



FCC TEST REPORT

REPORT NO.: RF110922C36

MODEL NO.: W311MI

FCC ID: V7TW311MI

RECEIVED: Sep. 22, 2011

TESTED: Oct. 03 to 13, 2011

ISSUED: Oct. 20, 2011

APPLICANT: SHENZHEN TENDA TECHNOLOGY
CO.,LTD.

ADDRESS: Tenda Industrial Park, No. 34-1, Shilong
Rd., Shiyan Town, Bao'an District,
Shenzhen, P.R.China 518108

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

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Table of Contents

RELEASE CONTROL RECORD	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	9
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	10
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	12
3.4 DESCRIPTION OF SUPPORT UNITS.....	13
3.5 CONFIGURATION OF SYSTEM UNDER TEST	13
4. TEST TYPES AND RESULTS	14
4.1 CONDUCTED EMISSION MEASUREMENT	14
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	14
4.1.2 TEST INSTRUMENTS.....	14
4.1.3 TEST PROCEDURES	15
4.1.4 DEVIATION FROM TEST STANDARD	15
4.1.5 TEST SETUP	16
4.1.6 EUT OPERATING CONDITIONS	16
4.1.7 TEST RESULTS	17
4.2 RADIATED EMISSION MEASUREMENT	19
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	19
4.2.2 TEST INSTRUMENTS.....	19
4.2.3 TEST PROCEDURES	22
4.2.4 DEVIATION FROM TEST STANDARD	22
4.2.5 TEST SETUP	23
4.2.6 EUT OPERATING CONDITIONS	23
4.2.7 TEST RESULTS	24
4.3 6dB BANDWIDTH MEASUREMENT	53
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	53
4.3.2 TEST INSTRUMENTS.....	53
4.3.3 TEST PROCEDURE.....	53
4.3.4 DEVIATION FROM TEST STANDARD	53
4.3.5 TEST SETUP	53
4.3.6 EUT OPERATING CONDITIONS	53
4.3.7 TEST RESULTS	54
4.4 MAXIMUM PEAK OUTPUT POWER.....	58
4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	58
4.4.2 INSTRUMENTS.....	58
4.4.3 TEST PROCEDURES	58



A D T

4.4.4	DEVIATION FROM TEST STANDARD	58
4.4.5	TEST SETUP	58
4.4.6	EUT OPERATING CONDITIONS	58
4.4.7	TEST RESULTS	59
4.5	POWER SPECTRAL DENSITY MEASUREMENT	60
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	60
4.5.2	TEST INSTRUMENTS.....	60
4.5.3	TEST PROCEDURE.....	60
4.5.4	DEVIATION FROM TEST STANDARD	60
4.5.5	TEST SETUP	60
4.5.6	EUT OPERATING CONDITION.....	60
4.5.7	TEST RESULTS	61
4.6	CONDUCTED OUT-BAND EMISSION MEASUREMENT	65
4.6.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	65
4.6.2	TEST INSTRUMENTS.....	65
4.6.3	TEST PROCEDURE.....	65
4.6.4	DEVIATION FROM TEST STANDARD	65
4.6.5	EUT OPERATING CONDITION	65
4.6.6	TEST RESULTS	65
5.	INFORMATION ON THE TESTING LABORATORIES	74
6.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB.....	75



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110922C36	Original release	Oct. 20, 2011



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1. CERTIFICATION

PRODUCT: 150Mbps Wireless-N Pico USB Adapter
BRAND NAME: Tenda
MODEL NO.: W311MI
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: SHENZHEN TENDA TECHNOLOGY CO.,LTD.
TESTED: Oct. 03 to 13, 2011
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: W311MI) 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:** Oct. 20, 2011
(Lori Chung, Specialist)

APPROVED BY :  , **DATE:** Oct. 20, 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 -17.09dB at 0.373MHz
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 -0.5dB at 2390.00MHz & 2483.50MHz
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.



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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)	3.81 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	150Mbps Wireless-N Pico USB Adapter
MODEL NO.	W311MI
FCC ID	V7TW311MI
POWER SUPPLY	DC 5V 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. HT40 MCS0~7 (800ns GI): 13.5Mbps/27Mbps/40.5Mbps, 54Mbps/81Mbps/108Mbps/121.5Mbps/135Mbps. HT20 MCS0~7 (400ns GI): 7.2Mbps/14.4Mbps/21.7Mbps, 28.9Mbps/43.3Mbps/57.8Mbps/65Mbps/72.2Mbps. HT40 MCS0~7 (400ns GI): 15Mbps/30Mbps/45Mbps, 60Mbps/90Mbps/120Mbps/135Mbps/150Mbps.
OPERATING FREQUENCY	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	For 802.11b, 802.11g, 802.11n (20MHz) : 11 For 802.11n (40MHz) : 7
MAXIMUM OUTPUT POWER	802.11b: 13.8mW 802.11g: 14.5mW 802.11n (20MHz): 14.1mW 802.11n (40MHz): 14.5mW
ANTENNA TYPE	PIFA antenna with 1.93dBi antenna gain
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is 1 * 1 spatial SISO (1Tx & 1Rx) without beam forming function.
2. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.



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3. 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 ≥ 1G	APCM	OB	
	√	√	√	√	√	

Where **PLC**: Power Line Conducted Emission **RE < 1G**: Radiated Emission below 1GHz
RE ≥ 1G: Radiated Emission above 1GHz **APCM**: Antenna Port Conducted Measurement
OB: Conducted Out-Band Emission Measurement

POWER LINE CONDUCTED EMISSION TEST:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6

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)
802.11g	1 to 11	11	OFDM	BPSK	6

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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5



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)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 11	OFDM	BPSK	6
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5
802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C, 65%RH	120Vac, 60Hz	Frank Liu
RE ³ 1G	26deg. C, 67%RH	120Vac, 60Hz	Frank Liu
RE<1G	25deg. C, 75%RH	120Vac, 60Hz	Rex Huang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	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 has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



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3.4 DESCRIPTION OF SUPPORT UNITS

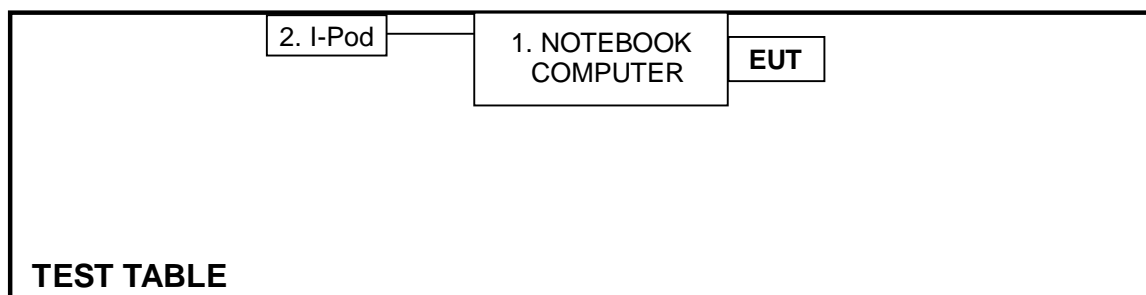
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	I-Pod	Apple	MC749TA/A	CC4DMFJUDFDM	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	0.1m USB cable

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	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: Oct. 14, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	ENV216	100072	June 10, 2011	June 09, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
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. C.
3. The VCCI Con C Registration No. is C-3611.

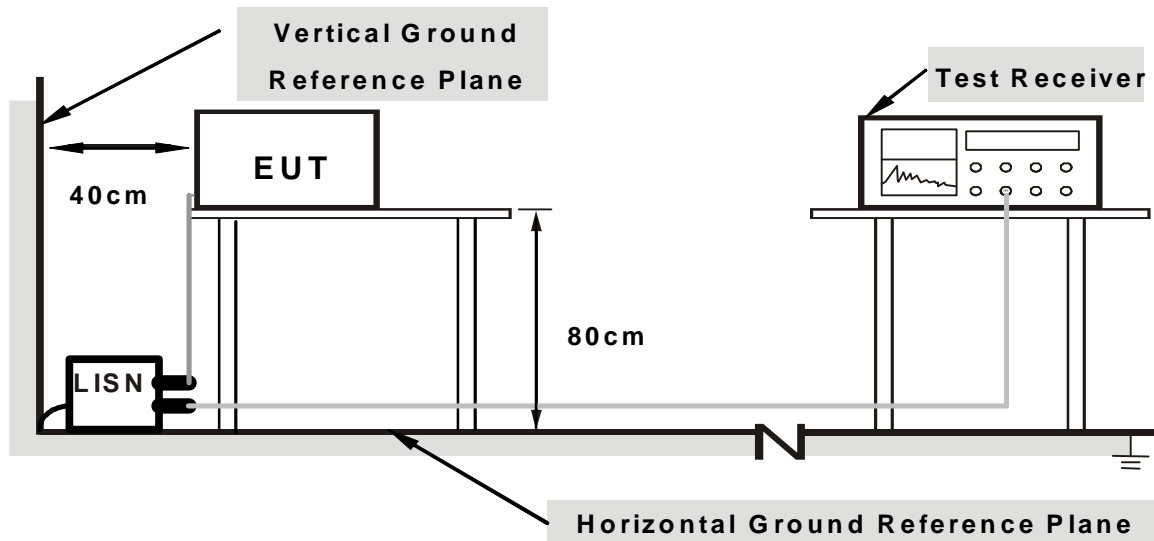
4.1.3 TEST PROCEDURES

- 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

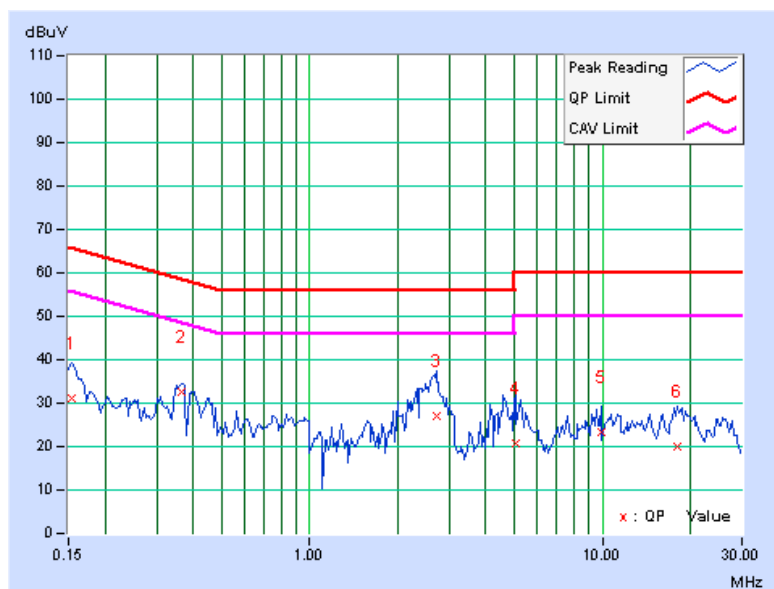
1. Turn on the power of all equipment.
2. The notebook computer ran test program “RT537xQA.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.09	30.89	21.33	30.98	21.42	65.79	55.79	-34.81	-34.37
2	0.365	0.11	32.37	28.72	32.48	28.83	58.62	48.62	-26.14	-19.79
3	2.730	0.24	26.74	18.21	26.98	18.45	56.00	46.00	-29.02	-27.55
4	5.070	0.36	20.24	12.69	20.60	13.05	60.00	50.00	-39.40	-36.95
5	9.980	0.55	22.63	15.62	23.18	16.17	60.00	50.00	-36.82	-33.83
6	17.977	0.73	19.12	13.68	19.85	14.41	60.00	50.00	-40.15	-35.59

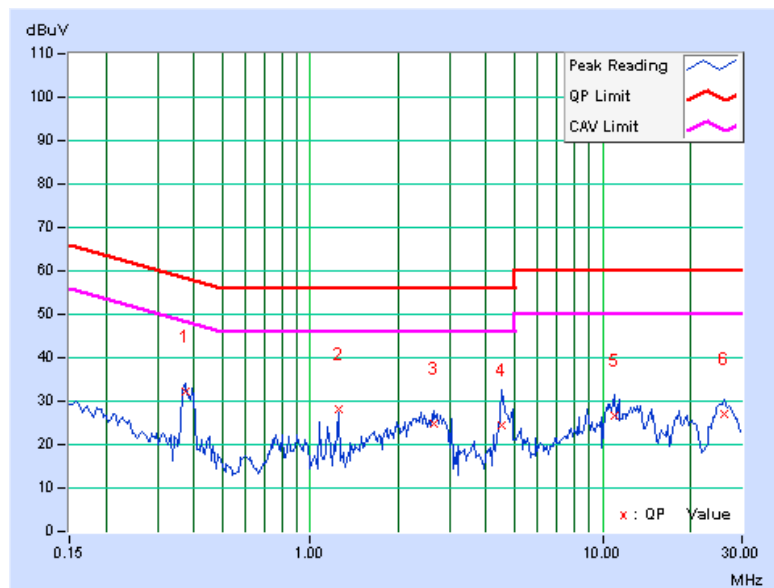
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.373	0.11	32.29	31.24	32.40	31.35	58.44
2	1.250	0.14	27.95	14.41	28.09	14.55	56.00	46.00	-27.91	-31.45
3	2.637	0.19	24.76	18.33	24.95	18.52	56.00	46.00	-31.05	-27.48
4	4.543	0.26	24.14	11.86	24.40	12.12	56.00	46.00	-31.60	-33.88
5	11.047	0.44	26.29	19.44	26.73	19.88	60.00	50.00	-33.27	-30.12
6	26.121	0.80	26.10	21.29	26.90	22.09	60.00	50.00	-33.10	-27.91

- 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

Same as 4.1.6



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<For Frequency Range below 1GHz>Test Date: Oct. 03, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	Nov. 16, 2010	Nov. 15, 2011
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	000032009111 0	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	Oct. 12 , 2010	Oct. 11 , 2011
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.



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<For Frequency Range above 1GHz>Test Date: Oct. 13, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY48250113	Nov. 30 , 2010	Nov. 29 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 02, 2011	Sep. 01, 2012
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 14, 2011	Apr. 13, 2012
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 17, 2011	Jan. 16, 2012
RF Switches	EMH-011	1001	Sep. 24, 2011	Sep. 23, 2012
RF CABLE (Chaintek)	Sucoflex 106	RF106-102	Jan. 27, 2011	Jan. 26, 2012
RF Cable	8DFB	STCCAB-30M-1GHz	Sep. 24, 2011	Sep. 23, 2012
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, 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 3 meters chamber room test site for below 1GHz test and at a 10 meter open area for above 1GHz test. 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.

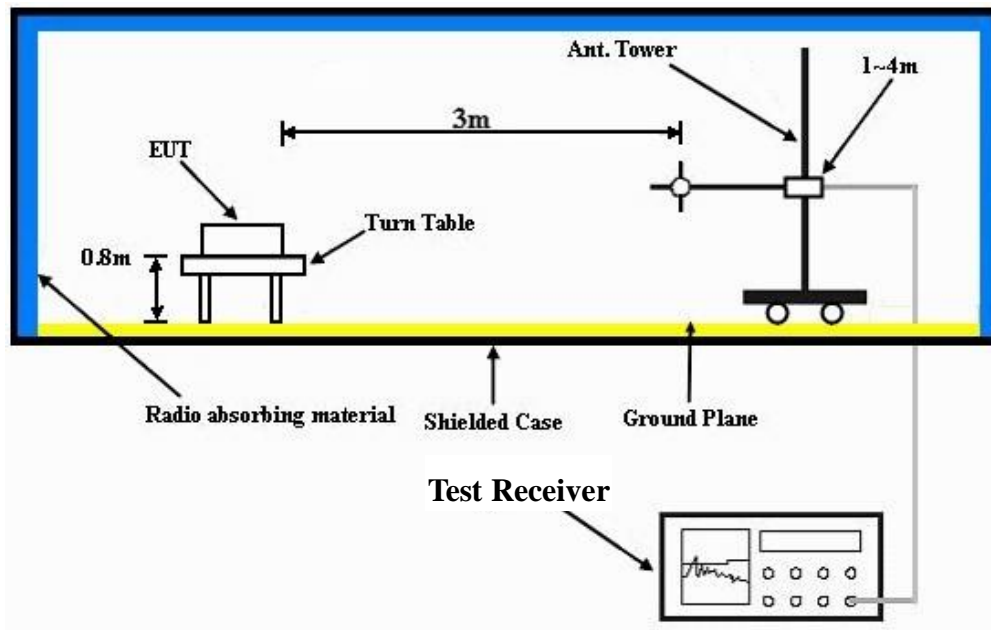
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for 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

Same as 4.1.6



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4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : 802.11g OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 66%RH 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	232.38	28.3 QP	46.0	-17.7	1.50 H	0	15.73	12.59
2	549.76	24.6 QP	46.0	-21.4	2.00 H	360	3.58	21.02
3	698.97	30.8 QP	46.0	-15.2	1.00 H	169	8.21	22.58
4	747.17	32.2 QP	46.0	-13.8	1.00 H	107	8.40	23.80
5	847.12	37.7 QP	46.0	-8.3	1.50 H	146	11.87	25.83
6	898.87	36.9 QP	46.0	-9.1	1.00 H	80	10.43	26.48
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	137.65	25.4 QP	43.5	-18.1	1.00 V	142	11.34	14.10
2	232.38	23.8 QP	46.0	-22.2	1.00 V	115	11.20	12.59
3	398.29	25.1 QP	46.0	-20.9	1.50 V	215	7.42	17.64
4	699.09	27.5 QP	46.0	-18.5	1.50 V	80	4.89	22.58
5	796.43	30.6 QP	46.0	-15.4	1.50 V	360	5.51	25.09
6	896.02	32.0 QP	46.0	-14.0	1.00 V	140	5.59	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.



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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, 67%RH	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	2386.00	57.8 PK	74.0	-16.2	1.30 H	8	26.49	31.31
2	2386.00	49.5 AV	54.0	-4.5	1.30 H	8	18.19	31.31
3	*2412.00	104.0 PK			1.30 H	8	72.61	31.39
4	*2412.00	101.8 AV			1.30 H	8	70.41	31.39
5	4824.00	50.2 PK	74.0	-23.8	1.24 H	0	14.03	36.17
6	4824.00	47.3 AV	54.0	-6.7	1.24 H	0	11.13	36.17

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	2386.30	60.5 PK	74.0	-13.5	1.17 V	30	29.19	31.31
2	2386.30	53.4 AV	54.0	-0.6	1.17 V	30	22.09	31.31
3	*2412.00	105.4 PK			1.17 V	30	74.01	31.39
4	*2412.00	103.2 AV			1.17 V	30	71.81	31.39
5	4824.00	52.8 PK	74.0	-21.2	1.15 V	34	16.63	36.17
6	4824.00	49.2 AV	54.0	-4.8	1.15 V	34	13.03	36.17

- 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.



