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FCC TEST REPORT (15.247)

REPORT NO.: RF110718E01 R1

MODEL NO.: RT-N53

FCC ID: MSQ-RTN53

RECEIVED: July 18, 2011

TESTED: July 19 to Sep. 07, 2011

ISSUED: Sep. 15, 2011

APPLICANT: ASUSTEK Computer Inc.

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

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A D T

Table of Contents

RELEASE CONTROL RECORD.....	5
1. CERTIFICATION.....	6
2. SUMMARY OF TEST RESULTS.....	7
2.1 MEASUREMENT UNCERTAINTY	9
3. GENERAL INFORMATION	10
3.1 GENERAL DESCRIPTION OF EUT.....	10
3.2 DESCRIPTION OF TEST MODES.....	13
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	14
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	18
3.4 DESCRIPTION OF SUPPORT UNITS.....	19
3.5 CONFIGURATION OF SYSTEM UNDER TEST	20
4. TEST TYPES AND RESULTS (For 2400 ~ 2483.5MHz Band).....	21
4.1 CONDUCTED EMISSION MEASUREMENT	21
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	21
4.1.2 TEST INSTRUMENTS	21
4.1.3 TEST PROCEDURES.....	22
4.1.4 DEVIATION FROM TEST STANDARD	22
4.1.5 TEST SETUP	23
4.1.6 EUT OPERATING CONDITIONS.....	23
4.1.7 TEST RESULTS(MODE 1).....	24
4.1.8 TEST RESULTS(MODE 2).....	26
4.2 RADIATED EMISSION MEASUREMENT	28
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT.....	28
4.2.2 TEST INSTRUMENTS	29
4.2.3 TEST PROCEDURES.....	30
4.2.4 DEVIATION FROM TEST STANDARD	30
4.2.5 TEST SETUP	31
4.2.6 EUT OPERATING CONDITIONS.....	31
4.2.7 TEST RESULTS.....	32
4.3 6dB BANDWIDTH MEASUREMENT	61
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	61
4.3.2 TEST INSTRUMENTS	61
4.3.3 TEST PROCEDURE	61
4.3.4 DEVIATION FROM TEST STANDARD	61
4.3.5 TEST SETUP	61
4.3.6 EUT OPERATING CONDITIONS.....	61
4.3.7 TEST RESULTS.....	62



A D T

4.4	MAXIMUM PEAK OUTPUT POWER	66
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	66
4.4.2	INSTRUMENTS	66
4.4.3	TEST PROCEDURES.....	66
4.4.4	DEVIATION FROM TEST STANDARD	66
4.4.5	TEST SETUP	67
4.4.6	EUT OPERATING CONDITIONS.....	67
4.4.7	TEST RESULTS.....	68
4.5	POWER SPECTRAL DENSITY MEASUREMENT.....	70
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	70
4.5.2	TEST INSTRUMENTS	70
4.5.3	TEST PROCEDURE	70
4.5.4	DEVIATION FROM TEST STANDARD	70
4.5.5	TEST SETUP	70
4.5.6	EUT OPERATING CONDITION	70
4.5.7	TEST RESULTS.....	71
4.6	CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	75
4.6.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT	75
4.6.2	TEST INSTRUMENTS	75
4.6.3	TEST PROCEDURE	75
4.6.4	DEVIATION FROM TEST STANDARD	75
4.6.5	EUT OPERATING CONDITION	75
4.6.6	TEST RESULTS.....	75
5.	TEST TYPES AND RESULTS (For 5725~5850MHz Band).....	84
5.1	CONDUCTED EMISSION MEASUREMENT	84
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	84
5.1.2	TEST INSTRUMENTS	84
5.1.3	TEST PROCEDURES.....	85
5.1.4	DEVIATION FROM TEST STANDARD	85
5.1.5	TEST SETUP	86
5.1.6	EUT OPERATING CONDITIONS.....	86
5.1.7	TEST RESULTS(MODE 1).....	87
5.1.8	TEST RESULTS(MODE 2).....	89
5.2	RADIATED EMISSION MEASUREMENT	91
5.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	91
5.2.2	TEST INSTRUMENTS	92
5.2.3	TEST PROCEDURES.....	93
5.2.4	DEVIATION FROM TEST STANDARD	93
5.2.5	TEST SETUP	94



A D T

5.2.6	EUT OPERATING CONDITIONS.....	94
5.2.7	TEST RESULTS.....	95
5.3	6dB BANDWIDTH MEASUREMENT	104
5.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	104
5.3.2	TEST INSTRUMENTS	104
5.3.3	TEST PROCEDURE	104
5.3.4	DEVIATION FROM TEST STANDARD	104
5.3.5	TEST SETUP	104
5.3.6	EUT OPERATING CONDITIONS.....	104
5.3.7	TEST RESULTS.....	105
5.4	MAXIMUM PEAK OUTPUT POWER	108
5.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	108
5.4.2	INSTRUMENTS	108
5.4.3	TEST PROCEDURES.....	108
5.4.4	DEVIATION FROM TEST STANDARD	108
5.4.5	TEST SETUP	109
5.4.6	EUT OPERATING CONDITIONS.....	109
5.4.7	TEST RESULTS.....	110
5.5	POWER SPECTRAL DENSITY MEASUREMENT.....	111
5.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	111
5.5.2	TEST INSTRUMENTS	111
5.5.3	TEST PROCEDURE	111
5.5.4	DEVIATION FROM TEST STANDARD	111
5.5.5	TEST SETUP	111
5.5.6	EUT OPERATING CONDITION	111
5.5.7	TEST RESULTS.....	112
5.6	CONDUCTED OUT-BAND EMISSION MEASUREMENT.....	115
5.6.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT	115
5.6.2	TEST INSTRUMENTS	115
5.6.3	TEST PROCEDURE	115
5.6.4	DEVIATION FROM TEST STANDARD	115
5.6.5	EUT OPERATING CONDITION	115
5.6.6	TEST RESULTS.....	115
6.	INFORMATION ON THE TESTING LABORATORIES	122
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	123



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110718E01	Original release	Aug. 19, 2011
RF110718E01 R1	For 2.4GHz: Modified the maximum peak output power, 6dB Bandwidth, Power Spectral Density, and conducted out-band emission test. For 5GHz: Modified the maximum peak output power and conducted out-band emission test.	Sep. 15, 2011



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1. CERTIFICATION

PRODUCT: ASUS Dual band Wireless N Router
BRAND NAME: ASUS
MODEL NO.: RT-N53
TEST SAMPLE: R&D SAMPLE
APPLICANT: ASUSTEK Computer Inc.
TESTED: July 19 to Sep. 07, 2011
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: RT-N53) 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:** Sep. 15, 2011
(Claire Kuan, Specialist)

APPROVED BY :  , **DATE:** Sep. 15, 2011
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 2.4GHz, 2412~2462MHz Band

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 -7.27dB at 0.151MHz
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
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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For 5GHz, 5725~5850MHz Band

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 -7.46dB at 0.150MHz
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 -0.6dB at 11570.00MHz
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.

NOTE:

1. The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.25GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz and 5.725~5.850GHz. For the 5.15~5.25GHz RF parameters was recorded in another test report.



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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)	3.89 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.56 dB



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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	ASUS Dual band Wireless N Router
MODEL NO.	RT-N53
FCC ID	MSQ-RTN53
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11a/g: 54/48/36/24/18/12/9/6Mbps 802.11b:11/5.5/2/1Mbps 802.11n (20MHz, 400ns GI): 7.2/14.4/21.7/28.9/43.3/57.8/65.0/72.2Mbps 14.444 / 28.889 / 43.333 / 57.778 / 86.667 /115.556 / 130.000 / 144.444Mbps 802.11n (40MHz, 400ns GI): 15.0/30.0/45.0/60.0/90.0/120.0/135.0/150.0Mbps 30.0 / 60.0 / 90.0 / 120.0 / 180.0 / 240.0 / 270.0 / 300.0Mbps
OPERATING FREQUENCY	For 15.407 802.11a: 5.18 ~ 5.24GHz For 15.247 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.745 ~ 5.825GHz



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NUMBER OF CHANNEL	For 15.407 4 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
	For 15.247(2.4GHz) 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz) For 15.247(5GHz) 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
MAXIMUM OUTPUT POWER	For 15.407 802.11a: 13.4mW 802.11n (20MHz): 19.8mW 802.11n (40MHz): 43.9mW For 15.247(2.4GHz) 802.11b: 151.4mW 802.11g: 649.9mW 802.11n (20MHz): 656.8mW 802.11n (40MHz): 449.6mW For 15.247(5GHz) 802.11a: 335.8mW 802.11n (20MHz): 335.8mW 802.11n (40MHz): 335.8mW
ANTENNA TYPE	Please see note
DATA CABLE	NA
I/O PORTS	WAN port x 1 LAN port x 4
ASSOCIATED DEVICES	Adapter x 1

NOTE:

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

Transmitter Circuit	Antenna Type	2.4G Gain (dBi) Net gain	2.4G (dBi) Cable loss	5G Gain (dBi) Net gain	Antenna Connector
Chain (0)	PCB Printed	1.44	1.2	3.53	NA
Chain (1)	PCB Printed	3.55	2	4.52	NA



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2. The EUT must be supplied with a power adapter and following two different model names could be chosen:

Adapter	Brand	Model No.	Spec.
Adapter 1	LEI	MU12-G120100-A1	AC Input: 100-240V 0.5A, 50-60Hz DC Output: 12V, 1A
Adapter 2	DVE	DSA-12G-12 FUS 120120	DC output cable: Unshielded, 1.6m

Note:

1. From the above adapters, the worst radiated test item was found in Adapter 1. Therefore only the test data of the mode was recorded in this report.

3. The EUT incorporates CDD function with 802.11a, 802.11g.

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

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

6. Conducted emission and Radiated emission of the simultaneous operation has been evaluated and no non-compliance found.

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

3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

Eleven channels are provided for 802.11b, 802.11g, 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		

Operated in 5725 ~ 5850MHz band:

Five channels are provided for 802.11a, 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

Two channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY
151	5755 MHz
159	5795 MHz



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
1	√	√	√	√	√	With adapter 1
2	√	-	-	-	-	With adapter 2

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

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)
A	802.11 b	√	
B	802.11 g	√	√
C	802.11 a	√	√
D	802.11n(20MHz) for MCS0~15	√	√
E	802.11n(40MHz) for MCS0~15	√	√

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
For 2.4 GHz 802.11g	1 to 11	6	OFDM	BPSK	6	B
For 5 GHz 802.11a	149 to 165	149	OFDM	BPSK	6	C



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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).
- The EUT was pre-tested under the XY different axis placements and the worst case was recorded in this report. (X: laying-flat type; Y: stand-up type)
- 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	AXIS
For 2.4 GHz 802.11g	1 to 11	6	OFDM	BPSK	6	B	X
For 5 GHz 802.11a	149 to 165	149	OFDM	BPSK	6	C	X

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).
- The EUT was pre-tested under the XY different axis placements and the worst case was recorded in this report. (X: laying-flat type; Y: stand-up type)
- 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	AXIS
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1	A	Y
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6	B	Y
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	D	Y
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15	E	Y
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6	C	Y
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	D	Y
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15	E	Y



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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
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	7.2	D
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 9	OFDM	BPSK	15	E
802.11a	149 to 165	149, 165	OFDM	BPSK	6	C
For 5 GHz 802.11n (20MHz)	149 to 165	149, 165	OFDM	BPSK	7.2	D
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15	E

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
For 2.4 GHz 802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	7.2	D
For 2.4 GHz 802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	15	E
802.11a	149 to 165	149, 157, 165	OFDM	BPSK	6	C
For 5 GHz 802.11n (20MHz)	149 to 165	149, 157, 165	OFDM	BPSK	7.2	D
For 5 GHz 802.11n (40MHz)	151 to 159	151, 159	OFDM	BPSK	15	E

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



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※ **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE ³ 1G	27deg. C, 71%RH	120Vac, 60Hz	Frank Liu / Rex Huang
RE<1G	26deg. C, 69%RH	120Vac, 60Hz	Rex Huang
PLC	26deg. C, 62%RH	120Vac, 60Hz	Andy Ho
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

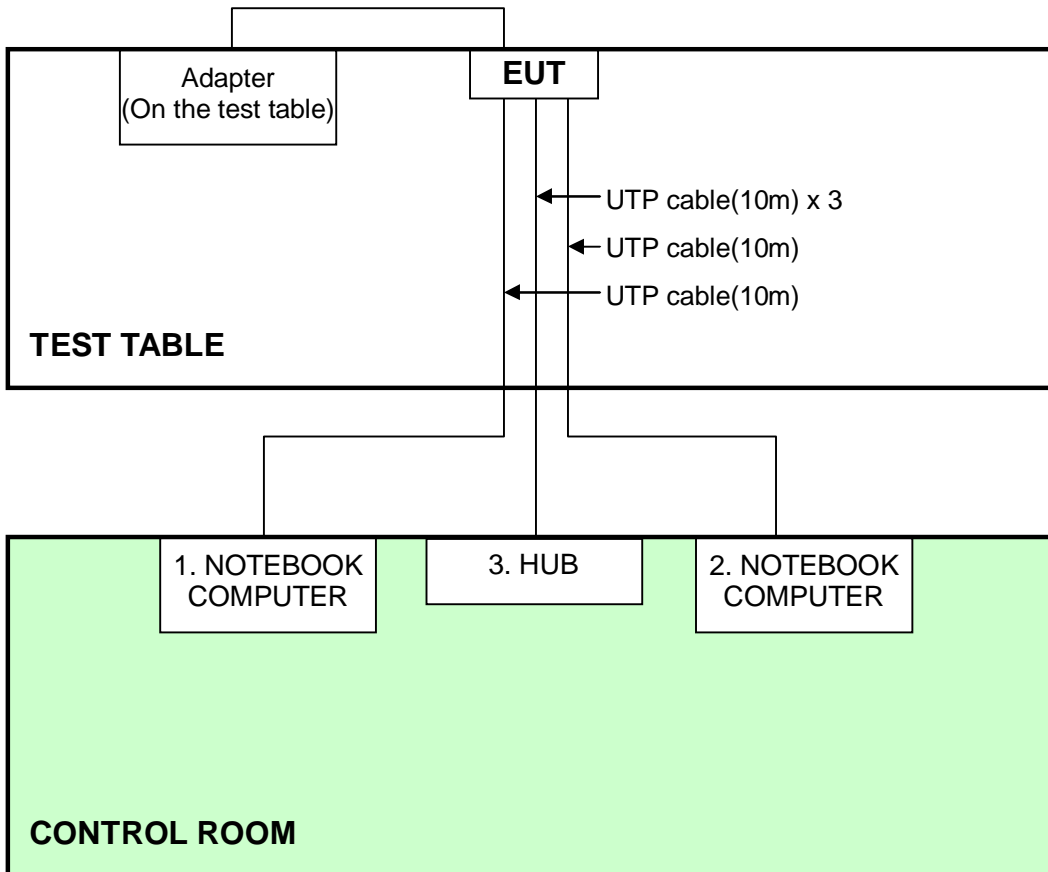
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m UTP cable
2	10m UTP cable
3	10m UTP 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 (For 2400 ~ 2483.5MHz Band)

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: July 19, 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)	NSLK 8127	8127-522	Sep. 08, 2010	Sep. 07, 2011
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYBAO)	5DFB	COCCAB-002	Aug. 30, 2010	Aug. 29, 2011
50 ohms Terminator	50	3	Oct. 07, 2010	Oct. 06, 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.

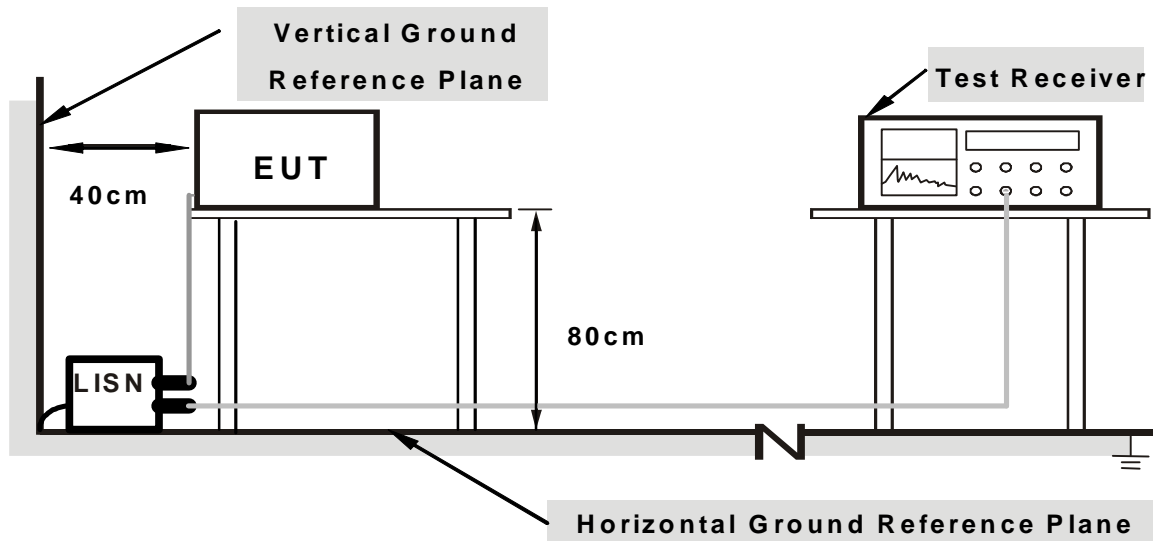
4.1.3 TEST PROCEDURES

- 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

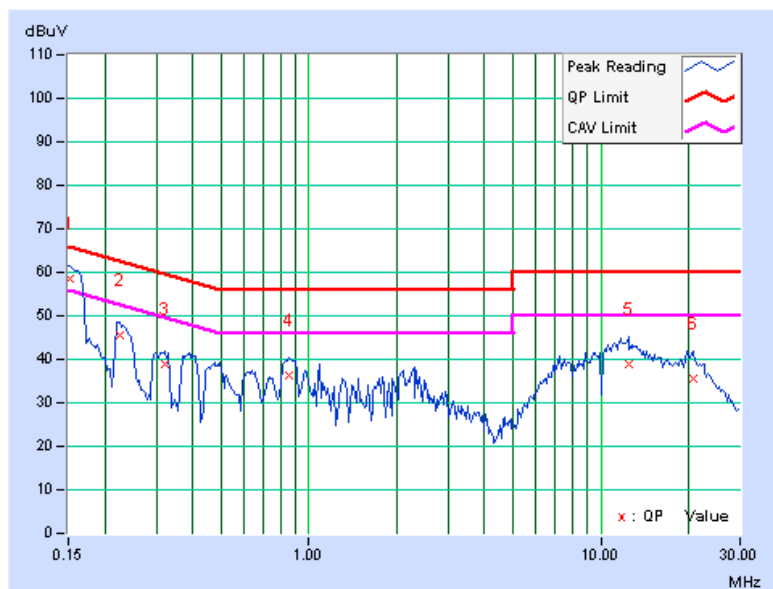
1. Placed the EUT on testing table.
2. Prepared computer system (support unit 1) to act as communication partner and placed it outside of testing area.
3. The communication partner ran test program “Broadcom WL COMMANDS.txt” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS(MODE 1)

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	0.151	0.11	58.56	47.25	58.67	47.36	65.93	55.93	-7.27	-8.58
2	0.224	0.14	45.32	31.44	45.46	31.58	62.66	52.66	-17.20	-21.08
3	0.322	0.15	38.62	25.29	38.77	25.44	59.66	49.66	-20.89	-24.22
4	0.853	0.18	36.24	23.21	36.42	23.39	56.00	46.00	-19.58	-22.61
5	12.477	0.73	38.29	32.01	39.02	32.74	60.00	50.00	-20.98	-17.26
6	20.644	1.01	34.66	30.24	35.67	31.25	60.00	50.00	-24.33	-18.75

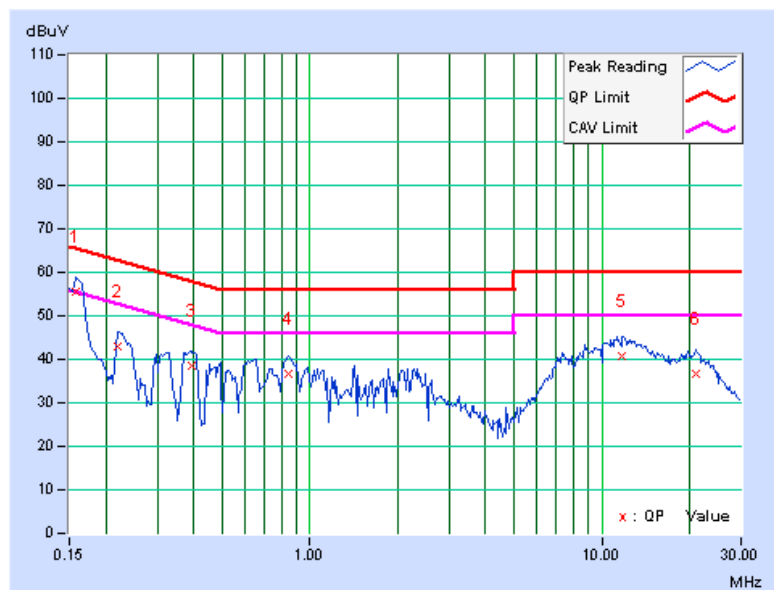
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	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	0.158	0.12	55.57	46.68	55.69	46.80	65.57	55.57	-9.88	-8.77
2	0.220	0.15	42.68	25.73	42.83	25.88	62.81	52.81	-19.97	-26.92
3	0.392	0.17	38.44	28.09	38.61	28.26	58.02	48.02	-19.41	-19.76
4	0.841	0.18	36.64	23.72	36.82	23.90	56.00	46.00	-19.18	-22.10
5	11.722	1.14	39.68	31.79	40.82	32.93	60.00	50.00	-19.18	-17.07
6	21.121	1.87	34.98	30.64	36.85	32.51	60.00	50.00	-23.15	-17.49

- 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.

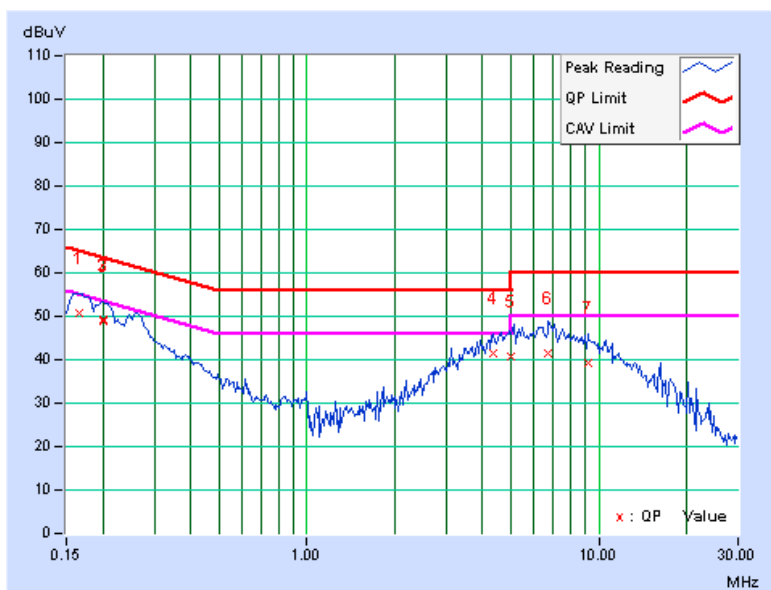


4.1.8 TEST RESULTS(MODE 2)

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	0.166	0.12	50.55	41.24	50.67	41.36	65.18	55.18	-14.51	-13.82
2	0.201	0.14	49.24	38.11	49.38	38.25	63.58	53.58	-14.20	-15.33
3	0.201	0.14	48.87	37.68	49.01	37.82	63.58	53.58	-14.57	-15.76
4	4.371	0.30	41.11	32.25	41.41	32.55	56.00	46.00	-14.59	-13.45
5	5.000	0.34	40.25	32.87	40.59	33.21	56.00	46.00	-15.41	-12.79
6	6.727	0.45	40.96	33.65	41.41	34.10	60.00	50.00	-18.59	-15.90
7	9.227	0.60	38.52	30.65	39.12	31.25	60.00	50.00	-20.88	-18.75

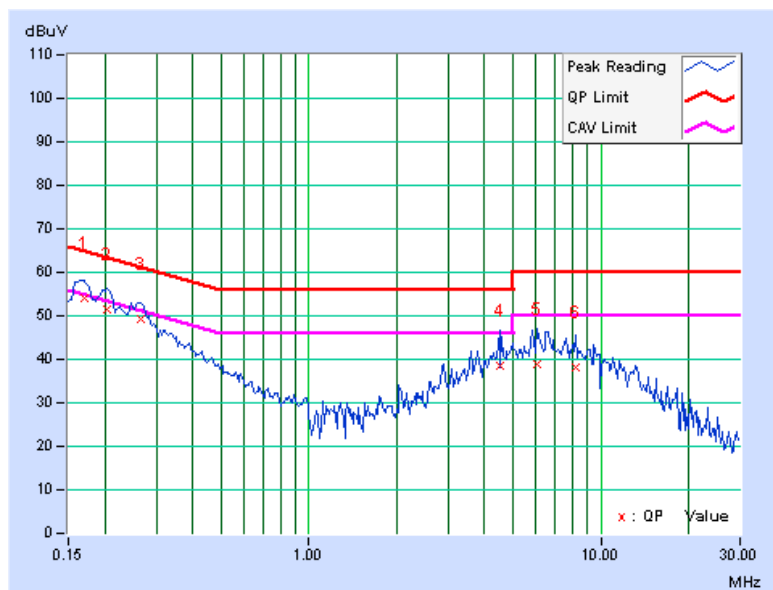
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.170	0.13	54.02	42.55	54.15	42.68	64.98	54.98	-10.83	-12.30
2	0.204	0.15	51.35	38.26	51.50	38.41	63.43	53.43	-11.93	-15.02
3	0.267	0.16	48.96	37.58	49.12	37.74	61.20	51.20	-12.09	-13.47
4	4.500	0.41	38.21	30.64	38.62	31.05	56.00	46.00	-17.38	-14.95
5	6.042	0.57	38.26	30.99	38.83	31.56	60.00	50.00	-21.17	-18.44
6	8.204	0.81	37.26	29.44	38.07	30.25	60.00	50.00	-21.93	-19.75

- 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.



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4.2.2 TEST INSTRUMENTS

Test date: July 28, 2011

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	AFS33-1800265 0-30-8P-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 3 meter 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.

