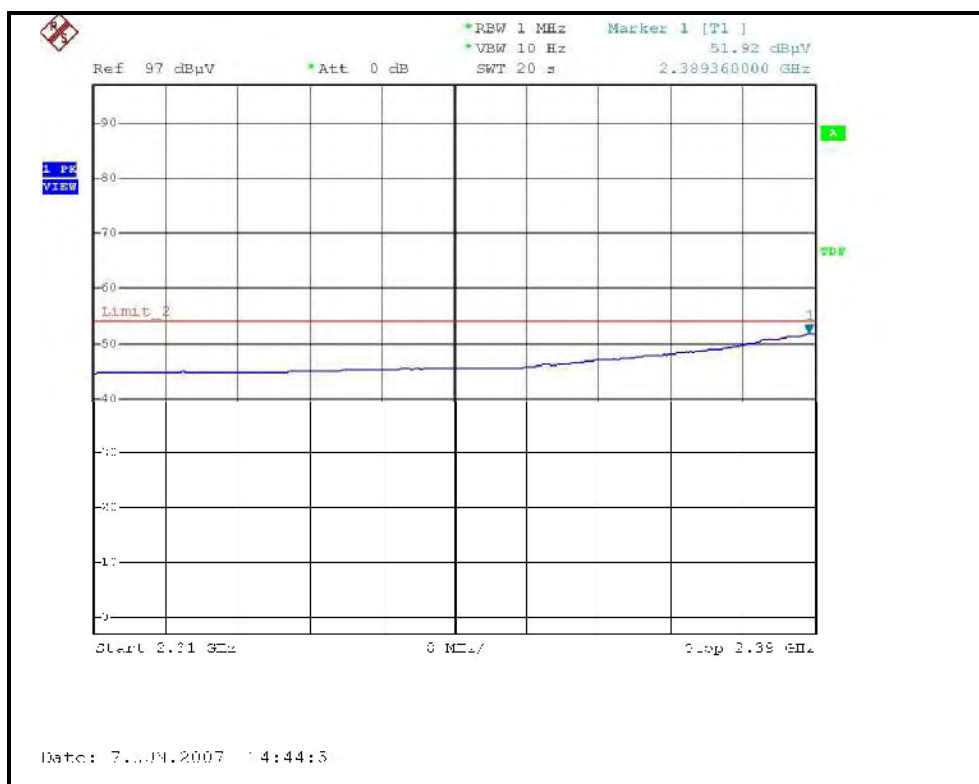
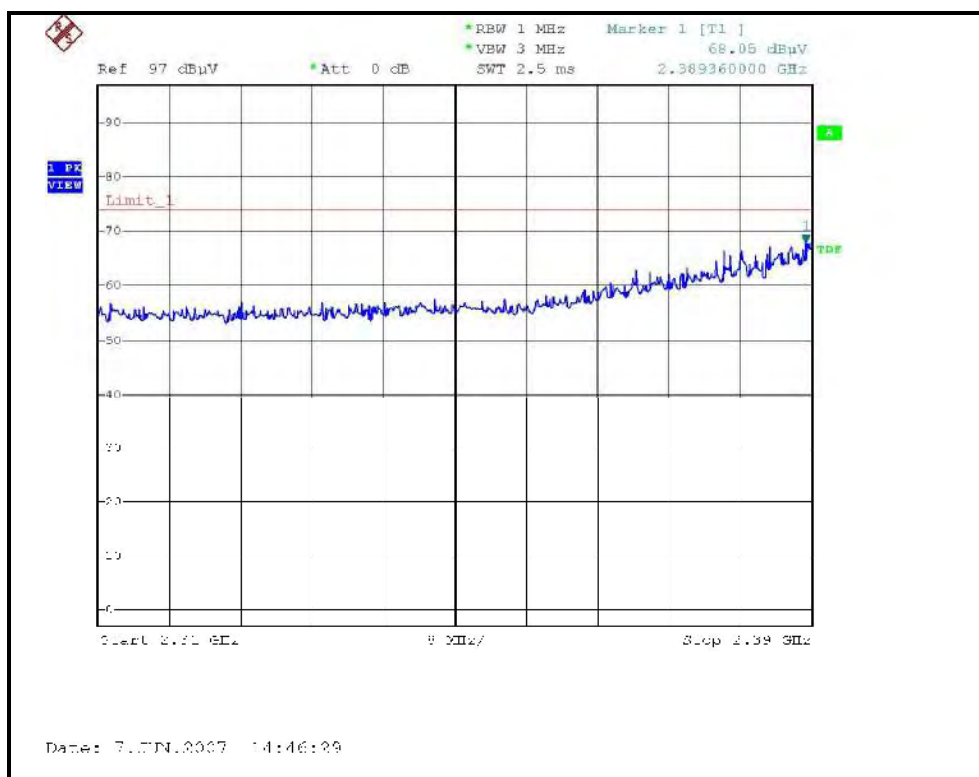
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	107.80 PK			1.03 V	63	77.13	30.67
2	*2452.00	93.70 AV			1.03 V	63	63.03	30.67
3	2483.53	68.23 PK	74.00	-5.77	1.00 V	64	37.41	30.82
4	2483.53	53.07 AV	54.00	-0.93	1.00 V	64	22.25	30.82
5	3269.00	55.80 PK	87.80	-32.00	1.08 V	110	23.52	32.28
6	3269.00	51.20 AV	73.70	-22.50	1.08 V	110	18.92	32.28
7	4904.00	51.40 PK	74.00	-22.60	1.02 V	156	15.54	35.86
8	4904.00	45.80 AV	54.00	-8.20	1.02 V	156	9.94	35.86
9	7356.00	59.60 PK	74.00	-14.40	1.28 V	7	16.92	42.68
10	7356.00	41.20 AV	54.00	-12.80	1.28 V	7	-1.48	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.

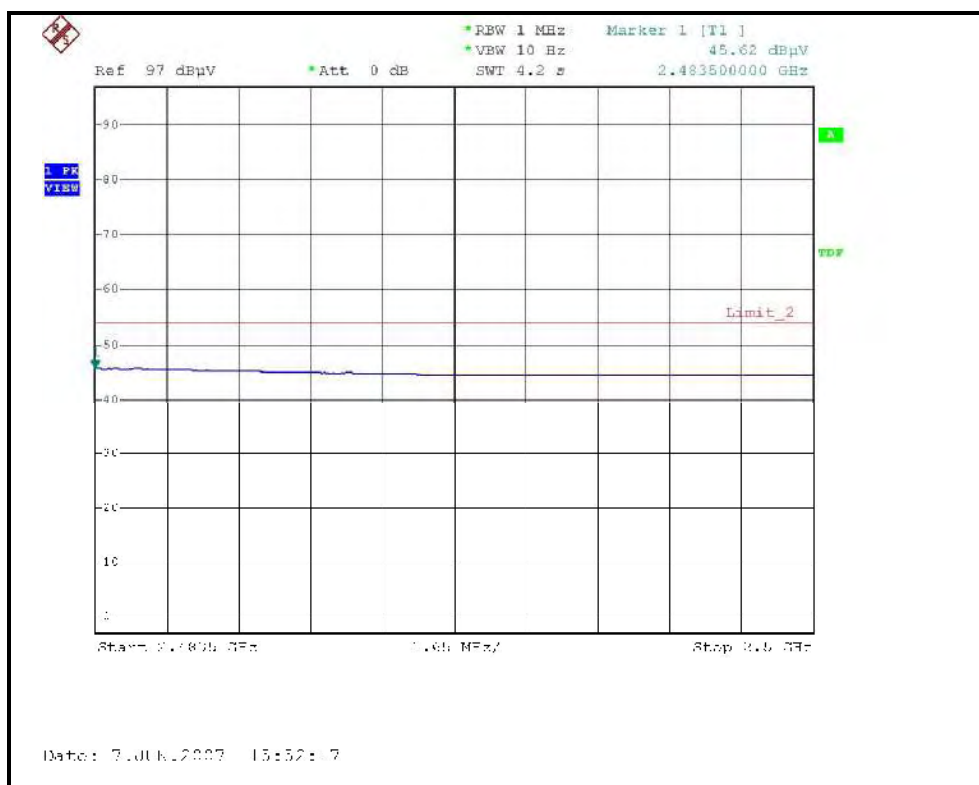
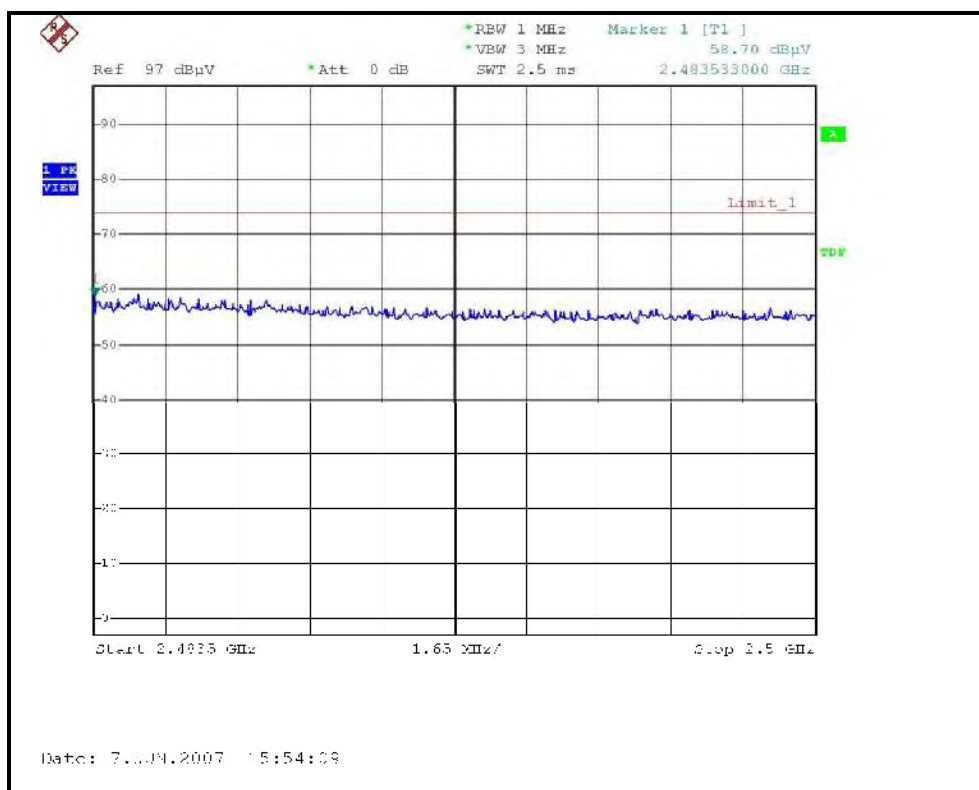
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, HORIZONTAL)



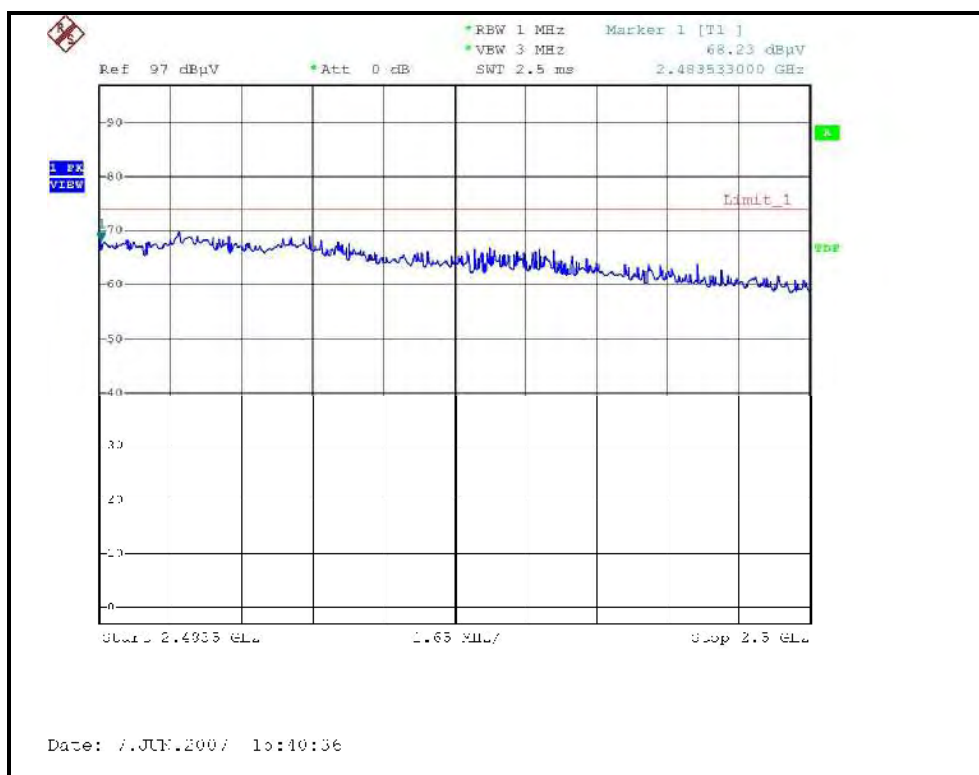
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)



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	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.

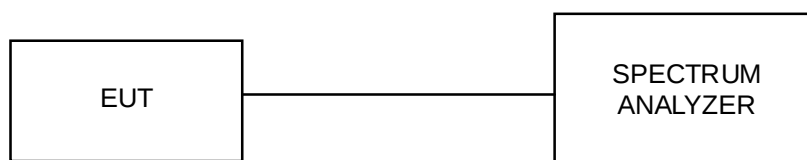
4.3.3 TEST PROCEDURE

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.

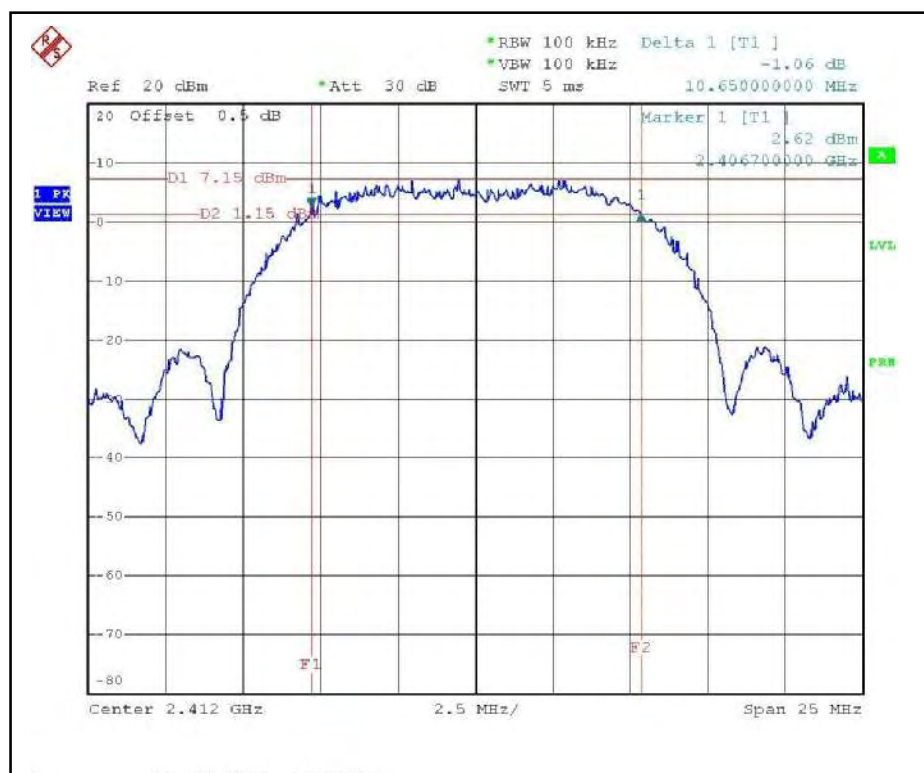
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

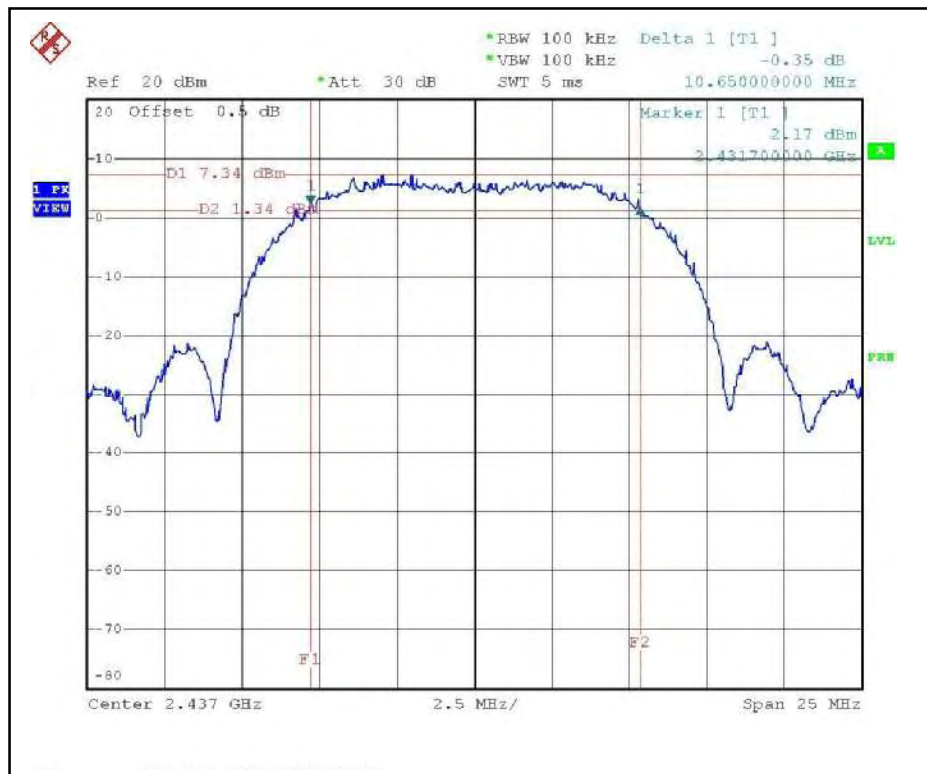
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.65	0.5	PASS
6	2437	10.65	0.5	PASS
11	2462	10.60	0.5	PASS

