FCC TEST REPORT (15.407)

REPORT NO.:	RF990810E06-1
MODEL NO.:	2100X
FCC ID:	TC22100X
RECEIVED:	Aug. 11, 2010
TESTED:	Aug. 24, 2010
ISSUED:	Sep. 06, 2010

APPLICANT:	Roku, LLC
ADDRESS:	19352 Hilton Rd Springdale, AR 72764

ISSUED BY:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS:	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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1. CERTIFICATION

PRODUCT:	IP Set Top Box
BRAND NAME:	RoKu
MODEL NO.:	2100X
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	Aug. 24, 2010
APPLICANT:	Roku, LLC
STANDARDS:	FCC Part 15, Subpart E (Section 15.407)
	ANSI C63.4-2003

The above equipment (Model: 2100X) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** Sep. 06, 2010
(Midoli Peng, Specialist)

TECHNICAL ACCEPTANCE : _____ , **DATE:** Sep. 06, 2010
(Hank Chung, Deputy Manager)

APPROVED BY : _____ , **DATE:** Sep. 06, 2010
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:
For 802.11a

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	**Test Type**	**Result**	**Remark**
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -11.99dB at 4.453MHz
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 -0.1dB at 5150.00MHz, 5470MHz & 5725MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

NOTE:

1. The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz and 5.47~5.725GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz RF parameters was recorded in another test report.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.3 dB
Radiated emissions (1GHz -18GHz)	2.19 dB
Radiated emissions (18GHz -40GHz)	2.55 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	IP Set Top Box
MODEL NO.	2100X
FCC ID	TC22100X
POWER SUPPLY	DC 5V from power 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 **802.11a/g**: 54/48/36/24/18/12/9/6Mbps **802.11n (20MHz, 800ns GI)**: 130 / 117 / 104 / 78 / 52 / 39 / 26/ 13 / 65 / 58.5 / 52 / 39 / 26 / 19.5 /13 / 6.5Mbps **802.11n (40MHz, 800ns GI)** : 270 / 243 / 216 / 162 / 108 /81 / 54 / 27 /135 / 121.5 / 108 / 81 /54 / 40.5 / 27 / 13.5Mbps
OPERATING FREQUENCY	**For 15.407** 802.11a: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz,5.50 ~ 5.70GHz
	For 15.247 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.745 ~ 5.825GHz
NUMBER OF CHANNEL	**For 15.407** 19 for 802.11a, 802.11n (20MHz) 9 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: 147.9mW 802.11n (20MHz): 119.1mW 802.11n (40MHz): 188.8mW **For 15.247(2.4GHz)** 802.11b: 234.4mW 802.11g: 883.7mW 802.11n (20MHz): 873.3mW 802.11n (40MHz): 317.1mW **For 15.247(5GHz)** 802.11a: 199.5mW 802.11n (20MHz): 413.1mW 802.11n (40MHz): 376.8mW
ANTENNA TYPE	Please see note 1
DATA CABLE	NA
I/O PORTS	USB port (USB 2.0) x 1 COMPNT VIDEO port (Y/Pb/Pr) x 1 OPTICAL AUDIO port x 1 HDMI port x 1 ETHERNET port x 1 VIDEO R-AUDIO-L port x 1(VIDEO(yellow), Right channel(Red), Left channel(White))
ASSOCIATED DEVICES	Remote control x 1

NOTE:

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

Chain	Antenna Type	Antenna Connector	Antenna Gain (dBi)	Frequency range (MHz to MHz)
Chain (0)	PCB Printed(Main)	NA	-1.51	2400 to 2483.5
	PCB Printed(Main)	NA	3.88	5150 to 5750
Chain (1)	PCB Printed(Aux)	NA	0.34	2400 to 2483.5
	PCB Printed(Aux)	NA	3.03	5150 to 5750

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

Adapter 1	
Brand:	RoKu
Model No.:	FA-0502500SU
Input power :	AC100-240V, 0.5A, 50/60Hz
Output power :	DC 5V, 2.5A DC output cable (Unshielded, 1.5m)
Adapter 2	
Brand:	RoKu
Model No.:	DSA-15P-05 US 050125
Input power :	AC100-240V, 0.5A, 50/60Hz
Output power :	DC 5V, 2.5A DC output cable (Unshielded, 1.8m)

For radiated test, the EUT was pre-tested with above adapters, the worse case was found in adapter 2. Therefore only the test data of the adapter was recorded in this report.

3. The EUT incorporates a MIMO function with 802.11n. Physically, the EUT provides two completed transmitters and two completed receivers.

4. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 PCB Printed antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas. The 11a/b legacy mode is limited to single transmitter only.

5. The EUT complies with 802.11n standards and backwards compatible with 802. 11a, 802.11b, 802.11g products.

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

3.2 DESCRIPTION OF TEST MODES

Operated in 5150MHz ~ 5350MHz bands:

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

CHANNEL	FREQUENCY
36	5180 MHz
40	5200 MHz
44	5220 MHz
48	5240 MHz
52	5260 MHz
56	5280 MHz
60	5300 MHz
64	5320 MHz

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

CHANNEL	FREQUENCY
38	5190 MHz
46	5230 MHz
54	5270 MHz
62	5310 MHz

Operated in 5470MHz ~ 5725MHz bands:

Eleven 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
120	5600 MHz
124	5620 MHz
128	5640 MHz
132	5660 MHz
136	5680 MHz
140	5700 MHz

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

CHANNEL	FREQUENCY
102	5510 MHz
110	5550 MHz
118	5590 MHz
126	5630 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	
1	√				With adapter 1
2	√	√	√	√	With 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

ANTENNA COMBINATION MODE:

COMBINATION MODE	OPERATION MODE	TX CHAIN(0)	TX CHAIN(1)
A	**802.11 a**	√	
B	802.11 a		√
C	**802.11n (20MHz) for MCS 0~15**	√	√
D	**802.11n (40MHz) for MCS 0~15**	√	√

Note:
1. The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
2. Mode A, C and D the worst modes, were selected as representative mode for the report.

POWER LINE CONDUCTED EMISSION TEST:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (MBPS)	COMBINATION MODE
Worst Channel	-	-	-	-	-	-

RADIATED EMISSION TEST (BELOW 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11n (20MHz)	36 to 140	60	OFDM	BPSK	6.5	C

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11a	36 to 140	36, 40, 48, 52, 60, 64, 100, 120, 140	OFDM	BPSK	6	A
802.11n (20MHz)	36 to 140	36, 40, 48, 52, 60, 64, 100, 100, 120, 140	OFDM	BPSK	6.5	C
802.11n (40MHz)	38 to 134	38,46, 54, 62, 102, 118, 134	OFDM	BPSK	13.5	D

CONDUCTED OUT-BAND EMISSION MEASUREMENT:

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11a	36 to 140	36, 64, 100, 140	OFDM	BPSK	6	A
802.11n (20MHz)	36 to 140	36, 64, 100, 140	OFDM	BPSK	6.5	C
802.11n (40MHz)	38 to 134	38, 62, 102, 134	OFDM	BPSK	13.5	D

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

ANTENNA PORT CONDUCTED MEASUREMENT:

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

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	COMBINATION MODE
802.11a	36 to 140	36, 40, 48, 52, 60, 64, 100, 120, 140	OFDM	BPSK	6	A
802.11n (20MHz)	36 to 140	36, 40, 48, 52, 60, 64, 100, 100, 120, 140	OFDM	BPSK	6.5	C
802.11n (40MHz)	38 to 134	38,46, 54, 62, 102, 118, 134	OFDM	BPSK	13.5	D

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

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE≥1G	28deg. C, 72%RH, 1013 hPa	120Vac, 60Hz	Duke Tseng
RE<1G	28deg. C, 72%RH, 1013 hPa	120Vac, 60Hz	Rex Huang
PLC	26deg. C, 66%RH, 1013 hPa	120Vac, 60Hz	Max Tseng
APCM	25deg. C, 60%RH, 1013 hPa	120Vac, 60Hz	Wen Yu

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)

ANSI C63.4-2003

All test items have been performed and recorded as per the above standards.

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

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

For conducted test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	D600	CN-0G5152-48643 -47H-7672	NA
2	TV MONITOR	Panasonic	TH-L26K10W	9540684	NA
3	TV MONITOR	Toshiba	21D7GT	87000018	NA
4	LCD MONITOR	DELL	U2410F	CNOJ257M728729 AG159L	FCC DoC
5	SPEAKERS	J-S	JY2003	090404619	FCC DoC
6	USB AUDIO 8 SOUND CARD	CASE	DSA-0101F-05 UP	5204	NA
7	USB Flash Drive	SanDisk	SDCZ2-512-A10	5482374371	FCC DoC

For conducted test	
No.	Signal cable description
1	UTP cable (10m)
2	HDMI cable (1.5m)
3	Y/Pb/Pr cable (1.8m)
4	AV cable (1.8m)
5	NA
6	Fiber cable (1 m)
7	NA

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

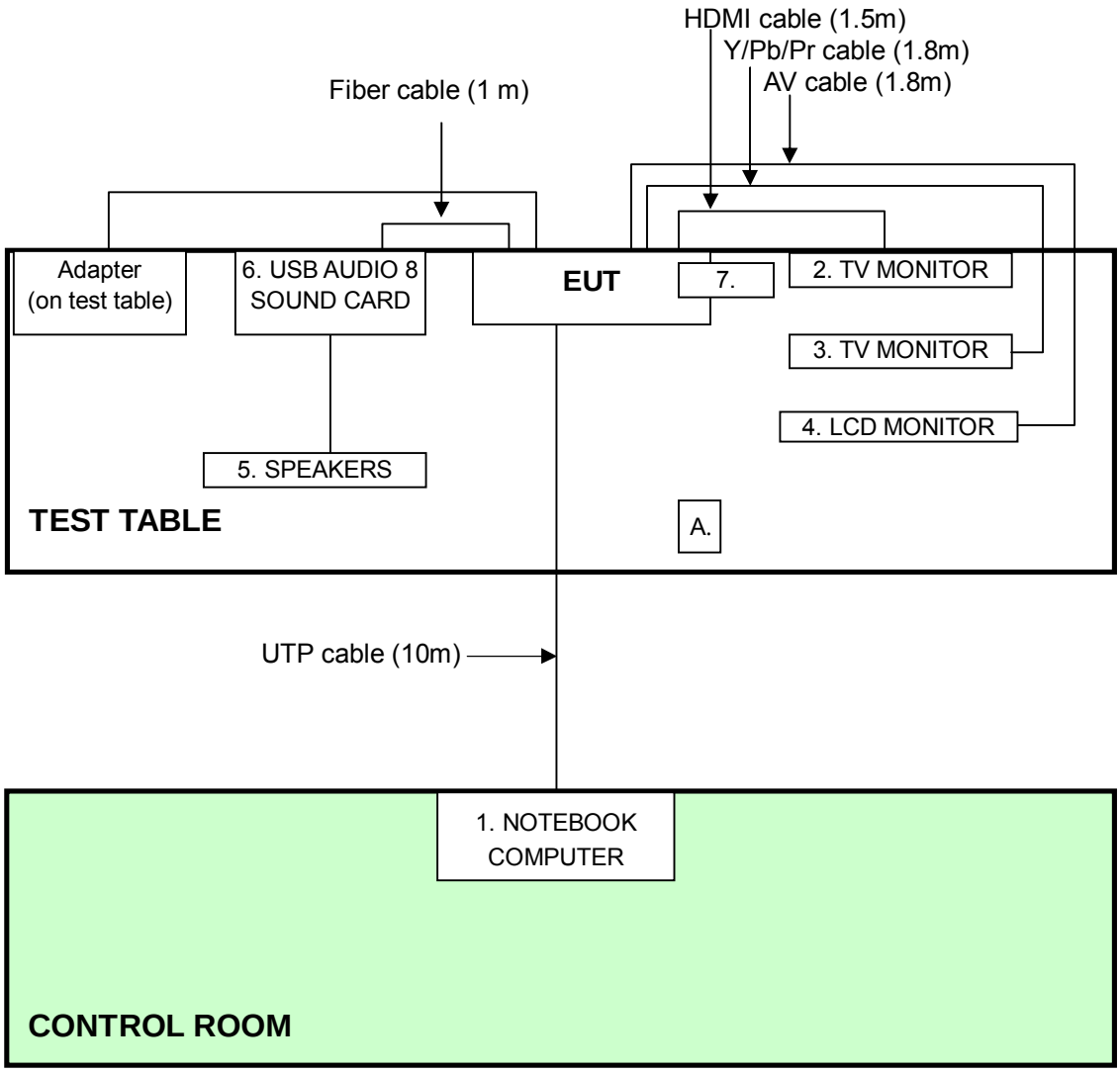
For other test items					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	D600	CN-0G5152-48643 -47H-7672	NA
2	TV MONITOR	Panasonic	TH-L26K10W	9540684	NA
3	LCD MONITOR	DELL	U2410F	CNOJ257M728729 AG14ML	FCC DoC
4	LCD MONITOR	DELL	U2410F	CNOJ257M728729 AG159L	FCC DoC
5	SPEAKERS	J-S	JY2003	090404619	FCC DoC
6	SPEAKERS	J-S	JY2003	090404576	FCC DoC
7	USB AUDIO 8 SOUND CARD	CASE	DSA-0101F-05 UP	5204	NA
8	USB Flash Drive	SanDisk	SDCZ2-512-A10	5482374371	FCC DoC

For other test items	
No.	Signal cable description
1	UTP cable (10m)
2	HDMI cable (1.5m)
3	Y/Pb/Pr cable (1.8m)
4	AV cable (1.8m)
5	NA
6	NA
7	Fiber cable (1 m)
8	NA

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

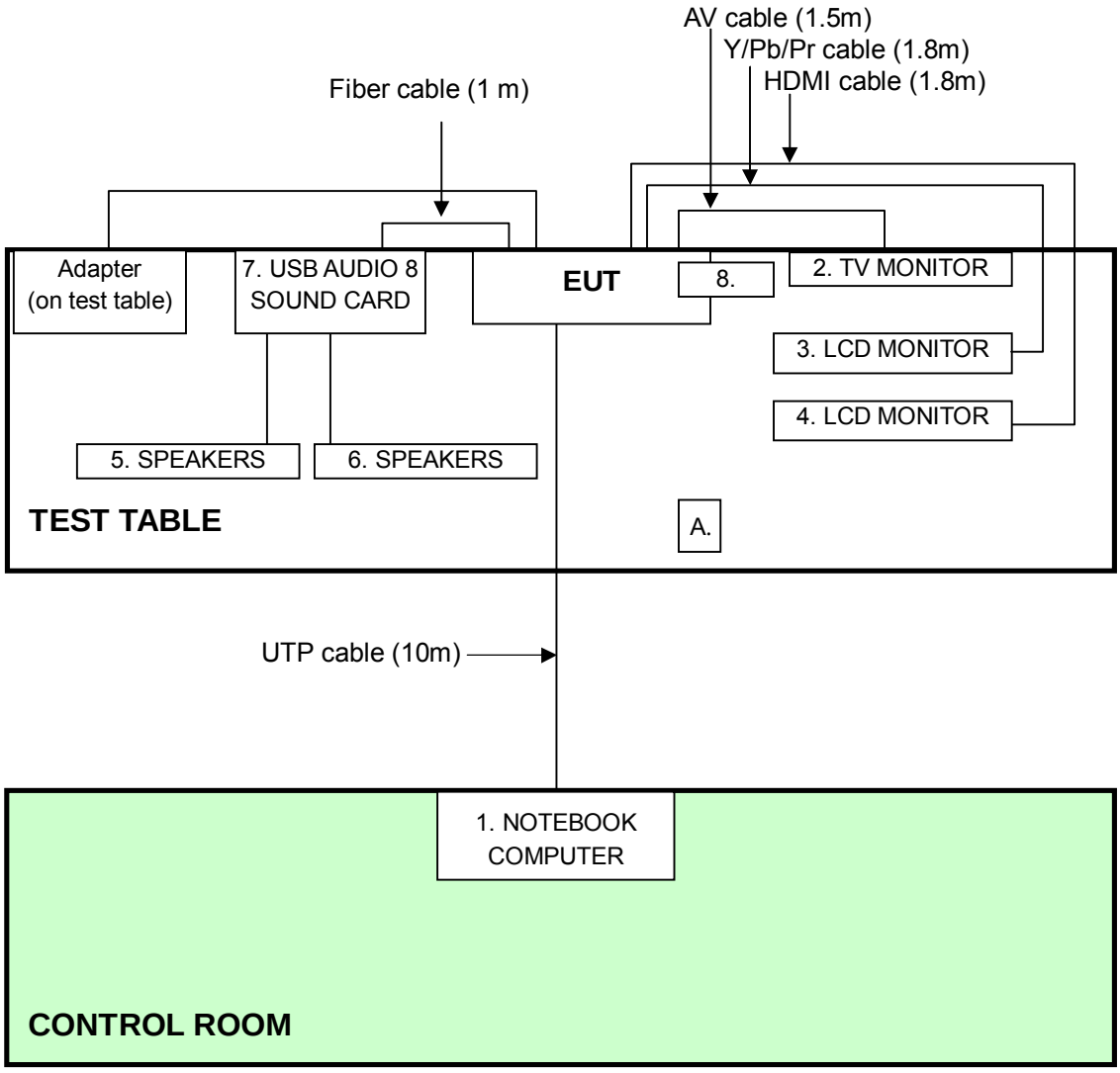
3.5 CONFIGURATION OF SYSTEM UNDER TEST

For conducted test:



NOTE: 1. Item A is the remote control of the EUT.
2. Item 7 is USB Flash Drive.

For other test items :



NOTE: 1. Item A is the remote control of the EUT.
2. Item 8 is USB Flash Drive.

4.TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 01, 2010	Feb. 28, 2011
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 23, 2009	Sep. 22, 2010
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 11, 2010	June 10, 2011
RF Cable (JYEBAO)	5DFB	COACAB-001	Dec. 14, 2009	Dec. 13, 2010
50 ohms Terminator	50	3	Oct. 28, 2009	Oct. 27, 2010
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. A.
3 The VCCI Con A Registration No. is C-817.

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.

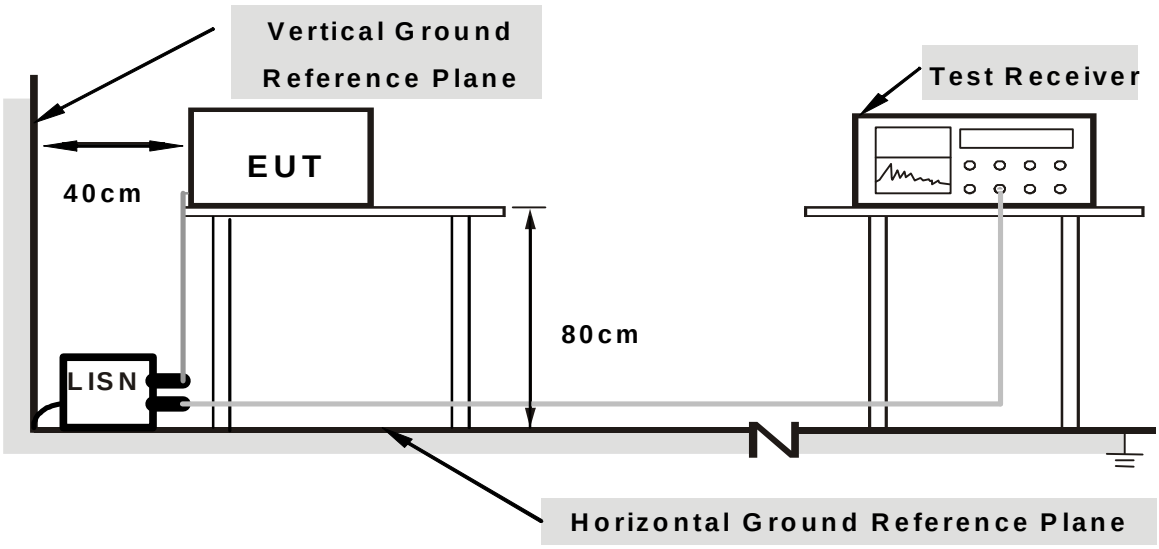
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

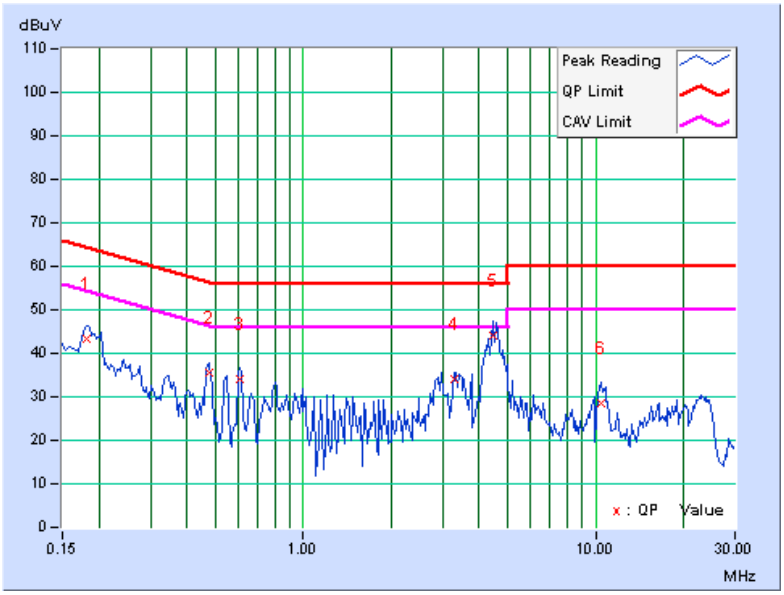
1. Turned on the power of all equipment.
2. Prepared other computer system (support unit 1) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “Telnet Broadcom command.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.
4. Support unit 1 (NB) sends video/Audio messages to Support units 2, 3 & 4 (TV*2 / LCD monitor) / Support unit 5 (speaker) via EUT.
5. Support unit 1 (NB) ran ”Telnet command.exe” to R/W from Support unit 7 (USB Flash Drive) via EUT.

4.1.7 TEST RESULTS

TEST MODE	With adapter 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	0.181	0.04	43.18	28.85	43.22	28.89	64.43	54.43	-21.21	-25.54
2	0.474	0.07	35.54	29.11	35.61	29.18	56.44	46.44	-20.83	-17.26
3	0.607	0.11	34.08	30.36	34.19	30.47	56.00	46.00	-21.81	-15.53
4	3.297	0.20	33.82	19.90	34.02	20.10	56.00	46.00	-21.98	-25.90
5	**4.453**	**0.22**	**43.79**	**28.44**	**44.01**	**28.66**	**56.00**	**46.00**	**-11.99**	**-17.34**
6	10.512	0.58	27.90	19.62	28.48	20.20	60.00	50.00	-31.52	-29.80

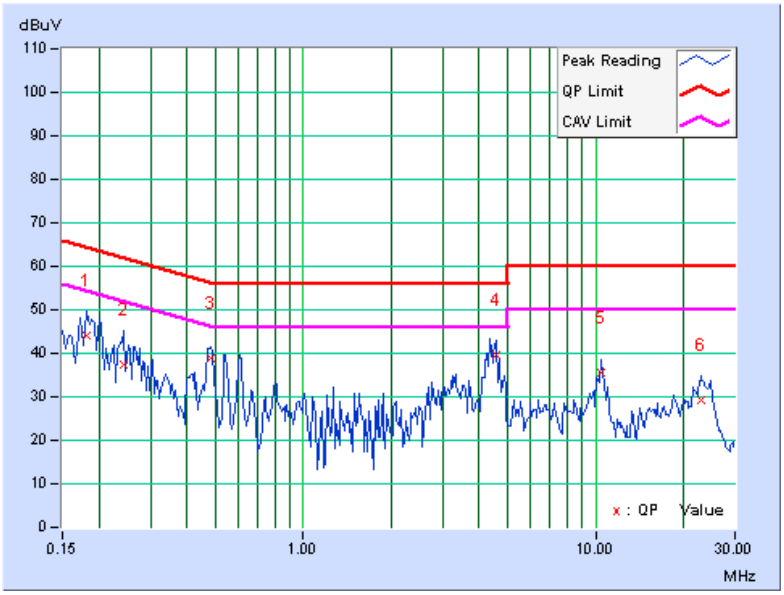
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST MODE	With adapter 1		
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	0.181	0.05	44.10	29.99	44.15	30.04	64.43	54.43	-20.28	-24.39
2	0.244	0.05	37.43	24.43	37.48	24.48	61.97	51.97	-24.49	-27.49
3	0.482	0.08	38.86	34.98	38.94	35.06	56.30	46.30	-17.36	-11.24
4	4.559	0.25	39.29	24.59	39.54	24.84	56.00	46.00	-16.46	-21.16
5	10.430	0.59	35.14	30.65	35.73	31.24	60.00	50.00	-24.27	-18.76
6	22.895	0.65	28.51	20.37	29.16	21.02	60.00	50.00	-30.84	-28.98

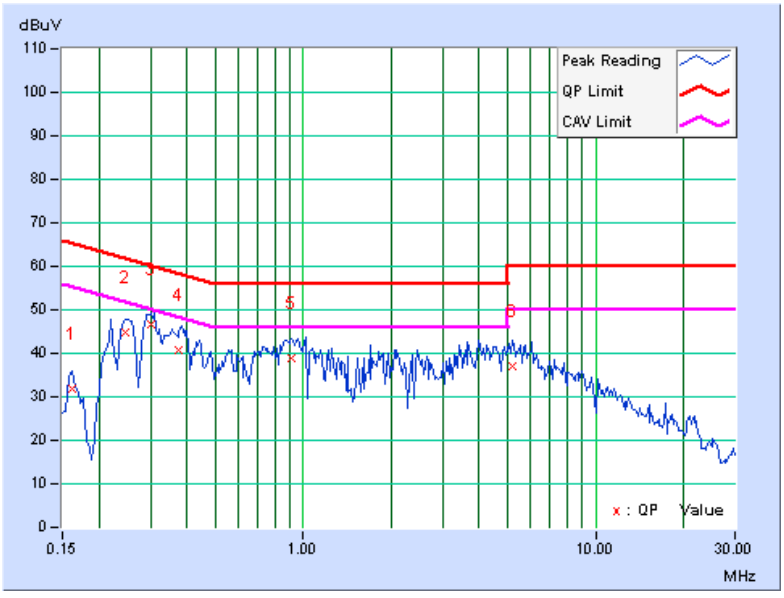
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST MODE	With adapter 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	0.162	0.04	31.98	21.32	32.02	21.36	65.38	55.38	-33.36	-34.02
2	0.248	0.04	44.77	33.34	44.81	33.38	61.84	51.84	-17.02	-18.45
3	0.303	0.05	46.44	34.88	46.49	34.93	60.17	50.17	-13.69	-15.25
4	0.377	0.05	40.54	27.94	40.59	27.99	58.35	48.35	-17.77	-20.37
5	0.912	0.19	38.63	26.78	38.82	26.97	56.00	46.00	-17.18	-19.03
6	5.203	0.27	36.85	28.47	37.12	28.74	60.00	50.00	-22.88	-21.26

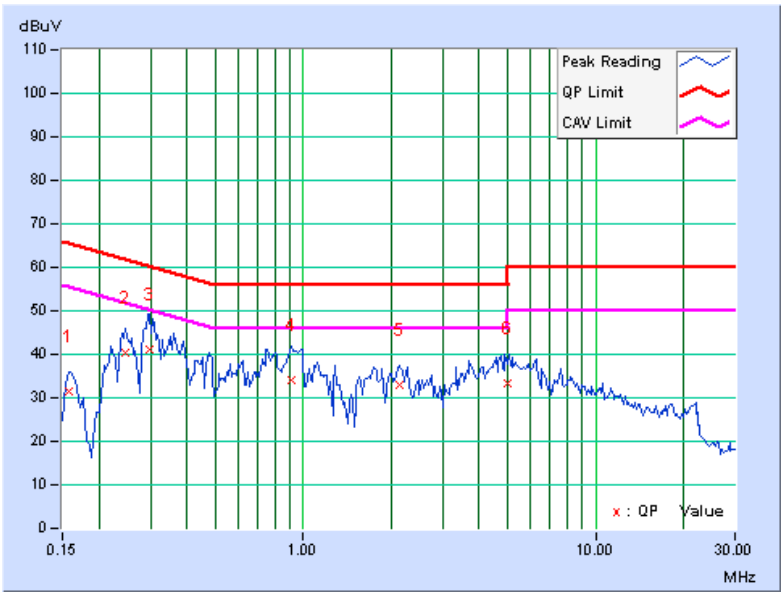
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST MODE	With adapter 2		
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	0.158	0.05	31.32	10.55	31.37	10.60	65.58	55.58	-34.21	-44.98
2	0.248	0.05	40.46	28.08	40.51	28.13	61.84	51.84	-21.32	-23.70
3	0.298	0.05	41.13	28.00	41.18	28.05	60.29	50.29	-19.10	-22.23
4	0.908	0.20	33.83	21.53	34.03	21.73	56.00	46.00	-21.97	-24.27
5	2.133	0.24	32.90	22.90	33.14	23.14	56.00	46.00	-22.86	-22.86
6	5.000	0.27	33.22	25.39	33.49	25.66	56.00	46.00	-22.51	-20.34

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



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

4.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

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

NOTE:

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

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

4.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 02, 2010	Aug. 01, 2011
Agilent Pre-Selector	N9039A	MY46520311	July 14, 2010	July 13, 2011
Agilent Signal Generator	N5181A	MY49060517	July 14, 2010	July 13, 2011
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 18, 2009	Nov. 17, 2010
Agilent Pre-Amplifier	8449B	3008A02578	July 05, 2010	July 04, 2011
Miteq Pre-Amplifier	AFS33-18002650-30-8P-44	881786	NA	NA
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Sep. 30, 2009	Sep. 29, 2010
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 16, 2009	Nov. 15, 2010
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Sep. 30, 2009	Sep. 29, 2010
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 24, 2009	Dec. 23, 2010
RF Cable	NA	CHGCAB_001	NA	NA
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

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

4.2.4 TEST PROCEDURES

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

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

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

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

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

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

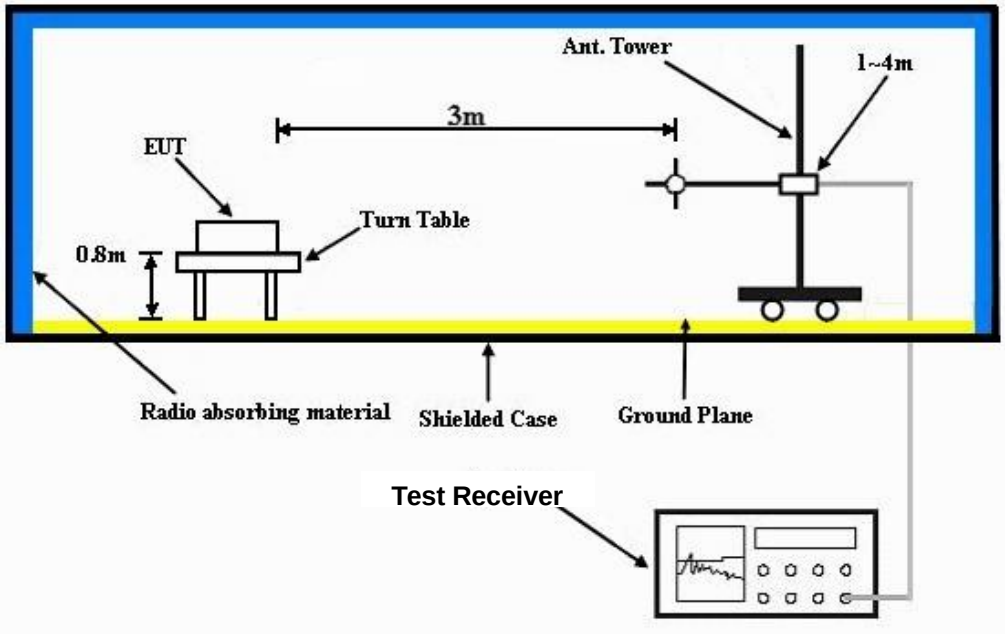
NOTE:

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

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



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

4.2.7 EUT OPERATING CONDITION

1. Turned on the power of all equipment.
2. Prepared other computer system (support unit 1) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “Telnet Broadcom command.exe” to enable EUT under transmission/receiving condition continuously at specific channel frequency.
4. Support unit 1 (NB) sends video/Audio messages to Support units 2, 3 & 4 (TV / LCD monitor *2) / Support units 5 & 6 (speaker) via EUT.
5. Support unit 1 (NB) ran ”Telnet command.exe” to R/W from Support unit 8 (USB Flash Drive) via EUT.