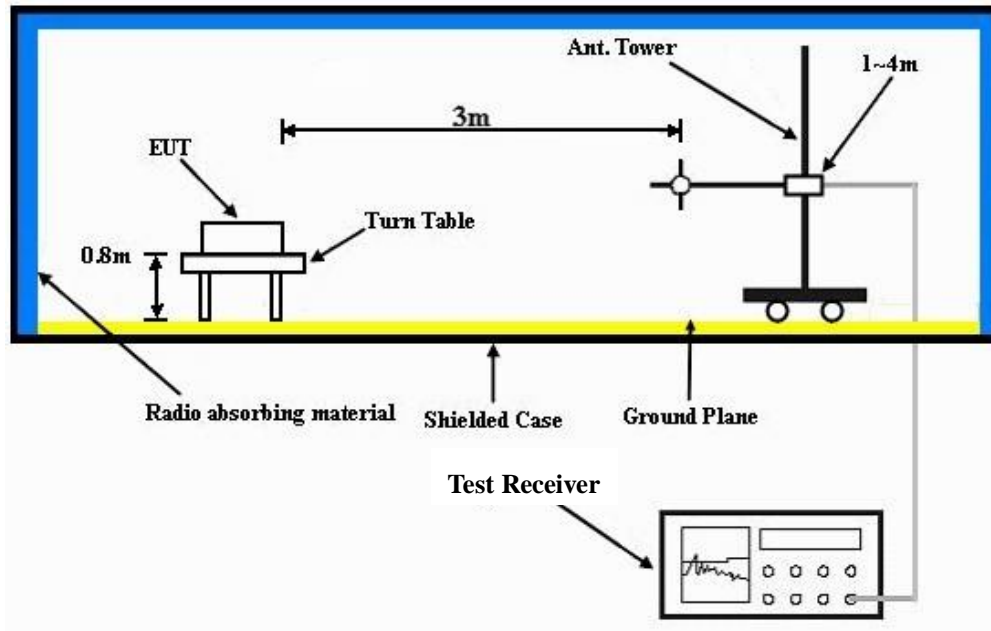
NOTE:

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

4.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.71	28.3 QP	40.0	-11.7	1.50 H	278	14.14	14.20
2	106.62	34.0 QP	43.5	-9.5	1.50 H	135	23.65	10.33
3	146.53	36.5 QP	43.5	-7.0	1.75 H	76	22.11	14.35
4	229.90	35.6 QP	46.0	-10.4	1.50 H	81	23.28	12.30
5	259.98	34.8 QP	46.0	-11.2	1.00 H	80	21.37	13.47
6	706.55	28.5 QP	46.0	-17.5	1.00 H	358	6.18	22.29
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	37.71	34.9 QP	40.0	-5.1	1.00 V	341	21.23	13.70
2	106.86	36.4 QP	43.5	-7.1	1.00 V	13	26.02	10.37
3	159.20	38.3 QP	43.5	-5.2	1.00 V	36	23.92	14.36
4	249.91	33.2 QP	46.0	-12.8	1.00 V	163	20.18	13.04
5	529.98	27.1 QP	46.0	-18.9	1.25 V	88	6.92	20.18
6	706.79	26.6 QP	46.0	-19.4	1.50 V	143	4.35	22.29

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.2 PK	74.0	-10.8	1.38 H	56	36.17	27.03
2	2390.00	52.5 AV	54.0	-1.5	1.38 H	56	25.47	27.03
3	*2412.00	111.3 PK			1.36 H	53	84.27	27.03
4	*2412.00	109.0 AV			1.36 H	53	81.97	27.03
5	4824.00	55.9 PK	74.0	-18.1	1.52 H	221	28.87	27.03
6	4824.00	52.9 AV	54.0	-1.1	1.52 H	221	25.87	27.03
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	59.0 PK	74.0	-15.0	1.01 V	277	31.97	27.03
2	2390.00	47.6 AV	54.0	-6.4	1.01 V	277	20.57	27.03
3	*2412.00	107.5 PK			1.00 V	275	80.47	27.03
4	*2412.00	105.3 AV			1.00 V	275	78.27	27.03
5	4824.00	58.4 PK	74.0	-15.6	1.00 V	73	31.37	27.03
6	4824.00	52.9 AV	54.0	-1.1	1.00 V	73	25.87	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	113.3 PK			1.35 H	51	86.27	27.03
2	*2437.00	111.1 AV			1.35 H	51	84.07	27.03
3	4874.00	55.6 PK	74.0	-18.4	1.61 H	221	28.57	27.03
4	4874.00	53.1 AV	54.0	-0.9	1.61 H	221	26.07	27.03
5	7311.00	57.2 PK	74.0	-16.8	1.21 H	114	30.17	27.03
6	7311.00	53.4 AV	54.0	-0.6	1.21 H	114	26.37	27.03

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.2 PK			1.00 V	276	81.17	27.03
2	*2437.00	105.8 AV			1.00 V	276	78.77	27.03
3	4874.00	54.2 PK	74.0	-19.8	1.00 V	69	27.17	27.03
4	4874.00	52.0 AV	54.0	-2.0	1.00 V	69	24.97	27.03
5	7311.00	58.0 PK	74.0	-16.0	1.24 V	88	30.97	27.03
6	7311.00	52.7 AV	54.0	-1.3	1.24 V	88	25.67	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

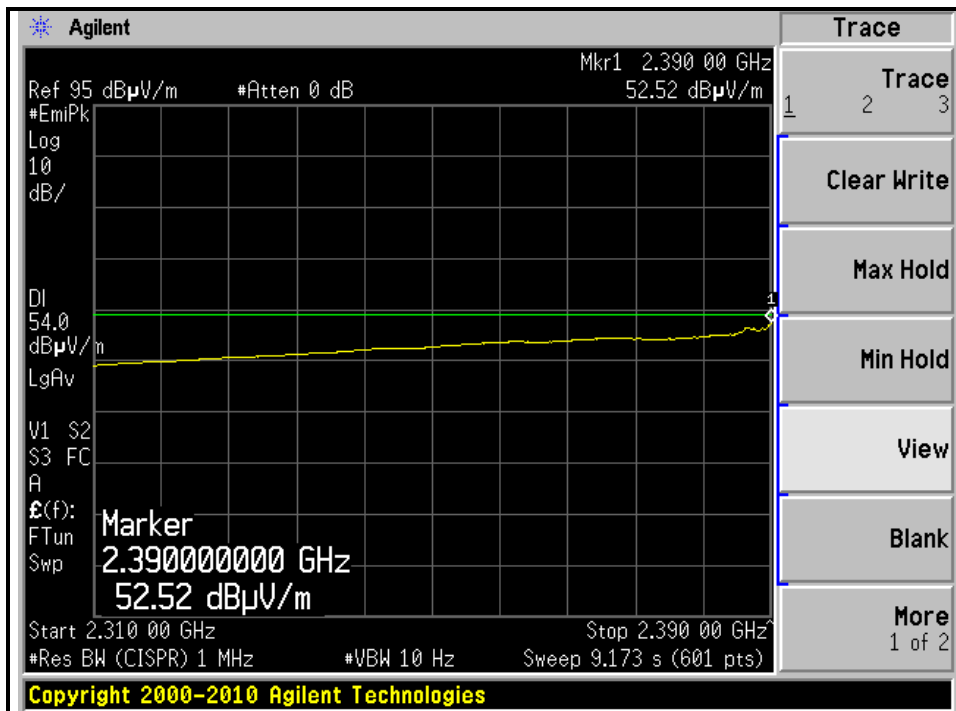
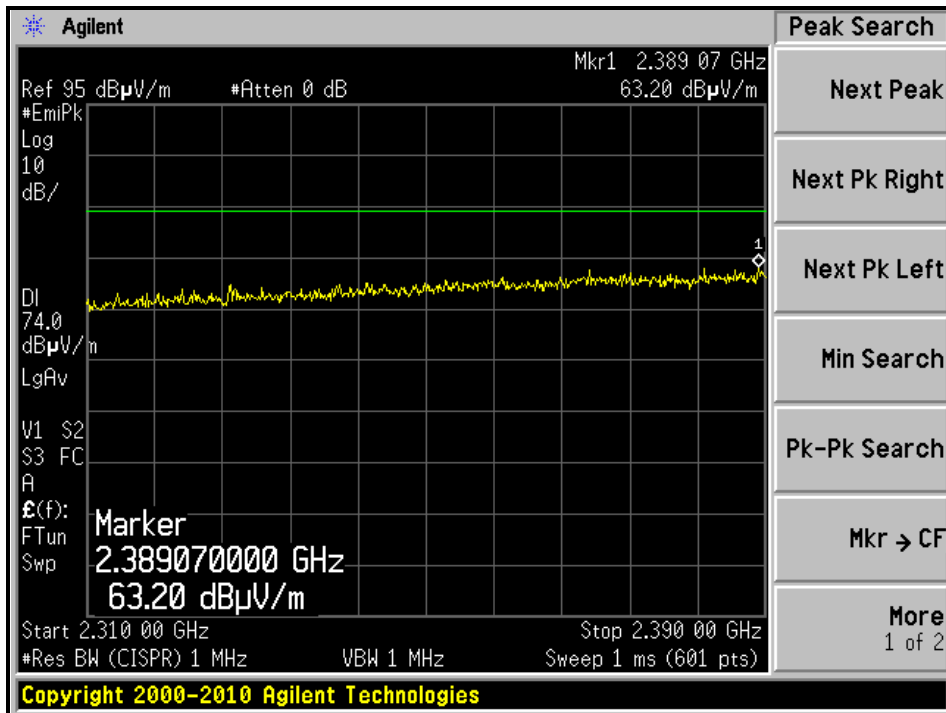
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.0 PK			1.35 H	52	83.97	27.03
2	*2462.00	108.9 AV			1.35 H	52	81.87	27.03
3	2486.60	62.5 PK	74.0	-11.5	1.34 H	53	35.47	27.03
4	2486.60	51.7 AV	54.0	-2.3	1.34 H	53	24.67	27.03
5	4924.00	56.4 PK	74.0	-17.6	1.81 H	230	29.37	27.03
6	4924.00	53.4 AV	54.0	-0.6	1.81 H	230	26.37	27.03
7	7386.00	57.5 PK	74.0	-16.5	1.31 H	120	30.47	27.03
8	7386.00	52.3 AV	54.0	-1.7	1.31 H	120	25.27	27.03

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.2 PK			1.00 V	276	81.17	27.03
2	*2462.00	106.1 AV			1.00 V	276	79.07	27.03
3	2483.50	58.7 PK	74.0	-15.3	1.00 V	277	31.67	27.03
4	2483.50	47.4 AV	54.0	-6.6	1.00 V	277	20.37	27.03
5	4924.00	53.6 PK	74.0	-20.4	1.00 V	77	26.57	27.03
6	4924.00	51.0 AV	54.0	-3.0	1.00 V	77	23.97	27.03
7	7386.00	58.6 PK	74.0	-15.4	1.22 V	83	31.57	27.03
8	7386.00	52.9 AV	54.0	-1.1	1.22 V	83	25.83	27.03

- 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.

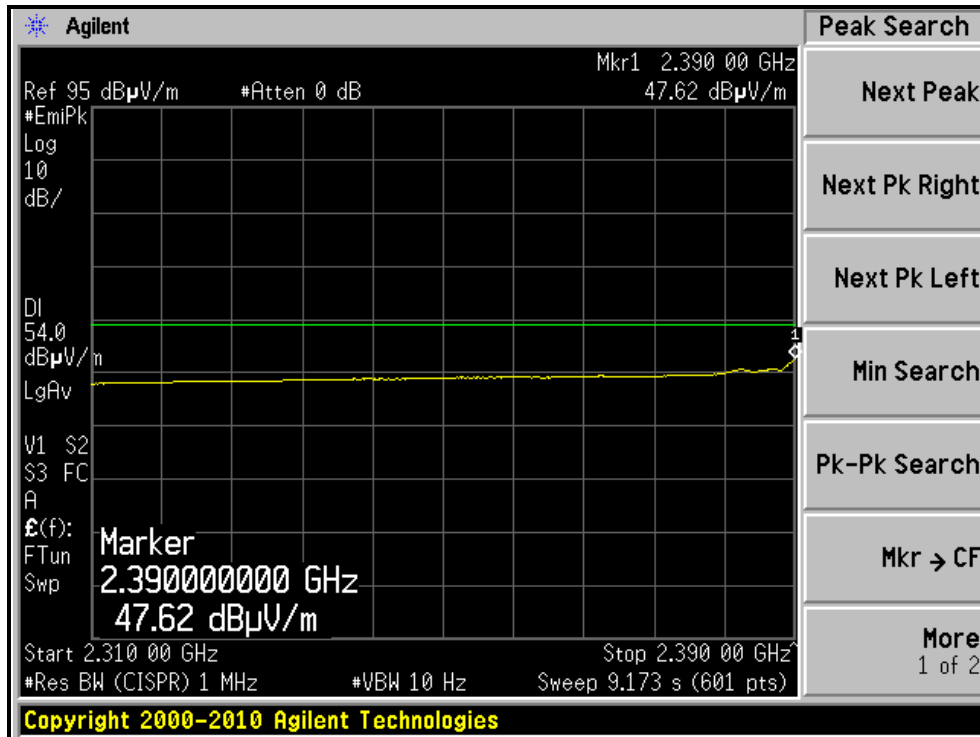
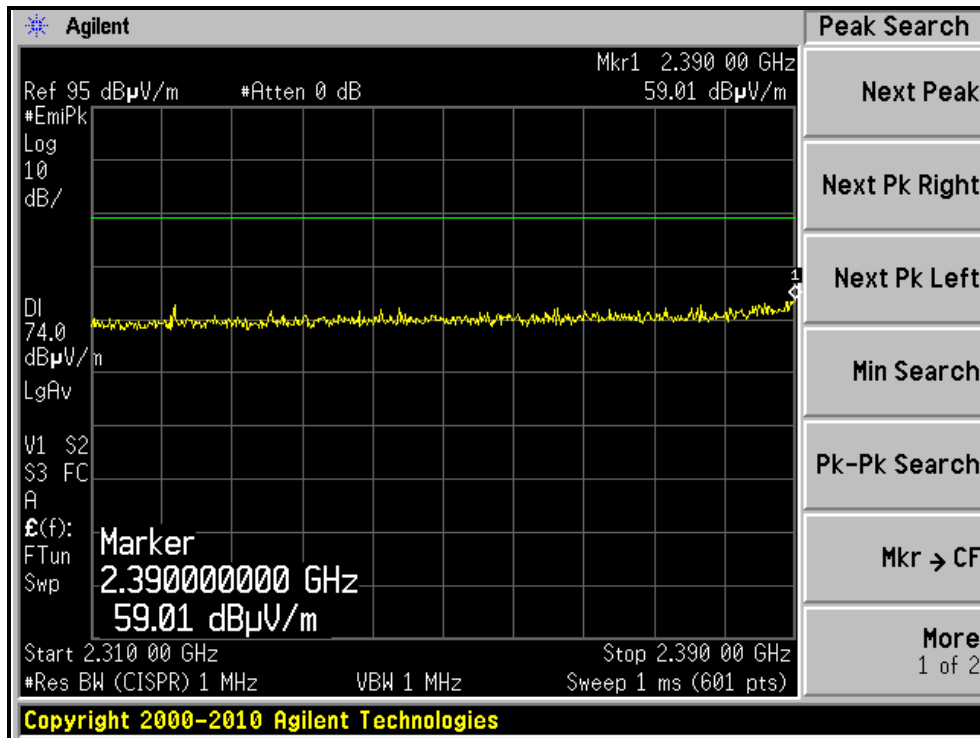
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)



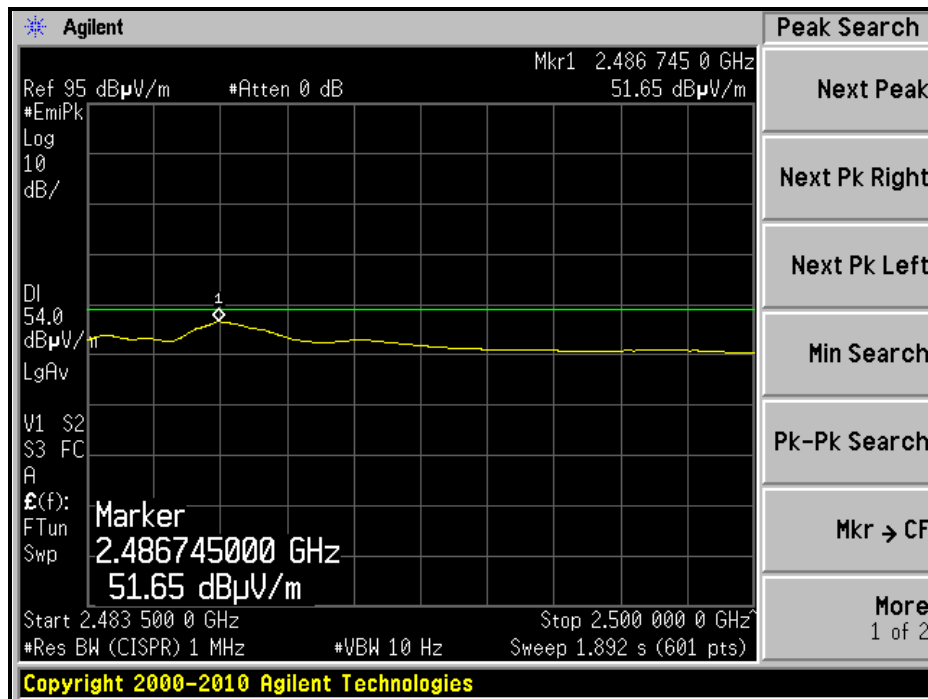
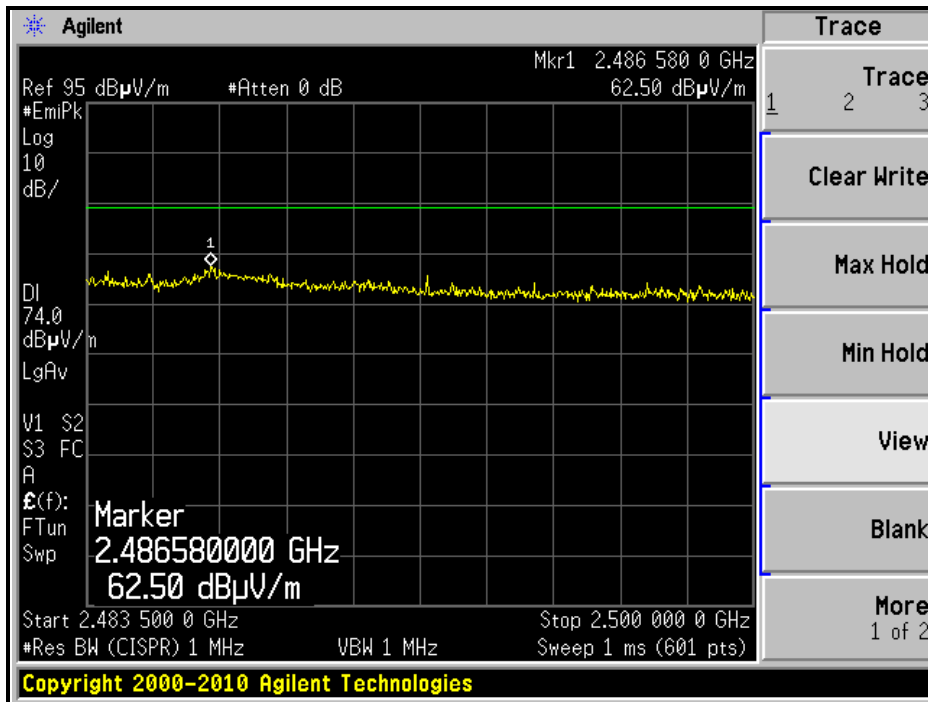


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RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)



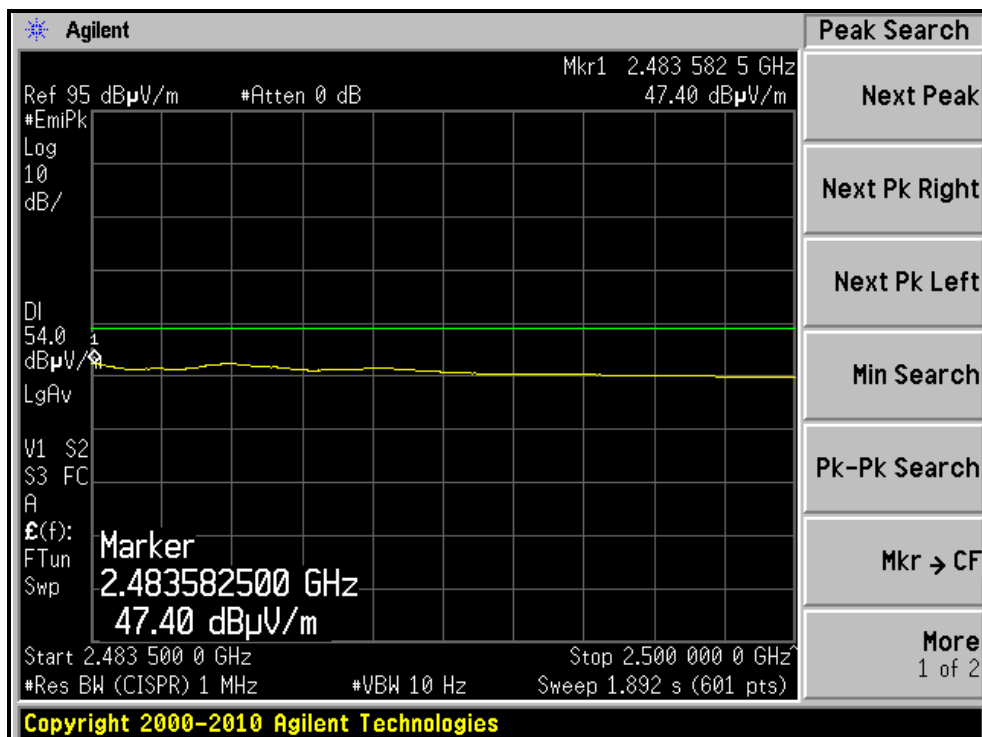
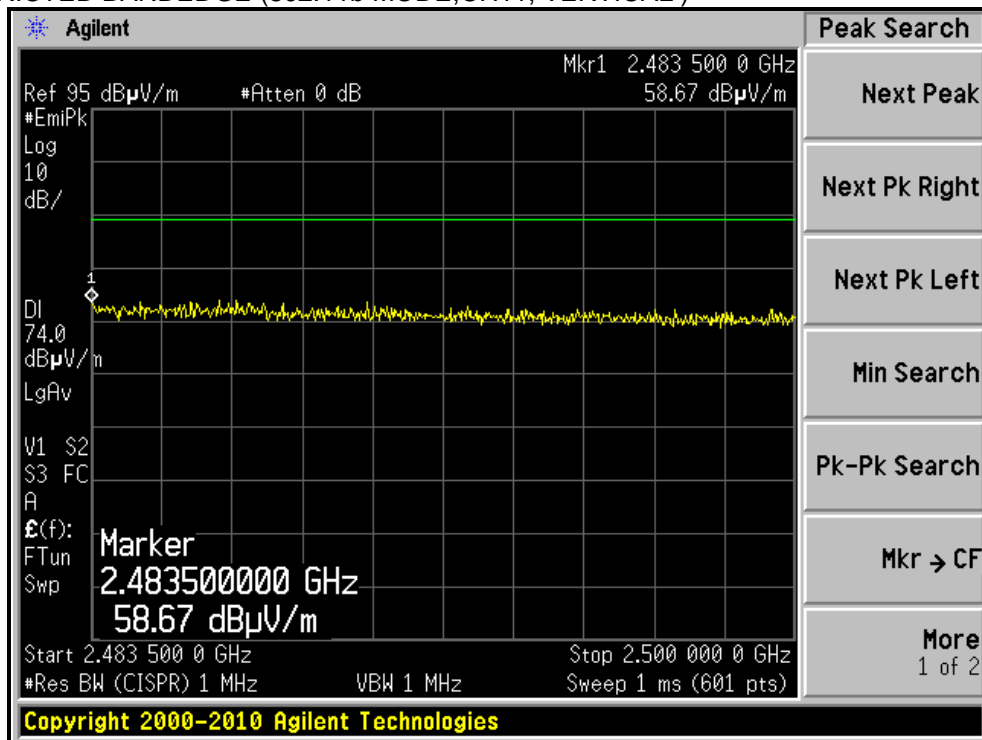
RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL)





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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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.6 PK	74.0	-8.4	1.41 H	54	38.57	27.03
2	2390.00	52.0 AV	54.0	-2.0	1.41 H	54	24.97	27.03
3	*2412.00	107.6 PK			1.39 H	55	80.57	27.03
4	*2412.00	98.9 AV			1.39 H	55	71.87	27.03
5	4824.00	52.1 PK	74.0	-21.9	1.46 H	128	25.07	27.03
6	4824.00	48.1 AV	54.0	-5.9	1.46 H	128	21.07	27.03

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	67.2 PK	74.0	-6.8	1.54 V	270	40.17	27.03
2	2390.00	49.8 AV	54.0	-4.2	1.54 V	270	22.77	27.03
3	*2412.00	107.1 PK			1.55 V	269	80.07	27.03
4	*2412.00	98.0 AV			1.55 V	269	70.97	27.03
5	4824.00	50.9 PK	74.0	-23.1	1.03 V	300	23.87	27.03
6	4824.00	47.2 AV	54.0	-6.8	1.03 V	300	20.17	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.2 PK	74.0	-5.8	1.43 H	58	41.17	27.03
2	2390.00	53.5 AV	54.0	-0.5	1.43 H	58	26.47	27.03
3	*2437.00	112.5 PK			1.35 H	54	85.47	27.03
4	*2437.00	103.3 AV			1.35 H	54	76.27	27.03
5	2483.50	59.8 PK	74.0	-14.2	1.32 H	51	32.77	27.03
6	2483.50	46.8 AV	54.0	-7.2	1.32 H	51	19.77	27.03
7	4874.00	54.9 PK	74.0	-19.1	1.41 H	126	27.87	27.03
8	4874.00	50.4 AV	54.0	-3.6	1.41 H	126	23.37	27.03
9	7311.00	60.4 PK	74.0	-13.6	1.31 H	120	33.37	27.03
10	7311.00	53.3 AV	54.0	-0.7	1.31 H	120	26.27	27.03

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.4 PK	74.0	-5.6	1.00 V	275	41.37	27.03
2	2390.00	51.9 AV	54.0	-2.1	1.00 V	275	24.87	27.03
3	*2437.00	111.9 PK			1.00 V	276	84.87	27.03
4	*2437.00	103.0 AV			1.00 V	276	75.97	27.03
5	2484.30	63.7 PK	74.0	-10.3	1.00 V	274	36.67	27.03
6	2484.30	48.8 AV	54.0	-5.2	1.00 V	274	21.77	27.03
7	4874.00	57.7 PK	74.0	-16.3	1.00 V	322	30.67	27.03
8	4874.00	53.1 AV	54.0	-0.9	1.00 V	322	26.07	27.03
9	7311.00	51.2 PK	74.0	-22.8	1.21 V	60	24.17	27.03
10	7311.00	49.5 AV	54.0	-4.5	1.21 V	60	22.47	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%RH 1003 hPa	TESTED BY	Rex Huang

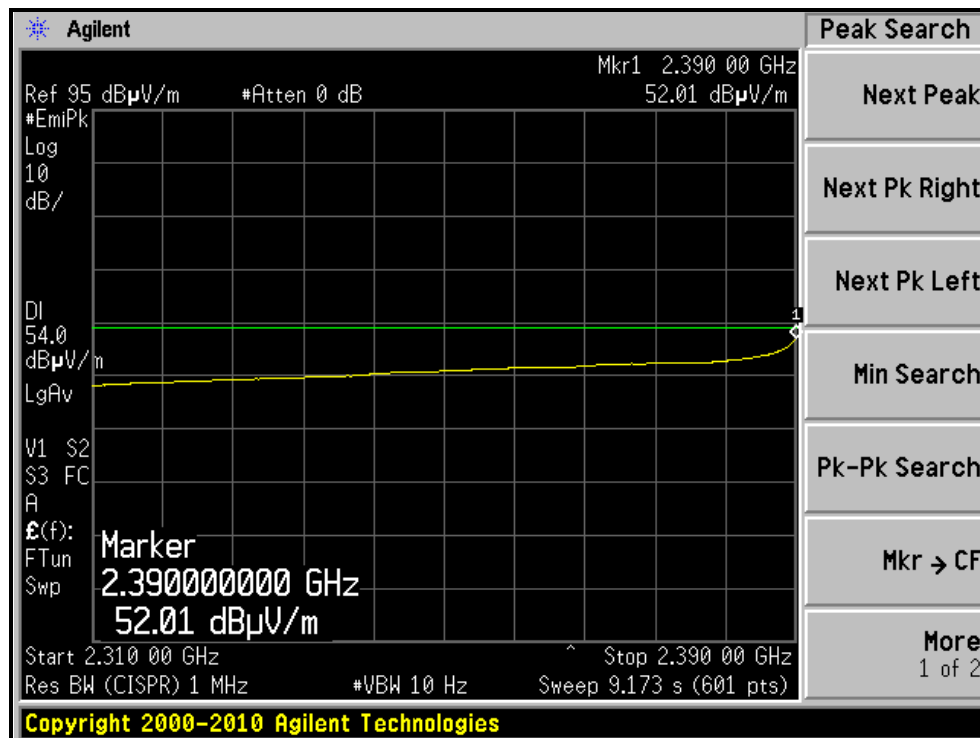
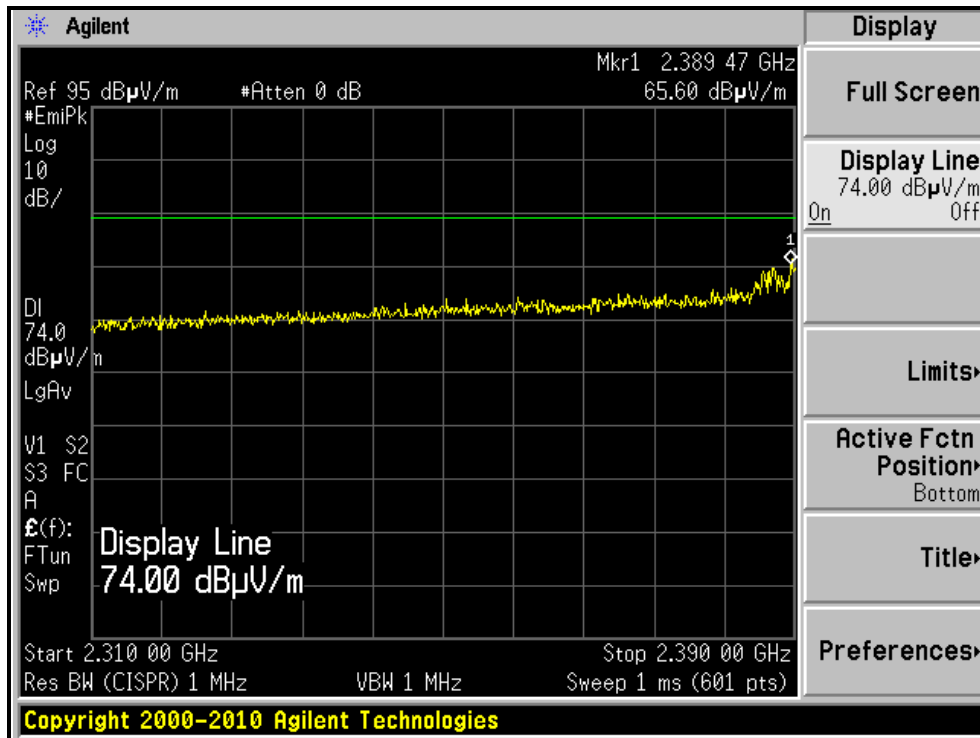
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.9 PK			1.35 H	53	83.87	27.03
2	*2462.00	108.8 AV			1.35 H	53	81.77	27.03
3	2486.30	73.2 PK	74.0	-0.8	1.34 H	58	46.17	27.03
4	2486.30	52.1 AV	54.0	-1.9	1.34 H	58	25.07	27.03
5	4924.00	63.6 PK	74.0	-10.4	1.45 H	121	36.57	27.03
6	4924.00	49.4 AV	54.0	-4.6	1.45 H	121	22.37	27.03
7	7386.00	59.4 PK	74.0	-14.6	1.34 H	126	32.37	27.03
8	7386.00	52.7 AV	54.0	-1.3	1.34 H	126	25.67	27.03
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	109.7 PK			1.52 V	270	82.67	27.03
2	*2462.00	100.4 AV			1.52 V	270	73.37	27.03
3	2483.50	68.5 PK	74.0	-5.5	1.49 V	272	41.47	27.03
4	2483.50	49.8 AV	54.0	-4.2	1.49 V	272	22.77	27.03
5	4924.00	51.2 PK	74.0	-22.8	1.00 V	321	24.17	27.03
6	4924.00	48.4 AV	54.0	-5.6	1.00 V	321	21.37	27.03
7	7386.00	52.4 PK	74.0	-21.6	1.26 V	79	25.37	27.03
8	7386.00	50.4 AV	54.0	-3.6	1.26 V	79	23.37	27.03

