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FCC RADIO TEST REPORT

Applicant's company	**TRENDnet, Inc.**
Applicant Address	20675 Manhattan, Place, Torrance, CA, 90501
FCC ID	**XU8TEW1750AC**
Manufacturer's company	**U-MEDIA Communications, Inc.**
Manufacturer Address	9F, No. 1, Jin-Shan 8th St., Hsinchu 300, Taiwan, R.O.C.

Product Name	1. AC1750 Dual Band Wireless Router 2. AC1750 Dual Band Wireless Media Bridge
Brand Name	TRENDnet
Model Name	TEW-812DRU, TEW-800MB
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Sep. 27, 2012
Final Test Date	Nov. 29, 2012
Submission Type	Original Equipment
Multiple Listing	Please refer to section 3.7

Statement

Test result included is only for the IEEE 802.11n, IEEE 802.11b/g part and IEEE 802.11a (5725 ~ 5850MHz) of the product.

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2009**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v02** and **KDB 662911 D01 v01r02**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR292714AA	Rev. 01	Initial issue of report	Dec. 12, 2012

Certificate No.: CB10111148

1. CERTIFICATE OF COMPLIANCE

Product Name	:	1. AC1750 Dual Band Wireless Router
		2. AC1750 Dual Band Wireless Media Bridge
Brand Name	:	TRENDnet
Model Name	:	TEW-812DRU, TEW-800MB
Applicant	:	TRENDnet, Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Sep. 27, 2012 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

Jordan Hsiao

Jordan Hsiao

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	11.70 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	5.43 dB
4.3	15.247(e)	Power Spectral Density	Complies	9.43 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	0.35 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.09 dB
4.7	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.3dB	Confidence levels of 95%
Maximum Conducted Output Power	±0.8dB	Confidence levels of 95%
Power Spectral Density	±0.5dB	Confidence levels of 95%
6dB Spectrum Bandwidth	$\pm 8.5\times10^{-8}$	Confidence levels of 95%
Radiated Emissions (9kHz~30MHz)	±0.8dB	Confidence levels of 95%
Radiated Emissions (30MHz~1GHz)	±1.9dB	Confidence levels of 95%
Radiated / Band Edge Emissions (1GHz~18GHz)	±1.9dB	Confidence levels of 95%
Radiated Emissions (18GHz~40GHz)	±1.9dB	Confidence levels of 95%
Temperature	±0.7℃	Confidence levels of 95%
Humidity	±3.2%	Confidence levels of 95%
DC / AC Power Source	±1.4%	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	WLAN (3TX, 3RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter
Modulation	see the below table for IEEE 802.11n/ac
Data Modulation	For 802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) For 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	For 2.4GHz Band: 11 for 20MHz bandwidth ; 7 for 40MHz bandwidth For 5GHz Band: 5 for 20MHz bandwidth ; 2 for 40MHz bandwidth ; 1 for 80MHz bandwidth
Channel Band Width (99%)	For 2.4GHz Band: MCS0 (20MHz): 18.32 MHz ; MCS0 (40MHz): 36.00 MHz For 5GHz Band: MCS0 (20MHz): 17.60 MHz ; MCS0 (40MHz): 36.48 MHz ; MCS0 (80MHz): 75.84 MHz
Maximum Conducted Output Power	For 2.4GHz Band: MCS0 (20MHz): 24.86 dBm ; MCS0 (40MHz): 22.12 dBm For 5GHz Band: MCS0 (20MHz): 23.62 dBm ; MCS0 (40MHz): 24.26 dBm ; MCS0 (20MHz): 24.13 dBm ; MCS0 (40MHz): 24.57 dBm MCS0 (80MHz): 24.45 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

802.11a/b/g

Items	Description
Product Type	WLAN (1TX, 1RX)
Radio Type	Intentional Transceiver
Power Type	From Power Adapter
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11a/g
Data Modulation	DSSS (BPSK / QPSK / CCK) ; OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	DSSS (1/ 2/ 5.5/11) ; OFDM (6/9/12/18/24/36/48/54)
Frequency Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Channel Number	11b/g: 11 ; 11a: 5
Channel Band Width (99%)	11b: 10.08 MHz ; 11g:17.2 MHz ; 11a: 16.64 MHz
Maximum Conducted Output Power	11b: 16.52 dBm ; 11g: 20.14 dBm ; 11a: 18.79 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

Antenna	Single (TX)		Three (TX)
Band width Mode	20 MHz	40 MHz	80 MHz
IEEE 802.11a	V	X	X
IEEE 802.11b	V	X	X
IEEE 802.11g	V	X	X
IEEE 802.11n	V	V	X
IEEE 802.11ac	V	V	V

IEEE 802.11n spec

MCS Index	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Datarate(Mbps)			
									800nsGI		400nsGI	
					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5	7.200	15
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0	14.400	30
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5	21.700	45
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0	28.900	60
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0	43.300	90
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0	57.800	120
6	1	64-QAM	3/4	6	312	648	234	486	58.5	121.5	65.000	135
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0	72.200	150
8	2	BPSK	1/2	1	104	216	52	108	13.0	27.0	14.444	30
9	2	QPSK	1/2	2	208	432	104	216	26.0	54.0	28.889	60
10	2	QPSK	3/4	2	208	432	156	324	39.0	81.0	43.333	90
11	2	16-QAM	1/2	4	416	864	208	432	52.0	108.0	57.778	120
12	2	16-QAM	3/4	4	416	864	312	648	78.0	162.0	86.667	180
13	2	64-QAM	2/3	6	624	1296	416	864	104.0	216.0	115.556	240
14	2	64-QAM	3/4	6	624	1296	468	972	117.0	243.0	130.000	270
15	2	64-QAM	5/6	6	624	1296	520	1080	130.0	270.0	144.444	300

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	guard interval

3.2. Accessories

Power	Brand Holder	Model	Rating
Adapter 1	HON-KWANG	HK-AX-120A200-US	INPUT: 100-240V ~ 50-60Hz, 0.8A OUTPUT: 12V – 2.0A
Adapter 2	SOLYTECH ENTERPRISE CORPORATION	CAD2412	INPUT: 100-240V ~1.0A 50-60Hz OUTPUT: 12V – 2.0A Max. 24W

3.3. Table for Filed Antenna

Chain	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
					2.4G
1	JOYMAX	TBF-A019MPFX-711	PCB Antenna	I-Pex	3
2	JOYMAX	TBF-A019MPDX-711	PCB Antenna	I-Pex	3
3	JOYMAX	TBF-A019MPEX-711	PCB Antenna	I-Pex	3
Chain	**Brand**	**Model Name**	**Antenna Type**	**Connector**	**Gain (dBi)**
					5G
4	JOYMAX	INVAX IVX0051-B	PIPA Antenna	N/A	1.7
5	JOYMAX	INVAX IVX0051-B	PIPA Antenna	N/A	1.7
6	JOYMAX	INVAX IVX0051-B	PIPA Antenna	N/A	1.7

Note: <For 2.4 GHz function >

For IEEE 802.11b/g mode (1TX/1RX)

Only Chain 1can be use as transmit and receive antenna.

For IEEE 802.11n mode (3TX/3RX):

Chain 1 Chain 2 and Chain 3 could both transmit/receive simultaneously.

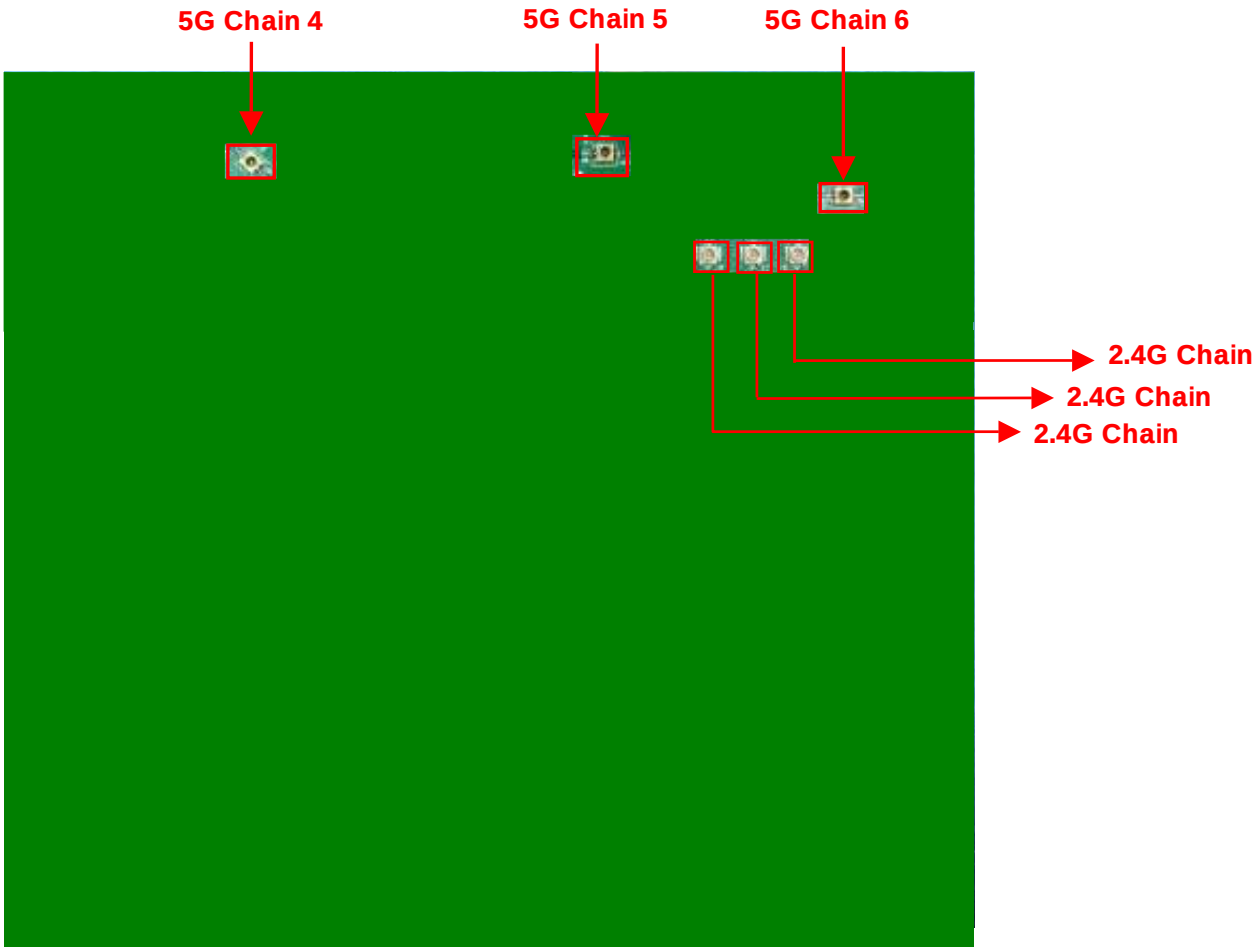
<For 5 GHz function >

For IEEE 802.11a mode (1TX/1RX)

Only Chain 4 can be use as transmit and receive antenna.

For IEEE 802.11an/ac Mode: (3TX, 3RX)

Chain 4, Chain 5 and Chain 6 could both transmit/receive simultaneously.



3.4. Table for Carrier Frequencies

For 2.4GHz Band:

There are two bandwidth systems.

For both 20MHz bandwidth systems, use Channel 1~Channel 11.

For both 40MHz bandwidth systems, use Channel 3~Channel 9.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400~2483.5MHz	1	2412 MHz	7	2442 MHz
	2	2417 MHz	8	2447 MHz
	3	2422 MHz	9	2452 MHz
	4	2427 MHz	10	2457 MHz
	5	2432 MHz	11	2462 MHz
	6	2437 MHz	-	-

For 5GHz Band:

There are three bandwidth systems.

For 20MHz bandwidth systems, use Channel 149, 153, 157, 161, 165.

For 40MHz bandwidth systems, use Channel 151, 159.

For 80MHz bandwidth systems, use Channel 155.

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5725~5850 MHz Band 4	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz

3.5. Table for Test Modes

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

For 2.4GHz Band

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	CTX	Auto	-	-
Maximum Conducted Output Power	MCS0/20MHz	7.2 Mbps	1/6/11	1/2/3/1+2+3
	MCS0/40MHz	15 Mbps	3/6/9	1/2/3/1+2+3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Power Spectral Density	MCS0/20MHz	7.2 Mbps	1/6/11	1/2/3
	MCS0/40MHz	15 Mbps	3/6/9	1/2/3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
6dB Spectrum Bandwidth	MCS0/20MHz	7.2 Mbps	1/6/11	1+2+3
	MCS0/40MHz	15 Mbps	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Radiated Emissions Below 1GHz	CTX	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	7.2 Mbps	1/6/11	1+2+3
	MCS0/40MHz	15 Mbps	3/6/9	1+2+3
	11b/CCK	1 Mbps	1/6/11	1/2/3/1+2+3
	11g/BPSK	6 Mbps	1/6/11	1/2/3/1+2+3
Band Edge Emissions	MCS0/20MHz	7.2 Mbps	1/11	1+2+3
	MCS0/40MHz	15 Mbps	3/9	1+2+3
	11b/CCK	1 Mbps	1/11	1
	11g/BPSK	6 Mbps	1/11	1

For 5GHz Band

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	CTX	Auto	-	-
Maximum Conducted Output Power	MCS0/20MHz	7.2 Mbps	149/157/165	4/5/6/4+5+6
	MCS0/40MHz	15 Mbps	151/159	4/5/6/4+5+6
	MCS0/80MHz	29.3 Mbps	155	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
Power Spectral Density	MCS0/20MHz	7.2 Mbps	149/157/165	1/2/3
	MCS0/40MHz	15 Mbps	151/159	1/2/3
	MCS0/80MHz	29.3 Mbps	155	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
6dB Spectrum Bandwidth	MCS0/20MHz	7.2 Mbps	149/157/165	4+5+6
	MCS0/40MHz	15 Mbps	151/159	4+5+6
	MCS0/80MHz	29.3 Mbps	155	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
Radiated Emissions Below 1GHz	CTX	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	7.2 Mbps	149/157/165	4+5+6
	MCS0/40MHz	15 Mbps	151/159	4+5+6
	MCS0/80MHz	29.3 Mbps	155	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4
Band Edge Emissions	MCS0/20MHz	7.2 Mbps	149/157/165	4+5+6
	MCS0/40MHz	15 Mbps	151/159	4+5+6
	MCS0/80MHz	29.3 Mbps	155	4+5+6
	11a/BPSK	6 Mbps	149/157/165	4

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1: CTX (Adapter 1: HK-AX-120A200-US)

Mode 2: CTX (Adapter 2: CAD2412)

Due to Mode 1 generated the worst test result, it was recorded in the report.

For Radiated Emission test:

Mode 1: CTX (Adapter 1: HK-AX-120A200-US)

Mode 2: CTX (Adapter 2: CAD2412)

Due to Mode 2 generated the worst test result, it was recorded in the report.

<For MPE and Co-location Test>:

The EUT could be applied with 2.4GHz WLAN function and 5GHz WLAN function; therefore Maximum Permissible Exposure (Please refer to Appendix B) and Co-location (please refer to Appendix C) tests

are added for simultaneously transmit between 2.4GHz WLAN function and 5GHz WLAN function.

3.6. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.7. Table for Multiple Listing

The difference for each model is shown as below:

Model Name	Product Name	Description
TEW-812DRU	AC1750 Dual Band Wireless Router	-
TEW-800MB	AC1750 Dual Band Wireless Media Bridge	(1) Remove Ethernet WAN port, USB port (2) Lack of components: J68, J8, U14, J7, D44

3.8. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6220	E2KWM3945ABG
Notebook	DELL	E6220	E2KWM3945ABG
Notebook	DELL	1340	E2K4965AGNM
Notebook	DELL	1340	QDS-BRCM1005-D
Flash Disk	Silicon	D33B01	DoC

3.9. Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For 2.4GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	Manual Tool Version:1.0.0.9		
Frequency	2412 MHz	2437 MHz	2462 MHz
MCS0 20MHz	62	80	65

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	Manual Tool Version:1.0.0.9		
Frequency	2422 MHz	2437 MHz	2452 MHz
MCS0 40MHz	50	66	56

Power Parameters of IEEE 802.11b/g

Test Software Version	Manual Tool Version:1.0.0.9		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	64	64	65
IEEE 802.11g	67	80	68

For 5GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	Manual Tool Version:1.0.0.9		
Frequency	5745 MHz	5785 MHz	5825 MHz
MCS0 20MHz	80	80	80

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	Manual Tool Version:1.0.0.9	
Frequency	5755 MHz	5795 MHz
MCS0 40MHz	80	80

Power Parameters of IEEE 802.11ac MCS0 80MHz

Test Software Version	Manual Tool Version:1.0.0.9
Frequency	5775 MHz
MCS0 80MHz	80

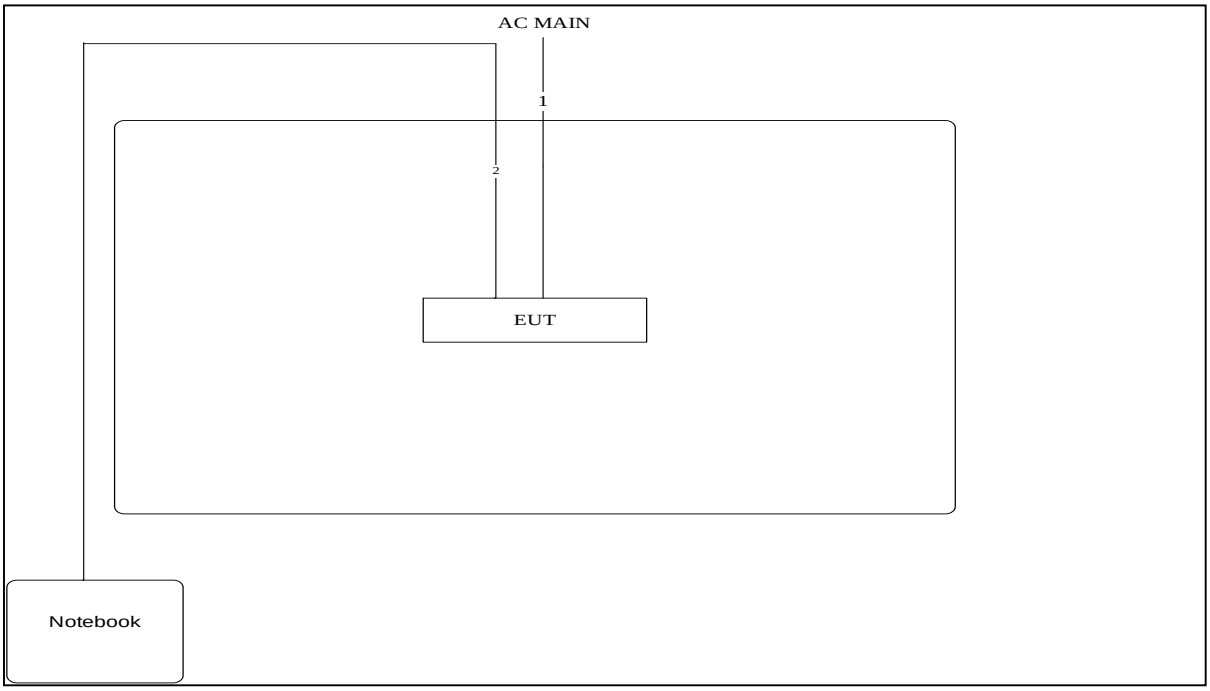
Power Parameters of IEEE 802.11a

Test Software Version	Manual Tool Version:1.0.0.9		
Frequency	5745 MHz	5785 MHz	5825 MHz
IEEE 802.11a	80	80	80

