FCC TEST REPORT

REPORT NO.: RF110608E03

MODEL NO.: DWA-140

FCC ID: KA2WA140B3

RECEIVED: June 08, 2011

TESTED: June 08 to 15, 2011

ISSUED: July 28, 2011

APPLICANT: D-Link Corporation

ADDRESS: No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

LAB ADDRESS : No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

Table of Contents

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110608E03	Original release	July 28, 2011

1. CERTIFICATION

PRODUCT:	Wireless N USB Adapter, Wireless N USB Mini Adapter, RangeBooster N™ USB Adapter
BRAND NAME:	D-Link
MODEL NO.:	DWA-140
TEST SAMPLE:	MASS-PRODUCTION
TESTED:	June 08 to 15, 2011
APPLICANT:	D-Link Corporation
STANDARDS:	FCC Part 15, Subpart C (Section 15.247) ANSI C63.4-2003 ANSI C63.10-2009

The above equipment (Model: DWA-140) 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:** *July 28, 2011*
(Midoli Peng, Specialist)

APPROVED BY : _____, **DATE:** *July 28, 2011*
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Section	**Test Type and Limit**	**Result**	**Remark**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -10.75dB at 0.224MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.7dB at 4924.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Conducted Out-Band Emission Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

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	2.45 dB
Radiated emissions (30MHz-1GHz)	3.81dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.56 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless N USB Adapter, Wireless N USB Mini Adapter, RangeBooster N™ USB Adapter
MODEL NO.	DWA-140
FCC ID	KA2WA140B3
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 **802.11g:** 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps **HT20 MCS0~7 (800ns GI):** 6.5Mbps, 13Mbps, 19.5Mbps, 26Mbps, 39Mbps, 52Mbps, 58.5Mbps, 65Mbps, **HT20 MCS8~15 (800ns GI):** 13Mbps, 26Mbps, 39Mbps, 52Mbps, 78Mbps, 104Mbps, 117Mbps, 130Mbps. **HT40 MCS0~7 (800ns GI):** 13.5Mbps, 27Mbps, 40.5Mbps, 54Mbps, 81Mbps, 108Mbps, 121.5Mbps, 135Mbps. **HT40 MCS8~15 (800ns GI):** 27Mbps, 54Mbps, 81Mbps, 108Mbps, 162Mbps, 216Mbps, 243Mbps, 270Mbps. **HT20 MCS0~7 (400ns GI):** 7.2Mbps, 14.4Mbps, 21.7Mbps, 28.9Mbps, 43.3Mbps, 57.8Mbps, 65.0Mbps, 72.2Mbps, **HT20 MCS8~15 (400ns GI):** 14.444Mbps, 28.889Mbps, 43.333Mbps, 57.778Mbps, 86.667Mbps, 115.556Mbps, 130.000Mbps, 144.444Mbps. **HT40 MCS0~7 (400ns GI):** 15.0Mbps, 30.0Mbps, 45.0Mbps, 60.0Mbps, 90.0Mbps, 120.0Mbps, 135.0Mbps, 150.0Mbps, **HT40 MCS8~15 (400ns GI):** 30.0Mbps, 60.0Mbps, 90.0Mbps, 120.0Mbps, 180.0Mbps, 240.0Mbps, 270.0Mbps, 300.0Mbps.
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	802.11b: 85.1mW 802.11g: 371.5mW 802.11n (20MHz): 618.7mW 802.11n (40MHz): 514.1mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	USB Cable x 1(shielded, 1m)
I/O PORTS	NA
ASSOCIATED DEVICES	USB Cradle x 1

NOTE:

1. The EUT has three product names and one model name which are identical to each other in all aspects except for the following table:

Model No.	Product	Difference
DWA-140	Wireless N USB Adapter	For marketing requirement
	Wireless N USB Mini Adapter	
	RangeBooster N™ USB Adapter	

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

Transmitter Circuit	Manufacuture	Model	Peak Gain (Included Cable loss) (dBi)	Antenna Type	Connector Type
Chain (0)	Ralink Technology Corporation	NA	-0.3	Metal	NA
Chain (1)	Ralink Technology Corporation	NA	0.5	Printed	NA

3. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function.

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

5. The EUT was pre-tested under the following test modes :

Pre-test Mode	Description
Mode A	With USB Cradle
Mode B	Without USB Cradle

The worst radiated emissions were found in **Mode A** for below 1GHz and found in **Mode B** for above 1GHz. Therefore only the test data of the modes were recorded in this report.

6. 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, 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 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
A	-	√	-	-		With USB Cradle
B	√	-	√	√	√	Without USB Cradle

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

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)
A	802.11 b	√	-
B	802.11 g	√	-
C	802.11n (20MHz) for MCS 0~15	√	√
D	802.11n (40MHz) for MCS 0~15	√	√

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.

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)	COMBINATION MODE
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5	C

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)	COMBINATION MODE
802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5	C

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	C
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	D

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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)	COMBINATION MODE
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5	C
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5	D

※ Bandwidth as show worst chain in report base on preliminary measurement.

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)	COMBINATION MODE
802.11b	1 to 11	1, 11	DSSS	DBPSK	1	A
802.11g	1 to 11	1, 11	OFDM	BPSK	6	B
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5	C
802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	13.5	D

※ TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	27deg. C, 55%RH, 1003 hPa	120Vac, 60Hz	Kyle Huang
RE≥1G	26deg. C, 64%RH, 1003 hPa	120Vac, 60Hz	Frank Liu
RE<1G	24deg. C, 71%RH, 1003 hPa	120Vac, 60Hz	Moris Lin
APCM	25deg. C, 60%RH, 1003 hPa	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH, 1003 hPa	120Vac, 60Hz	Rex Huang

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
ANSI C63.10-2009

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.

For Conducted test					
NO.	**PRODUCT**	**BRAND**	**MODEL NO.**	**SERIAL NO.**	**FCC ID**
1	PERSONAL COMPUTER	DELL	DCSM	G84QL1S	FCC DoC
2	MONITOR	DELL	E228WFPc	CN-OX765G-64180-88P-0C2M	FCC DoC
3	PRINTER	EPSON	LQ-300+	DCGY017079	FCC DoC
4	MODEM	ACEEX	1414	0206026779	IFAXDM1414
5	KEYBOARD	DELL	SK-8115	CN-0J4635-71616-63I-076F	FCC DoC
6	MOUSE	DELL	M056UOA	FOROOBSN	FCC DoC

For Conducted test	
NO.	**SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS**
1	1m USB Cable, shielded.
2	1.8m VGA Cable, shielded, with two cores.
3	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
4	1.2m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	1.8m USB Cable, shielded.
6	1.5m USB Cable, shielded.

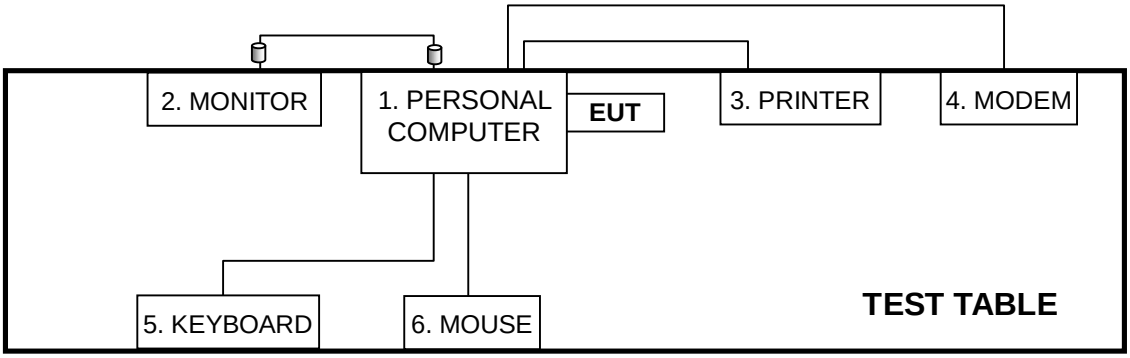
For other test items					
NO.	**PRODUCT**	**BRAND**	**MODEL NO.**	**SERIAL NO.**	**FCC ID**
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	IPod nano	Apple	A1137	6U6078FMUPR	FCC DoC

For other test items	
NO.	**SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS**
1	1m USB Cable, shielded.
2	NA

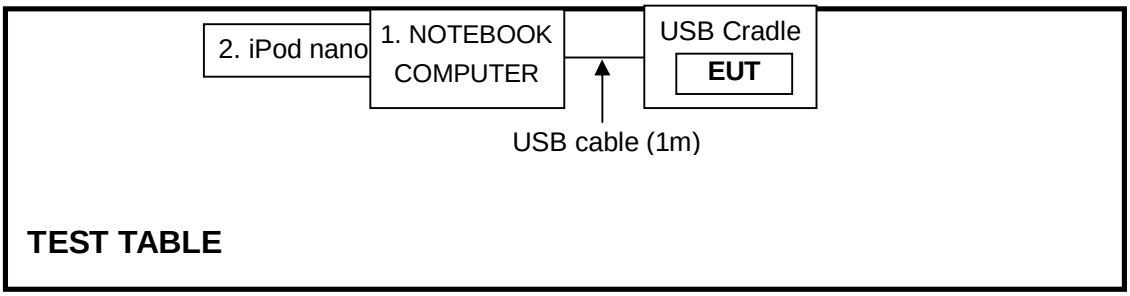
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

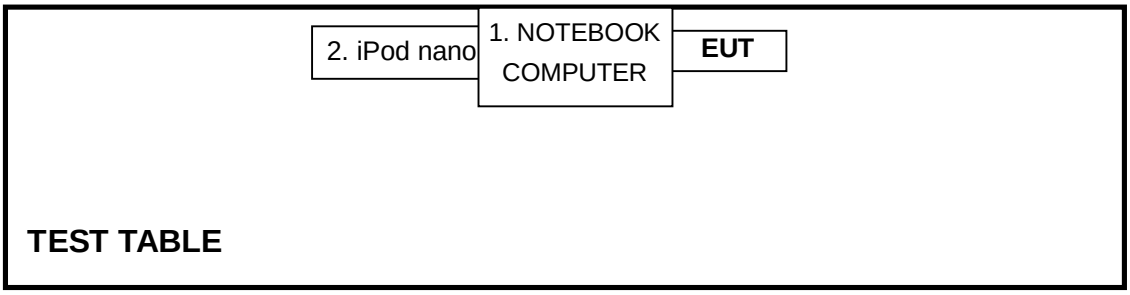
For Conducted Emission test:



For Radiated Emission test: (Below 1GHz)



For other test items :



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

Test date: June 08, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 02, 2011	Mar. 01, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 17, 2010	Sep. 16, 2011
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 11, 2010	June 10, 2011
RF Cable (JYEBAO)	5DFB	CONCAB-003	Aug. 06, 2010	Aug. 05, 2011
50 ohms Terminator	50	3	Nov. 03, 2010	Nov. 02, 2011
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. A.
3 The VCCI Con A Registration No. is C-817.

4.1.3 TEST PROCEDURES

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

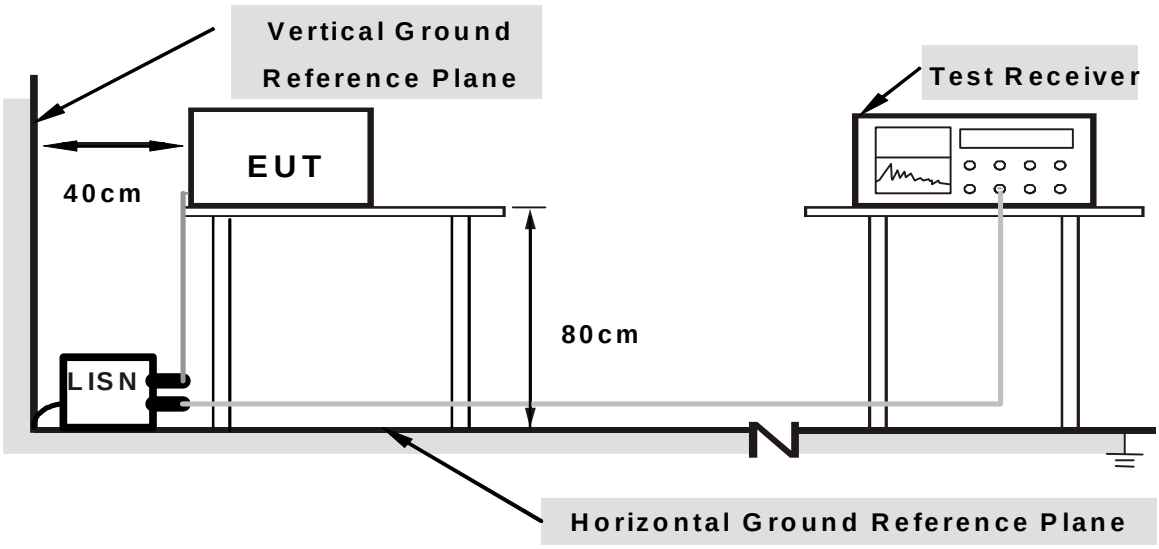
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

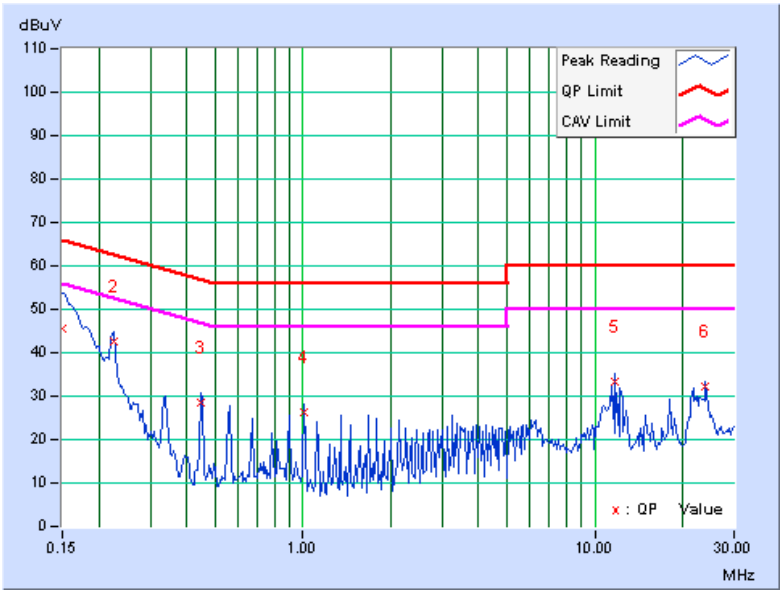
1. Turned on the power of all equipment.
2. Prepared computer system support unit 1 (Personal Computer) to act as communication partner and placed it outside of testing area.
3. The communication partner ran test program “RT537xQA.exe” to enable EUT under transmission/receiving condition continuously.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.37	45.11	20.59	45.48	20.96	66.00	56.00	-20.52	-35.04
2	**0.224**	**0.36**	**42.35**	**41.55**	**42.71**	**41.91**	**62.66**	**52.66**	**-19.95**	**-10.75**
3	0.447	0.36	28.33	28.28	28.69	28.64	56.93	46.93	-28.24	-18.29
4	1.008	0.41	25.82	21.76	26.23	22.17	56.00	46.00	-29.77	-23.83
5	11.656	0.79	32.43	23.88	33.22	24.67	60.00	50.00	-26.78	-25.33
6	23.980	1.23	31.13	29.95	32.36	31.18	60.00	50.00	-27.64	-18.82

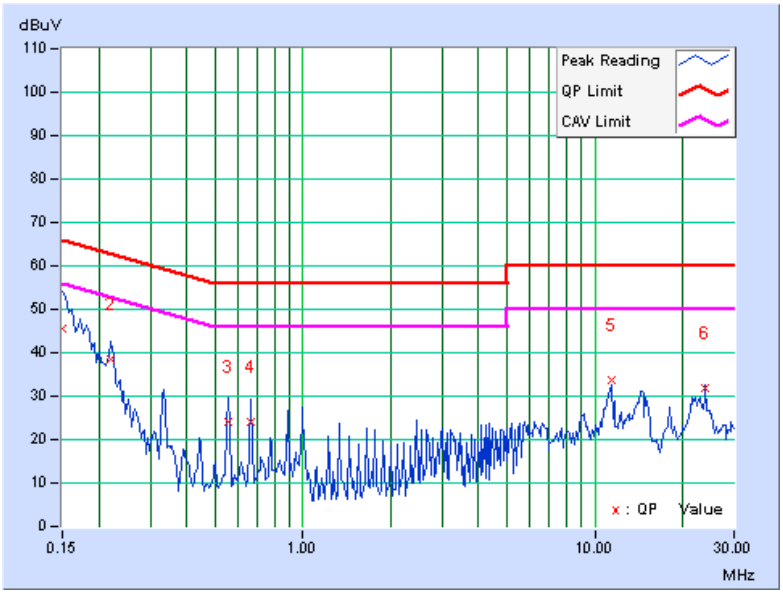
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.10	45.31	19.99	45.41	20.09	66.00	56.00	-20.59	-35.91
2	0.220	0.10	38.54	30.50	38.64	30.60	62.81	52.81	-24.17	-22.21
3	0.552	0.12	24.06	23.51	24.18	23.63	56.00	46.00	-31.82	-22.37
4	0.666	0.13	23.83	23.18	23.96	23.31	56.00	46.00	-32.04	-22.69
5	11.383	0.61	33.24	23.81	33.85	24.42	60.00	50.00	-26.15	-25.58
6	23.977	1.47	30.29	29.44	31.76	30.91	60.00	50.00	-28.24	-19.09

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. 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. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

4.2.2 TEST INSTRUMENTS

For Below 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 2011
Agilent Pre-Selector	N9039A	MY46520311	July 14, 2010	July 13, 2011
Agilent Signal Generator	N5181A	MY49060517	July 14, 2010	July 13, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02578	July 05, 2010	July 04, 2011
Miteq Pre-Amplifier	AFS33-18002650-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 12, 2010	Nov. 11, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_V8.7.05	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, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.

For Above 1GHz:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 23, 2010	Aug. 22, 2011
Agilent Pre-Selector	N9039A	MY46520310	Aug. 23, 2010	Aug. 22, 2011
Agilent Signal Generator	N5181A	MY49060347	July 30, 2010	July 29, 2011
LIG NEX1 Test Receiver	ER-265	L09068005	Oct. 25, 2010	Oct. 24, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 28, 2011	Feb. 27, 2012
Miteq Pre-Amplifier	AFS33-18002650-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 22, 2010	Nov. 21, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 28, 2010	Dec. 27, 2011
RF Cable	NA	CHHCAB_001	NA	NA
Software	ADT_Radiated_V8.7.05	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, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. 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 height of antenna 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

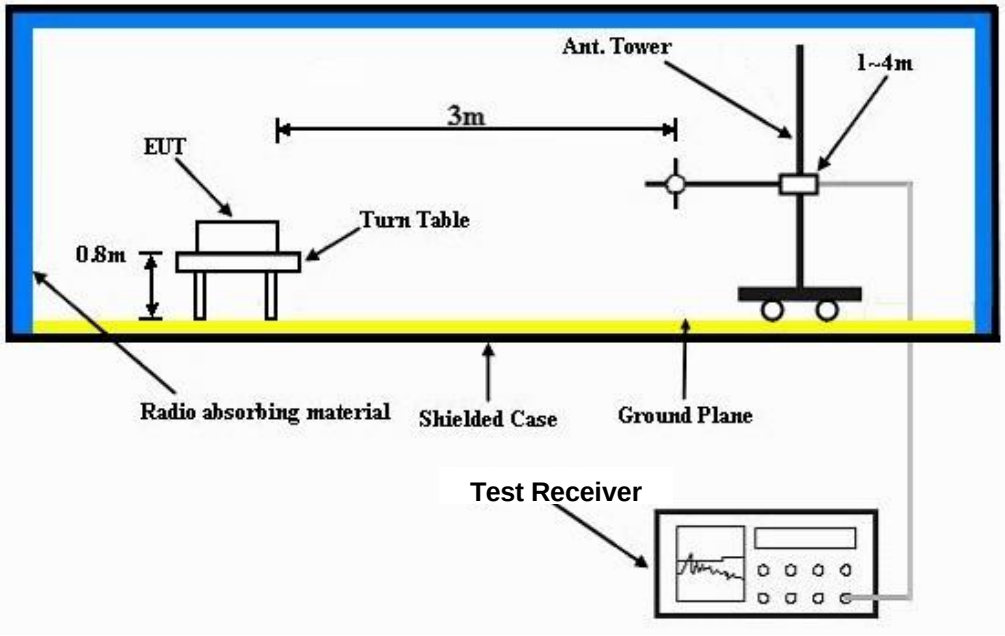
NOTE:

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 video bandwidth 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

For below 1GHz:

1. Turned on the power of all equipment.
2. Prepared computer system support unit 1 (Notebook Computer) to act as communication partner and placed it outside of testing area.
3. The communication partner ran test program “RT537xQA.exe” to enable EUT under transmission/receiving condition continuously via one USB cable.

For above 1GHz:

1. Turned on the power of all equipment.
2. Prepared computer system support unit 1 (Notebook Computer) to act as communication partner and placed it outside of testing area.
3. The communication partner ran test program “RT537xQA.exe” to enable EUT under transmission/receiving condition continuously.

