FCC TEST REPORT (15.407)

REPORT NO.: RF110421E04-1

MODEL NO.: NBG5715, HGW-501HN-M

FCC ID: I88NBG5715

RECEIVED: Apr. 21, 2011

TESTED: Apr. 28 to May 12

ISSUED: Aug. 03, 2011

APPLICANT: ZyXEL Communications Corporation

ADDRESS: No. 6, Innovation Road II, Science-Park, Hsin-Chu, 300, Taiwan.

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

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

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

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

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110421E04-1	Original release	Aug. 03, 2011

1. CERTIFICATION

PRODUCT:	Simultaneous Dual-Band Wireless N Media Router
BRAND NAME:	ZyXEL, MitraStar
MODEL NO.:	NBG5715, HGW-501HN-M
TEST SAMPLE:	MASS-PRODUCTION
APPLICANT:	ZyXEL Communications Corporation
TESTED:	Apr. 28 to May 12
STANDARDS:	FCC Part 15, Subpart E (Section 15.407) ANSI C63.4-2003 ANSI C63.10-2009

The above equipment (Model: NBG5715) 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 : Phoenix Huang , **DATE:** Aug. 03, 2011
(Phoenix Huang, Specialist)

APPROVED BY : , **DATE:** Aug. 03, 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 -25.67dB at 0.184MHz
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 -0.9dB at 5150.00MHz
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 R-SMA not a standard 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.

2.1 MEASUREMENT UNCERTAINTY

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

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

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Simultaneous Dual-Band Wireless N Media Router
MODEL NO.	NBG5715, HGW-501HN-M
FCC ID	I88NBG5715
POWER SUPPLY	DC 12V from power adapter (Class II, AC 2 Pin)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	■802.11b: 11 / 5.5 / 2 / 1Mbps ■802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps ■802.11a: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps ■HT20 MCS0~7 (800ns GI): 6.5Mbps, 13Mbps, 19.5Mbps, 26Mbps, 39Mbps, 52Mbps, 58.5Mbps, 65Mbps, ■HT20 MCS8~15 (800ns GI): 13Mbps, 26Mbps, 39Mbps, 52Mbps, 78Mbps, 104Mbps, 117Mbps, 130Mbps. ■HT20 MCS16~23 (800ns GI): 19.5Mbps,39Mbps, 58.5Mbps, 78Mbps, 117Mbps, 156Mbps, 175.5Mbps, 195Mbps. ■HT40 MCS0~7 (800ns GI): 13.5Mbps, 27Mbps, 40.5Mbps, 54Mbps, 81Mbps, 108Mbps, 121.5Mbps, 135Mbps. ■HT40 MCS8~15 (800ns GI): 27Mbps, 54Mbps, 81Mbps, 108Mbps, 162Mbps, 216Mbps, 243Mbps, 270Mbps. ■HT40 MCS16~23 (800ns GI): 40.5Mbps, 81Mbps, 121.5Mbps, 162Mbps, 243Mbps, 324Mbps, 364.5Mbps, 405Mbps. ■HT20 MCS0~7 (400ns GI): 7.2Mbps, 14.4Mbps, 21.7Mbps, 28.9Mbps, 43.3Mbps, 57.8Mbps, 65.0Mbps, 72.2Mbps, ■HT20 MCS8~15 (400ns GI): 14.444Mbps, 28.889Mbps, 43.333Mbps, 57.778Mbps, 86.667Mbps, 115.556Mbps, 130.000Mbps, 144.444Mbps. ■HT20 MCS16~23 (400ns GI): 21.7Mbps, 43.3Mbps, 65Mbps, 86.7Mbps,130Mbps, 173.3Mbps, 195Mbps, 216.7Mbps. ■HT40 MCS0~7 (400ns GI): 15.0Mbps, 30.0Mbps, 45.0Mbps, 60.0Mbps, 90.0Mbps, 120.0Mbps, 135.0Mbps, 150.0Mbps, ■HT40 MCS8~15 (400ns GI): 30.0Mbps, 60.0Mbps, 90.0Mbps, 120.0Mbps, 180.0Mbps, 240.0Mbps, 270.0Mbps, 300.0Mbps. ■HT40 MCS16~23 (400ns GI): 45Mbps,90.0Mbps, 135Mbps, 180.0Mbps, 270.0Mbps, 360.0Mbps, 405Mbps, 450.0Mbps.

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
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: 22.9mW 802.11n (20MHz): 29.6mW 802.11n (40MHz): 46.8 mW **For 15.247(2.4GHz)** 802.11b: 53.7mW 802.11g: 501.9mW 802.11n (20MHz): 483.6mW 802.11n (40MHz): 501.9mW **For 15.247(5GHz)** 802.11a: 275.7mW 802.11n (20MHz): 276.2mW 802.11n (40MHz): 280.2mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	LAN port (Ethernet: 10, 100, 1000Mbps) x 4 WAN port x 1 USB port x 2
ASSOCIATED DEVICES	Adapter x 1

NOTE:

1. The EUT has two brand names and model names, which are identical to each other in all aspects except for the following table:

Brand	Model No.	Description
ZyXEL	NBG5715	For marketing requirement to separate difference models.
MitraStar	HGW-501HN-M	

From the above models, model: **NBG5715** was selected as representative model for the test and its data was recorded in this report.

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

Transmitter Circuit	Manufacturer	Model name	Peak Gain (Included Cable loss)	Antenna Type	Connecter Type
Chain (0)	ARISTOTLE	RFA-25-C2M2-M10-1	2.4G & 5G: 2dBi	Dipole	R-SMA
Chain (1)			2.4G & 5G: 2dBi	Dipole	R-SMA
Chain (2)			2.4G & 5G: 2dBi	Dipole	R-SMA

3. The EUT must be supplied with a power adapter:

Brand:	DVE
Model No.:	DSA-24CA-12 120200
Input power :	100-240V 50/60Hz, 0.8A
Output power :	DC 12V, 2A DC output cable (Unshielded, 1.55m, With one core)

4. The EUT is 3 * 3 spatial MIMO (3Tx & 3Rx) without beam forming function. The 11b legacy mode is limited to single transmitter only.
5. The EUT incorporates CDD function with 802.11a, 802.11g and MIMO function with 802.11n.
6. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 23.
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 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 ³ 1G	APCM	OB	
-	√	√	√	√	√	-

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

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

OB: Conducted Out-Band Emission Measurement

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)	TX CHAIN(2)
A	802.11 a	√	√	√
B	802.11n(20MHz) for MCS0~23	√	√	√
C	802.11n(40MHz) for MCS0~23	√	√	√
Note: The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.				

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (MBPS)	COMBINATION MODE
802.11n (20MHz)	36 to 48	48	OFDM	BPSK	6.5	B

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11n (20MHz)	36 to 48	48	OFDM	BPSK	6.5	B

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	B
802.11n (40MHz)	38 to 46	38, 46	OFDM	BPSK	13.5	C

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

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

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

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

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

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 64%RH, 1005 hPa	120Vac, 60Hz	Kent Liu
RE<1G	17deg. C, 69%RH, 1005 hPa	120Vac, 60Hz	Frank Liu
PLC	24deg. C, 69%RH, 1005 hPa	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH, 1005 hPa	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH, 1005 hPa	120Vac, 60Hz	Rex Huang

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart 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.

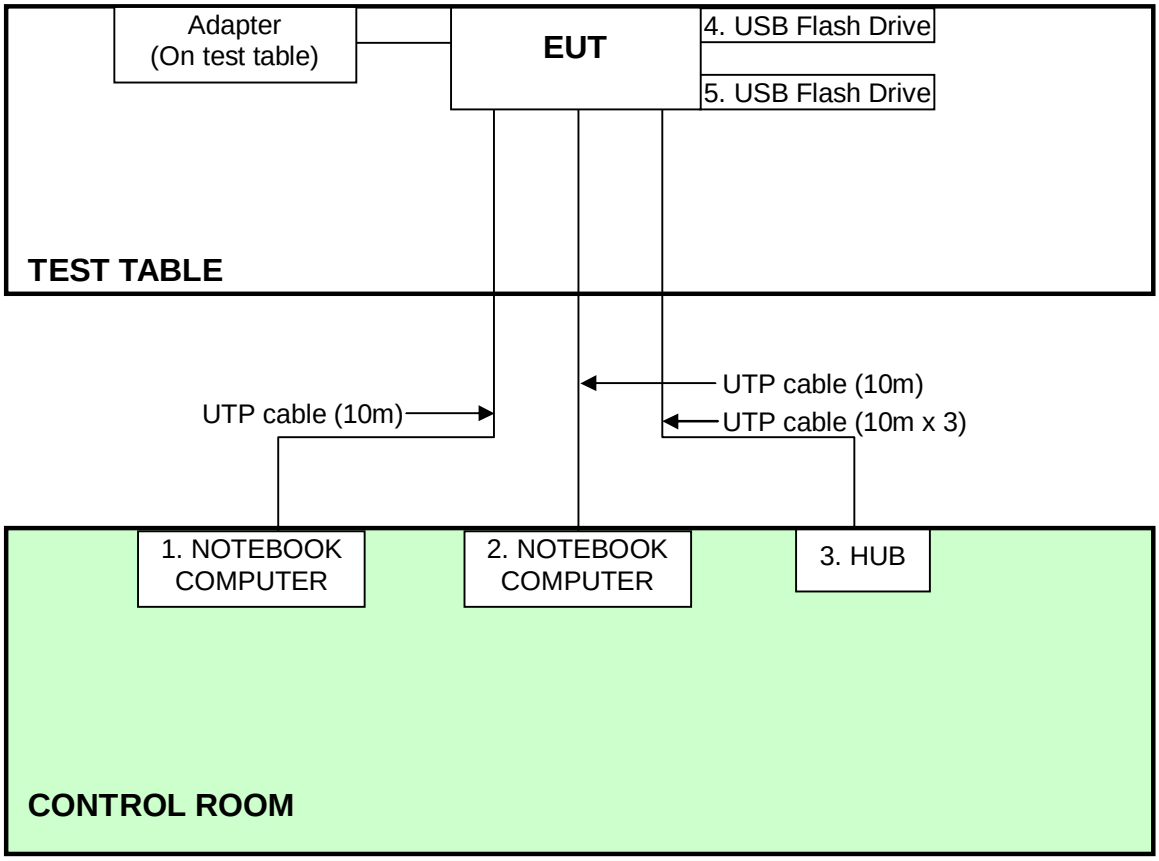
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
2	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC
4	USB Flash Disk (For Conducted test)	Transcenr	JF168	NA	NA
	iPod shuffle	Apple	MC749TA/A	CC4DN29UDFDM	NA
5	USB Flash Disk (For Conducted test)	Transcenr	NA	NA	NA
	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFDM	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP Cable, 10m
2	UTP Cable, 10m
3	UTP Cable, 10m
4	NA
	USB Cable W/O Core, 0.1m
5	NA
	USB Cable W/O Core, 0.1m

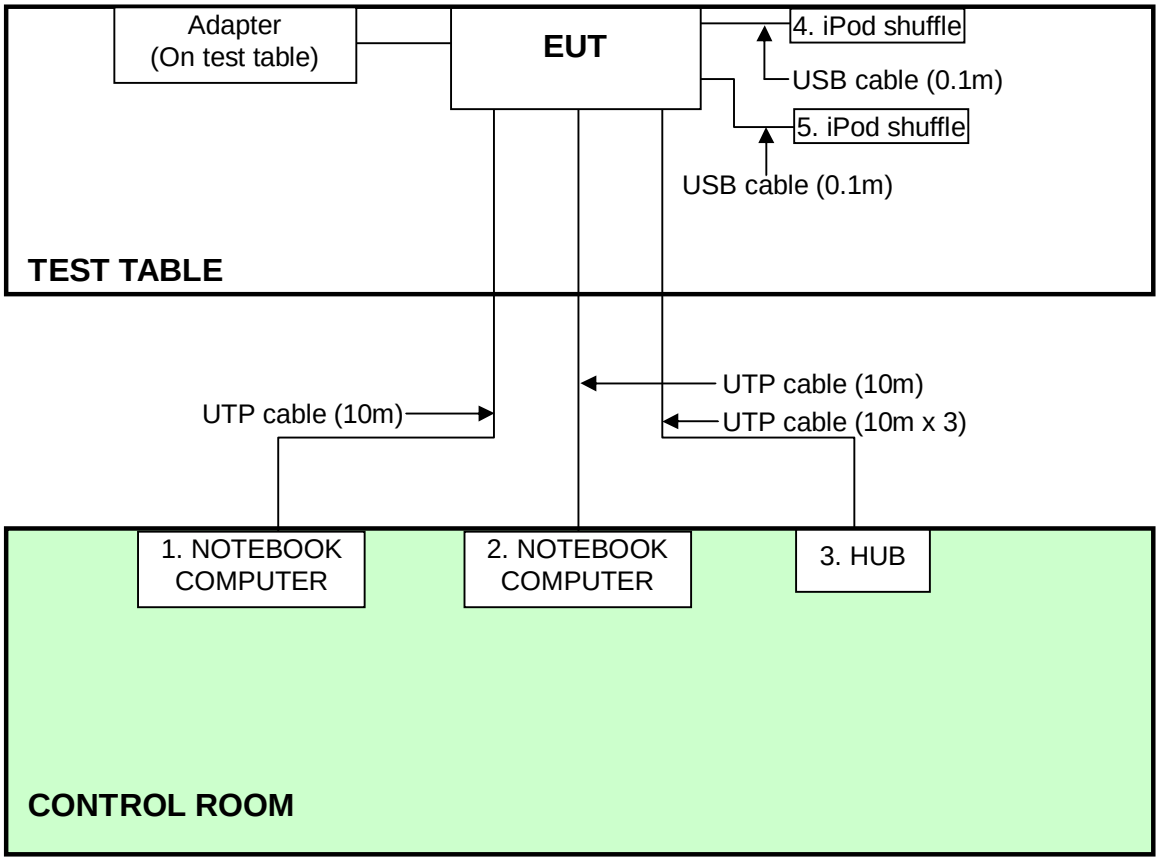
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted test:



For Other 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 (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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: Apr. 28, 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.

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

b. provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

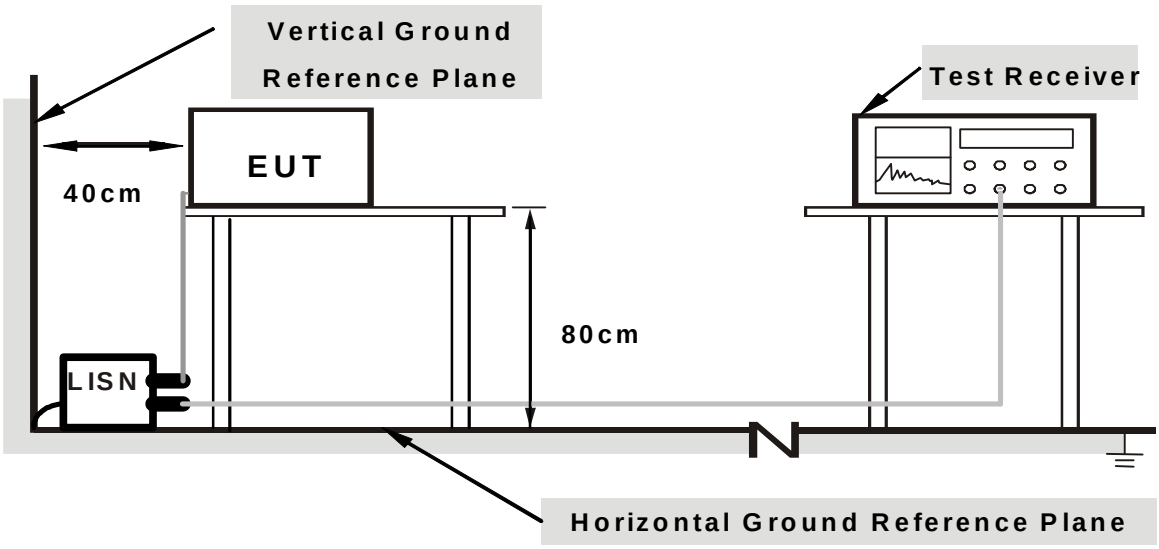
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

d. 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 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

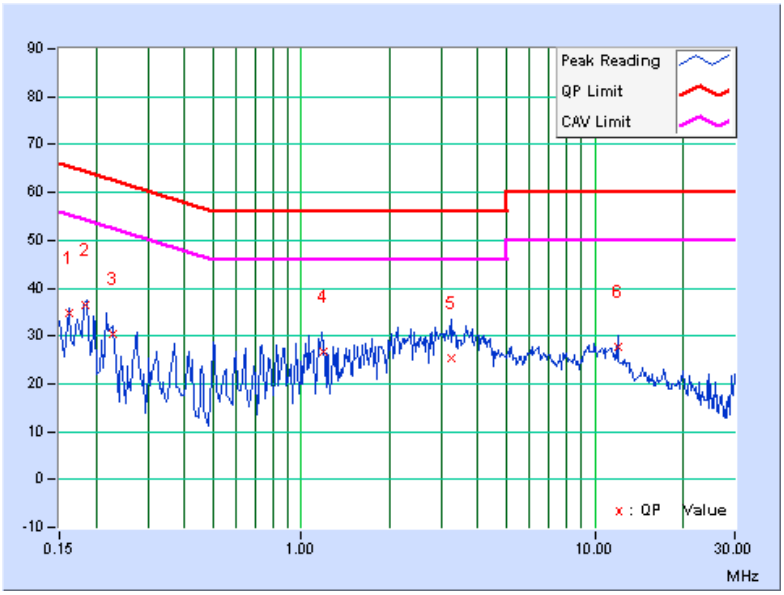
1. Placed the EUT on testing table.
2. Prepared computer system (support unit 2) to act as communication partner and placed it outside of testing area.
3. The communication partners ran test program “RT3883QA.exe” to enable EUT under transmission/receiving condition continuously via one UTP cable transmission.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.11	34.52	-	34.63	-	65.37	55.37	-30.74	-
2	0.184	0.12	36.33	-	36.45	-	64.31	54.31	-27.86	-
3	0.229	0.13	30.25	-	30.38	-	62.50	52.50	-32.12	-
4	1.191	0.14	26.62	-	26.76	-	56.00	46.00	-29.24	-
5	3.235	0.18	25.22	-	25.40	-	56.00	46.00	-30.60	-
6	11.998	0.51	27.28	-	27.79	-	60.00	50.00	-32.21	-

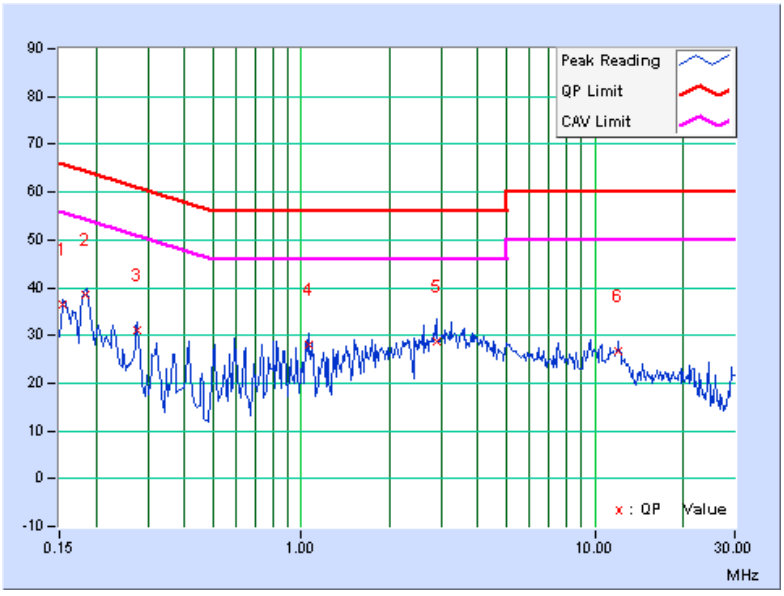
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.12	36.38	-	36.50	-	65.79	55.79	-29.29	-
2	**0.184**	**0.13**	**38.49**	**-**	**38.62**	**-**	**64.29**	**54.29**	**-25.67**	**-**
3	0.275	0.14	30.83	-	30.97	-	60.97	50.97	-29.99	-
4	1.057	0.16	28.05	-	28.21	-	56.00	46.00	-27.79	-
5	2.893	0.23	28.46	-	28.69	-	56.00	46.00	-27.31	-
6	11.997	0.95	25.73	-	26.68	-	60.00	50.00	-33.32	-

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

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

4.2.3 TEST INSTRUMENTS

Test date: Apr. 29 to May 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 14, 2010	July 13, 2011
Agilent Pre-Selector	N9039A	MY46520311	July 14, 2010	July 13, 2011
Agilent Signal Generator	N5181A	MY49060517	July 14, 2010	July 13, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02578	July 05, 2010	July 04, 2011
Miteq Pre-Amplifier	AFS33-18002650-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 12, 2010	Nov. 11, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

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

4.2.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meters chamber test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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

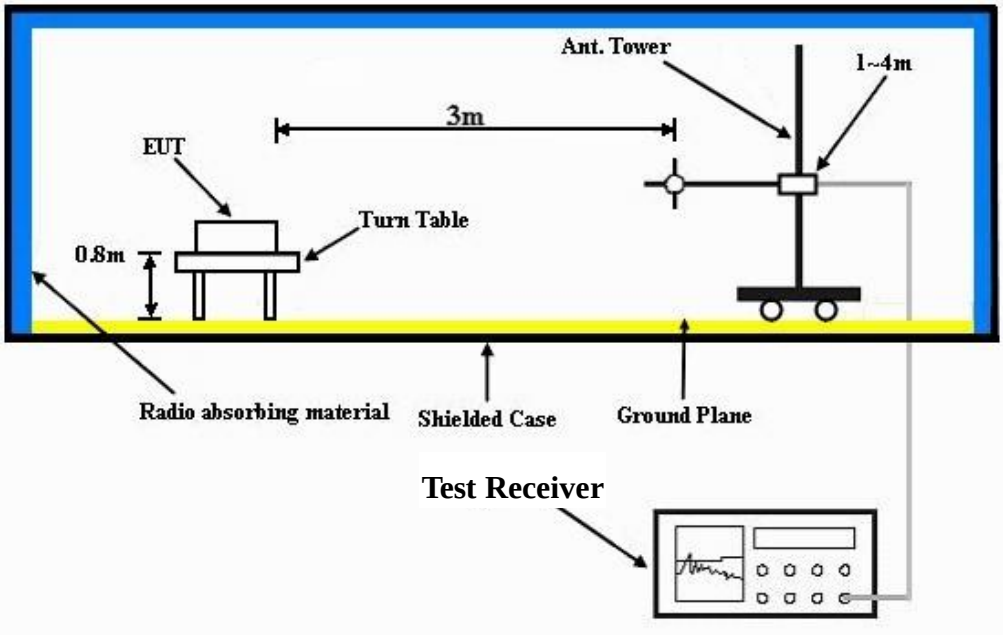
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



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

4.2.7 EUT OPERATING CONDITION

1. Placed the EUT on testing table.
2. Prepared computer system (support unit 2) to act as communication partner and placed it outside of testing area.
3. The communication partners ran test program “RT3883QA.exe” to enable EUT under transmission/receiving condition continuously via one UTP cable transmission.

4.2.8 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac / 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	17deg. C, 69%RH 1005 hPa	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.26	40.1 QP	43.5	-3.4	2.00 H	285	27.10	13.02
2	249.99	40.8 QP	46.0	-5.2	1.25 H	307	27.39	13.42
3	415.11	37.4 QP	46.0	-8.6	1.00 H	231	19.36	18.05
4	445.79	35.3 QP	46.0	-10.7	1.50 H	3	16.51	18.78
5	625.01	43.7 QP	46.0	-2.3	1.00 H	322	20.95	22.72
6	874.99	42.9 QP	46.0	-3.1	1.00 H	0	16.56	26.37
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	124.57	40.9 QP	43.5	-2.6	1.50 V	5	27.90	13.02
2	409.15	30.2 QP	46.0	-15.8	1.00 V	218	12.34	17.88
3	501.22	42.5 QP	46.0	-3.5	1.00 V	355	22.55	19.95
4	625.11	43.9 QP	46.0	-2.1	1.50 V	4	21.63	22.27
5	921.90	43.8 QP	46.0	-2.2	1.00 V	235	17.17	26.67
6	954.01	42.5 QP	46.0	-3.5	1.50 V	360	15.54	26.92

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	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent 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	5127.90	58.0 PK	74.0	-16.0	1.16 H	118	18.12	39.88
2	5127.90	47.1 AV	54.0	-6.9	1.16 H	118	7.22	39.88
3	*5180.00	107.2 PK			1.16 H	118	67.18	40.02
4	*5180.00	96.1 AV			1.16 H	118	56.08	40.02
5	#10360.00	54.7 PK	68.3	-13.6	1.00 H	310	8.17	46.53
6	15540.00	59.3 PK	74.0	-14.7	1.13 H	26	7.93	51.37
7	15540.00	48.4 AV	54.0	-5.6	1.13 H	26	-2.97	51.37
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	57.2 PK	74.0	-16.8	1.03 V	48	17.32	39.88
2	5128.30	48.2 AV	54.0	-5.8	1.03 V	48	8.32	39.88
3	*5180.00	108.7 PK			1.03 V	48	68.68	40.02
4	*5180.00	96.7 AV			1.03 V	48	56.68	40.02
5	#10360.00	54.4 PK	68.3	-13.9	1.00 V	46	7.87	46.53
6	15540.00	59.2 PK	74.0	-14.8	1.00 V	13	7.83	51.37
7	15540.00	48.1 AV	54.0	-5.9	1.00 V	13	-3.27	51.37

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	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent 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	*5200.00	107.1 PK			1.18 H	105	67.03	40.07
2	*5200.00	95.8 AV			1.18 H	105	55.73	40.07
3	#10400.00	54.2 PK	68.3	-14.1	1.00 H	313	7.63	46.57
4	15600.00	59.7 PK	74.0	-14.3	1.19 H	117	8.23	51.47
5	15600.00	48.4 AV	54.0	-5.6	1.19 H	117	-3.07	51.47
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	107.3 PK			1.00 V	63	67.23	40.07
2	*5200.00	96.3 AV			1.00 V	63	56.23	40.07
3	#10400.00	54.1 PK	68.3	-14.2	1.00 V	36	7.53	46.57
4	15600.00	59.4 PK	74.0	-14.6	1.00 V	53	7.93	51.47
5	15600.00	48.7 AV	54.0	-5.3	1.00 V	53	-2.77	51.47

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.

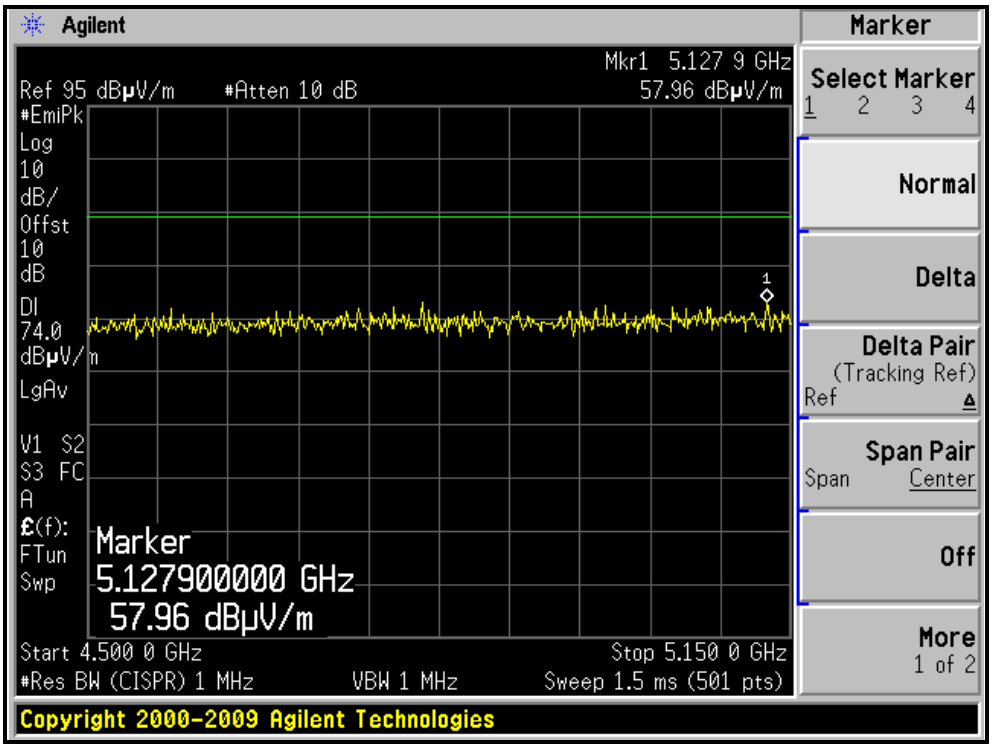
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent Liu

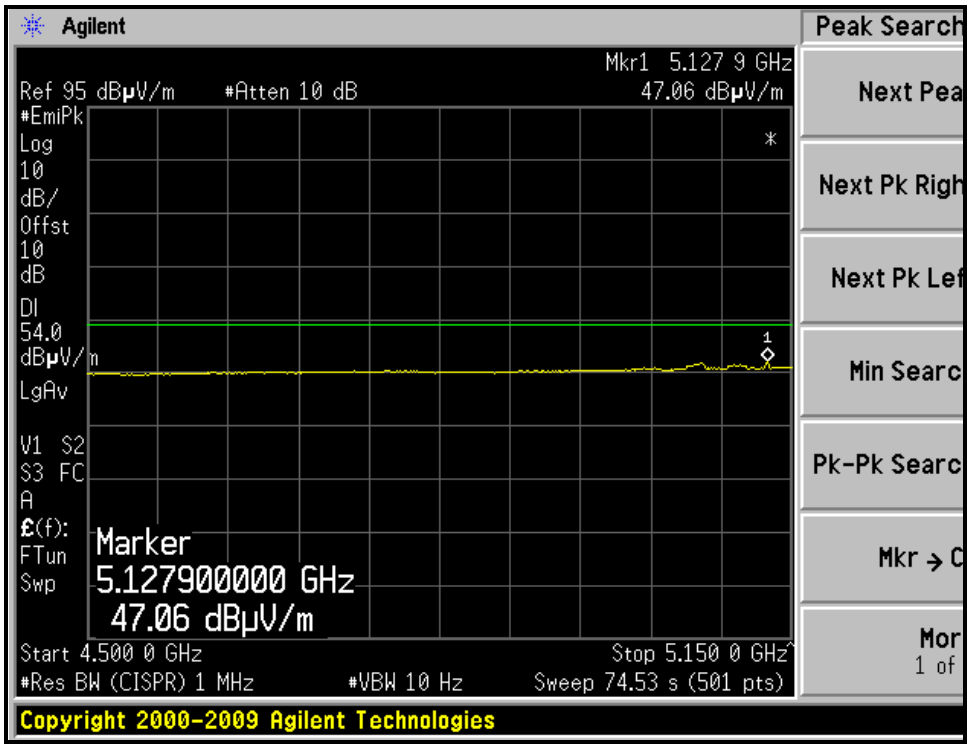
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.3 PK			1.12 H	107	67.13	40.17
2	*5240.00	96.3 AV			1.12 H	107	56.13	40.17
3	5350.00	58.0 PK	74.0	-16.0	1.10 H	114	17.53	40.47
4	5350.00	46.3 AV	54.0	-7.7	1.10 H	114	5.83	40.47
5	#10480.00	54.7 PK	68.3	-13.6	1.00 H	313	8.03	46.67
6	15720.00	59.9 PK	74.0	-14.1	1.19 H	46	8.39	51.51
7	15720.00	48.2 AV	54.0	-5.8	1.19 H	46	-3.31	51.51
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	107.3 PK			1.00 V	62	67.13	40.17
2	*5240.00	96.4 AV			1.00 V	62	56.23	40.17
3	5352.93	59.2 PK	74.0	-14.8	1.03 V	48	18.72	40.48
4	5352.93	46.8 AV	54.0	-7.2	1.03 V	48	6.32	40.48
5	#10480.00	54.3 PK	68.3	-14.0	1.00 V	0	7.63	46.67
6	15720.00	59.8 PK	74.0	-14.2	1.00 V	0	8.29	51.51
7	15720.00	48.6 AV	54.0	-5.4	1.00 V	0	-2.91	51.51

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

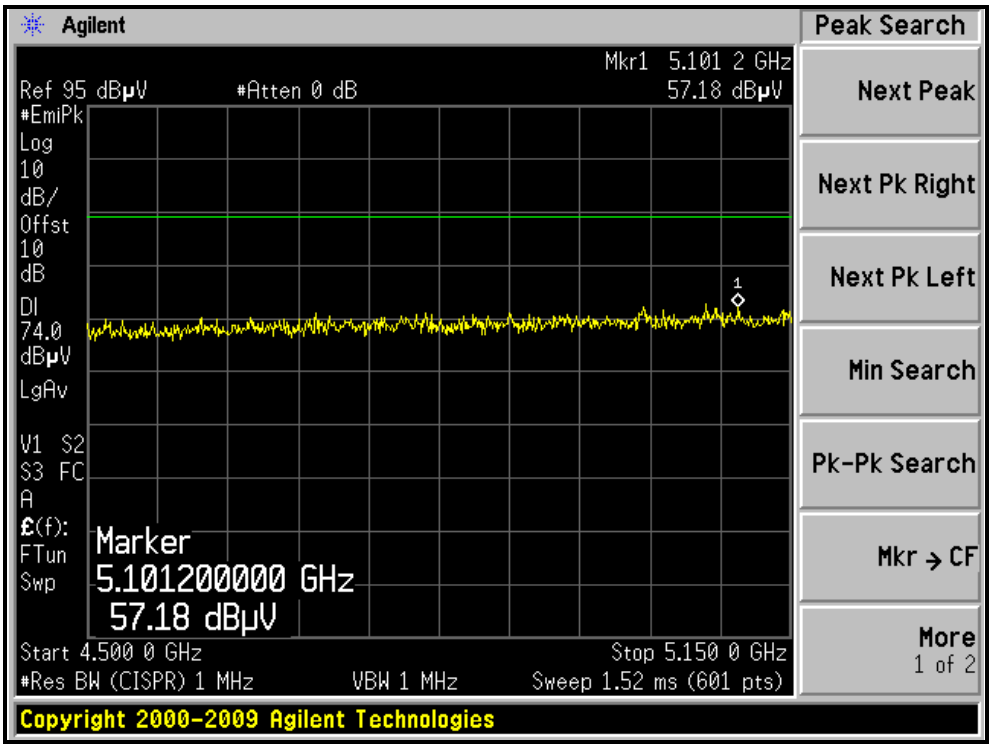
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

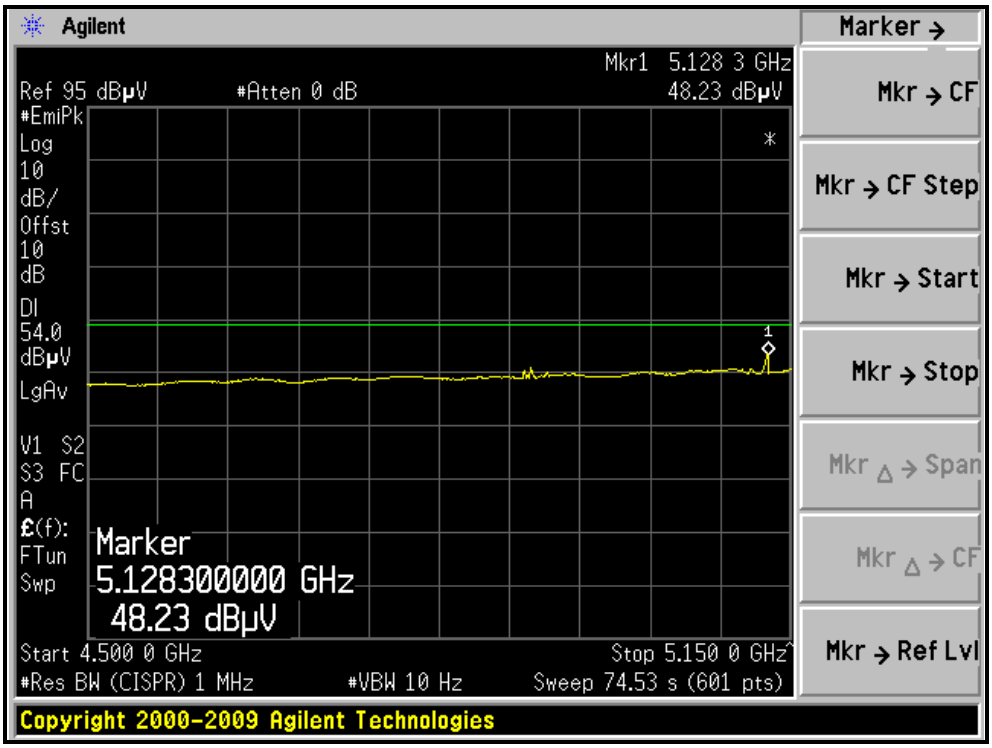
RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)





RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)





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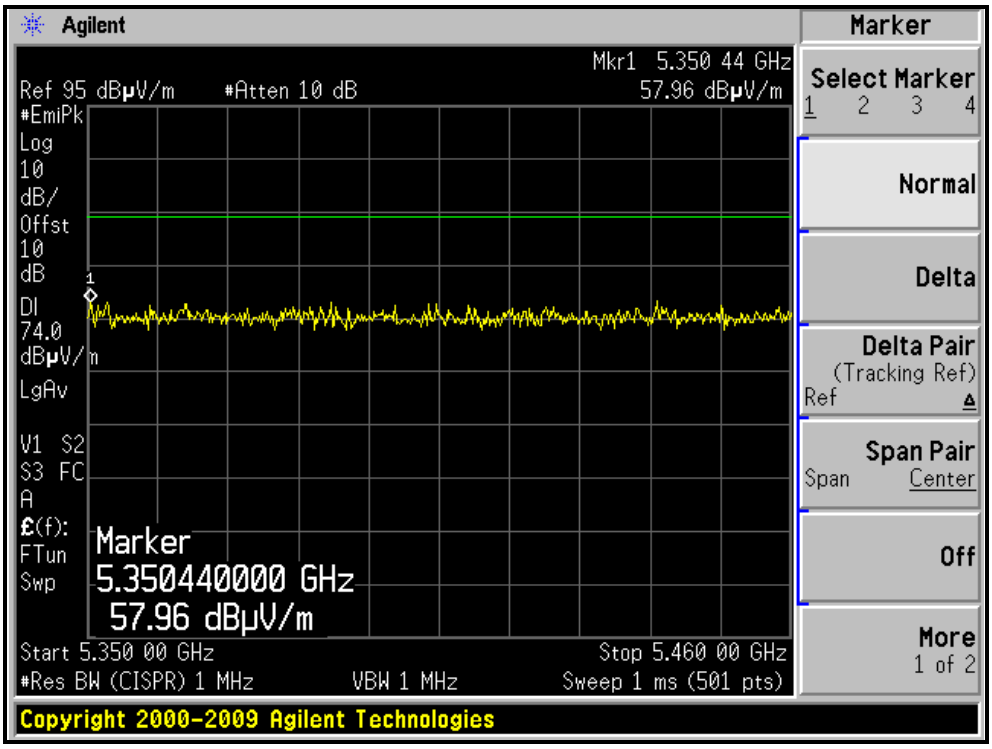
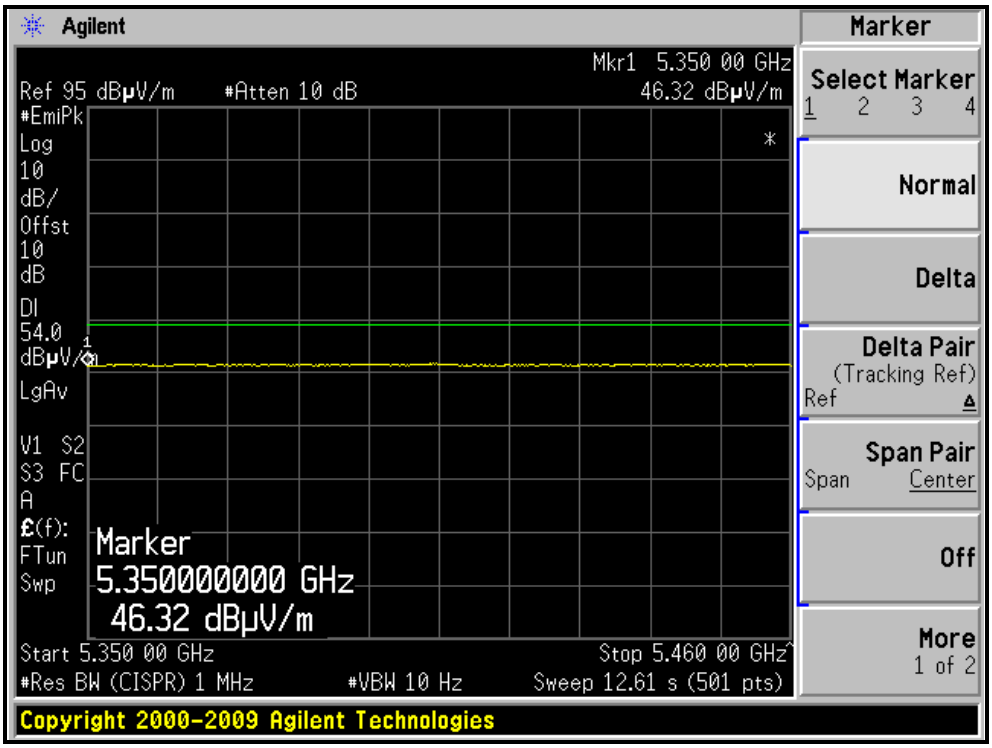
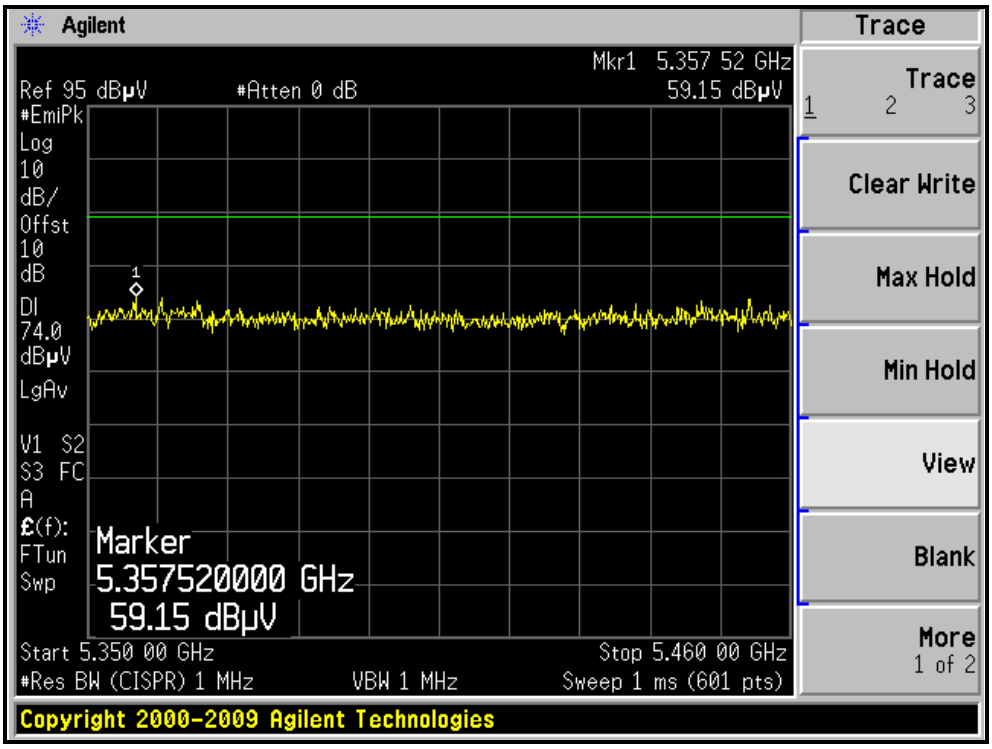
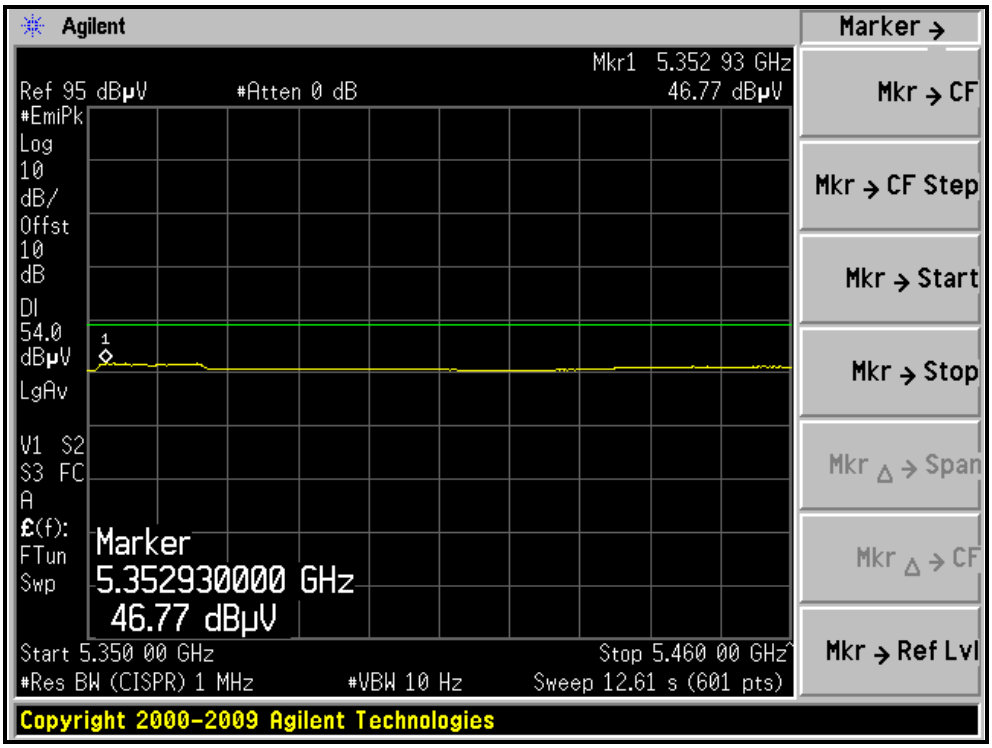




RESTRICTED BANDEDGE (802.11a MODE, CH48, VERTICAL)





802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent 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	5127.90	57.1 PK	74.0	-16.9	1.19 H	104	17.22	39.88
2	5127.90	47.1 AV	54.0	-6.9	1.19 H	104	7.22	39.88
3	*5180.00	107.3 PK			1.12 H	129	67.28	40.02
4	*5180.00	96.5 AV			1.12 H	129	56.48	40.02
5	#10360.00	55.4 PK	68.3	-12.9	1.03 H	334	8.87	46.53
6	15540.00	60.2 PK	74.0	-13.8	1.20 H	53	8.83	51.37
7	15540.00	48.6 AV	54.0	-5.4	1.20 H	53	-2.77	51.37
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	58.0 PK	74.0	-16.0	1.07 V	10	18.12	39.88
2	5127.20	48.4 AV	54.0	-5.6	1.07 V	10	8.52	39.88
3	*5180.00	110.3 PK			1.07 V	10	70.28	40.02
4	*5180.00	97.8 AV			1.07 V	10	57.78	40.02
5	#10360.00	54.8 PK	68.3	-13.5	1.47 V	273	8.27	46.53
6	15540.00	60.0 PK	74.0	-14.0	1.00 V	58	8.63	51.37
7	15540.00	48.9 AV	54.0	-5.1	1.00 V	58	-2.47	51.37

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	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent 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	*5200.00	107.6 PK			1.14 H	126	67.53	40.07
2	*5200.00	96.7 AV			1.14 H	126	56.63	40.07
3	#10400.00	56.2 PK	68.3	-12.1	1.02 H	339	9.63	46.57
4	15600.00	60.3 PK	74.0	-13.7	1.25 H	56	8.83	51.47
5	15600.00	49.0 AV	54.0	-5.0	1.25 H	56	-2.47	51.47
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	110.9 PK			1.07 V	23	70.83	40.07
2	*5200.00	97.6 AV			1.07 V	23	57.53	40.07
3	#10400.00	54.8 PK	68.3	-13.5	1.50 V	269	8.23	46.57
4	15600.00	60.5 PK	74.0	-13.5	1.00 V	58	9.03	51.47
5	15600.00	49.3 AV	54.0	-4.7	1.00 V	58	-2.17	51.47

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.

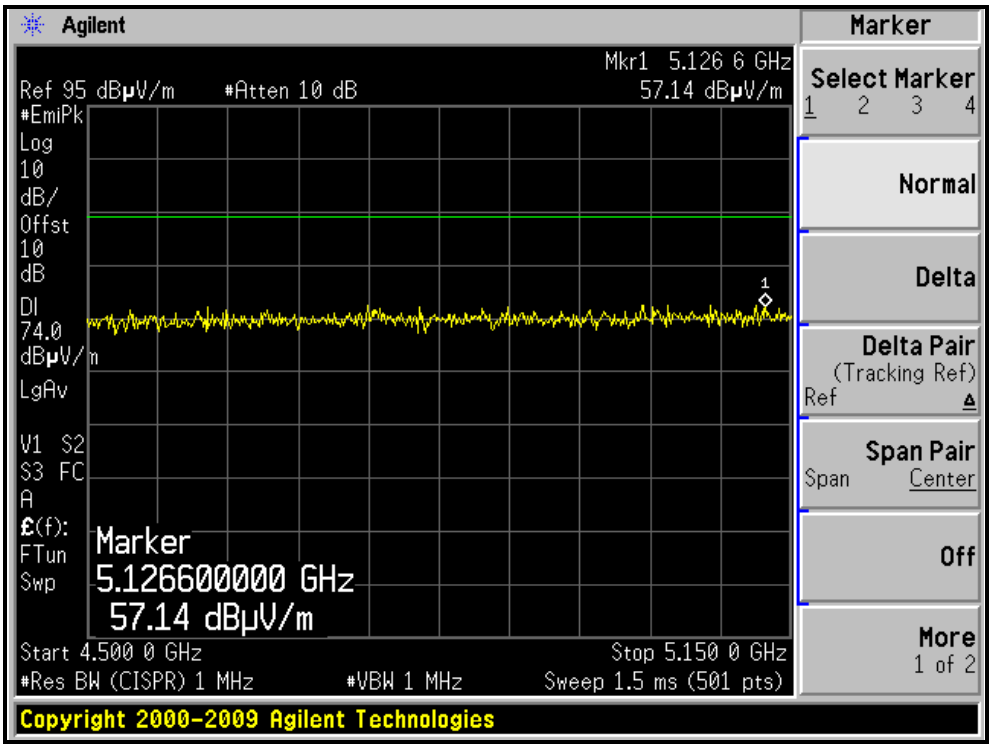
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent Liu

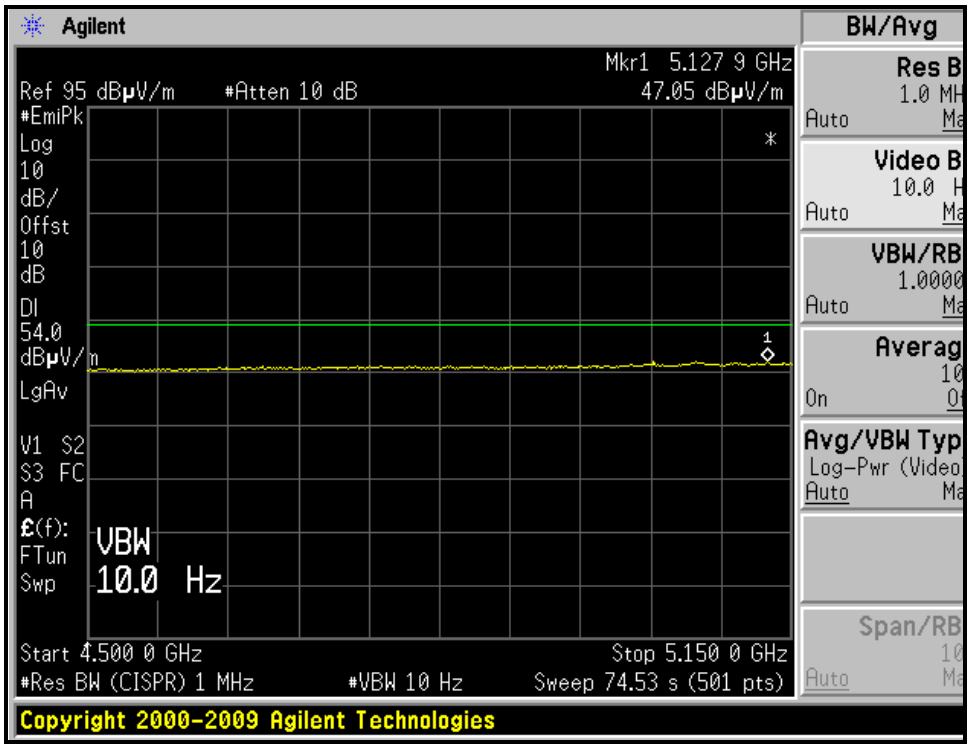
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.9 PK			1.19 H	124	67.73	40.17
2	*5240.00	96.9 AV			1.19 H	124	56.73	40.17
3	5350.00	57.6 PK	74.0	-16.4	1.14 H	103	17.13	40.47
4	5350.00	46.3 AV	54.0	-7.7	1.14 H	103	5.83	40.47
5	#10480.00	57.0 PK	68.3	-11.3	1.00 H	328	10.33	46.67
6	15720.00	60.4 PK	74.0	-13.6	1.31 H	69	8.89	51.51
7	15720.00	49.0 AV	54.0	-5.0	1.31 H	69	-2.51	51.51
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	111.2 PK			1.04 V	26	71.03	40.17
2	*5240.00	97.9 AV			1.04 V	26	57.73	40.17
3	5372.73	56.5 PK	74.0	-17.5	1.07 V	10	15.97	40.53
4	5372.73	45.4 AV	54.0	-8.6	1.07 V	10	4.87	40.53
5	#10480.00	55.4 PK	68.3	-12.9	1.55 V	257	8.73	46.67
6	15720.00	60.5 PK	74.0	-13.5	1.00 V	63	8.99	51.51
7	15720.00	49.2 AV	54.0	-4.8	1.00 V	63	-2.31	51.51

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

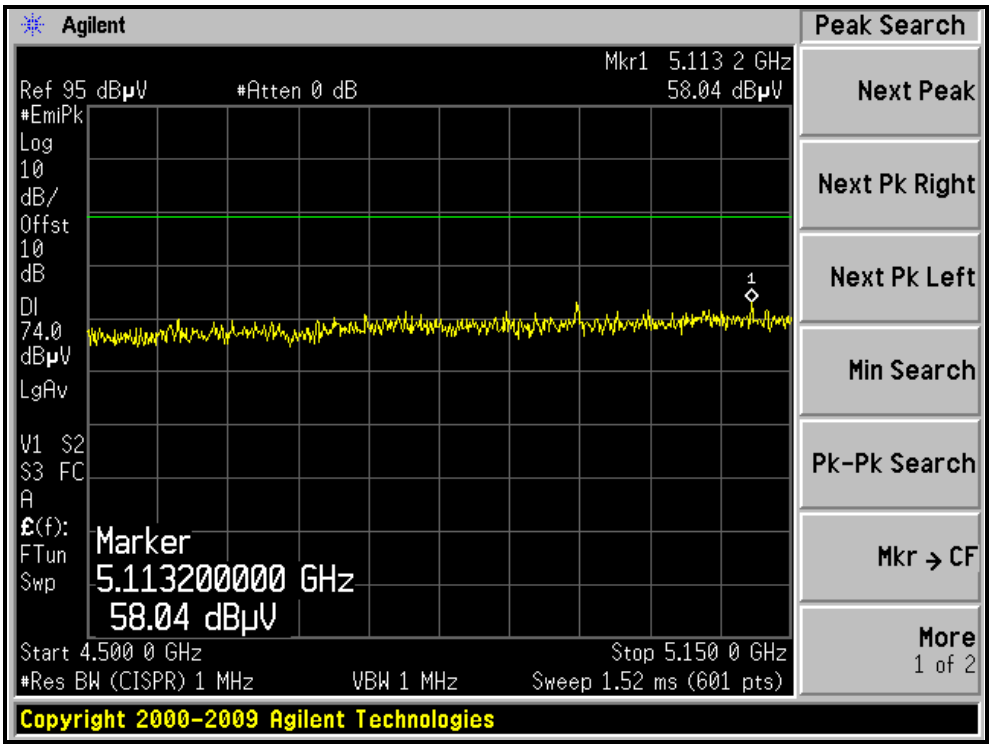
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

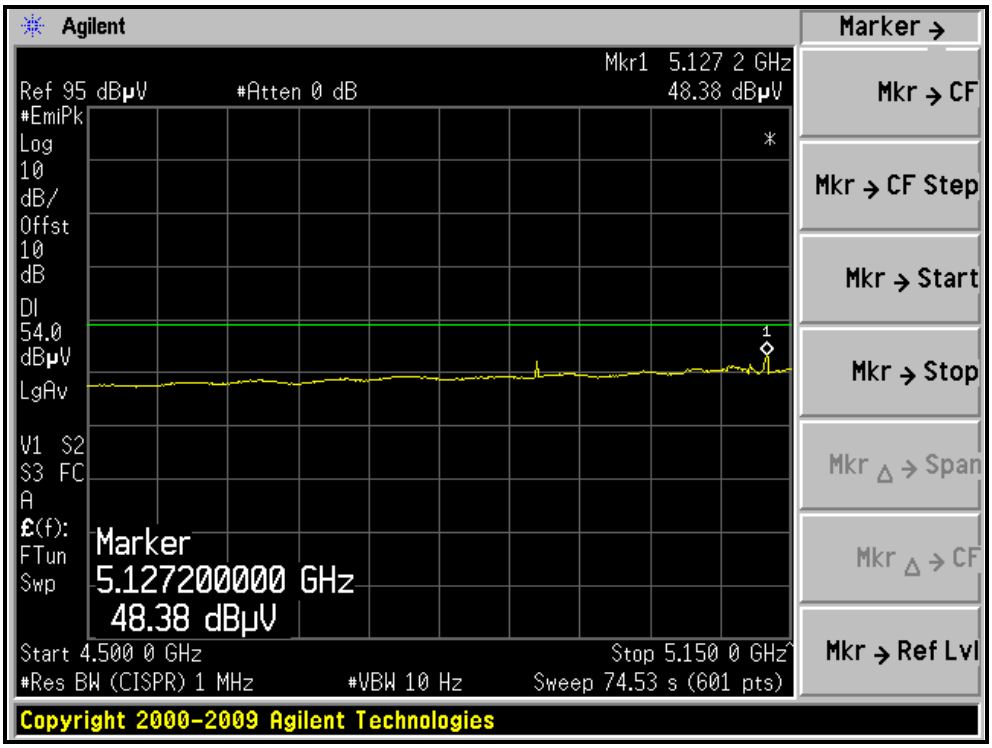
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)



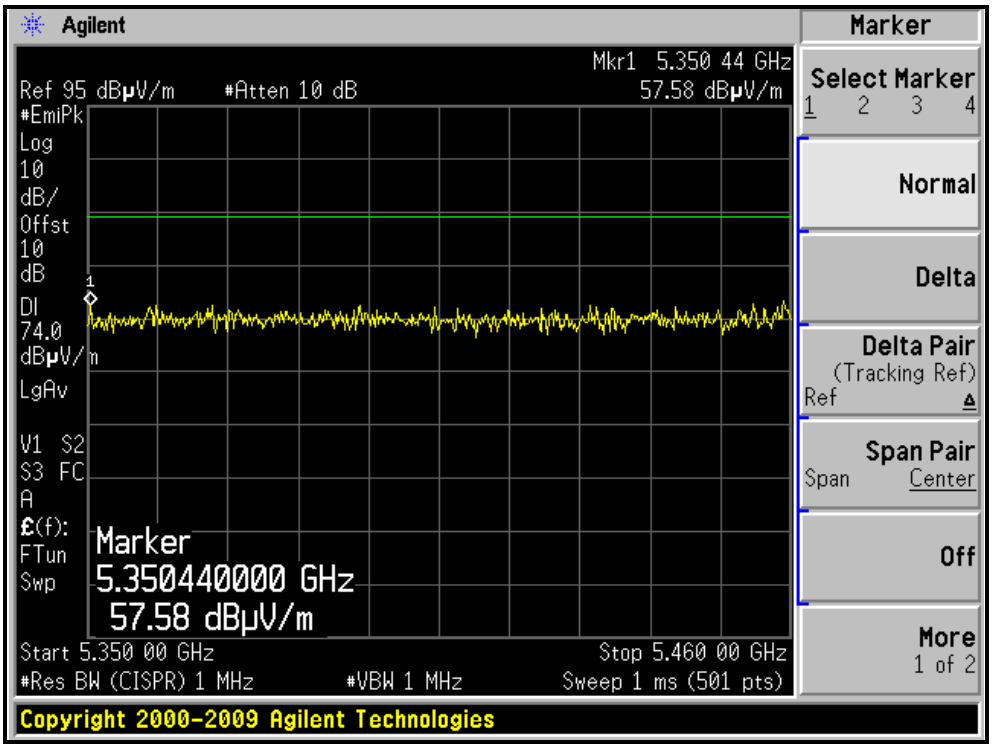


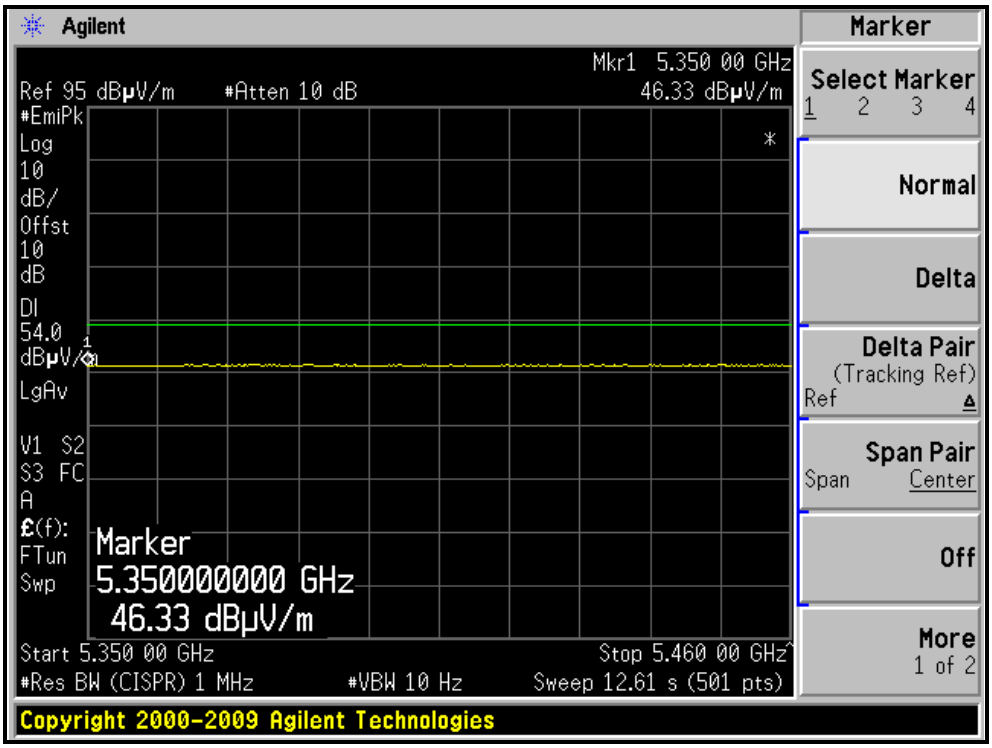
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, VERTICAL)



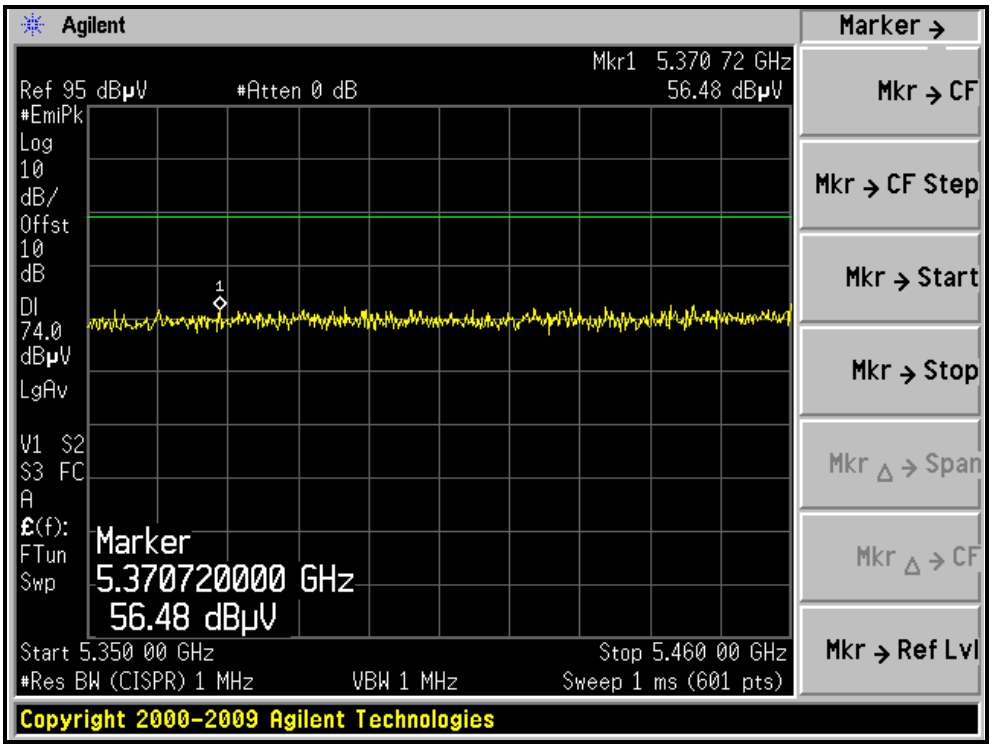


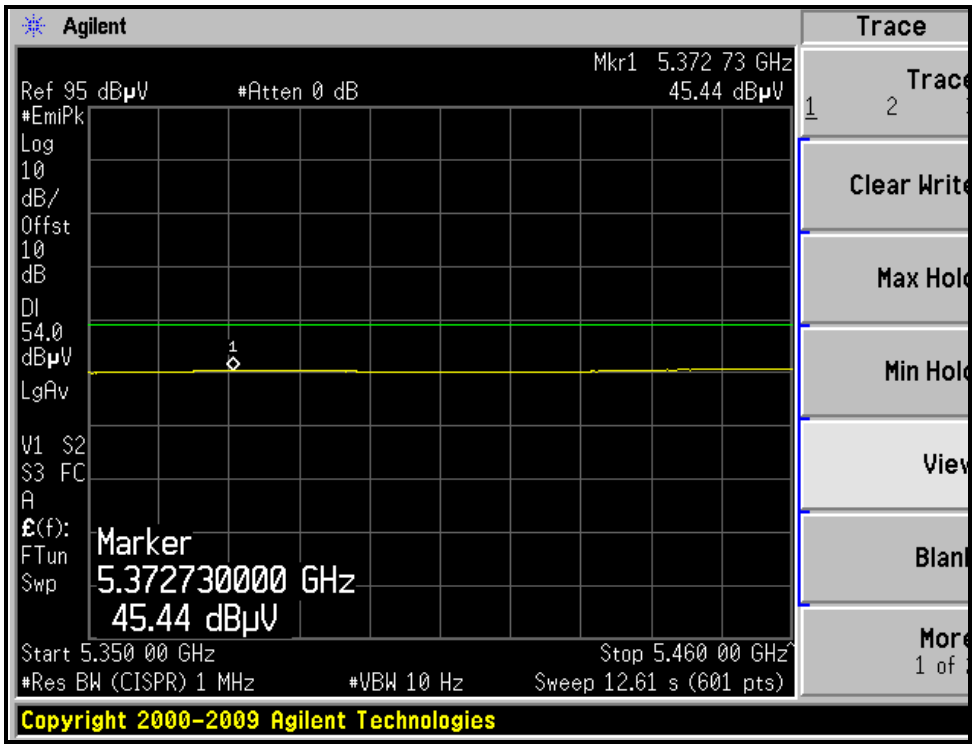
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH48, HORIZONTAL)





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





802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent 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	5150.00	61.1 PK	74.0	-12.9	1.14 H	113	21.16	39.94
2	5150.00	50.2 AV	54.0	-3.8	1.14 H	113	10.26	39.94
3	*5190.00	107.9 PK			1.13 H	254	67.86	40.04
4	*5190.00	95.7 AV			1.13 H	254	55.66	40.04
5	#10380.00	57.9 PK	68.3	-10.4	1.02 H	354	11.35	46.55
6	15570.00	61.5 PK	74.0	-12.5	1.35 H	66	10.08	51.42
7	15570.00	49.6 AV	54.0	-4.4	1.35 H	66	-1.82	51.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	73.0 PK	74.0	-1.0	1.19 V	24	33.06	39.94
2	**5150.00**	**53.1 AV**	**54.0**	**-0.9**	**1.19 V**	**24**	**13.16**	**39.94**
3	*5190.00	110.3 PK			1.30 V	23	70.26	40.04
4	*5190.00	96.8 AV			1.30 V	23	56.76	40.04
5	#10380.00	55.6 PK	68.3	-12.7	1.51 V	253	9.05	46.55
6	15570.00	60.3 PK	74.0	-13.7	1.00 V	60	8.88	51.42
7	15570.00	49.2 AV	54.0	-4.8	1.00 V	60	-2.22	51.42

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

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

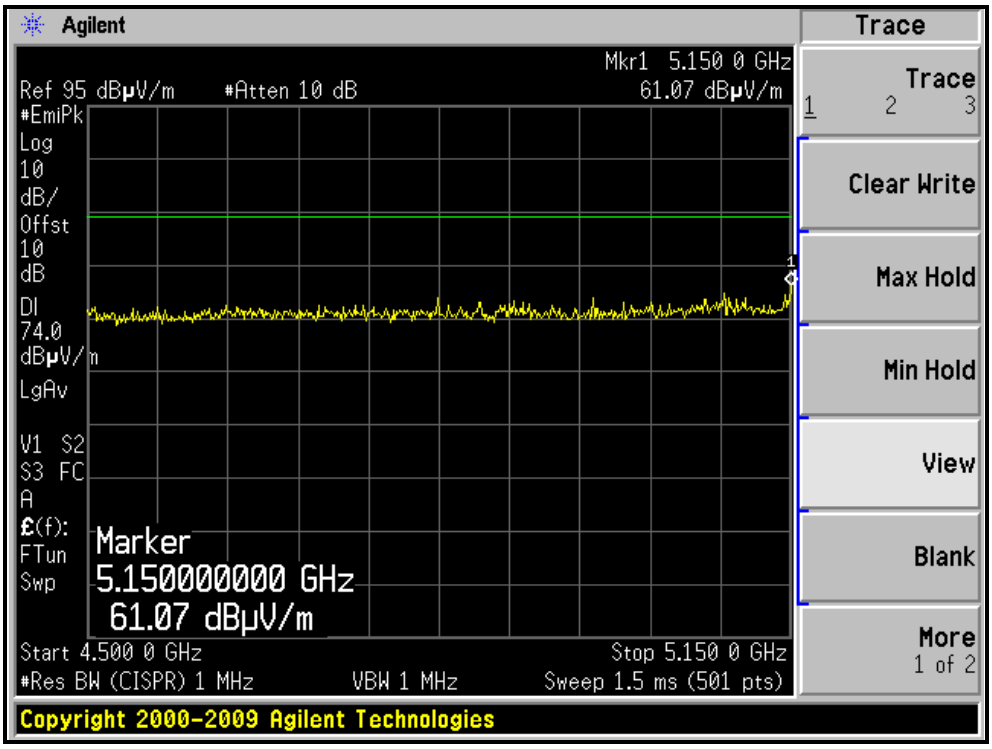
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac / 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22deg. C, 64%RH 1005 hPa	TESTED BY	Kent Liu

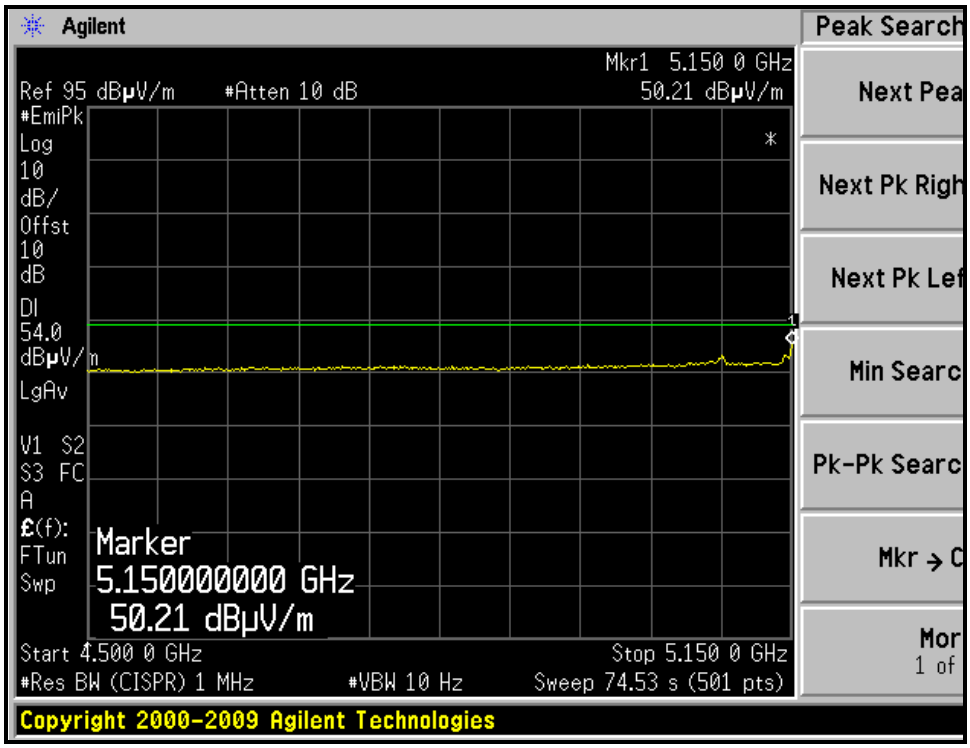
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	108.3 PK			1.12 H	257	68.15	40.15
2	*5230.00	96.2 AV			1.12 H	257	56.05	40.15
3	5350.00	56.8 PK	74.0	-17.2	1.15 H	102	16.33	40.47
4	5350.00	47.2 AV	54.0	-6.8	1.15 H	102	6.73	40.47
5	#10460.00	57.3 PK	68.3	-11.0	1.00 H	335	10.65	46.65
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	109.4 PK			1.07 V	52	69.25	40.15
2	*5230.00	97.3 AV			1.07 V	52	57.15	40.15
3	5363.38	58.8 PK	74.0	-15.2	1.12 V	32	18.29	40.51
4	5363.38	45.6 AV	54.0	-8.4	1.12 V	32	5.09	40.51
5	#10460.00	56.1 PK	68.3	-12.2	1.50 V	255	9.45	46.65
6	15690.00	60.4 PK	74.0	-13.6	1.00 V	55	8.91	51.49
7	15690.00	49.1 AV	54.0	-4.9	1.00 V	55	-2.39	51.49

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

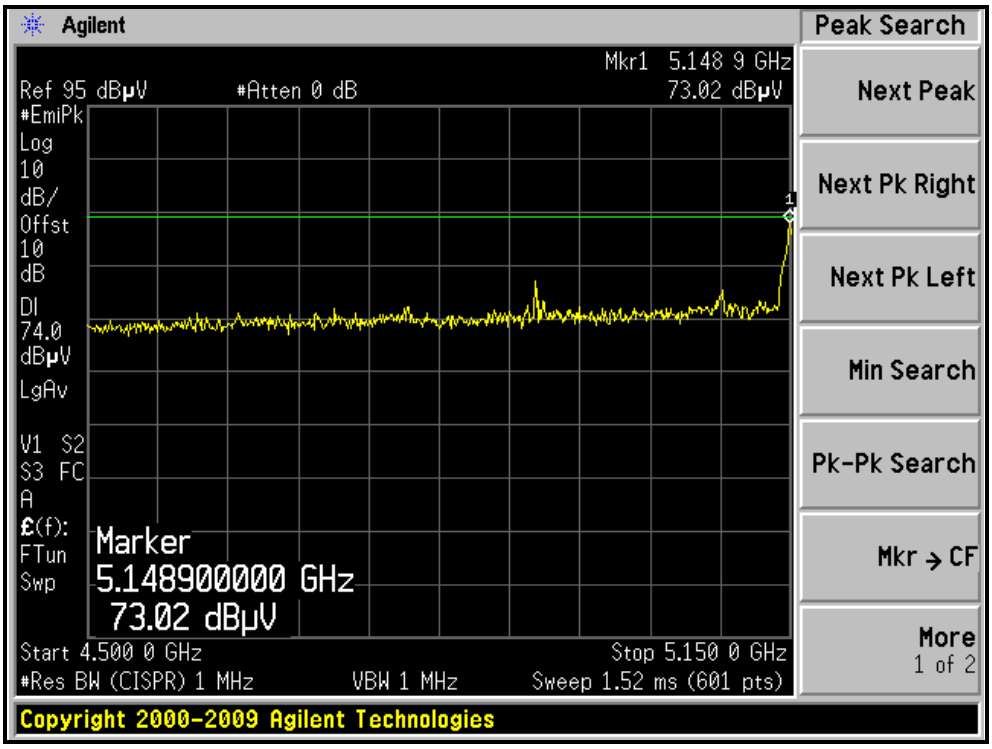
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

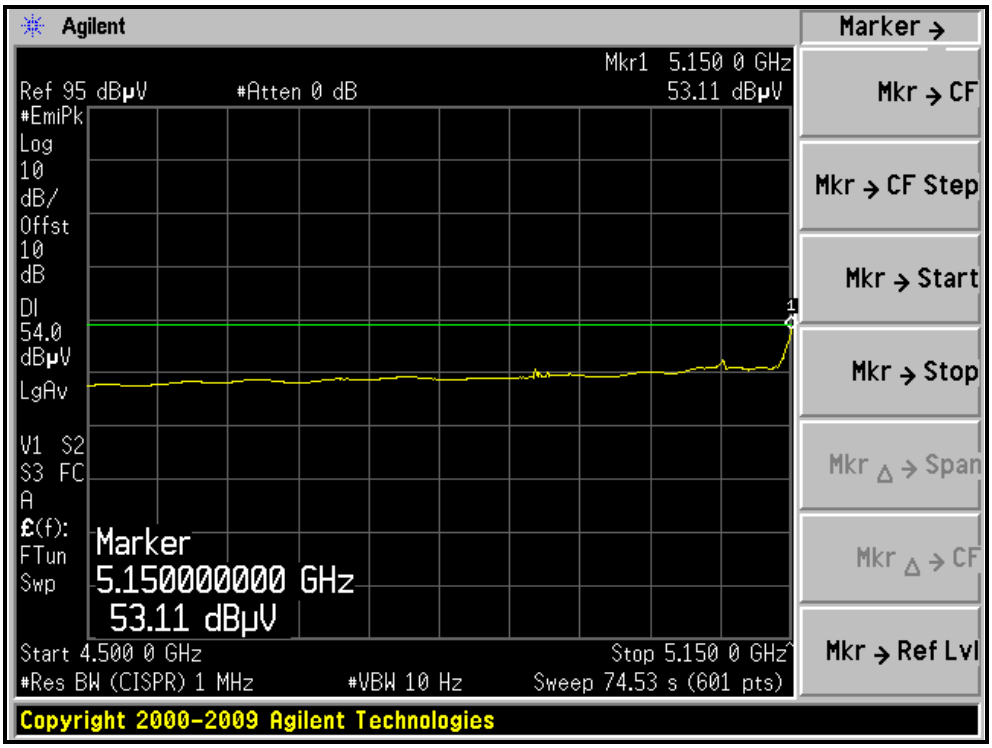
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)



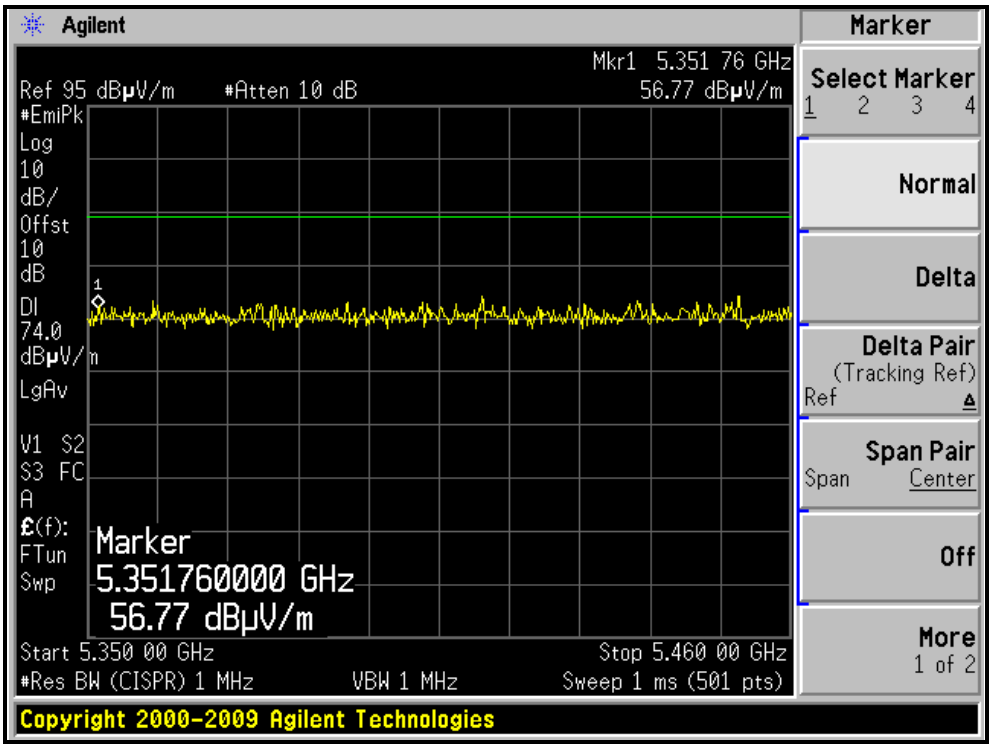


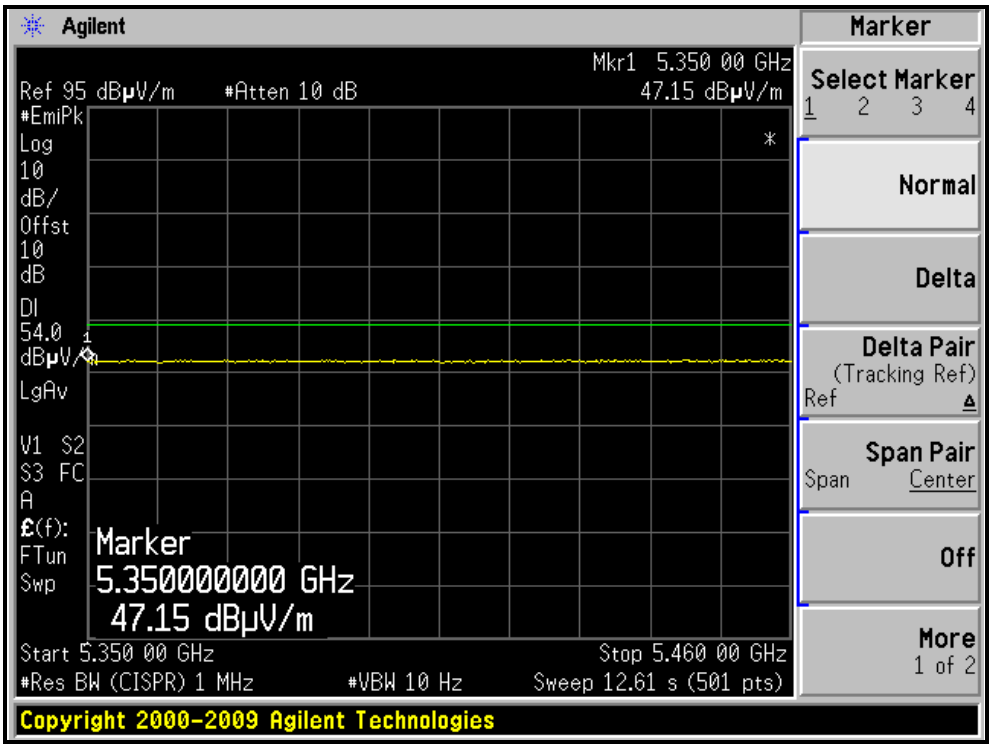
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH38, VERTICAL)



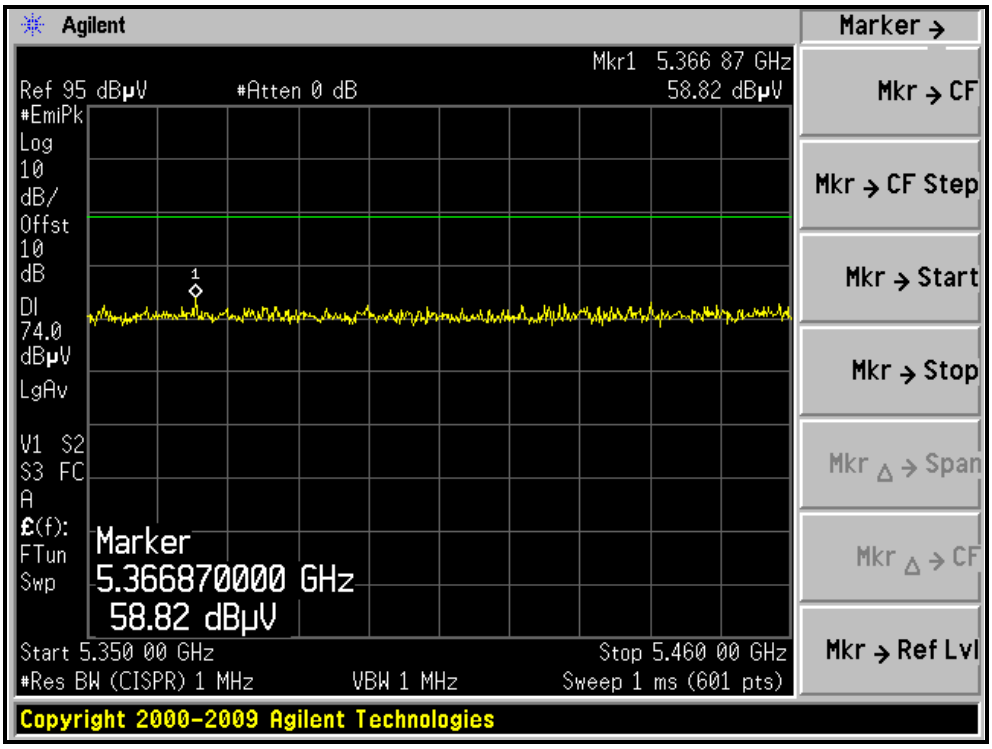


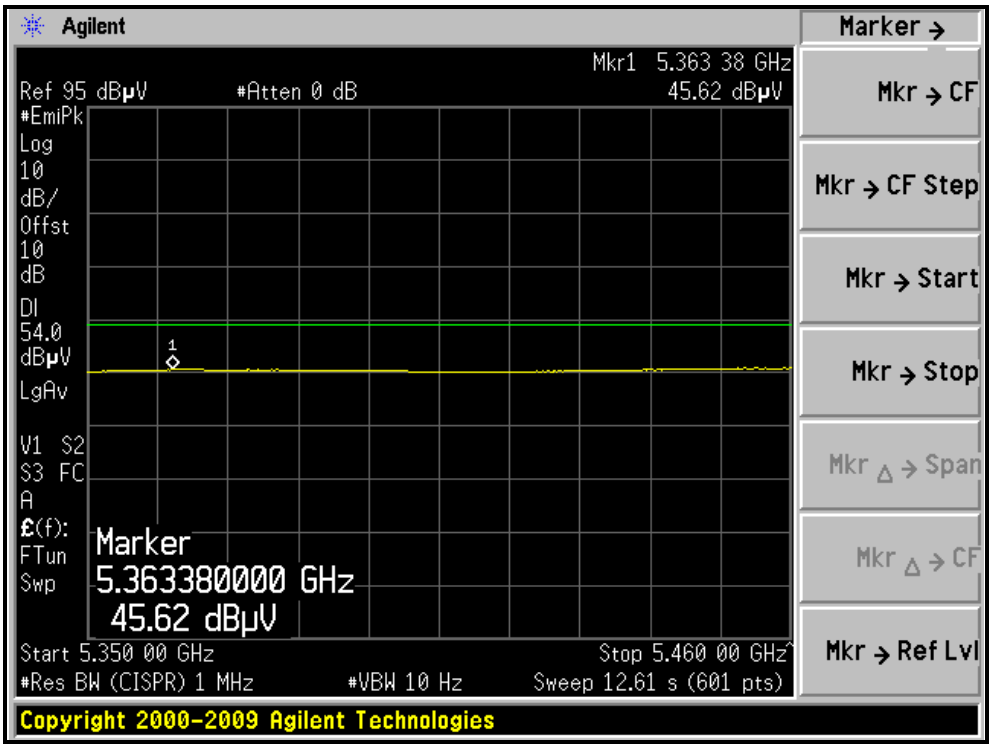
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH46, HORIZONTAL)





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

Test date: May 12, 2011

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.

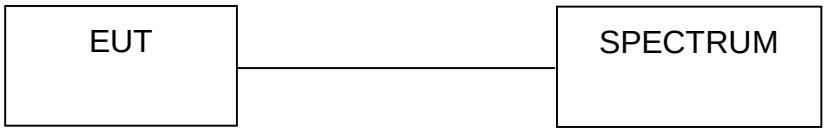
NOTE:
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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:

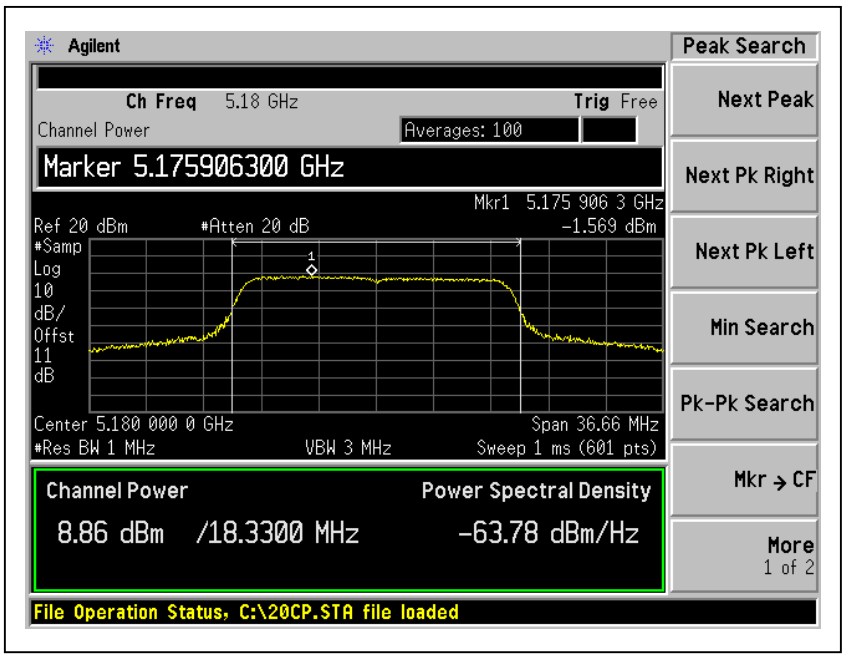
CHANNEL	CHANNEL FREQUENCY (MHz)	OUTPUT POWER (dBm)			TOTAL OUTPUT POWER (mW)	TOTAL OUTPUT POWER (dBm)	OUTPUT POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)				
36	5180	8.9	8.9	8.7	22.9	13.6	16.2	PASS
40	5200	8.4	8.6	8.6	21.4	13.3	16.2	PASS
48	5240	8.5	8.4	8.8	21.6	13.3	16.2	PASS

Directional gain = gain of antenna element + 10 log (3)
Effective Legacy Gain (dBi)=6.8
The effective legacy gain is 6.8dBi, therefore the limit needs to reduce.

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		
		CHAIN(0)	CHAIN(1)	CHAIN(2)
36	5180	18.33	18.28	18.21
40	5200	18.17	18.11	18.07
48	5240	18.42	18.37	18.33

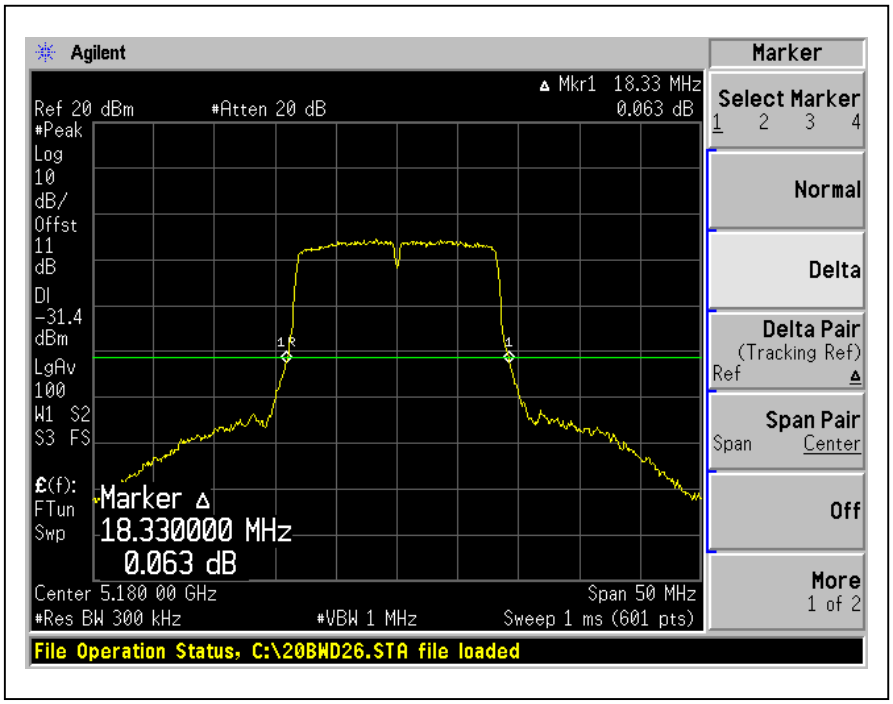
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Power Output:
For CHAIN(1)
CH36



26dB Occupied Bandwidth:

CH36



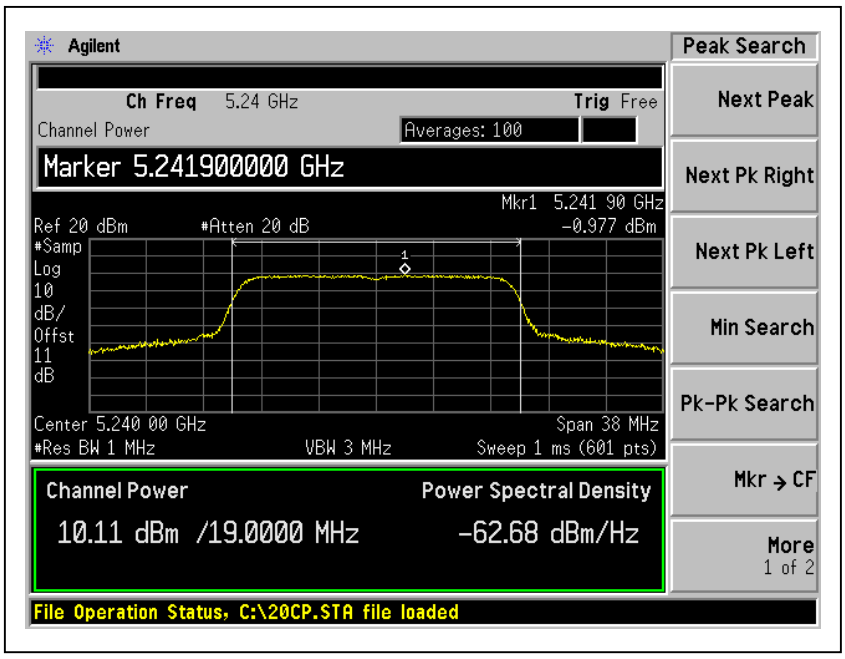
802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	OUTPUT POWER (dBm)			TOTAL OUTPUT POWER (mW)	TOTAL OUTPUT POWER (dBm)	OUTPUT POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)				
36	5180	9.9	9.8	9.8	28.9	14.6	17	PASS
40	5200	9.7	10.0	9.8	28.9	14.6	17	PASS
48	5240	10.1	9.7	10.0	29.6	14.7	17	PASS

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		
		CHAIN(0)	CHAIN(1)	CHAIN(2)
36	5180	19.42	19.3	19.35
40	5200	19.33	19.25	19.28
48	5240	19	18.92	18.94

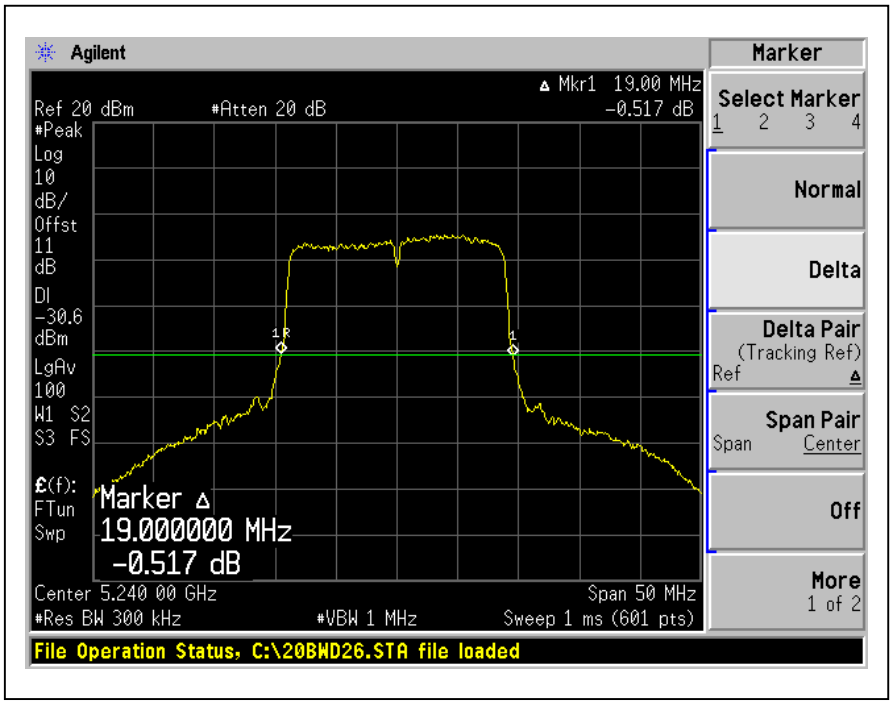
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Power Output:
For CHAIN(0)
CH48



26dB Occupied Bandwidth:

CH48



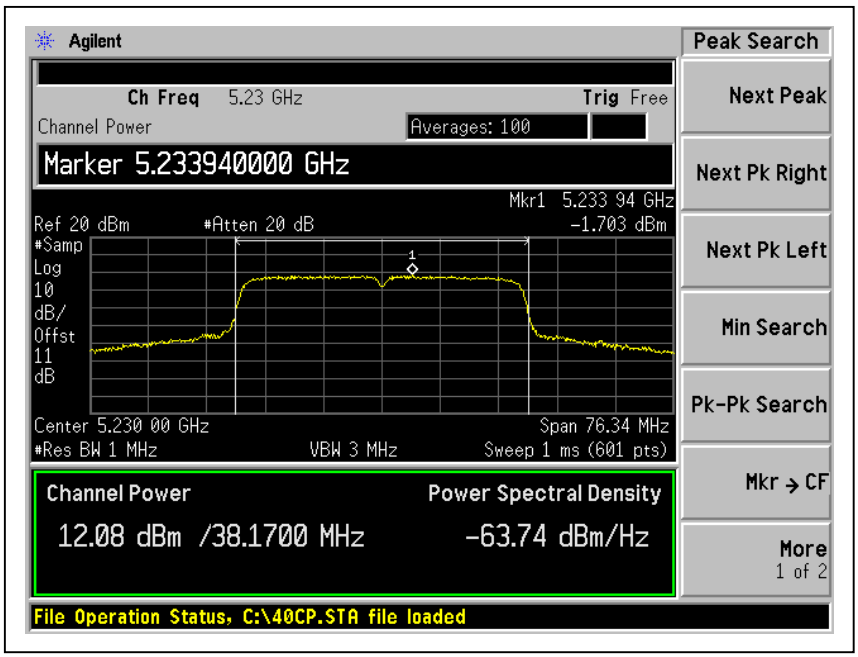
802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	OUTPUT POWER (dBm)			TOTAL OUTPUT POWER (mW)	TOTAL OUTPUT POWER (dBm)	OUTPUT POWER LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)				
38	5190	11.6	11.5	12.0	44.4	16.5	17	PASS
46	5230	11.9	11.8	12.1	46.8	16.7	17	PASS

CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		
		CHAIN(0)	CHAIN(1)	CHAIN(2)
38	5190	38.17	38.15	38.08
46	5230	38.17	38.12	38.1

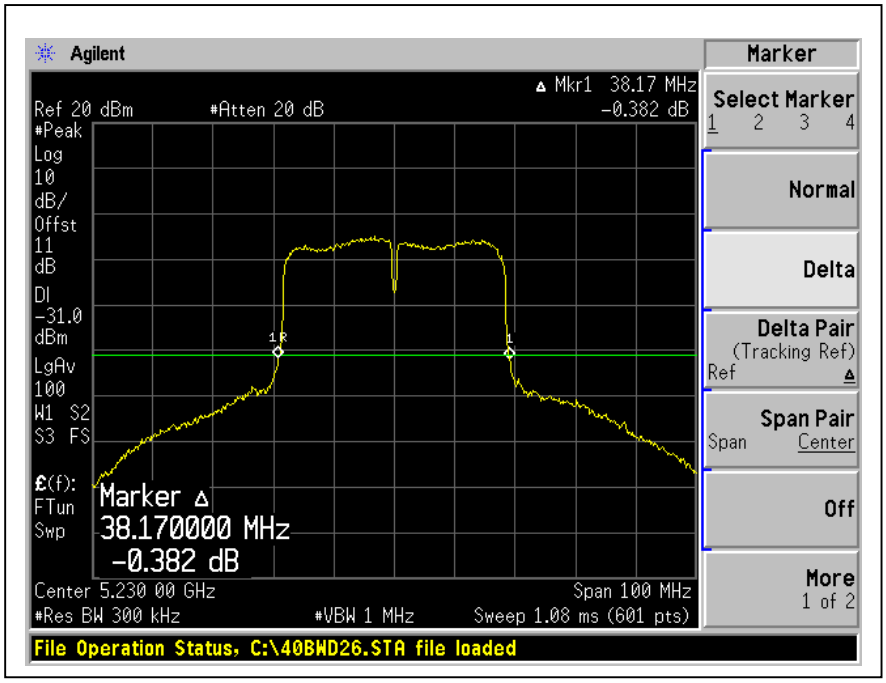
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Power Output:
For CHAIN(0)
CH46



26dB Occupied Bandwidth:

CH46



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

Test date: May 12, 2011

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.

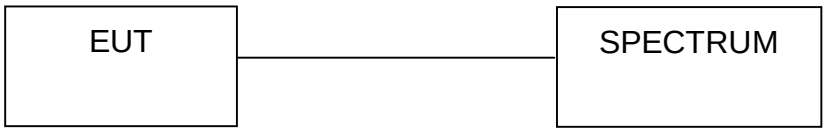
4.4.3 TEST PROCEDURE

1. Connect the cable from the spectrum analyzer to the EUT antenna port using an appropriate RF attenuator.
2. Verify the antenna port selected is the active one if the system has more then one antenna.
3. Verify the unlicensed wireless device is set to operate at 100 % duty cycle at the maximum allowed power for operation.
4. Testing shall be done on the center frequency of each U-NII band.
5. 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.
   a. First trace: set RBW = 1 MHz, VBW = 3 MHz with peak detector and max hold settings.
   b. 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

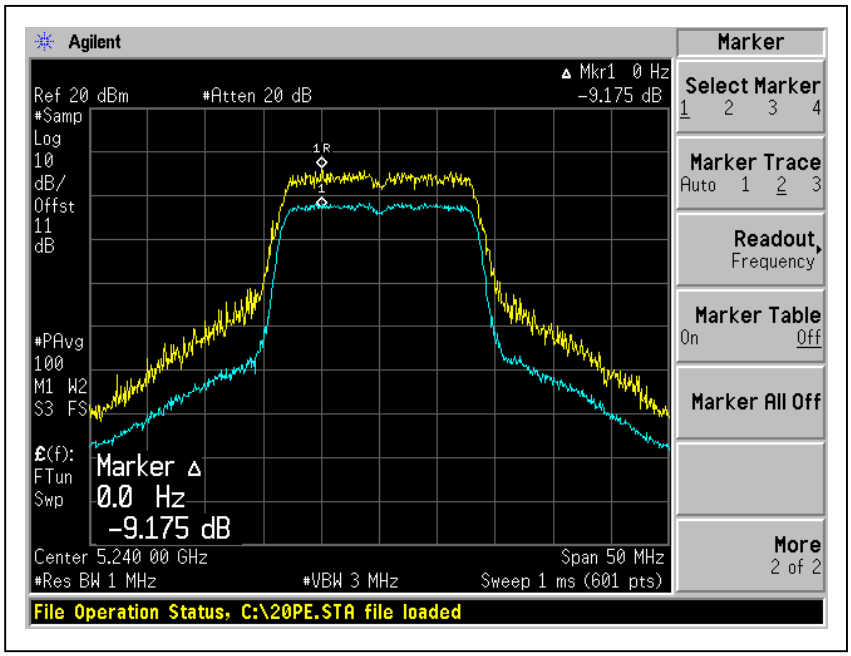
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

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
		CHAIN(0)	CHAIN(1)	CHAIN(2)		
36	5180	8.10	8.02	7.90	13	PASS
40	5200	9.08	8.98	9.00	13	PASS
48	5240	9.17	9.07	9.10	13	PASS

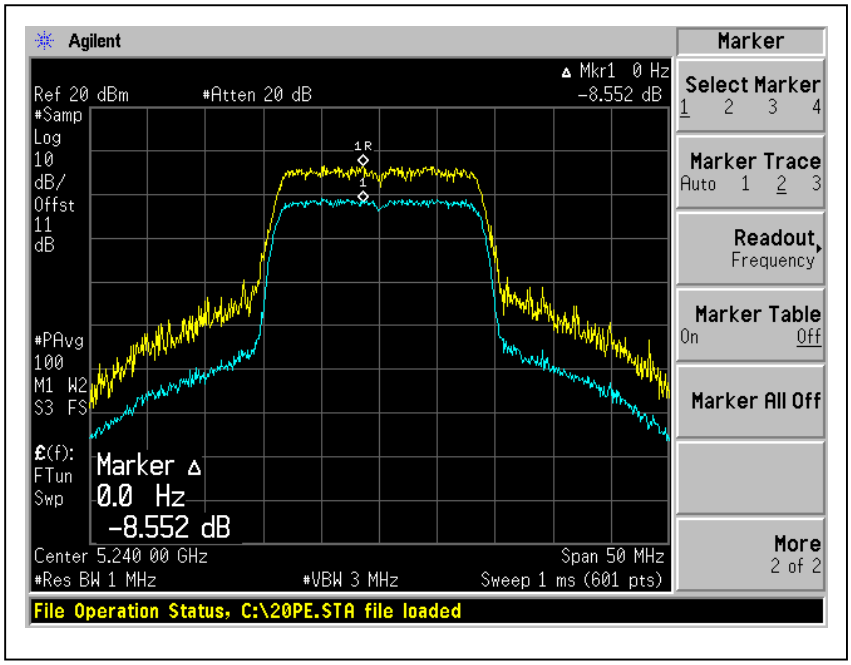
For CHAIN(0)
CH48



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)		
36	5180	8.36	8.31	8.28	13	PASS
40	5200	8.13	8.00	8.02	13	PASS
48	5240	8.55	8.40	8.45	13	PASS

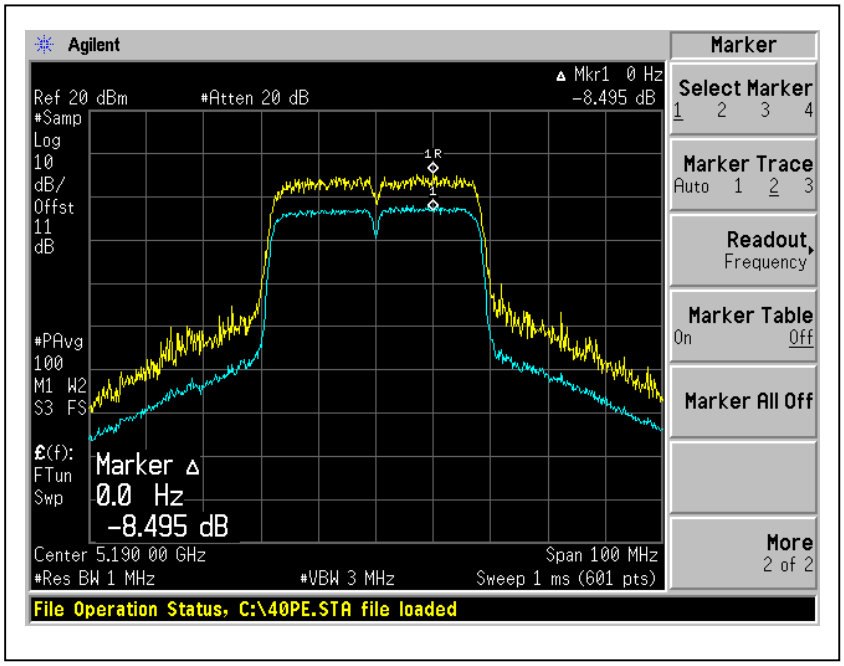
For CHAIN(0)
CH48



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)		
38	5190	8.49	8.42	8.40	13	PASS
46	5230	7.51	7.48	7.44	13	PASS

For CHAIN(0)
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

Test date: May 12, 2011

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.

