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

NCC RADIO TEST REPORT

Applicant's company	香港商極進網路有限公司台灣分公司
Applicant Address	台北市松山區復勢里南京東路 4 段 126 號 5 樓
Manufacturer's company	啟碁科技股份有限公司
Manufacturer Address	308 新竹科學園區園區二路 20 號

Product Name	WiFi 模組
Brand Name	Extreme Networks
Model No.	CDRDB
Test Rule	NCC LP0002 Section 3.10.1
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Oct. 05, 2015
Final Test Date	Jul. 24, 2017
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**, **NCC LP0002 (Jan. 10, 2018)**, **KDB558074 D01 v04** and **KDB 662911 D01 v02r01**.

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

Testing Laboratory
1190

Table of Contents

1. VERIFICATION OF COMPLIANCE 1

2. SUMMARY OF THE TEST RESULT 2

3. GENERAL INFORMATION 3

3.1. Product Details 3
3.2. Accessories 5
3.3. Table for Filed Antenna 6
3.4. Table for Carrier Frequencies 7
3.5. Table for Test Modes 8
3.6. Table for Testing Locations 12
3.7. Table for Supporting Units 12
3.8. Table for Parameters of Test Software Setting 13
3.9. EUT Operation during Test 14
3.10. Duty Cycle 15
3.11. Test Configurations 17

4. TEST RESULT 22

4.1. AC Power Line Conducted Emissions Measurement 22
4.2. Maximum Conducted Output Power Measurement 28
4.3. Power Spectral Density Measurement 34
4.4. 6dB Spectrum Bandwidth Measurement 58
4.5. Radiated Emissions Measurement 75
4.6. Emissions Measurement 107
4.7. Antenna Requirements 173

5. LIST OF MEASURING EQUIPMENTS 174

6. MEASUREMENT UNCERTAINTY 177

APPENDIX A. TEST PHOTOS ..... A1 ~ A13

APPENDIX B. VERIFICATION WORST CASE ..... B1 ~ B5

History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
TR592302-19AA	Rev. 01	Initial issue of report	Sep. 12, 2017
TR592302-19AA	Rev. 02	Updating the test rule of to “NCC LP0002 (Jan. 10, 2018)” from “NCC LP0002 (Aug. 23, 2016)”.	Mar. 12, 2018

1. VERIFICATION OF COMPLIANCE

Product Name	:	WIFI 模組
Brand Name	:	Extreme Networks
Model No.	:	CDRDB
Applicant	:	香港商極進網路有限公司台灣分公司
Test Rule Part(s)	:	NCC LP0002 Section 3.10.1

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Oct. 05, 2015 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.

Cliff Chang

Cliff Chang

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: NCC LP0002 (Jan. 10, 2018)			
Part	Rule Section	Description of Test	Result
4.1	2.3	AC Power Line Conducted Emissions	Complies
4.2	3.10.1.2	Maximum Conducted Output Power	Complies
4.3	3.10.1.6	Power Spectral Density	Complies
4.4	3.10.1.6	6dB Spectrum Bandwidth	Complies
4.5	3.10.1.5	Radiated Emissions	Complies
4.6	3.10.1.5	Band Edge Emissions	Complies
4.7	3.10.1.4	Antenna Requirements	Complies

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (1TX, 2TX, 3TX / 3RX)
Radio Type	Intentional Transceiver
Power Type	From host system
Modulation	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: see the below table
Data Modulation	IEEE 802.11b: DSSS (BPSK / QPSK / CCK) IEEE 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)
Data Rate (Mbps)	IEEE 802.11b: DSSS (1/ 2/ 5.5/11) IEEE 802.11g: OFDM (6/9/12/18/24/36/48/54) IEEE 802.11n: see the below table
Frequency Range	2400 ~ 2483.5MHz
Channel Number	11 for 20MHz bandwidth ; 7 for 40MHz bandwidth
Channel Band Width (99%)	**For Non-Beamforming Mode** **1TX:** IEEE 802.11b: 10.42 MHz IEEE 802.11g: 16.76 MHz IEEE 802.11n MCS0 (HT20): 17.89 MHz IEEE 802.11n MCS0 (HT40): 36.76 MHz **2TX:** IEEE 802.11b: 10.85 MHz IEEE 802.11g: 17.02 MHz IEEE 802.11n MCS0 (HT20): 17.45 MHz IEEE 802.11n MCS0 (HT40): 37.05 MHz **3TX:** IEEE 802.11b: 10.77 MHz IEEE 802.11g: 16.85 MHz IEEE 802.11n MCS0 (HT20): 17.54 MHz IEEE 802.11n MCS0 (HT40): 36.32 MHz

Maximum Conducted Output Power	**For Non-Beamforming Mode** **1TX:** IEEE 802.11b: 23.63 dBm IEEE 802.11g: 22.02 dBm IEEE 802.11n MCS0 (HT20): 21.68 dBm IEEE 802.11n MCS0 (HT40): 18.43 dBm **2TX:** IEEE 802.11b: 23.98 dBm IEEE 802.11g: 24.72 dBm IEEE 802.11n MCS0 (HT20): 24.71 dBm IEEE 802.11n MCS0 (HT40): 20.91 dBm **3TX:** IEEE 802.11b: 25.47 dBm IEEE 802.11g: 25.72 dBm IEEE 802.11n MCS0 (HT20): 25.56 dBm IEEE 802.11n MCS0 (HT40): 21.29 dBm **For Beamforming Mode** **2TX:** IEEE 802.11n MCS0 (HT20): 24.43 dBm IEEE 802.11n MCS0 (HT40): 20.05 dBm **3TX:** IEEE 802.11n MCS0 (HT20): 26.28 dBm IEEE 802.11n MCS0 (HT40): 19.91 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☒ With beamforming	☐ Without beamforming

Note: The product has beamforming function for 802.11n in 2.4GHz and 802.11n/ac in 5GHz.

Antenna and Band width

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

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	1, 2, 3	MCS 0-7, MCS 0-15, MCS 0-23
802.11n (HT40)	1, 2, 3	MCS 0-7, MCS 0-15, MCS 0-23
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). Then EUT supports HT20 and HT40. Note 2: Modulation modes consist of below configuration: HT20/HT40: IEEE 802.11n		

3.2. Accessories

N/A

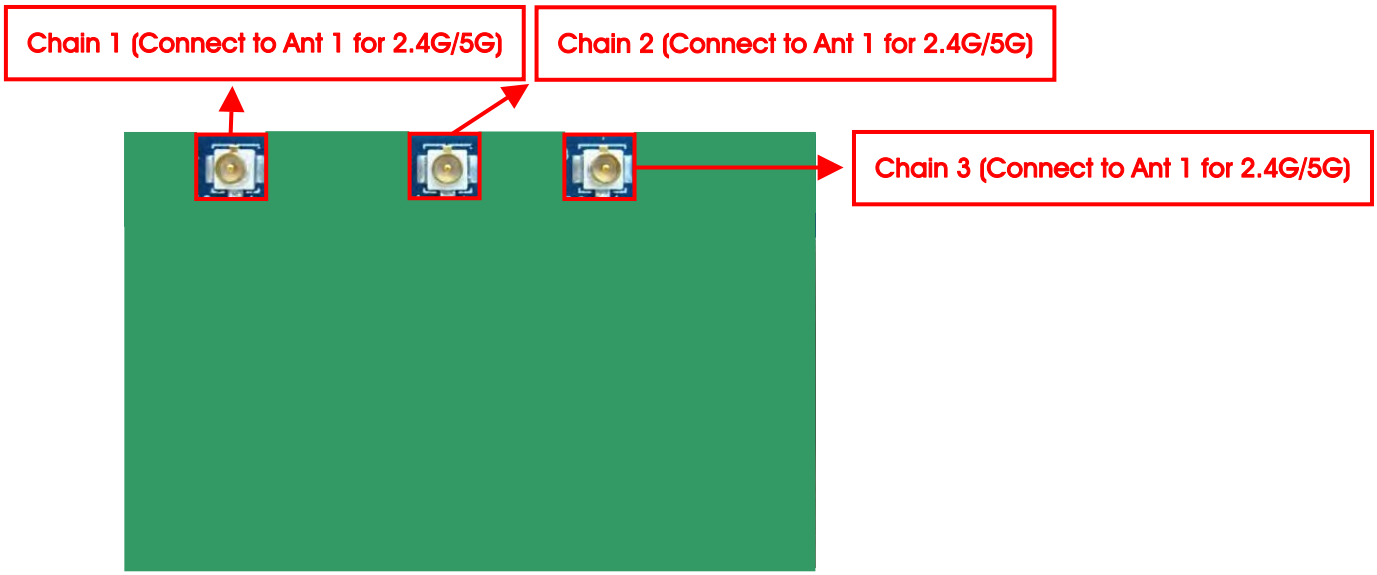
3.3. Table for Filed Antenna

Set	Brand	Model Number	Antenna Type	Connector	Indoor/Outdoor
1	ZEBRA	CEDAR-INT-ANT	Monopole	U.FL	Indoor/outdoor

Note:

Set	Antenna Gain (dBi)					
	2.4G			5G		
	Chain 1	Chain 2	Chain 3	Chain 1	Chain 2	Chain 3
1	4.1	4.4	4.4	5.9	5.4	5.9

For IEEE 802.11b/g/n & For IEEE 802.11a/n/ac					
Mode	BF	Non BF	Chain 1	Chain 2	Chain 3
For 1TX	-	V	TX/RX	RX	RX
For 2TX-Type 1 (Worst case For IEEE 802.11a/n/ac)	-	V	TX/RX	TX/RX	RX
For 2TX-Type 2 (Worst case For IEEE 802.11b/g/n)	-	V	TX/RX	RX	TX/RX
For 2TX	V	-	TX/RX	TX/RX	RX
For 3TX	V	V	TX/RX	TX/RX	TX/RX
Note: BF = Beamforming ; Non-BF = Non Beamforming					



3.4. Table for Carrier Frequencies

There are two bandwidth systems.

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

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

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

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	Intentional - CTX	-	-	-
	Unintentional - CRX	-	-	-
Maximum Conducted Output Power	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1 1+3 1+2+3
	11g/BPSK	6 Mbps	1/6/11	1 1+3 1+2+3
	11n HT20	MCS0	1/6/11	1 1+3 1+2+3
	11n HT40	MCS0	3/6/9	1 1+3 1+2+3
	For Beamforming Mode			
	11n HT20	MCS0	1/6/11	1+2 1+2+3
	11n HT40	MCS0	3/6/9	1+2 1+2+3

Power Spectral Density	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1 1+3 1+2+3
	11g/BPSK	6 Mbps	1/6/11	1 1+3 1+2+3
	11n HT20	MCS0	1/6/11	1 1+3 1+2+3
	11n HT40	MCS0	3/6/9	1 1+3 1+2+3
	For Beamforming Mode			
	11n HT20	MCS0	1/6/11	1+2 1+2+3
	11n HT40	MCS0	3/6/9	1+2 1+2+3
6dB Spectrum Bandwidth	For Non-Beamforming Mode			
	11b/CCK	1 Mbps	1/6/11	1 1+3 1+2+3
	11g/BPSK	6 Mbps	1/6/11	1 1+3 1+2+3
	11n HT20	MCS0	1/6/11	1 1+3 1+2+3
	11n HT40	MCS0	3/6/9	1 1+3 1+2+3

Radiated Emissions 9kHz~1GHz	Intentional - CTX	-	-	-
	Unintentional - CRX	-	-	-
Radiated Emission – Unintentional 1GHz~5th	Unintentional - CRX	-	-	-
Radiated Emissions 1GHz~10th Harmonic	**For Non-Beamforming Mode**			
	11b/CCK	1 Mbps	1/6/11	1 1+2 1+2+3
	11g/BPSK	6 Mbps	1/6/11	1+2+3
	11n HT20	MCS0	1/6/11	1+2+3
	11n HT40	MCS0	3/6/9	1+2+3
Band Edge Emissions	**For Non-Beamforming Mode**			
	11b/CCK	1 Mbps	1/6/11	1 1+3 1+2+3
	11g/BPSK	6 Mbps	1/6/11	1 1+3 1+2+3
	11n HT20	MCS0	1/6/11	1 1+3 1+2+3
	11n HT40	MCS0	3/6/9	1 1+3 1+2+3
	For Beamforming Mode			
	11n HT20	MCS0	1/6/11	1+2 1+2+3
	11n HT40	MCS0	3/6/9	1+2 1+2+3

Note1: There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802 11n. Beamforming mode and non-beamforming mode has been test and record in this test report.

Note2: All the specification of test configurations and test modes were based on customer's request

Note3:The PoE is for measurement only, would not be marketed.

The PoE information as below:

Power	Brand	Model
PoE	Symbol	APSBIAS-2P3-ATR

The following test modes were performed for all tests:

Conducted Emission test			
Intentional - CTX			
Mode	EUT	2.4GHz	5GHz
1	●	●	-
2	●	-	●
Mode 2 generated the worst test result, so it was recorded in this report.			
Unintentional - CRX			
Mode	EUT	2.4GHz	5GHz
3	●	●	-
4	●	-	●
Mode 3 generated the worst test result, so it was recorded in this report.			

Radiated Emission test							
30MHz~1GHz: Intentional - CTX							
The EUT was performed at Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.							
Mode	EUT in Y axis	EUT in Z axis	Set in Y axis	Set in Z axis	2.4GHz	5GHz	Set 1
1	-	●	-	●	●	-	●
2	-	●	-	●	-	●	●
Mode 2 generated the worst test result, so it was recorded in this report.							
30MHz~1GHz: Unintentional - CRX and above1GHz: Unintentional 1GHz~5th							
Mode	EUT in Y axis	EUT in Z axis	Set in Y axis	Set in Z axis	2.4GHz	5GHz	Set 1
3	-	●	-	●	●	-	●
4	-	●	-	●	-	●	●
Mode 3 generated the worst test result, so it was recorded in this report.							

Radiated Emission above1GHz: Intentional 1GHz~10th test							
The EUT was performed at Y axis and Z axis position, and the worst case was found at Z axis.							
Mode	EUT in Y axis	EUT in Z axis	Set in Y axis	Set in Z axis	2.4GHz	5GHz	Set 1
1	-	●	-	●	●	-	●

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	TW0006	IC 4086D
CO01-CB	Conduction	Hsin Chu	TW0006	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

3.7. Table for Supporting Units

For Test Site No: 03CH01-CB (30MHz~1GHz: Intentional and Unintentional and above1GHz: Unintentional 1GHz~5th test and Intentional 1GHz~10th for non-beamforming mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
PoE	Symbol	APSBIAS-2P3-ATR	N/A
Fixture	Bplus	P22S-P22F	N/A

For Test Site No: 03CH01-CB (above1GHz: Intentional 1GHz~10th for beamforming mode)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Notebook	DELL	E4300	DoC
Client Device	Cedar	AP-8532	N/A
PoE	Symbol	APSBIAS-2P3-ATR	N/A
Fixture	Bplus	P22S-P22F	N/A

For Test Site No: CO01-CB (Intentional and Unintentional)

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E6430	DoC
PoE	Symbol	APSBIAS-2P3-ATR	N/A
Fixture	Bplus	P22S-P22F	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
PoE	Symbol	APSBIAS-2P3-ATR	N/A
Fixture	Bplus	P22S-P22F	N/A

3.8. 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.

For Non-Beamforming Mode

Chain 1: 4.1dBi / 1TX

Test Software Version	DoS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	89	92	86	-	-	-
802.11g	72	87	71	-	-	-
802.11n MCS0 HT20	72	85	71	-	-	-
802.11n MCS0 HT40	-	-	-	64	69	63

Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX

Test Software Version	DoS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	79	80	81	-	-	-
802.11g	66	85	66	-	-	-
802.11n MCS0 HT20	67	85	66	-	-	-
802.11n MCS0 HT40	-	-	-	57	66	60

Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

Test Software Version	DoS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	78	79	79	-	-	-
802.11g	66	83	65	-	-	-
802.11n MCS0 HT20	62	83	67	-	-	-
802.11n MCS0 HT40	-	-	-	56	61	58

For Beamforming Mode

Chain 1: 4.1dBi, Chain 2: 4.4dBi / 2TX

Test Software Version	DoS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11n MCS0 HT20	71	88	71	-	-	-
802.11n MCS0 HT40	-	-	-	59	64	60

Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

Test Software Version	DoS					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11n MCS0 HT20	60	88	60	-	-	-
802.11n MCS0 HT40	-	-	-	48	57	40

3.9. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting/receiving mode.

For beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under DOS.
3. Executed "Lantest.exe " to link with the remote workstation to receive and transmit packet by Client Device and transmit duty cycle no less 98%

3.10. Duty Cycle

For non-beamforming mode:

Chain 1: 4.1dBi / 1TX

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	1.000	1.000	100	0.00	0.01
802.11g	2.048	2.084	98.27	0.08	0.01
802.11n MCS0 HT20	1.920	1.956	98.16	0.08	0.01
802.11n MCS0 HT40	0.910	0.960	94.79	0.23	1.10

Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	1.000	1.000	100	0.00	0.01
802.11g	2.064	2.088	98.85	0.05	0.01
802.11n MCS0 HT20	1.920	1.940	98.97	0.05	0.01
802.11n MCS0 HT40	0.918	0.966	95.03	0.22	1.09

Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	1.000	1.000	100	0.00	0.01
802.11g	2.064	2.094	98.57	0.06	0.01
802.11n MCS0 HT20	1.900	1.950	97.44	0.11	0.53
802.11n MCS0 HT40	0.912	0.966	94.41	0.25	1.10

For beamforming mode:

Chain 1: 4.1dBi, Chain 2: 4.4dBi / 2TX

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11n MCS0 HT20	3.792	4.104	92.40	0.34	0.26
802.11n MCS0 HT40	4.553	4.930	92.35	0.35	0.22

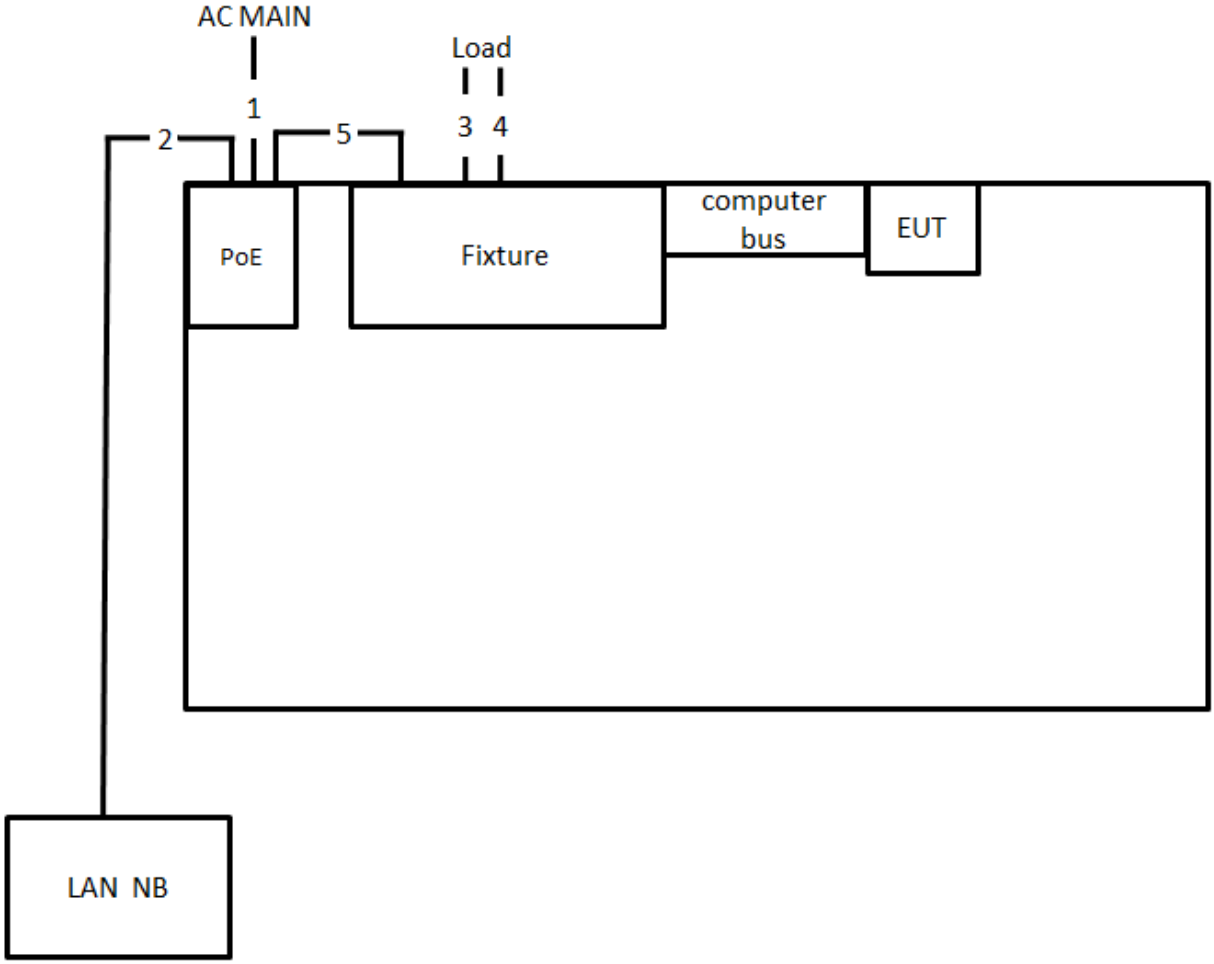
Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11n MCS0 HT20	3.792	4.104	92.40	0.34	0.26
802.11n MCS0 HT40	4.553	4.930	92.35	0.35	0.22

3.11. Test Configurations

3.11.1. AC Power Line Conduction Emissions Test Configuration

Test Configuration: Intentional – CTX and Unintentional – CRX

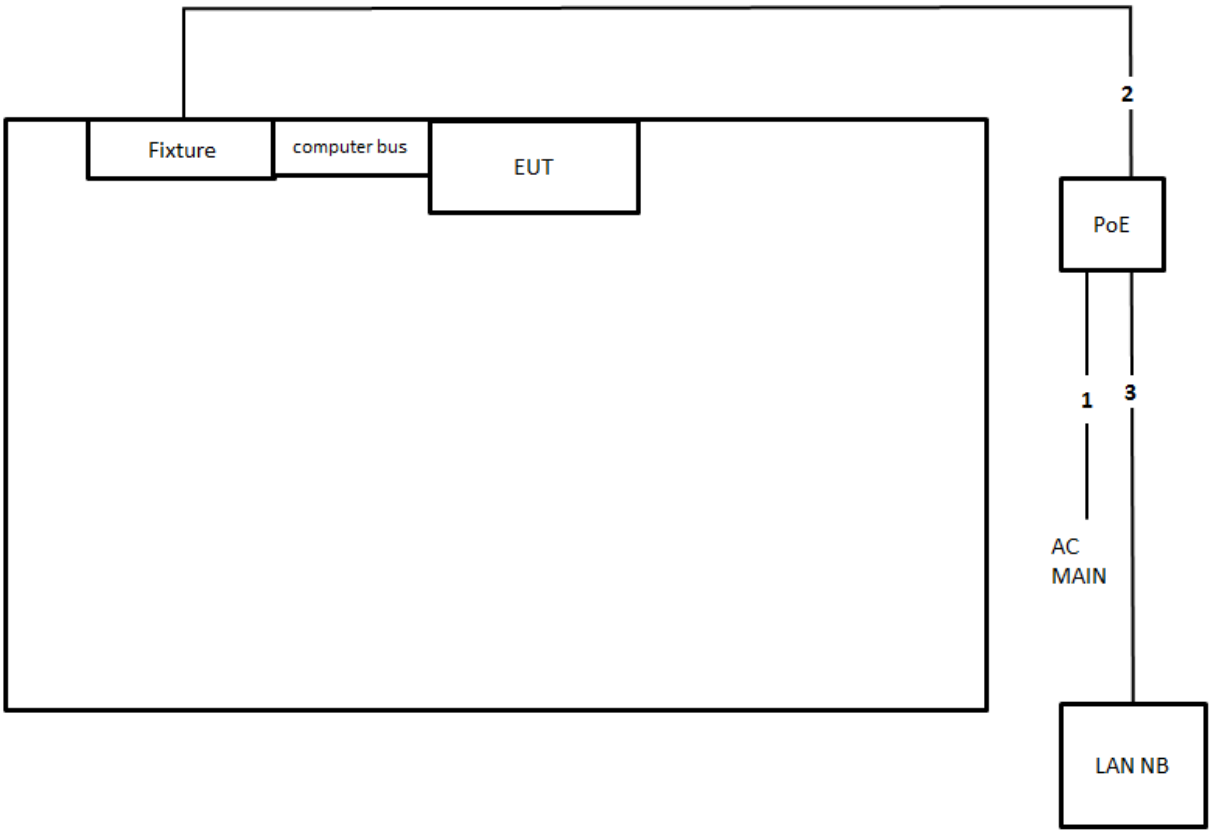


Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1.5m
4	Console cable	No	1.5m
5	RJ-45 cable	No	1.5m

3.11.2. Radiation Emissions Test Configuration

Test Configuration:

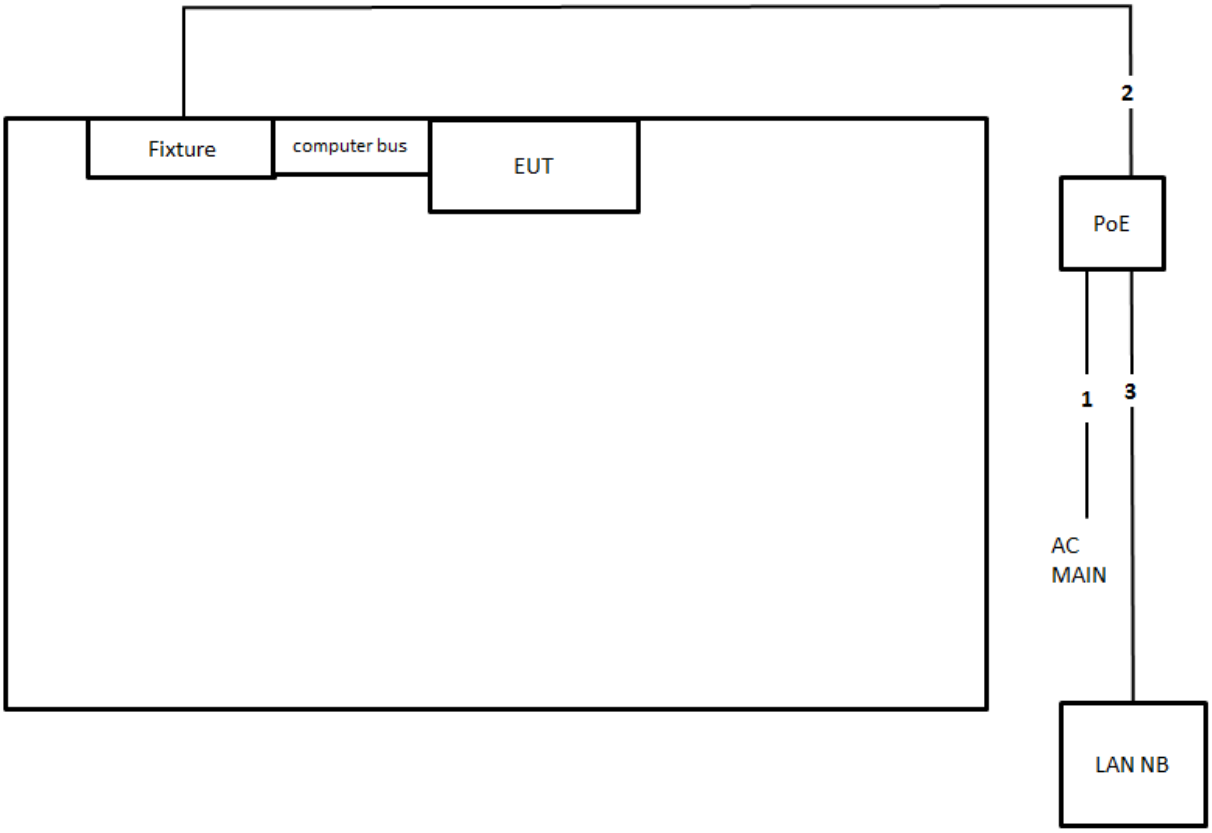
30MHz~1GHz: Intentional - CTX



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1.5m

Test Configuration:

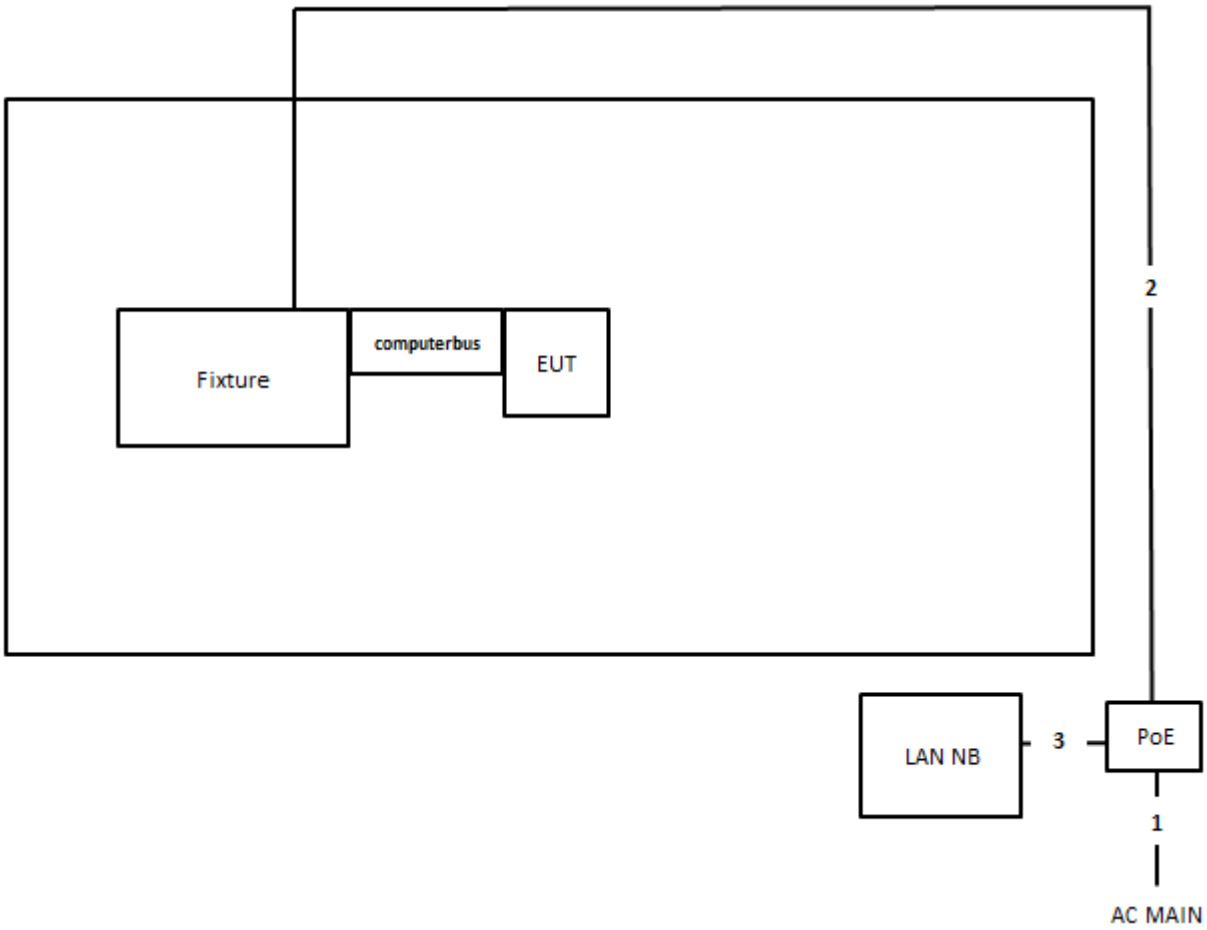
30MHz~1GHz: Unintentional – CRX and Unintentional 1GHz~5th



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1.5m

Test Configuration:

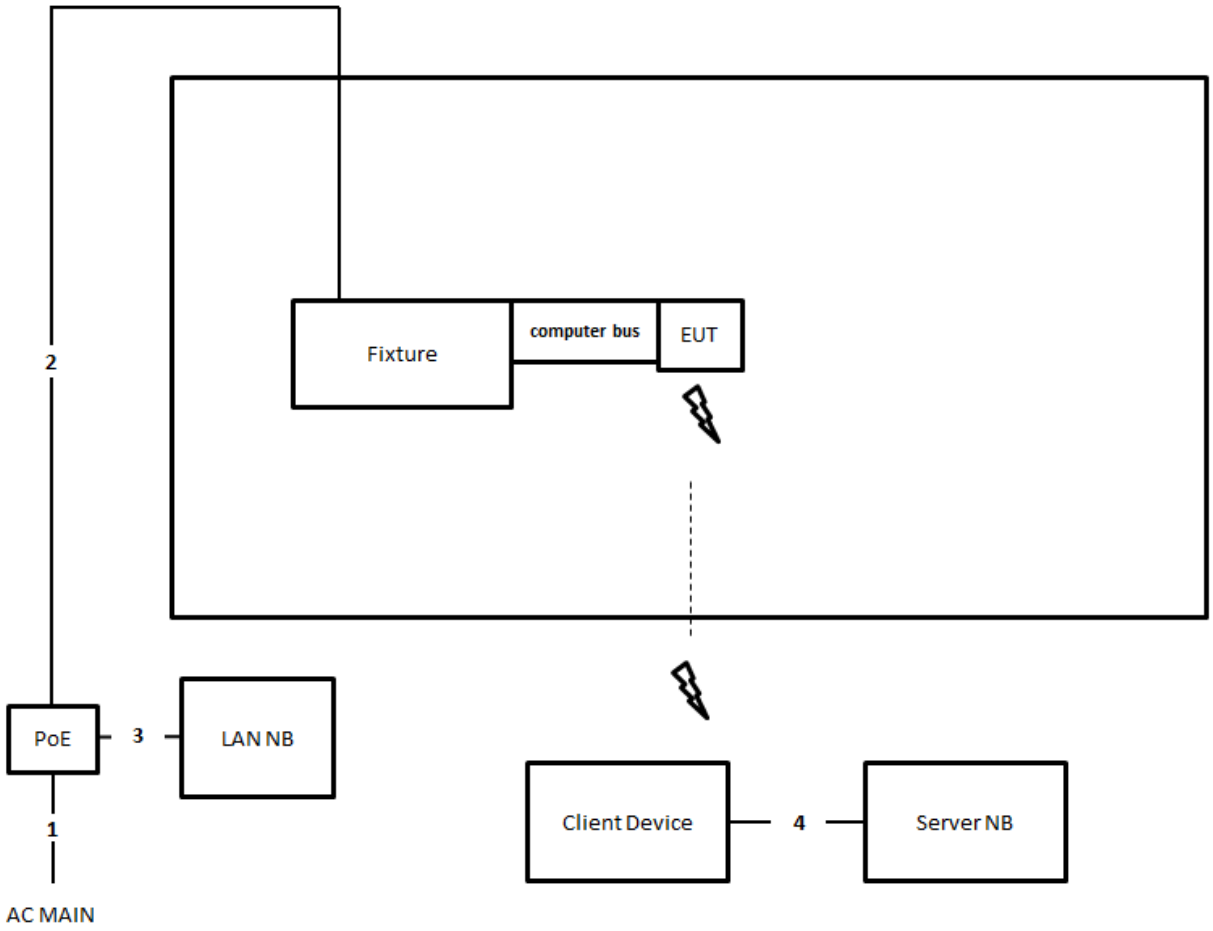
above1GHz: Intentional 1GHz~10th for Non-beamforming mode



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1m

Test Configuration:

above1GHz: Intentional 1GHz~10th for beamforming mode



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	1m
4	RJ-45 cable	No	10m

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

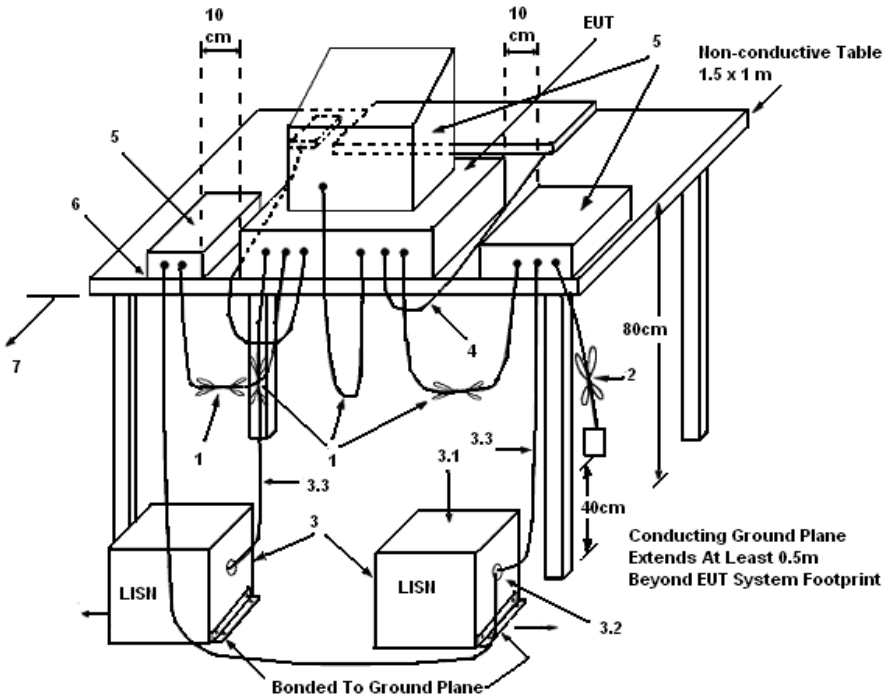
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

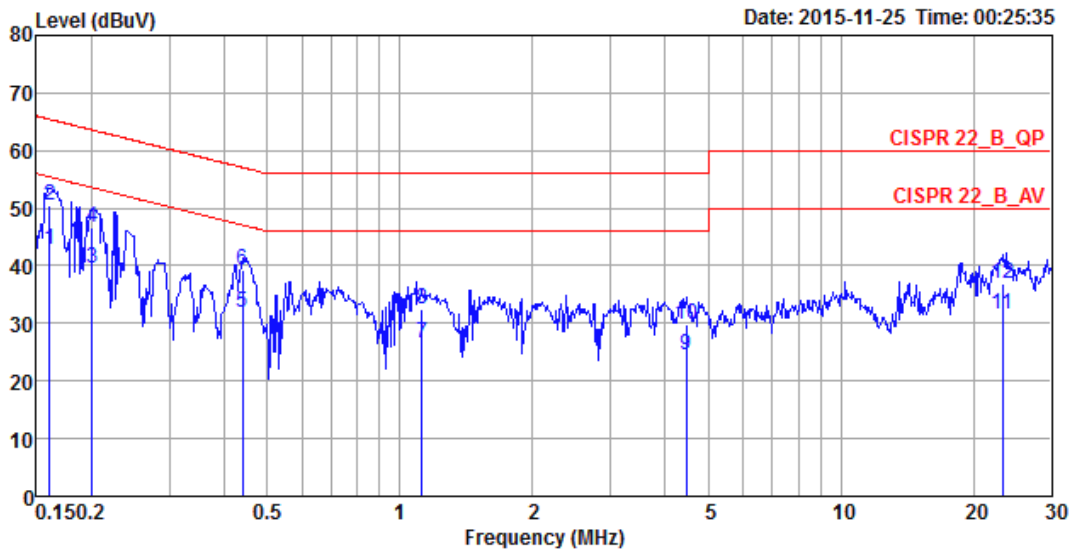
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

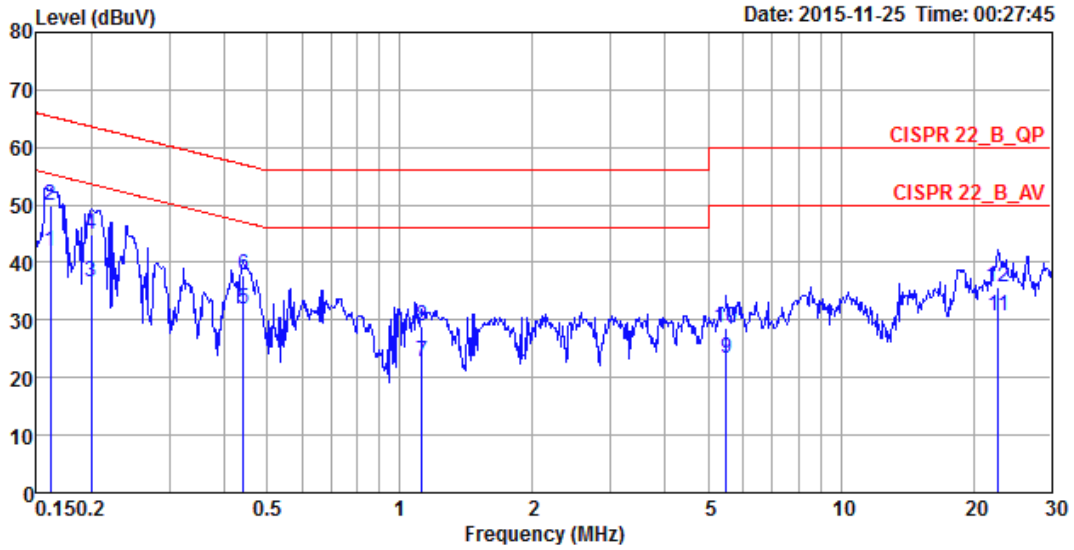
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	25°C	Humidity	59%
Test Engineer	Da Deng	Phase	Line
Configuration	Intentional - CTX	Test Mode	Mode 2



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1607	42.67	-12.76	55.43	32.72	9.93	0.02	LINE	Average
2	0.1607	50.60	-14.83	65.43	40.65	9.93	0.02	LINE	QP
3	0.2007	39.54	-14.04	53.58	29.59	9.93	0.02	LINE	Average
4	0.2007	46.73	-16.85	63.58	36.78	9.93	0.02	LINE	QP
5	0.4397	31.78	-15.29	47.07	21.81	9.93	0.04	LINE	Average
6	0.4397	39.36	-17.71	57.07	29.39	9.93	0.04	LINE	QP
7	1.1233	26.47	-19.53	46.00	16.46	9.96	0.05	LINE	Average
8	1.1233	32.61	-23.39	56.00	22.60	9.96	0.05	LINE	QP
9	4.4540	24.60	-21.40	46.00	14.48	10.04	0.08	LINE	Average
10	4.4540	29.82	-26.18	56.00	19.70	10.04	0.08	LINE	QP
11	23.2633	31.56	-18.44	50.00	20.76	10.53	0.27	LINE	Average
12	23.2633	36.93	-23.07	60.00	26.13	10.53	0.27	LINE	QP

Temperature	25°C	Humidity	59%
Test Engineer	Da Deng	Phase	Neutral
Configuration	Intentional - CTX	Test Mode	Mode 2

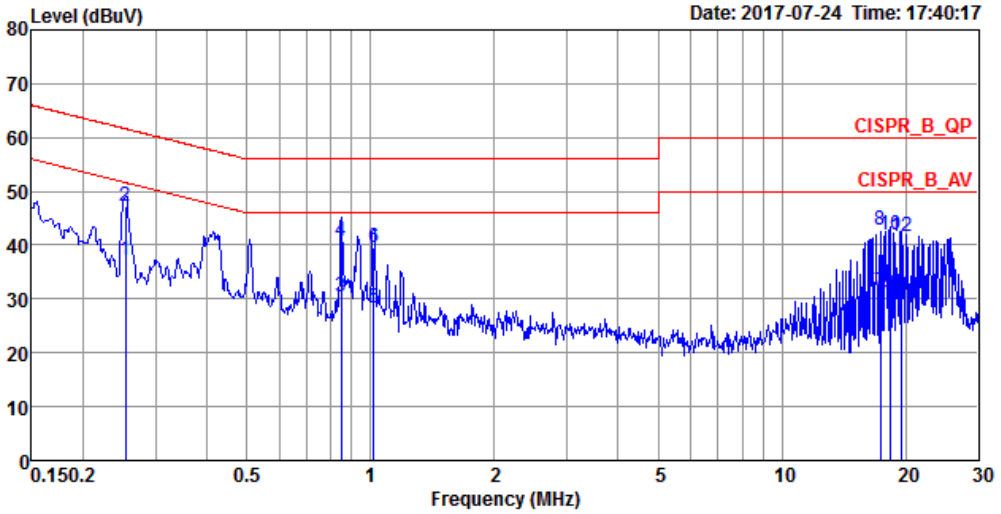


	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1616	42.06	-13.32	55.38	32.26	9.78	0.02	NEUTRAL	Average
2	0.1616	49.81	-15.57	65.38	40.01	9.78	0.02	NEUTRAL	QP
3	0.1997	36.60	-17.02	53.62	26.79	9.79	0.02	NEUTRAL	Average
4	0.1997	45.01	-18.61	63.62	35.20	9.79	0.02	NEUTRAL	QP
5	0.4421	31.74	-15.28	47.02	21.91	9.79	0.04	NEUTRAL	Average
6	0.4421	37.78	-19.24	57.02	27.95	9.79	0.04	NEUTRAL	QP
7	1.1233	22.74	-23.26	46.00	12.88	9.81	0.05	NEUTRAL	Average
8	1.1233	28.87	-27.13	56.00	19.01	9.81	0.05	NEUTRAL	QP
9	5.5054	23.35	-26.65	50.00	13.32	9.92	0.11	NEUTRAL	Average
10	5.5054	28.55	-31.45	60.00	18.52	9.92	0.11	NEUTRAL	QP
11	22.7755	30.62	-19.38	50.00	20.12	10.23	0.27	NEUTRAL	Average
12	22.7755	35.84	-24.16	60.00	25.34	10.23	0.27	NEUTRAL	QP

Note:

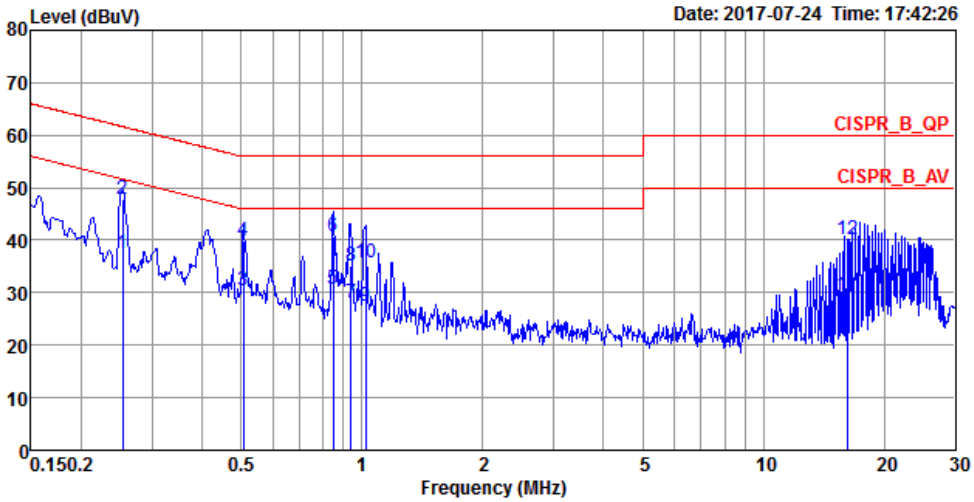
Level = Read Level + LISN Factor + Cable Loss.

Temperature	22°C	Humidity	55%
Test Engineer	Howard Liu	Phase	Line
Configuration	Unintentional – CRX	Test Mode	Mode 3



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.2535	37.09	-14.55	51.64	27.08	9.92	0.09	Average	LINE
2	0.2535	47.11	-14.53	61.64	37.10	9.92	0.09	QP	LINE
3	0.8483	30.51	-15.49	46.00	20.39	9.96	0.16	Average	LINE
4	0.8483	40.64	-15.36	56.00	30.52	9.96	0.16	QP	LINE
5	1.0157	28.22	-17.78	46.00	18.07	9.96	0.19	Average	LINE
6	1.0157	39.61	-16.39	56.00	29.46	9.96	0.19	QP	LINE
7	17.3638	31.40	-18.60	50.00	20.92	10.28	0.20	Average	LINE
8	17.3638	42.73	-17.27	60.00	32.25	10.28	0.20	QP	LINE
9	18.3142	31.00	-19.00	50.00	20.50	10.30	0.20	Average	LINE
10	18.3142	41.99	-18.01	60.00	31.49	10.30	0.20	QP	LINE
11	19.5048	30.71	-19.29	50.00	20.18	10.33	0.20	Average	LINE
12	19.5048	41.54	-18.46	60.00	31.01	10.33	0.20	QP	LINE

Temperature	22°C	Humidity	55%
Test Engineer	Howard Liu	Phase	Neutral
Configuration	Unintentional – CRX	Test Mode	Mode 3



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.2535	37.61	-14.03	51.64	27.44	10.08	0.09	Average	NEUTRAL
2	0.2535	47.96	-13.68	61.64	37.79	10.08	0.09	QP	NEUTRAL
3	0.5074	30.43	-15.57	46.00	20.15	10.22	0.06	Average	NEUTRAL
4	0.5074	39.97	-16.03	56.00	29.69	10.22	0.06	QP	NEUTRAL
5	0.8483	30.81	-15.19	46.00	20.55	10.10	0.16	Average	NEUTRAL
6	0.8483	40.84	-15.16	56.00	30.58	10.10	0.16	QP	NEUTRAL
7	0.9381	28.08	-17.92	46.00	17.83	10.07	0.18	Average	NEUTRAL
8	0.9381	35.16	-20.84	56.00	24.91	10.07	0.18	QP	NEUTRAL
9	1.0211	27.45	-18.55	46.00	17.21	10.05	0.19	Average	NEUTRAL
10	1.0211	35.70	-20.30	56.00	25.46	10.05	0.19	QP	NEUTRAL
11	16.1748	29.59	-20.41	50.00	19.11	10.29	0.19	Average	NEUTRAL
12	16.1748	40.13	-19.87	60.00	29.65	10.29	0.19	QP	NEUTRAL

Note:

Level = Read Level + LISN Factor + Cable Loss.

