

FCC TEST REPORT (15.407)

REPORT NO.: RF991230E02-1 R1

MODEL NO.: RT3572

FCC ID: N89-RT3572

RECEIVED: Dec. 30, 2010

TESTED: Jan. 07 to 10, 2011

ISSUED: Mar. 22, 2011

APPLICANT: CyberTAN Technology, Inc.

ADDRESS: No. 99, Park Avenue III, Science-based
Industrial Park, Hsinchu, Taiwan 308,R.O.C.

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

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

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

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

This test report consists of 96 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agency. The test results in the report only apply to the tested sample.



Table of Contents

RELEASE CONTROL RECORD.....	4
1. CERTIFICATION.....	5
2. SUMMARY OF TEST RESULTS.....	6
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT.....	8
3.2 DESCRIPTION OF TEST MODES.....	11
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:	12
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	14
3.4 DESCRIPTION OF SUPPORT UNITS.....	15
3.5 CONFIGURATION OF SYSTEM UNDER TEST	15
4. TEST TYPES AND RESULTS.....	16
4.1 CONDUCTED EMISSION MEASUREMENT	16
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	16
4.1.2 TEST INSTRUMENTS	16
4.1.3 TEST PROCEDURES.....	17
4.1.4 DEVIATION FROM TEST STANDARD	17
4.1.5 TEST SETUP	17
4.1.6 EUT OPERATING CONDITIONS.....	18
4.1.7 TEST RESULTS.....	19
4.2 RADIATED EMISSION MEASUREMENT	21
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT.....	21
4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS.....	22
4.2.3 TEST INSTRUMENTS	23
4.2.4 TEST PROCEDURES.....	25
4.2.5 DEVIATION FROM TEST STANDARD	25
4.2.6 TEST SETUP	26
4.2.7 EUT OPERATING CONDITION	26
4.2.8 TEST RESULTS (Dipole antenna)	27
4.2.9 TEST RESULTS (PIFA antenna).....	48
4.3 OUTPUT TRANSMIT POWER MEASUREMENT	69
4.3.1 LIMITS OF OUTPUT TRANSMIT POWER MEASUREMENT.....	69
4.3.2 TEST INSTRUMENTS	69
4.3.3 TEST PROCEDURE	69
4.3.4 DEVIATION FROM TEST STANDARD	69
4.3.5 TEST SETUP	70
4.3.6 EUT OPERATING CONDITIONS.....	70
4.3.7 TEST RESULTS.....	71
4.4 PEAK POWER EXCURSION MEASUREMENT	77
4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT.....	77
4.4.2 TEST INSTRUMENTS	77
4.4.3 TEST PROCEDURE	77
4.4.4 DEVIATION FROM TEST STANDARD	77
4.4.5 TEST SETUP	77
4.4.6 EUT OPERATING CONDITIONS.....	77
4.4.7 TEST RESULTS.....	78



A D T

4.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	81
4.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	81
4.5.2	TEST INSTRUMENTS	81
4.5.3	TEST PROCEDURES	81
4.5.4	DEVIATION FROM TEST STANDARD	81
4.5.5	TEST SETUP	81
4.5.6	EUT OPERATING CONDITIONS	81
4.5.7	TEST RESULTS	82
4.6	FREQUENCY STABILITY	85
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	85
4.6.2	TEST INSTRUMENTS	85
4.6.3	TEST PROCEDURE	85
4.6.4	DEVIATION FROM TEST STANDARD	86
4.6.5	TEST SETUP	86
4.6.6	EUT OPERATING CONDITION	86
4.6.7	TEST RESULTS	87
4.7	CONDUCTED OUT-BAND EMISSION MEASUREMENT	88
4.7.1	TEST INSTRUMENTS	88
4.7.2	TEST PROCEDURE	88
4.7.3	EUT OPERATING CONDITION	88
4.7.4	TEST RESULTS	88
5.	INFORMATION ON THE TESTING LABORATORIES	95
6.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	96



RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	NA	Mar. 18, 2011
RF991230E02-1 R1	Modified the product name and model name of EUT	Mar. 22, 2011

1. CERTIFICATION

PRODUCT: WLAN Dual Band 802.11 a/b/g/n module
BRAND NAME: CyberTAN
MODEL NO.: RT3572
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Jan. 07 to 10, 2011
APPLICANT: CyberTAN Technology, Inc.
STANDARDS: FCC Part 15, Subpart E (Section 15.407)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: RT3572) 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 : Carol Liao , **DATE:** Mar. 22, 2011
(Carol Liao, Specialist)

APPROVED BY : May Chen , **DATE:** Mar. 22, 2011
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

[For 802.11a](#)

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	Test Type	Result	Remark
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -18.55dB at 4.047MHz
15.407(b)(1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -3.3dB at 5128.30MHz
15.407(a)(1/2/3)	Output Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is I-PEX connector.

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 5.15~5.25GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz RF parameters was recorded in another test report.



A D T

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) – Chamber G	3.30 dB
Radiated emissions (1GHz -18GHz) – Site C	2.49 dB
Radiated emissions (18GHz -40GHz) – Site C	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	WLAN Dual Band 802.11 a/b/g/n module
MODEL NO.	RT3572
FCC ID	N89-RT3572
POWER SUPPLY	DC 5V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11a/g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps 802.11b: 11 / 5.5 / 2 / 1Mbps 802.11n (20MHz, 800ns GI): 130 / 117 / 104 / 78 / 52 / 39 / 26 / 13 / 6.5 / 5.5 / 5.0 / 4.5 / 4.0 / 3.5 / 3.0 / 2.5 / 2.0 / 1.5 / 1.0 / 0.5 / 0.2 / 0.1Mbps 802.11n (40MHz, 800ns GI): 270 / 243 / 216 / 162 / 108 / 81 / 54 / 27 / 13.5 / 12.15 / 10.8 / 8.1 / 5.4 / 4.05 / 3.6 / 3.0 / 2.7 / 2.25 / 2.0 / 1.5 / 1.0 / 0.5 / 0.2 / 0.1Mbps
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
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)



A D T

MAXIMUM OUTPUT POWER	For 15.407 802.11a: 29.5mW 802.11n (20MHz): 27.7mW 802.11n (40MHz): 38.1mW For 15.247(2.4GHz) 802.11b: 151.4mW 802.11g: 229.1mW 802.11n (20MHz): 368.2mW 802.11n (40MHz): 209.5mW For 15.247(5GHz) 802.11a: 169.8mW 802.11n (20MHz): 302.8mW 802.11n (40MHz): 279.3mW
ANTENNA TYPE	Please see note
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

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

Set 1									
Transmitter Circuit	Antenna Type	Antenna Connector	Antenna Gain (dBi)		Cable Loss (dB)		Net Gain (dBi)		Frequency range
			2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz	
Chain(0)	Dipole	I-PEX	6.27	5.63	0.27	0.42	6	5.21	2.4GHz & 5GHz
Chain(1)	Dipole	I-PEX	6.27	5.63	0.27	0.42	6	5.21	
Set 2									
Transmitter Circuit	Antenna Type	Antenna Connector	Antenna Gain (dBi)		Cable Loss (dB)		Net Gain (dBi)		Frequency range
			2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz	
Chain(0)	Metal PIFA	I-PEX	5.48	5.55	0.27	0.42	5.21	5.13	2.4GHz & 5GHz
Chain(1)	Metal PIFA	I-PEX	5.48	5.55	0.27	0.42	5.21	5.13	
Set 3									
Transmitter Circuit	Antenna Type	Antenna Connector	Antenna Gain (dBi)		Cable Loss (dB)		Net Gain (dBi)		Frequency range
			2.4GHz	5GHz	2.4GHz	5GHz	2.4GHz	5GHz	
Chain(0)	Dipole	I-PEX	6.27	5.63	0.27	0.42	6	5.21	2.4GHz & 5GHz
Chain(1)	Metal PIFA	I-PEX	5.48	5.55	0.27	0.42	5.21	5.13	

From the above antennas, the worst cases were found in set 1 & set 2. Therefore only the test data of the mode was recorded in this report individually.

2. The EUT incorporates a MIMO function with 802.11n.
3. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function. The 11a, 11b & 11g legacy mode is limited to single transmitter only.
4. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 5150MHz ~ 5250MHz bands:

Four channels are provided for 802.11a and 802.11n (20MHz):

CHANNEL	FREQUENCY
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz

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

CHANNEL	FREQUENCY
38	5190 MHz
46	5230 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	
1	√	√	√	√	With antenna set 1
2		√	√		With antenna set 2

Where **PLC**: Power Line Conducted Emission

RE < 1G: Radiated Emission below 1GHz

RE ≥ 1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN (0)	TX CHAIN (1)
A	802.11 a	√	
B	802.11 a		√
C	802.11n (20MHz) for MCS0~15	√	√
D	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
Worst Channel	-	-	-	-	-	-

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11n (40MHz)	38 to 46	38	OFDM	BPSK	13.5	D

RADIATED EMISSION TEST (ABOVE 1 GHZ):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6	A
802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	6.5	C
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5	D

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
802.11a	36 to 48	36, 48	OFDM	BPSK	6	A
802.11n (20MHz)	36 to 48	36, 48	OFDM	BPSK	6.5	C
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5	D

※ Conducted out band emission as show worst chain in report base on preliminary measurement.

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
802.11a	36 to 48	36, 40, 48	OFDM	BPSK	6	A
802.11n (20MHz)	36 to 48	36, 40, 48	OFDM	BPSK	6.5	C
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5	D

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE ³ 1G	15deg. C, 64%RH, 1013 hPa	120Vac, 60Hz	Frank Liu
RE<1G	14deg. C, 66%RH, 1013 hPa	120Vac, 60Hz	Eric Lee
PLC	20deg. C, 60%RH, 1013 hPa	120Vac, 60Hz	Eric Lee
APCM	25deg. C, 60%RH, 1015 hPa	120Vac, 60Hz	Kent Liu

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 E (15.407)

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.

3.4 DESCRIPTION OF SUPPORT UNITS

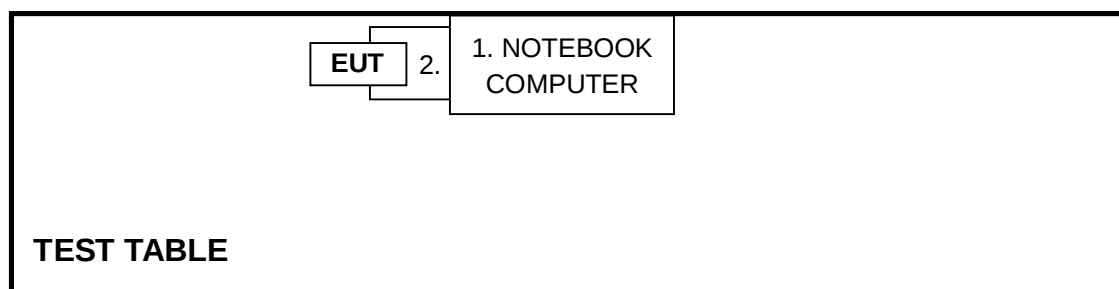
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER (conducted test)	DELL	PP32LA	DSLB32S	FCC DoC
	NOTEBOOK COMPUTER (others test)	DELL	PP17L	CN-ONF743-48643- 7AV-0124	FCC DoC
2	TEST TOOL	CyberTAN	NA	NA	NA

No.	Signal cable description
1	NA
2	NA

Note: The power cords of the above support units were unshielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2010	Mar. 08, 2011
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	Nov. 03, 2010	Nov. 02, 2011
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
- 3 The VCCI Con C Registration No. is C-3611.

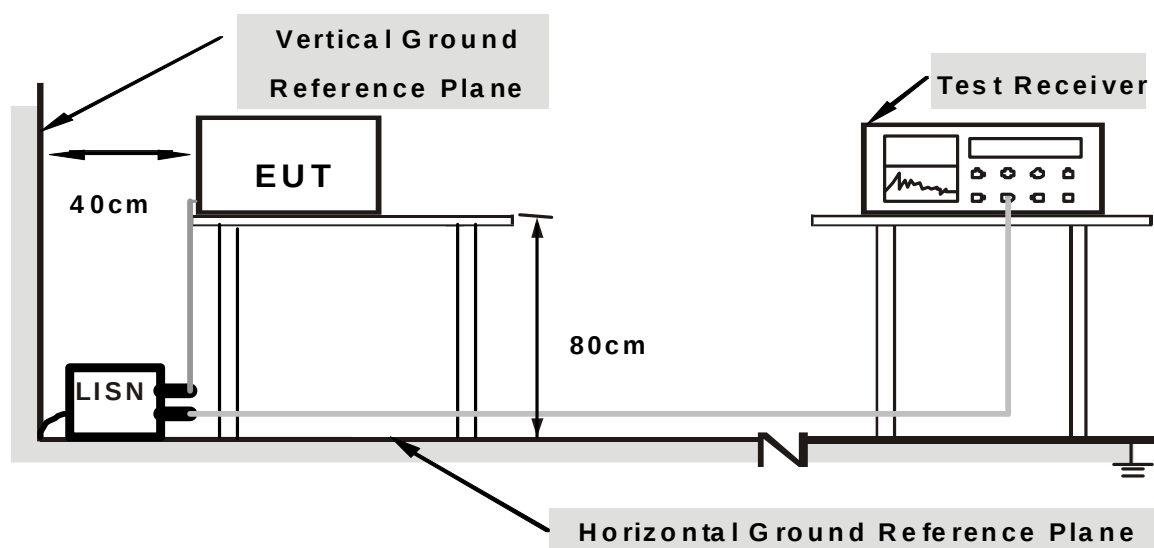
4.1.3 TEST PROCEDURES

- 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.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission level under (Limit – 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

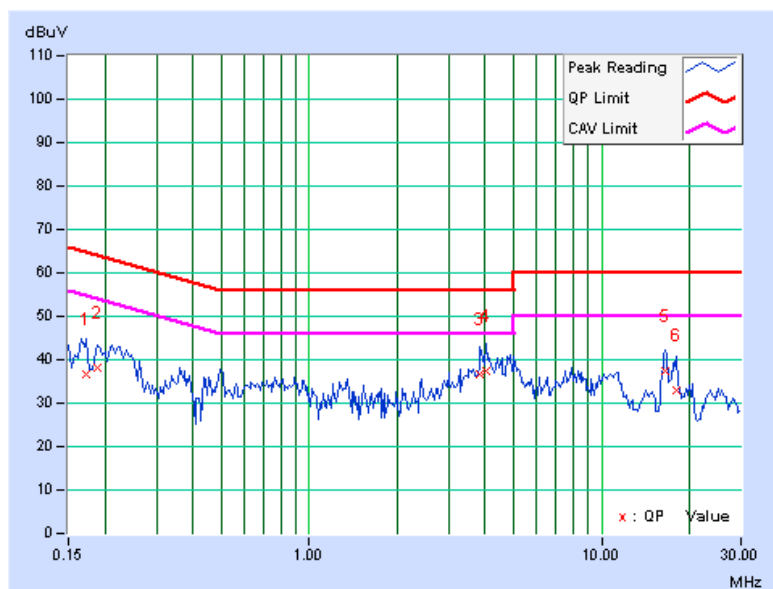
1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed in test table.
2. The support unit 1 (Notebook Computer) runs test program “RT3x7xQA.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
-------	----------	---------------	-------

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	0.173	0.12	36.73	-	36.85	-	64.79	54.79	-27.95	-
2	0.189	0.12	37.91	-	38.03	-	64.08	54.08	-26.04	-
3	3.852	0.20	36.32	-	36.52	-	56.00	46.00	-19.48	-
4	4.047	0.20	37.25	-	37.45	-	56.00	46.00	-18.55	-
5	16.531	0.59	36.73	-	37.32	-	60.00	50.00	-22.68	-
6	17.973	0.62	32.31	-	32.93	-	60.00	50.00	-27.07	-

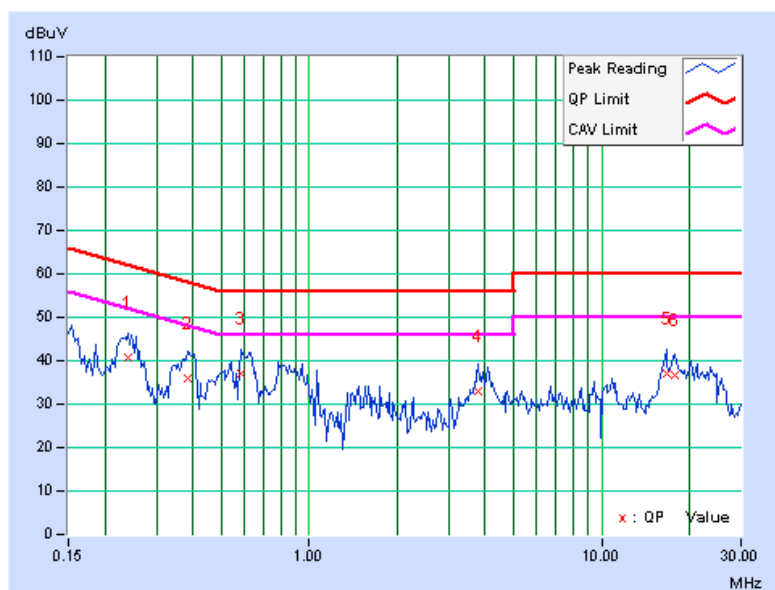
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
-------	-------------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.240	0.14	40.54	-	40.68	-	62.10	52.10	-21.42	-
2	0.384	0.15	35.73	-	35.88	-	58.18	48.18	-22.31	-
3	0.588	0.15	36.88	-	37.03	-	56.00	46.00	-18.97	-
4	3.766	0.27	32.62	-	32.89	-	56.00	46.00	-23.11	-
5	16.641	1.22	35.74	-	36.96	-	60.00	50.00	-23.04	-
6	17.742	1.28	35.42	-	36.70	-	60.00	50.00	-23.30	-

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
4. Section 15.205 restricted bands of operation shall compliance with the limits in Section 15.209.

4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

4.2.3 TEST INSTRUMENTS

Below 1GHz test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 2011
Agilent Pre-Selector	N9039A	MY46520311	July 14, 2010	July 13, 2011
Agilent Signal Generator	N5181A	MY49060517	July 14, 2010	July 13, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02578	July 05, 2010	July 04, 2011
Miteq Pre-Amplifier	AFS33-1800265 0-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 29, 2010	Apr. 28, 2011
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 12, 2010	Nov. 11, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.

**A D T****Above 1GHz test:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 08, 2010	Dec. 07, 2011
Agilent PSA Spectrum Analyzer	E4446A	MY46180622	May 12 , 2010	May 11 , 2011
HP Pre_Amplifier	8449B	300801923	Nov. 01, 2010	Oct. 31, 2011
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Sep. 03, 2010	Sep. 02, 2011
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	Apr. 28, 2010	Apr. 27, 2011
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 17, 2010	Dec. 16, 2011
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2010	Jan. 21, 2011
R&S Loop Antenna	HFH2-Z2	100070	Feb. 03, 2010	Feb. 02, 2011
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+R F106-101	Aug. 24, 2010	Aug. 23, 2011
RF Cable	8DFB	STCCAB-30M- 1GHz	NA	NA
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in Open Site No. C.

4. The FCC Site Registration No. is 656396.

5. The VCCI Site Registration No. is R-1626.

6. The CANADA Site Registration No. is IC 7450G-3.

4.2.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room for below 1GHz and 10 meter open area test site for above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to 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:

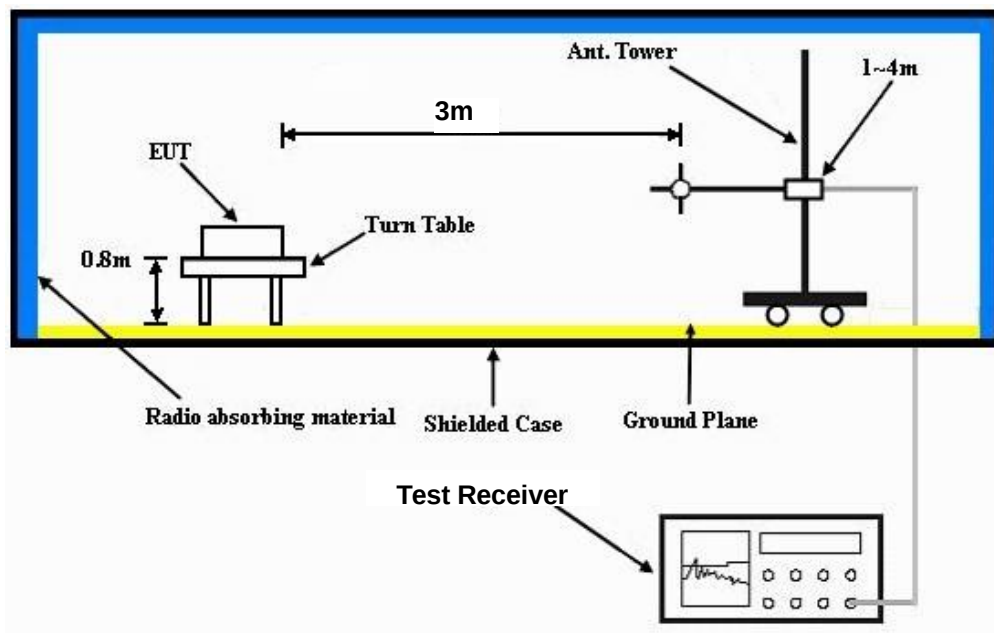
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.

4.2.5 DEVIATION FROM TEST STANDARD

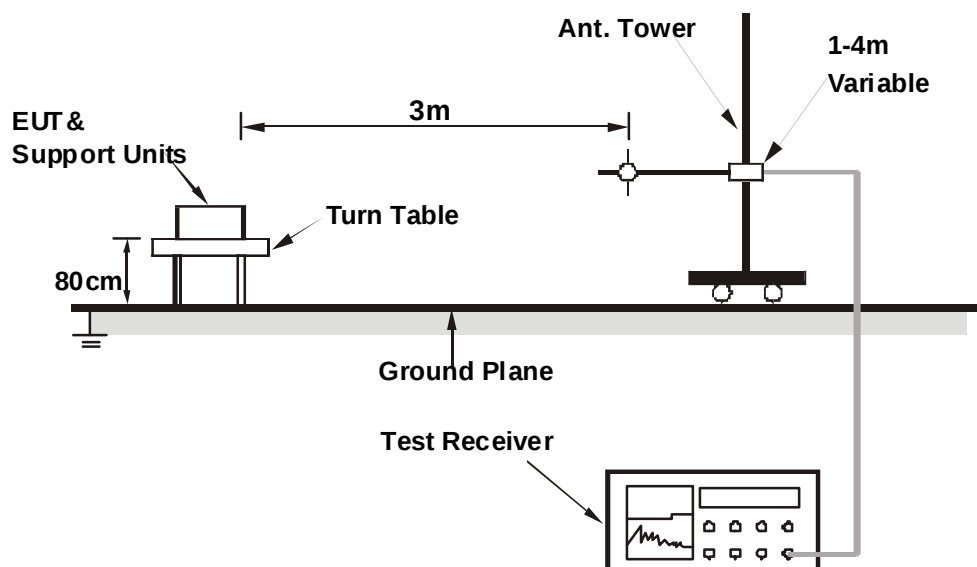
No deviation

4.2.6 TEST SETUP

Below 1GHz test:



Above 1GHz test:



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

4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

4.2.8 TEST RESULTS (DIPOLE ANTENNA)

BELOW 1GHz WORST-CASE DATA : 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	14deg. C, 66%RH 1013 hPa	TESTED BY	Eric Lee
TEST MODE	Dipole antenna		

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	279.65	37.2 QP	46.0	-8.9	1.25 H	10	22.52	14.63
2	285.33	37.4 QP	46.0	-8.6	1.00 H	323	22.55	14.86
3	300.12	39.9 QP	46.0	-6.1	1.00 H	42	24.43	15.46
4	309.55	39.7 QP	46.0	-6.4	1.00 H	25	23.98	15.67
5	320.10	39.6 QP	46.0	-6.4	2.00 H	23	23.67	15.90
6	327.40	36.5 QP	46.0	-9.5	1.50 H	109	20.48	16.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	145.21	28.6 QP	43.5	-14.9	1.00 V	163	14.57	14.00
2	299.86	35.5 QP	46.0	-10.5	1.50 V	340	20.02	15.45
3	311.12	34.3 QP	46.0	-11.8	1.50 V	360	18.55	15.70
4	320.39	35.6 QP	46.0	-10.4	1.50 V	360	19.71	15.91
5	698.73	32.4 QP	46.0	-13.6	1.00 V	160	8.79	23.65
6	898.96	33.4 QP	46.0	-12.6	1.25 V	171	6.64	26.78

- 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.