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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, 67%RH	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	103.9 PK			1.35 H	8	72.41	31.49
2	*2437.00	101.9 AV			1.35 H	8	70.41	31.49
3	4874.00	58.4 PK	74.0	-15.6	1.28 H	7	22.09	36.31
4	4874.00	49.9 AV	54.0	-4.1	1.28 H	7	13.59	36.31
5	7311.00	50.5 PK	74.0	-23.5	1.27 H	0	8.27	42.23
6	7311.00	47.5 AV	54.0	-6.5	1.27 H	0	5.27	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	*2437.00	105.6 PK			1.16 V	35	74.11	31.49
2	*2437.00	103.1 AV			1.16 V	35	71.61	31.49
3	4874.00	61.3 PK	74.0	-12.7	1.23 V	32	24.99	36.31
4	4874.00	53.4 AV	54.0	-0.6	1.23 V	32	17.09	36.31
5	7311.00	52.7 PK	74.0	-21.3	1.09 V	24	10.47	42.23
6	7311.00	49.0 AV	54.0	-5.0	1.09 V	24	6.77	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.



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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, 67%RH	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	100.6 PK			1.31 H	15	69.02	31.58
2	*2462.00	98.4 AV			1.31 H	15	66.82	31.58
3	2487.80	57.6 PK	74.0	-16.4	1.32 H	16	25.93	31.67
4	2487.80	46.2 AV	54.0	-7.8	1.32 H	16	14.53	31.67
5	4924.00	48.6 PK	74.0	-25.4	1.23 H	3	12.18	36.42
6	4924.00	45.2 AV	54.0	-8.8	1.23 H	3	8.78	36.42
7	7386.00	49.4 PK	74.0	-24.6	1.41 H	304	6.88	42.52
8	7386.00	37.2 AV	54.0	-16.8	1.41 H	304	-5.32	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

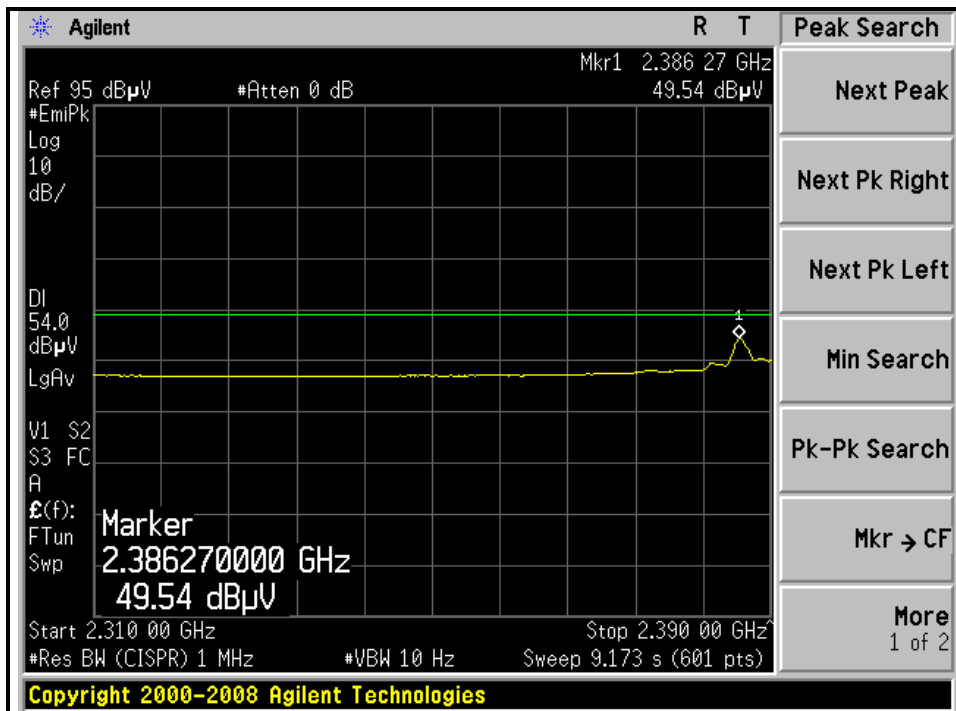
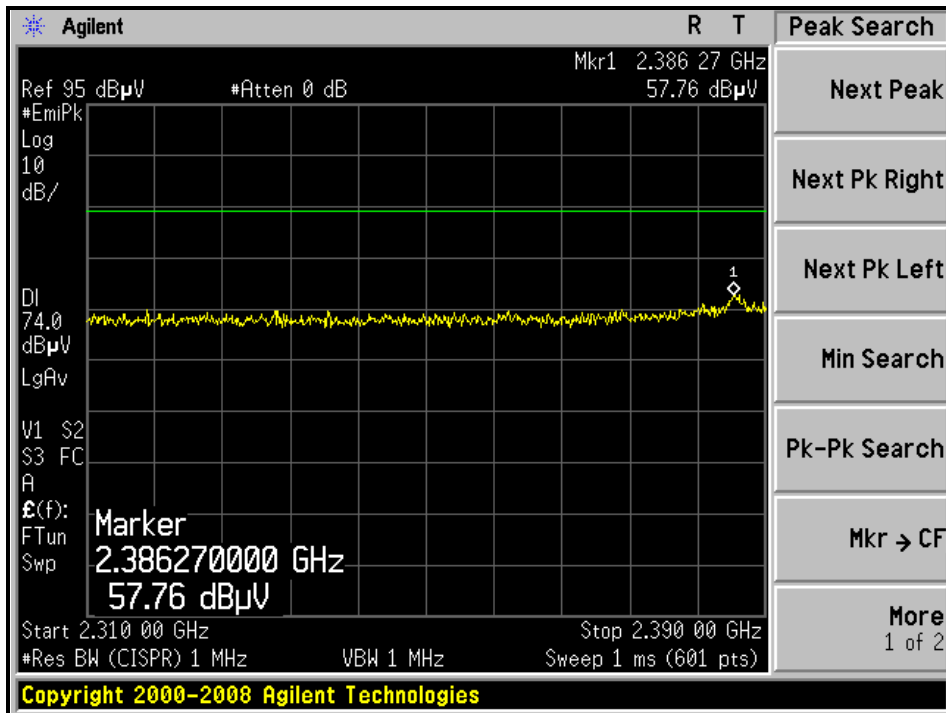
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.2 PK			1.05 V	30	71.62	31.58
2	*2462.00	100.9 AV			1.05 V	30	69.32	31.58
3	2487.70	61.7 PK	74.0	-12.30	1.05 V	30	30.03	31.67
4	2487.70	53.3 AV	54.0	-0.7	1.05 V	30	21.63	31.67
5	4924.00	51.2 PK	74.0	-22.8	1.35 V	285	14.78	36.42
6	4924.00	48.6 AV	54.0	-5.4	1.35 V	285	12.18	36.42
7	7386.00	49.2 PK	74.0	-24.8	1.47 V	81	6.68	42.52
8	7386.00	37.3 AV	54.0	-16.7	1.47 V	81	-5.22	42.52

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

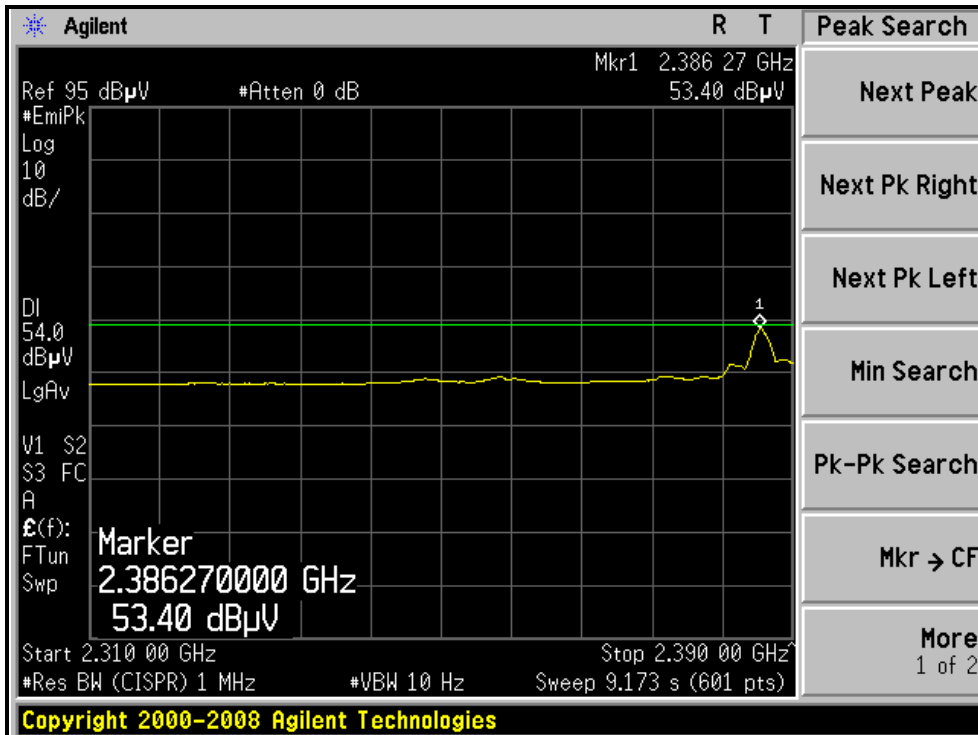
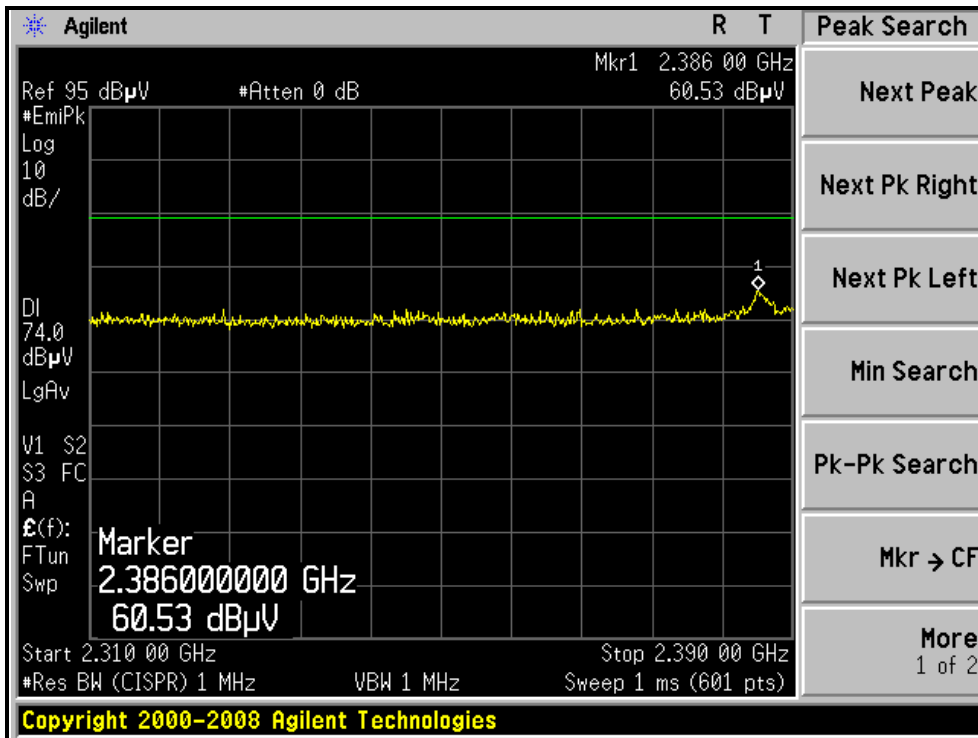


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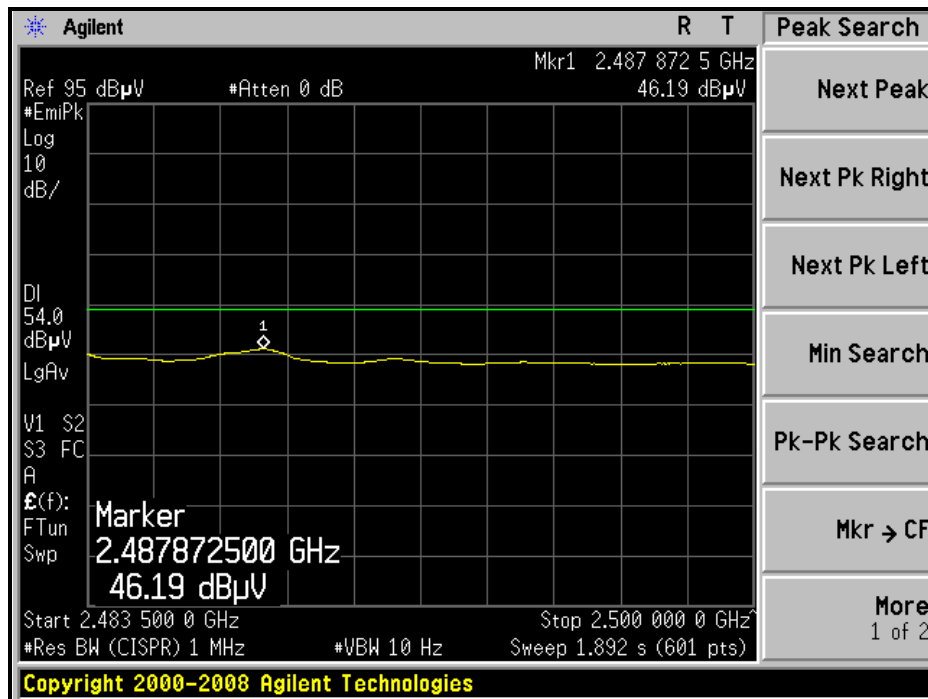
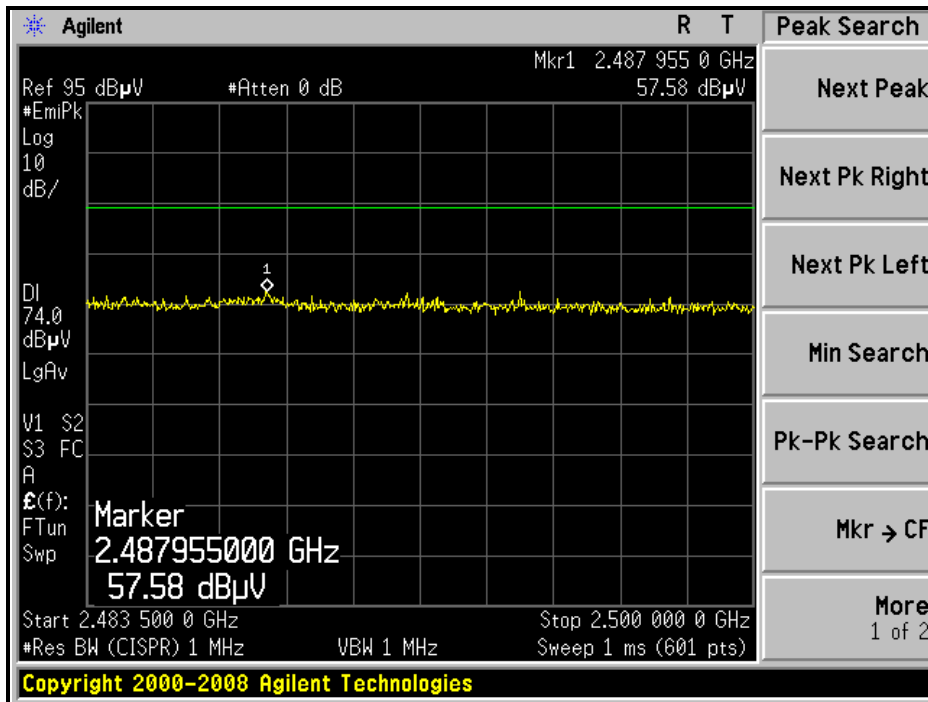
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RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



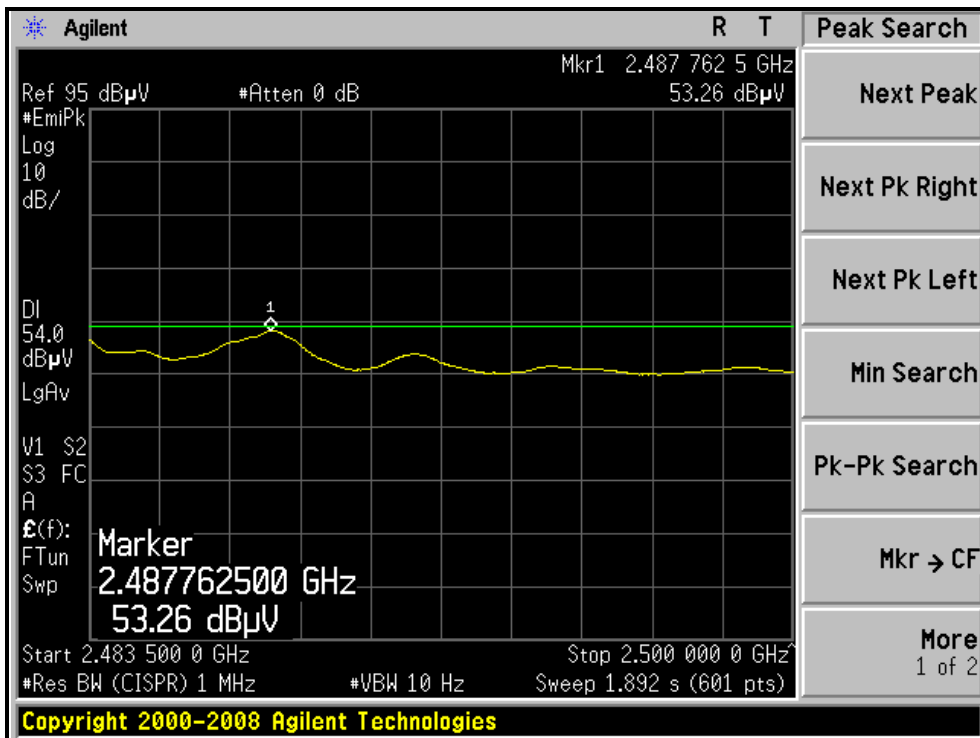
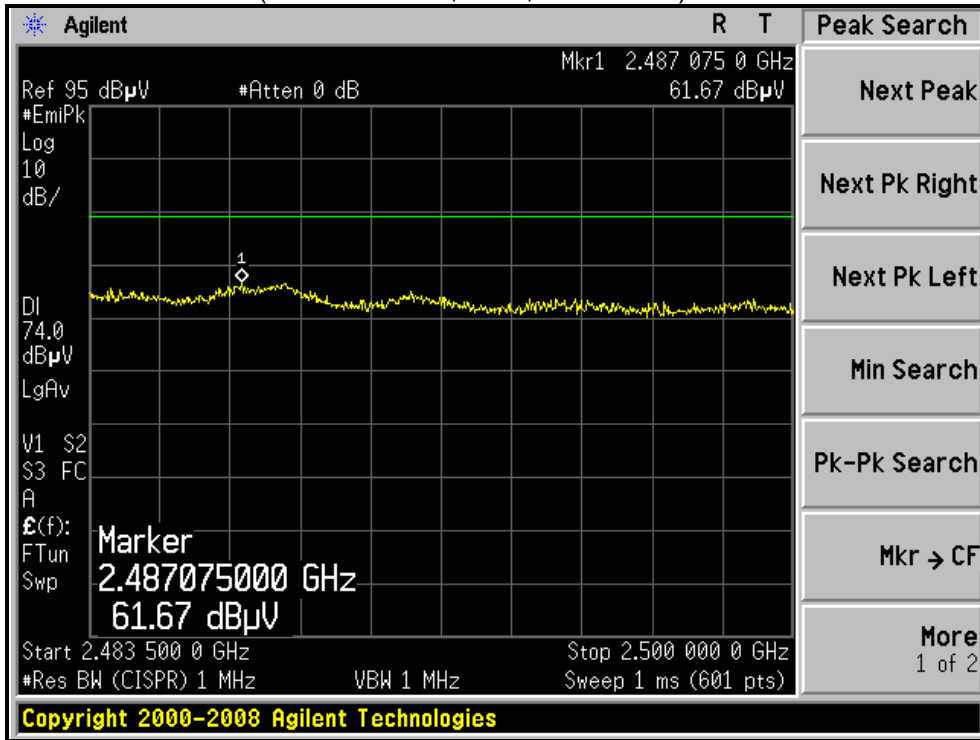
RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)





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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, 67%RH	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	65.5 PK	74.0	-8.5	1.14 H	29	34.18	31.32
2	2390.00	49.7 AV	54.0	-4.3	1.14 H	29	18.38	31.32
3	*2412.00	97.9 PK			1.08 H	27	66.51	31.39
4	*2412.00	88.5 AV			1.08 H	27	57.11	31.39
5	4824.00	52.9 PK	74.0	-21.1	1.25 H	17	16.73	36.17
6	4824.00	43.2 AV	54.0	-10.8	1.25 H	17	7.03	36.17

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	69.8 PK	74.0	-4.2	1.09 V	28	38.48	31.32
2	2390.00	53.5 AV	54.0	-0.5	1.09 V	28	22.18	31.32
3	*2412.00	105.3 PK			1.09 V	28	73.91	31.39
4	*2412.00	95.2 AV			1.09 V	28	63.81	31.39
5	4824.00	55.1 PK	74.0	-18.9	1.41 V	276	18.93	36.17
6	4824.00	44.4 AV	54.0	-9.6	1.41 V	276	8.23	36.17

- 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.



