FCC TEST REPORT (15.407)

REPORT NO.:	RF110831C15B-1
MODEL NO.:	APL25-091
FCC ID:	QWU-091
RECEIVED:	Aug. 31, 2011
TESTED:	Oct. 07 to 12, 2011
ISSUED:	Feb. 23, 2012
APPLICANT:	SonicWALL, Inc.
ADDRESS:	2001 Logic Drive San Jose, CA 95124, USA
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

Table of Contents

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF110831C15B-1	Original release	Feb. 23, 2012

1. CERTIFICATION

PRODUCT:	Wireless 802.11 abgn Device
BRAND NAME:	SonicWALL
MODEL NO.:	APL25-091
TEST SAMPLE:	ENGINEERING SAMPLE
APPLICANT:	SonicWALL, Inc.
TESTED:	Oct. 07 to 12, 2011
STANDARDS:	FCC Part 15, Subpart E (Section 15.407) ANSI C63.10-2009

The above equipment (Model: APL25-091) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** *Feb. 23, 2012*
(Lori Chung, Specialist)

APPROVED BY : _____ , **DATE:** *Feb. 23, 2012*
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart 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 -6.97dB at 4.082 MHz
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 -0.7dB 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 connectors are RTNC and RSMA not standard connectors.

NOTE:

1. This report is prepared for FCC class II change add DFS band (5250~5350MHz & 5.47~5.6GHz & 5.65~5.725GHz
2. The DFS report 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)	3.89 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	Wireless 802.11 abgn Device
MODEL NO.	APL25-091
FCC ID	QWU-091
POWER SUPPLY	12Vdc (Adapter)
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 ■802.11n: up to 450Mbps.
OPERATING FREQUENCY	**For 15.407** 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.47~5.6GHz, 5.65~5.725GHz
	For 15.247 2.4GHz: 2.412 ~ 2.462GHz 5GHz: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 16 for 802.11a, 802.11n (20MHz) 7 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: 95.1mW 802.11n (20MHz): 144.9mW 802.11n (40MHz): 240.4 mW **For 15.247(2.4GHz)** 802.11b: 154.8mW 802.11g: 504.2mW 802.11n (20MHz): 484.4mW 802.11n (40MHz): 741.4mW **For 15.247(5GHz)** 802.11a: 426.6mW 802.11n (20MHz): 493.6mW 802.11n (40MHz): 510.7mW
ANTENNA TYPE	Refer to note for more details

DATA CABLE	1.8m non-shielded RJ45 cable without core
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Adapter

NOTE:

1. This report is prepared for FCC class II permissive change < Add DFS band 5250~5350MHz & 5.47~5.6GHz & 5.65~5.725GHz >
2. The frequency bands used in this EUT are listed as below.

Frequency Band (MHz)	2412~2462	5180~5320	5470~5600 & 5650~5725	5745~5825
802.11b	√	-	-	-
802.11g	√	-	-	-
802.11a	-	√	√	√
802.11n (20MHz)	√	√	√	√
802.11n (40MHz)	√	√	√	√

3. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 2 receivers.

MODULATION MODE	TX FUNCTION
802.11b	3TX
802.11g	3TX
802.11a	3TX
802.11n (20MHz)	3TX
802.11n (40MHz)	3TX

4. The antennas used in this EUT are listed as below table:

Transmitter Circuit	ANTENNA TYPE	ANTENNA CONNECTOR	GAIN (dBi)	
			2.4GHz BAND	5.0GHz BAND
Chain (0)	Dipole	RTNC	2.5	2.5
Chain (1)	Dipole	RSMA	3.0	3.0
Chain (2)	Dipole	RTNC	2.5	2.5

5. The EUT is powered by the following adapters. After pre-testing, the adapter 2 is the worst case for final test.

ADAPTER 1	
BRAND:	Sunny COMPUTER TECHNOLOGY CO,LTD.
MODEL:	SYS1359-3612-T3
INPUT:	100-240Vac, 1.5A MAX ,50-60Hz
OUTPUT:	12Vdc, 3.0A
POWER LINE:	AC 1.8m non-shielded cable without core DC 1.8m non-shielded cable with 1 core

ADAPTER 2	
BRAND:	SINO-AMERICAN
MODEL:	SA142B-12V
INPUT:	100-240Vac, 50-60Hz, 1.2A
OUTPUT:	12Vdc, 3.0A
POWER LINE:	AC 1.8m non-shielded cable without core DC 1.6m non-shielded cable with 1 core

6. 2.4GHz and 5GHz technology cannot transmit at same time.
7. The above EUT information is declared by the manufacturer and for more detailed feature description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Operated in 5150MHz ~ 5350MHz bands:

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

CHANNEL	FREQUENCY
52	5260 MHz
56	5280 MHz
60	5300 MHz
64	5320 MHz

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

CHANNEL	FREQUENCY
54	5270 MHz
62	5310 MHz

Operated in 5470MHz ~ 5600MHz & 5650MHz ~ 5725MHz bands:

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

CHANNEL	FREQUENCY
100	5500 MHz
104	5520 MHz
108	5540 MHz
112	5560 MHz
116	5580 MHz
132	5660 MHz
136	5680 MHz
140	5700 MHz

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

CHANNEL	FREQUENCY
102	5510 MHz
110	5550 MHz
134	5670 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	
MODE 1	√	-	-	-	-	Adapter 1
MODE 2	√	√	√	√	√	Adapter 2

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

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)
For 5 GHz 802.11n (20MHz)	52 to 140	100	OFDM	BPSK	6.5

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, XYZ axis 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)	AXIS
For 5 GHz 802.11n (20MHz)	52 to 140	100	OFDM	BPSK	6.5	X

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis 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)	AXIS
802.11a	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6	X
For 5 GHz 802.11n (20MHz)	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5	X
For 5 GHz 802.11n (40MHz)	54 to 134	54, 62, 102, 110, 134	OFDM	BPSK	13.5	X

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	52 to 140	52, 60, 64, 100, 116, 132, 140	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	54 to 134	54, 62, 102, 110, 134	OFDM	BPSK	13.5

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	52 to 140	64, 100, 140	OFDM	BPSK	6
For 5 GHz 802.11n (20MHz)	52 to 140	64, 100, 140	OFDM	BPSK	6.5
For 5 GHz 802.11n (40MHz)	54 to 134	62, 102, 134	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	25deg. C, 67%RH	120Vac, 60Hz	Frank Liu
	26deg. C, 68%RH	120Vac, 60Hz	Frank Liu
RE≥1G	24deg. C, 64%RH	120Vac, 60Hz	Frank Liu
RE<1G	24deg. C, 71%RH	120Vac, 60Hz	Evan Huang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)
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

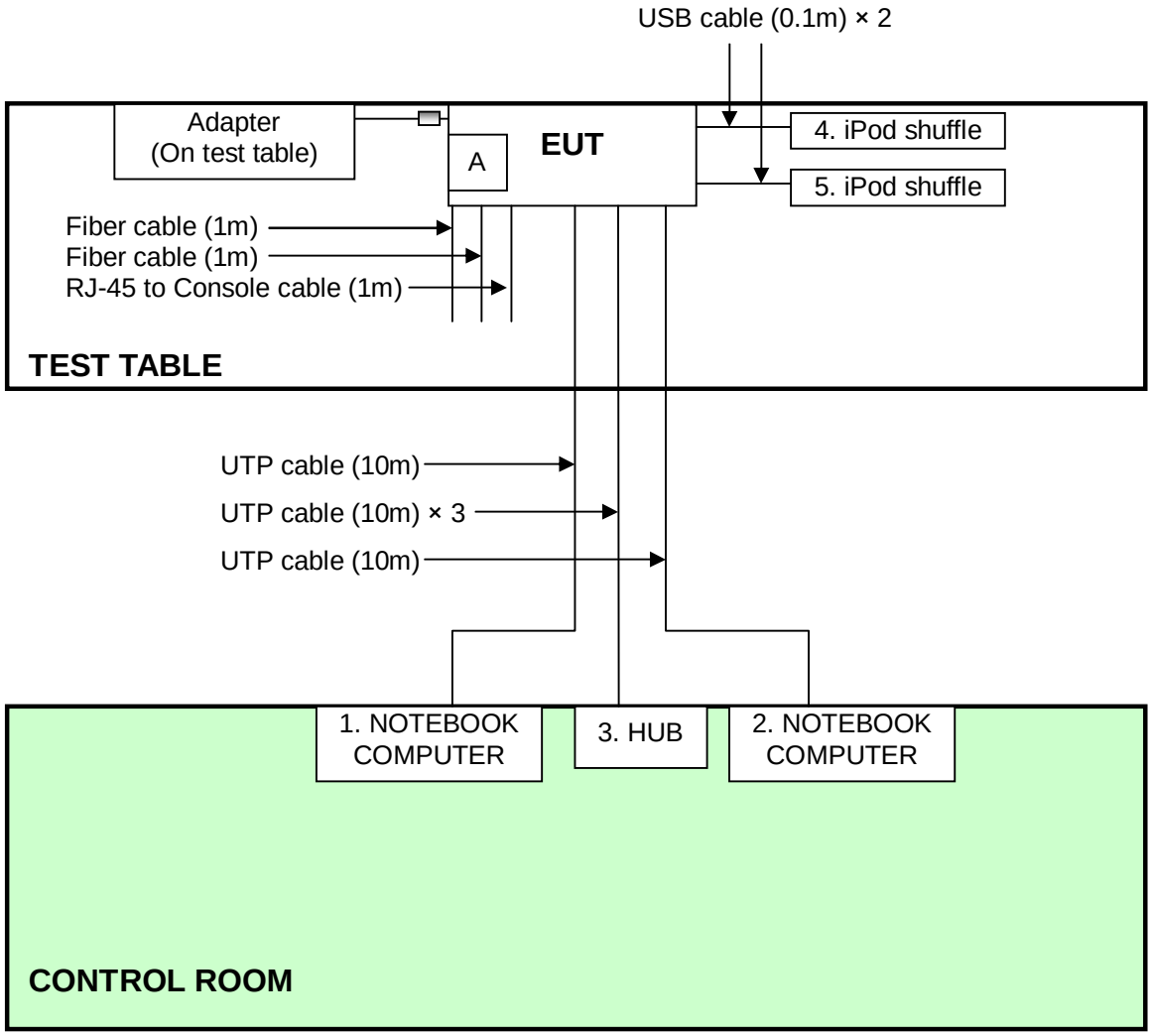
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	GSLB32S	FCC DoC
2	NOTEBOOK COMPUTER	DELL	PP19L	CN-OHC416-70166-5CA-0448	PIW632500516610
3	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC
4	iPod shuffle	Apple	MC749TA/A	CC4DMFJUDFDM	NA
5	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFDM	NA
6	SD card	Transcend	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (10m)
2	UTP cable (10m)
3	UTP cable (10m)
4	USB cable (0.1m)
5	USB cable (0.1m)
6	NA

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. The item A is support unit 6.

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: Oct. 08 to 12, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 09, 2011	Mar. 08, 2012
Line-Impedance Stabilization Network (for EUT)	ENV216	100072	June 10, 2011	June 09, 2012
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 03, 2010	Nov. 02, 2011
RF Cable (JYEBAO)	5DFB	COCCAB-002	Aug. 29, 2011	Aug. 28, 2012
50 ohms Terminator	50	3	Nov. 03, 2010	Nov. 02, 2011
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

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

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs

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

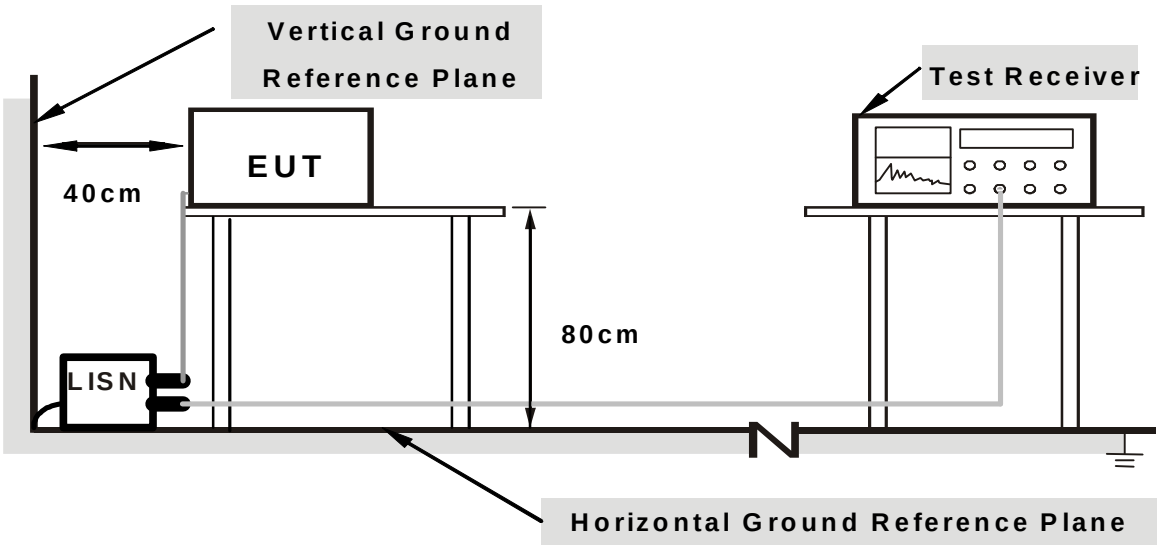
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

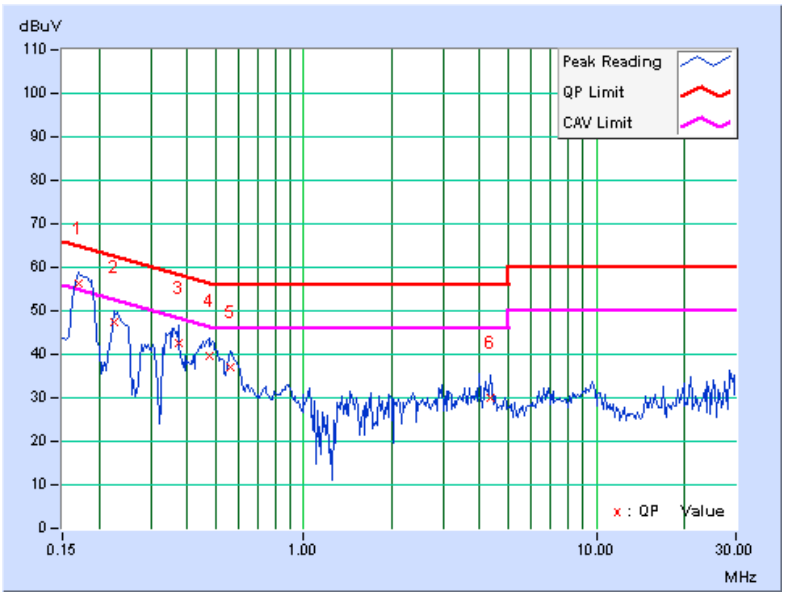
1. Placed the EUT on testing table.
2. Prepared computer system (support unit 1~2) to act as communication partner and placed it outside of testing area.
3. The communication partners ran test program “art.exe” to enable EUT under transmission/receiving condition continuously via UTP cables transmission.

4.1.7 TEST RESULTS (Mode 1)

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	0.170	0.09	56.05	43.59	56.14	43.68	64.98	54.98	-8.84	-11.30
2	0.224	0.10	47.26	33.01	47.36	33.11	62.66	52.66	-15.30	-19.55
3	0.373	0.11	42.33	28.21	42.44	28.32	58.44	48.44	-16.00	-20.12
4	0.474	0.11	39.66	28.80	39.77	28.91	56.44	46.44	-16.66	-17.52
5	0.560	0.12	36.95	24.83	37.07	24.95	56.00	46.00	-18.93	-21.05
6	4.359	0.33	29.70	22.09	30.03	22.42	56.00	46.00	-25.97	-23.58

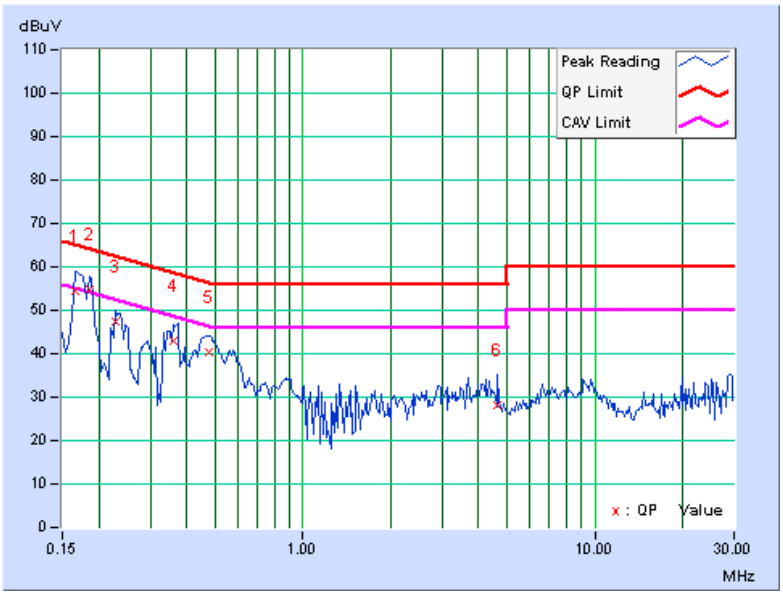
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	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	0.166	0.08	54.37	38.54	54.45	38.62	65.18	55.18	-10.73	-16.56
2	0.185	0.09	54.61	41.51	54.70	41.60	64.25	54.25	-9.56	-12.66
3	0.228	0.09	47.36	35.86	47.45	35.95	62.52	52.52	-15.07	-16.57
4	0.361	0.11	42.71	31.65	42.82	31.76	58.71	48.71	-15.89	-16.95
5	0.474	0.11	40.12	29.37	40.23	29.48	56.44	46.44	-16.21	-16.96
6	4.641	0.26	28.07	20.79	28.33	21.05	56.00	46.00	-27.67	-24.95

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

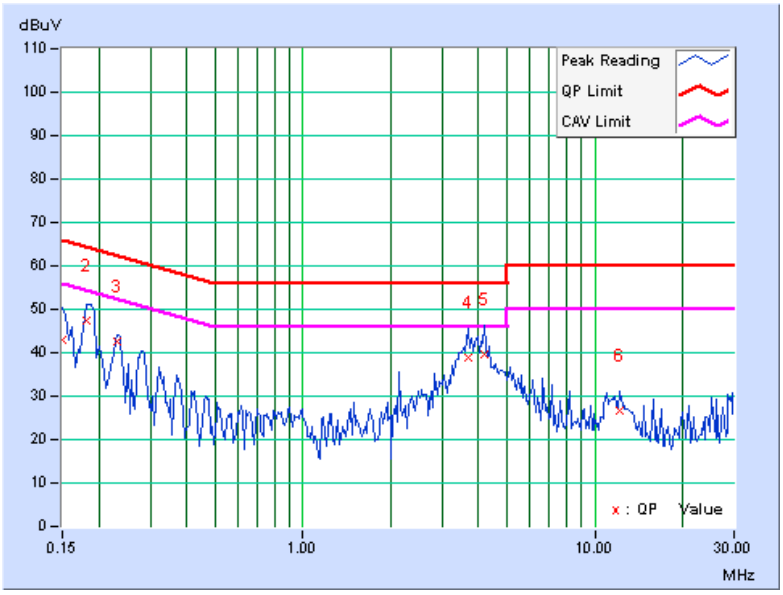


4.1.8 TEST RESULTS (Mode 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

	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	0.150	0.09	42.95	28.23	43.04	28.32	66.00	56.00	-22.96	-27.68
2	0.181	0.09	47.16	34.68	47.25	34.77	64.43	54.43	-17.17	-19.65
3	0.232	0.10	42.48	34.97	42.58	35.07	62.38	52.38	-19.80	-17.31
4	3.676	0.30	38.57	33.07	38.87	33.37	56.00	46.00	-17.13	-12.63
5	4.180	0.33	39.28	33.99	39.61	34.32	56.00	46.00	-16.39	-11.68
6	12.238	0.60	25.95	22.02	26.55	22.62	60.00	50.00	-33.45	-27.38

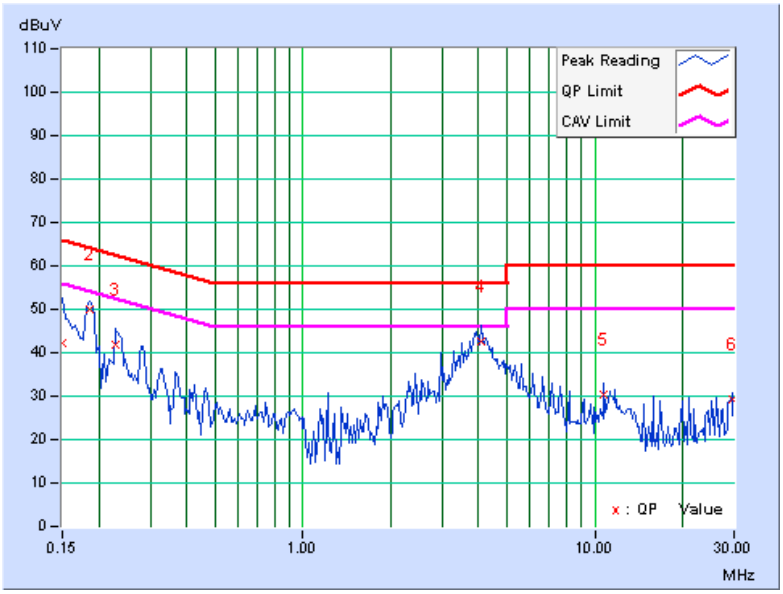
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

	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	0.150	0.07	42.02	26.41	42.09	26.48	66.00	56.00	-23.91	-29.52
2	0.185	0.09	50.01	42.01	50.10	42.10	64.25	54.25	-14.16	-12.16
3	0.228	0.09	41.94	30.23	42.03	30.32	62.52	52.52	-20.49	-22.20
4	**4.082**	**0.24**	**42.23**	**38.79**	**42.47**	**39.03**	**56.00**	**46.00**	**-13.53**	**-6.97**
5	10.707	0.43	29.85	28.23	30.28	28.66	60.00	50.00	-29.72	-21.34
6	29.582	0.89	28.37	25.00	29.26	25.89	60.00	50.00	-30.74	-24.11

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.2.2 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: Oct. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 29, 2011	Aug. 28, 2012
Agilent Pre-Selector	N9039A	MY46520310	Aug. 29, 2011	Aug. 28, 2012
Agilent Signal Generator	N5181A	MY49060347	July 25, 2011	July 24, 2012
LIG NEX1 Test Receiver	ER-265	L09068005	Oct. 25, 2010	Oct. 24, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 16, 2010	Nov. 15, 2011
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 28, 2011	Feb. 27, 2012
Miteq Pre-Amplifier	AFS33-18002650-30-8P-44	881786	Nov. 16, 2010	Nov. 15, 2011
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 22, 2010	Nov. 21, 2011
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 08, 2010	Oct. 07, 2011
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 28, 2010	Dec. 27, 2011
RF Cable	NA	CHHCAB_001	Oct. 17, 2010	Oct. 16, 2011
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-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 3 meters chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

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

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

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

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

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

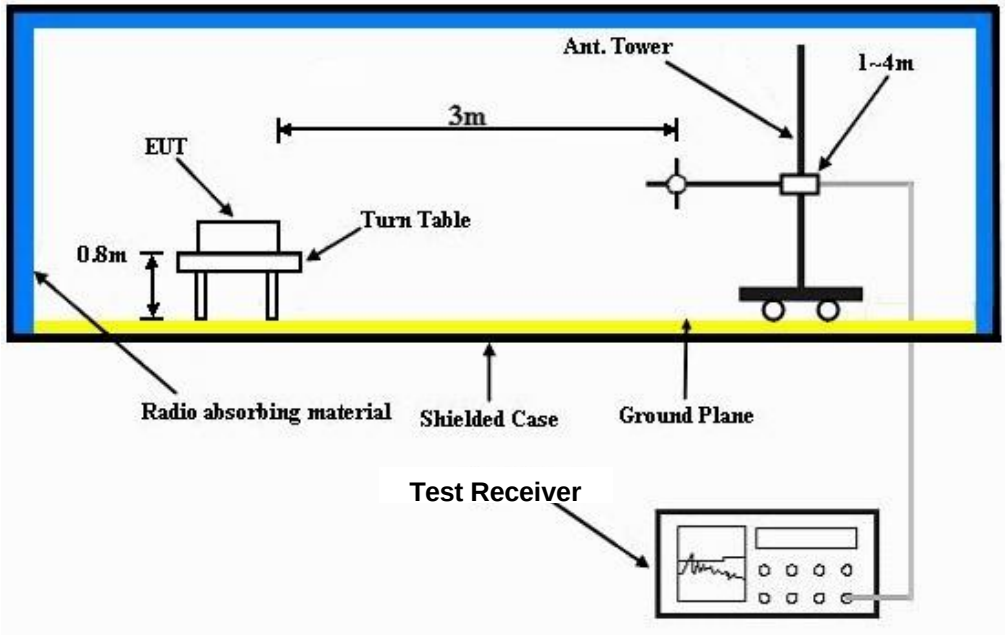
NOTE:

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

4.2.5 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

Same as 4.1.6

4.2.8 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 71%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	107.52	32.5 QP	43.5	-11.0	1.75 H	75	22.04	10.47
2	120.61	29.7 QP	43.5	-13.8	1.75 H	260	17.27	12.44
3	210.55	33.2 QP	43.5	-10.3	1.25 H	85	21.61	11.60
4	382.61	38.9 QP	46.0	-7.1	1.00 H	43	21.93	16.95
5	752.35	36.7 QP	46.0	-9.3	1.25 H	110	13.36	23.33
6	996.62	40.3 QP	54.0	-13.7	1.25 H	2	13.33	26.99
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	42.32	38.7 QP	40.0	-1.3	1.00 V	321	24.57	14.10
2	121.51	34.6 QP	43.5	-8.9	1.00 V	7	22.12	12.52
3	190.53	31.8 QP	43.5	-11.7	1.24 V	10	19.88	11.93
4	625.12	41.4 QP	46.0	-4.6	1.01 V	75	19.68	21.73
5	748.62	34.7 QP	46.0	-11.3	1.25 V	192	11.43	23.24
6	874.87	32.7 QP	46.0	-13.3	1.00 V	9	7.27	25.47

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.