4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 71%RH 1003 hPa	TESTED BY	Nelson Teng

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	80.57	33.0 QP	40.0	-7.0	2.00 H	0	23.22	9.81
2	216.04	41.6 QP	46.0	-4.4	1.75 H	264	29.64	11.98
3	411.91	32.3 QP	46.0	-13.7	2.00 H	278	14.32	17.94
4	604.82	37.9 QP	46.0	-8.1	1.25 H	283	15.70	22.17
5	847.23	35.6 QP	46.0	-10.4	1.25 H	360	9.76	25.83
6	949.79	34.9 QP	46.0	-11.1	1.25 H	260	8.03	26.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	80.09	28.0 QP	40.0	-12.1	1.00 V	236	18.08	9.87
2	173.88	29.8 QP	43.5	-13.7	1.00 V	35	16.10	13.67
3	322.03	43.0 QP	46.0	-3.1	1.50 V	0	27.23	15.72
4	522.16	32.4 QP	46.0	-13.6	1.25 V	192	11.97	20.41
5	604.82	39.8 QP	46.0	-6.2	1.25 V	233	17.67	22.17
6	896.14	39.1 QP	46.0	-6.9	1.25 V	282	12.66	26.44

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 WORST-CASE DATA

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	1.00 H	267	25.99	31.21
2	2390.00	44.7 AV	54.0	-9.3	1.00 H	267	13.49	31.21
3	*2412.00	103.3 PK			1.00 H	267	72.03	31.27
4	*2412.00	101.0 AV			1.00 H	267	69.73	31.27
5	4824.00	49.7 PK	74.0	-24.3	1.36 H	237	10.28	39.42
6	4824.00	48.6 AV	54.0	-5.4	1.36 H	237	9.18	39.42
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	54.2 PK	74.0	-19.8	1.00 V	279	22.99	31.21
2	2390.00	44.8 AV	54.0	-9.2	1.00 V	279	13.59	31.21
3	*2412.00	98.3 PK			1.00 V	279	67.03	31.27
4	*2412.00	96.1 AV			1.00 V	279	64.83	31.27
5	4824.00	52.7 PK	74.0	-21.3	1.00 V	295	13.28	39.42
6	4824.00	50.8 AV	54.0	-3.2	1.00 V	295	11.38	39.42

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	104.7 PK			1.00 H	267	73.36	31.34
2	*2437.00	102.5 AV			1.00 H	267	71.16	31.34
3	4874.00	55.7 PK	74.0	-18.3	1.25 H	51	16.08	39.62
4	4874.00	51.3 AV	54.0	-2.7	1.25 H	51	11.68	39.62
5	7311.00	52.9 PK	74.0	-21.1	1.00 H	29	8.80	44.10
6	7311.00	41.1 AV	54.0	-12.9	1.00 H	29	-3.00	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.7 PK			1.00 V	279	68.36	31.34
2	*2437.00	97.4 AV			1.00 V	279	66.06	31.34
3	4874.00	54.8 PK	74.0	-19.2	1.00 V	294	15.18	39.62
4	4874.00	52.9 AV	54.0	-1.1	1.00 V	294	13.28	39.62
5	7311.00	53.1 PK	74.0	-20.9	1.00 V	24	9.00	44.10
6	7311.00	41.5 AV	54.0	-12.5	1.00 V	24	-2.60	44.10

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	103.9 PK			1.00 H	249	72.50	31.40
2	*2462.00	101.3 AV			1.00 H	249	69.90	31.40
3	2483.50	55.0 PK	74.0	-19.0	1.00 H	249	23.54	31.46
4	2483.50	45.6 AV	54.0	-8.4	1.00 H	249	14.14	31.46
5	4924.00	54.3 PK	74.0	-19.7	1.43 H	49	14.48	39.82
6	4924.00	50.2 AV	54.0	-3.8	1.43 H	49	10.38	39.82
7	7386.00	52.0 PK	74.0	-22.0	1.00 H	30	7.82	44.18
8	7386.00	40.5 AV	54.0	-13.5	1.00 H	30	-3.68	44.18
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	*2462.00	97.6 PK			1.00 V	280	66.20	31.40
2	*2462.00	95.0 AV			1.00 V	280	63.60	31.40
3	2483.50	55.3 PK	74.0	-18.7	1.00 V	280	23.84	31.46
4	2483.50	43.5 AV	54.0	-10.5	1.00 V	280	12.04	31.46
5	4924.00	55.8 PK	74.0	-18.2	1.00 V	294	15.98	39.82
6	**4924.00**	**53.3 AV**	**54.0**	**-0.7**	**1.00 V**	**294**	**13.48**	**39.82**
7	7386.00	53.4 PK	74.0	-20.6	1.00 V	32	9.22	44.18
8	7386.00	41.4 AV	54.0	-12.6	1.00 V	32	-2.78	44.18

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

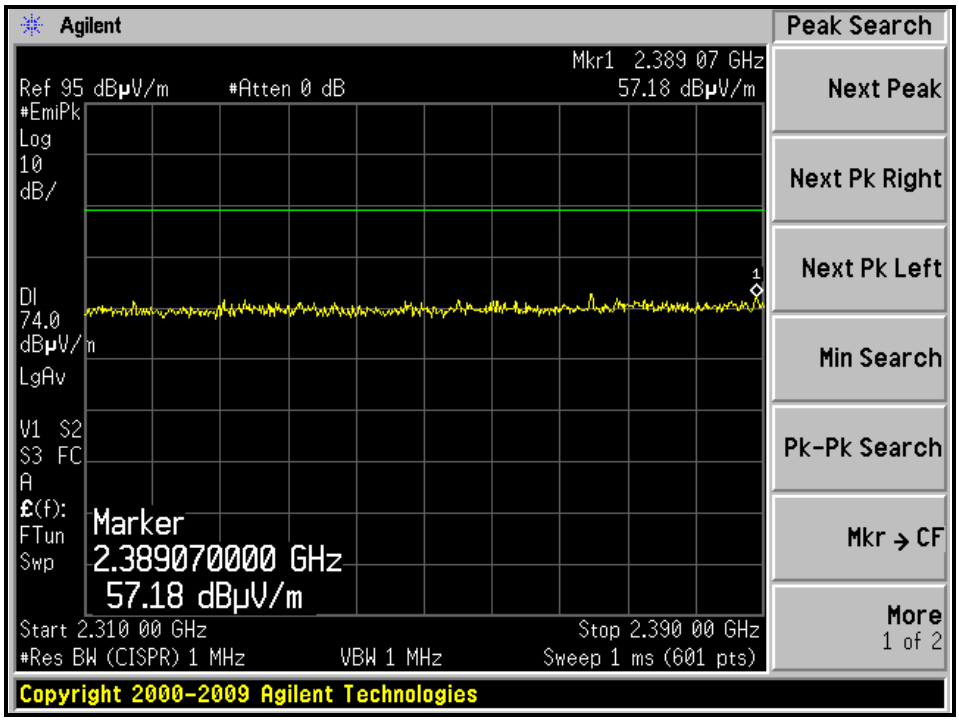
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

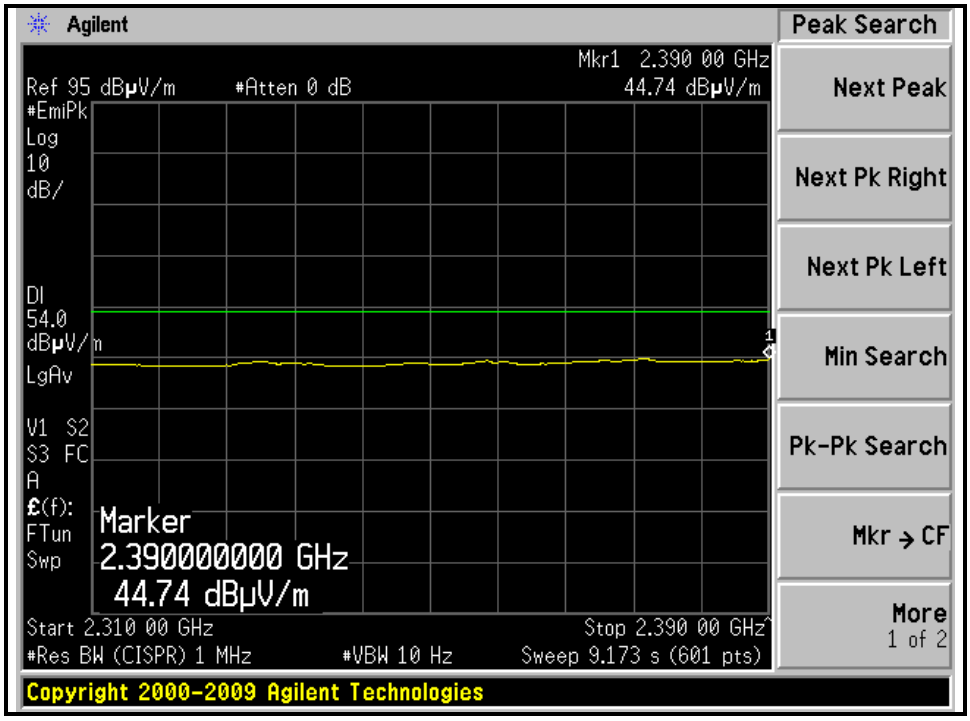
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL)





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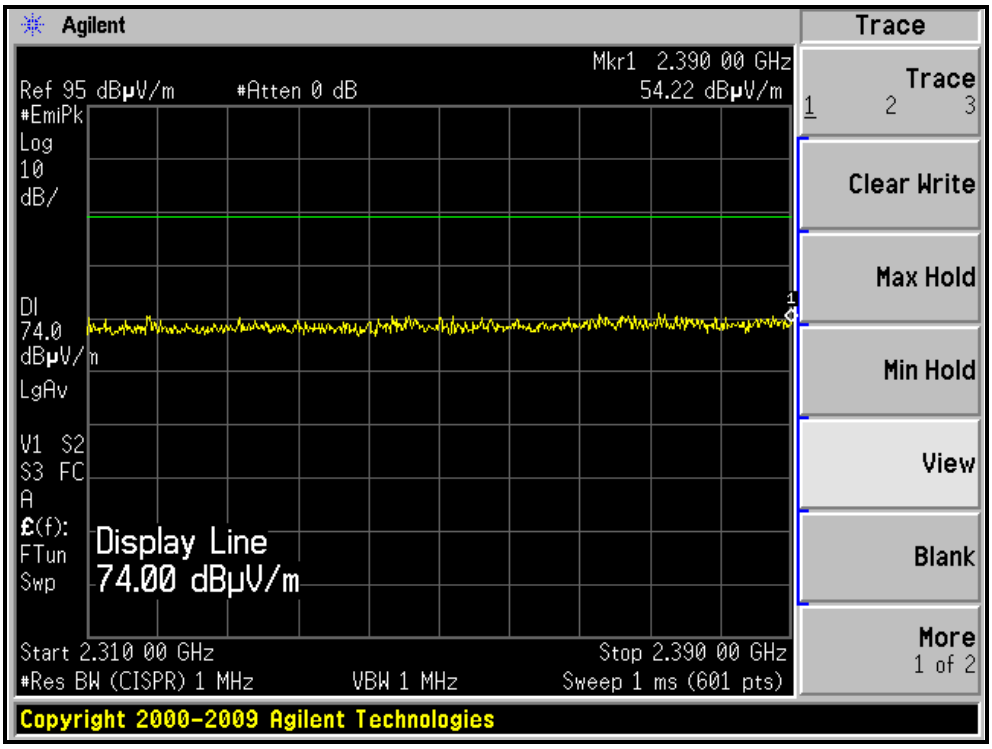

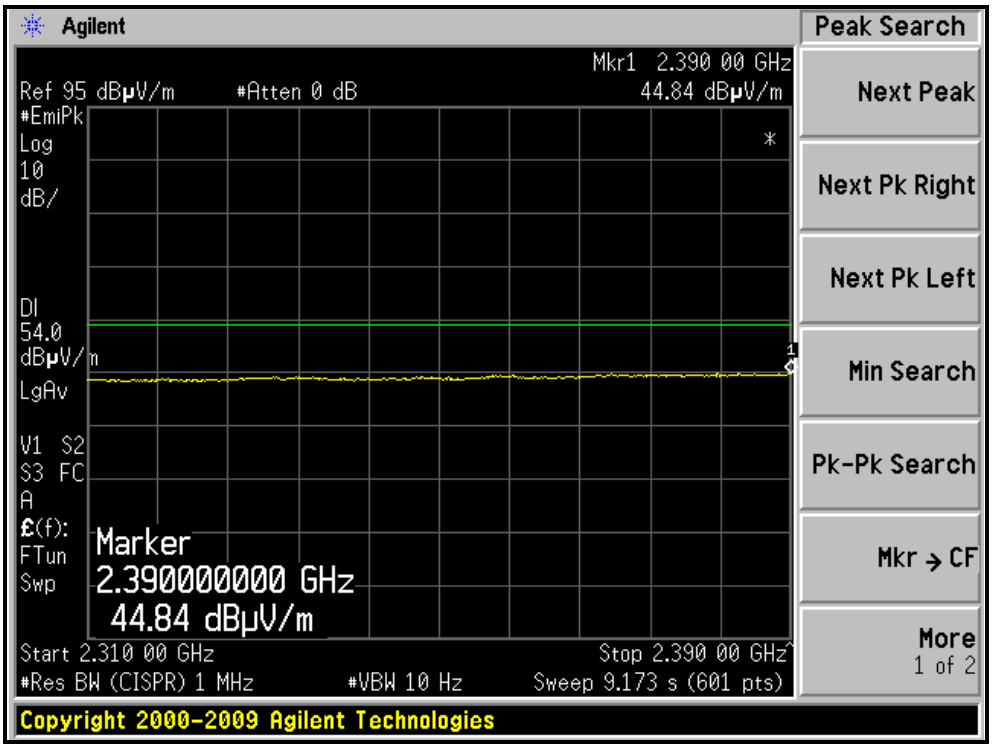

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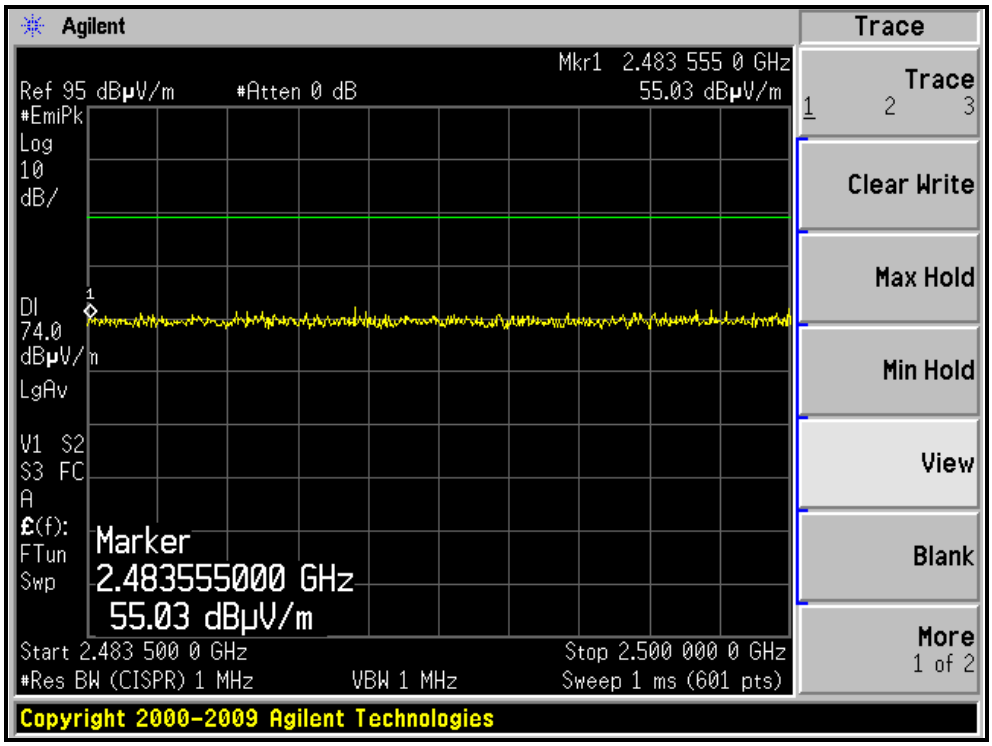
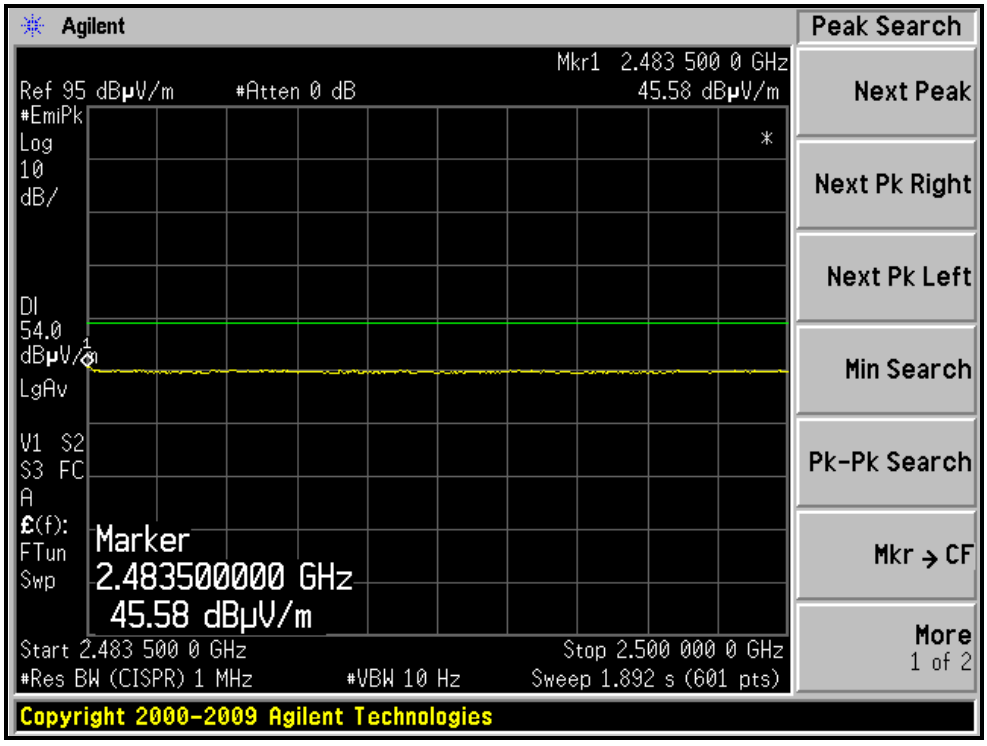
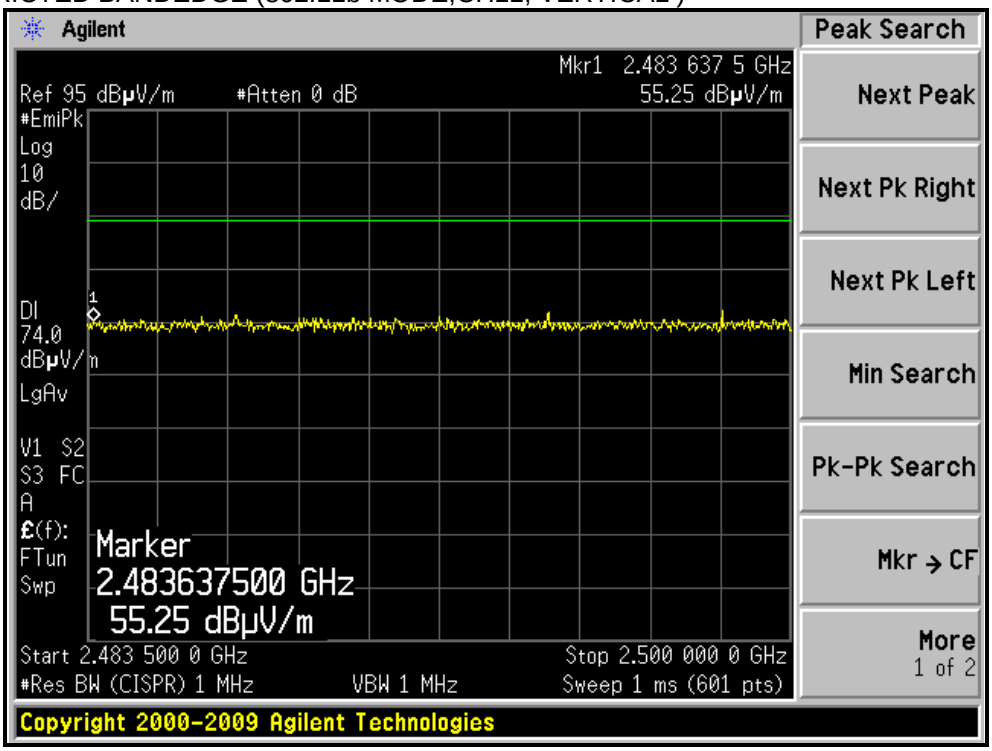
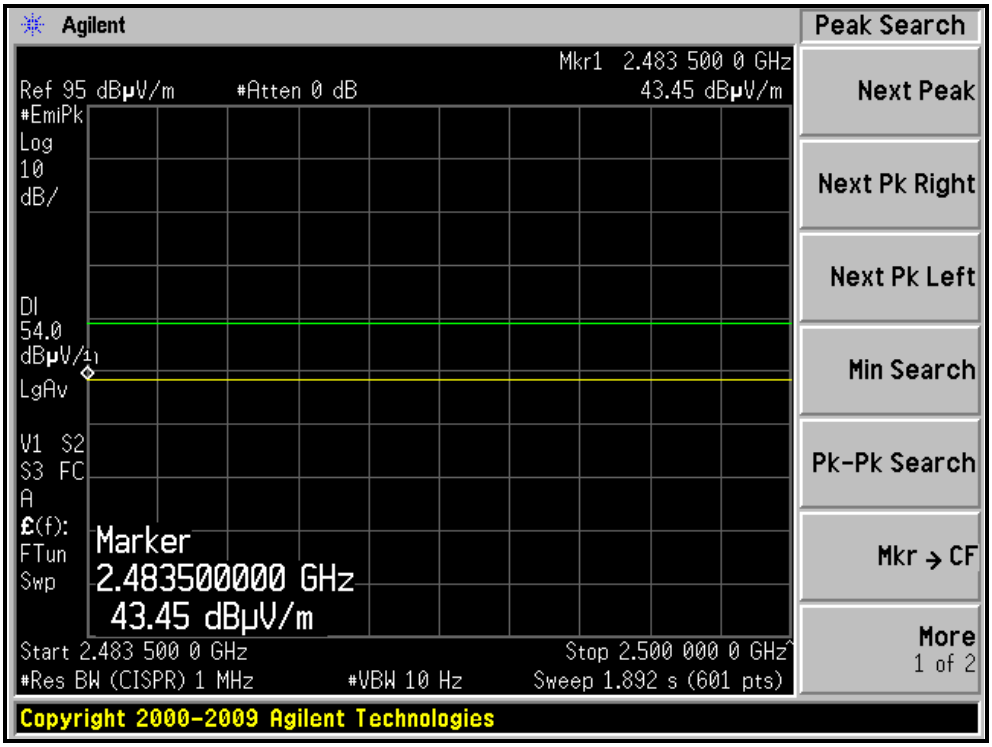




RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.3 PK	74.0	-4.7	1.00 H	251	38.09	31.21
2	2390.00	52.6 AV	54.0	-1.4	1.00 H	251	21.39	31.21
3	*2412.00	106.1 PK			1.00 H	251	74.83	31.27
4	*2412.00	96.3 AV			1.00 H	251	65.03	31.27
5	4824.00	54.2 PK	74.0	-19.8	1.34 H	242	14.78	39.42
6	4824.00	41.9 AV	54.0	-12.1	1.34 H	242	2.48	39.42
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	65.4 PK	74.0	-8.6	1.00 V	279	34.19	31.21
2	2390.00	49.6 AV	54.0	-4.4	1.00 V	279	18.39	31.21
3	*2412.00	103.2 PK			1.00 V	279	71.93	31.27
4	*2412.00	92.8 AV			1.00 V	279	61.53	31.27
5	4824.00	59.3 PK	74.0	-14.7	1.05 V	117	19.88	39.42
6	4824.00	45.9 AV	54.0	-8.1	1.05 V	117	6.48	39.42

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	2384.50	58.4 PK	74.0	-15.6	1.00 H	251	27.20	31.20
2	2384.50	49.0 AV	54.0	-5.0	1.00 H	251	17.80	31.20
3	*2437.00	108.4 PK			1.00 H	263	77.06	31.34
4	*2437.00	98.8 AV			1.00 H	263	67.46	31.34
5	2489.10	62.6 PK	74.0	-11.4	1.00 H	249	31.13	31.47
6	2489.10	52.0 AV	54.0	-2.0	1.00 H	249	20.53	31.47
7	4874.00	55.9 PK	74.0	-18.1	1.36 H	235	16.28	39.62
8	4874.00	43.8 AV	54.0	-10.2	1.36 H	235	4.18	39.62
9	7311.00	53.1 PK	74.0	-20.9	1.00 H	23	9.00	44.10
10	7311.00	41.1 AV	54.0	-12.9	1.00 H	23	-3.00	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.4 PK			1.00 V	278	74.06	31.34
2	*2437.00	95.6 AV			1.00 V	278	64.26	31.34
3	4874.00	63.0 PK	74.0	-11.0	1.05 V	113	23.38	39.62
4	4874.00	48.0 AV	54.0	-6.0	1.05 V	113	8.38	39.62
5	7311.00	52.1 PK	74.0	-21.9	1.00 V	110	8.00	44.10
6	7311.00	40.0 AV	54.0	-14.0	1.00 V	110	-4.10	44.10