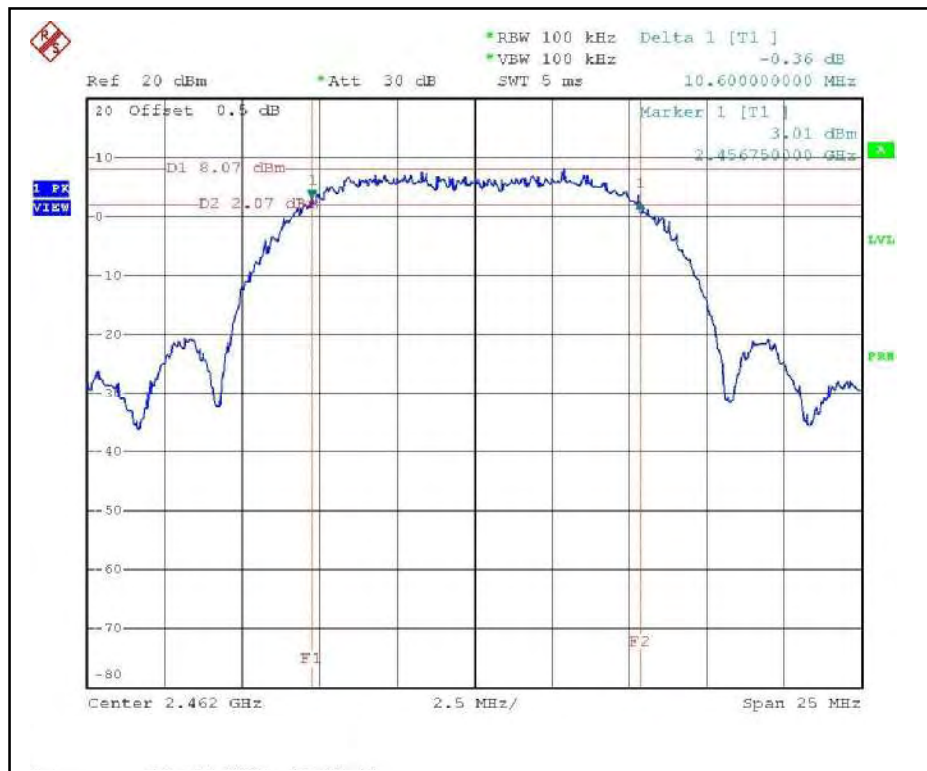
CH1



CH6



CH11

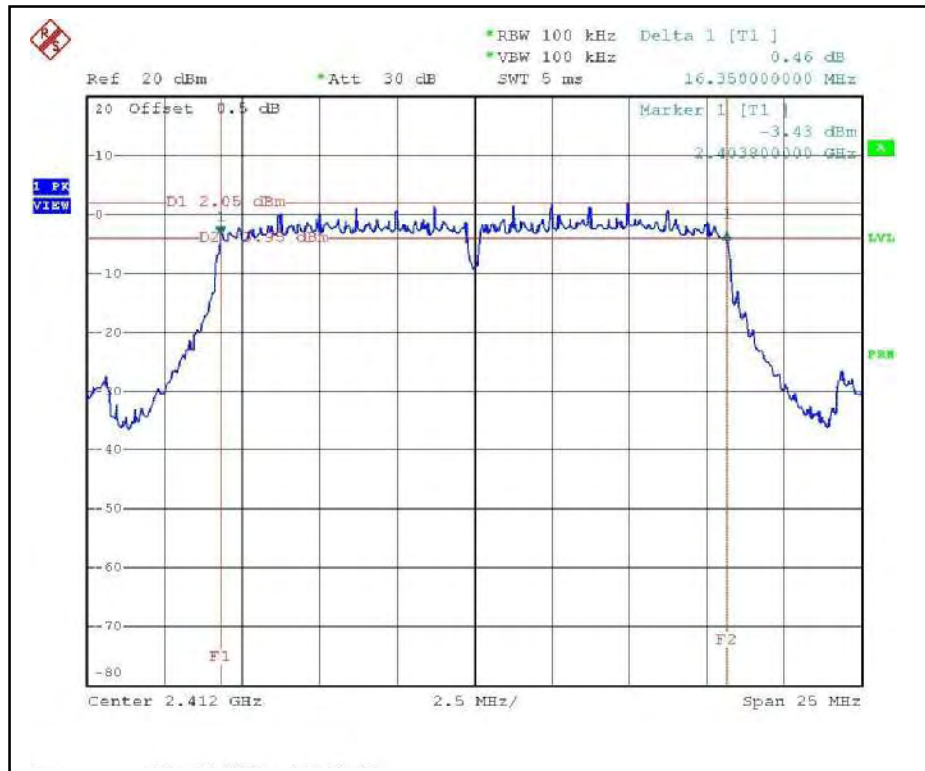


802.11g OFDM MODULATION:

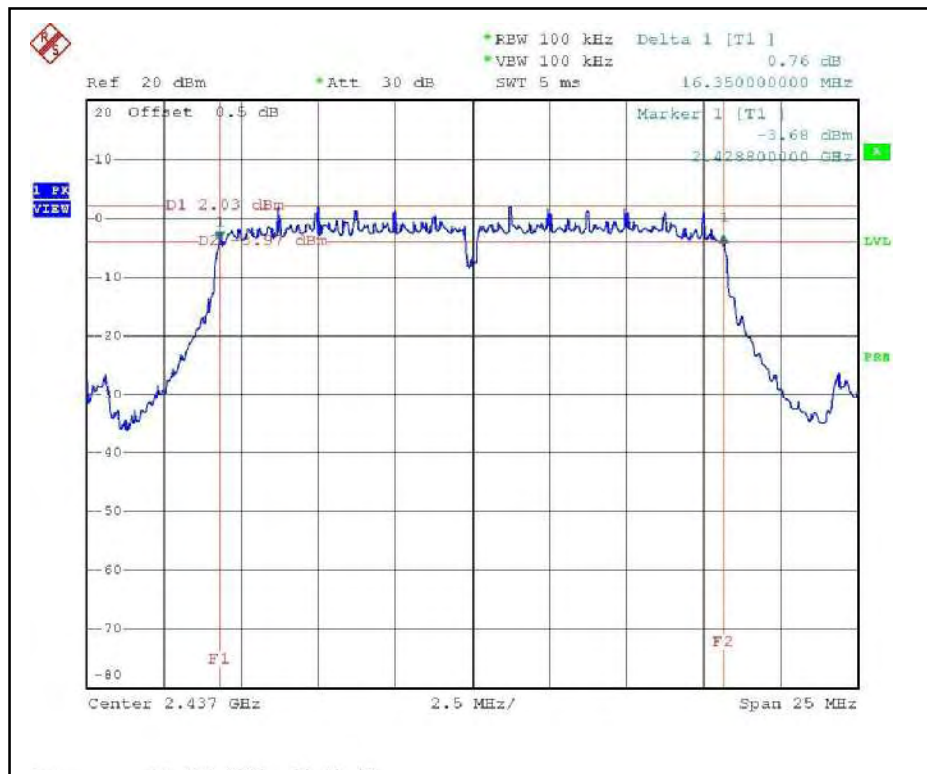
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.35	16.35	0.5	PASS
6	2437	16.35	16.35	0.5	PASS
11	2462	16.35	16.35	0.5	PASS

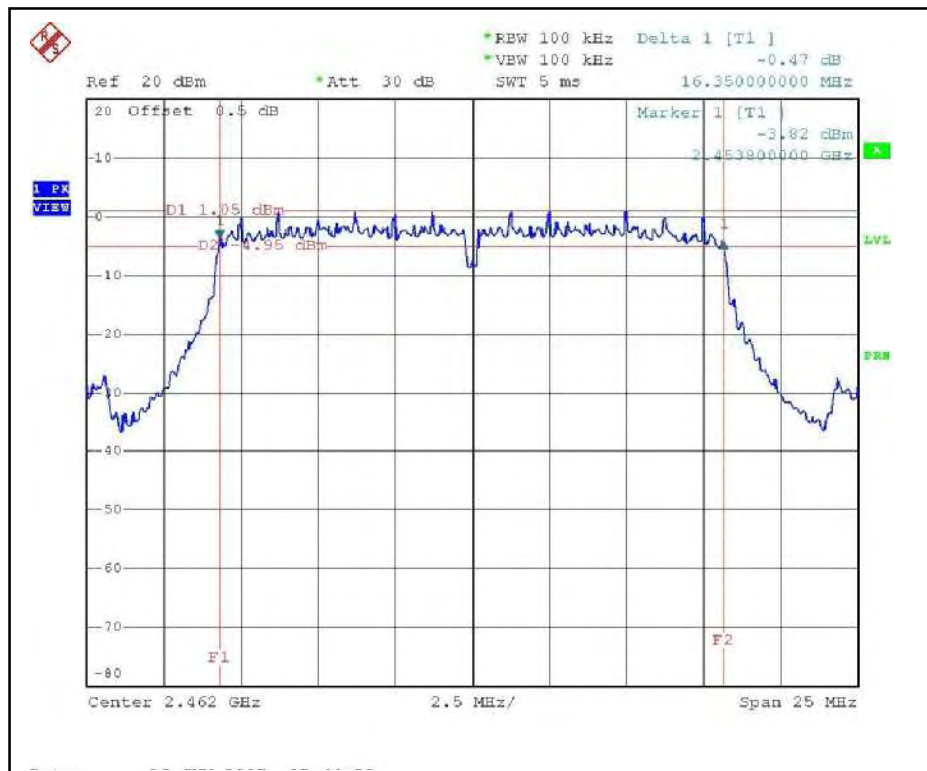
FOR CHAIN 0: CH1



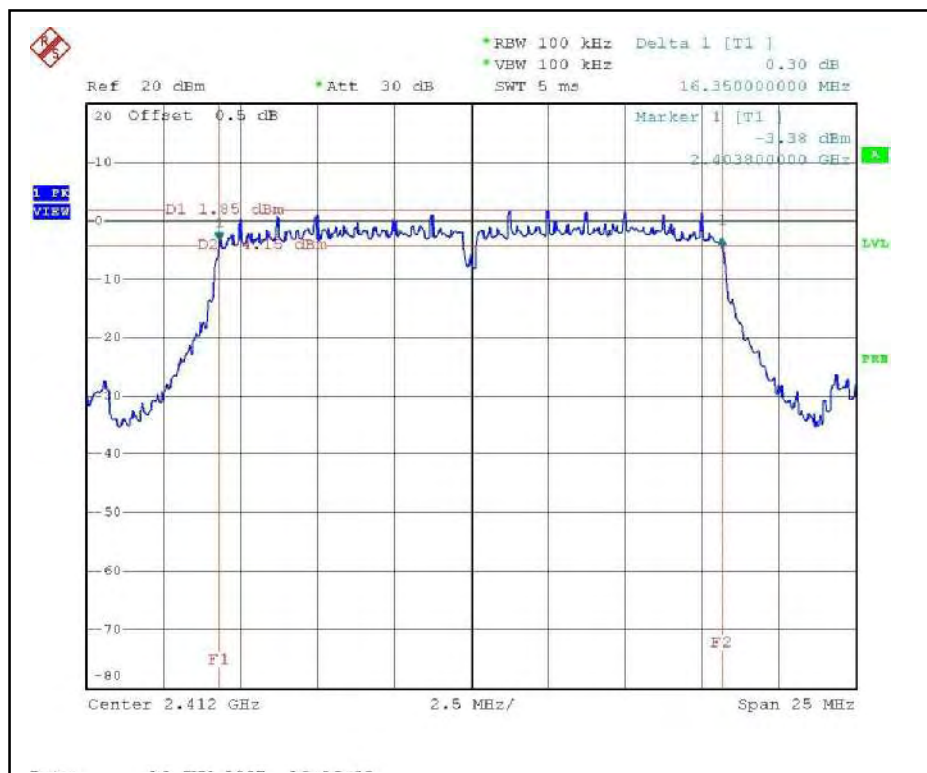
CH6



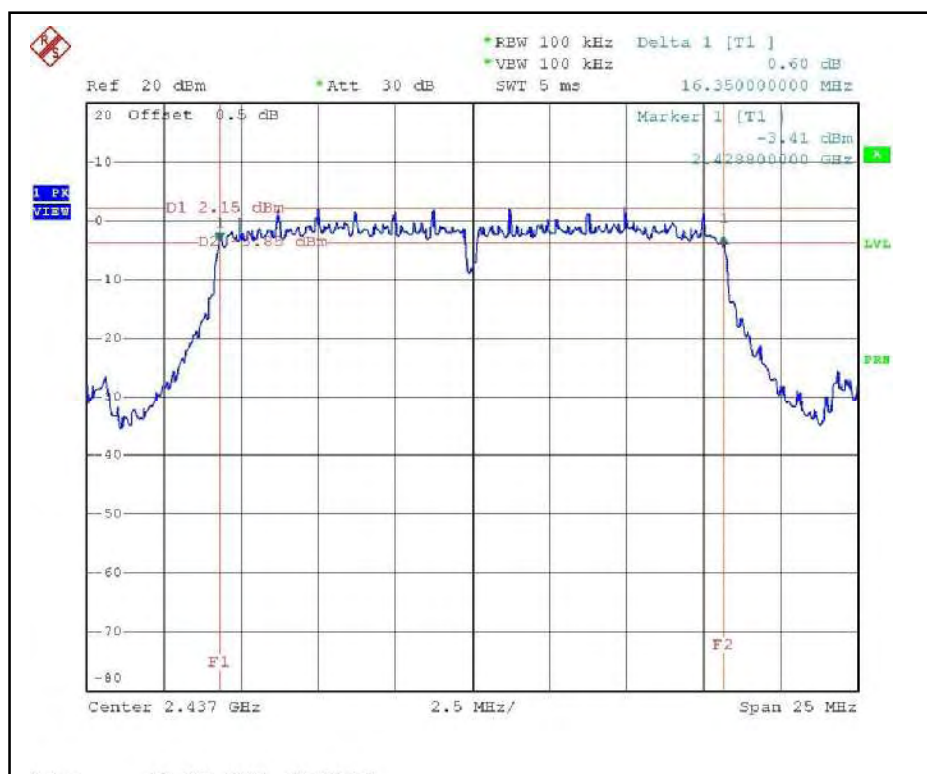
CH11



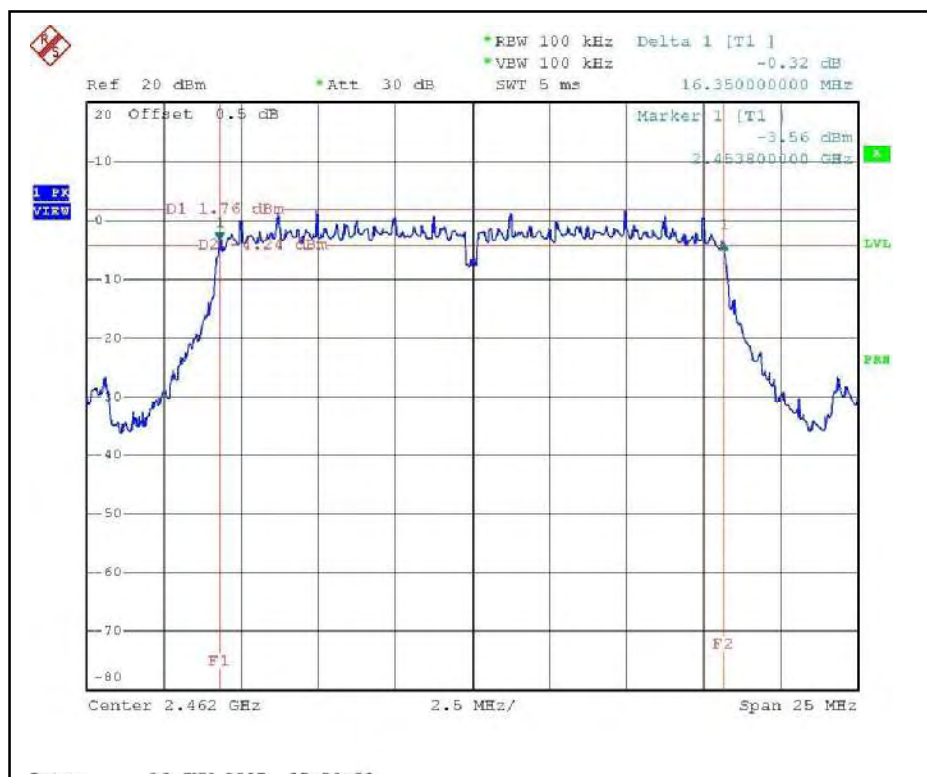
FOR CHAIN 1: CH1



CH6



CH11

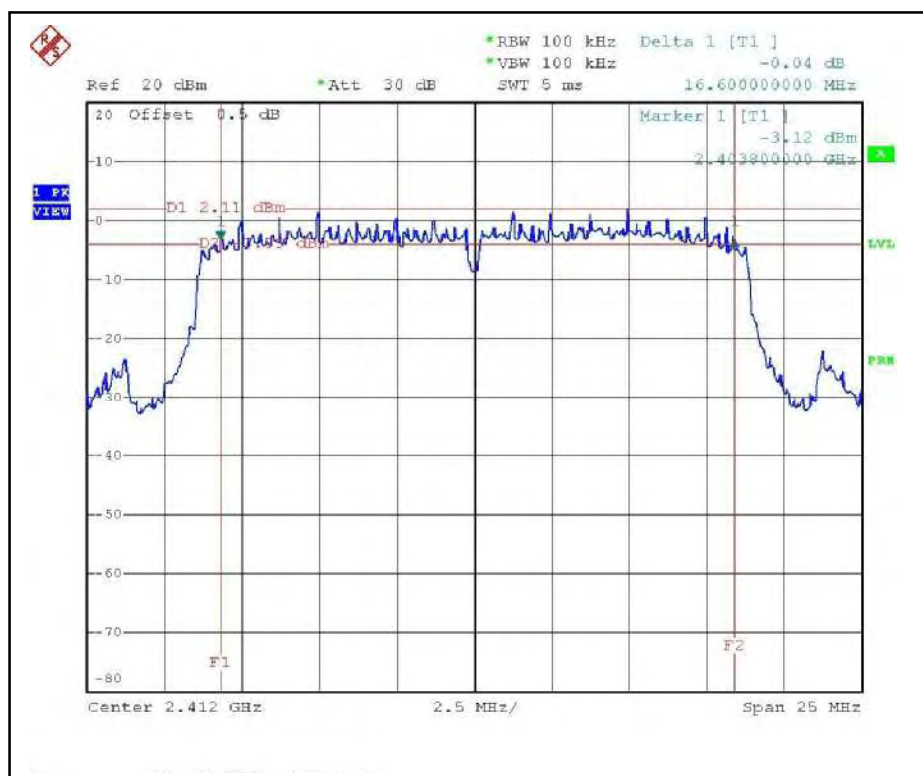


DRAFT 802.11n (20MHz) OFDM MODULATION:

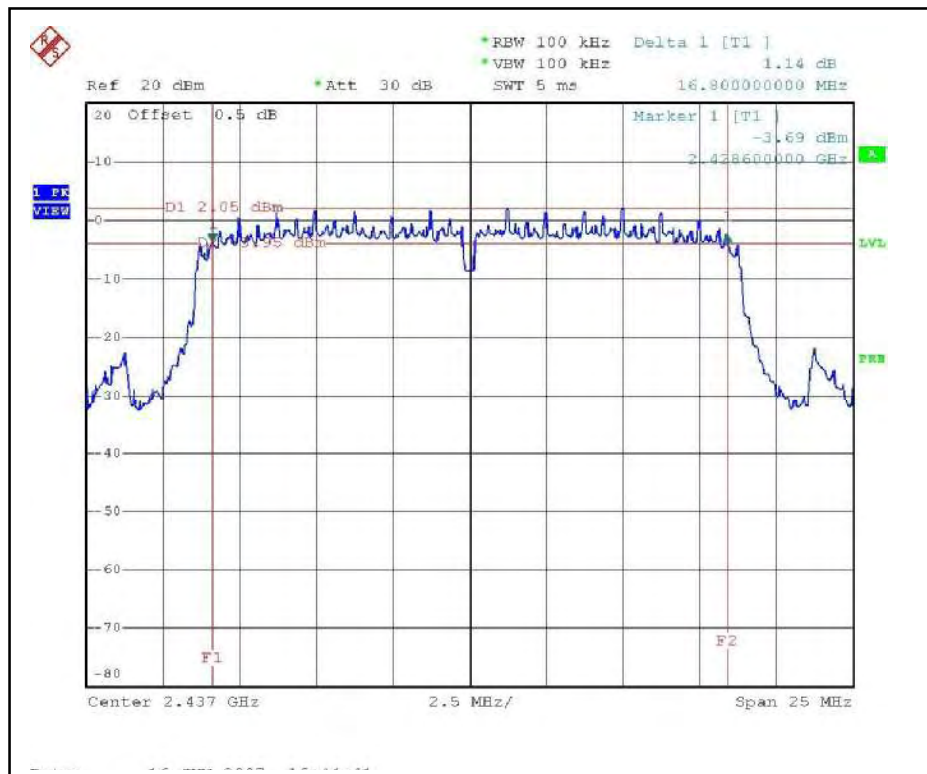
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	16.60	16.90	0.5	PASS
6	2437	16.80	16.60	0.5	PASS
11	2462	17.20	16.75	0.5	PASS