ABOVE 1GHz WORST-CASE DATA

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	114.5 PK			1.30 H	282	72.59	41.91
2	*5260.00	104.6 AV			1.30 H	282	62.69	41.91
3	#10520.00	52.5 PK	68.3	-15.8	1.29 H	300	3.84	48.66
4	15780.00	62.3 PK	74.0	-11.7	1.19 H	91	8.38	53.92
5	15780.00	50.4 AV	54.0	-3.6	1.19 H	91	-3.52	53.92
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	*5260.00	122.4 PK			1.43 V	28	80.49	41.91
2	*5260.00	112.3 AV			1.43 V	28	70.39	41.91
3	#10520.00	50.7 PK	68.3	-17.6	1.31 V	244	2.04	48.66
4	15780.00	62.8 PK	74.0	-11.2	1.33 V	15	8.88	53.92
5	15780.00	51.9 AV	54.0	-2.1	1.33 V	15	-2.02	53.92

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.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	114.8 PK			1.21 H	283	72.80	42.00
2	*5300.00	104.3 AV			1.21 H	283	62.30	42.00
3	10640.00	55.4 PK	74.0	-18.6	1.21 H	282	6.59	48.81
4	10640.00	42.9 AV	54.0	-11.1	1.21 H	282	-5.91	48.81
5	15960.00	62.4 PK	74.0	-11.6	1.33 H	75	8.06	54.34
6	15960.00	50.4 AV	54.0	-3.6	1.33 H	75	-3.94	54.34
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	*5300.00	122.7 PK			1.49 V	46	80.70	42.00
2	*5300.00	112.6 AV			1.49 V	46	70.60	42.00
3	10640.00	55.6 PK	74.0	-18.4	1.39 V	249	6.79	48.81
4	10640.00	43.2 AV	54.0	-10.8	1.39 V	249	-5.61	48.81
5	15960.00	63.2 PK	74.0	-10.8	1.12 V	141	8.86	54.34
6	15960.00	52.0 AV	54.0	-2.0	1.12 V	141	-2.34	54.34

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	110.4 PK			1.24 H	287	68.36	42.04
2	*5320.00	100.3 AV			1.24 H	287	58.26	42.04
3	5350.00	60.8 PK	74.0	-13.2	1.24 H	287	18.71	42.09
4	5350.00	49.6 AV	54.0	-4.4	1.24 H	287	7.51	42.09
5	10640.00	55.6 PK	74.0	-18.4	1.23 H	276	6.79	48.81
6	10640.00	43.5 AV	54.0	-10.5	1.23 H	276	-5.31	48.81
7	15960.00	62.7 PK	74.0	-11.3	1.33 H	58	8.36	54.34
8	15960.00	50.7 AV	54.0	-3.3	1.33 H	58	-3.64	54.34
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	*5320.00	118.3 PK			1.43 V	56	76.26	42.04
2	*5320.00	108.4 AV			1.43 V	56	66.36	42.04
3	5350.00	67.4 PK	74.0	-6.6	1.43 V	56	25.31	42.09
4	5350.00	52.8 AV	54.0	-1.2	1.43 V	56	10.71	42.09
5	10640.00	54.8 PK	74.0	-19.2	1.32 V	253	5.99	48.81
6	10640.00	42.9 AV	54.0	-11.1	1.32 V	253	-5.91	48.81
7	15960.00	64.0 PK	74.0	-10.0	1.08 V	126	9.66	54.34
8	15960.00	52.9 AV	54.0	-1.1	1.08 V	126	-1.44	54.34

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.4 PK	74.0	-9.6	1.26 H	279	22.18	42.22
2	5460.00	48.8 AV	54.0	-5.2	1.26 H	279	6.58	42.22
3	#5470.00	58.4 PK	68.3	-9.9	1.26 H	279	16.17	42.23
4	*5500.00	110.9 PK			1.26 H	279	68.65	42.25
5	*5500.00	100.7 AV			1.26 H	279	58.45	42.25
6	11000.00	55.6 PK	74.0	-18.4	1.23 H	293	6.62	48.98
7	11000.00	43.0 AV	54.0	-11.0	1.23 H	293	-5.98	48.98
8	#16500.00	61.3 PK	68.3	-7.0	1.33 H	83	5.37	55.93
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	5460.00	65.2 PK	74.0	-8.8	1.45 V	73	22.98	42.22
2	5460.00	51.6 AV	54.0	-2.4	1.45 V	73	9.38	42.22
3	#5470.00	62.3 PK	68.3	-6.0	1.45 V	73	20.07	42.23
4	*5500.00	118.9 PK			1.45 V	73	76.65	42.25
5	*5500.00	108.1 AV			1.45 V	73	65.85	42.25
6	11000.00	55.6 PK	74.0	-18.4	1.32 V	237	6.62	48.98
7	11000.00	43.1 AV	54.0	-10.9	1.32 V	237	-5.88	48.98
8	#16500.00	58.0 PK	68.3	-10.3	1.09 V	117	2.07	55.93

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 116	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	114.5 PK			1.26 H	279	72.11	42.39
2	*5580.00	104.6 AV			1.26 H	279	62.21	42.39
3	11160.00	54.8 PK	74.0	-19.2	1.27 H	292	5.74	49.06
4	11160.00	43.4 AV	54.0	-10.6	1.27 H	292	-5.66	49.06
5	#16740.00	60.8 PK	68.3	-7.5	1.35 H	64	4.60	56.20
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	*5580.00	121.1 PK			1.41 V	63	78.71	42.39
2	*5580.00	111.3 AV			1.41 V	63	68.91	42.39
3	11160.00	56.8 PK	74.0	-17.2	1.35 V	253	7.74	49.06
4	11160.00	43.6 AV	54.0	-10.4	1.35 V	253	-5.46	49.06
5	#16740.00	59.7 PK	68.3	-8.6	1.00 V	133	3.50	56.20

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 132	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5660.00	114.6 PK			1.21 H	243	72.04	42.56
2	*5660.00	104.3 AV			1.21 H	243	61.74	42.56
3	11320.00	55.5 PK	74.0	-18.5	1.30 H	280	6.45	49.05
4	11320.00	43.7 AV	54.0	-10.3	1.30 H	280	-5.35	49.05
5	#16980.00	61.1 PK	68.3	-7.2	1.34 H	63	4.74	56.36
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	*5660.00	122.3 PK			1.46 V	73	79.74	42.56
2	*5660.00	111.9 AV			1.46 V	73	69.34	42.56
3	11320.00	60.6 PK	74.0	-13.4	1.36 V	349	11.55	49.05
4	11320.00	49.2 AV	54.0	-4.8	1.36 V	349	0.15	49.05
5	#16980.00	59.3 PK	68.3	-9.0	1.08 V	113	2.94	56.36

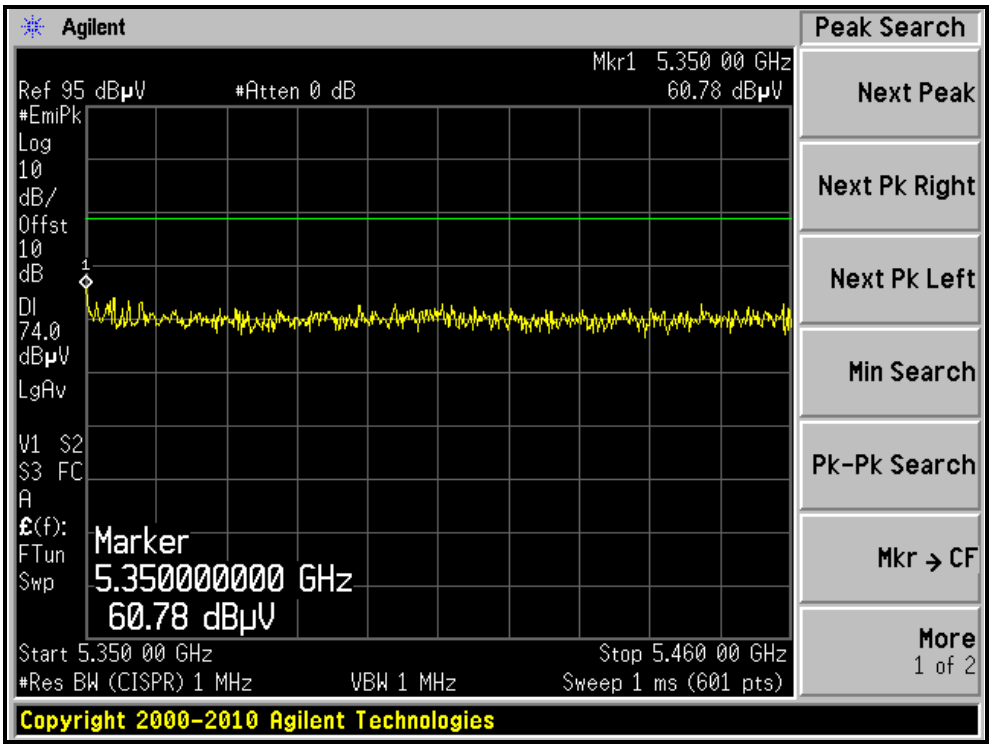
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6.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

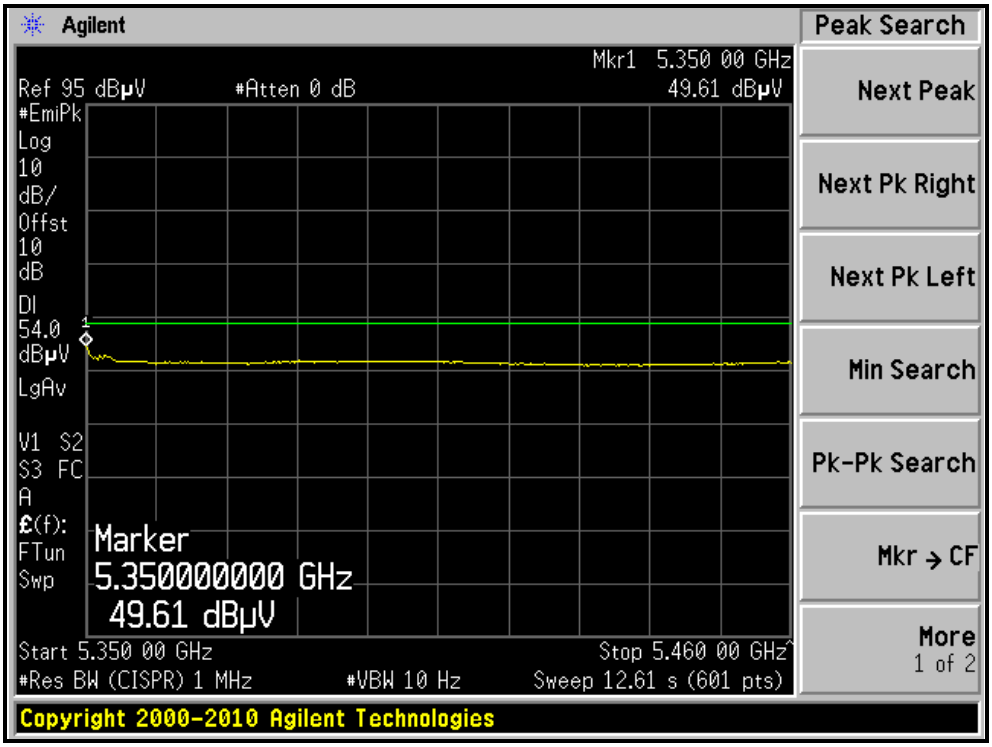
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	110.3 PK			1.24 H	261	67.66	42.64
2	*5700.00	100.5 AV			1.24 H	261	57.86	42.64
3	#5725.00	57.4 PK	68.3	-10.9	1.24 H	261	14.73	42.67
4	11400.00	55.7 PK	74.0	-18.3	1.34 H	270	6.47	49.23
5	11400.00	44.3 AV	54.0	-9.7	1.34 H	270	-4.93	49.23
6	#17100.00	61.0 PK	68.3	-7.3	1.32 H	57	4.40	56.60
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	*5700.00	117.4 PK			1.42 V	63	74.76	42.64
2	*5700.00	107.3 AV			1.42 V	63	64.66	42.64
3	#5725.00	61.4 PK	68.3	-6.9	1.42 V	59	18.73	42.67
4	11400.00	60.4 PK	74.0	-13.6	1.34 V	341	11.17	49.23
5	11400.00	49.1 AV	54.0	-4.9	1.34 V	341	-0.13	49.23
6	#17100.00	59.2 PK	68.3	-9.1	1.04 V	112	2.60	56.60

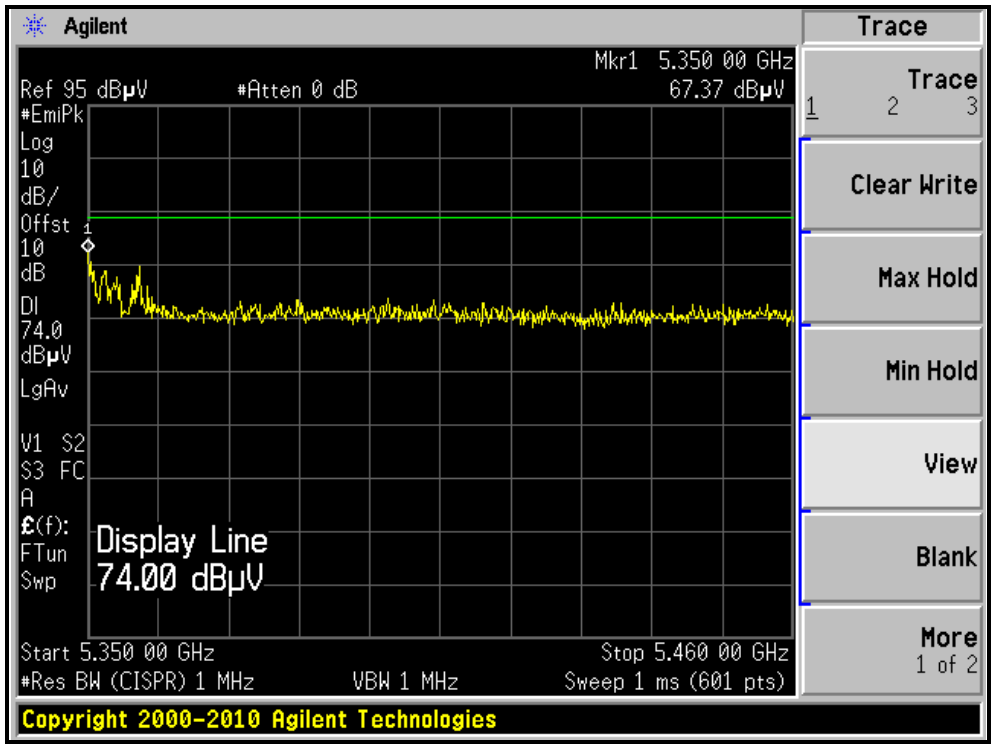
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6.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

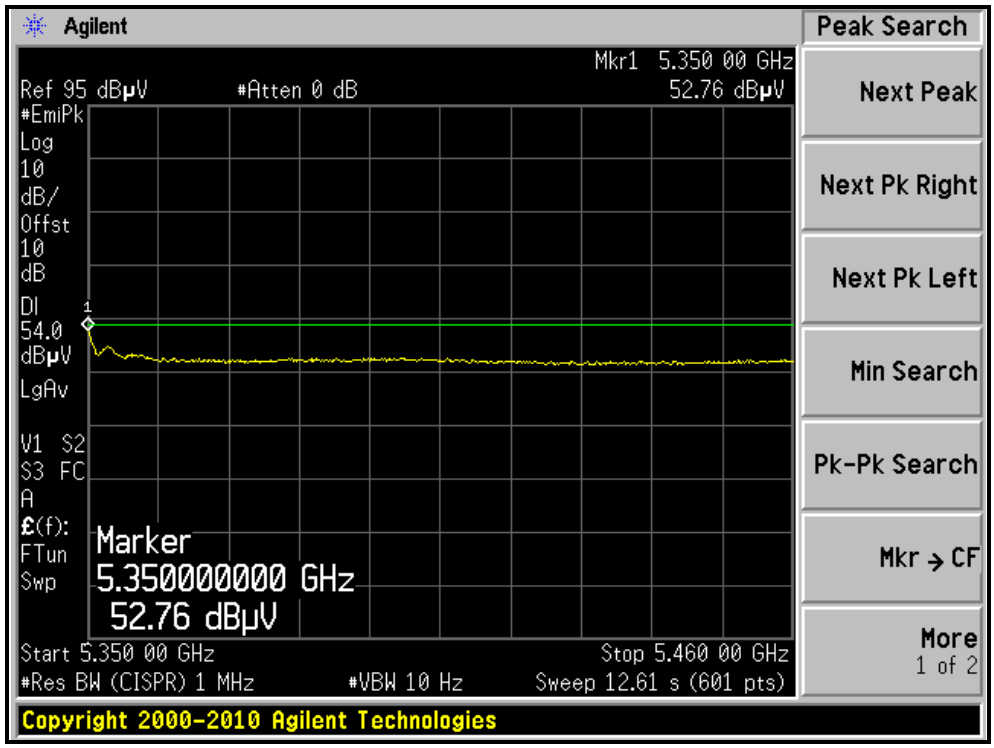
RESTRICTED BANDEDGE (802.11a MODE, CH64, HORIZONTAL)





RESTRICTED BANDEDGE (802.11a MODE, CH64, VERTICAL)





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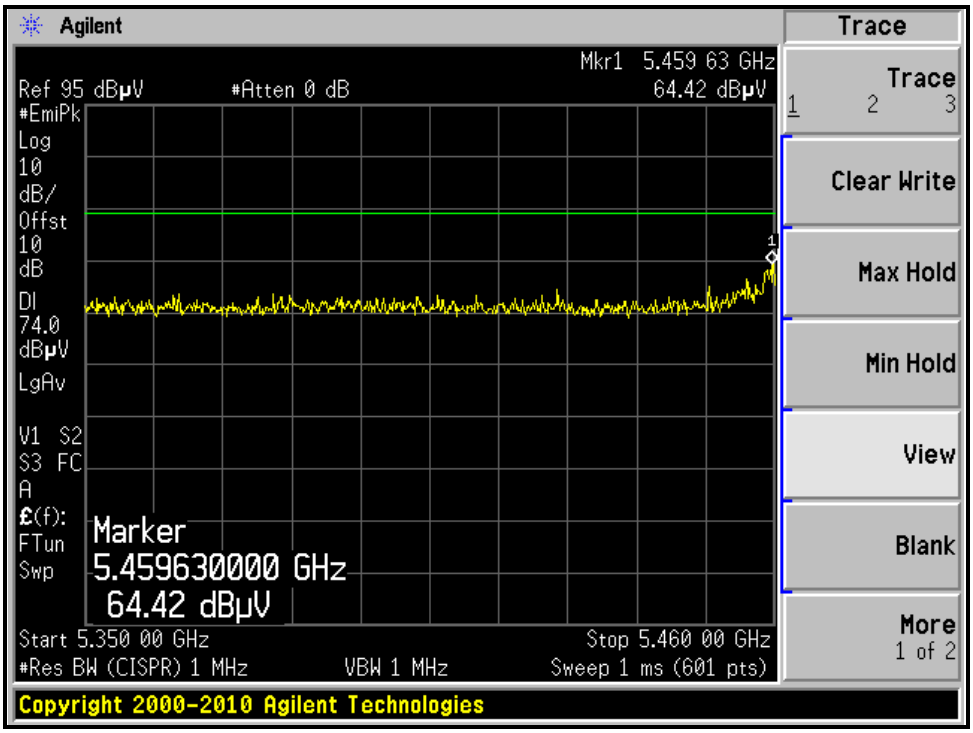

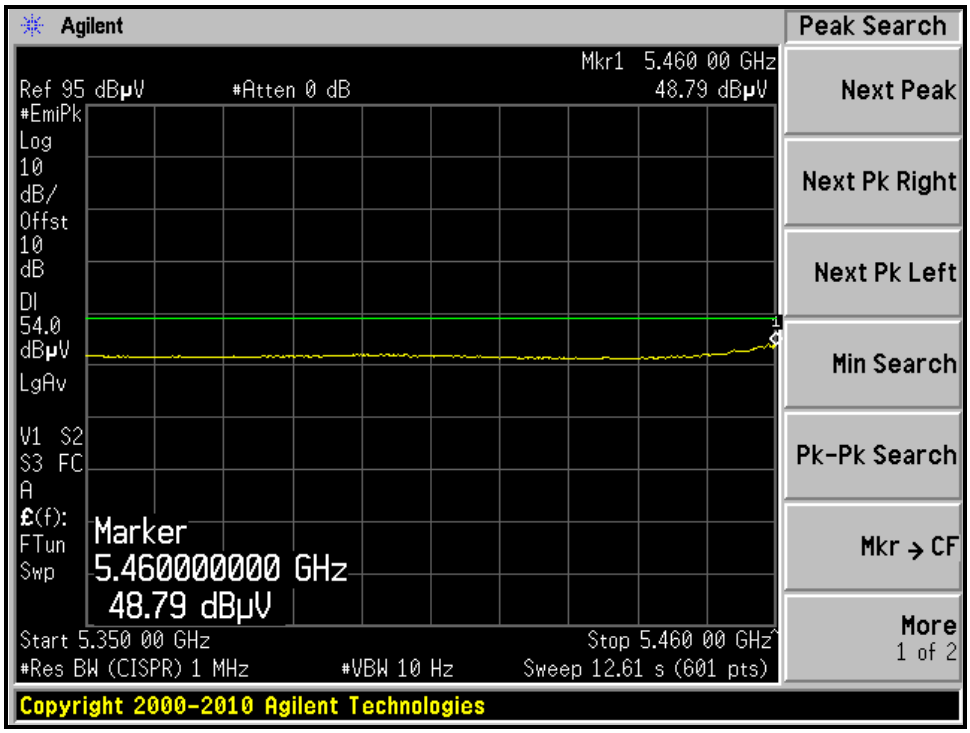

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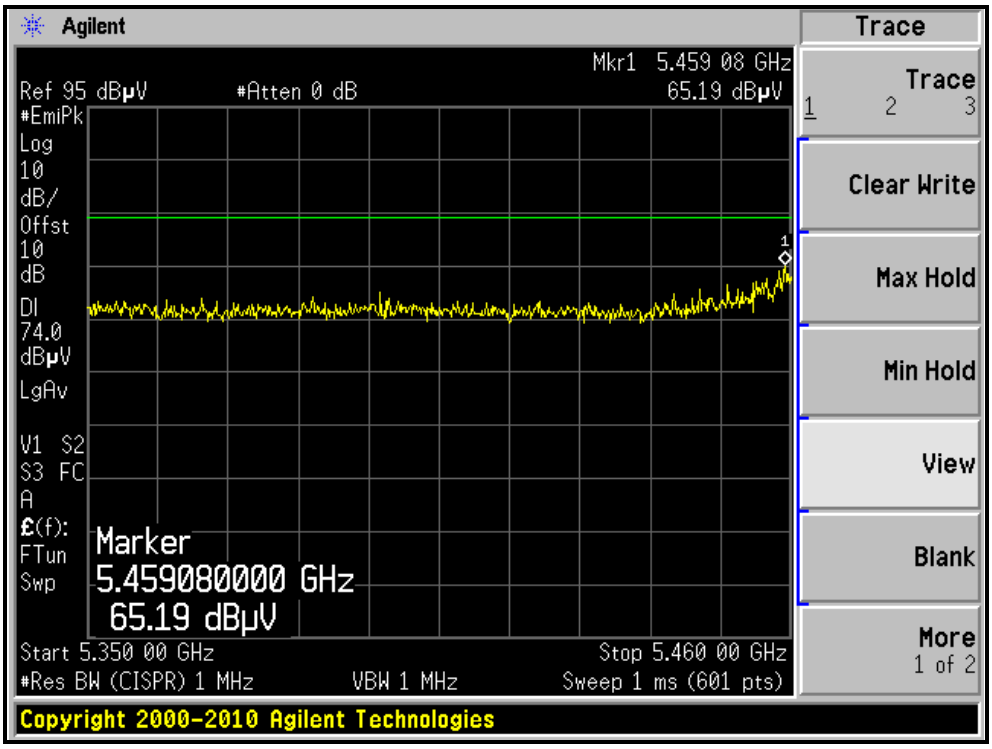
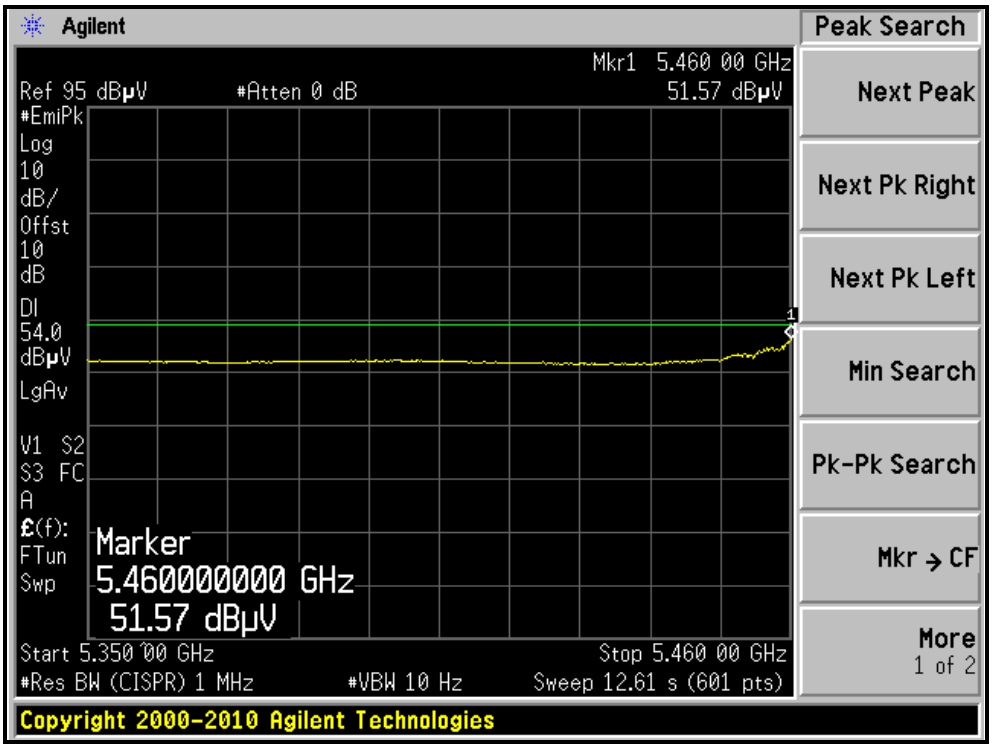




802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 52	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5260.00	113.7 PK			1.51 H	304	71.79	41.91
2	*5260.00	104.8 AV			1.51 H	304	62.89	41.91
3	#10520.00	53.2 PK	68.3	-15.1	1.23 H	315	4.54	48.66
4	15780.00	62.2 PK	74.0	-11.8	1.22 H	80	8.28	53.92
5	15780.00	51.2 AV	54.0	-2.8	1.22 H	80	-2.72	53.92
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	*5260.00	121.3 PK			1.37 V	218	79.39	41.91
2	*5260.00	110.4 AV			1.37 V	218	68.49	41.91
3	#10520.00	51.1 PK	68.3	-17.2	1.39 V	272	2.44	48.66
4	15780.00	63.8 PK	74.0	-10.2	1.47 V	30	9.88	53.92
5	15780.00	51.6 AV	54.0	-2.4	1.47 V	30	-2.32	53.92

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.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	112.4 PK			1.51 H	302	70.40	42.00
2	*5300.00	103.8 AV			1.51 H	302	61.80	42.00
3	10600.00	56.2 PK	74.0	-17.8	1.29 H	309	7.28	48.92
4	10600.00	43.7 AV	54.0	-10.3	1.29 H	309	-5.22	48.92
5	15900.00	63.4 PK	74.0	-10.6	1.14 H	89	8.76	54.64
6	15900.00	51.9 AV	54.0	-2.1	1.14 H	89	-2.74	54.64
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	*5300.00	118.9 PK			1.33 V	229	76.90	42.00
2	*5300.00	109.6 AV			1.33 V	229	67.60	42.00
3	10600.00	56.7 PK	74.0	-17.3	1.42 V	269	7.78	48.92
4	10600.00	46.9 AV	54.0	-7.1	1.42 V	269	-2.02	48.92
5	15900.00	63.9 PK	74.0	-10.1	1.44 V	6	9.26	54.64
6	15900.00	52.2 AV	54.0	-1.8	1.44 V	6	-2.44	54.64