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	106.4 PK			1.00 H	251	75.00	31.40
2	*2462.00	97.3 AV			1.00 H	251	65.90	31.40
3	2483.50	70.0 PK	74.0	-4.0	1.00 H	251	38.54	31.46
4	2483.50	53.1 AV	54.0	-0.9	1.00 H	251	21.64	31.46
5	4924.00	53.8 PK	74.0	-20.2	1.34 H	224	13.98	39.82
6	4924.00	41.7 AV	54.0	-12.3	1.34 H	224	1.88	39.82
7	7386.00	52.9 PK	74.0	-21.1	1.00 H	23	8.72	44.18
8	7386.00	41.0 AV	54.0	-13.0	1.00 H	23	-3.18	44.18
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	*2462.00	101.5 PK			1.00 V	281	70.10	31.40
2	*2462.00	91.0 AV			1.00 V	281	59.60	31.40
3	2483.50	65.3 PK	74.0	-8.7	1.00 V	281	33.84	31.46
4	2483.50	45.3 AV	54.0	-8.7	1.00 V	281	13.84	31.46
5	4924.00	60.2 PK	74.0	-13.8	1.05 V	111	20.38	39.82
6	4924.00	46.3 AV	54.0	-7.7	1.05 V	111	6.48	39.82
7	7386.00	52.1 PK	74.0	-21.9	1.00 V	109	7.92	44.18
8	7386.00	40.2 AV	54.0	-13.8	1.00 V	109	-3.98	44.18

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

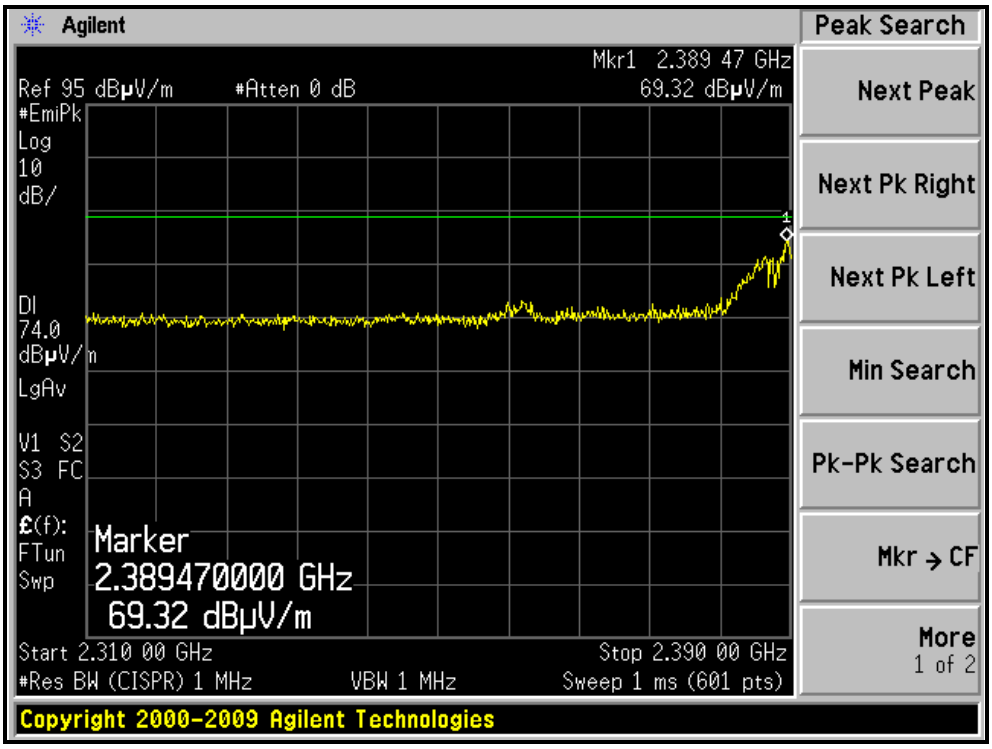
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

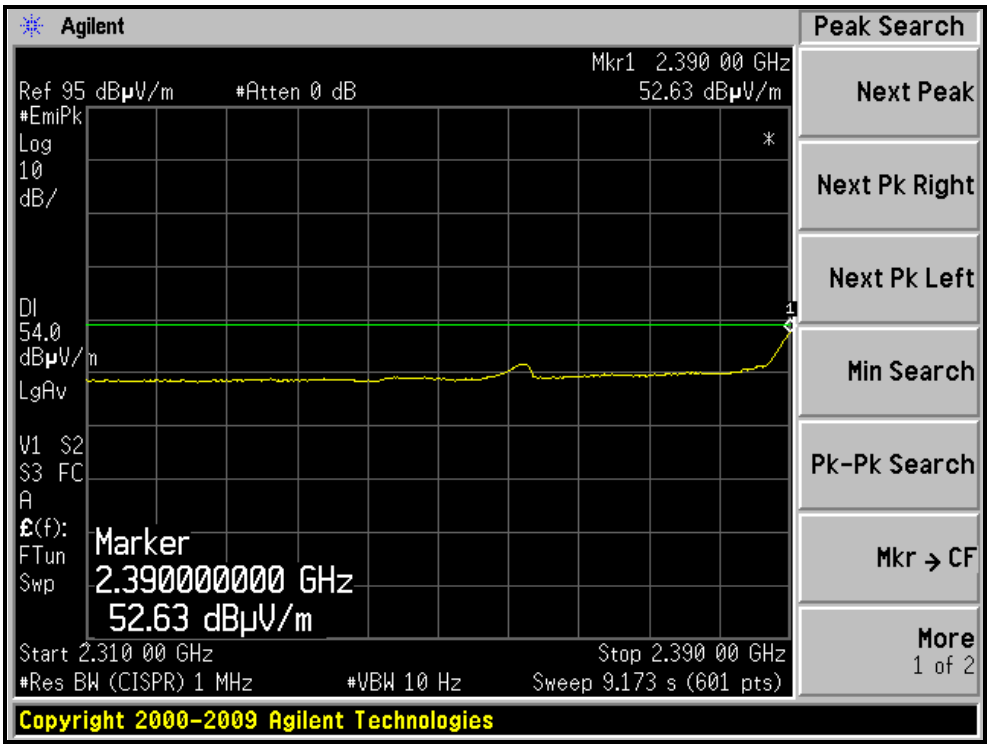
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

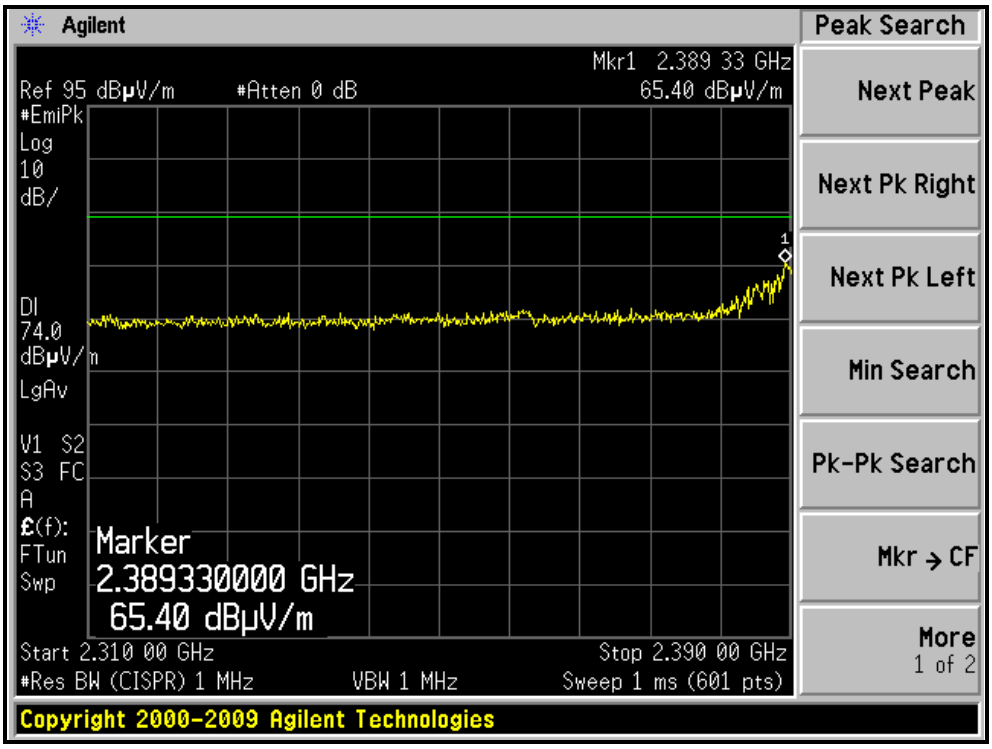
5. " * ": Fundamental frequency.

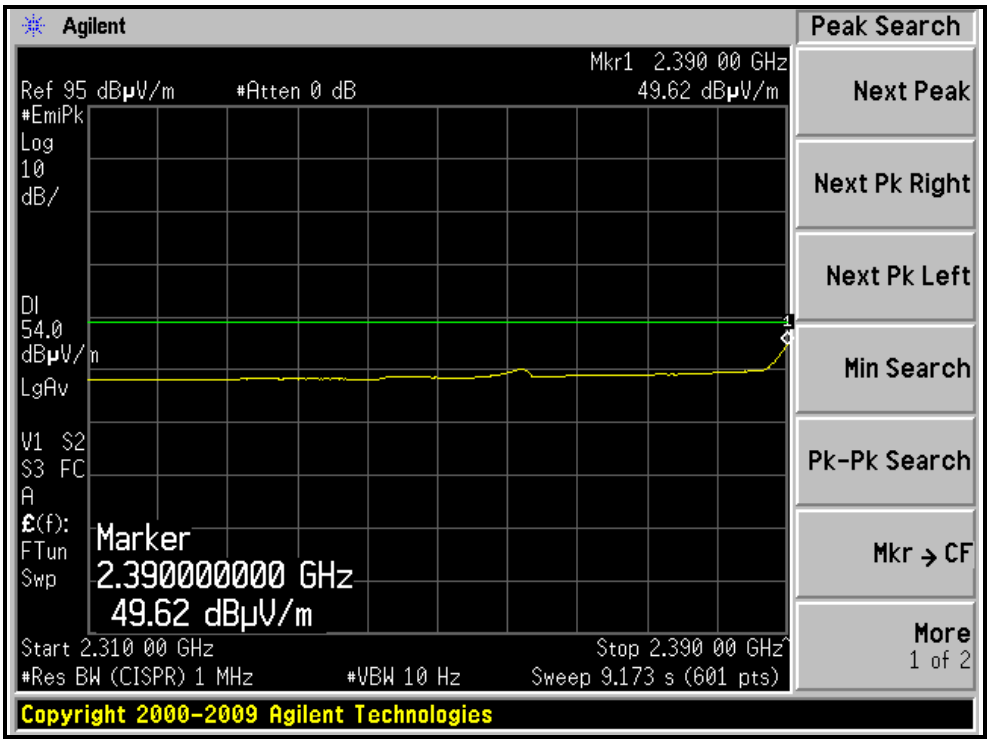
RESTRICTED BANDEDGE (802.11g MODE,CH1, HORIZONTAL)





RESTRICTED BANDEDGE (802.11g MODE,CH1, VERTICAL)





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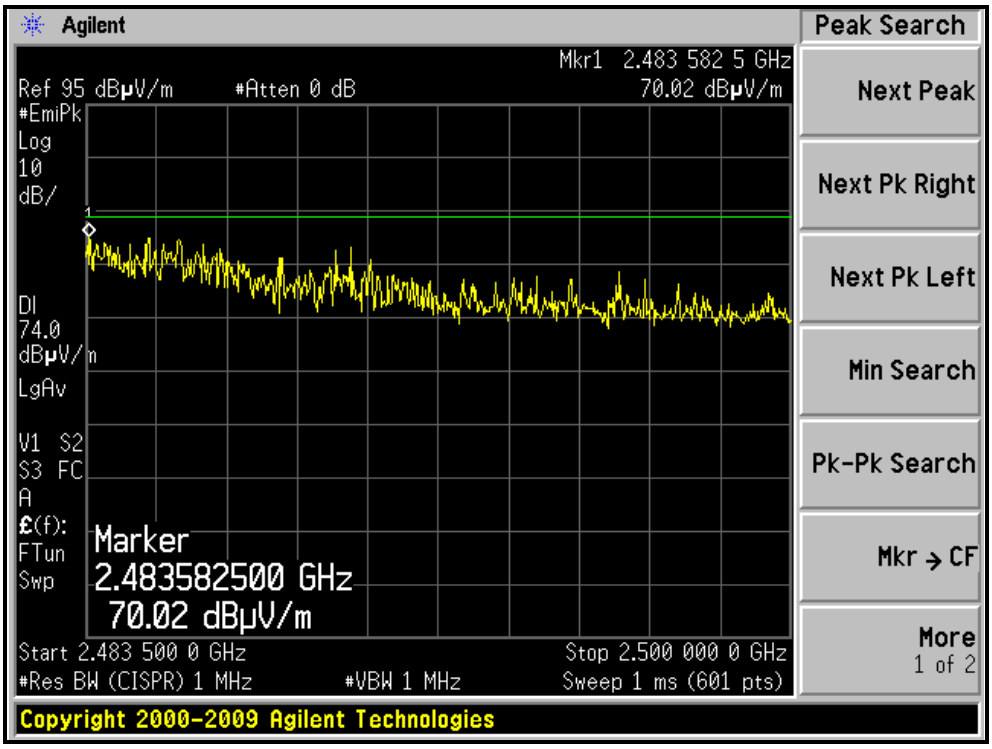
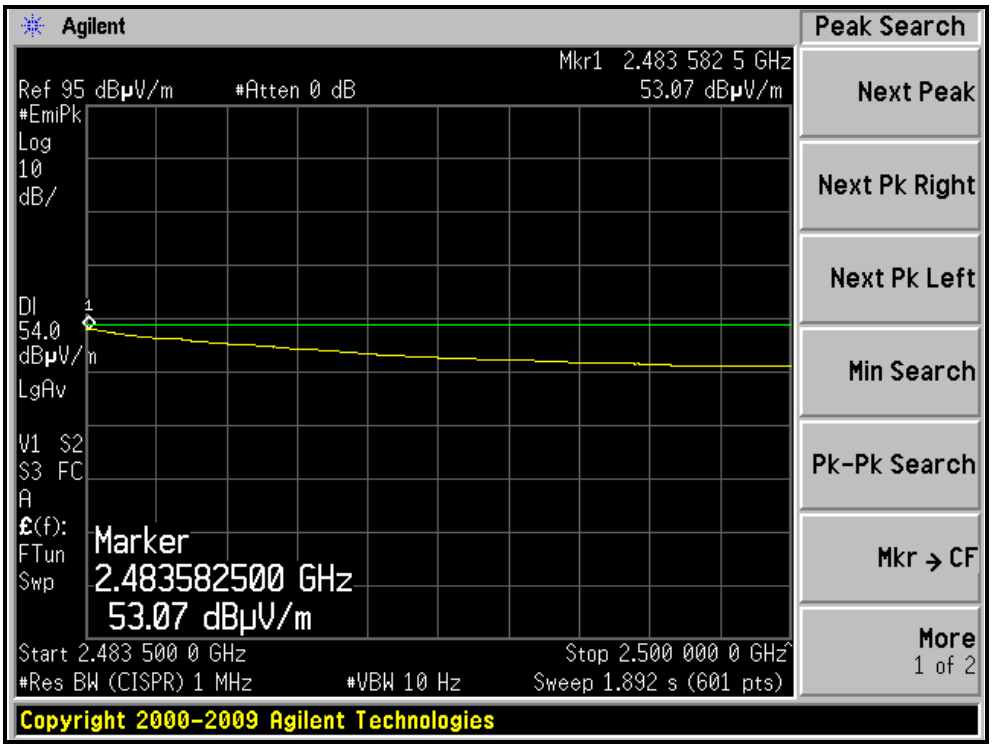
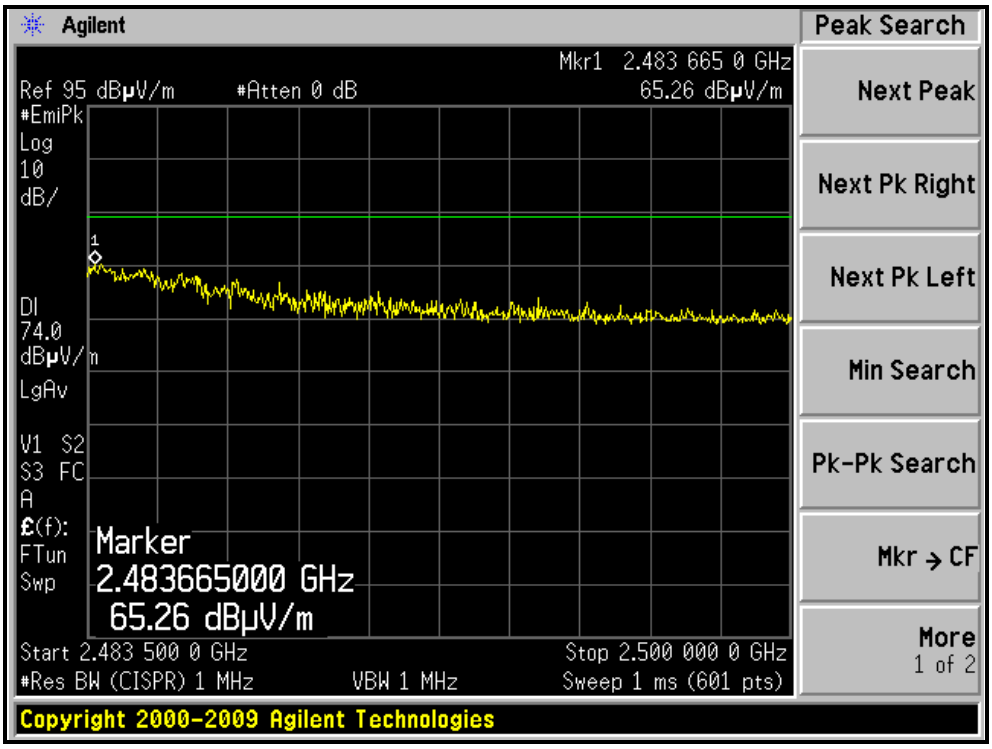
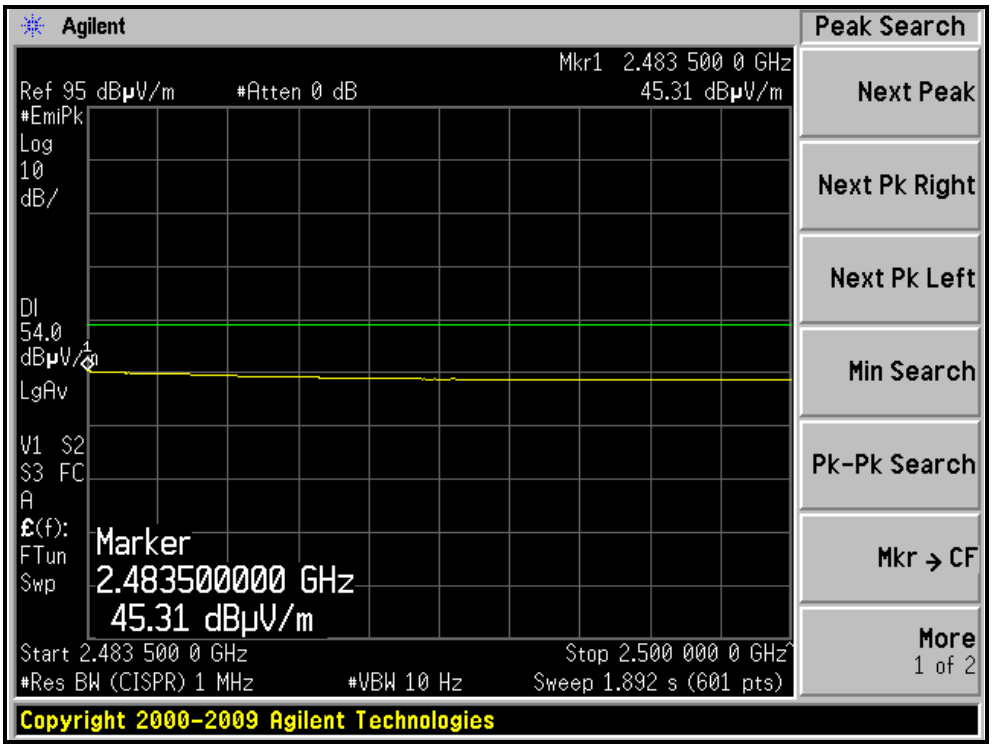




RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	70.5 PK	74.0	-3.5	1.00 H	254	39.29	31.21
2	2390.00	53.1 AV	54.0	-0.9	1.00 H	254	21.89	31.21
3	*2412.00	106.4 PK			1.00 H	254	75.13	31.27
4	*2412.00	96.1 AV			1.00 H	254	64.83	31.27
5	4824.00	53.4 PK	74.0	-20.6	1.33 H	252	13.98	39.42
6	4824.00	40.9 AV	54.0	-13.1	1.33 H	252	1.48	39.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.2 PK	74.0	-4.8	1.00 V	281	37.99	31.21
2	2390.00	48.7 AV	54.0	-5.3	1.00 V	281	17.49	31.21
3	*2412.00	105.0 PK			1.00 V	281	73.73	31.27
4	*2412.00	92.5 AV			1.00 V	281	61.23	31.27
5	4824.00	58.2 PK	74.0	-15.8	1.00 V	118	18.78	39.42
6	4824.00	43.9 AV	54.0	-10.1	1.00 V	118	4.48	39.42

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	2385.10	58.6 PK	74.0	-15.4	1.00 H	296	27.40	31.20
2	2385.10	50.0 AV	54.0	-4.0	1.00 H	296	18.80	31.20
3	*2437.00	107.2 PK			1.00 H	251	75.86	31.34
4	*2437.00	97.3 AV			1.00 H	251	65.96	31.34
5	2488.70	63.3 PK	74.0	-10.7	1.00 H	289	31.83	31.47
6	2488.70	53.2 AV	54.0	-0.8	1.00 H	289	21.73	31.47
7	4874.00	54.9 PK	74.0	-19.1	1.40 H	244	15.28	39.62
8	4874.00	42.7 AV	54.0	-11.3	1.40 H	244	3.08	39.62
9	7311.00	50.8 PK	74.0	-23.2	1.00 H	9	6.70	44.10
10	7311.00	39.4 AV	54.0	-14.6	1.00 H	9	-4.70	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.5 PK			1.00 V	277	73.16	31.34
2	*2437.00	93.8 AV			1.00 V	277	62.46	31.34
3	4874.00	62.3 PK	74.0	-11.7	1.00 V	119	22.68	39.62
4	4874.00	47.1 AV	54.0	-6.9	1.00 V	119	7.48	39.62
5	7311.00	50.8 PK	74.0	-23.2	1.00 V	87	6.70	44.10
6	7311.00	39.4 AV	54.0	-14.6	1.00 V	87	-4.70	44.10

