FCC TEST REPORT (15.407)

REPORT NO.: RF991229E03-1

MODEL NO.: CY-SWR1100

FCC ID: A3LCYSWR1100

RECEIVED: Dec. 29, 2010

TESTED: Dec. 31, 2010 to Jan. 10, 2011

ISSUED: Jan. 31, 2011

APPLICANT: Samsung Electronics Co., Ltd.

ADDRESS: 416 Maetan-dong, Young-Tong gu, Suwon, Korea 442-742

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
Original release	NA	Jan. 31, 2011

1. CERTIFICATION

PRODUCT:	Wireless Router
BRAND NAME:	Samsung
MODEL NO.:	CY-SWR1100
TEST SAMPLE:	MASS-PRODUCTION
TESTED:	Dec. 31, 2010 to Jan. 10, 2011
APPLICANT:	Samsung Electronics Co., Ltd.
STANDARDS:	FCC Part 15, Subpart E (Section 15.407) ANSI C63.4-2003 ANSI C63.10-2009

The above equipment (Model: CY-SWR1100) 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:** Jan. 31, 2011
(Carol Liao, Specialist)

APPROVED BY : , **DATE:** Jan. 31, 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 -11.52dB at 0.326MHz
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 -0.5dB at 5147.00MHz
15.407(a/1/2/3)	Peak 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 MHF 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)	3.94 dB
Radiated emissions (1GHz -18GHz)	2.49 dB
Radiated emissions (18GHz -40GHz)	2.70 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Router
MODEL NO.	CY-SWR1100
FCC ID	A3LCYSWR1100
POWER SUPPLY	DC 12V from power adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps 802.11b:11/ 5.5 / 2 /1Mbps 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. HT40 MCS0~7 (800ns GI): 13.5Mbps, 27Mbps, 40.5Mbps, 54Mbps, 81Mbps, 108Mbps, 121.5Mbps, 135Mbps. HT40 MCS8~15 (800ns GI): 27Mbps, 54Mbps, 81Mbps, 108Mbps, 162Mbps, 216Mbps, 243Mbps, 270Mbps. HT20 MCS0~7 (400ns GI): 7.2Mbps, 14.4Mbps, 21.7Mbps, 28.9Mbps, 43.3Mbps, 57.8Mbps, 65.0Mbps, 72.2Mbps, HT20 MCS8~15 (400ns GI): 14.444Mbps, 28.889Mbps, 43.333Mbps, 57.778Mbps, 86.667Mbps, 115.556Mbps, 130.000Mbps, 144.444Mbps. HT40 MCS0~7 (400ns GI): 15.0Mbps, 30.0Mbps, 45.0Mbps, 60.0Mbps, 90.0Mbps, 120.0Mbps, 135.0Mbps, 150.0Mbps, HT40 MCS8~15 (400ns GI): 30.0Mbps, 60.0Mbps, 90.0Mbps, 120.0Mbps, 180.0Mbps, 240.0Mbps, 270.0Mbps, 300.0Mbps.
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: 30.9mW 802.11n (20MHz): 28.9mW 802.11n (40MHz): 27.6mW **For 15.247(2.4GHz)** 802.11b: 87.1mW 802.11g: 309.0mW 802.11n (20MHz): 413.1mW 802.11n (40MHz): 243.6mW **For 15.247(5GHz)** 802.11a: 257.0mW 802.11n (20MHz): 526.1mW 802.11n (40MHz): 469.0mW
ANTENNA TYPE	Please see note 1
DATA CABLE	Ethernet cable (unshielded, 1.5m)
I/O PORTS	USB port x 1 Internet port (10, 100, 1000Mbps) port x 1 Ethernet port (10, 100, 1000Mbps) port x 4
ASSOCIATED DEVICES	Adapter x 1 Stand x 1

NOTE:

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

Transmitter Circuit	Manufacture	Model No.	Antenna Type	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Cable length (mm)	Antenna Connector
Chain (0)	WHA YU GROUP	C037-511102-A (SSR-02095)	PCB	4.76	0.68	4.08	170	MHF
Chain (1)		C037-511101-A (SSR-02094)	PCB	4.73	0.49	4.24	120	

2. The EUT must be supplied with a power adapter as following table:

BRAND	SAMSUNG
MANUFACTURE	Yang Ming Industrial
MODEL	DA-24B12-FAC
INPUT POWER	AC 100-240V, 47-63Hz, 0.65A Max AC Cable: 1.85m unshielded
OUTPUT POWER	DC 12V, 2A DC Cable: 1.55m unshielded with one core

3. The EUT was pre-tested in chamber under the following modes:

Test Mode	Description
Mode A	Level-set
Mode B	Tower-set

From the above modes, the radiated emission<below 1GHz> worse case was found in Mode A and the radiated emission<above 1GHz> worse case was found in Mode B. Therefore only the test data of the modes were recorded in this report.

4. The EUT incorporates a MIMO function with 802.11n.

5. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function. The 11abg legacy mode is limited to single transmitter only.

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

7. The EUT complies with 802.11n standards and backwards compatible with 802.11b, 802.11g products.

8. 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	
1	√	√			Level-set
2			√	√	Tower-set

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

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

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)	Remark
A	802.11 a	√		With diversity
B	802.11 a		√	With diversity
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.
2. Mode B, C & D the worst modes, was selected as representative mode for the report.

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
802.11a	36 to 48	36	OFDM	BPSK	6	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	B
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, 40, 48	OFDM	BPSK	6	B
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

※ After verification, conducted out band emission as show worst chain in report by investigations.

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	B
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

※ After verification, bandwidth as show worst chain in report by investigations.

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	21deg. C, 61%RH, 1013 hPa	120Vac, 60Hz	Frank Liu
RE<1G	21deg. C, 61%RH, 1013 hPa	120Vac, 60Hz	Frank Liu
PLC	25deg. C, 60%RH, 1013 hPa	120Vac, 60Hz	Timmy Hu
APCM	25deg. C, 60%RH, 1013 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.

For Conducted test:					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	PERSONAL COMPUTER	Compag	DCSM	294QL1S	FCC DoC
2	MONITOR	DELL	E2210Hc	CN-OG337R-64180-97S-OQGS	FCC DoC
3	KEYBOARD	DELL	SK-8115	MY-0DJ325-71619-99B-0479	FCC DoC
4	MOUSE	DELL	MOC5UO	I1401LVG	FCC DoC
5	SWITCH	HP	J9086A	NA	NA
6	iPod nano 2GB	APPLE	A1199	YM712NN5VQ5	FCC DoC
7	NOTEBOOK COMPUTER	DELL	PP18L	4799903248	FCC DoC
8	NOTEBOOK COMPUTER	HP	HSTNN-S19C	GFC2Q-3C9FD-QX CYT-YTB2D-BJH43	FCC DoC

For Conducted test:	
No.	Signal cable description
1	UTP Cable (3m)
2	1.8 m braid shielded wire, VGA connector, with two cores.
3	1.8 m foil shielded wire, USB Connector, , w/o core
4	1.5 m foil shielded wire, USB Connector, w/o core.
5	UTP Cable (10m)
6	1 m shielded cable, terminated with USB connector, w/o core.
7	NA
8	NA

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

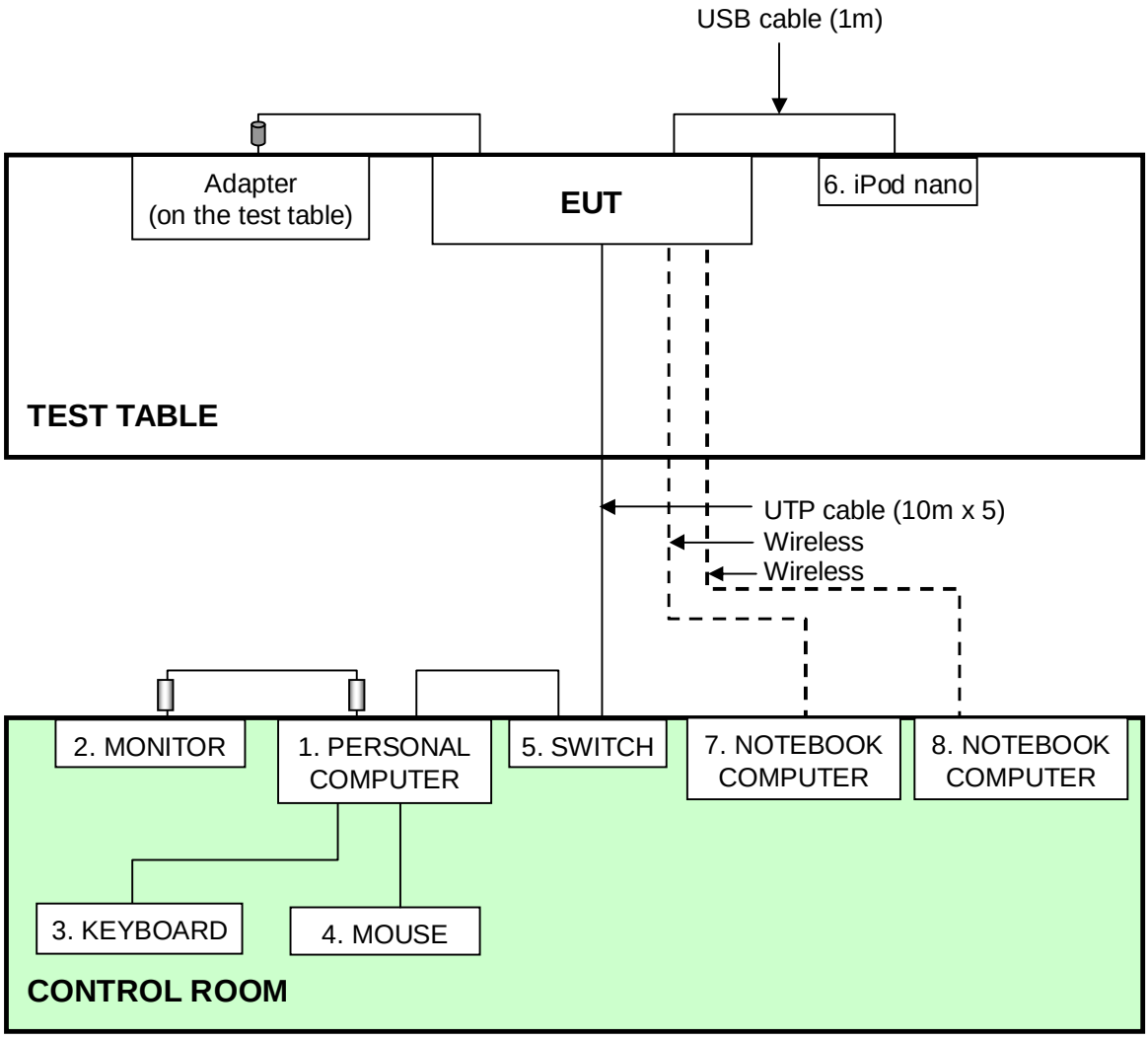
For Radiated test:					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP17L	CN-ONF743-48643-7AV-0124	FCC DoC
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC
4	USB Flash Drive	SanDisk	SDCZ2-512-A10	5472260816	FCC DoC

For Radiated test:	
No.	Signal cable description
1	UTP cable (10m)
2	UTP cable (10m)
3	UTP cable (10m)
4	NA

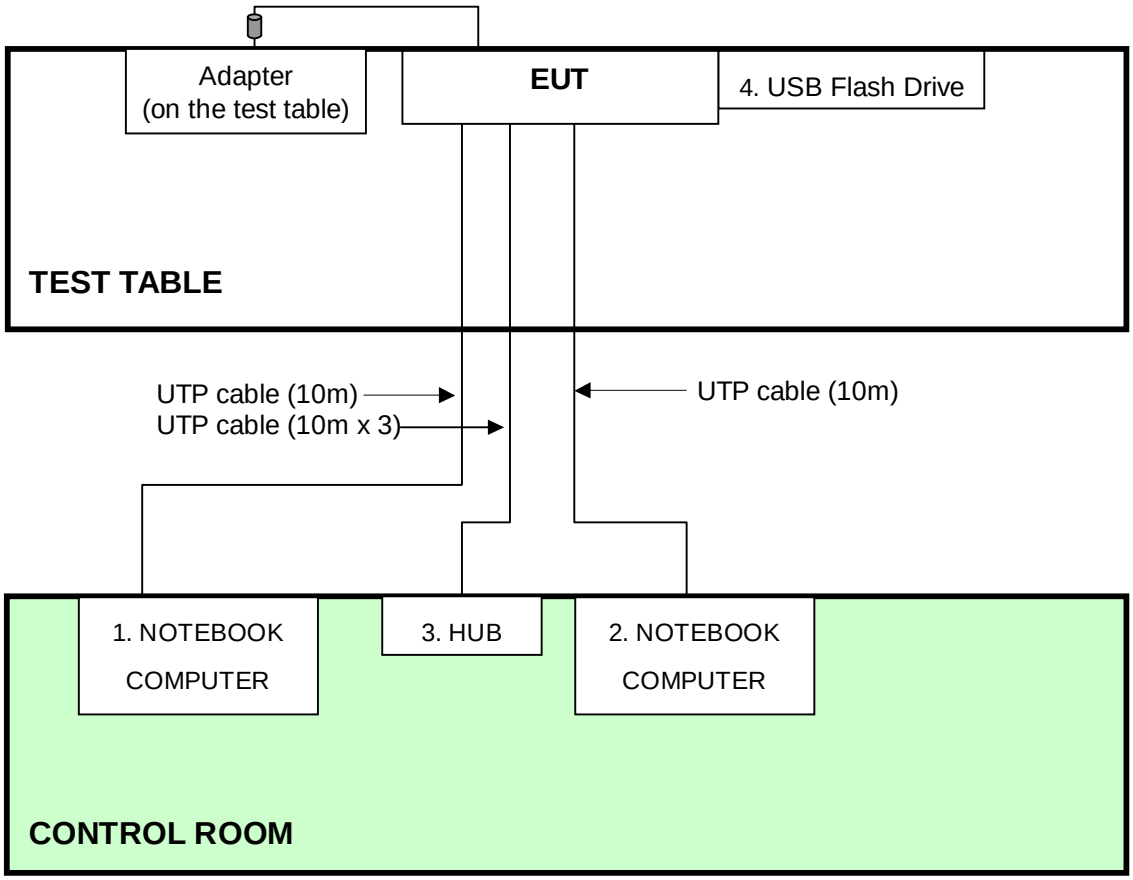
Note: The power cords of the above support units were unshielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted test:



For Radiated 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	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

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.

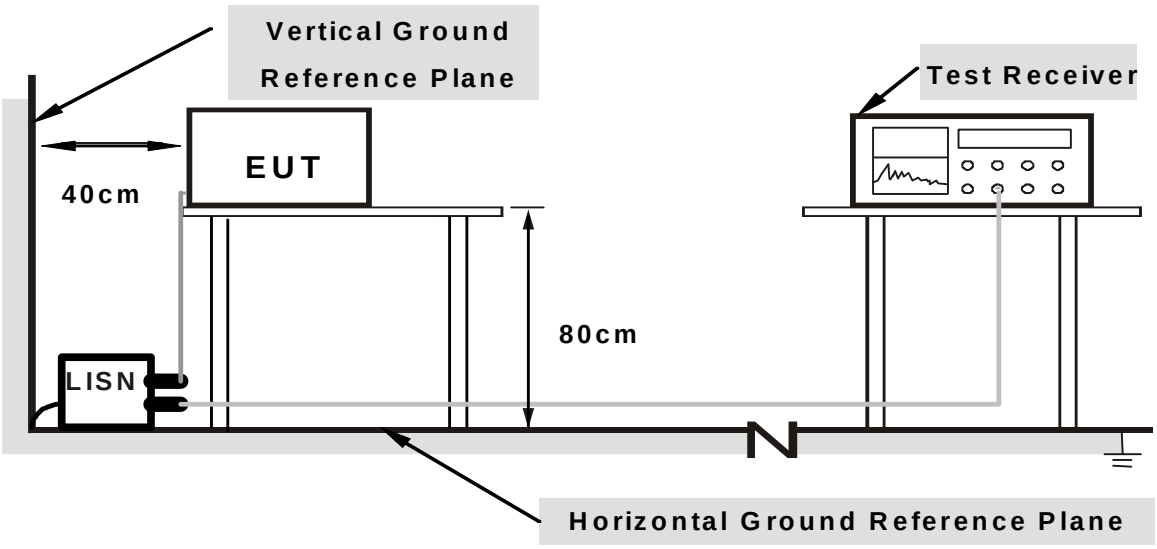
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

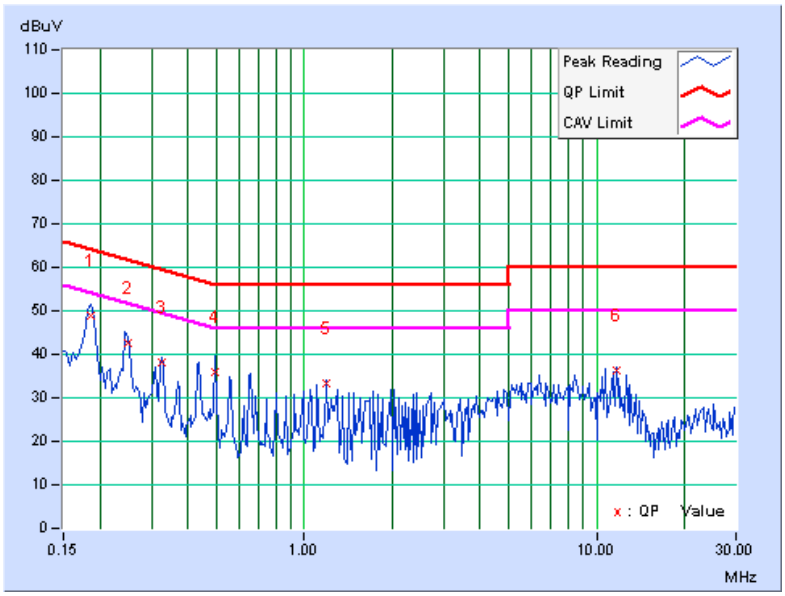
1. Placed the EUT on testing table.
2. Prepared other computer systems (support units 1, 7 & 8) to act as communication partners and placed them outside of testing area.
3. The communication partners ran test program “WinTG.exe” & “Ping.exe” to enable EUT under transmission/receiving condition continuously via UTP cables and wireless 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	0.185	0.12	48.76	40.20	48.88	40.32	64.25	54.25	-15.37	-13.93
2	0.249	0.13	42.31	34.81	42.44	34.94	61.81	51.81	-19.37	-16.87
3	**0.326**	**0.13**	**37.84**	**37.91**	**37.97**	**38.04**	**59.56**	**49.56**	**-21.59**	**-11.52**
4	0.494	0.13	35.90	33.35	36.03	33.48	56.10	46.10	-20.07	-12.62
5	1.188	0.14	33.34	22.62	33.48	22.76	56.00	46.00	-22.52	-23.24
6	11.731	0.51	35.70	36.29	36.21	36.80	60.00	50.00	-23.79	-13.20

