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FCC RADIO TEST REPORT

Applicant's company	**Belkin International, Inc.**
Applicant Address	12045 East Waterfront Drive, Playa Vista, CA 90094
FCC ID	**K7SF9K1117V2**

Product Name	AC900 DB Wi-Fi Dual-Band AC+ Gigabit Router
Brand Name	Belkin
Model Name	F9K1117V2
Test Rule Part(s)	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz / 5725 ~ 5850MHz
Received Date	Oct. 25, 2012
Final Test Date	Nov. 26, 2012
Submission Type	Original Equipment

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
FR2O2519AA	Rev. 01	Initial issue of report	Nov. 28, 2012

Certificate No.: CB10111112

1. CERTIFICATE OF COMPLIANCE

Product Name	:	AC900 DB Wi-Fi Dual-Band AC+ Gigabit Router
Brand Name	:	Belkin
Model Name	:	F9K1117V2
Applicant	:	Belkin International, 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 Oct. 25, 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	12.69 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	6.97 dB
4.3	15.247(e)	Power Spectral Density	Complies	12.17 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	3.02 dB
4.6	15.247(d)	Band Edge Emissions	Complies	1.01 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/ac

Items	Description
Product Type	802.11n (2TX, 2RX), 802.11ac (2TX, 2RX)
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): 18.96 MHz ; MCS0 (40MHz): 36.48 MHz For 5GHz Band: MCS0 (20MHz): 17.84 MHz ; MCS0 (40MHz): 36.48 MHz ; MCS0 (80MHz): 75.52 MHz
Maximum Conducted Output Power	For 2.4GHz Band: MCS0 (20MHz): 23.03 dBm ; MCS0 (40MHz): 18.91 dBm For 5GHz Band 11an: MCS0 (20MHz): 22.30 dBm ; MCS0 (40MHz): 21.54 dBm For 5GHz Band 11ac: MCS0 (20MHz): 21.89 dBm ; MCS0 (40MHz): 21.62 dBm MCS0 (80MHz): 21.41 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: 14.96 MHz ; 11g:16.80 MHz ; 11a: 17.60 MHz
Maximum Conducted Output Power	11b: 21.22 dBm ; 11g: 20.55 dBm ; 11a: 20.40 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Antenna & Band width

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

IEEE 802. 11a, 11n and 11ac Spec.

Worst Modulation Used for Conformance Testing				
Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS	Worst Data Rate / MCS	Worst Modulation Mode
802.11a	1	6-54 Mbps	6Mbps	11A5.2G-20M
802.11n 20MHz	2	MCS 0-15	MCS 0	11N5.2G-20M
802.11n 40MHz	2	MCS 0-15	MCS 0	11N5.2G-40M
802.11ac 20MHz	2	MCS 0-9	MCS 0-Nss1	11AC5.8G-20M
802.11ac 40MHz	2	MCS 0-9	MCS 0-Nss1	11AC5.8G-40M
802.11ac 80MHz	2	MCS 0-9	MCS 0-Nss1	11AC5.8G-80M
Note 1: IEEE Std. 802.11-2007 modulation consists of IEEE Std. 802.11a-1999.				
Note 2: IEEE Std. 802.11n-2009 modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Worst modulation mode of Guard Interval (GI) is 400ns.				
Note 3: draft IEEE Std. 802.11ac-2012 modulation consists of VHT20, VHT40, VHT80 and VHT160. Then EUT support VHT20, VHT40, VHT80. (VHT: Very High Throughput).				
Note 4: Modulation modes consist of 11A5.2G-20M, 11A5.3G-20M, 11A5.6G-20M, 11A5.8G-20M 11N5.2G-20M, 11N5.3G-20M, 11N5.6G-20M, 11N5.8G-20M, 11N5.2G-40M, 11N5.3G-40M, 11N5.6G-40M, 11N5.8G-40M,11AC5.2G-20M, 11AC5.3G-20M, 11AC5.6G-20M, 11AC5.8G-20M,11AC5.2G-40M, 11AC5.3G-40M, 11AC5.6G-40M, 11AC5.8G-40M, 11AC5.2G-80M, 11AC5.3G-80M, 11AC5.6G-80M, 11AC5.8G-80M,				
11A: IEEE 802.11a, 11N: IEEE 802.11n, 11AC: IEEE 802.11ac. 5.2G: 5.15-5.25 GHz band, 5.3G: 5.25-5.35 GHz band, 5.6G: 5.47-5.725 GHz band , 5.8G: 5.725-5.850GHz band				
20M/40M/80M: Channel Bandwidth 20MHz/40MHz/80MHz				

3.2. Accessories

Power	Brand	Model	Rating
Adapter 1	Belkin	DSA-18PFG-12 FUS 120150	INPUT: 100-240V~50/60Hz, 0.6A OUTPUT: +12V, 1.5A
Adapter 2	Belkin	DSA-12PFE-12 BUS 120100	INPUT: 100-120V~50/60Hz, 0.3A OUTPUT: +12V, 1A
Others			
RJ45 Cable	Non-Shield 1.5m		

3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)		Remark
					2.4GHz	5GHz	
1	SerComm	AC900	Printed Antenna	I-PEX	3.15	4.34	TX/RX
2	SerComm	AC900	Printed Antenna	I-PEX	4.97	4.56	TX/RX

Note: The EUT has two antennas.

For 2.4GHz:

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

Ant. 2 was fixed to use as transmitting antenna.

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

Ant. 2 was fixed to use as transmitting antenna.

For IEEE 802.11n mode (2TX/2RX):

Ant. 1 and Ant. 2 will transmit/receive the signal simultaneously.

For 5GHz:

For IEEE 802.11n mode (2TX/2RX):

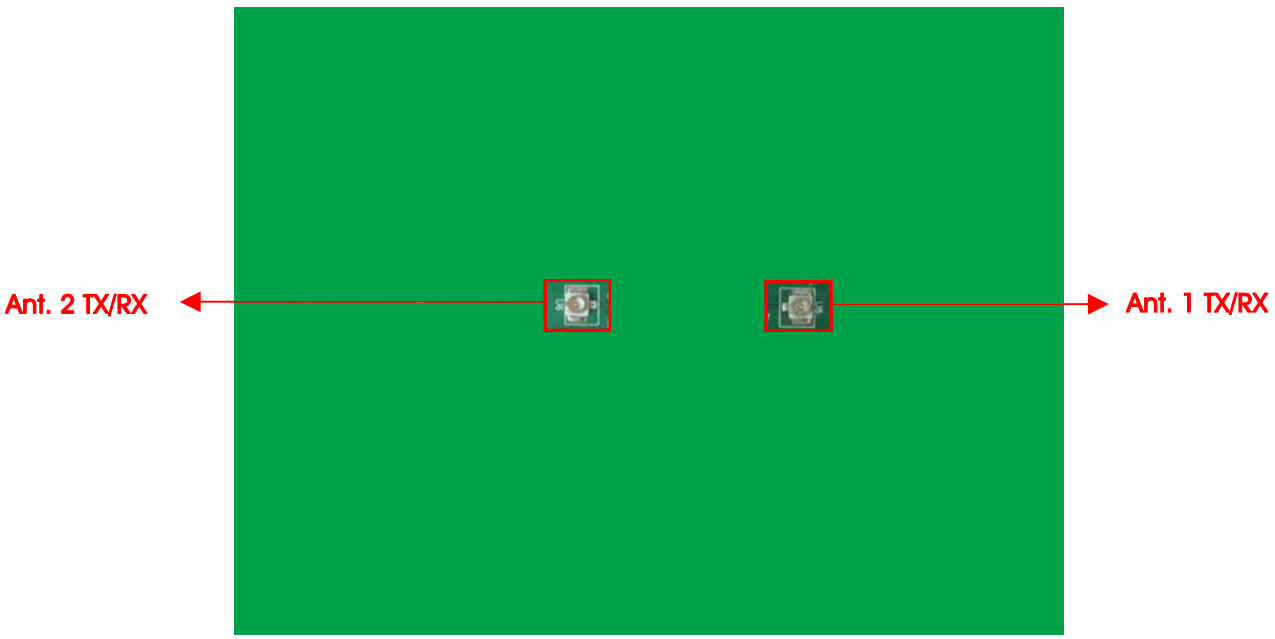
Ant. 1 and Ant. 2 will transmit/receive the signal simultaneously.

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

Ant. 2 was fixed to use as transmitting antenna.

For IEEE 802.11ac mode (2TX/2RX):

Ant. 1 and Ant. 2 will transmit/receive the signal 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	Antenna
AC Power Line Conducted Emissions	Normal Link	Auto	-	-
Maximum Conducted Output Power	MCS0/20MHz	7.2 Mbps	1/6/11	1+2
	MCS0/40MHz	15 Mbps	3/6/9	1+2
	11b/CCK	1 Mbps	1/6/11	2
	11g/BPSK	6 Mbps	1/6/11	2
Power Spectral Density	MCS0/20MHz	7.2 Mbps	1/6/11	1/2
	MCS0/40MHz	15 Mbps	3/6/9	1/2
	11b/CCK	1 Mbps	1/6/11	2
	11g/BPSK	6 Mbps	1/6/11	2
6dB Spectrum Bandwidth	MCS0/20MHz	7.2 Mbps	1/6/11	1+2
	MCS0/40MHz	15 Mbps	3/6/9	1+2
	11b/CCK	1 Mbps	1/6/11	2
	11g/BPSK	6 Mbps	1/6/11	2
Radiated Emissions Below 1GHz	CTX	Auto	-	-
Radiated Emissions Above 1GHz	MCS0/20MHz	7.2 Mbps	1/6/11	1+2
	MCS0/40MHz	15 Mbps	3/6/9	1+2
	11b/CCK	1 Mbps	1/6/11	2
	11g/BPSK	6 Mbps	1/6/11	2
Band Edge Emissions	MCS0/20MHz	7.2 Mbps	1/11	1+2
	MCS0/40MHz	15 Mbps	3/9	1+2
	11b/CCK	1 Mbps	1/11	2
	11g/BPSK	6 Mbps	1/11	2

For 5GHz Band

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

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. Put EUT upright with Adapter 1.

Mode 2. Put EUT upright with Adapter 2.

For Radiated Emission test:

Mode 1. Put EUT upright with Adapter 1.

Mode 2. Put EUT upright with Adapter 2.

<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 C) and Co-location (please refer to Appendix D) 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-NH	Conduction	Dung Hu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

Please refer section 6 for Test Site Address.

3.7. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	M1330	E2KWM3945ABG
Notebook	DELL	E5520	DOC
USB Mouse	DELL	MOC5UO	DOC
USB Printer	XEROX	PHASER3121	DOC
USB 2.0 IPOD*2	APPLE	A1137	DOC
Notebook*2	DELL	DCTA	DOC
Notebook	HP	541	DOC
AC WIFI USB Dongle	Belkin	F9L1106v1	DOC

3.8. 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	MP_TEST 1.3.8.0		
Frequency	2412 MHz	2437 MHz	2462 MHz
MCS0 20MHz	50/49	63/62	49/49

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	MP_TEST 1.3.8.0		
Frequency	2422 MHz	2437 MHz	2452 MHz
MCS0 40MHz	46/46	52/52	43/43

Power Parameters of IEEE 802.11b/g

Test Software Version	MP_TEST 1.3.8.0		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b	52	49	49
IEEE 802.11g	51	63	48

For 5GHz Band

Power Parameters of IEEE 802.11n MCS0 20MHz

Test Software Version	MP_TEST 1.3.8.0		
Frequency	5745 MHz	5785 MHz	5825 MHz
MCS0 20MHz	62/62	63/63	63/63

Power Parameters of IEEE 802.11n MCS0 40MHz

Test Software Version	MP_TEST 1.3.8.0	
Frequency	5755 MHz	5795 MHz
MCS0 40MHz	63/63	63/63

Power Parameters of IEEE 802.11ac MCS0 80MHz

Test Software Version	MP_TEST 1.3.8.0
Frequency	5775 MHz
MCS0 80MHz	63/63

Power Parameters of IEEE 802.11a

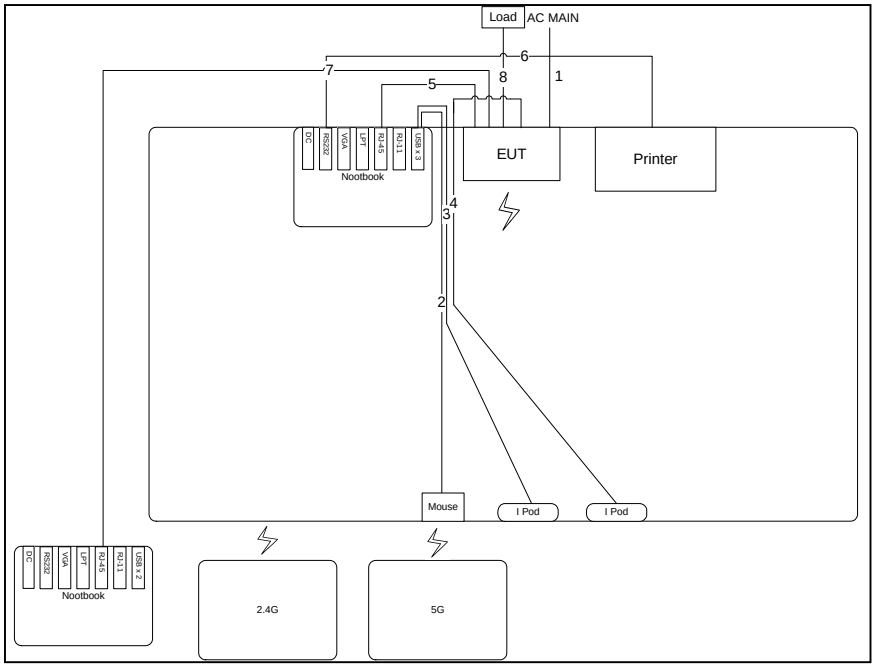
Test Software Version	MP_TEST 1.3.8.0		
Frequency	5745 MHz	5785 MHz	5825 MHz
IEEE 802.11a	63	63	63

During the test, “MP_TEST 1.3.8.0” under WIN XP was executed the test program to control the EUT continuously transmit RF signal.

3.9. Test Configurations

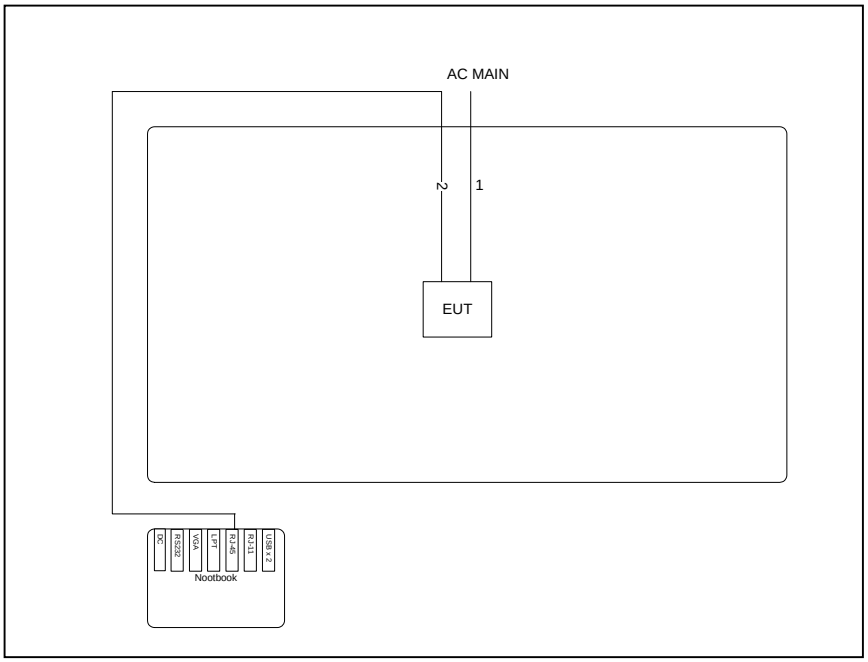
3.9.1. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



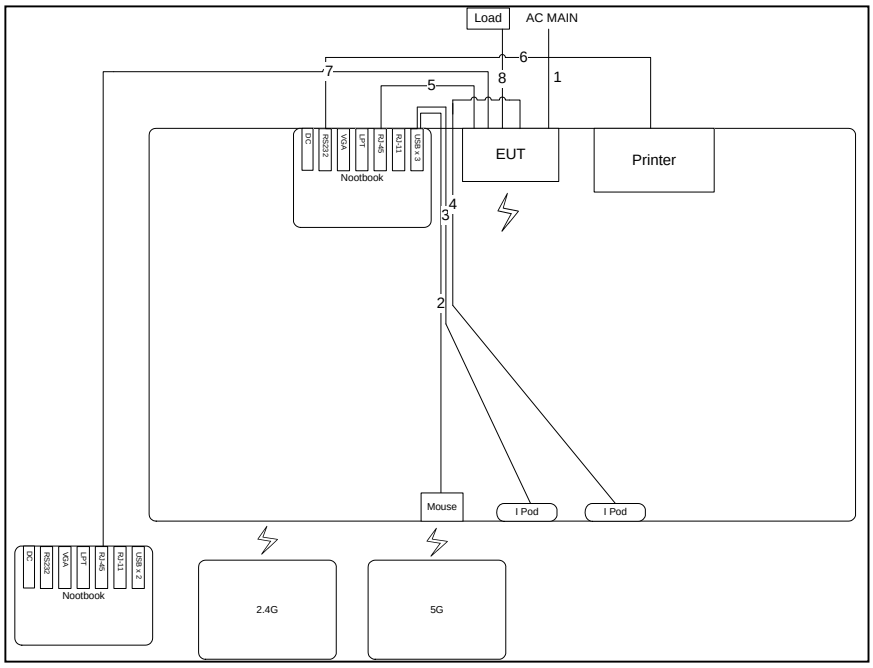
Item	Connection	Shield	Length
1	Power cable	No	1.5m
2	USB cable	No	1.8m
3	USB cable	No	1.8m
4	USB cable	No	1.8m
5	RJ45 cable	No	1.5m
6	USB cable	No	1.8m
7	RJ45 cable	No	20m
8	RJ45 cable	No	1.5m

Test Configuration: above 1GHz



Item	Connection	Shield	Length
1	Power cable	No	1.45m
2	LAN cable	No	10m

3.9.2. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shield	Length
1	Power cable	No	1.5m
2	USB cable	No	1.8m
3	USB cable	No	1.8m
4	USB cable	No	1.8m
5	RJ45 cable	No	1.5m
6	USB cable	No	1.8m
7	RJ45 cable	No	20m
8	RJ45 cable	No	1.5m

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

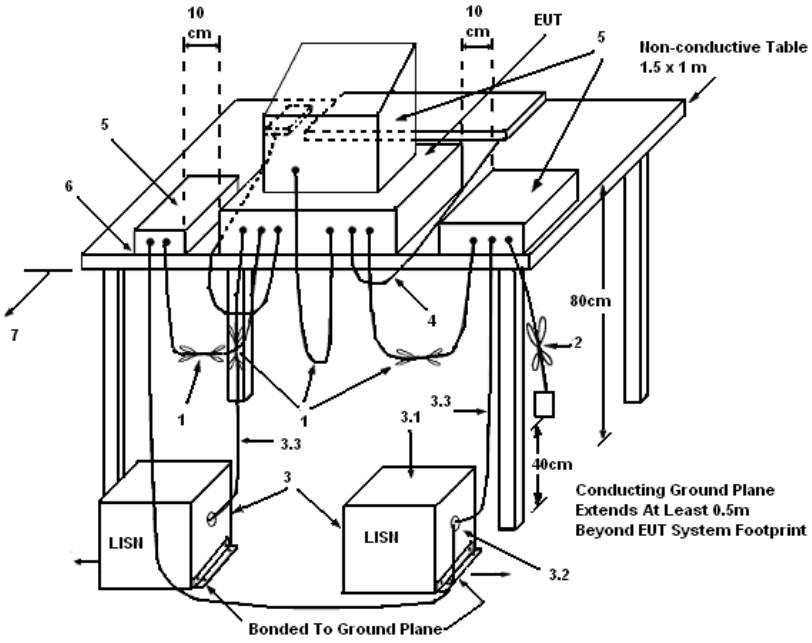
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

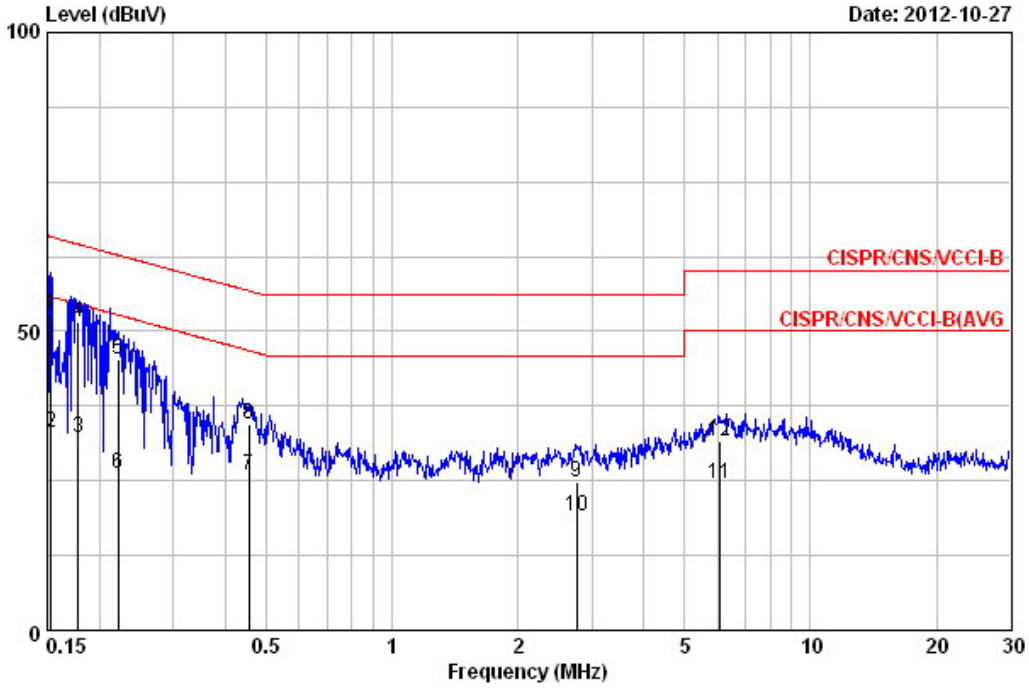
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