4.2.8 TEST RESULTS

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 60	FREQUENCY RANGE	Below 1000MHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Rex Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	120.00	37.5 QP	43.5	-6.0	1.80 H	255	25.06	12.46
2	245.00	39.1 QP	46.0	-6.9	1.25 H	55	26.22	12.92
3	350.00	41.3 QP	46.0	-4.7	1.25 H	150	25.01	16.29
4	595.23	42.5 QP	46.0	-3.5	1.80 H	300	20.61	21.86
5	936.42	40.6 QP	46.0	-5.4	1.50 H	360	14.03	26.53
6	989.25	27.0 QP	54.0	-27.0	2.10 H	35	0.00	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	37.50	37.6 QP	40.0	-2.4	1.00 V	275	23.99	13.57
2	80.23	36.5 QP	40.0	-3.5	1.50 V	350	27.28	9.18
3	116.00	38.5 QP	43.5	-5.0	1.50 V	200	26.69	11.81
4	160.00	40.3 QP	43.5	-3.2	1.50 V	180	25.81	14.50
5	350.60	41.8 QP	46.0	-4.2	1.25 V	300	25.52	16.30
6	1000.00	49.6 QP	54.0	-4.4	1.25 V	350	22.48	27.08

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

ABOVE 1GHz WORST-CASE DATA

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.0 PK	74.0	-5.0	1.02 H	109	29.06	39.94
2	5150.00	53.1 AV	54.0	-0.9	1.02 H	109	13.16	39.94
3	*5180.00	111.4 PK			1.04 H	110	71.38	40.02
4	*5180.00	101.6 AV			1.04 H	110	61.58	40.02
5	#10360.00	58.4 PK	68.3	-9.9	1.62 H	114	11.87	46.53
6	15540.00	62.2 PK	74.0	-11.8	1.34 H	286	10.83	51.37
7	15540.00	50.1 AV	54.0	-3.9	1.34 H	286	-1.27	51.37
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.0 PK	74.0	-3.0	1.03 V	342	31.06	39.94
2	5150.00	53.6 AV	54.0	-0.4	1.03 V	342	13.66	39.94
3	*5180.00	112.4 PK			1.03 V	342	72.38	40.02
4	*5180.00	102.5 AV			1.03 V	342	62.48	40.02
5	#10360.00	56.2 PK	68.3	-12.1	1.81 V	295	9.67	46.53
6	15540.00	61.4 PK	74.0	-12.6	1.24 V	262	10.03	51.37
7	15540.00	49.6 AV	54.0	-4.4	1.24 V	262	-1.77	51.37

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.0 PK	74.0	-7.0	1.02 H	108	27.06	39.94
2	5150.00	52.6 AV	54.0	-1.4	1.02 H	108	12.66	39.94
3	*5200.00	111.2 PK			1.02 H	108	71.13	40.07
4	*5200.00	100.8 AV			1.02 H	108	60.73	40.07
5	#10400.00	60.9 PK	68.3	-7.4	1.57 H	111	14.33	46.57
6	15600.00	63.8 PK	74.0	-10.2	1.50 H	246	12.33	51.47
7	15600.00	51.3 AV	54.0	-2.7	1.50 H	246	-0.17	51.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	112.1 PK			1.04 V	348	72.03	40.07
2	*5200.00	102.2 AV			1.04 V	348	62.13	40.07
3	#10400.00	58.1 PK	68.3	-10.2	1.94 V	307	11.53	46.57
4	15600.00	61.8 PK	74.0	-12.2	1.37 V	246	10.33	51.47
5	15600.00	50.5 AV	54.0	-3.5	1.37 V	246	-0.97	51.47

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	111.1 PK			1.01 H	107	70.93	40.17
2	*5240.00	100.5 AV			1.01 H	107	60.33	40.17
3	#10480.00	58.9 PK	68.3	-9.4	1.56 H	106	12.23	46.67
4	15720.00	64.9 PK	74.0	-9.1	1.35 H	240	13.39	51.51
5	15720.00	52.0 AV	54.0	-2.0	1.35 H	240	0.49	51.51
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	112.5 PK			1.03 V	346	72.33	40.17
2	*5240.00	102.3 AV			1.03 V	346	62.13	40.17
3	#10480.00	58.4 PK	68.3	-9.9	1.76 V	305	11.73	46.67
4	15720.00	62.1 PK	74.0	-11.9	1.19 V	248	10.59	51.51
5	15720.00	50.2 AV	54.0	-3.8	1.19 V	248	-1.31	51.51

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

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	116.8 PK			1.00 H	63	76.57	40.23
2	*5260.00	106.3 AV			1.00 H	63	66.07	40.23
3	#10520.00	57.7 PK	68.3	-10.6	1.55 H	106	10.98	46.72
4	15780.00	65.0 PK	74.0	-9.0	1.35 H	241	13.42	51.58
5	15780.00	52.3 AV	54.0	-1.7	1.35 H	241	0.72	51.58
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	118.7 PK			1.02 V	348	78.47	40.23
2	*5260.00	108.2 AV			1.02 V	348	67.97	40.23
3	#10520.00	57.8 PK	68.3	-10.5	1.82 V	318	11.08	46.72
4	15780.00	63.2 PK	74.0	-10.8	1.16 V	251	11.62	51.58
5	15780.00	51.4 AV	54.0	-2.6	1.16 V	251	-0.18	51.58

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	116.7 PK			1.00 H	64	76.37	40.33
2	*5300.00	106.5 AV			1.00 H	64	66.17	40.33
3	10600.00	58.1 PK	74.0	-15.9	1.54 H	107	11.28	46.82
4	10600.00	45.8 AV	54.0	-8.2	1.54 H	107	-1.02	46.82
5	15900.00	64.8 PK	74.0	-9.2	1.51 H	105	13.14	51.66
6	15900.00	51.9 AV	54.0	-2.1	1.51 H	105	0.24	51.66
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	118.5 PK			1.02 V	348	78.17	40.33
2	*5300.00	108.4 AV			1.02 V	348	68.07	40.33
3	10600.00	57.7 PK	74.0	-16.3	1.71 V	317	10.88	46.82
4	10600.00	45.6 AV	54.0	-8.4	1.71 V	317	-1.22	46.82
5	15900.00	63.0 PK	74.0	-11.0	1.14 V	242	11.34	51.66
6	15900.00	51.0 AV	54.0	-3.0	1.14 V	242	-0.66	51.66

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	109.8 PK			1.00 H	64	69.41	40.39
2	*5320.00	99.5 AV			1.00 H	64	59.11	40.39
3	5350.00	67.3 PK	74.0	-6.7	1.02 H	111	26.83	40.47
4	5350.00	51.5 AV	54.0	-2.5	1.02 H	111	11.03	40.47
5	10640.00	57.2 PK	74.0	-16.8	1.53 H	142	10.33	46.87
6	10640.00	45.6 AV	54.0	-8.4	1.53 H	142	-1.27	46.87
7	15960.00	61.9 PK	74.0	-12.1	1.16 H	217	10.17	51.73
8	15960.00	49.4 AV	54.0	-4.6	1.16 H	217	-2.33	51.73
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	111.9 PK			1.02 V	348	71.51	40.39
2	*5320.00	102.0 AV			1.02 V	348	61.61	40.39
3	5350.00	68.3 PK	74.0	-5.7	1.02 V	348	27.83	40.47
4	5350.00	53.8 AV	54.0	-0.2	1.02 V	348	13.33	40.47
5	10640.00	56.3 PK	74.0	-17.7	1.69 V	315	9.43	46.87
6	10640.00	44.0 AV	54.0	-10.0	1.69 V	315	-2.87	46.87
7	15960.00	62.1 PK	74.0	-11.9	1.17 V	245	10.37	51.73
8	15960.00	49.6 AV	54.0	-4.4	1.17 V	245	-2.13	51.73

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	58.6 PK	74.0	-15.4	1.00 H	109	17.84	40.76
2	5460.00	46.5 AV	54.0	-7.5	1.00 H	109	5.74	40.76
3	#5470.00	68.0 PK	68.3	-0.3	1.00 H	109	27.22	40.78
4	*5500.00	106.3 PK			1.00 H	65	65.44	40.86
5	*5500.00	96.2 AV			1.00 H	65	55.34	40.86
6	11000.00	55.6 PK	74.0	-18.4	1.57 H	132	8.32	47.28
7	11000.00	43.4 AV	54.0	-10.6	1.57 H	132	-3.88	47.28
8	#16500.00	62.9 PK	68.3	-5.4	1.14 H	211	9.87	53.03
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.2 PK	74.0	-12.8	1.00 V	347	20.44	40.76
2	5460.00	47.6 AV	54.0	-6.4	1.00 V	347	6.84	40.76
3	#5470.00	67.9 PK	68.3	-0.4	1.00 V	347	27.12	40.78
4	*5500.00	108.3 PK			1.00 V	347	67.44	40.86
5	*5500.00	98.0 AV			1.00 V	347	57.14	40.86
6	11000.00	55.5 PK	74.0	-18.5	1.62 V	316	8.22	47.28
7	11000.00	43.2 AV	54.0	-10.8	1.62 V	316	-4.08	47.28
8	#16500.00	62.6 PK	68.3	-5.7	1.19 V	251	9.57	53.03

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 120	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	*5600.00	112.0 PK			1.00 H	64	70.85	41.15
2	*5600.00	102.1 AV			1.00 H	64	60.95	41.15
3	11200.00	64.9 PK	74.0	-9.1	1.50 H	121	17.48	47.42
4	11200.00	51.9 AV	54.0	-2.1	1.50 H	121	4.48	47.42
5	#16800.00	63.4 PK	68.3	-4.9	1.36 H	238	9.77	53.63
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	*5600.00	113.9 PK			1.07 V	340	72.75	41.15
2	*5600.00	103.9 AV			1.07 V	340	62.75	41.15
3	11200.00	64.6 PK	74.0	-9.4	1.74 V	314	17.18	47.42
4	11200.00	51.3 AV	54.0	-2.7	1.74 V	314	3.88	47.42
5	#16800.00	63.0 PK	68.3	-5.3	1.15 V	242	9.37	53.63

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.

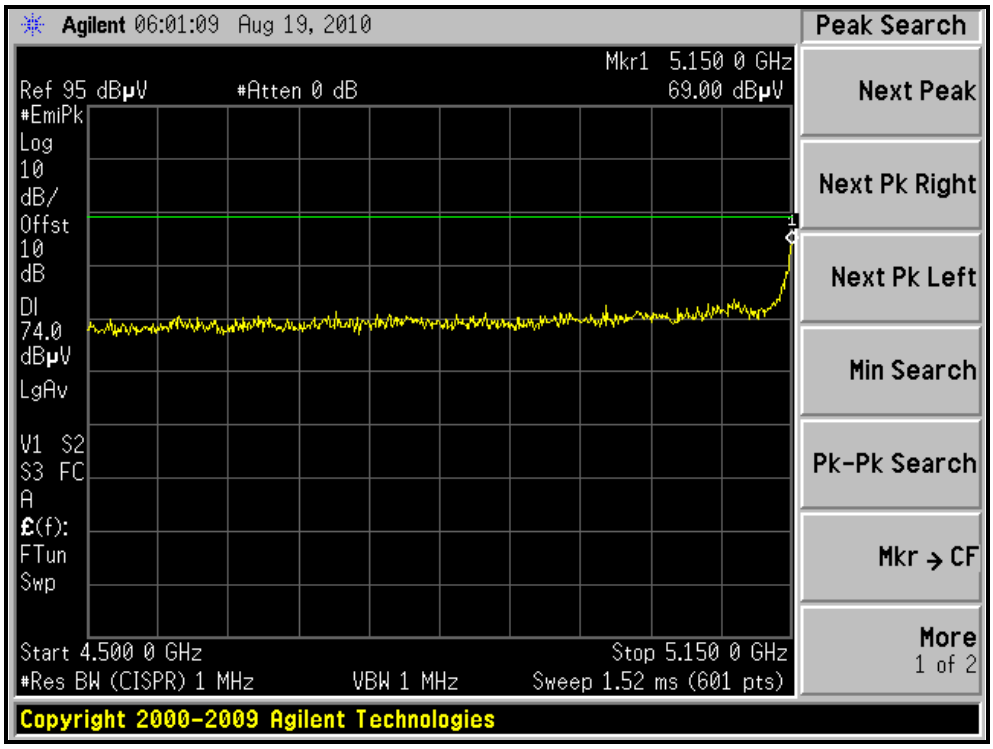
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

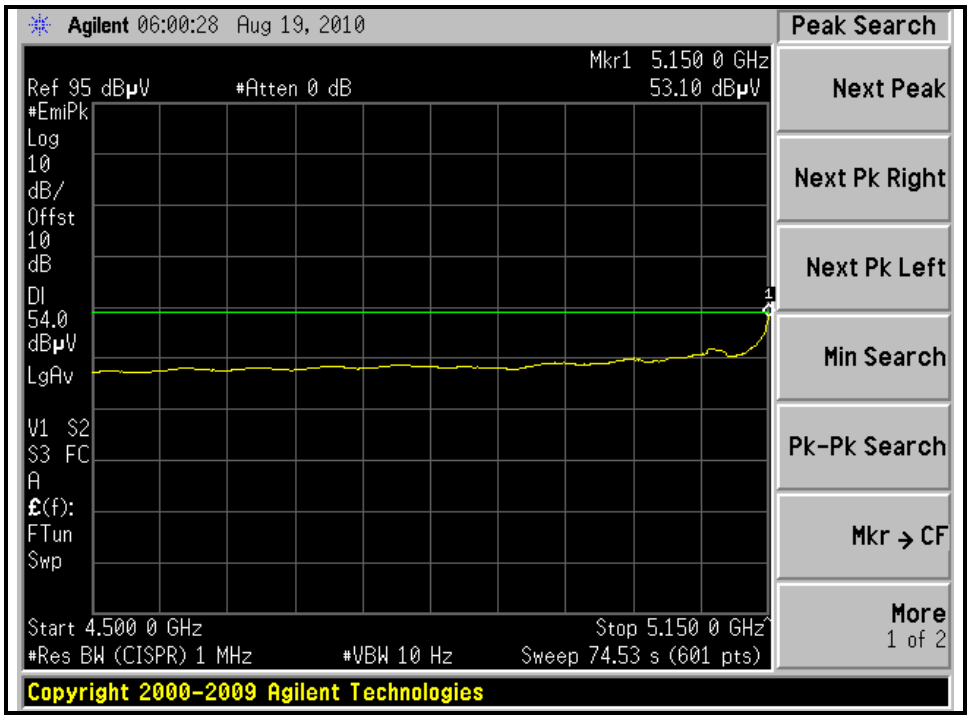
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	104.0 PK			1.00 H	108	62.58	41.42
2	*5700.00	94.1 AV			1.00 H	108	52.68	41.42
3	#5725.00	66.2 PK	68.3	-2.1	1.40 H	108	24.71	41.49
4	11400.00	55.4 PK	74.0	-18.6	1.46 H	117	7.78	47.62
5	11400.00	42.7 AV	54.0	-11.3	1.46 H	117	-4.92	47.62
6	#17100.00	63.7 PK	68.3	-4.6	1.15 H	206	9.50	54.20
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	*5700.00	106.5 PK			1.06 V	340	65.08	41.42
2	*5700.00	96.2 AV			1.06 V	340	54.78	41.42
3	#5725.00	68.1 PK	68.3	-0.2	1.06 V	340	26.61	41.49
4	11400.00	55.1 PK	74.0	-18.9	1.69 V	307	7.48	47.62
5	11400.00	42.5 AV	54.0	-11.5	1.69 V	307	-5.12	47.62
6	#17100.00	62.4 PK	68.3	-5.9	1.16 V	247	8.20	54.20

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

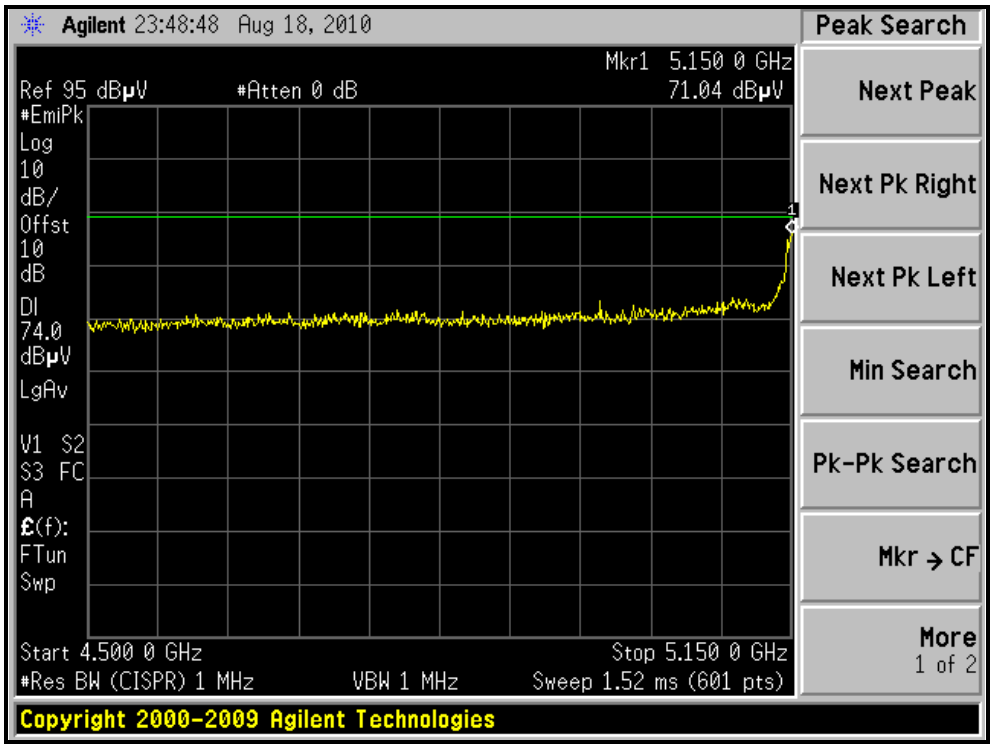
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

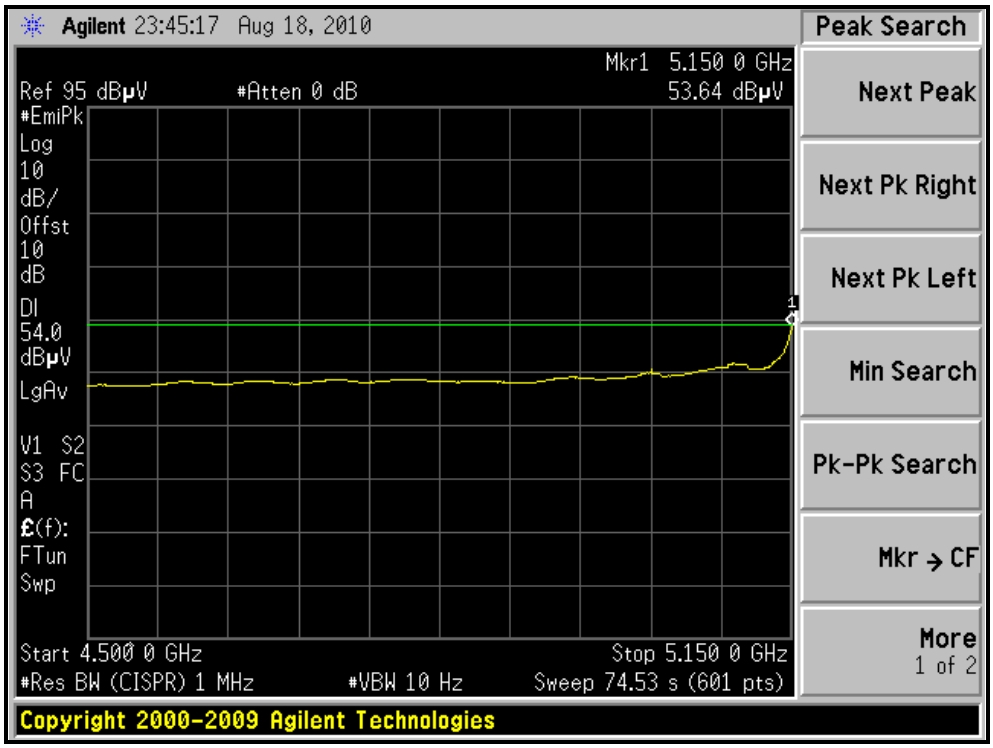
RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)



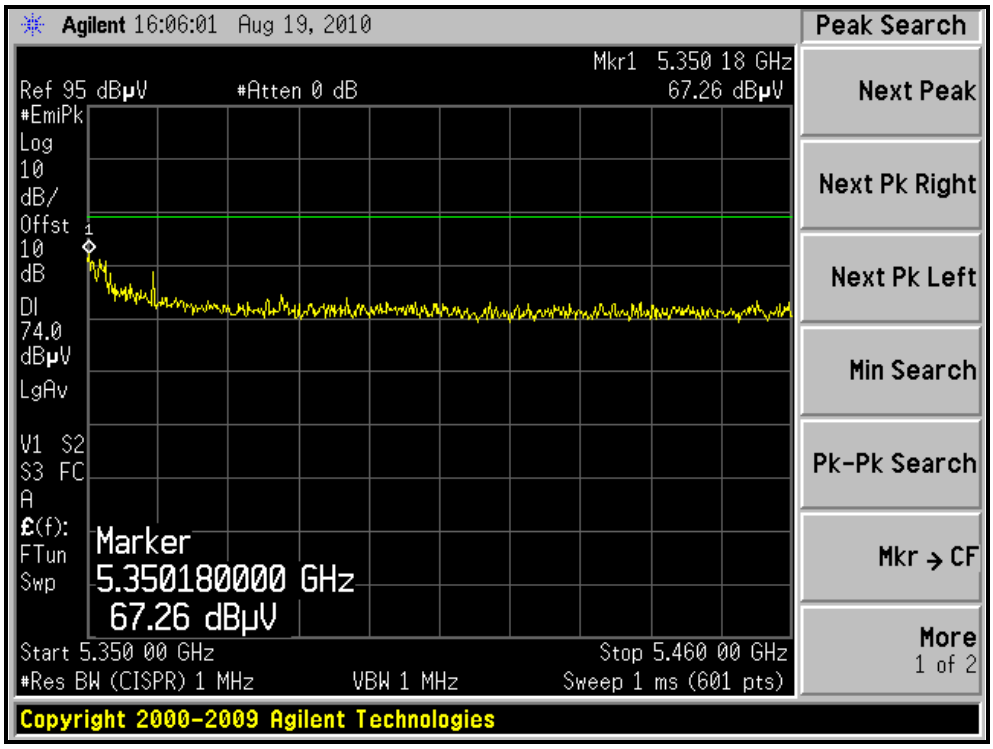


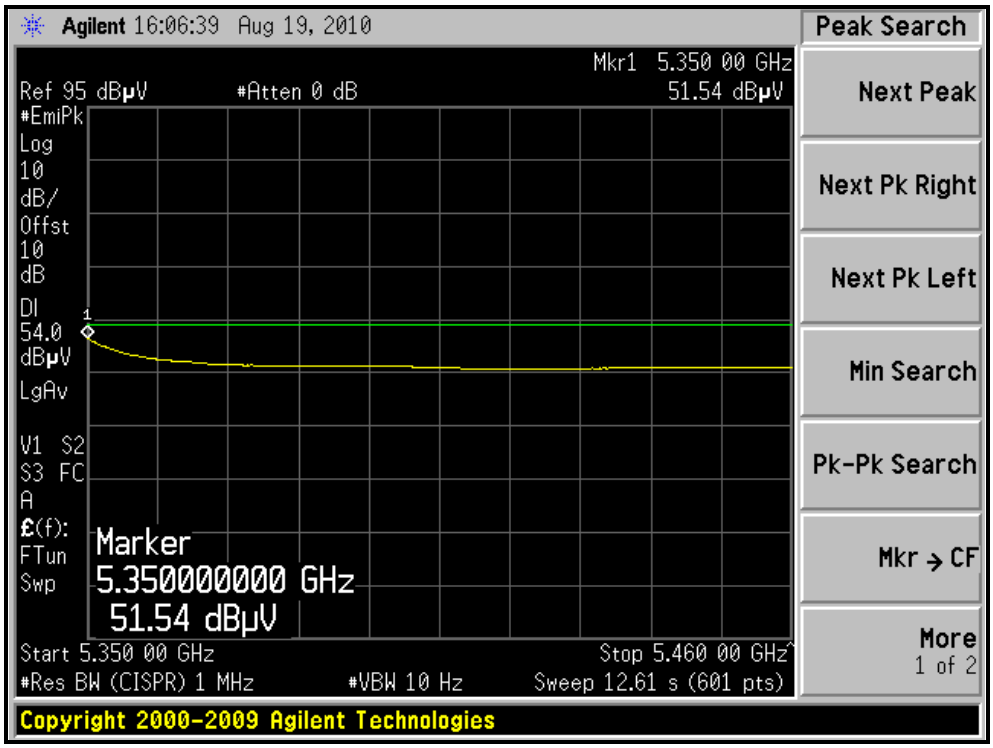
RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)



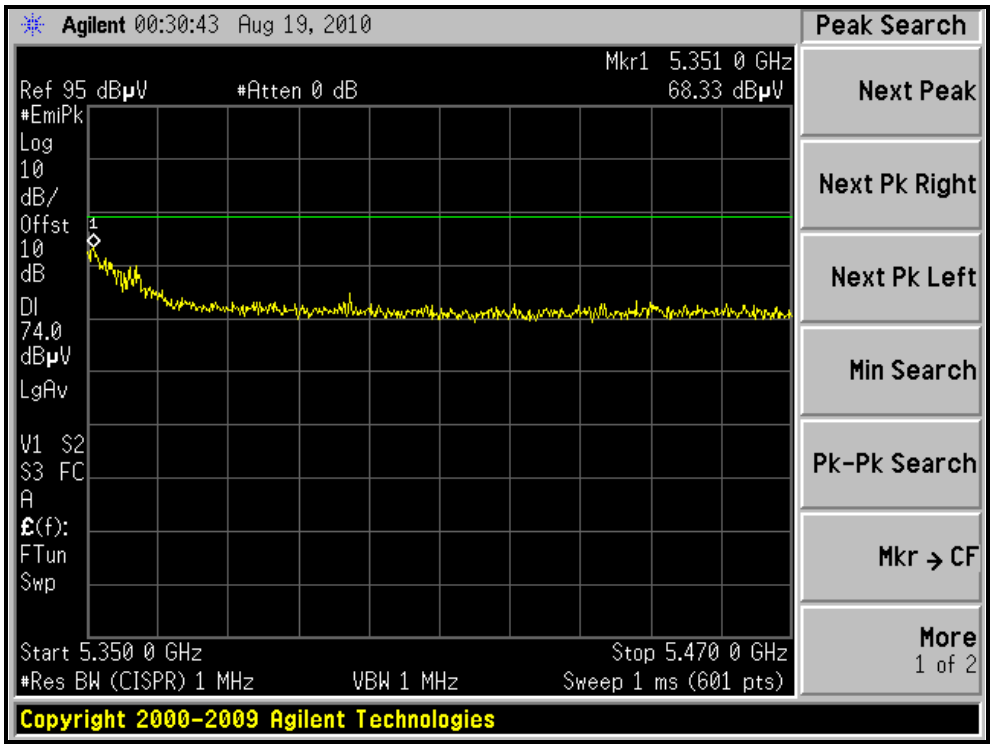


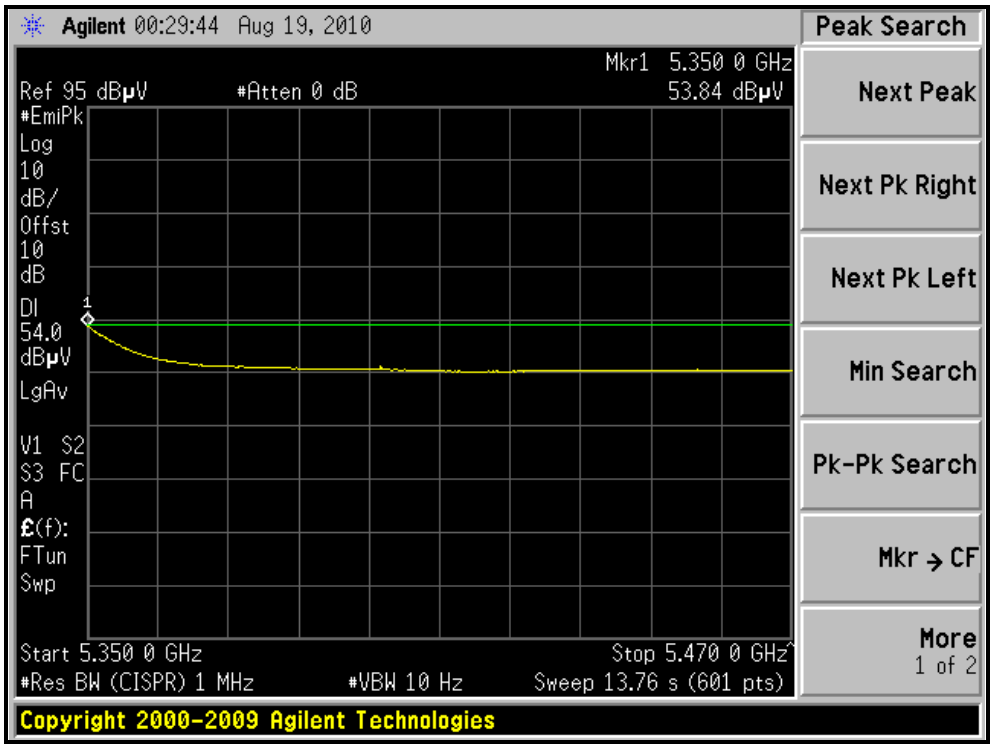
RESTRICTED BANDEDGE (802.11a MODE, CH64, HORIZONTAL)





RESTRICTED BANDEDGE (802.11a MODE, CH64, VERTICAL)





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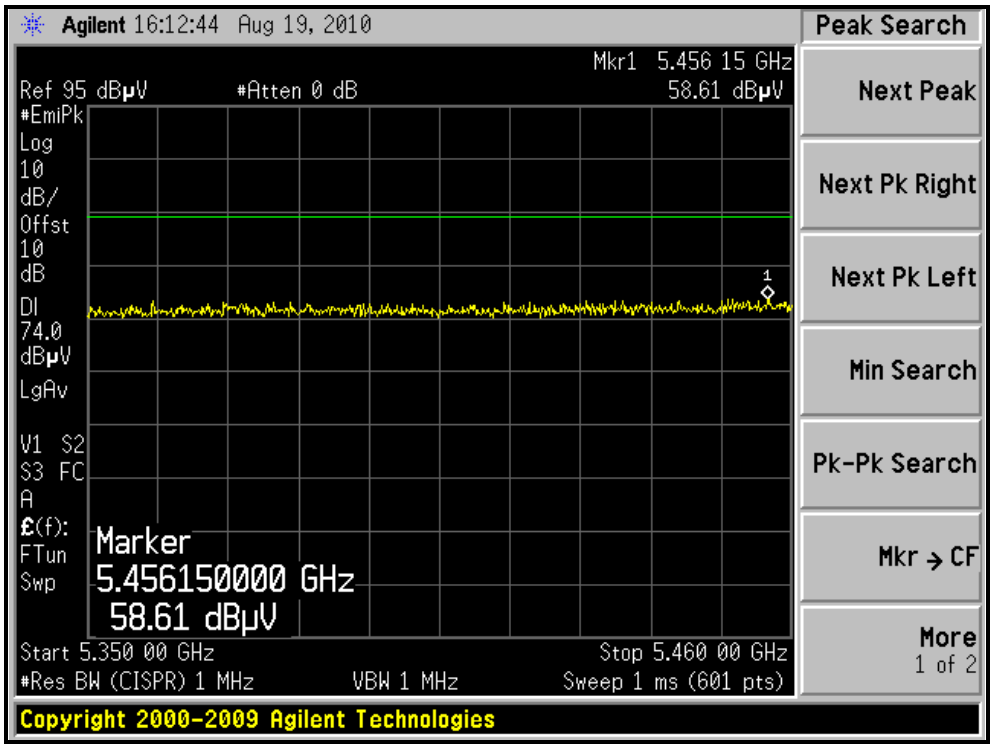
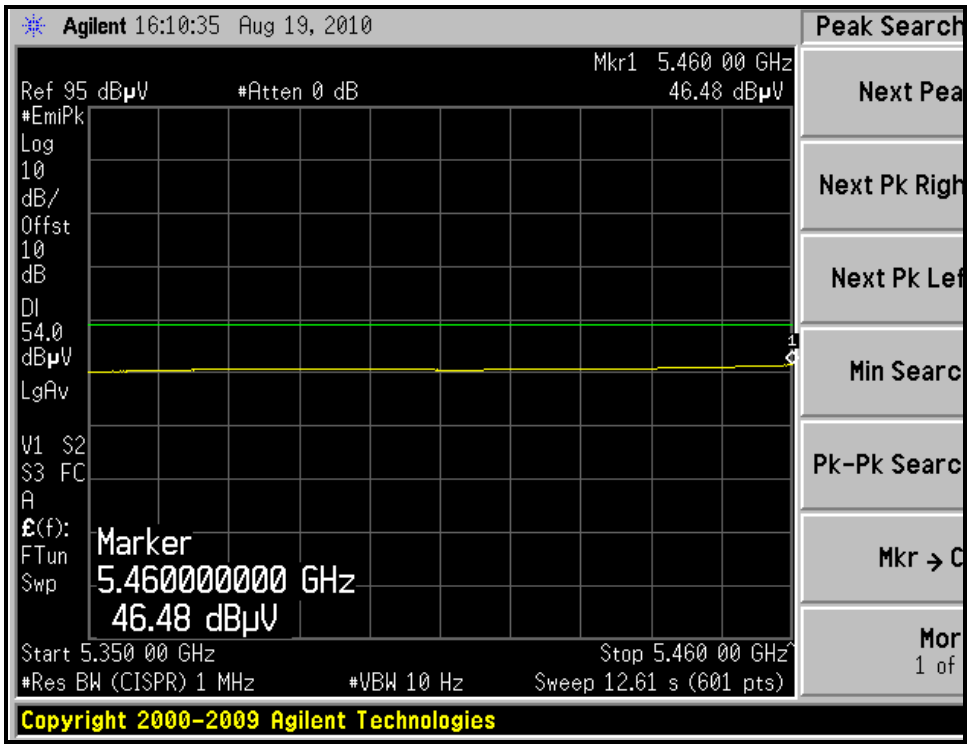
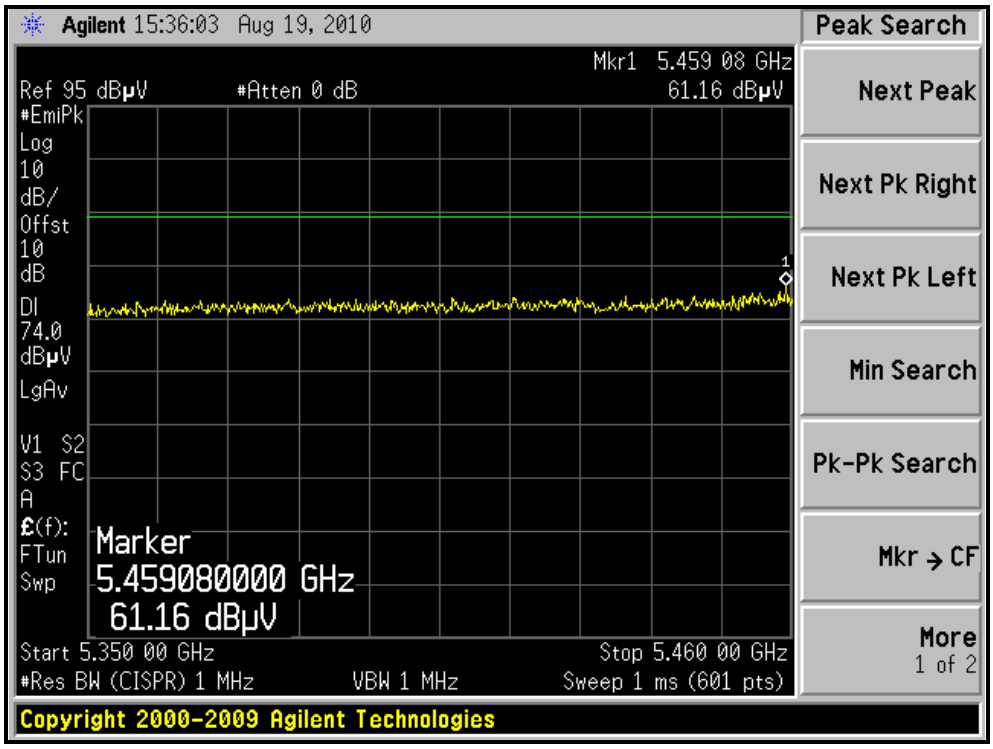
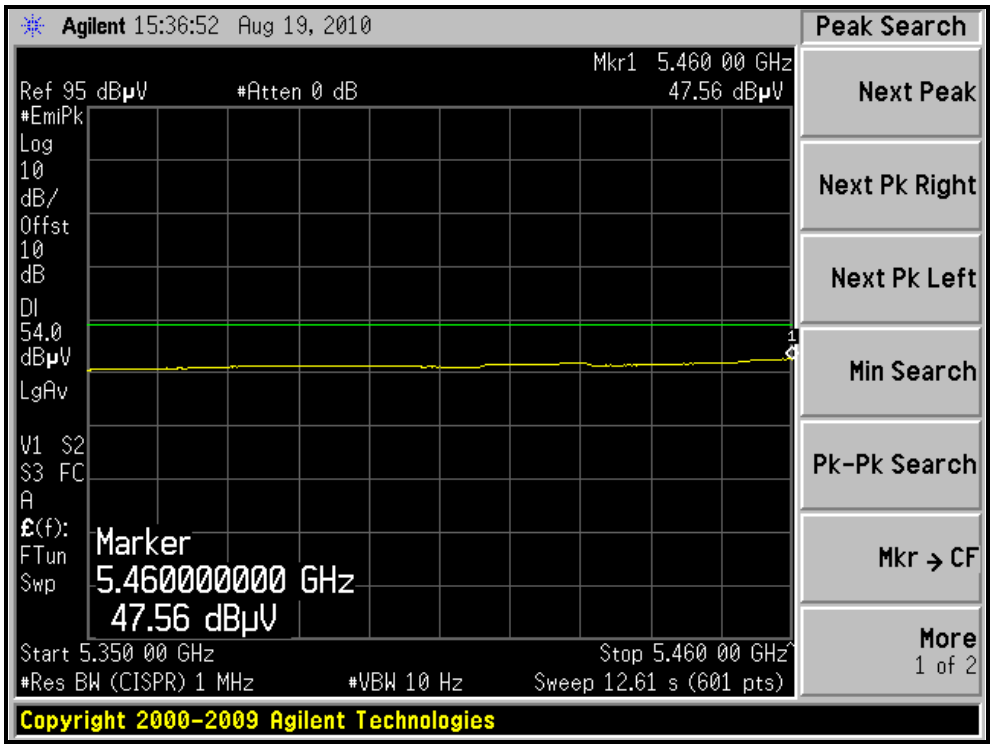