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 64	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	108.9 PK			1.52 H	305	66.86	42.04
2	*5320.00	100.1 AV			1.52 H	305	58.06	42.04
3	5350.00	61.1 PK	74.0	-12.9	1.52 H	209	19.01	42.09
4	5350.00	48.3 AV	54.0	-5.7	1.52 H	209	6.21	42.09
5	10640.00	56.0 PK	74.0	-18.0	1.21 H	286	7.19	48.81
6	10640.00	43.9 AV	54.0	-10.1	1.21 H	286	-4.91	48.81
7	15960.00	62.4 PK	74.0	-11.6	1.28 H	67	8.06	54.34
8	15960.00	51.8 AV	54.0	-2.2	1.28 H	67	-2.54	54.34
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	*5320.00	115.5 PK			1.32 V	238	73.46	42.04
2	*5320.00	106.2 AV			1.32 V	238	64.16	42.04
3	5350.00	68.0 PK	74.0	-6.0	1.33 V	319	25.91	42.09
4	5350.00	52.7 AV	54.0	-1.3	1.33 V	319	10.61	42.09
5	10640.00	56.0 PK	74.0	-18.0	1.34 V	228	7.19	48.81
6	10640.00	43.2 AV	54.0	-10.8	1.34 V	228	-5.61	48.81
7	15960.00	58.2 PK	74.0	-15.8	1.05 V	132	3.86	54.34
8	15960.00	50.7 AV	54.0	-3.3	1.05 V	132	-3.64	54.34

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

2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

5. " * ": Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 100	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.0 PK	74.0	-16.0	1.50 H	200	15.78	42.22
2	5460.00	47.1 AV	54.0	-6.9	1.50 H	200	4.88	42.22
3	#5470.00	53.2 PK	68.3	-15.1	1.50 H	200	10.97	42.23
4	*5500.00	110.5 PK			1.49 H	204	68.25	42.25
5	*5500.00	102.3 AV			1.49 H	204	60.05	42.25
6	11000.00	56.4 PK	74.0	-17.6	1.27 H	292	7.42	48.98
7	11000.00	43.9 AV	54.0	-10.1	1.27 H	292	-5.08	48.98
8	#16500.00	62.6 PK	68.3	-5.7	1.34 H	66	6.67	55.93
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	5460.00	65.4 PK	74.0	-8.6	1.48 V	19	23.18	42.22
2	5460.00	53.1 AV	54.0	-0.9	1.48 V	19	10.88	42.22
3	#5470.00	65.3 PK	68.3	-3.0	1.48 V	19	23.07	42.23
4	*5500.00	117.8 PK			1.51 V	35	75.55	42.25
5	*5500.00	108.2 AV			1.51 V	35	65.95	42.25
6	11000.00	56.3 PK	74.0	-17.7	1.28 V	260	7.32	48.98
7	11000.00	43.7 AV	54.0	-10.3	1.28 V	260	-5.28	48.98
8	#16500.00	58.8 PK	68.3	-9.5	1.00 V	134	2.87	55.93

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 116	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	111.5 PK			1.45 H	210	69.11	42.39
2	*5580.00	103.5 AV			1.45 H	210	61.11	42.39
3	11160.00	55.5 PK	74.0	-18.5	1.25 H	286	6.44	49.06
4	11160.00	43.7 AV	54.0	-10.3	1.25 H	286	-5.36	49.06
5	#16740.00	62.6 PK	68.3	-5.7	1.27 H	89	6.40	56.20
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	*5580.00	121.5 PK			1.35 V	121	79.11	42.39
2	*5580.00	110.9 AV			1.35 V	121	68.51	42.39
3	11160.00	55.7 PK	74.0	-18.3	1.29 V	269	6.64	49.06
4	11160.00	43.0 AV	54.0	-11.0	1.29 V	269	-6.06	49.06
5	#16740.00	59.3 PK	68.3	-9.0	1.00 V	134	3.10	56.20

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 132	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5660.00	111.2 PK			1.45 H	211	68.64	42.56
2	*5660.00	102.6 AV			1.45 H	211	60.04	42.56
3	11320.00	56.1 PK	74.0	-17.9	1.23 H	299	7.05	49.05
4	11320.00	44.0 AV	54.0	-10.0	1.23 H	299	-5.05	49.05
5	#16980.00	62.2 PK	68.3	-6.1	1.31 H	79	5.84	56.36
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	*5660.00	119.9 PK			1.34 V	120	77.34	42.56
2	*5660.00	110.4 AV			1.34 V	120	67.84	42.56
3	11320.00	55.8 PK	74.0	-18.2	1.22 V	251	6.75	49.05
4	11320.00	43.0 AV	54.0	-11.0	1.22 V	251	-6.05	49.05
5	#16980.00	59.0 PK	68.3	-9.3	1.00 V	142	2.64	56.36

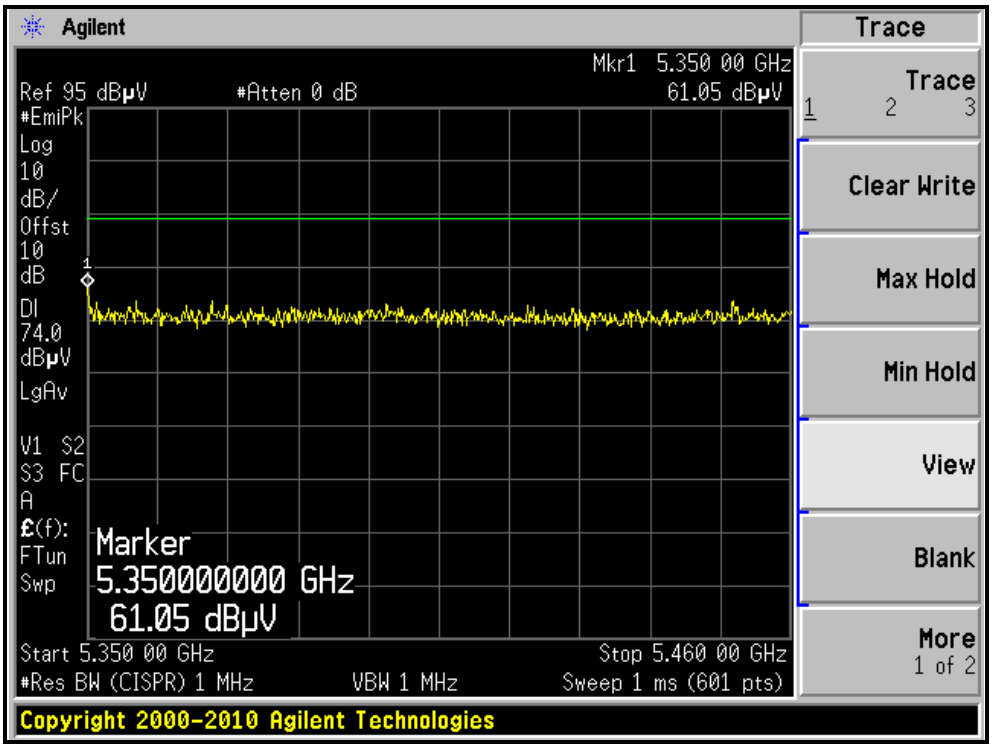
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6.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

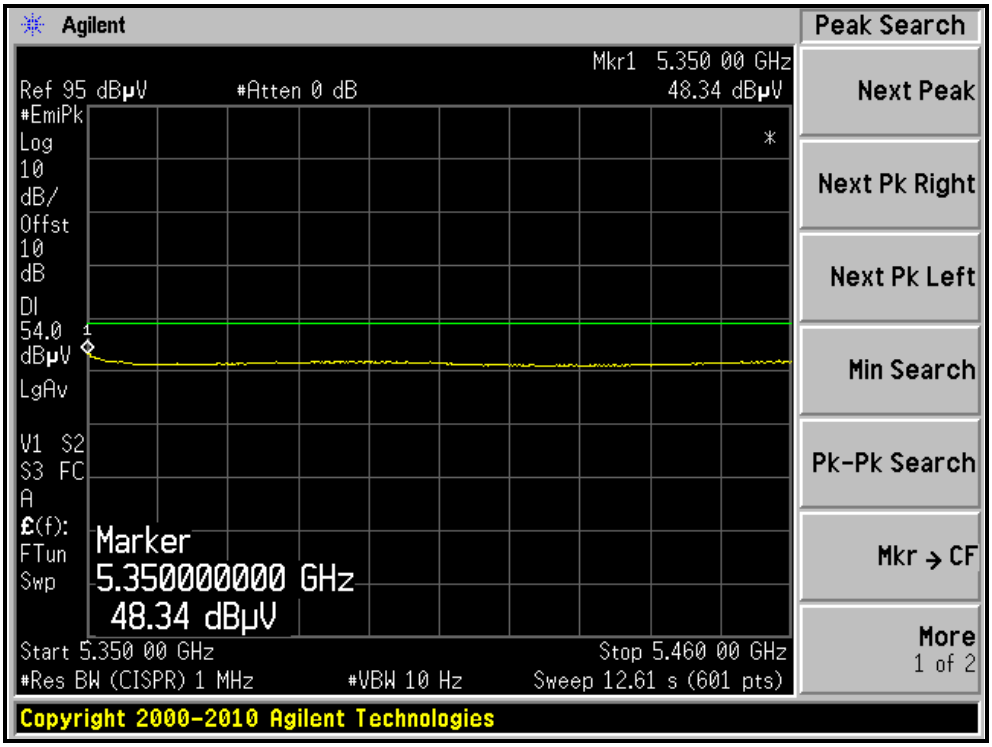
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	106.0 PK			1.28 H	204	63.36	42.64
2	*5700.00	96.2 AV			1.28 H	204	53.56	42.64
3	#5725.00	56.9 PK	68.3	-11.4	1.27 H	205	14.23	42.67
4	11400.00	56.7 PK	74.0	-17.3	1.28 H	303	7.47	49.23
5	11400.00	44.5 AV	54.0	-9.5	1.28 H	303	-4.73	49.23
6	#17100.00	62.4 PK	68.3	-5.9	1.25 H	77	5.80	56.60
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	*5700.00	119.9 PK			1.34 V	145	77.26	42.64
2	*5700.00	108.5 AV			1.34 V	145	65.86	42.64
3	#5725.00	60.1 PK	68.3	-8.2	1.35 V	150	17.43	42.67
4	11400.00	55.6 PK	74.0	-18.4	1.31 V	261	6.37	49.23
5	11400.00	43.4 AV	54.0	-10.6	1.31 V	261	-5.83	49.23
6	#17100.00	58.9 PK	68.3	-9.4	1.00 V	155	2.30	56.60

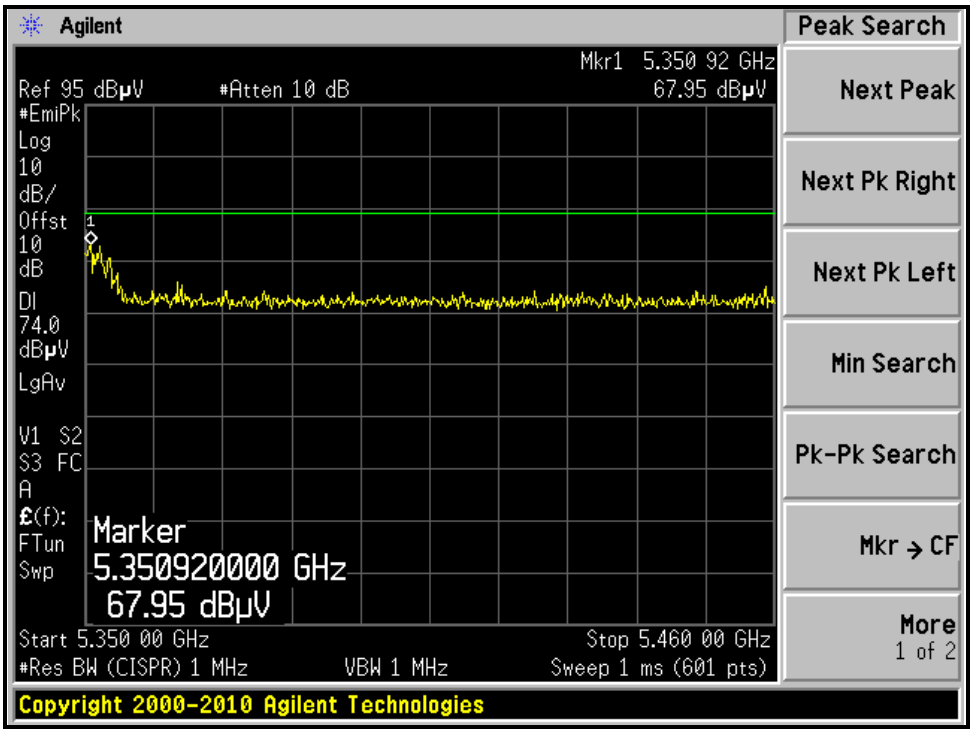
REMARKS: 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6.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

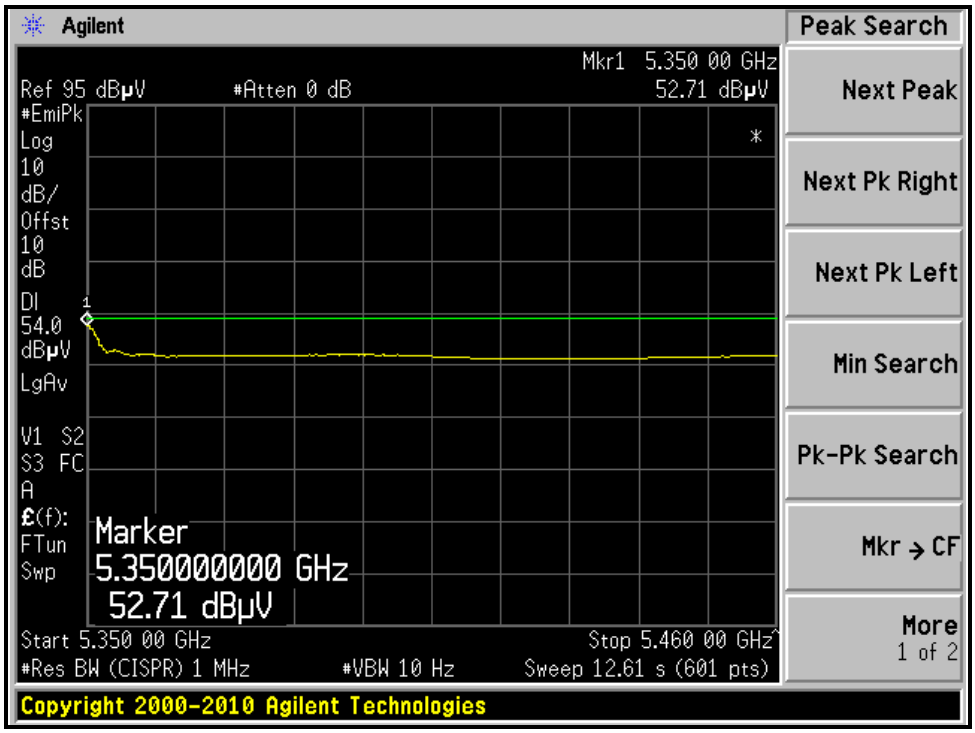
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH 64, HORIZONTAL)



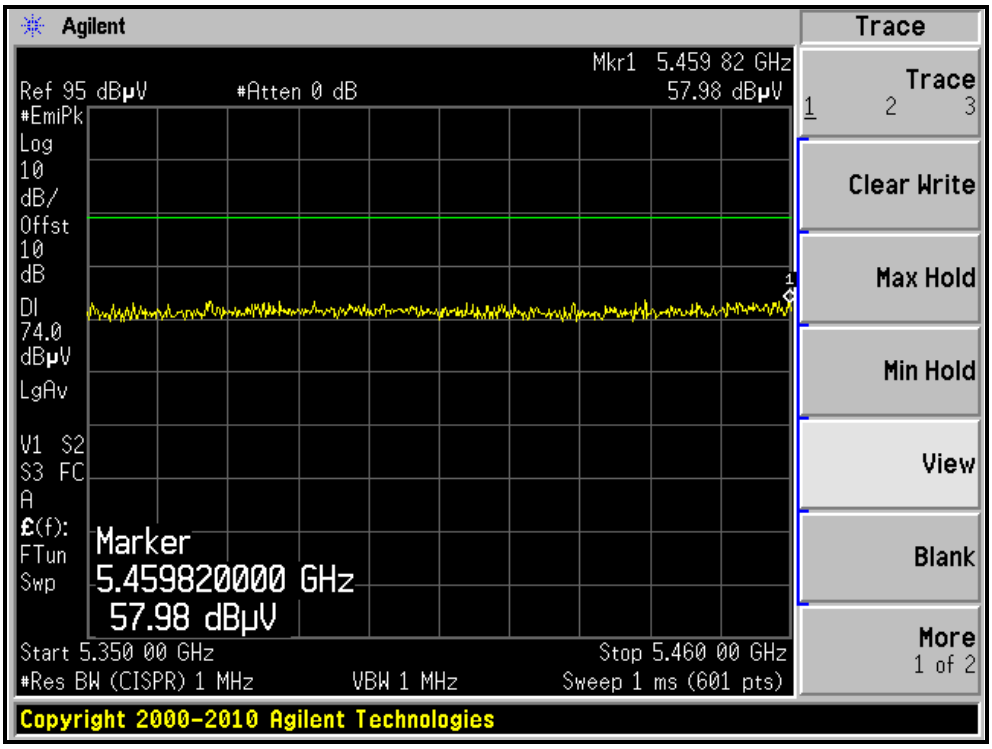


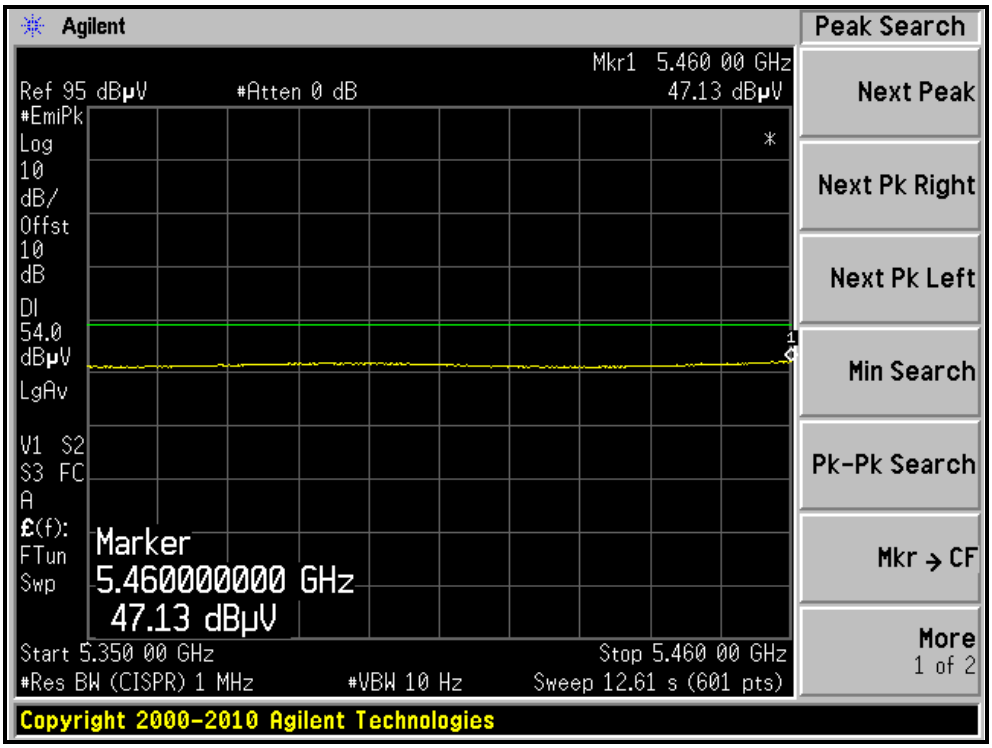
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH 64, VERTICAL)



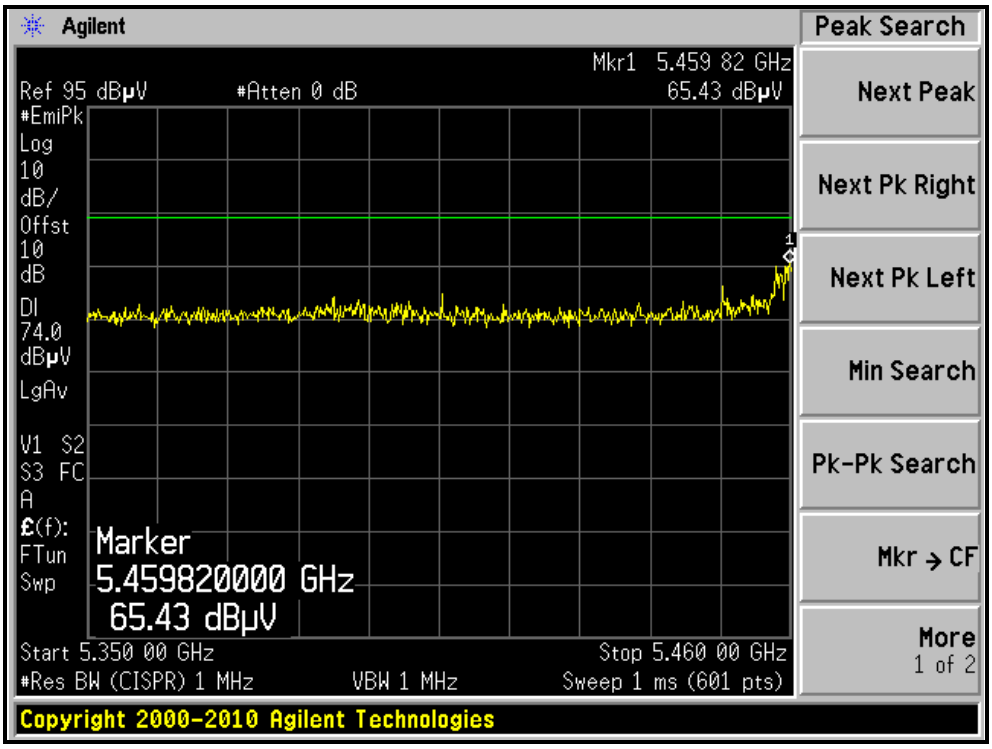


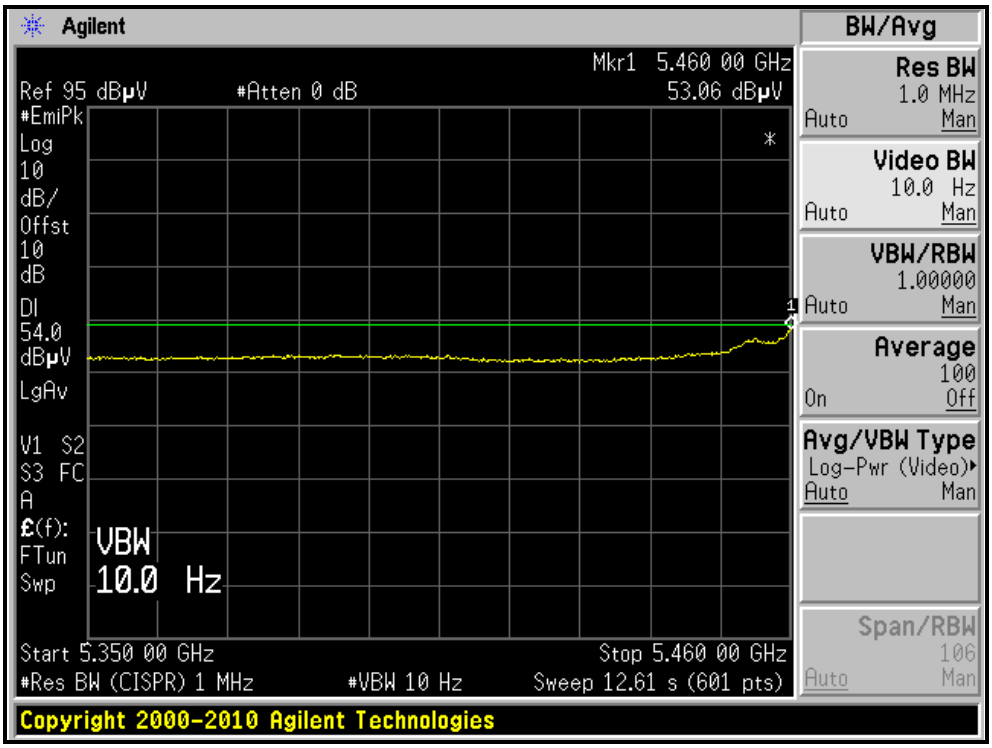
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH 100, HORIZONTAL)





RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH 100, VERTICAL)





802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 54	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5270.00	111.5 PK			1.56 H	305	69.57	41.93
2	*5270.00	101.1 AV			1.56 H	305	59.17	41.93
3	#10540.00	53.2 PK	68.3	-15.1	1.29 H	296	4.47	48.73
4	15810.00	64.1 PK	74.0	-9.9	1.19 H	52	10.09	54.01
5	15810.00	51.7 AV	54.0	-2.3	1.19 H	52	-2.31	54.01
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	*5270.00	120.3 PK			1.41 V	327	78.37	41.93
2	*5270.00	110.0 AV			1.41 V	327	68.07	41.93
3	#10540.00	50.4 PK	68.3	-17.9	1.41 V	269	1.67	48.73
4	15810.00	65.0 PK	74.0	-9.0	1.17 V	123	10.99	54.01
5	15810.00	53.1 AV	54.0	-0.9	1.17 V	123	-0.91	54.01

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 62	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	101.7 PK			1.51 H	306	59.68	42.02
2	*5310.00	92.3 AV			1.51 H	306	50.28	42.02
3	5350.00	58.8 PK	74.0	-15.2	1.52 H	163	16.71	42.09
4	5350.00	47.6 AV	54.0	-6.4	1.52 H	163	5.51	42.09
5	10620.00	56.7 PK	74.0	-17.3	1.25 H	291	7.83	48.87
6	10620.00	44.8 AV	54.0	-9.2	1.25 H	291	-4.07	48.87
7	15930.00	59.1 PK	74.0	-14.9	1.09 H	49	4.61	54.49
8	15930.00	49.6 AV	54.0	-4.4	1.09 H	49	-4.89	54.49
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	*5310.00	109.3 PK			1.37 V	328	67.28	42.02
2	*5310.00	99.4 AV			1.37 V	328	57.38	42.02
3	5350.00	66.5 PK	74.0	-7.5	1.37 V	327	24.41	42.09
4	5350.00	53.0 AV	54.0	-1.0	1.37 V	327	10.91	42.09
5	10620.00	55.8 PK	74.0	-18.2	1.45 V	293	6.93	48.87
6	10620.00	43.8 AV	54.0	-10.2	1.45 V	293	-5.07	48.87
7	15930.00	58.7 PK	74.0	-15.3	1.11 V	136	4.21	54.49
8	15930.00	50.2 AV	54.0	-3.8	1.11 V	136	-4.29	54.49

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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 102	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.6 PK	74.0	-11.4	1.51 H	313	20.38	42.22
2	5460.00	47.8 AV	54.0	-6.2	1.51 H	313	5.58	42.22
3	#5470.00	54.5 PK	68.3	-13.8	1.50 H	310	12.27	42.23
4	*5510.00	102.4 PK			1.50 H	312	60.13	42.27
5	*5510.00	92.8 AV			1.50 H	312	50.53	42.27
6	11020.00	57.4 PK	74.0	-16.6	1.27 H	314	8.40	49.00
7	11020.00	43.5 AV	54.0	-10.5	1.27 H	314	-5.50	49.00
8	#16530.00	59.6 PK	68.3	-8.7	1.08 H	55	3.72	55.88
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	5460.00	66.1 PK	74.0	-7.9	1.37 V	331	23.88	42.22
2	5460.00	52.9 AV	54.0	-1.1	1.37 V	331	10.68	42.22
3	#5470.00	57.8 PK	68.3	-10.5	1.37 V	329	15.57	42.23
4	*5510.00	111.2 PK			1.36 V	326	68.93	42.27
5	*5510.00	101.6 AV			1.36 V	326	59.33	42.27
6	11020.00	55.8 PK	74.0	-18.2	1.42 V	288	6.80	49.00
7	11020.00	43.8 AV	54.0	-10.2	1.42 V	288	-5.20	49.00
8	#16530.00	58.4 PK	68.3	-9.9	1.11 V	117	2.52	55.88

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.