- 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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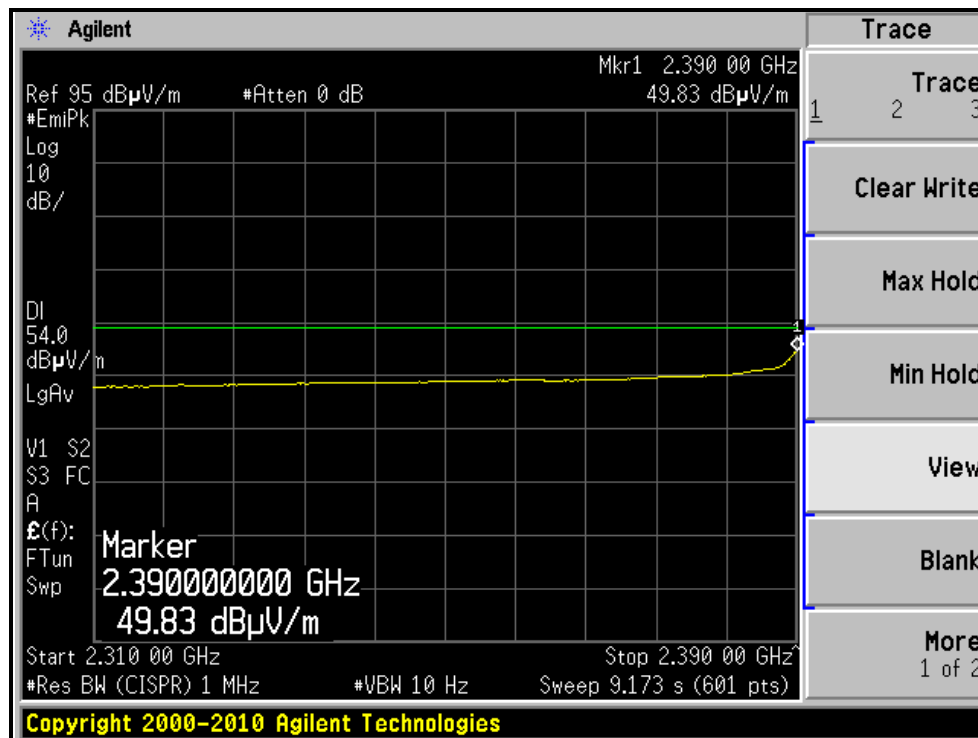
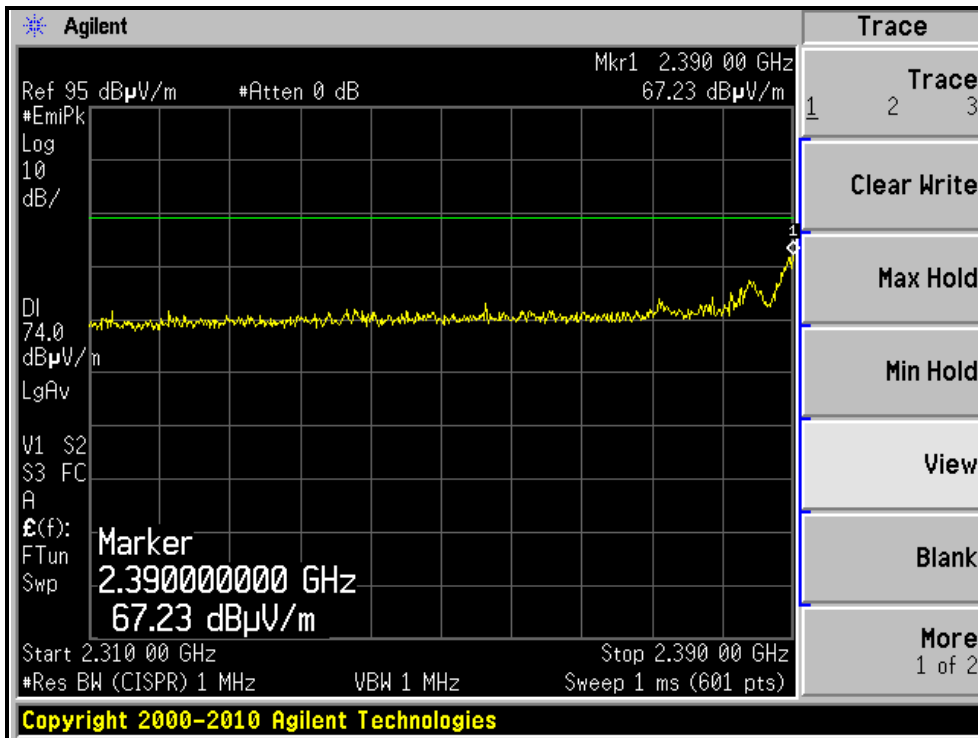
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)





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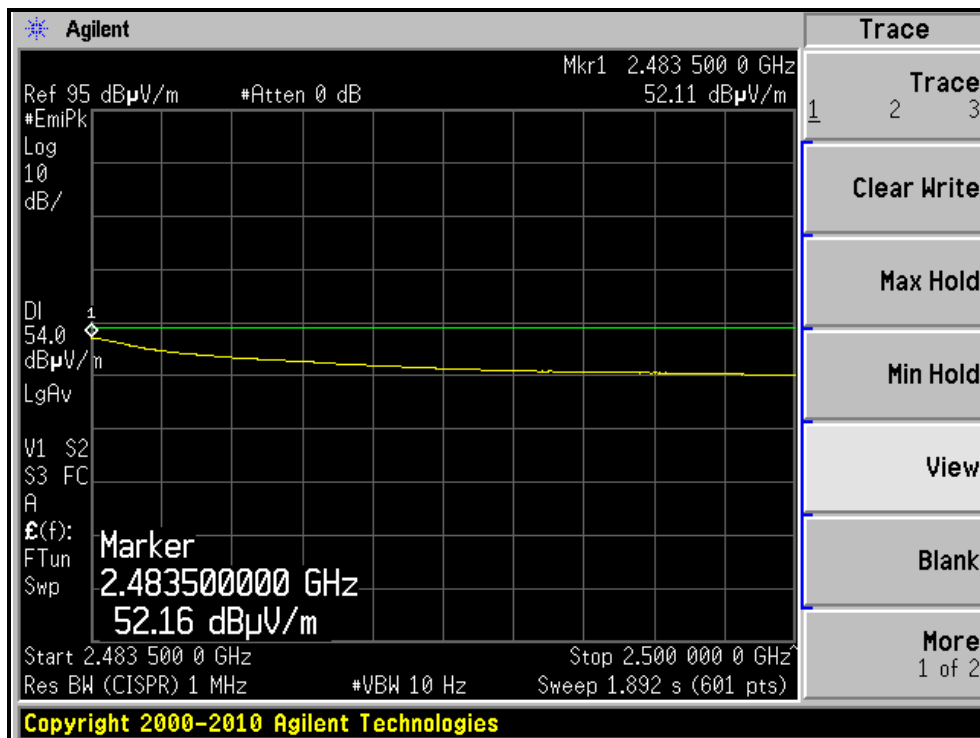
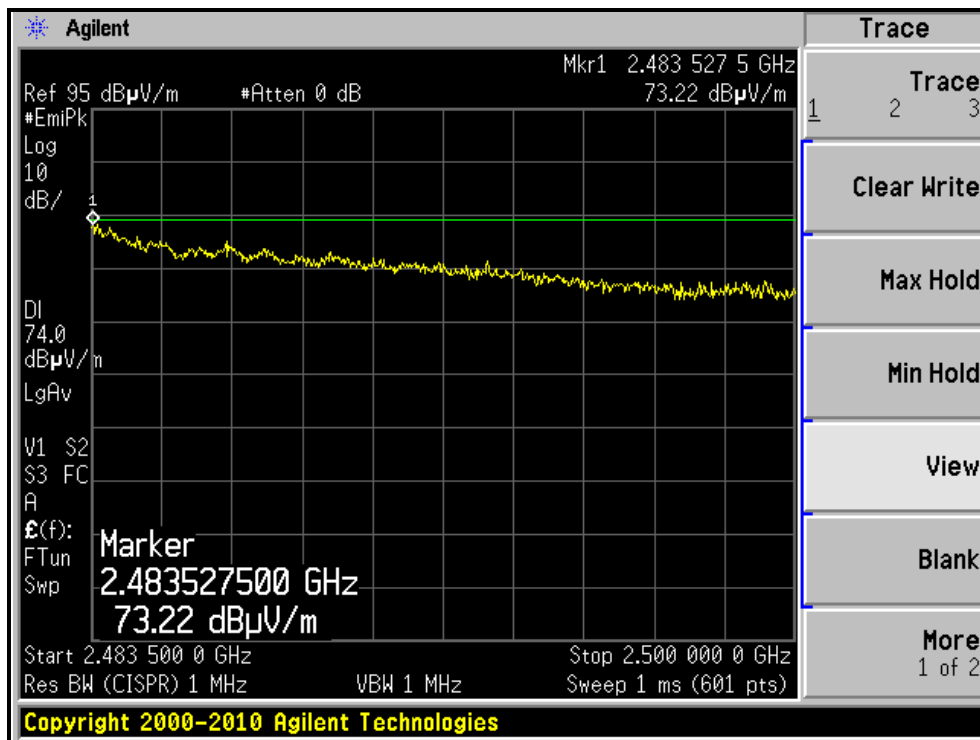
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)





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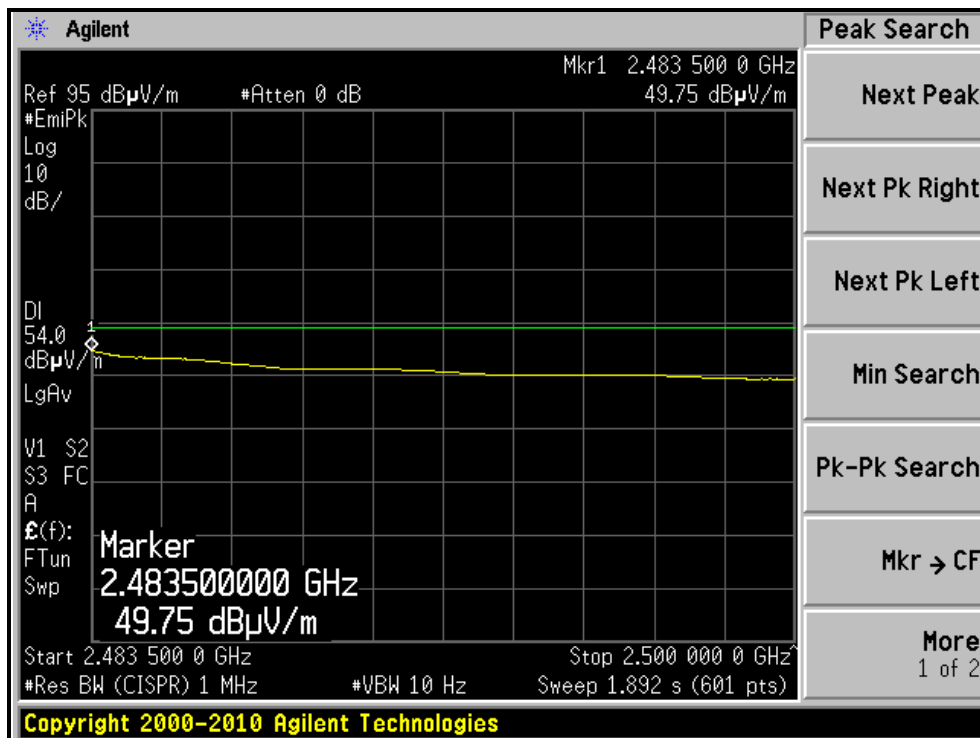
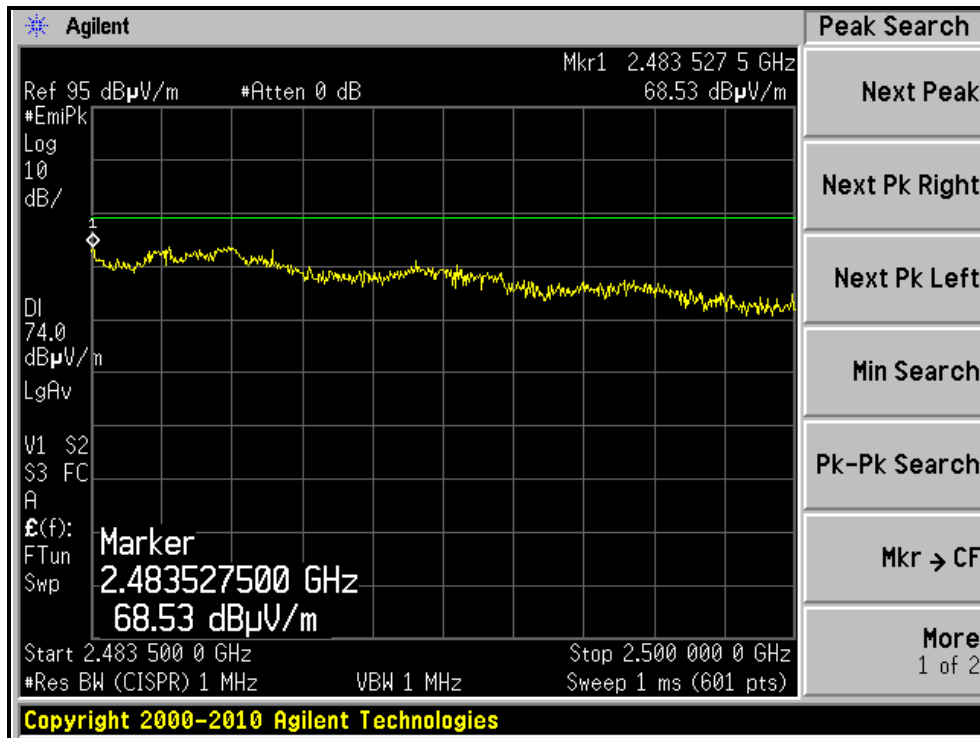
RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL)





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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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.8 PK	74.0	-4.2	1.42 H	56	42.77	27.03
2	2390.00	52.9 AV	54.0	-1.1	1.42 H	56	25.87	27.03
3	*2412.00	107.0 PK			1.36 H	54	79.97	27.03
4	*2412.00	98.0 AV			1.36 H	54	70.97	27.03
5	4824.00	56.6 PK	74.0	-17.4	1.48 H	130	29.57	27.03
6	4824.00	43.7 AV	54.0	-10.3	1.48 H	130	16.67	27.03
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	63.9 PK	74.0	-10.1	1.54 V	266	36.87	27.03
2	2390.00	48.9 AV	54.0	-5.1	1.54 V	266	21.87	27.03
3	*2412.00	106.9 PK			1.55 V	267	79.87	27.03
4	*2412.00	97.5 AV			1.55 V	267	70.47	27.03
5	4824.00	47.4 PK	74.0	-26.6	1.00 V	301	20.37	27.03
6	4824.00	37.2 AV	54.0	-16.8	1.00 V	301	10.17	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.1 PK	74.0	-6.9	1.42 H	54	40.07	27.03
2	2390.00	51.9 AV	54.0	-2.1	1.42 H	54	24.87	27.03
3	*2437.00	111.3 PK			1.36 H	53	84.27	27.03
4	*2437.00	102.2 AV			1.36 H	53	75.17	27.03
5	2483.50	62.7 PK	74.0	-11.3	1.34 H	55	35.67	27.03
6	2483.50	47.9 AV	54.0	-6.1	1.34 H	55	20.87	27.03
7	4874.00	65.4 PK	74.0	-8.6	1.44 H	131	38.37	27.03
8	4874.00	52.8 AV	54.0	-1.2	1.44 H	131	25.77	27.03
9	7311.00	60.7 PK	74.0	-13.3	1.26 H	131	33.67	27.03
10	7311.00	53.4 AV	54.0	-0.6	1.26 H	131	26.37	27.03
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.8 PK	74.0	-7.2	1.49 V	279	39.77	27.03
2	2390.00	48.9 AV	54.0	-5.1	1.49 V	279	21.87	27.03
3	*2437.00	112.3 PK			1.52 V	273	85.27	27.03
4	*2437.00	102.4 AV			1.52 V	273	75.37	27.03
5	2483.50	61.8 PK	74.0	-12.2	1.50 V	274	34.77	27.03
6	2483.50	46.9 AV	54.0	-7.1	1.50 V	274	19.87	27.03
7	4874.00	63.1 PK	74.0	-10.9	1.53 V	274	36.07	27.03
8	4874.00	47.1 AV	54.0	-6.9	1.53 V	274	20.07	27.03
9	7311.00	52.1 PK	74.0	-21.9	1.22 V	59	25.07	27.03
10	7311.00	49.6 AV	54.0	-4.4	1.22 V	59	22.57	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

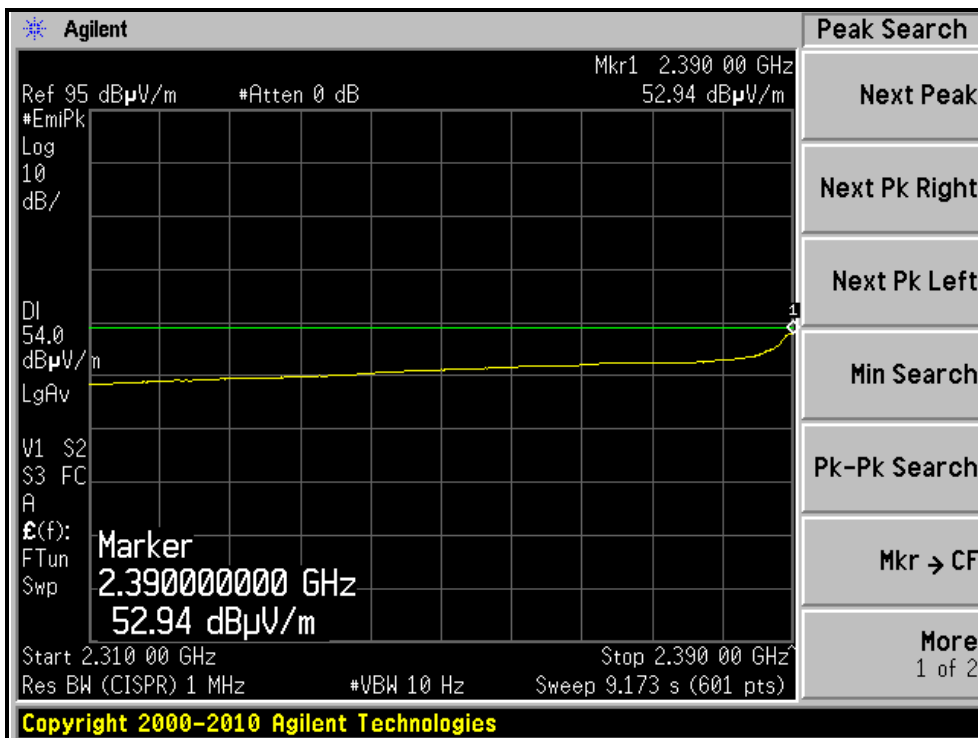
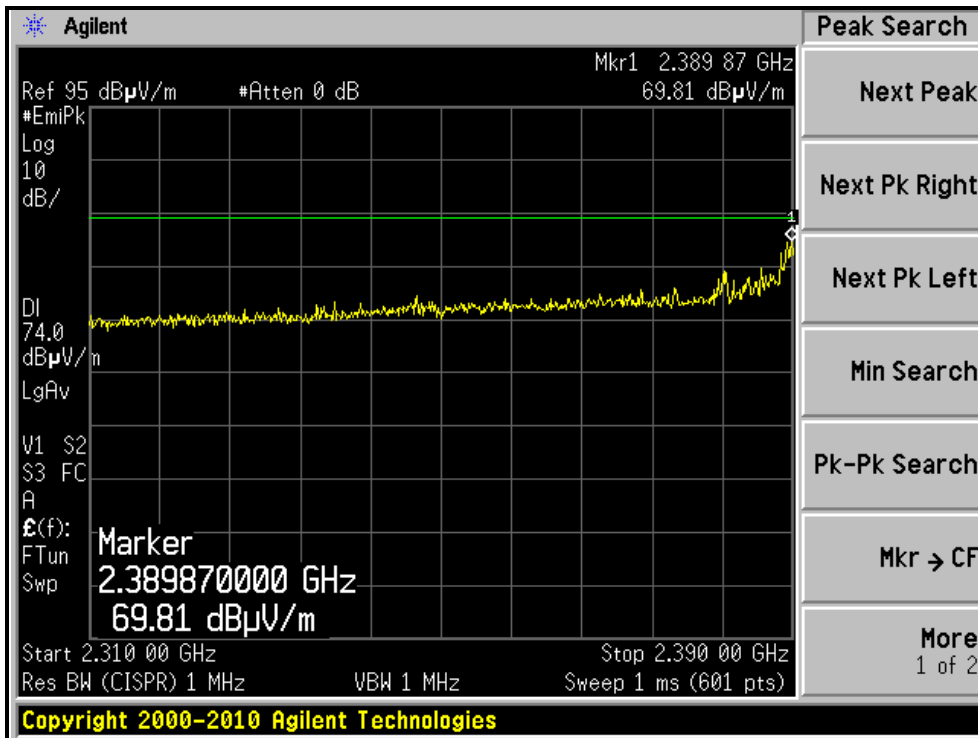
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.6 PK			1.35 H	52	78.57	27.03
2	*2462.00	95.9 AV			1.35 H	52	68.87	27.03
3	2483.50	70.2 PK	74.0	-3.8	1.32 H	52	43.17	27.03
4	2483.50	52.9 AV	54.0	-1.1	1.32 H	52	25.87	27.03
5	4924.00	56.8 PK	74.0	-17.2	1.46 H	128	29.77	27.03
6	4924.00	43.2 AV	54.0	-10.8	1.46 H	128	16.17	27.03
7	7386.00	60.4 PK	74.0	-13.6	1.31 H	61	33.37	27.03
8	7386.00	52.6 AV	54.0	-1.4	1.31 H	61	25.57	27.03
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	104.9 PK			1.51 V	273	77.87	27.03
2	*2462.00	95.7 AV			1.51 V	273	68.67	27.03
3	2483.50	58.8 PK	74.0	-15.2	1.50 V	270	31.77	27.03
4	2483.50	45.9 AV	54.0	-8.1	1.50 V	270	18.87	27.03
5	4924.00	53.5 PK	74.0	-20.5	1.00 V	305	26.47	27.03
6	4924.00	39.7 AV	54.0	-14.3	1.00 V	305	12.67	27.03
7	7386.00	52.5 PK	74.0	-21.5	1.21 V	60	25.47	27.03
8	7386.00	39.2 AV	54.0	-14.8	1.21 V	60	12.17	27.03

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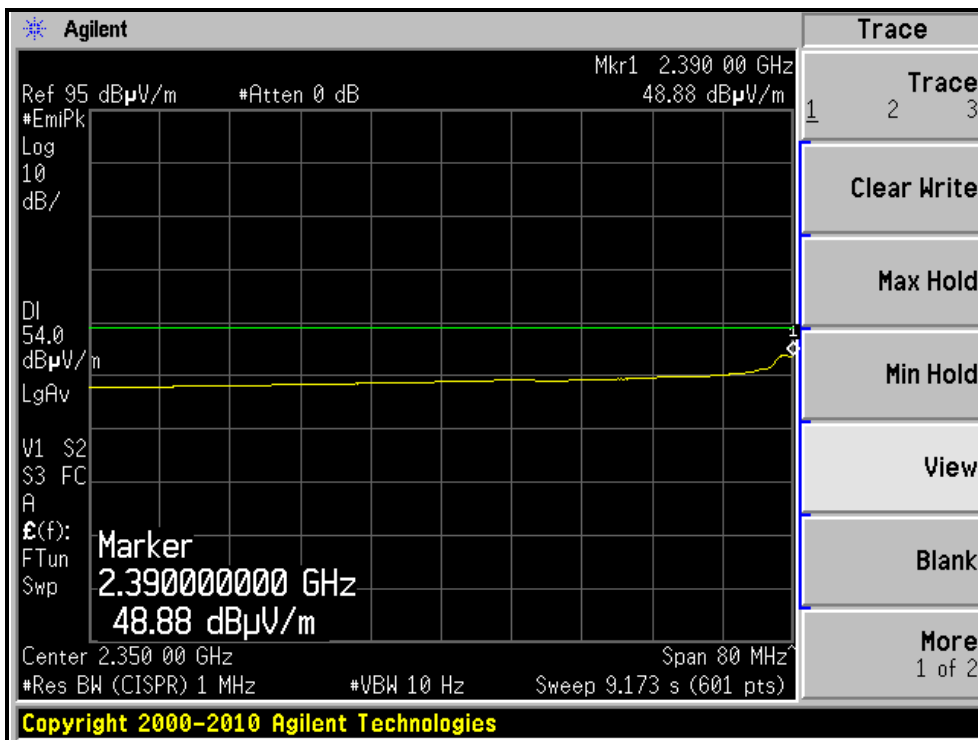
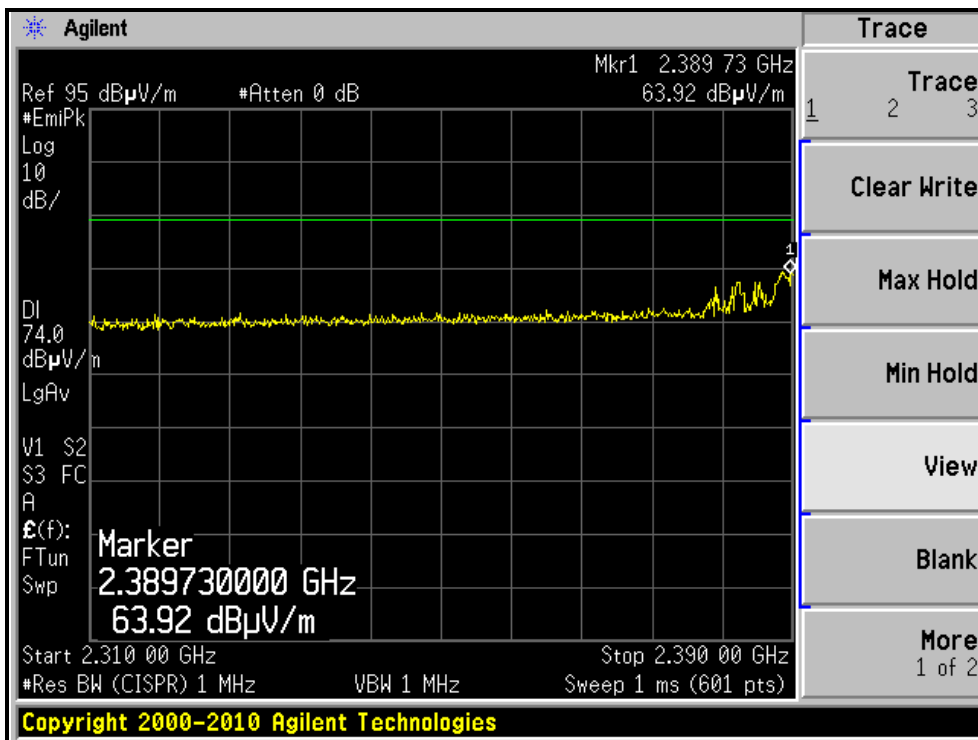
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, HORIZONTAL)