During the test, "Manual Tool Version:1.0.0.9" under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

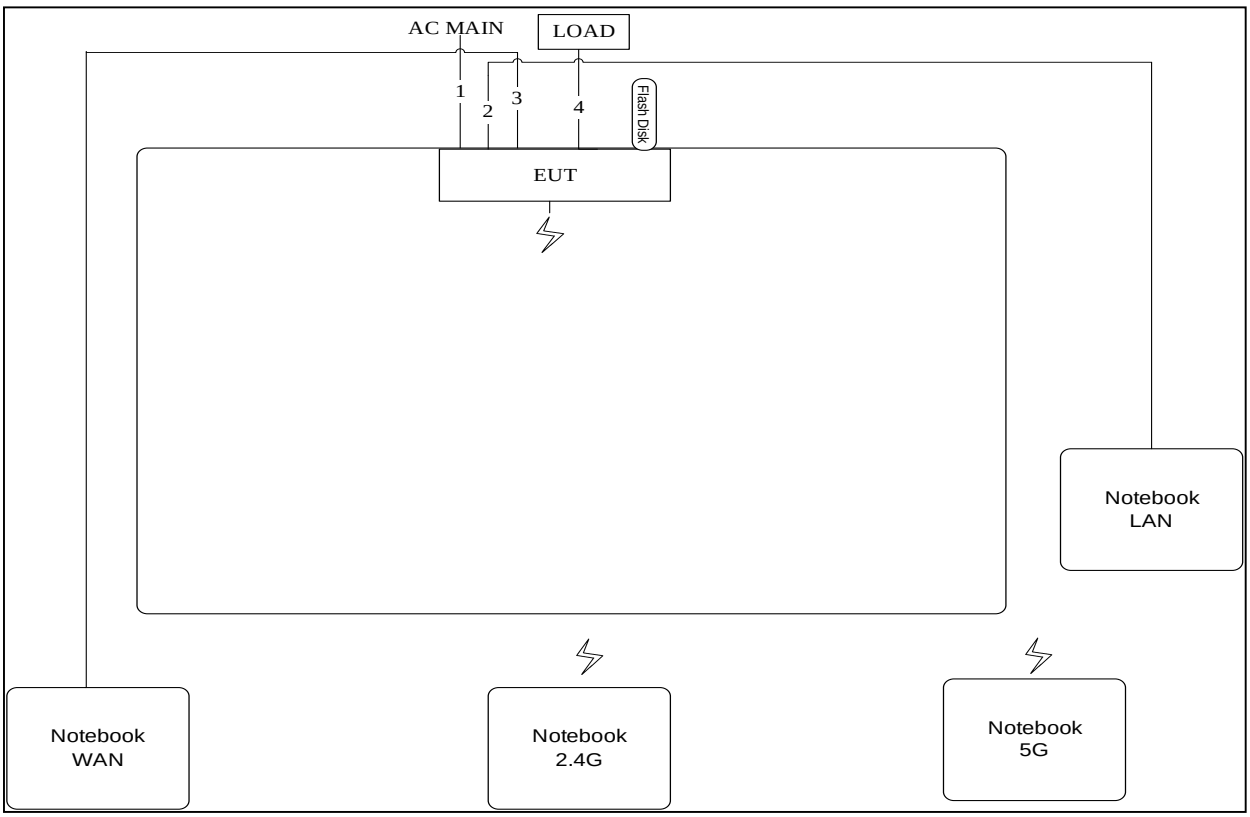
3.10. Test Configurations

3.10.1. Radiation Emissions Test Configuration



Item	Cable	Shield	Length
1	POWER Cable	No	1.65m
2	RJ-45 Cable	No	10m

Test Configuration: Co-location



Item	Cable	Shield	Length
1	POWER Cable	No	1.65m
2	RJ-45 Cable	No	10m
3	RJ-45 Cable	No	10m
4	RJ-45 Cable*3	No	1m

3.10.2. AC Power Line Conduction Emissions Test Configuration

Item	Cable	Shield	Length
1	POWER Cable	No	1.65m

4. TEST RESULT

4.1. AC Power Line Conducted Emissions Measurement

4.1.1. Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

4.1.2. Measuring Instruments and Setting

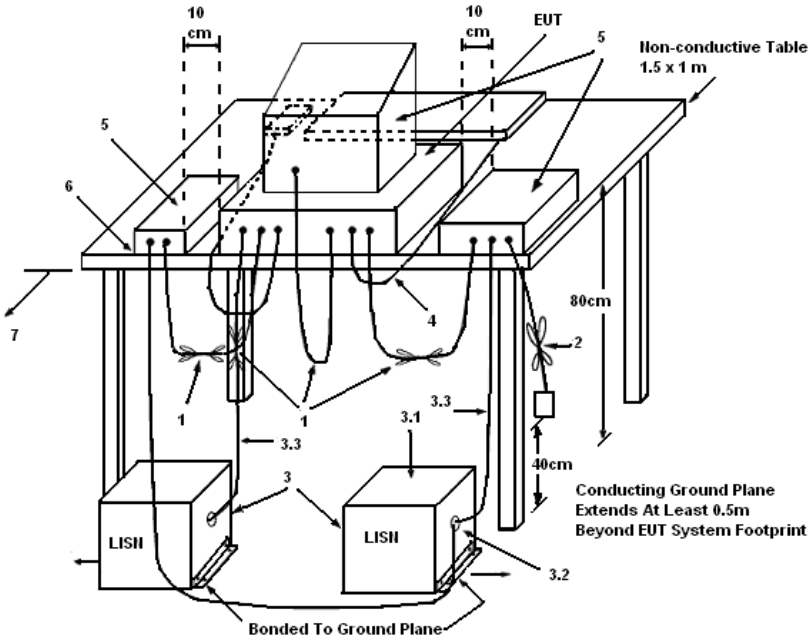
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

4.1.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 KHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4. Test Setup Layout



LEGEND:

(1) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

(2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

(3) EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω. LISN can be placed on top of, or immediately beneath, reference ground plane.

(3.1) All other equipment powered from additional LISN(s).

(3.2) Multiple outlet strip can be used for multiple power cords of non-EUT equipment.

(3.3) LISN at least 80 cm from nearest part of EUT chassis.

(4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.

(5) Non-EUT components of EUT system being tested.

(6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.

(7) Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5. Test Deviation

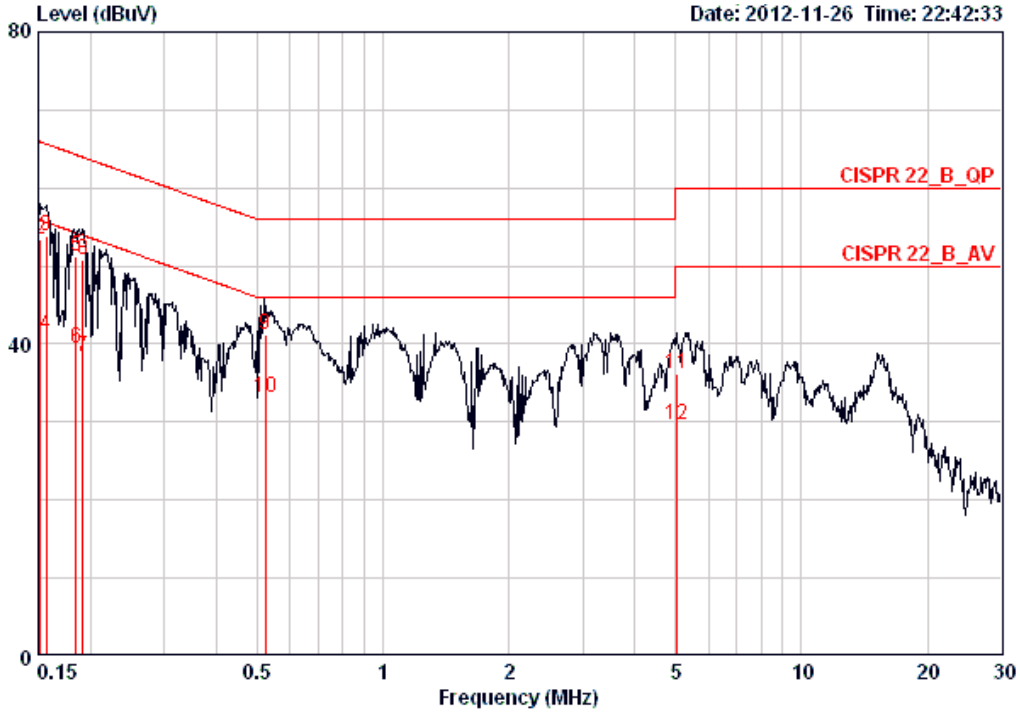
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was placed on the test table and programmed in normal function.

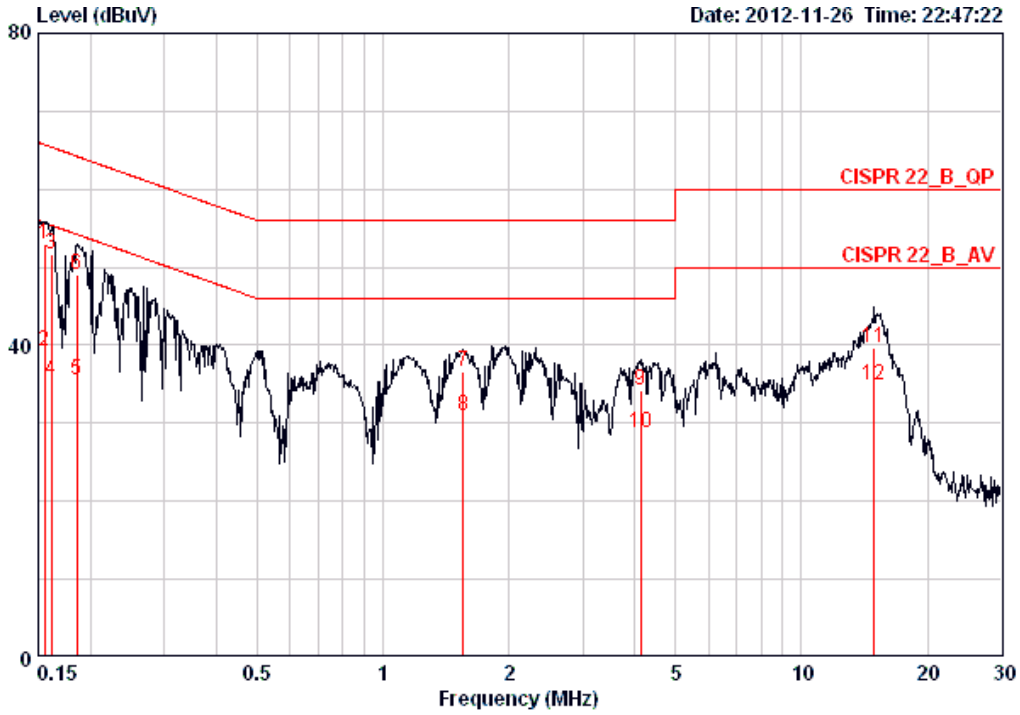
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	24℃	Humidity	59%
Test Engineer	Sollo Luo	Phase	Line
Configuration	Mode 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1 @	0.15160	38.78	-17.13	55.91	38.42	0.16	0.20	LINE	AVERAGE
2 @	0.15160	53.33	-12.58	65.91	52.97	0.16	0.20	LINE	QP
3 @	0.15650	53.95	-11.70	65.65	53.59	0.16	0.20	LINE	QP
4 @	0.15650	41.28	-14.37	55.65	40.92	0.16	0.20	LINE	AVERAGE
5 @	0.18443	51.30	-12.98	64.28	50.95	0.15	0.20	LINE	QP
6 @	0.18443	39.53	-14.75	54.28	39.18	0.15	0.20	LINE	AVERAGE
7 @	0.19140	38.39	-15.59	53.98	38.04	0.15	0.20	LINE	AVERAGE
8 @	0.19140	50.73	-13.25	63.98	50.38	0.15	0.20	LINE	QP
9 @	0.52376	41.16	-14.84	56.00	40.81	0.15	0.20	LINE	QP
10 @	0.52376	33.11	-12.89	46.00	32.76	0.15	0.20	LINE	AVERAGE
11	5.031	36.18	-23.82	60.00	35.64	0.24	0.30	LINE	QP
12	5.031	29.63	-20.37	50.00	29.09	0.24	0.30	LINE	AVERAGE

Temperature	24℃	Humidity	59%
Test Engineer	Sollo Luo	Phase	Neutral
Configuration	Mode 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1 @	0.15567	52.99	-12.70	65.69	52.71	0.08	0.20	NEUTRAL	QP
2 @	0.15567	39.22	-16.47	55.69	38.94	0.08	0.20	NEUTRAL	AVERAGE
3 @	0.16155	51.77	-13.61	65.38	51.49	0.08	0.20	NEUTRAL	QP
4	0.16155	35.51	-19.87	55.38	35.23	0.08	0.20	NEUTRAL	AVERAGE
5 @	0.18541	35.43	-18.81	54.24	35.15	0.08	0.20	NEUTRAL	AVERAGE
6 @	0.18541	49.07	-15.17	64.24	48.79	0.08	0.20	NEUTRAL	QP
7 @	1.552	36.62	-19.38	56.00	36.41	0.10	0.11	NEUTRAL	QP
8 @	1.552	30.86	-15.14	46.00	30.65	0.10	0.11	NEUTRAL	AVERAGE
9	4.136	34.21	-21.79	56.00	33.78	0.13	0.30	NEUTRAL	QP
10 @	4.136	28.86	-17.14	46.00	28.43	0.13	0.30	NEUTRAL	AVERAGE
11	14.907	39.77	-20.23	60.00	39.06	0.31	0.40	NEUTRAL	QP
12 @	14.907	34.84	-15.16	50.00	34.13	0.31	0.40	NEUTRAL	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi. Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter output power.

4.2.2. Measuring Instruments and Setting

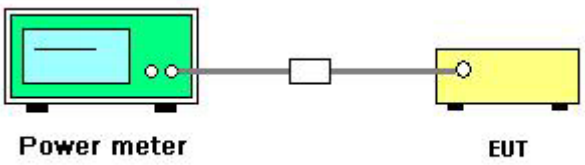
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Detector	Average

4.2.3. Test Procedures

1. Test procedures refer KDB558074 v01 r02 section 8.2.3 option 3.
2. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

Temperature	25℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Date	Nov. 27, 2012		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Chain1 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3			
1	2412 MHz	16.10	16.43	15.73	20.87	30.00	Complies
6	2437 MHz	19.99	20.24	20.04	24.86	30.00	Complies
11	2462 MHz	16.66	16.86	16.43	21.42	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz / Chain1 1 + Chain 2 + Chain 3

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3			
3	2422 MHz	13.65	14.05	13.42	18.49	30.00	Complies
6	2437 MHz	17.15	17.77	17.09	22.12	30.00	Complies
9	2452 MHz	15.06	15.22	14.67	19.76	30.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6			
149	5745 MHz	17.98	18.40	18.70	23.14	30.00	Complies
157	5785 MHz	18.13	18.64	19.63	23.62	30.00	Complies
165	5825 MHz	18.19	18.36	19.79	23.61	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6			
151	5755 MHz	18.64	19.05	20.02	24.05	30.00	Complies
159	5795 MHz	18.67	19.53	20.13	24.26	30.00	Complies

Temperature	25℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11ac
Test Date	Nov. 27, 2012		

Configuration IEEE 802.11ac MCS0 20MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6			
149	5745 MHz	18.69	19.19	19.72	23.99	30.00	**Complies**
157	5785 MHz	18.96	19.41	19.67	24.13	30.00	**Complies**
165	5825 MHz	18.81	19.15	19.12	23.80	30.00	**Complies**

Configuration IEEE 802.11ac MCS0 40MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6			
151	5755 MHz	19.71	19.65	19.73	24.47	30.00	**Complies**
159	5795 MHz	19.63	19.76	20.01	24.57	30.00	**Complies**

Configuration IEEE 802.11ac MCS0 80MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Conducted Power (dBm)			Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 4	Chain 5	Chain 6			
155	5775 MHz	19.99	19.39	19.63	24.45	30.00	**Complies**

Temperature	25℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b/g/a
Test Date	Nov. 27, 2012		

Configuration IEEE 802.11b / Chain 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	16.40	30.00	**Complies**
6	2437 MHz	16.31	30.00	**Complies**
11	2462 MHz	16.52	30.00	**Complies**

Configuration IEEE 802.11g / Chain 1

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	16.86	30.00	**Complies**
6	2437 MHz	20.14	30.00	**Complies**
11	2462 MHz	17.01	30.00	**Complies**

Configuration IEEE 802.11a / Chain 4

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
149	5745 MHz	18.69	30.00	**Complies**
157	5785 MHz	18.79	30.00	**Complies**
165	5825 MHz	18.46	30.00	**Complies**

4.3. Power Spectral Density Measurement

4.3.1. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

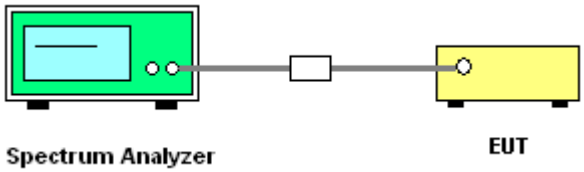
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RB	100 kHz
VB	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.3.3. Test Procedures

1. Test procedures refer KDB558074 v01 r02 section 9.1 option 1
2. Spectrum analyzer must be capable of utilizing a number of measurement points in each sweep that is greater than or equal to twice the span/RBW in order to ensure bin-to-bin spacing of ≤ RBW/2 so that narrowband signals are not lost between frequency bins.
3. Use this procedure when the maximum conducted output power in the fundamental emission is used to demonstrate compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
4. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
5. Use the peak marker function to determine the maximum level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent level in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where: BWCF = 10log (3 kHz/100 kHz = -15.2 dB).
7. The resulting PSD level must be ≤ 8 dBm.
8. When measuring power spectral density with multiple antenna systems, add every result of the values by mathematic formula.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

4.3.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.3.7. Test Result of Power Spectral Density

Temperature	25℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Date	Nov. 27, 2012		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Chain1 1 + Chain 2 + Chain 3

Channel	Frequency	Power Density (dBm/100kHz)			BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3		Chain 1	Chain 2	Chain 3		
1	2412 MHz	4.03	4.27	4.12	-15.23	-11.20	-10.96	-11.11	3.23	**Complies**
6	2437 MHz	8.49	9.02	8.51	-15.23	-6.74	-6.21	-6.72	3.23	**Complies**
11	2462 MHz	3.96	5.13	4.61	-15.23	-11.27	-10.10	-10.62	3.23	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Chain1 1 + Chain 2 + Chain 3

