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FCC RADIO TEST REPORT

Applicant's company	**CyberTAN Technology Inc.**
Applicant Address	No. 99, Park Avenue III, Science-based Industrial Park, Hsinchu, 308 Taiwan
FCC ID	**N89-WD111**
Manufacturer's company	**CyberTAN Technology Inc.**
Manufacturer Address	No. 99, Park Avenue III, Science-based Industrial Park, Hsinchu, 308 Taiwan

Product Name	Smart Control Module
Brand Name	CyberTAN
Model No.	WD111
Test Rule	47 CFR FCC Part 15 Subpart C § 15.247
Test Freq. Range	2400 ~ 2483.5MHz
Received Date	Jun. 13, 2015
Final Test Date	Nov. 13, 2015
Submission Type	Original Equipment

Statement

Test result included in this report is for the IEEE 802.11n and IEEE 802.11b/g of the product.

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

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

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI C63.10-2013**, **47 CFR FCC Part 15 Subpart C** and **KDB558074 D01 v03r04.**

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

Testing Laboratory
1190

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR561607	Rev. 01	Initial issue of report	Feb. 02, 2016

1. VERIFICATION OF COMPLIANCE

Product Name	:	Smart Control Module
Brand Name	:	CyberTAN
Model No.	:	WD111
Applicant	:	CyberTAN Technology Inc.
Test Rule Part(s)	:	47 CFR FCC Part 15 Subpart C § 15.247

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Jun. 13, 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.

Sam Chen
SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**Rule Section**	**Description of Test**	**Result**	**Under Limit**
4.1	15.207	AC Power Line Conducted Emissions	Complies	19.35 dB
4.2	15.247(b)(3)	Maximum Conducted Output Power	Complies	7.11 dB
4.3	15.247(e)	Power Spectral Density	Complies	8.25 dB
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Complies	-
4.5	15.247(d)	Radiated Emissions	Complies	0.27 dB
4.6	15.247(d)	Band Edge Emissions	Complies	0.04 dB
4.7	15.203	Antenna Requirements	Complies	-

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Product Type	WLAN (1TX, 1RX)
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 Ant. 1 (Printed Ant.)** IEEE 802.11b: 14.15 MHz IEEE 802.11g: 18.32 MHz IEEE 802.11n MCS0 (HT20): 19.80 MHz IEEE 802.11n MCS0 (HT40): 36.32 MHz **For Ant. 2 (PIFA Ant.)** IEEE 802.11b: 14.15 MHz IEEE 802.11g: 18.76 MHz IEEE 802.11n MCS0 (HT20): 20.14 MHz IEEE 802.11n MCS0 (HT40): 36.32 MHz
Maximum Conducted Output Power	**For Ant. 1 (Printed Ant.)** IEEE 802.11b: 22.76 dBm IEEE 802.11g: 22.46 dBm IEEE 802.11n MCS0 (HT20): 22.89 dBm IEEE 802.11n MCS0 (HT40): 17.76 dBm **For Ant. 2 (PIFA Ant.)** IEEE 802.11b: 22.76 dBm IEEE 802.11g: 22.46 dBm IEEE 802.11n MCS0 (HT20): 22.89 dBm IEEE 802.11n MCS0 (HT40): 17.36 dBm
Carrier Frequencies	Please refer to section 3.4
Antenna	Please refer to section 3.3

Items	Description	
Beamforming Function	☐ With beamforming	☒ Without beamforming

Antenna and Band width

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

IEEE 11n Spec.

Protocol	Number of Transmit Chains (NTX)	Data Rate / MCS
802.11n (HT20)	1	MCS 0-7
802.11n (HT40)	1	MCS 0-7
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

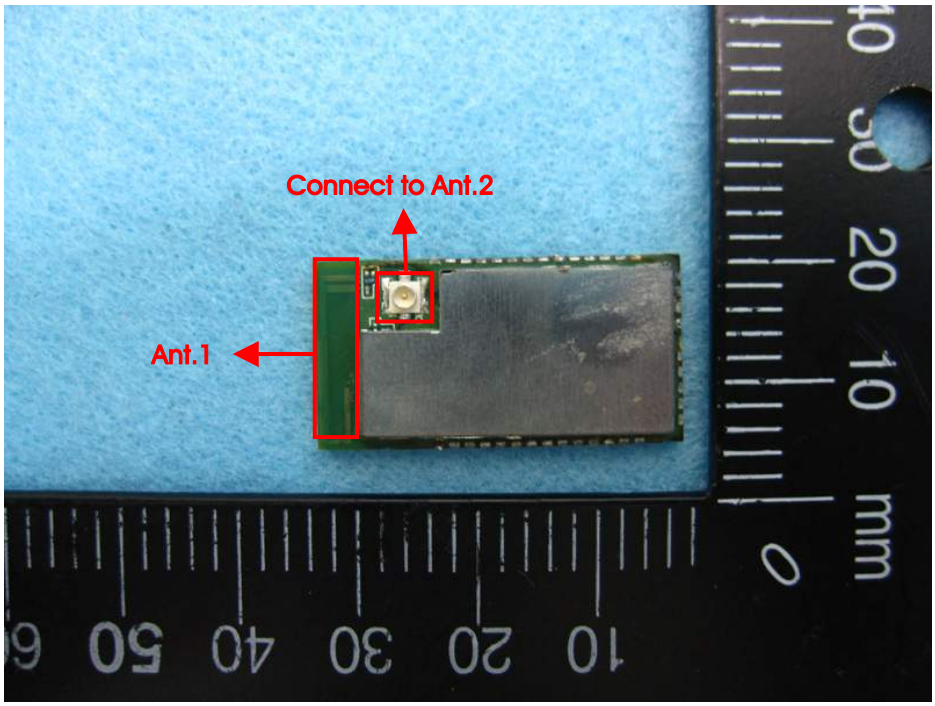
3.3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Qualcomm Atheros	2.4G_SingleBand_CNIoE_4mm*16mm	Printed Ant.	N/A	1.53
2	Airgain	M2445J	PIFA Ant.	I-PEX	3.60

Note: The EUT has two antennas.

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

Ant. 1 and Ant. 2 can be used as transmitting antenna and receiving antenna.



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.

For Ant. 1 (Printed Ant.)

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

For Ant. 2 (PIFA Ant.)

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

The following test modes were performed for all tests:

For Conducted Emission test:

Mode 1. EUT with Ant. 1

Mode 2. EUT with Ant. 2

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

For Radiated Emission test (Below 1GHz):

Mode 1. EUT with Ant. 1 - in X-axis

Mode 2. EUT with Ant. 1 - in Y-axis

Mode 3. EUT with Ant. 2 - in X-axis

Mode 4. EUT with Ant. 2 - in Y-axis

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

For Radiated Emission test (Above 1GHz):

The EUT was performed at X axis, Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at X axis. So the measurement will follow this same test configuration.

Mode 1: CTX - EUT in X-axis

3.6. Table for Testing Locations

Test Site Location				
Address:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.			
TEL:	886-3-656-9065			
FAX:	886-3-656-9085			
Test Site No.	**Site Category**	**Location**	**FCC Reg. No.**	**IC File No.**
03CH01-CB	SAC	Hsin Chu	262045	IC 4086D
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

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

3.7. Table for Supporting Units

For Test Site No: CO01-CB

Support Unit	Brand	Model	FCC ID
AP Router	Planex	GW-AP54SGX	KA220030603014-1
Notebook	DELL	E6430	DoC
Earphone	e-Power	S90W	N/A
Mouse	HP	FM100	DoC
Test fixture	CyberTAN	ST mother board	N/A

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

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Mouse	Logitech	M-U0026	DoC
Wireless ac AP	Netgear	R6300V2	PY313200227
Earphone	SHYARO CHI	MIC-04	N/A
Test fixture	CyberTAN	ST mother board	N/A

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

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Test fixture	CyberTAN	NXP mother board	N/A

For Test Site No: TH01-CB

Support Unit	Brand	Model	FCC ID
Notebook	DELL	E4300	DoC
Test fixture	CyberTAN	NXP mother board	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 Ant. 1 (Printed Ant.)

Test Software Version	Art2_IoE 2.3					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	19.5	21.5	19.5	-	-	-
802.11g	16	22.5	16.5	-	-	-
802.11n MCS0 HT20	15.5	23	15.5	-	-	-
802.11n MCS0 HT40	-	-	-	15	16.5	15.5

For Ant. 2 (PIFA Ant.)

Test Software Version	Art2_IoE 2.3					
Mode	Test Frequency (MHz)					
	NCB: 20MHz			NCB: 40MHz		
	2412 MHz	2437 MHz	2462 MHz	2422 MHz	2437 MHz	2452 MHz
802.11b	19.5	21.5	19	-	-	-
802.11g	15.5	22.5	15.5	-	-	-
802.11n MCS0 HT20	14.5	23	14.5	-	-	-
802.11n MCS0 HT40	-	-	-	14.5	16	14.5

3.9. EUT Operation during Test

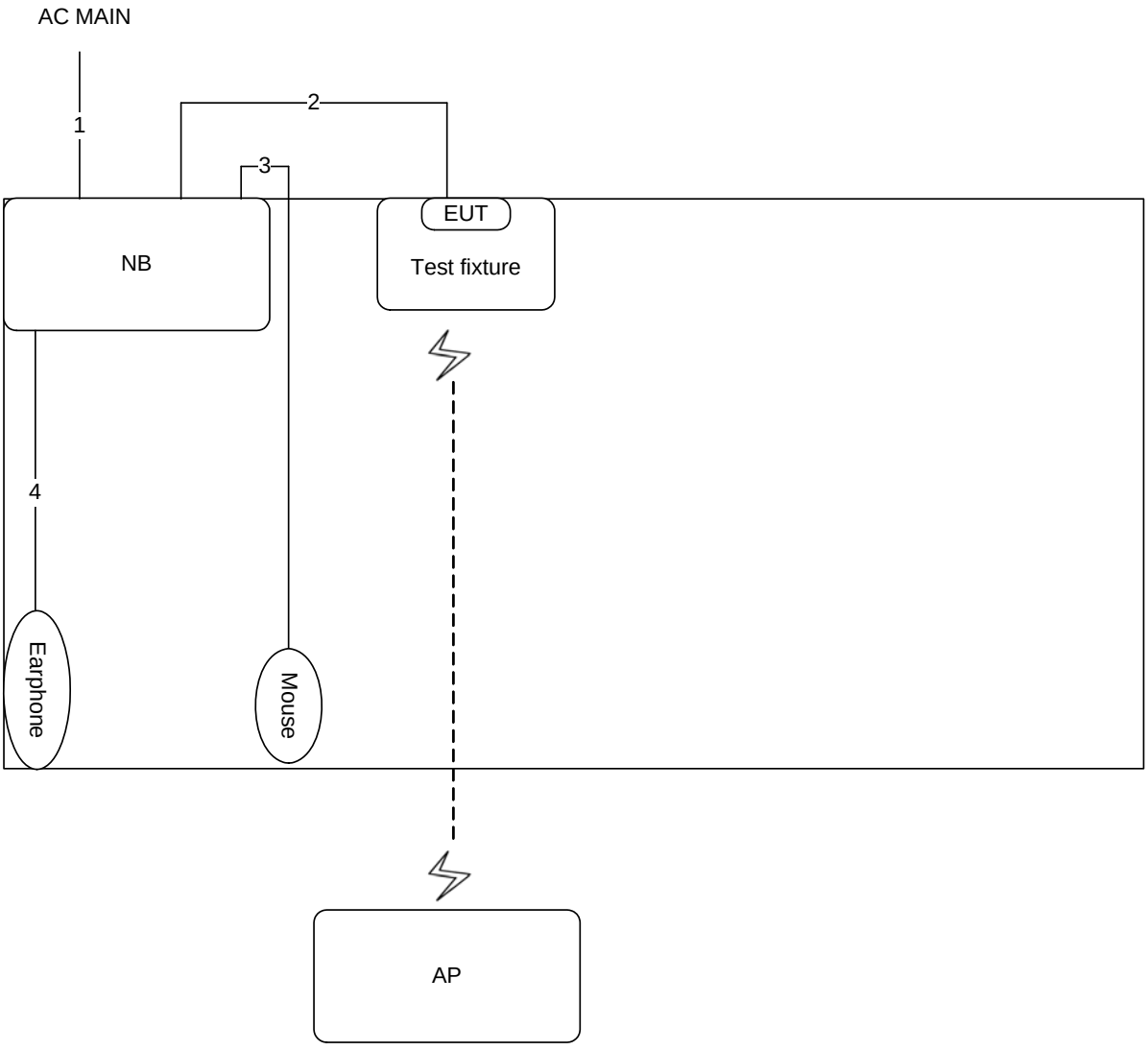
The EUT was programmed to be in continuously transmitting mode.

3.10. Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11b	1.000	1.000	100.00	0.00	0.01
802.11g	2.010	2.070	97.10	0.13	0.50
802.11n MCS0 HT20	1.860	1.940	95.88	0.18	0.54
802.11n MCS0 HT40	0.880	0.980	89.80	0.47	1.14

3.11. Test Configurations

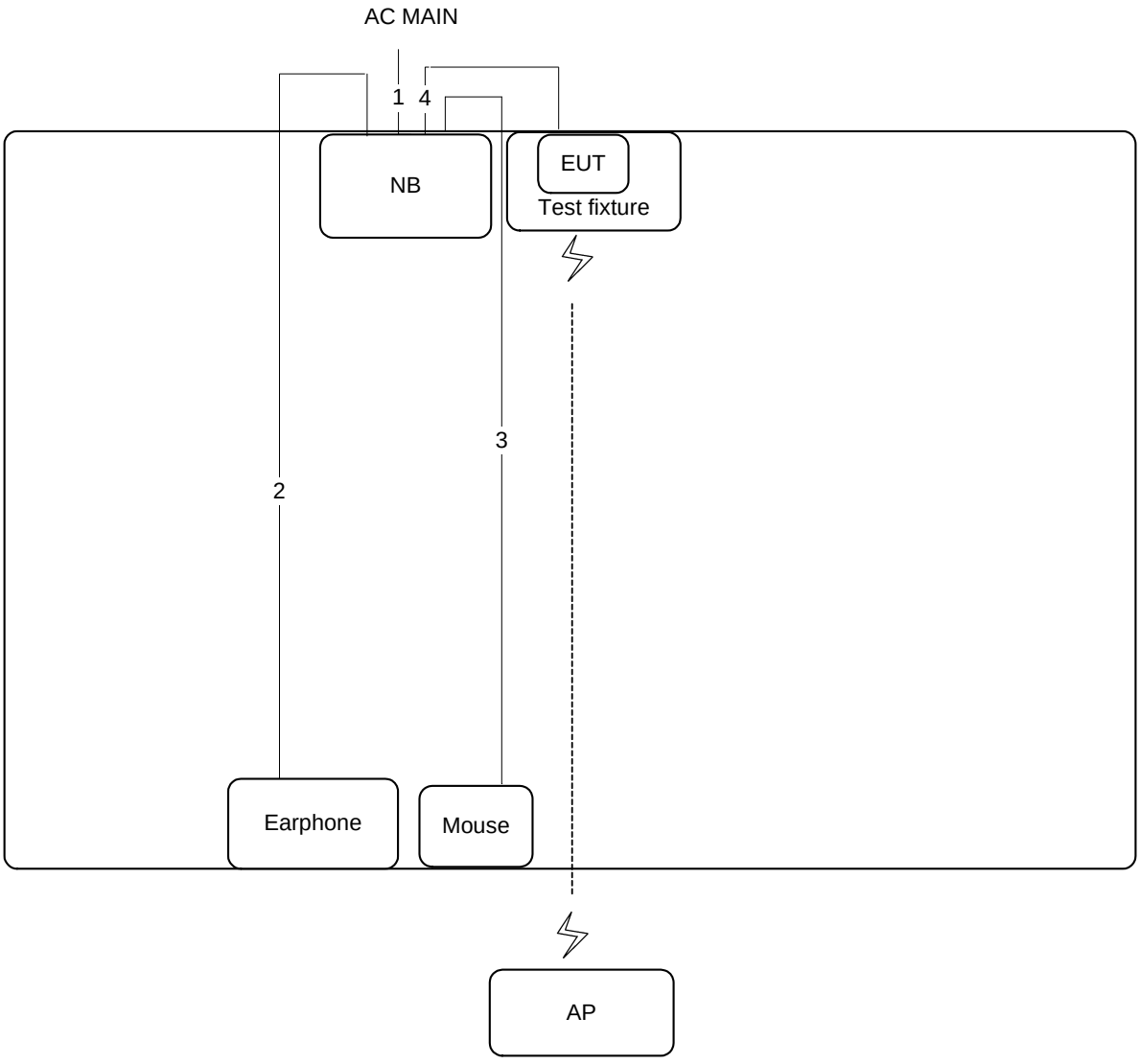
3.11.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	1m
3	USB cable	Yes	1.8m
4	Audio cable	No	1.4m

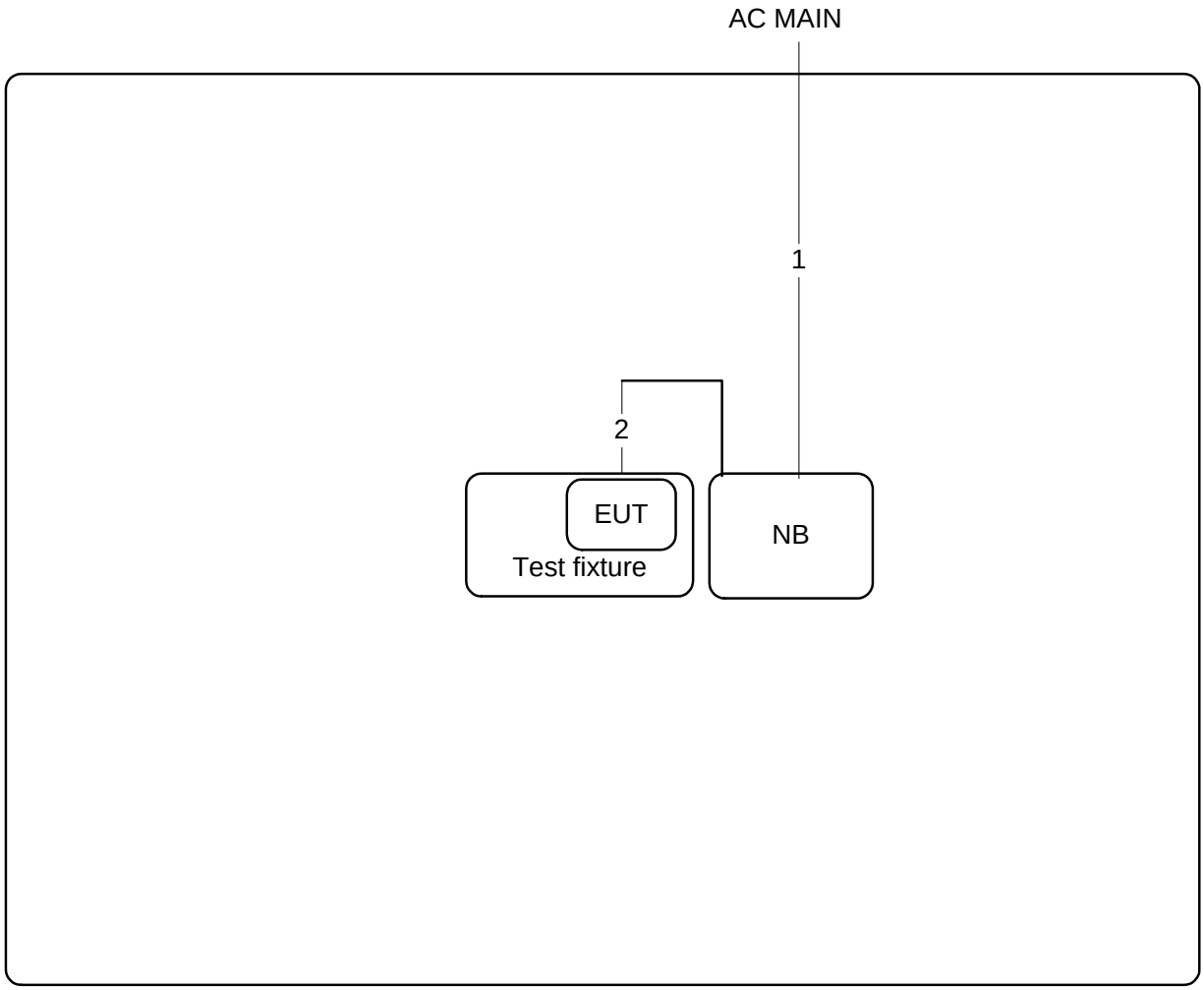
3.11.2. Radiation Emissions Test Configuration

Test Configuration: 30MHz~1GHz



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

Test Configuration: above 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	1m

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

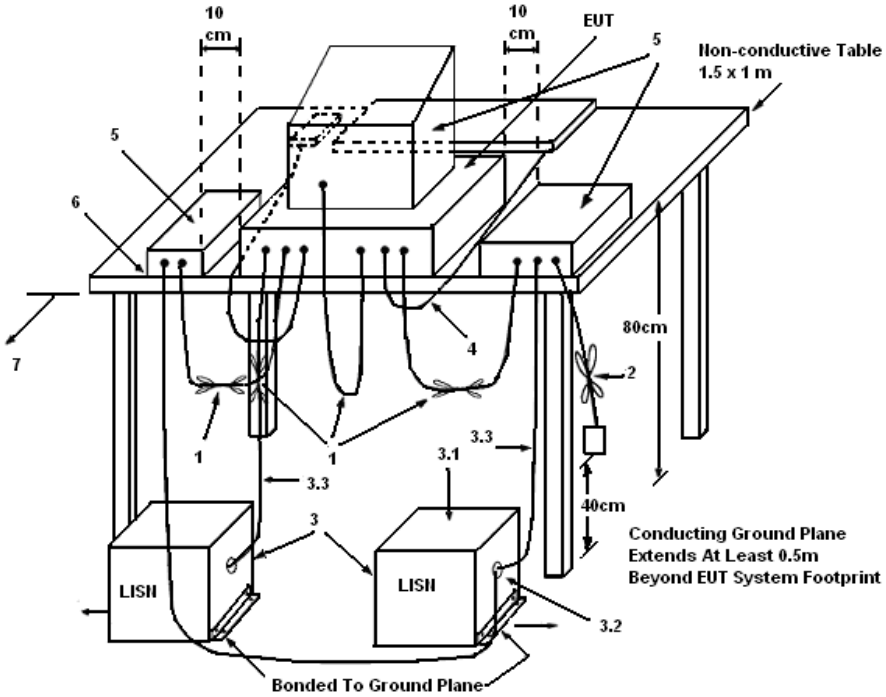
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver.

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

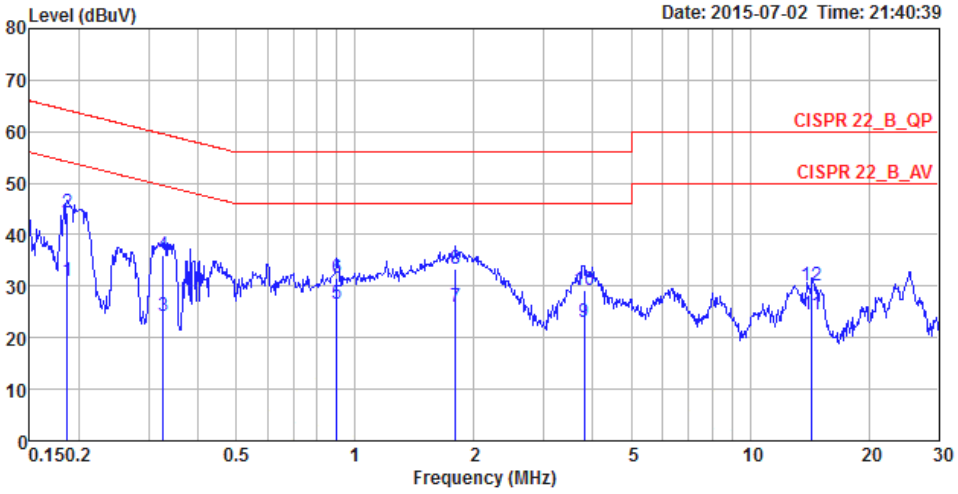
There is no deviation with the original standard.

4.1.6. EUT Operation during Test

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

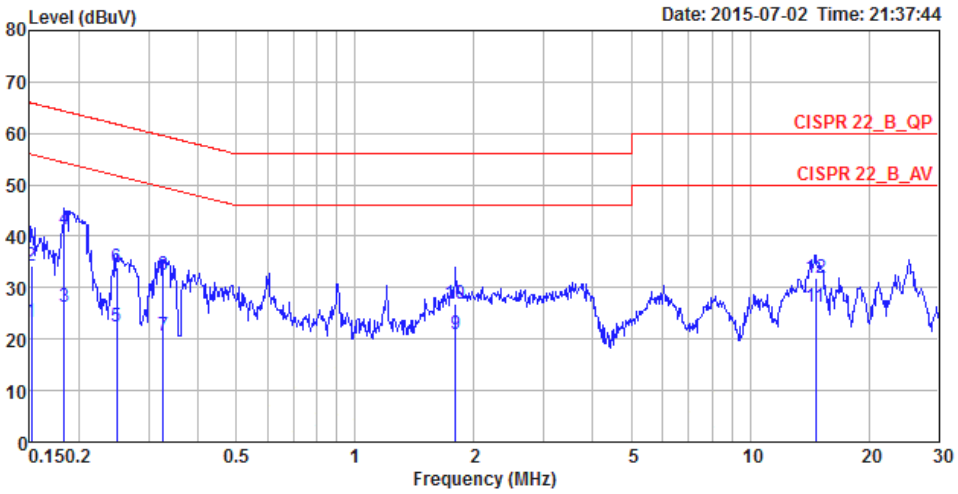
4.1.7. Results of AC Power Line Conducted Emissions Measurement

Temperature	22°C	Humidity	55%
Test Engineer	Kane Liu	Phase	Line
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1864	30.93	-23.27	54.20	20.98	9.93	0.02	LINE	Average
2	0.1864	44.21	-19.99	64.20	34.26	9.93	0.02	LINE	QP
3	0.3268	24.14	-25.39	49.53	14.17	9.93	0.04	LINE	Average
4	0.3268	36.13	-23.40	59.53	26.16	9.93	0.04	LINE	QP
5	0.8992	26.65	-19.35	46.00	16.64	9.96	0.05	LINE	Average
6	0.8992	31.49	-24.51	56.00	21.48	9.96	0.05	LINE	QP
7	1.8000	26.04	-19.96	46.00	15.99	9.99	0.06	LINE	Average
8	1.8000	33.42	-22.58	56.00	23.37	9.99	0.06	LINE	QP
9	3.7994	23.01	-22.99	46.00	12.92	10.02	0.07	LINE	Average
10	3.7994	29.14	-26.86	56.00	19.05	10.02	0.07	LINE	QP
11	14.3641	24.63	-25.37	50.00	14.06	10.31	0.26	LINE	Average
12	14.3641	30.19	-29.81	60.00	19.62	10.31	0.26	LINE	QP

Temperature	22°C	Humidity	55%
Test Engineer	Kane Liu	Phase	Neutral
Configuration	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1516	23.29	-32.62	55.91	13.49	9.78	0.02	NEUTRAL	Average
2	0.1516	34.24	-31.67	65.91	24.44	9.78	0.02	NEUTRAL	QP
3	0.1835	26.29	-28.04	54.33	16.48	9.79	0.02	NEUTRAL	Average
4	0.1835	41.21	-23.12	64.33	31.40	9.79	0.02	NEUTRAL	QP
5	0.2495	22.50	-29.28	51.78	12.68	9.79	0.03	NEUTRAL	Average
6	0.2495	33.94	-27.84	61.78	24.12	9.79	0.03	NEUTRAL	QP
7	0.3268	20.70	-28.83	49.53	10.87	9.79	0.04	NEUTRAL	Average
8	0.3268	32.41	-27.12	59.53	22.58	9.79	0.04	NEUTRAL	QP
9	1.8000	20.92	-25.08	46.00	11.02	9.84	0.06	NEUTRAL	Average
10	1.8000	26.85	-29.15	56.00	16.95	9.84	0.06	NEUTRAL	QP
11	14.6718	26.41	-23.59	50.00	16.05	10.10	0.26	NEUTRAL	Average
12	14.6718	31.96	-28.04	60.00	21.60	10.10	0.26	NEUTRAL	QP

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

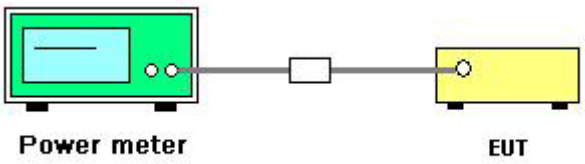
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

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 v03r04 section 9.2.3.2 Measurement using a power meter (PM).
2. This procedure provides an alternative for determining the RMS output power using a broadband RF average power meter with a thermocouple detector.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Test Result of Maximum Conducted Output Power

For Ant. 1 (Printed Ant.)

Temperature	25°C	Humidity	62%
Test Engineer	Lucas Huang	Test Date	Jun. 18, 2015~Nov. 12, 2015

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
802.11b	2412 MHz	21.16	30.00	Complies
	2437 MHz	22.76	30.00	Complies
	2462 MHz	21.12	30.00	Complies
802.11g	2412 MHz	18.16	30.00	Complies
	2437 MHz	22.46	30.00	Complies
	2462 MHz	18.52	30.00	Complies
802.11n MCS0 HT20	2412 MHz	16.55	30.00	Complies
	2437 MHz	22.89	30.00	Complies
	2462 MHz	17.34	30.00	Complies
802.11n MCS0 HT40	2422 MHz	15.81	30.00	Complies
	2437 MHz	17.76	30.00	Complies
	2452 MHz	17.55	30.00	Complies

For Ant. 2 (PIFA Ant.)

Temperature	25°C	Humidity	62%
Test Engineer	Lucas Huang	Test Date	Jun. 18, 2015~Nov. 13, 2015

Mode	Frequency	Conducted Power (dBm)	Max. Limit (dBm)	Result
802.11b	2412 MHz	21.16	30.00	Complies
	2437 MHz	22.76	30.00	Complies
	2462 MHz	20.63	30.00	Complies
802.11g	2412 MHz	17.50	30.00	Complies
	2437 MHz	22.46	30.00	Complies
	2462 MHz	17.62	30.00	Complies
802.11n MCS0 HT20	2412 MHz	15.76	30.00	Complies
	2437 MHz	22.89	30.00	Complies
	2462 MHz	16.45	30.00	Complies
802.11n MCS0 HT40	2422 MHz	15.01	30.00	Complies
	2437 MHz	17.36	30.00	Complies
	2452 MHz	16.52	30.00	Complies

4.3. Power Spectral Density Measurement

4.3.1. Limit

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

4.3.2. Measuring Instruments and Setting

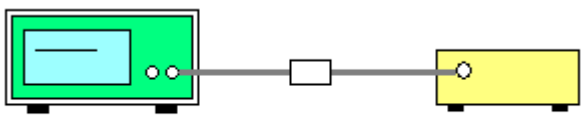
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

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

4.3.3. Test Procedures

1. Test was performed in accordance with KDB558074 D01 v03r04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) - section 10.2 Method PKPSD (peak PSD).
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 Ant. 1 (Printed Ant.)

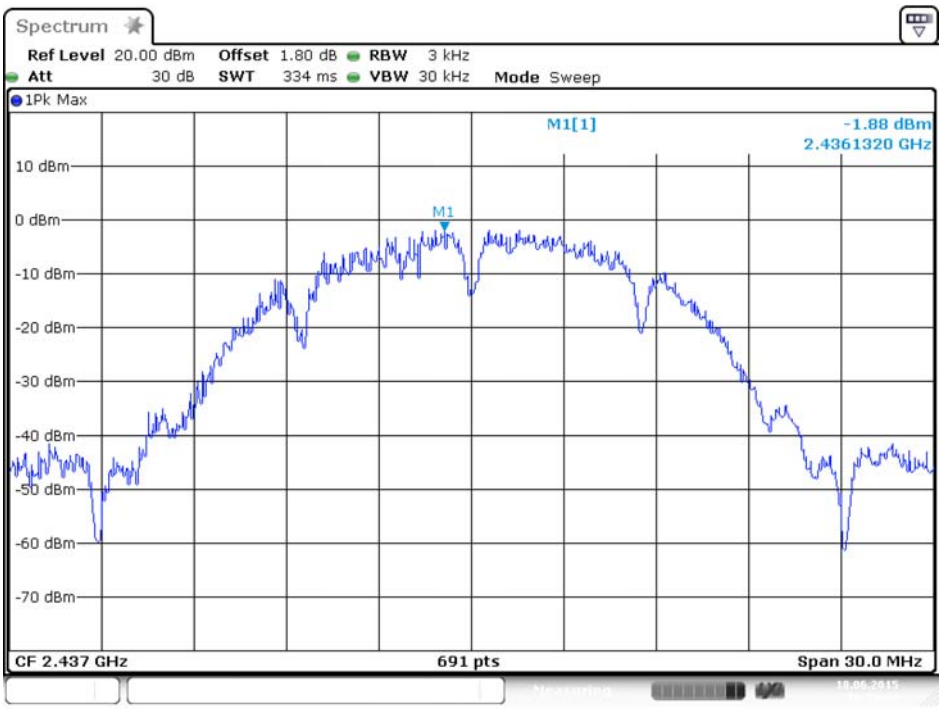
Temperature	25℃	Humidity	62%
Test Engineer	Lucas Huang		

Mode	Frequency	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
802.11b	2412 MHz	-2.45	8.00	Complies
	2437 MHz	-1.88	8.00	Complies
	2462 MHz	-2.60	8.00	Complies
802.11g	2412 MHz	-8.47	8.00	Complies
	2437 MHz	-0.25	8.00	Complies
	2462 MHz	-6.27	8.00	Complies
802.11n MCS0 HT20	2412 MHz	-8.67	8.00	Complies
	2437 MHz	-1.94	8.00	Complies
	2462 MHz	-8.87	8.00	Complies
802.11n MCS0 HT40	2422 MHz	-11.32	8.00	Complies
	2437 MHz	-10.02	8.00	Complies
	2452 MHz	-11.49	8.00	Complies

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

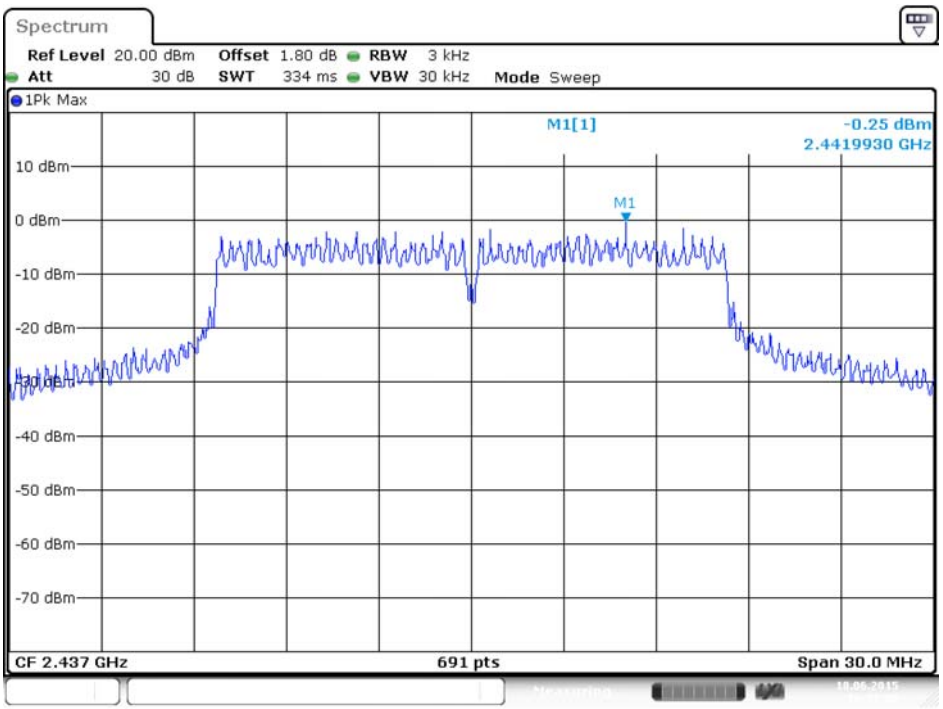
For plots, only the channel with worse result was shown.

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



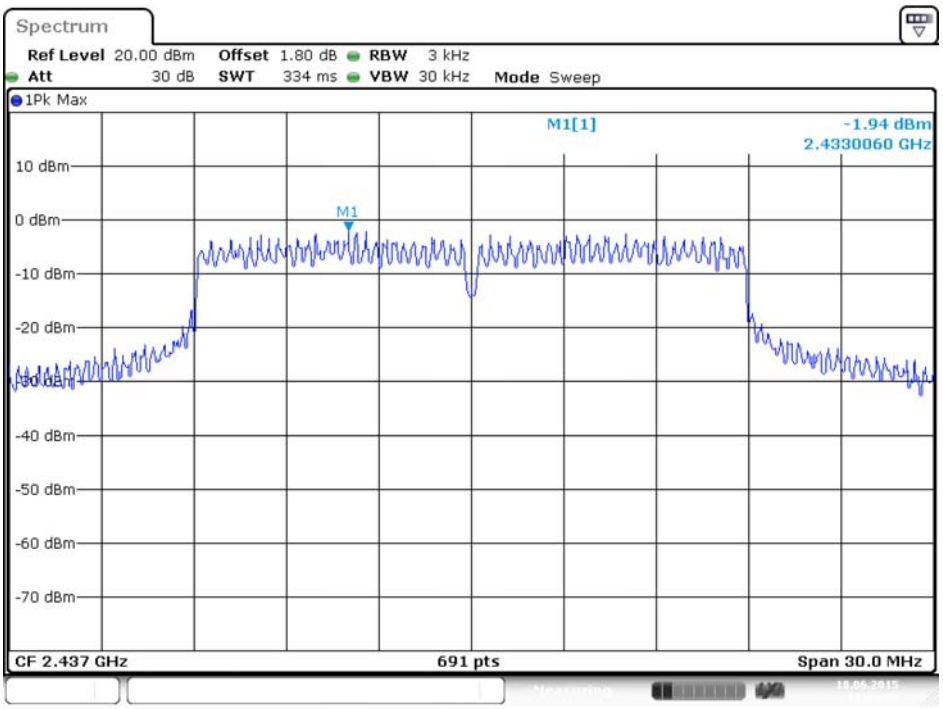
Date: 18.JUN.2015 10:39:44

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



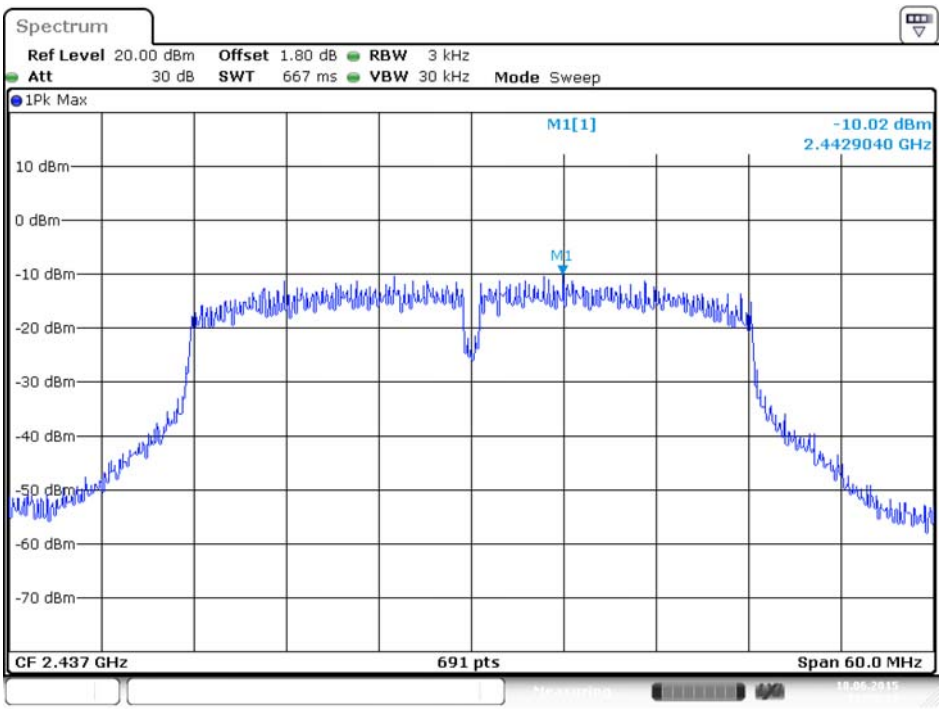
Date: 18.JUN.2015 10:57:00

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



Date: 18.JUN.2015 11:04:55

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



Date: 18.JUN.2015 11:25:18

For Ant. 2 (PIFA Ant.)

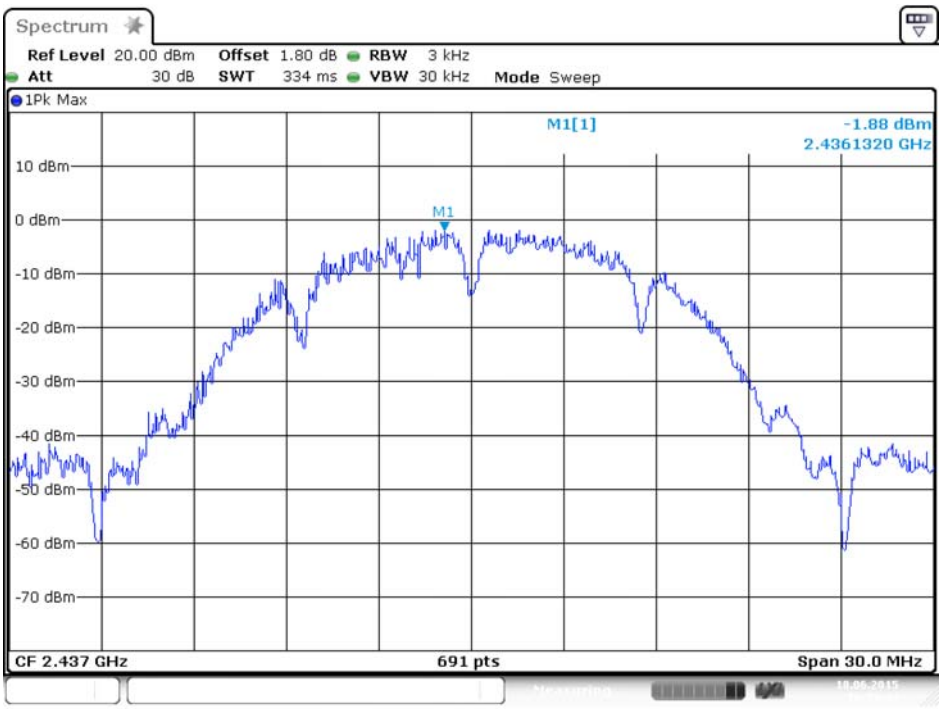
Temperature	25°C	Humidity	62%
Test Engineer	Lucas Huang		

Mode	Frequency	Power Density (dBm/3kHz)	Power Density Limit (dBm/3kHz)	Result
802.11b	2412 MHz	-2.45	8.00	Complies
	2437 MHz	-1.88	8.00	Complies
	2462 MHz	-3.42	8.00	Complies
802.11g	2412 MHz	-8.86	8.00	Complies
	2437 MHz	-0.25	8.00	Complies
	2462 MHz	-7.39	8.00	Complies
802.11n MCS0 HT20	2412 MHz	-9.36	8.00	Complies
	2437 MHz	-1.94	8.00	Complies
	2462 MHz	-10.12	8.00	Complies
802.11n MCS0 HT40	2422 MHz	-12.13	8.00	Complies
	2437 MHz	-11.03	8.00	Complies
	2452 MHz	-12.77	8.00	Complies

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

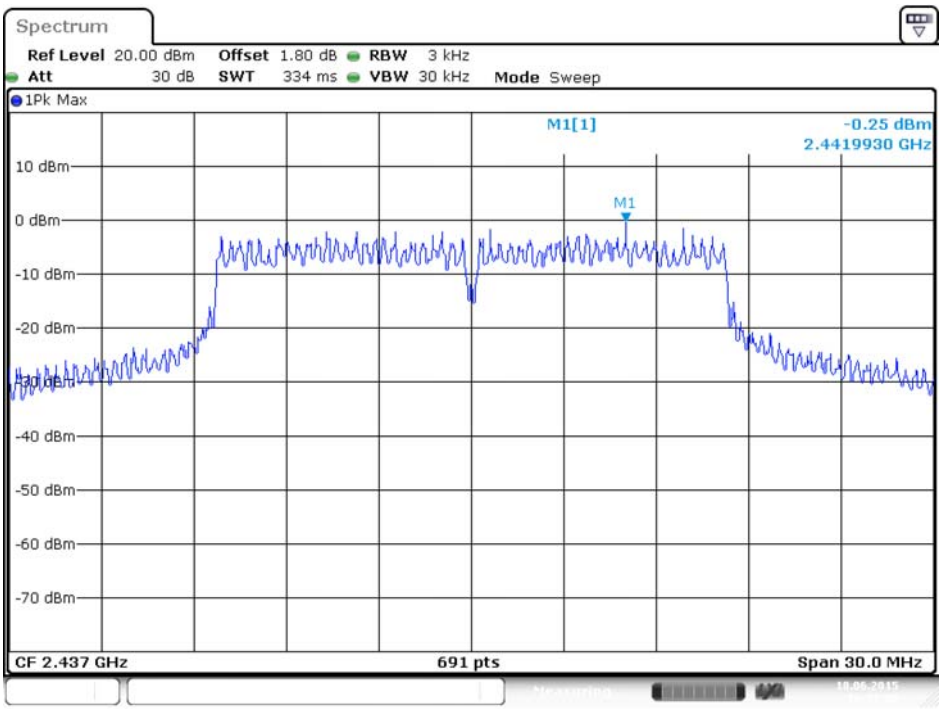
For plots, only the channel with worse result was shown.

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



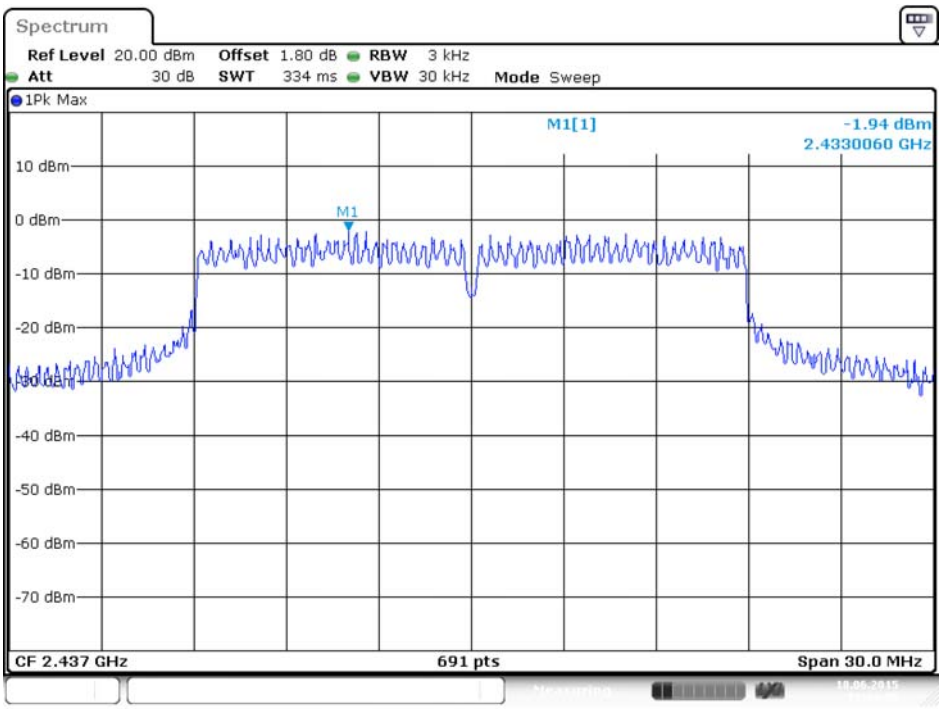
Date: 18.JUN.2015 10:39:44

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



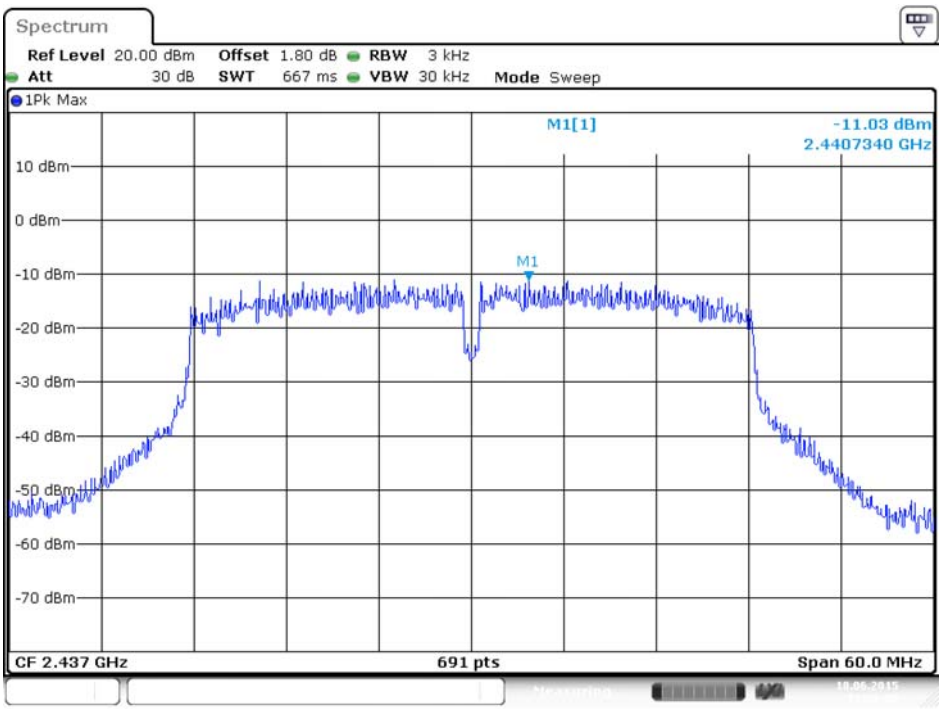
Date: 18.JUN.2015 10:57:00

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



Date: 18.JUN.2015 11:04:55

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



Date: 18.JUN.2015 11:26:08

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 conducted to the spectrum analyzer in peak hold mode.
2. Test was performed in accordance with KDB558074 D01 v03r04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 8.0 DTS 6-dB signal bandwidth option 1.
3. Multiple antenna system was performed in accordance with KDB558074 D01 v03r04 Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
4. Measurement perform conducted of each port.
5. Measured the spectrum width with power higher than 6dB below carrier.

4.4.4. Test Setup Layout

For Radiated 6dB Bandwidth Measurement:

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

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of 6dB Spectrum Bandwidth

For Ant. 1 (Printed Ant.)

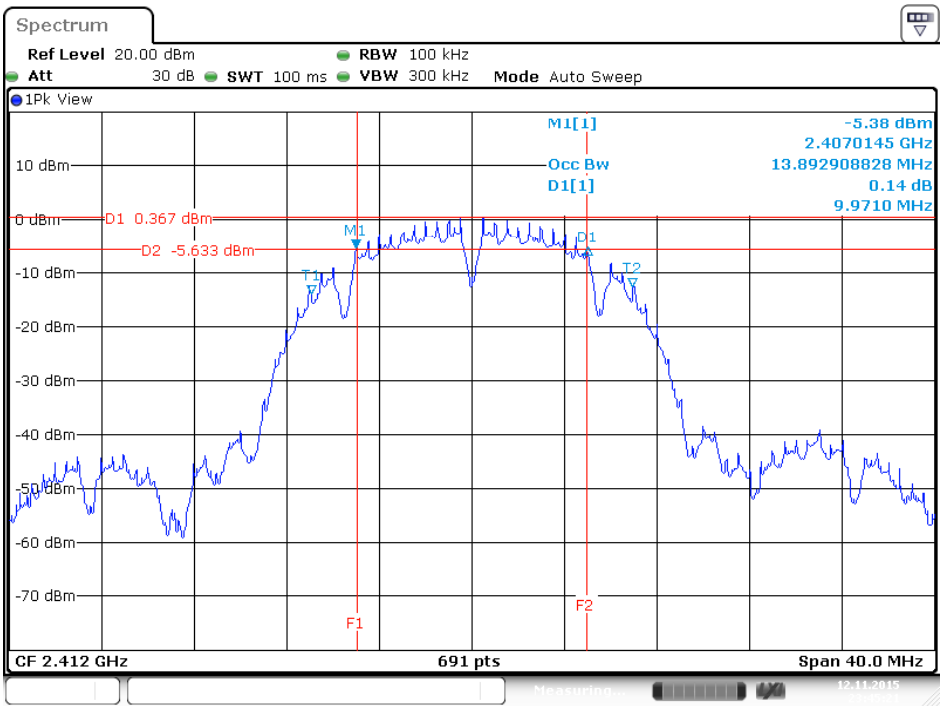
Temperature	25℃	Humidity	62%
Test Engineer	Lucas Huang		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	9.97	13.98	500	Complies
	2437 MHz	10.09	14.15	500	Complies
	2462 MHz	10.09	13.98	500	Complies
802.11g	2412 MHz	16.29	16.67	500	Complies
	2437 MHz	16.29	18.32	500	Complies
	2462 MHz	16.35	16.76	500	Complies
802.11n MCS0 HT20	2412 MHz	17.28	17.80	500	Complies
	2437 MHz	16.52	19.80	500	Complies
	2462 MHz	17.28	17.80	500	Complies
802.11n MCS0 HT40	2422 MHz	35.77	36.18	500	Complies
	2437 MHz	35.77	36.32	500	Complies
	2452 MHz	35.77	36.18	500	Complies

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

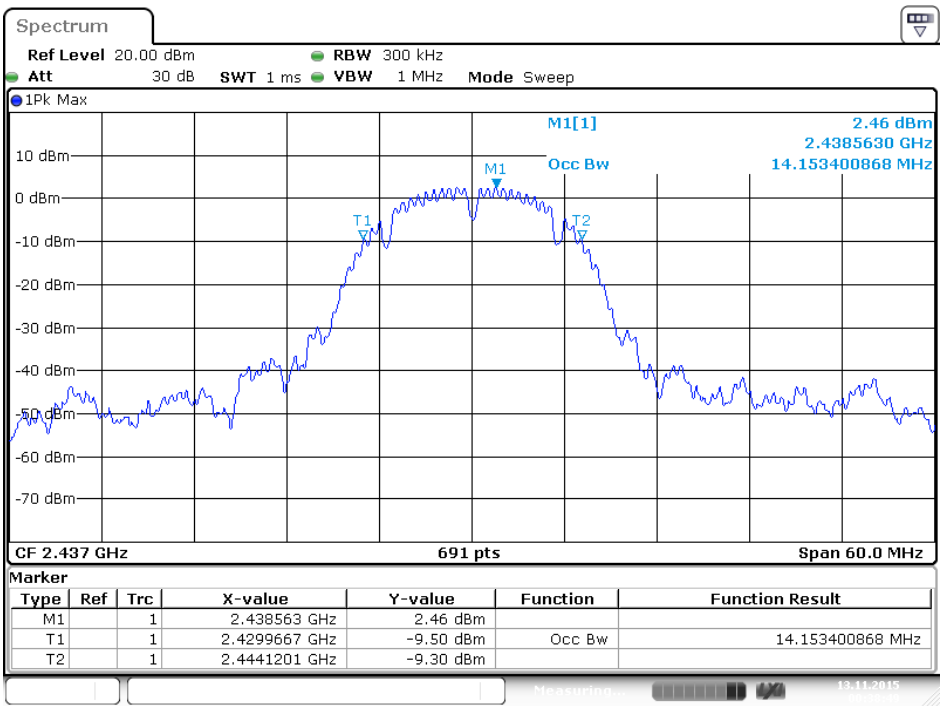
For plots, only the channel with worse result was shown.

