FCC TEST REPORT (15.247)

REPORT NO.:	RF980110H01
MODEL NO.:	DWA-160
RECEIVED:	Jan. 10, 2009
TESTED:	April 07 to 08, 2009
ISSUED:	May 19, 2009

APPLICANT:	D-Link Co.
ADDRESS:	No.289, Shinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
TEST LOCATION:	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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1. CERTIFICATION

PRODUCT:	Xtreme N Dual Band USB Adapter
BRAND NAME:	D-Link
MODEL NO.:	DWA-160
TEST SAMPLE:	MASS-PRODUCTION
TESTED:	April 07 to 08, 2009
APPLICANT:	D-Link Co.
STANDARDS:	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment (Model: DWA-160) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, 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:** *May 19, 2009*
(Claire Kuan, Specialist)

TECHNICAL ACCEPTANCE : _____ , **DATE:** *May 19, 2009*
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : _____ , **DATE:** *May 19, 2009*
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 802.11b & g, 2412~2462MHz Band

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	**Test Type and Limit**	**Result**	**Remark**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is –3.54dB at 0.179MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is –1.00dB at 4874.00MHz
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.

NOTE:

1. The EUT was operating in 2.412 ~ 2.462GHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.825GHz frequencies band. This report was recorded the RF parameters including 2.412 ~ 2.462GHz. For the 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.825GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

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

Measurement	Value
Conducted emissions	2.44 dB
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Xtreme N Dual Band USB Adapter
MODEL NO.	DWA-160
FCC ID	KA2WA160A2
POWER SUPPLY	DC 5V ±10% from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11 / 5.5 / 2 / 1Mbps 802.11a / g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps HT20 MCS0~7 (800ns GI): 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps. HT20 MCS8~15 (800ns GI): 130 / 117 / 104 / 78 / 52 / 39 / 26 / 13Mbps. HT40 MCS0~7 (800ns GI): 135 / 121.5 / 108 / 81 / 54 / 40.5 / 27 / 13.5Mbps. HT40 MCS8~15 (800ns GI): 270 / 243 / 216 / 162 / 108 / 81 / 54 / 27Mbps.
OPERATING FREQUENCY	**For 15.247** 802.11b & 802.11g: 2412 ~ 2462MHz
	For 15.407 5.18 ~ 5.32GHz, 5.50 ~ 5.70GHz, 5.745 ~ 5.805GHz
NUMBER OF CHANNEL	**For 15.247(2.4GHz)** 11 for 802.11b, 802.11g, draft 802.11n (20MHz) 7 for draft 802.11n (40MHz) **For 15.407(5GHz)** 23 for 802.11a, draft 802.11n (20MHz) 11 for draft 802.11n (40MHz)

MAXIMUM OUTPUT POWER	**For 15.247(2.4GHz)** 802.11b: 133.045mW 802.11g: 193.642mW draft 802.11n (20MHz): 246.315mW draft 802.11n (40MHz): 223.365mW **For 15.407(5GHz)** **5150MHz ~ 5350MHz** 802.11a: 39.084mW draft 802.11n (20MHz): 67.871mW draft 802.11n (40MHz): 61.532mW **5470MHz ~ 5725MHz** 802.11a: 41.210mW draft 802.11n (20MHz): 66.088mW draft 802.11n (40MHz): 56.916mW **5725 ~ 5825MHz** 802.11a: 38.994mW draft 802.11n (20MHz): 63.535mW draft 802.11n (40MHz): 58.440mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
INTERFACE	USB
ASSOCIATED DEVICES	Cradle (with 1m cable, Unshielded)

NOTE:

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

Chain	Antenna Type	For 2.4GHz Gain (dBi)	For 5GHz Gain (dBi)				Antenna Connector
			5.15~5.25GHz	5.25~5.35GHz	5.47~5.725GHz	5.725~5.825GHz	
0	PCB Printed	0.29	-0.14	-0.86	0.21	0.14	NA
1	PCB Printed						

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

3. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 PCB Printed antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas. The legacy 11bg and legacy 11a modes are limited to single transmitter mode only.

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. 11a, 802.11b, 802.11g products.

6. The EUT was pre-tested in chamber as the following test modes:

TEST MODE	DESCRIPTION
Mode A	**With Cradle**
Mode B	Without Cradle

The worst case was found in Mode A. Its test data were recorded in this report individually.

7. 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

Operated in 2400 ~ 2483.5MHz band:

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

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

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

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
-	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

ANTENNA COMBINATION MODE:

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

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 PCB Printed antennas.

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 (20MHz)	1 to 11	11	OFDM	BPSK	13	D

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
Draft 802.11n (20MHz)	1 to 11	1	OFDM	BPSK	13	D

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27	F

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	13	D
Draft 802.11n (40MHz)	1 to 7	1, 7	OFDM	BPSK	27	F

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	TX COMBINATION
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
Draft 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	13	D
Draft 802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	27	F

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Xtreme N Dual Band USB Adapter. 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.

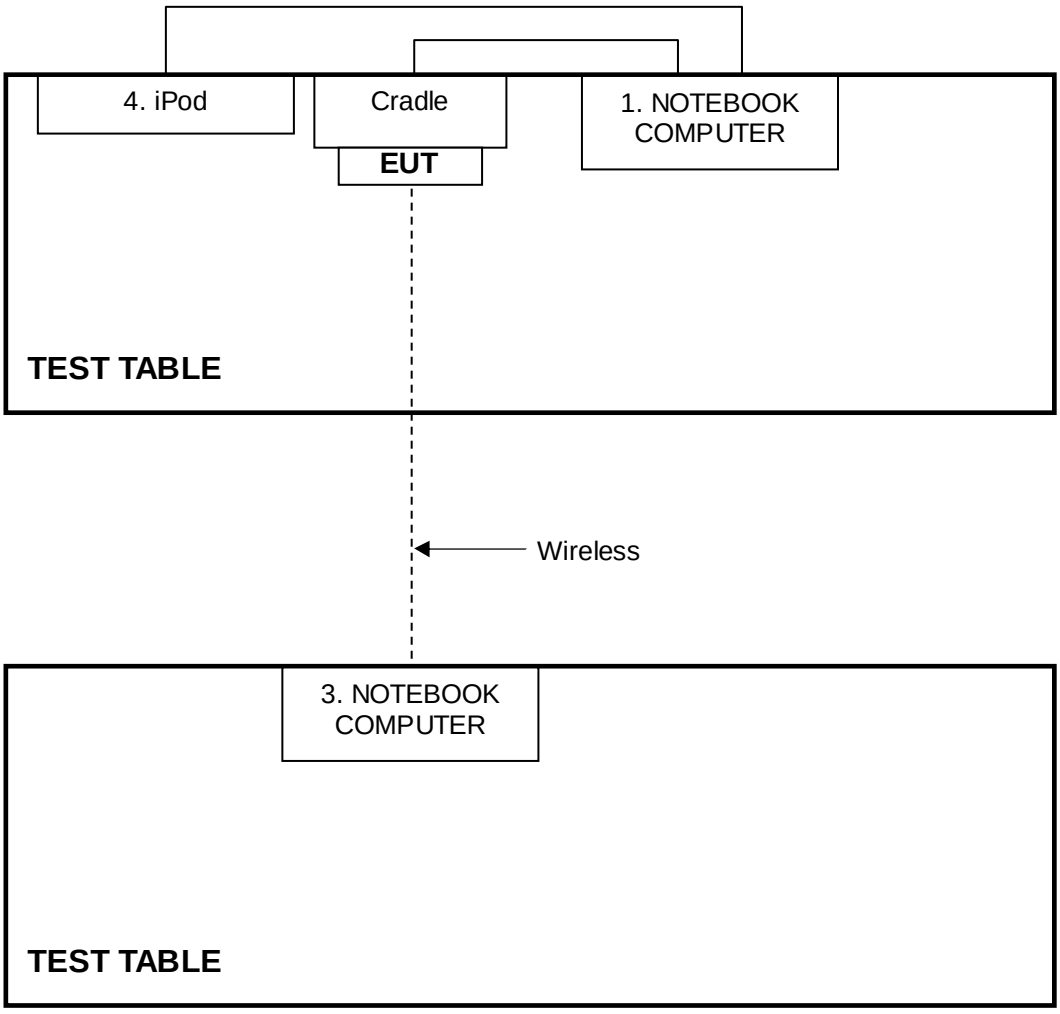
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	D531	CN-0XM006-48643-86 L-4472	QDS-BRCM1019
2	MODEM	ACEEX	1414	0206026776	IFAXDM1414
3	NOTEBOOK COMPUTER	DELL	PP17L	CN-ONF743-48643-7A V-0124	FCC DoC
4	iPod	Apple	A1137	6U6078FMUPR	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
3	NA
4	1 m shielded cable, terminated with USB connector, w/o core.

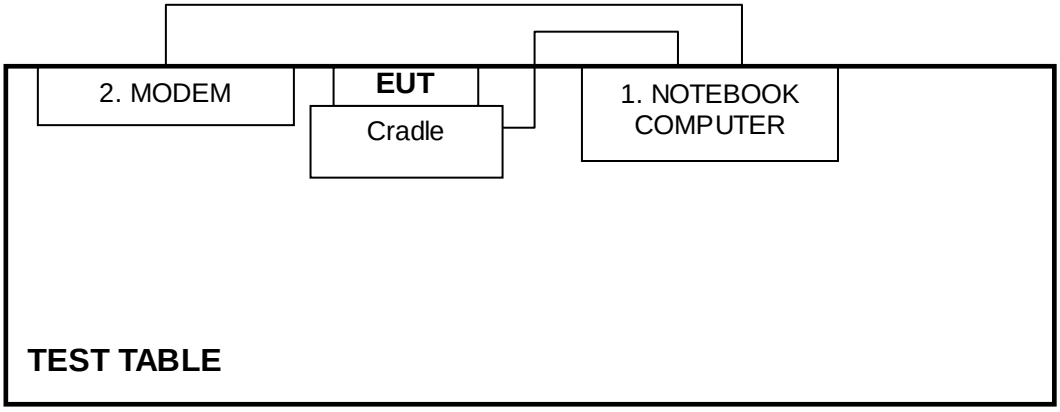
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For conducted emission test:



For other test:



4. TEST TYPES AND RESULTS (802.11b & g, 2400 ~ 2483.5MHz Band)

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 DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 31, 2009	Mar. 30, 2010
Line-Impedance Stabilization Network (for EUT)	ENV-216	100071	Nov. 26, 2008	Nov. 25, 2009
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 05, 2008	Nov. 04, 2009
RF Cable (JYEBAO)	5DFB	COBCAB-001	Aug 15, 2008	Aug 14, 2009
50 ohms Terminator	50	3	Nov. 05, 2008	Nov. 04, 2009
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

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

4.1.3 TEST PROCEDURES

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

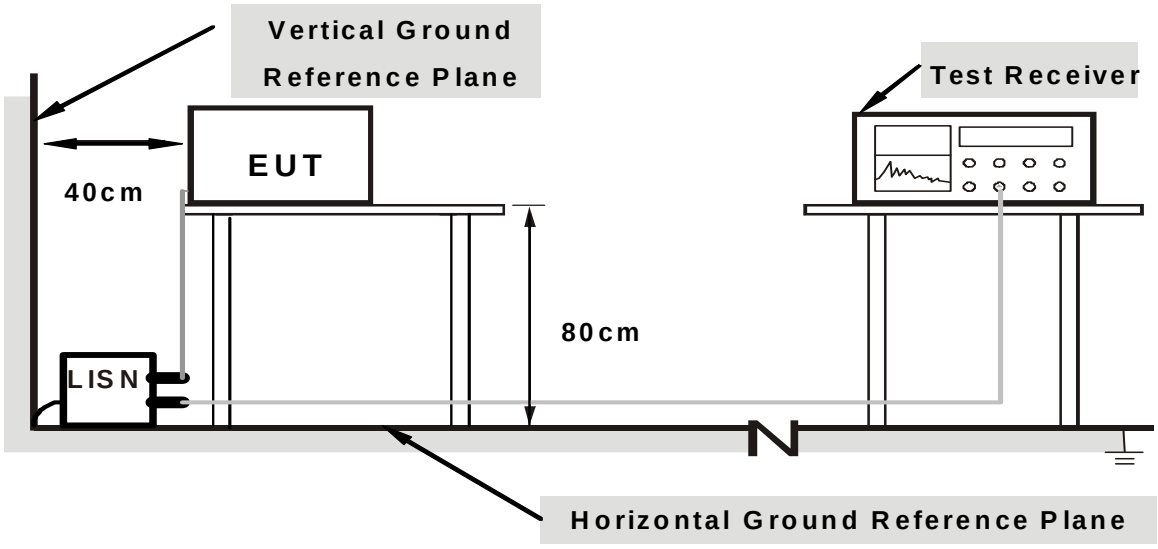
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

a. Placed the EUT on testing table.
b. The communication partner run test program “ART_V80_b33” to enable EUT under transmission/receiving condition continuously at specific channel frequency via one UTP cable and wireless.

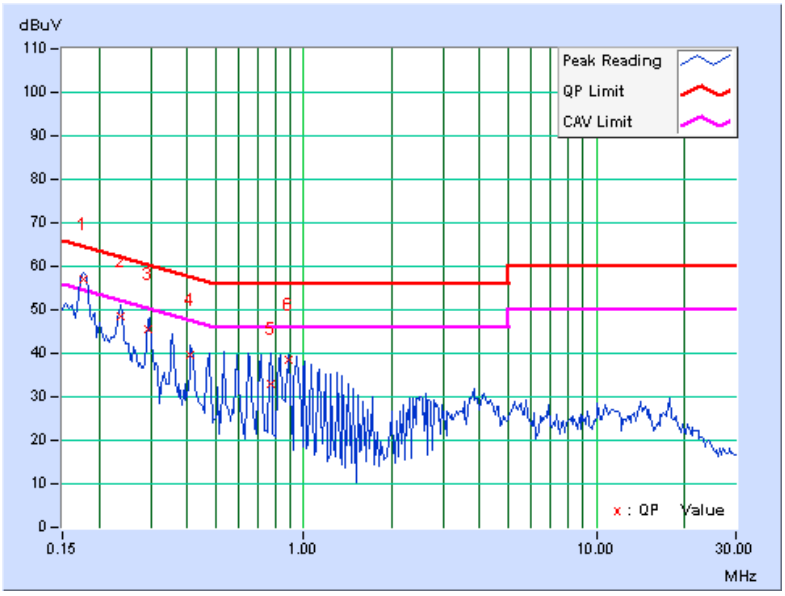
4.1.7 TEST RESULTS

DRAFT 802.11n (20MHz) OFDM MODULATION:

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Line (L)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13Mbps	INPUT POWER	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 965hPa	TESTED BY	Kent Liu

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	0.177	0.21	56.76	49.98	56.97	50.19	64.61	54.61	-7.64	-4.42
2	0.236	0.26	48.37	-	48.63	-	62.24	52.24	-13.60	-
3	0.295	0.33	45.37	-	45.70	-	60.40	50.40	-14.69	-
4	0.412	0.46	39.03	-	39.49	-	57.61	47.61	-18.13	-
5	0.775	0.35	32.76	-	33.11	-	56.00	46.00	-22.89	-
6	0.888	0.32	38.23	-	38.55	-	56.00	46.00	-17.45	-

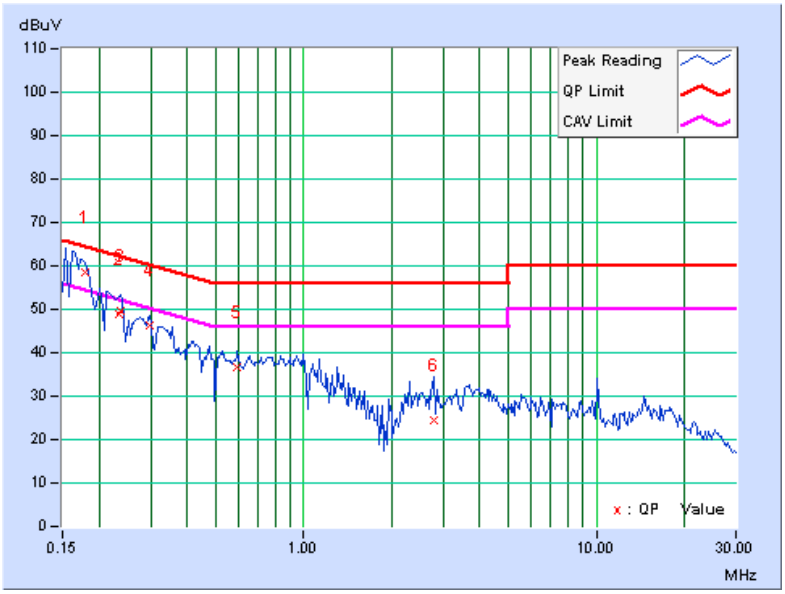
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	PHASE	Neutral (N)
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	13Mbps	INPUT POWER	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 965hPa	TESTED BY	Kent Liu

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	**0.179**	**0.14**	**58.54**	**51.57**	**58.68**	**51.71**	**64.55**	**54.55**	**-5.87**	**-2.84**
2	0.235	0.19	48.73	-	48.92	-	62.26	52.26	-13.34	-
3	0.236	0.19	49.49	-	49.68	-	62.24	52.24	-12.55	-
4	0.298	0.27	45.89	-	46.16	-	60.29	50.29	-14.12	-
5	0.595	0.33	36.20	-	36.53	-	56.00	46.00	-19.47	-
6	2.793	0.40	24.07	-	24.47	-	56.00	46.00	-31.53	-

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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 09, 2008	Dec. 08, 2009
HP Pre_Amplifier	8449B	3008A01923	Nov. 10, 2008	Nov. 09, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 09, 2008	Sep. 08, 2009
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 30, 2008	April 29, 2009
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2009	Jan. 21, 2010
RF Switches	EMH-011	08009	Oct. 07, 2008	Oct. 06, 2009
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 15, 2008	Aug. 14, 2009
RF Cable	8DFB	STCCAB-30M-1GHz	Oct. 07, 2008	Oct. 06, 2009
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 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 7450G-3.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

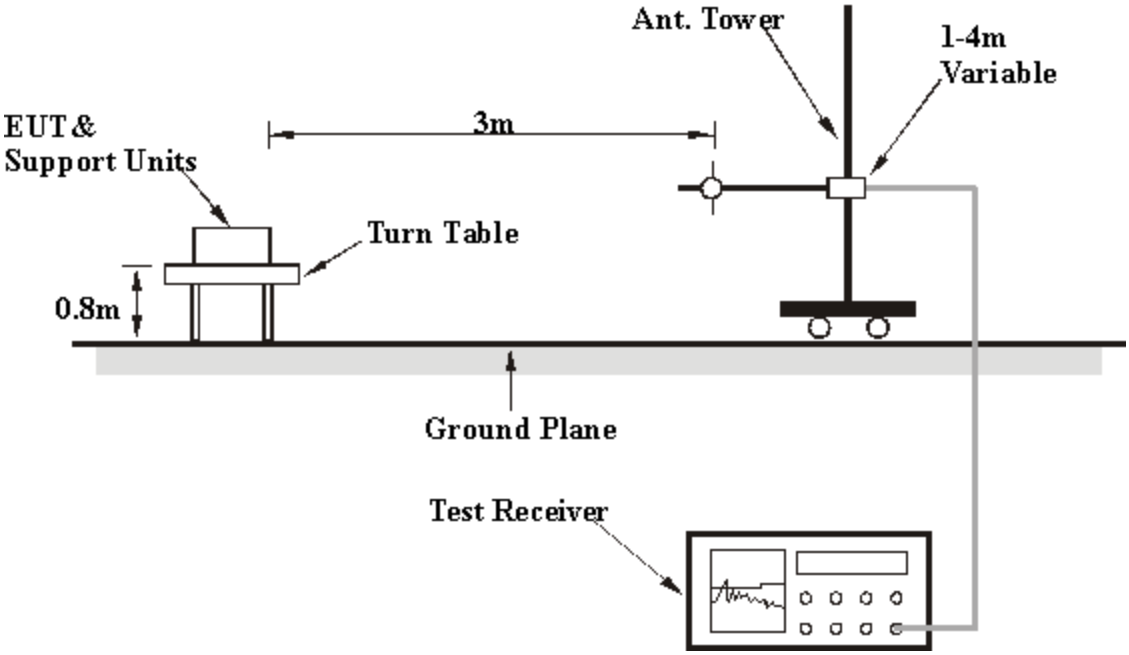
NOTE:

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 of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. The communication partner run test program “ART_V80_b33” to enable EUT under transmission/receiving condition continuously at specific channel frequency via one UTP cable.

Below 1GHz Test Data

4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20deg. C, 65%RH 965hPa	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	75.58	29.65 QP	40.00	-10.35	1.00 H	286	17.29	12.36
2	240.00	42.77 QP	46.00	-3.23	1.31 H	173	27.84	14.93
3	299.99	40.31 QP	46.00	-5.69	1.00 H	238	23.29	17.02
4	500.00	24.40 QP	46.00	-21.60	1.42 H	209	1.74	22.66
5	799.85	39.02 QP	46.00	-6.98	1.50 H	33	9.08	29.94
6	960.00	33.32 QP	46.00	-12.68	1.00 H	306	1.35	31.97
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	75.33	28.80 QP	40.00	-11.20	1.00 V	248	16.42	12.38
2	144.05	28.89 QP	43.50	-14.61	1.00 V	0	13.38	15.51
3	240.00	37.27 QP	46.00	-8.73	1.00 V	107	22.34	14.93
4	300.00	29.31 QP	46.00	-16.69	1.00 V	138	12.29	17.02
5	480.00	40.31 QP	46.00	-5.69	1.00 V	276	17.96	22.35
6	500.00	29.06 QP	46.00	-16.94	1.00 V	135	6.40	22.66
7	623.98	35.16 QP	46.00	-10.84	1.00 V	45	9.84	25.32
8	959.97	40.81 QP	46.00	-5.19	1.03 V	184	8.84	31.97

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

Above 1GHz Test Data

4.2.8 TEST RESULTS

802.11b DSSS MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.00	55.11 PK	74.00	-18.89	1.20 H	20	25.06	30.05
2	2386.00	43.68 AV	54.00	-10.32	1.20 H	20	13.63	30.05
3	*2412.00	102.54 PK			1.25 H	66	72.39	30.15
4	*2412.00	99.20 AV			1.25 H	66	69.05	30.15
5	4824.00	55.24 PK	74.00	-18.76	1.62 H	250	19.78	35.46
6	4824.00	51.00 AV	54.00	-3.00	1.62 H	250	15.54	35.46
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2386.00	57.05 PK	74.00	-16.95	1.25 V	63	27.00	30.05
2	2386.00	48.69 AV	54.00	-5.31	1.25 V	63	18.64	30.05
3	*2412.00	106.60 PK			1.01 V	245	76.45	30.15
4	*2412.00	102.80 AV			1.01 V	245	72.65	30.15
5	4824.00	51.27 PK	74.00	-22.73	1.20 V	111	15.81	35.46
6	4824.00	46.78 AV	54.00	-7.22	1.20 V	111	11.32	35.46

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.54 PK			1.30 H	71	74.30	30.24
2	*2437.00	101.90 AV			1.30 H	71	71.66	30.24
3	4874.00	57.54 PK	74.00	-16.46	1.62 H	253	21.99	35.55
4	**4874.00**	**53.00 AV**	**54.00**	**-1.00**	**1.62 H**	**253**	**17.45**	**35.55**
5	7311.00	57.90 PK	74.00	-16.10	1.53 H	212	15.86	42.04
6	7311.00	45.23 AV	54.00	-8.77	1.53 H	212	3.19	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.47 PK			1.02 V	247	78.23	30.24
2	*2437.00	104.13 AV			1.02 V	247	73.89	30.24
3	4874.00	53.27 PK	74.00	-20.73	1.29 V	112	17.72	35.55
4	4874.00	48.78 AV	54.00	-5.22	1.29 V	112	13.23	35.55
5	7311.00	54.67 PK	74.00	-19.33	1.24 V	222	12.63	42.04
6	7311.00	41.25 AV	54.00	-12.75	1.24 V	222	-0.79	42.04

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.50 PK			1.30 H	70	70.16	30.34
2	*2462.00	96.90 AV			1.30 H	70	66.56	30.34
3	2483.50	55.69 PK	74.00	-18.31	1.01 H	214	25.26	30.43
4	2483.50	43.91 AV	54.00	-10.09	1.01 H	214	13.48	30.43
5	4924.00	53.24 PK	74.00	-20.76	1.42 H	21	17.61	35.63
6	4924.00	48.25 AV	54.00	-5.75	1.42 H	21	12.62	35.63
7	7386.00	56.24 PK	74.00	-17.76	1.24 H	24	14.01	42.23
8	7386.00	44.12 AV	54.00	-9.88	1.24 H	24	1.89	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.80 PK			1.67 V	279	73.46	30.34
2	*2462.00	99.90 AV			1.67 V	279	69.56	30.34
3	2483.50	57.22 PK	74.00	-16.78	1.02 V	212	26.79	30.43
4	2483.50	46.73 AV	54.00	-7.27	1.02 V	212	16.30	30.43
5	4924.00	49.90 PK	74.00	-24.10	1.54 V	245	14.27	35.63
6	4924.00	44.50 AV	54.00	-9.50	1.54 V	245	8.87	35.63
7	7386.00	52.21 PK	74.00	-21.79	1.24 V	47	9.98	42.23
8	7386.00	39.90 AV	54.00	-14.10	1.24 V	47	-2.33	42.23

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

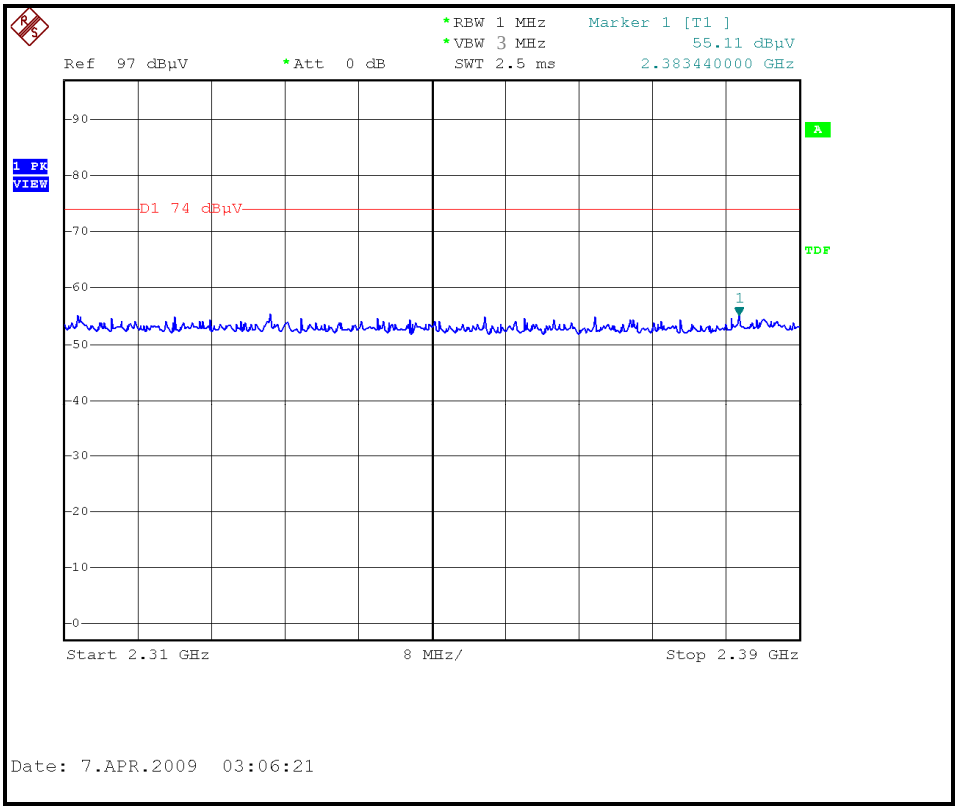
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