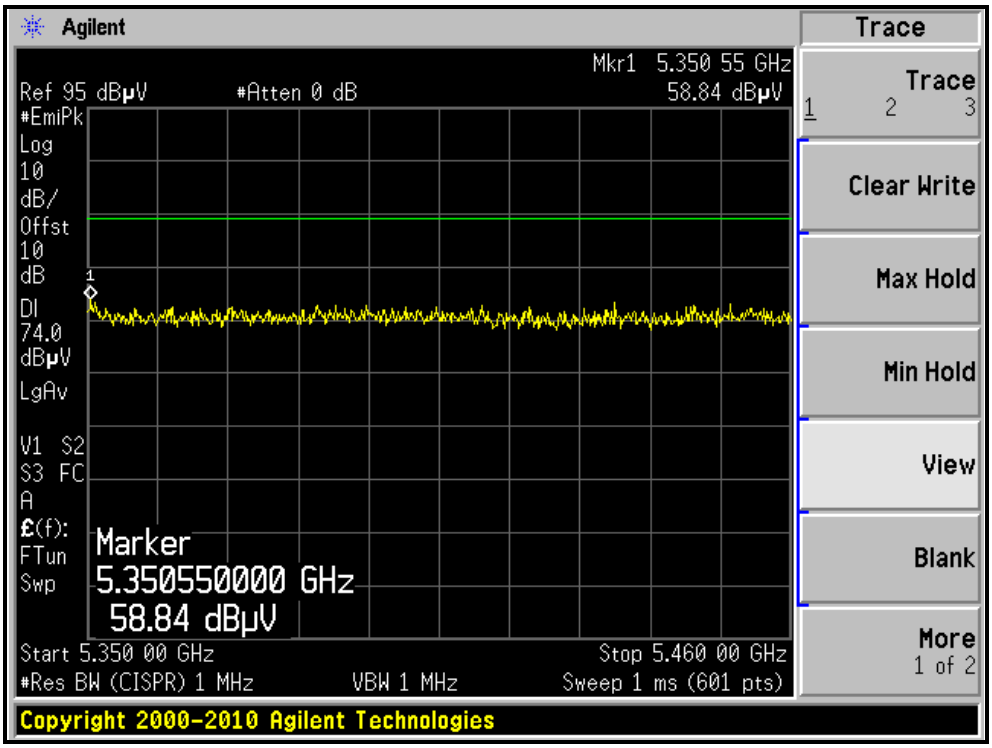
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH	TESTED BY	Frank Liu

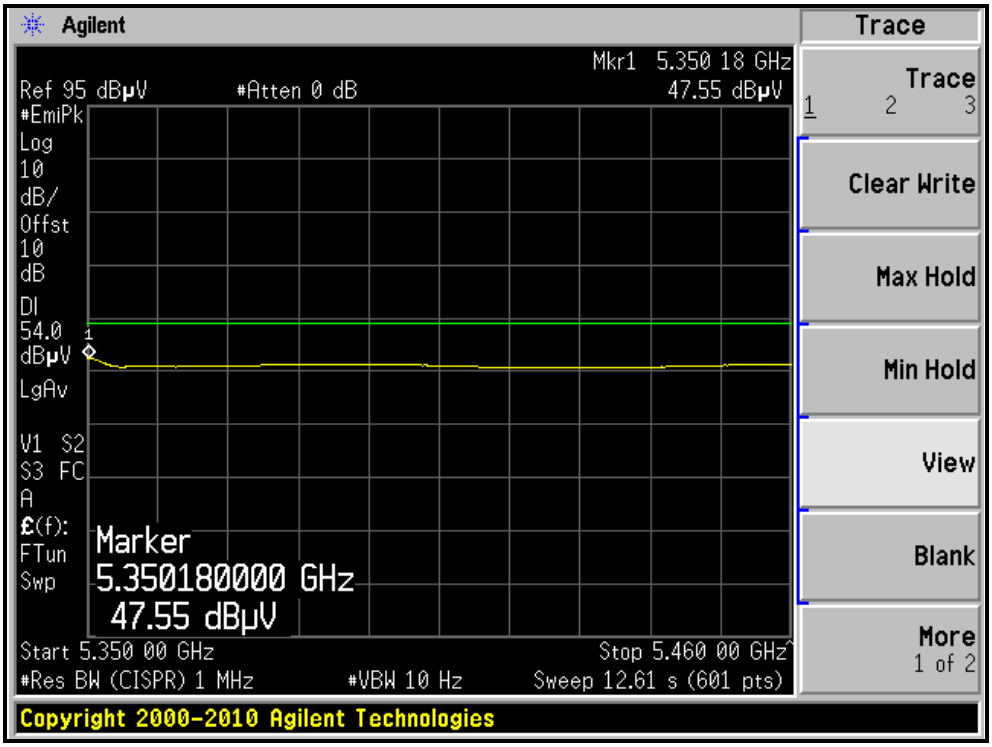
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	107.6 PK			1.38 H	295	65.02	42.58
2	*5670.00	97.4 AV			1.38 H	295	54.82	42.58
3	#5725.00	54.6 PK	68.3	-13.7	1.38 H	300	11.93	42.67
4	11340.00	56.8 PK	74.0	-17.2	1.27 H	310	7.71	49.09
5	11340.00	44.9 AV	54.0	-9.1	1.27 H	310	-4.19	49.09
6	#17010.00	59.1 PK	68.3	-9.2	1.07 H	67	2.74	56.36
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	*5670.00	116.1 PK			1.41 V	333	73.52	42.58
2	*5670.00	106.5 AV			1.41 V	333	63.92	42.58
3	#5725.00	59.6 PK	68.3	-8.7	1.40 V	337	16.93	42.67
4	11340.00	56.0 PK	74.0	-18.0	1.38 V	293	6.91	49.09
5	11340.00	43.6 AV	54.0	-10.4	1.38 V	293	-5.49	49.09
6	#17010.00	58.5 PK	68.3	-9.8	1.07 V	133	2.14	56.36

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

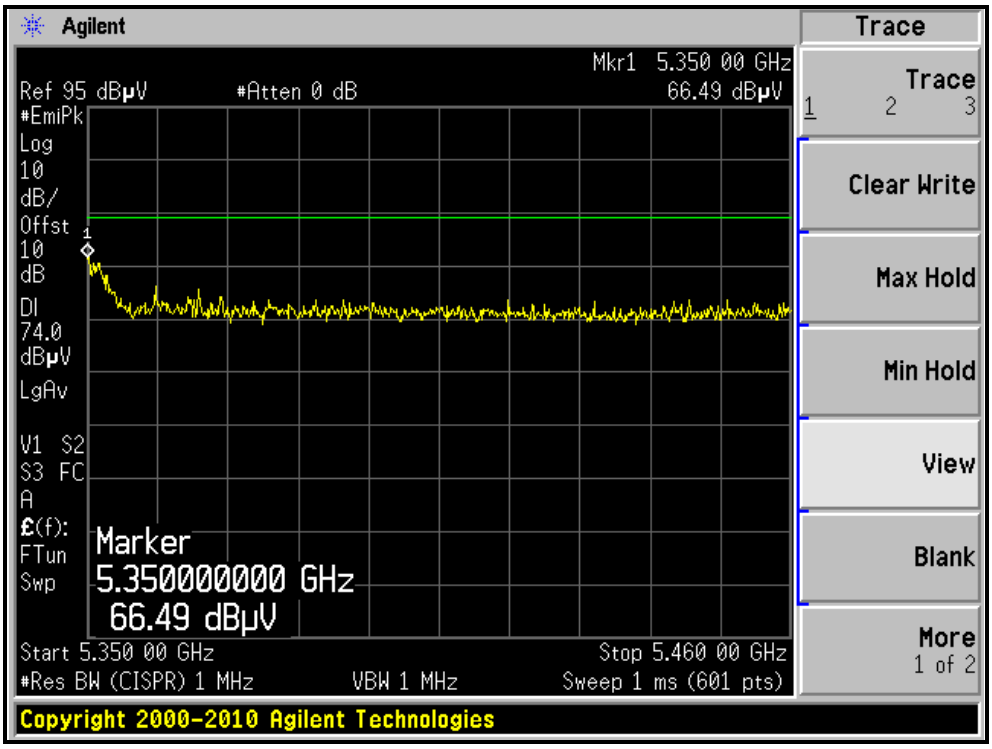
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

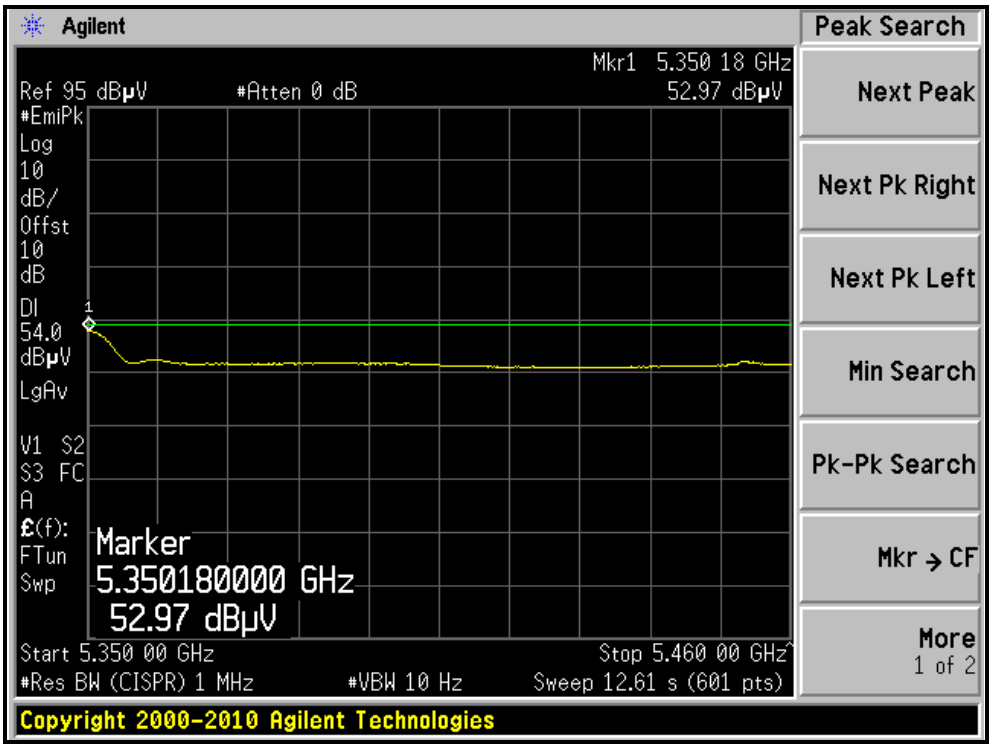
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH62, HORIZONTAL)



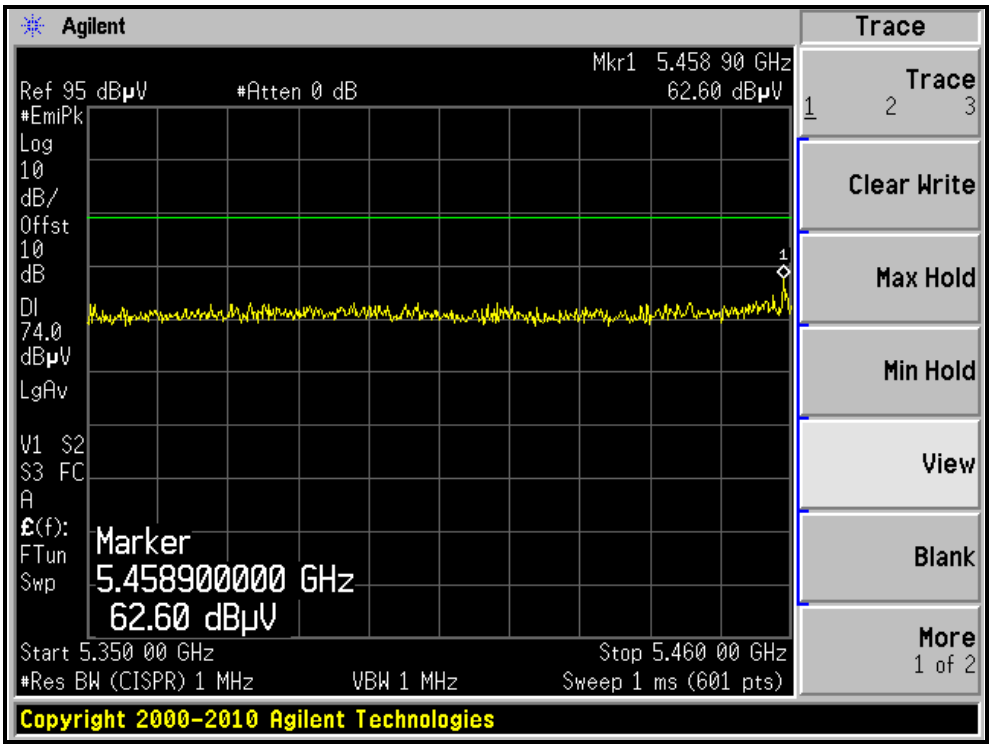


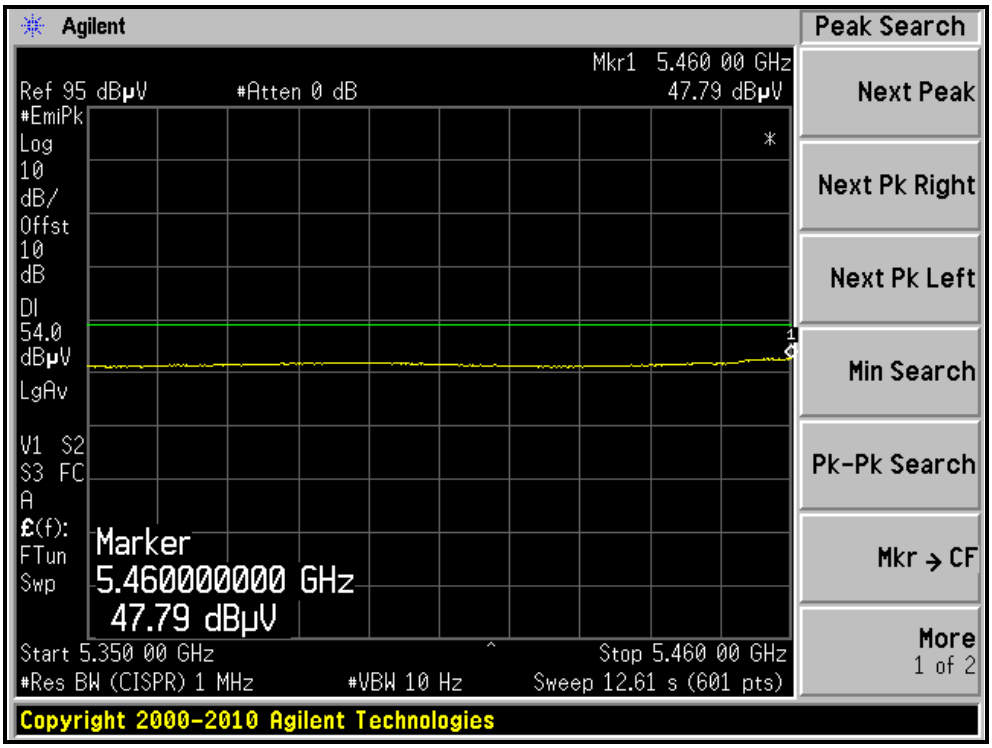
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH62, VERTICAL)



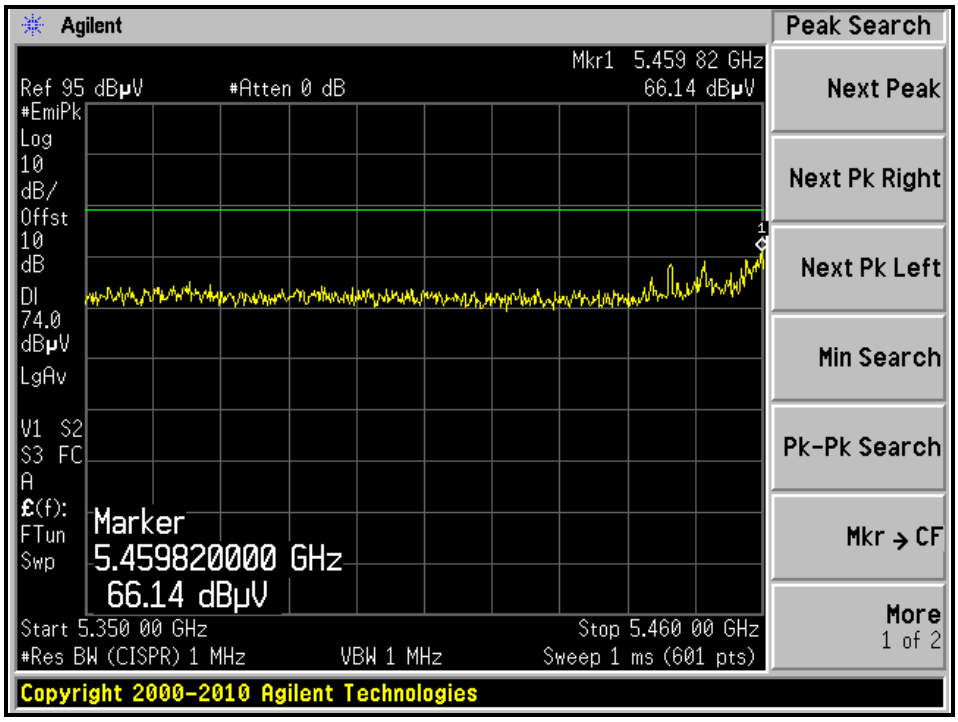


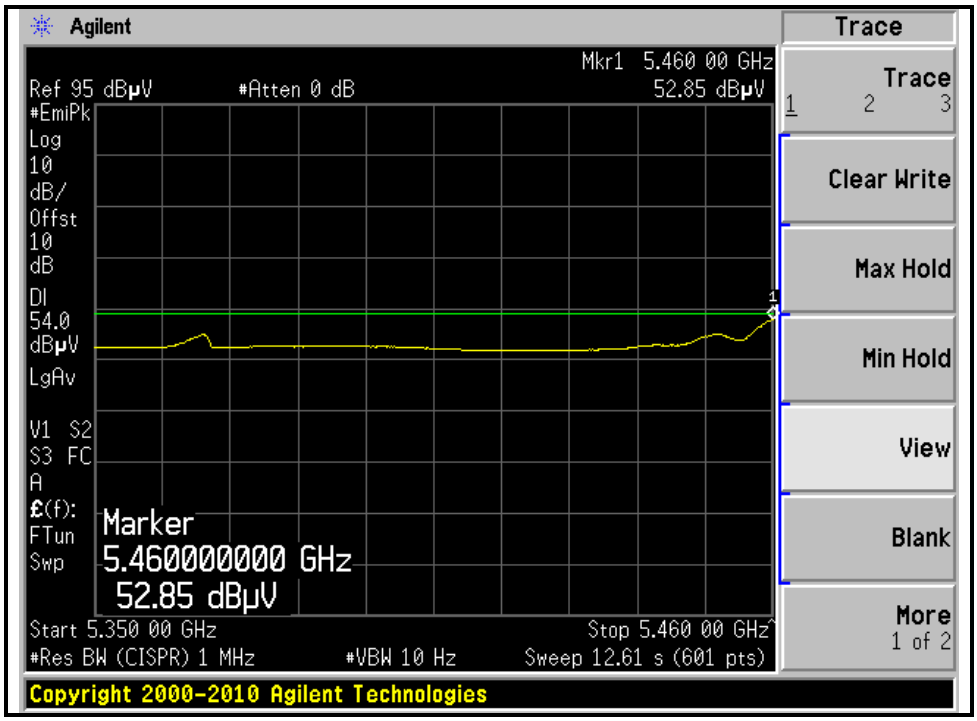
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, HORIZONTAL)





RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, 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: Oct. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

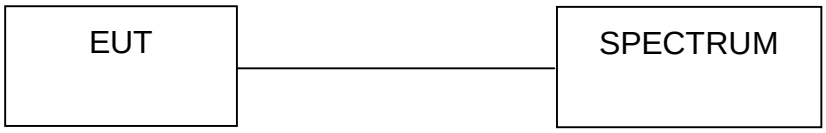
4.3.3 TEST PROCEDURE

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.

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)				
52	5260	15.2	13.1	15.1	85.9	19.3	22.6	PASS
60	5300	15.1	13.5	15.9	93.7	19.7	22.6	PASS
64	5320	15.4	13.5	15.8	95.1	19.8	22.6	PASS
100	5500	15.0	12.6	15.6	86.1	19.4	22.6	PASS
116	5580	14.8	14.1	15.6	92.2	19.6	22.6	PASS
132	5660	14.7	13.9	16.1	94.8	19.8	22.6	PASS
140	5700	14.7	13.8	15.7	90.7	19.6	22.6	PASS

Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$+ $10^{G3/20}$)^2 / 3]

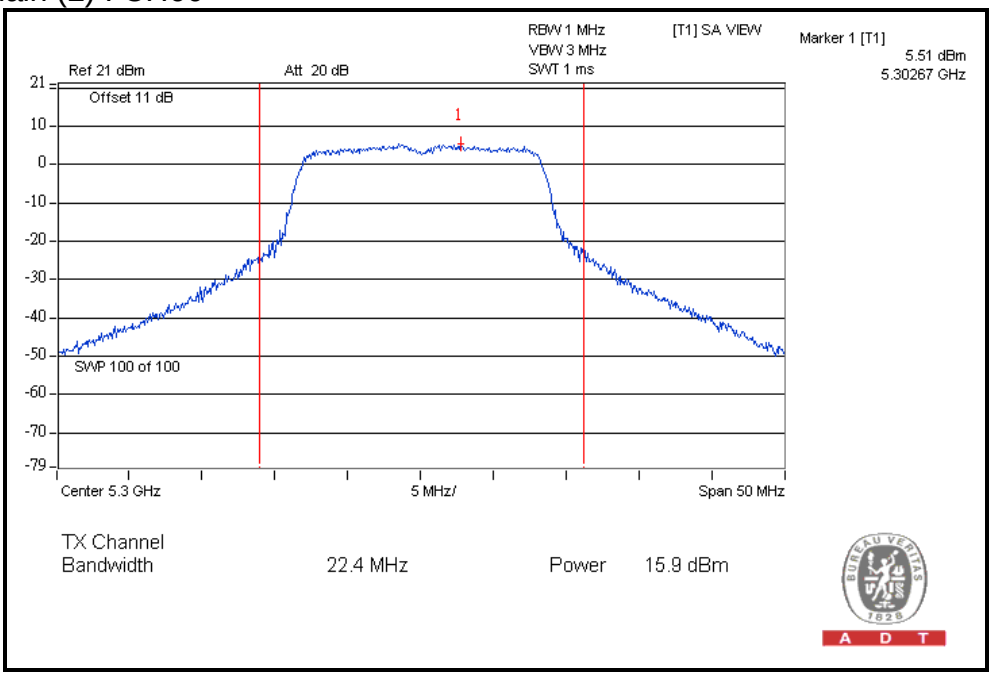
Effective Legacy Gain (dBi) = 7.4

The effective legacy gain is 7.4dBi, therefore the limit needs to reduce.