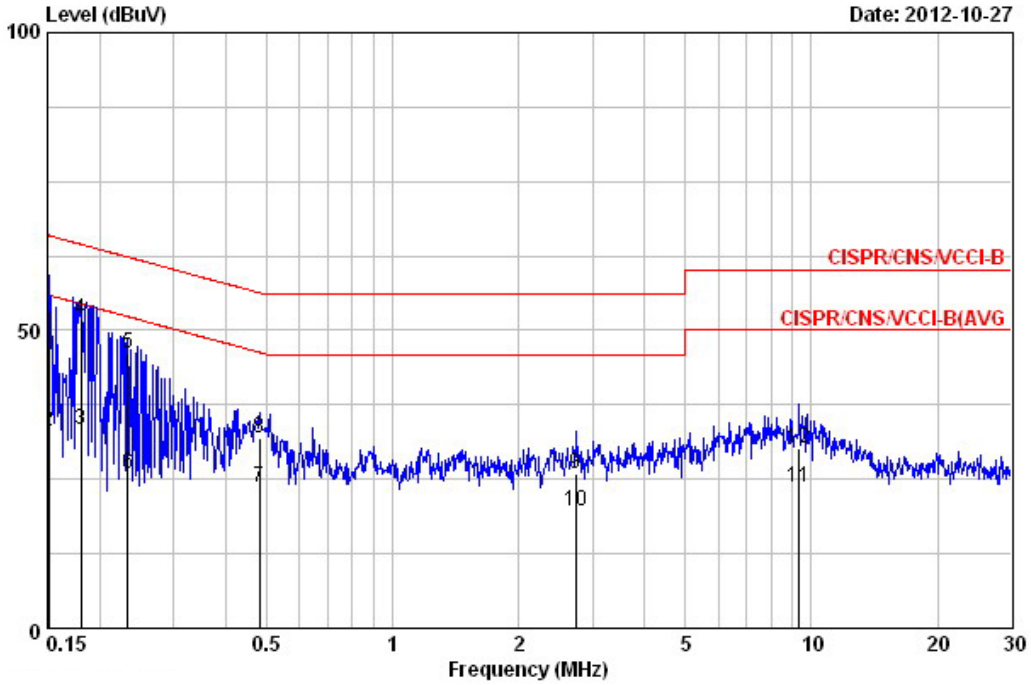
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	23°C	Humidity	59%
Test Engineer	Eddie Lee	Phase	Line
Configuration	Normal Link / Mode 1 / Adapter 1 (DSA-18PFG-12 FUS 120150)		



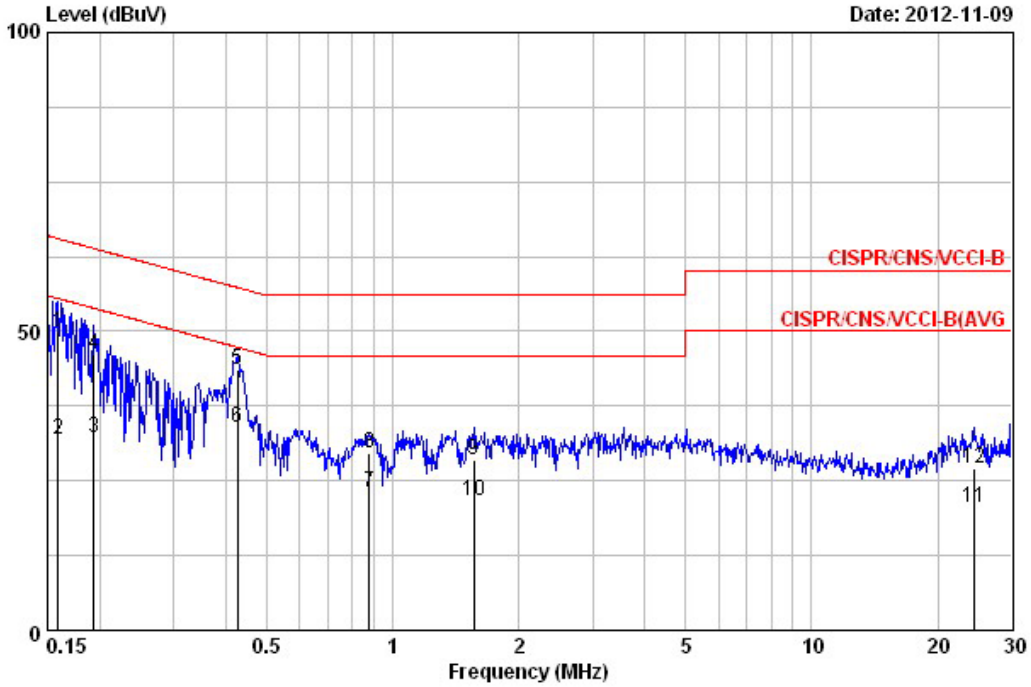
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 @	0.153	52.74	-13.09	65.82	42.49	10.15	0.10	QP
2	0.153	33.07	-22.76	55.82	22.82	10.15	0.10	AVERAGE
3	0.178	32.25	-22.35	54.59	21.99	10.16	0.10	AVERAGE
4 @	0.178	51.48	-13.12	64.59	41.22	10.16	0.10	QP
5	0.222	45.30	-17.44	62.74	35.04	10.16	0.10	QP
6	0.222	26.10	-26.64	52.74	15.84	10.16	0.10	AVERAGE
7	0.454	25.96	-20.85	46.80	15.69	10.16	0.10	AVERAGE
8	0.454	34.46	-22.35	56.80	24.19	10.16	0.10	QP
9	2.765	24.91	-31.09	56.00	14.57	10.19	0.15	QP
10	2.765	18.98	-27.02	46.00	8.64	10.19	0.15	AVERAGE
11	6.089	24.60	-25.40	50.00	14.16	10.24	0.20	AVERAGE
12	6.089	31.68	-28.32	60.00	21.24	10.24	0.20	QP

Temperature	23°C	Humidity	59%
Test Engineer	Eddie Lee	Phase	Neutral
Configuration	Normal Link / Mode 1 / Adapter 1 (DSA-18PFG-12 FUS 120150)		



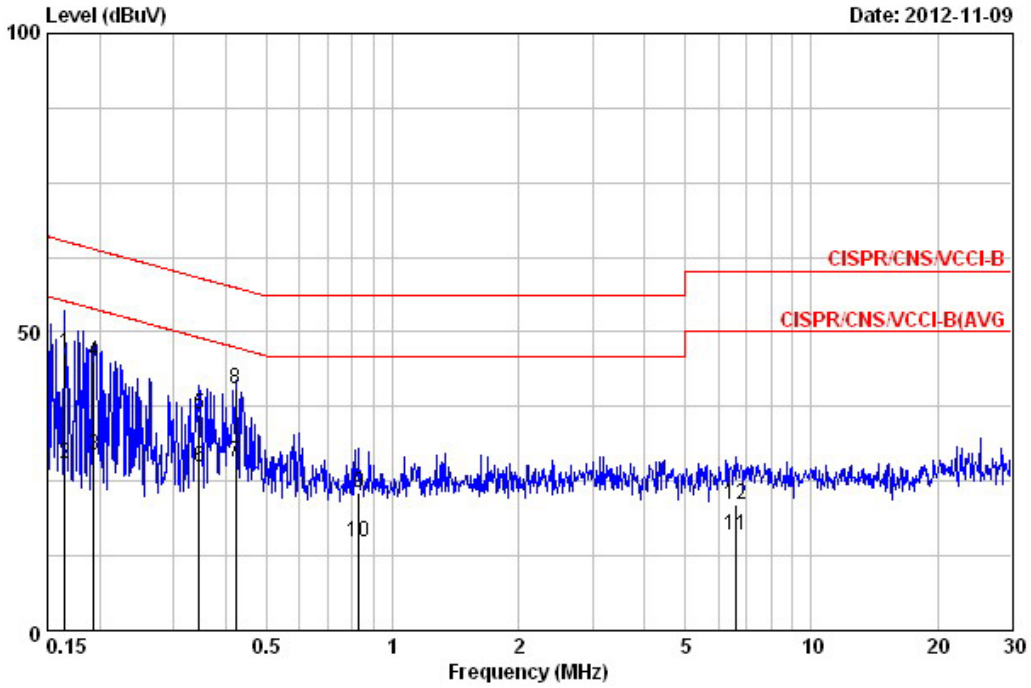
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1 @	0.151	53.26	-12.69	65.96	43.02	10.14	0.10	QP
2	0.151	32.97	-22.98	55.96	22.73	10.14	0.10	AVERAGE
3	0.181	33.37	-21.08	54.46	23.13	10.14	0.10	AVERAGE
4 @	0.181	51.75	-12.70	64.46	41.51	10.14	0.10	QP
5	0.233	46.10	-16.25	62.35	35.86	10.14	0.10	QP
6	0.233	26.02	-26.33	52.35	15.78	10.14	0.10	AVERAGE
7	0.481	23.67	-22.65	46.32	13.43	10.14	0.10	AVERAGE
8	0.481	31.84	-24.48	56.32	21.60	10.14	0.10	QP
9	2.736	25.90	-30.10	56.00	15.58	10.17	0.15	QP
10	2.736	19.52	-26.48	46.00	9.20	10.17	0.15	AVERAGE
11	9.352	23.52	-26.48	50.00	13.05	10.27	0.20	AVERAGE
12	9.352	30.16	-29.84	60.00	19.69	10.27	0.20	QP

Temperature	23°C	Humidity	59%
Test Engineer	Eddie Lee	Phase	Line
Configuration	Normal Link / Mode 2 / Adapter 2 (DSA-12PFE-12 BUS 120100)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.159	49.96	-15.55	65.52	39.71	10.15	0.10	QP
2	0.159	31.86	-23.65	55.52	21.61	10.15	0.10	AVERAGE
3	0.193	32.24	-21.65	53.89	21.98	10.16	0.10	AVERAGE
4	0.193	46.11	-17.78	63.89	35.85	10.16	0.10	QP
5 @	0.426	43.56	-13.77	57.33	33.30	10.16	0.10	QP
6 @	0.426	33.96	-13.37	47.33	23.70	10.16	0.10	AVERAGE
7	0.880	23.04	-22.96	46.00	12.77	10.18	0.10	AVERAGE
8	0.880	29.52	-26.48	56.00	19.25	10.18	0.10	QP
9	1.560	28.35	-27.65	56.00	18.00	10.19	0.16	QP
10	1.560	21.76	-24.24	46.00	11.41	10.19	0.16	AVERAGE
11	24.400	20.57	-29.43	50.00	9.77	10.50	0.30	AVERAGE
12	24.400	27.02	-32.98	60.00	16.22	10.50	0.30	QP

Temperature	23°C	Humidity	59%
Test Engineer	Eddie Lee	Phase	Neutral
Configuration	Normal Link / Mode 2 / Adapter 2 (DSA-12PFE-12 BUS 120100)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.165	46.47	-18.73	65.21	36.23	10.14	0.10	QP
2	0.165	28.04	-27.16	55.21	17.80	10.14	0.10	AVERAGE
3	0.193	29.39	-24.50	53.89	19.15	10.14	0.10	AVERAGE
4	0.193	45.07	-18.82	63.89	34.83	10.14	0.10	QP
5	0.345	36.13	-22.96	59.09	25.89	10.14	0.10	QP
6	0.345	27.37	-21.72	49.09	17.13	10.14	0.10	AVERAGE
7	0.421	28.18	-19.24	47.42	17.94	10.14	0.10	AVERAGE
8	0.421	40.59	-16.83	57.42	30.35	10.14	0.10	QP
9	0.830	22.96	-33.04	56.00	12.71	10.15	0.10	QP
10	0.830	14.83	-31.17	46.00	4.58	10.15	0.10	AVERAGE
11	6.592	16.02	-33.98	50.00	5.58	10.23	0.20	AVERAGE
12	6.592	21.06	-38.94	60.00	10.62	10.23	0.20	QP

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

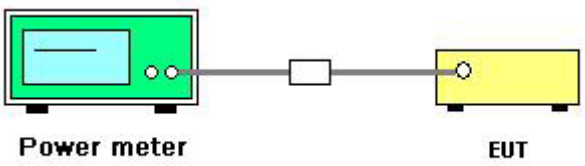
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
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°C	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n/ac
Test Date	Nov. 21, 2012		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
1	2412 MHz	15.05	15.00	18.04	30.00	Complies
6	2437 MHz	20.27	19.75	23.03	30.00	Complies
11	2462 MHz	14.51	14.40	17.47	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
3	2422 MHz	12.85	12.86	15.87	30.00	Complies
6	2437 MHz	15.88	15.92	18.91	30.00	Complies
9	2452 MHz	11.42	11.34	14.39	30.00	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
149	5745 MHz	18.68	18.60	21.65	30.00	Complies
157	5785 MHz	18.92	18.80	21.87	30.00	Complies
165	5825 MHz	19.36	19.21	22.30	30.00	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
151	5755 MHz	18.58	18.25	21.43	30.00	Complies
159	5795 MHz	18.70	18.35	21.54	30.00	Complies

Configuration IEEE 802.11ac MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
149	5745 MHz	18.60	18.40	21.51	30.00	Complies
157	5785 MHz	18.88	18.54	21.72	30.00	Complies
165	5825 MHz	19.18	18.56	21.89	30.00	Complies

Configuration IEEE 802.11ac MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
151	5755 MHz	18.48	18.03	21.27	30.00	Complies
159	5795 MHz	18.95	18.23	21.62	30.00	Complies

Configuration IEEE 802.11ac MCS0 80MHz / Ant. 1 + Ant. 2

Channel	Frequency	Conducted Power (dBm)		Total Conducted Power (dBm)	Max. Limit (dBm)	Result
		Ant. 1	Ant. 2			
155	5775 MHz	18.60	18.20	21.41	30.00	Complies

Temperature	25°C	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a/b/g
Test Date	Nov. 21, 2012		

Configuration IEEE 802.11b / Ant. 2

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	21.22	30.00	Complies
6	2437 MHz	19.06	30.00	Complies
11	2462 MHz	18.81	30.00	Complies

Configuration IEEE 802.11g / Ant. 2

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
1	2412 MHz	16.26	30.00	Complies
6	2437 MHz	20.55	30.00	Complies
11	2462 MHz	14.84	30.00	Complies

Configuration IEEE 802.11a / Ant. 2

Channel	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
149	5745 MHz	20.15	30.00	Complies
157	5785 MHz	20.35	30.00	Complies
165	5825 MHz	20.40	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

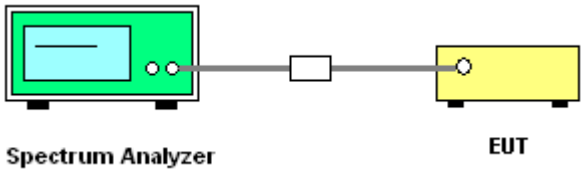
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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°C	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n
Test Date	Nov. 21, 2012		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)		BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)		Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2		Ant. 1	Ant. 2		
1	2412 MHz	1.01	0.91	-15.23	-14.22	-14.32	4.99	Complies
6	2437 MHz	5.98	5.52	-15.23	-9.25	-9.71	4.99	Complies
11	2462 MHz	0.49	0.35	-15.23	-14.74	-14.88	4.99	Complies

Note: PSD Limit =(8dBm/MHz –(10log(2))=4.99dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)		BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)		Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2		Ant. 1	Ant. 2		
3	2422 MHz	-5.14	-4.70	-15.23	-20.37	-19.93	4.99	Complies
6	2437 MHz	-2.01	-1.82	-15.23	-17.24	-17.05	4.99	Complies
9	2452 MHz	-6.39	-6.16	-15.23	-21.62	-21.39	4.99	Complies

Note: PSD Limit =(8dBm/MHz –(10log(2))=4.99dBm/MHz

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)		BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)		Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2		Ant. 1	Ant. 2		
149	5745 MHz	5.15	4.96	-15.23	-10.08	-10.27	4.99	Complies
157	5785 MHz	5.66	5.48	-15.23	-9.57	-9.75	4.99	Complies
165	5825 MHz	5.50	5.33	-15.23	-9.73	-9.90	4.99	Complies

Note: PSD Limit =(8dBm/MHz –(10log(2))=4.99dBm/MHz

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)		BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)		Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2		Ant. 1	Ant. 2		
151	5755 MHz	0.29	0.24	-15.23	-14.94	-14.99	4.99	Complies
159	5795 MHz	0.27	0.16	-15.23	-14.96	-15.07	4.99	Complies

Note: PSD Limit =(8dBm/MHz –(10log(2))=4.99dBm/MHz

Configuration IEEE 802.11ac MCS0 80MHz / Ant. 1 + Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)		BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)		Single Port Limit (dBm/3kHz)	Result
		Ant. 1	Ant. 2		Ant. 1	Ant. 2		
155	5775 MHz	0.21	0.08	-15.23	-15.02	-15.15	4.99	Complies

Note: PSD Limit =(8dBm/MHz –(10log(2))=4.99dBm/MHz

Temperature	25°C	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a/b/g
Test Date	Nov. 21, 2012		

Configuration IEEE 802.11b / Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	11.06	-15.23	-4.17	8.00	Complies
6	2437 MHz	9.34	-15.23	-5.89	8.00	Complies
11	2462 MHz	9.08	-15.23	-6.15	8.00	Complies

Configuration IEEE 802.11g / Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
1	2412 MHz	2.25	-15.23	-12.98	8.00	Complies
6	2437 MHz	6.73	-15.23	-8.50	8.00	Complies
11	2462 MHz	0.40	-15.23	-14.83	8.00	Complies

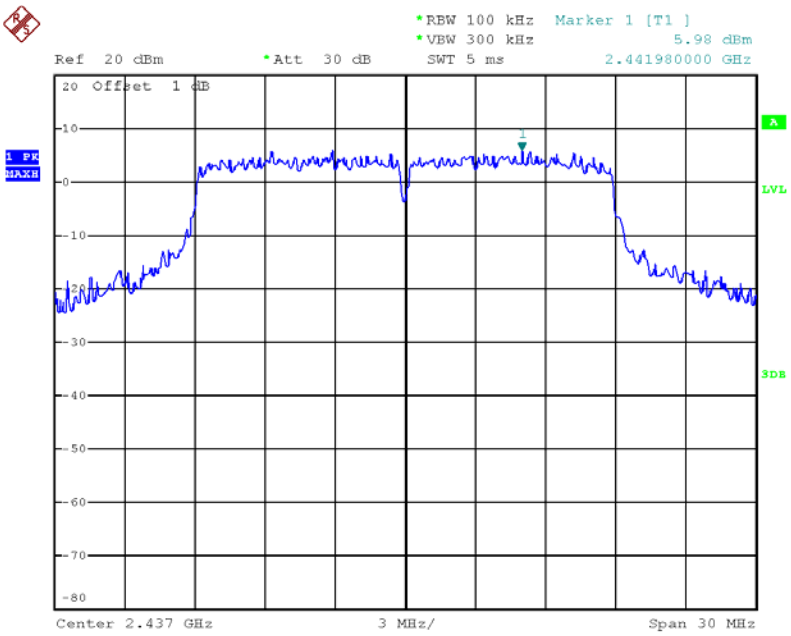
Configuration IEEE 802.11a / Ant. 2

Channel	Frequency	Power Density (dBm/100kHz)	BWCF factor (100KHz to 3KHz)	Power Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
149	5745 MHz	5.76	-15.23	-9.47	8.00	Complies
157	5785 MHz	6.16	-15.23	-9.07	8.00	Complies
165	5825 MHz	6.47	-15.23	-8.76	8.00	Complies

Note: All the test values were listed in the report.

For plots, only the channel with maximum results was shown.