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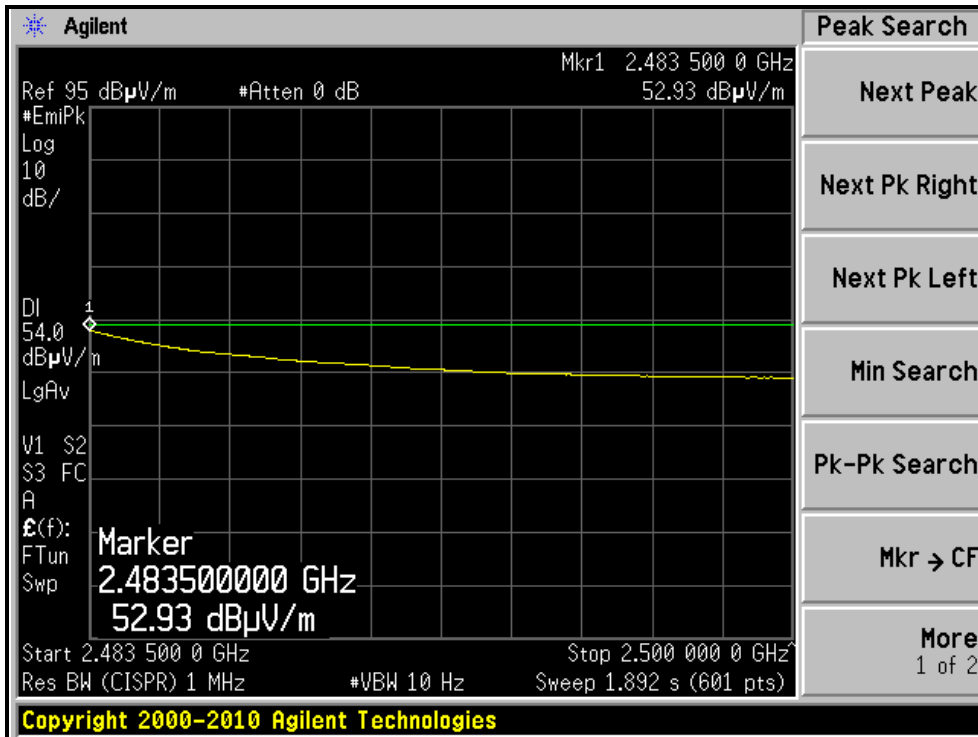
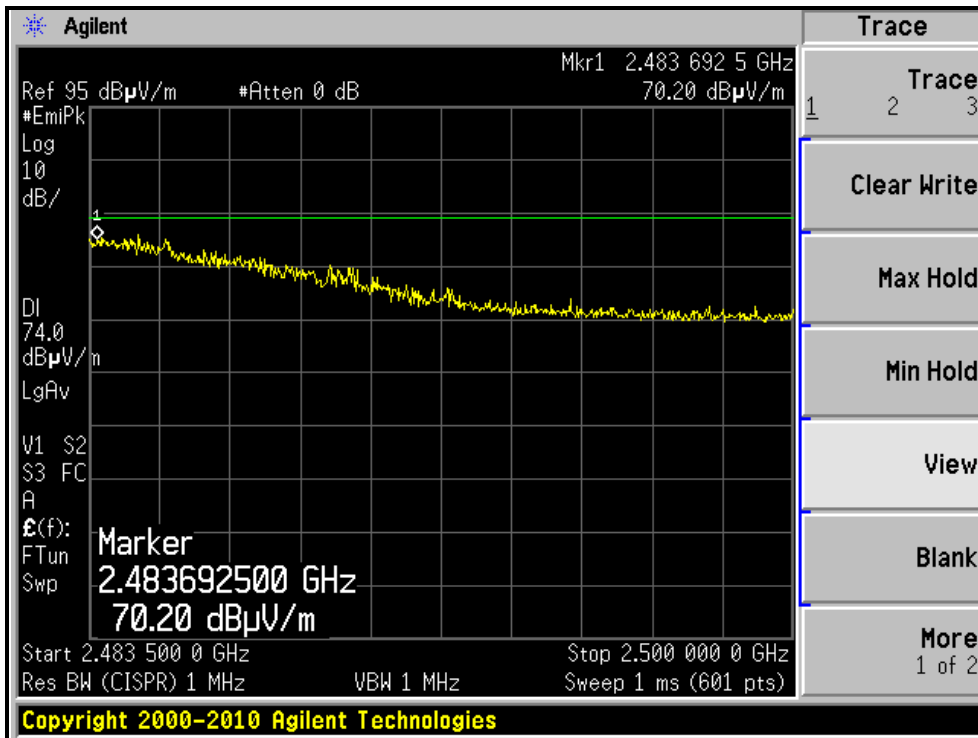
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH1, VERTICAL)





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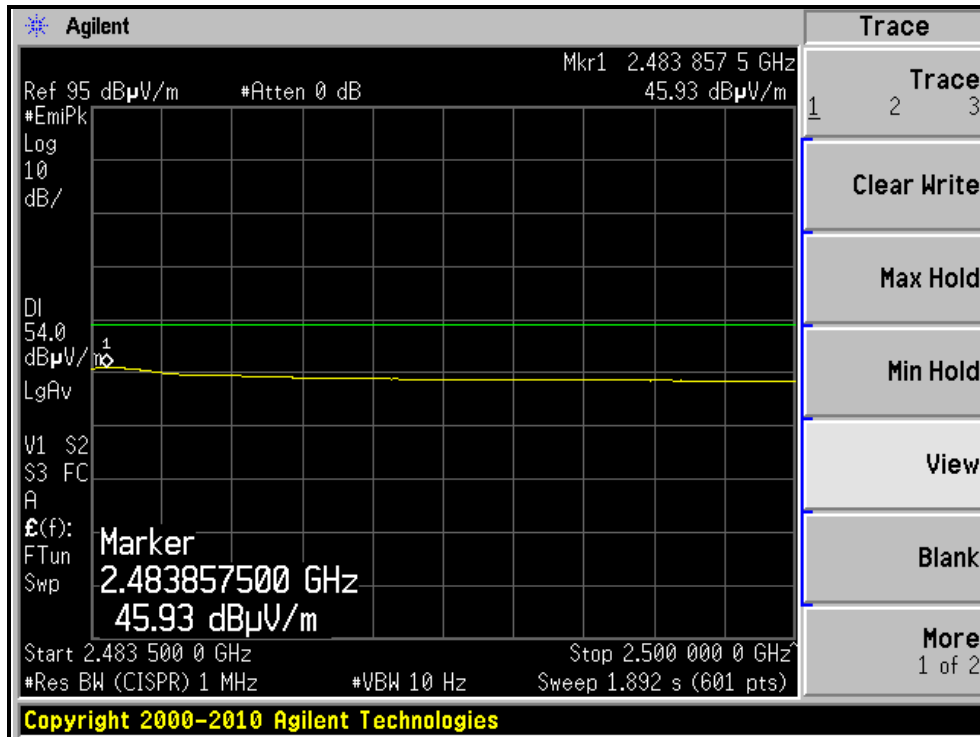
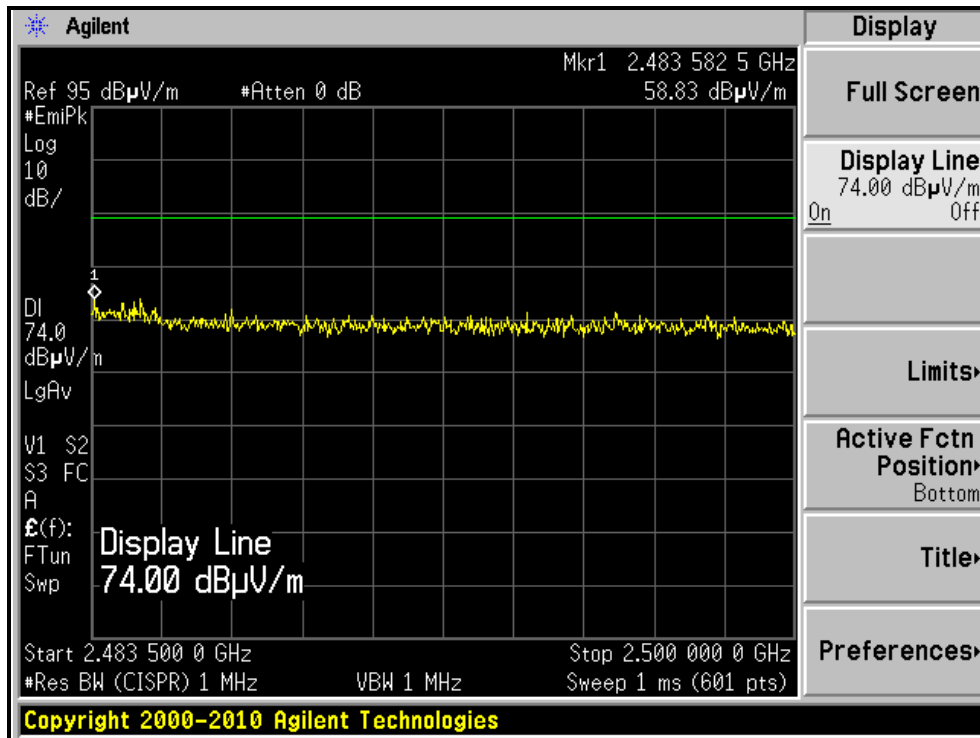
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH11, HORIZONTAL)





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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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.8 PK	74.0	-5.2	1.41 H	55	41.77	27.03
2	2390.00	52.6 AV	54.0	-1.4	1.41 H	55	25.57	27.03
3	*2422.00	101.2 PK			1.40 H	56	74.17	27.03
4	*2422.00	91.3 AV			1.40 H	56	64.27	27.03
5	4844.00	48.4 PK	74.0	-25.6	1.00 H	302	21.37	27.03
6	4844.00	37.6 AV	54.0	-16.4	1.00 H	302	10.57	27.03
7	7266.00	52.6 PK	74.0	-21.4	1.06 H	74	25.57	27.03
8	7266.00	39.4 AV	54.0	-14.6	1.06 H	74	12.37	27.03

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	2388.00	63.0 PK	74.0	-11.0	1.57 V	272	35.97	27.03
2	2388.00	49.6 AV	54.0	-4.4	1.57 V	272	22.57	27.03
3	*2422.00	100.7 PK			1.56 V	273	73.67	27.03
4	*2422.00	90.1 AV			1.56 V	273	63.07	27.03
5	4844.00	47.5 PK	74.0	-26.5	1.00 V	306	20.47	27.03
6	4844.00	36.7 AV	54.0	-17.3	1.00 V	306	9.67	27.03
7	7266.00	52.4 PK	74.0	-21.6	1.01 V	77	25.37	27.03
8	7266.00	39.1 AV	54.0	-14.9	1.01 V	77	12.07	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.7 PK	74.0	-6.3	1.42 H	53	40.67	27.03
2	2390.00	53.0 AV	54.0	-1.0	1.42 H	53	25.97	27.03
3	*2437.00	104.5 PK			1.35 H	53	77.47	27.03
4	*2437.00	94.5 AV			1.35 H	53	67.47	27.03
5	2483.50	60.6 PK	74.0	-13.4	1.34 H	53	33.57	27.03
6	2483.50	46.3 AV	54.0	-7.7	1.34 H	53	19.27	27.03
7	4874.00	48.6 PK	74.0	-25.4	1.03 H	296	21.57	27.03
8	4874.00	37.4 AV	54.0	-16.6	1.03 H	296	10.37	27.03
9	7311.00	53.1 PK	74.0	-20.9	1.00 H	70	26.07	27.03
10	7311.00	39.4 AV	54.0	-14.6	1.00 H	70	12.37	27.03

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	67.5 PK	74.0	-6.5	1.52 V	275	40.47	27.03
2	2390.00	50.2 AV	54.0	-3.8	1.52 V	275	23.17	27.03
3	*2437.00	105.5 PK			1.51 V	273	78.47	27.03
4	*2437.00	94.4 AV			1.51 V	273	67.37	27.03
5	2484.00	59.9 PK	74.0	-14.1	1.53 V	278	32.87	27.03
6	2484.00	45.7 AV	54.0	-8.3	1.53 V	278	18.67	27.03
7	4874.00	50.5 PK	74.0	-23.5	1.00 V	309	23.47	27.03
8	4874.00	39.3 AV	54.0	-14.7	1.00 V	309	12.27	27.03
9	7311.00	53.3 PK	74.0	-20.7	1.00 V	72	26.27	27.03
10	7311.00	37.2 AV	54.0	-16.8	1.00 V	72	10.17	27.03

- 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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	103.3 PK			1.37 H	52	76.27	27.03
2	*2452.00	93.6 AV			1.37 H	52	66.57	27.03
3	2483.50	73.2 PK	74.0	-0.8	1.33 H	51	46.17	27.03
4	2483.50	53.4 AV	54.0	-0.6	1.33 H	51	26.37	27.03
5	4904.00	49.4 PK	74.0	-24.6	1.00 H	300	22.37	27.03
6	4904.00	39.3 AV	54.0	-14.7	1.00 H	300	12.27	27.03
7	7356.00	53.6 PK	74.0	-20.4	1.00 H	81	26.57	27.03
8	7356.00	39.7 AV	54.0	-14.3	1.00 H	81	12.67	27.03

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

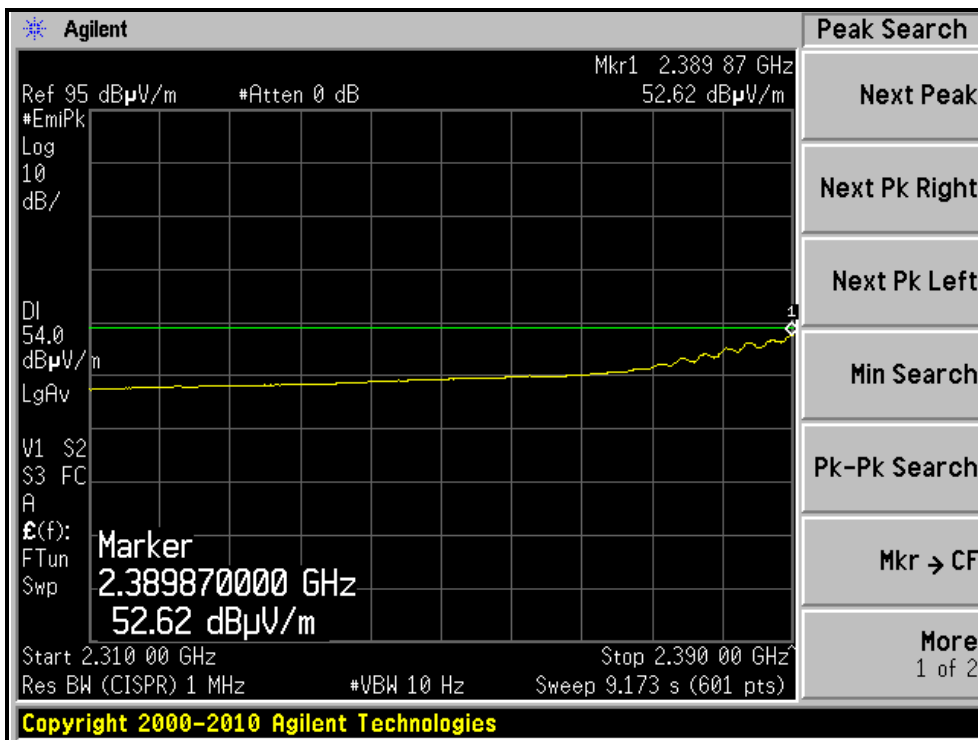
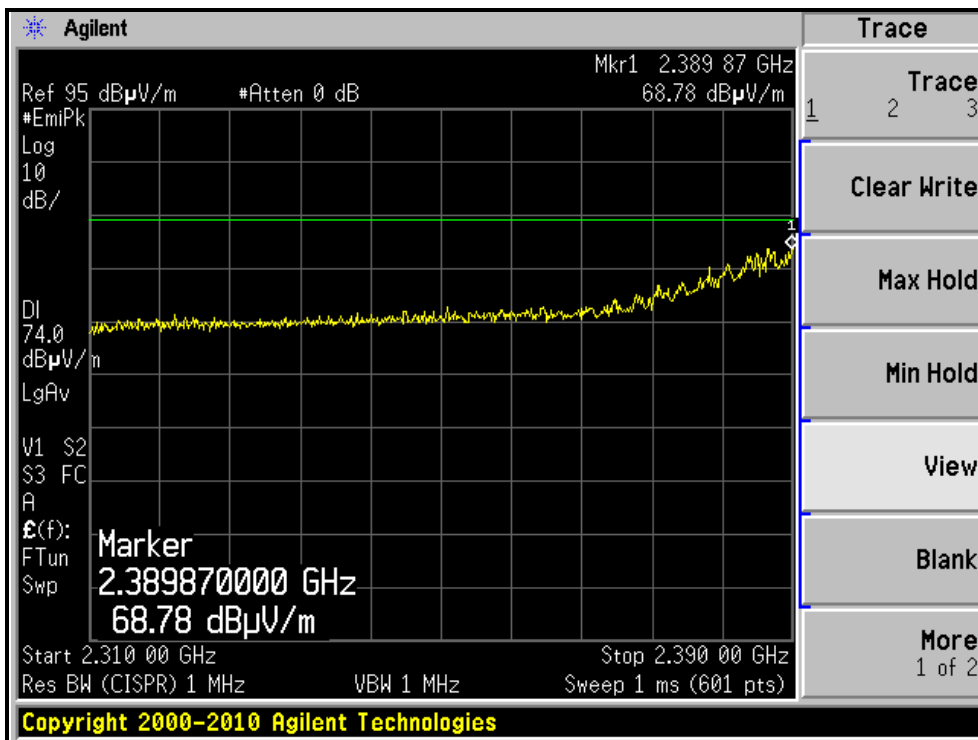
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	103.5 PK			1.49 V	272	76.47	27.03
2	*2452.00	93.7 AV			1.49 V	272	66.67	27.03
3	2483.50	69.0 PK	74.0	-5.0	1.50 V	270	41.97	27.03
4	2483.50	53.3 AV	54.0	-0.7	1.50 V	270	26.27	27.03
5	4904.00	50.3 PK	74.0	-23.7	1.00 V	299	23.27	27.03
6	4904.00	39.2 AV	54.0	-14.8	1.00 V	299	12.17	27.03
7	7356.00	53.2 PK	74.0	-20.8	1.00 V	65	26.17	27.03
8	7356.00	37.2 AV	54.0	-16.8	1.00 V	65	10.17	27.03

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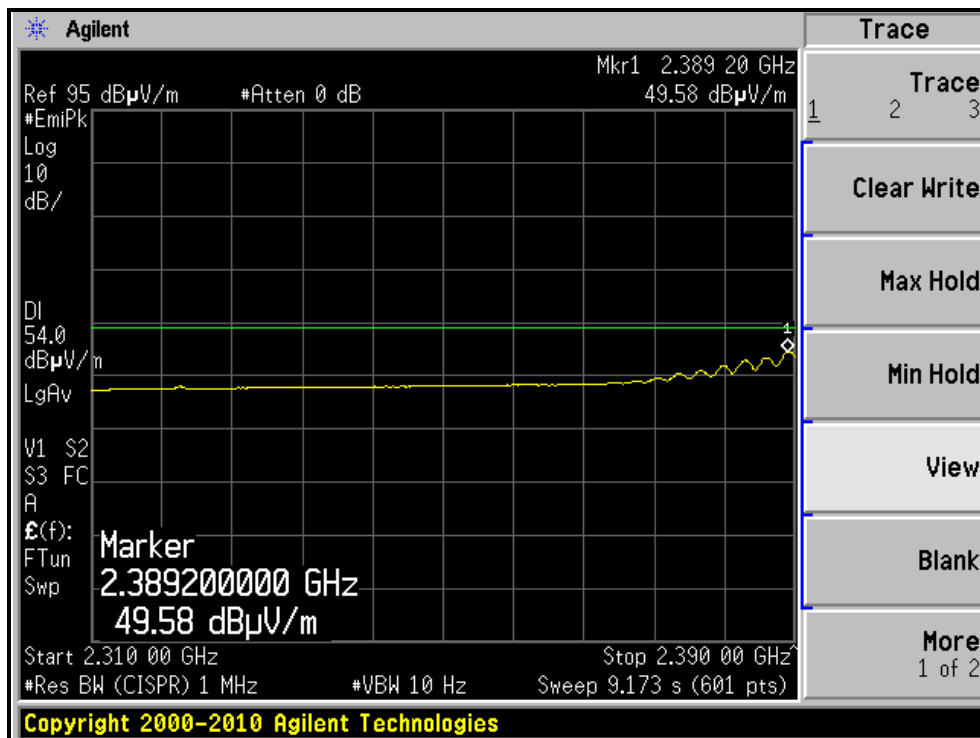
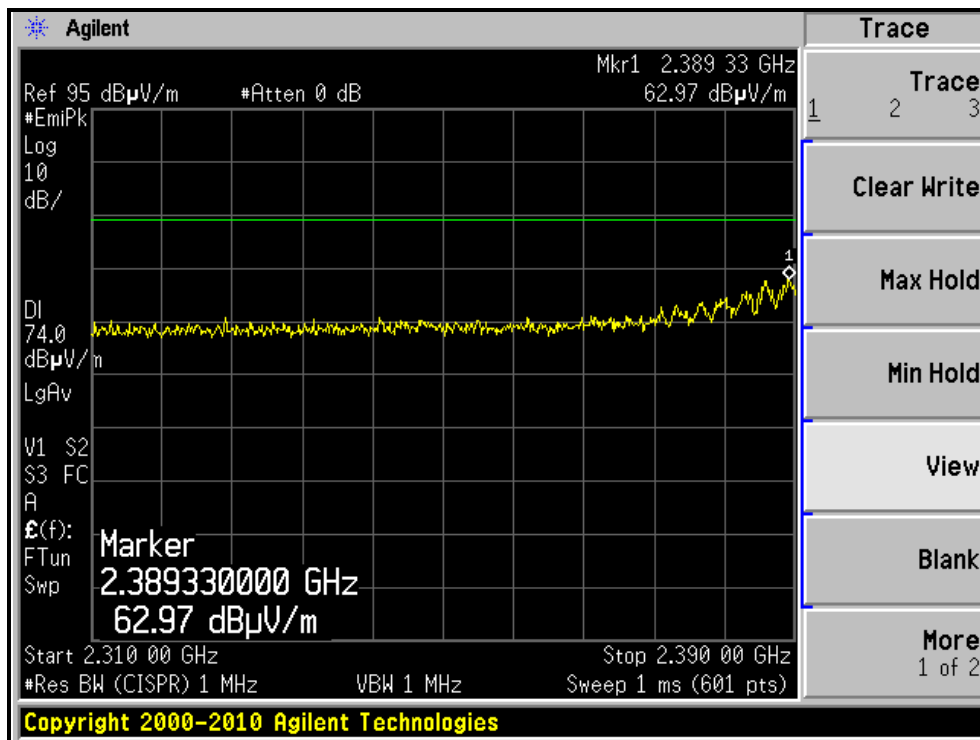
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, HORIZONTAL)





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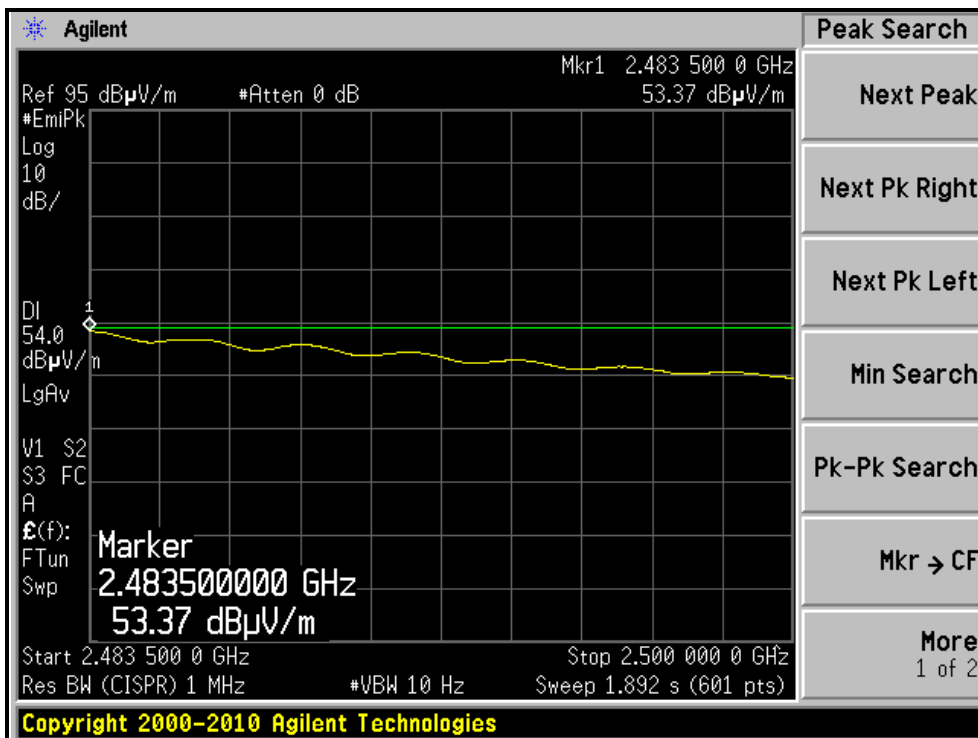
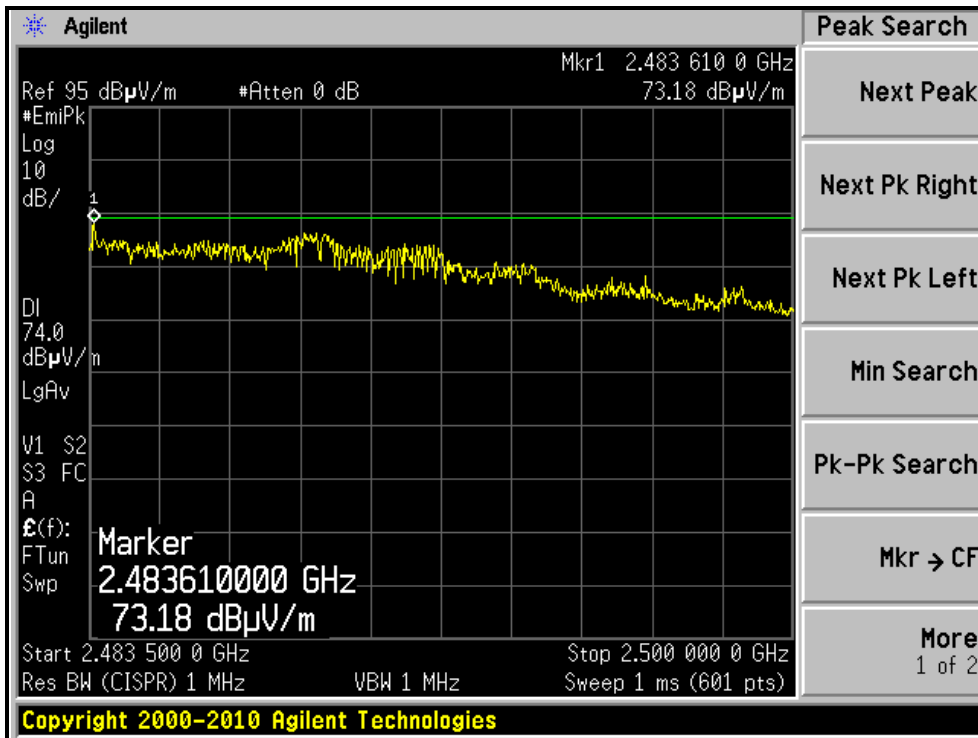
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH3, VERTICAL)





A D T

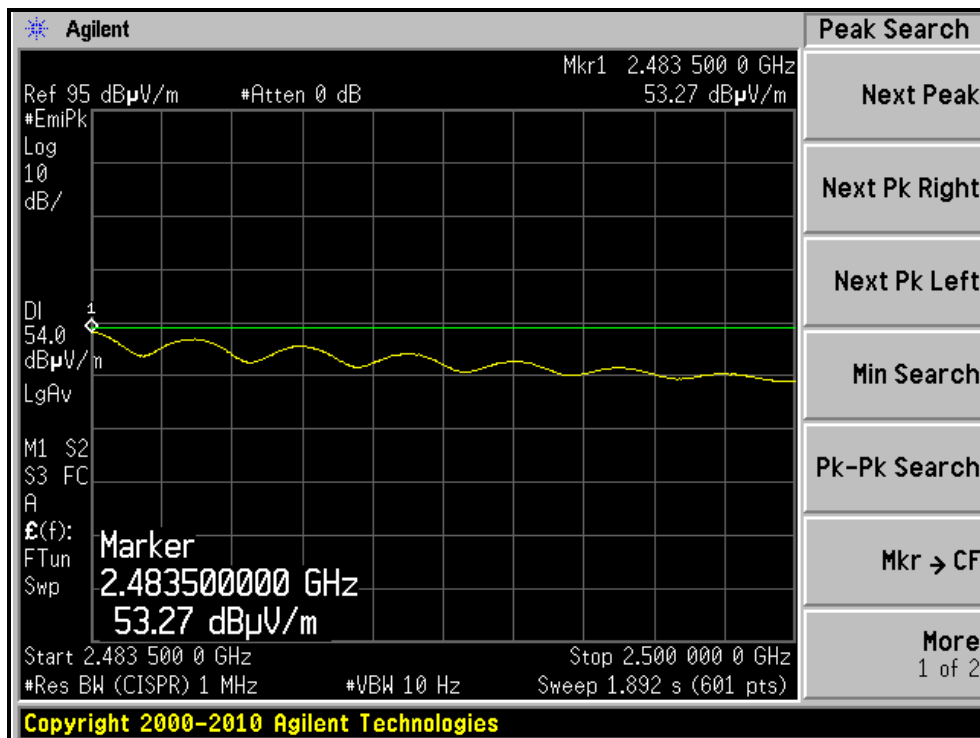
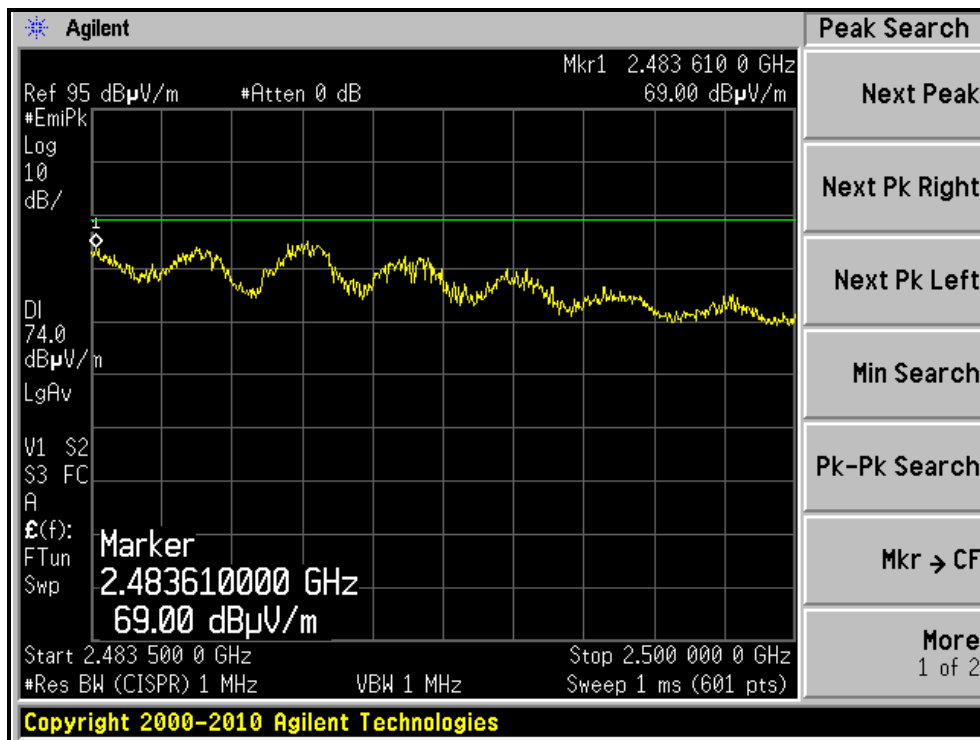
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH9, HORIZONTAL)





A D T

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: Sep. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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.