Channel	Frequency	Power Density (dBm/100kHz)			BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3		Chain 1	Chain 2	Chain 3		
3	2422 MHz	-0.29	0.94	-0.43	-15.23	-15.52	-14.29	-15.66	3.23	**Complies**
6	2437 MHz	3.14	3.79	2.96	-15.23	-12.09	-11.44	-12.27	3.23	**Complies**
9	2452 MHz	0.88	1.58	0.82	-15.23	-14.35	-13.65	-14.41	3.23	**Complies**

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Power Density (dBm/100kHz)			BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Chain 4	Chain 5	Chain 6		Chain 4	Chain 5	Chain 6		
149	5745 MHz	5.97	6.51	7.78	-15.23	-9.26	-8.72	-7.45	3.23	**Complies**
157	5785 MHz	5.80	6.87	7.20	-15.23	-9.43	-8.36	-8.03	3.23	**Complies**
165	5825 MHz	6.28	6.95	7.64	-15.23	-8.95	-8.28	-7.59	3.23	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Power Density (dBm/100kHz)			BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Chain 4	Chain 5	Chain 6		Chain 4	Chain 5	Chain 6		
151	5755 MHz	3.95	4.72	5.51	-15.23	-11.28	-10.51	-9.72	3.23	**Complies**
159	5795 MHz	3.92	4.93	5.16	-15.23	-11.31	-10.30	-10.07	3.23	**Complies**

Configuration IEEE 802.11ac MCS0 80MHz / Chain 4 + Chain 5 + Chain 6

Channel	Frequency	Power Density (dBm/100kHz)			BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)			Single Port Limit (dBm/3kHz)	Result
		Chain 4	Chain 5	Chain 6		Chain 4	Chain 5	Chain 6		
155	5775 MHz	2.13	1.65	1.95	-15.23	-13.10	-13.58	-13.28	3.23	**Complies**

Temperature	25℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a/b/g
Test Date	Nov. 27, 2012		

Configuration IEEE 802.11b / Chain 1

Channel	Frequency	Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	8.36	-15.23	-6.87	8.00	**Complies**
6	2437 MHz	7.72	-15.23	-7.51	8.00	**Complies**
11	2462 MHz	8.42	-15.23	-6.81	8.00	**Complies**

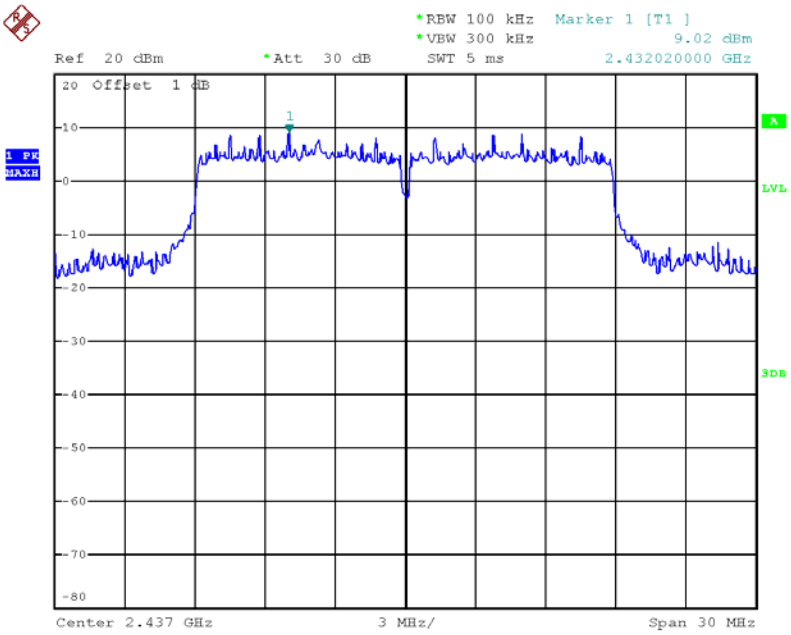
Configuration IEEE 802.11g / Chain 1

Channel	Frequency	Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	5.07	-15.23	-10.16	8.00	**Complies**
6	2437 MHz	8.83	-15.23	-6.40	8.00	**Complies**
11	2462 MHz	5.36	-15.23	-9.87	8.00	**Complies**

Configuration IEEE 802.11a / Chain 4

Channel	Frequency	Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
149	5745 MHz	6.73	-15.23	-8.50	8.00	**Complies**
157	5785 MHz	6.12	-15.23	-9.11	8.00	**Complies**
165	5825 MHz	6.49	-15.23	-8.74	8.00	**Complies**

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 2 / 2437MHz



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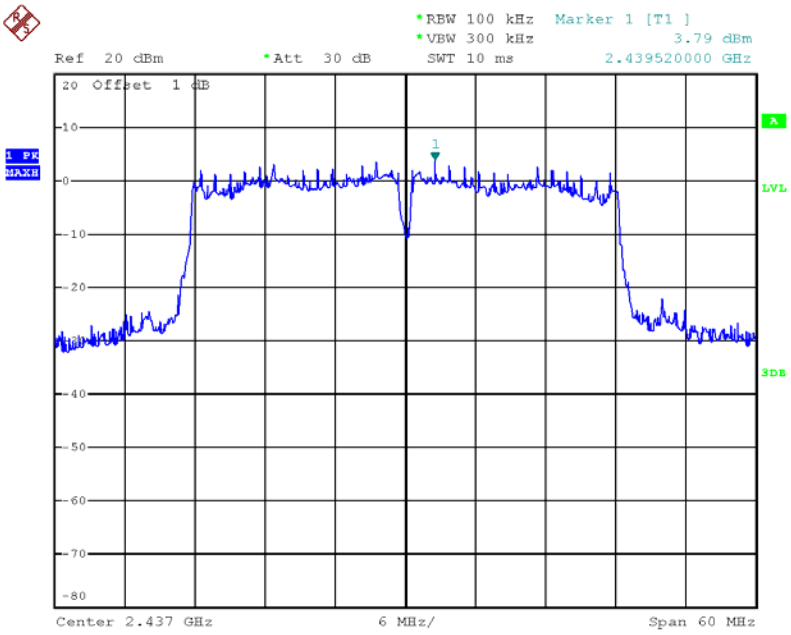
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 2 / 2437 MHz



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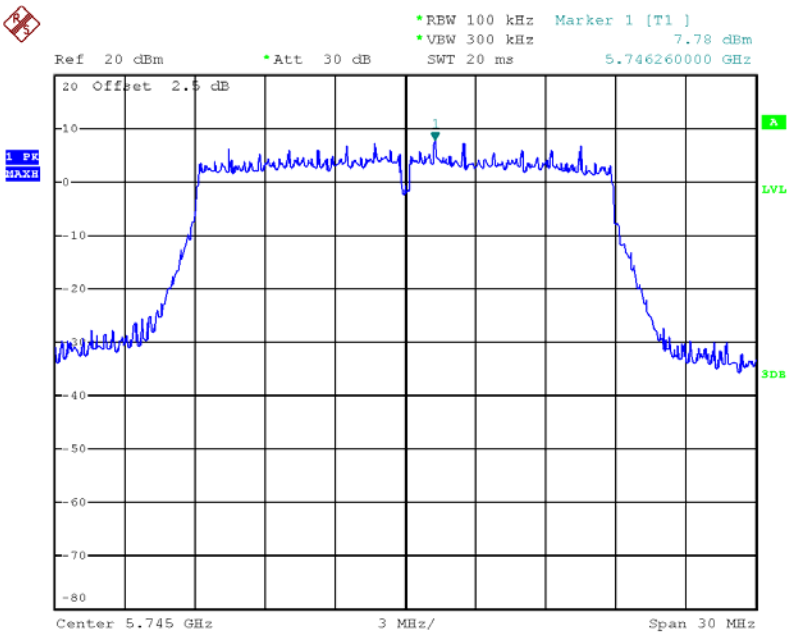
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 5 / 5745 MHz



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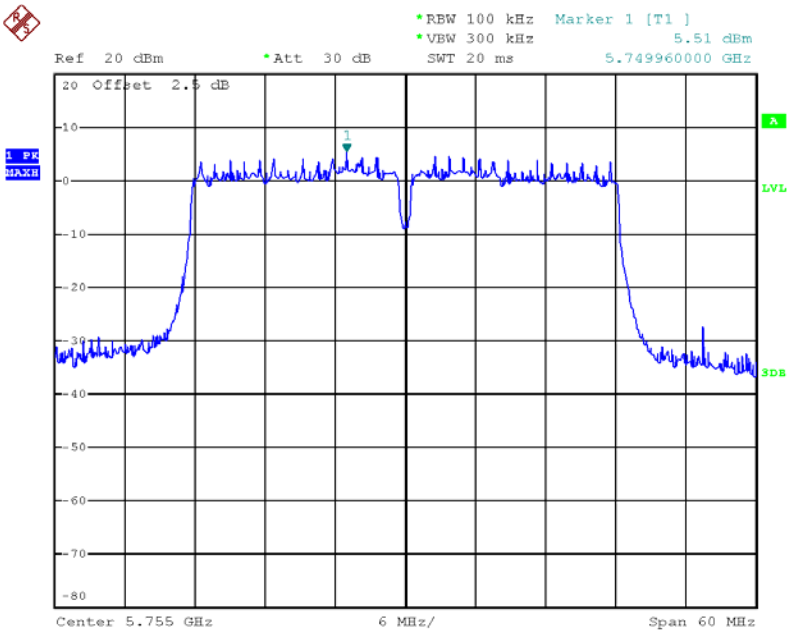
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 6 / 5755 MHz



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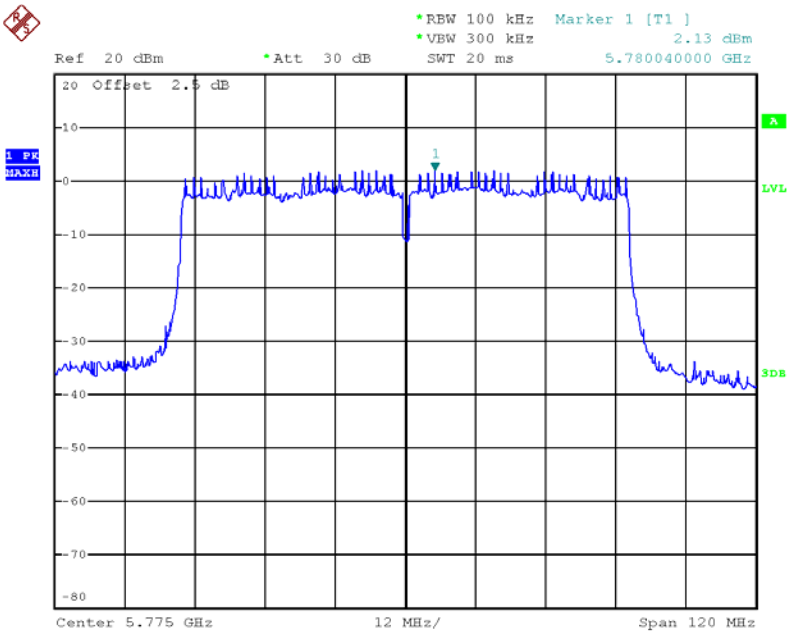
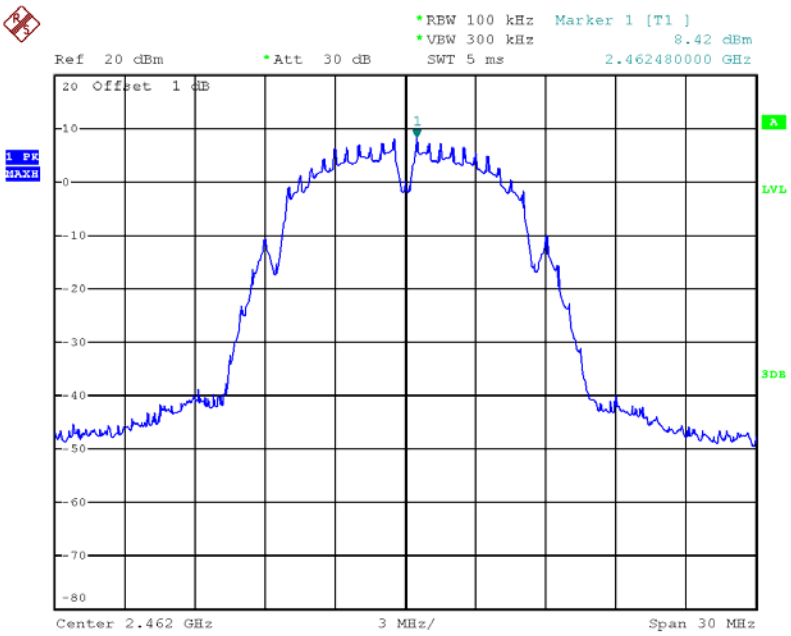
Power Density Plot on Configuration IEEE 802.11ac MCS0 80MHz / Chain 4 / 5775 MHz



Power Density Plot on Configuration IEEE 802.11b / Chain 1 / 2462 MHz



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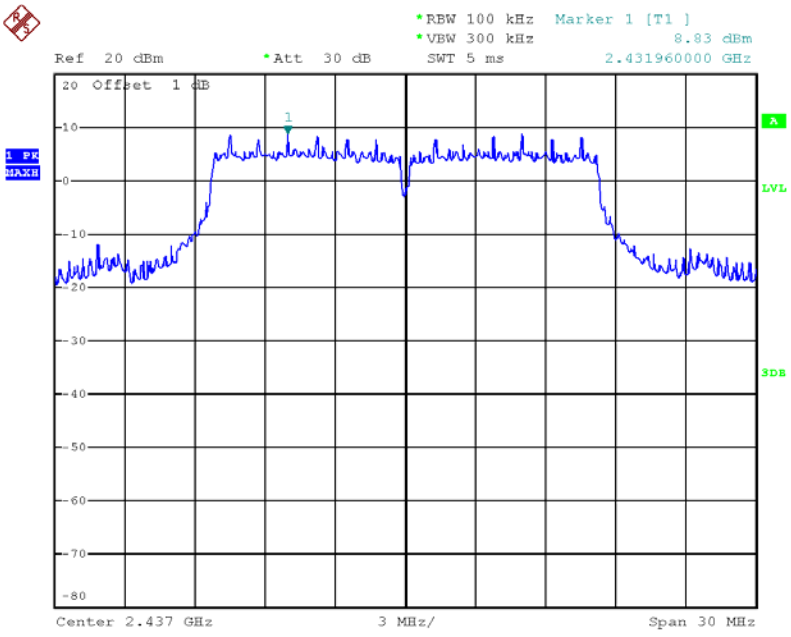
Power Density Plot on Configuration IEEE 802.11g / Chain 1 / 2737 MHz



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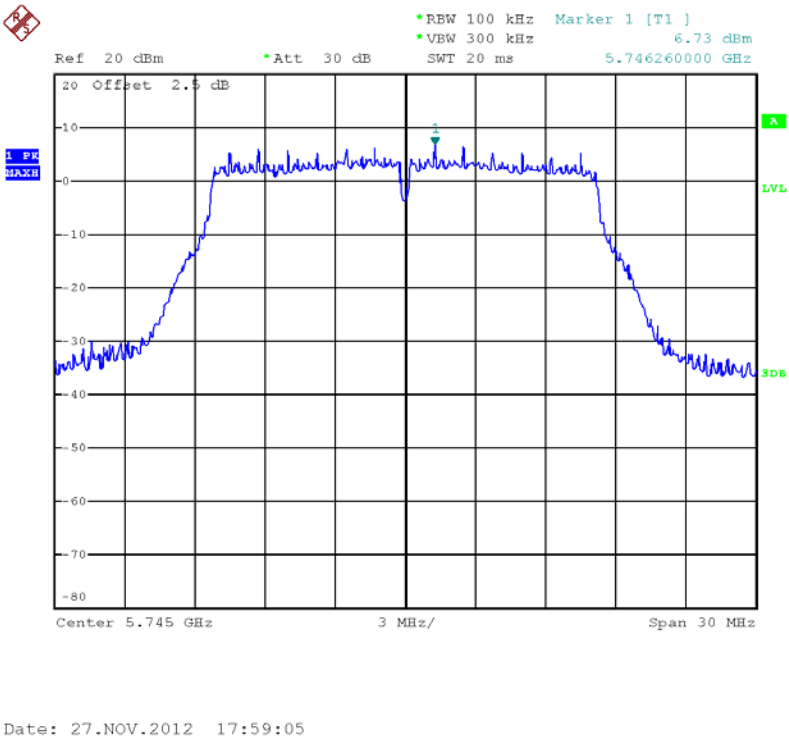
Power Density Plot on Configuration IEEE 802.11a / Chain 4 / 5745 MHz



4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

4.4.2. Measuring Instruments and Setting

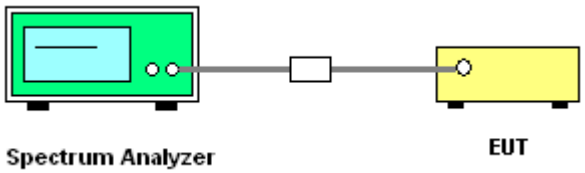
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RB	1-5 % or DTS BW, not exceed 100KHz
VB	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB 558074 Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 5.1.1 EBW Measurement Procedure
3. Multiple antenna system was performed in accordance with KDB 662911 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout



4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

Temperature	25℃	Humidity	56%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n/ac

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Chain1 1 + Chain 2 + Chain 3

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	12.00	17.28	500	**Complies**
6	2437 MHz	11.68	18.32	500	**Complies**
11	2462 MHz	11.92	17.20	500	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Chain1 1 + Chain 2 + Chain 3

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	31.04	35.52	500	**Complies**
6	2437 MHz	31.20	36.00	500	**Complies**
9	2452 MHz	31.20	36.00	500	**Complies**

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Chain1 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.40	17.60	500	**Complies**
157	5785 MHz	15.04	17.52	500	**Complies**
165	5825 MHz	15.12	17.52	500	**Complies**

Configuration IEEE 802.11n MCS0 40MHz / Chain1 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
151	5755 MHz	36.32	36.48	500	**Complies**
159	5795 MHz	36.16	36.48	500	**Complies**

Configuration IEEE 802.11ac MCS0 80MHz / Chain1 4 + Chain 5 + Chain 6

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
155	5775 MHz	75.84	75.84	500	**Complies**

Temperature	20℃	Humidity	70%
Test Engineer	Robert Chang	Configurations	IEEE 802.11a/b/g

Configuration IEEE 802.11b / Chain 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	8.16	10.08	500	**Complies**
6	2437 MHz	8.08	10.08	500	**Complies**
11	2462 MHz	7.60	10.08	500	**Complies**