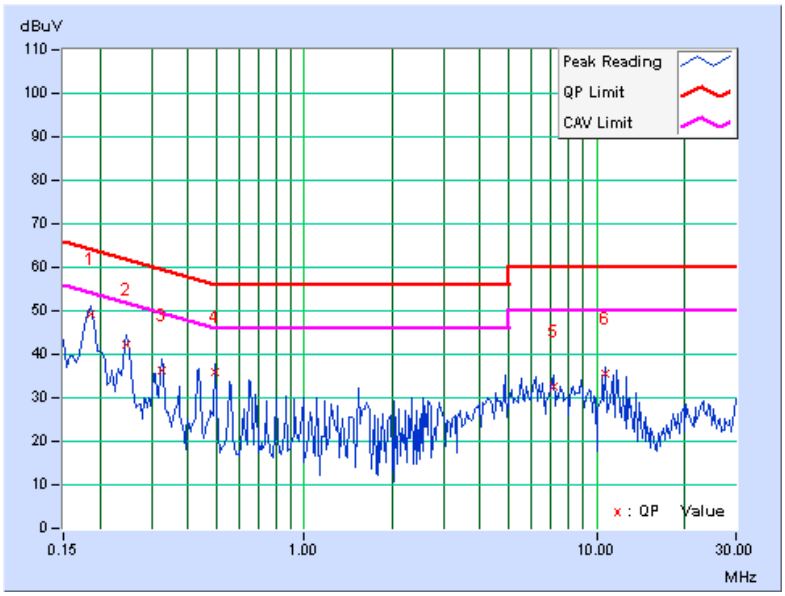
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission 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	0.185	0.13	49.19	39.69	49.32	39.82	64.25	54.25	-14.93	-14.43
2	0.248	0.14	42.01	33.13	42.15	33.27	61.84	51.84	-19.68	-18.56
3	0.326	0.15	36.19	37.26	36.34	37.41	59.56	49.56	-23.22	-12.15
4	0.494	0.15	35.68	32.98	35.83	33.13	56.10	46.10	-20.27	-12.97
5	7.168	0.57	32.13	28.50	32.70	29.07	60.00	50.00	-27.30	-20.93
6	10.748	0.87	34.83	35.41	35.70	36.28	60.00	50.00	-24.30	-13.72

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

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
RF Switches	EMH-011	1001	NA	NA
RF CABLE (Chaintek)	Sucoflex 104+ Sucoflex 106	RF104-101+RF106-101	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 10 meter open area test site. 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.

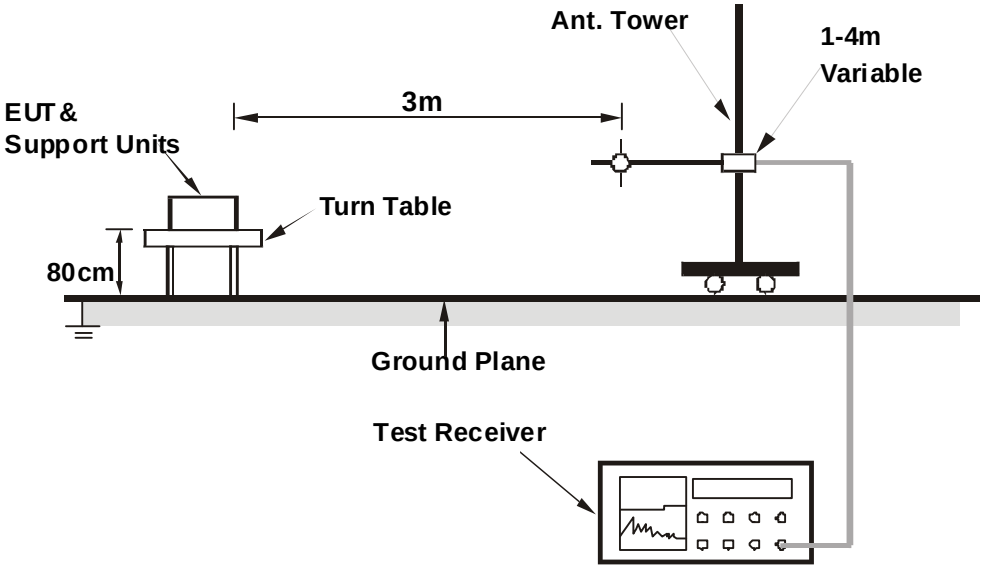
NOTE:

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



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

4.2.7 EUT OPERATING CONDITION

1. Turn on the power of all equipment.
2. Support unit 1 (Notebook Computer) run a test program “RT3x9xQA.exe” to enable of EUT via UTP cable continuously.

4.2.8 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 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	172.40	28.5 QP	43.5	-15.0	1.02 H	24	14.40	14.10
2	250.00	39.2 QP	46.0	-6.8	1.00 H	247	25.31	13.89
3	375.00	36.4 QP	46.0	-9.6	1.00 H	185	18.42	17.98
4	500.00	38.9 QP	46.0	-7.1	1.04 H	57	17.64	21.26
5	625.00	36.9 QP	46.0	-9.1	1.00 H	24	11.76	25.14
6	750.00	36.9 QP	46.0	-9.1	1.04 H	278	10.59	26.31
7	960.00	39.3 QP	46.0	-6.7	1.00 H	227	10.28	29.02
8	1000.00	34.9 QP	54.0	-19.1	1.00 H	87	5.53	29.37
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	45.60	36.8 QP	40.0	-3.2	1.00 V	5	22.94	13.86
2	69.30	31.4 QP	40.0	-8.6	1.00 V	24	19.12	12.28
3	125.00	35.9 QP	43.5	-7.6	1.00 V	54	22.73	13.15
4	250.00	36.9 QP	46.0	-9.1	1.00 V	64	22.98	13.89
5	375.00	35.1 QP	46.0	-10.9	1.00 V	105	17.14	17.98
6	500.00	37.8 QP	46.0	-8.2	1.00 V	204	16.52	21.26
7	625.00	35.9 QP	46.0	-10.1	1.00 V	248	10.76	25.14
8	960.00	35.8 QP	46.0	-10.2	1.02 V	55	6.78	29.02

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, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 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	5150.00	57.7 PK	74.0	-16.3	1.25 H	229	21.70	36.00
2	5150.00	45.6 AV	54.0	-8.4	1.25 H	229	9.60	36.00
3	*5180.00	103.4 PK			1.25 H	229	67.35	36.05
4	*5180.00	92.7 AV			1.25 H	229	56.65	36.05
5	#10360.00	53.3 PK	68.3	-15.0	1.21 H	303	7.15	46.15
6	15540.00	60.2 PK	74.0	-13.8	1.00 H	242	12.09	48.11
7	15540.00	48.4 AV	54.0	-5.6	1.00 H	242	0.29	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	5127.00	61.5 PK	74.0	-12.5	1.14 V	271	25.54	35.96
2	5127.00	52.7 AV	54.0	-1.3	1.14 V	271	16.74	35.96
3	*5180.00	111.9 PK			1.13 V	242	75.85	36.05
4	*5180.00	102.5 AV			1.13 V	242	66.45	36.05
5	#10360.00	53.7 PK	68.3	-14.6	1.02 V	241	7.55	46.15
6	15540.00	60.6 PK	74.0	-13.4	1.00 V	129	12.49	48.11
7	15540.00	48.5 AV	54.0	-5.5	1.00 V	129	0.39	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 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	*5200.00	104.1 PK			1.24 H	227	68.02	36.08
2	*5200.00	93.8 AV			1.24 H	227	57.72	36.08
3	#10400.00	54.0 PK	68.3	-14.3	1.23 H	209	7.79	46.21
4	15600.00	60.6 PK	74.0	-13.4	1.03 H	244	12.66	47.94
5	15600.00	48.5 AV	54.0	-5.5	1.03 H	244	0.56	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	5147.00	62.7 PK	74.0	-11.3	1.04 V	301	26.70	36.00
2	**5147.00**	**53.5 AV**	**54.0**	**-0.5**	**1.04 V**	**301**	**17.50**	**36.00**
3	*5200.00	114.5 PK			1.13 V	264	78.42	36.08
4	*5200.00	103.6 AV			1.13 V	264	67.52	36.08
5	#10400.00	54.2 PK	68.3	-14.1	1.05 V	225	7.99	46.21
6	15600.00	60.4 PK	74.0	-13.6	1.00 V	131	12.46	47.94
7	15600.00	48.6 AV	54.0	-5.4	1.00 V	131	0.66	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.

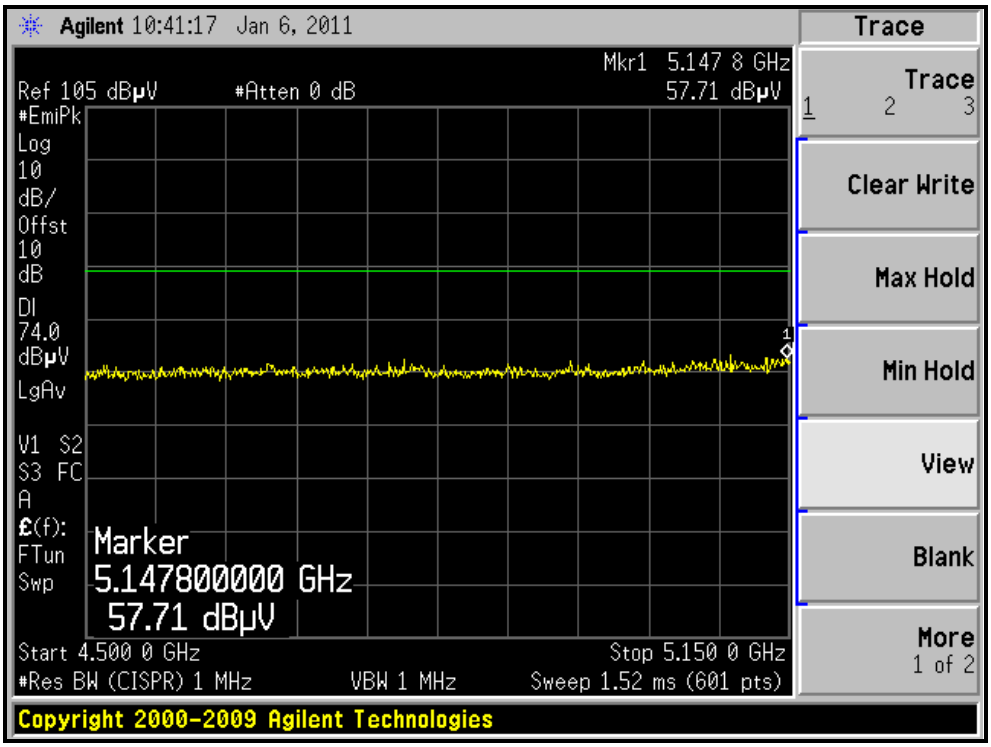
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 hPa	TESTED BY	Frank Liu

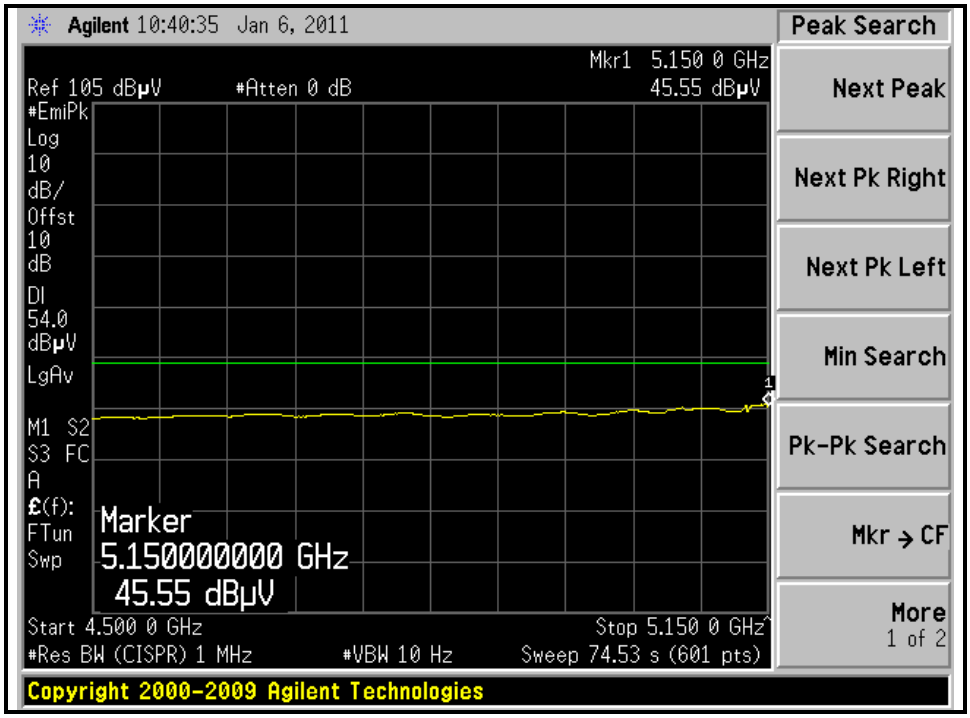
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	105.2 PK			1.26 H	222	69.06	36.14
2	*5240.00	95.0 AV			1.26 H	222	58.86	36.14
3	5354.90	59.4 PK	74.0	-14.6	1.26 H	222	23.07	36.33
4	5354.90	47.6 AV	54.0	-6.4	1.26 H	222	11.27	36.33
5	#10480.00	54.3 PK	68.3	-14.0	1.25 H	240	7.98	46.32
6	15720.00	60.7 PK	74.0	-13.3	1.20 H	201	13.11	47.59
7	15720.00	48.7 AV	54.0	-5.3	1.20 H	201	1.11	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	5115.00	62.4 PK	74.0	-11.6	1.14 V	270	26.46	35.94
2	5115.00	51.7 AV	54.0	-2.3	1.14 V	270	15.76	35.94
3	*5240.00	115.2 PK			1.10 V	78	79.06	36.14
4	*5240.00	105.6 AV			1.10 V	78	69.46	36.14
5	5358.80	64.0 PK	74.0	-10.0	1.10 V	78	27.67	36.33
6	5358.80	52.8 AV	54.0	-1.2	1.10 V	78	16.47	36.33
7	#10480.00	55.0 PK	68.3	-13.3	1.20 V	209	8.68	46.32
8	15720.00	60.8 PK	74.0	-13.2	1.00 V	114	13.21	47.59
9	15720.00	48.7 AV	54.0	-5.3	1.00 V	114	1.11	47.59

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

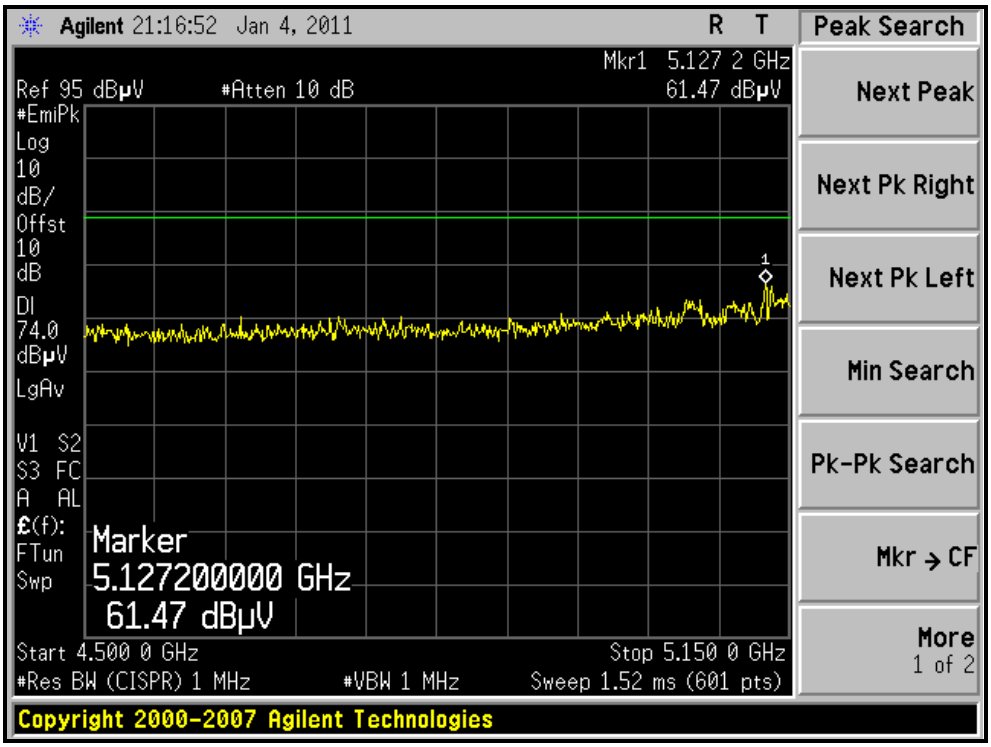
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