A D T

ABOVE 1GHz WORST-CASE DATA

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	15deg. C, 64%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

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	5150.00	64.3 PK	74.0	-9.7	1.14 H	268	22.78	41.52
2	5150.00	50.2 AV	54.0	-3.8	1.14 H	268	8.68	41.52
3	*5180.00	107.8 PK			1.40 H	272	66.24	41.56
4	*5180.00	98.3 AV			1.40 H	272	56.74	41.56
5	#10360.00	55.8 PK	68.3	-12.5	1.26 H	246	7.49	48.31
6	15540.00	59.1 PK	74.0	-14.9	1.06 H	257	6.12	52.98
7	15540.00	48.3 AV	54.0	-5.7	1.06 H	257	-4.68	52.98
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	5150.00	60.7 PK	74.0	-13.3	1.15 V	32	19.18	41.52
2	5150.00	48.8 AV	54.0	-5.2	1.15 V	32	7.28	41.52
3	*5180.00	104.7 PK			1.25 V	11	63.14	41.56
4	*5180.00	94.6 AV			1.25 V	11	53.04	41.56
5	#10360.00	59.4 PK	68.3	-8.9	1.16 V	30	11.09	48.31
6	15540.00	59.2 PK	74.0	-14.8	1.33 V	310	6.22	52.98
7	15540.00	48.1 AV	54.0	-5.9	1.33 V	310	-4.88	52.98

- 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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	15deg. C, 64%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

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	*5200.00	109.3 PK			1.16 H	270	67.71	41.59
2	*5200.00	99.4 AV			1.16 H	270	57.81	41.59
3	#10400.00	55.9 PK	68.3	-12.4	1.54 H	299	7.54	48.36
4	15600.00	59.3 PK	74.0	-14.7	1.27 H	106	6.22	53.08
5	15600.00	49.1 AV	54.0	-4.9	1.27 H	106	-3.98	53.08
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	*5200.00	105.3 PK			1.26 V	36	63.71	41.59
2	*5200.00	95.2 AV			1.26 V	36	53.61	41.59
3	#10400.00	59.2 PK	68.3	-9.1	1.15 V	60	10.84	48.36
4	15600.00	59.9 PK	74.0	-14.1	1.30 V	310	6.82	53.08
5	15600.00	48.7 AV	54.0	-5.3	1.30 V	310	-4.38	53.08

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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	15deg. C, 64%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

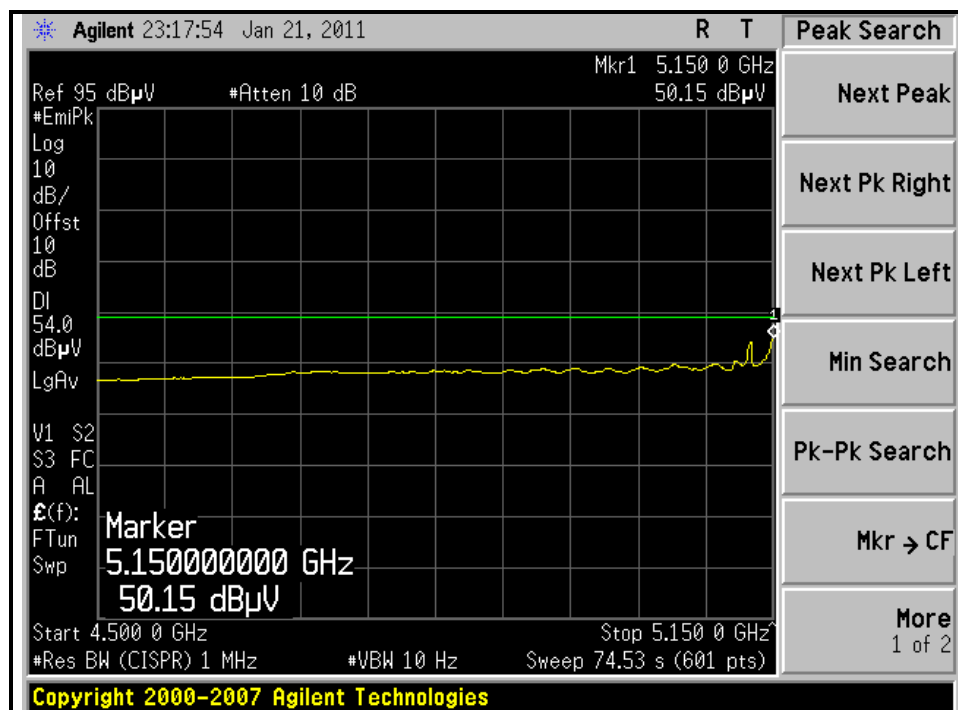
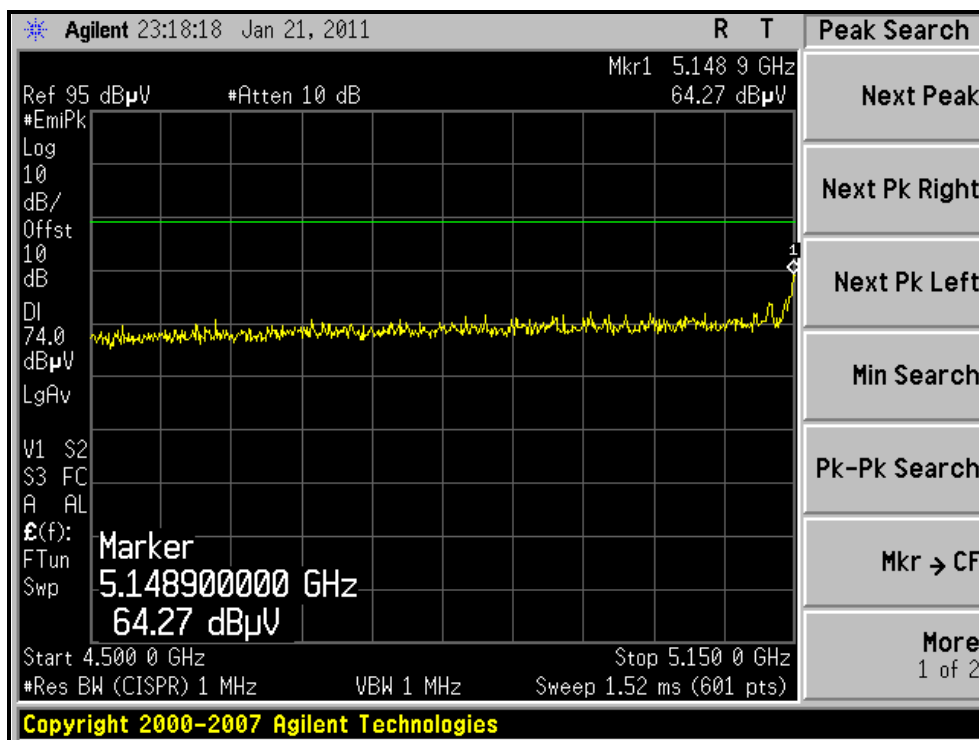
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	110.0 PK			1.21 H	240	68.35	41.65
2	*5240.00	99.5 AV			1.21 H	240	57.85	41.65
3	5366.90	57.8 PK	74.0	-16.2	1.21 H	240	15.96	41.84
4	5366.90	44.5 AV	54.0	-9.5	1.21 H	240	2.66	41.84
5	#10480.00	60.2 PK	68.3	-8.1	1.34 H	302	11.74	48.46
6	15720.00	60.2 PK	74.0	-13.8	1.00 H	144	6.94	53.26
7	15720.00	49.3 AV	54.0	-4.7	1.00 H	144	-3.96	53.26
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	*5240.00	106.3 PK			1.05 V	329	64.65	41.65
2	*5240.00	96.5 AV			1.05 V	329	54.85	41.65
3	5367.10	56.8 PK	74.0	-17.2	1.05 V	329	14.96	41.84
4	5367.10	43.7 AV	54.0	-10.3	1.05 V	329	1.86	41.84
5	#10480.00	59.3 PK	68.3	-9.0	1.39 V	311	10.84	48.46
6	15720.00	60.1 PK	74.0	-13.9	1.26 V	307	6.84	53.26
7	15720.00	48.9 AV	54.0	-5.1	1.26 V	307	-4.36	53.26

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 radiated frequency is out the restricted band.



A D T

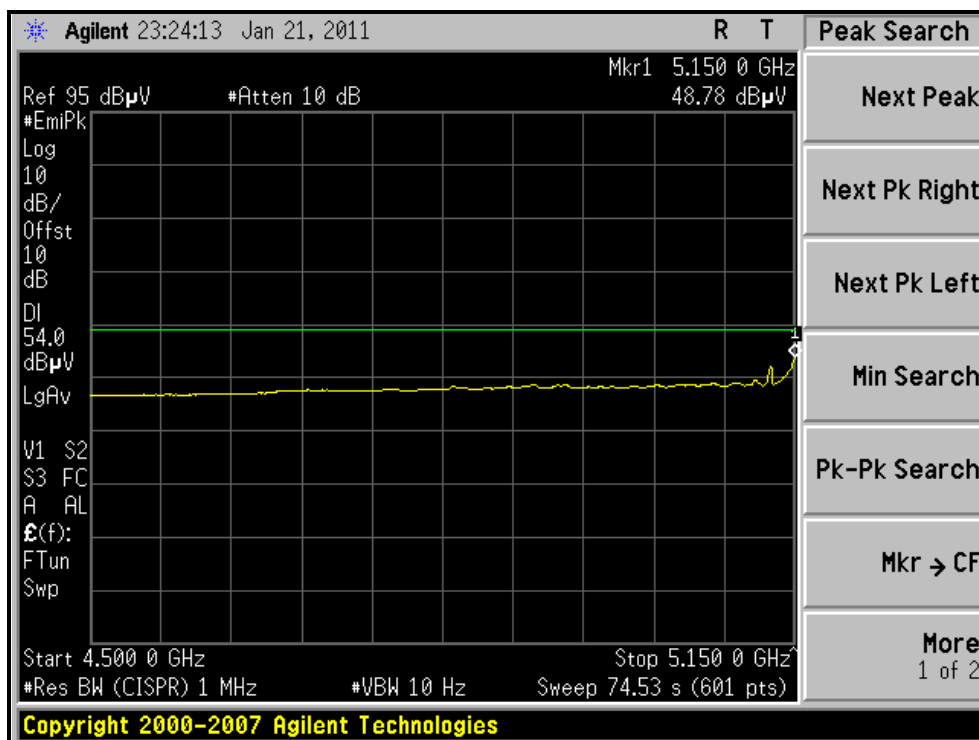
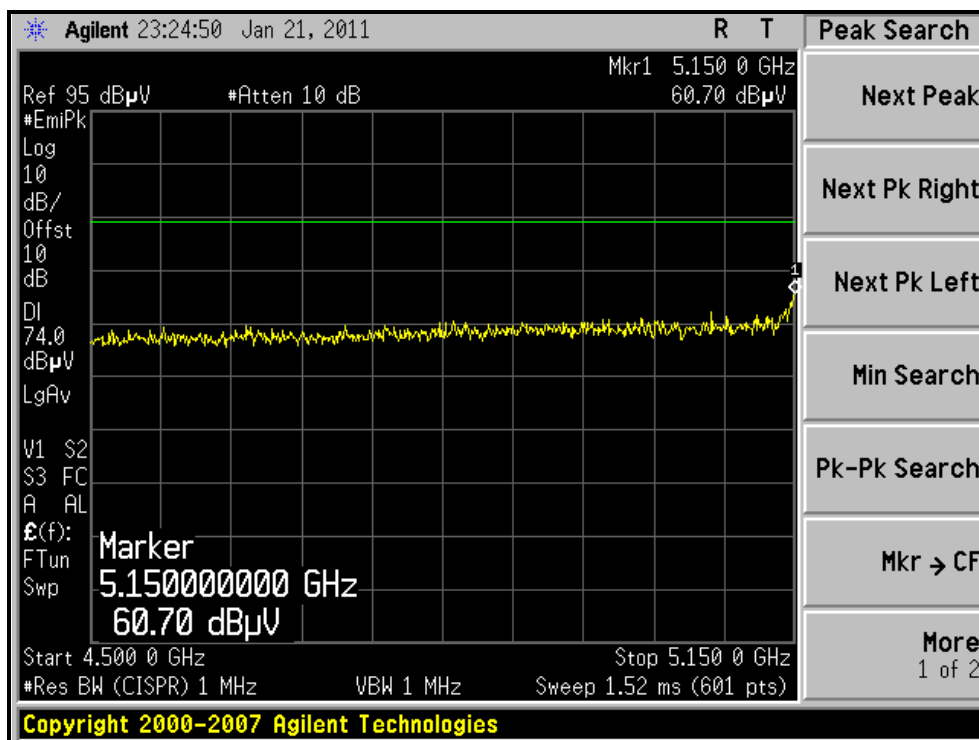
RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)





A D T

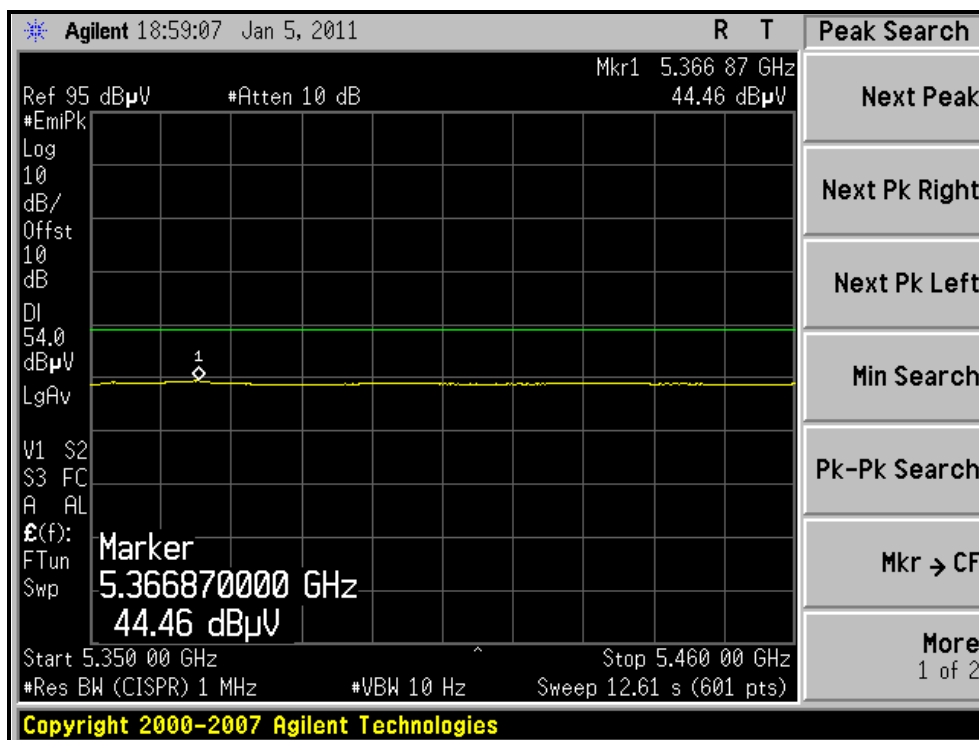
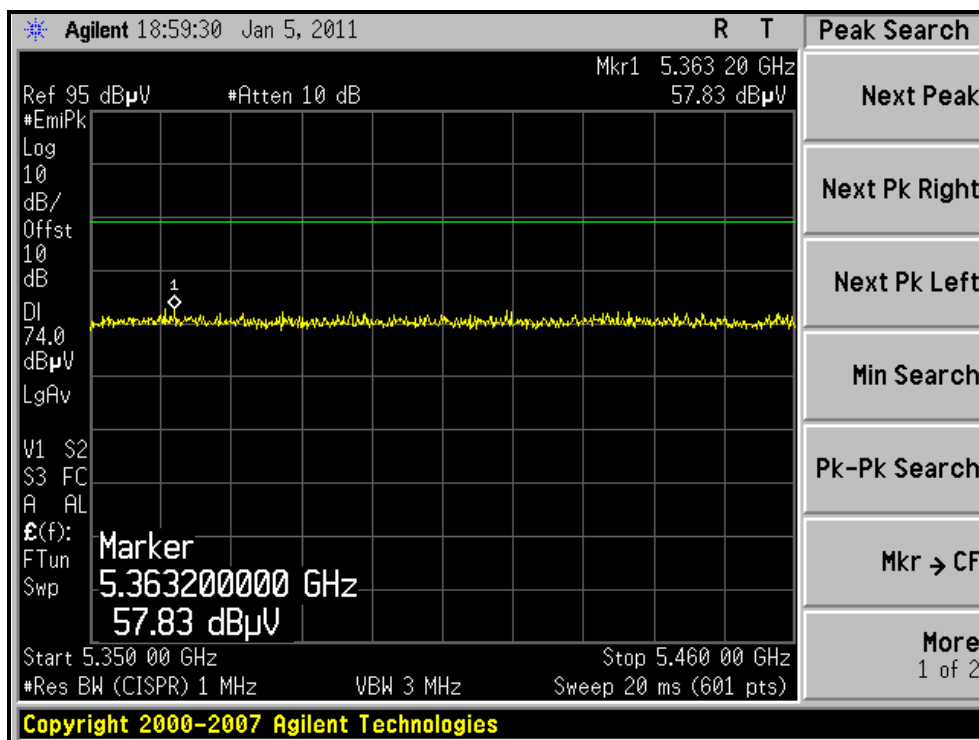
RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)





A D T

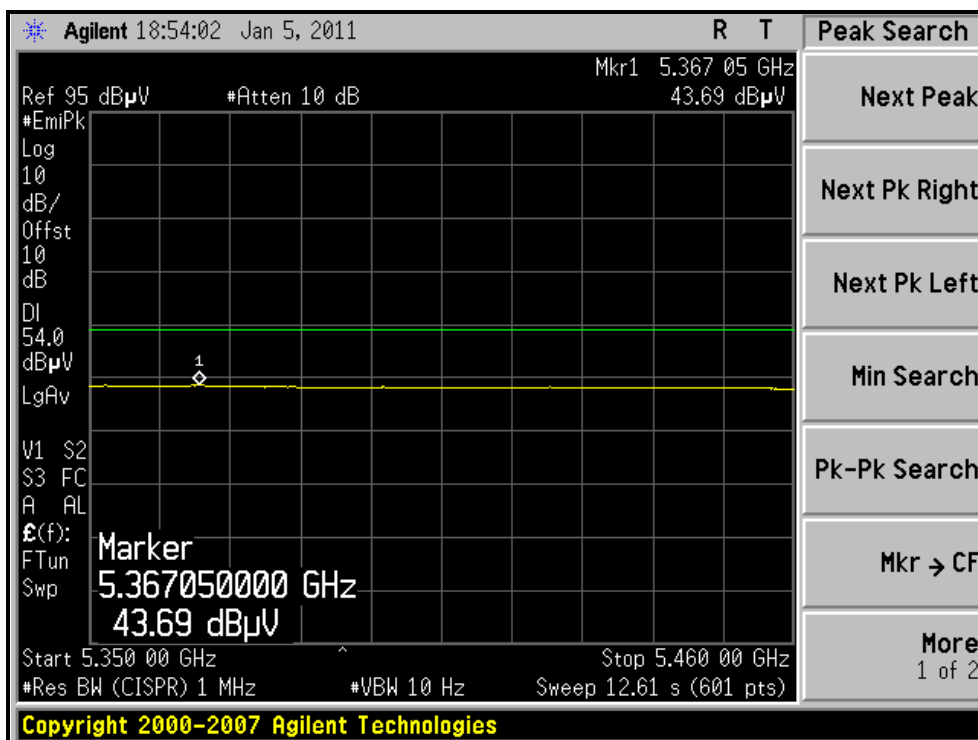
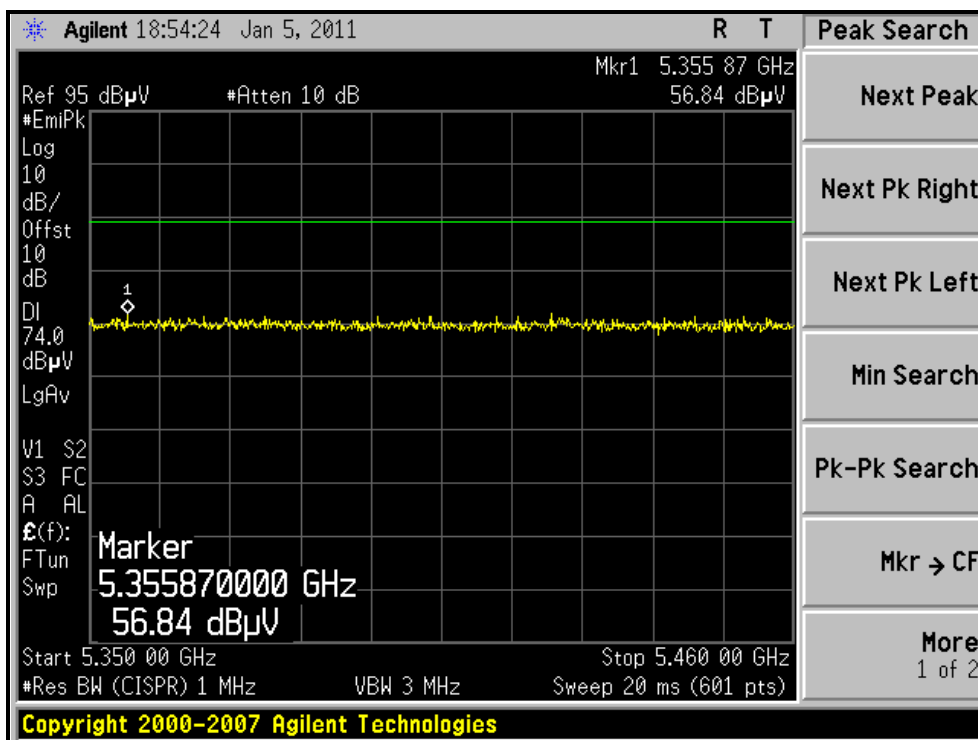
RESTRICTED BANDEDGE (802.11a MODE, CH48, HORIZONTAL)





A D T

RESTRICTED BANDEDGE (802.11a MODE, CH48, VERTICAL)





A D T

802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	15deg. C, 64%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

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	5128.30	62.3 PK	74.0	-11.7	1.15 H	269	20.82	41.48
2	5128.30	50.7 AV	54.0	-3.3	1.15 H	269	9.22	41.48
3	*5180.00	108.9 PK			1.38 H	270	67.34	41.56
4	*5180.00	97.1 AV			1.38 H	270	55.54	41.56
5	#10360.00	56.6 PK	68.3	-11.7	1.09 H	223	8.29	48.31
6	15540.00	58.8 PK	74.0	-15.2	1.00 H	201	5.82	52.98
7	15540.00	47.5 AV	54.0	-6.5	1.00 H	201	-5.48	52.98
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	5127.30	58.1 PK	74.0	-15.9	1.20 V	93	16.62	41.48
2	5127.30	47.4 AV	54.0	-6.6	1.20 V	93	5.92	41.48
3	*5180.00	106.3 PK			1.20 V	93	64.74	41.56
4	*5180.00	95.2 AV			1.20 V	93	53.64	41.56
5	#10360.00	54.1 PK	68.3	-14.2	1.19 V	200	5.79	48.31
6	15540.00	56.9 PK	74.0	-17.1	1.29 V	184	3.92	52.98
7	15540.00	46.3 AV	54.0	-7.7	1.29 V	184	-6.68	52.98

- 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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	15deg. C, 64%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

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	*5200.00	108.5 PK			1.24 H	241	66.91	41.59
2	*5200.00	97.2 AV			1.24 H	241	55.61	41.59
3	#10400.00	56.3 PK	68.3	-12.0	1.33 H	287	7.94	48.36
4	15600.00	58.9 PK	74.0	-15.1	1.10 H	197	5.82	53.08
5	15600.00	47.9 AV	54.0	-6.1	1.10 H	197	-5.18	53.08
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	*5200.00	107.2 PK			1.22 V	88	65.61	41.59
2	*5200.00	96.1 AV			1.22 V	88	54.51	41.59
3	#10400.00	55.1 PK	68.3	-13.2	1.30 V	200	6.74	48.36
4	15600.00	57.0 PK	74.0	-17.0	1.32 V	83	3.92	53.08
5	15600.00	46.4 AV	54.0	-7.6	1.32 V	83	-6.68	53.08

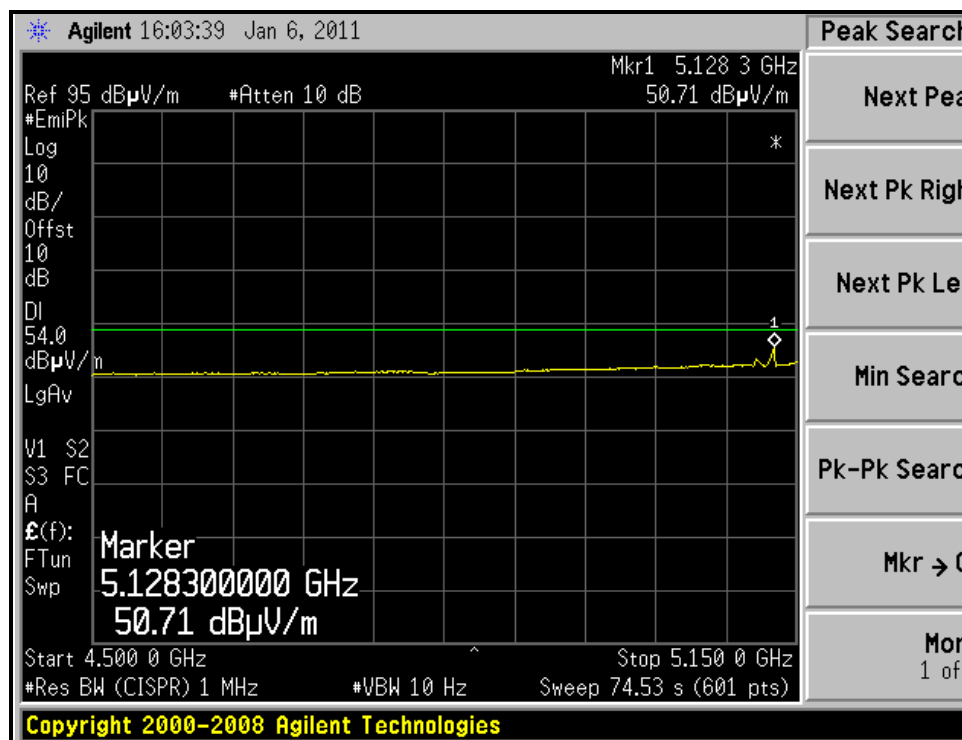
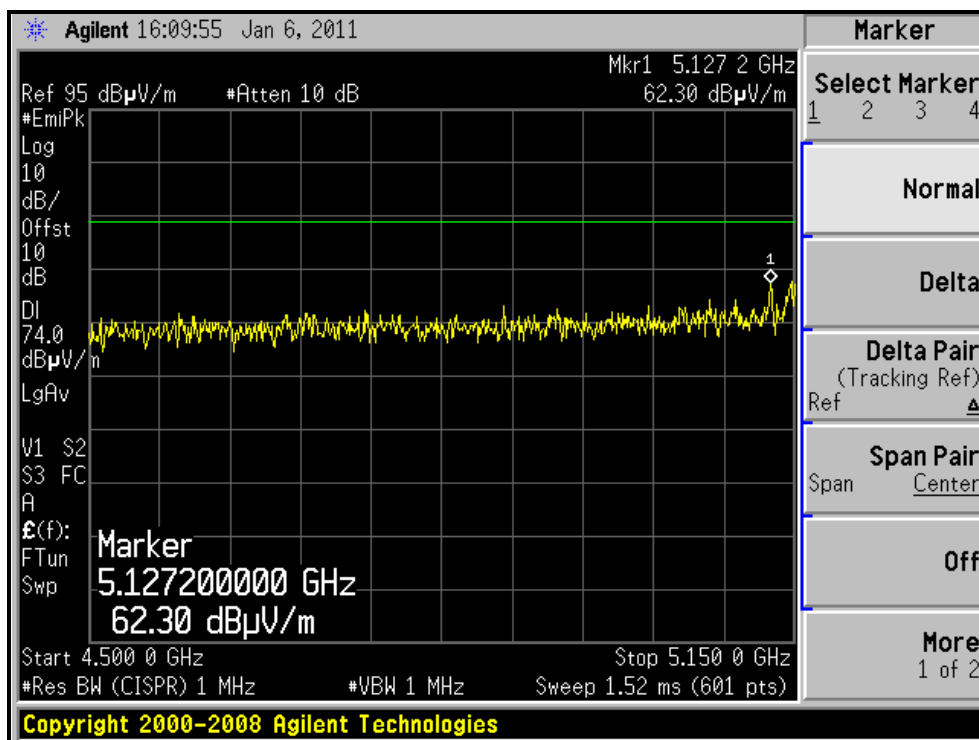
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * ”: Fundamental frequency.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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	15deg. C, 64%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