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	109.4 PK			1.00 H	291	78.00	31.40
2	*2462.00	96.9 AV			1.00 H	291	65.50	31.40
3	2483.50	71.2 PK	74.0	-2.8	1.00 H	291	39.74	31.46
4	2483.50	51.0 AV	54.0	-3.0	1.00 H	291	19.54	31.46
5	4924.00	52.4 PK	74.0	-21.6	1.37 H	221	12.58	39.82
6	4924.00	40.6 AV	54.0	-13.4	1.37 H	221	0.78	39.82
7	7386.00	52.1 PK	74.0	-21.9	1.00 H	27	7.92	44.18
8	7386.00	40.2 AV	54.0	-13.8	1.00 H	27	-3.98	44.18
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	*2462.00	103.7 PK			1.00 V	277	72.30	31.40
2	*2462.00	91.3 AV			1.00 V	277	59.90	31.40
3	2483.50	63.8 PK	74.0	-10.2	1.00 V	277	32.34	31.46
4	2483.50	45.1 AV	54.0	-8.9	1.00 V	277	13.64	31.46
5	4924.00	61.7 PK	74.0	-12.3	1.00 V	115	21.88	39.82
6	4924.00	44.9 AV	54.0	-9.1	1.00 V	115	5.08	39.82
7	7386.00	52.0 PK	74.0	-22.0	1.00 V	88	7.82	44.18
8	7386.00	39.9 AV	54.0	-14.1	1.00 V	88	-4.28	44.18

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

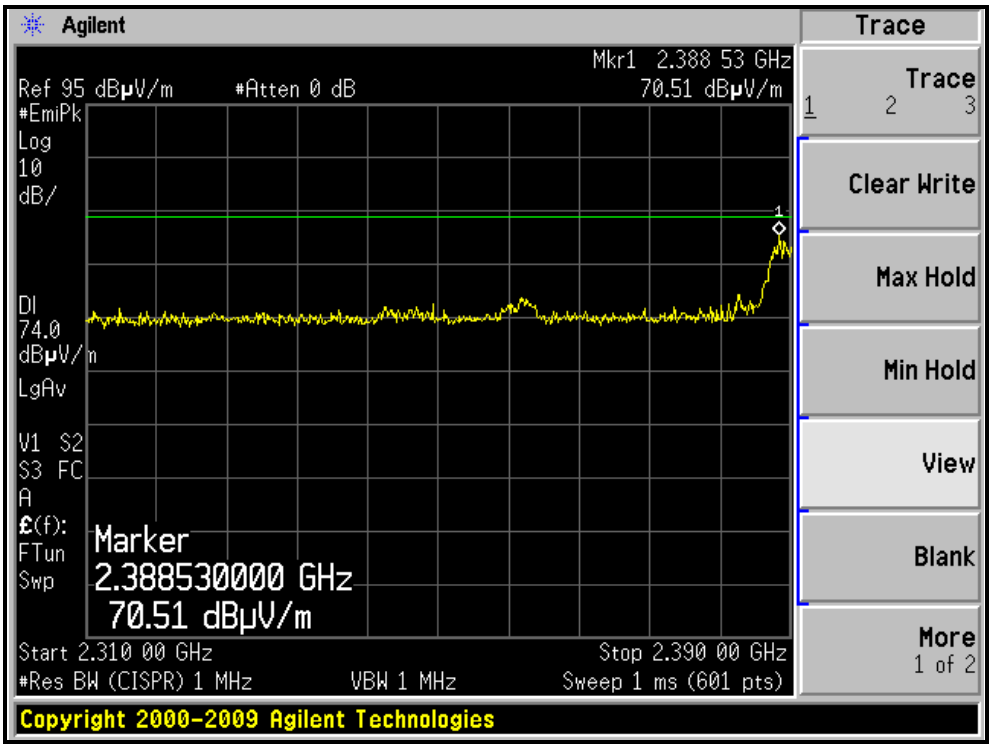
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

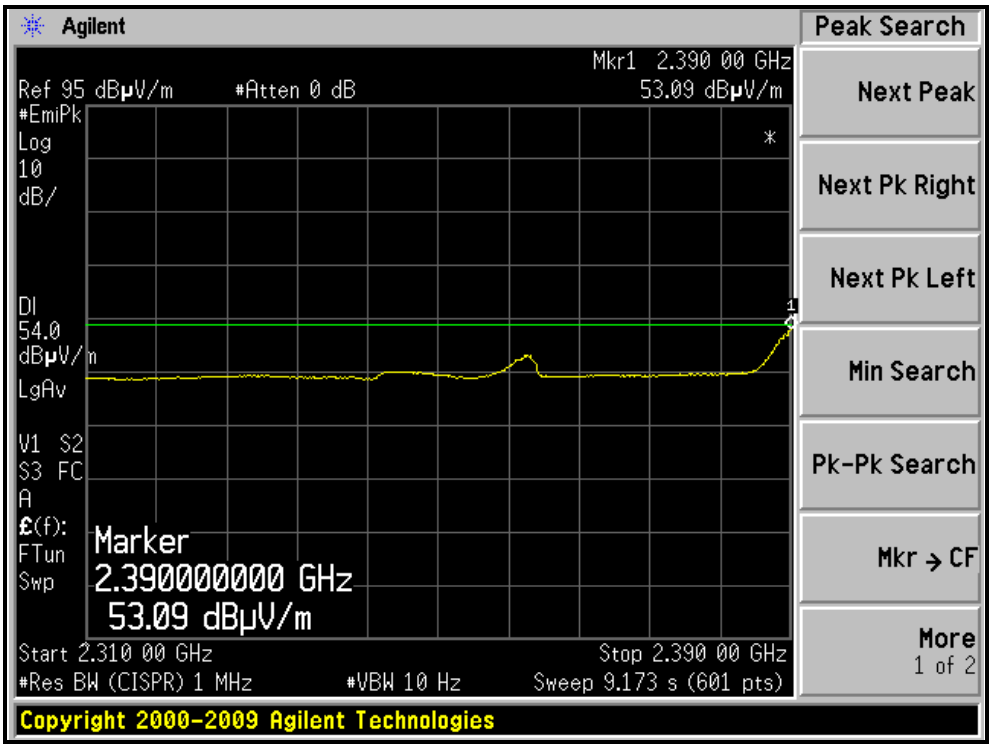
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

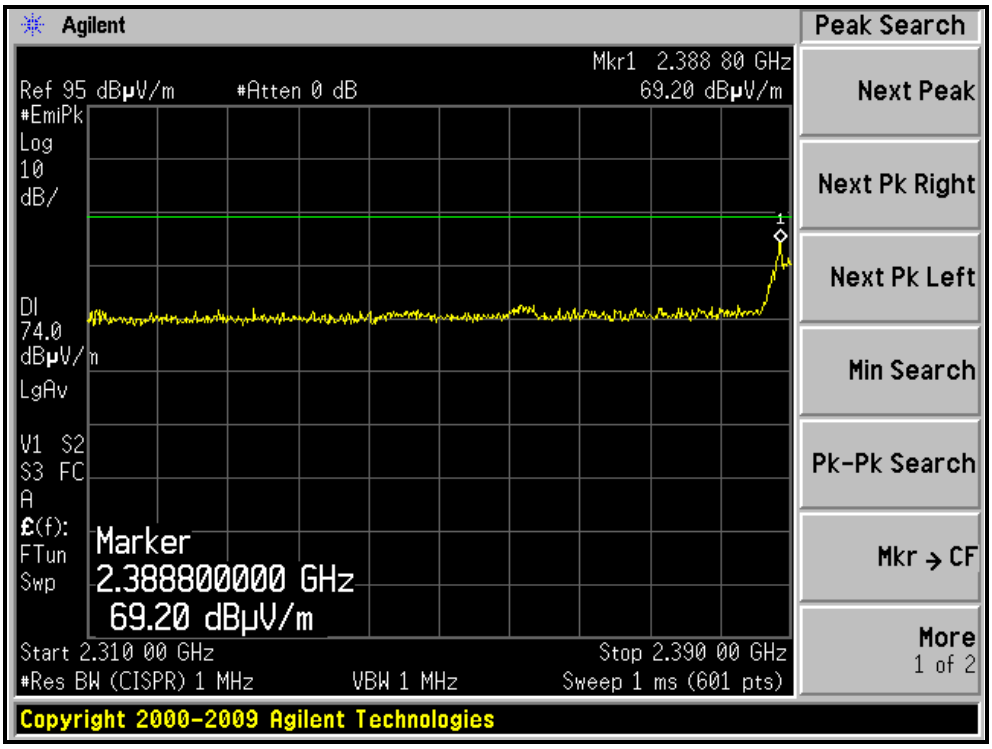
5. " * ": Fundamental frequency.

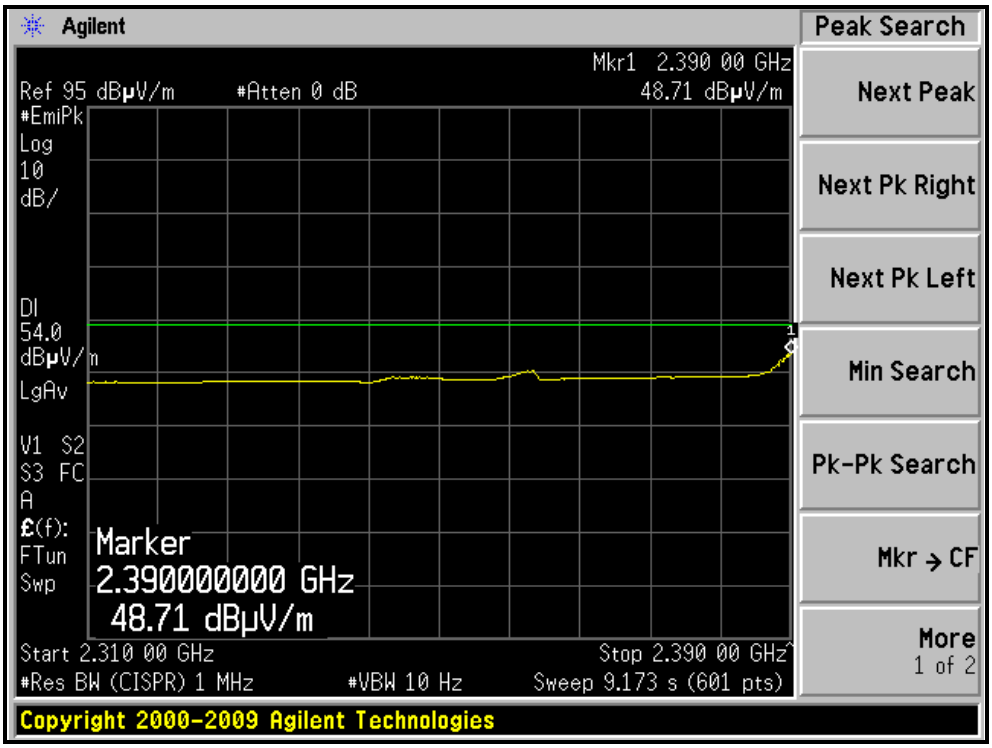
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, HORIZONTAL)



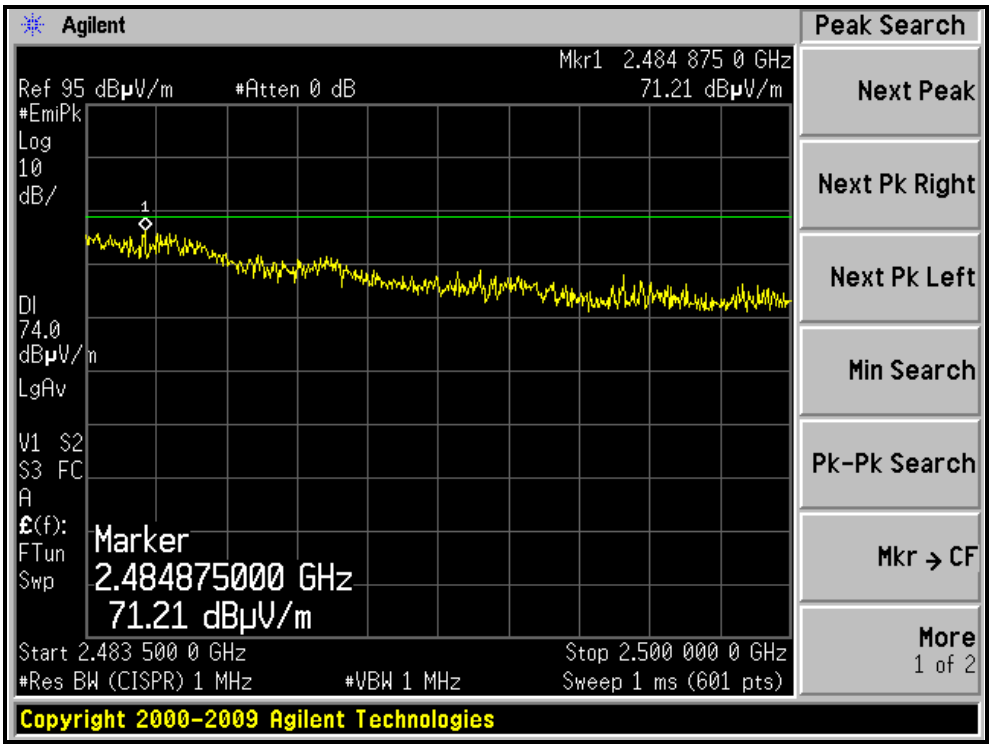


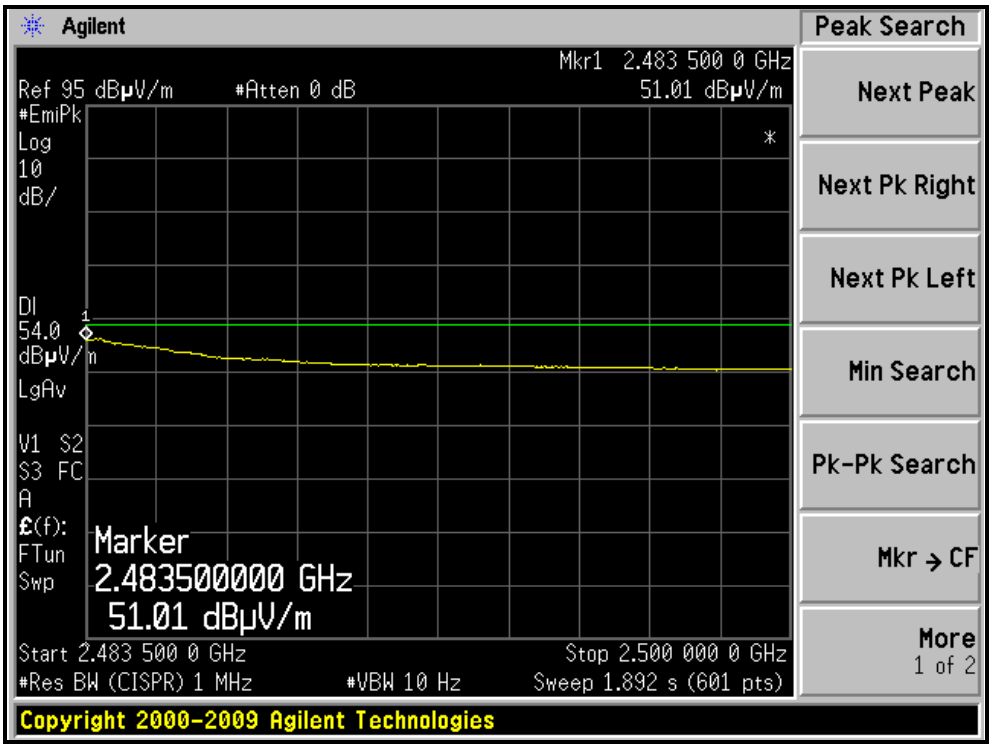
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, VERTICAL)



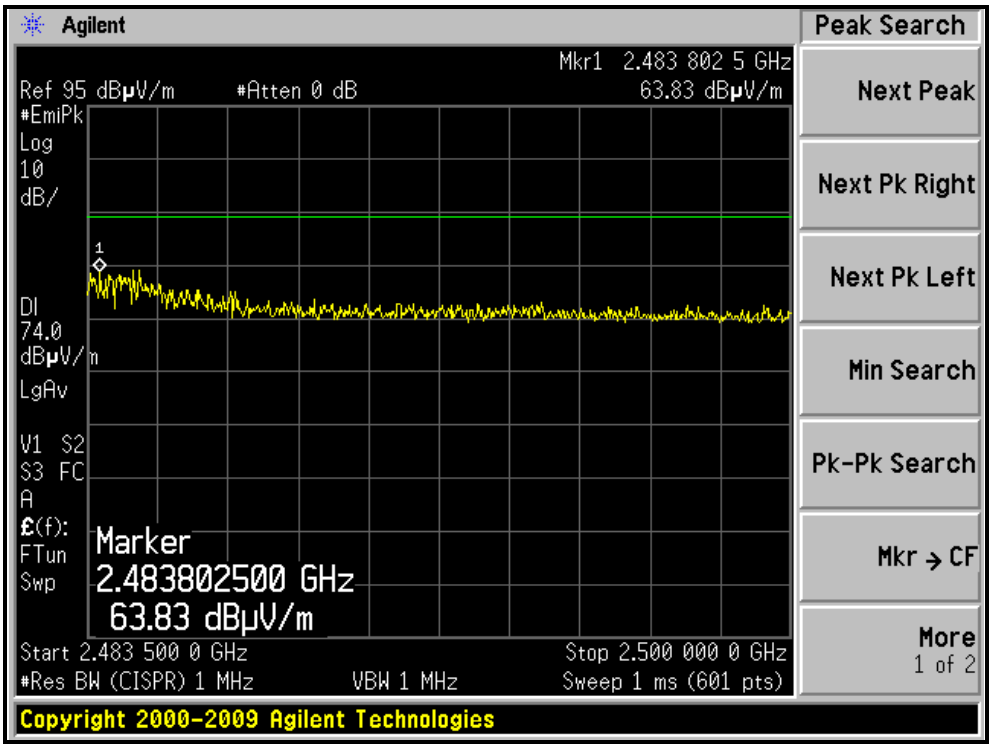


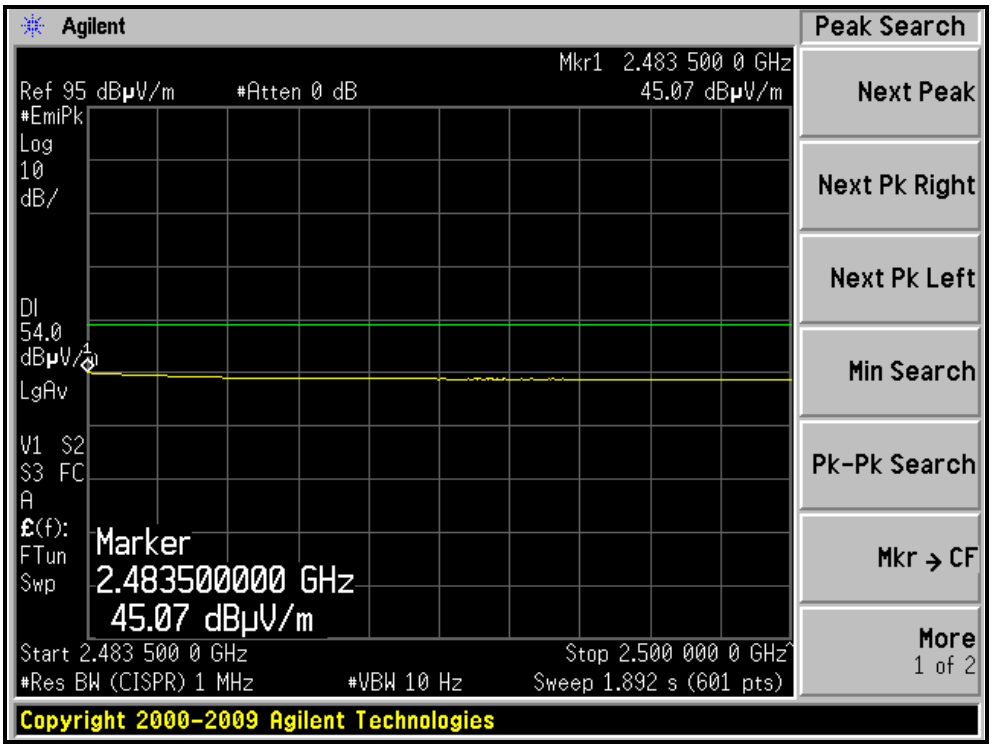
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, HORIZONTAL)





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





802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	68.8 PK	74.0	-5.2	1.00 H	302	37.59	31.21
2	2390.00	53.0 AV	54.0	-1.0	1.00 H	302	21.79	31.21
3	*2422.00	100.7 PK			1.00 H	302	69.40	31.30
4	*2422.00	90.2 AV			1.00 H	302	58.90	31.30
5	4844.00	50.6 PK	74.0	-23.4	1.35 H	224	11.10	39.50
6	4844.00	37.7 AV	54.0	-16.3	1.35 H	224	-1.80	39.50
7	7266.00	51.3 PK	74.0	-22.7	1.00 H	15	7.24	44.06
8	7266.00	40.2 AV	54.0	-13.8	1.00 H	15	-3.86	44.06
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	2389.33	66.7 PK	74.0	-7.3	1.00 V	278	35.49	31.21
2	2389.33	49.5 AV	54.0	-4.5	1.00 V	278	18.29	31.21
3	*2422.00	98.8 PK			1.00 V	278	67.50	31.30
4	*2422.00	86.4 AV			1.00 V	278	55.10	31.30
5	4844.00	52.8 PK	74.0	-21.2	1.05 V	115	13.30	39.50
6	4844.00	39.5 AV	54.0	-14.5	1.05 V	115	0.00	39.50
7	7266.00	51.0 PK	74.0	-23.0	1.00 V	90	6.94	44.06
8	7266.00	39.8 AV	54.0	-14.2	1.00 V	90	-4.26	44.06

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	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.5 PK	74.0	-4.5	1.00 H	296	38.29	31.21
2	2390.00	53.1 AV	54.0	-0.9	1.00 H	296	21.89	31.21
3	*2437.00	105.8 PK			1.00 H	282	74.46	31.34
4	*2437.00	94.8 AV			1.00 H	282	63.46	31.34
5	2483.50	68.8 PK	74.0	-5.2	1.00 H	291	37.34	31.46
6	2483.50	52.0 AV	54.0	-2.0	1.00 H	291	20.54	31.46
7	4874.00	52.7 PK	74.0	-21.3	1.36 H	208	13.08	39.62
8	4874.00	40.6 AV	54.0	-13.4	1.36 H	208	0.98	39.62
9	7311.00	51.7 PK	74.0	-22.3	1.00 H	21	7.60	44.10
10	7311.00	40.9 AV	54.0	-13.1	1.00 H	21	-3.20	44.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.6 PK			1.00 V	276	71.26	31.34
2	*2437.00	91.1 AV			1.00 V	276	59.76	31.34
3	4874.00	58.7 PK	74.0	-15.3	1.06 V	114	19.08	39.62
4	4874.00	42.5 AV	54.0	-11.5	1.06 V	114	2.88	39.62
5	7311.00	50.4 PK	74.0	-23.6	1.00 V	86	6.30	44.10
6	7311.00	39.5 AV	54.0	-14.5	1.00 V	86	-4.60	44.10