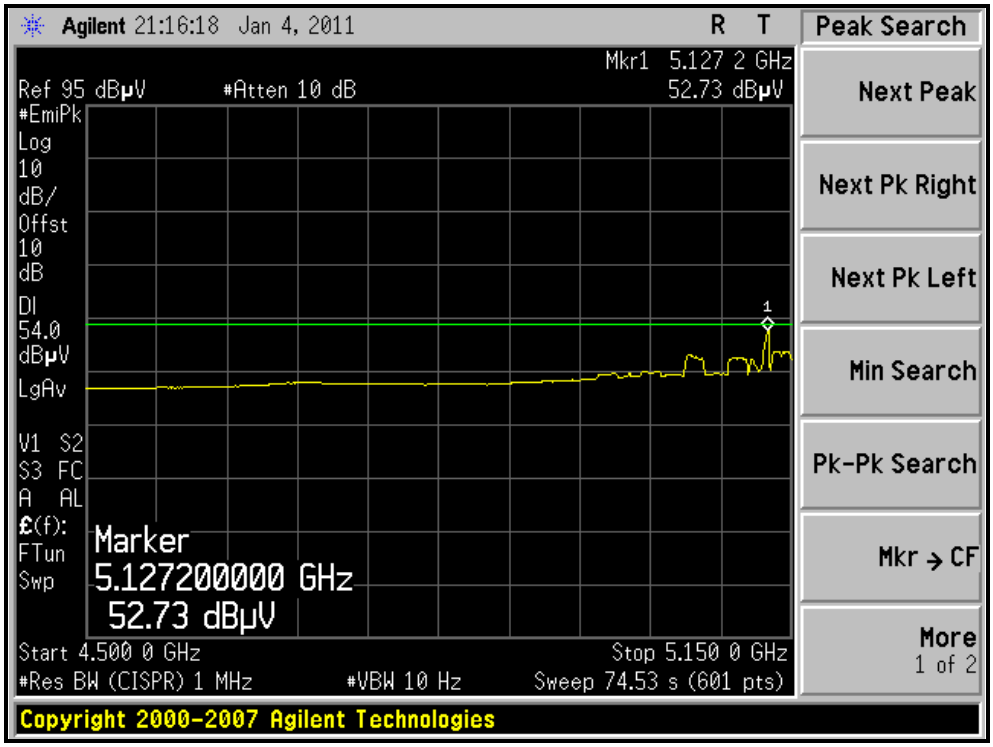
RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)





RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)





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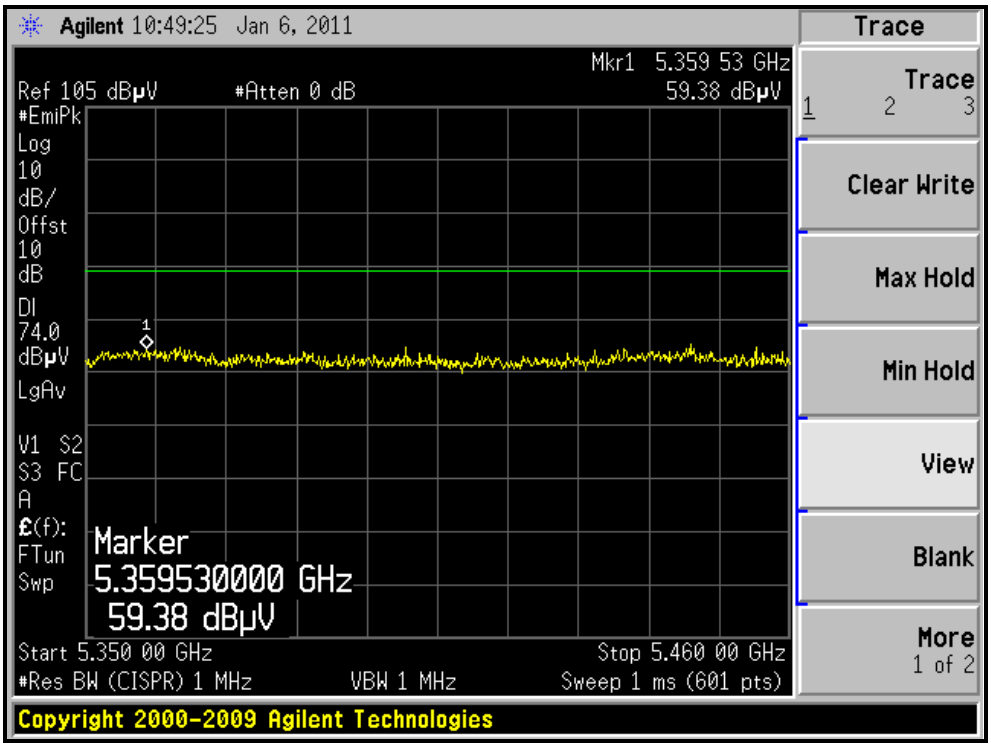
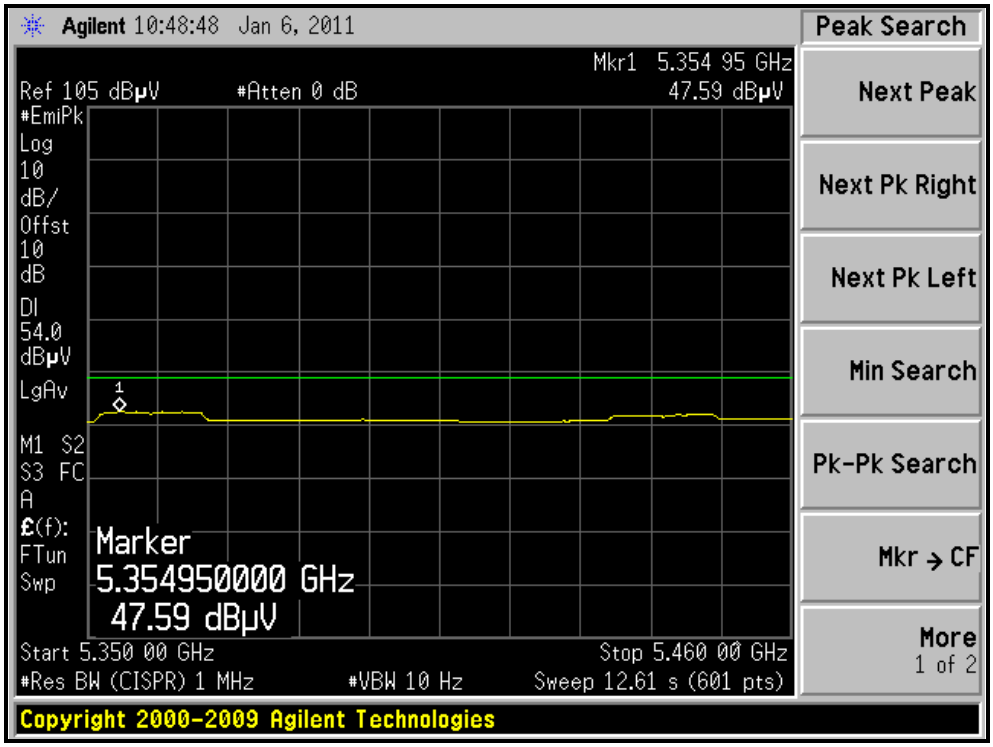
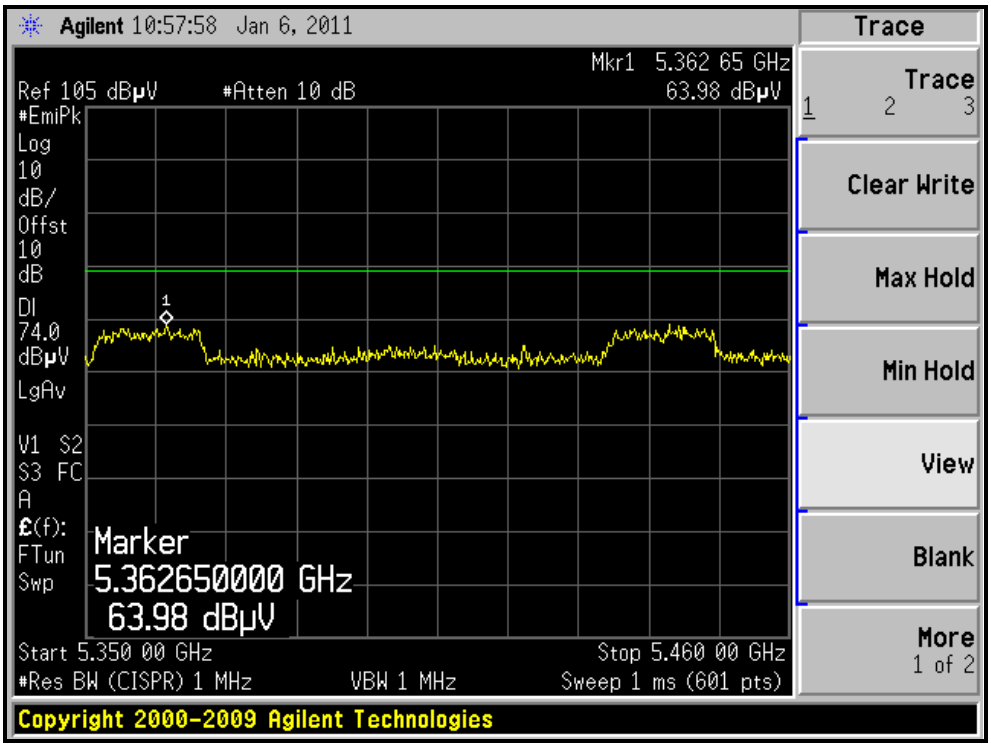
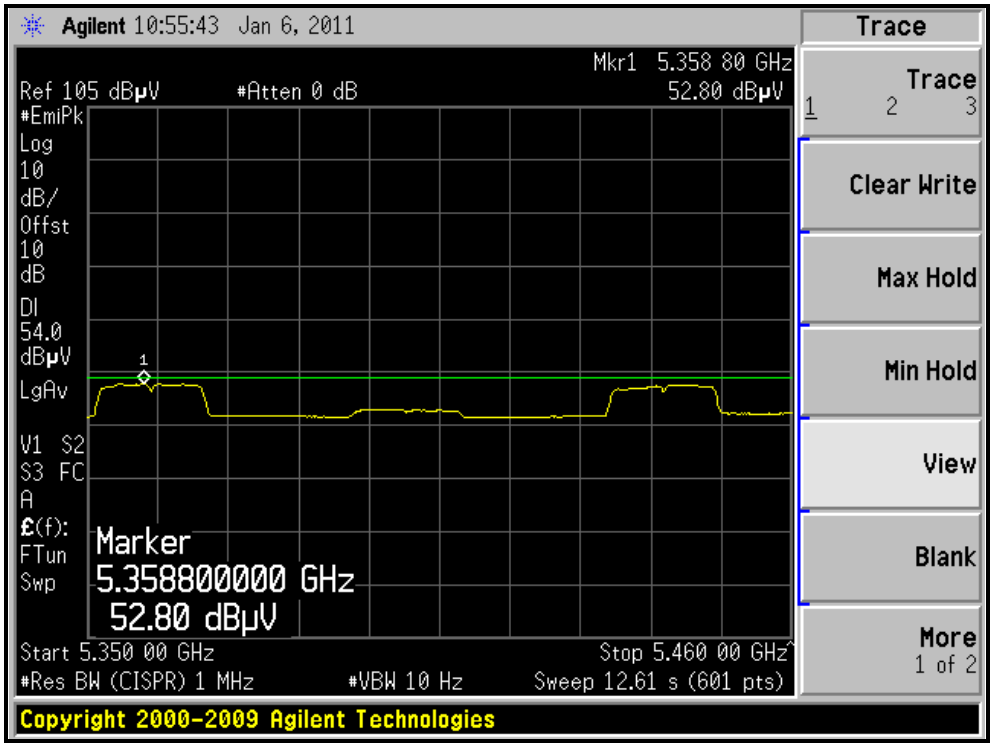




RESTRICTED BANDEDGE (802.11a MODE, CH48, VERTICAL)





802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 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	5128.30	58.2 PK	74.0	-15.8	1.06 H	42	22.23	35.97
2	5128.30	47.6 AV	54.0	-6.4	1.06 H	42	11.63	35.97
3	*5180.00	105.9 PK			1.06 H	42	69.85	36.05
4	*5180.00	95.8 AV			1.06 H	42	59.75	36.05
5	#10360.00	54.2 PK	68.3	-14.1	1.22 H	305	8.05	46.15
6	15540.00	59.9 PK	74.0	-14.1	1.00 H	263	11.79	48.11
7	15540.00	48.5 AV	54.0	-5.5	1.00 H	263	0.39	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	5128.00	61.6 PK	74.0	-12.4	1.13 V	282	25.64	35.96
2	5128.00	53.1 AV	54.0	-0.9	1.13 V	282	17.14	35.96
3	*5180.00	112.1 PK			1.14 V	265	76.05	36.05
4	*5180.00	101.5 AV			1.14 V	265	65.45	36.05
5	#10360.00	53.8 PK	68.3	-14.5	1.02 V	248	7.65	46.15
6	15540.00	60.9 PK	74.0	-13.1	1.00 V	120	12.79	48.11
7	15540.00	48.6 AV	54.0	-5.4	1.00 V	120	0.49	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	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 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	*5200.00	107.0 PK			1.06 H	44	70.92	36.08
2	*5200.00	96.6 AV			1.06 H	44	60.52	36.08
3	#10400.00	54.3 PK	68.3	-14.0	1.25 H	311	8.09	46.21
4	15600.00	60.8 PK	74.0	-13.2	1.00 H	257	12.86	47.94
5	15600.00	48.6 AV	54.0	-5.4	1.00 H	257	0.66	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	5148.00	63.3 PK	74.0	-10.7	1.15 V	267	27.30	36.00
2	5148.00	53.3 AV	54.0	-0.7	1.15 V	267	17.30	36.00
3	*5200.00	112.9 PK			1.09 V	88	76.82	36.08
4	*5200.00	103.2 AV			1.09 V	88	67.12	36.08
5	#10400.00	54.7 PK	68.3	-13.6	1.03 V	249	8.49	46.21
6	15600.00	60.6 PK	74.0	-13.4	1.00 V	112	12.66	47.94
7	15600.00	48.5 AV	54.0	-5.5	1.00 V	112	0.56	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.

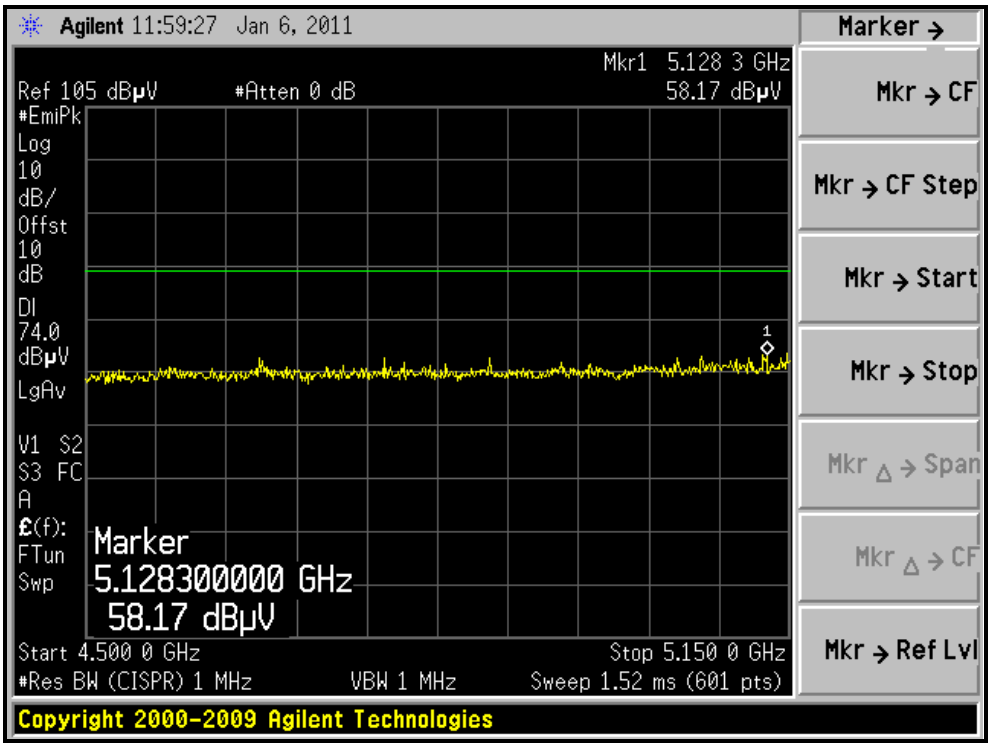
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 hPa	TESTED BY	Frank Liu

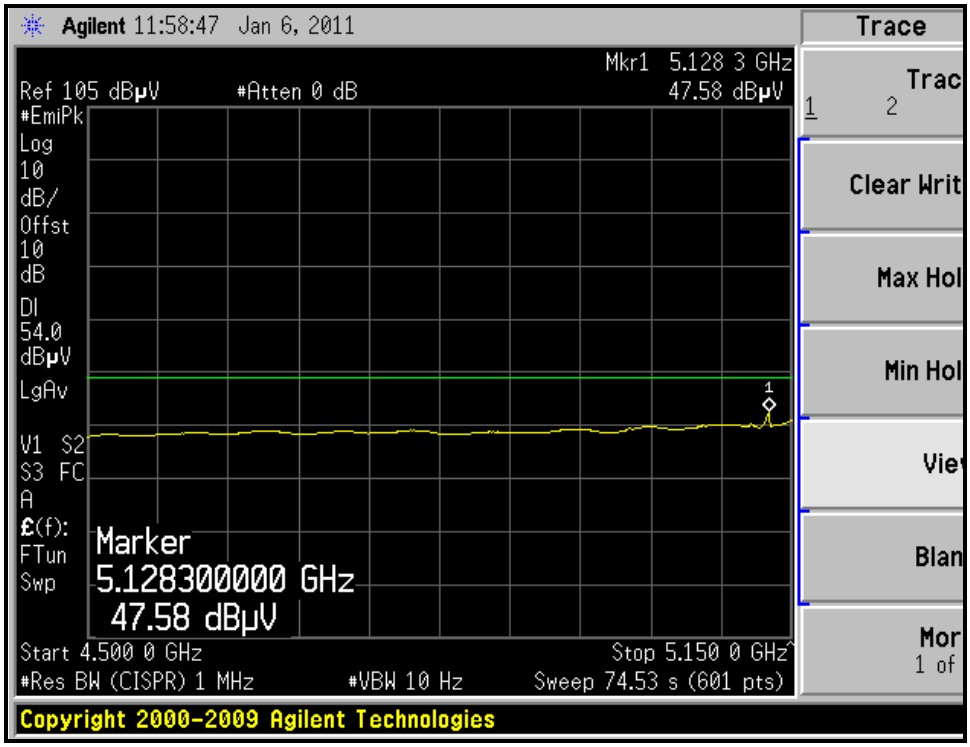
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.3 PK			1.06 H	42	71.16	36.14
2	*5240.00	97.8 AV			1.06 H	42	61.66	36.14
3	5359.10	59.4 PK	74.0	-14.6	1.06 H	42	23.07	36.33
4	5359.10	46.2 AV	54.0	-7.8	1.06 H	42	9.87	36.33
5	#10480.00	55.5 PK	68.3	-12.8	1.23 H	307	9.18	46.32
6	15720.00	61.3 PK	74.0	-12.7	1.03 H	125	13.71	47.59
7	15720.00	48.9 AV	54.0	-5.1	1.03 H	125	1.31	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	5115.00	61.4 PK	74.0	-12.6	1.13 V	271	25.46	35.94
2	5115.00	50.6 AV	54.0	-3.4	1.13 V	271	14.66	35.94
3	*5240.00	114.8 PK			1.09 V	87	78.66	36.14
4	*5240.00	104.3 AV			1.09 V	87	68.16	36.14
5	5358.80	64.9 PK	74.0	-9.1	1.10 V	78	28.57	36.33
6	5358.80	52.2 AV	54.0	-1.8	1.10 V	78	15.87	36.33
7	#10480.00	54.9 PK	68.3	-13.4	1.07 V	241	8.58	46.32
8	15720.00	61.9 PK	74.0	-12.1	1.00 V	129	14.31	47.59
9	15720.00	48.8 AV	54.0	-5.2	1.00 V	129	1.21	47.59