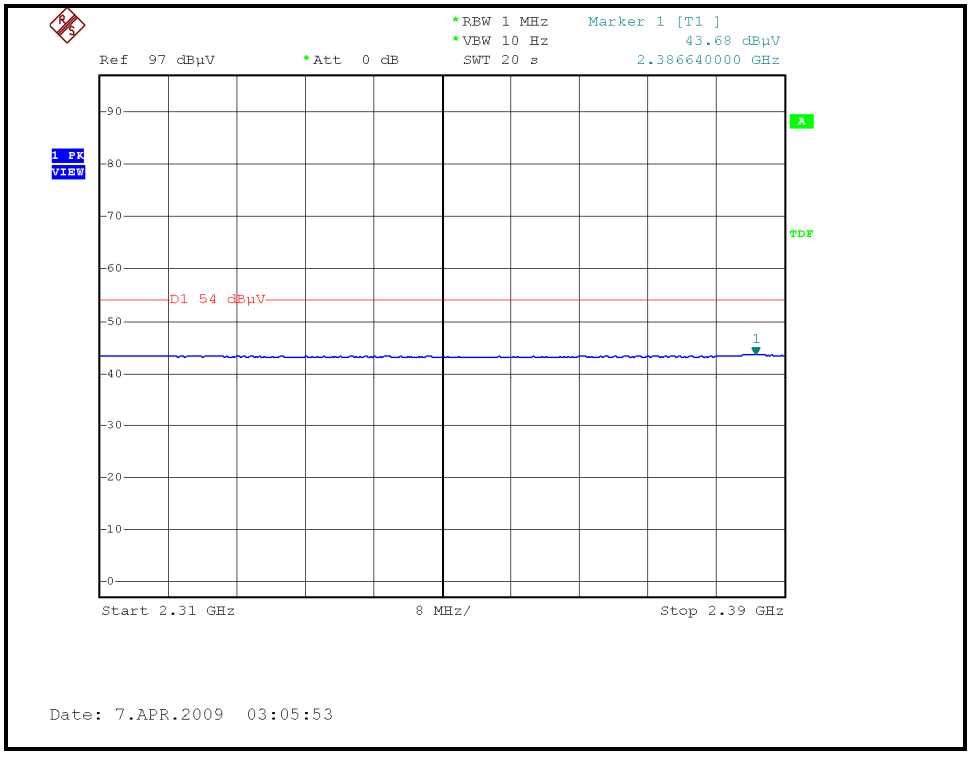
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)





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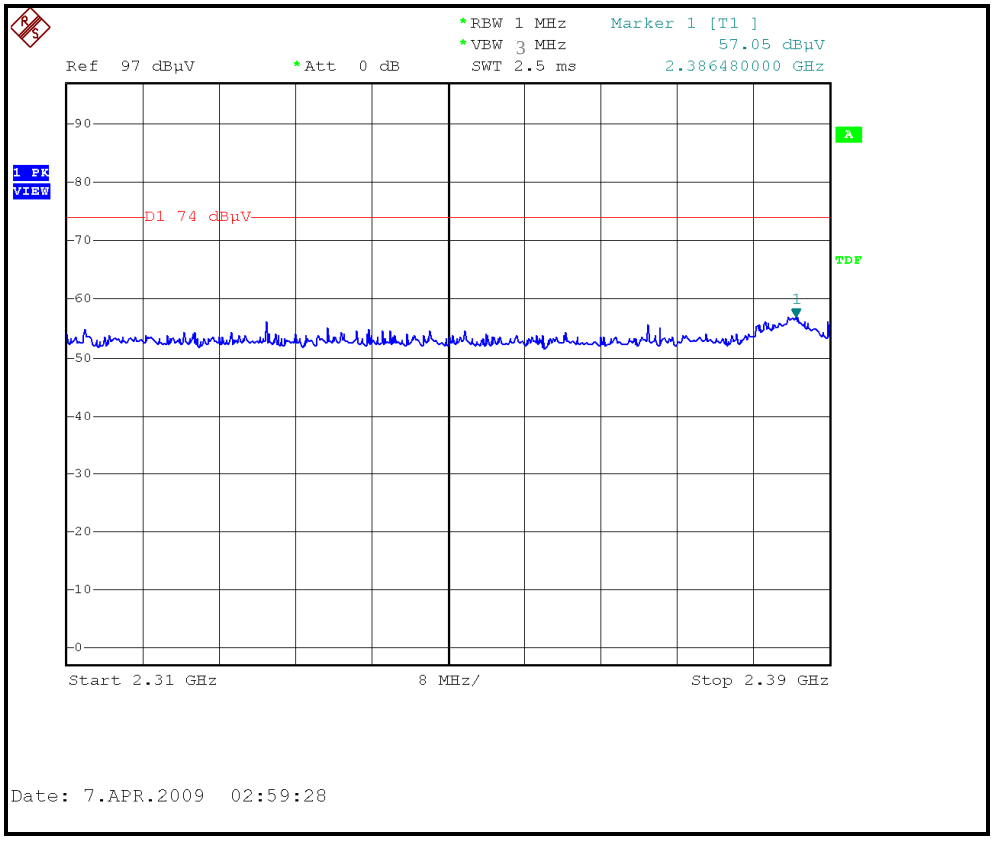

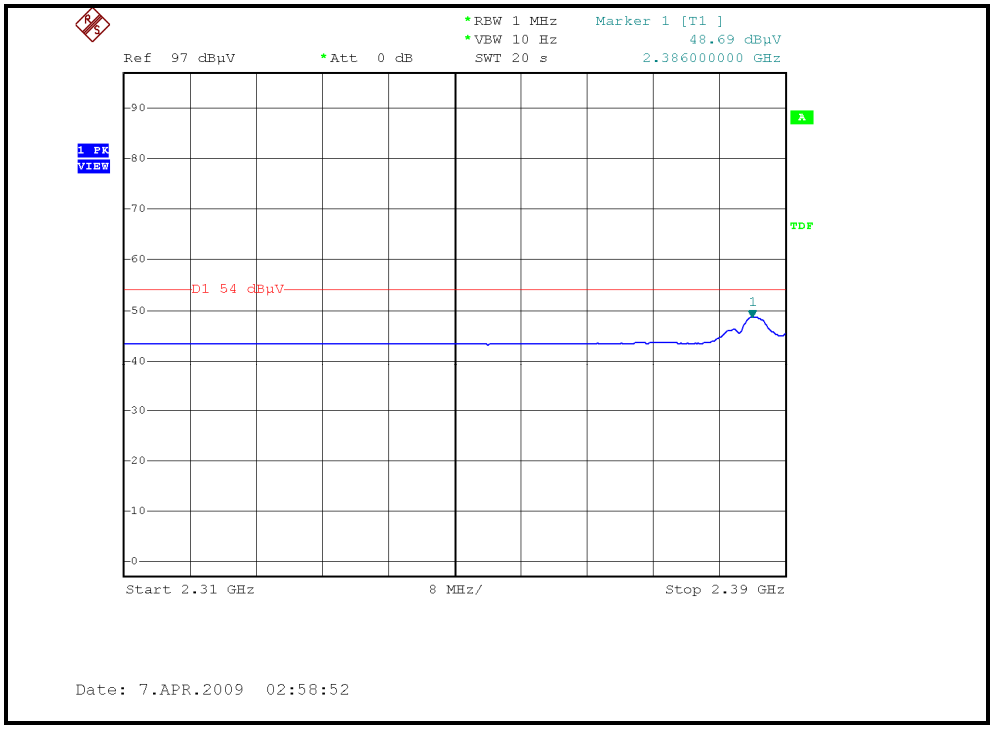

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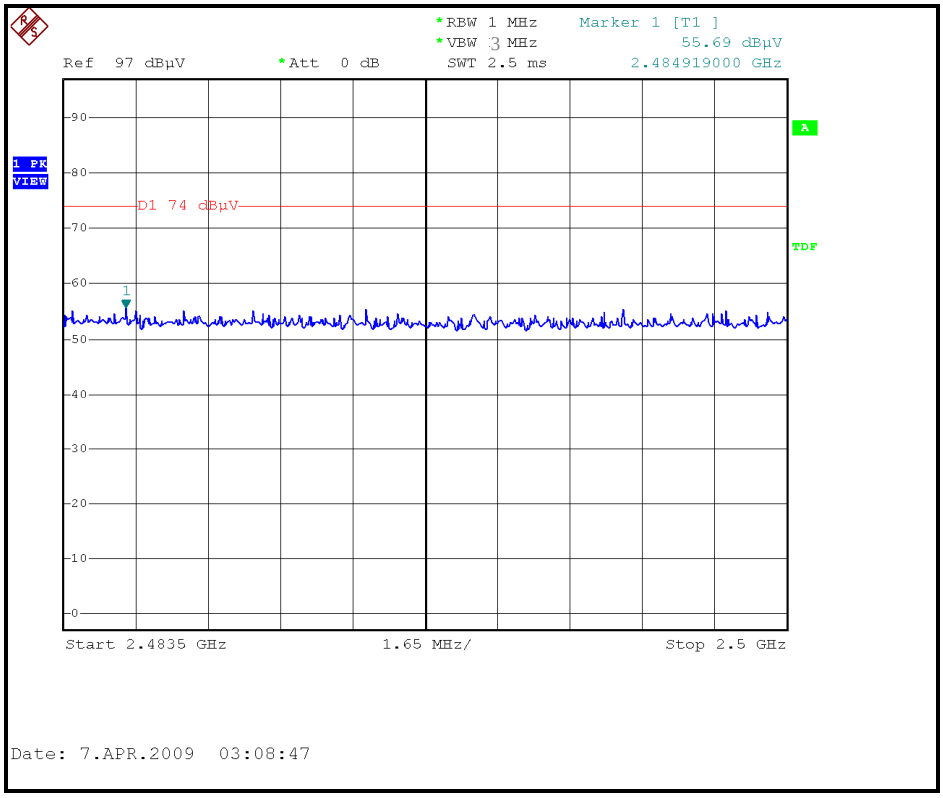
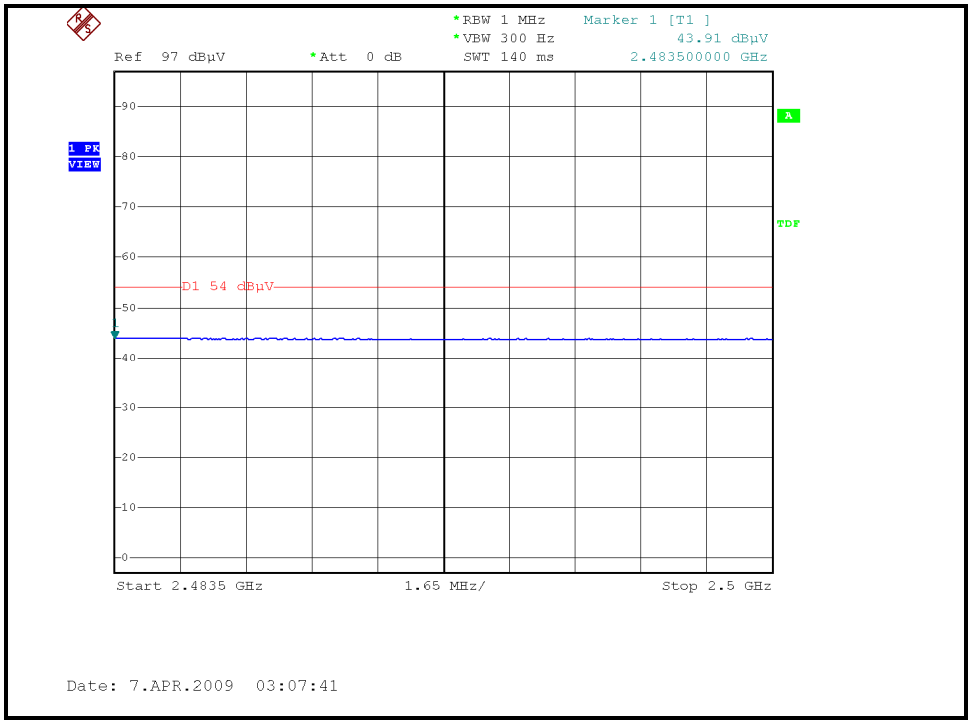
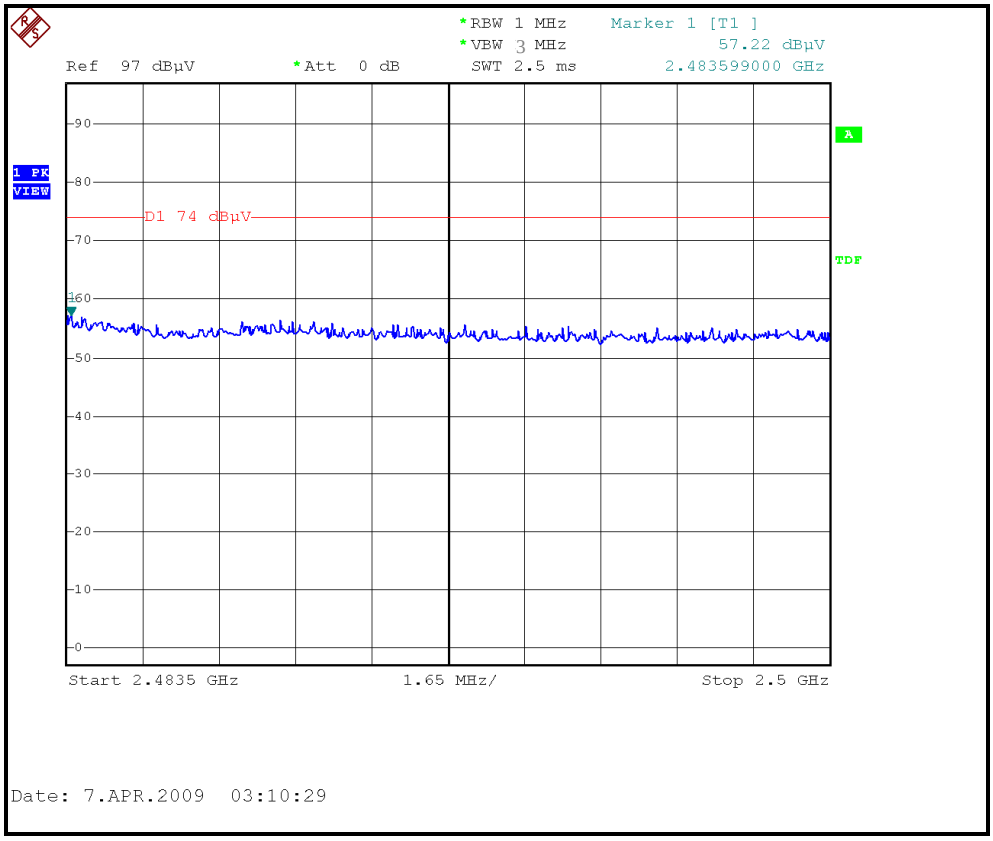
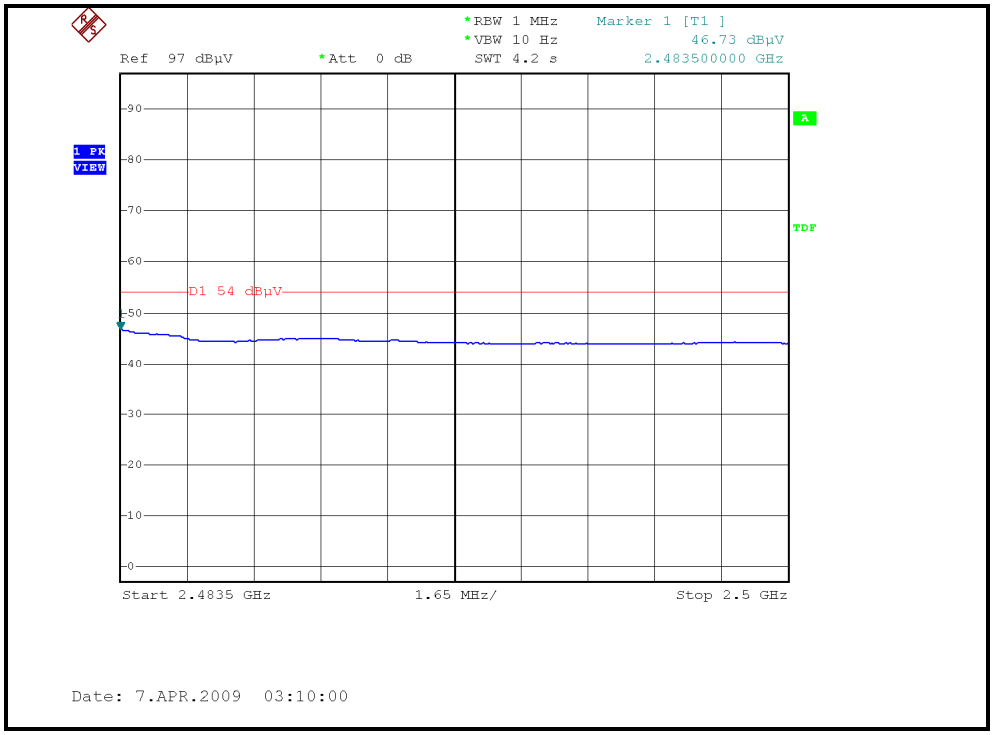




RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.85 PK	74.00	-13.15	1.02 H	4	30.79	30.06
2	2390.00	46.46 AV	54.00	-7.54	1.02 H	4	16.40	30.06
3	*2412.00	100.90 PK			1.25 H	71	70.75	30.15
4	*2412.00	91.68 AV			1.25 H	71	61.53	30.15
5	4824.00	47.24 PK	74.00	-26.76	1.54 H	69	11.78	35.46
6	4824.00	37.90 AV	54.00	-16.10	1.54 H	69	2.44	35.46
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	67.94 PK	74.00	-6.06	1.02 V	24	37.88	30.06
2	2390.00	50.20 AV	54.00	-3.80	1.02 V	24	20.14	30.06
3	*2412.00	103.81 PK			1.69 V	293	73.66	30.15
4	*2412.00	93.79 AV			1.69 V	293	63.64	30.15
5	4924.00	45.25 PK	74.00	-28.75	1.45 V	24	9.62	35.63
6	4924.00	36.25 AV	54.00	-17.75	1.45 V	24	0.62	35.63

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.57 PK			1.02 H	24	74.33	30.24
2	*2437.00	95.70 AV			1.02 H	24	65.46	30.24
3	4874.00	48.65 PK	74.00	-25.35	1.65 H	326	13.10	35.55
4	4874.00	39.90 AV	54.00	-14.10	1.65 H	326	4.35	35.55
5	7311.00	54.36 PK	74.00	-19.64	1.65 H	314	12.32	42.04
6	7311.00	41.24 AV	54.00	-12.76	1.65 H	314	-0.80	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.21 PK			1.11 V	42	76.97	30.24
2	*2437.00	97.80 AV			1.11 V	42	67.56	30.24
3	4874.00	46.90 PK	74.00	-27.10	1.25 V	23	11.35	35.55
4	4874.00	37.20 AV	54.00	-16.80	1.25 V	23	1.65	35.55
5	7311.00	52.60 PK	74.00	-21.40	1.26 V	326	10.56	42.04
6	7311.00	40.00 AV	54.00	-14.00	1.26 V	326	-2.04	42.04

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	99.90 PK			1.29 H	73	69.56	30.34
2	*2462.00	90.87 AV			1.29 H	73	60.53	30.34
3	2483.50	62.94 PK	74.00	-11.06	1.32 H	321	32.51	30.43
4	2483.50	46.81 AV	54.00	-7.19	1.32 H	321	16.38	30.43
5	4924.00	47.21 PK	74.00	-26.79	1.55 H	49	11.58	35.63
6	4924.00	36.65 AV	54.00	-17.35	1.55 H	49	1.02	35.63
7	7386.00	54.23 PK	74.00	-19.77	1.24 H	84	12.00	42.23
8	7386.00	39.00 AV	54.00	-15.00	1.24 H	84	-3.23	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.90 PK			1.29 V	95	72.56	30.34
2	*2462.00	92.46 AV			1.29 V	95	62.12	30.34
3	2483.50	69.51 PK	74.00	-4.49	1.11 V	202	39.08	30.43
4	2483.50	50.46 AV	54.00	-3.54	1.11 V	202	20.03	30.43
5	4924.00	45.23 PK	74.00	-28.77	1.25 V	256	9.60	35.63
6	4924.00	34.90 AV	54.00	-19.10	1.25 V	256	-0.73	35.63
7	7386.00	51.24 PK	74.00	-22.76	1.35 V	257	9.01	42.23
8	7386.00	38.40 AV	54.00	-15.60	1.35 V	257	-3.83	42.23

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

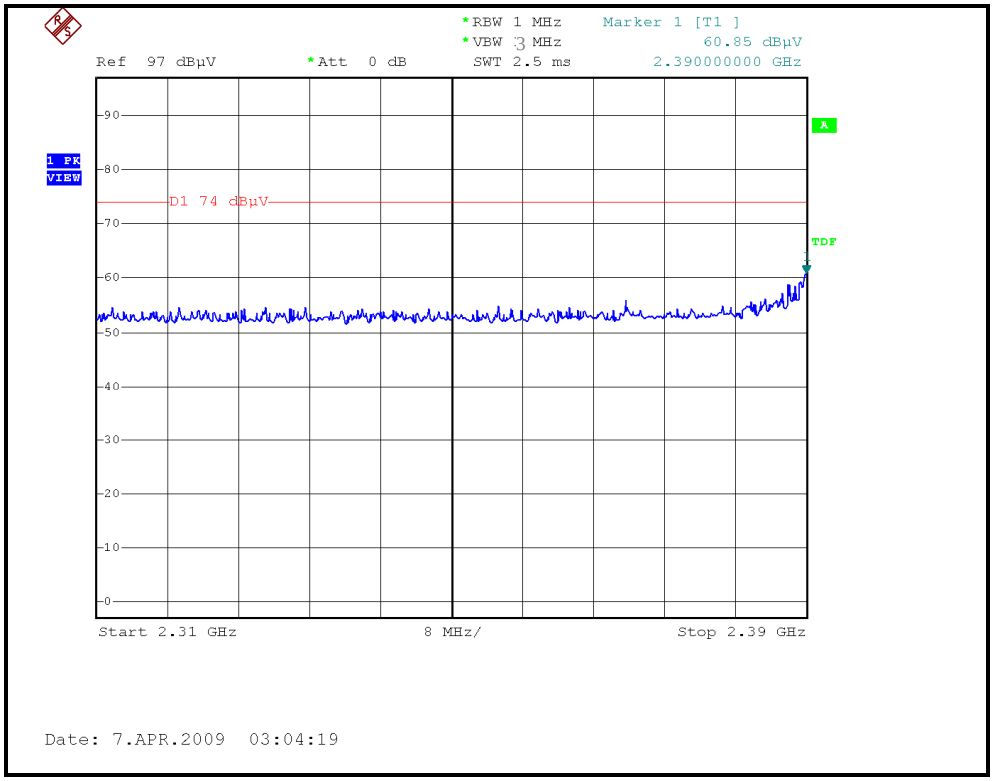
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

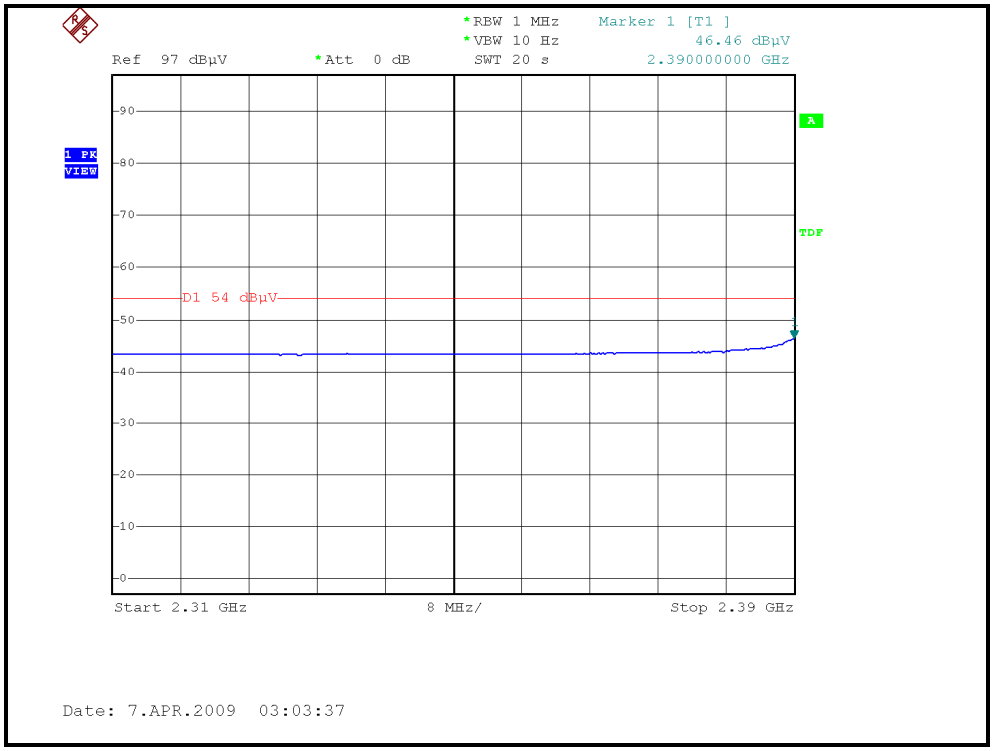
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

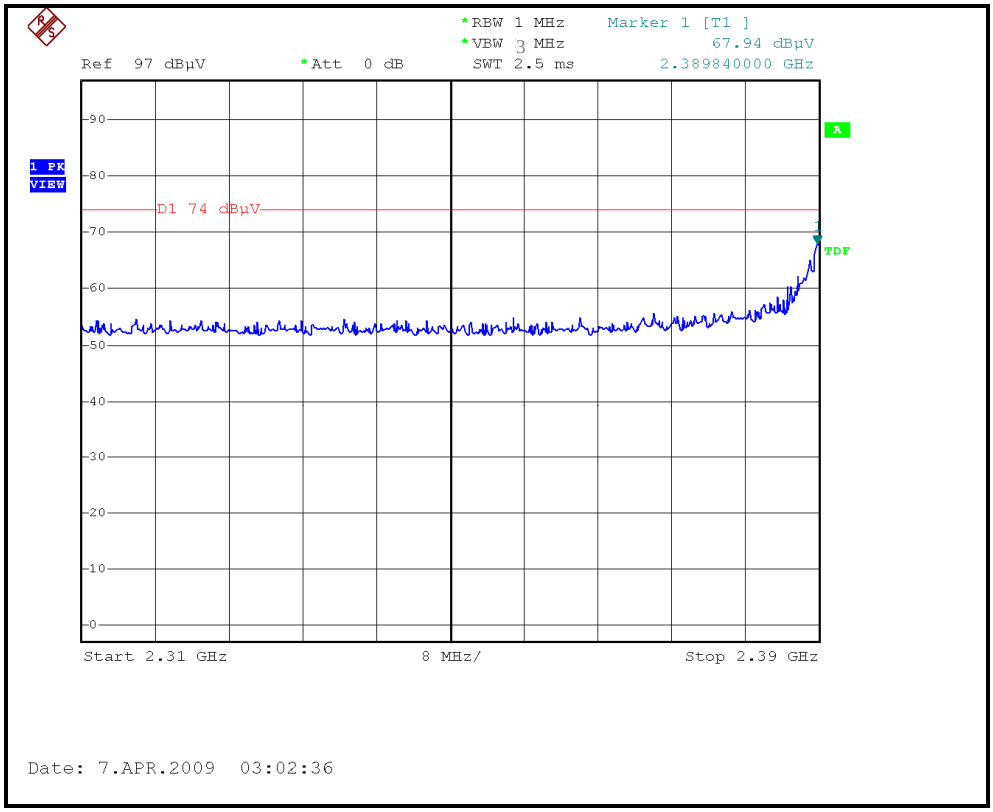
5. " * ": Fundamental frequency.