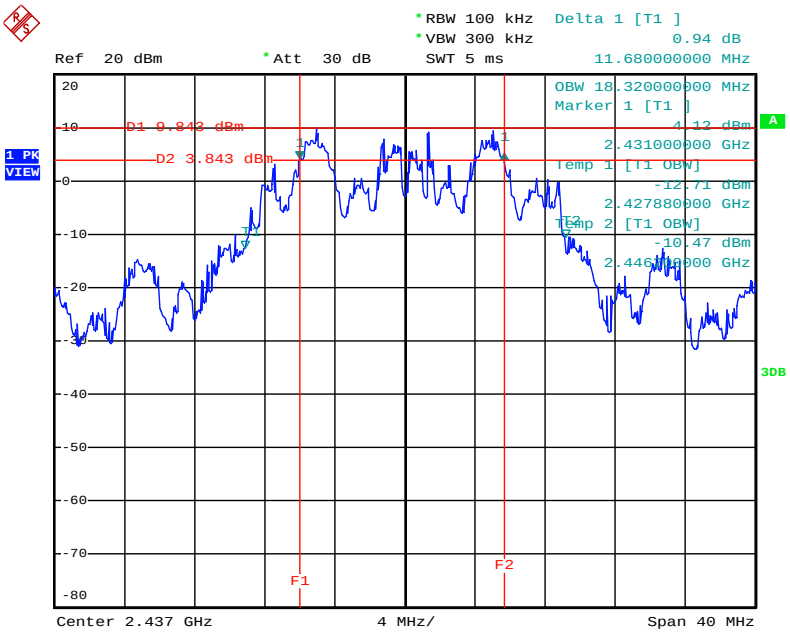
Configuration IEEE 802.11g / Chain 1

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.48	16.64	500	**Complies**
6	2437 MHz	16.32	17.20	500	**Complies**
11	2462 MHz	16.48	16.64	500	**Complies**

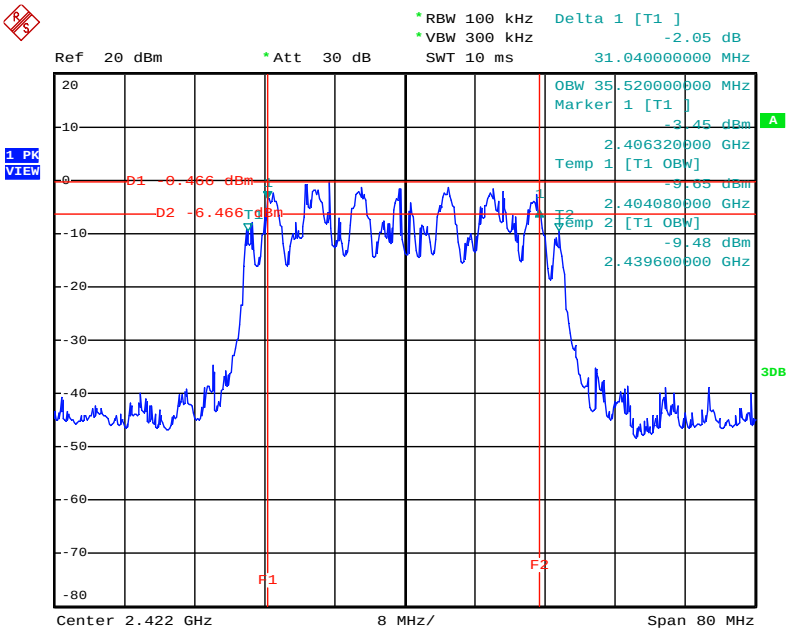
Configuration IEEE 802.11a / Chain 4

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.32	16.64	500	**Complies**
157	5785 MHz	16.32	16.56	500	**Complies**
165	5825 MHz	16.32	16.56	500	**Complies**

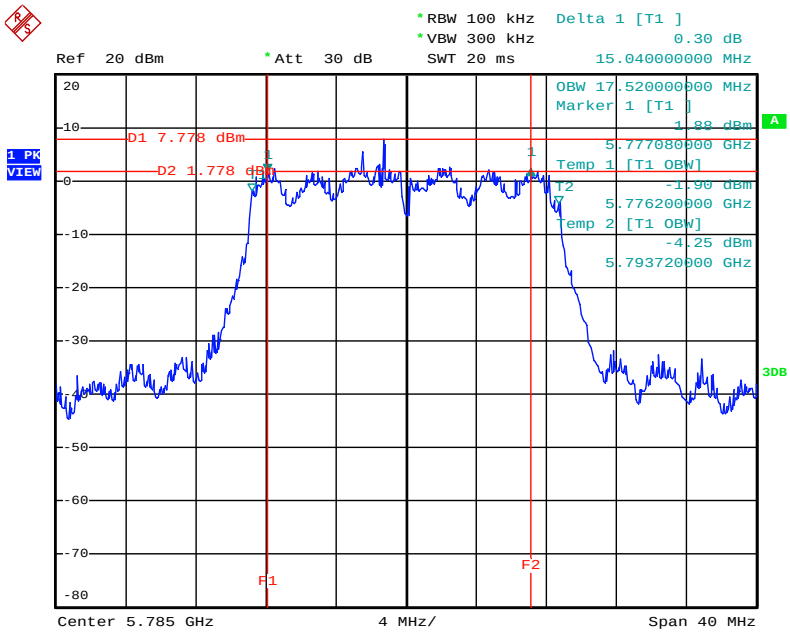
6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 1 + Chain 2 + Chain 3 / 2437 MHz



6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 1 + Chain 2 + Chain 3 / 2422 MHz

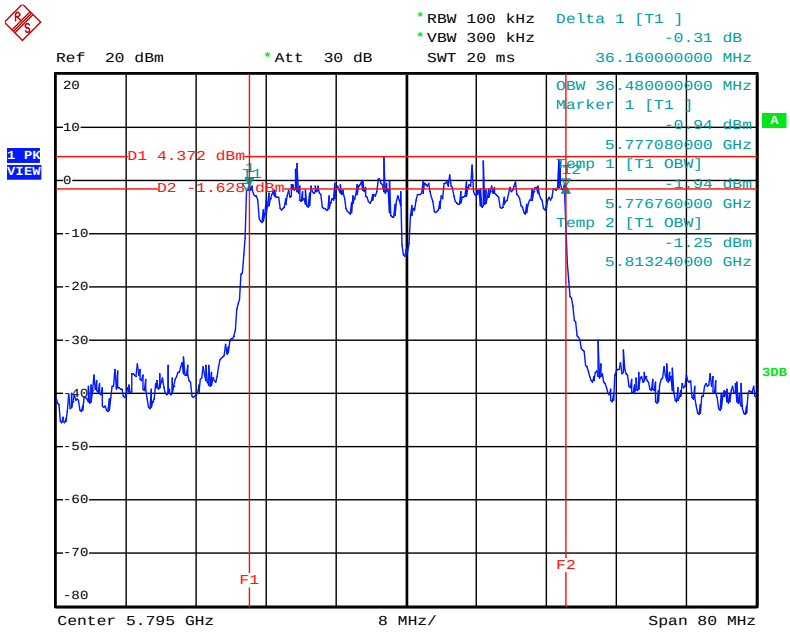


6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Chain 4 + Chain 5 + Chain 6 / 5785 MHz



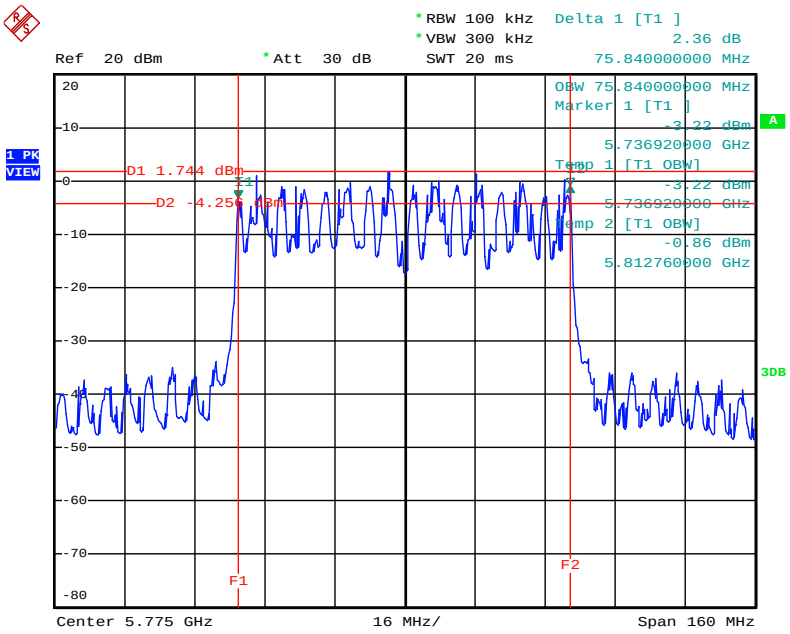
Date: 27.NOV.2012 19:48:18

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Chain 4 + Chain 5 + Chain 6 / 5795 MHz



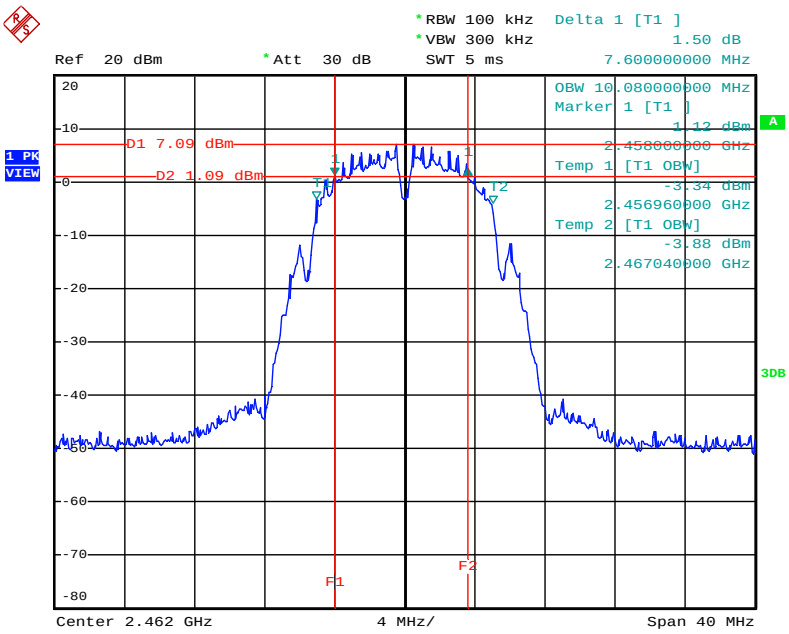
Date: 27.NOV.2012 19:52:11

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0 80MHz / Chain 4 + Chain 5 + Chain 6 / 5775 MHz



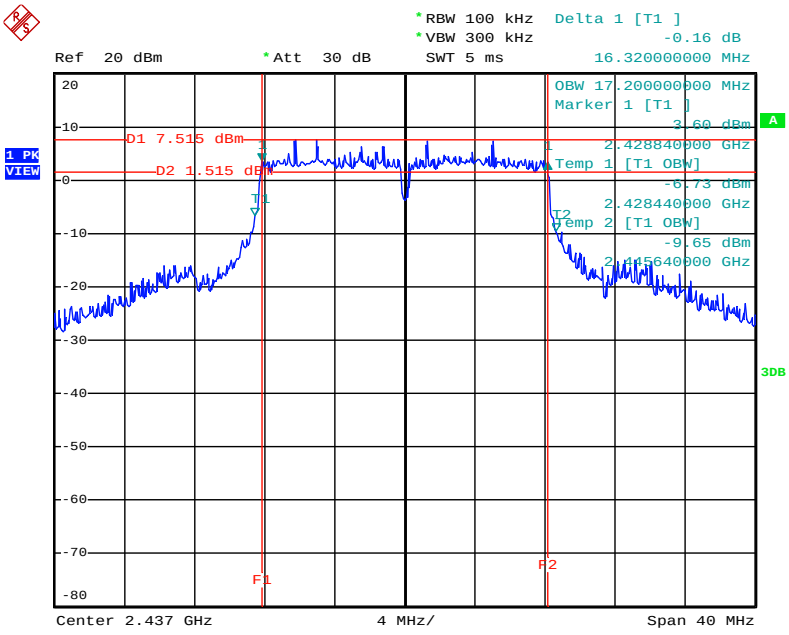
Date: 27.NOV.2012 22:16:11

6 dB Bandwidth Plot on Configuration IEEE 802.11b / Chain 1 / 2462 MHz



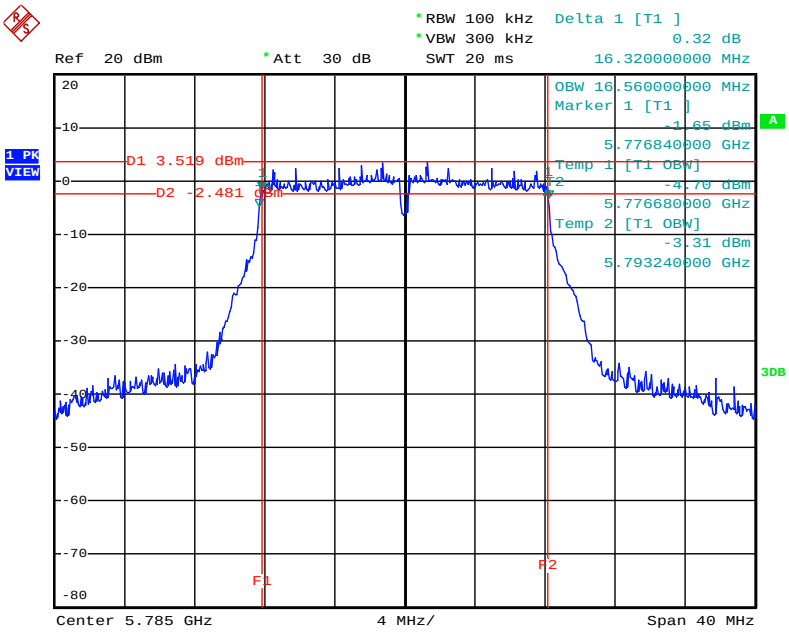
Date: 27.NOV.2012 14:41:47

6 dB Bandwidth Plot on Configuration IEEE 802.11g / Chain 1 / 2437 MHz



Date: 27.NOV.2012 15:03:07

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Chain 4 / 5785 MHz



4.5. Radiated Emissions Measurement

4.5.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.5.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

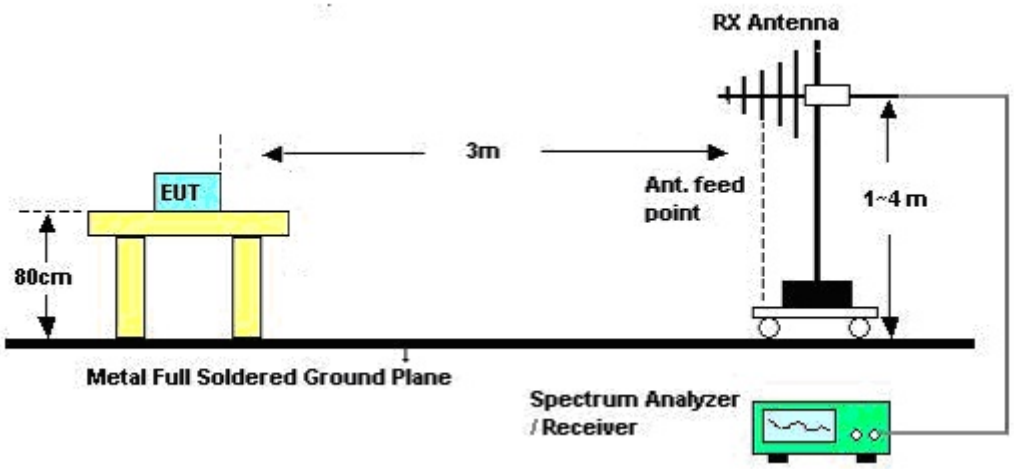
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1GHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	1MHz / 3MHz for peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RB 120kHz for QP

4.5.3. Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.5.4. Test Setup Layout



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz)

Temperature	22℃	Humidity	63%
Test Engineer	Benson Peng	Configurations	CTX
Test Date	Nov. 29, 2012		

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

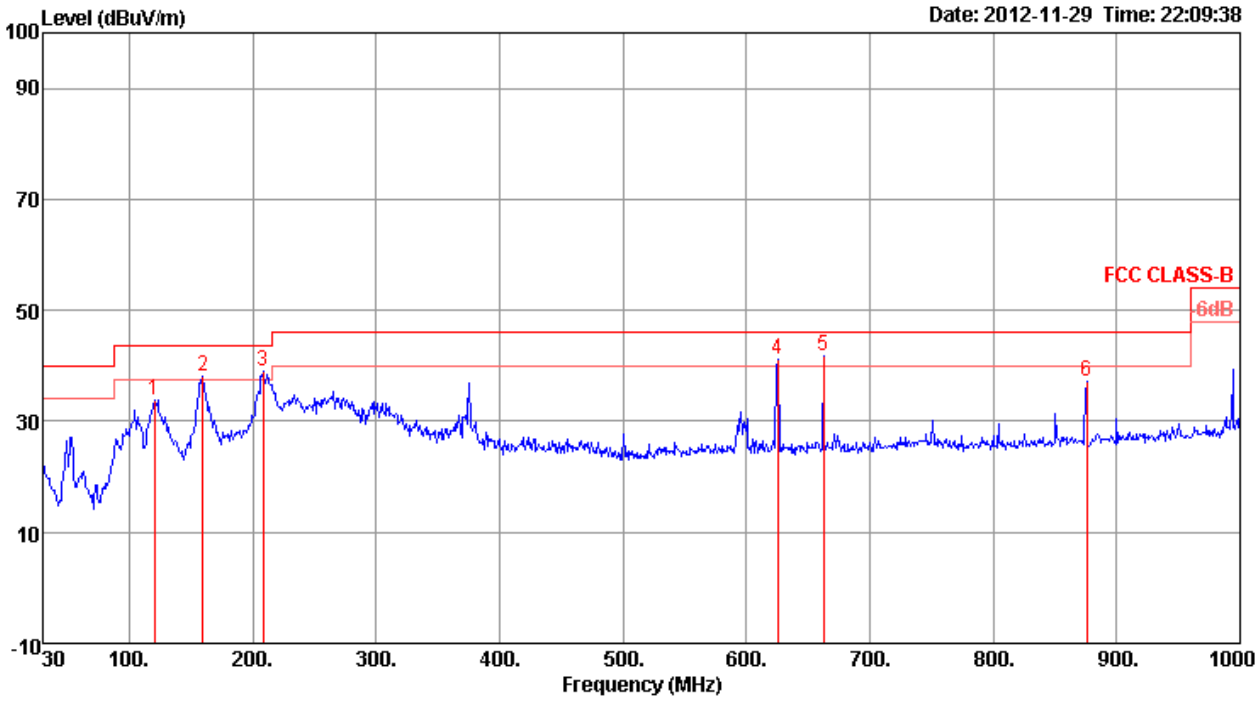
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