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

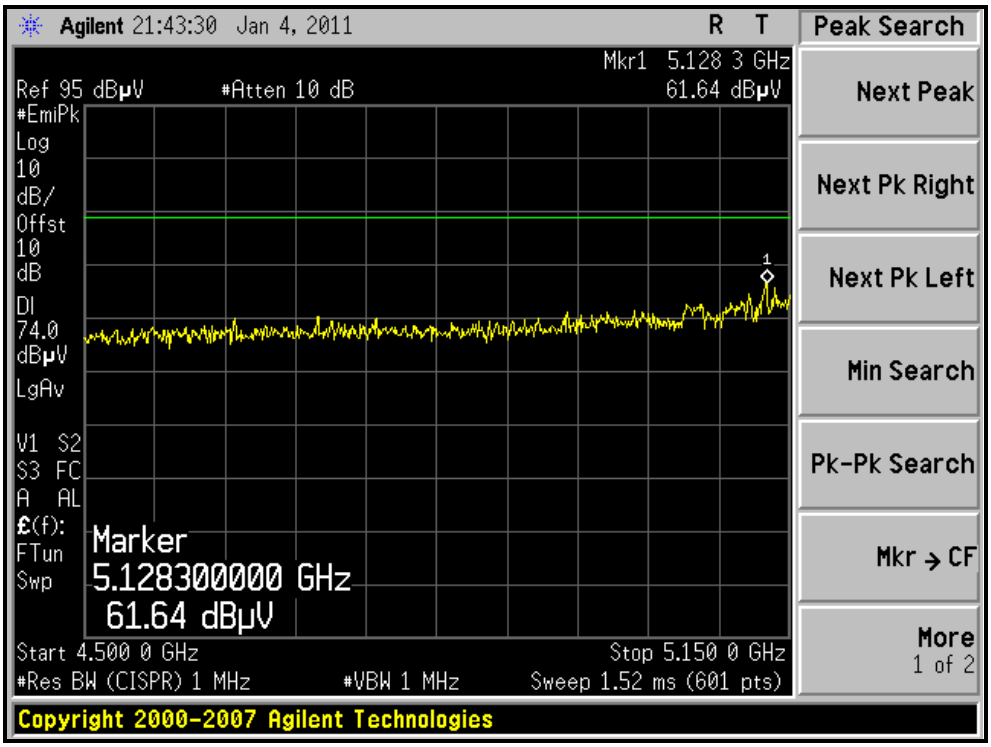
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

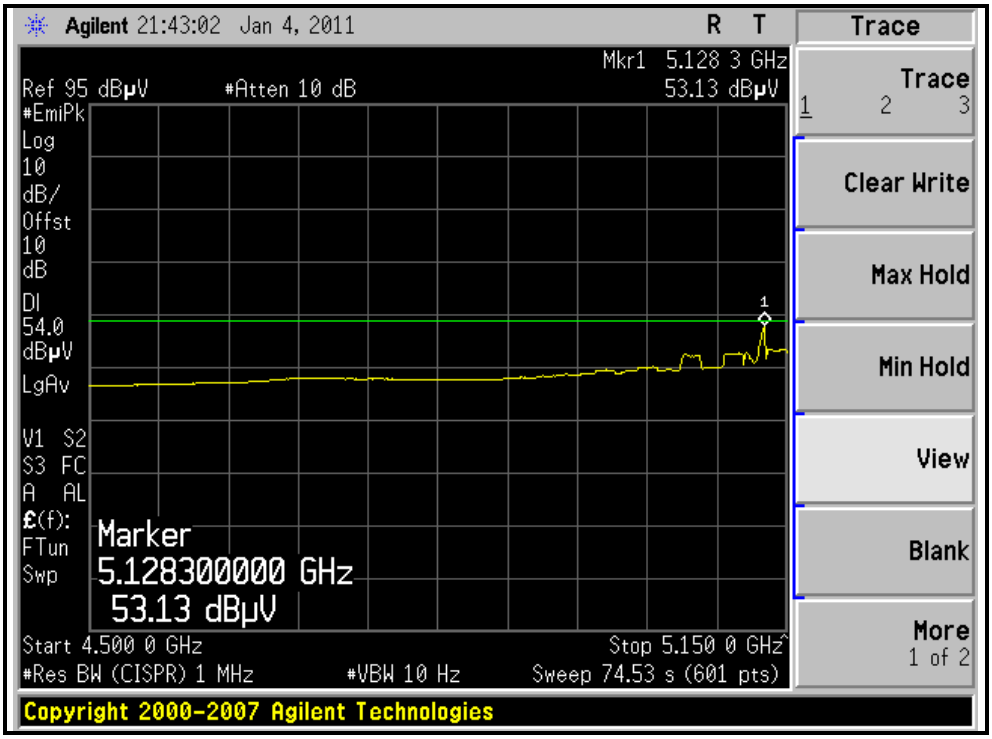
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)



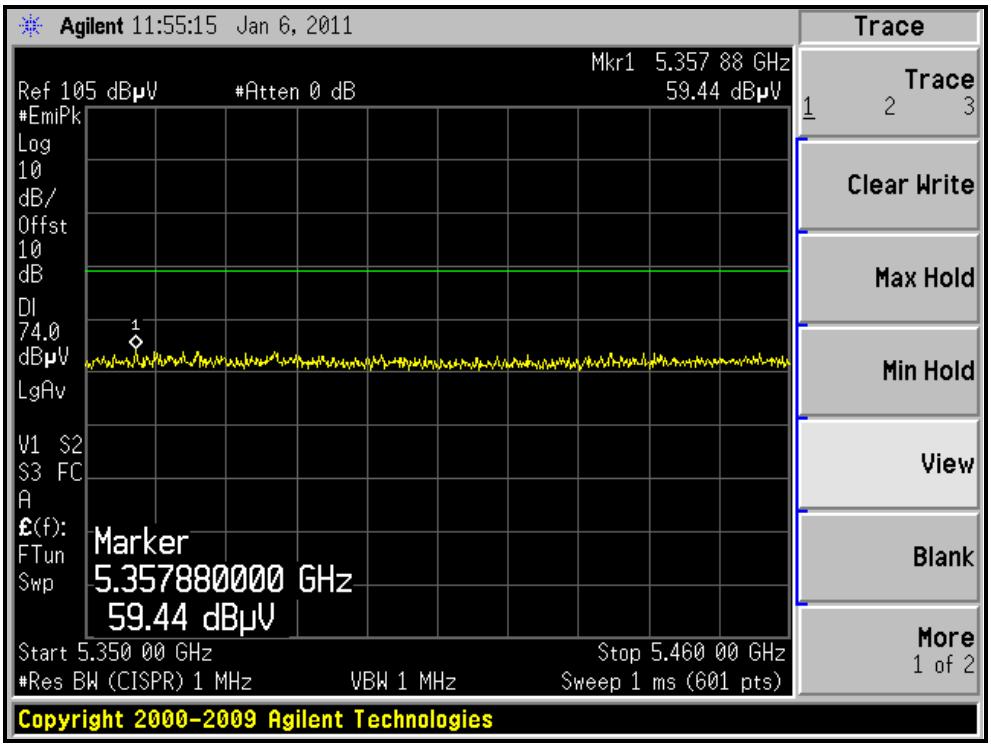


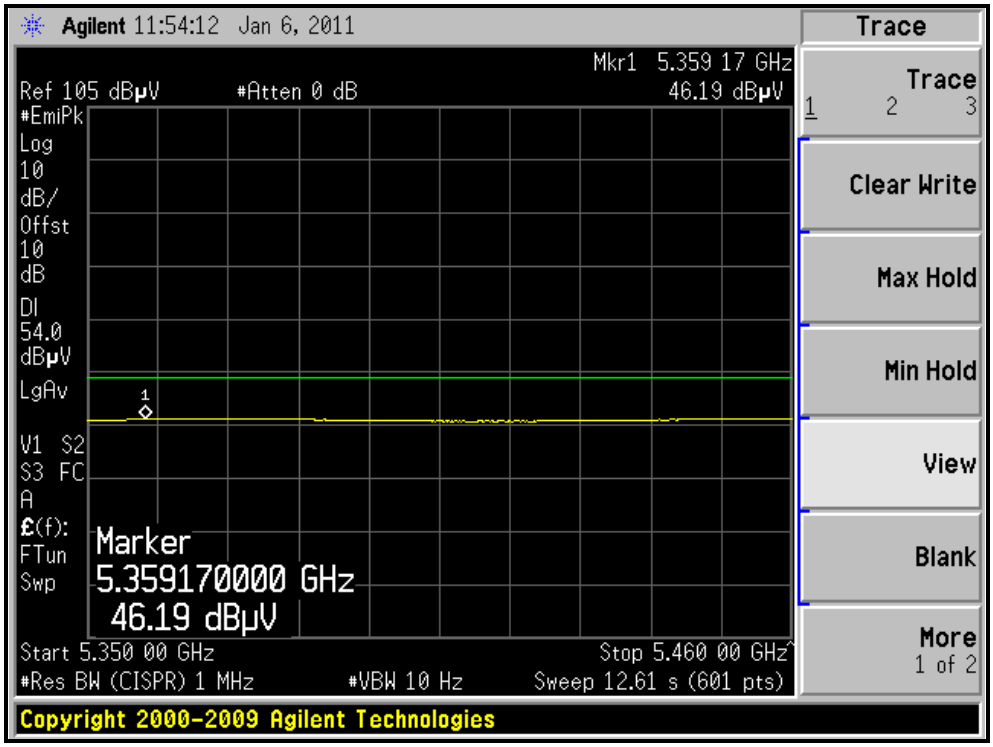
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, VERTICAL)



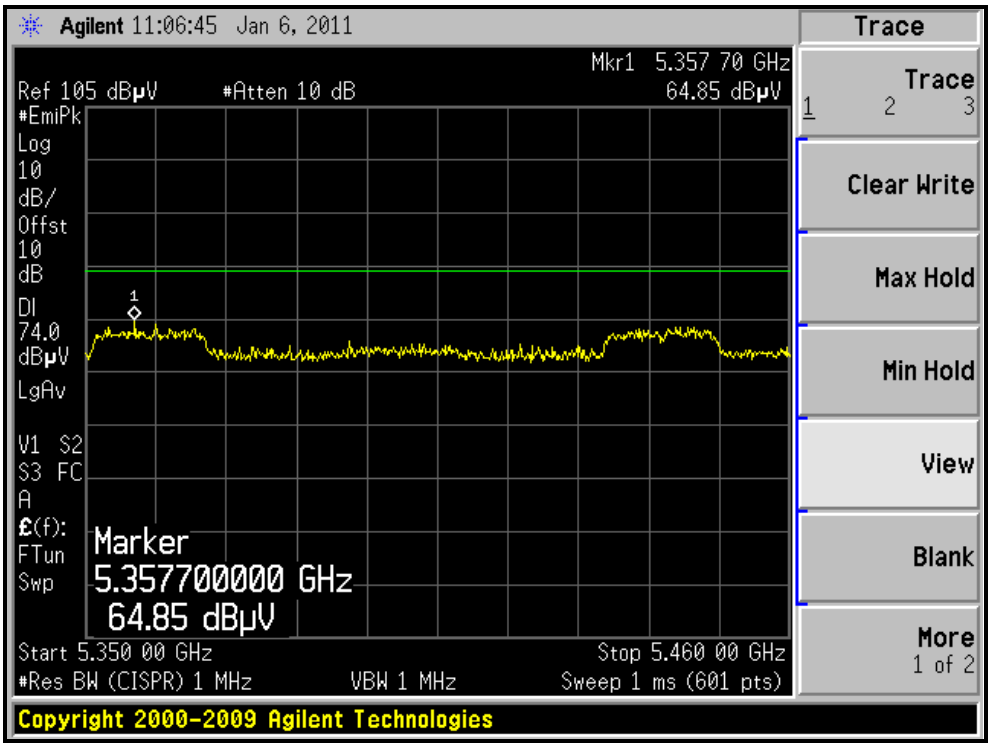


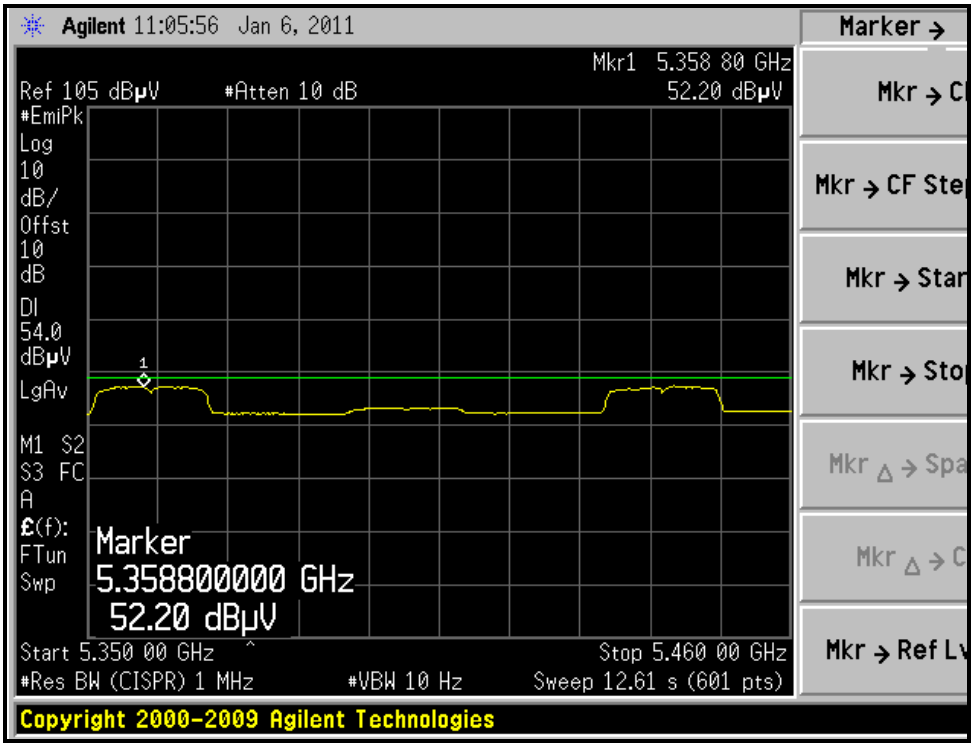
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH48, HORIZONTAL)





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





802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 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	5150.00	57.0 PK	74.0	-17.0	1.07 H	40	21.0	36.00
2	5150.00	45.4 AV	54.0	-8.6	1.07 H	40	9.40	36.00
3	*5190.00	100.5 PK			1.07 H	40	64.44	36.06
4	*5190.00	89.8 AV			1.07 H	40	53.74	36.06
5	#10380.00	54.0 PK	68.3	-14.3	1.24 H	305	6.82	47.18
6	15570.00	60.6 PK	74.0	-13.4	1.00 H	264	12.57	48.03
7	15570.00	48.8 AV	54.0	-5.2	1.00 H	264	0.77	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	64.4 PK	74.0	-9.6	1.14 V	271	28.40	36.00
2	5150.00	52.7 AV	54.0	-1.3	1.14 V	271	16.70	36.00
3	*5190.00	106.3 PK			1.14 V	272	70.24	36.06
4	*5190.00	95.8 AV			1.14 V	272	59.74	36.06
5	#10380.00	54.3 PK	68.3	-14.0	1.03 V	249	7.12	47.18
6	15570.00	60.1 PK	74.0	-13.9	1.00 V	129	12.07	48.03
7	15570.00	48.7 AV	54.0	-5.3	1.00 V	129	0.67	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.