RESTRICTED BANDEDGE (802.11a MODE, CH100, VERTICAL)





802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 36	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.4 PK	74.0	-6.6	1.03 H	251	27.46	39.94
2	5150.00	53.5 AV	54.0	-0.5	1.03 H	251	13.56	39.94
3	*5180.00	111.6 PK			1.04 H	251	71.58	40.02
4	*5180.00	102.5 AV			1.04 H	251	62.48	40.02
5	#10360.00	53.6 PK	68.3	-14.7	1.24 H	115	7.07	46.53
6	15540.00	61.6 PK	74.0	-12.4	1.20 H	252	10.23	51.37
7	15540.00	49.6 AV	54.0	-4.4	1.20 H	252	-1.77	51.37
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.2 PK	74.0	-4.8	1.04 V	348	29.26	39.94
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.04 V**	**348**	**13.96**	**39.94**
3	*5180.00	113.4 PK			1.04 V	348	73.38	40.02
4	*5180.00	103.0 AV			1.04 V	348	62.98	40.02
5	#10360.00	53.7 PK	68.3	-14.6	1.34 V	276	7.17	46.53
6	15540.00	61.4 PK	74.0	-12.6	1.26 V	144	10.03	51.37
7	15540.00	49.5 AV	54.0	-4.5	1.26 V	144	-1.87	51.37

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 40	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	112.1 PK			1.05 H	250	72.03	40.07
2	*5200.00	102.1 AV			1.05 H	250	62.03	40.07
3	#10400.00	54.7 PK	68.3	-13.6	1.37 H	98	8.13	46.57
4	15600.00	61.5 PK	74.0	-12.5	1.17 H	236	10.03	51.47
5	15600.00	49.8 AV	54.0	-4.2	1.17 H	236	-1.67	51.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	113.1 PK			1.00 V	349	73.03	40.07
2	*5200.00	102.8 AV			1.00 V	349	62.73	40.07
3	#10400.00	54.5 PK	68.3	-13.8	1.39 V	254	7.93	46.57
4	15600.00	61.4 PK	74.0	-12.6	1.24 V	153	9.93	51.47
5	15600.00	49.8 AV	54.0	-4.2	1.24 V	153	-1.67	51.47

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 48	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	111.9 PK			1.04 H	251	71.73	40.17
2	*5240.00	102.0 AV			1.04 H	251	61.83	40.17
3	#10480.00	55.0 PK	68.3	-13.3	1.40 H	92	8.33	46.67
4	15720.00	61.9 PK	74.0	-12.1	1.21 H	249	10.39	51.51
5	15720.00	49.9 AV	54.0	-4.1	1.21 H	249	-1.61	51.51
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	113.5 PK			1.00 V	348	73.33	40.17
2	*5240.00	103.0 AV			1.00 V	348	62.83	40.17
3	#10480.00	54.7 PK	68.3	-13.6	1.43 V	265	8.03	46.67
4	15720.00	61.5 PK	74.0	-12.5	1.26 V	149	9.99	51.51
5	15720.00	49.5 AV	54.0	-4.5	1.26 V	149	-2.01	51.51

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

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	116.8 PK			1.04 H	250	76.57	40.23
2	*5260.00	107.6 AV			1.04 H	250	67.37	40.23
3	#10520.00	57.9 PK	68.3	-10.4	1.53 H	124	11.18	46.72
4	15780.00	64.3 PK	74.0	-9.7	1.52 H	111	12.72	51.58
5	15780.00	51.9 AV	54.0	-2.1	1.52 H	111	0.32	51.58
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	119.0 PK			1.00 V	349	78.77	40.23
2	*5260.00	108.3 AV			1.00 V	349	68.07	40.23
3	#10520.00	56.7 PK	68.3	-11.6	1.49 V	308	9.98	46.72
4	15780.00	62.4 PK	74.0	-11.6	1.36 V	319	10.82	51.58
5	15780.00	50.5 AV	54.0	-3.5	1.36 V	319	-1.08	51.58

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	117.4 PK			1.05 H	250	77.07	40.33
2	*5300.00	107.5 AV			1.05 H	250	67.17	40.33
3	10600.00	60.2 PK	74.0	-13.8	1.40 H	105	13.38	46.82
4	10600.00	47.5 AV	54.0	-6.5	1.40 H	105	0.68	46.82
5	15900.00	64.4 PK	74.0	-9.6	1.20 H	246	12.74	51.66
6	15900.00	52.4 AV	54.0	-1.6	1.20 H	246	0.74	51.66
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	119.7 PK			1.00 V	348	79.37	40.33
2	*5300.00	109.5 AV			1.00 V	348	69.17	40.33
3	10600.00	55.7 PK	74.0	-18.3	1.42 V	315	8.88	46.82
4	10600.00	44.6 AV	54.0	-9.4	1.42 V	315	-2.22	46.82
5	15900.00	62.3 PK	74.0	-11.7	1.27 V	158	10.64	51.66
6	15900.00	50.4 AV	54.0	-3.6	1.27 V	158	-1.26	51.66

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	110.7 PK			1.04 H	250	70.31	40.39
2	*5320.00	101.3 AV			1.04 H	250	60.91	40.39
3	5351.10	67.7 PK	74.0	-6.3	1.04 H	251	27.23	40.47
4	5351.10	53.3 AV	54.0	-0.7	1.04 H	251	12.83	40.47
5	10640.00	56.7 PK	74.0	-17.3	1.56 H	102	9.83	46.87
6	10640.00	44.2 AV	54.0	-9.8	1.56 H	102	-2.67	46.87
7	15960.00	61.6 PK	74.0	-12.4	1.09 H	224	9.87	51.73
8	15960.00	49.3 AV	54.0	-4.7	1.09 H	224	-2.43	51.73
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	114.5 PK			1.01 V	348	74.11	40.39
2	*5320.00	103.4 AV			1.01 V	348	63.01	40.39
3	5350.20	69.0 PK	74.0	-5.0	1.01 V	348	28.53	40.47
4	5350.20	53.7 AV	54.0	-0.3	1.01 V	348	13.23	40.47
5	10640.00	54.6 PK	74.0	-19.4	1.27 V	292	7.73	46.87
6	10640.00	43.0 AV	54.0	-11.0	1.27 V	292	-3.87	46.87
7	15960.00	61.9 PK	74.0	-12.1	1.12 V	232	10.17	51.73
8	15960.00	49.4 AV	54.0	-4.6	1.12 V	232	-2.33	51.73

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	59.7 PK	74.0	-14.3	1.04 H	250	18.94	40.76
2	5460.00	46.8 AV	54.0	-7.2	1.04 H	250	6.04	40.76
3	#5467.50	68.1 PK	68.3	-0.2	1.04 H	250	27.32	40.78
4	*5500.00	108.2 PK			1.04 H	251	67.34	40.86
5	*5500.00	98.5 AV			1.04 H	251	57.64	40.86
6	11000.00	55.8 PK	74.0	-18.2	1.64 H	94	8.52	47.28
7	11000.00	43.0 AV	54.0	-11.0	1.64 H	94	-4.28	47.28
8	#16500.00	62.6 PK	68.3	-5.7	1.20 H	176	9.57	53.03
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5458.35	61.8 PK	74.0	-12.2	1.00 V	349	21.04	40.76
2	5458.35	48.0 AV	54.0	-6.0	1.00 V	349	7.24	40.76
3	#5468.40	68.1 PK	68.3	-0.2	1.00 V	349	27.32	40.78
4	*5500.00	110.2 PK			1.00 V	349	69.34	40.86
5	*5500.00	100.3 AV			1.00 V	349	59.44	40.86
6	11000.00	55.3 PK	74.0	-18.7	1.24 V	321	8.02	47.28
7	11000.00	42.2 AV	54.0	-11.8	1.24 V	321	-5.08	47.28
8	#16500.00	62.4 PK	68.3	-5.9	1.22 V	153	9.37	53.03

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 120	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	*5600.00	115.8 PK			1.07 H	250	74.65	41.15
2	*5600.00	106.3 AV			1.07 H	250	65.15	41.15
3	11200.00	65.5 PK	74.0	-8.5	1.46 H	105	18.08	47.42
4	11200.00	52.9 AV	54.0	-1.1	1.46 H	105	5.48	47.42
5	#16800.00	63.3 PK	68.3	-5.0	1.21 H	149	9.67	53.63
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	*5600.00	116.9 PK			1.08 V	343	75.75	41.15
2	*5600.00	106.9 AV			1.08 V	343	65.75	41.15
3	11200.00	59.6 PK	74.0	-14.4	1.24 V	313	12.18	47.42
4	11200.00	47.8 AV	54.0	-6.2	1.24 V	313	0.38	47.42
5	#16800.00	63.0 PK	68.3	-5.3	1.25 V	168	9.37	53.63

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.

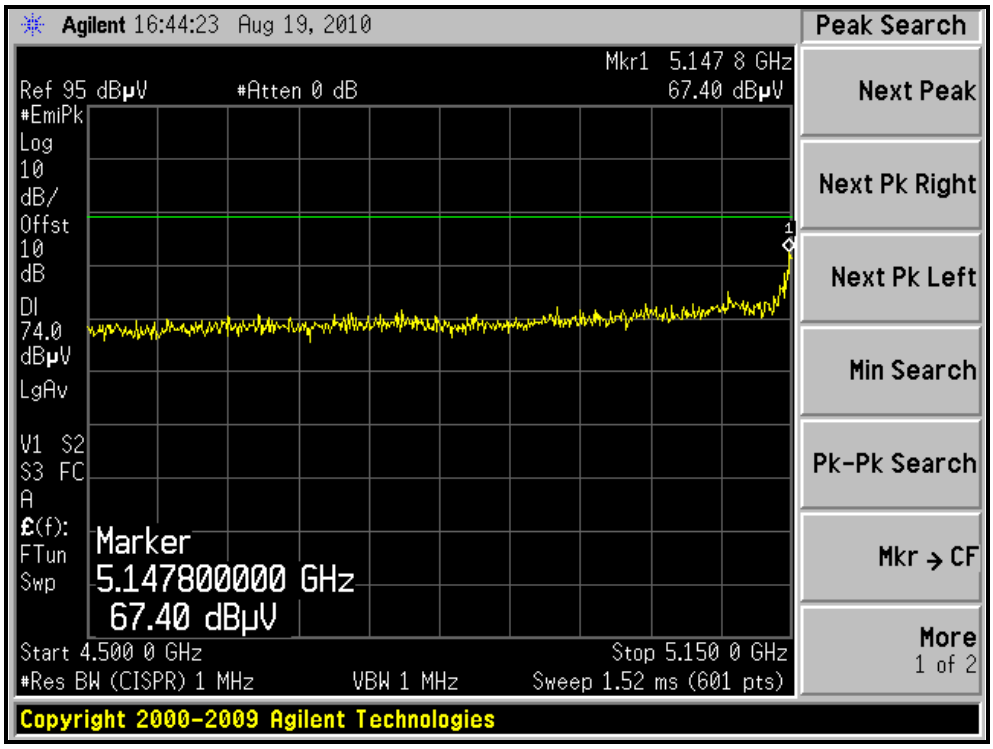
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 140	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

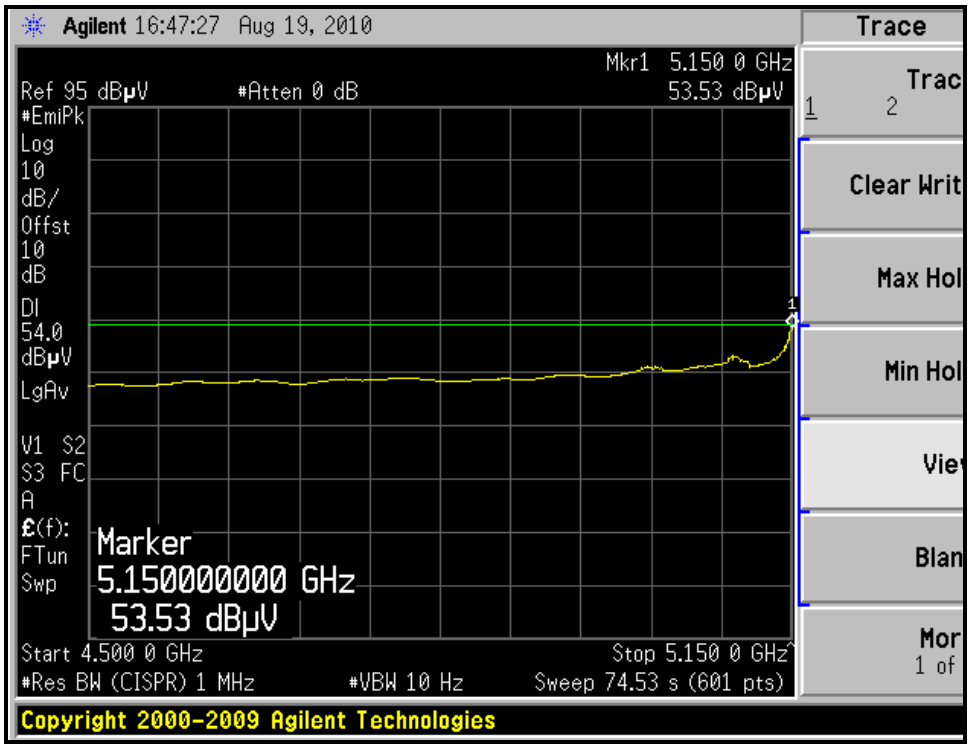
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	106.2 PK			1.19 H	251	64.78	41.42
2	*5700.00	96.5 AV			1.19 H	251	55.08	41.42
3	#5725.00	68.0 PK	68.3	-0.3	1.17 H	251	26.51	41.49
4	11400.00	54.4 PK	74.0	-19.6	1.39 H	111	6.78	47.62
5	11400.00	41.8 AV	54.0	-12.2	1.39 H	111	-5.82	47.62
6	#17100.00	63.9 PK	68.3	-4.4	1.14 H	183	9.70	54.20
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	*5700.00	106.5 PK			1.05 V	345	65.08	41.42
2	*5700.00	96.9 AV			1.05 V	345	55.48	41.42
3	#5725.00	68.1 PK	68.3	-0.2	1.05 V	345	26.61	41.49
4	11400.00	54.6 PK	74.0	-19.4	1.25 V	316	6.98	47.62
5	11400.00	42.1 AV	54.0	-11.9	1.25 V	316	-5.52	47.62
6	#17100.00	63.4 PK	68.3	-4.9	1.29 V	147	9.20	54.20

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

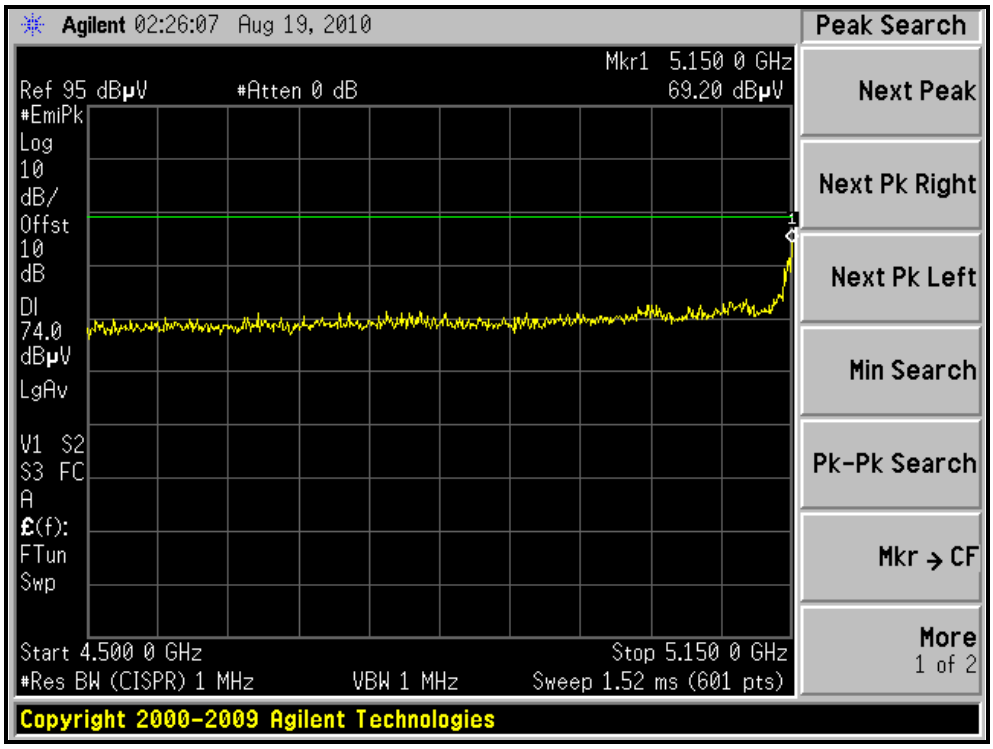
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

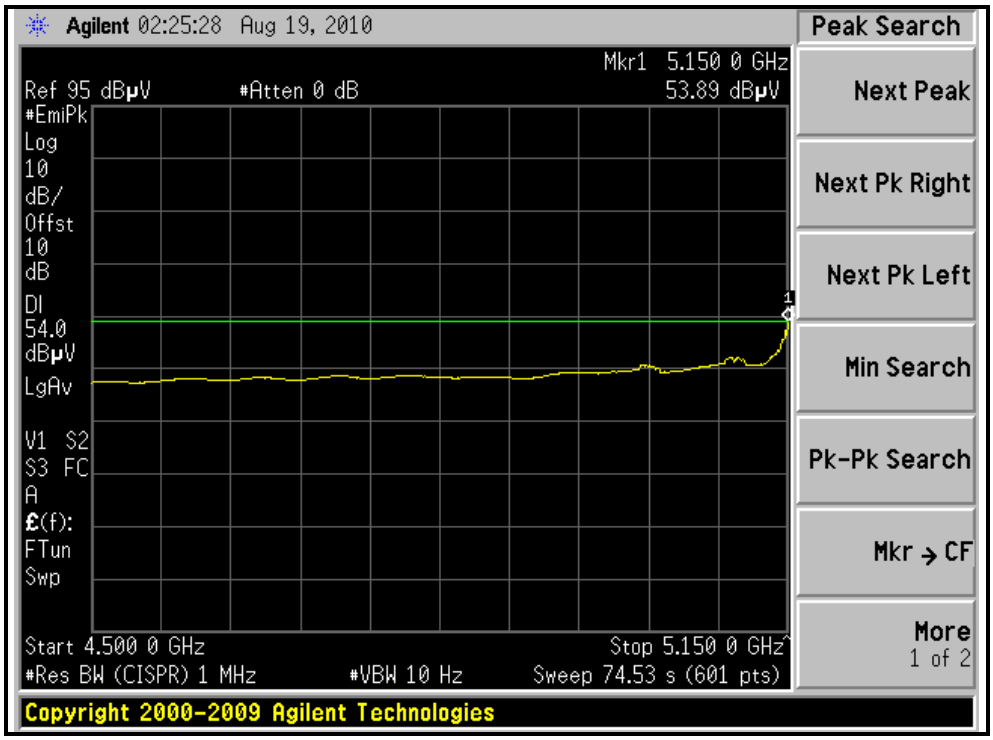
RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)





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





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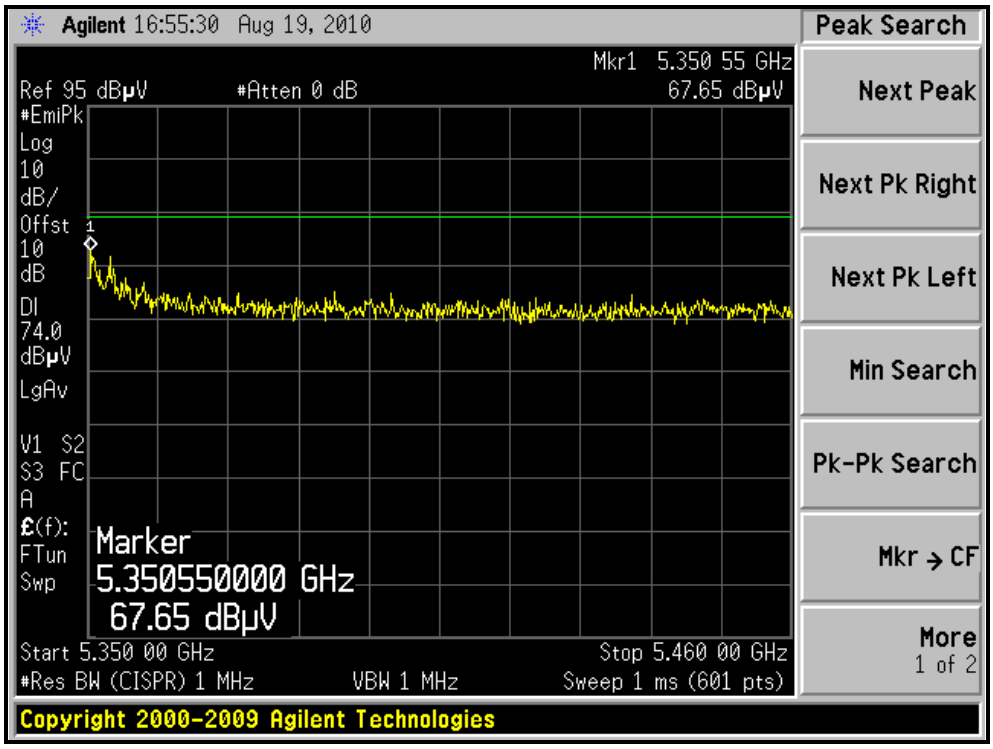
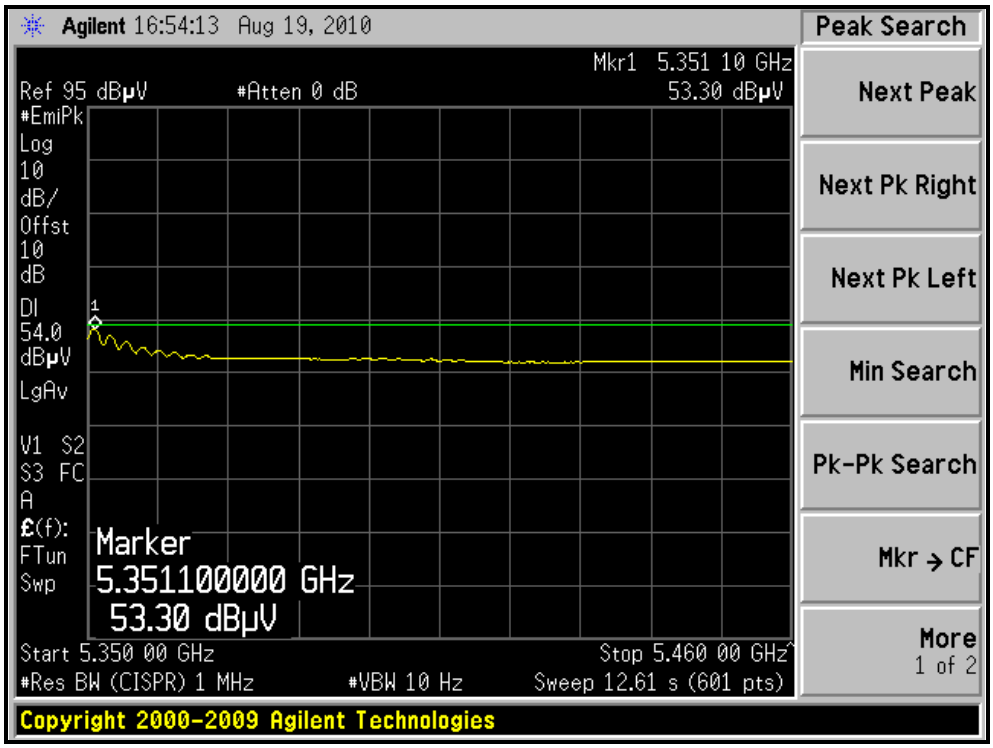
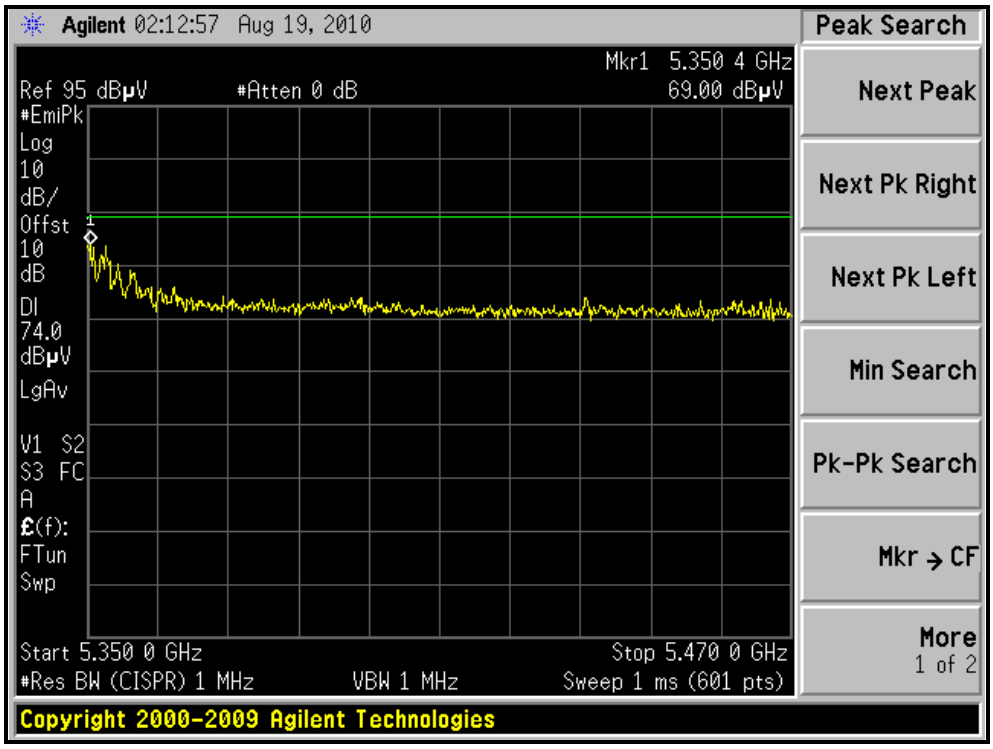
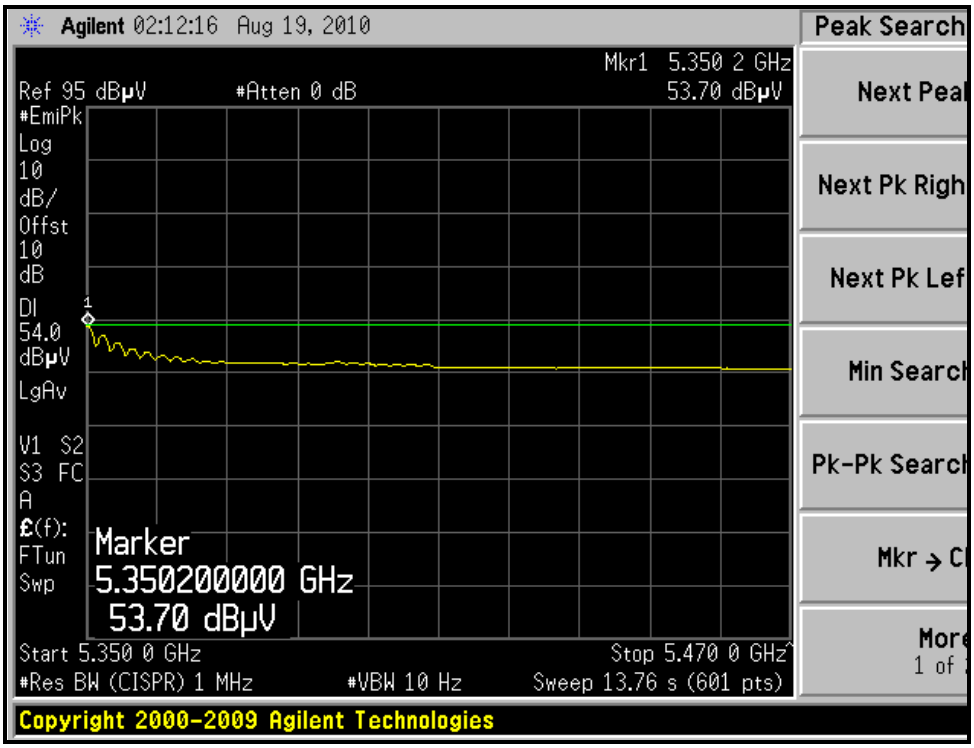




RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH64, VERTICAL)