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 9	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 64%RH 1003 hPa	TESTED BY	Frank Liu

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	102.5 PK			1.00 H	278	71.12	31.38
2	*2452.00	92.5 AV			1.00 H	278	61.12	31.38
3	2483.50	69.6 PK	74.0	-4.4	1.00 H	278	38.14	31.46
4	2483.50	52.4 AV	54.0	-1.6	1.00 H	278	20.94	31.46
5	4904.00	51.5 PK	74.0	-22.5	1.35 H	216	11.76	39.74
6	4904.00	38.2 AV	54.0	-15.8	1.35 H	216	-1.54	39.74
7	7356.00	51.4 PK	74.0	-22.6	1.00 H	27	7.25	44.15
8	7356.00	40.5 AV	54.0	-13.5	1.00 H	27	-3.65	44.15
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	99.7 PK			1.00 V	277	68.32	31.38
2	*2452.00	87.4 AV			1.00 V	277	56.02	31.38
3	2483.50	65.3 PK	74.0	-8.7	1.00 V	277	33.84	31.46
4	2483.50	46.4 AV	54.0	-7.6	1.00 V	277	14.94	31.46
5	4904.00	53.2 PK	74.0	-20.8	1.23 V	56	13.46	39.74
6	4904.00	39.5 AV	54.0	-14.5	1.23 V	56	-0.24	39.74
7	7356.00	50.8 PK	74.0	-23.2	1.00 V	91	6.65	44.15
8	7356.00	39.2 AV	54.0	-14.8	1.00 V	91	-4.95	44.15

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

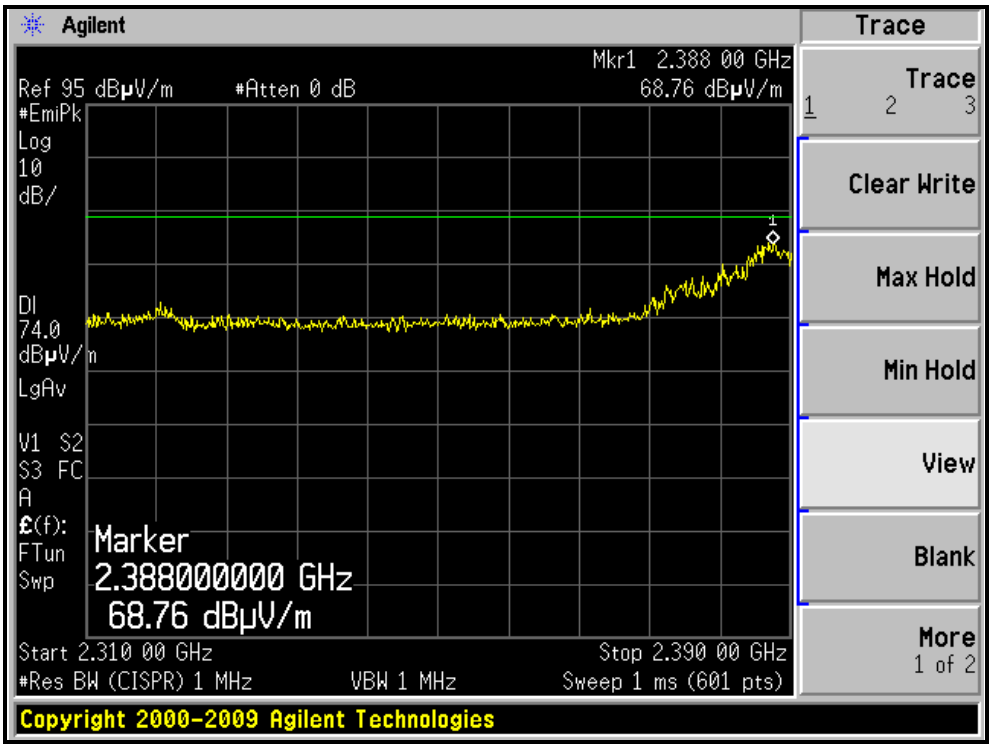
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

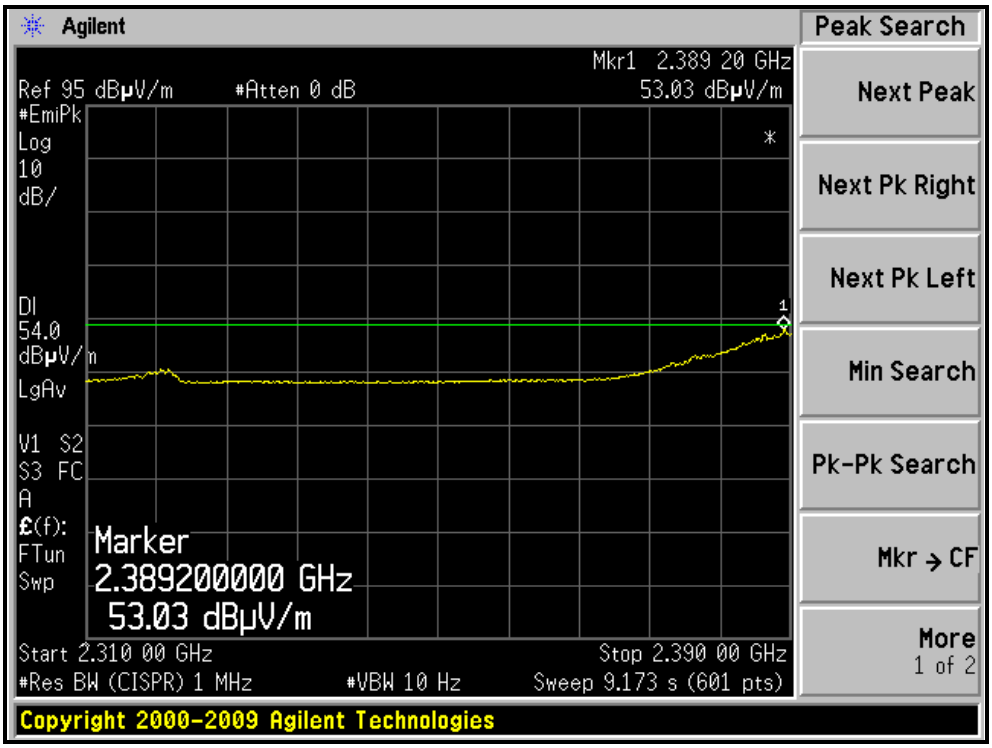
3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

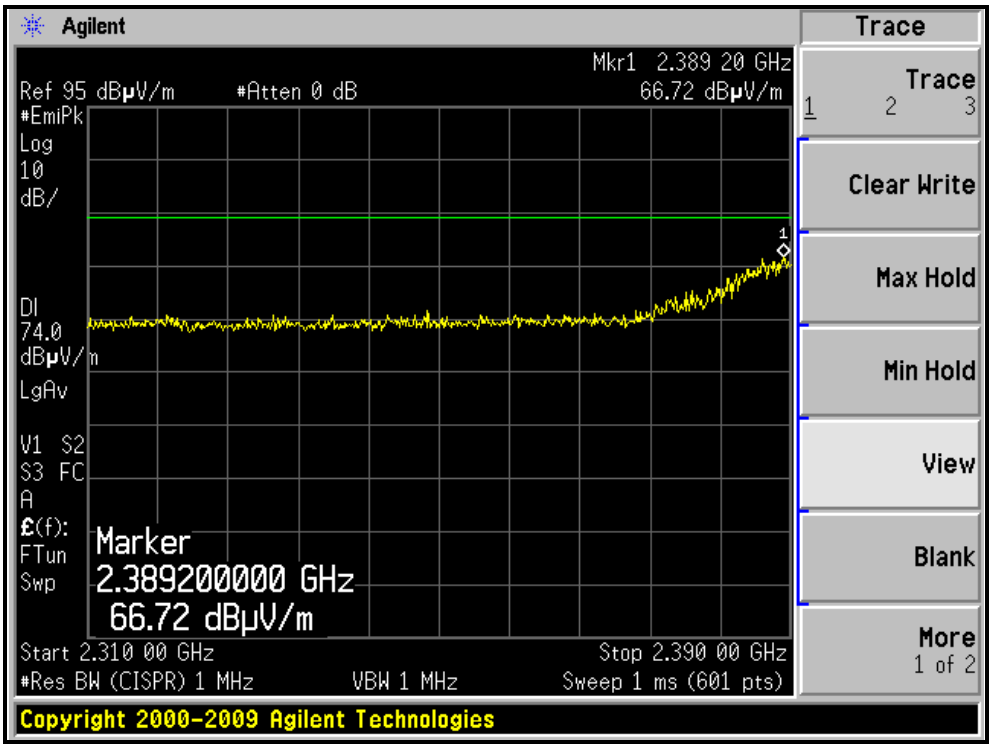
5. " * ": Fundamental frequency.

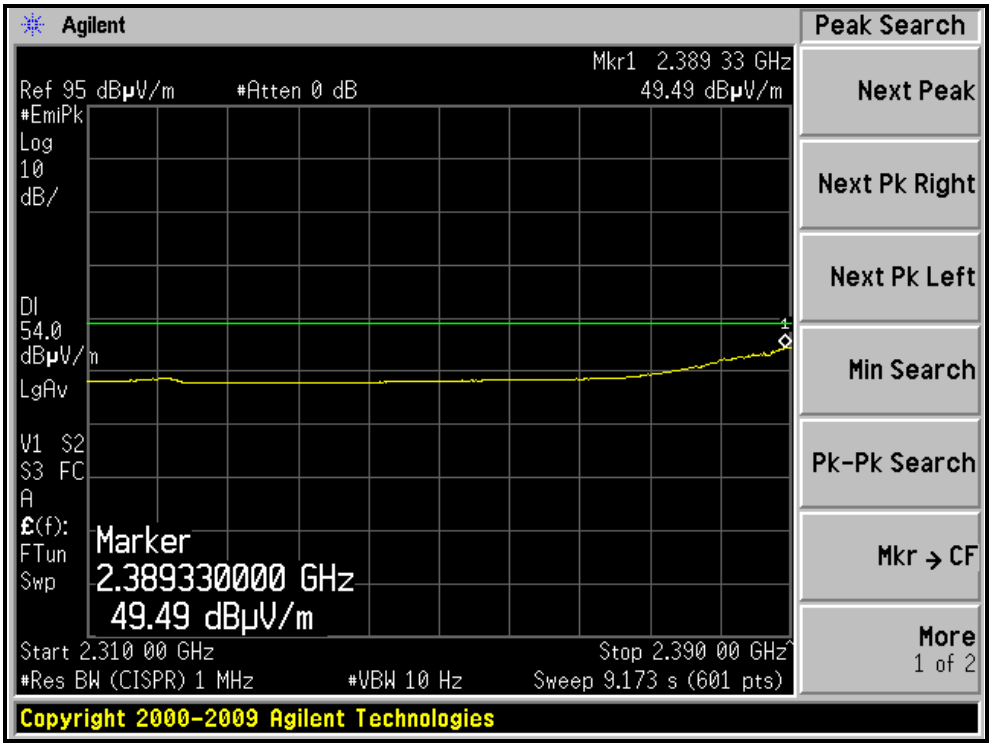
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, HORIZONTAL)



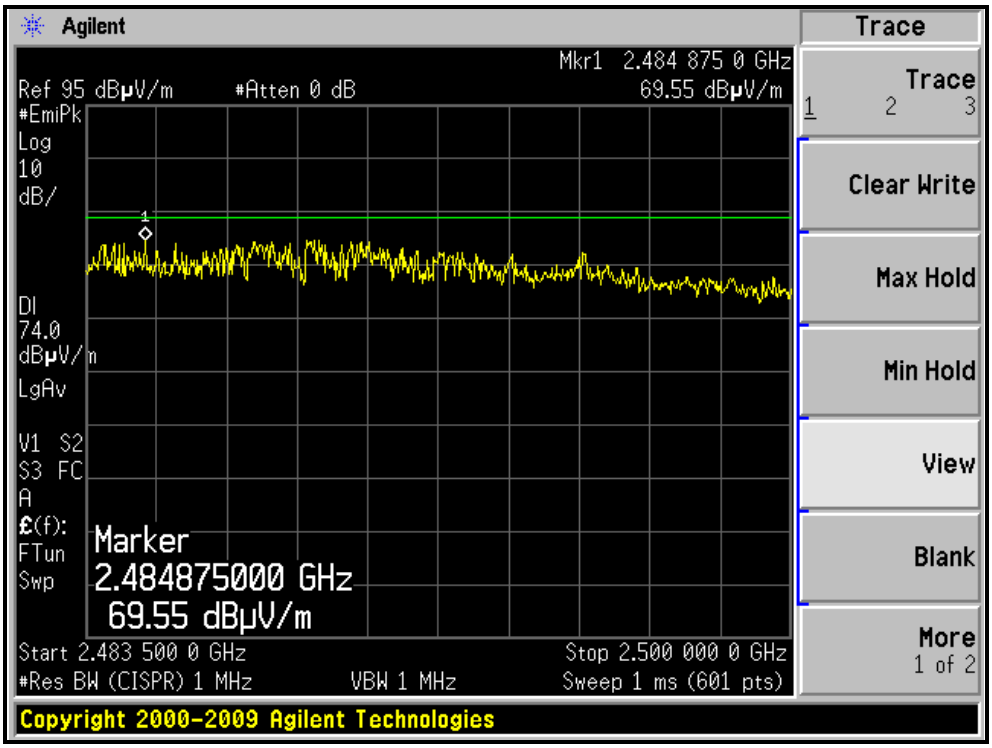


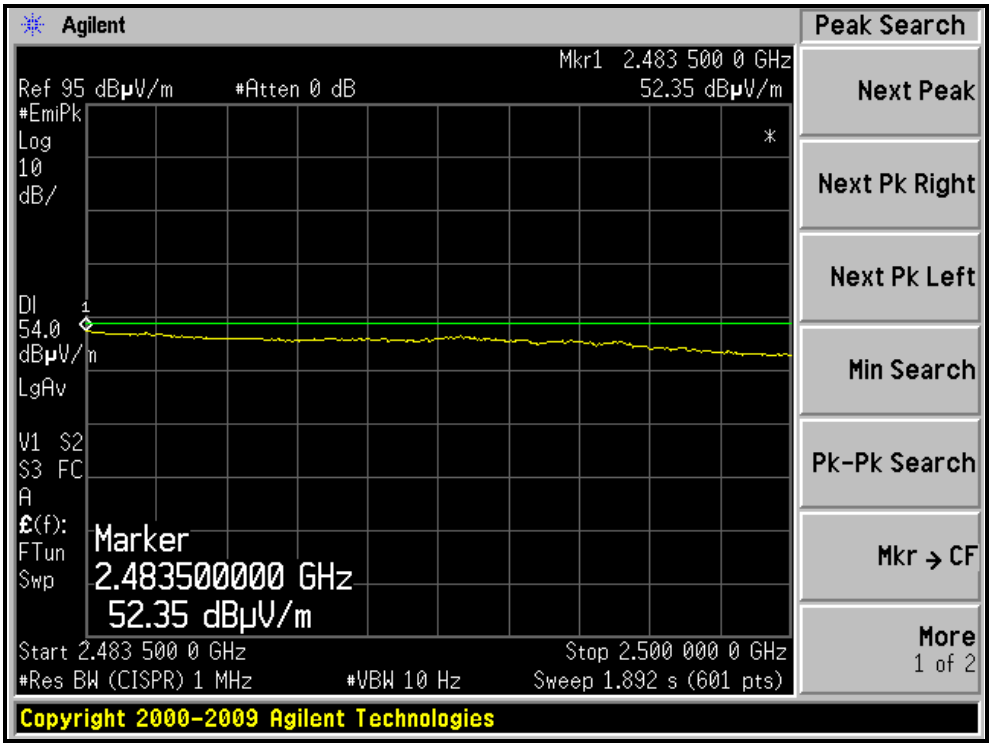
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, VERTICAL)



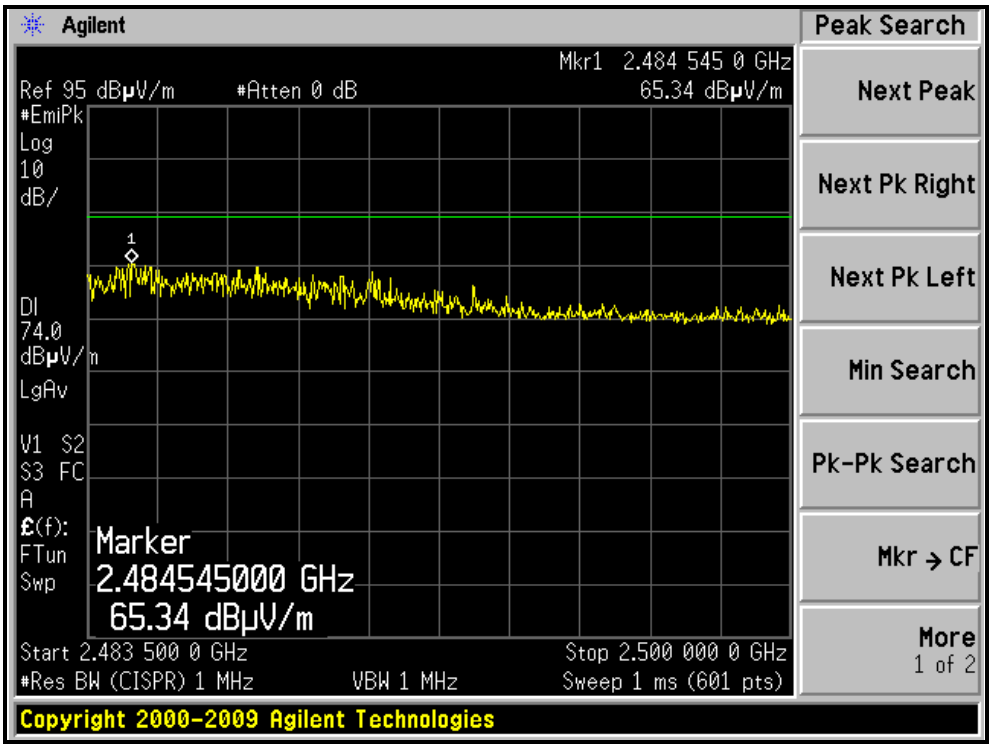


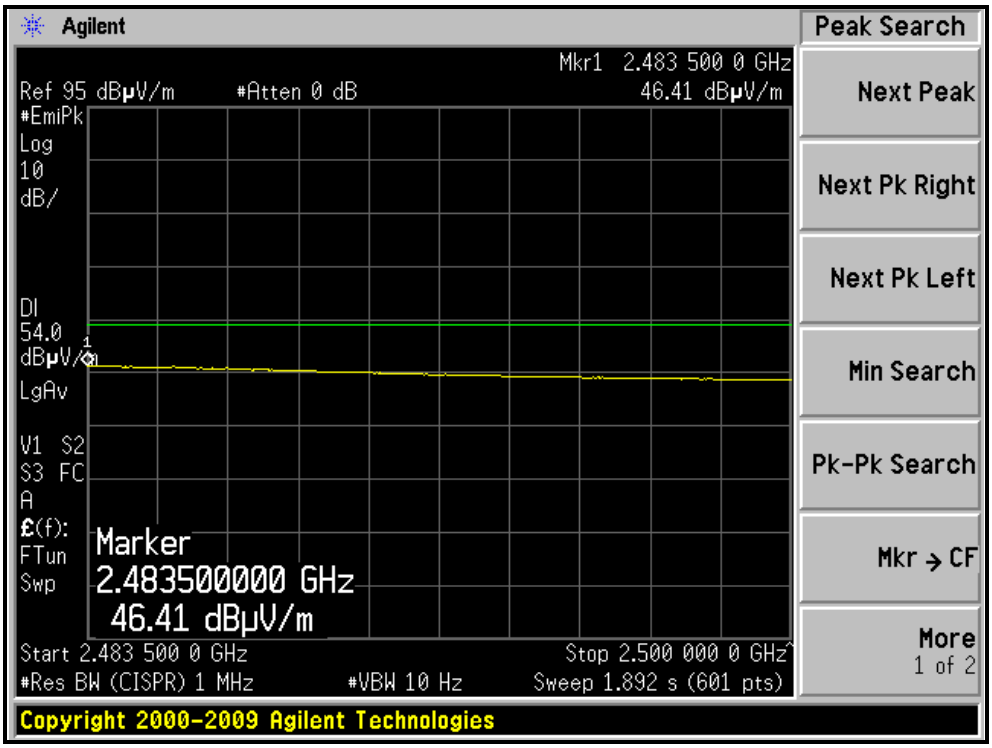
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, HORIZONTAL)





RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, 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	FSP 40	100060	May 11, 2011	May 10, 2012

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

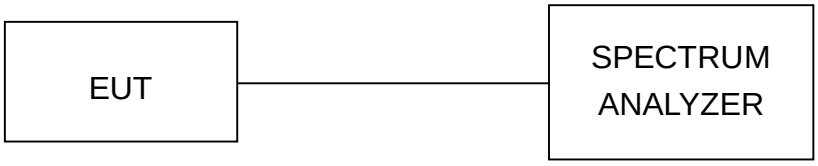
4.3.3 TEST PROCEDURE

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 300kHz 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

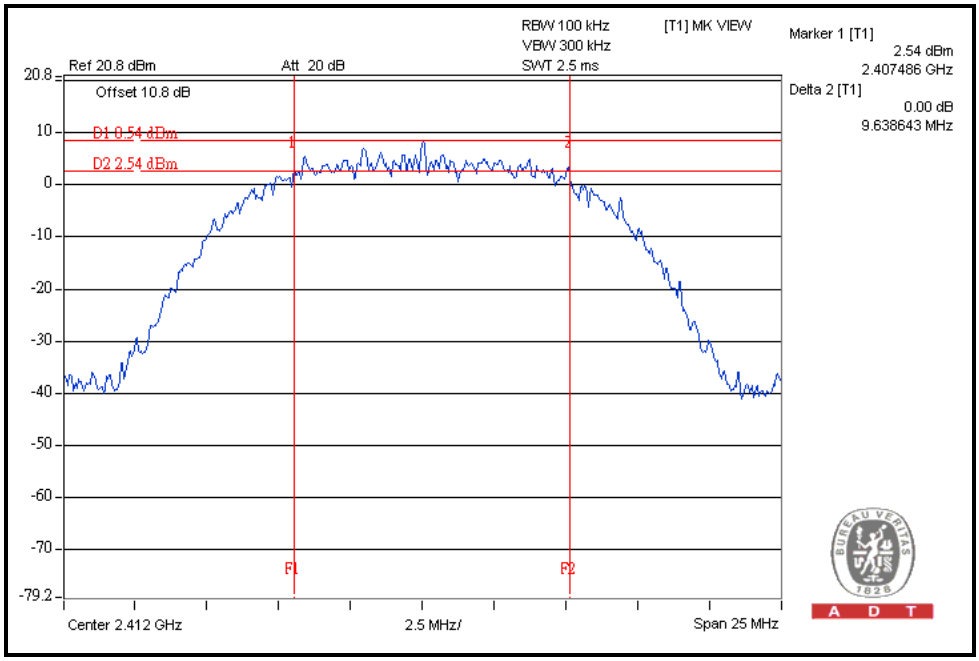
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	9.63	0.5	PASS
6	2437	9.27	0.5	PASS
11	2462	8.81	0.5	PASS