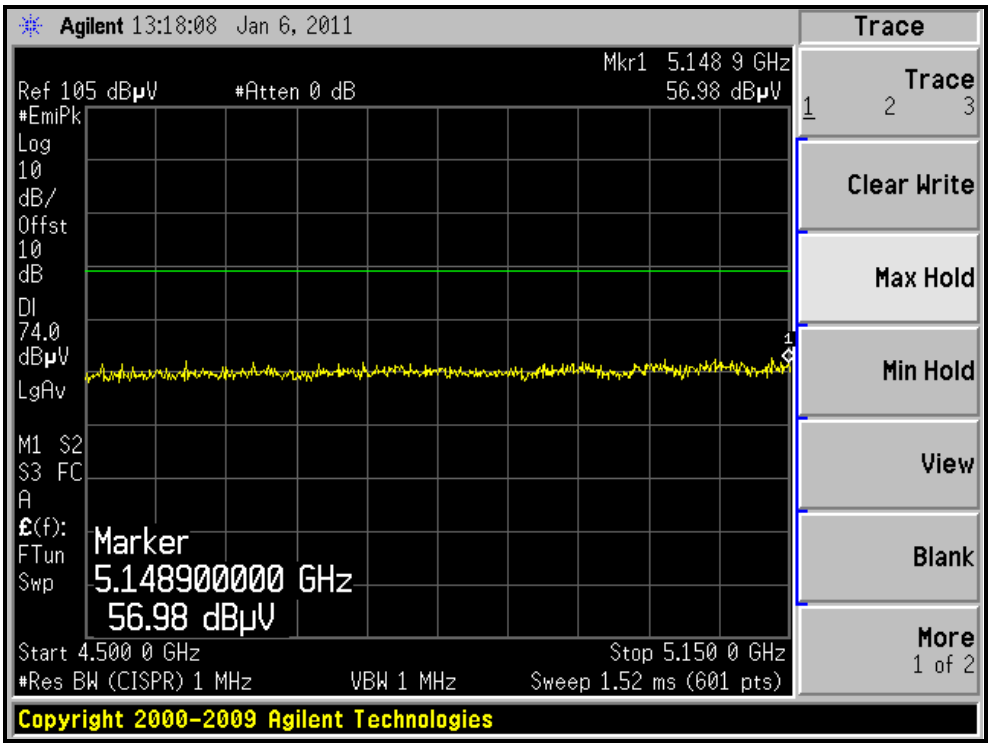
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	21deg. C, 61%RH 1013 hPa	TESTED BY	Frank Liu

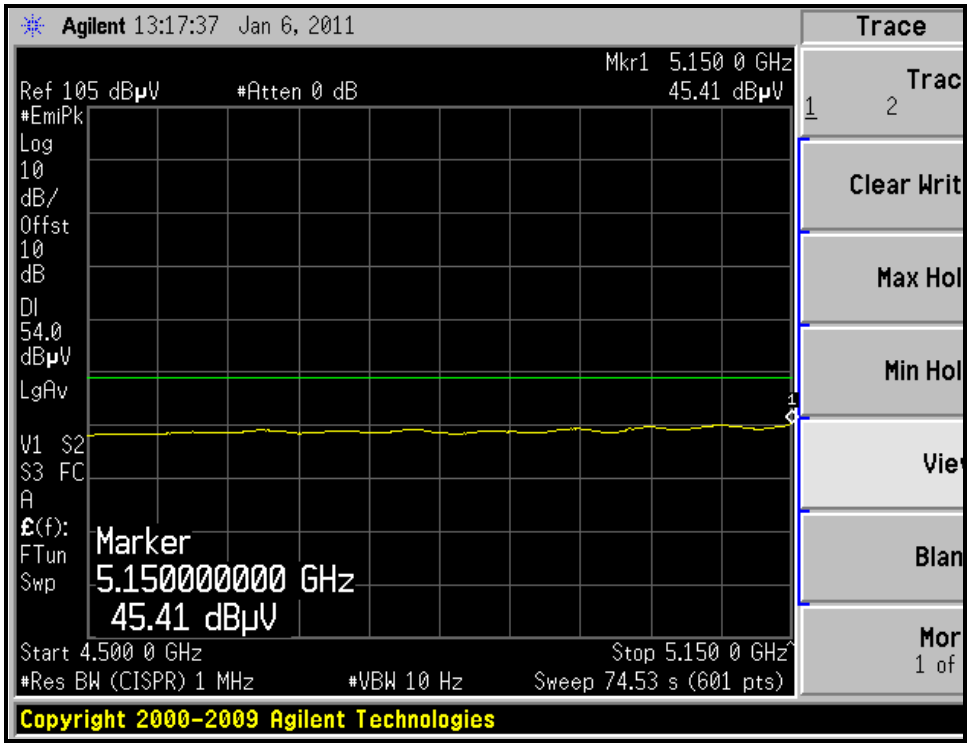
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	101.6 PK			1.06 H	39	65.47	36.13
2	*5230.00	90.6 AV			1.06 H	39	54.47	36.13
3	5362.20	57.7 PK	74.0	-16.3	1.06 H	39	21.36	36.34
4	5362.20	46.6 AV	54.0	-7.4	1.06 H	39	10.26	36.34
5	#10460.00	54.2 PK	68.3	-14.1	1.24 H	311	7.91	46.29
6	15690.00	61.2 PK	74.0	-12.8	1.00 H	268	13.52	47.68
7	15690.00	49.0 AV	54.0	-5.0	1.00 H	268	1.32	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	5126.00	61.7 PK	74.0	-12.3	1.14 V	269	25.74	35.96
2	5126.00	51.4 AV	54.0	-2.6	1.14 V	269	15.44	35.96
3	*5230.00	106.4 PK			1.10 V	286	70.27	36.13
4	*5230.00	96.1 AV			1.10 V	286	59.97	36.13
5	5360.20	60.8 PK	74.0	-13.2	1.10 V	286	24.46	36.34
6	5360.20	47.7 AV	54.0	-6.3	1.10 V	286	11.36	36.34
7	#10460.00	54.5 PK	68.3	-13.8	1.04 V	247	8.21	46.29
8	15960.00	61.4 PK	74.0	-12.6	1.00 V	122	14.50	46.90
9	15960.00	49.2 AV	54.0	-4.8	1.00 V	122	2.30	46.90

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

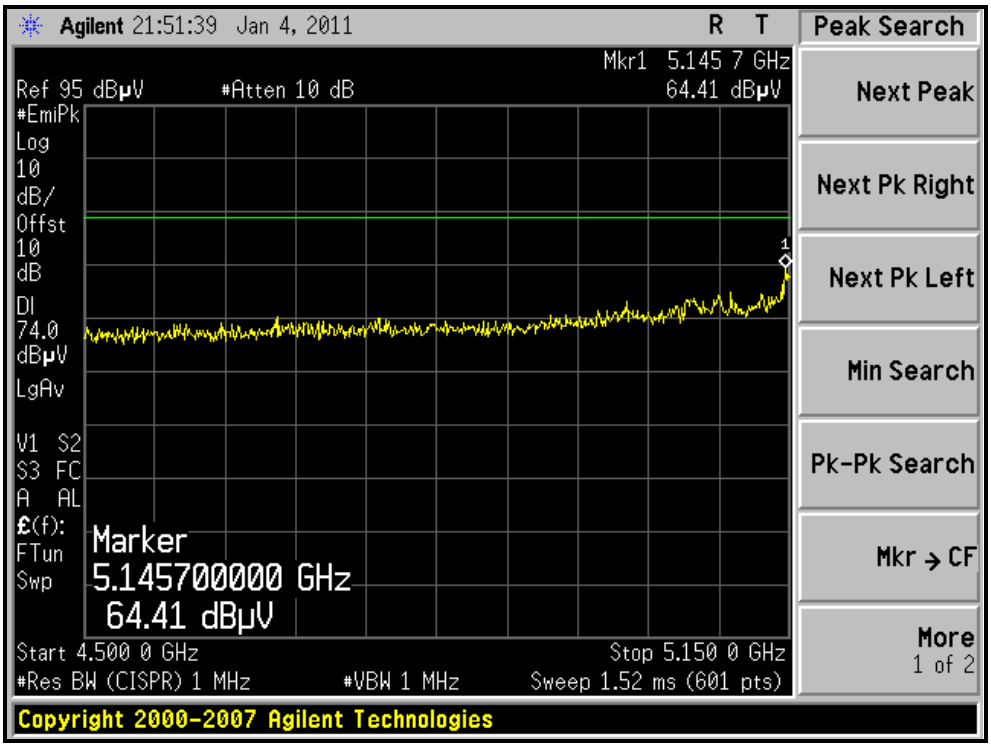
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

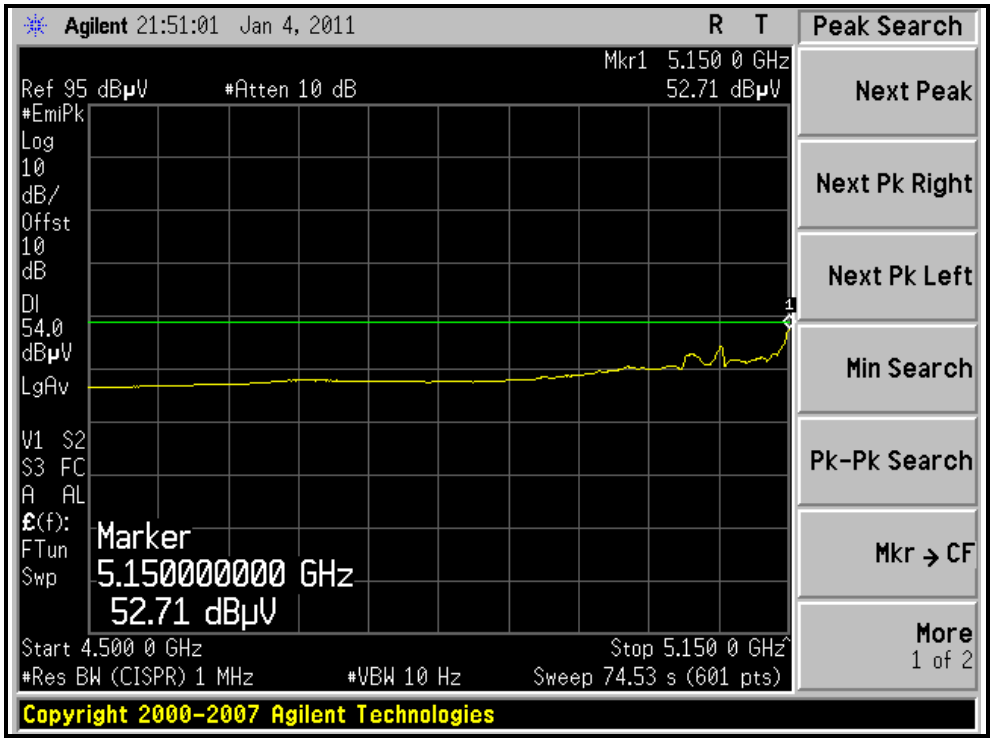
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)



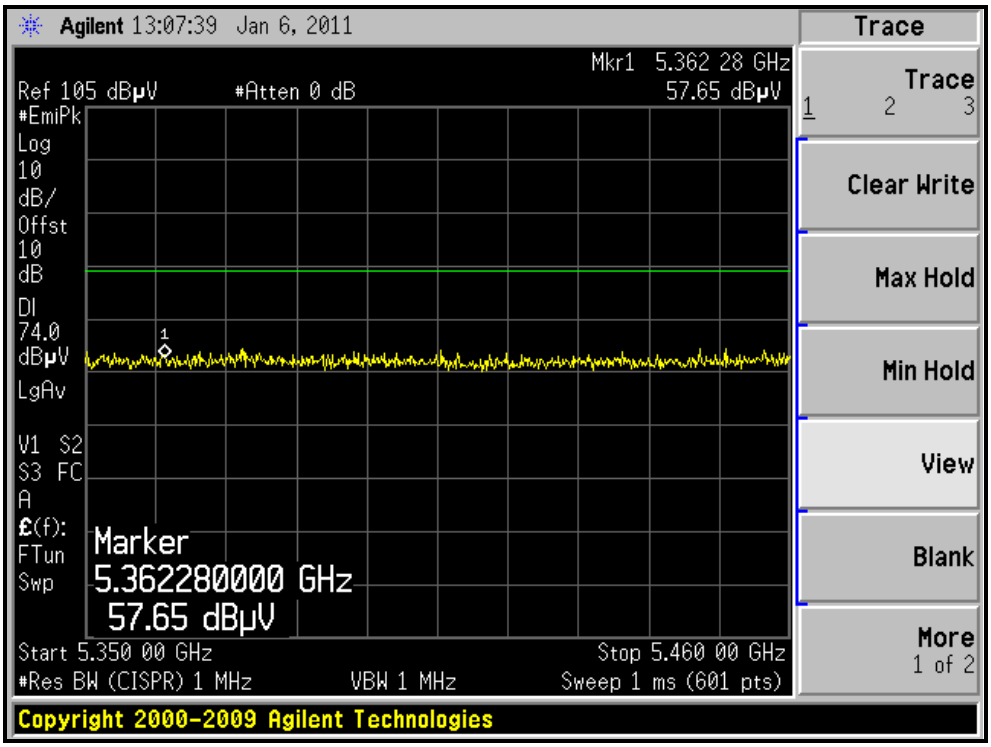


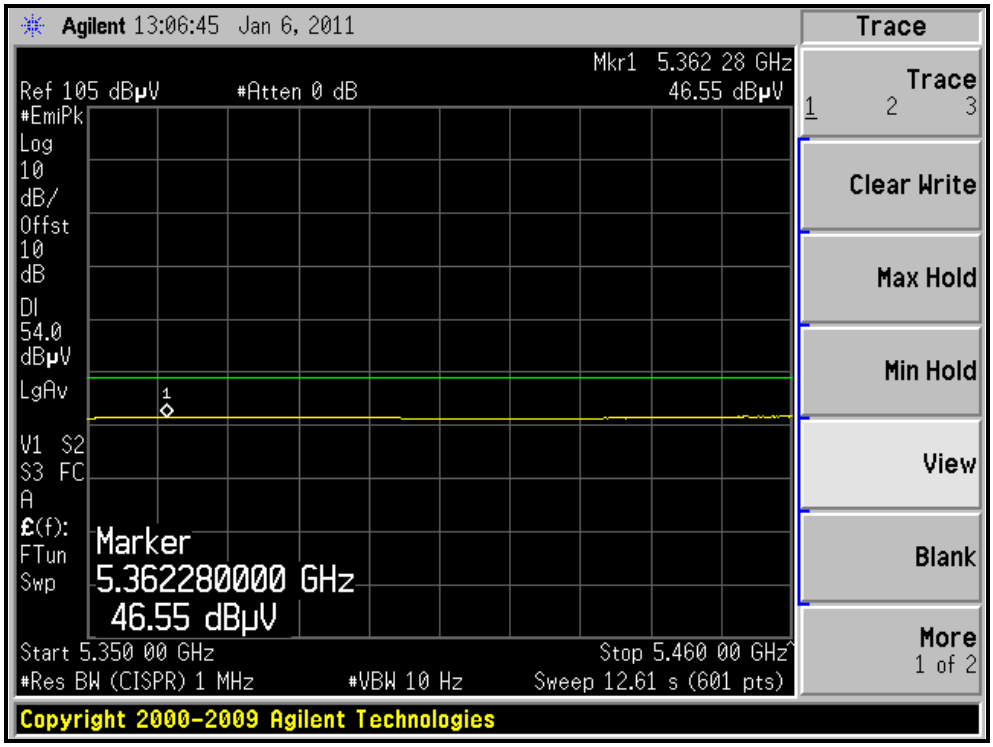
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH38, VERTICAL)



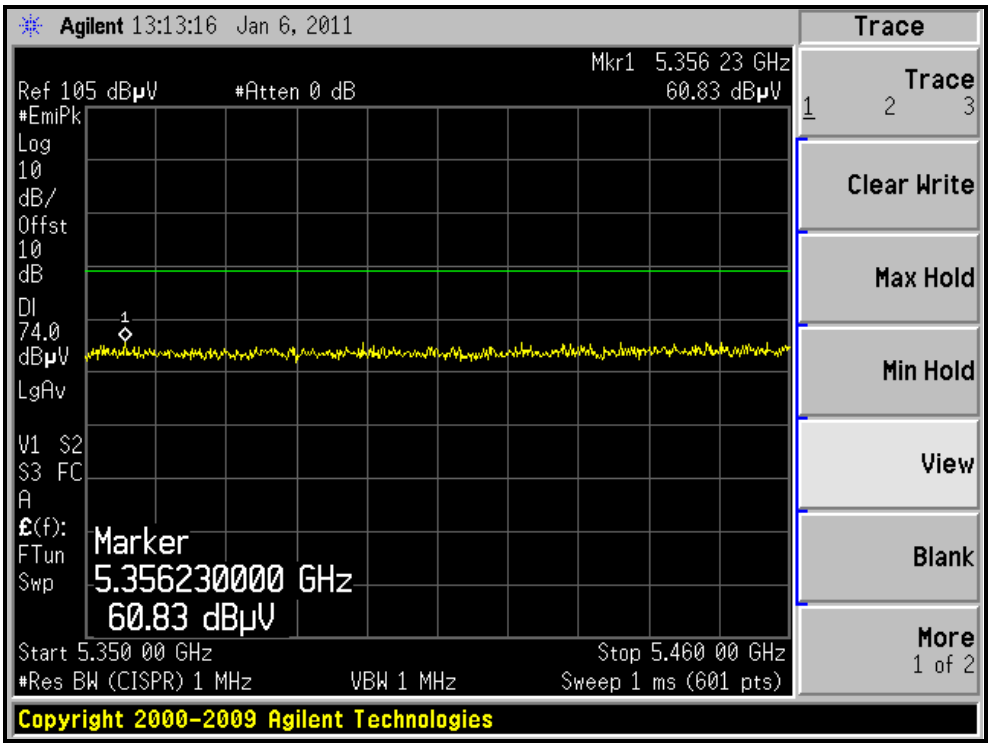


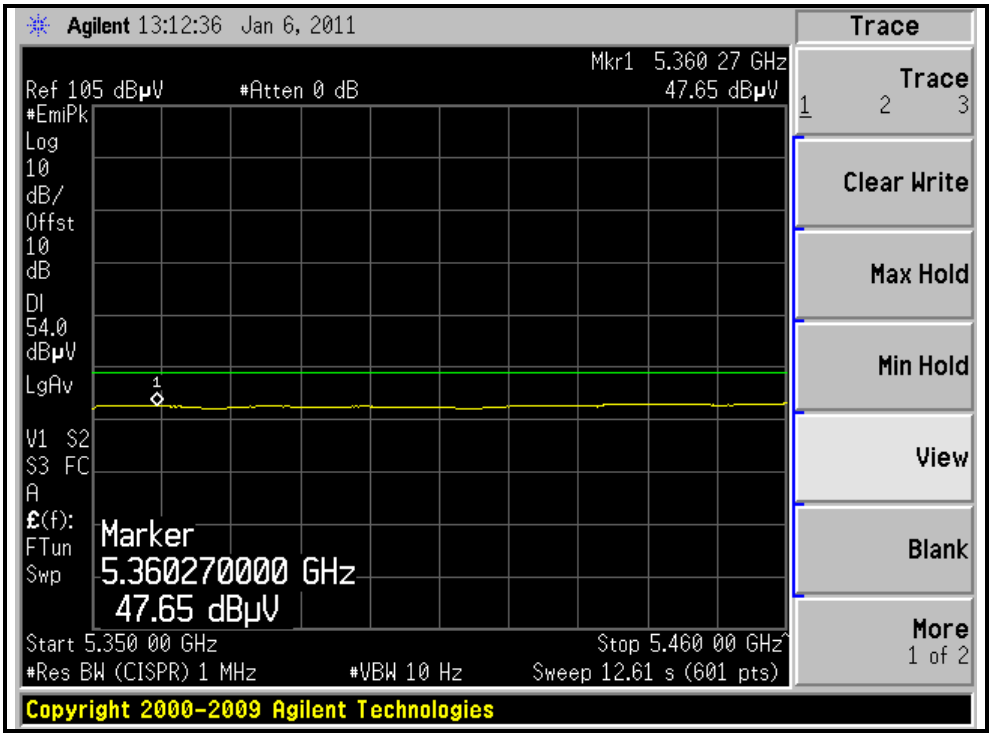
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH46, HORIZONTAL)





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





4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK 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 300kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

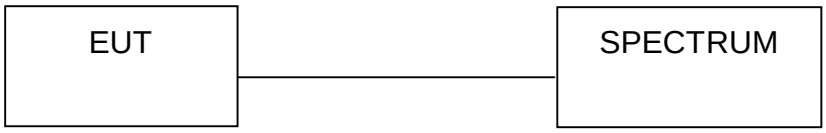
NOTE:
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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.