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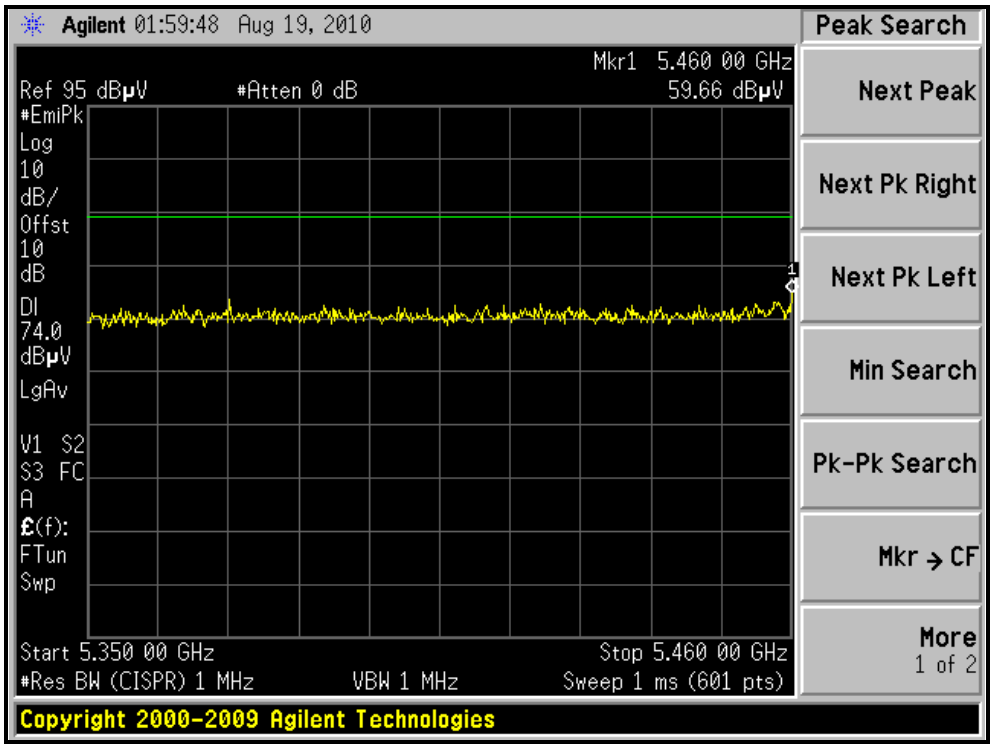
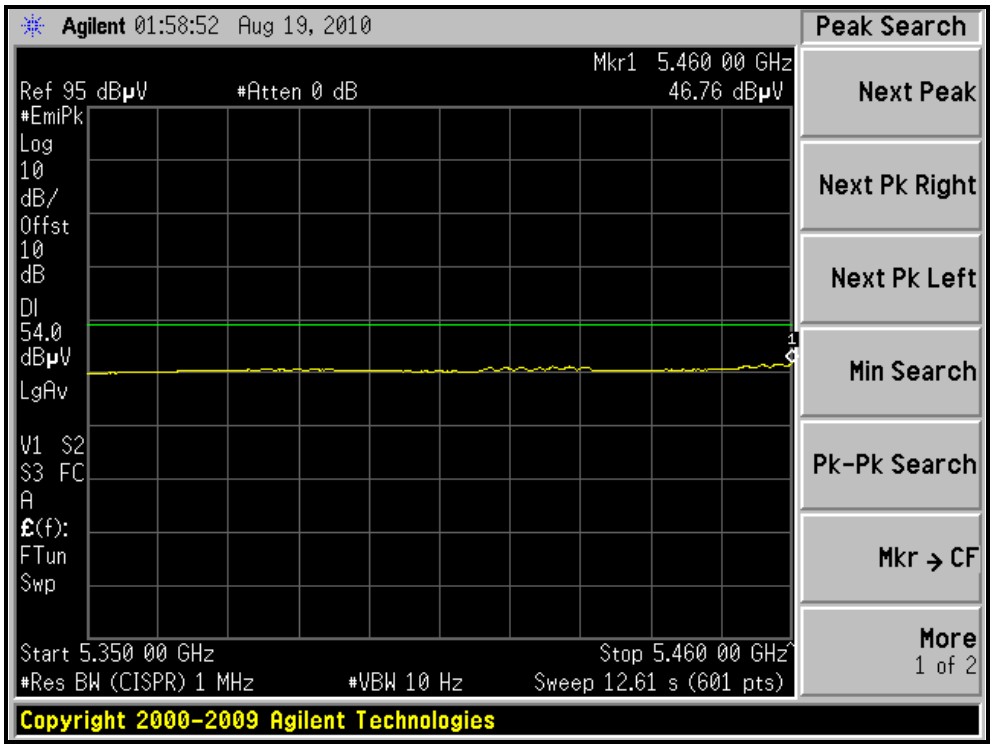
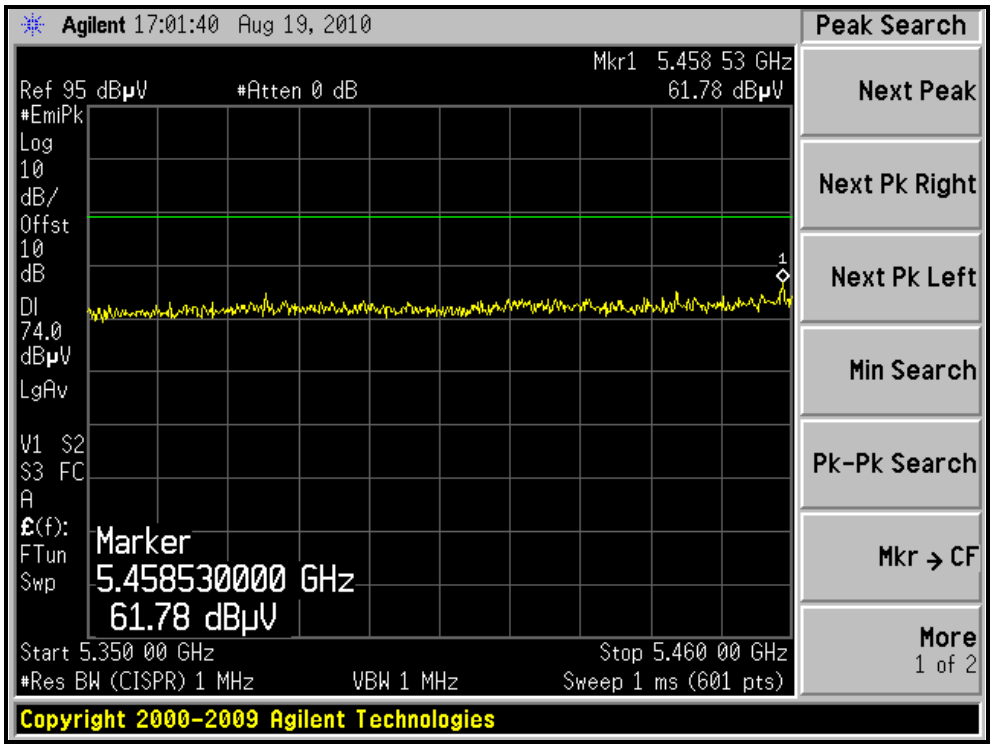
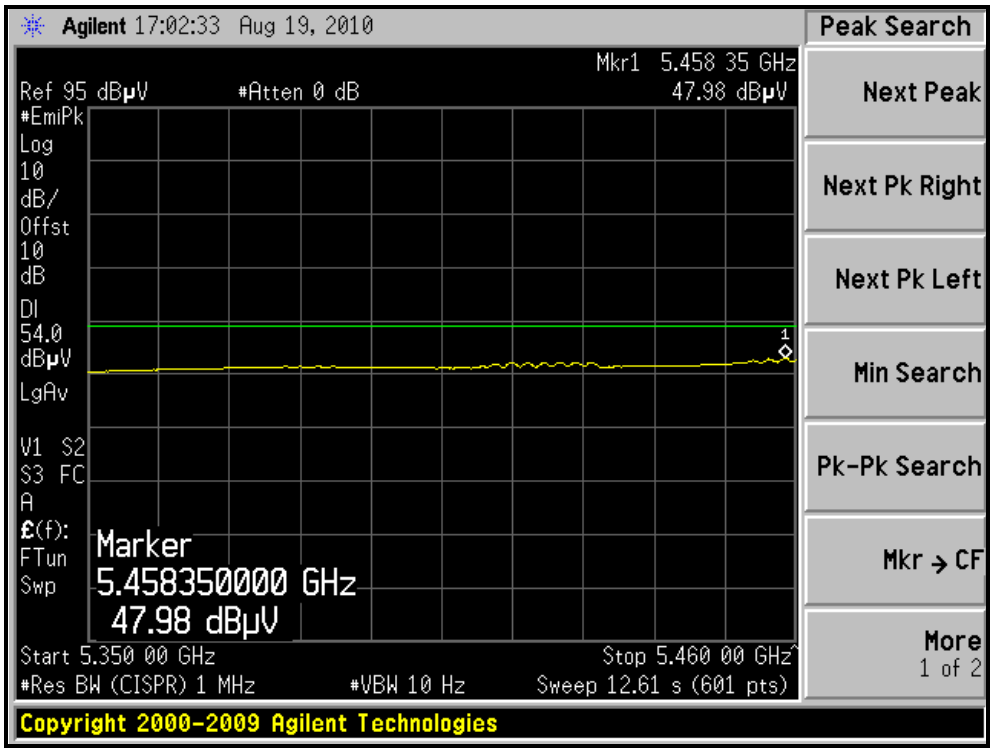




RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH100, VERTICAL)





802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 38	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.5 PK	74.0	-8.5	1.00 H	249	25.56	39.94
2	5150.00	53.5 AV	54.0	-0.5	1.00 H	249	13.56	39.94
3	*5190.00	104.5 PK			1.00 H	249	64.46	40.04
4	*5190.00	94.2 AV			1.00 H	249	54.16	40.04
5	#10380.00	54.2 PK	68.3	-14.1	1.45 H	134	7.60	46.60
6	15570.00	61.4 PK	74.0	-12.6	1.17 H	265	9.98	51.42
7	15570.00	49.4 AV	54.0	-4.6	1.17 H	265	-2.02	51.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	72.4 PK	74.0	-1.6	1.03 V	348	32.46	39.94
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.03 V**	**348**	**13.96**	**39.94**
3	*5190.00	105.4 PK			1.03 V	348	65.36	40.04
4	*5190.00	94.8 AV			1.03 V	348	54.76	40.04
5	#10380.00	53.9 PK	68.3	-14.4	1.49 V	317	7.30	46.60
6	15570.00	61.1 PK	74.0	-12.9	1.20 V	154	9.68	51.42
7	15570.00	49.3 AV	54.0	-4.7	1.20 V	154	-2.12	51.42

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 46	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	109.2 PK			1.00 H	247	69.05	40.15
2	*5230.00	97.9 AV			1.00 H	247	57.75	40.15
3	#10460.00	54.6 PK	68.3	-13.7	1.43 H	106	7.95	46.65
4	15690.00	61.6 PK	74.0	-12.4	1.19 H	273	10.11	51.49
5	15690.00	49.7 AV	54.0	-4.3	1.19 H	273	-1.79	51.49
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	*5230.00	109.9 PK			1.03 V	348	69.75	40.15
2	*5230.00	98.9 AV			1.03 V	348	58.75	40.15
3	#10460.00	54.5 PK	68.3	-13.8	1.46 V	312	7.85	46.65
4	15690.00	61.5 PK	74.0	-12.5	1.24 V	162	10.01	51.49
5	15690.00	49.9 AV	54.0	-4.1	1.24 V	162	-1.59	51.49

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

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	115.5 PK			1.03 H	249	75.25	40.25
2	*5270.00	105.4 AV			1.03 H	249	65.15	40.25
3	#10540.00	56.7 PK	68.3	-11.6	1.41 H	90	9.95	46.75
4	15810.00	62.6 PK	74.0	-11.4	1.32 H	113	10.99	51.61
5	15810.00	50.7 AV	54.0	-3.3	1.32 H	113	-0.91	51.61
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	116.5 PK			1.02 V	348	76.25	40.25
2	*5270.00	106.2 AV			1.02 V	348	65.95	40.25
3	#10540.00	55.7 PK	68.3	-12.6	1.50 V	310	8.95	46.75
4	15810.00	62.7 PK	74.0	-11.3	1.27 V	159	11.09	51.61
5	15810.00	50.4 AV	54.0	-3.6	1.27 V	159	-1.21	51.61

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	106.1 PK			1.05 H	249	65.74	40.36
2	*5310.00	96.9 AV			1.05 H	249	56.54	40.36
3	5350.00	65.8 PK	74.0	-8.2	1.05 H	249	25.33	40.47
4	5350.00	53.2 AV	54.0	-0.8	1.05 H	249	12.73	40.47
5	10620.00	54.6 PK	74.0	-19.4	1.42 H	153	7.76	46.84
6	10620.00	42.6 AV	54.0	-11.4	1.42 H	153	-4.24	46.84
7	15930.00	62.2 PK	74.0	-11.8	1.25 H	206	10.51	51.69
8	15930.00	50.1 AV	54.0	-3.9	1.25 H	206	-1.59	51.69
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	108.1 PK			1.01 V	347	67.74	40.36
2	*5310.00	97.4 AV			1.01 V	347	57.04	40.36
3	5350.00	66.4 PK	74.0	-7.6	1.01 V	347	25.93	40.47
4	5350.00	53.6 AV	54.0	-0.4	1.01 V	347	13.13	40.47
5	10620.00	55.1 PK	74.0	-18.9	1.46 V	312	8.26	46.84
6	10620.00	43.4 AV	54.0	-10.6	1.46 V	312	-3.44	46.84
7	15930.00	62.4 PK	74.0	-11.6	1.25 V	166	10.71	51.69
8	15930.00	50.2 AV	54.0	-3.8	1.25 V	166	-1.49	51.69

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	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	62.2 PK	74.0	-11.8	1.04 H	250	21.44	40.76
2	5460.00	48.9 AV	54.0	-5.1	1.04 H	250	8.14	40.76
3	#5470.00	67.4 PK	68.3	-0.9	1.04 H	250	26.62	40.78
4	*5510.00	102.9 PK			1.04 H	250	62.01	40.89
5	*5510.00	93.6 AV			1.04 H	250	52.71	40.89
6	11020.00	53.7 PK	74.0	-20.3	1.54 H	219	6.41	47.29
7	11020.00	41.4 AV	54.0	-12.6	1.54 H	219	-5.89	47.29
8	#16530.00	62.7 PK	68.3	-5.6	1.16 H	252	9.62	53.08
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.9 PK	74.0	-11.1	1.00 V	349	22.14	40.76
2	5460.00	49.5 AV	54.0	-4.5	1.00 V	349	8.74	40.76
3	**#5470.00**	**68.2 PK**	**68.3**	**-0.1**	**1.00 V**	**349**	**27.42**	**40.78**
4	*5510.00	105.3 PK			1.00 V	349	64.41	40.89
5	*5510.00	94.5 AV			1.00 V	349	53.61	40.89
6	11020.00	53.8 PK	74.0	-20.2	1.54 V	269	6.51	47.29
7	11020.00	41.9 AV	54.0	-12.1	1.54 V	269	-5.39	47.29
8	#16530.00	62.5 PK	68.3	-5.8	1.29 V	143	9.42	53.08

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

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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 118	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

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	*5590.00	112.5 PK			1.05 H	251	71.38	41.12
2	*5590.00	102.3 AV			1.05 H	251	61.18	41.12
3	11180.00	53.9 PK	74.0	-20.1	1.74 H	281	6.49	47.41
4	11180.00	42.3 AV	54.0	-11.7	1.74 H	281	-5.11	47.41
5	#16770.00	63.2 PK	68.3	-5.1	1.23 H	291	9.64	53.56
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	*5590.00	112.8 PK			1.07 V	343	71.68	41.12
2	*5590.00	103.0 AV			1.07 V	343	61.88	41.12
3	11180.00	57.9 PK	74.0	-16.1	1.60 V	308	10.49	47.41
4	11180.00	46.1 AV	54.0	-7.9	1.60 V	308	-1.31	47.41
5	#16770.00	63.5 PK	68.3	-4.8	1.21 V	169	9.94	53.56

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.

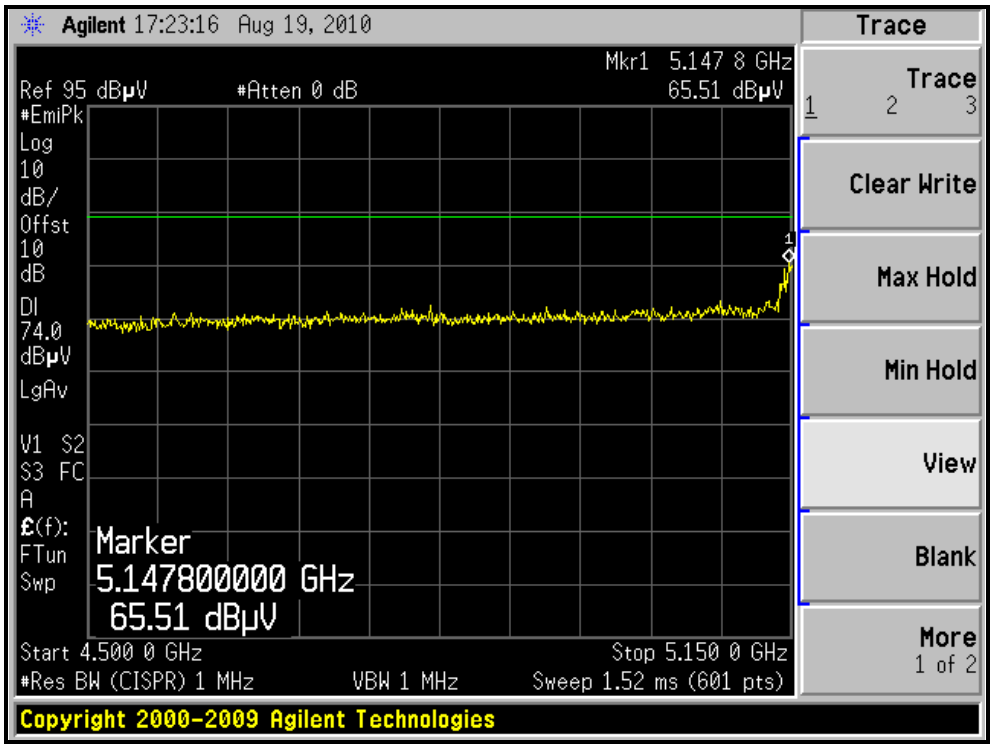
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 134	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	28deg. C, 72%RH 1013 hPa	TESTED BY	Duke Tseng

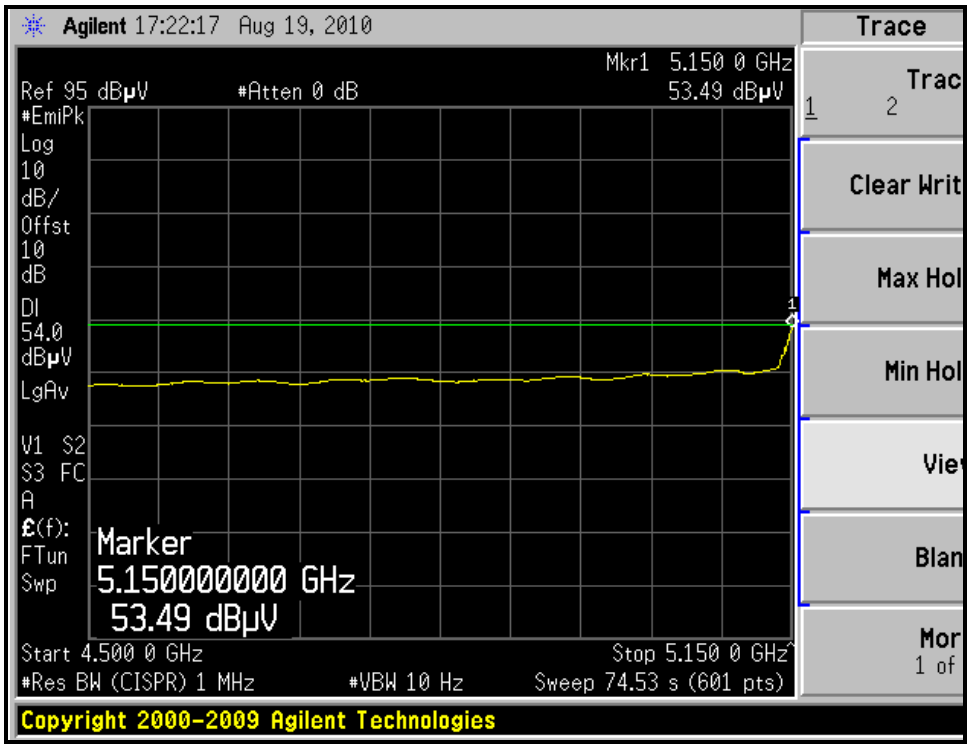
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	107.4 PK			1.04 H	252	66.06	41.34
2	*5670.00	96.8 AV			1.04 H	252	55.46	41.34
3	#5727.50	67.8 PK	68.3	-0.5	1.04 H	252	26.30	41.50
4	11340.00	53.8 PK	74.0	-20.2	1.63 H	266	6.23	47.57
5	11340.00	41.6 AV	54.0	-12.4	1.63 H	266	-5.97	47.57
6	#17010.00	63.2 PK	68.3	-5.1	1.25 H	273	9.11	54.09
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	107.6 PK			1.06 V	343	66.26	41.34
2	*5670.00	97.3 AV			1.06 V	343	55.96	41.34
3	**#5725.00**	**68.2 PK**	**68.3**	**-0.1**	**1.06 V**	**343**	**26.71**	**41.49**
4	11340.00	54.1 PK	74.0	-19.9	1.57 V	295	6.53	47.57
5	11340.00	42.2 AV	54.0	-11.8	1.57 V	295	-5.37	47.57
6	#17010.00	63.1 PK	68.3	-5.2	1.24 V	176	9.01	54.09

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

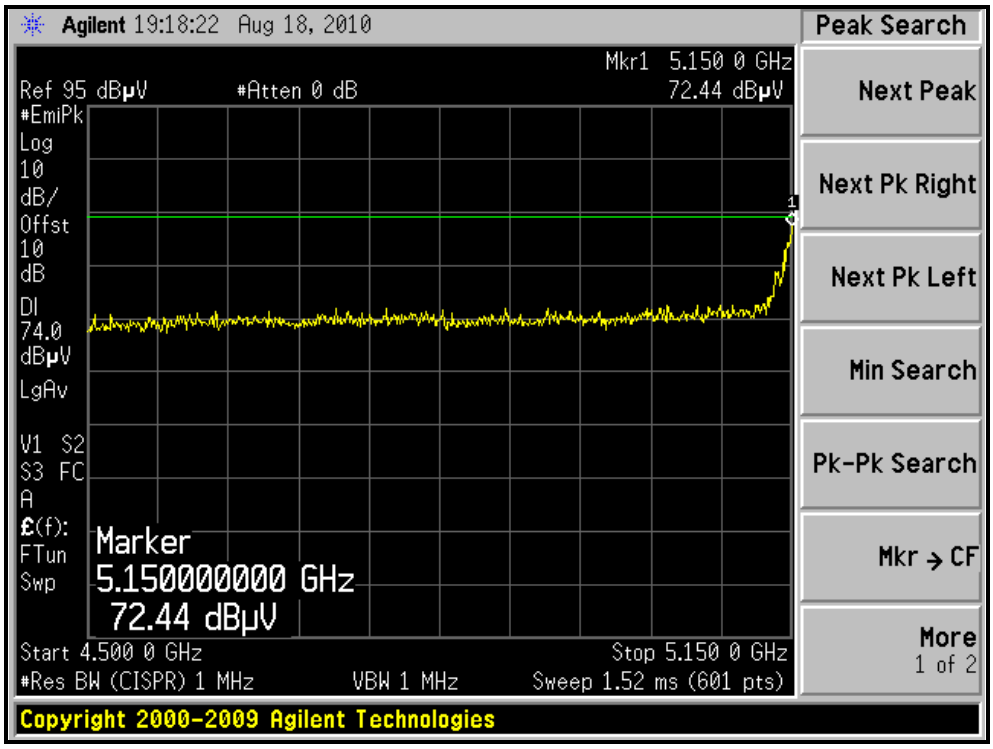
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. "#":The radiated frequency is out the restricted band.

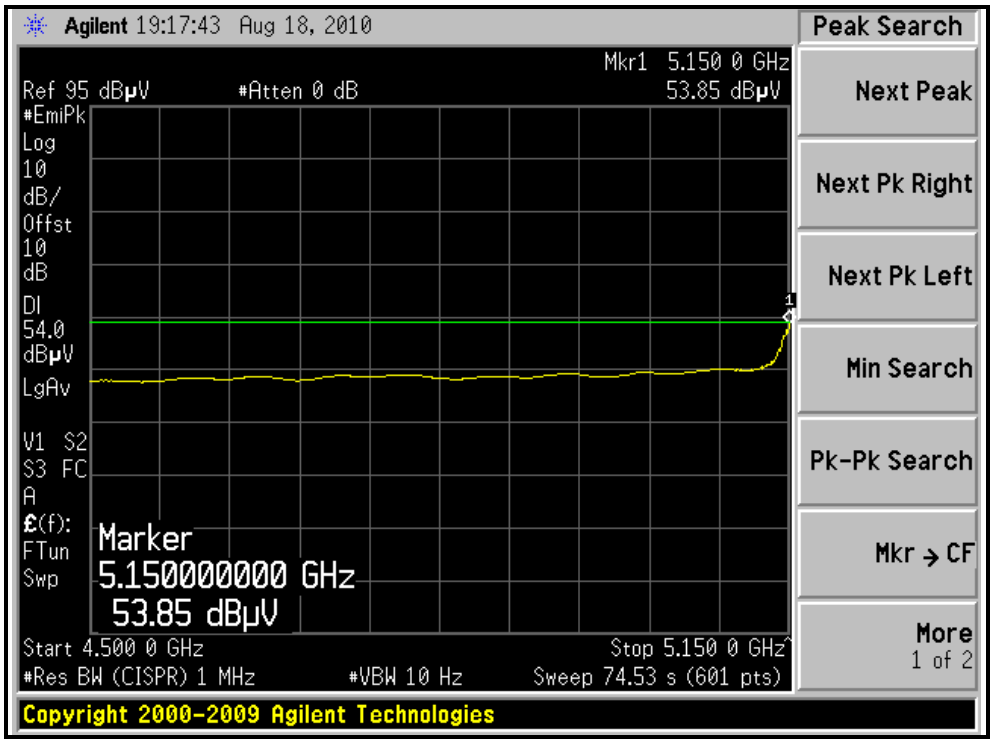
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)





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





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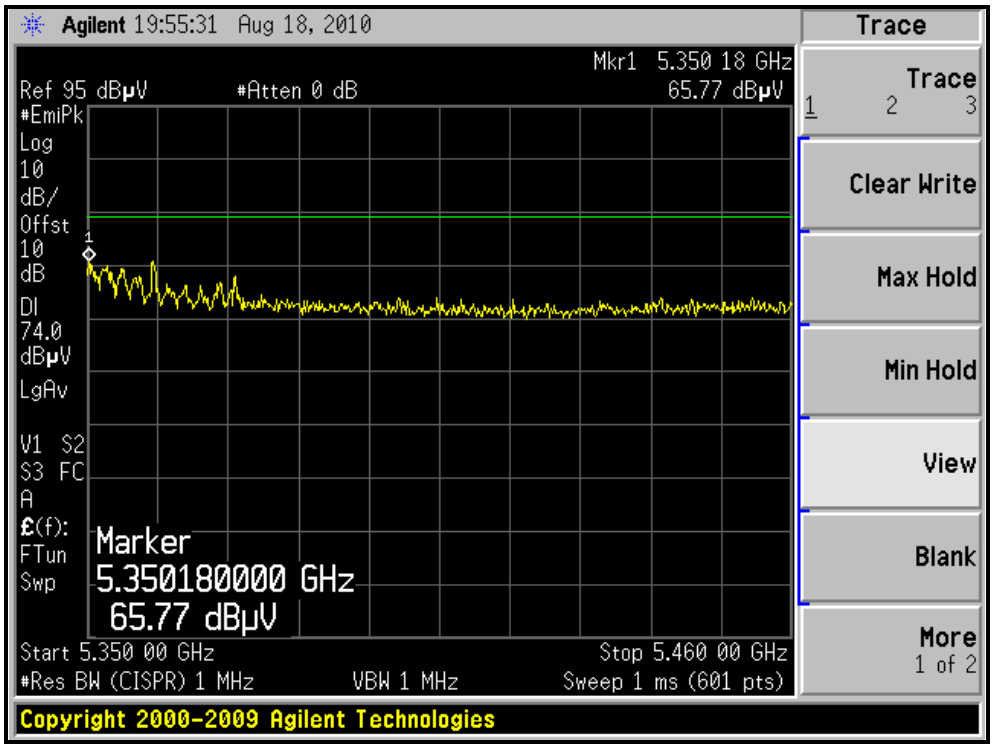

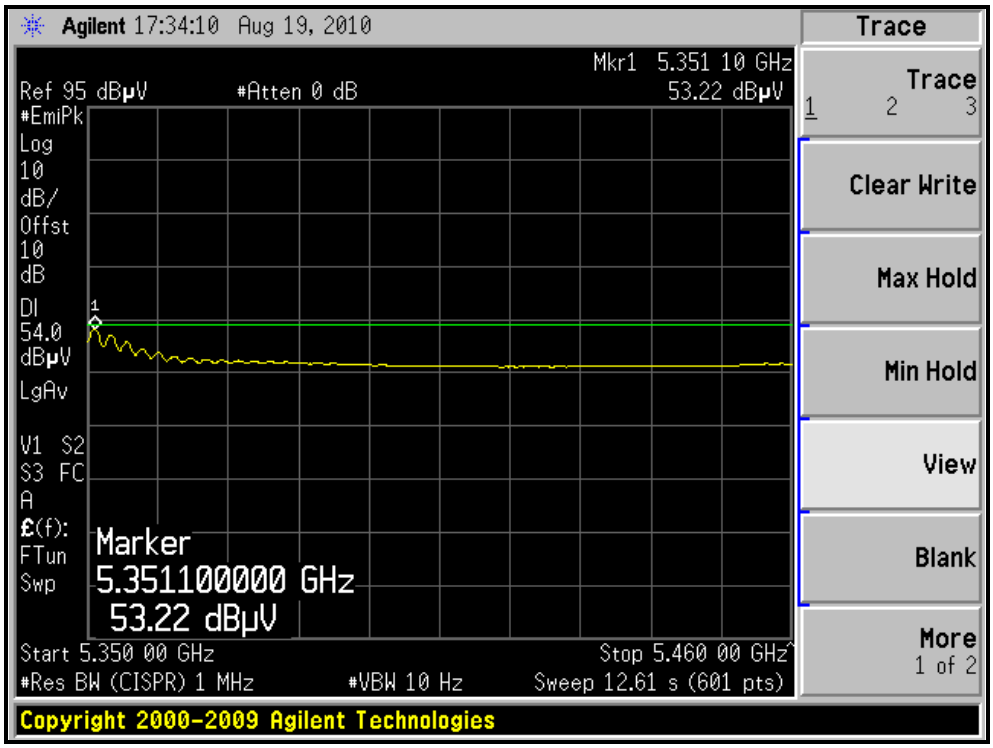

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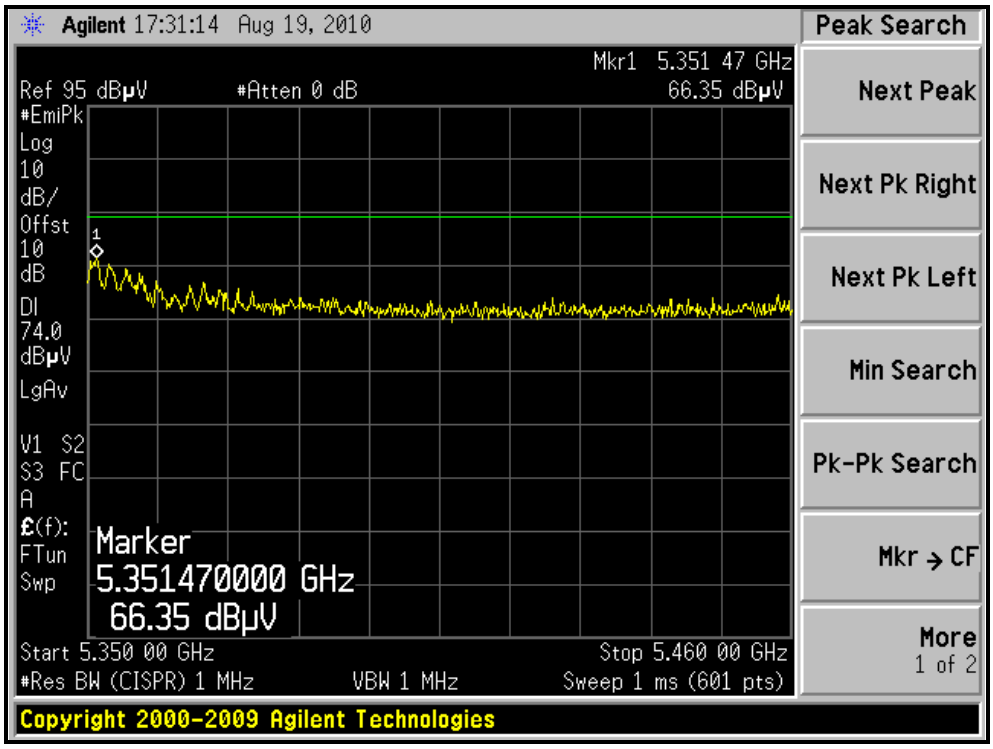

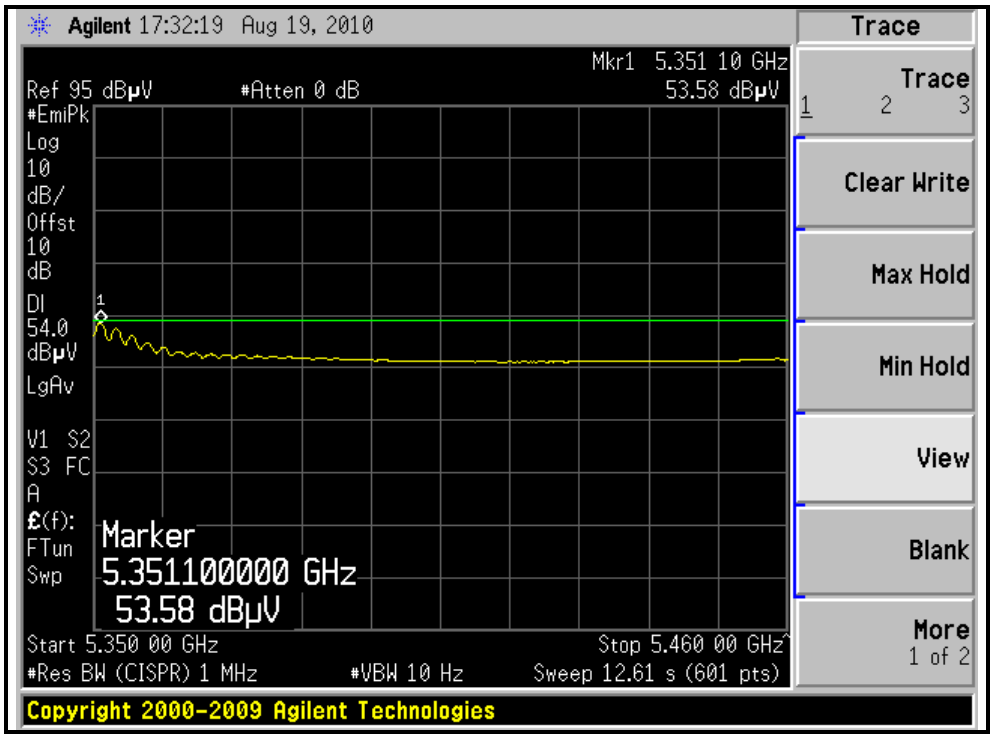

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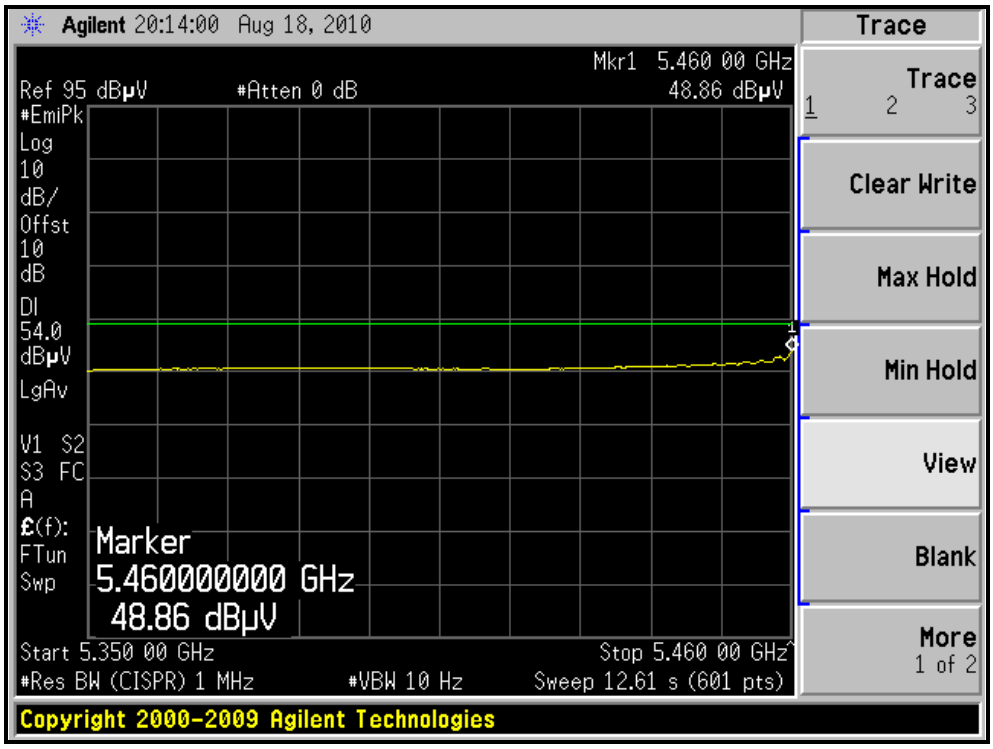
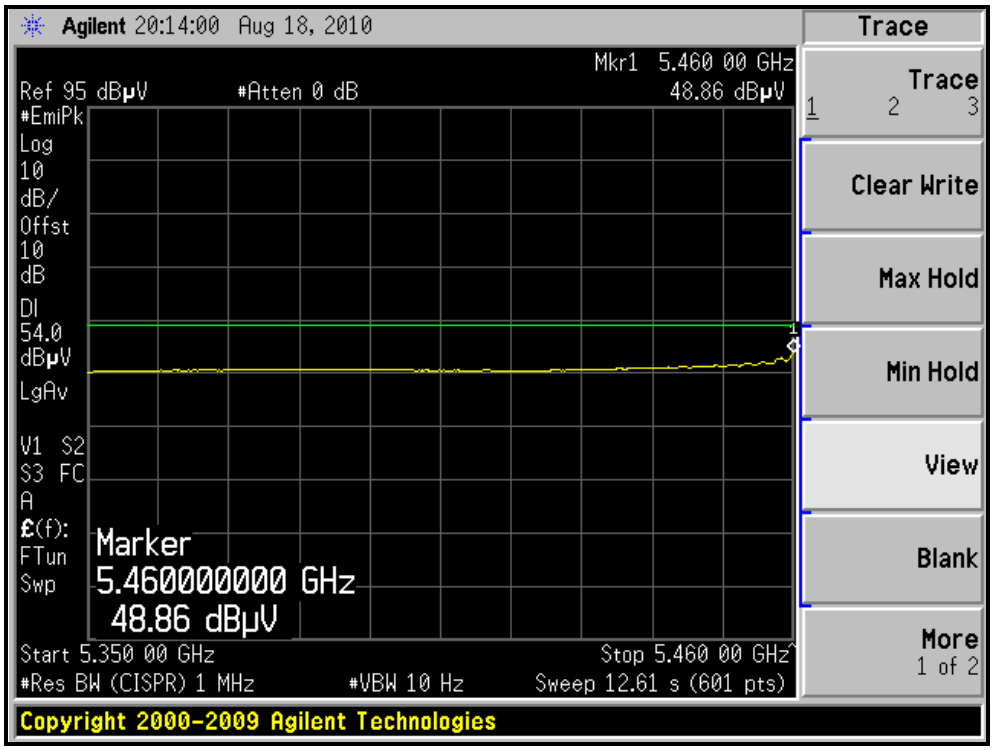
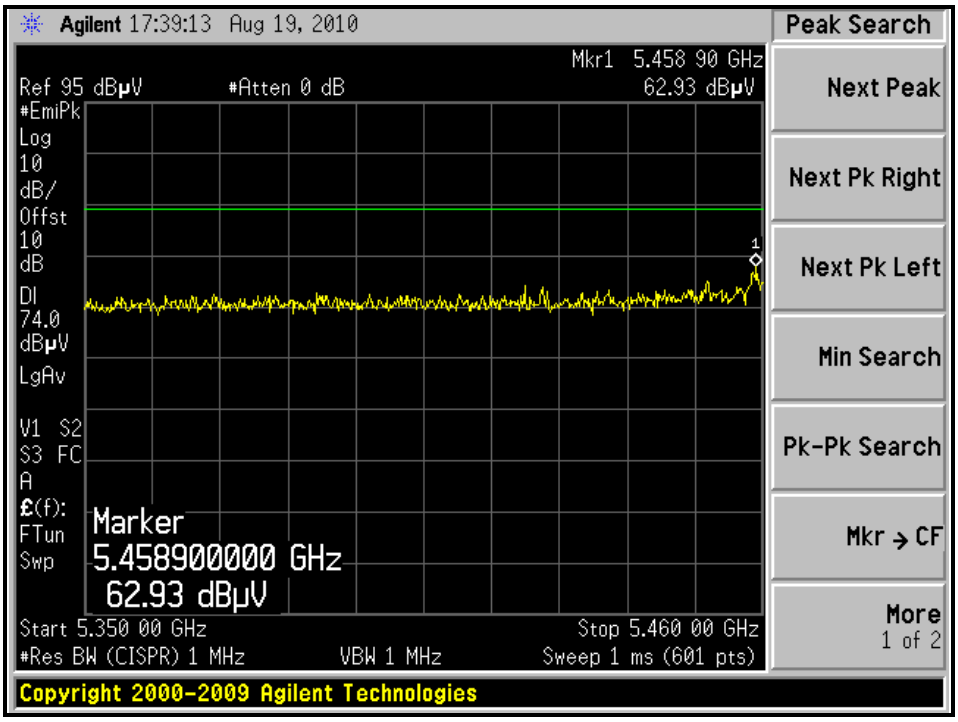
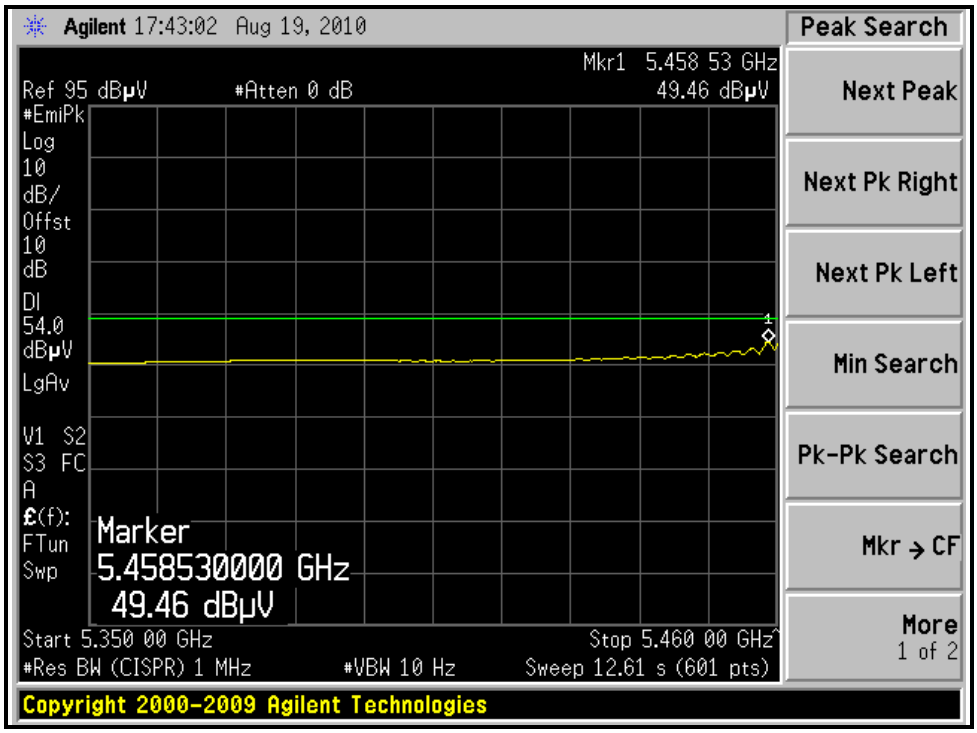




RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, VERTICAL)





4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

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

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

4.3.2 TEST INSTRUMENTS

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

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

4.3.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 300kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

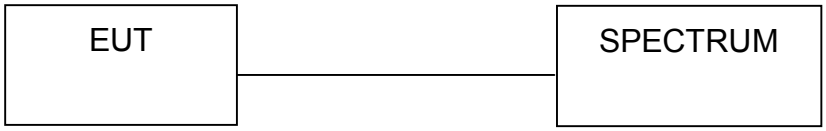
NOTE:
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

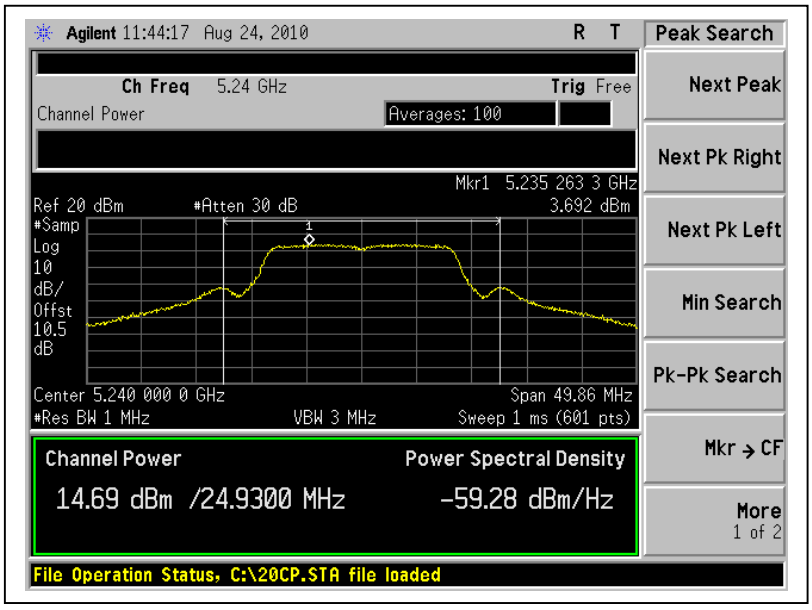
4.3.7 TEST RESULTS

802.11a OFDM MODULATION:

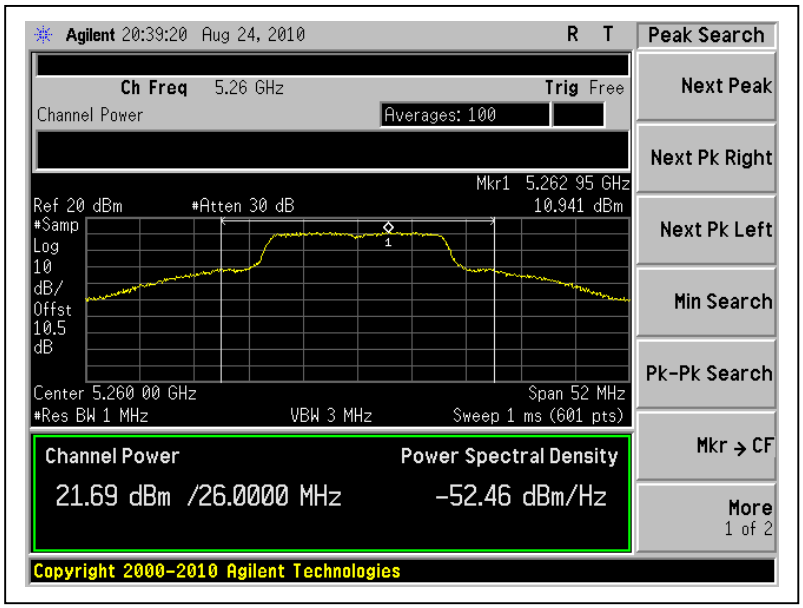
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/ FAIL
36	5180	28.8	14.6	17.0	25.91	PASS
40	5200	28.8	14.6	17.0	23.20	PASS
48	5240	29.5	14.7	17.0	24.93	PASS
52	5260	147.9	21.7	24.0	26.00	PASS
60	5300	147.9	21.7	24.0	25.74	PASS
64	5320	67.6	18.3	24.0	26.51	PASS
100	5500	41.7	16.2	24.0	25.83	PASS
120	5600	138.0	21.4	24.0	29.02	PASS
140	5700	28.2	14.5	24.0	25.75	PASS

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

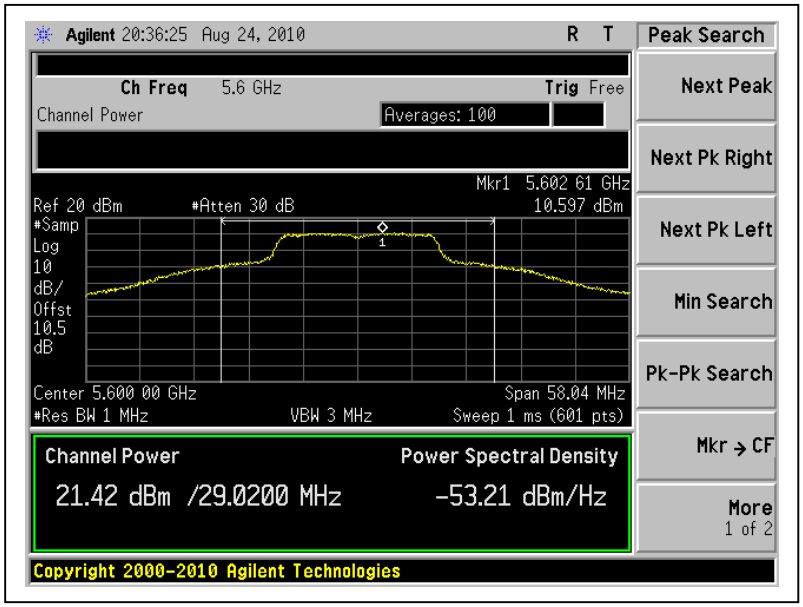
Peak Power Output:
CH48



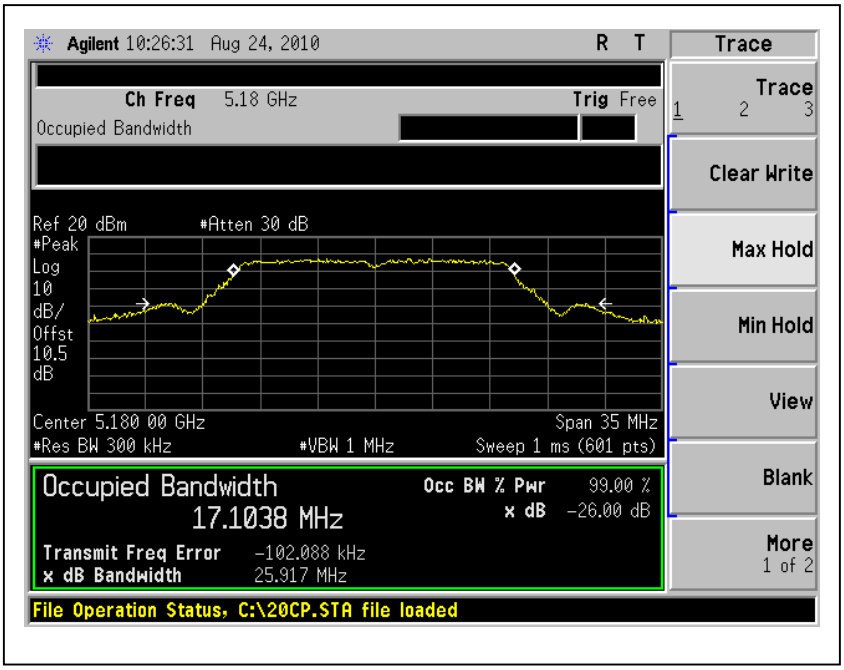
CH52



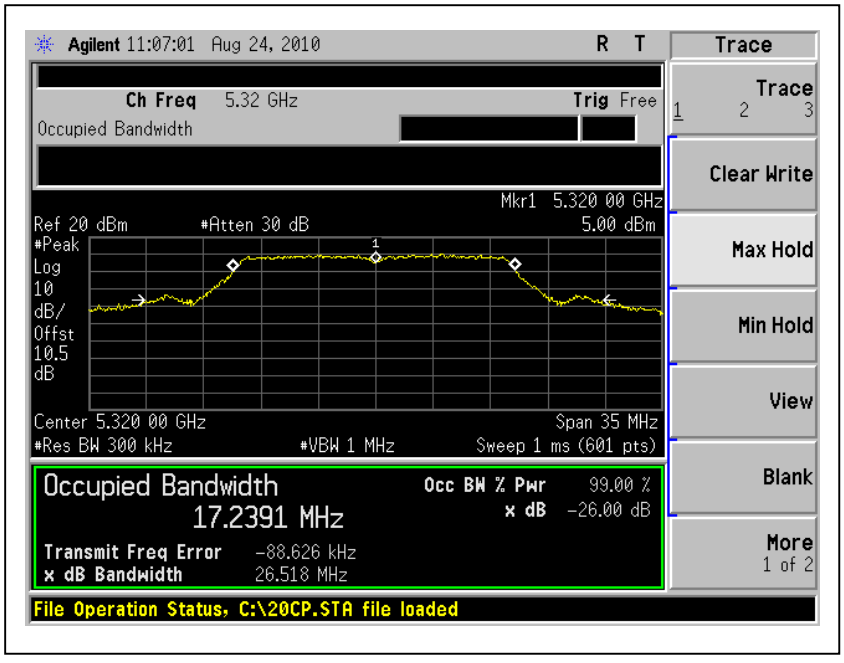
CH120


Agilent 20:36:25 Aug 24, 2010
R T
Peak Search
Ch Freq 5.6 GHz
Trig Free
Channel Power
Averages: 100
Next Peak
Next Pk Right
Mkr1 5.602 61 GHz
Ref 20 dBm
#Atten 30 dB
10.597 dBm
Next Pk Left
#Samp
Log
10
dB/
Offst
10.5
dB
Min Search
Pk-Pk Search
Center 5.600 00 GHz
Span 58.04 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 1 ms (601 pts)
Mkr → CF
Channel Power
Power Spectral Density
21.42 dBm /29.0200 MHz
-53.21 dBm/Hz
More
1 of 2
Copyright 2000-2010 Agilent Technologies

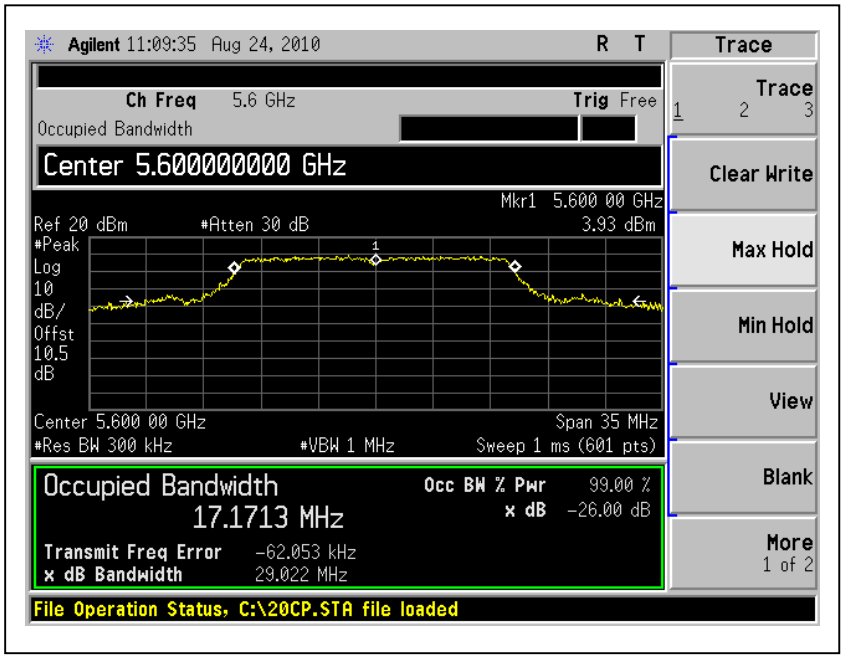
26dB Occupied Bandwidth:
CH36



CH64



CH120

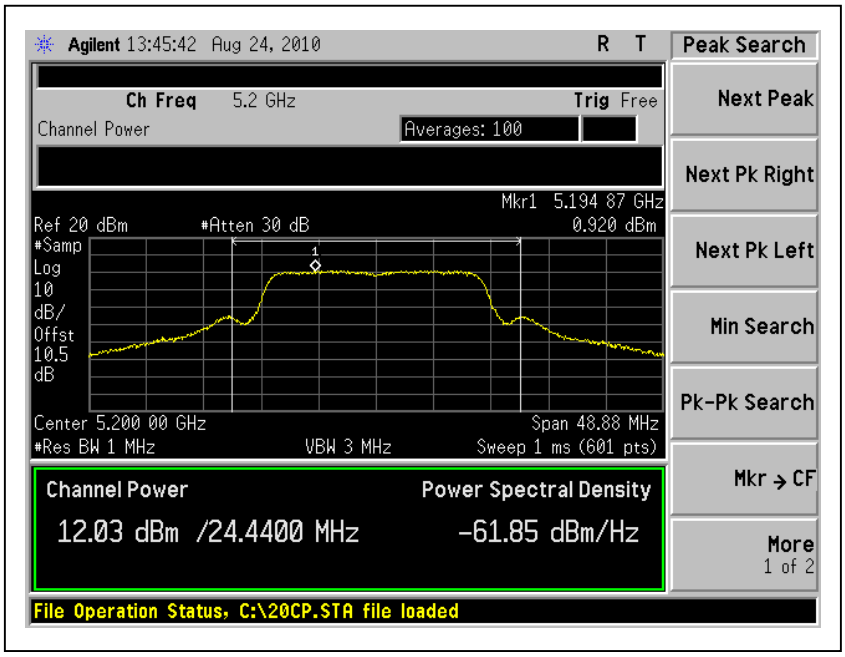

Agilent 11:09:35 Aug 24, 2010
R T
Trace
Ch Freq 5.6 GHz
Trig Free
Occupied Bandwidth
Center 5.600000000 GHz
Mkr1 5.600 00 GHz
Ref 20 dBm
#Atten 30 dB
3.93 dBm
#Peak
Log
10
dB/
Offst
10.5
dB
Center 5.600 00 GHz
Span 35 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Occupied Bandwidth
17.1713 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -62.053 kHz
x dB Bandwidth 29.022 MHz
File Operation Status, C:\20CP.STA file loaded
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2

802.11n (20MHz) OFDM MODULATION:

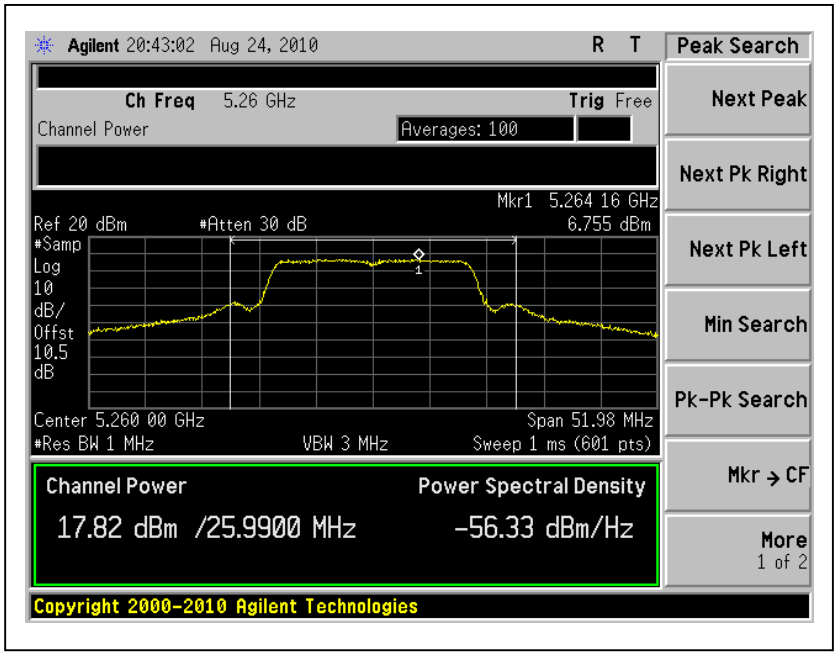
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/ FAIL
		Chain 0	Chain 1					
36	5180	11.9	11.4	29.4	14.7	17.0	28.07	PASS
40	5200	11.9	12.0	31.6	15.0	17.0	24.44	PASS
48	5240	11.9	11.9	31.1	14.9	17.0	27.08	PASS
52	5260	17.8	17.7	119.1	20.8	24.0	25.99	PASS
60	5300	17.8	17.6	117.8	20.7	24.0	26.88	PASS
64	5320	17.4	17.4	109.9	20.4	24.0	26.32	PASS
100	5500	14.6	14.5	57.0	17.6	24.0	24.8	PASS
120	5600	17.8	17.7	119.1	20.8	24.0	29.54	PASS
140	5700	13.4	13.4	44.0	16.4	24.0	26.69	PASS

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

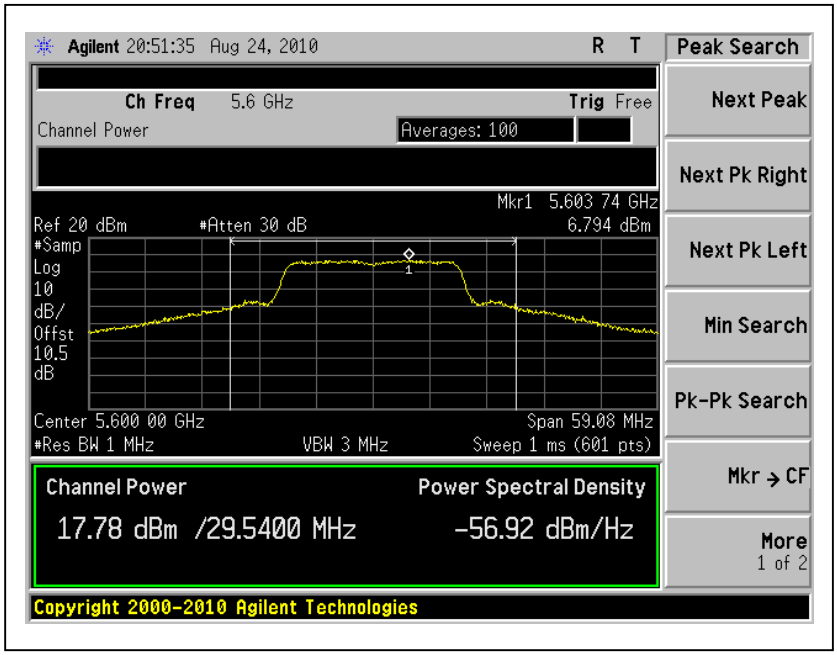
Peak Power Output:
For Chain (1) :CH40



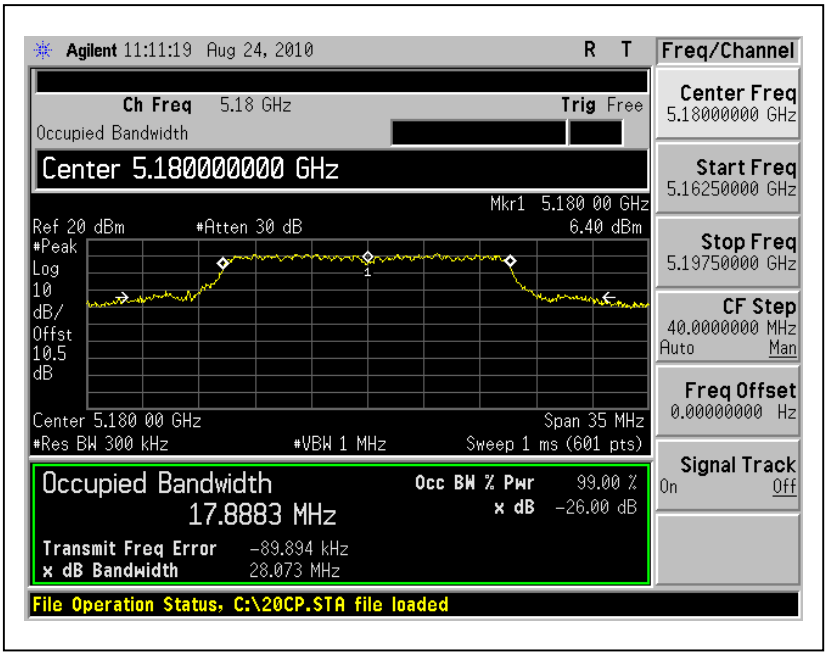
For Chain (0) :CH52



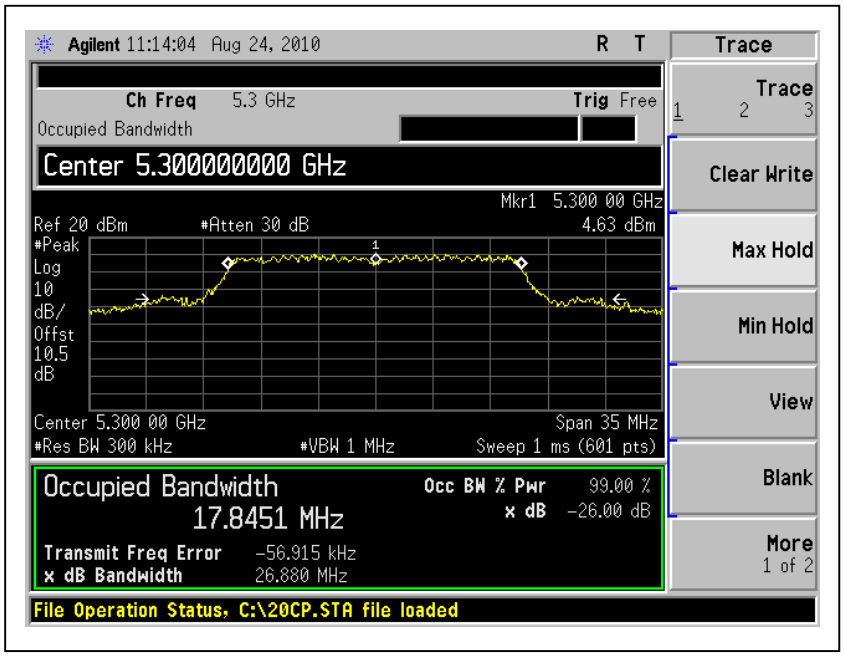
For Chain (0) :CH120



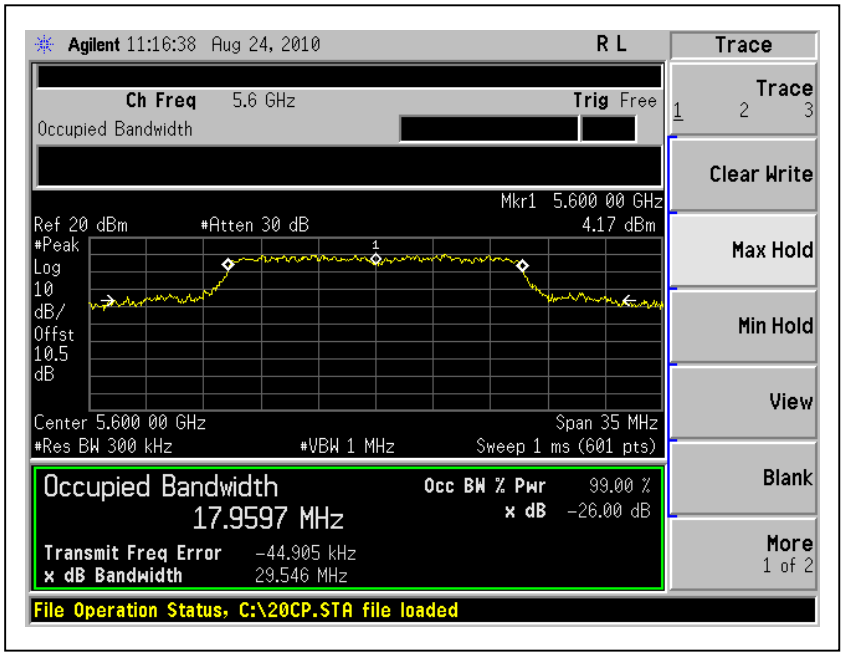
26dB Occupied Bandwidth:
CH36



CH60



CH120

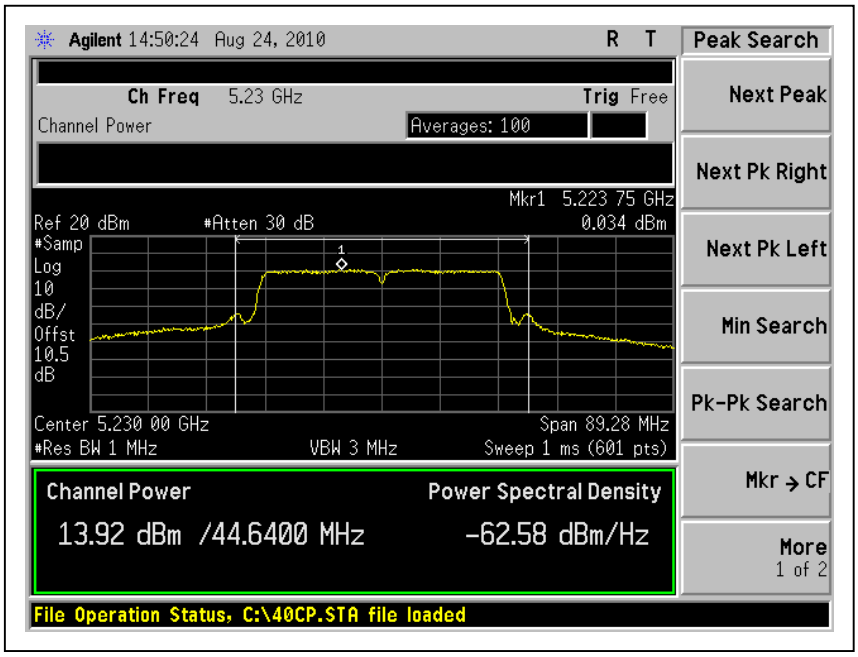

Agilent 11:16:38 Aug 24, 2010
R L
Trace
Ch Freq 5.6 GHz
Trig Free
Occupied Bandwidth
Trace
1 2 3
Clear Write
Mkr1 5.600 00 GHz
Ref 20 dBm
#Atten 30 dB
4.17 dBm
Max Hold
#Peak
Log
10
dB/
Offst
10.5
dB
Min Hold
View
Center 5.600 00 GHz
Span 35 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Blank
Occupied Bandwidth
17.9597 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
More
1 of 2
Transmit Freq Error -44.905 kHz
x dB Bandwidth 29.546 MHz
File Operation Status, C:\20CP.STA file loaded

802.11n (40MHz) OFDM MODULATION:

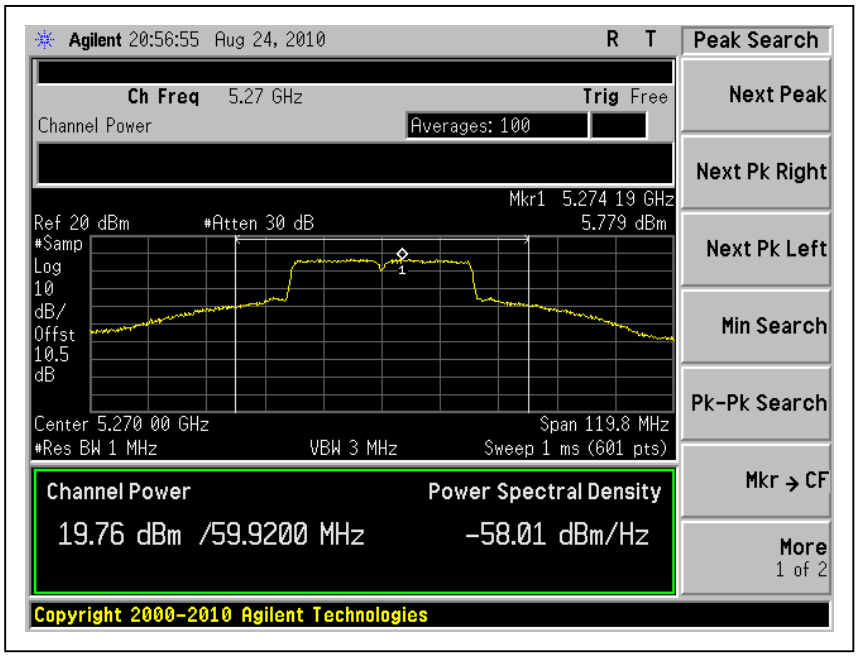
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)		TOTAL PEAK POWER (mW)	TOTAL PEAK POWER (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/ FAIL
		Chain 0	Chain 1					
38	5190	12.1	11.8	31.5	15.0	17.0	45.08	PASS
46	5230	13.9	13.5	47.0	16.7	17.0	44.64	PASS
54	5270	19.8	19.7	188.8	22.8	24.0	59.92	PASS
62	5310	13.4	13.1	41.9	16.2	24.0	45.13	PASS
102	5510	12.0	12.1	32.1	15.1	24.0	44.81	PASS
118	5590	19.7	19.3	178.4	22.5	24.0	61.87	PASS
134	5670	15.6	15.8	74.3	18.7	24.0	58.1	PASS