4.5.8. Results of Radiated Emissions (30MHz~1GHz)

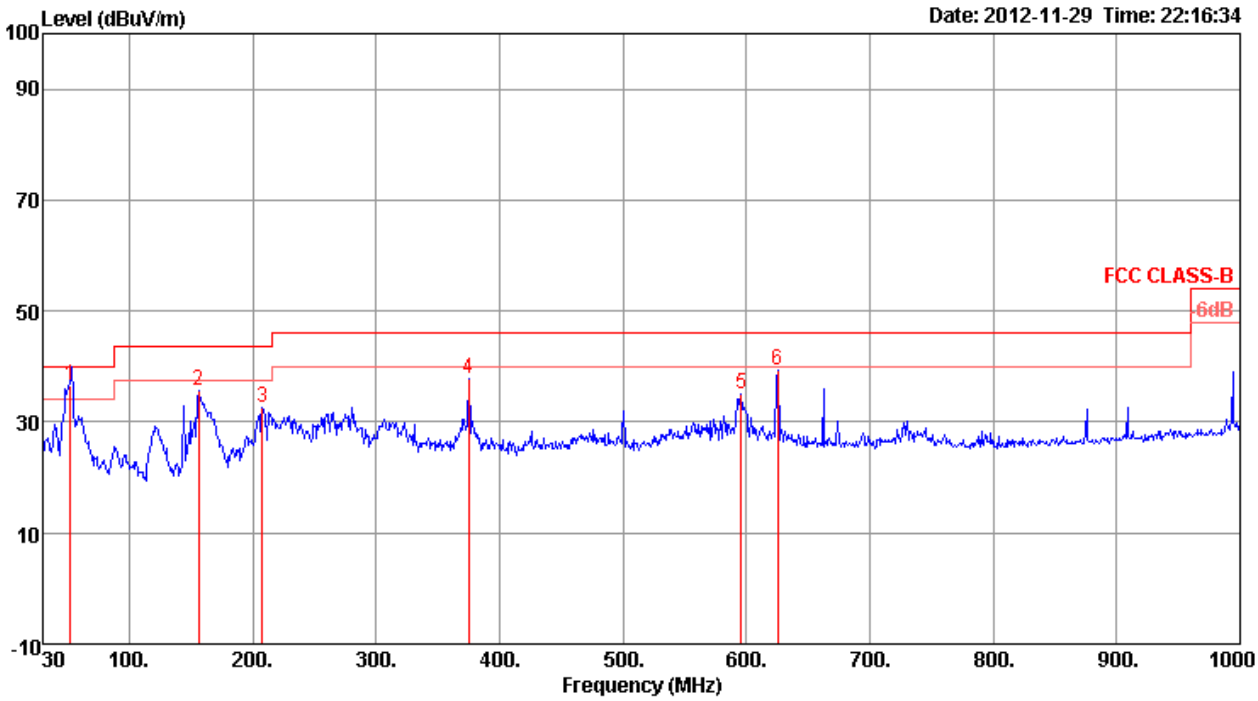
Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	CTX / Mode 2

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	120.21	33.68	43.50	-9.82	47.45	1.20	12.53	27.50	Peak	---	---	HORIZONTAL
2	159.98	38.15	43.50	-5.35	51.92	1.50	12.03	27.30	Peak	---	---	HORIZONTAL
3	208.48	39.07	43.50	-4.43	54.73	1.73	9.69	27.08	Peak	---	---	HORIZONTAL
4	625.58	41.17	46.00	-4.83	47.34	3.05	18.85	28.07	Peak	---	---	HORIZONTAL
5	662.44	41.66	46.00	-4.34	47.28	3.45	18.97	28.04	Peak	---	---	HORIZONTAL
6	875.84	37.31	46.00	-8.69	40.91	3.50	20.35	27.45	Peak	---	---	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	52.39	36.62	40.00	-3.38	55.49	0.74	8.18	27.79	QP	138	355	VERTICAL
2	156.10	35.72	43.50	-7.78	49.60	1.48	11.96	27.32	Peak	---	---	VERTICAL
3	207.51	32.63	43.50	-10.87	48.36	1.73	9.62	27.08	Peak	---	---	VERTICAL
4	375.32	37.72	46.00	-8.28	47.50	2.25	15.40	27.43	Peak	---	---	VERTICAL
5	595.51	34.93	46.00	-11.07	41.43	2.89	18.71	28.10	Peak	---	---	VERTICAL
6	625.58	39.35	46.00	-6.65	45.52	3.05	18.85	28.07	Peak	---	---	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.5.9. Results for Radiated Emissions (1GHz~10th Harmonic)

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz Ch 1 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.94	41.58	54.00	-12.42	40.24	3.31	33.06	35.03	Average	100	242	HORIZONTAL
2	4823.04	54.11	74.00	-19.89	52.77	3.31	33.06	35.03	Peak	100	242	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4821.89	45.12	54.00	-8.88	43.78	3.31	33.06	35.03	Average	100	230	VERTICAL
2	4827.11	61.05	74.00	-12.95	59.71	3.31	33.06	35.03	Peak	100	230	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz Ch 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.17	51.78	54.00	-2.22	50.32	3.33	33.16	35.03	Average	133	269	HORIZONTAL
2	4873.39	68.33	74.00	-5.67	66.87	3.33	33.16	35.03	Peak	133	269	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4872.88	68.71	74.00	-5.29	67.25	3.33	33.16	35.03	Peak	101	300	VERTICAL
2	4872.97	53.51	54.00	-0.49	52.05	3.33	33.16	35.03	Average	101	300	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz Ch11 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4922.91	43.94	54.00	-10.06	42.34	3.35	33.26	35.01	Average	129	277	HORIZONTAL
2	4928.74	59.16	74.00	-14.84	57.56	3.35	33.26	35.01	Peak	129	277	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4918.26	62.18	74.00	-11.82	60.62	3.35	33.23	35.02	Peak	100	299	VERTICAL
2	4923.20	46.82	54.00	-7.18	45.22	3.35	33.26	35.01	Average	100	299	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 40MHz Ch 3 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4838.04	36.22	54.00	-17.78	34.84	3.32	33.09	35.03	Average	136	271	HORIZONTAL
2	4847.59	50.77	74.00	-23.23	49.39	3.32	33.09	35.03	Peak	136	271	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4841.79	38.33	54.00	-15.67	36.95	3.32	33.09	35.03	Average	100	247	VERTICAL
2	4846.79	51.88	74.00	-22.12	50.50	3.32	33.09	35.03	Peak	100	247	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 40MHz Ch 6 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.26	42.76	54.00	-11.24	41.30	3.33	33.16	35.03	Average	133	270	HORIZONTAL
2	4873.26	57.60	74.00	-16.40	56.14	3.33	33.16	35.03	Peak	133	270	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.13	59.84	74.00	-14.16	58.38	3.33	33.16	35.03	Peak	100	263	VERTICAL
2	4874.19	45.86	54.00	-8.14	44.40	3.33	33.16	35.03	Average	100	263	VERTICAL

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 40MHz Ch 9 / Chain 1 + Chain 2 + Chain 3
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4903.84	50.43	74.00	-23.57	48.92	3.34	33.19	35.02	Peak	100	187	HORIZONTAL
2	4903.94	36.39	54.00	-17.61	34.88	3.34	33.19	35.02	Average	100	187	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4903.46	53.67	74.00	-20.33	52.16	3.34	33.19	35.02	Peak	100	303	VERTICAL
2	4904.88	40.42	54.00	-13.58	38.87	3.34	33.23	35.02	Average	100	303	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz CH 149 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11490.16	58.42	74.00	-15.58	49.81	5.11	38.78	35.28	Peak	100	255	HORIZONTAL
2	11490.32	46.18	54.00	-7.82	37.57	5.11	38.78	35.28	Average	100	255	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11488.91	66.74	74.00	-7.26	58.13	5.11	38.78	35.28	Peak	130	258	VERTICAL
2	11489.20	51.68	54.00	-2.32	43.07	5.11	38.78	35.28	Average	130	258	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz CH 157 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11564.81	59.37	74.00	-14.63	50.72	5.13	38.82	35.30	Peak	152	255	HORIZONTAL
2	11569.94	47.72	54.00	-6.28	39.05	5.14	38.83	35.30	Average	152	255	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.23	52.79	54.00	-1.21	44.13	5.13	38.83	35.30	Average	131	253	VERTICAL
2	11570.00	67.63	74.00	-6.37	58.96	5.14	38.83	35.30	Peak	131	253	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz CH 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11650.38	61.80	74.00	-12.20	53.08	5.16	38.86	35.30	Peak	129	262	HORIZONTAL
2	11650.54	47.48	54.00	-6.52	38.76	5.16	38.86	35.30	Average	129	262	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11649.01	65.41	74.00	-8.59	56.69	5.16	38.86	35.30	Peak	161	257	VERTICAL
2	11649.58	51.93	54.00	-2.07	43.21	5.16	38.86	35.30	Average	161	257	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 40MHz CH 151 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11506.12	58.01	74.00	-15.99	49.38	5.12	38.79	35.28	Peak	126	284	HORIZONTAL
2	11511.09	44.64	54.00	-9.36	36.01	5.12	38.79	35.28	Average	126	284	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11504.71	64.04	74.00	-9.96	55.41	5.12	38.79	35.28	Peak	131	249	VERTICAL
2	11509.68	51.62	54.00	-2.38	42.99	5.12	38.79	35.28	Average	131	249	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 40MHz CH 159 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.81	58.79	74.00	-15.21	50.12	5.14	38.83	35.30	Peak	130	259	HORIZONTAL
2	11590.03	45.28	54.00	-8.72	36.61	5.14	38.83	35.30	Average	130	259	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.29	65.47	74.00	-8.53	56.80	5.14	38.83	35.30	Peak	130	251	VERTICAL
2	11589.36	52.30	54.00	-1.70	43.63	5.14	38.83	35.30	Average	130	251	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11ac MCS0 20MHz CH 149 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11490.00	46.72	54.00	-7.28	38.11	5.11	38.78	35.28	Average	128	259	HORIZONTAL
2	11490.38	60.83	74.00	-13.17	52.22	5.11	38.78	35.28	Peak	128	259	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11488.85	53.22	54.00	-0.78	44.61	5.11	38.78	35.28	Average	148	255	VERTICAL
2	11494.68	65.88	74.00	-8.12	57.26	5.12	38.78	35.28	Peak	148	255	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11ac MCS0 20MHz CH 157 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.87	61.96	74.00	-12.04	53.29	5.14	38.83	35.30	Peak	130	258	HORIZONTAL
2	11570.38	47.60	54.00	-6.40	38.93	5.14	38.83	35.30	Average	130	258	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.26	68.95	74.00	-5.05	60.29	5.13	38.83	35.30	Peak	131	252	VERTICAL
2	11569.39	53.46	54.00	-0.54	44.80	5.13	38.83	35.30	Average	131	252	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11ac MCS0 20MHz CH 165 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11649.81	60.74	74.00	-13.26	52.02	5.16	38.86	35.30	Peak	130	258	HORIZONTAL
2	11650.03	46.68	54.00	-7.32	37.96	5.16	38.86	35.30	Average	130	258	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11644.49	53.65	54.00	-0.35	44.93	5.16	38.86	35.30	Average	152	247	VERTICAL
2	11655.87	66.44	74.00	-7.56	57.72	5.16	38.86	35.30	Peak	152	247	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11ac MCS0 40MHz CH 151 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11509.84	44.99	54.00	-9.01	36.36	5.12	38.79	35.28	Average	159	261	HORIZONTAL
2	11509.87	57.02	74.00	-16.98	48.39	5.12	38.79	35.28	Peak	159	261	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11504.29	51.32	54.00	-2.68	42.69	5.12	38.79	35.28	Average	159	253	VERTICAL
2	11509.33	64.10	74.00	-9.90	55.47	5.12	38.79	35.28	Peak	159	253	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11ac MCS0 40MHz CH 159 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.84	58.56	74.00	-15.44	49.89	5.14	38.83	35.30	Peak	157	253	HORIZONTAL
2	11590.19	44.73	54.00	-9.27	36.06	5.14	38.83	35.30	Average	157	253	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11589.20	53.11	54.00	-0.89	44.44	5.14	38.83	35.30	Average	130	255	VERTICAL
2	11589.39	65.83	74.00	-8.17	57.16	5.14	38.83	35.30	Peak	130	255	VERTICAL

Temperature	24℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11ac MCS0 80MHz CH 155 / Chain 4 + Chain 5 + Chain 6
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11549.94	42.50	54.00	-11.50	33.86	5.13	38.81	35.30	Average	132	256	HORIZONTAL
2	11550.22	55.05	74.00	-18.95	46.41	5.13	38.81	35.30	Peak	132	256	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11549.39	49.26	54.00	-4.74	40.62	5.13	38.81	35.30	Average	130	252	VERTICAL
2	11554.26	64.01	74.00	-9.99	55.36	5.13	38.82	35.30	Peak	130	252	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11b CH 1 / Chain 1
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.97	47.43	54.00	-6.57	46.09	3.31	33.06	35.03	Average	100	256	HORIZONTAL
2	4824.03	51.63	74.00	-22.37	50.29	3.31	33.06	35.03	Peak	100	256	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.92	56.35	74.00	-17.65	55.01	3.31	33.06	35.03	Peak	100	264	VERTICAL
2	4823.96	53.52	54.00	-0.48	52.18	3.31	33.06	35.03	Average	100	264	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11b CH 6 / Chain 1
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.97	48.52	54.00	-5.48	47.06	3.33	33.16	35.03	Average	100	255	HORIZONTAL
2	4873.98	51.02	74.00	-22.98	49.56	3.33	33.16	35.03	Peak	100	255	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.96	53.50	54.00	-0.50	52.04	3.33	33.16	35.03	Average	115	246	VERTICAL
2	4873.97	56.76	74.00	-17.24	55.30	3.33	33.16	35.03	Peak	115	246	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11b CH 11 / Chain 1
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.91	50.55	74.00	-23.45	48.95	3.35	33.26	35.01	Peak	100	233	HORIZONTAL
2	4923.97	47.22	54.00	-6.78	45.62	3.35	33.26	35.01	Average	100	233	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4923.94	56.31	74.00	-17.69	54.71	3.35	33.26	35.01	Peak	125	249	VERTICAL
2	4923.99	53.43	54.00	-0.57	51.83	3.35	33.26	35.01	Average	125	249	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11g CH 1 / Chain 1
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4823.58	55.37	74.00	-18.63	54.03	3.31	33.06	35.03	Peak	117	234	HORIZONTAL
2	4824.19	39.47	54.00	-14.53	38.13	3.31	33.06	35.03	Average	117	234	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4822.94	58.08	74.00	-15.92	56.74	3.31	33.06	35.03	Peak	114	241	VERTICAL
2	4823.74	43.00	54.00	-11.00	41.66	3.31	33.06	35.03	Average	114	241	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11g CH 6 / Chain 1
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4873.36	44.39	54.00	-9.61	42.93	3.33	33.16	35.03	Average	100	180	HORIZONTAL
2	4875.57	58.65	74.00	-15.35	57.19	3.33	33.16	35.03	Peak	100	180	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4874.00	51.17	54.00	-2.83	49.71	3.33	33.16	35.03	Average	111	228	VERTICAL
2	4881.08	65.45	74.00	-8.55	63.99	3.33	33.16	35.03	Peak	111	228	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11g CH 11 / Chain 1
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4924.51	37.89	54.00	-16.11	36.29	3.35	33.26	35.01	Average	127	224	HORIZONTAL
2	4925.03	51.14	74.00	-22.86	49.54	3.35	33.26	35.01	Peak	127	224	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4921.98	58.57	74.00	-15.43	56.97	3.35	33.26	35.01	Peak	125	229	VERTICAL
2	4924.39	44.01	54.00	-9.99	42.41	3.35	33.26	35.01	Average	125	229	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a CH 149 / Chain 4
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11490.90	57.76	74.00	-16.24	49.15	5.11	38.78	35.28	Peak	156	288	HORIZONTAL
2	11491.06	44.23	54.00	-9.77	35.62	5.11	38.78	35.28	Average	156	288	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11489.10	60.76	74.00	-13.24	52.15	5.11	38.78	35.28	Peak	159	257	VERTICAL
2	11490.29	47.86	54.00	-6.14	39.25	5.11	38.78	35.28	Average	159	257	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a CH 157 / Chain 4
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11570.22	46.27	54.00	-7.73	37.60	5.14	38.83	35.30	Average	152	288	HORIZONTAL
2	11574.42	60.66	74.00	-13.34	51.99	5.14	38.83	35.30	Peak	152	288	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11569.87	48.66	54.00	-5.34	39.99	5.14	38.83	35.30	Average	125	247	VERTICAL
2	11571.57	62.48	74.00	-11.52	53.81	5.14	38.83	35.30	Peak	125	247	VERTICAL

Temperature	20℃	Humidity	70%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a CH 165 / Chain 4
Test Date	Nov. 24, 2012		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11649.42	45.36	54.00	-8.64	36.64	5.16	38.86	35.30	Average	155	287	HORIZONTAL
2	11649.81	59.95	74.00	-14.05	51.23	5.16	38.86	35.30	Peak	155	287	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	11646.35	59.52	74.00	-14.48	50.80	5.16	38.86	35.30	Peak	169	278	VERTICAL
2	11649.97	46.90	54.00	-7.10	38.18	5.16	38.86	35.30	Average	169	278	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

4.6. Band Edge Emissions Measurement

4.6.1. Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

4.6.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (Emission in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	100 KHz / 300 KHz for Peak

4.6.3. Test Procedures

1. The test procedure is the same as section 4.5.3, only the frequency range investigated is limited to 100MHz around bandedges.

4.6.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.5.4.

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Chain 1 + Chain 2 + Chain 3
Test date	Nov. 24, 2012		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.72	53.91	54.00	-0.09	23.53	2.21	28.17	0.00	Average	100	21	VERTICAL
2	2388.72	73.68	74.00	-0.32	43.30	2.21	28.17	0.00	Peak	100	21	VERTICAL
3	2408.47	100.89			70.46	2.22	28.21	0.00	Average	100	21	VERTICAL
4	2408.47	114.01			83.58	2.22	28.21	0.00	Peak	100	21	VERTICAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.08	65.68	74.00	-8.32	35.30	2.21	28.17	0.00	Peak	100	22	VERTICAL
2	2388.56	49.52	54.00	-4.48	19.14	2.21	28.17	0.00	Average	100	22	VERTICAL
3	2428.83	102.28			71.80	2.23	28.25	0.00	Average	100	22	VERTICAL
4	2428.99	115.62			85.14	2.23	28.25	0.00	Peak	100	22	VERTICAL
5	2483.50	47.58	54.00	-6.42	16.95	2.26	28.37	0.00	Average	100	22	VERTICAL
6	2483.50	62.47	74.00	-11.53	31.84	2.26	28.37	0.00	Peak	100	22	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2464.40	96.89			66.32	2.24	28.33	0.00	Average	140	182	HORIZONTAL
2	2466.49	109.08			78.49	2.26	28.33	0.00	Peak	140	182	HORIZONTAL
3	2484.14	53.56	54.00	-0.44	22.92	2.26	28.38	0.00	Average	140	182	HORIZONTAL
4	2485.10	71.37	74.00	-2.63	40.69	2.26	28.42	0.00	Peak	140	182	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Chain 1 + Chain 2 + Chain 3
Test date	Nov. 24, 2012		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.40	72.86	74.00	-1.14	42.48	2.21	28.17	0.00	Peak	100	20	VERTICAL
2	2388.72	53.66	54.00	-0.34	23.28	2.21	28.17	0.00	Average	100	20	VERTICAL
3	2408.54	96.47			66.04	2.22	28.21	0.00	Average	100	20	VERTICAL
4	2423.92	107.21			76.73	2.23	28.25	0.00	Peak	100	20	VERTICAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	53.76	54.00	-0.24	23.37	2.22	28.17	0.00	Average	100	317	VERTICAL
2	2390.00	66.27	74.00	-7.73	35.88	2.22	28.17	0.00	Peak	100	317	VERTICAL
3	2435.72	99.00			68.48	2.23	28.29	0.00	Average	100	317	VERTICAL
4	2436.04	109.91			79.39	2.23	28.29	0.00	Peak	100	317	VERTICAL

Item 3, 4 are the fundamental frequency at 2437MHz.