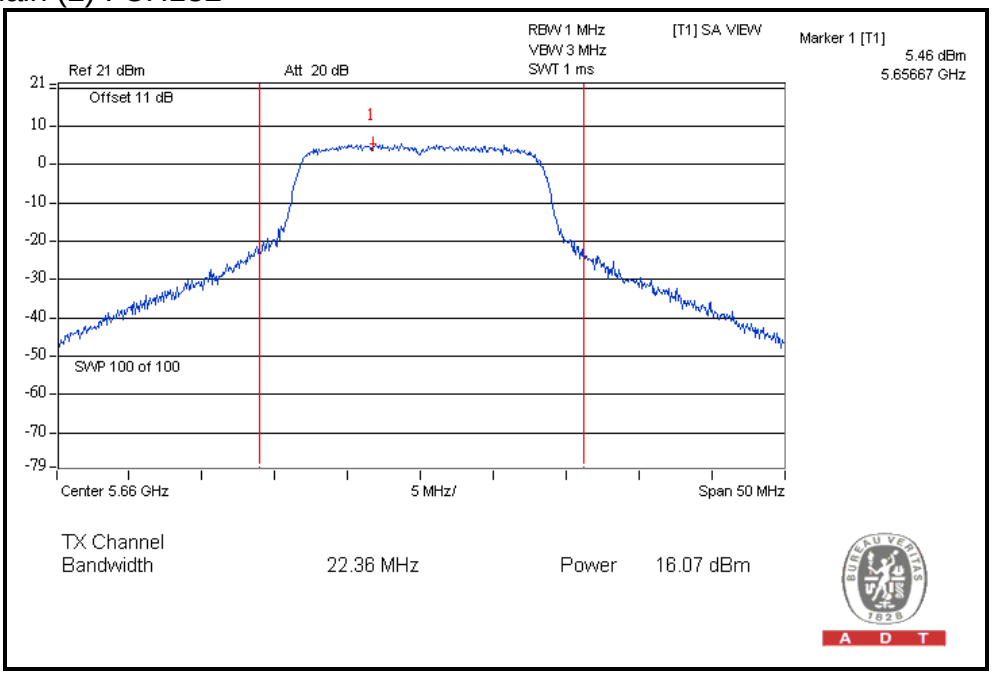
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		
		CHAIN(0)	CHAIN(1)	CHAIN(2)
52	5260	22.69	21.46	23.53
60	5300	23.16	21.89	22.40
64	5320	22.68	20.57	21.92
100	5500	23.42	22.70	21.73
116	5580	21.24	22.76	22.94
132	5660	23.17	22.53	22.36
140	5700	22.08	21.09	22.88

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

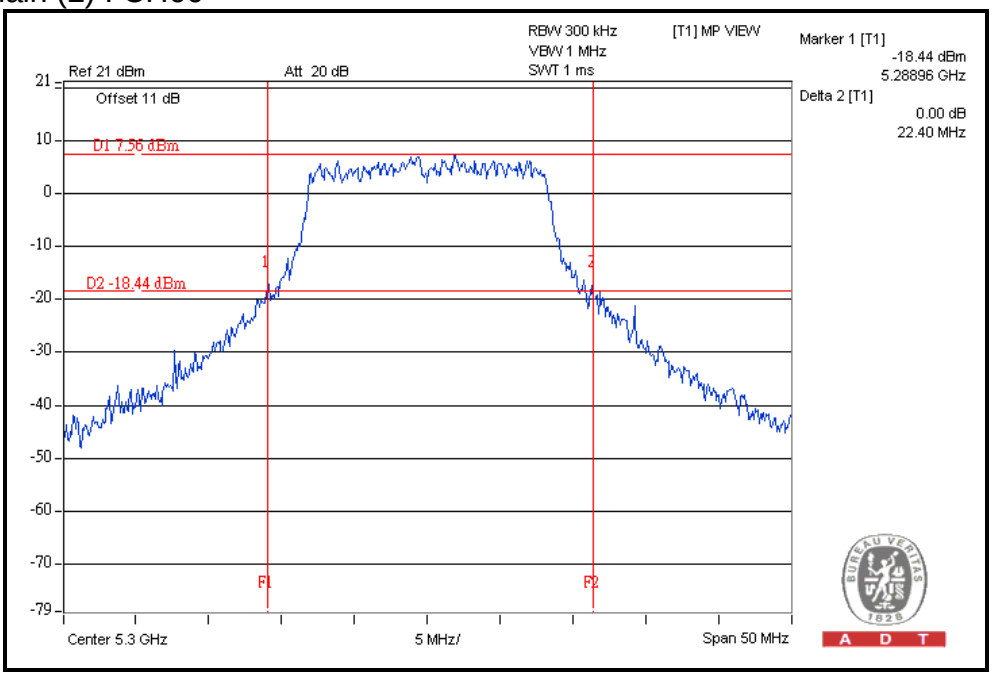
Peak Power Output:
For Chain (2) : CH60



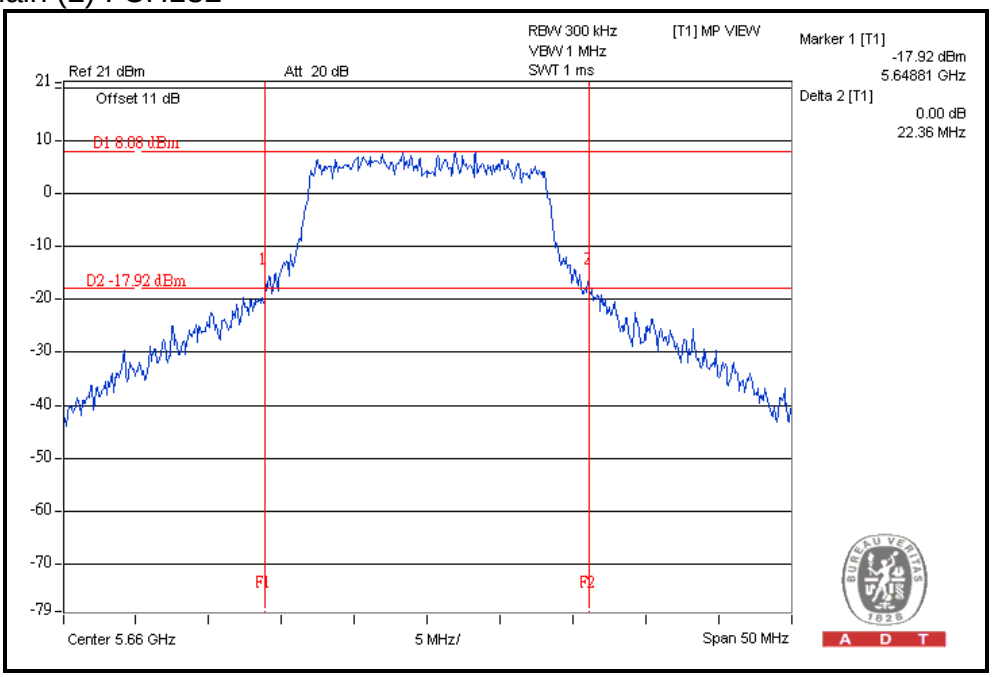
For Chain (2) : CH132



26dB Occupied Bandwidth:
For Chain (2) : CH60



For Chain (2) : CH132



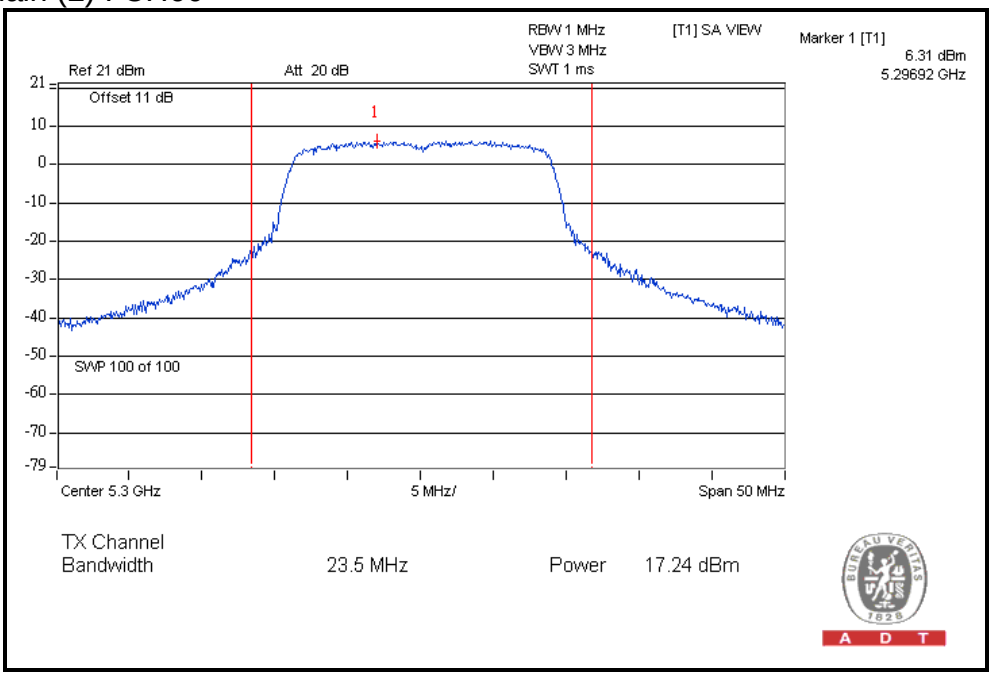
802.11n (20MHz) OFDM MODULATION:

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)				
52	5260	17.1	15.4	17.1	137.2	21.4	24	PASS
60	5300	16.8	14.6	17.2	129.2	21.1	24	PASS
64	5320	16.7	15.3	17.1	131.9	21.2	24	PASS
100	5500	17.2	15.0	17.6	141.6	21.5	24	PASS
116	5580	16.3	15.9	17.0	131.7	21.2	24	PASS
132	5660	15.7	15.5	16.8	120.5	20.8	24	PASS
140	5700	16.6	15.9	17.8	144.9	21.6	24	PASS

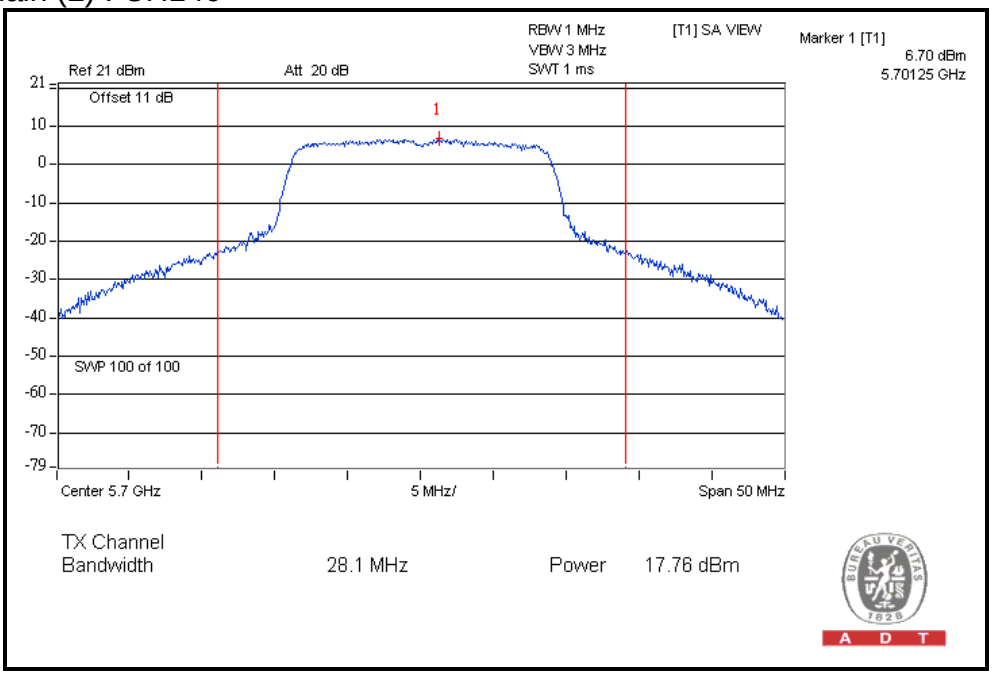
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		
		CHAIN(0)	CHAIN(1)	CHAIN(2)
52	5260	25.46	24.87	22.88
60	5300	23.65	24.45	23.50
64	5320	23.32	22.90	23.66
100	5500	24.13	21.78	27.39
116	5580	22.52	22.61	23.81
132	5660	22.27	22.52	26.35
140	5700	23.78	22.33	28.10

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

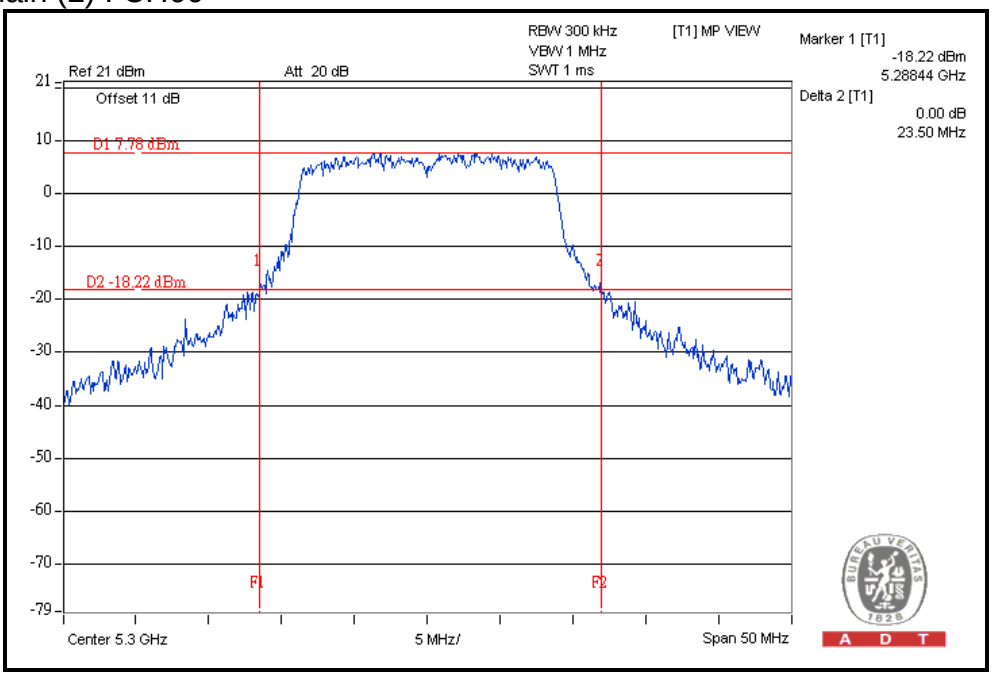
Peak Power Output:
For Chain (2) : CH60



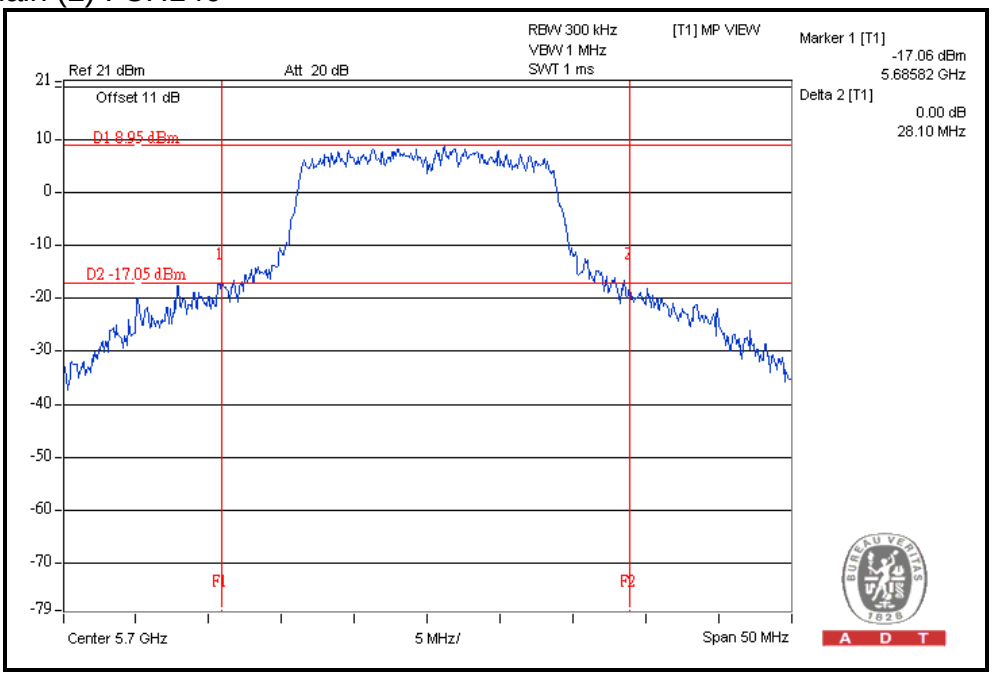
For Chain (2) : CH140



26dB Occupied Bandwidth:
For Chain (2) : CH60



For Chain (2) : CH140



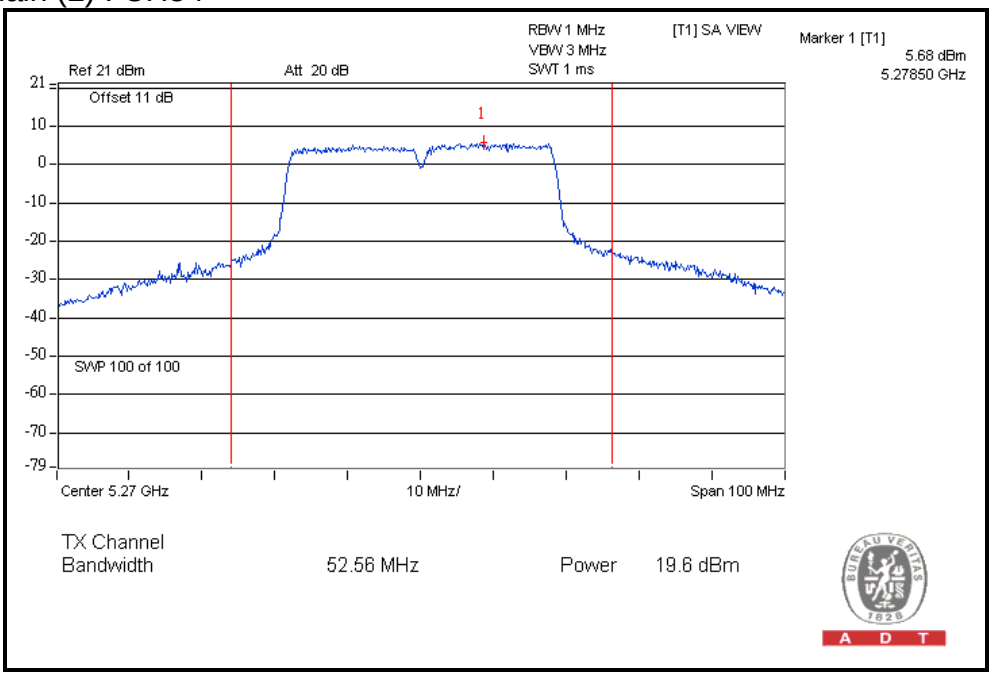
802.11n (40MHz) OFDM MODULATION:

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)				
54	5270	19.2	17.7	19.6	233.3	23.7	24	PASS
62	5310	11.4	10.6	12.6	43.5	16.4	24	PASS
102	5510	12.4	11.3	13.5	53.3	17.3	24	PASS
110	5550	18.7	18.5	19.8	240.4	23.8	24	PASS
134	5670	16.8	16.0	18.2	153.7	21.9	24	PASS

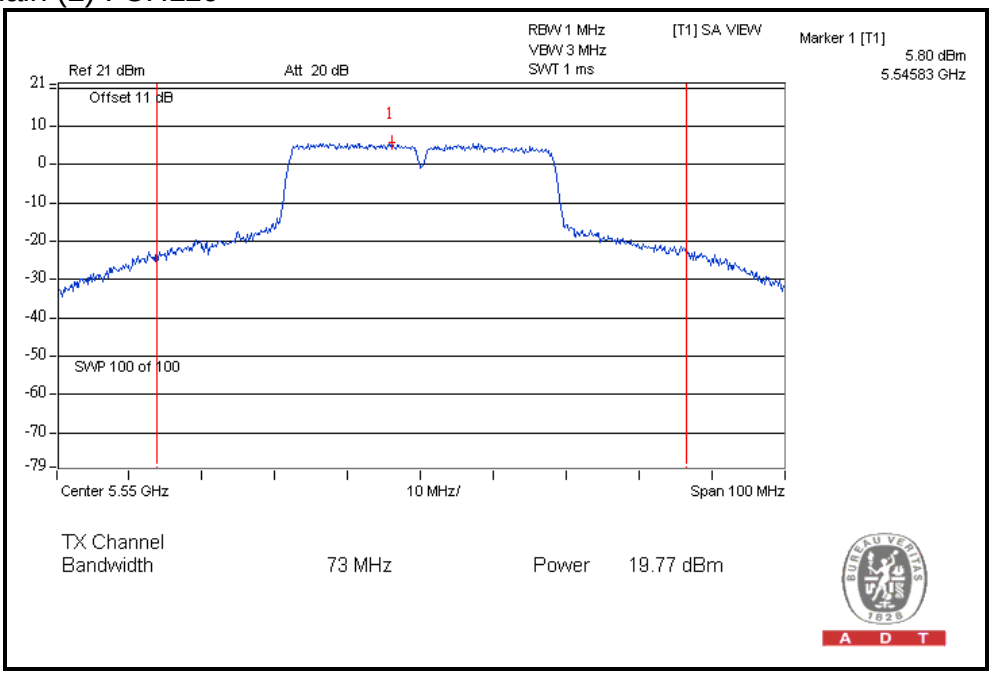
CHANNEL	CHANNEL FREQUENCY (MHz)	26dBc OCCUPIED BANDWIDTH (MHz)		
		CHAIN(0)	CHAIN(1)	CHAIN(2)
54	5270	61.35	63.52	52.56
62	5310	44.13	43.83	43.01
102	5510	43.10	44.36	44.82
110	5550	66.37	58.57	73.00
134	5670	60.06	52.83	68.17

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

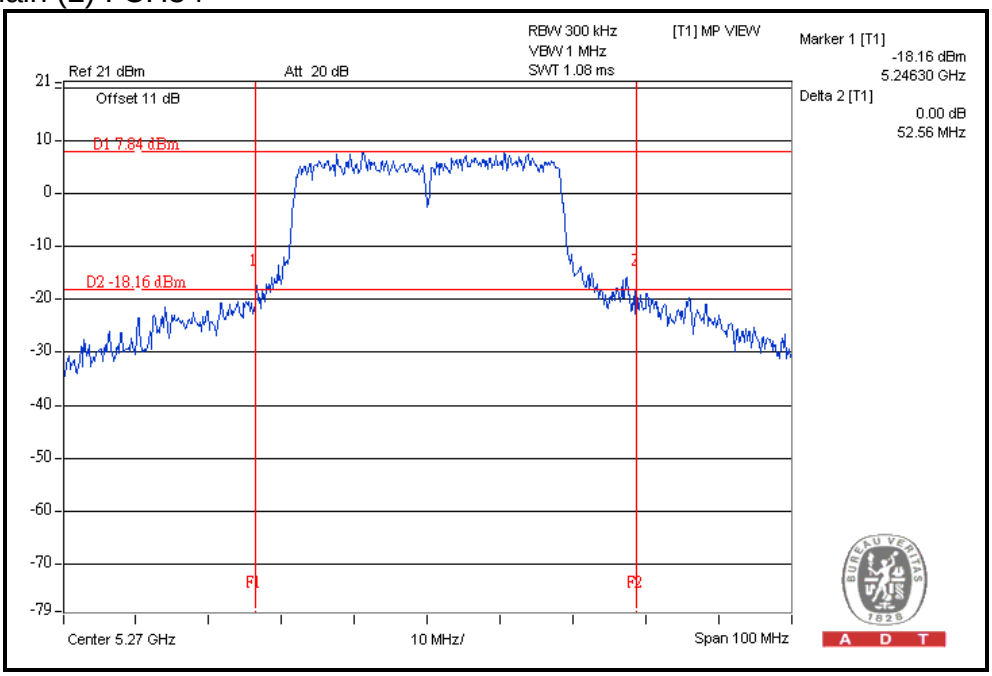
Peak Power Output:
For Chain (2) : CH54



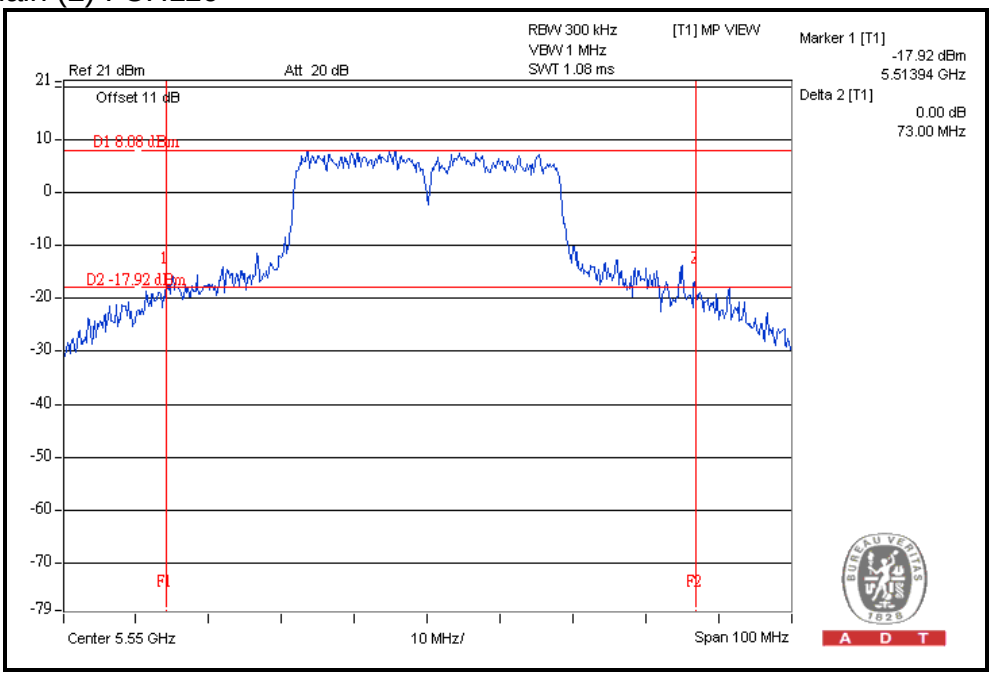
For Chain (2) : CH110



26dB Occupied Bandwidth:
For Chain (2) : CH54



For Chain (2) : CH110



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: Oct. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

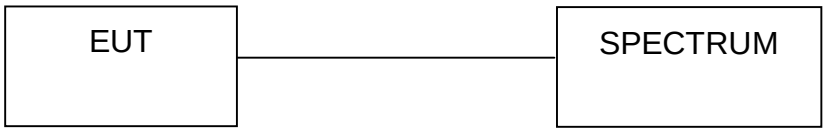
4.4.3 TEST PROCEDURE

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

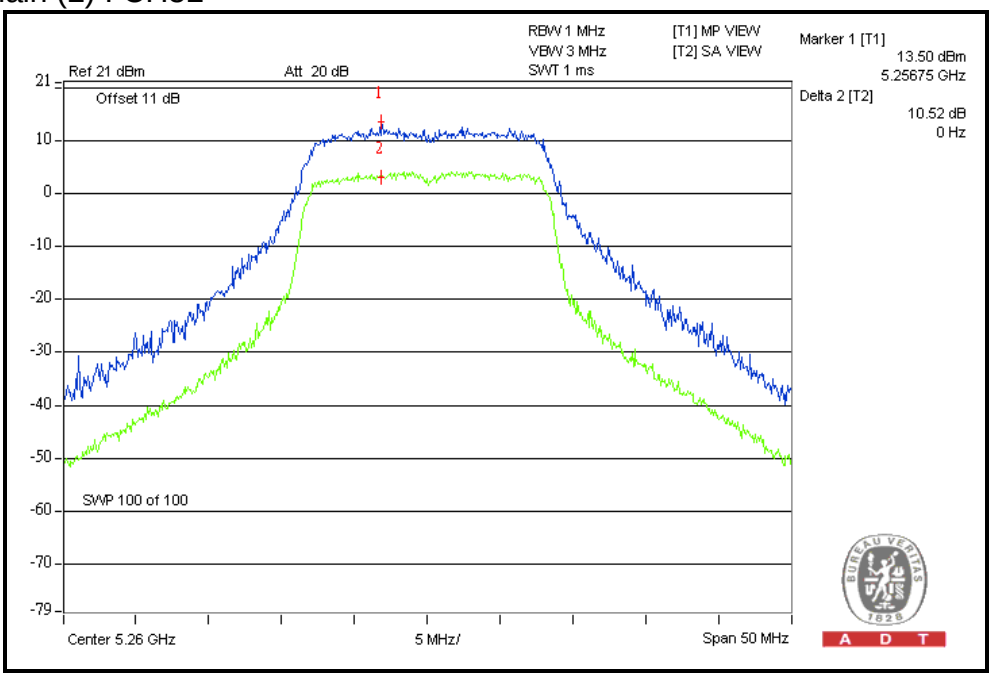
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.4.7 TEST RESULTS