4.2. Maximum Conducted Output Power Measurement

4.2.1. Limit

The limit for output power is 30dBm.

4.2.2. Measuring Instruments and Setting

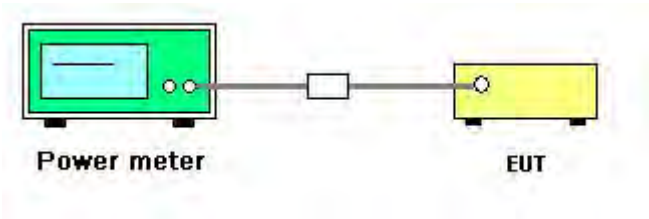
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Average

4.2.3. Test Procedures

1. Test procedures refer KDB558074 D01 v04 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

For Non-Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Test Date	Oct. 14, 2015~Dec. 23, 2015
Configurations	Chain 1: 4.1dBi / 1TX		

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
		Chain 1		
802.11b	2412 MHz	22.98	30.00	Complies
	2437 MHz	23.63	30.00	Complies
	2462 MHz	22.13	30.00	Complies
802.11g	2412 MHz	19.28	30.00	Complies
	2437 MHz	22.02	30.00	Complies
	2462 MHz	18.61	30.00	Complies
802.11n MCS0 HT20	2412 MHz	19.15	30.00	Complies
	2437 MHz	21.68	30.00	Complies
	2462 MHz	18.72	30.00	Complies
802.11n MCS0 HT40	2422 MHz	17.55	30.00	Complies
	2437 MHz	18.43	30.00	Complies
	2452 MHz	17.29	30.00	Complies

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Test Date	Oct. 14, 2015~Dec. 23, 2015
Configurations	Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX		

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 3	Total		
802.11b	2412 MHz	20.91	21.03	23.98	30.00	Complies
	2437 MHz	20.95	21.32	24.15	30.00	Complies
	2462 MHz	21.02	21.42	24.23	30.00	Complies
802.11g	2412 MHz	17.82	17.94	20.89	30.00	Complies
	2437 MHz	21.54	21.87	24.72	30.00	Complies
	2462 MHz	17.43	17.62	20.54	30.00	Complies
802.11n MCS0 HT20	2412 MHz	18.13	18.25	21.20	30.00	Complies
	2437 MHz	21.62	21.77	24.71	30.00	Complies
	2462 MHz	17.64	17.81	20.74	30.00	Complies
802.11n MCS0 HT40	2422 MHz	16.06	16.15	19.12	30.00	Complies
	2437 MHz	17.84	17.95	20.91	30.00	Complies
	2452 MHz	16.34	16.53	19.45	30.00	Complies

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Test Date	Oct. 14, 2015~Dec. 23, 2015
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX		

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11b	2412 MHz	20.71	20.34	20.58	25.32	30.00	Complies
	2437 MHz	20.71	20.38	20.98	25.47	30.00	Complies
	2462 MHz	20.64	20.23	21.03	25.42	30.00	Complies
802.11g	2412 MHz	17.69	17.32	17.86	22.40	30.00	Complies
	2437 MHz	21.11	20.65	21.08	25.72	30.00	Complies
	2462 MHz	17.29	16.86	17.34	21.94	30.00	Complies
802.11n MCS0 HT20	2412 MHz	16.52	15.89	16.62	21.13	30.00	Complies
	2437 MHz	20.94	20.48	20.92	25.56	30.00	Complies
	2462 MHz	17.46	16.88	17.35	22.01	30.00	Complies
802.11n MCS0 HT40	2422 MHz	15.59	14.78	15.63	20.12	30.00	Complies
	2437 MHz	16.74	16.02	16.77	21.29	30.00	Complies
	2452 MHz	15.66	14.91	15.84	20.26	30.00	Complies

For Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Test Date	Oct. 23, 2015~Dec. 23, 2015
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi / 2TX		

Mode	Frequency	Conducted Power (dBm)			Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total		
802.11n MCS0 HT20	2412 MHz	18.97	18.45	21.73	28.74	Complies
	2437 MHz	21.94	20.82	24.43	28.74	Complies
	2462 MHz	18.51	18.09	21.32	28.74	Complies
802.11n MCS0 HT40	2422 MHz	16.12	15.13	18.66	28.74	Complies
	2437 MHz	17.52	16.49	20.05	28.74	Complies
	2452 MHz	16.27	15.17	18.77	28.74	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.26dBi > 6dBi, So Limit =30-(7.26-6)=28.74dBm.

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Test Date	Oct. 23, 2015~Dec. 23, 2015
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX		

Mode	Frequency	Conducted Power (dBm)				Max. Limit (dBm)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11n MCS0 HT20	2412 MHz	16.29	15.56	16.12	20.77	26.93	Complies
	2437 MHz	21.88	21.42	21.21	26.28	26.93	Complies
	2462 MHz	16.24	15.08	15.84	20.52	26.93	Complies
802.11n MCS0 HT40	2422 MHz	13.47	12.48	13.05	17.79	26.93	Complies
	2437 MHz	15.56	14.52	15.26	19.91	26.93	Complies
	2452 MHz	11.08	9.75	10.96	15.41	26.93	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.07dBi > 6dBi, So Limit =30-(9.07-6)=26.93dBm.

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

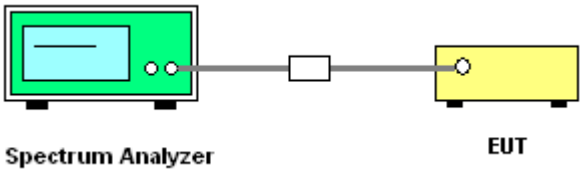
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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 KDB558074 D01 v04 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

For Non-Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi / 1TX		

Mode	Frequency	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
		Chain 1		
802.11b	2412 MHz	2.52	8.00	Complies
	2437 MHz	2.83	8.00	Complies
	2462 MHz	1.46	8.00	Complies
802.11g	2412 MHz	-4.67	8.00	Complies
	2437 MHz	-1.23	8.00	Complies
	2462 MHz	-5.58	8.00	Complies
802.11n MCS0 HT20	2412 MHz	-5.76	8.00	Complies
	2437 MHz	-2.27	8.00	Complies
	2462 MHz	-5.72	8.00	Complies
802.11n MCS0 HT40	2422 MHz	-10.64	8.00	Complies
	2437 MHz	-9.25	8.00	Complies
	2452 MHz	-10.65	8.00	Complies

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX		

Mode	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 3	Total		
802.11b	2412 MHz	-0.38	-0.62	2.51	6.74	Complies
	2437 MHz	0.65	0.86	3.77	6.74	Complies
	2462 MHz	1.56	2.13	4.86	6.74	Complies
802.11g	2412 MHz	-5.66	-4.96	-2.29	6.74	Complies
	2437 MHz	-1.82	-0.97	1.64	6.74	Complies
	2462 MHz	-5.50	-5.41	-2.44	6.74	Complies
802.11n MCS0 HT20	2412 MHz	-6.59	-4.83	-2.61	6.74	Complies
	2437 MHz	-1.92	-1.16	1.49	6.74	Complies
	2462 MHz	-5.99	-5.37	-2.66	6.74	Complies
802.11n MCS0 HT40	2422 MHz	-11.91	-11.38	-8.63	6.74	Complies
	2437 MHz	-10.14	-9.99	-7.05	6.74	Complies
	2452 MHz	-11.28	-10.13	-7.66	6.74	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.26dBi>6dBi, So Limit =8-(7.26-6)=6.74dBm/3kHz.

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX		

Mode	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11b	2412 MHz	-0.02	-0.96	-0.47	4.30	4.93	Complies
	2437 MHz	-0.79	-0.42	0.44	4.55	4.93	Complies
	2462 MHz	0.20	-0.73	-0.24	4.53	4.93	Complies
802.11g	2412 MHz	-6.09	-5.86	-4.85	-0.79	4.93	Complies
	2437 MHz	-1.86	-1.30	-1.72	3.15	4.93	Complies
	2462 MHz	-5.71	-5.71	-5.78	-0.96	4.93	Complies
802.11n MCS0 HT20	2412 MHz	-7.57	-7.36	-7.06	-2.55	4.93	Complies
	2437 MHz	-1.91	-3.17	-2.30	2.34	4.93	Complies
	2462 MHz	-6.77	-7.02	-5.94	-1.78	4.93	Complies
802.11n MCS0 HT40	2422 MHz	-12.60	-13.46	-11.43	-7.65	4.93	Complies
	2437 MHz	-11.11	-12.24	-11.29	-6.75	4.93	Complies
	2452 MHz	-12.17	-12.71	-12.16	-7.57	4.93	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.07dBi>6dBi, So Limit =8-(9.07-6)=4.93dBm/3kHz.

For Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi / 2TX		

Mode	Frequency	Power Density (dBm/3kHz)			Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Total		
802.11n MCS0 HT20	2412 MHz	-5.70	-6.30	-2.98	6.74	Complies
	2437 MHz	-0.93	-1.43	1.84	6.74	Complies
	2462 MHz	-6.25	-5.38	-2.78	6.74	Complies
802.11n MCS0 HT40	2422 MHz	-12.50	-11.53	-8.98	6.74	Complies
	2437 MHz	-8.79	-11.21	-6.82	6.74	Complies
	2452 MHz	-12.15	-12.10	-9.11	6.74	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =7.26dBi>6dBi, So Limit =8-(7.26-6)=6.74dBm/3kHz.

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX		

Mode	Frequency	Power Density (dBm/3kHz)				Power Density Limit (dBm/3kHz)	Result
		Chain 1	Chain 2	Chain 3	Total		
802.11n MCS0 HT20	2412 MHz	-8.12	-9.78	-8.60	-4.01	4.93	Complies
	2437 MHz	-1.60	-1.73	-1.50	3.16	4.93	Complies
	2462 MHz	-9.27	-9.54	-8.02	-4.12	4.93	Complies
802.11n MCS0 HT40	2422 MHz	-15.52	-16.76	-15.67	-11.18	4.93	Complies
	2437 MHz	-12.51	-13.81	-13.18	-8.36	4.93	Complies
	2452 MHz	-16.46	-17.21	-17.79	-12.35	4.93	Complies

Note: $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ =9.07dBi>6dBi, So Limit =8-(9.07-6)=4.93dBm/3kHz.

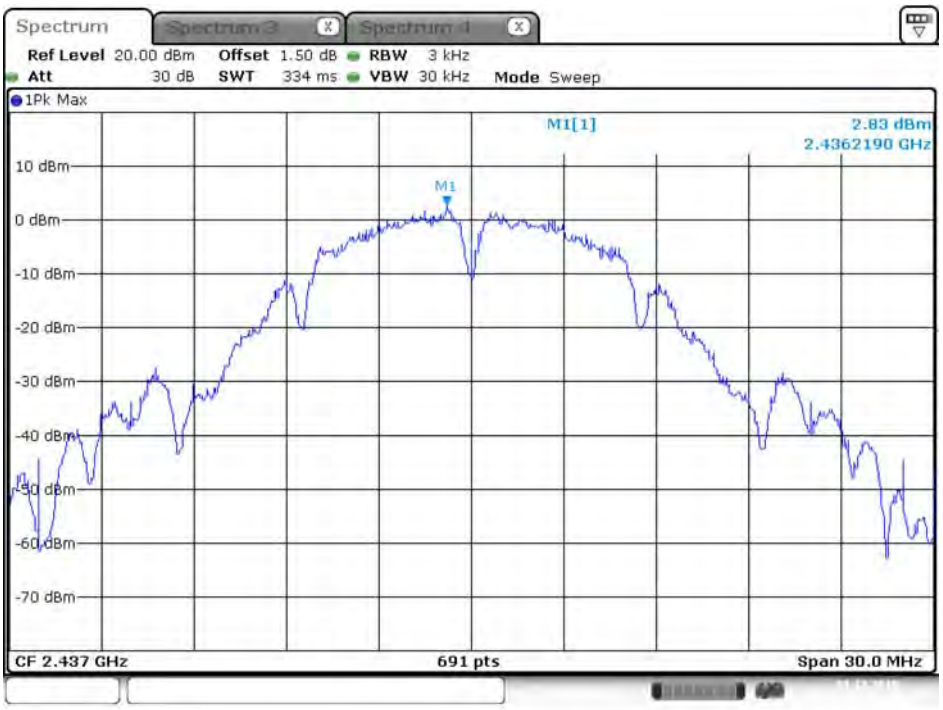
Note: All the test values were listed in the report.

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

For Non-Beamforming Mode

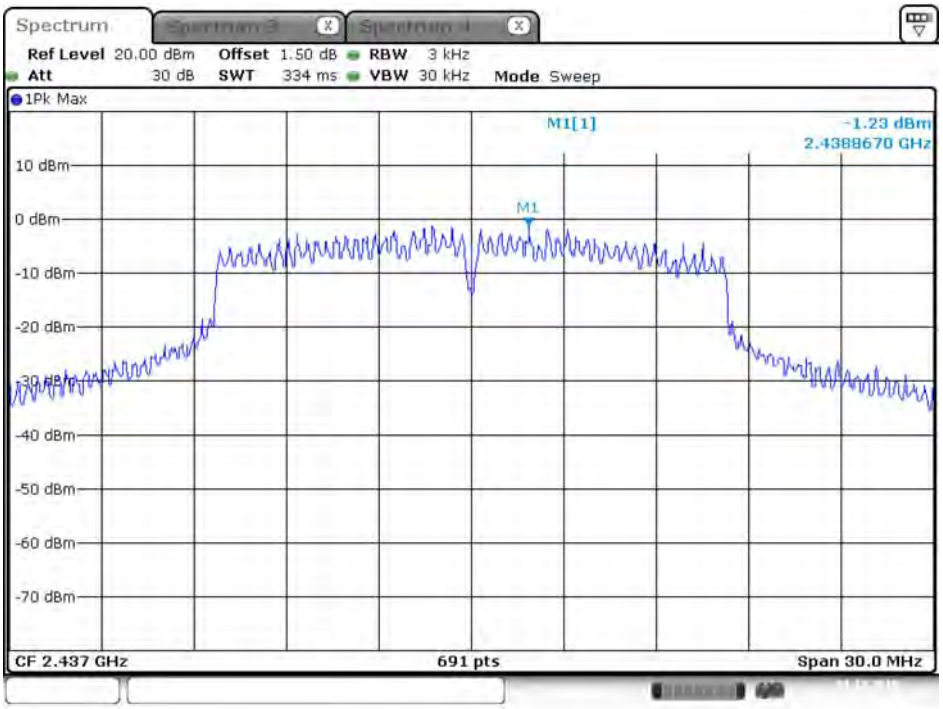
Chain 1: 4.1dBi / 1TX

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



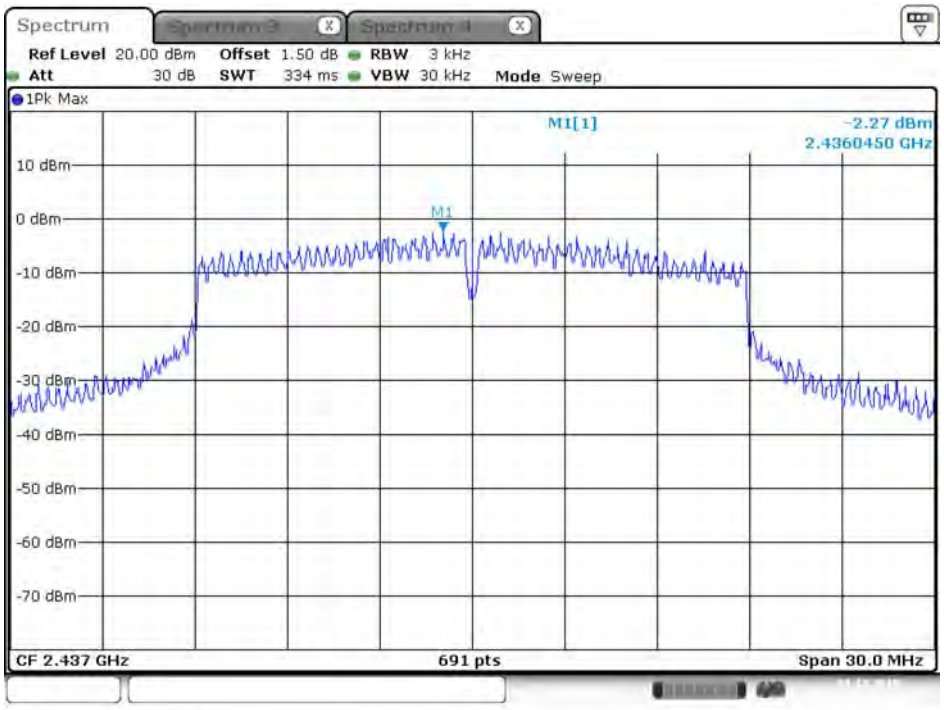
Date: 23.DEC.2015 16:05:12

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



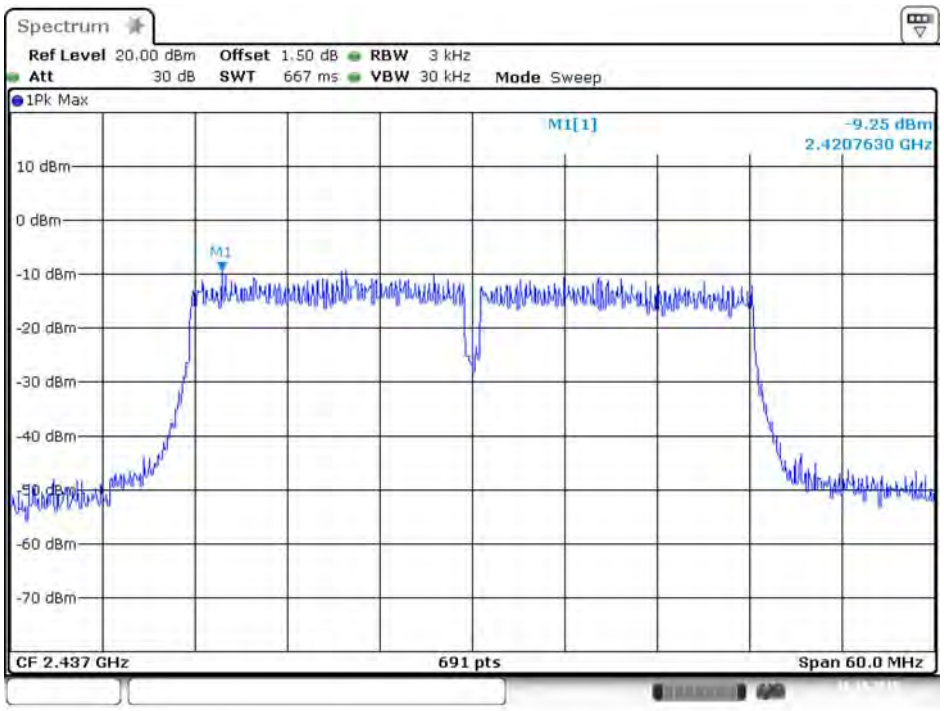
Date: 23.DEC.2015 16:30:57

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



Date: 23.DEC.2015 16:37:37

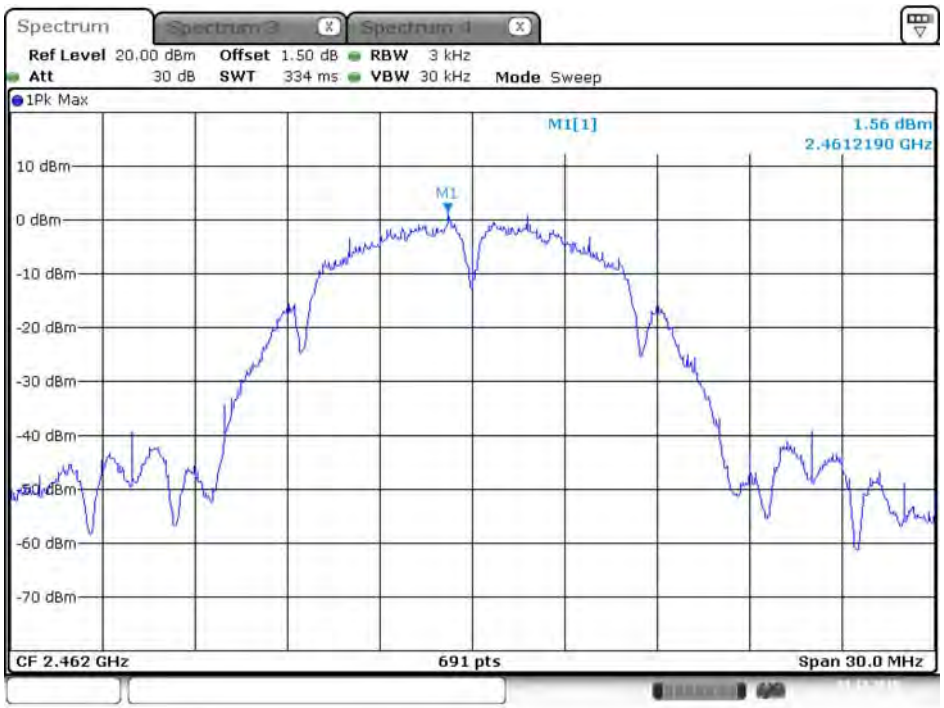
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 1



Date: 16.OCT.2015 10:22:09

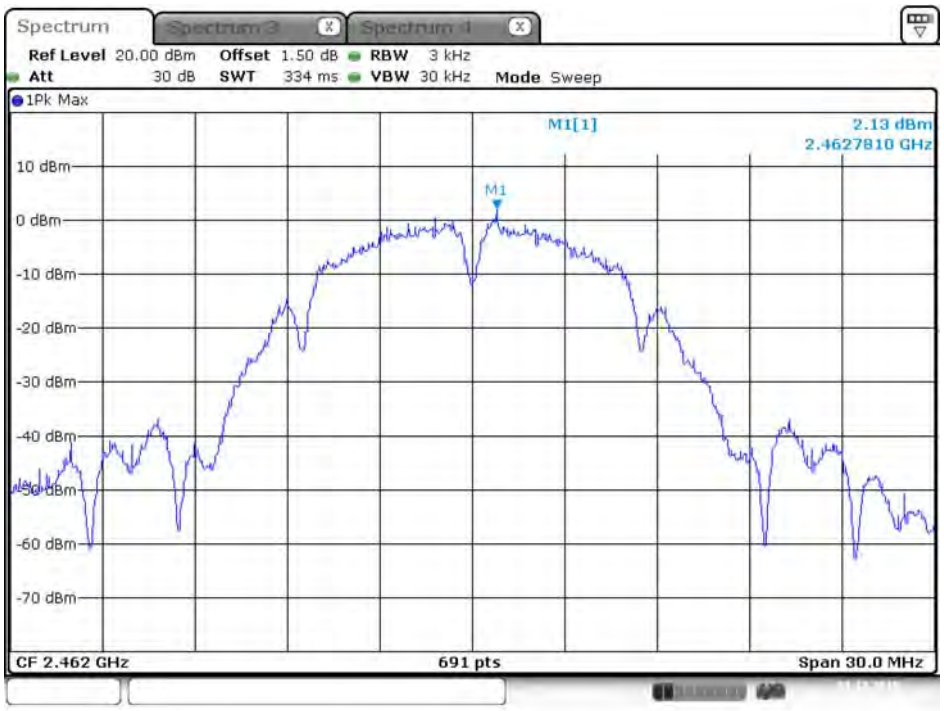
Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX

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



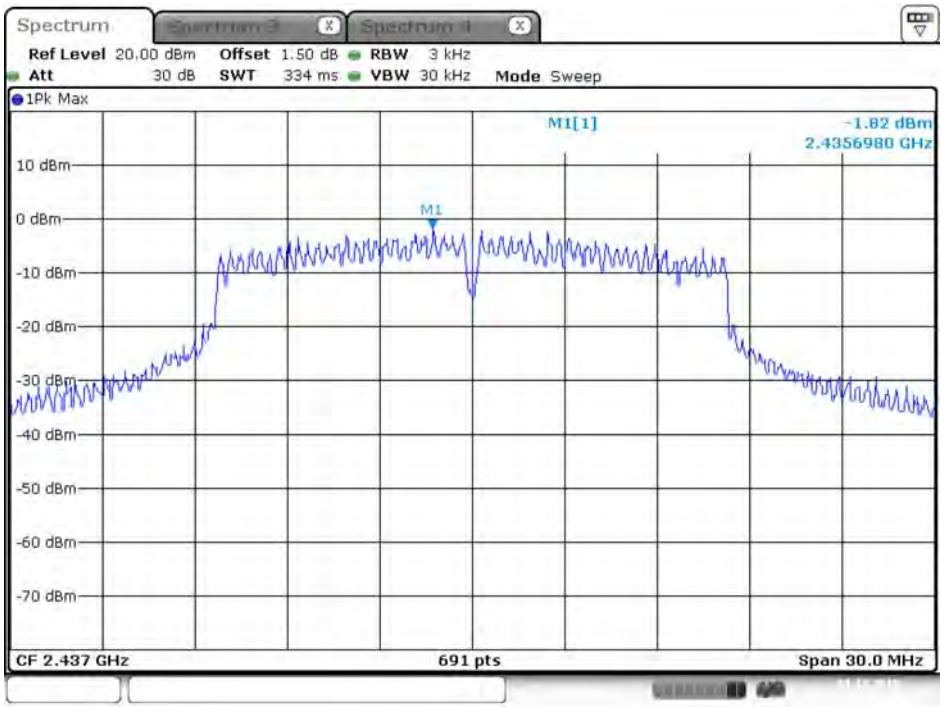
Date: 23.DEC.2015 16:46:13

Power Density Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 3



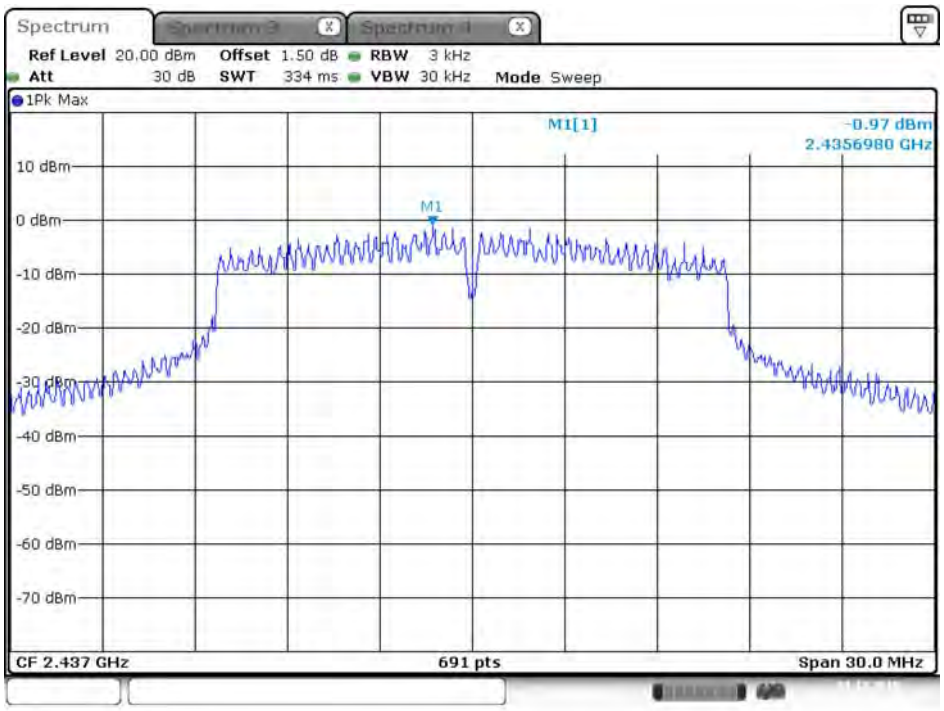
Date: 23.DEC.2015 16:47:26

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



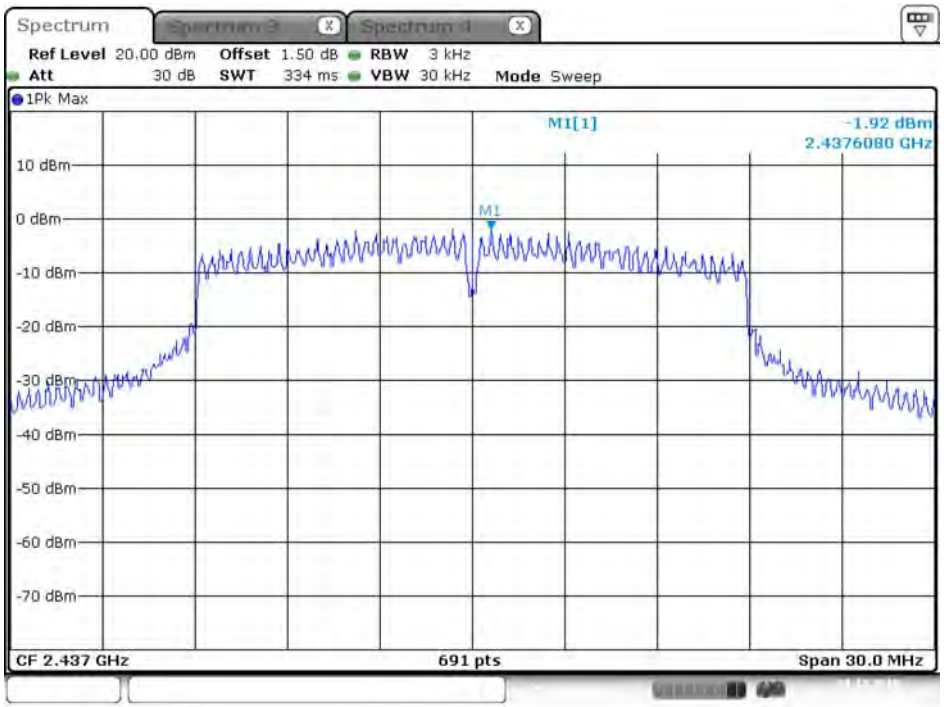
Date: 23.DEC.2015 17:01:26

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 3



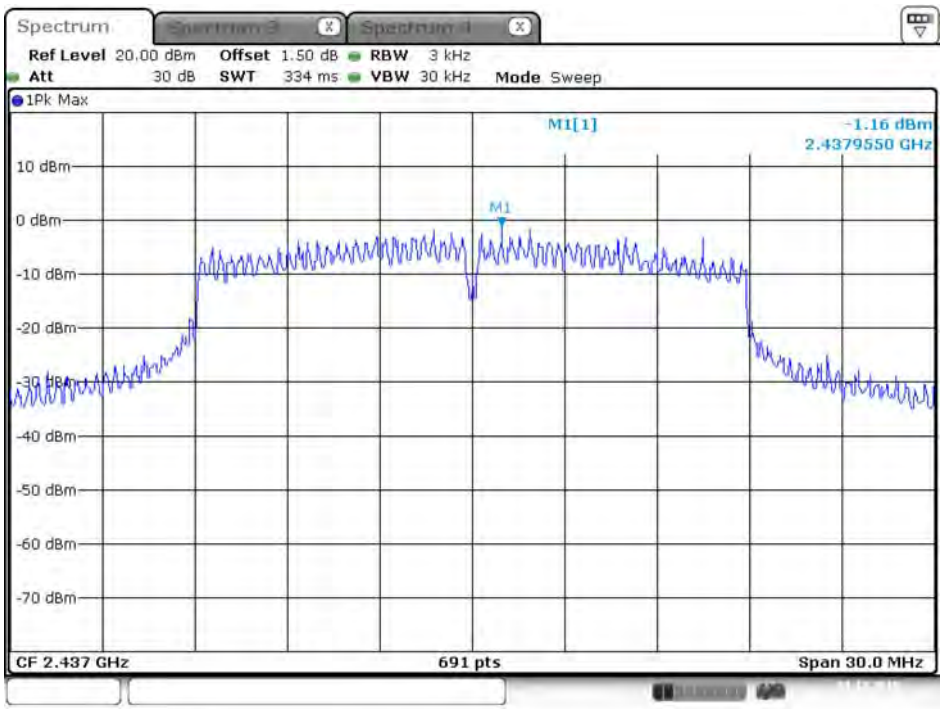
Date: 23.DEC.2015 16:59:34

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



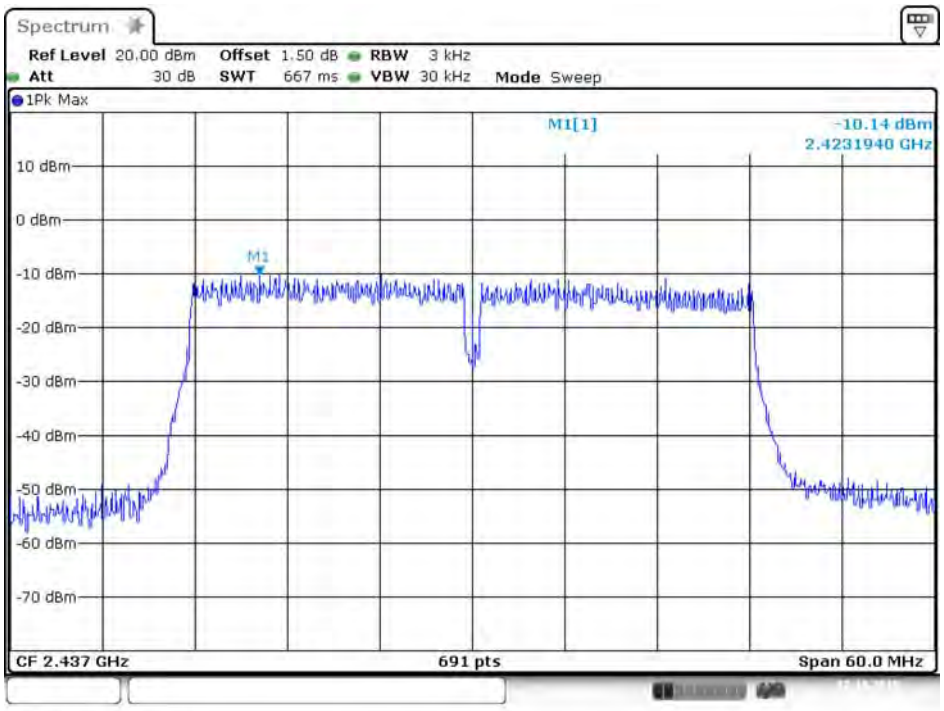
Date: 23.DEC.2015 17:04:23

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 3



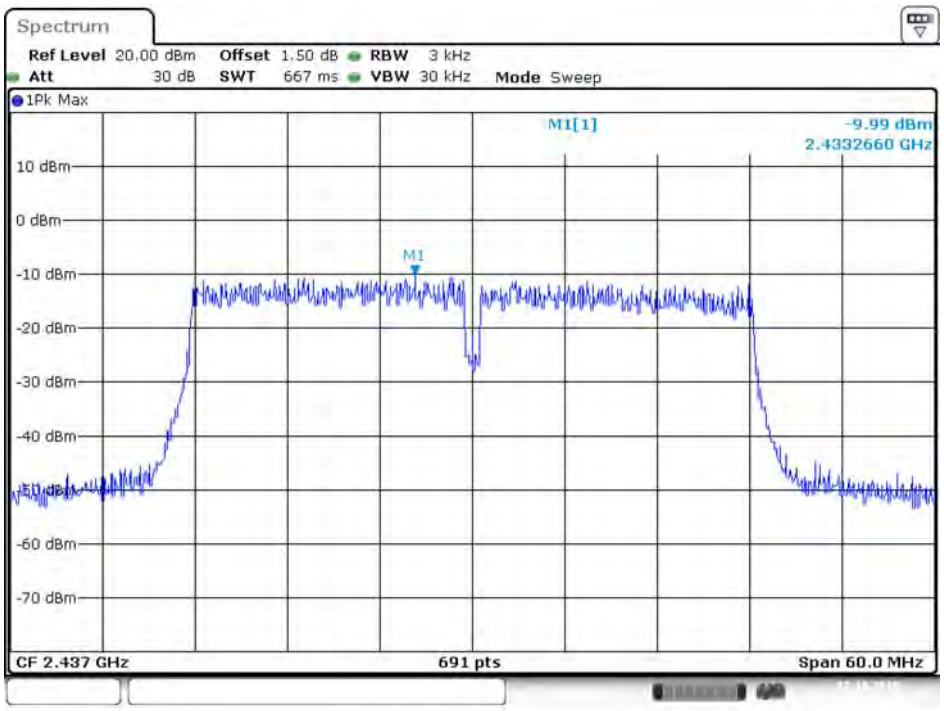
Date: 23.DEC.2015 17:05:47

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 1



Date: 17.OCT.2015 11:42:09

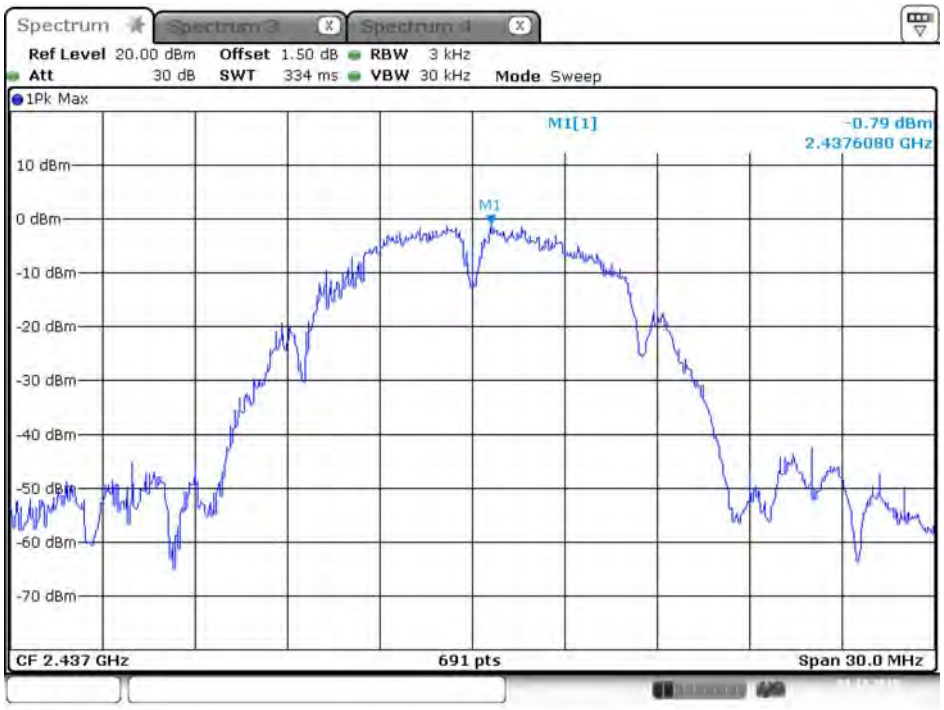
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 3



Date: 17.OCT.2015 11:42:42

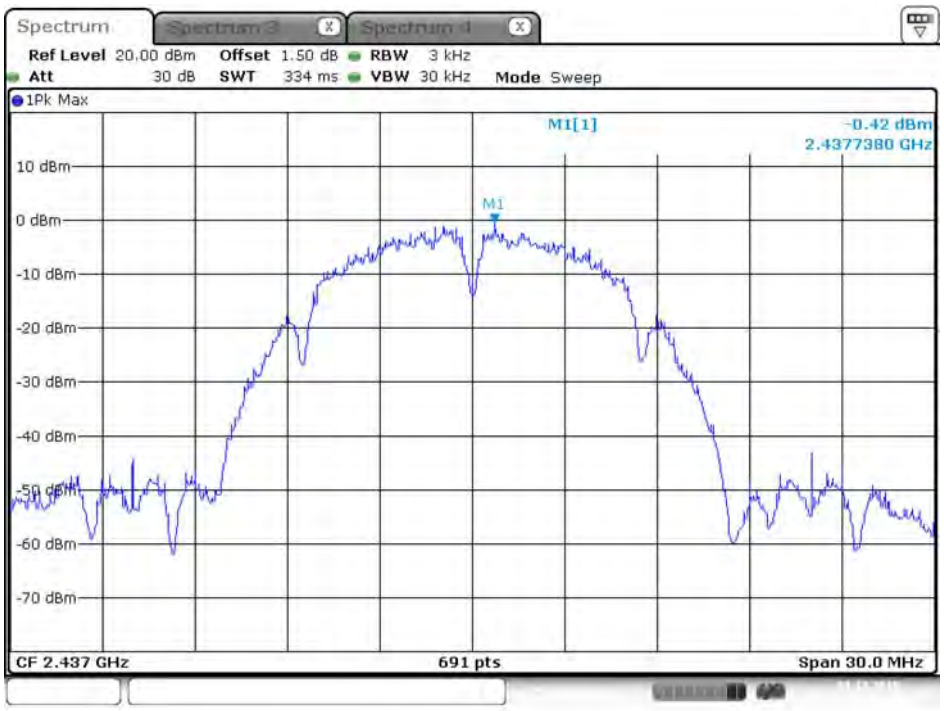
Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