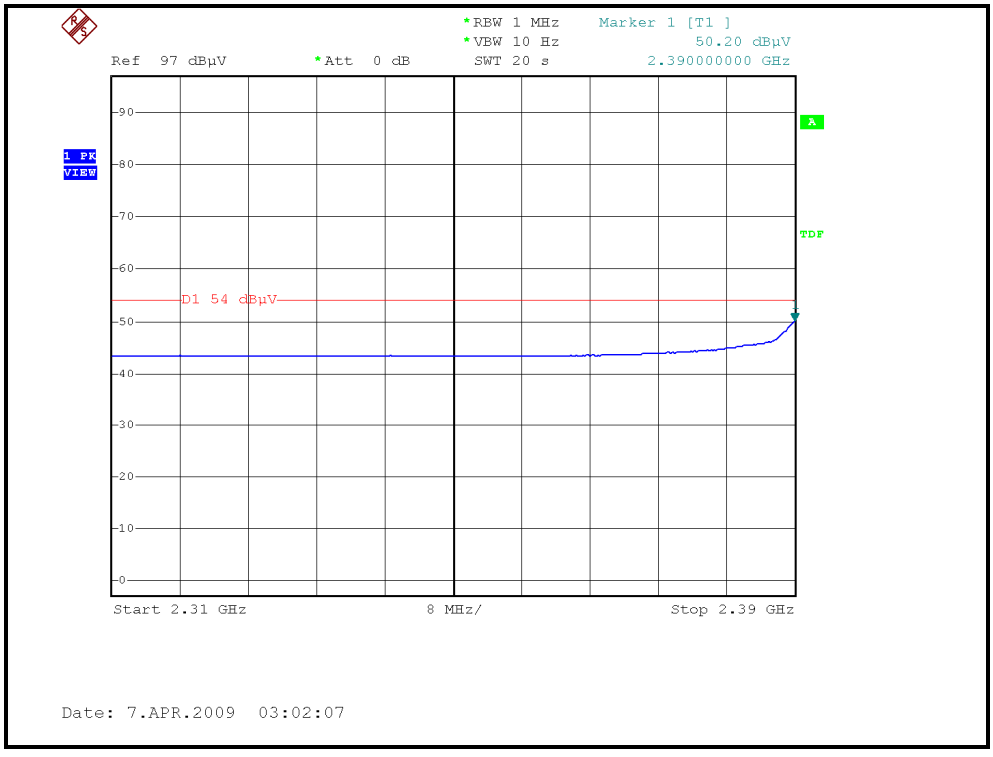
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)



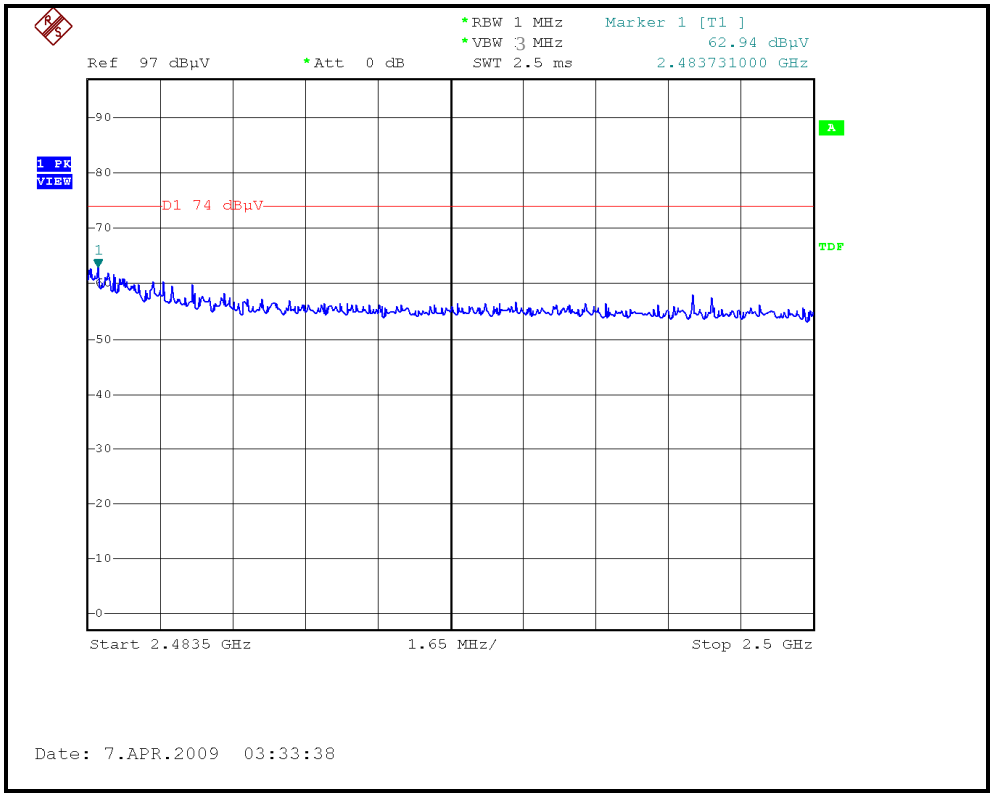


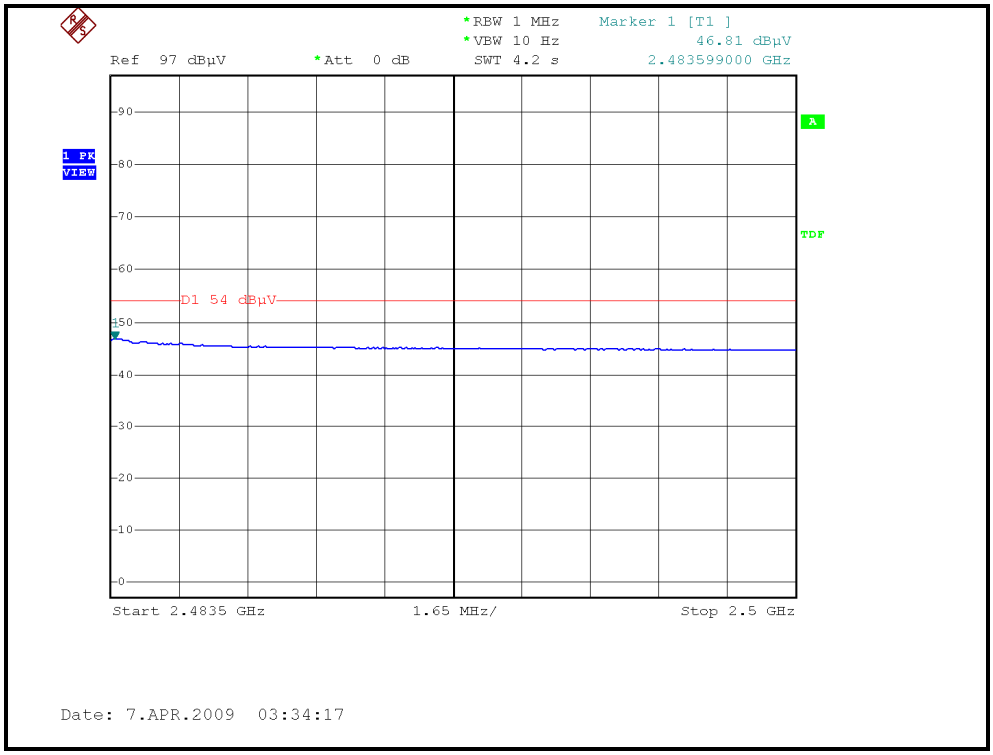
RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)



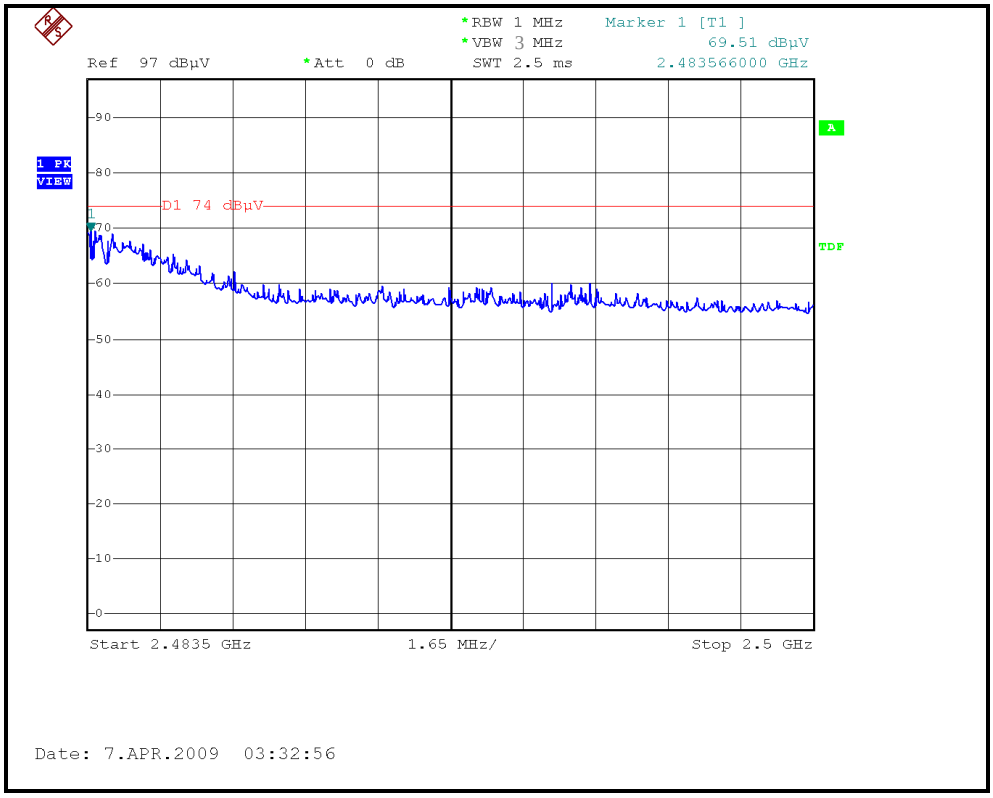


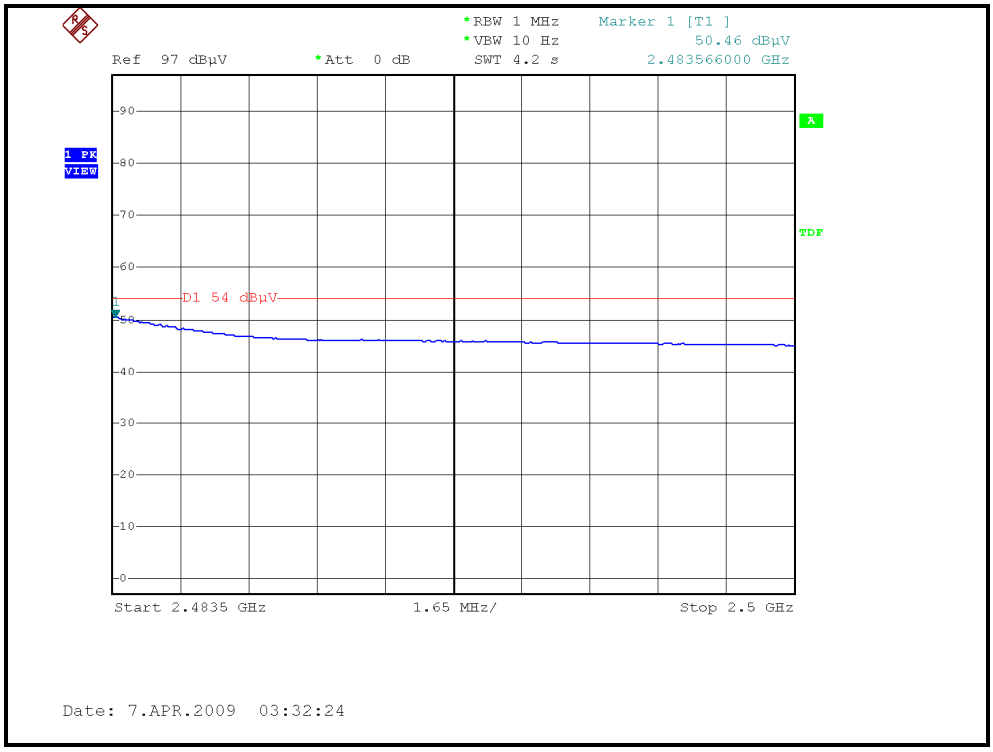
RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)





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
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.05 PK	74.00	-12.95	1.24 H	245	30.99	30.06
2	2390.00	47.47 AV	54.00	-6.53	1.24 H	245	17.41	30.06
3	*2412.00	103.01 PK			1.60 H	10	72.86	30.15
4	*2412.00	91.70 AV			1.60 H	10	61.55	30.15
5	4824.00	48.24 PK	74.00	-25.76	1.47 H	45	12.78	35.46
6	4824.00	37.80 AV	54.00	-16.20	1.47 H	45	2.34	35.46
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	66.68 PK	74.00	-7.32	1.02 V	214	36.62	30.06
2	2390.00	52.79 AV	54.00	-1.21	1.02 V	214	22.73	30.06
3	*2412.00	104.65 PK			1.74 V	24	74.50	30.15
4	*2412.00	92.97 AV			1.74 V	24	62.82	30.15
5	4824.00	46.23 PK	74.00	-27.77	1.02 V	245	10.77	35.46
6	4824.00	35.24 AV	54.00	-18.76	1.02 V	245	-0.22	35.46

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.00 PK			1.25 H	24	76.76	30.24
2	*2437.00	96.90 AV			1.25 H	24	66.66	30.24
3	4874.00	59.00 PK	74.00	-15.00	1.55 H	256	23.45	35.55
4	4874.00	39.30 AV	54.00	-14.70	1.55 H	256	3.75	35.55
5	7311.00	56.98 PK	74.00	-17.02	1.08 H	9	14.94	42.04
6	7311.00	40.00 AV	54.00	-14.00	1.08 H	9	-2.04	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.94 PK			1.11 V	198	80.70	30.24
2	*2437.00	98.24 AV			1.11 V	198	68.00	30.24
3	4874.00	47.24 PK	74.00	-26.76	1.53 V	62	11.69	35.55
4	4874.00	37.90 AV	54.00	-16.10	1.53 V	62	2.35	35.55
5	7311.00	55.00 PK	74.00	-19.00	1.64 V	253	12.96	42.04
6	7311.00	39.90 AV	54.00	-14.10	1.64 V	253	-2.14	42.04

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.00 PK			1.57 H	11	70.66	30.34
2	*2462.00	90.00 AV			1.57 H	11	59.66	30.34
3	2483.50	59.34 PK	74.00	-14.66	1.54 H	74	28.91	30.43
4	2483.50	45.71 AV	54.00	-8.29	1.54 H	74	15.28	30.43
5	4924.00	46.23 PK	74.00	-27.77	1.02 H	214	10.60	35.63
6	4924.00	37.42 AV	54.00	-16.58	1.02 H	214	1.79	35.63
7	7386.00	54.23 PK	74.00	-19.77	1.75 H	214	12.00	42.23
8	7386.00	39.50 AV	54.00	-14.50	1.75 H	214	-2.73	42.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.50 PK			1.54 V	57	73.16	30.34
2	*2462.00	92.40 AV			1.54 V	57	62.06	30.34
3	2483.50	65.70 PK	74.00	-8.30	1.11 V	245	35.27	30.43
4	2483.50	52.45 AV	54.00	-1.55	1.11 V	245	22.02	30.43
5	4924.00	43.21 PK	74.00	-30.79	1.74 V	54	7.58	35.63
6	4924.00	35.90 AV	54.00	-18.10	1.74 V	54	0.27	35.63
7	7386.00	52.24 PK	74.00	-21.76	1.65 V	346	10.01	42.23
8	7386.00	38.40 AV	54.00	-15.60	1.65 V	346	-3.83	42.23

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

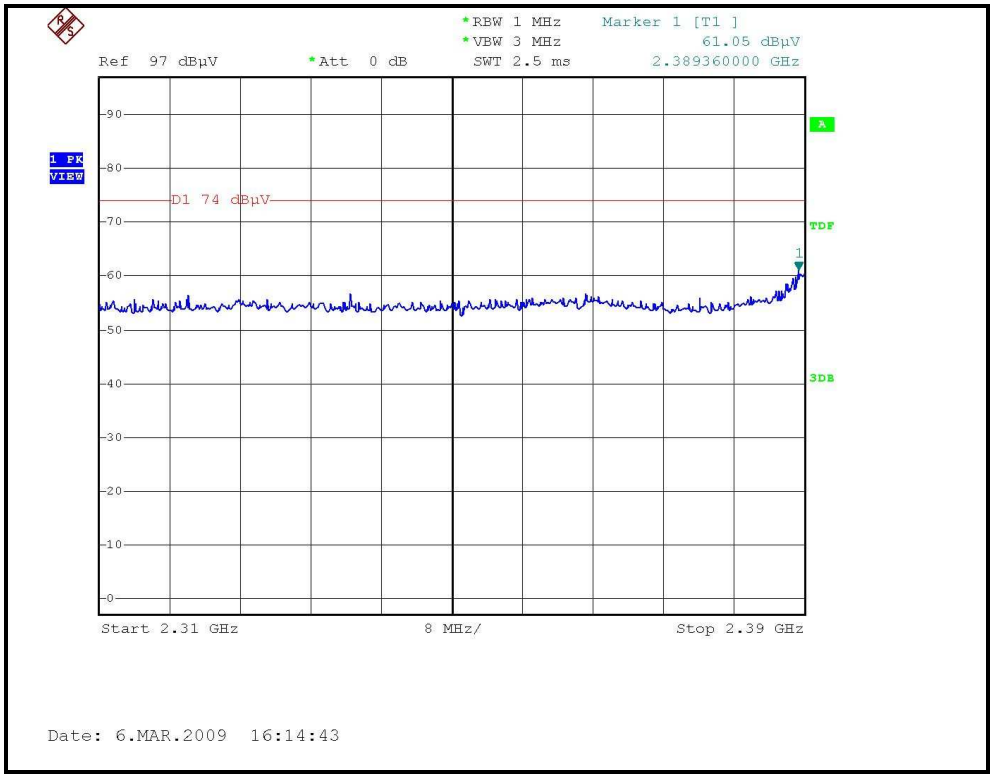
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

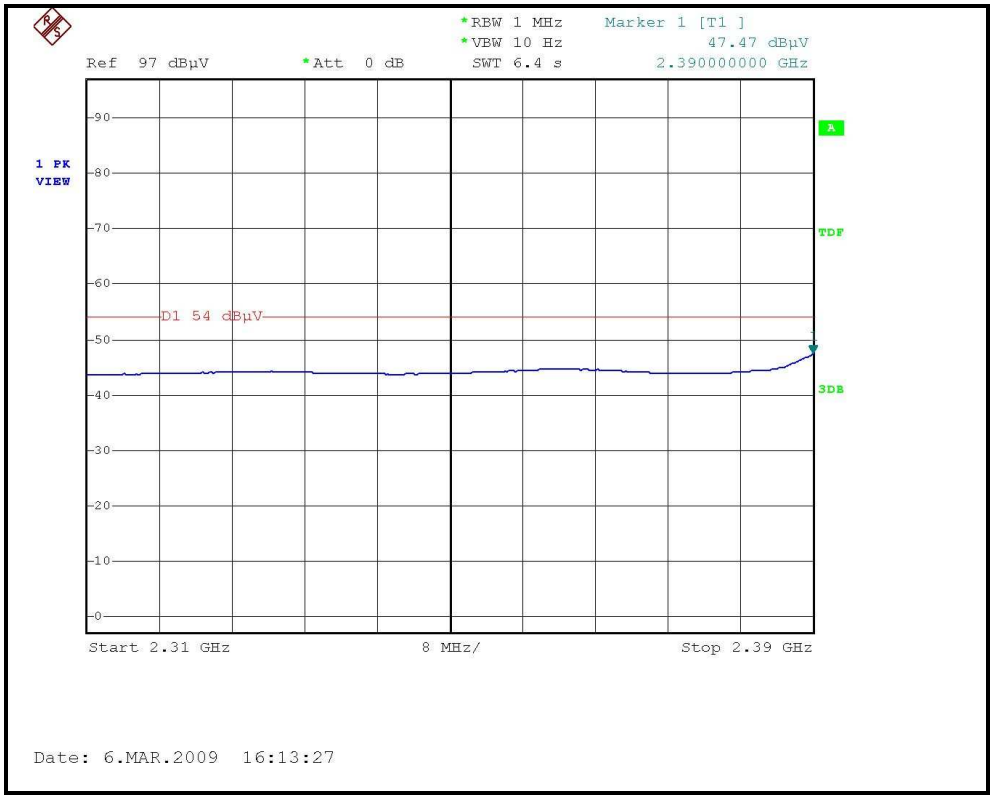
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

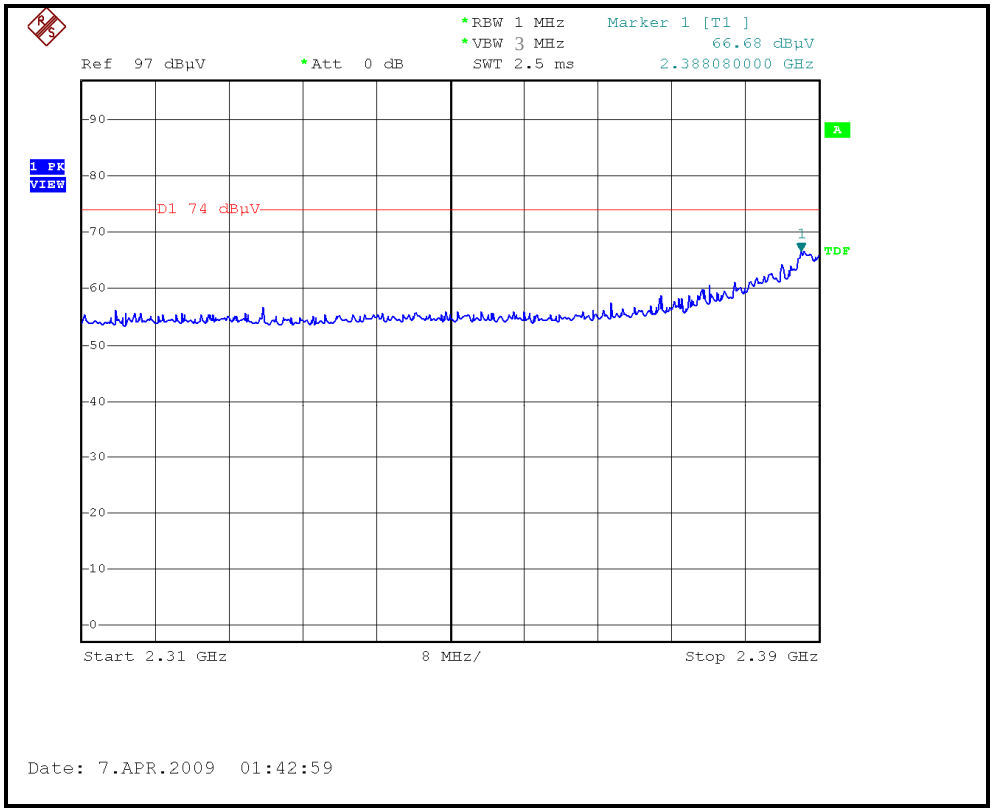
5. " * ": Fundamental frequency.

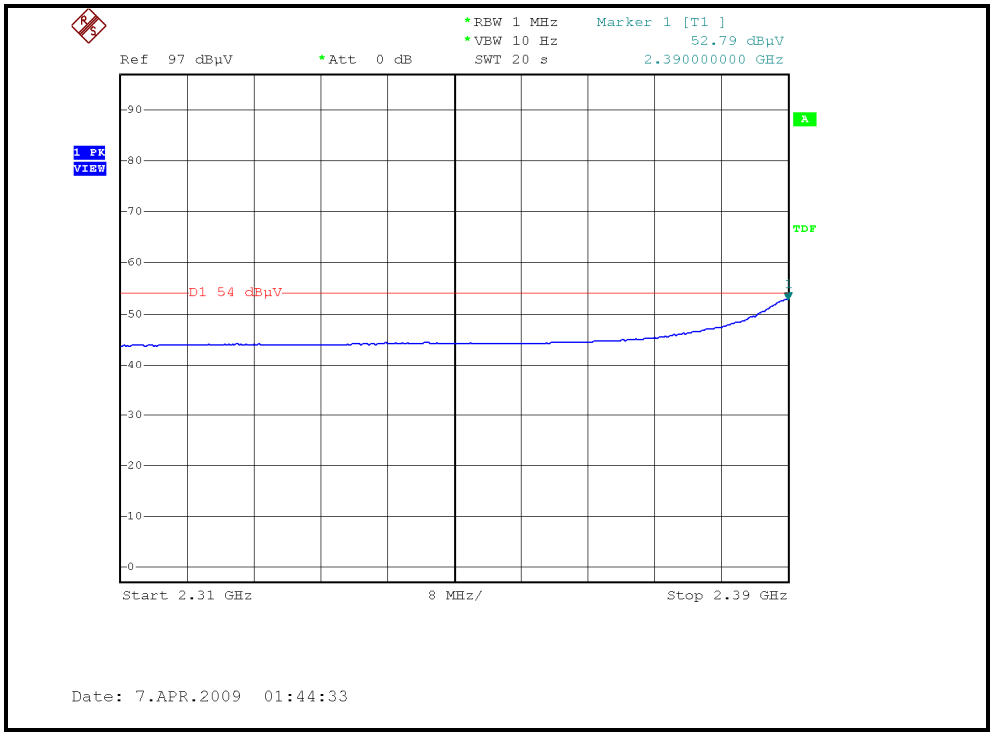
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, HORIZONTAL)



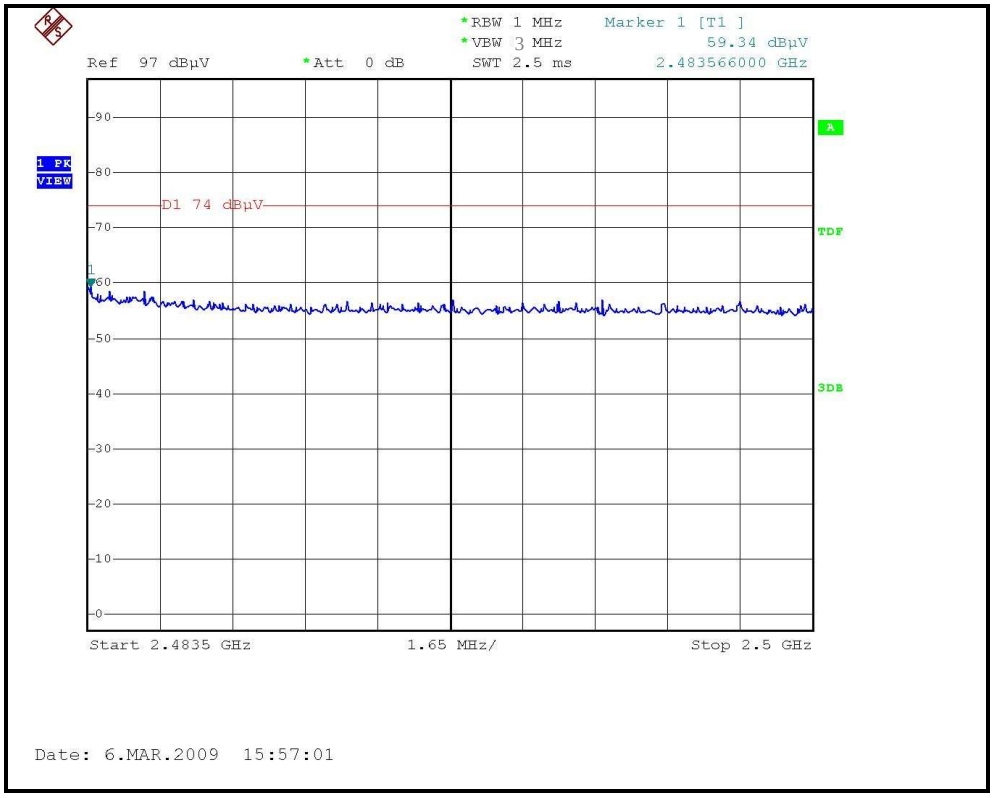


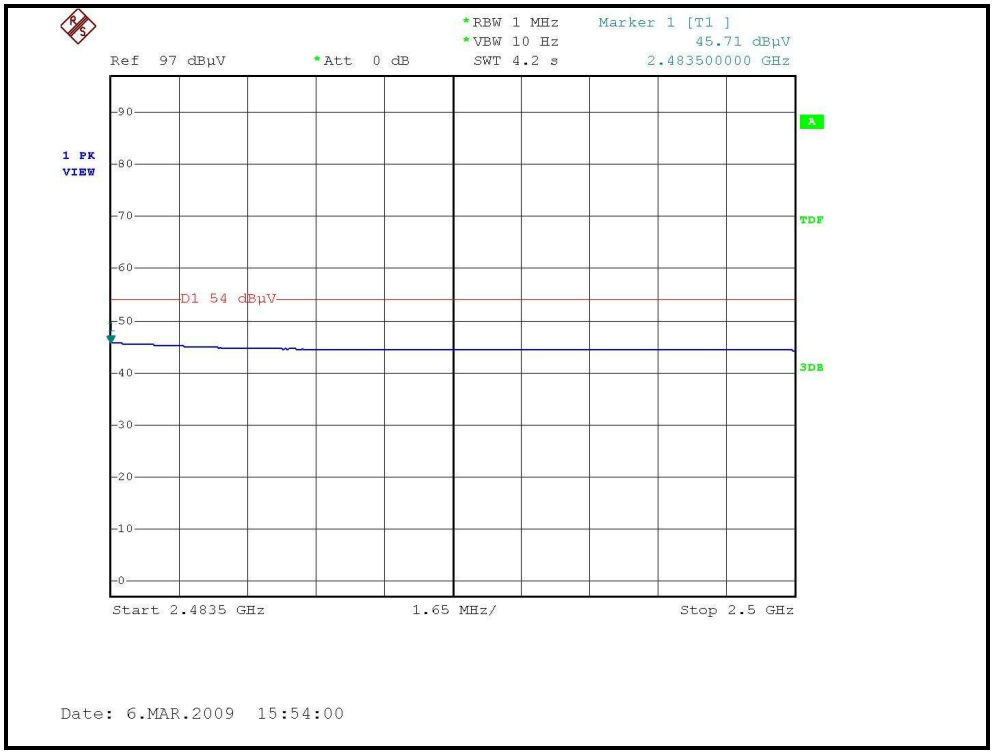
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)