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 / 2437 MHz



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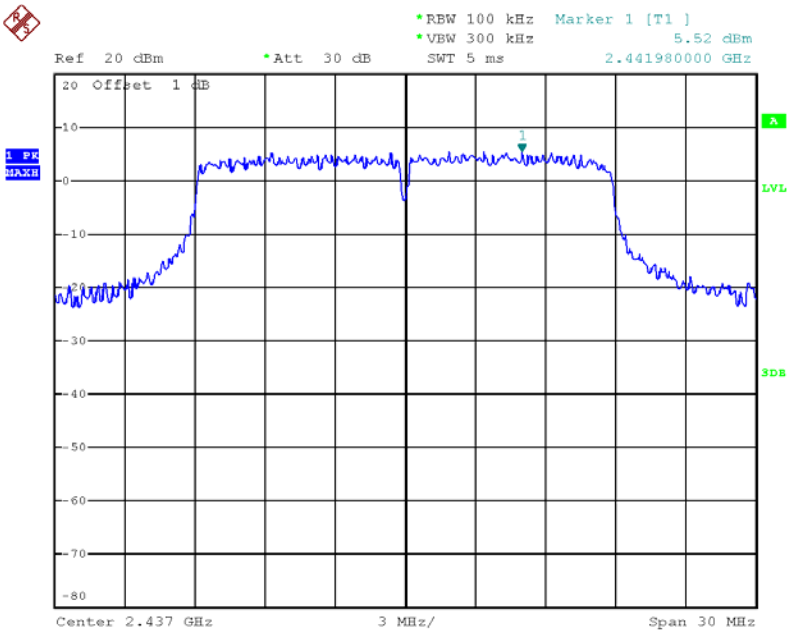
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 / 2437 MHz



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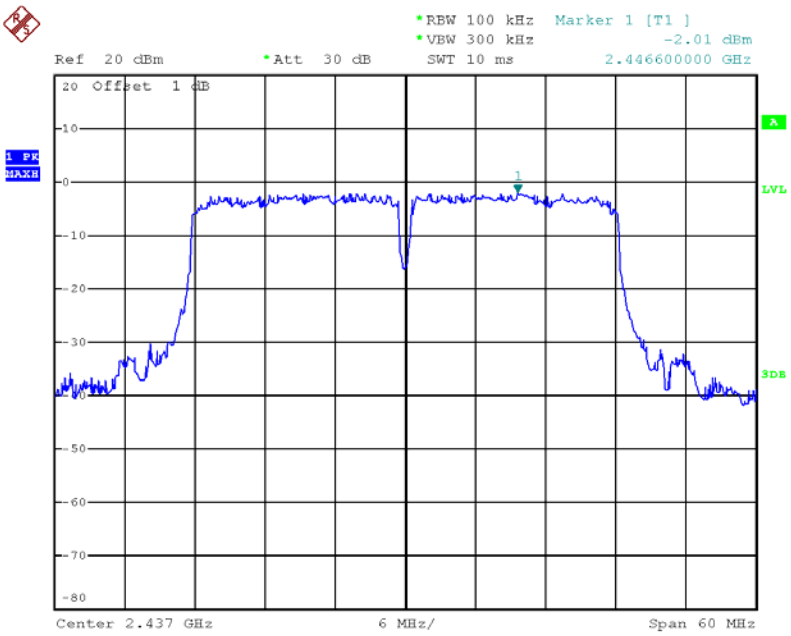
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 / 2437 MHz



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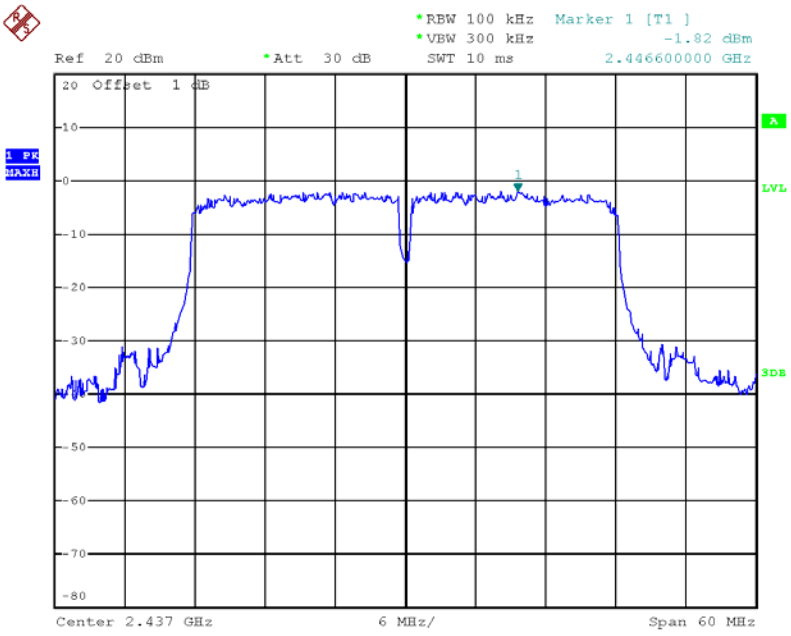
Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 / 2437 MHz



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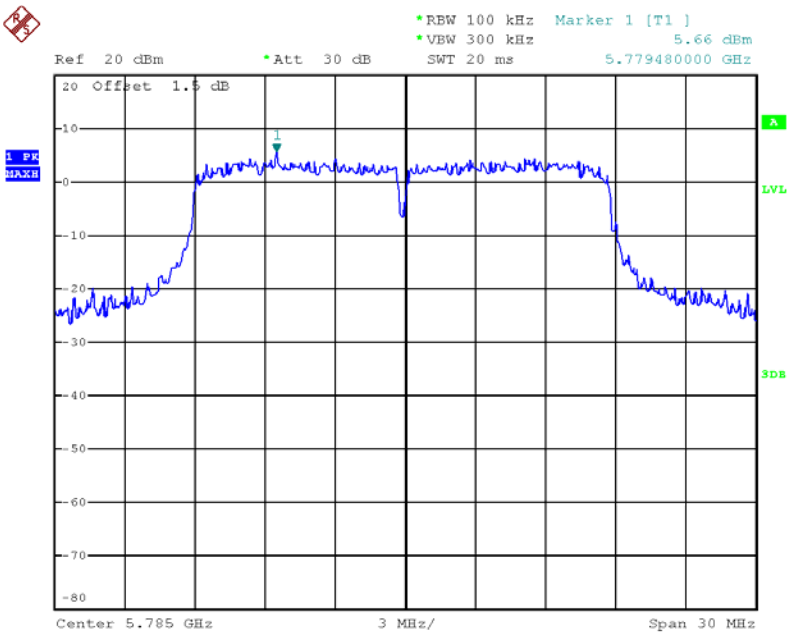
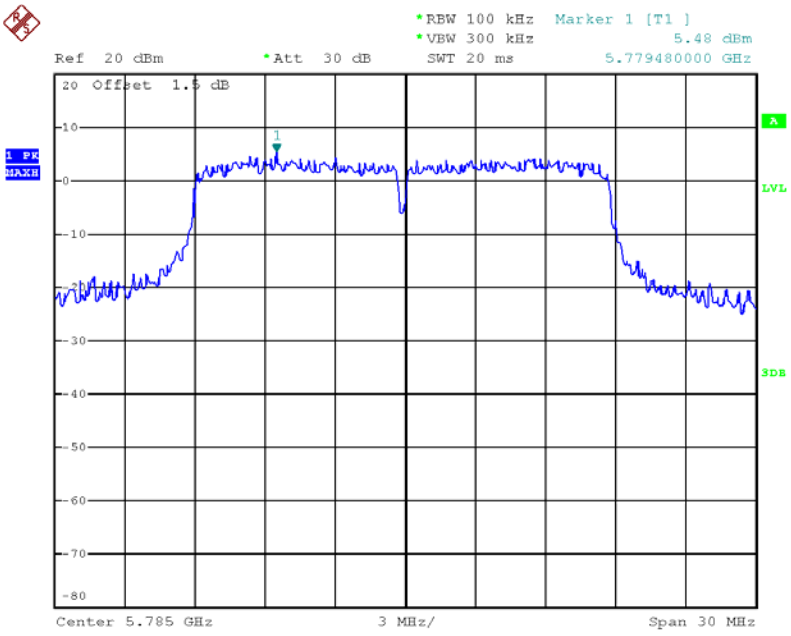
Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 / 5785 MHz



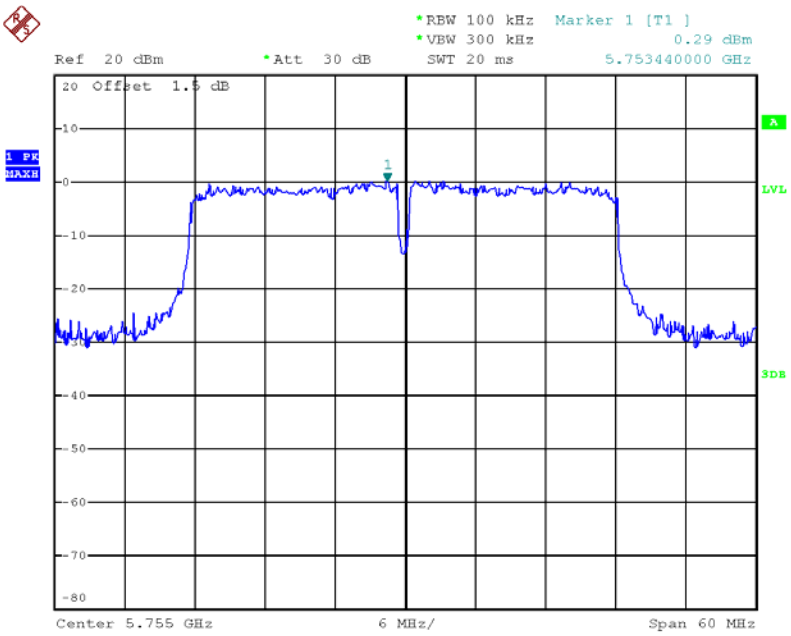
Date: 21.NOV.2012 21:50:56

Power Density Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 2 / 5785 MHz



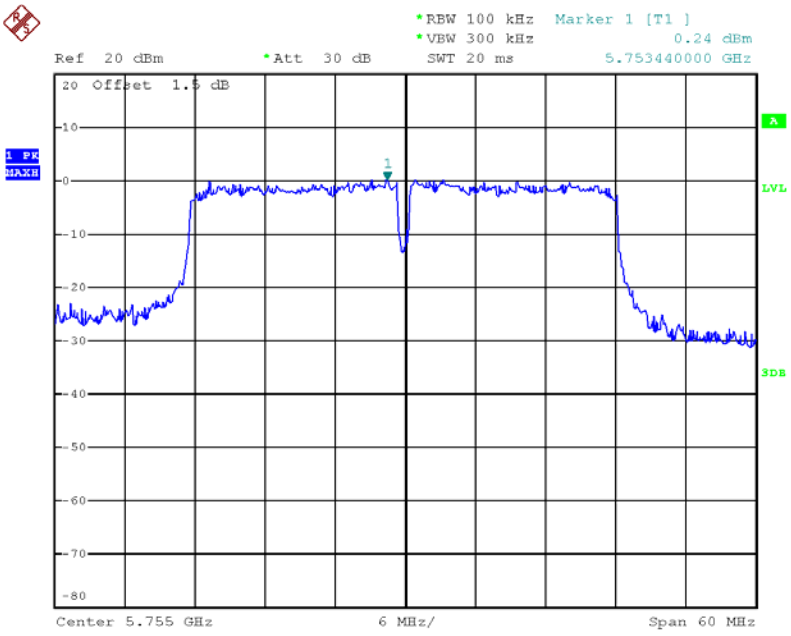
Date: 21.NOV.2012 21:57:06

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 / 5755 MHz



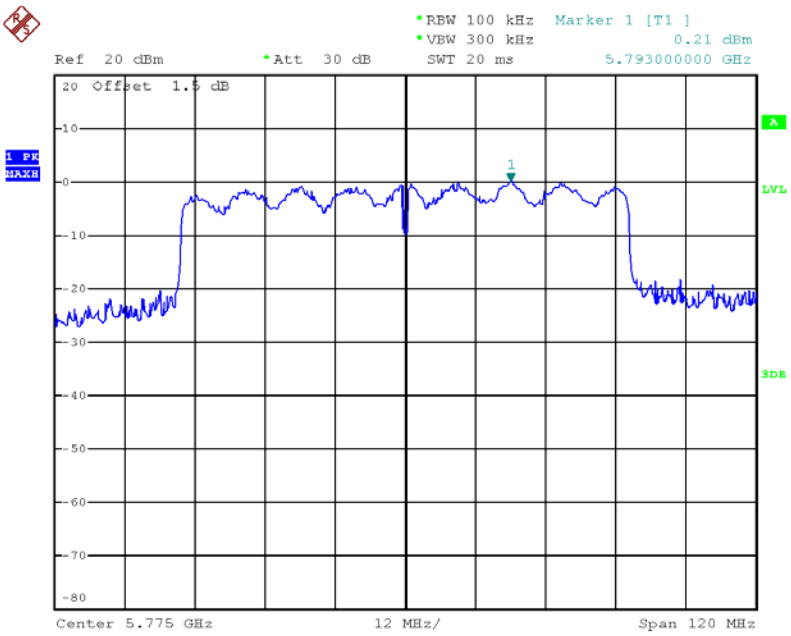
Date: 21.NOV.2012 21:53:14

Power Density Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 2 / 5755 MHz



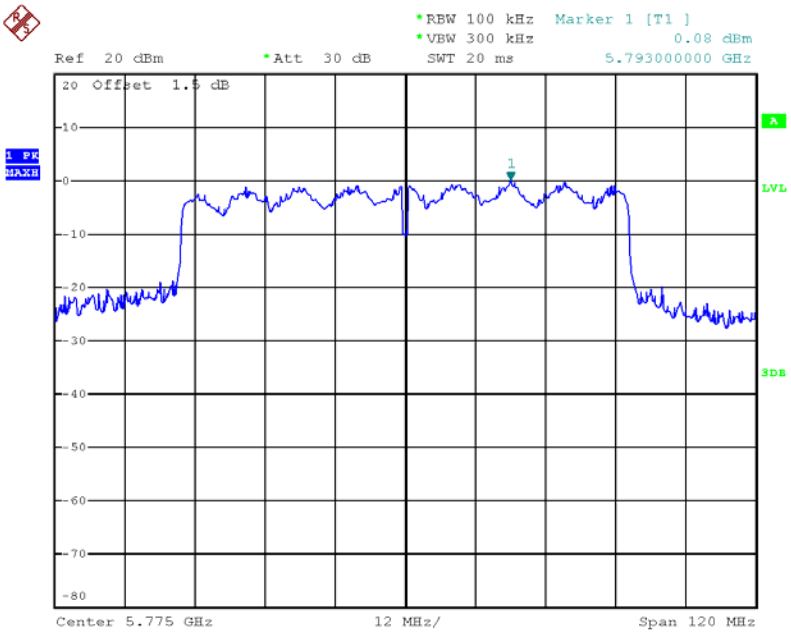
Date: 21.NOV.2012 21:52:47

Power Density Plot on Configuration IEEE 802.11ac MCS0 80MHz / Ant. 1 / 5775 MHz



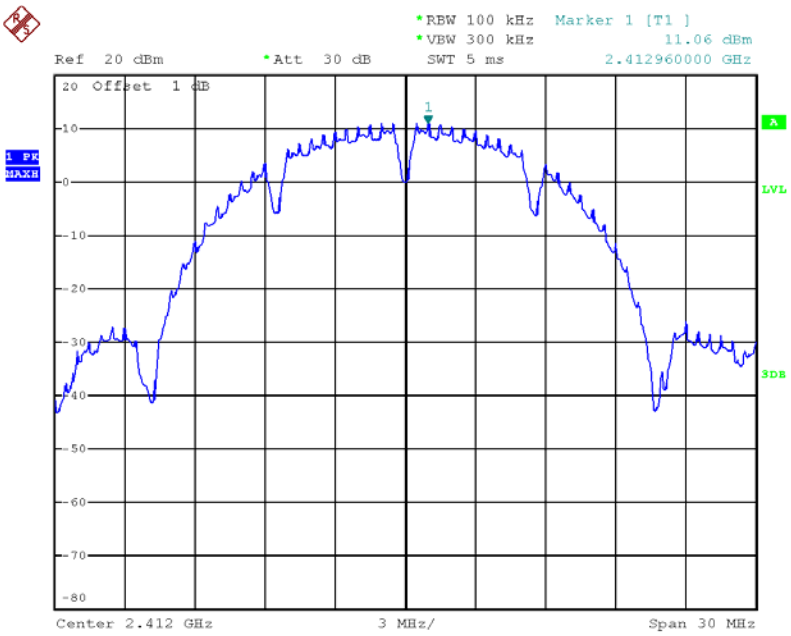
Date: 22.NOV.2012 01:10:48

Power Density Plot on Configuration IEEE 802.11ac MCS0 80MHz / Ant. 2 / 5775 MHz



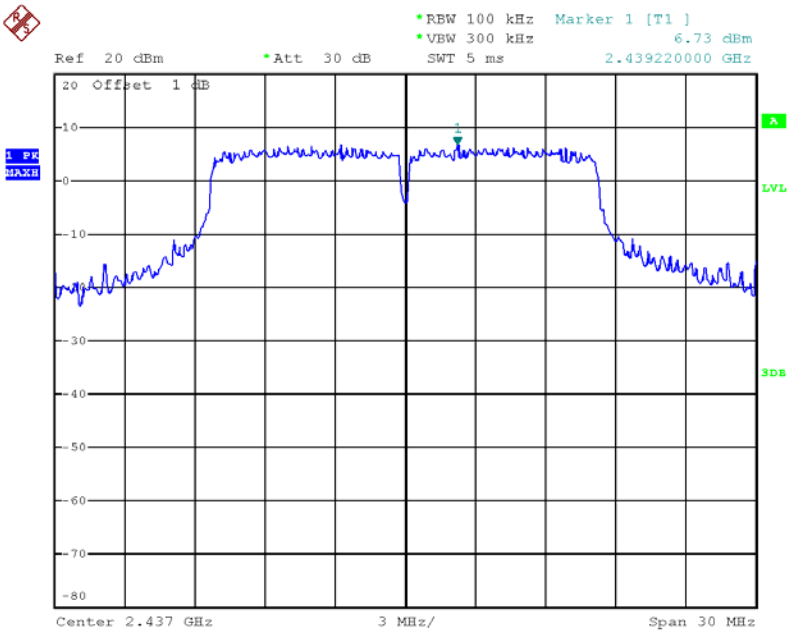
Date: 22.NOV.2012 01:09:32

Power Density Plot on Configuration IEEE 802.11b / Ant. 2 / 2412 MHz



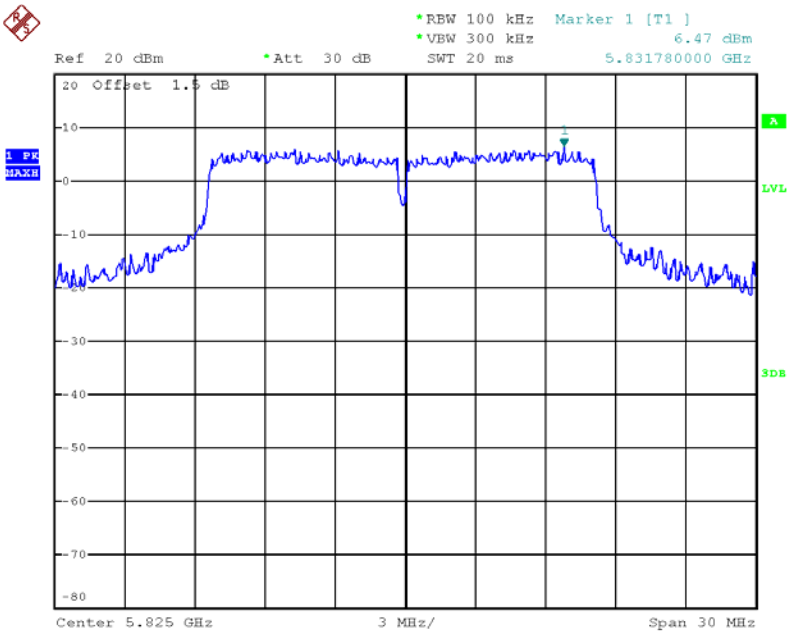
Date: 21.NOV.2012 21:22:25

Power Density Plot on Configuration IEEE 802.11g / Ant. 2 / 2437 MHz



Date: 21.NOV.2012 21:27:52

Power Density Plot on Configuration IEEE 802.11a / Ant. 2 / 5825 MHz



Date: 21.NOV.2012 21:43:34

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

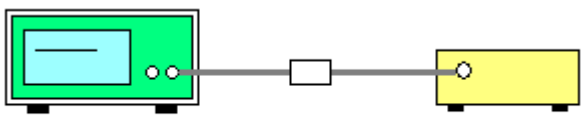
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer.