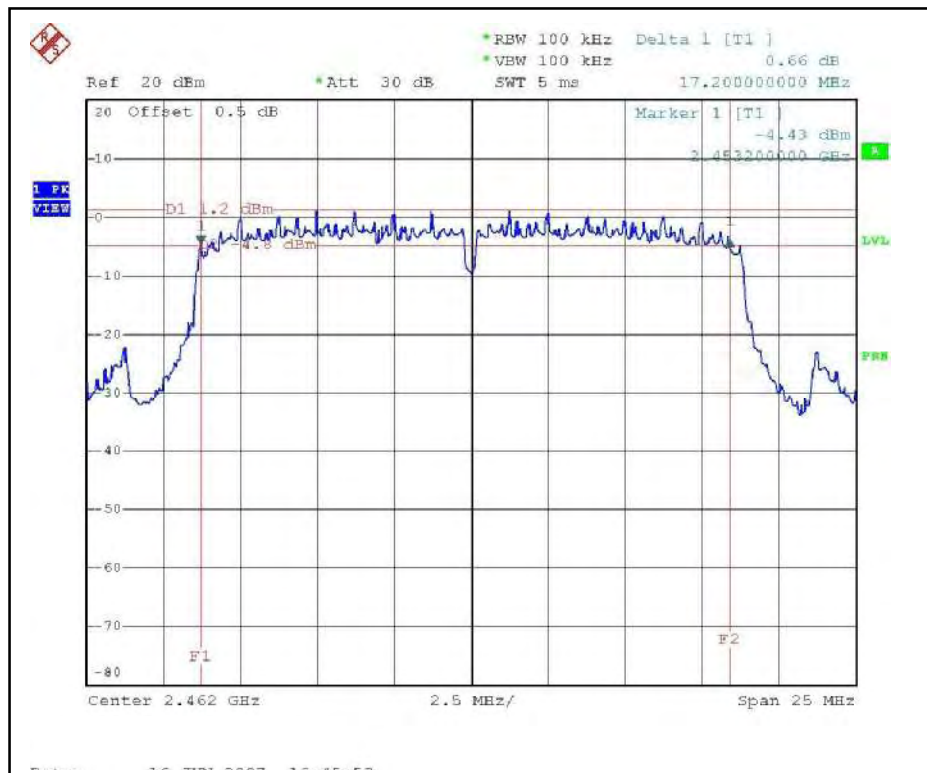
FOR CHAIN 0: CH1



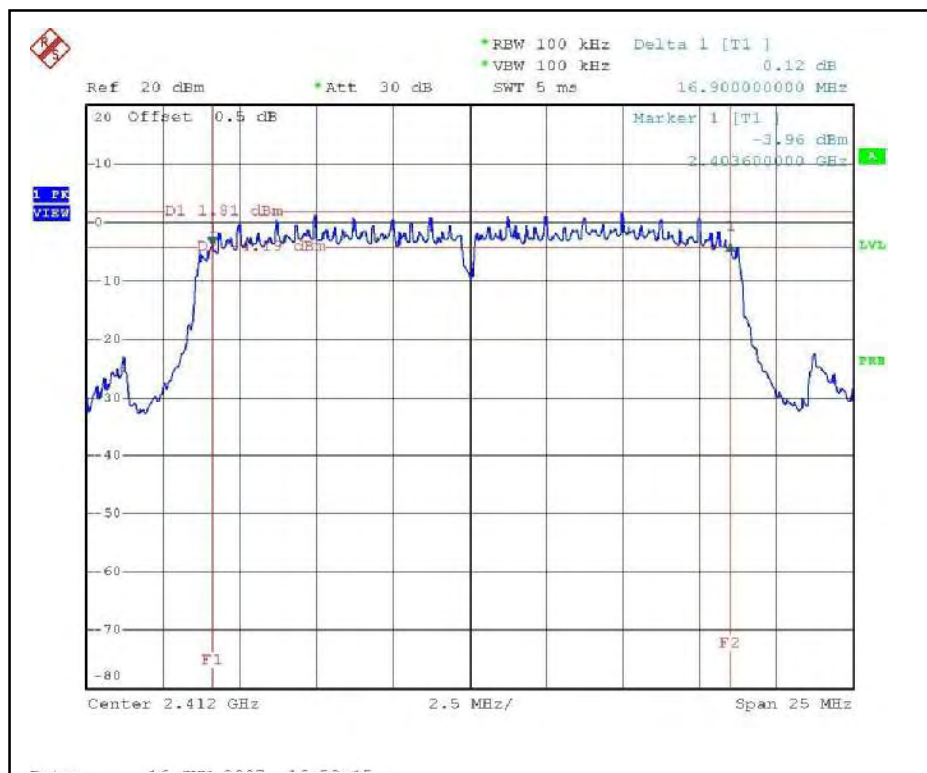
CH6



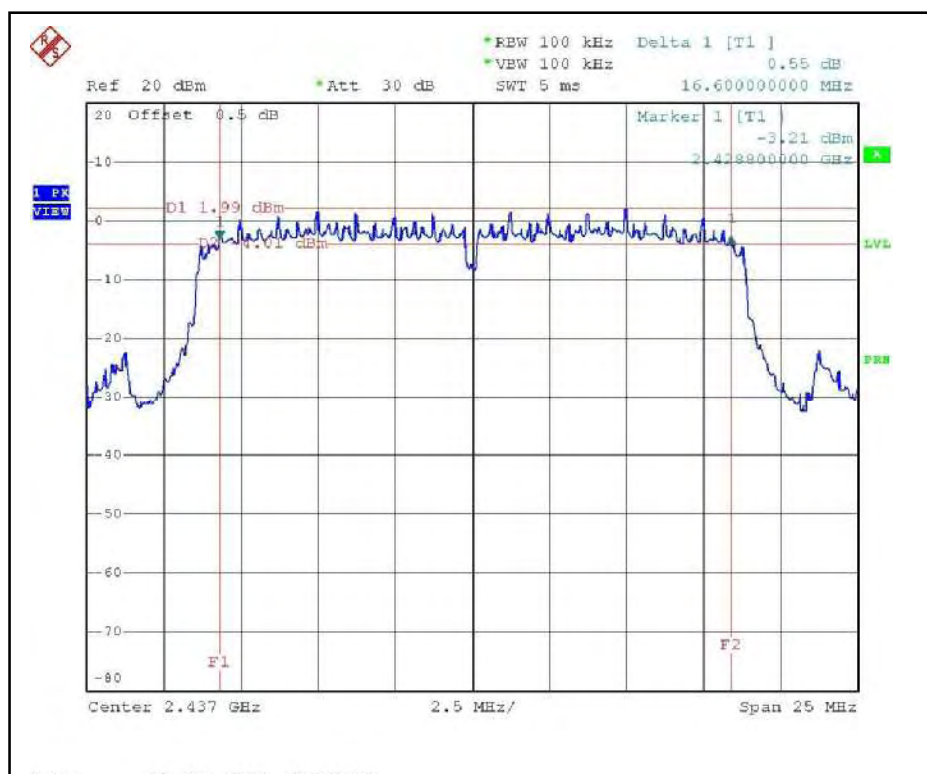
CH11



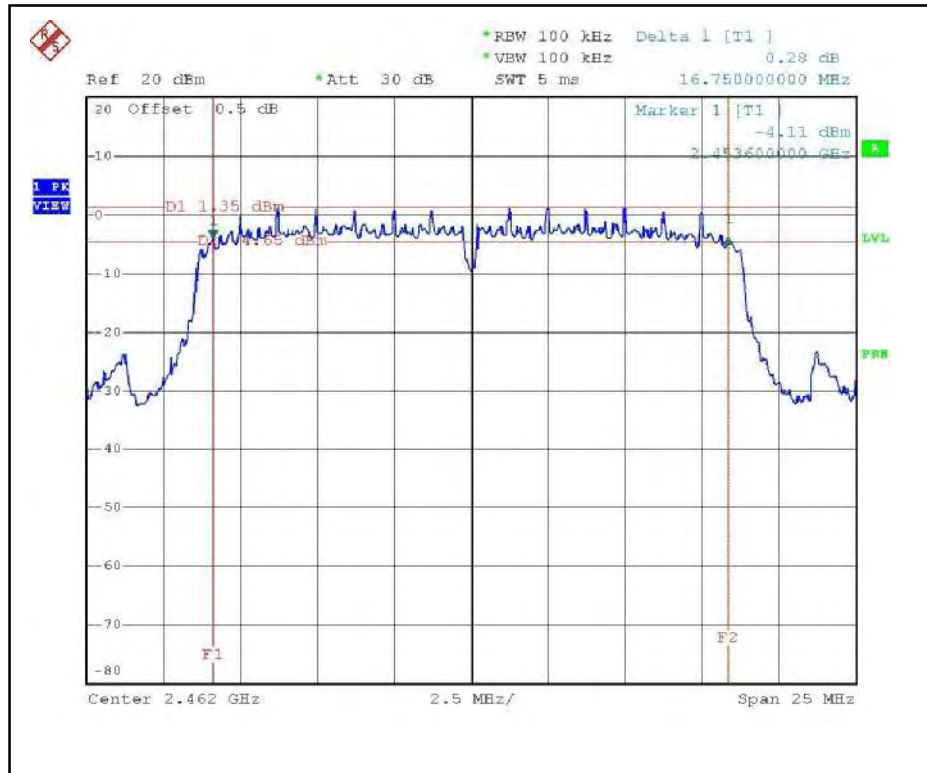
FOR CHAIN 1: CH1



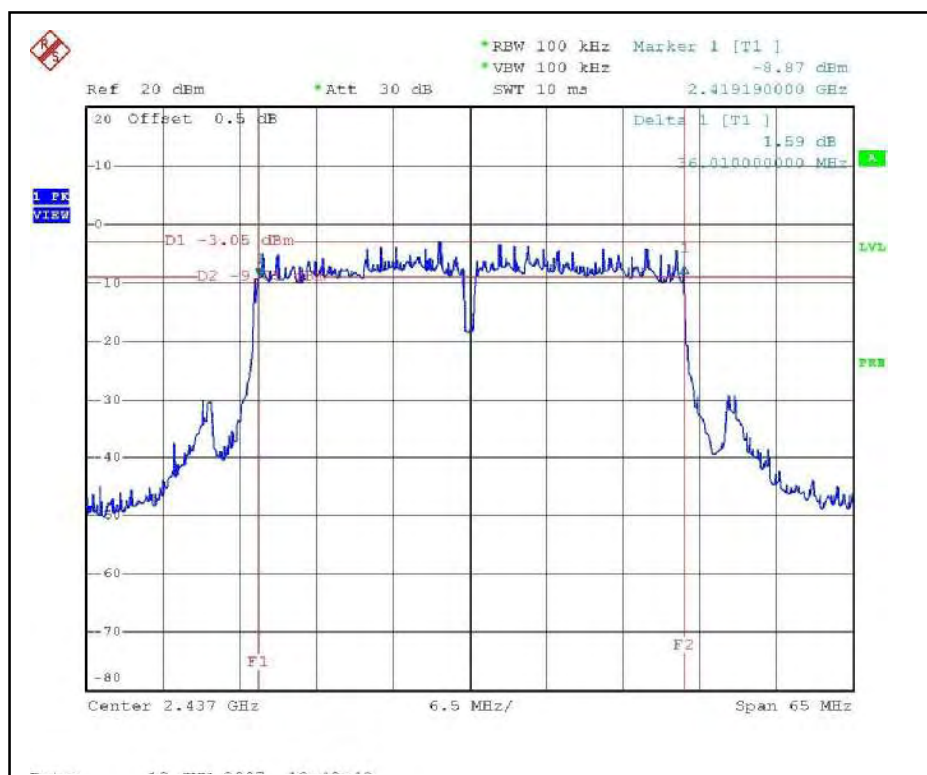
CH6



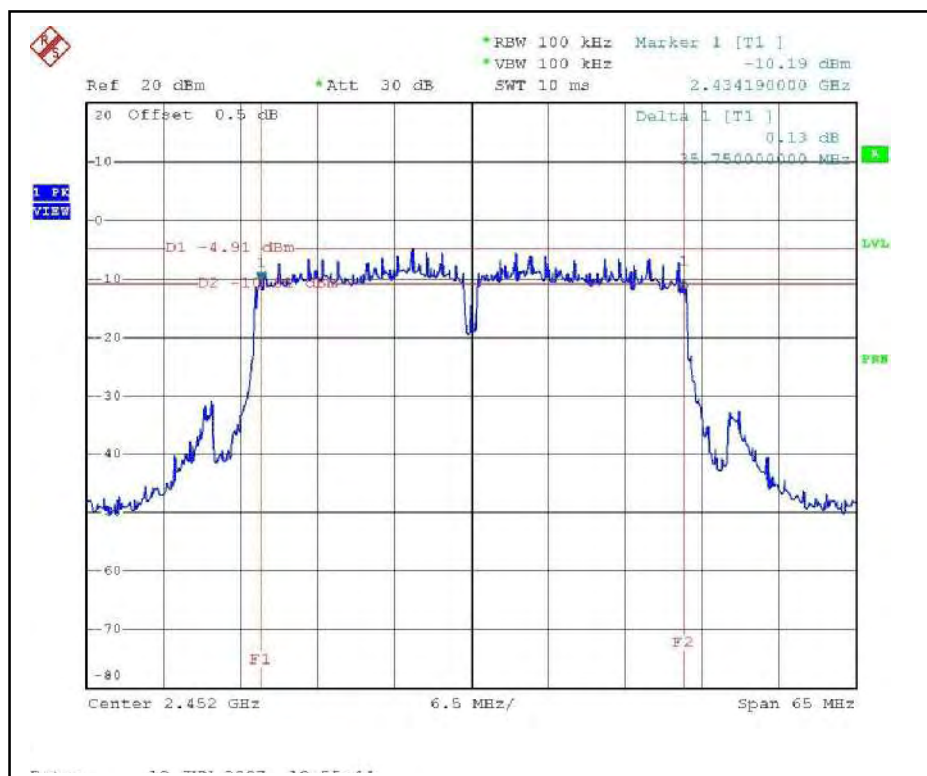
CH11



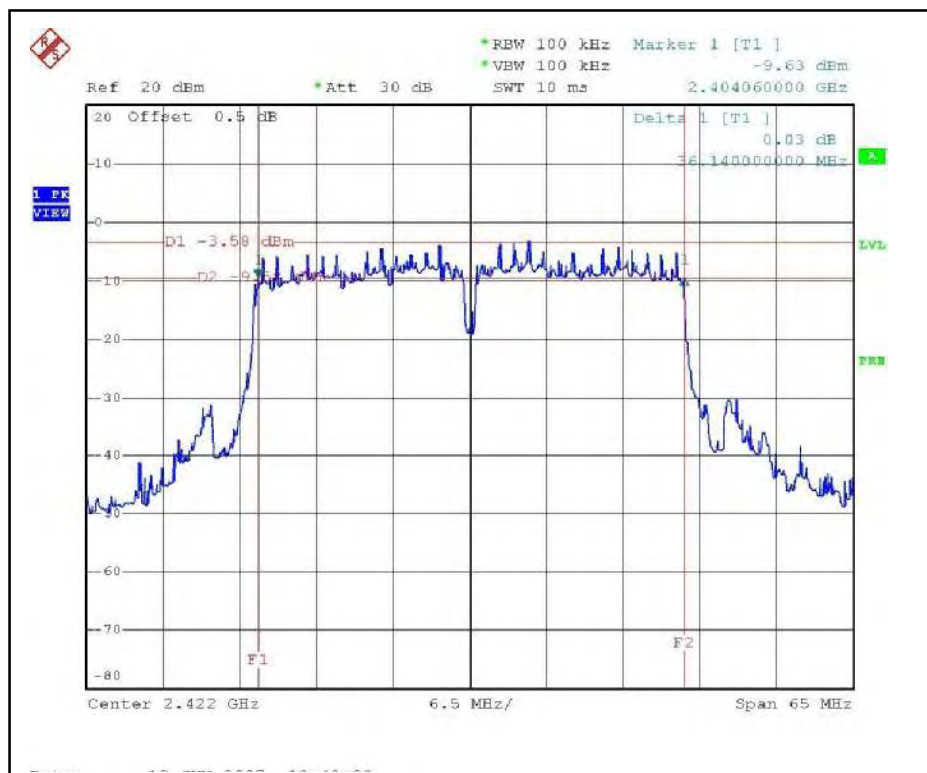
CH4



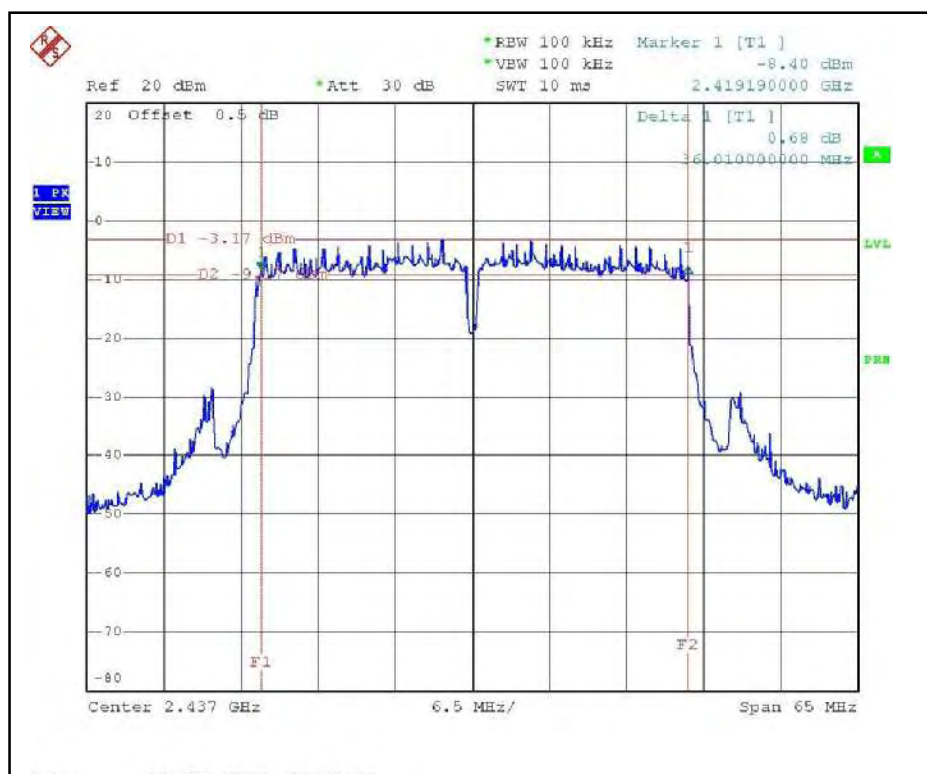
CH7



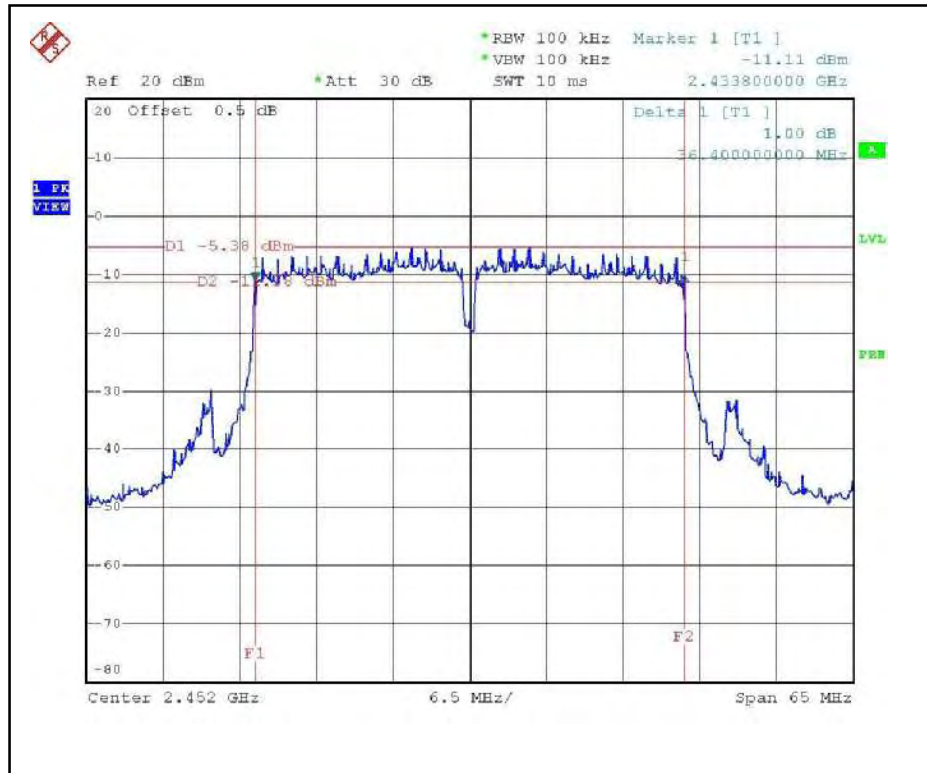
FOR CHAIN 1: CH1



CH4



CH7



4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2007
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 28, 2007
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	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	63.096	18.00	30	PASS
6	2437	63.096	18.00	30	PASS
11	2462	66.834	18.25	30	PASS

802.11g OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
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	79.43	79.43	19.00	19.00	158.866	22.0	30	PASS
6	2437	83.18	83.18	19.20	19.20	166.353	22.2	30	PASS
11	2462	70.79	70.79	18.50	18.50	141.589	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	26deg.C, 68%RH, 960hPa
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	79.43	79.43	19.00	19.00	158.866	22.0	30	PASS
6	2437	81.28	81.28	19.10	19.10	162.566	22.1	30	PASS
11	2462	70.79	70.79	18.50	18.50	141.589	21.5	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
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	75.86	75.86	18.80	18.80	151.716	21.8	30	PASS
4	2437	79.43	79.43	19.00	19.00	158.866	22.0	30	PASS
7	2452	53.09	59.57	17.25	17.75	112.655	20.5	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

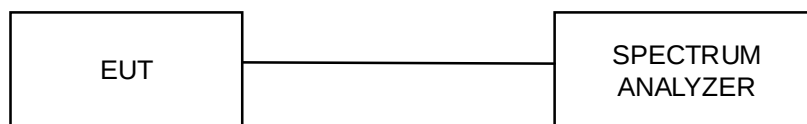
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

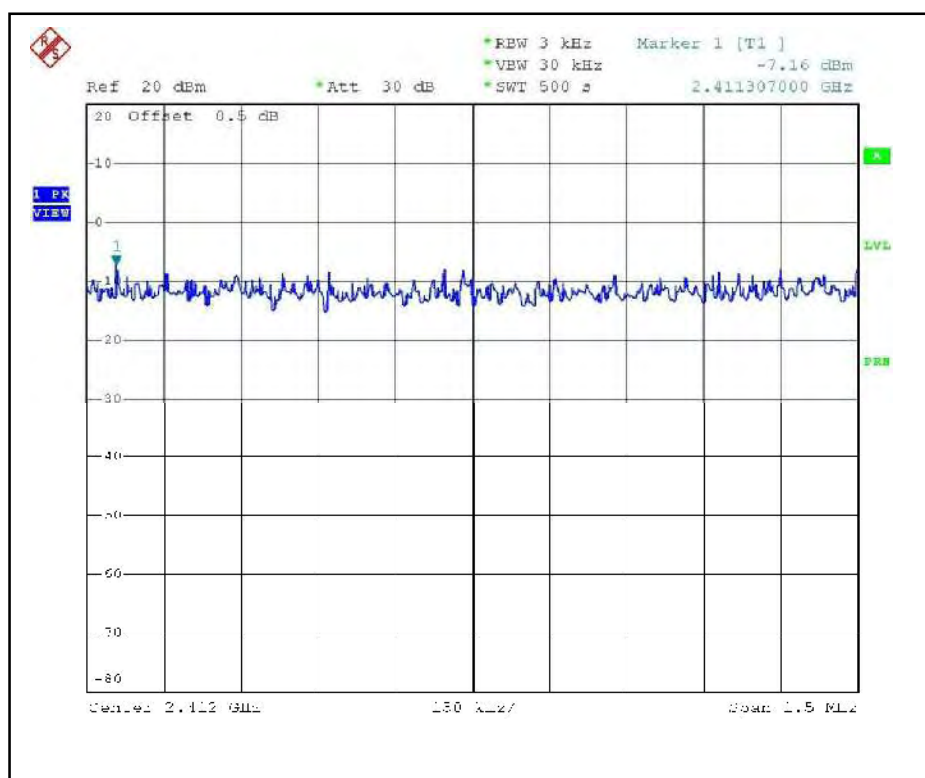
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

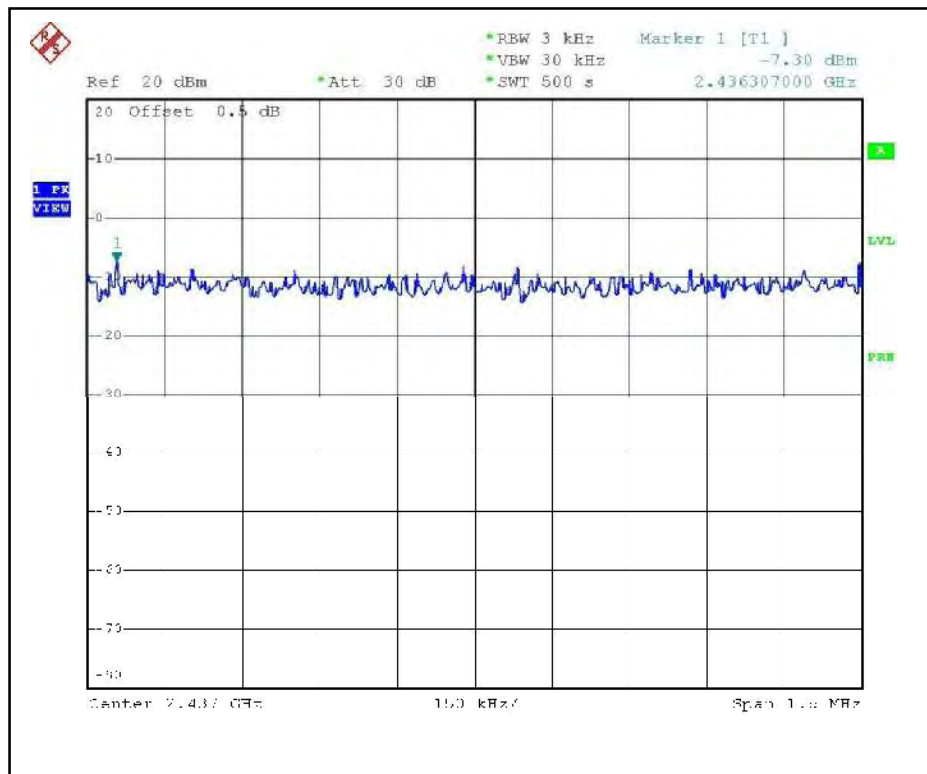
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.16	8	PASS
6	2437	-7.30	8	PASS
11	2462	-7.24	8	PASS

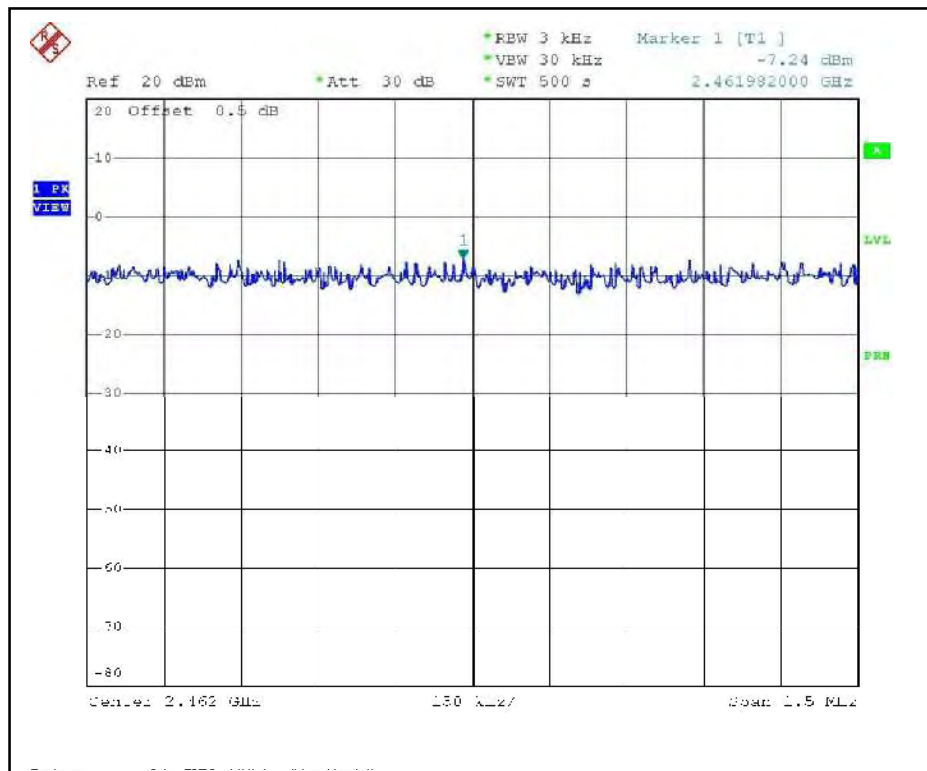
CH1



CH6



CH11

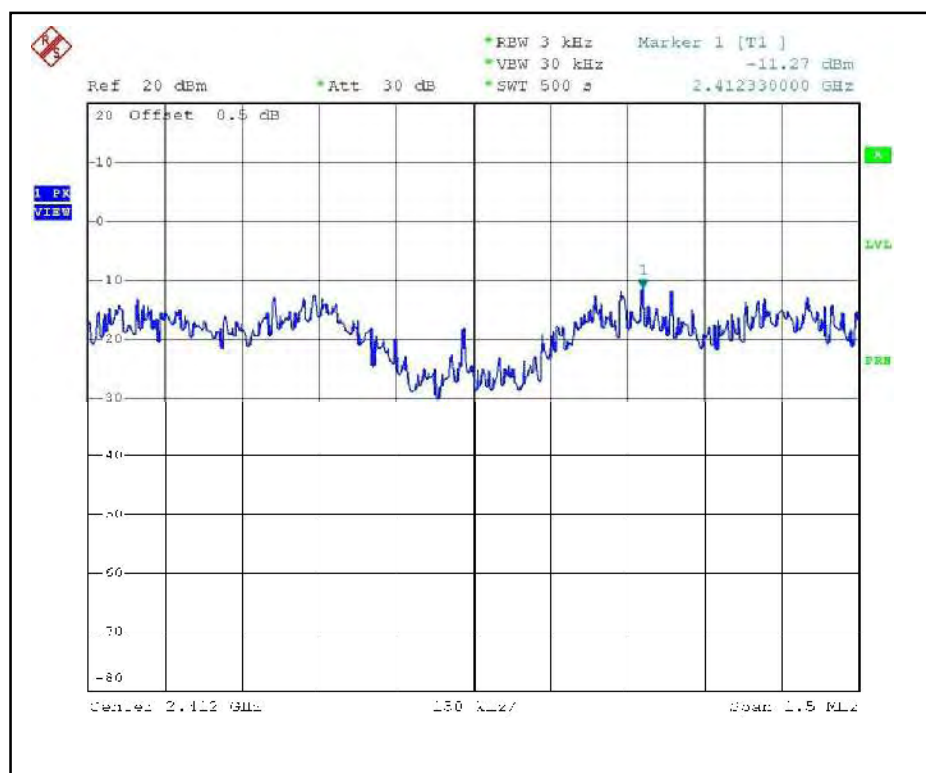


802.11g OFDM MODULATION:

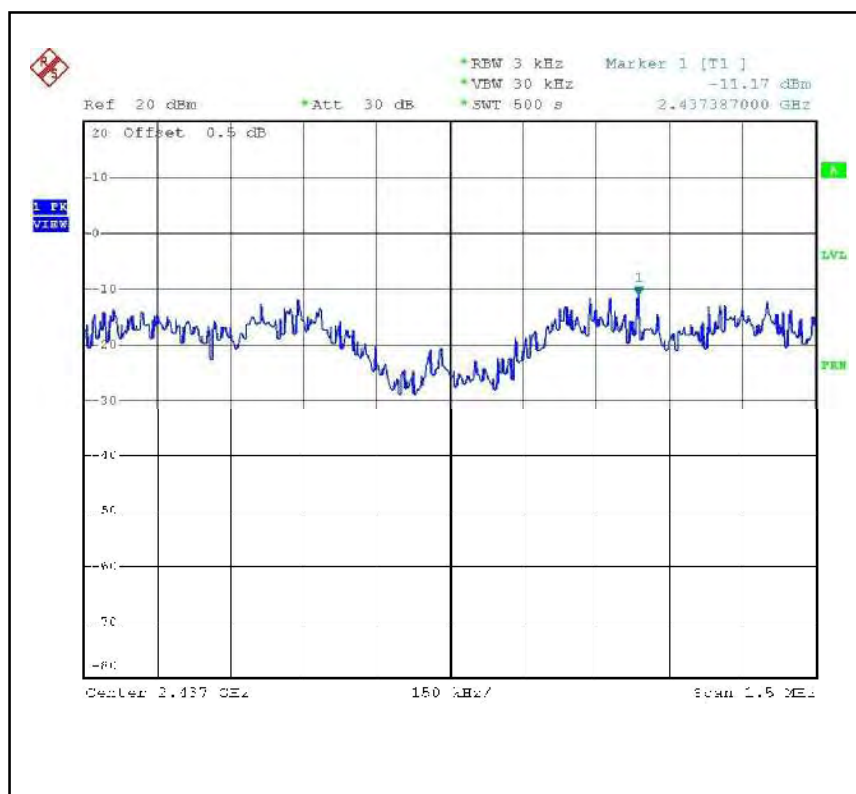
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	-11.27	-11.78	8	PASS
6	2437	-11.17	-11.89	8	PASS
11	2462	-13.01	-12.62	8	PASS

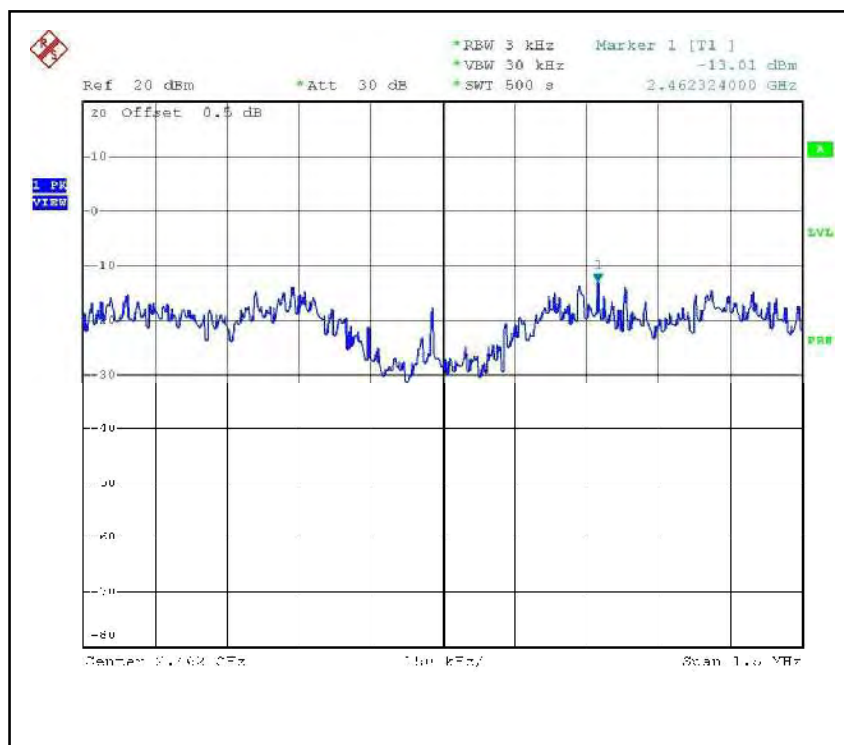
FOR CHAIN 0: CH1



CH6

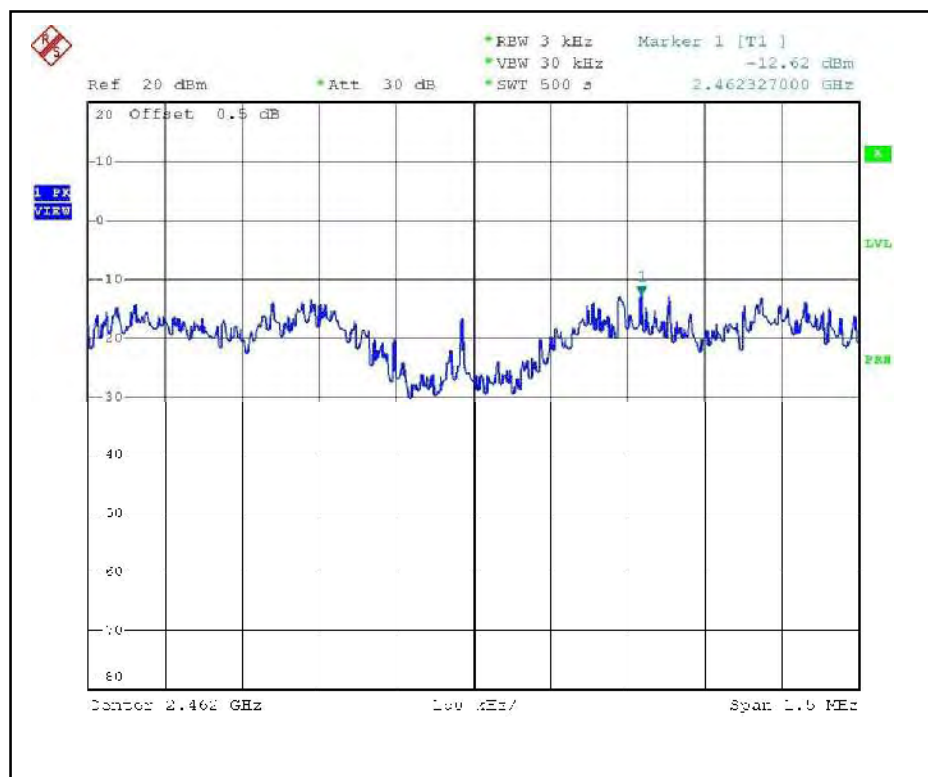


CH11



FOR CHAIN 1: CH1

CH11

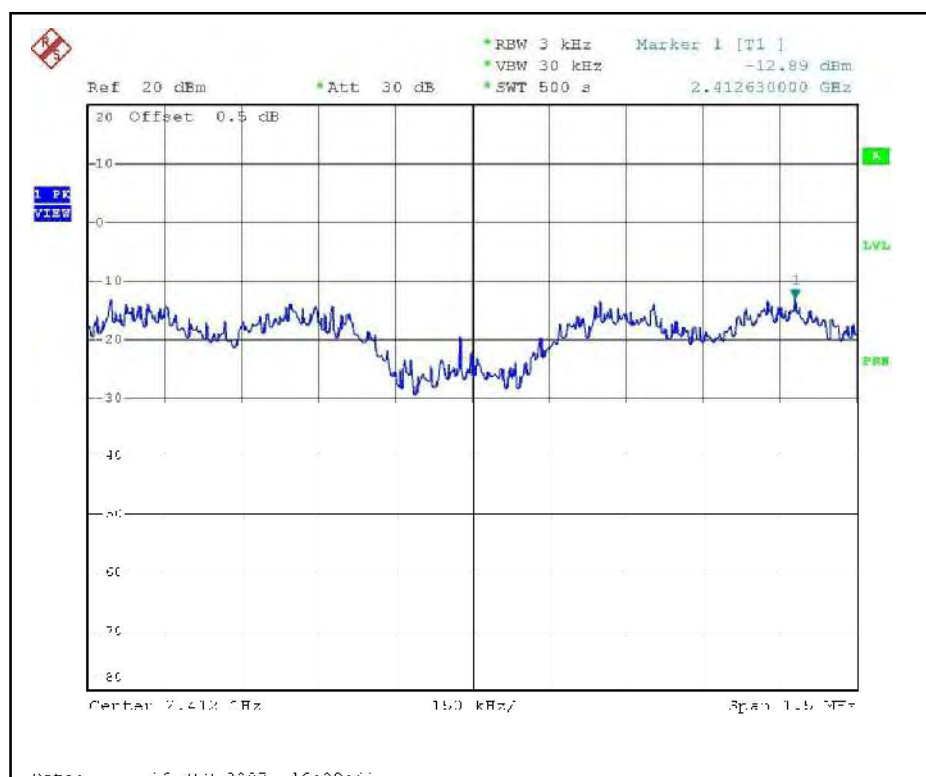


DRAFT 802.11n (20MHz) OFDM MODULATION:

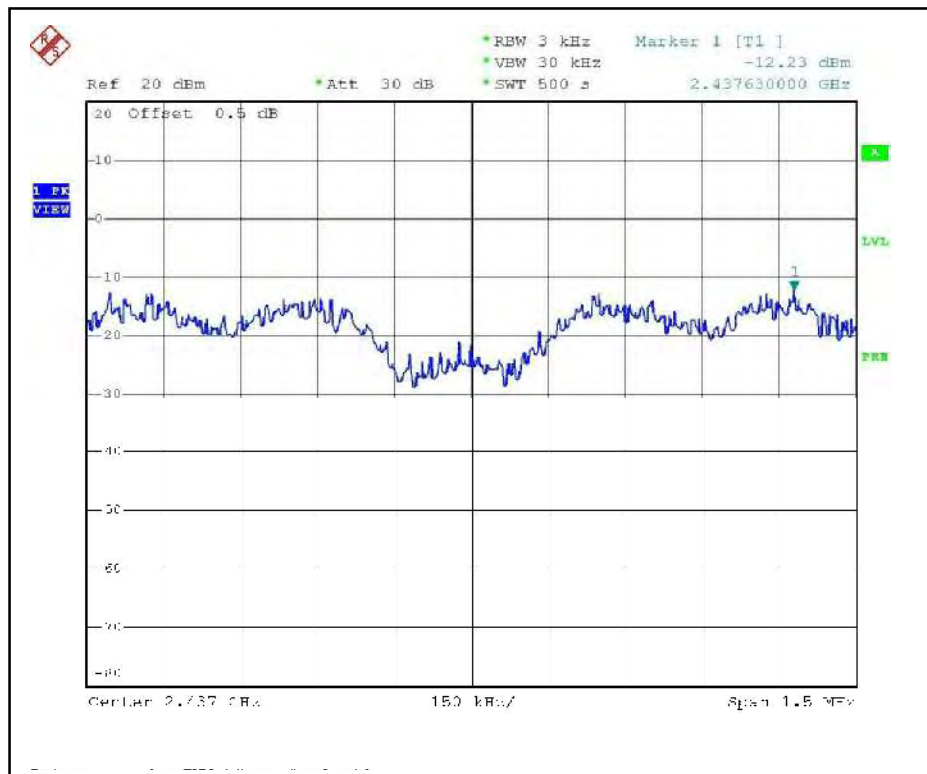
MODULATION TYPE	BPSK	TRANSFER RATE	6.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	-12.89	-11.04	8	PASS
6	2437	-12.23	-11.02	8	PASS
11	2462	-13.11	-13.39	8	PASS

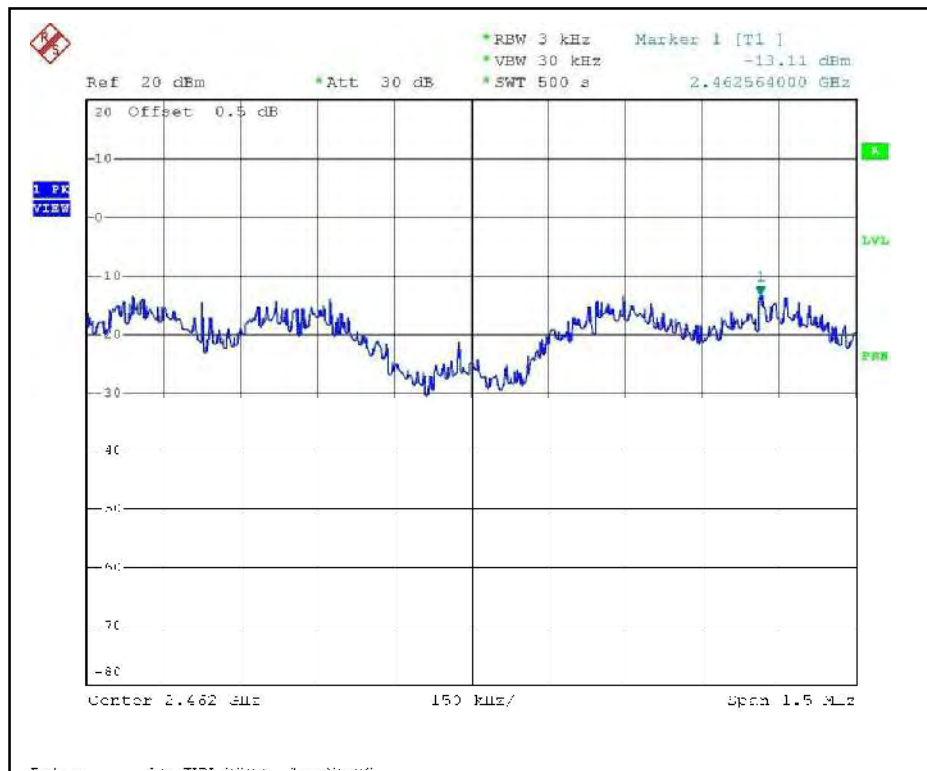
FOR CHAIN 0: CH1



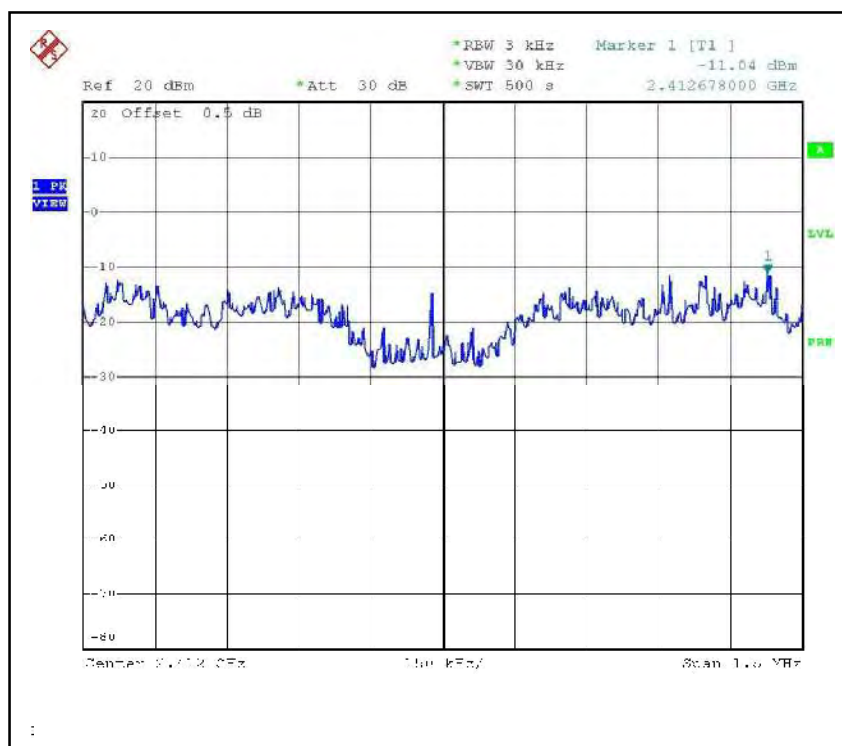
CH6



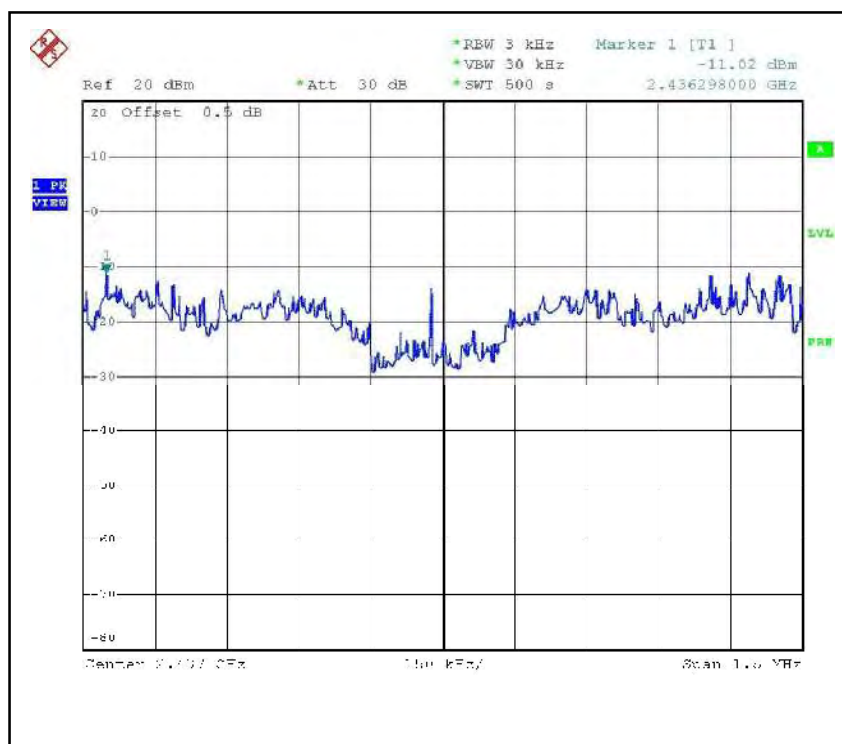
CH11



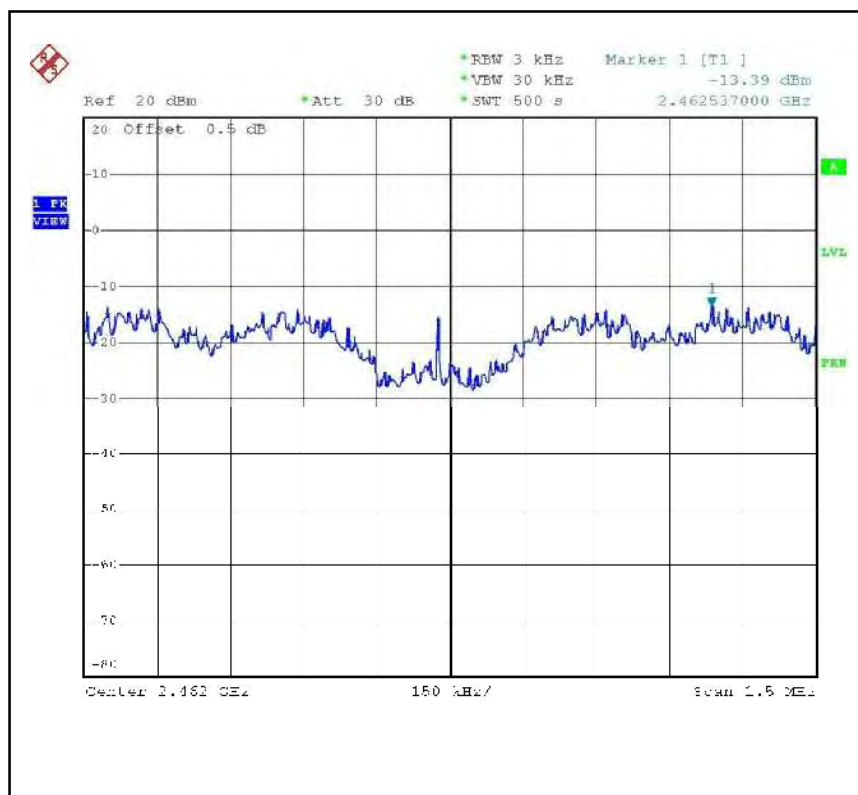
FOR CHAIN 1: CH1



CH6



CH11

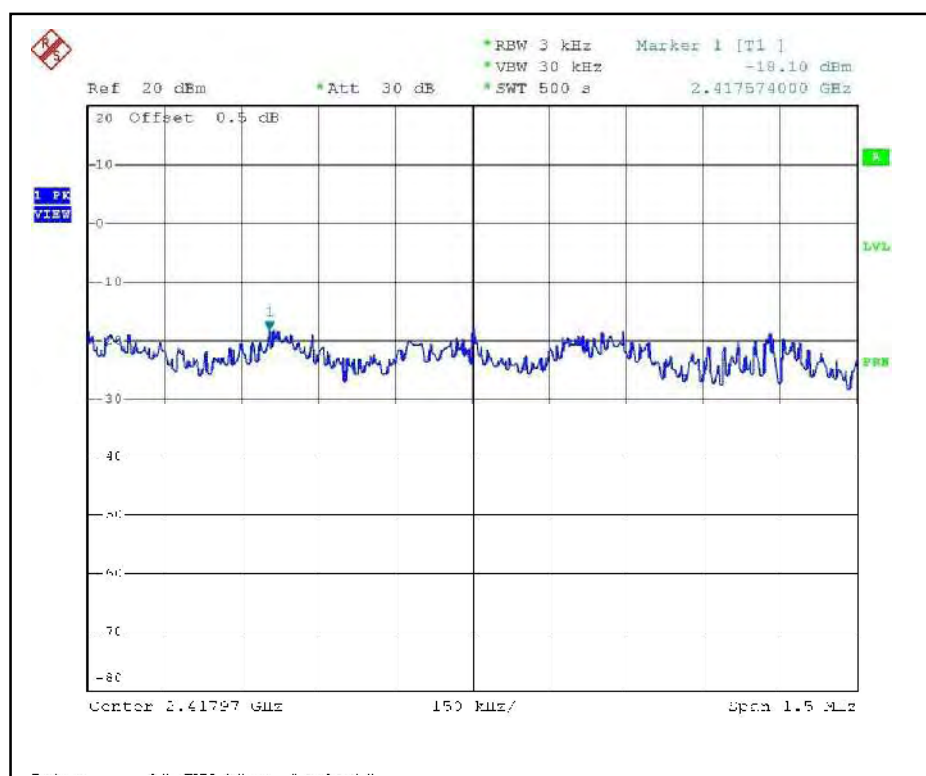


DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	TRANSFER RATE	13.5Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 68%RH, 960hPa
TESTED BY	Rex Huang		

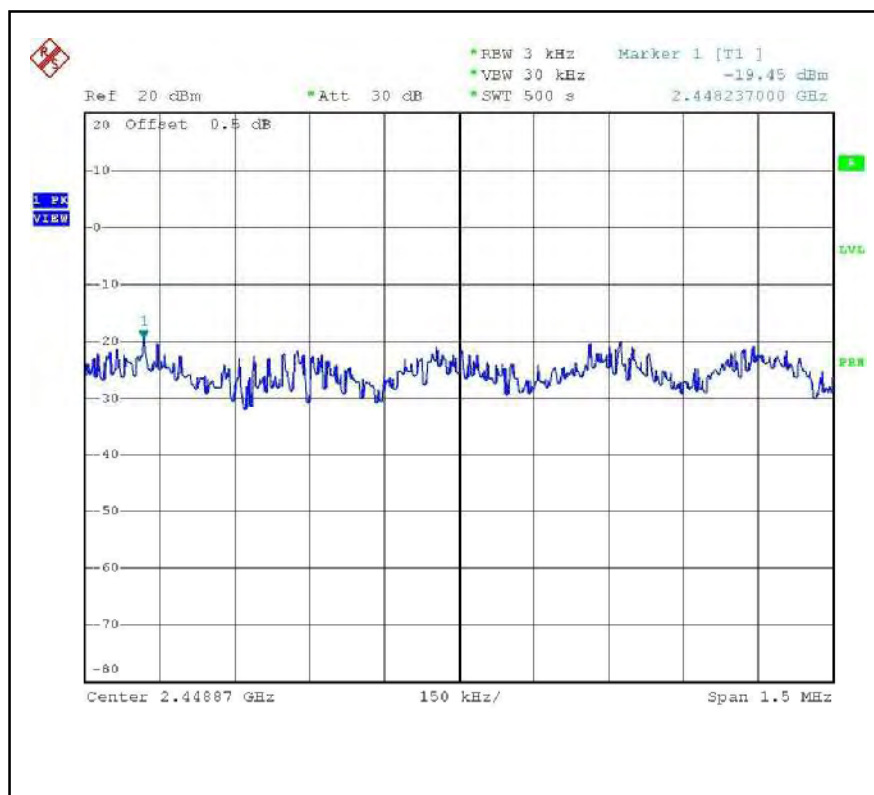
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2422	-18.10	-17.32	8	PASS
4	2437	-17.70	-17.60	8	PASS
7	2452	-19.88	-19.45	8	PASS

FOR CHAIN 0: CH1





CH7



4.6 CONDUCTED EMISSION AND BAND EDGES MEASUREMENT

4.6.1 LIMITS OF CONDUCTED EMISSION AND BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	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.

4.6.3 TEST PROCEDURE

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

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

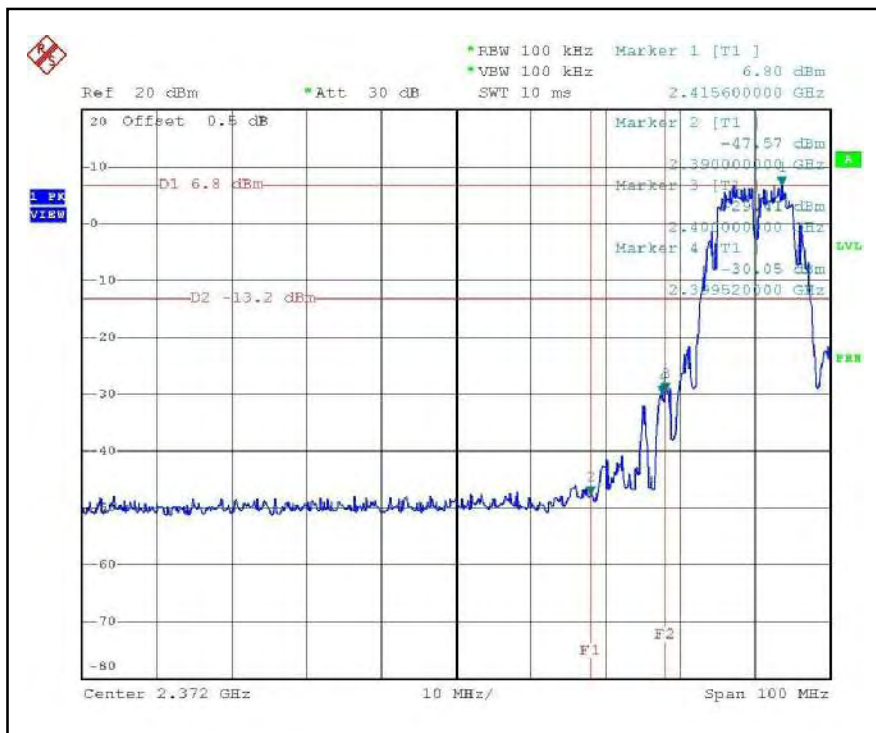
4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

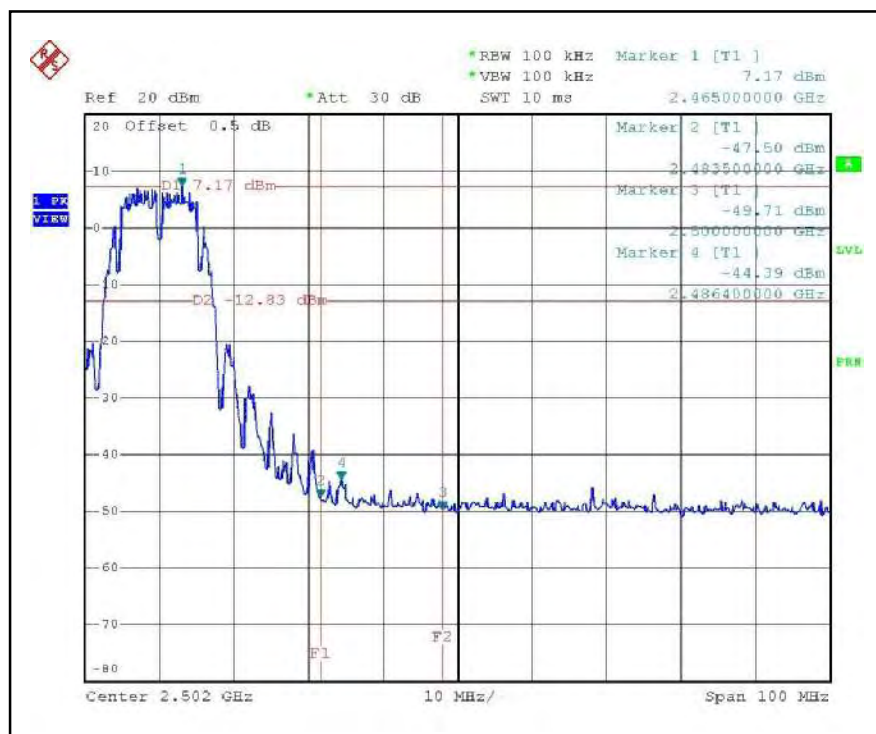
4.6.6 TEST RESULTS

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

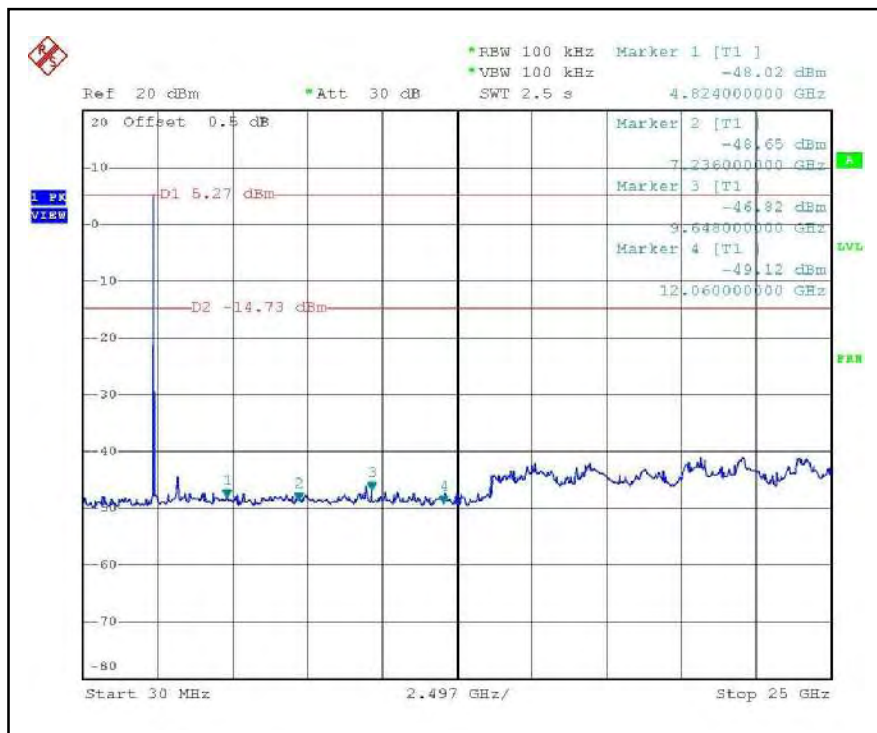
802.11b DSSS MODULATION: CH1



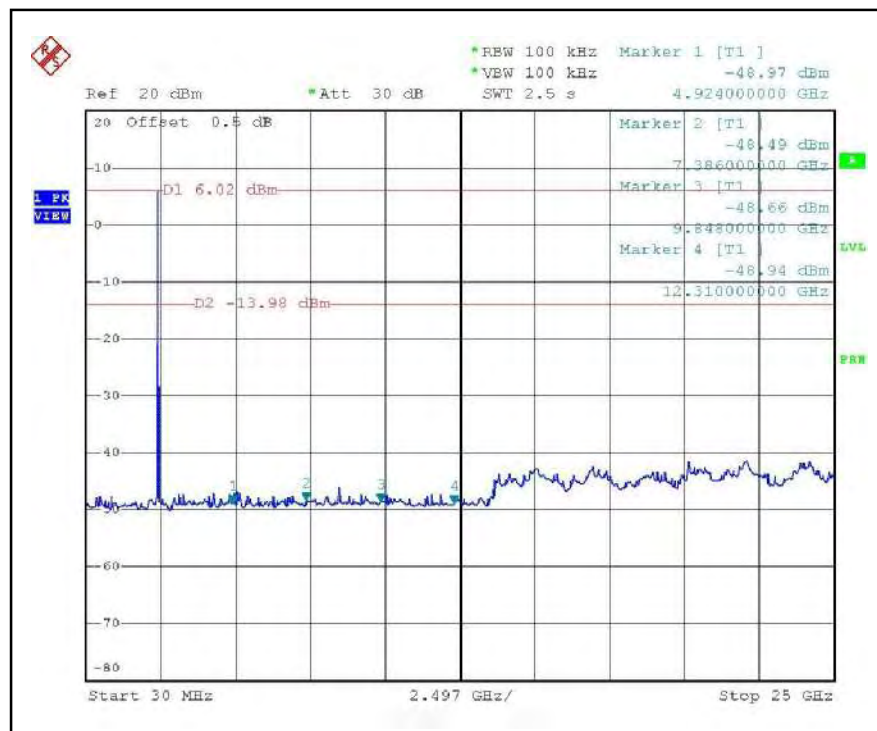
CH11



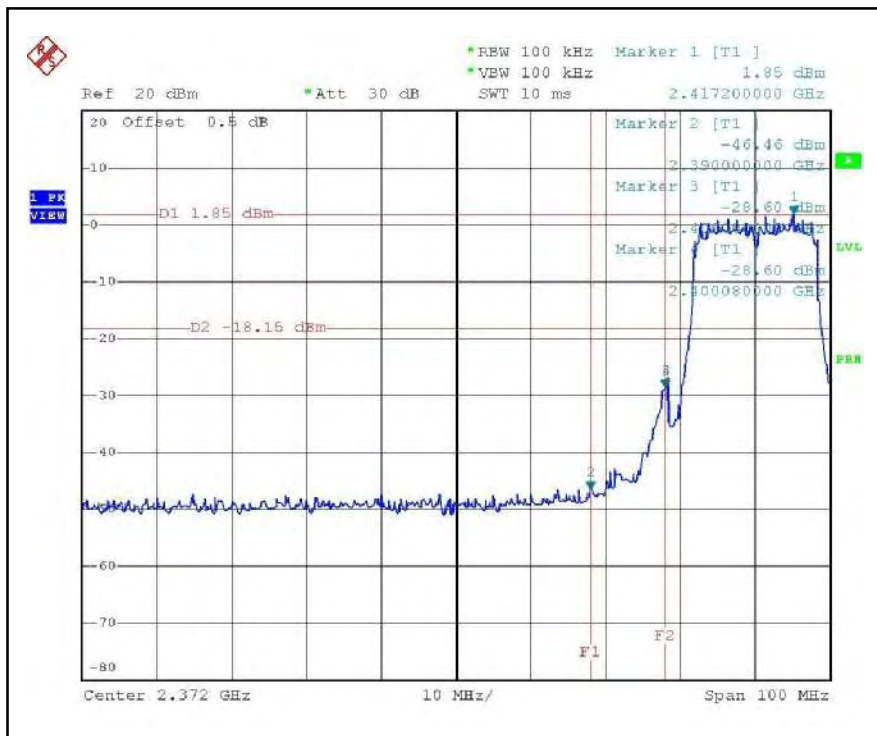
CH1



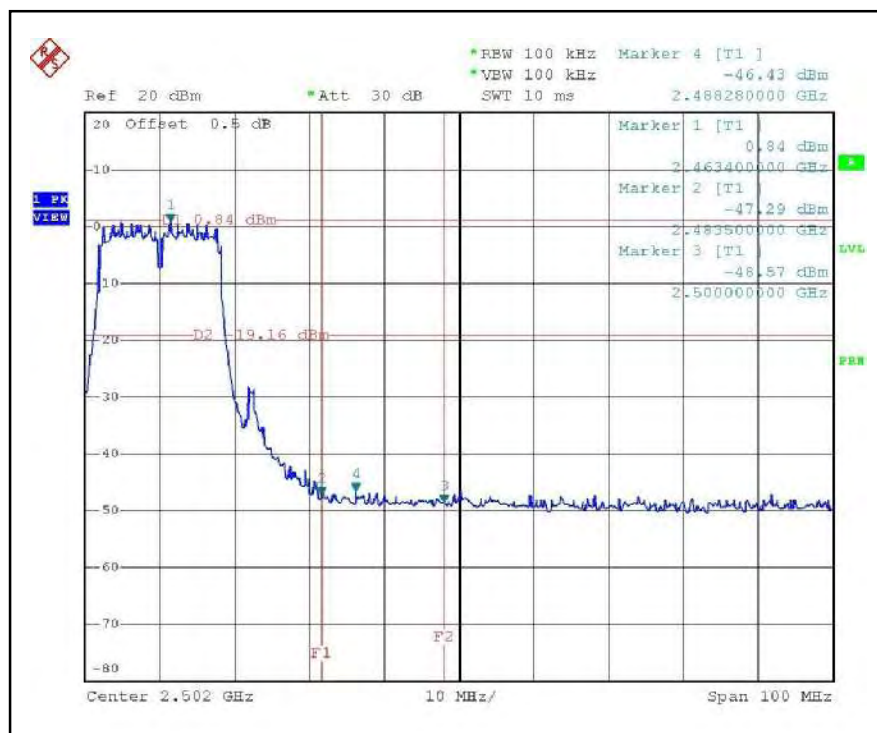
CH11



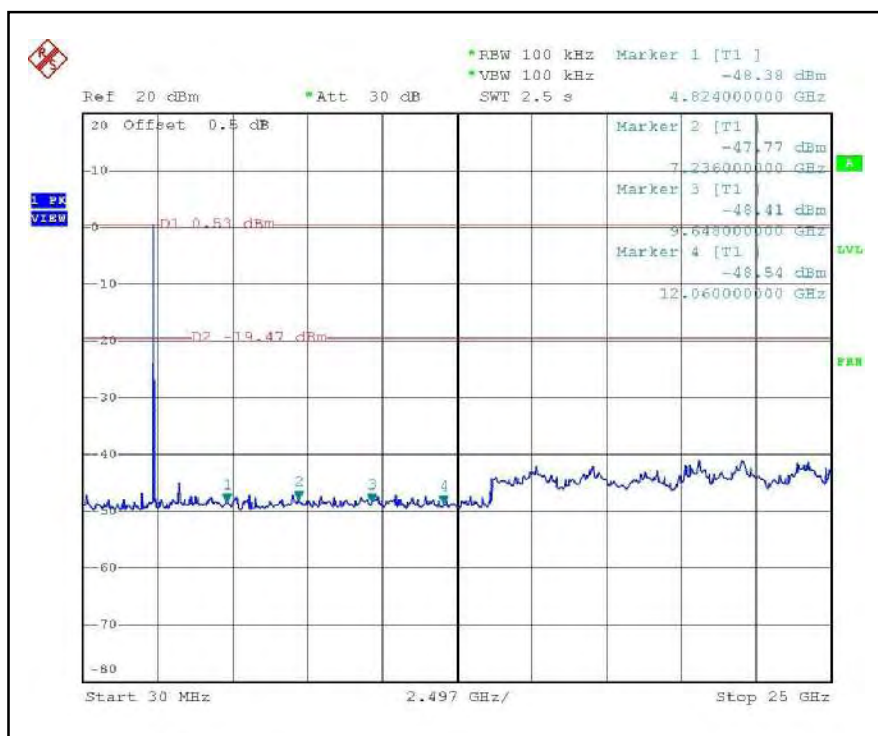
802.11g OFDM MODULATION: FOR CHAIN 0:CH 1