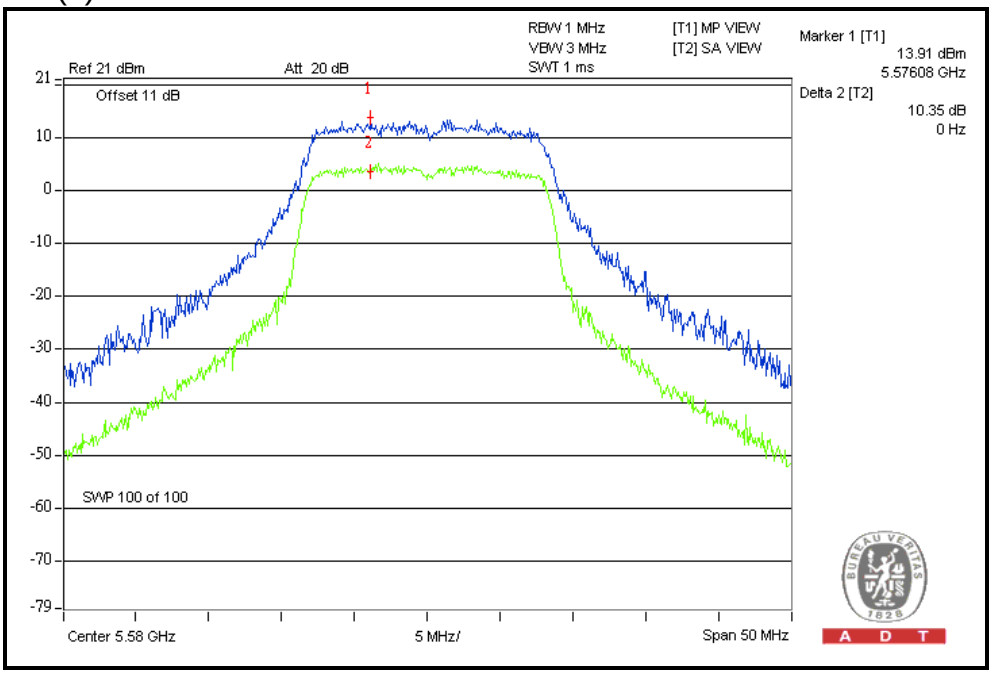
802.11a OFDM MODULATION

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)		
52	5260	9.2	8.6	10.5	13	PASS
60	5300	9.3	9.2	10.0	13	PASS
64	5320	9.7	9.2	9.3	13	PASS
100	5500	9.0	9.5	9.4	13	PASS
116	5580	8.5	9.3	10.4	13	PASS
132	5660	9.4	9.2	9.4	13	PASS
140	5700	7.9	9.0	10.2	13	PASS

For Chain (2) : CH52



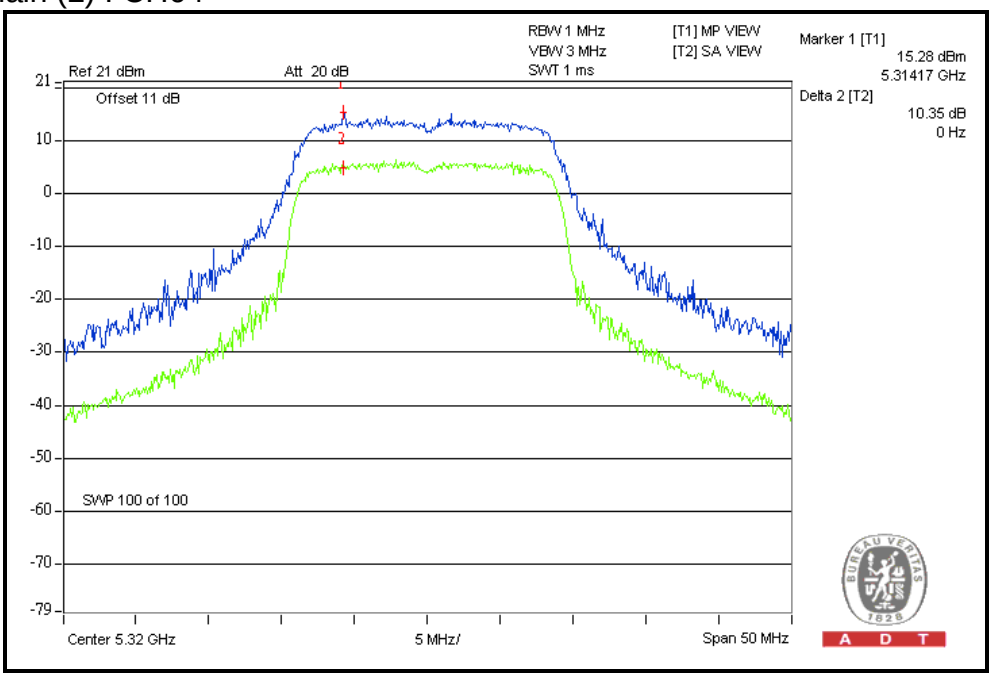
For Chain (2) : CH116



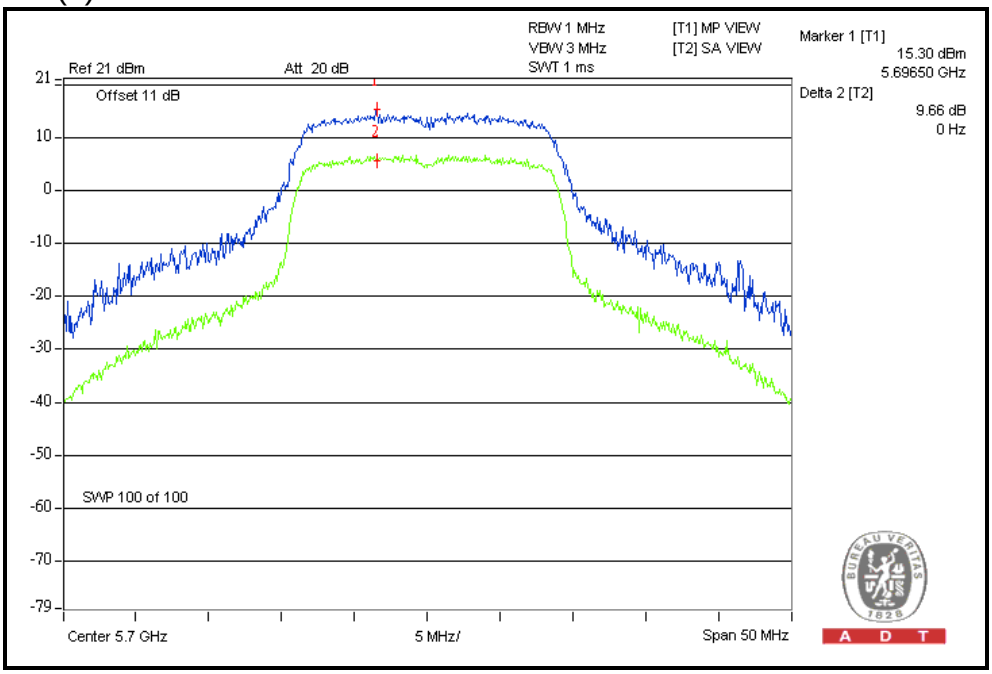
802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)		
52	5260	9.0	8.4	9.2	13	PASS
60	5300	10.0	8.6	9.7	13	PASS
64	5320	8.6	8.4	10.4	13	PASS
100	5500	8.0	9.4	9.0	13	PASS
116	5580	9.5	9.0	9.0	13	PASS
132	5660	8.2	9.6	9.4	13	PASS
140	5700	7.6	7.6	9.7	13	PASS

For Chain (2) : CH64



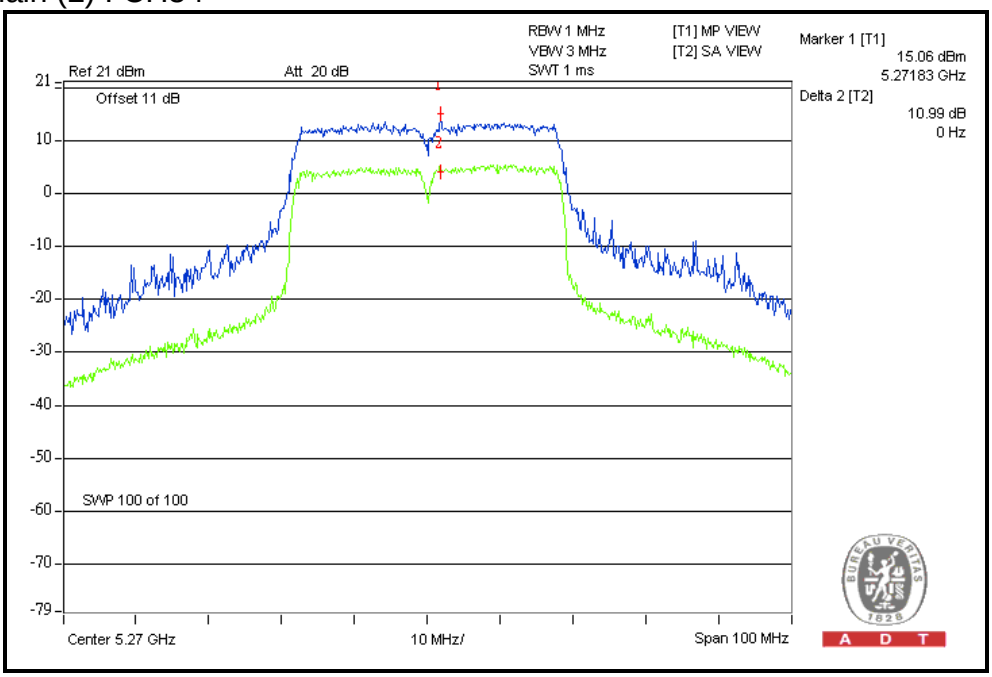
For Chain (2) : CH140



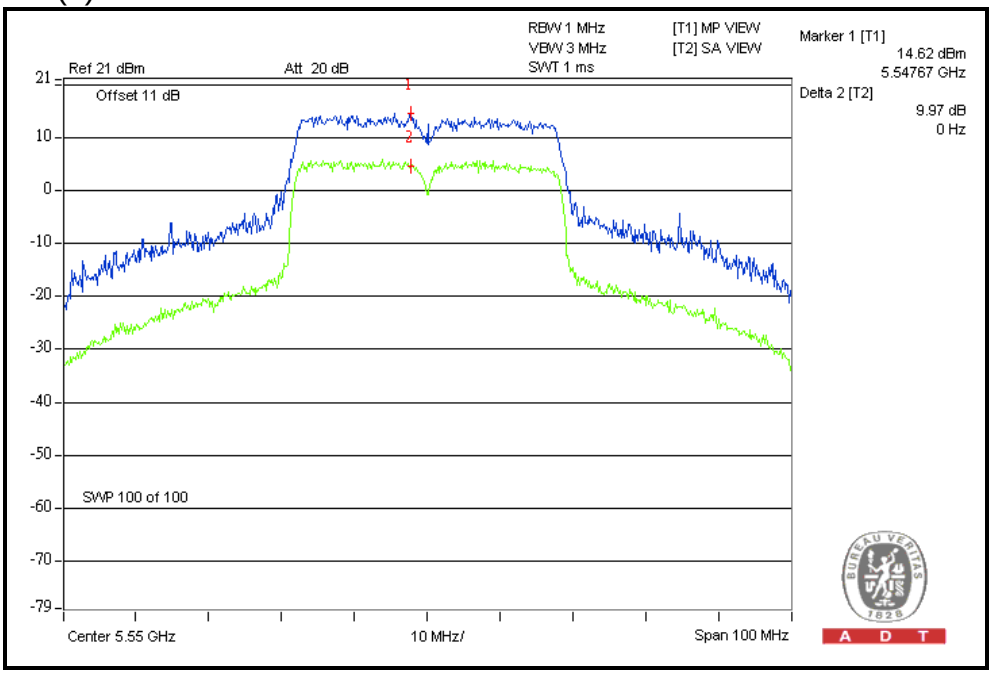
802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)			PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)		
54	5270	9.3	9.3	11.0	13	PASS
62	5310	9.0	9.8	9.4	13	PASS
102	5510	7.8	8.5	9.3	13	PASS
110	5550	8.3	8.6	10.0	13	PASS
134	5670	9.8	9.2	9.4	13	PASS

For Chain (2) : CH54



For Chain (2) : CH110



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: Oct. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

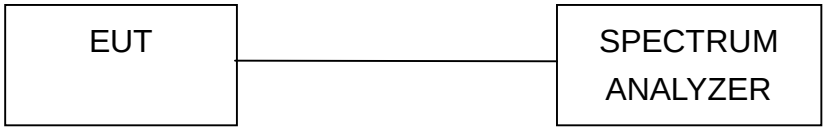
4.5.3 TEST PROCEDURES

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

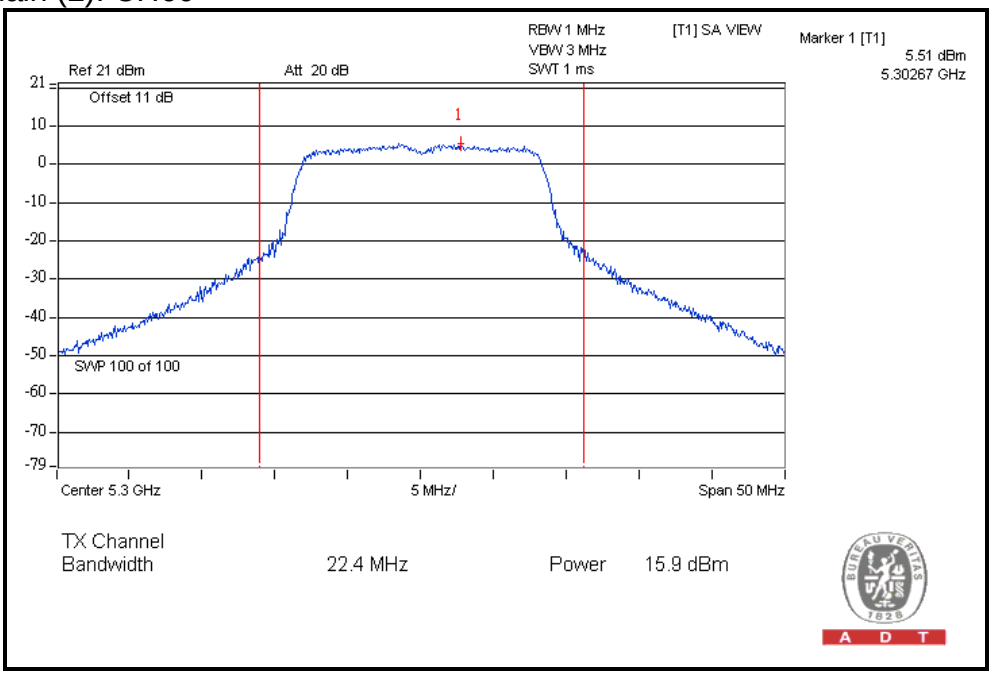
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)			TOTAL POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS / FAIL
		CHAIN(0)	CHAIN(1)	CHAIN(2)			
52	5260	4.7	2.6	4.5	8.8	9.6	PASS
60	5300	4.9	3.5	5.5	9.5	9.6	PASS
64	5320	4.5	3.8	4.9	9.2	9.6	PASS
100	5500	4.3	2.1	5.0	8.7	9.6	PASS
116	5580	4.5	3.9	5.1	9.3	9.6	PASS
132	5660	4.0	3.6	5.5	9.2	9.6	PASS
140	5700	4.0	3.8	4.9	9.0	9.6	PASS

Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3]$

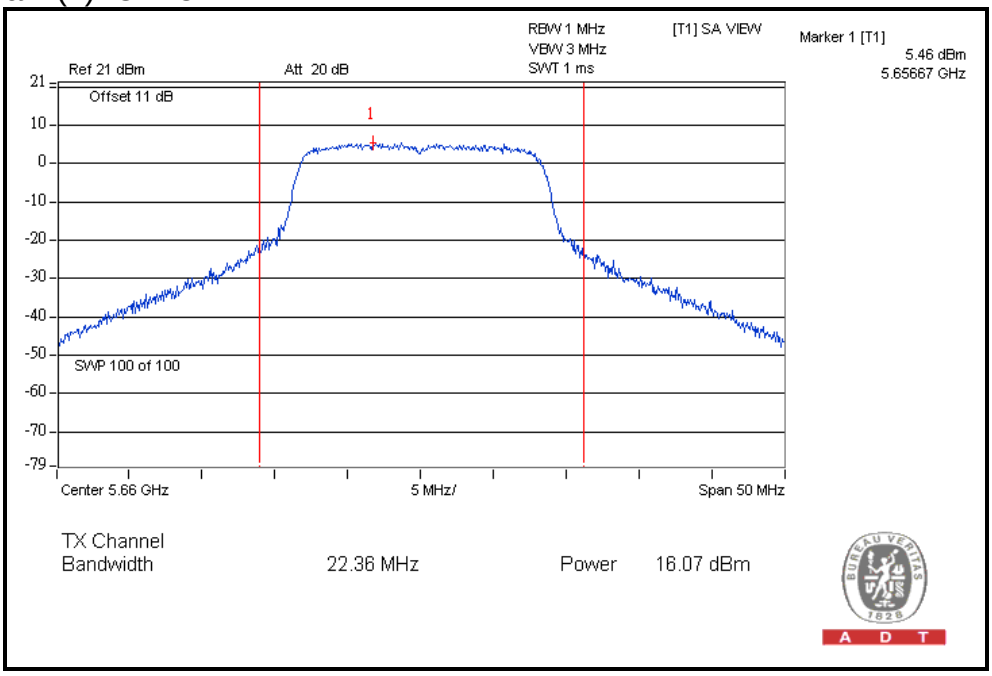
Effective Legacy Gain (dBi) = 7.4

The effective legacy gain is 7.4dBi, therefore the limit needs to reduce.

For Chain (2): CH60



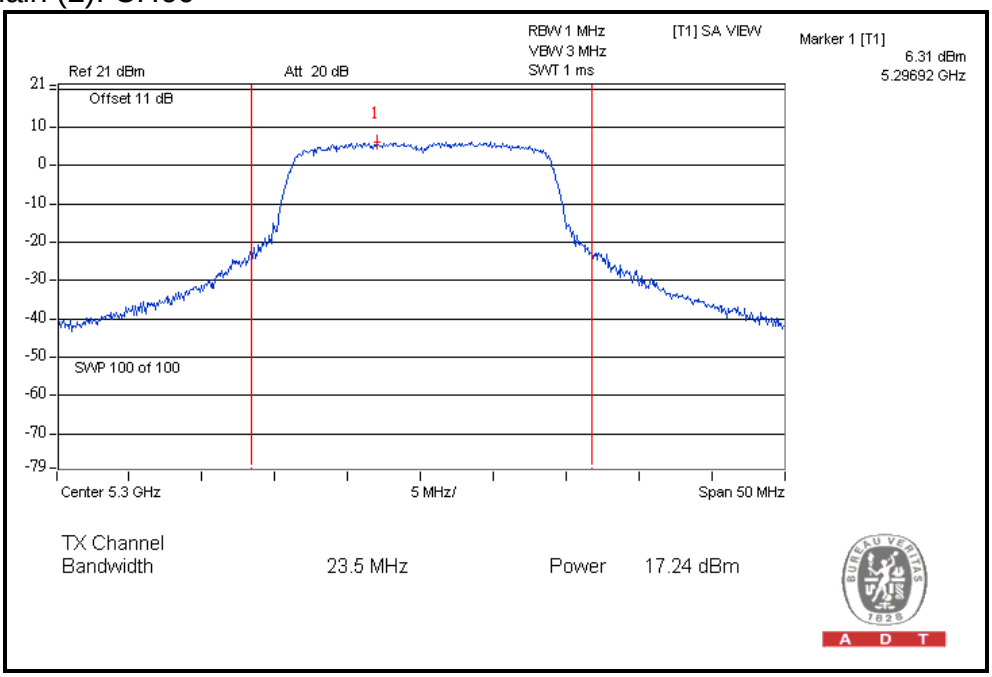
For Chain (2): CH132



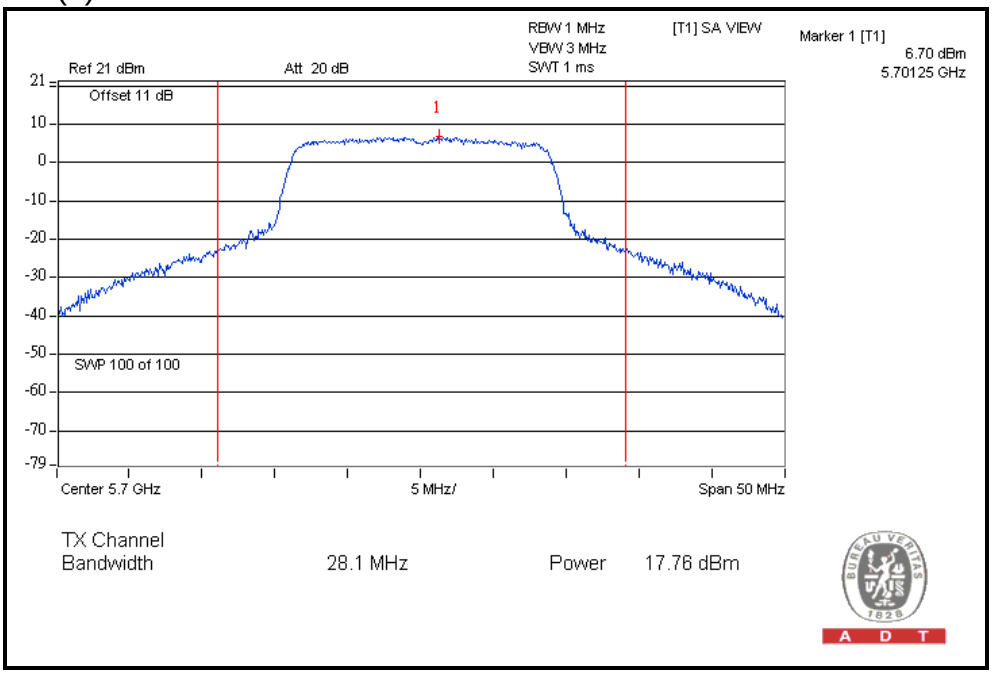
802.11n (20MHz) OFDM MODULATION:

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)			
52	5260	6.1	5.1	6.3	10.6	11	PASS
60	5300	5.8	3.8	6.3	10.2	11	PASS
64	5320	5.9	4.3	6.1	10.3	11	PASS
100	5500	6.2	4.8	6.6	10.7	11	PASS
116	5580	5.3	5.4	6.2	10.4	11	PASS
132	5660	4.8	5.3	6.0	10.2	11	PASS
140	5700	5.8	5.6	6.7	10.8	11	PASS

For Chain (2): CH60



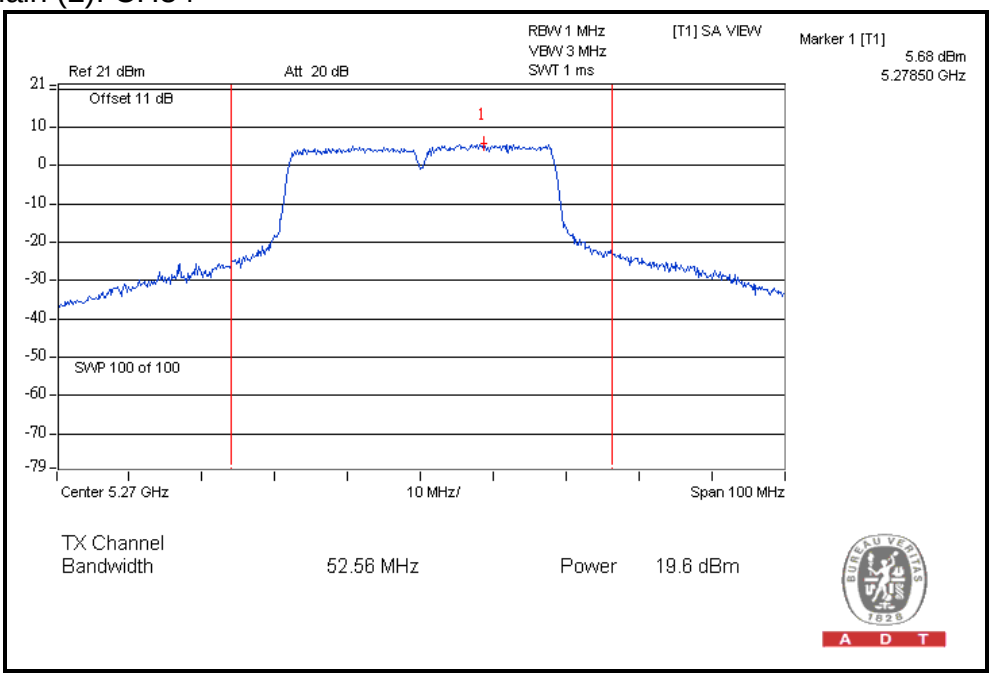
For Chain (2): CH140



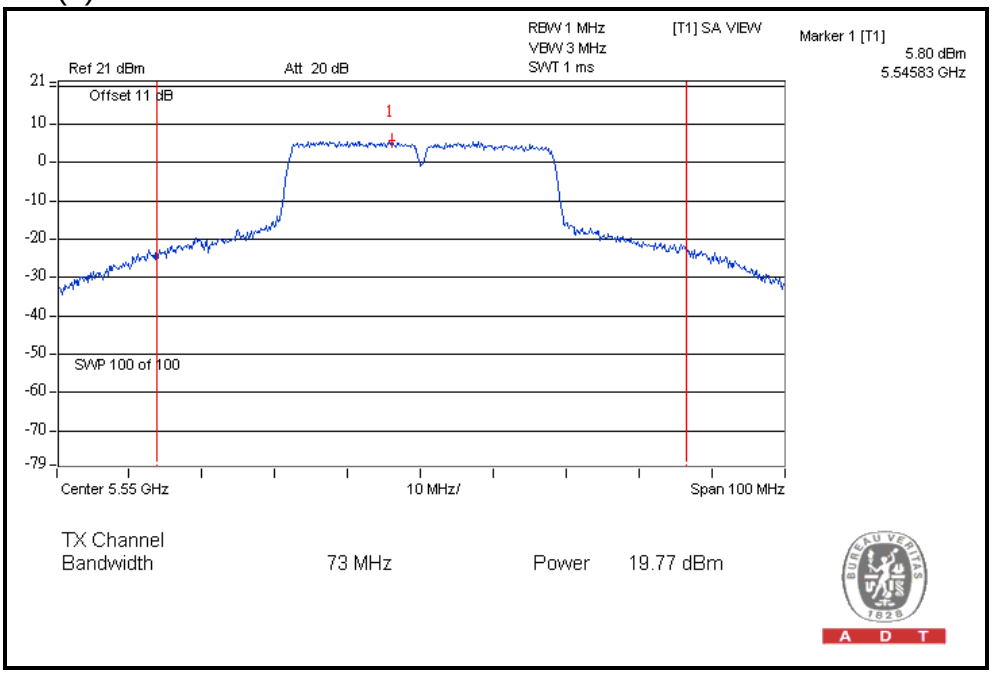
802.11n (40MHz) OFDM MODULATION:

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)			
54	5270	4.9	4.0	5.7	9.7	11	PASS
62	5310	-2.7	-2.7	-1.5	2.5	11	PASS
102	5510	-1.7	-2.2	-0.2	3.5	11	PASS
110	5550	4.6	4.9	5.8	9.9	11	PASS
134	5670	2.7	1.9	4.0	7.7	11	PASS

For Chain (2): CH54



For Chain (2): CH110



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: Oct. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