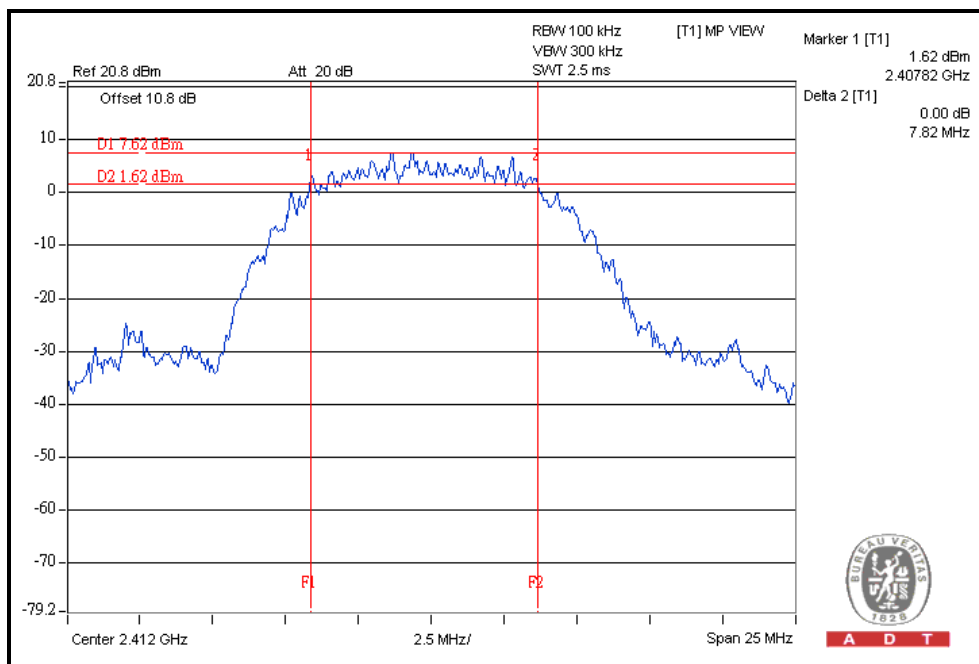
A D T

4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.82	0.5	PASS
6	2437	7.65	0.5	PASS
11	2462	7.81	0.5	PASS

CH1



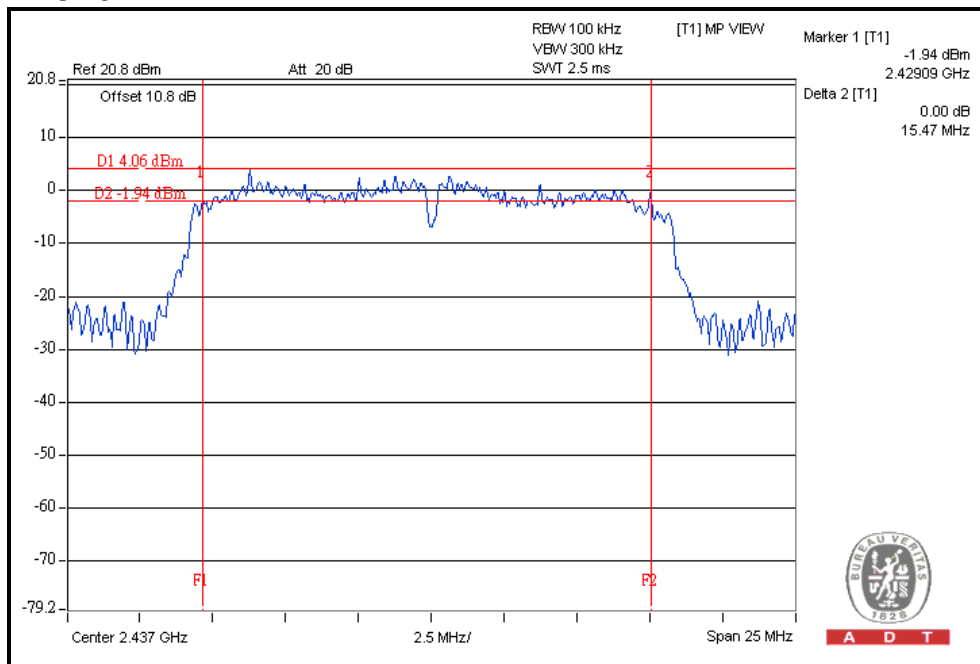


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802.11g OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	14.17	15.14	0.5	PASS
6	2437	13.46	15.47	0.5	PASS
11	2462	15.13	14.53	0.5	PASS

CHAIN 1: CH6



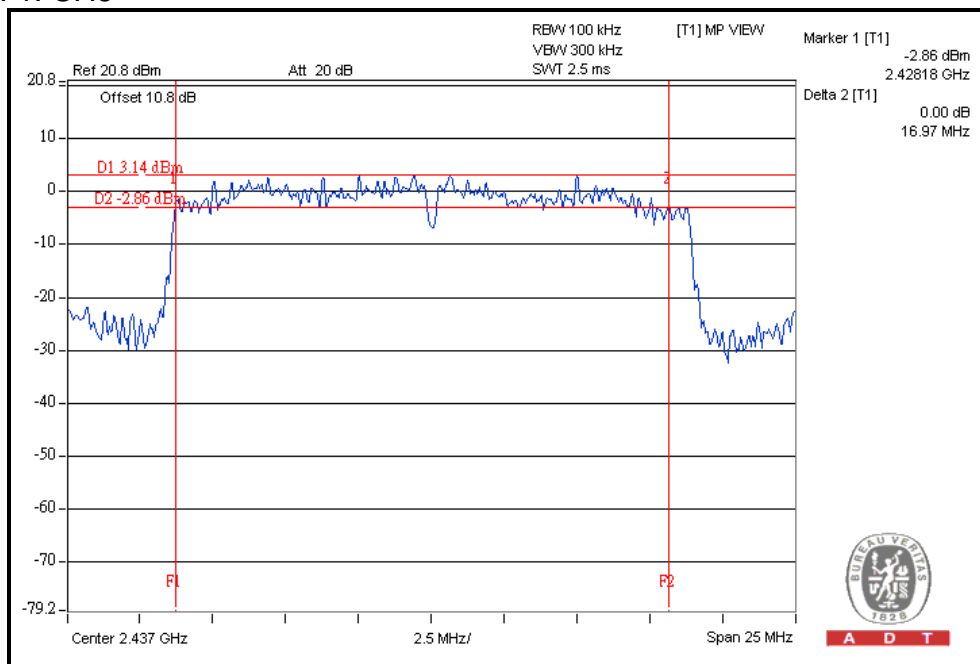


A D T

802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
1	2412	13.82	15.62	0.5	PASS
6	2437	14.17	16.97	0.5	PASS
11	2462	14.22	15.73	0.5	PASS

CHANI 1: CH6



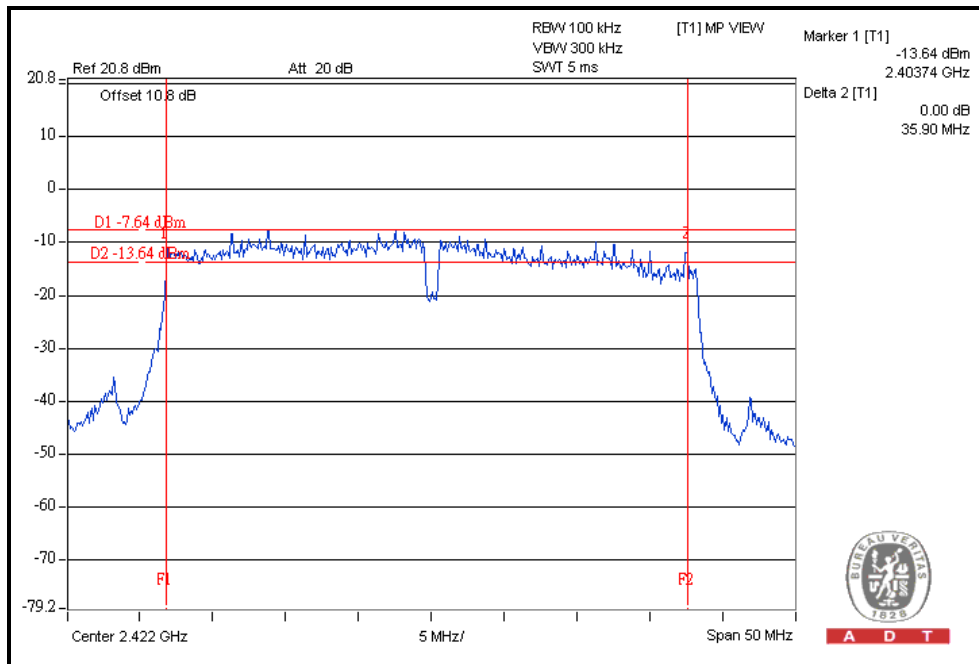


A D T

802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
3	2422	35.83	35.90	0.5	PASS
6	2437	35.20	33.37	0.5	PASS
9	2452	32.78	35.85	0.5	PASS

CHAIN 1: CH3





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: Sep. 07, 2011

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.

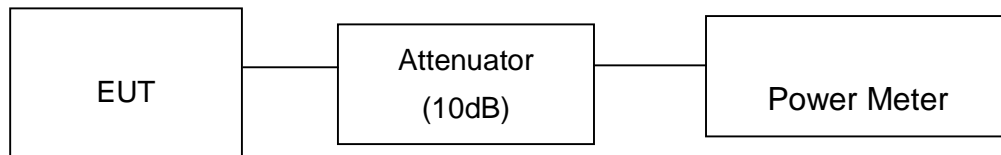
4.4.4 DEVIATION FROM TEST STANDARD

No deviation



A D T

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



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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	125.9	21.0	30	PASS
6	2437	112.2	20.5	30	PASS
11	2462	151.4	21.8	30	PASS

802.11g 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	24.1	24.5	538.9	27.3	30	PASS
6	2437	24.7	25.5	649.9	28.1	30	PASS
11	2462	24.2	24.9	572.1	27.6	30	PASS

Note:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$

Effective Legacy Gain (dBi) = 5.6

The effective legacy gain is 5.6dBi, therefore the limit doesn't reduce.



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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	24.1	24.7	552.2	27.4	30	PASS
6	2437	24.8	25.5	656.8	28.2	30	PASS
11	2462	24.1	25.1	580.6	27.6	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	20.0	20.3	207.2	23.2	30	PASS
6	2437	23.1	23.9	449.6	26.5	30	PASS
9	2452	22.3	23.5	393.7	26.0	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: Sep. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

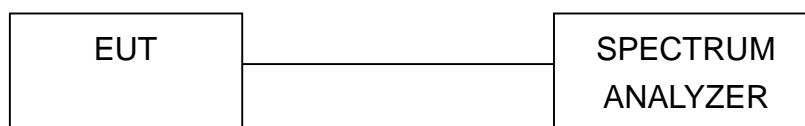
4.5.3 TEST PROCEDURE

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



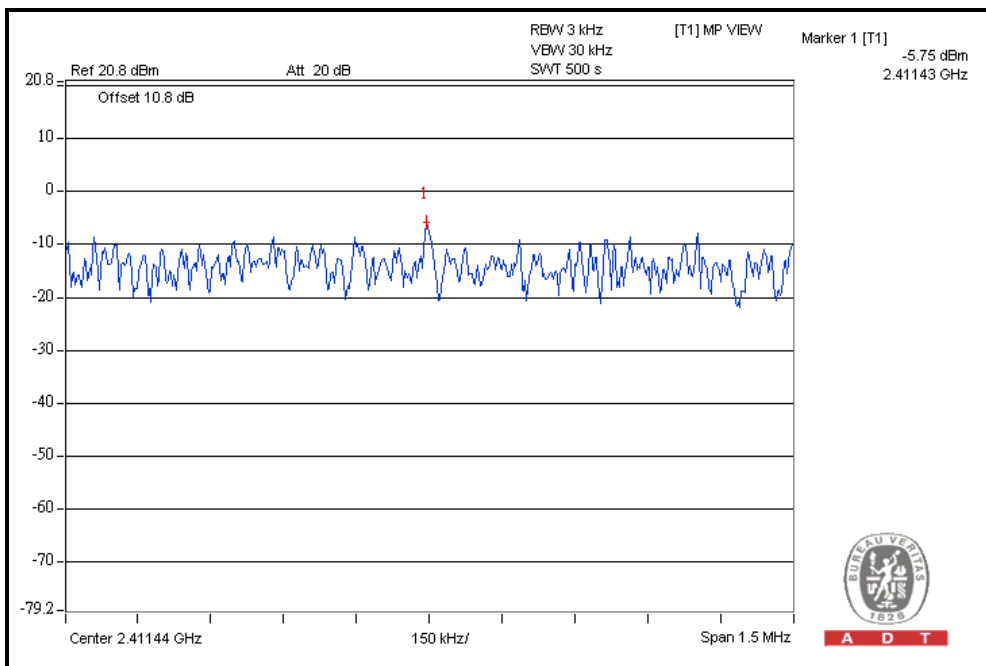
A D T

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	-5.8	8	PASS
6	2437	-6.8	8	PASS
11	2462	-6.5	8	PASS

CH1



802.11g 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	-14.5	-14.8	-11.6	8	PASS
6	2437	-10.6	-11.5	-8.0	8	PASS
11	2462	-13.3	-12.9	-10.1	8	PASS

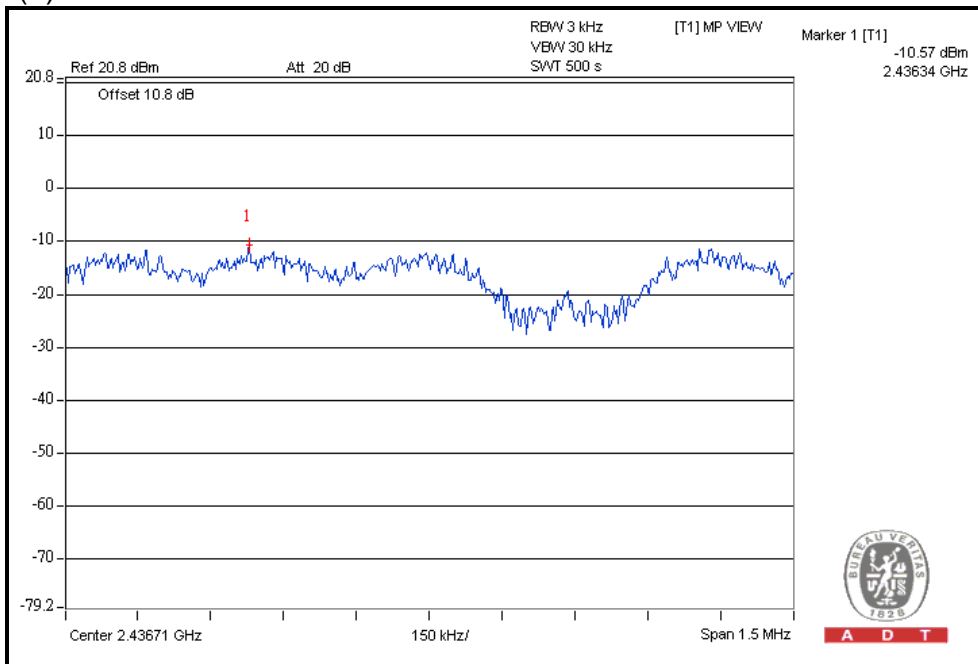
Note:

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$

Effective Legacy Gain (dBi) = 5.6

The effective legacy gain is 5.6dBi, therefore the limit doesn't reduce.

CHAIN (0): CH6



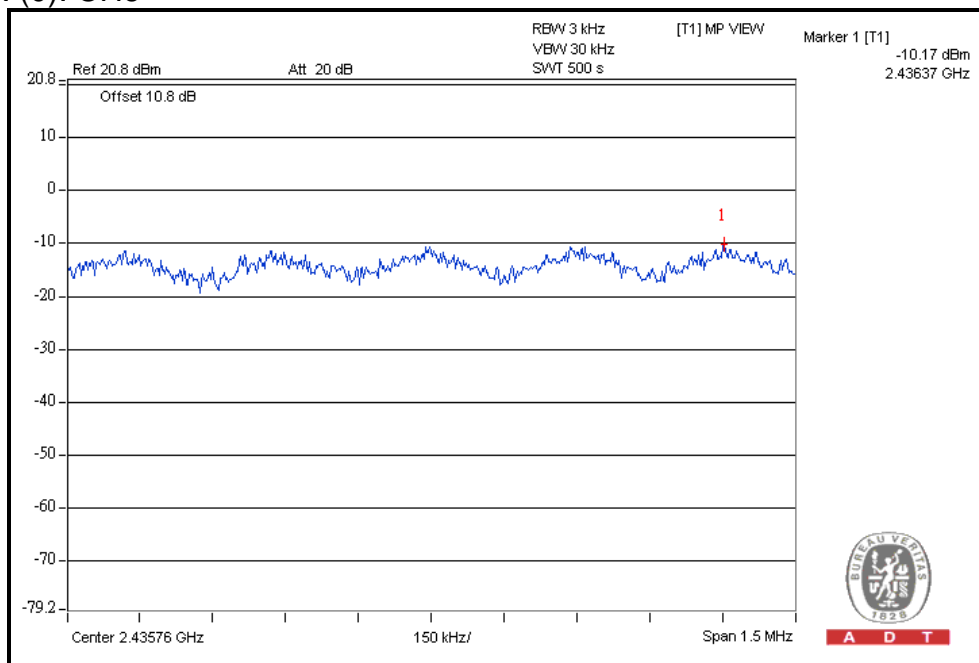


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802.11n (20MHz) OFDM MODULATION:

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	-13.4	-14.5	-10.9	8	PASS
6	2437	-10.2	-10.7	-7.4	8	PASS
11	2462	-12.9	-12.7	-9.8	8	PASS

CHAIN (0): CH6



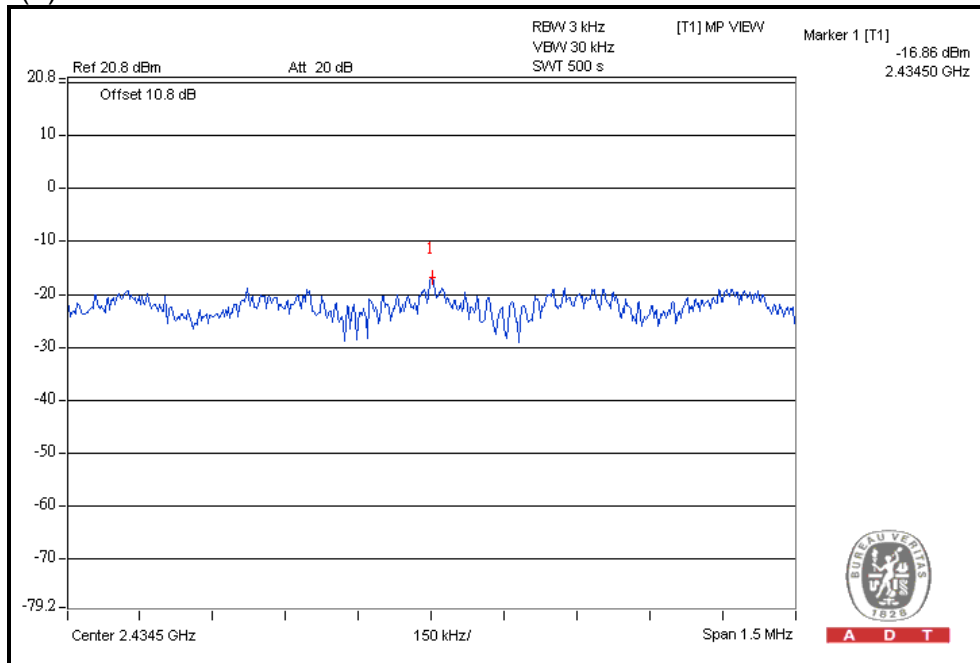


A D T

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	-20.7	-23.3	-18.8	8	PASS
6	2437	-16.9	-19.0	-14.8	8	PASS
9	2452	-18.2	-18.9	-15.5	8	PASS

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

Test date: Sep. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

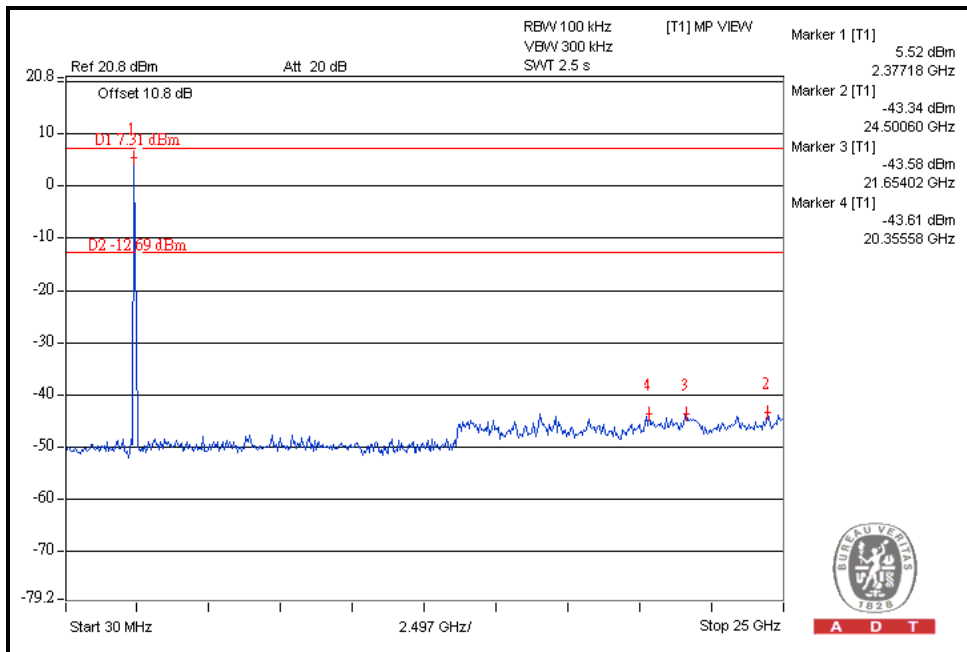
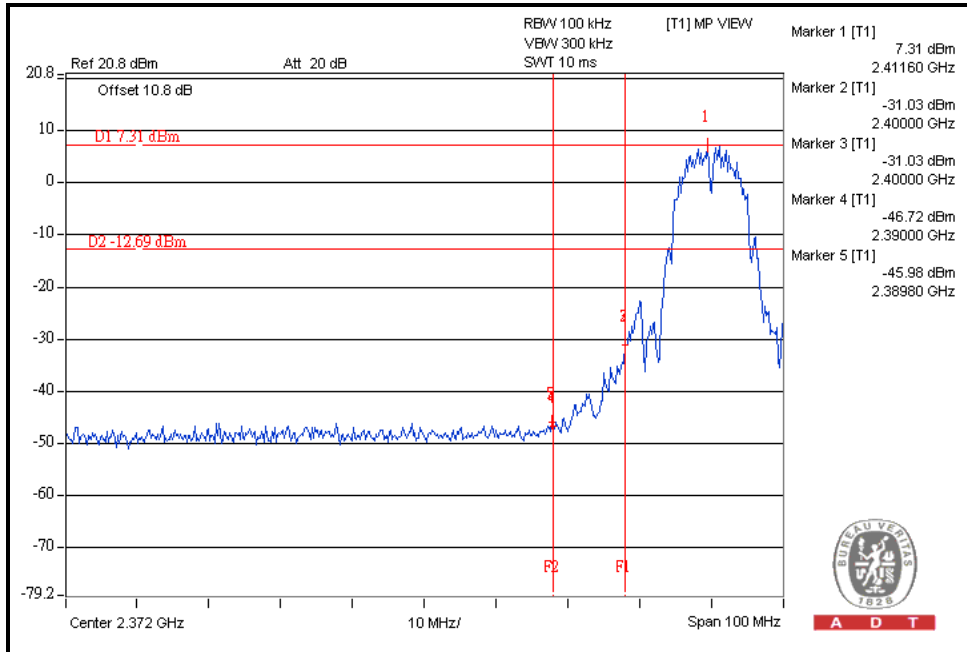
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).