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



Date: 12.NOV.2015 23:45:22

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

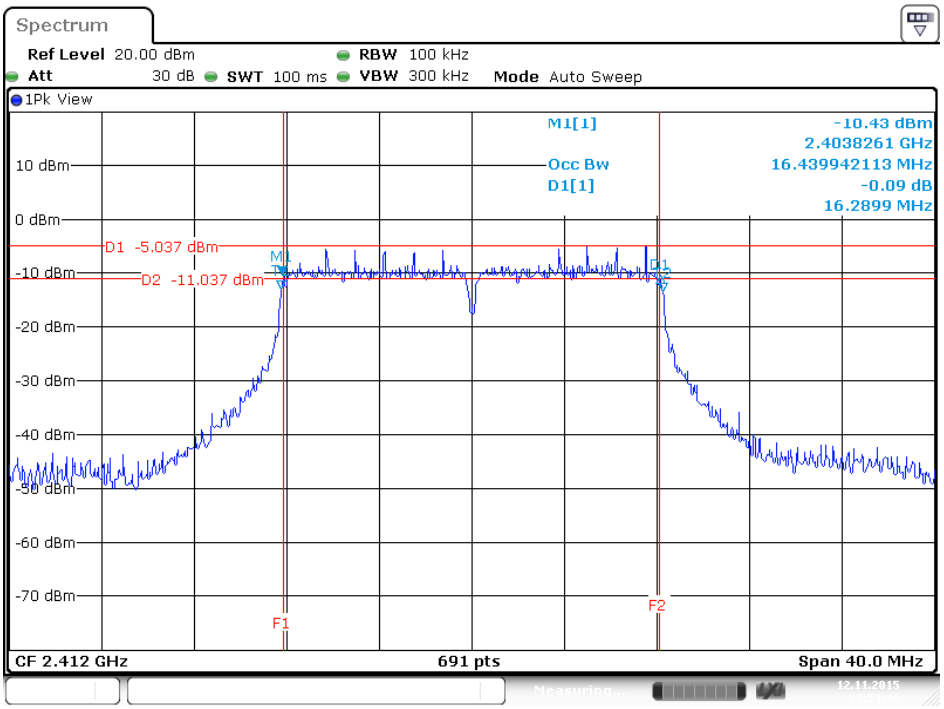


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.438563 GHz	2.46 dBm		
T1		1	2.4299667 GHz	-9.50 dBm	Occ Bw	14.153400868 MHz
T2		1	2.4441201 GHz	-9.30 dBm		

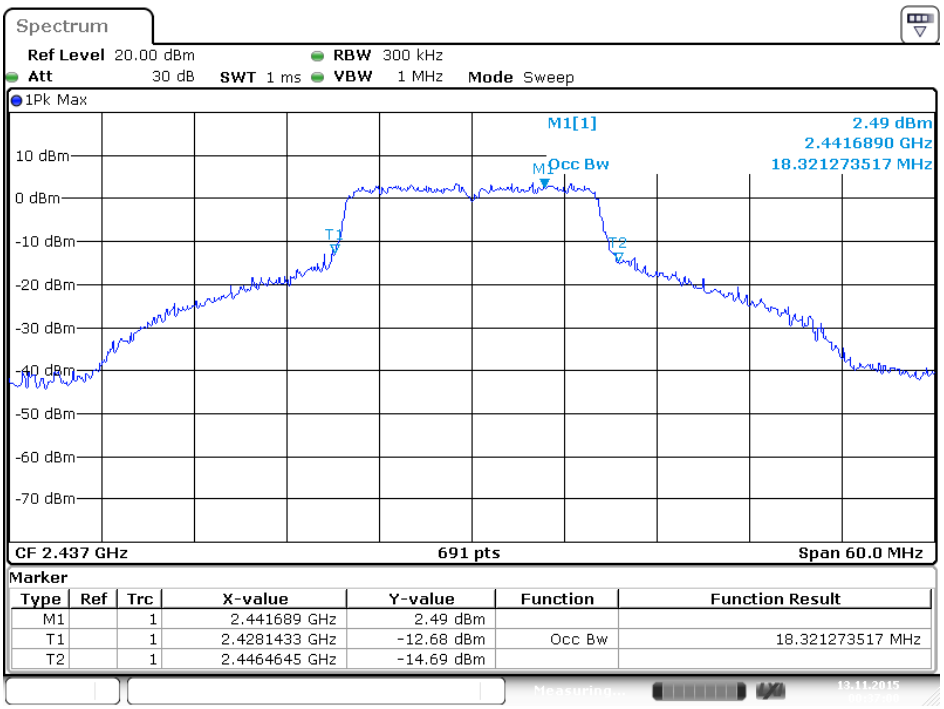
Date: 13.NOV.2015 00:38:49

6 dB Bandwidth Plot on Configuration IEEE 802.11g / 2412 MHz / Ant. 1



Date: 12.NOV.2015 23:53:41

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

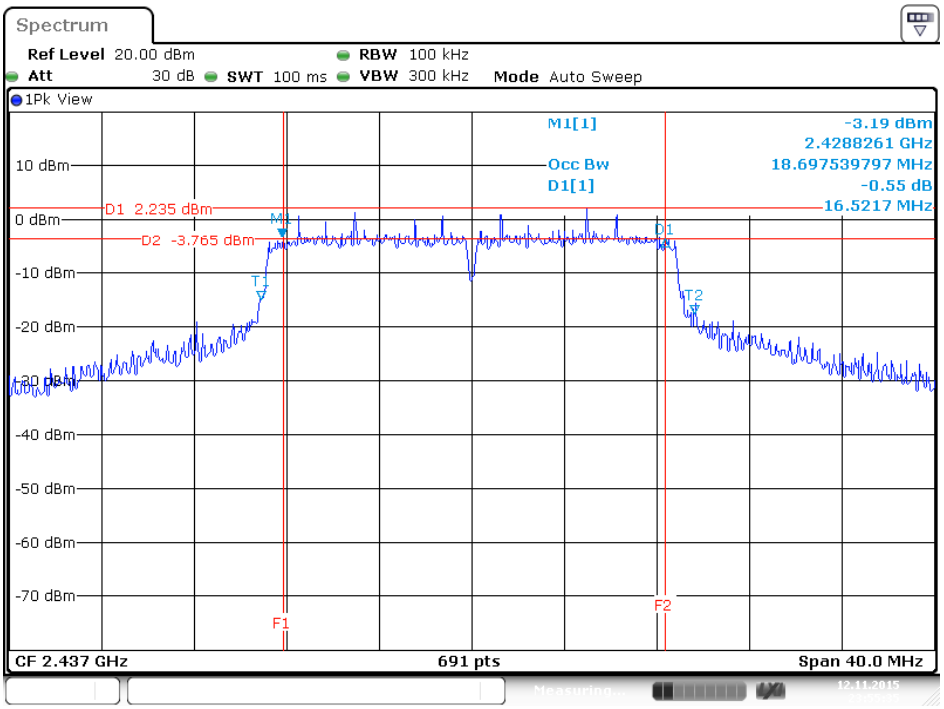


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.441689 GHz	2.49 dBm		
T1		1	2.4281433 GHz	-12.68 dBm	Occ Bw	18.321273517 MHz
T2		1	2.4464645 GHz	-14.69 dBm		

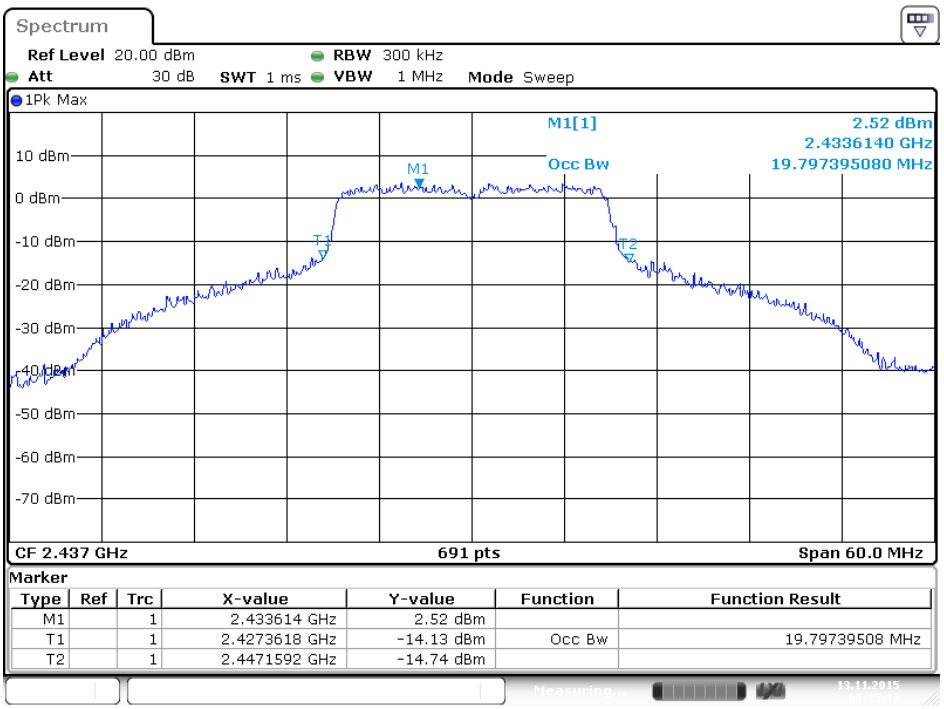
Date: 13.NOV.2015 00:37:00

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



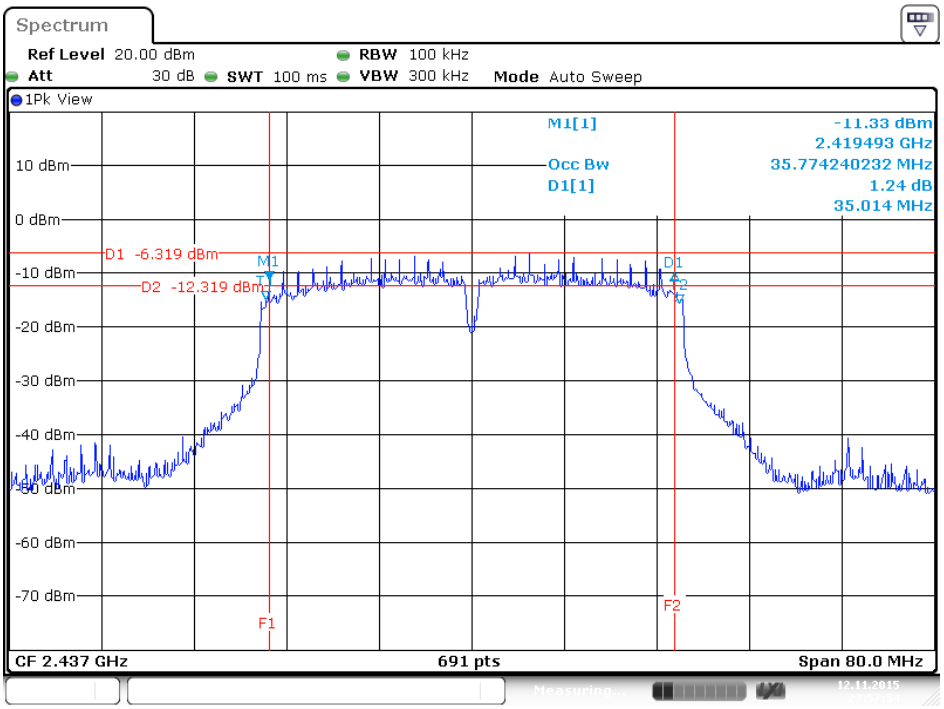
Date: 12.NOV.2015 23:55:35

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



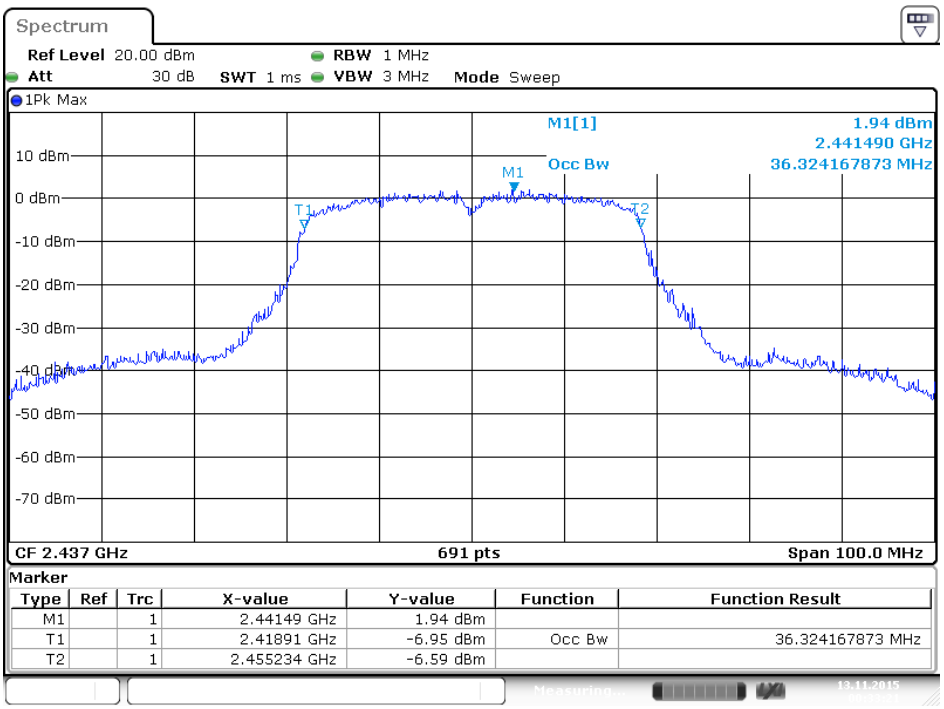
Date: 13.NOV.2015 00:35:13

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Ant. 1



Date: 12.NOV.2015 23:57:54

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437 MHz / Ant. 1



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.44149 GHz	1.94 dBm		
T1		1	2.41891 GHz	-6.95 dBm	Occ Bw	36.324167873 MHz
T2		1	2.455234 GHz	-6.59 dBm		

Date: 13.NOV.2015 00:33:21

For Ant. 2 (PIFA Ant.)

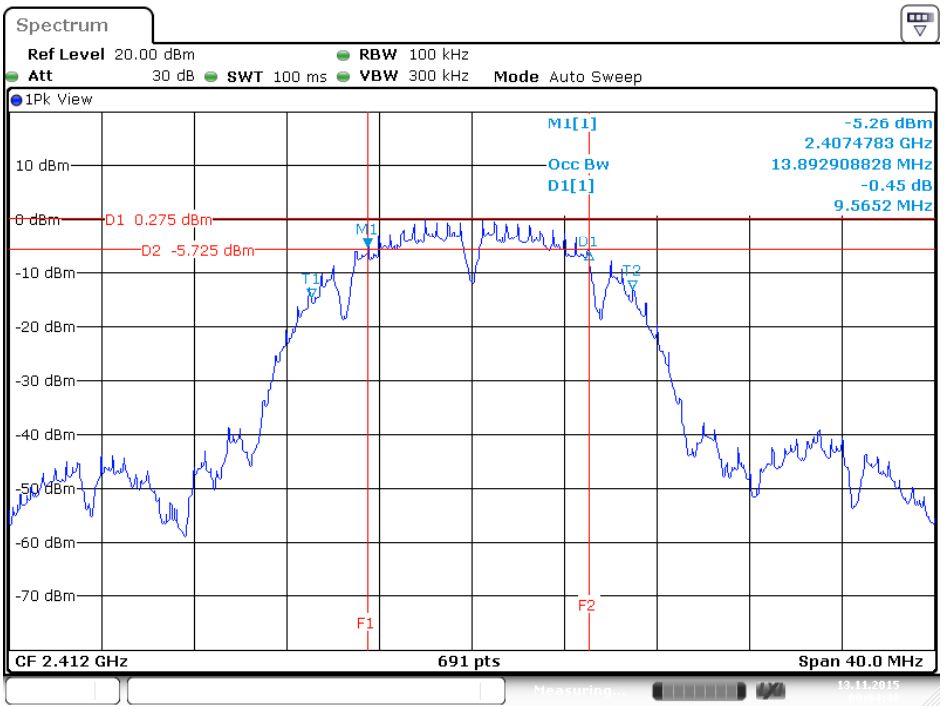
Temperature	25°C	Humidity	62%
Test Engineer	Lucas Huang		

Mode	Frequency	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Min. Limit (kHz)	Test Result
802.11b	2412 MHz	9.57	13.89	500	Complies
	2437 MHz	9.97	14.15	500	Complies
	2462 MHz	10.09	13.89	500	Complies
802.11g	2412 MHz	16.35	16.67	500	Complies
	2437 MHz	16.35	18.76	500	Complies
	2462 MHz	16.35	16.67	500	Complies
802.11n MCS0 HT20	2412 MHz	17.28	17.80	500	Complies
	2437 MHz	17.33	20.14	500	Complies
	2462 MHz	17.28	17.80	500	Complies
802.11n MCS0 HT40	2422 MHz	33.74	36.32	500	Complies
	2437 MHz	35.01	36.18	500	Complies
	2452 MHz	35.01	36.18	500	Complies

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

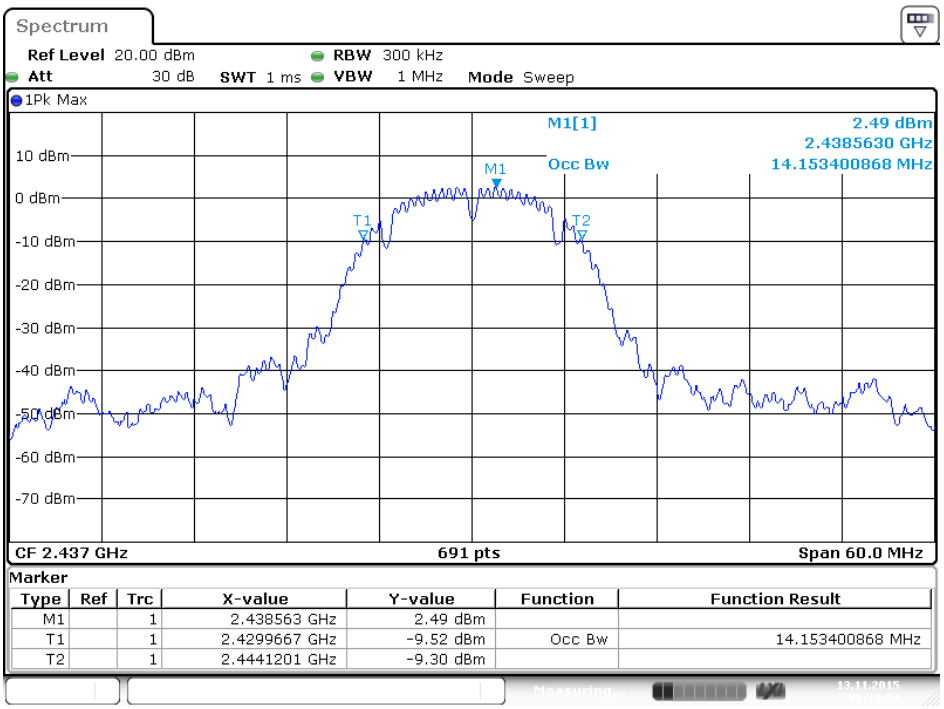
For plots, only the channel with worse result was shown.

6 dB Bandwidth Plot on Configuration IEEE 802.11b / 2412 MHz / Ant. 2



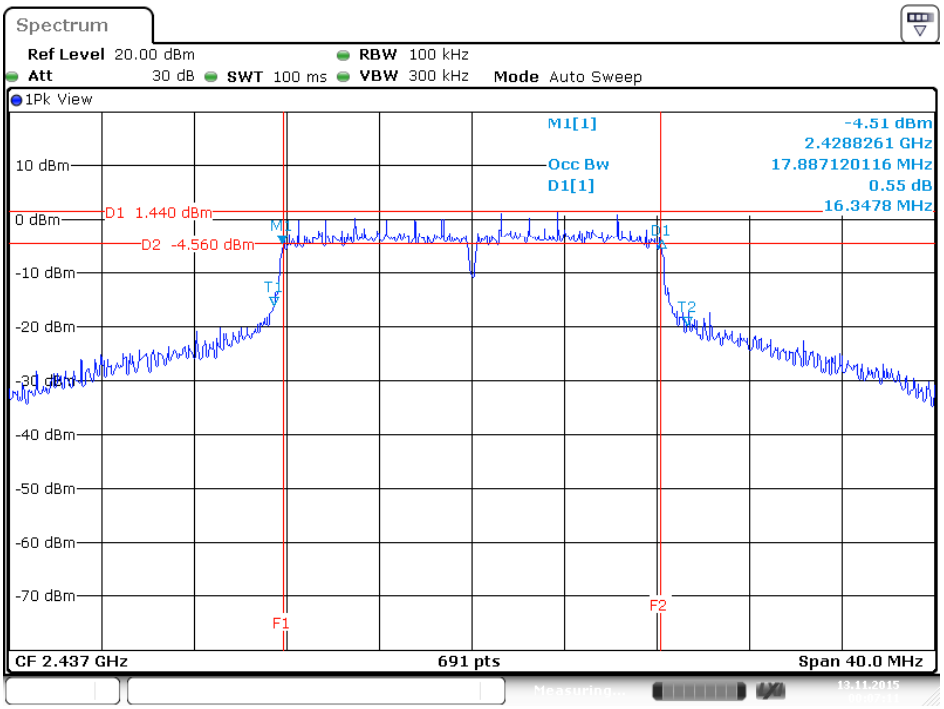
Date: 13.NOV.2015 00:04:40

99% Occupied Bandwidth Plot on Configuration IEEE 802.11b / 2437 MHz / Ant. 2



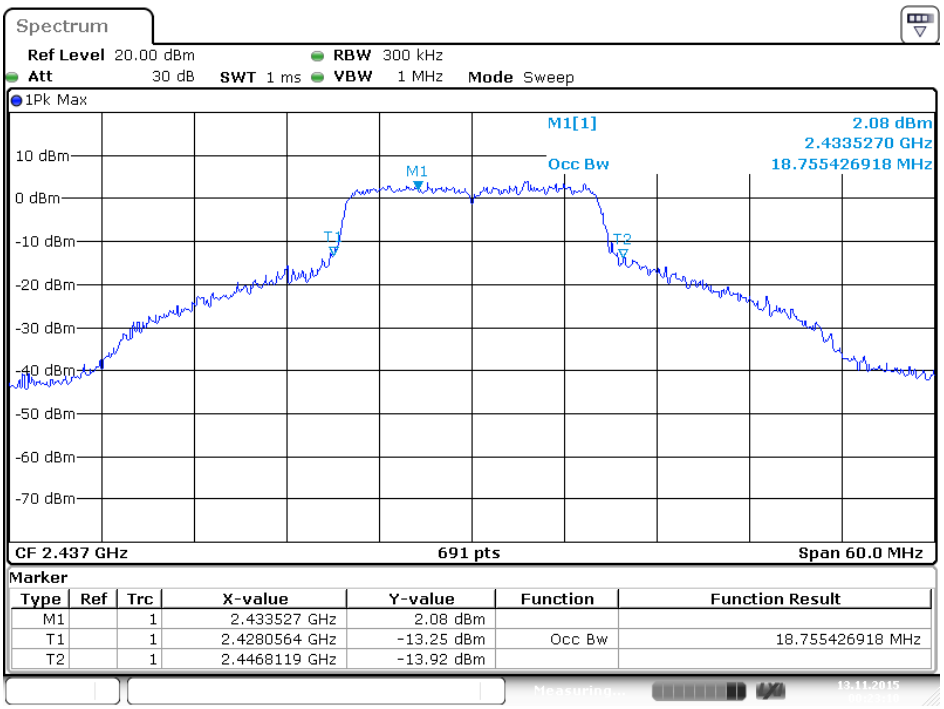
Date: 13.NOV.2015 00:19:54

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



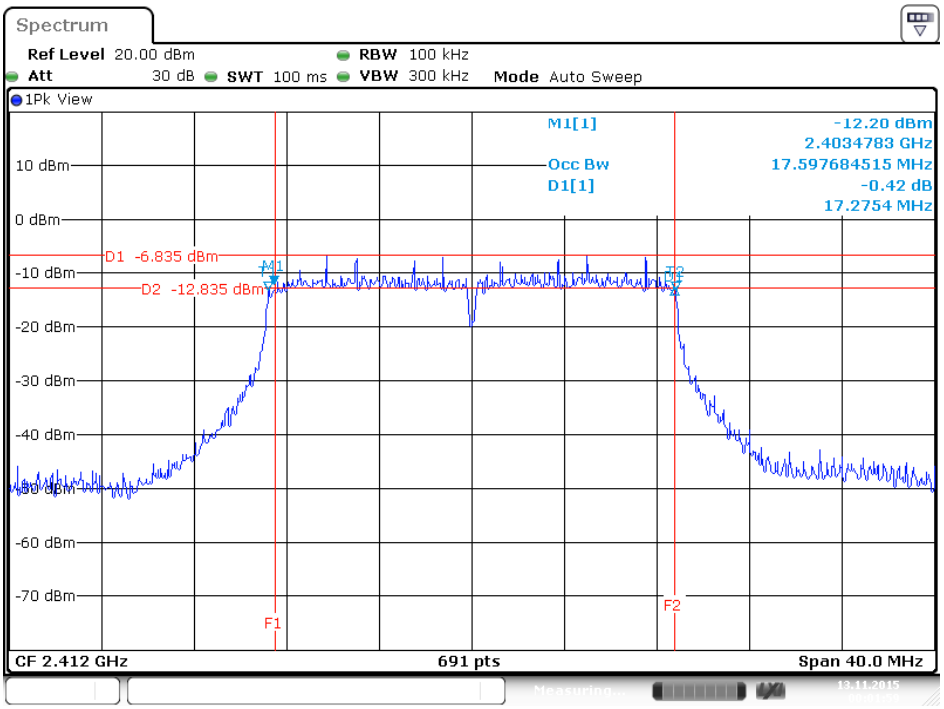
Date: 13.NOV.2015 00:07:12

99% Occupied Bandwidth Plot on Configuration IEEE 802.11g / 2437 MHz / Ant. 2



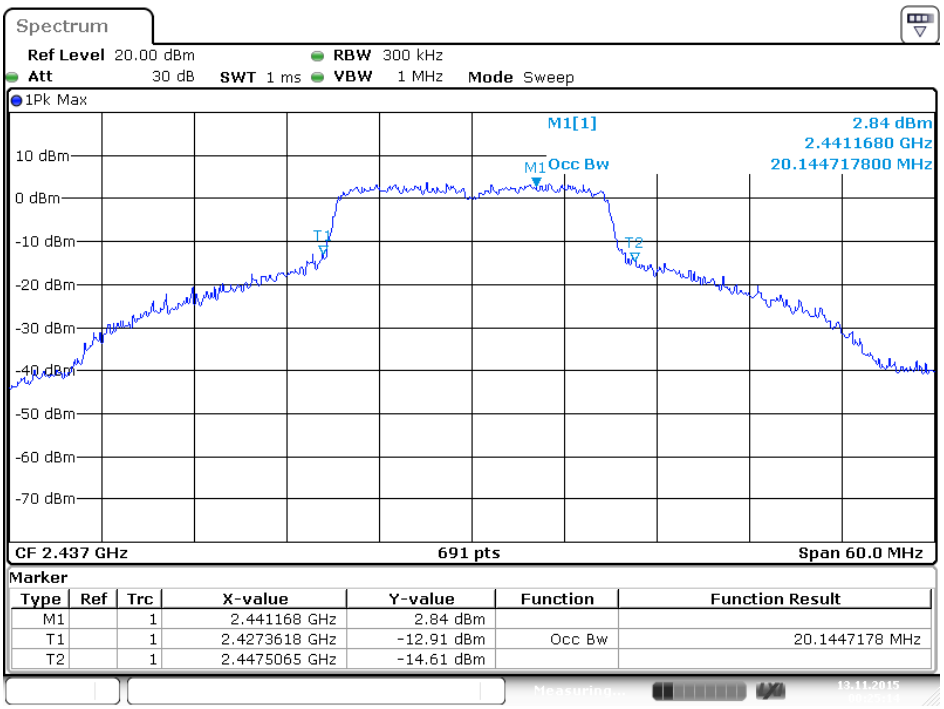
Date: 13.NOV.2015 00:23:10

6 dB Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412 MHz / Ant. 2



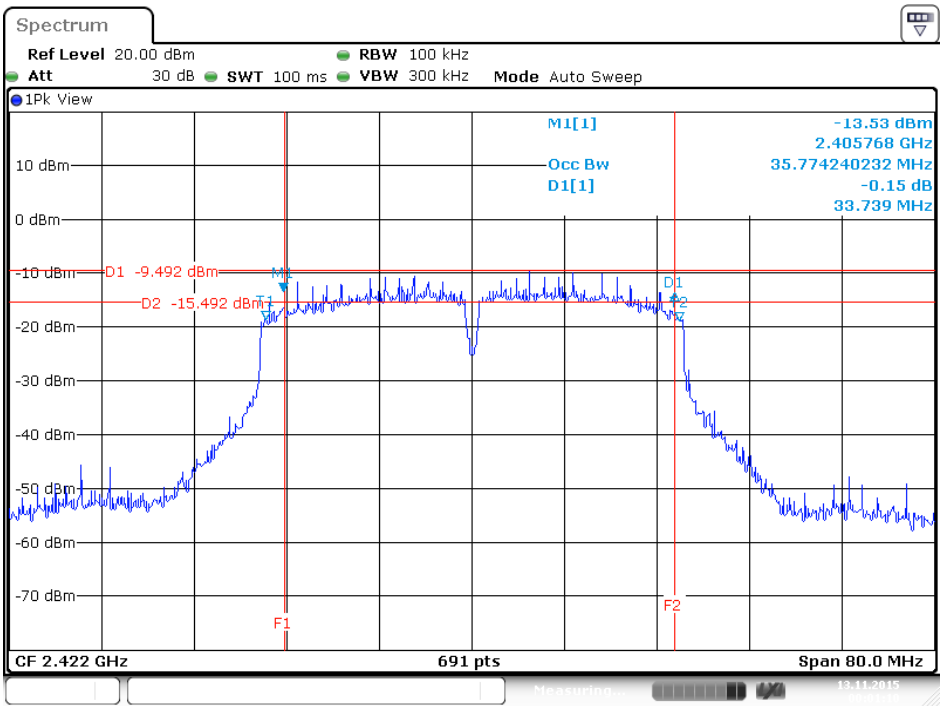
Date: 13.NOV.2015 00:01:59

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437 MHz / Ant. 2



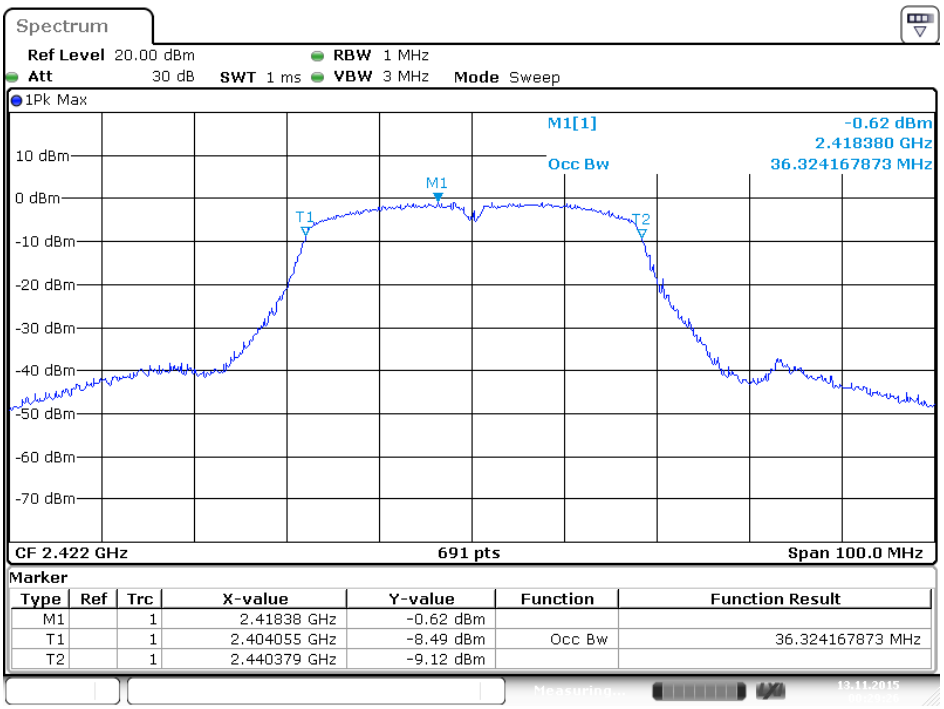
Date: 13.NOV.2015 00:25:14

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



Date: 13.NOV.2015 00:01:11

99% Occupied Bandwidth Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422 MHz / Ant. 2



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.41838 GHz	-0.62 dBm		
T1		1	2.404055 GHz	-8.49 dBm	Occ Bw	36.324167873 MHz
T2		1	2.440379 GHz	-9.12 dBm		

Date: 13.NOV.2015 00:29:26

4.5. Radiated Emissions Measurement

4.5.1. Limit

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

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.5.2. Measuring Instruments and Setting

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

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

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

4.5.3. Test Procedures

Radiated:

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.

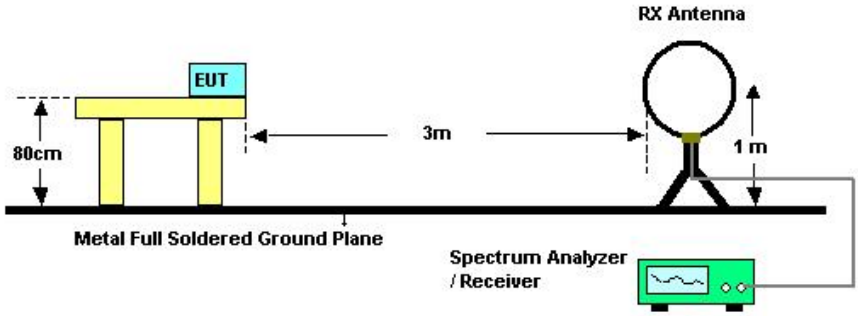
Conducted:

1. Configure the EUT according to KDB558074 D01 v03r04. The EUT was perform conducted measurement and measurement level added antenna gain shall be comply to section 4.5.1.

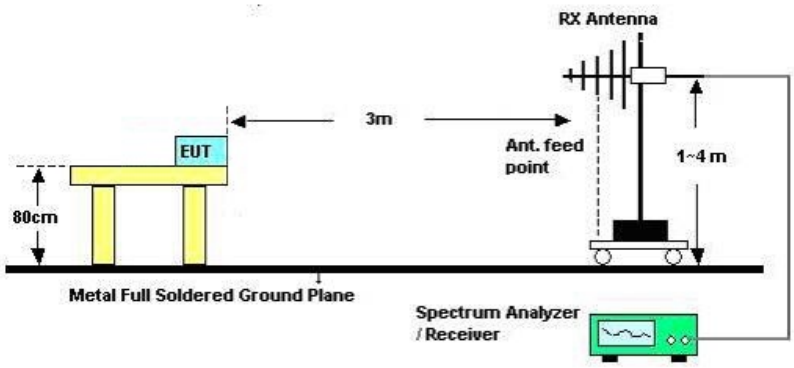
4.5.4. Test Setup Layout

Radiated:

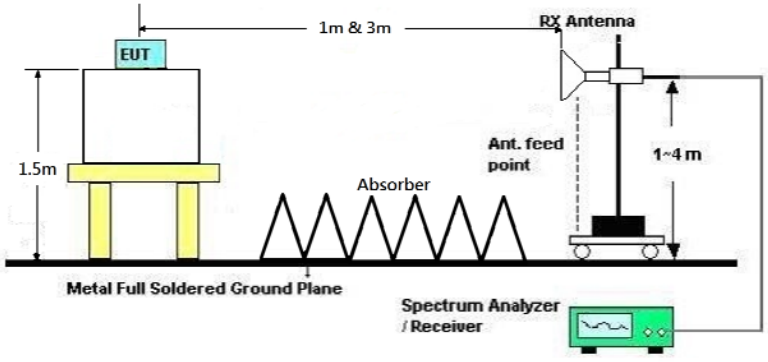
For Radiated Emissions: 9kHz ~30MHz



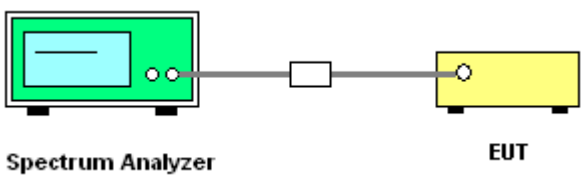
For Radiated Emissions: 30MHz~1GHz



For Radiated Emissions: Above 1GHz



Conducted:



4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

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

Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	Normal Link
Test Date	Jun. 20, 2015	Test Mode	Mode 1

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

Note:

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

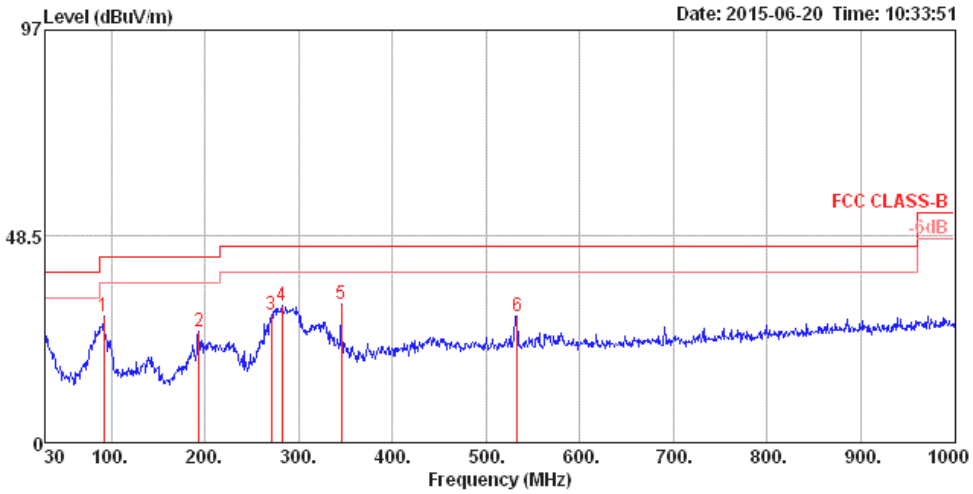
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

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

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

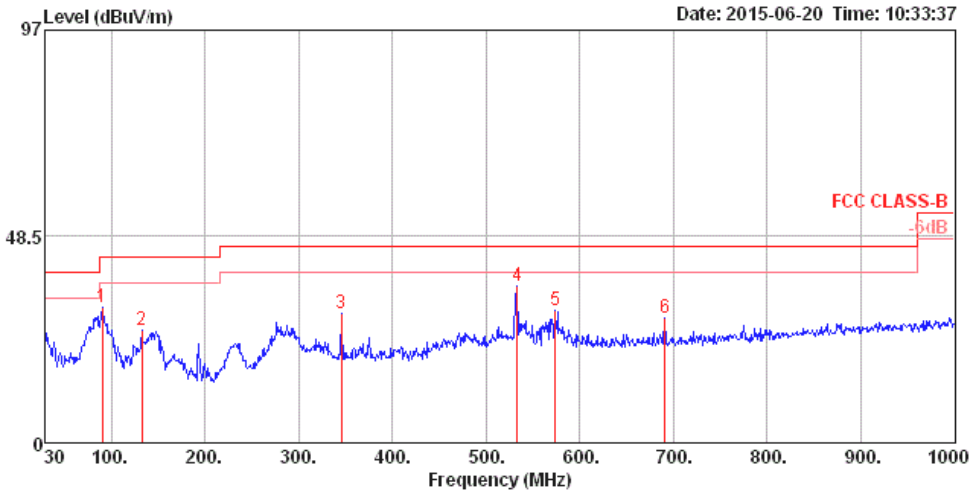
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	Normal Link
Test Mode	Mode 1		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	92.08	29.85	43.50	-13.65	44.91	1.14	9.67	25.87	200	97	HORIZONTAL	QP
2	193.93	26.21	43.50	-17.29	44.81	1.68	10.02	30.30	150	328	HORIZONTAL	QP
3	270.56	30.05	46.00	-15.95	44.46	1.99	13.40	29.80	100	176	HORIZONTAL	QP
4	282.20	32.07	46.00	-13.93	46.31	2.03	13.44	29.71	150	245	HORIZONTAL	QP
5	345.25	32.64	46.00	-13.36	44.23	2.30	15.07	28.96	100	360	HORIZONTAL	QP
6	533.43	29.80	46.00	-16.20	35.79	2.90	18.44	27.33	100	360	HORIZONTAL	QP

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	90.14	31.88	43.50	-11.62	47.30	1.13	9.27	25.82	125	20	VERTICAL	QP
2	132.82	26.54	43.50	-16.96	40.62	1.37	12.43	27.88	125	104	VERTICAL	QP
3	345.25	30.39	46.00	-15.61	41.98	2.30	15.07	28.96	200	165	VERTICAL	QP
4	533.43	36.70	46.00	-9.30	42.69	2.90	18.44	27.33	100	351	VERTICAL	QP
5	574.17	30.98	46.00	-15.02	36.83	3.03	18.85	27.73	150	360	VERTICAL	QP
6	690.57	29.18	46.00	-16.82	34.12	3.39	19.58	27.91	100	257	VERTICAL	QP

Note:

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

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

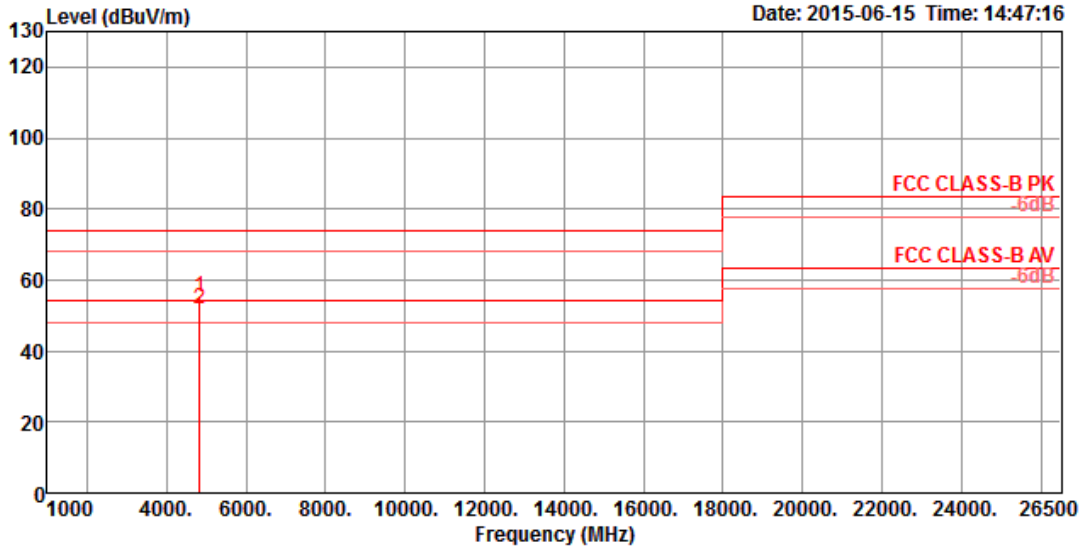
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

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

Radiated measurement:

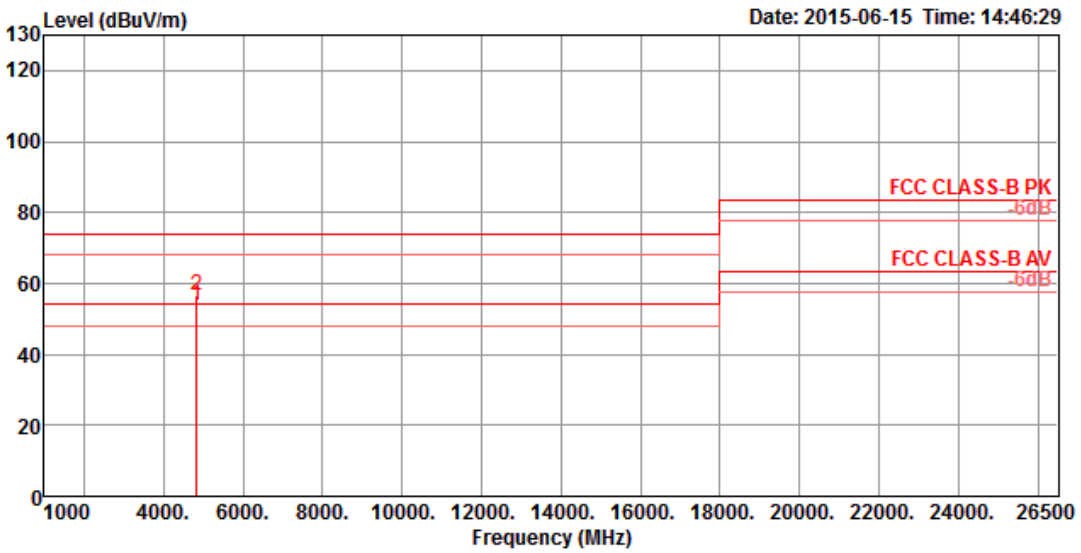
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 1
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.96	55.16	74.00	-18.84	50.72	7.05	33.70	31.09	HORIZONTAL	294	110	Peak
2	4823.97	51.75	54.00	-2.25	47.31	7.05	33.70	31.09	HORIZONTAL	294	110	Average

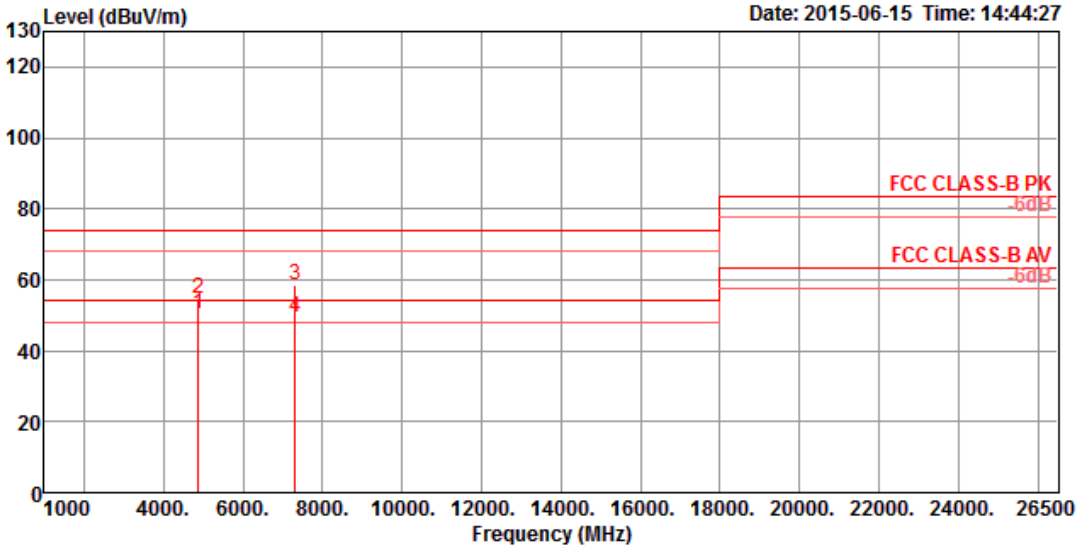
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4824.01	53.73	54.00	-0.27	49.30	7.05	33.70	31.08	VERTICAL	96	134	Average
2	4824.06	56.76	74.00	-17.24	52.33	7.05	33.70	31.08	VERTICAL	96	134	Peak

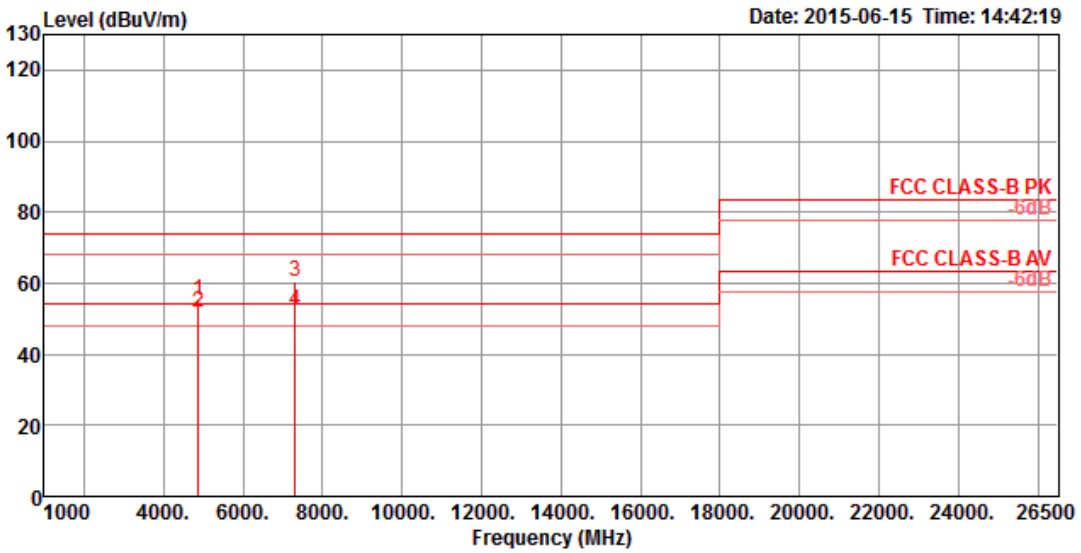
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 6
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4874.03	50.30	54.00	-3.70	45.71	7.09	33.68	31.18	HORIZONTAL	167	140	Average
2	4874.04	54.62	74.00	-19.38	50.03	7.09	33.68	31.18	HORIZONTAL	167	140	Peak
3	7309.52	58.40	74.00	-15.60	47.49	8.86	34.00	36.05	HORIZONTAL	182	120	Peak
4	7310.23	49.54	54.00	-4.46	38.63	8.86	34.00	36.05	HORIZONTAL	182	120	Average

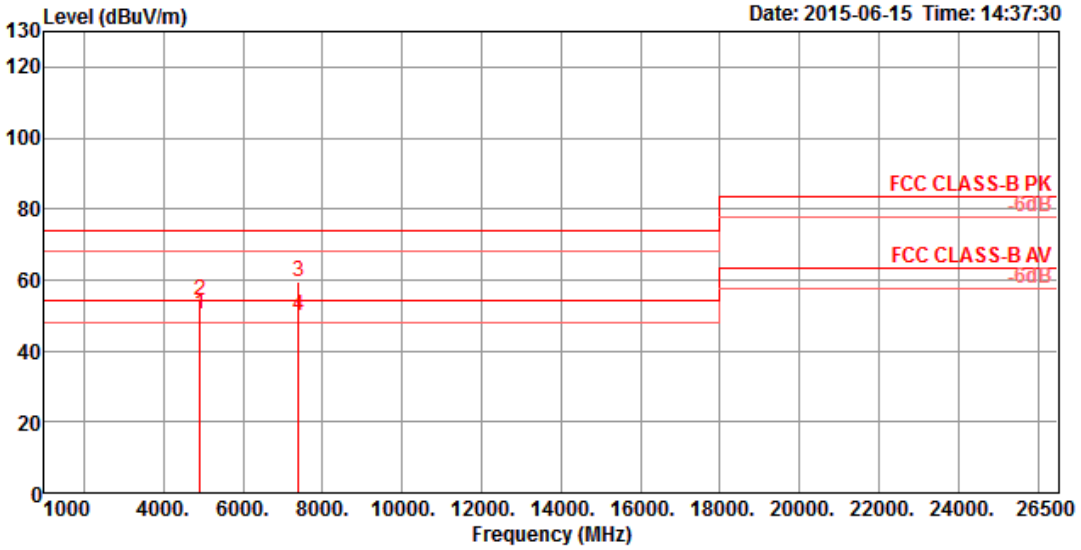
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4873.86	55.19	74.00	-18.81	50.60	7.09	33.68	31.18	VERTICAL	96	145	Peak
2	4873.97	51.74	54.00	-2.26	47.15	7.09	33.68	31.18	VERTICAL	96	145	Average
3	7309.63	60.55	74.00	-13.45	49.64	8.86	34.00	36.05	VERTICAL	76	145	Peak
4	7310.22	52.46	54.00	-1.54	41.55	8.86	34.00	36.05	VERTICAL	76	145	Average

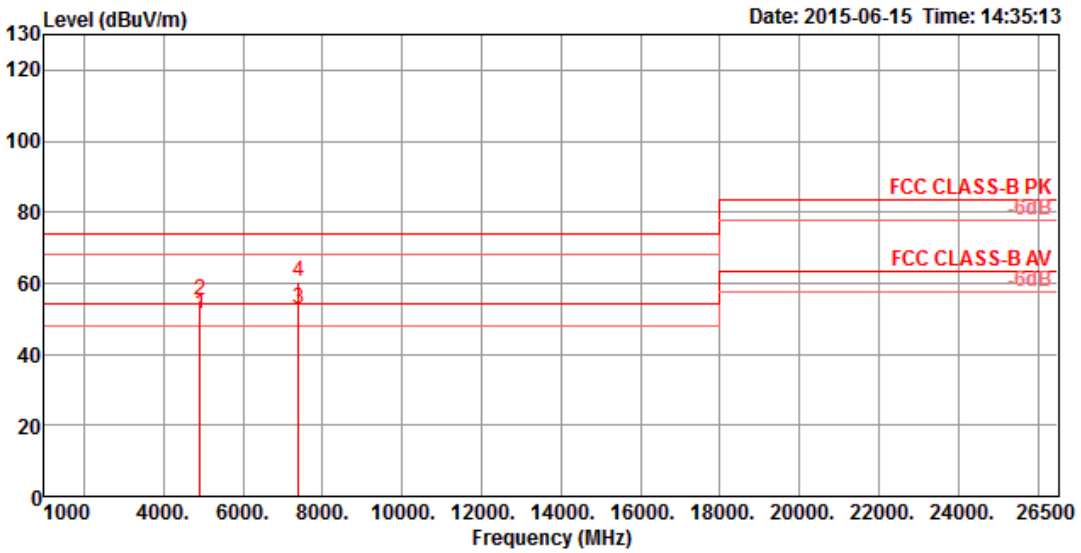
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11b CH 11
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.01	50.41	54.00	-3.59	45.68	7.13	33.67	31.27	HORIZONTAL	211	100	Average
2	4924.04	54.38	74.00	-19.62	49.65	7.13	33.67	31.27	HORIZONTAL	211	100	Peak
3	7384.34	59.31	74.00	-14.69	48.23	8.92	34.07	36.23	HORIZONTAL	219	100	Peak
4	7385.25	49.83	54.00	-4.17	38.75	8.92	34.07	36.23	HORIZONTAL	219	100	Average

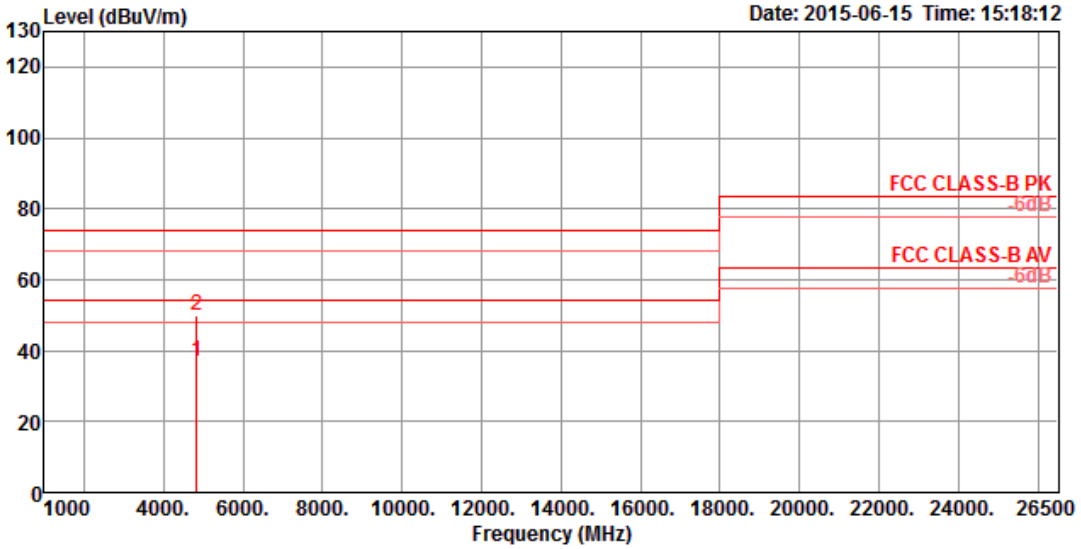
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4924.00	51.24	54.00	-2.76	46.50	7.13	33.67	31.28	VERTICAL	98	146	Average
2	4924.03	55.04	74.00	-18.96	50.30	7.13	33.67	31.28	VERTICAL	98	146	Peak
3	7385.26	52.83	54.00	-1.17	41.73	8.92	34.07	36.25	VERTICAL	84	148	Average
4	7387.93	60.59	74.00	-13.41	49.49	8.92	34.07	36.25	VERTICAL	84	148	Peak

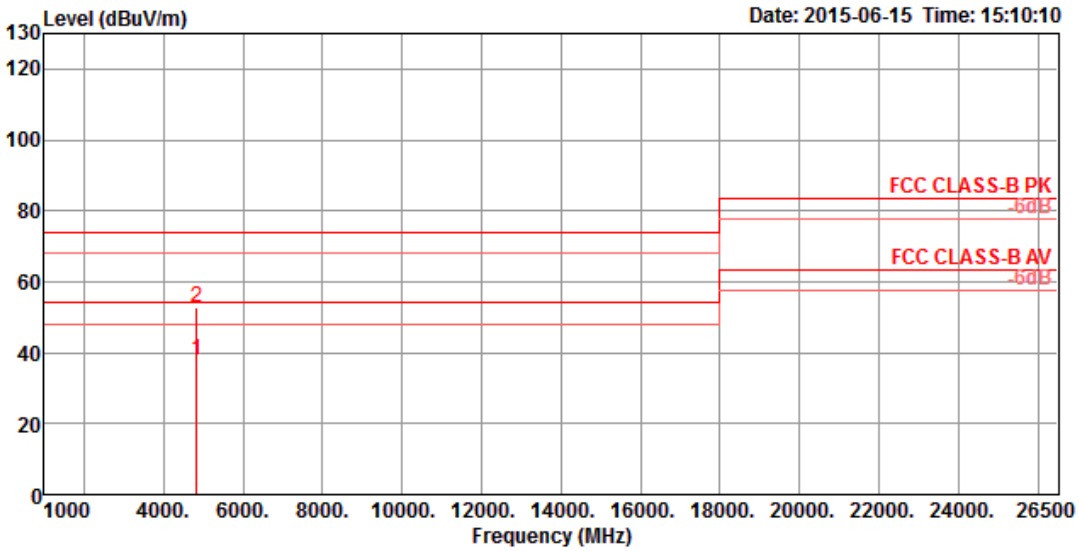
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 1
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4822.99	36.82	54.00	-17.18	32.38	7.05	33.70	31.09	HORIZONTAL	106	116	Average
2	4825.30	49.78	74.00	-24.22	45.32	7.06	33.70	31.10	HORIZONTAL	106	116	Peak

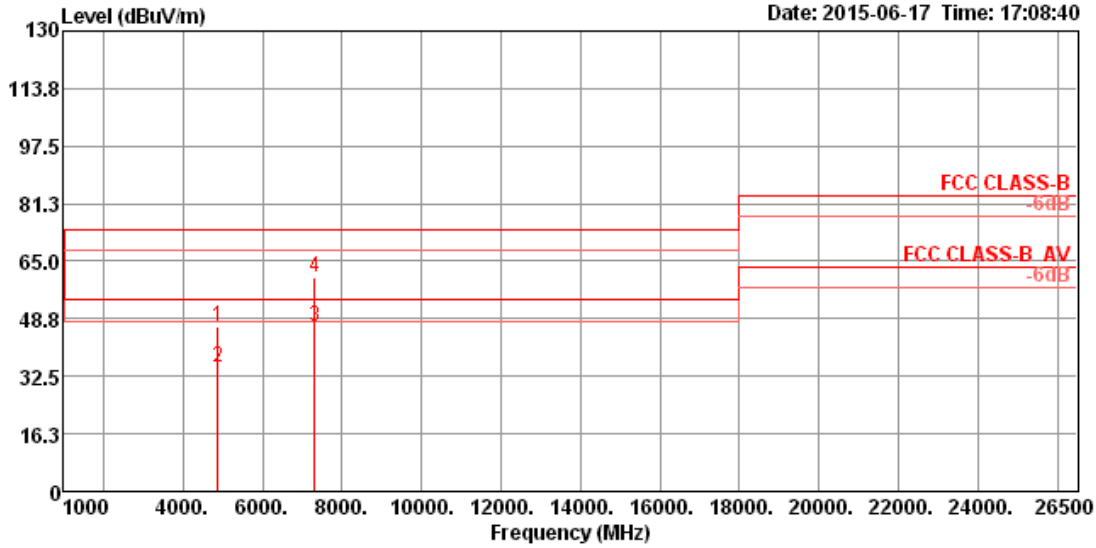
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4823.65	37.67	54.00	-16.33	33.24	7.05	33.70	31.08	VERTICAL	98	160	Average
2	4826.14	52.65	74.00	-21.35	48.18	7.06	33.70	31.11	VERTICAL	98	160	Peak