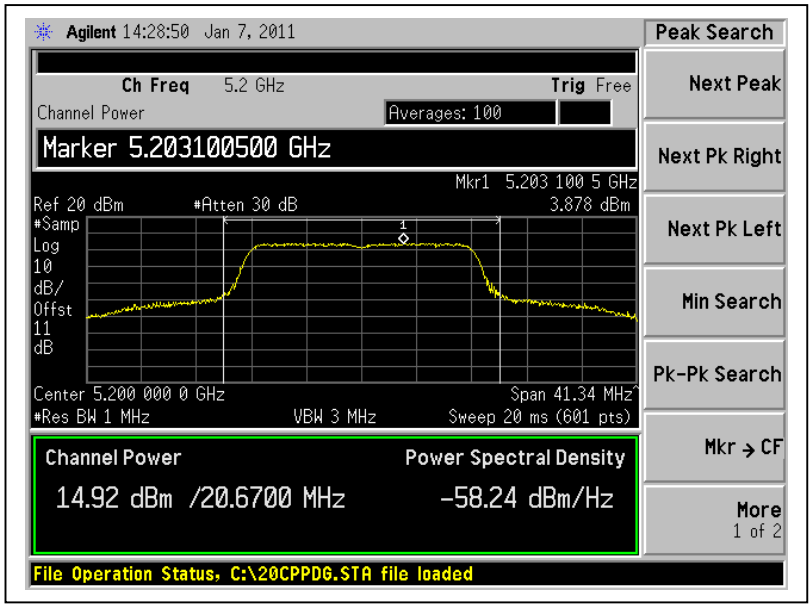
4.3.7 TEST RESULTS

802.11a OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/ FAIL
36	5180	30.9	14.9	17	20.67	PASS
40	5200	30.9	14.9	17	20.67	PASS
48	5240	26.3	14.2	17	20.42	PASS

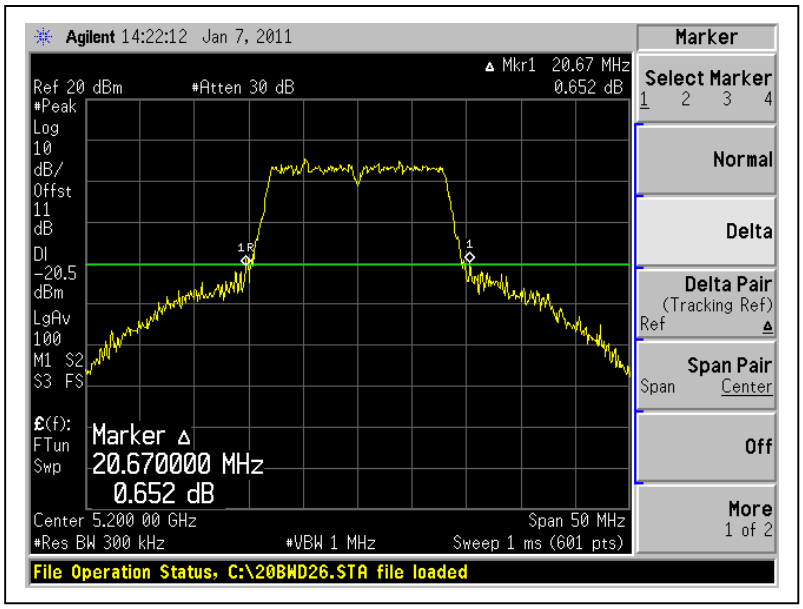
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:
CH40



26dB Occupied Bandwidth:

CH40

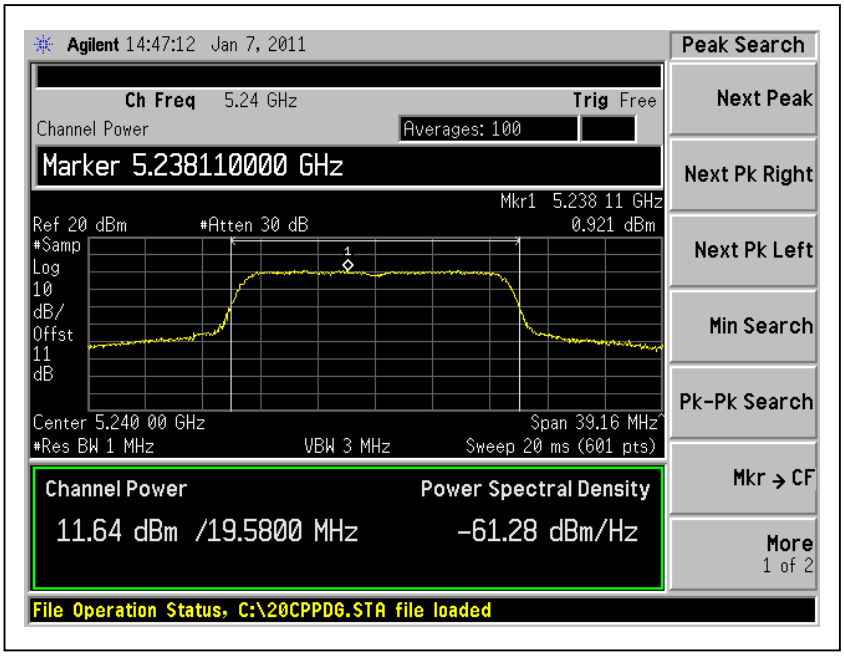


802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)					
36	5180	11.6	11.1	27.3	14.4	17	21.83	PASS
40	5200	11.5	11.2	27.3	14.4	17	19.92	PASS
48	5240	11.6	11.6	28.9	14.6	17	19.58	PASS

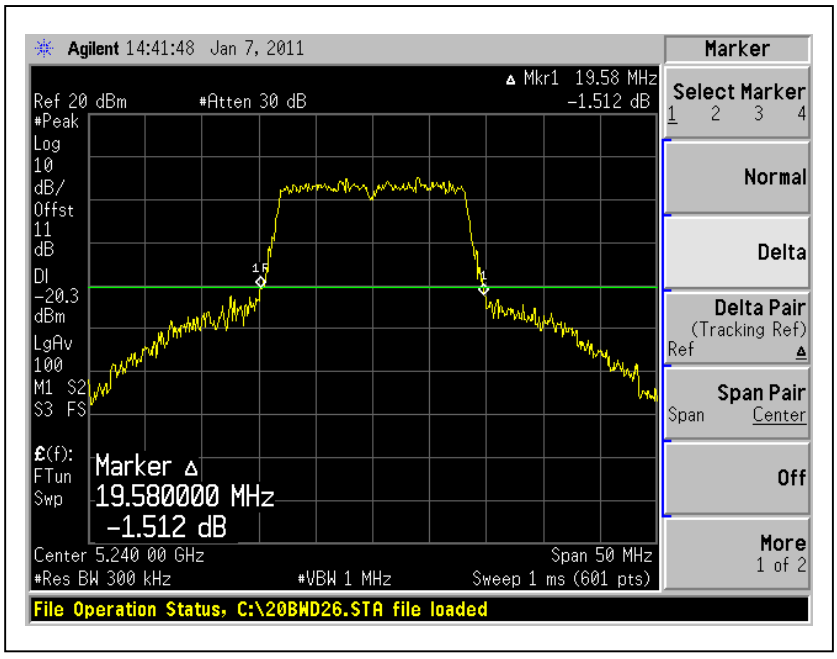
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:
For Chain(1) : CH48



26dB Occupied Bandwidth:

CH48

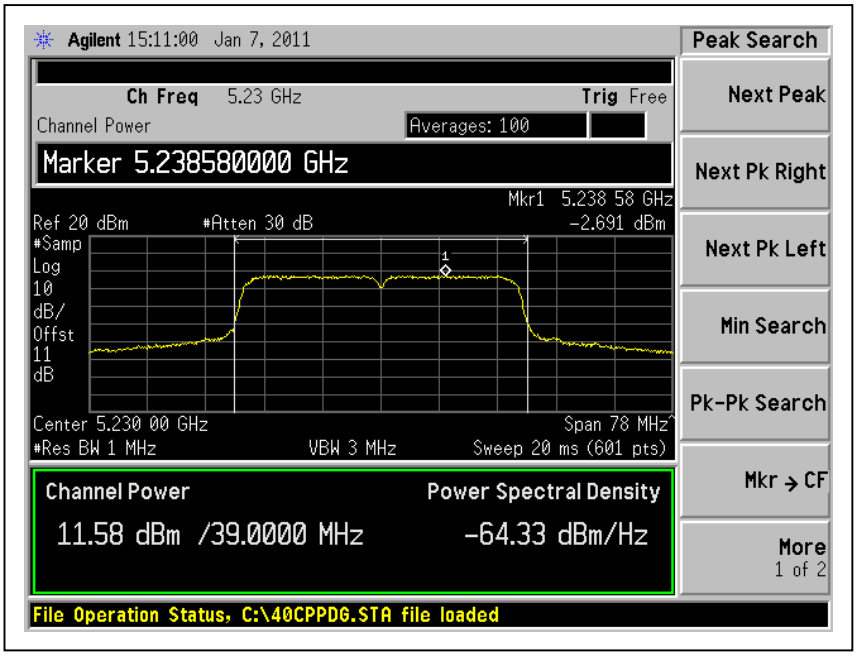


802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS / FAIL
		CHAIN(0)	CHAIN(1)					
38	5190	11.2	10.6	24.7	13.9	17	39.5	PASS
46	5230	11.6	11.2	27.6	14.4	17	39.0	PASS

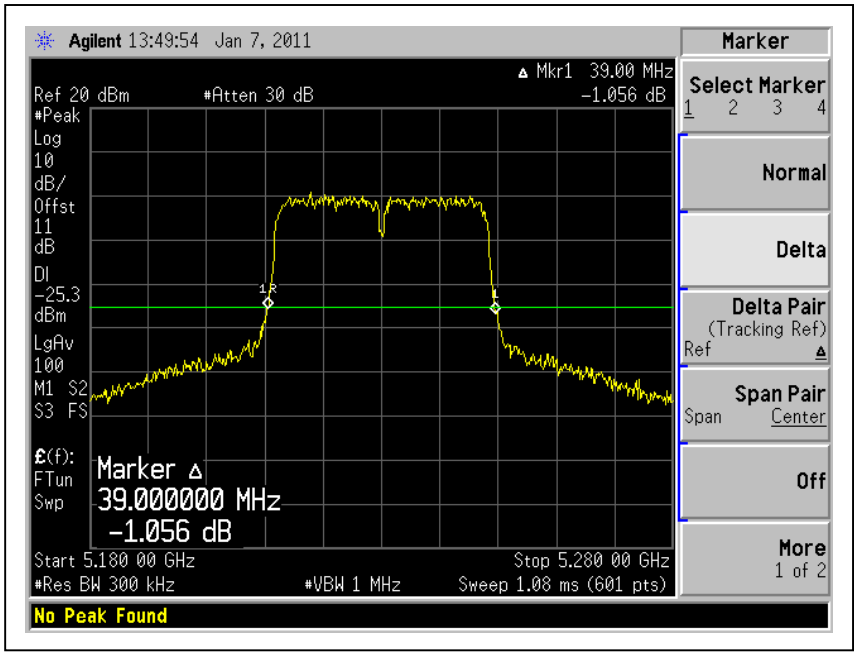
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak 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

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.

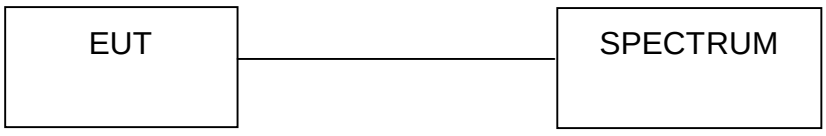
4.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=300kHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

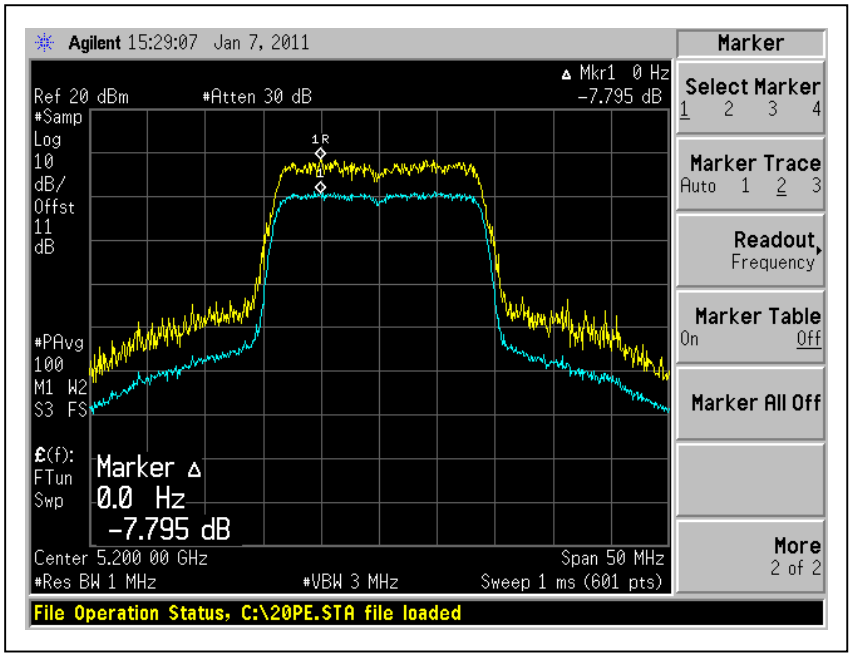
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

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	7.3	13	PASS
40	5200	7.8	13	PASS
48	5240	7.5	13	PASS

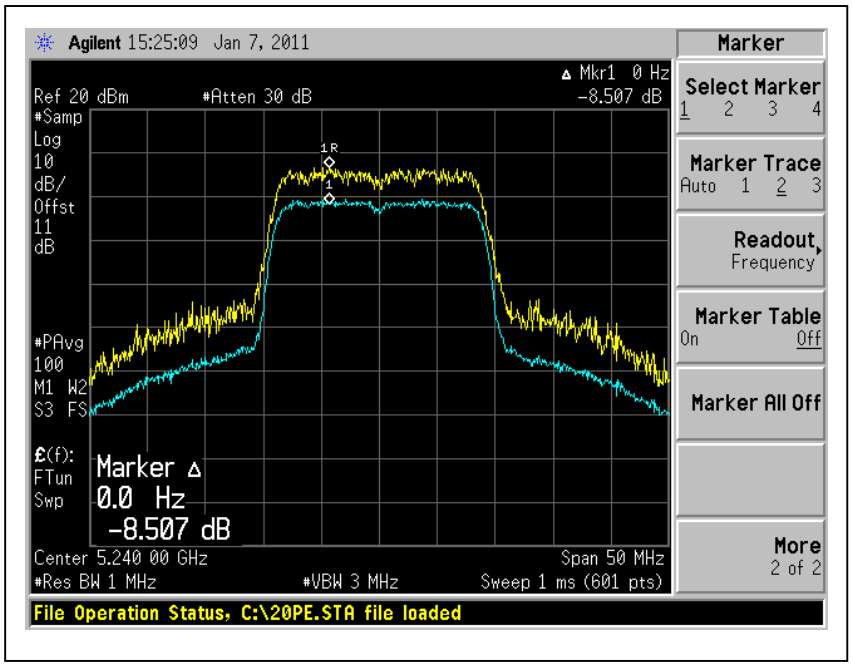
CH40



802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	8.0	13	PASS
40	5200	8.0	13	PASS
48	5240	8.5	13	PASS

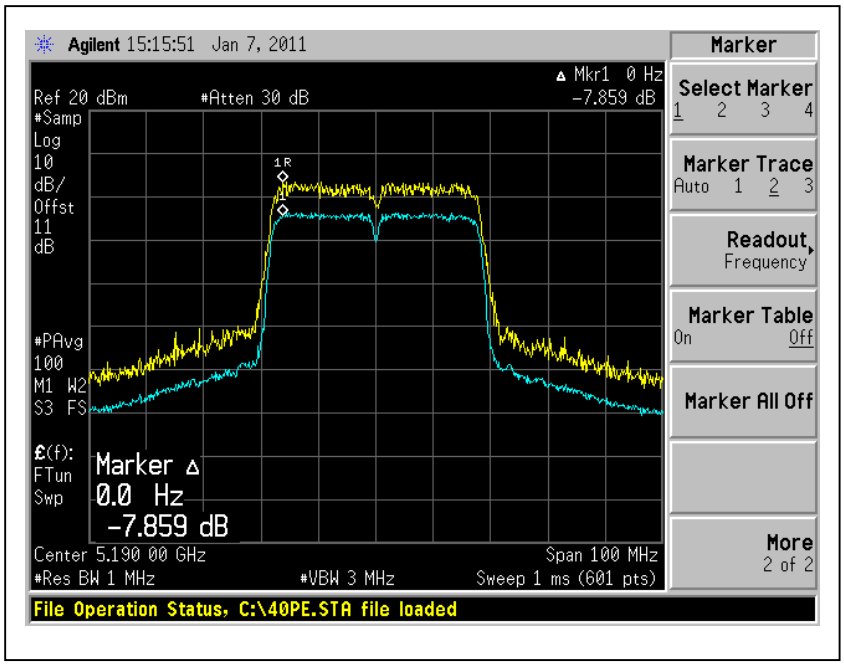
CH48



802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
38	5190	7.9	13	PASS
46	5230	7.8	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.