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°C	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11n/ac
Test Date	Nov. 21, 2012		

For 2.4GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1 + Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	17.76	17.92	500	Complies
6	2437 MHz	17.76	18.96	500	Complies
11	2462 MHz	17.84	17.92	500	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
3	2422 MHz	36.48	36.48	500	Complies
6	2437 MHz	36.48	36.48	500	Complies
9	2452 MHz	36.48	36.48	500	Complies

For 5GHz Band

Configuration IEEE 802.11n MCS0 20MHz / Ant. 1+ Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	17.68	17.68	500	Complies
157	5785 MHz	17.68	17.84	500	Complies
165	5825 MHz	17.68	17.84	500	Complies

Configuration IEEE 802.11n MCS0 40MHz / Ant. 1+ Ant. 2

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

Configuration IEEE 802.11ac MCS0 80MHz / Ant. 1+ Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
155	5775 MHz	74.56	75.52	500	Complies

Temperature	25°C	Humidity	56%
Test Engineer	Benson Peng	Configurations	IEEE 802.11a/b/g
Test Date	Nov. 21, 2012		

Configuration IEEE 802.11b / Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	10.08	14.96	500	Complies
6	2437 MHz	10.08	14.72	500	Complies
11	2462 MHz	10.08	14.80	500	Complies

Configuration IEEE 802.11g / Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
1	2412 MHz	16.56	16.48	500	Complies
6	2437 MHz	16.56	16.80	500	Complies
11	2462 MHz	16.48	16.48	500	Complies

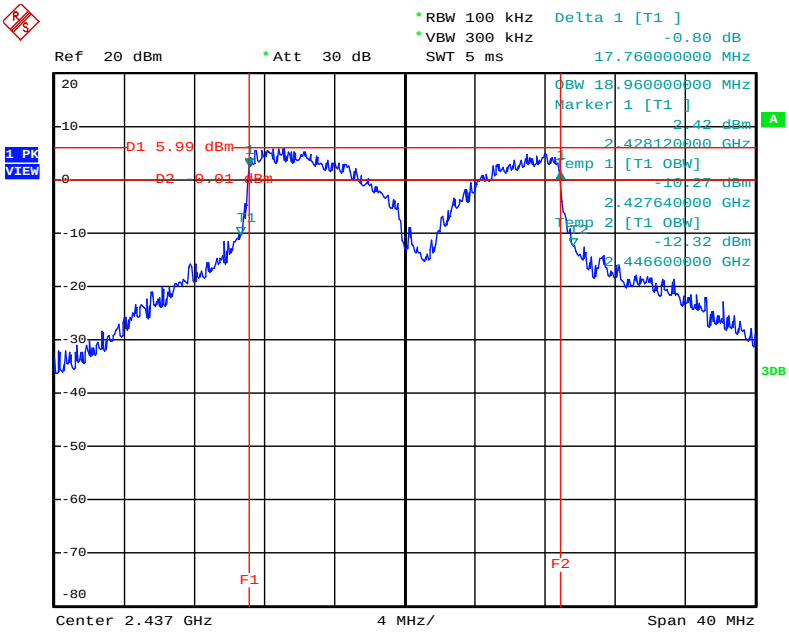
Configuration IEEE 802.11a / Ant. 2

Channel	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
149	5745 MHz	16.56	16.96	500	Complies
157	5785 MHz	16.56	17.12	500	Complies
165	5825 MHz	16.56	17.60	500	Complies

Note: All the test values were listed in the report.

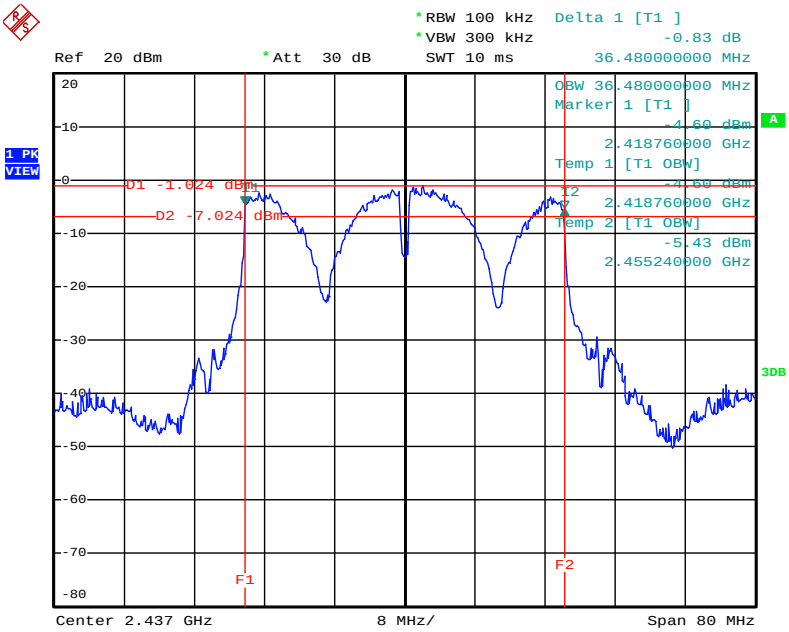
For plots, only the channel with maximum results was shown.

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



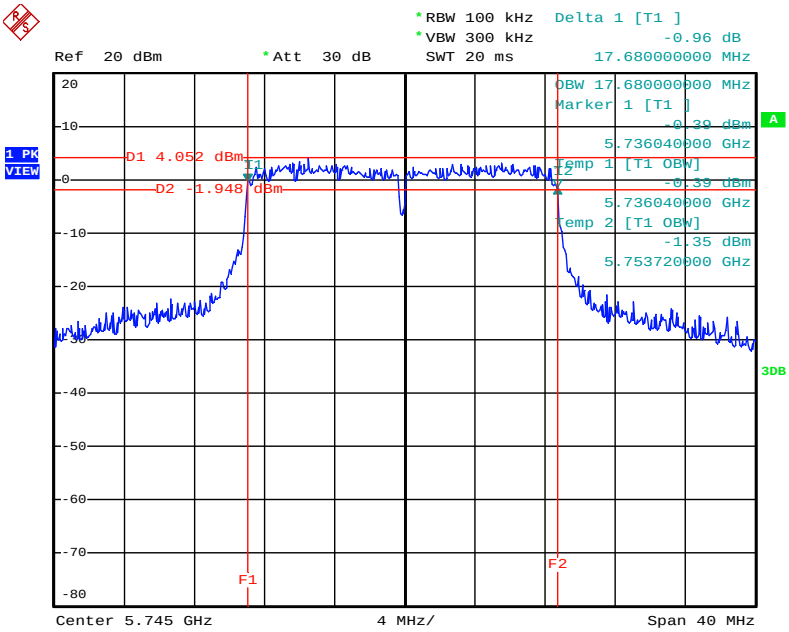
Date: 21.NOV.2012 23:00:33

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1 + Ant. 2 / 2437 MHz



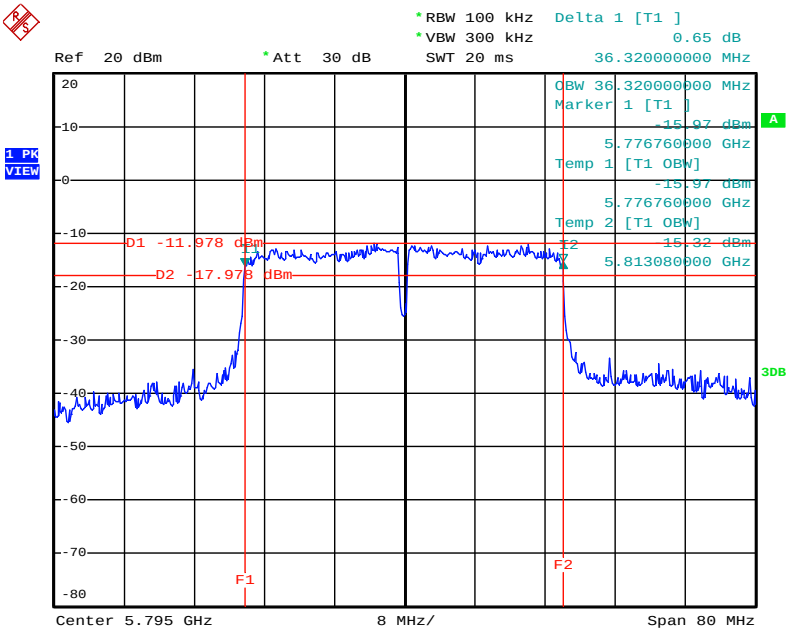
Date: 21.NOV.2012 23:05:35

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 20MHz / Ant. 1+ Ant. 2 / 5745 MHz



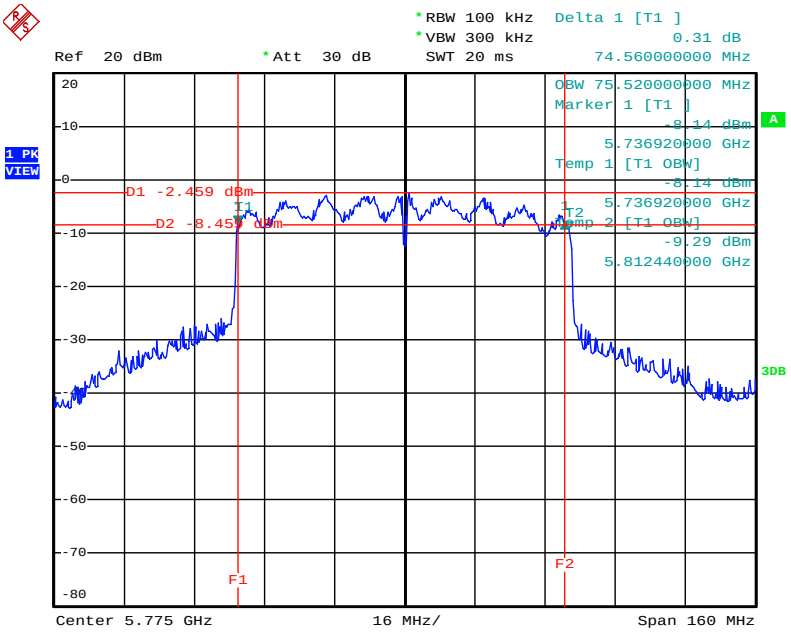
Date: 21.NOV.2012 23:11:44

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 40MHz / Ant. 1+ Ant. 2 / 5795 MHz



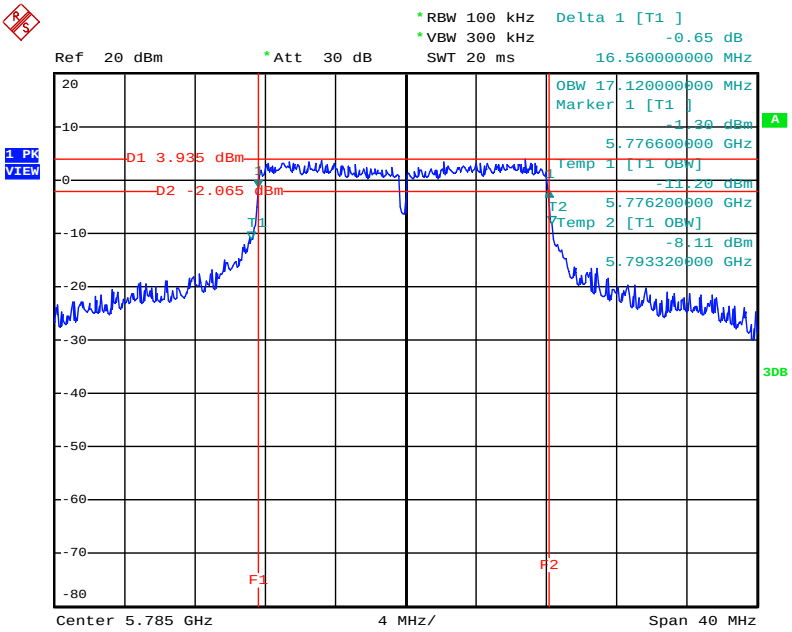
Date: 21.NOV.2012 23:14:49

6 dB Bandwidth Plot on Configuration IEEE 802.11ac MCS0 80MHz / Ant. 1+ Ant. 2 / 5775 MHz



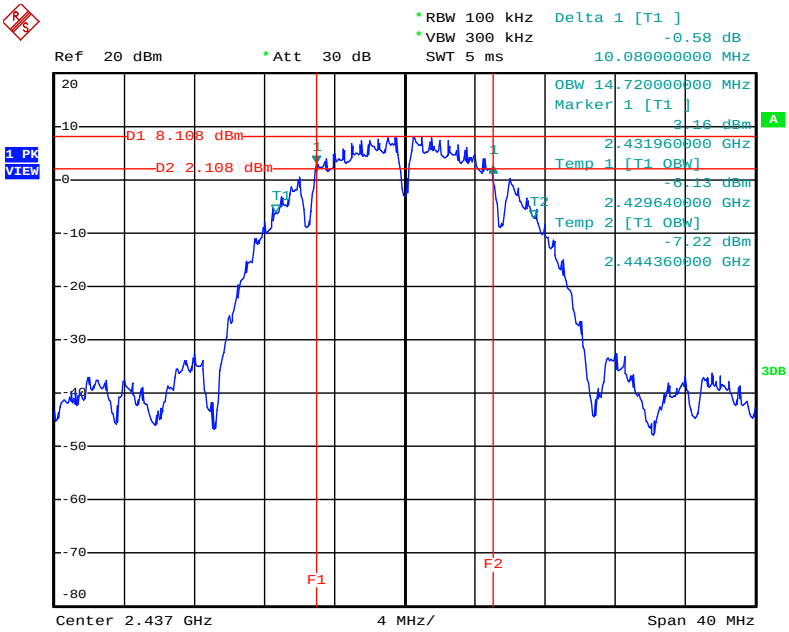
Date: 22.NOV.2012 01:20:33

6 dB Bandwidth Plot on Configuration IEEE 802.11a / Ant. 2 / 5785 MHz



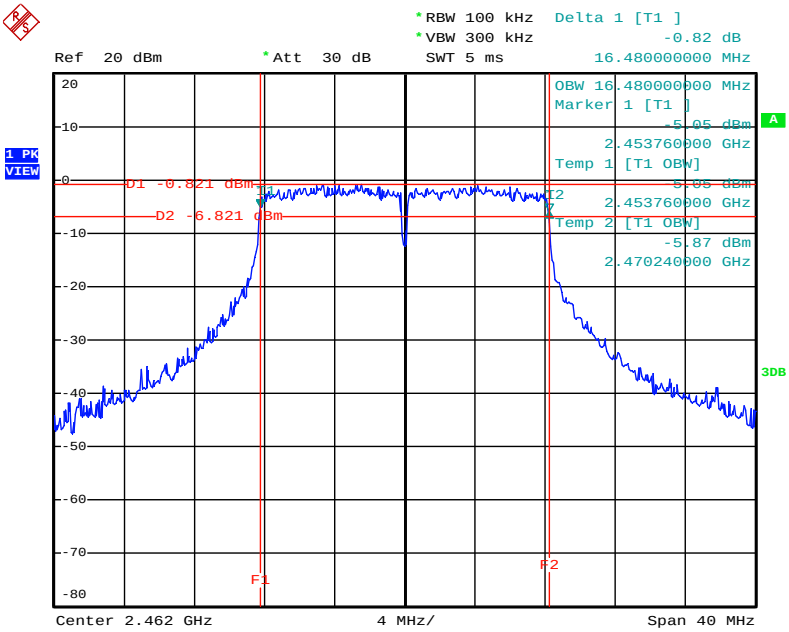
Date: 21.NOV.2012 23:17:55

6 dB Bandwidth Plot on Configuration IEEE 802.11b / Ant. 2 / 2437 MHz



Date: 21.NOV.2012 22:53:45

6 dB Bandwidth Plot on Configuration IEEE 802.11g / Ant. 2 / 2462 MHz



Date: 21.NOV.2012 22:54:54

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

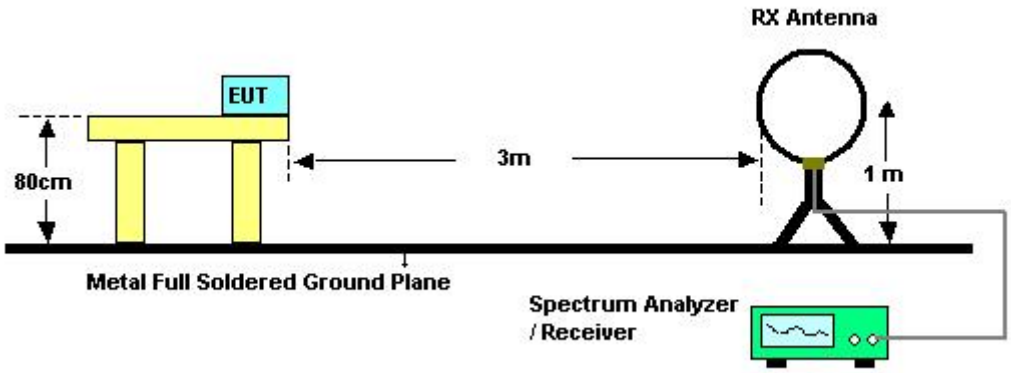
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1GHz / RB 120kHz for QP

4.5.3. Test Procedures

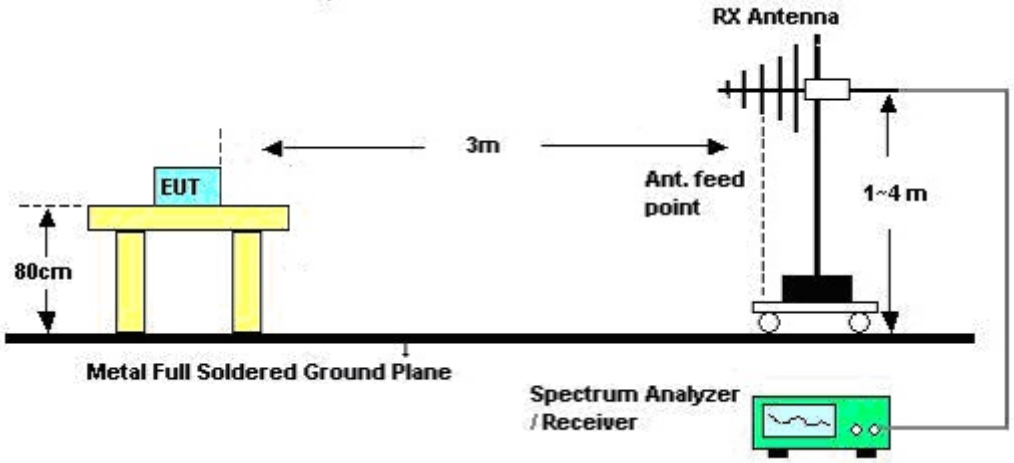
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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

For radiated emissions below 1GHz



For radiated emissions above 1GHz



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	23°C	Humidity	54%
Test Engineer	Magic Lai	Configurations	CTX
Test Date	Nov. 23, 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.

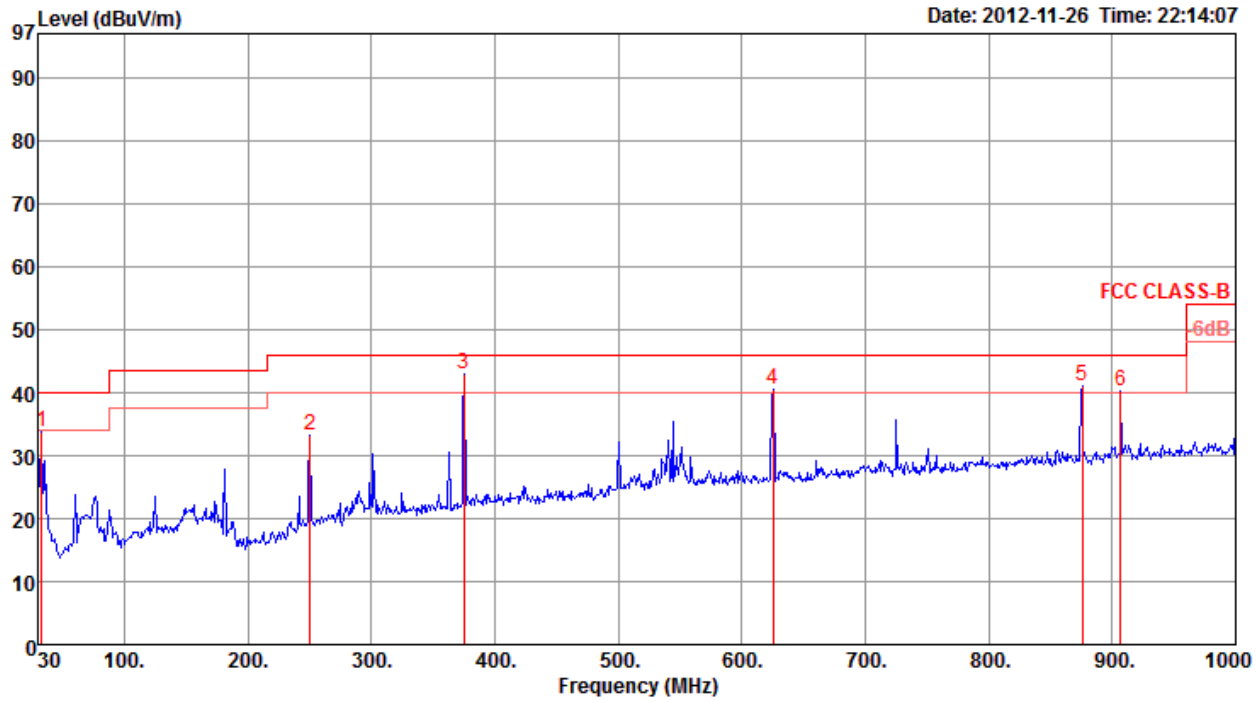
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