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802.11b DSSS MODULATION:

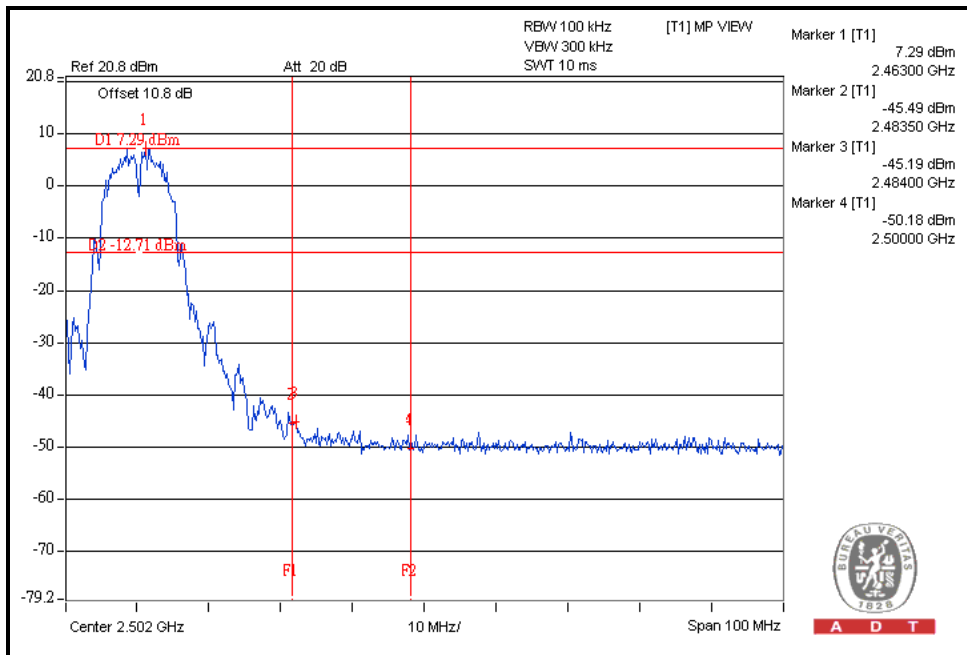
CH1



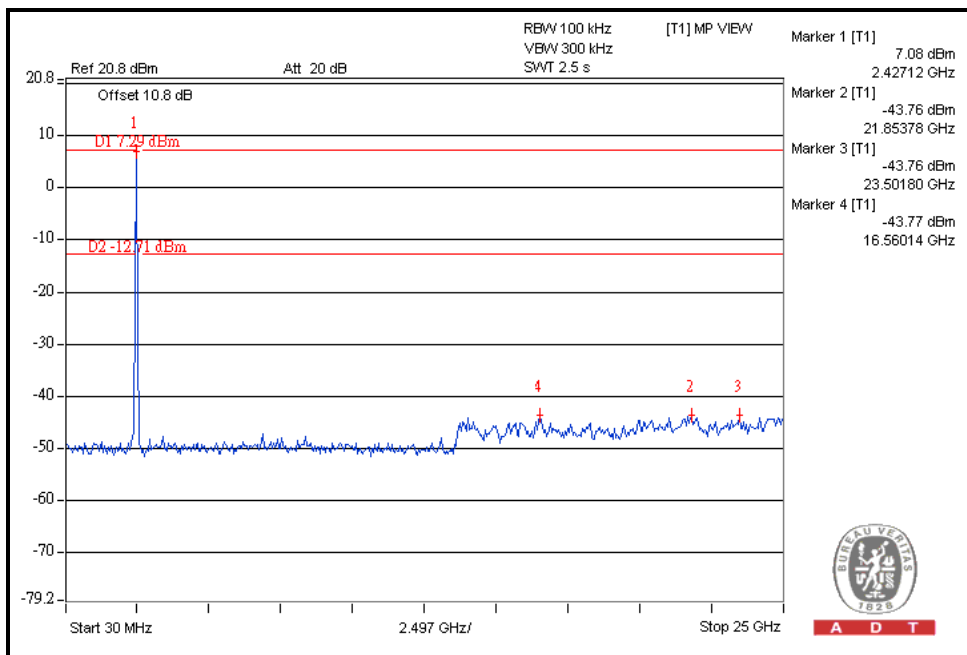


A D T

CH11



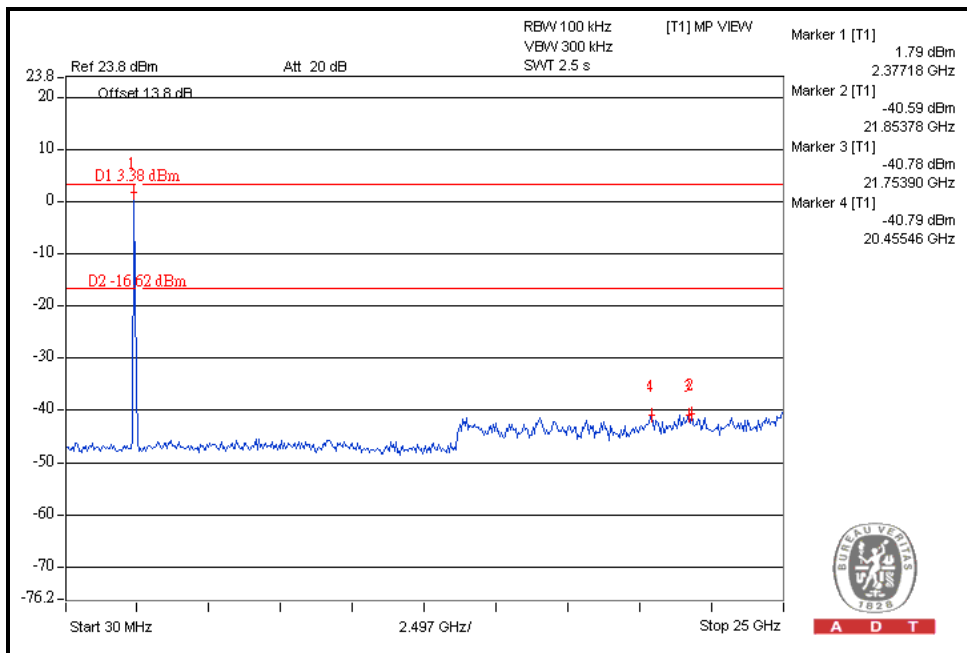
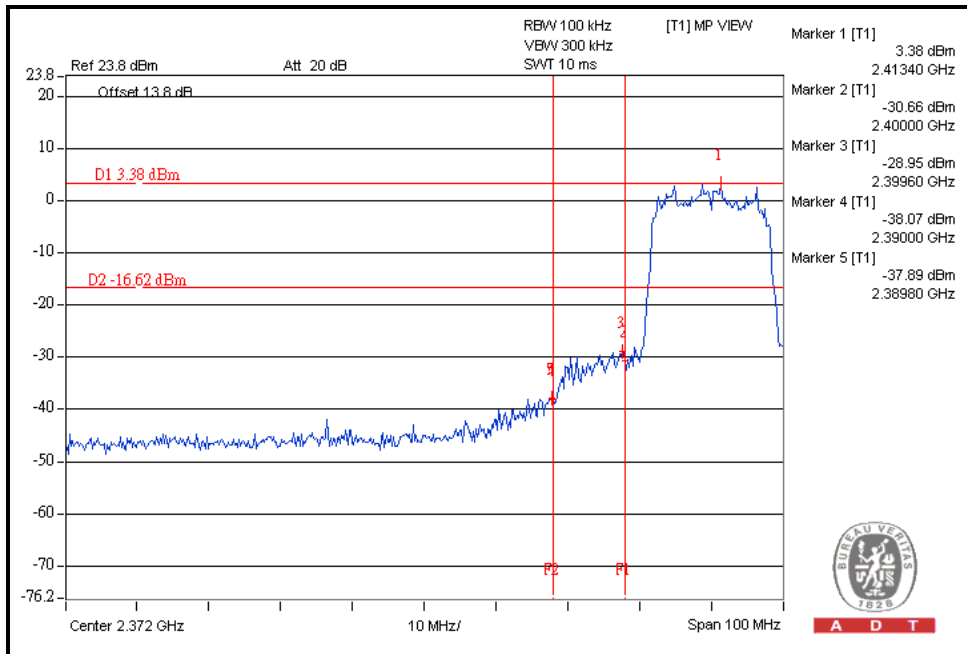
A D T



A D T

Performing measurements: Measure and add 10 log(N) dB
802.11g OFDM modulation:

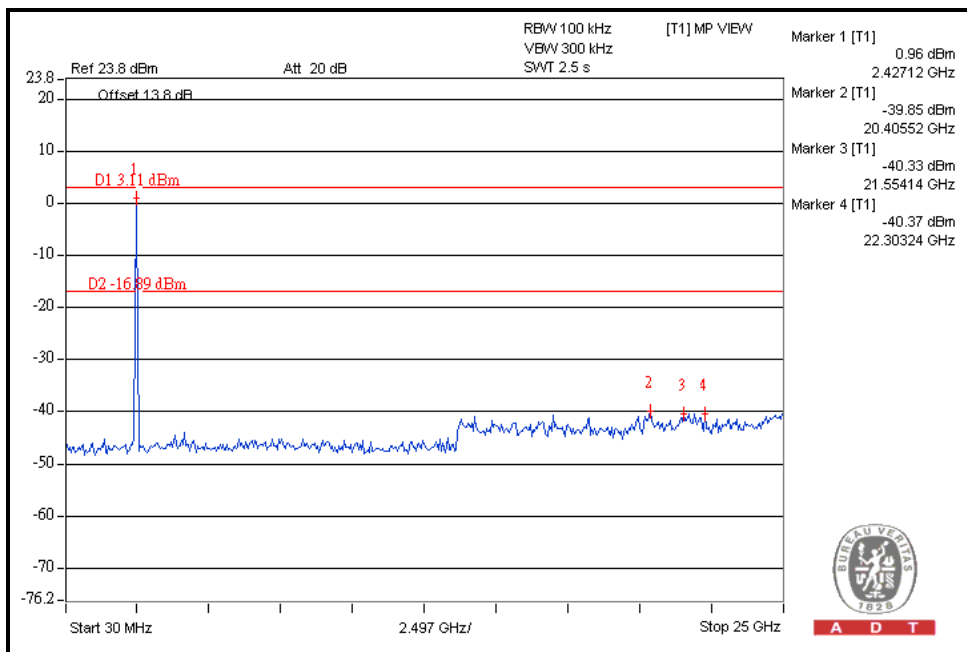
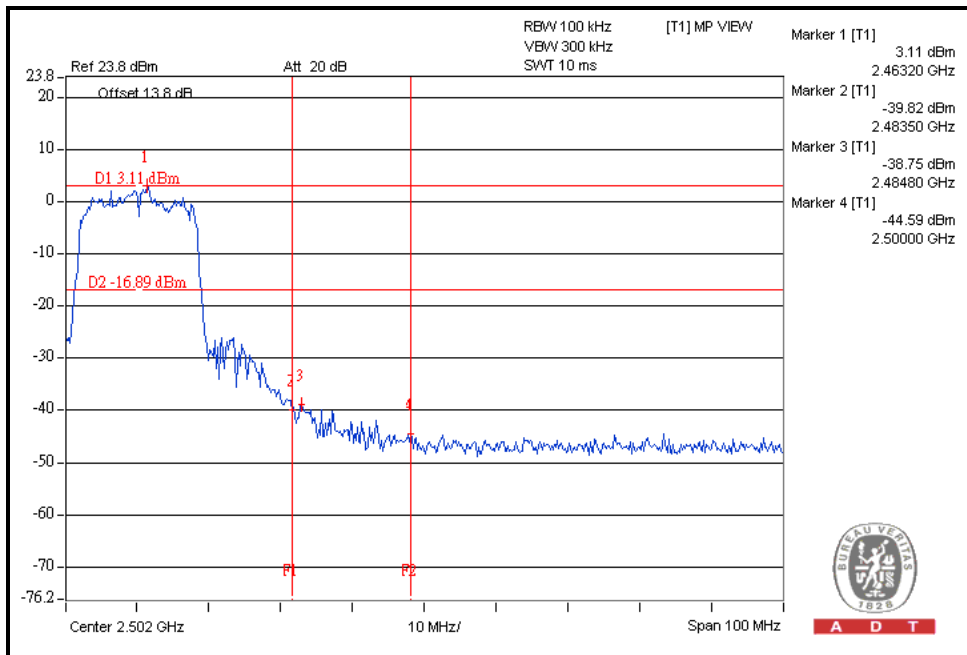
CH1





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CH11

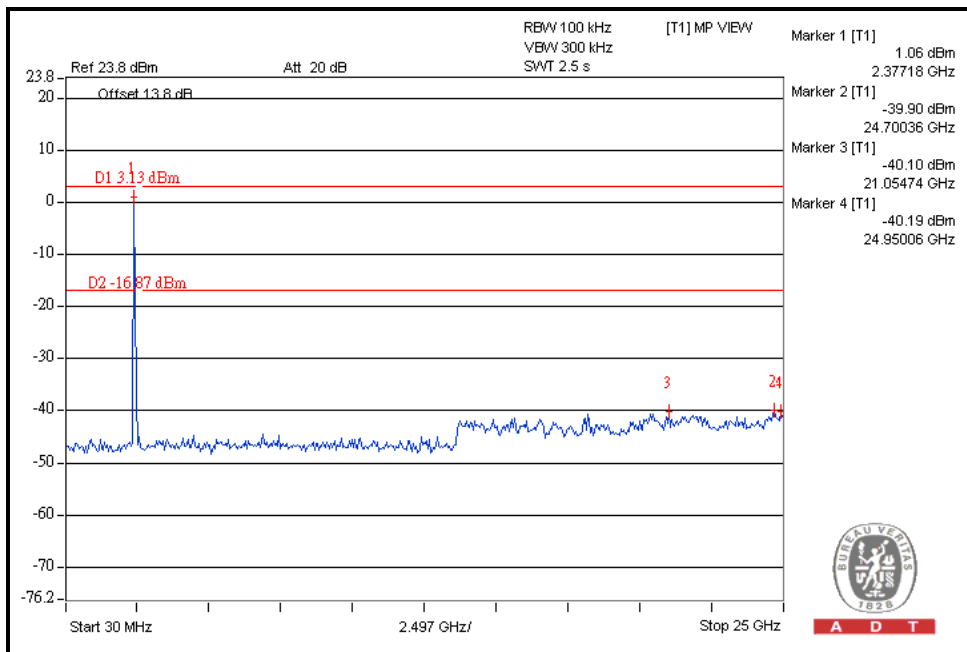
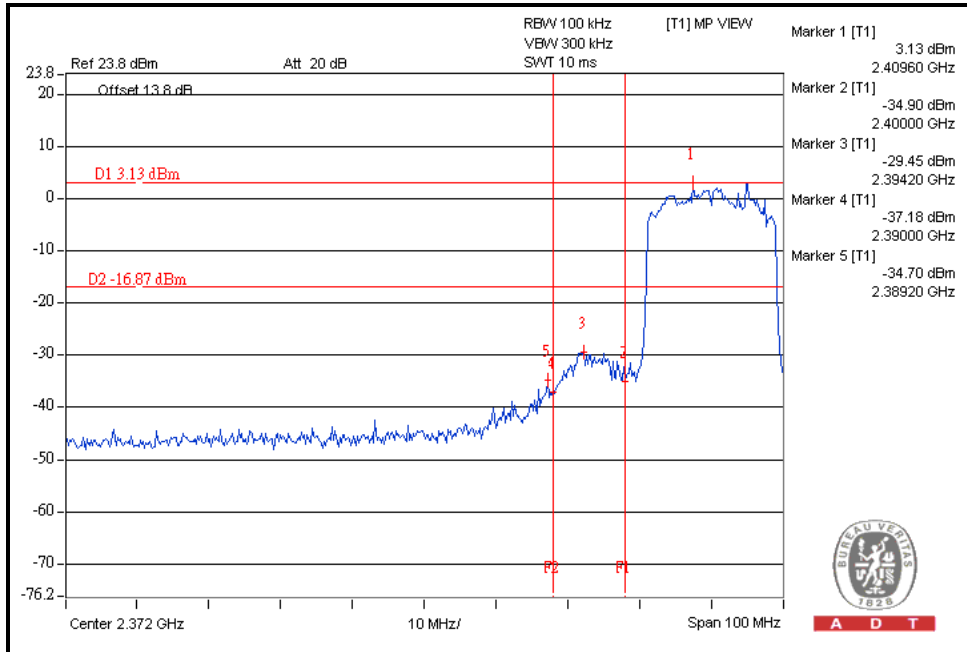




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802.11n (20MHz) OFDM MODULATION:

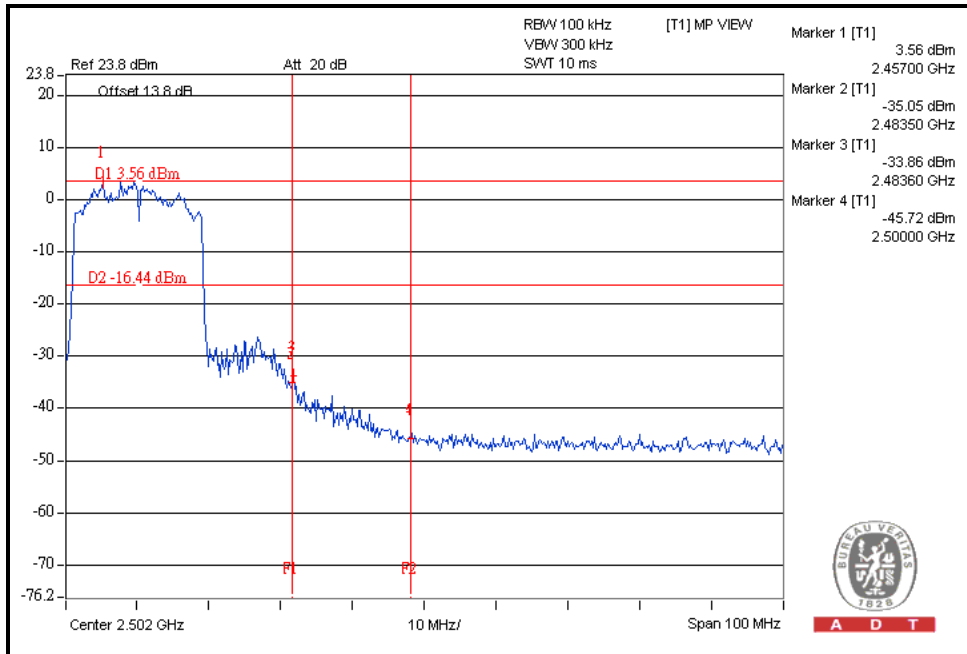
CH1



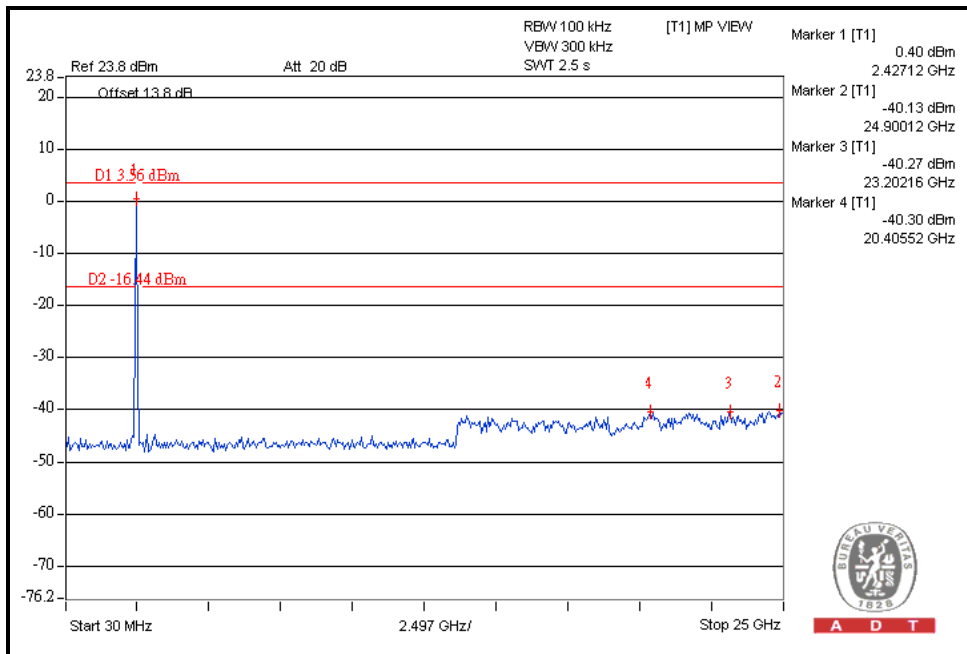


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CH11



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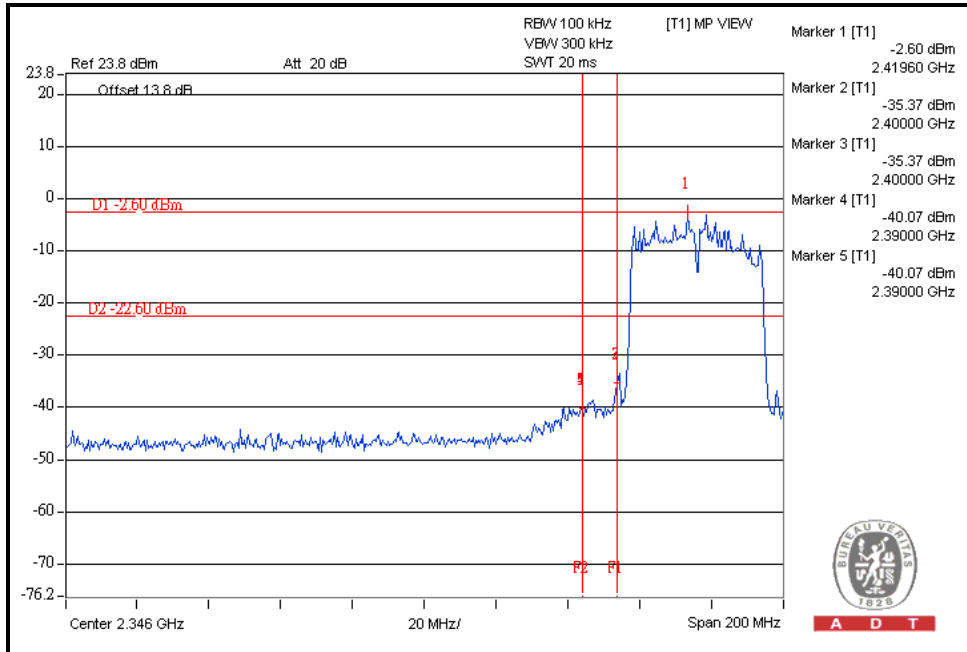
A D T



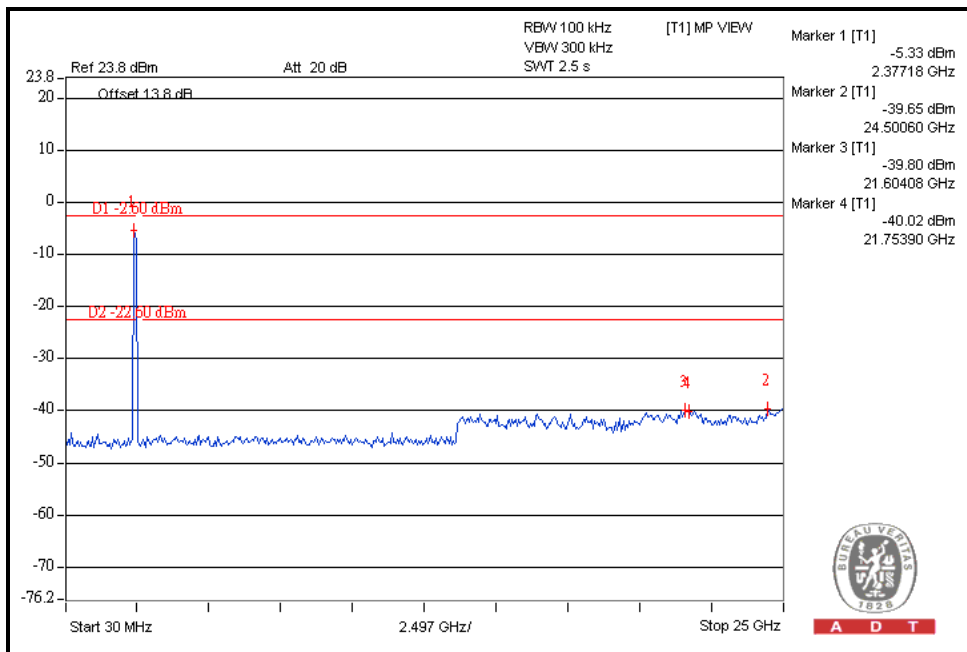
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802.11n (40MHz) OFDM MODULATION:

CH3



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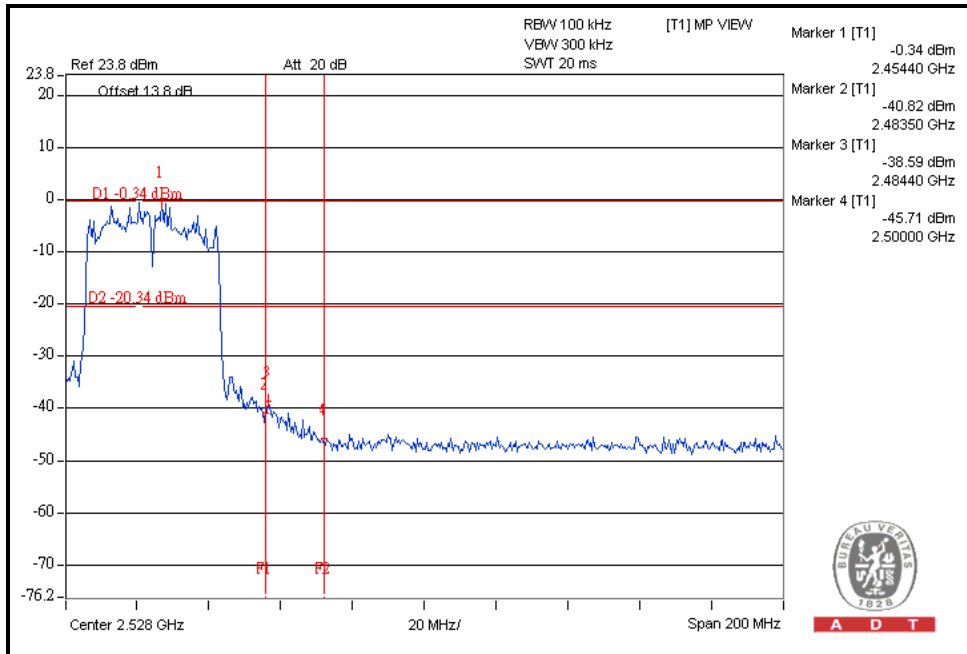


A D T

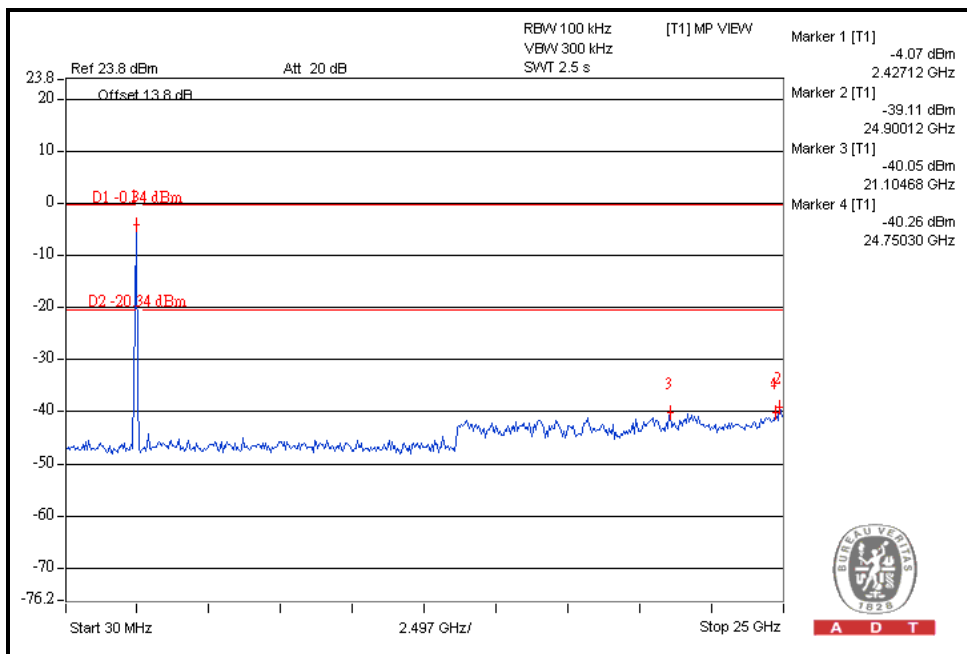


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CH9



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5. TEST TYPES AND RESULTS (For 5725~5850MHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.

5.1.2 TEST INSTRUMENTS

Test date: July 19, 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)	NSLK 8127	8127-522	Sep. 08, 2010	Sep. 07, 2011
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 30, 2010	Aug. 29, 2011
50 ohms Terminator	50	3	Oct. 07, 2010	Oct. 06, 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.



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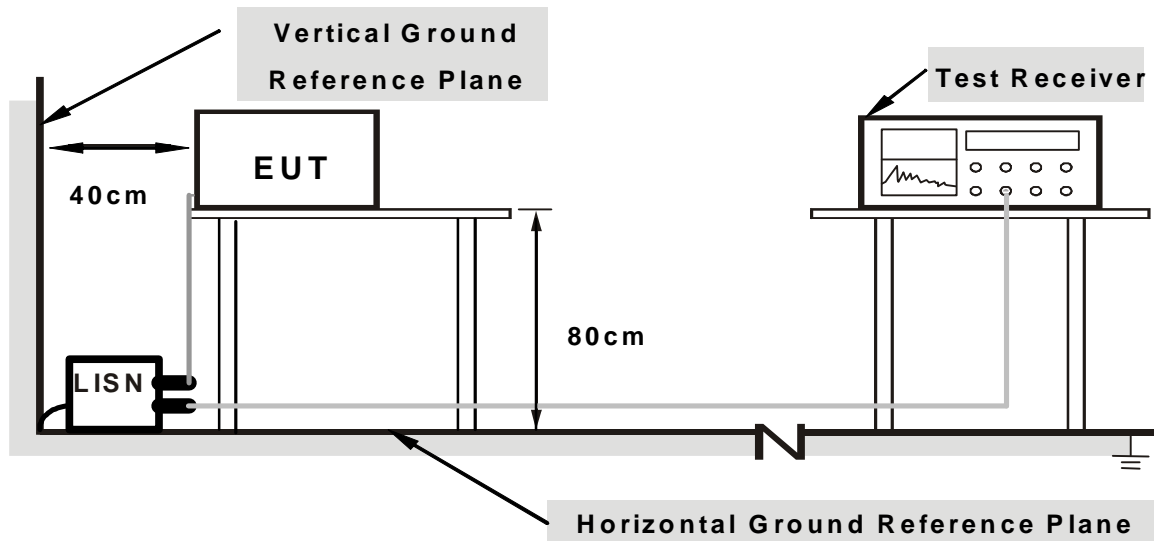
5.1.3 TEST PROCEDURES

- 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.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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.