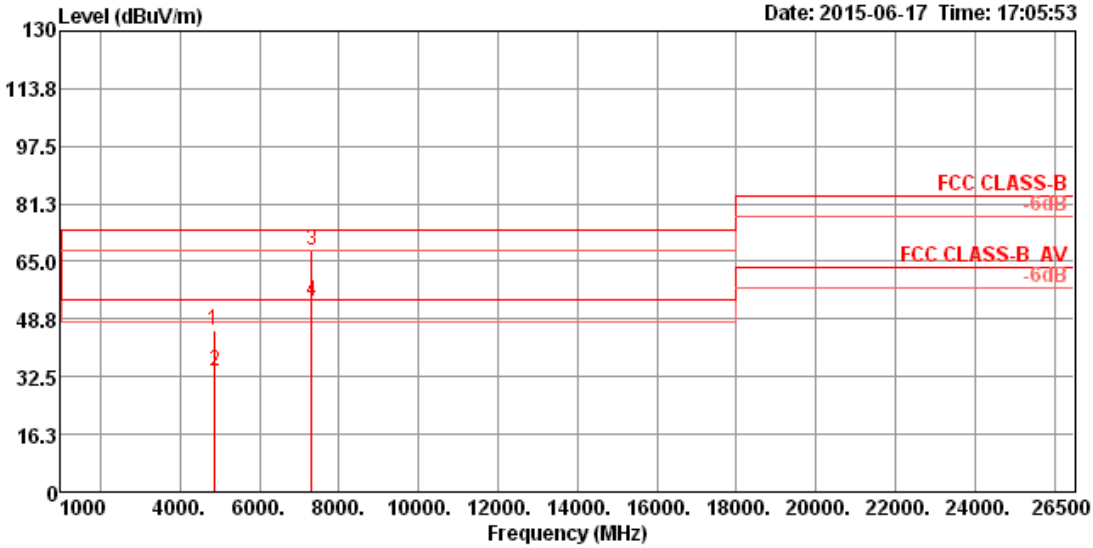
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 6
Test Date	Jun. 17, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4869.19	46.33	74.00	-27.67	40.10	6.08	33.23	33.08	Peak	168	202	HORIZONTAL
2	4875.60	35.12	54.00	-18.88	28.89	6.08	33.23	33.08	Average	168	202	HORIZONTAL
3	7313.48	46.55	54.00	-7.45	35.64	8.30	36.08	33.47	Average	227	126	HORIZONTAL
4	7313.56	60.57	74.00	-13.43	49.66	8.30	36.08	33.47	Peak	227	126	HORIZONTAL

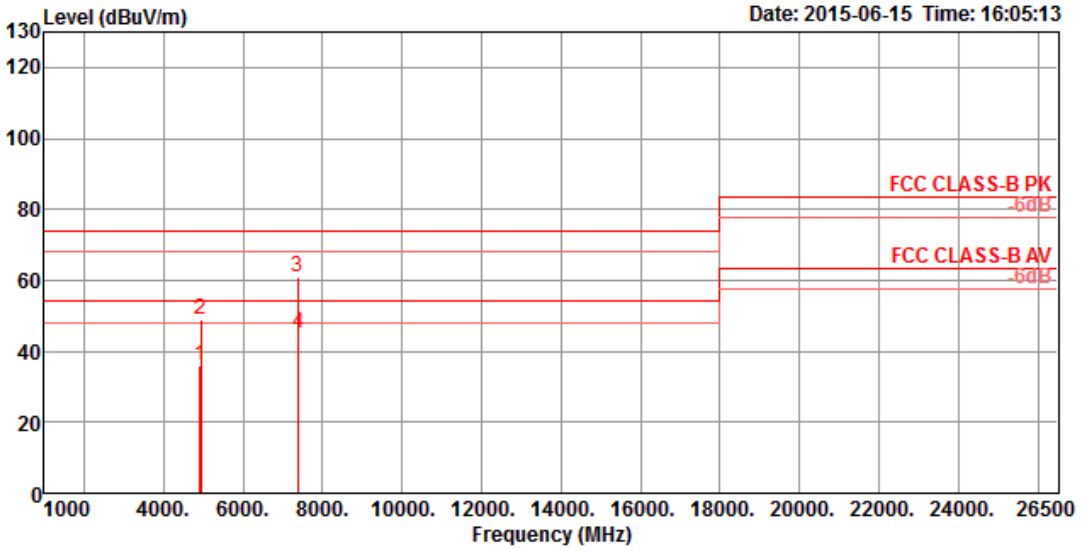
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4849.08	45.36	74.00	-28.64	39.18	6.10	33.16	33.08	Peak	163	201	VERTICAL
2	4879.61	34.21	54.00	-19.79	27.98	6.08	33.23	33.08	Average	163	201	VERTICAL
3	7307.31	68.04	74.00	-5.96	57.15	8.28	36.08	33.47	Peak	233	168	VERTICAL
4	7307.56	53.68	54.00	-0.32	42.79	8.28	36.08	33.47	Average	233	168	VERTICAL

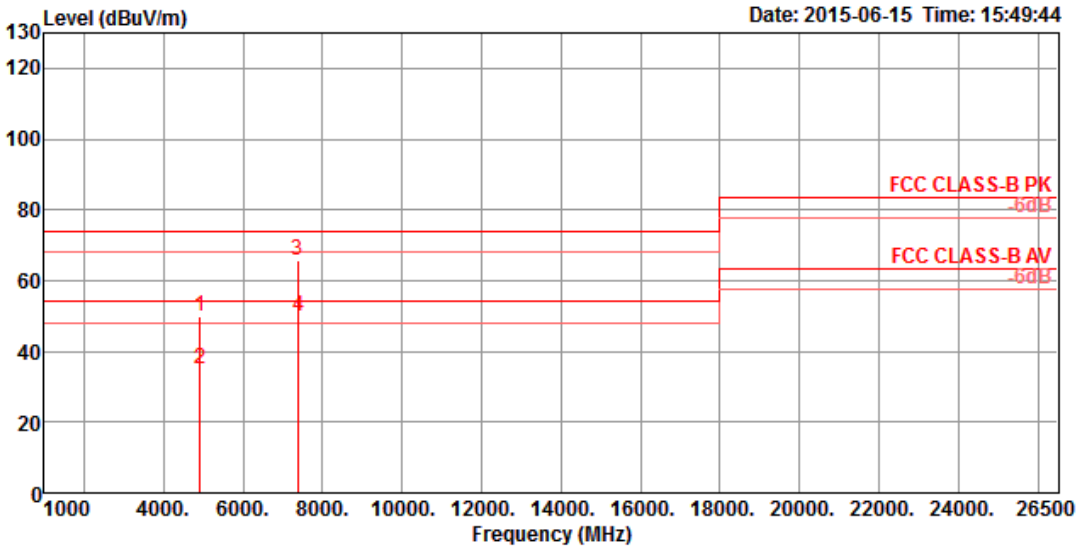
Temperature	22℃	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11g CH 11
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.78	35.89	54.00	-18.11	31.16	7.13	33.67	31.27	HORIZONTAL	169	150	Average
2	4926.97	48.81	74.00	-25.19	44.08	7.13	33.67	31.27	HORIZONTAL	169	150	Peak
3	7383.03	60.87	74.00	-13.13	49.79	8.92	34.07	36.23	HORIZONTAL	337	232	Peak
4	7384.12	45.00	54.00	-9.00	33.92	8.92	34.07	36.23	HORIZONTAL	337	232	Average

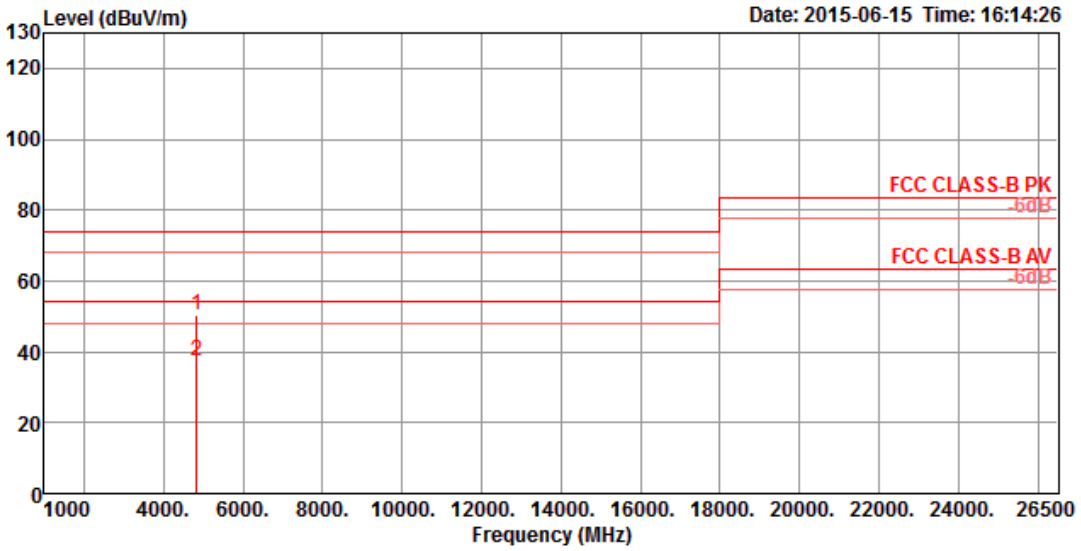
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4917.56	49.77	74.00	-24.23	45.07	7.12	33.67	31.25	VERTICAL	221	172	Peak
2	4923.64	35.21	54.00	-18.79	30.47	7.13	33.67	31.28	VERTICAL	221	172	Average
3	7379.34	65.49	74.00	-8.51	54.43	8.92	34.06	36.20	VERTICAL	87	238	Peak
4	7384.19	49.87	54.00	-4.13	38.77	8.92	34.07	36.25	VERTICAL	87	238	Average

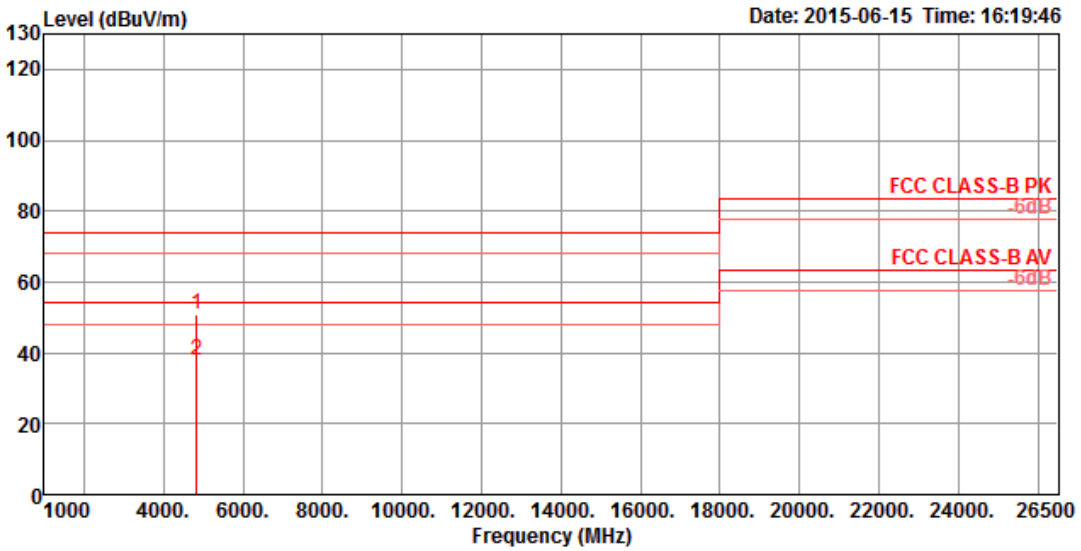
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 1
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4822.12	50.43	74.00	-23.57	45.99	7.05	33.70	31.09	HORIZONTAL	298	106	Peak
2	4823.93	37.61	54.00	-16.39	33.17	7.05	33.70	31.09	HORIZONTAL	298	106	Average

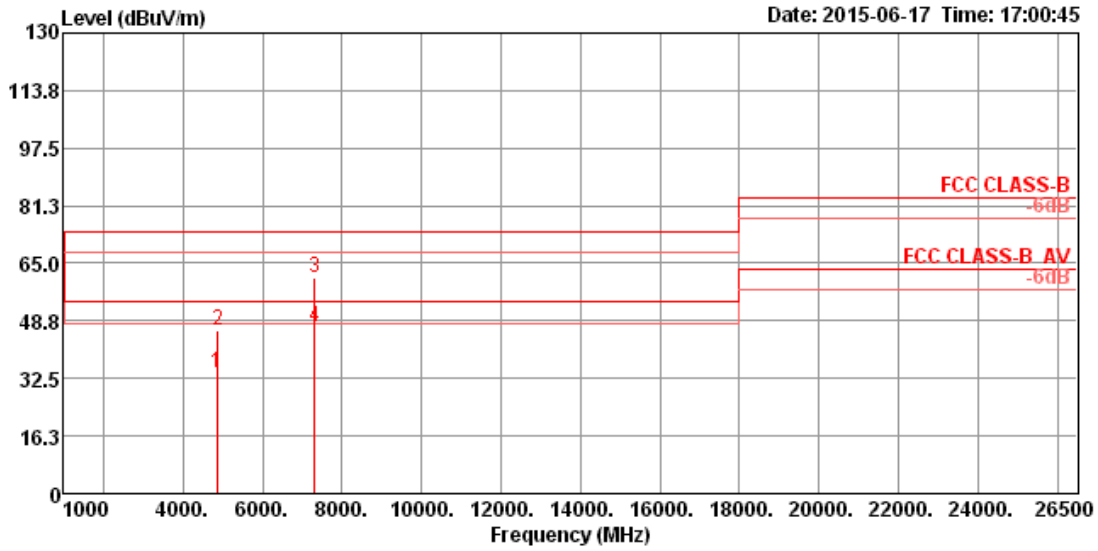
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4824.36	50.96	74.00	-23.04	46.53	7.05	33.70	31.08	VERTICAL	94	159	Peak
2	4825.16	37.75	54.00	-16.25	33.28	7.06	33.70	31.11	VERTICAL	94	159	Average

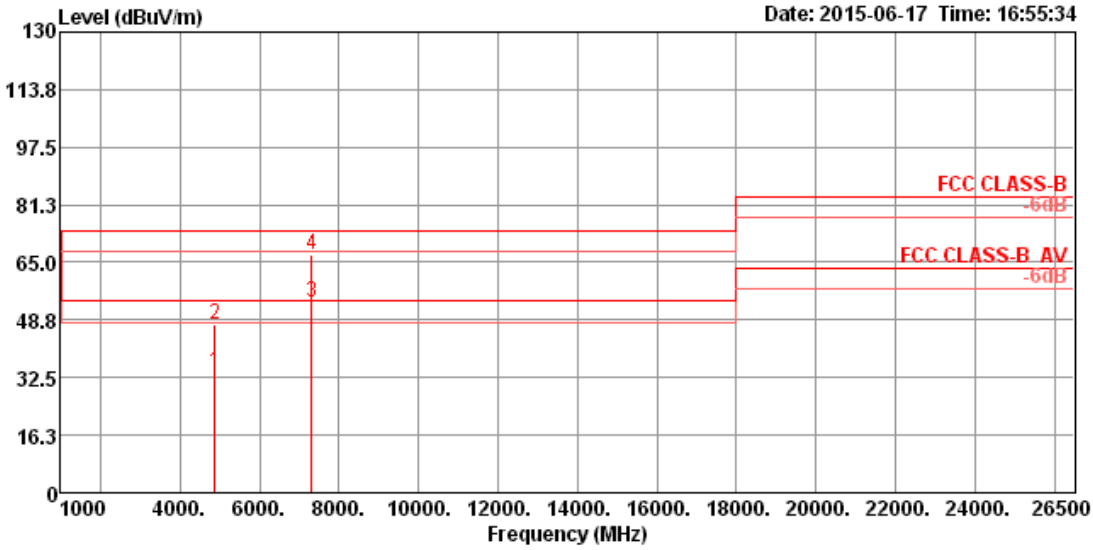
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 6
Test Date	Jun. 17, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4856.21	33.93	54.00	-20.07	27.71	6.10	33.20	33.08	Average	157	160	HORIZONTAL
2	4871.68	46.27	74.00	-27.73	40.04	6.08	33.23	33.08	Peak	157	160	HORIZONTAL
3	7302.43	60.80	74.00	-13.20	49.91	8.28	36.08	33.47	Peak	216	128	HORIZONTAL
4	7313.08	47.21	54.00	-6.79	36.30	8.30	36.08	33.47	Average	216	128	HORIZONTAL

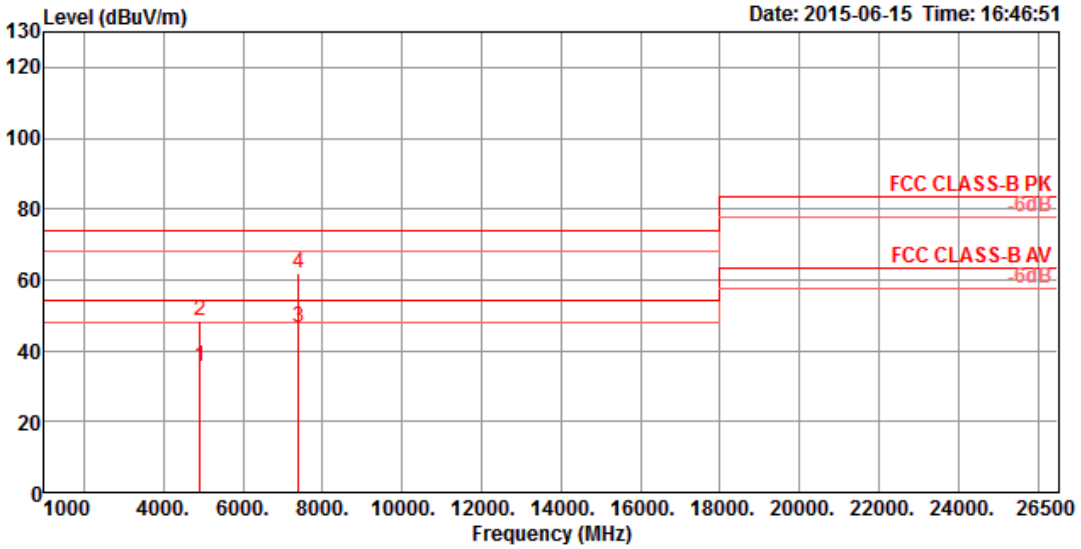
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	4875.76	34.20	54.00	-19.80	27.97	6.08	33.23	33.08	Average	161	250	VERTICAL
2	4876.72	47.34	74.00	-26.66	41.11	6.08	33.23	33.08	Peak	161	250	VERTICAL
3	7314.21	53.69	54.00	-0.31	42.78	8.30	36.08	33.47	Average	124	99	VERTICAL
4	7316.45	67.26	74.00	-6.74	56.31	8.30	36.12	33.47	Peak	124	99	VERTICAL

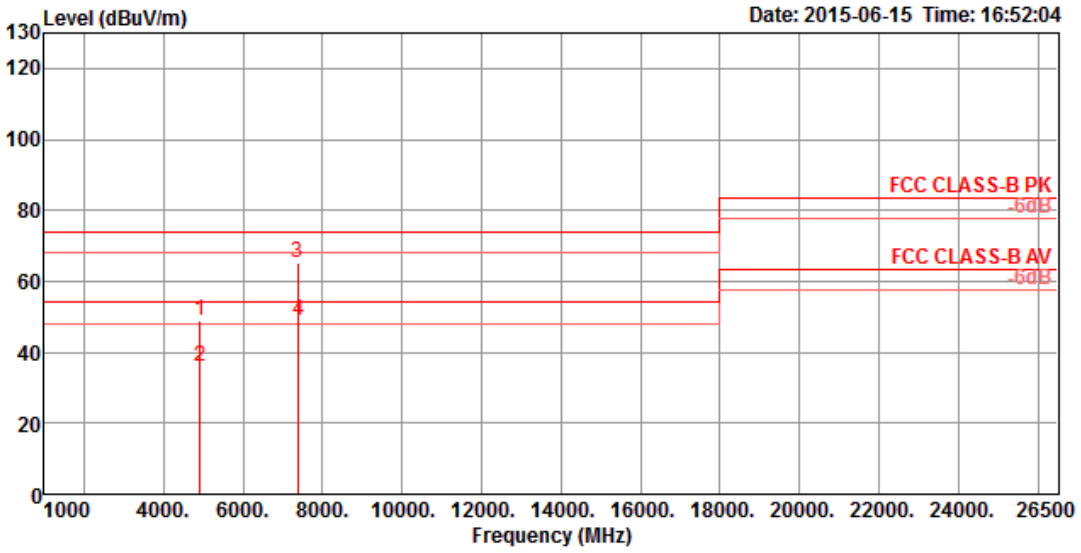
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT20 CH 11
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.71	35.63	54.00	-18.37	30.90	7.13	33.67	31.27	HORIZONTAL	211	135	Average
2	4924.72	48.48	74.00	-25.52	43.75	7.13	33.67	31.27	HORIZONTAL	211	135	Peak
3	7384.05	46.63	54.00	-7.37	35.55	8.92	34.07	36.23	HORIZONTAL	53	107	Average
4	7386.00	61.85	74.00	-12.15	50.77	8.92	34.07	36.23	HORIZONTAL	53	107	Peak

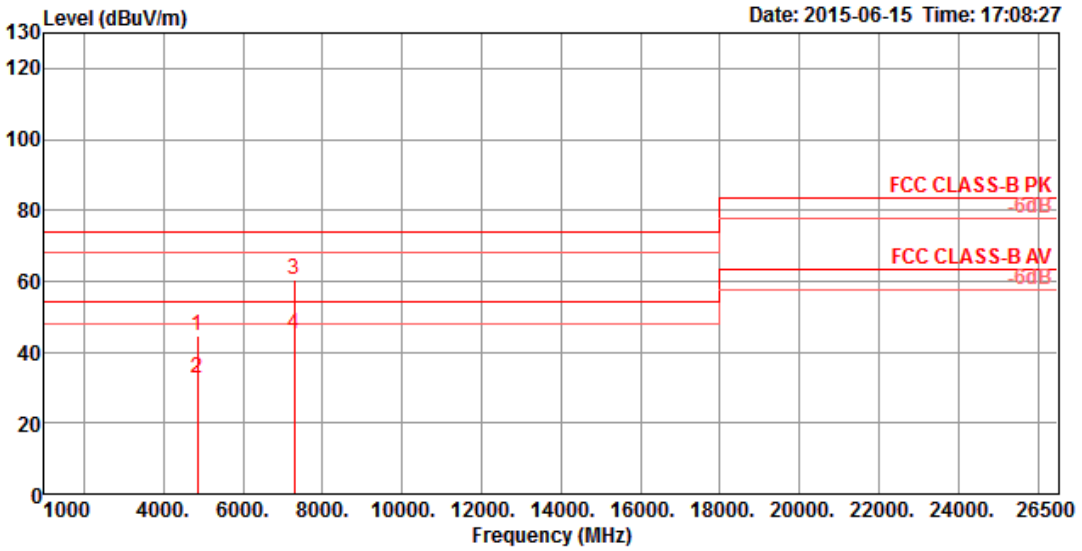
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4921.40	49.05	74.00	-24.95	44.35	7.12	33.67	31.25	VERTICAL	319	112	Peak
2	4924.07	36.03	54.00	-17.97	31.29	7.13	33.67	31.28	VERTICAL	319	112	Average
3	7380.79	65.05	74.00	-8.95	53.94	8.92	34.06	36.25	VERTICAL	88	102	Peak
4	7383.97	48.97	54.00	-5.03	37.87	8.92	34.07	36.25	VERTICAL	88	102	Average

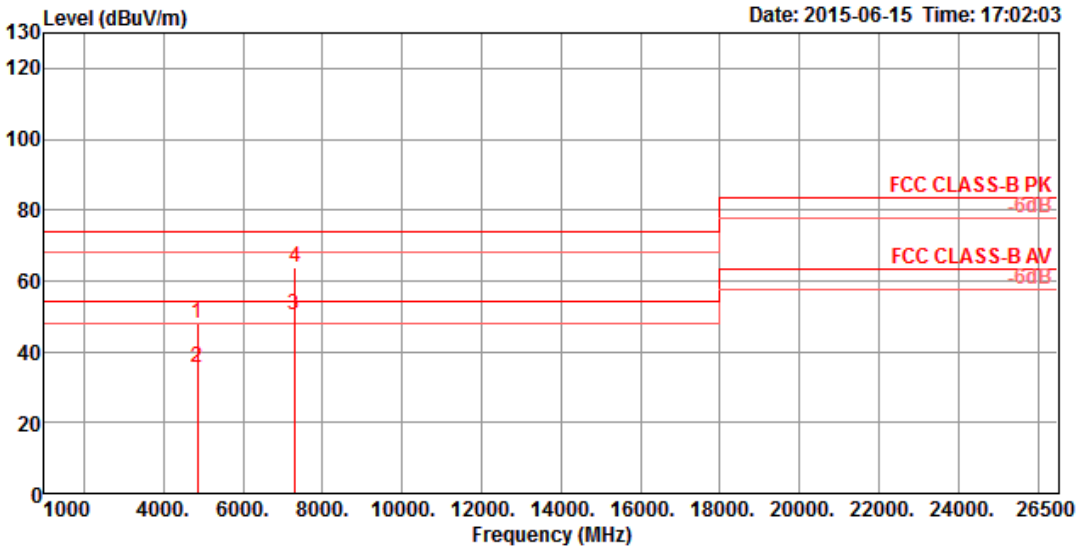
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT40 CH 3
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4844.00	44.50	74.00	-29.50	40.00	7.07	33.70	31.13	HORIZONTAL	0	176	Peak
2	4856.01	32.51	54.00	-21.49	27.97	7.08	33.69	31.15	HORIZONTAL	0	176	Average
3	7289.73	60.24	74.00	-13.76	49.36	8.85	33.98	36.01	HORIZONTAL	60	223	Peak
4	7295.38	45.22	54.00	-8.78	34.33	8.85	33.98	36.02	HORIZONTAL	60	223	Average

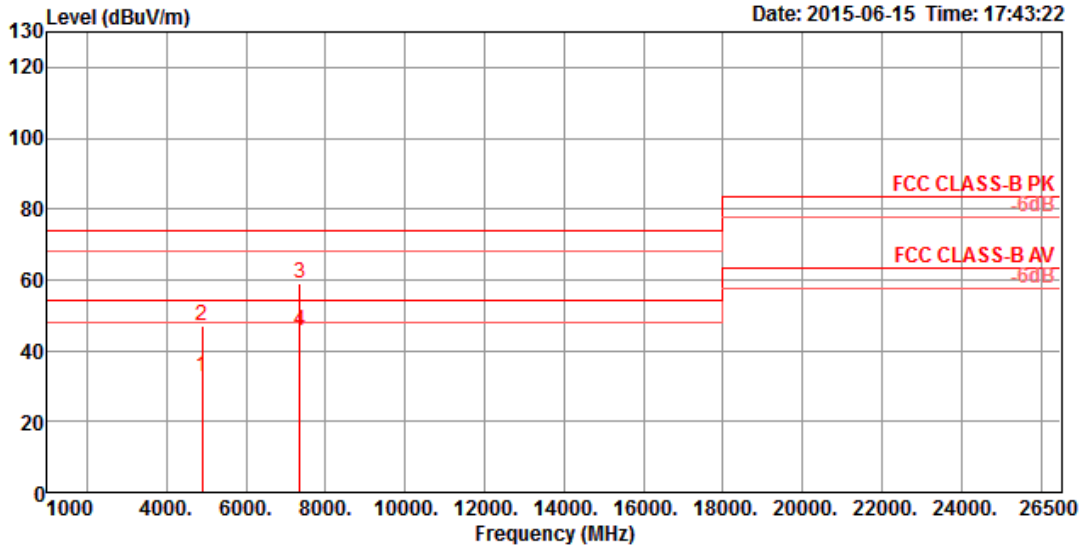
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4856.45	47.84	74.00	-26.16	43.29	7.08	33.69	31.16	VERTICAL	76	155	Peak
2	4856.74	35.38	54.00	-18.62	30.83	7.08	33.69	31.16	VERTICAL	76	155	Average
3	7292.19	50.20	54.00	-3.80	39.33	8.85	33.98	36.00	VERTICAL	62	237	Average
4	7308.69	63.99	74.00	-10.01	53.08	8.86	34.00	36.05	VERTICAL	62	237	Peak

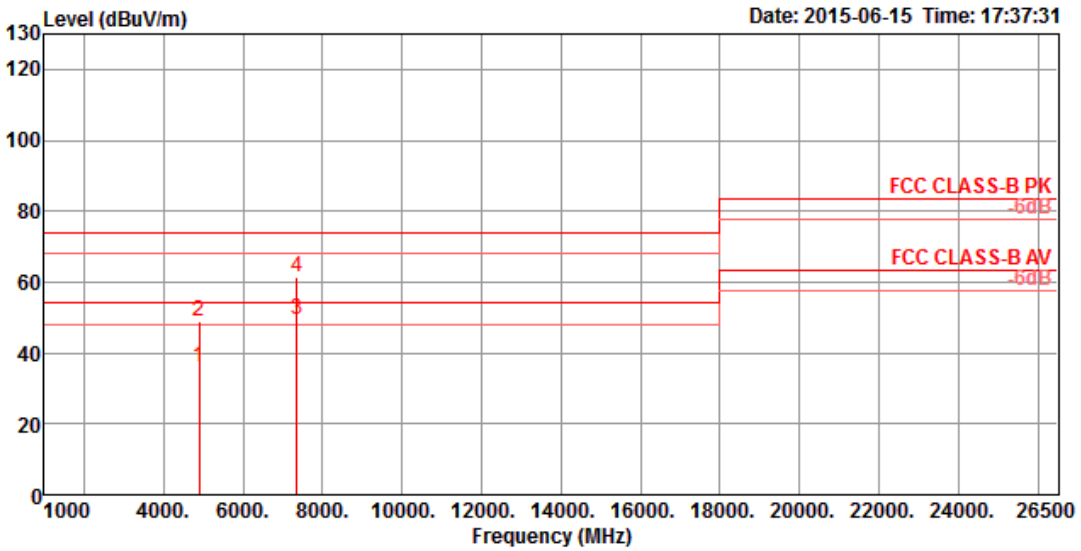
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT40 CH 6
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4893.88	32.79	54.00	-21.21	28.15	7.10	33.68	31.22	HORIZONTAL	199	244	Average
2	4893.88	46.93	74.00	-27.07	42.29	7.10	33.68	31.22	HORIZONTAL	199	244	Peak
3	7341.80	59.09	74.00	-14.91	48.10	8.89	34.03	36.13	HORIZONTAL	60	220	Peak
4	7342.50	45.50	54.00	-8.50	34.51	8.89	34.03	36.13	HORIZONTAL	60	220	Average

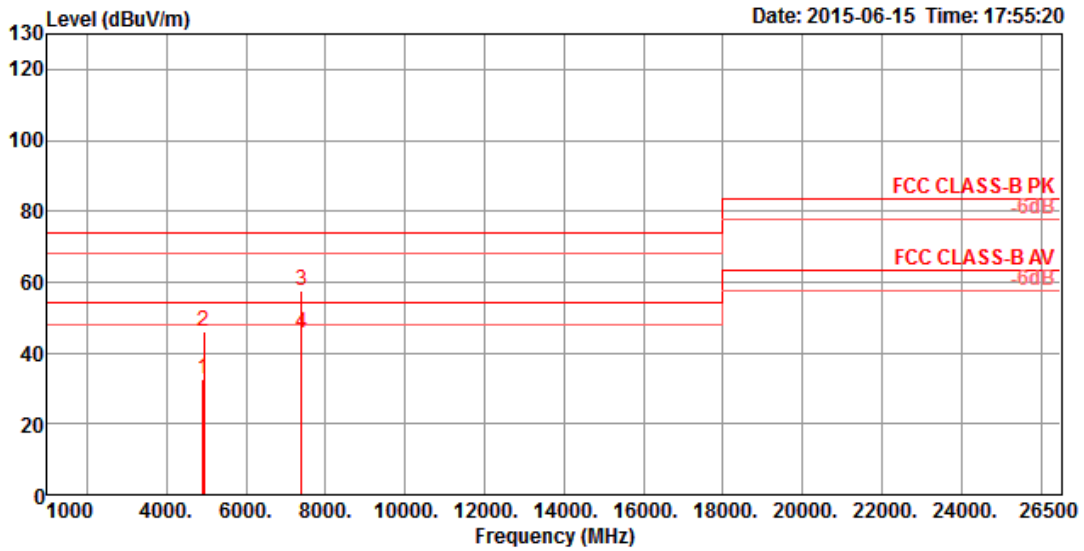
Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4893.76	35.93	54.00	-18.07	31.30	7.10	33.68	31.21	VERTICAL	207	174	Average
2	4894.04	48.88	74.00	-25.12	44.25	7.10	33.68	31.21	VERTICAL	207	174	Peak
3	7342.50	49.31	54.00	-4.69	38.30	8.89	34.03	36.15	VERTICAL	63	229	Average
4	7342.50	61.32	74.00	-12.68	50.31	8.89	34.03	36.15	VERTICAL	63	229	Peak

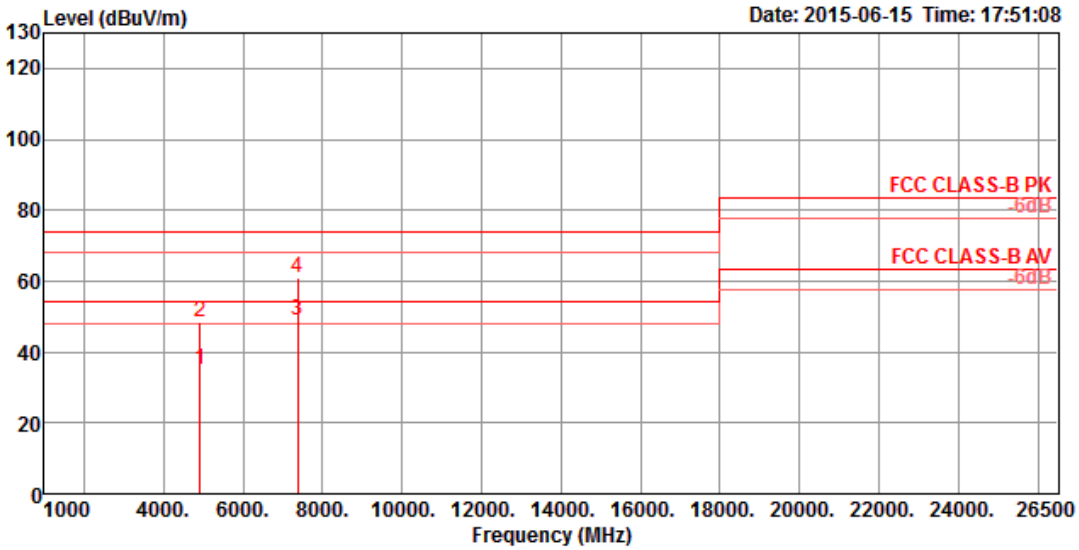
Temperature	22°C	Humidity	55%
Test Engineer	Nick Peng	Configurations	IEEE 802.11n MCS0 HT40 CH 9
Test Date	Jun. 15, 2015		

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4922.80	32.65	54.00	-21.35	27.92	7.13	33.67	31.27	HORIZONTAL	149	177	Average
2	4927.00	45.97	74.00	-28.03	41.24	7.13	33.67	31.27	HORIZONTAL	149	177	Peak
3	7385.00	57.77	74.00	-16.23	46.69	8.92	34.07	36.23	HORIZONTAL	51	219	Peak
4	7387.60	45.42	54.00	-8.58	34.33	8.92	34.07	36.24	HORIZONTAL	51	219	Average

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Pol/Phase	T/Pos	A/Pos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m		deg	cm	
1	4923.60	34.98	54.00	-19.02	30.27	7.13	33.67	31.25	VERTICAL	220	217	Average
2	4923.76	48.58	74.00	-25.42	43.84	7.13	33.67	31.28	VERTICAL	220	217	Peak
3	7375.80	49.01	54.00	-4.99	37.96	8.91	34.06	36.20	VERTICAL	50	219	Average
4	7381.20	60.87	74.00	-13.13	49.77	8.92	34.07	36.25	VERTICAL	50	219	Peak

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.

Conducted measurement:

For Ant. 1 (Printed Ant.)

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Average / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-51.31	-49.78	-41.25	8.53
2437	-51.43	-49.90	-41.25	8.65
2462	-54.44	-52.91	-41.25	11.66

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Peak / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-50.42	-48.89	-21.25	27.64
2437	-50.11	-48.58	-21.25	27.33
2462	-52.63	-51.10	-21.25	29.85

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Average / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-69.12	-67.59	-41.25	26.34
2437	-58.71	-57.18	-41.25	15.93
2462	-71.81	-70.28	-41.25	29.03

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Peak / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-55.47	-53.94	-21.25	32.69
2437	-45.97	-44.44	-21.25	23.19
2462	-59.03	-57.50	-21.25	36.25

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Average / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-70.91	-69.38	-41.25	28.13
2437	-58.63	-57.10	-41.25	15.85
2462	-74.37	-72.84	-41.25	31.59

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Peak / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-57.28	-55.75	-21.25	34.50
2437	-45.43	-43.90	-21.25	22.65
2462	-61.11	-59.58	-21.25	38.33

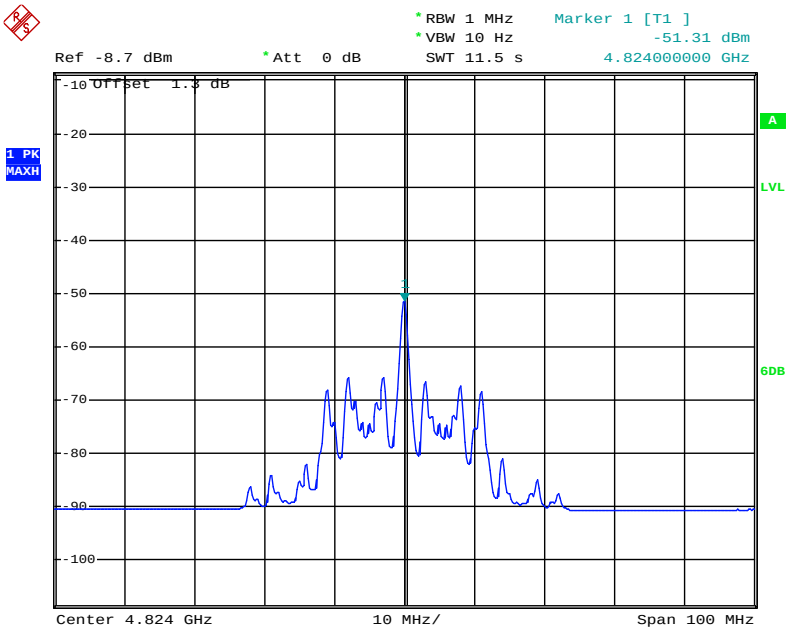
Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Average / Ant. 1

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2422	-74.23	-72.70	-41.25	31.45
2437	-72.72	-71.19	-41.25	29.94
2452	-76.20	-74.67	-41.25	33.42

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Peak / Ant. 1

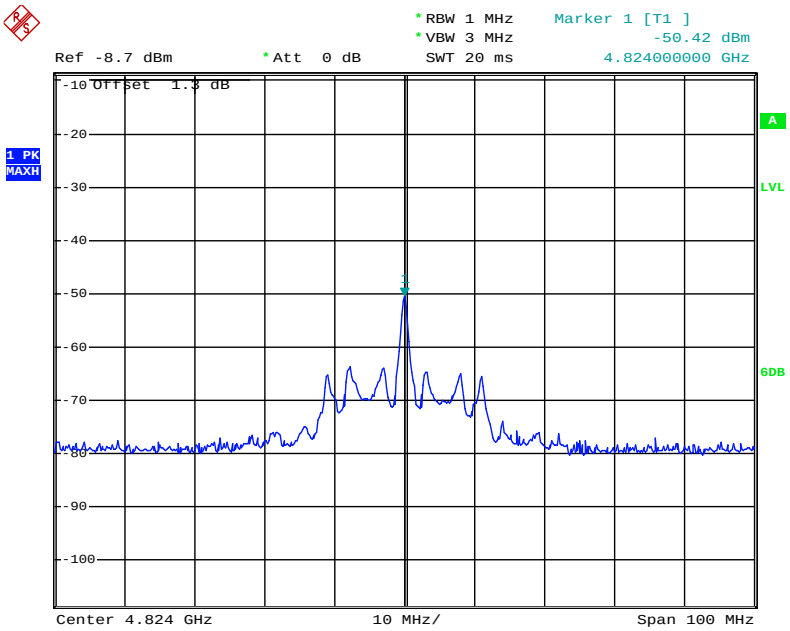
Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2422	-61.73	-60.20	-21.25	38.95
2437	-59.16	-57.63	-21.25	36.38
2452	-64.71	-63.18	-21.25	41.93

Plot on Configuration IEEE 802.11b / 2412MHz / Average



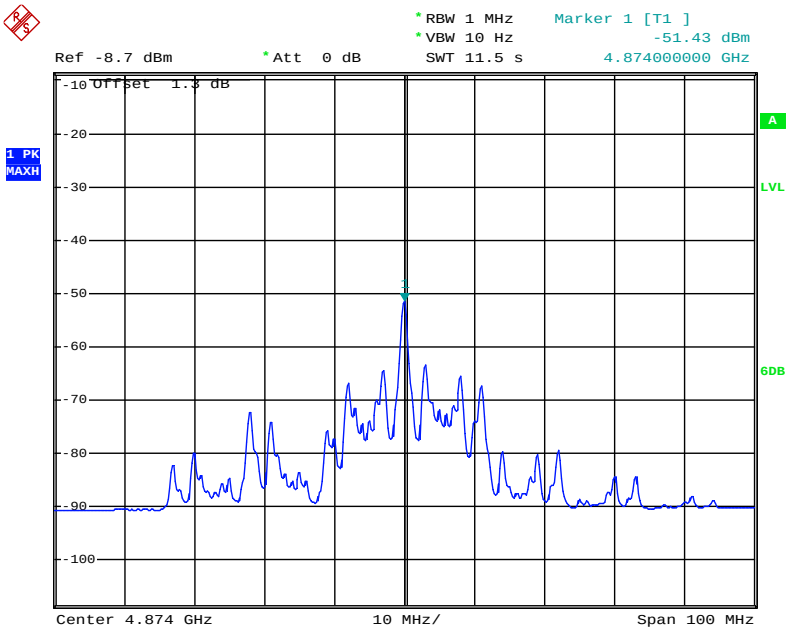
Date: 16.JUN.2015 14:32:27

Plot on Configuration IEEE 802.11b / 2412MHz / Peak



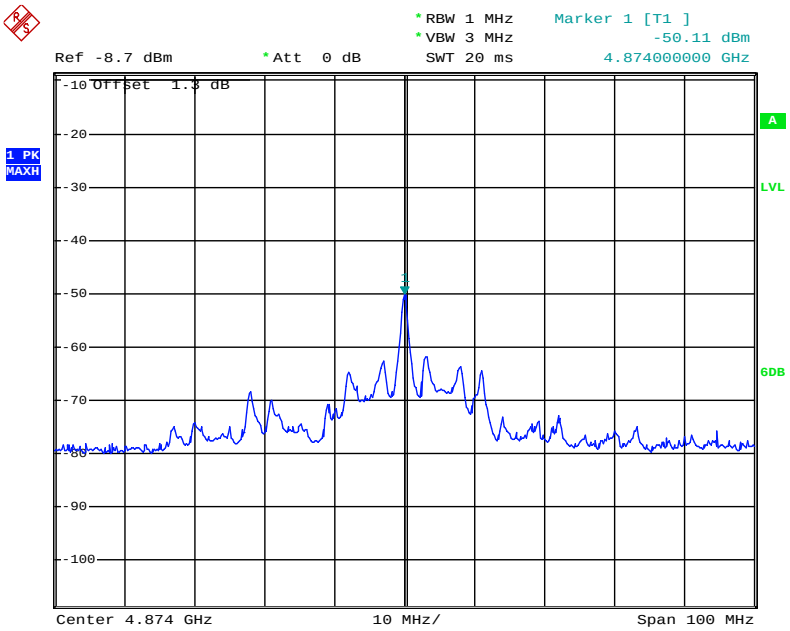
Date: 16.JUN.2015 14:32:55

Plot on Configuration IEEE 802.11b / 2437MHz / Average



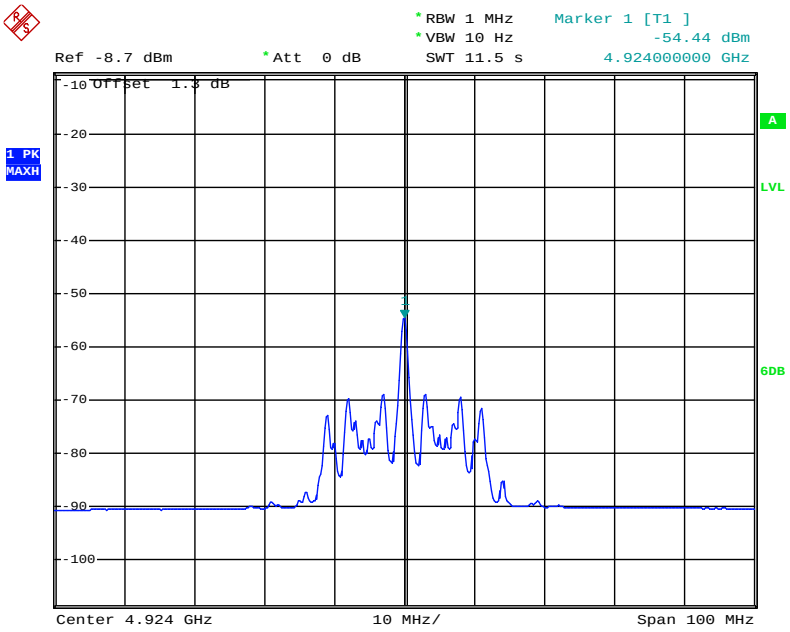
Date: 16.JUN.2015 14:39:35

Plot on Configuration IEEE 802.11b / 2437MHz / Peak



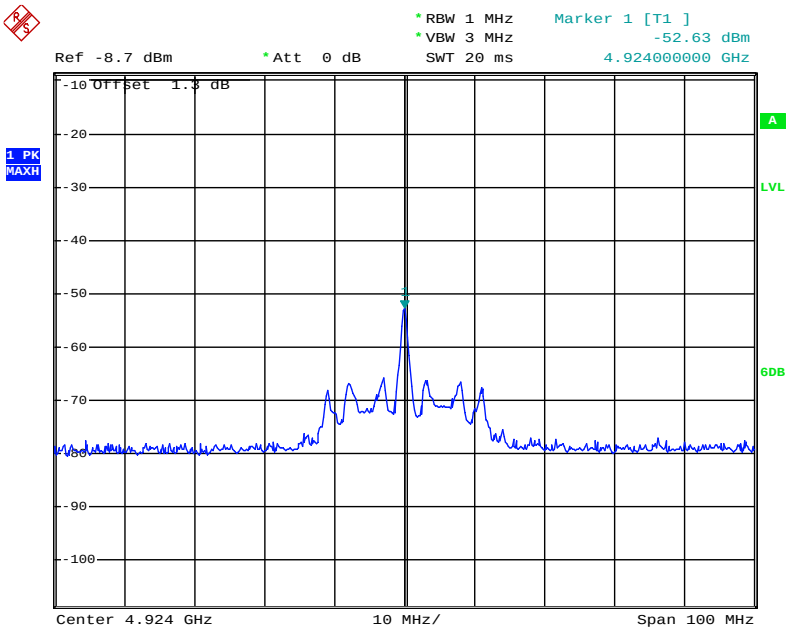
Date: 16.JUN.2015 14:39:05

Plot on Configuration IEEE 802.11b / 2462MHz / Average



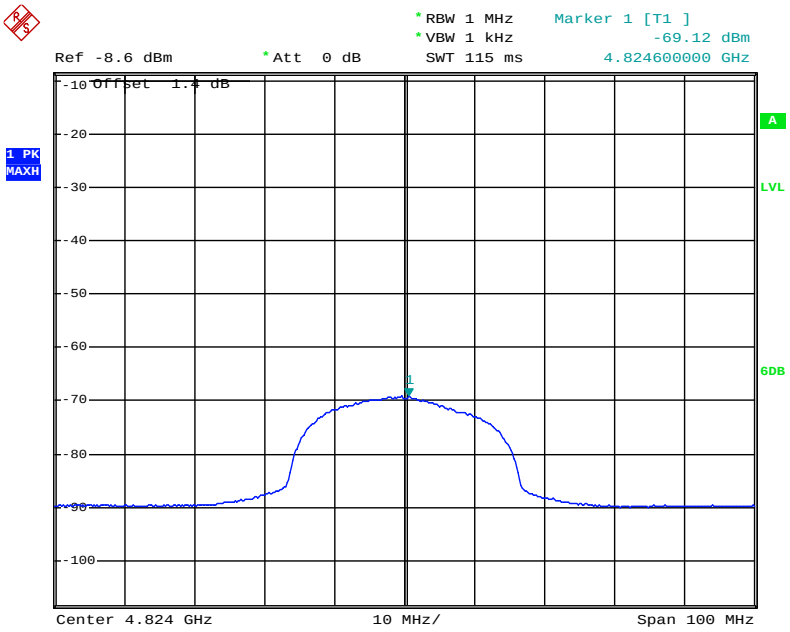
Date: 16.JUN.2015 14:40:40

Plot on Configuration IEEE 802.11b / 2462MHz / Peak



Date: 16.JUN.2015 14:41:05

Plot on Configuration IEEE 802.11g / 2412MHz / Average



Date: 16.JUN.2015 15:00:52

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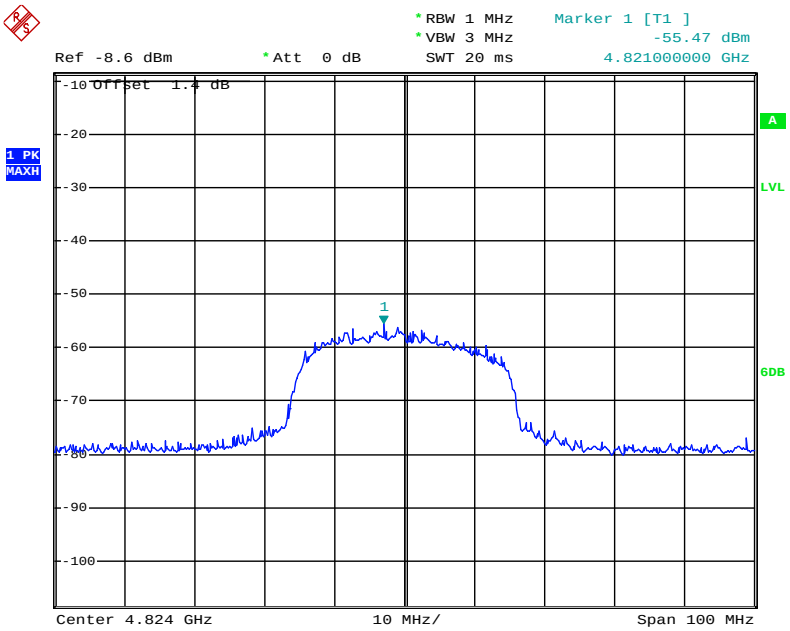
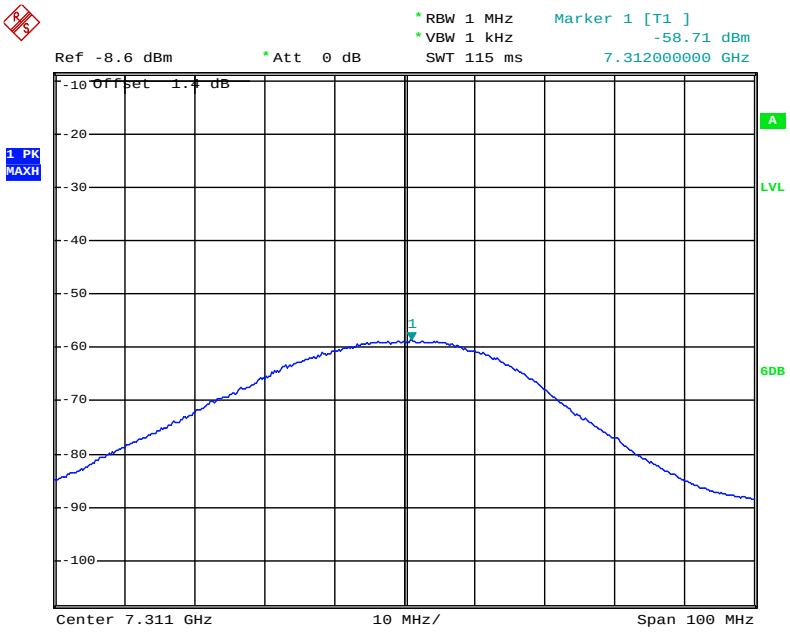


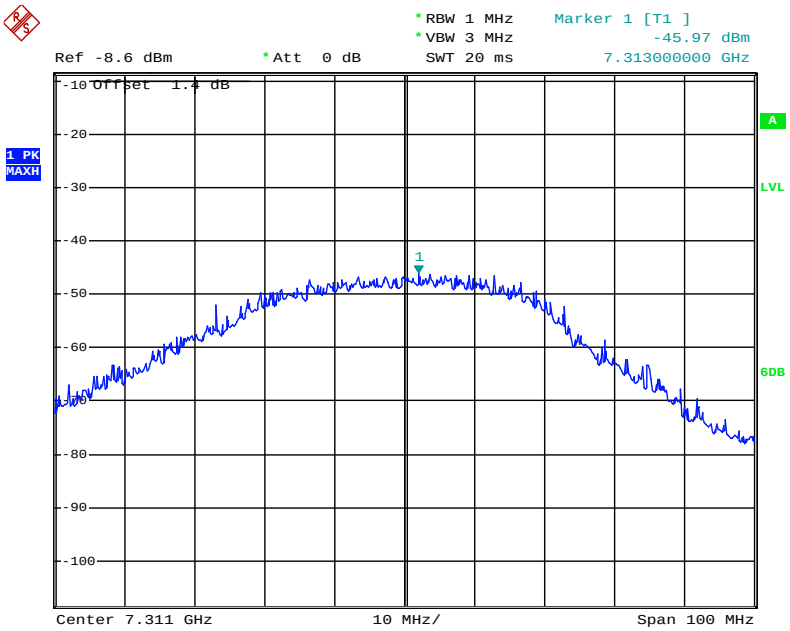
Date: 16.JUN.2015 15:01:24

Plot on Configuration IEEE 802.11g / 2437MHz / Average



Date: 16.JUN.2015 15:07:05

Plot on Configuration IEEE 802.11g / 2437MHz / Peak



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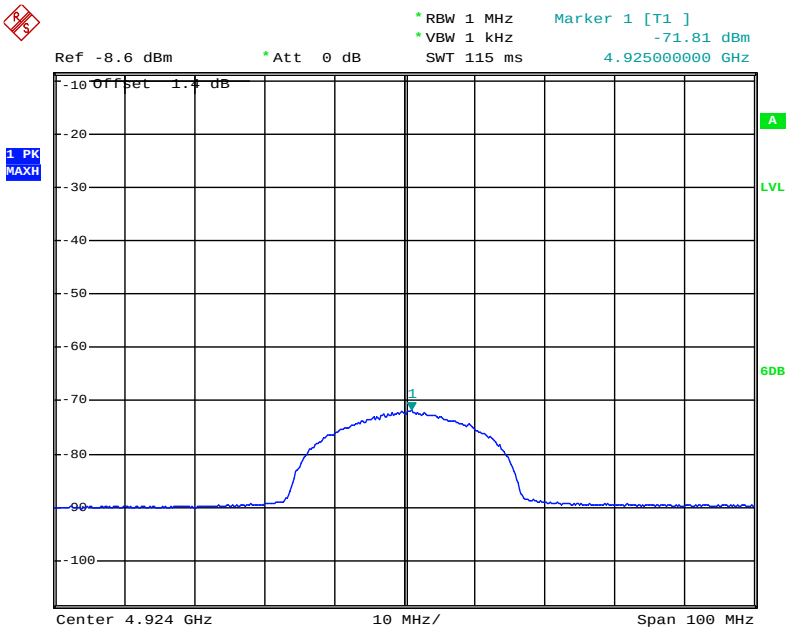
Plot on Configuration IEEE 802.11g / 2462MHz / Average