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



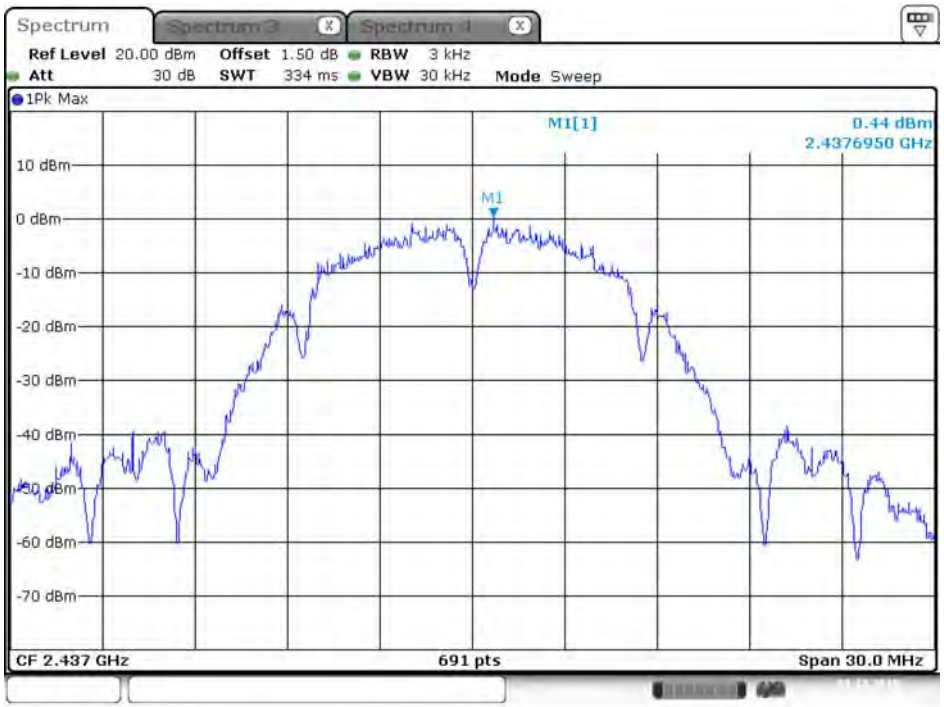
Date: 23.DEC.2015 17:33:17

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



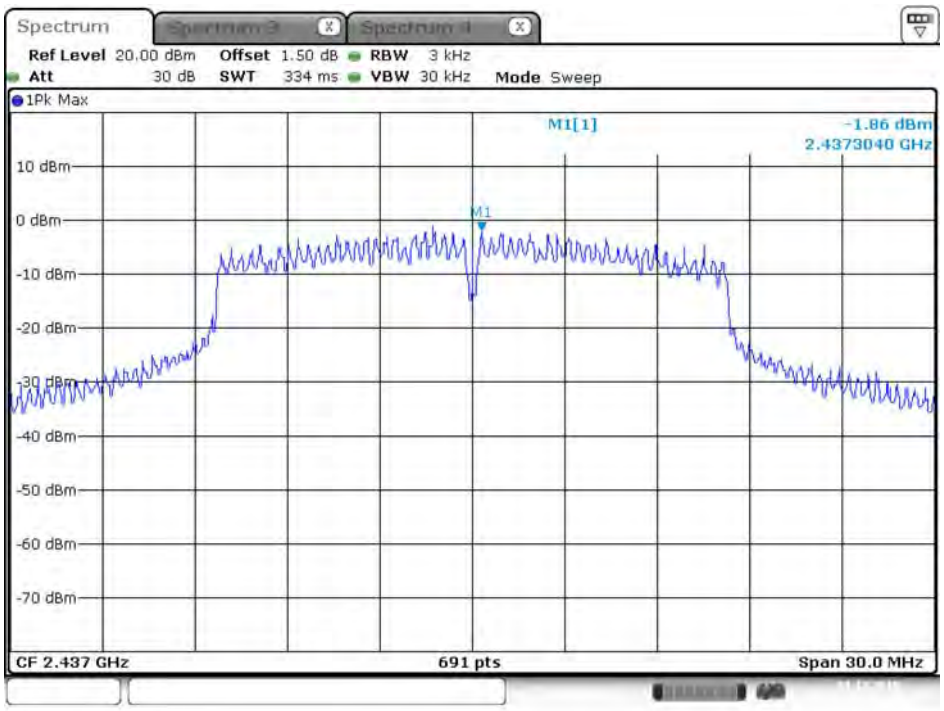
Date: 23.DEC.2015 17:40:00

Power Density Plot on Configuration IEEE 802.11b / 2437 MHz / Chain 3



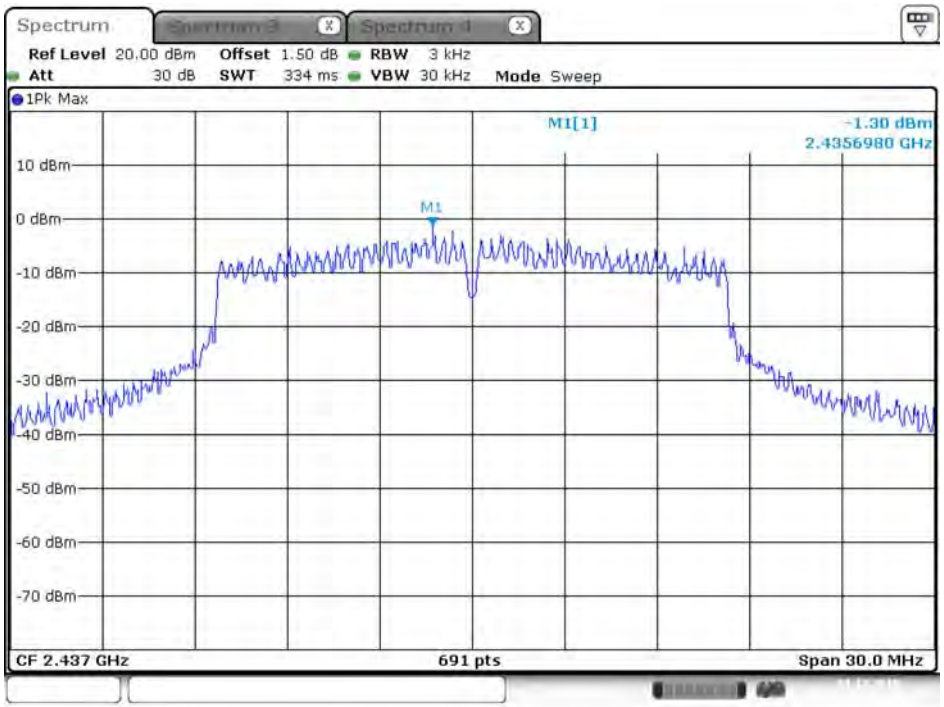
Date: 23.DEC.2015 17:41:00

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



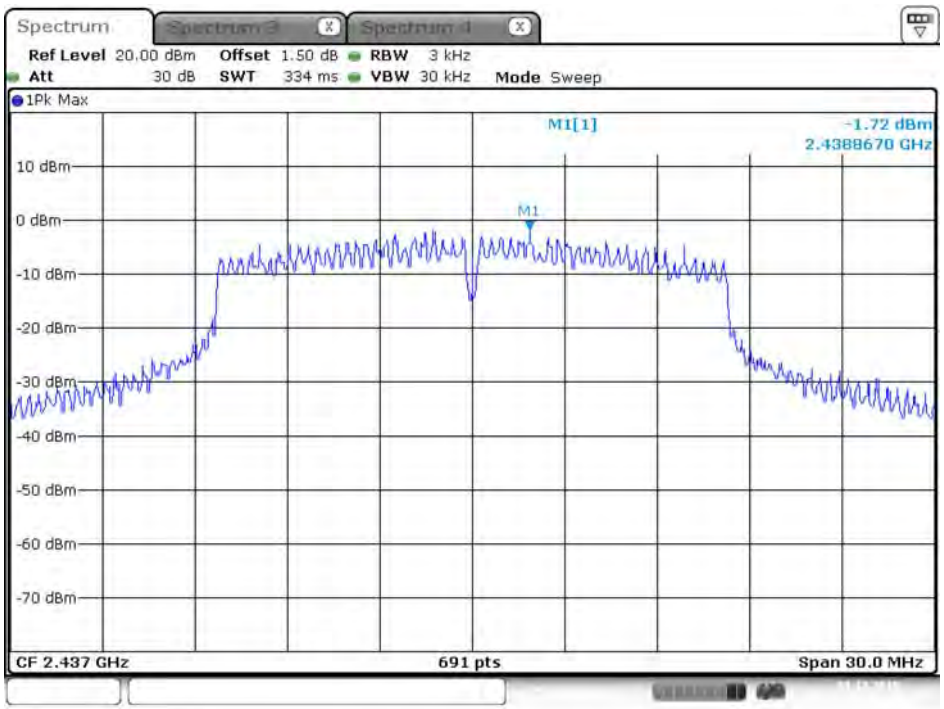
Date: 23.DEC.2015 17:50:02

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



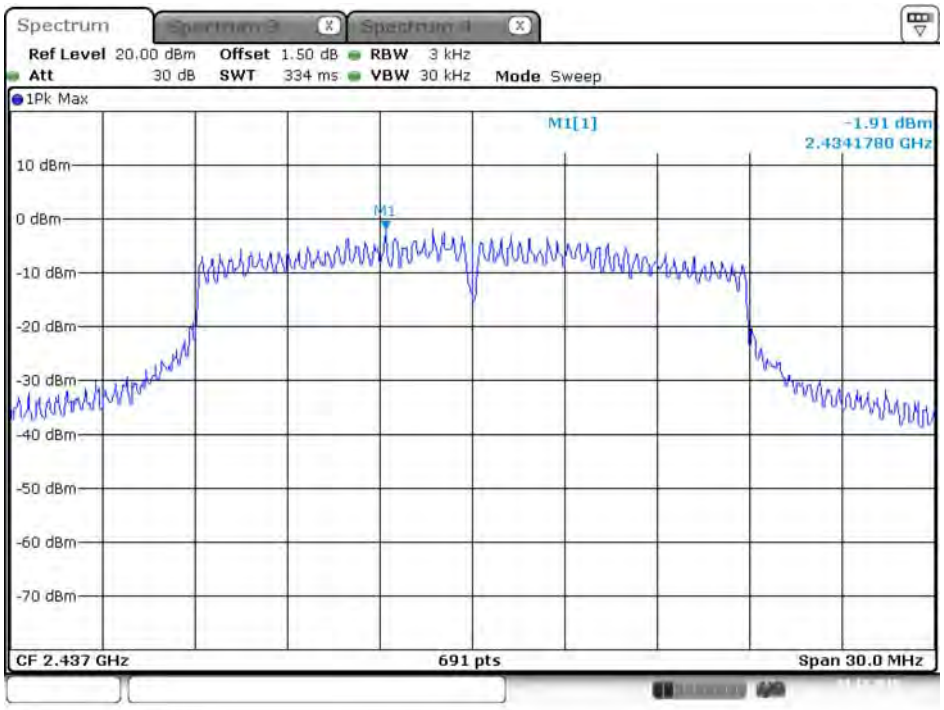
Date: 23.DEC.2015 17:48:06

Power Density Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 3



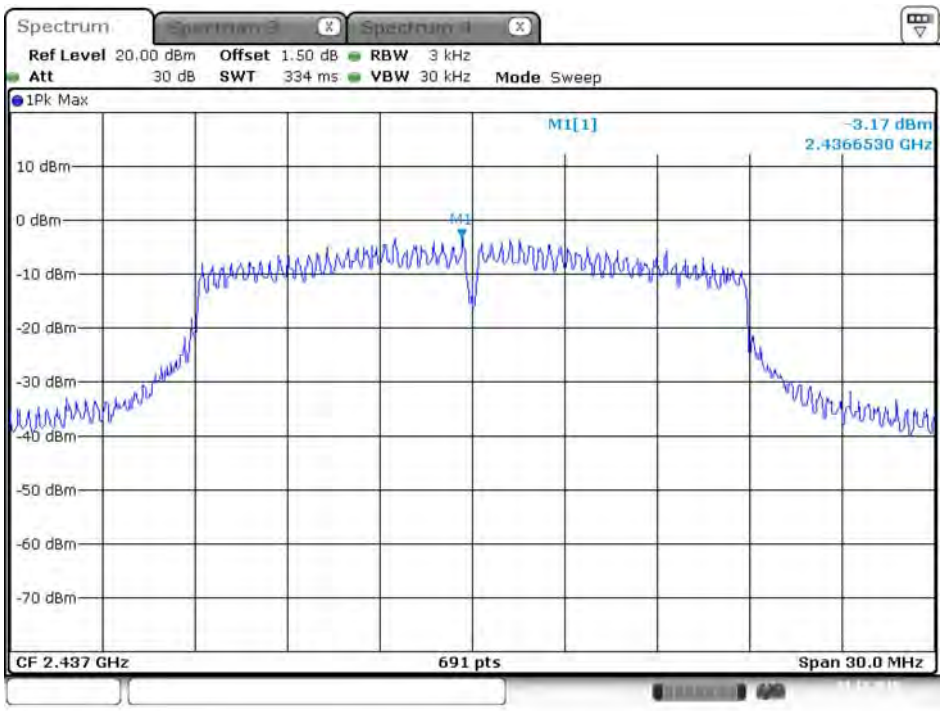
Date: 23.DEC.2015 17:47:10

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



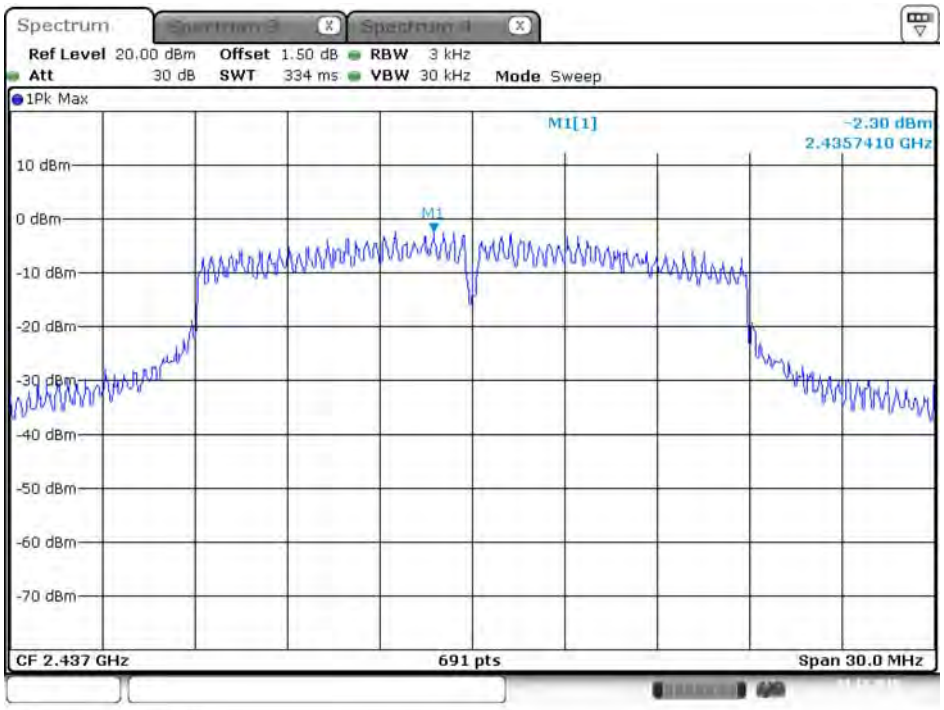
Date: 23.DEC.2015 17:52:23

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



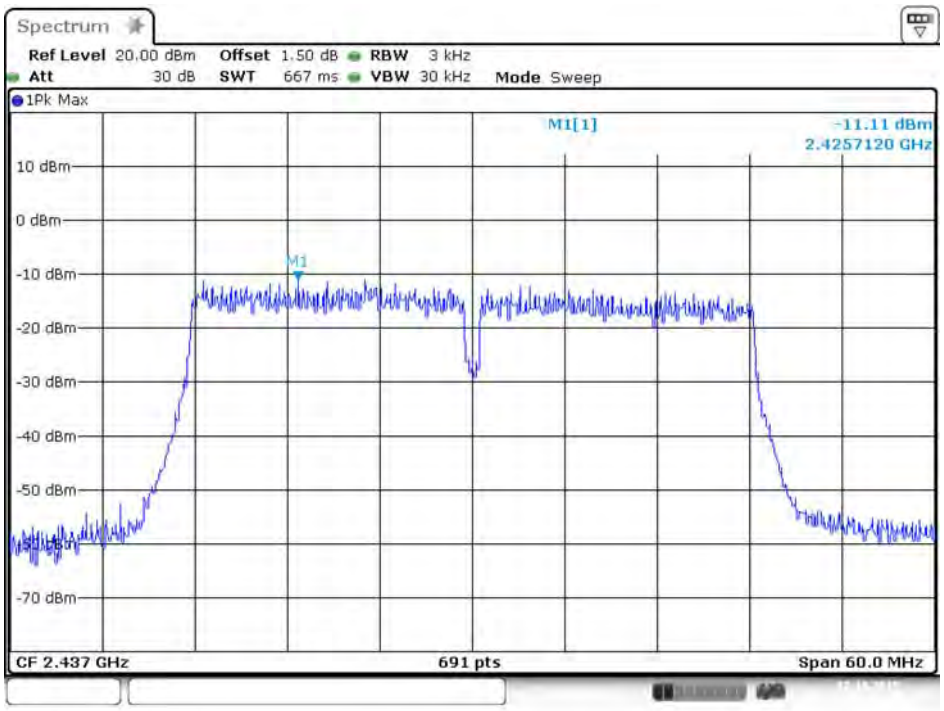
Date: 23.DEC.2015 17:53:38

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 3



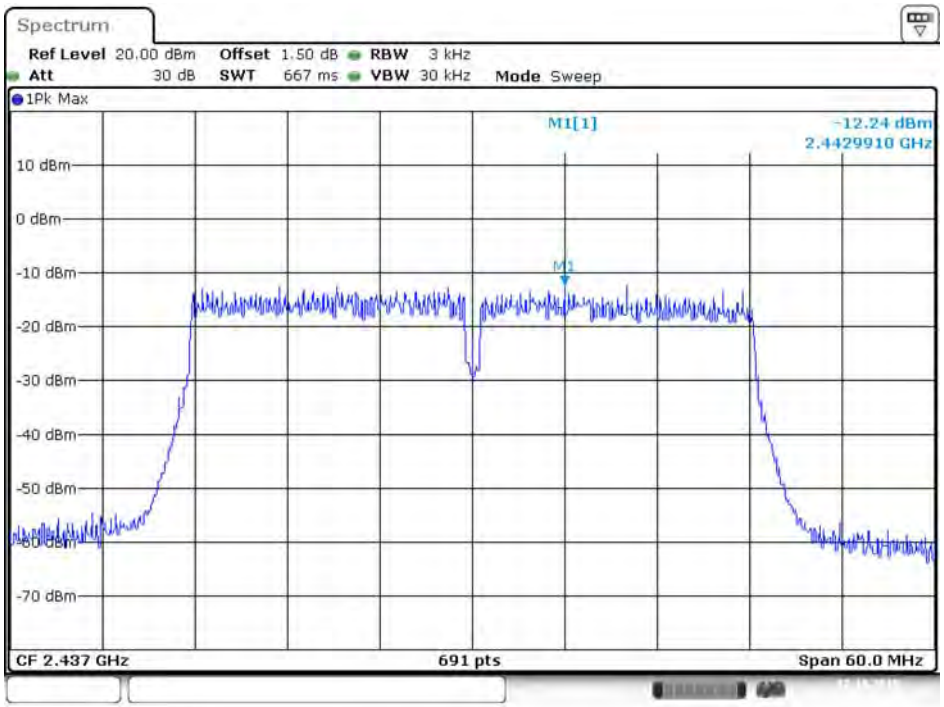
Date: 23.DEC.2015 17:54:30

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 1



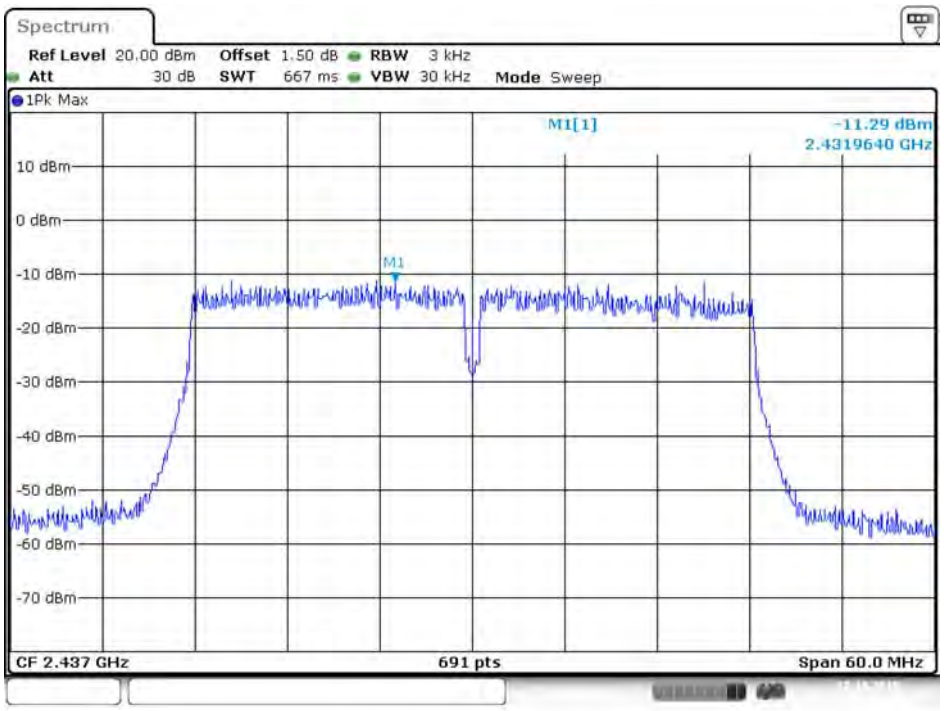
Date: 17.OCT.2015 12:42:55

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 2



Date: 17.OCT.2015 12:43:26

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 3

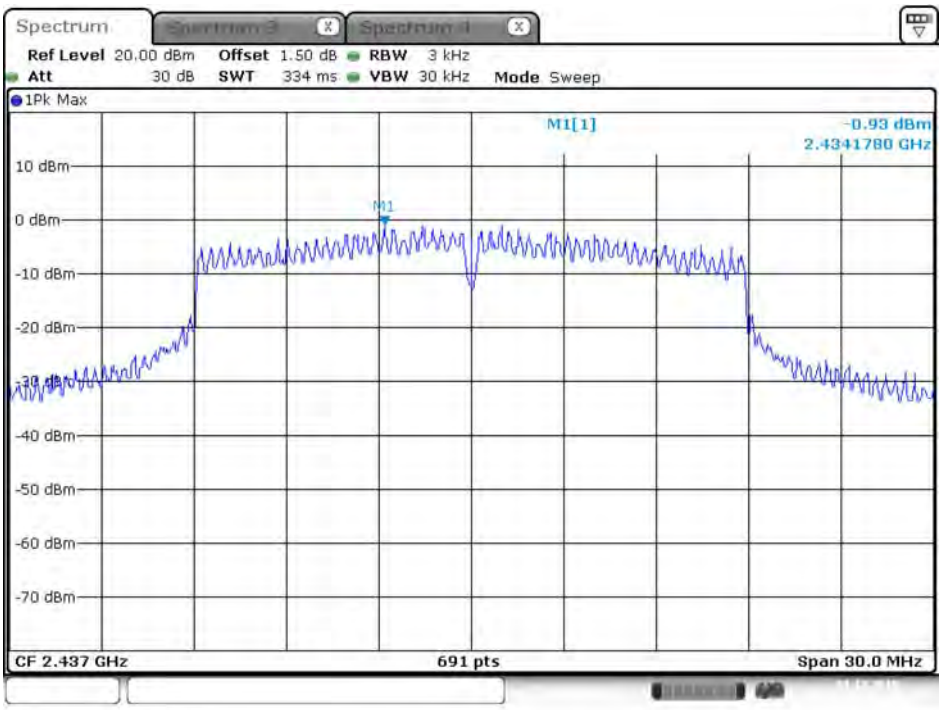


Date: 17.OCT.2015 12:44:23

For Beamforming Mode

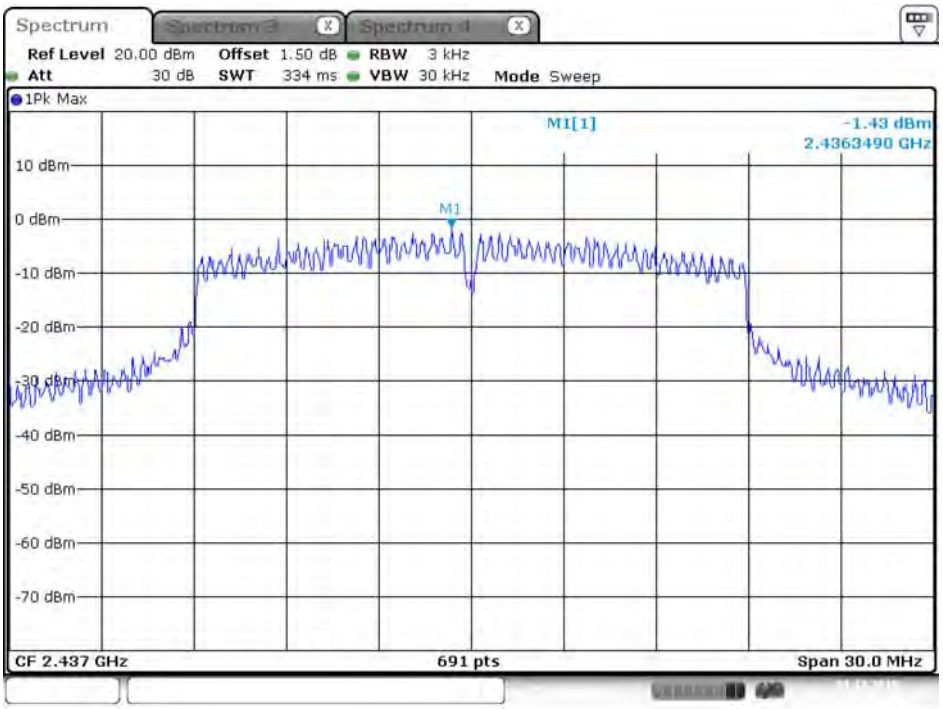
Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX

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



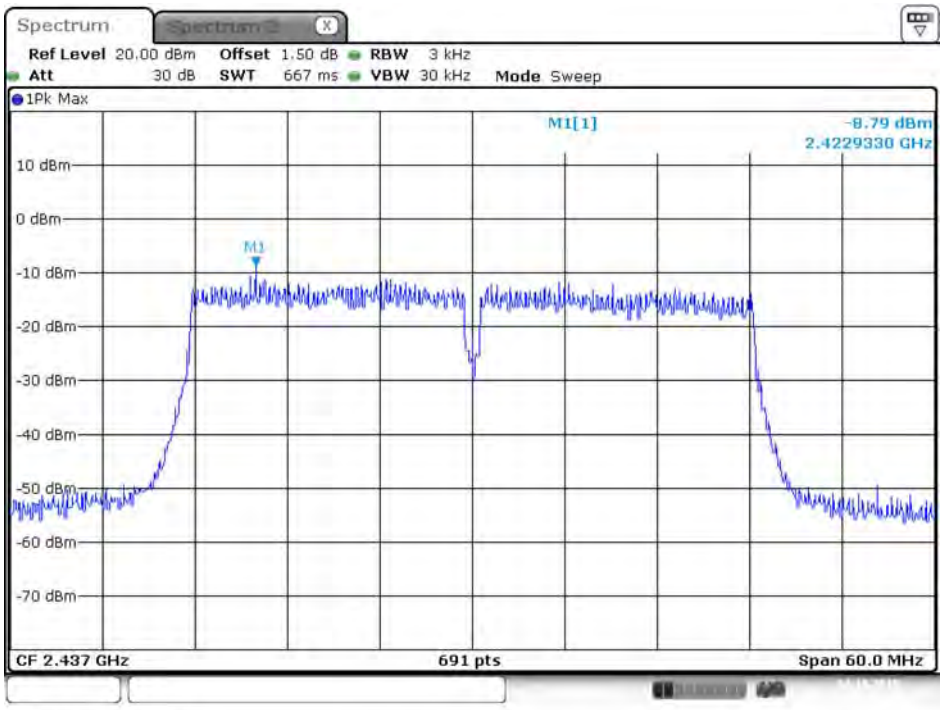
Date: 23.DEC.2015 18:09:23

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



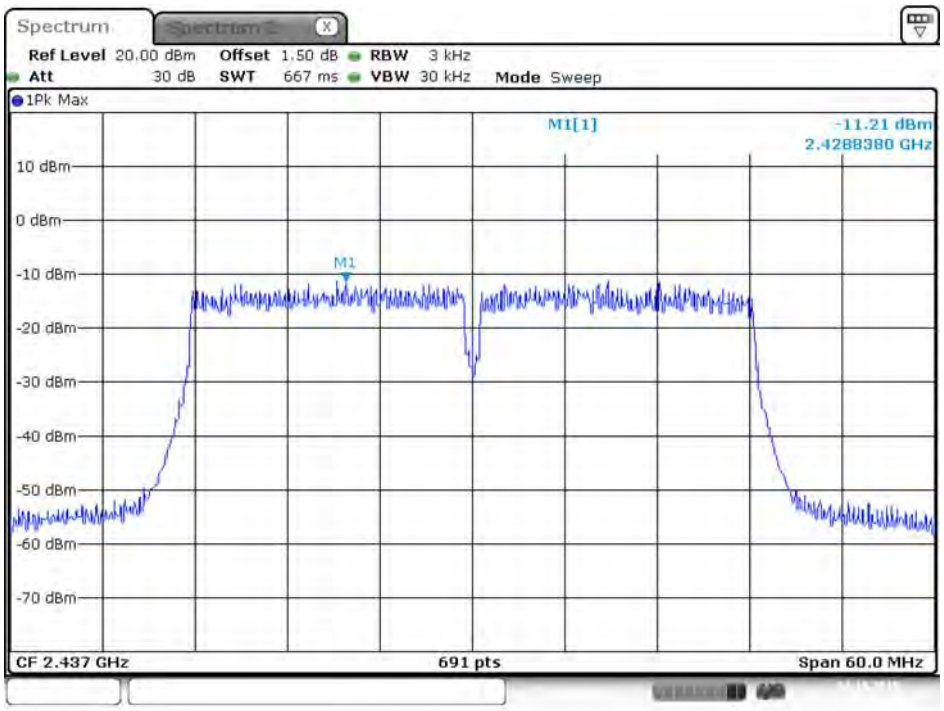
Date: 23.DEC.2015 18:06:28

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437GHz / Chain 1



Date: 24.OCT.2015 01:37:47

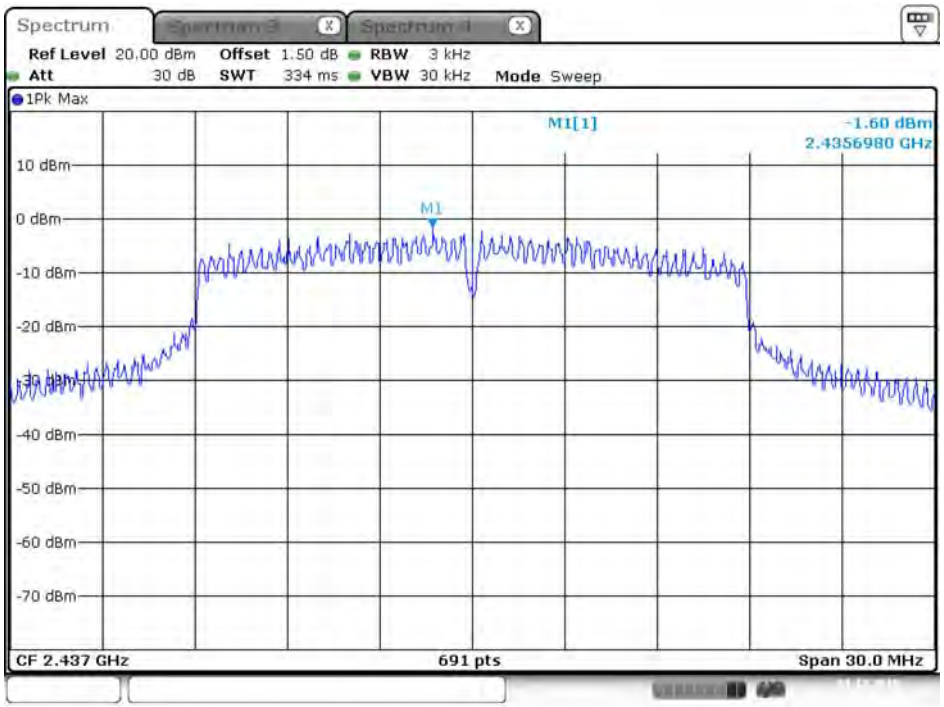
Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 2



Date: 24.OCT.2015 01:36:58

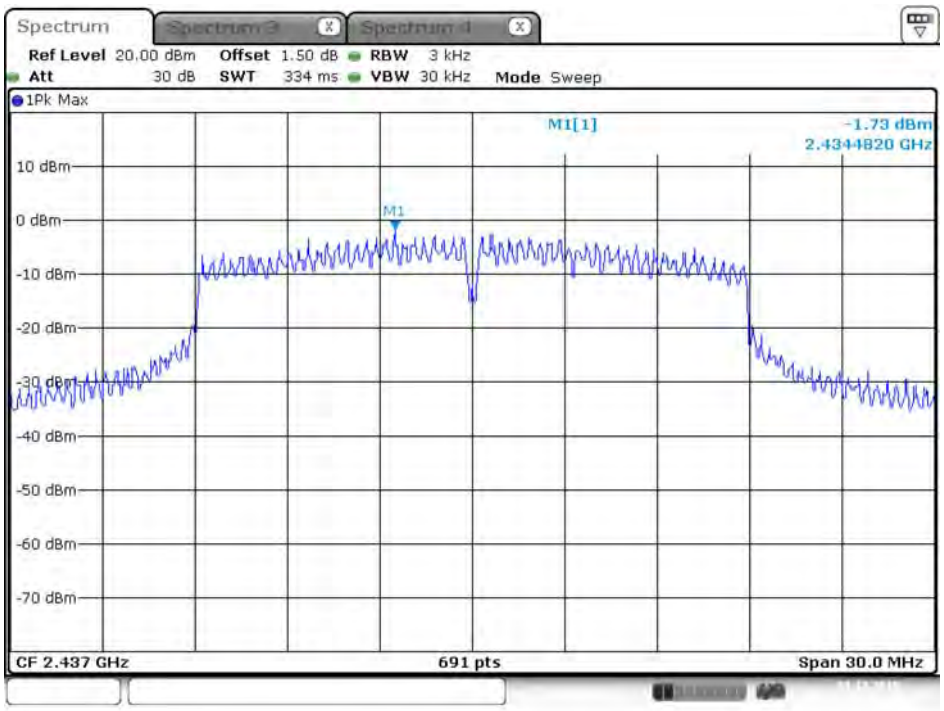
Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

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



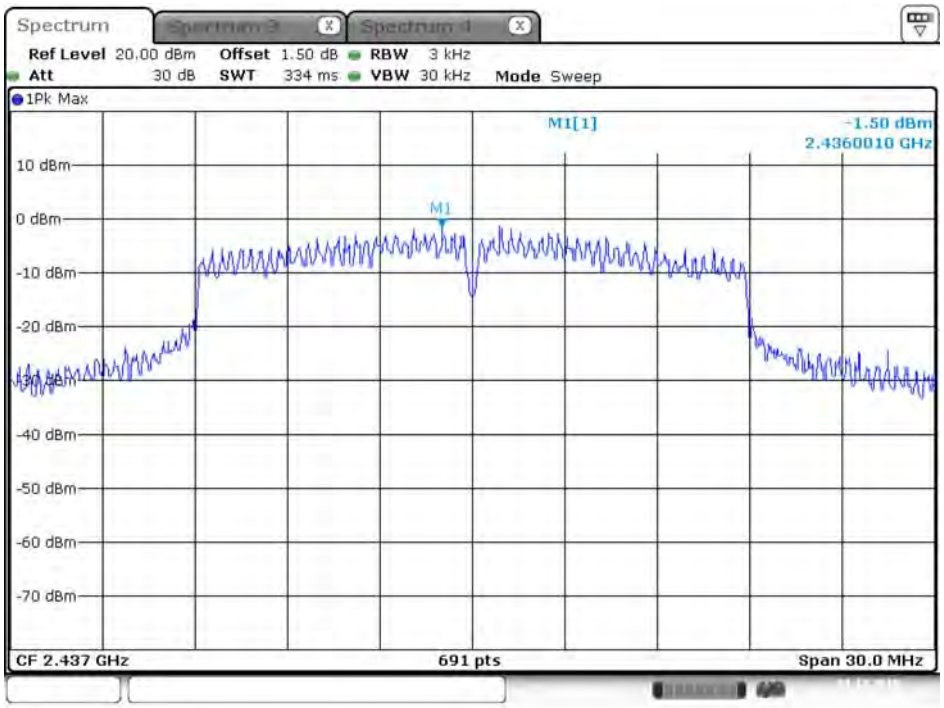
Date: 23.DEC.2015 18:12:48

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



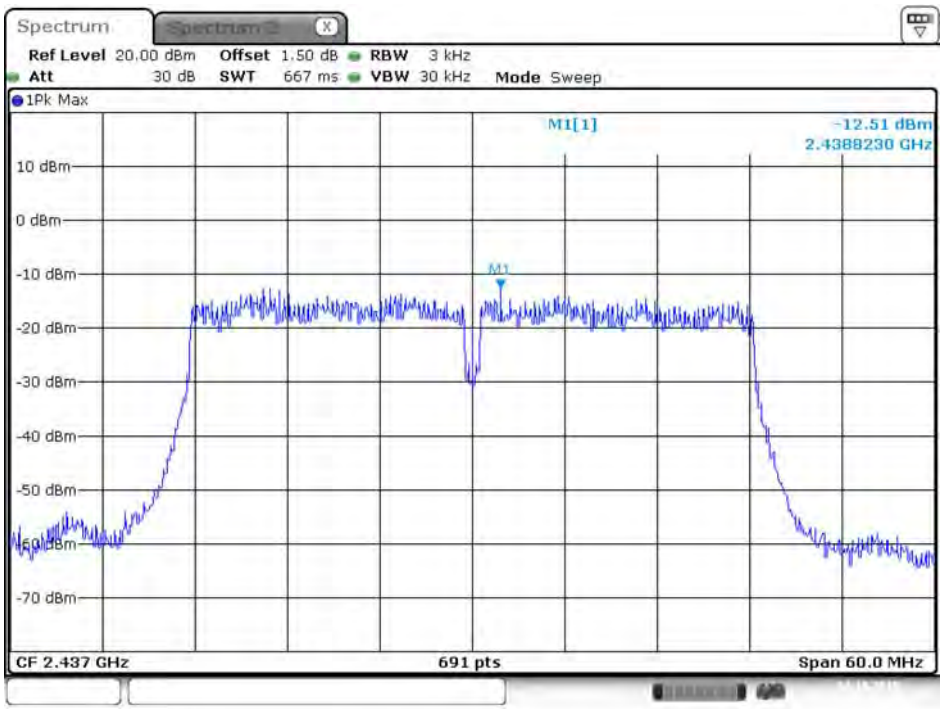
Date: 23.DEC.2015 18:13:56

Power Density Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 3



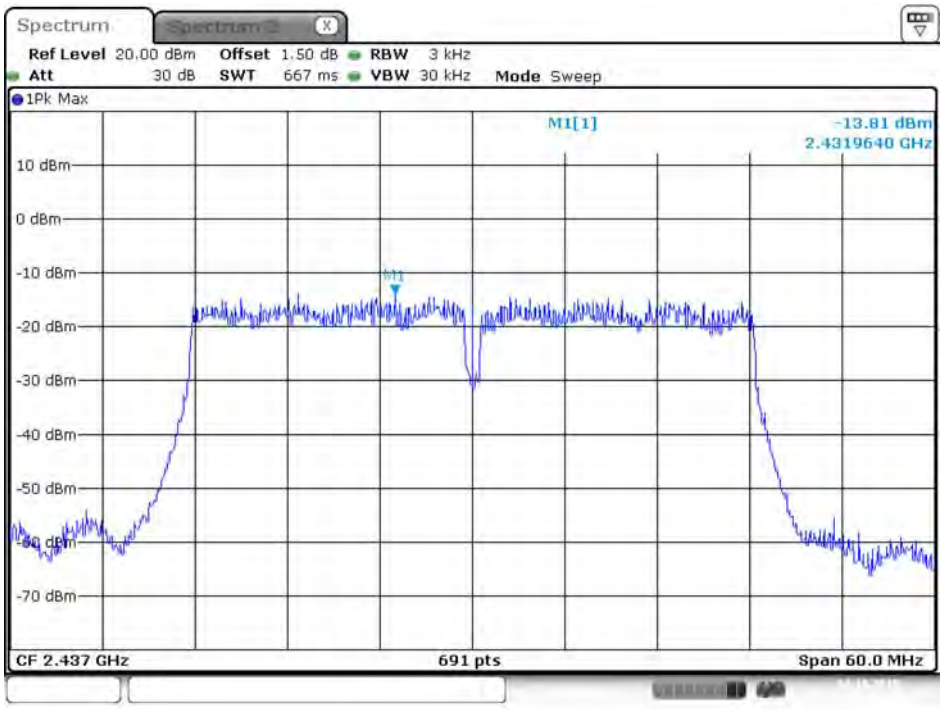
Date: 23.DEC.2015 18:14:37

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 1



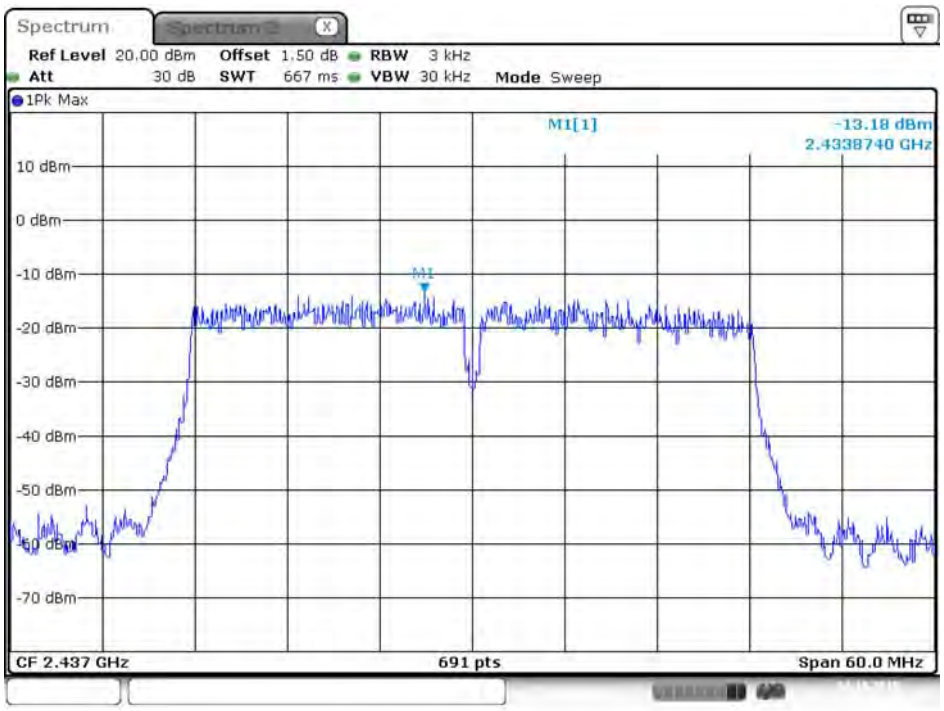
Date: 24.OCT.2015 00:51:04

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 2



Date: 24.OCT.2015 00:56:57

Power Density Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Chain 3



Date: 24.OCT.2015 00:57:32

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.

6dB Spectrum Bandwidth	
Spectrum Parameters	**Setting**
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100kHz
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto
99% Occupied Bandwidth	
Spectrum Parameters	**Setting**
Span	1.5 times to 5.0 times the OBW
RBW	1 % to 5 % of the OBW
VBW	≥ 3 x RBW
Detector	Peak
Trace	Max Hold

4.4.3. Test Procedures

For Radiated 6dB Bandwidth Measurement:

1. The transmitter was radiated to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB558074 D01 v04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 8.0 DTS bandwidth=> 8.1 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. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

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

For Non-Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi / 1TX		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	8.35	10.33	500	Complies
	2437 MHz	7.01	10.42	500	Complies
	2462 MHz	7.13	10.42	500	Complies
802.11g	2412 MHz	16.35	16.58	500	Complies
	2437 MHz	16.06	16.76	500	Complies
	2462 MHz	13.16	16.67	500	Complies
802.11n MCS0 HT20	2412 MHz	14.38	17.71	500	Complies
	2437 MHz	15.77	17.89	500	Complies
	2462 MHz	17.57	17.71	500	Complies
802.11n MCS0 HT40	2422 MHz	36.17	36.47	500	Complies
	2437 MHz	36.17	36.61	500	Complies
	2452 MHz	35.83	36.76	500	Complies

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	7.13	10.85	500	Complies
	2437 MHz	7.13	10.51	500	Complies
	2462 MHz	7.13	10.77	500	Complies
802.11g	2412 MHz	12.58	16.15	500	Complies
	2437 MHz	12.58	17.02	500	Complies
	2462 MHz	12.52	15.89	500	Complies
802.11n MCS0 HT20	2412 MHz	13.16	17.45	500	Complies
	2437 MHz	15.71	17.13	500	Complies
	2462 MHz	15.65	17.45	500	Complies
802.11n MCS0 HT40	2422 MHz	35.83	36.76	500	Complies
	2437 MHz	35.83	36.90	500	Complies
	2452 MHz	35.71	37.05	500	Complies

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu		
Configurations	Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	8.23	10.51	500	Complies
	2437 MHz	9.04	10.59	500	Complies
	2462 MHz	8.52	10.77	500	Complies
802.11g	2412 MHz	4.23	15.63	500	Complies
	2437 MHz	9.80	16.85	500	Complies
	2462 MHz	3.54	16.32	500	Complies
802.11n MCS0 HT20	2412 MHz	10.72	17.02	500	Complies
	2437 MHz	11.42	17.54	500	Complies
	2462 MHz	13.80	17.19	500	Complies
802.11n MCS0 HT40	2422 MHz	31.42	36.32	500	Complies
	2437 MHz	33.86	36.18	500	Complies
	2452 MHz	30.96	36.32	500	Complies

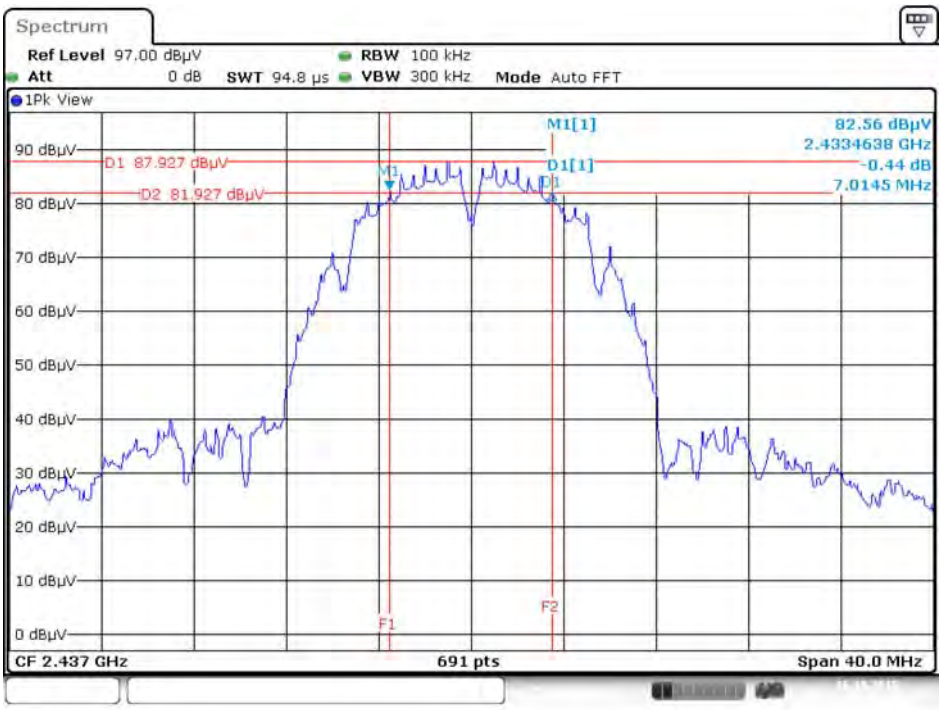
Note: All the test values were listed in the report.

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

For Non-Beamforming Mode

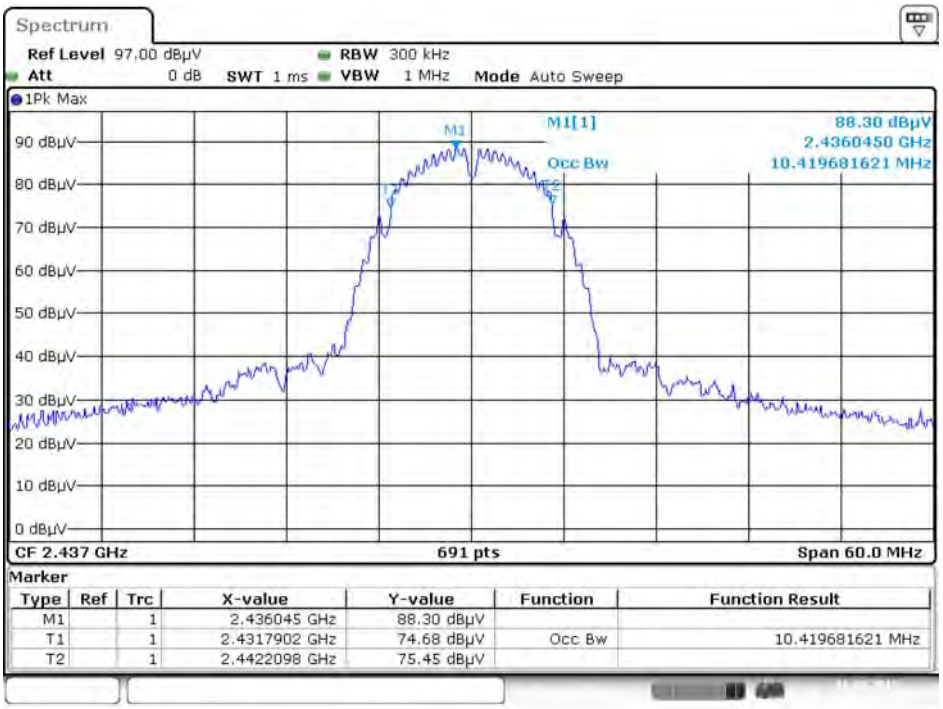
Chain 1: 4.1dBi / 1TX

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



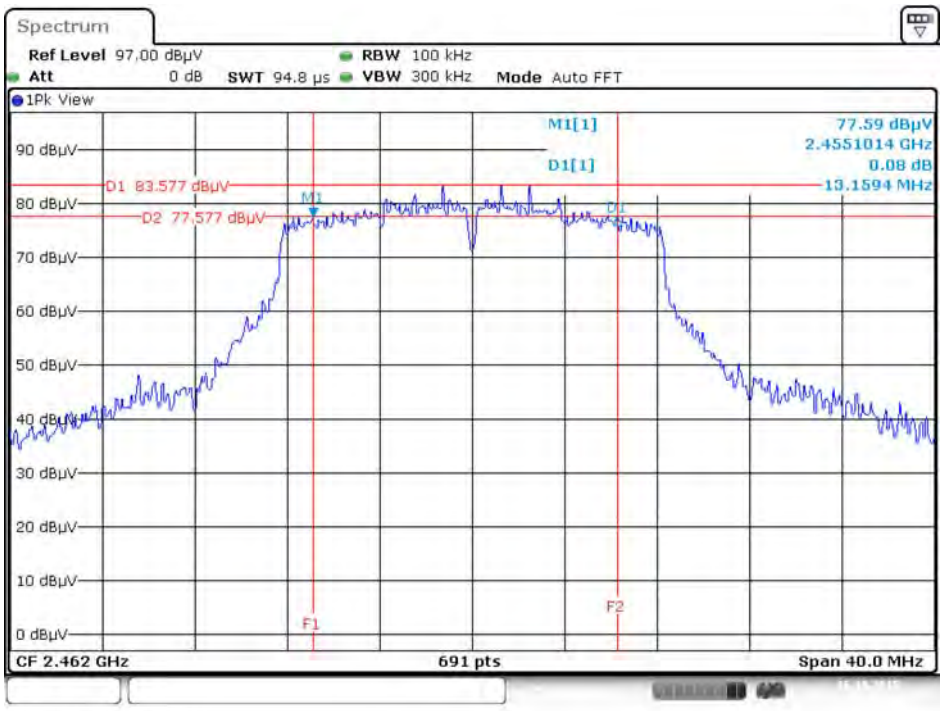
Date: 16.OCT.2015 11:18:39

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2437 MHz / Chain 1



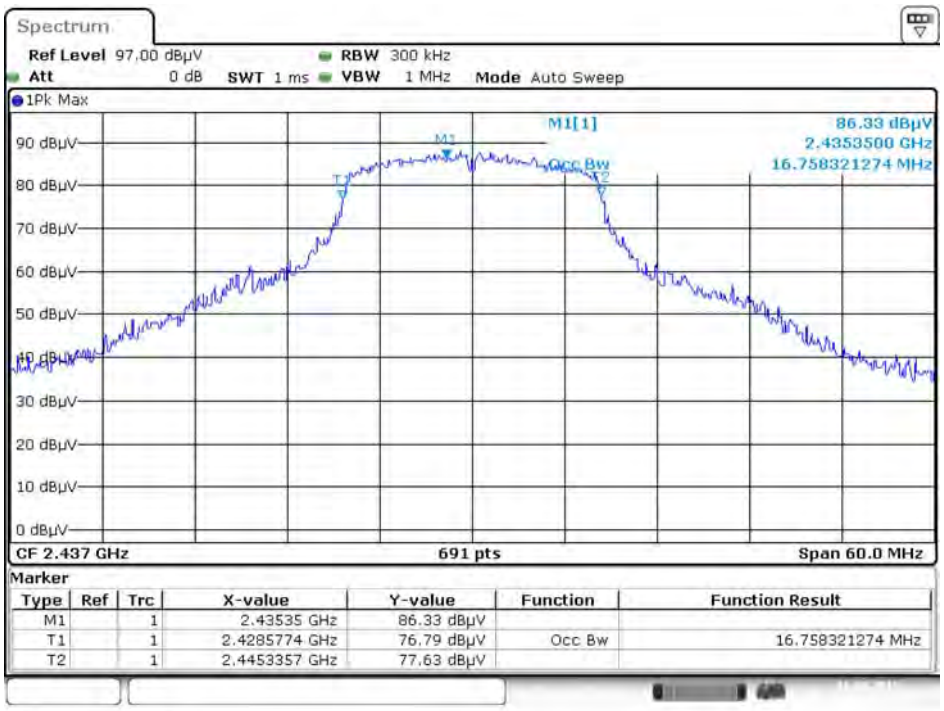
Date: 16.OCT.2015 11:00:17

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



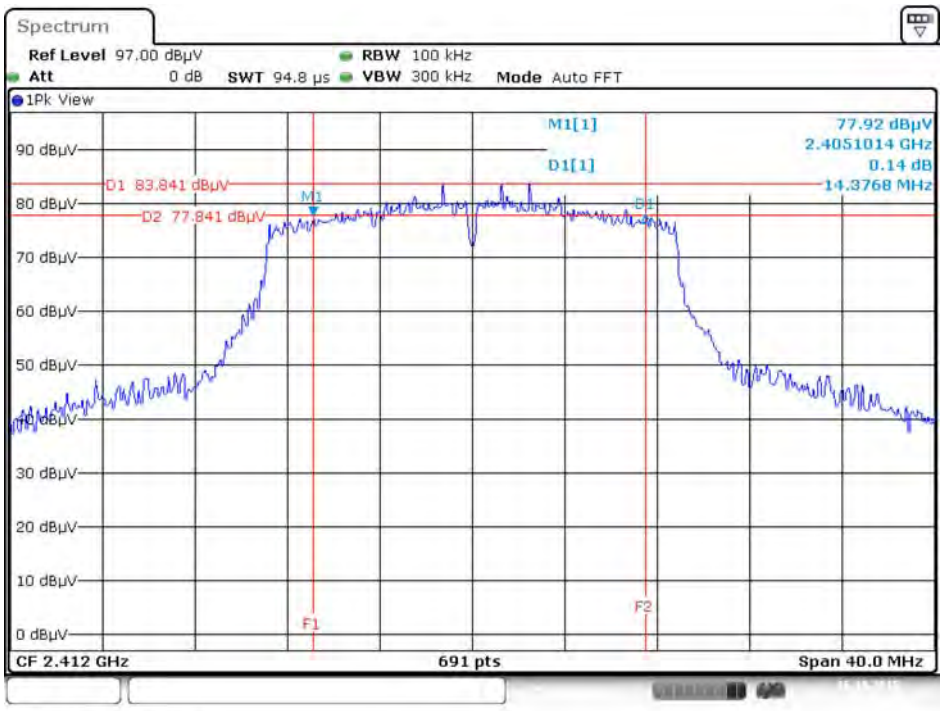
Date: 16.OCT.2015 11:22:01

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1



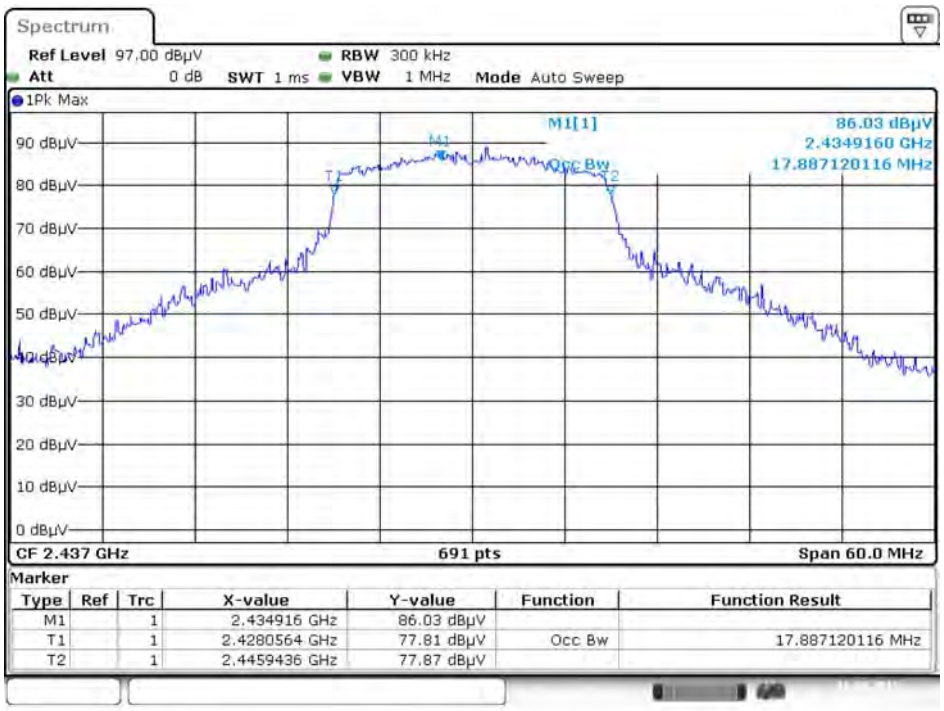
Date: 16.OCT.2015 11:02:23

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 1



Date: 16.OCT.2015 11:22:40

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 1

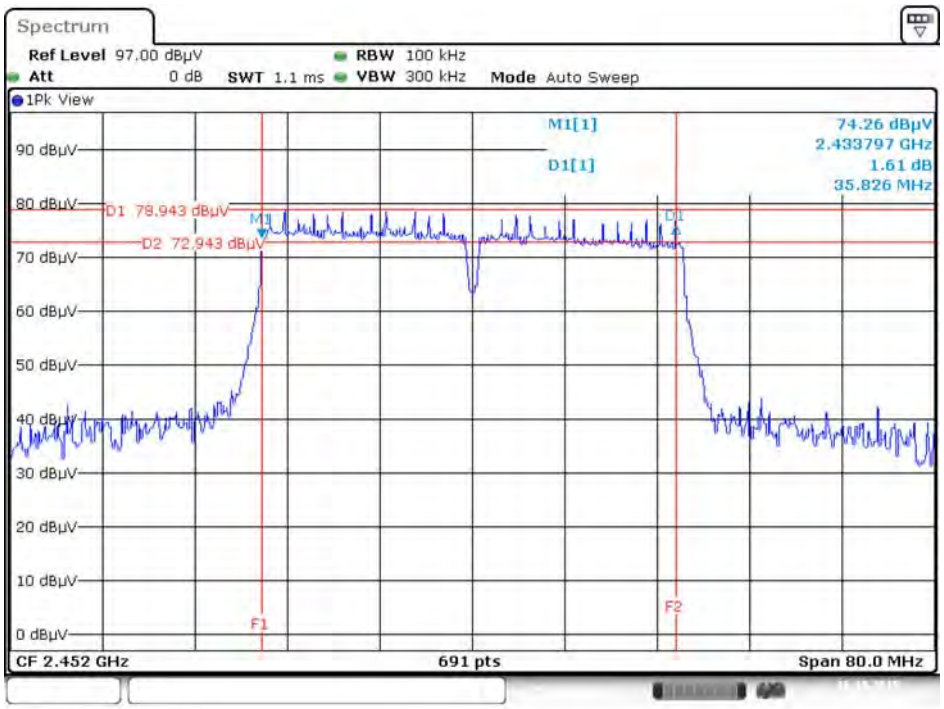


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.434916 GHz	86.03 dBµV		
T1		1	2.4280564 GHz	77.81 dBµV	Occ Bw	17.887120116 MHz
T2		1	2.4459436 GHz	77.87 dBµV		

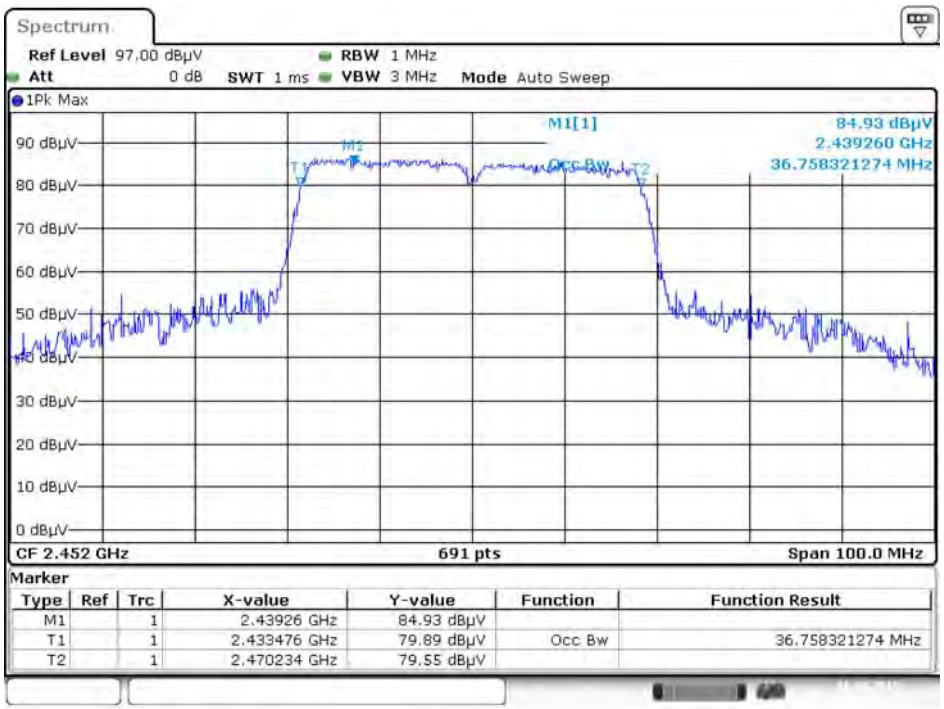
Date: 16.OCT.2015 11:04:28

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 1



Date: 16.OCT.2015 11:16:42

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 1



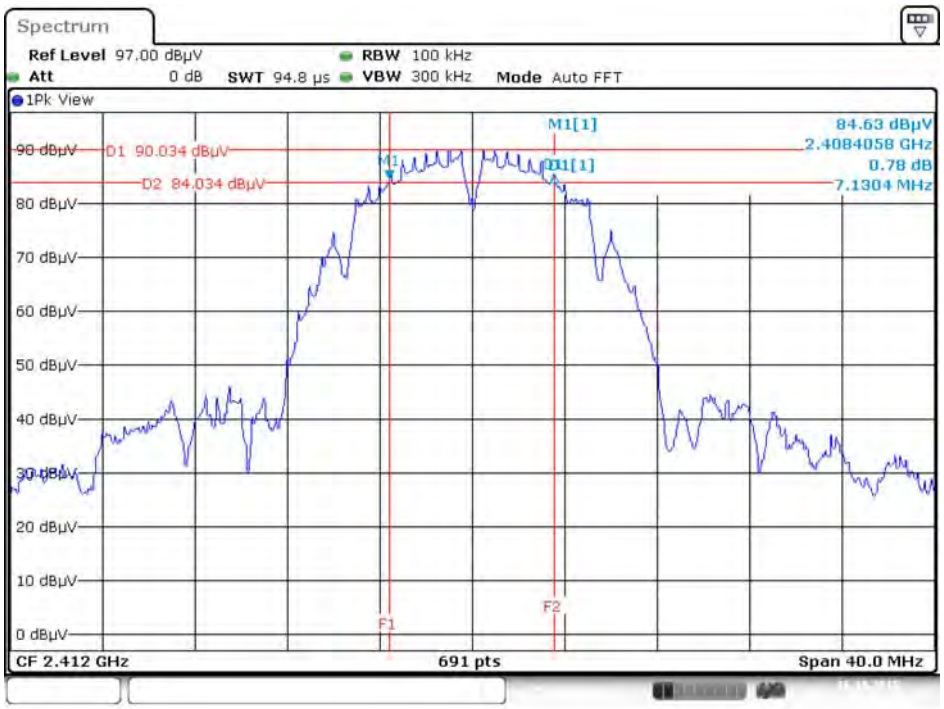
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.43926 GHz	84.93 dBµV		
T1		1	2.433476 GHz	79.89 dBµV	Occ Bw	36.758321274 MHz
T2		1	2.470234 GHz	79.55 dBµV		

Date: 16.OCT.2015 11:06:26

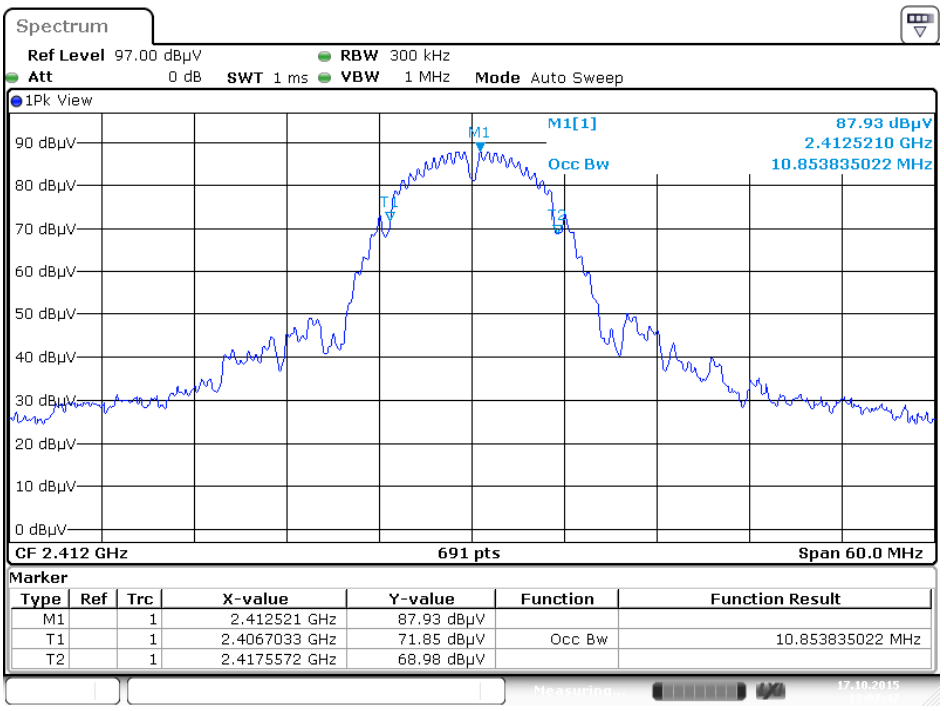
Chain 1: 4.1dBi, Chain 3: 4.4dBi / 2TX

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1 + Chain 3



Date: 16.OCT.2015 11:45:41

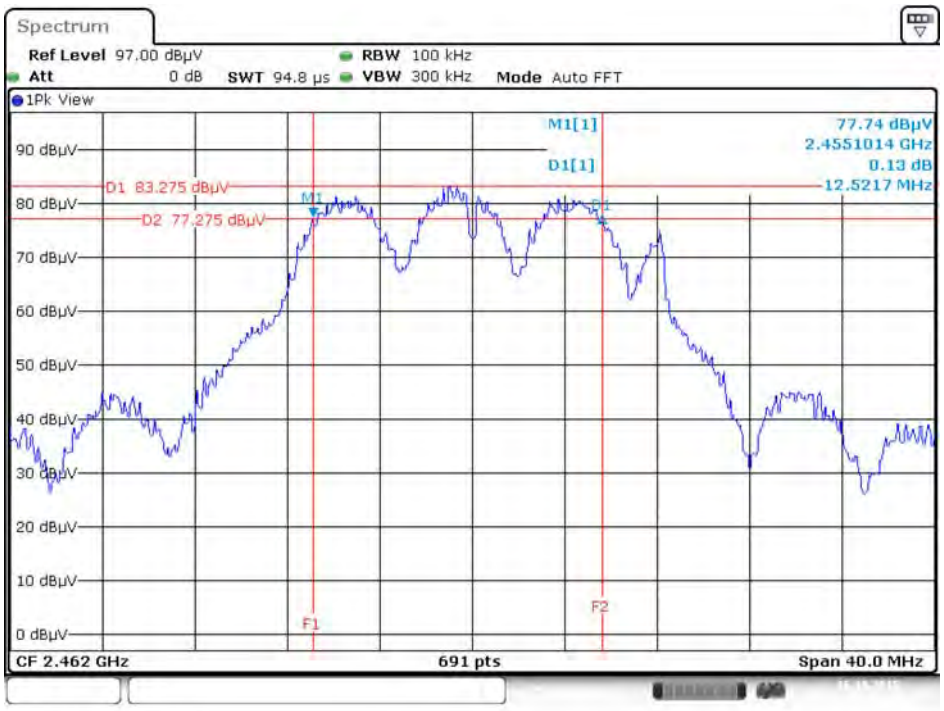
99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1 + Chain 3



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.412521 GHz	87.93 dBµV		
T1		1	2.4067033 GHz	71.85 dBµV	Occ Bw	10.853835022 MHz
T2		1	2.4175572 GHz	68.98 dBµV		

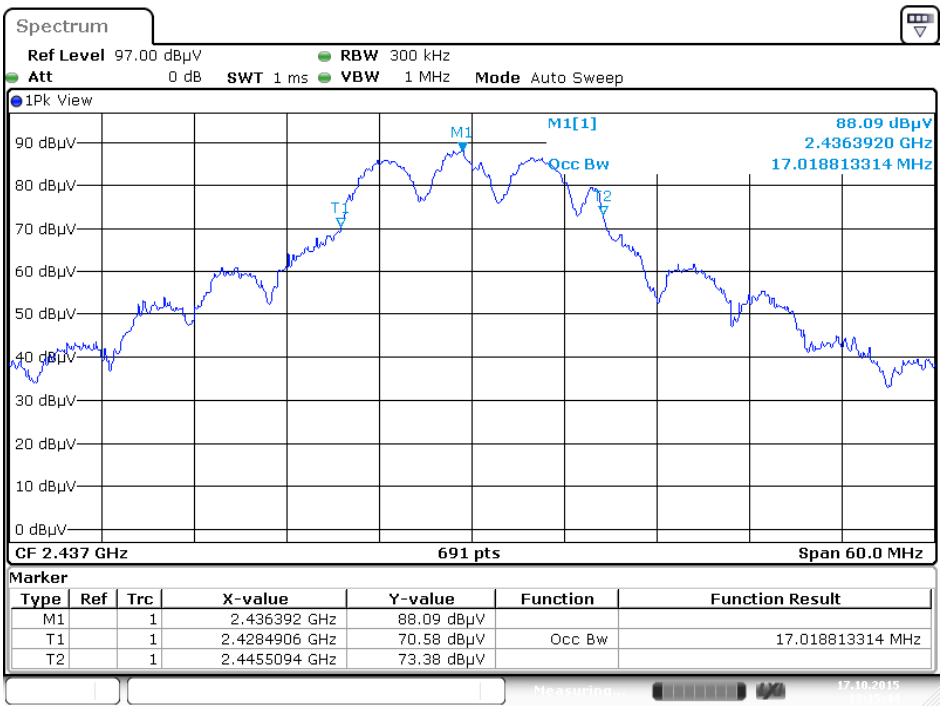
Date: 17.OCT.2015 13:07:48

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 1 + Chain 3



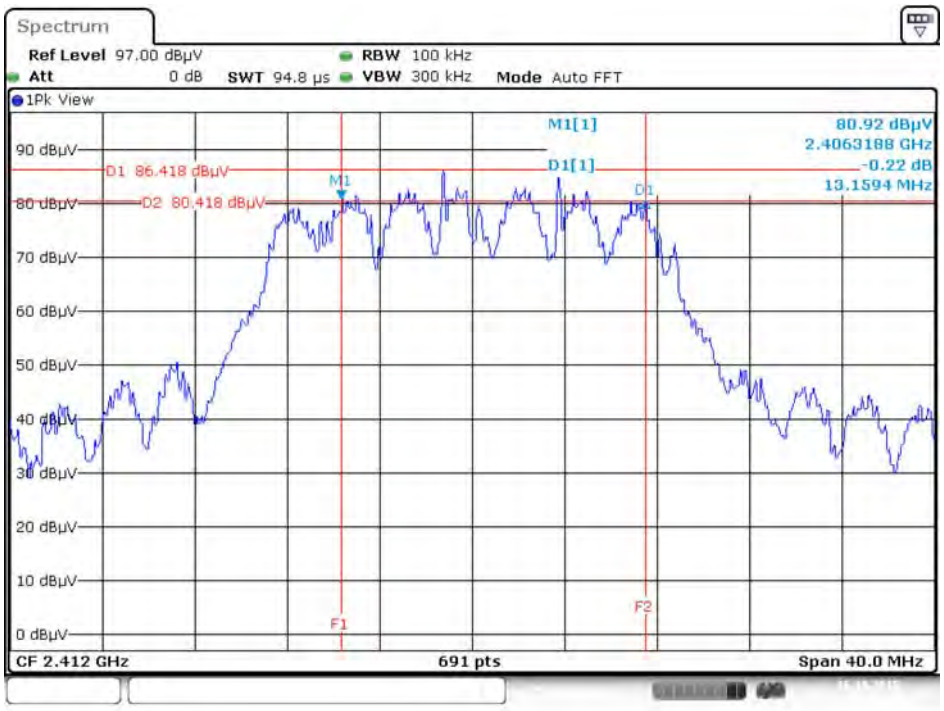
Date: 16.OCT.2015 11:49:15

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1 + Chain 3



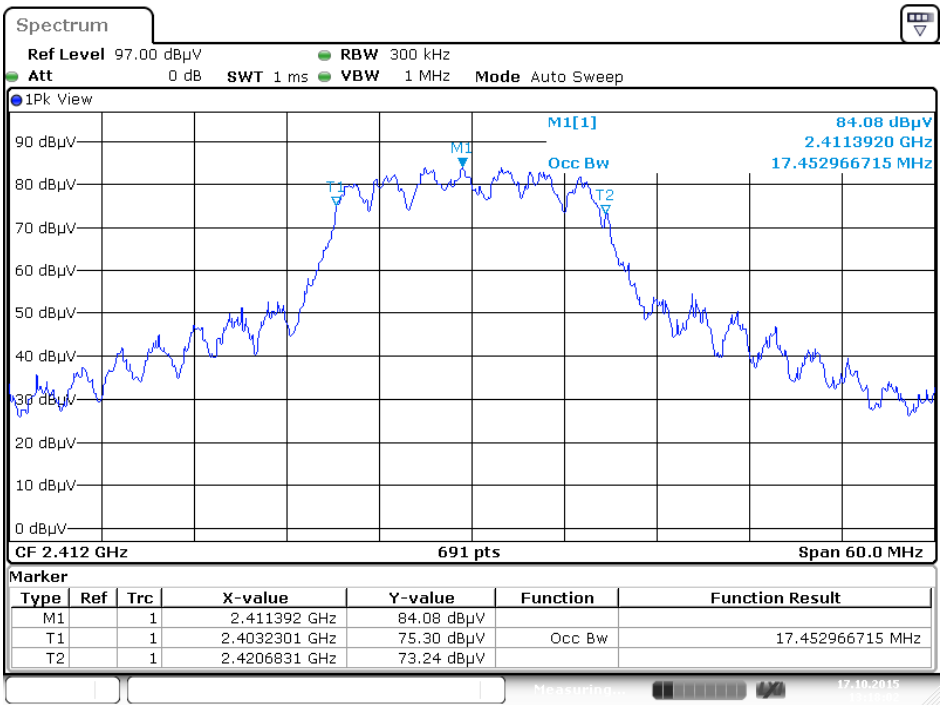
Date:17.OCT.2015 13:15:44

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 1 + Chain 3



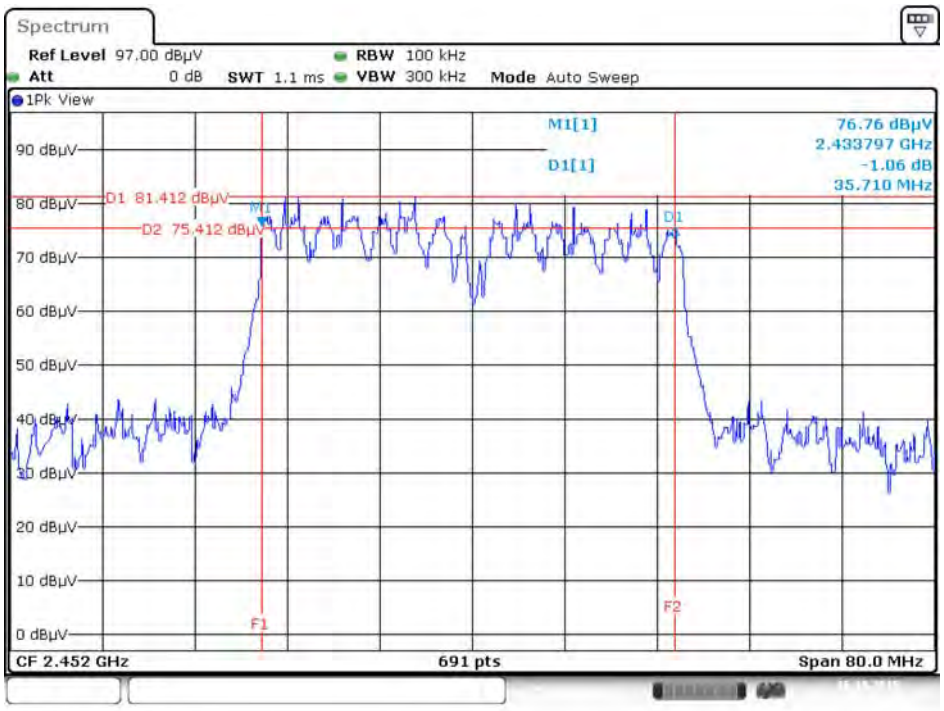
Date: 16.OCT.2015 11:50:23

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 1 + Chain 3



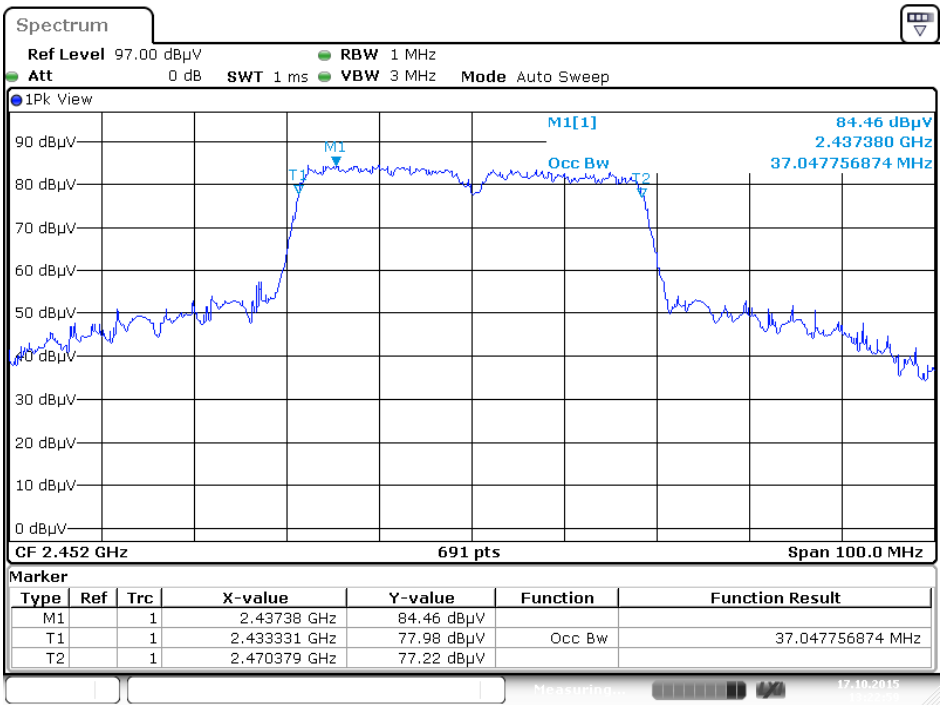
Date: 17.OCT.2015 13:18:02

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 1 + Chain 3



Date: 16.OCT.2015 11:53:30

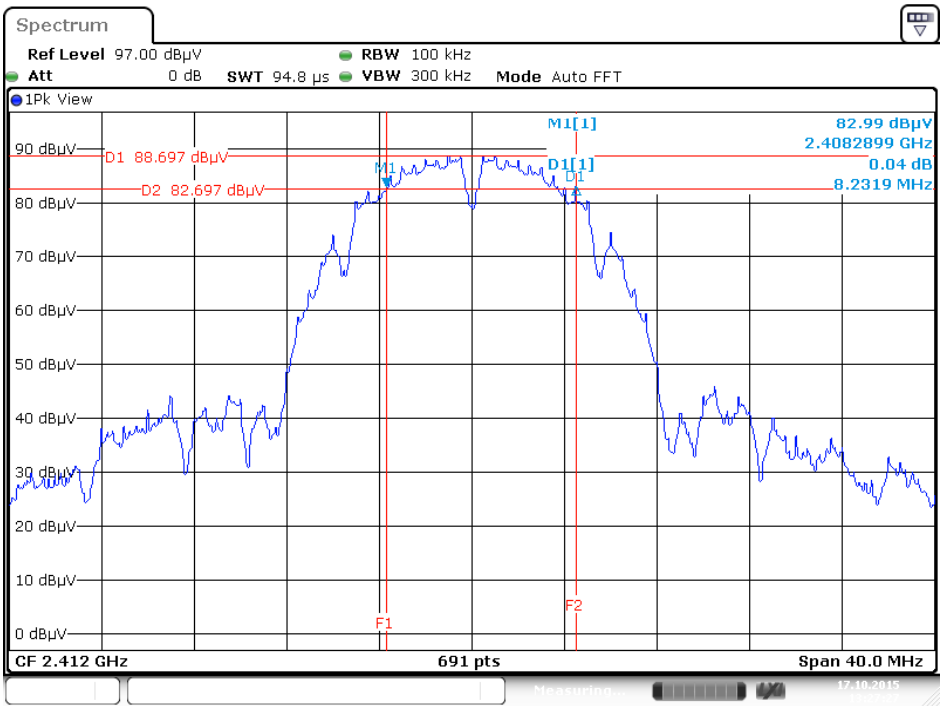
99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 1 + Chain 3



Date: 17.OCT.2015 13:22:59

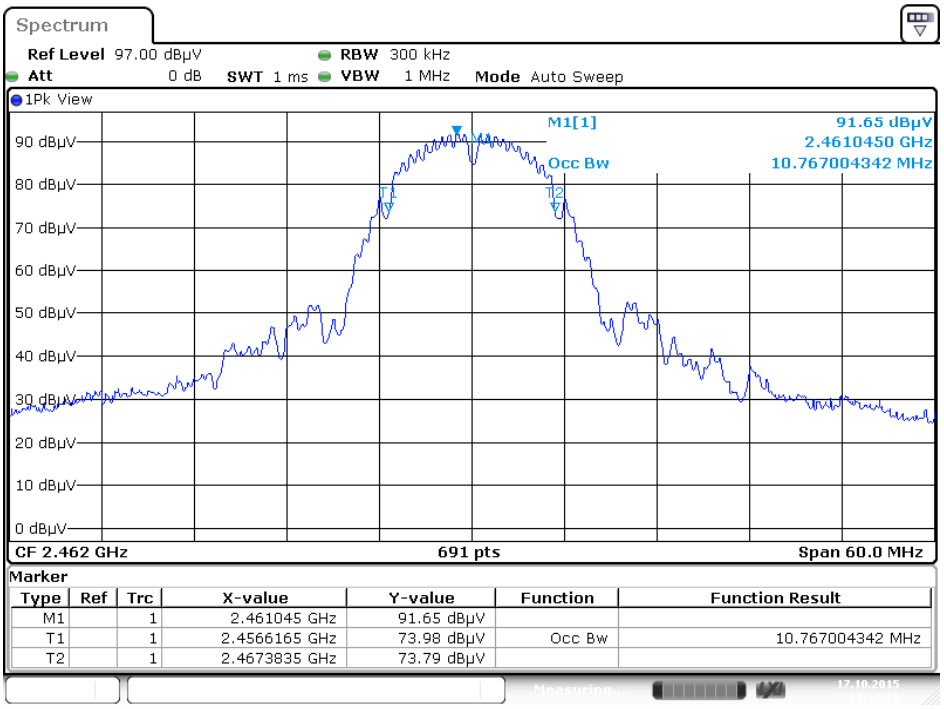
Chain 1: 4.1dBi, Chain 2: 4.4dBi, Chain 3: 4.4dBi / 3TX

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Chain 1 + Chain 2 + Chain 3



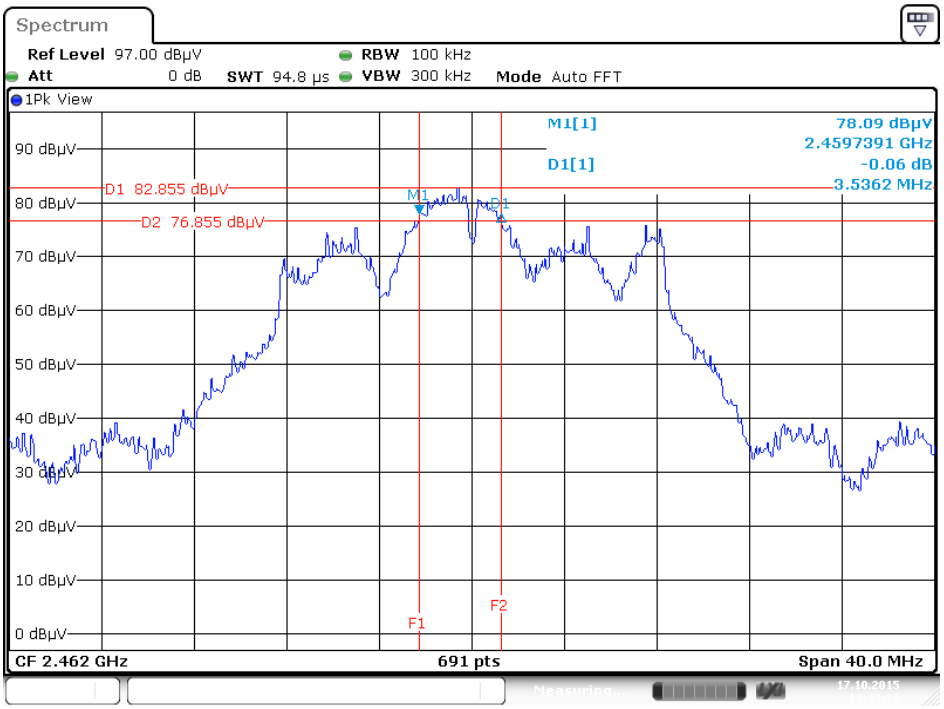
Date: 17.OCT.2015 13:27:26

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2462 MHz / Chain 1 + Chain 2 + Chain 3



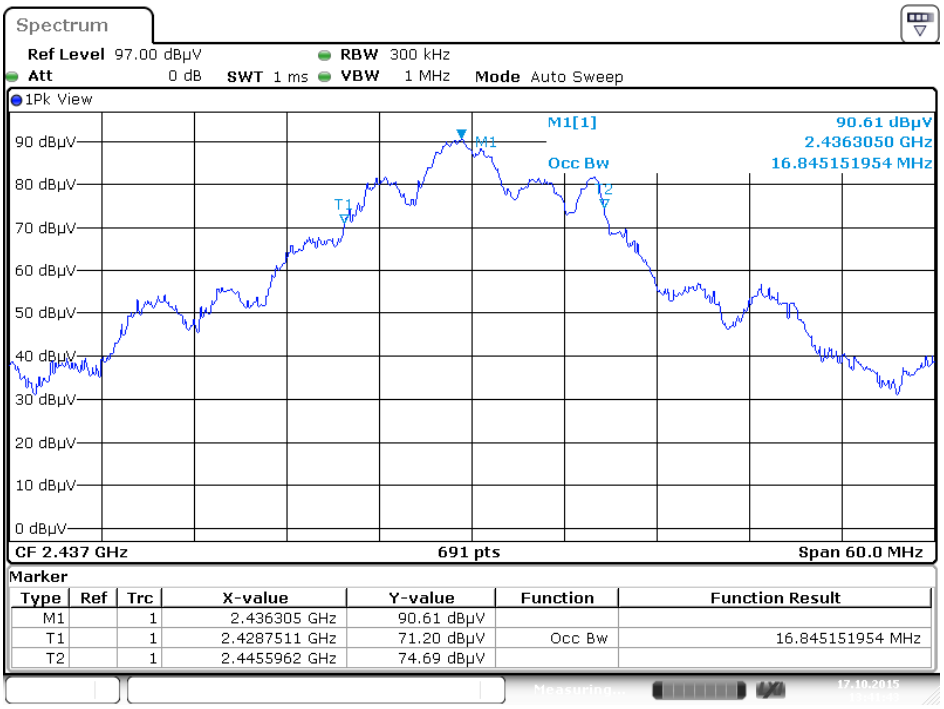
Date: 17.OCT.2015 13:31:26

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2462 MHz / Chain 1 + Chain 2 + Chain 3



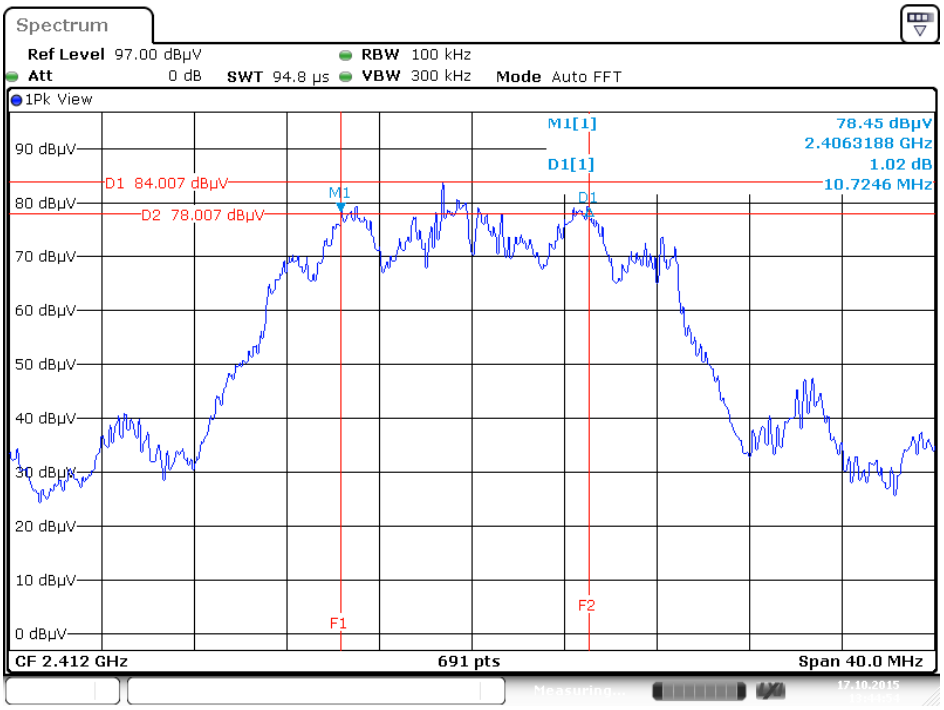
Date: 17.OCT.2015 13:43:22

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Chain 1 + Chain 2 + Chain 3



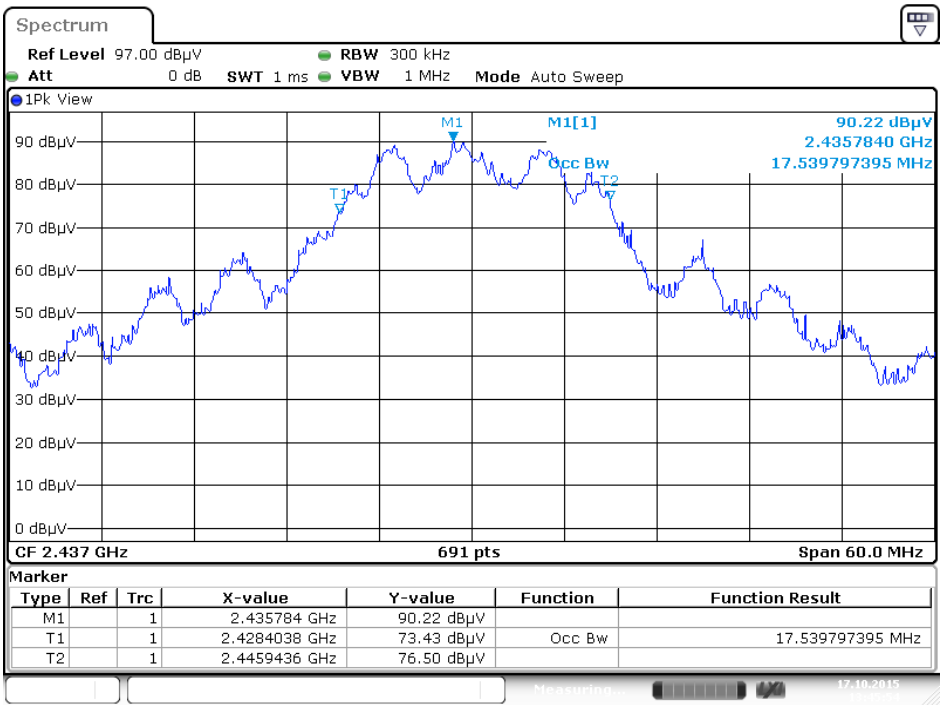
Date: 17.OCT.2015 13:41:43

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Chain 1 + Chain 2 + Chain 3



Date: 17.OCT.2015 13:44:54

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Chain 1 + Chain 2 + Chain 3

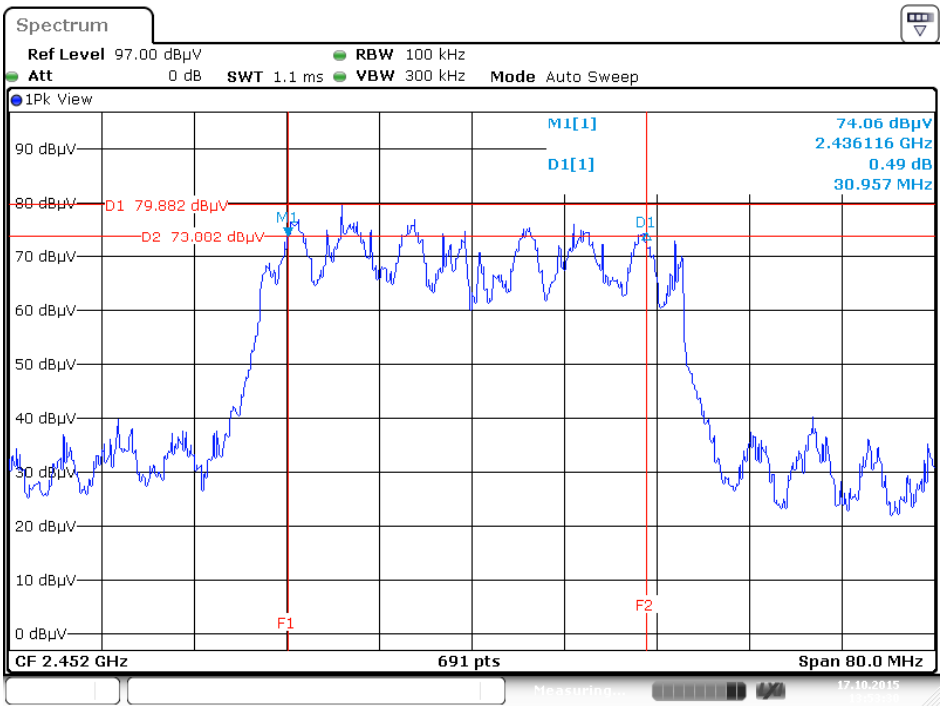


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.435784 GHz	90.22 dBµV		
T1		1	2.4284038 GHz	73.43 dBµV	Occ Bw	17.539797395 MHz
T2		1	2.4459436 GHz	76.50 dBµV		

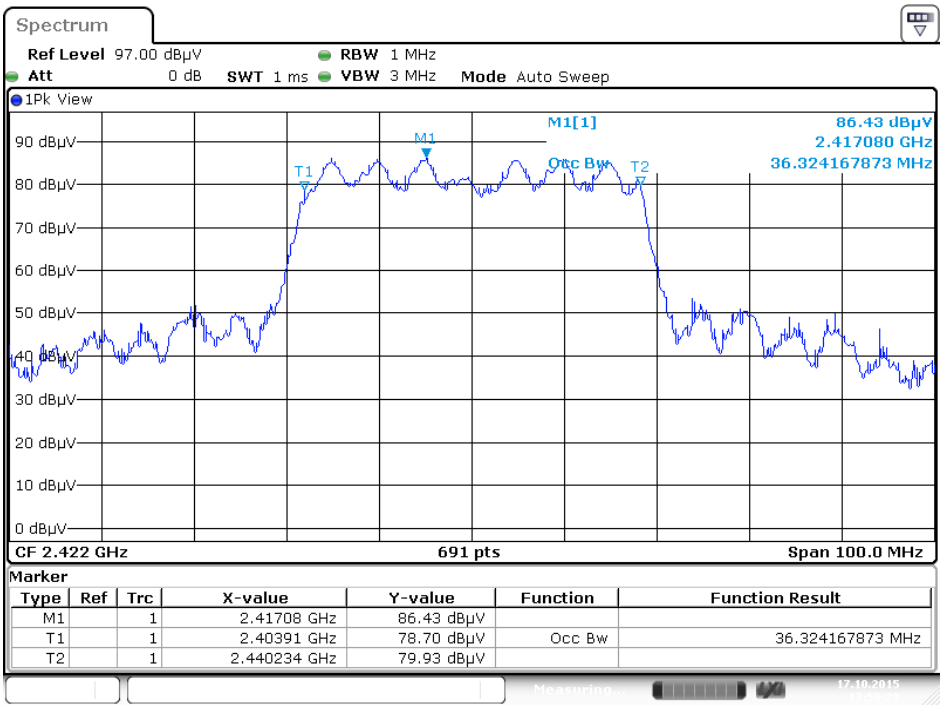
Date: 17.OCT.2015 13:45:54

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452 MHz / Chain 1 + Chain 2 + Chain 3



Date: 17.OCT.2015 13:53:31

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422 MHz / Chain 1 + Chain 2 + Chain 3



Date: 17.OCT.2015 13:50:29

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 2.7, then the 2.8 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

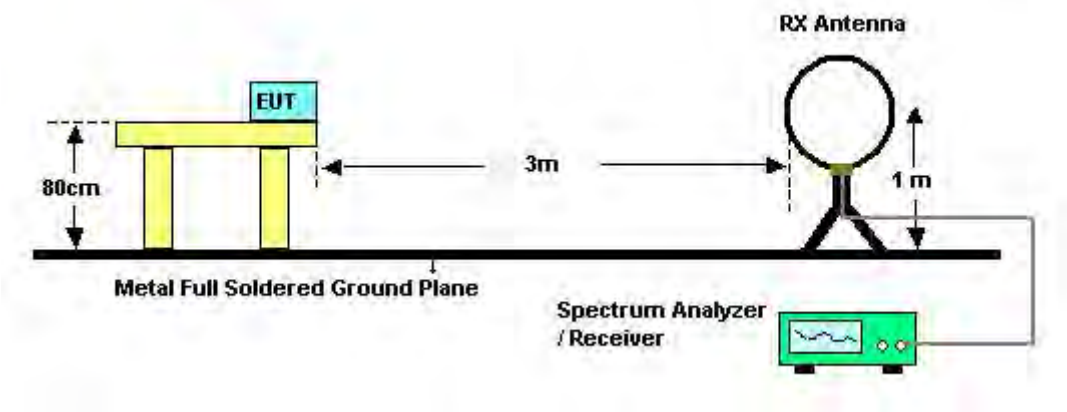
4.5.3. Test Procedures

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 1m & 3m 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.

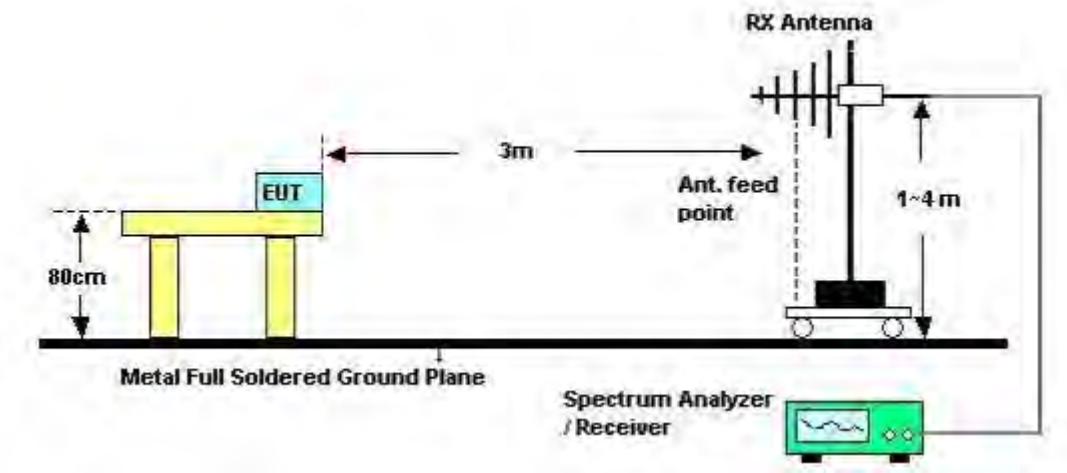
4.5.4. Test Setup Layout

For Unintentional and intentional:

9kHz ~30MHz

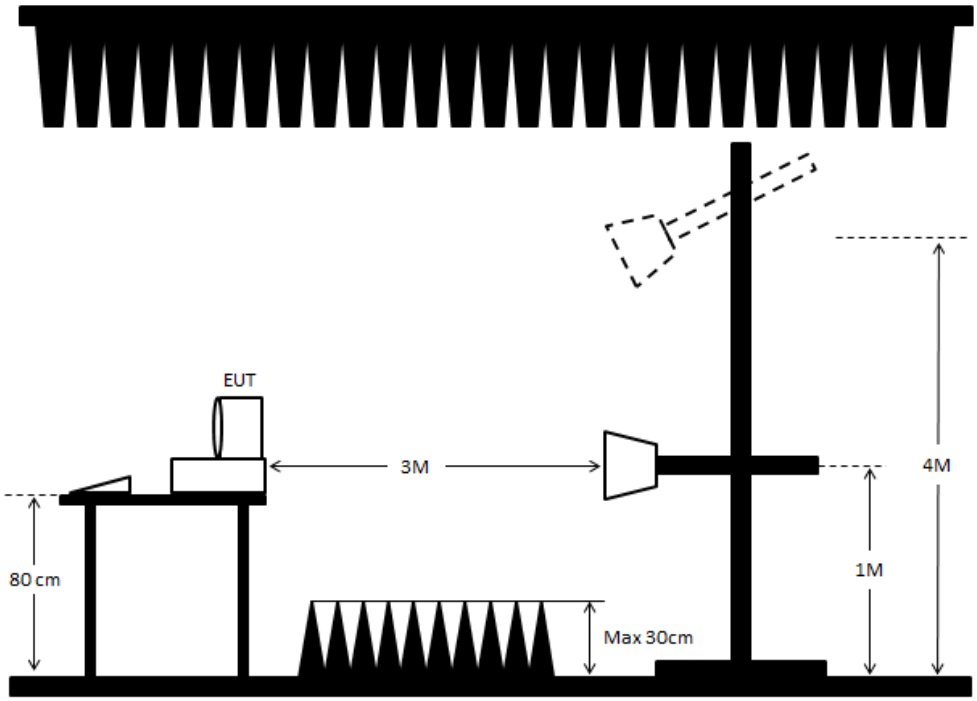


30MHz~1GHz

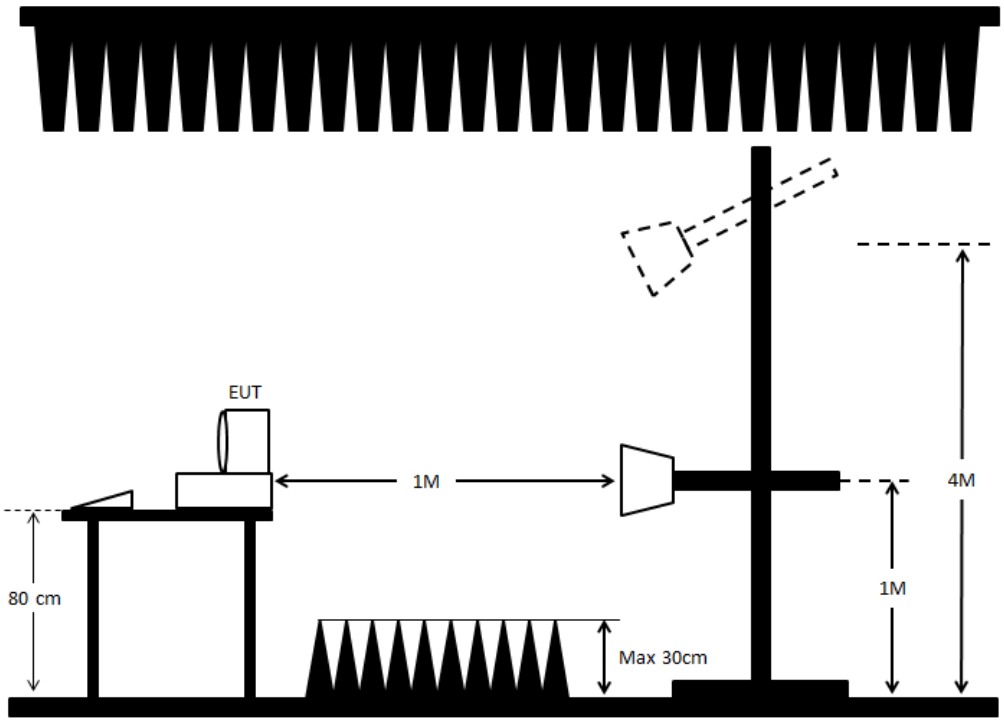


For Unintentional 1GHz~5th – CRX

1GHz~18GHz

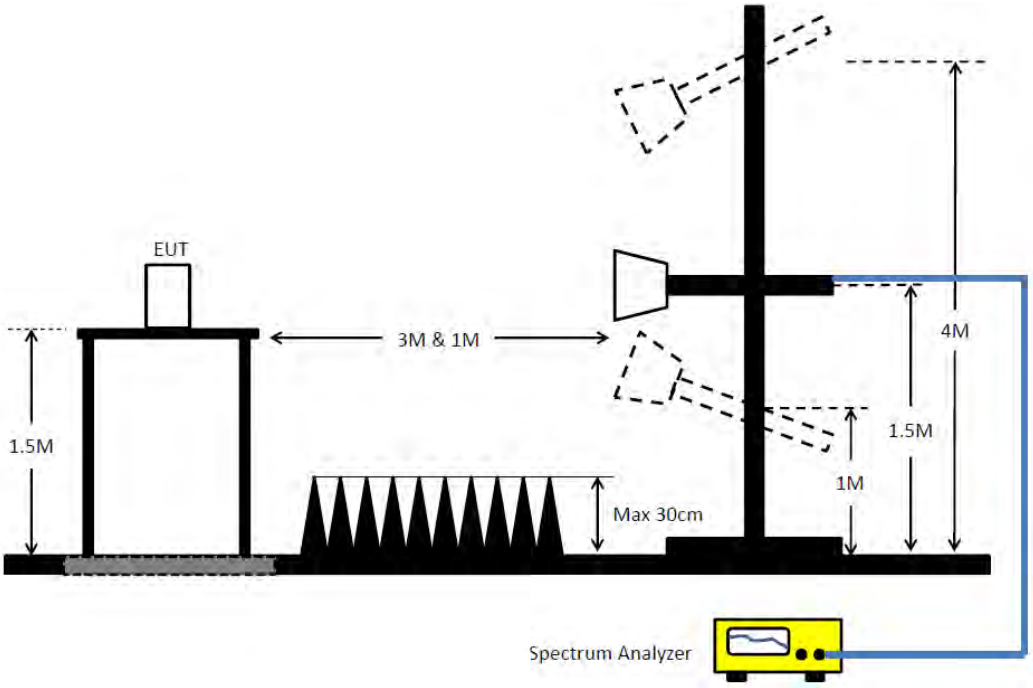


18GHz ~30GHz



For Intentional 1GHz~10th - CTX

Above 1GHz



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.5.7. Results of Radiated Emissions (9kHz~30MHz: Intentional and Unintentional)

Temperature	24°C	**Humidity**	65%
Test Engineer	Gino Huang	**Configurations**	Intentional – CTX
Test Date	Oct. 12, 2015	**Test Mode**	Mode 2

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.

Temperature	24℃	Humidity	65%
Test Engineer	Brian Sun & Gino Huang	Configurations	Unintentional – CRX
Test Date	Jul. 07, 2017	Test Mode	Mode 3

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

Note:

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

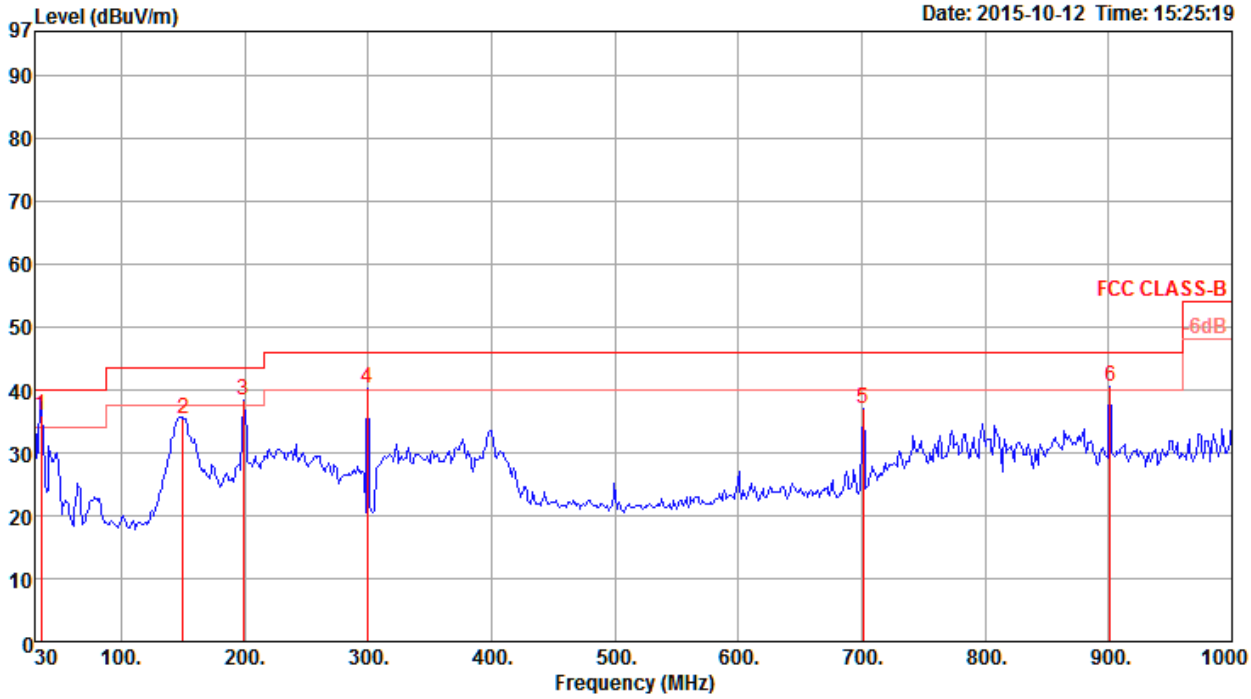
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

4.5.8. Results of Radiated Emissions (30MHz~1GHz: Intentional and Unintentional)

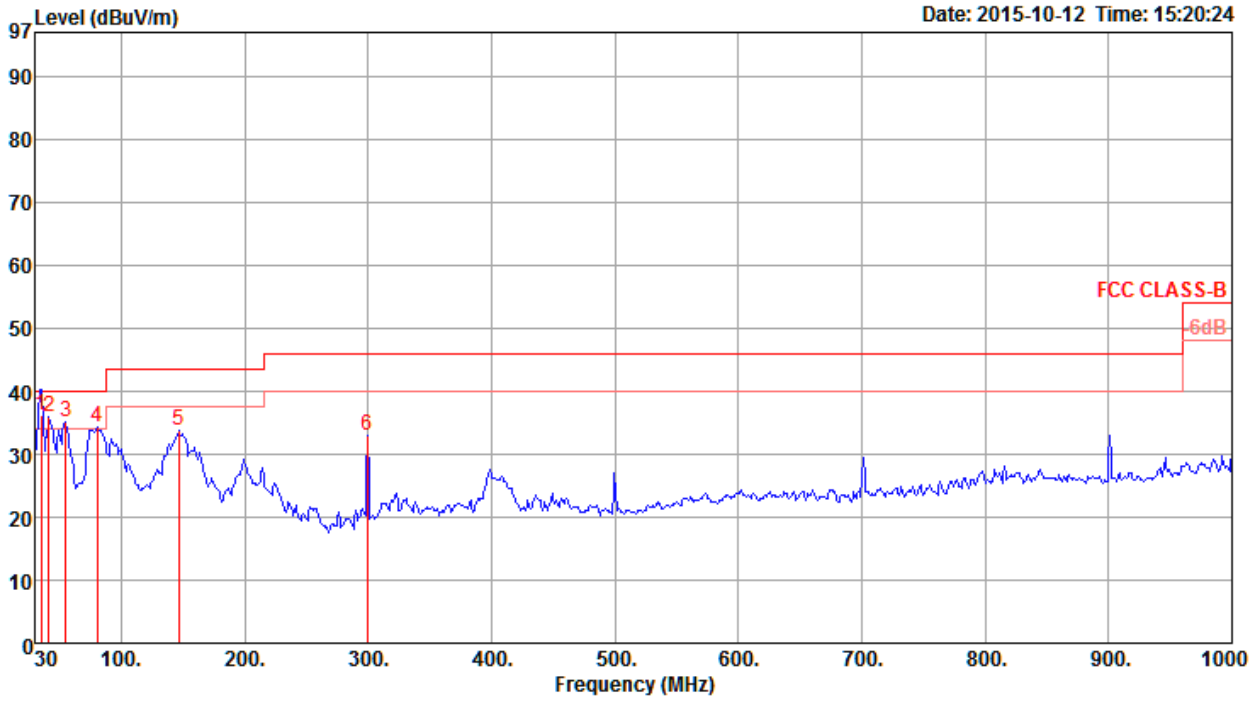
Temperature	24°C	Humidity	65%
Test Engineer	Gino Huang	Configurations	Intentional - CTX
Test Mode	Mode 2		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	34.85	35.92	40.00	-4.08	48.01	0.61	16.80	29.50	312	156	QP	HORIZONTAL
2	150.28	35.53	43.50	-7.97	52.35	1.03	11.20	29.05	360	100	Peak	HORIZONTAL
3	198.78	38.33	43.50	-5.17	55.56	1.17	10.43	28.83	360	100	Peak	HORIZONTAL
4	299.66	40.24	46.00	-5.76	53.27	1.40	13.90	28.33	360	100	Peak	HORIZONTAL
5	701.24	36.97	46.00	-9.03	44.05	2.12	19.71	28.91	360	100	Peak	HORIZONTAL
6	901.06	40.40	46.00	-5.60	44.47	2.40	21.51	27.98	360	100	Peak	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	34.85	36.18	40.00	-3.82	48.27	0.61	16.80	29.50	351	122	QP	VERTICAL
2	41.64	35.94	40.00	-4.06	52.25	0.59	12.58	29.48	360	100	Peak	VERTICAL
3	55.22	35.06	40.00	-4.94	55.93	0.67	7.90	29.44	360	100	Peak	VERTICAL
4	80.44	34.31	40.00	-5.69	55.49	0.76	7.40	29.34	360	100	Peak	VERTICAL
5	146.40	33.64	43.50	-9.86	50.16	1.02	11.53	29.07	360	100	Peak	VERTICAL
6	299.66	32.92	46.00	-13.08	45.95	1.40	13.90	28.33	360	100	Peak	VERTICAL

Note:

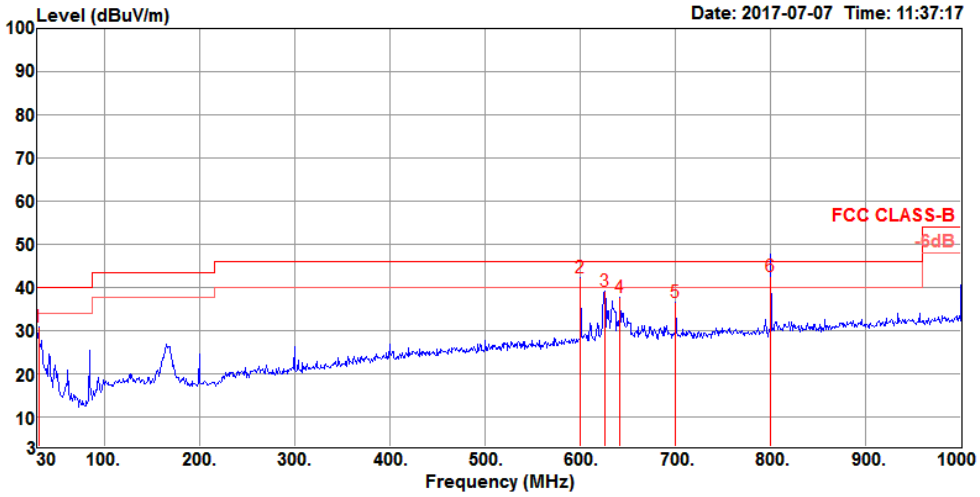
The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

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

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

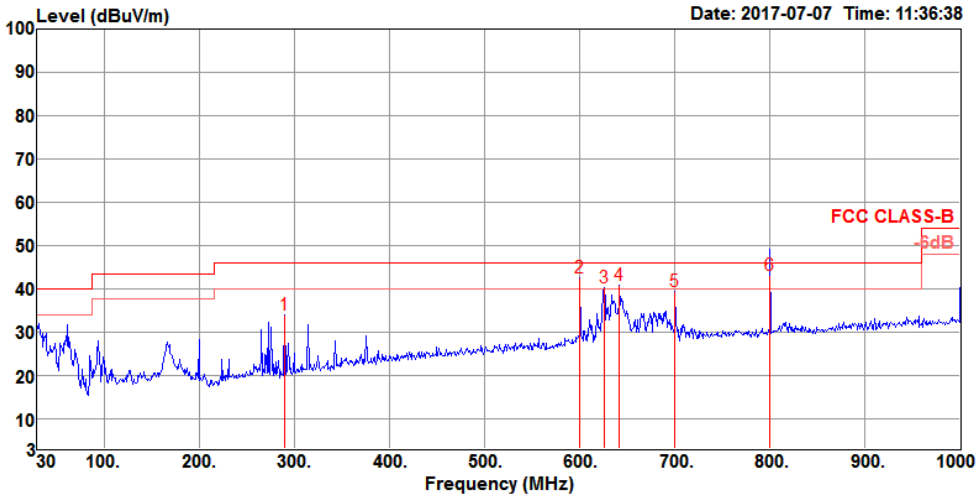
Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun & Gino Huang	Configurations	Unintentional – CRX
Test Mode	Mode 3		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.97	30.74	40.00	-9.26	37.19	0.89	25.19	32.53	200	209	Peak	HORIZONTAL
2	600.36	42.33	46.00	-3.67	45.65	4.35	24.90	32.57	200	79	Peak	HORIZONTAL
3	625.58	39.05	46.00	-6.95	42.00	4.44	25.16	32.55	150	102	Peak	HORIZONTAL
4	642.07	37.56	46.00	-8.44	40.27	4.50	25.33	32.54	150	122	Peak	HORIZONTAL
5	700.27	36.62	46.00	-9.38	38.82	4.71	25.60	32.51	150	141	Peak	HORIZONTAL
6	800.18	42.58	46.00	-3.42	43.25	5.05	26.60	32.32	100	192	QP	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	289.96	33.97	46.00	-12.03	43.95	2.96	19.50	32.44	250	238	Peak	VERTICAL
2	600.36	42.62	46.00	-3.38	45.94	4.35	24.90	32.57	100	162	Peak	VERTICAL
3	625.58	40.12	46.00	-5.88	43.07	4.44	25.16	32.55	100	132	Peak	VERTICAL
4	642.07	40.91	46.00	-5.09	43.62	4.50	25.33	32.54	100	229	Peak	VERTICAL
5	700.27	39.36	46.00	-6.64	41.56	4.71	25.60	32.51	100	255	Peak	VERTICAL
6	800.18	43.15	46.00	-2.85	43.82	5.05	26.60	32.32	100	4	QP	VERTICAL

Note:

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

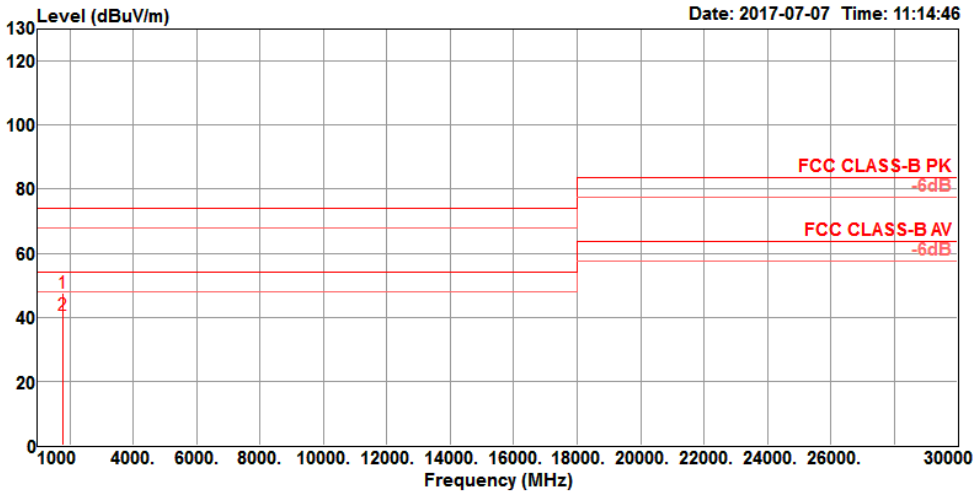
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

4.5.9. Results for Radiated Emissions (above1GHz: Unintentional 1GHz~5th)

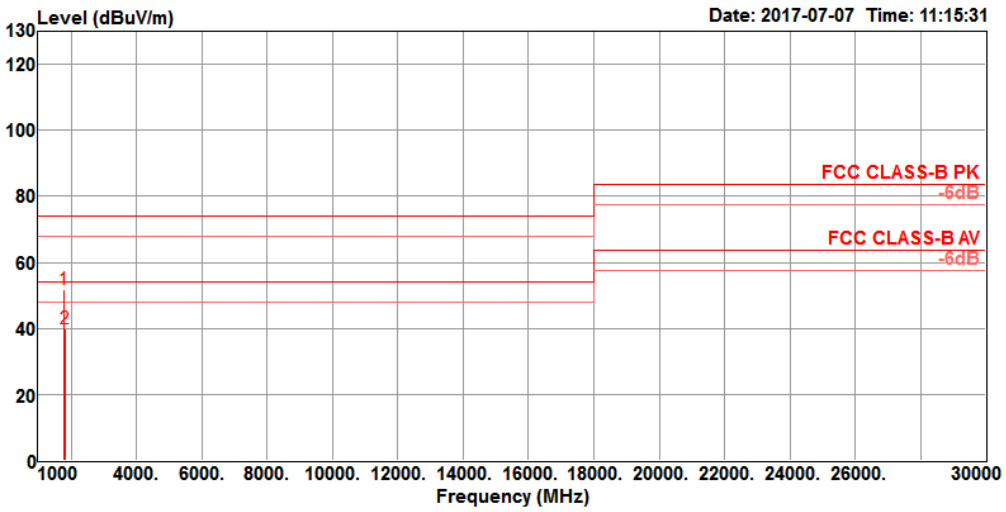
Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun & Gino Huang	Configurations	Unintentional – CRX
Test Mode	Mode 3		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1784.00	47.40	74.00	-26.60	51.00	4.26	25.88	33.74	165	71	Peak	HORIZONTAL
2	1784.20	40.59	54.00	-13.41	44.19	4.26	25.88	33.74	165	71	Average	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1788.40	51.84	74.00	-22.16	55.43	4.26	25.89	33.74	176	78	Peak	VERTICAL
2	1810.00	40.03	54.00	-13.97	43.53	4.28	25.92	33.70	176	78	Average	VERTICAL

Note:

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

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

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

4.5.10. Results for Radiated Emissions (above1GHz: Intentional 1GHz~10th)

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 1 / Chain 1+ Chain 2 + Chain 3 / 1TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.96	45.88	54.00	-8.12	37.74	8.11	33.11	33.08	103	138	Average	HORIZONTAL
2	4824.01	52.86	74.00	-21.14	44.72	8.11	33.11	33.08	103	138	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.90	56.69	74.00	-17.31	48.55	8.11	33.11	33.08	154	167	Peak	VERTICAL
2	4823.97	52.75	54.00	-1.25	44.61	8.11	33.11	33.08	154	167	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 6 / Chain 1+ Chain 2 + Chain 3 / 1TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.95	44.95	54.00	-9.05	36.86	7.94	33.23	33.08	300	79	Average	HORIZONTAL
2	4874.01	51.70	74.00	-22.30	43.61	7.94	33.23	33.08	300	79	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.89	56.50	74.00	-17.50	48.44	7.78	33.35	33.07	271	174	Peak	VERTICAL
2	4923.96	49.72	54.00	-4.28	41.66	7.78	33.35	33.07	271	174	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 11 / Chain 1+ Chain 2 + Chain 3 / 1TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.87	50.81	74.00	-23.19	42.75	7.78	33.35	33.07	153	75	Peak	HORIZONTAL
2	4923.96	42.41	54.00	-11.59	34.35	7.78	33.35	33.07	153	75	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.81	56.12	74.00	-17.88	48.03	7.94	33.23	33.08	265	171	Peak	VERTICAL
2	4873.98	52.64	54.00	-1.36	44.55	7.94	33.23	33.08	265	171	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 1 / Chain 1+ Chain 2 + Chain 3 / 2TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.87	51.85	74.00	-22.15	43.71	8.11	33.11	33.08	309	349	Peak	HORIZONTAL
2	4823.96	44.99	54.00	-9.01	36.85	8.11	33.11	33.08	309	349	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.86	57.29	74.00	-16.71	49.15	8.11	33.11	33.08	278	192	Peak	VERTICAL
2	4823.95	52.95	54.00	-1.05	44.81	8.11	33.11	33.08	278	192	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 6 / Chain 1+ Chain 2 + Chain 3 / 2TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.67	50.95	74.00	-23.05	42.86	7.94	33.23	33.08	271	7	Peak	HORIZONTAL
2	4873.90	43.71	54.00	-10.29	35.62	7.94	33.23	33.08	271	7	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Limit	Level	Loss	Factor	Factor	/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.98	52.85	54.00	-1.15	44.76	7.94	33.23	33.08	312	259	Average	VERTICAL
2	4874.01	55.98	74.00	-18.02	47.89	7.94	33.23	33.08	312	259	Peak	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 11 / Chain 1+ Chain 2 + Chain 3 / 2TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.91	50.60	74.00	-23.40	42.54	7.78	33.35	33.07	312	8	Peak	HORIZONTAL
2	4923.96	42.16	54.00	-11.84	34.10	7.78	33.35	33.07	312	8	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.94	54.87	74.00	-19.13	46.81	7.78	33.35	33.07	320	265	Peak	VERTICAL
2	4923.99	49.95	54.00	-4.05	41.89	7.78	33.35	33.07	320	265	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 1 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Dec. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.93	58.03	74.00	-15.97	50.54	8.11	33.11	33.73	294	319	Peak	HORIZONTAL
2	4823.99	52.82	54.00	-1.18	45.33	8.11	33.11	33.73	294	319	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.85	57.61	74.00	-16.39	50.12	8.11	33.11	33.73	276	325	Peak	VERTICAL
2	4823.97	52.99	54.00	-1.01	45.50	8.11	33.11	33.73	276	325	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 6 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Dec. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.86	51.85	74.00	-22.15	44.39	7.94	33.23	33.71	100	332	Peak	HORIZONTAL
2	4873.97	44.63	54.00	-9.37	37.17	7.94	33.23	33.71	100	332	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Limit	Level	Loss	Factor	Factor	/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.96	57.37	74.00	-16.63	49.91	7.94	33.23	33.71	277	324	Peak	VERTICAL
2	4873.99	52.98	54.00	-1.02	45.52	7.94	33.23	33.71	277	324	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 11 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Dec. 18, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.97	46.72	54.00	-7.28	39.27	7.78	33.35	33.68	100	316	Average	HORIZONTAL
2	4924.05	53.13	74.00	-20.87	45.68	7.78	33.35	33.68	100	316	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4924.00	57.37	74.00	-16.63	49.92	7.78	33.35	33.68	300	326	Peak	VERTICAL
2	4924.00	52.96	54.00	-1.04	45.51	7.78	33.35	33.68	300	326	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11g CH 1 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4820.92	52.00	74.00	-22.00	48.23	5.60	32.69	34.52	273	260	Peak	HORIZONTAL
2	4821.40	37.59	54.00	-16.41	33.82	5.60	32.69	34.52	273	260	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4824.91	44.20	54.00	-9.80	40.43	5.60	32.69	34.52	270	287	Average	VERTICAL
2	4824.96	59.47	74.00	-14.53	55.70	5.60	32.69	34.52	270	287	Peak	VERTICAL

Temperature	24℃	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11g CH 6 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.56	50.24	74.00	-23.76	42.15	7.94	33.23	33.08	100	308	Peak	HORIZONTAL
2	4873.62	38.59	54.00	-15.41	30.50	7.94	33.23	33.08	100	308	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4871.24	57.27	74.00	-16.73	49.18	7.94	33.23	33.08	277	239	Peak	VERTICAL
2	4871.79	43.24	54.00	-10.76	35.15	7.94	33.23	33.08	277	239	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11g CH 11 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4924.35	35.70	54.00	-18.30	31.52	5.79	32.88	34.49	264	261	Average	HORIZONTAL
2	4924.56	48.59	74.00	-25.41	44.41	5.79	32.88	34.49	264	261	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4920.83	54.49	74.00	-19.51	50.31	5.79	32.88	34.49	240	295	Peak	VERTICAL
2	4921.44	40.04	54.00	-13.96	35.86	5.79	32.88	34.49	240	295	Average	VERTICAL

Temperature	24℃	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 1 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4821.54	52.13	74.00	-21.87	48.36	5.60	32.69	34.52	228	106	Peak	HORIZONTAL
2	4821.83	38.04	54.00	-15.96	34.27	5.60	32.69	34.52	228	106	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4822.26	61.98	74.00	-12.02	58.21	5.60	32.69	34.52	17	298	Peak	VERTICAL
2	4822.77	46.05	54.00	-7.95	42.28	5.60	32.69	34.52	17	298	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Dec. 19, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.71	52.00	74.00	-22.00	43.91	7.94	33.23	33.08	125	334	Peak	HORIZONTAL
2	4874.58	38.10	54.00	-15.90	30.01	7.94	33.23	33.08	125	334	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.06	59.21	74.00	-14.79	51.12	7.94	33.23	33.08	276	322	Peak	VERTICAL
2	4874.39	44.90	54.00	-9.10	36.81	7.94	33.23	33.08	276	322	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4923.86	51.87	74.00	-22.13	47.69	5.79	32.88	34.49	231	122	Peak	HORIZONTAL
2	4924.65	37.52	54.00	-16.48	33.34	5.79	32.88	34.49	231	122	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4922.99	54.95	74.00	-19.05	50.77	5.79	32.88	34.49	16	294	Peak	VERTICAL
2	4923.20	41.12	54.00	-12.88	36.94	5.79	32.88	34.49	16	294	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 3 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4842.77	47.53	74.00	-26.47	43.69	5.63	32.72	34.51	256	104	Peak	HORIZONTAL
2	4842.77	34.79	54.00	-19.21	30.95	5.63	32.72	34.51	256	104	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4842.77	56.01	74.00	-17.99	52.17	5.63	32.72	34.51	14	294	Peak	VERTICAL
2	4842.99	42.19	54.00	-11.81	38.35	5.63	32.72	34.51	14	294	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 6 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4869.01	35.24	54.00	-18.76	31.27	5.70	32.78	34.51	246	106	Average	HORIZONTAL
2	4869.80	47.91	74.00	-26.09	43.94	5.70	32.78	34.51	246	106	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4872.92	55.13	74.00	-18.87	51.16	5.70	32.78	34.51	20	282	Peak	VERTICAL
2	4872.92	40.57	54.00	-13.43	36.60	5.70	32.78	34.51	20	282	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 9 / Chain 1+ Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4903.35	46.19	74.00	-27.81	42.09	5.76	32.84	34.50	259	101	Peak	HORIZONTAL
2	4903.35	34.34	54.00	-19.66	30.24	5.76	32.84	34.50	259	101	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4902.84	39.08	54.00	-14.92	34.98	5.76	32.84	34.50	16	299	Average	VERTICAL
2	4903.35	53.90	74.00	-20.10	49.80	5.76	32.84	34.50	16	299	Peak	VERTICAL

Note:

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

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

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

4.6. 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 2.7, then the 2.8 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

<u>For Radiated band edges Measurement</u>:

1. The test procedure is the same as section 4.5.3.

<u>For Radiated Out of Band Emission Measurement</u>:

1. Test was performed in accordance with KDB558074 D01 v04 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.

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

For non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

For beamforming mode:

The EUT was programmed to be in beamforming transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

For Non-Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1/ 1TX
Test Date	Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.89	61.34	74.00	-12.66	28.65	4.38	28.31	0.00	206	265	Peak	VERTICAL
2	2390.00	51.48	54.00	-2.52	18.79	4.38	28.31	0.00	206	265	Average	VERTICAL
3	2411.36	108.19			75.42	4.41	28.36	0.00	206	265	Average	VERTICAL
4	2412.96	111.88			79.11	4.41	28.36	0.00	206	265	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2361.36	59.26	74.00	-14.74	26.64	4.35	28.27	0.00	259	183	Peak	VERTICAL
2	2390.00	48.00	54.00	-6.00	15.31	4.38	28.31	0.00	259	183	Average	VERTICAL
3	2436.04	112.22			79.39	4.44	28.39	0.00	259	183	Peak	VERTICAL
4	2436.36	108.66			75.83	4.44	28.39	0.00	259	183	Average	VERTICAL
5	2483.50	48.53	54.00	-5.47	15.55	4.50	28.48	0.00	259	183	Average	VERTICAL
6	2492.13	60.40	74.00	-13.60	27.40	4.51	28.49	0.00	259	183	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.04	110.66			77.75	4.47	28.44	0.00	288	186	Peak	VERTICAL
2	2461.20	107.12			74.21	4.47	28.44	0.00	288	186	Average	VERTICAL
3	2483.50	52.93	54.00	-1.07	19.95	4.50	28.48	0.00	288	186	Average	VERTICAL
4	2483.96	62.72	74.00	-11.28	29.74	4.50	28.48	0.00	288	186	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 / 1TX
Test Date	Oct. 07, 2015 ~ Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.60	67.23	74.00	-6.77	35.34	3.75	28.14	0.00	188	198	Peak	VERTICAL
2	2390.00	52.77	54.00	-1.23	20.88	3.75	28.14	0.00	188	198	Average	VERTICAL
3	2411.20	102.54			70.66	3.76	28.12	0.00	188	198	Average	VERTICAL
4	2414.00	113.07			81.19	3.76	28.12	0.00	188	198	Peak	VERTICAL
5	2487.60	57.14	74.00	-16.86	25.31	3.83	28.00	0.00	188	198	Peak	VERTICAL
6	2487.60	48.09	54.00	-5.91	16.26	3.83	28.00	0.00	188	198	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2383.80	49.44	54.00	-4.56	16.75	4.38	28.31	0.00	153	144	Average	HORIZONTAL
2	2384.12	59.95	74.00	-14.05	27.26	4.38	28.31	0.00	153	144	Peak	HORIZONTAL
3	2436.04	105.64			72.81	4.44	28.39	0.00	153	144	Peak	HORIZONTAL
4	2436.36	96.42			63.59	4.44	28.39	0.00	153	144	Average	HORIZONTAL
5	2483.50	48.73	54.00	-5.27	15.75	4.50	28.48	0.00	153	144	Average	HORIZONTAL
6	2489.89	59.86	74.00	-14.14	26.86	4.51	28.49	0.00	153	144	Peak	HORIZONTAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2460.20	111.75			79.90	3.80	28.05	0.00	188	188	Peak	VERTICAL
2	2463.00	101.18			69.33	3.80	28.05	0.00	188	188	Average	VERTICAL
3	2483.50	69.56	74.00	-4.44	37.72	3.82	28.02	0.00	188	188	Peak	VERTICAL
4	2483.50	52.57	54.00	-1.43	20.73	3.82	28.02	0.00	188	188	Average	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 / 1TX
Test Date	Oct. 08, 2015 ~ Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.80	68.98	74.00	-5.02	37.09	3.75	28.14	0.00	186	200	Peak	VERTICAL
2	2390.00	52.59	54.00	-1.41	20.70	3.75	28.14	0.00	186	200	Average	VERTICAL
3	2413.20	101.40			69.52	3.76	28.12	0.00	186	200	Average	VERTICAL
4	2414.40	112.11			80.23	3.76	28.12	0.00	186	200	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2347.26	47.99	54.00	-6.01	15.42	4.33	28.24	0.00	271	189	Average	VERTICAL
2	2365.21	60.62	74.00	-13.38	27.98	4.36	28.28	0.00	271	189	Peak	VERTICAL
3	2437.96	102.24			69.41	4.44	28.39	0.00	271	189	Average	VERTICAL
4	2439.24	113.34			80.48	4.45	28.41	0.00	271	189	Peak	VERTICAL
5	2483.80	49.22	54.00	-4.78	16.24	4.50	28.48	0.00	271	189	Average	VERTICAL
6	2499.50	60.40	74.00	-13.60	27.38	4.52	28.50	0.00	271	189	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2463.20	100.43			68.58	3.80	28.05	0.00	193	188	Average	VERTICAL
2	2463.60	111.40			79.55	3.80	28.05	0.00	193	188	Peak	VERTICAL
3	2483.50	52.99	54.00	-1.01	21.15	3.82	28.02	0.00	193	188	Average	VERTICAL
4	2483.80	72.64	74.00	-1.36	40.80	3.82	28.02	0.00	193	188	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 / 1TX
Test Date	Oct. 08, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2388.40	72.21	74.00	-1.79	40.32	3.75	28.14	0.00	189	196	Peak	VERTICAL
2	2389.20	52.58	54.00	-1.42	20.69	3.75	28.14	0.00	189	196	Average	VERTICAL
3	2425.20	96.69			64.82	3.77	28.10	0.00	189	196	Average	VERTICAL
4	2433.60	106.40			74.53	3.77	28.10	0.00	189	196	Peak	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2387.20	67.38	74.00	-6.62	35.49	3.75	28.14	0.00	189	193	Peak	VERTICAL
2	2390.00	51.68	54.00	-2.32	19.79	3.75	28.14	0.00	189	193	Average	VERTICAL
3	2423.20	108.55			76.68	3.77	28.10	0.00	189	193	Peak	VERTICAL
4	2431.60	97.38			65.51	3.77	28.10	0.00	189	193	Average	VERTICAL
5	2483.50	52.65	54.00	-1.35	20.81	3.82	28.02	0.00	189	193	Average	VERTICAL
6	2485.60	68.35	74.00	-5.65	36.51	3.82	28.02	0.00	189	193	Peak	VERTICAL

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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2434.80	96.66			64.79	3.77	28.10	0.00	188	152	Average	VERTICAL
2	2436.00	106.57			74.70	3.77	28.10	0.00	188	152	Peak	VERTICAL
3	2483.50	52.51	54.00	-1.49	20.67	3.82	28.02	0.00	188	152	Average	VERTICAL
4	2487.20	71.34	74.00	-2.66	39.50	3.82	28.02	0.00	188	152	Peak	VERTICAL

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

Note:

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

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 3 / 2TX
Test Date	Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2386.84	60.49	74.00	-13.51	27.80	4.38	28.31	0.00	259	259	Peak	VERTICAL
2	2387.00	49.77	54.00	-4.23	17.08	4.38	28.31	0.00	259	259	Average	VERTICAL
3	2411.04	114.28			81.53	4.40	28.35	0.00	259	259	Peak	VERTICAL
4	2411.36	110.78			78.01	4.41	28.36	0.00	259	259	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.28	48.20	54.00	-5.80	15.51	4.38	28.31	0.00	262	259	Average	VERTICAL
2	2389.56	60.42	74.00	-13.58	27.73	4.38	28.31	0.00	262	259	Peak	VERTICAL
3	2436.04	114.85			82.02	4.44	28.39	0.00	262	259	Peak	VERTICAL
4	2436.36	111.31			78.48	4.44	28.39	0.00	262	259	Average	VERTICAL
5	2483.50	48.56	54.00	-5.44	15.58	4.50	28.48	0.00	262	259	Average	VERTICAL
6	2497.26	59.37	74.00	-14.63	26.35	4.52	28.50	0.00	262	259	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.04	116.13			83.22	4.47	28.44	0.00	264	259	Peak	VERTICAL
2	2461.36	112.55			79.64	4.47	28.44	0.00	264	259	Average	VERTICAL
3	2483.50	52.33	54.00	-1.67	19.35	4.50	28.48	0.00	264	259	Average	VERTICAL
4	2483.64	63.53	74.00	-10.47	30.55	4.50	28.48	0.00	264	259	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 3 / 2TX
Test Date	Oct. 07, 2015 ~ Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2390.00	71.02	74.00	-2.98	39.13	3.75	28.14	0.00	271	193	Peak	VERTICAL
2	2390.00	52.74	54.00	-1.26	20.85	3.75	28.14	0.00	271	193	Average	VERTICAL
3	2410.40	105.36			73.48	3.76	28.12	0.00	271	193	Average	VERTICAL
4	2410.80	115.48			83.60	3.76	28.12	0.00	271	193	Peak	VERTICAL
5	2487.20	58.51	74.00	-15.49	26.67	3.82	28.02	0.00	271	193	Peak	VERTICAL
6	2487.60	50.94	54.00	-3.06	19.11	3.83	28.00	0.00	271	193	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2386.36	48.57	54.00	-5.43	15.88	4.38	28.31	0.00	304	264	Average	VERTICAL
2	2389.24	60.67	74.00	-13.33	27.98	4.38	28.31	0.00	304	264	Peak	VERTICAL
3	2436.36	117.06			84.23	4.44	28.39	0.00	304	264	Peak	VERTICAL
4	2436.36	107.79			74.96	4.44	28.39	0.00	304	264	Average	VERTICAL
5	2483.80	49.20	54.00	-4.80	16.22	4.50	28.48	0.00	304	264	Average	VERTICAL
6	2499.82	59.71	74.00	-14.29	26.69	4.52	28.50	0.00	304	264	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2462.80	104.31			72.46	3.80	28.05	0.00	245	186	Average	VERTICAL
2	2463.20	114.45			82.60	3.80	28.05	0.00	245	186	Peak	VERTICAL
3	2483.50	72.81	74.00	-1.19	40.97	3.82	28.02	0.00	245	186	Peak	VERTICAL
4	2483.50	52.87	54.00	-1.13	21.03	3.82	28.02	0.00	245	186	Average	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 3 / 2TX
Test Date	Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2388.80	72.45	74.00	-1.55	40.56	3.75	28.14	0.00	271	192	Peak	VERTICAL
2	2389.20	52.67	54.00	-1.33	20.78	3.75	28.14	0.00	271	192	Average	VERTICAL
3	2411.20	104.45			72.57	3.76	28.12	0.00	271	192	Average	VERTICAL
4	2413.60	114.94			83.06	3.76	28.12	0.00	271	192	Peak	VERTICAL
5	2487.60	58.26	74.00	-15.74	26.43	3.83	28.00	0.00	271	192	Peak	VERTICAL
6	2487.60	50.08	54.00	-3.92	18.25	3.83	28.00	0.00	271	192	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2386.36	61.23	74.00	-12.77	28.54	4.38	28.31	0.00	253	267	Peak	VERTICAL
2	2388.92	49.05	54.00	-4.95	16.36	4.38	28.31	0.00	253	267	Average	VERTICAL
3	2436.36	115.95			83.12	4.44	28.39	0.00	253	267	Peak	VERTICAL
4	2436.36	106.79			73.96	4.44	28.39	0.00	253	267	Average	VERTICAL
5	2483.80	49.23	54.00	-4.77	16.25	4.50	28.48	0.00	253	267	Average	VERTICAL
6	2487.00	61.29	74.00	-12.71	28.31	4.50	28.48	0.00	253	267	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2459.80	103.64			71.79	3.80	28.05	0.00	245	182	Average	VERTICAL
2	2460.20	113.68			81.83	3.80	28.05	0.00	245	182	Peak	VERTICAL
3	2484.40	72.64	74.00	-1.36	40.80	3.82	28.02	0.00	245	182	Peak	VERTICAL
4	2484.60	52.74	54.00	-1.26	20.90	3.82	28.02	0.00	245	182	Average	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 3 / 2TX
Test Date	Oct. 07, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2386.40	70.49	74.00	-3.51	38.60	3.75	28.14	0.00	271	192	Peak	VERTICAL
2	2389.60	52.57	54.00	-1.43	20.68	3.75	28.14	0.00	271	192	Average	VERTICAL
3	2408.80	108.68			76.80	3.76	28.12	0.00	271	192	Peak	VERTICAL
4	2428.80	98.95			67.08	3.77	28.10	0.00	271	192	Average	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2390.00	69.10	74.00	-4.90	37.21	3.75	28.14	0.00	273	238	Peak	VERTICAL
2	2390.00	52.82	54.00	-1.18	20.93	3.75	28.14	0.00	273	238	Average	VERTICAL
3	2431.60	111.10			79.23	3.77	28.10	0.00	273	238	Peak	VERTICAL
4	2434.00	101.37			69.50	3.77	28.10	0.00	273	238	Average	VERTICAL
5	2483.50	71.49	74.00	-2.51	39.65	3.82	28.02	0.00	273	238	Peak	VERTICAL
6	2484.40	51.72	54.00	-2.28	19.88	3.82	28.02	0.00	273	238	Average	VERTICAL

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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2435.60	91.76			59.89	3.77	28.10	0.00	295	143	Average	HORIZONTAL
2	2445.60	102.87			71.01	3.79	28.07	0.00	295	143	Peak	HORIZONTAL
3	2484.40	47.37	54.00	-6.63	15.53	3.82	28.02	0.00	295	143	Average	HORIZONTAL
4	2485.60	65.69	74.00	-8.31	33.85	3.82	28.02	0.00	295	143	Peak	HORIZONTAL

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

Note:

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

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11b CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 / 3TX
Test Date	Dec. 18, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2387.64	61.52	74.00	-12.48	28.20	5.01	28.31	0.00	259	253	Peak	VERTICAL
2	2389.08	50.18	54.00	-3.82	16.86	5.01	28.31	0.00	259	253	Average	VERTICAL
3	2411.20	111.06			77.65	5.05	28.36	0.00	259	253	Average	VERTICAL
4	2412.96	114.96			81.55	5.05	28.36	0.00	259	253	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2379.42	59.32	74.00	-14.68	26.02	5.00	28.30	0.00	254	303	Peak	HORIZONTAL
2	2389.24	48.25	54.00	-5.75	14.93	5.01	28.31	0.00	254	303	Average	HORIZONTAL
3	2436.36	109.31			75.85	5.07	28.39	0.00	254	303	Peak	HORIZONTAL
4	2436.36	105.65			72.19	5.07	28.39	0.00	254	303	Average	HORIZONTAL
5	2483.50	48.57	54.00	-5.43	14.97	5.12	28.48	0.00	254	303	Average	HORIZONTAL
6	2484.14	60.97	74.00	-13.03	27.37	5.12	28.48	0.00	254	303	Peak	HORIZONTAL

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

Channel 11

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.04	118.10			84.56	5.10	28.44	0.00	266	256	Peak	VERTICAL
2	2461.20	114.43			80.89	5.10	28.44	0.00	266	256	Average	VERTICAL
3	2483.70	53.00	54.00	-1.00	19.40	5.12	28.48	0.00	266	256	Average	VERTICAL
4	2483.96	63.52	74.00	-10.48	29.92	5.12	28.48	0.00	266	256	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015 ~ Dec. 18, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.40	68.81	74.00	-5.19	36.92	3.75	28.14	0.00	272	169	Peak	VERTICAL
2	2390.00	52.95	54.00	-1.05	21.06	3.75	28.14	0.00	272	169	Average	VERTICAL
3	2415.40	116.72			84.84	3.76	28.12	0.00	272	169	Peak	VERTICAL
4	2415.40	106.79			74.91	3.76	28.12	0.00	272	169	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.24	50.11	54.00	-3.89	16.79	5.01	28.31	0.00	309	276	Average	VERTICAL
2	2389.56	63.75	74.00	-10.25	30.43	5.01	28.31	0.00	309	276	Peak	VERTICAL
3	2440.21	119.74			86.25	5.08	28.41	0.00	309	276	Peak	VERTICAL
4	2440.21	110.34			76.85	5.08	28.41	0.00	309	276	Average	VERTICAL
5	2483.50	63.28	74.00	-10.72	29.68	5.12	28.48	0.00	309	276	Peak	VERTICAL
6	2483.50	50.84	54.00	-3.16	17.24	5.12	28.48	0.00	309	276	Average	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2463.00	105.30			73.45	3.80	28.05	0.00	243	232	Average	VERTICAL
2	2463.40	115.61			83.76	3.80	28.05	0.00	243	232	Peak	VERTICAL
3	2483.50	72.47	74.00	-1.53	40.63	3.82	28.02	0.00	243	232	Peak	VERTICAL
4	2483.50	52.74	54.00	-1.26	20.90	3.82	28.02	0.00	243	232	Average	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015 ~ Dec. 18, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.20	71.37	74.00	-2.63	39.48	3.75	28.14	0.00	274	193	Peak	VERTICAL
2	2390.00	52.92	54.00	-1.08	21.03	3.75	28.14	0.00	274	193	Average	VERTICAL
3	2410.20	116.57			84.69	3.76	28.12	0.00	274	193	Peak	VERTICAL
4	2410.40	106.63			74.75	3.76	28.12	0.00	274	193	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2385.72	60.70	74.00	-13.30	27.38	5.01	28.31	0.00	254	262	Peak	VERTICAL
2	2389.24	49.66	54.00	-4.34	16.34	5.01	28.31	0.00	254	262	Average	VERTICAL
3	2435.72	119.70			86.24	5.07	28.39	0.00	254	262	Peak	VERTICAL
4	2436.04	110.48			77.02	5.07	28.39	0.00	254	262	Average	VERTICAL
5	2483.80	50.33	54.00	-3.67	16.73	5.12	28.48	0.00	254	262	Average	VERTICAL
6	2486.04	62.22	74.00	-11.78	28.62	5.12	28.48	0.00	254	262	Peak	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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2460.00	116.71			84.86	3.80	28.05	0.00	276	166	Peak	VERTICAL
2	2460.40	106.30			74.45	3.80	28.05	0.00	276	166	Average	VERTICAL
3	2485.40	52.97	54.00	-1.03	21.13	3.82	28.02	0.00	276	166	Average	VERTICAL
4	2486.20	72.04	74.00	-1.96	40.20	3.82	28.02	0.00	276	166	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3 / 3TX
Test Date	Oct. 07, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2390.00	71.71	74.00	-2.29	39.82	3.75	28.14	0.00	276	171	Peak	VERTICAL
2	2390.00	52.75	54.00	-1.25	20.86	3.75	28.14	0.00	276	171	Average	VERTICAL
3	2410.40	110.23			78.35	3.76	28.12	0.00	276	171	Peak	VERTICAL
4	2415.20	100.51			68.63	3.76	28.12	0.00	276	171	Average	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2389.60	52.66	54.00	-1.34	20.77	3.75	28.14	0.00	277	215	Average	VERTICAL
2	2390.00	70.48	74.00	-3.52	38.59	3.75	28.14	0.00	277	215	Peak	VERTICAL
3	2430.40	102.58			70.71	3.77	28.10	0.00	277	215	Average	VERTICAL
4	2435.20	112.14			80.27	3.77	28.10	0.00	277	215	Peak	VERTICAL
5	2485.00	51.32	54.00	-2.68	19.48	3.82	28.02	0.00	277	215	Average	VERTICAL
6	2485.60	67.09	74.00	-6.91	35.25	3.82	28.02	0.00	277	215	Peak	VERTICAL

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	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	2435.20	111.77			79.90	3.77	28.10	0.00	274	151	Peak	VERTICAL
2	2435.20	101.75			69.88	3.77	28.10	0.00	274	151	Average	VERTICAL
3	2485.60	52.82	54.00	-1.18	20.98	3.82	28.02	0.00	274	151	Average	VERTICAL
4	2487.20	72.48	74.00	-1.52	40.64	3.82	28.02	0.00	274	151	Peak	VERTICAL

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

Note:

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

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

For Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 2 / 2TX
Test Date	Oct. 20, 2015 ~ Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.20	69.30	74.00	-4.70	36.62	4.37	28.31	0.00	277	172	Peak	VERTICAL
2	2390.00	52.78	54.00	-1.22	20.06	4.41	28.31	0.00	277	172	Average	VERTICAL
3	2415.00	105.93			73.18	4.41	28.34	0.00	277	172	Average	VERTICAL
4	2416.20	115.35			82.57	4.44	28.34	0.00	277	172	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.24	61.13	74.00	-12.87	28.44	4.38	28.31	0.00	200	167	Peak	VERTICAL
2	2390.00	48.97	54.00	-5.03	16.28	4.38	28.31	0.00	200	167	Average	VERTICAL
3	2435.40	108.08			75.25	4.44	28.39	0.00	200	167	Average	VERTICAL
4	2436.36	116.88			84.05	4.44	28.39	0.00	200	167	Peak	VERTICAL
5	2483.80	61.82	74.00	-12.18	28.84	4.50	28.48	0.00	200	167	Peak	VERTICAL
6	2483.80	49.78	54.00	-4.22	16.80	4.50	28.48	0.00	200	167	Average	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2460.60	105.90			72.98	4.48	28.44	0.00	268	171	Average	VERTICAL
2	2460.80	115.87			82.95	4.48	28.44	0.00	268	171	Peak	VERTICAL
3	2484.00	52.76	54.00	-1.24	19.78	4.51	28.47	0.00	268	171	Average	VERTICAL
4	2484.40	67.42	74.00	-6.58	34.44	4.51	28.47	0.00	268	171	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 2 / 2TX
Test Date	Oct. 20, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.00	69.22	74.00	-4.78	36.54	4.37	28.31	0.00	277	273	Peak	VERTICAL
2	2389.60	52.71	54.00	-1.29	20.03	4.37	28.31	0.00	277	273	Average	VERTICAL
3	2424.00	98.83			66.01	4.44	28.38	0.00	277	273	Average	VERTICAL
4	2429.20	109.16			76.34	4.44	28.38	0.00	277	273	Peak	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.20	69.68	74.00	-4.32	37.00	4.37	28.31	0.00	256	275	Peak	VERTICAL
2	2390.00	52.96	54.00	-1.04	20.24	4.41	28.31	0.00	256	275	Average	VERTICAL
3	2422.60	99.88			67.06	4.44	28.38	0.00	256	275	Average	VERTICAL
4	2423.40	110.66			77.84	4.44	28.38	0.00	256	275	Peak	VERTICAL
5	2483.50	49.24	54.00	-4.76	16.26	4.51	28.47	0.00	256	275	Average	VERTICAL
6	2486.60	65.92	74.00	-8.08	32.94	4.51	28.47	0.00	256	275	Peak	VERTICAL

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	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2444.40	110.09			77.20	4.48	28.41	0.00	258	170	Peak	VERTICAL
2	2458.40	98.17			65.25	4.48	28.44	0.00	258	170	Average	VERTICAL
3	2484.40	50.85	54.00	-3.15	17.87	4.51	28.47	0.00	258	170	Average	VERTICAL
4	2495.20	72.79	74.00	-1.21	39.74	4.55	28.50	0.00	258	170	Peak	VERTICAL

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

Note:

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

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 2 + Chain 3 / 3TX
Test Date	Oct. 20, 2015 ~ Dec. 19, 2015		

Channel 1

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.20	69.83	74.00	-4.17	37.15	4.37	28.31	0.00	258	263	Peak	VERTICAL
2	2390.00	52.13	54.00	-1.87	19.41	4.41	28.31	0.00	258	263	Average	VERTICAL
3	2410.60	107.54			74.79	4.41	28.34	0.00	258	263	Average	VERTICAL
4	2412.40	117.22			84.47	4.41	28.34	0.00	258	263	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.56	62.45	74.00	-11.55	29.76	4.38	28.31	0.00	279	327	Peak	VERTICAL
2	2390.00	49.35	54.00	-4.65	16.66	4.38	28.31	0.00	279	327	Average	VERTICAL
3	2436.04	118.41			85.58	4.44	28.39	0.00	279	327	Peak	VERTICAL
4	2436.04	109.41			76.58	4.44	28.39	0.00	279	327	Average	VERTICAL
5	2484.44	49.88	54.00	-4.12	16.90	4.50	28.48	0.00	279	327	Average	VERTICAL
6	2490.21	60.97	74.00	-13.03	27.97	4.51	28.49	0.00	279	327	Peak	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	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2460.40	107.08			74.16	4.48	28.44	0.00	231	262	Average	VERTICAL
2	2460.40	117.17			84.25	4.48	28.44	0.00	231	262	Peak	VERTICAL
3	2483.50	52.86	54.00	-1.14	19.88	4.51	28.47	0.00	231	262	Average	VERTICAL
4	2483.50	70.73	74.00	-3.27	37.75	4.51	28.47	0.00	231	262	Peak	VERTICAL

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

Temperature	24°C	Humidity	65%
Test Engineer	Brian Sun	Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 2 + Chain 3 / 3TX
Test Date	Oct. 20, 2015		

Channel 3

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2388.80	71.70	74.00	-2.30	39.02	4.37	28.31	0.00	252	259	Peak	VERTICAL
2	2390.00	52.40	54.00	-1.60	19.68	4.41	28.31	0.00	252	259	Average	VERTICAL
3	2414.40	110.06			77.31	4.41	28.34	0.00	252	259	Peak	VERTICAL
4	2415.20	100.70			67.95	4.41	28.34	0.00	252	259	Average	VERTICAL

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

Channel 6

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	52.69	54.00	-1.31	19.97	4.41	28.31	0.00	211	264	Average	VERTICAL
2	2390.00	68.39	74.00	-5.61	35.67	4.41	28.31	0.00	211	264	Peak	VERTICAL
3	2422.60	102.73			69.91	4.44	28.38	0.00	211	264	Average	VERTICAL
4	2428.20	111.75			78.93	4.44	28.38	0.00	211	264	Peak	VERTICAL
5	2483.50	51.62	54.00	-2.38	18.64	4.51	28.47	0.00	211	264	Average	VERTICAL
6	2483.50	69.96	74.00	-4.04	36.98	4.51	28.47	0.00	211	264	Peak	VERTICAL

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	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2440.00	99.04			66.19	4.44	28.41	0.00	281	261	Average	VERTICAL
2	2447.20	108.54			75.65	4.48	28.41	0.00	281	261	Peak	VERTICAL
3	2485.20	52.45	54.00	-1.55	19.47	4.51	28.47	0.00	281	261	Average	VERTICAL
4	2488.00	64.29	74.00	-9.71	31.28	4.51	28.50	0.00	281	261	Peak	VERTICAL

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

Note:

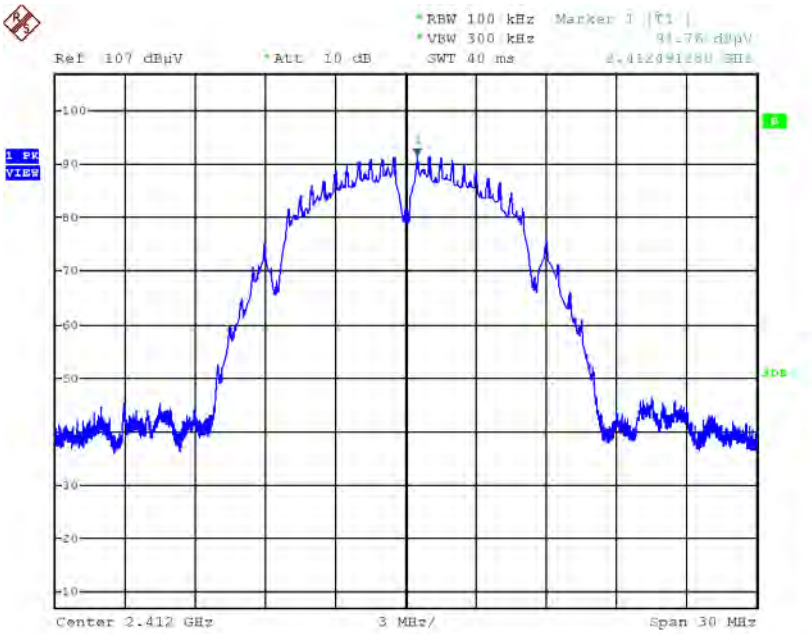
Emission level (dBuV/m) = 20 log Emission level (uV/m).

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

For Emission not in Restricted Band

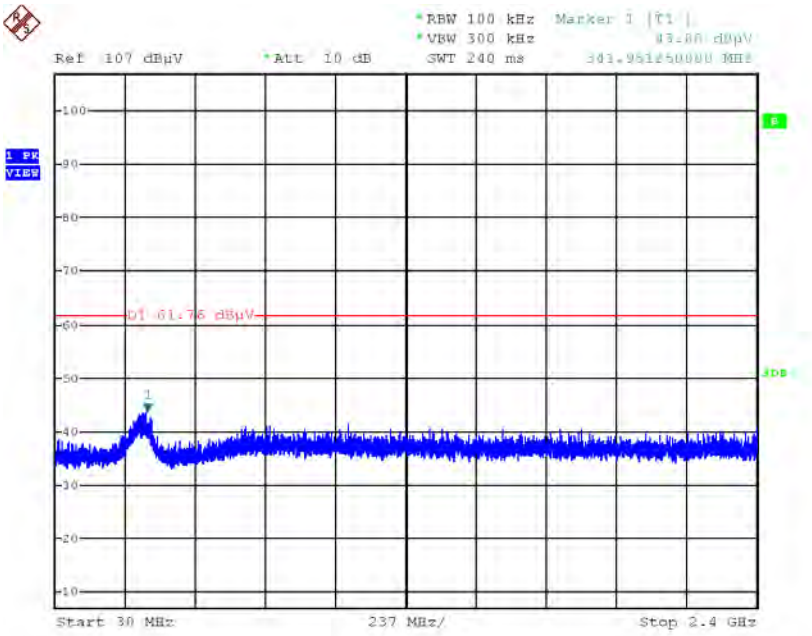
For Non-Beamforming Mode

Plot on Configuration IEEE 802.11b / Reference Level / 1TX



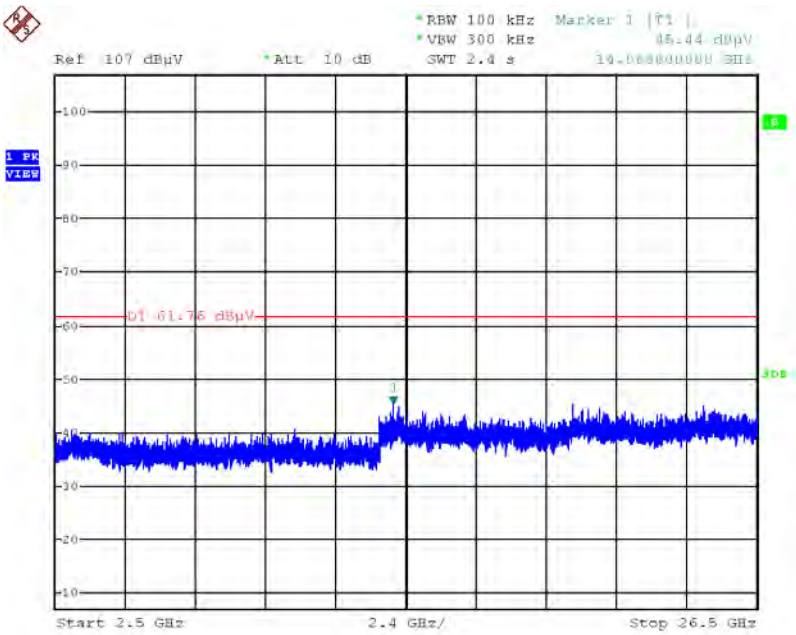
Date: 8.OCT.2015 01:37:27

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



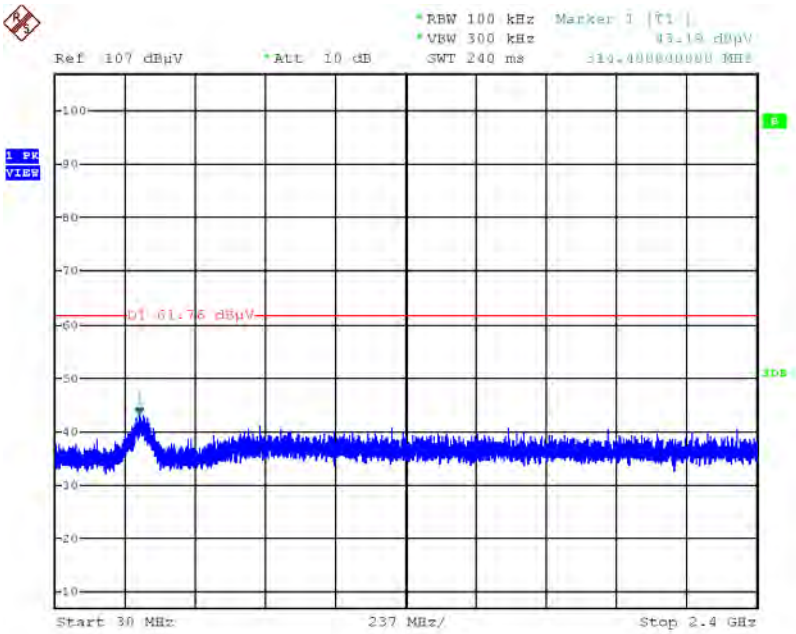
Date: 8.OCT.2015 01:38:42

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



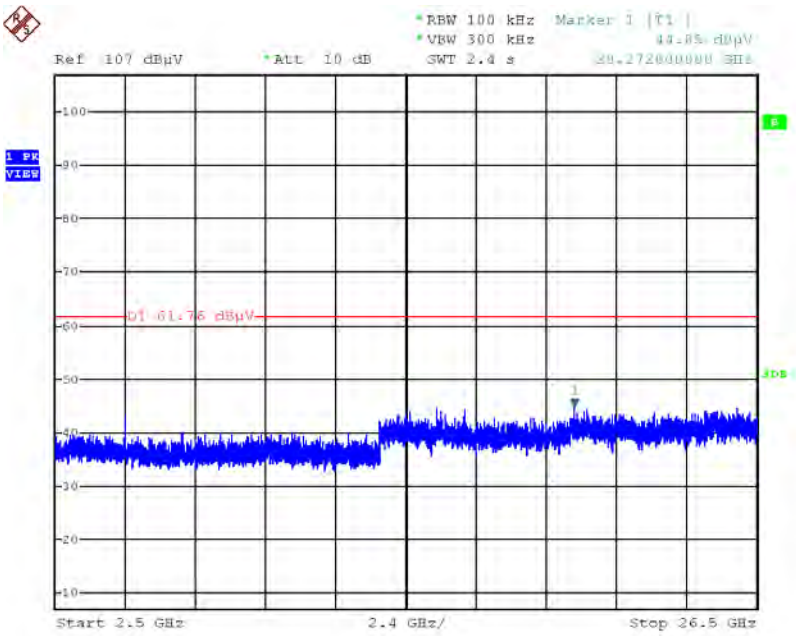
Date: 8.OCT.2015 01:39:14

Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc) / 1TX

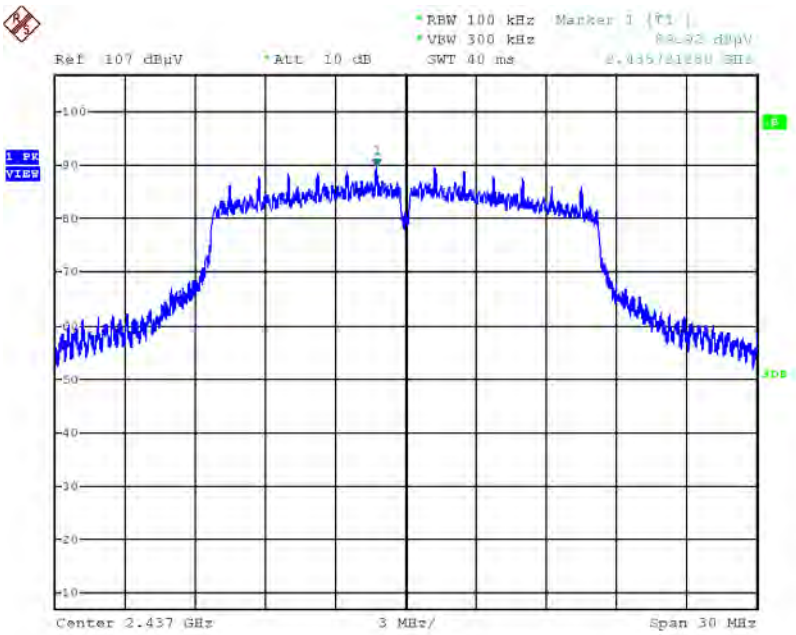


Date: 8.OCT.2015 01:40:50

Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc) / 1TX

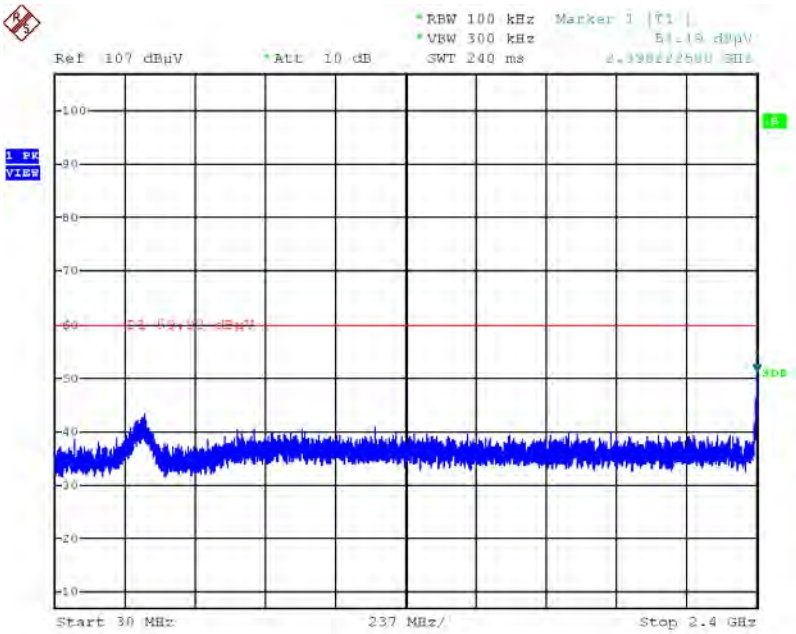


Plot on Configuration IEEE 802.11g / Reference Level / 1TX



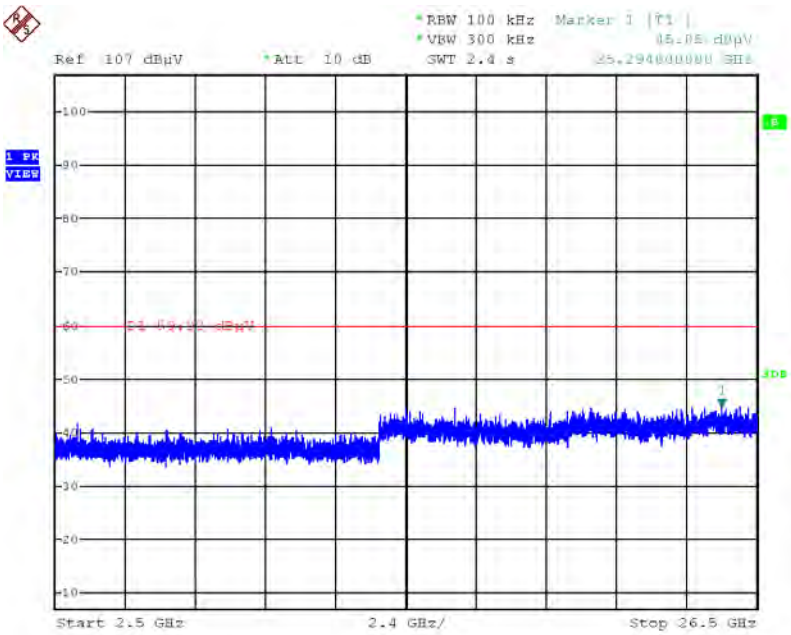
Date: 8.OCT.2015 01:43:31

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



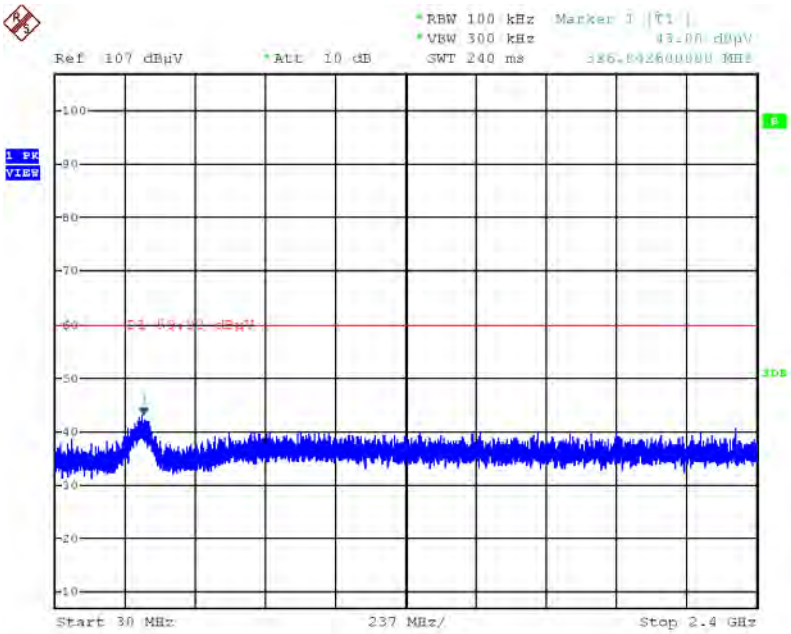
Date: 8.OCT.2015 01:44:58

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



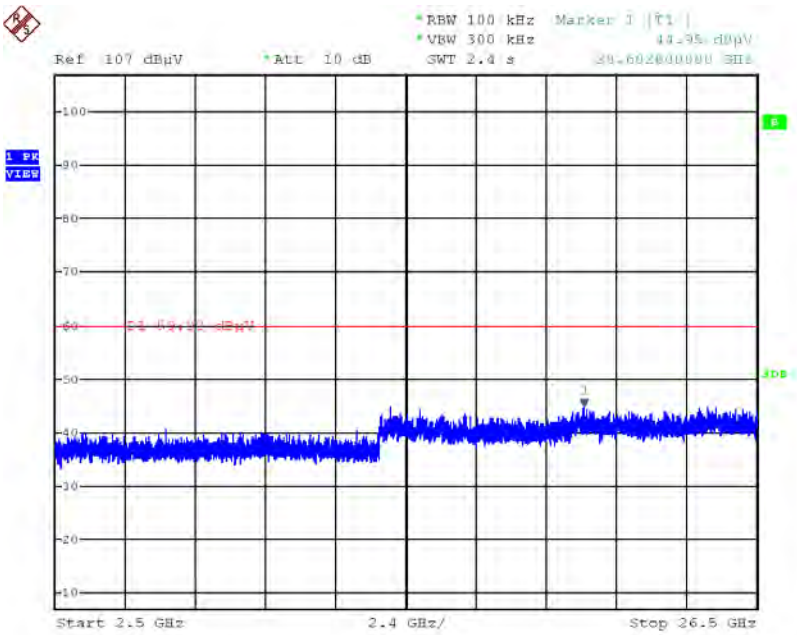
Date: 8.OCT.2015 01:45:40

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc) / 1TX

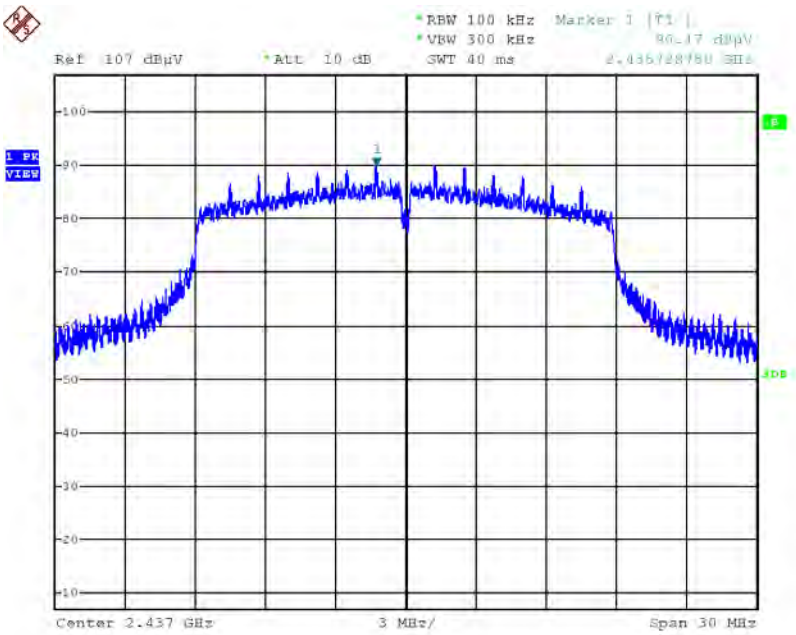


Date: 8.OCT.2015 01:46:27

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc) / 1TX

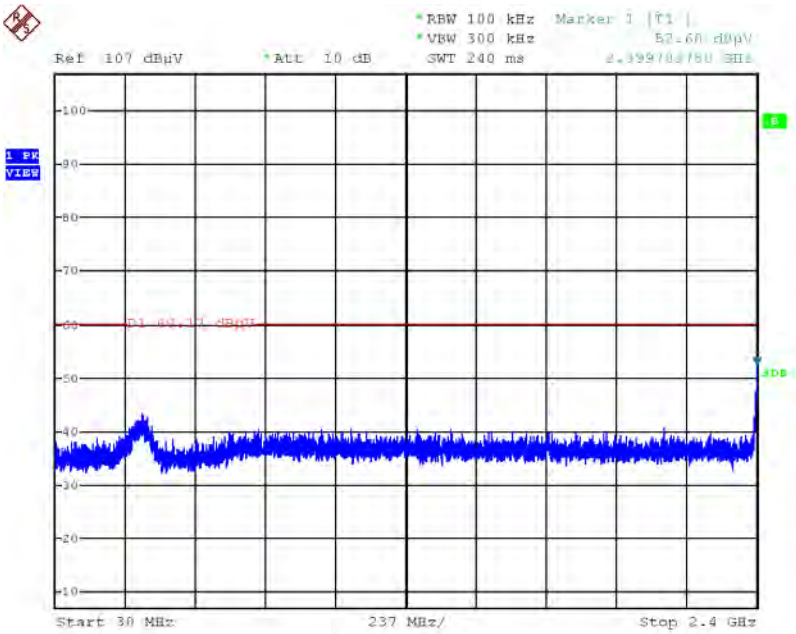


Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level / 1TX



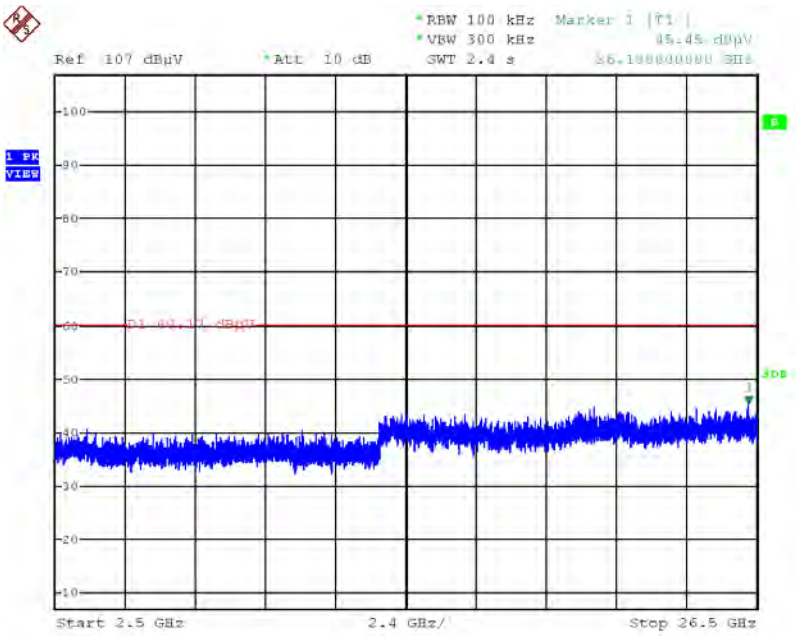
Date: 8.OCT.2015 01:48:40

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



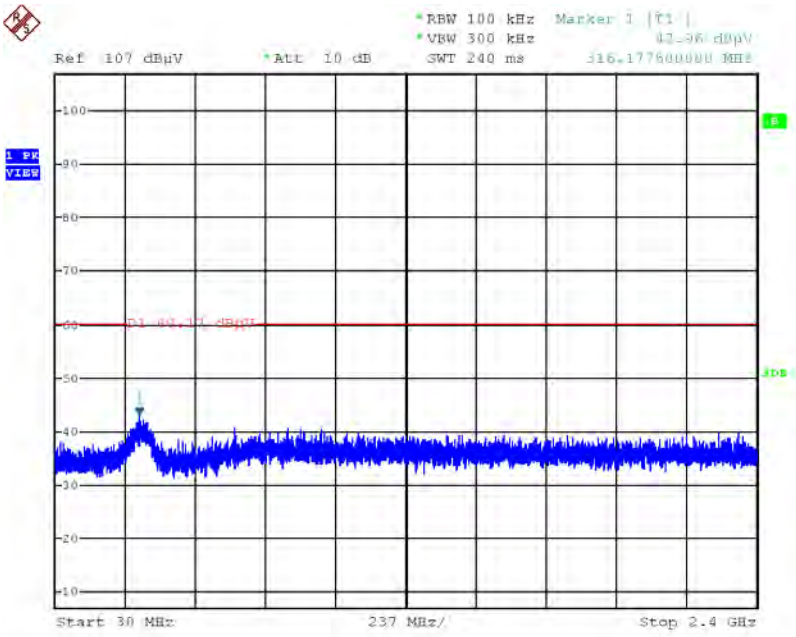
Date: 8.OCT.2015 01:50:09

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



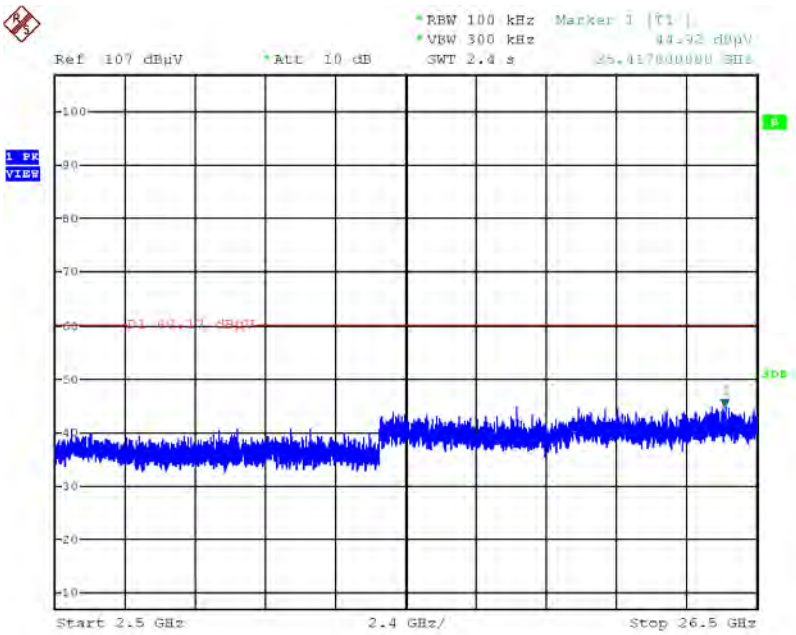
Date: 8.OCT.2015 01:50:39

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) / 1TX



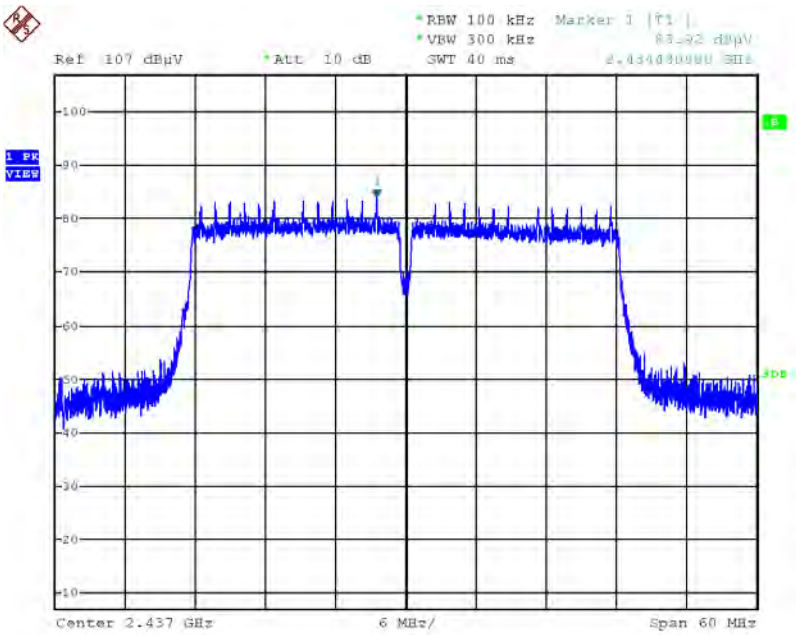
Date: 8.OCT.2015 01:51:20

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) / 1TX



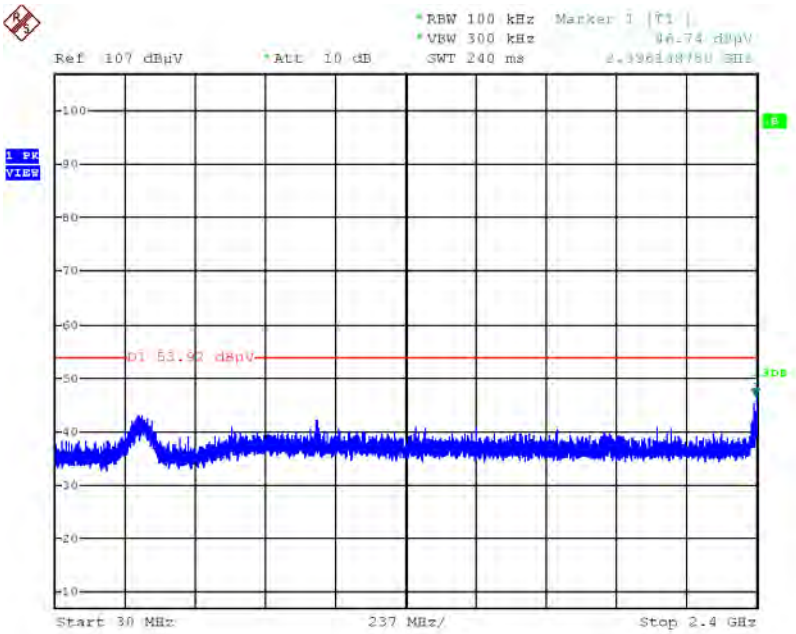
Date: 8.OCT.2015 01:51:50

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level / 1TX



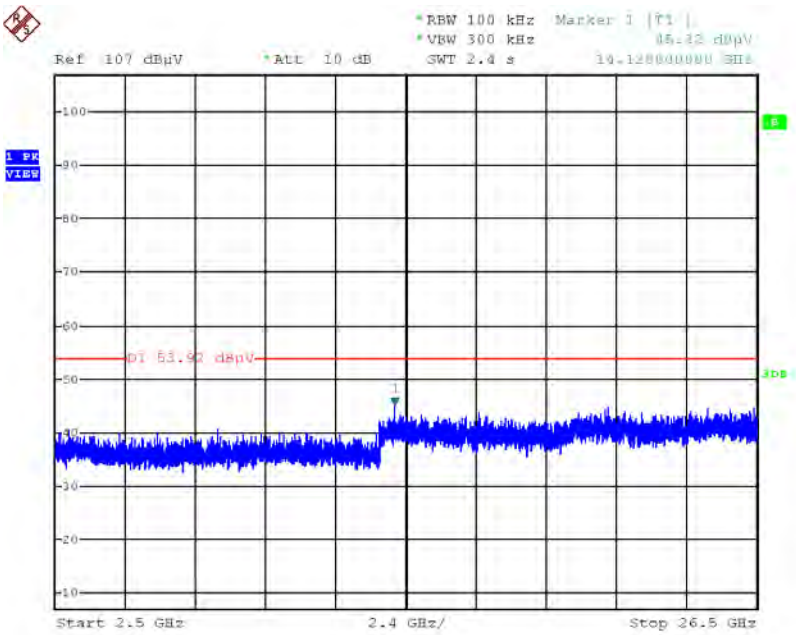
Date: 8.OCT.2015 01:54:36

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc) / 1TX



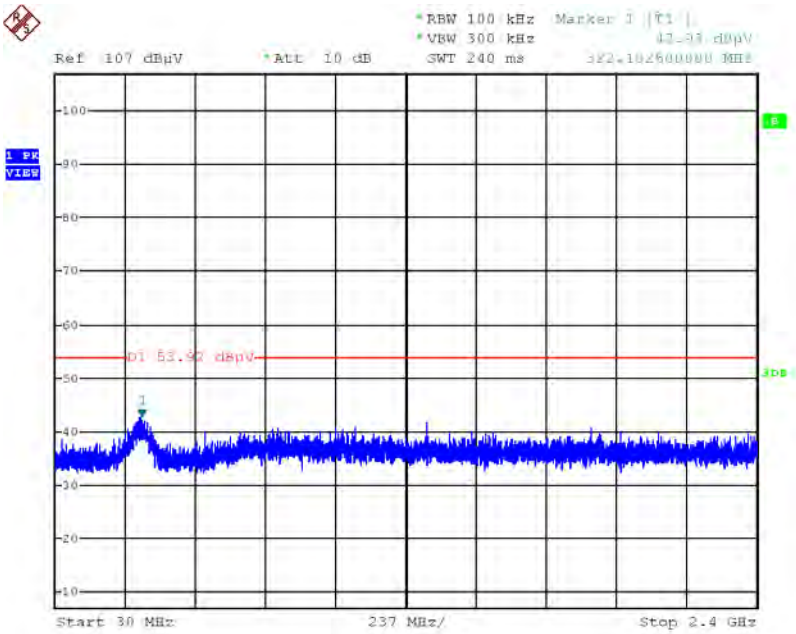
Date: 8.OCT.2015 01:55:45

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2500MHz~26500MHz (down 30dBc) / 1TX



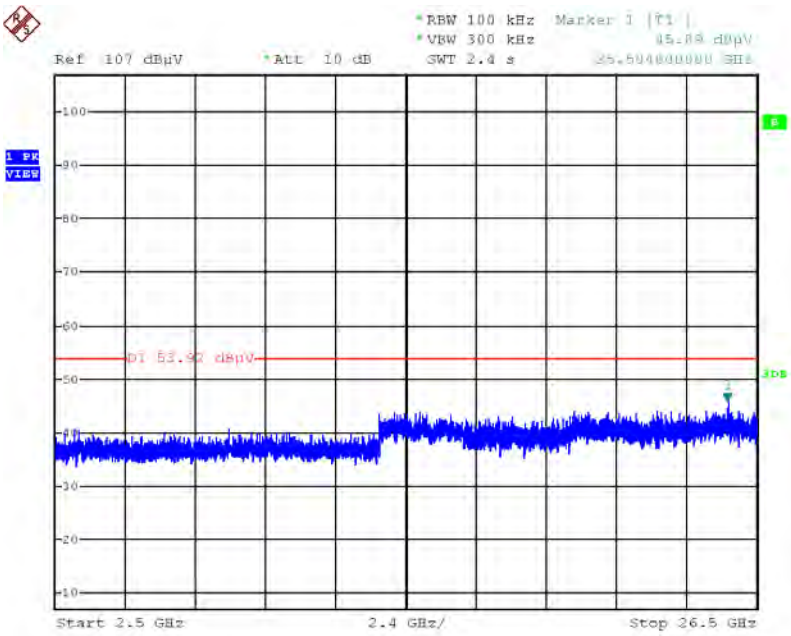
Date: 8.OCT.2015 01:56:35

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) / 1TX



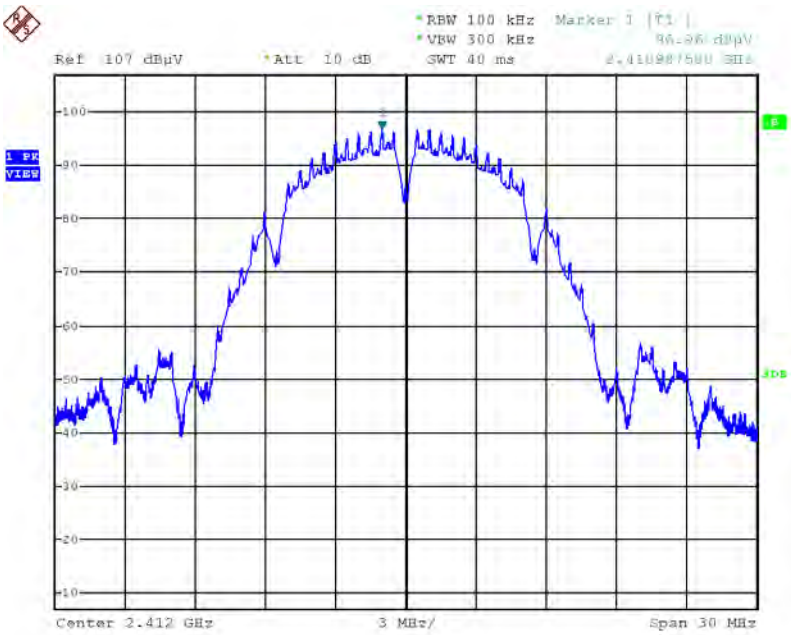
Date: 8.OCT.2015 01:57:26

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) / 1TX



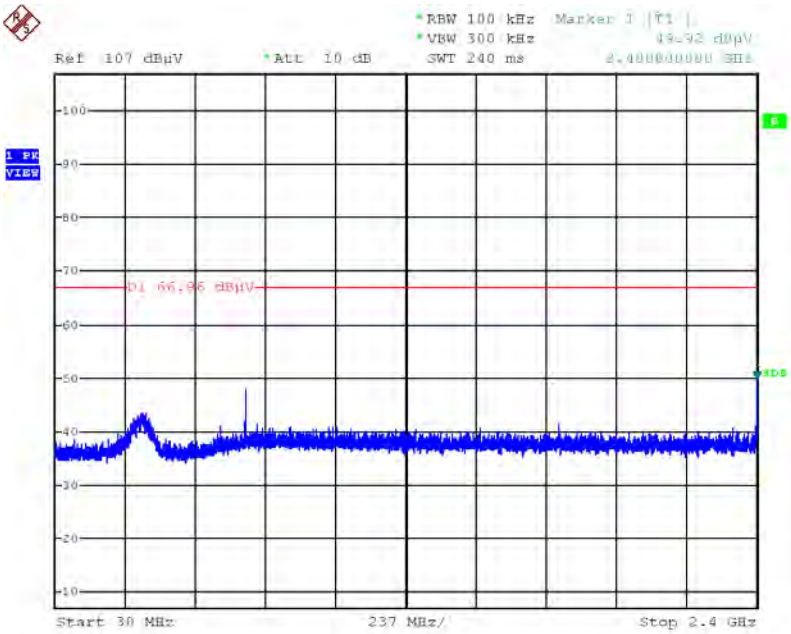
Date: 8.OCT.2015 01:58:00

Plot on Configuration IEEE 802.11b / Reference Level / 2TX



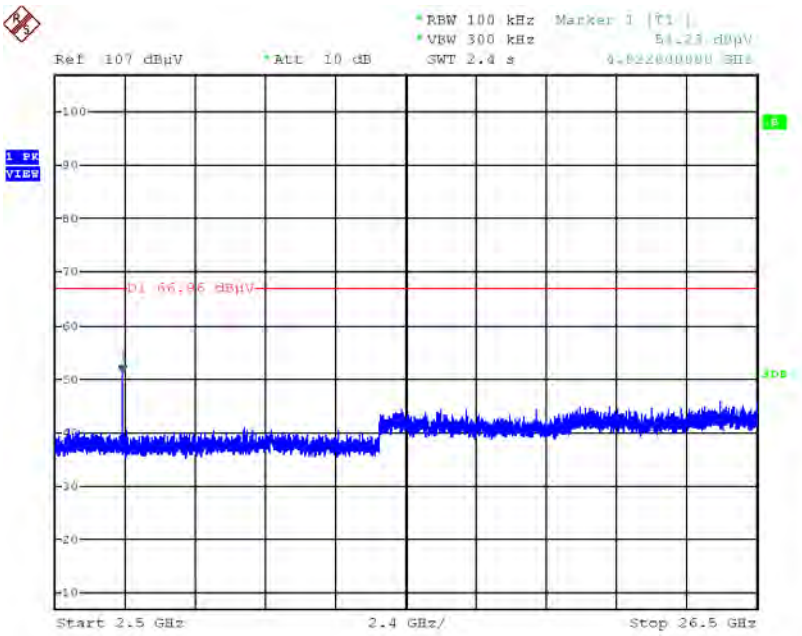
Date: 7.OCT.2015 22:03:00

Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc) / 2TX



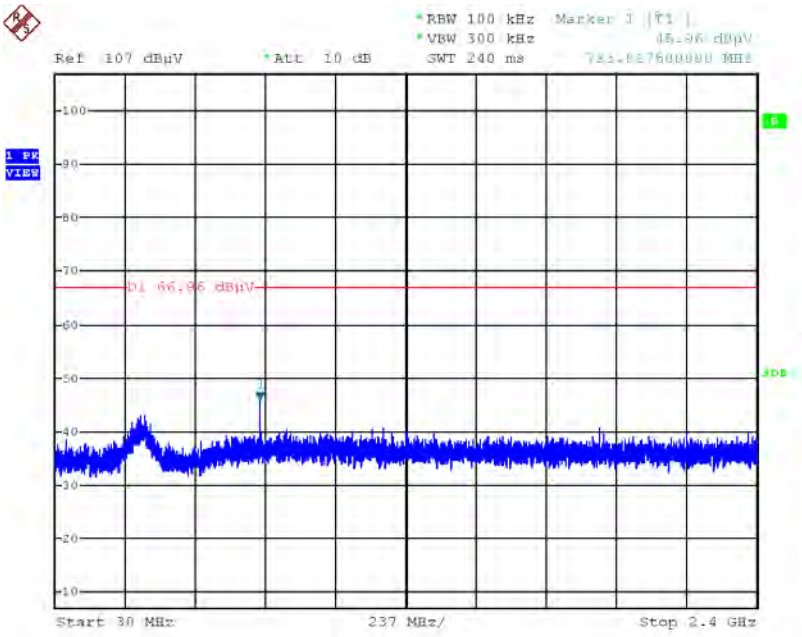
Date: 7.OCT.2015 22:04:33

Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc) / 2TX



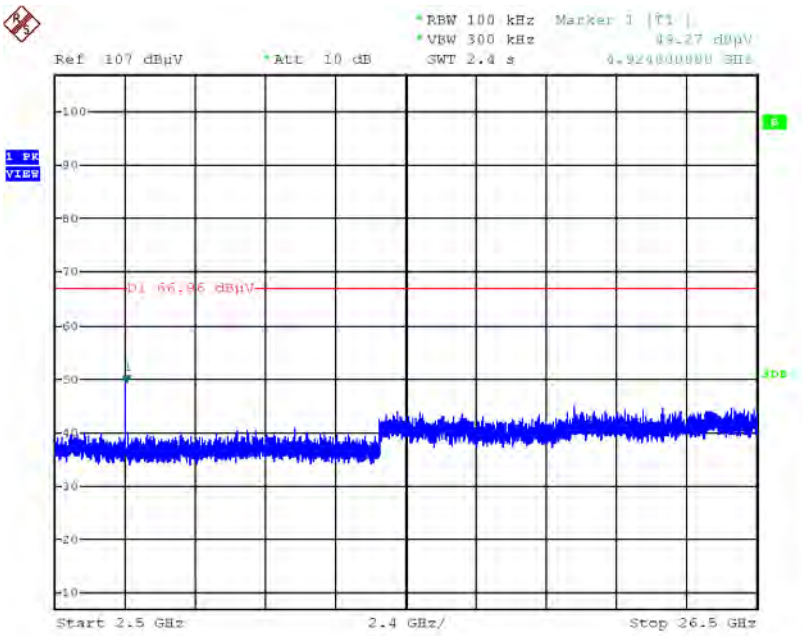
Date: 7.OCT.2015 22:06:18

Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc) / 2TX

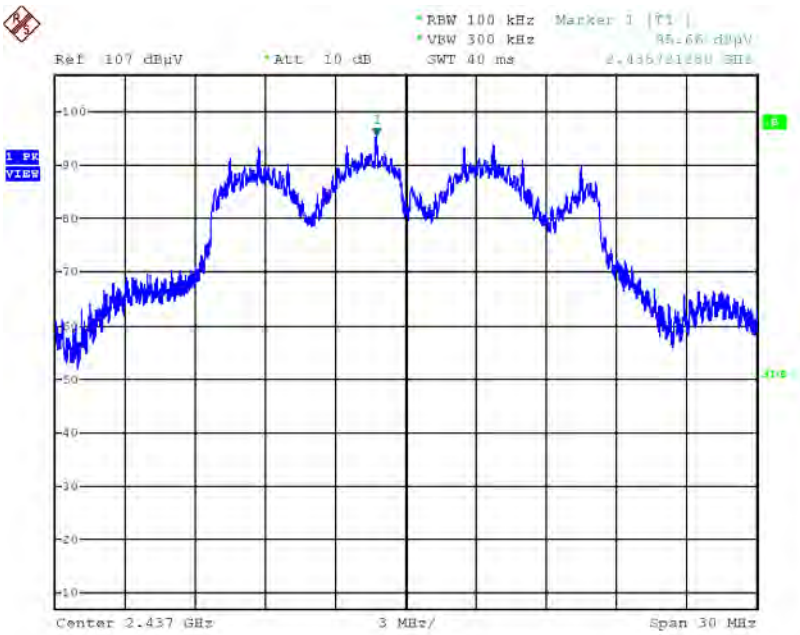


Date: 7.OCT.2015 22:07:33

Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc) / 2TX

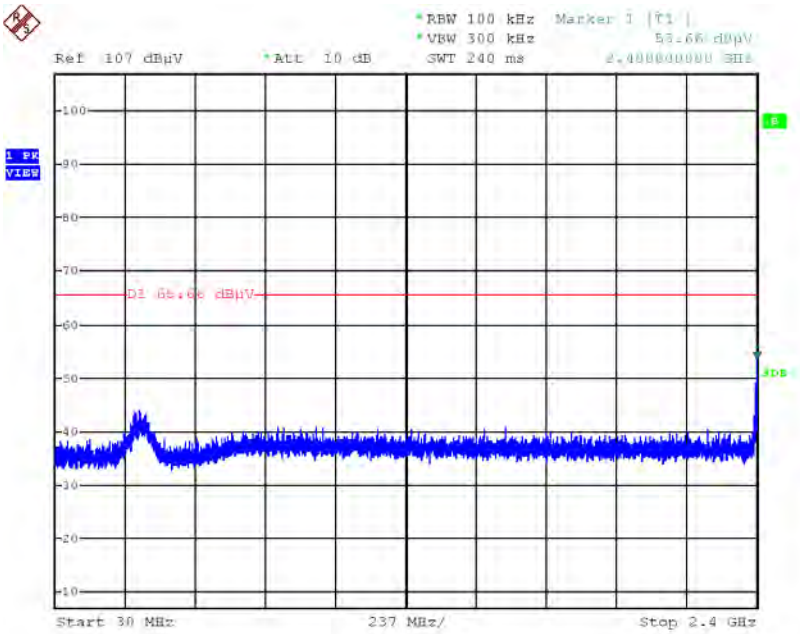


Plot on Configuration IEEE 802.11g / Reference Level / 2TX



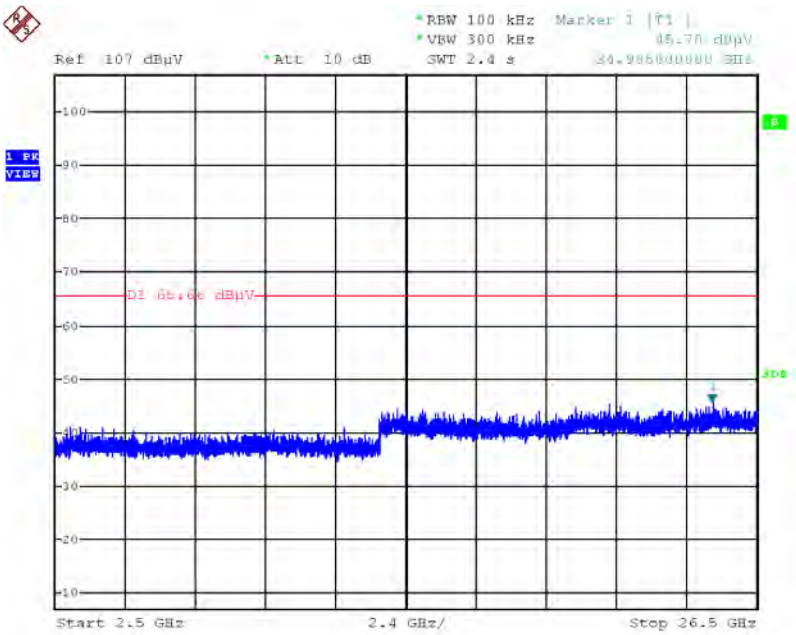
Date: 7.OCT.2015 22:12:07

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc) / 2TX



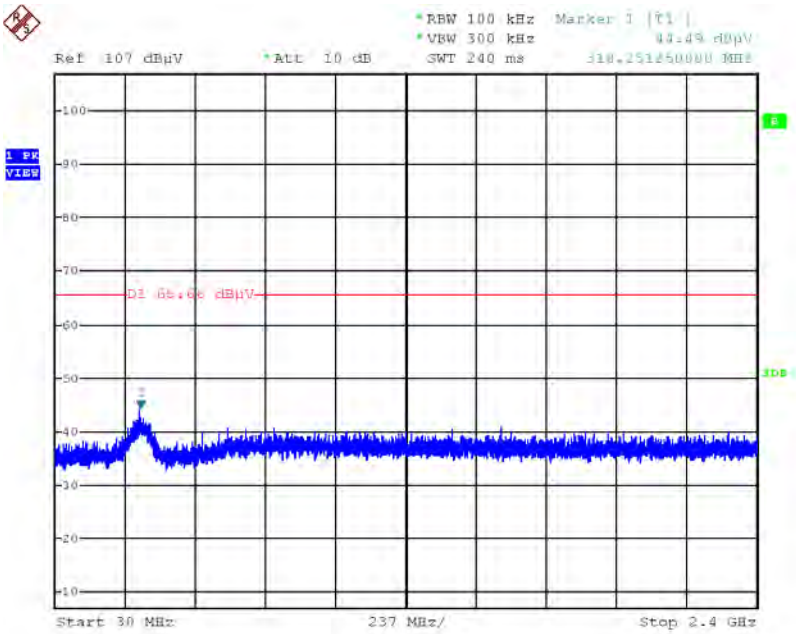
Date: 7.OCT.2015 22:13:20

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc) / 2TX



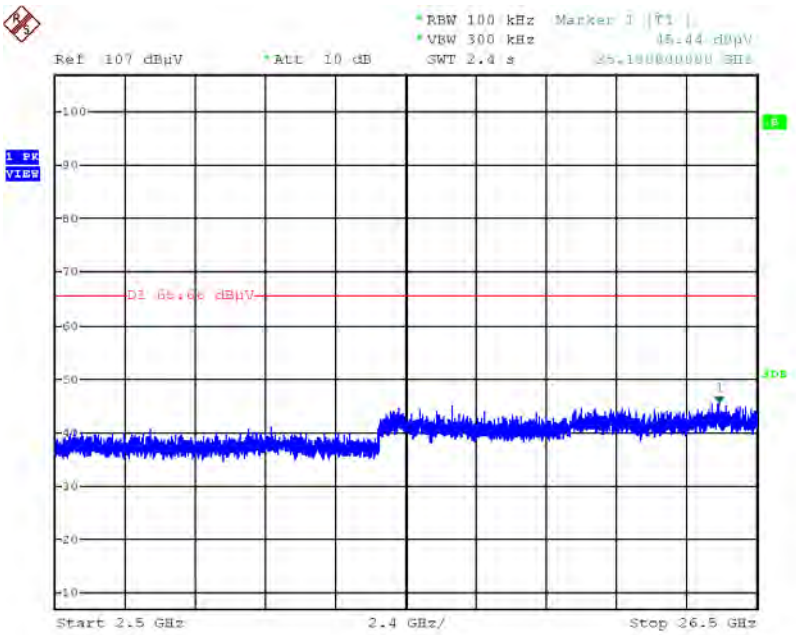
Date: 7.OCT.2015 22:14:17

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc) / 2TX

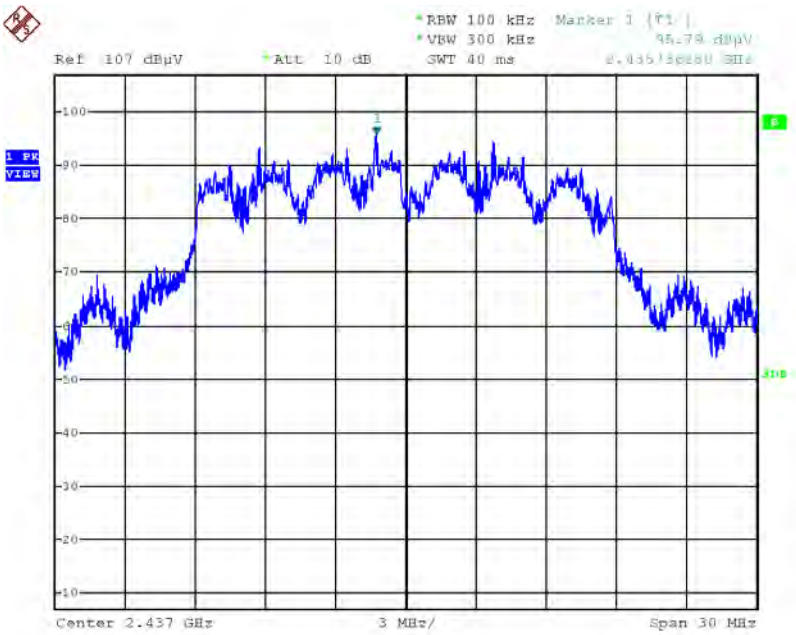


Date: 7.OCT.2015 22:15:45

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc) / 2TX

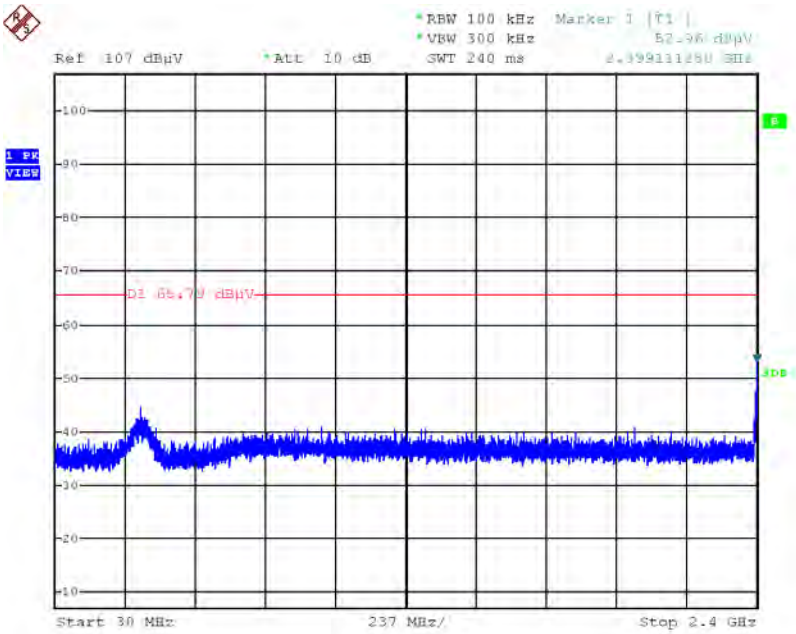


Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level / 2TX



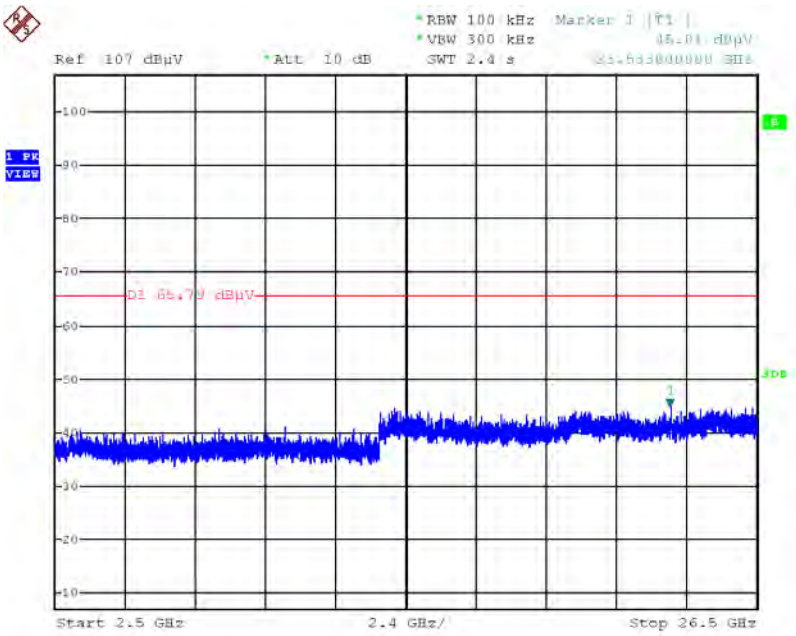
Date: 7.OCT.2015 22:18:19

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc) / 2TX



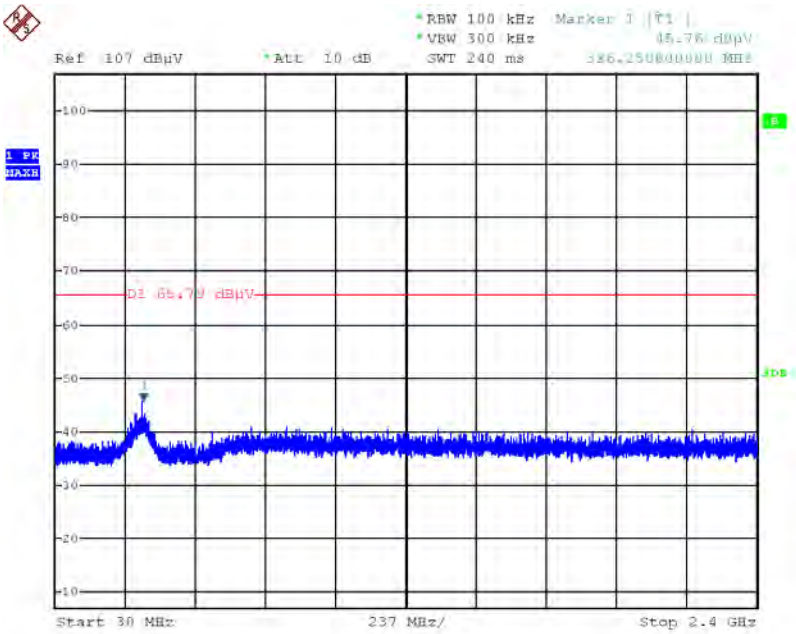
Date: 7.OCT.2015 22:19:33

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc) / 2TX



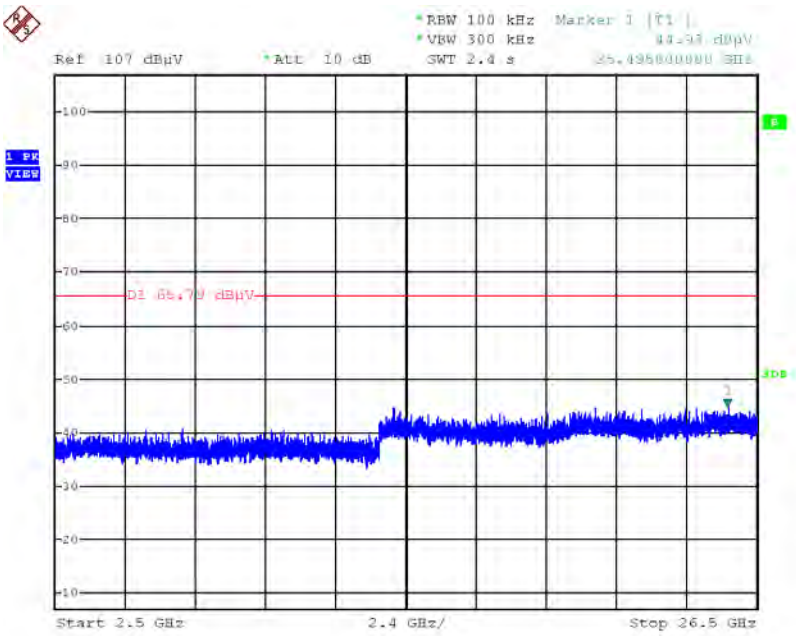
Date: 7.OCT.2015 22:20:11

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) / 2TX

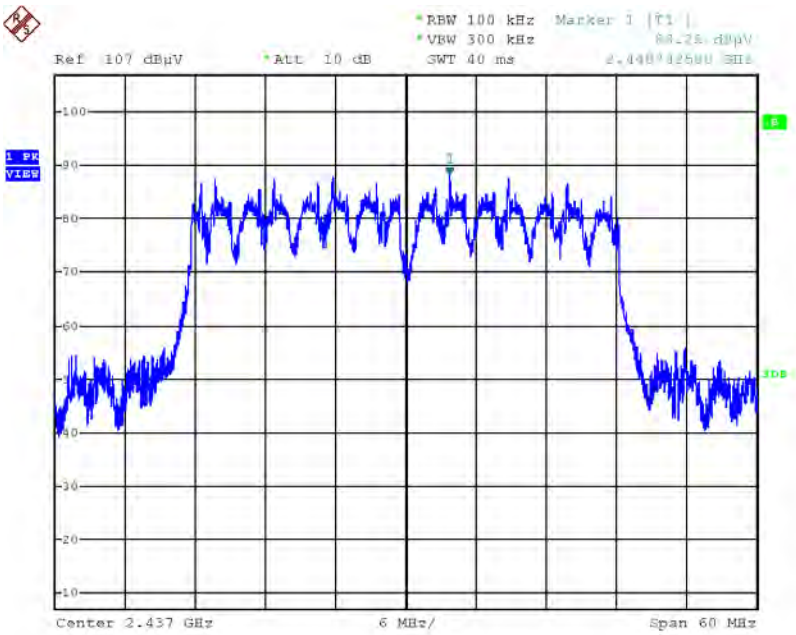


Date: 7.OCT.2015 22:21:06

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) / 2TX

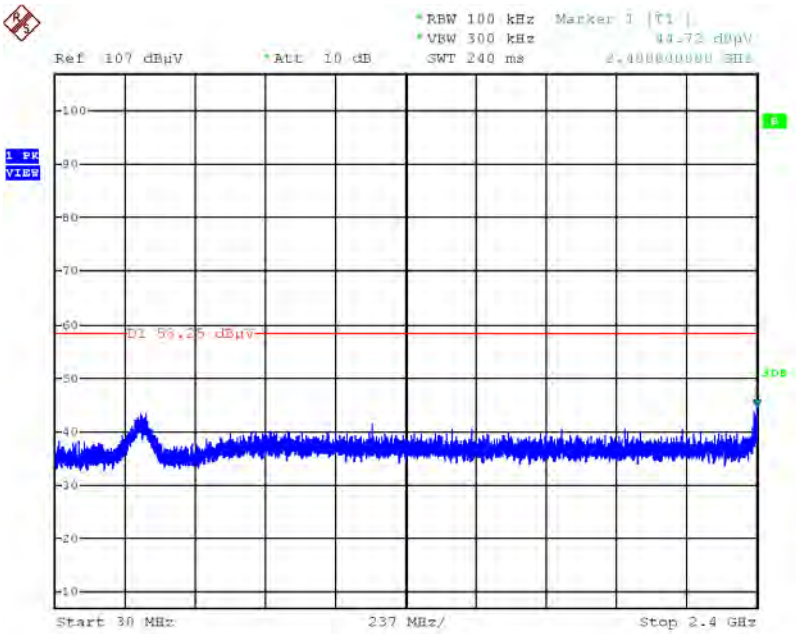


Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level / 2TX



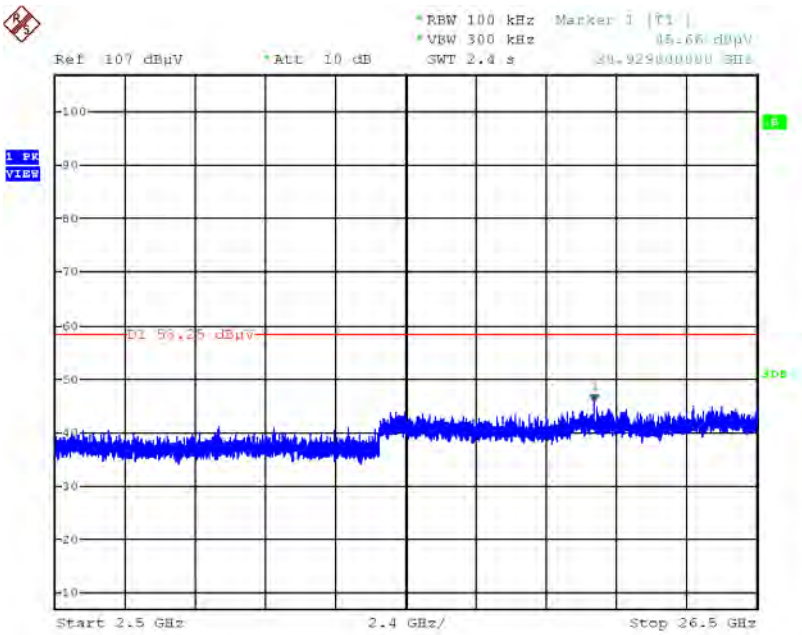
Date: 7.OCT.2015 22:24:29

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc) / 2TX



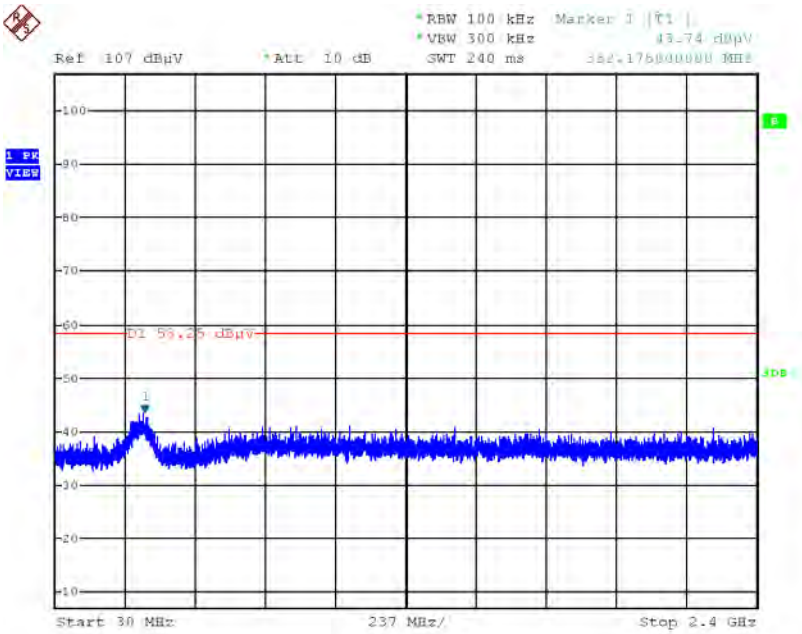
Date: 7.OCT.2015 22:28:14

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2500MHz~26500MHz (down 30dBc) / 2TX



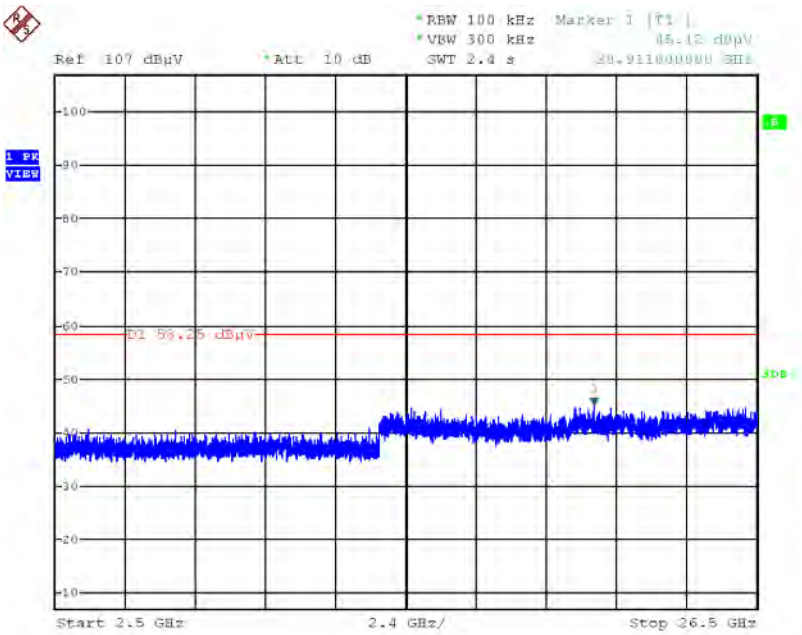
Date: 7.OCT.2015 22:29:02

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) / 2TX



Date: 7.OCT.2015 22:29:55

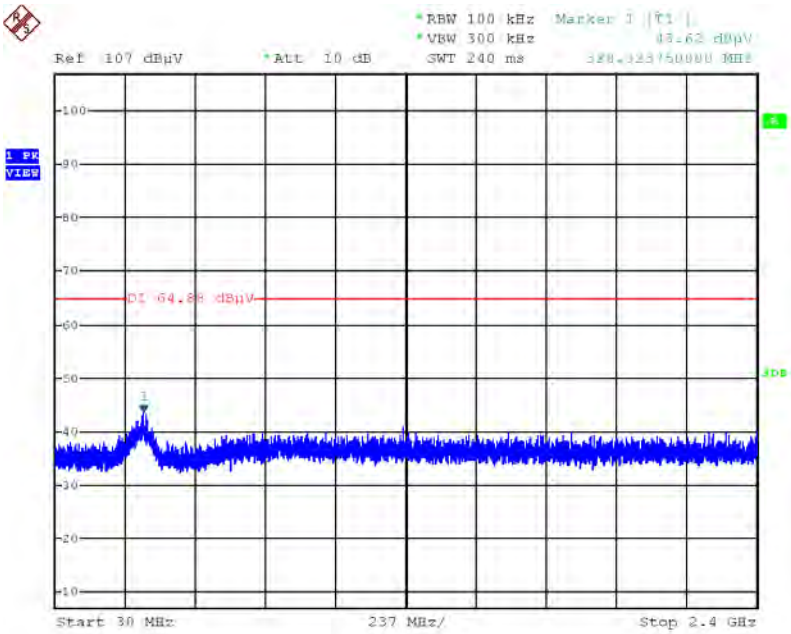
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) / 2TX



Plot on Configuration IEEE 802.11b / Reference Level / 3TX

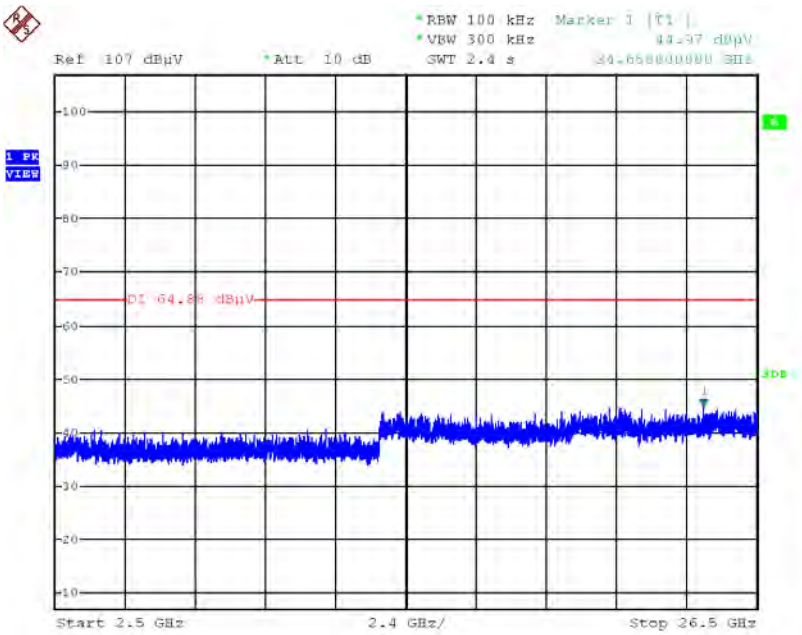
Date: 7.OCT.2015 17:18:07

Plot on Configuration IEEE 802.11b / CH 1 / 30MHz~2400MHz (down 30dBc) / 3TX



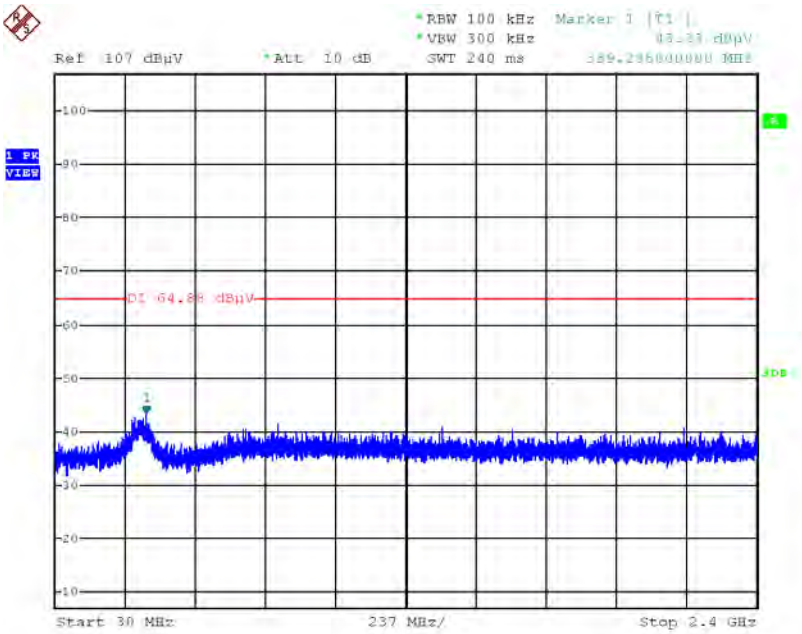
Date: 7.OCT.2015 17:19:11

Plot on Configuration IEEE 802.11b / CH 1 / 2500MHz~26500MHz (down 30dBc) / 3TX



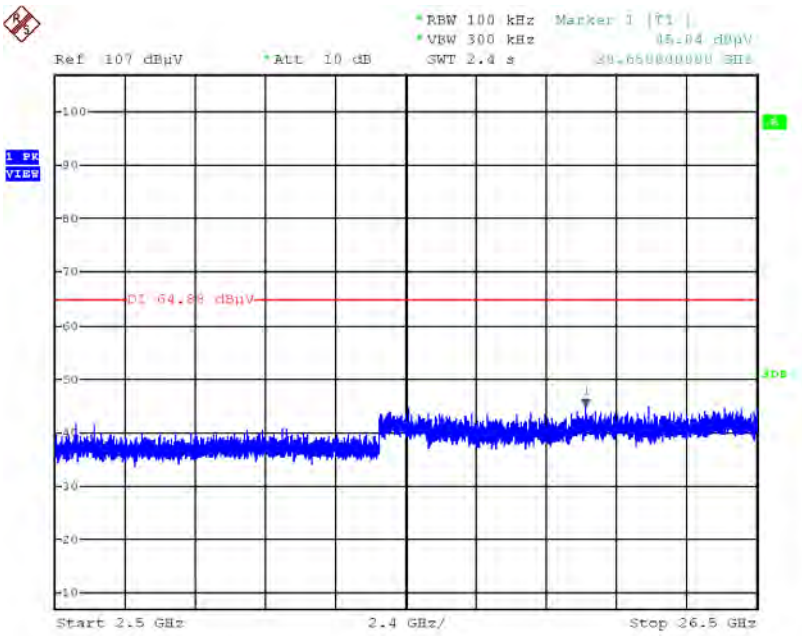
Date: 7.OCT.2015 17:19:40

Plot on Configuration IEEE 802.11b / CH 11 / 30MHz~2400MHz (down 30dBc) / 3TX

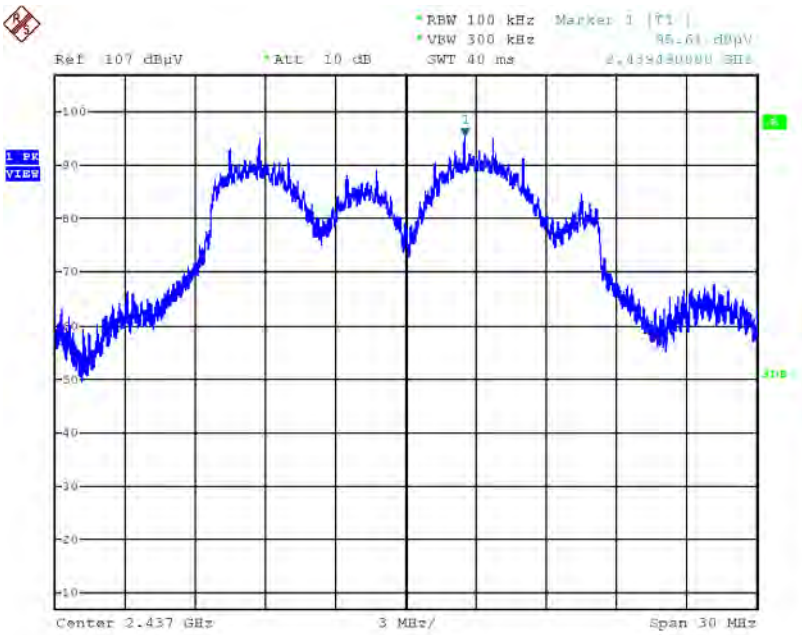


Date: 7.OCT.2015 17:20:42

Plot on Configuration IEEE 802.11b / CH 11 / 2500MHz~26500MHz (down 30dBc) / 3TX

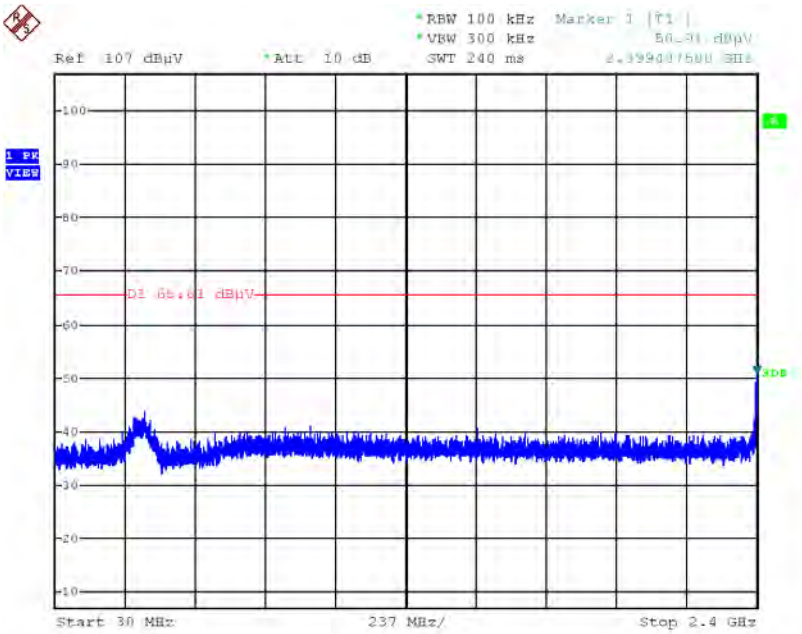


Plot on Configuration IEEE 802.11g / Reference Level / 3TX



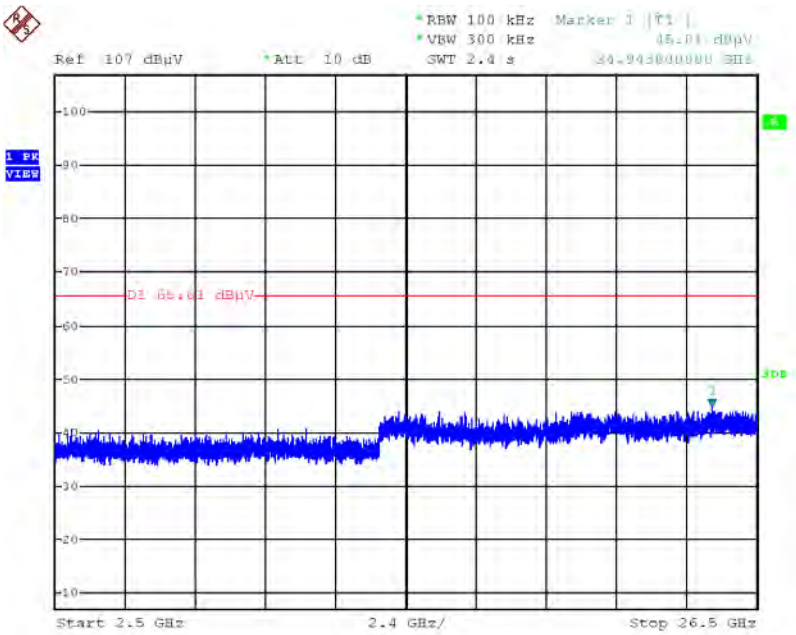
Date: 7.OCT.2015 17:12:46

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc) / 3TX



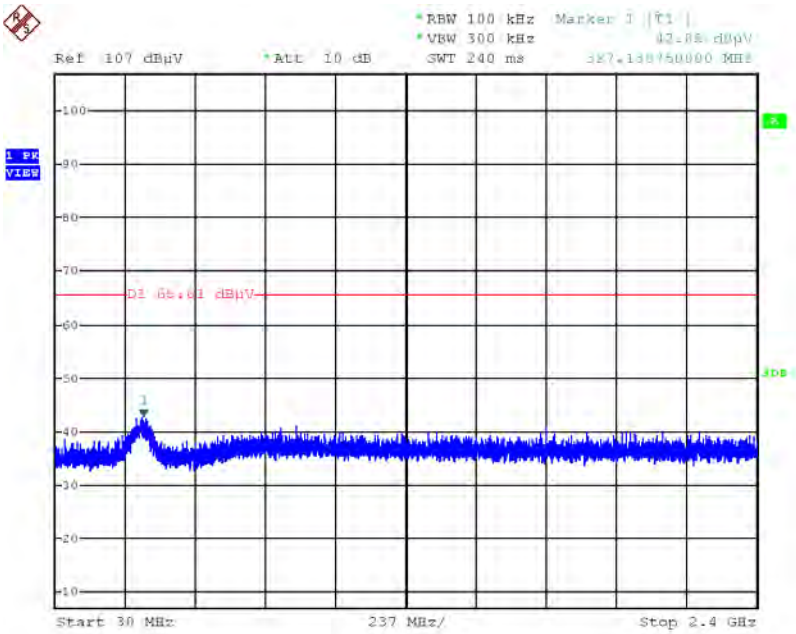
Date: 7.OCT.2015 17:13:47

Plot on Configuration IEEE 802.11g / CH 1 / 2500MHz~26500MHz (down 30dBc) / 3TX



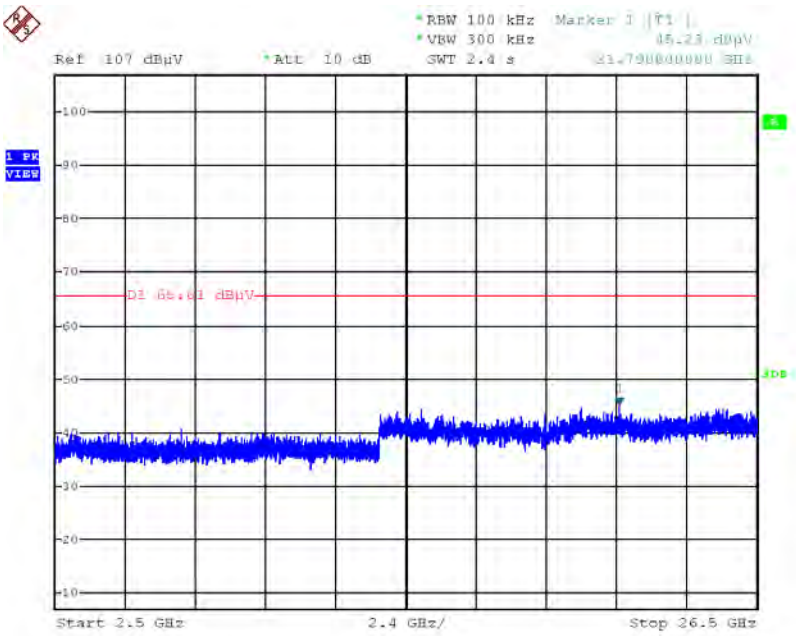
Date: 7.OCT.2015 17:14:09

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc) / 3TX



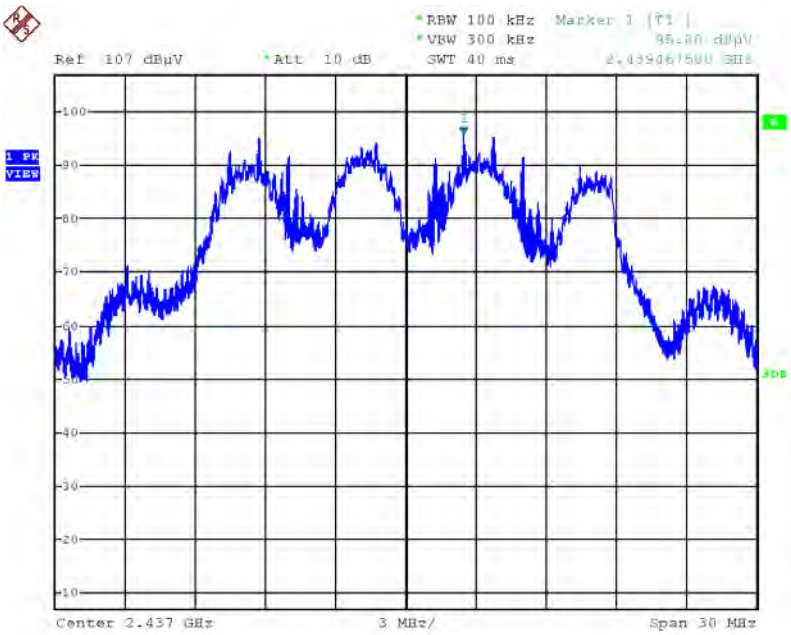
Date: 7.OCT.2015 17:14:40

Plot on Configuration IEEE 802.11g / CH 11 / 2500MHz~26500MHz (down 30dBc) / 3TX



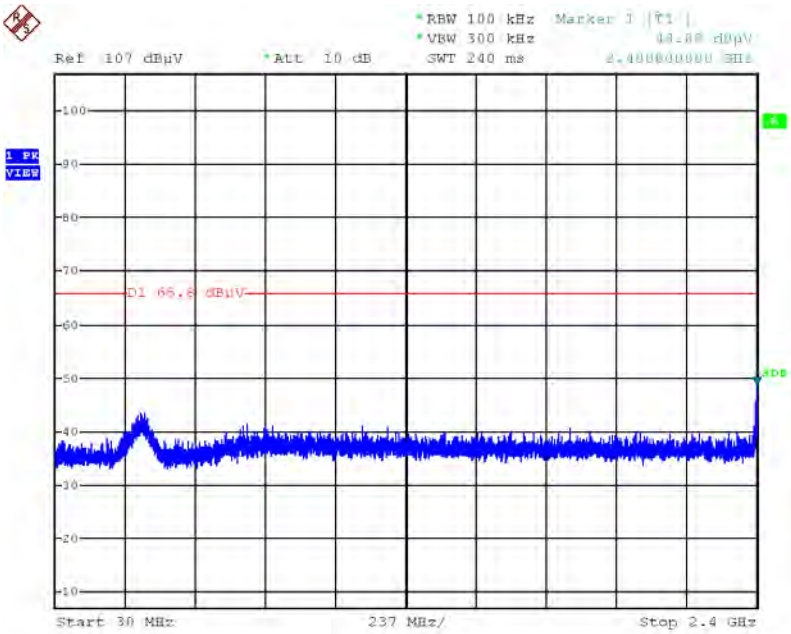
Date: 7.OCT.2015 17:14:59

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level / 3TX



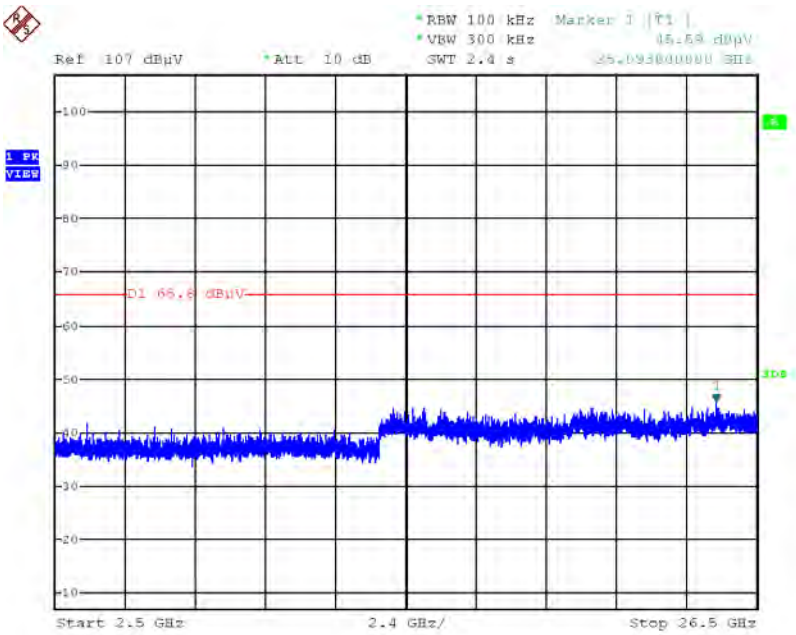
Date: 7.OCT.2015 17:02:55

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc) / 3TX



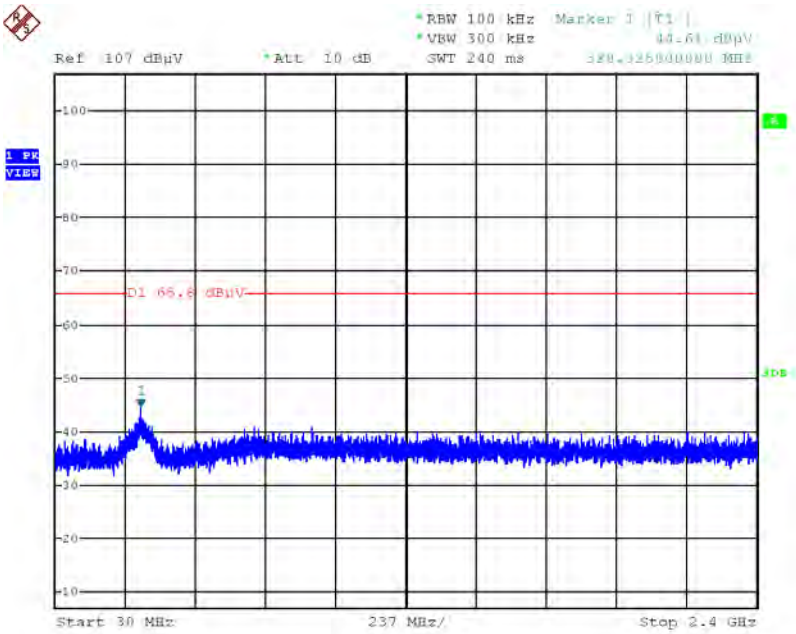
Date: 7.OCT.2015 17:04:42

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc) / 3TX



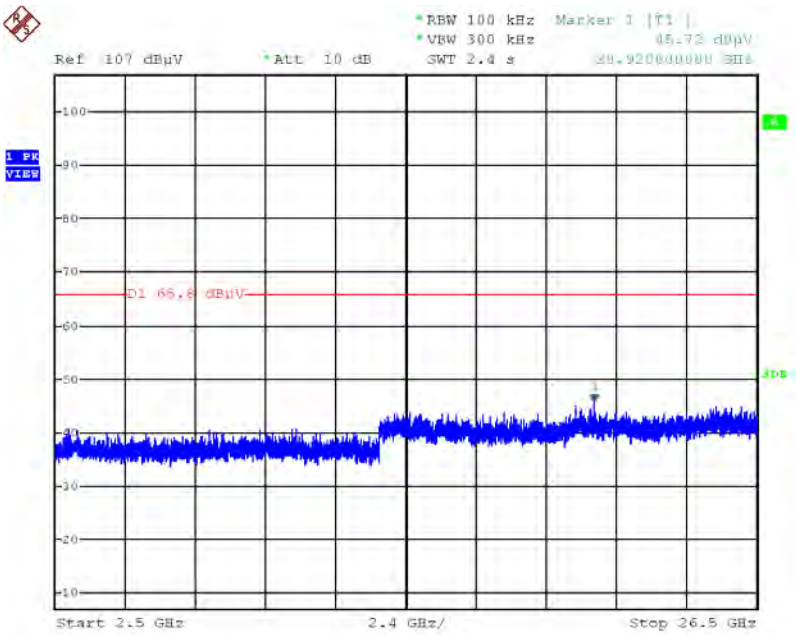
Date: 7.OCT.2015 17:05:27

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) / 3TX

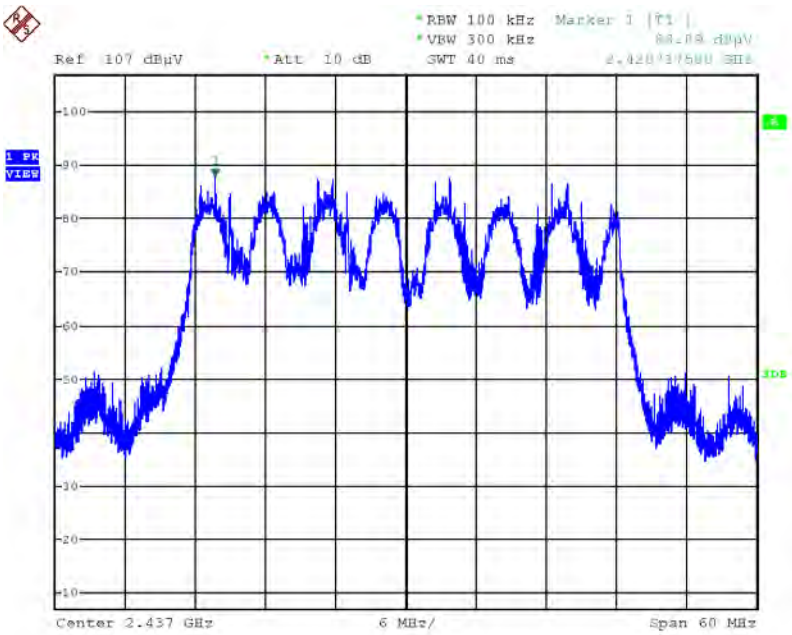


Date: 7.OCT.2015 17:06:54

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) / 3TX

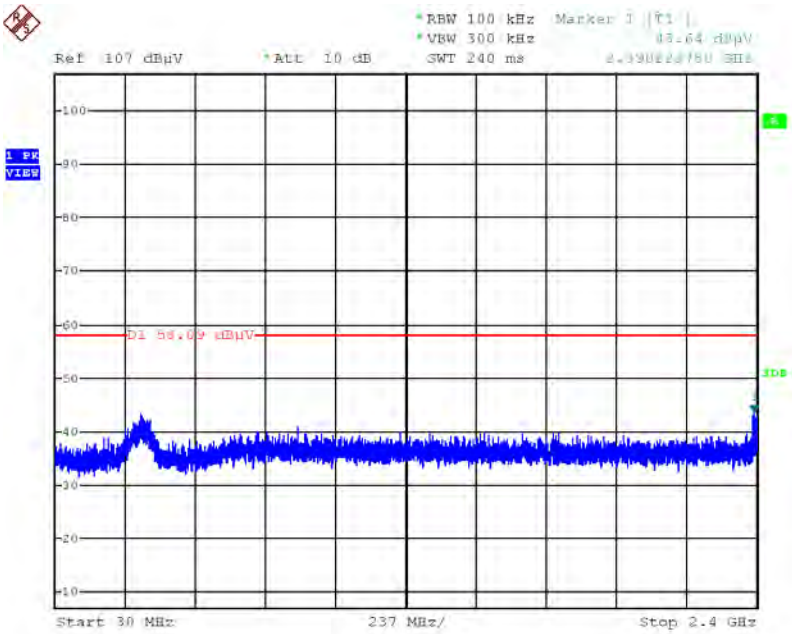


Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level / 3TX



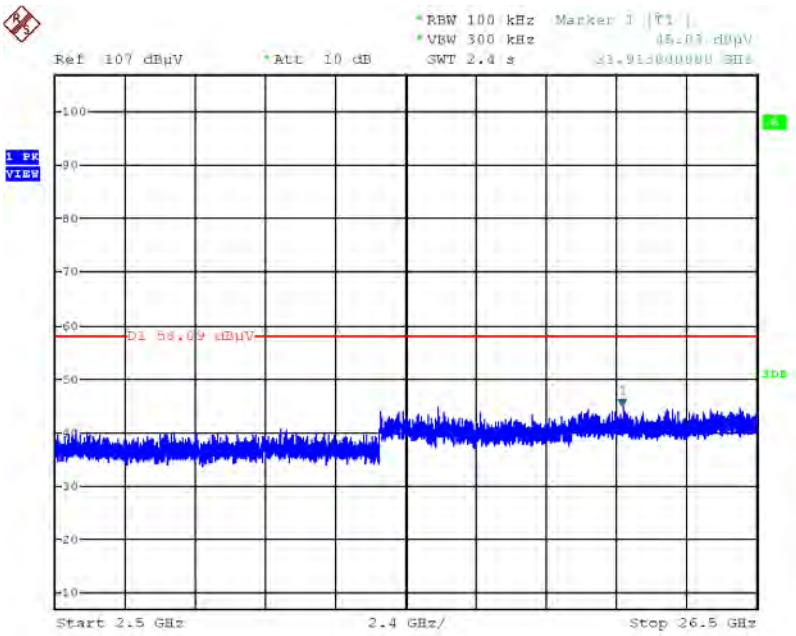
Date: 7.OCT.2015 17:09:01

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



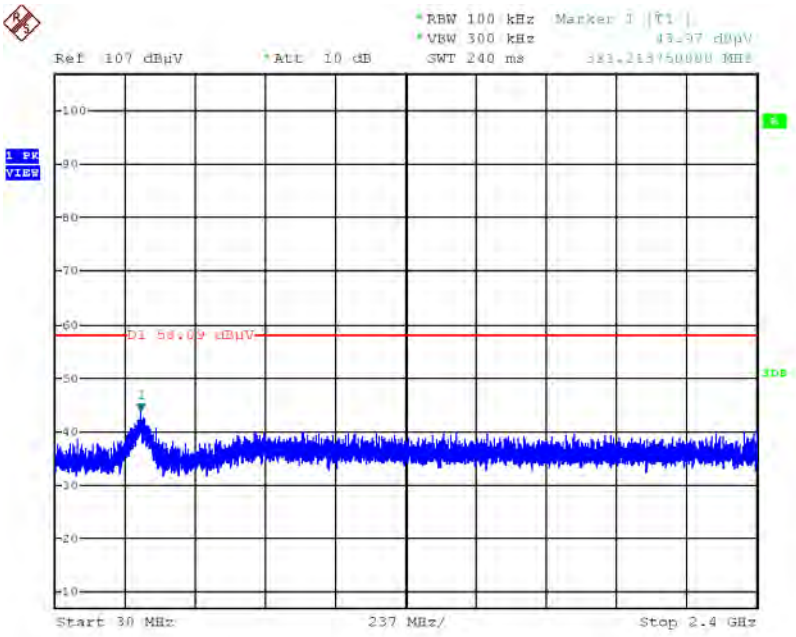
Date: 7.OCT.2015 17:10:31

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



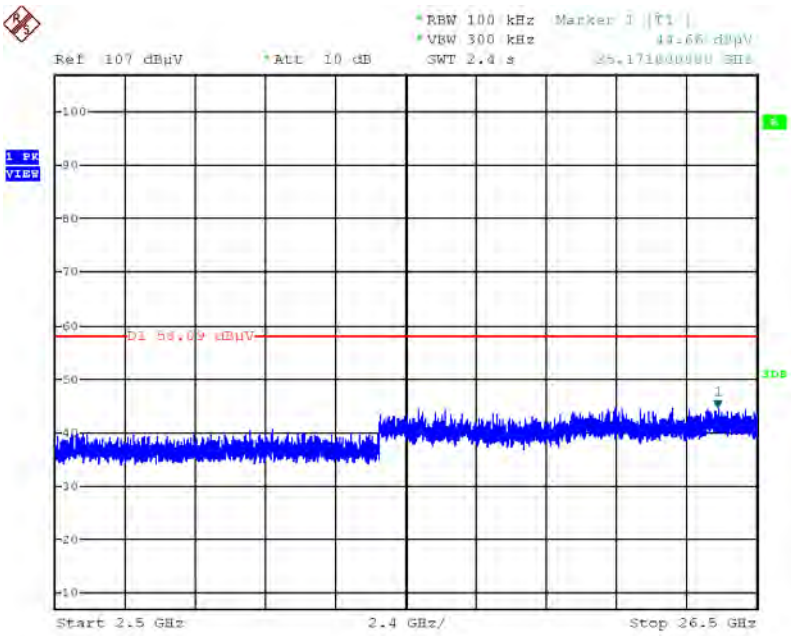
Date: 7.OCT.2015 17:10:52

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) / 3TX



Date: 7.OCT.2015 17:11:29

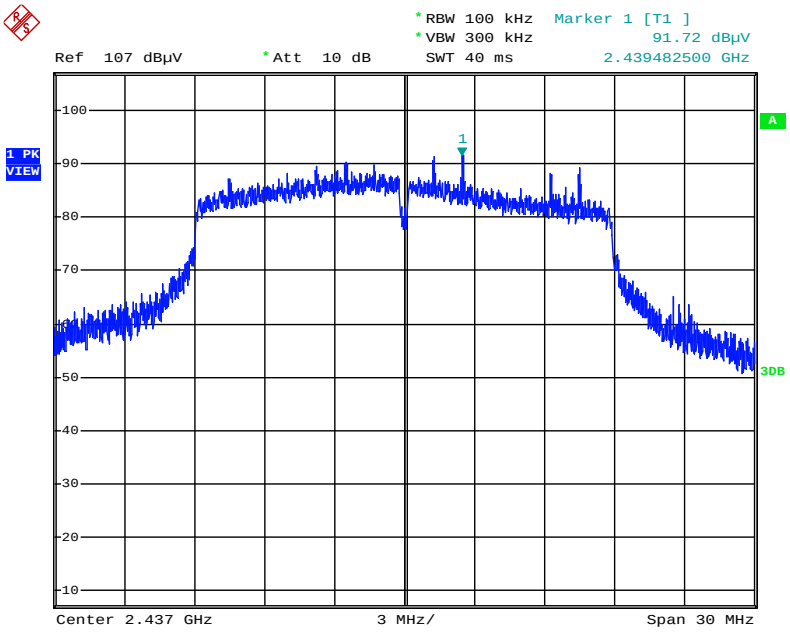
Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) / 3TX



Date: 7.OCT.2015 17:11:48

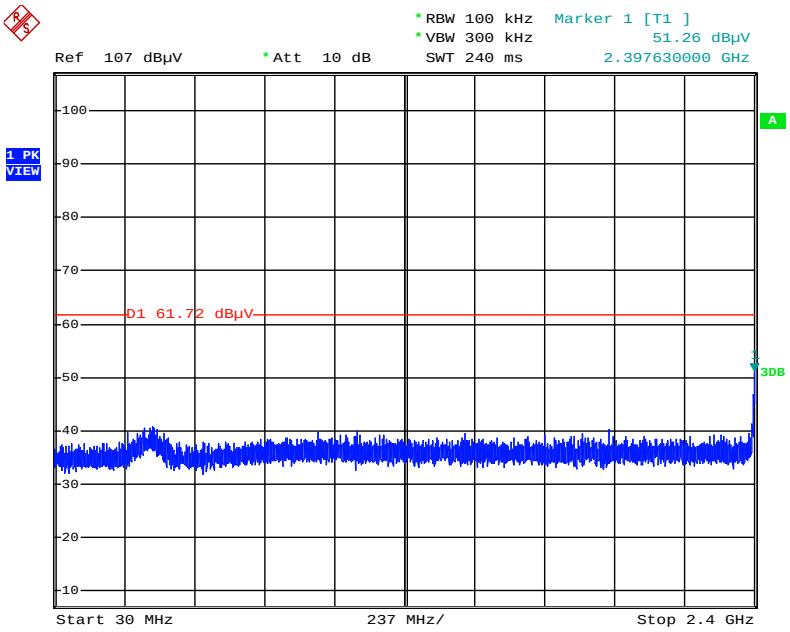
For Beamforming Mode

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level / 2TX



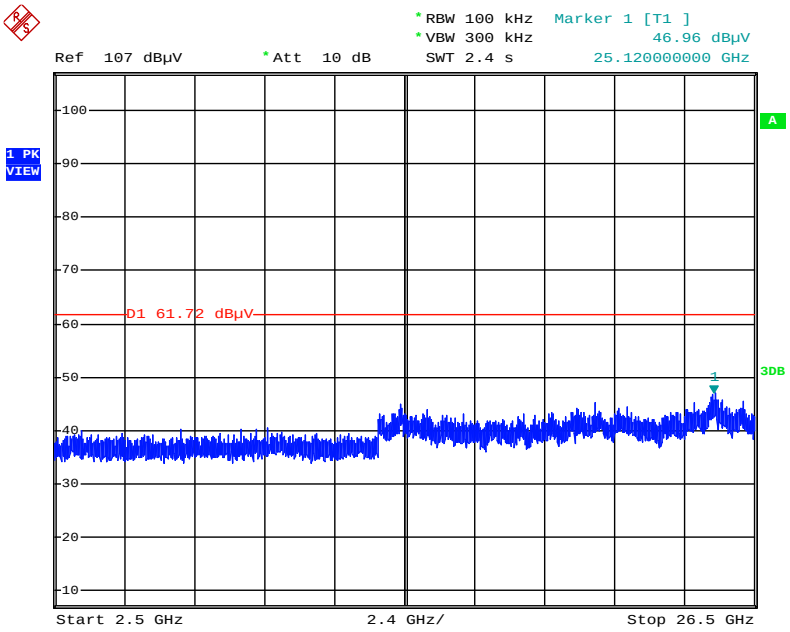
Date: 20.OCT.2015 18:04:39

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc) / 2TX



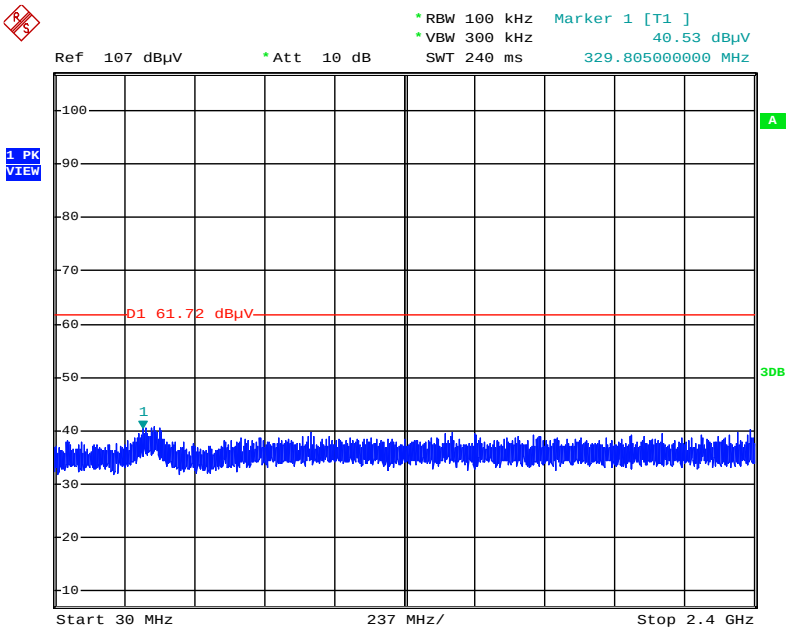
Date: 20.OCT.2015 18:06:54

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc) / 2TX



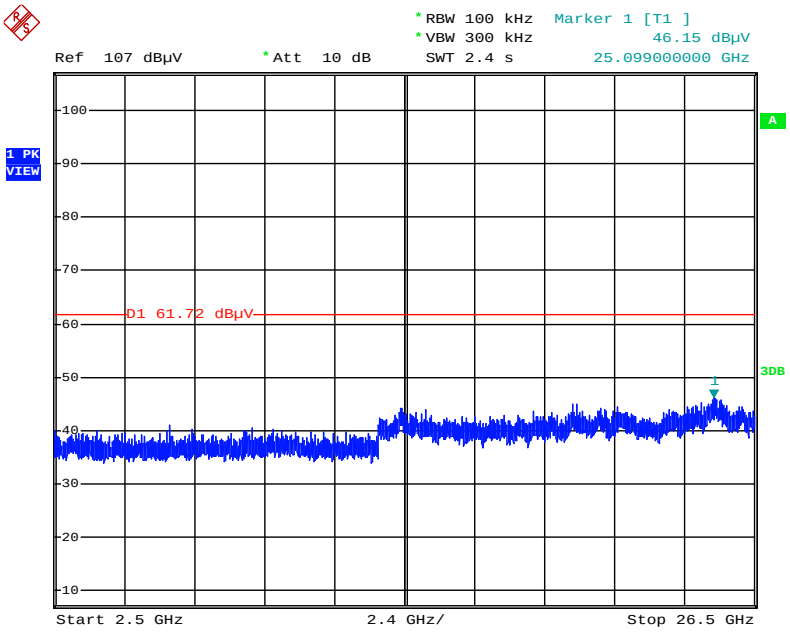
Date: 20.OCT.2015 18:07:27

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) / 2TX



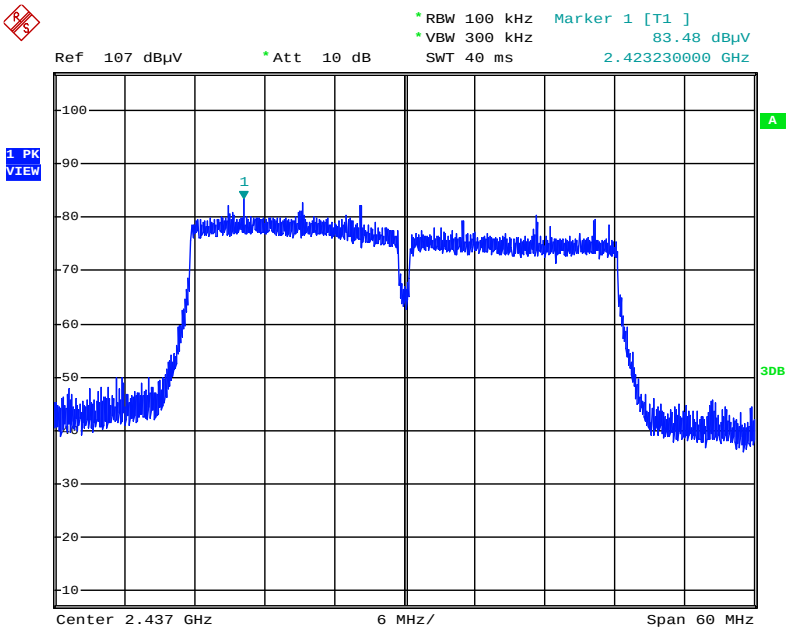
Date: 20.OCT.2015 18:08:34

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) / 2TX



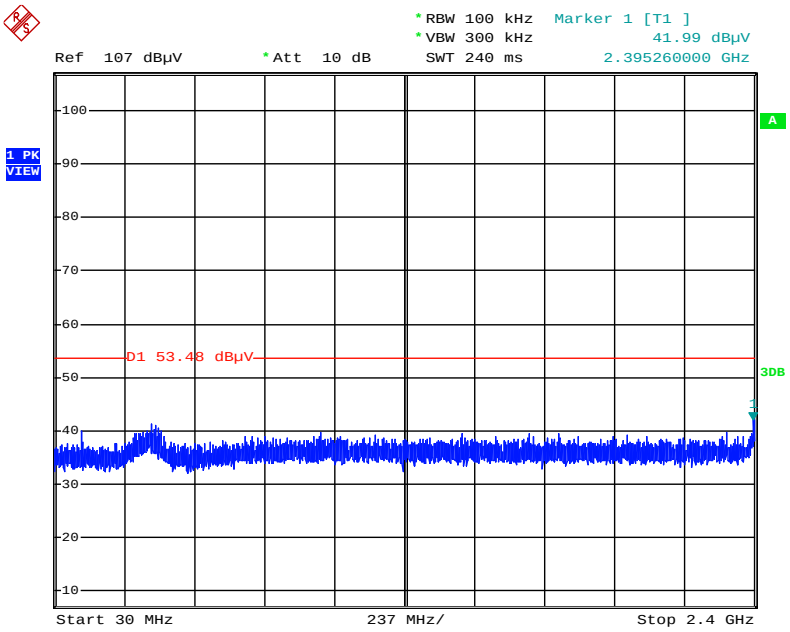
Date: 20.OCT.2015 18:08:10

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level / 2TX



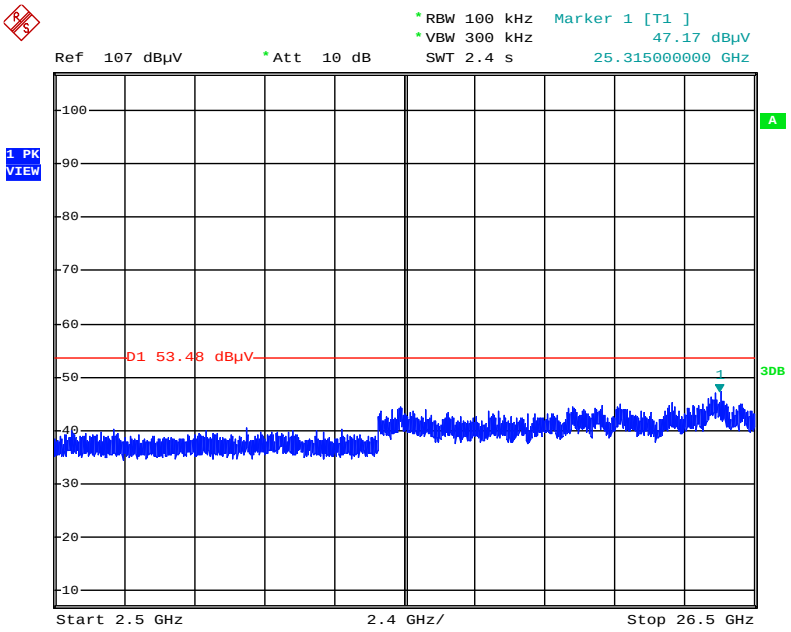
Date: 20.OCT.2015 18:11:01

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc) / 2TX



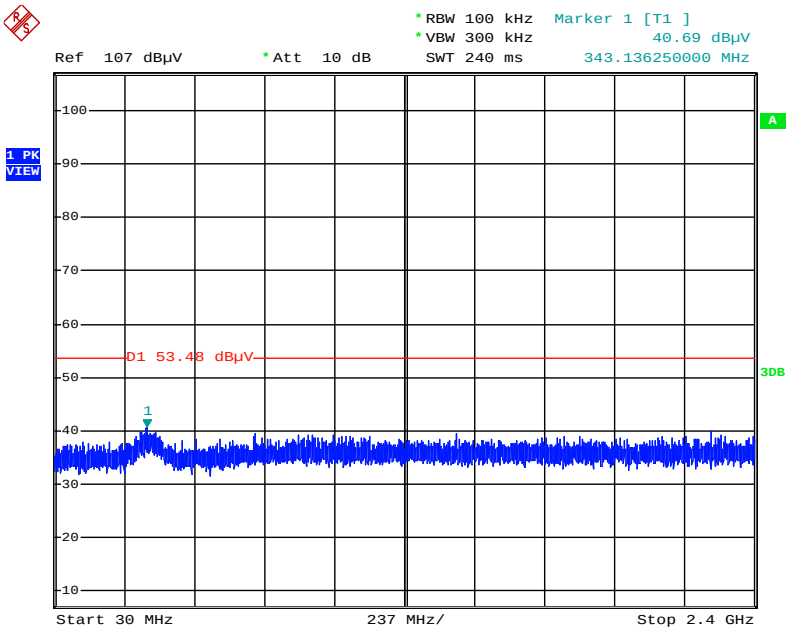
Date: 20.OCT.2015 18:13:21

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2500MHz~26500MHz (down 30dBc) / 2TX



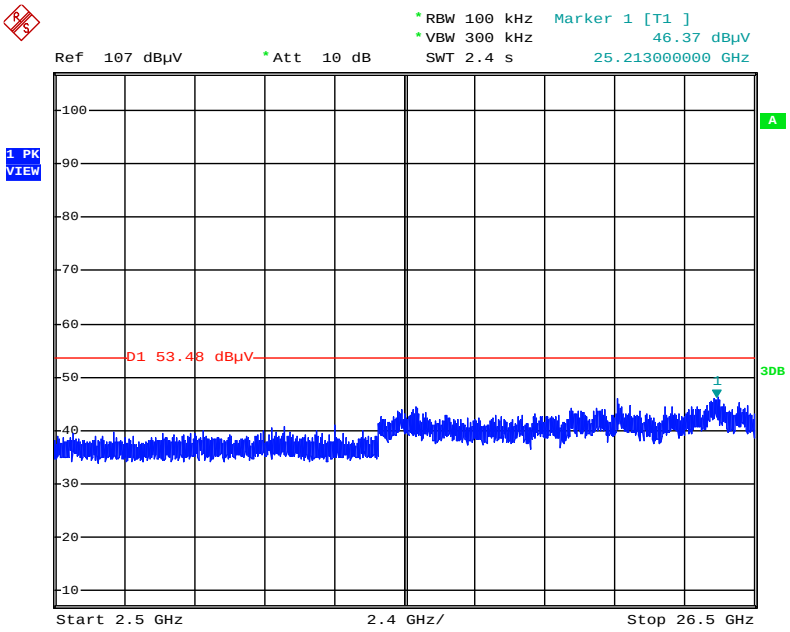
Date: 20.OCT.2015 18:14:00

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) / 2TX



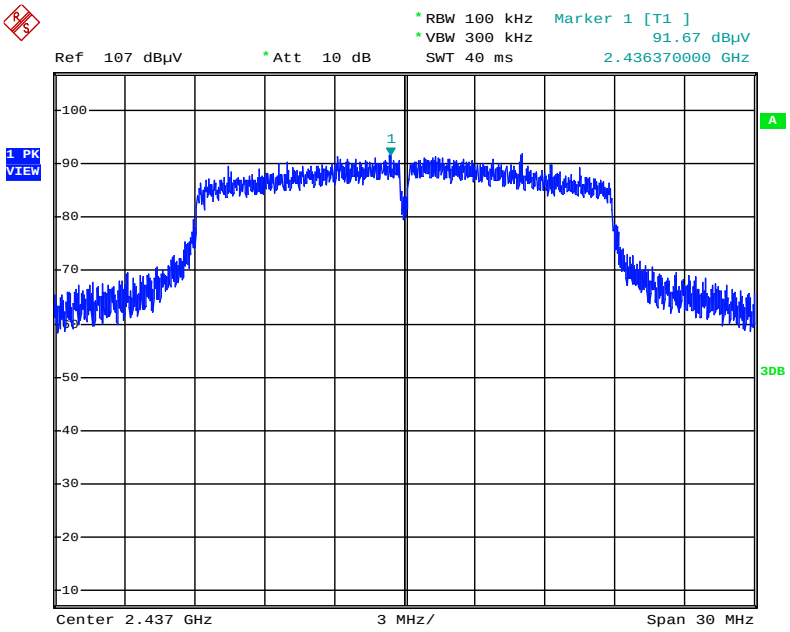
Date: 20.OCT.2015 18:15:07

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) / 2TX



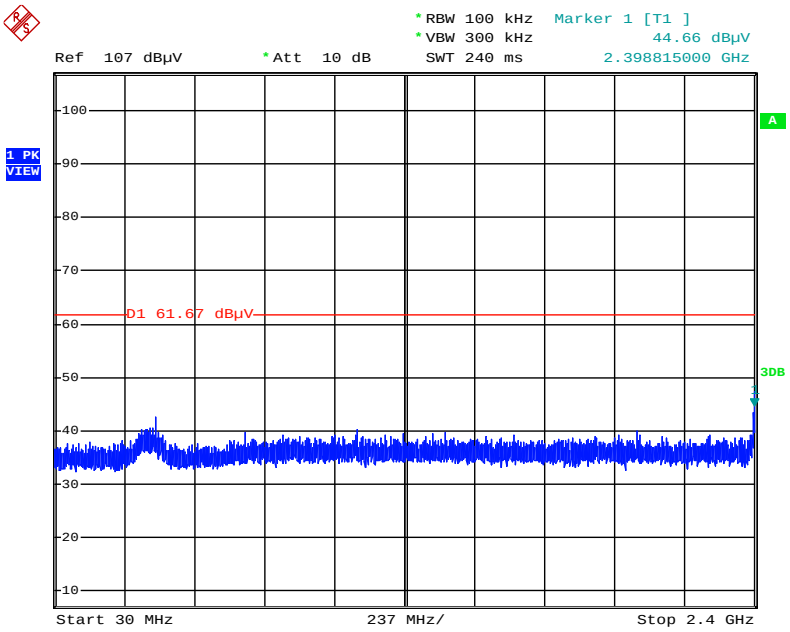
Date: 20.OCT.2015 18:14:41

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level / 3TX



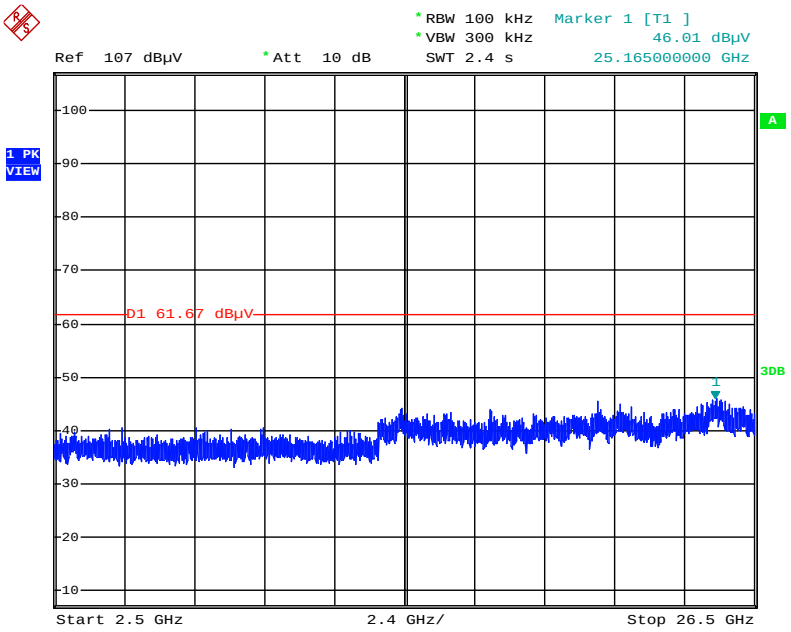
Date: 20.OCT.2015 16:40:04

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc) / 3TX



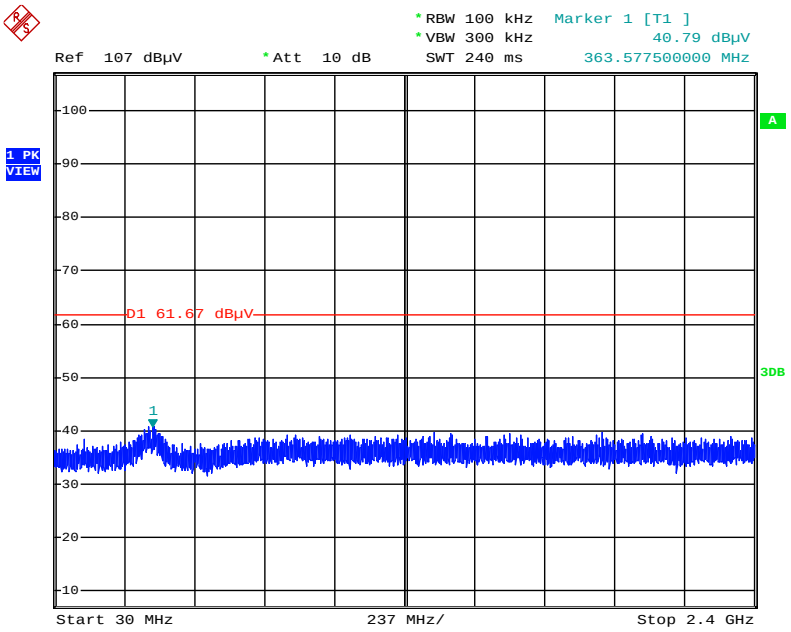
Date: 20.OCT.2015 16:41:49

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2500MHz~26500MHz (down 30dBc) / 3TX



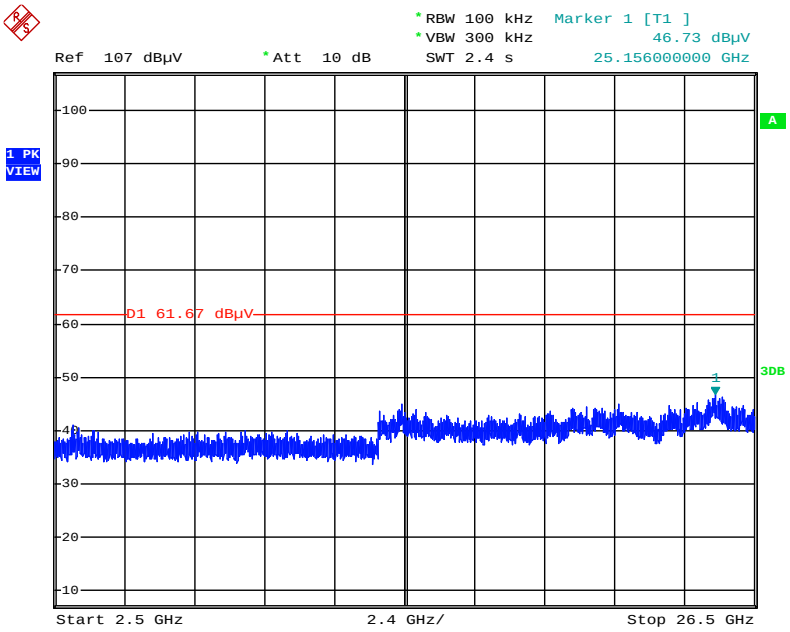
Date: 20.OCT.2015 16:42:39

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc) / 3TX



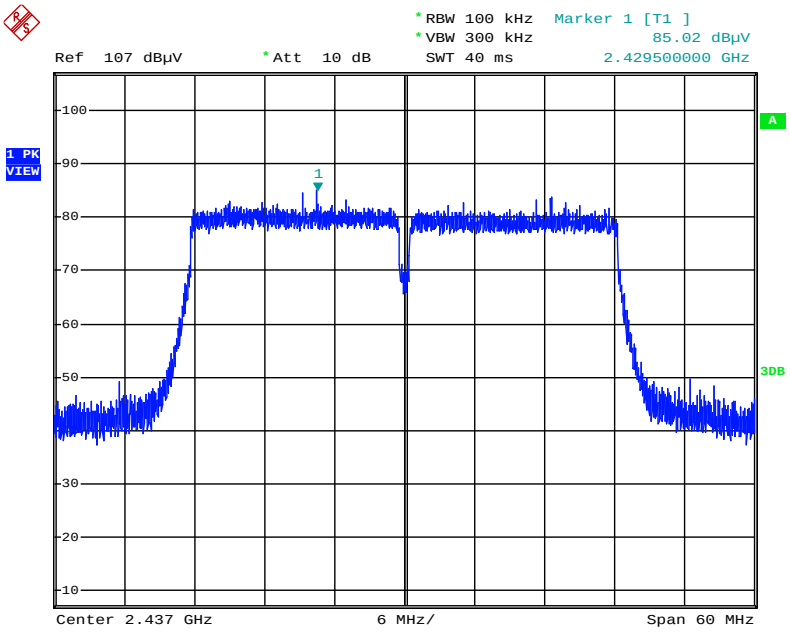
Date: 20.OCT.2015 16:43:56

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2500MHz~26500MHz (down 30dBc) / 3TX



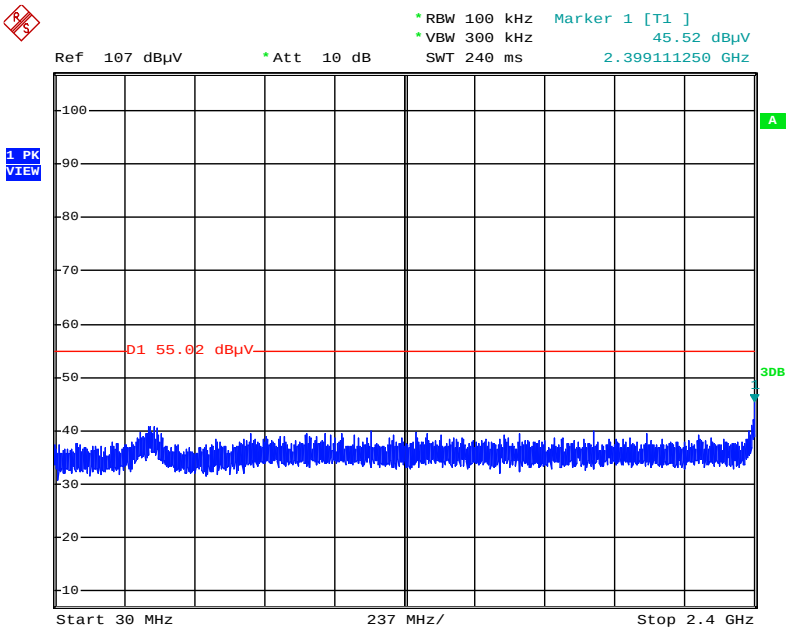
Date: 20.OCT.2015 16:43:27

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level / 3TX



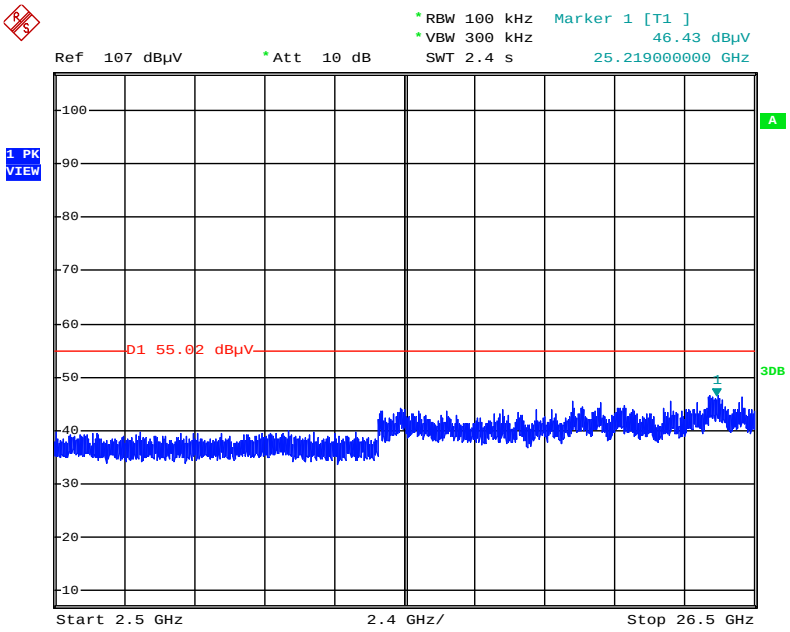
Date: 20.OCT.2015 16:45:36

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



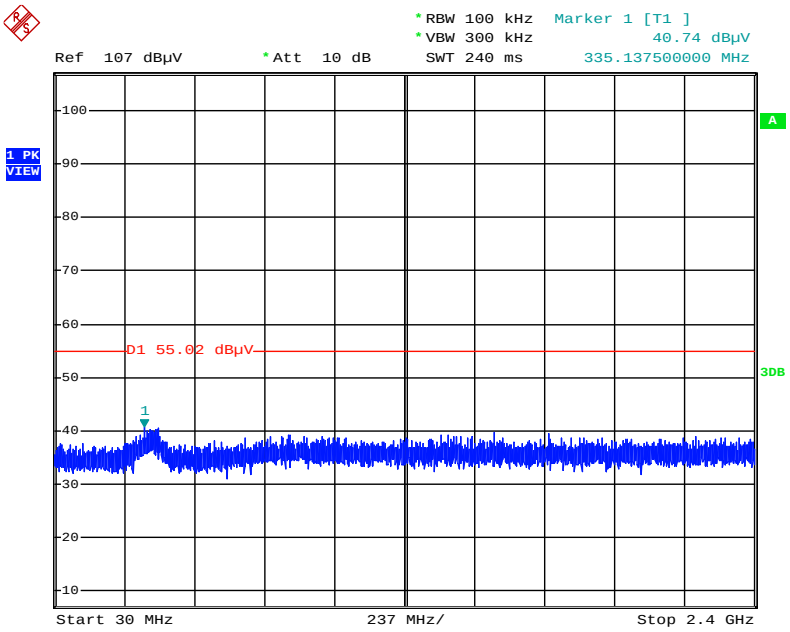
Date: 20.OCT.2015 16:46:46

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



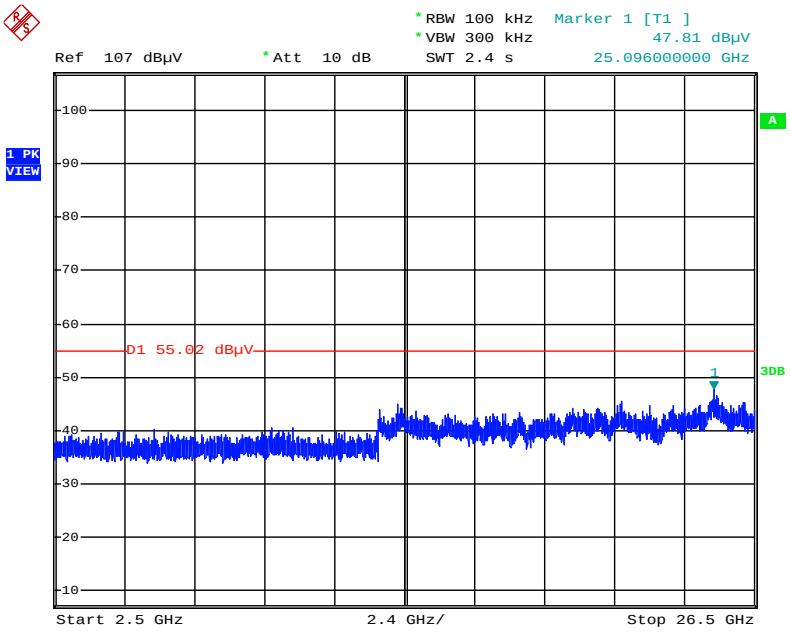
Date: 20.OCT.2015 16:47:17

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc) / 3TX



Date: 20.OCT.2015 16:48:53

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2500MHz~26500MHz (down 30dBc) / 3TX



Date: 20.OCT.2015 16:48:21

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.

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	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 23, 2017	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 14, 2016	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 21, 2016	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 23, 2017	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2016	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (10CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 10, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 22, 2016	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 21, 2015	Radiation (03CH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 06, 2017	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 12, 2014	Conducted (TH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410002	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-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.

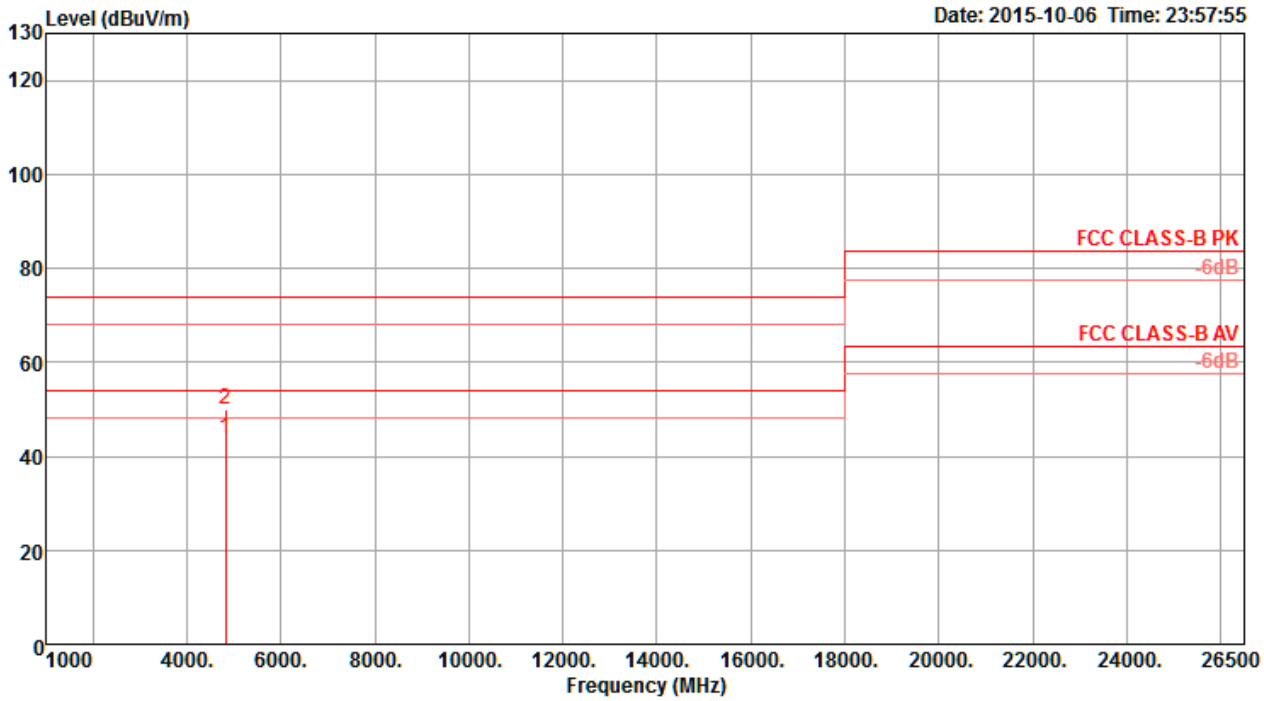
6. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 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%

Appendix B. Verification Worst Case

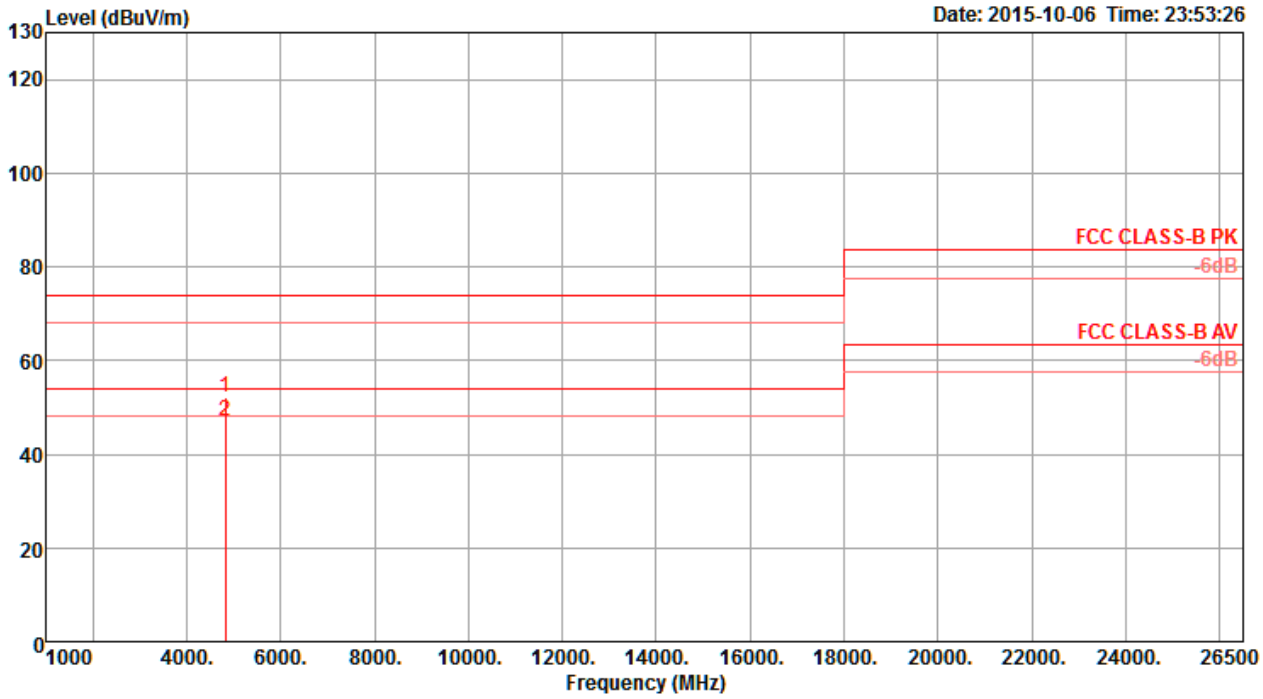
For Non-Beamforming Mode

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2



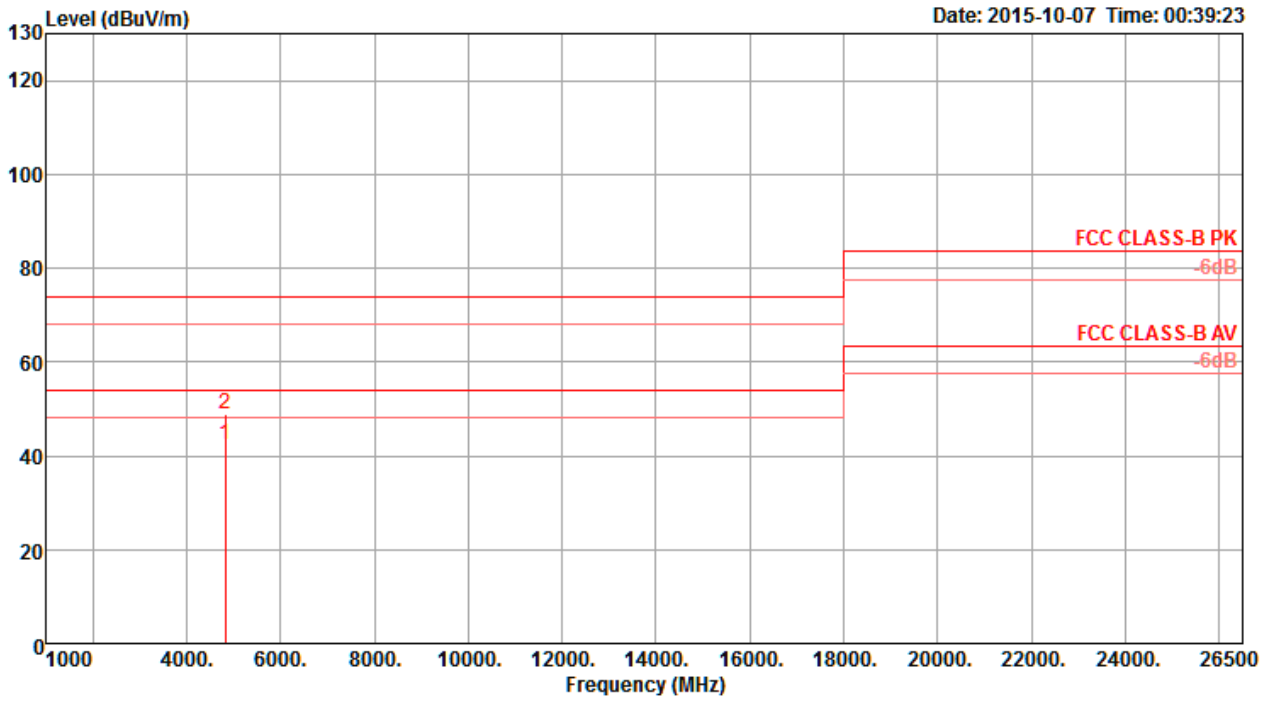
	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.94	43.89	54.00	-10.11	40.12	5.60	32.69	34.52	291	103	Average	HORIZONTAL
2	4824.01	49.95	74.00	-24.05	46.18	5.60	32.69	34.52	291	103	Peak	HORIZONTAL

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 2



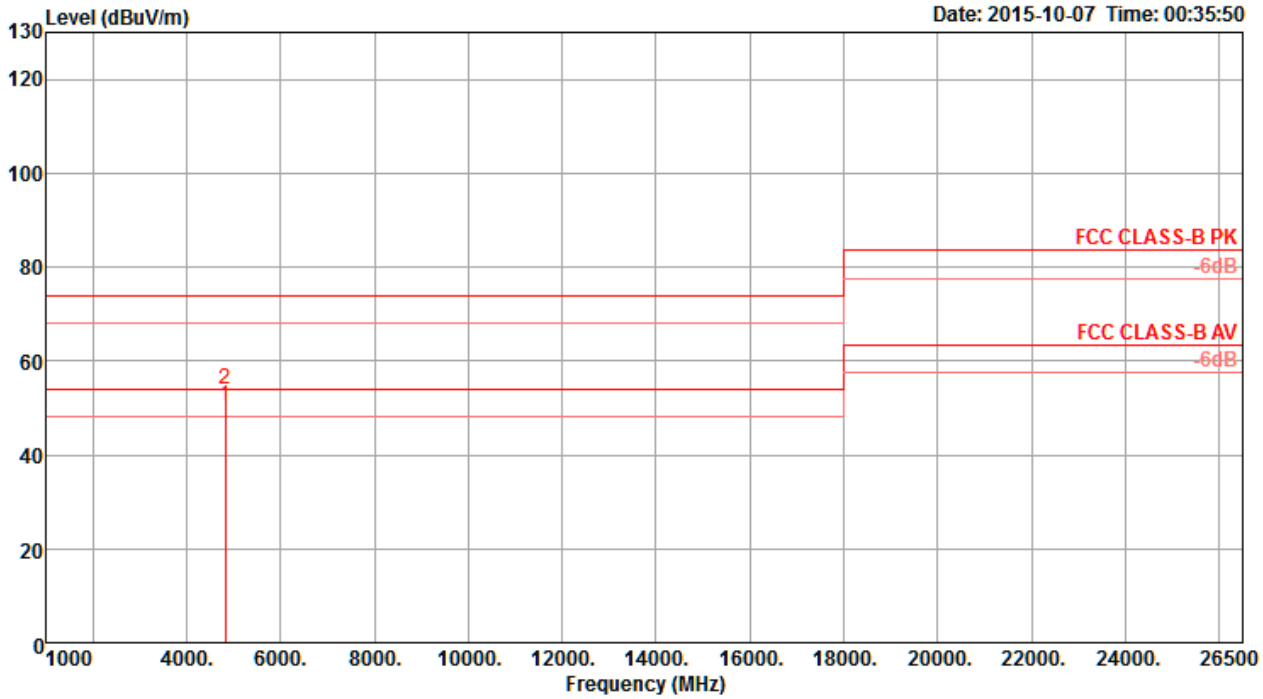
	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.91	51.98	74.00	-22.02	48.21	5.60	32.69	34.52	358	153	Peak	VERTICAL
2	4823.96	47.22	54.00	-6.78	43.45	5.60	32.69	34.52	358	153	Average	VERTICAL

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 3



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.99	42.37	54.00	-11.63	38.60	5.60	32.69	34.52	246	106	Average	HORIZONTAL
2	4824.07	48.97	74.00	-25.03	45.20	5.60	32.69	34.52	246	106	Peak	HORIZONTAL

Temperature	24°C	Humidity	65%
Test Engineer	Roki Liu / Eric Fu	Configurations	IEEE 802.11b CH 1 / Chain 1 + Chain 3



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	T/Pos	A/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	deg	cm		
1	4823.97	50.42	54.00	-3.58	46.65	5.60	32.69	34.52	13	298	Average	VERTICAL
2	4824.16	53.95	74.00	-20.05	50.18	5.60	32.69	34.52	13	298	Peak	VERTICAL