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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, 67%RH	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	98.0 PK			1.14 H	20	66.51	31.49
2	*2437.00	88.5 AV			1.14 H	20	57.01	31.49
3	4874.00	49.3 PK	74.0	-24.7	1.23 H	23	12.99	36.31
4	4874.00	39.4 AV	54.0	-14.6	1.23 H	23	3.09	36.31
5	7311.00	49.8 PK	74.0	-24.2	1.42 H	290	7.57	42.23
6	7311.00	37.3 AV	54.0	-16.7	1.42 H	290	-4.93	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	*2437.00	105.4 PK			1.05 V	41	73.91	31.49
2	*2437.00	95.5 AV			1.05 V	41	64.01	31.49
3	4874.00	50.7 PK	74.0	-23.3	1.36 V	287	14.39	36.31
4	4874.00	40.3 AV	54.0	-13.7	1.36 V	287	3.99	36.31
5	7311.00	49.4 PK	74.0	-24.6	1.49 V	69	7.17	42.23
6	7311.00	37.3 AV	54.0	-16.7	1.49 V	69	-4.93	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.



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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, 67%RH	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	97.9 PK			1.06 H	28	66.32	31.58
2	*2462.00	88.7 AV			1.06 H	28	57.12	31.58
3	2483.50	62.0 PK	74.0	-12.0	1.06 H	28	30.34	31.66
4	2483.50	47.4 AV	54.0	-6.6	1.06 H	28	15.74	31.66
5	4924.00	52.8 PK	74.0	-21.2	1.23 H	15	16.38	36.42
6	4924.00	43.2 AV	54.0	-10.8	1.23 H	15	6.78	36.42
7	7386.00	49.3 PK	74.0	-24.7	1.37 H	288	6.78	42.52
8	7386.00	37.1 AV	54.0	-16.9	1.37 H	288	-5.42	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

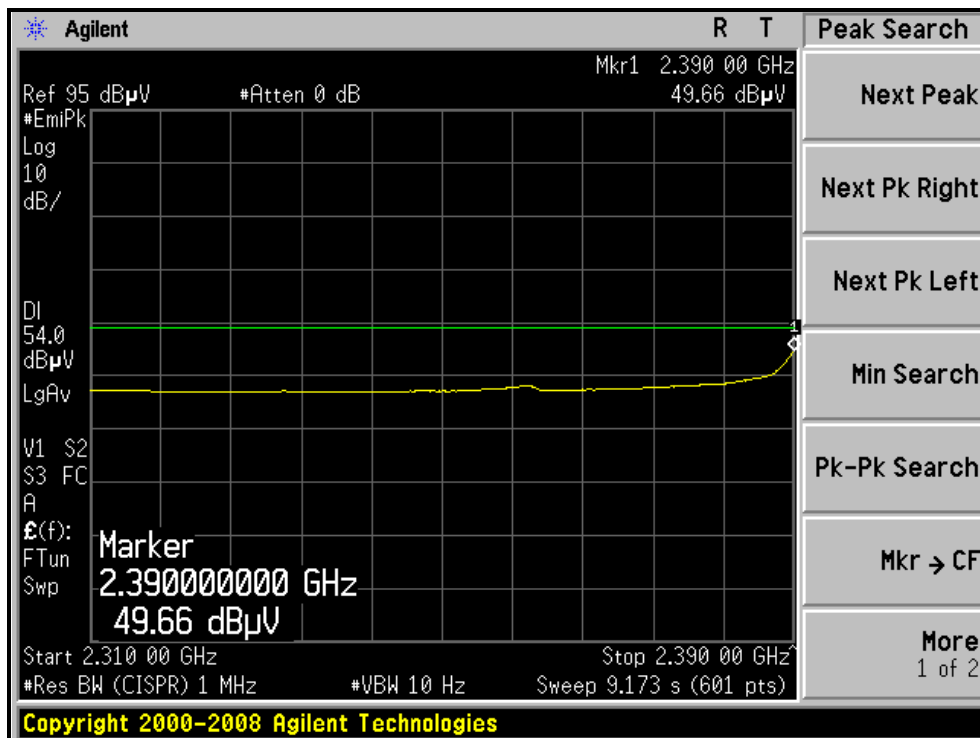
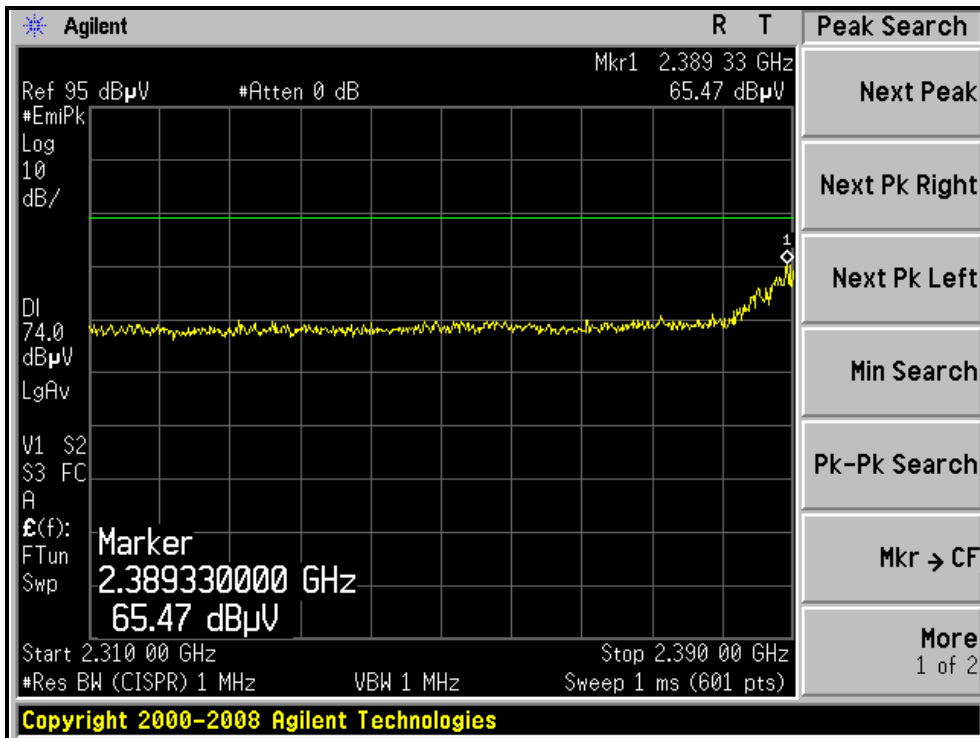
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1	*2462.00	104.3 PK			1.05 V	31	72.72	31.58
2	*2462.00	94.3 AV			1.05 V	31	62.72	31.58
3	2483.50	69.8 PK	74.0	-4.2	1.05 V	30	38.14	31.66
4	2483.50	53.5 AV	54.0	-0.5	1.05 V	30	21.84	31.66
5	4924.00	54.6 PK	74.0	-19.4	1.39 V	292	18.18	36.42
6	4924.00	44.3 AV	54.0	-9.7	1.39 V	292	7.88	36.42
7	7386.00	49.5 PK	74.0	-24.5	1.51 V	78	6.98	42.52
8	7386.00	37.2 AV	54.0	-16.8	1.51 V	78	-5.32	42.52

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



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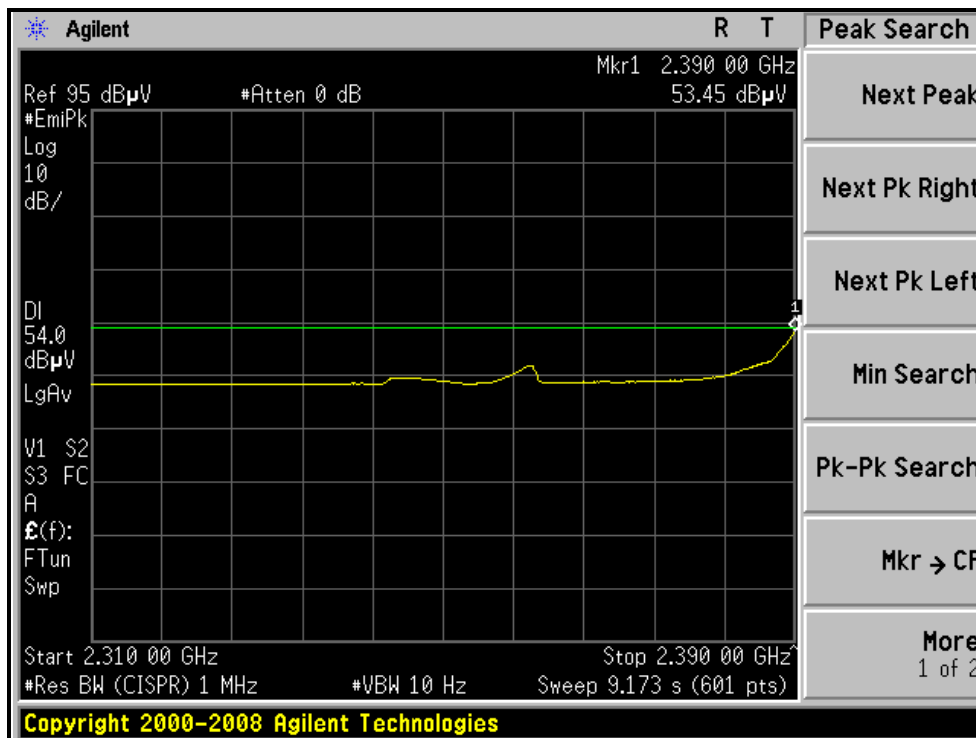
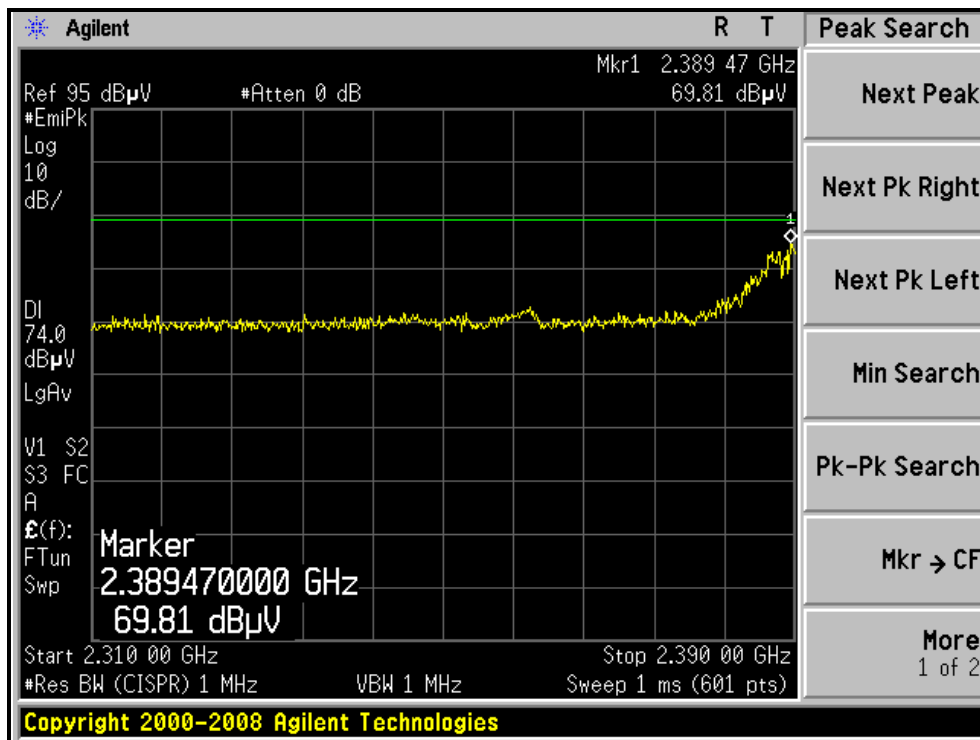
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)





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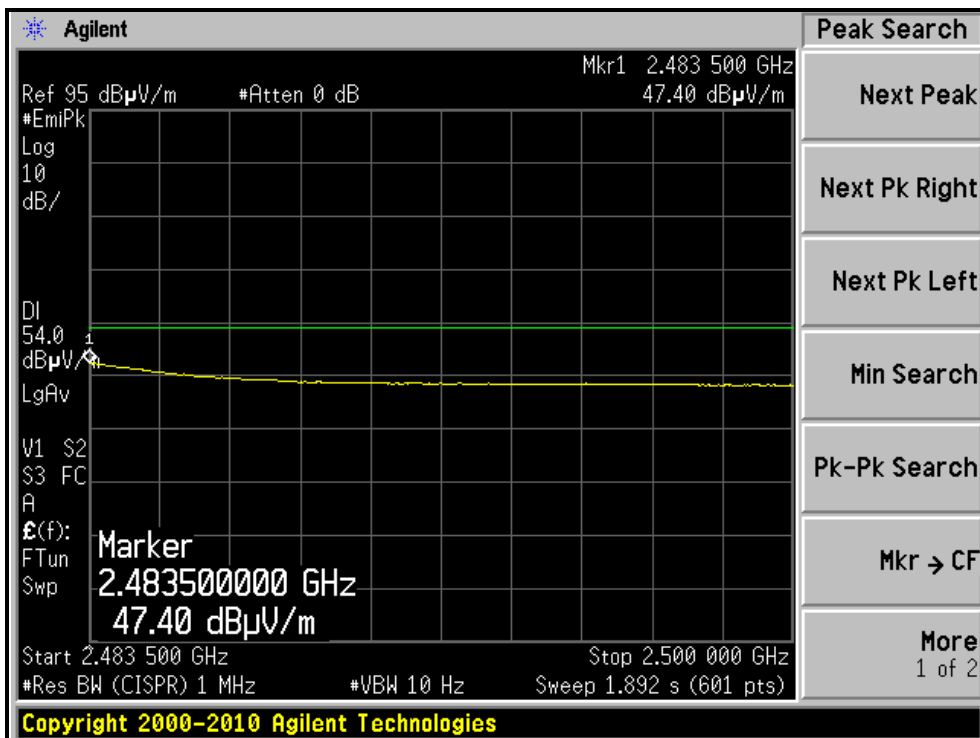
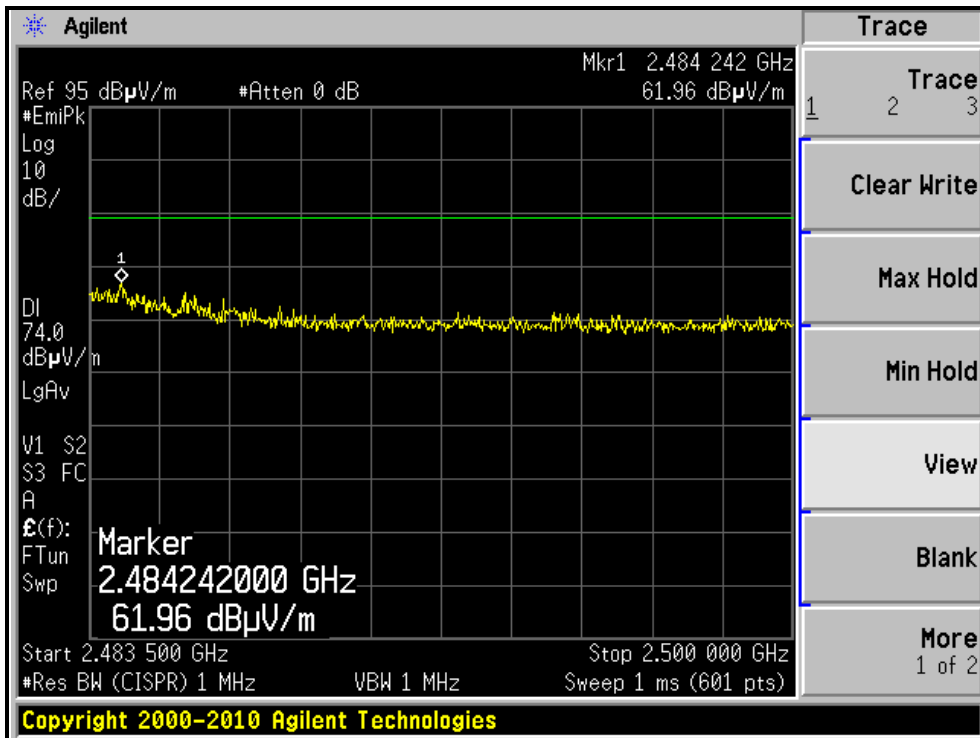
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)