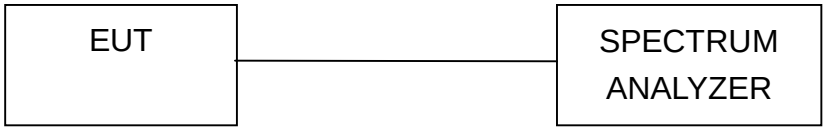
4.5.3 TEST PROCEDURES

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

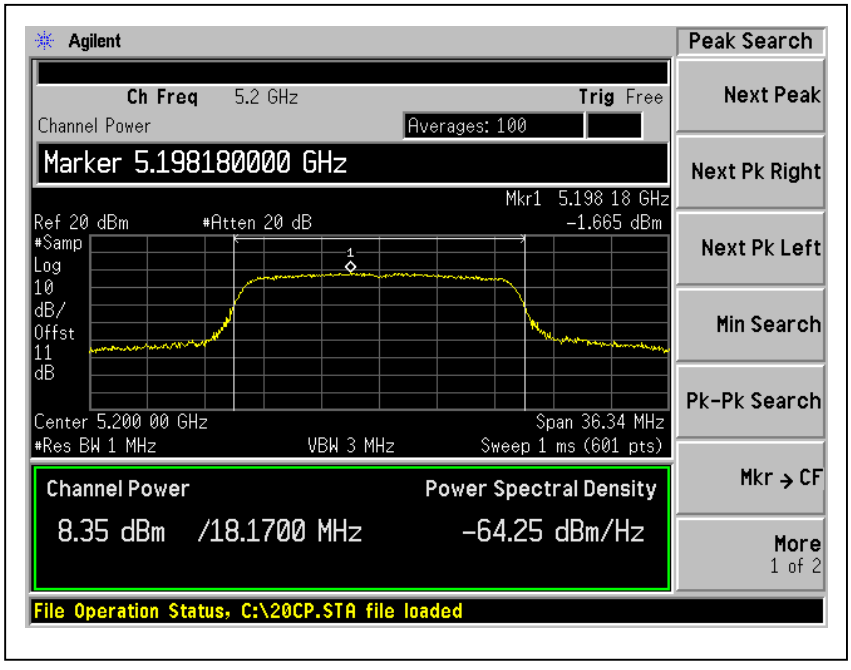
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)			TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)			
36	5180	-1.8	-1.6	-2.0	3.0	3.2	PASS
40	5200	-1.7	-1.6	-1.9	3.0	3.2	PASS
48	5240	-1.7	-2.1	-2.2	2.8	3.2	PASS

Directional gain = gain of antenna element + 10 log (3)

Effective Legacy Gain (dBi)=6.8

The effective legacy gain is 6.8dBi, therefore the limit needs to reduce.

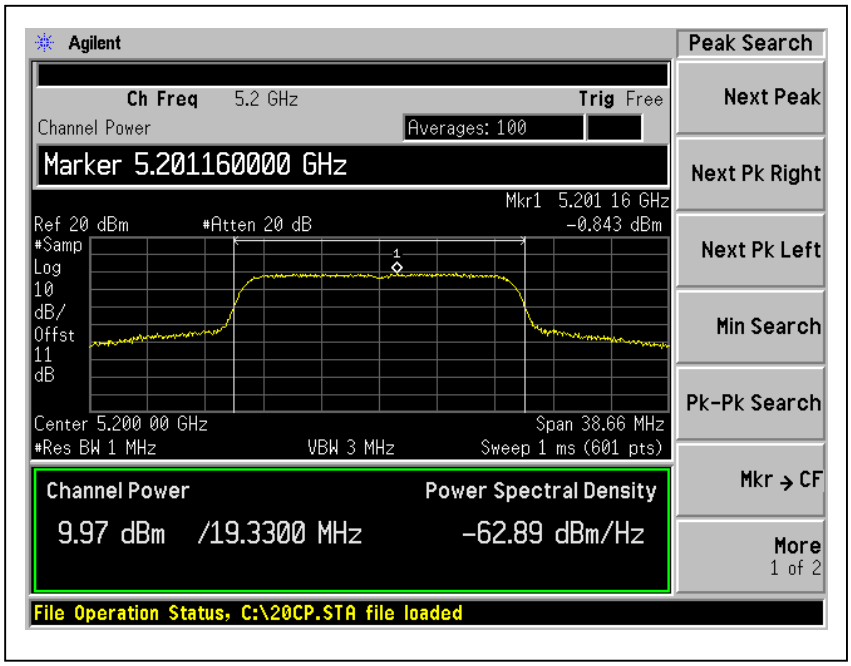
For CHAIN(0)
CH40



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)			TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)			
36	5180	-1.1	-1.2	-1.1	3.6	4	PASS
40	5200	-1.2	-0.8	-1.1	3.7	4	PASS
48	5240	-1.0	-1.0	-1.1	3.7	4	PASS

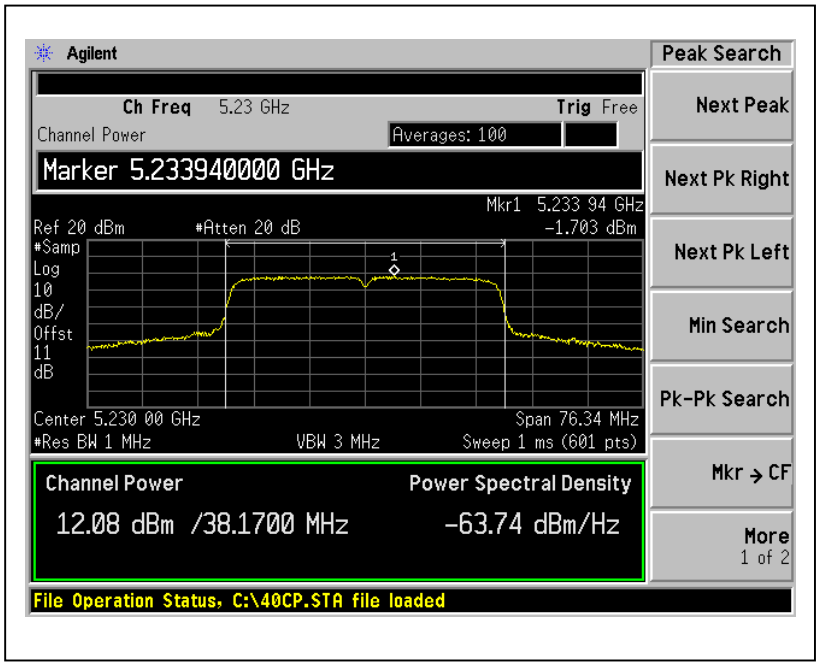
For CHAIN(1)
CH40



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)			TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)			
38	5190	-2.4	-2.5	-2.0	2.5	4	PASS
46	5230	-2.0	-2.2	-1.7	2.8	4	PASS

For CHAIN(2)
CH46



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

Test date: May 12, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 17, 2010	May 16, 2011

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

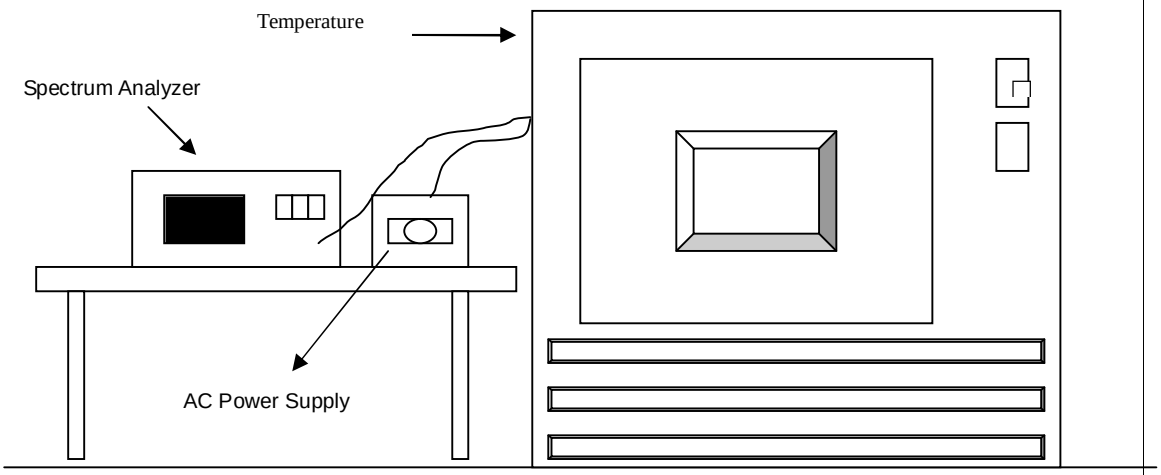
4.6.3 TEST PROCEDURE

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: 5240MHz									
Temp. (℃)	Power supply (VAC)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	138	5240.007	1.3359	5240.0054	1.0305	5240.0096	1.8321	5240.0131	2.5000
	120	5240.0067	1.2786	5240.0054	1.0305	5240.0084	1.6031	5240.013	2.4809
	102	5240.0068	1.2977	5240.005	0.9542	5240.0079	1.5076	5240.0135	2.5763
40	138	5240.0147	2.8053	5240.0174	3.3206	5240.0205	3.9122	5240.0175	3.3397
	120	5240.0144	2.7481	5240.0173	3.3015	5240.0203	3.8740	5240.0171	3.2634
	102	5240.0142	2.7099	5240.016	3.0534	5240.0201	3.8359	5240.0172	3.2824
30	138	5239.9897	-1.9656	5239.9913	-1.6603	5239.994	-1.1450	5239.9944	-1.0687
	120	5239.9894	-2.0229	5239.9917	-1.5840	5239.9944	-1.0687	5239.9947	-1.0115
	102	5239.9904	-1.8321	5239.9911	-1.6985	5239.9943	-1.0878	5239.9948	-0.9924
20	138	5239.9999	-0.0191	5239.9979	-0.4008	5239.9951	-0.9351	5239.9961	-0.7443
	120	5240.0007	0.1336	5239.9965	-0.6679	5239.9945	-1.0496	5239.997	-0.5725
	102	5239.9999	-0.0191	5239.9961	-0.7443	5239.9956	-0.8397	5239.9973	-0.5153
10	138	5239.988	-2.2901	5239.9897	-1.9656	5239.9896	-1.9847	5239.9872	-2.4427
	120	5239.988	-2.2901	5239.9895	-2.0038	5239.9895	-2.0038	5239.9882	-2.2519
	102	5239.9881	-2.2710	5239.9884	-2.2137	5239.9895	-2.0038	5239.9879	-2.3092
0	138	5240.0112	2.1374	5240.0134	2.5573	5240.0094	1.7939	5240.0095	1.8130
	120	5240.0113	2.1565	5240.0127	2.4237	5240.0103	1.9656	5240.0095	1.8130
	102	5240.0115	2.1947	5240.0137	2.6145	5240.0097	1.8511	5240.0109	2.0802
-10	138	5240.0034	0.6489	5240.0019	0.3626	5240.0041	0.7824	5240.009	1.7176
	120	5240.0043	0.8206	5240.0017	0.3244	5240.0048	0.9160	5240.0079	1.5076
	102	5240.0034	0.6489	5240.002	0.3817	5240.004	0.7634	5240.0087	1.6603
-20	138	5239.9959	-0.7824	5239.9901	-1.8893	5239.986	-2.6718	5239.9895	-2.0038
	120	5239.9961	-0.7443	5239.9899	-1.9275	5239.9854	-2.7863	5239.9892	-2.0611
	102	5239.9947	-1.0115	5239.9914	-1.6412	5239.9853	-2.8053	5239.9904	-1.8321
-30	138	5239.9962	-0.7252	5239.9952	-0.9160	5239.9944	-1.0687	5239.9995	-0.0954
	120	5239.9964	-0.6870	5239.9951	-0.9351	5239.9941	-1.1260	5239.9978	-0.4198
	102	5239.9961	-0.7443	5239.9949	-0.9733	5239.9929	-1.3550	5239.9981	-0.3626

4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 TEST INSTRUMENTS

Test date: May 12, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	FSP 40	100060	May 17, 2010	May 16, 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 lose 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.

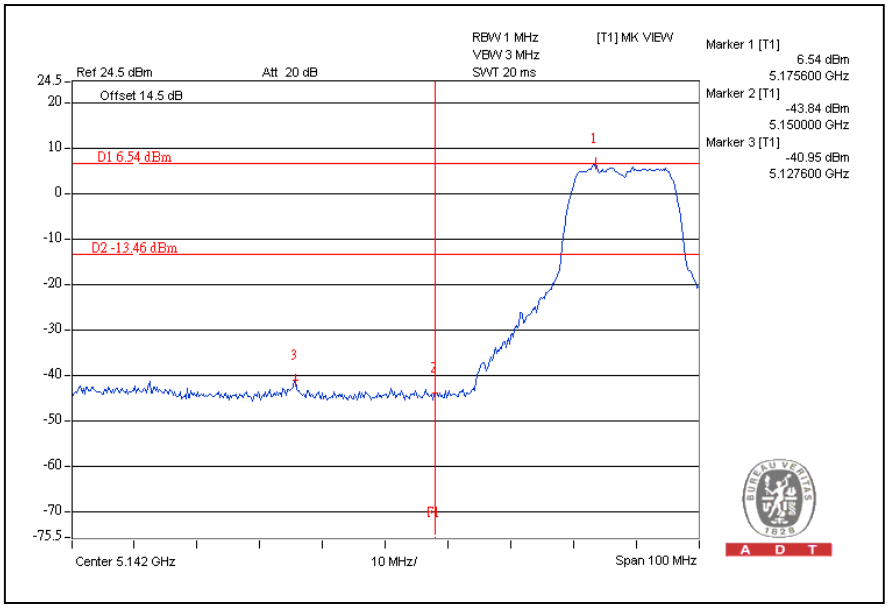
4.7.4 TEST RESULTS

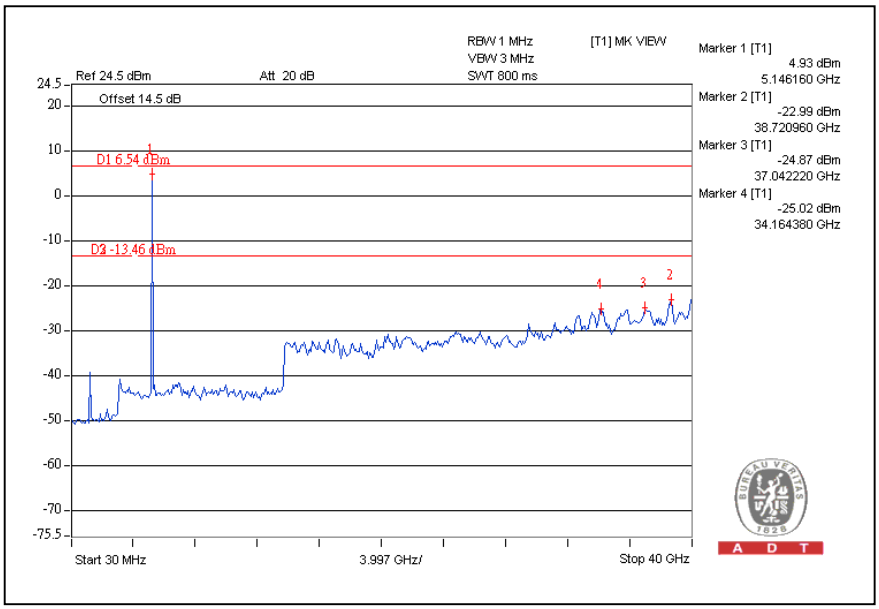
For 5.15 to 5.25GHz band:
The spectrum plots (Peak RBW=1MHz, VBW=3MHz) are attached on the following pages.

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

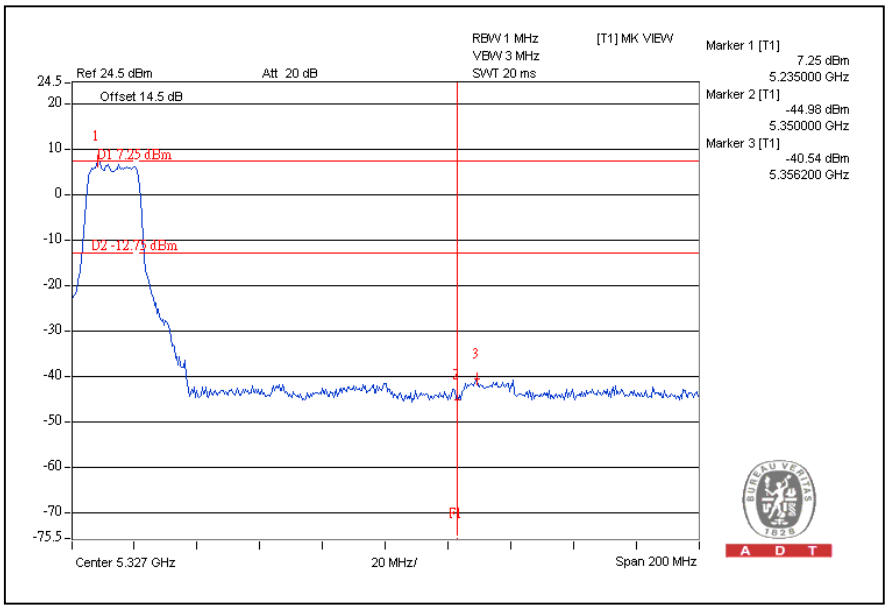
802.11a OFDM modulation

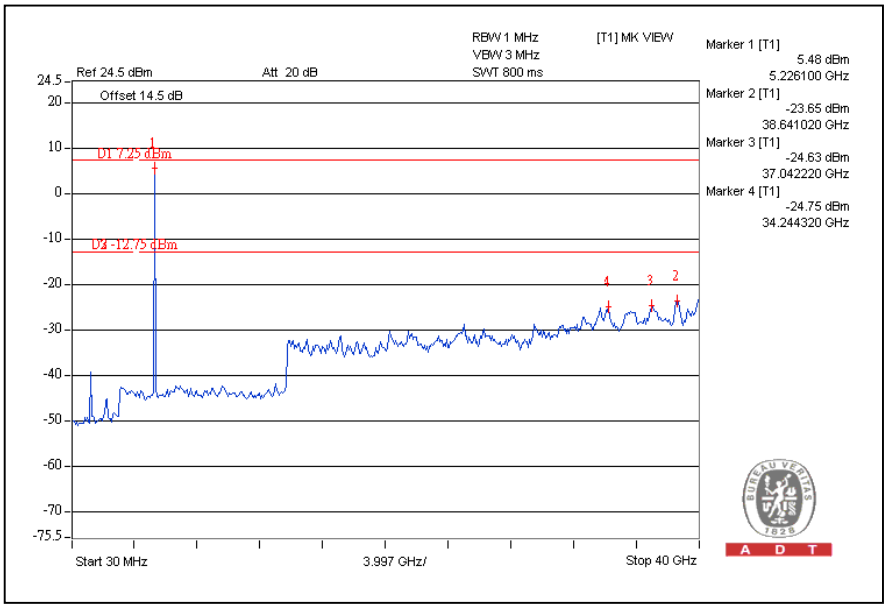
CH36





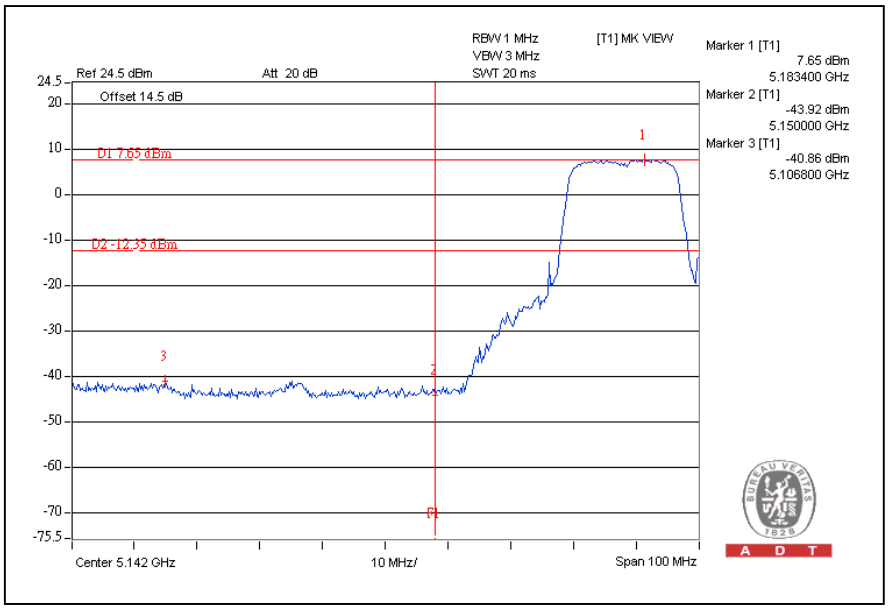
CH48

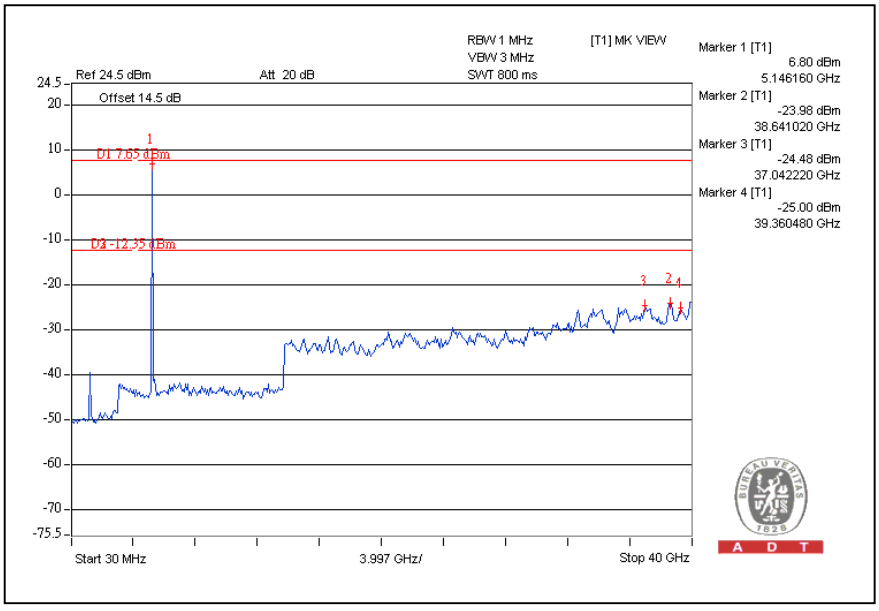

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Ref 24.5 dBm
Att 20 dB
Offset 14.5 dB
D1 7.25 dBm
D2 -12.75 dBm
Marker 1 [T1]
7.25 dBm
5.235000 GHz
Marker 2 [T1]
-44.98 dBm
5.350000 GHz
Marker 3 [T1]
-40.54 dBm
5.356200 GHz
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 24.5 dBm
Att 20 dB
Offset 14.5 dB
D1 7.25 dBm
D2 -12.75 dBm
Marker 1 [T1]
5.48 dBm
5.226100 GHz
Marker 2 [T1]
-23.65 dBm
38.641020 GHz
Marker 3 [T1]
-24.63 dBm
37.042220 GHz
Marker 4 [T1]
-24.75 dBm
34.244320 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

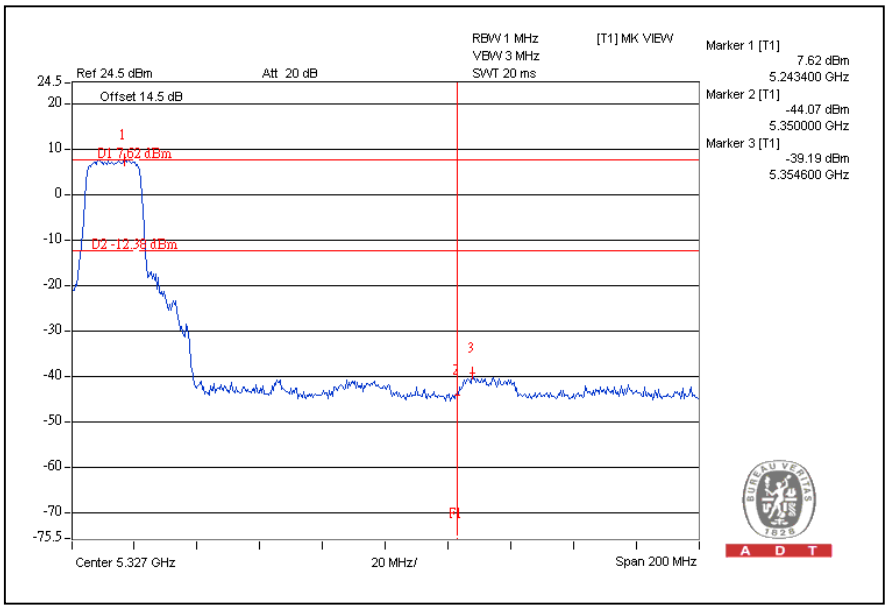
802.11n (20MHz) OFDM MODULATION:

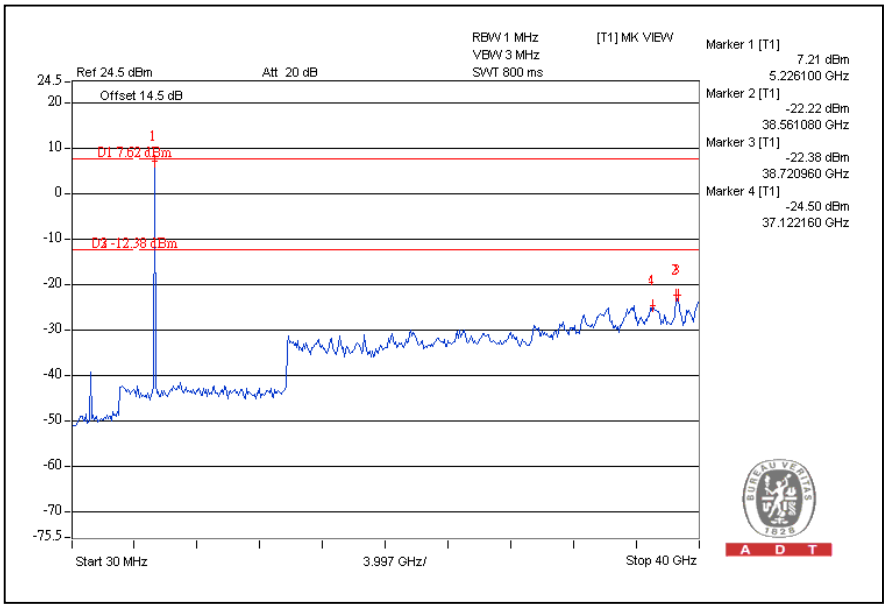
CH36





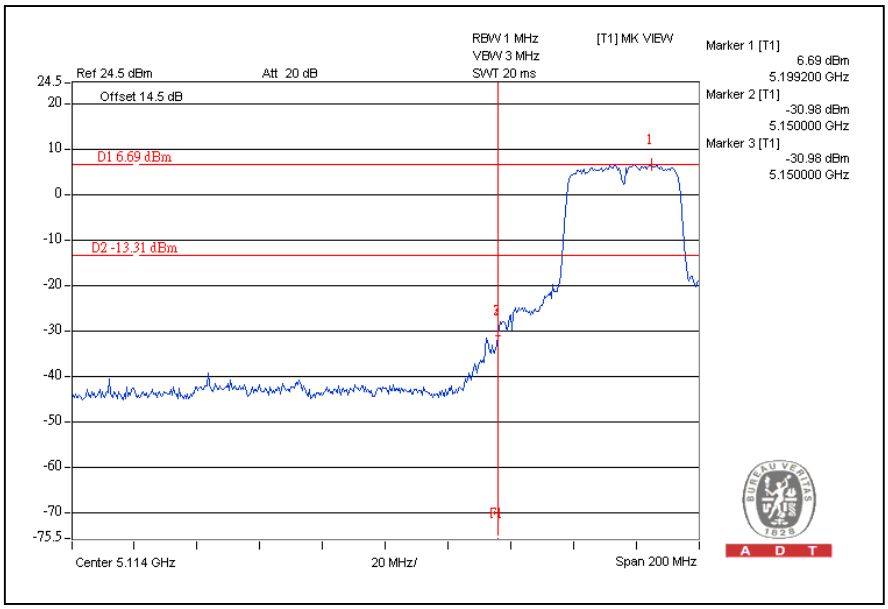
CH48

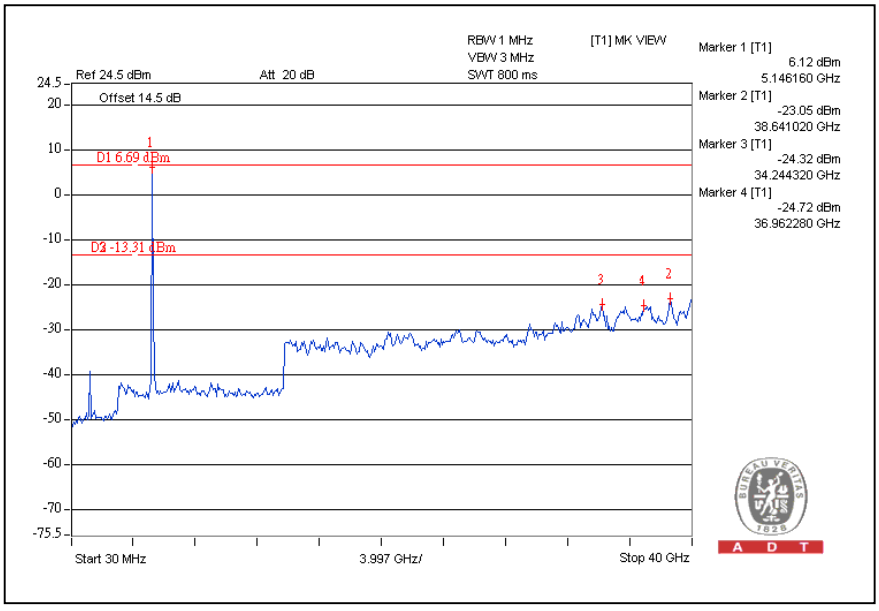

RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
7.62 dBm
5.243400 GHz
Marker 2 [T1]
-44.07 dBm
5.350000 GHz
Marker 3 [T1]
-39.19 dBm
5.354600 GHz
Ref 24.5 dBm
Att 20 dB
Offset 14.5 dB
D1 7.62 dBm
D2 -12.38 dBm
24.5
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75.5
Center 5.327 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Marker 1 [T1]
7.21 dBm
5.226100 GHz
Marker 2 [T1]
-22.22 dBm
38.561080 GHz
Marker 3 [T1]
-22.38 dBm
38.720960 GHz
Marker 4 [T1]
-24.50 dBm
37.122160 GHz
Ref 24.5 dBm
Att 20 dB
Offset 14.5 dB
D1 7.62 dBm
D2 -12.38 dBm
24.5
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

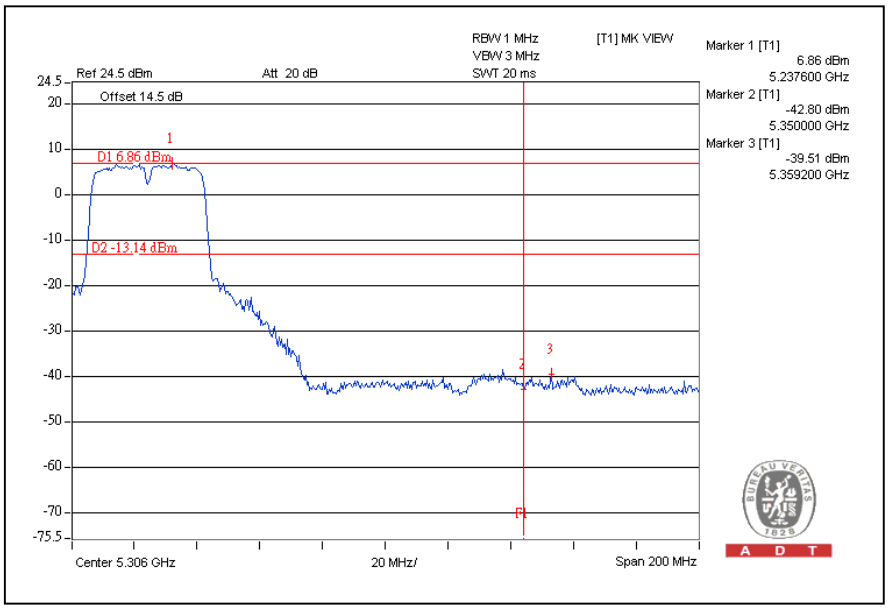
802.11n (40MHz) OFDM MODULATION:

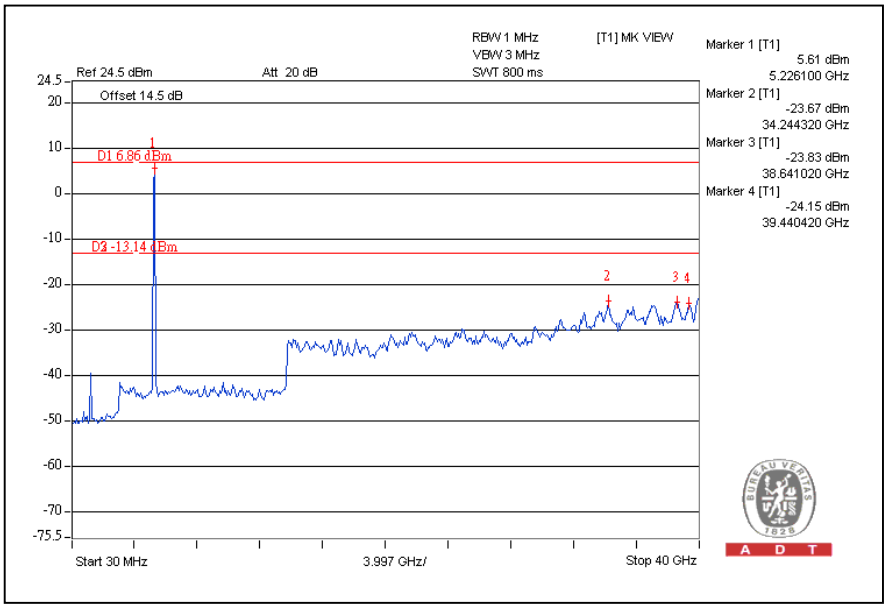
CH38





CH46


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
6.86 dBm
5.237600 GHz
Marker 2 [T1]
-42.80 dBm
5.350000 GHz
Marker 3 [T1]
-39.51 dBm
5.359200 GHz
Ref 24.5 dBm
Att 20 dB
Offset 14.5 dB
D1 6.86 dBm
D2 -13.14 dBm
24.5
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75.5
Center 5.306 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Marker 1 [T1]
5.61 dBm
5.226100 GHz
Marker 2 [T1]
-23.67 dBm
34.244320 GHz
Marker 3 [T1]
-23.83 dBm
38.641020 GHz
Marker 4 [T1]
-24.15 dBm
39.440420 GHz
Ref 24.5 dBm
Att 20 dB
Offset 14.5 dB
D1 6.86 dBm
D2 -13.14 dBm
24.5
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75.5
Start 30 MHz
3.997 GHz/
Stop 40 GHz

5. INFORMATION ON THE TESTING LABORATORIES

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

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

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

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

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

Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

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

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

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