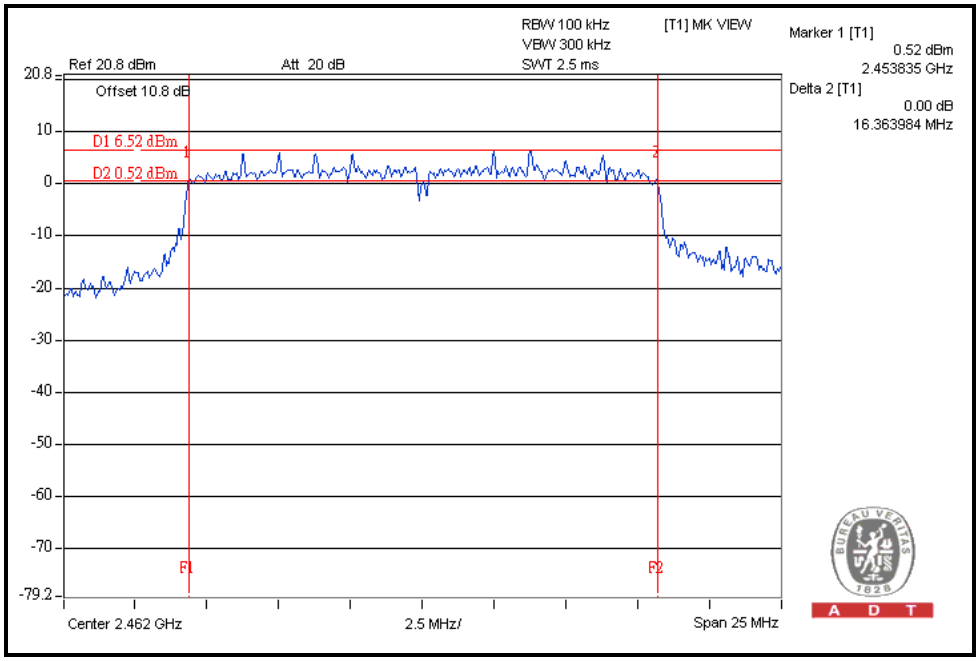
CH1



802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.35	0.5	PASS
6	2437	15.53	0.5	PASS
11	2462	16.36	0.5	PASS

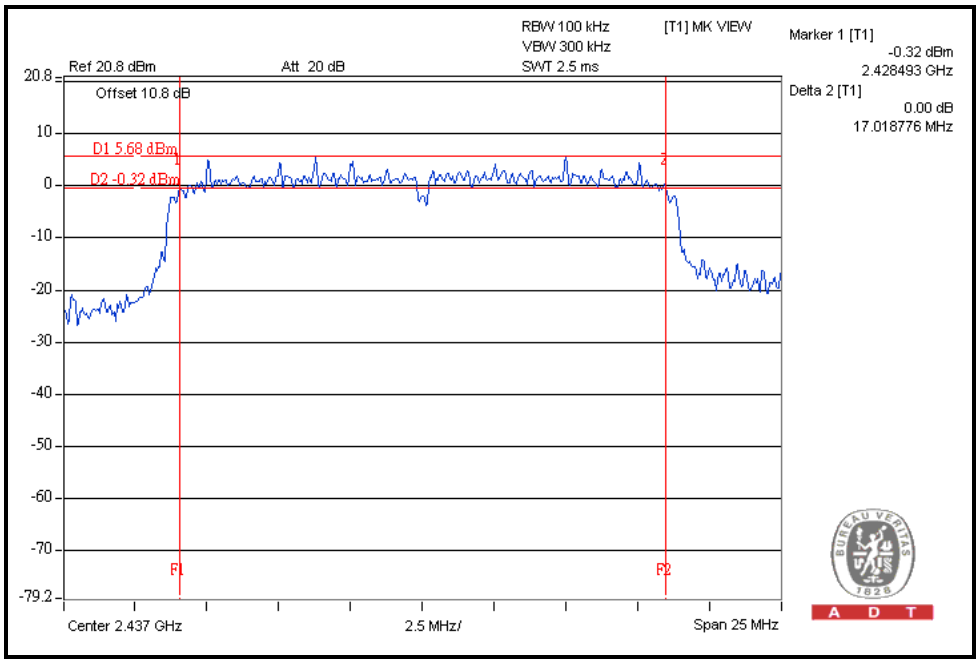
CH11



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.06	0.5	PASS
6	2437	17.01	0.5	PASS
11	2462	17.00	0.5	PASS

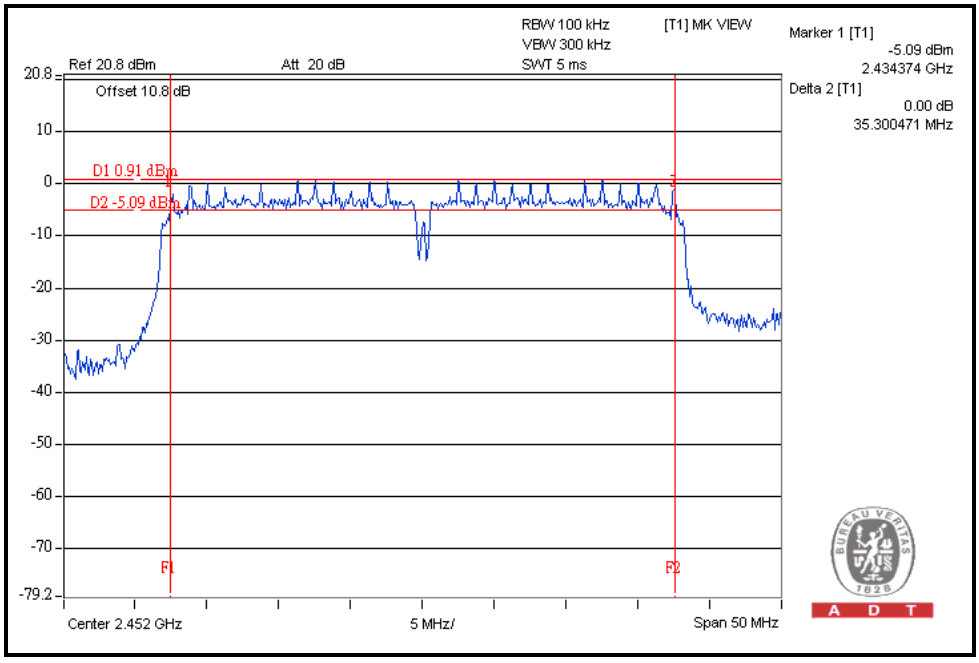
CH6



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.29	0.5	PASS
6	2437	35.13	0.5	PASS
9	2452	35.30	0.5	PASS

CH9



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	May 04, 2011	May 03, 2012
Pulse Power Sensor	MA2411B	0738172	May 03, 2011	May 02, 2012

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

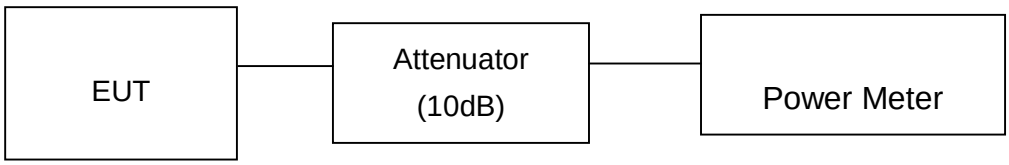
4.4.3 TEST PROCEDURES

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:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	85.1	19.3	30	PASS
6	2437	74.1	18.7	30	PASS
11	2462	64.6	18.1	30	PASS

802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	323.6	25.1	30	PASS
6	2437	371.5	25.7	30	PASS
11	2462	323.6	25.1	30	PASS

802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
1	2412	24.6	24.7	583.5	27.7	30	PASS
6	2437	24.7	25.1	618.7	27.9	30	PASS
11	2462	23.8	24.1	496.9	27.0	30	PASS

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)				
3	2422	21.2	21.1	260.7	24.2	30	PASS
6	2437	24.1	24.1	514.1	27.1	30	PASS
9	2452	23.4	23.2	427.7	26.3	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	FSP 40	100060	May 11, 2011	May 10, 2012

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

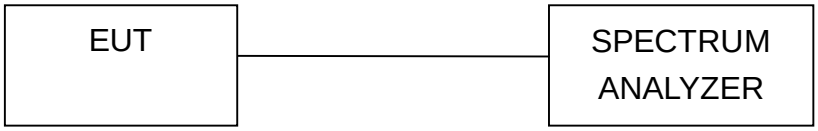
4.5.3 TEST PROCEDURE

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

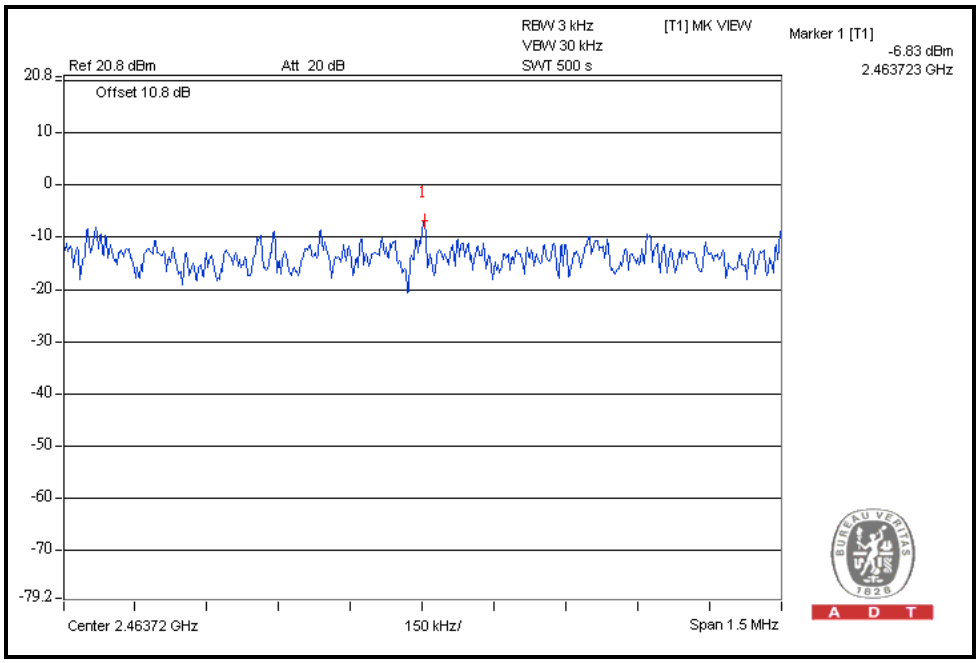
Same as Item 4.3.6

4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-7.1	8	PASS
6	2437	-7.8	8	PASS
11	2462	-6.8	8	PASS

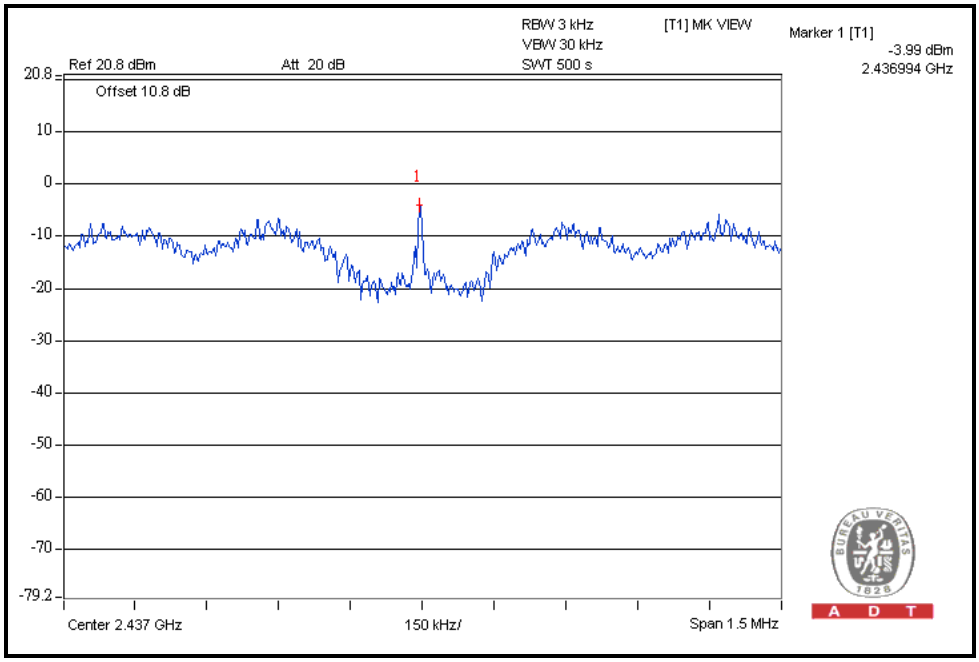
CH11



802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-6.8	8	PASS
6	2437	-4.0	8	PASS
11	2462	-5.6	8	PASS

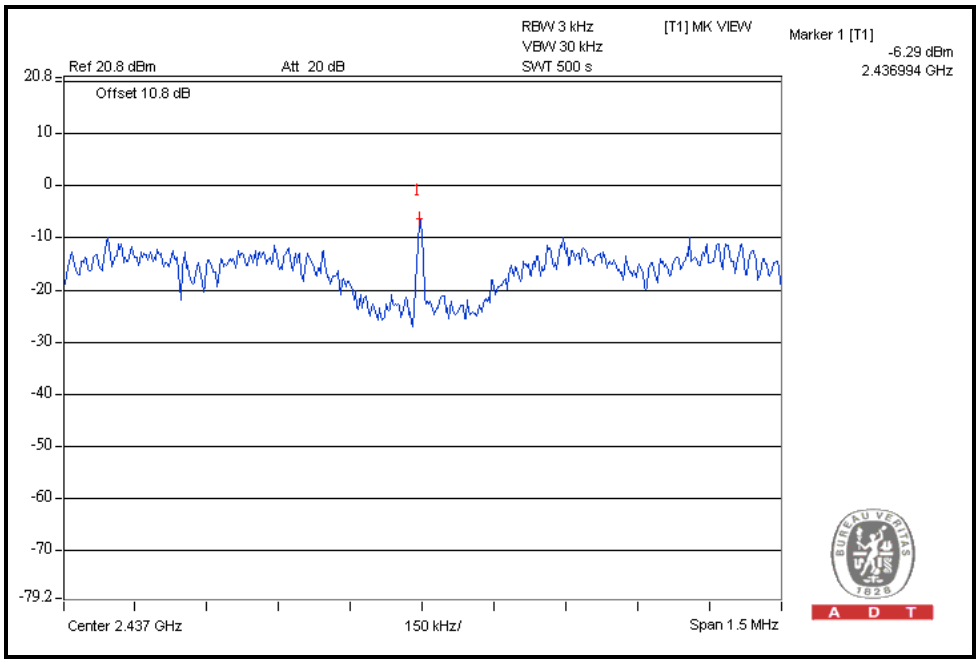
CH6



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
1	2412	-7.9	-10.8	-6.1	8	PASS
6	2437	-6.3	-9.3	-4.5	8	PASS
11	2462	-8.0	-10.6	-6.1	8	PASS

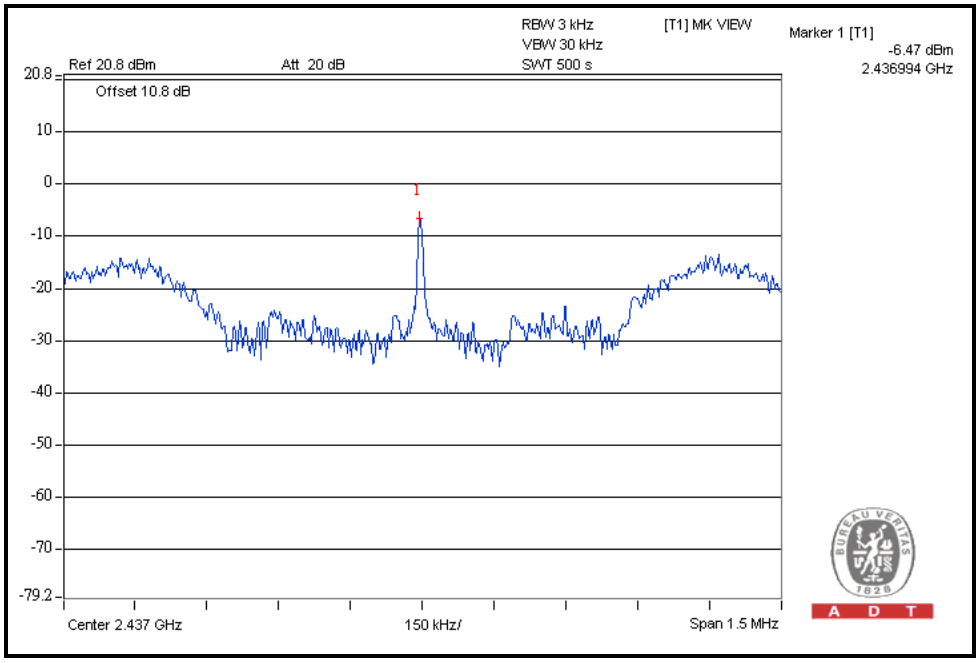
For Chain(0): CH6



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
3	2422	-12.9	-14.5	-10.6	8	PASS
6	2437	-6.5	-10.2	-5.0	8	PASS
9	2452	-10.1	-13.5	-8.5	8	PASS

For Chain(0): CH6



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	FSP 40	100060	May 11, 2011	May 10, 2012

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 or 200 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

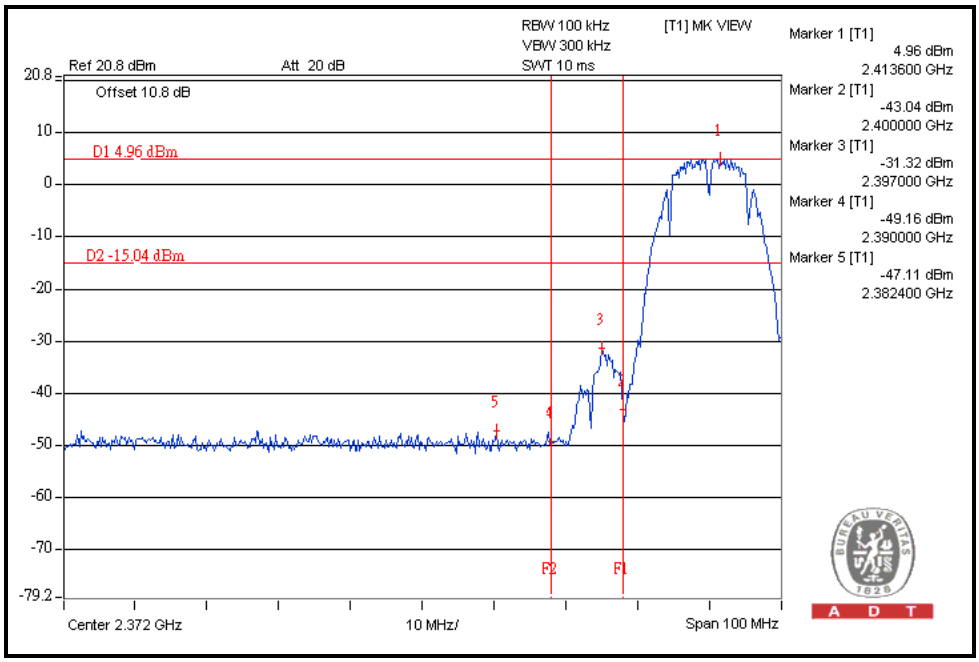
Same as Item 4.3.6

4.6.6 TEST RESULTS

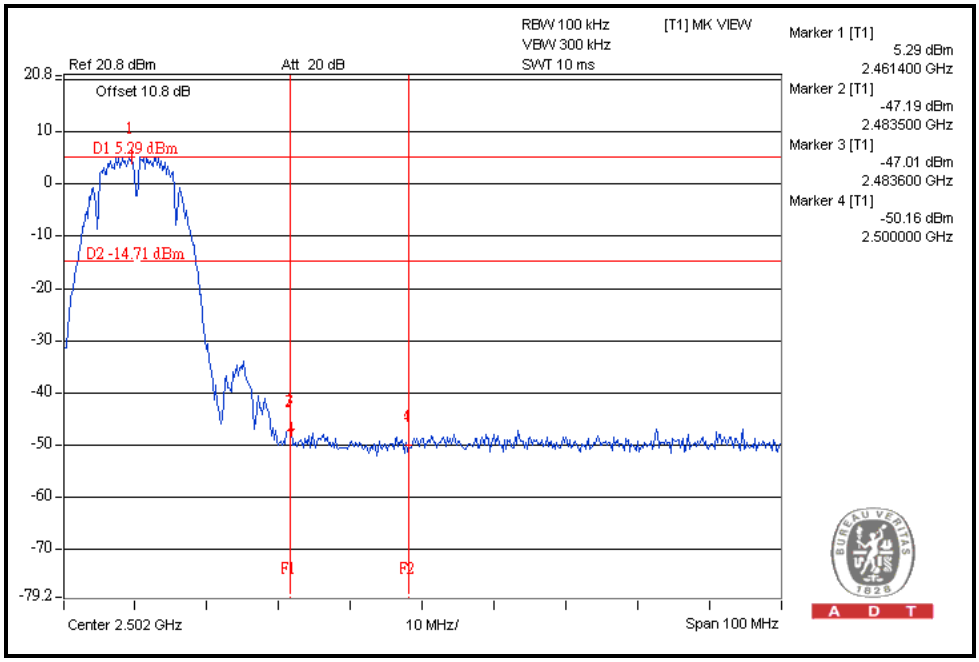
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