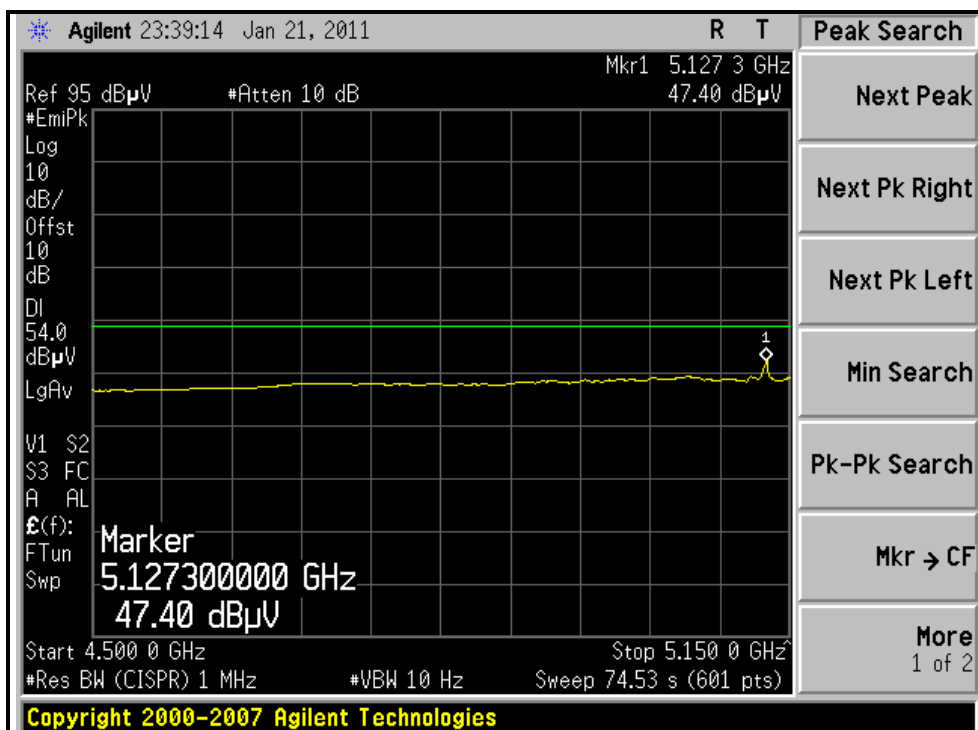
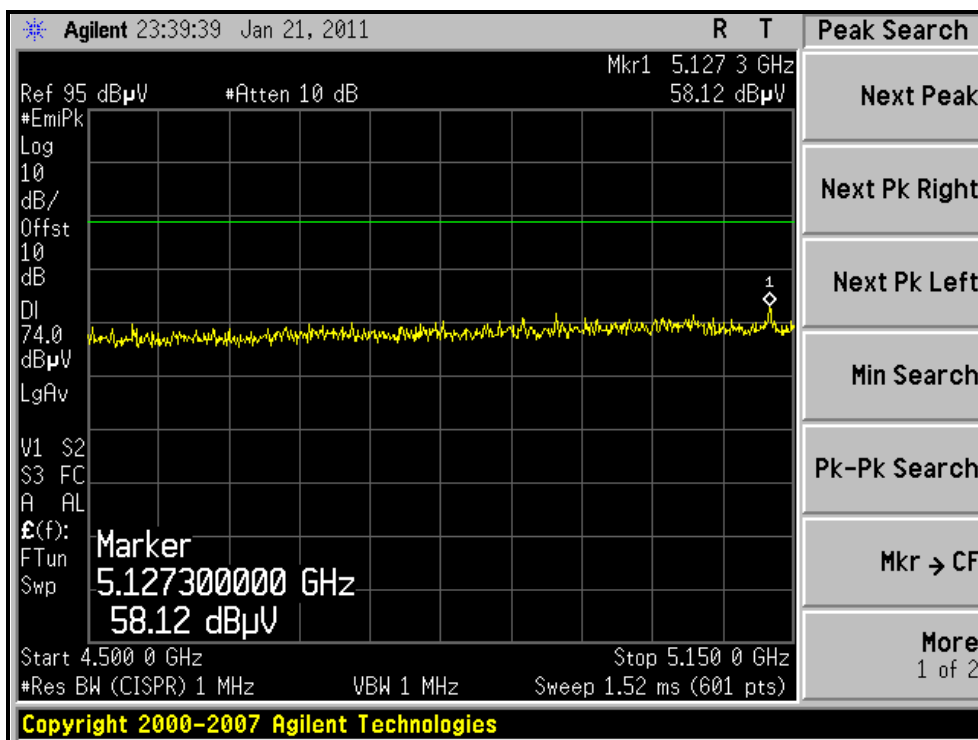
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	109.1 PK			1.34 H	102	67.45	41.65
2	*5240.00	98.1 AV			1.34 H	102	56.45	41.65
3	5368.00	57.6 PK	74.0	-16.4	1.34 H	102	15.76	41.84
4	5368.00	44.4 AV	54.0	-9.6	1.34 H	102	2.56	41.84
5	#10480.00	56.4 PK	68.3	-11.9	1.30 H	155	7.94	48.46
6	15720.00	59.0 PK	74.0	-15.0	1.23 H	117	5.74	53.26
7	15720.00	47.7 AV	54.0	-6.3	1.23 H	117	-5.56	53.26
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	*5240.00	108.4 PK			1.06 V	329	66.75	41.65
2	*5240.00	97.3 AV			1.06 V	329	55.65	41.65
3	5350.00	58.5 PK	74.0	-15.5	1.00 V	256	16.69	41.81
4	5350.00	48.0 AV	54.0	-6.0	1.00 V	256	6.19	41.81
5	#10480.00	54.3 PK	68.3	-14.0	1.22 V	144	5.84	48.46
6	15720.00	57.4 PK	74.0	-16.6	1.50 V	64	4.14	53.26
7	15720.00	46.2 AV	54.0	-7.8	1.50 V	64	-7.06	53.26

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 radiated frequency is out the restricted band.

RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)



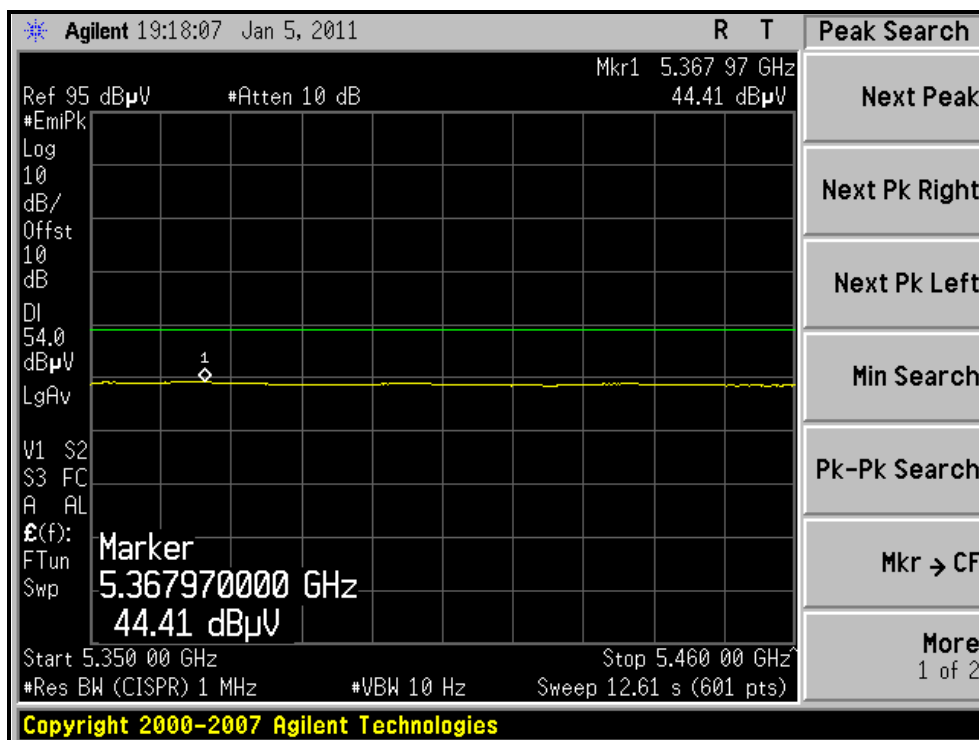
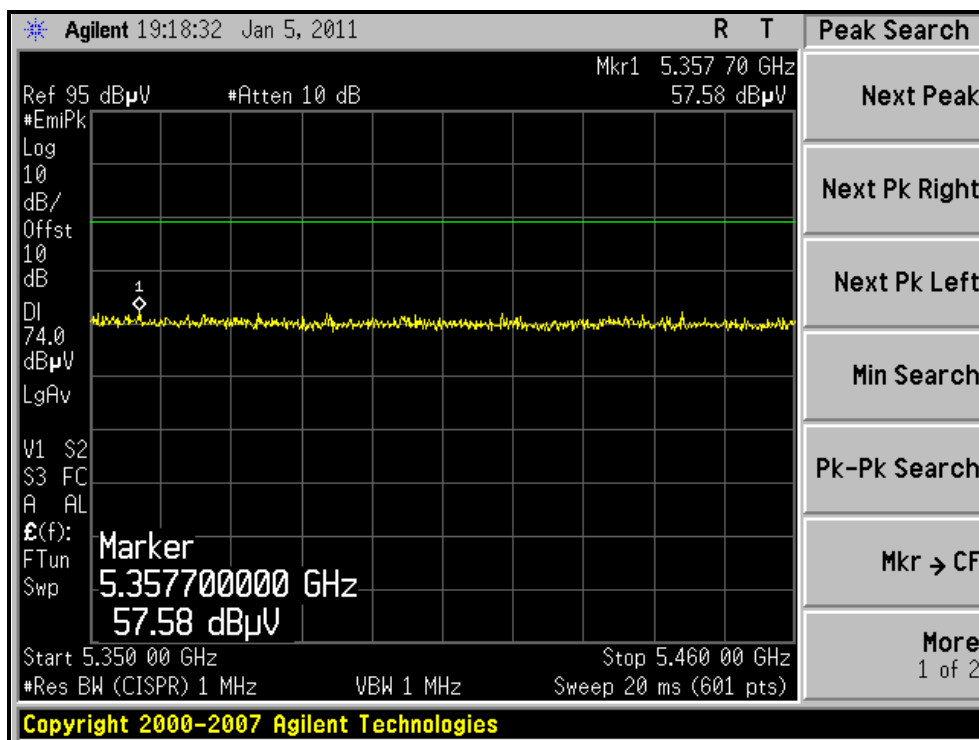
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, VERTICAL)



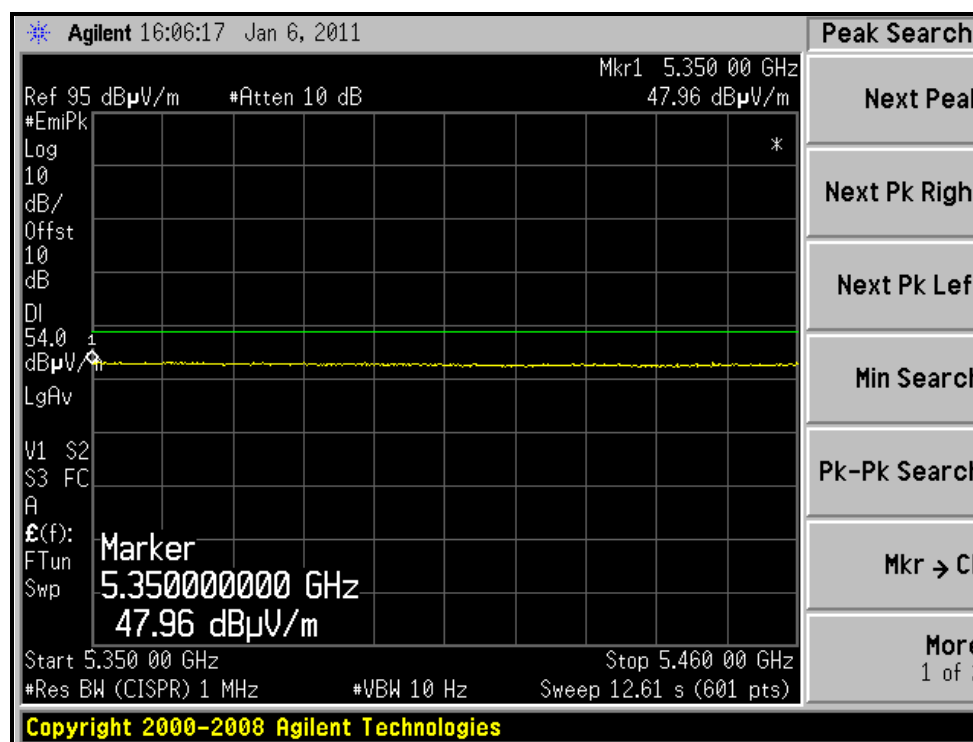
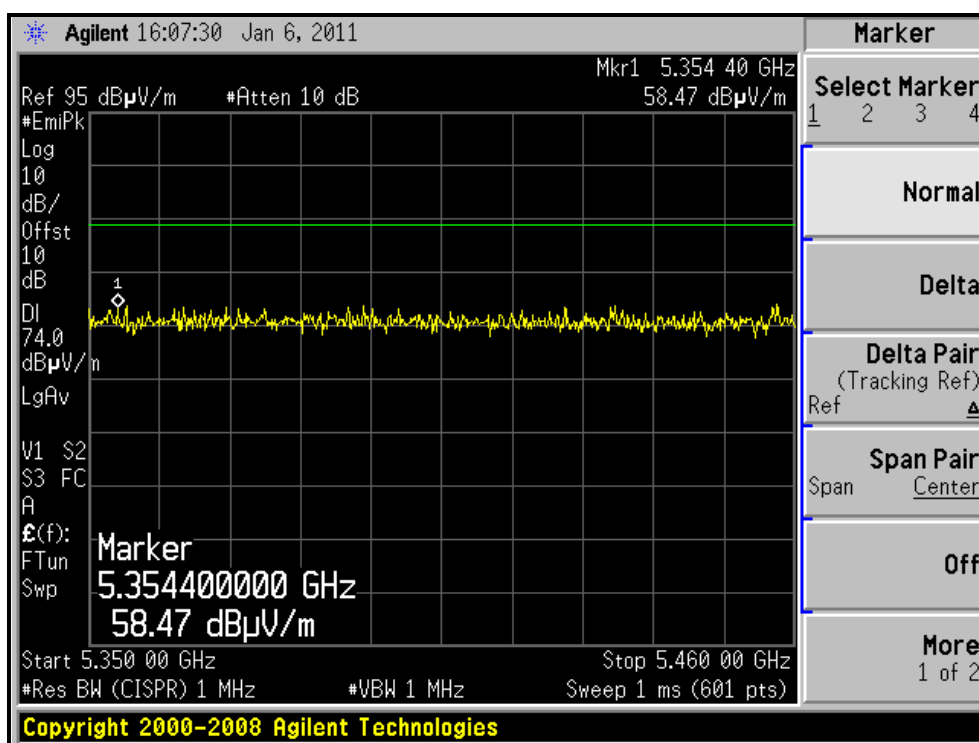


A D T

RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH48, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH48, VERTICAL)





A D T

802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

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	5150.00	65.5 PK	74.0	-8.5	1.43 H	92	29.50	36.00
2	5150.00	50.3 AV	54.0	-3.7	1.43 H	92	14.30	36.00
3	*5190.00	105.3 PK			1.23 H	99	69.24	36.06
4	*5190.00	94.4 AV			1.23 H	99	58.34	36.06
5	#10380.00	57.2 PK	68.3	-11.1	1.27 H	217	11.02	46.18
6	15570.00	58.8 PK	74.0	-15.2	1.30 H	195	10.77	48.03
7	15570.00	47.5 AV	54.0	-6.5	1.30 H	195	-0.53	48.03
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	5150.00	63.1 PK	74.0	-10.9	1.00 V	262	27.10	36.00
2	5150.00	46.2 AV	54.0	-7.8	1.00 V	262	10.20	36.00
3	*5190.00	104.2 PK			1.11 V	40	68.14	36.06
4	*5190.00	93.1 AV			1.11 V	40	57.04	36.06
5	#10380.00	56.3 PK	68.3	-12.0	1.34 V	111	10.12	46.18
6	15570.00	57.2 PK	74.0	-16.8	1.29 V	88	9.17	48.03
7	15570.00	46.1 AV	54.0	-7.9	1.29 V	88	-1.93	48.03

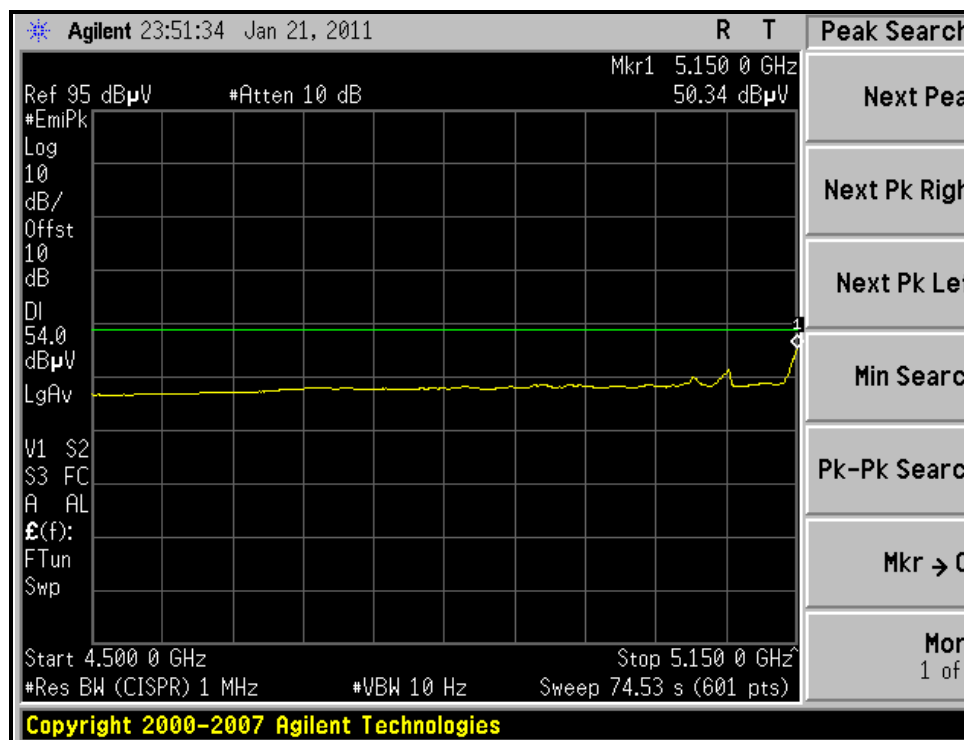
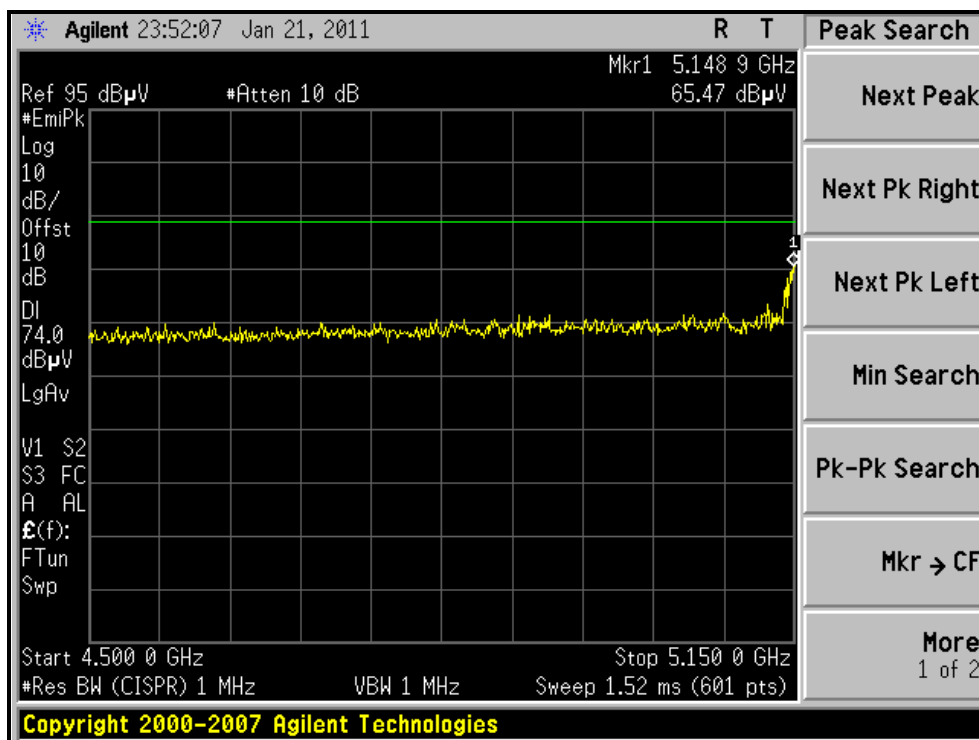
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	Dipole antenna		

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	*5230.00	106.0 PK			1.35 H	297	69.87	36.13
2	*5230.00	95.5 AV			1.35 H	297	59.37	36.13
3	5366.00	58.5 PK	74.0	-15.5	1.25 H	296	22.15	36.35
4	5366.00	44.9 AV	54.0	-9.1	1.25 H	296	8.55	36.35
5	#10460.00	57.8 PK	68.3	-10.5	1.40 H	287	11.51	46.29
6	15960.00	59.2 PK	74.0	-14.8	1.29 H	277	12.30	46.90
7	15960.00	47.6 AV	54.0	-6.4	1.29 H	277	0.70	46.90
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	*5230.00	105.3 PK			1.10 V	39	69.17	36.13
2	*5230.00	94.1 AV			1.10 V	39	57.97	36.13
3	5356.20	58.7 PK	74.0	-15.3	1.00 V	127	22.37	36.33
4	5356.20	48.1 AV	54.0	-5.9	1.00 V	127	11.77	36.33
5	#10460.00	56.2 PK	68.3	-12.1	1.25 V	308	9.91	46.29
6	15690.00	57.6 PK	74.0	-16.4	1.30 V	263	9.92	47.68
7	15690.00	46.3 AV	54.0	-7.7	1.30 V	263	-1.38	47.68

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

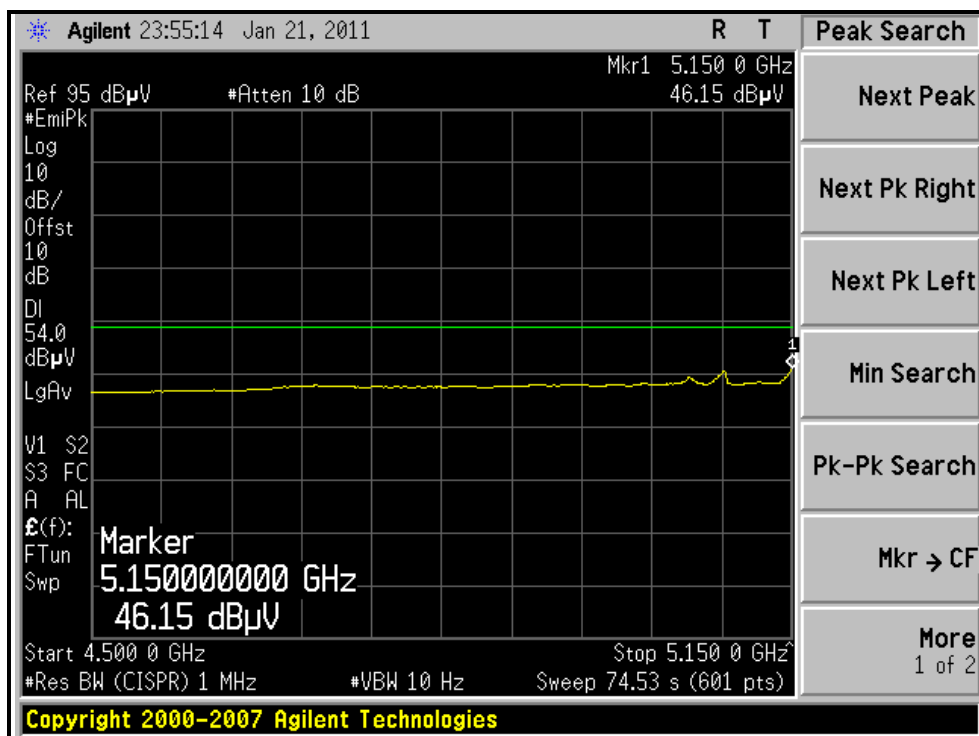
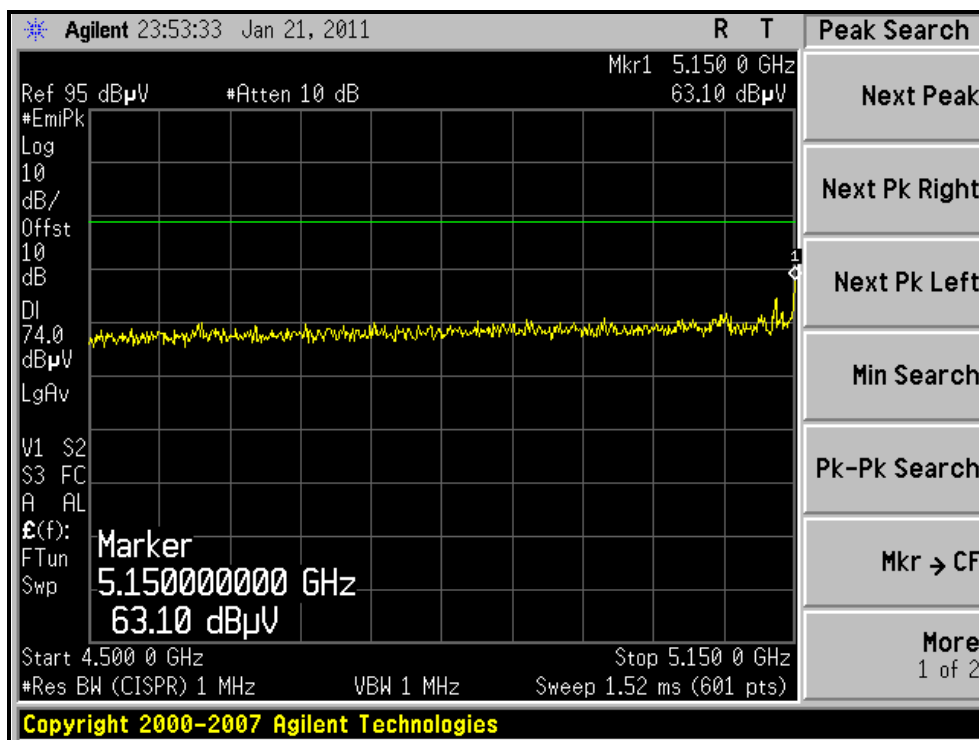
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)