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

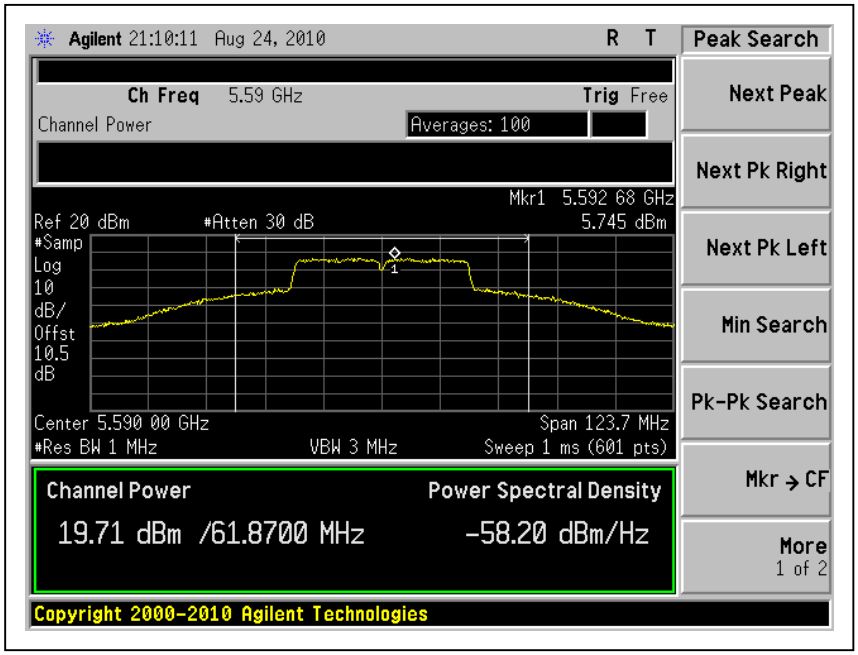
Peak Power Output:
For Chain (0) :CH46



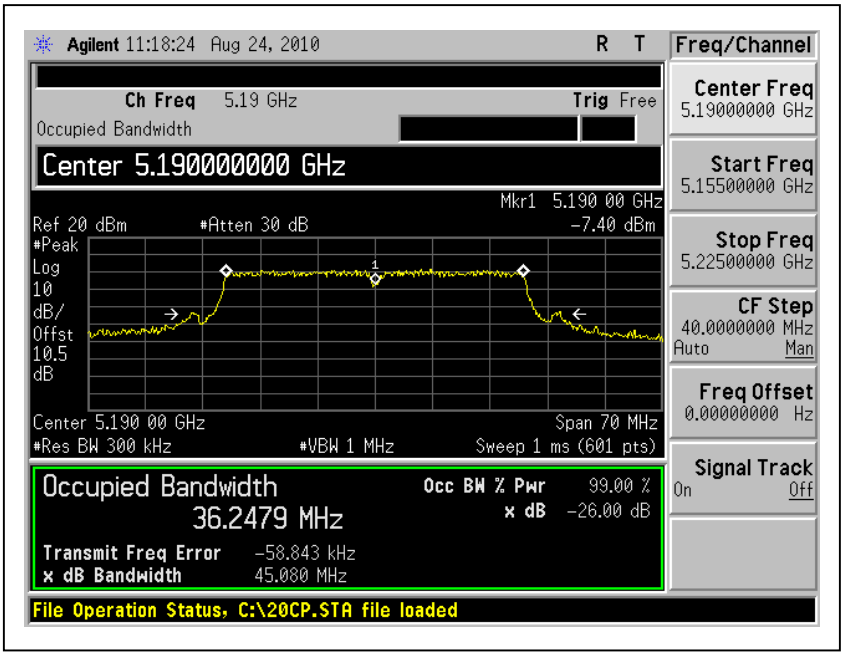
For Chain (0) :CH54



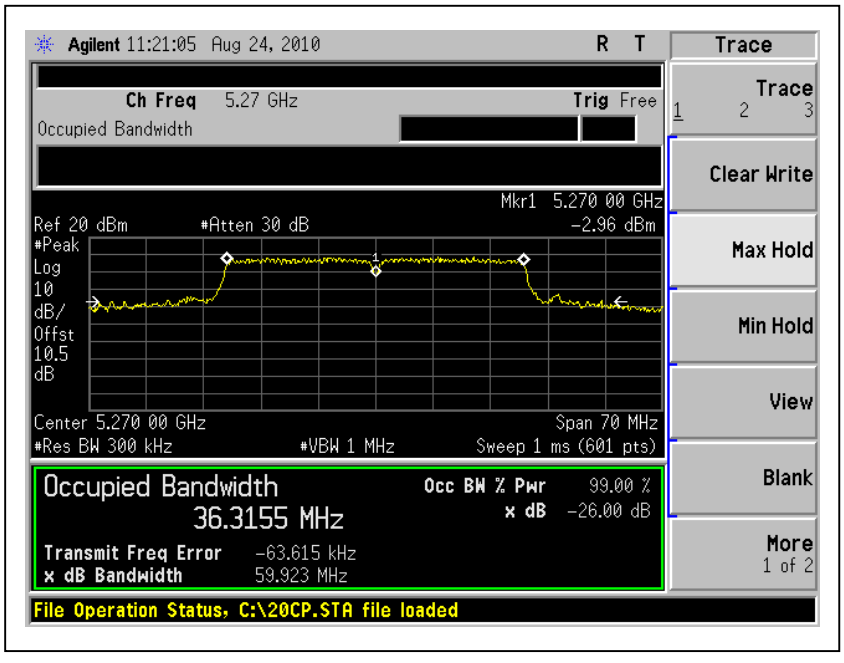
For Chain (0) :CH118



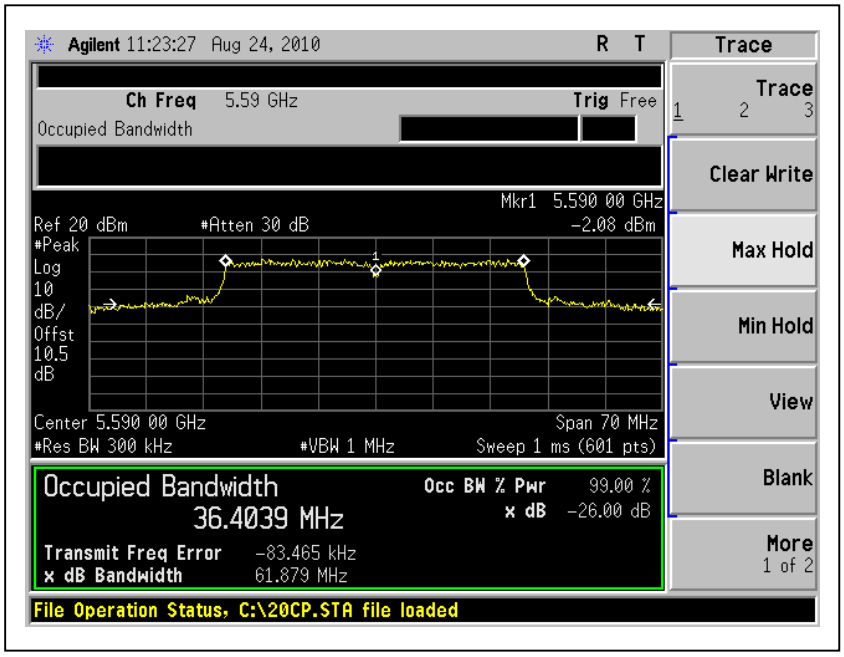
26dB Occupied Bandwidth:
CH38



CH54



CH118


Agilent 11:23:27 Aug 24, 2010
R T
Trace
Ch Freq 5.59 GHz
Trig Free
Occupied Bandwidth
Trace
1 2 3
Clear Write
Mkr1 5.590 00 GHz
Ref 20 dBm
#Atten 30 dB
-2.08 dBm
Max Hold
#Peak
Log
10
dB/
Offst
10.5
dB
Min Hold
View
Center 5.590 00 GHz
Span 70 MHz
#Res BW 300 kHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
Blank
Occupied Bandwidth
36.4039 MHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
More
1 of 2
Transmit Freq Error -83.465 kHz
x dB Bandwidth 61.879 MHz
File Operation Status, C:\20CP.STA file loaded

4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

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

4.4.2 TEST INSTRUMENTS

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

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

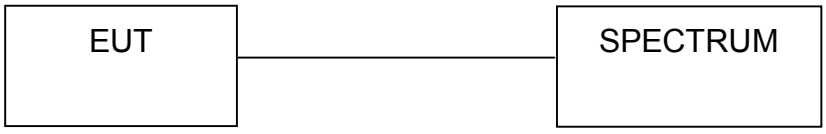
4.4.3 TEST PROCEDURE

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

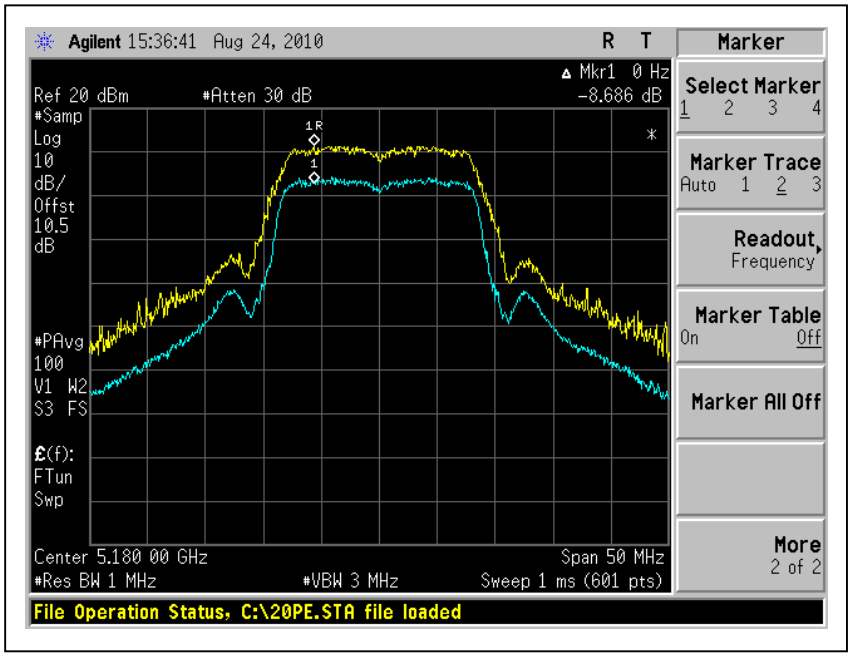
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.4.7 TEST RESULTS

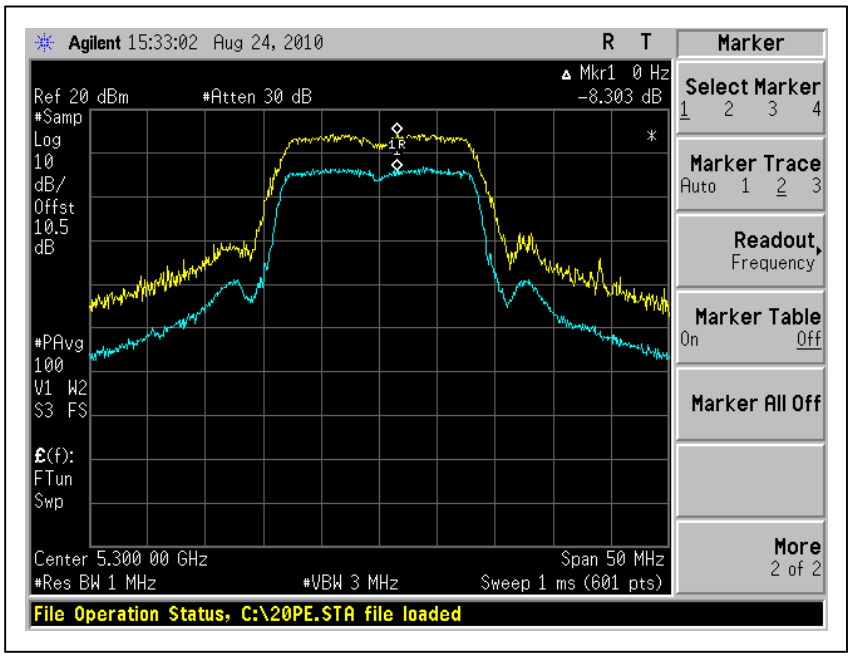
802.11a OFDM MODULATION

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	8.7	13	PASS
40	5200	8.3	13	PASS
48	5240	8.0	13	PASS
52	5260	7.6	13	PASS
60	5300	8.3	13	PASS
64	5320	8.3	13	PASS
100	5500	8.6	13	PASS
120	5600	8.3	13	PASS
140	5700	7.8	13	PASS

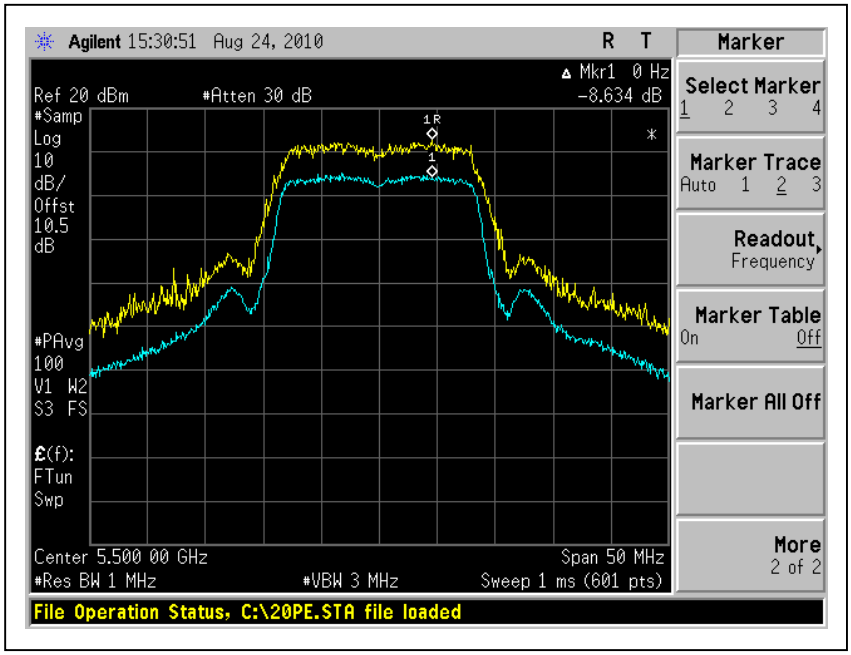
CH36


Agilent 15:36:41 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-8.686 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.180 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\20PE.STA file loaded

CH60


Agilent 15:33:02 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-8.303 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.300 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\20PE.STA file loaded

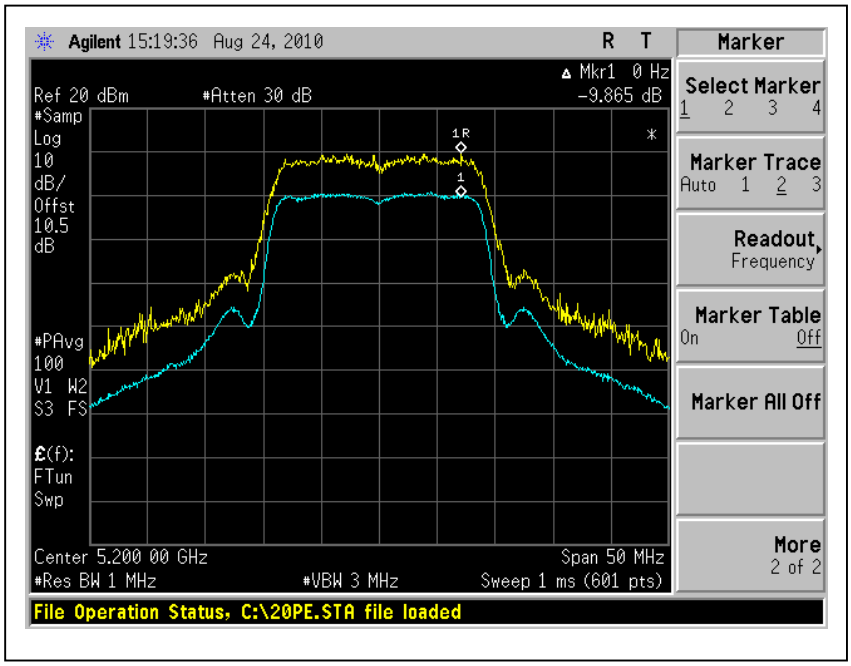
CH100


Agilent 15:30:51 Aug 24, 2010
R T
Marker
Δ Mkr1 0 Hz
-8.634 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
1R
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.500 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\20PE.STA file loaded

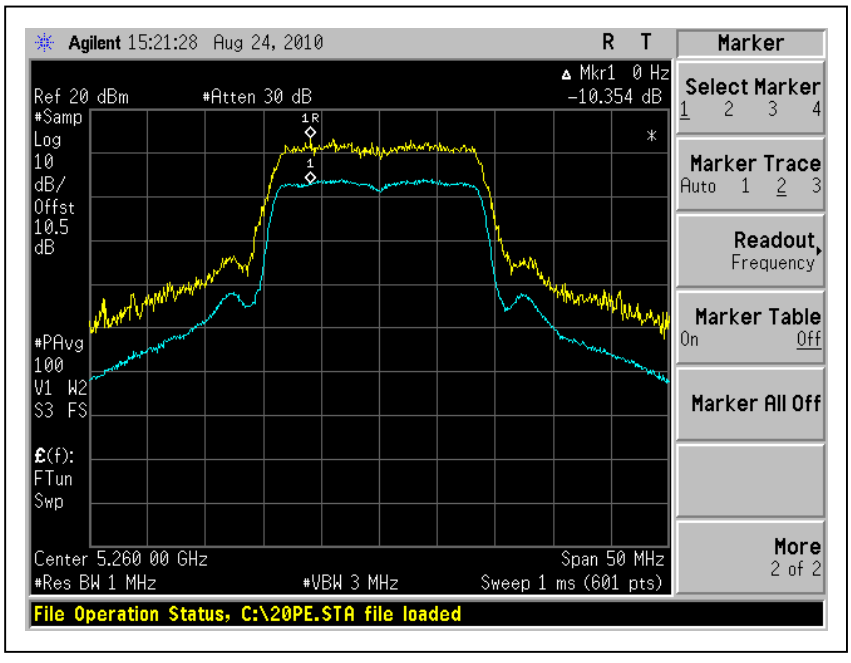
802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	9.8	13	PASS
40	5200	9.9	13	PASS
48	5240	9.8	13	PASS
52	5260	10.4	13	PASS
60	5300	10.1	13	PASS
64	5320	9.0	13	PASS
100	5500	9.0	13	PASS
120	5600	9.3	13	PASS
140	5700	9.2	13	PASS

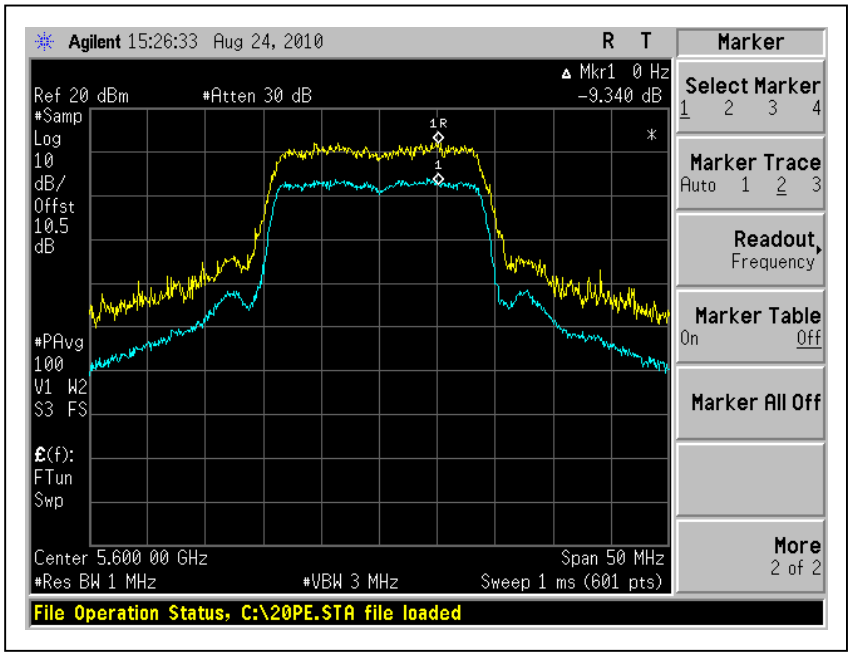
CH40


Agilent 15:19:36 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-9.865 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.200 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\20PE.STA file loaded

CH52


Agilent 15:21:28 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-10.354 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.260 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\20PE.STA file loaded

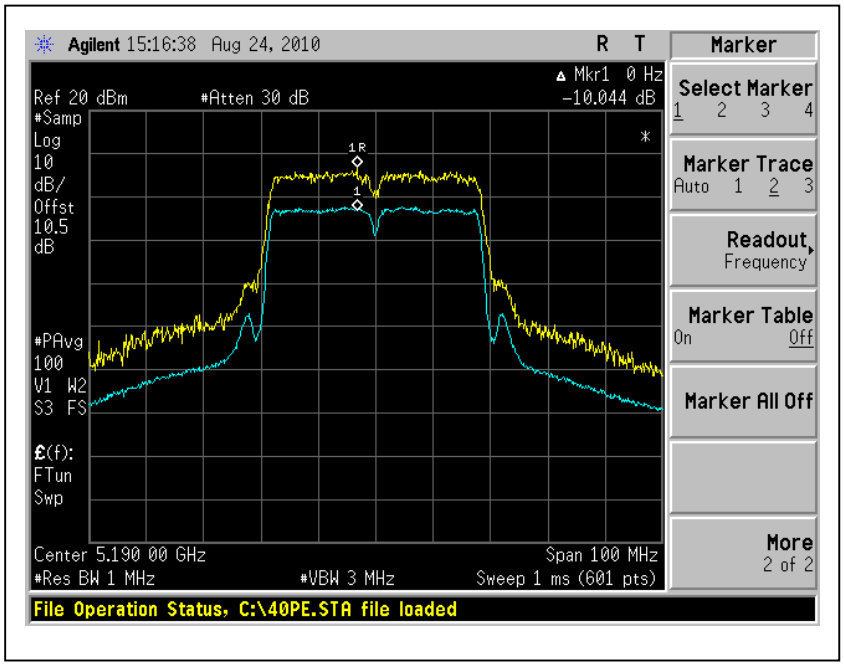
CH120


Agilent 15:26:33 Aug 24, 2010
R T
Marker
Δ Mkr1 0 Hz
-9.340 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
1R
1
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.600 00 GHz
Span 50 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
File Operation Status, C:\20PE.STA file loaded

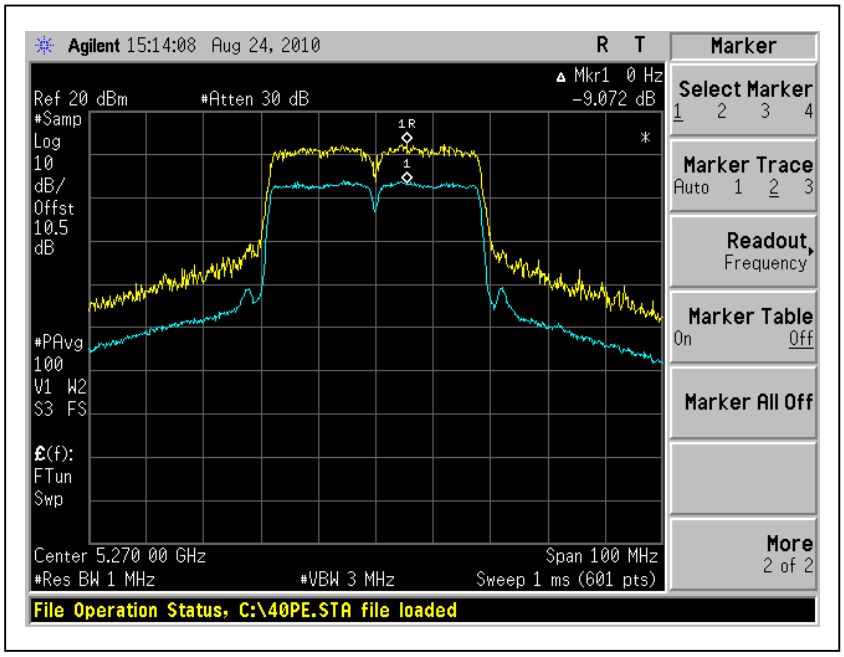
802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
38	5190	10.0	13	PASS
46	5230	9.0	13	PASS
54	5270	9.1	13	PASS
62	5310	9.1	13	PASS
102	5510	9.6	13	PASS
118	5590	9.7	13	PASS
134	5670	9.0	13	PASS

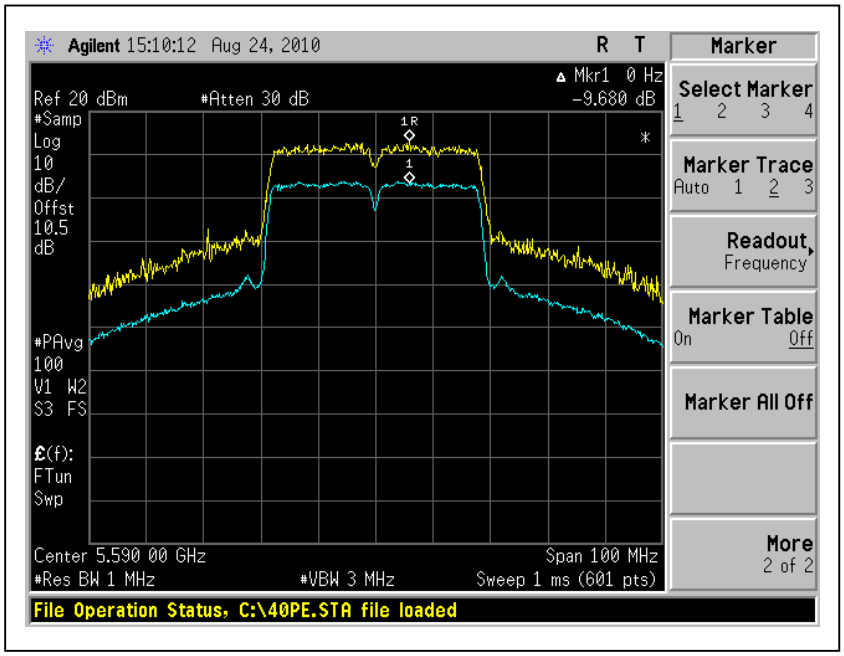
CH38


Agilent 15:16:38 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-10.044 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.190 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\40PE.STA file loaded

CH54


Agilent 15:14:08 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-9.072 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.270 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\40PE.STA file loaded

CH118


Agilent 15:10:12 Aug 24, 2010
R T
Marker
Mkr1 0 Hz
-9.680 dB
Ref 20 dBm
#Atten 30 dB
#Samp
Log
10
dB/
Offst
10.5
dB
1R
1
#PAvg
100
V1 W2
S3 FS
£(f):
FTun
Swp
Center 5.590 00 GHz
Span 100 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Select Marker
1 2 3 4
Marker Trace
Auto 1 2 3
Readout
Frequency
Marker Table
On Off
Marker All Off
More
2 of 2
File Operation Status, C:\40PE.STA file loaded

4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST INSTRUMENTS

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

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

4.5.3 TEST PROCEDURES

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP

4.5.6 EUT OPERATING CONDITIONS

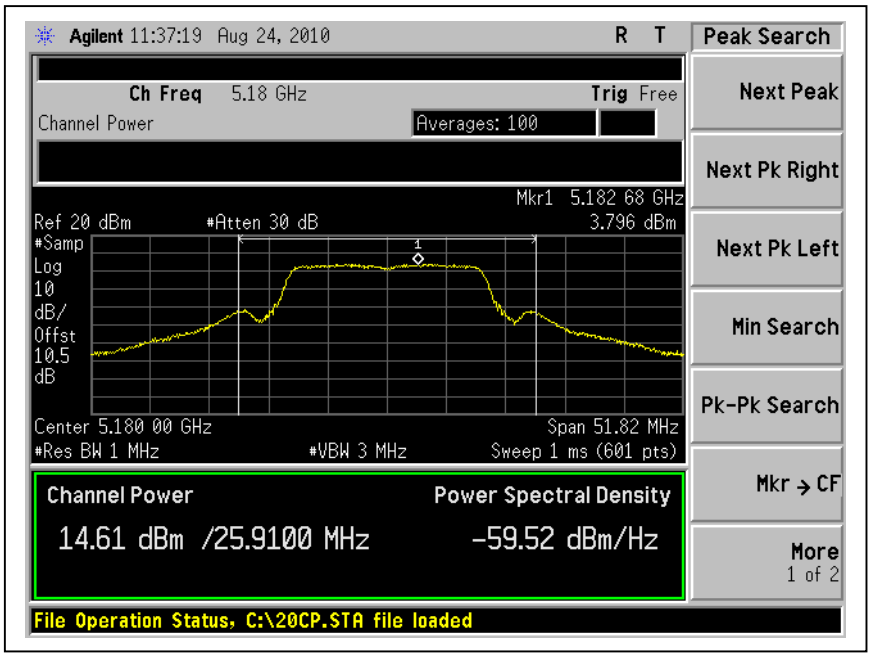
Same as 4.3.6

4.5.7 TEST RESULTS

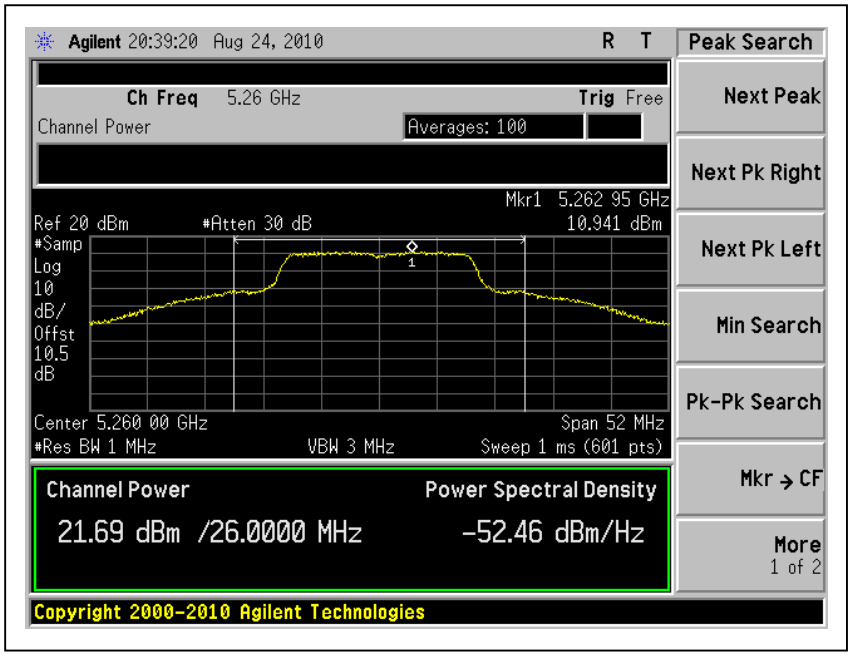
802.11a OFDM MODULATION

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
36	5180	3.8	4	PASS
40	5200	3.7	4	PASS
48	5240	3.7	4	PASS
52	5260	10.9	11	PASS
60	5300	10.9	11	PASS
64	5320	7.8	11	PASS
100	5500	5.5	11	PASS
120	5600	10.6	11	PASS
140	5700	4.0	11	PASS

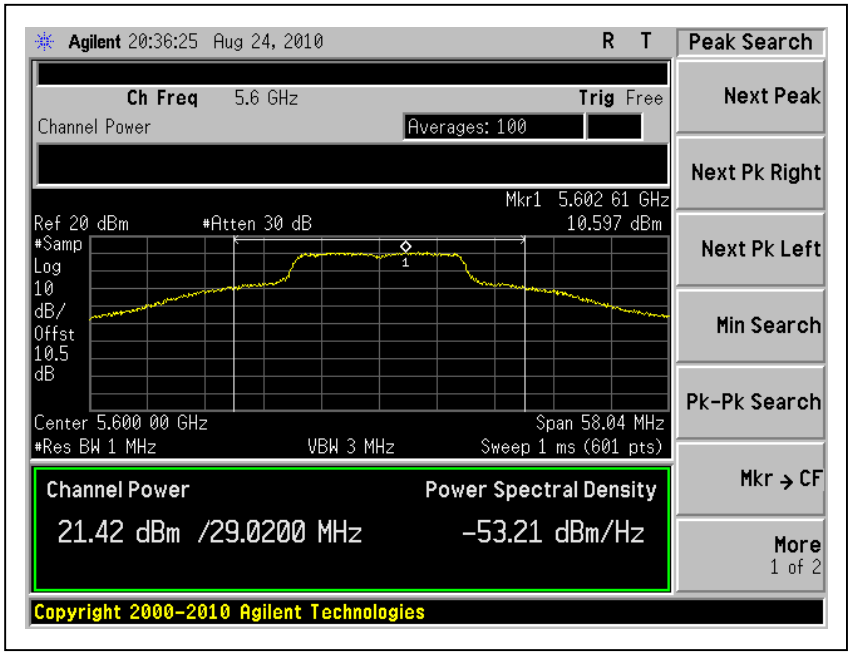
CH36


Agilent 11:37:19 Aug 24, 2010
R T
Peak Search
Ch Freq 5.18 GHz
Trig Free
Channel Power
Averages: 100
Next Peak
Next Pk Right
Mkr1 5.182 68 GHz
Ref 20 dBm
#Atten 30 dB
3.796 dBm
#Samp
Log
10
dB/
Offst
10.5
dB
Next Pk Left
Min Search
Pk-Pk Search
Center 5.180 00 GHz
Span 51.82 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Mkr → CF
Channel Power
14.61 dBm /25.9100 MHz
Power Spectral Density
-59.52 dBm/Hz
More
1 of 2
File Operation Status, C:\20CP.STA file loaded