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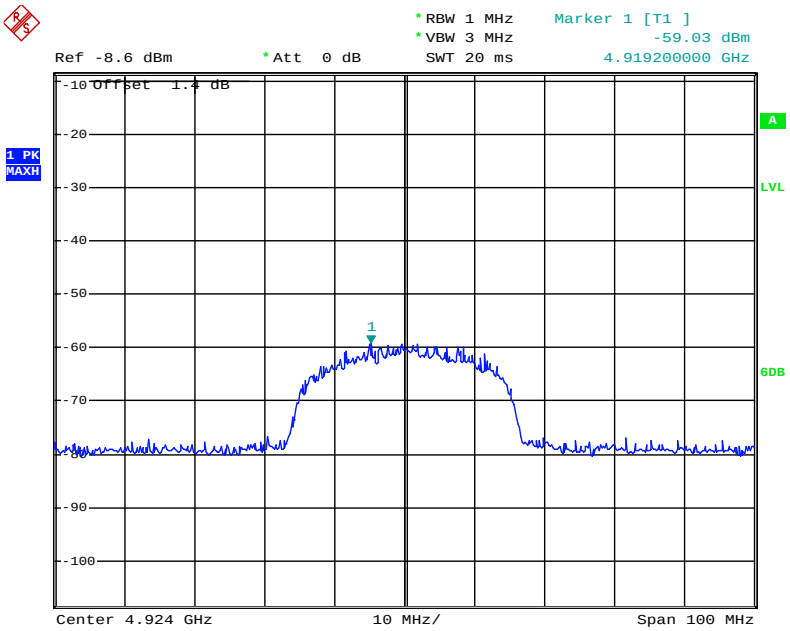
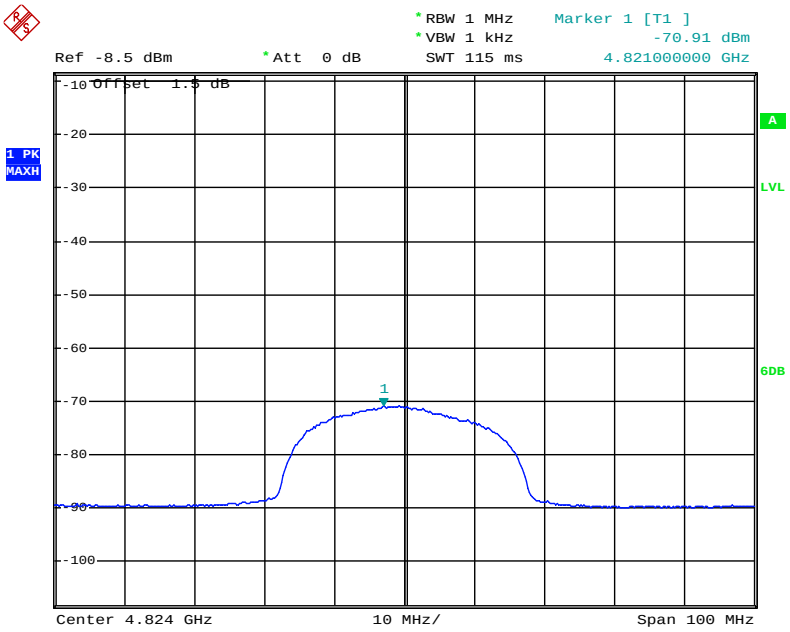
Plot on Configuration IEEE 802.11g / 2462MHz / Peak



Date: 16.JUN.2015 15:08:39

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Average



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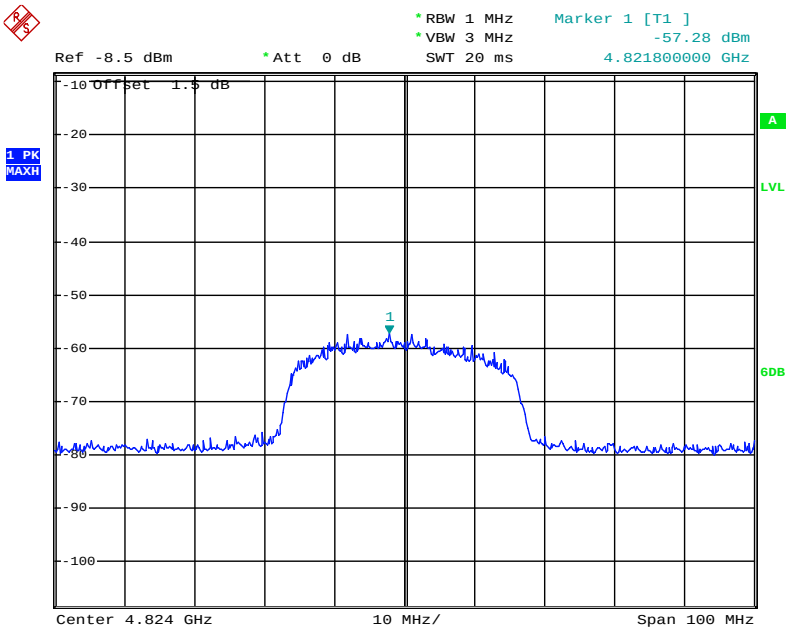
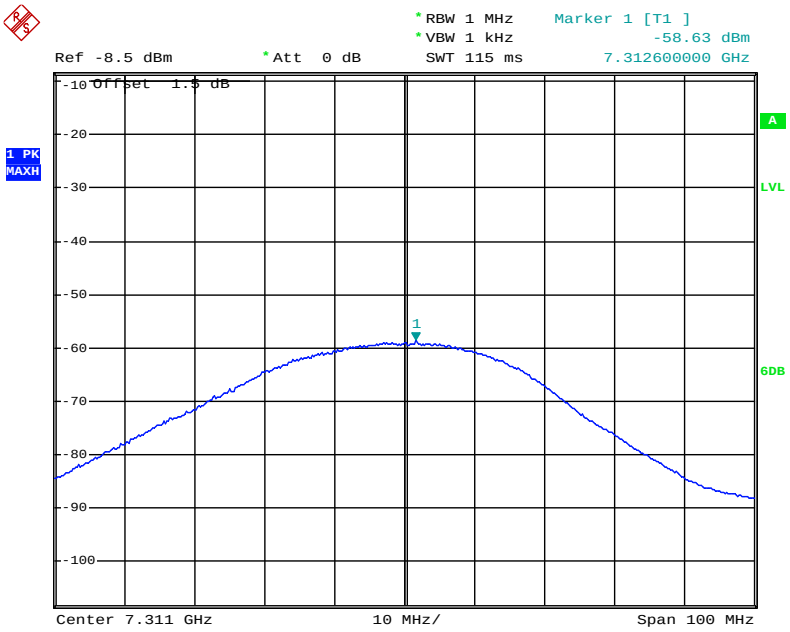
Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Peak



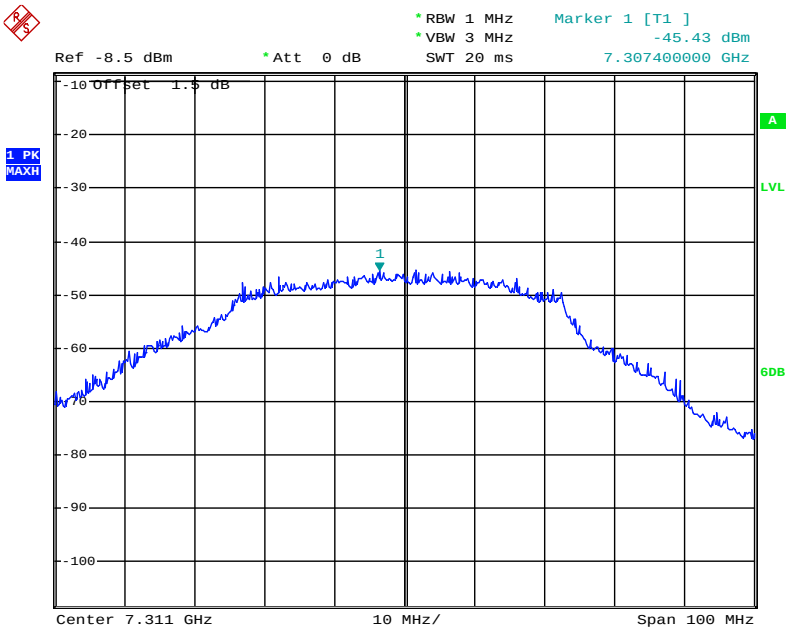
Date: 16.JUN.2015 15:26:45

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Average



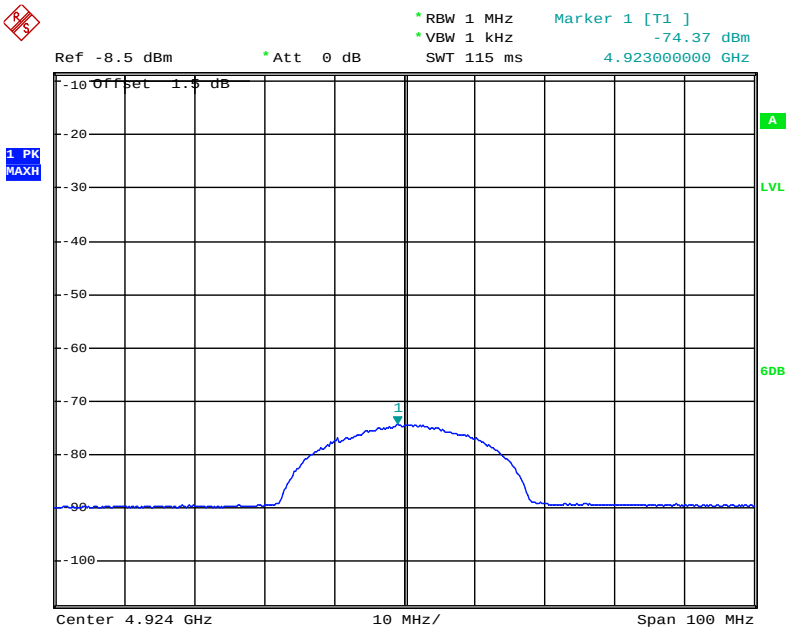
Date: 16.JUN.2015 15:42:02

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Peak



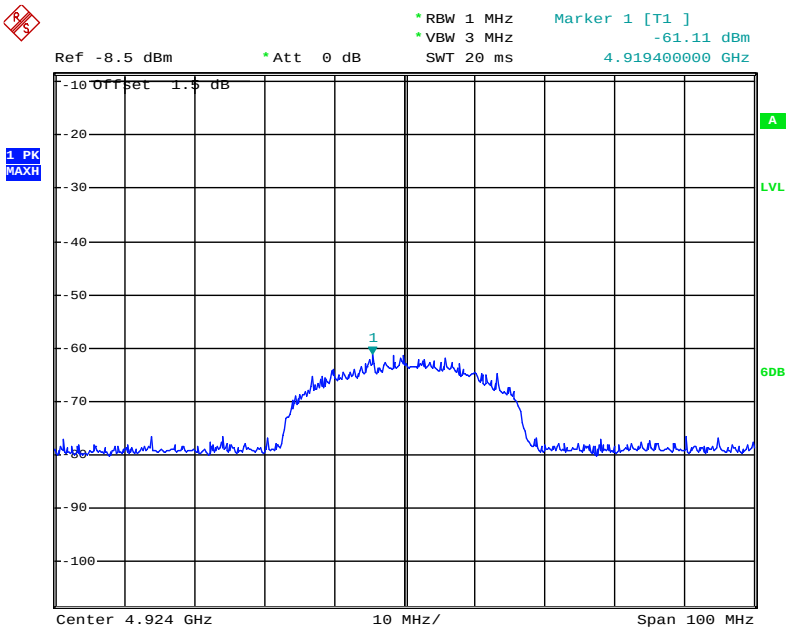
Date: 16.JUN.2015 15:42:23

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Average



Date: 16.JUN.2015 15:45:00

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Peak



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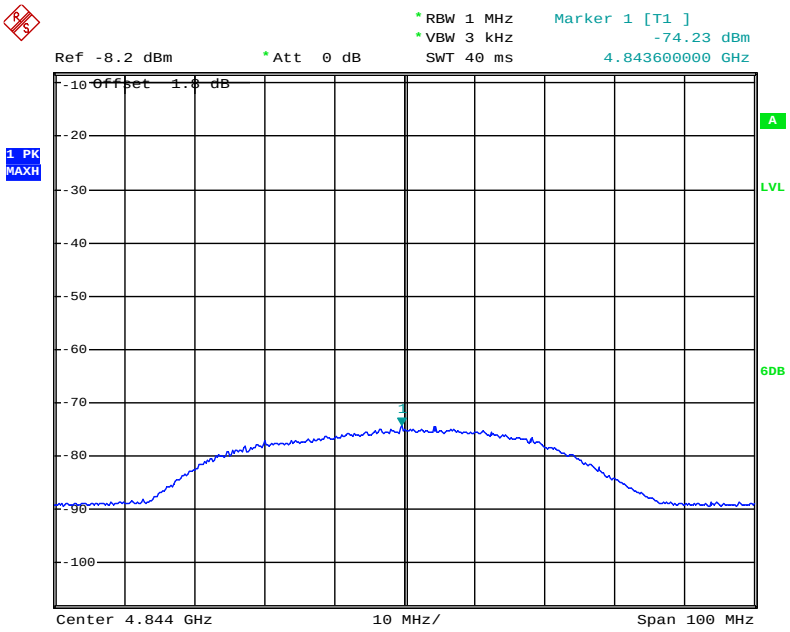
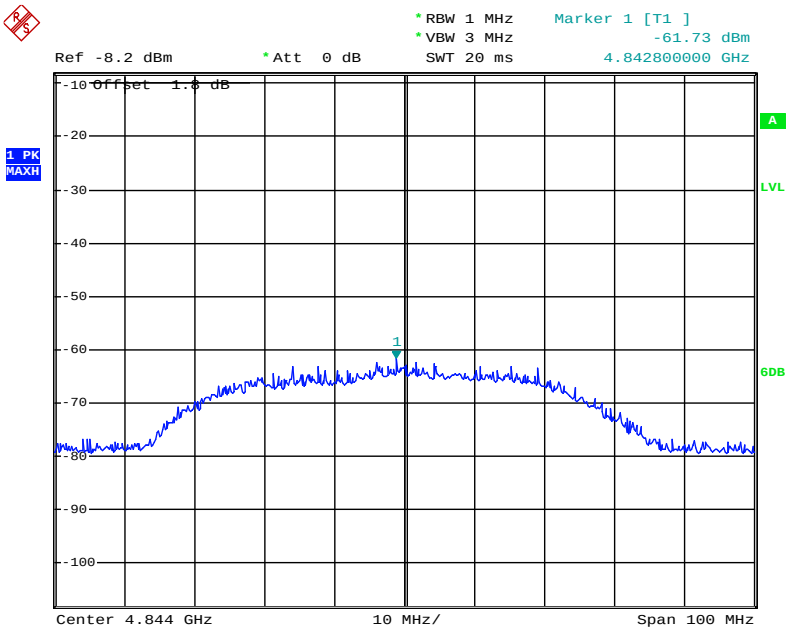
Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Average



Date: 16.JUN.2015 15:48:29

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Peak



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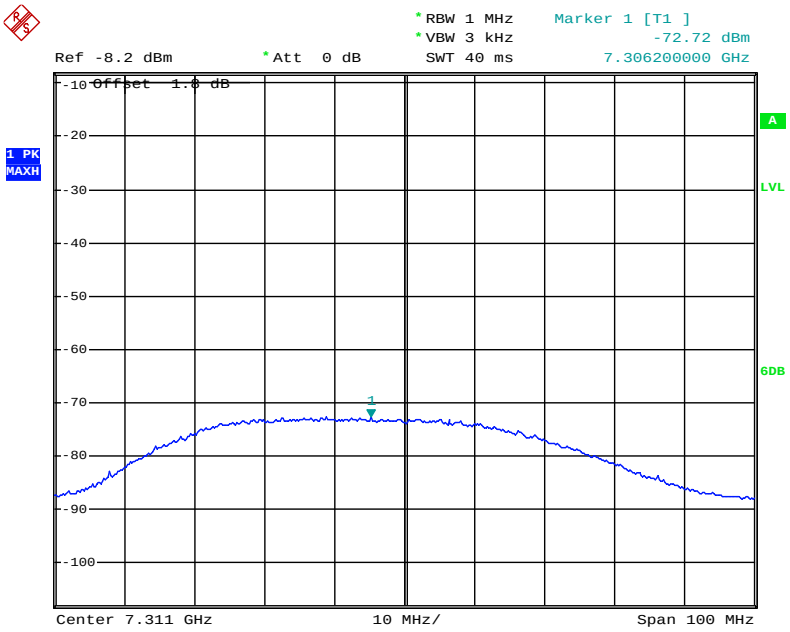
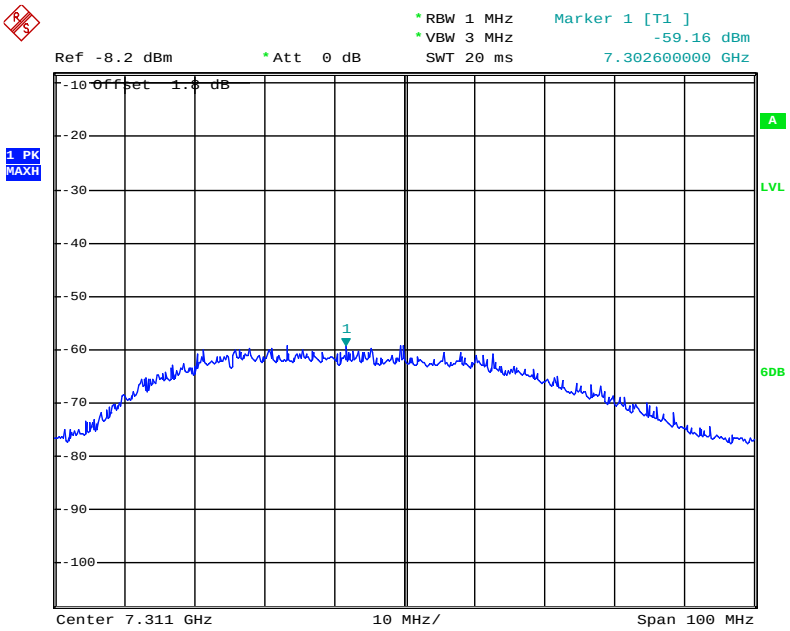
Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Average



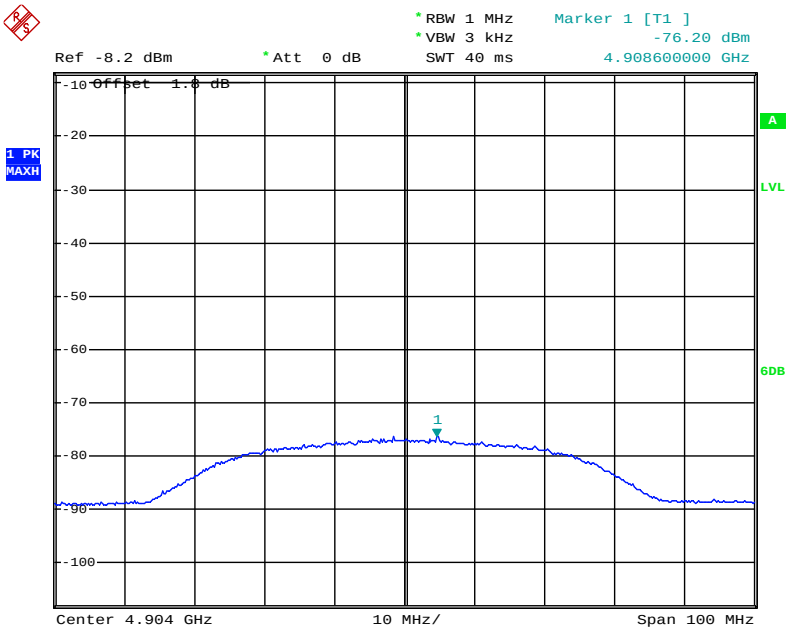
Date: 16.JUN.2015 15:49:41

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Peak



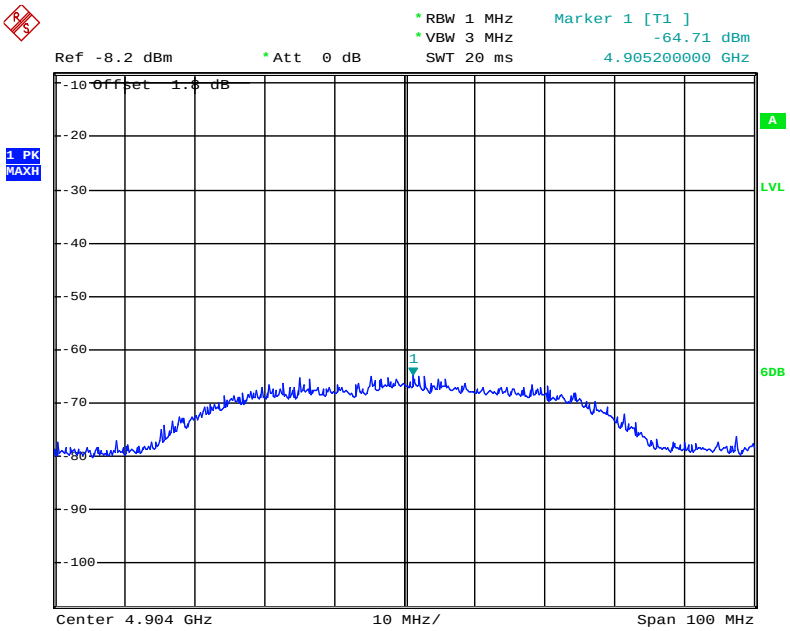
Date: 16.JUN.2015 15:49:54

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Average



Date: 16.JUN.2015 15:52:19

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Peak



Date: 16.JUN.2015 15:52:24

Conducted measurement:

For Ant. 2 (PIFA Ant.)

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Average / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-51.31	-47.71	-41.25	6.46
2437	-52.41	-48.81	-41.25	7.56
2462	-54.83	-51.23	-41.25	9.98

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Peak / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-50.42	-46.82	-21.25	25.57
2437	-51.32	-47.72	-21.25	26.47
2462	-53.31	-49.71	-21.25	28.46

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Average / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-70.10	-66.50	-41.25	25.25
2437	-59.27	-55.67	-41.25	14.42
2462	-73.03	-69.43	-41.25	28.18

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Peak / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-56.75	-53.15	-21.25	31.90
2437	-46.15	-42.55	-21.25	21.30
2462	-58.25	-54.65	-21.25	33.40

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Average / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-71.76	-68.16	-41.25	26.91
2437	-59.21	-55.61	-41.25	14.36
2462	-75.30	-71.70	-41.25	30.45

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Peak / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2412	-59.64	-56.04	-21.25	34.79
2437	-45.72	-42.12	-21.25	20.87
2462	-61.48	-57.88	-21.25	36.63

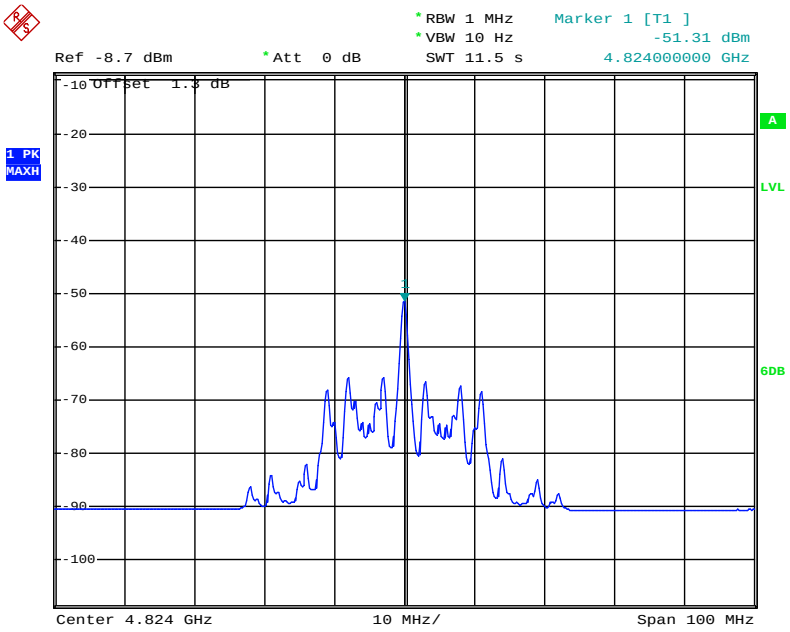
Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Average / Ant. 2

Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2422	-74.68	-71.08	-41.25	29.83
2437	-72.02	-68.42	-41.25	27.17
2452	-78.13	-74.53	-41.25	33.28

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Peak / Ant. 2

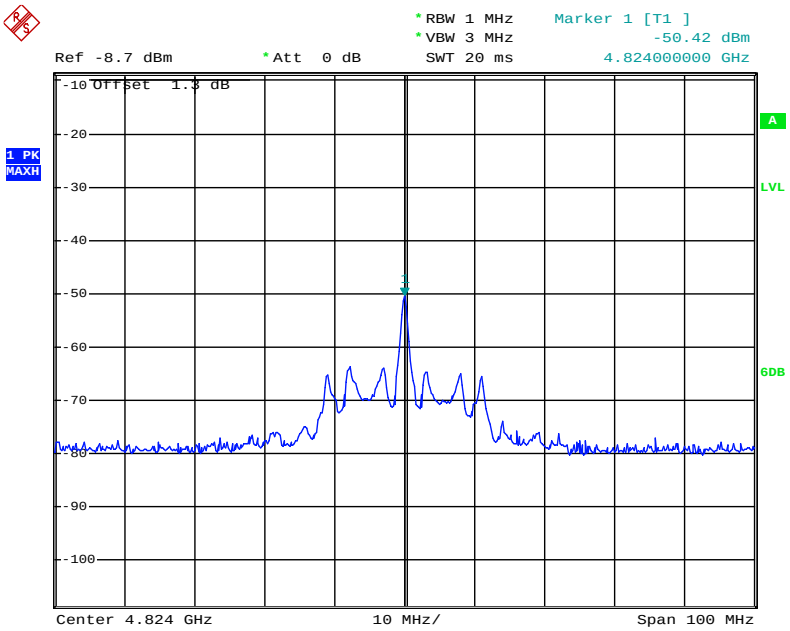
Frequency(MHz)	TX1 Spruious Level (dBm)	Total TX Spruious Level (dBm)	Limit (dBm)	Margin (dB)
2422	-63.04	-59.44	-21.25	38.19
2437	-58.89	-55.29	-21.25	34.04
2452	-66.77	-63.17	-21.25	41.92

Plot on Configuration IEEE 802.11b / 2412MHz / Average



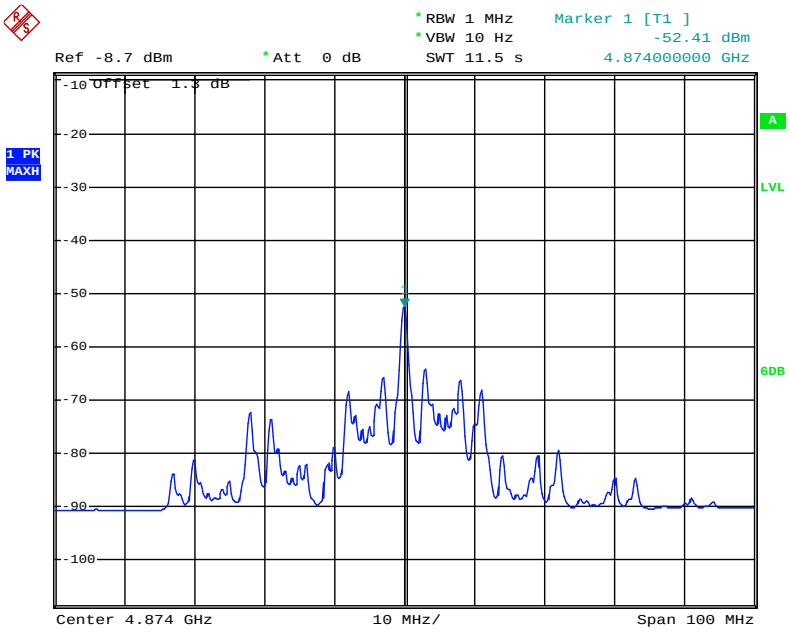
Date: 16.JUN.2015 14:32:27

Plot on Configuration IEEE 802.11b / 2412MHz / Peak



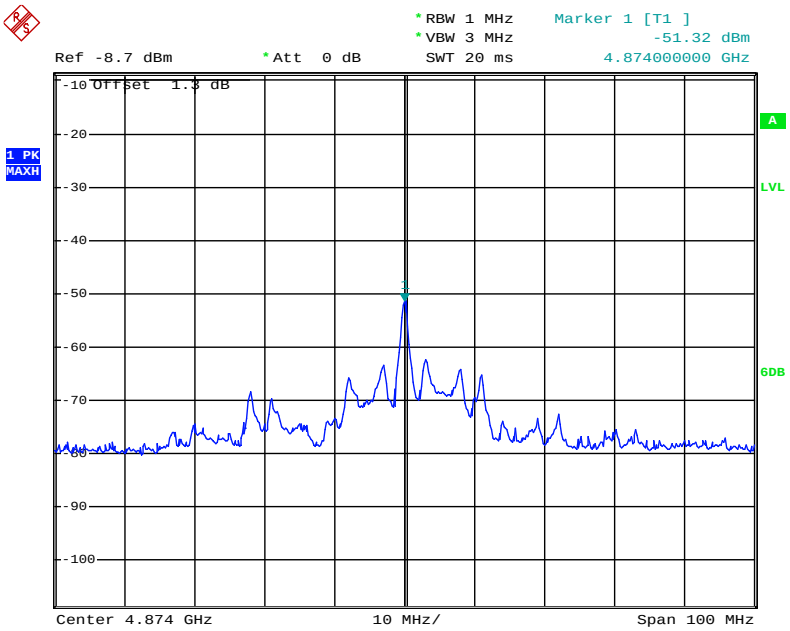
Date: 16.JUN.2015 14:32:55

Plot on Configuration IEEE 802.11b / 2437MHz / Average



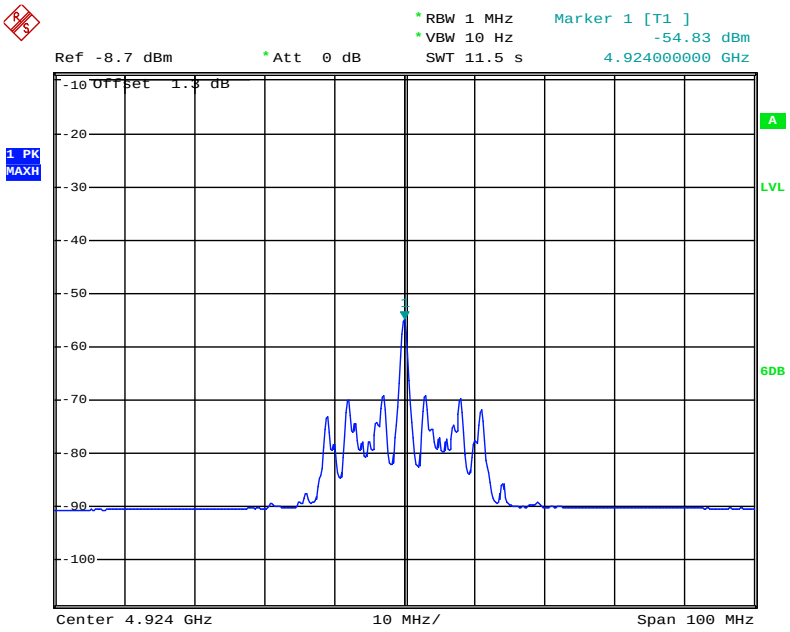
Date: 16.JUN.2015 14:37:41

Plot on Configuration IEEE 802.11b / 2437MHz / Peak



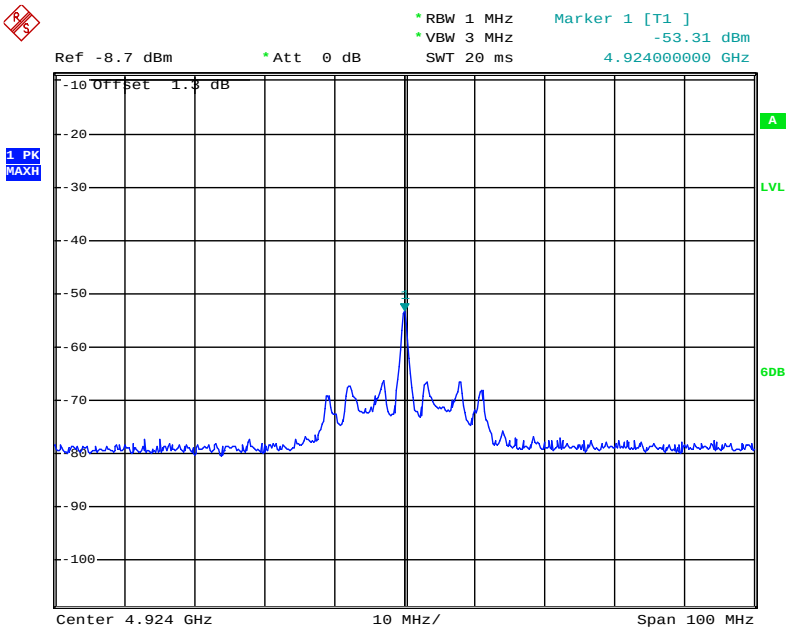
Date: 16.JUN.2015 14:38:16

Plot on Configuration IEEE 802.11b / 2462MHz / Average



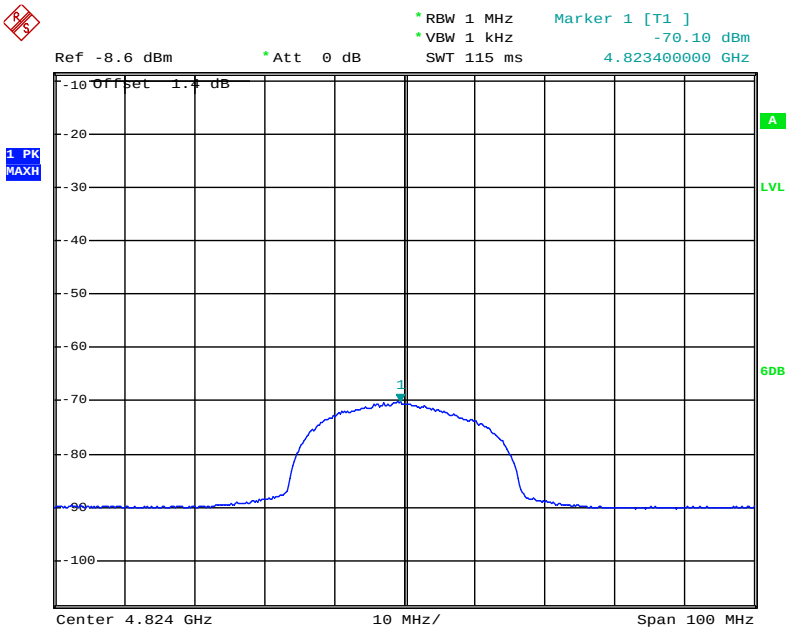
Date: 16.JUN.2015 14:44:31

Plot on Configuration IEEE 802.11b / 2462MHz / Peak



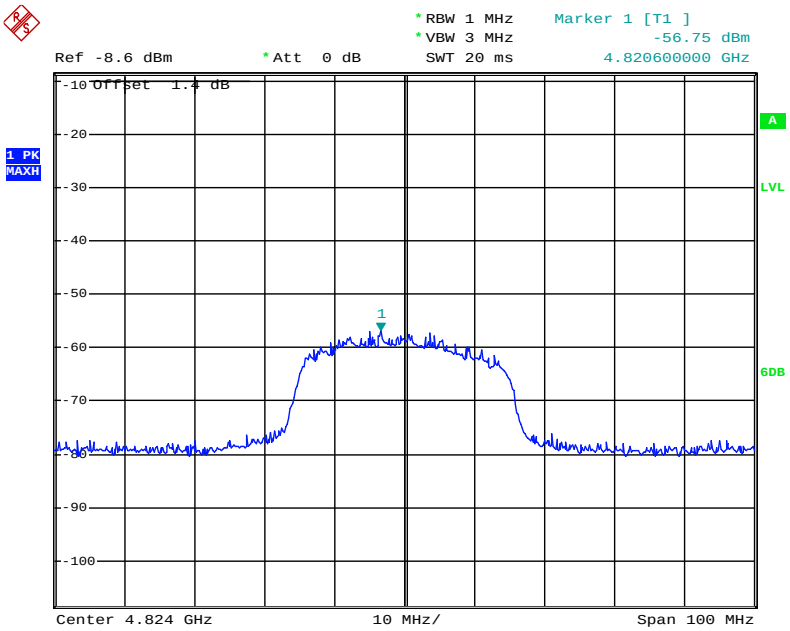
Date: 16.JUN.2015 14:43:52

Plot on Configuration IEEE 802.11g / 2412MHz / Average



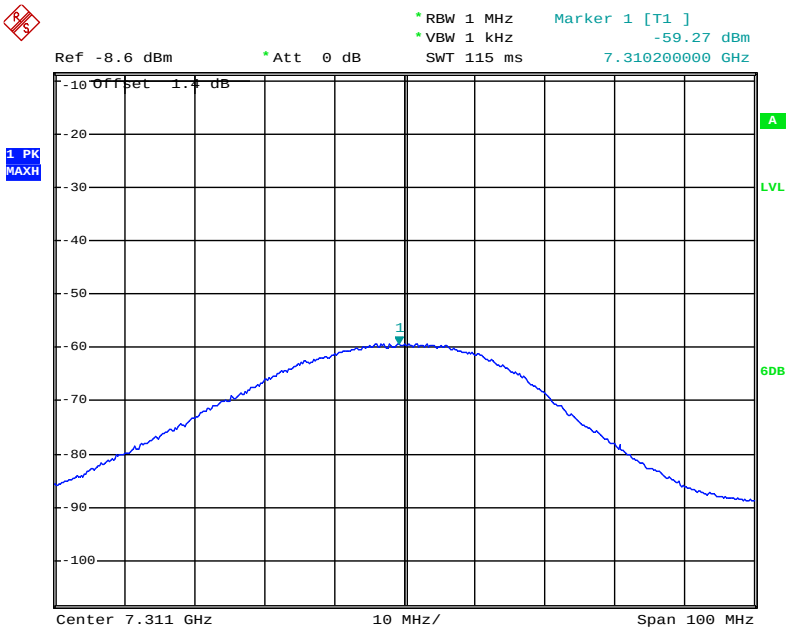
Date: 16.JUN.2015 15:03:26

Plot on Configuration IEEE 802.11g / 2412MHz / Peak



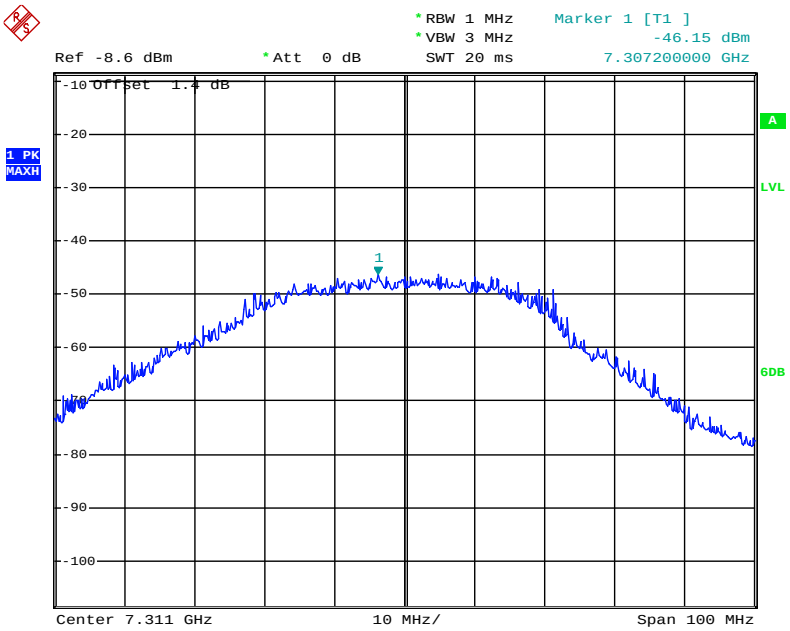
Date: 16.JUN.2015 15:03:48

Plot on Configuration IEEE 802.11g / 2437MHz / Average



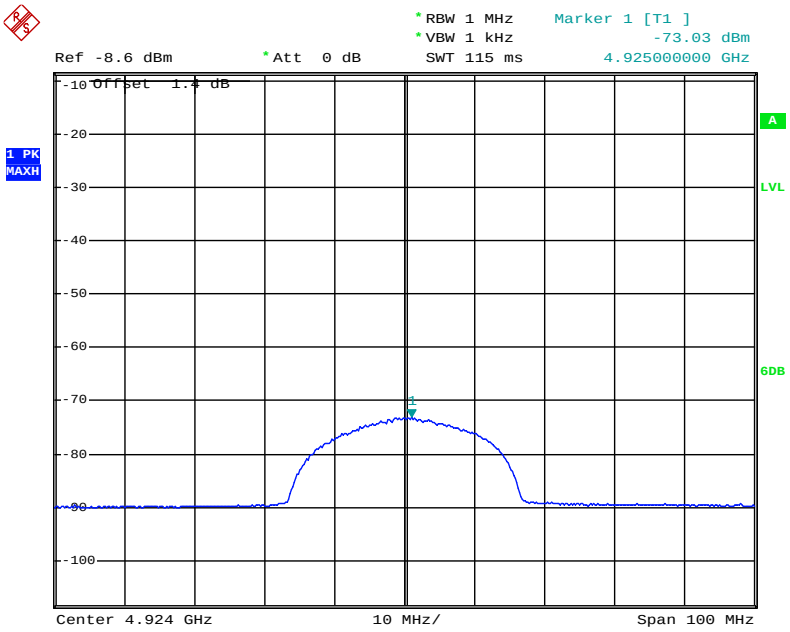
Date: 16.JUN.2015 15:05:40

Plot on Configuration IEEE 802.11g / 2437MHz / Peak



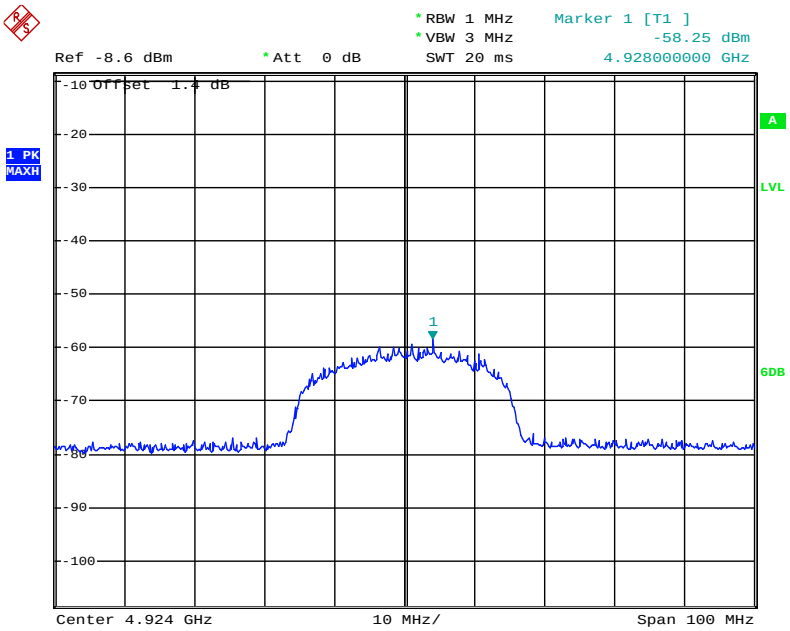
Date: 16.JUN.2015 15:06:08

Plot on Configuration IEEE 802.11g / 2462MHz / Average



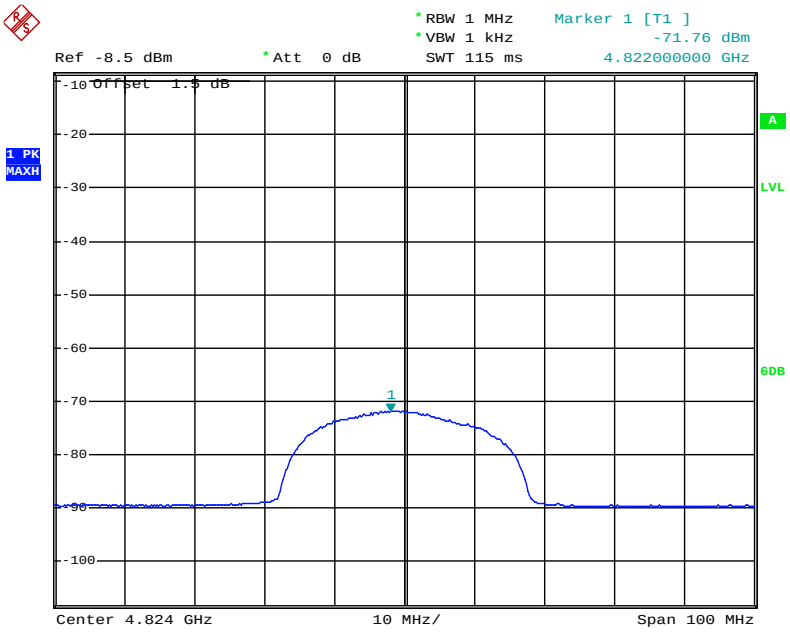
Date: 16.JUN.2015 15:10:35

Plot on Configuration IEEE 802.11g / 2462MHz / Peak



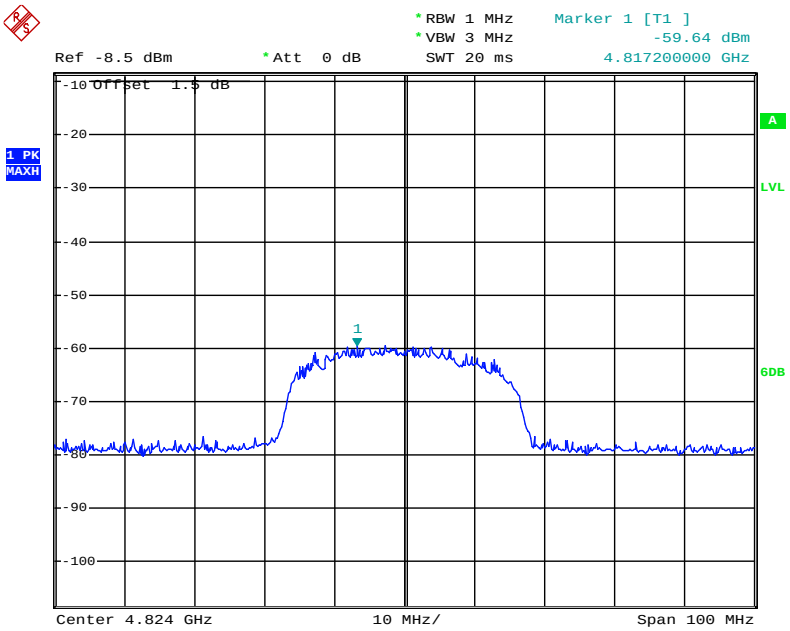
Date: 16.JUN.2015 15:11:05

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Average



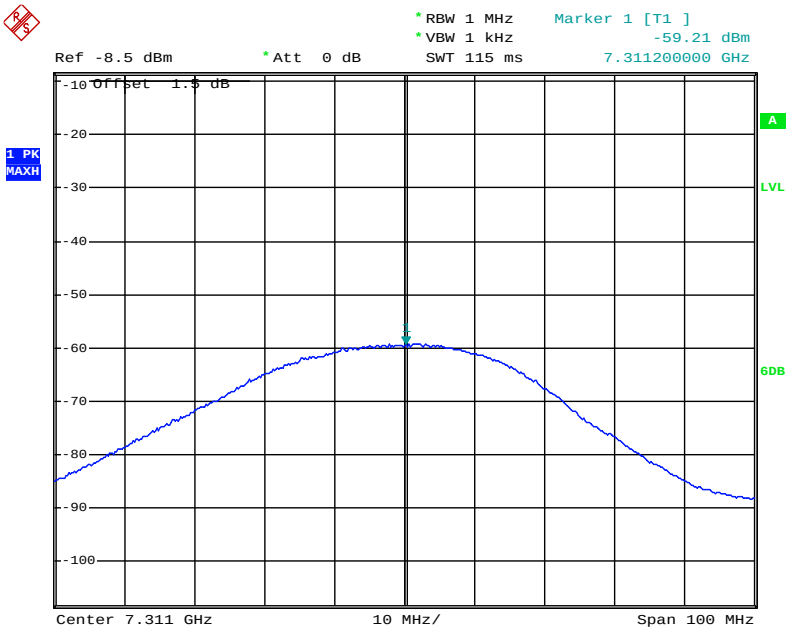
Date: 16.JUN.2015 15:24:00

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Peak



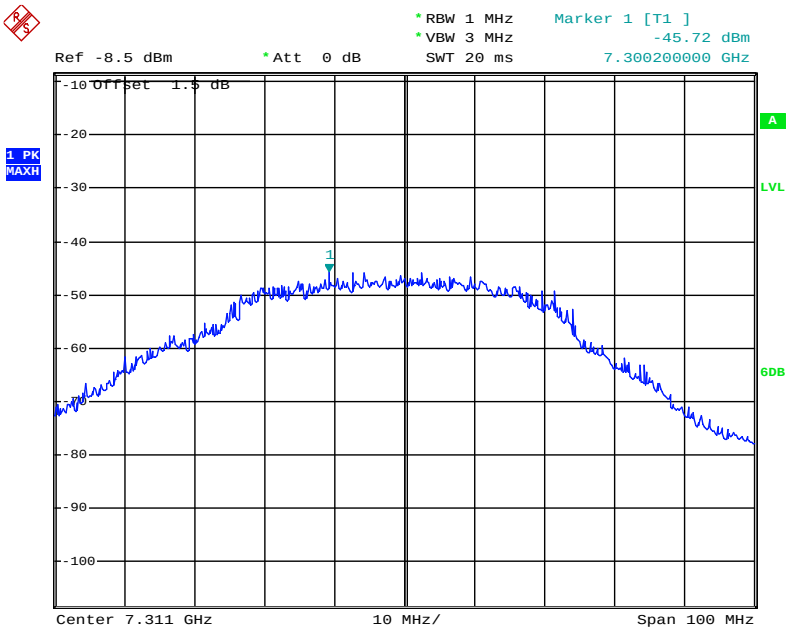
Date: 16.JUN.2015 15:24:09

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Average



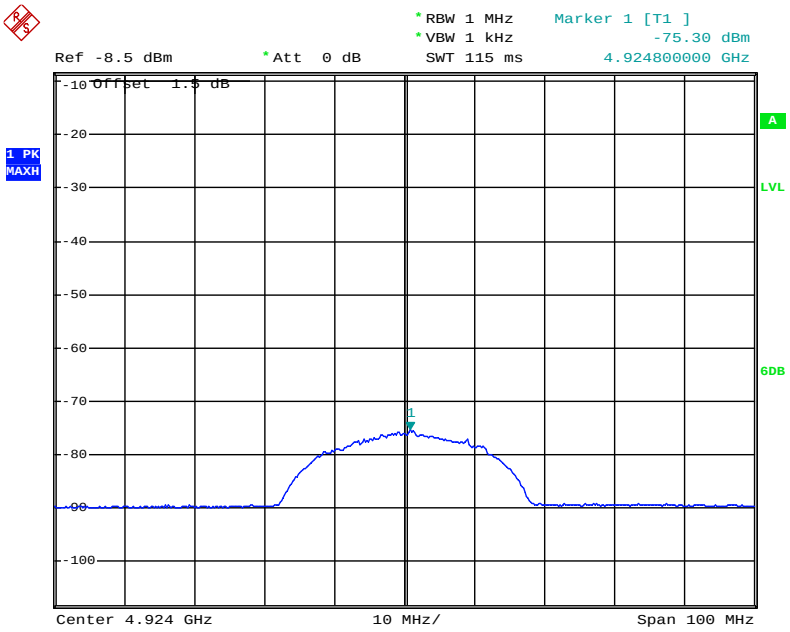
Date: 16.JUN.2015 15:43:22

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Peak



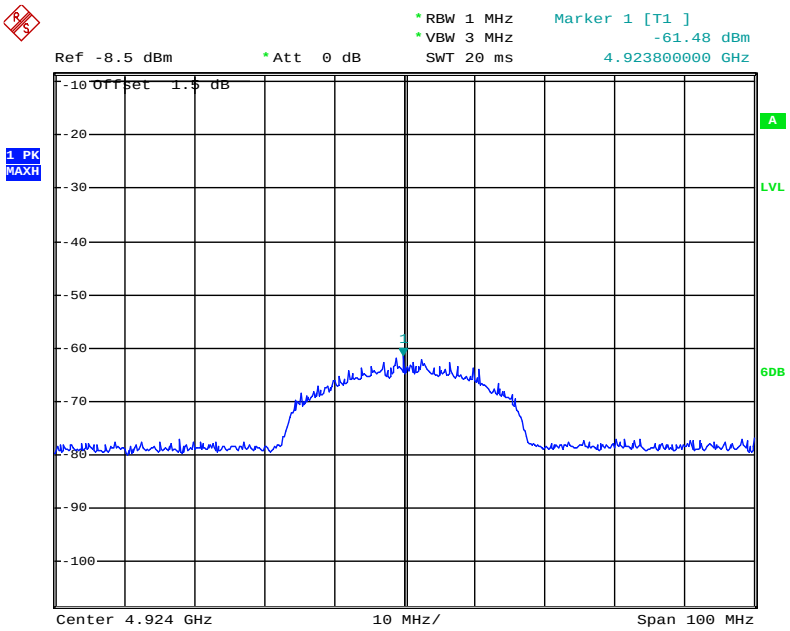
Date: 16.JUN.2015 15:43:28

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Average



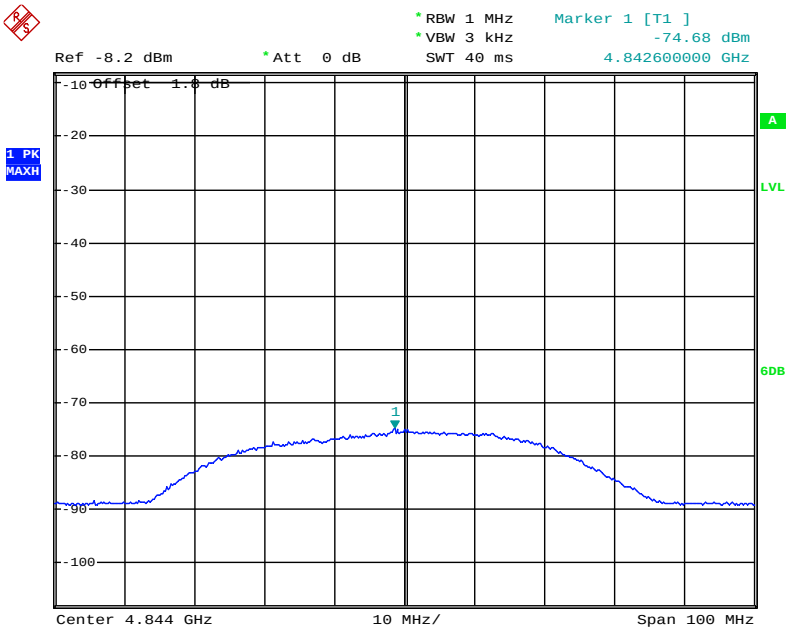
Date: 16.JUN.2015 15:44:12

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Peak



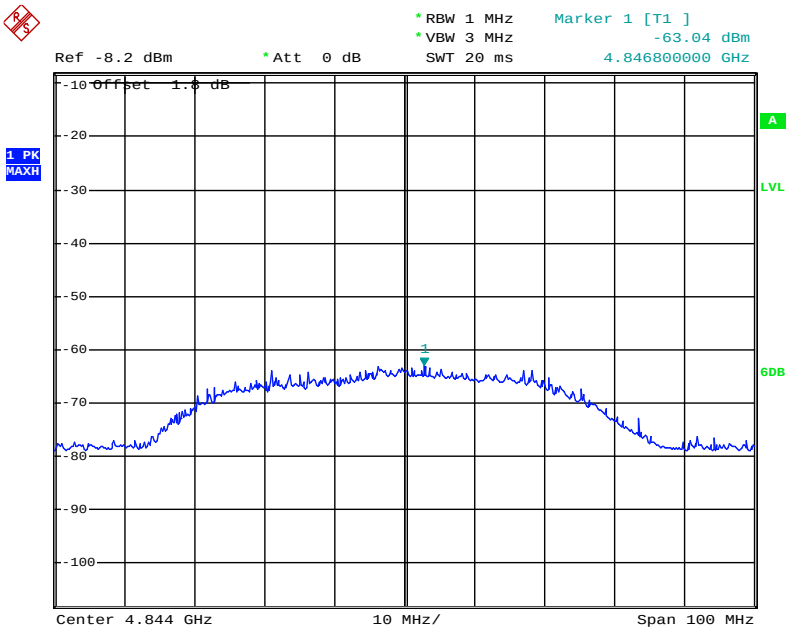
Date: 16.JUN.2015 15:44:24

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Average



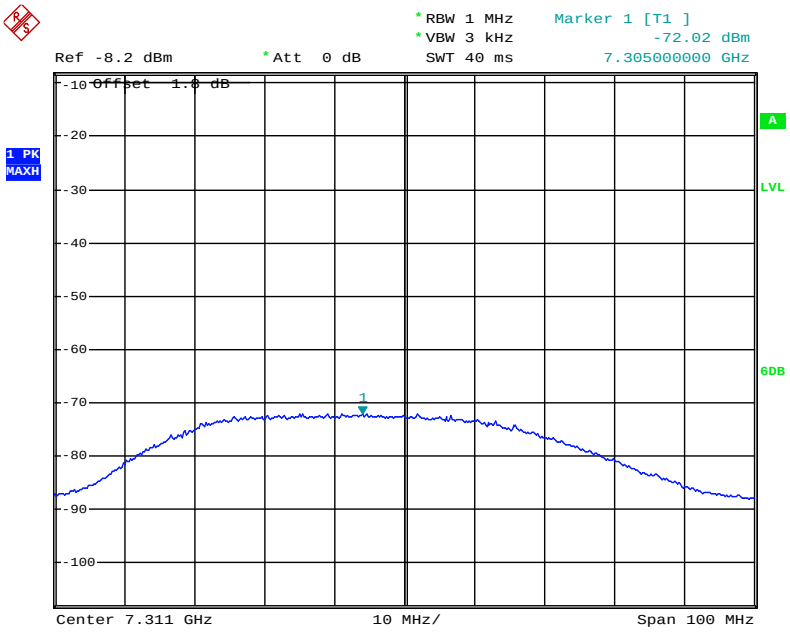
Date: 16.JUN.2015 15:47:18

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Peak



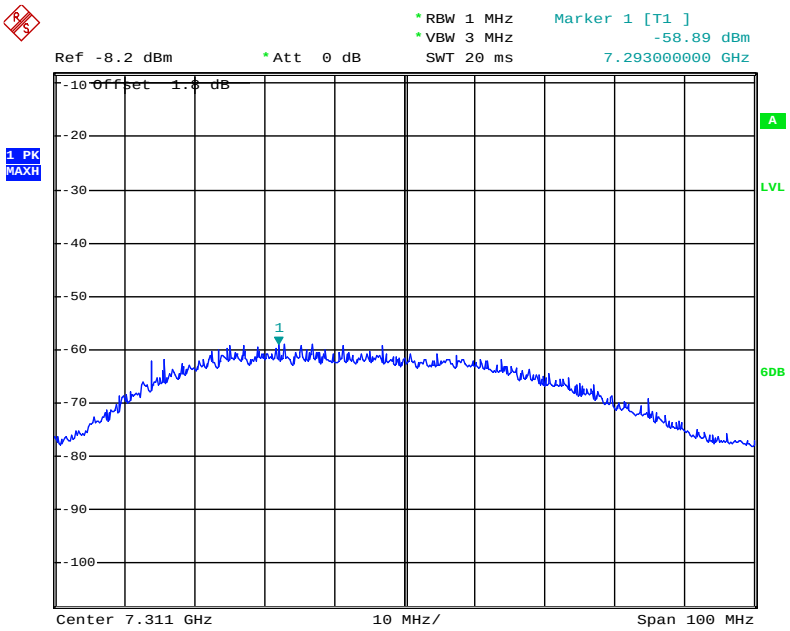
Date: 16.JUN.2015 15:47:35

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Average



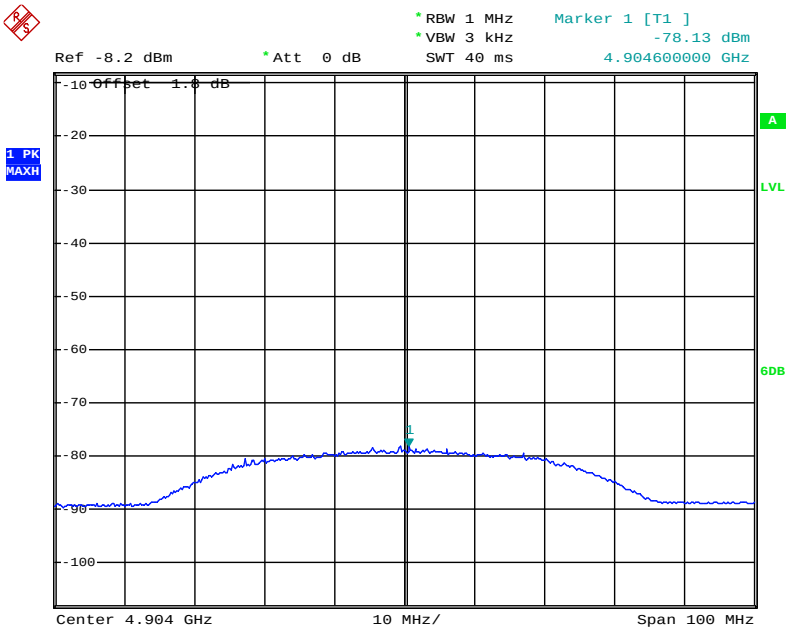
Date: 16.JUN.2015 15:50:32

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Peak



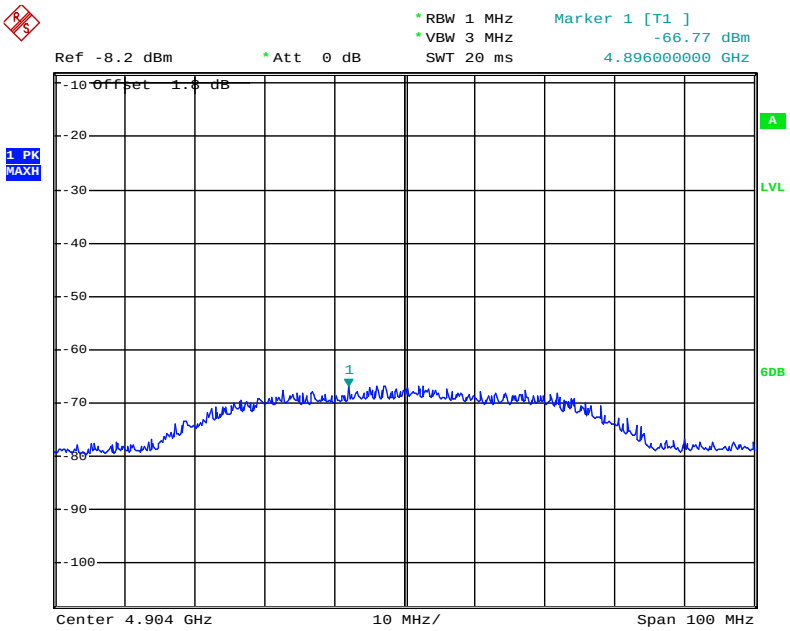
Date: 16.JUN.2015 15:50:38

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Average



Date: 16.JUN.2015 15:51:35

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Peak



Date: 16.JUN.2015 15:51:40

4.6. Band Edge Emissions Measurement

4.6.1. Limit

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

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

4.6.2. Measuring Instruments and Setting

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

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
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

Configure the EUT according to KDB558074 D01 v03r04. The EUT was perform conducted measurement and measurement level added antenna gain shall be comply to section 4.5.1.

4.6.4. Test Setup Layout

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

4.6.5. Test Deviation

There is no deviation with the original standard.

4.6.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.6.7. Test Result of Band Edge and Fundamental Emissions

For Ant. 1 (Printed Ant.)

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Average / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-46.16	-44.63	-41.25	3.38
2437	-50.81	-49.28	-41.25	8.03
2462	-43.18	-41.65	-41.25	0.40

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Peak / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-39.44	-37.91	-21.25	16.66
2437	-43.48	-41.95	-21.25	20.70
2462	-37.70	-36.17	-21.25	14.92

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Average / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-42.92	-41.39	-41.25	0.14
2437	-44.12	-42.59	-41.25	1.34
2462	-43.12	-41.59	-41.25	0.34

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Peak / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-27.76	-26.23	-21.25	4.98
2437	-27.20	-25.67	-21.25	4.42
2462	-30.75	-29.22	-21.25	7.97

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Average / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-43.07	-41.54	-41.25	0.29
2437	-43.01	-41.48	-41.25	0.23
2462	-43.54	-42.01	-41.25	0.76

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Peak / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-29.16	-27.63	-21.25	6.38
2437	-28.45	-26.92	-21.25	5.67
2462	-29.44	-27.91	-21.25	6.66

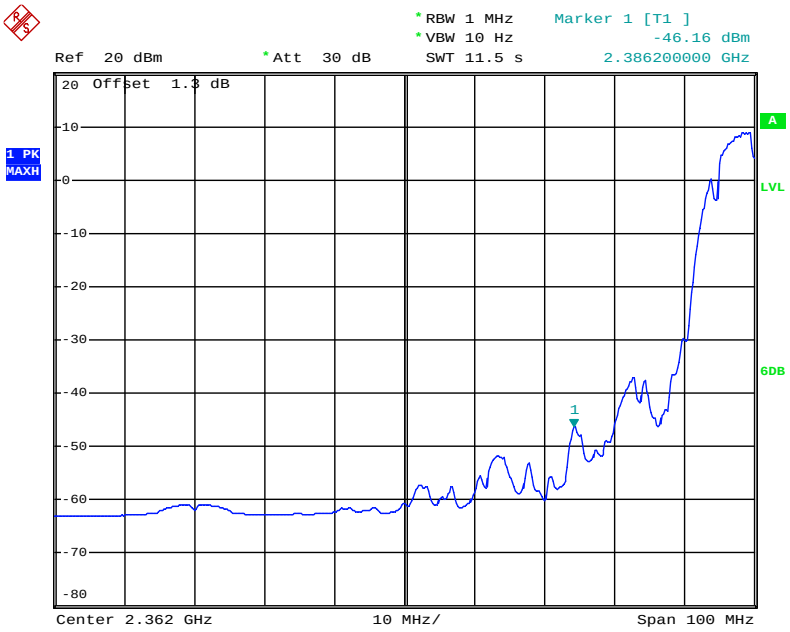
Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Average / Ant. 1

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2422	-43.03	-41.50	-41.25	0.25
2437	-46.30	-44.77	-41.25	3.52
2452	-42.90	-41.37	-41.25	0.12

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Peak / Ant. 1

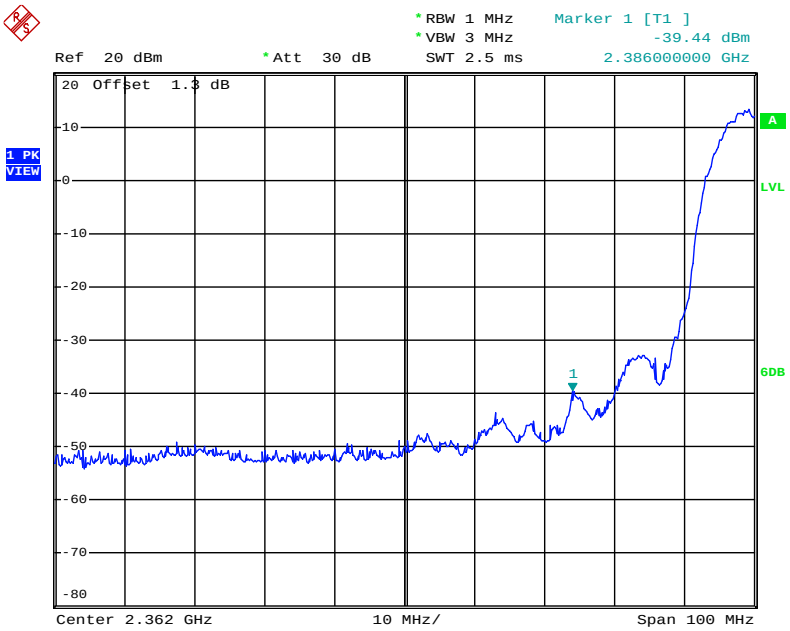
Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2422	-30.50	-28.97	-21.25	7.72
2437	-33.82	-32.29	-21.25	11.04
2452	-28.76	-27.23	-21.25	5.98

Plot on Configuration IEEE 802.11b / 2412MHz / Average



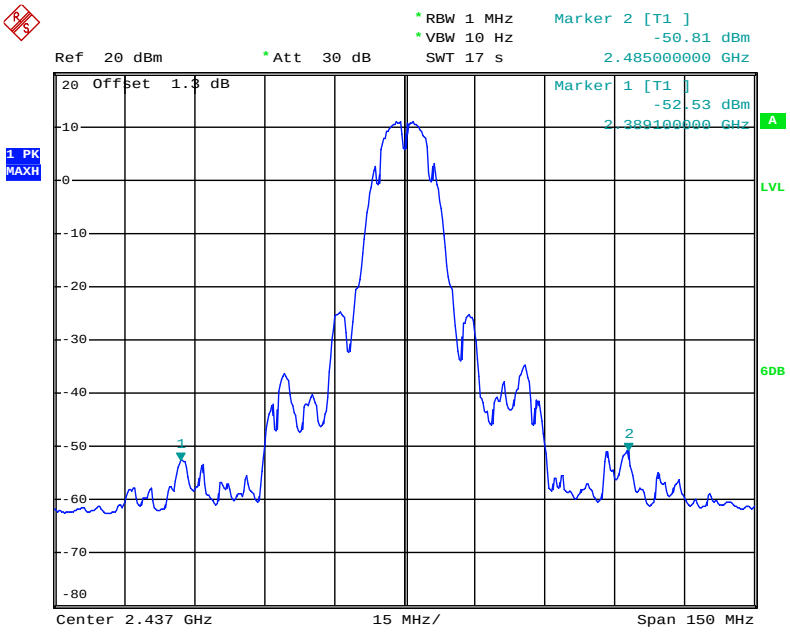
Date: 16.JUN.2015 10:28:40

Plot on Configuration IEEE 802.11b / 2412MHz / Peak



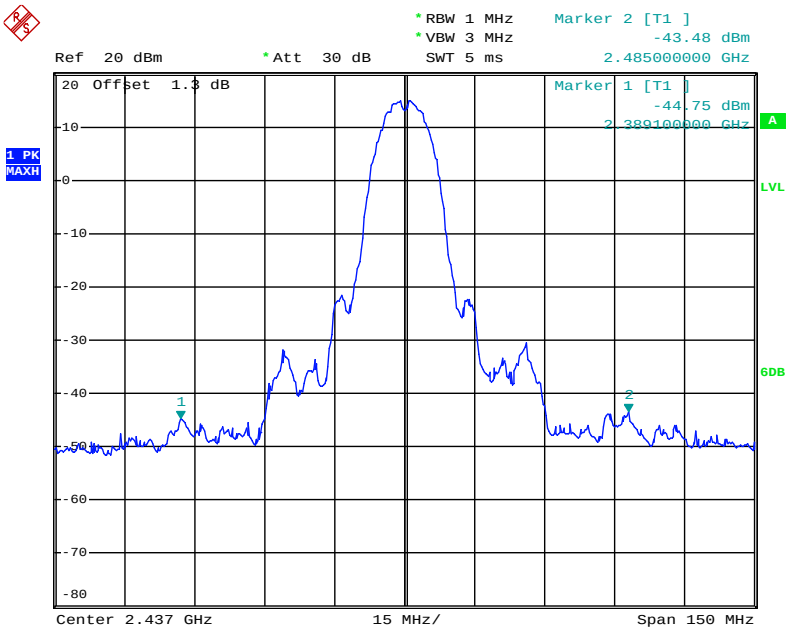
Date: 16.JUN.2015 10:29:37

Plot on Configuration IEEE 802.11b / 2437MHz / Average



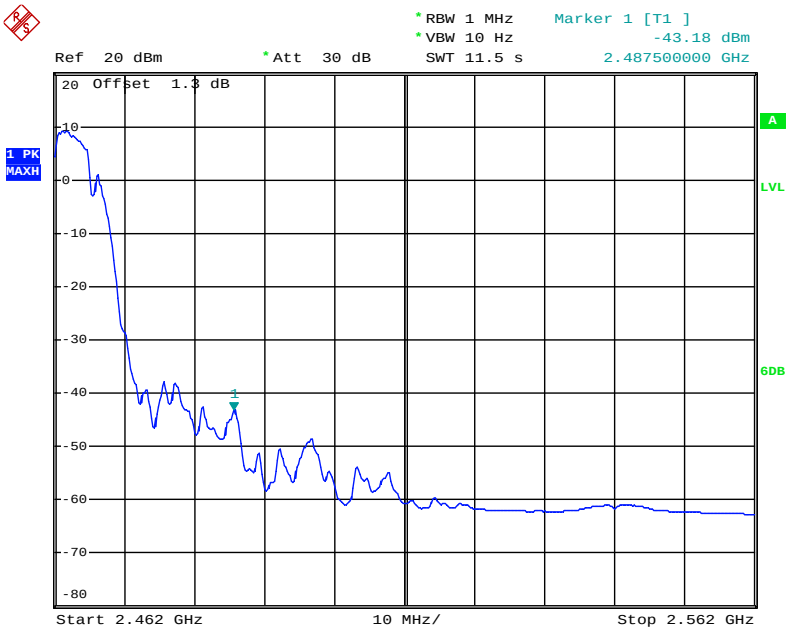
Date: 16.JUN.2015 15:57:34

Plot on Configuration IEEE 802.11b / 2437MHz / Peak



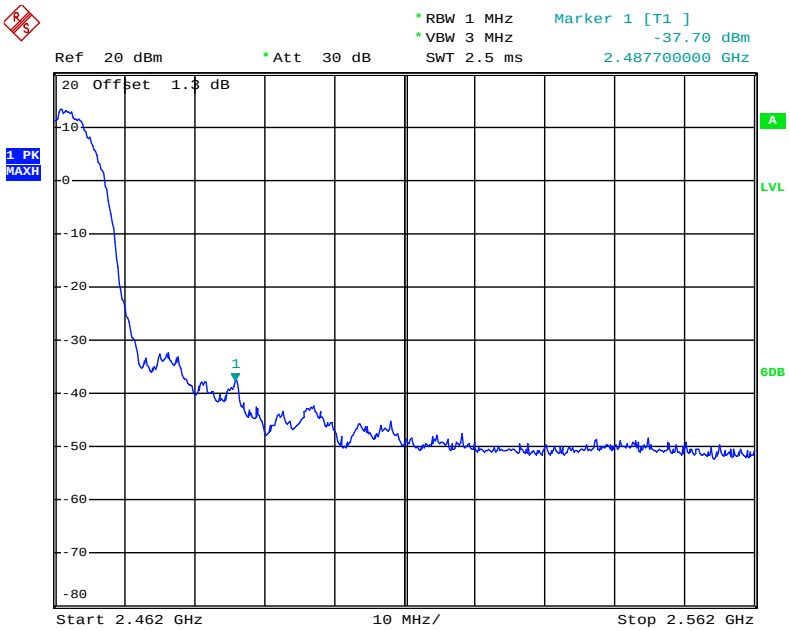
Date: 16.JUN.2015 15:58:05

Plot on Configuration IEEE 802.11b / 2462MHz / Average



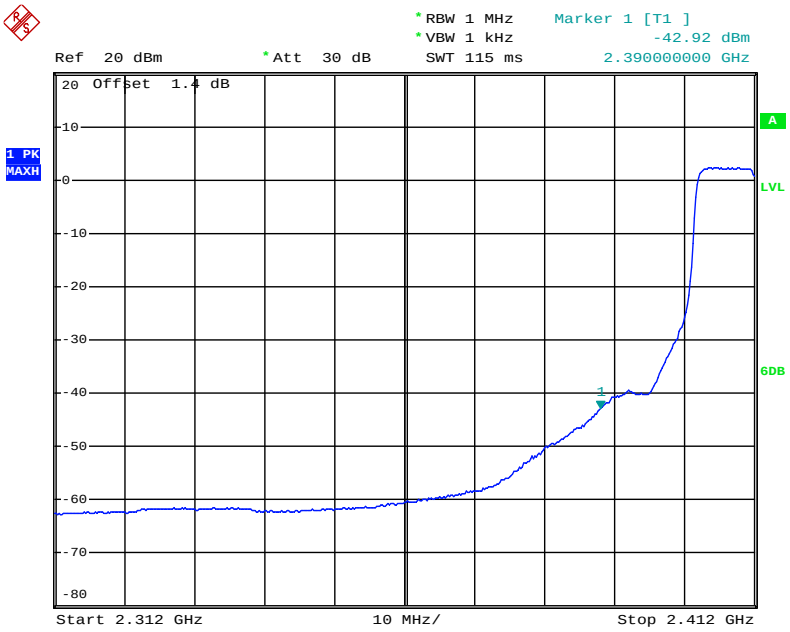
Date: 16.JUN.2015 10:41:08

Plot on Configuration IEEE 802.11b / 2462MHz / Peak



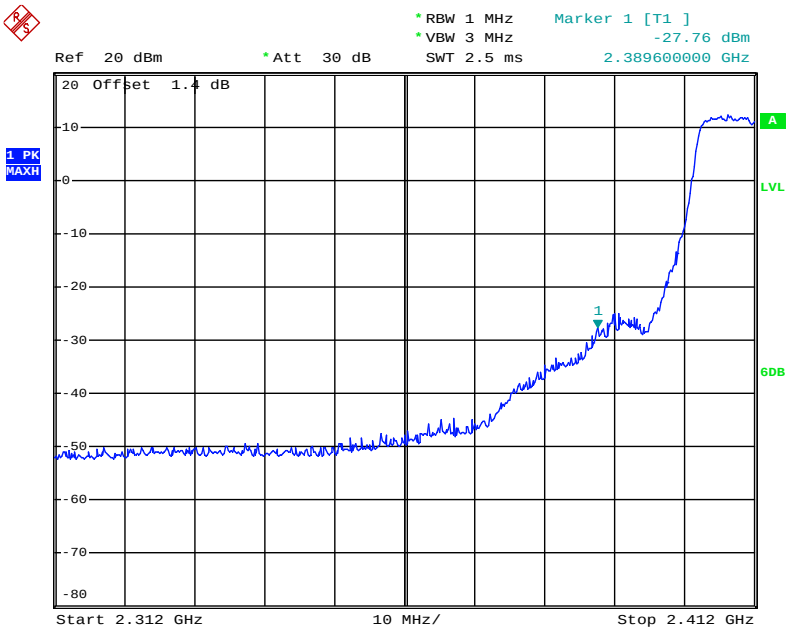
Date: 16.JUN.2015 10:41:34

Plot on Configuration IEEE 802.11g / 2412MHz / Average



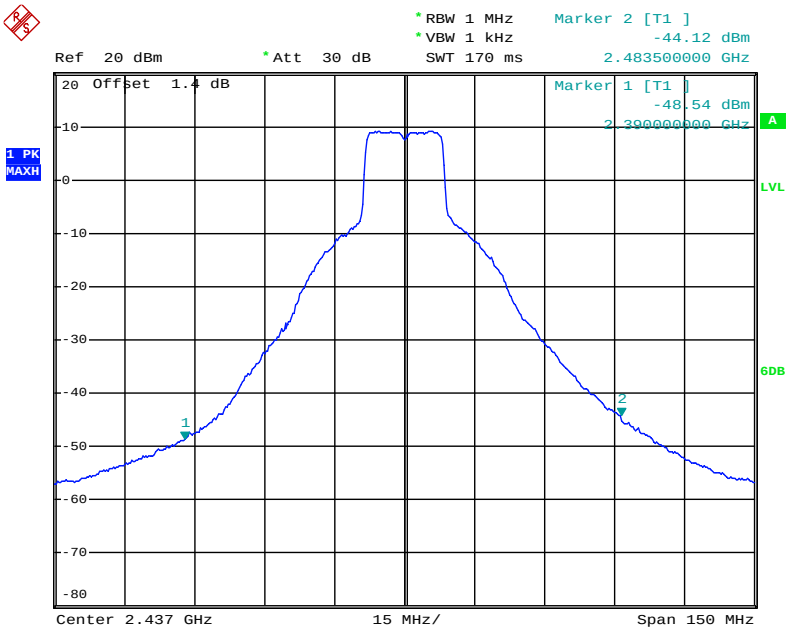
Date: 16.JUN.2015 10:46:41

Plot on Configuration IEEE 802.11g / 2412MHz / Peak



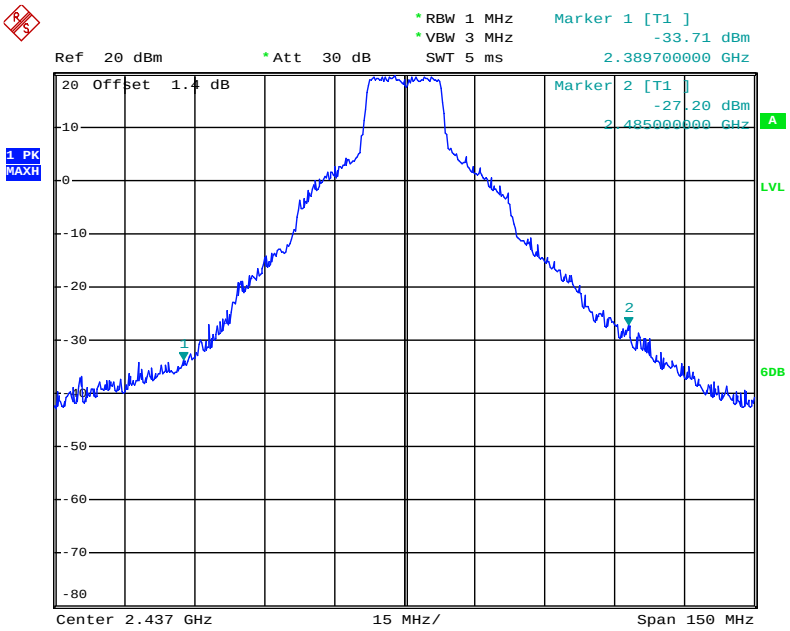
Date: 16.JUN.2015 10:47:34

Plot on Configuration IEEE 802.11g / 2437MHz / Average



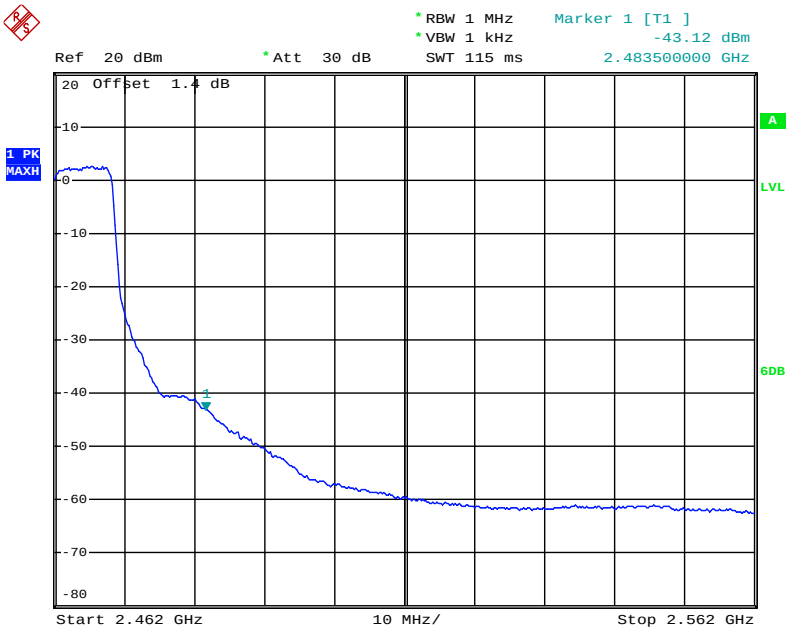
Date: 16.JUN.2015 10:50:48

Plot on Configuration IEEE 802.11g / 2437MHz / Peak



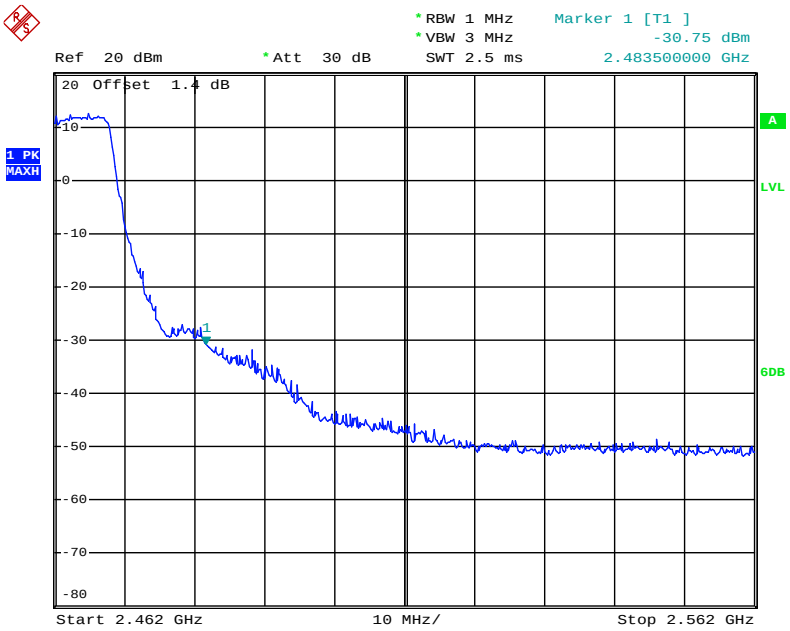
Date: 16.JUN.2015 10:51:18

Plot on Configuration IEEE 802.11g / 2462MHz / Average



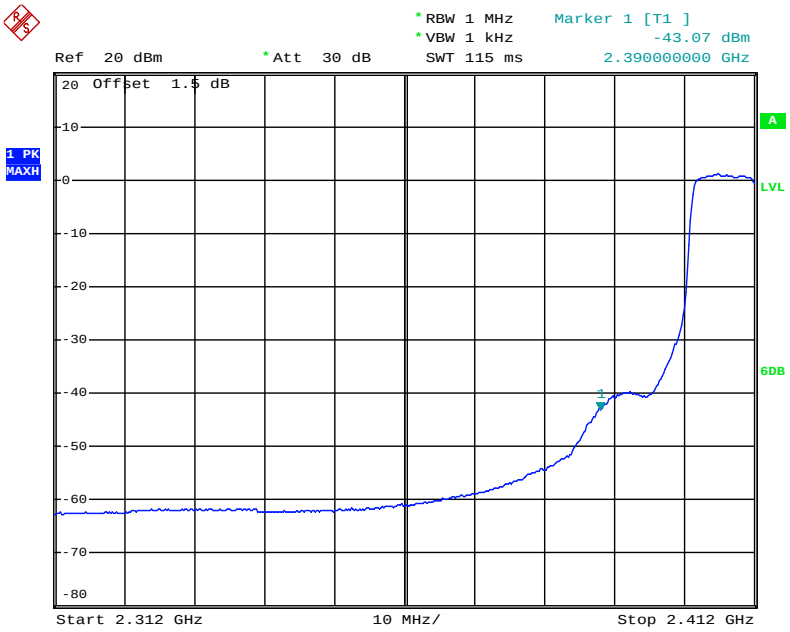
Date: 16.JUN.2015 10:56:53

Plot on Configuration IEEE 802.11g / 2462MHz / Peak



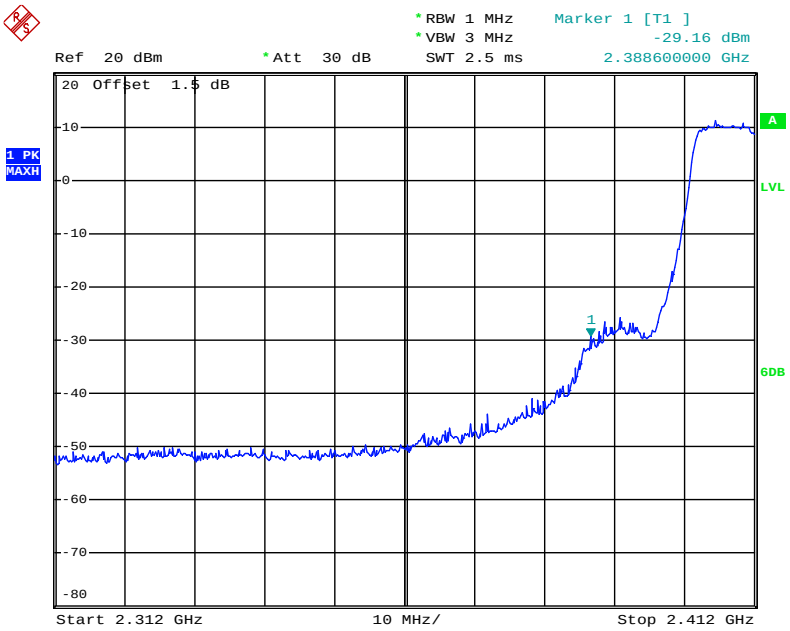
Date: 16.JUN.2015 10:57:17

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Average



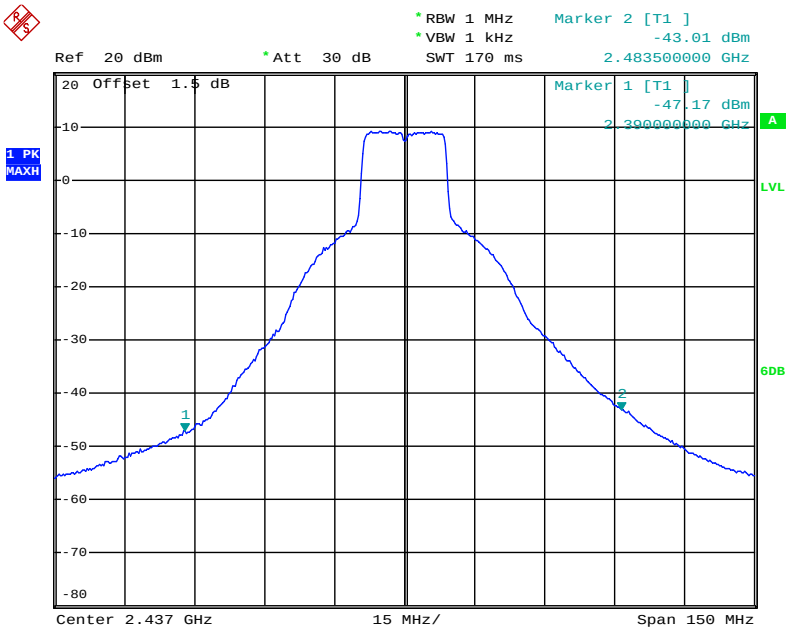
Date: 16.JUN.2015 10:58:52

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Peak



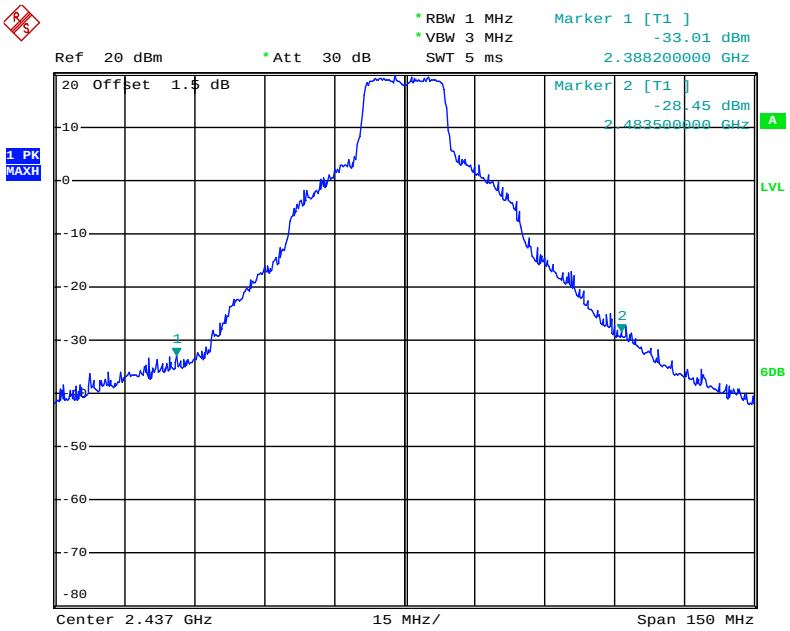
Date: 16.JUN.2015 10:59:06

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Average



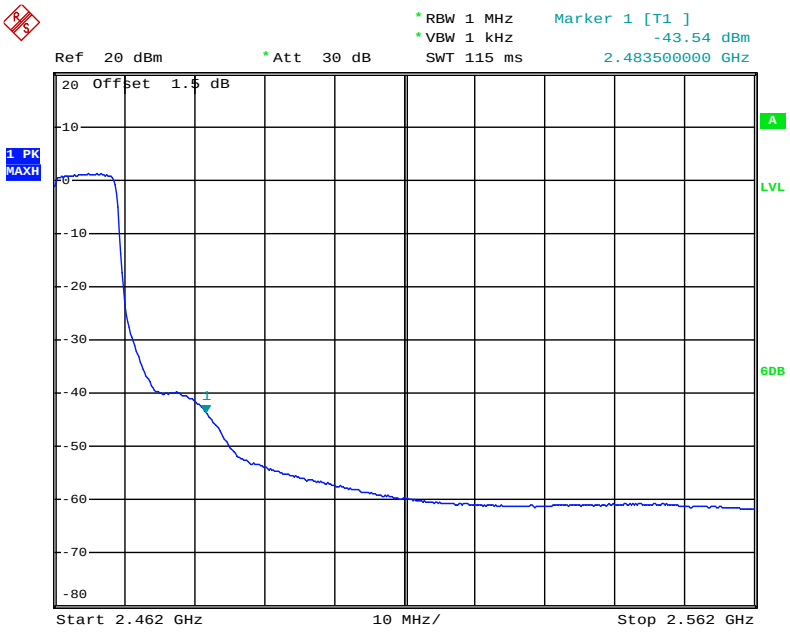
Date: 16.JUN.2015 11:21:38

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Peak



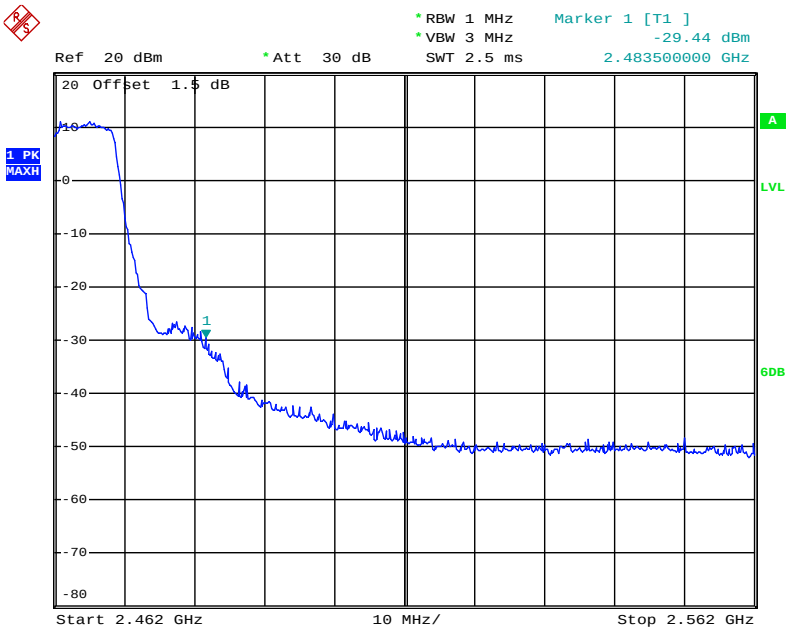
Date: 16.JUN.2015 11:22:13

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Average



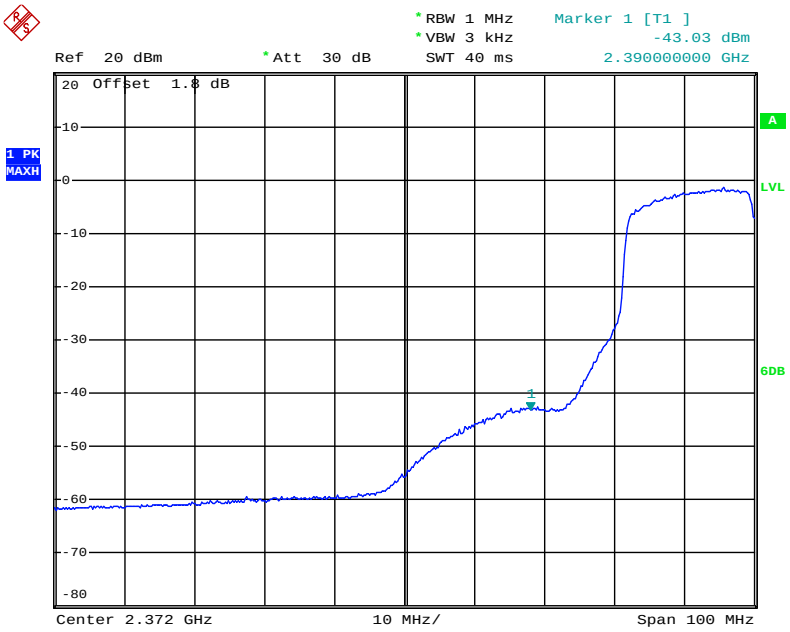
Date: 16.JUN.2015 11:24:20

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Peak



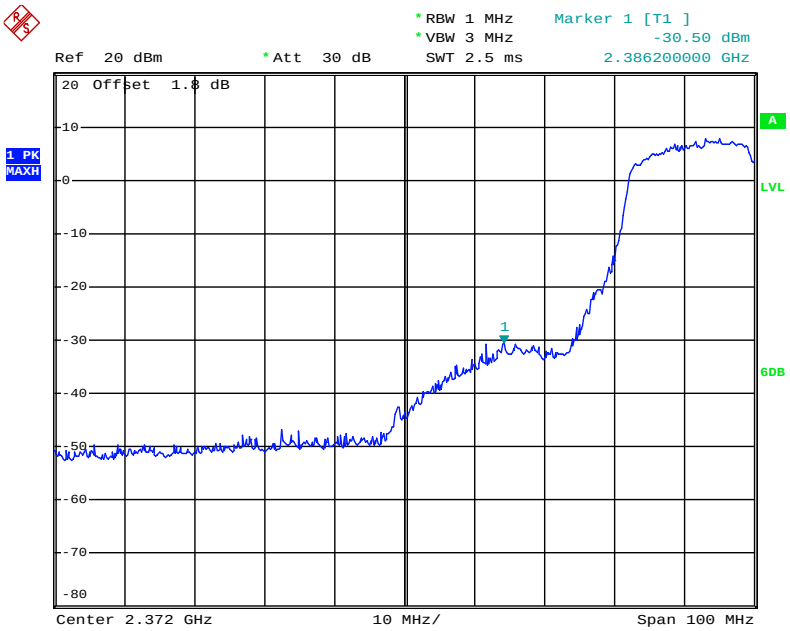
Date: 16.JUN.2015 11:24:47

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Average



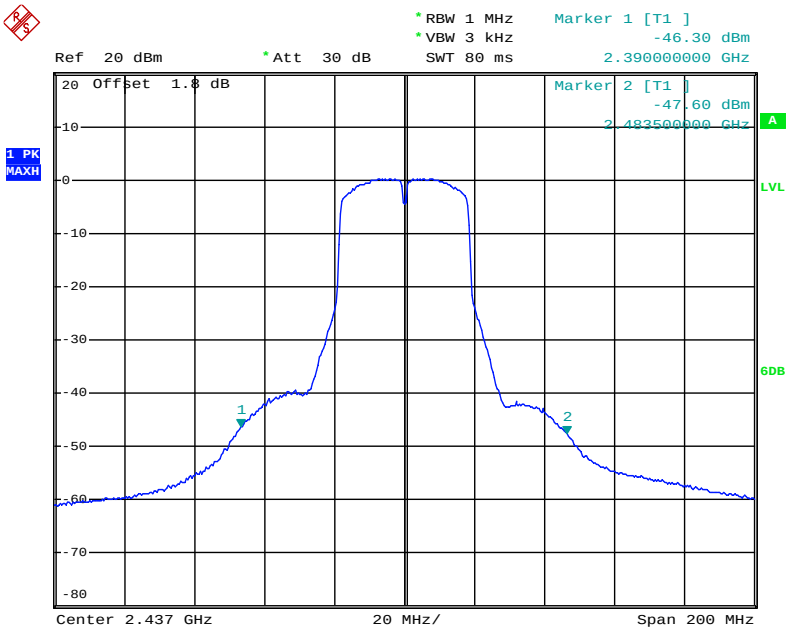
Date: 16.JUN.2015 11:30:49

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Peak



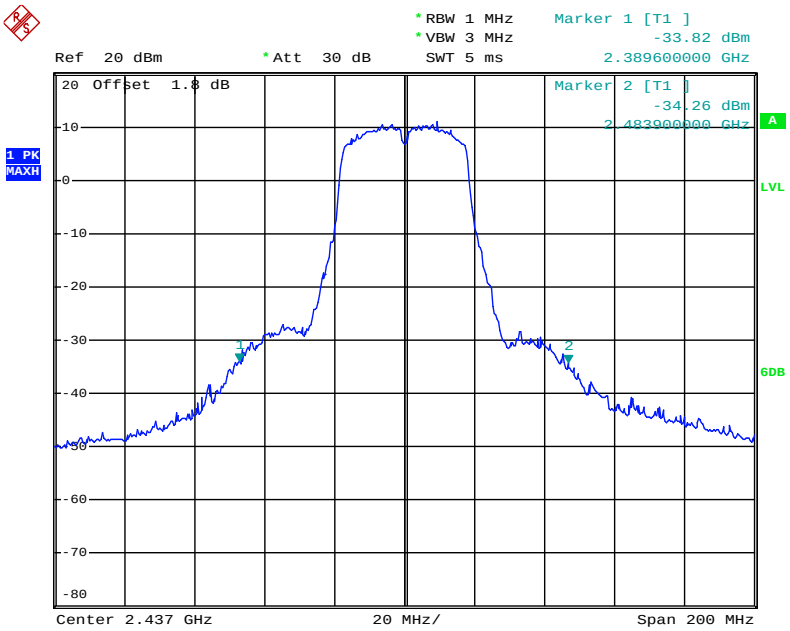
Date: 16.JUN.2015 11:29:19

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Average



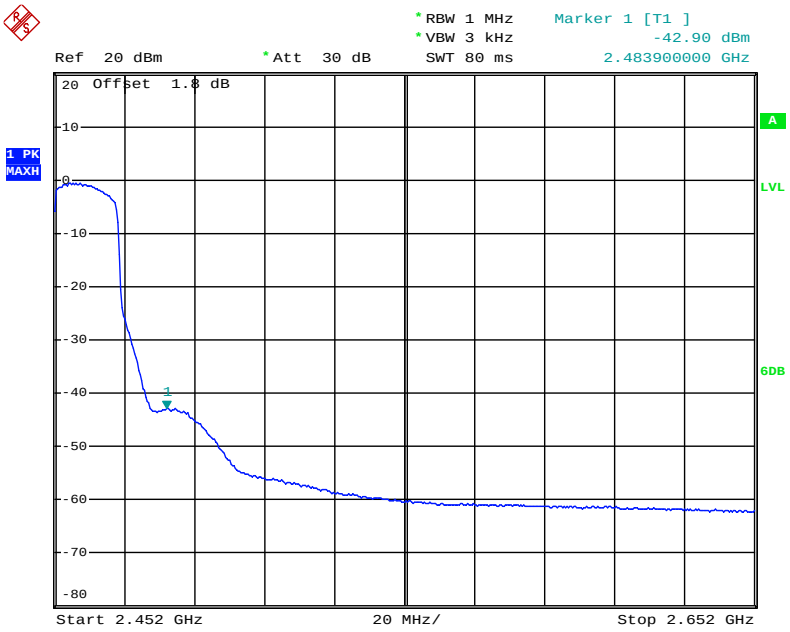
Date: 16.JUN.2015 11:36:53

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Peak



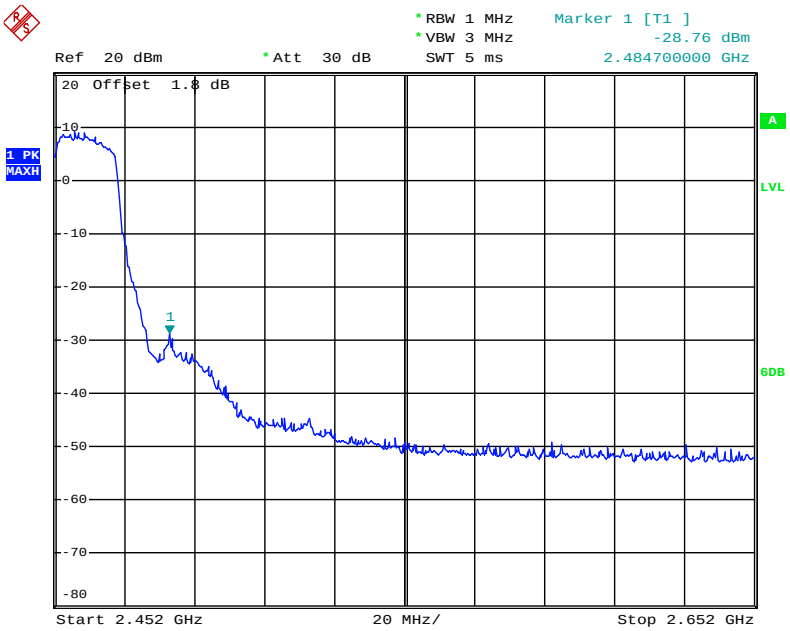
Date: 16.JUN.2015 11:38:21

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Average



Date: 16.JUN.2015 11:41:41

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Peak



Date: 16.JUN.2015 11:42:00

For Emission not in Restricted Band

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Ant. 1

Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2412MHz	30MHz~2400MHz	-29.71	-13.25	16.46
	2390MHz~2400MHz	-37.92	-13.25	24.67
	2483.5MHz~2500MHz	-51.66	-13.25	38.41
	2500MHz~26500MHz	-39.84	-13.25	26.59
2462MHz	30MHz~2400MHz	-44.83	-13.25	31.58
	2390MHz~2400MHz	-53.28	-13.25	40.03
	2483.5MHz~2500MHz	-44.04	-13.25	30.79
	2500MHz~26500MHz	-42.05	-13.25	28.8

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Ant. 1

Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2412MHz	30MHz~2400MHz	-27.01	-13.38	13.63
	2390MHz~2400MHz	-33.52	-13.38	20.14
	2483.5MHz~2500MHz	-52.62	-13.38	39.24
	2500MHz~26500MHz	-44.3	-13.38	30.92
2462MHz	30MHz~2400MHz	-53.12	-13.38	39.74
	2390MHz~2400MHz	-52.87	-13.38	39.49
	2483.5MHz~2500MHz	-42.45	-13.38	29.07
	2500MHz~26500MHz	-44.08	-13.38	30.7

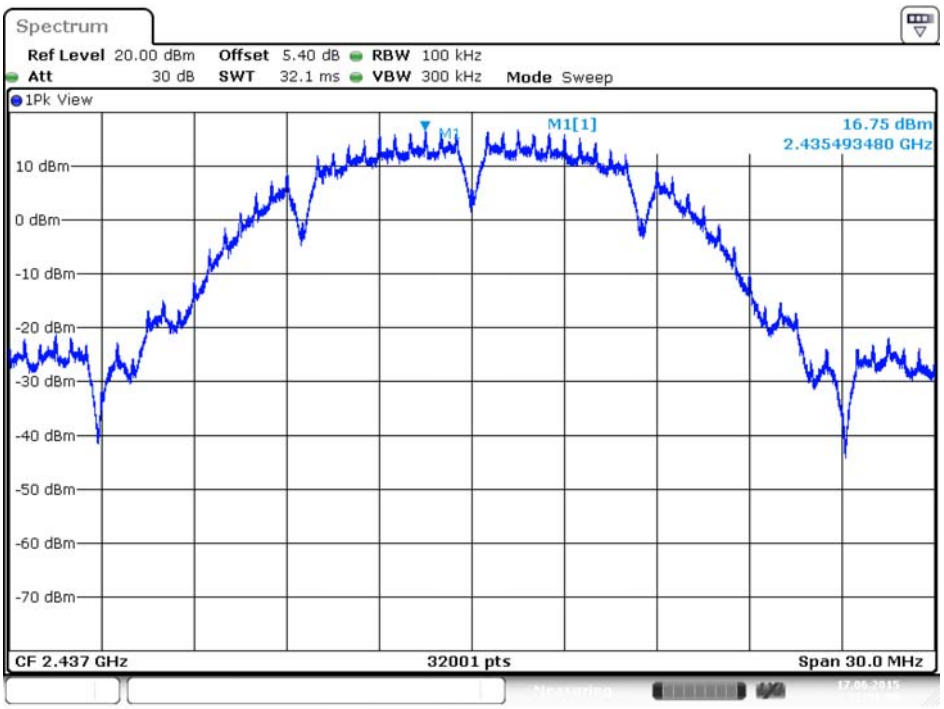
Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Ant. 1

Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2412MHz	30MHz~2400MHz	-29.01	-13.62	15.39
	2390MHz~2400MHz	-34.27	-13.62	20.65
	2483.5MHz~2500MHz	-52.48	-13.62	38.86
	2500MHz~26500MHz	-44.82	-13.62	31.2
2462MHz	30MHz~2400MHz	-52.13	-13.62	38.51
	2390MHz~2400MHz	-53.28	-13.62	39.66
	2483.5MHz~2500MHz	-43.15	-13.62	29.53
	2500MHz~26500MHz	-45.11	-13.62	31.49

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Ant. 1

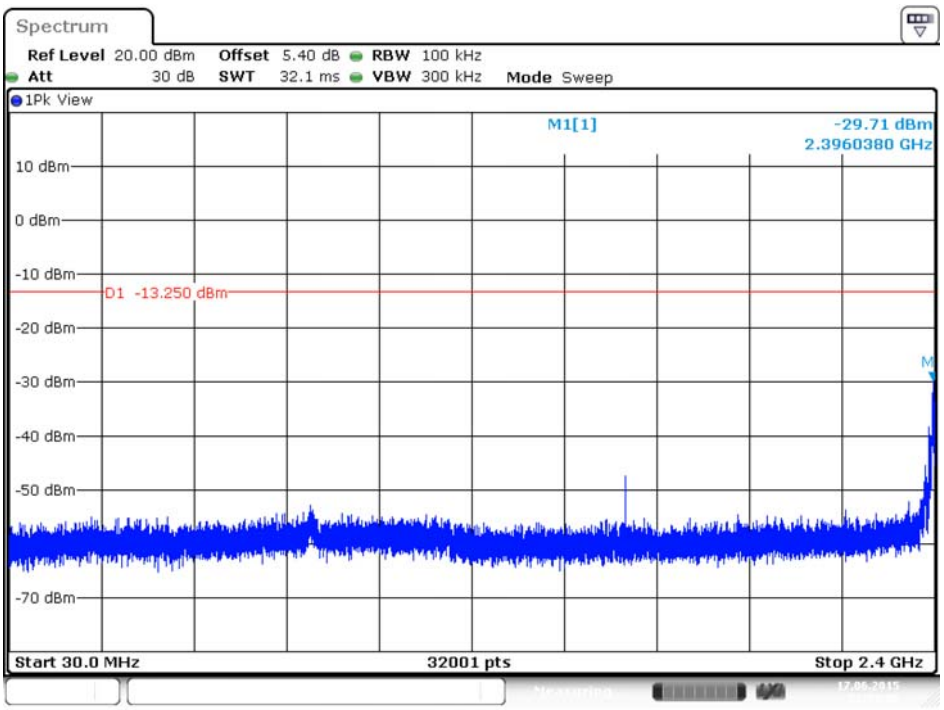
Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2422MHz	30MHz~2400MHz	-28.35	-22.56	5.79
	2390MHz~2400MHz	-34.18	-22.56	11.62
	2483.5MHz~2500MHz	-50.78	-22.56	28.22
	2500MHz~26500MHz	-44.62	-22.56	22.06
2452MHz	30MHz~2400MHz	-49.69	-22.56	27.13
	2390MHz~2400MHz	-50.78	-22.56	28.22
	2483.5MHz~2500MHz	-29.31	-22.56	6.75
	2500MHz~26500MHz	-44.14	-22.56	21.58

Plot on Configuration IEEE 802.11b / Reference Level



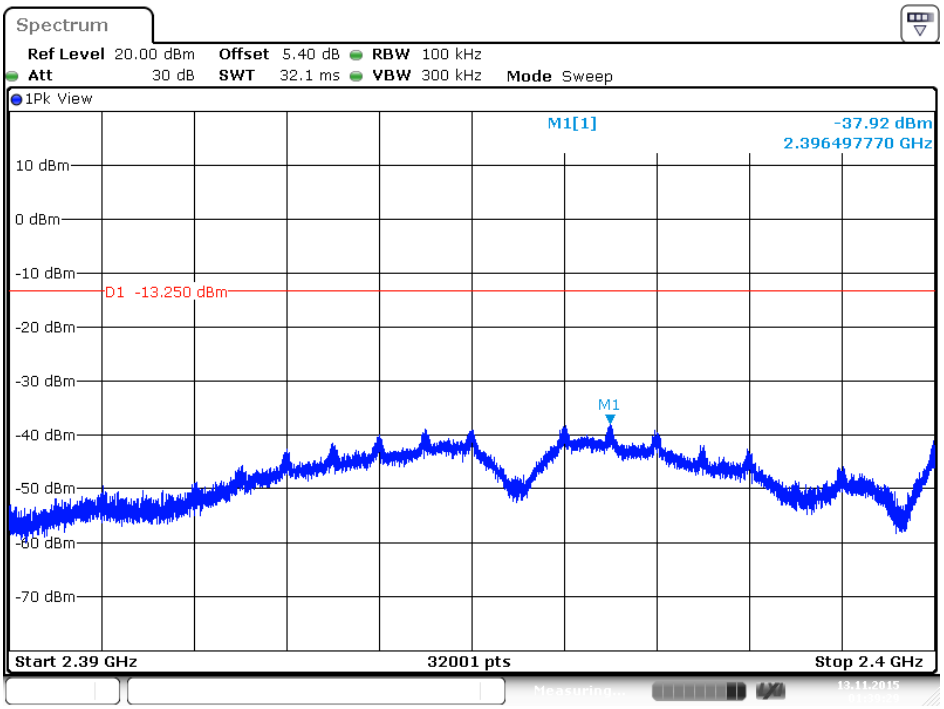
Date: 17.JUN.2015 22:52:10

Plot on Configuration IEEE 802.11b / 2412MHz / 30MHz~2400MHz (down 30dBc)



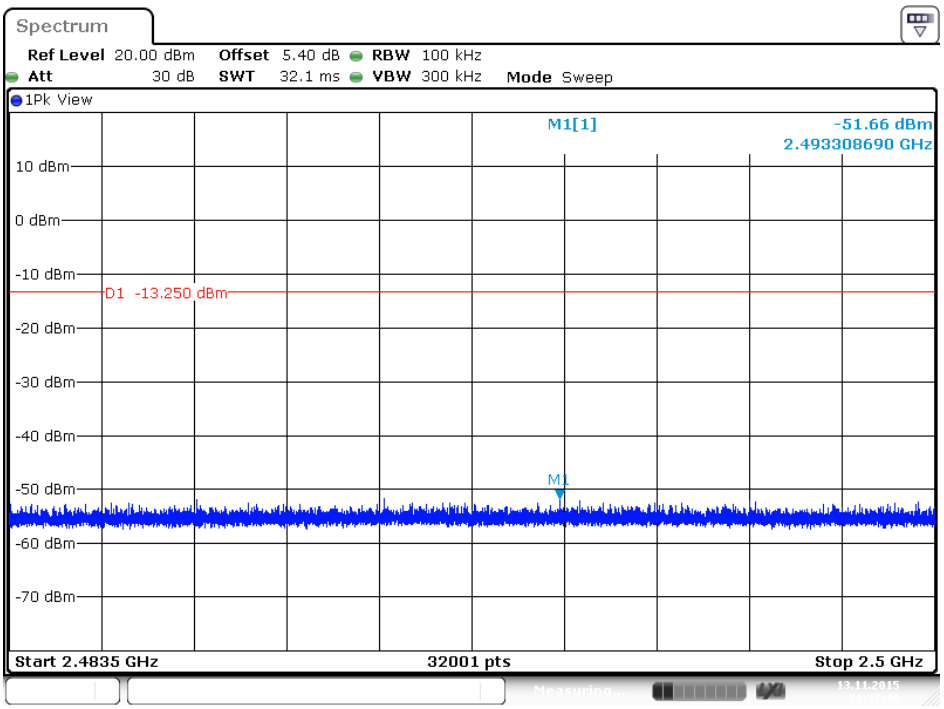
Date: 17.JUN.2015 22:53:06

Plot on Configuration IEEE 802.11b / 2412MHz / 2390MHz~2400MHz (down 30dBc)



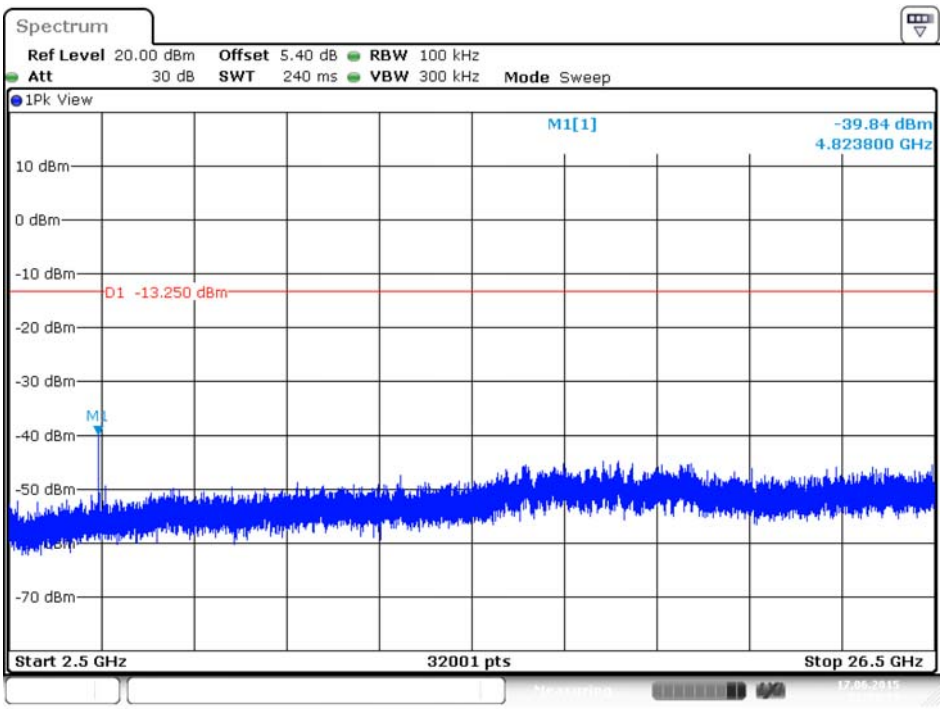
Date: 13.NOV.2015 01:39:29

Plot on Configuration IEEE 802.11b / 2412MHz / 2483.5MHz~2500MHz (down 30dBc)



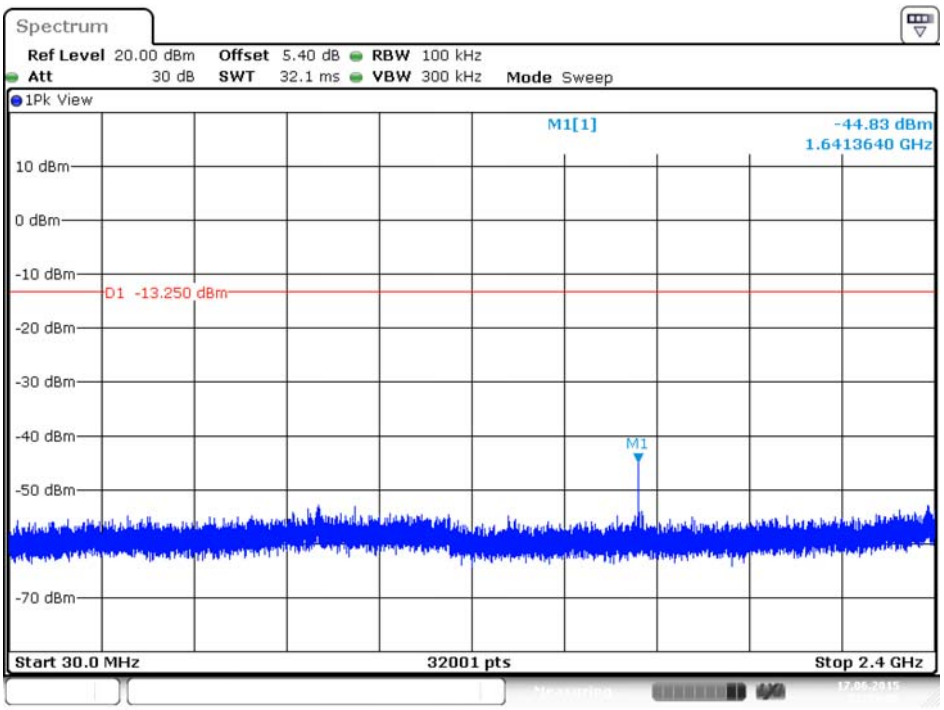
Date: 13.NOV.2015 01:37:40

Plot on Configuration IEEE 802.11b / 2412MHz / 2500MHz~26500MHz (down 30dBc)



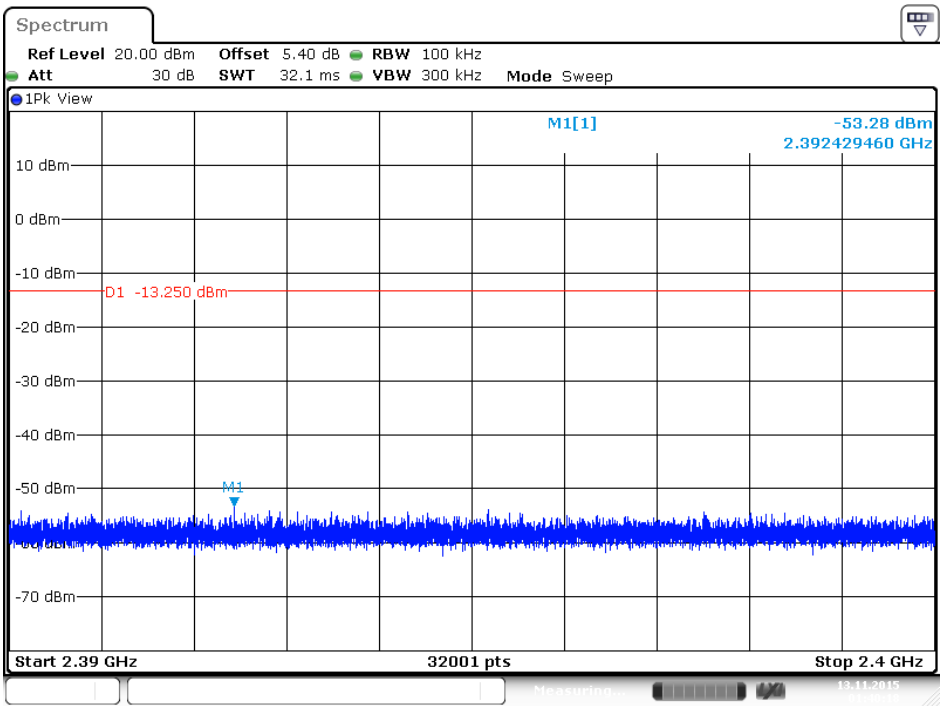
Date: 17.JUN.2015 22:53:39

Plot on Configuration IEEE 802.11b / 2462MHz / 30MHz~2400MHz (down 30dBc)



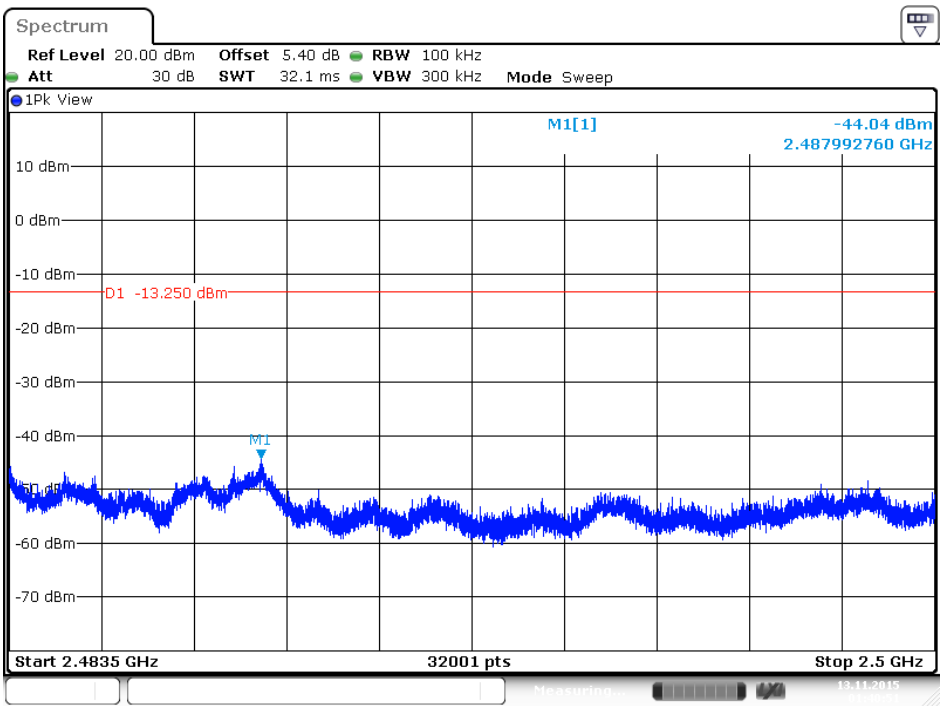
Date: 17.JUN.2015 22:54:26

Plot on Configuration IEEE 802.11b / 2462MHz / 2390MHz~2400MHz (down 30dBc)



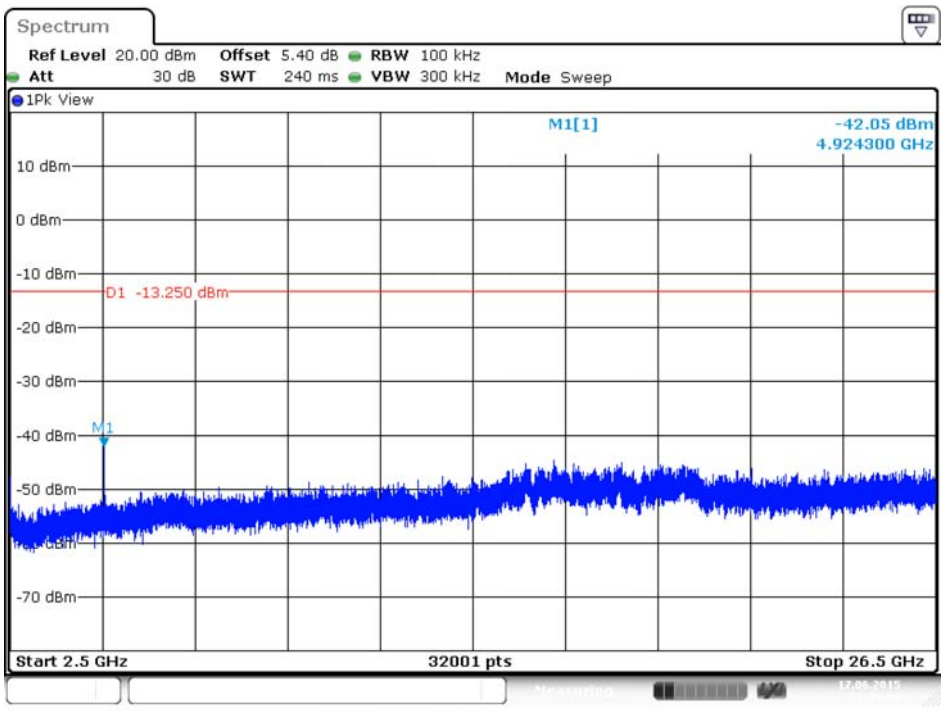
Date: 13.NOV.2015 01:40:18

Plot on Configuration IEEE 802.11b / 2462MHz / 2483.5MHz~2500MHz (down 30dBc)



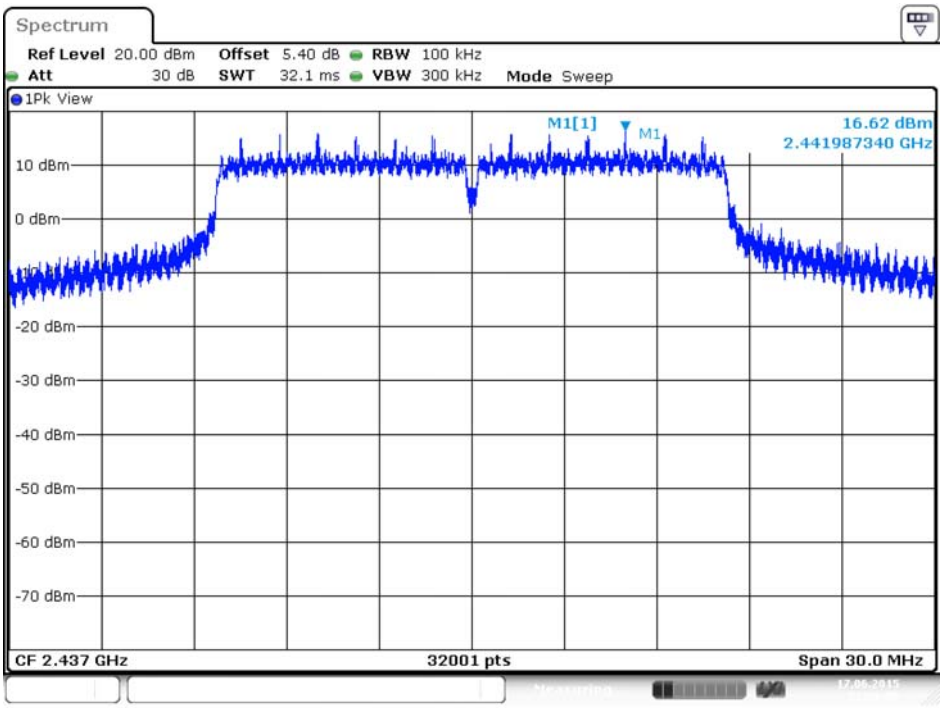
Date: 13.NOV.2015 01:40:51

Plot on Configuration IEEE 802.11b / 2462MHz / 2500MHz~26500MHz (down 30dBc)



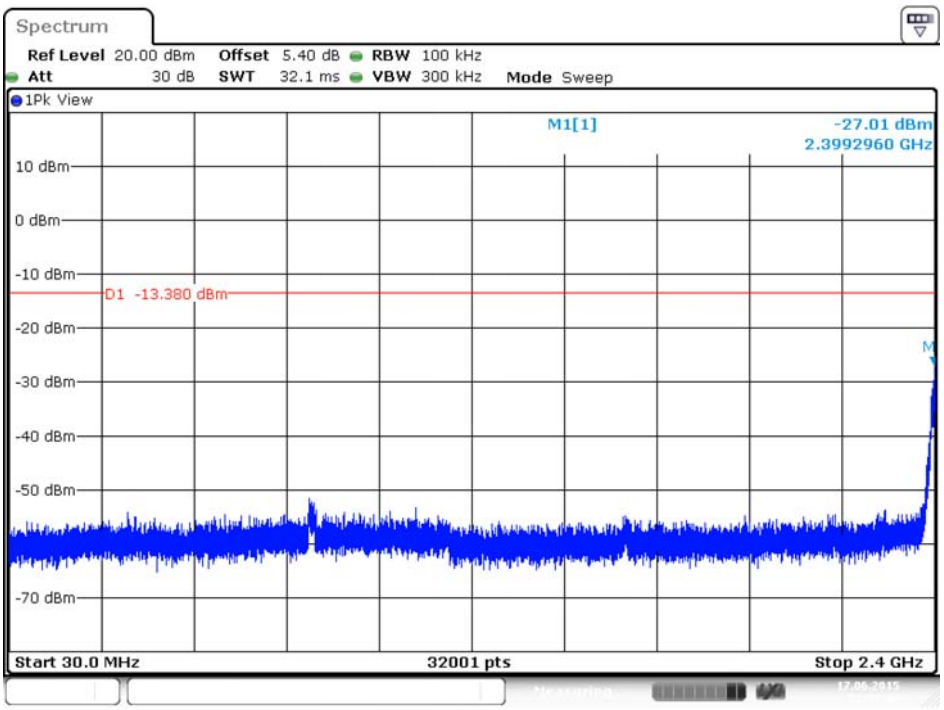
Date: 17.JUN.2015 22:54:04

Plot on Configuration IEEE 802.11g / Reference Level (down 30dBc)



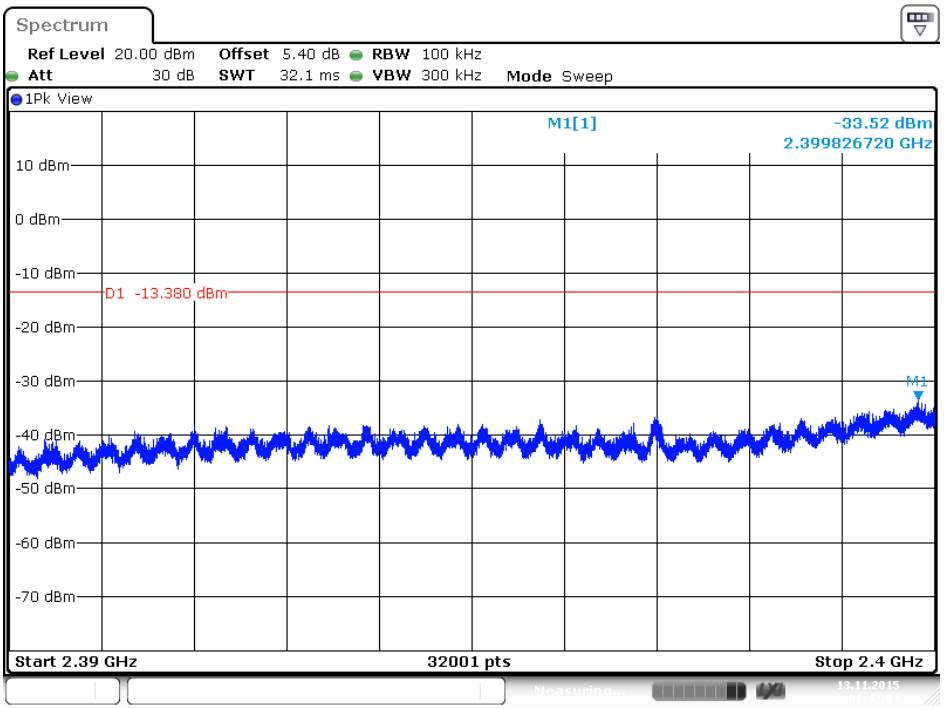
Date: 17.JUN.2015 22:56:58

Plot on Configuration IEEE 802.11g / 2412MHz / 30MHz~2400MHz (down 30dBc)



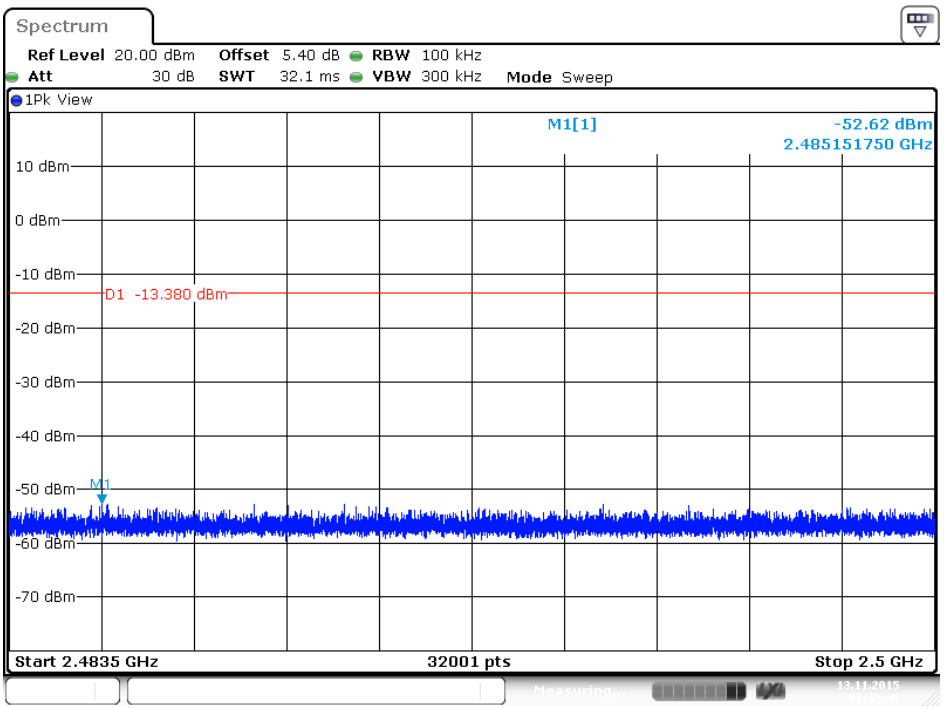
Date: 17.JUN.2015 22:57:50

Plot on Configuration IEEE 802.11g / 2412MHz / 2390MHz~2400MHz (down 30dBc)



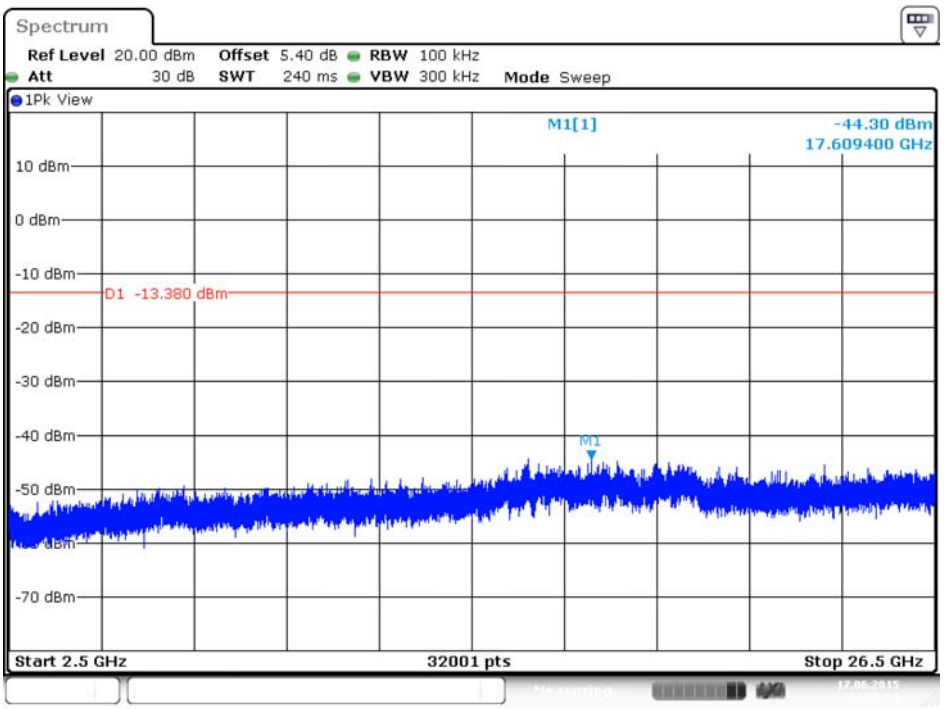
Date: 13.NOV.2015 01:42:04

Plot on Configuration IEEE 802.11g / 2412MHz / 2483.5MHz~2500MHz (down 30dBc)



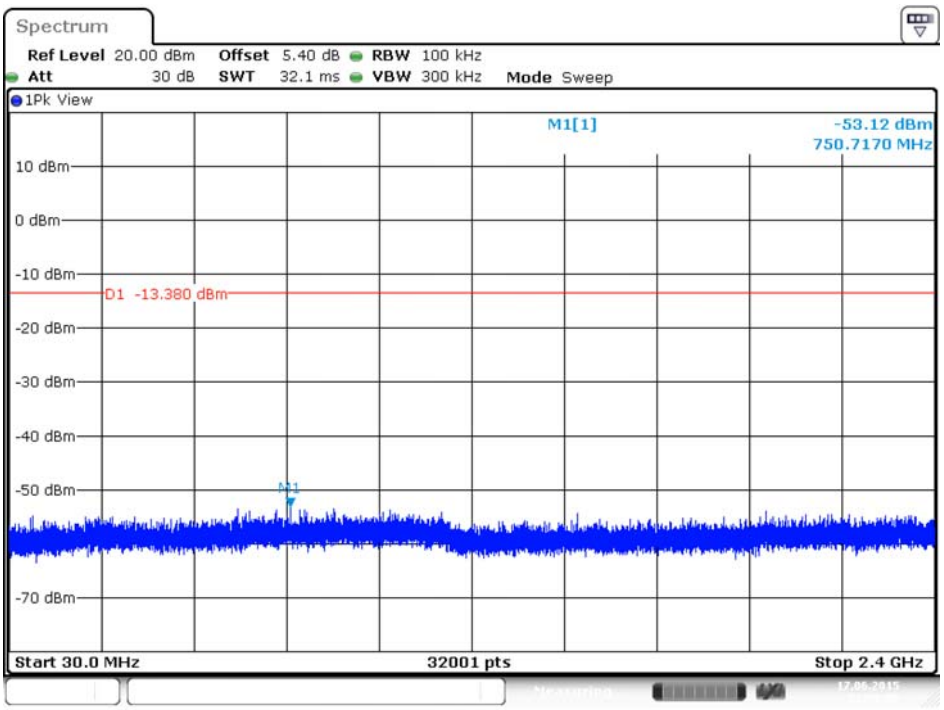
Date: 13.NOV.2015 01:42:45

Plot on Configuration IEEE 802.11g / 2412MHz / 2500MHz~26500MHz (down 30dBc)



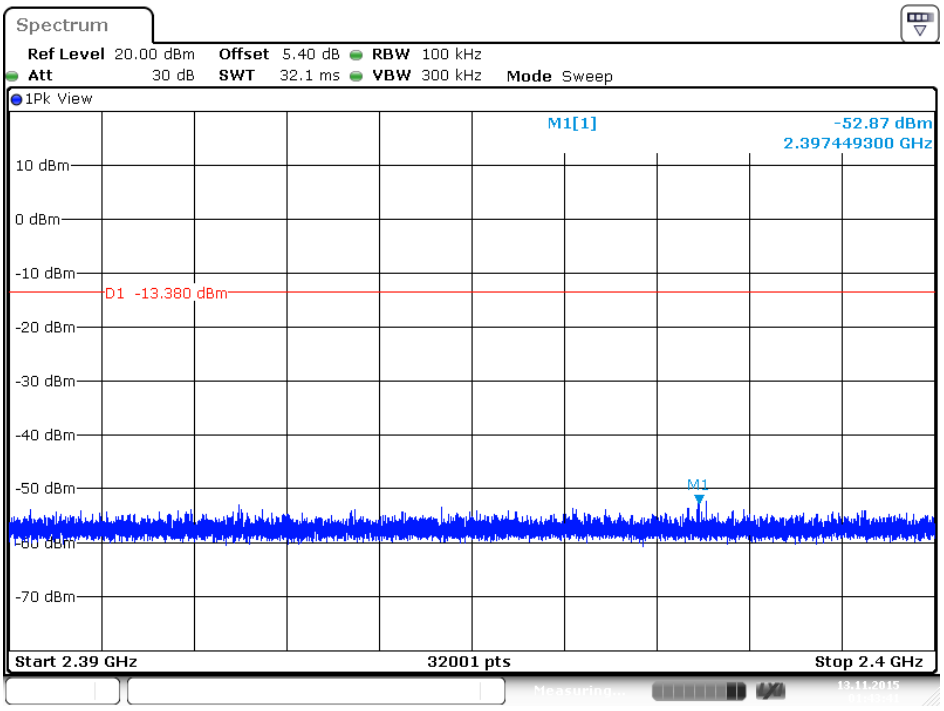
Date: 17.JUN.2015 22:58:13

Plot on Configuration IEEE 802.11g / 2462MHz / 30MHz~2400MHz (down 30dBc)



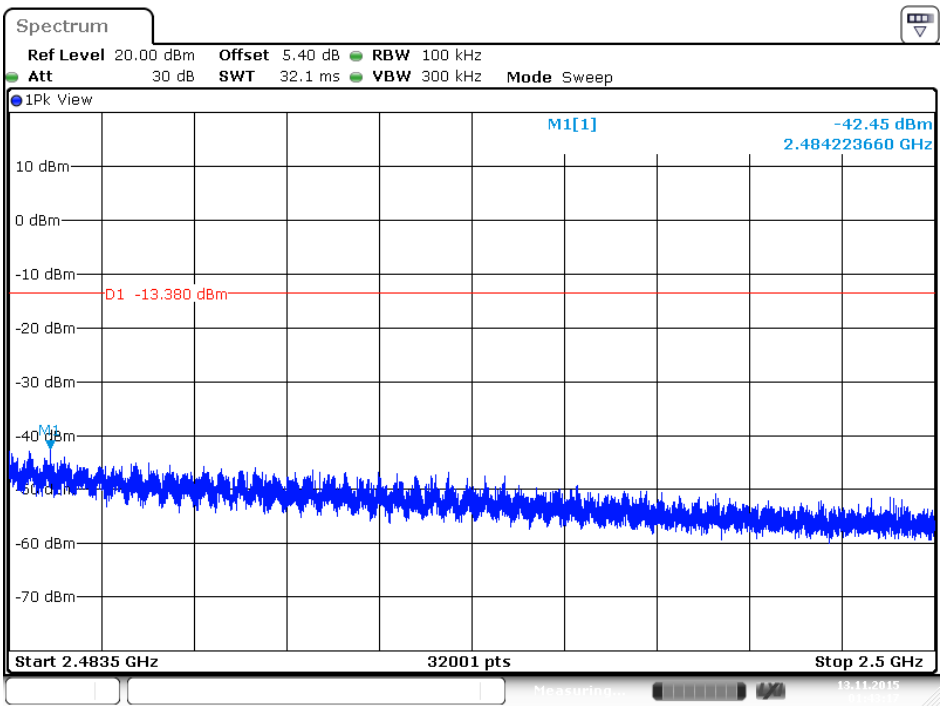
Date: 17.JUN.2015 22:58:57

Plot on Configuration IEEE 802.11g / 2462MHz / 2390MHz~2400MHz (down 30dBc)



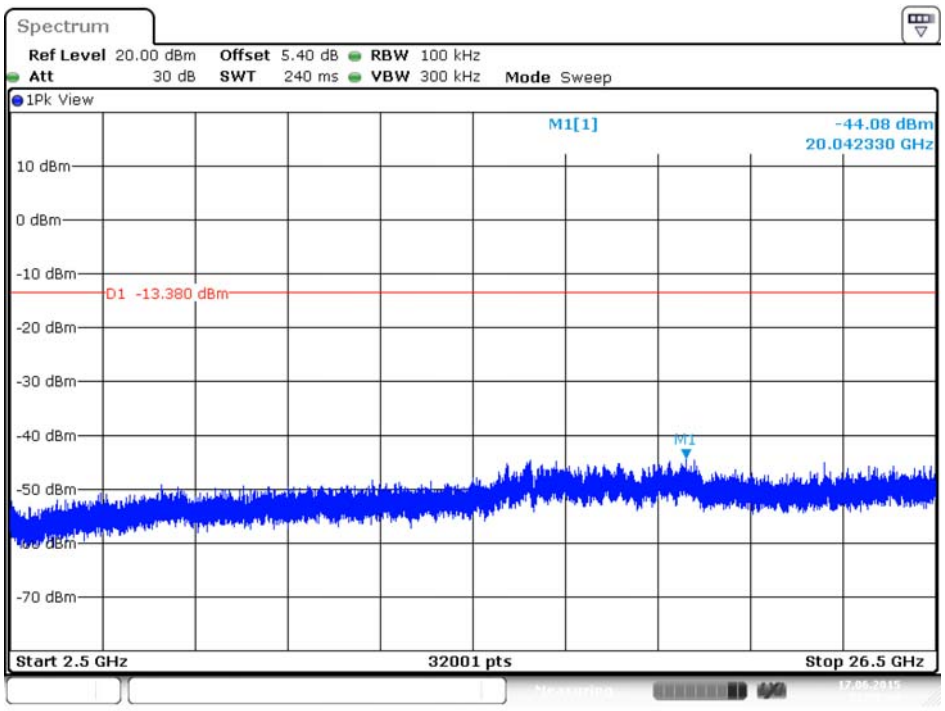
Date: 13.NOV.2015 01:43:42

Plot on Configuration IEEE 802.11g / 2462MHz / 2483.5MHz~2500MHz (down 30dBc)



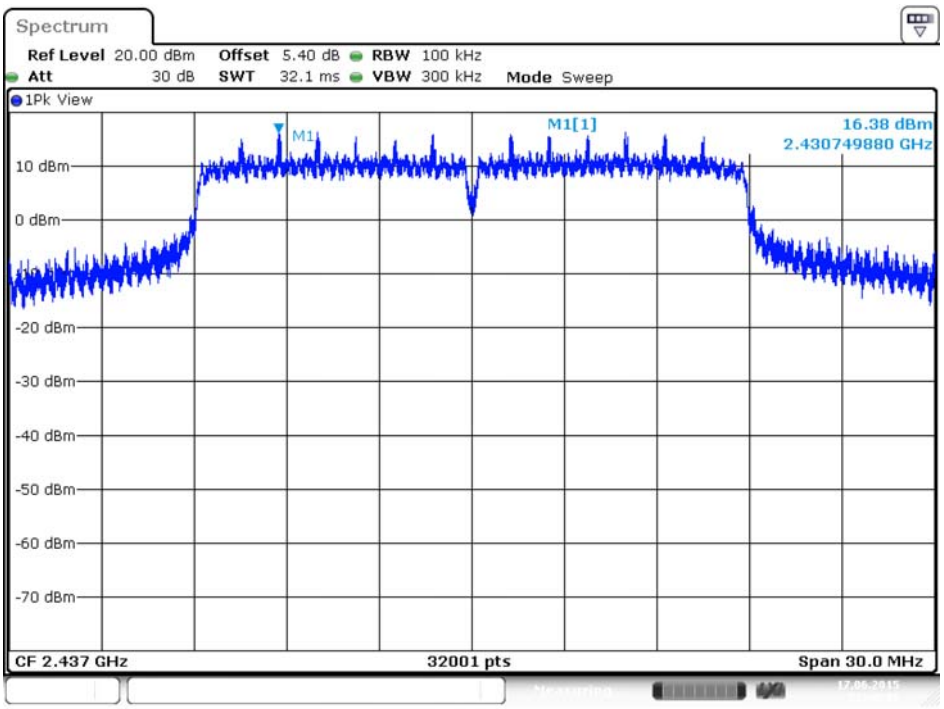
Date: 13.NOV.2015 01:43:17

Plot on Configuration IEEE 802.11g / 2462MHz / 2500MHz~26500MHz (down 30dBc)



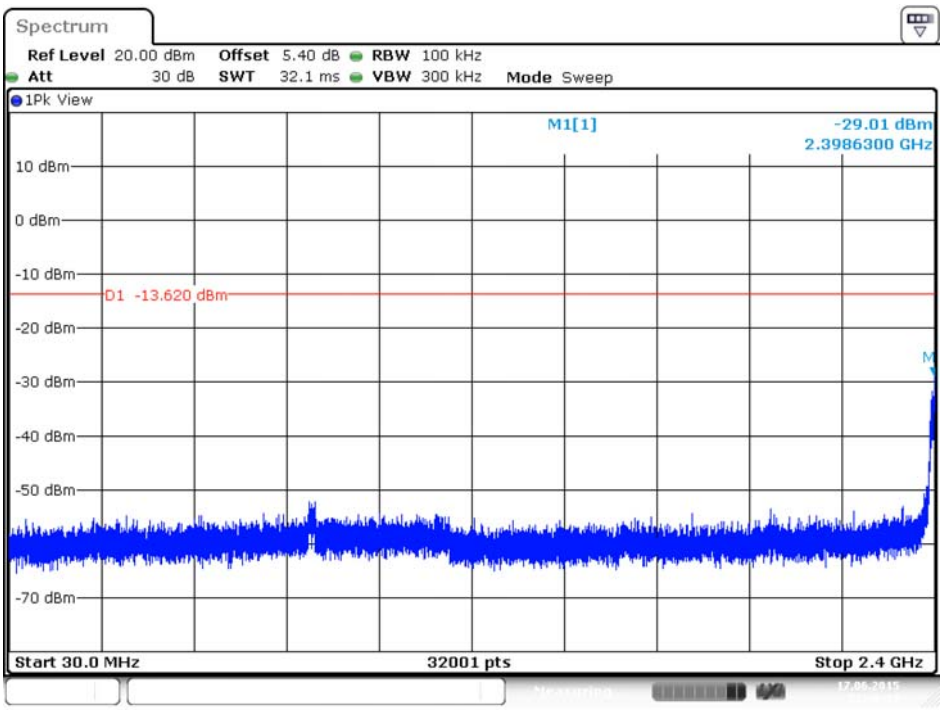
Date: 17.JUN.2015 22:58:34

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



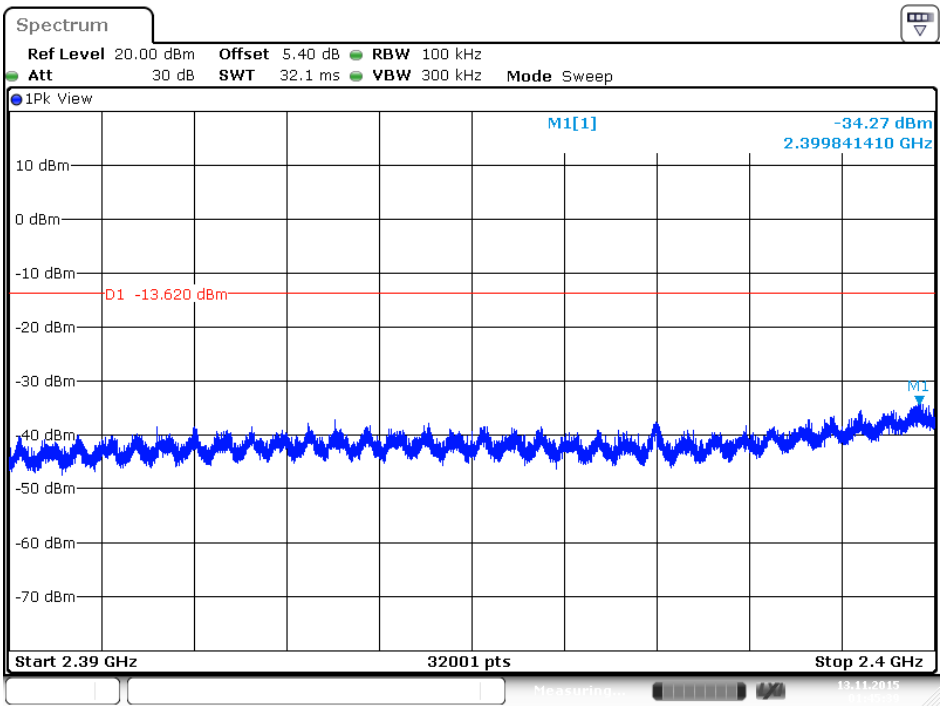
Date: 17.JUN.2015 22:45:16

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 30MHz~2400MHz (down 30dBc)



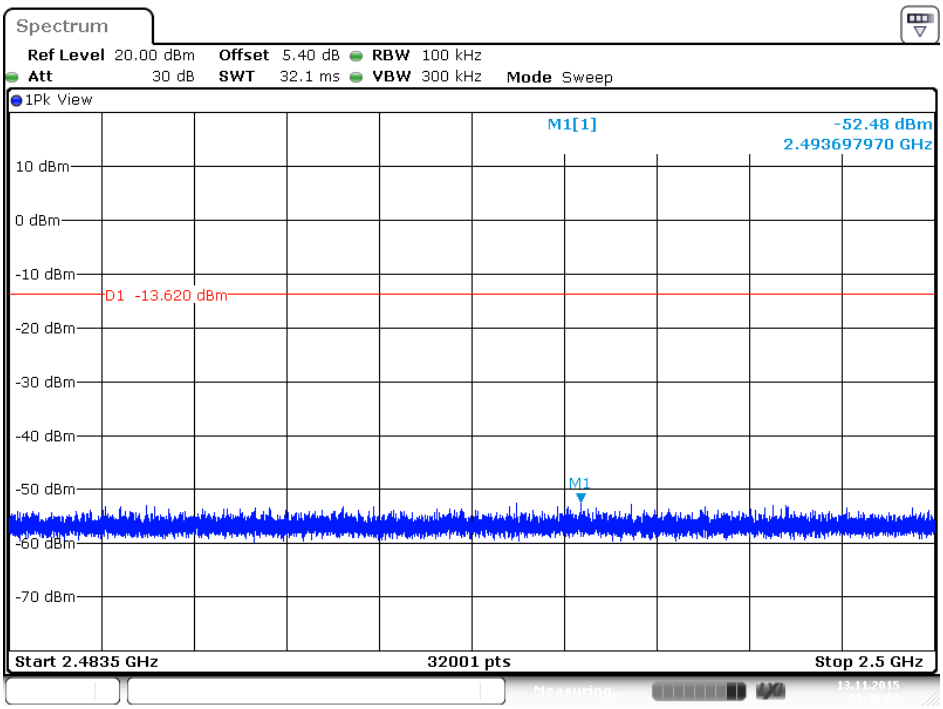
Date: 17.JUN.2015 22:46:18

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 2390MHz~2400MHz (down 30dBc)



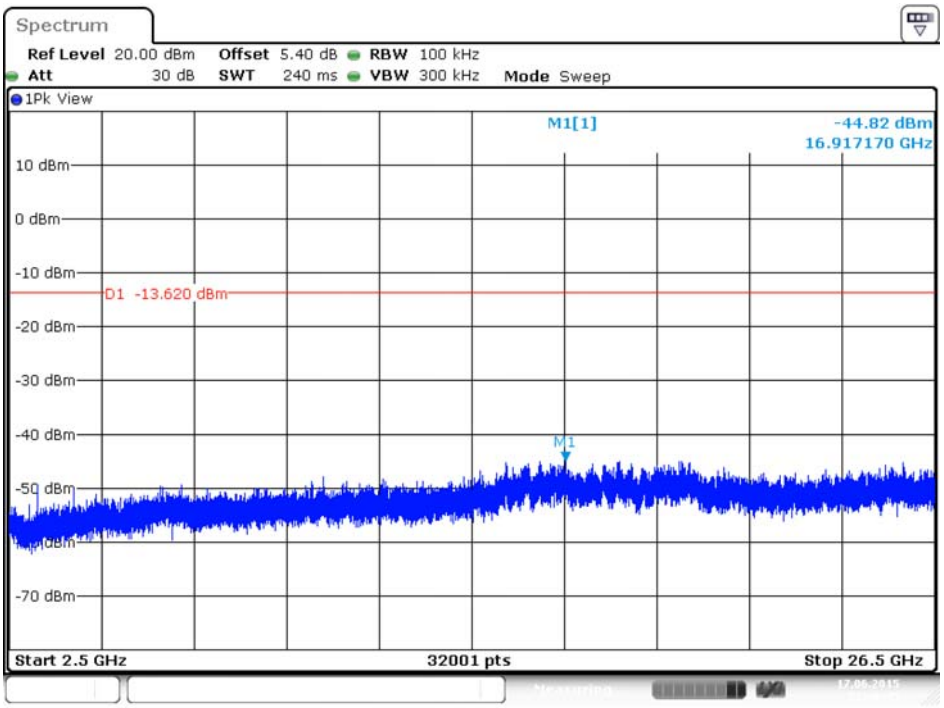
Date: 13.NOV.2015 01:45:39

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 2483.5MHz~2500MHz (down 30dBc)



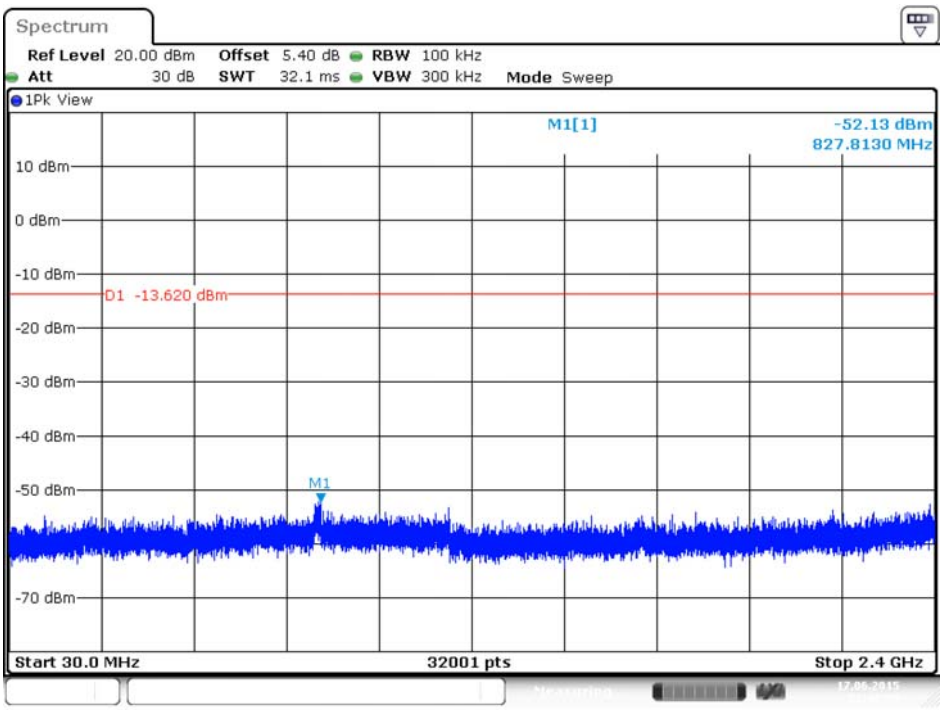
Date: 13.NOV.2015 01:46:07

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 2500MHz~26500MHz (down 30dBc)



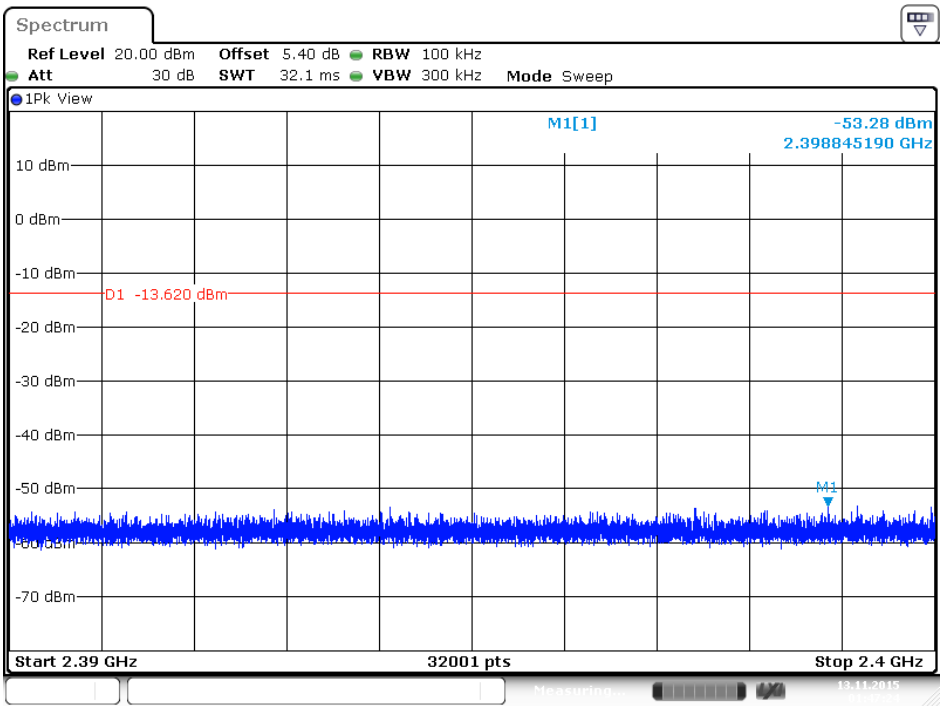
Date: 17.JUN.2015 22:46:45

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 30MHz~2400MHz (down 30dBc)



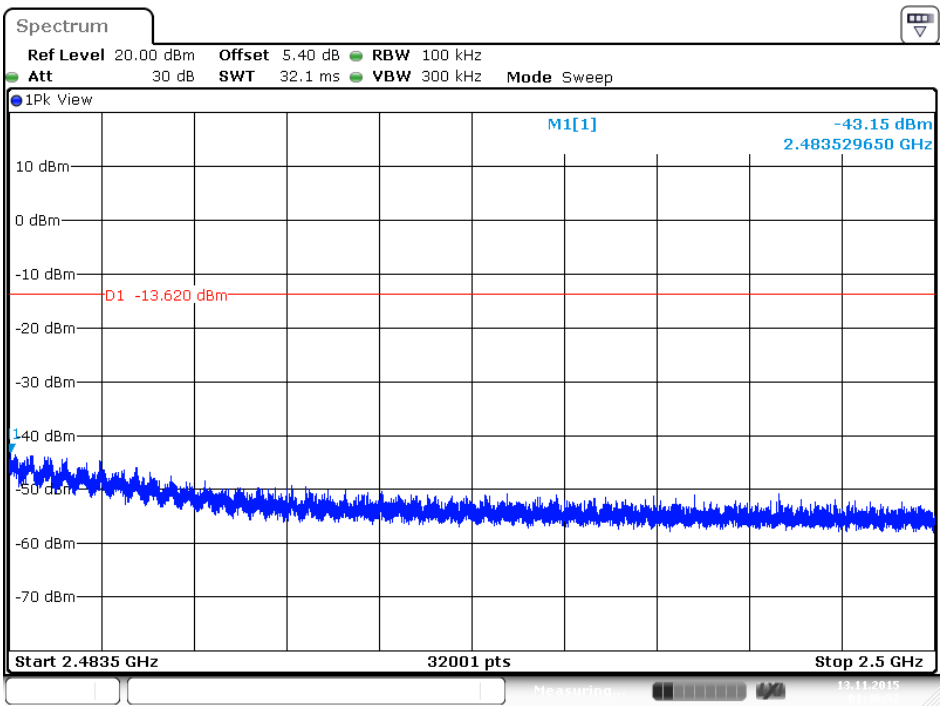
Date: 17.JUN.2015 22:47:29

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 2390MHz~2400MHz (down 30dBc)



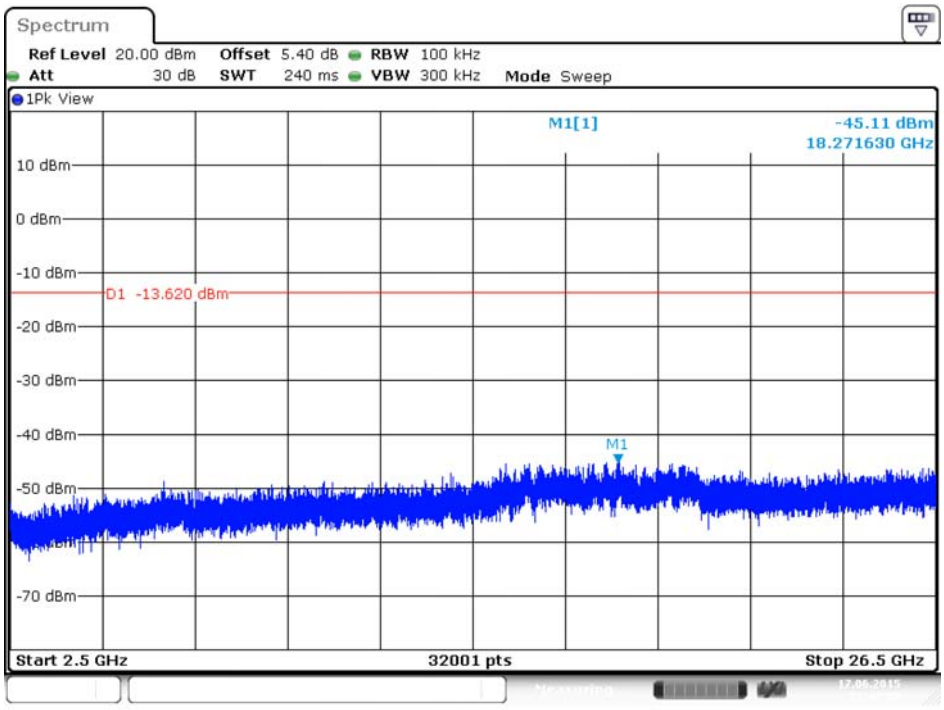
Date: 13.NOV.2015 01:47:25

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 2483.5MHz~2500MHz (down 30dBc)



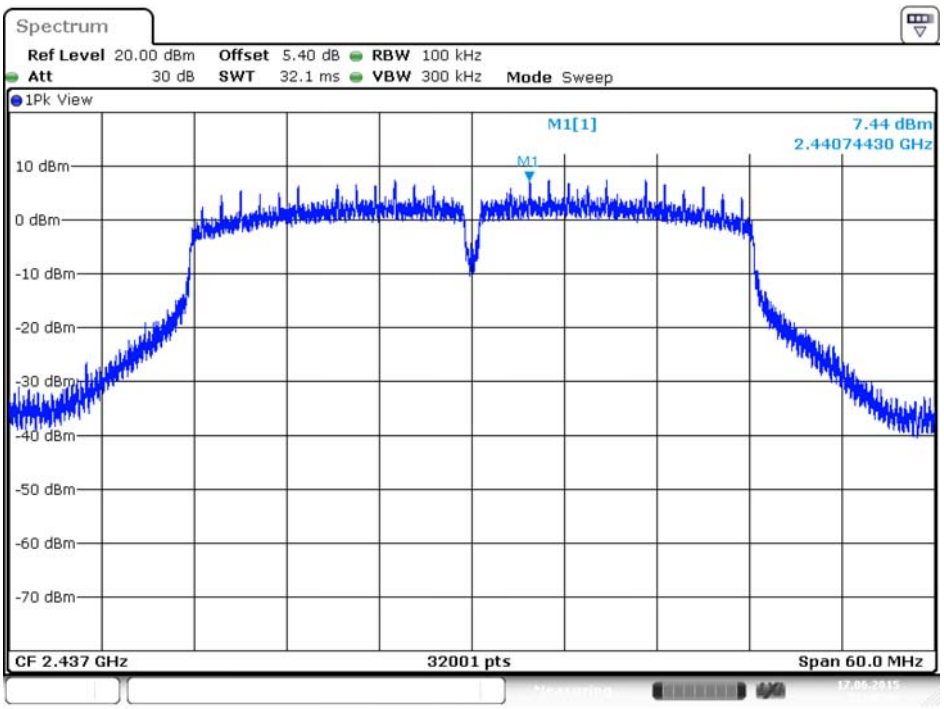
Date: 13.NOV.2015 01:46:52

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 2500MHz~26500MHz (down 30dBc)



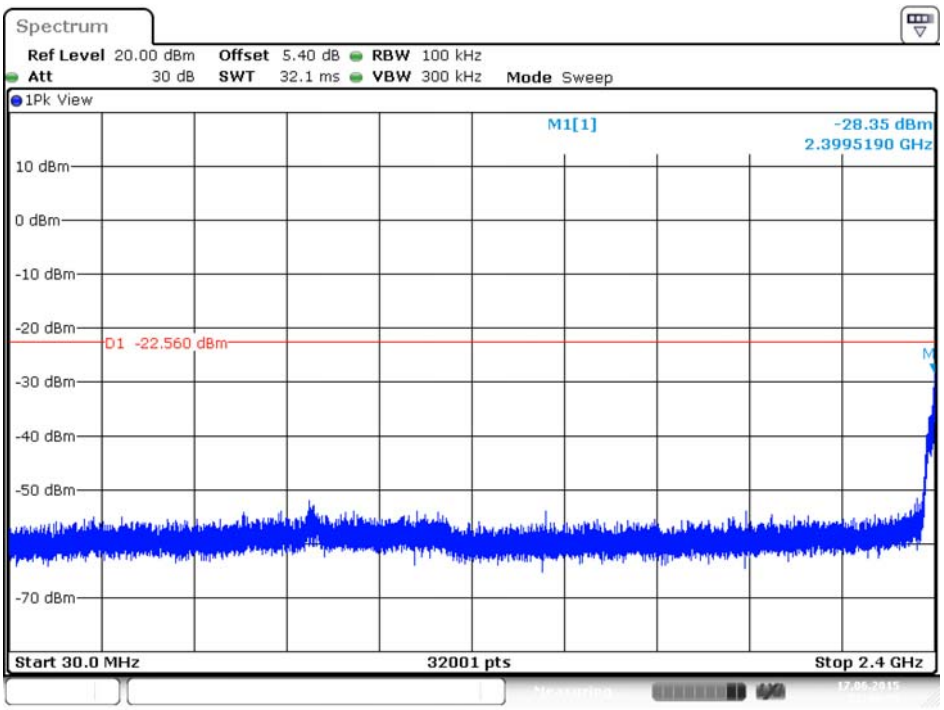
Date: 17.JUN.2015 22:47:10

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level



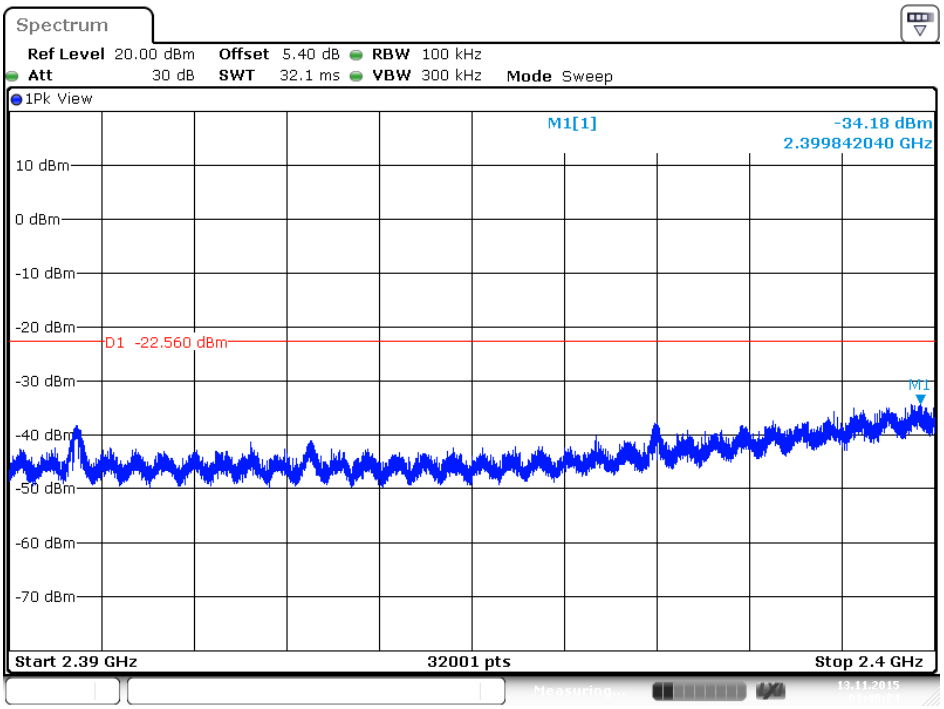
Date: 17.JUN.2015 22:48:41

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 30MHz~2400MHz (down 30dBc)