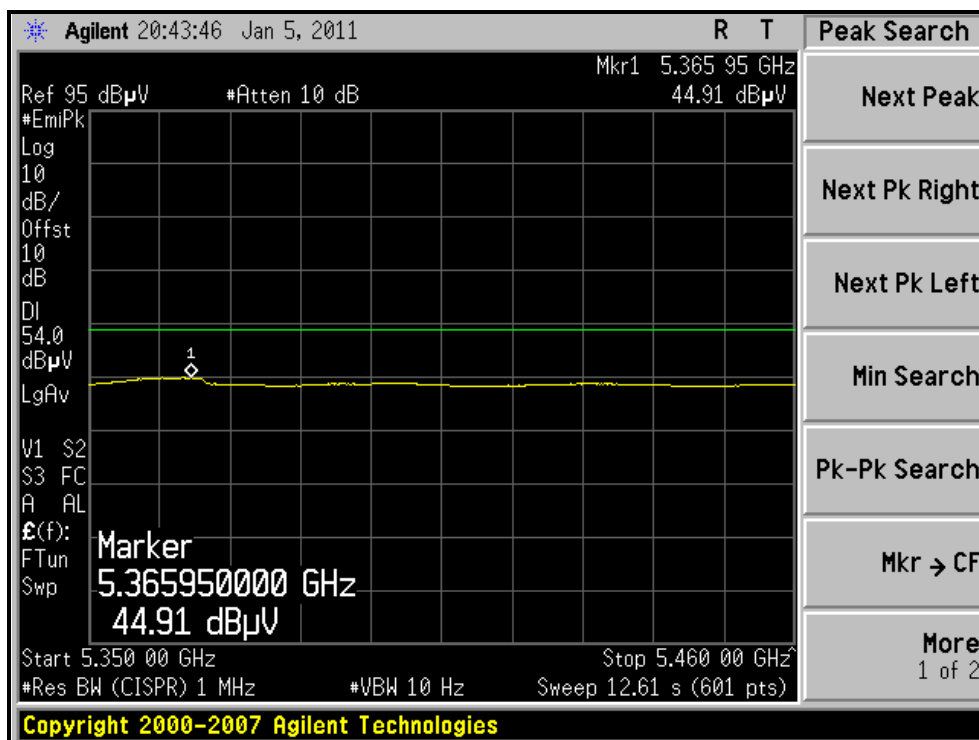
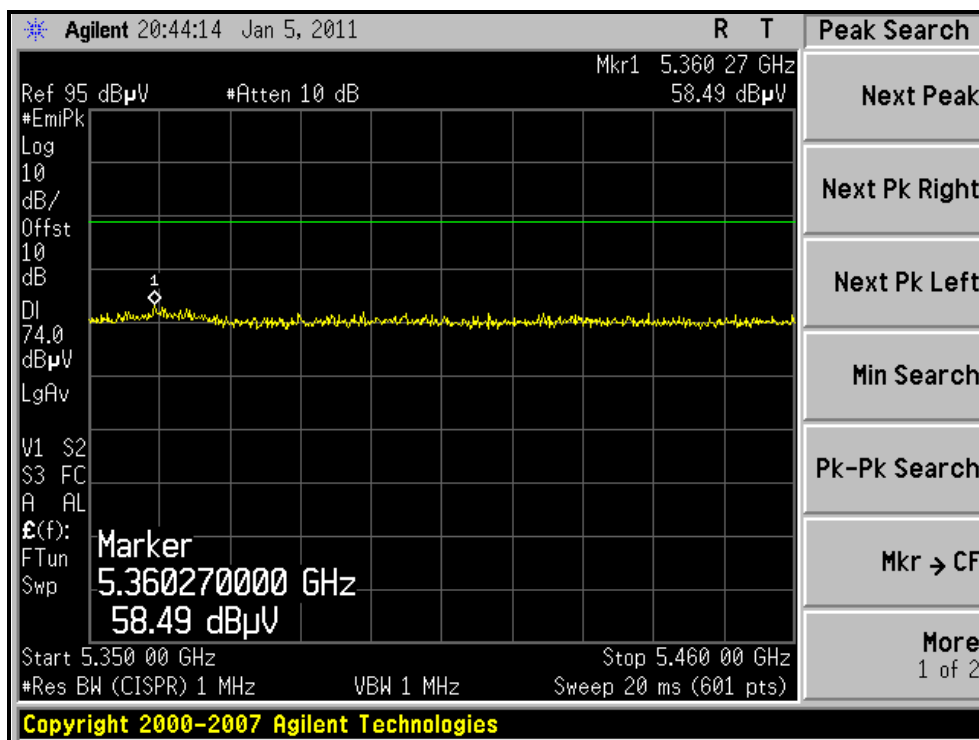


A D T

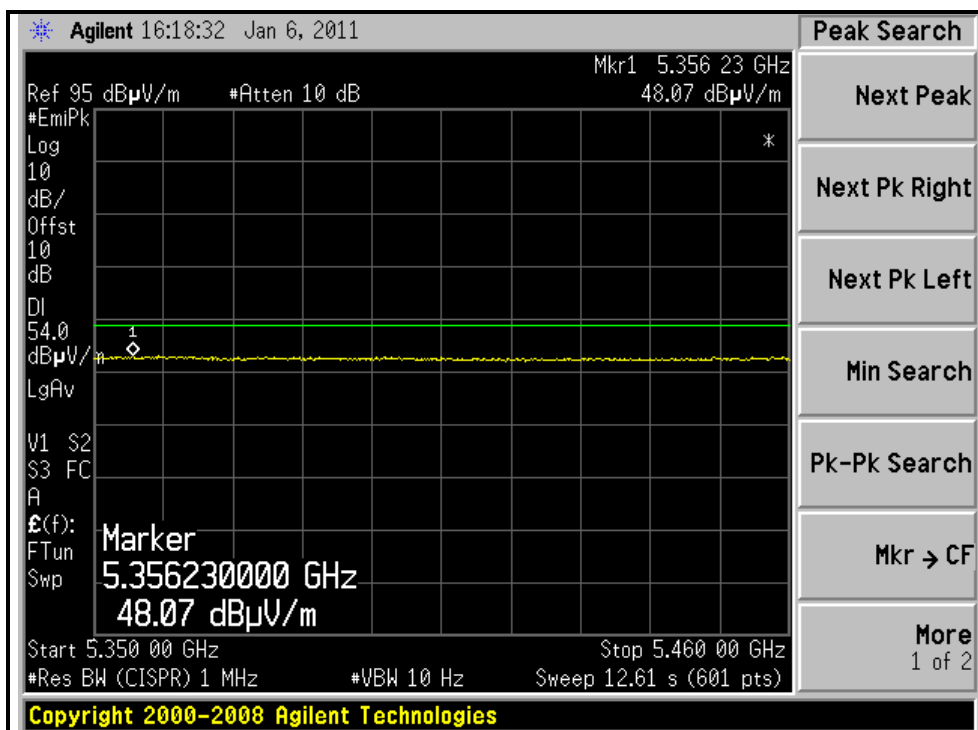
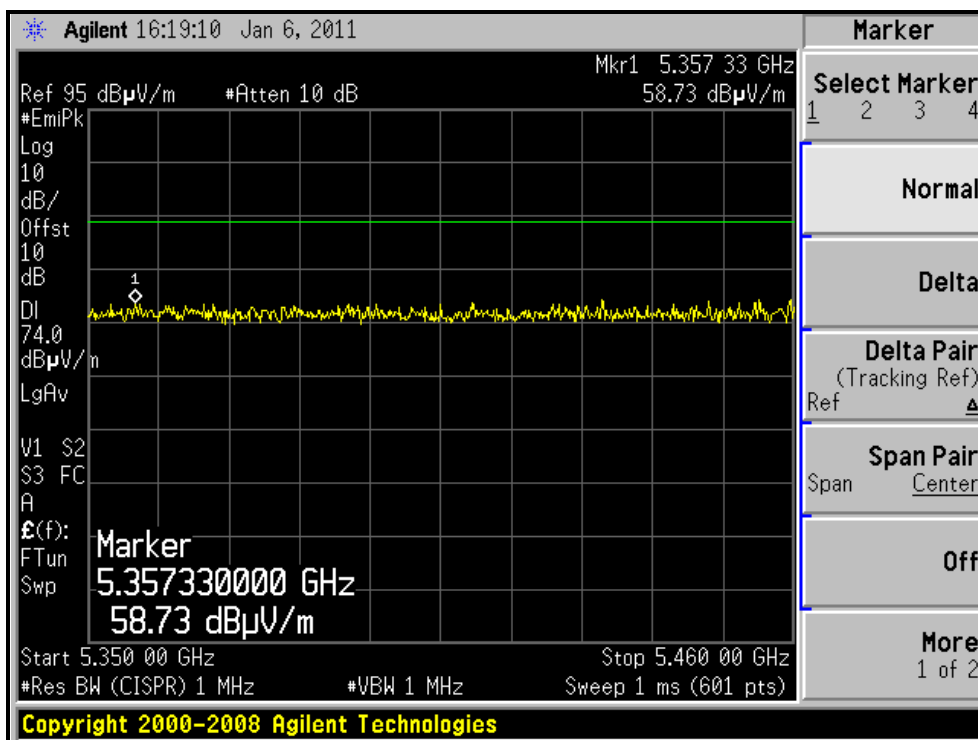
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH38, VERTICAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH46, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH46, VERTICAL)



4.2.9 TEST RESULTS (PIFA ANTENNA)

BELOW 1GHz WORST-CASE DATA : 802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	14deg. C, 66%RH 1013 hPa	TESTED BY	Eric Lee
TEST MODE	PIFA antenna		

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	279.89	36.9 QP	46.0	-9.1	1.25 H	214	22.23	14.64
2	285.32	38.4 QP	46.0	-7.6	1.25 H	42	23.56	14.86
3	296.86	41.0 QP	46.0	-5.0	1.75 H	123	25.66	15.33
4	309.12	39.4 QP	46.0	-6.6	1.00 H	220	23.73	15.66
5	320.37	38.9 QP	46.0	-7.1	1.00 H	227	23.03	15.91
6	327.12	36.8 QP	46.0	-9.2	1.00 H	211	20.75	16.05
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	45.10	29.2 QP	40.0	-10.8	1.25 V	247	14.80	14.40
2	300.00	36.2 QP	46.0	-9.8	1.25 V	103	20.74	15.46
3	311.10	34.9 QP	46.0	-11.1	1.75 V	42	19.20	15.70
4	320.73	35.8 QP	46.0	-10.2	1.50 V	360	19.85	15.91
5	698.73	32.9 QP	46.0	-13.1	1.00 V	160	9.29	23.65
6	897.92	33.5 QP	46.0	-12.5	1.25 V	171	6.72	26.76

- 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

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

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	5127.20	59.3 PK	74.0	-14.7	1.20 H	206	23.34	35.96
2	5127.20	50.5 AV	54.0	-3.5	1.20 H	206	14.54	35.96
3	*5180.00	109.7 PK			1.12 H	208	73.65	36.05
4	*5180.00	98.0 AV			1.12 H	208	61.95	36.05
5	#10360.00	58.6 PK	68.3	-9.7	1.27 H	36	12.45	46.15
6	15540.00	59.3 PK	74.0	-14.7	1.04 H	129	11.19	48.11
7	15540.00	48.2 AV	54.0	-5.8	1.04 H	129	0.09	48.11
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	5127.20	56.9 PK	74.0	-17.1	1.54 V	347	24.44	35.96
2	5127.20	47.0 AV	54.0	-7.0	1.54 V	347	15.14	35.96
3	*5180.00	109.2 PK			1.54 V	347	73.15	36.05
4	*5180.00	97.1 AV			1.54 V	347	61.05	36.05
5	#10360.00	56.4 PK	68.3	-11.9	1.07 V	231	10.25	46.15
6	15540.00	58.2 PK	74.0	-15.8	1.04 V	123	10.09	48.11
7	15540.00	47.3 AV	54.0	-6.7	1.04 V	123	-0.81	48.11

- 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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

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	*5200.00	109.4 PK			1.11 H	204	73.32	36.08
2	*5200.00	98.2 AV			1.11 H	204	62.12	36.08
3	#10400.00	55.7 PK	68.3	-12.6	1.29 H	42	9.49	46.21
4	15600.00	59.3 PK	74.0	-14.7	1.04 H	127	11.36	47.94
5	15600.00	48.4 AV	54.0	-5.6	1.04 H	127	0.46	47.94
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	*5200.00	109.4 PK			1.51 V	358	73.32	36.08
2	*5200.00	97.2 AV			1.51 V	358	61.12	36.08
3	#10400.00	54.3 PK	68.3	-14.0	1.08 V	241	8.09	46.21
4	15600.00	57.6 PK	74.0	-16.4	1.03 V	305	9.66	47.94
5	15600.00	47.2 AV	54.0	-6.8	1.03 V	305	-0.74	47.94

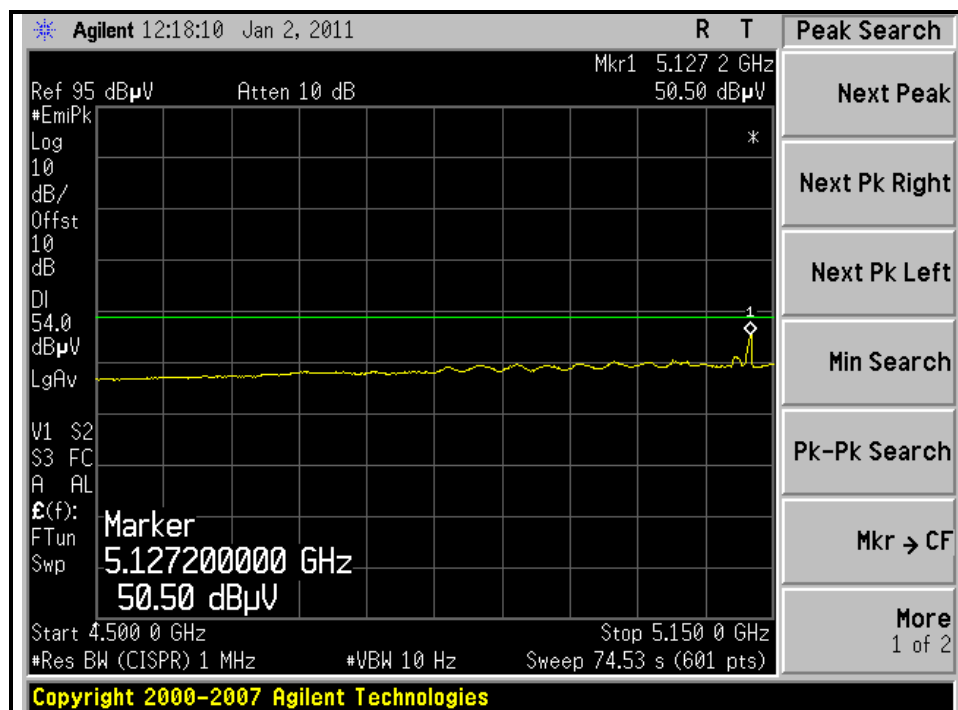
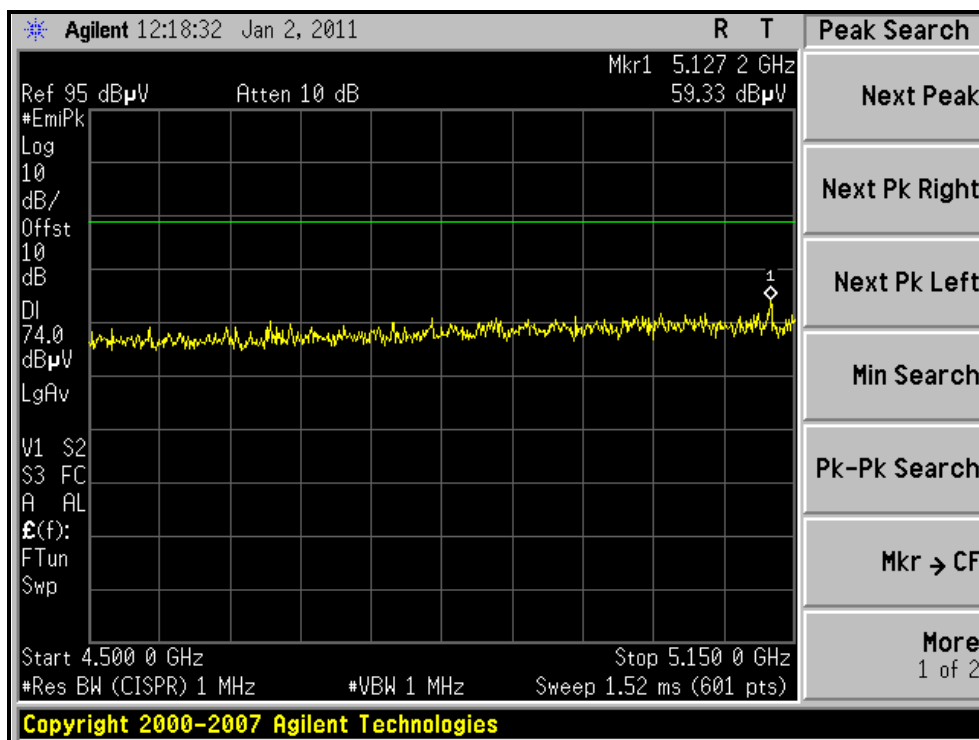
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6.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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

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	*5240.00	109.3 PK			1.14 H	207	73.16	36.14
2	*5240.00	98.4 AV			1.14 H	207	62.26	36.14
3	5350.00	59.2 PK	74.0	-14.8	1.14 H	307	22.88	36.32
4	5350.00	47.4 AV	54.0	-6.6	1.14 H	307	11.08	36.32
5	#10480.00	55.2 PK	68.3	-13.1	1.26 H	37	8.88	46.32
6	15720.00	59.4 PK	74.0	-14.6	1.03 H	121	11.81	47.59
7	15720.00	48.1 AV	54.0	-5.9	1.03 H	121	0.51	47.59
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	*5240.00	109.2 PK			1.47 V	342	73.06	36.14
2	*5240.00	97.1 AV			1.47 V	342	60.96	36.14
3	5350.00	58.3 PK	74.0	-15.7	1.54 V	344	21.98	36.32
4	5350.00	46.9 AV	54.0	-7.1	1.54 V	344	10.58	36.32
5	#10480.00	54.9 PK	68.3	-13.4	1.07 V	256	8.58	46.32
6	15720.00	58.3 PK	74.0	-15.7	1.05 V	311	10.71	47.59
7	15720.00	47.5 AV	54.0	-6.5	1.05 V	311	-0.09	47.59

- 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 radiated frequency is out the restricted band.

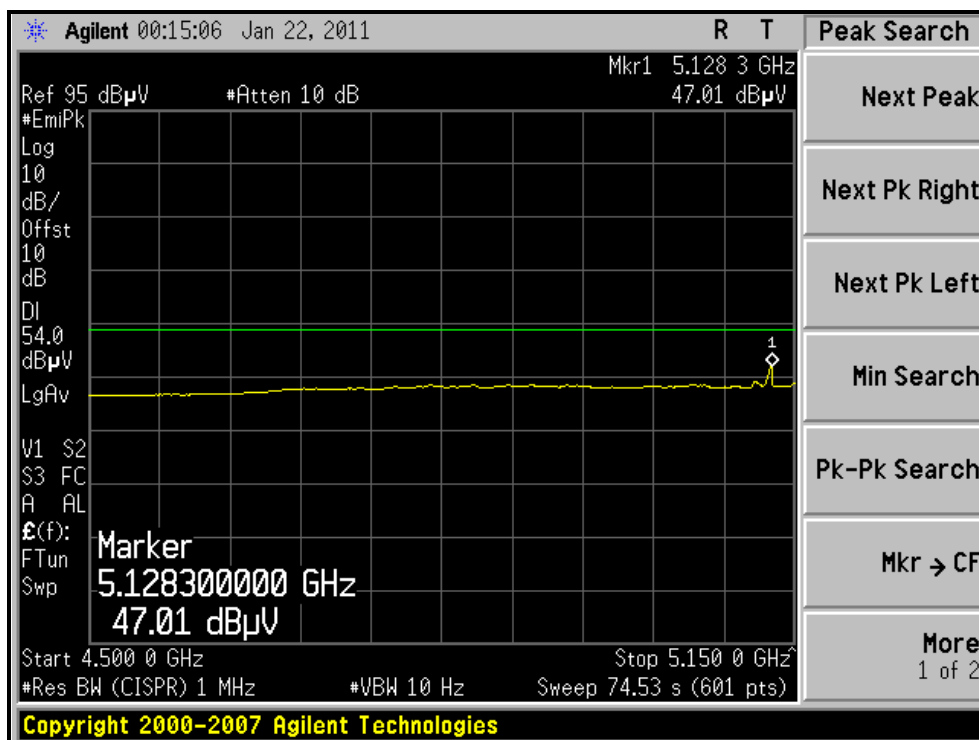
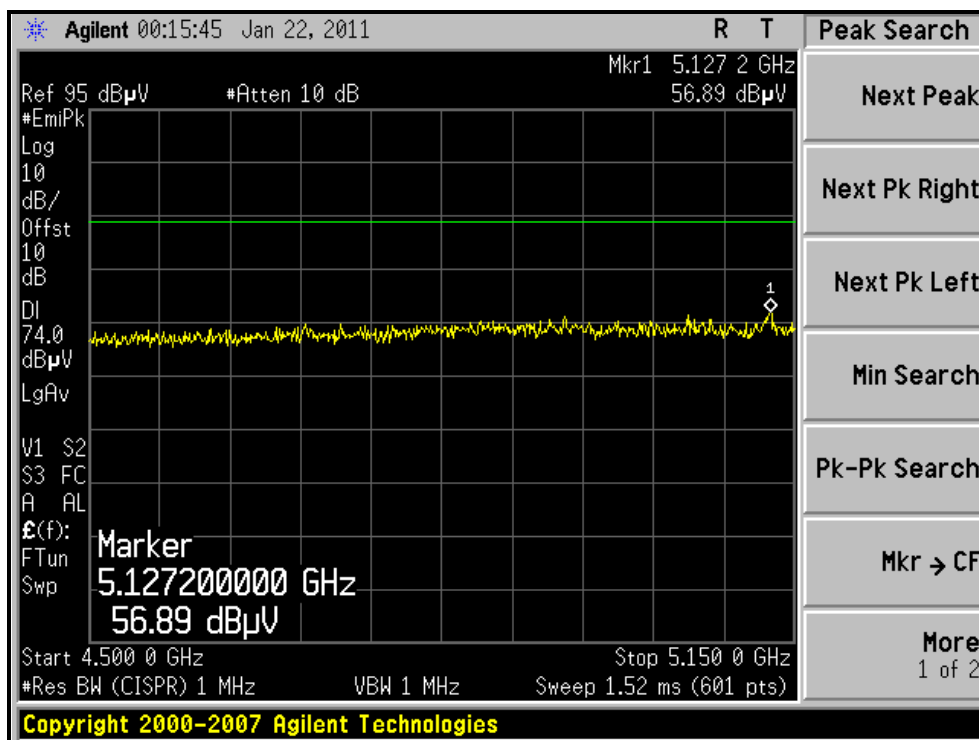
RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)