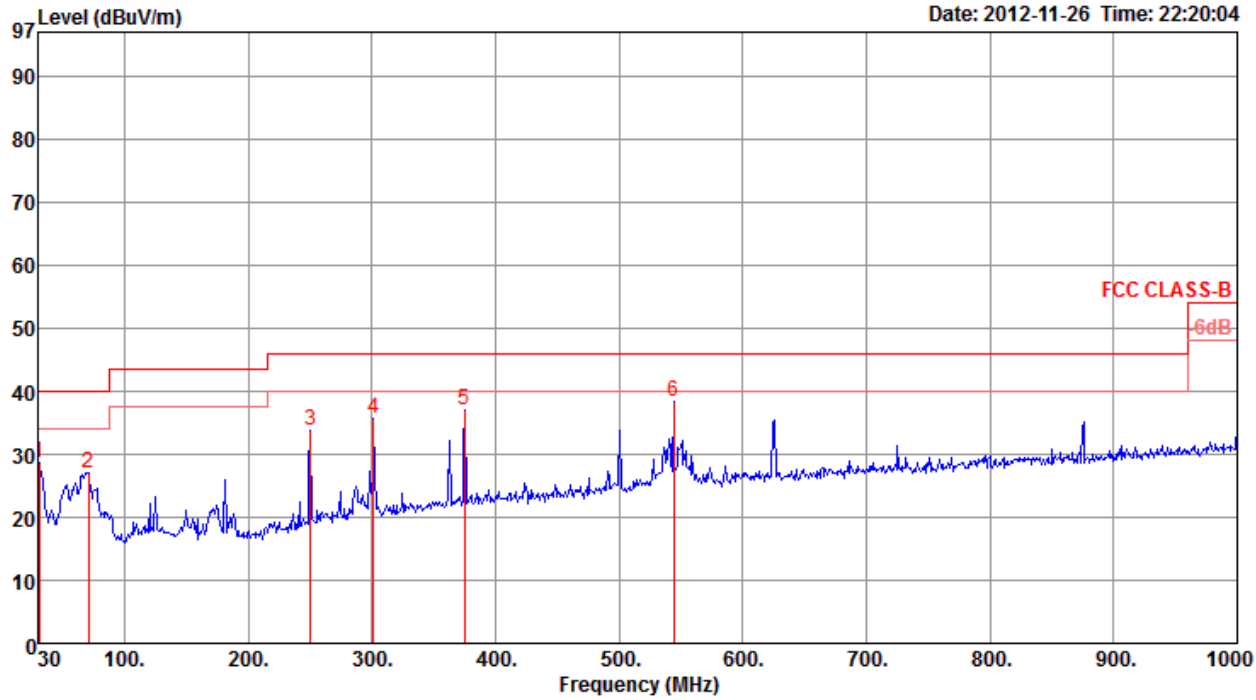
Temperature	23°C	Humidity	54%
Test Engineer	Magic Lai	Configurations	CTX / Mode 1 / Adapter 1(DSA-18PFG-12 FUS 120150)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	32.91	33.71	40.00	-6.29	42.72	0.88	27.99	18.10	Peak	0	400	HORIZONTAL
2	250.19	33.14	46.00	-12.86	44.81	2.38	26.95	12.90	Peak	0	400	HORIZONTAL
3 p	375.32	42.88	46.00	-3.12	51.34	2.89	27.26	15.91	Peak	0	400	HORIZONTAL
4 !	625.58	40.43	46.00	-5.57	44.74	3.82	27.58	19.45	Peak	0	400	HORIZONTAL
5 !	875.84	41.20	46.00	-4.80	42.19	4.51	26.86	21.36	Peak	0	400	HORIZONTAL
6 !	906.88	40.31	46.00	-5.69	40.92	4.63	26.79	21.55	Peak	0	400	HORIZONTAL

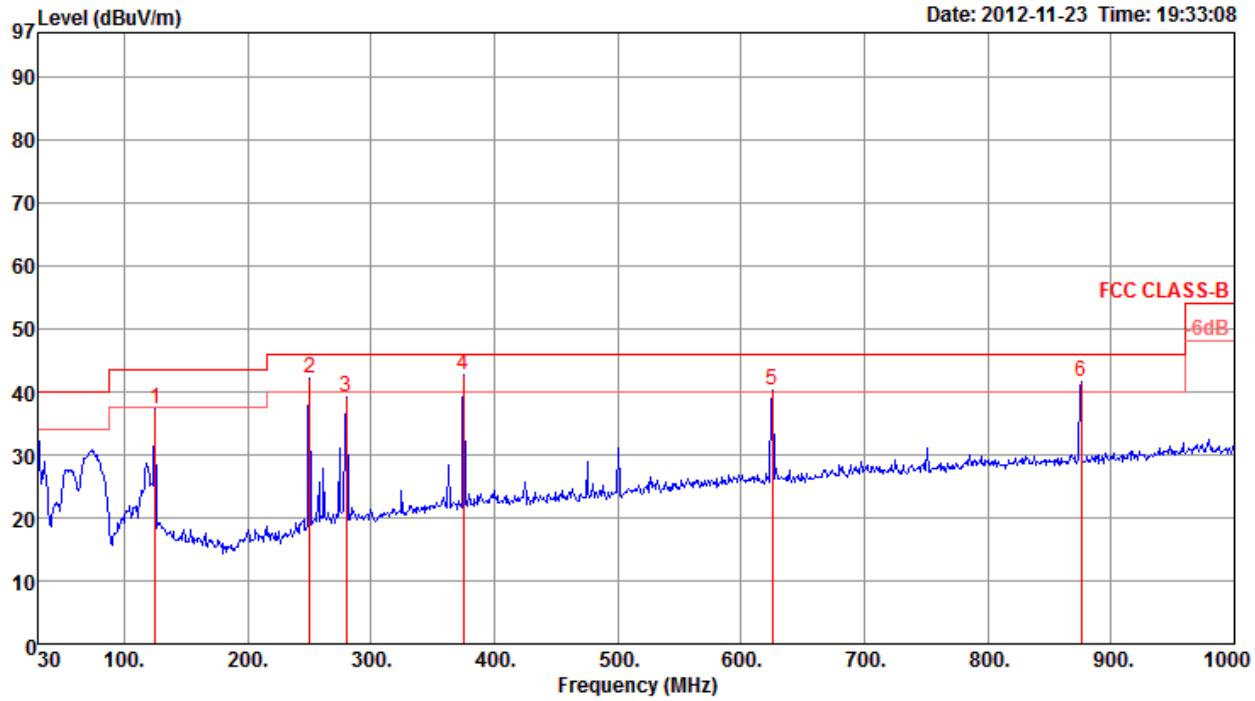
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	30.97	28.55	40.00	-11.45	36.38	0.85	27.98	19.30	Peak	0	400	VERTICAL
2	70.74	27.15	40.00	-12.85	46.95	1.28	27.94	6.86	Peak	0	400	VERTICAL
3	250.19	33.88	46.00	-12.12	45.55	2.38	26.95	12.90	Peak	0	400	VERTICAL
4	301.60	35.63	46.00	-10.37	46.09	2.52	26.84	13.86	Peak	0	400	VERTICAL
5	375.32	37.14	46.00	-8.86	45.60	2.89	27.26	15.91	Peak	0	400	VERTICAL
6 p	544.10	38.42	46.00	-7.58	44.11	3.52	27.89	18.68	Peak	0	400	VERTICAL

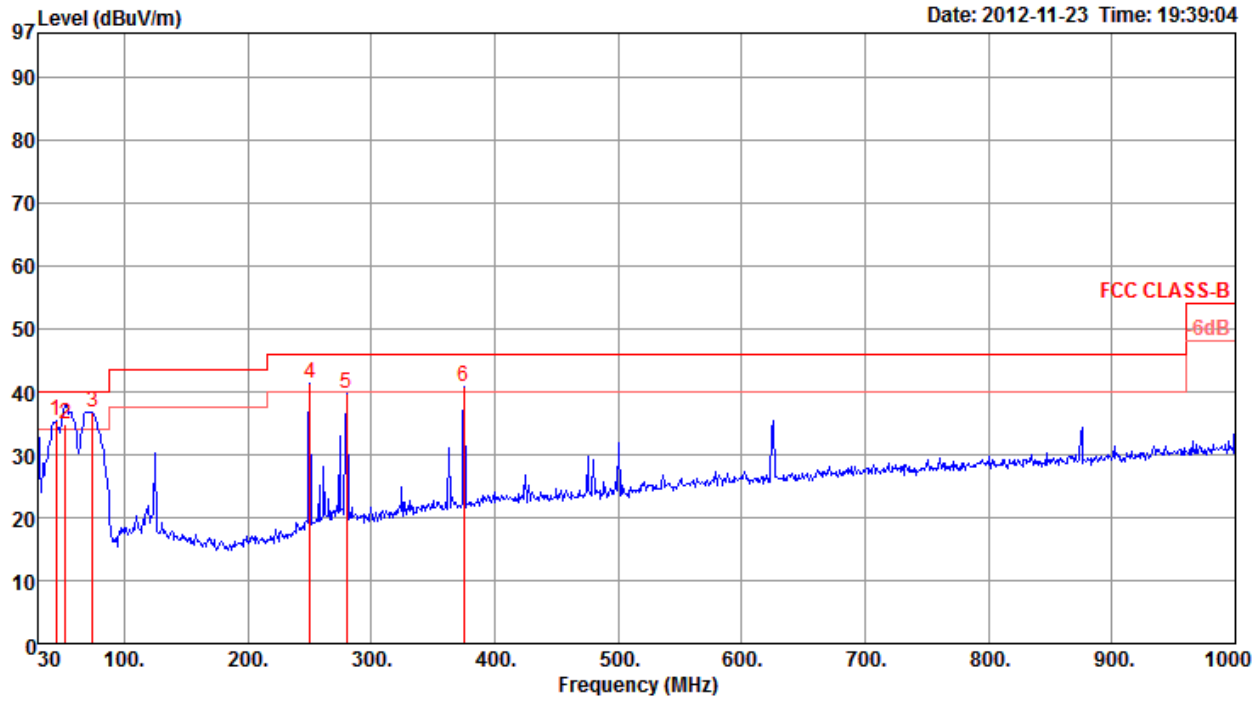
Temperature	23℃	Humidity	54%
Test Engineer	Magic Lai	Configurations	CTX / Mode 2 / Adapter 2 (DSA-12PFE-12 BUS 120100)

Horizontal



		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1		125.06	37.29	43.50	-6.21	50.40	1.65	27.66	12.90	Peak	0	400	HORIZONTAL
2	!	250.19	42.15	46.00	-3.85	53.82	2.38	26.95	12.90	Peak	0	400	HORIZONTAL
3		280.26	39.13	46.00	-6.87	49.98	2.53	26.88	13.50	Peak	0	400	HORIZONTAL
4	p	375.32	42.63	46.00	-3.37	51.09	2.89	27.26	15.91	Peak	0	400	HORIZONTAL
5	!	625.58	40.24	46.00	-5.76	44.55	3.82	27.58	19.45	Peak	0	400	HORIZONTAL
6	!	875.84	41.56	46.00	-4.44	42.55	4.51	26.86	21.36	Peak	0	400	HORIZONTAL

Vertical



		Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	T/Pos	A/Pos	Pol/Phase
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	!	44.55	35.45	40.00	-4.55	51.59	1.00	27.94	10.80	Peak	0	100	VERTICAL
2	q	52.31	34.82	40.00	-5.18	53.30	1.09	27.91	8.34	QP	320	100	VERTICAL
3	p	74.62	36.87	40.00	-3.13	56.38	1.29	27.92	7.12	Peak	0	100	VERTICAL
4	!	250.19	41.22	46.00	-4.78	52.89	2.38	26.95	12.90	Peak	0	100	VERTICAL
5		280.26	39.66	46.00	-6.34	50.51	2.53	26.88	13.50	Peak	0	100	VERTICAL
6	!	375.32	40.81	46.00	-5.19	49.27	2.89	27.26	15.91	Peak	0	100	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	24.5℃	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz Ch 1 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	4822.88	33.55	54.00	-20.45	29.09	6.27	33.39	35.20	Average	100	295	HORIZONTAL
2	4824.16	45.60	74.00	-28.40	41.14	6.27	33.39	35.20	Peak	100	295	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	4825.20	34.63	54.00	-19.37	30.17	6.27	33.39	35.20	Average	100	103	VERTICAL
2	4825.44	47.18	74.00	-26.82	42.72	6.27	33.39	35.20	Peak	100	103	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz Ch 6 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	4877.29	54.28	74.00	-19.72	49.69	6.31	33.48	35.20	Peak	156	50	HORIZONTAL
2	4877.61	39.84	54.00	-14.16	35.25	6.31	33.48	35.20	Average	156	50	HORIZONTAL
3	7300.42	58.80	74.00	-15.20	50.23	7.51	36.48	35.42	Peak	100	359	HORIZONTAL
4	7305.63	44.11	54.00	-9.89	35.54	7.51	36.48	35.42	Average	100	359	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	4871.82	56.85	74.00	-17.15	52.26	6.31	33.48	35.20	Peak	116	40	VERTICAL
2	4877.53	42.26	54.00	-11.74	37.67	6.31	33.48	35.20	Average	116	40	VERTICAL
3	7311.10	62.29	74.00	-11.71	53.70	7.51	36.51	35.43	Peak	121	107	VERTICAL
4	7311.67	46.04	54.00	-7.96	37.45	7.51	36.51	35.43	Average	121	107	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz Ch11 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	4915.75	45.39	74.00	-28.61	40.70	6.35	33.54	35.20	Peak	100	155	HORIZONTAL
2	4918.87	32.81	54.00	-21.19	28.12	6.35	33.54	35.20	Average	100	155	HORIZONTAL
3	7365.73	37.10	54.00	-16.90	28.35	7.61	36.59	35.45	Average	100	315	HORIZONTAL
4	7389.37	49.41	74.00	-24.59	40.62	7.64	36.61	35.46	Peak	100	315	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	4908.06	45.02	74.00	-28.98	40.35	6.33	33.54	35.20	Peak	100	262	VERTICAL
2	4920.31	32.86	54.00	-21.14	28.17	6.35	33.54	35.20	Average	100	262	VERTICAL
3	7382.88	49.90	74.00	-24.10	41.13	7.61	36.61	35.45	Peak	100	211	VERTICAL
4	7382.96	37.11	54.00	-16.89	28.34	7.61	36.61	35.45	Average	100	211	VERTICAL

Temperature	24.5℃	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 40MHz Ch 3 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	4819.56	44.56	74.00	-29.44	40.10	6.27	33.39	35.20	Peak	100	169	HORIZONTAL
2	4827.97	32.79	54.00	-21.21	28.33	6.27	33.39	35.20	Average	100	169	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	4824.85	44.80	74.00	-29.20	40.34	6.27	33.39	35.20	Peak	100	253	VERTICAL
2	4844.16	32.94	54.00	-21.06	28.43	6.29	33.42	35.20	Average	100	253	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 40MHz Ch 6 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	4858.38	46.35	74.00	-27.65	41.81	6.29	33.45	35.20	Peak	100	153	HORIZONTAL
2	4875.20	33.10	54.00	-20.90	28.51	6.31	33.48	35.20	Average	100	153	HORIZONTAL
3	7320.22	39.09	54.00	-14.91	30.47	7.54	36.51	35.43	Average	100	21	HORIZONTAL
4	7320.94	51.92	74.00	-22.08	43.30	7.54	36.51	35.43	Peak	100	21	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	4878.17	34.40	54.00	-19.60	29.81	6.31	33.48	35.20	Average	100	4	VERTICAL
2	4878.17	46.42	74.00	-27.58	41.83	6.31	33.48	35.20	Peak	100	4	VERTICAL
3	7312.92	38.16	54.00	-15.84	29.54	7.54	36.51	35.43	Average	100	109	VERTICAL
4	7323.82	51.03	74.00	-22.97	42.41	7.54	36.51	35.43	Peak	100	109	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 40MHz Ch 9 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	4915.78	32.90	54.00	-21.10	28.21	6.35	33.54	35.20	Average	100	320	HORIZONTAL
2	4917.22	44.80	74.00	-29.20	40.11	6.35	33.54	35.20	Peak	100	320	HORIZONTAL
3	7342.06	49.55	74.00	-24.45	40.86	7.57	36.56	35.44	Peak	100	182	HORIZONTAL
4	7344.30	37.29	54.00	-16.71	28.60	7.57	36.56	35.44	Average	100	182	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	4914.26	45.58	74.00	-28.42	40.89	6.35	33.54	35.20	Peak	100	130	VERTICAL
2	4919.22	33.01	54.00	-20.99	28.32	6.35	33.54	35.20	Average	100	130	VERTICAL
3	7334.51	37.41	54.00	-16.59	28.78	7.54	36.53	35.44	Average	100	329	VERTICAL
4	7337.81	49.99	74.00	-24.01	41.33	7.57	36.53	35.44	Peak	100	329	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz CH 149 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11488.81	65.65	74.00	-8.35	51.52	9.71	39.50	35.08	Peak	115	146	HORIZONTAL
2	11489.74	50.98	54.00	-3.02	36.85	9.71	39.50	35.08	Average	115	146	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	11489.65	48.52	54.00	-5.48	34.39	9.71	39.50	35.08	Average	110	100	VERTICAL
2	11489.97	63.31	74.00	-10.69	49.18	9.71	39.50	35.08	Peak	110	100	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz CH 157 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11569.49	61.29	74.00	-12.71	47.26	9.65	39.47	35.09	Peak	151	100	HORIZONTAL
2	11569.74	50.30	54.00	-3.70	36.27	9.65	39.47	35.09	Average	151	100	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	11564.52	61.66	74.00	-12.34	47.62	9.65	39.48	35.09	Peak	115	288	VERTICAL
2	11569.65	47.36	54.00	-6.64	33.33	9.65	39.47	35.09	Average	115	288	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz CH 165 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11649.39	63.22	74.00	-10.78	49.26	9.59	39.44	35.07	Peak	117	92	HORIZONTAL
2	11649.78	49.19	54.00	-4.81	35.23	9.59	39.44	35.07	Average	117	92	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	11649.42	60.88	74.00	-13.12	46.92	9.59	39.44	35.07	Peak	112	285	VERTICAL
2	11649.68	46.70	54.00	-7.30	32.74	9.59	39.44	35.07	Average	112	285	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 40MHz CH 151 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11509.78	49.71	54.00	-4.29	35.60	9.71	39.50	35.10	Average	117	79	HORIZONTAL
2	11510.00	60.76	74.00	-13.24	46.65	9.71	39.50	35.10	Peak	117	79	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	11509.74	45.53	54.00	-8.47	31.42	9.71	39.50	35.10	Average	117	294	VERTICAL
2	11510.61	58.20	74.00	-15.80	44.09	9.71	39.50	35.10	Peak	117	294	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 40MHz CH 159 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11589.62	57.86	74.00	-16.14	43.84	9.63	39.47	35.08	Peak	117	100	HORIZONTAL
2	11589.74	47.98	54.00	-6.02	33.96	9.63	39.47	35.08	Average	117	100	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	11581.06	57.44	74.00	-16.56	43.40	9.65	39.47	35.08	Peak	100	289	VERTICAL
2	11589.68	44.62	54.00	-9.38	30.60	9.63	39.47	35.08	Average	100	289	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11ac MCS0 20MHz CH 149 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11488.94	63.80	74.00	-10.20	49.67	9.71	39.50	35.08	Peak	117	80	HORIZONTAL
2	11489.65	50.49	54.00	-3.51	36.36	9.71	39.50	35.08	Average	117	80	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	11489.55	48.08	54.00	-5.92	33.95	9.71	39.50	35.08	Average	110	100	VERTICAL
2	11492.60	62.79	74.00	-11.21	48.66	9.71	39.50	35.08	Peak	110	100	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11ac MCS0 20MHz CH 157 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11569.52	63.01	74.00	-10.99	48.98	9.65	39.47	35.09	Peak	119	101	HORIZONTAL
2	11569.68	50.73	54.00	-3.27	36.70	9.65	39.47	35.09	Average	119	101	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	11563.21	61.95	74.00	-12.05	47.91	9.65	39.48	35.09	Peak	115	288	VERTICAL
2	11569.62	47.26	54.00	-6.74	33.23	9.65	39.47	35.09	Average	115	288	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11ac MCS0 20MHz CH 165 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11649.49	62.01	74.00	-11.99	48.05	9.59	39.44	35.07	Peak	117	92	HORIZONTAL
2	11649.71	49.17	54.00	-4.83	35.21	9.59	39.44	35.07	Average	117	92	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	11648.11	59.96	74.00	-14.04	46.00	9.59	39.44	35.07	Peak	139	288	VERTICAL
2	11649.71	45.92	54.00	-8.08	31.96	9.59	39.44	35.07	Average	139	288	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11ac MCS0 40MHz CH 151 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11509.39	58.97	74.00	-15.03	44.86	9.71	39.50	35.10	Peak	118	100	HORIZONTAL
2	11509.74	50.31	54.00	-3.69	36.20	9.71	39.50	35.10	Average	118	100	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	11509.52	57.90	74.00	-16.10	43.79	9.71	39.50	35.10	Peak	100	54	VERTICAL
2	11509.81	44.24	54.00	-9.76	30.13	9.71	39.50	35.10	Average	100	54	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11ac MCS0 40MHz CH 159 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11589.62	58.61	74.00	-15.39	44.59	9.63	39.47	35.08	Peak	117	101	HORIZONTAL
2	11589.74	48.21	54.00	-5.79	34.19	9.63	39.47	35.08	Average	117	101	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	11589.23	57.50	74.00	-16.50	43.48	9.63	39.47	35.08	Peak	114	288	VERTICAL
2	11589.81	44.16	54.00	-9.84	30.14	9.63	39.47	35.08	Average	114	288	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11ac MCS0 80MHz CH 155 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	11549.60	45.17	54.00	-8.83	31.10	9.67	39.49	35.09	Average	100	164	HORIZONTAL
2	11551.92	56.33	74.00	-17.67	42.27	9.67	39.48	35.09	Peak	100	164	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	11550.08	43.62	54.00	-10.38	29.55	9.67	39.49	35.09	Average	100	210	VERTICAL
2	11569.39	54.63	74.00	-19.37	40.60	9.65	39.47	35.09	Peak	100	210	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.