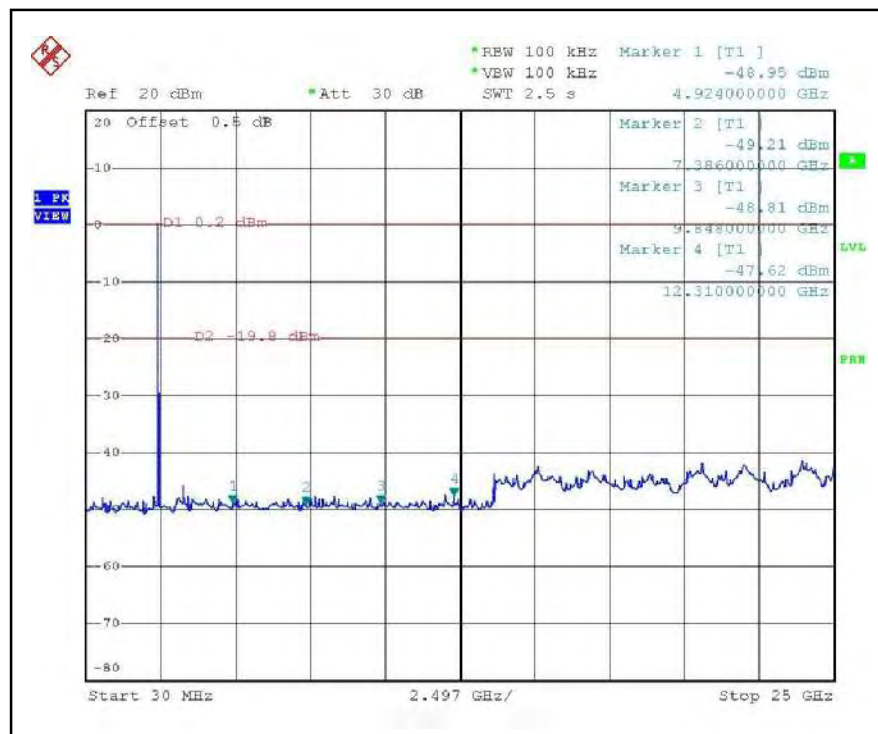
CH11



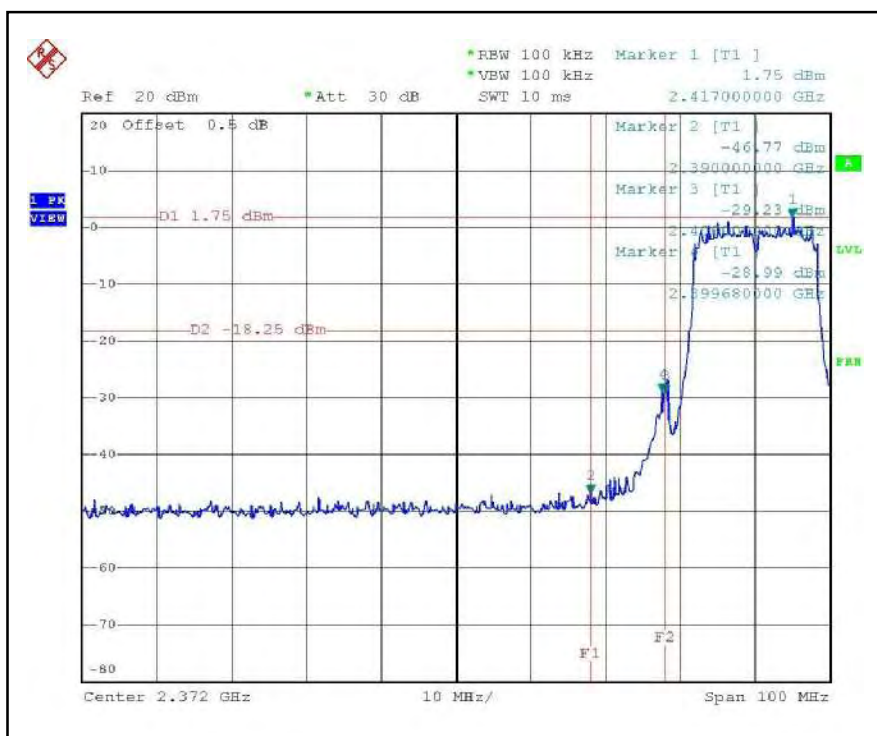
CH1



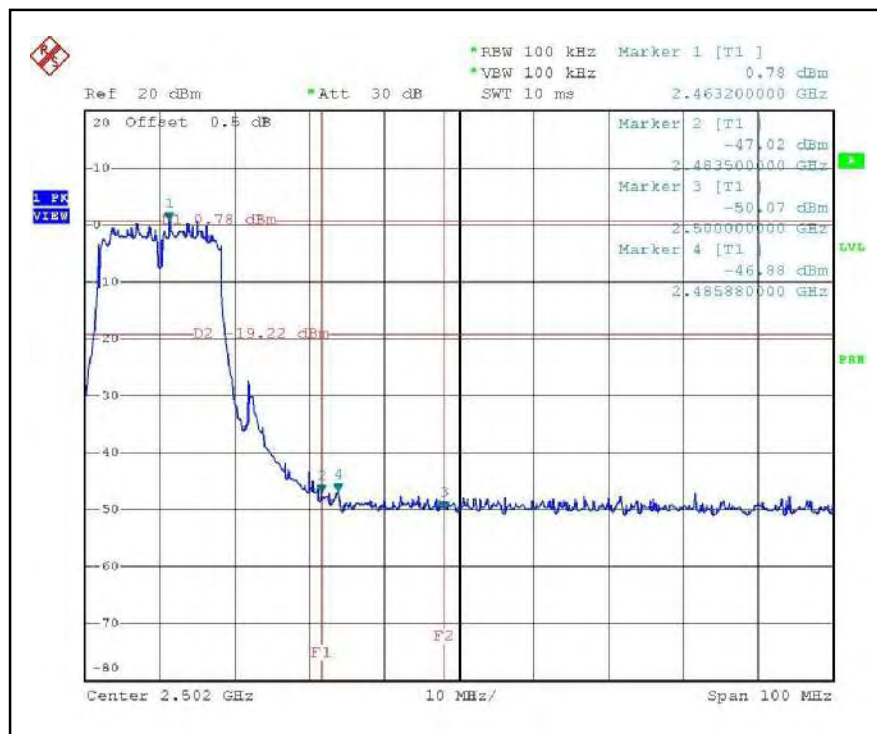
CH11



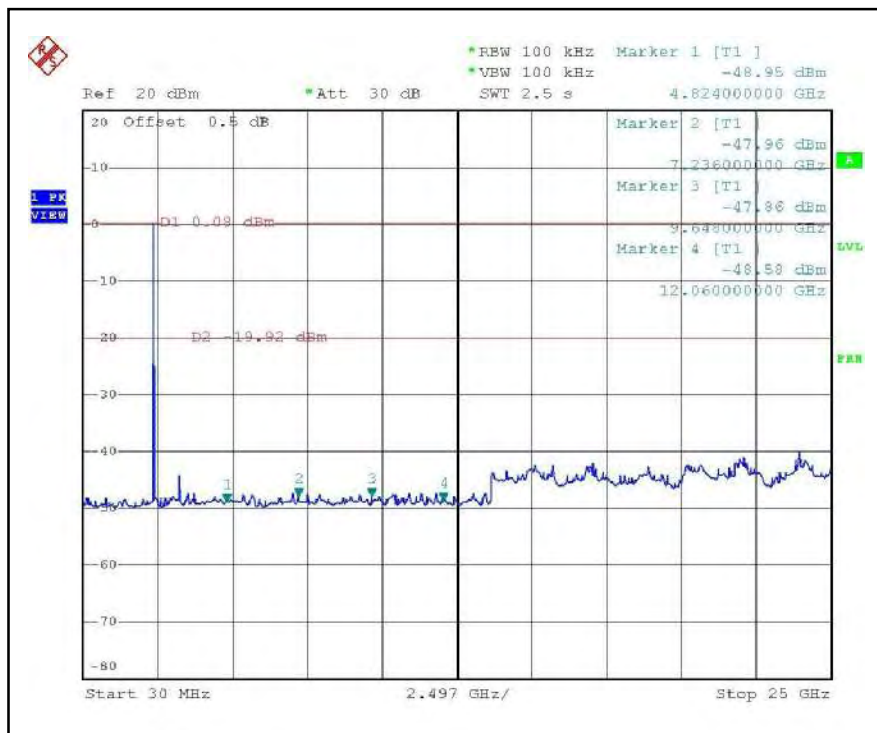
FOR CHAIN 1:CH 1



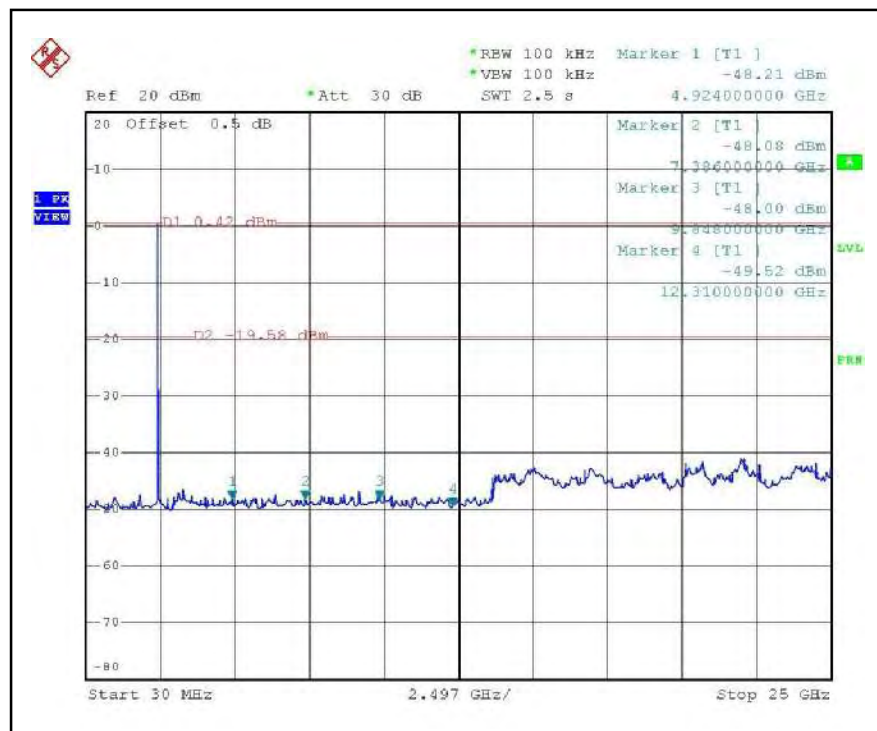
CH11



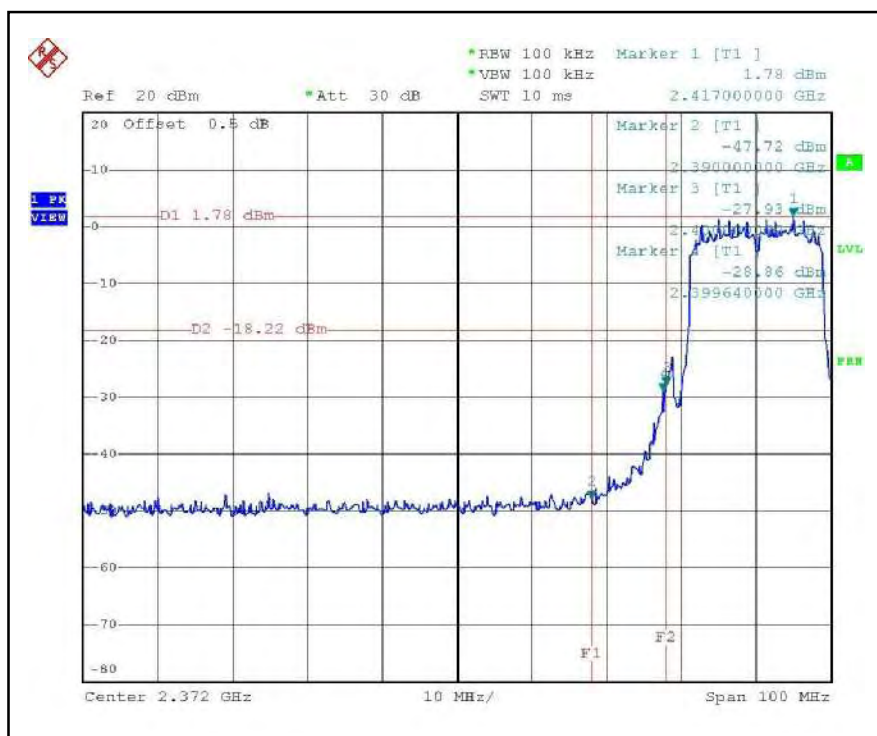
CH1



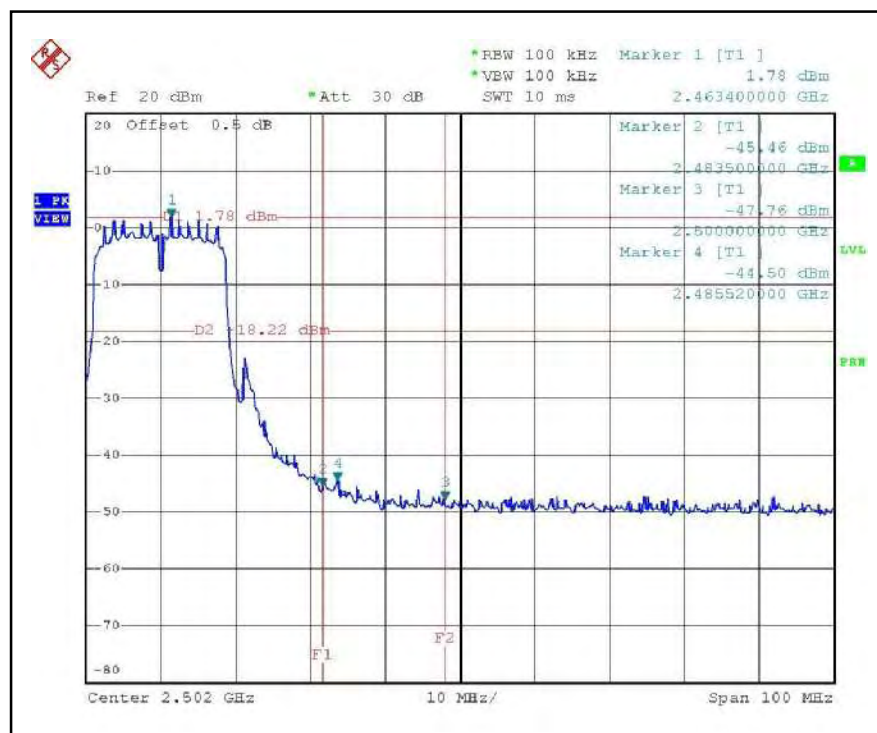
CH11



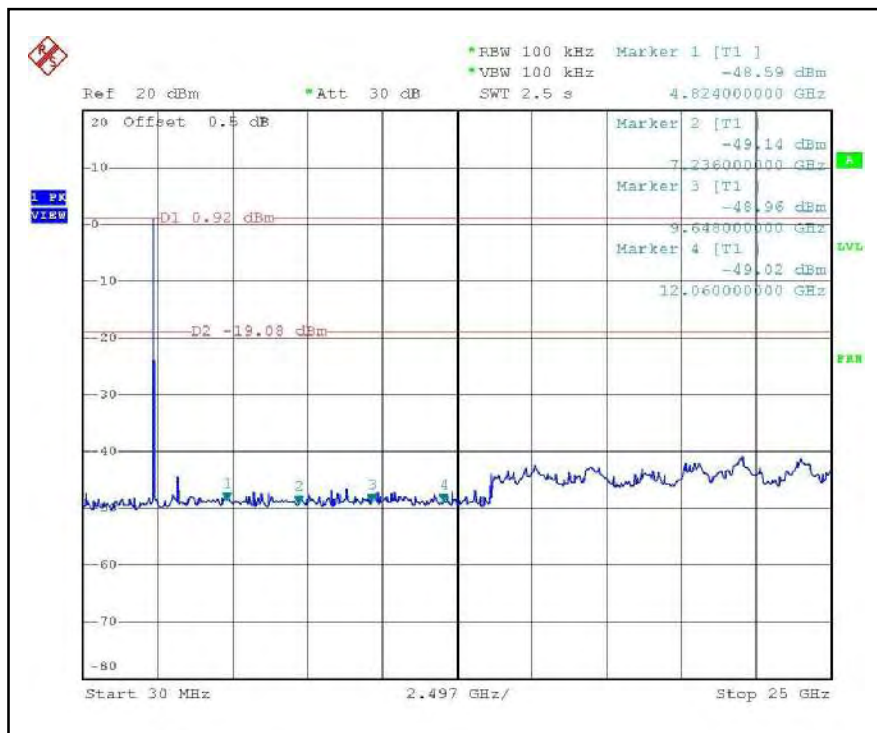
DRAFT 802.11n (20MHz) OFDM MODULATION: **FOR CHAIN 0:CH1**