A D T

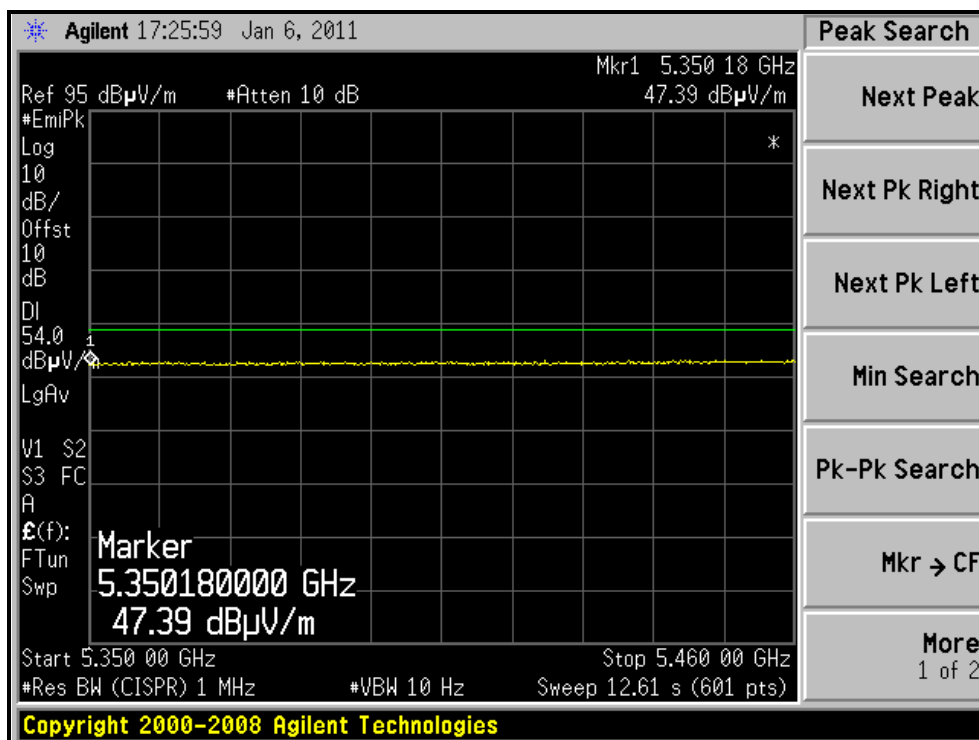
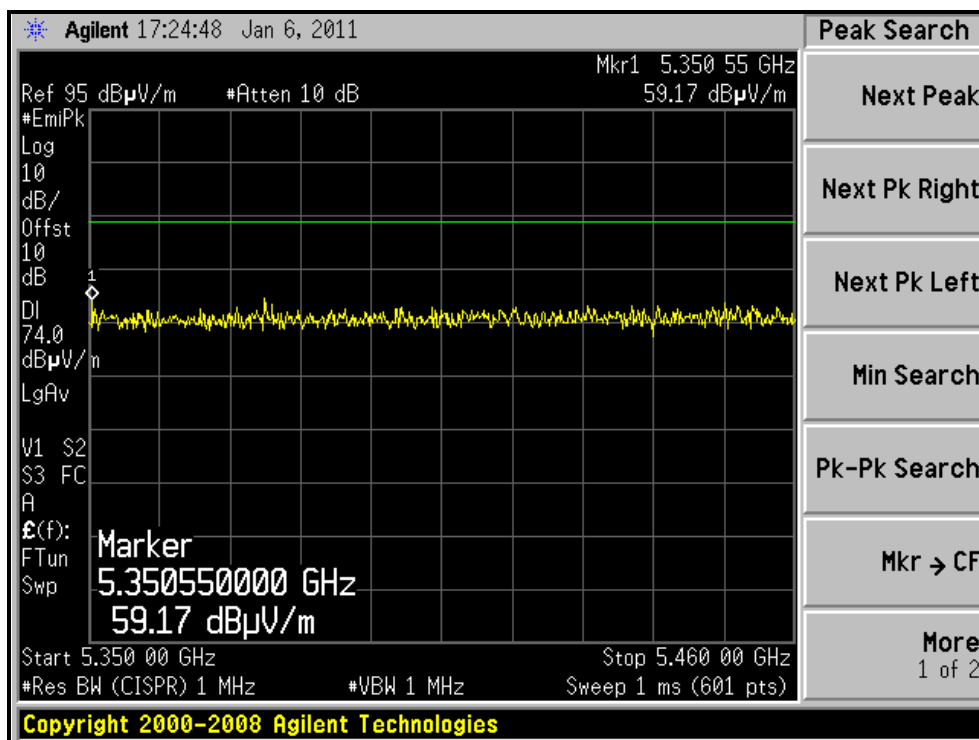
RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)



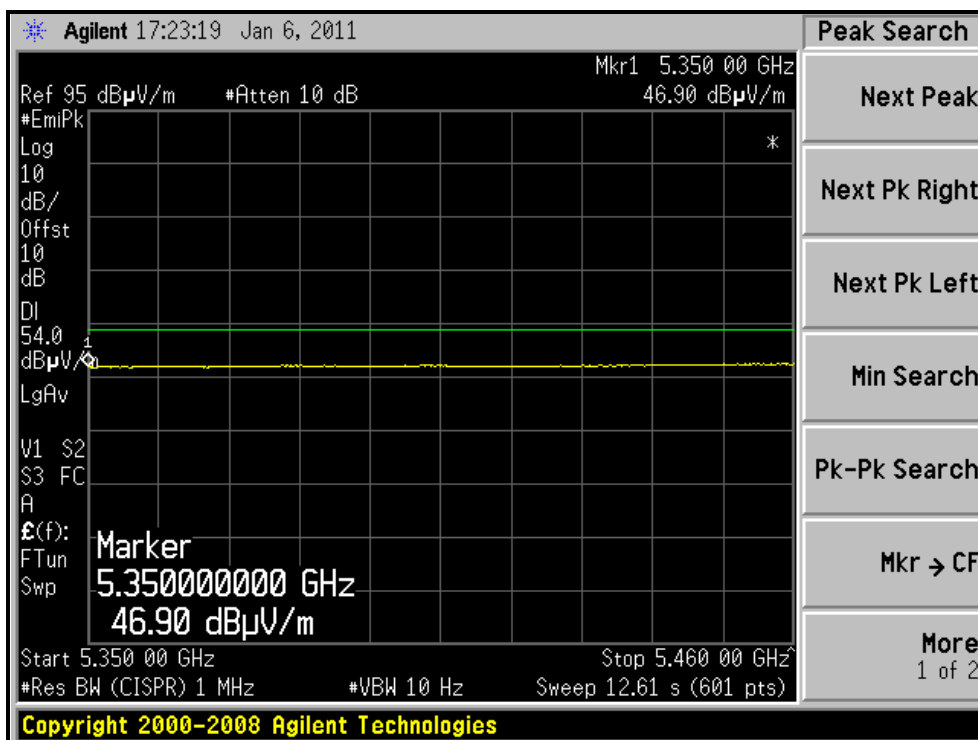
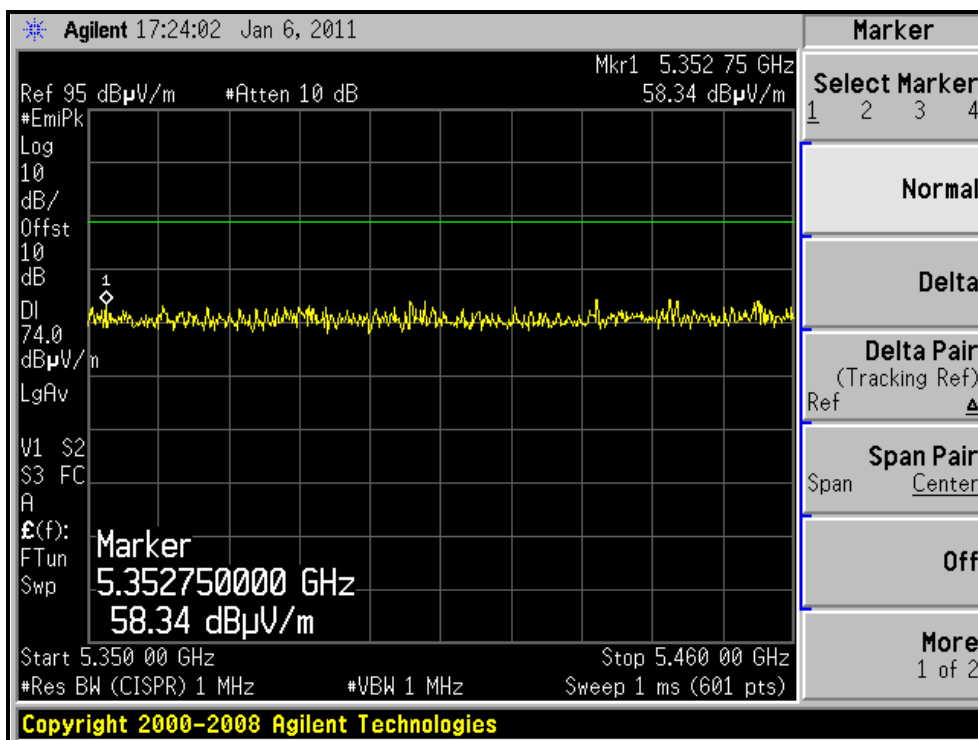


A D T

RESTRICTED BANDEDGE (802.11a MODE, CH48, HORIZONTAL)



RESTRICTED BANDEDGE (802.11a MODE, CH48, VERTICAL)





A D T

802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

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	5128.30	60.5 PK	74.0	-13.5	1.16 H	211	23.83	35.97
2	5128.30	49.6 AV	54.0	-4.4	1.16 H	211	15.43	35.97
3	*5180.00	107.6 PK			1.36 H	249	71.55	36.05
4	*5180.00	97.1 AV			1.36 H	249	61.05	36.05
5	#10360.00	55.2 PK	68.3	-13.1	1.24 H	72	9.05	46.15
6	15540.00	59.4 PK	74.0	-14.6	1.06 H	127	11.29	48.11
7	15540.00	48.7 AV	54.0	-5.3	1.06 H	127	0.59	48.11
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	5128.30	58.2 PK	74.0	-15.8	1.51 V	342	27.43	35.97
2	5128.30	46.7 AV	54.0	-7.3	1.51 V	342	16.73	35.97
3	*5180.00	108.4 PK			1.54 V	311	72.35	36.05
4	*5180.00	96.6 AV			1.54 V	311	60.55	36.05
5	#10360.00	54.2 PK	68.3	-14.1	1.20 V	14	8.05	46.15
6	15540.00	58.2 PK	74.0	-15.8	1.39 V	205	10.09	48.11
7	15540.00	47.6 AV	54.0	-6.4	1.39 V	205	-0.51	48.11

- 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 radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

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	*5200.00	108.3 PK			1.27 H	244	72.22	36.08
2	*5200.00	97.4 AV			1.27 H	244	61.32	36.08
3	#10400.00	55.4 PK	68.3	-12.9	1.26 H	45	9.19	46.21
4	15600.00	59.2 PK	74.0	-14.8	1.07 H	124	11.26	47.94
5	15600.00	48.3 AV	54.0	-5.7	1.07 H	124	0.36	47.94
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	*5200.00	107.9 PK			1.51 V	249	71.82	36.08
2	*5200.00	97.1 AV			1.51 V	249	61.02	36.08
3	#10400.00	54.6 PK	68.3	-13.7	1.14 V	180	8.39	46.21
4	15600.00	58.6 PK	74.0	-15.4	1.30 V	165	10.66	47.94
5	15600.00	47.8 AV	54.0	-6.2	1.30 V	165	-0.14	47.94

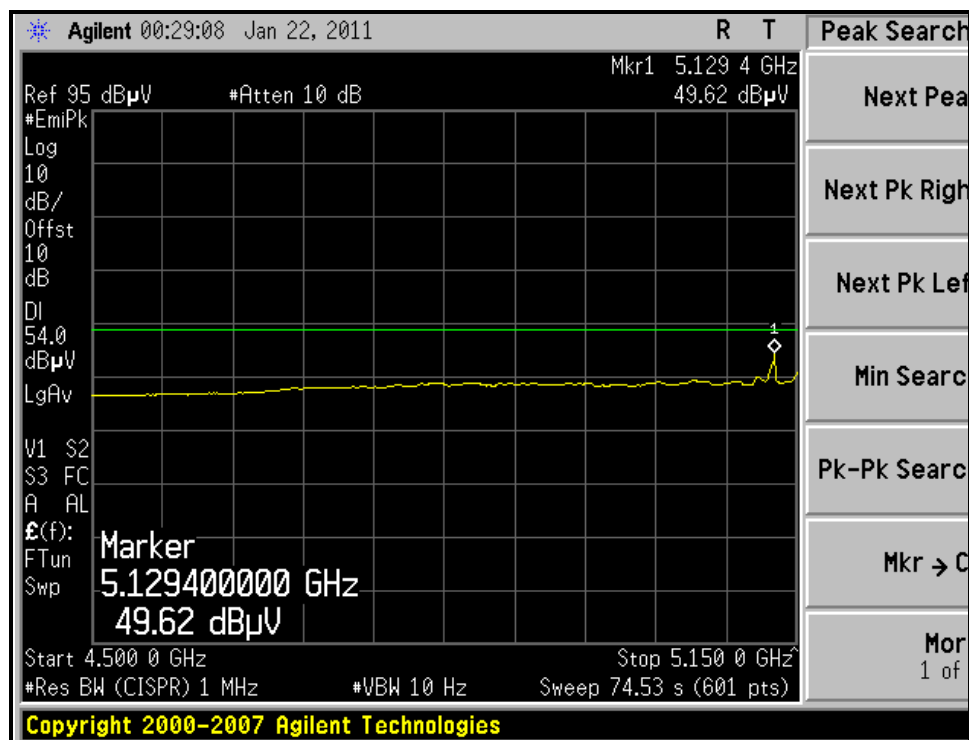
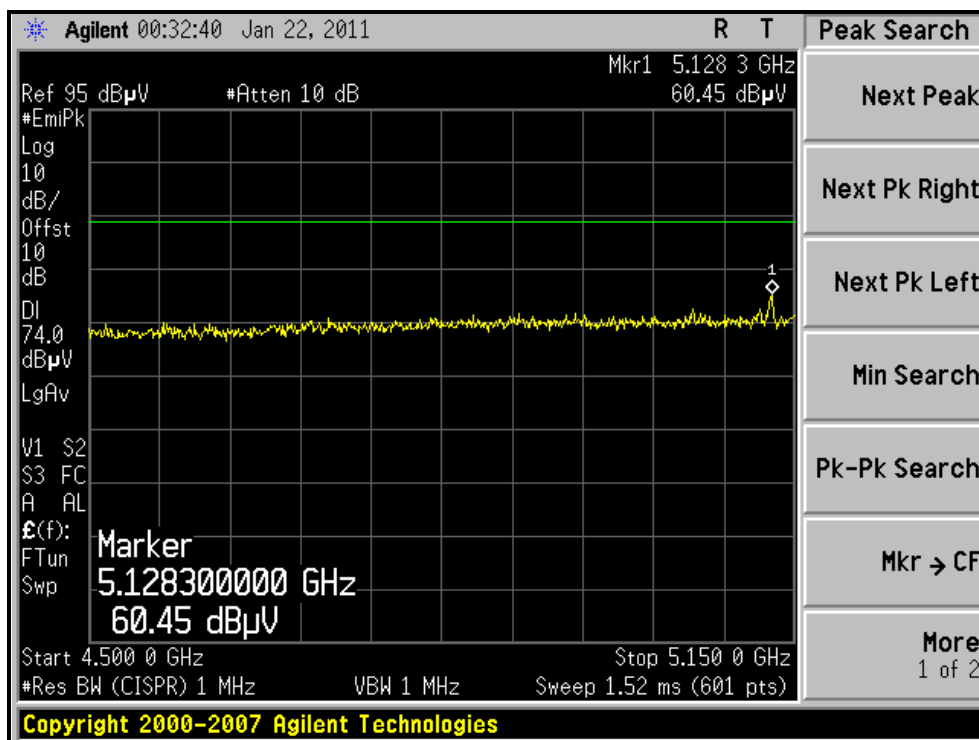
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.
6.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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

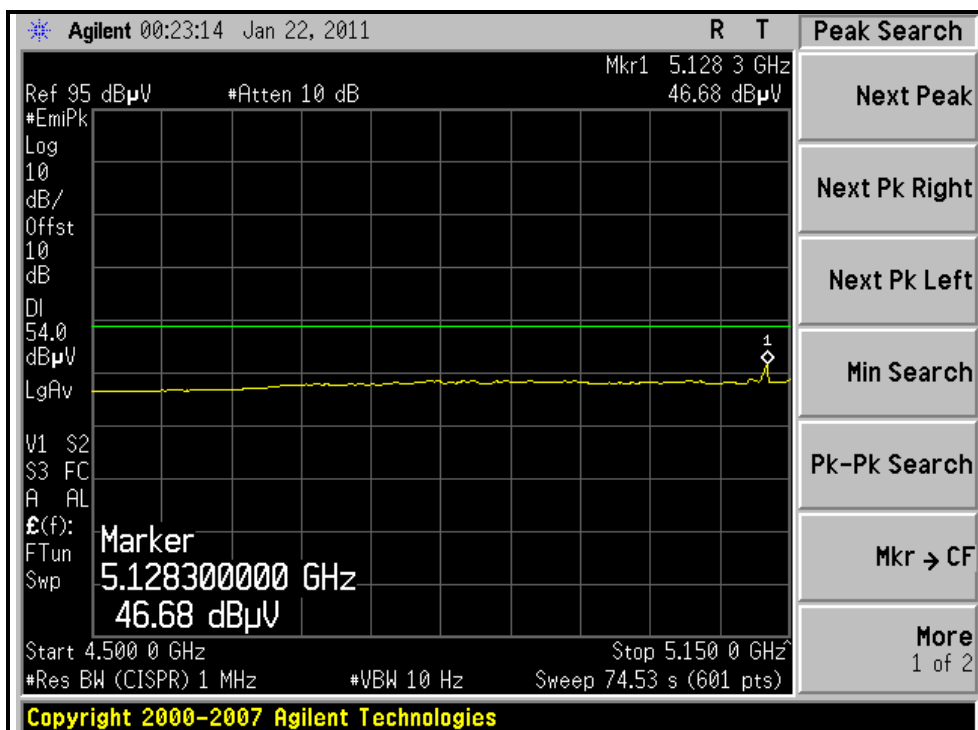
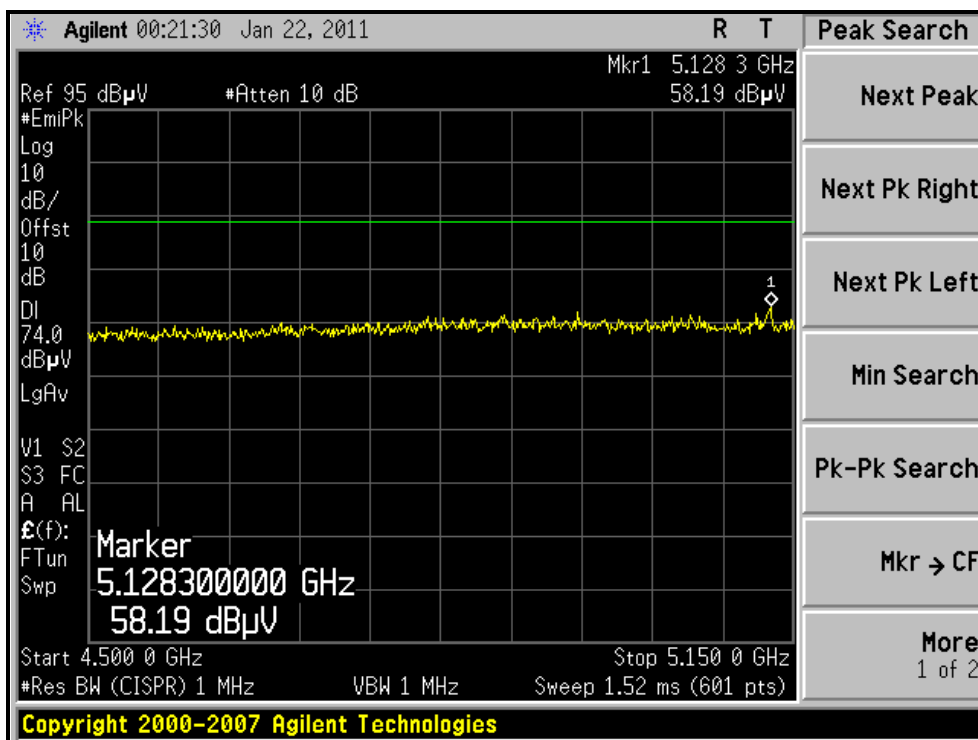
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	108.4 PK			1.21 H	245	72.26	36.14
2	*5240.00	97.5 AV			1.21 H	245	61.36	36.14
3	5365.58	58.0 PK	74.0	-16.0	1.24 H	243	21.66	36.34
4	5365.58	47.0 AV	54.0	-7.0	1.24 H	243	10.66	36.34
5	#10480.00	55.2 PK	68.3	-13.1	1.21 H	47	8.88	46.32
6	15720.00	59.0 PK	74.0	-15.0	1.09 H	129	11.41	47.59
7	15720.00	48.1 AV	54.0	-5.9	1.09 H	129	0.51	47.59
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	*5240.00	106.4 PK			1.49 V	283	70.26	36.14
2	*5240.00	96.3 AV			1.49 V	283	60.16	36.14
3	5350.00	59.2 PK	74.0	-14.8	1.51 V	344	22.88	36.32
4	5350.00	46.9 AV	54.0	-7.1	1.51 V	344	10.58	36.32
5	#10480.00	54.7 PK	68.3	-13.6	1.30 V	65	8.38	46.32
6	15720.00	58.5 PK	74.0	-15.5	1.29 V	58	10.91	47.59
7	15720.00	47.6 AV	54.0	-6.4	1.29 V	58	0.01	47.59

- 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 radiated frequency is out the restricted band.

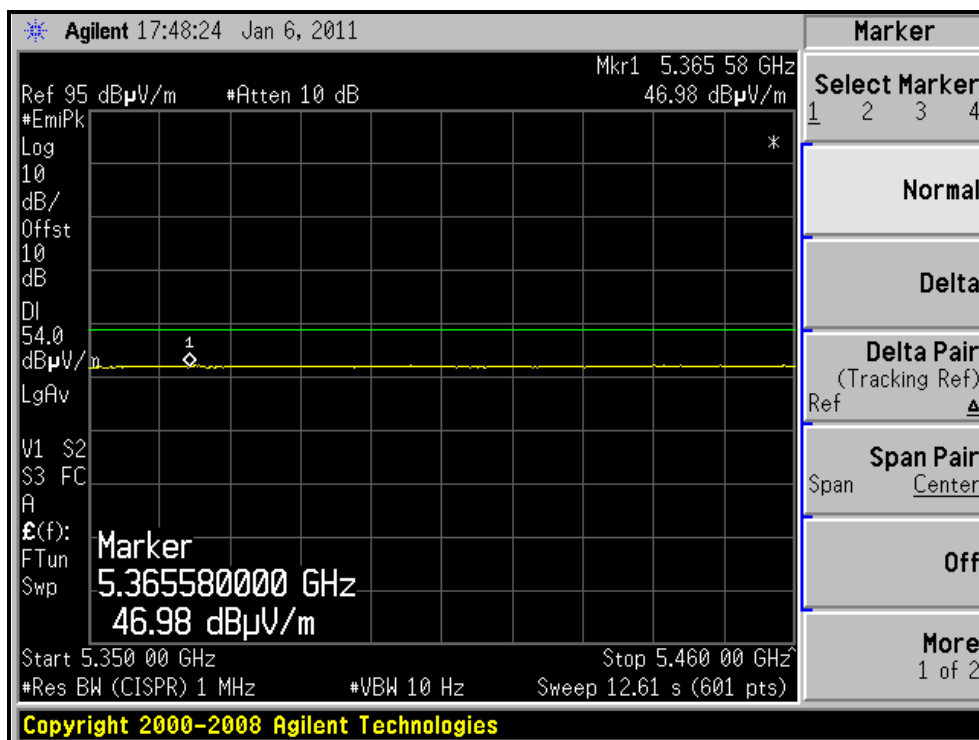
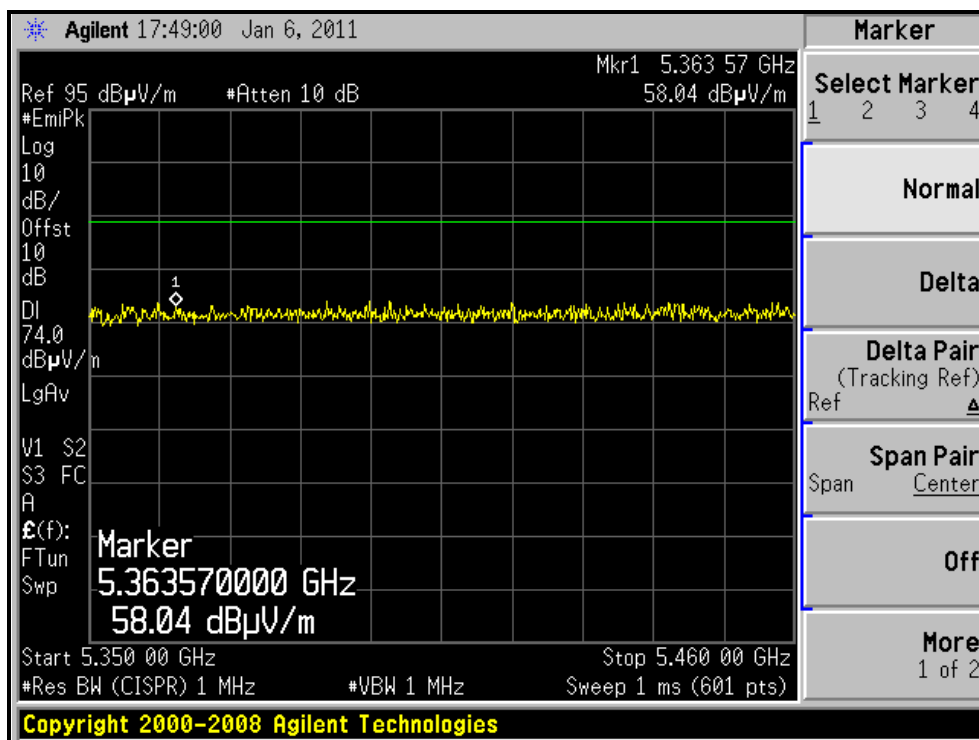
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)