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11b CH 1 / Ant. 2
Test Date	Nov. 21, 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	4823.83	49.01	74.00	-24.99	44.55	6.27	33.39	35.20	Peak	102	302	HORIZONTAL
2	4823.98	43.08	54.00	-10.92	38.62	6.27	33.39	35.20	Average	102	302	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	4823.90	49.90	74.00	-24.10	45.44	6.27	33.39	35.20	Peak	100	325	VERTICAL
2	4823.99	44.26	54.00	-9.74	39.80	6.27	33.39	35.20	Average	100	325	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11b CH 6 / Ant. 2
Test Date	Nov. 21, 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	4873.79	46.40	74.00	-27.60	41.81	6.31	33.48	35.20	Peak	101	298	HORIZONTAL
2	4873.89	36.94	54.00	-17.06	32.35	6.31	33.48	35.20	Average	101	298	HORIZONTAL
3	7310.40	54.57	74.00	-19.43	45.98	7.51	36.51	35.43	Peak	122	29	HORIZONTAL
4	7311.68	48.84	54.00	-5.16	40.25	7.51	36.51	35.43	Average	45	29	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	4873.87	46.87	74.00	-27.13	42.28	6.31	33.48	35.20	Peak	100	86	VERTICAL
2	4873.92	37.73	54.00	-16.27	33.14	6.31	33.48	35.20	Average	100	86	VERTICAL
3	7309.96	56.43	74.00	-17.57	47.84	7.51	36.51	35.43	Peak	128	87	VERTICAL
4	7310.22	50.33	54.00	-3.67	41.74	7.51	36.51	35.43	Average	128	87	VERTICAL

Temperature	24.5°C	Humidity	56.4%
Test Engineer	Magic Lai	Configurations	IEEE 802.11b CH 11 / Ant. 2
Test Date	Nov. 21, 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	4923.97	40.86	54.00	-13.14	36.13	6.35	33.58	35.20	Average	100	352	HORIZONTAL
2	4924.24	48.34	74.00	-25.66	43.61	6.35	33.58	35.20	Peak	100	352	HORIZONTAL
3	7384.99	55.71	74.00	-18.29	46.95	7.61	36.61	35.46	Peak	122	40	HORIZONTAL
4	7385.23	48.83	54.00	-5.17	40.07	7.61	36.61	35.46	Average	122	40	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	4923.99	39.42	54.00	-14.58	34.69	6.35	33.58	35.20	Average	100	112	VERTICAL
2	4924.00	47.38	74.00	-26.62	42.65	6.35	33.58	35.20	Peak	100	112	VERTICAL
3	7385.10	57.58	74.00	-16.42	48.82	7.61	36.61	35.46	Peak	102	89	VERTICAL
4	7385.19	50.90	54.00	-3.10	42.14	7.61	36.61	35.46	Average	102	89	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11g CH 1 / Ant. 2
Test Date	Nov. 21, 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	4816.98	32.54	54.00	-21.46	28.11	6.27	33.36	35.20	Average	100	275	HORIZONTAL
2	4827.72	44.82	74.00	-29.18	40.36	6.27	33.39	35.20	Peak	100	275	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	4814.74	44.98	74.00	-29.02	40.55	6.27	33.36	35.20	Peak	100	179	VERTICAL
2	4820.28	32.69	54.00	-21.31	28.23	6.27	33.39	35.20	Average	100	179	VERTICAL

Temperature	24.5℃	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11g CH 6 / Ant. 2
Test Date	Nov. 21, 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	4873.52	43.94	74.00	-30.06	39.35	6.31	33.48	35.20	Peak	100	204	HORIZONTAL
2	4875.96	32.90	54.00	-21.10	28.31	6.31	33.48	35.20	Average	100	204	HORIZONTAL
3	7307.47	62.35	74.00	-11.65	53.76	7.51	36.51	35.43	Peak	117	26	HORIZONTAL
4	7308.20	47.80	54.00	-6.20	39.21	7.51	36.51	35.43	Average	117	26	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	4875.51	45.56	74.00	-28.44	40.97	6.31	33.48	35.20	Peak	100	88	VERTICAL
2	4877.59	33.19	54.00	-20.81	28.60	6.31	33.48	35.20	Average	360	88	VERTICAL
3	7310.28	49.64	54.00	-4.36	41.05	7.51	36.51	35.43	Average	114	97	VERTICAL
4	7312.84	64.53	74.00	-9.47	55.91	7.54	36.51	35.43	Peak	114	97	VERTICAL

Temperature	24.5℃	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11g CH 11 / Ant. 2
Test Date	Nov. 21, 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	4913.18	32.80	54.00	-21.20	28.11	6.35	33.54	35.20	Average	100	225	HORIZONTAL
2	4928.33	45.39	74.00	-28.61	40.66	6.35	33.58	35.20	Peak	100	225	HORIZONTAL
3	7385.52	38.50	54.00	-15.50	29.74	7.61	36.61	35.46	Average	100	88	HORIZONTAL
4	7389.69	50.41	74.00	-23.59	41.62	7.64	36.61	35.46	Peak	100	88	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	4909.74	32.80	54.00	-21.20	28.13	6.33	33.54	35.20	Average	100	34	VERTICAL
2	4911.15	45.45	74.00	-28.55	40.78	6.33	33.54	35.20	Peak	100	34	VERTICAL
3	7385.12	39.52	54.00	-14.48	30.76	7.61	36.61	35.46	Average	100	95	VERTICAL
4	7389.21	53.69	74.00	-20.31	44.90	7.64	36.61	35.46	Peak	100	95	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a CH 149 / Ant. 2
Test Date	Nov. 21, 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	11489.71	48.99	54.00	-5.01	34.86	9.71	39.50	35.08	Average	151	24	HORIZONTAL
2	11489.90	57.41	74.00	-16.59	43.28	9.71	39.50	35.08	Peak	151	24	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	11489.74	49.87	54.00	-4.13	35.74	9.71	39.50	35.08	Average	155	248	VERTICAL
2	11492.12	62.78	74.00	-11.22	48.65	9.71	39.50	35.08	Peak	155	248	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a CH 157 / Ant. 2
Test Date	Nov. 21, 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	11569.74	48.59	54.00	-5.41	34.56	9.65	39.47	35.09	Average	147	28	HORIZONTAL
2	11569.78	56.28	74.00	-17.72	42.25	9.65	39.47	35.09	Peak	147	28	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	11569.78	48.78	54.00	-5.22	34.75	9.65	39.47	35.09	Average	114	241	VERTICAL
2	11571.63	61.80	74.00	-12.20	47.77	9.65	39.47	35.09	Peak	114	241	VERTICAL

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11a CH 165 / Ant. 2
Test Date	Nov. 21, 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	11649.58	58.83	74.00	-15.17	44.87	9.59	39.44	35.07	Peak	100	31	HORIZONTAL
2	11649.78	47.42	54.00	-6.58	33.46	9.59	39.44	35.07	Average	100	31	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	11646.70	62.42	74.00	-11.58	48.46	9.59	39.44	35.07	Peak	111	246	VERTICAL
2	11649.65	48.71	54.00	-5.29	34.75	9.59	39.44	35.07	Average	111	246	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	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 20MHz Ch 1, 6, 11 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	2389.84	71.03	74.00	-2.97	38.64	4.34	28.05	0.00	Peak	155	238	HORIZONTAL
2	2390.00	52.66	54.00	-1.34	20.27	4.34	28.05	0.00	Average	155	238	HORIZONTAL
3	2406.23	99.13	54.00			4.34	28.09	0.00	Average	155	238	HORIZONTAL
4	2407.19	109.05	74.00			4.34	28.09	0.00	Peak	155	238	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	2389.36	65.00	74.00	-9.00	32.61	4.34	28.05	0.00	Peak	100	273	VERTICAL
2	2390.00	48.39	54.00	-5.61	16.00	4.34	28.05	0.00	Average	100	273	VERTICAL
3	2444.37	113.85	74.00			4.38	28.18	0.00	Peak	100	273	VERTICAL
4	2445.01	104.12	54.00			4.38	28.18	0.00	Average	100	273	VERTICAL
5	2483.98	65.34	74.00	-8.66	32.68	4.40	28.26	0.00	Peak	100	273	VERTICAL
6	2485.26	50.24	54.00	-3.76	17.54	4.40	28.30	0.00	Average	100	273	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	2460.56	99.18	54.00			4.38	28.22	0.00	Average	100	274	VERTICAL
2	2463.60	109.13	74.00			4.40	28.22	0.00	Peak	100	274	VERTICAL
3	2483.50	52.89	54.00	-1.11	20.23	4.40	28.26	0.00	Average	100	274	VERTICAL
4	2483.98	67.97	74.00	-6.03	35.31	4.40	28.26	0.00	Peak	100	274	VERTICAL

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

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11n MCS0 40MHz Ch 3, 6, 9 / Ant. 1 + Ant. 2
Test Date	Nov. 21, 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	2386.15	66.51	74.00	-7.49	34.14	4.32	28.05	0.00	Peak	154	237	HORIZONTAL
2	2390.00	52.81	54.00	-1.19	20.42	4.34	28.05	0.00	Average	154	237	HORIZONTAL
3	2423.28	103.76	74.00			4.36	28.13	0.00	Peak	154	237	HORIZONTAL
4	2423.60	94.35	54.00			4.36	28.13	0.00	Average	154	237	HORIZONTAL

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	2389.04	61.41	74.00	-12.59	29.02	4.34	28.05	0.00	Peak	126	125	HORIZONTAL
2	2390.00	48.58	54.00	-5.42	16.19	4.34	28.05	0.00	Average	126	125	HORIZONTAL
3	2441.49	96.24	54.00			4.38	28.18	0.00	Average	126	125	HORIZONTAL
4	2442.13	105.75	74.00			4.38	28.18	0.00	Peak	126	125	HORIZONTAL
5	2483.50	52.97	54.00	-1.03	20.31	4.40	28.26	0.00	Average	126	125	HORIZONTAL
6	2483.82	67.61	74.00	-6.39	34.95	4.40	28.26	0.00	Peak	126	125	HORIZONTAL

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	2442.71	94.20	54.00			4.38	28.18	0.00	Average	156	232	HORIZONTAL
2	2443.67	103.95	74.00			4.38	28.18	0.00	Peak	156	232	HORIZONTAL
3	2483.82	52.67	54.00	-1.33	20.01	4.40	28.26	0.00	Average	156	232	HORIZONTAL
4	2487.67	65.18	74.00	-8.82	32.46	4.42	28.30	0.00	Peak	156	232	HORIZONTAL

Item 1, 2 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	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11b CH 1, 6, 11 / Ant. 2
Test Date	Nov. 21, 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	2386.20	52.99	54.00	-1.01	20.62	4.32	28.05	0.00	Average	157	244	HORIZONTAL
2	2386.80	61.85	74.00	-12.15	29.48	4.32	28.05	0.00	Peak	157	244	HORIZONTAL
3	2411.00	112.01	74.00			4.34	28.09	0.00	Peak	157	244	HORIZONTAL
4	2411.20	108.06	54.00			4.34	28.09	0.00	Average	157	244	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	2389.68	58.59	74.00	-15.41	26.20	4.34	28.05	0.00	Peak	131	125	HORIZONTAL
2	2390.00	46.58	54.00	-7.42	14.19	4.34	28.05	0.00	Average	131	125	HORIZONTAL
3	2436.04	111.15	74.00			4.36	28.18	0.00	Peak	131	125	HORIZONTAL
4	2436.20	107.51	54.00			4.36	28.18	0.00	Average	131	125	HORIZONTAL
5	2483.50	47.13	54.00	-6.87	14.47	4.40	28.26	0.00	Average	131	125	HORIZONTAL
6	2483.66	59.18	74.00	-14.82	26.52	4.40	28.26	0.00	Peak	131	125	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	2461.20	107.38	54.00			4.38	28.22	0.00	Average	150	126	HORIZONTAL
2	2463.00	111.30	74.00			4.40	28.22	0.00	Peak	150	126	HORIZONTAL
3	2487.50	60.44	74.00	-13.56	27.72	4.42	28.30	0.00	Peak	150	126	HORIZONTAL
4	2487.70	51.24	54.00	-2.76	18.52	4.42	28.30	0.00	Average	150	126	HORIZONTAL

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

Temperature	24.5°C	Humidity	57%
Test Engineer	Magic Lai	Configurations	IEEE 802.11g CH 1, 6, 11 / Ant. 2
Test Date	Nov. 21, 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	2388.40	68.09	74.00	-5.91	35.70	4.34	28.05	0.00	Peak	156	132	HORIZONTAL
2	2390.00	52.31	54.00	-1.69	19.92	4.34	28.05	0.00	Average	156	132	HORIZONTAL
3	2408.15	108.88	74.00			4.34	28.09	0.00	Peak	156	132	HORIZONTAL
4	2409.44	99.50	54.00			4.34	28.09	0.00	Average	156	132	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	2389.84	62.12	74.00	-11.88	29.73	4.34	28.05	0.00	Peak	127	230	HORIZONTAL
2	2390.00	48.32	54.00	-5.68	15.93	4.34	28.05	0.00	Average	127	230	HORIZONTAL
3	2442.45	104.95	54.00			4.38	28.18	0.00	Average	127	230	HORIZONTAL
4	2442.61	114.29	74.00			4.38	28.18	0.00	Peak	127	230	HORIZONTAL
5	2483.50	49.91	54.00	-4.09	17.25	4.40	28.26	0.00	Average	127	230	HORIZONTAL
6	2484.78	65.50	74.00	-8.50	32.84	4.40	28.26	0.00	Peak	127	230	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	2459.44	98.78	54.00			4.38	28.22	0.00	Average	154	127	VERTICAL
2	2463.44	108.27	74.00			4.40	28.22	0.00	Peak	154	127	VERTICAL
3	2483.50	52.92	54.00	-1.08	20.26	4.40	28.26	0.00	Average	154	127	VERTICAL
4	2483.66	70.34	74.00	-3.66	37.68	4.40	28.26	0.00	Peak	154	127	VERTICAL

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

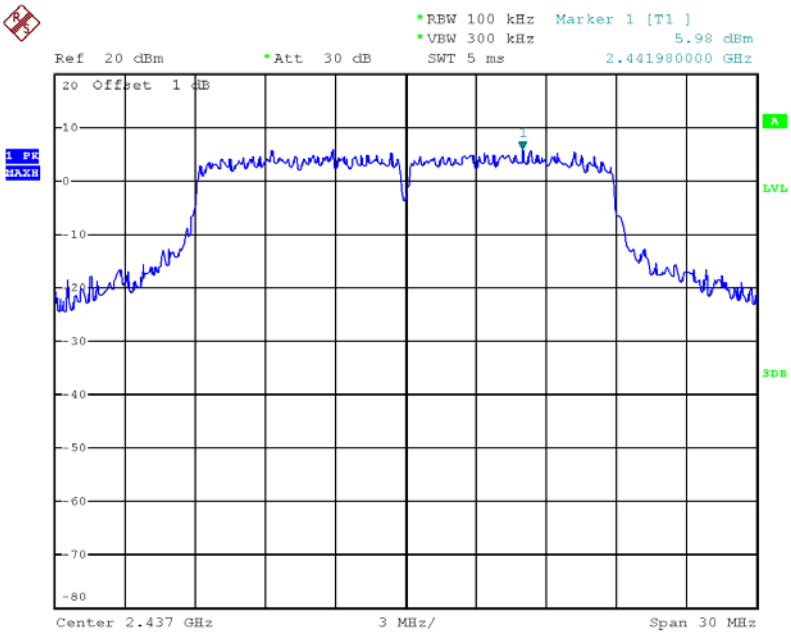
Note:

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

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

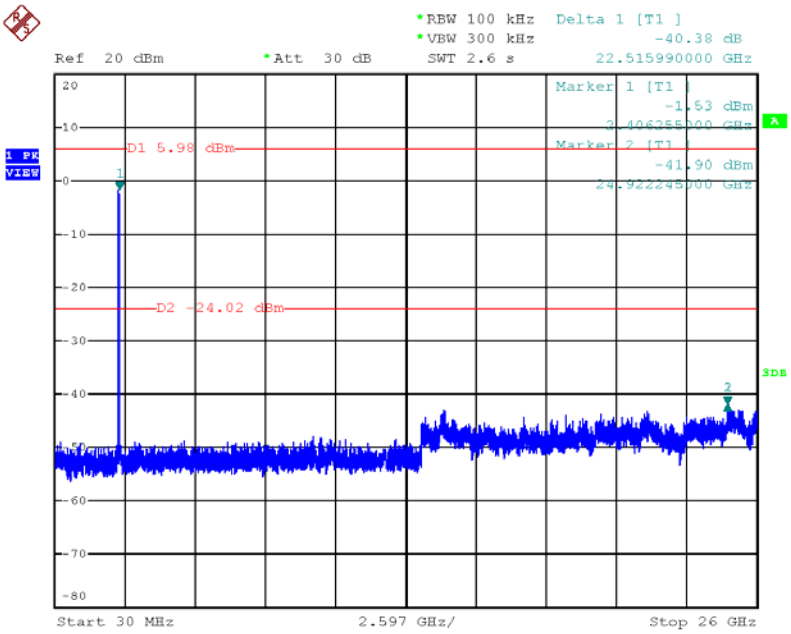
For Emission not in Restricted Band

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



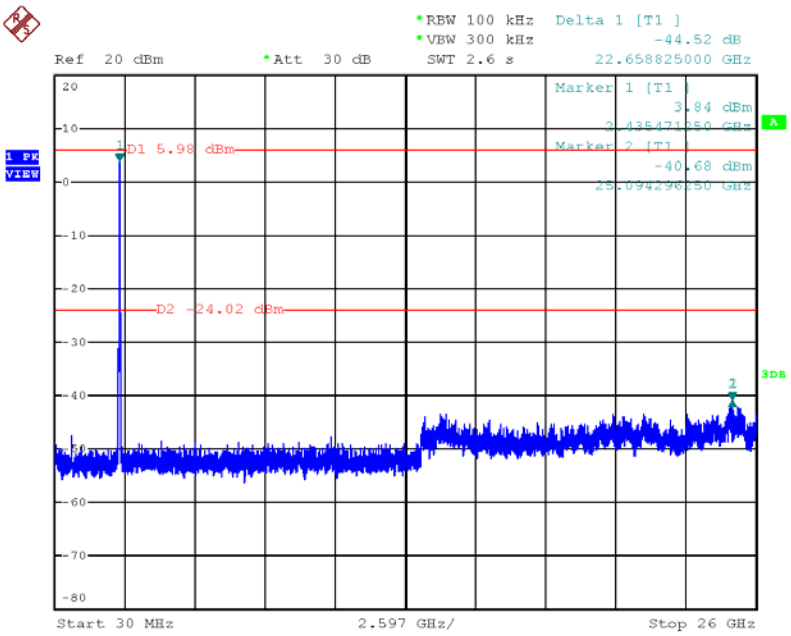
Date: 21.NOV.2012 21:34:20

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



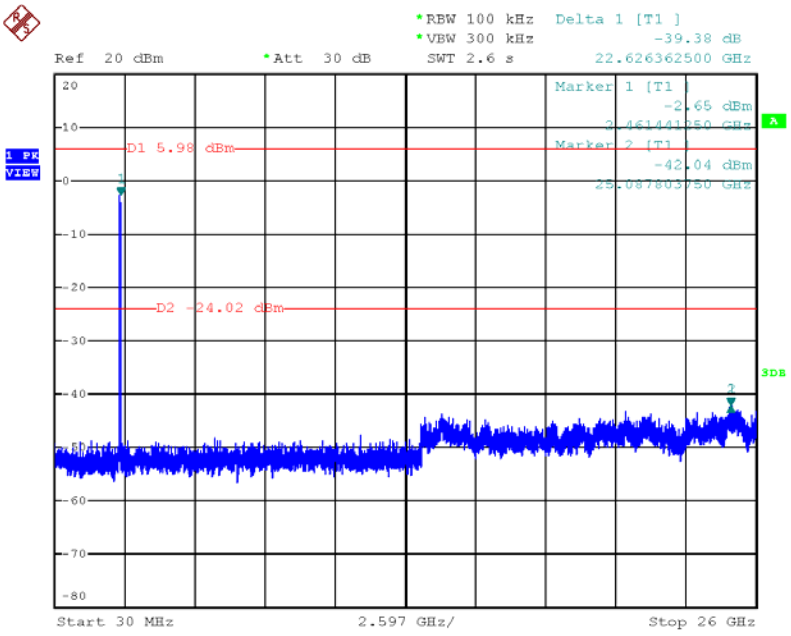
Date: 21.NOV.2012 22:13:23

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



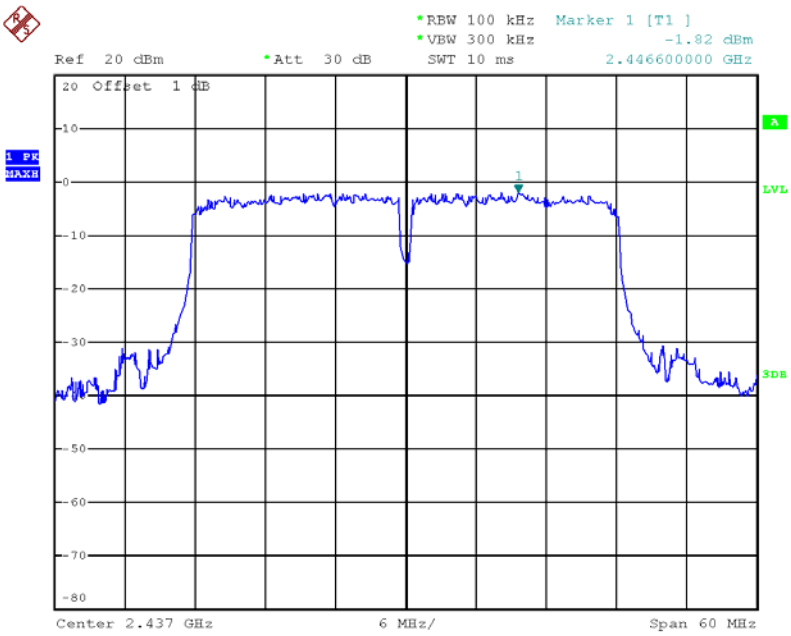
Date: 21.NOV.2012 22:13:53

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



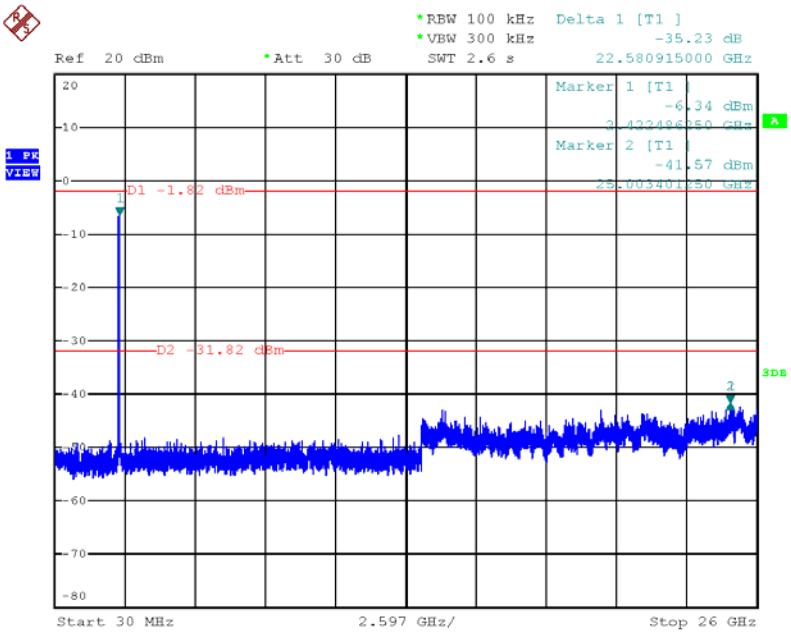
Date: 21.NOV.2012 22:14:31

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



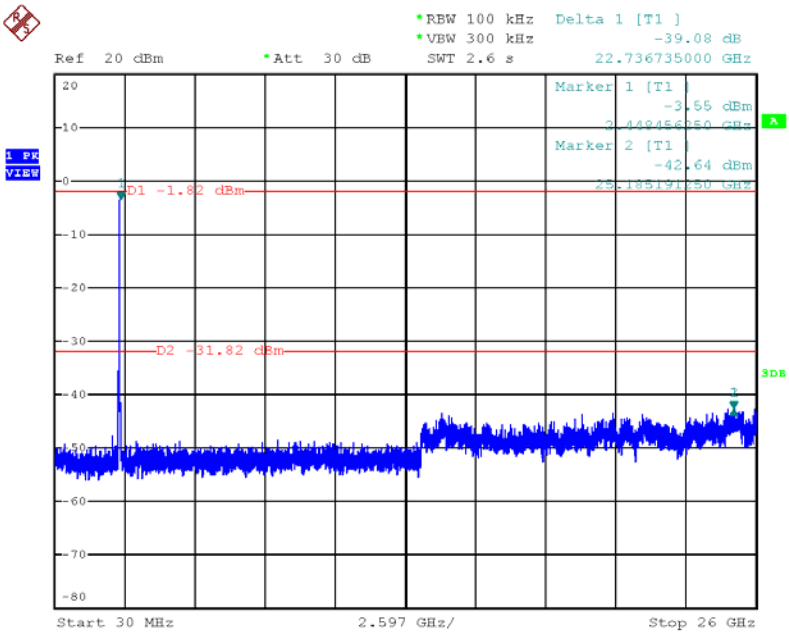
Date: 21.NOV.2012 21:39:34

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



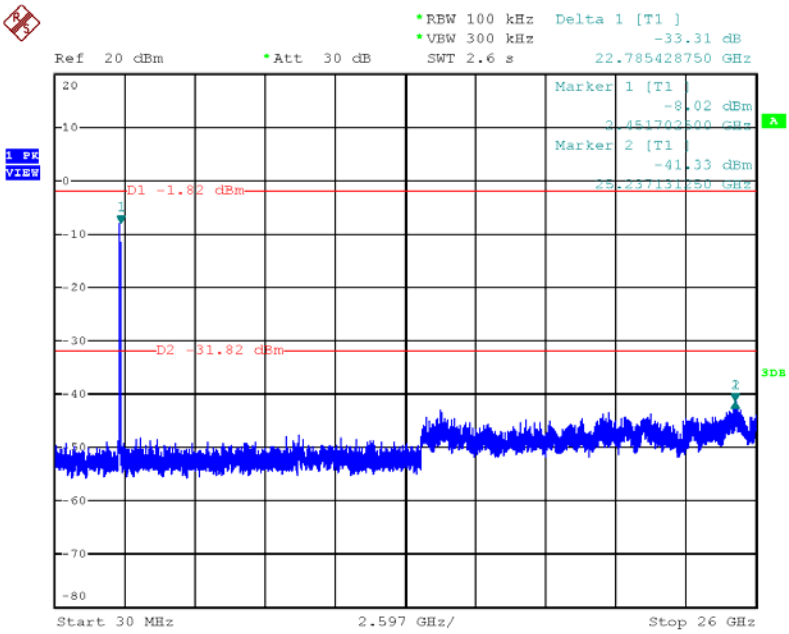
Date: 21.NOV.2012 22:16:28

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



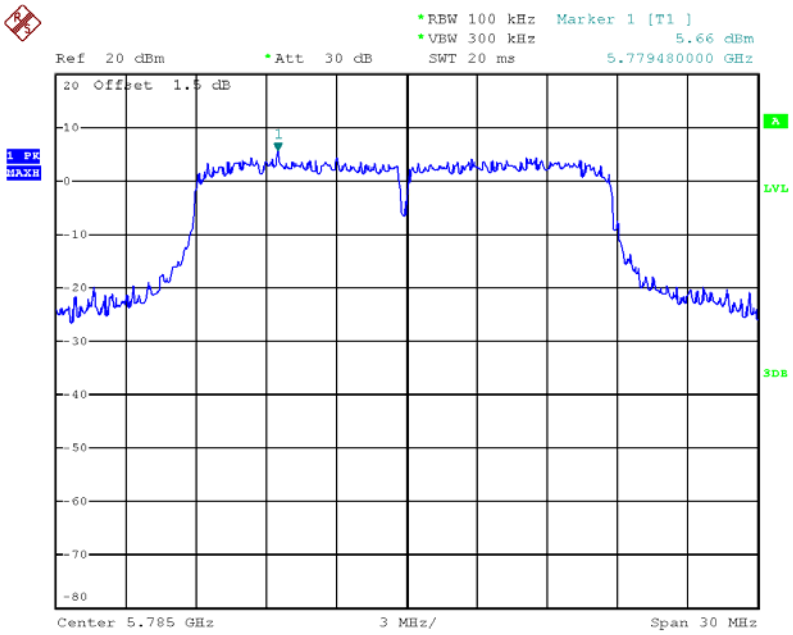
Date: 21.NOV.2012 22:16:56

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



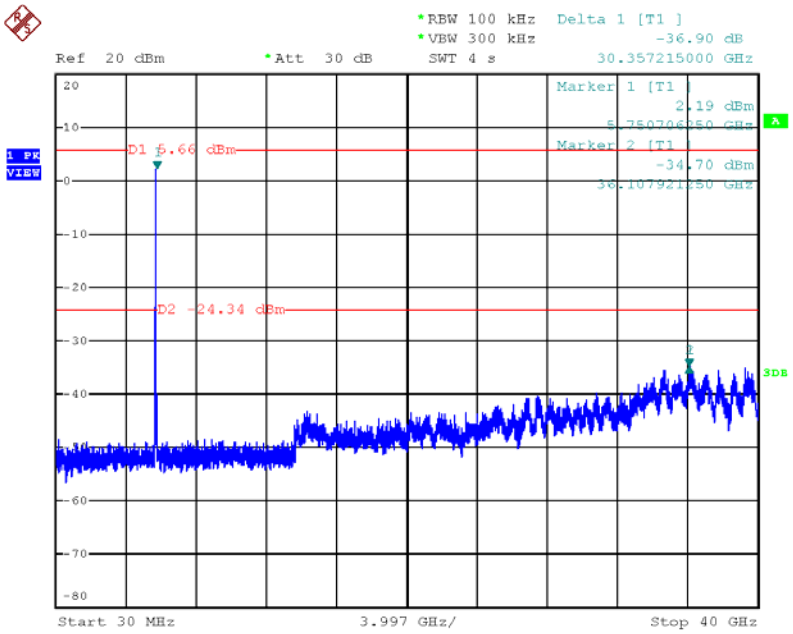
Date: 21.NOV.2012 22:17:45

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



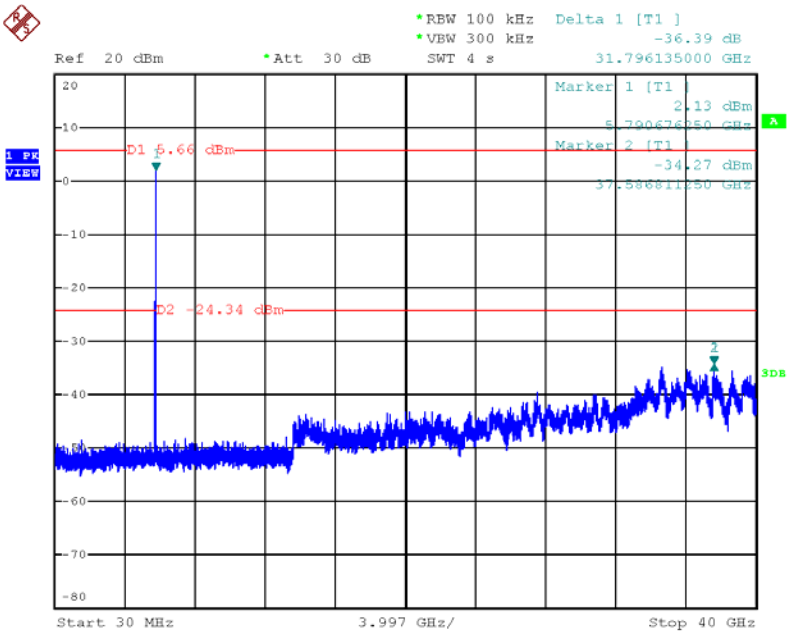
Date: 21.NOV.2012 21:50:56

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



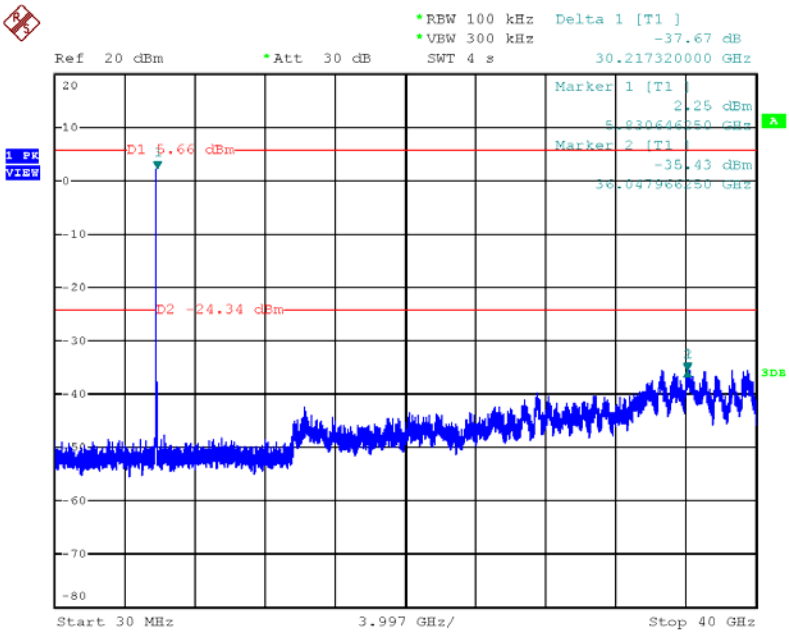
Date: 21.NOV.2012 22:21:06

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



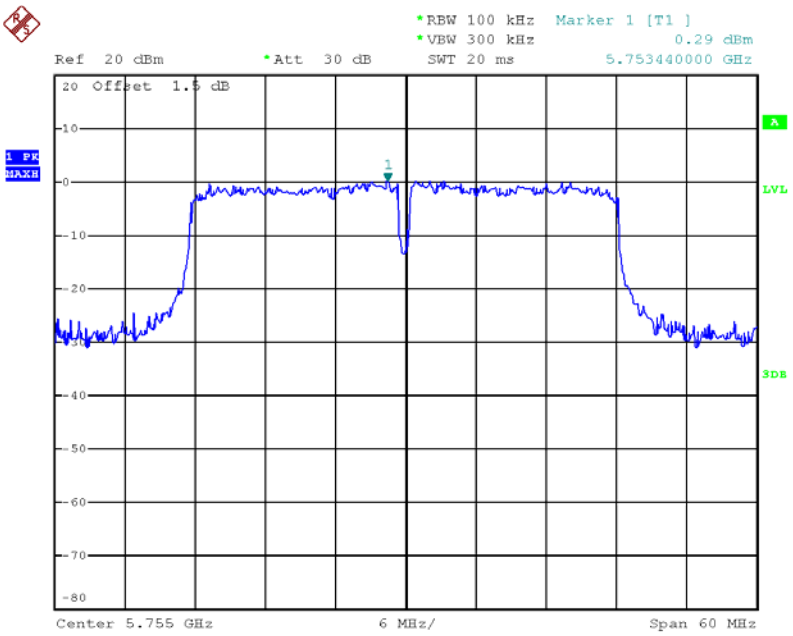
Date: 21.NOV.2012 22:21:45

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



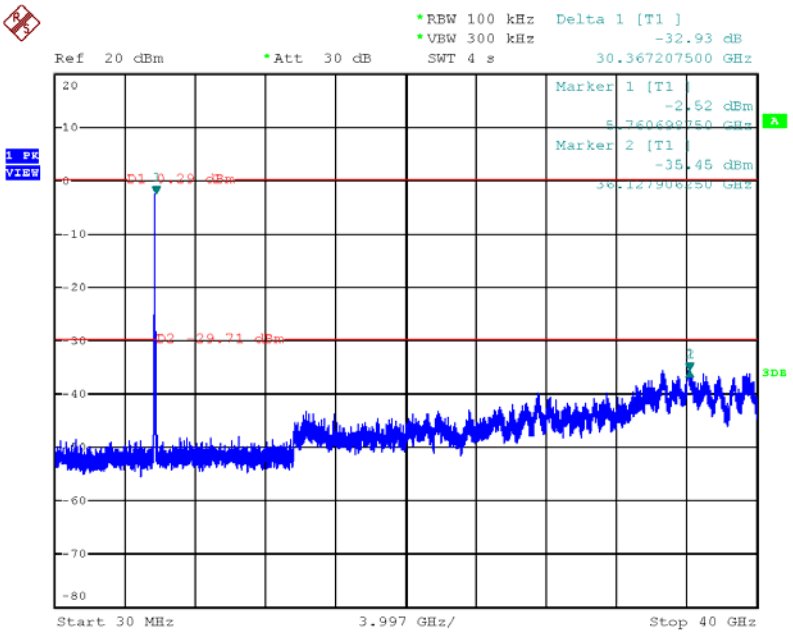
Date: 21.NOV.2012 22:22:16

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



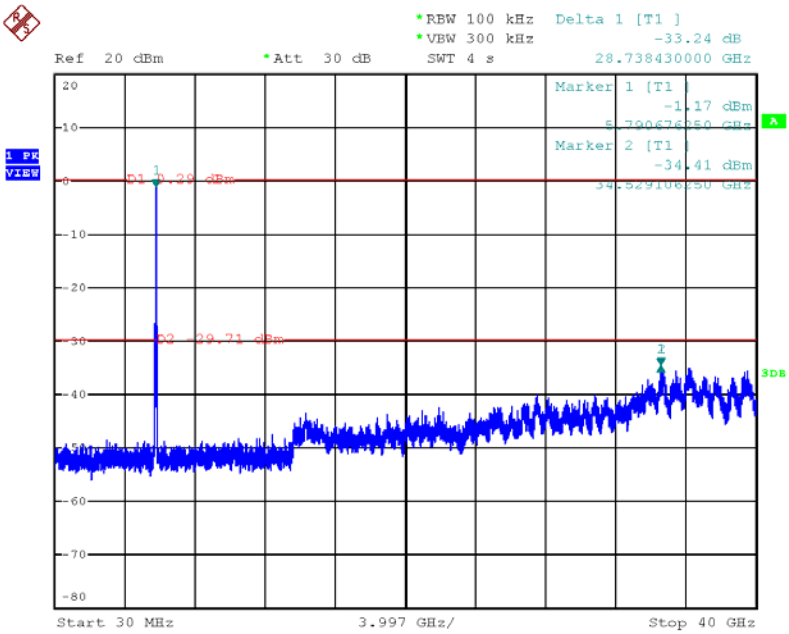
Date: 21.NOV.2012 21:53:14

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



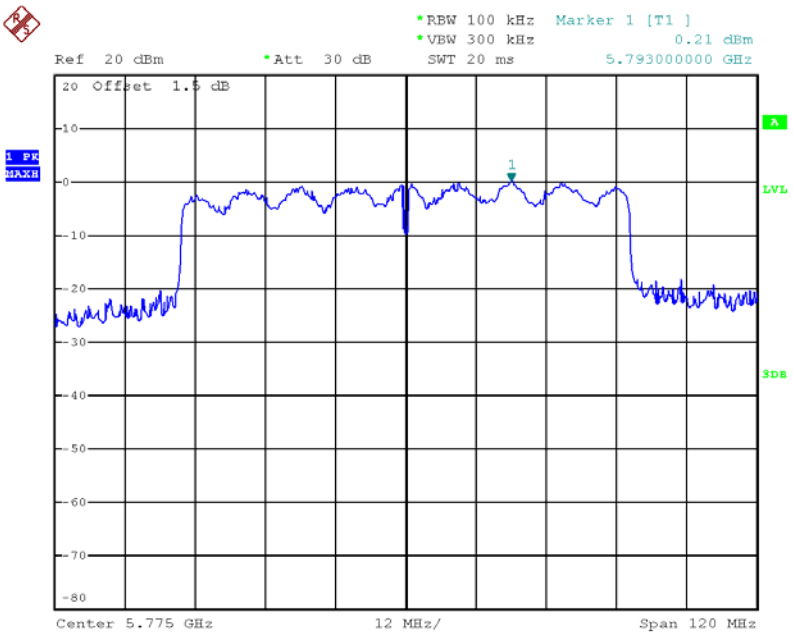
Date: 21.NOV.2012 22:29:28

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



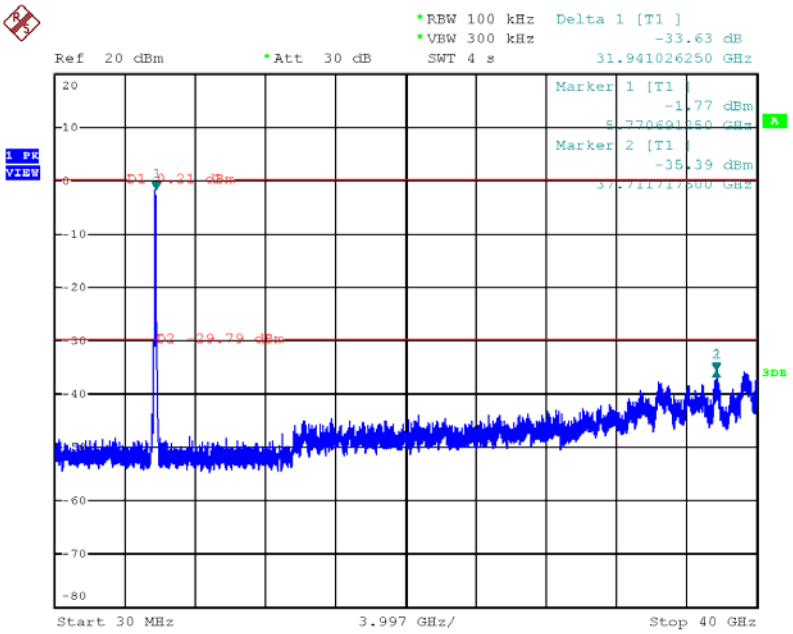
Date: 21.NOV.2012 22:28:20

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



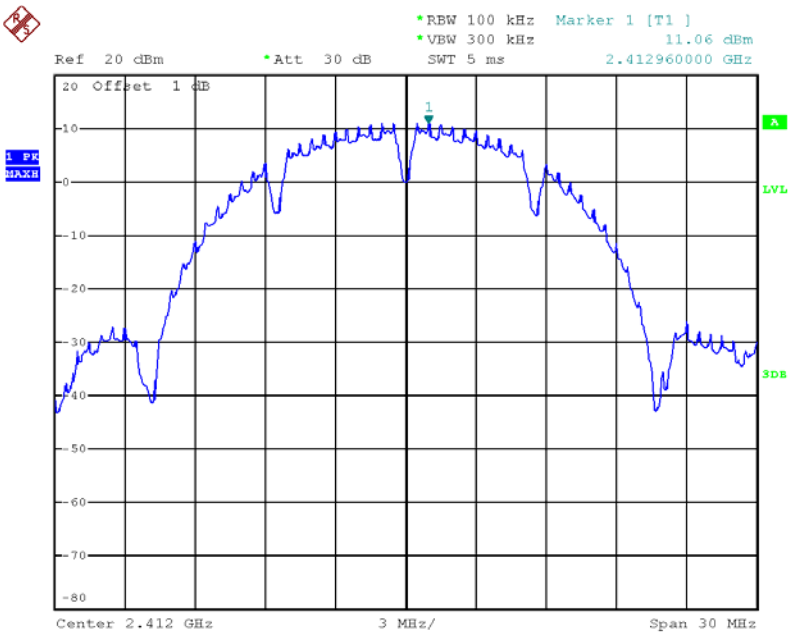
Date: 22.NOV.2012 01:10:48

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



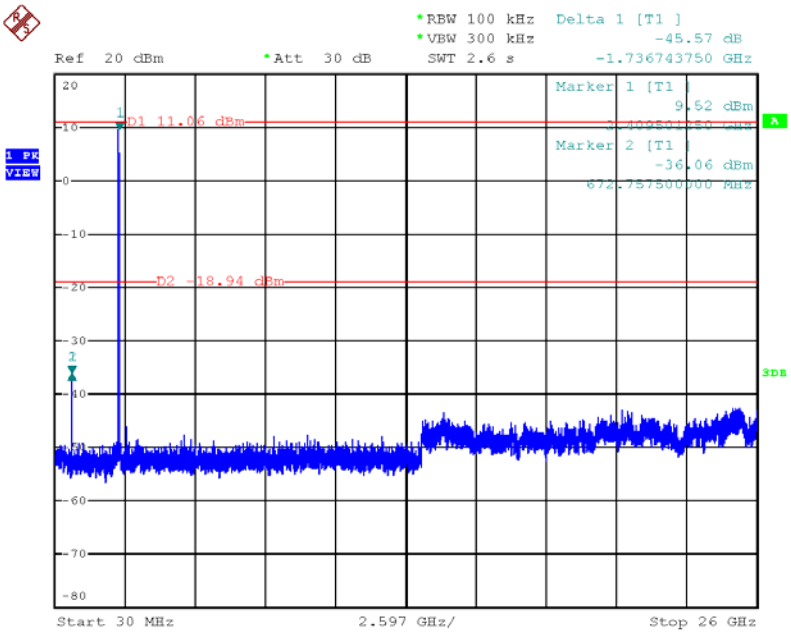
Date: 22.NOV.2012 01:14:40

Plot on Configuration IEEE 802.11b / Reference Level



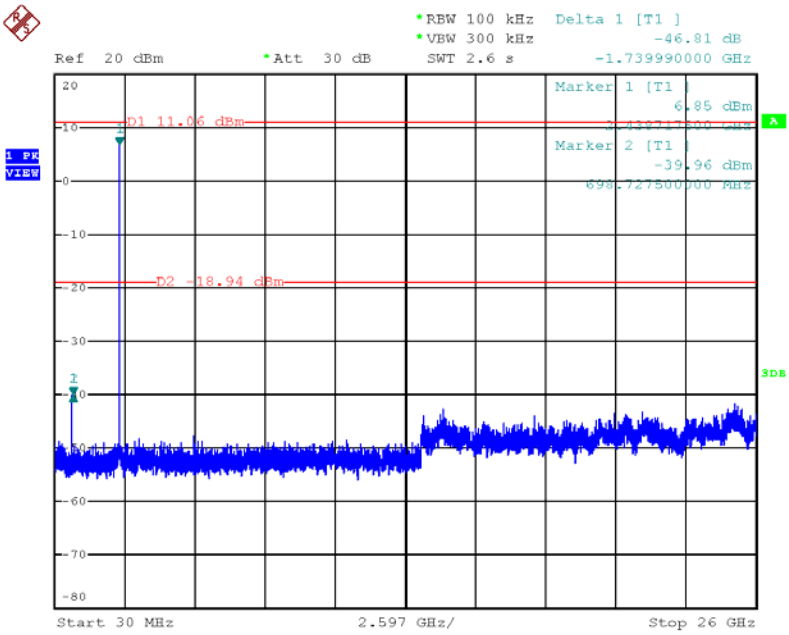
Date: 21.NOV.2012 21:22:25

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



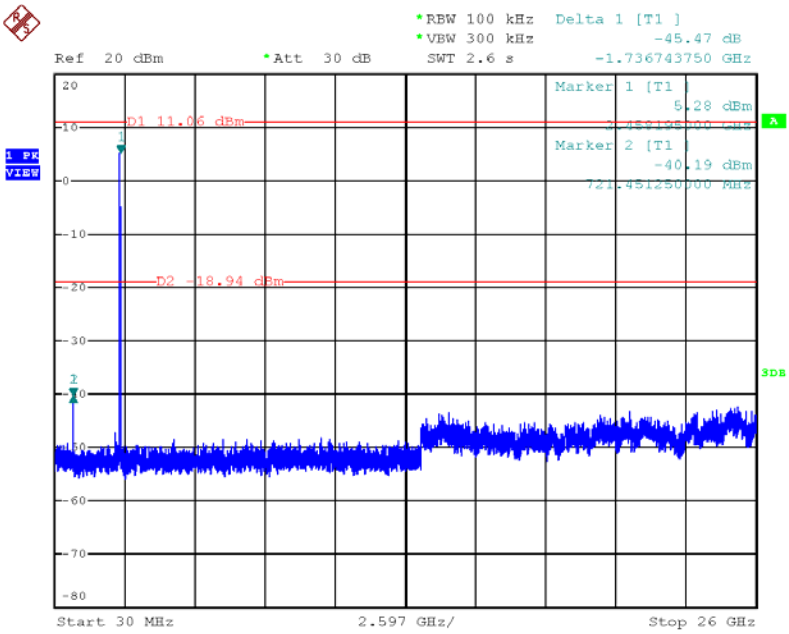
Date: 21.NOV.2012 22:05:01

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



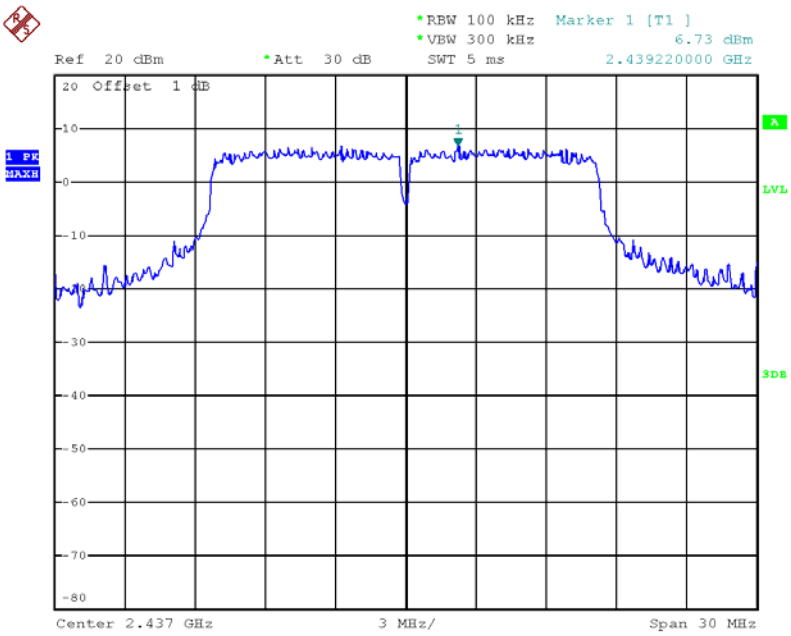
Date: 21.NOV.2012 22:05:52

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