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2450.40	105.41			74.88	2.24	28.29	0.00	Peak	116	183	HORIZONTAL
2	2451.04	94.39			63.82	2.24	28.33	0.00	Average	116	183	HORIZONTAL
3	2486.06	72.03	74.00	-1.97	41.35	2.26	28.42	0.00	Peak	116	183	HORIZONTAL
4	2488.31	53.69	54.00	-0.31	23.01	2.26	28.42	0.00	Average	116	183	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1
Test Date	Nov. 24, 2012		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2388.24	56.64	74.00	-17.36	26.26	2.21	28.17	0.00	Peak	123	200	HORIZONTAL
2	2390.00	45.11	54.00	-8.89	14.72	2.22	28.17	0.00	Average	123	200	HORIZONTAL
3	2411.20	102.80			72.37	2.22	28.21	0.00	Average	123	200	HORIZONTAL
4	2412.96	109.04			78.61	2.22	28.21	0.00	Peak	123	200	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	37.79	54.00	-16.21	7.40	2.22	28.17	0.00	Average	100	151	VERTICAL
2	2390.00	47.28	74.00	-26.72	16.89	2.22	28.17	0.00	Peak	100	151	VERTICAL
3	2436.04	100.14			69.62	2.23	28.29	0.00	Peak	100	151	VERTICAL
4	2436.36	96.44			65.92	2.23	28.29	0.00	Average	100	151	VERTICAL
5	2483.50	37.82	54.00	-16.18	7.19	2.26	28.37	0.00	Average	100	151	VERTICAL
6	2483.50	46.08	74.00	-27.92	15.45	2.26	28.37	0.00	Peak	100	151	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2462.64	101.71			71.14	2.24	28.33	0.00	Average	146	184	HORIZONTAL
2	2462.96	107.94			77.37	2.24	28.33	0.00	Peak	146	184	HORIZONTAL
3	2483.50	43.05	54.00	-10.95	12.41	2.26	28.38	0.00	Average	146	184	HORIZONTAL
4	2483.50	53.38	74.00	-20.62	22.74	2.26	28.38	0.00	Peak	146	184	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2462 MHz.

Temperature	25.6℃	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1
Test Date	Nov. 24, 2012		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	53.38	54.00	-0.62	22.99	2.22	28.17	0.00	Average	118	194	HORIZONTAL
2	2390.00	71.26	74.00	-2.74	40.87	2.22	28.17	0.00	Peak	118	194	HORIZONTAL
3	2408.31	110.20			79.77	2.22	28.21	0.00	Peak	118	194	HORIZONTAL
4	2408.96	97.60			67.17	2.22	28.21	0.00	Average	118	194	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2390.00	48.77	54.00	-5.23	18.38	2.22	28.17	0.00	Average	148	181	HORIZONTAL
2	2390.00	65.70	74.00	-8.30	35.31	2.22	28.17	0.00	Peak	148	181	HORIZONTAL
3	2430.11	113.97			83.49	2.23	28.25	0.00	Peak	148	181	HORIZONTAL
4	2432.99	101.15			70.67	2.23	28.25	0.00	Average	148	181	HORIZONTAL
5	2483.50	44.46	54.00	-9.54	13.82	2.26	28.38	0.00	Average	148	181	HORIZONTAL
6	2485.42	60.20	74.00	-13.80	29.52	2.26	28.42	0.00	Peak	148	181	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2463.92	108.34			77.77	2.24	28.33	0.00	Peak	148	181	HORIZONTAL
2	2465.05	96.17			65.60	2.24	28.33	0.00	Average	148	181	HORIZONTAL
3	2483.50	53.33	54.00	-0.67	22.69	2.26	28.38	0.00	Average	148	181	HORIZONTAL
4	2483.98	71.54	74.00	-2.46	40.90	2.26	28.38	0.00	Peak	148	181	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2462 MHz.

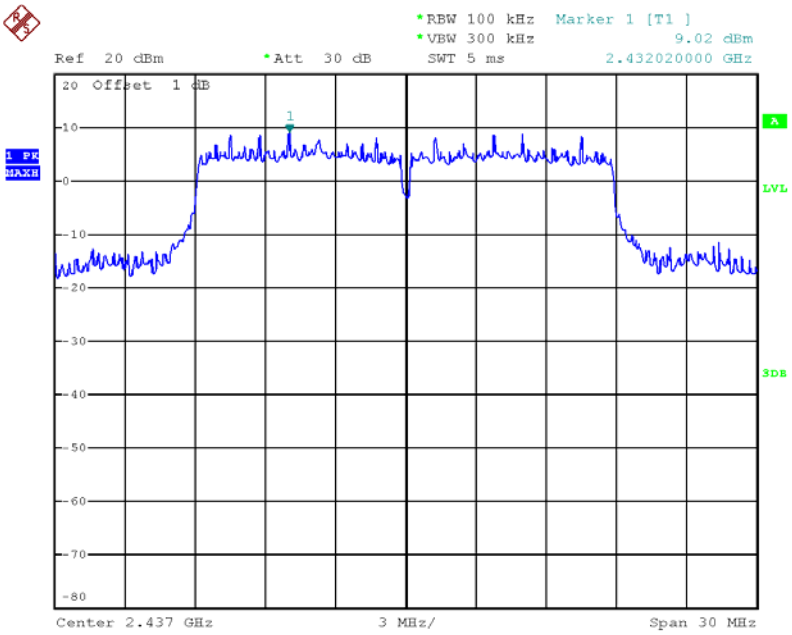
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

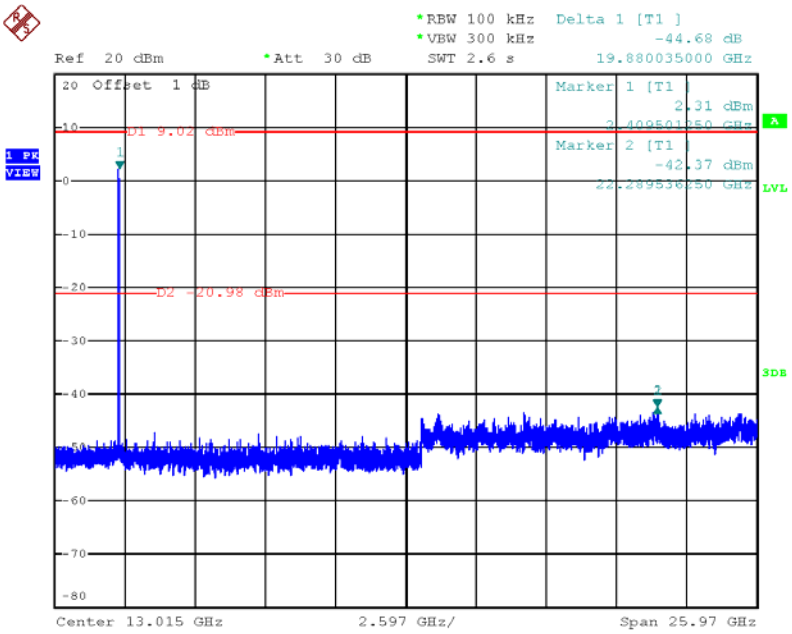
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11n MCS0 20MHz / Reference Level



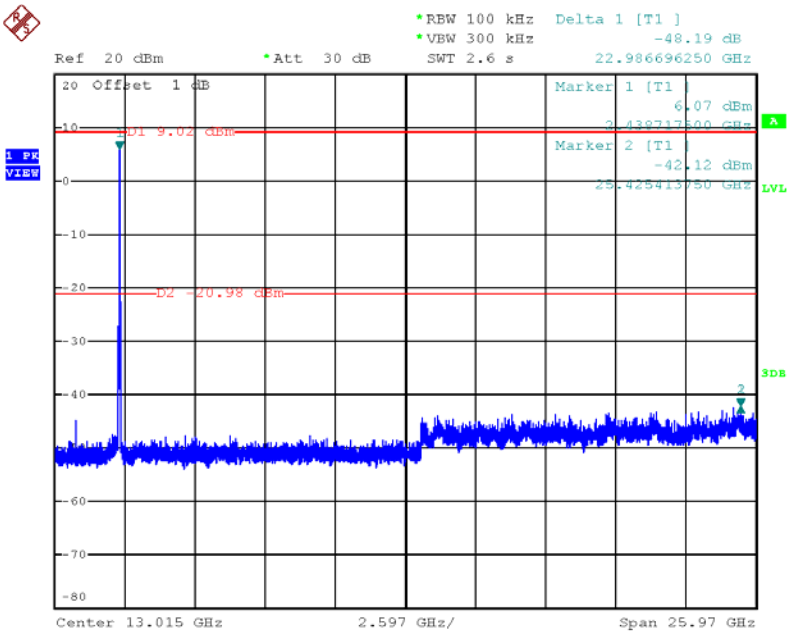
Date: 27.NOV.2012 15:18:48

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 1 (down 30dBc)



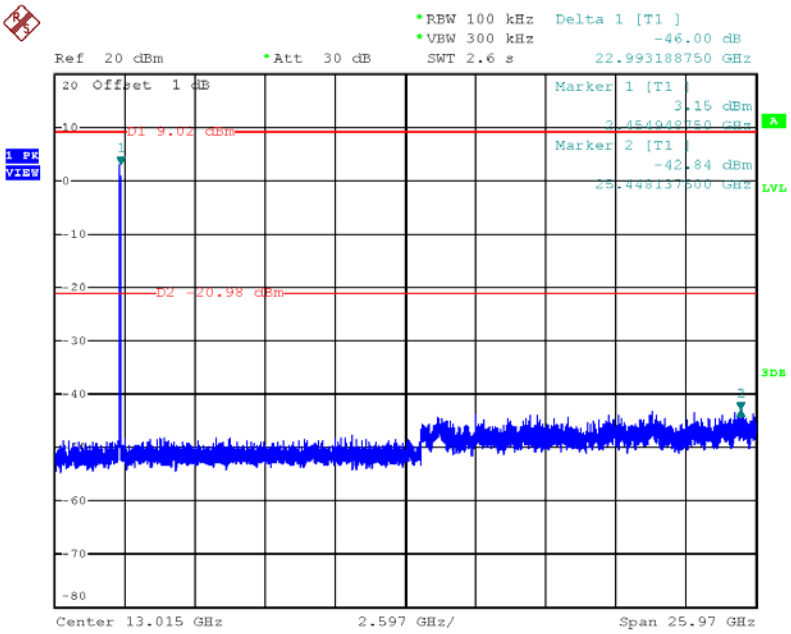
Date: 27.NOV.2012 15:55:27

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 6 (down 30dBc)



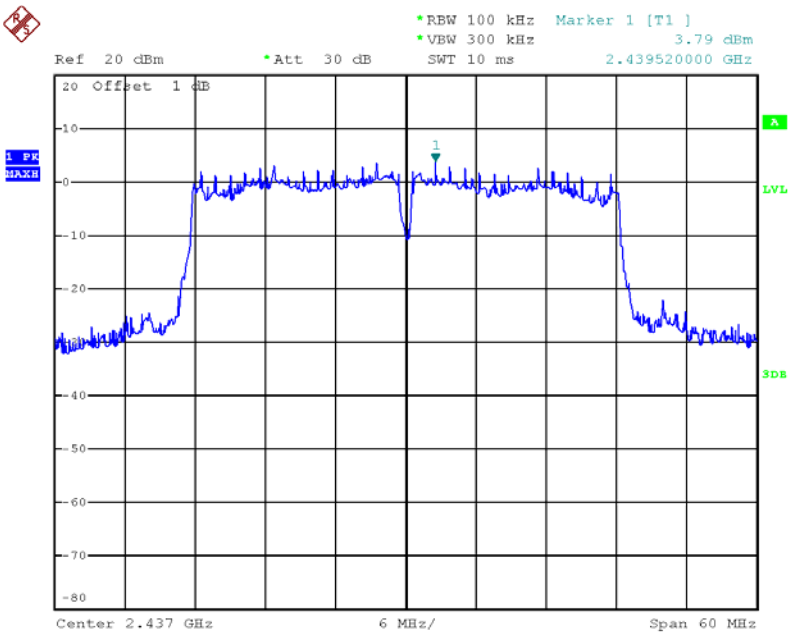
Date: 27.NOV.2012 15:58:08

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 11 (down 30dBc)



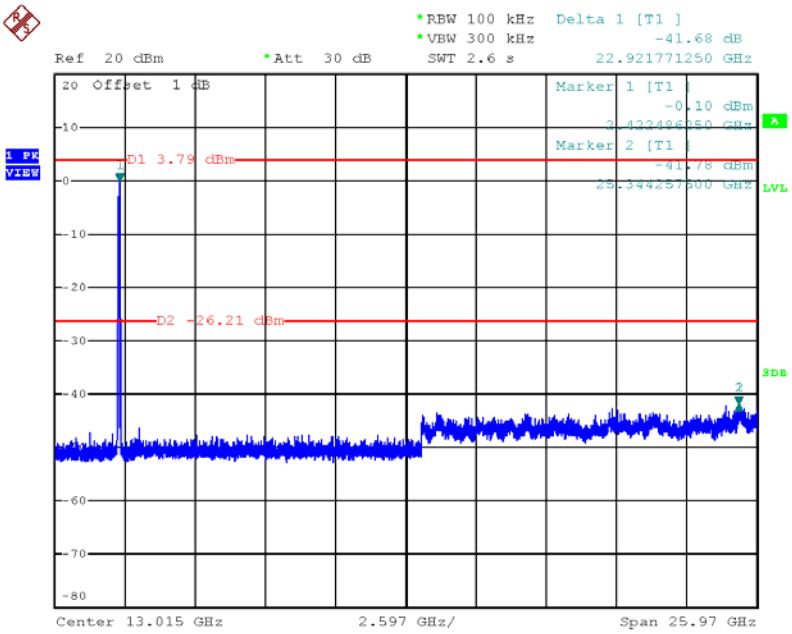
Date: 27.NOV.2012 15:59:01

Plot on Configuration IEEE 802.11n MCS0 40MHz / Reference Level



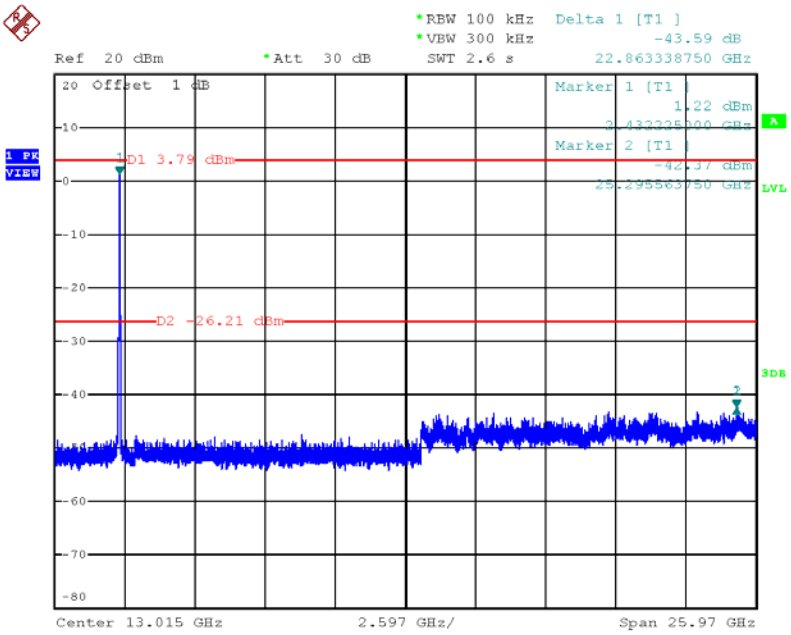
Date: 27.NOV.2012 15:29:42

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 3 (down 30dBc)



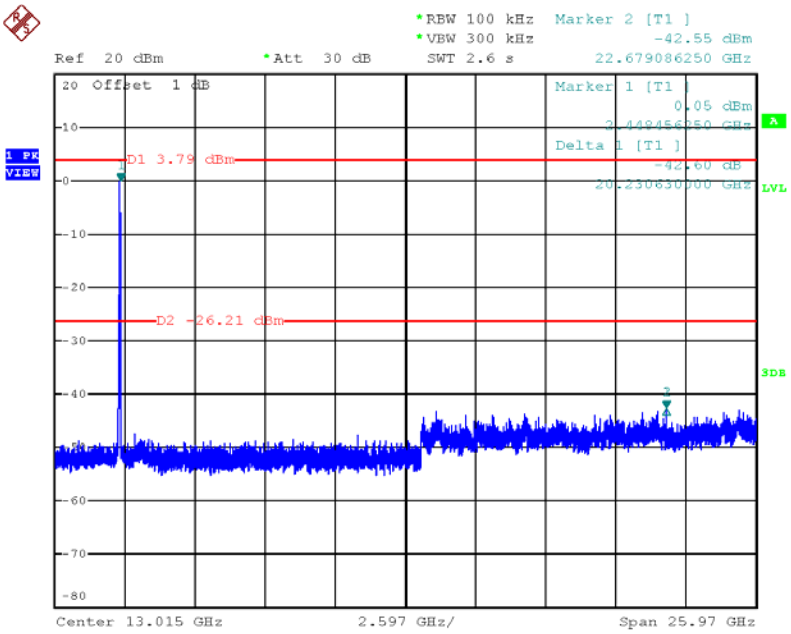
Date: 27.NOV.2012 15:46:15

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 6 (down 30dBc)



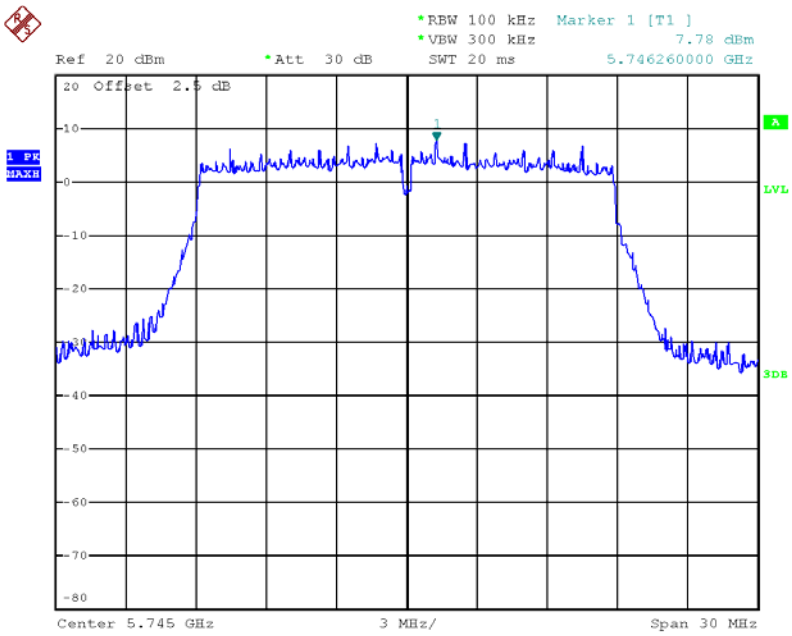
Date: 27.NOV.2012 15:43:57

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 9 (down 30dBc)