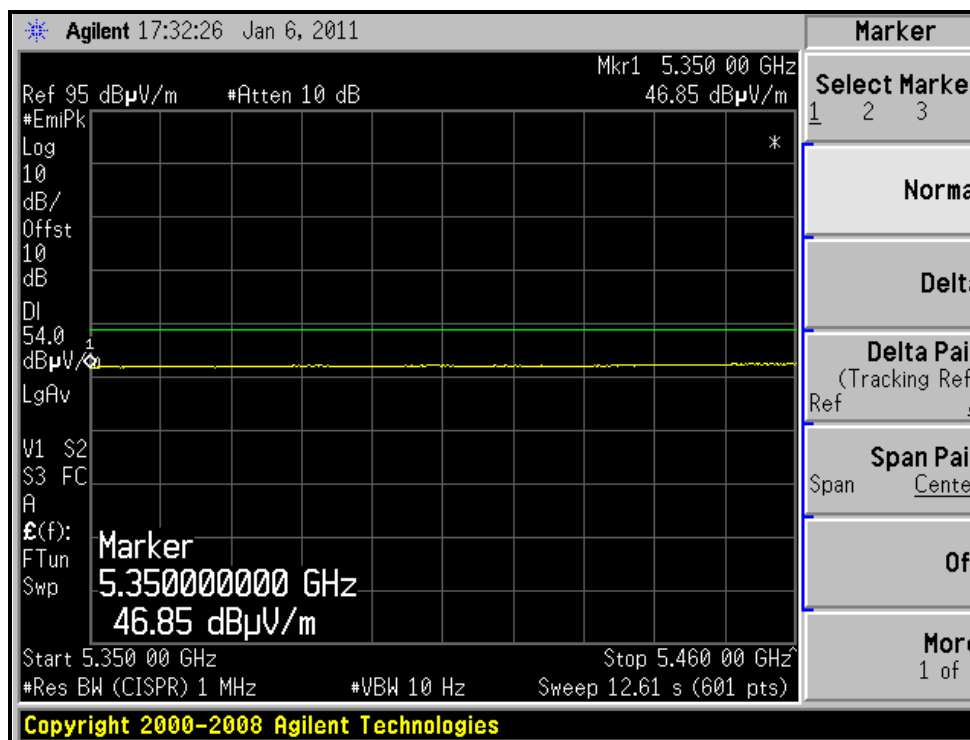
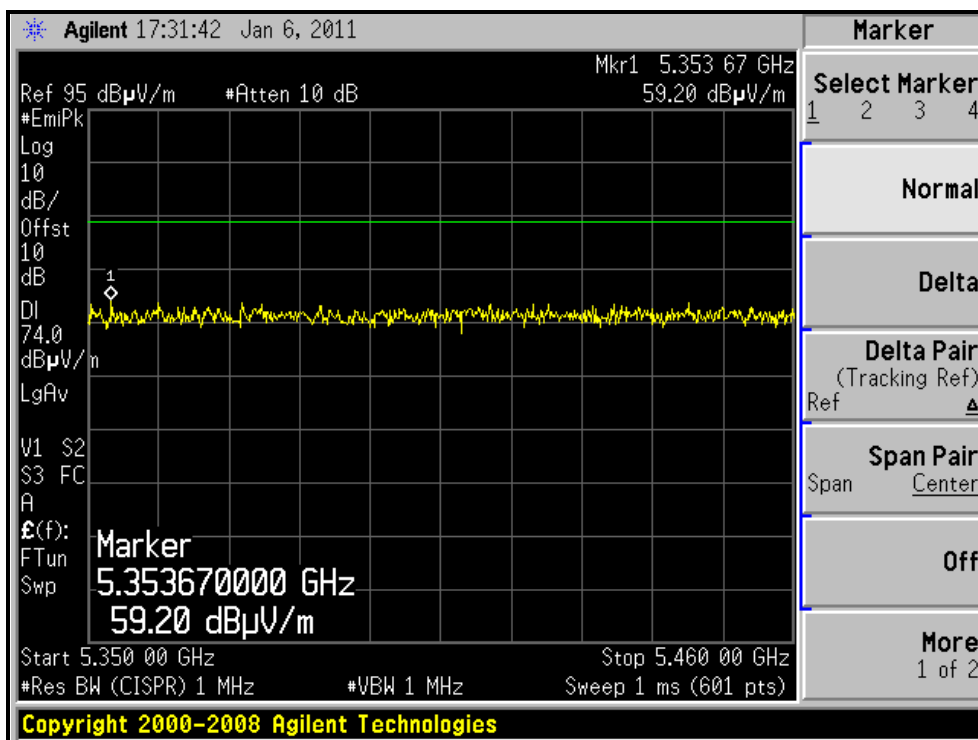
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, VERTICAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH48, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH48, VERTICAL)





A D T

802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

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	5150.00	61.8 PK	74.0	-12.2	1.24 H	298	25.80	36.00
2	5150.00	50.8 AV	54.0	-3.2	1.24 H	298	14.80	36.00
3	*5190.00	107.1 PK			1.24 H	294	71.04	36.06
4	*5190.00	95.2 AV			1.24 H	294	59.14	36.06
5	#10380.00	58.3 PK	68.3	-10.0	1.62 H	114	11.12	47.18
6	15570.00	58.6 PK	74.0	-15.4	1.63 H	105	10.57	48.03
7	15570.00	48.3 AV	54.0	-5.7	1.63 H	105	0.27	48.03
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	5150.00	60.7 PK	74.0	-13.3	1.42 V	142	24.70	36.00
2	5150.00	49.6 AV	54.0	-4.4	1.42 V	142	13.60	36.00
3	*5190.00	106.7 PK			1.41 V	150	70.64	36.06
4	*5190.00	94.3 AV			1.41 V	150	58.24	36.06
5	#10380.00	57.6 PK	68.3	-10.7	1.36 V	93	10.42	47.18
6	15570.00	58.1 PK	74.0	-15.9	1.14 V	180	10.07	48.03
7	15570.00	47.2 AV	54.0	-6.8	1.14 V	180	-0.83	48.03

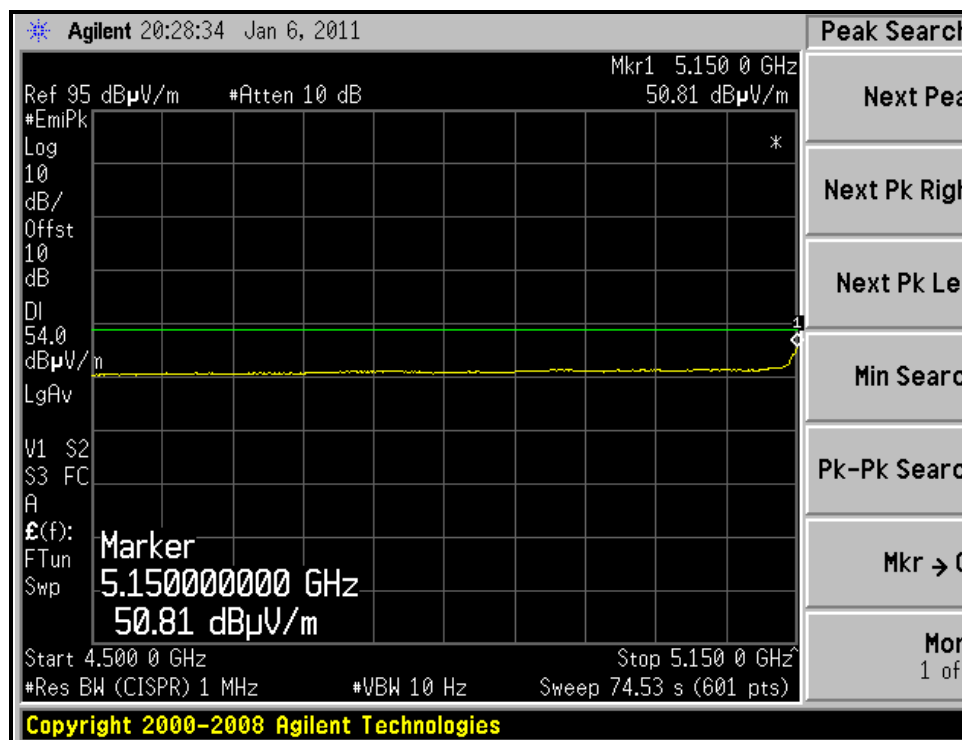
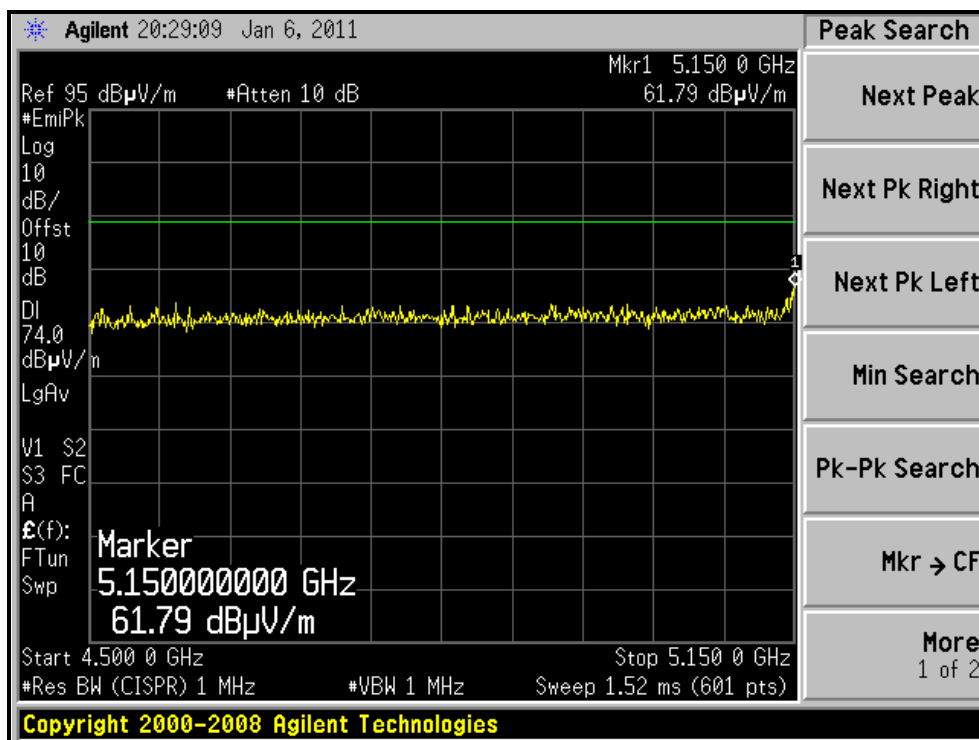
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20deg. C, 62%RH 1013 hPa	TESTED BY	Frank Liu
TEST MODE	PIFA antenna		

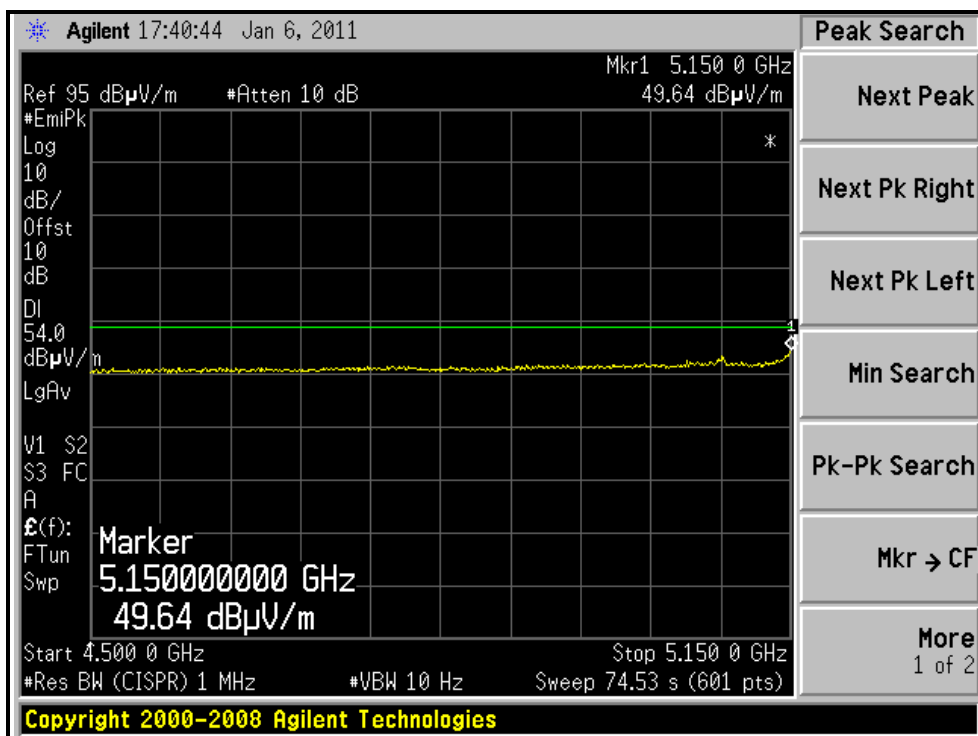
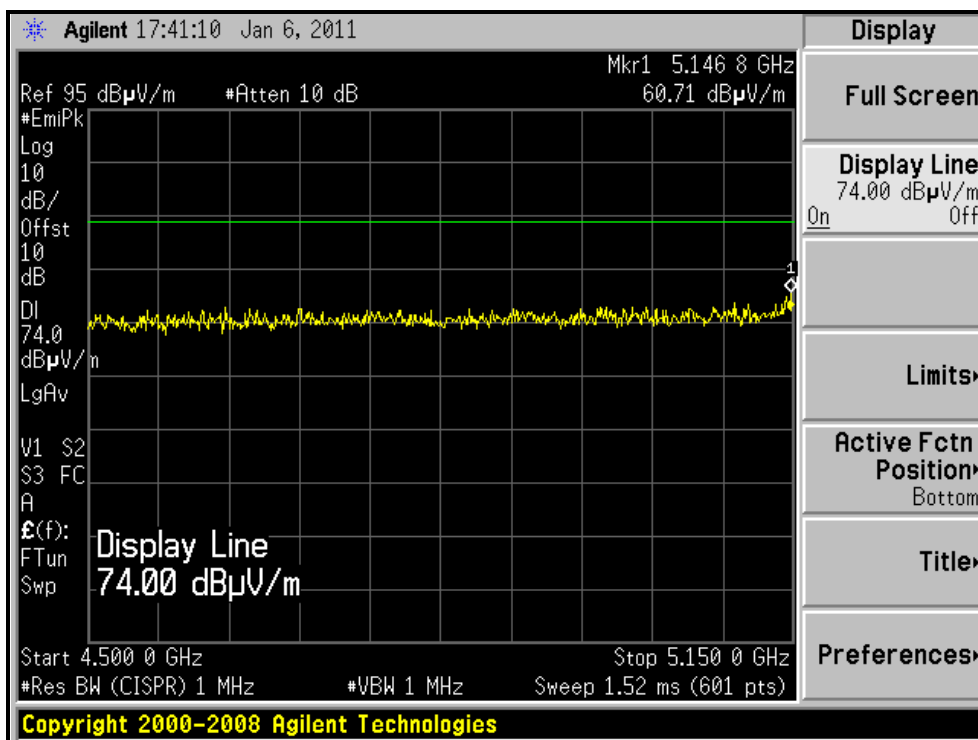
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	107.2 PK			1.20 H	291	71.07	36.13
2	*5230.00	95.1 AV			1.20 H	291	58.97	36.13
3	5365.60	58.7 PK	74.0	-15.3	1.20 H	283	22.36	36.34
4	5365.60	47.1 AV	54.0	-6.9	1.20 H	283	10.76	36.34
5	#10460.00	58.6 PK	68.3	-9.7	1.31 H	78	12.31	46.29
6	15690.00	59.6 PK	74.0	-14.4	1.44 H	20	11.92	47.68
7	15690.00	49.2 AV	54.0	-4.8	1.44 H	20	1.52	47.68
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	106.2 PK			1.49 V	324	70.07	36.13
2	*5230.00	94.1 AV			1.49 V	324	57.97	36.13
3	5365.00	57.8 PK	74.0	-16.2	1.54 V	314	21.46	36.34
4	5365.00	47.2 AV	54.0	-6.8	1.54 V	314	10.86	36.34
5	#10460.00	57.9 PK	68.3	-10.4	1.50 V	89	11.61	46.29
6	15690.00	58.2 PK	74.0	-15.8	1.42 V	100	10.52	47.68
7	15690.00	48.1 AV	54.0	-5.9	1.42 V	100	0.42	47.68

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

RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)



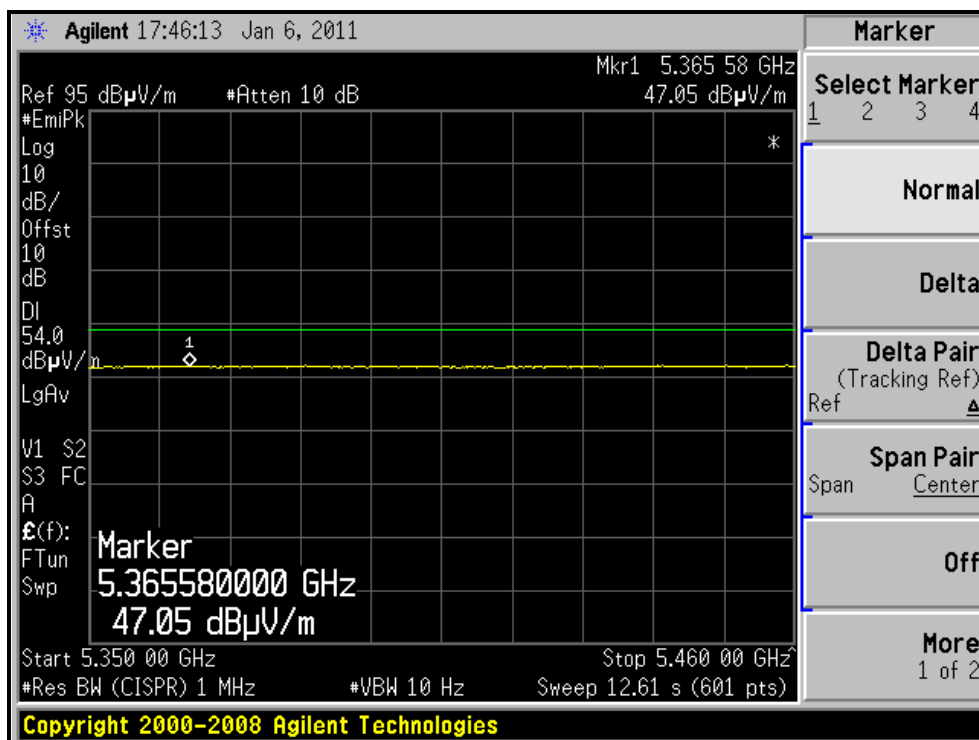
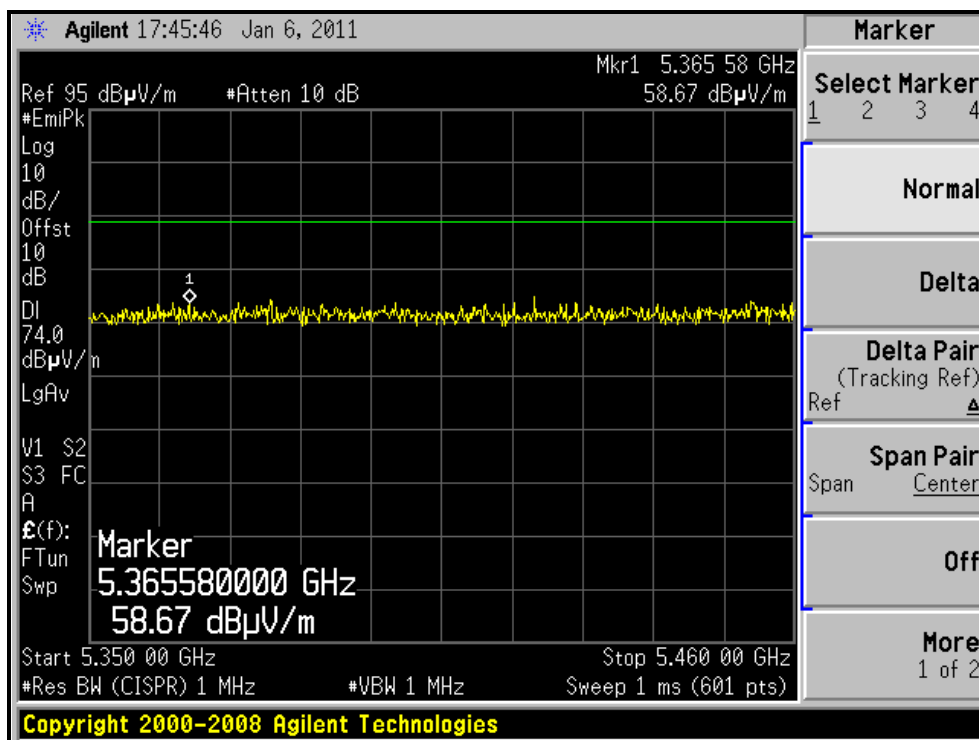
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH38, VERTICAL)



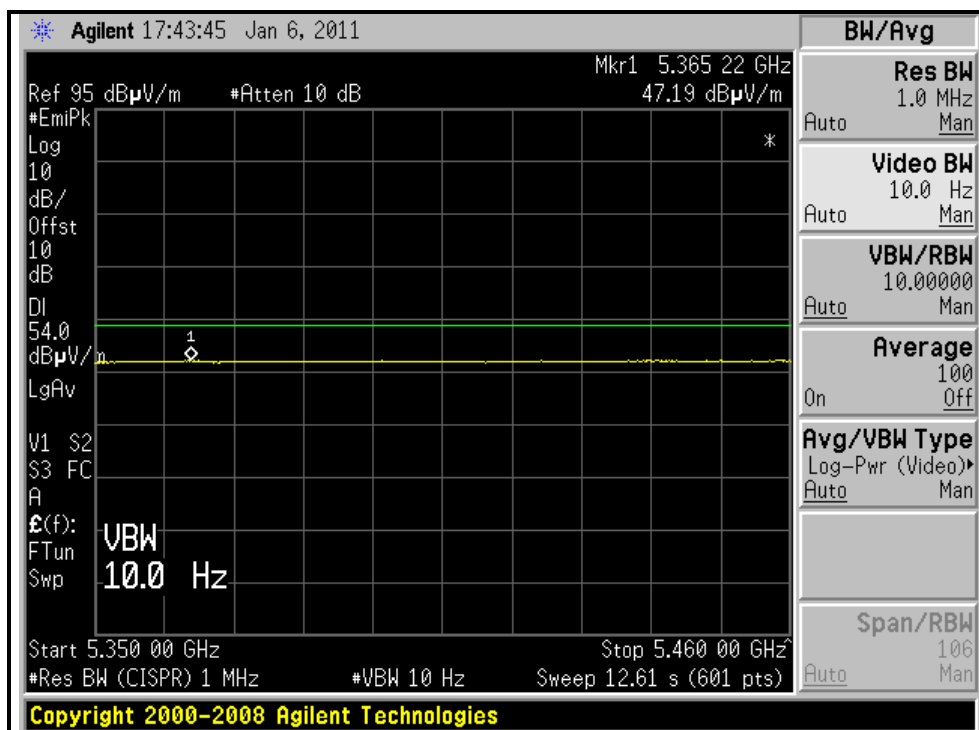
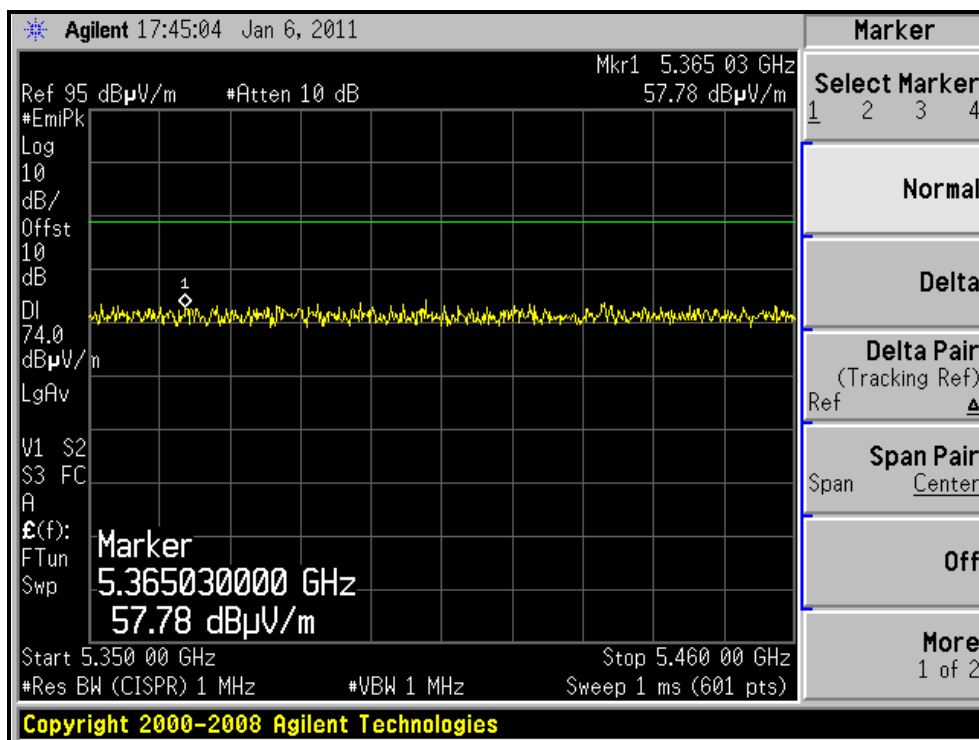


A D T

RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH46, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH46, VERTICAL)



4.3 OUTPUT TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF OUTPUT TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47 – 5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

NOTE: Where B is the 26dB emission bandwidth in MHz.

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 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

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 3MHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

NOTE:

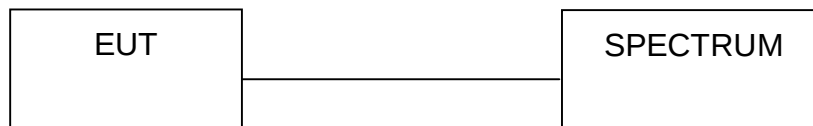
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

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 specific channel frequencies individually.

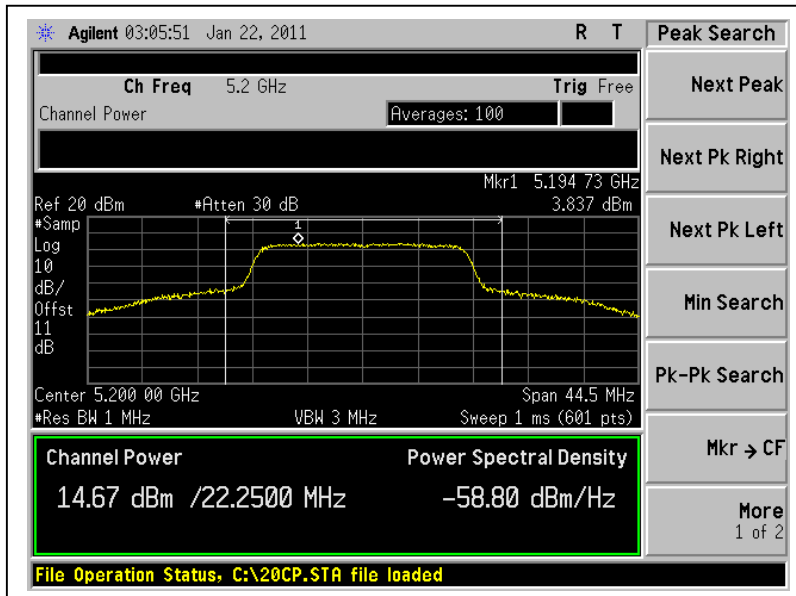
4.3.7 TEST RESULTS

802.11a OFDM MODULATION FOR DIPOLE ANTENNA:

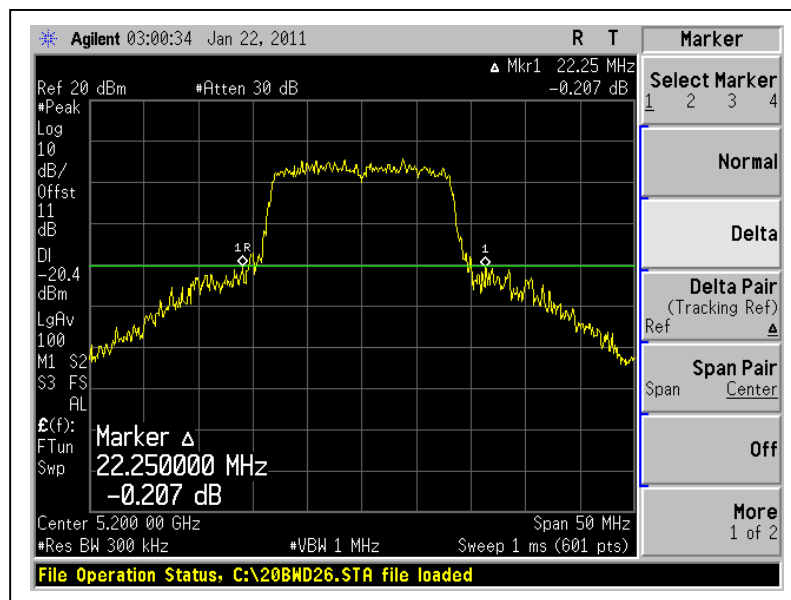
CHANNEL	CHANNEL FREQUENCY (MHz)	OUTPUT POWER (mW)	OUTPUT POWER (dBm)	POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/ FAIL
36	5180	25.1	14.0	17	25.58	PASS
40	5200	29.5	14.7	17	22.25	PASS
48	5240	26.3	14.2	17	24.42	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output: CH40



26dB Occupied Bandwidth: CH40





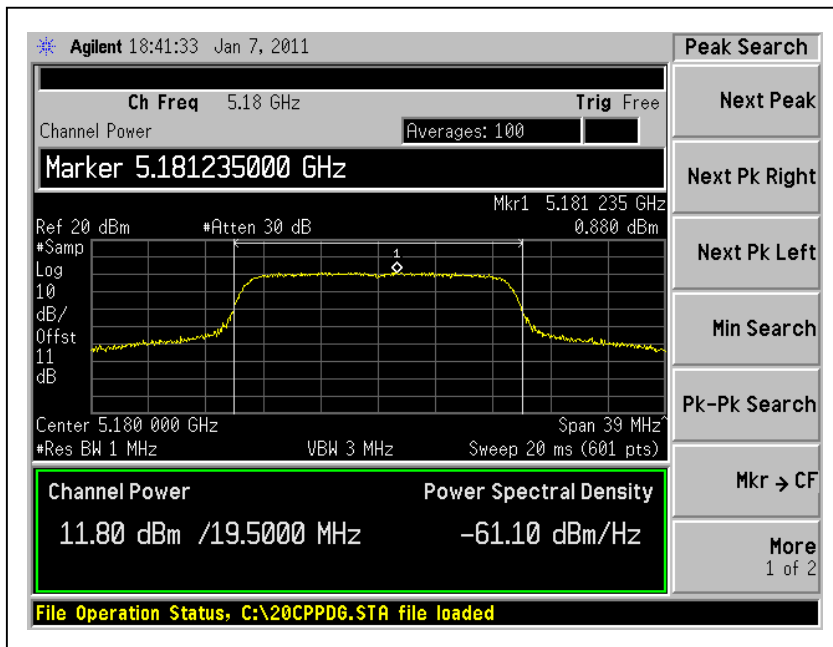
A D T

802.11n (20MHz) OFDM MODULATION:

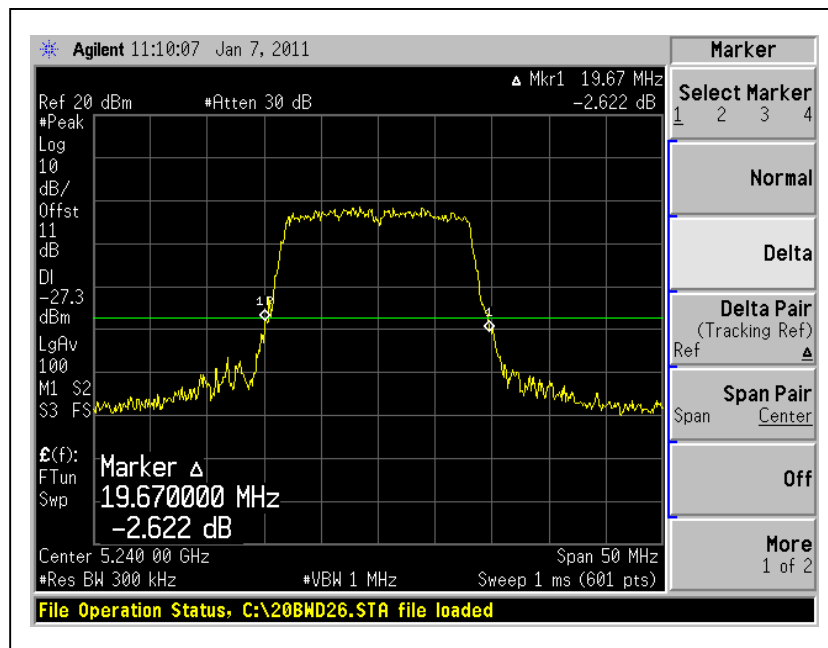
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		OUTPUT POWER (mW)	OUTPUT POWER (dBm)	POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)					
36	5180	11.8	11.0	27.7	14.4	17	19.33	PASS
40	5200	10.3	10.5	21.9	13.4	17	19.67	PASS
48	5240	11.0	11.2	25.8	14.1	17	19.67	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:
For Chain(0) : CH36



26dB Occupied Bandwidth:
CH48





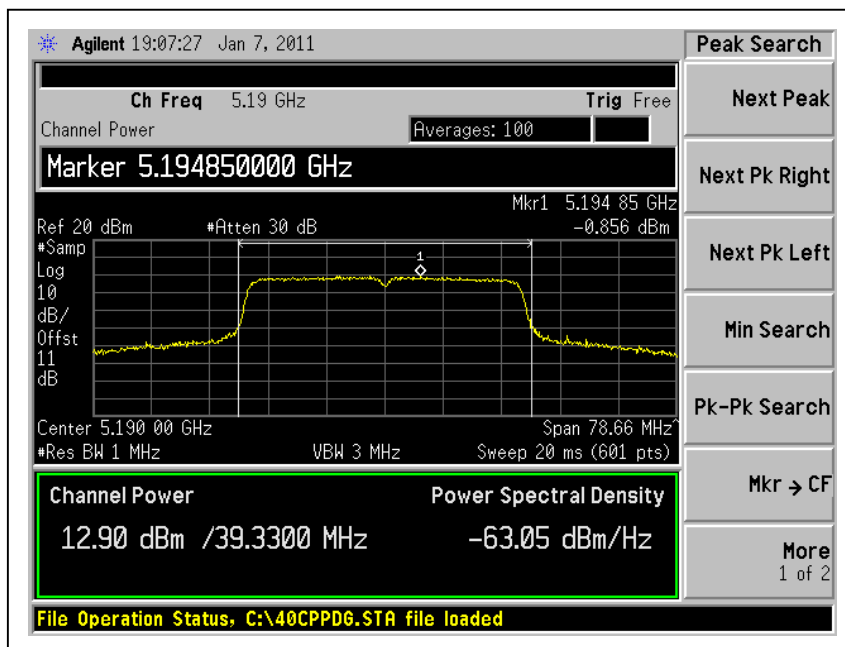
A D T

802.11n (40MHz) OFDM MODULATION:

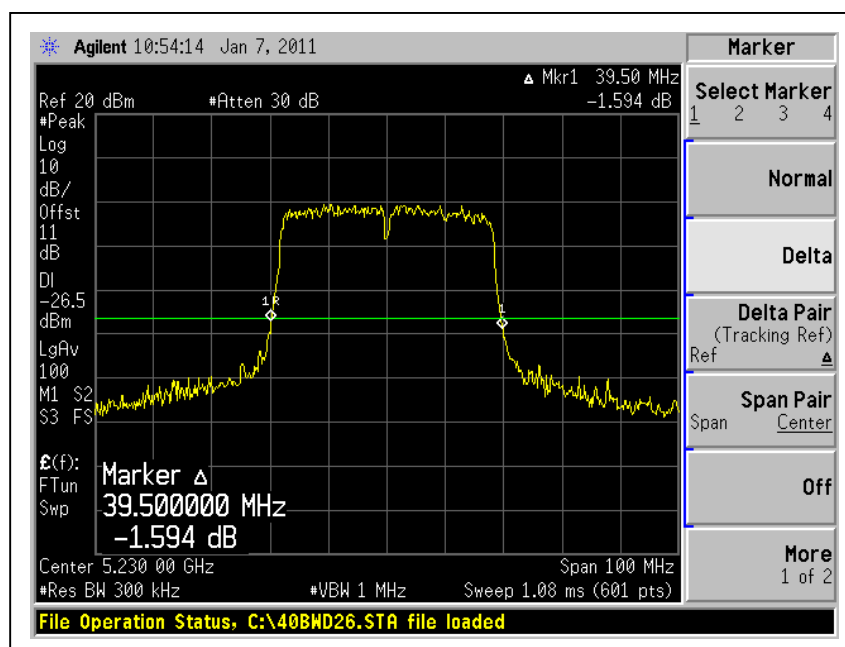
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		OUTPUT POWER (mW)	OUTPUT POWER (dBm)	POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)					
38	5190	12.9	12.7	38.1	15.8	17	39.33	PASS
46	5230	12.5	12.7	36.4	15.6	17	39.50	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:
For Chain(0) :CH38



26dB Occupied Bandwidth:
CH46





A D T

4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.47 – 5.725GHz	13dB
5.725 – 5.825 GHz	13dB

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 2011

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

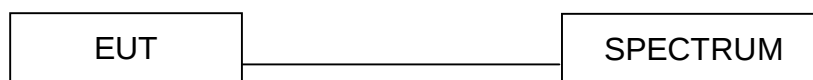
4.4.3 TEST PROCEDURE

- Connect the cable from the spectrum analyzer to the EUT antenna port using an appropriate RF attenuator.
- Verify the antenna port selected is the active one if the system has more than one antenna.
- Verify the unlicensed wireless device is set to operate at 100 % duty cycle at the maximum allowed power for operation.
- Testing shall be done on the center frequency of each U-NII band.
- Set the spectrum analyzer span to view the entire emission bandwidth. The largest difference between the following two traces must be ≤ 13 dB for all frequencies across the emission bandwidth.
 - First trace: set RBW = 1 MHz, VBW ≤ 3 MHz with peak detector and max hold settings.
 - Second trace: set RBW = 1 MHz, VBW ≤ 3 MHz with sample detector and trace average across 100 traces in power averaging mode.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

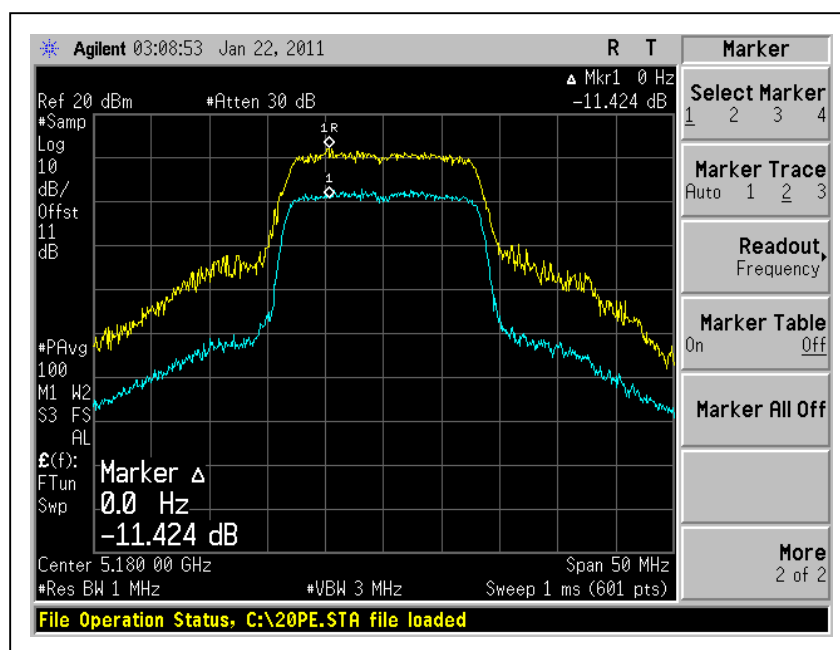
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.4.7 TEST RESULTS

802.11a OFDM MODULATION

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	11.4	13	PASS
40	5200	10.3	13	PASS
48	5240	10.4	13	PASS

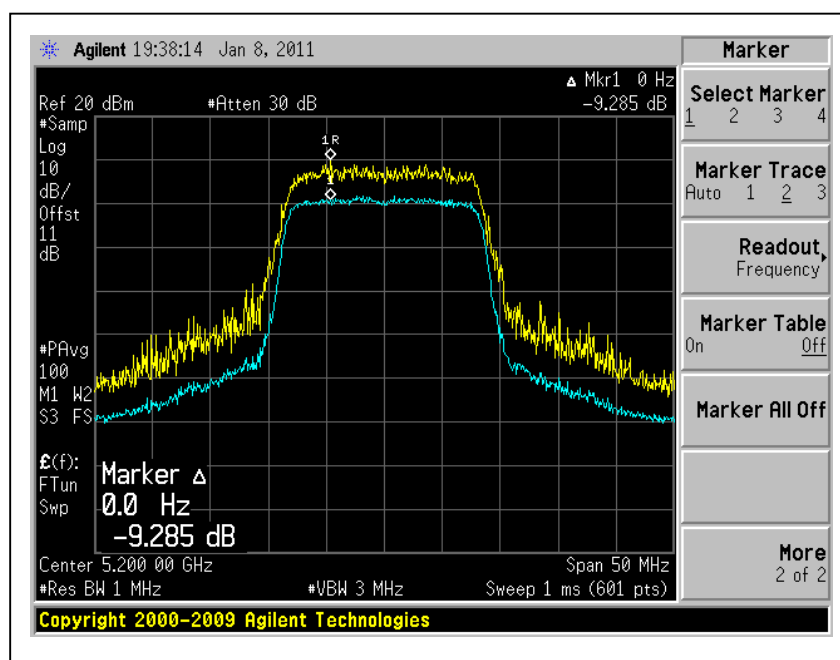
CH36



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	7.2	13	PASS
40	5200	9.3	13	PASS
48	5240	8.8	13	PASS

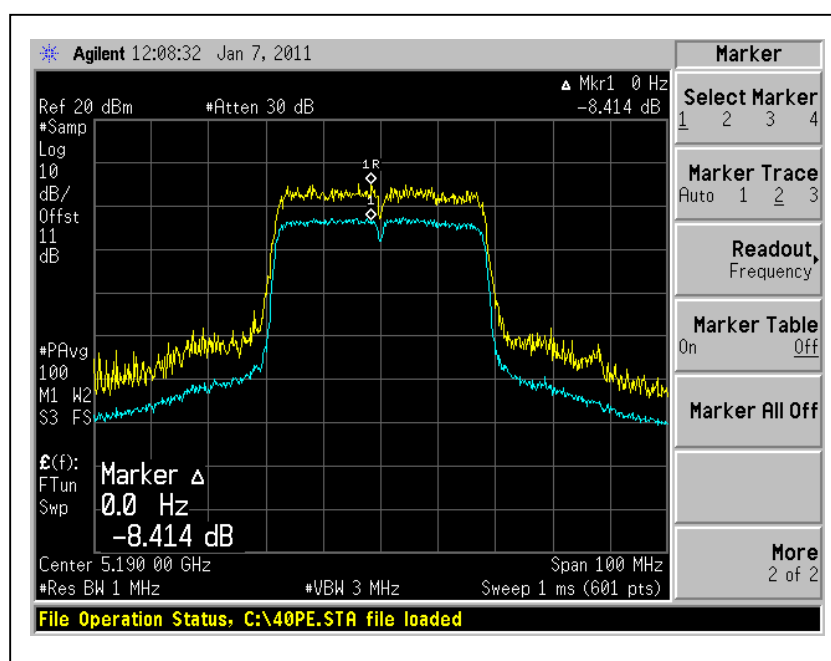
CH40



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
38	5190	8.4	13	PASS
46	5230	8.4	13	PASS

CH38



4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.47 ~ 5.725GHz	11dBm
5.725 ~ 5.825GHz	17dBm

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 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 PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

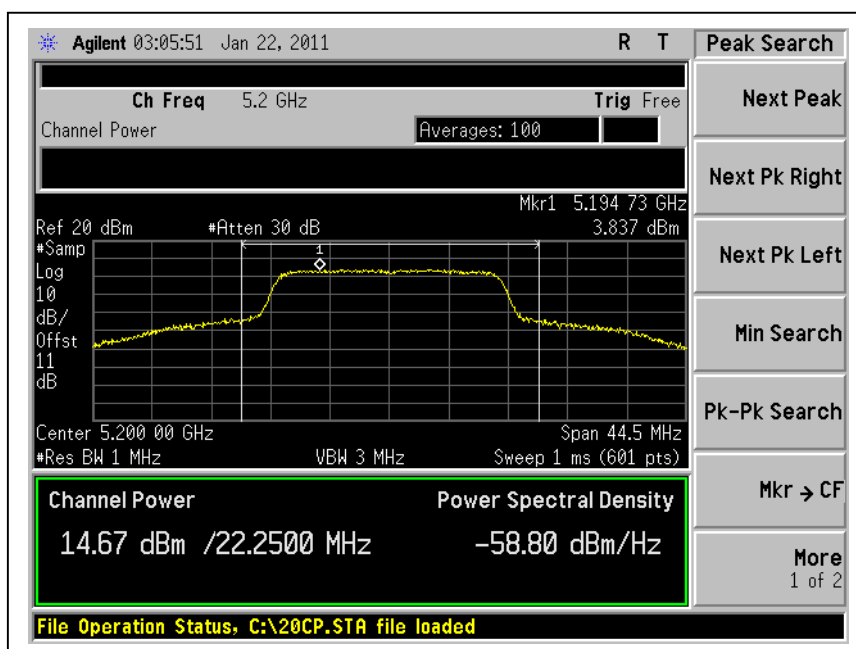
Same as 4.3.6

4.5.7 TEST RESULTS

802.11a OFDM MODULATION

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	3.4	4	PASS
40	5200	3.8	4	PASS
48	5240	3.4	4	PASS

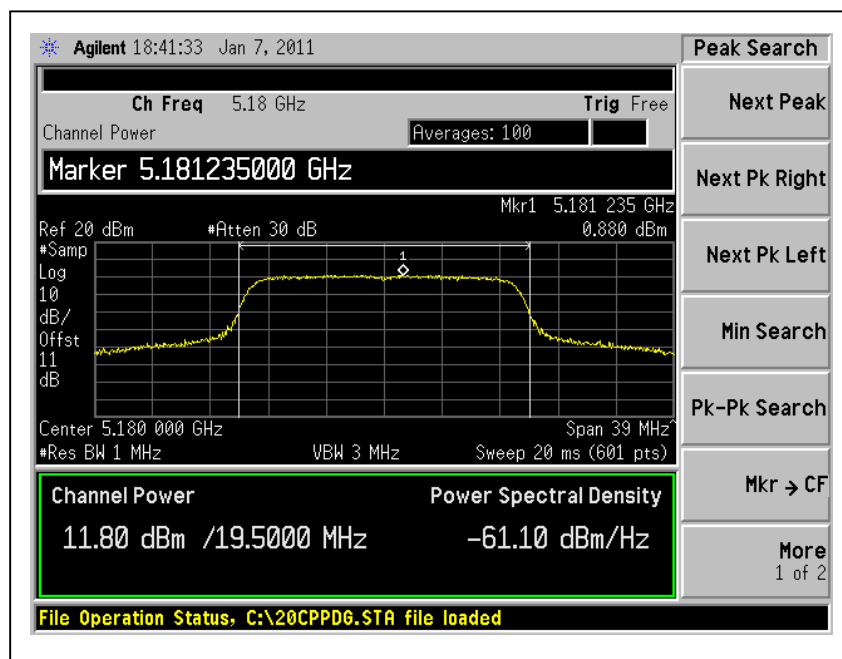
CH40



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)			
36	5180	0.9	0.5	3.7	4	PASS
40	5200	0.7	0.8	3.8	4	PASS
48	5240	0.6	0.7	3.7	4	PASS

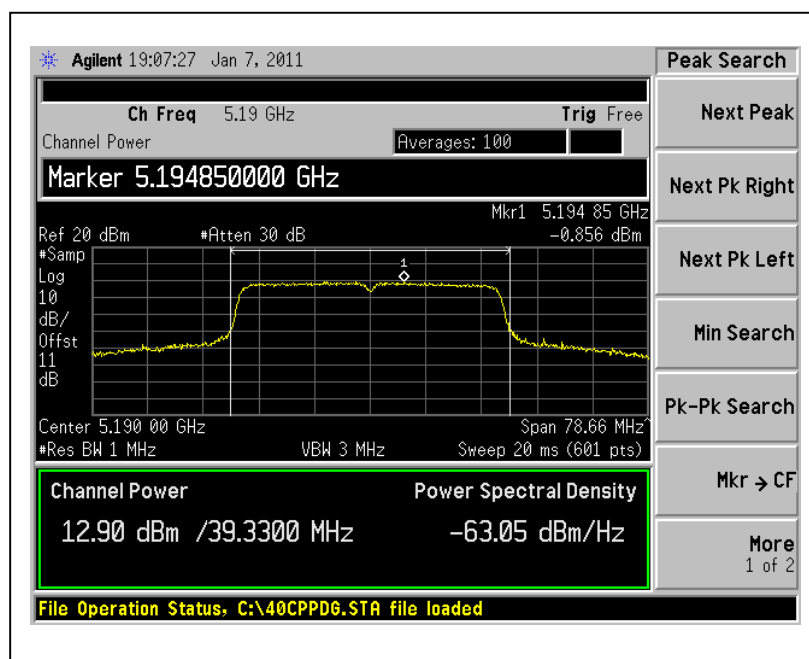
For Chain (0) : CH36



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)			
38	5190	-0.9	-1.3	1.90	4	PASS
46	5230	-1.4	-1.1	1.80	4	PASS

For Chain ((0) : CH38



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within the band of the operating frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Apr. 27, 2010	Apr. 26, 2011

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

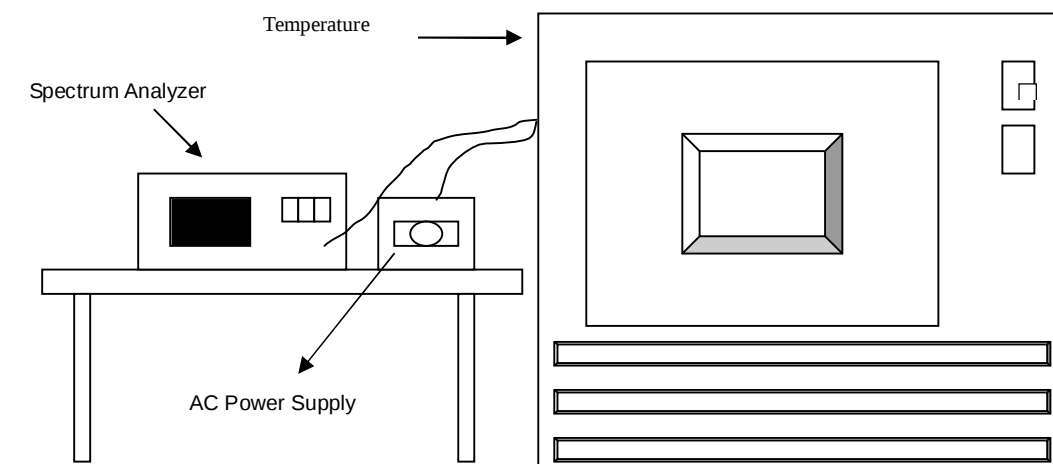
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.6.7 TEST RESULTS

Operating frequency: 5180MHz									
Temp. (°C)	Power supply (VAC)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5179.9952	0.000184	5179.9914	0.000331	5179.9912	0.000338	5179.9912	0.000337
	110	5179.9915	0.000327	5179.9916	0.000323	5179.9914	0.000330	5179.9915	0.000328
	93.5	5179.9915	0.000303	5179.9913	0.000302	5179.9912	0.000300	5179.9915	0.000300
40	126.5	5179.9921	0.000303	5179.9921	0.000302	5179.9922	0.000300	5179.9922	0.000300
	110	5179.9921	0.000303	5179.9921	0.000302	5179.9922	0.000300	5179.9923	0.000298
	93.5	5179.9921	0.000303	5179.9921	0.000303	5179.9922	0.000300	5179.9922	0.000299
30	126.5	5179.9915	0.000328	5179.9979	0.000081	5179.9796	0.000784	5179.9795	0.000786
	110	5179.9915	0.000328	5179.9913	0.000335	5179.9799	0.000772	5179.9798	0.000777
	93.5	5179.9915	0.000328	5179.9800	0.000769	5179.9797	0.000780	5179.9796	0.000783
20	126.5	5179.9797	0.000778	5179.9793	0.000796	5179.9793	0.000795	5179.9793	0.000794
	110	5179.9797	0.000778	5179.9796	0.000784	5179.9794	0.000791	5179.9794	0.000792
	93.5	5179.9795	0.000785	5179.9793	0.000796	5179.9793	0.000795	5179.9794	0.000793
10	126.5	5179.9969	0.000119	5179.9967	0.000119	5179.9967	0.000119	5179.9955	0.000142
	110	5179.9969	0.000119	5179.9969	0.000119	5179.9969	0.000119	5179.9963	0.000142
	93.5	5179.9969	0.000119	5179.9967	0.000127	5179.9966	0.000131	5179.9957	0.000165
0	126.5	5179.9917	0.000319	5179.9916	0.000323	5179.9915	0.000327	5179.9917	0.000319
	110	5179.9919	0.000311	5179.992	0.000307	5179.9919	0.000311	5179.9915	0.000327
	93.5	5179.9917	0.000319	5179.9916	0.000323	5179.9915	0.000327	5179.9912	0.000338
-10	126.5	5179.9927	0.000280	5179.9924	0.000292	5179.9923	0.000296	5179.9926	0.000284
	110	5179.9929	0.000273	5179.9924	0.000292	5179.9925	0.000288	5179.9922	0.000300
	93.5	5179.9927	0.000280	5179.9927	0.000280	5179.9922	0.000300	5179.9925	0.000288
-20	126.5	5179.9962	0.000146	5179.9959	0.000158	5179.9959	0.000158	5179.9947	0.000204
	110	5179.9962	0.000146	5179.9961	0.000158	5179.9961	0.000158	5179.9945	0.000223
	93.5	5179.9962	0.000146	5179.9959	0.000158	5179.9959	0.000158	5179.9942	0.000223
-30	126.5	5179.999	0.000038	5179.996	0.000154	5179.9969	0.000119	5179.9959	0.000158
	110	5179.979	0.000807	5179.997	0.000115	5179.9991	0.000035	5179.9957	0.000165
	93.5	5179.977	0.000884	5179.9969	0.000119	5179.9969	0.000119	5179.9955	0.000173



A D T

4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Apr. 27, 2010	Apr. 26, 2011

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

4.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set RBW of spectrum analyzer to 1MHz with suitable frequency span including 100MHz or 200MHz bandwidth from band edge. The band edges was measured and recorded.

4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

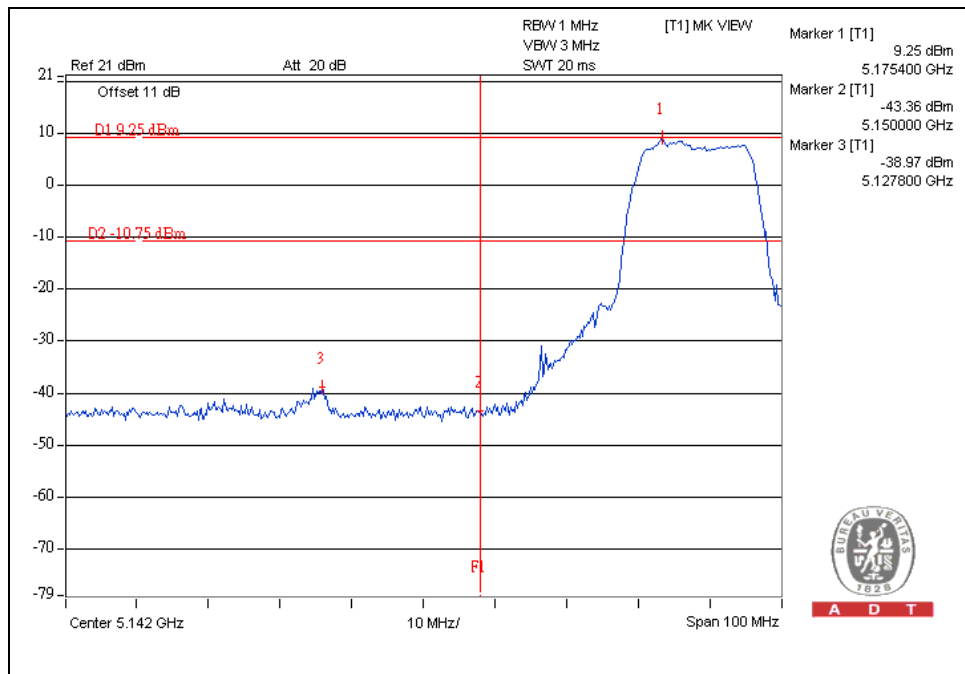
4.7.4 TEST RESULTS

For 5.15 to 5.35GHz band:

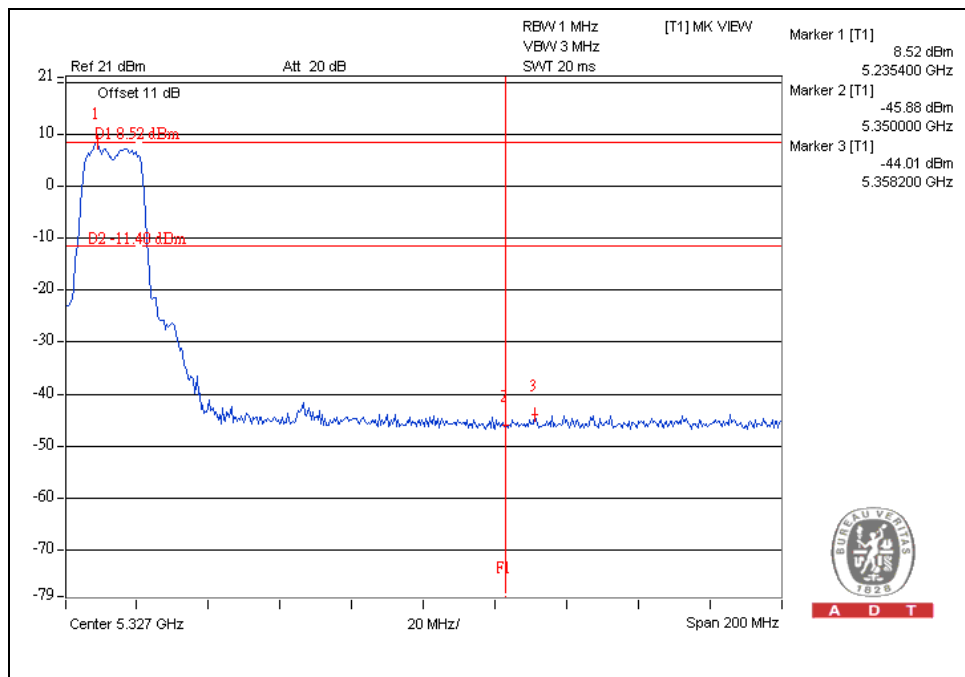
The spectrum plots (Peak RBW=1MHz, VBW=3MHz) are attached on the following pages.

802.11a OFDM modulation

CH 36



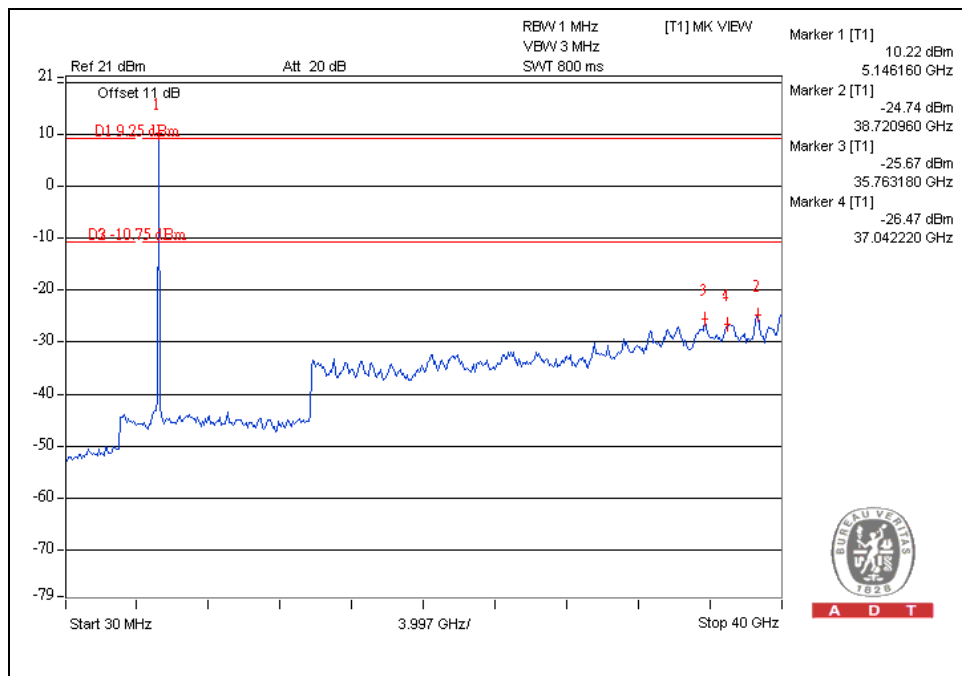
CH 48





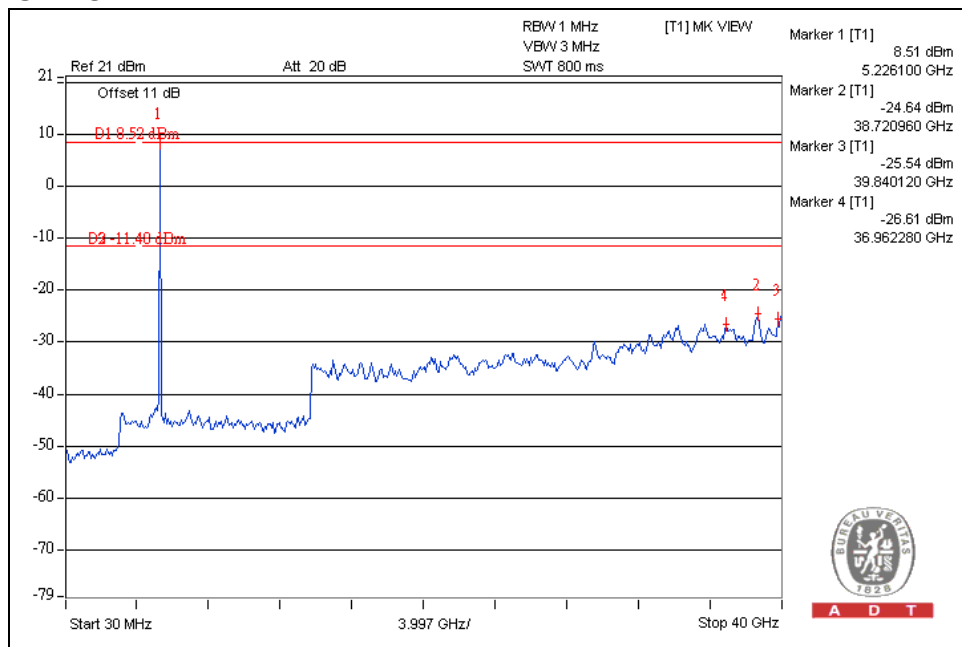
A D T

CH 36



A D T

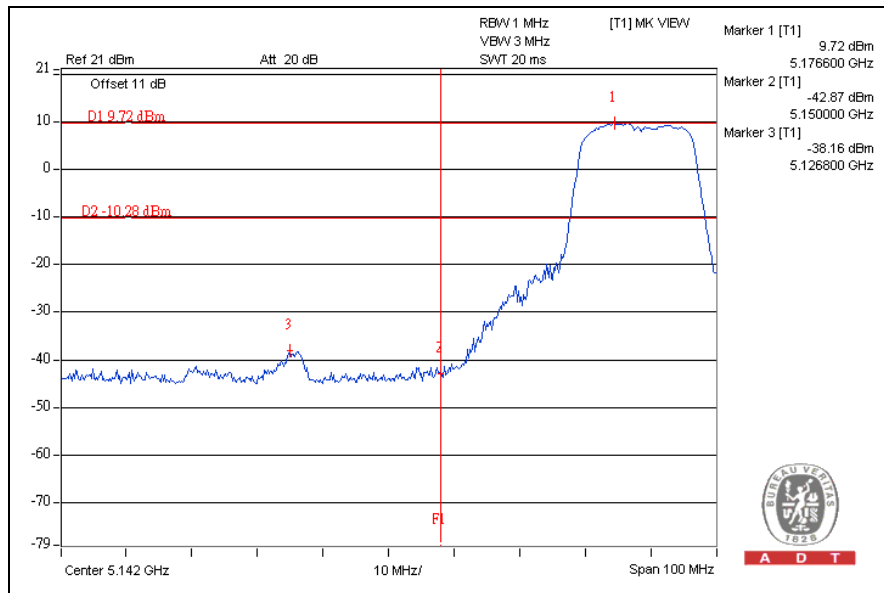
CH 48



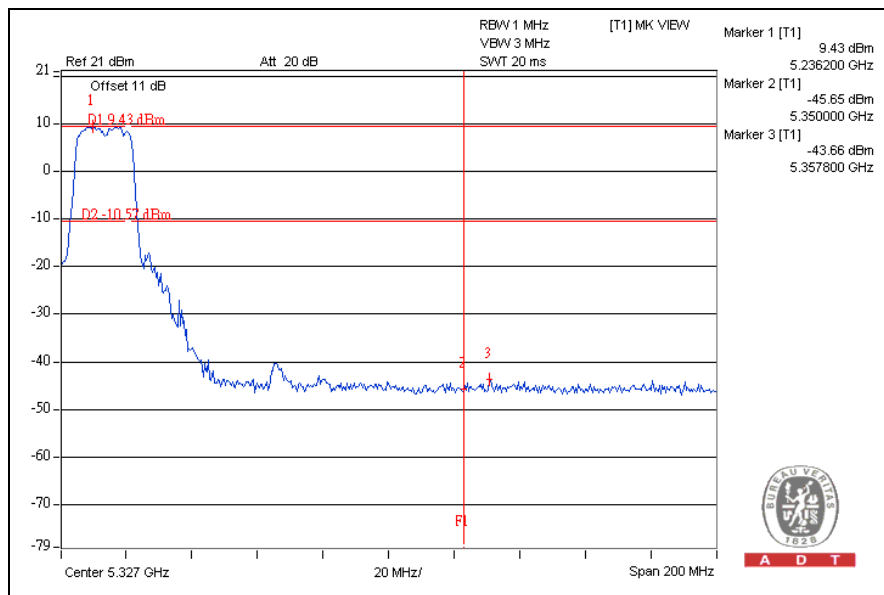
A D T

802.11n (20MHz) OFDM MODULATION:

CH36



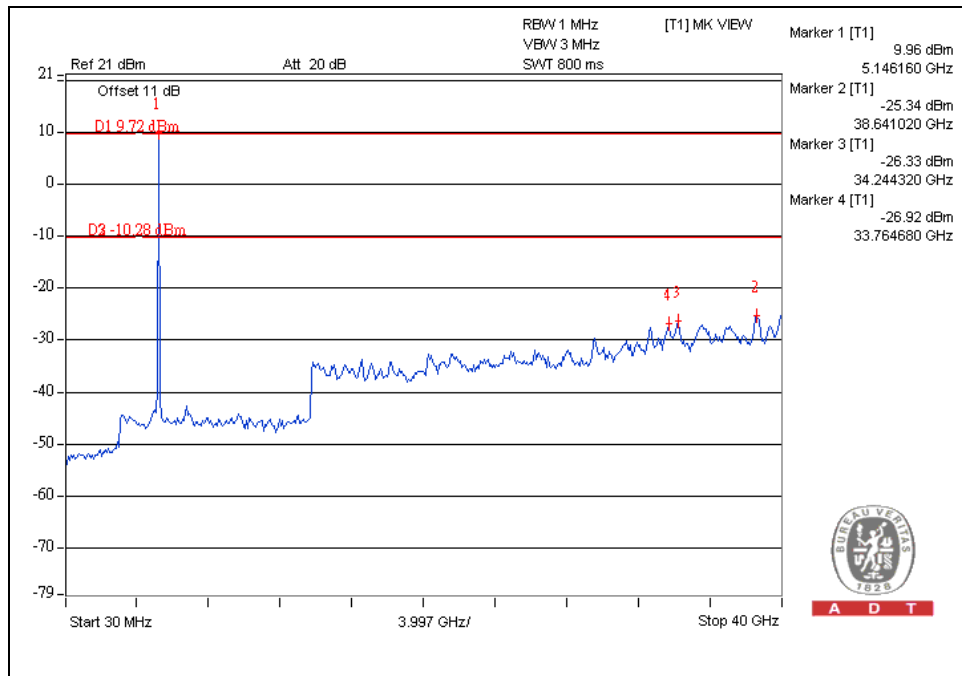
CH48





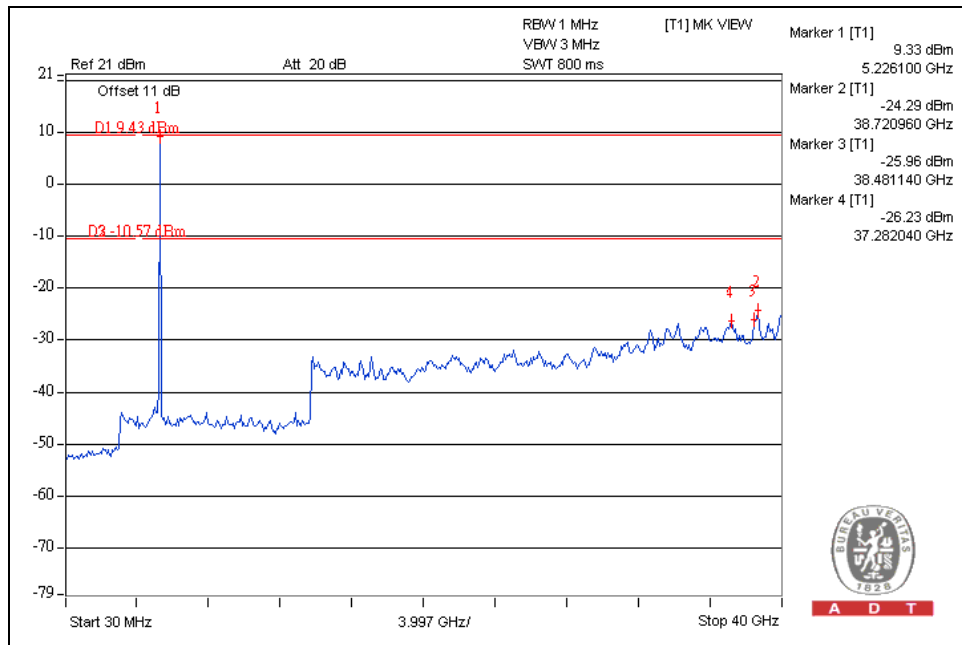
A D T

CH36



A D T

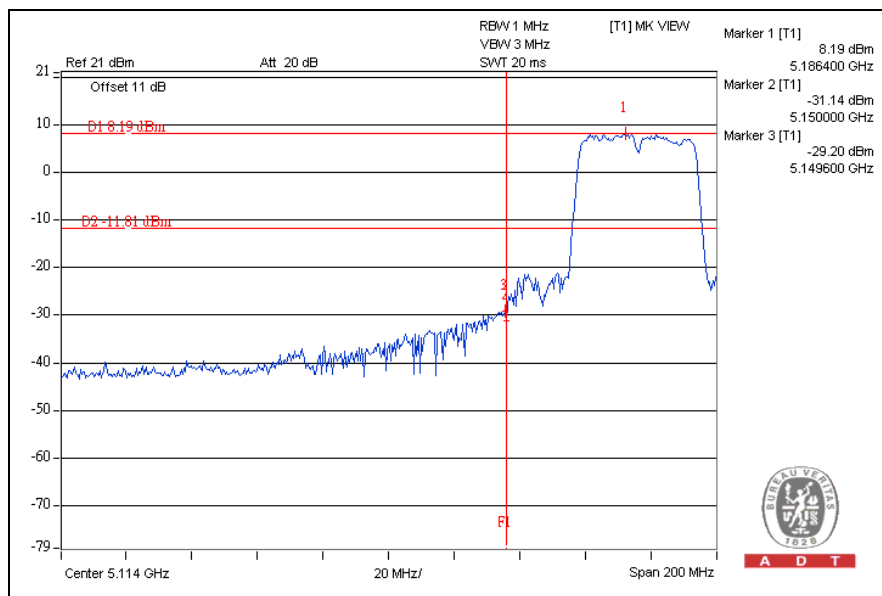
CH48



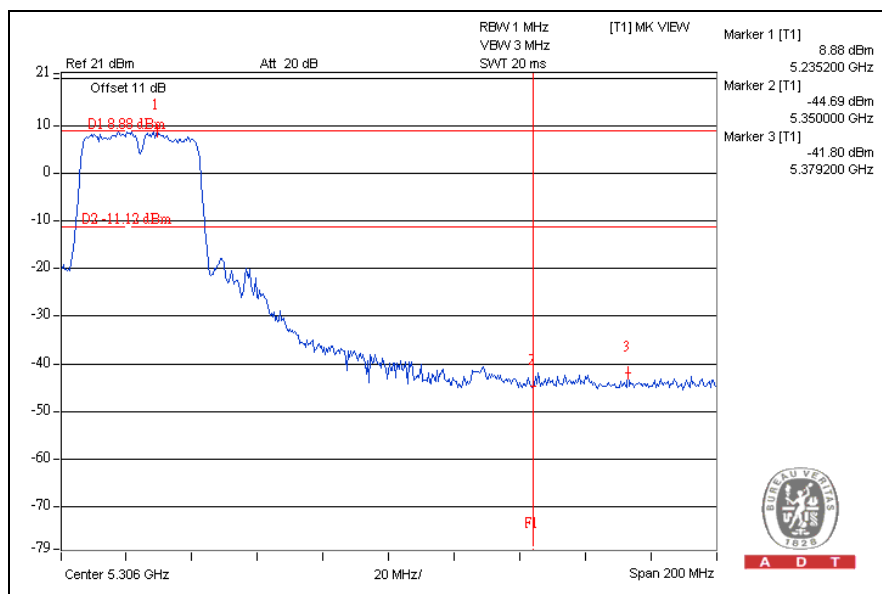
A D T

802.11n (40MHz) OFDM MODULATION:

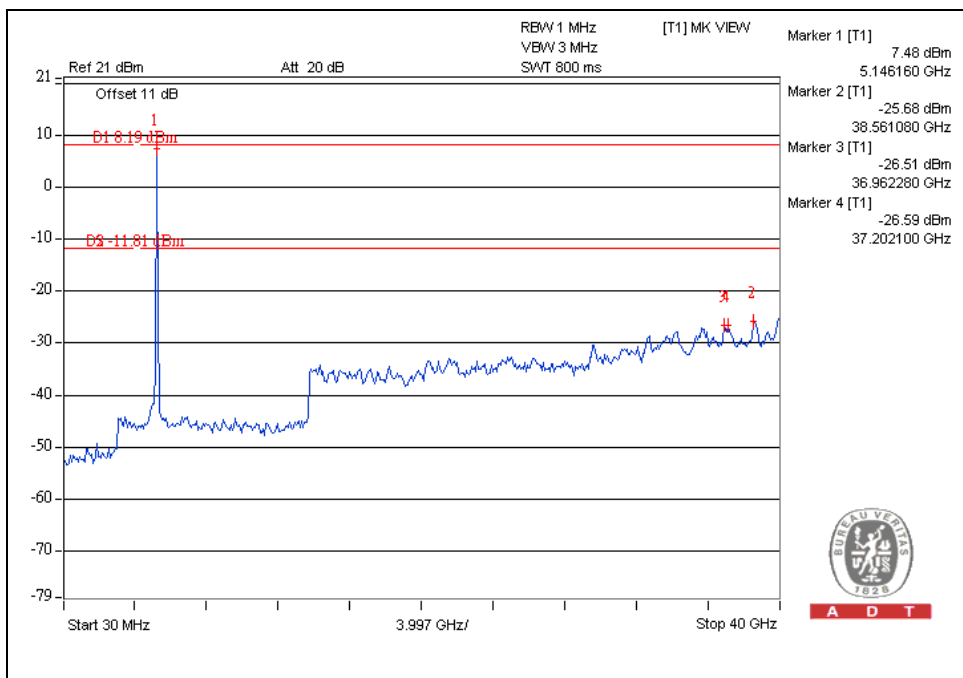
CH38



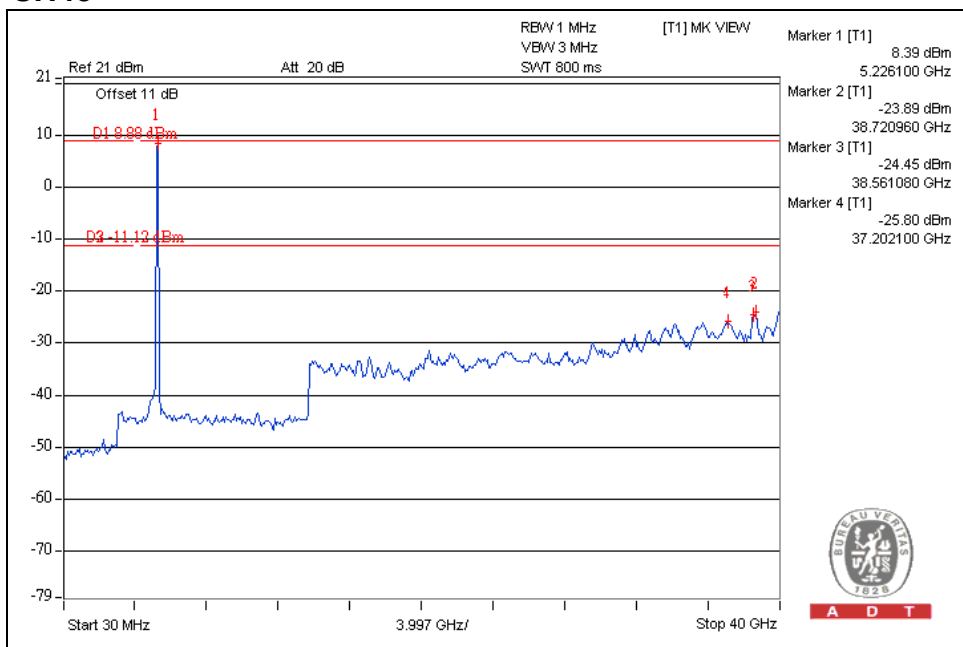
CH46



CH38



CH46



5. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Email: service@adt.com.tw

Web Site: www.adt.com.tw

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



A D T

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

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