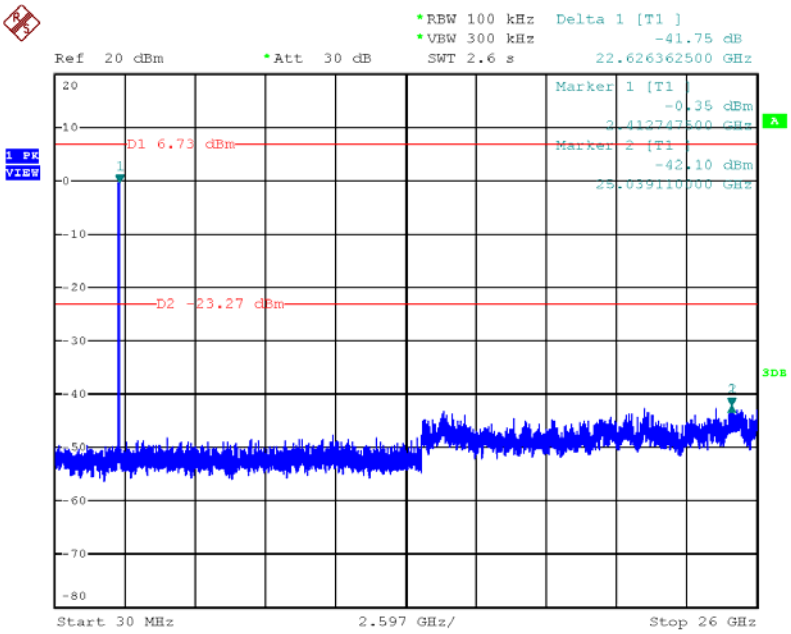
Date: 21.NOV.2012 22:06:46

Plot on Configuration IEEE 802.11g / Reference Level



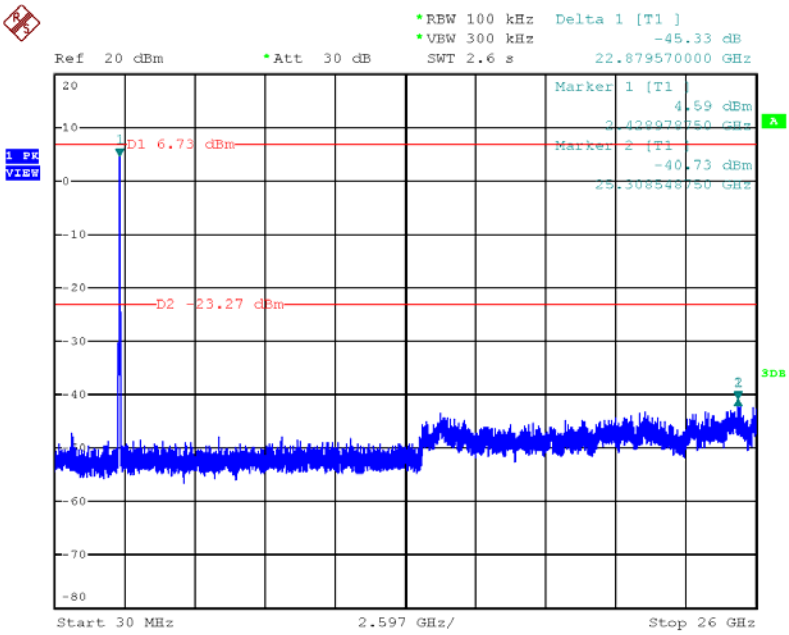
Date: 21.NOV.2012 21:27:52

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



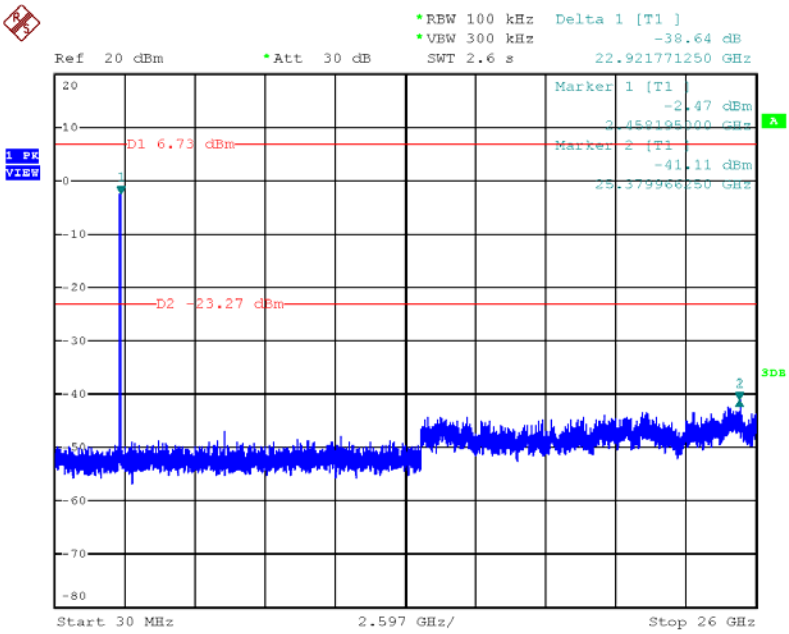
Date: 21.NOV.2012 22:08:57

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



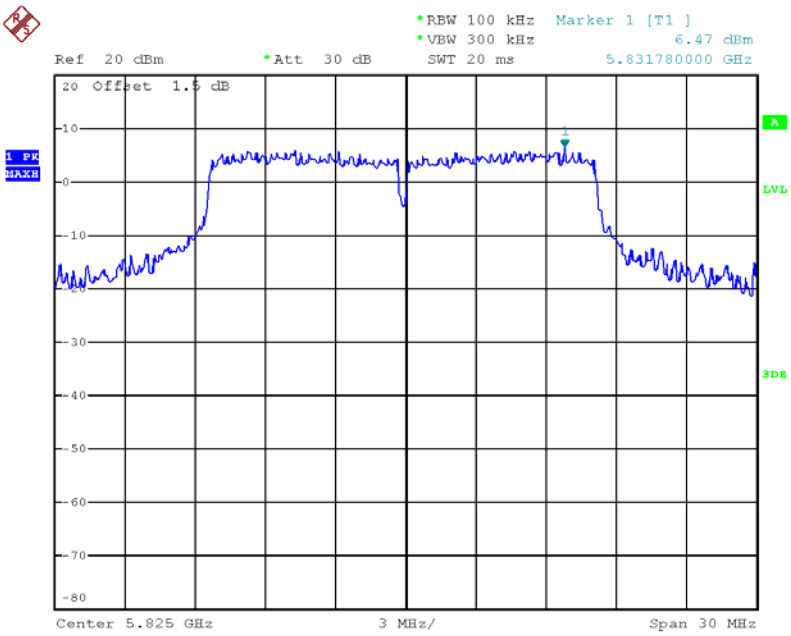
Date: 21.NOV.2012 22:09:32

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



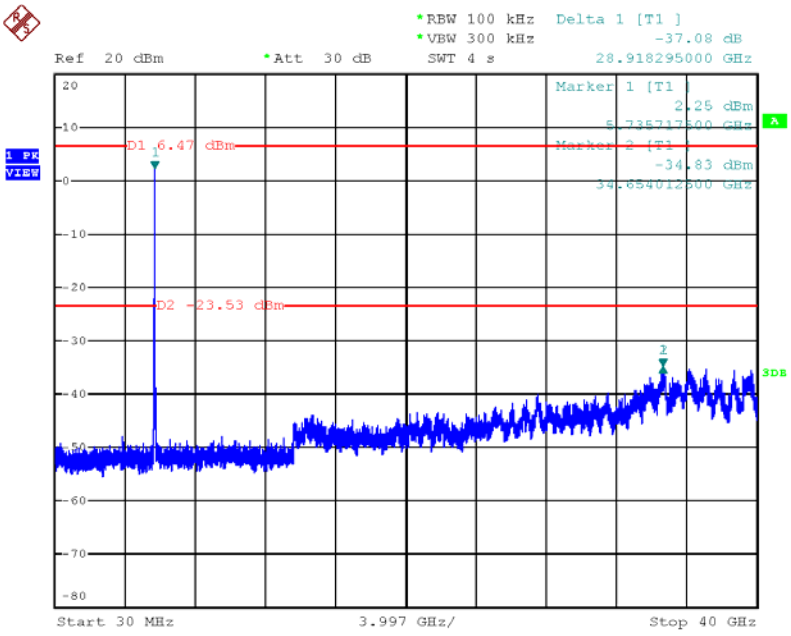
Date: 21.NOV.2012 22:10:57

Plot on Configuration IEEE 802.11a / Reference Level



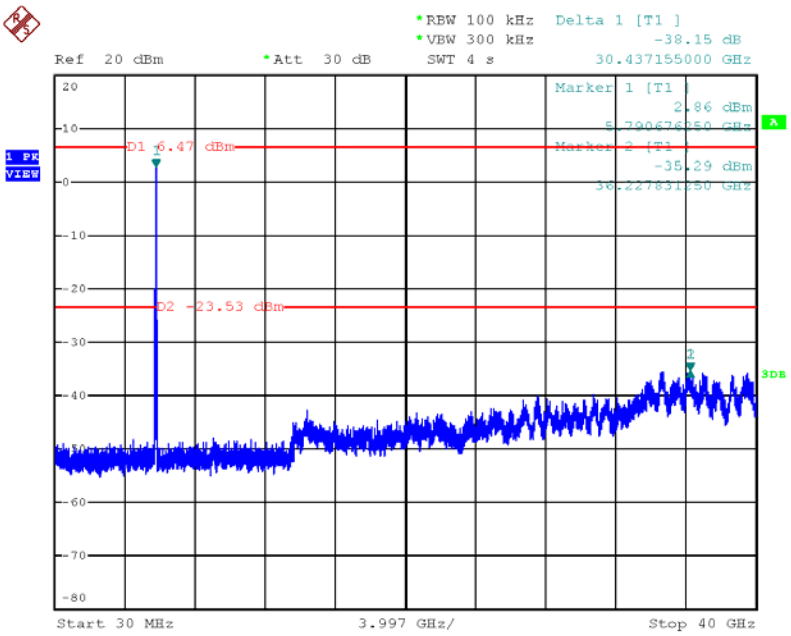
Date: 21.NOV.2012 21:43:34

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



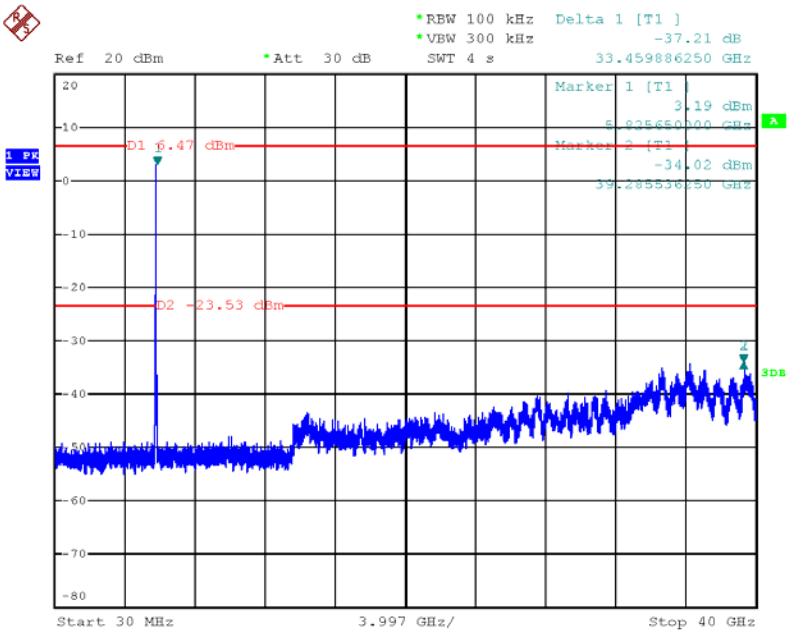
Date: 21.NOV.2012 22:31:30

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



Date: 21.NOV.2012 22:32:05

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



Date: 21.NOV.2012 22:32:31

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
Receiver	R&S	ESCS 30	100167	9 kHz - 2.75 GHz	Sep. 24, 2012	Conduction (CO01-NH)
LISN	SCHAFFNER	NNB41	04/10053	9kHz - 30MHz	Nov. 20, 2011	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	N/A	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9kHz - 30MHz	Dec. 13, 2011	Conduction (CO01-NH)
Impedance Stabilization Network	TESEQ GMBH	ISN T400A	25669	150kHz - 30MHz	Oct. 15, 2012	Conduction (CO01-NH)
Impedance Stabilization Network	TESEQ GMBH	ISN T800	26105	150kHz - 30MHz	Oct. 15, 2012	Conduction (CO01-NH)
Impedance Stabilization Network	TESEQ GMBH	ST08	24347	150kHz - 230MHz	Oct. 16, 2012	Conduction (CO01-NH)
SmartBits	ParaLink	SMB-600M	60613574	10/100/1000Mbps, Auto-Negotiation	N/A	Conduction (CO01-NH)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Oct. 08, 2012	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 05, 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)
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	Oct. 31, 2012	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Oct. 31, 2012	Conducted (TH01-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)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Pre-Amplifier	Agilent	8447D	2944A10784	9kHz ~ 1.3GHz	Feb. 03, 2012	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 29, 2011	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 31, 2012	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Dec. 14, 2011	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	Oct. 29, 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)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

NCR means Non-Calibration required.

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

P1, total 22 pages

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