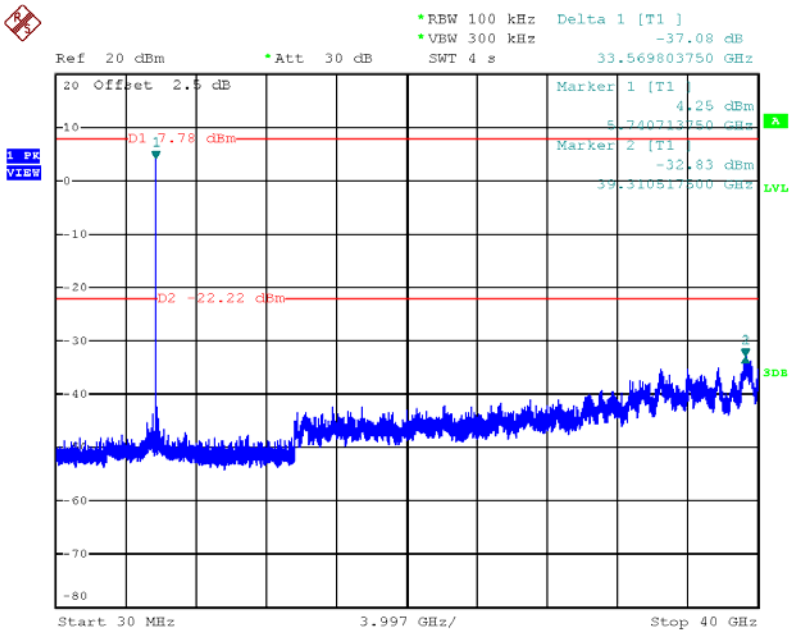
Date: 27.NOV.2012 15:39:05

Plot on Configuration IEEE 802.11n MCS0 20MHz / Reference Level



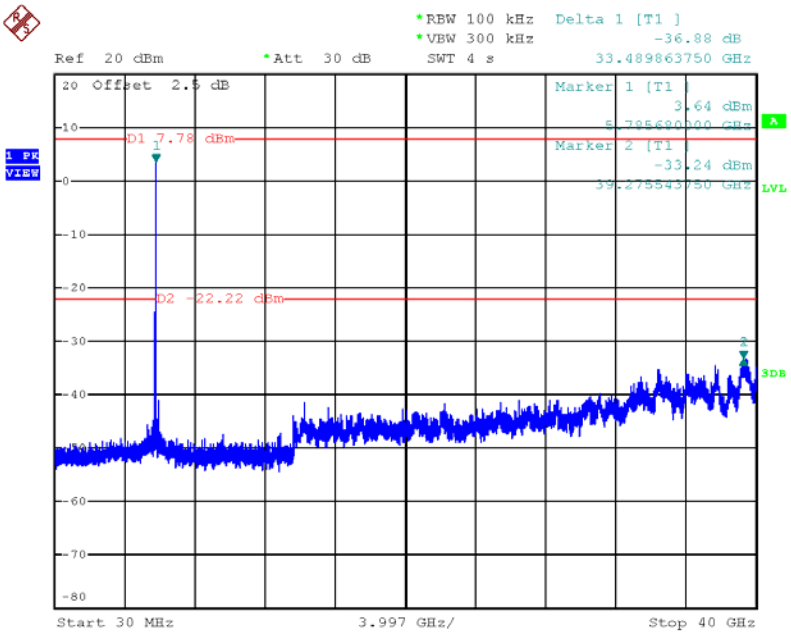
Date: 27.NOV.2012 18:44:15

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 149 (down 30dBc)



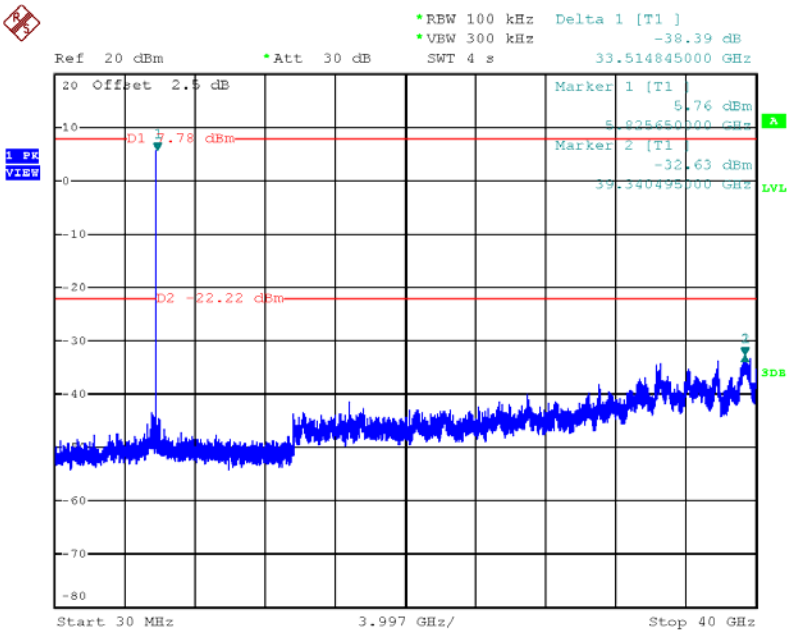
Date: 27.NOV.2012 18:55:10

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 157 (down 30dBc)



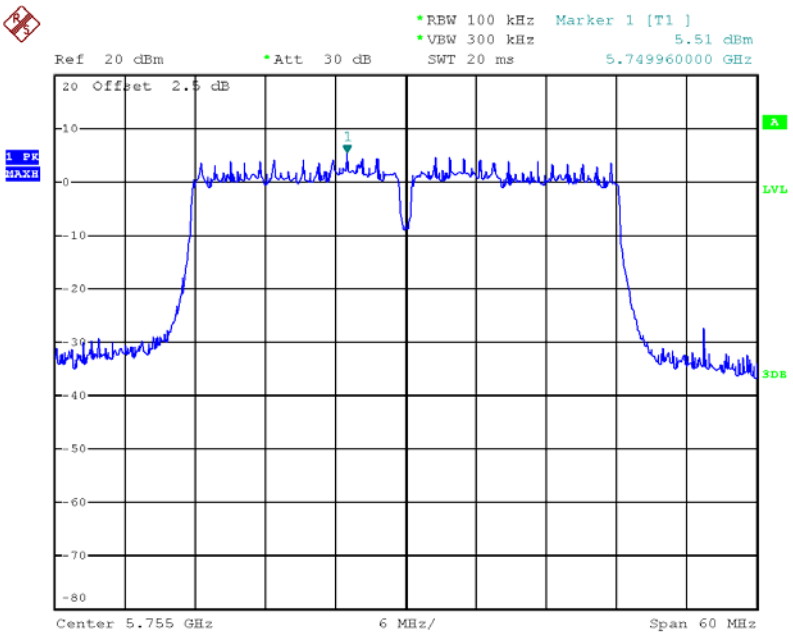
Date: 27.NOV.2012 18:54:04

Plot on Configuration IEEE 802.11n MCS0 20MHz / CH 165 (down 30dBc)



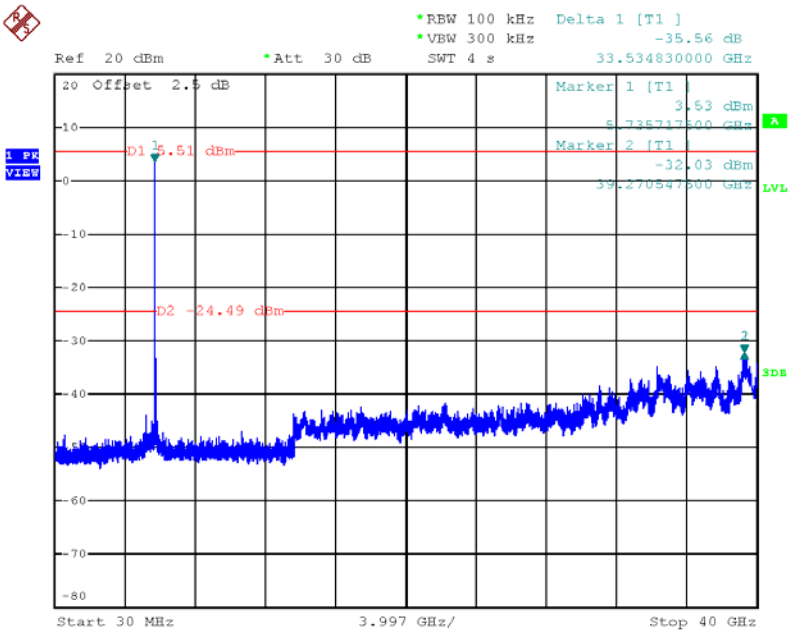
Date: 27.NOV.2012 18:53:12

Plot on Configuration IEEE 802.11n MCS0 40MHz / Reference Level



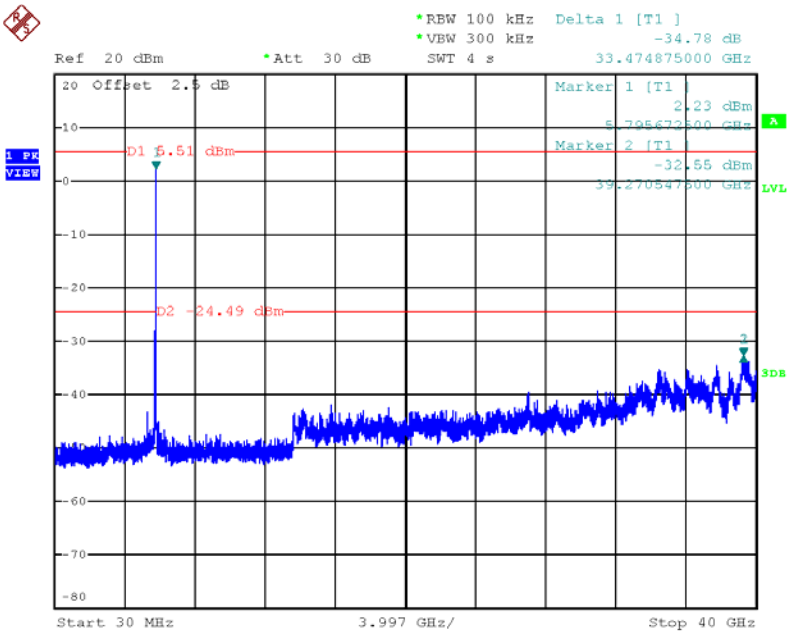
Date: 27.NOV.2012 18:37:57

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 151 (down 30dBc)



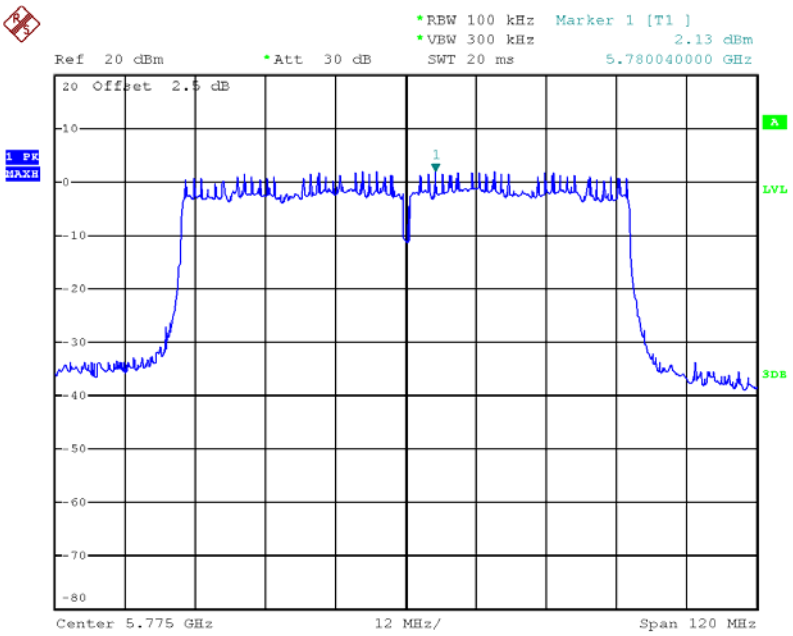
Date: 27.NOV.2012 18:58:07

Plot on Configuration IEEE 802.11n MCS0 40MHz / CH 159 (down 30dBc)



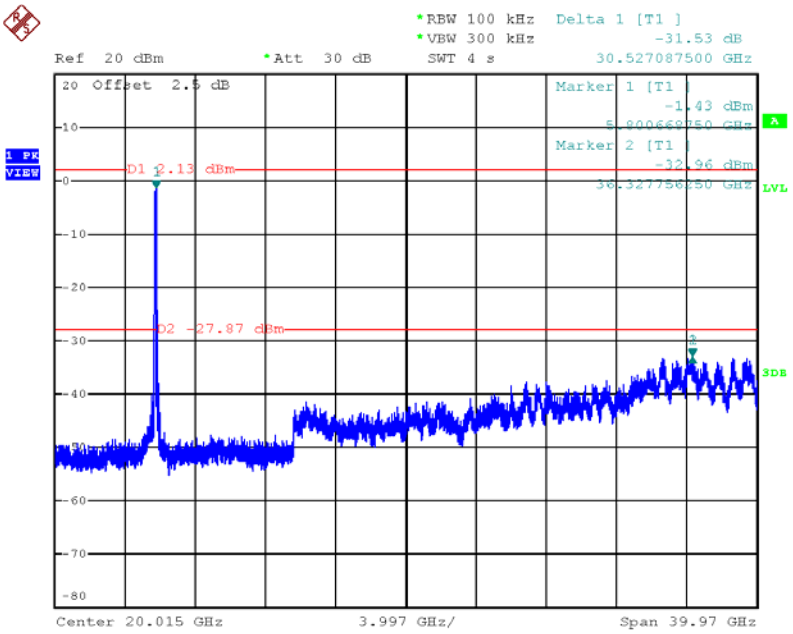
Date: 27.NOV.2012 18:59:01

Plot on Configuration IEEE 802.11ac MCS0 80MHz / Reference Level



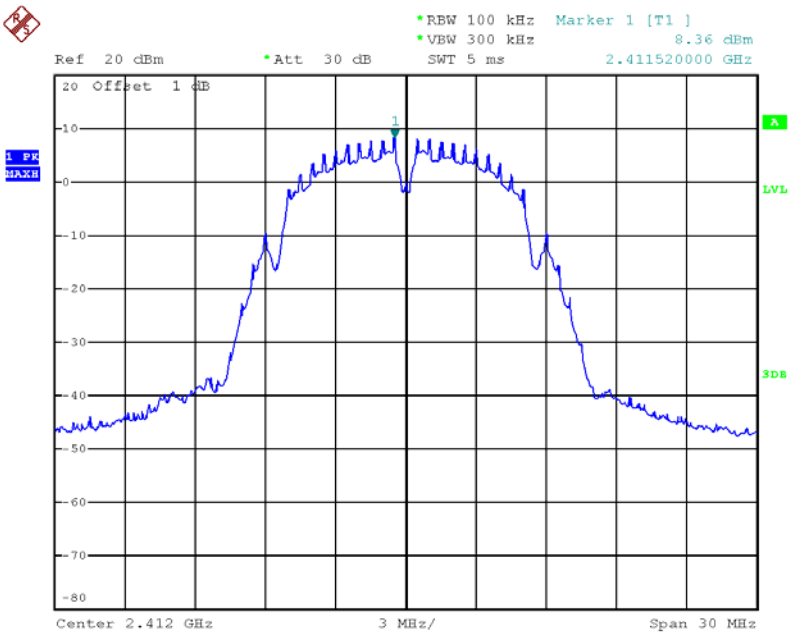
Date: 27.NOV.2012 22:12:11

Plot on Configuration IEEE 802.11ac MCS0 80MHz / CH 155 (down 30dBc)



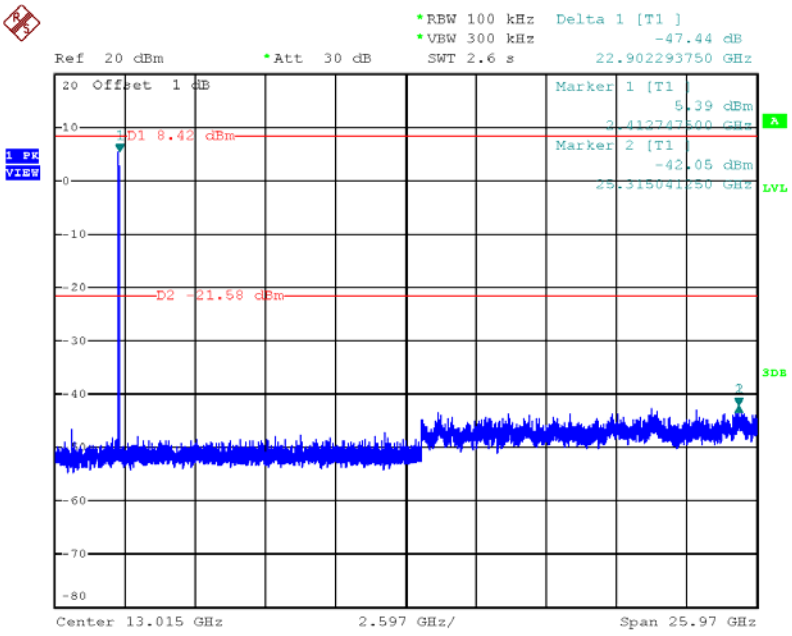
Date: 27.NOV.2012 22:26:54

Plot on Configuration IEEE 802.11b / Reference Level



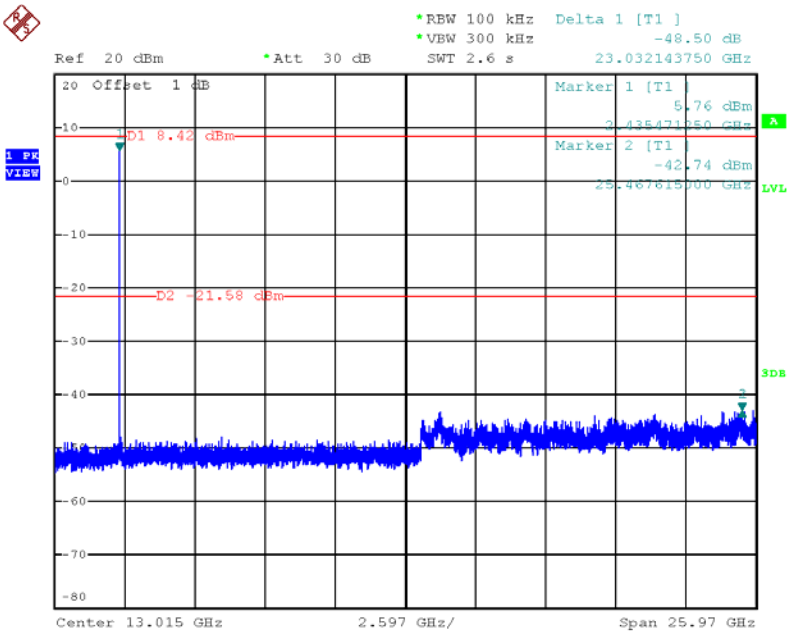
Date: 27.NOV.2012 14:34:39

Plot on Configuration IEEE 802.11b / CH 1 (down 30dBc)