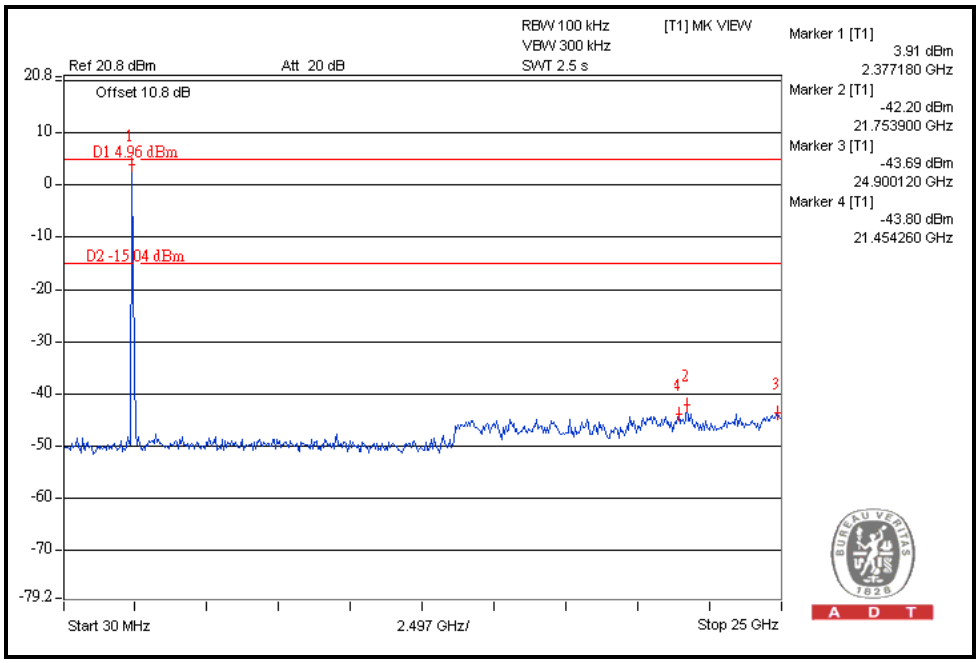
CH1



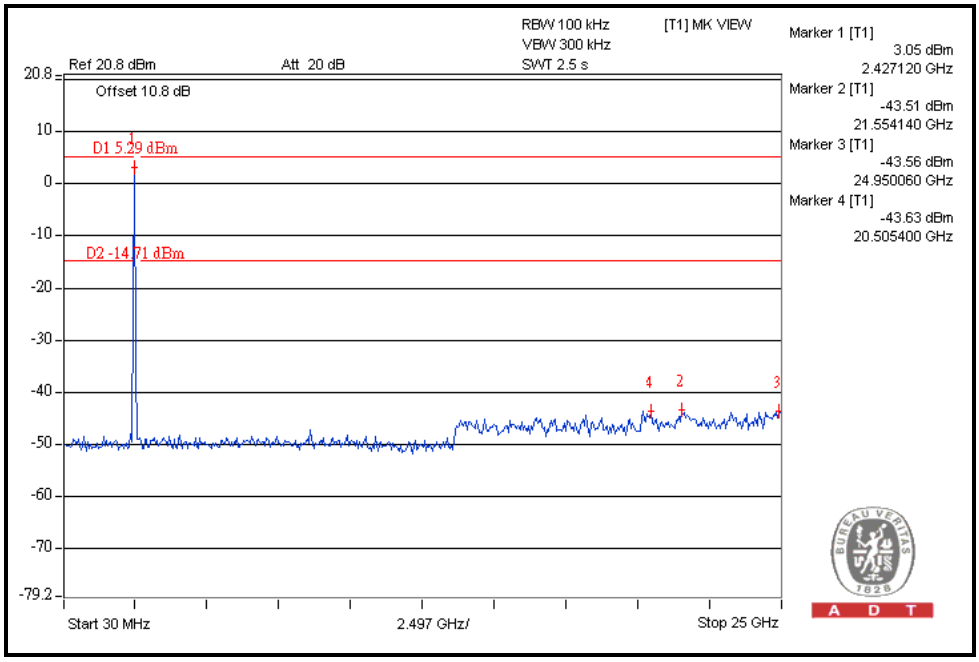
CH11



CH1

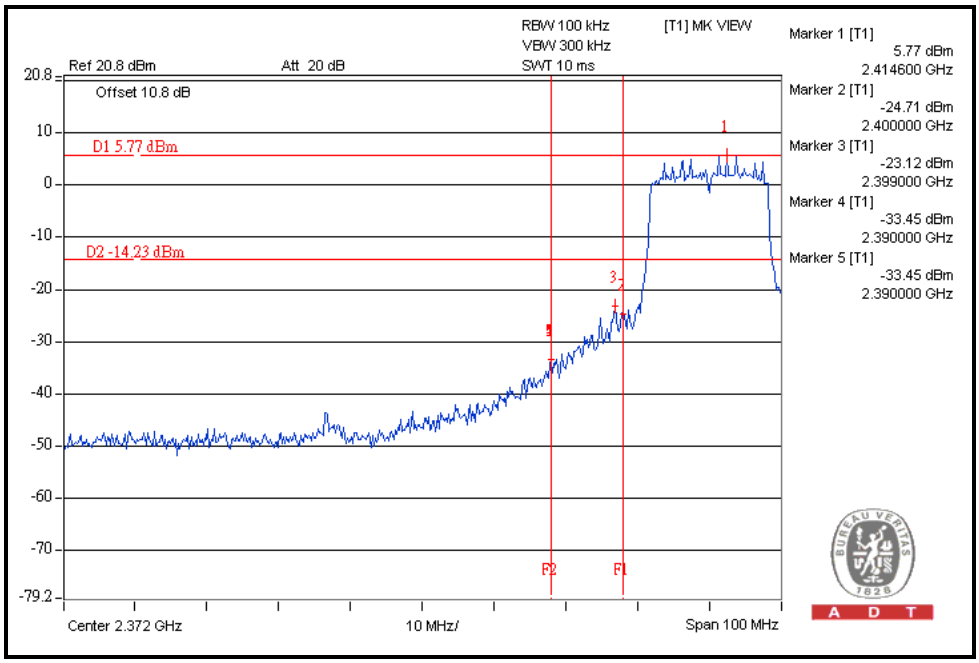

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 20 dB
Offset 10.8 dB
D1 4.96 dBm
D2 -15.04 dBm
Marker 1 [T1]
3.91 dBm
2.377180 GHz
Marker 2 [T1]
-42.20 dBm
21.753900 GHz
Marker 3 [T1]
-43.69 dBm
24.900120 GHz
Marker 4 [T1]
-43.80 dBm
21.454260 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

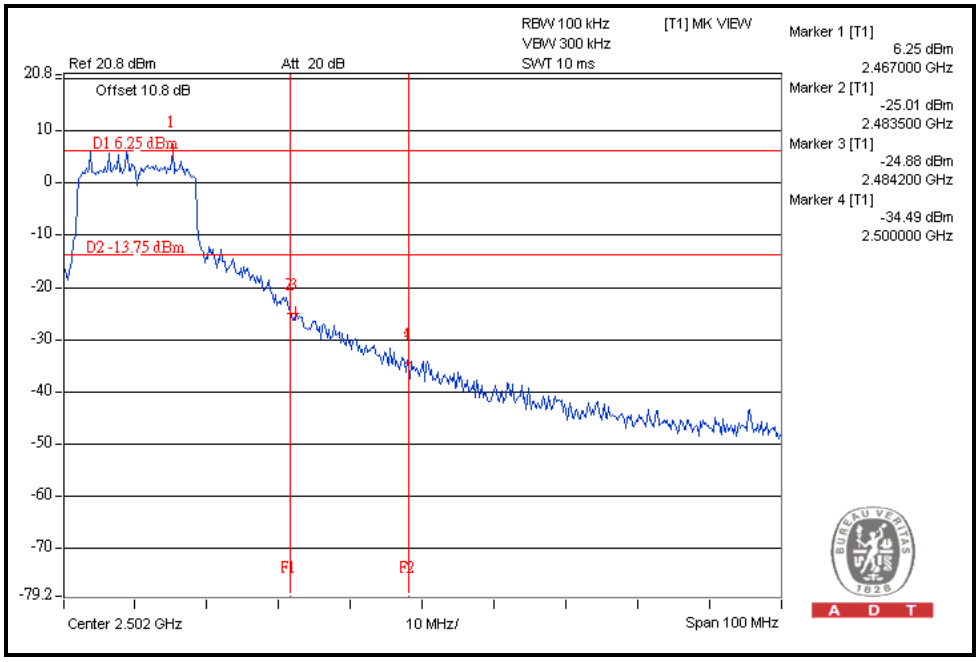

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 20 dB
Offset 10.8 dB
D1 5.29 dBm
D2 -14.71 dBm
Marker 1 [T1]
3.05 dBm
2.427120 GHz
Marker 2 [T1]
-43.51 dBm
21.554140 GHz
Marker 3 [T1]
-43.56 dBm
24.950060 GHz
Marker 4 [T1]
-43.63 dBm
20.505400 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM MODULATION:

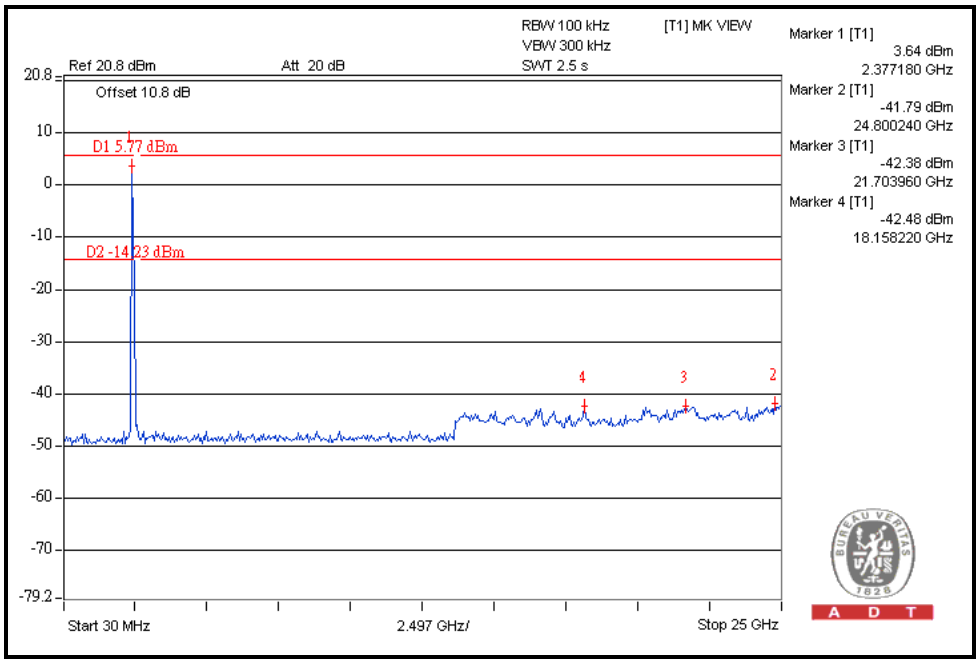
CH1



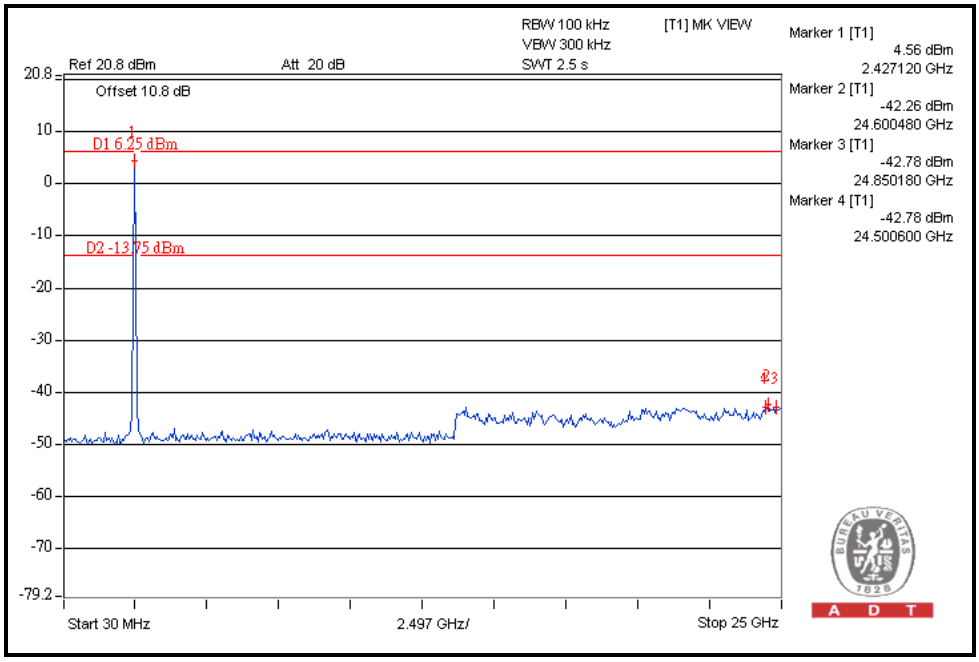
CH11



CH1

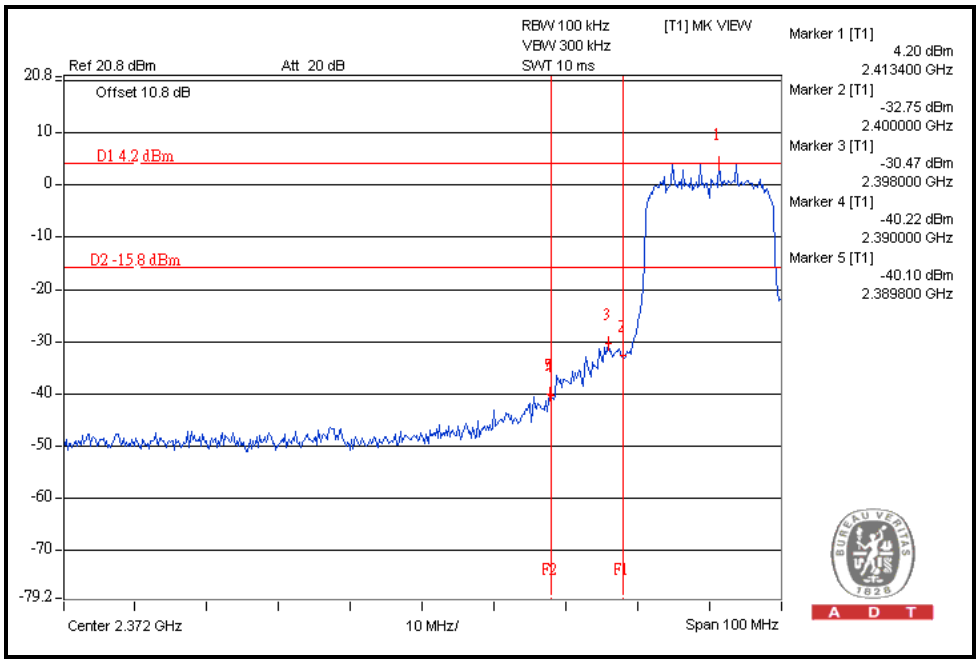

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 20 dB
Offset 10.8 dB
D1 5.77 dBm
D2 -14.23 dBm
Marker 1 [T1]
3.64 dBm
2.377180 GHz
Marker 2 [T1]
-41.79 dBm
24.800240 GHz
Marker 3 [T1]
-42.38 dBm
21.703960 GHz
Marker 4 [T1]
-42.48 dBm
18.158220 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

CH11

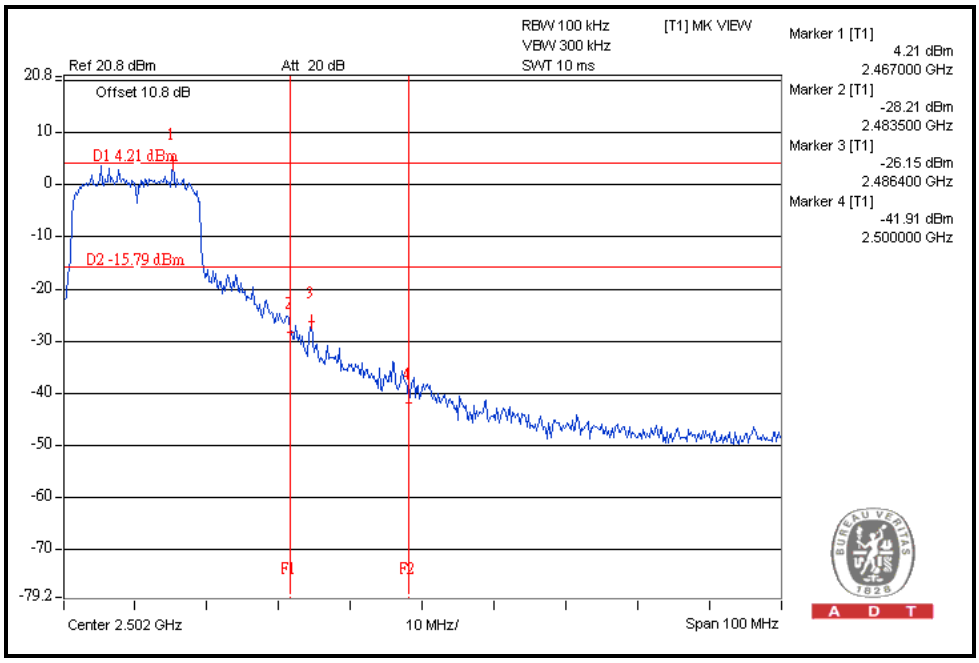

RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20.8 dBm
Att 20 dB
Offset 10.8 dB
D1 6.25 dBm
D2 -13.75 dBm
Marker 1 [T1]
4.56 dBm
2.427120 GHz
Marker 2 [T1]
-42.26 dBm
24.600480 GHz
Marker 3 [T1]
-42.78 dBm
24.850180 GHz
Marker 4 [T1]
-42.78 dBm
24.500600 GHz
20.8
10
0
-10
-20
-30
-40
-50
-60
-70
-79.2
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11n (20MHz) OFDM MODULATION:

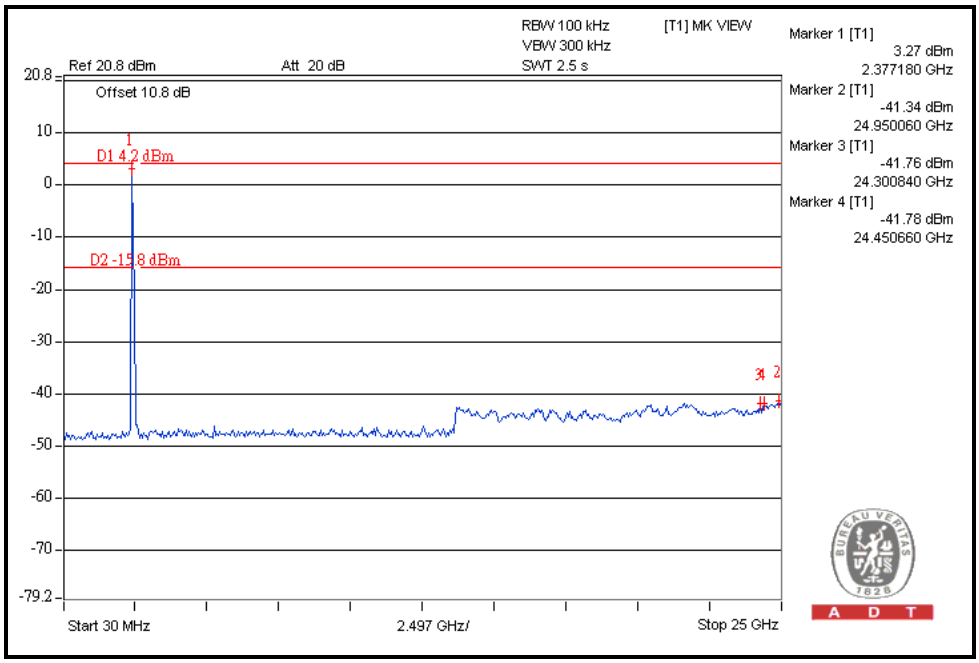
For Chain(0) : CH1



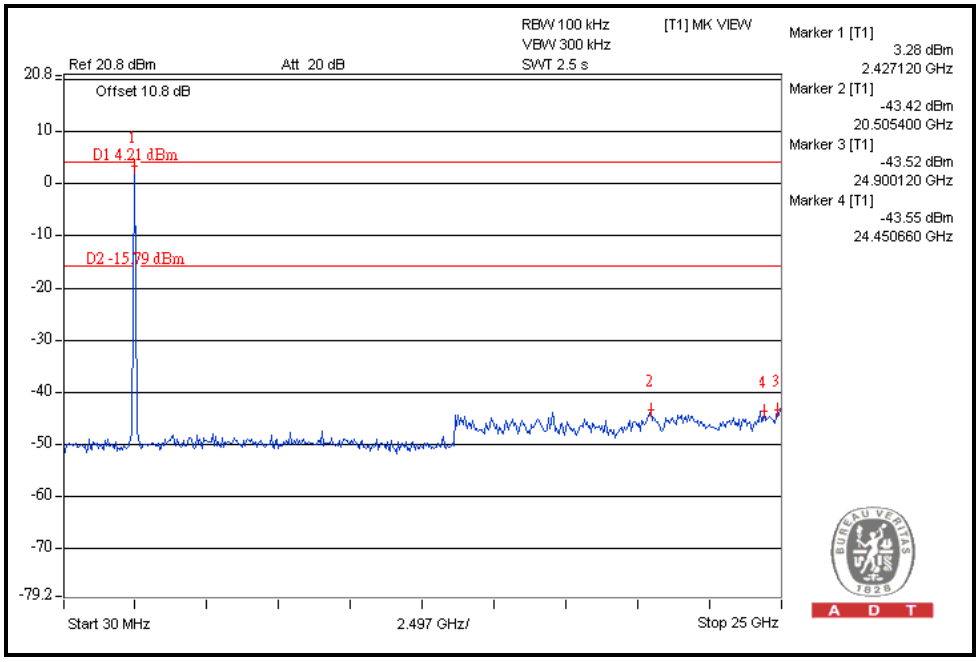
For Chain(0) : CH11



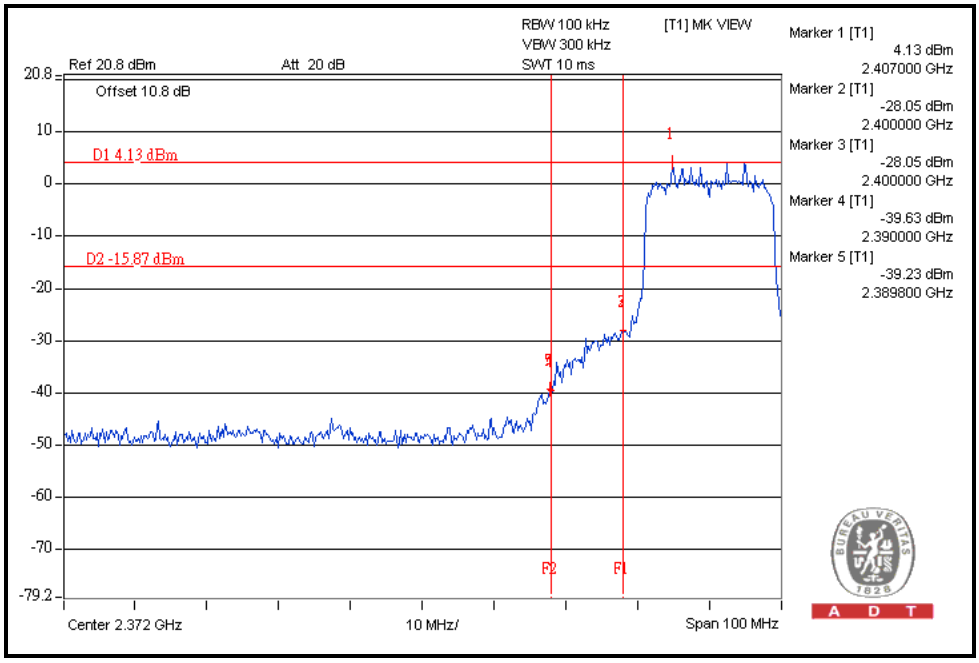
For Chain(0) : CH1



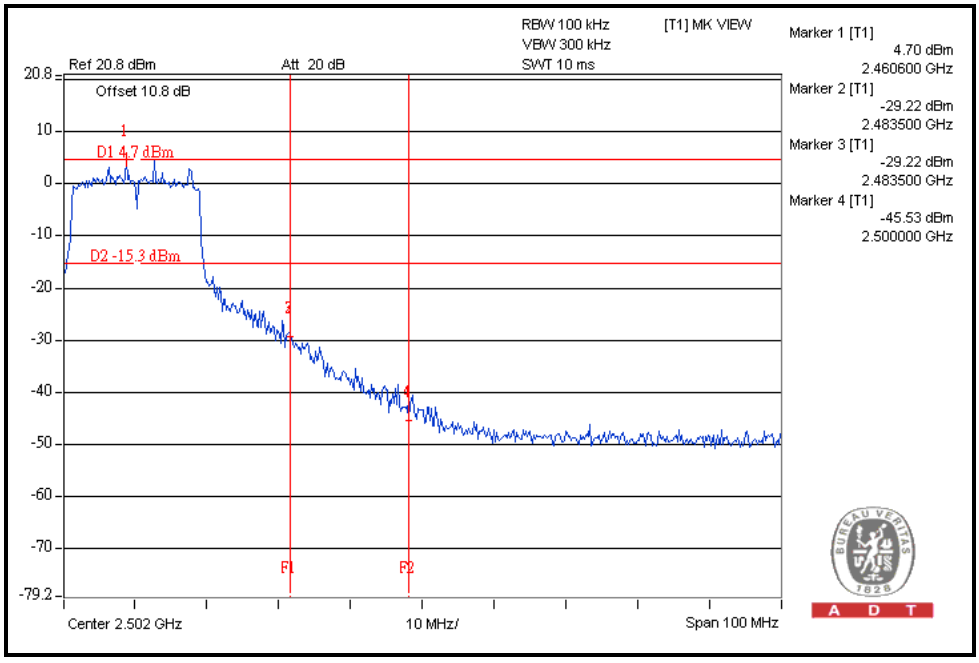
For Chain(0) : CH11



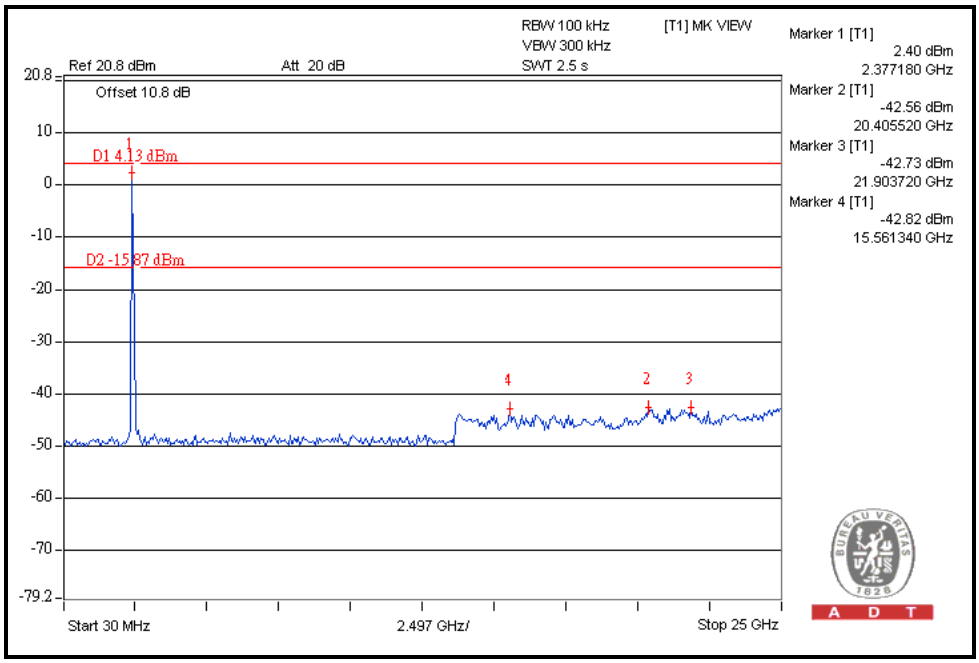
For Chain(1) : CH1



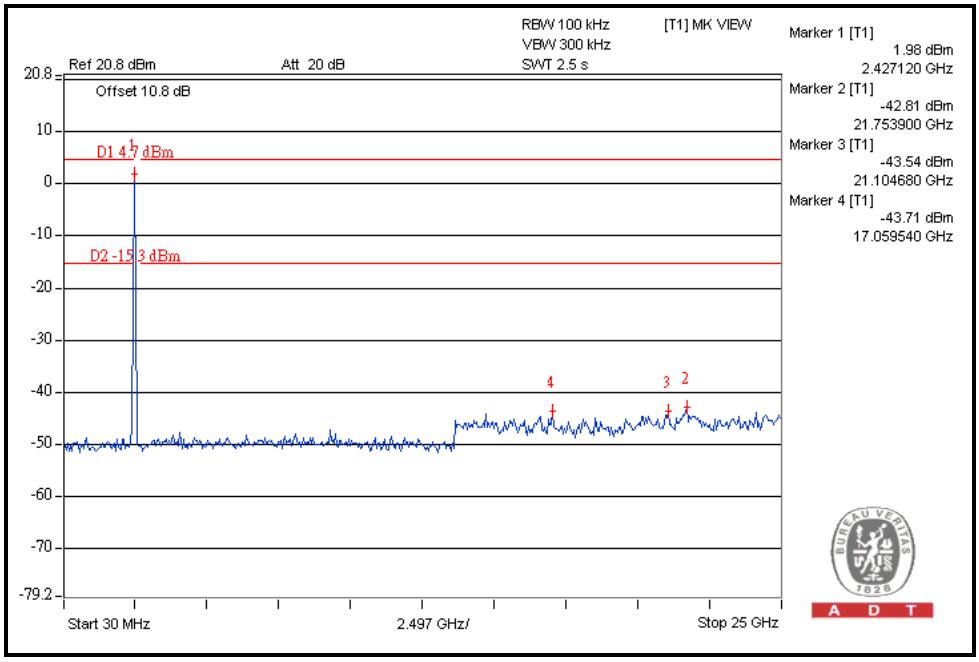
For Chain(1) : CH11



For Chain(1) : CH1

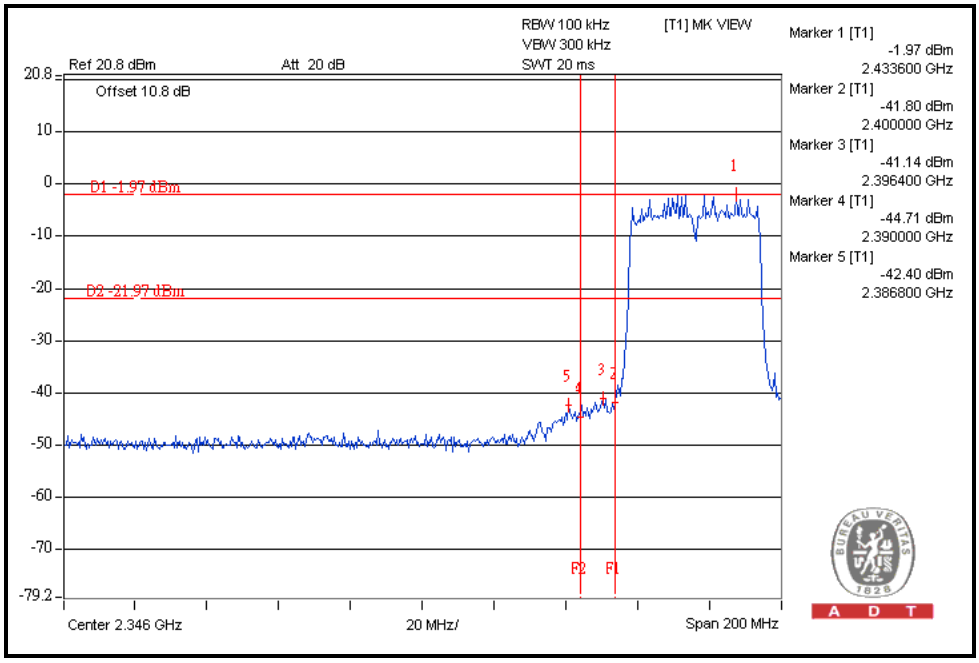


For Chain(1) : CH11

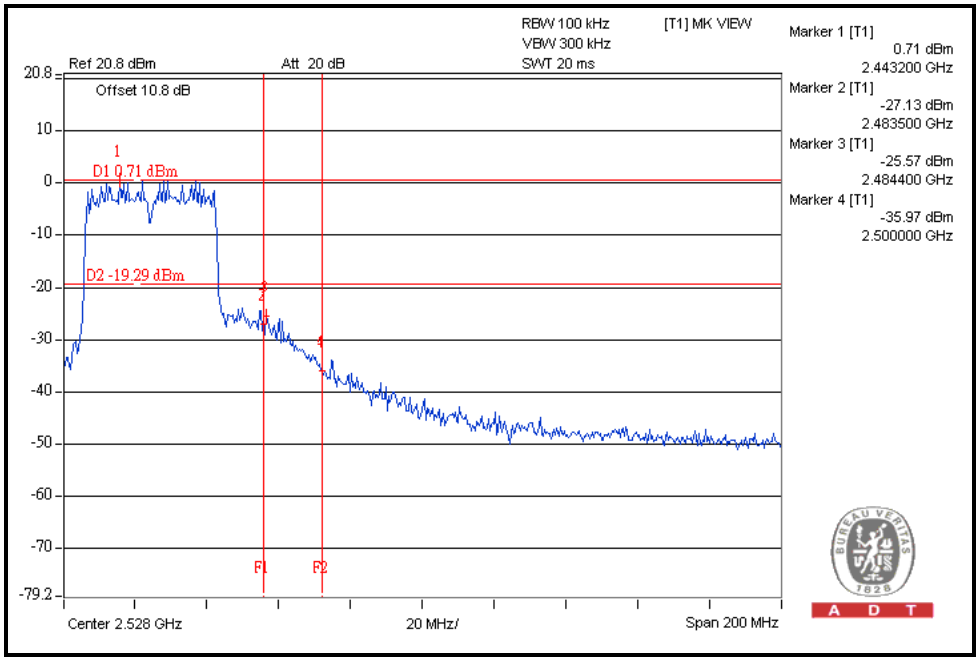


802.11n (40MHz) OFDM MODULATION:

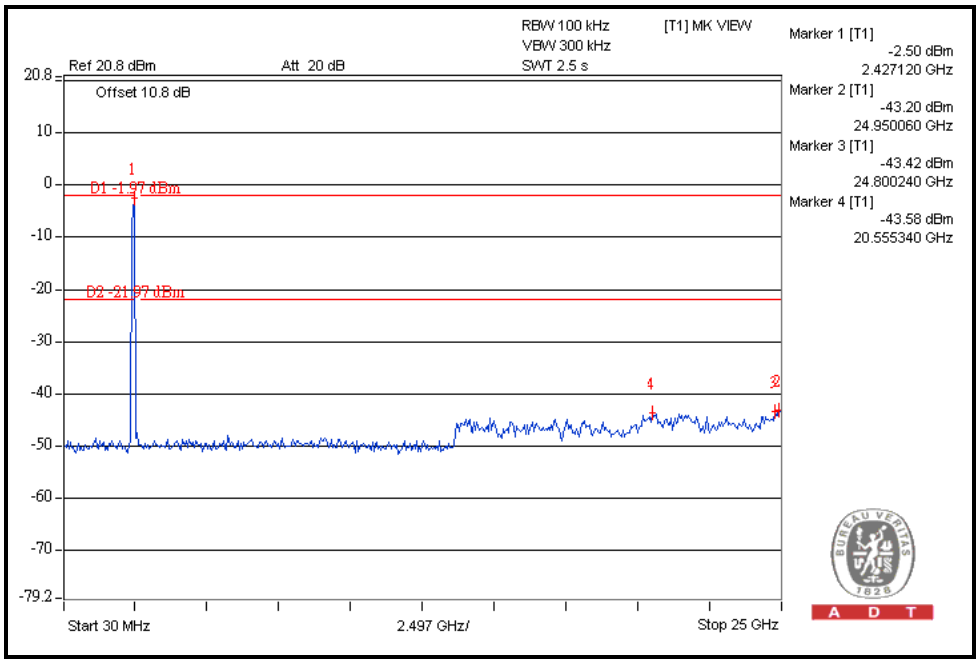
For Chain(0) : CH3



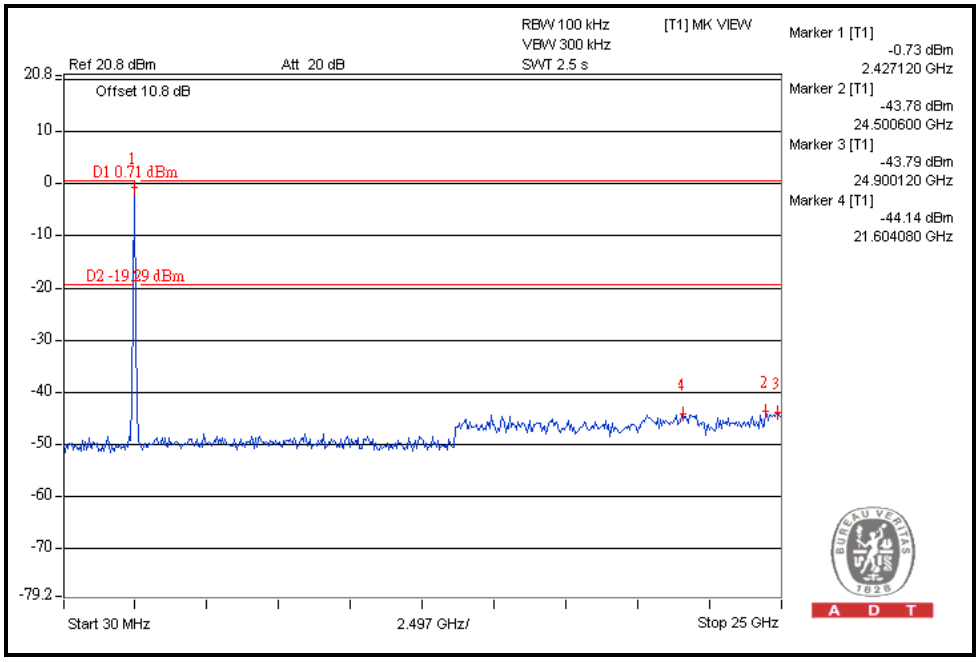
For Chain(0) : CH9



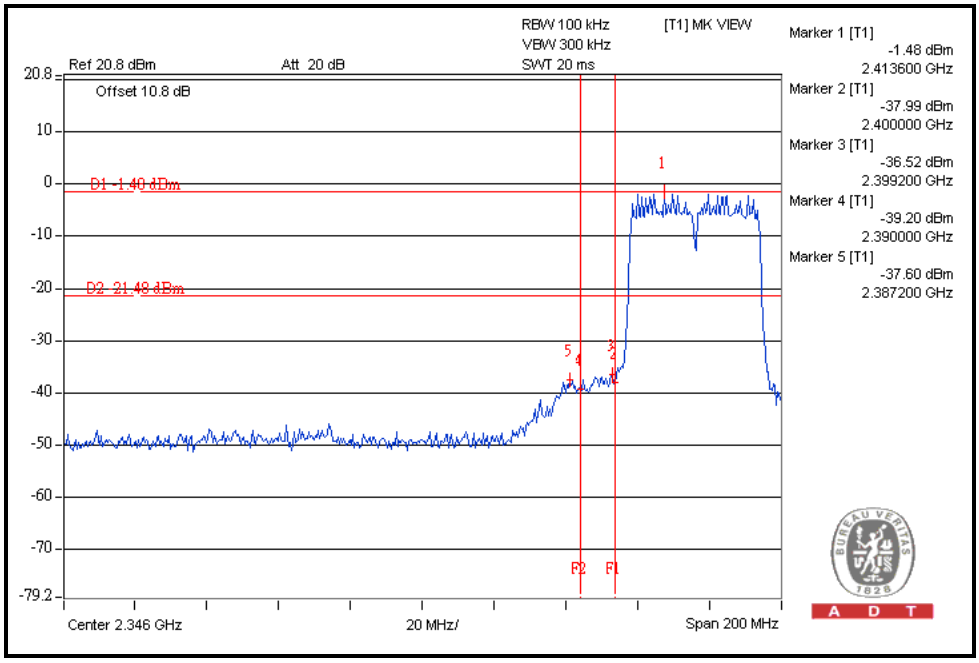
For Chain(0) : CH3



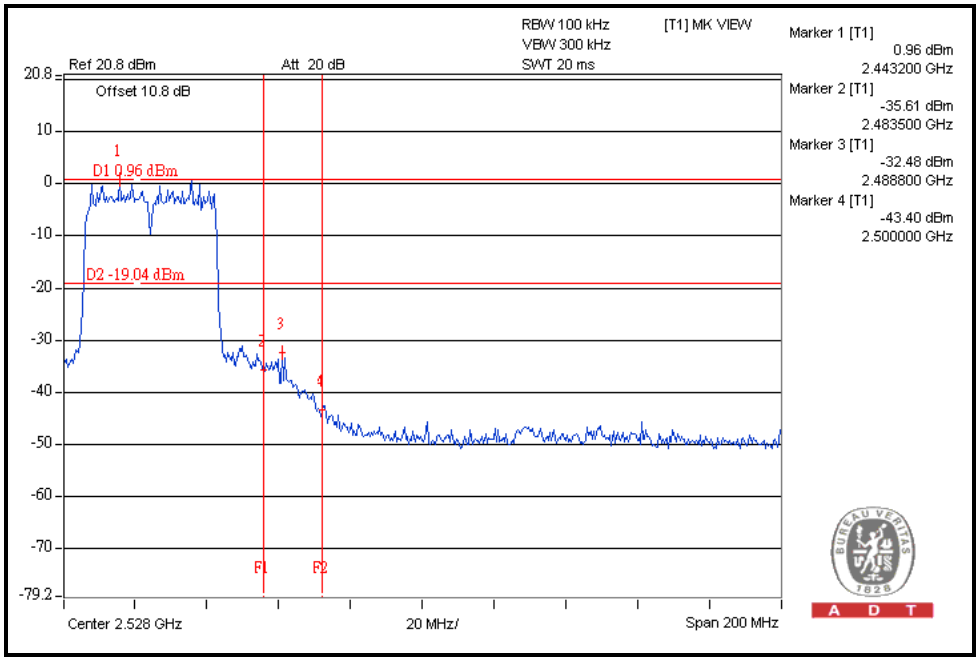
For Chain(0) : CH9



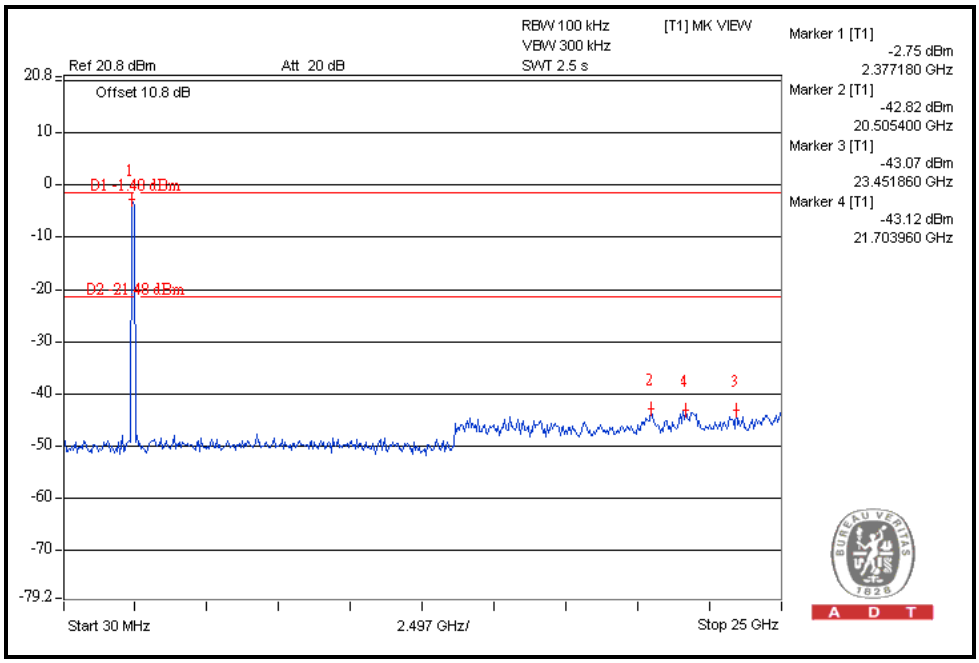
For Chain(1) : CH3



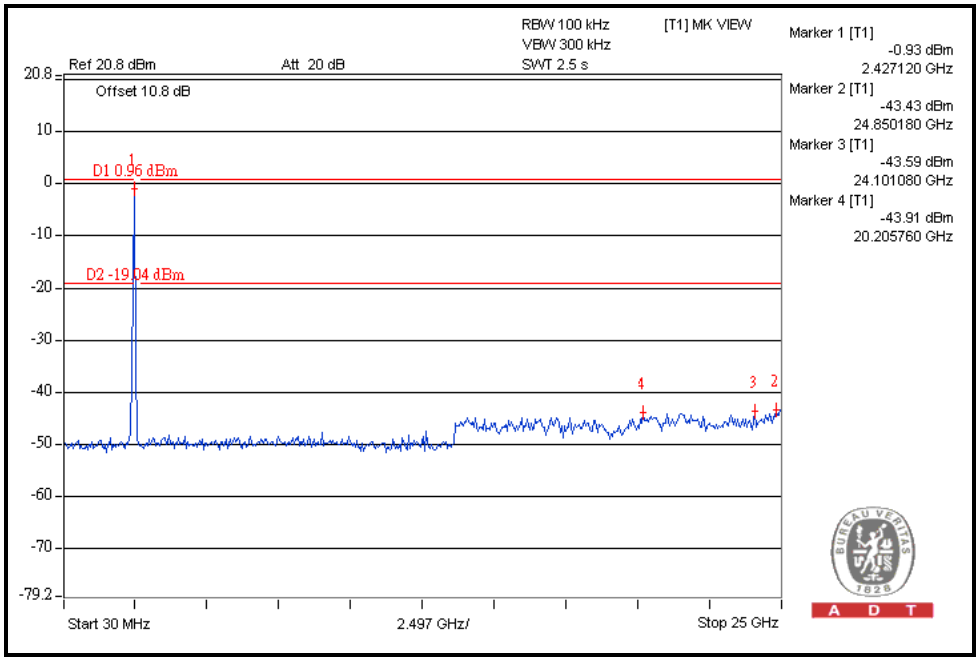
For Chain(1) : CH9



For Chain(1) : CH3



For Chain(1) : CH9



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 according to ISO/IEC 17025.

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

Email: service.adt@tw.bureauveritas.com
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.

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