5.1.6 EUT OPERATING CONDITIONS

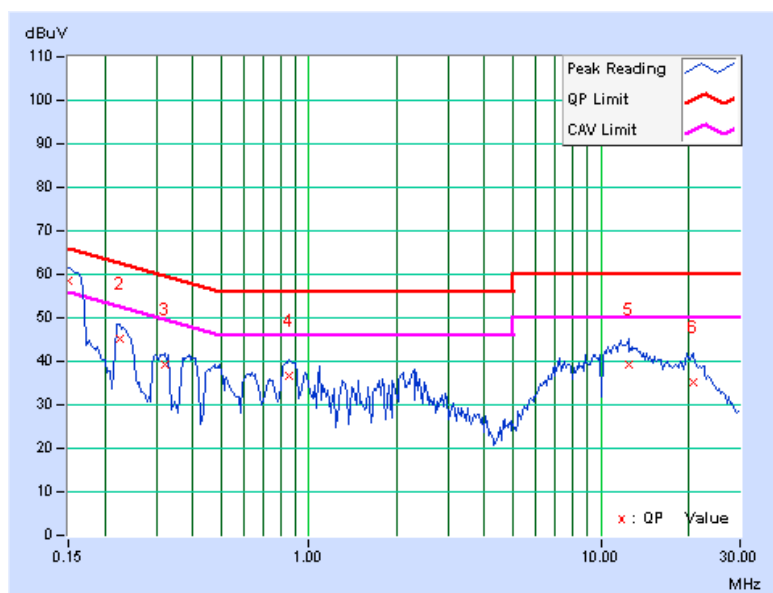
Same as the 4.1.6

5.1.7 TEST RESULTS(MODE 1)

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	0.150	0.11	58.42	47.22	58.53	47.33	65.98	55.98	-7.46	-8.66
2	0.224	0.14	45.13	31.26	45.27	31.40	62.66	52.66	-17.39	-21.26
3	0.322	0.15	38.96	26.35	39.11	26.50	59.66	49.66	-20.55	-23.16
4	0.853	0.18	36.35	23.96	36.53	24.14	56.00	46.00	-19.47	-21.86
5	12.477	0.73	38.65	32.26	39.38	32.99	60.00	50.00	-20.62	-17.01
6	20.645	1.01	34.16	31.21	35.17	32.22	60.00	50.00	-24.83	-17.78

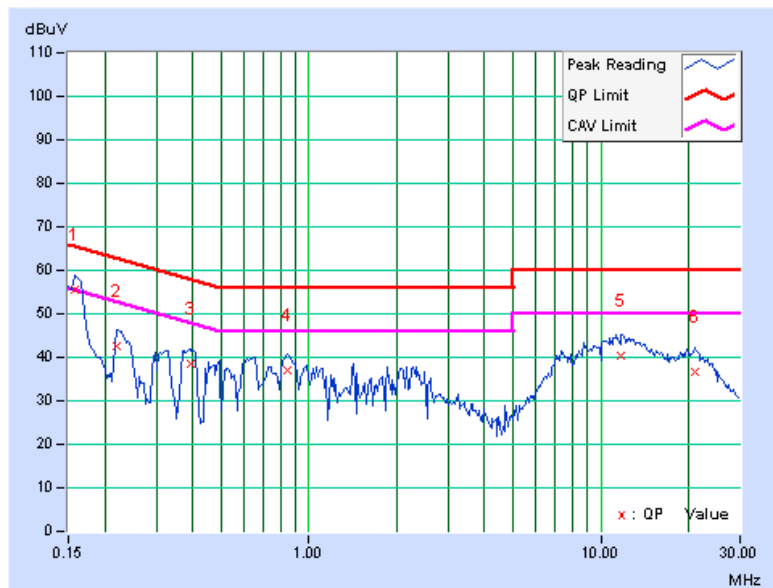
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.12	55.38	46.27	55.50	46.39	65.57	55.57	-10.07	-9.18
2	0.220	0.15	42.28	25.33	42.43	25.48	62.81	52.81	-20.38	-27.33
3	0.392	0.17	38.24	28.19	38.41	28.36	58.01	48.01	-19.60	-19.65
4	0.842	0.18	36.72	23.83	36.90	24.01	56.00	46.00	-19.10	-21.99
5	11.723	1.14	39.28	31.83	40.42	32.97	60.00	50.00	-19.58	-17.03
6	21.121	1.87	34.72	30.30	36.59	32.17	60.00	50.00	-23.41	-17.83

- 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.

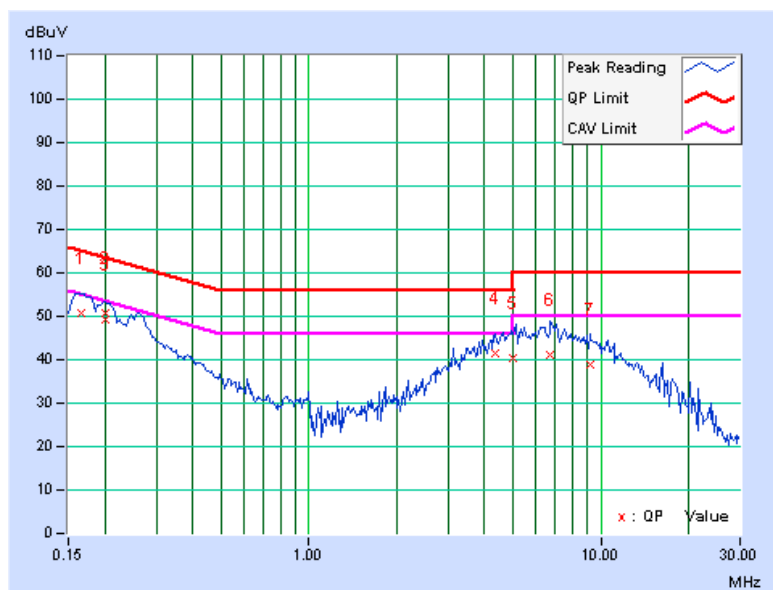


5.1.8 TEST RESULTS(MODE 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.12	50.55	41.24	50.67	41.36	65.18	55.18	-14.51	-13.82
2	0.201	0.14	50.55	39.15	50.69	39.29	63.58	53.58	-12.89	-14.29
3	0.201	0.14	49.24	38.22	49.38	38.36	63.58	53.58	-14.20	-15.22
4	4.371	0.30	41.02	32.22	41.32	32.52	56.00	46.00	-14.68	-13.48
5	5.000	0.34	40.15	32.29	40.49	32.63	56.00	46.00	-15.51	-13.37
6	6.727	0.45	40.58	33.58	41.03	34.03	60.00	50.00	-18.97	-15.97
7	9.227	0.60	38.33	30.28	38.93	30.88	60.00	50.00	-21.07	-19.12

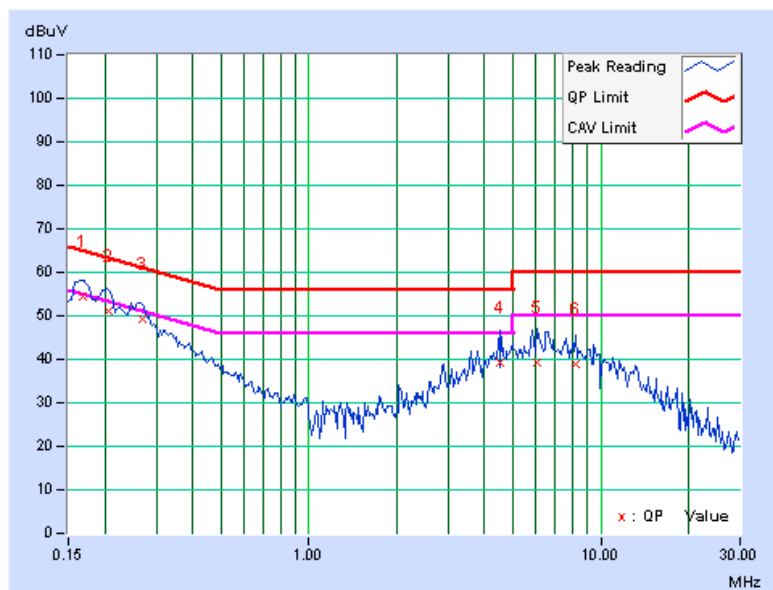
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	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	0.169	0.13	54.32	42.98	54.45	43.11	65.00	55.00	-10.55	-11.89
2	0.205	0.15	50.84	38.65	50.99	38.80	63.41	53.41	-12.42	-14.61
3	0.268	0.16	49.28	38.12	49.44	38.28	61.19	51.19	-11.75	-12.91
4	4.500	0.41	38.67	30.50	39.08	30.91	56.00	46.00	-16.92	-15.09
5	6.043	0.57	38.57	30.56	39.14	31.13	60.00	50.00	-20.86	-18.87
6	8.204	0.81	37.96	30.22	38.77	31.03	60.00	50.00	-21.23	-18.97

- 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.





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5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.



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5.2.2 TEST INSTRUMENTS

Test date: July 28, 2011

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	AFS33-1800265 0-30-8P-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.



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5.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter 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.

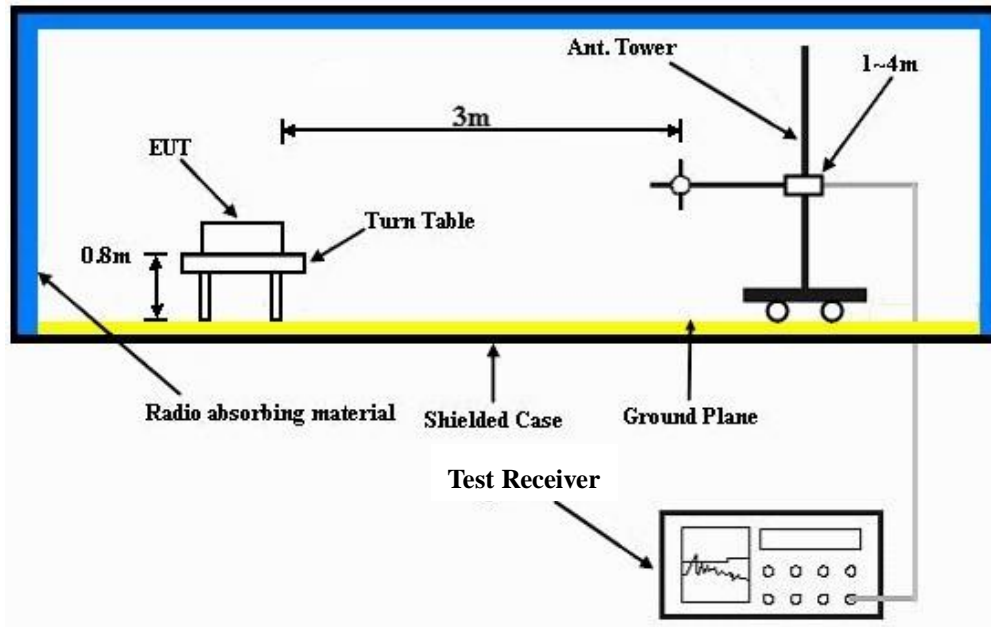
NOTE:

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

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

5.2.7 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	26deg. C, 71%RH	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.71	28.4 QP	40.0	-11.6	1.50 H	260	14.18	14.20
2	106.62	33.7 QP	43.5	-9.8	1.50 H	138	23.39	10.33
3	146.53	36.4 QP	43.5	-7.2	1.75 H	68	22.00	14.35
4	229.90	35.2 QP	46.0	-10.8	1.50 H	109	22.88	12.30
5	259.98	34.8 QP	46.0	-11.2	1.00 H	101	21.30	13.47
6	706.55	28.4 QP	46.0	-17.6	1.00 H	6	6.09	22.29
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	37.62	34.8 QP	40.0	-5.2	1.00 V	352	21.14	13.69
2	107.77	36.5 QP	43.5	-7.1	1.00 V	53	25.94	10.51
3	169.20	38.3 QP	43.5	-5.2	1.00 V	126	24.62	13.70
4	250.28	32.5 QP	46.0	-13.5	1.00 V	163	19.47	13.05
5	539.98	27.9 QP	46.0	-18.1	1.25 V	188	7.47	20.39
6	709.79	26.9 QP	46.0	-19.1	1.50 V	43	4.53	22.36

- 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

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5745.00	113.3 PK			1.00 H	187	86.27	27.03
2	*5745.00	104.0 AV			1.00 H	187	76.97	27.03
3	11490.00	64.8 PK	74.0	-9.2	1.36 H	138	37.77	27.03
4	11490.00	53.3 AV	54.0	-0.7	1.36 H	138	26.27	27.03
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	*5745.00	112.6 PK			1.03 V	273	85.57	27.03
2	*5745.00	103.4 AV			1.03 V	273	76.37	27.03
3	11490.00	57.6 PK	74.0	-16.4	1.21 V	43	30.57	27.03
4	11490.00	48.4 AV	54.0	-5.6	1.21 V	43	21.37	27.03

- 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.
 6. The limit value is defined as per 15.247.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5785.00	113.6 PK			1.00 H	184	86.57	27.03
2	*5785.00	104.5 AV			1.00 H	184	77.47	27.03
3	11570.00	65.1 PK	74.0	-8.9	1.31 H	138	38.07	27.03
4	11570.00	53.1 AV	54.0	-0.9	1.31 H	138	26.07	27.03

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	*5785.00	112.2 PK			1.04 V	276	85.17	27.03
2	*5785.00	103.3 AV			1.04 V	276	76.27	27.03
3	11570.00	57.8 PK	74.0	-16.2	1.26 V	49	30.77	27.03
4	11570.00	48.2 AV	54.0	-5.8	1.26 V	49	21.17	27.03

- 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.
 6. The limit value is defined as per 15.247.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5825.00	113.3 PK			1.00 H	186	86.27	27.03
2	*5825.00	104.2 AV			1.00 H	186	77.17	27.03
3	11650.00	65.2 PK	74.0	-8.8	1.28 H	135	38.17	27.03
4	11650.00	53.2 AV	54.0	-0.8	1.28 H	135	26.17	27.03
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	*5825.00	112.6 PK			1.02 V	279	85.57	27.03
2	*5825.00	103.1 AV			1.02 V	279	76.07	27.03
3	11650.00	57.2 PK	74.0	-16.8	1.24 V	53	30.17	27.03
4	11650.00	48.4 AV	54.0	-5.6	1.24 V	53	21.37	27.03

- 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.
 6. The limit value is defined as per 15.247.



A D T

802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 149	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5745.00	114.3 PK			1.00 H	182	87.27	27.03
2	*5745.00	104.5 AV			1.00 H	182	77.47	27.03
3	11490.00	65.4 PK	74.0	-8.6	1.27 H	134	38.37	27.03
4	11490.00	53.1 AV	54.0	-0.9	1.27 H	134	26.07	27.03
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	*5745.00	113.3 PK			1.03 V	274	86.27	27.03
2	*5745.00	103.4 AV			1.03 V	274	76.37	27.03
3	11490.00	57.3 PK	74.0	-16.7	1.26 V	49	30.27	27.03
4	11490.00	48.5 AV	54.0	-5.5	1.26 V	49	21.47	27.03

- 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.
 6. The limit value is defined as per 15.247.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 157	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5785.00	114.6 PK			1.00 H	189	87.57	27.03
2	*5785.00	104.2 AV			1.00 H	189	77.17	27.03
3	11570.00	65.3 PK	74.0	-8.7	1.24 H	44	38.27	27.03
4	11570.00	53.4 AV	54.0	-0.6	1.24 H	44	26.37	27.03

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	*5785.00	113.6 PK			1.03 V	269	86.57	27.03
2	*5785.00	103.3 AV			1.03 V	269	76.27	27.03
3	11570.00	57.6 PK	74.0	-16.4	1.24 V	63	30.57	27.03
4	11570.00	48.7 AV	54.0	-5.3	1.24 V	63	21.67	27.03

- 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.
 6. The limit value is defined as per 15.247.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 165	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5825.00	114.7 PK			1.00 H	184	87.67	27.03
2	*5825.00	104.5 AV			1.00 H	184	77.47	27.03
3	11650.00	65.2 PK	74.0	-8.8	1.21 H	56	38.17	27.03
4	11650.00	53.1 AV	54.0	-0.9	1.21 H	56	26.07	27.03
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	*5825.00	113.9 PK			1.04 V	263	86.87	27.03
2	*5825.00	103.7 AV			1.04 V	263	76.67	27.03
3	11650.00	57.9 PK	74.0	-16.1	1.26 V	59	30.87	27.03
4	11650.00	48.4 AV	54.0	-5.6	1.26 V	59	21.37	27.03

- 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.
 6. The limit value is defined as per 15.247.



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802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 151	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5755.00	111.1 PK			1.00 H	184	84.07	27.03
2	*5755.00	101.1 AV			1.00 H	184	74.07	27.03
3	11510.00	64.1 PK	74.0	-9.9	1.32 H	138	37.07	27.03
4	11510.00	53.1 AV	54.0	-0.9	1.32 H	138	26.07	27.03
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	*5755.00	110.3 PK			1.04 V	257	83.27	27.03
2	*5755.00	100.4 AV			1.04 V	257	73.37	27.03
3	11510.00	58.2 PK	74.0	-15.8	1.24 V	63	31.17	27.03
4	11510.00	48.1 AV	54.0	-5.9	1.24 V	63	21.07	27.03

- 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.
 6. The limit value is defined as per 15.247.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 159	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	27deg. C, 71%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	*5795.00	111.2 PK			1.00 H	185	84.17	27.03
2	*5795.00	101.3 AV			1.00 H	185	74.27	27.03
3	11590.00	64.4 PK	74.0	-9.6	1.36 H	137	37.37	27.03
4	11590.00	53.3 AV	54.0	-0.7	1.36 H	137	26.27	27.03
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	*5795.00	110.5 PK			1.03 V	254	83.47	27.03
2	*5795.00	100.6 AV			1.03 V	254	73.57	27.03
3	11590.00	58.1 PK	74.0	-15.9	1.26 V	59	31.07	27.03
4	11590.00	48.3 AV	54.0	-5.7	1.26 V	59	21.27	27.03

- 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.
 6. The limit value is defined as per 15.247.

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

Test date: July 29, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

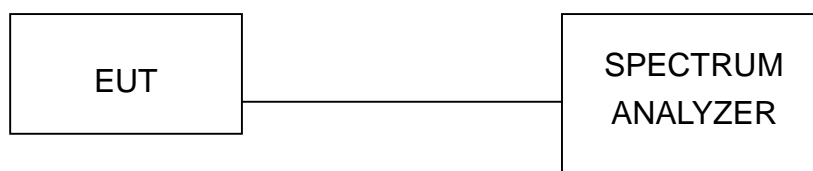
5.3.3 TEST PROCEDURE

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.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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



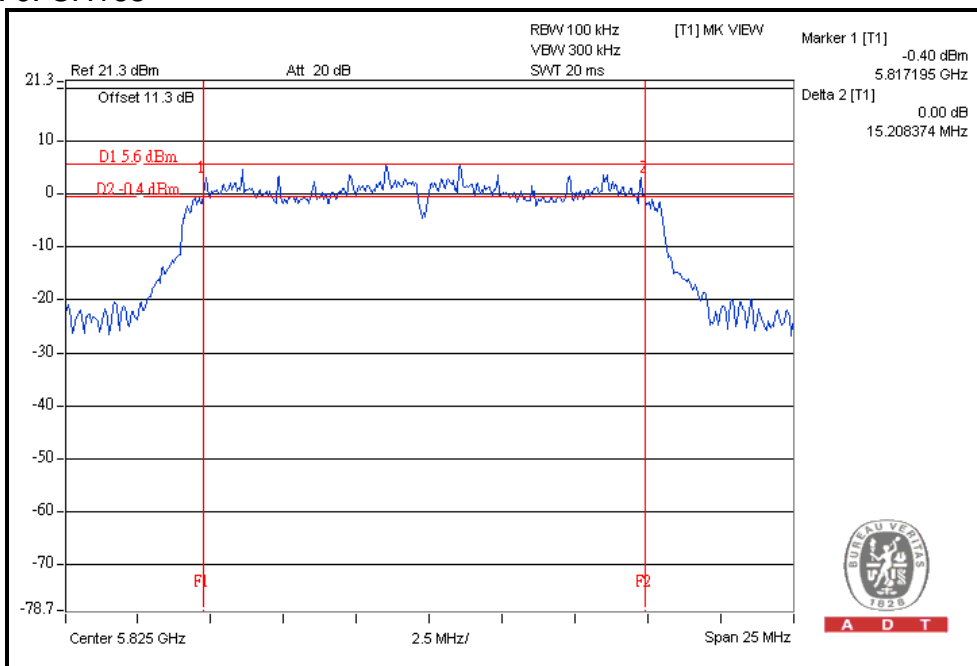
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5.3.7 TEST RESULTS

802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.2	15.17	0.5	PASS
157	5785	15.08	15.2	0.5	PASS
165	5825	15.2	15.13	0.5	PASS

CHAIN 0: CH165



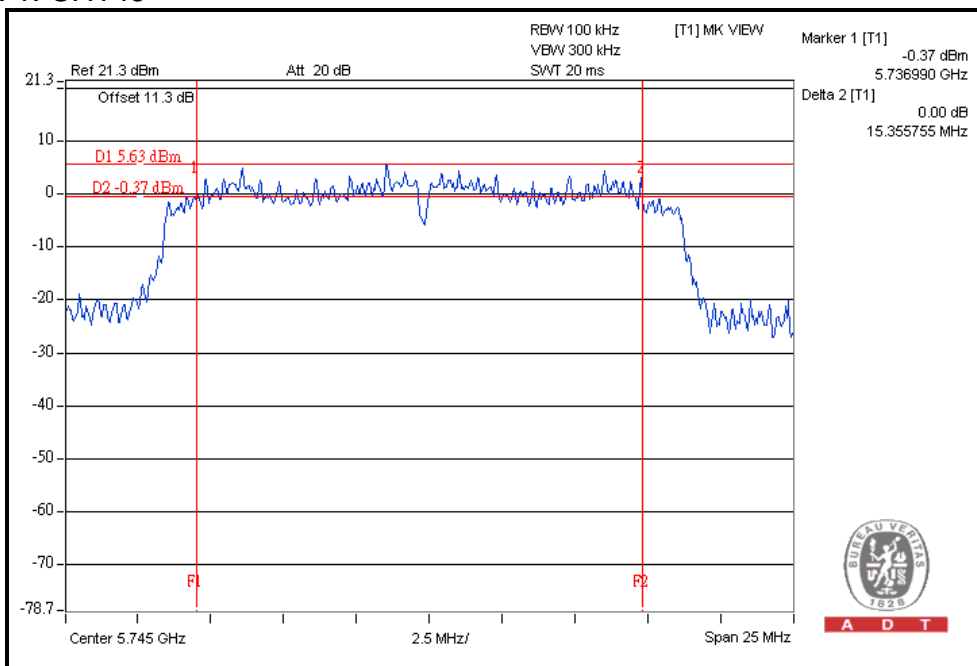


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802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
149	5745	15.16	15.35	0.5	PASS
157	5785	15.16	15.16	0.5	PASS
165	5825	15.13	15.15	0.5	PASS

CHAIN 1: CH149



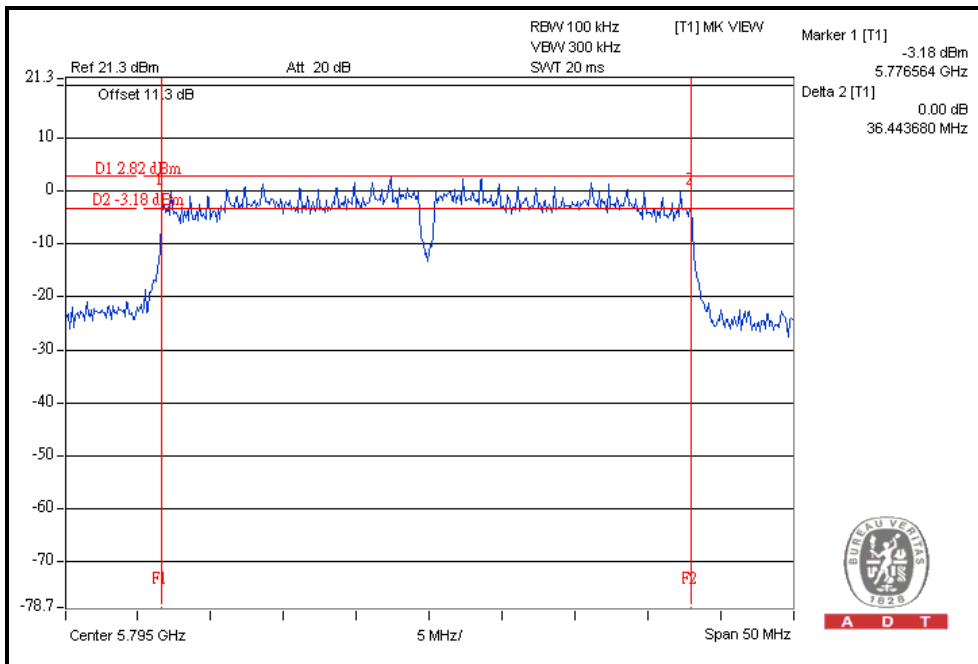


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802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 0	CHAIN 1		
151	5755	35.31	36.43	0.5	PASS
159	5795	35.48	36.44	0.5	PASS

CHAIN 1: CH159



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5.4 MAXIMUM PEAK OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

Test date: Sep. 07, 2011

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.

5.4.3 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.

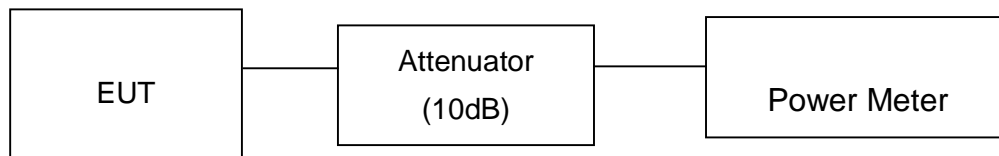
5.4.4 DEVIATION FROM TEST STANDARD

No deviation



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5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



5.4.7 TEST RESULTS

802.11a 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)				
149	5745	22.2	22.1	328.1	25.2	29	PASS
157	5785	22.0	22.2	324.4	25.1	29	PASS
165	5825	22.3	22.2	335.8	25.3	29	PASS

Note:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$$

Effective Legacy Gain (dBi) = 7

The effective legacy gain is 7dBi, therefore the limit needs to reduce.

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)				
149	5745	22.2	22.3	335.8	25.3	30	PASS
157	5785	22.1	22.2	328.1	25.2	30	PASS
165	5825	22.1	22.0	320.7	25.1	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)				
151	5755	22.2	22.3	335.8	25.3	30	PASS
159	5795	22.1	22.0	320.7	25.1	30	PASS

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8 dBm.

5.5.2 TEST INSTRUMENTS

Test date: July 29, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

5.5.3 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 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

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

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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5.5.7 TEST RESULTS

802.11a 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)			
149	5745	-10.7	-9.7	-7.2	7	PASS
157	5785	-9.4	-8.6	-6.0	7	PASS
165	5825	-9.1	-10.1	-6.6	7	PASS

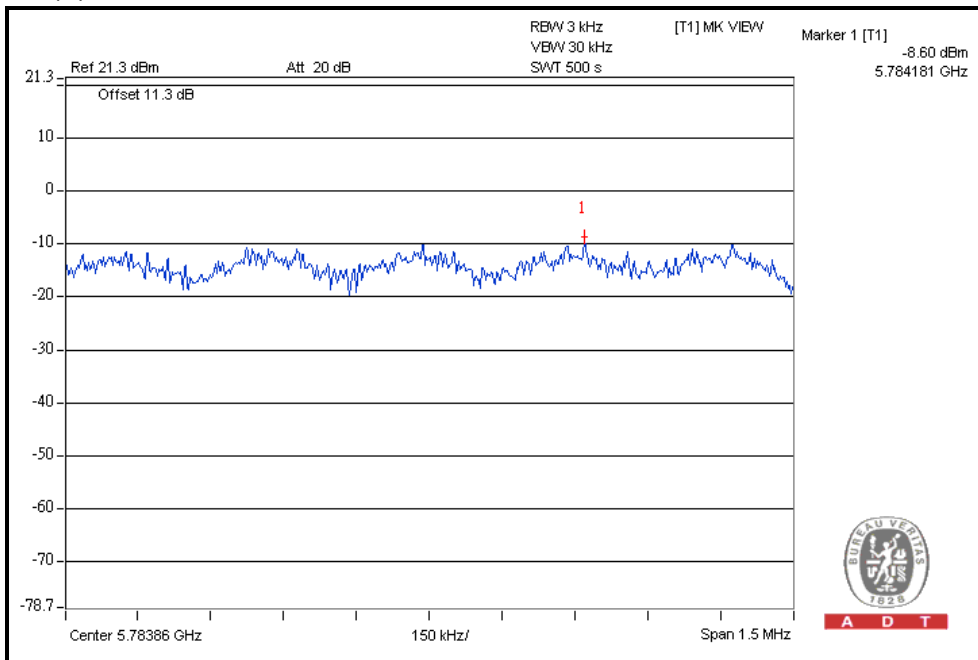
Note:

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2]$$

$$\text{Effective Legacy Gain (dBi)} = 7$$

The effective legacy gain is 7dBi, therefore the limit needs to reduce.