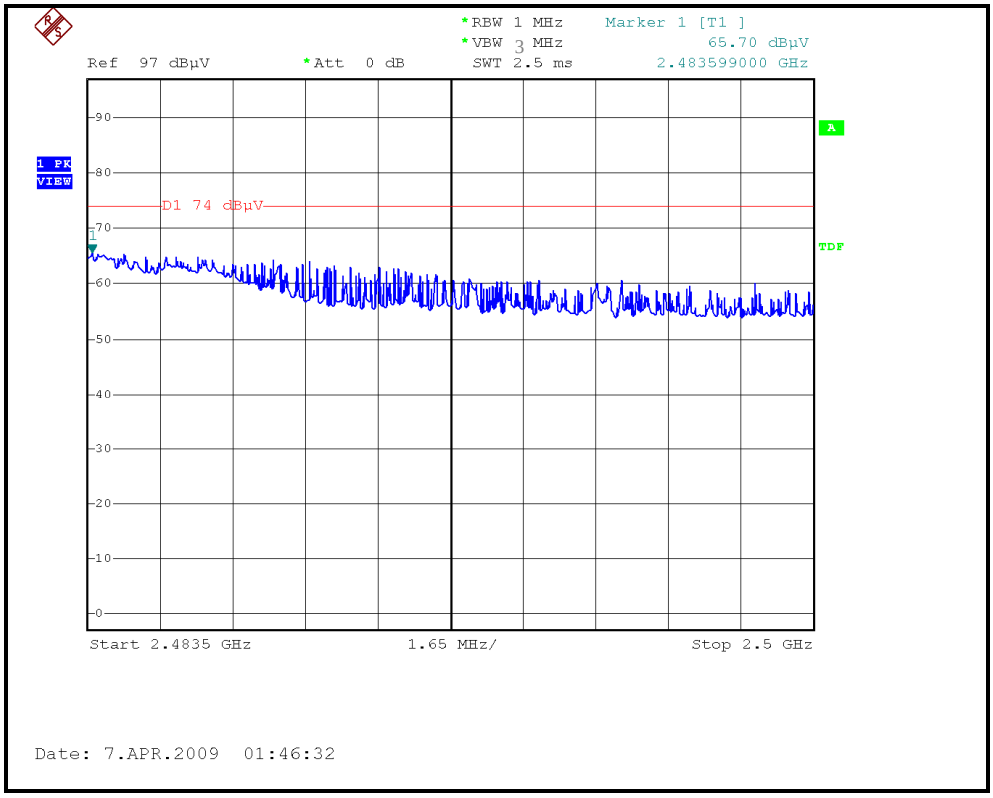


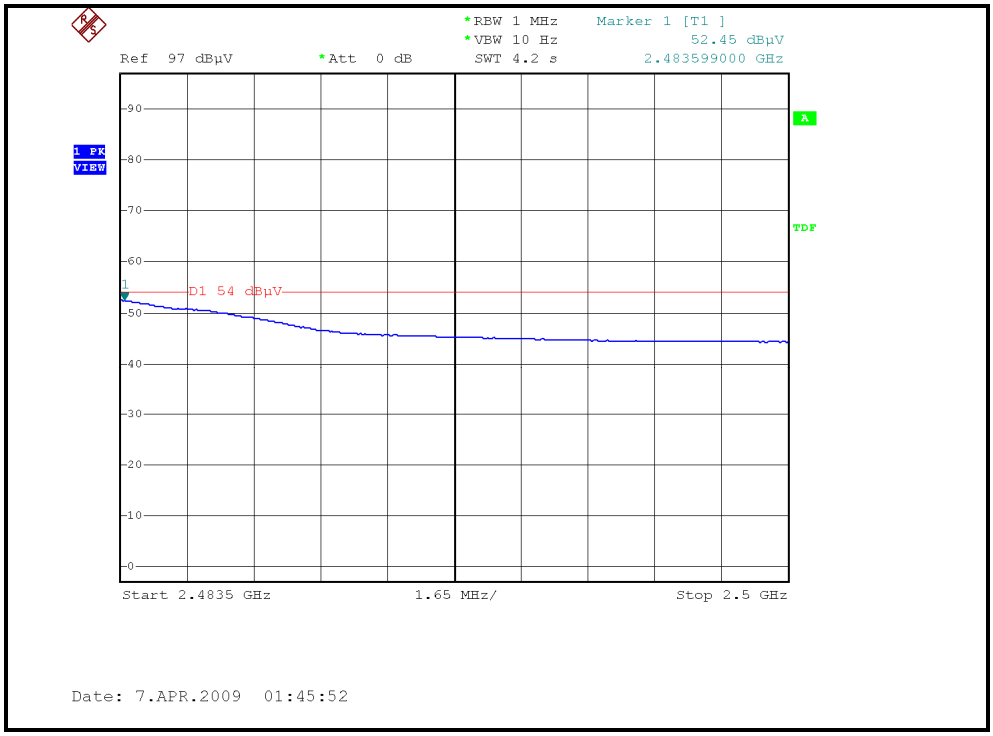
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, HORIZONTAL)





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
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.59 PK	74.00	-10.41	1.34 H	219	33.53	30.06
2	2390.00	46.58 AV	54.00	-7.42	1.34 H	219	16.52	30.06
3	*2422.00	100.99 PK			1.63 H	20	70.80	30.19
4	*2422.00	87.97 AV			1.63 H	20	57.78	30.19
5	4844.00	47.45 PK	74.00	-26.55	1.57 H	249	11.95	35.50
6	4844.00	36.15 AV	54.00	-17.85	1.57 H	249	0.65	35.50
7	7366.00	53.23 PK	74.00	-20.77	1.86 H	65	11.05	42.18
8	7366.00	39.56 AV	54.00	-14.44	1.86 H	65	-2.62	42.18
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	65.83 PK	74.00	-8.17	1.46 V	291	35.77	30.06
2	2390.00	50.63 AV	54.00	-3.37	1.46 V	291	20.57	30.06
3	*2422.00	102.90 PK			1.36 V	289	72.71	30.19
4	*2422.00	90.89 AV			1.36 V	289	60.70	30.19
5	4844.00	44.23 PK	74.00	-29.77	1.42 V	245	8.73	35.50
6	4844.00	35.21 AV	54.00	-18.79	1.42 V	245	-0.29	35.50
7	7366.00	52.24 PK	74.00	-21.76	1.74 V	42	10.06	42.18
8	7366.00	38.23 AV	54.00	-15.77	1.74 V	42	-3.95	42.18

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.98 PK			1.71 H	39	74.74	30.24
2	*2437.00	91.54 AV			1.71 H	39	61.30	30.24
3	4874.00	48.54 PK	74.00	-25.46	1.02 H	258	12.99	35.55
4	4874.00	38.56 AV	54.00	-15.44	1.02 H	258	3.01	35.55
5	7311.00	57.24 PK	74.00	-16.76	1.02 H	326	15.20	42.04
6	7311.00	42.60 AV	54.00	-11.40	1.02 H	326	0.56	42.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.24 PK			1.41 V	300	77.00	30.24
2	*2437.00	94.23 AV			1.41 V	300	63.99	30.24
3	4874.00	47.24 PK	74.00	-26.76	1.25 V	245	11.69	35.55
4	4874.00	38.23 AV	54.00	-15.77	1.25 V	245	2.68	35.55
5	7311.00	54.25 PK	74.00	-19.75	1.32 V	231	12.21	42.04
6	7311.00	40.00 AV	54.00	-14.00	1.32 V	231	-2.04	42.04

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 70%RH 965hPa	TESTED BY	Eric Lee

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	100.45 PK			1.62 H	18	70.15	30.30
2	*2452.00	87.47 AV			1.62 H	18	57.17	30.30
3	2483.50	61.12 PK	74.00	-12.88	1.45 H	213	30.69	30.43
4	2483.50	46.55 AV	54.00	-7.45	1.45 H	213	16.12	30.43
5	4904.00	46.23 PK	74.00	-27.77	1.58 H	65	10.63	35.60
6	4904.00	36.23 AV	54.00	-17.77	1.58 H	65	0.63	35.60
7	7356.00	52.25 PK	74.00	-21.75	1.65 H	95	10.09	42.16
8	7356.00	38.90 AV	54.00	-15.10	1.65 H	95	-3.26	42.16
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	102.00 PK			1.34 V	291	71.70	30.30
2	*2452.00	89.90 AV			1.34 V	291	59.60	30.30
3	2483.50	63.74 PK	74.00	-10.26	1.02 V	23	33.31	30.43
4	2483.50	49.05 AV	54.00	-4.95	1.02 V	23	18.62	30.43
5	4904.00	44.24 PK	74.00	-29.76	1.32 V	23	8.64	35.60
6	4904.00	34.23 AV	54.00	-19.77	1.32 V	23	-1.37	35.60
7	7356.00	51.24 PK	74.00	-22.76	1.89 V	96	9.08	42.16
8	7356.00	37.30 AV	54.00	-16.70	1.89 V	96	-4.86	42.16

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

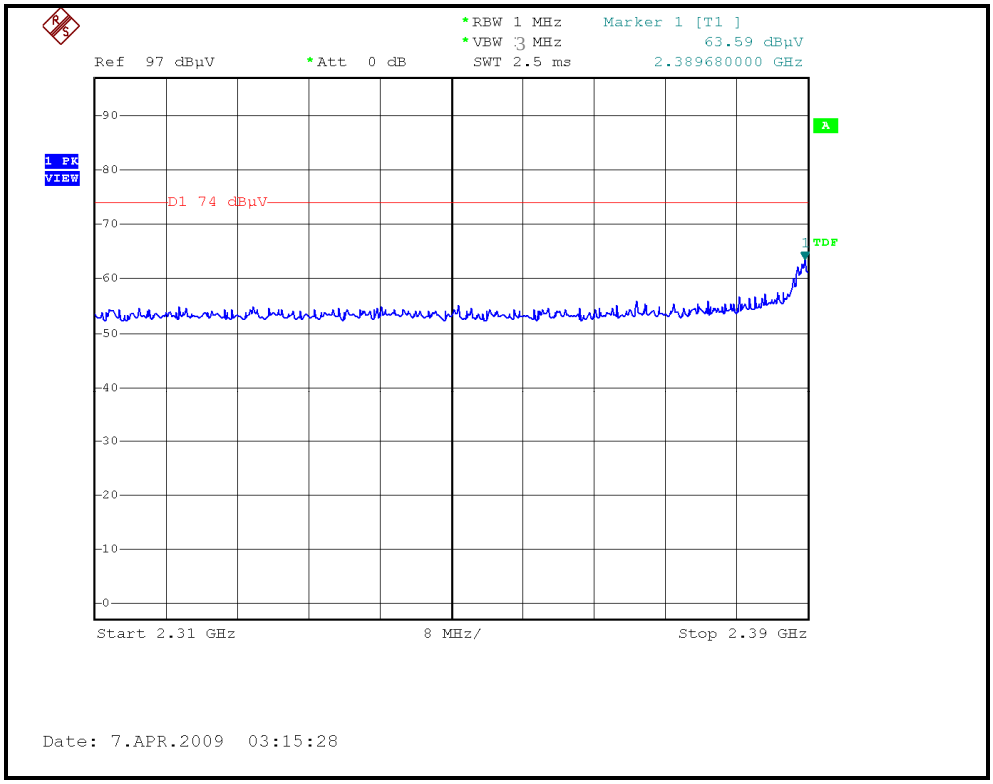
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

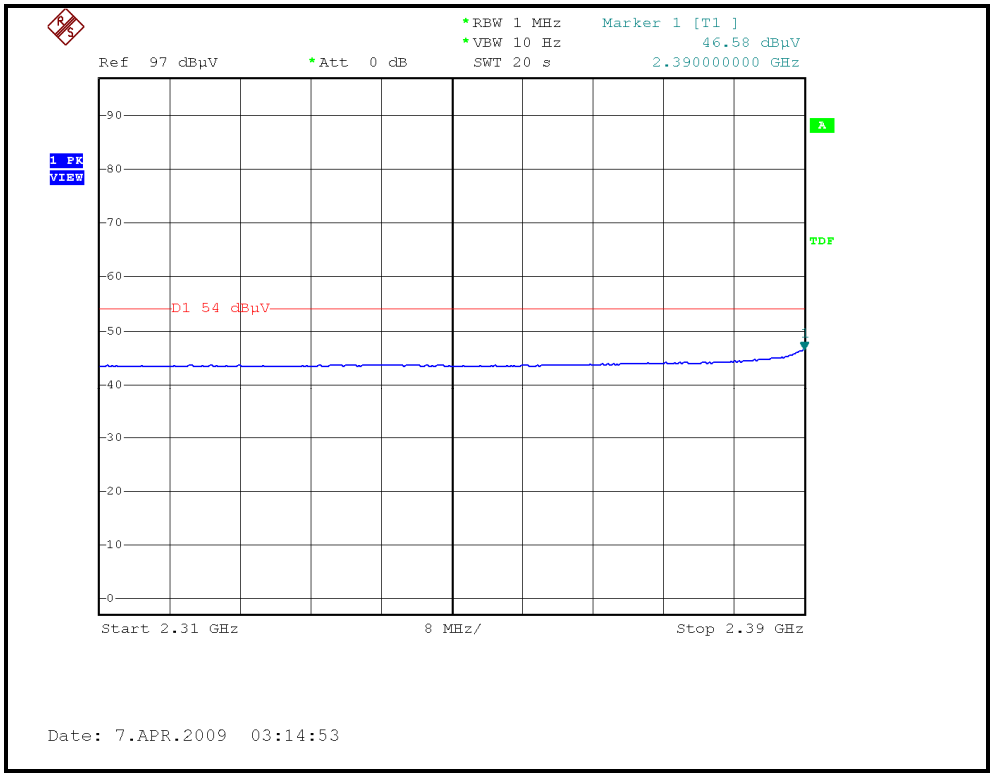
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

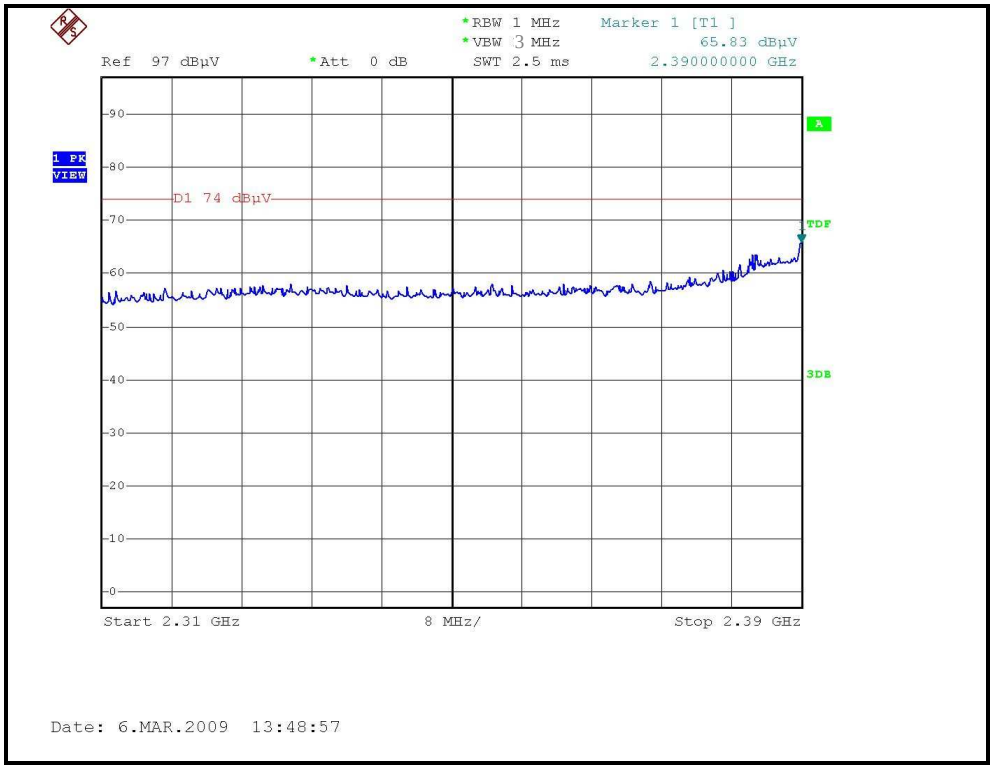
5. " * ": Fundamental frequency.

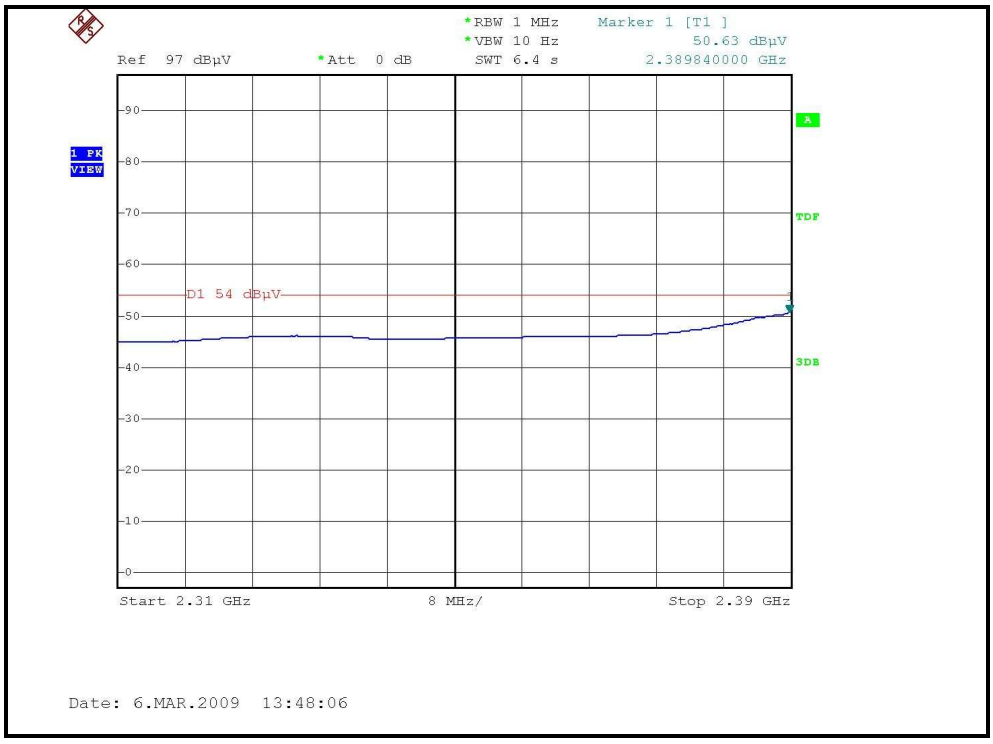
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, HORIZONTAL)



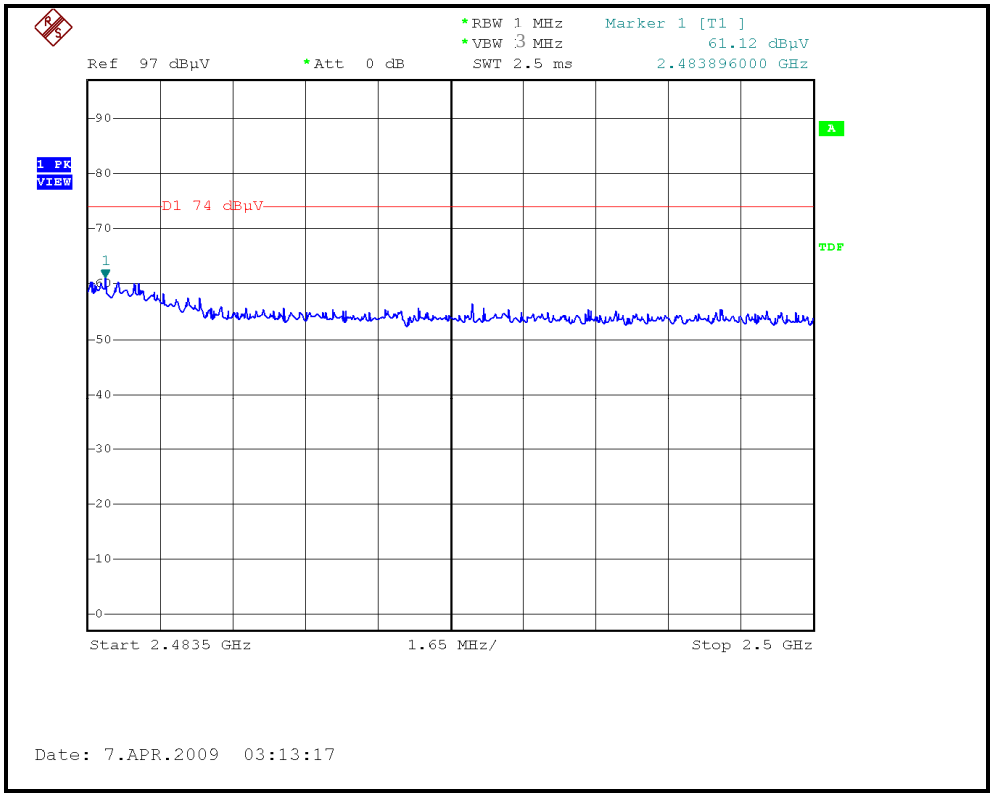


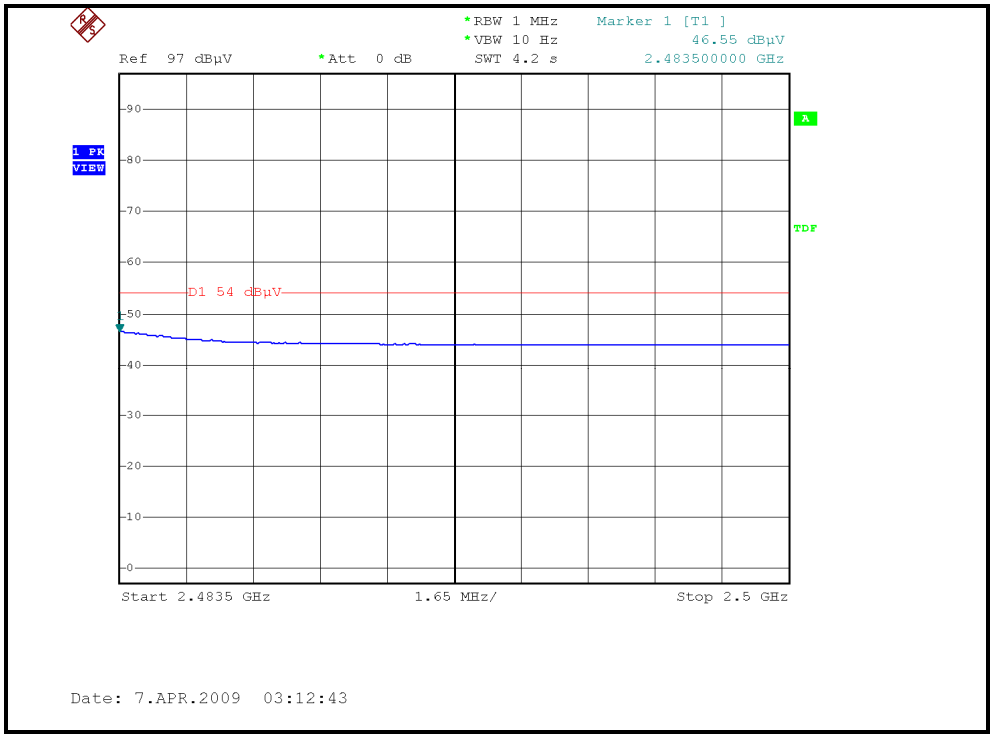
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH1, VERTICAL)



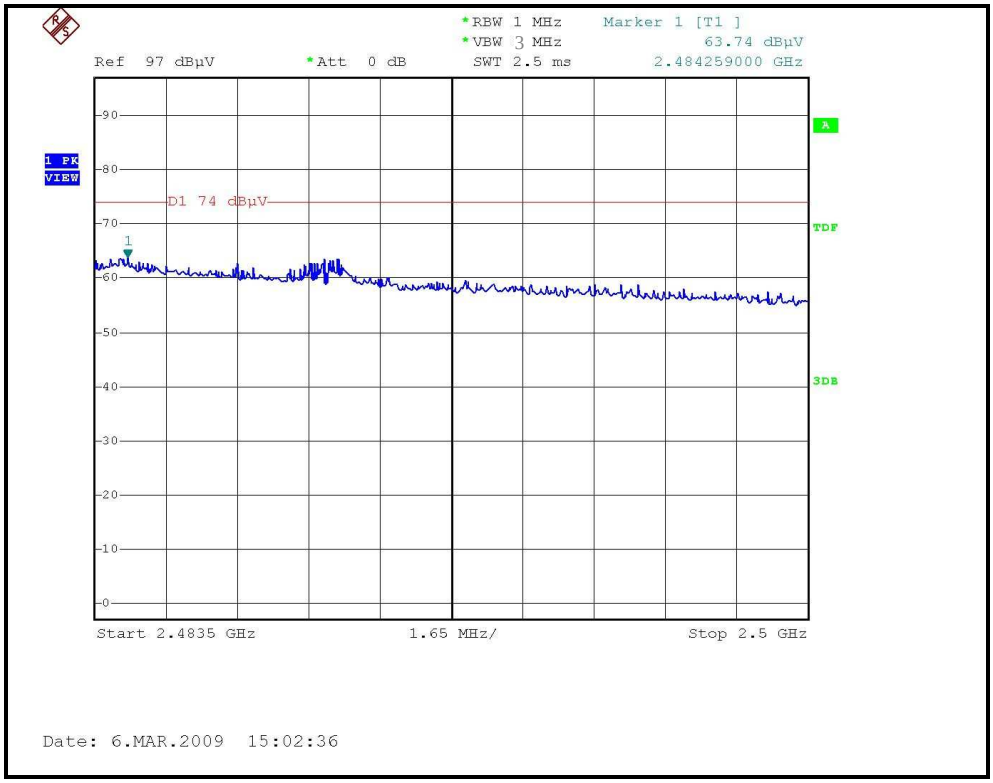


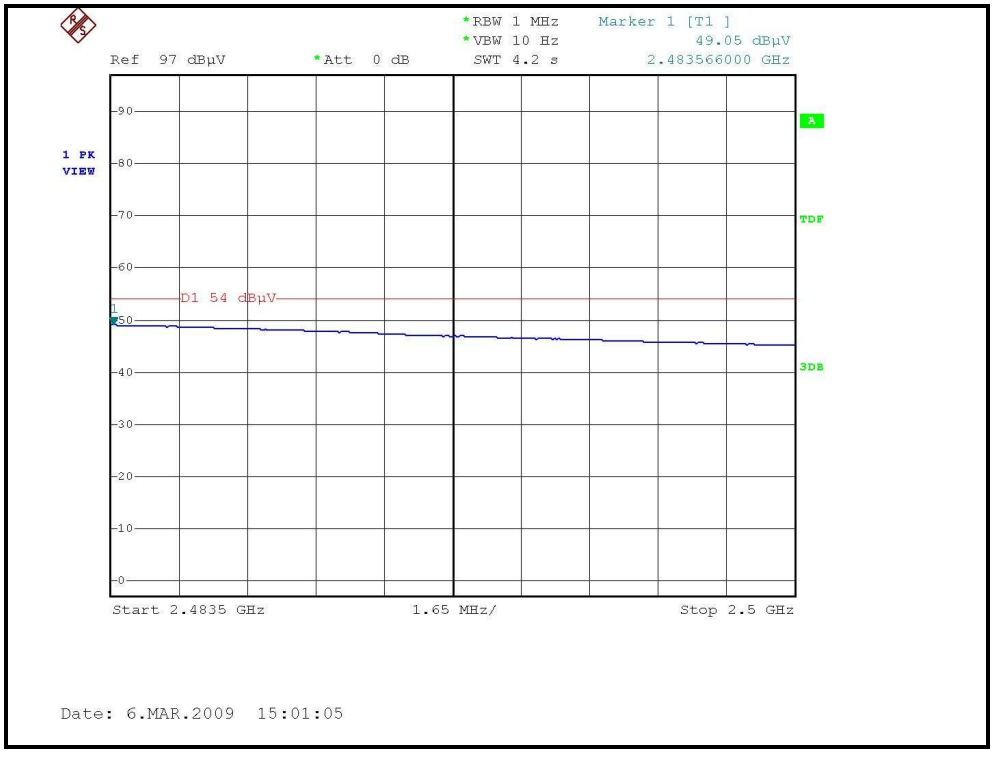
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, HORIZONTAL)





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

NOTE:

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

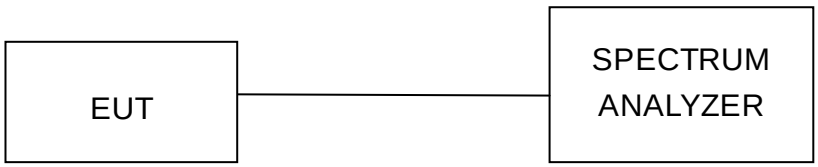
4.3.3 TEST PROCEDURE

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.

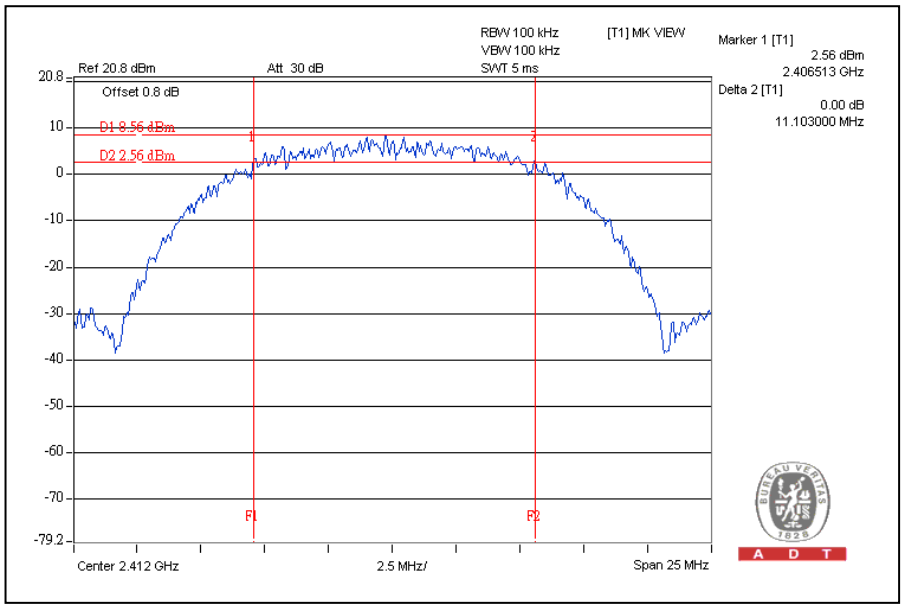
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

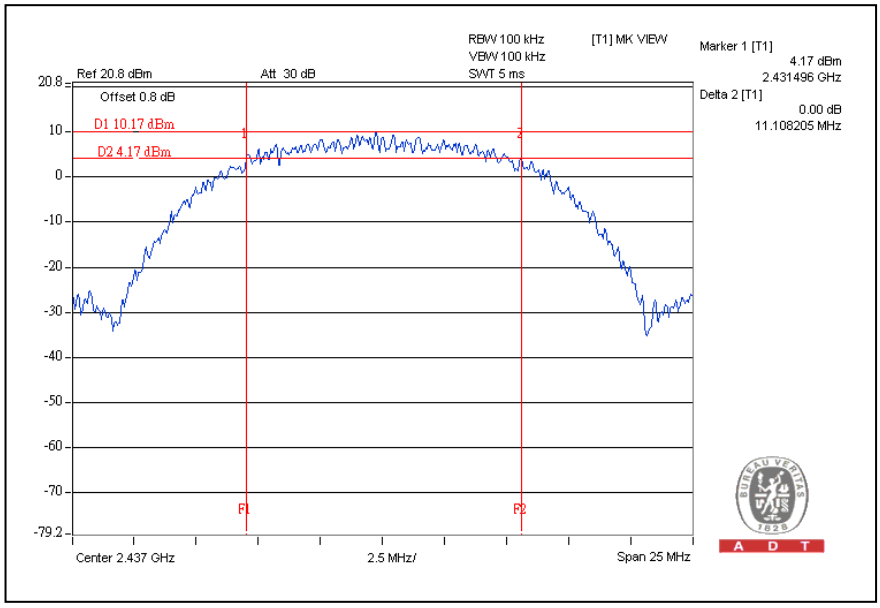
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	11.10	0.5	PASS
6	2437	11.11	0.5	PASS
11	2462	11.10	0.5	PASS

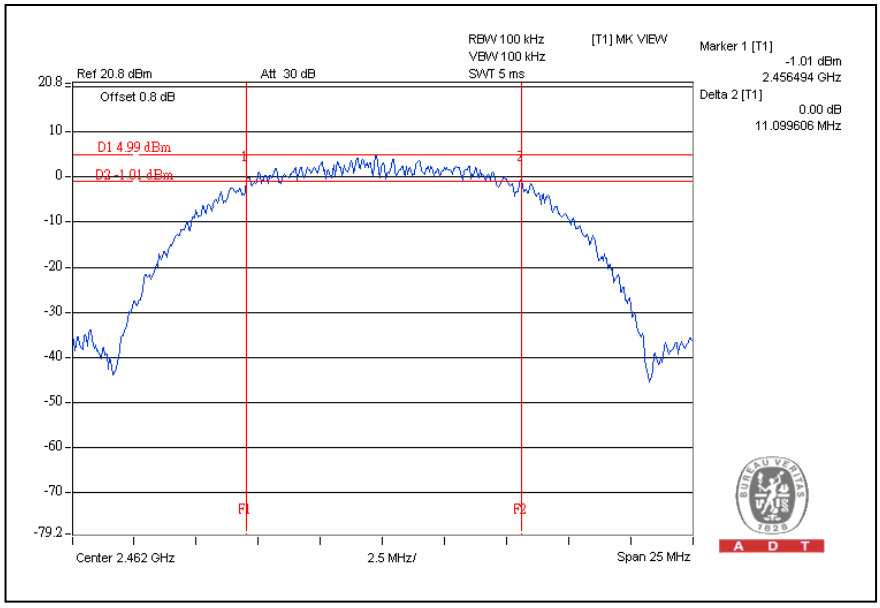
CH1



CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
4.17 dBm
2.431496 GHz
Delta 2 [T1]
0.00 dB
11.108205 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 10.17 dBm
D2 4.17 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

CH11

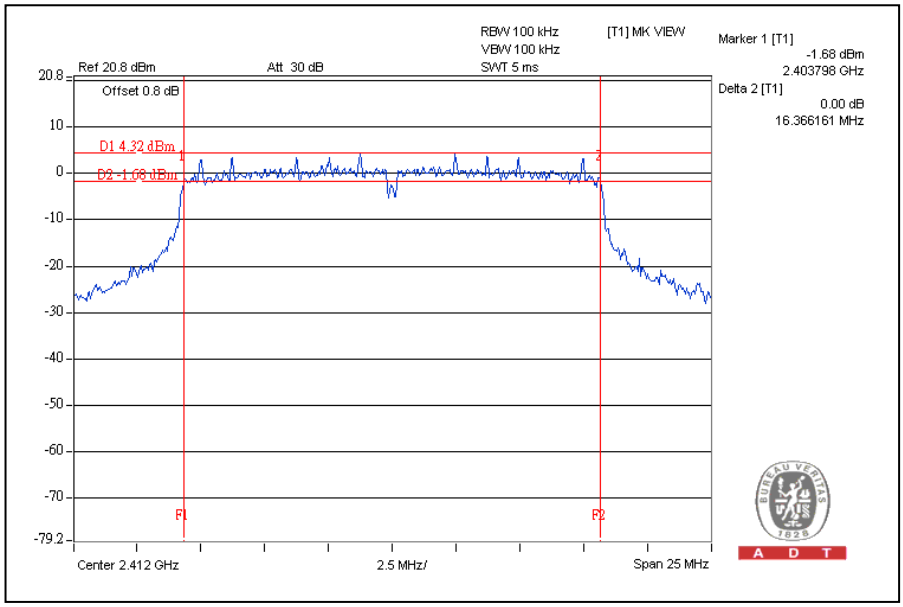

RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-1.01 dBm
2.456494 GHz
Delta 2 [T1]
0.00 dB
11.099606 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 4.99 dBm
D2 -1.01 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

802.11g OFDM MODULATION:

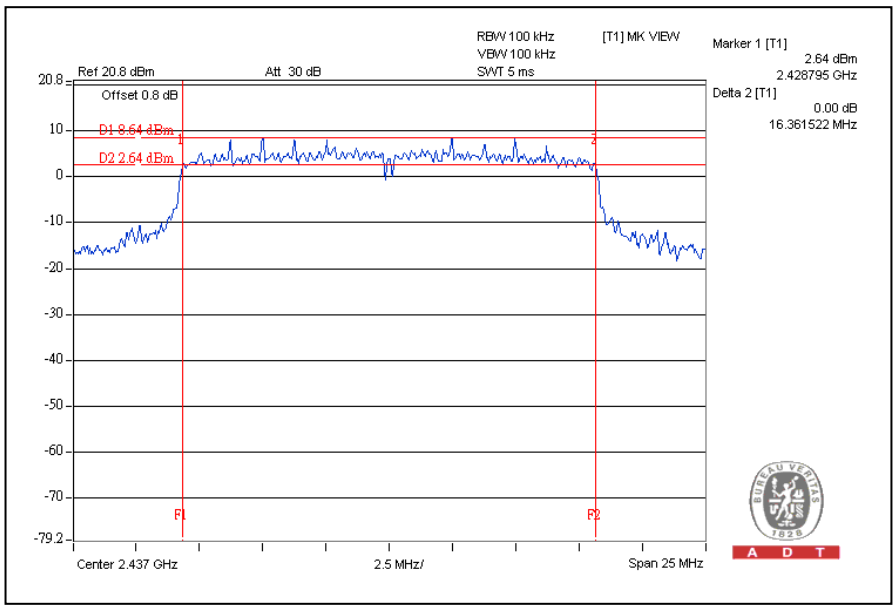
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.37	0.5	PASS
6	2437	16.36	0.5	PASS
11	2462	16.39	0.5	PASS

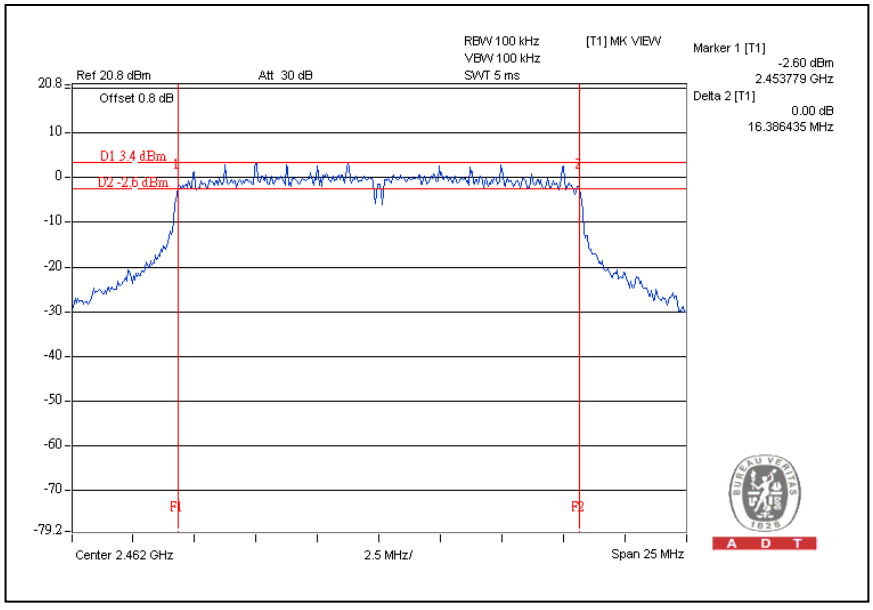
CH1



CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
2.64 dBm
2.428795 GHz
Delta 2 [T1]
0.00 dB
16.361522 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 8.64 dBm
D2 2.64 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

CH11

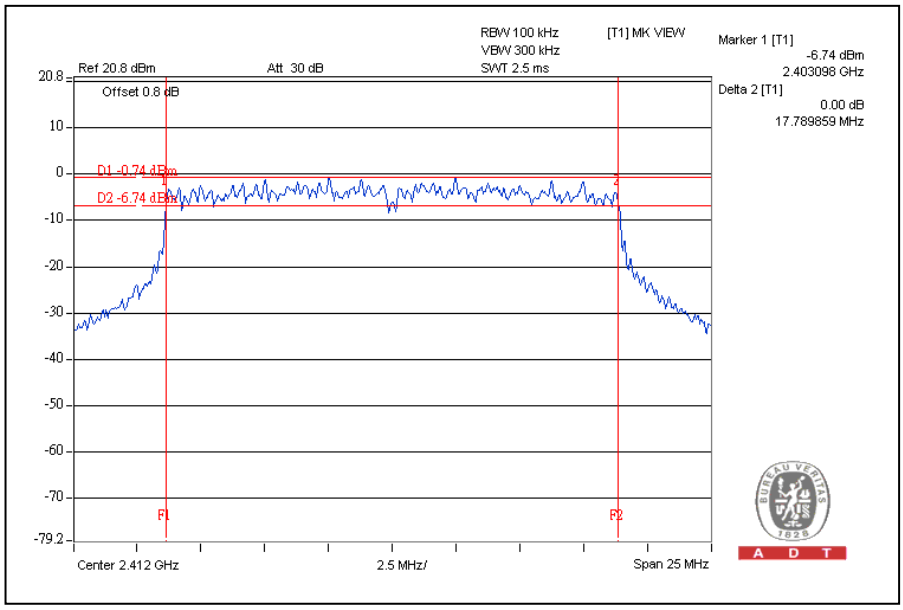

RBW 100 kHz
VBW 100 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.60 dBm
2.453779 GHz
Delta 2 [T1]
0.00 dB
16.386435 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 3.4 dBm
D2 -2.6 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION:

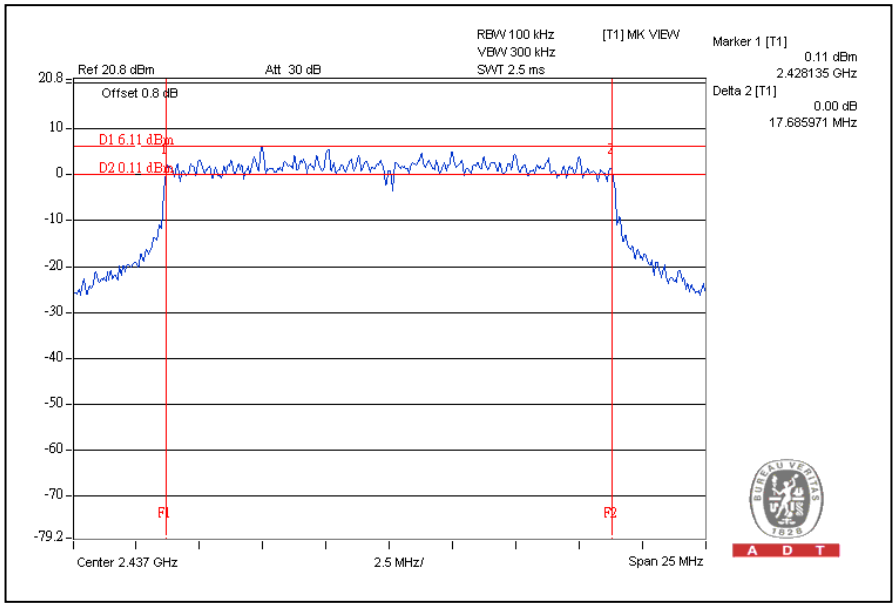
MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 54%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2412	17.79	17.73	0.5	PASS
6	2437	17.69	17.69	0.5	PASS
11	2462	17.70	17.70	0.5	PASS

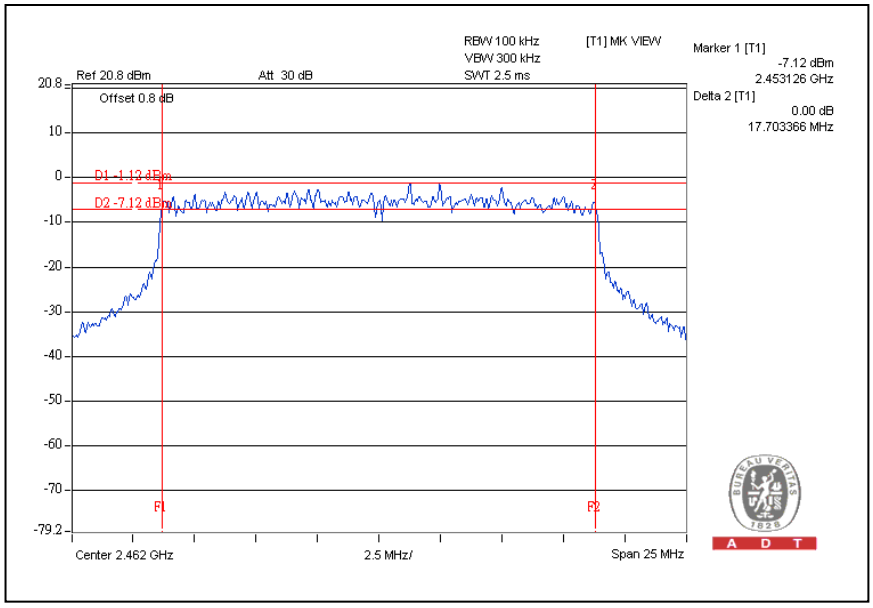
For Chain(0): CH1



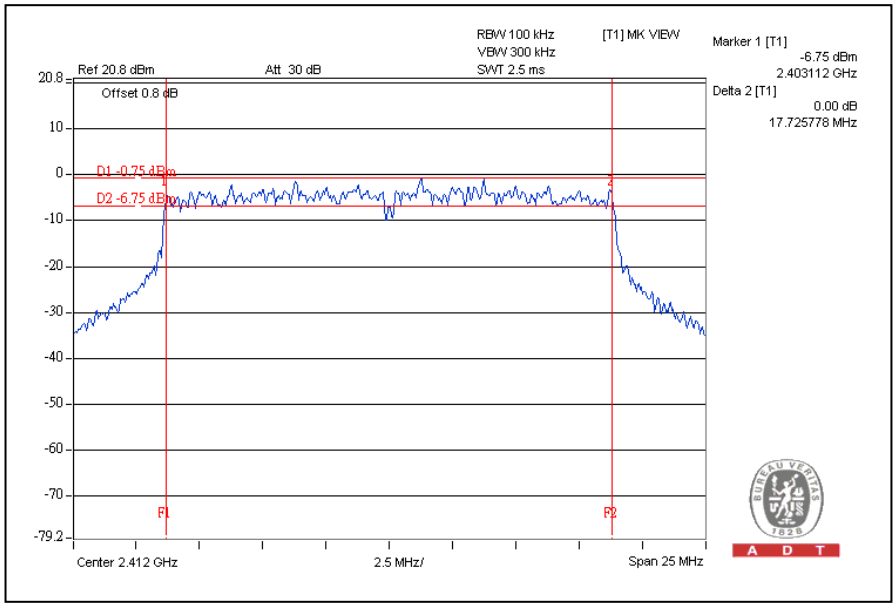
CH6


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
0.11 dBm
2.428135 GHz
Delta 2 [T1]
0.00 dB
17.685971 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 6.11 dBm
D2 0.11 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

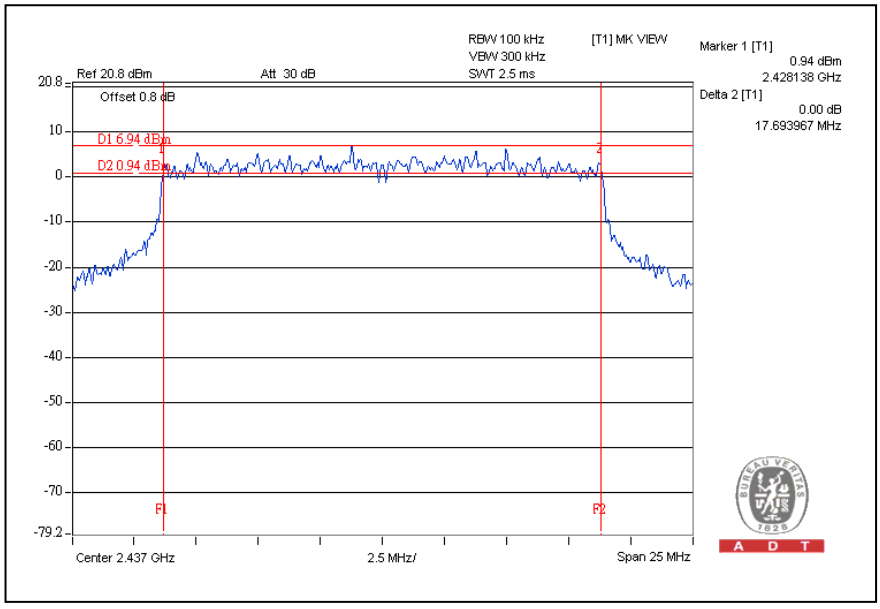
CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.12 dBm
2.453126 GHz
Delta 2 [T1]
0.00 dB
17.703366 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -1.12 dBm
D2 -7.12 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

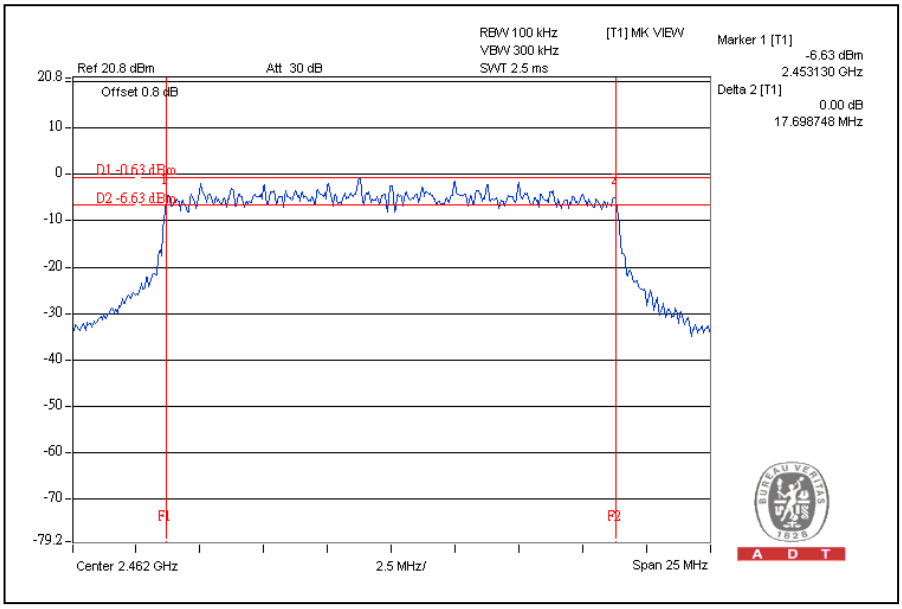
For CHAIN(1): CH1



CH6



CH11

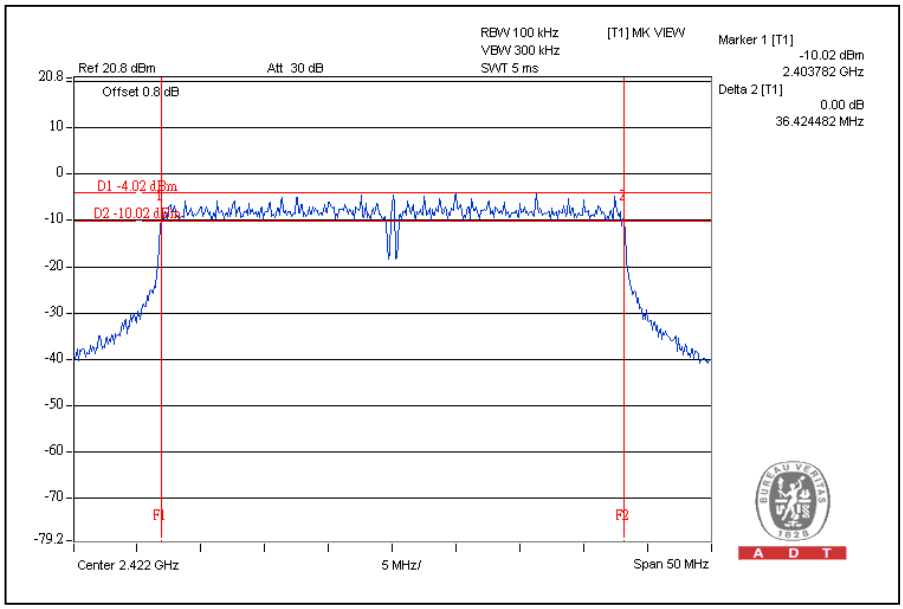

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
[T1] MK VIEW
Marker 1 [T1]
-6.63 dBm
2.453130 GHz
Delta 2 [T1]
0.00 dB
17.698748 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
D1 -0.63 dBm
D2 -6.63 dBm
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION:

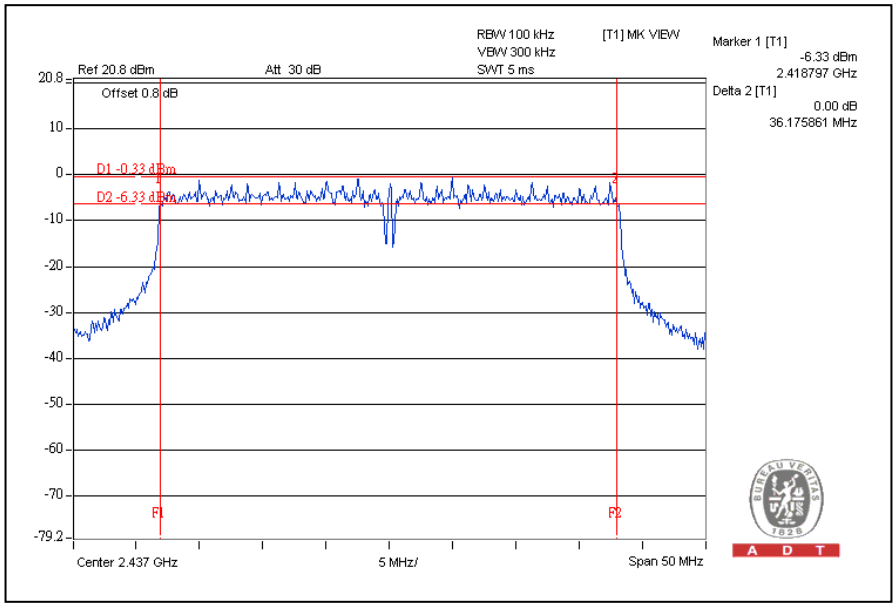
MODULATION TYPE	BPSK	TRANSFER RATE	27Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)		
1	2422	36.42	36.50	0.5	PASS
4	2437	36.18	36.51	0.5	PASS
7	2452	36.42	36.52	0.5	PASS

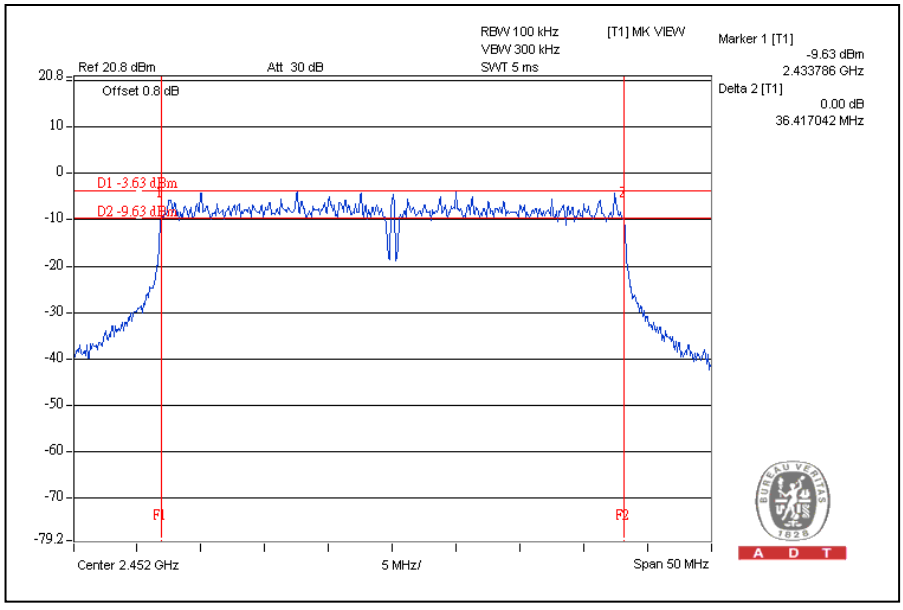
For Chain (0): CH1



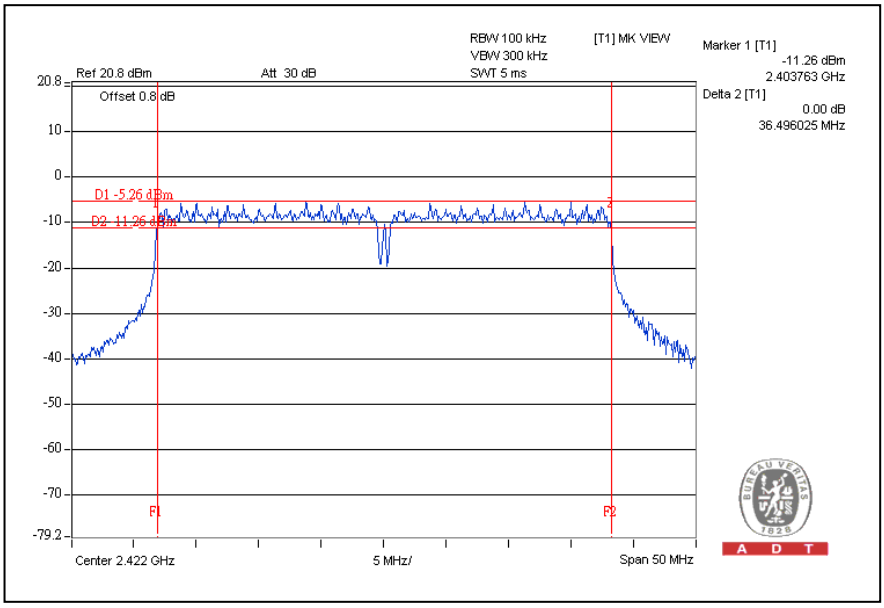
CH4


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-6.33 dBm
2.418797 GHz
Delta 2 [T1]
0.00 dB
36.175861 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -0.33 dBm
D2 -6.33 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.437 GHz
5 MHz/
Span 50 MHz

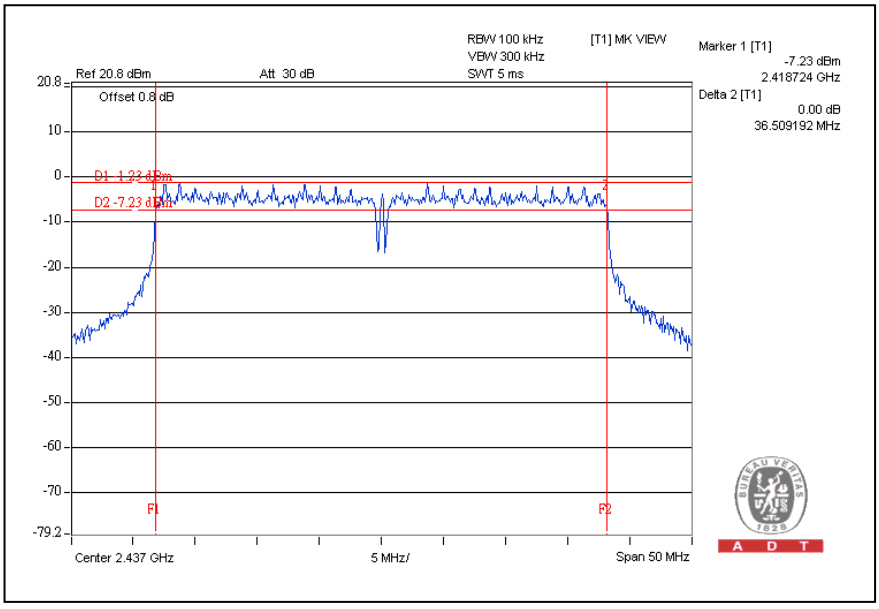
CH7


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-9.63 dBm
2.433786 GHz
Delta 2 [T1]
0.00 dB
36.417042 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -3.63 dBm
D2 -9.63 dBm
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
F1
F2
Center 2.452 GHz
5 MHz/
Span 50 MHz

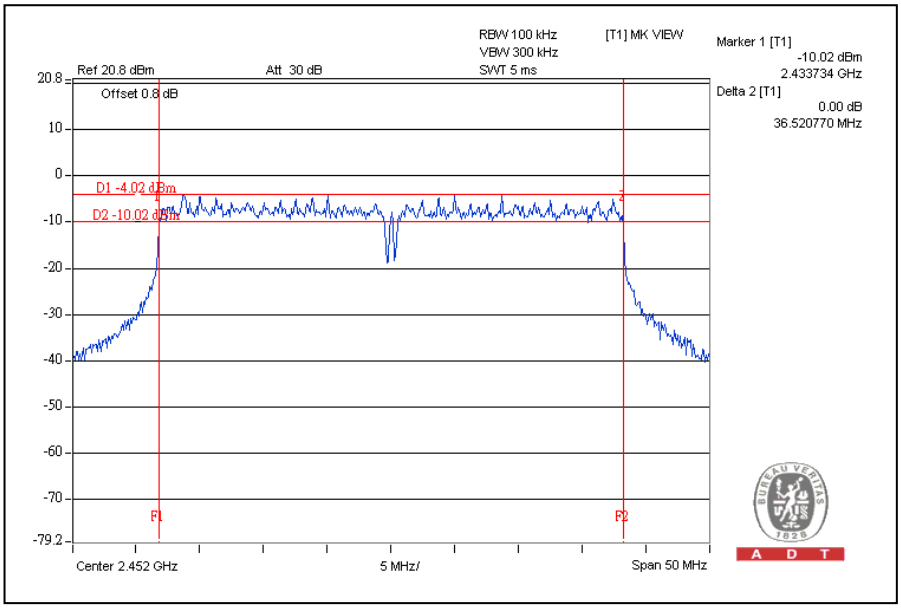
For Chain (1): CH1



CH4



CH7


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-10.02 dBm
2.433734 GHz
Delta 2 [T1]
0.00 dB
36.520770 MHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
D1 -4.02 dBm
D2 -10.02 dBm
F1
F2
Center 2.452 GHz
5 MHz/
Span 50 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 DATE	CALIBRATED UNTIL
Anritsu Power Meter	ML2495A	0824006	June 14, 2008	June 13, 2009
Pulse Power Sensor	MA2411B	0738172	April 17, 2008	April 16, 2009

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

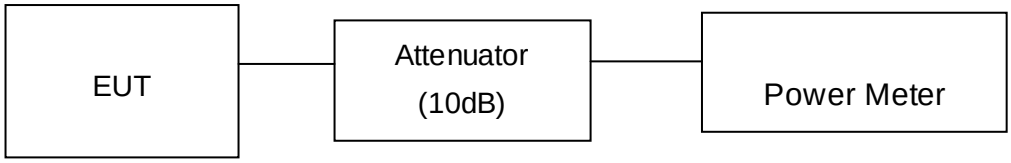
4.4.3 TEST PROCEDURES

1. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.
2. 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	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	116.681	20.67	30	PASS
6	2437	133.045	21.24	30	PASS
11	2462	62.951	17.99	30	PASS

802.11g OFDM MODULATION:

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

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	188.365	22.75	30	PASS
6	2437	193.642	22.87	30	PASS
11	2462	158.489	22.00	30	PASS

DRAFT 802.11n (20MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**TRANSFER RATE**	13Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	75.336	99.541	18.77	19.98	174.877	22.43	30	PASS
6	2437	117.490	128.825	20.70	21.10	246.315	23.91	30	PASS
11	2462	55.976	58.210	17.48	17.65	114.186	20.58	30	PASS

DRAFT 802.11n (40MHz) OFDM MODULATION:

MODULATION TYPE	BPSK	**TRANSFER RATE**	27Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)		PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	38.726	41.976	15.88	16.23	80.702	19.07	30	PASS
4	2437	99.770	123.595	19.99	20.92	223.365	23.49	30	PASS
7	2452	35.892	42.462	15.55	16.28	78.354	18.94	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

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

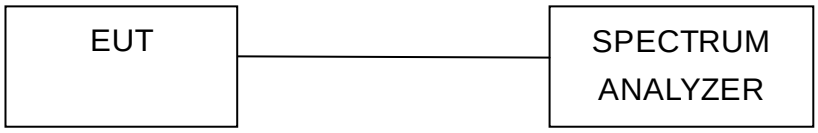
4.5.3 TEST PROCEDURE

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

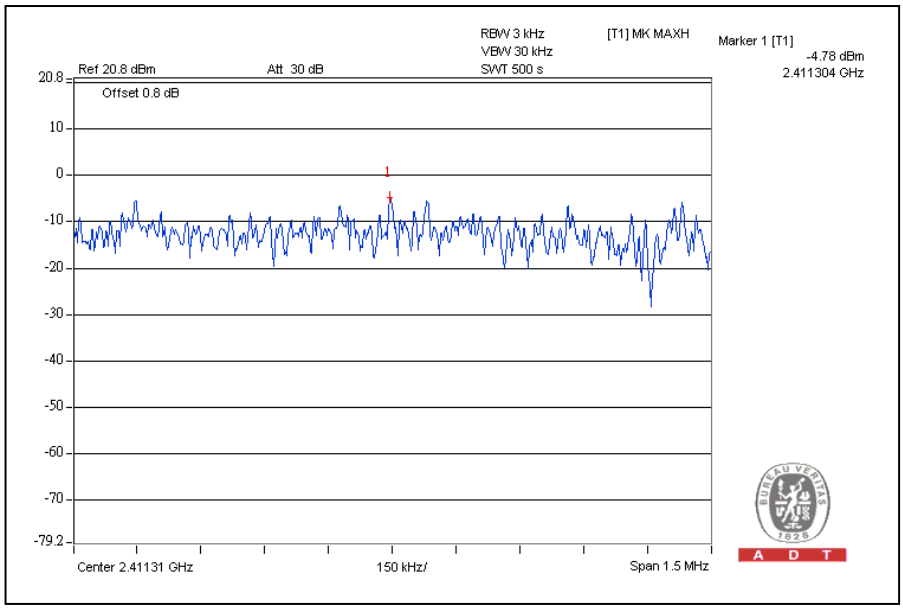
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

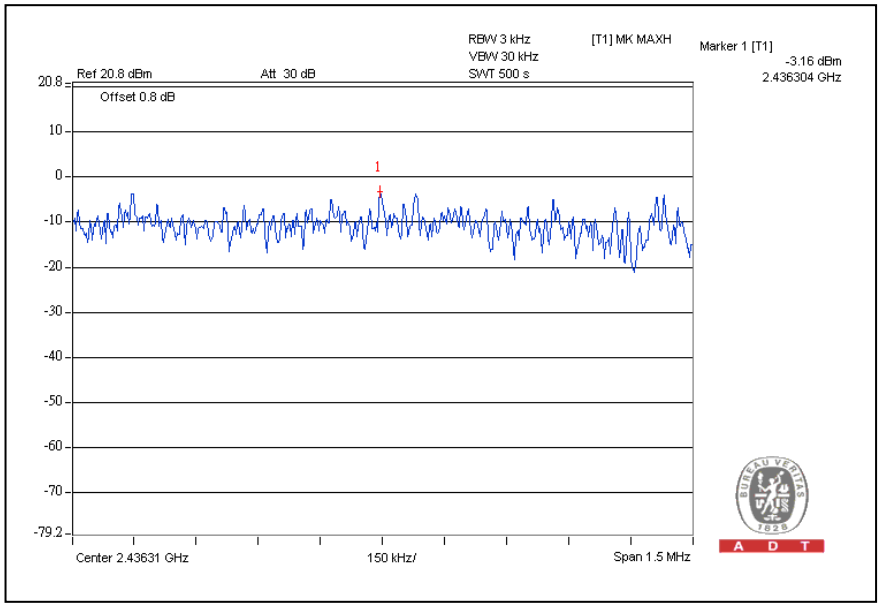
MODULATION TYPE	DBPSK	TRANSFER RATE	1Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-4.78	8	PASS
6	2437	-3.16	8	PASS
11	2462	-8.84	8	PASS

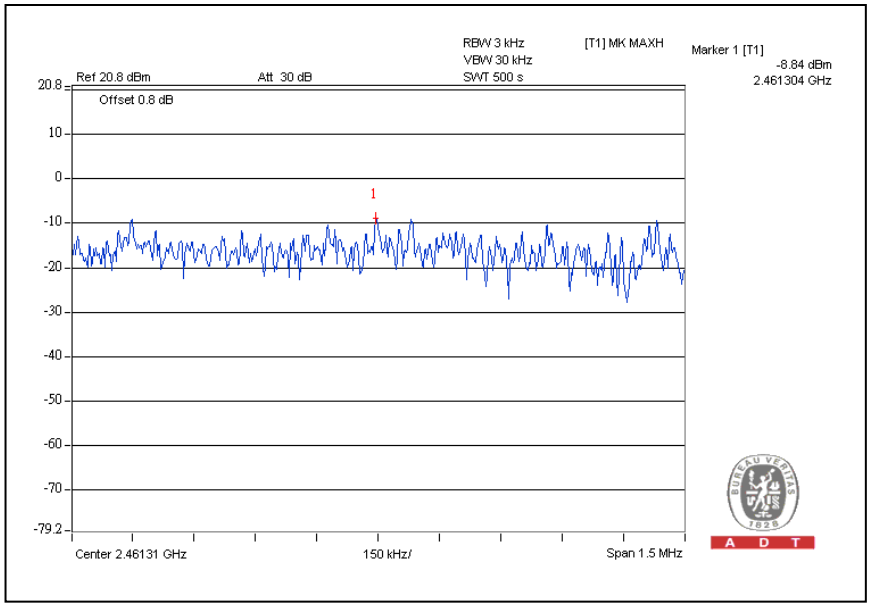
CH1



CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-3.16 dBm
2.436304 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.43631 GHz
150 kHz/
Span 1.5 MHz

CH11

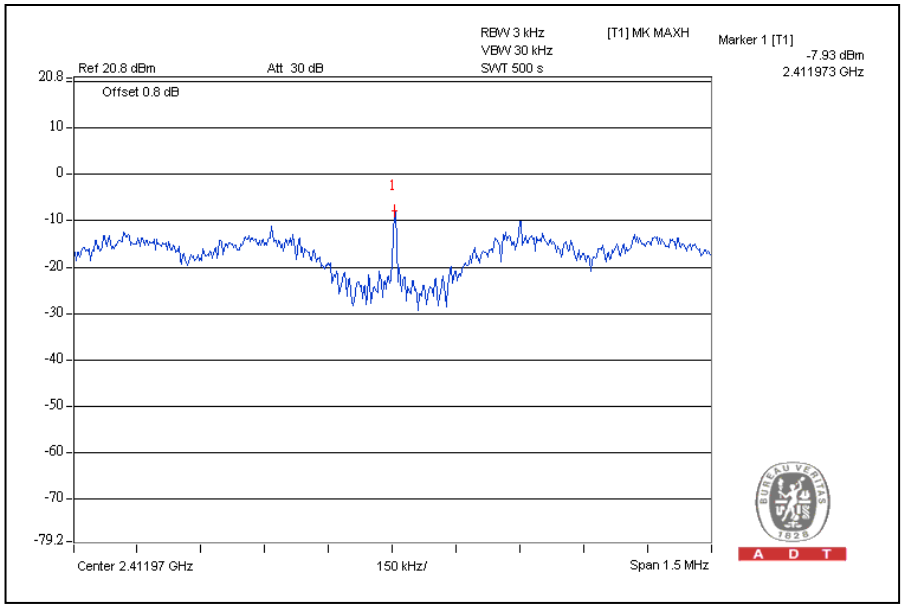

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-8.84 dBm
2.461304 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.46131 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM MODULATION:

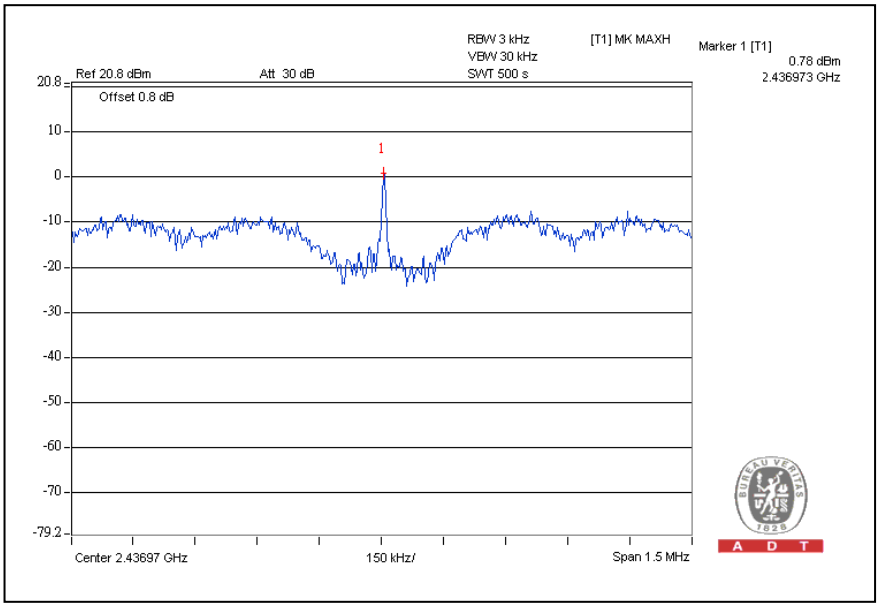
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.93	8	PASS
6	2437	0.78	8	PASS
11	2462	-4.15	8	PASS

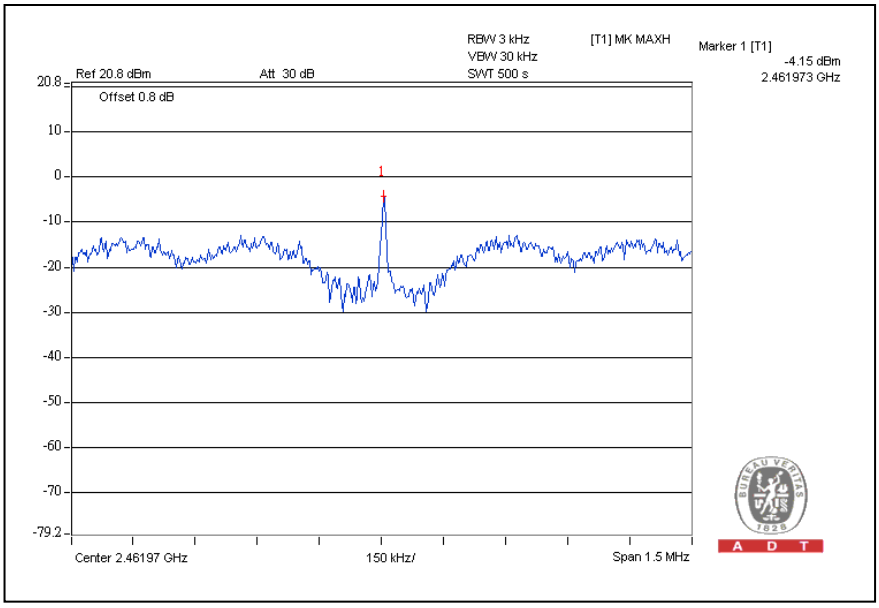
CH1



CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
0.78 dBm
2.436973 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.43697 GHz
150 kHz/
Span 1.5 MHz

CH11

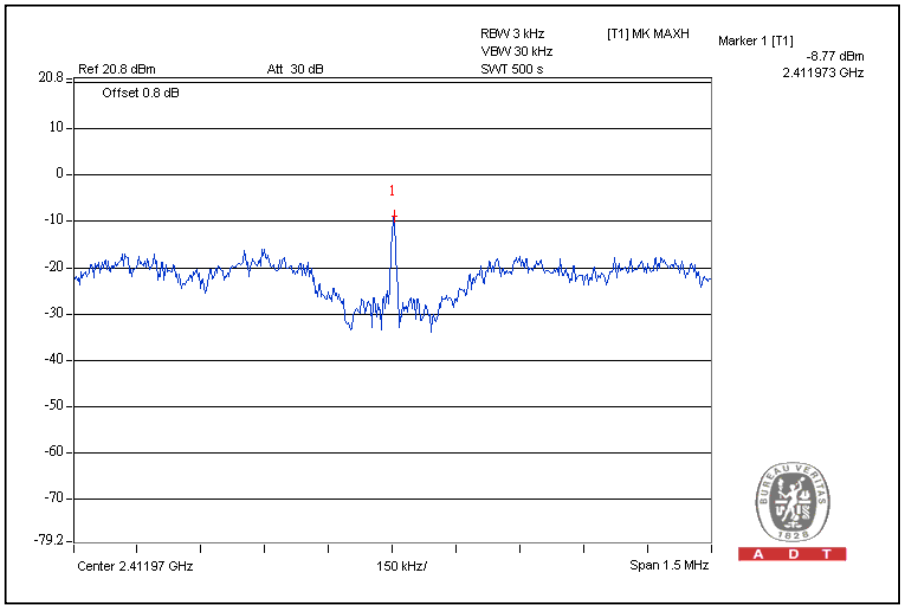

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-4.15 dBm
2.461973 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.46197 GHz
150 kHz/
Span 1.5 MHz

DRAFT 802.11n (20MHz) OFDM MODULATION:

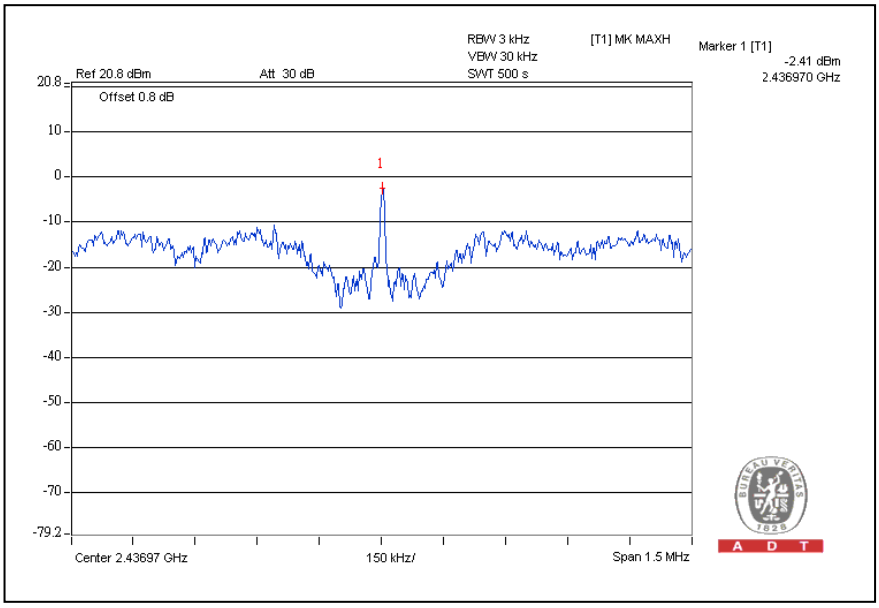
MODULATION TYPE	BPSK	TRANSFER RATE	13Mbps
INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25 deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2412	0.133	0.079	-8.77	-11.02	0.212	-6.74	8	PASS
6	2437	0.574	0.869	-2.41	-0.61	1.443	1.59	8	PASS
11	2462	0.152	0.307	-8.18	-5.13	0.459	-3.38	8	PASS

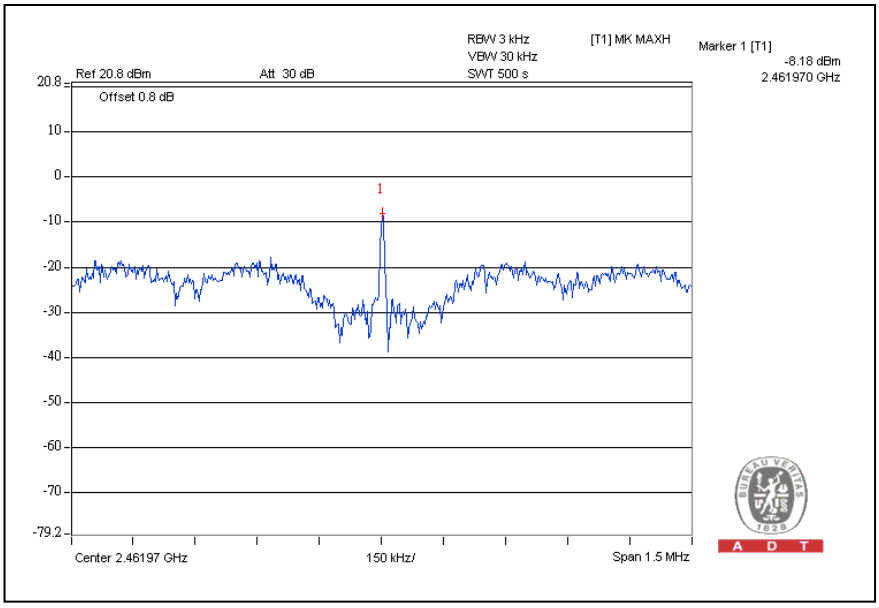
For Chain(0): CH1



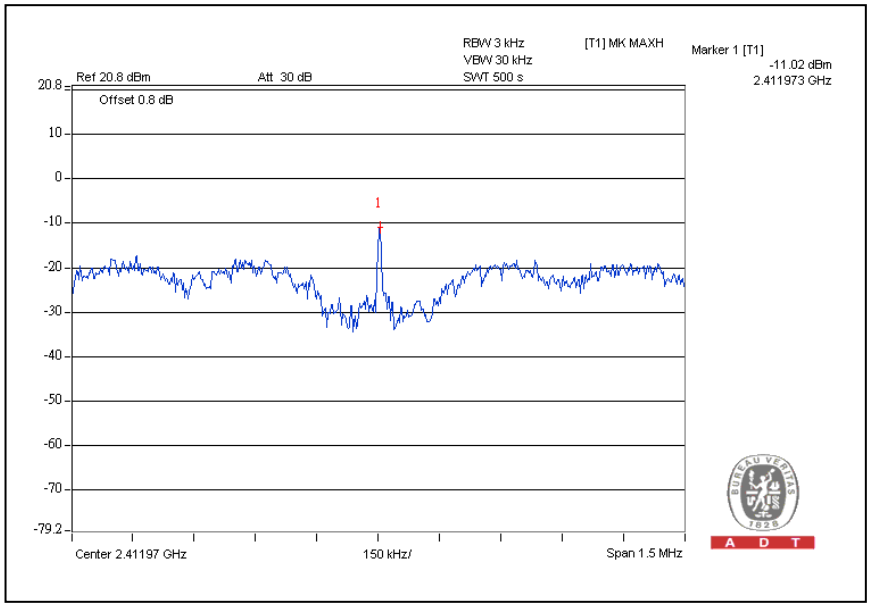
CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-2.41 dBm
2.436970 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.43697 GHz
150 kHz/
Span 1.5 MHz

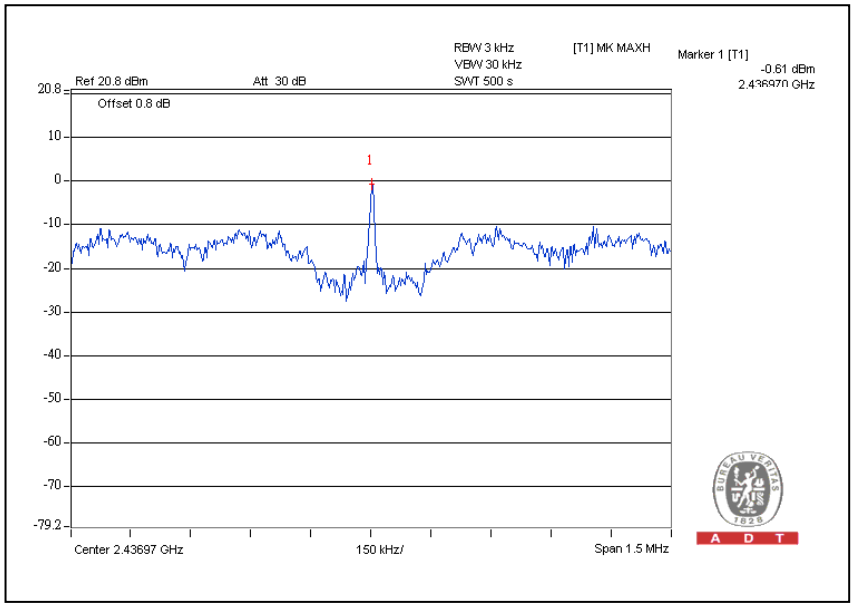
CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-8.18 dBm
2.461970 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.46197 GHz
150 kHz/
Span 1.5 MHz

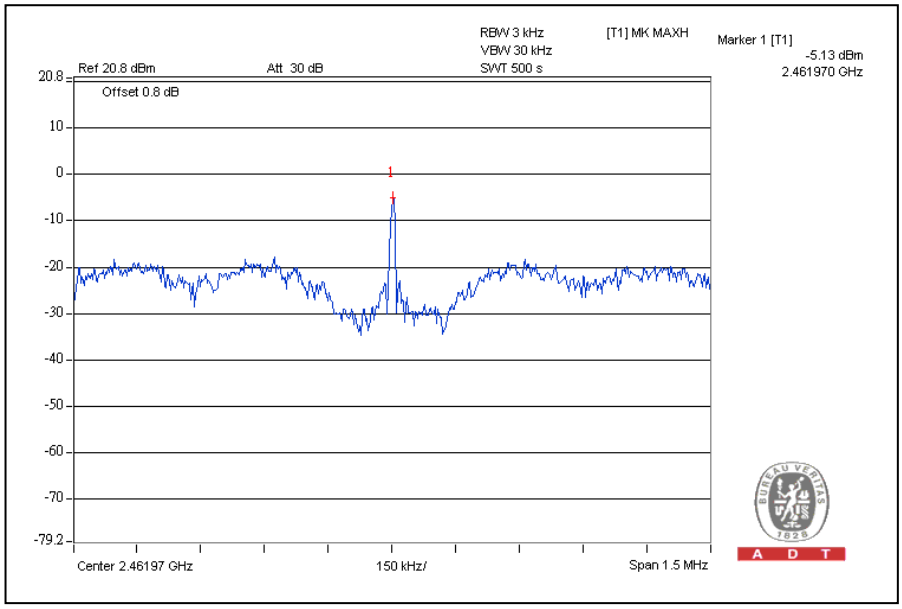
For Chain (1): CH1



CH6



CH11

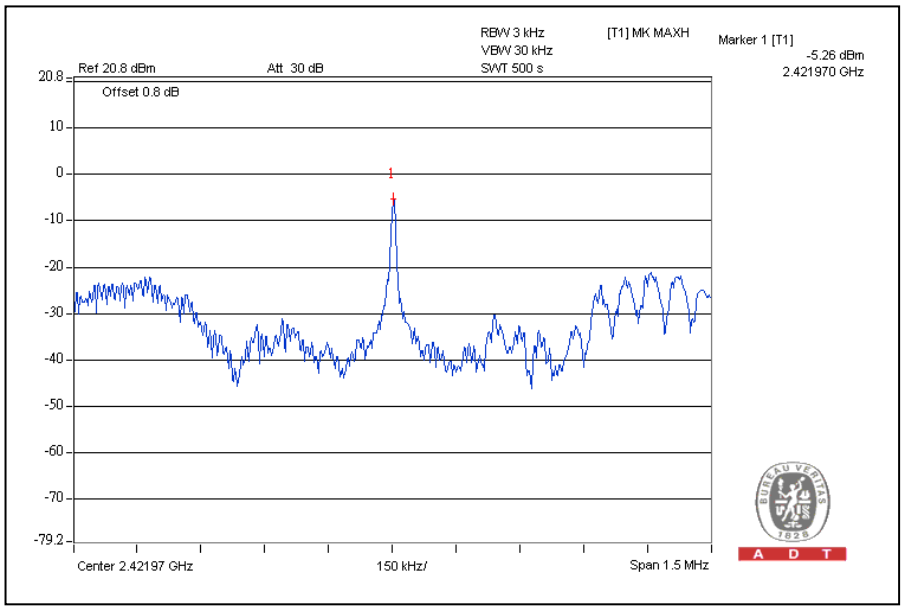

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-5.13 dBm
2.461970 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.46197 GHz
150 kHz/
Span 1.5 MHz

DRAFT 802.11n (40MHz) OFDM MODULATION:

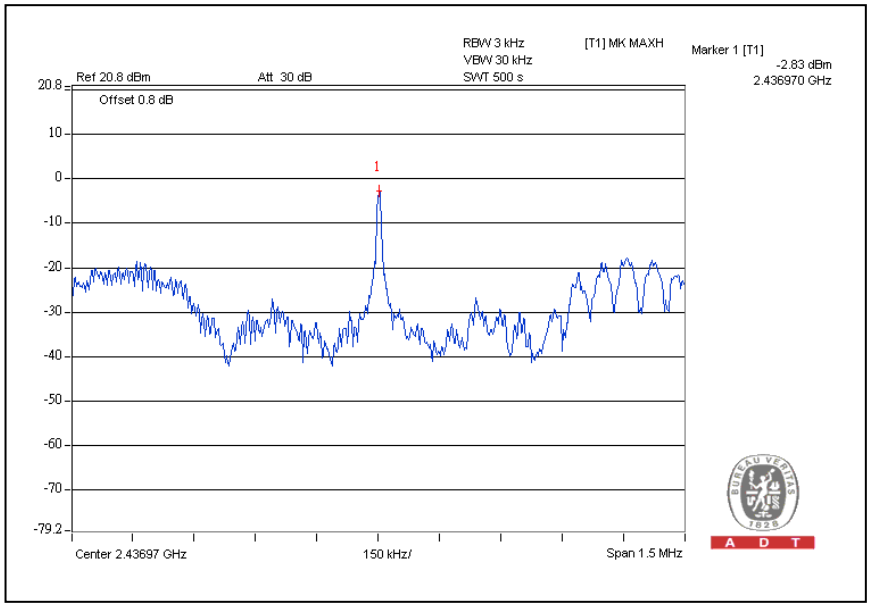
MODULATION TYPE	BPSK	**TRANSFER RATE**	27Mbps
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg.C, 60%RH, 965hPa
TESTED BY	Phoenix Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (mW)		RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (mW)	TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(0)	CHAIN(1)				
1	2422	0.298	0.071	-5.26	-11.49	0.369	-4.33	8	PASS
4	2437	0.521	0.319	-2.83	-4.96	0.840	-0.76	8	PASS
7	2452	0.302	0.117	-5.20	-9.32	0.419	-3.78	8	PASS

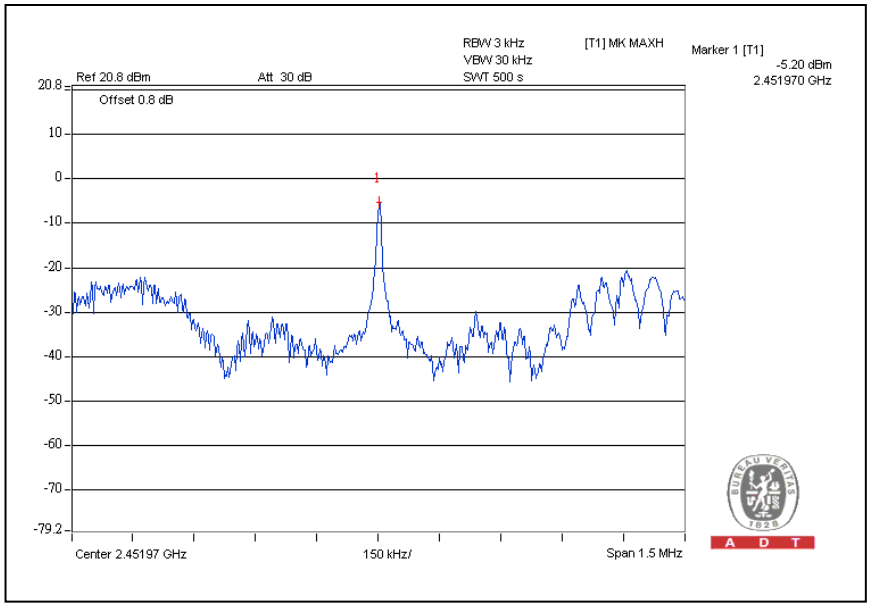
For Chain (0): CH1



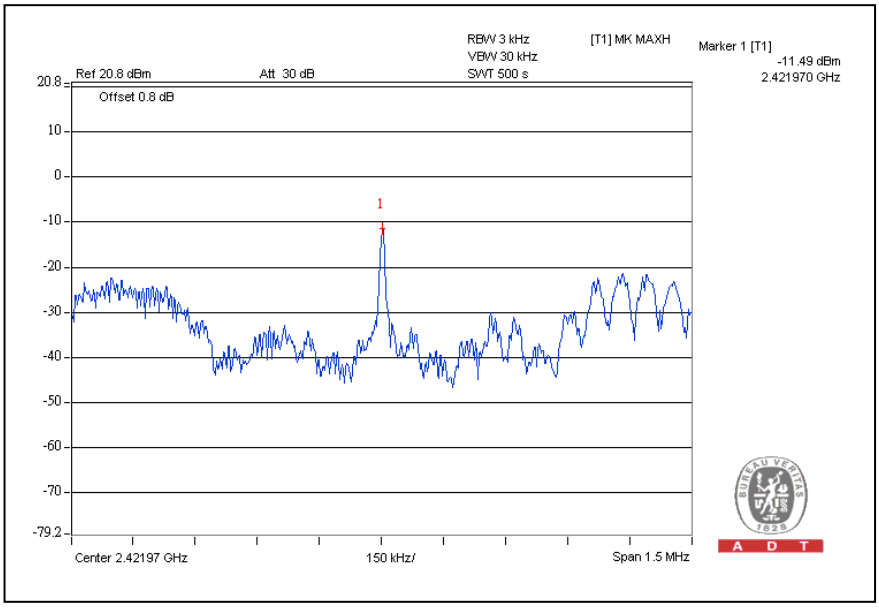
CH4


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-2.83 dBm
2.436970 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.43697 GHz
150 kHz/
Span 1.5 MHz

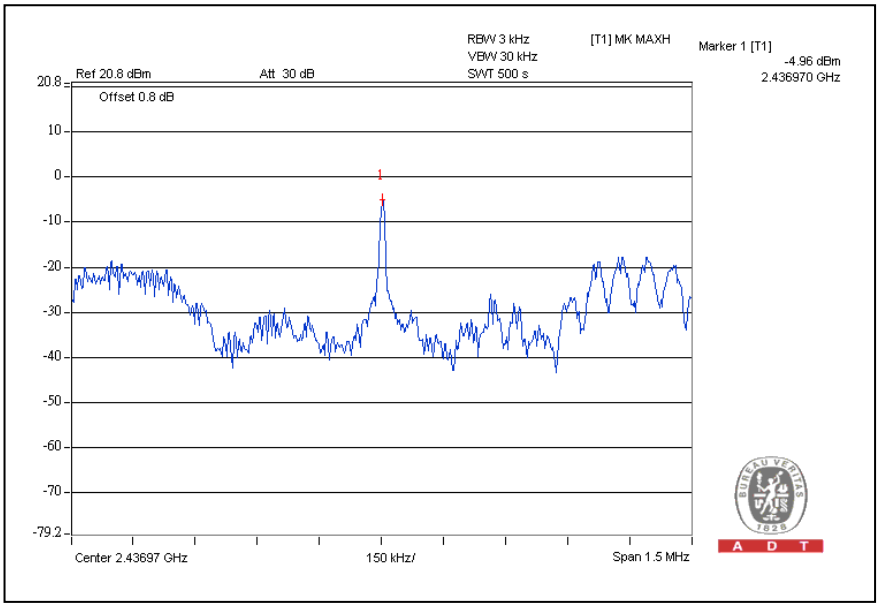
CH7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-5.20 dBm
2.451970 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Center 2.45197 GHz
150 kHz/
Span 1.5 MHz

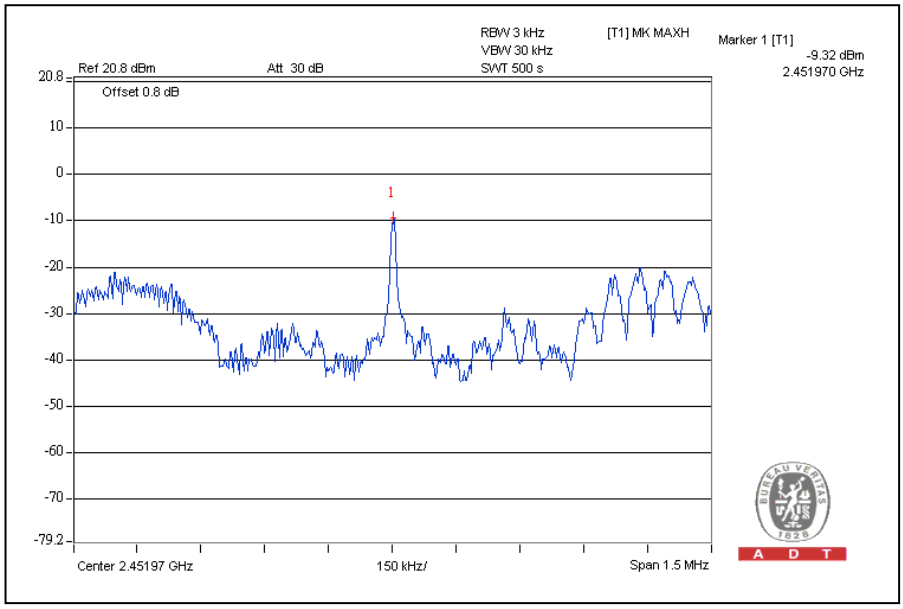
For Chain (1): CH1



CH4



CH7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-9.32 dBm
2.451970 GHz
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
1
Center 2.45197 GHz
150 kHz/
Span 1.5 MHz

4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

NOTE:

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

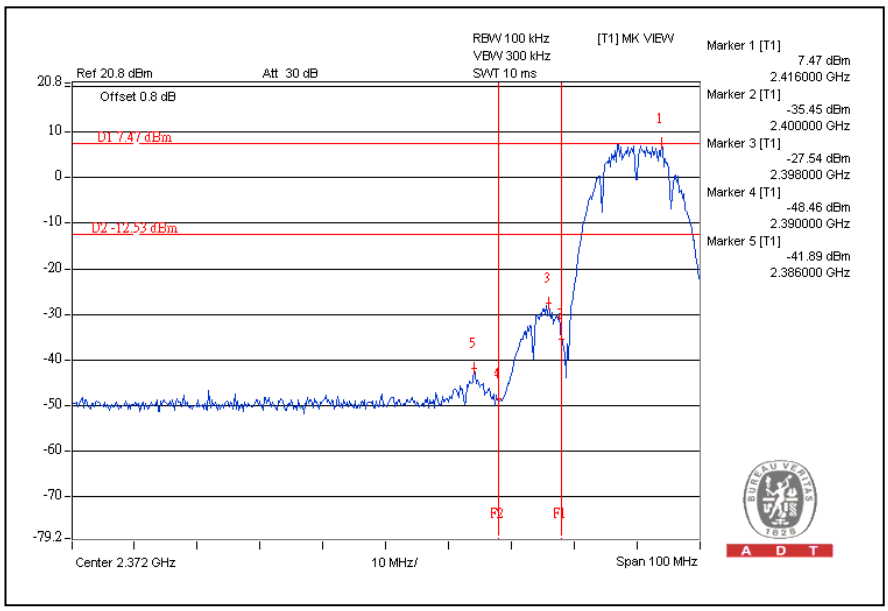
Same as Item 4.3.6

4.6.6 TEST RESULTS

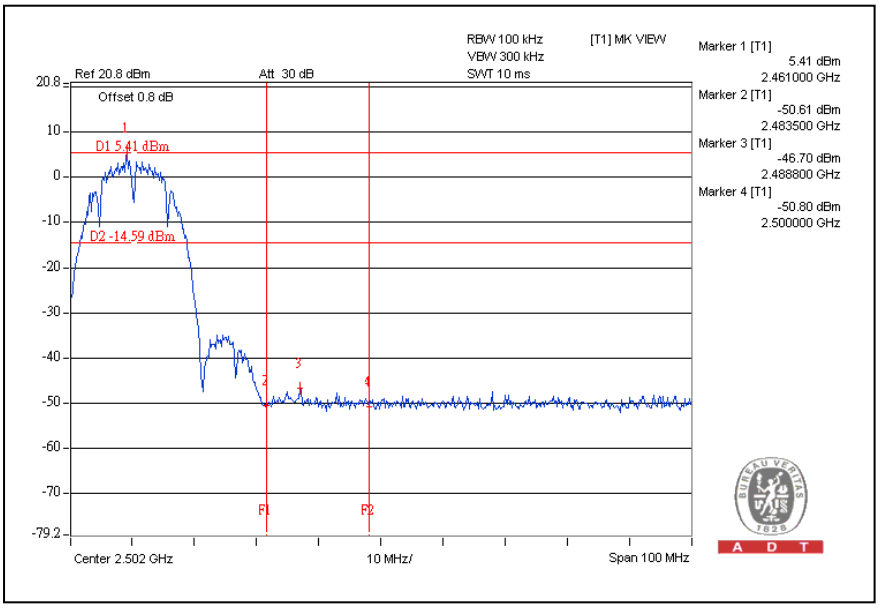
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

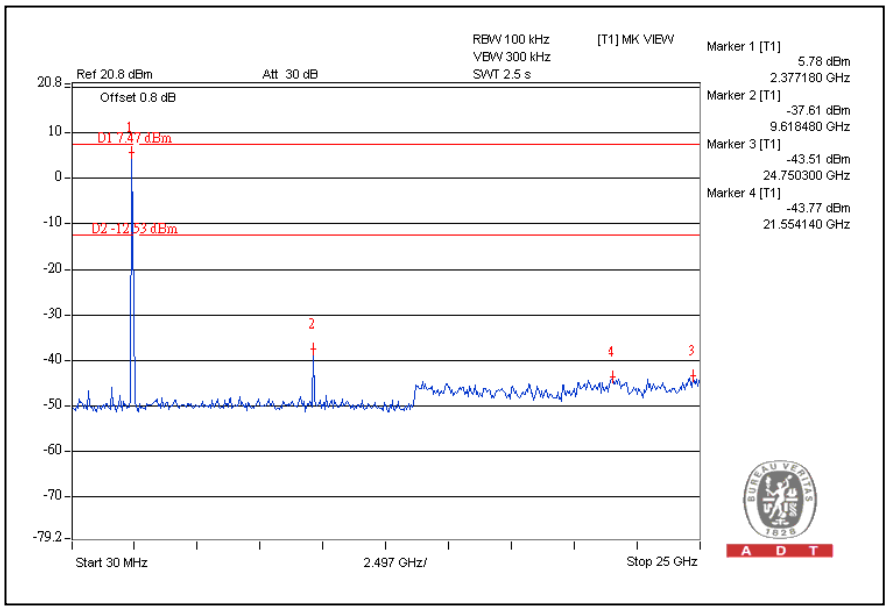
CH1



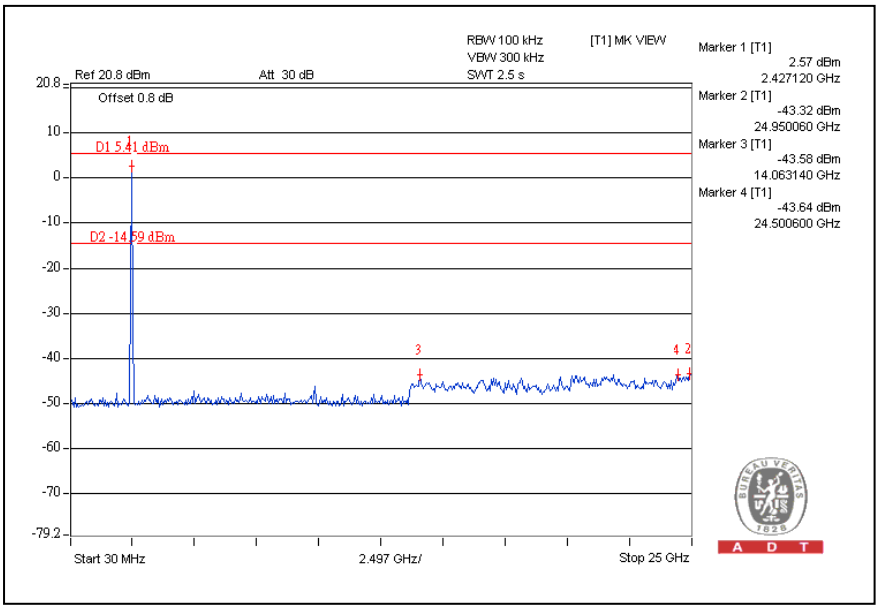
CH11



CH1

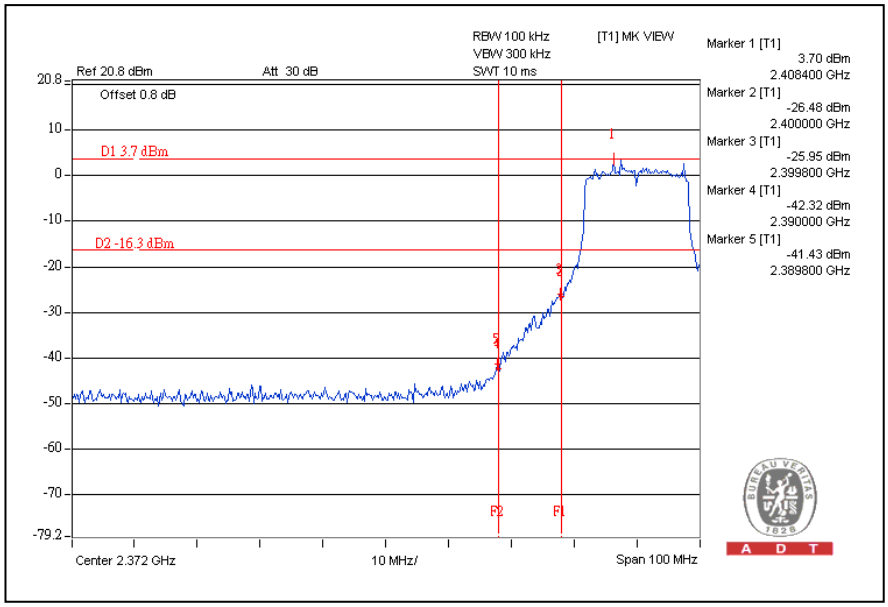

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 7.47 dBm
D2 -12.53 dBm
Marker 1 [T1]
5.78 dBm
2.377180 GHz
Marker 2 [T1]
-37.61 dBm
9.618480 GHz
Marker 3 [T1]
-43.51 dBm
24.750300 GHz
Marker 4 [T1]
-43.77 dBm
21.554140 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

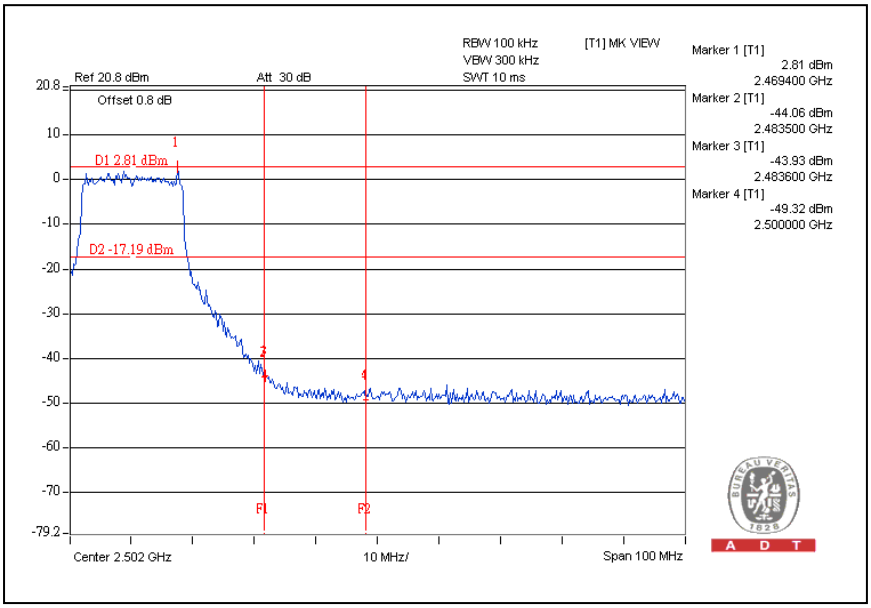

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 5.41 dBm
D2 -14.59 dBm
Marker 1 [T1]
2.57 dBm
2.427120 GHz
Marker 2 [T1]
-43.32 dBm
24.950060 GHz
Marker 3 [T1]
-43.58 dBm
14.063140 GHz
Marker 4 [T1]
-43.64 dBm
24.500600 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION:

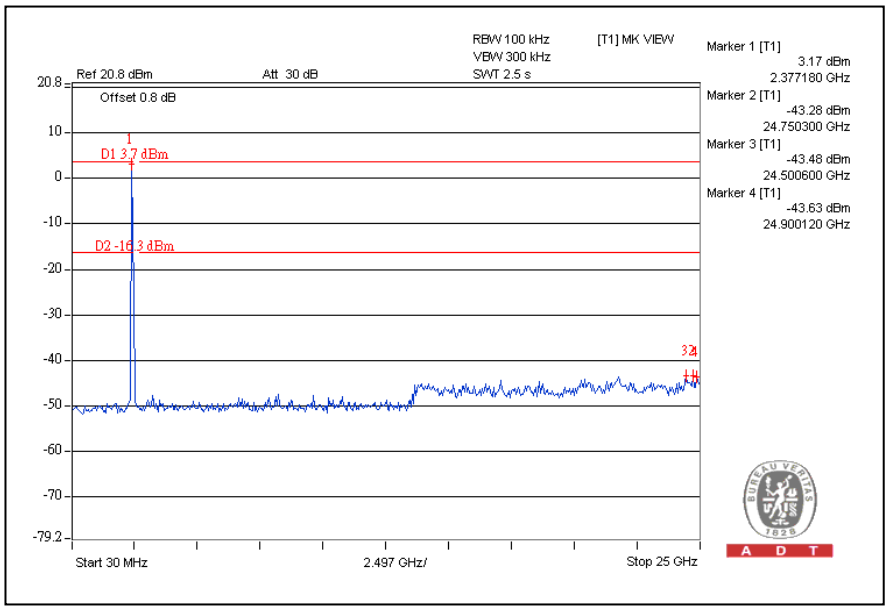
CH1



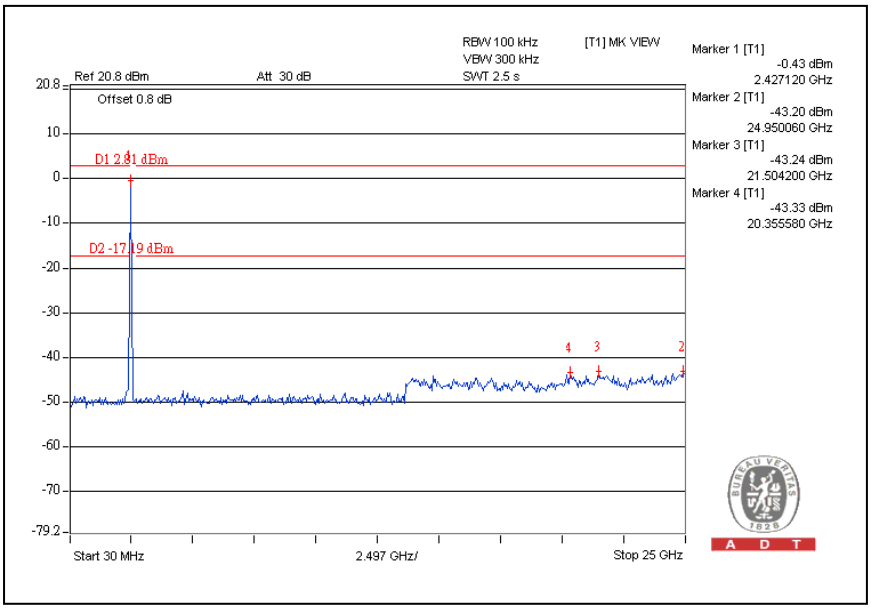
CH11



CH1

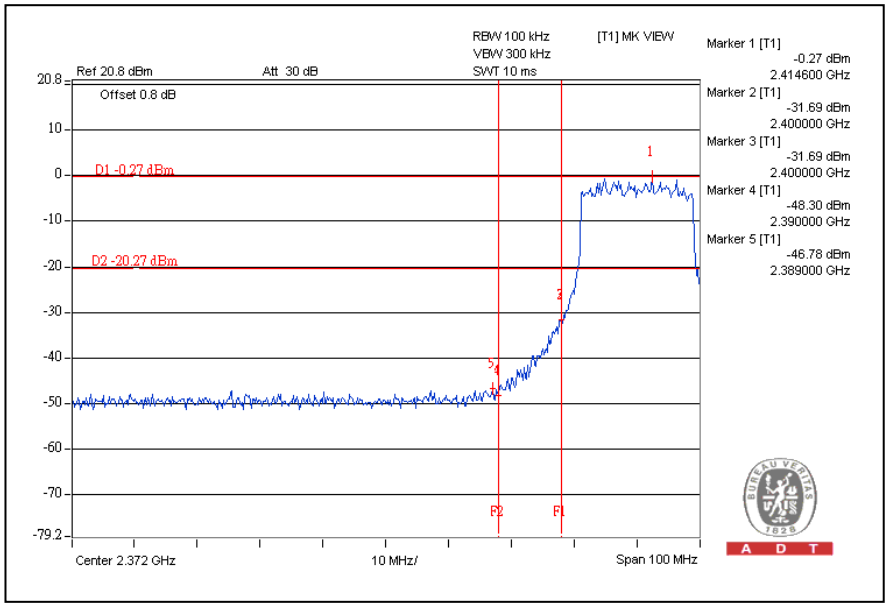

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 3.17 dBm
D2 -16.83 dBm
Marker 1 [T1]
3.17 dBm
2.377180 GHz
Marker 2 [T1]
-43.28 dBm
24.750300 GHz
Marker 3 [T1]
-43.48 dBm
24.500600 GHz
Marker 4 [T1]
-43.63 dBm
24.900120 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