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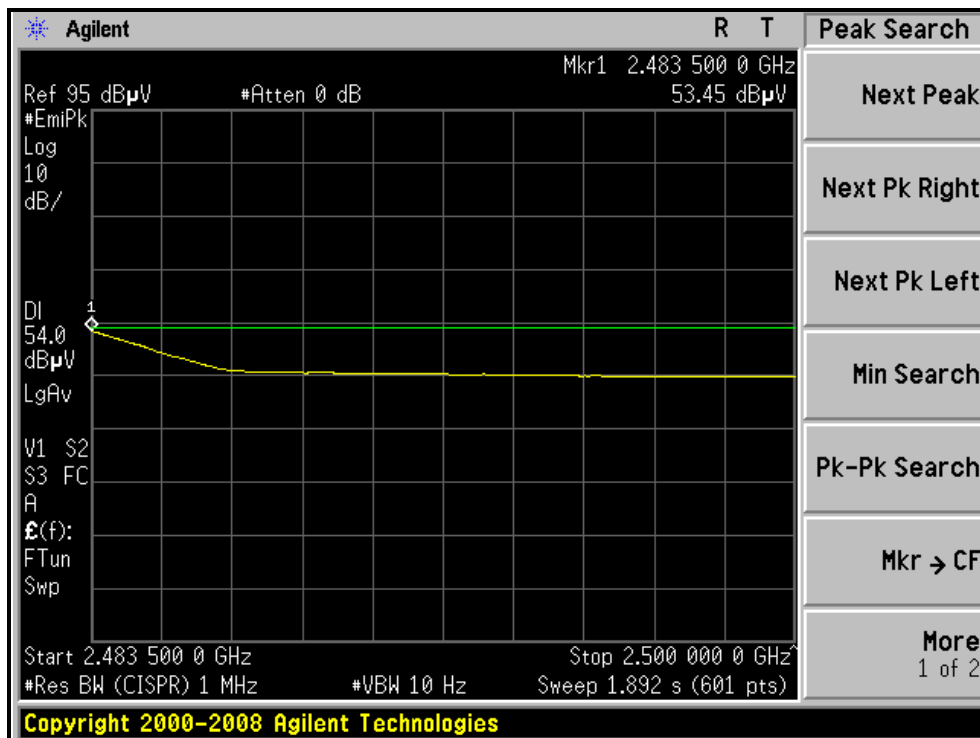
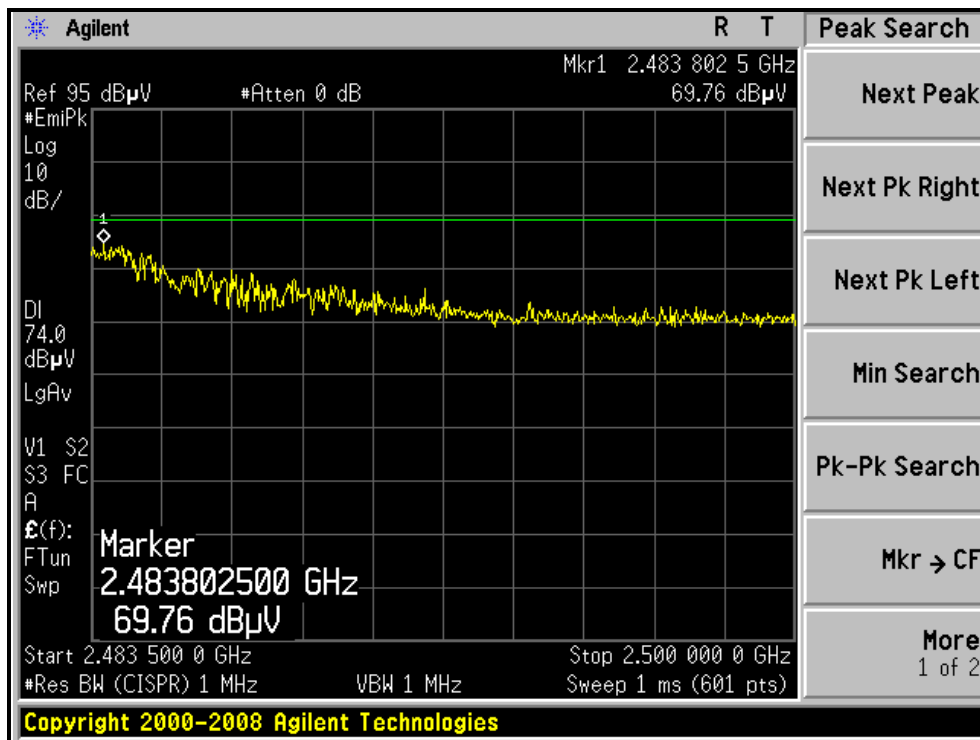
RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





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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, 67%RH	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	60.8 PK	74.0	-13.2	1.06 H	37	29.48	31.32
2	2390.00	46.8 AV	54.0	-7.2	1.06 H	37	15.48	31.32
3	*2412.00	97.6 PK			1.06 H	37	66.21	31.39
4	*2412.00	88.6 AV			1.06 H	37	57.21	31.39
5	4824.00	53.5 PK	74.0	-20.5	1.22 H	8	17.33	36.17
6	4824.00	43.4 AV	54.0	-10.6	1.22 H	8	7.23	36.17
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	71.6 PK	74.0	-2.4	1.11 V	29	40.28	31.32
2	2390.00	53.4 AV	54.0	-0.6	1.11 V	29	22.08	31.32
3	*2412.00	103.7 PK			1.09 V	28	72.31	31.39
4	*2412.00	94.3 AV			1.09 V	28	62.91	31.39
5	4824.00	54.6 PK	74.0	-19.4	1.37 V	285	18.43	36.17
6	4824.00	44.4 AV	54.0	-9.6	1.37 V	285	8.23	36.17

- 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.



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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, 67%RH	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	98.0 PK			1.10 H	46	66.51	31.49
2	*2437.00	88.7 AV			1.10 H	46	57.21	31.49
3	4874.00	53.2 PK	74.0	-20.8	1.23 H	6	16.89	36.31
4	4874.00	43.4 AV	54.0	-10.6	1.23 H	6	7.09	36.31
5	7311.00	49.1 PK	74.0	-24.9	1.40 H	280	6.87	42.23
6	7311.00	37.0 AV	54.0	-17.0	1.40 H	280	-5.23	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	*2437.00	103.8 PK			1.03 V	15	72.31	31.49
2	*2437.00	94.3 AV			1.03 V	15	62.81	31.49
3	4874.00	54.6 PK	74.0	-19.4	1.38 V	296	18.29	36.31
4	4874.00	44.1 AV	54.0	-9.9	1.38 V	296	7.79	36.31
5	7311.00	49.2 PK	74.0	-24.8	1.46 V	66	6.97	42.23
6	7311.00	37.0 AV	54.0	-17.0	1.46 V	66	-5.23	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.



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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, 67%RH	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	97.9 PK			1.15 H	46	66.32	31.58
2	*2462.00	88.7 AV			1.15 H	46	57.12	31.58
3	2483.50	61.1 PK	74.0	-12.9	1.15 H	46	29.44	31.66
4	2483.50	46.5 AV	54.0	-7.5	1.15 H	46	14.84	31.66
5	4924.00	52.7 PK	74.0	-21.3	1.25 H	14	16.28	36.42
6	4924.00	43.2 AV	54.0	-10.8	1.25 H	14	6.78	36.42
7	7386.00	49.1 PK	74.0	-24.9	1.39 H	272	6.58	42.52
8	7386.00	36.7 AV	54.0	-17.3	1.39 H	272	-5.82	42.52

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

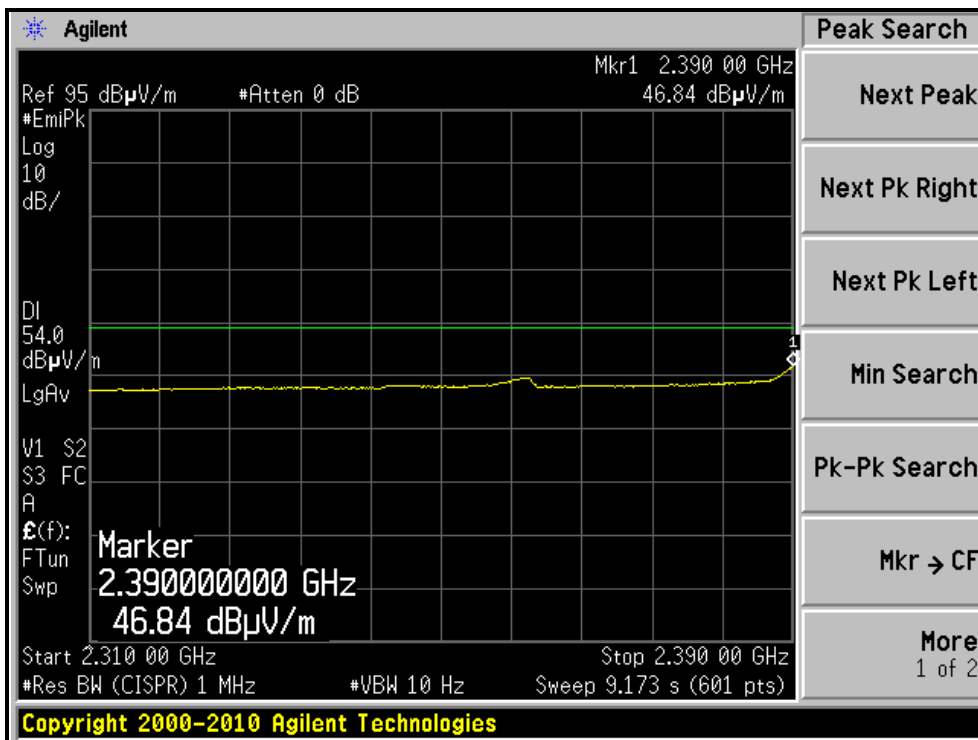
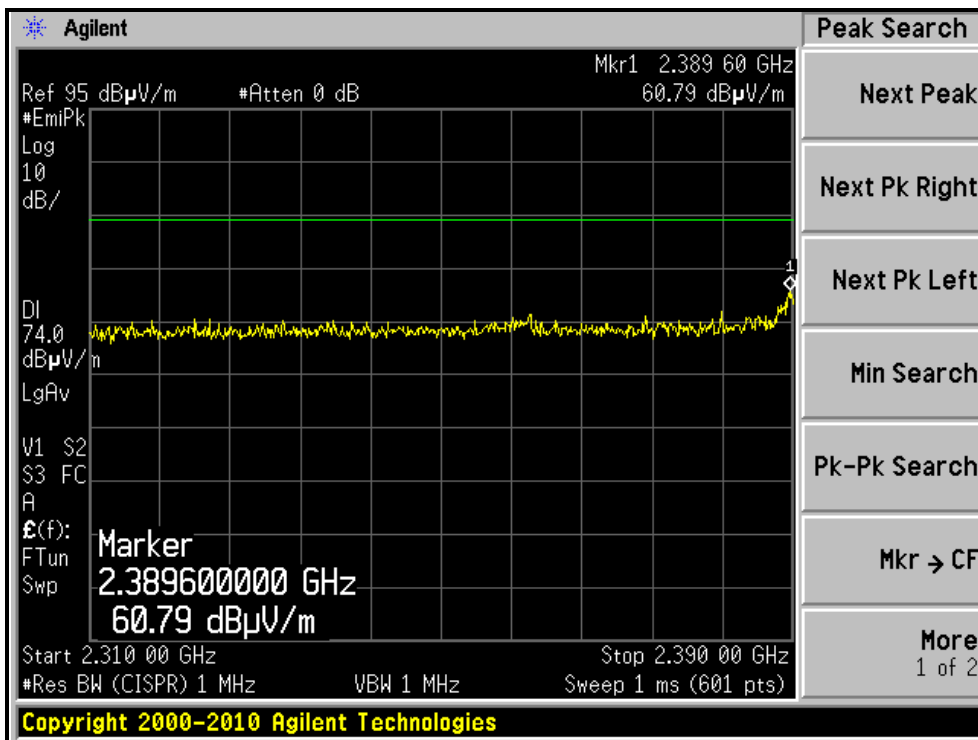
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.6 PK			1.07 V	28	72.02	31.58
2	*2462.00	93.5 AV			1.07 V	28	61.92	31.58
3	2483.50	71.1 PK	74.0	-2.9	1.07 V	28	39.44	31.66
4	2483.50	53.3 AV	54.0	-0.7	1.07 V	28	21.64	31.66
5	4924.00	55.0 PK	74.0	-19.0	1.34 V	288	18.58	36.42
6	4924.00	44.4 AV	54.0	-9.6	1.34 V	288	7.98	36.42
7	7386.00	49.6 PK	74.0	-24.4	1.48 V	56	7.08	42.52
8	7386.00	37.1 AV	54.0	-16.9	1.48 V	56	-5.42	42.52

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

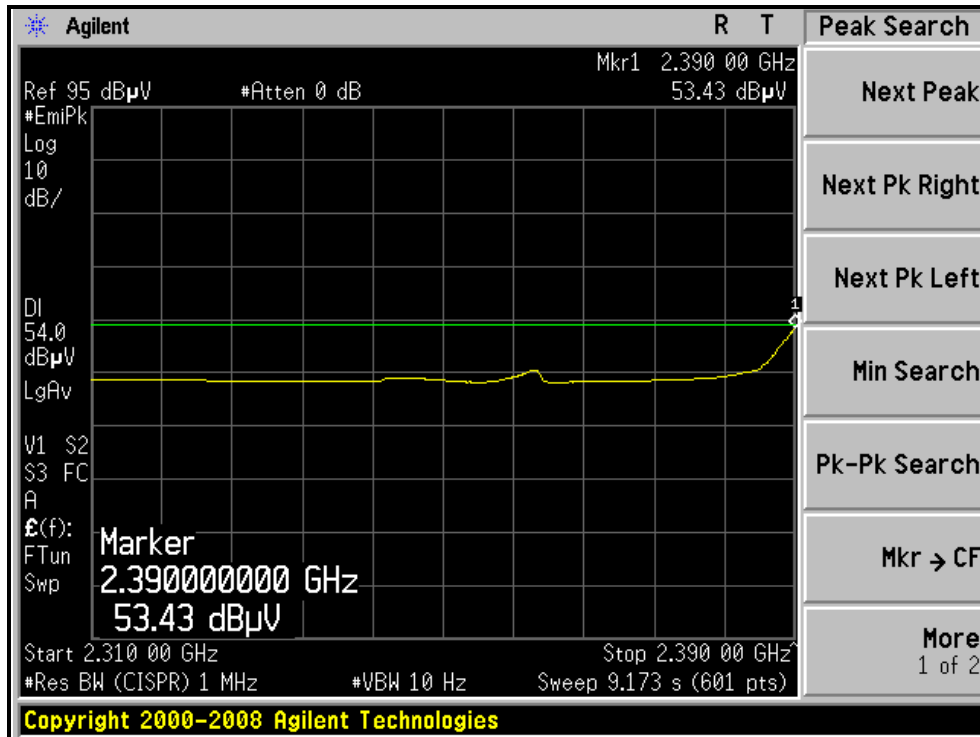
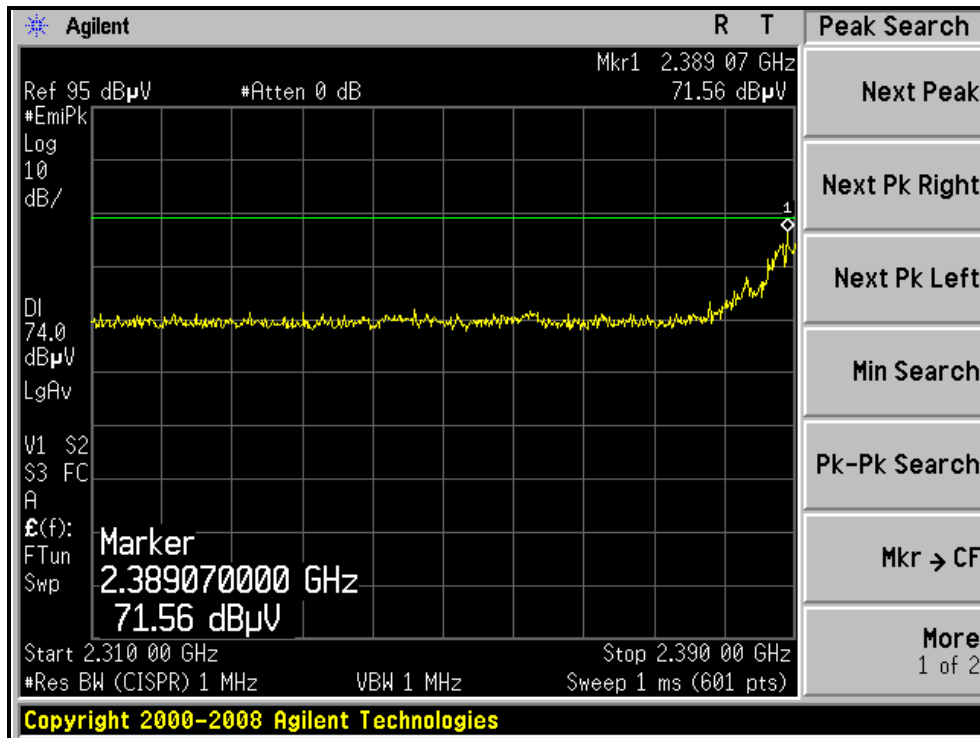


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RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, HORIZONTAL)



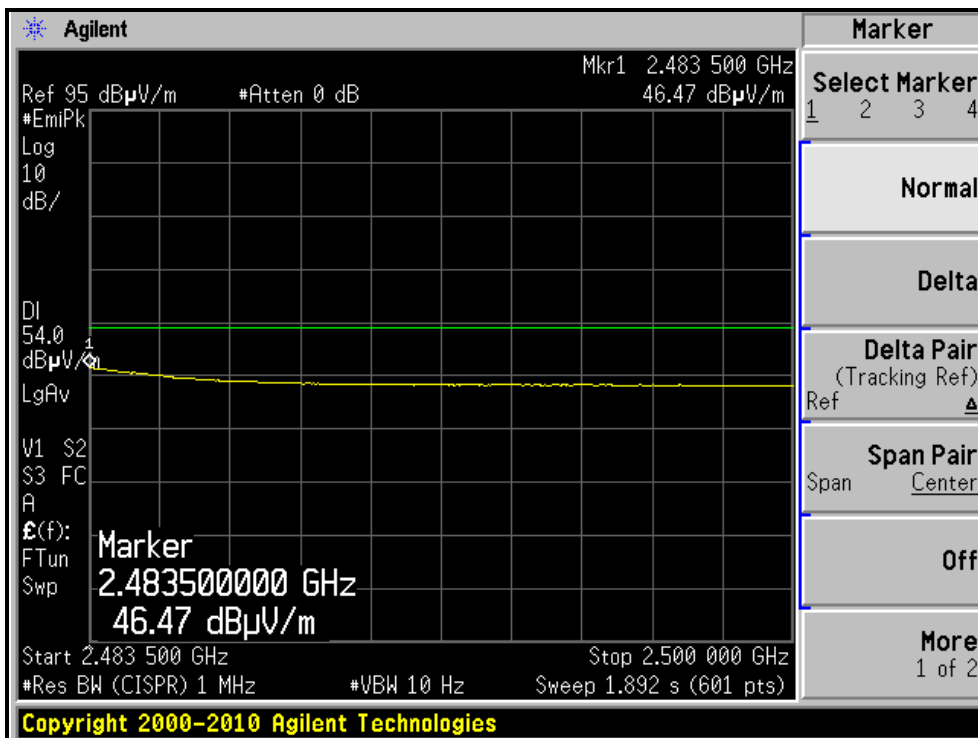
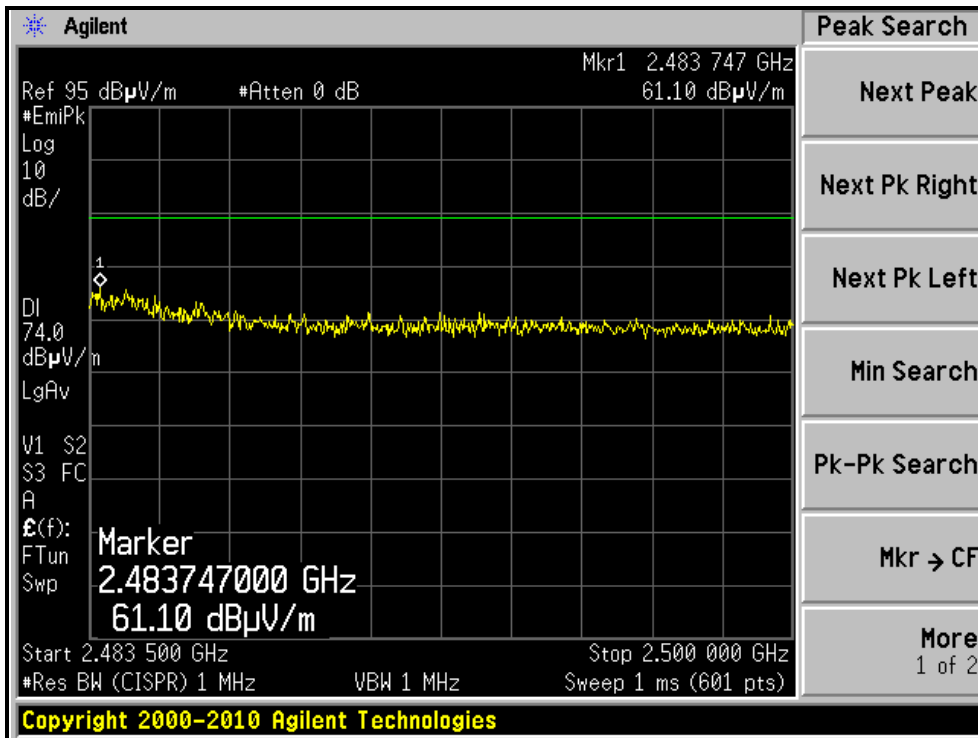
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, VERTICAL)





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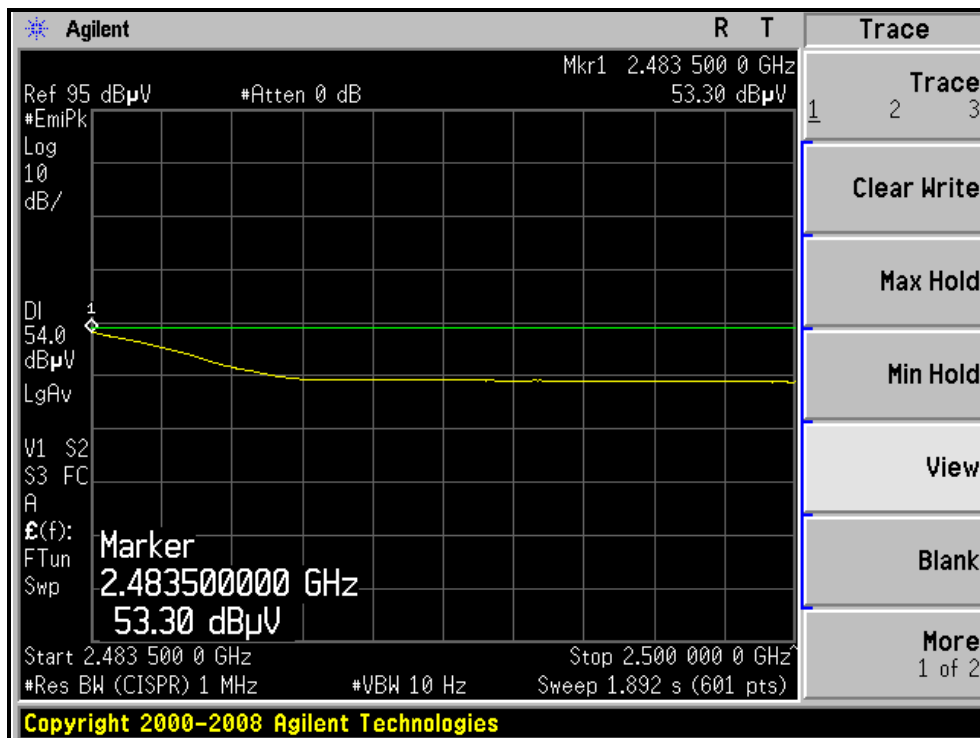
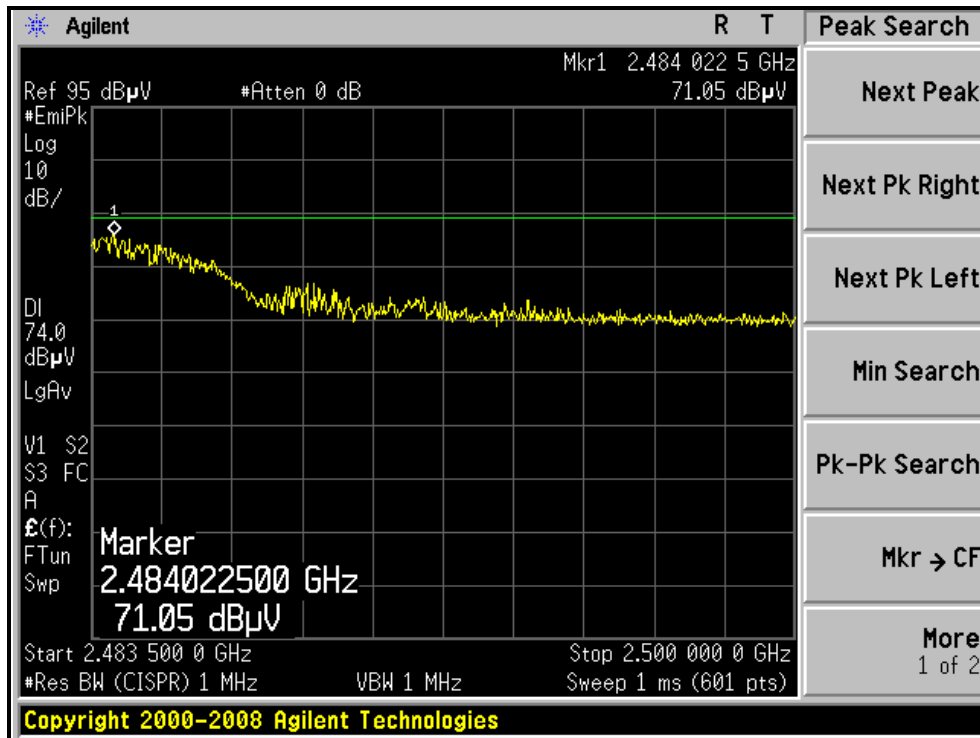
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, HORIZONTAL)





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





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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, 67%RH	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	64.1 PK	74.0	-9.9	1.14 H	53	32.78	31.32
2	2390.00	48.6 AV	54.0	-5.4	1.14 H	53	17.28	31.32
3	*2422.00	92.4 PK			1.14 H	53	60.97	31.43
4	*2422.00	82.3 AV			1.14 H	53	50.87	31.43
5	4844.00	50.3 PK	74.0	-23.7	1.27 H	23	14.08	36.22
6	4844.00	41.4 AV	54.0	-12.6	1.27 H	23	5.18	36.22
7	7266.00	49.3 PK	74.0	-24.7	1.36 H	269	7.17	42.13
8	7266.00	36.1 AV	54.0	-17.9	1.36 H	269	-6.03	42.13
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	67.7 PK	74.0	-6.3	1.10 V	28	36.38	31.32
2	2390.00	53.2 AV	54.0	-0.8	1.10 V	28	21.88	31.32
3	*2422.00	97.3 PK			1.10 V	28	65.87	31.43
4	*2422.00	87.9 AV			1.10 V	28	56.47	31.43
5	4844.00	51.4 PK	74.0	-22.6	1.31 V	279	15.18	36.22
6	4844.00	40.3 AV	54.0	-13.7	1.31 V	279	4.08	36.22
7	7266.00	49.3 PK	74.0	-24.7	1.43 V	49	7.17	42.13
8	7266.00	37.4 AV	54.0	-16.6	1.43 V	49	-4.73	42.13

- 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.



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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, 67%RH	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	96.7 PK			1.14 H	45	65.21	31.49
2	*2437.00	86.5 AV			1.14 H	45	55.01	31.49
3	4874.00	50.5 PK	74.0	-23.5	1.28 H	12	14.19	36.31
4	4874.00	41.4 AV	54.0	-12.6	1.28 H	12	5.09	36.31
5	7311.00	49.5 PK	74.0	-24.5	1.32 H	257	7.27	42.23
6	7311.00	36.4 AV	54.0	-17.6	1.32 H	257	-5.83	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	*2437.00	101.7 PK			1.11 V	21	70.21	31.49
2	*2437.00	92.1 AV			1.11 V	21	60.61	31.49
3	4874.00	51.2 PK	74.0	-22.8	1.33 V	286	14.89	36.31
4	4874.00	40.3 AV	54.0	-13.7	1.33 V	286	3.99	36.31
5	7311.00	48.8 PK	74.0	-25.2	1.42 V	63	6.57	42.23
6	7311.00	37.2 AV	54.0	-16.8	1.42 V	63	-5.03	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.



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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, 67%RH	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	96.5 PK			1.15 H	49	64.96	31.54
2	*2452.00	86.5 AV			1.15 H	49	54.96	31.54
3	2483.50	66.7 PK	74.0	-7.3	1.15 H	49	35.04	31.66
4	2483.50	49.0 AV	54.0	-5.0	1.15 H	49	17.34	31.66
5	4904.00	50.4 PK	74.0	-23.6	1.32 H	13	14.01	36.39
6	4904.00	41.6 AV	54.0	-12.4	1.32 H	13	5.21	36.39
7	7356.00	49.6 PK	74.0	-24.4	1.27 H	262	7.20	42.40
8	7356.00	36.2 AV	54.0	-17.8	1.27 H	262	-6.20	42.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

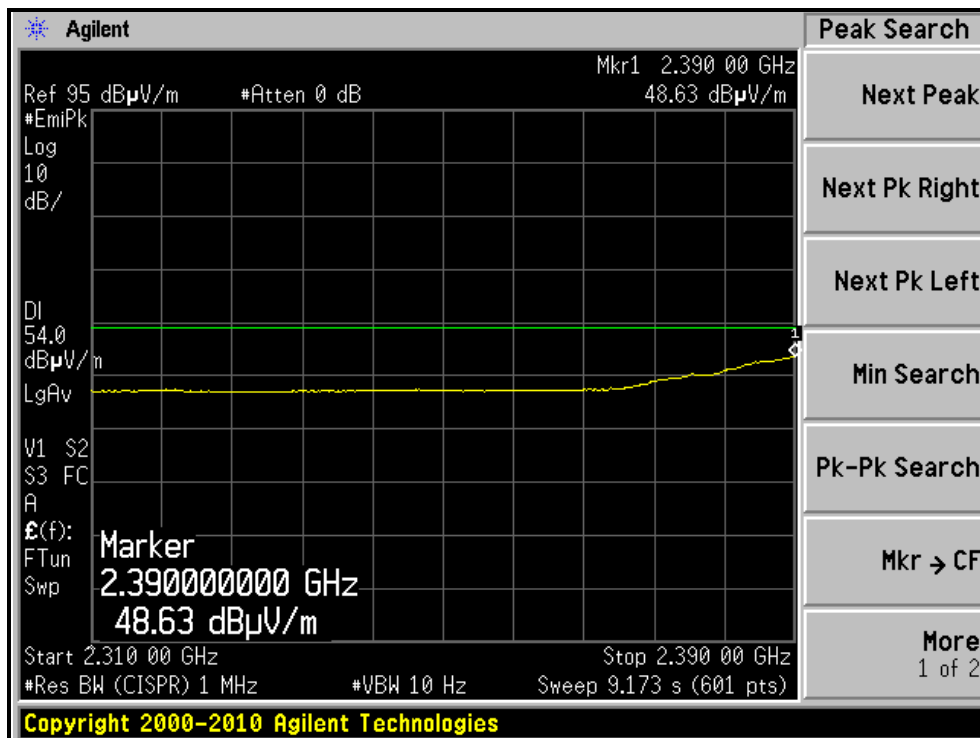
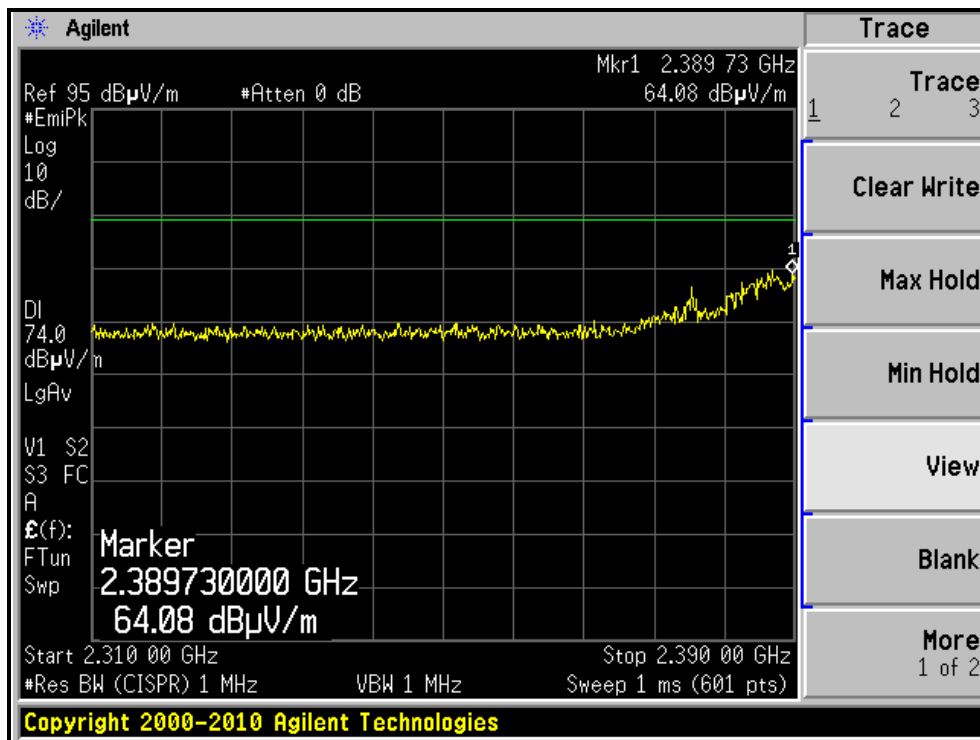
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	98.7 PK			1.07 V	30	67.16	31.54
2	*2452.00	88.3 AV			1.07 V	30	56.76	31.54
3	2483.50	69.9 PK	74.0	-4.1	1.08 V	30	38.24	31.66
4	2483.50	53.4 AV	54.0	-0.6	1.08 V	30	21.74	31.66
5	4904.00	51.2 PK	74.0	-22.8	1.30 V	300	14.81	36.39
6	4904.00	40.3 AV	54.0	-13.7	1.30 V	300	3.91	36.39
7	7356.00	49.0 PK	74.0	-25.0	1.44 V	72	6.60	42.40
8	7356.00	37.1 AV	54.0	-16.9	1.44 V	72	-5.30	42.40

- 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.