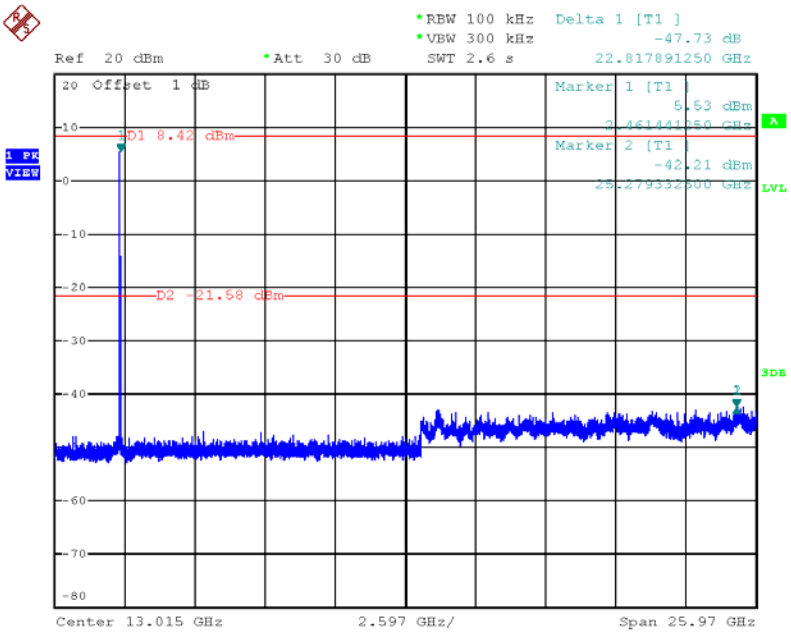
Date: 27.NOV.2012 14:57:47

Plot on Configuration IEEE 802.11b / CH 6 (down 30dBc)



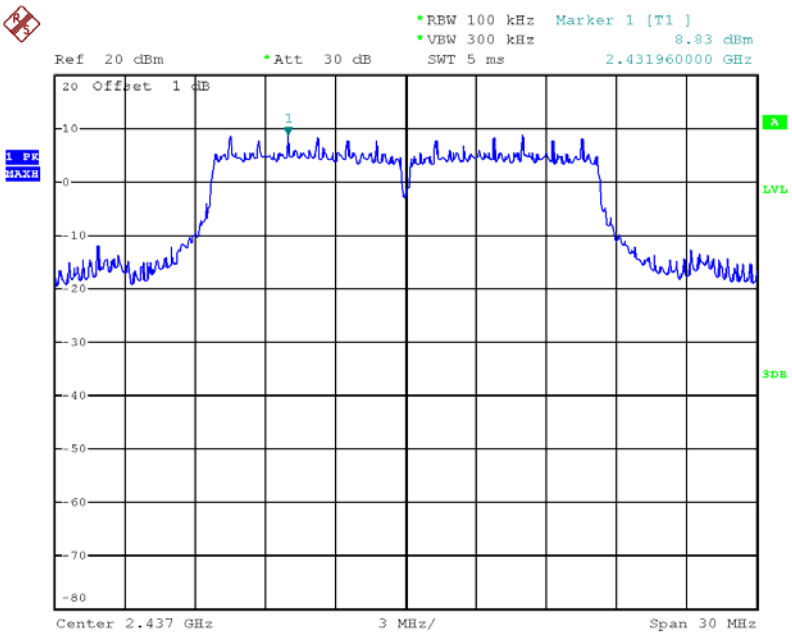
Date: 27.NOV.2012 14:56:04

Plot on Configuration IEEE 802.11b / CH 11 (down 30dBc)



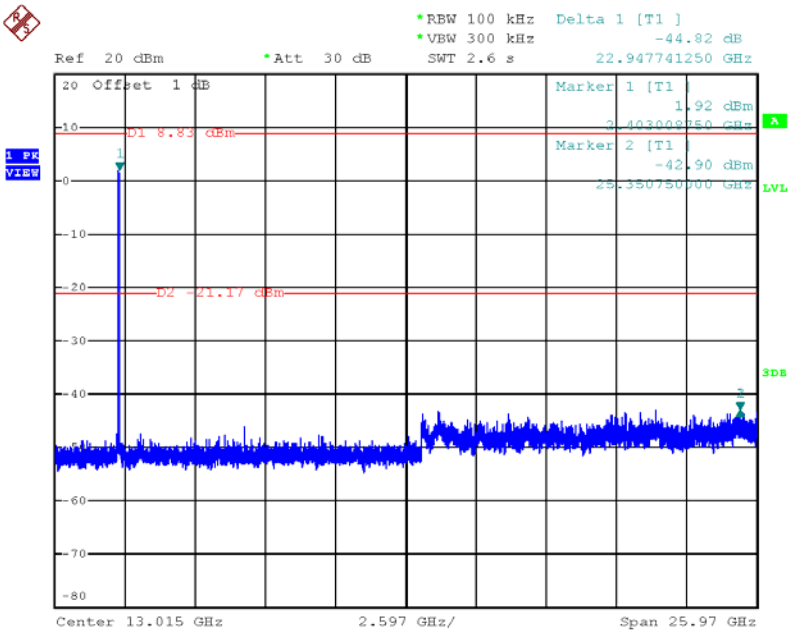
Date: 27.NOV.2012 14:47:54

Plot on Configuration IEEE 802.11g / Reference Level



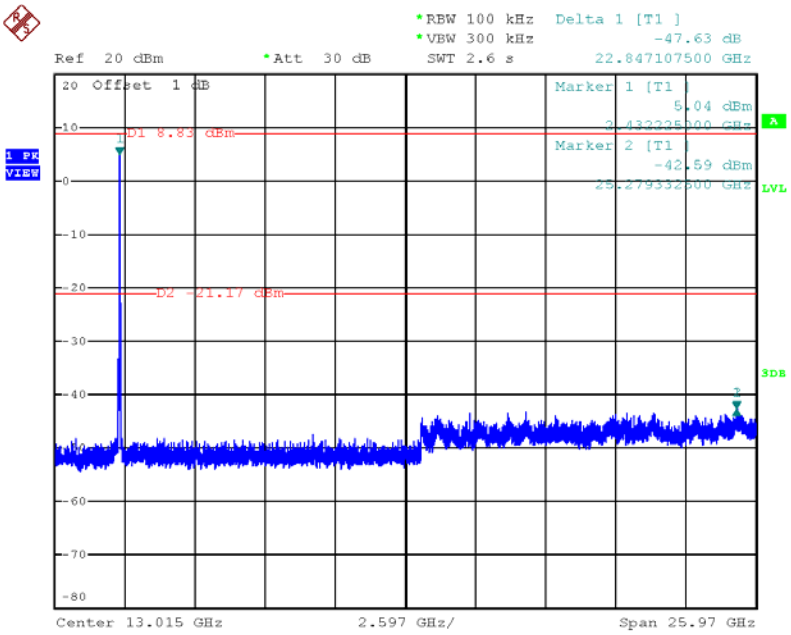
Date: 27.NOV.2012 15:03:49

Plot on Configuration IEEE 802.11g / CH 1 (down 30dBc)



Date: 27.NOV.2012 15:10:40

Plot on Configuration IEEE 802.11g / CH 6 (down 30dBc)



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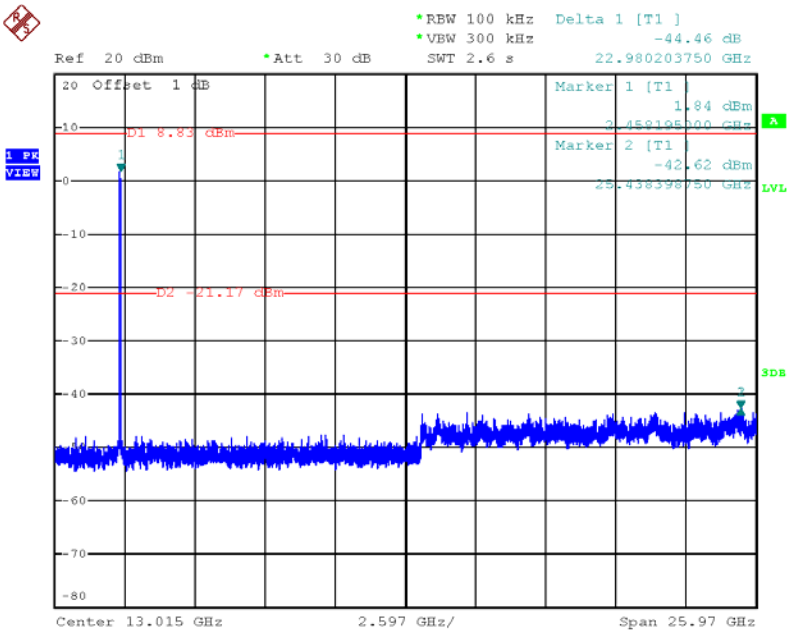
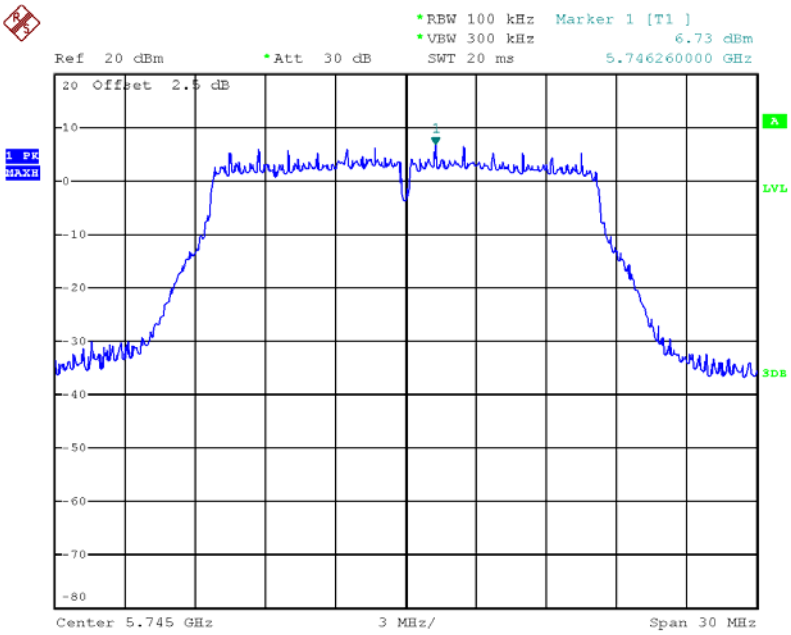
Plot on Configuration IEEE 802.11g / CH 11 (down 30dBc)



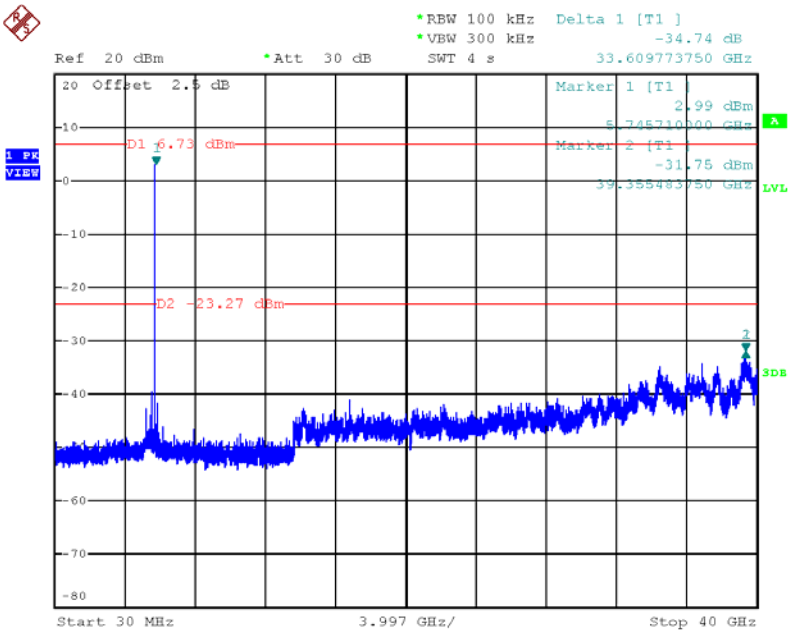
Date: 27.NOV.2012 15:08:07

Plot on Configuration IEEE 802.11a / Reference Level



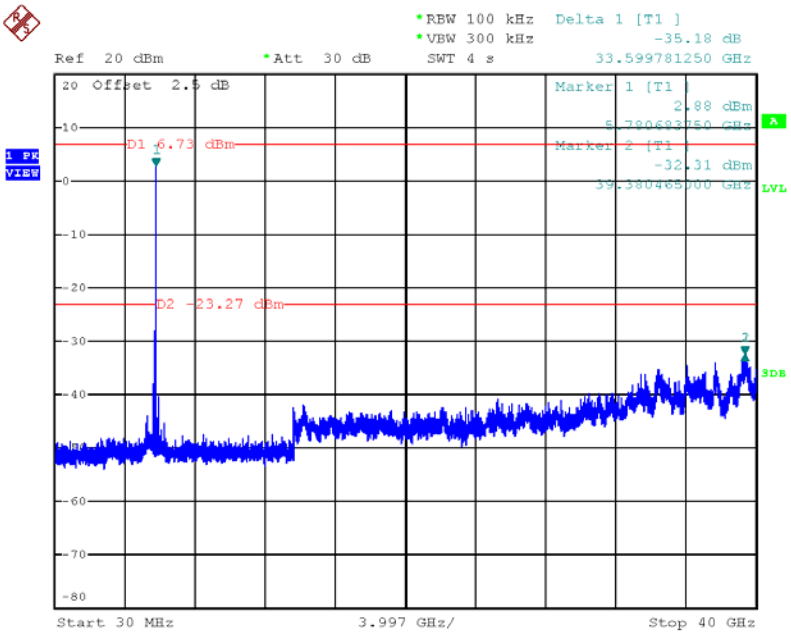
Date: 27.NOV.2012 17:59:05

Plot on Configuration IEEE 802.11a / CH 149 (down 30dBc)



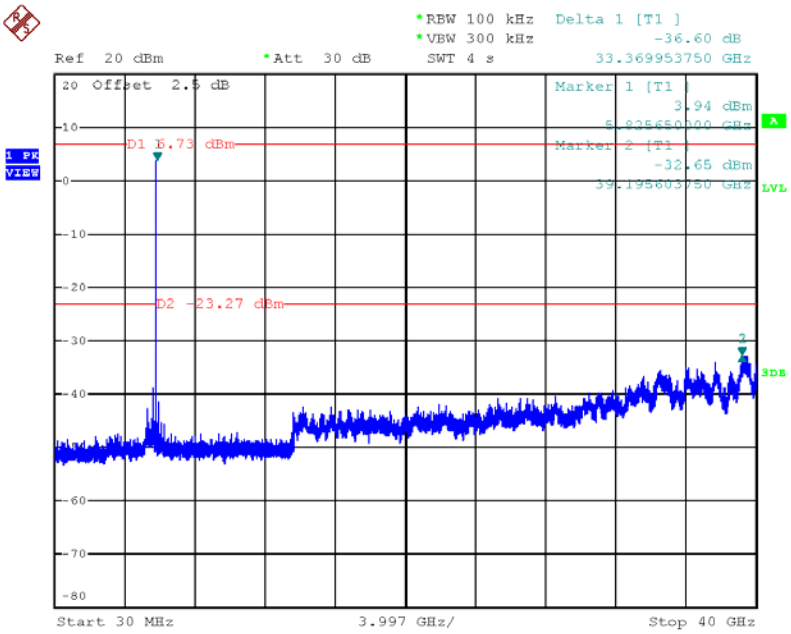
Date: 27.NOV.2012 19:04:03

Plot on Configuration IEEE 802.11a / CH 157 (down 30dBc)



Date: 27.NOV.2012 19:05:05

Plot on Configuration IEEE 802.11a / CH 165 (down 30dBc)



Date: 27.NOV.2012 19:06:43

4.7. Antenna Requirements

4.7.1. Limit

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

4.7.2. Antenna Connector Construction

Please refer to section 3.3 in this test report; antenna connector complied with the requirements.

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100377	9kHz ~ 2.75GHz	Sep. 14, 2012	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	4083	150kHz ~ 100MHz	Nov. 14, 2012	Conduction (CO01-CB)
V- LISN	Schwarzbeck	NSLK 8127	8127-478	9K ~ 30MHz	Jun. 22, 2012	Conduction (CO01-CB)
PULSE LIMITER	R&S	ESH3-Z2	100430	9K~30MHz	Feb. 03, 2012	Conduction (CO01-CB)
COND Cable	Woken	Cable	1	0.15MHz~30MHz	Dec. 04, 2011	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 25, 2012	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 29, 2012	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 03, 2012	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 20, 2012	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2012*	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2012	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2012	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Sep. 26, 2012	Conducted (TH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Sep. 26, 2012	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 2012	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2012	Conducted (TH01-CB)
Signal Generator	R&S	SMR40	100302	10MHz-40GHz	Nov. 22, 2012	Conducted (TH01-CB)
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
Signal generator	R&S	SMU200A	102782	10MHz-40GHz	Jun. 07, 2012	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071187	1GHz – 18GHz	May 09, 2012	Conducted (TH01-CB)
Horn Antenna	COM-POWER	AH-118	071042	1GHz – 18GHz	Nov. 01, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2012	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2012	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2012	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.
Note: "*" Calibration Interval of instruments listed above is two years.

6. TEST LOCATION

SHIJR	ADD	:	6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C.
	TEL	:	886-2-2696-2468
	FAX	:	886-2-2696-2255
HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
	TEL	:	886-3-327-3456
	FAX	:	886-3-318-0055
LINKOU	ADD	:	No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C
	TEL	:	886-2-2601-1640
	FAX	:	886-2-2601-1695
DUNGHU	ADD	:	No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C.
	TEL	:	886-2-2631-4739
	FAX	:	886-2-2631-9740
JUNGHE	ADD	:	7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C.
	TEL	:	886-2-8227-2020
	FAX	:	886-2-8227-2626
NEIHU	ADD	:	4Fl., No. 339, Hsin Hu 2nd Rd., Taipei 114, Taiwan, R.O.C.
	TEL	:	886-2-2794-8886
	FAX	:	886-2-2794-9777
JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
	TEL	:	886-3-656-9065
	FAX	:	886-3-656-9085

7. TAF CERTIFICATE OF ACCREDITATION

Certificate No.：L1190-110702

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Road, Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	:	ISO/IEC 17025:2005
Accreditation Number	:	1190
Originally Accredited	:	December 15, 2003
Effective Period	:	January 10, 2010 to January 09, 2013
Accredited Scope	:	Testing Field, see described in the Appendix
Specific Accreditation Program	:	Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangment with Foreign Authorities

Jay-San Chen
President, Taiwan Accreditation Foundation
Date：July 02, 2011

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix