SPORTON International Inc.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
Ph: 886-3-327-3456 / FAX: 886-3-327-0973 / www.sporton.com.tw

FCC RADIO TEST REPORT

Applicant's company	**Broadcom Corporation**
Applicant Address	190 Mathilda Place Sunnyvale CA 94086 U.S.A.
FCC ID	**QDS-BRCM1085**
Manufacturer's company	**Broadcom Corporation**
Manufacturer Address	190 Mathilda Place Sunnyvale CA 94086 U.S.A.

Product Name	Broadcom 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E NGFF 2230 Card
Brand Name	Broadcom
Model No.	BCM94356Z
Part No.	BCM94356Z, BCM94356ZAE
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Jul. 31, 2014
Final Test Date	Sep. 16, 2014
Submission Type	Original Equipment

Statement

Test result included in this report is for the IEEE 802.11n and IEEE 802.11b/g 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 C63.10-2013**, **47 CFR FCC Part 15 Subpart C**, **KDB 558074 D01 v03r02** and **KDB 662911 D01 v02r01**.

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

TAF
Testing Laboratory
1190

Table of Contents

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR473142AA	Rev. 01	Initial issue of report	Sep. 23, 2014

Certificate No.: CB10309161

1. CERTIFICATE OF COMPLIANCE

Product Name	:	Broadcom 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E NGFF 2230 Card
Brand Name	:	Broadcom
Model No.	:	BCM94356Z
Part No.	:	BCM94356Z, BCM94356ZAE
Applicant	:	Broadcom Corporation
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 Jul. 31, 2014 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.

Sam Chen

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	12.54 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	6.45 dB
4.3	15.247(e)	Power Spectral Density	Complies	6.48 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	3.42 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.09 dB
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

IEEE 802.11n

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	see the below table for IEEE 802.11n
Data Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	see the below table for IEEE 802.11n
Frequency Range	2400 ~ 2483.5MHz
Channel Number	12 for 20MHz bandwidth ; 8 for 40MHz bandwidth
Channel Band Width (99%)	MCS0 (HT20): 17.92 MHz ; MCS0 (HT40): 36.48 MHz
Maximum Conducted Output Power	MCS0 (HT20): 22.19 dBm ; MCS0 (HT40): 15.91 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

IEEE 802.11b/g

Items	Description
Product Type	WLAN (2TX, 2RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	DSSS for IEEE 802.11b ; OFDM for IEEE 802.11g
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
Channel Number	12
Channel Band Width (99%)	11b: 12.48 MHz ; 11g: 16.72 MHz
Maximum Conducted Output Power	11b: 23.55 dBm ; 11g: 22.25 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming	☐ Without beamforming
STBC Function	☒ With STBC	☐ Without STBC

Note: 1. The EUT has beamforming function for 802.11n/ac in 5GHz band 1~4.

2. The EUT has STBC function for 802.11n/ac in 5GHz band 1~4.

3. The MIMO transmission mode is correlated.

Antenna and Band width

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

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	2	MCS 0-15
802.11n (HT40)	2	MCS 0-15
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT support HT20 and HT40. Note 2: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n		

3.2. Accessories

N/A

3.3. Table for Filed Antenna

Set	Ant.	Brand	Part No.	Antenna Type	Connector	Gain (dBi)				
						2.4G/ BT	5G B1	5G B2	5G B3	5G B4
1	1	MAG.LAYERS	PCA-4077-25GC1-A1-RT	WLAN/BT antenna	I-PEX A13	3.33	5.85	5.85	6.21	6.21
	2	MAG.LAYERS	PCA-4077-25GC1-A1-RT	WLAN/BT antenna	I-PEX A13	3.33	5.85	5.85	6.21	6.21

Note: The EUT has one set of antenna, and each set contains two antennas.

Chain 1: Connect to Ant. 1, Chain 2: Connect to Ant. 2.

For 2.4 GHz WLAN function (2TX/2RX):

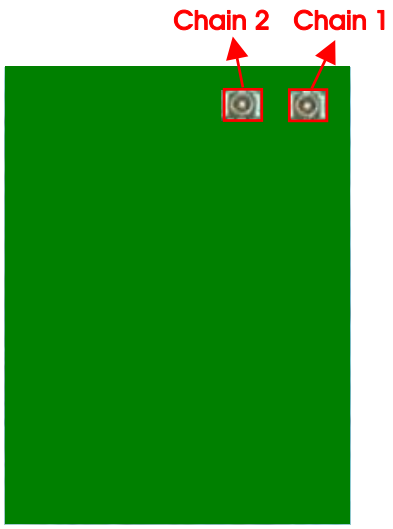
Chain 1 and Chain 2 could transmit/receive simultaneously.

For Bluetooth function (1TX/1RX):

Only Chain 1 could transmit/receive simultaneously.

For 5 GHz WLAN function (2TX/2RX):

Chain 1 and Chain 2 could transmit/receive simultaneously.



3.4. Table for Carrier Frequencies

There are two bandwidth systems.

For 20MHz bandwidth systems, use Channel 1~Channel 12.

For 40MHz bandwidth systems, use Channel 3~Channel 10.

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	12	2467 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.

Test Items	Mode	Data Rate	Channel	Chain
AC Power Line Conducted Emissions	Normal Link	-	-	-
Maximum Conducted Output Power	802.11n HT20	MCS0	1/6/11/12	1+2
	802.11n HT40	MCS0	3/6/9/10	1+2
	11b/BPSK	1 Mbps	1/6/11/12	1+2
	11g/BPSK	6 Mbps	1/6/11/12	1+2
Power Spectral Density	802.11n HT20	MCS0	1/6/11/12	1+2
	802.11n HT40	MCS0	3/6/9/10	1+2
	11b/BPSK	1 Mbps	1/6/11/12	1+2
	11g/BPSK	6 Mbps	1/6/11/12	1+2
6dB Spectrum Bandwidth	802.11n HT20	MCS0	1/6/11/12	1+2
	802.11n HT40	MCS0	3/6/9/10	1+2
	11b/BPSK	1 Mbps	1/6/11/12	1+2
	11g/BPSK	6 Mbps	1/6/11/12	1+2
Radiated Emissions 9kHz~1GHz	Normal Link	-	-	-
Radiated Emissions 1GHz~10th Harmonic	802.11n HT20	MCS0	1/6/11/12	1+2
	802.11n HT40	MCS0	3/6/9/10	1+2
	11b/BPSK	1 Mbps	1/6/11/12	1+2
	11g/BPSK	6 Mbps	1/6/11/12	1+2
Band Edge Emissions	802.11n HT20	MCS0	1/6/11/12	1+2
	802.11n HT40	MCS0	3/6/9/10	1+2
	11b/BPSK	1 Mbps	1/6/11/12	1+2
	11g/BPSK	6 Mbps	1/6/11/12	1+2

The following test modes were performed for all tests:

For AC Power Line Conducted Emissions test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emissions 9kHz~1GHz test:

Radiated Emissions 9kHz~1GHz test was perform at its 3-axis (X-axis, Y-axis and Z-axis). After evaluating, X-axis was the worst case. Thus, measurements for Radiated Emissions 9kHz~1GHz test will follow this test mode.

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

Mode 1 is the worst case, so it was selected to record in this test report.

For Radiated Emissions above 1GHz test:

Radiated Emissions above 1GHz test was perform at its 3-axis (X-axis, Y-axis and Z-axis). X-axis was the worst case, so it's recorded in this test report.

For Radiated Emission Co-location test:

Mode 1. 2.4GHz WLAN function + Bluetooth function

Mode 2. 5GHz WLAN function + Bluetooth function

3.6. Table for Testing Locations

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

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

3.7. Table for Multiple Listing

The EUT has two part numbers which are identical to each other in all aspects except for the following table:

Model No.	Part No.	Description
BCM94356Z	BCM94356Z	The base pin between these two models is different.
	BCM94356ZAE	

From the above models, part number: BCM94356Z was selected as representative model for the test and its data was recorded in this report.

3.8. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
Wireless AP	Planex	GW-AP54SGX	KA220030603014-1
Test fixture	Broadcom	BCM9NGFF2EC_1	N/A
Broadcom 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E NGFF 2230 Card (Device)	Broadcom	BCM94356Z	QDS-BRCM1085
NB	DELL	E4300	DoC
Mouse	Logitech	M-U0026	DoC
Earphone	SHYARO CHI	MIC-04	N/A
NB	DELL	E4300	DoC
Test fixture	Broadcom	BCM9NGFF2EC_1	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
NB	DELL	E6430	DoC
Test fixture	Broadcom	BCM9NGFF2EC_1	N/A

For Test Site No: 03CH01-CB (below 1GHz)

Support Unit	Brand	Model	FCC ID
Wireless AP	Netgear	R6300V2	PY313200227
Test fixture	Broadcom	BCM9NGFF2EC_1	N/A
Broadcom 802.11a/b/g/n/ac WLAN + Bluetooth PCI-E NGFF 2230 Card (Device)	Broadcom	BCM94356Z	QDS-BRCM1085
NB	DELL	M1340	E2K4965AGNM
Mouse	Logitech	M-U0026	DoC
Earphone	E-BOOKI	E-EPC040	N/A
NB	DELL	E4300	RSE-TG233
Test fixture	Broadcom	BCM9NGFF2EC_1	N/A

For Test Site No: 03CH01-CB (above 1GHz)

Support Unit	Brand	Model	FCC ID
NB	DELL	E4300	RSE-TG233
Test fixture	Broadcom	BCM9NGFF2EC_1	N/A

3.9. Table for Parameters of Test Software Setting

During testing, Channel and 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.

Power Parameters of IEEE 802.11n

Test Software Version	Manual Tool version: 2.0.2.1			
Frequency	2412 MHz	2437 MHz	2462 MHz	2467 MHz
MCS0 HT20	57	77	53	45
Frequency	2422 MHz	2437 MHz	2452 MHz	2457 MHz
MCS0 HT40	44	52	51	46

Power Parameters of IEEE 802.11b/g

Test Software Version	Manual Tool version: 2.0.2.1			
Frequency	2412 MHz	2437 MHz	2462 MHz	2467 MHz
IEEE 802.11b	68	80	70	66
IEEE 802.11g	55	77	54	53

3.10. EUT Operation during Test

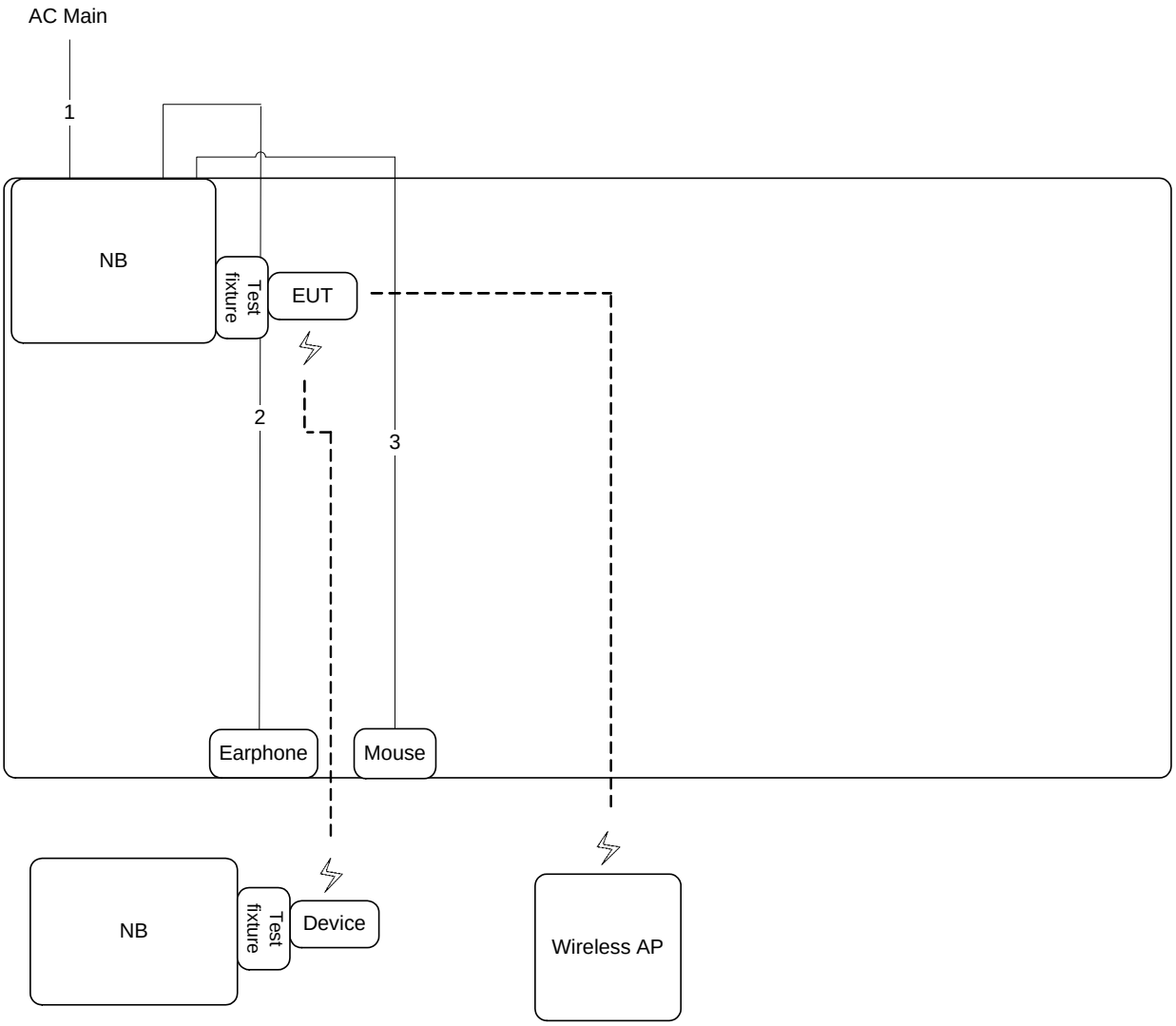
The EUT was programmed to be in continuously transmitting mode.

3.11. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11n MCS0 HT20	12.44	13.04	95.40	0.20	0.08
802.11n MCS0 HT40	2.06	2.16	95.37	0.21	0.49
802.11b	1.92	2.01	95.52	0.20	0.52
802.11g	0.93	1.03	90.29	0.44	1.08

3.12. Test Configurations

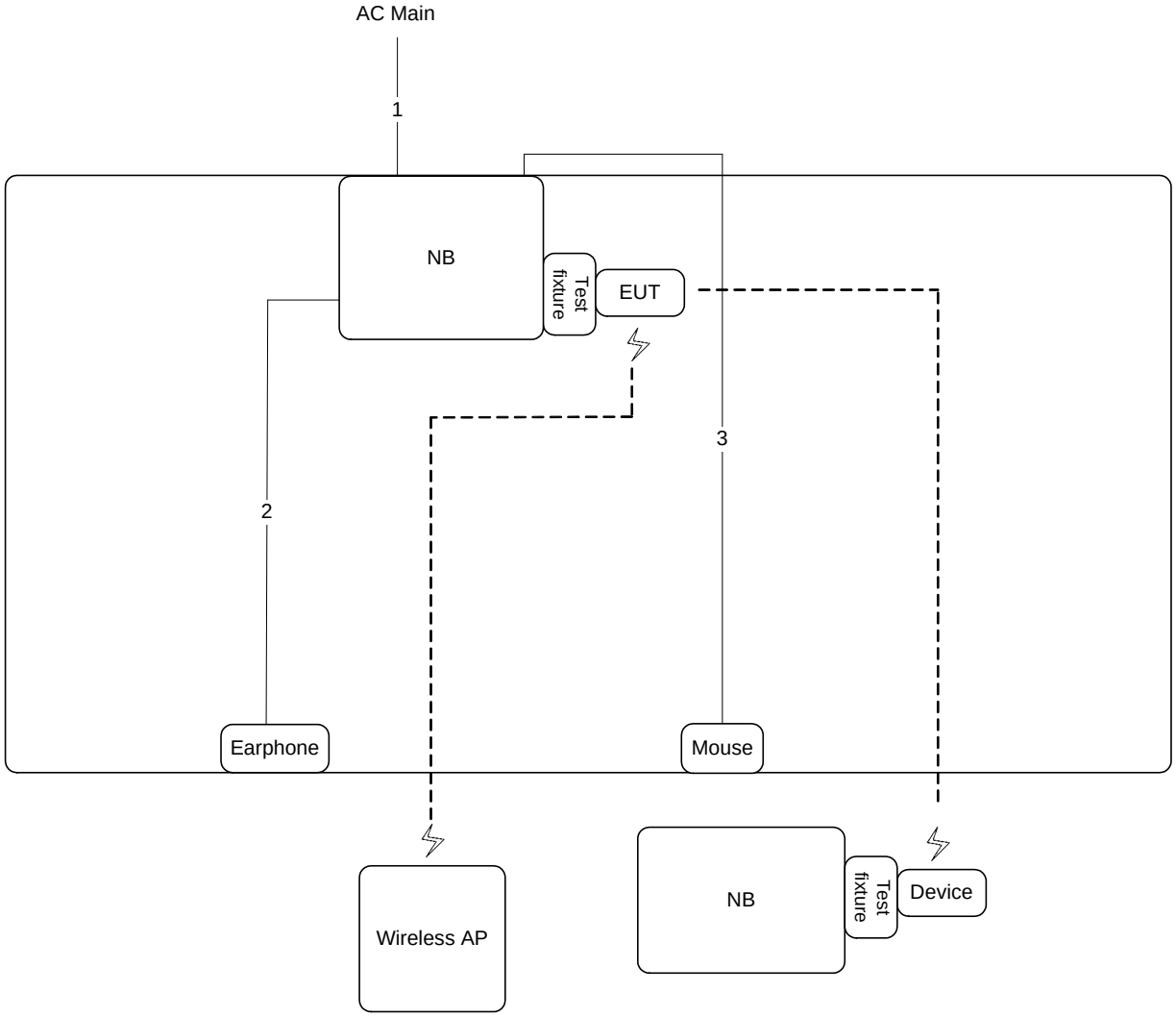
3.12.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	Audio cable	No	1.5m
3	USB cable	Yes	1.8m

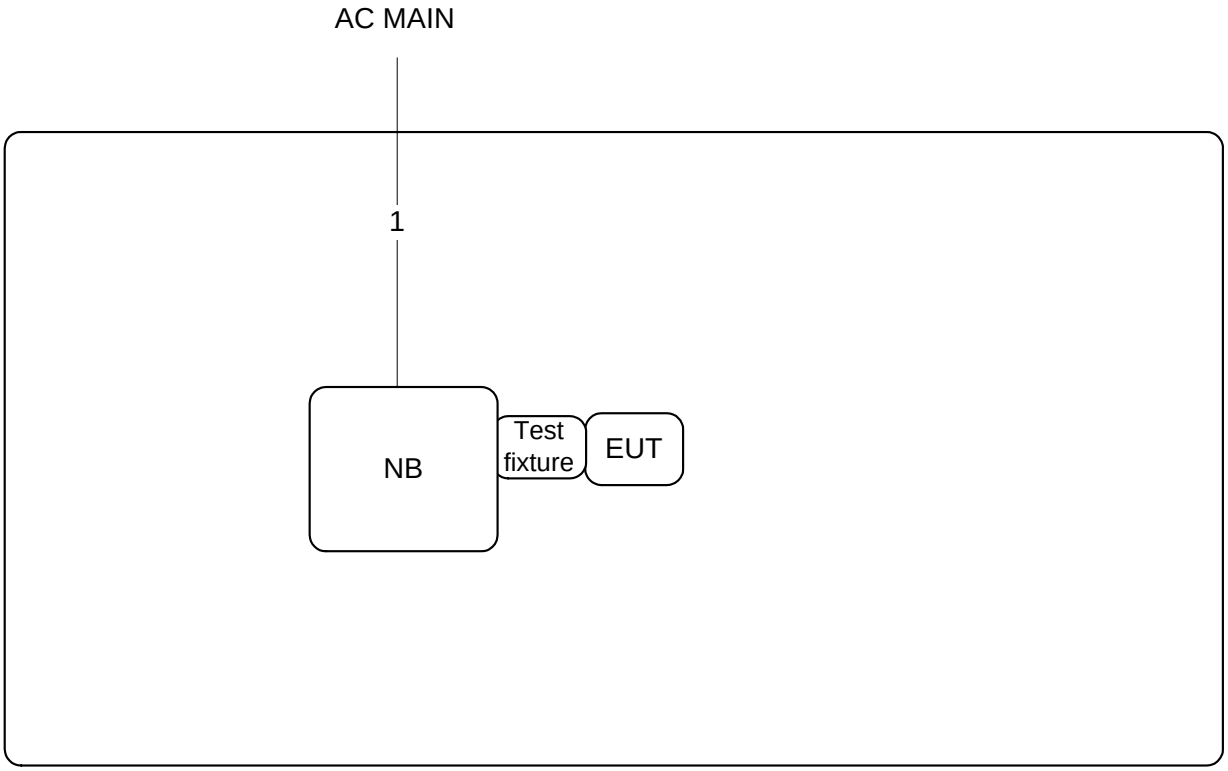
3.12.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	Audio cable	No	1.1m
3	USB cable	Yes	1.8m

Test Configuration: above 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.8m

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

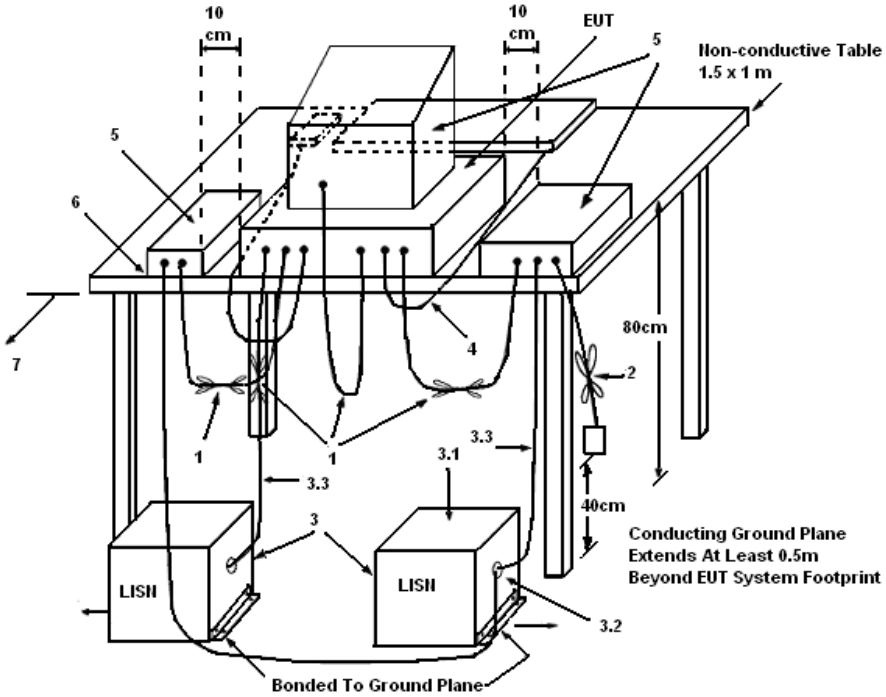
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

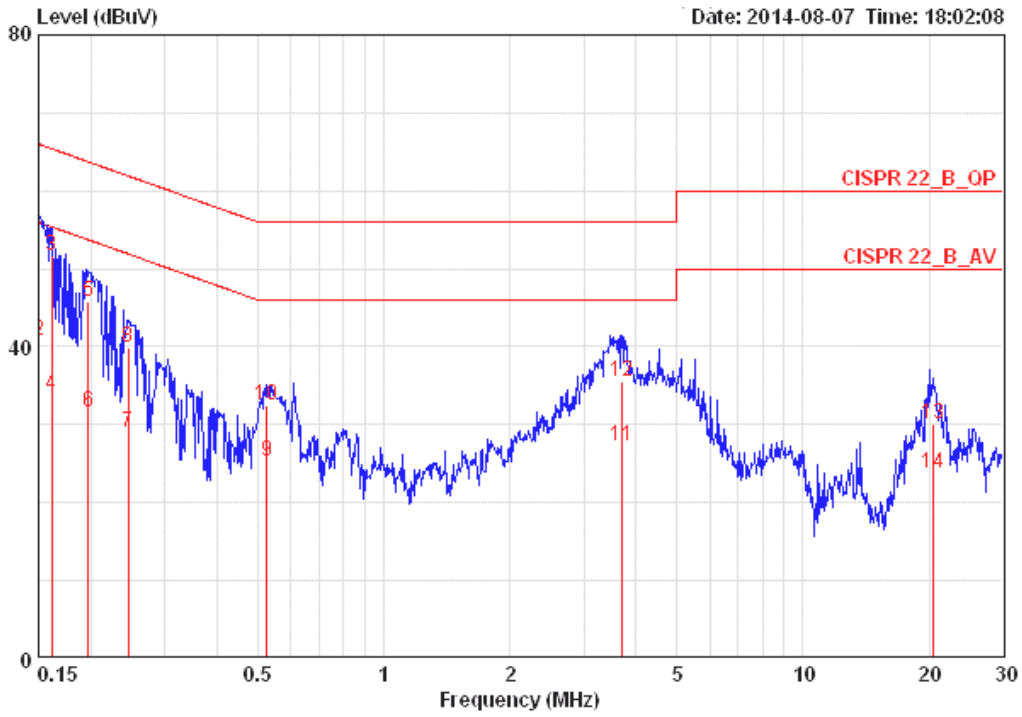
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

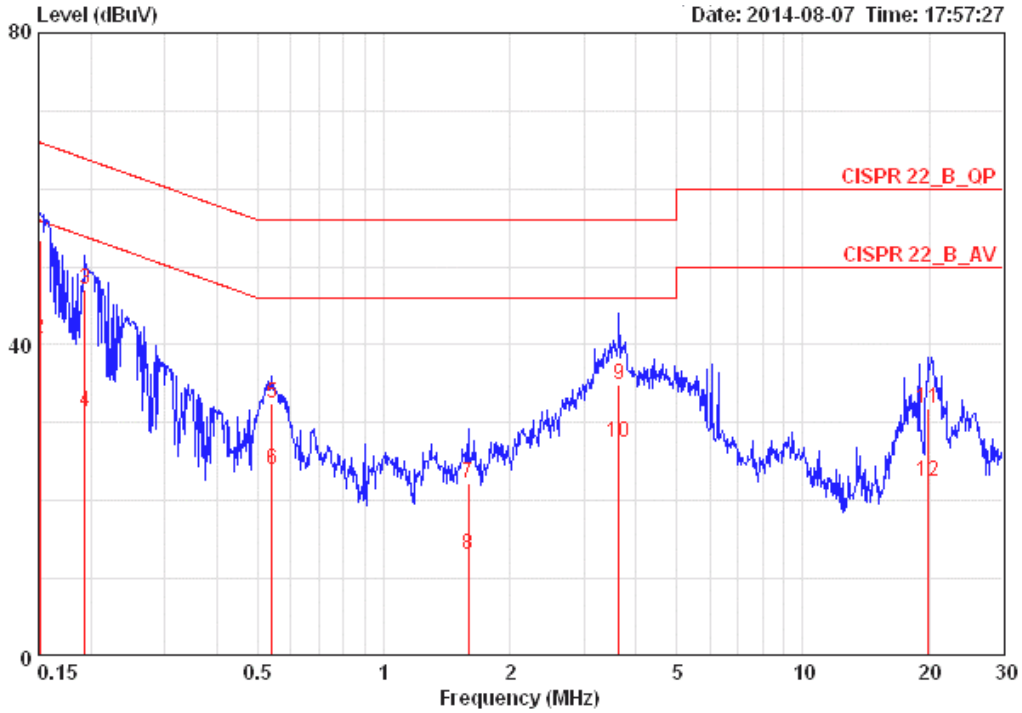
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	25°C	Humidity	52%
Test Engineer	Parody Lin	Phase	Line
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	LISN Factor	Read Level	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dB	dBuV	dB		
1 @	0.15000	53.37	-12.63	66.00	0.10	53.11	0.16	LINE	QP
2 @	0.15000	40.67	-15.33	56.00	0.10	40.41	0.16	LINE	AVERAGE
3 @	0.16155	51.63	-13.75	65.38	0.10	51.37	0.16	LINE	QP
4	0.16155	33.77	-21.61	55.38	0.10	33.51	0.16	LINE	AVERAGE
5	0.19758	45.86	-17.85	63.71	0.10	45.60	0.16	LINE	QP
6	0.19758	31.55	-22.16	53.71	0.10	31.29	0.16	LINE	AVERAGE
7	0.24552	28.97	-22.94	51.91	0.10	28.70	0.17	LINE	AVERAGE
8	0.24552	39.91	-22.00	61.91	0.10	39.64	0.17	LINE	QP
9	0.52655	25.28	-20.72	46.00	0.11	24.98	0.19	LINE	AVERAGE
10	0.52655	32.56	-23.44	56.00	0.11	32.26	0.19	LINE	QP
11	3.700	27.30	-18.70	46.00	0.20	26.80	0.29	LINE	AVERAGE
12	3.700	35.62	-20.38	56.00	0.20	35.12	0.29	LINE	QP
13	20.377	30.19	-29.81	60.00	0.48	29.19	0.52	LINE	QP
14	20.377	23.83	-26.17	50.00	0.48	22.83	0.52	LINE	AVERAGE

Temperature	25°C	Humidity	52%
Test Engineer	Parody Lin	Phase	Neutral
Configuration	Normal Link	Test Mode	Mode 1



	Freq	Level	Over Limit	Limit Line	LISN Factor	Read Level	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dB	dBuV	dB		
1 @	0.15080	53.42	-12.54	65.96	0.09	53.17	0.16	NEUTRAL	QP
2 @	0.15080	40.74	-15.22	55.96	0.09	40.49	0.16	NEUTRAL	AVERAGE
3 @	0.19344	47.04	-16.84	63.89	0.09	46.79	0.16	NEUTRAL	QP
4	0.19344	31.48	-22.40	53.89	0.09	31.23	0.16	NEUTRAL	AVERAGE
5	0.54068	32.46	-23.54	56.00	0.10	32.17	0.19	NEUTRAL	QP
6	0.54068	23.97	-22.03	46.00	0.10	23.68	0.19	NEUTRAL	AVERAGE
7	1.593	22.20	-33.80	56.00	0.13	21.83	0.23	NEUTRAL	QP
8	1.593	12.98	-33.02	46.00	0.13	12.61	0.23	NEUTRAL	AVERAGE
9	3.642	34.87	-21.13	56.00	0.18	34.39	0.29	NEUTRAL	QP
10	3.642	27.37	-18.63	46.00	0.18	26.89	0.29	NEUTRAL	AVERAGE
11	19.950	31.75	-28.25	60.00	0.44	30.80	0.51	NEUTRAL	QP
12	19.950	22.55	-27.45	50.00	0.44	21.60	0.51	NEUTRAL	AVERAGE

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceed 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.2.2. Measuring Instruments and Setting

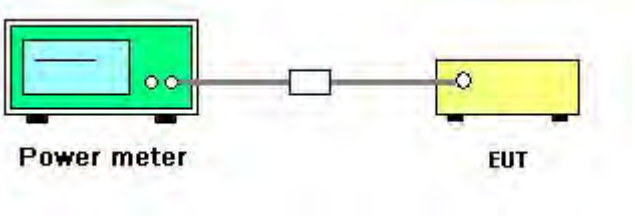
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 KDB 558074 D01 v03r02 section 9.2.3.2 Measurement using a power meter (PM).
2. Multiple antenna systems was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
3. 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	20°C	Humidity	52%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n
Test Date	Sep. 10, 2014		

Configuration IEEE 802.11n MCS0 HT20

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	14.28	14.06	17.18	30.00	Complies
6	2437 MHz	19.34	19.01	22.19	30.00	Complies
11	2462 MHz	13.23	13.15	16.20	30.00	Complies
12	2467 MHz	11.45	11.12	14.30	30.00	Complies

Configuration IEEE 802.11n MCS0 HT20 / Power table for SAR only

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	14.28	14.06	17.18	30.00	Complies
6	2437 MHz	14.36	14.09	17.24	30.00	Complies
11	2462 MHz	13.23	13.15	16.20	30.00	Complies
12	2467 MHz	11.45	11.12	14.30	30.00	Complies

Configuration IEEE 802.11n MCS0 HT40

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
3	2422 MHz	10.94	10.53	13.75	30.00	Complies
6	2437 MHz	12.91	12.88	15.91	30.00	Complies
9	2452 MHz	12.67	12.62	15.66	30.00	Complies
10	2457 MHz	11.55	11.21	14.39	30.00	Complies

Configuration IEEE 802.11n MCS0 HT40 / Power table for SAR only

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
3	2422 MHz	10.94	10.53	13.75	30.00	Complies
6	2437 MHz	12.91	12.88	15.91	30.00	Complies
9	2452 MHz	12.67	12.62	15.66	30.00	Complies
10	2457 MHz	11.55	11.21	14.39	30.00	Complies

Temperature	20°C	Humidity	52%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b/g
Test Date	Sep. 10, 2014		

Configuration IEEE 802.11b

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	17.31	17.18	20.26	30.00	Complies
6	2437 MHz	20.45	20.63	23.55	30.00	Complies
11	2462 MHz	18.05	17.75	20.91	30.00	Complies
12	2467 MHz	16.89	16.74	19.83	30.00	Complies

Configuration IEEE 802.11b / Power table for SAR only

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	14.28	14.03	17.17	30.00	Complies
6	2437 MHz	14.32	14.06	17.20	30.00	Complies
11	2462 MHz	14.29	14.07	17.19	30.00	Complies
12	2467 MHz	14.31	14.02	17.18	30.00	Complies

Configuration IEEE 802.11g

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	13.87	13.76	16.83	30.00	Complies
6	2437 MHz	19.41	19.07	22.25	30.00	Complies
11	2462 MHz	13.45	13.36	16.42	30.00	Complies
12	2467 MHz	13.23	13.25	16.25	30.00	Complies

Configuration IEEE 802.11g / Power table for SAR only

Channel	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	13.87	13.76	16.83	30.00	Complies
6	2437 MHz	14.37	14.05	17.22	30.00	Complies
11	2462 MHz	13.45	13.36	16.42	30.00	Complies
12	2467 MHz	13.23	13.25	16.25	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 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2. Measuring Instruments and Setting

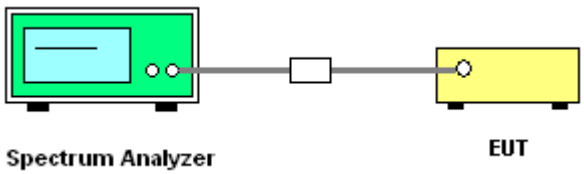
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	3 kHz ≤ RBW ≤ 100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.3.3. Test Procedures

1. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 10.2 Method PKPSD (peak PSD) and KDB 662911 D01 v02r01 section In-Band Power Spectral Density (PSD) Measurements option (b) Measure and sum spectral maximal across the outputs.
2. 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.
3. 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).
4. Use the peak marker function to determine the maximum level in any 3 kHz band segment within the fundamental EBW.
5. The resulting PSD level must be ≤ 8 dBm.

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	20°C	Humidity	52%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n

Configuration IEEE 802.11n MCS0 HT20

Channel	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	-11.82	-12.52	-9.15	7.66	Complies
6	2437 MHz	-6.34	-7.43	-3.84	7.66	Complies
11	2462 MHz	-11.60	-13.03	-9.25	7.66	Complies
12	2467 MHz	-14.39	-13.99	-11.18	7.66	Complies

Note: Directional gain= $10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.34dBi>6dBi, so limit=8 – (6.34 – 6)=7.66dBm/3kHz.

Configuration IEEE 802.11n MCS0 HT40

Channel	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Total		
3	2422 MHz	-16.85	-18.02	-14.39	7.66	Complies
6	2437 MHz	-15.56	-15.46	-12.50	7.66	Complies
9	2452 MHz	-15.33	-15.36	-12.33	7.66	Complies
10	2457 MHz	-16.71	-17.60	-14.12	7.66	Complies

Note: Directional gain= $10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$ =6.34dBi>6dBi, so limit=8 – (6.34 – 6)=7.66dBm/3kHz.

Temperature	20°C	Humidity	52%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b/g

Configuration IEEE 802.11b

Channel	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	-4.92	-6.08	-2.45	7.66	Complies
6	2437 MHz	-1.50	-2.19	1.18	7.66	Complies
11	2462 MHz	-4.78	-4.99	-1.87	7.66	Complies
12	2467 MHz	-4.75	-5.27	-1.99	7.66	Complies

Note: Directional gain= $10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.34dBi>6dBi, so limit=8 – (6.34 – 6)=7.66dBm/3kHz.

Configuration IEEE 802.11g

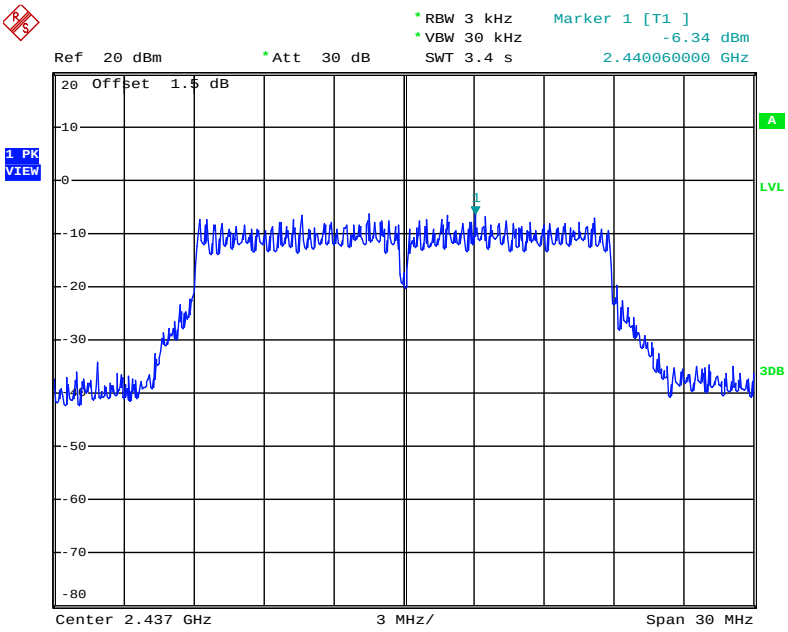
Channel	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Total		
1	2412 MHz	-10.62	-10.97	-7.78	7.66	Complies
6	2437 MHz	-5.20	-6.61	-2.84	7.66	Complies
11	2462 MHz	-10.83	-11.60	-8.19	7.66	Complies
12	2467 MHz	-11.31	-12.14	-8.69	7.66	Complies

Note: Directional gain= $10 \cdot \log\left[\frac{\sum_{j=1}^{N_{ANT}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =6.34dBi>6dBi, so limit=8 – (6.34 – 6)=7.66dBm/3kHz.

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

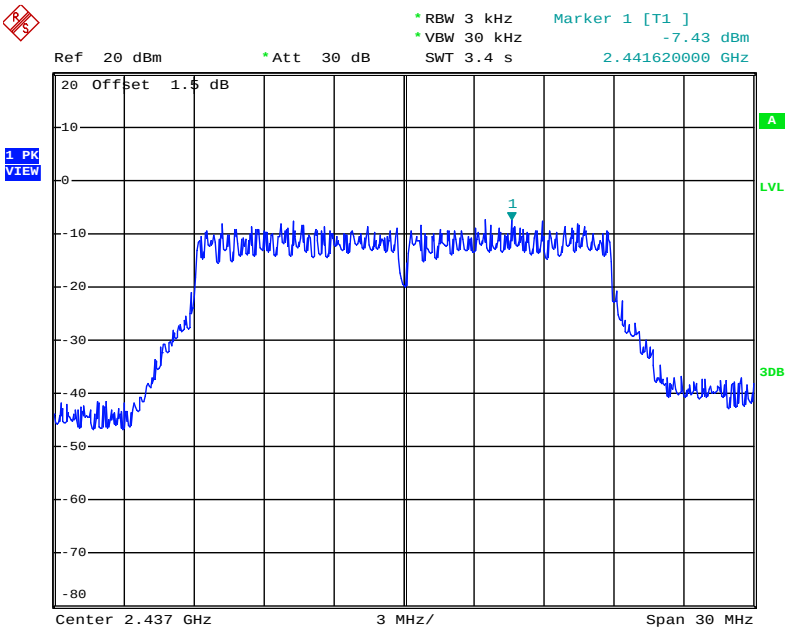
For plots, only the channel with worse result was shown.

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 1



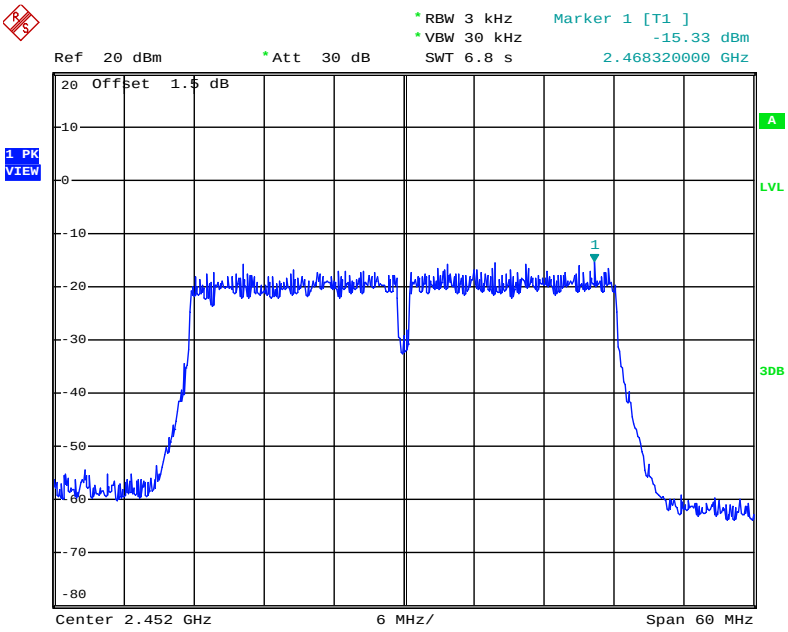
Date: 10.SEP.2014 20:16:44

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 2



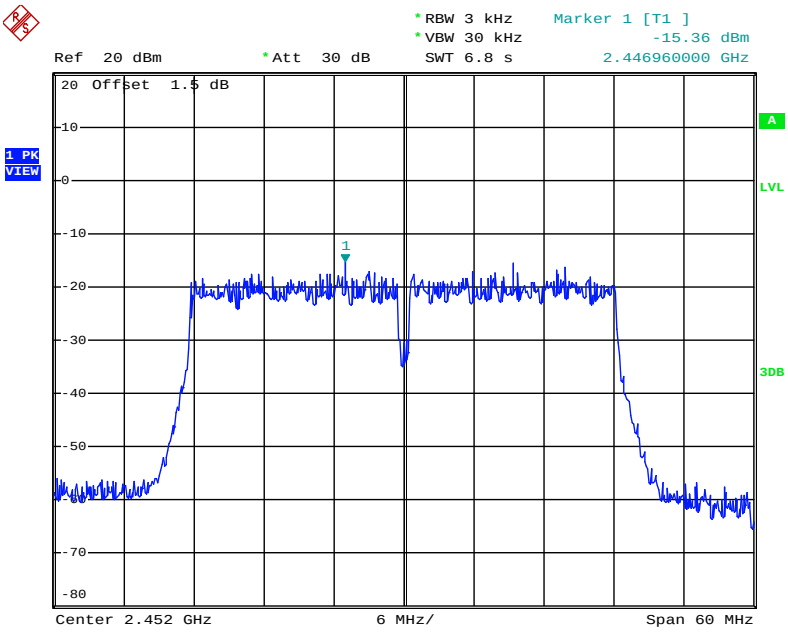
Date: 10.SEP.2014 20:11:13

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 1



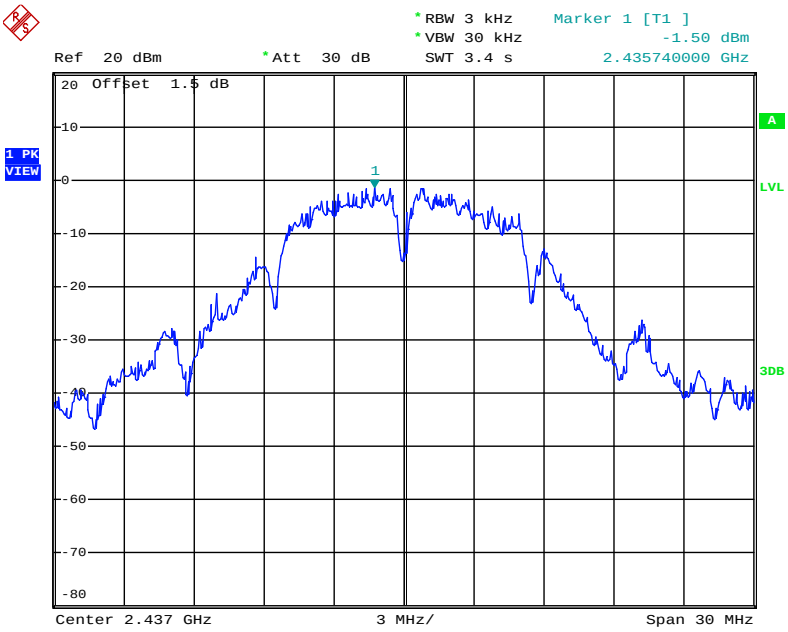
Date: 10.SEP.2014 20:22:26

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 2



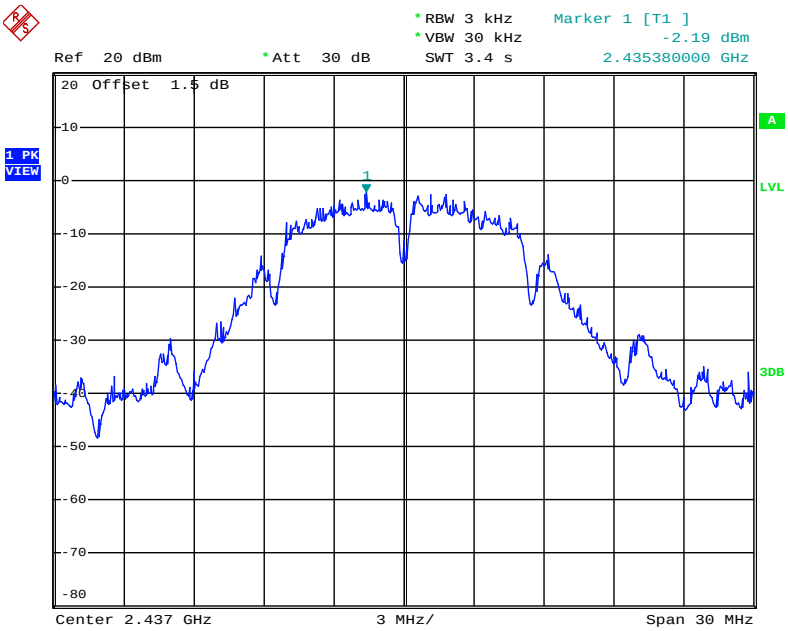
Date: 10.SEP.2014 20:25:47

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Chain 1



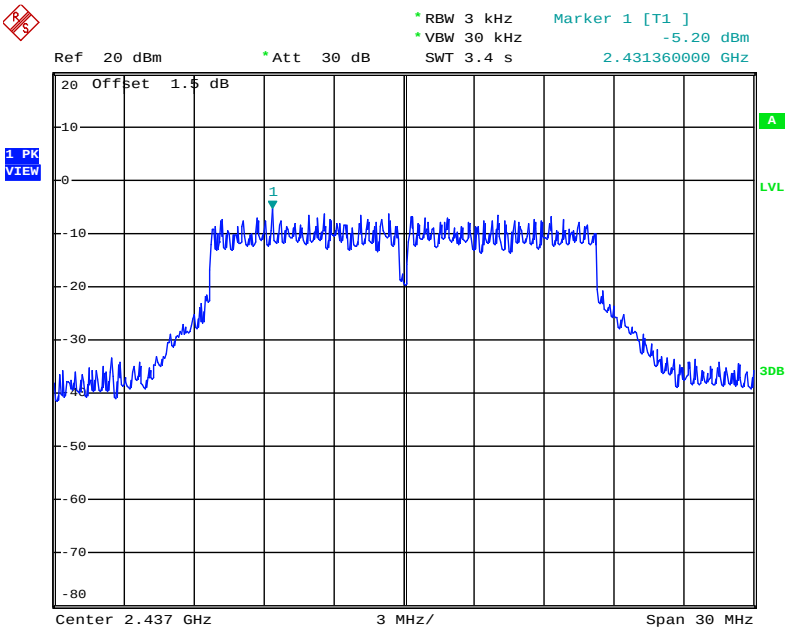
Date: 10.SEP.2014 19:57:00

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Chain 2



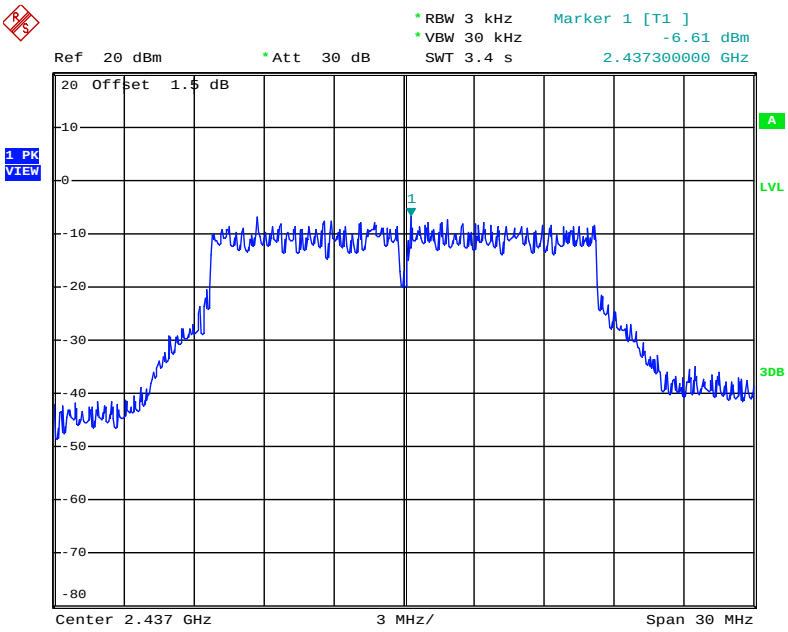
Date: 10.SEP.2014 19:50:42

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1



Date: 10.SEP.2014 20:00:06

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



Date: 10.SEP.2014 20:06:34

4.4. 6dB Spectrum Bandwidth Measurement

4.4.1. Limit

For digital modulation systems, the minimum 6 dB 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 the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3. Test Procedures

1. The transmitter was conducted to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8.0 DTS 6-dB signal bandwidth option 1.
3. Multiple antenna system was performed in accordance with KDB 662911 D01 v02r01 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measurement perform conducted of each port.
5. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.3.4.

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	20°C	Humidity	52%
Test Engineer	Robert Chang	Configurations	IEEE 802.11n

Configuration IEEE 802.11n MCS0 HT20

Channel	Frequency	6dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		Min. Limit (kHz)	Test Result
		Chain 1	Chain 2	Chain 1	Chain 2		
1	2412 MHz	17.60	17.60	17.84	17.76	500	Complies
6	2437 MHz	17.52	17.60	17.92	17.84	500	Complies
11	2462 MHz	17.60	17.60	17.76	17.84	500	Complies
12	2467 MHz	17.60	17.60	17.84	17.84	500	Complies

Configuration IEEE 802.11n MCS0 HT40

Channel	Frequency	6dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		Min. Limit (kHz)	Test Result
		Chain 1	Chain 2	Chain 1	Chain 2		
3	2422 MHz	36.32	36.32	36.32	36.32	500	Complies
6	2437 MHz	36.48	36.48	36.32	36.32	500	Complies
9	2452 MHz	36.32	36.32	36.32	36.32	500	Complies
10	2457 MHz	36.32	36.48	36.32	36.48	500	Complies

Temperature	20°C	Humidity	52%
Test Engineer	Robert Chang	Configurations	IEEE 802.11b/g

Configuration IEEE 802.11b

Channel	Frequency	6dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		Min. Limit (kHz)	Test Result
		Chain 1	Chain 2	Chain 1	Chain 2		
1	2412 MHz	8.00	8.56	11.84	11.76	500	Complies
6	2437 MHz	8.96	8.64	12.48	12.32	500	Complies
11	2462 MHz	9.04	8.00	11.84	11.84	500	Complies
12	2467 MHz	8.56	8.48	11.60	11.76	500	Complies

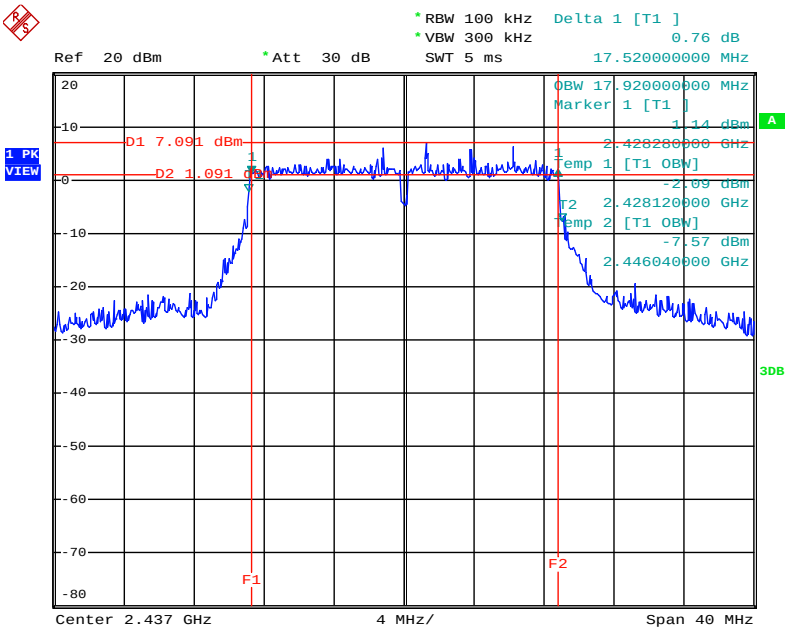
Configuration IEEE 802.11g

Channel	Frequency	6dB Bandwidth (MHz)		99% Occupied Bandwidth (MHz)		Min. Limit (kHz)	Test Result
		Chain 1	Chain 2	Chain 1	Chain 2		
1	2412 MHz	16.40	16.40	16.64	16.64	500	Complies
6	2437 MHz	16.32	16.32	16.72	16.64	500	Complies
11	2462 MHz	16.40	16.40	16.56	16.64	500	Complies
12	2467 MHz	16.48	16.48	16.64	16.64	500	Complies

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

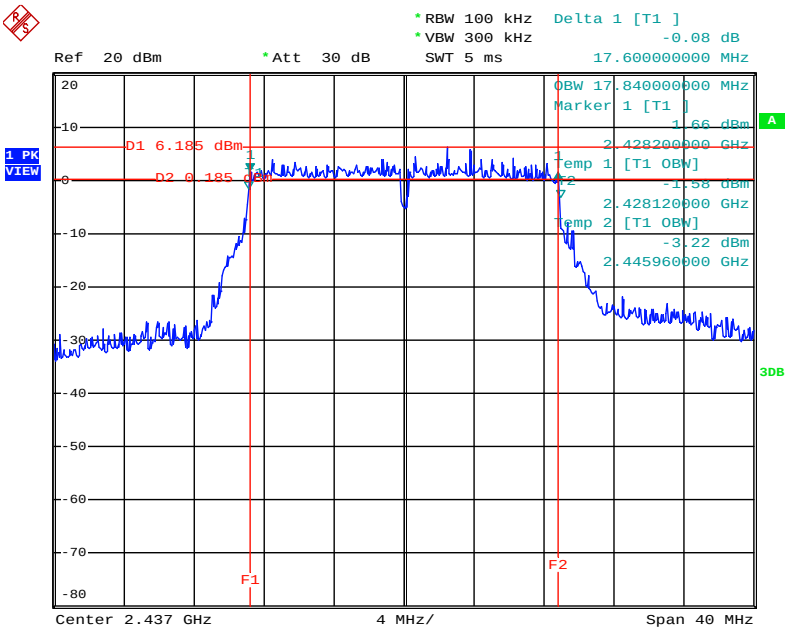
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 1



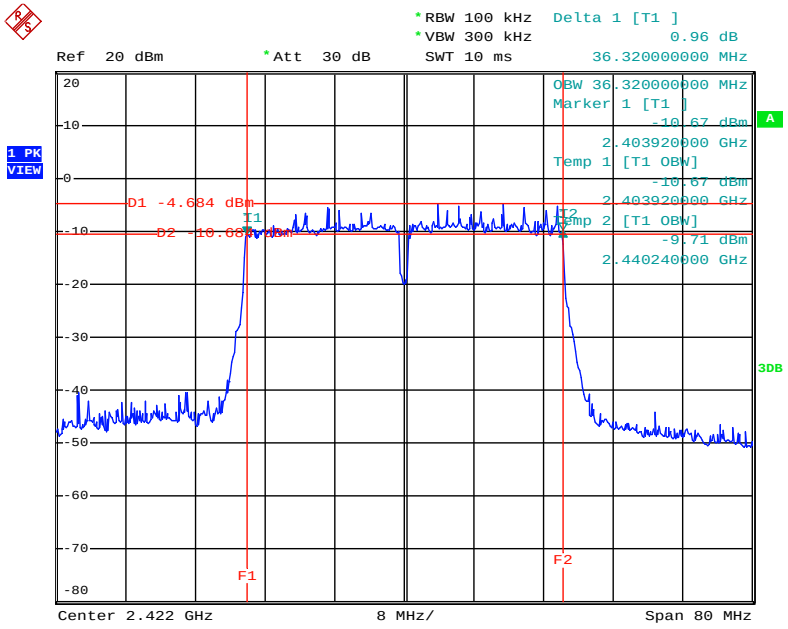
Date: 16.SEP.2014 16:34:25

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 2



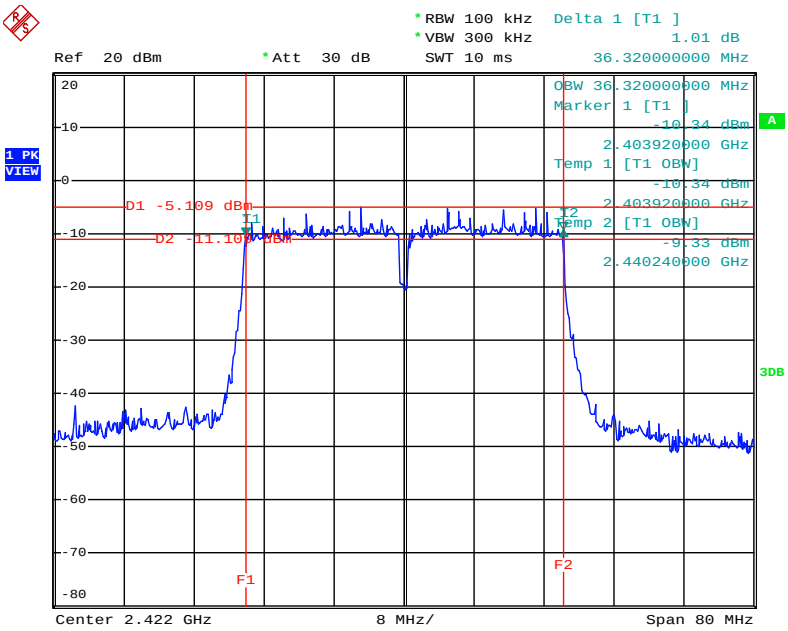
Date: 16.SEP.2014 16:33:45

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422 MHz / Chain 1



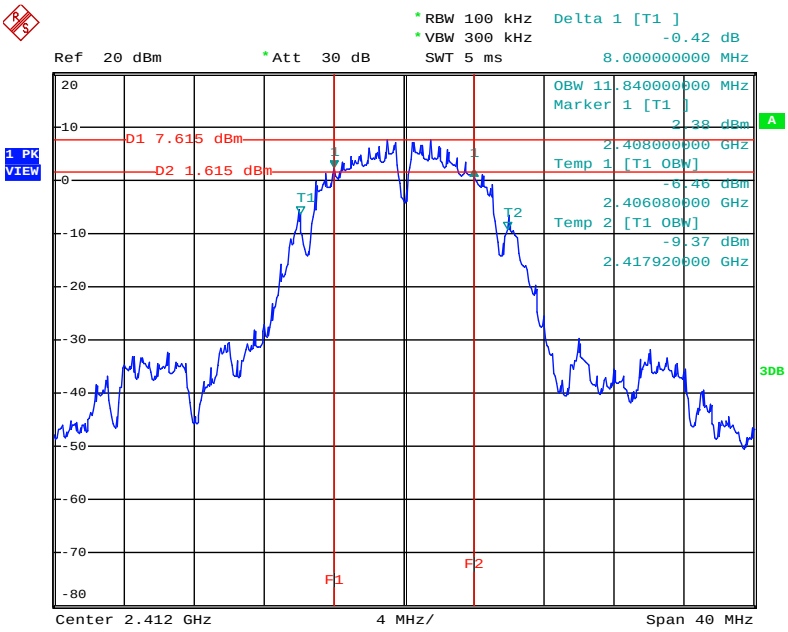
Date: 16.SEP.2014 16:40:11

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422 MHz / Chain 2



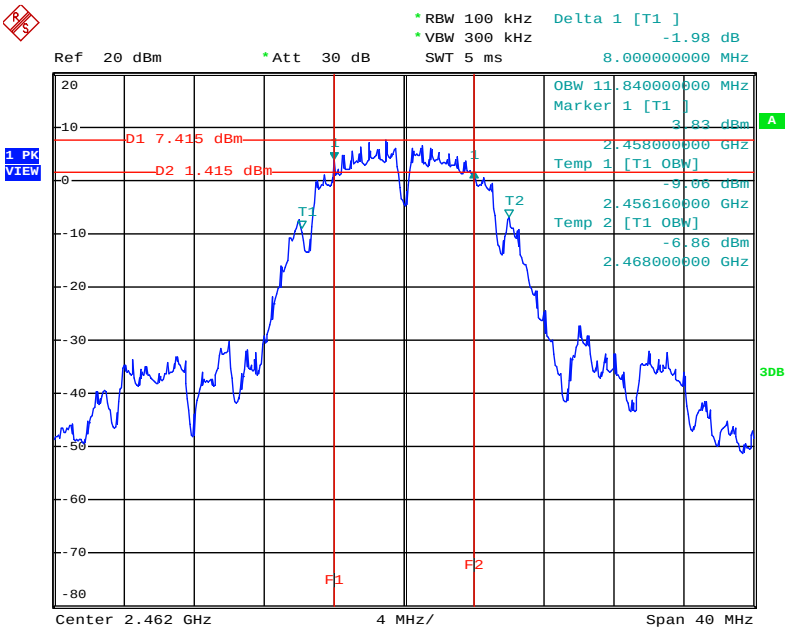
Date: 16.SEP.2014 16:40:57

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1



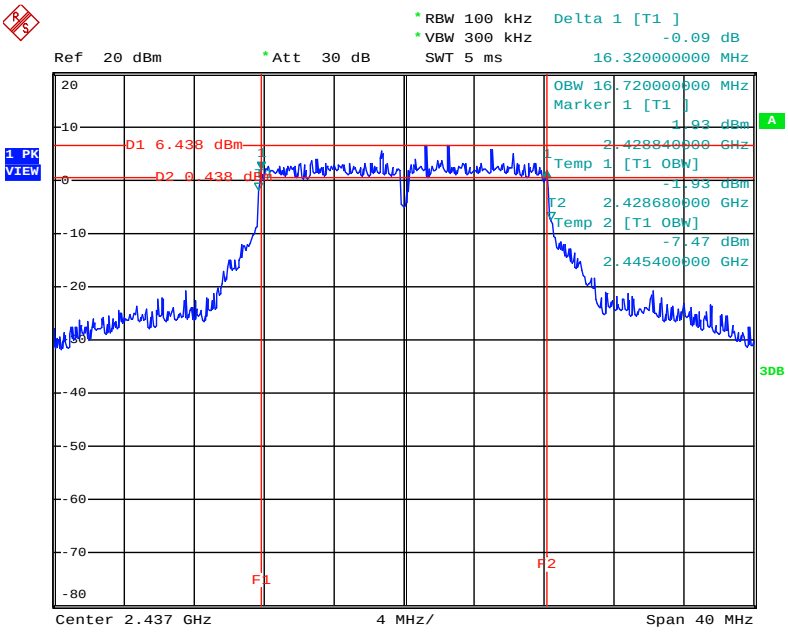
Date: 16.SEP.2014 15:20:56

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 2



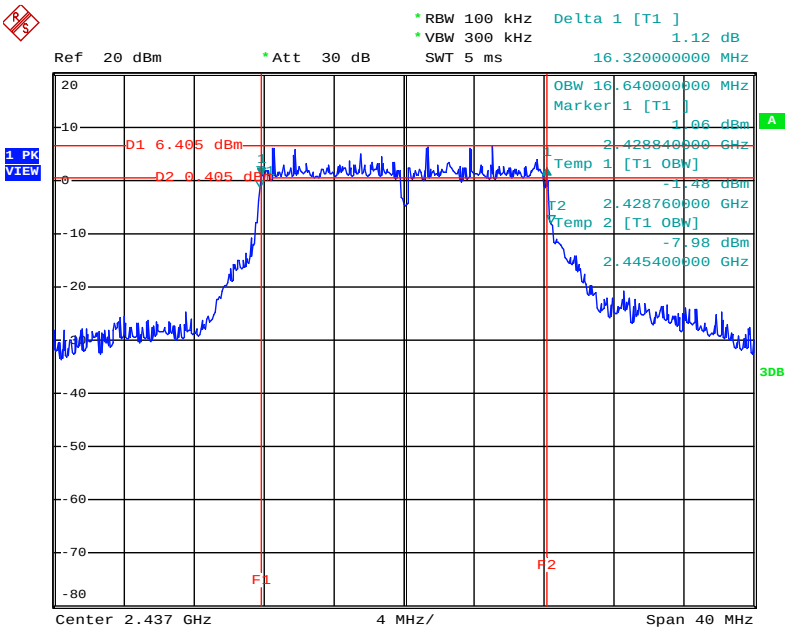
Date: 16.SEP.2014 15:24:18

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



Date: 16.SEP.2014 15:33:05

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 2



Date: 16.SEP.2014 15:34:49

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	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (Emission in non-restricted band)	100kHz / 300kHz for peak

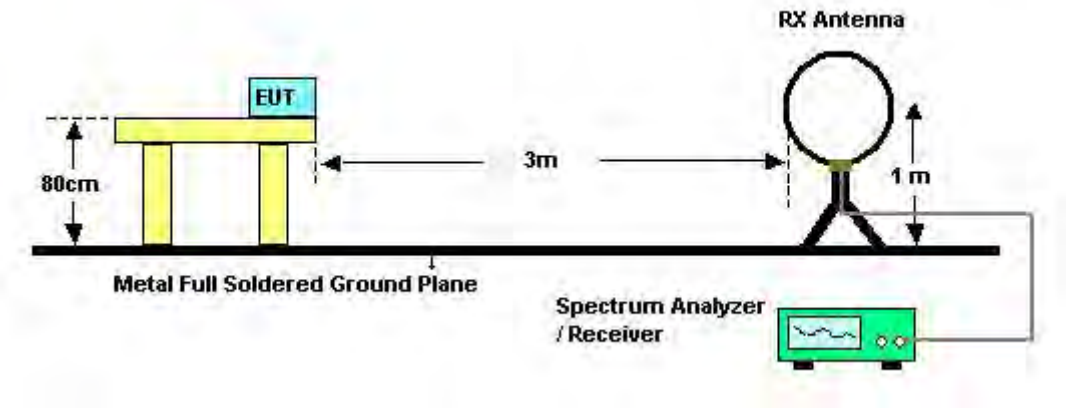
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.5.3. Test Procedures

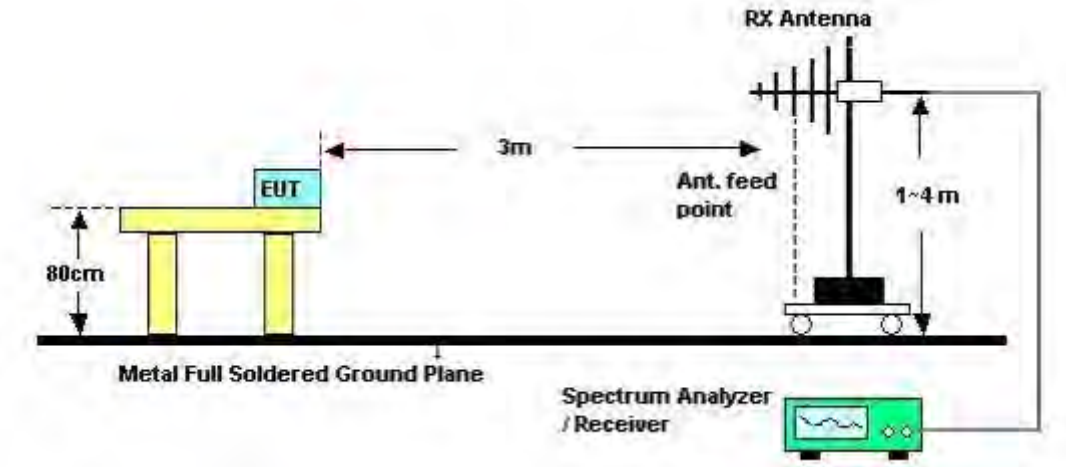
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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 1/T VBW for average reading in spectrum analyzer.
7. 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.
8. 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.
9. 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

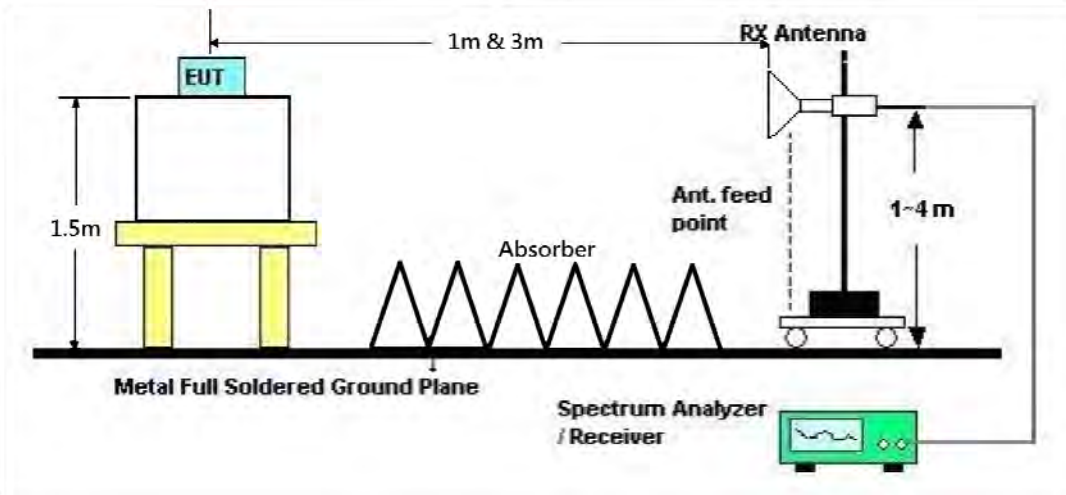
For Radiated Emissions: 9kHz ~30MHz



For Radiated Emissions: 30MHz~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	61%
Test Engineer	YC Chen	Configurations	Normal Link
Test Date	Aug. 09, 2014	Test Mode	Mode 1

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

Note:

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

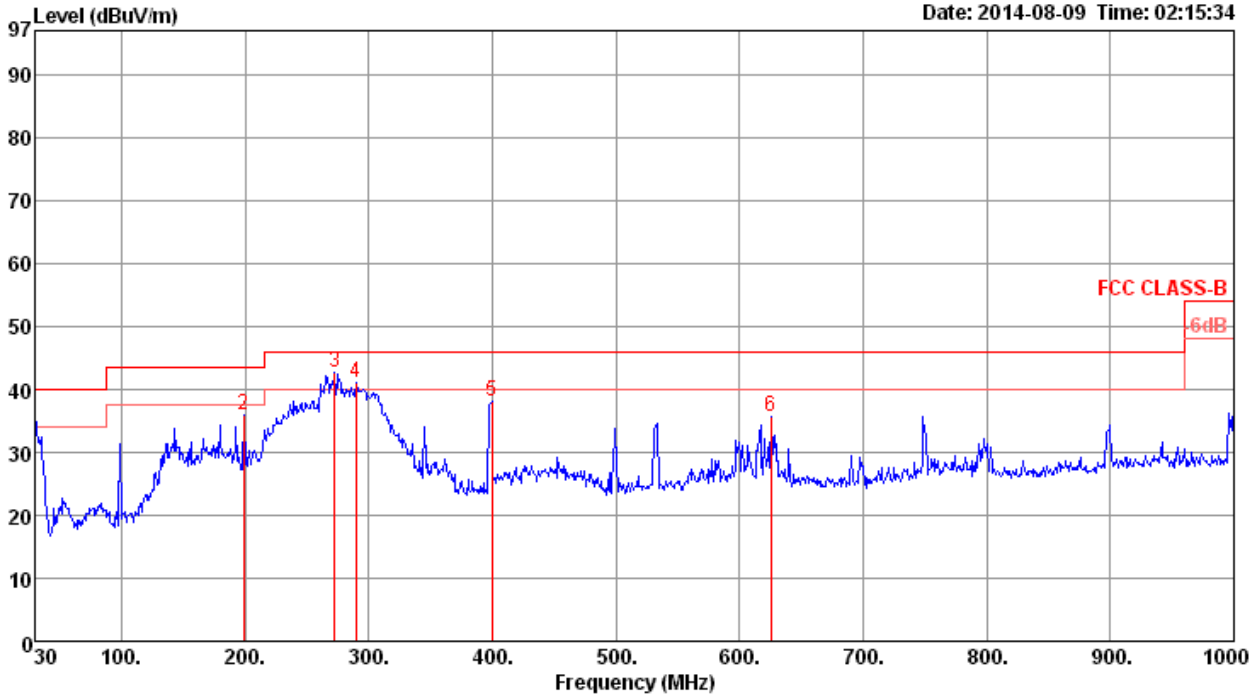
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

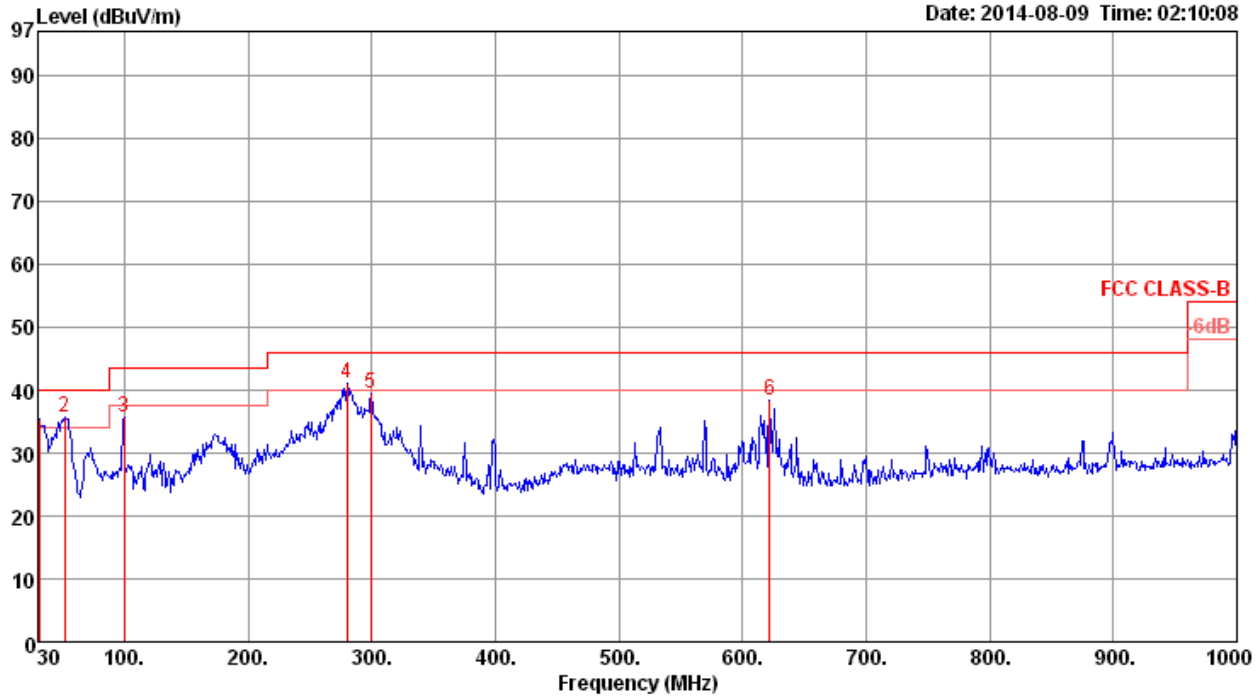
Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	Normal Link
Test Mode	Mode 1		

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	30.00	35.96	40.00	-4.04	44.39	0.61	18.76	27.80	Peak	100	0	HORIZONTAL
2	198.78	35.82	43.50	-7.68	52.02	1.66	9.25	27.11	Peak	100	0	HORIZONTAL
3	272.50	42.58	46.00	-3.42	54.61	1.89	13.04	26.96	Peak	100	0	HORIZONTAL
4	289.96	41.18	46.00	-4.82	52.88	1.98	13.24	26.92	Peak	100	0	HORIZONTAL
5	399.57	37.97	46.00	-8.03	47.21	2.30	16.06	27.60	Peak	100	0	HORIZONTAL
6	625.58	35.62	46.00	-10.38	41.94	2.90	18.85	28.07	Peak	100	0	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	30.97	35.48	40.00	-4.52	44.43	0.63	18.22	27.80	Peak	400	0	VERTICAL
2	51.34	35.71	40.00	-4.29	54.29	0.86	8.35	27.79	Peak	400	0	VERTICAL
3	99.84	35.64	43.50	-7.86	51.08	1.17	10.99	27.60	Peak	400	0	VERTICAL
4	280.26	41.16	46.00	-4.84	53.04	1.93	13.13	26.94	Peak	400	0	VERTICAL
5	299.66	39.58	46.00	-6.42	51.09	2.03	13.36	26.90	Peak	400	0	VERTICAL
6	621.70	38.34	46.00	-7.66	44.69	2.89	18.84	28.08	Peak	400	0	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB 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	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 1 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4826.04	37.43	54.00	-16.57	34.27	5.69	32.77	35.30	150	111	HORIZONTAL	Average
2	4826.29	46.90	74.00	-27.10	43.74	5.69	32.77	35.30	150	111	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4820.47	37.36	54.00	-16.64	34.22	5.68	32.76	35.30	150	58	VERTICAL	Average
2	4827.11	47.83	74.00	-26.17	44.67	5.69	32.77	35.30	150	58	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.70	46.68	74.00	-27.32	43.44	5.75	32.80	35.31	150	163	HORIZONTAL	Peak
2	4877.16	37.86	54.00	-16.14	34.63	5.75	32.80	35.32	150	163	HORIZONTAL	Average
3	7311.65	42.72	54.00	-11.28	33.90	7.06	37.12	35.36	150	235	HORIZONTAL	Average
4	7315.53	52.72	74.00	-21.28	43.90	7.06	37.12	35.36	150	235	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.71	39.00	54.00	-15.00	35.76	5.75	32.80	35.31	150	116	VERTICAL	Average
2	4876.00	48.10	74.00	-25.90	44.87	5.75	32.80	35.32	150	116	VERTICAL	Peak
3	7310.86	51.38	74.00	-22.62	42.56	7.06	37.12	35.36	150	184	VERTICAL	Peak
4	7311.40	42.82	54.00	-11.18	34.00	7.06	37.12	35.36	150	184	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.55	38.04	54.00	-15.96	34.73	5.81	32.83	35.33	150	173	HORIZONTAL	Average
2	4923.58	47.21	74.00	-26.79	43.90	5.81	32.83	35.33	150	173	HORIZONTAL	Peak
3	7381.60	42.41	54.00	-11.59	33.49	7.08	37.16	35.32	150	241	HORIZONTAL	Average
4	7383.42	51.77	74.00	-22.23	42.85	7.08	37.16	35.32	150	241	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4921.11	47.59	74.00	-26.41	44.29	5.80	32.83	35.33	150	117	VERTICAL	Peak
2	4927.49	38.14	54.00	-15.86	34.82	5.81	32.84	35.33	150	117	VERTICAL	Average
3	7381.97	52.34	74.00	-21.66	43.42	7.08	37.16	35.32	150	188	VERTICAL	Peak
4	7383.86	42.44	54.00	-11.56	33.52	7.08	37.16	35.32	150	188	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 12 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4931.15	38.16	54.00	-15.84	34.84	5.82	32.84	35.34	150	182	HORIZONTAL	Average
2	4934.88	46.95	74.00	-27.05	43.63	5.82	32.84	35.34	150	182	HORIZONTAL	Peak
3	7399.41	51.61	74.00	-22.39	42.67	7.09	37.16	35.31	150	106	HORIZONTAL	Peak
4	7400.22	42.23	54.00	-11.77	33.29	7.09	37.16	35.31	150	106	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4931.26	38.18	54.00	-15.82	34.86	5.82	32.84	35.34	150	241	VERTICAL	Average
2	4932.63	46.79	74.00	-27.21	43.47	5.82	32.84	35.34	150	241	VERTICAL	Peak
3	7398.82	42.24	54.00	-11.76	33.30	7.09	37.16	35.31	150	152	VERTICAL	Average
4	7398.97	51.51	74.00	-22.49	42.57	7.09	37.16	35.31	150	152	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 3 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4839.08	37.30	54.00	-16.70	34.12	5.70	32.78	35.30	150	298	HORIZONTAL	Average
2	4847.22	46.39	74.00	-27.61	43.21	5.71	32.78	35.31	150	298	HORIZONTAL	Peak
3	7264.08	51.42	74.00	-22.58	42.66	7.04	37.11	35.39	150	158	HORIZONTAL	Peak
4	7269.19	42.97	54.00	-11.03	34.20	7.04	37.11	35.38	150	158	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4840.02	37.45	74.00	-36.55	34.26	5.71	32.78	35.30	150	209	VERTICAL	Peak
2	4847.86	46.74	54.00	-7.26	43.55	5.72	32.78	35.31	150	209	VERTICAL	Average
3	7262.15	52.81	74.00	-21.19	44.05	7.04	37.11	35.39	150	92	VERTICAL	Peak
4	7263.76	42.94	54.00	-11.06	34.18	7.04	37.11	35.39	150	92	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 6 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4871.70	46.58	74.00	-27.42	43.35	5.74	32.80	35.31	150	293	HORIZONTAL	Peak
2	4876.90	37.99	54.00	-16.01	34.76	5.75	32.80	35.32	150	293	HORIZONTAL	Average
3	7312.19	51.65	74.00	-22.35	42.83	7.06	37.12	35.36	150	167	HORIZONTAL	Peak
4	7314.90	42.92	54.00	-11.08	34.10	7.06	37.12	35.36	150	167	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.64	38.07	54.00	-15.93	34.83	5.75	32.80	35.31	150	58	VERTICAL	Average
2	4875.87	47.24	74.00	-26.76	44.01	5.75	32.80	35.32	150	58	VERTICAL	Peak
3	7309.43	52.14	74.00	-21.86	43.32	7.06	37.12	35.36	150	197	VERTICAL	Peak
4	7315.28	42.85	54.00	-11.15	34.03	7.06	37.12	35.36	150	197	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 9 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4910.84	46.90	74.00	-27.10	43.61	5.79	32.83	35.33	150	127	HORIZONTAL	Peak
2	4910.90	37.90	54.00	-16.10	34.61	5.79	32.83	35.33	150	127	HORIZONTAL	Average
3	7365.06	42.60	54.00	-11.40	33.70	7.08	37.15	35.33	150	320	HORIZONTAL	Average
4	7365.48	51.33	74.00	-22.67	42.43	7.08	37.15	35.33	150	320	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4910.08	37.94	54.00	-16.06	34.65	5.79	32.83	35.33	150	140	VERTICAL	Average
2	4910.50	47.33	74.00	-26.67	44.04	5.79	32.83	35.33	150	140	VERTICAL	Peak
3	7365.04	42.71	54.00	-11.29	33.81	7.08	37.15	35.33	150	234	VERTICAL	Average
4	7365.76	51.30	74.00	-22.70	42.40	7.08	37.15	35.33	150	234	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 10 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4913.82	47.80	74.00	-26.20	44.50	5.80	32.83	35.33	150	332	HORIZONTAL	Peak
2	4923.78	35.86	54.00	-18.14	32.54	5.81	32.84	35.33	150	332	HORIZONTAL	Average
3	7369.98	52.03	74.00	-21.97	43.13	7.08	37.15	35.33	150	274	HORIZONTAL	Peak
4	7380.30	40.51	54.00	-13.49	31.59	7.08	37.16	35.32	150	274	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4919.64	47.29	74.00	-26.71	43.99	5.80	32.83	35.33	100	261	VERTICAL	Peak
2	4921.62	35.88	54.00	-18.12	32.57	5.81	32.83	35.33	100	261	VERTICAL	Average
3	7364.50	52.54	74.00	-21.46	43.64	7.08	37.15	35.33	100	199	VERTICAL	Peak
4	7368.48	40.55	54.00	-13.45	31.65	7.08	37.15	35.33	100	199	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.86	47.45	74.00	-26.55	44.30	5.69	32.76	35.30	132	105	HORIZONTAL	Peak
2	4824.05	40.53	54.00	-13.47	37.38	5.69	32.76	35.30	132	105	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4824.02	43.91	54.00	-10.09	40.76	5.69	32.76	35.30	170	229	VERTICAL	Average
2	4824.20	48.82	74.00	-25.18	45.67	5.69	32.76	35.30	170	229	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11b CH 6 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.72	50.46	74.00	-23.54	47.22	5.75	32.80	35.31	111	105	HORIZONTAL	Peak
2	4874.08	44.20	54.00	-9.80	40.96	5.75	32.80	35.31	111	105	HORIZONTAL	Average
3	7311.72	51.20	74.00	-22.80	42.38	7.06	37.12	35.36	167	91	HORIZONTAL	Peak
4	7312.45	42.49	54.00	-11.51	33.67	7.06	37.12	35.36	167	91	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.74	50.87	74.00	-23.13	47.63	5.75	32.80	35.31	167	230	VERTICAL	Peak
2	4874.01	46.30	54.00	-7.70	43.06	5.75	32.80	35.31	167	230	VERTICAL	Average
3	7309.80	43.56	54.00	-10.44	34.74	7.06	37.12	35.36	167	140	VERTICAL	Average
4	7313.18	52.04	74.00	-21.96	43.22	7.06	37.12	35.36	167	140	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11b CH 11 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.82	40.15	54.00	-13.85	36.83	5.81	32.84	35.33	126	103	HORIZONTAL	Average
2	4924.04	47.49	74.00	-26.51	44.17	5.81	32.84	35.33	126	103	HORIZONTAL	Peak
3	7381.87	42.20	54.00	-11.80	33.28	7.08	37.16	35.32	156	118	HORIZONTAL	Average
4	7385.23	51.52	74.00	-22.48	42.59	7.09	37.16	35.32	156	118	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.93	44.06	54.00	-9.94	40.74	5.81	32.84	35.33	218	236	VERTICAL	Average
2	4924.15	50.42	74.00	-23.58	47.10	5.81	32.84	35.33	218	236	VERTICAL	Peak
3	7381.42	42.41	54.00	-11.59	33.49	7.08	37.16	35.32	156	166	VERTICAL	Average
4	7389.93	51.89	74.00	-22.11	42.95	7.09	37.16	35.31	156	166	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11b CH 12 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4933.92	47.33	74.00	-26.67	44.01	5.82	32.84	35.34	100	121	HORIZONTAL	Peak
2	4933.94	39.40	54.00	-14.60	36.08	5.82	32.84	35.34	100	121	HORIZONTAL	Average
3	7396.74	41.95	54.00	-12.05	33.01	7.09	37.16	35.31	103	139	HORIZONTAL	Average
4	7401.94	50.67	74.00	-23.33	41.72	7.09	37.17	35.31	103	139	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4933.95	43.55	54.00	-10.45	40.23	5.82	32.84	35.34	182	169	VERTICAL	Average
2	4934.02	48.75	74.00	-25.25	45.43	5.82	32.84	35.34	182	169	VERTICAL	Peak
3	7400.19	51.20	74.00	-22.80	42.26	7.09	37.16	35.31	103	107	VERTICAL	Peak
4	7403.87	42.14	54.00	-11.86	33.19	7.09	37.17	35.31	103	107	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11g CH 1 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4819.79	37.49	54.00	-16.51	34.35	5.68	32.76	35.30	150	197	HORIZONTAL	Average
2	4825.79	46.25	74.00	-27.75	43.09	5.69	32.77	35.30	150	197	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4826.23	37.71	54.00	-16.29	34.55	5.69	32.77	35.30	150	107	VERTICAL	Average
2	4826.75	46.57	74.00	-27.43	43.41	5.69	32.77	35.30	150	107	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11g CH 6 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4871.82	37.69	54.00	-16.31	34.46	5.74	32.80	35.31	150	168	HORIZONTAL	Average
2	4877.94	47.71	74.00	-26.29	44.48	5.75	32.80	35.32	150	168	HORIZONTAL	Peak
3	7314.16	52.05	74.00	-21.95	43.23	7.06	37.12	35.36	150	257	HORIZONTAL	Peak
4	7314.35	42.57	54.00	-11.43	33.75	7.06	37.12	35.36	150	257	HORIZONTAL	Average

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.78	38.24	54.00	-15.76	35.00	5.75	32.80	35.31	150	104	VERTICAL	Average
2	4873.02	47.38	74.00	-26.62	44.14	5.75	32.80	35.31	150	104	VERTICAL	Peak
3	7312.82	42.74	54.00	-11.26	33.92	7.06	37.12	35.36	150	205	VERTICAL	Average
4	7314.86	52.79	74.00	-21.21	43.97	7.06	37.12	35.36	150	205	VERTICAL	Peak

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11g CH 11 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4924.54	37.87	54.00	-16.13	34.55	5.81	32.84	35.33	150	151	HORIZONTAL	Average
2	4929.00	47.72	74.00	-26.28	44.40	5.81	32.84	35.33	150	151	HORIZONTAL	Peak
3	7381.16	42.34	54.00	-11.66	33.42	7.08	37.16	35.32	150	228	HORIZONTAL	Average
4	7387.58	51.58	74.00	-22.42	42.65	7.09	37.16	35.32	150	228	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4921.69	38.02	54.00	-15.98	34.71	5.81	32.83	35.33	150	139	VERTICAL	Average
2	4927.88	47.70	74.00	-26.30	44.38	5.81	32.84	35.33	150	139	VERTICAL	Peak
3	7381.96	51.67	74.00	-22.33	42.75	7.08	37.16	35.32	150	268	VERTICAL	Peak
4	7383.05	42.43	54.00	-11.57	33.51	7.08	37.16	35.32	150	268	VERTICAL	Average

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11g CH 12 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4936.83	47.10	74.00	-26.90	43.78	5.82	32.84	35.34	150	134	HORIZONTAL	Peak
2	4937.16	38.02	54.00	-15.98	34.70	5.82	32.84	35.34	150	134	HORIZONTAL	Average
3	7401.71	42.15	54.00	-11.85	33.20	7.09	37.17	35.31	150	233	HORIZONTAL	Average
4	7404.17	50.71	74.00	-23.29	41.76	7.09	37.17	35.31	150	233	HORIZONTAL	Peak

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4933.35	38.19	54.00	-15.81	34.87	5.82	32.84	35.34	150	160	VERTICAL	Average
2	4933.76	47.18	74.00	-26.82	43.86	5.82	32.84	35.34	150	160	VERTICAL	Peak
3	7399.66	51.38	74.00	-22.62	42.44	7.09	37.16	35.31	150	88	VERTICAL	Peak
4	7404.92	42.17	54.00	-11.83	33.22	7.09	37.17	35.31	150	88	VERTICAL	Average

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. 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
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for Peak, 1MHz / 1/T for Average
RBW / VBW (30dBc in any 100 kHz bandwidth emission)	100 kHz / 300 kHz for Peak

4.6.3. Test Procedures

For Radiated band edges Measurement:

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

For Radiated Out of Band Emission Measurement:

1. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.
2. The radiated emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.
   Only worst data of each operating mode is presented.

4.6.4. Test Setup Layout

For Radiated band edges Measurement:

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

For Radiated Out of Band Emission Measurement:

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	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 2
Test Date	Aug. 12, 2014~Aug. 13, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.50	67.38	74.00	-6.62	35.80	3.68	27.90	0.00	100	245	VERTICAL	Peak
2	2388.70	53.52	54.00	-0.48	21.94	3.68	27.90	0.00	100	245	VERTICAL	Average
3	2416.20	101.43			69.84	3.69	27.90	0.00	100	245	VERTICAL	Average
4	2416.30	109.69			78.10	3.69	27.90	0.00	100	245	VERTICAL	Peak

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	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.60	53.25	54.00	-0.75	21.67	3.68	27.90	0.00	152	127	VERTICAL	Average
2	2390.00	66.41	74.00	-7.59	34.83	3.68	27.90	0.00	152	127	VERTICAL	Peak
3	2440.80	107.12			75.51	3.71	27.90	0.00	152	127	VERTICAL	Average
4	2440.80	114.67			83.06	3.71	27.90	0.00	152	127	VERTICAL	Peak
5	2483.50	51.57	54.00	-2.43	19.94	3.73	27.90	0.00	152	127	VERTICAL	Average
6	2483.50	61.90	74.00	-12.10	30.27	3.73	27.90	0.00	152	127	VERTICAL	Peak

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	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2459.30	109.18			77.56	3.72	27.90	0.00	182	256	VERTICAL	Peak
2	2459.40	101.85			70.23	3.72	27.90	0.00	182	256	VERTICAL	Average
3	2484.20	53.63	54.00	-0.37	22.00	3.73	27.90	0.00	182	256	VERTICAL	Average
4	2484.50	67.02	74.00	-6.98	35.39	3.73	27.90	0.00	182	256	VERTICAL	Peak

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

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT20 CH 12 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Channel 12

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.50	107.32			75.70	3.72	27.90	0.00	181	248	VERTICAL	Peak
2	2461.60	99.69			68.07	3.72	27.90	0.00	181	248	VERTICAL	Average
3	2483.70	64.48	74.00	-9.52	32.85	3.73	27.90	0.00	181	248	VERTICAL	Peak
4	2483.90	53.85	54.00	-0.15	22.22	3.73	27.90	0.00	181	248	VERTICAL	Average

Item 1, 2 are the fundamental frequency at 2467 MHz.

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	53.91	54.00	-0.09	22.33	3.68	27.90	0.00	175	265	VERTICAL	Average
2	2390.00	64.30	74.00	-9.70	32.72	3.68	27.90	0.00	175	265	VERTICAL	Peak
3	2412.80	104.81			73.22	3.69	27.90	0.00	175	265	VERTICAL	Peak
4	2417.20	96.86			65.27	3.69	27.90	0.00	175	265	VERTICAL	Average

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	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.20	53.52	54.00	-0.48	21.94	3.68	27.90	0.00	185	249	VERTICAL	Average
2	2390.00	66.90	74.00	-7.10	35.32	3.68	27.90	0.00	185	249	VERTICAL	Peak
3	2444.00	99.05			67.44	3.71	27.90	0.00	185	249	VERTICAL	Average
4	2444.00	107.23			75.62	3.71	27.90	0.00	185	249	VERTICAL	Peak
5	2484.10	49.01	54.00	-4.99	17.38	3.73	27.90	0.00	185	249	VERTICAL	Average
6	2484.90	59.61	74.00	-14.39	27.98	3.73	27.90	0.00	185	249	VERTICAL	Peak

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

Channel 9

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2446.60	98.81			67.20	3.71	27.90	0.00	192	250	VERTICAL	Average
2	2446.60	106.28			74.67	3.71	27.90	0.00	192	250	VERTICAL	Peak
3	2483.50	64.56	74.00	-9.44	32.93	3.73	27.90	0.00	192	250	VERTICAL	Peak
4	2484.10	53.60	54.00	-0.40	21.97	3.73	27.90	0.00	192	250	VERTICAL	Average

Item 1, 2 are the fundamental frequency at 2452 MHz.

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11n MCS0 HT40 CH 10 / Chain 1 + Chain 2
Test Date	Aug. 13, 2014		

Channel 10

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2444.40	97.18			65.57	3.71	27.90	0.00	192	254	VERTICAL	Average
2	2452.00	105.12			73.51	3.71	27.90	0.00	192	254	VERTICAL	Peak
3	2483.90	64.58	74.00	-9.42	32.95	3.73	27.90	0.00	192	254	VERTICAL	Peak
4	2484.10	53.69	54.00	-0.31	22.06	3.73	27.90	0.00	192	254	VERTICAL	Average

Item 1, 2 are the fundamental frequency at 2457 MHz.

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2
Test Date	Aug. 08, 2014		

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	2387.00	61.32	74.00	-12.68	29.18	4.09	28.05	0.00	Peak	108	61	VERTICAL
2	2387.20	53.53	54.00	-0.47	21.39	4.09	28.05	0.00	Average	108	61	VERTICAL
3	2410.20	106.29			74.09	4.11	28.09	0.00	Average	108	61	VERTICAL
4	2411.00	110.22			78.02	4.11	28.09	0.00	Peak	108	61	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2389.60	56.83	74.00	-17.17	24.69	4.09	28.05	0.00	Peak	145	57	VERTICAL
2	2390.00	46.51	54.00	-7.49	14.37	4.09	28.05	0.00	Average	145	57	VERTICAL
3	2435.40	109.74			77.44	4.12	28.18	0.00	Average	145	57	VERTICAL
4	2436.20	113.38			81.08	4.12	28.18	0.00	Peak	145	57	VERTICAL
5	2483.50	46.75	54.00	-7.25	14.33	4.16	28.26	0.00	Average	145	57	VERTICAL
6	2483.90	56.60	74.00	-17.40	24.18	4.16	28.26	0.00	Peak	145	57	VERTICAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2461.20	105.46			73.10	4.14	28.22	0.00	Average	100	62	VERTICAL
2	2461.20	109.37			77.01	4.14	28.22	0.00	Peak	100	62	VERTICAL
3	2483.50	53.87	54.00	-0.13	21.45	4.16	28.26	0.00	Average	100	62	VERTICAL
4	2483.70	60.81	74.00	-13.19	28.39	4.16	28.26	0.00	Peak	100	62	VERTICAL

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

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11b CH 12 / Chain 1 + Chain 2
Test Date	Aug. 08, 2014		

Channel 12

	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	2465.80	104.74			72.38	4.14	28.22	0.00	Average	100	62	VERTICAL
2	2466.20	108.44			76.08	4.14	28.22	0.00	Peak	100	62	VERTICAL
3	2483.50	64.10	74.00	-9.90	31.68	4.16	28.26	0.00	Peak	100	62	VERTICAL
4	2484.30	53.54	54.00	-0.46	21.12	4.16	28.26	0.00	Average	100	62	VERTICAL

Item 1, 2 are the fundamental frequency at 2467 MHz.

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2
Test Date	Aug. 12, 2014		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.90	66.39	74.00	-7.61	34.81	3.68	27.90	0.00	187	256	VERTICAL	Peak
2	2390.00	53.48	54.00	-0.52	21.90	3.68	27.90	0.00	187	256	VERTICAL	Average
3	2416.40	110.78			79.19	3.69	27.90	0.00	187	256	VERTICAL	Peak
4	2416.70	103.46			71.87	3.69	27.90	0.00	187	256	VERTICAL	Average

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	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	53.22	54.00	-0.78	21.64	3.68	27.90	0.00	134	120	VERTICAL	Average
2	2390.00	65.63	74.00	-8.37	34.05	3.68	27.90	0.00	134	120	VERTICAL	Peak
3	2435.40	114.20			82.60	3.70	27.90	0.00	134	120	VERTICAL	Peak
4	2440.00	107.16			75.55	3.71	27.90	0.00	134	120	VERTICAL	Average
5	2483.50	50.83	54.00	-3.17	19.20	3.73	27.90	0.00	134	120	VERTICAL	Average
6	2483.50	63.63	74.00	-10.37	32.00	3.73	27.90	0.00	134	120	VERTICAL	Peak

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	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2457.68	109.20			77.58	3.72	27.90	0.00	183	265	VERTICAL	Peak
2	2457.70	102.69			71.07	3.72	27.90	0.00	183	265	VERTICAL	Average
3	2483.50	53.40	54.00	-0.60	21.77	3.73	27.90	0.00	183	265	VERTICAL	Average
4	2483.50	64.20	74.00	-9.80	32.57	3.73	27.90	0.00	183	265	VERTICAL	Peak

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

Temperature	23°C	Humidity	61%
Test Engineer	YC Chen	Configurations	IEEE 802.11g CH 12 / Chain 1 + Chain 2
Test Date	Aug. 12, 2014		

Channel 12

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2465.10	107.81			76.19	3.72	27.90	0.00	100	118	VERTICAL	Peak
2	2465.20	100.67			69.05	3.72	27.90	0.00	100	118	VERTICAL	Average
3	2484.40	53.18	54.00	-0.82	21.55	3.73	27.90	0.00	100	118	VERTICAL	Average
4	2484.40	65.34	74.00	-8.66	33.71	3.73	27.90	0.00	100	118	VERTICAL	Peak

Item 1, 2 are the fundamental frequency at 2467 MHz.

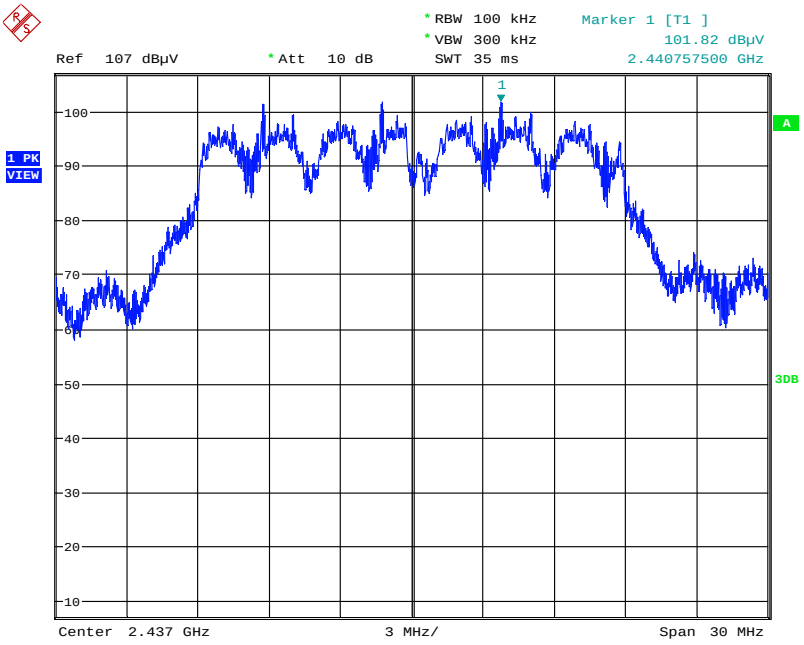
Note:

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

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

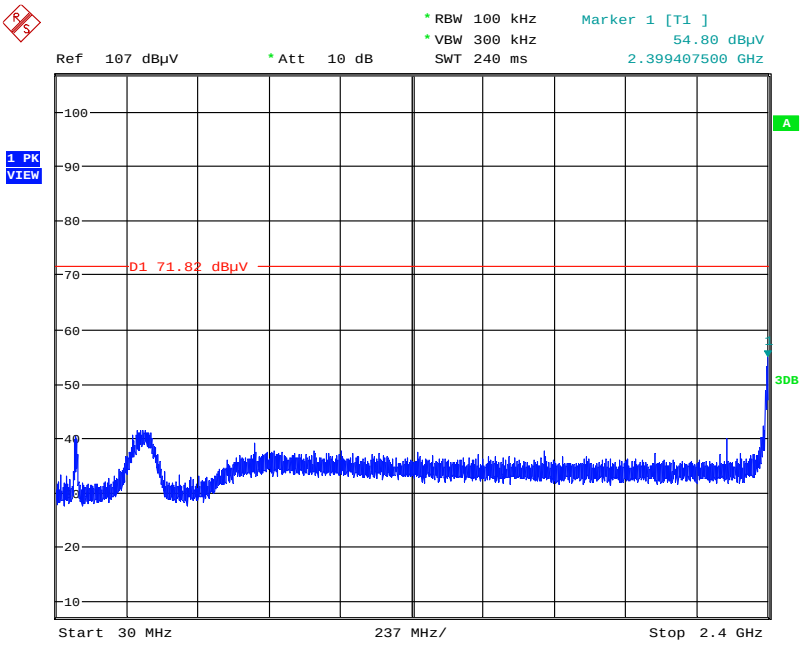
For Emission not in Restricted Band

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level (Horizontal)



Date: 14.SEP.2014 11:20:20

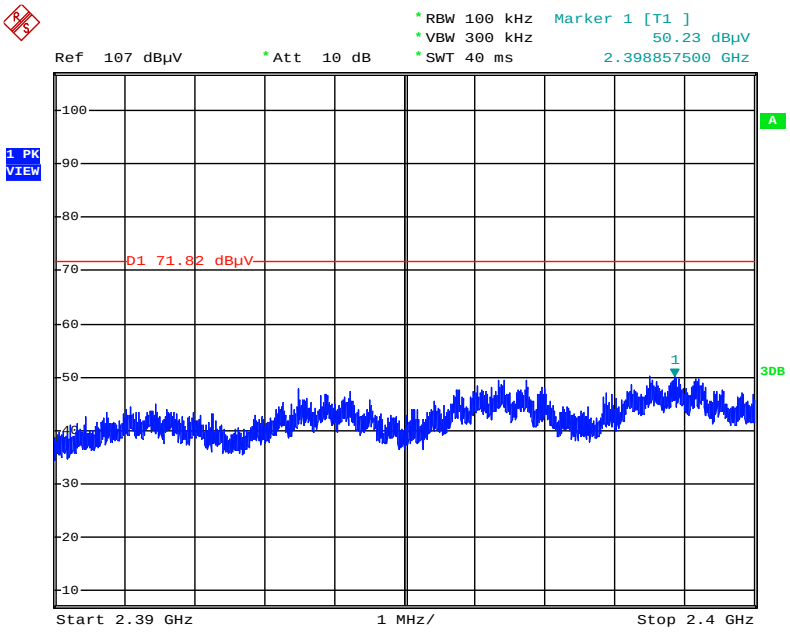
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:21:01

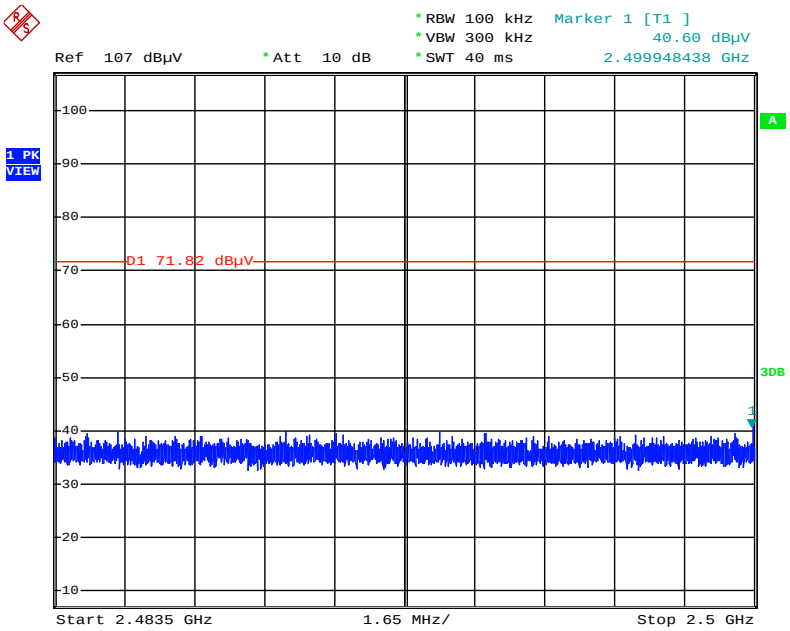
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:32:56

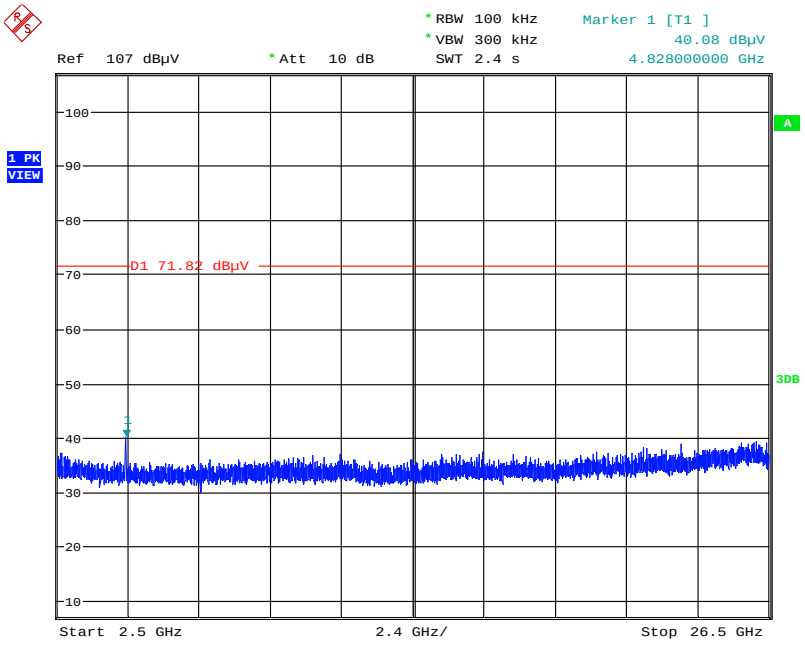
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:33:26

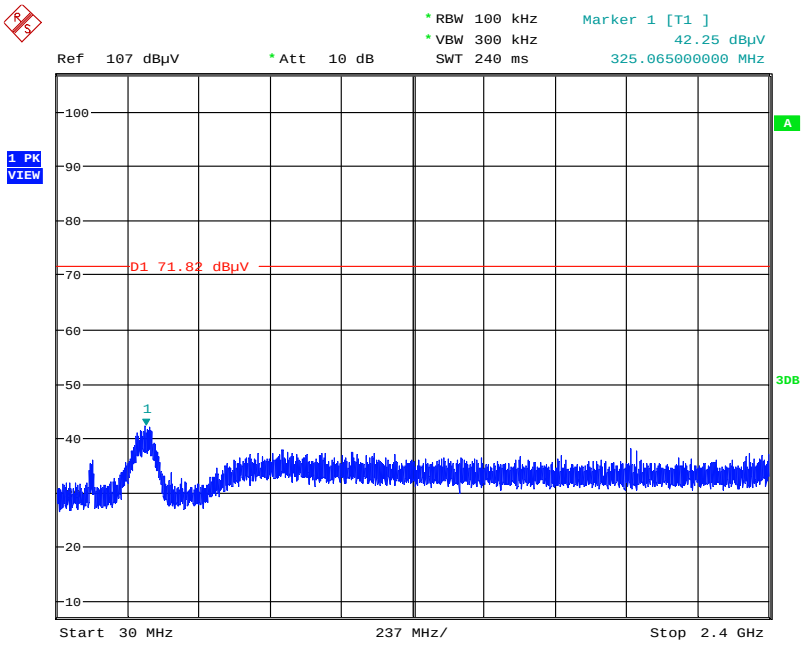
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:21:24

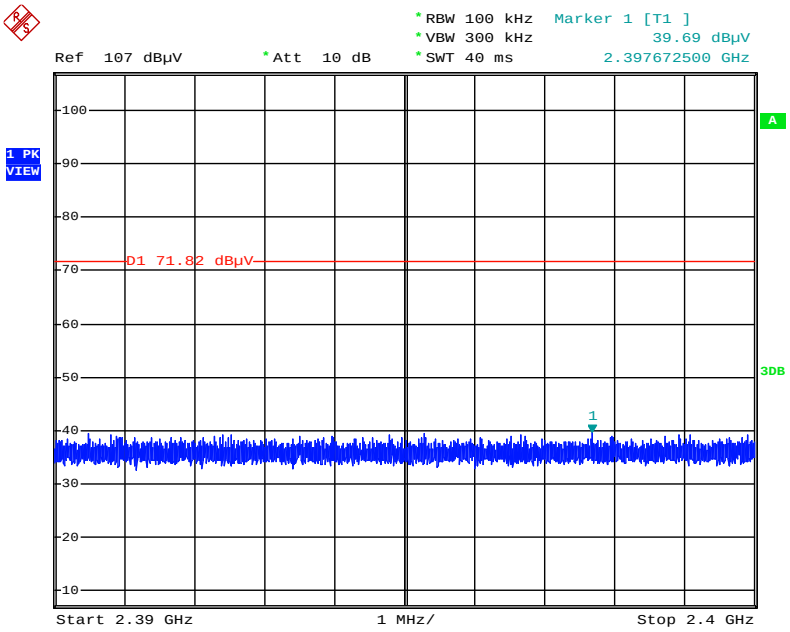
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:21:49

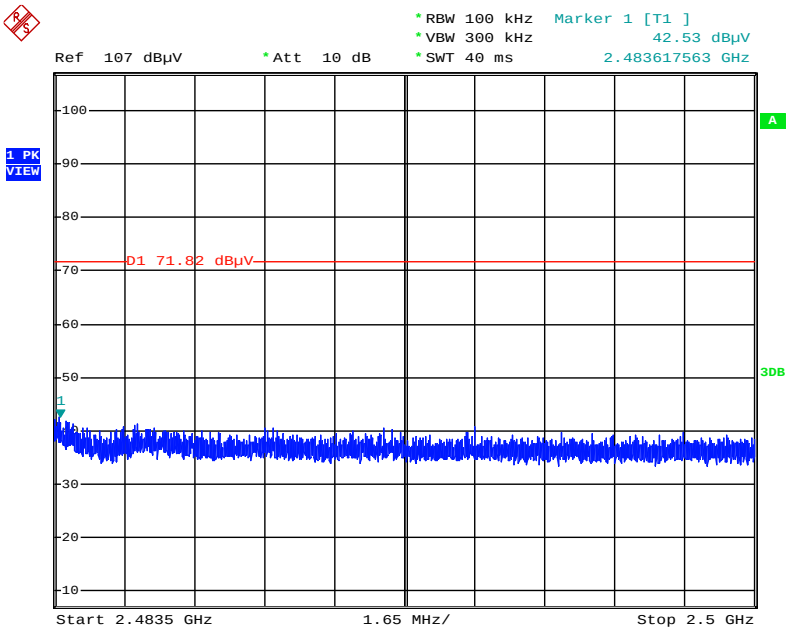
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:35:08

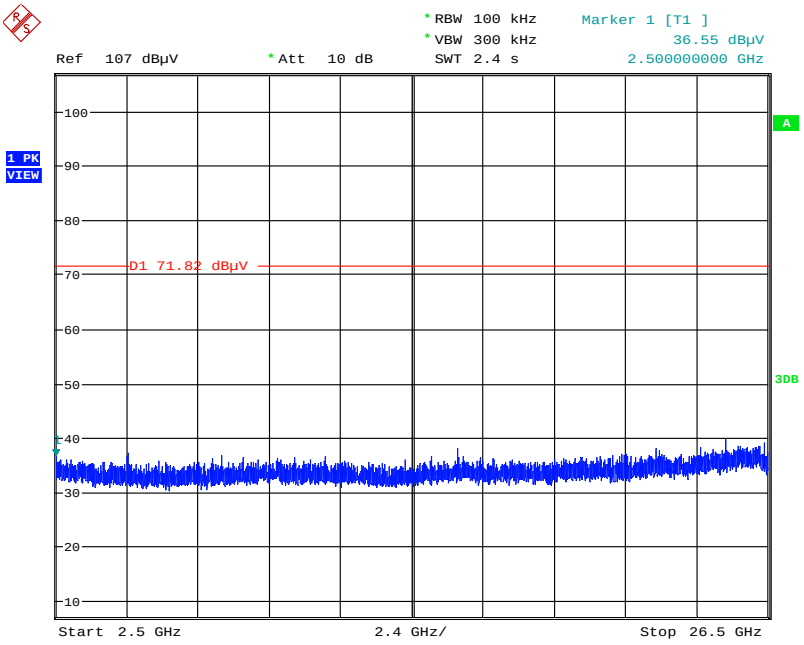
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:34:36

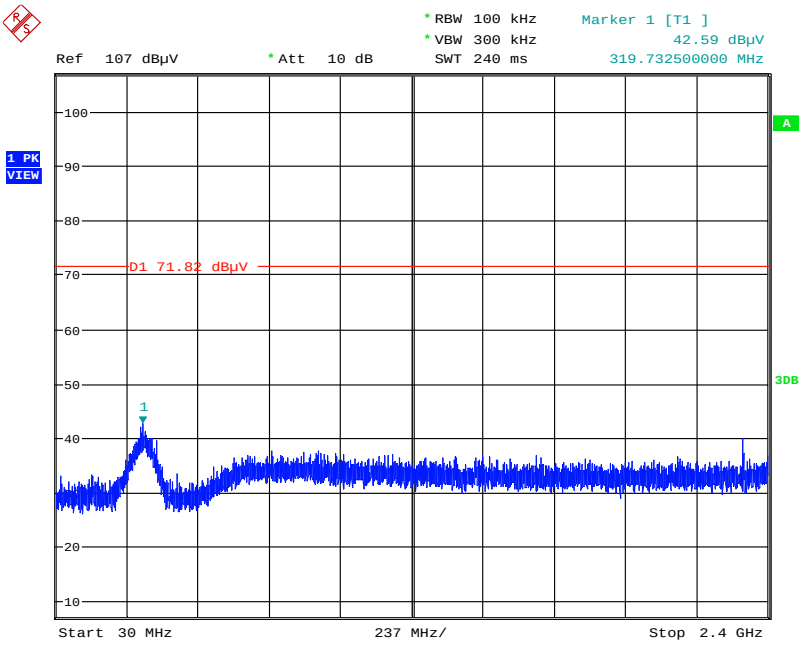
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:22:07

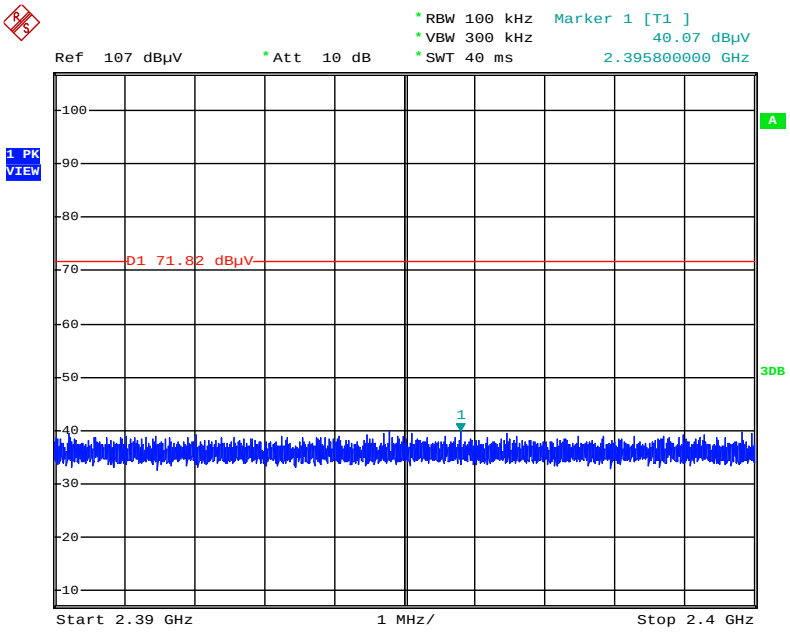
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 12 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:22:33

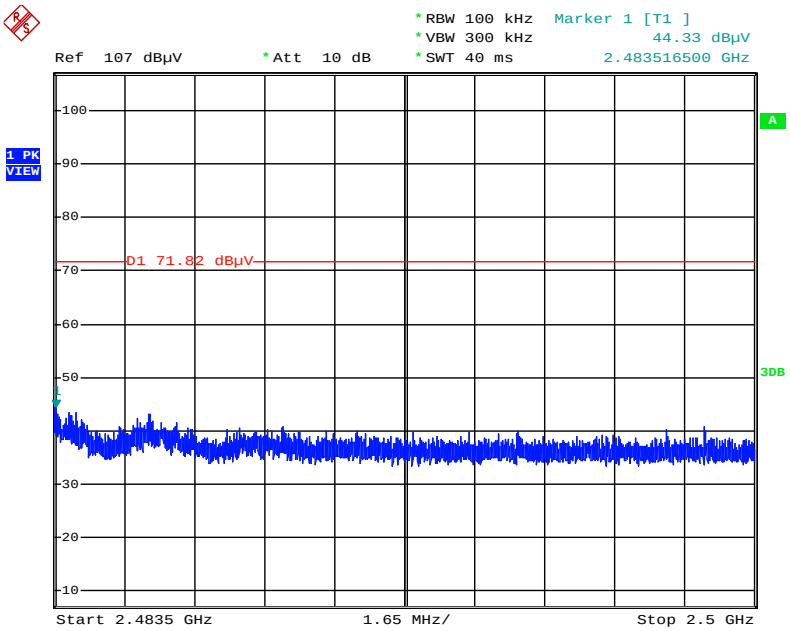
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 12 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:35:47

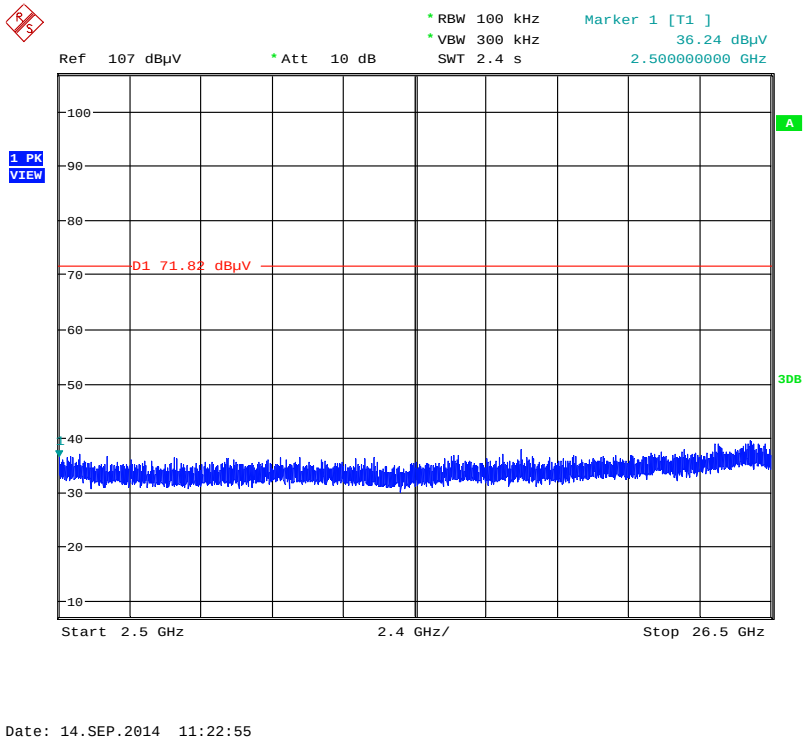
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 12 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:36:19

Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

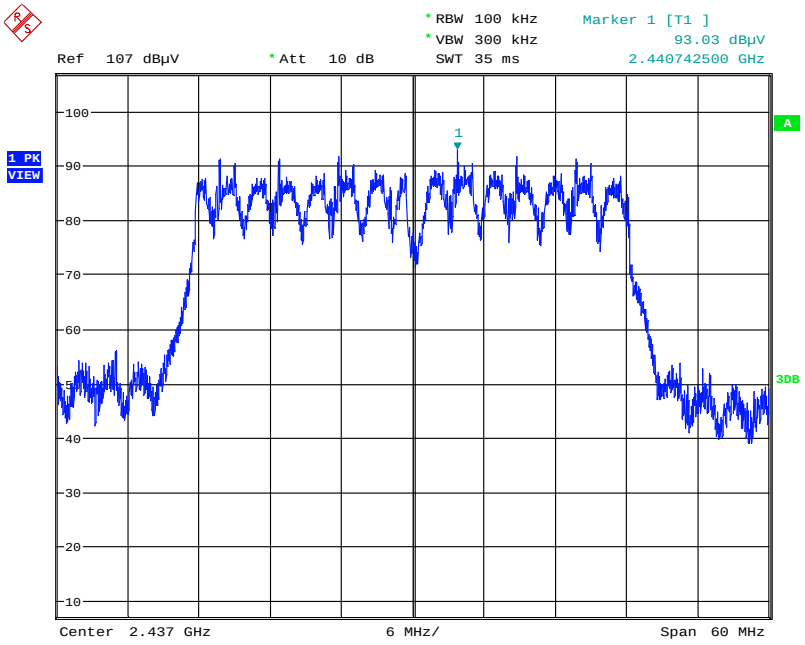
Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 12 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:22:55

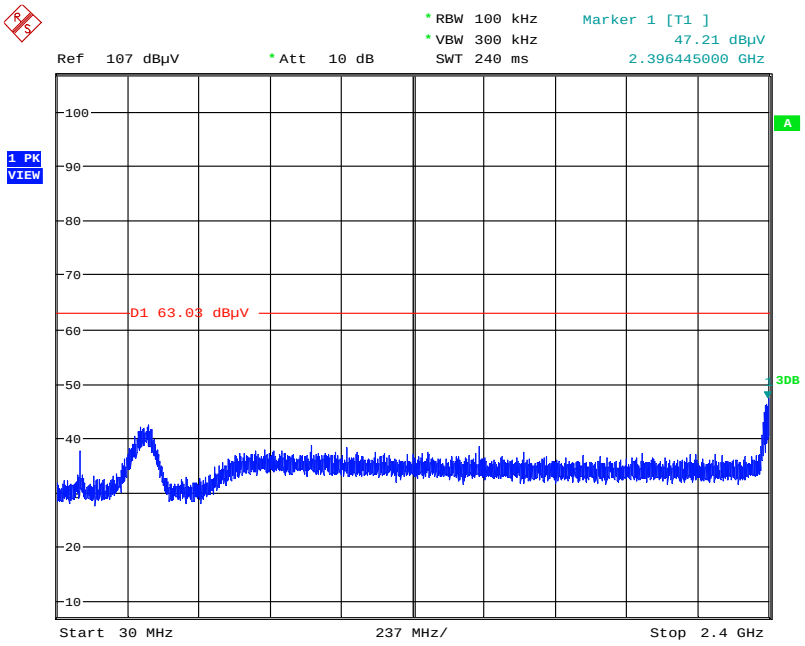
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level (Horizontal)



Date: 14.SEP.2014 11:24:11

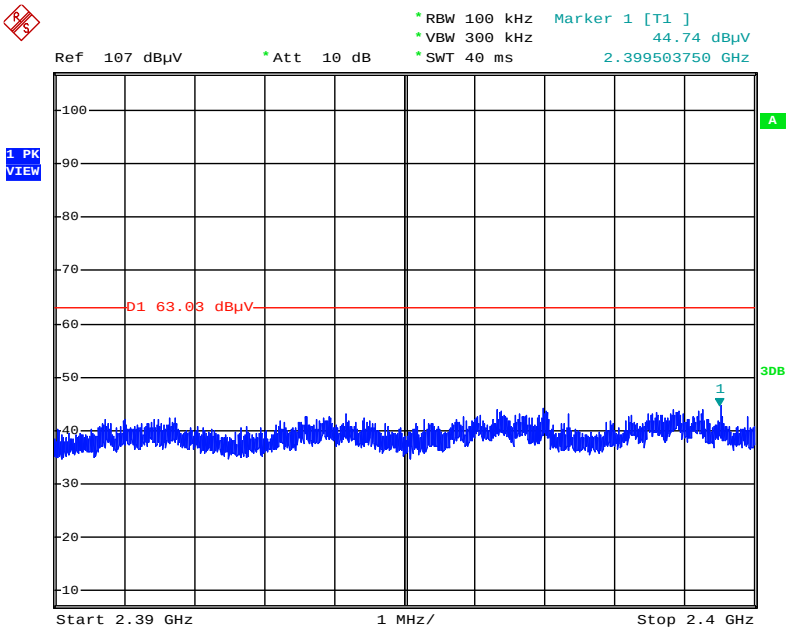
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:24:55

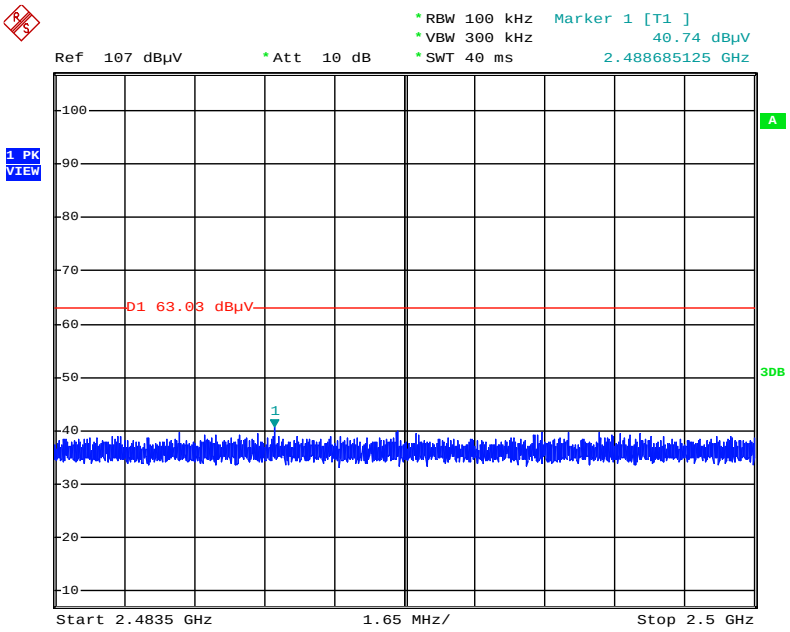
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:39:15

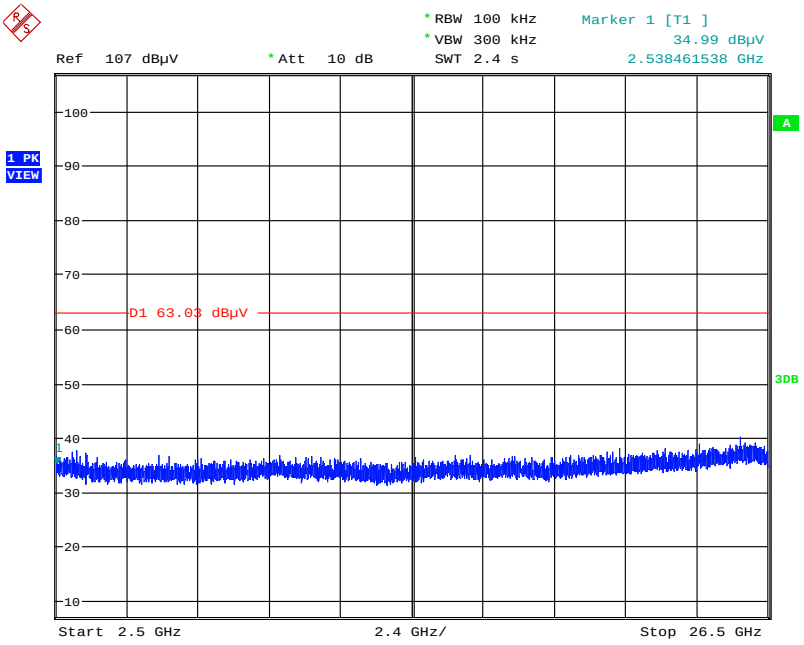
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:38:25

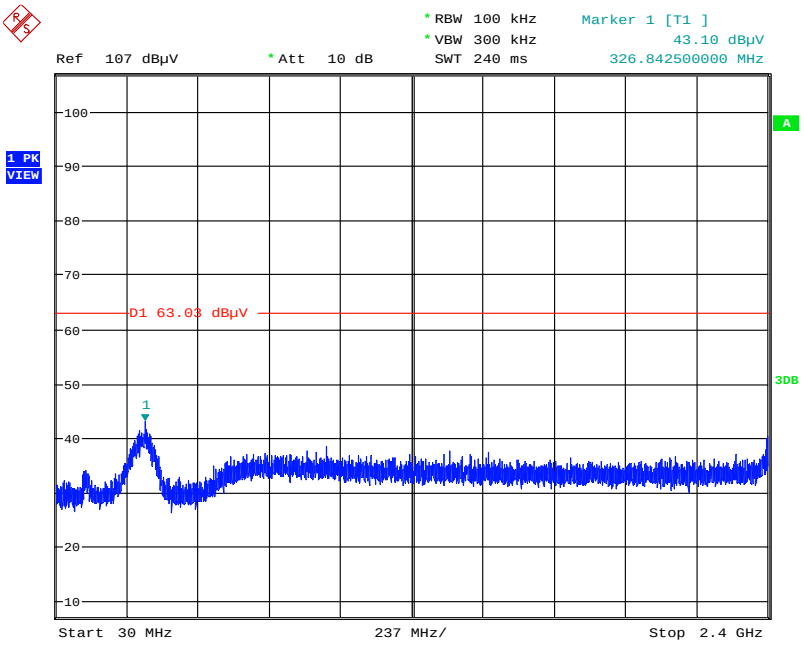
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:25:25

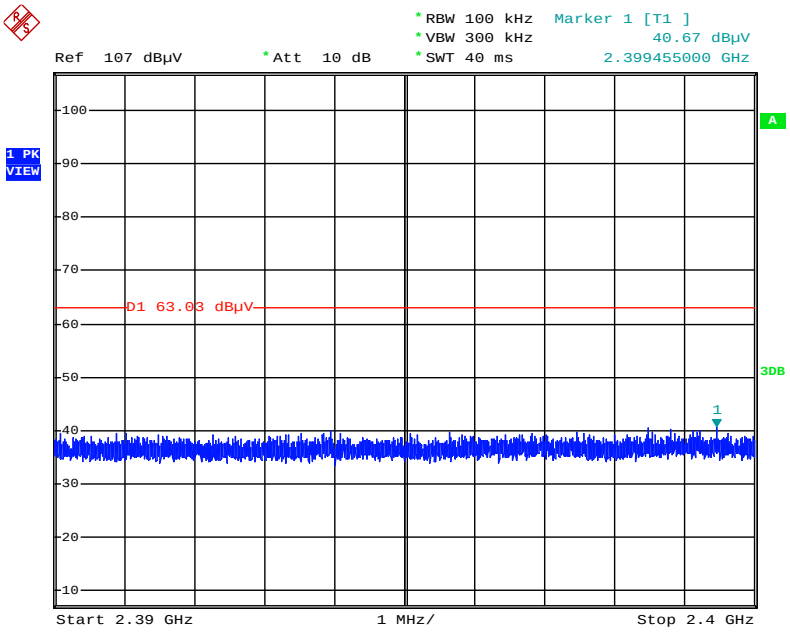
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:25:56

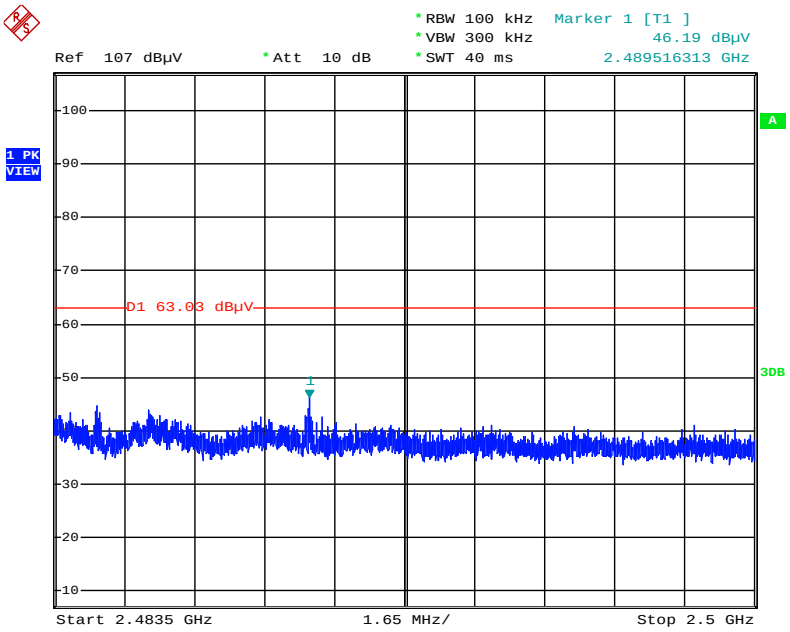
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:40:08

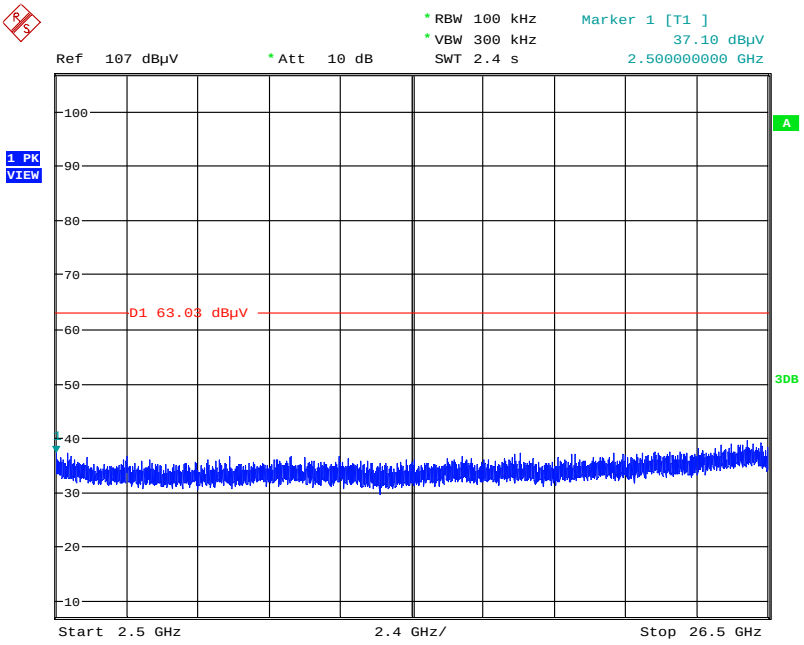
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:40:39

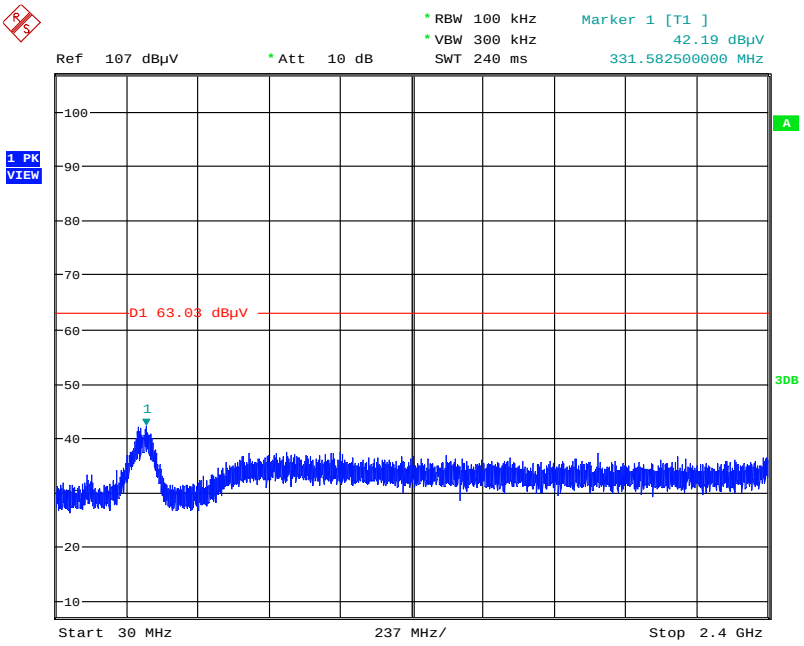
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:26:19

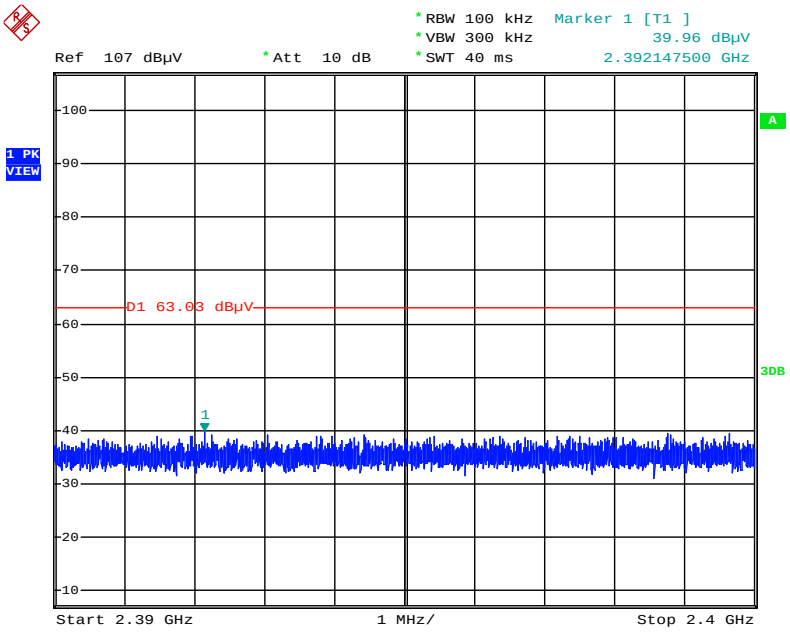
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 10 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:27:01

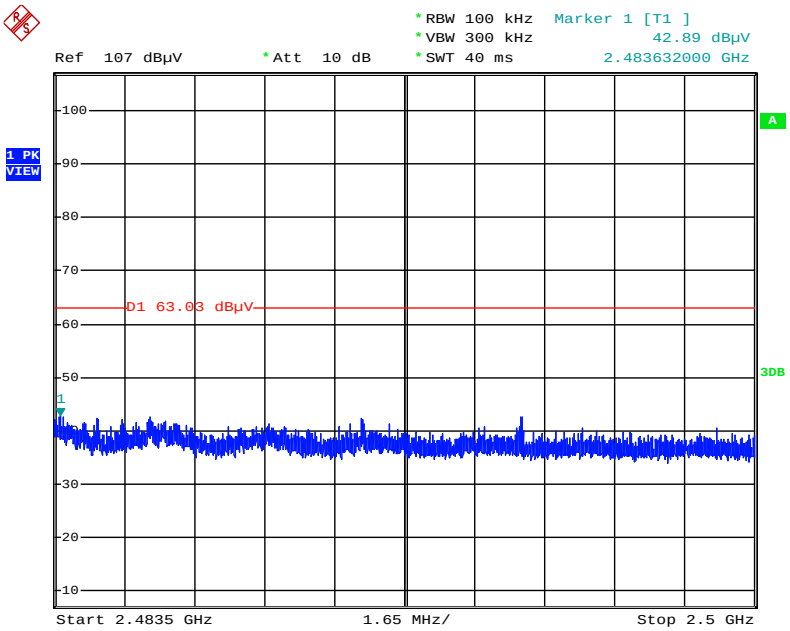
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 10 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:41:53

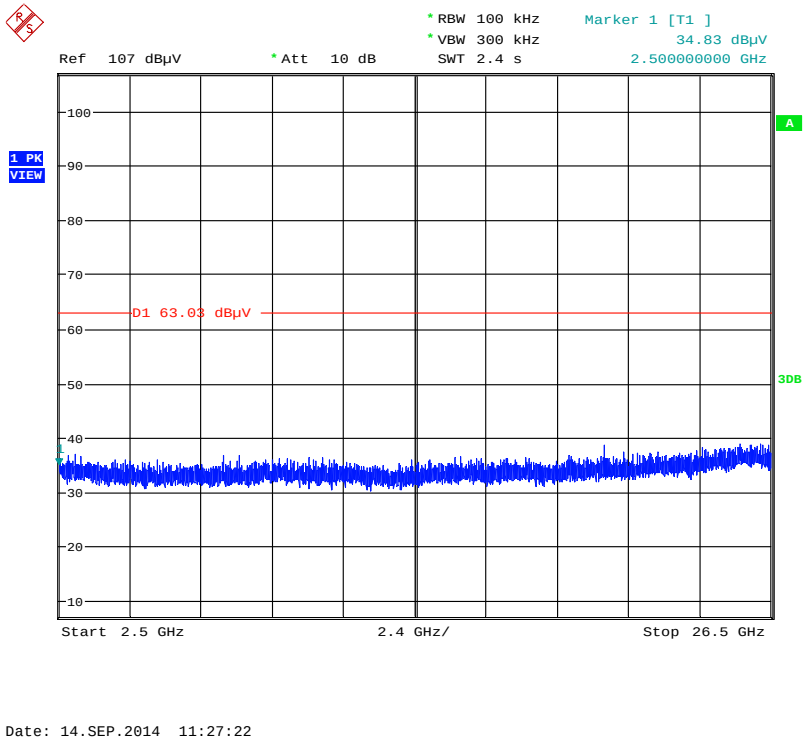
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 10 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:41:32

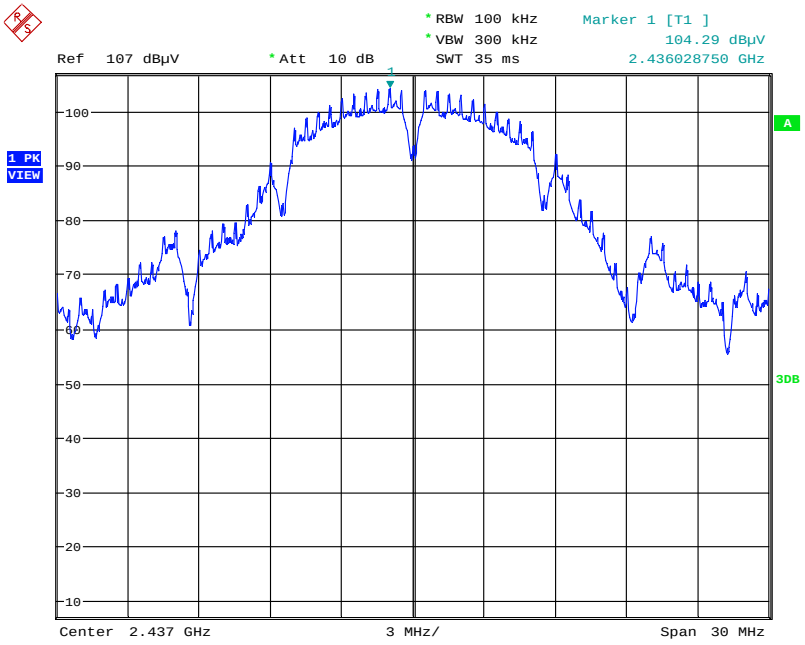
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 10 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



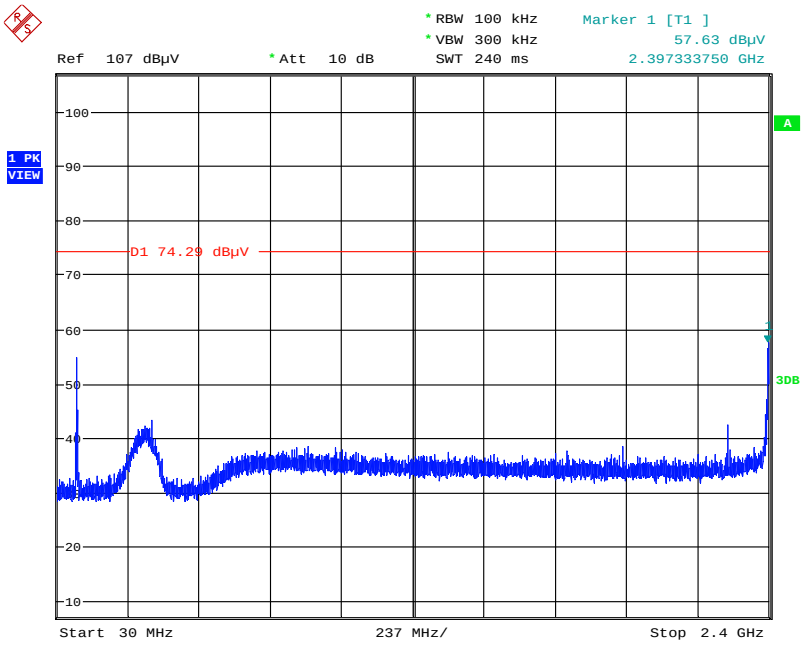
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / Reference Level (Horizontal)



Date: 14.SEP.2014 11:07:39

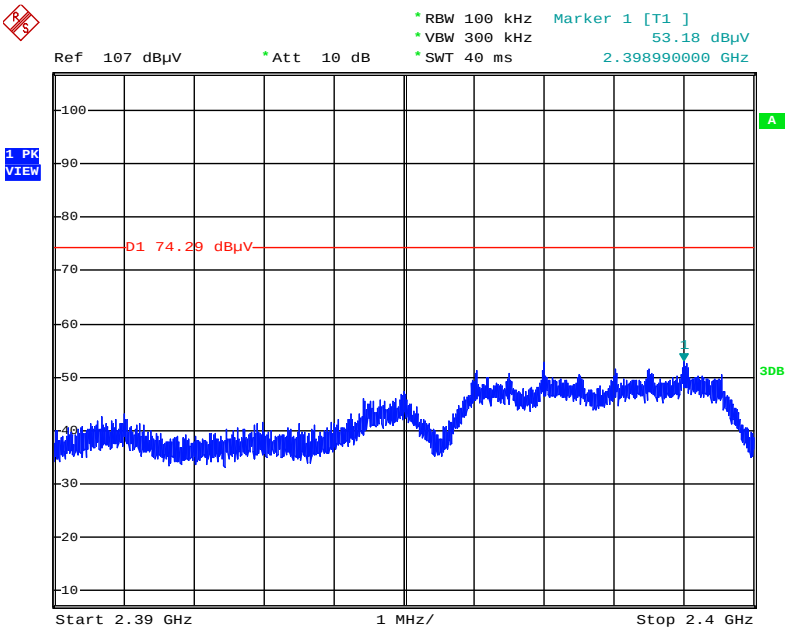
Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:09:05

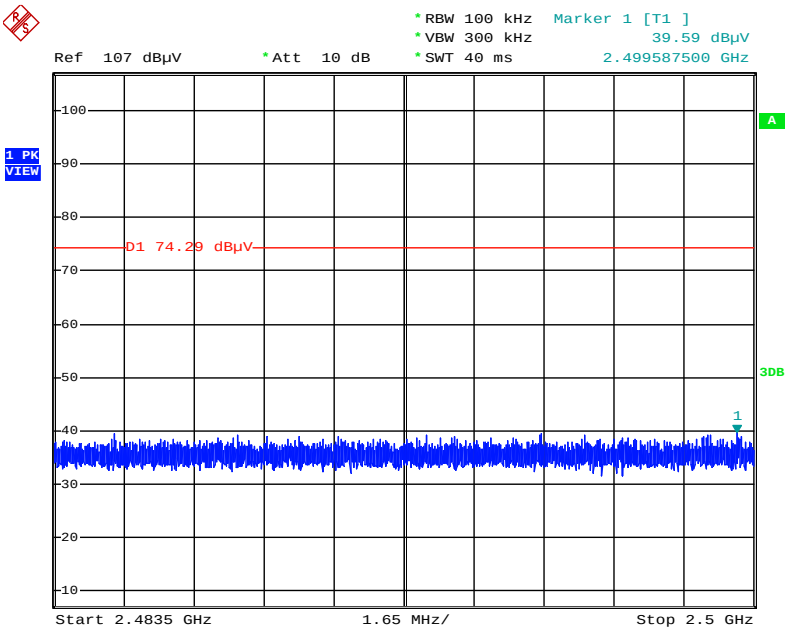
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 1 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:23:27

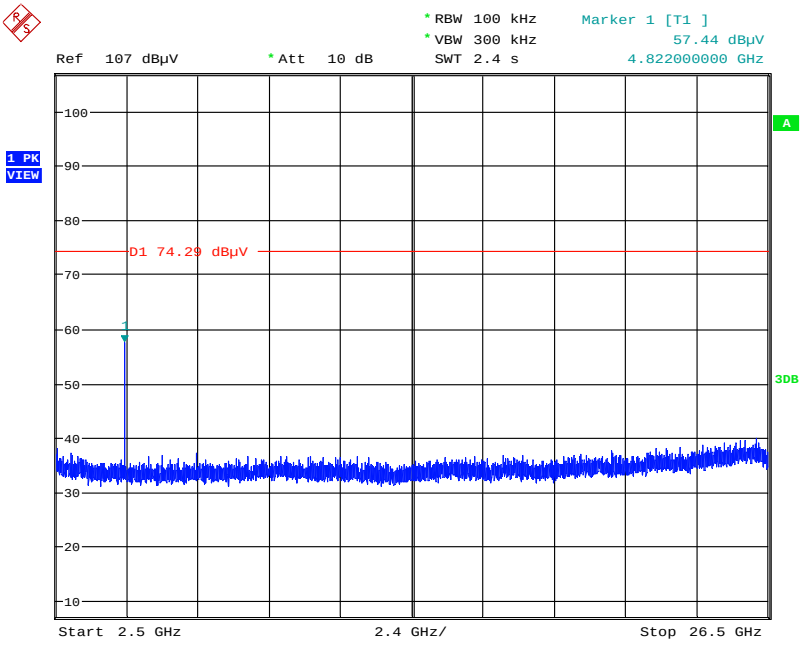
Plot on Configuration IEEE 802.11b / CH 1 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:23:58

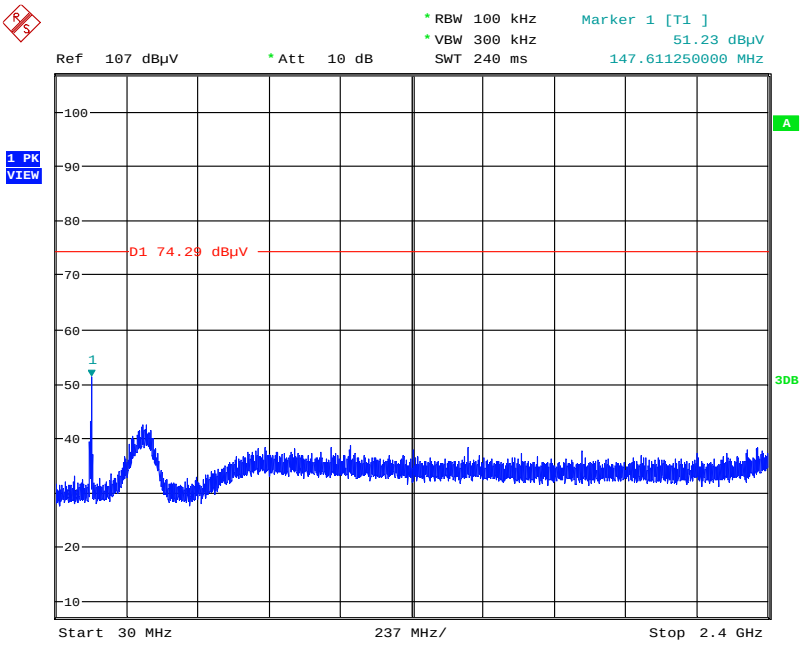
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:09:36

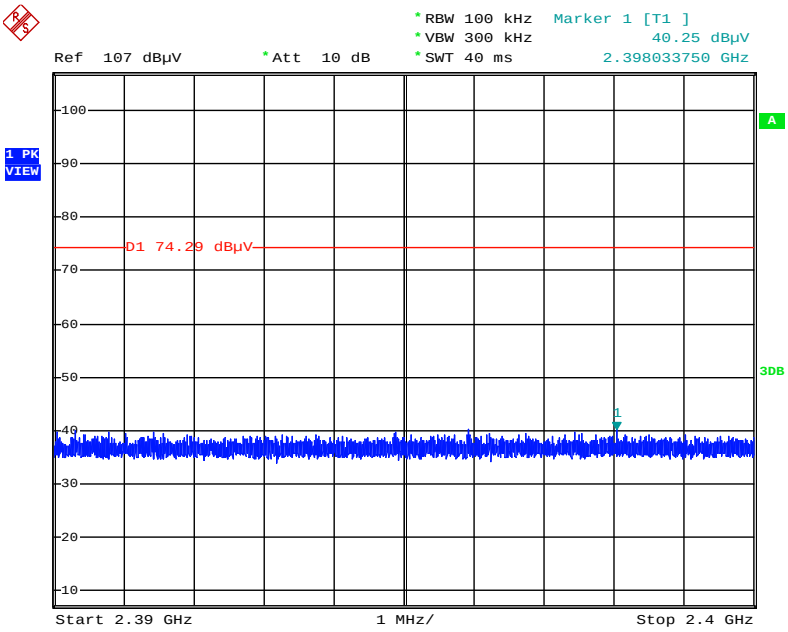
Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:10:13

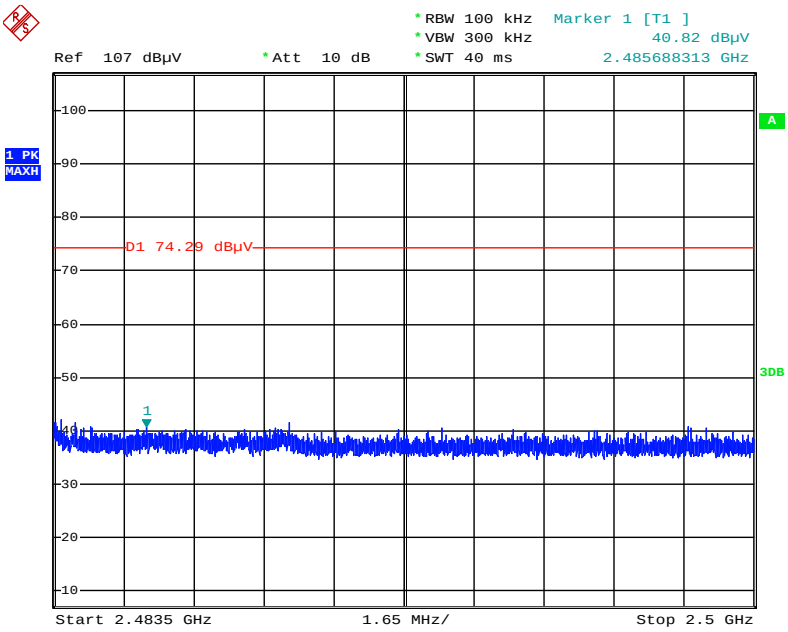
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 11 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:18:15

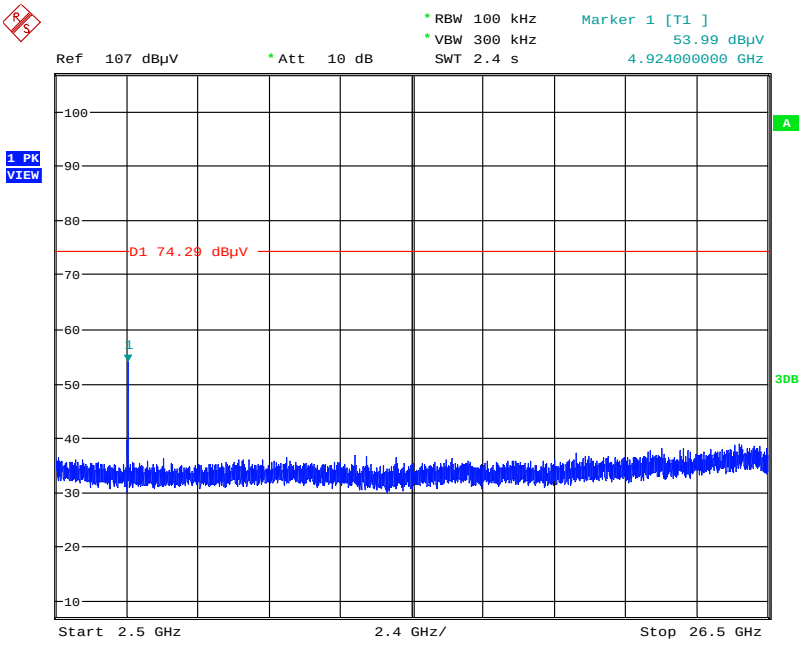
Plot on Configuration IEEE 802.11b / CH 11 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:22:16

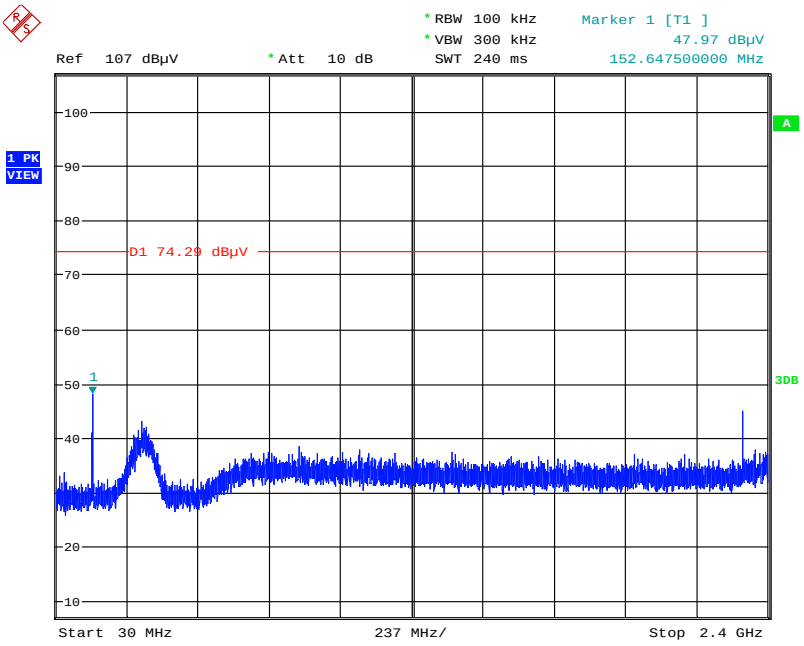
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:10:28

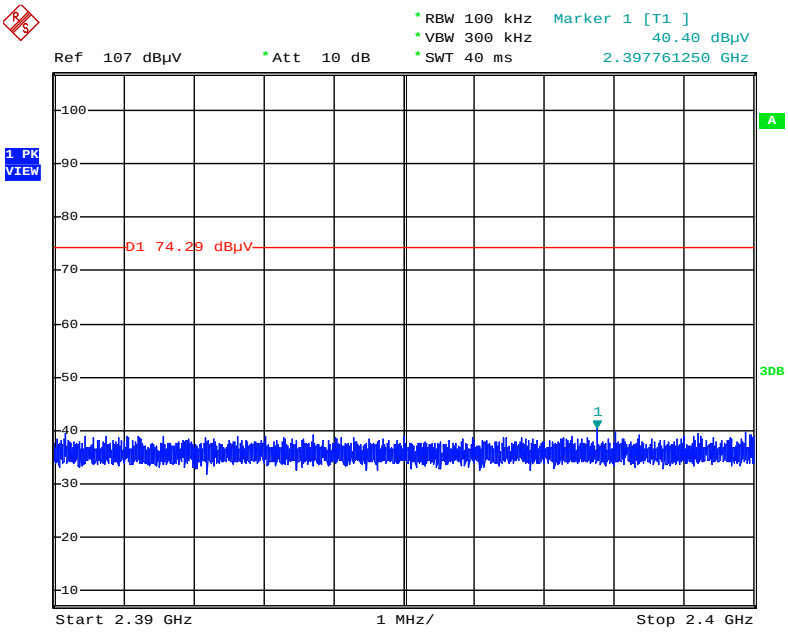
Plot on Configuration IEEE 802.11b / CH 12 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:10:57

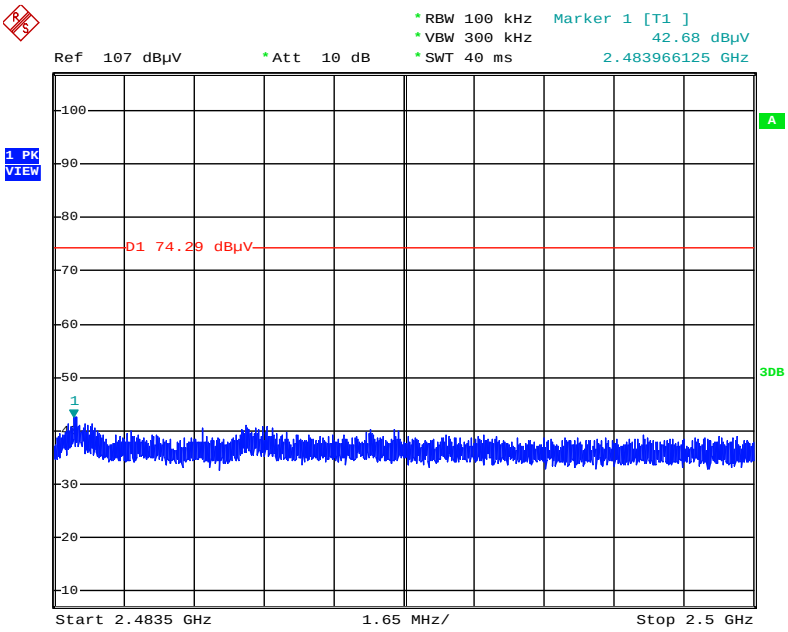
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 12 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:24:50

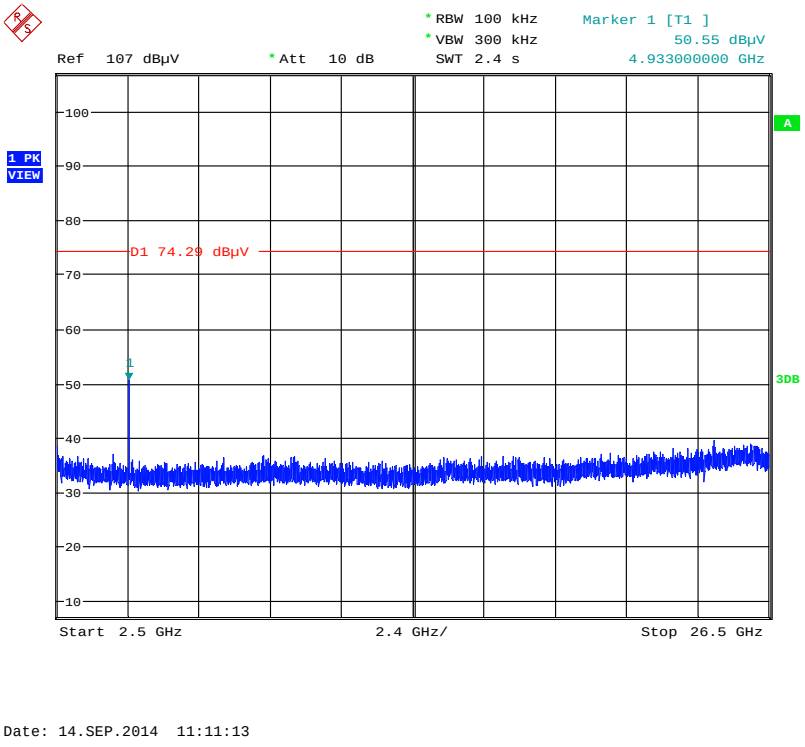
Plot on Configuration IEEE 802.11b / CH 12 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:25:18