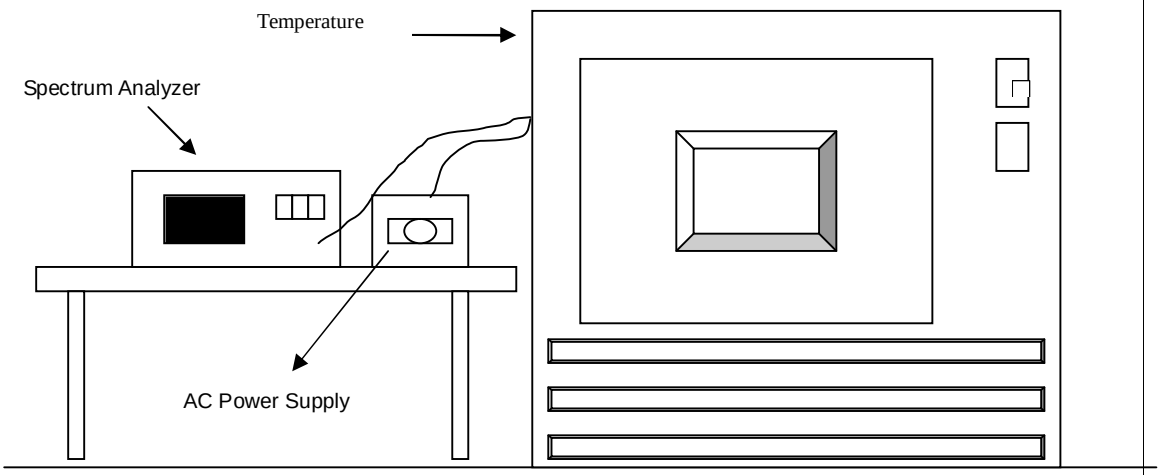
4.6.3 TEST PROCEDURE

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: 5320MHz									
Temp. (℃)	Power supply (VAC)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(ppm)	(MHz)	(ppm)	(MHz)	(ppm)	(MHz)	(ppm)
50	138	5319.994	-1.1278	5319.9894	-1.9925	5319.9942	-1.0902	5319.9935	-1.2218
	120	5319.9933	-1.2594	5319.9904	-1.8045	5319.9949	-0.9586	5319.9943	-1.0714
	102	5319.9937	-1.1842	5319.99	-1.8797	5319.994	-1.1278	5319.9932	-1.2782
40	138	5319.9939	-1.1466	5319.9946	-1.0150	5319.994	-1.1278	5319.9958	-0.7895
	120	5319.9949	-0.9586	5319.9938	-1.1654	5319.9951	-0.9211	5319.9957	-0.8083
	102	5319.9949	-0.9586	5319.9948	-0.9774	5319.9953	-0.8835	5319.9971	-0.5451
30	138	5319.9967	-0.6203	5319.9941	-1.1090	5319.9969	-0.5827	5319.9999	-0.0188
	120	5319.9964	-0.6767	5319.9939	-1.1466	5319.998	-0.3759	5320.001	0.1880
	102	5319.9968	-0.6015	5319.9943	-1.0714	5319.9971	-0.5451	5320	0.0000
20	138	5320.0172	3.2331	5320.0188	3.5338	5320.0185	3.4774	5320.0222	4.1729
	120	5320.0171	3.2143	5320.0204	3.8346	5320.0193	3.6278	5320.0225	4.2293
	102	5320.0171	3.2143	5320.0192	3.6090	5320.0185	3.4774	5320.0231	4.3421
10	138	5319.9899	-1.8985	5319.9857	-2.6880	5319.9835	-3.1015	5319.9862	-2.5940
	120	5319.9906	-1.7669	5319.9859	-2.6504	5319.9839	-3.0263	5319.9871	-2.4248
	102	5319.9899	-1.8985	5319.9868	-2.4812	5319.9837	-3.0639	5319.9864	-2.5564
0	138	5319.9837	-3.0639	5319.9788	-3.9850	5319.9819	-3.4023	5319.9785	-4.0414
	120	5319.9844	-2.9323	5319.9796	-3.8346	5319.9804	-3.6842	5319.9782	-4.0977
	102	5319.9851	-2.8008	5319.9801	-3.7406	5319.9811	-3.5526	5319.9787	-4.0038
-10	138	5320.0189	3.5526	5320.0208	3.9098	5320.0198	3.7218	5320.0223	4.1917
	120	5320.0173	3.2519	5320.0224	4.2105	5320.0213	4.0038	5320.021	3.9474
	102	5320.0172	3.2331	5320.0208	3.9098	5320.0212	3.9850	5320.0217	4.0789
-20	138	5320.0045	0.8459	5320.0022	0.4135	5320.0054	1.0150	5320.0063	1.1842
	120	5320.0036	0.6767	5320.0022	0.4135	5320.0039	0.7331	5320.0066	1.2406
	102	5320.004	0.7519	5320.0013	0.2444	5320.0046	0.8647	5320.0081	1.5226
-30	138	5320.0097	1.8233	5320.0067	1.2594	5320.01	1.8797	5320.0063	1.1842
	120	5320.0088	1.6541	5320.0066	1.2406	5320.0101	1.8985	5320.0056	1.0526
	102	5320.0089	1.6729	5320.0056	1.0526	5320.0089	1.6729	5320.0058	1.0902

4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 TEST INSTRUMENTS

Test date: Oct. 07, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

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

4.7.2 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

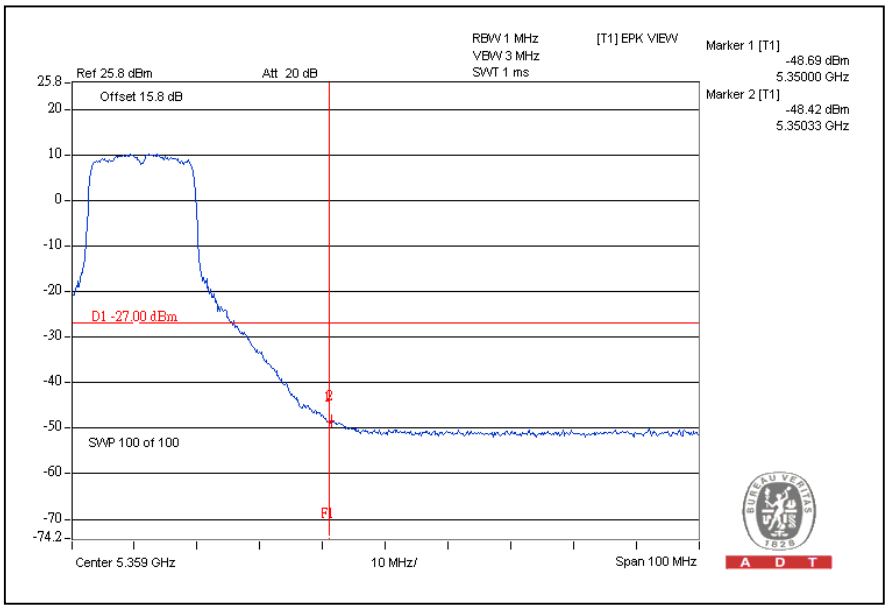
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

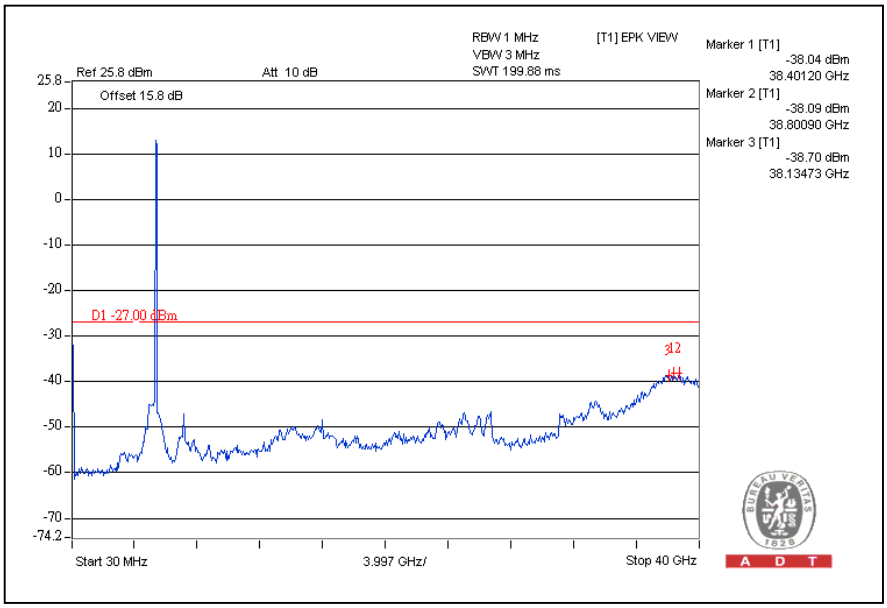
4.7.4 TEST RESULTS

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

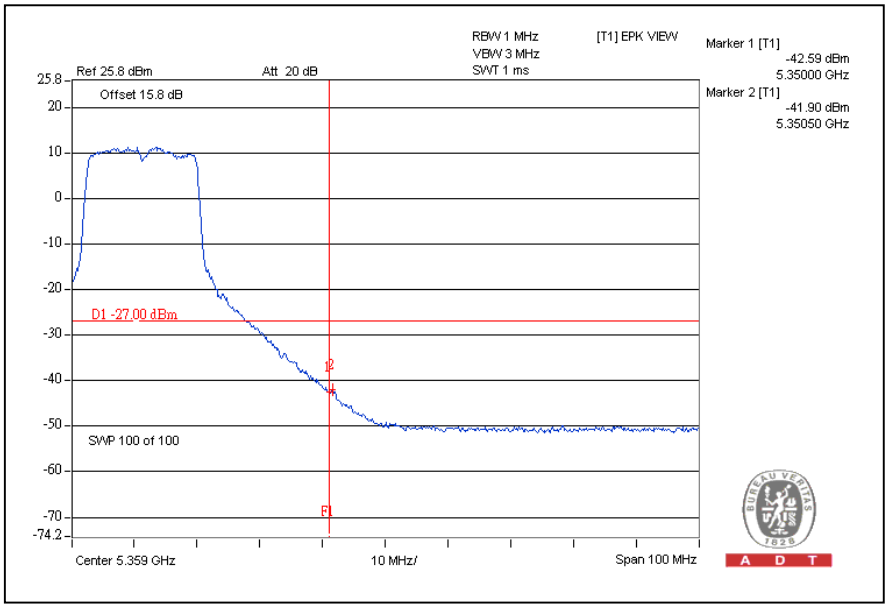
CH64

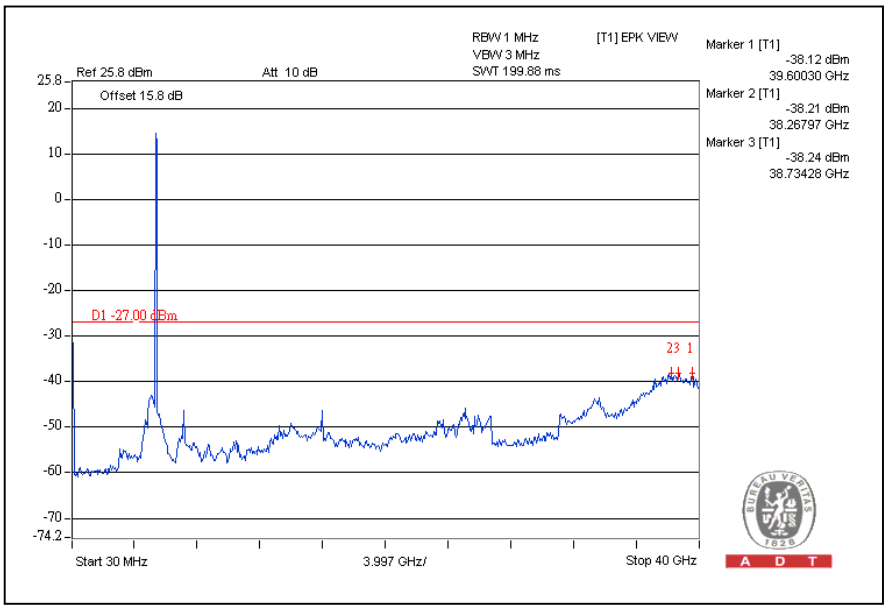




802.11n (20MHz) OFDM MODULATION:

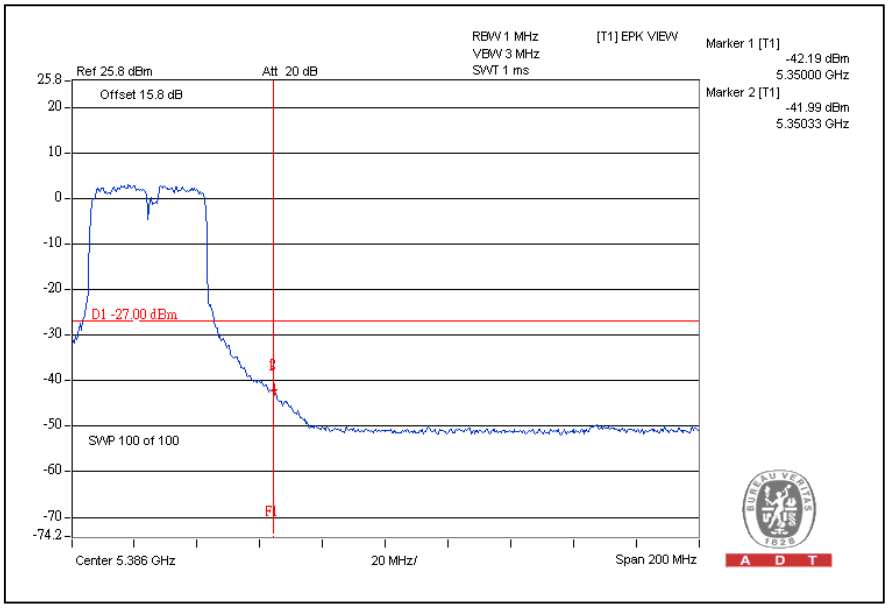
CH64

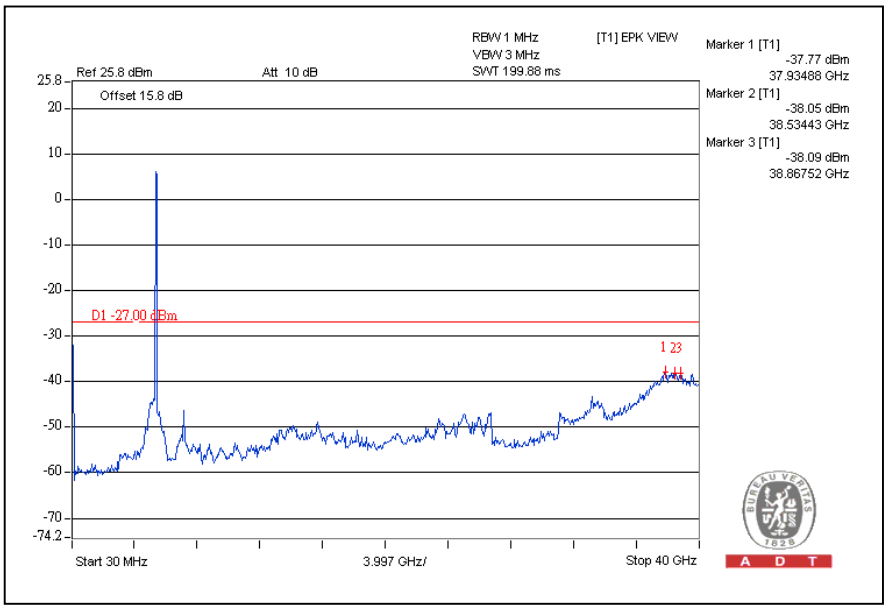




802.11n (40MHz) OFDM MODULATION:

CH62



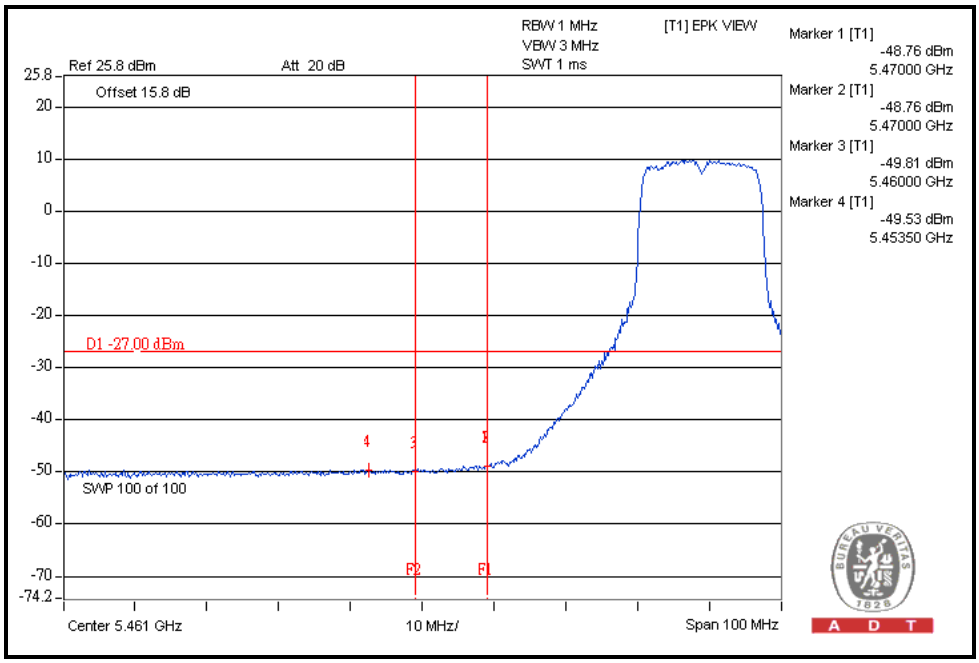


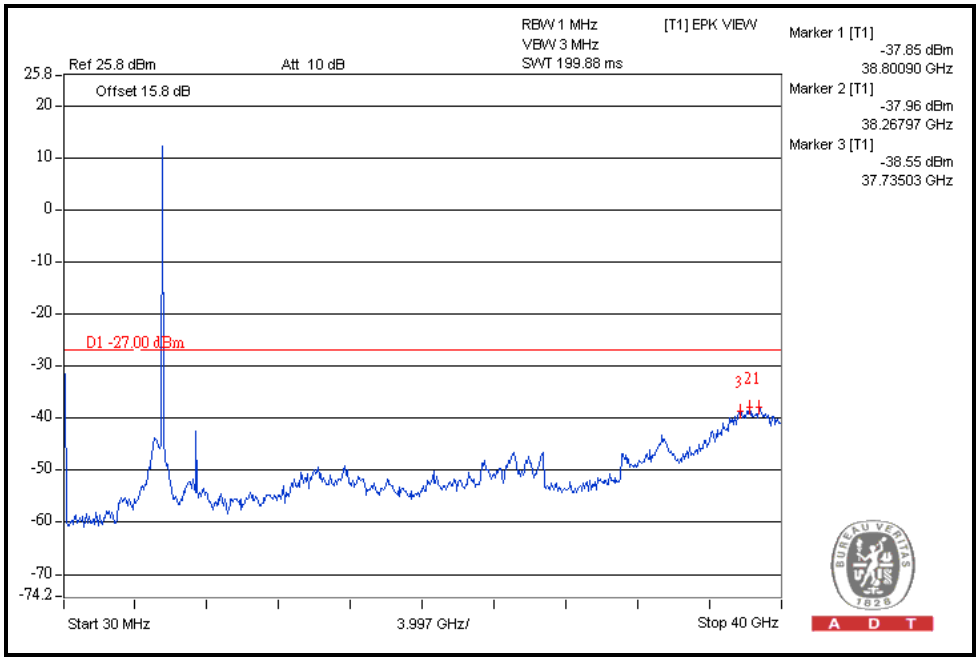
For 5.47 to 5.725GHz band:

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

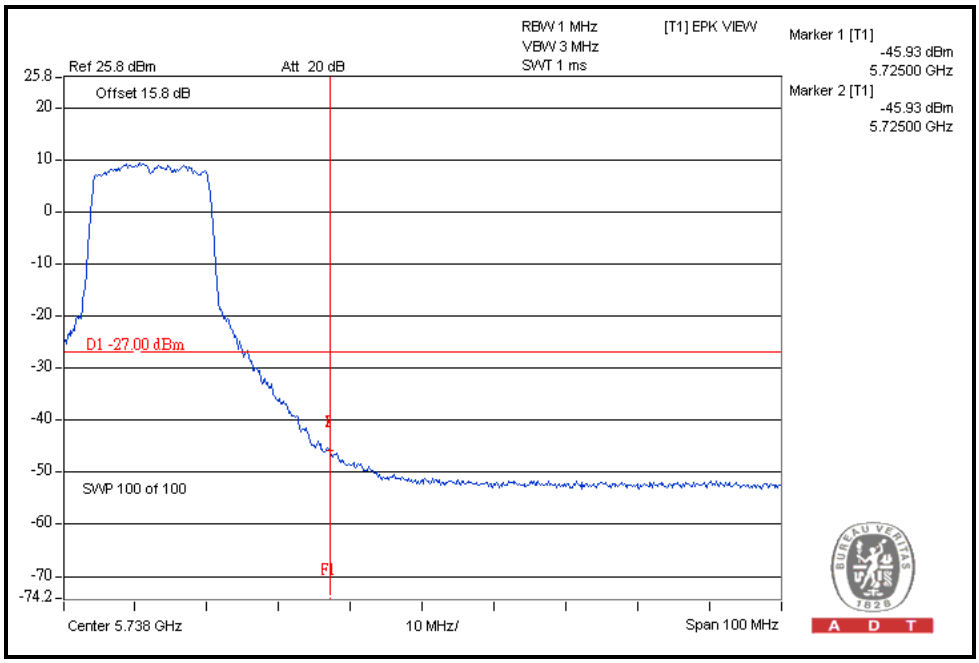
Performing measurements: Measure and add 10 log(N) dB
802.11a OFDM MODULATION

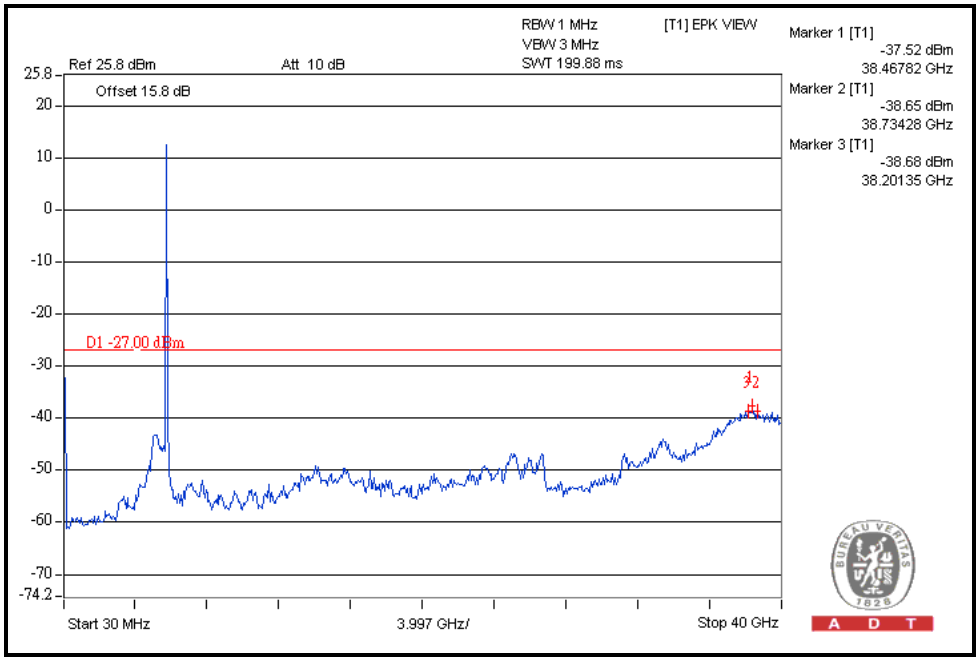
CH100





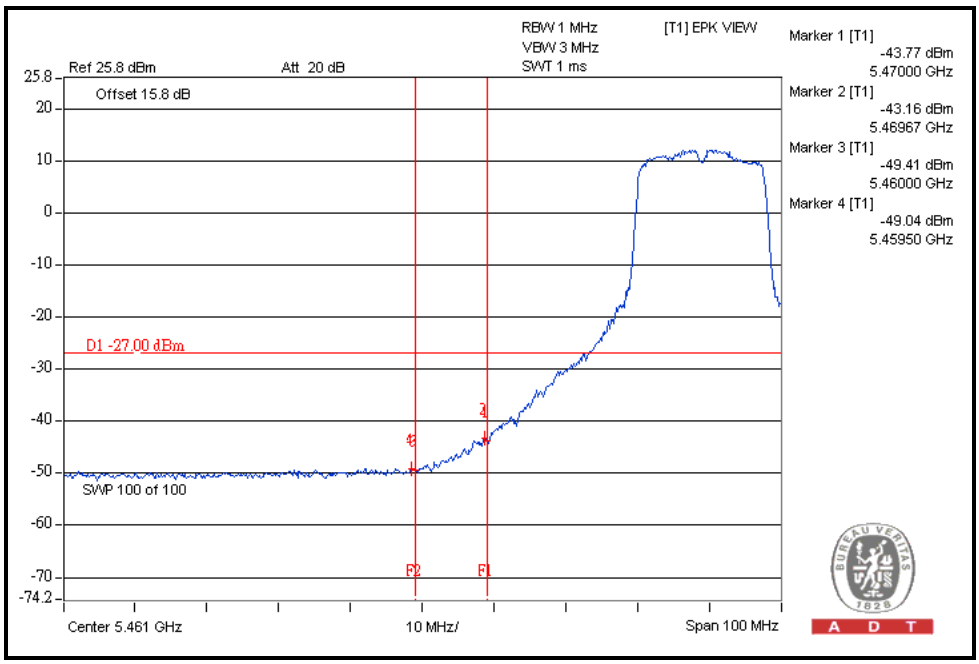
CH140

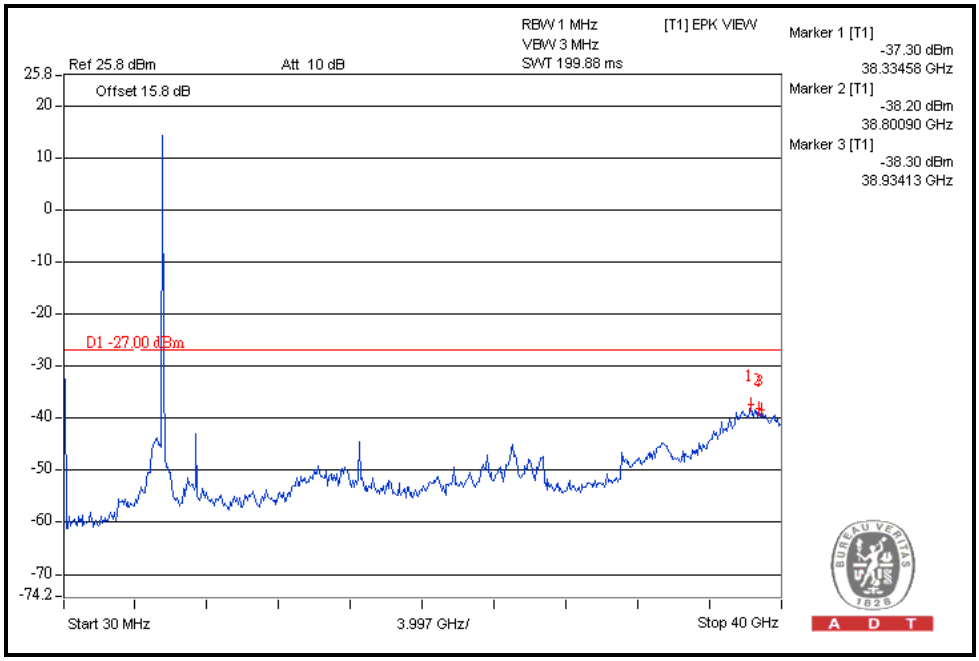

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] EPK VIEW
Marker 1 [T1]
-45.93 dBm
5.72500 GHz
Marker 2 [T1]
-45.93 dBm
5.72500 GHz
Ref 25.8 dBm
Att 20 dB
Offset 15.8 dB
25.8
20
10
0
-10
-20
-30
-40
-50
-60
-70
-74.2
D1 -27.00 dBm
SWP 100 of 100
Center 5.738 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 199.88 ms
[T1] EPK VIEW
Marker 1 [T1]
-37.52 dBm
38.46782 GHz
Marker 2 [T1]
-38.65 dBm
38.73428 GHz
Marker 3 [T1]
-38.68 dBm
38.20135 GHz
Ref 25.8 dBm
Att 10 dB
Offset 15.8 dB
25.8
20
10
0
-10
-20
-30
-40
-50
-60
-70
-74.2
D1 -27.00 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

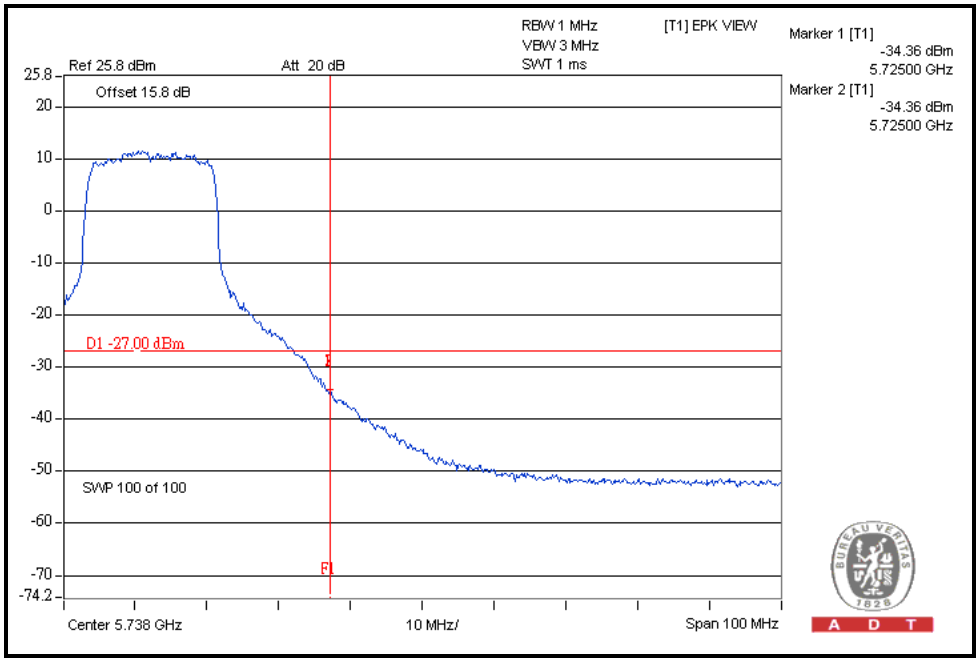
802.11n (20MHz) OFDM MODULATION:

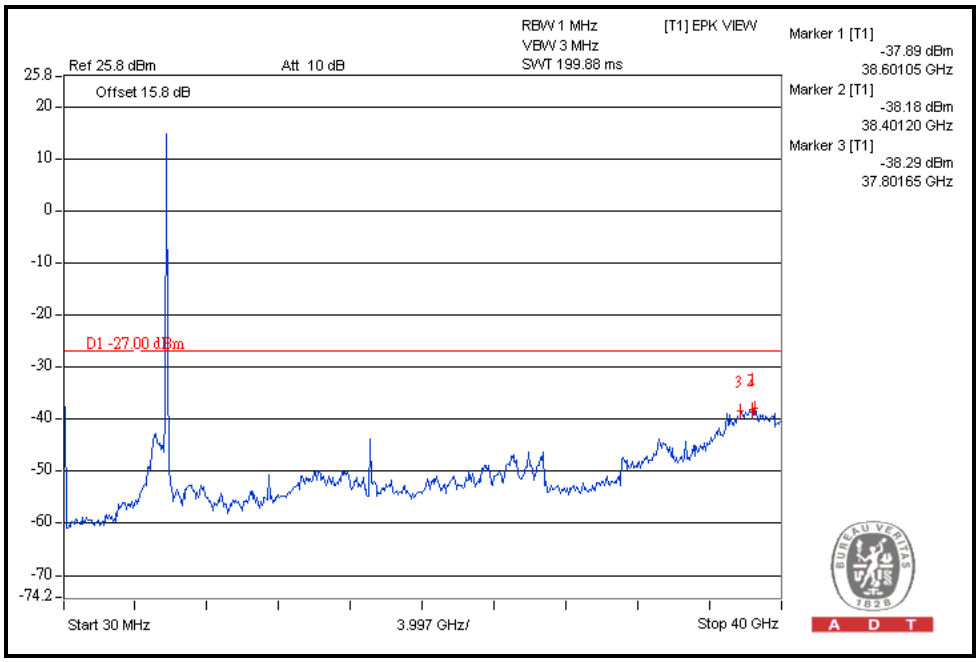
CH100





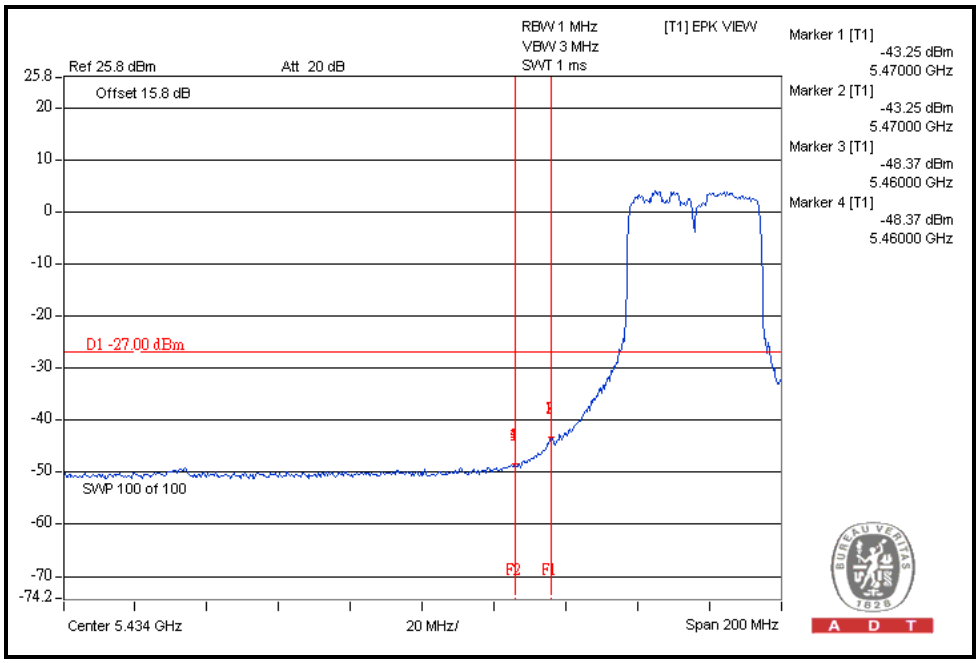
CH140

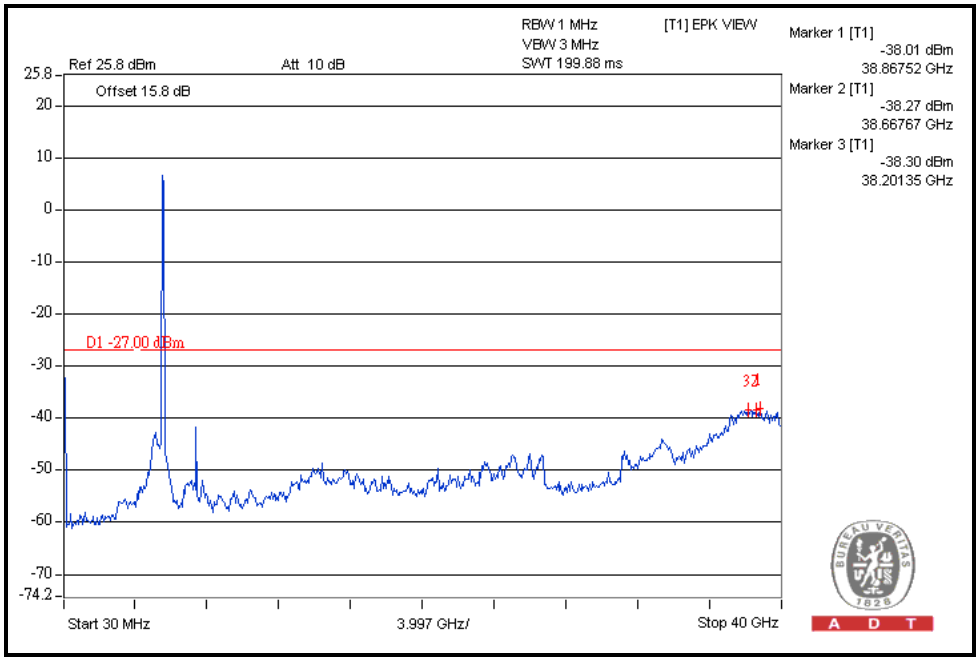

RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] EPK VIEW
Marker 1 [T1]
-34.36 dBm
5.72500 GHz
Marker 2 [T1]
-34.36 dBm
5.72500 GHz
Ref 25.8 dBm
Att 20 dB
Offset 15.8 dB
25.8
20
10
0
-10
-20
-30
-40
-50
-60
-70
-74.2
D1 -27.00 dBm
SWP 100 of 100
Center 5.738 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 3 MHz
SWT 199.88 ms
[T1] EPK VIEW
Marker 1 [T1]
-37.89 dBm
38.60105 GHz
Marker 2 [T1]
-38.18 dBm
38.40120 GHz
Marker 3 [T1]
-38.29 dBm
37.80165 GHz
Ref 25.8 dBm
Att 10 dB
Offset 15.8 dB
25.8
20
10
0
-10
-20
-30
-40
-50
-60
-70
-74.2
D1 -27.00 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

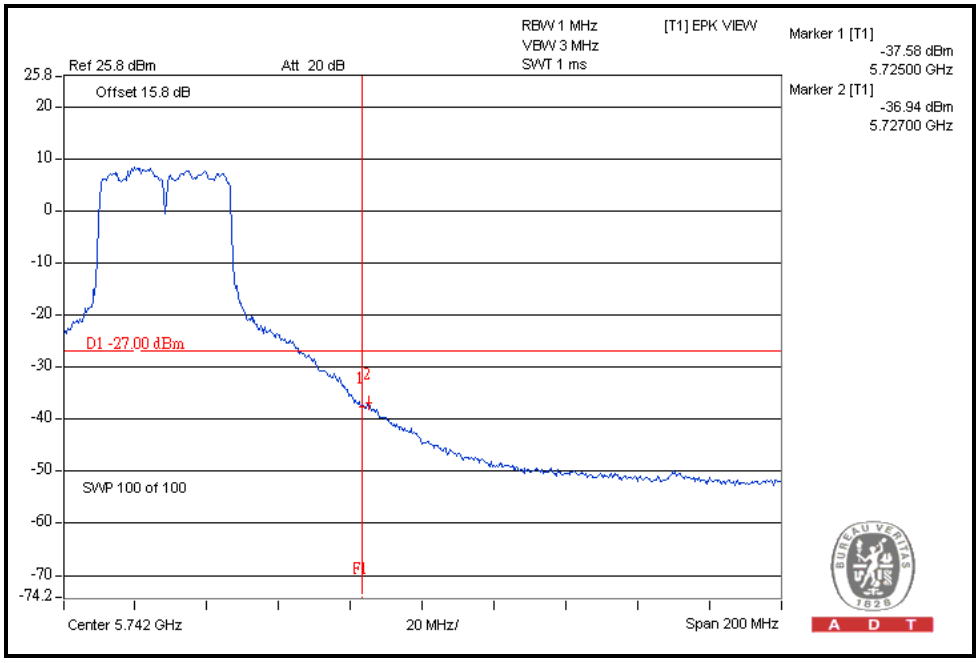
802.11n (40MHz) OFDM MODULATION:

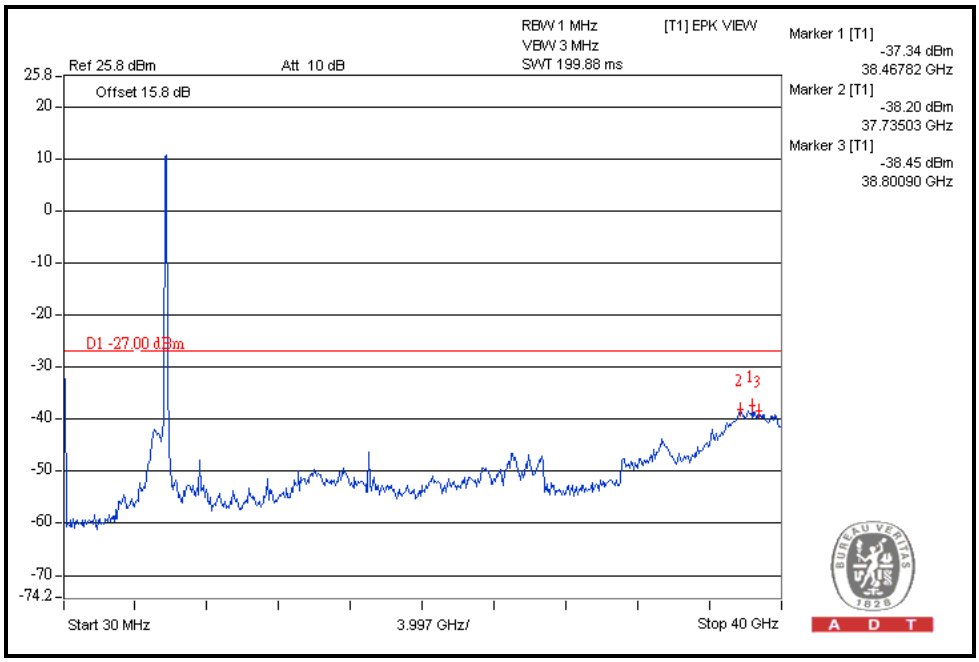
CH102





CH134


RBW 1 MHz
VBW 3 MHz
SWT 1 ms
[T1] EPK VIEW
Marker 1 [T1]
-37.58 dBm
5.72500 GHz
Marker 2 [T1]
-36.94 dBm
5.72700 GHz
Ref 25.8 dBm
Att 20 dB
Offset 15.8 dB
25.8
20
10
0
-10
-20
-30
-40
-50
-60
-70
-74.2
D1 -27.00 dBm
SWP 100 of 100
Center 5.742 GHz
20 MHz/
Span 200 MHz


RBW 1 MHz
VBW 3 MHz
SWT 199.88 ms
[T1] EPK VIEW
Marker 1 [T1]
-37.34 dBm
38.46782 GHz
Marker 2 [T1]
-38.20 dBm
37.73503 GHz
Marker 3 [T1]
-38.45 dBm
38.80090 GHz
Ref 25.8 dBm
Att 10 dB
Offset 15.8 dB
25.8
20
10
0
-10
-20
-30
-40
-50
-60
-70
-74.2
D1 -27.00 dBm
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 and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml.
If you have any comments, please feel free to contact us at the following:

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

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

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

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

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

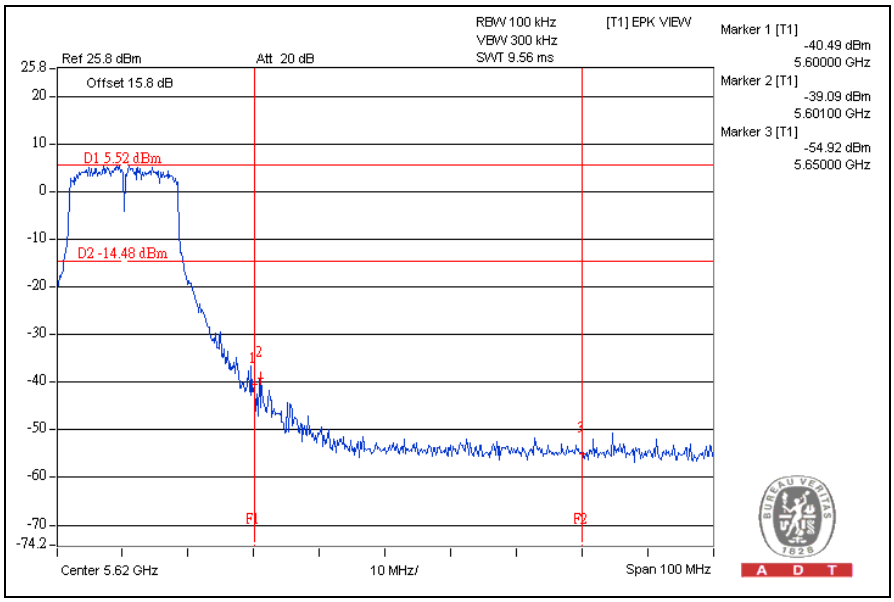
6.APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

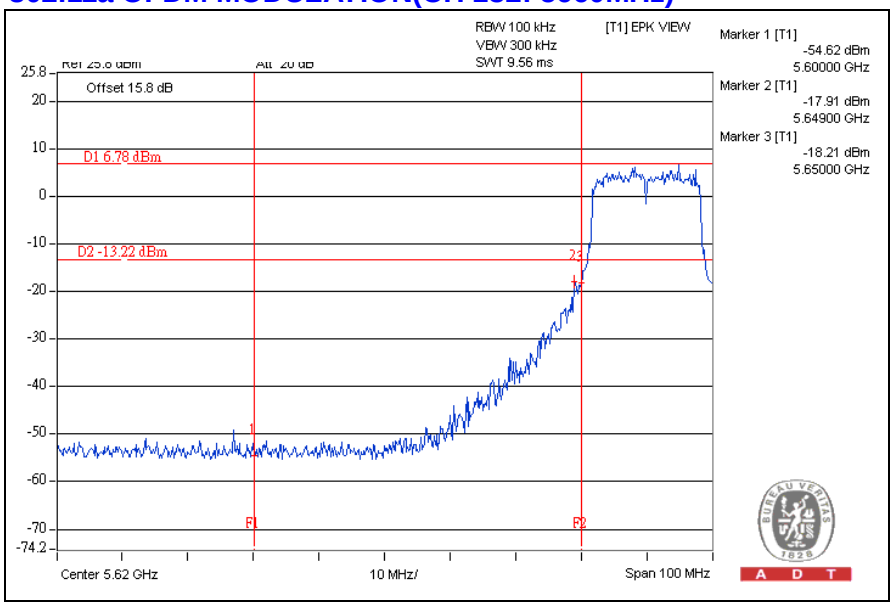
7. APPENDIX-B ADDITIONAL REQUIREMENTS FOR THE BAND 5600-5650MHz

7.1 FOR REFERENCE

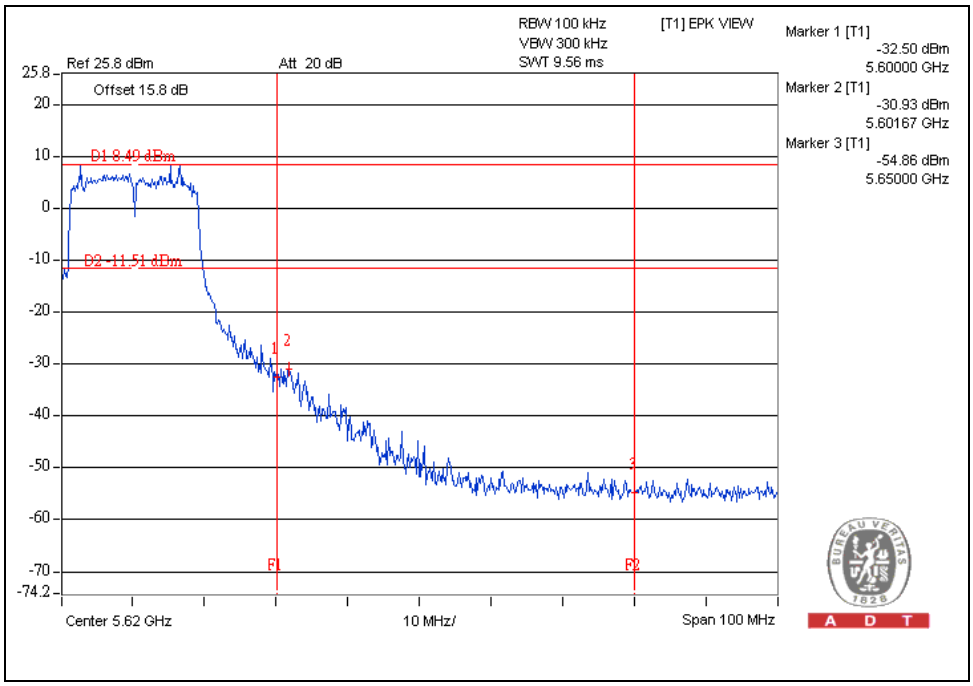
802.11a OFDM MODULATION (CH 116: 5580MHz)



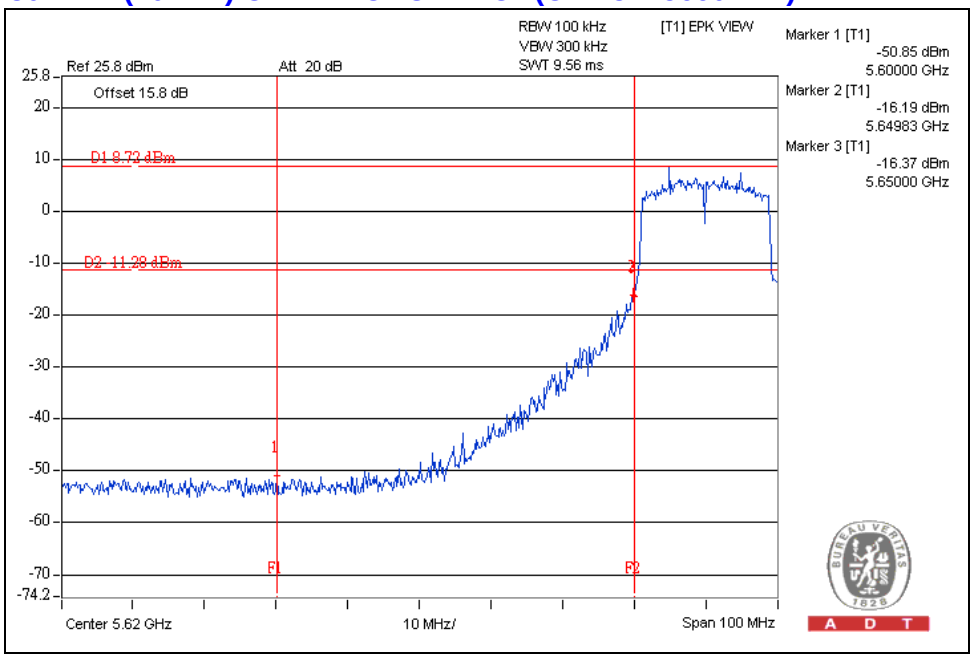
802.11a OFDM MODULATION(CH 132: 5660MHz)



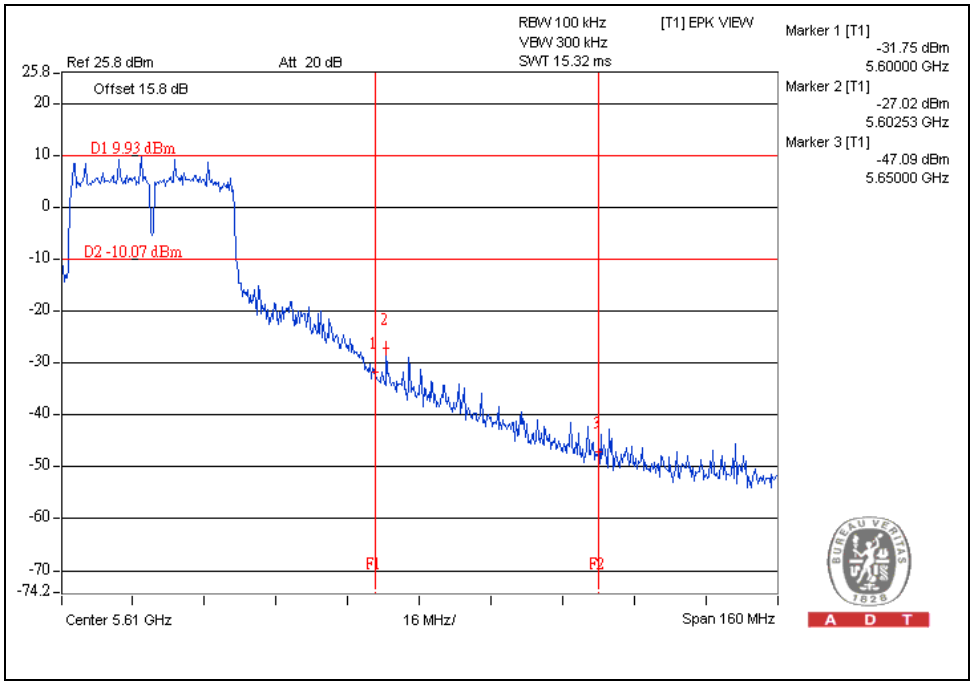
802.11n (20MHz) OFDM MODULATION(CH 116: 5580MHz)



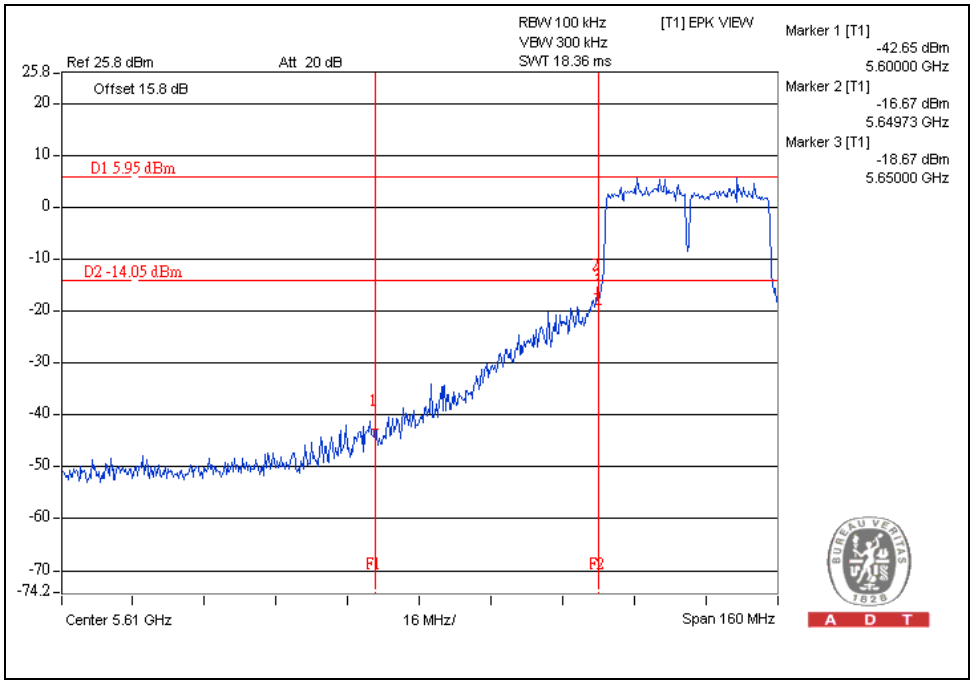
802.11n (20MHz) OFDM MODULATION(CH 132: 5660MHz)



802.11n (40MHz) OFDM MODULATION(CH 110: 5550MHz)



802.11n (40MHz) OFDM MODULATION(CH 134: 5670MHz)



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