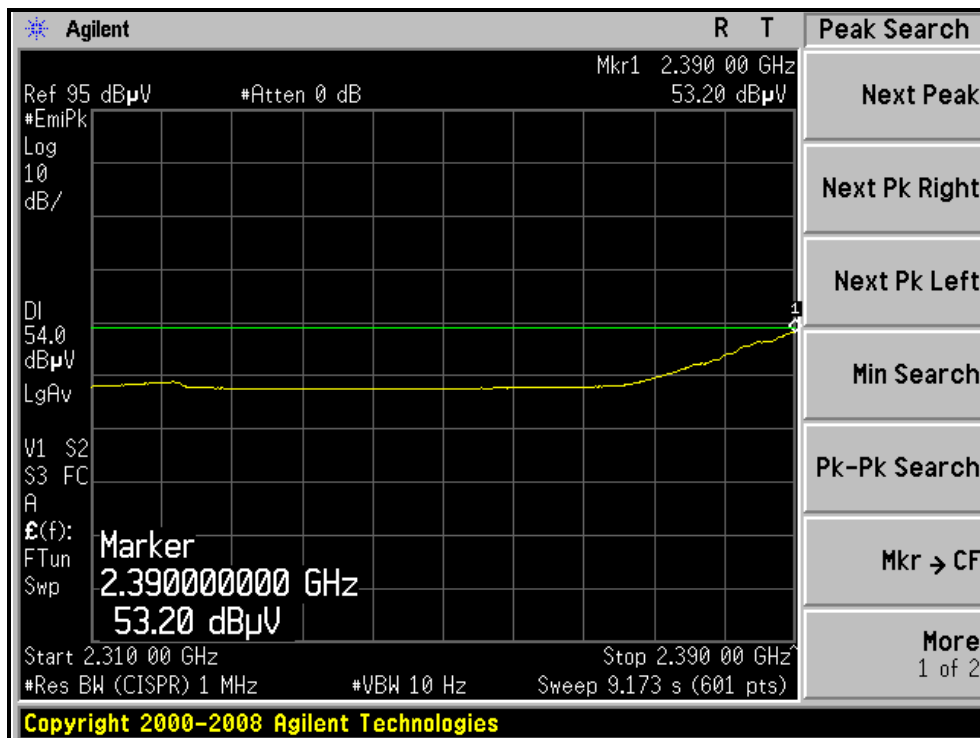
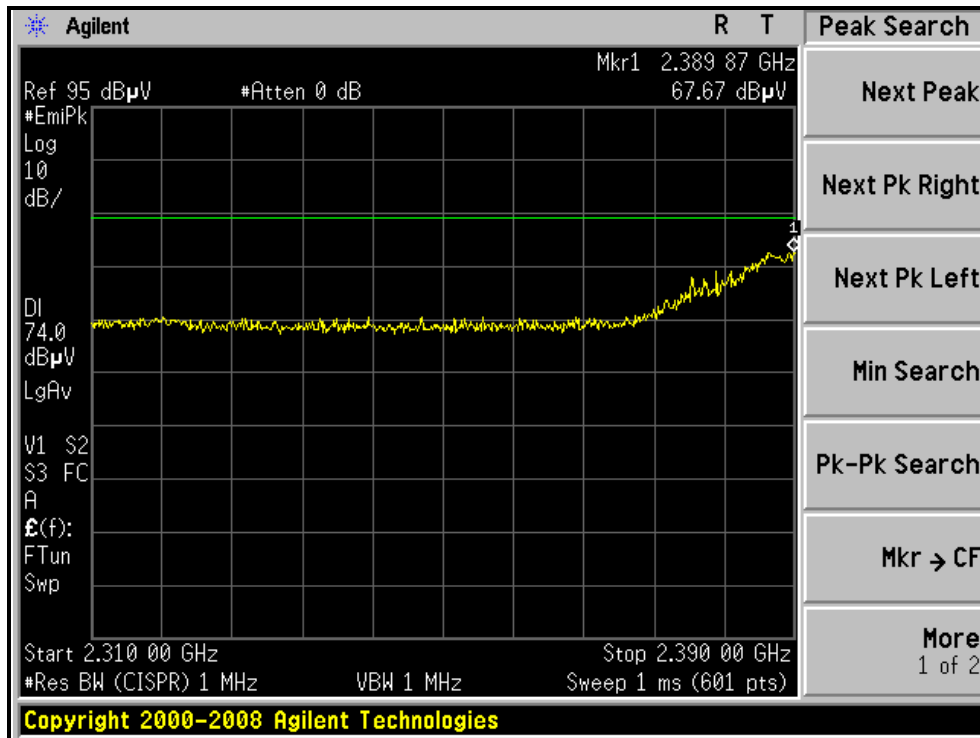


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RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, HORIZONTAL)



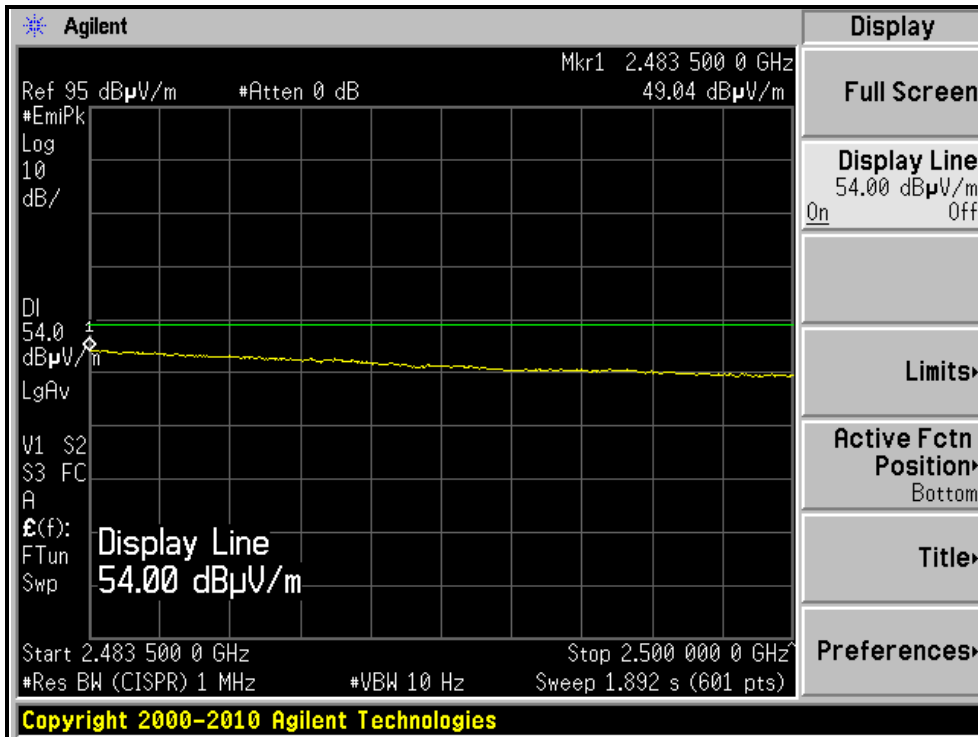
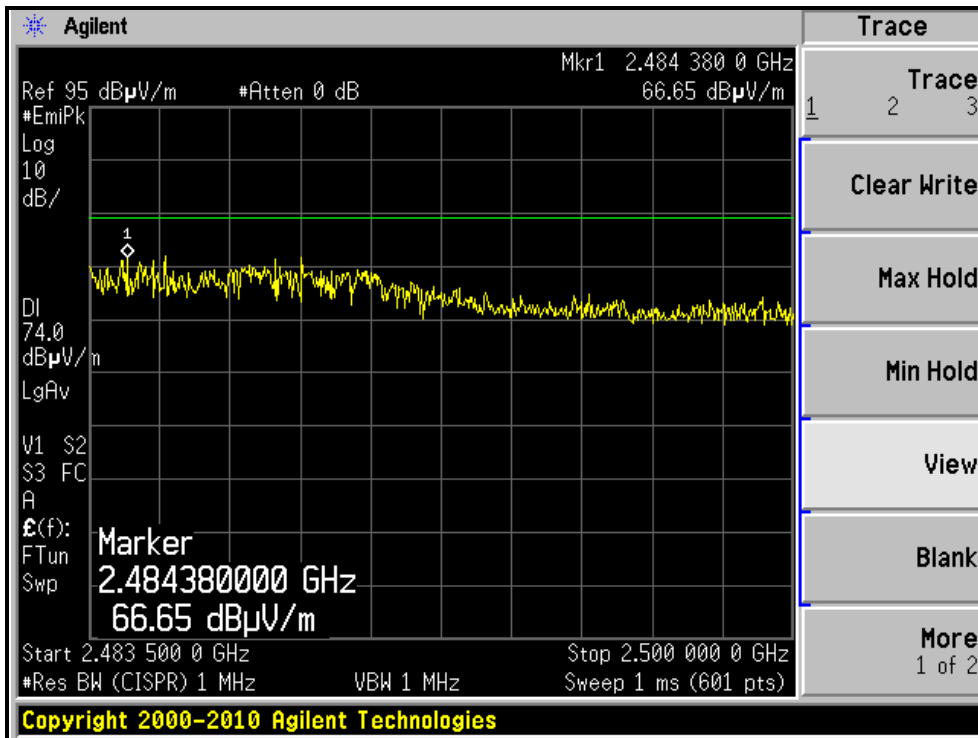
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, VERTICAL)





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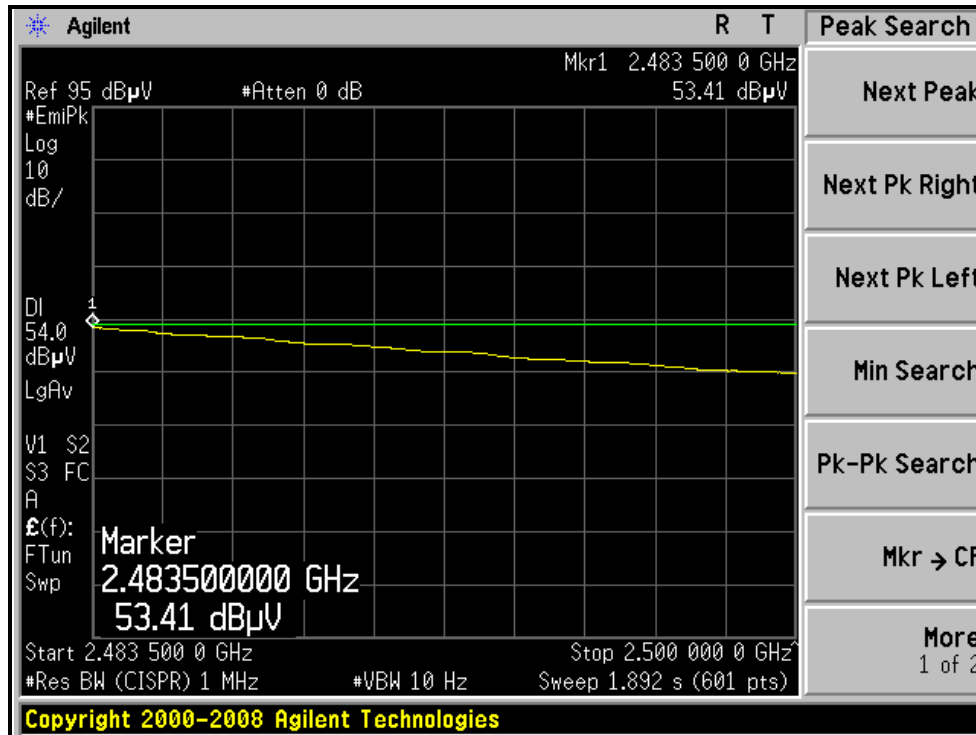
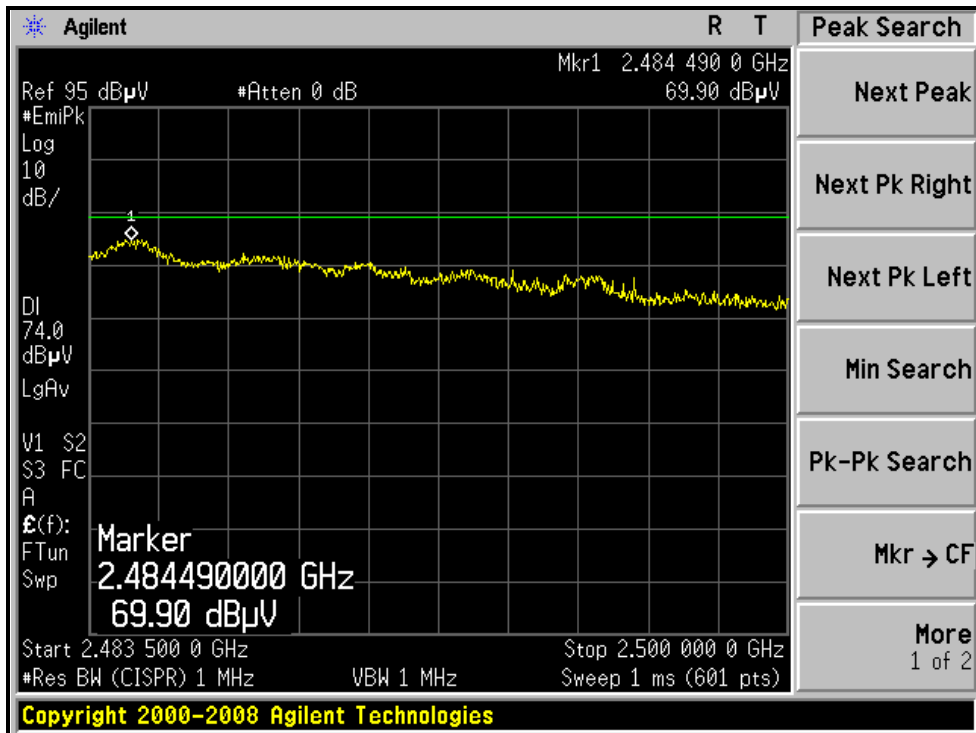
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, HORIZONTAL)





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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

Test date: Oct. 03, 2011

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

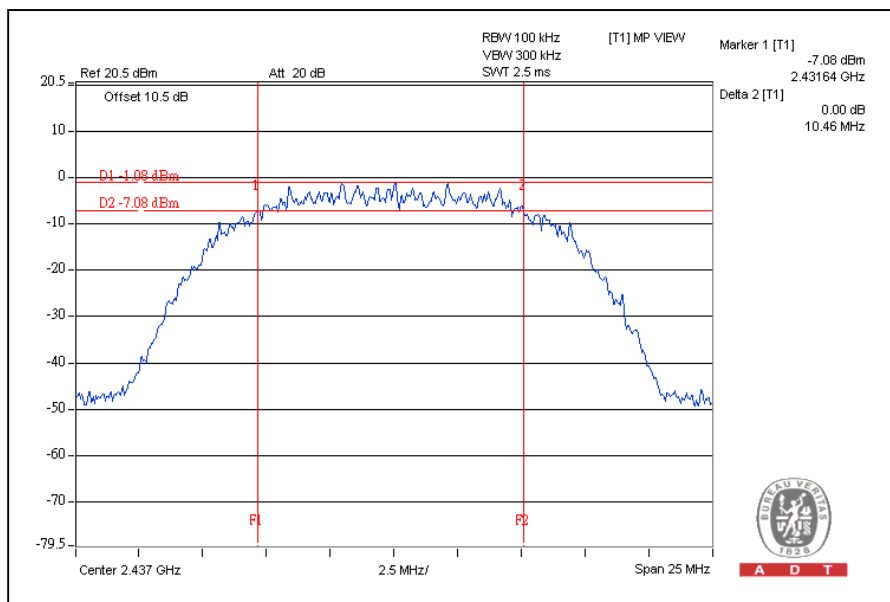
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.27	0.5	PASS
6	2437	10.46	0.5	PASS
11	2462	10.27	0.5	PASS

CH6



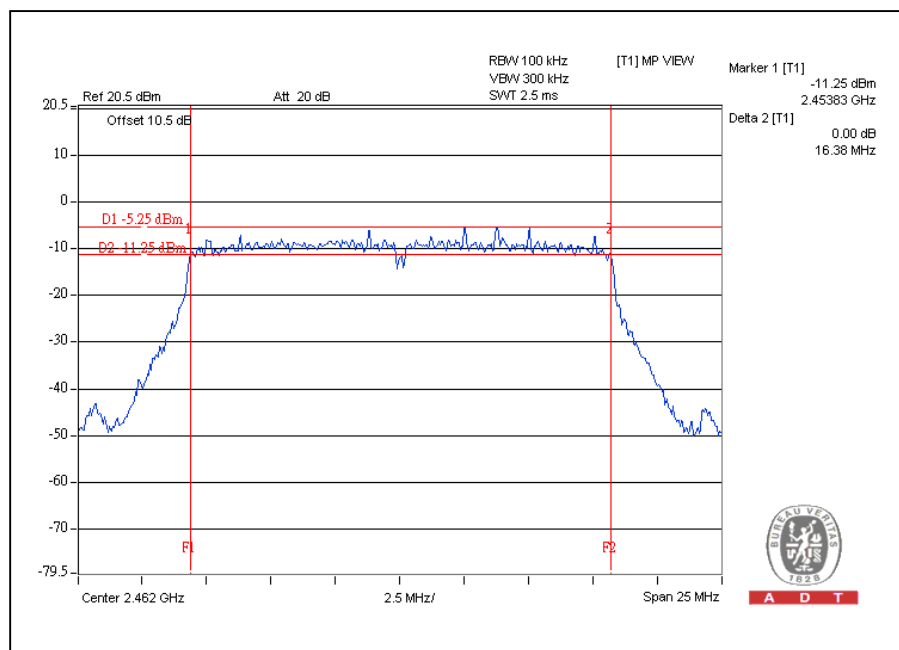


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802.11g OFDM MODULATION:

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

CH11



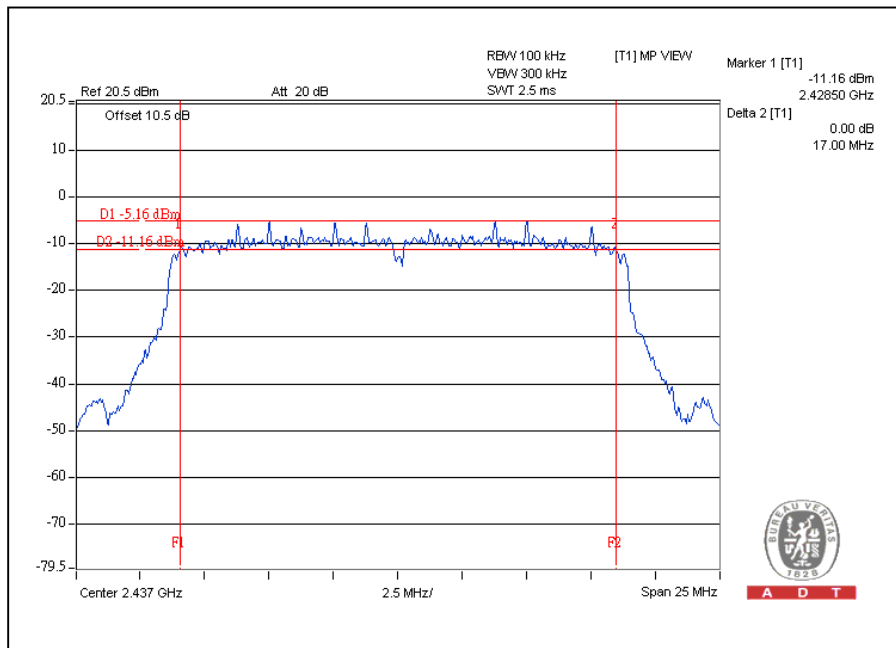


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802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.95	0.5	PASS
6	2437	17.00	0.5	PASS
11	2462	16.98	0.5	PASS

CH6



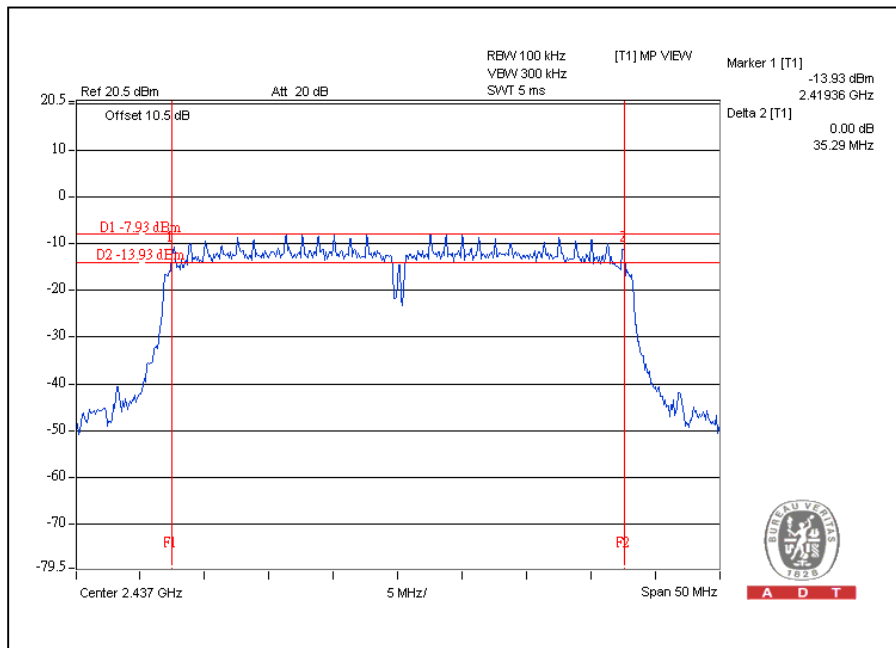


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802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	34.57	0.5	PASS
6	2437	35.29	0.5	PASS
9	2452	35.26	0.5	PASS

CH6



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

Test date: Oct. 03, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Peak Power Meter	ML2495A	0824006	May 04, 2011	May 03, 2012
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.

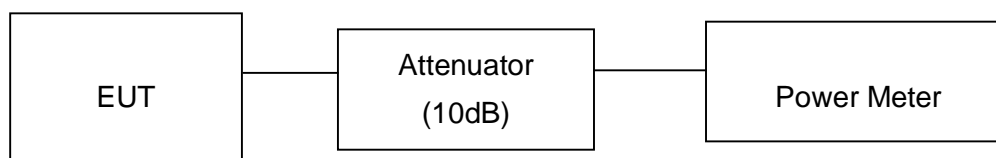
4.4.3 TEST PROCEDURES

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	13.8	11.4	30	PASS
6	2437	13.8	11.4	30	PASS
11	2462	13.5	11.3	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	13.5	11.3	30	PASS
6	2437	14.1	11.5	30	PASS
11	2462	14.5	11.6	30	PASS

802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
1	2412	14.1	11.5	30	PASS
6	2437	13.5	11.3	30	PASS
11	2462	13.8	11.4	30	PASS

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
3	2422	14.5	11.6	30	PASS
6	2437	13.8	11.4	30	PASS
9	2452	14.5	11.6	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

Test date: Oct. 03, 2011

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

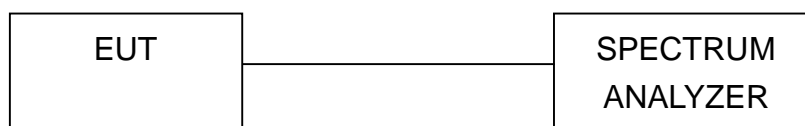
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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



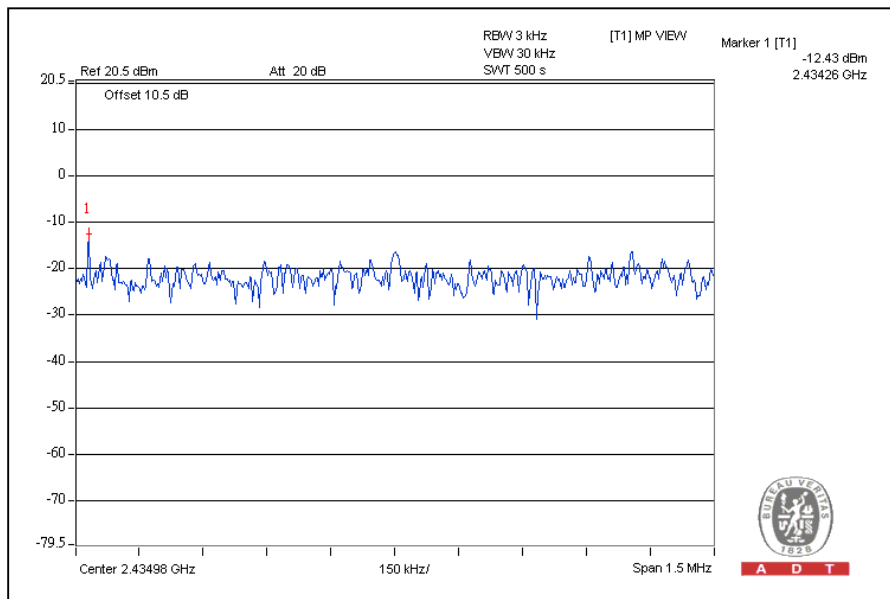
A D T

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	-13.8	8	PASS
6	2437	-12.4	8	PASS
11	2462	-16.1	8	PASS

CH6



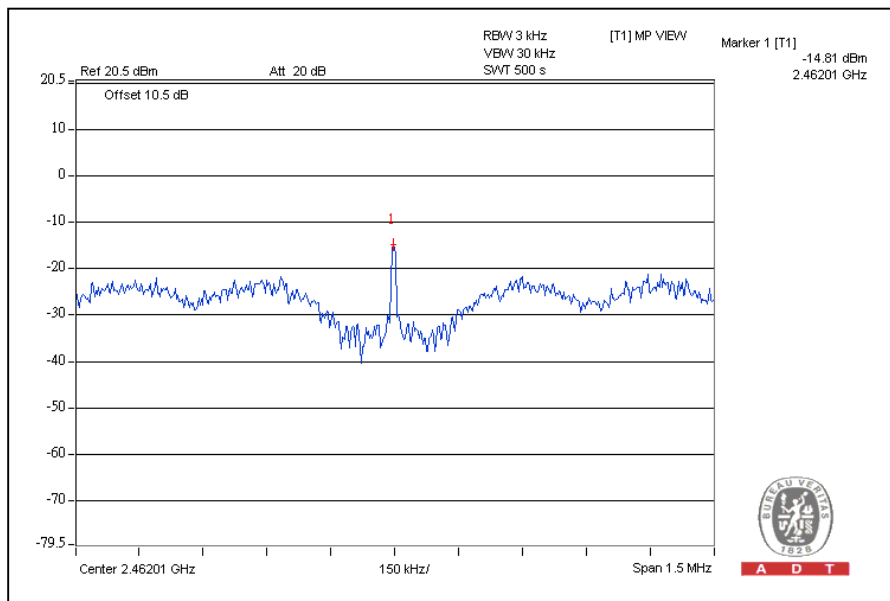


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802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-15.8	8	PASS
6	2437	-16.3	8	PASS
11	2462	-14.8	8	PASS

CH11



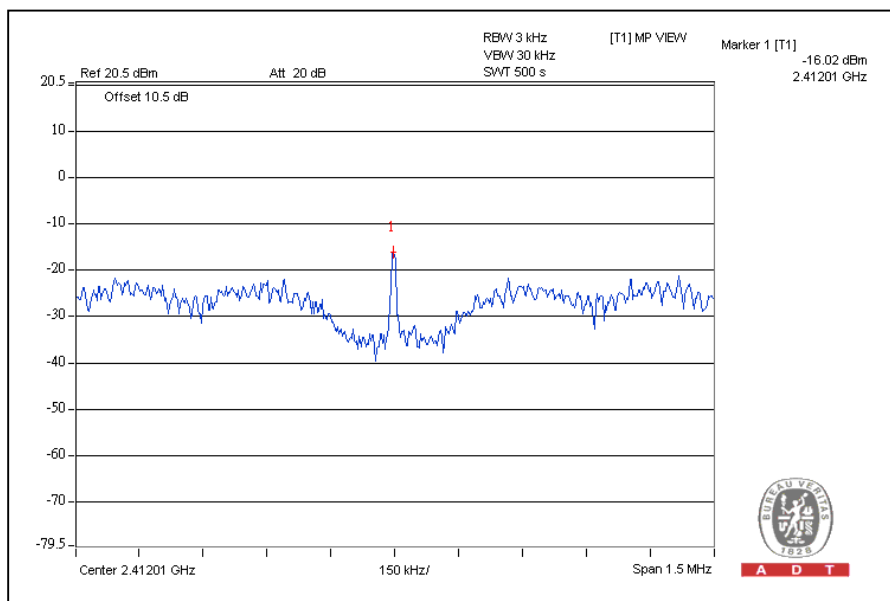


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802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
1	2412	-16.0	8	PASS
6	2437	-16.3	8	PASS
11	2462	-16.8	8	PASS

CH1



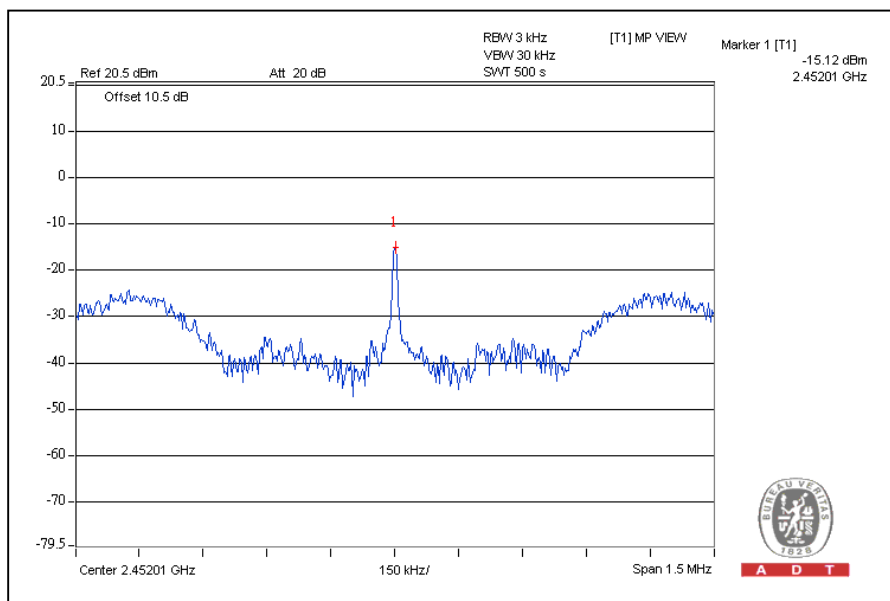


A D T

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
3	2422	-16.0	8	PASS
6	2437	-16.6	8	PASS
9	2452	-15.1	8	PASS

CH9



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

Test date: Oct. 03, 2011

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 loss cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100MHz or 200MHz 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

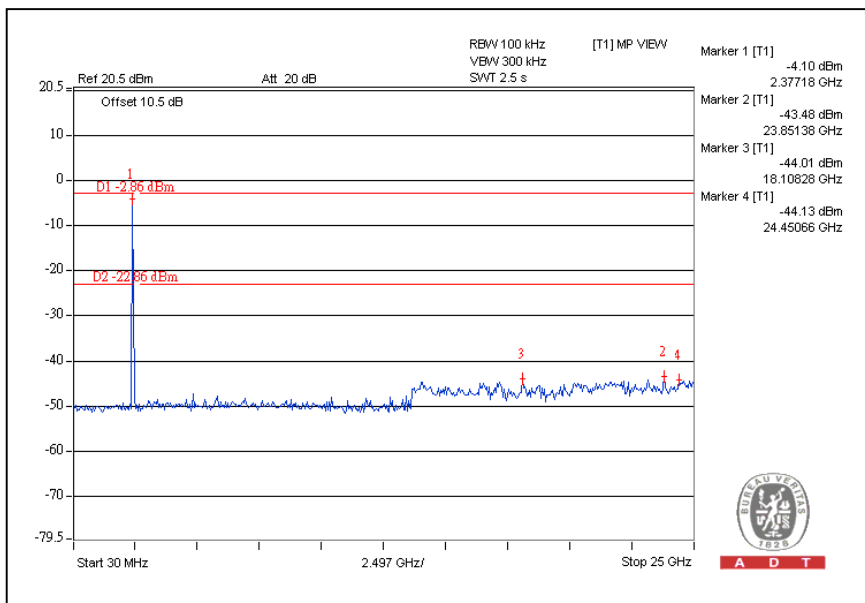
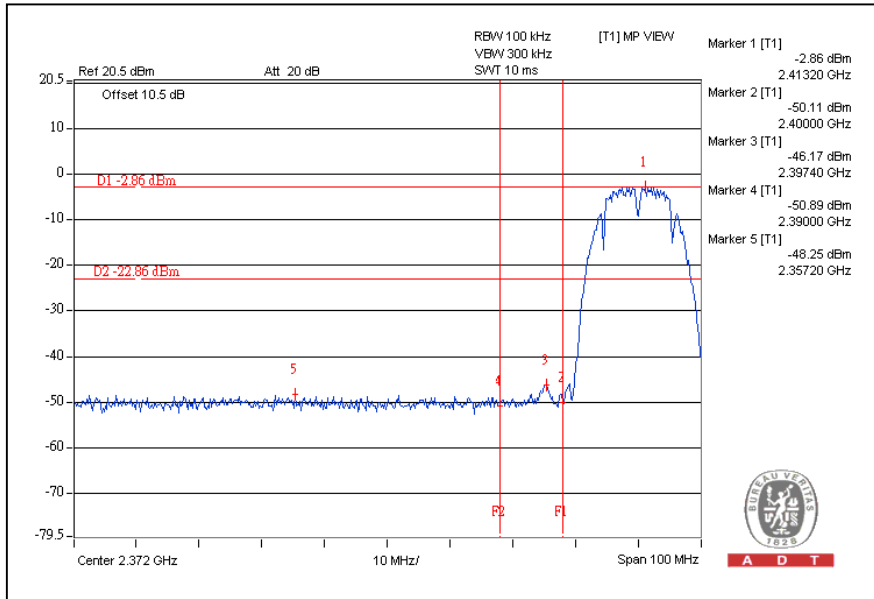
Same as Item 4.3.6

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:

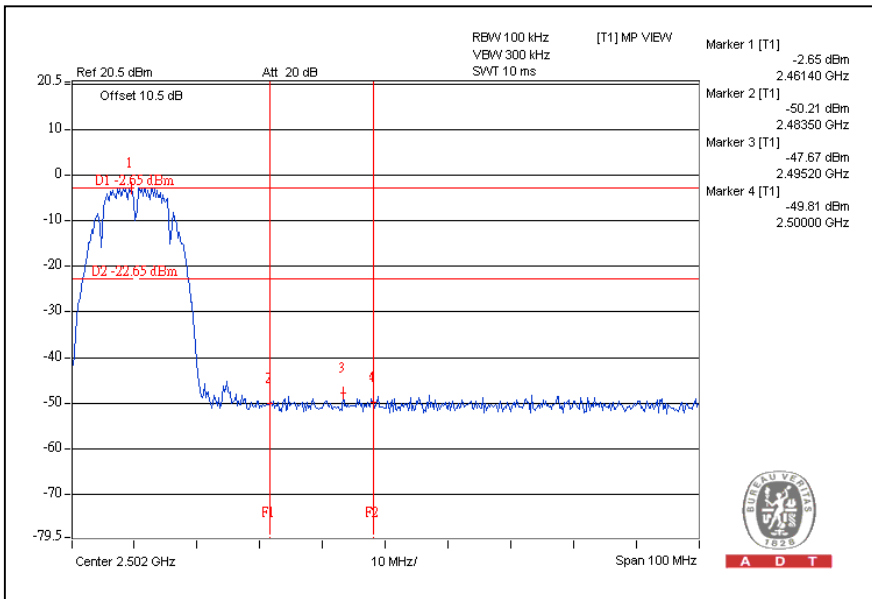
CH1



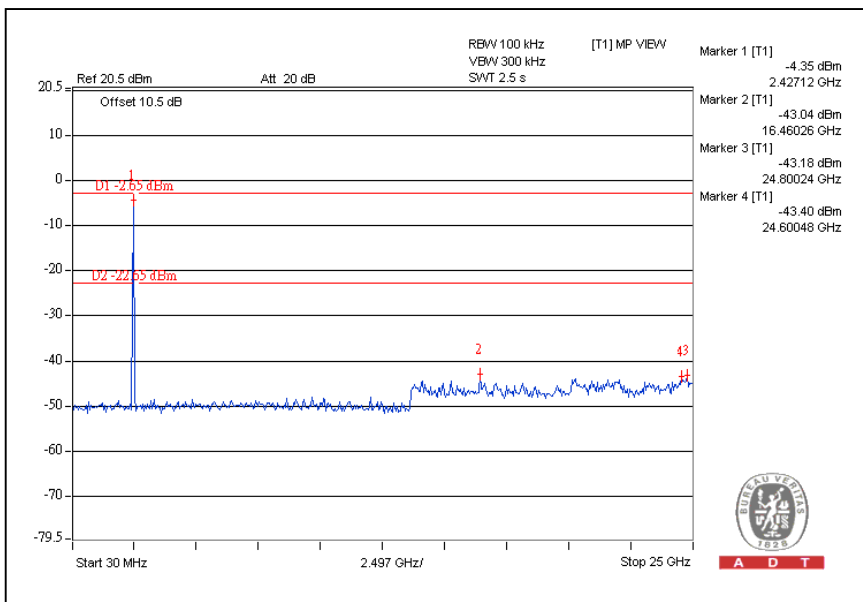


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CH11



A D T



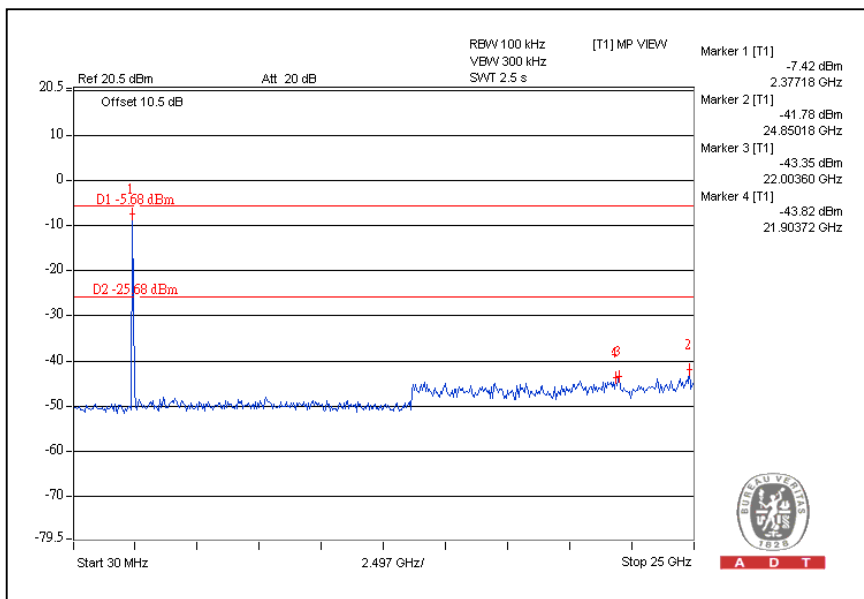
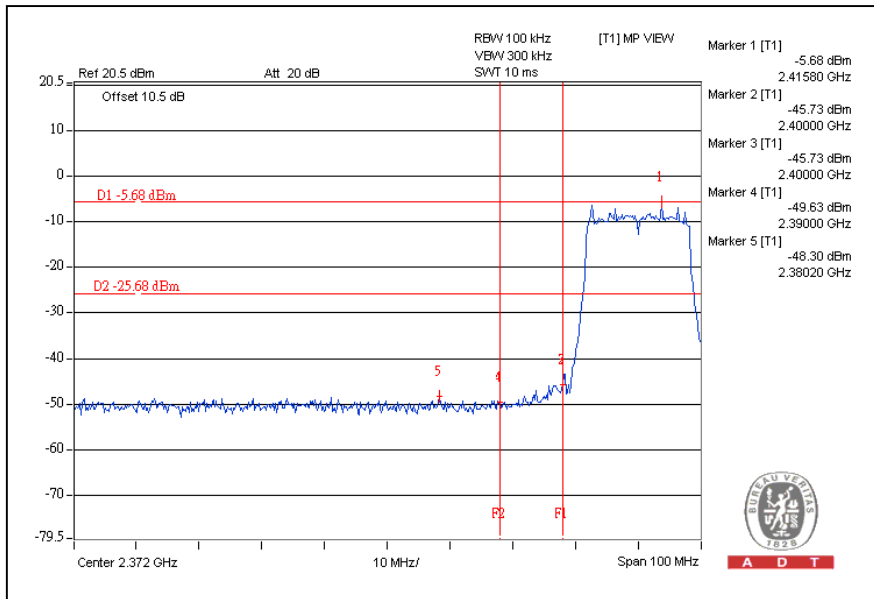
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802.11g OFDM MODULATION:

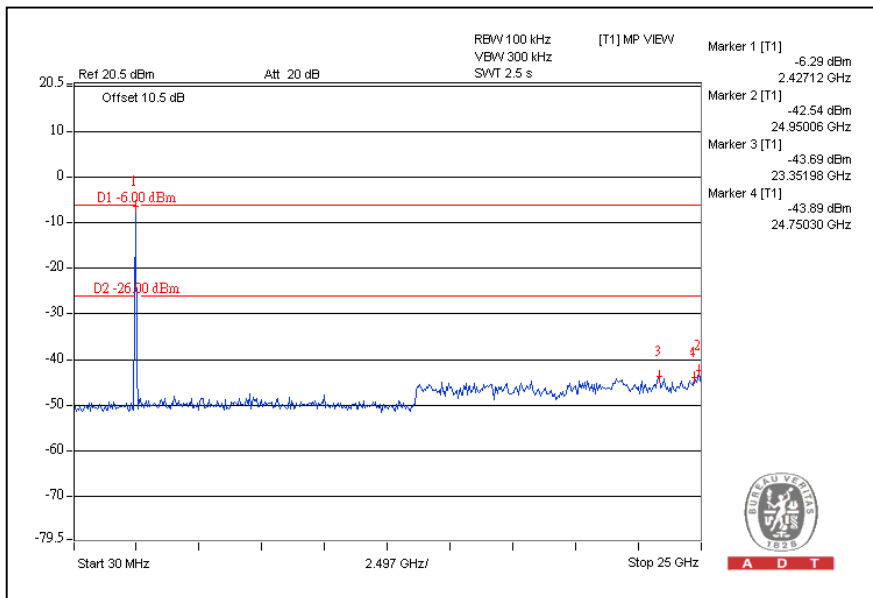
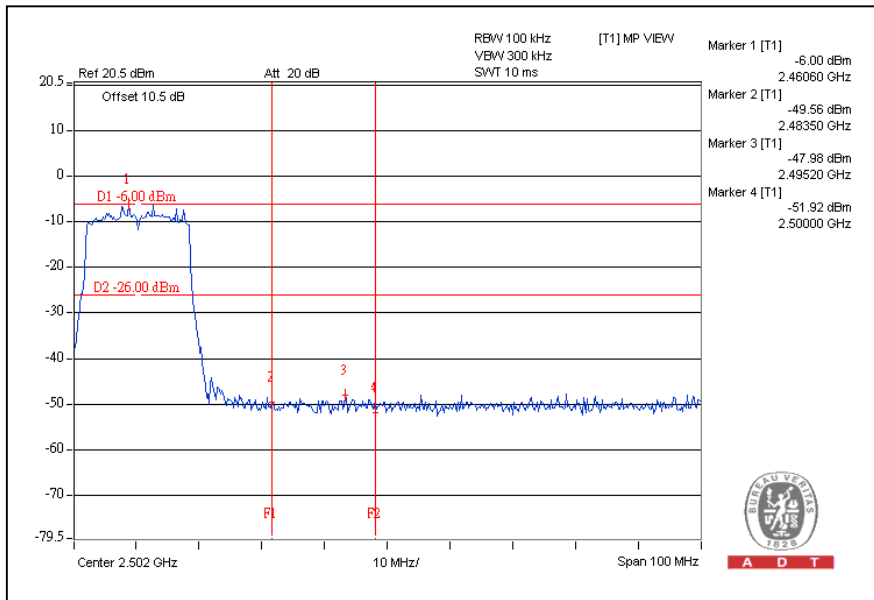
CH1





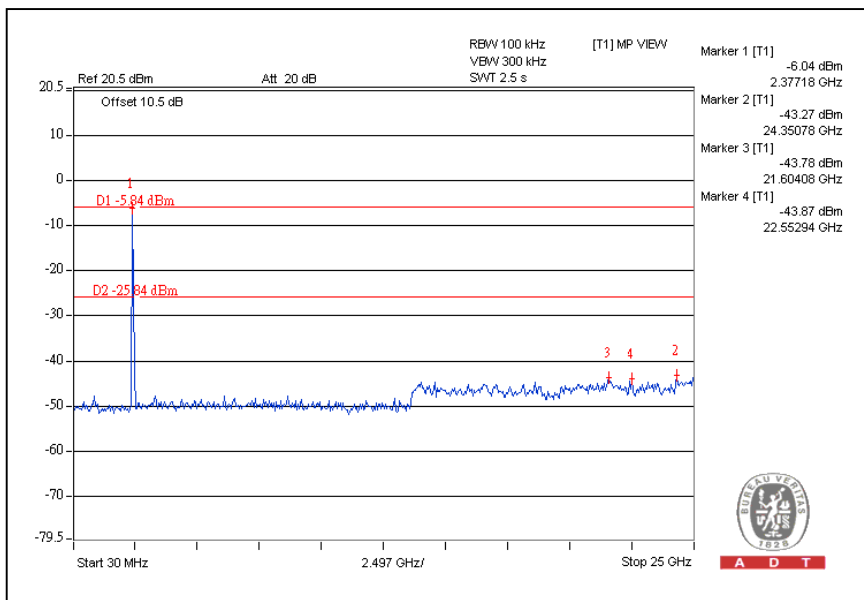
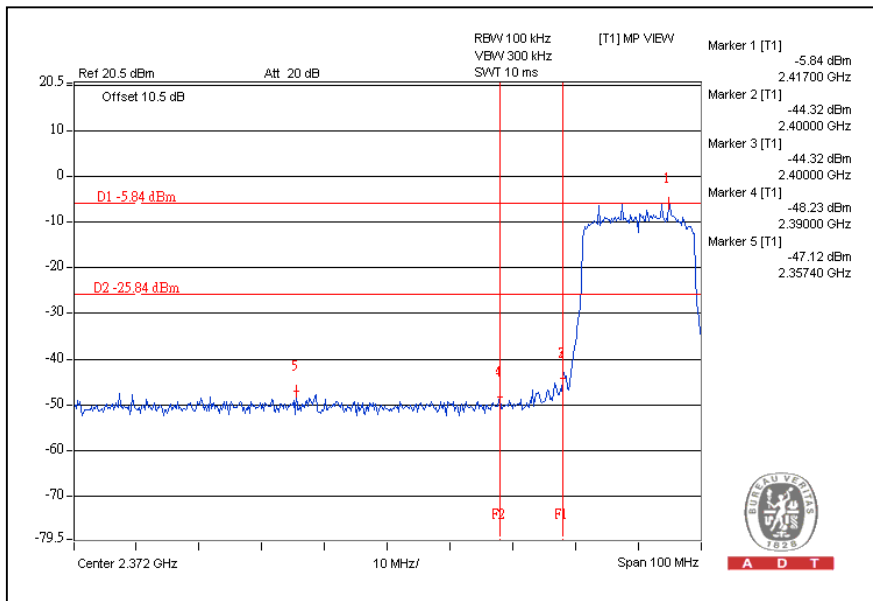
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CH11



802.11n (20MHz) OFDM MODULATION:

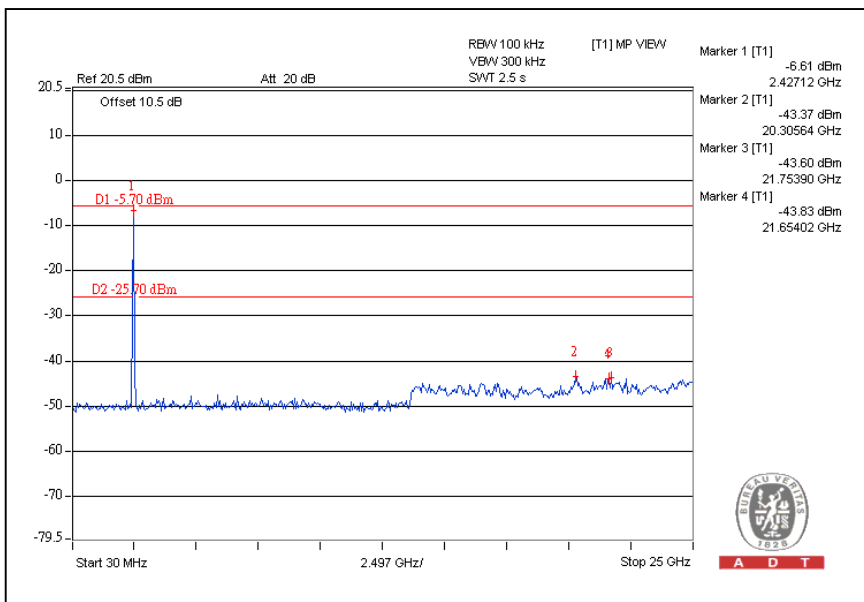
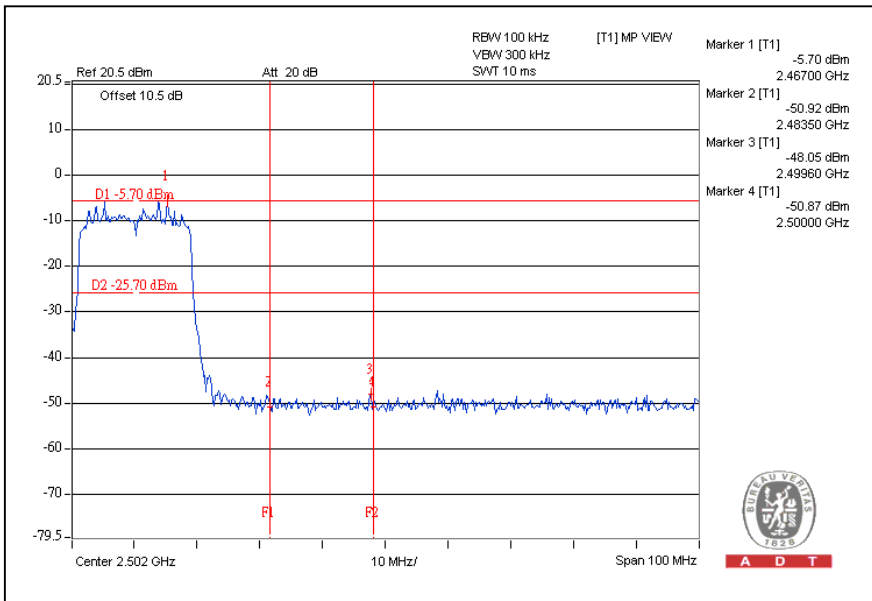
CH1





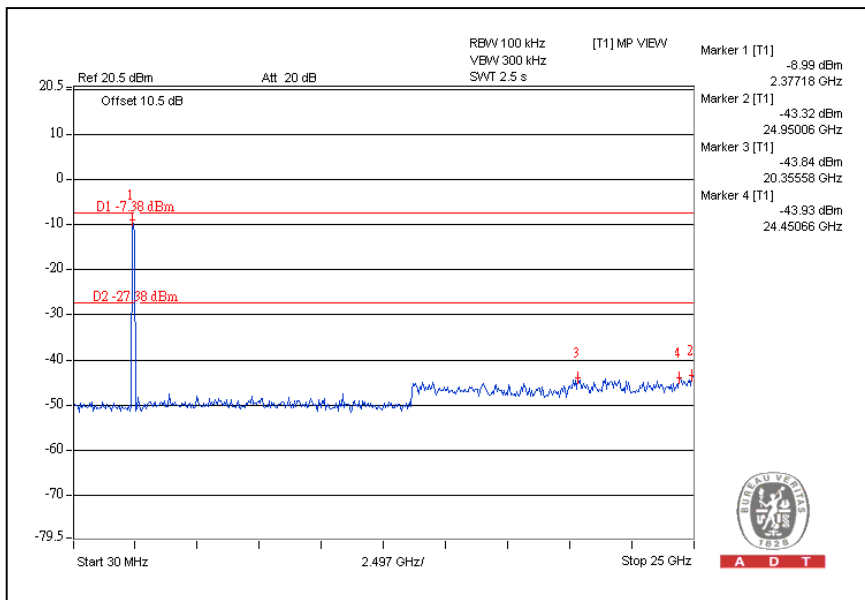
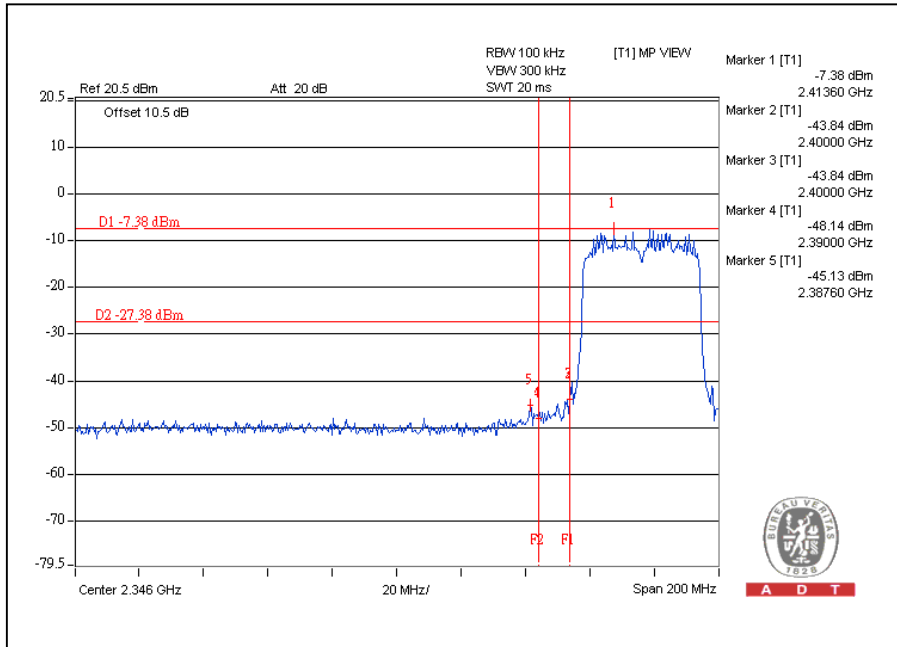
A D T

CH11



802.11n (40MHz) OFDM MODULATION:

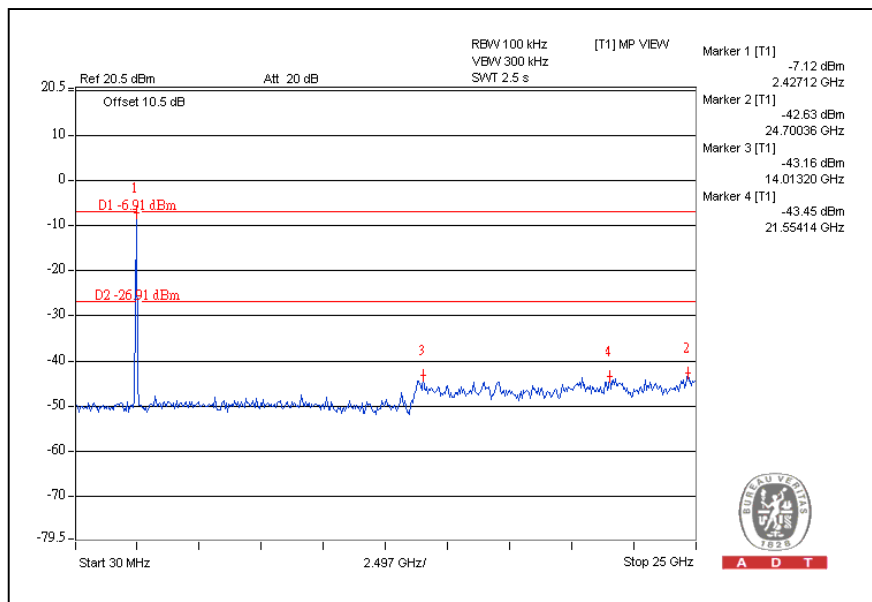
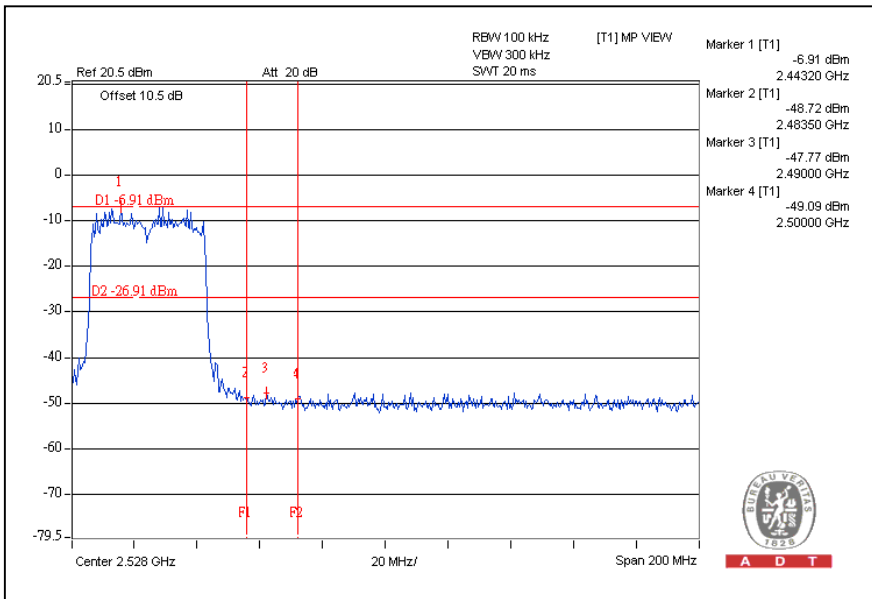
CH1





A D T

CH11





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 and authorization 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



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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 ---