CH52


Agilent 20:39:20 Aug 24, 2010
R T
Peak Search
Ch Freq 5.26 GHz
Trig Free
Channel Power
Averages: 100
Next Peak
Next Pk Right
Mkr1 5.262 95 GHz
Ref 20 dBm
#Atten 30 dB
10.941 dBm
#Samp
Log
10
dB/
Offst
10.5
dB
Next Pk Left
Min Search
Pk-Pk Search
Center 5.260 00 GHz
Span 52 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 1 ms (601 pts)
Mkr → CF
Channel Power
21.69 dBm /26.0000 MHz
Power Spectral Density
-52.46 dBm/Hz
More
1 of 2
Copyright 2000-2010 Agilent Technologies

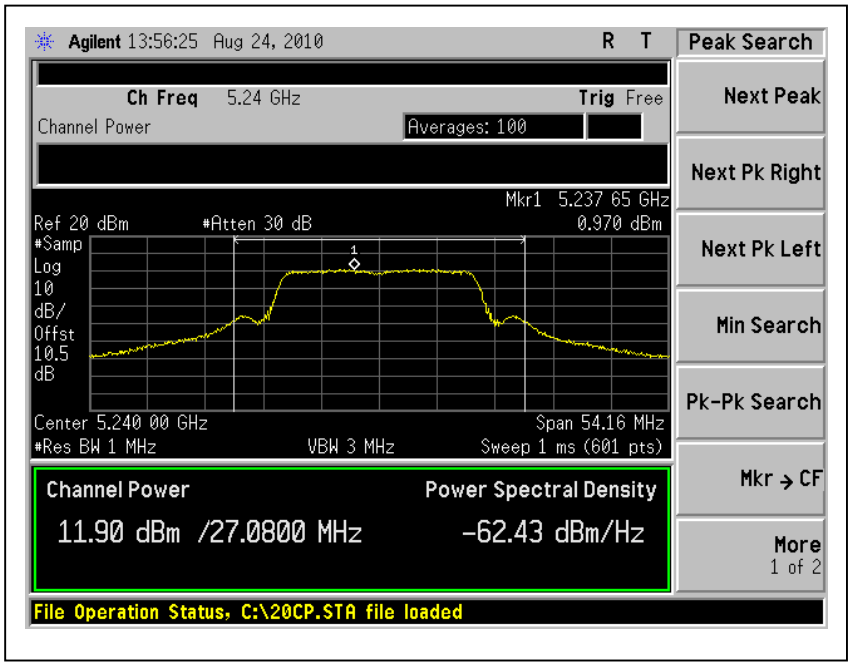
CH120


Agilent 20:36:25 Aug 24, 2010
R T
Ch Freq 5.6 GHz
Trig Free
Channel Power
Averages: 100
Mkr1 5.602 61 GHz
Ref 20 dBm
#Atten 30 dB
10.597 dBm
#Samp
Log
10
dB/
Offst
10.5
dB
Center 5.600 00 GHz
Span 58.04 MHz
#Res BW 1 MHz
VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
21.42 dBm /29.0200 MHz
Power Spectral Density
-53.21 dBm/Hz
Copyright 2000-2010 Agilent Technologies
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
Mkr → CF
More
1 of 2

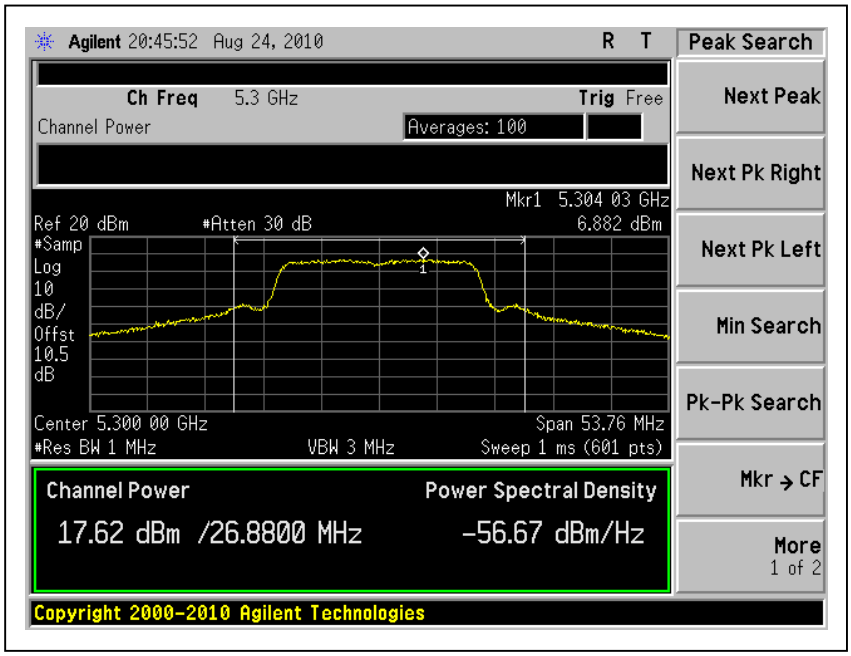
802.11n (20MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL OUTPUT POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
		Chain (0)	Chain(1)			
36	5180	0.7	0.7	3.7	4	PASS
40	5200	0.9	0.9	3.9	4	PASS
48	5240	1.0	0.8	3.9	4	PASS
52	5260	6.8	6.7	9.8	11	PASS
60	5300	6.6	6.9	9.8	11	PASS
64	5320	6.6	6.5	9.6	11	PASS
100	5500	3.7	3.6	6.7	11	PASS
120	5600	6.8	6.9	9.9	11	PASS
140	5700	2.4	2.6	5.5	11	PASS

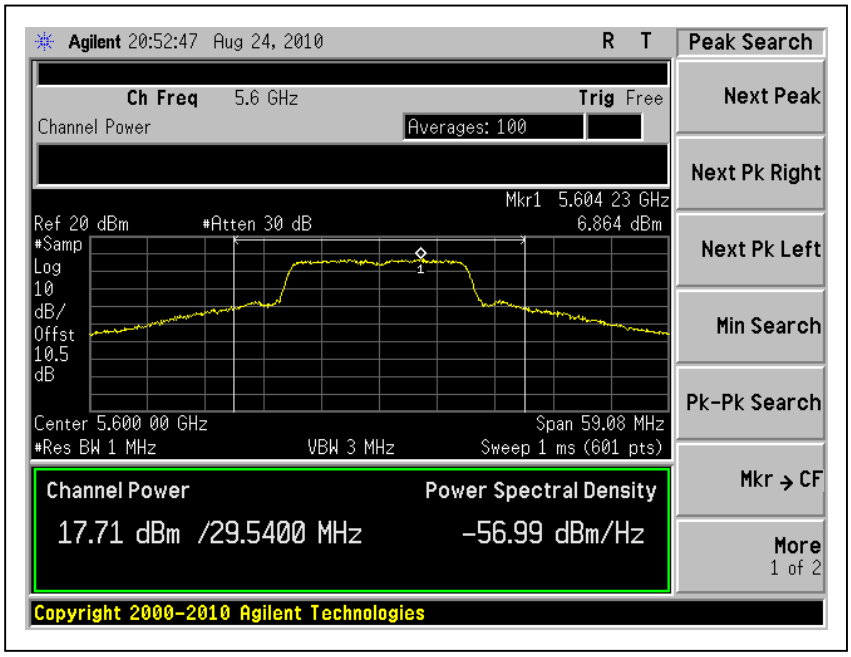
For Chain (0) : CH48



For Chain (1) : CH60



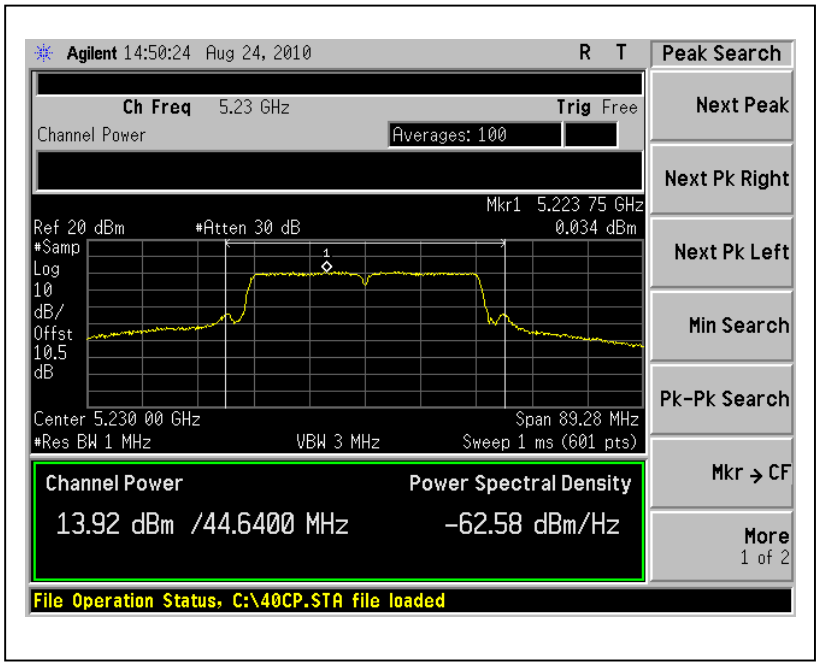
For Chain (1) : CH120



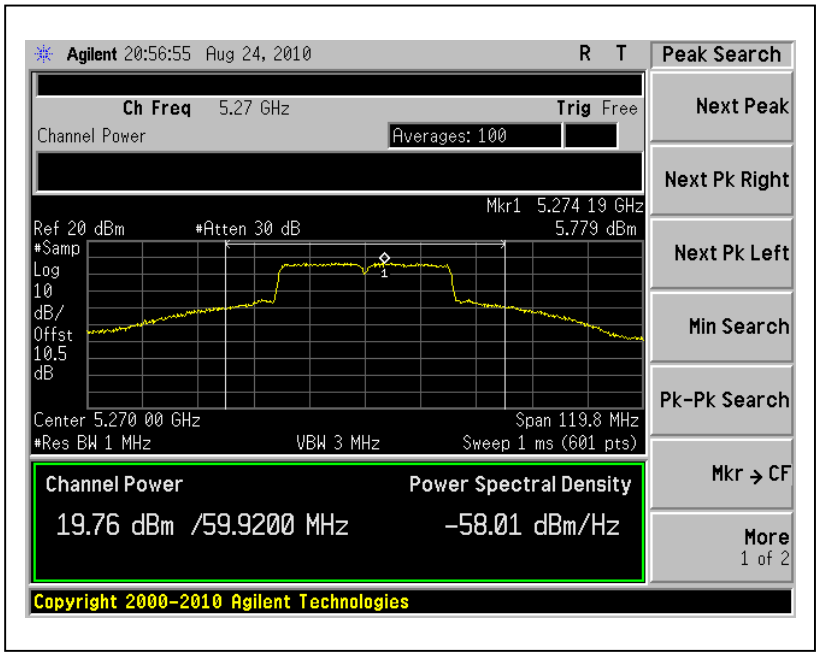
802.11n (40MHz) OFDM MODULATION:

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)		TOTAL OUTPUT POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
		Chain (0)	Chain(1)			
38	5190	-1.70	-2.10	1.10	4	PASS
46	5230	0.00	0.00	3.00	4	PASS
54	5270	5.80	5.60	8.70	11	PASS
62	5310	-0.60	-0.60	2.40	11	PASS
102	5510	-1.90	-1.70	1.20	11	PASS
118	5590	5.70	5.40	8.60	11	PASS
134	5670	1.90	1.90	4.90	11	PASS

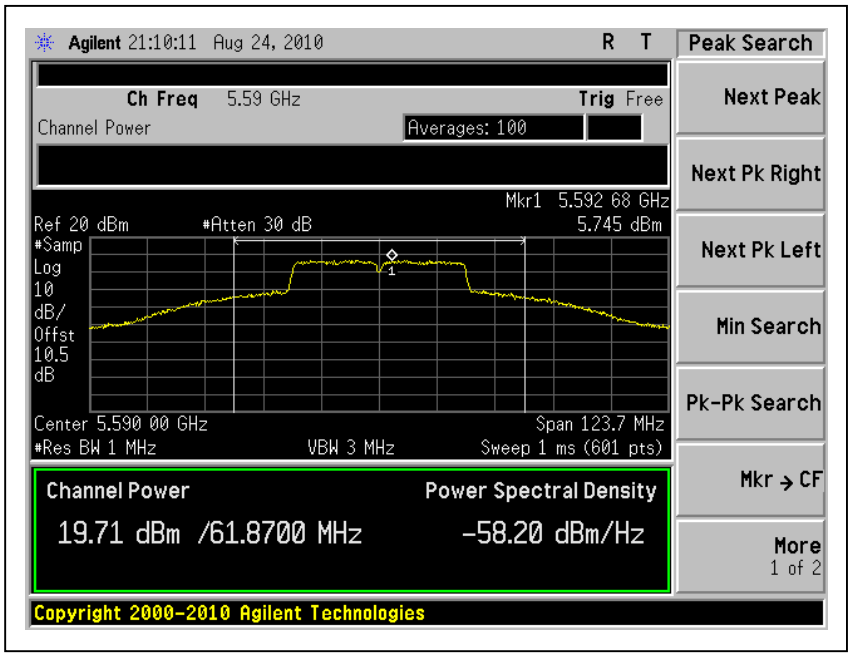
For Chain (0) : CH46



For Chain (0) : CH54



For Chain (0) : CH118



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

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

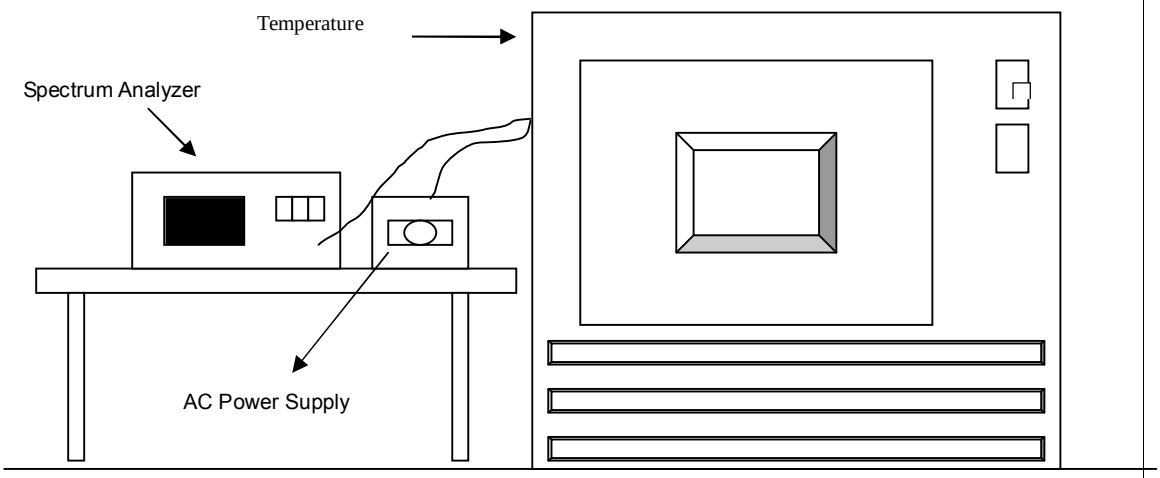
4.6.3 TEST PROCEDURE

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						Limit : ± 0.02%	
Temp. (℃)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5320.0039	0.000073	5320.0224	0.000421	5320.0154	0.000289
	110	5320.0043	0.000081	5320.0254	0.000477	5320.0164	0.000308
	93.5	5320.0039	0.000073	5320.0214	0.000402	5320.0154	0.000289
40	126.5	5320.009	0.000169	5320.0096	0.000180	5320.0204	0.000383
	110	5320.009	0.000169	5320.0096	0.000180	5320.0204	0.000383
	93.5	5320.009	0.000169	5320.0095	0.000179	5320.0184	0.000346
30	126.5	5319.9891	0.000205	5320.0085	0.000160	5320.028	0.000526
	110	5319.9892	0.000203	5320.0087	0.000164	5320.0278	0.000523
	93.5	5319.9890	0.000207	5320.0085	0.000160	5320.0278	0.000523
20	126.5	5320.0039	0.000073	5320.0096	0.000180	5320.0338	0.000635
	110	5320.0043	0.000081	5320.0096	0.000180	5320.0338	0.000635
	93.5	5320.0039	0.000073	5320.0095	0.000179	5320.034	0.000639
10	126.5	5320.0341	0.000641	5319.9896	0.000195	5320.0264	0.000496
	110	5320.034	0.000639	5319.9896	0.000195	5320.0284	0.000534
	93.5	5320.0338	0.000635	5319.9896	0.000195	5320.0254	0.000477
0	126.5	5320.0154	0.000289	5320.0274	0.000515	5320.0204	0.000383
	110	5320.0164	0.000308	5320.0274	0.000515	5320.0204	0.000383
	93.5	5320.0154	0.000289	5320.0274	0.000515	5320.0184	0.000346
-10	126.5	5319.9947	0.000100	5319.9891	0.000205	5319.9855	0.000273
	110	5319.9949	0.000096	5319.9892	0.000203	5319.9856	0.000271
	93.5	5319.9946	0.000102	5319.9890	0.000207	5319.9955	0.000085
-20	126.5	5320.0244	0.000459	5320.0096	0.000180	5319.9893	0.000201
	110	5320.0264	0.000496	5320.0096	0.000180	5319.9895	0.000197
	93.5	5320.0244	0.000459	5320.0095	0.000179	5319.9893	0.000201
-30	126.5	5319.9893	0.000201	5320.0042	0.000079	5320.0045	0.000085
	110	5319.9895	0.000197	5320.0046	0.000086	5320.0046	0.000086
	93.5	5319.9893	0.000201	5320.0042	0.000079	5320.0045	0.000085

4.7 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.7.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Dec. 18, 2009	Dec. 17, 2010

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

4.7.2 TEST PROCEDURE

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

4.7.3 EUT OPERATING CONDITION

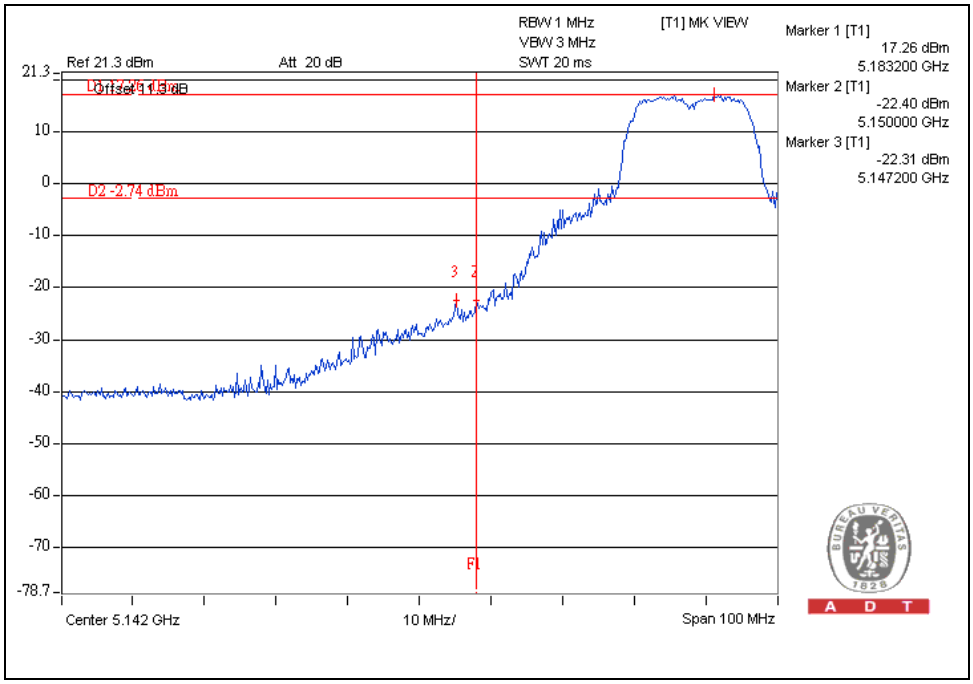
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.4 TEST RESULTS

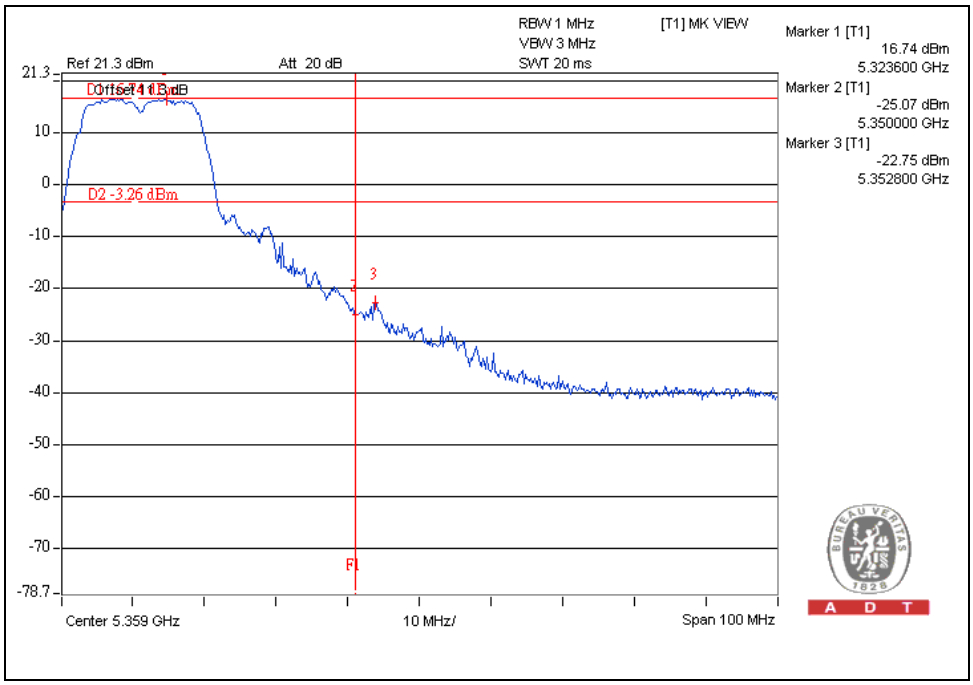
For 5.15 to 5.35GHz band:
The spectrum plots (Peak RBW=1MHz, VBW=3MHz) are attached on the following pages.

802.11a OFDM modulation

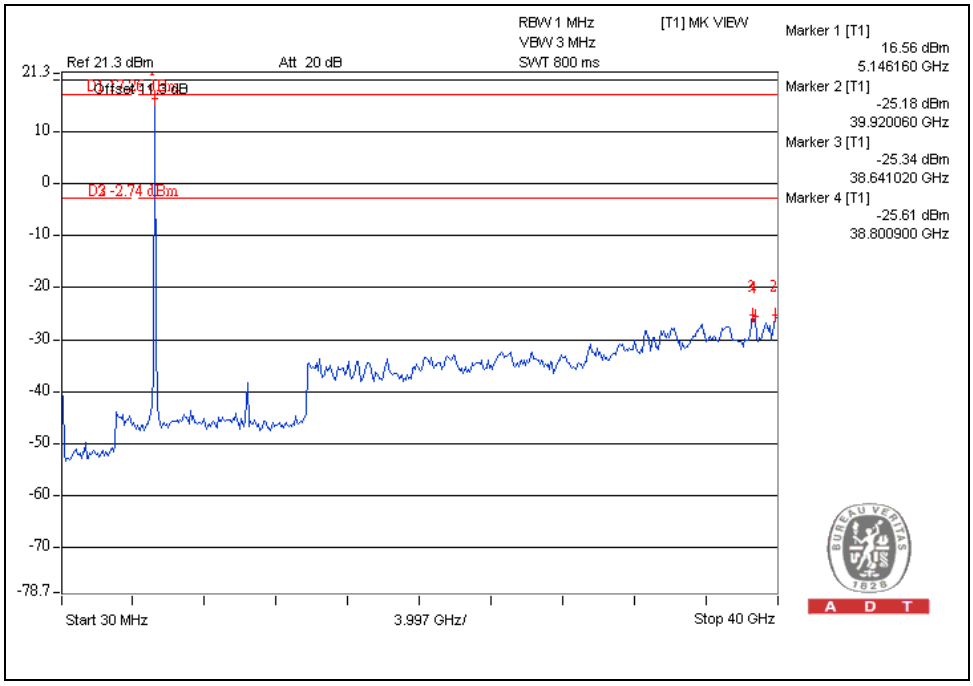
CH 36



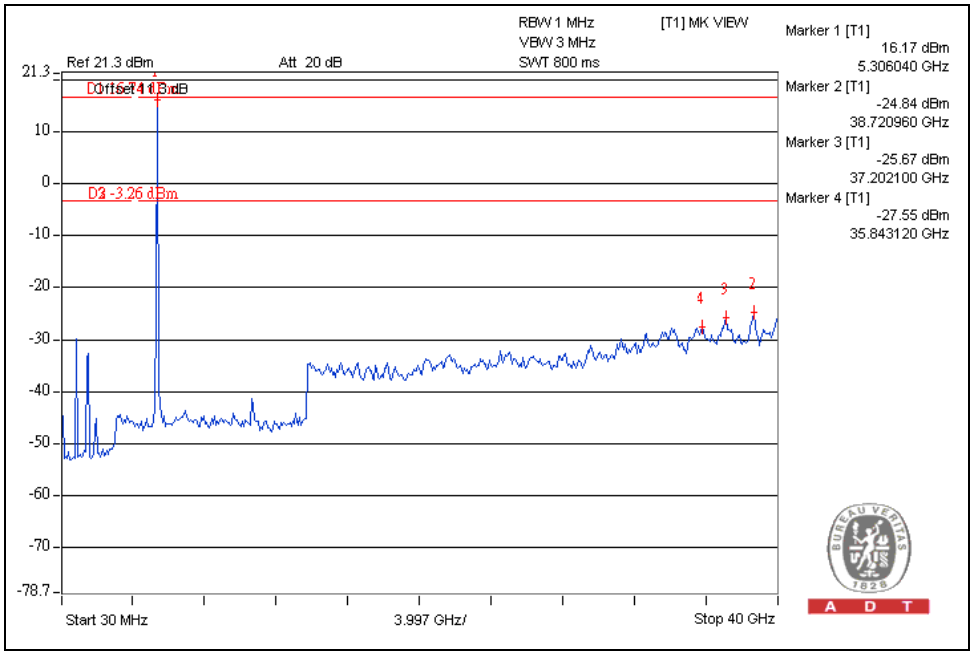
CH 64



CH 36

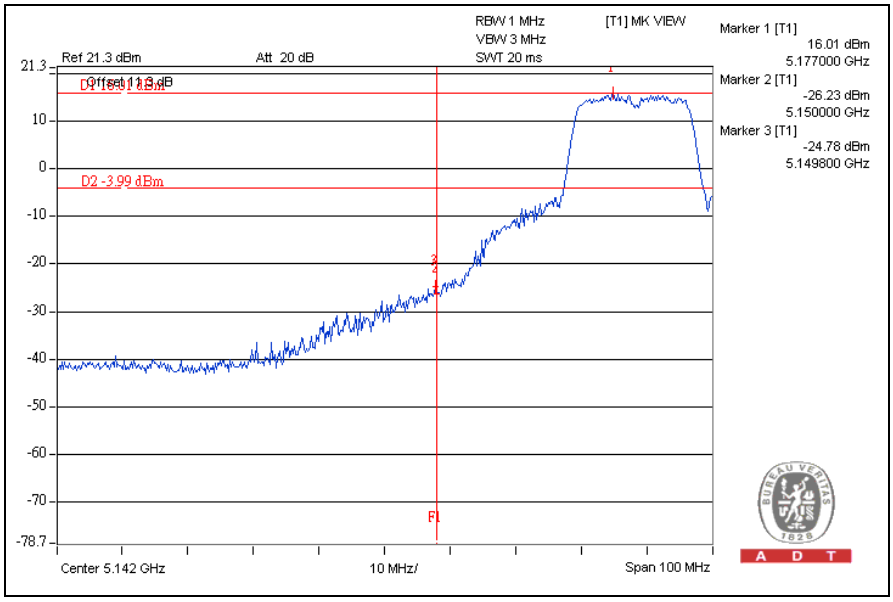

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.5 dB
D2 -2.74 dBm
Marker 1 [T1]
16.56 dBm
5.146160 GHz
Marker 2 [T1]
-25.18 dBm
39.920060 GHz
Marker 3 [T1]
-25.34 dBm
38.641020 GHz
Marker 4 [T1]
-25.61 dBm
38.800900 GHz
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz

CH 64

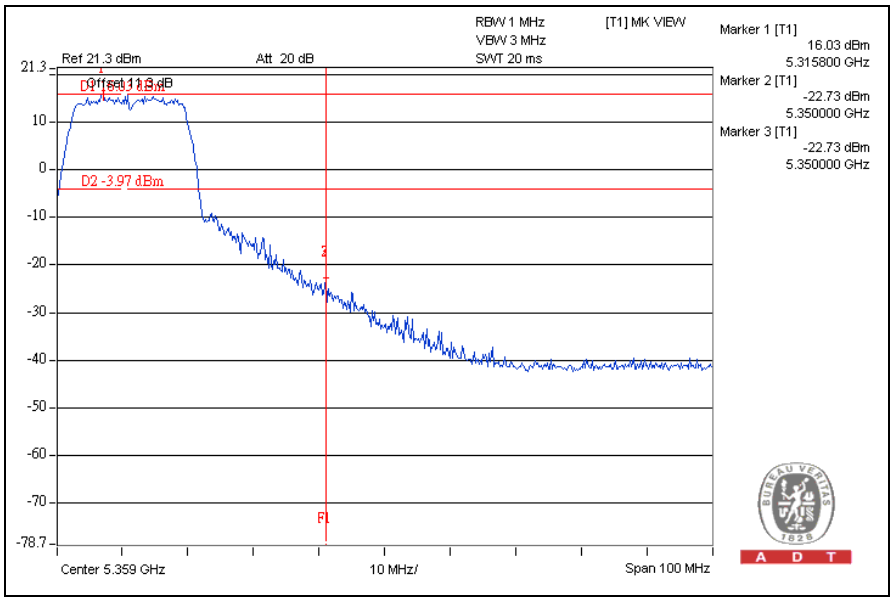

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.5 dB
D2 -3.26 dBm
Marker 1 [T1]
16.17 dBm
5.306040 GHz
Marker 2 [T1]
-24.84 dBm
38.720960 GHz
Marker 3 [T1]
-25.67 dBm
37.202100 GHz
Marker 4 [T1]
-27.55 dBm
35.843120 GHz
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz

802.11n (20MHz) OFDM MODULATION:

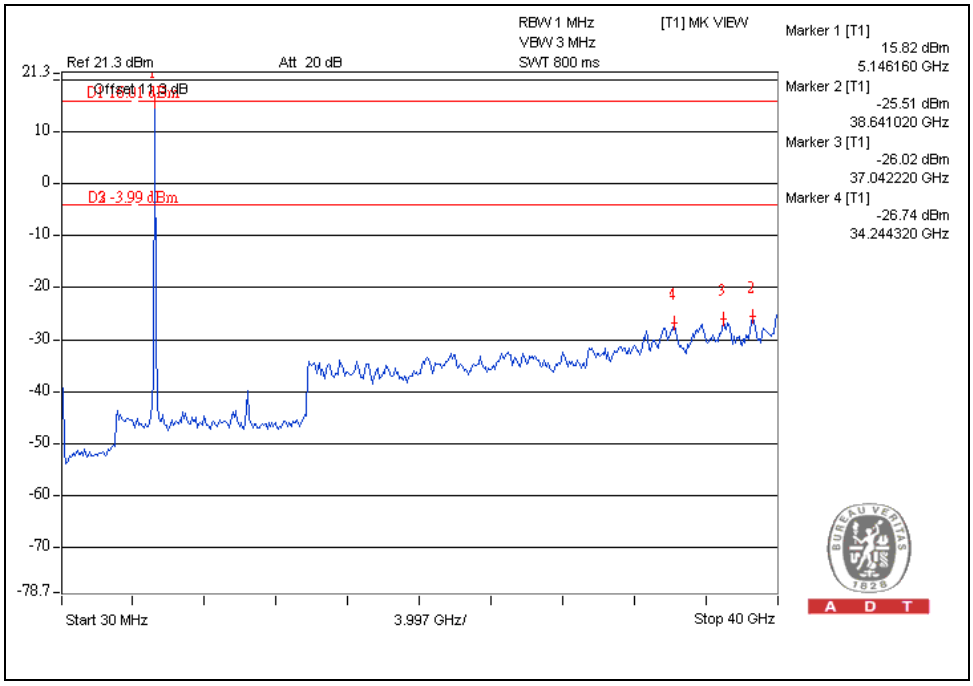
CH36



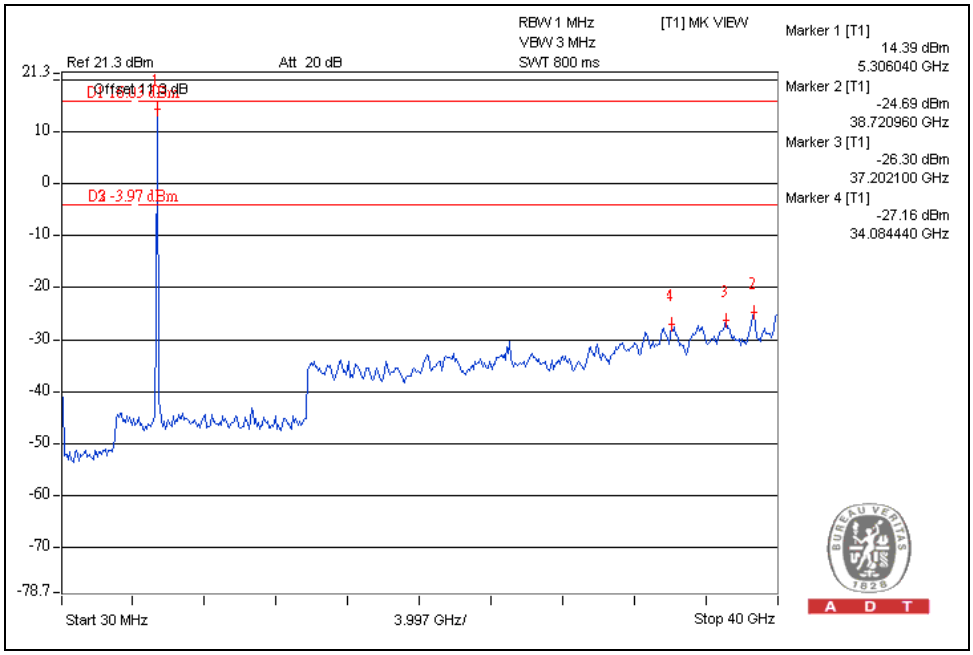
CH64



CH36

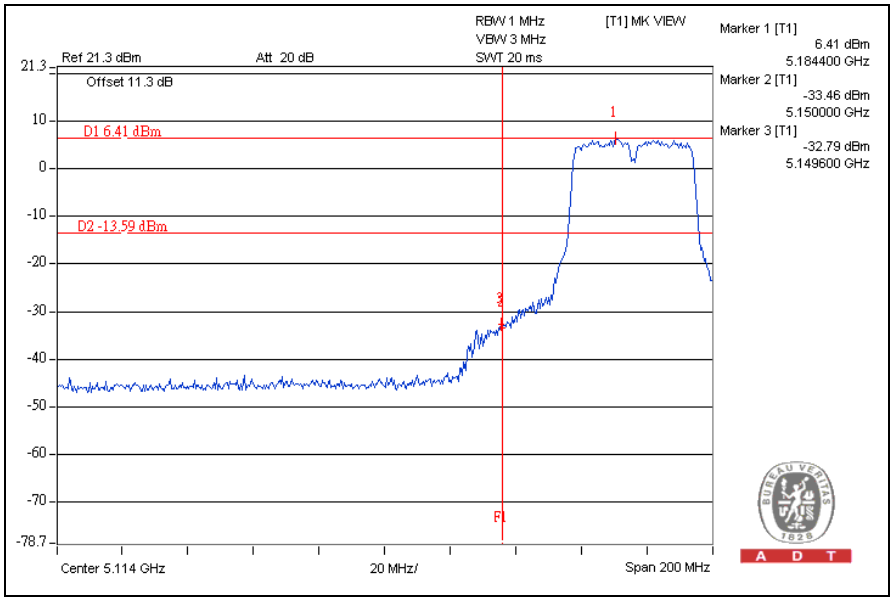

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 -3.99 dBm
Marker 1 [T1]
15.82 dBm
5.146160 GHz
Marker 2 [T1]
-25.51 dBm
38.641020 GHz
Marker 3 [T1]
-26.02 dBm
37.042220 GHz
Marker 4 [T1]
-26.74 dBm
34.244320 GHz
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz

CH64

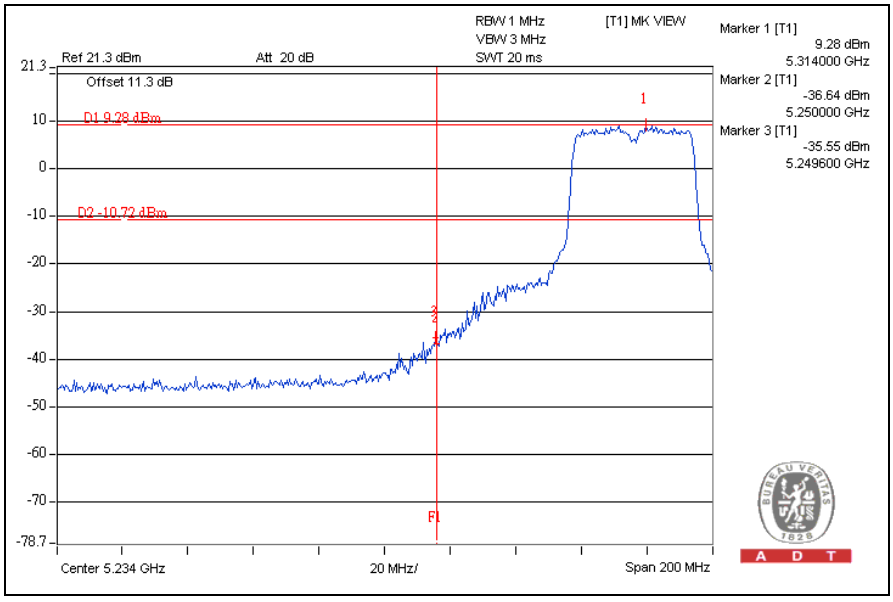

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 -3.97 dBm
Marker 1 [T1]
14.39 dBm
5.306040 GHz
Marker 2 [T1]
-24.69 dBm
38.720960 GHz
Marker 3 [T1]
-26.30 dBm
37.202100 GHz
Marker 4 [T1]
-27.16 dBm
34.084440 GHz
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz

802.11n (40MHz) OFDM MODULATION:

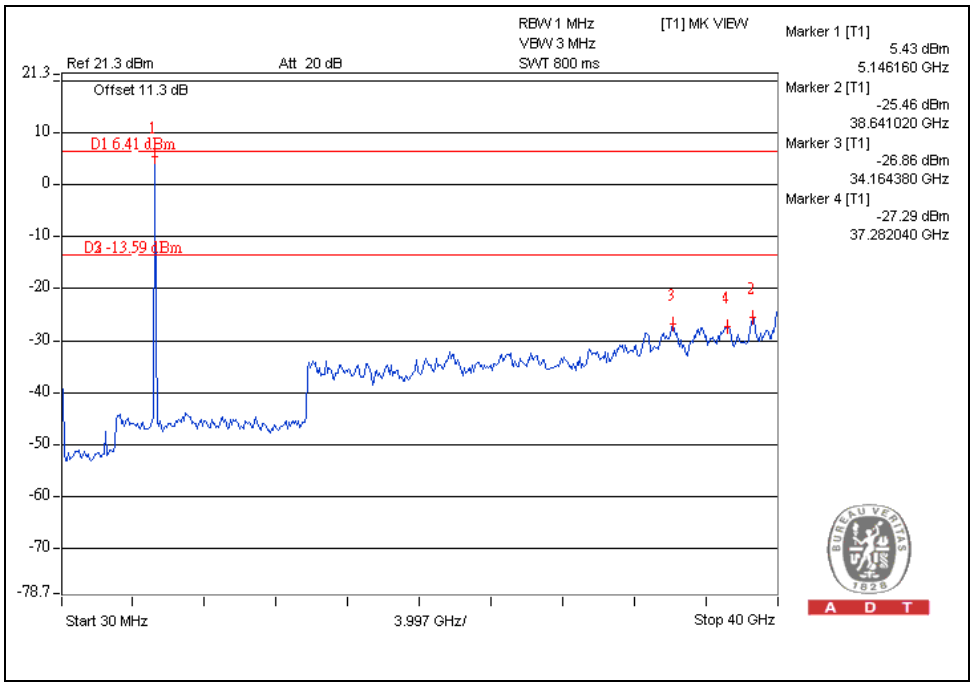
CH38



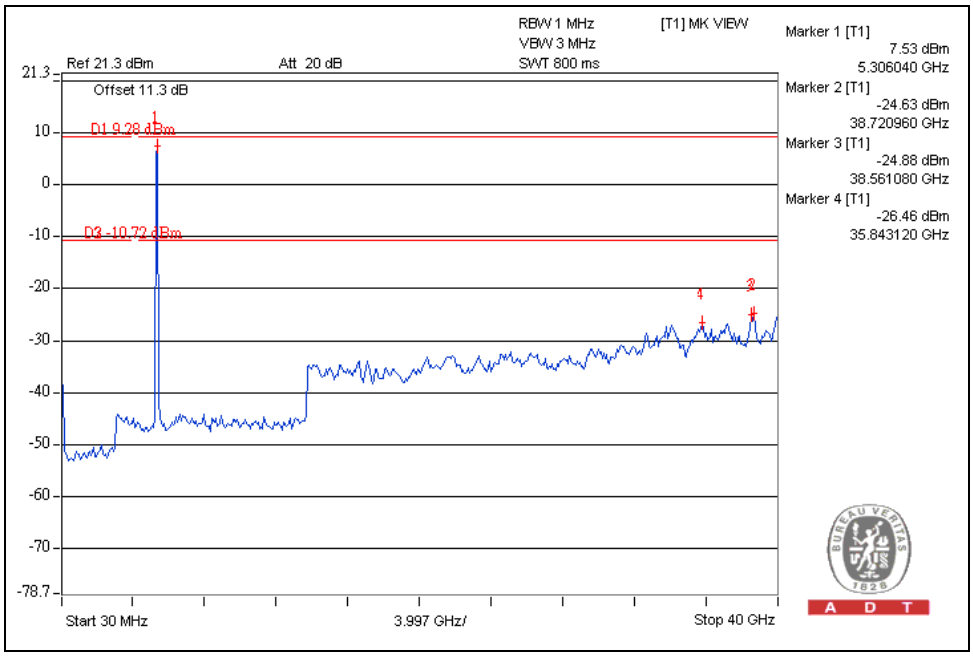
CH62



CH38


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 6.41 dBm
D2 -13.59 dBm
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
5.43 dBm
5.146160 GHz
Marker 2 [T1]
-25.46 dBm
38.641020 GHz
Marker 3 [T1]
-26.86 dBm
34.164380 GHz
Marker 4 [T1]
-27.29 dBm
37.282040 GHz

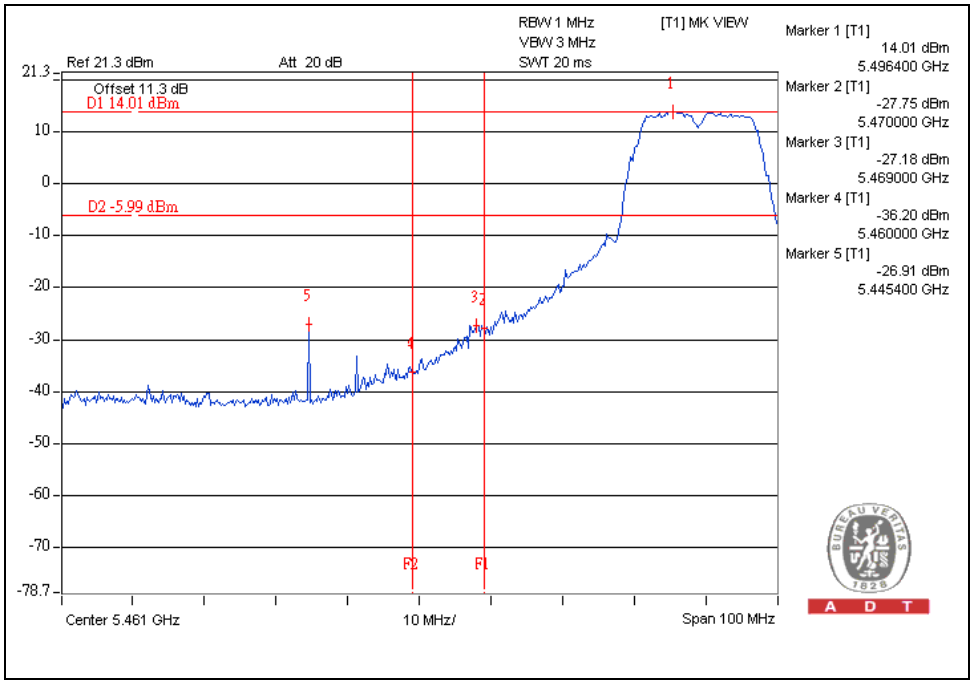
CH62


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 9.28 dBm
D2 -10.72 dBm
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
7.53 dBm
5.306040 GHz
Marker 2 [T1]
-24.63 dBm
38.720960 GHz
Marker 3 [T1]
-24.88 dBm
38.561080 GHz
Marker 4 [T1]
-26.46 dBm
35.843120 GHz

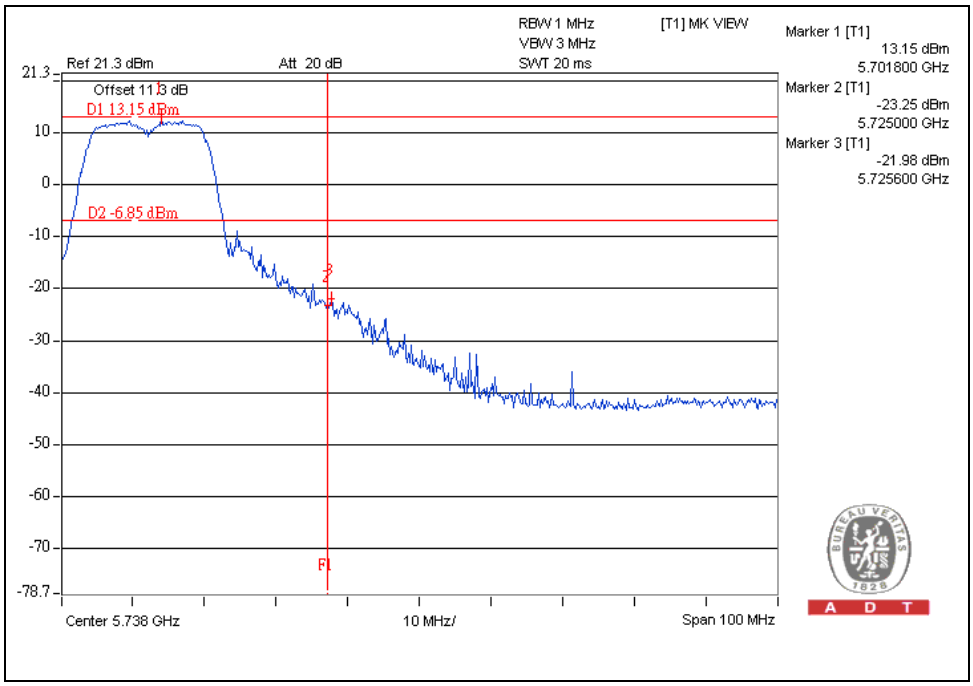
For 5.47 to 5.725GHz band:
The spectrum plots (Peak RBW=1MHz, VBW=3MHz) are attached on the following pages.

802.11a OFDM MODULATION

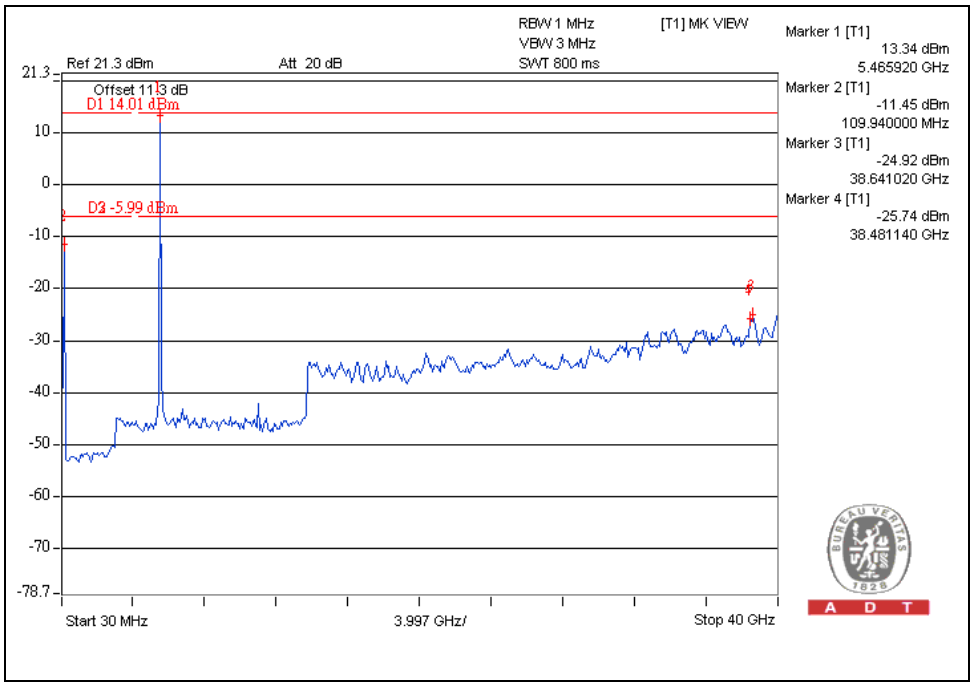
CH 100



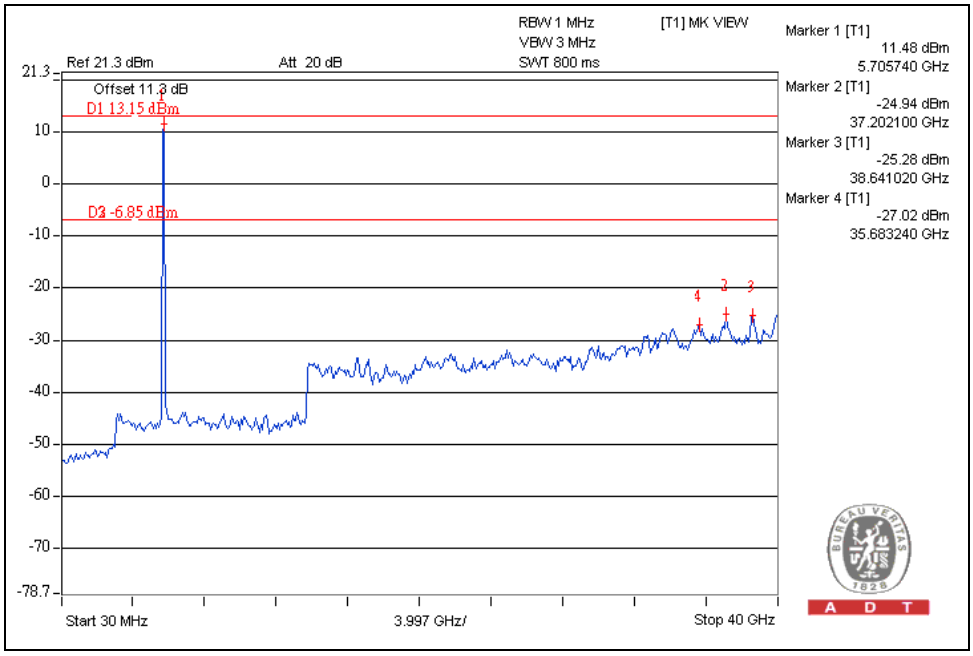
CH 140



CH 100

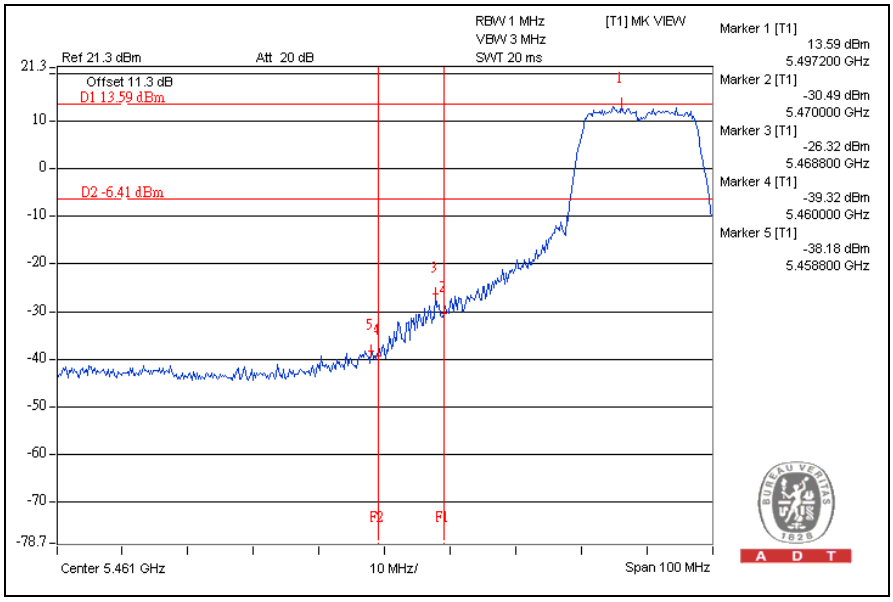

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 14.01 dBm
D2 -5.99 dBm
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
13.34 dBm
5.465920 GHz
Marker 2 [T1]
-11.45 dBm
109.940000 MHz
Marker 3 [T1]
-24.92 dBm
38.641020 GHz
Marker 4 [T1]
-25.74 dBm
38.481140 GHz

CH 140

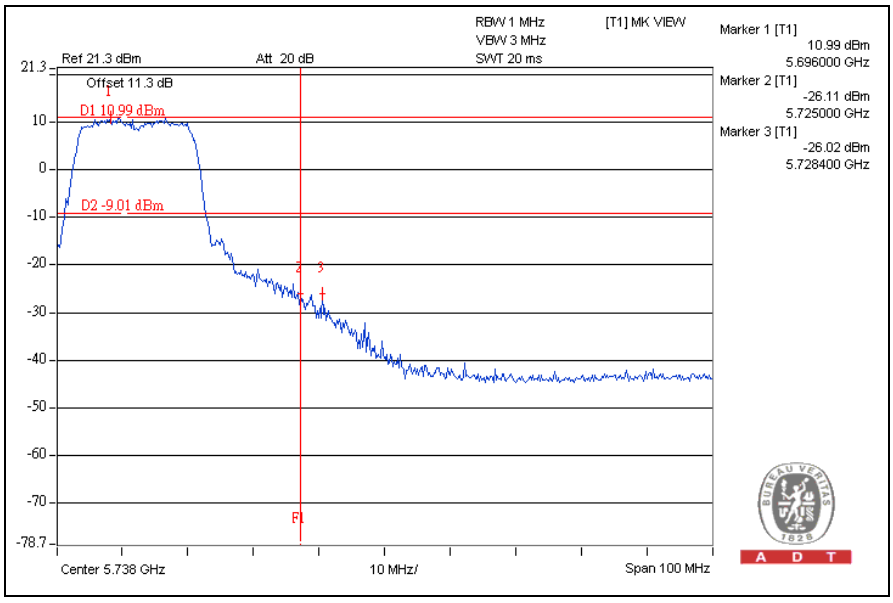

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 13.15 dBm
D2 -6.85 dBm
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
11.48 dBm
5.705740 GHz
Marker 2 [T1]
-24.94 dBm
37.202100 GHz
Marker 3 [T1]
-25.28 dBm
38.641020 GHz
Marker 4 [T1]
-27.02 dBm
35.683240 GHz

802.11n (20MHz) OFDM MODULATION:

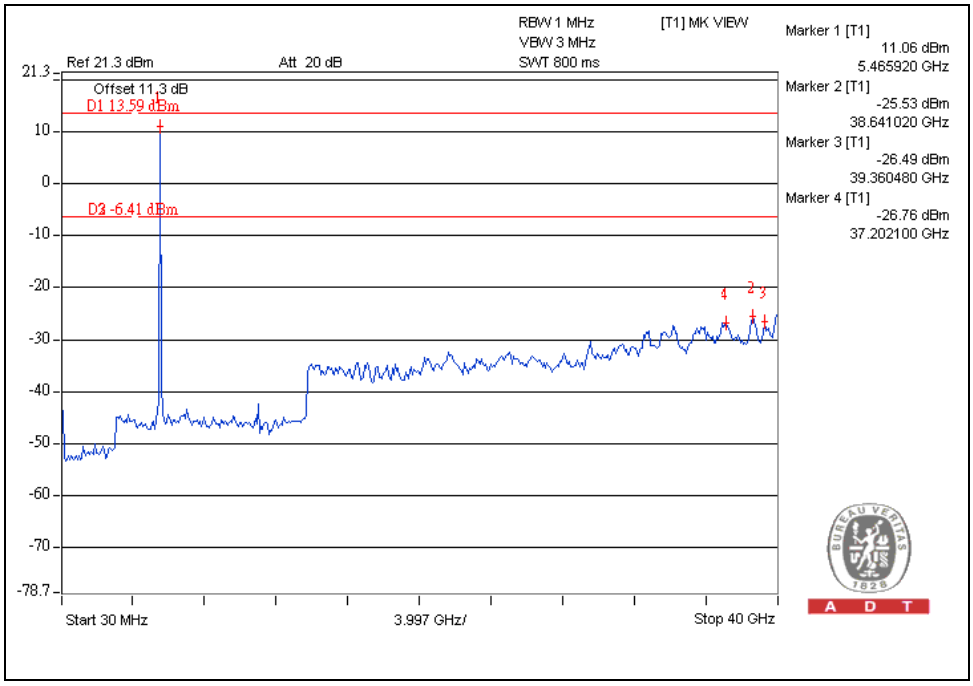
CH100



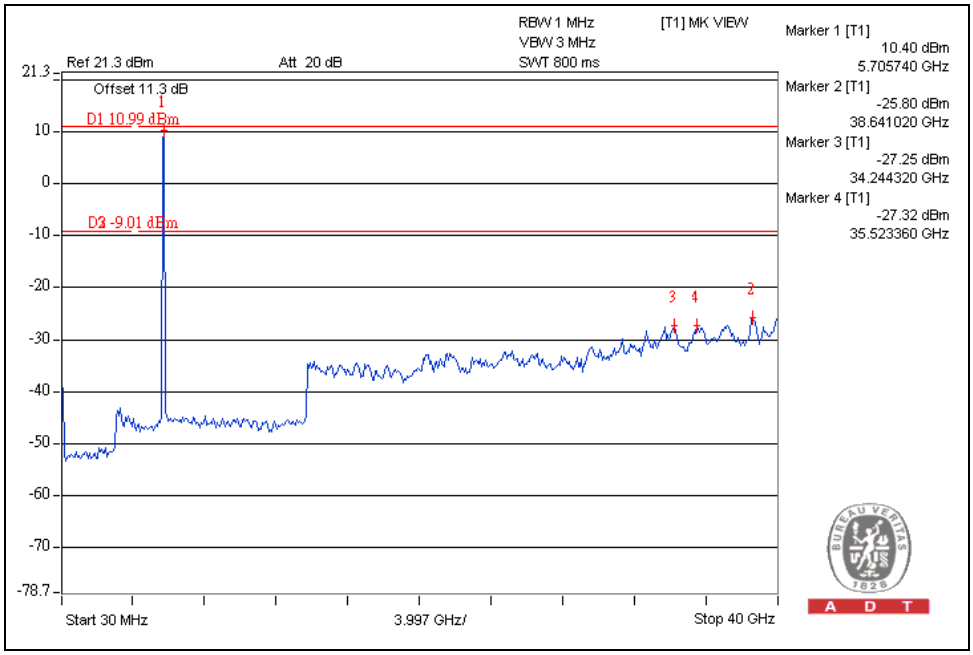
CH140



CH100

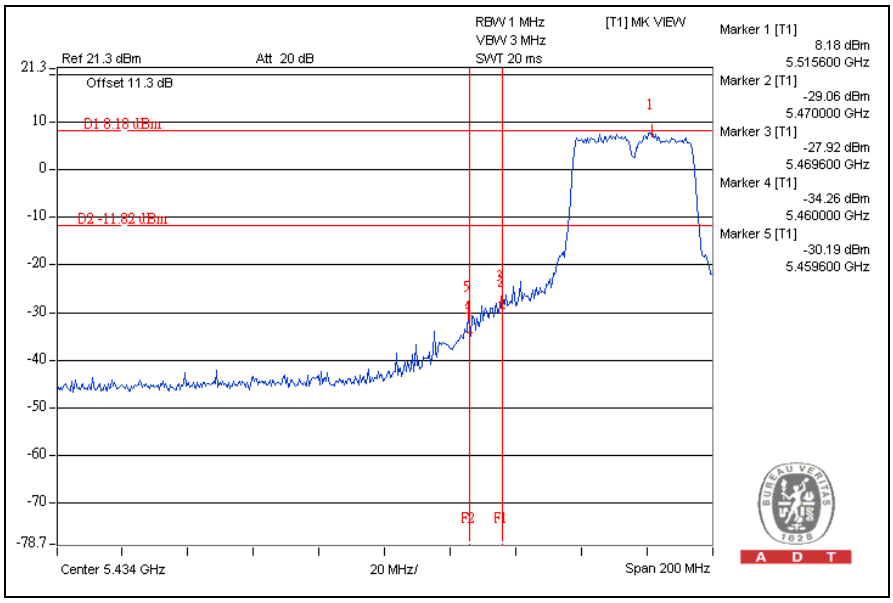

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 13.59 dBm
D2 -6.41 dBm
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
11.06 dBm
5.465920 GHz
Marker 2 [T1]
-25.53 dBm
38.641020 GHz
Marker 3 [T1]
-26.49 dBm
39.360480 GHz
Marker 4 [T1]
-26.76 dBm
37.202100 GHz

CH140

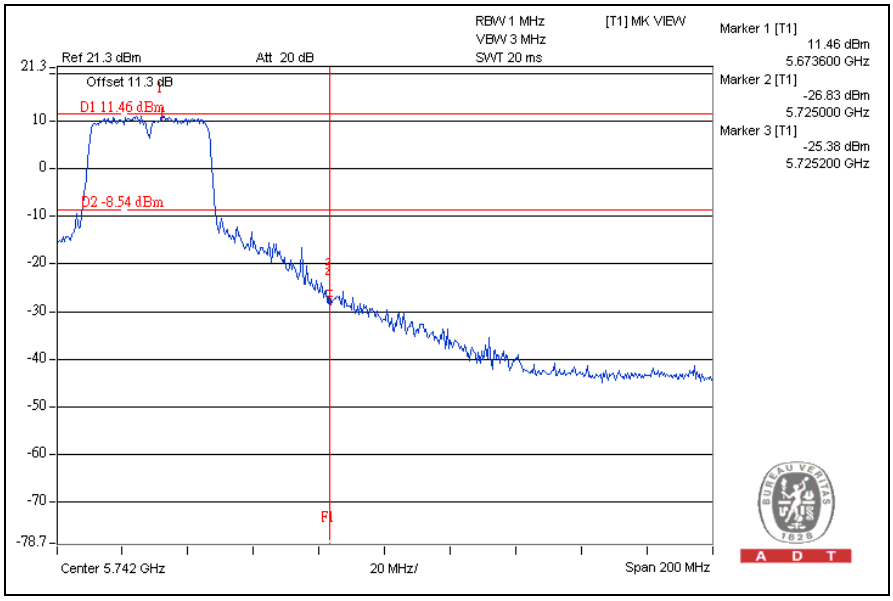

RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 10.99 dBm
D2 -9.01 dBm
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
10.40 dBm
5.705740 GHz
Marker 2 [T1]
-25.80 dBm
38.641020 GHz
Marker 3 [T1]
-27.25 dBm
34.244320 GHz
Marker 4 [T1]
-27.32 dBm
35.523360 GHz

802.11n (40MHz) OFDM MODULATION:

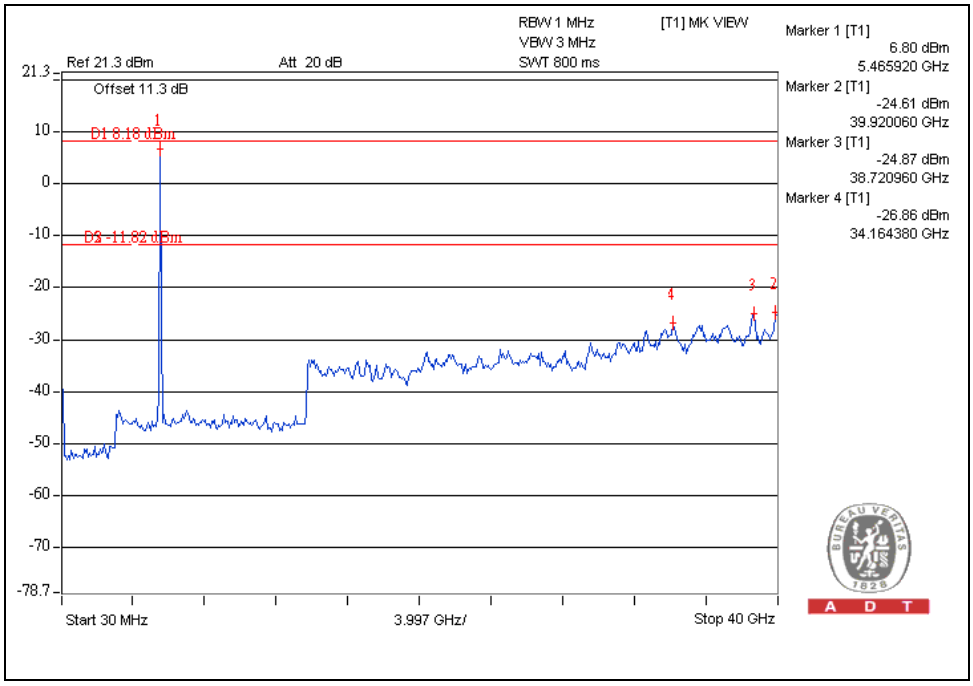
CH102



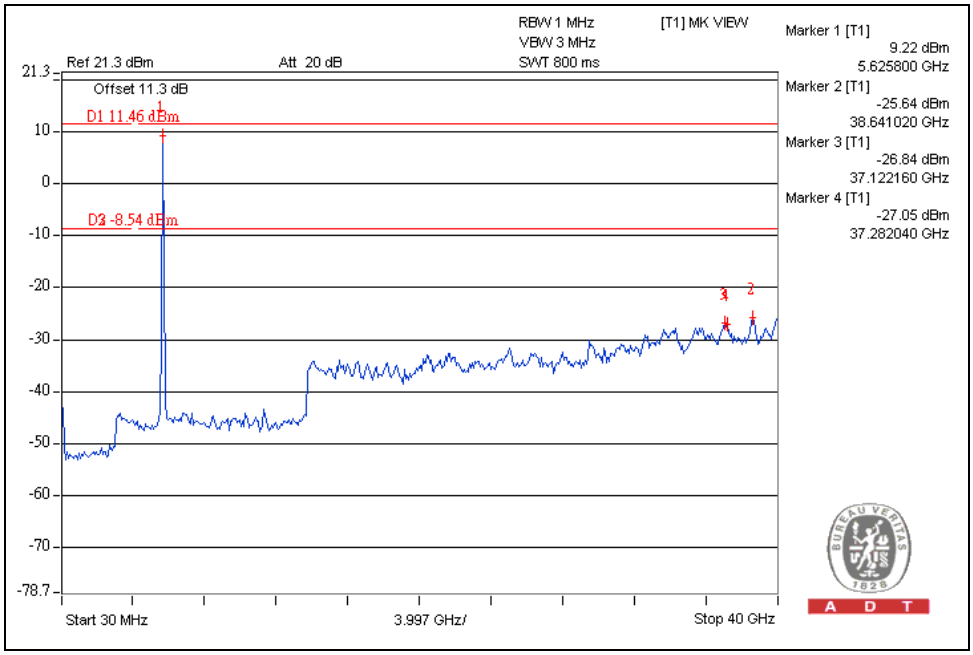
CH134



CH102


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 6.18 dBm
D2 -11.82 dBm
Marker 1 [T1]
6.80 dBm
5.465920 GHz
Marker 2 [T1]
-24.61 dBm
39.920060 GHz
Marker 3 [T1]
-24.87 dBm
38.720960 GHz
Marker 4 [T1]
-26.86 dBm
34.164380 GHz
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz

CH134


RBW 1 MHz
VBW 3 MHz
SWT 800 ms
[T1] MK VIEW
Ref 21.3 dBm
Att 20 dB
Offset 11.3 dB
D1 11.46 dBm
D2 -8.54 dBm
Marker 1 [T1]
9.22 dBm
5.625800 GHz
Marker 2 [T1]
-25.64 dBm
38.641020 GHz
Marker 3 [T1]
-26.84 dBm
37.122160 GHz
Marker 4 [T1]
-27.05 dBm
37.282040 GHz
21.3
10
0
-10
-20
-30
-40
-50
-60
-70
-78.7
Start 30 MHz
3.997 GHz/
Stop 40 GHz

5.INFORMATION ON THE TESTING LABORATORIES

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

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

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

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

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

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

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

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

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