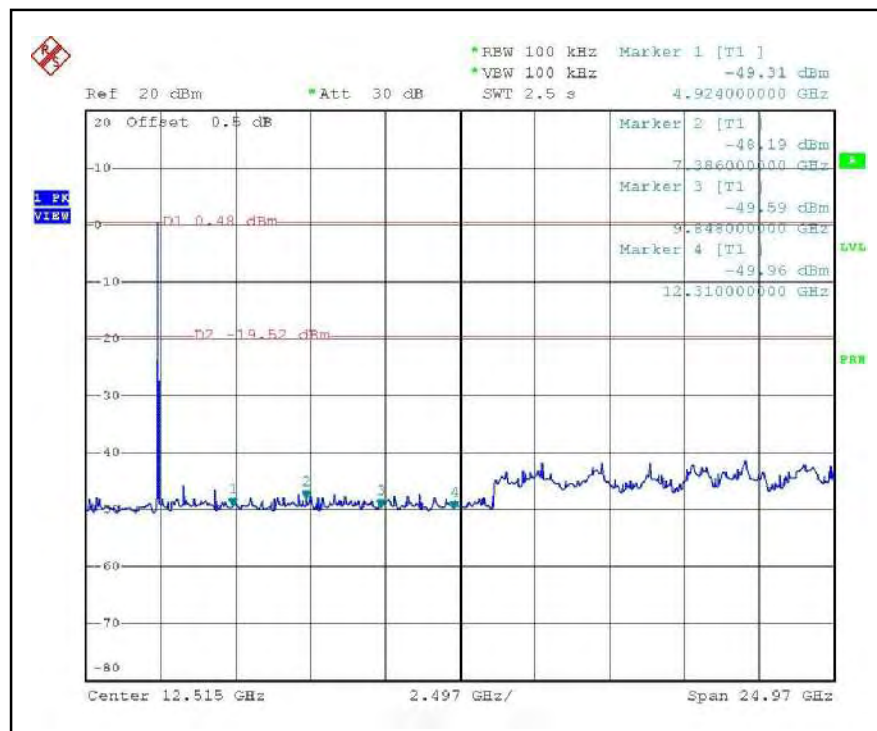
CH11



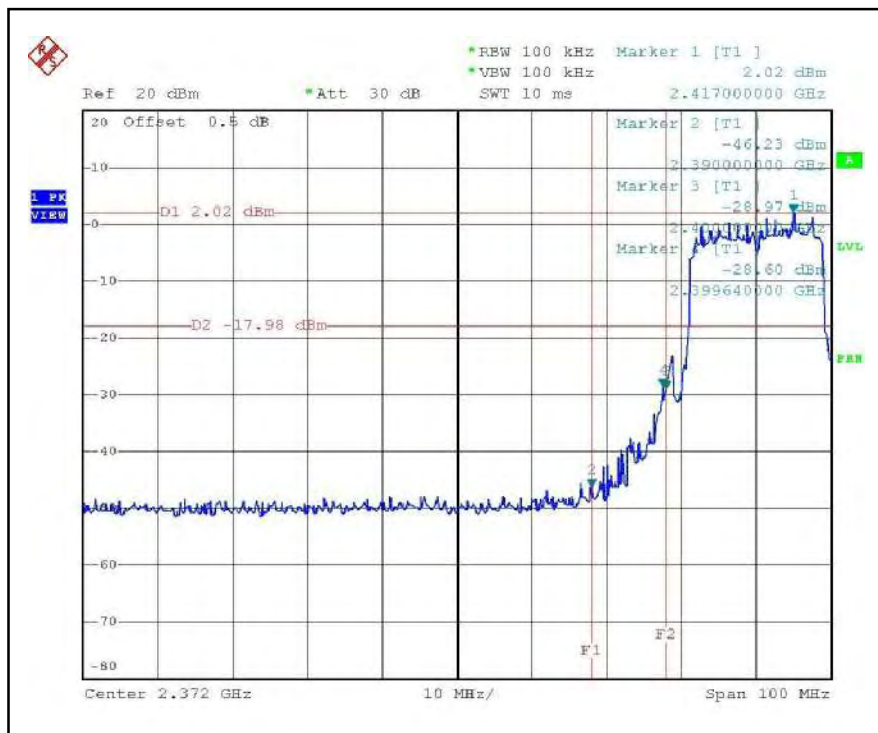
CH1



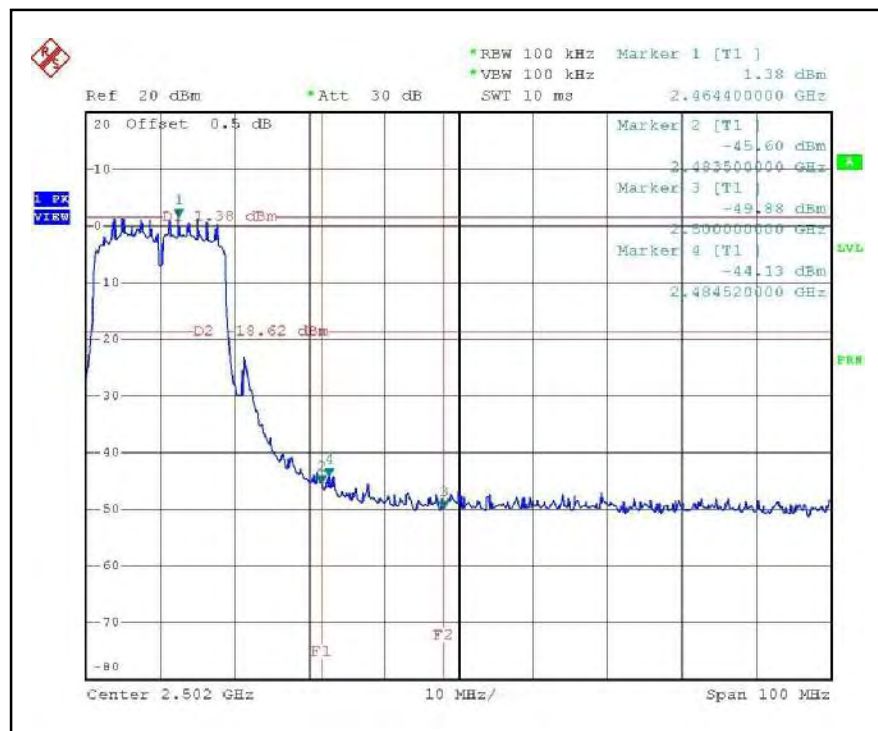
CH11



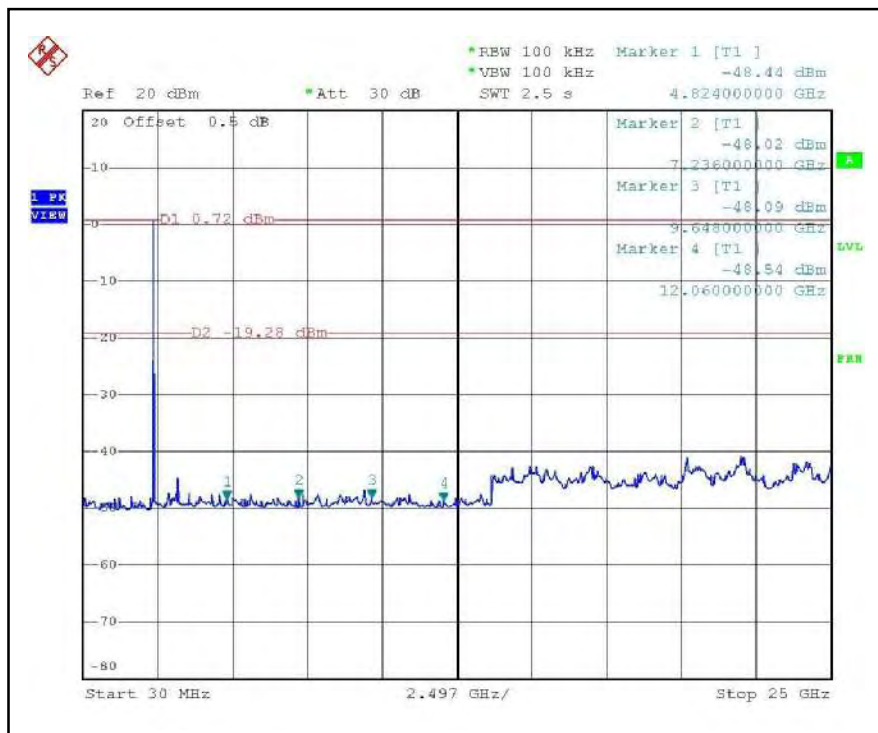
FOR CHAIN 1:CH1



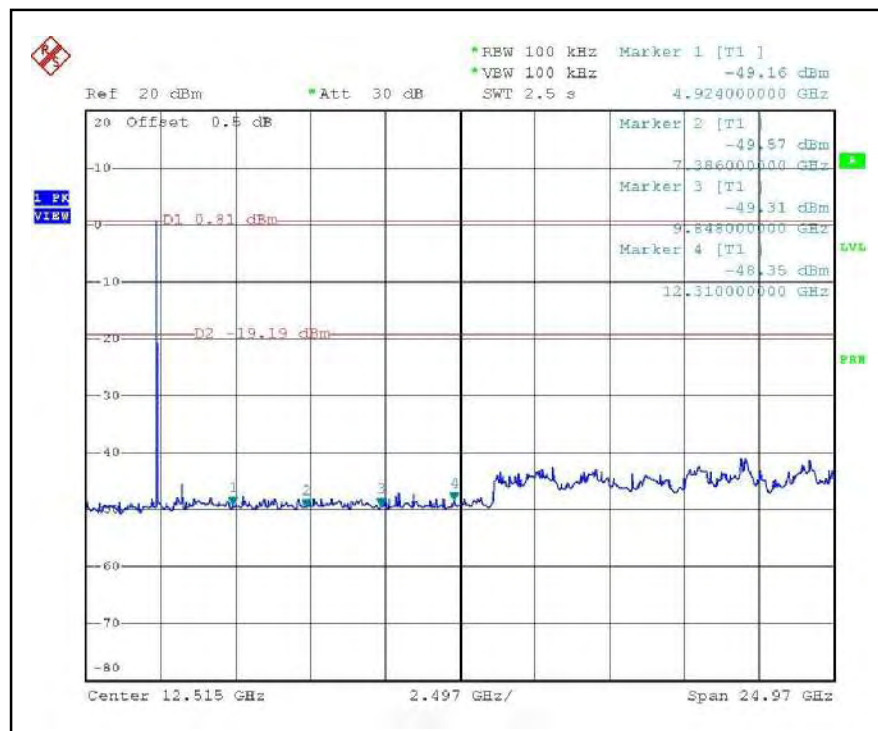
CH11



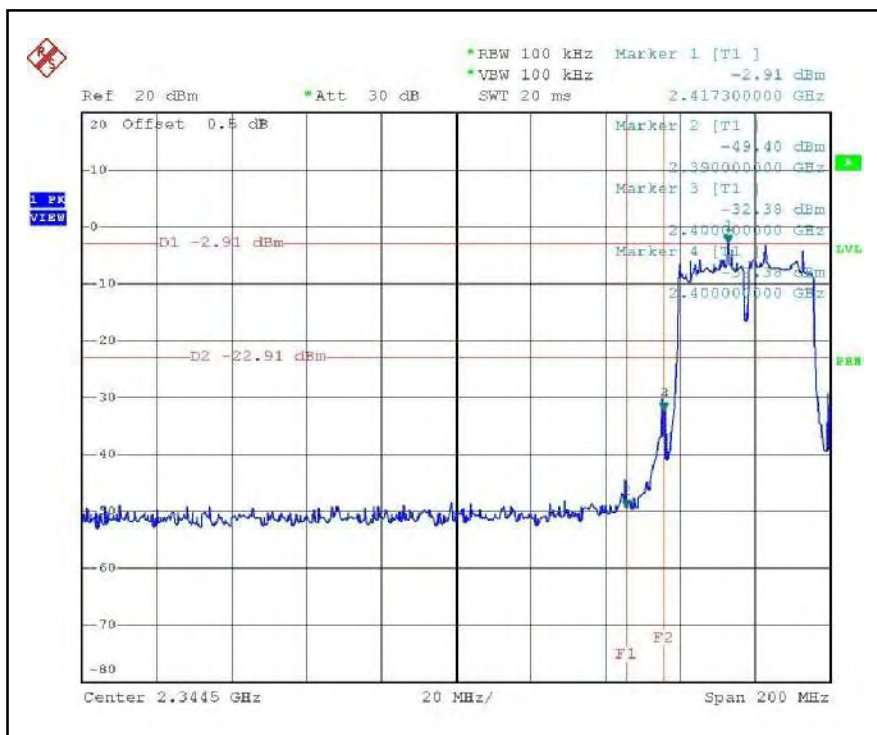
CH1



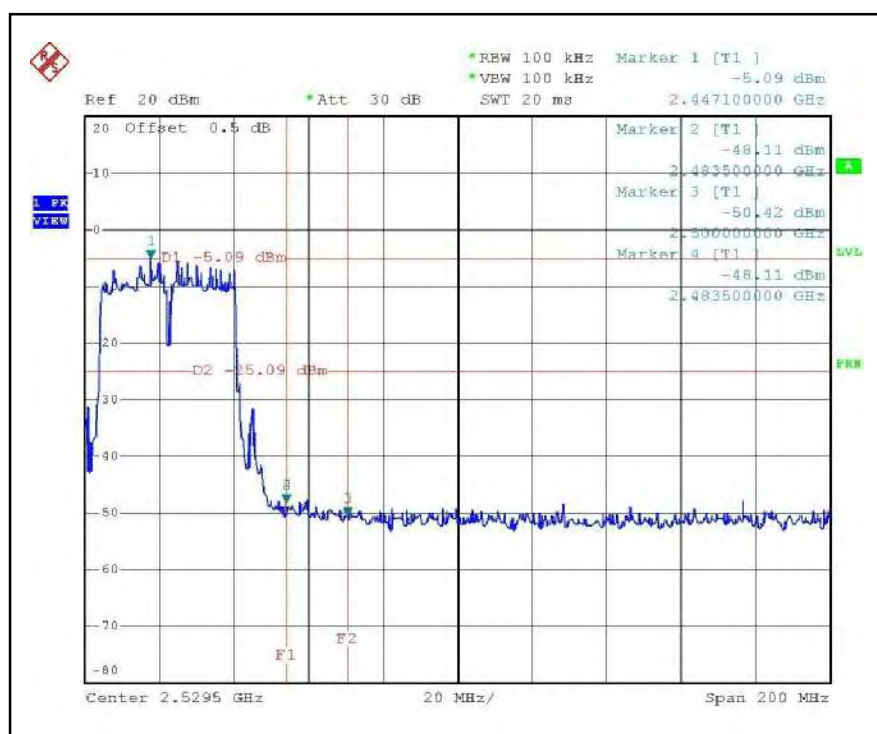
CH11



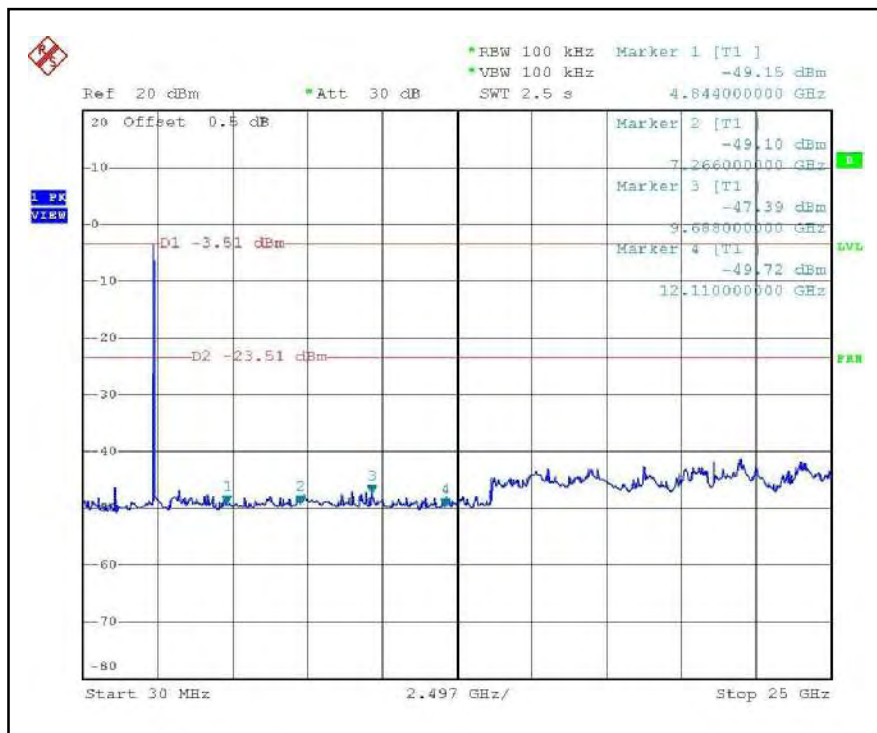
DRAFT 802.11n (40MHz) OFDM MODULATION: FOR CHAIN 0:CH1



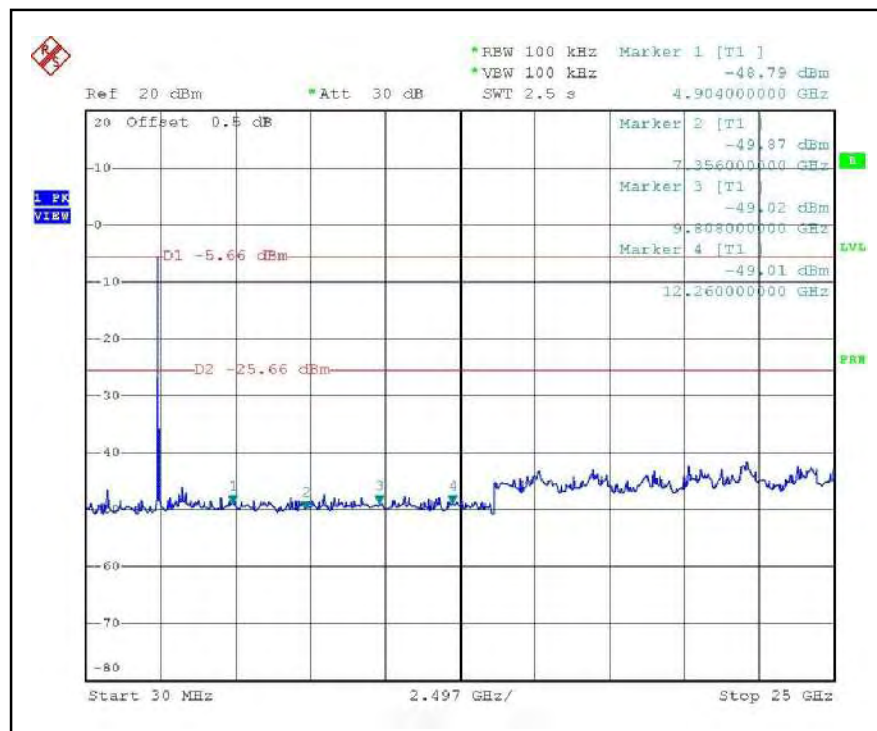
CH7



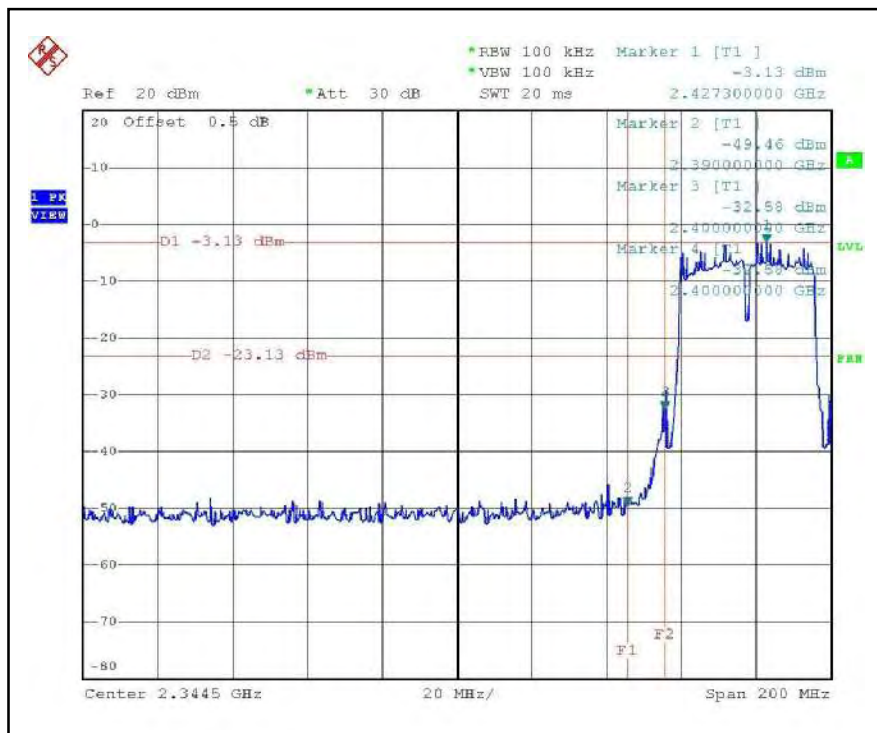
CH1



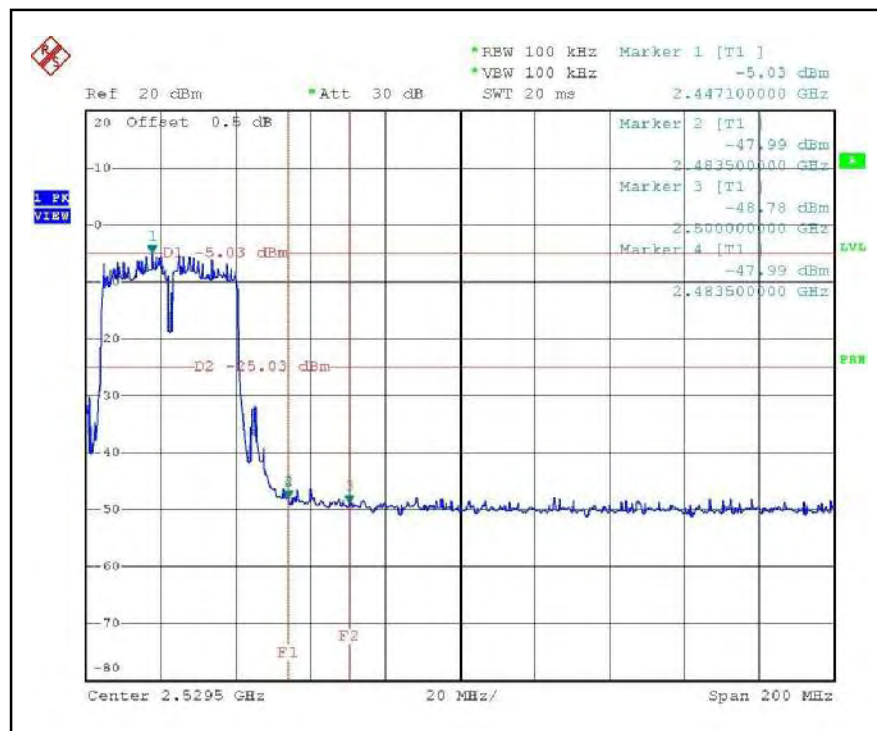
CH7



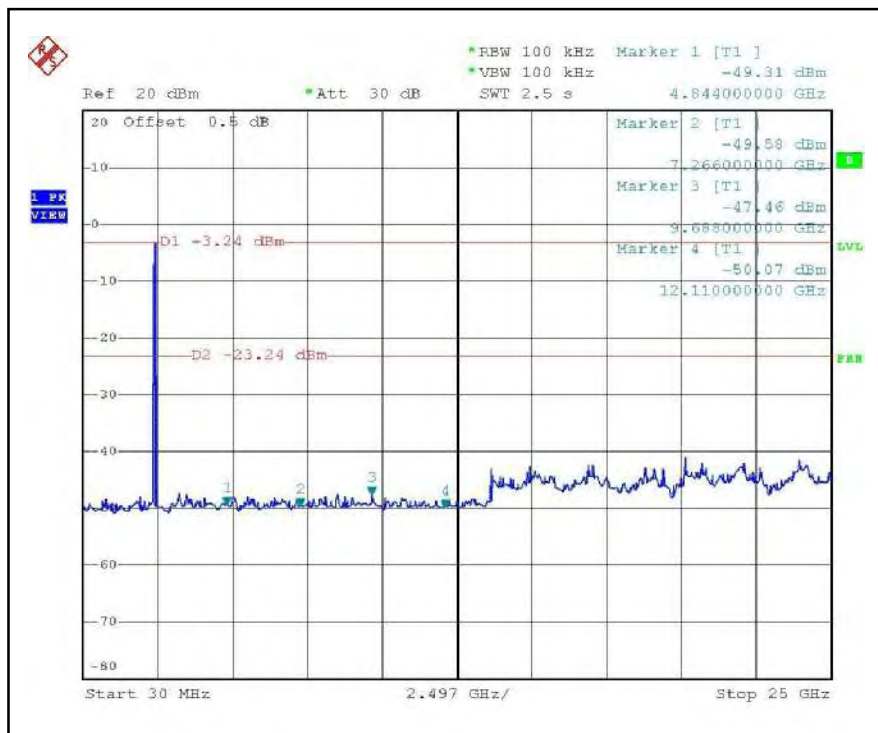
FOR CHAIN 1:CH1



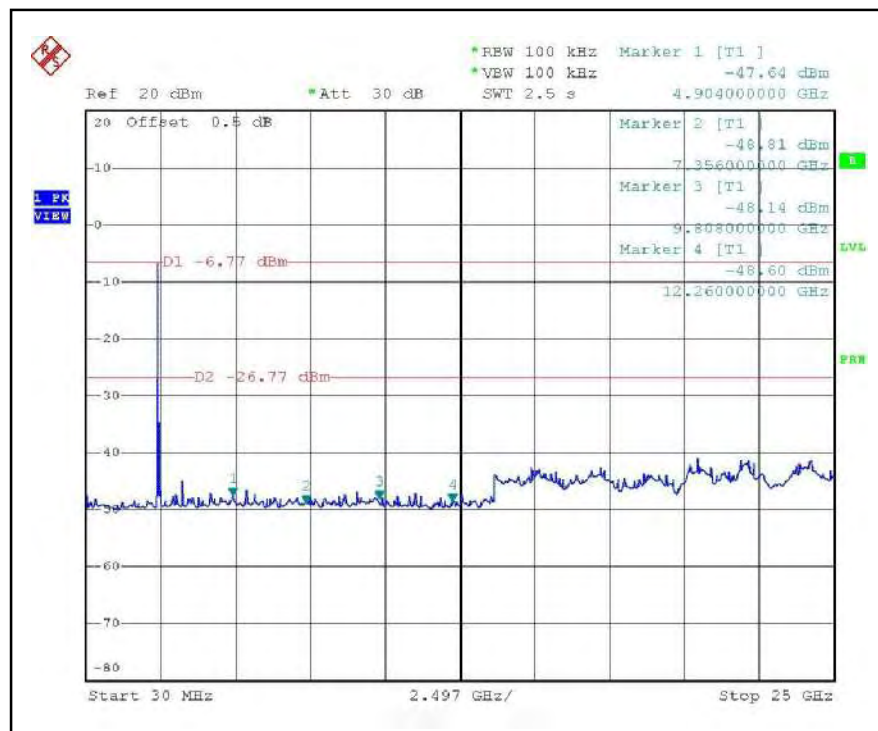
CH7



CH1



CH7



4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are as below.

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



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.	CNLA, BSMI, NCC
Netherlands	Telefication
Singapore	PSB , 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.



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.