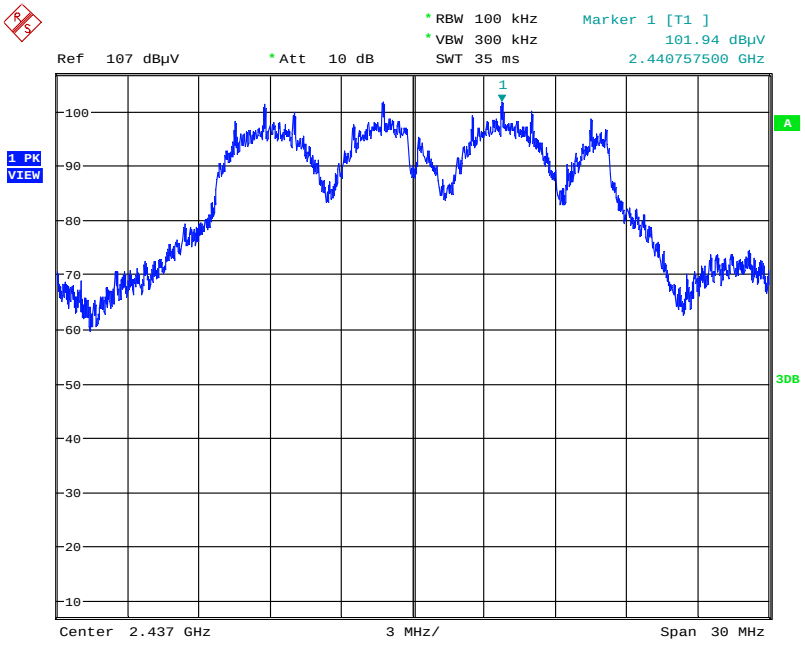
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11b / CH 12 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



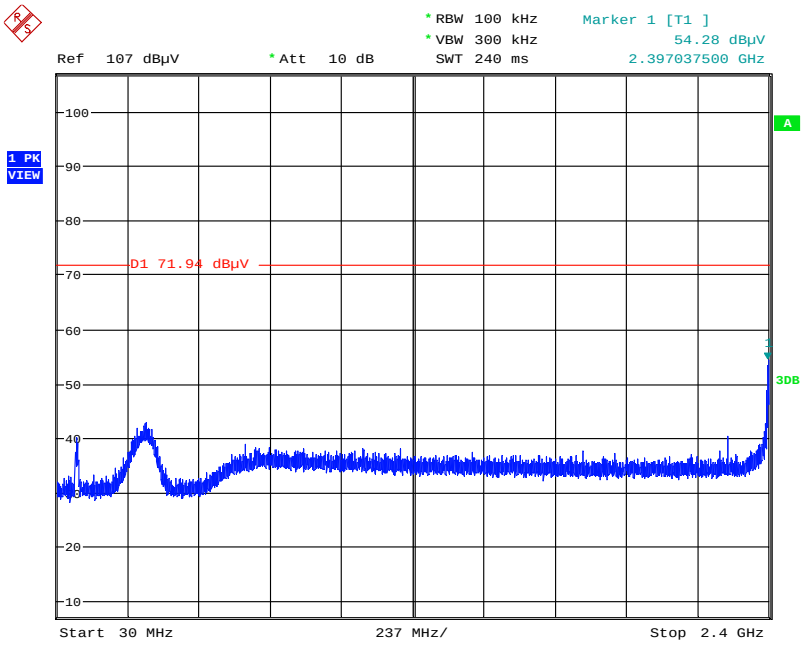
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / Reference Level (Horizontal)



Date: 14.SEP.2014 11:16:00

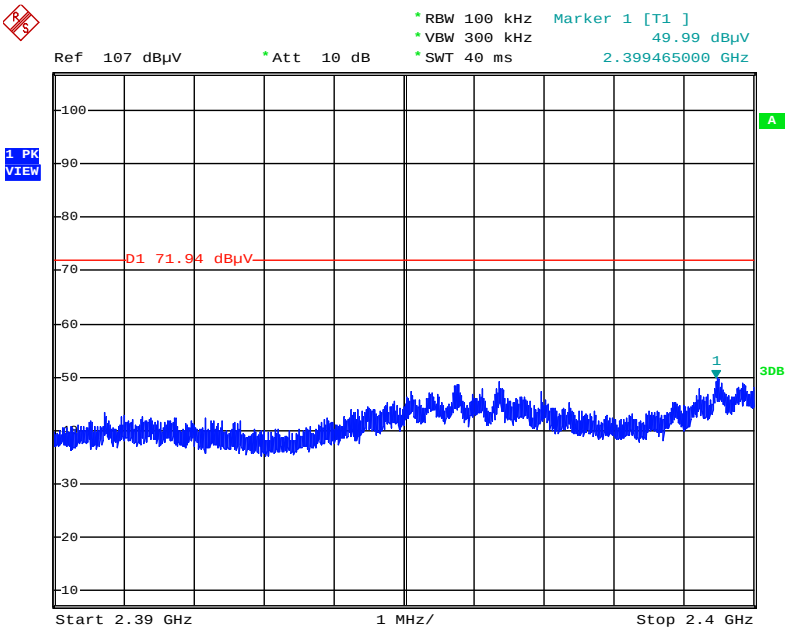
Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:16:58

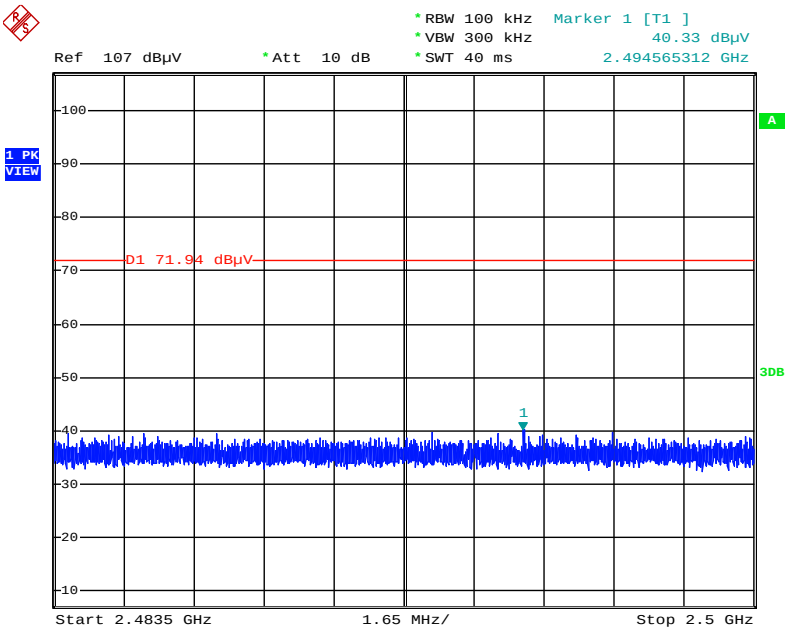
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 1 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:27:46

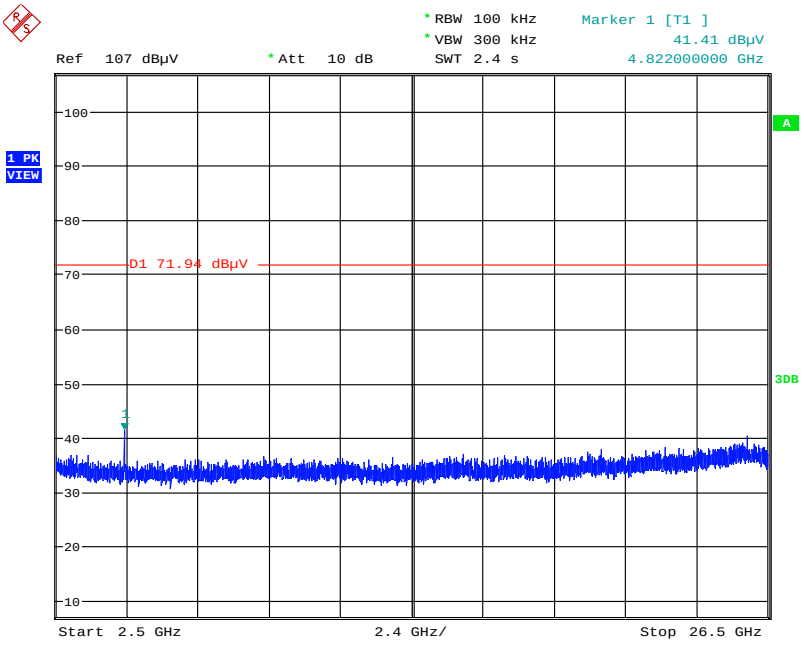
Plot on Configuration IEEE 802.11g / CH 1 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:28:19

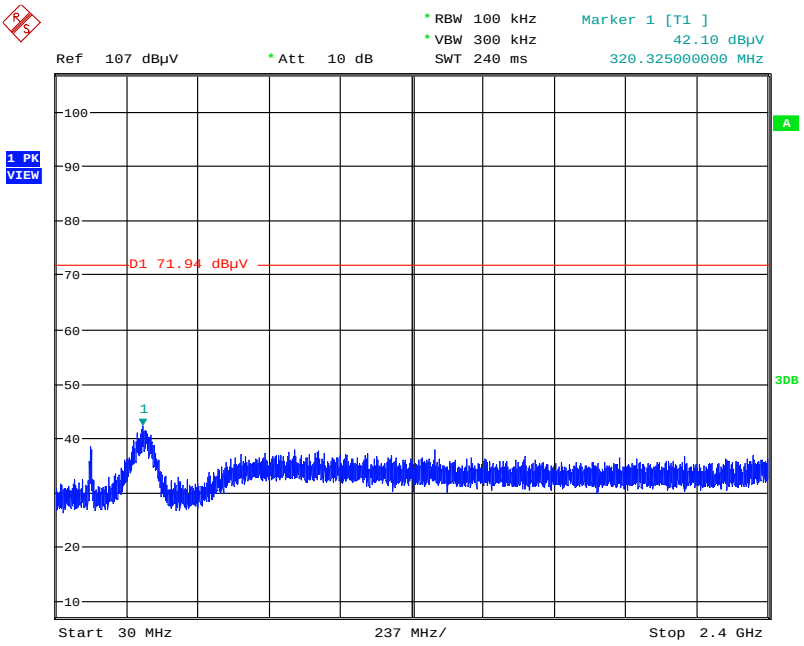
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:17:26

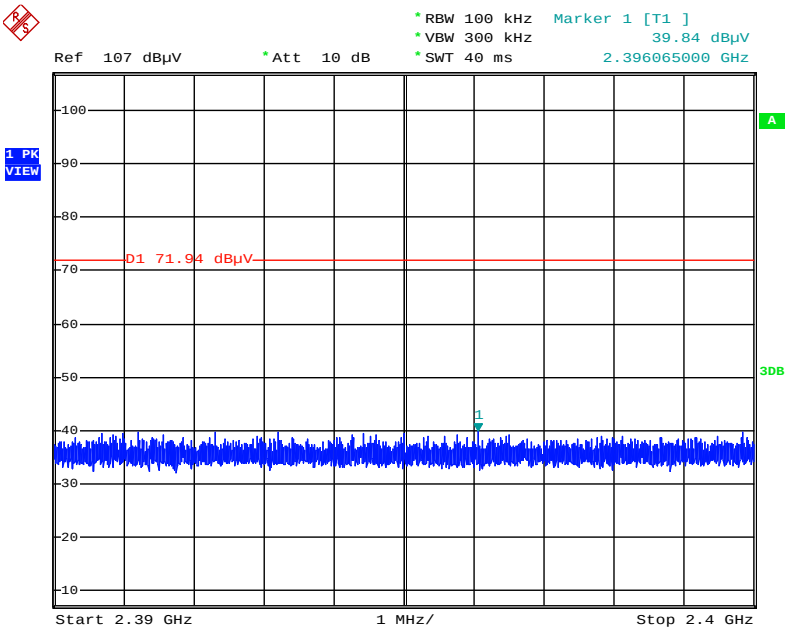
Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:17:53

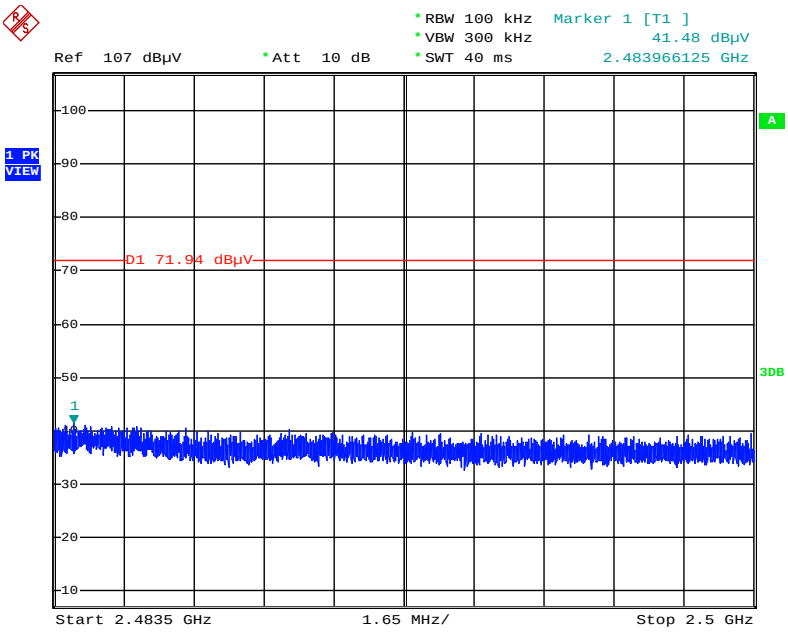
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 11 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:29:56

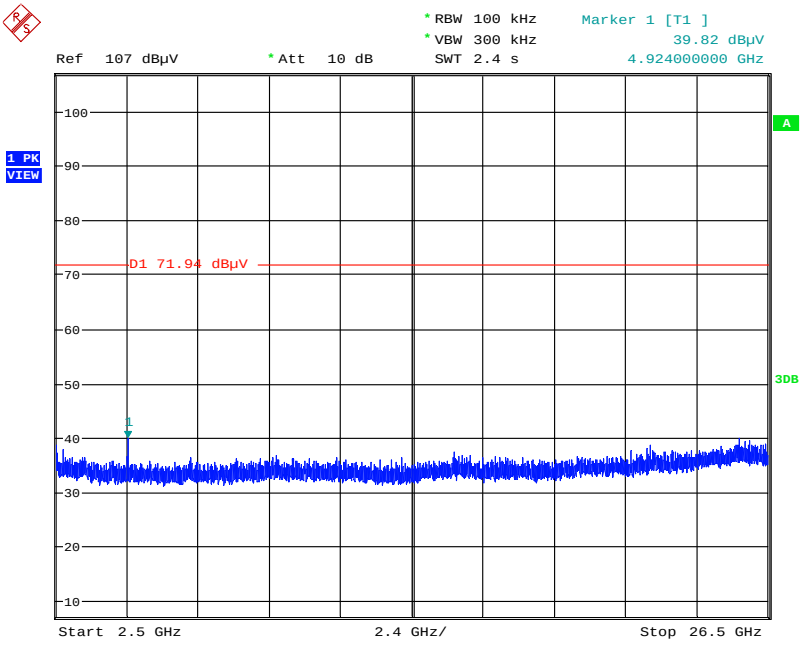
Plot on Configuration IEEE 802.11g / CH 11 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:29:18

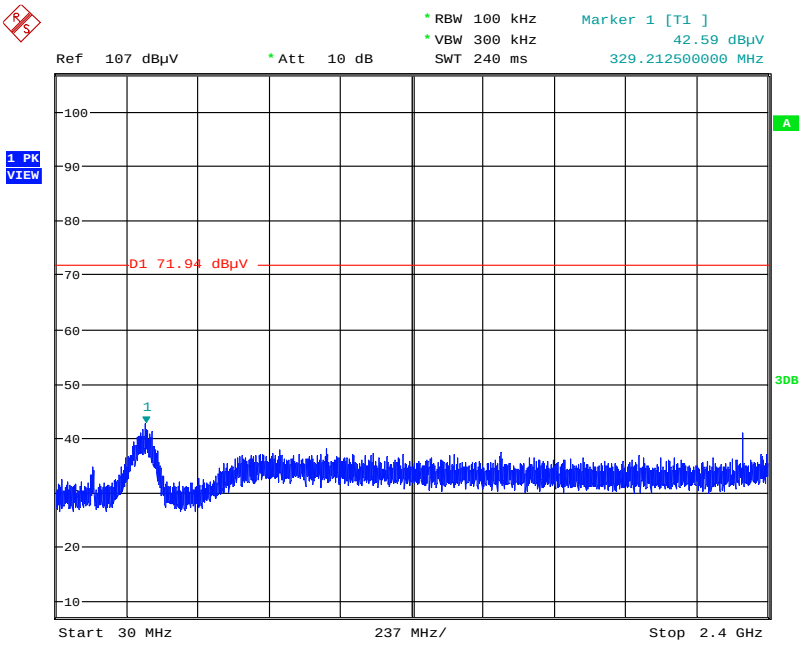
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:18:18

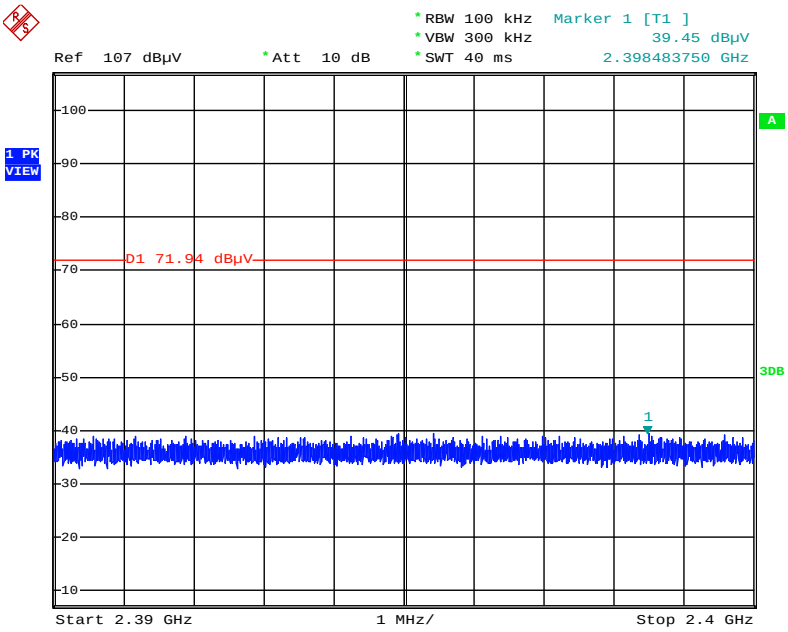
Plot on Configuration IEEE 802.11g / CH 12 / 30MHz~2400MHz (down 30dBc) (Horizontal)



Date: 14.SEP.2014 11:18:43

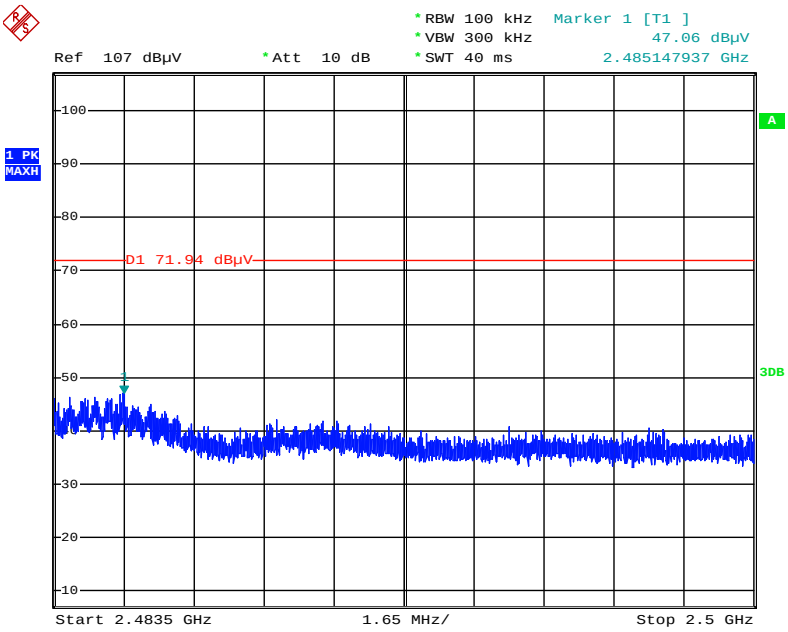
Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 12 / 2390MHz~2400MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:30:31

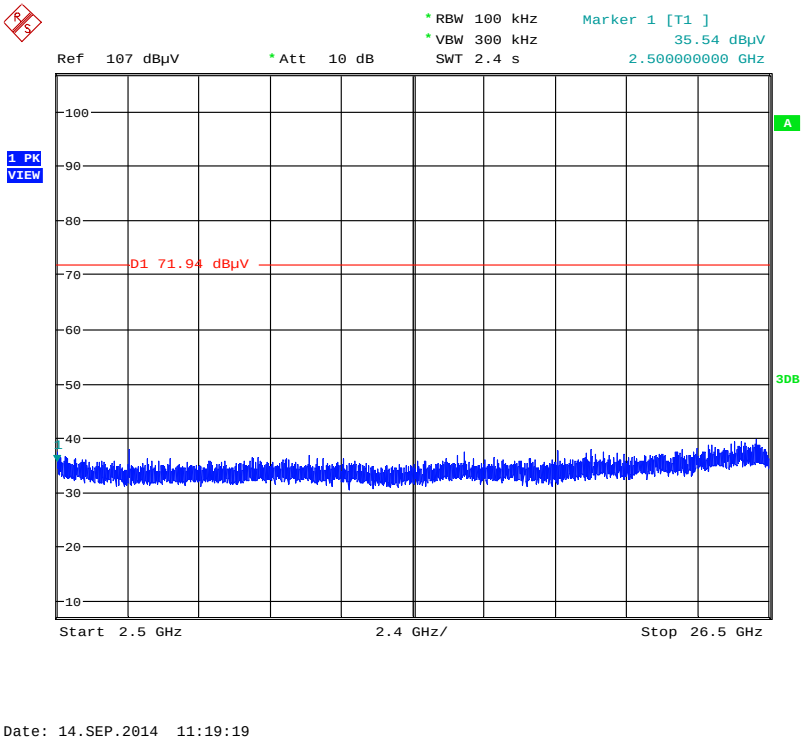
Plot on Configuration IEEE 802.11g / CH 12 / 2483.5MHz~2500MHz (down 30dBc) (Horizontal)



Date: 15.SEP.2014 17:30:56

Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

Plot on Configuration IEEE 802.11g / CH 12 / 2500MHz~26500MHz (down 30dBc) (Horizontal)



Note: Only the worse polarization (Horizontal) is tested and recorded in test report.

4.7. Antenna Requirements

4.7.1. Limit

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

4.7.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9 kHz ~ 2.75 GHz	Apr. 23, 2014	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150 kHz ~ 100 MHz	Nov. 23, 2013	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 11, 2013	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150 kHz ~ 30 MHz	Dec. 04, 2013	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
Signal analyzer	R&S	FSV40	100979	9kHz~40GHz	Nov. 29, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2013	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Sep. 18, 2013	Conducted (TH01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 26, 2014	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Nov. 05, 2012*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 01, 2013	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	9170-507	15GHz ~ 40GHz	Feb. 13, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 12, 2013	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Dec. 16, 2013	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Oct. 23, 2013	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100019	9kHz~40GHz	Dec. 02, 2013	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Dec. 12, 2013	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N.C.R.	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N.C.R.	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2013	Radiation (03CH01-CB)

Note: Calibration Interval of instruments listed above is one year.
"*" Calibration Interval of instruments listed above is two years.
N.C.R. means Non-Calibration required.

6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%