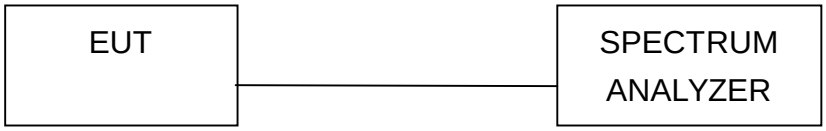
4.5.3 TEST PROCEDURES

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

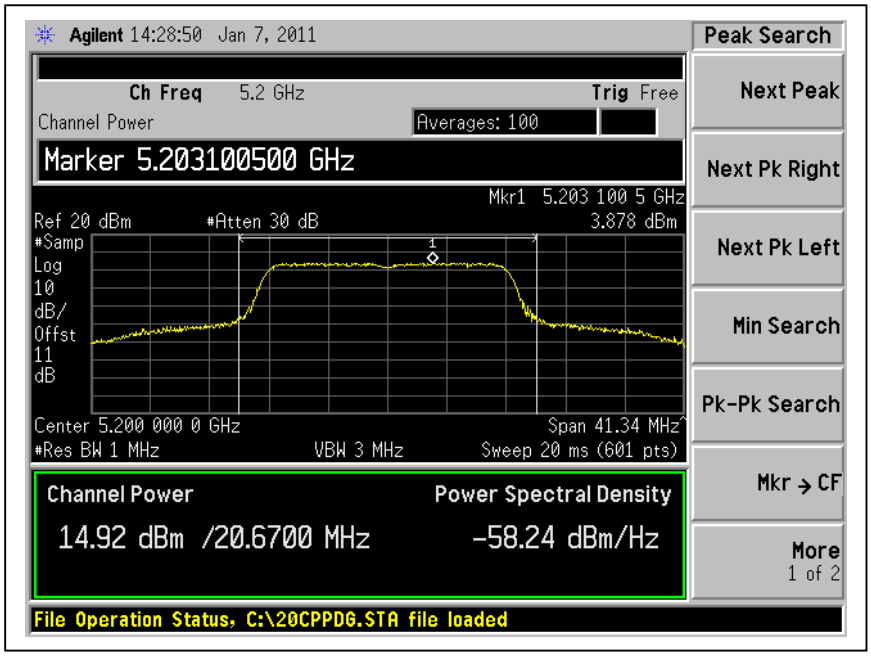
Same as 4.3.6

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	3.9	4	PASS
40	5200	3.9	4	PASS
48	5240	3.4	4	PASS

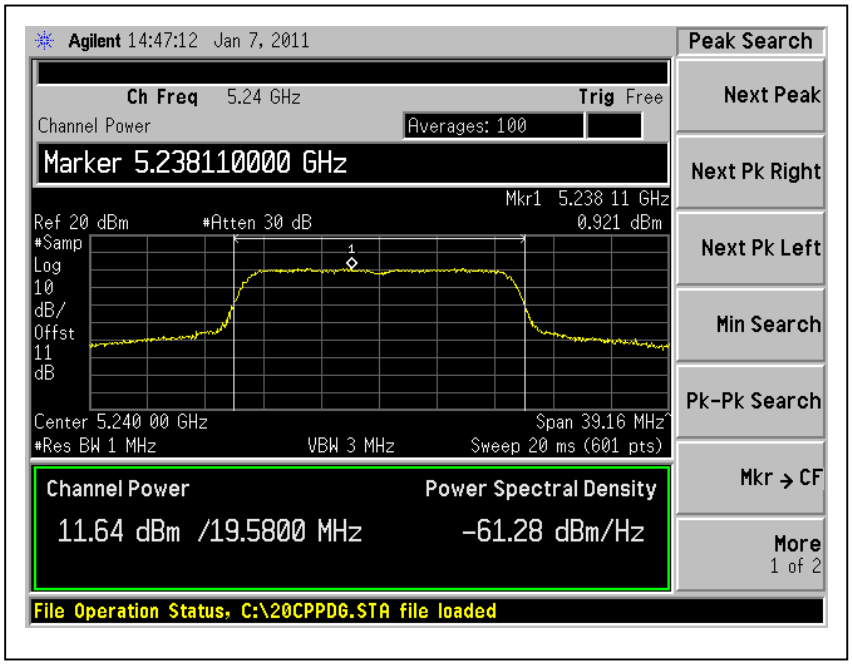
CH40



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	0.8	0.5	3.7	4	PASS
40	5200	0.7	0.8	3.8	4	PASS
48	5240	0.9	0.9	3.9	4	PASS

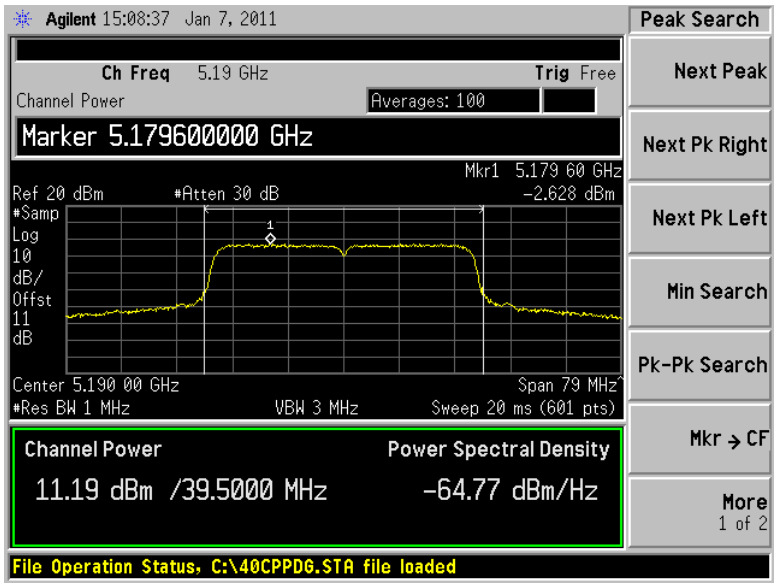
For Chain (1) : CH48



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	-2.6	-3.7	-0.1	4	PASS
46	5230	-2.7	-2.8	0.3	4	PASS

For Chain ((0) : CH1



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within 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
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.

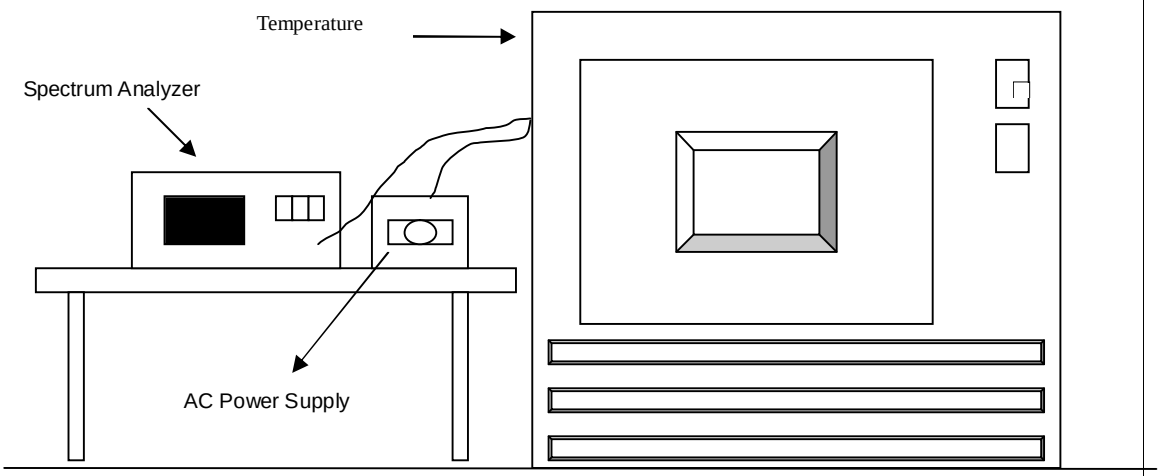
4.6.3 TEST PROCEDURE

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: 5180MHz									
Temp. (℃)	Power supply (VAC)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5180.0152	0.000293	5180.0138	0.000266	5180.0120	0.000232	5180.0123	0.000237
	110	5180.015	0.000290	5180.0158	0.000305	5180.0140	0.000270	5180.0147	0.000284
	93.5	5180.015	0.000290	5180.0128	0.000247	5180.0120	0.000232	5180.0145	0.000280
40	126.5	5180.021	0.000405	5180.0215	0.000415	5180.0218	0.000421	5180.0219	0.000423
	110	5180.021	0.000405	5180.0214	0.000413	5180.0218	0.000421	5180.0225	0.000434
	93.5	5180.0212	0.000409	5180.0212	0.000409	5180.0218	0.000421	5180.0223	0.000431
30	126.5	5180.0146	0.000282	5180.0098	0.000189	5180.0060	0.000116	5180.0053	0.000102
	110	5180.0146	0.000282	5180.0128	0.000247	5180.0090	0.000174	5180.0077	0.000149
	93.5	5180.0146	0.000282	5180.0088	0.000170	5180.0070	0.000135	5180.0063	0.000122
20	126.5	5180.0076	0.000147	5180.0028	0.000054	5180.0030	0.000058	5180.0033	0.000064
	110	5180.0076	0.000147	5180.0058	0.000112	5180.0040	0.000077	5180.0039	0.000075
	93.5	5180.0056	0.000108	5180.0028	0.000054	5180.0030	0.000058	5180.0037	0.000071
10	126.5	5179.9768	0.000448	5179.9767	0.000450	5179.9767	0.000450	5179.9755	0.000473
	110	5179.9768	0.000448	5179.9769	0.000446	5179.9768	0.000448	5179.9763	0.000458
	93.5	5179.9768	0.000448	5179.9767	0.000450	5179.9766	0.000452	5179.9757	0.000469
0	126.5	5179.9917	0.000160	5179.9916	0.000162	5179.9915	0.000164	5179.9917	0.000160
	110	5179.9918	0.000158	5179.992	0.000154	5179.9919	0.000156	5179.9915	0.000164
	93.5	5179.9917	0.000160	5179.9916	0.000162	5179.9915	0.000164	5179.9912	0.000170
-10	126.5	5179.9727	0.000527	5179.9824	0.000340	5179.9823	0.000342	5179.9826	0.000336
	110	5179.9728	0.000525	5179.9824	0.000340	5179.9825	0.000338	5179.9822	0.000344
	93.5	5179.9827	0.000334	5179.9827	0.000334	5179.9822	0.000344	5179.9825	0.000338
-20	126.5	5179.9962	0.000073	5179.9959	0.000079	5179.9958	0.000081	5179.9947	0.000102
	110	5179.9962	0.000073	5179.9961	0.000075	5179.9961	0.000075	5179.9945	0.000106
	93.5	5179.9962	0.000073	5179.9959	0.000079	5179.9958	0.000081	5179.9942	0.000112
-30	126.5	5179.997	0.000058	5179.997	0.000058	5179.9969	0.000060	5179.9959	0.000079
	110	5179.997	0.000058	5179.997	0.000058	5179.9971	0.000056	5179.9957	0.000083
	93.5	5179.997	0.000058	5179.9969	0.000060	5179.9968	0.000062	5179.9955	0.000087

4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 TEST INSTRUMENTS

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

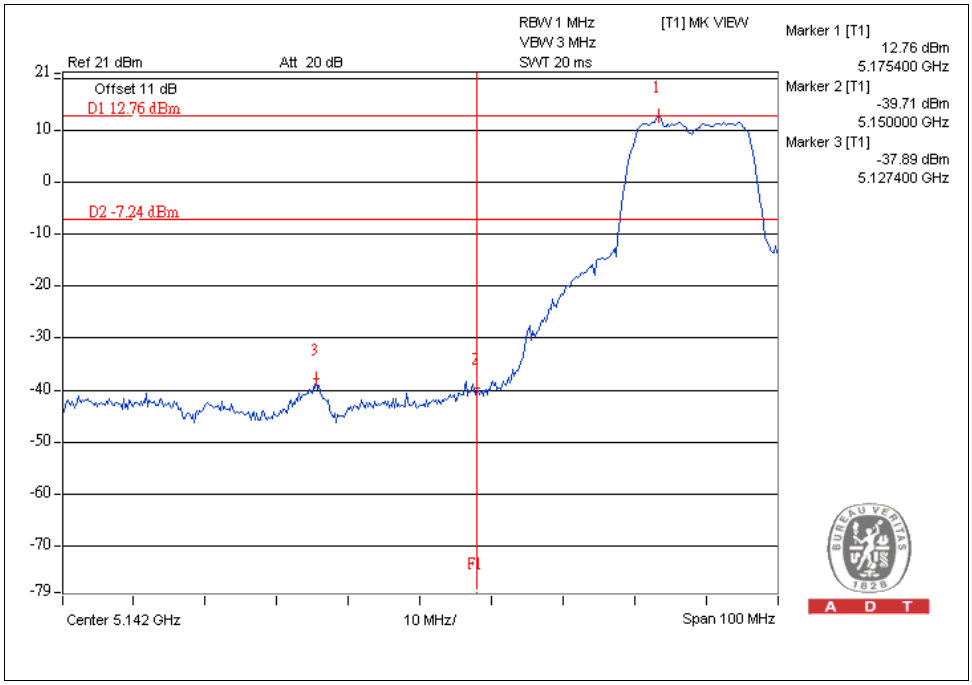
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.4 TEST RESULTS

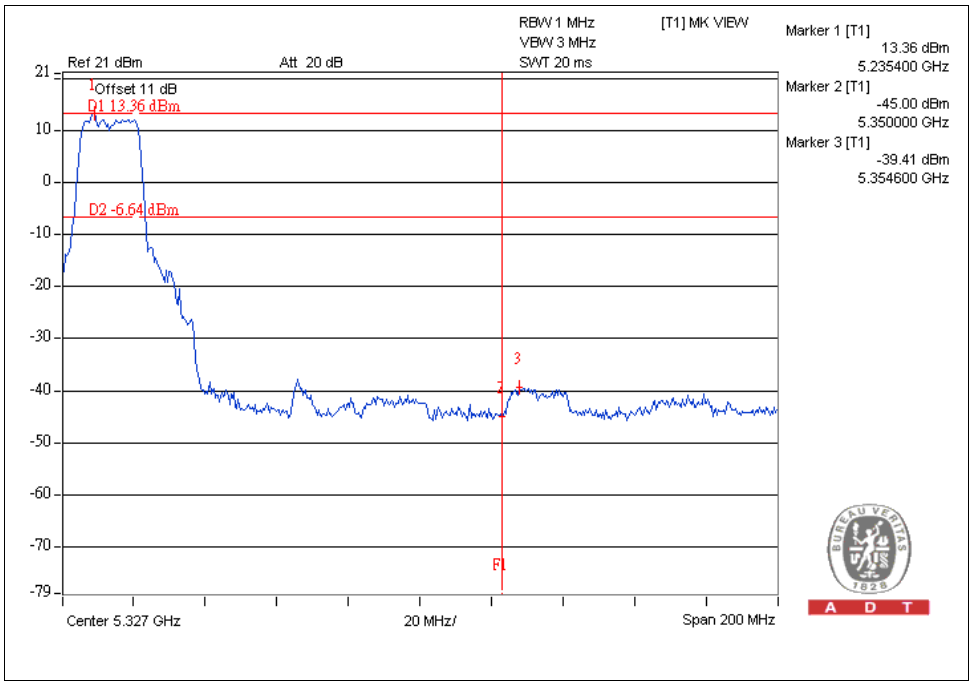
For 5.15 to 5.35GHz band:
The spectrum plots (Peak RBW=1MHz, VBW=3MHz) are attached on the following pages.