For Chain(1): CH157



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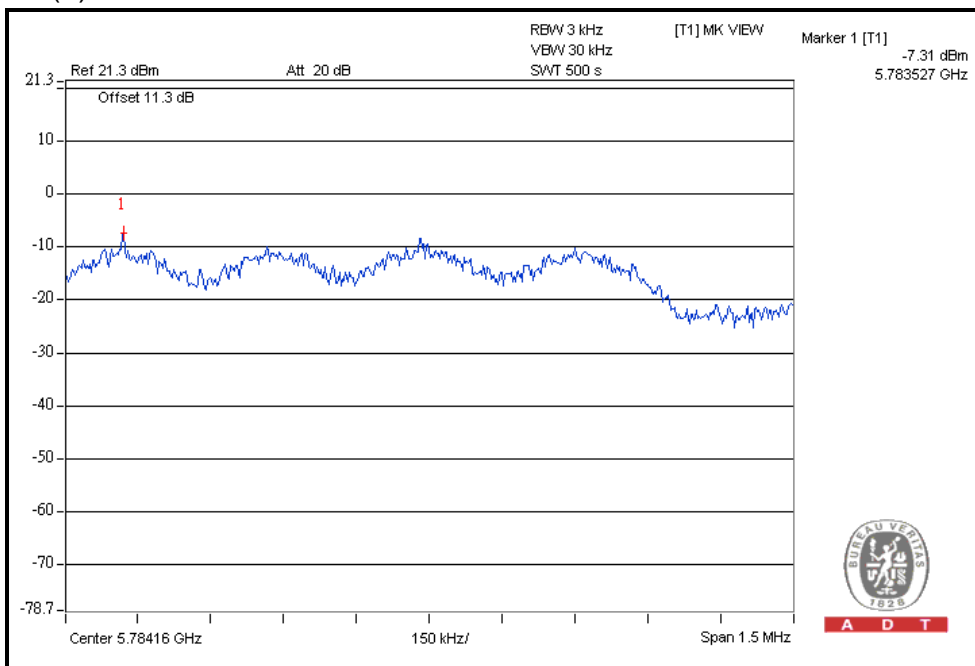


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802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
149	5745	-9.7	-7.5	-5.5	8	PASS
157	5785	-8.3	-7.3	-4.8	8	PASS
165	5825	-10.3	-8.4	-6.2	8	PASS

For Chain(1): CH157



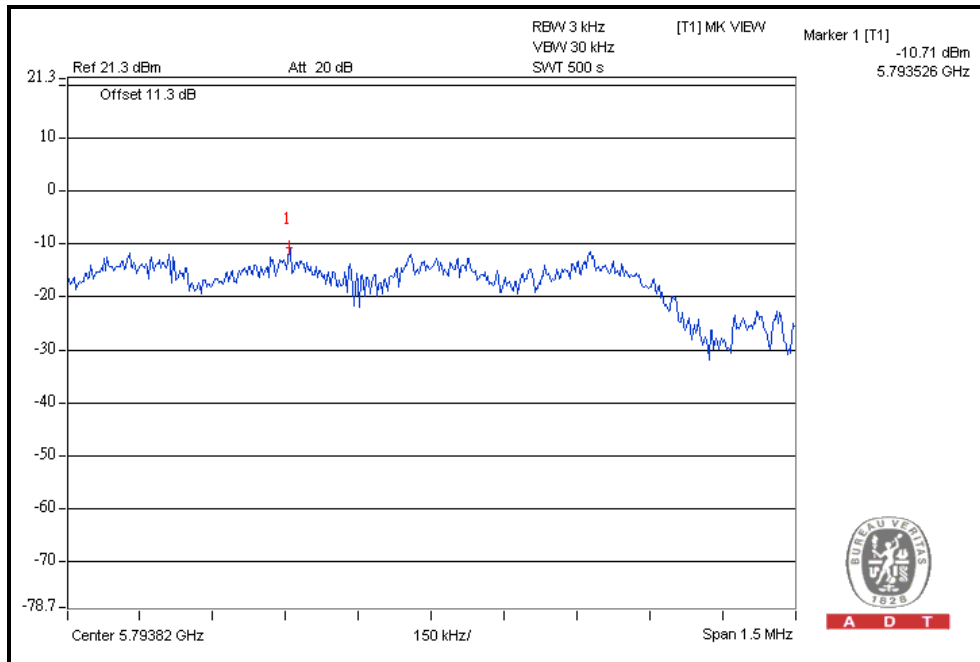


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802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)		TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)			
151	5755	-11.1	-11.0	-8.0	8	PASS
159	5795	-10.7	-11.3	-8.0	8	PASS

For Chain(0): CH159



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5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

5.6.2 TEST INSTRUMENTS

Test date: Sep. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011

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

5.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set RBW of spectrum analyzer to 100 kHz with suitable frequency span including 100MHz or 200MHz bandwidth from band edge. The band edges was measured and recorded.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

5.6.6 TEST RESULTS

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

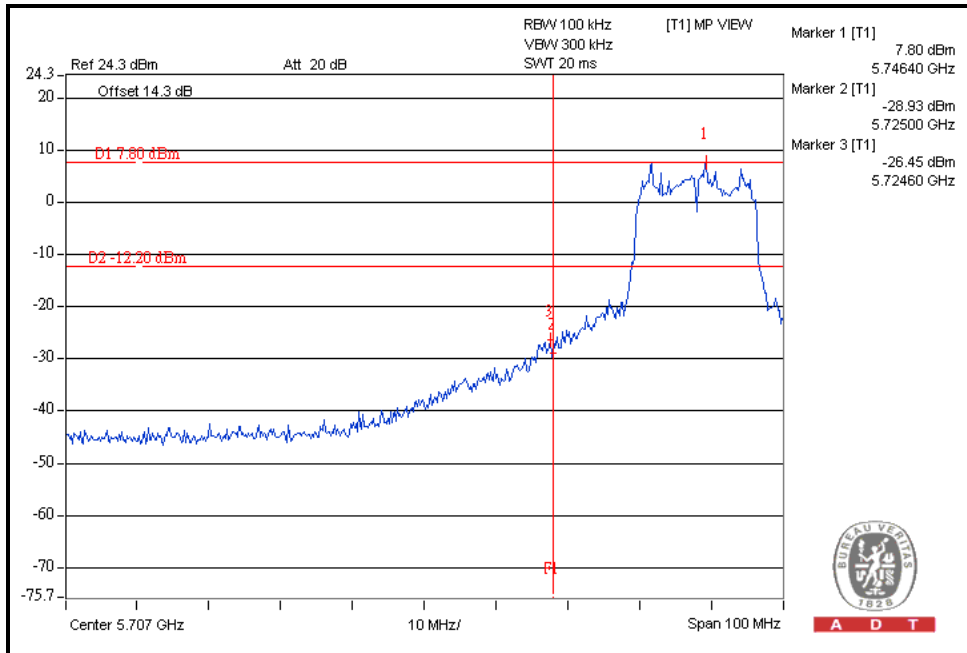


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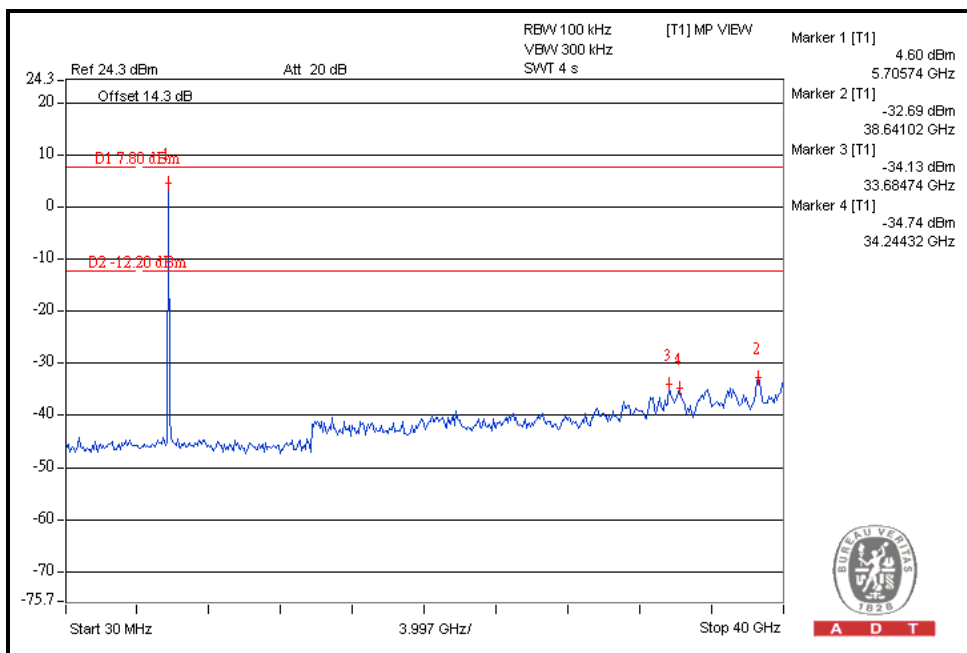
Performing measurements: Measure and add 10 log(N) dB

802.11a OFDM modulation

CH149



A D T

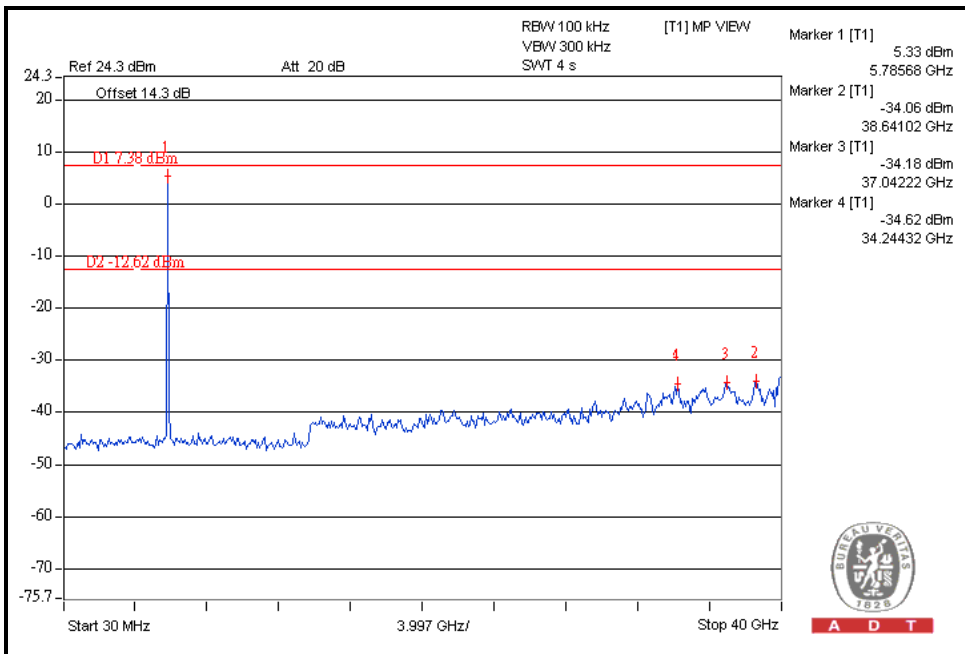
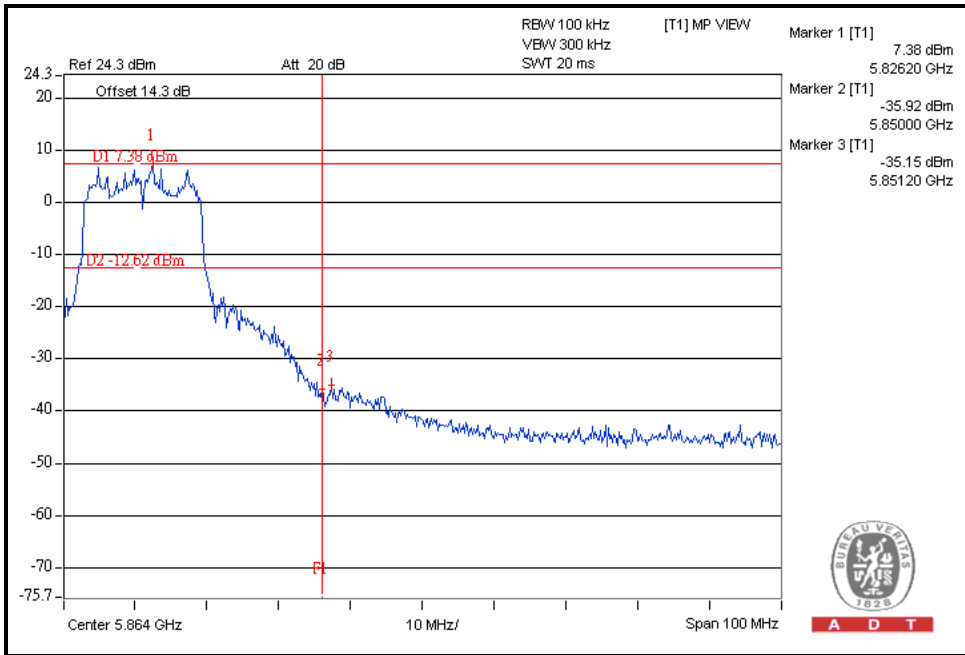


A D T



A D T

CH165

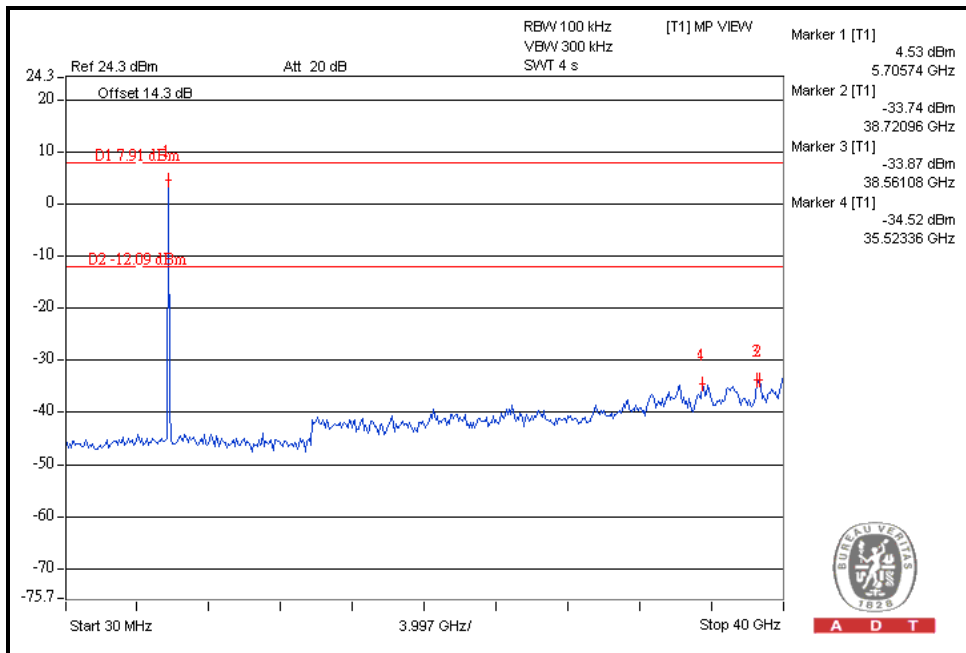
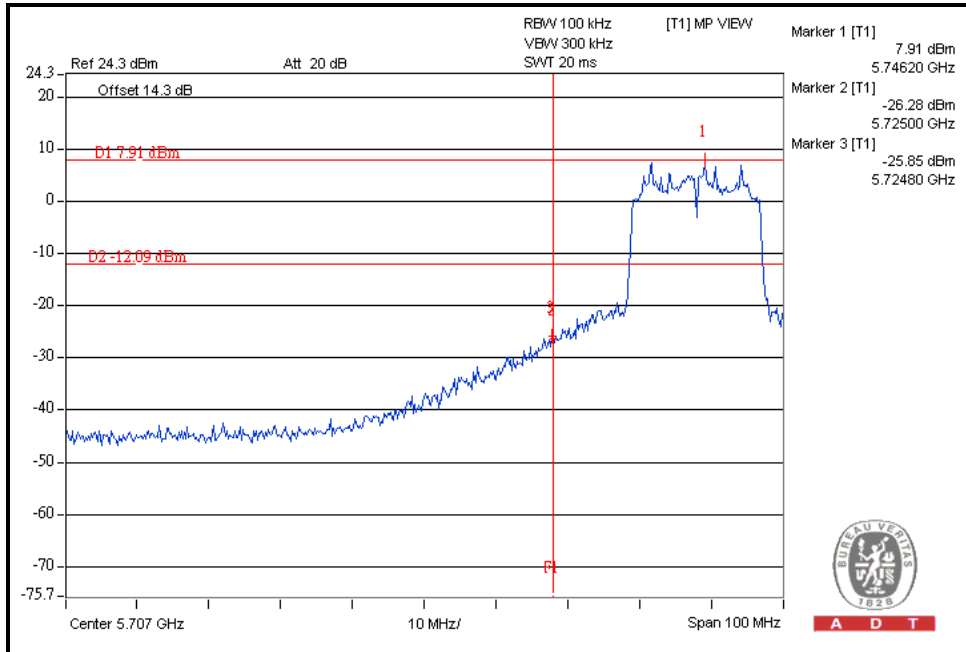




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802.11n (20MHz) OFDM MODULATION:

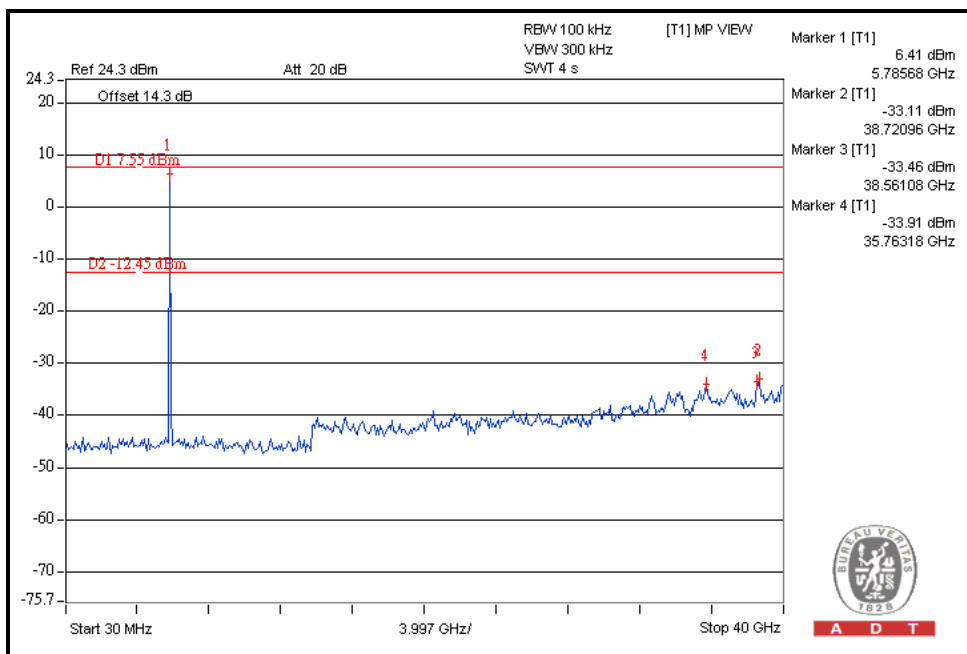
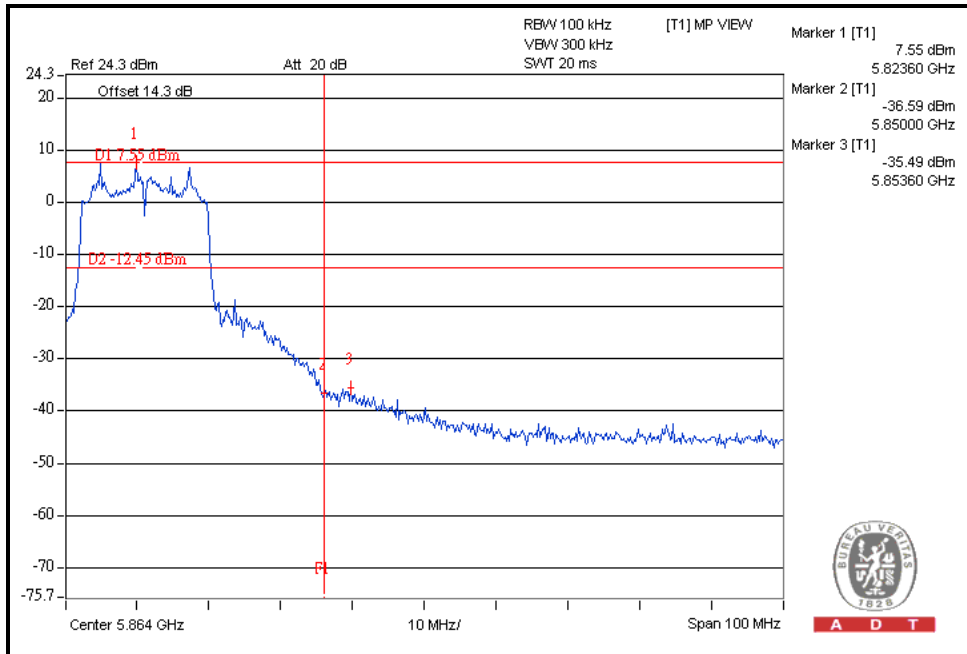
CH149





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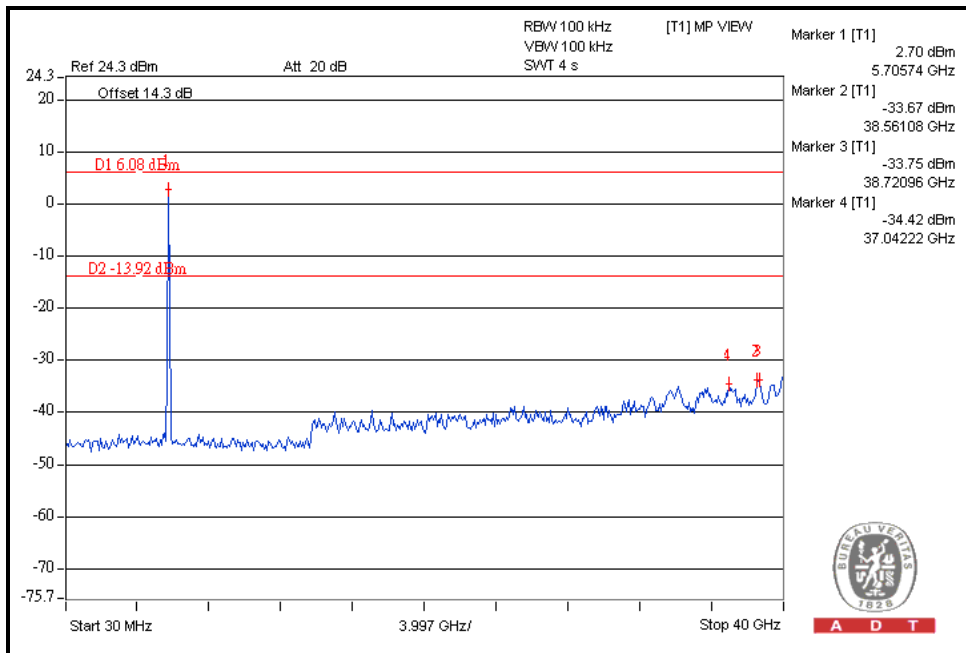
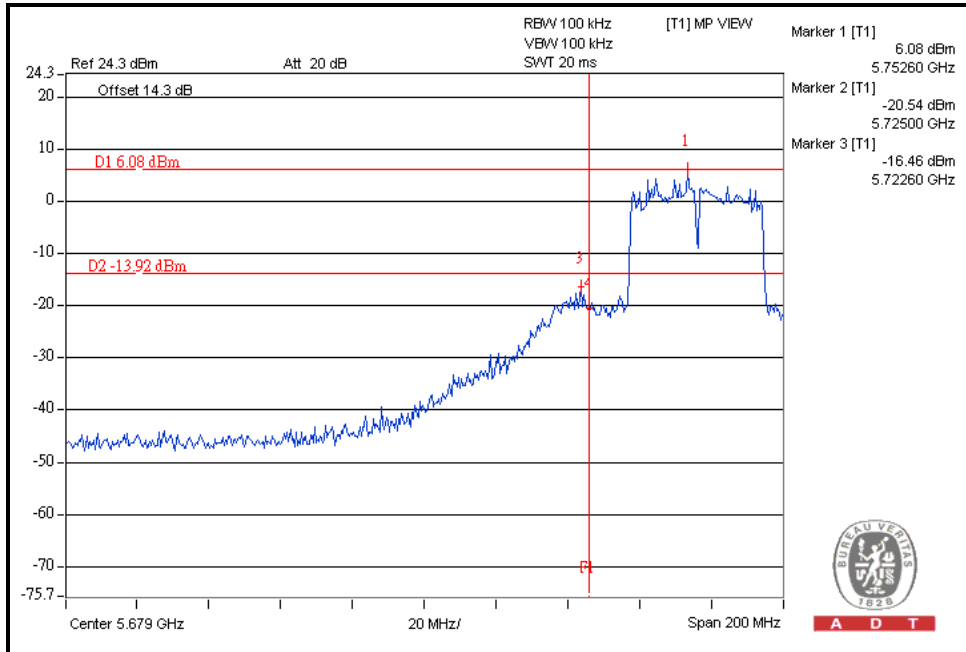
CH165





A D T

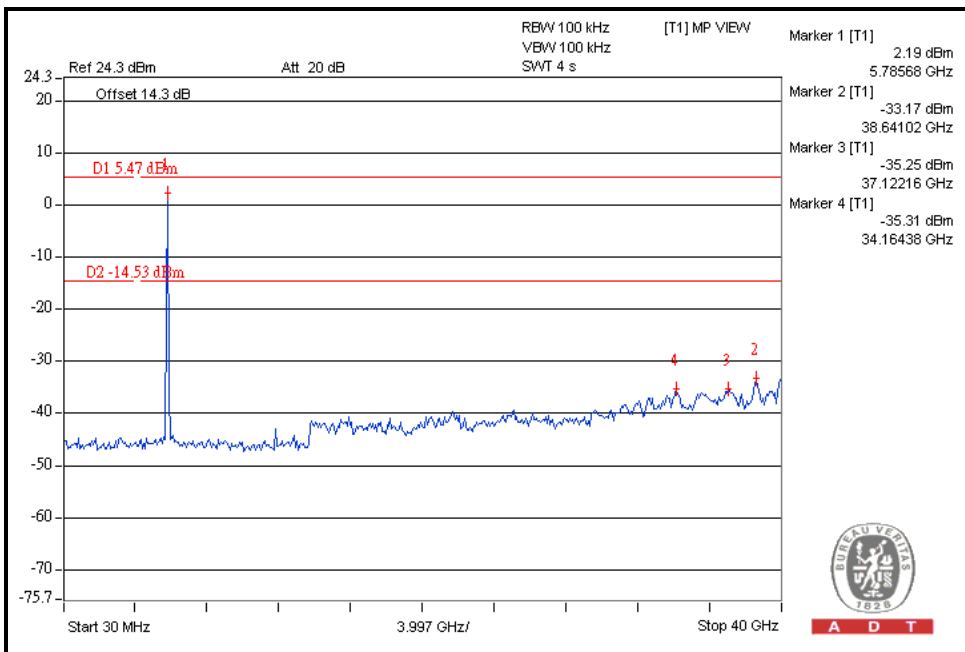
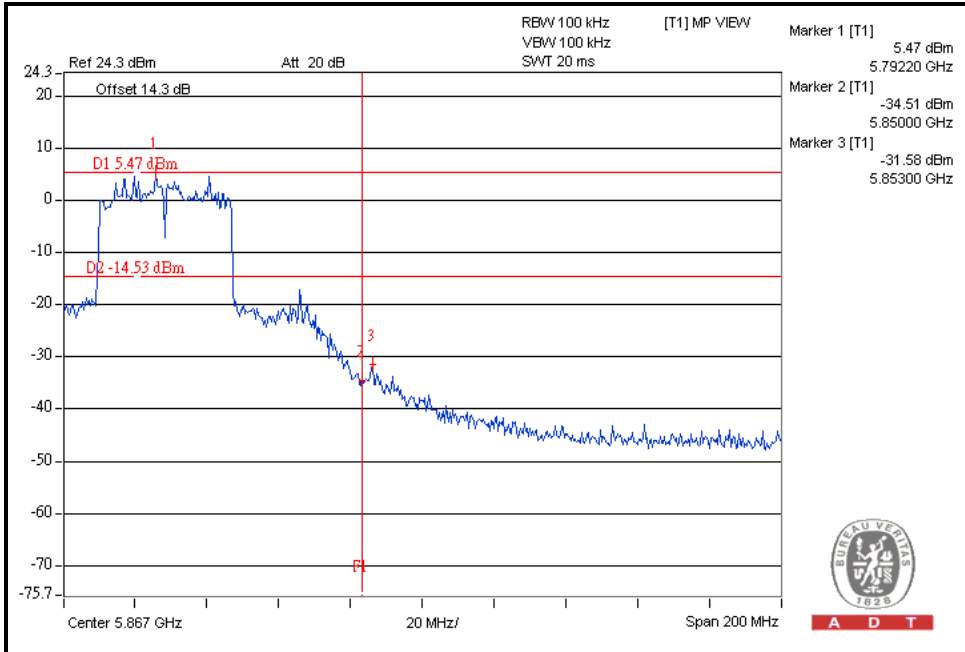
802.11n (40MHz) OFDM MODULATION: CH151





A D T

CH159





6. 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.



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7.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 ---