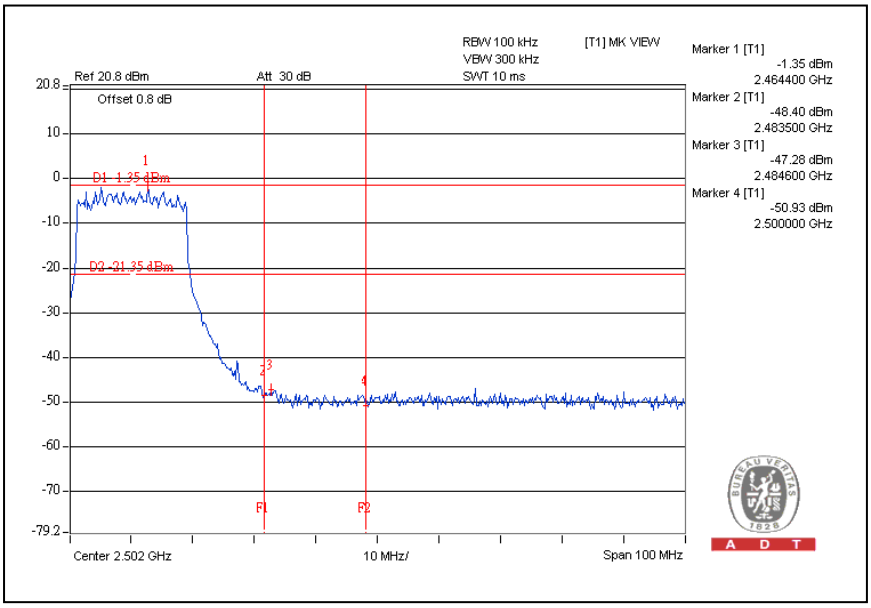

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 2.81 dBm
D2 -17.19 dBm
Marker 1 [T1]
-0.43 dBm
2.427120 GHz
Marker 2 [T1]
-43.20 dBm
24.950060 GHz
Marker 3 [T1]
-43.24 dBm
21.504200 GHz
Marker 4 [T1]
-43.33 dBm
20.355580 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

DRAFT 802.11n (20MHz) OFDM MODULATION:

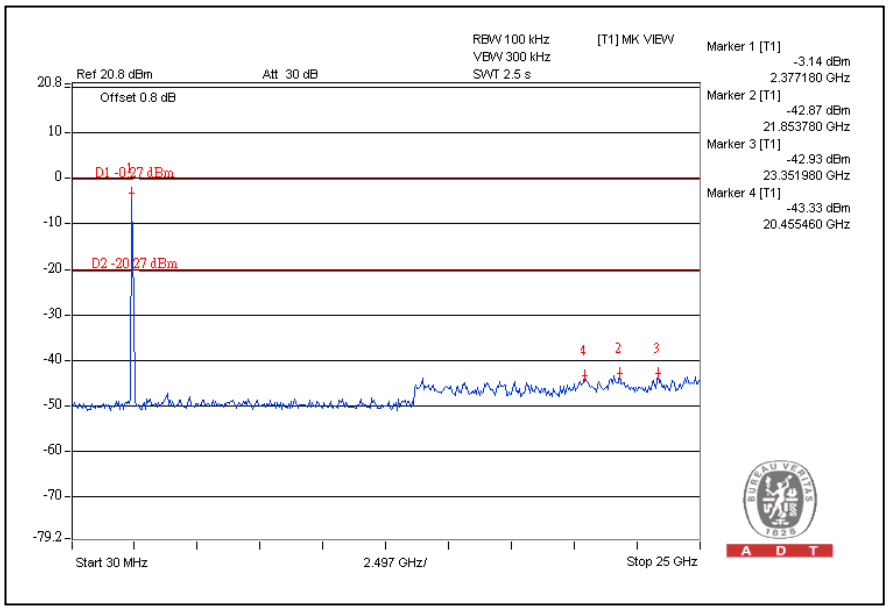
For Chain (0):CH1



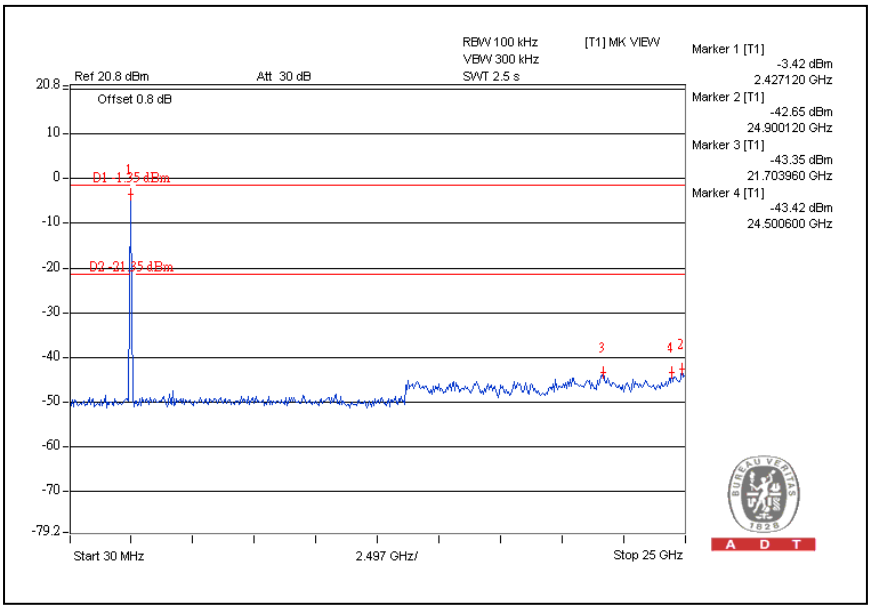
CH11



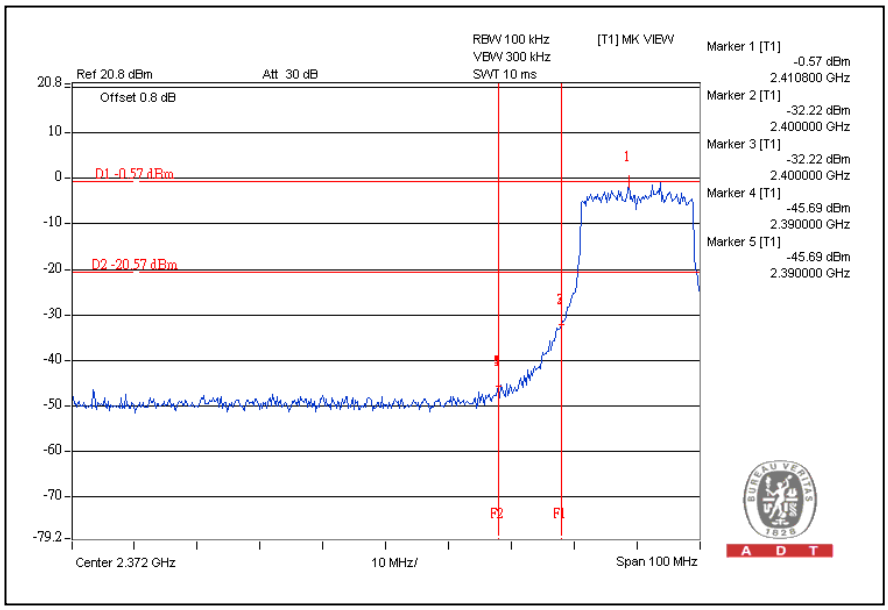
CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -0.27 dBm
D2 -20.27 dBm
Marker 1 [T1]
-3.14 dBm
2.377180 GHz
Marker 2 [T1]
-42.87 dBm
21.853780 GHz
Marker 3 [T1]
-42.93 dBm
23.351980 GHz
Marker 4 [T1]
-43.33 dBm
20.455460 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

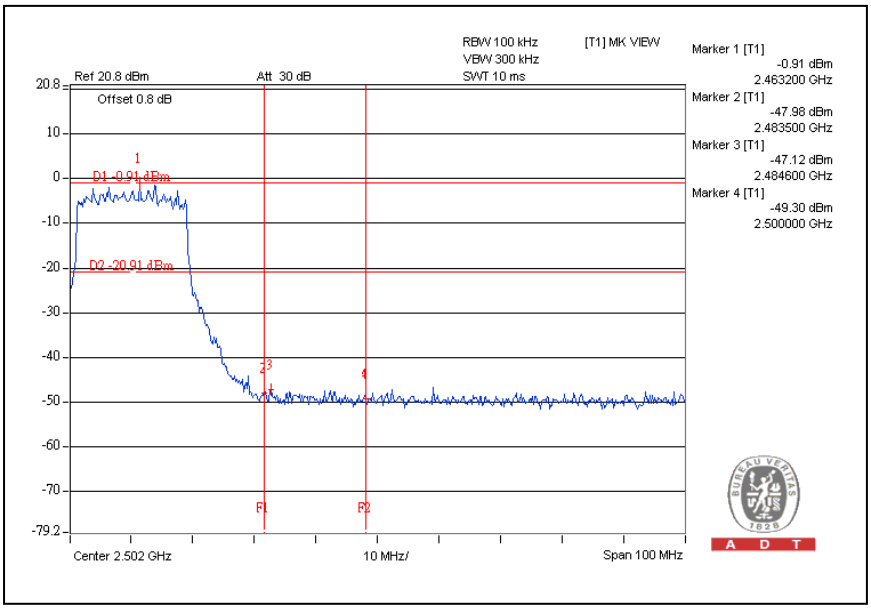
CH11


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -1.35 dBm
D2 -21.35 dBm
Marker 1 [T1]
-3.42 dBm
2.427120 GHz
Marker 2 [T1]
-42.65 dBm
24.900120 GHz
Marker 3 [T1]
-43.35 dBm
21.703960 GHz
Marker 4 [T1]
-43.42 dBm
24.500600 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

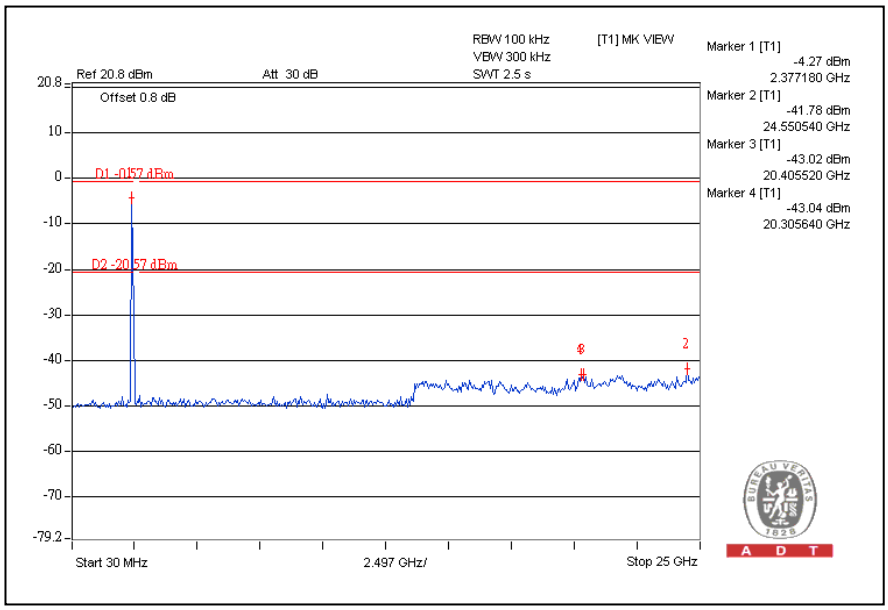
For Chain (1):CH1



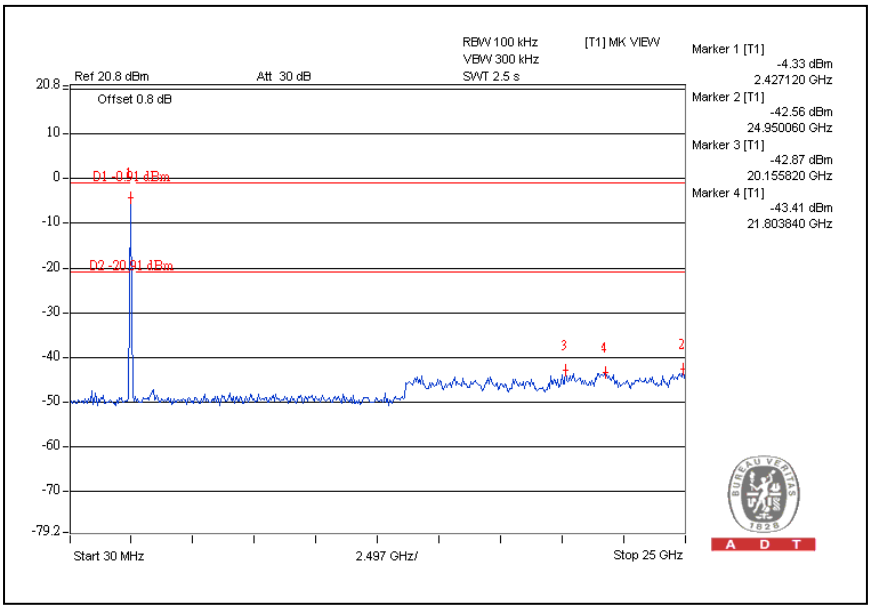
CH11



CH1

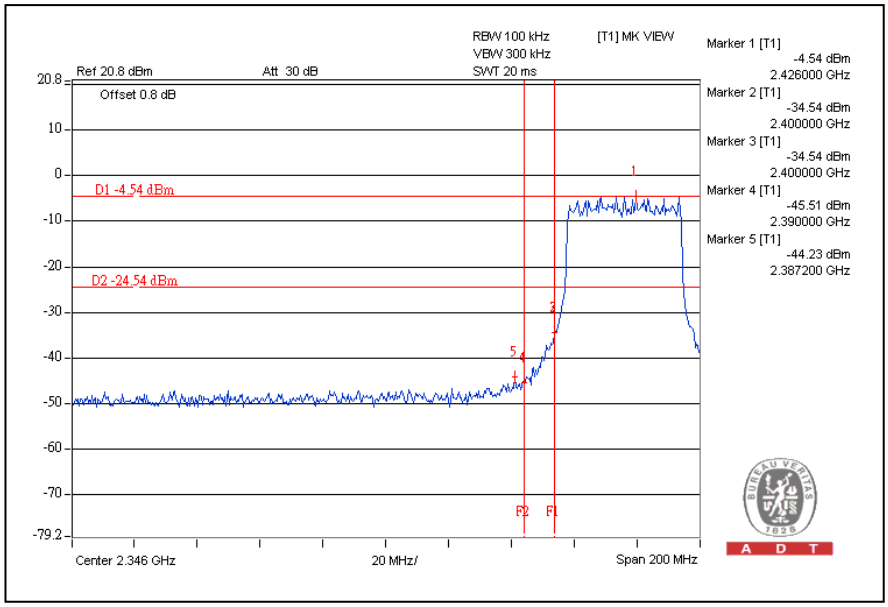

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -0.52 dBm
D2 -20.57 dBm
Marker 1 [T1]
-4.27 dBm
2.377180 GHz
Marker 2 [T1]
-41.78 dBm
24.550540 GHz
Marker 3 [T1]
-43.02 dBm
20.405520 GHz
Marker 4 [T1]
-43.04 dBm
20.305640 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

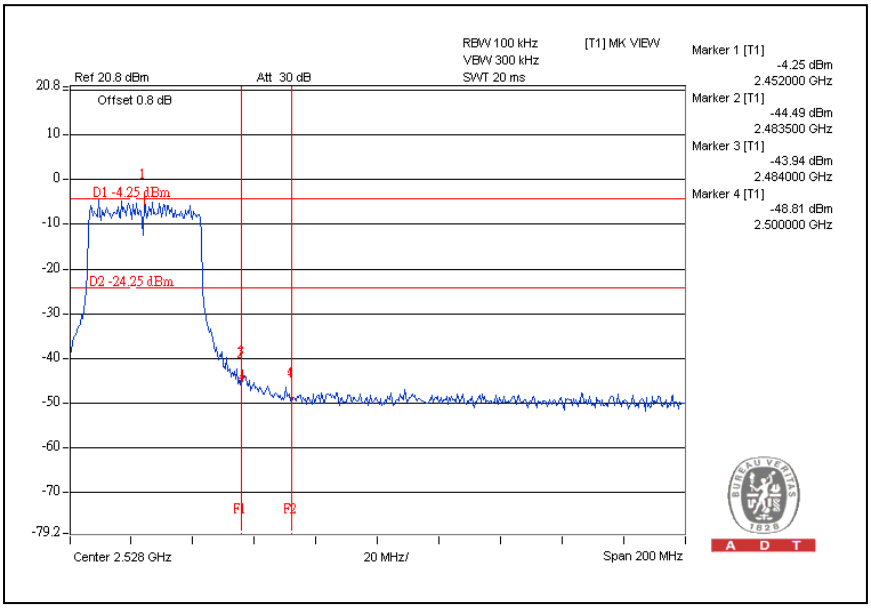

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -0.91 dBm
D2 -20.91 dBm
Marker 1 [T1]
-4.33 dBm
2.427120 GHz
Marker 2 [T1]
-42.56 dBm
24.950060 GHz
Marker 3 [T1]
-42.87 dBm
20.155820 GHz
Marker 4 [T1]
-43.41 dBm
21.803840 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

DRAFT 802.11n (40MHz) OFDM MODULATION:

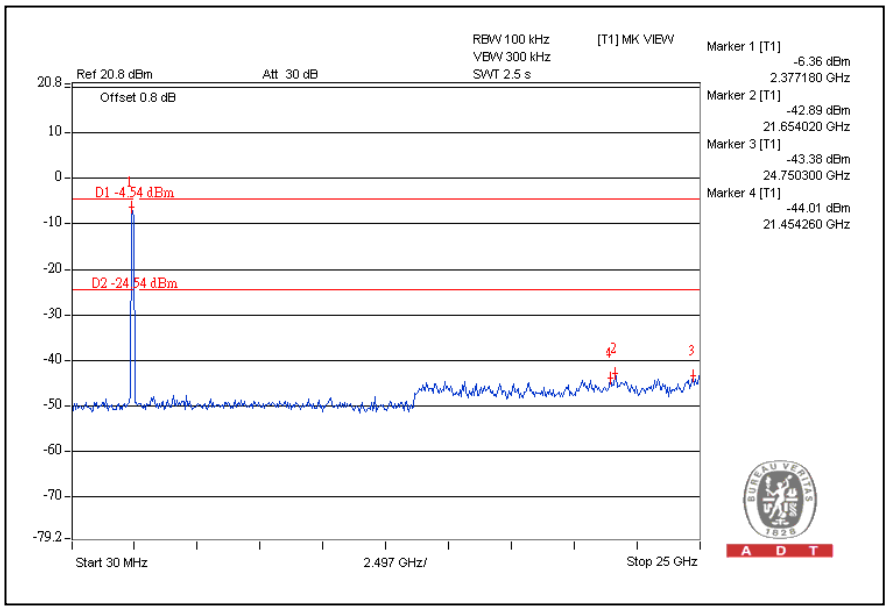
For Chain (0):CH1



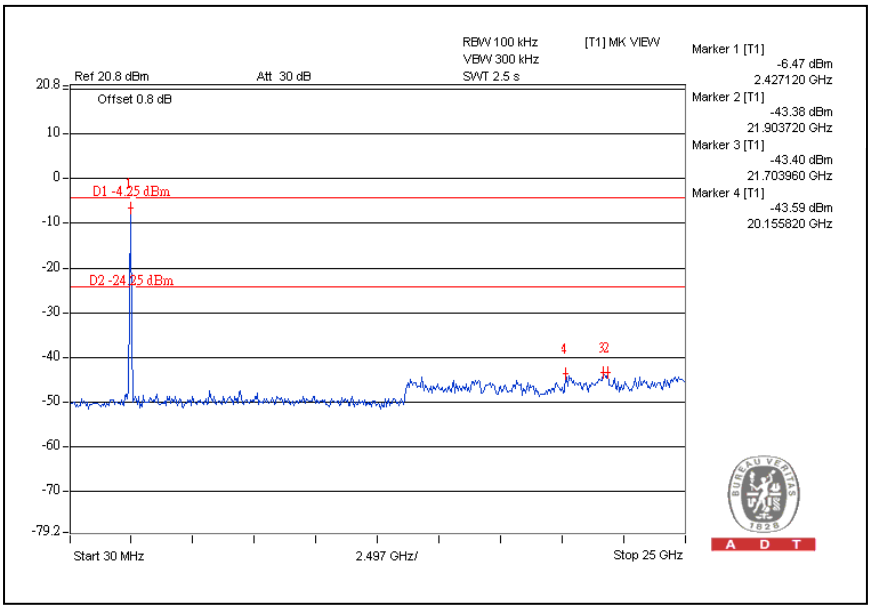
CH7



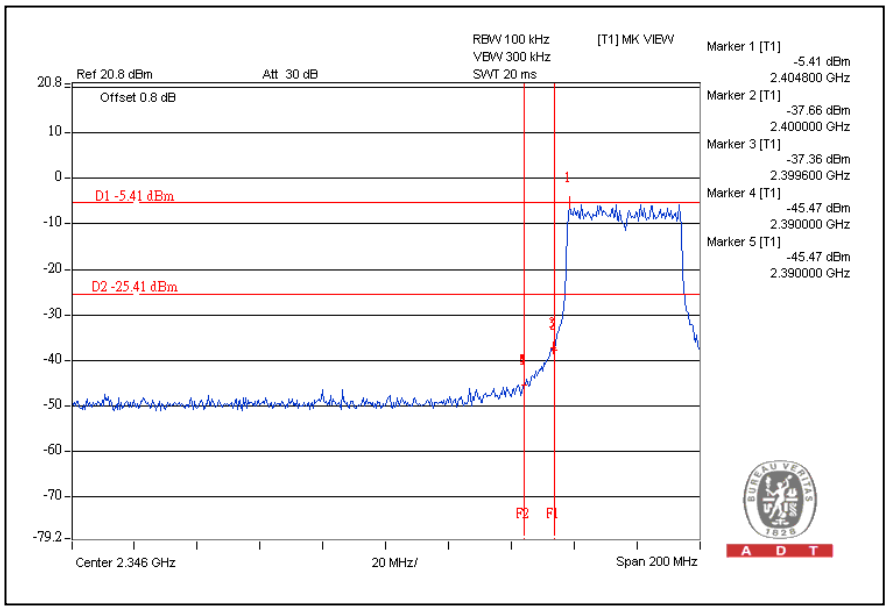
CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -4.54 dBm
D2 -24.54 dBm
Marker 1 [T1]
-6.36 dBm
2.377180 GHz
Marker 2 [T1]
-42.89 dBm
21.654020 GHz
Marker 3 [T1]
-43.38 dBm
24.750300 GHz
Marker 4 [T1]
-44.01 dBm
21.454260 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

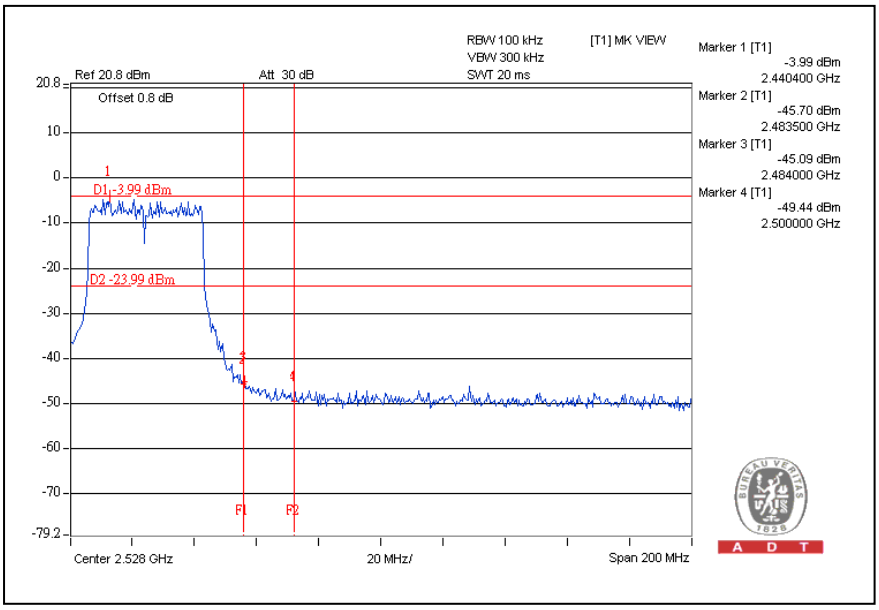
CH7


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -4.25 dBm
D2 -24.25 dBm
Marker 1 [T1]
-6.47 dBm
2.427120 GHz
Marker 2 [T1]
-43.38 dBm
21.903720 GHz
Marker 3 [T1]
-43.40 dBm
21.703960 GHz
Marker 4 [T1]
-43.59 dBm
20.155820 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

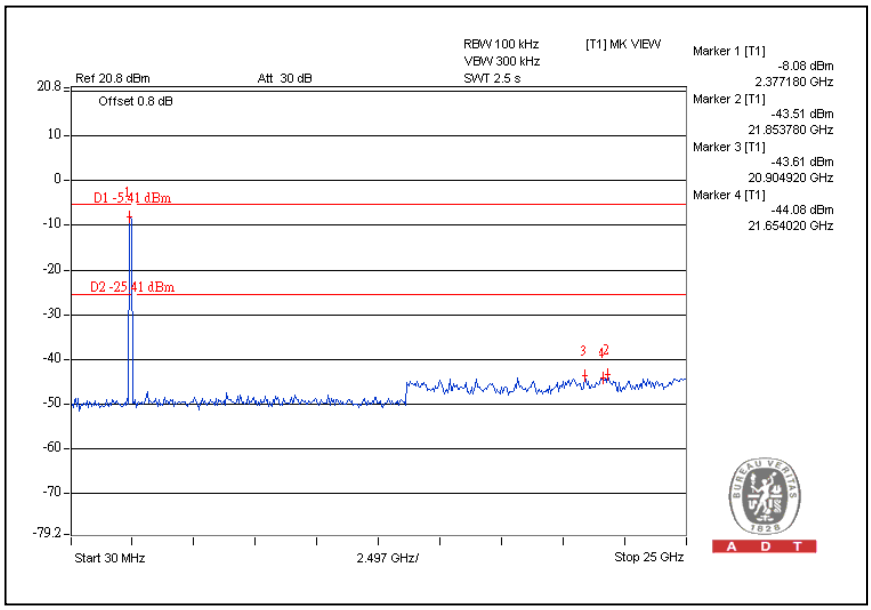
For Chain (1):CH1



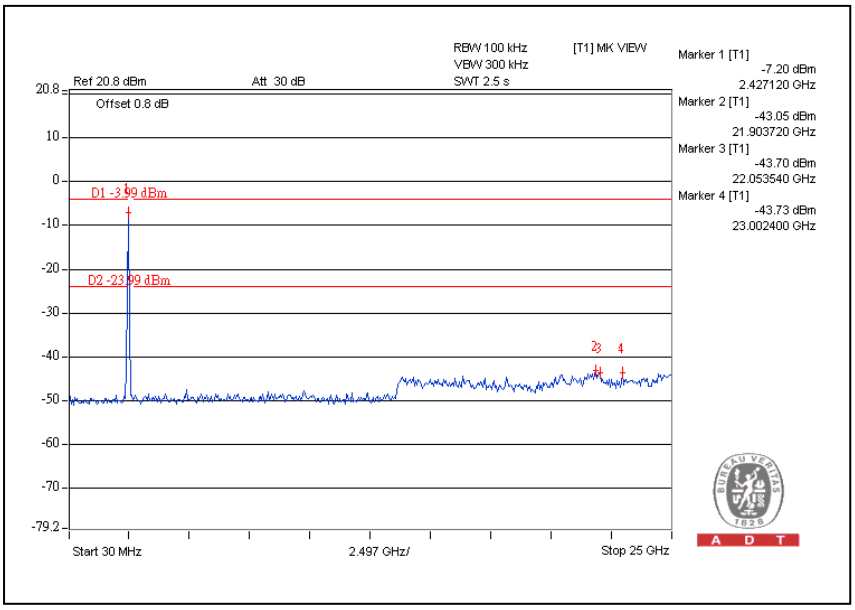
CH7



CH1


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -5.41 dBm
D2 -25.41 dBm
Marker 1 [T1]
-8.08 dBm
2.377180 GHz
Marker 2 [T1]
-43.51 dBm
21.853780 GHz
Marker 3 [T1]
-43.61 dBm
20.904920 GHz
Marker 4 [T1]
-44.08 dBm
21.654020 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH7


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 30 dB
Offset 0.8 dB
D1 -3.99 dBm
D2 -23.99 dBm
Marker 1 [T1]
-7.20 dBm
2.427120 GHz
Marker 2 [T1]
-43.05 dBm
21.903720 GHz
Marker 3 [T1]
-43.70 dBm
22.053540 GHz
Marker 4 [T1]
-43.73 dBm
23.002400 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

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

4.7.2 ANTENNA CONNECTED CONSTRUCTION

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

Chain	Antenna Type	For 2.4GHz Gain (dBi)	For 5GHz Gain (dBi)				Antenna Connector
			5.15~5.25GHz	5.25~5.35GHz	5.47~5.725GHz	5.725~5.825GHz	
0	PCB Printed	0.29	-0.14	-0.86	0.21	0.14	NA
1	PCB Printed						

5. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, 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, NVLAP
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

6. APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---