802.11a OFDM modulation

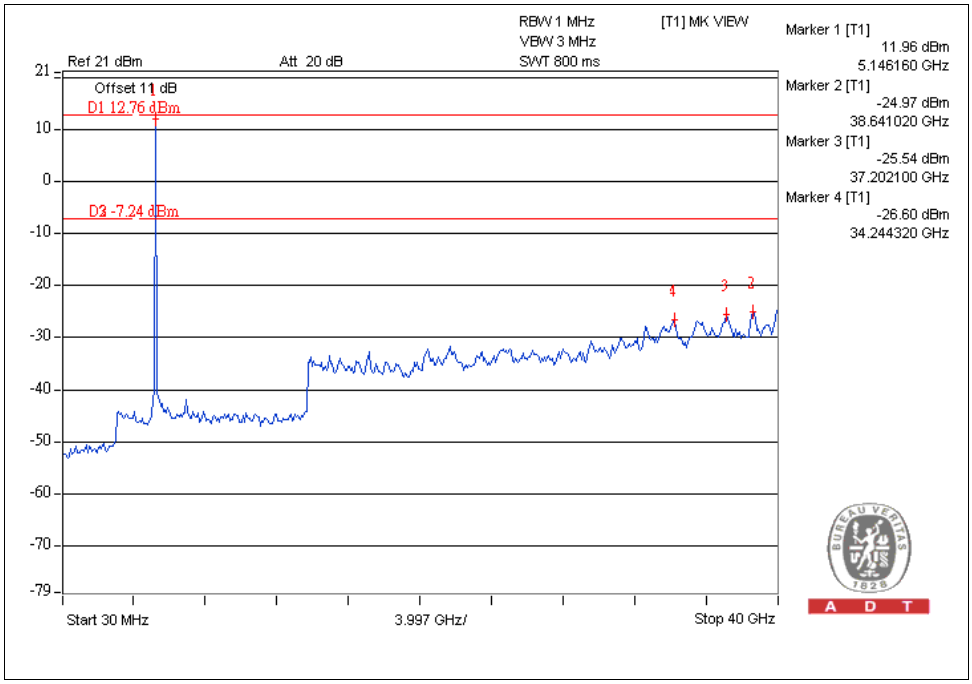
CH 36



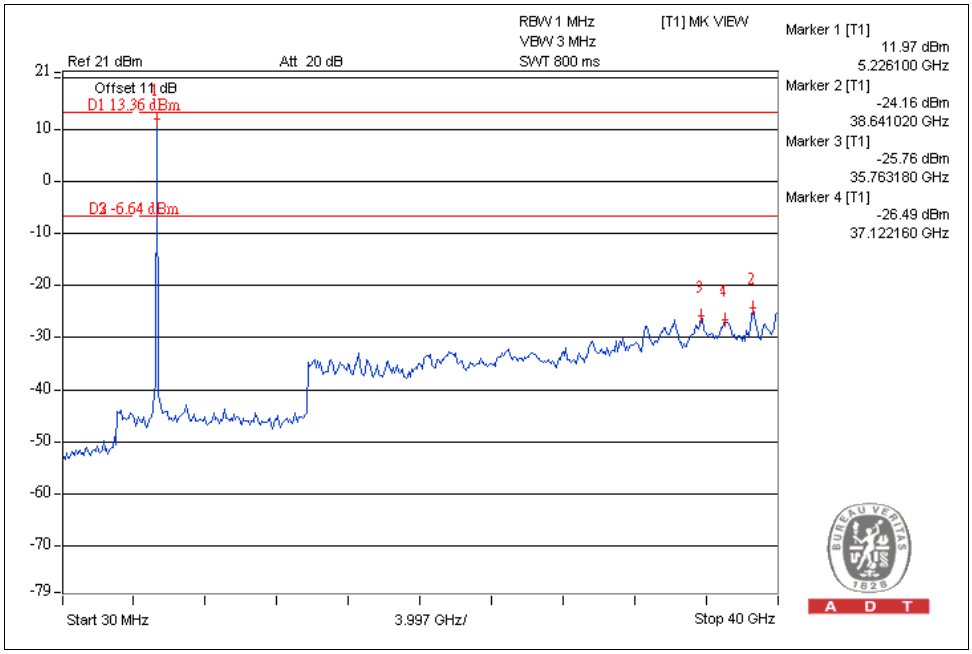
CH 48



CH 36

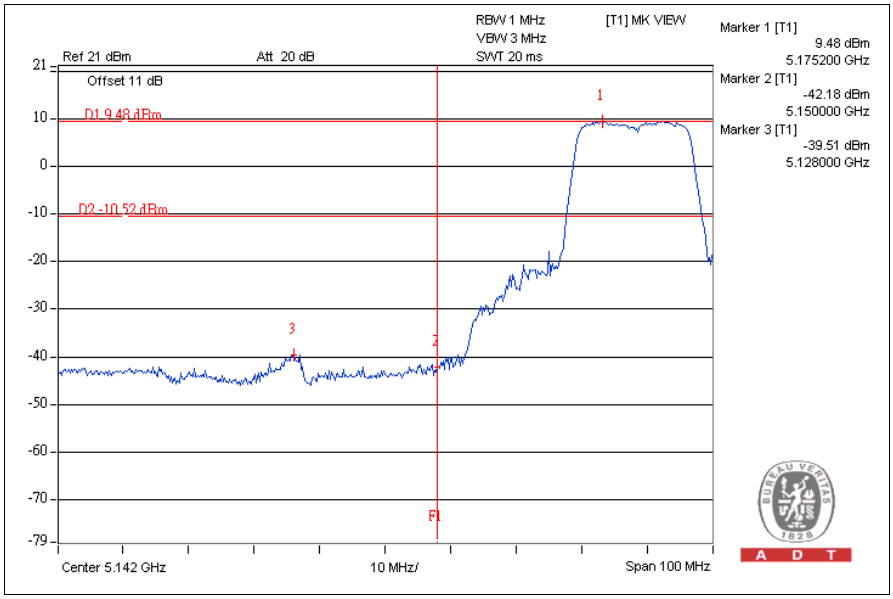

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 12.76 dBm
D2 -7.24 dBm
Marker 1 [T1]
11.96 dBm
5.146160 GHz
Marker 2 [T1]
-24.97 dBm
38.641020 GHz
Marker 3 [T1]
-25.54 dBm
37.202100 GHz
Marker 4 [T1]
-26.60 dBm
34.244320 GHz
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
Start 30 MHz
3.997 GHz/
Stop 40 GHz

CH 48

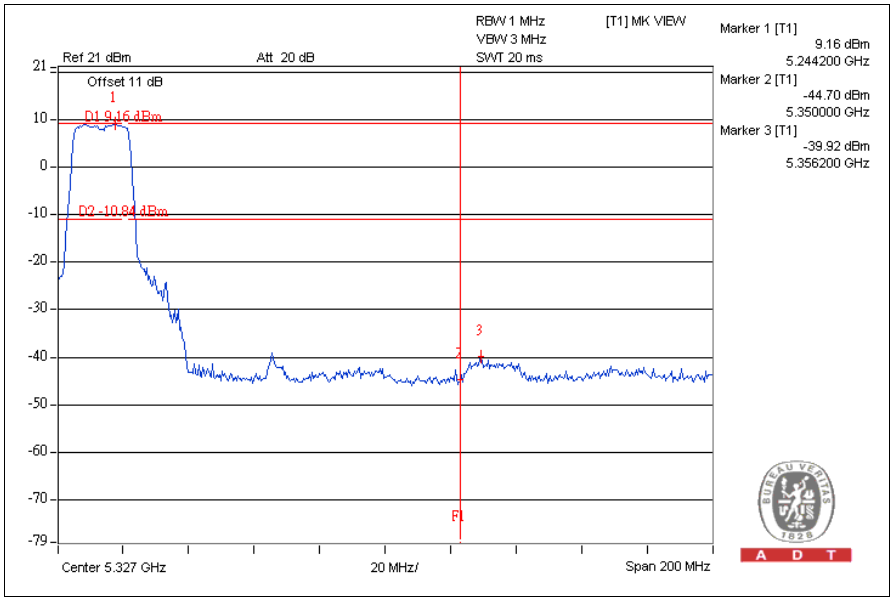

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 13.36 dBm
D2 -6.64 dBm
Marker 1 [T1]
11.97 dBm
5.226100 GHz
Marker 2 [T1]
-24.16 dBm
38.641020 GHz
Marker 3 [T1]
-25.76 dBm
35.763180 GHz
Marker 4 [T1]
-26.49 dBm
37.122160 GHz
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
Start 30 MHz
3.997 GHz/
Stop 40 GHz

802.11n (20MHz) OFDM MODULATION:

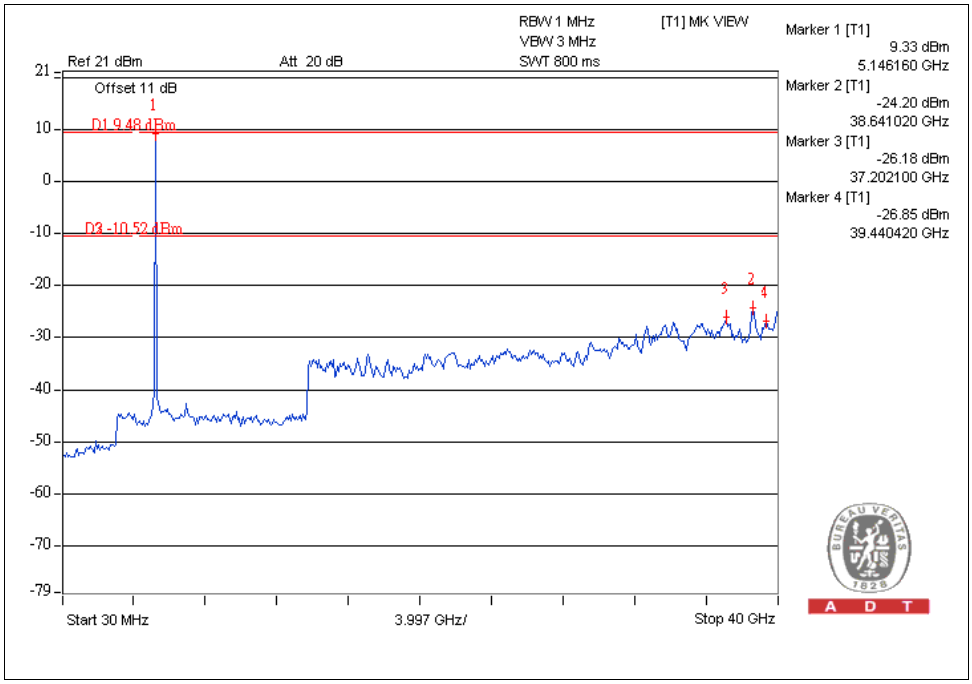
CH36



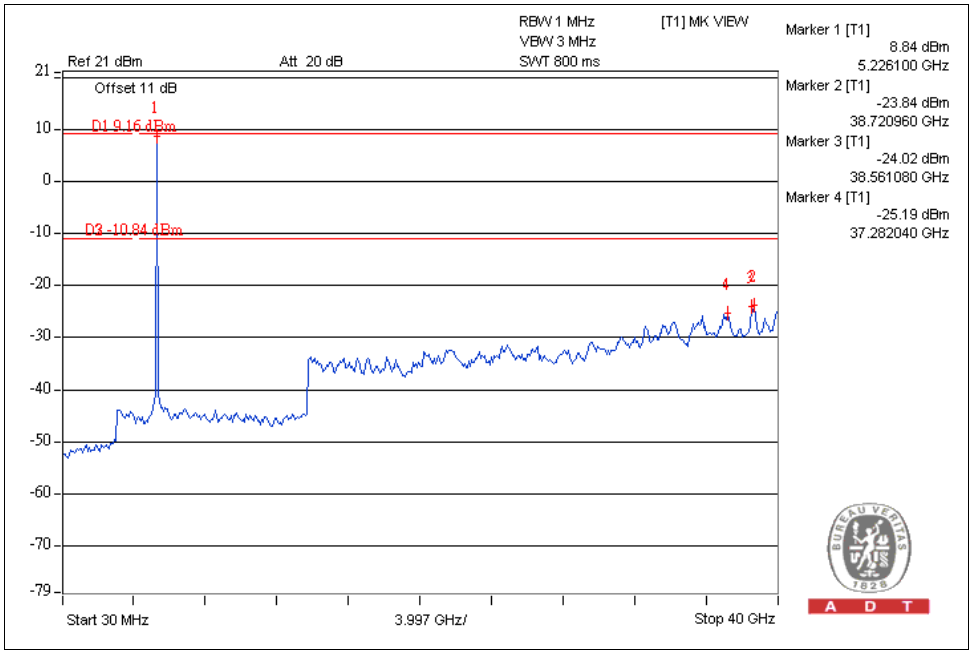
CH48



CH36

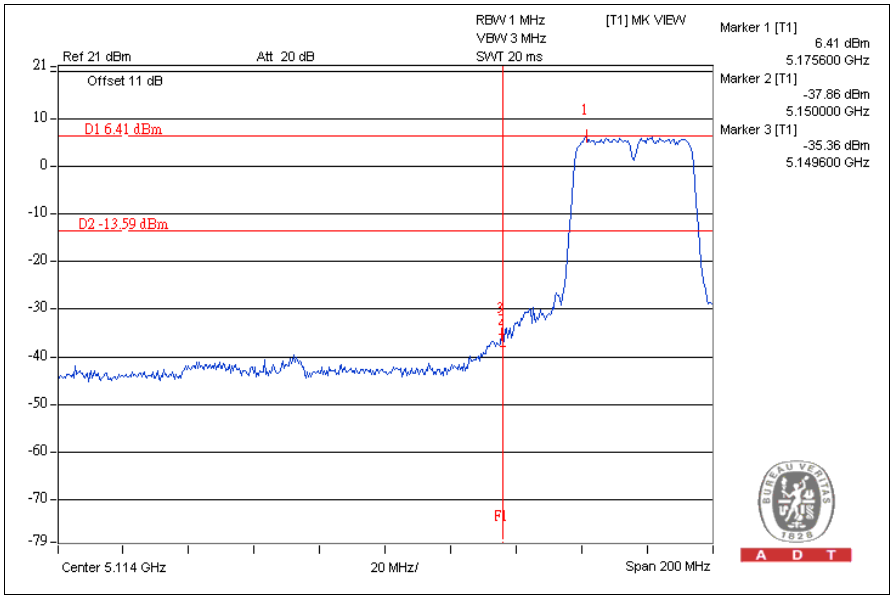

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Marker 1 [T1]
9.33 dBm
5.146160 GHz
Marker 2 [T1]
-24.20 dBm
38.641020 GHz
Marker 3 [T1]
-26.18 dBm
37.202100 GHz
Marker 4 [T1]
-26.85 dBm
39.440420 GHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 9.48 dBm
D2 -10.52 dBm
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
Start 30 MHz
3.997 GHz/
Stop 40 GHz

CH48

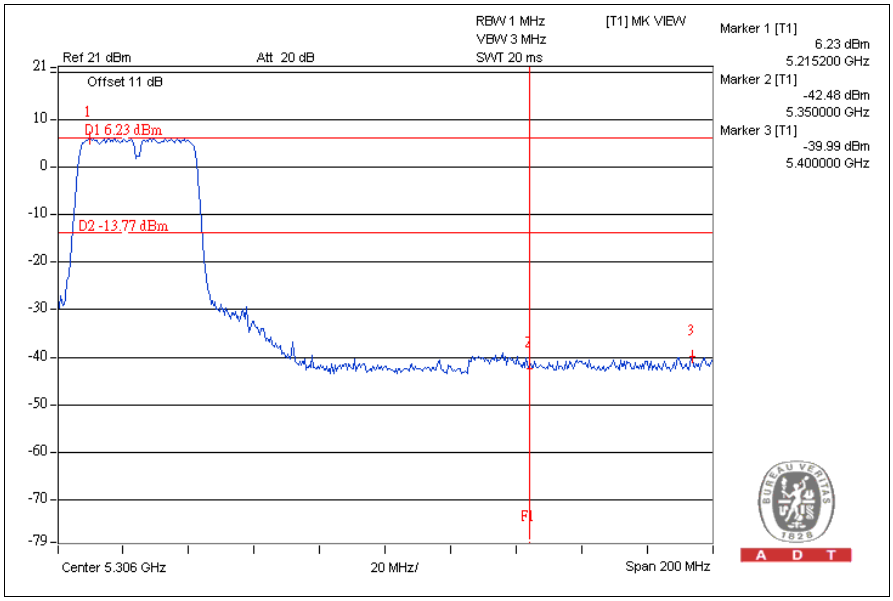

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Marker 1 [T1]
8.84 dBm
5.226100 GHz
Marker 2 [T1]
-23.84 dBm
38.720960 GHz
Marker 3 [T1]
-24.02 dBm
38.561080 GHz
Marker 4 [T1]
-25.19 dBm
37.282040 GHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 9.16 dBm
D2 -10.84 dBm
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
Start 30 MHz
3.997 GHz/
Stop 40 GHz

802.11n (40MHz) OFDM MODULATION:

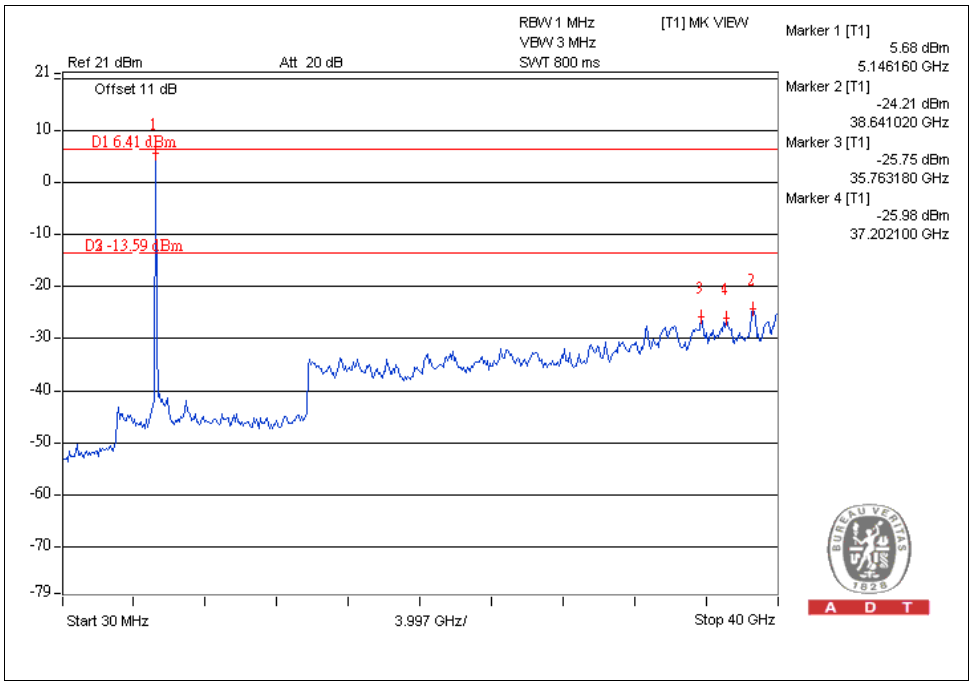
CH38



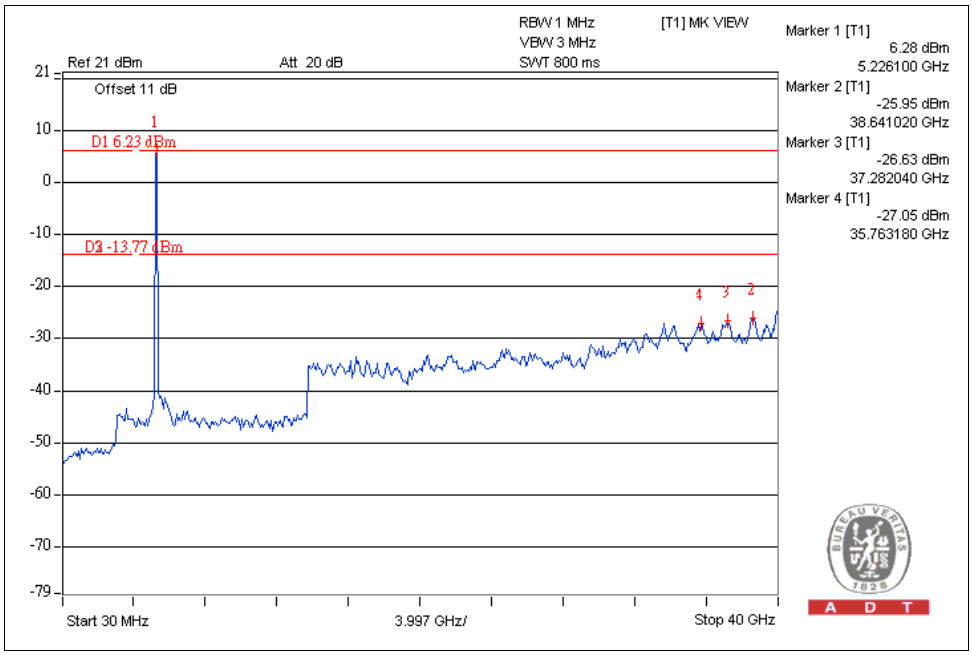
CH46



CH38


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 6.41 dBm
D2 -13.59 dBm
Marker 1 [T1]
5.68 dBm
5.146160 GHz
Marker 2 [T1]
-24.21 dBm
38.641020 GHz
Marker 3 [T1]
-25.75 dBm
35.763180 GHz
Marker 4 [T1]
-25.98 dBm
37.202100 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

CH46


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 6.23 dBm
D2 -13.77 dBm
Marker 1 [T1]
6.28 dBm
5.226100 GHz
Marker 2 [T1]
-25.95 dBm
38.641020 GHz
Marker 3 [T1]
-26.63 dBm
37.282040 GHz
Marker 4 [T1]
-27.05 dBm
35.763180 GHz
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.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.

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.