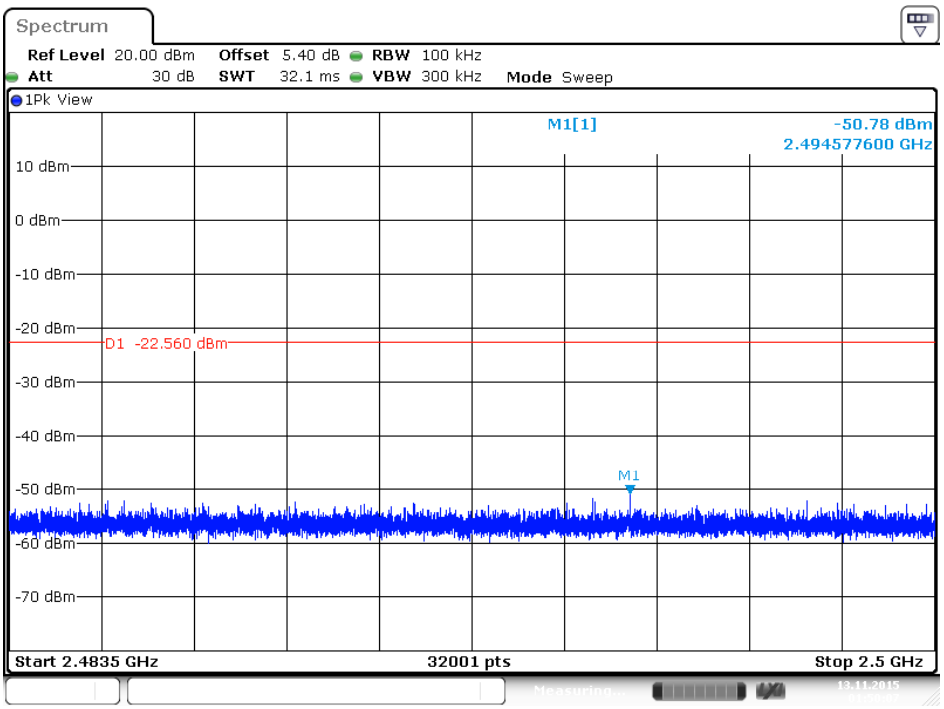
Date: 17.JUN.2015 22:49:25

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 2390MHz~2400MHz (down 30dBc)



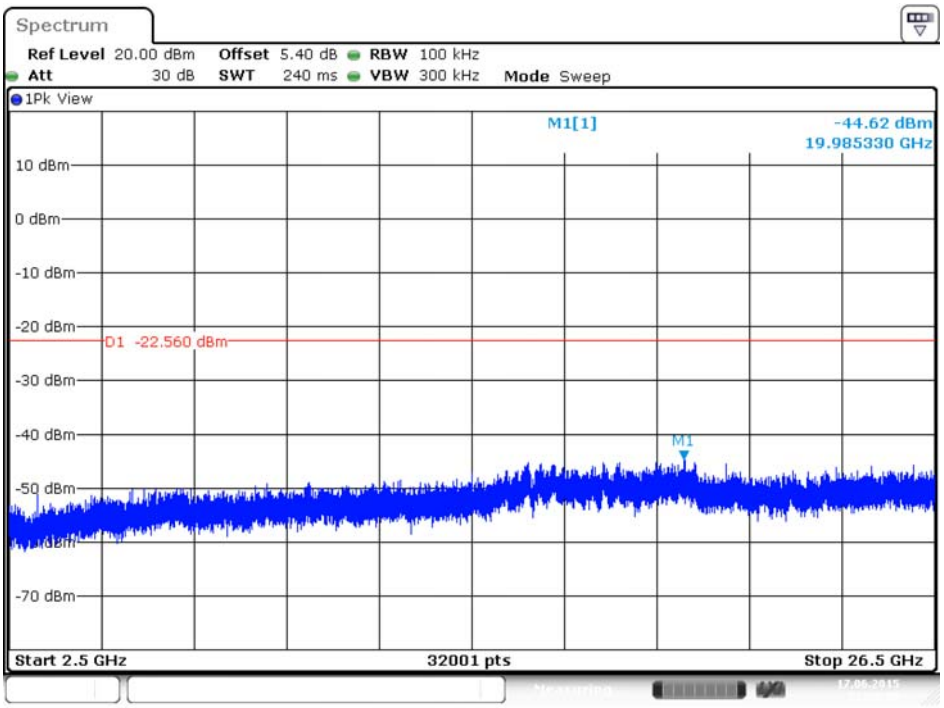
Date: 13.NOV.2015 01:49:25

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 2483.5MHz~2500MHz (down 30dBc)



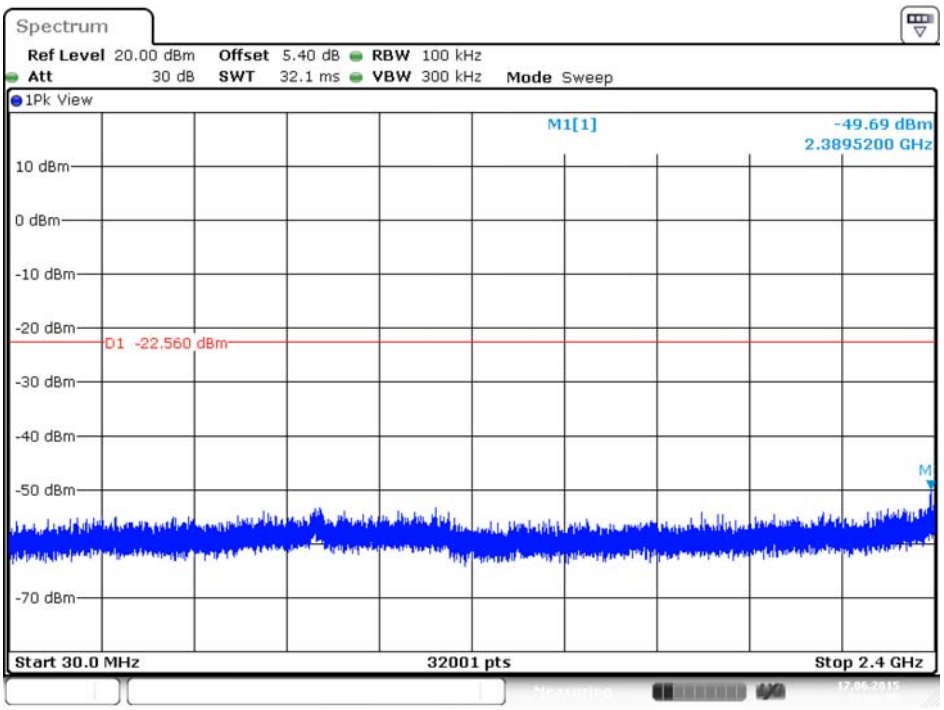
Date: 13.NOV.2015 01:50:07

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 2500MHz~26500MHz (down 30dBc)



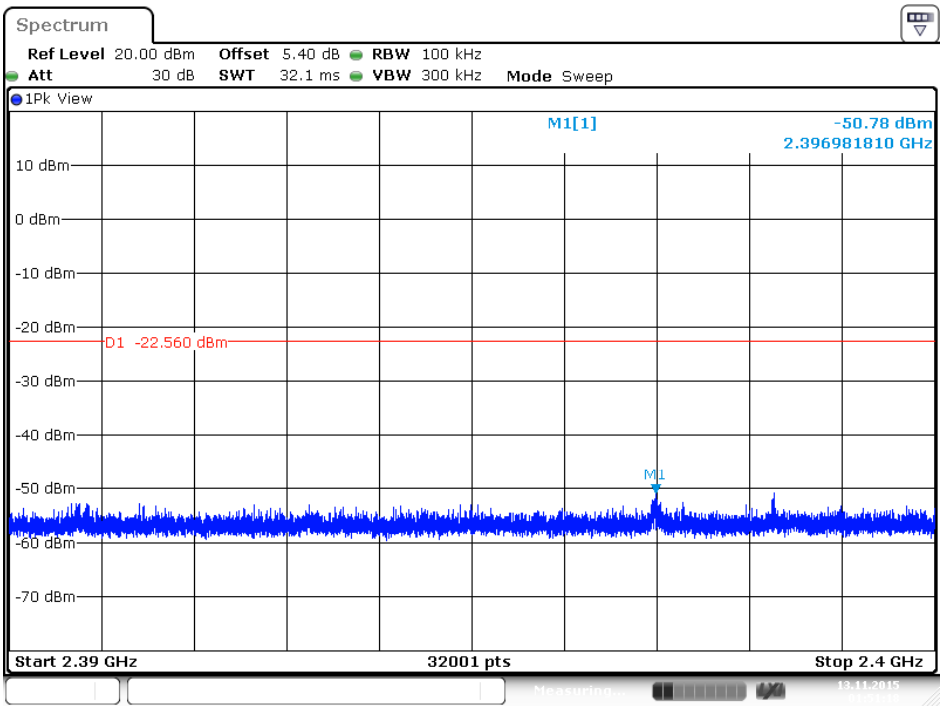
Date: 17.JUN.2015 22:50:08

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 30MHz~2400MHz (down 30dBc)



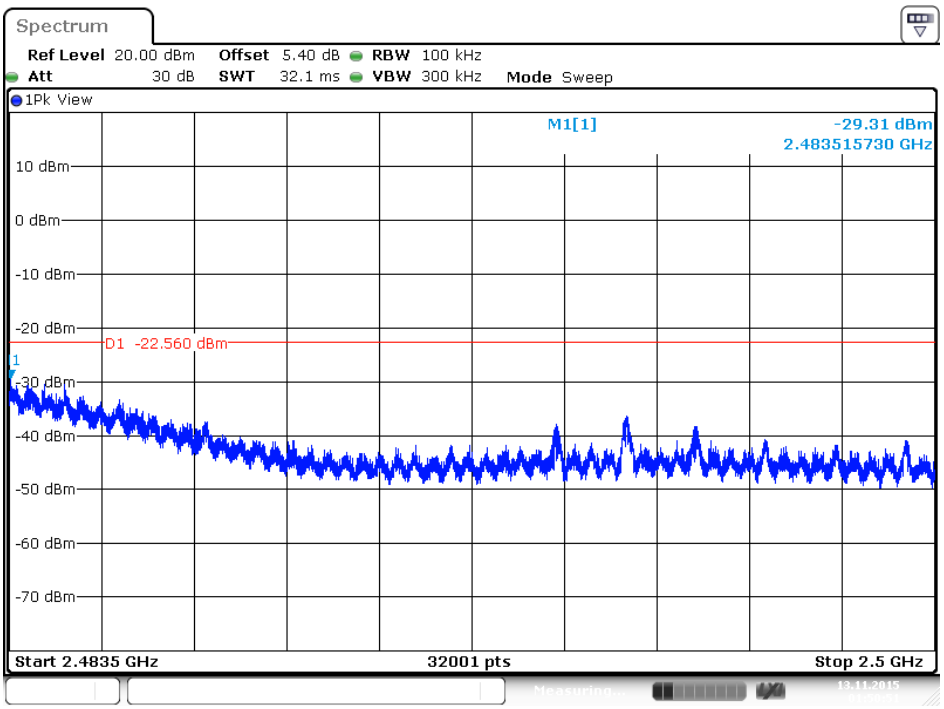
Date: 17.JUN.2015 22:50:58

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 2390MHz~2400MHz (down 30dBc)



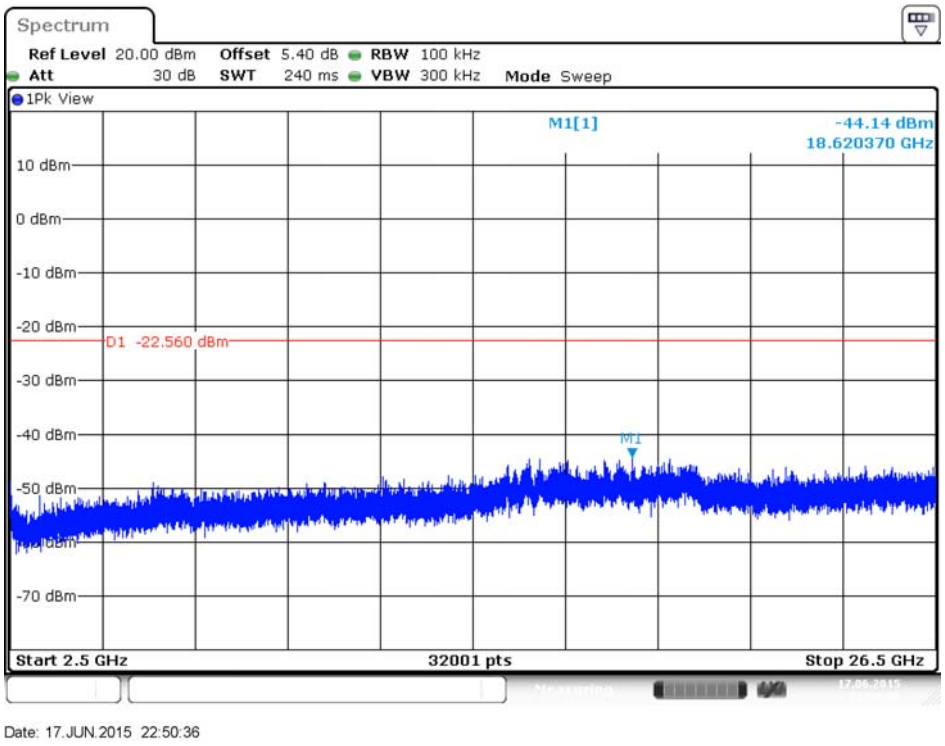
Date: 13.NOV.2015 01:51:18

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 2483.5MHz~2500MHz (down 30dBc)



Date: 13.NOV.2015 01:50:51

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 2500MHz~26500MHz (down 30dBc)



For Ant. 2 (PIFA Ant.)

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Average / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-46.16	-42.56	-41.25	1.31
2437	-50.81	-47.21	-41.25	5.96
2462	-49.23	-45.63	-41.25	4.38

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Peak / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-39.44	-35.84	-21.25	14.59
2437	-43.48	-39.88	-21.25	18.63
2462	-40.58	-36.98	-21.25	15.73

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Average / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-45.76	-42.16	-41.25	0.91
2437	-46.26	-42.66	-41.25	1.41
2462	-45.46	-41.86	-41.25	0.61

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Peak / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-30.81	-27.21	-21.25	5.96
2437	-30.29	-26.69	-21.25	5.44
2462	-32.07	-28.47	-21.25	7.22

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Average / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-45.67	-42.07	-41.25	0.82
2437	-45.11	-41.51	-41.25	0.26
2462	-45.56	-41.96	-41.25	0.71

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Peak / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2412	-29.64	-26.04	-21.25	4.79
2437	-29.49	-25.89	-21.25	4.64
2462	-33.52	-29.92	-21.25	8.67

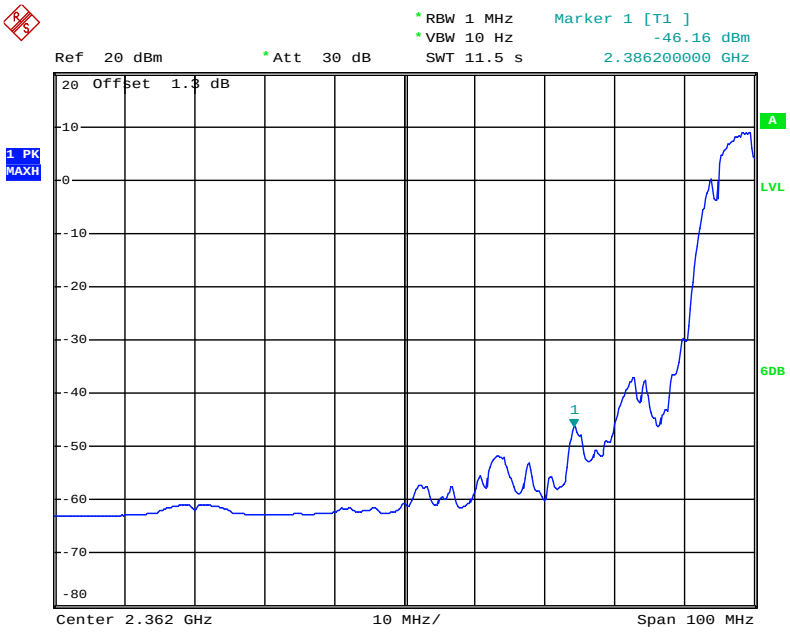
Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Average / Ant. 2

Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2422	-44.89	-41.29	-41.25	0.04
2437	-46.03	-42.43	-41.25	1.18
2452	-45.46	-41.86	-41.25	0.61

Temperature	25℃	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Peak / Ant. 2

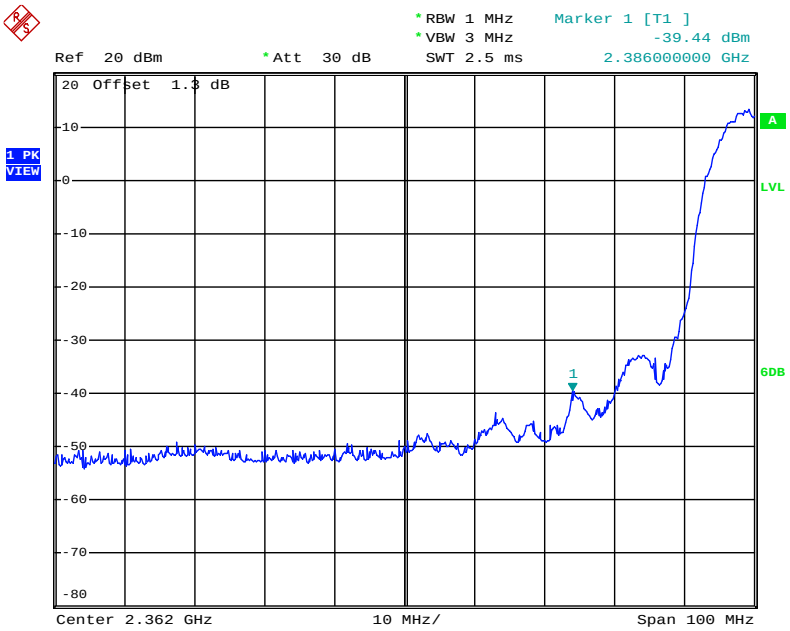
Frequency(MHz)	TX1 Bandedge Level (dBm)	Total TX Bandedge Level (dBm)	Limit (dBm)	Margin (dB)
2422	-32.09	-28.49	-21.25	7.24
2437	-32.99	-29.39	-21.25	8.14
2452	-30.86	-27.26	-21.25	6.01

Plot on Configuration IEEE 802.11b / 2412MHz / Average



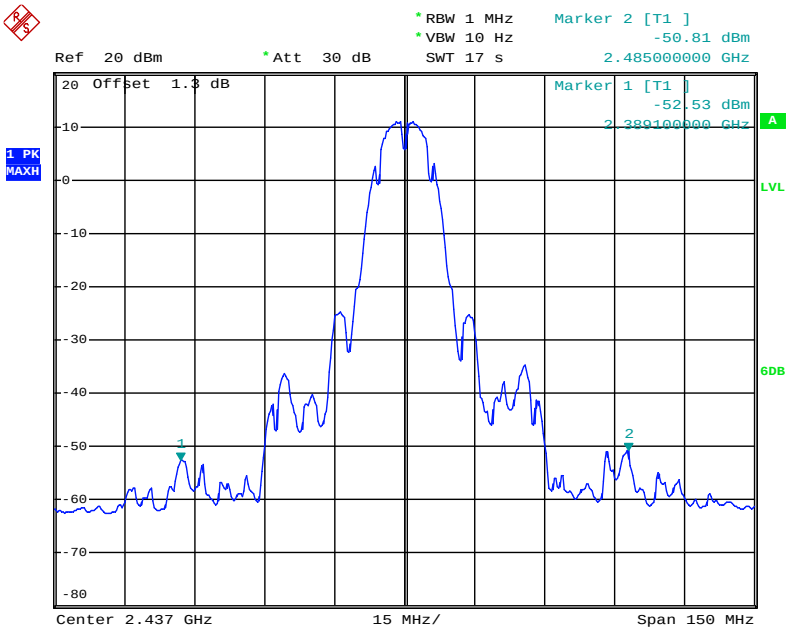
Date: 16.JUN.2015 10:28:40

Plot on Configuration IEEE 802.11b / 2412MHz / Peak



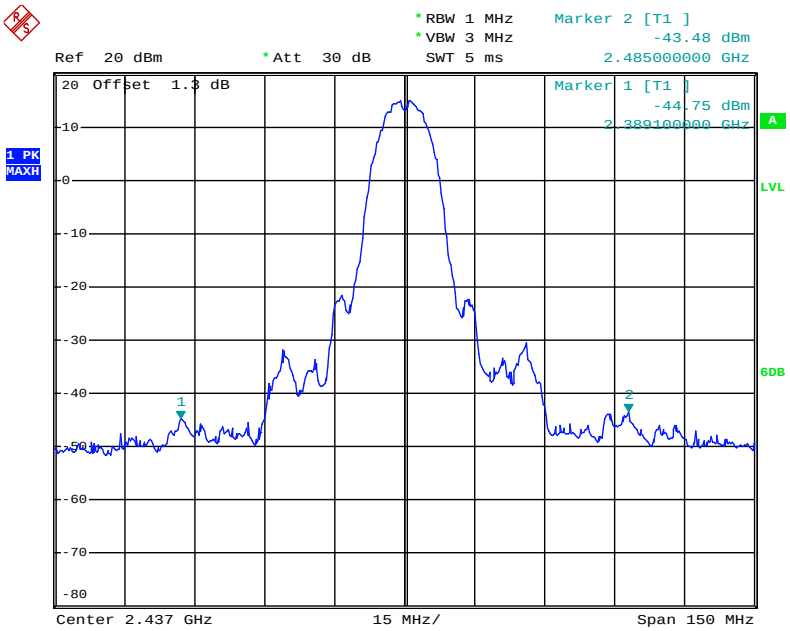
Date: 16.JUN.2015 10:29:37

Plot on Configuration IEEE 802.11b / 2437MHz / Average



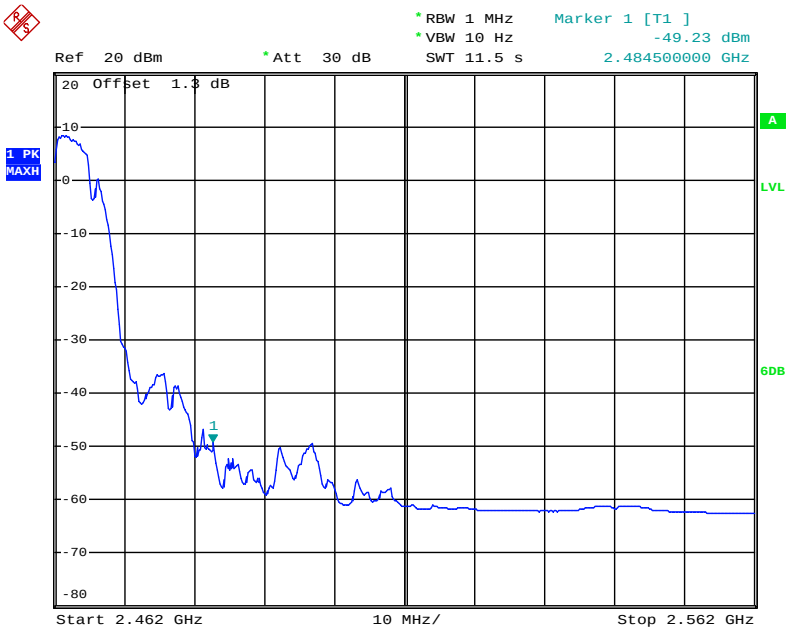
Date: 16.JUN.2015 15:57:34

Plot on Configuration IEEE 802.11b / 2437MHz / Peak



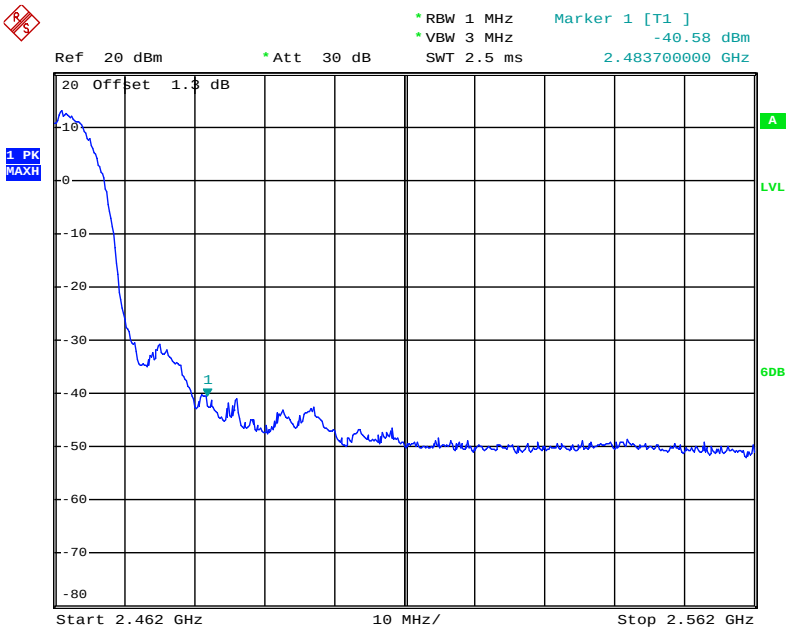
Date: 16.JUN.2015 15:58:05

Plot on Configuration IEEE 802.11b / 2462MHz / Average



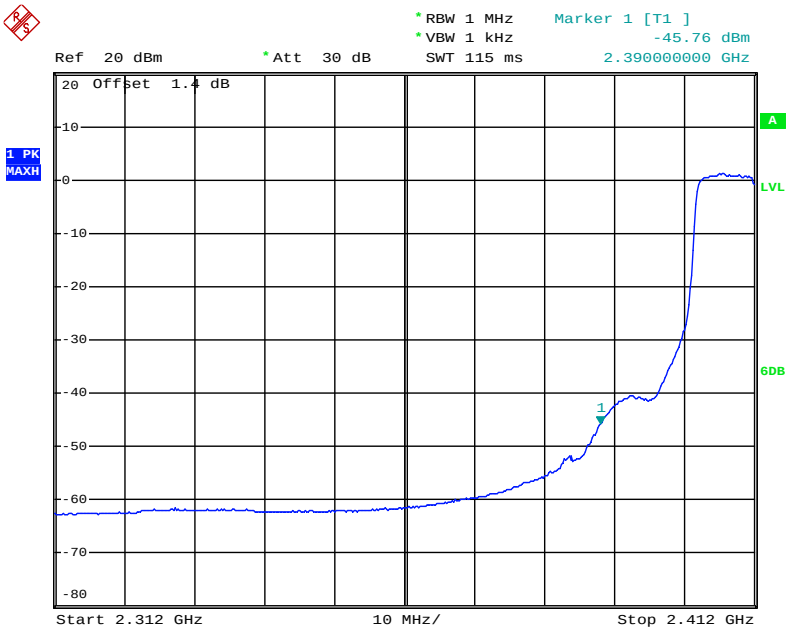
Date: 16.JUN.2015 10:42:51

Plot on Configuration IEEE 802.11b / 2462MHz / Peak



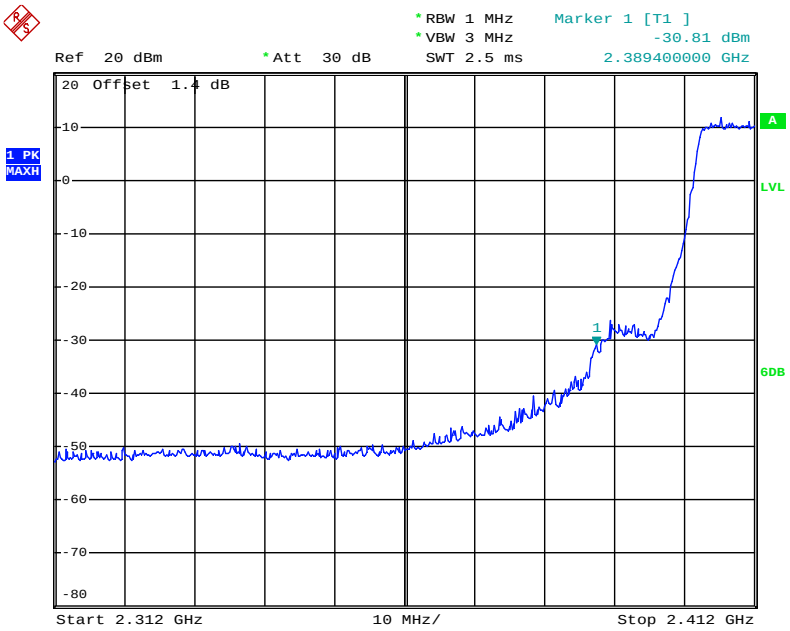
Date: 16.JUN.2015 10:43:39

Plot on Configuration IEEE 802.11g / 2412MHz / Average



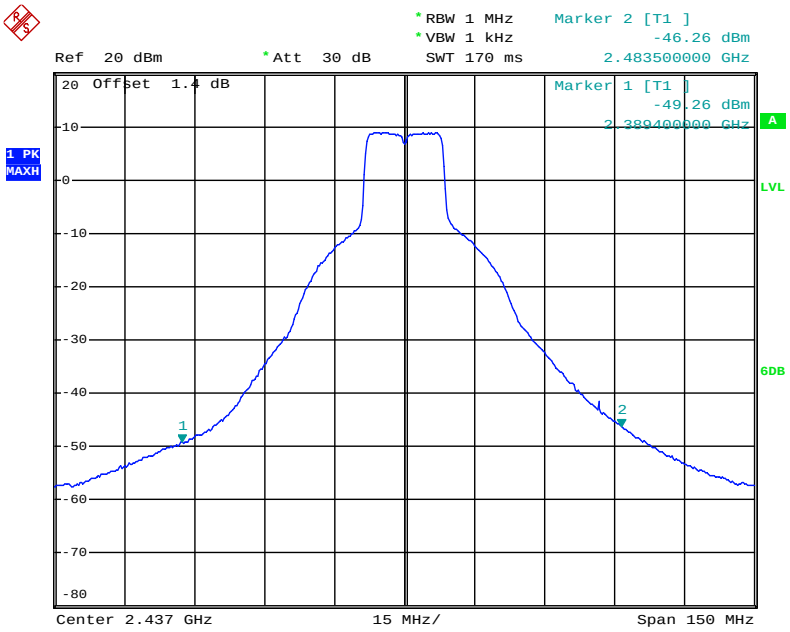
Date: 16.JUN.2015 10:48:58

Plot on Configuration IEEE 802.11g / 2412MHz / Peak



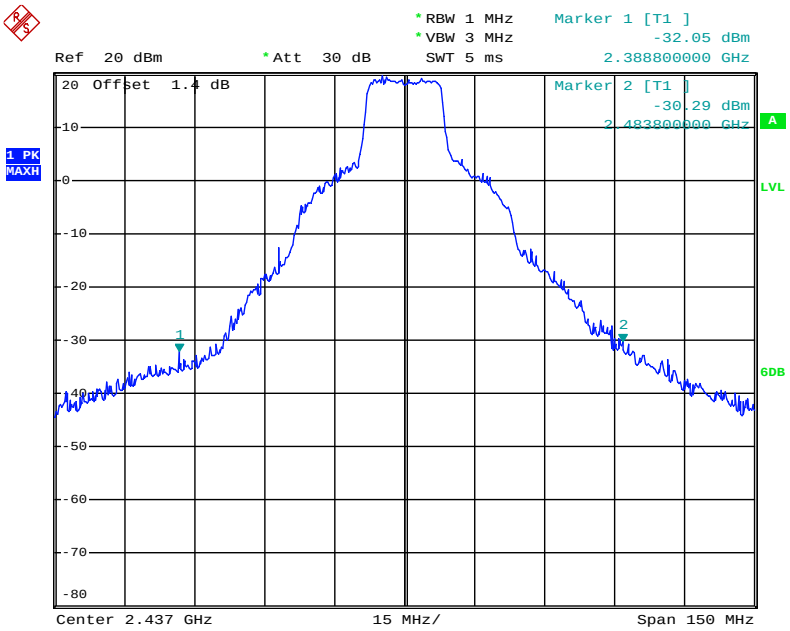
Date: 16.JUN.2015 10:49:30

Plot on Configuration IEEE 802.11g / 2437MHz / Average



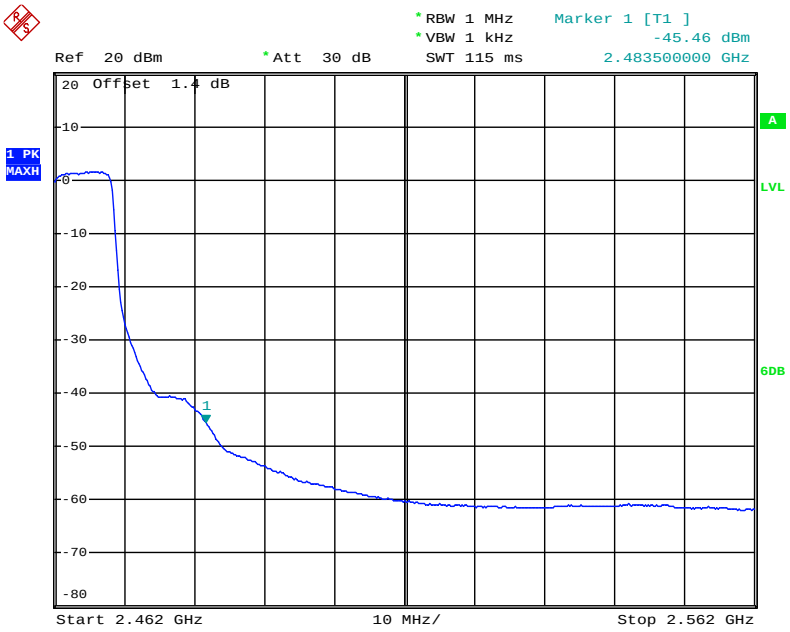
Date: 16.JUN.2015 10:52:55

Plot on Configuration IEEE 802.11g / 2437MHz / Peak



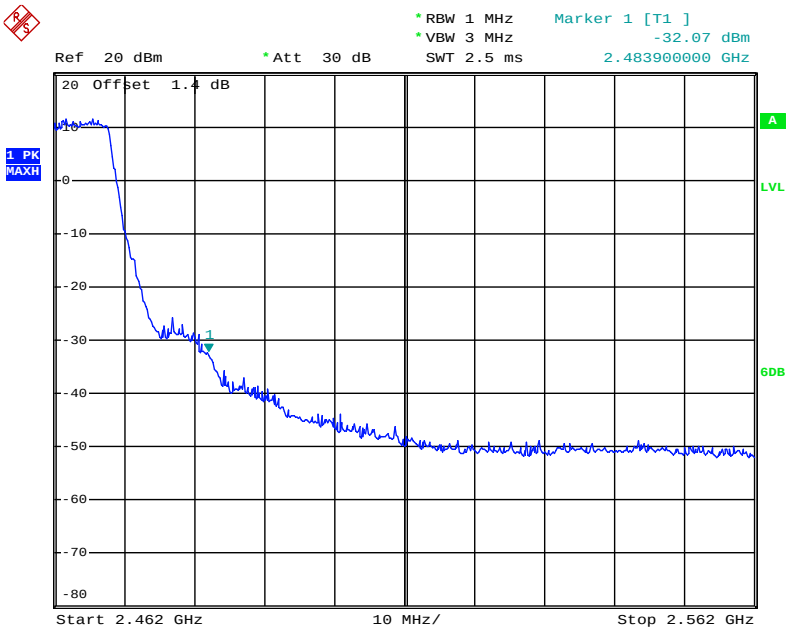
Date: 16.JUN.2015 10:53:35

Plot on Configuration IEEE 802.11g / 2462MHz / Average



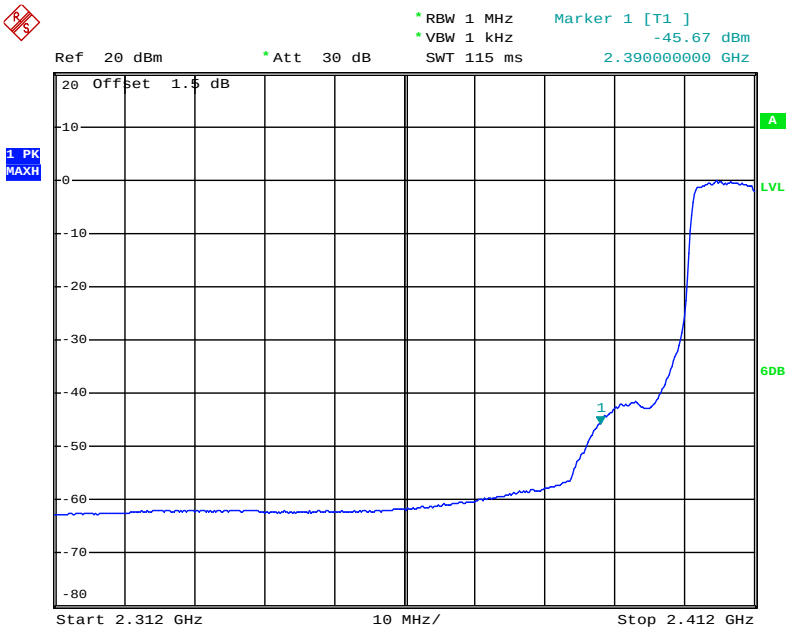
Date: 16.JUN.2015 10:55:33

Plot on Configuration IEEE 802.11g / 2462MHz / Peak



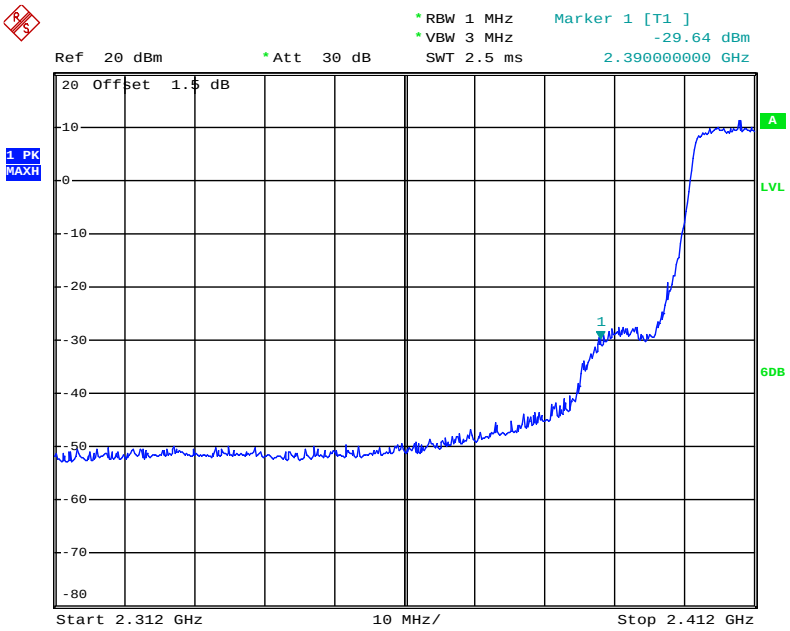
Date: 16.JUN.2015 10:55:55

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Average



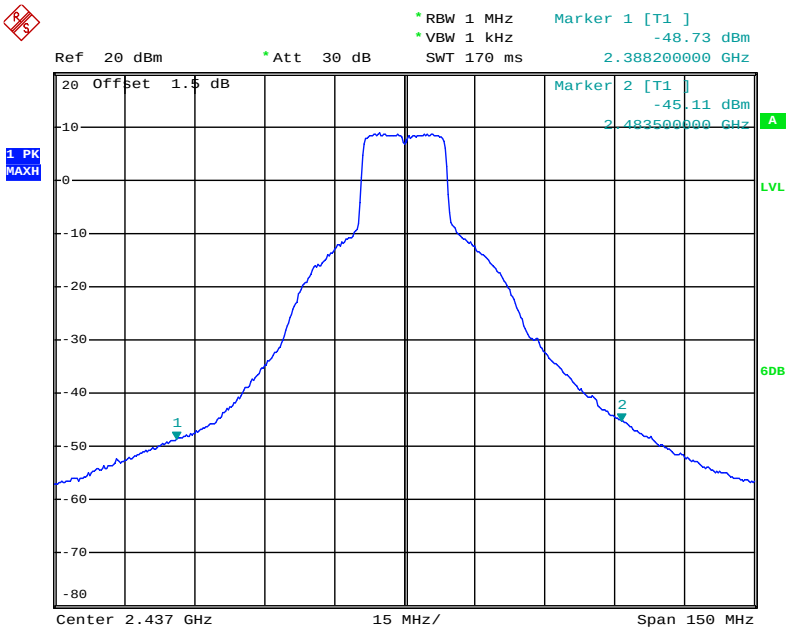
Date: 16.JUN.2015 11:01:21

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / Peak



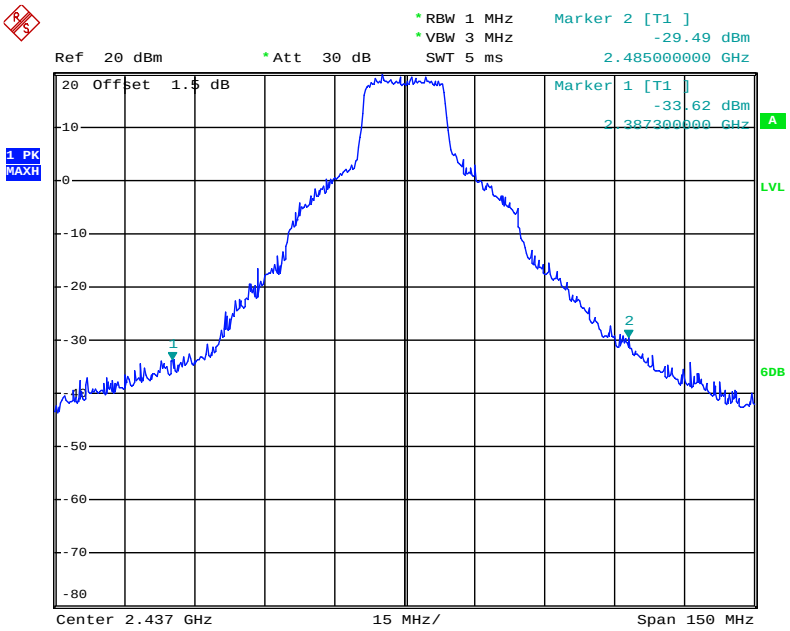
Date: 16.JUN.2015 11:00:24

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Average



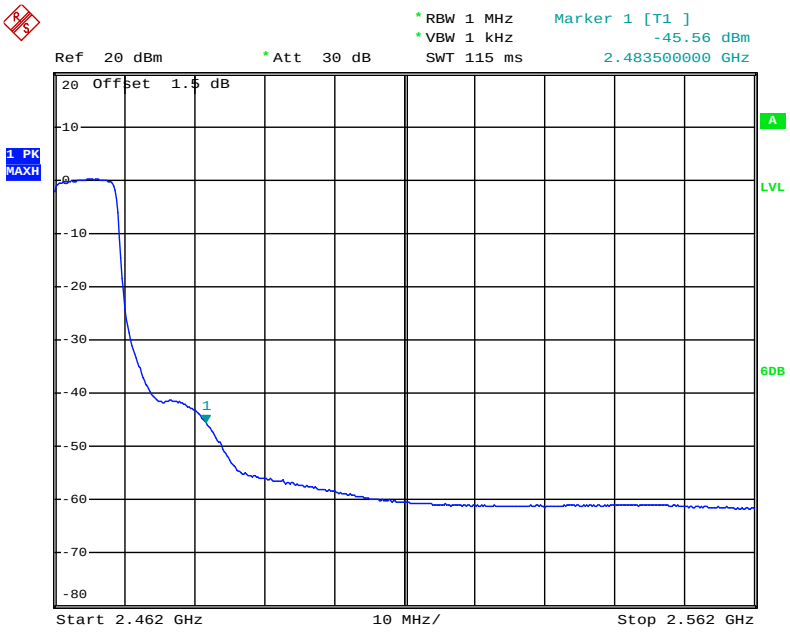
Date: 16.JUN.2015 11:22:39

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2437MHz / Peak



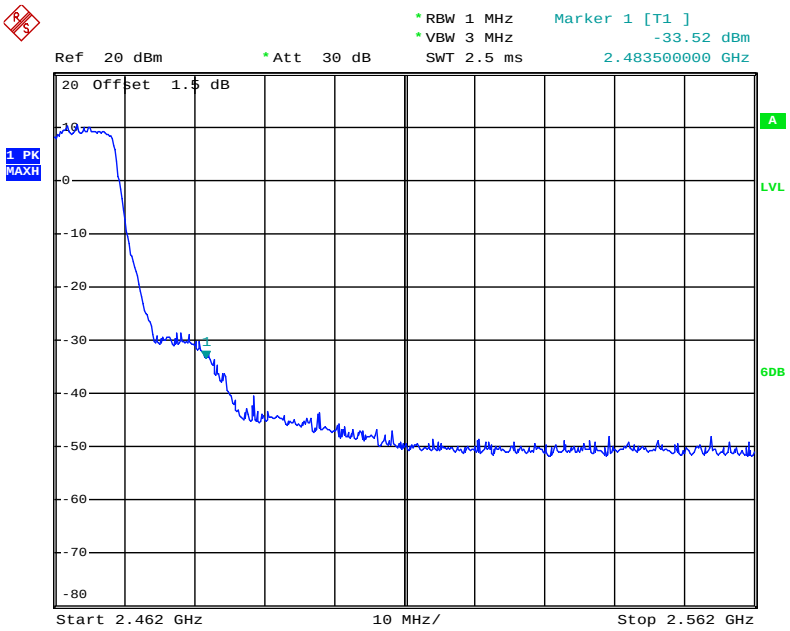
Date: 16.JUN.2015 11:23:02

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Average



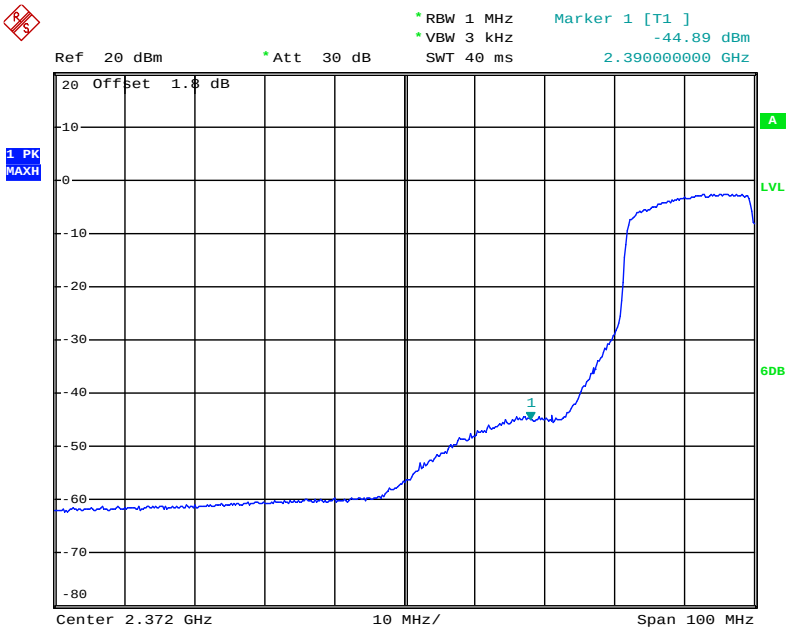
Date: 16.JUN.2015 11:25:45

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / Peak



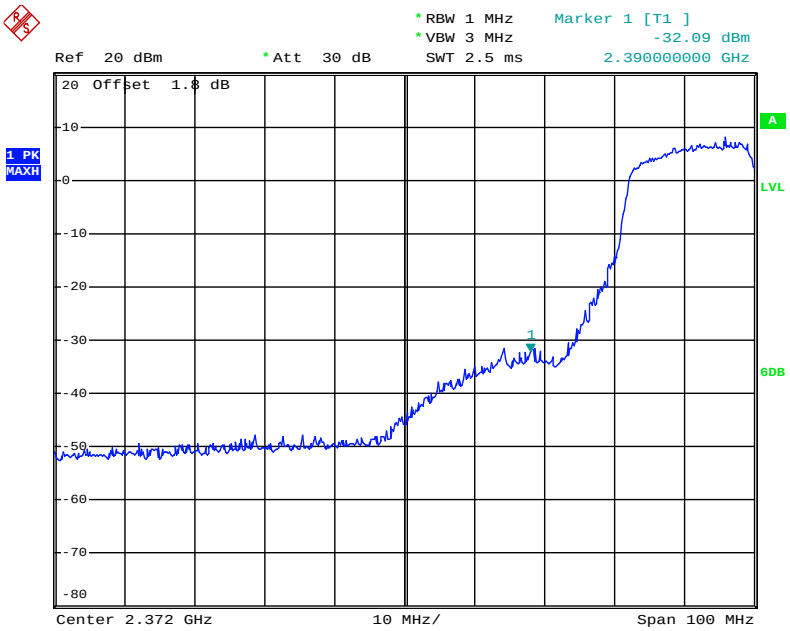
Date: 16.JUN.2015 11:25:59

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Average



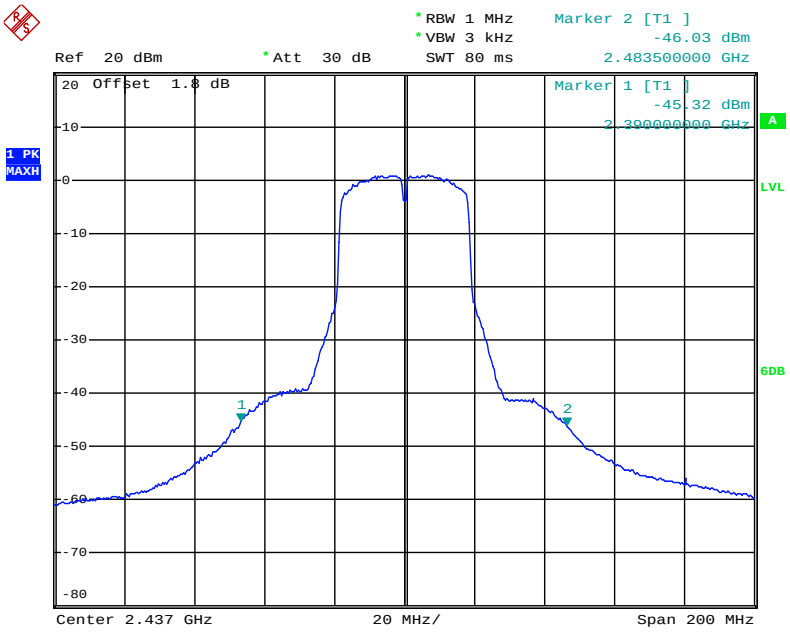
Date: 16.JUN.2015 11:31:50

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / Peak



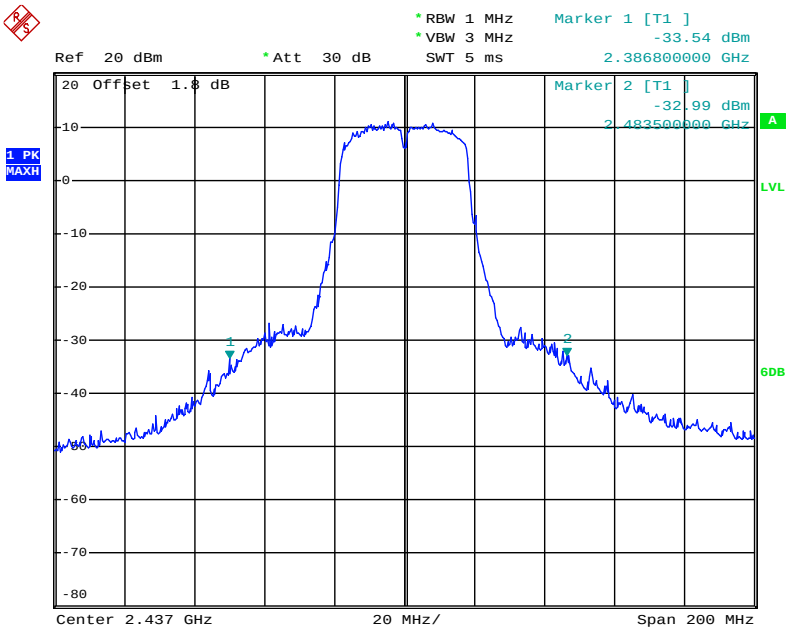
Date: 16.JUN.2015 11:32:16

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Average



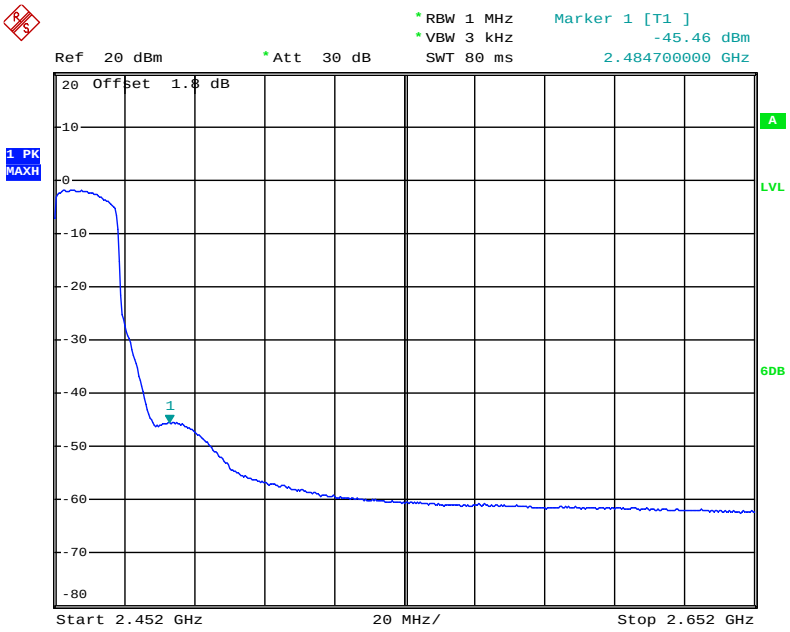
Date: 16.JUN.2015 11:34:44

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2437MHz / Peak



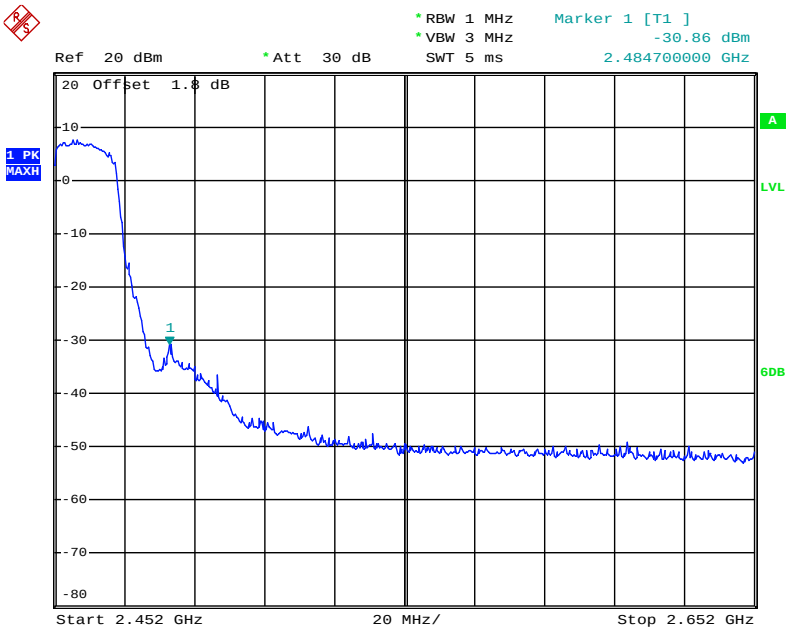
Date: 16.JUN.2015 11:35:19

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Average



Date: 16.JUN.2015 11:39:56

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / Peak



Date: 16.JUN.2015 11:40:11

For Emission not in Restricted Band

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11b / Ant. 2

Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2412MHz	30MHz~2400MHz	-32.92	-15.42	17.5
	2390MHz~2400MHz	-39.65	-15.42	24.23
	2483.5MHz~2500MHz	-55.3	-15.42	39.88
	2500MHz~26500MHz	-42.08	-15.42	26.66
2462MHz	30MHz~2400MHz	-48.54	-15.42	33.12
	2390MHz~2400MHz	-54.91	-15.42	39.49
	2483.5MHz~2500MHz	-50.16	-15.42	34.74
	2500MHz~26500MHz	-45.85	-15.42	30.43

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11g / Ant. 2

Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2412MHz	30MHz~2400MHz	-30.75	-15.62	15.13
	2390MHz~2400MHz	-36.45	-15.62	20.83
	2483.5MHz~2500MHz	-54.43	-15.62	38.81
	2500MHz~26500MHz	-46.37	-15.62	30.75
2462MHz	30MHz~2400MHz	-54.66	-15.62	39.04
	2390MHz~2400MHz	-55.69	-15.62	40.07
	2483.5MHz~2500MHz	-46.47	-15.62	30.85
	2500MHz~26500MHz	-45.83	-15.62	30.21

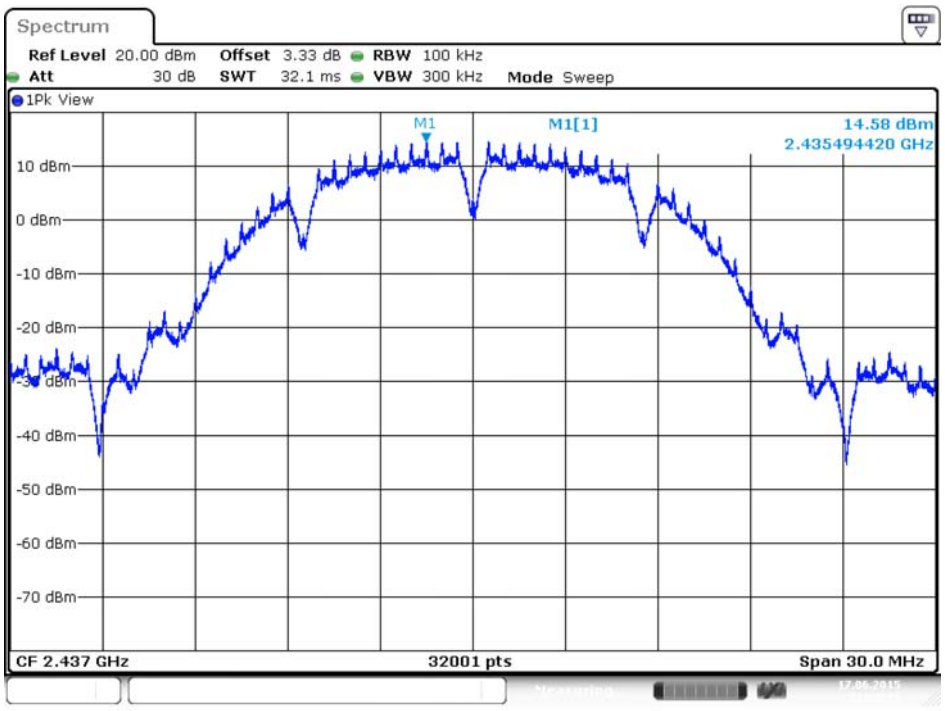
Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT20 / Ant. 2

Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2412MHz	30MHz~2400MHz	-32.16	-15.23	16.93
	2390MHz~2400MHz	-38.39	-15.23	23.16
	2483.5MHz~2500MHz	-54.32	-15.23	39.09
	2500MHz~26500MHz	-45.22	-15.23	29.99
2462MHz	30MHz~2400MHz	-54.51	-15.23	39.28
	2390MHz~2400MHz	-55.8	-15.23	40.57
	2483.5MHz~2500MHz	-46.72	-15.23	31.49
	2500MHz~26500MHz	-46.46	-15.23	31.23

Temperature	25°C	Humidity	56%
Test Engineer	Mars Lin	Configurations	IEEE 802.11n MCS0 HT40 / Ant. 2

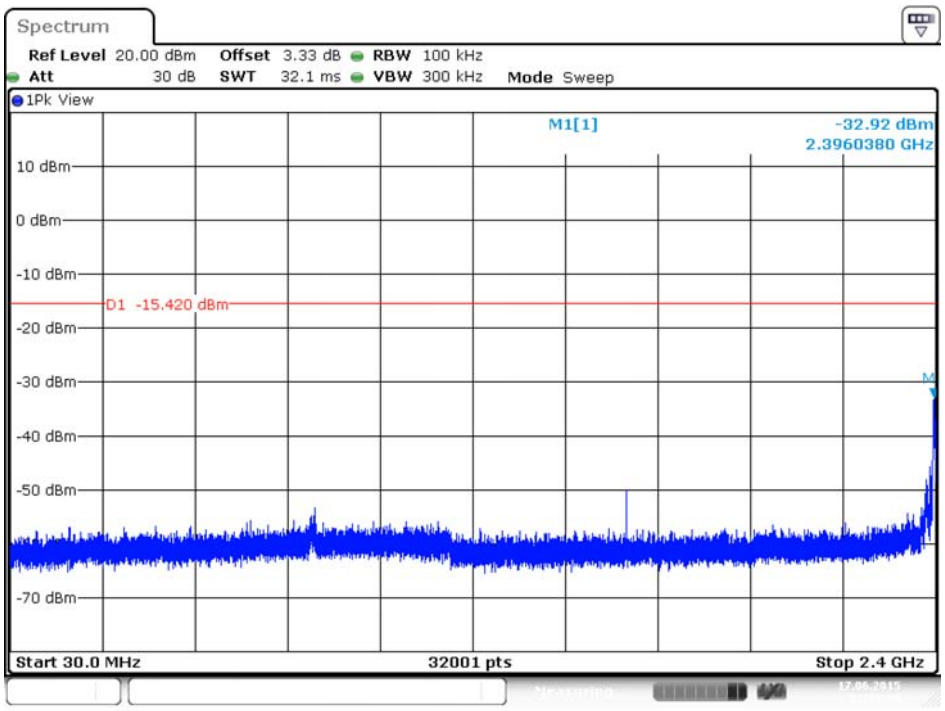
Frequency (MHz)		Conducted Spurious Delta (dB)	Limit (dBc)	Margin (dB)
2422MHz	30MHz~2400MHz	-29.97	-23.82	6.15
	2390MHz~2400MHz	-35.72	-23.82	11.9
	2483.5MHz~2500MHz	-54.26	-23.82	30.44
	2500MHz~26500MHz	-46.54	-23.82	22.72
2452MHz	30MHz~2400MHz	-54.54	-23.82	30.72
	2390MHz~2400MHz	-54.7	-23.82	30.88
	2483.5MHz~2500MHz	-32.35	-23.82	8.53
	2500MHz~26500MHz	-45.72	-23.82	21.9

Plot on Configuration IEEE 802.11b / Reference Level



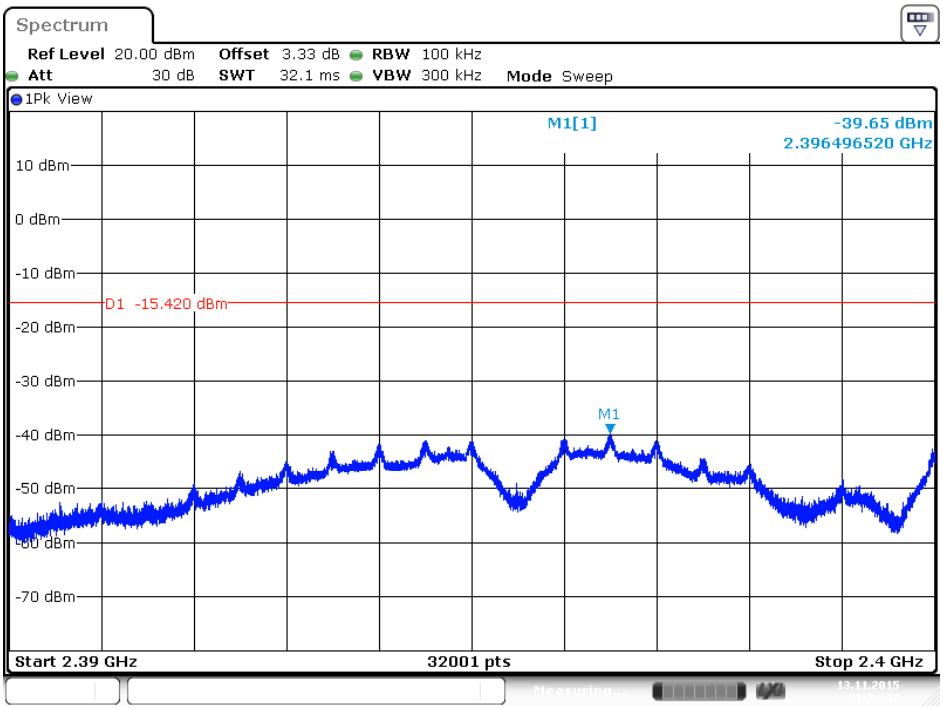
Date: 17.JUN.2015 22:30:30

Plot on Configuration IEEE 802.11b / 2412MHz / 30MHz~2400MHz (down 30dBc)



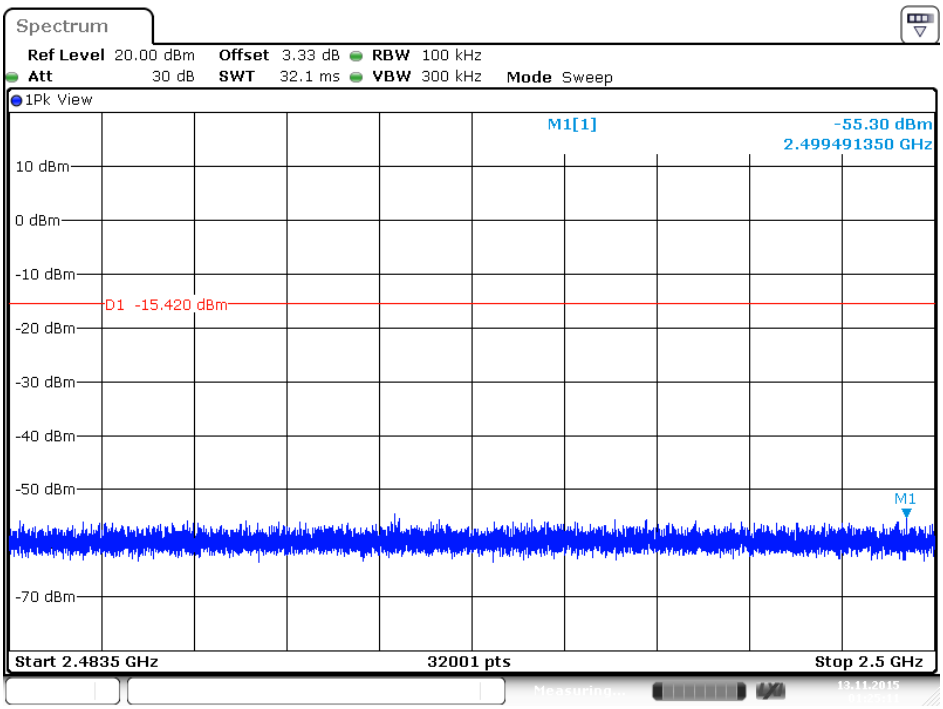
Date: 17.JUN.2015 22:31:36

Plot on Configuration IEEE 802.11b / 2412MHz / 2390MHz~2400MHz (down 30dBc)



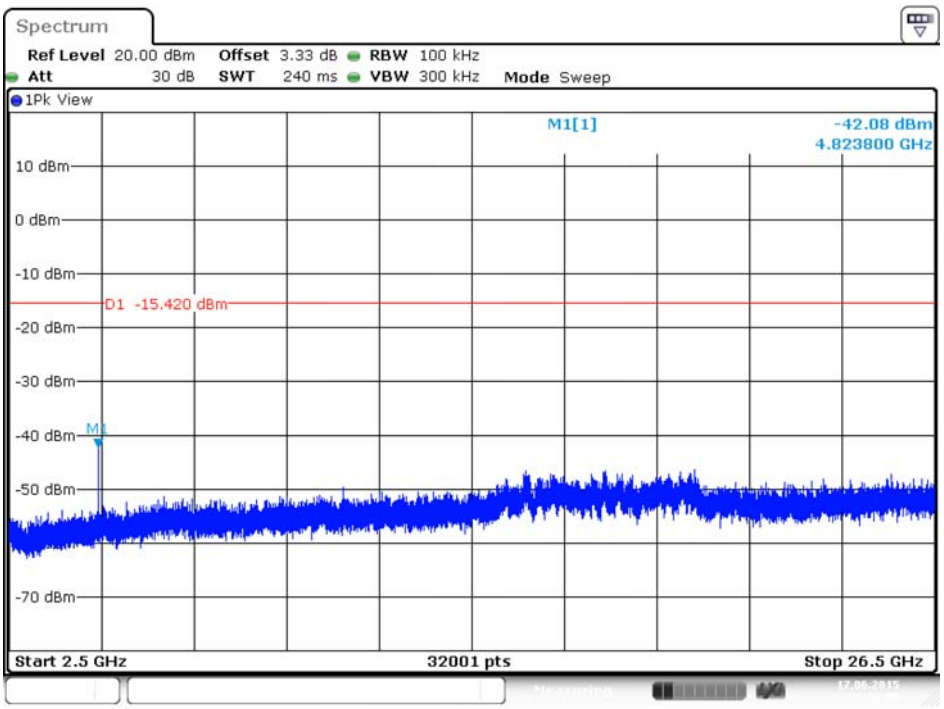
Date: 13.NOV.2015 01:24:47

Plot on Configuration IEEE 802.11b / 2412MHz / 2483.5MHz~2500MHz (down 30dBc)



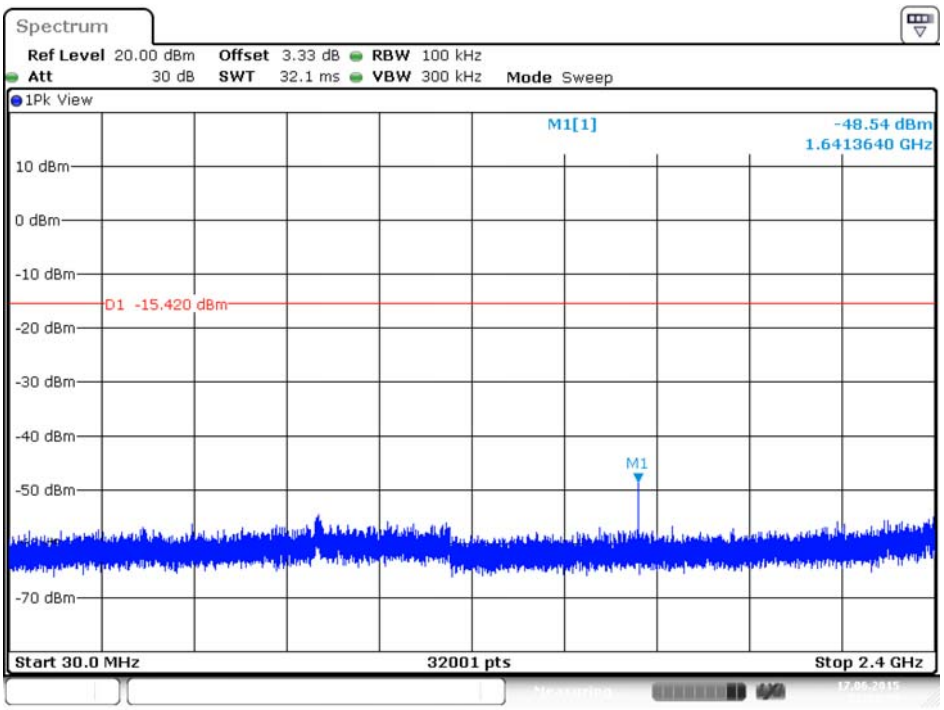
Date: 13.NOV.2015 01:25:11

Plot on Configuration IEEE 802.11b / 2412MHz / 2500MHz~26500MHz (down 30dBc)



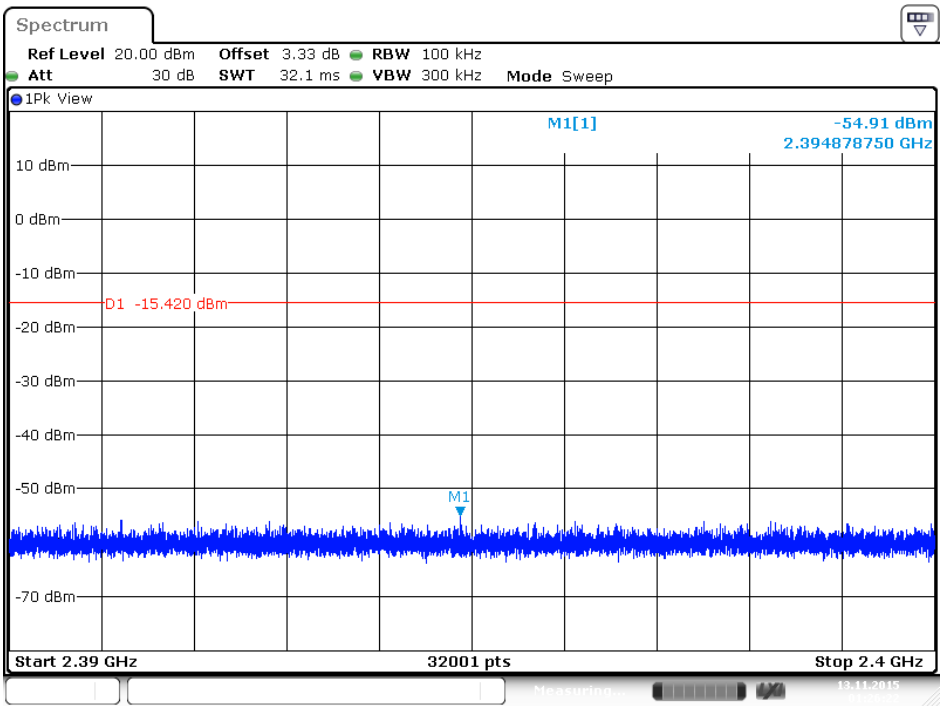
Date: 17.JUN.2015 22:31:58

Plot on Configuration IEEE 802.11b / 2462MHz / 30MHz~2400MHz (down 30dBc)



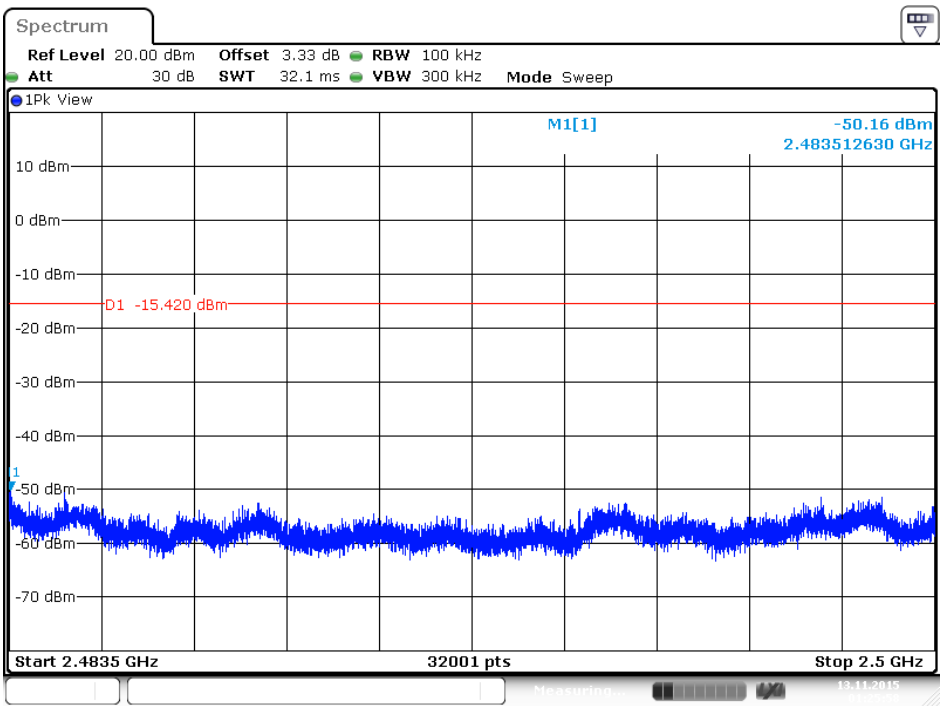
Date: 17.JUN.2015 22:33:29

Plot on Configuration IEEE 802.11b / 2462MHz / 2390MHz~2400MHz (down 30dBc)



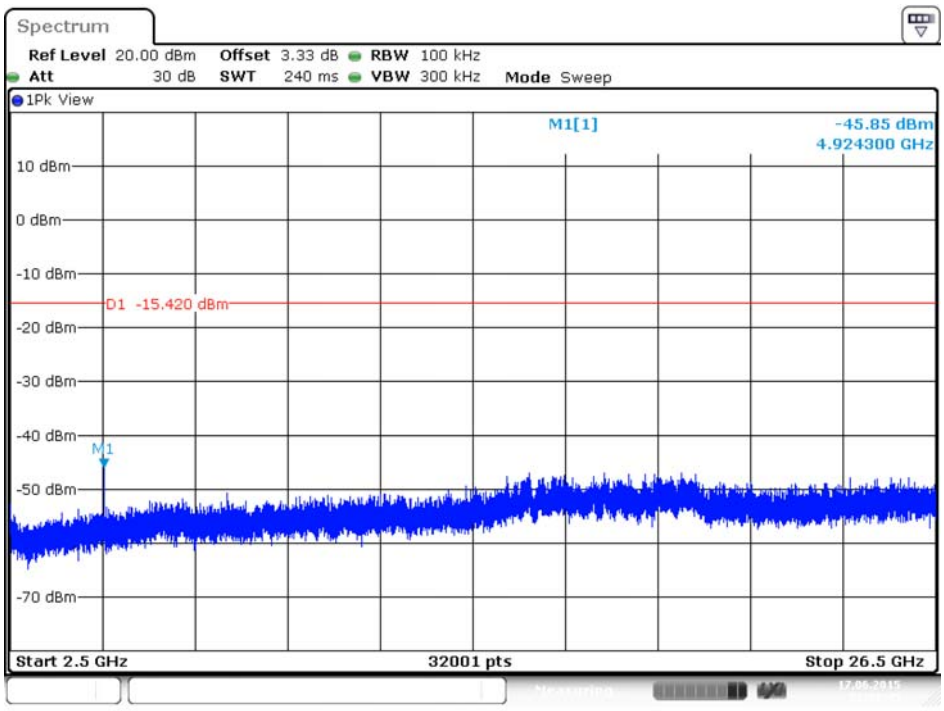
Date: 13.NOV.2015 01:26:22

Plot on Configuration IEEE 802.11b / 2462MHz / 2483.5MHz~2500MHz (down 30dBc)



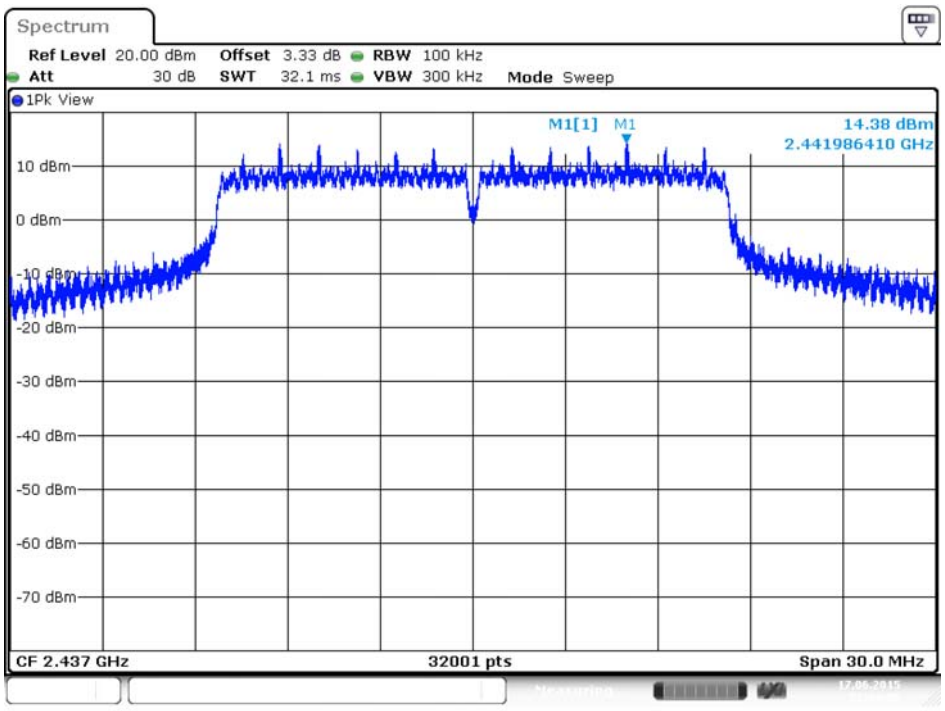
Date: 13.NOV.2015 01:25:58

Plot on Configuration IEEE 802.11b / 2462MHz / 2500MHz~26500MHz (down 30dBc)



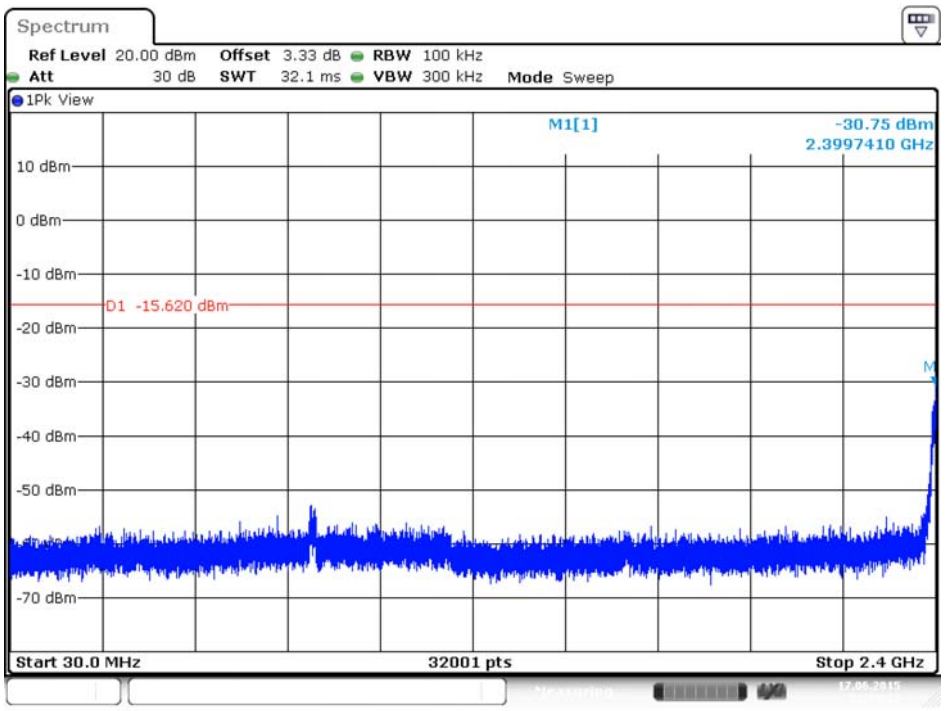
Date: 17.JUN.2015 22:32:46

Plot on Configuration IEEE 802.11g / Reference Level (down 30dBc)



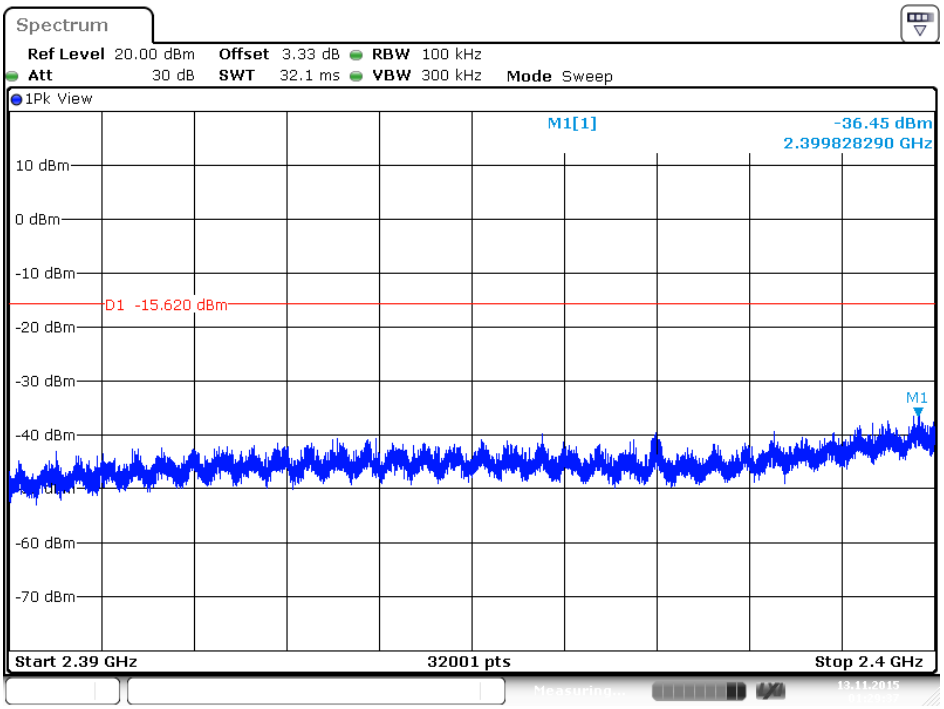
Date: 17.JUN.2015 22:34:26

Plot on Configuration IEEE 802.11g / 2412MHz / 30MHz~2400MHz (down 30dBc)



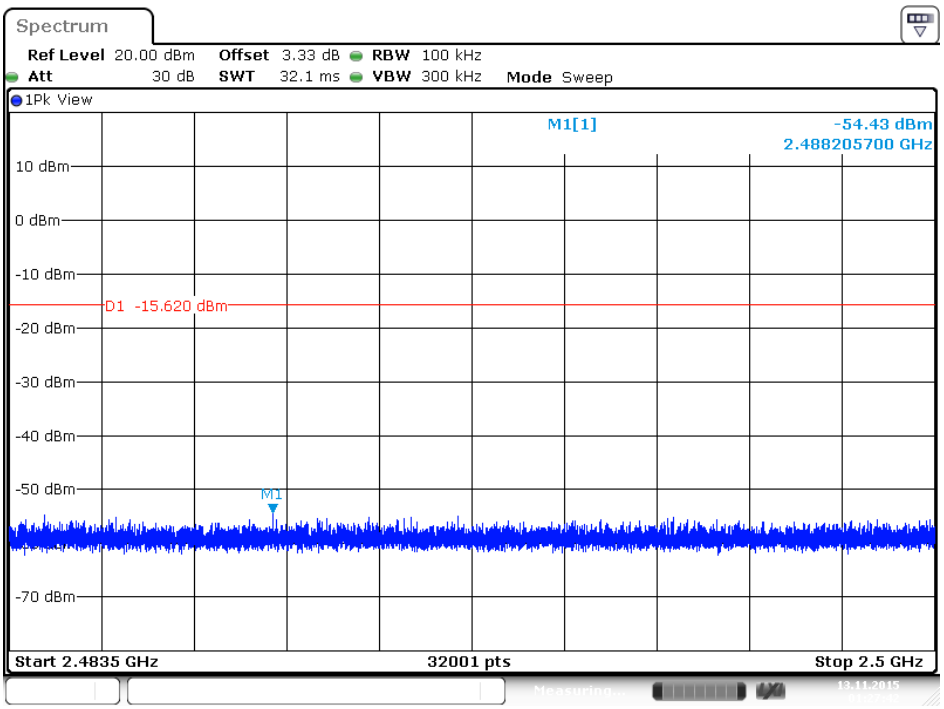
Date: 17.JUN.2015 22:35:18

Plot on Configuration IEEE 802.11g / 2412MHz / 2390MHz~2400MHz (down 30dBc)



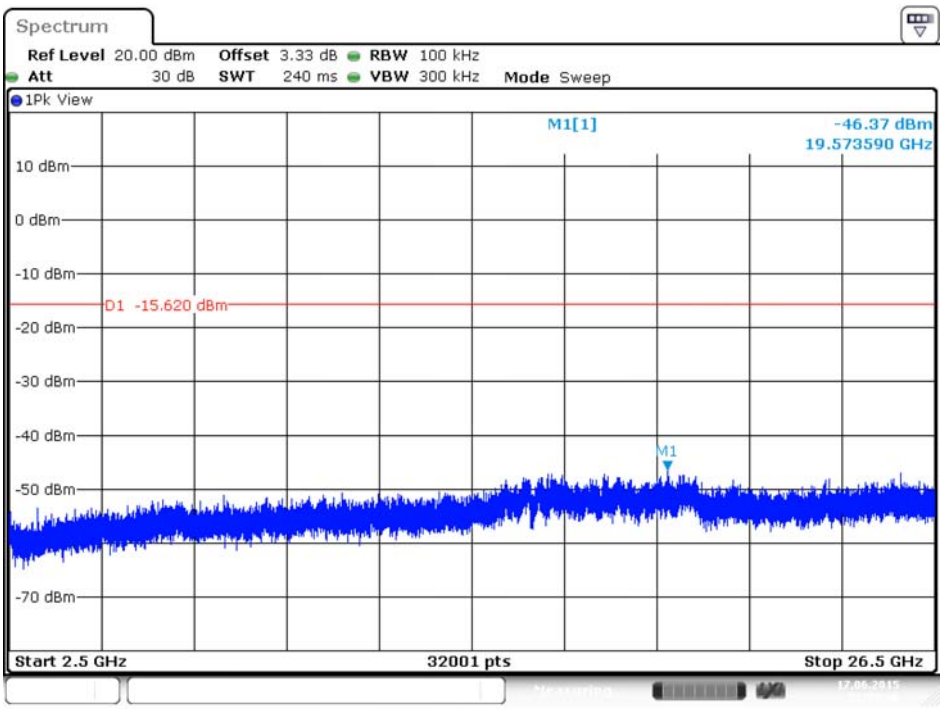
Date: 13.NOV.2015 01:29:37

Plot on Configuration IEEE 802.11g / 2412MHz / 2483.5MHz~2500MHz (down 30dBc)



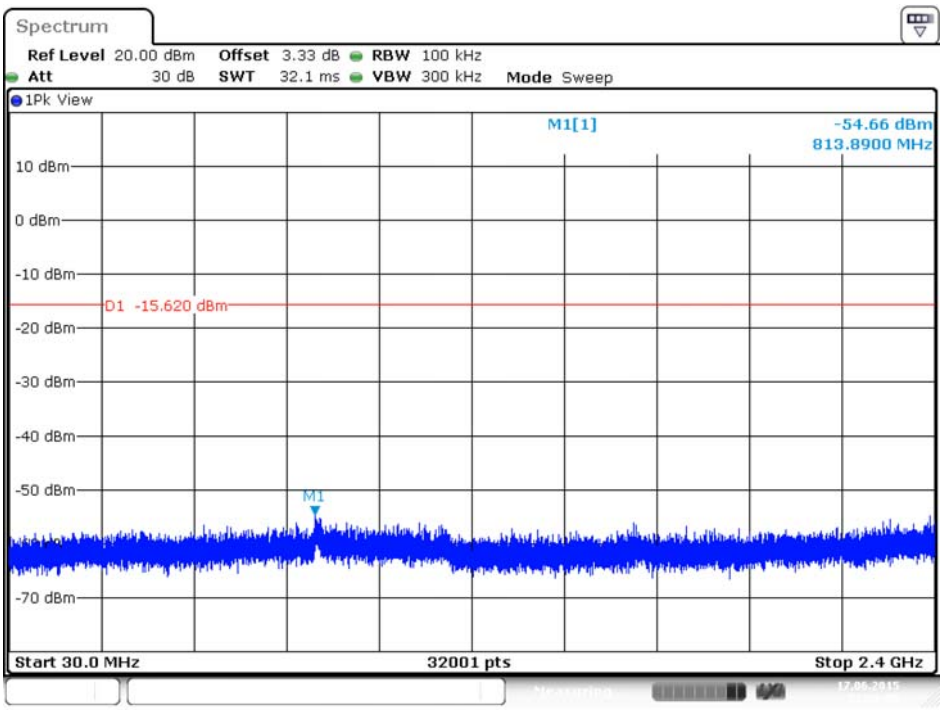
Date: 13.NOV.2015 01:27:43

Plot on Configuration IEEE 802.11g / 2412MHz / 2500MHz~26500MHz (down 30dBc)



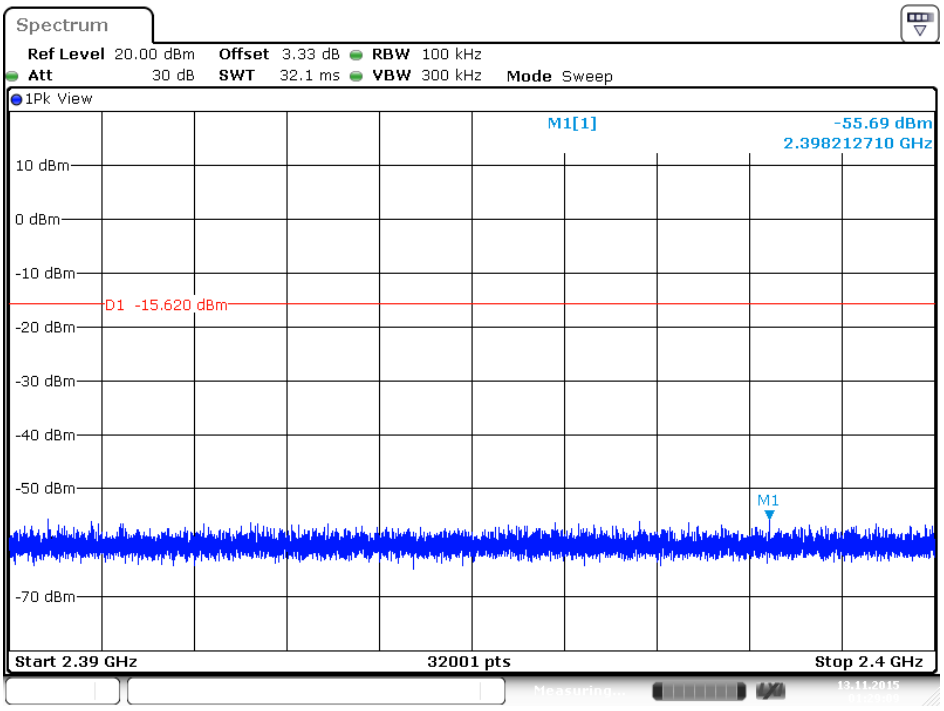
Date: 17.JUN.2015 22:35:46

Plot on Configuration IEEE 802.11g / 2462MHz / 30MHz~2400MHz (down 30dBc)



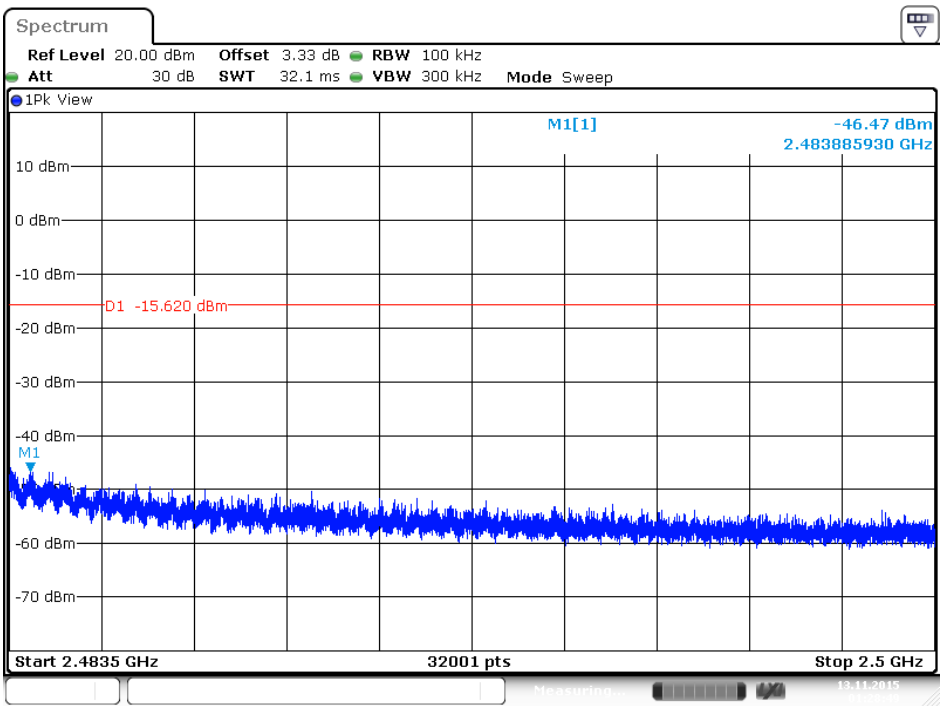
Date: 17.JUN.2015 22:36:55

Plot on Configuration IEEE 802.11g / 2462MHz / 2390MHz~2400MHz (down 30dBc)



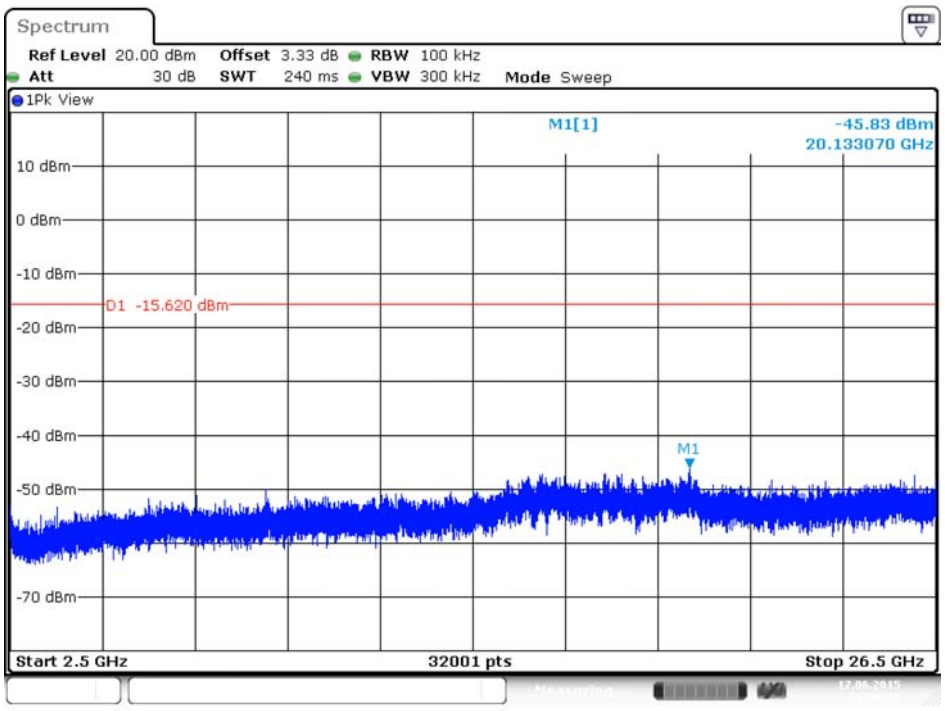
Date:13.NOV.2015 01:29:10

Plot on Configuration IEEE 802.11g / 2462MHz / 2483.5MHz~2500MHz (down 30dBc)



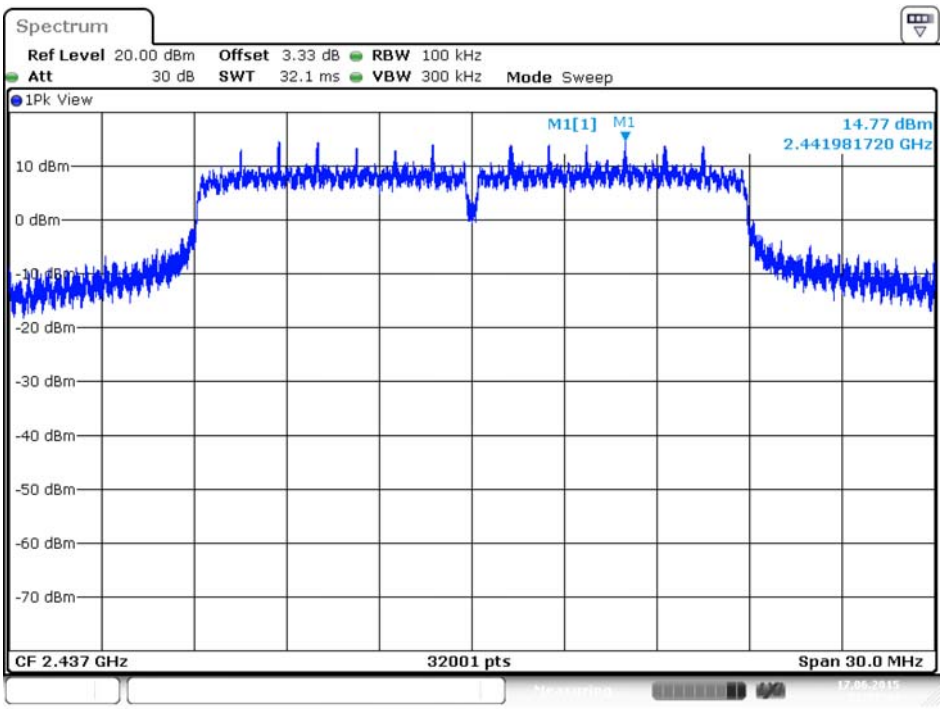
Date:13.NOV.2015 01:28:49

Plot on Configuration IEEE 802.11g / 2462MHz / 2500MHz~26500MHz (down 30dBc)



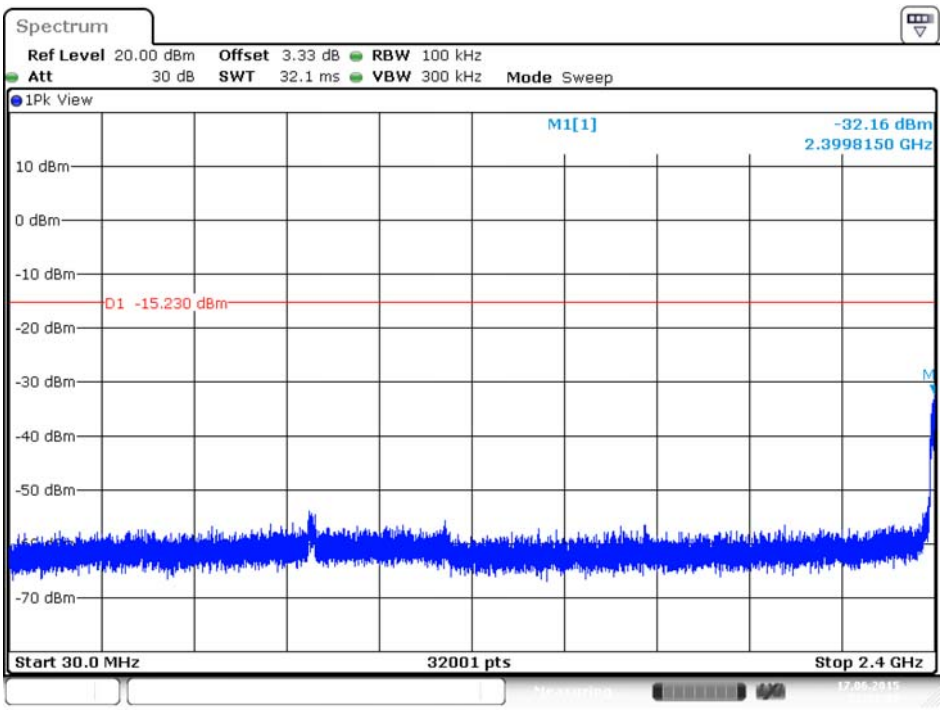
Date: 17.JUN.2015 22:36:18

Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



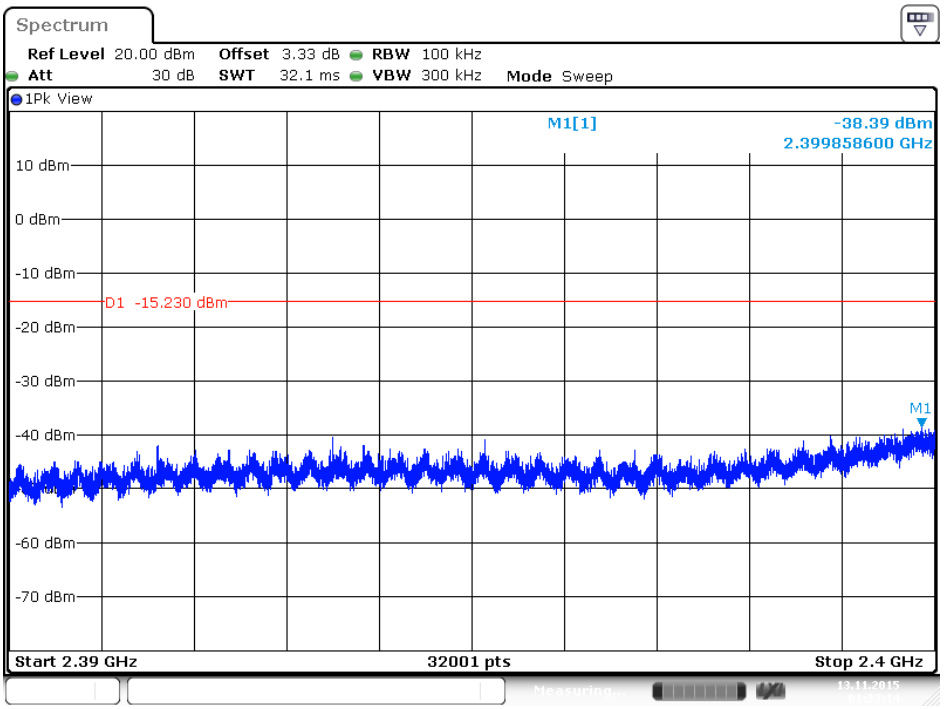
Date: 17.JUN.2015 22:37:45

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 30MHz~2400MHz (down 30dBc)



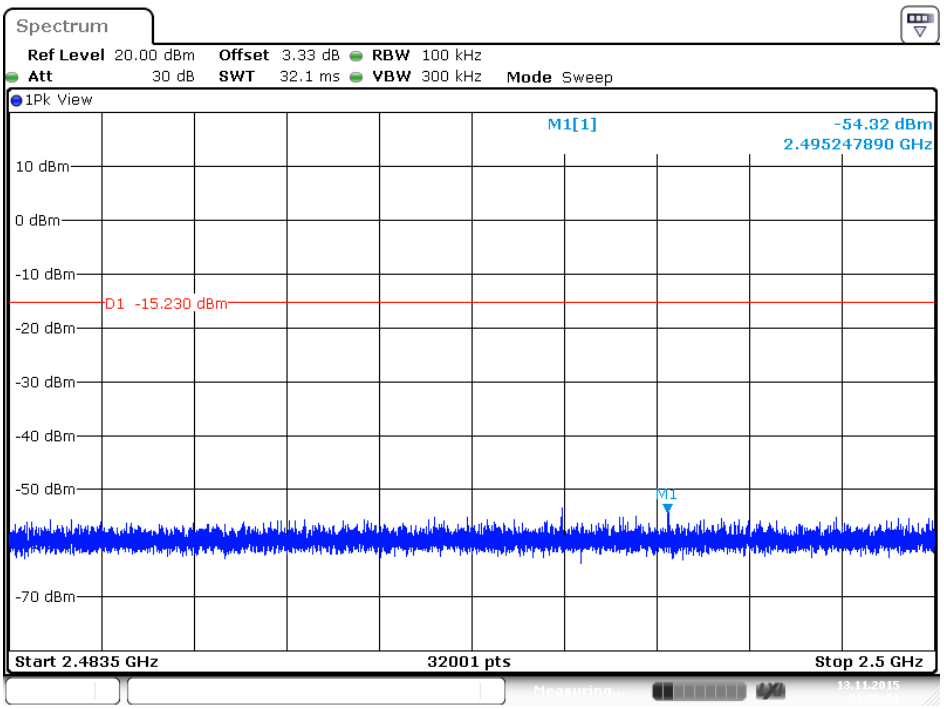
Date: 17.JUN.2015 22:38:38

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 2390MHz~2400MHz (down 30dBc)



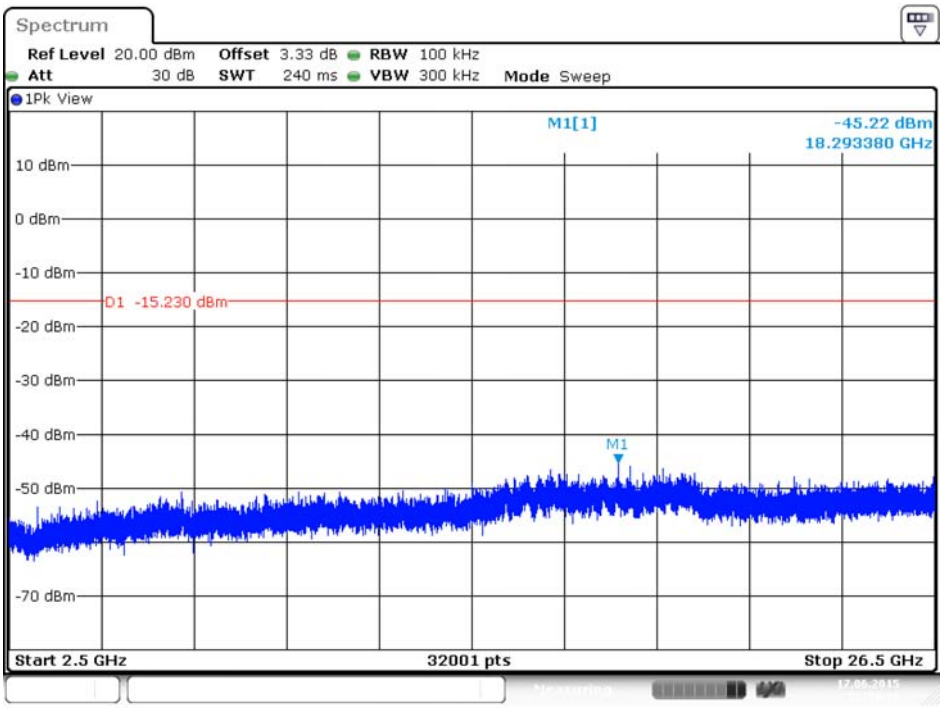
Date: 13.NOV.2015 01:23:15

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 2483.5MHz~2500MHz (down 30dBc)



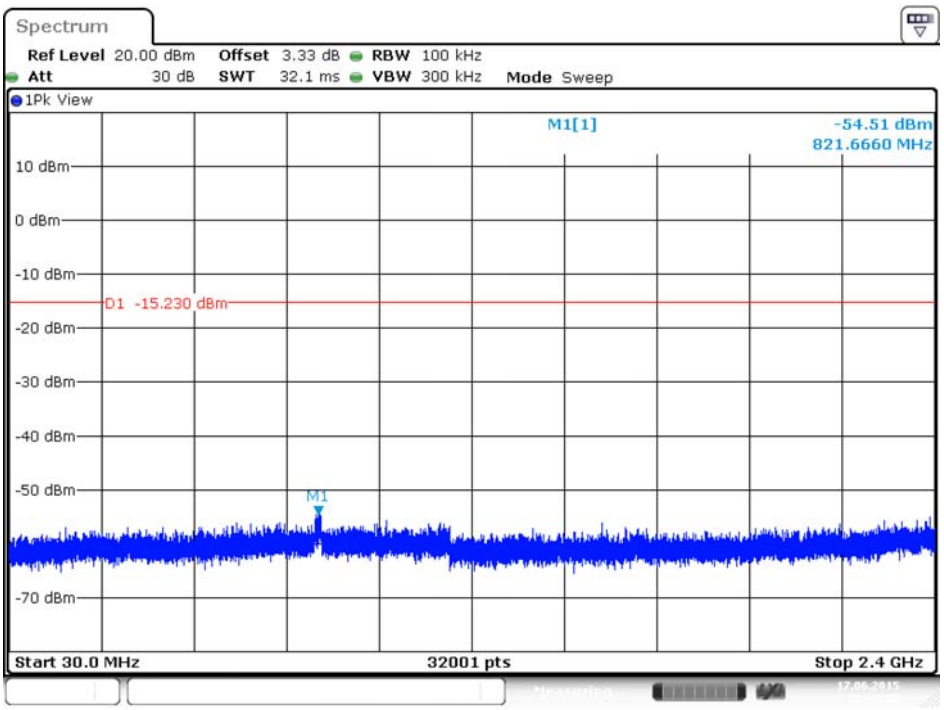
Date: 13.NOV.2015 01:22:51

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2412MHz / 2500MHz~26500MHz (down 30dBc)



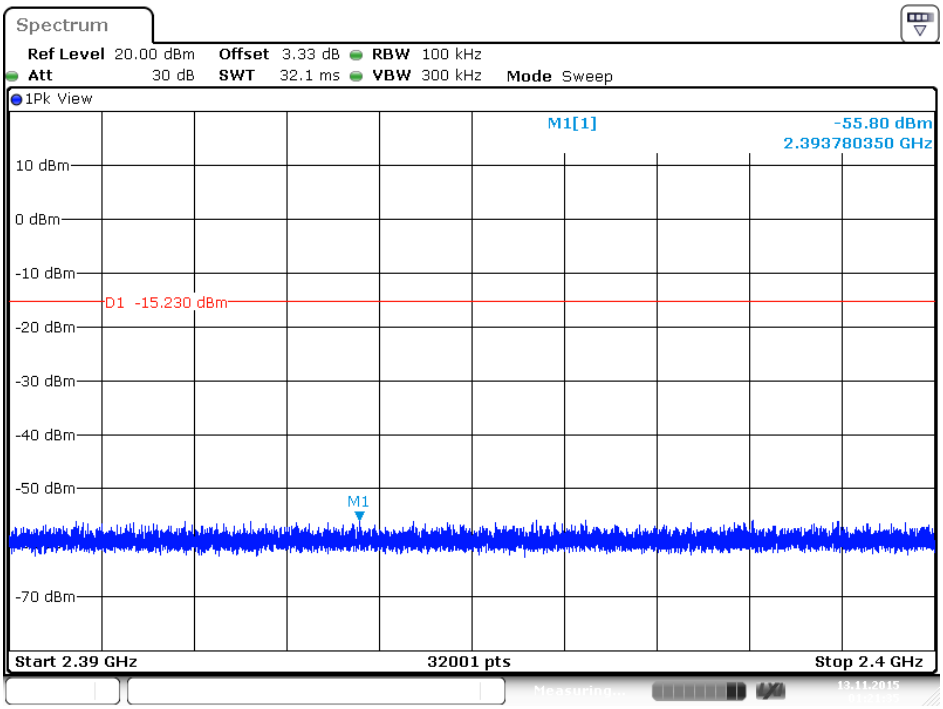
Date: 17.JUN.2015 22:39:11

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 30MHz~2400MHz (down 30dBc)



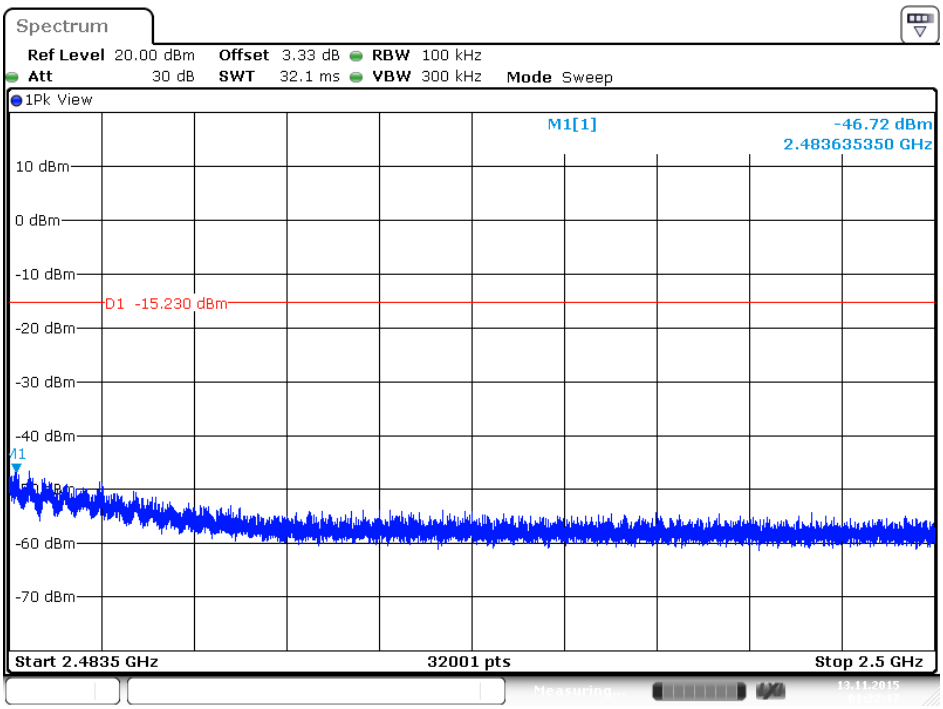
Date: 17.JUN.2015 22:40:28

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 2390MHz~2400MHz (down 30dBc)



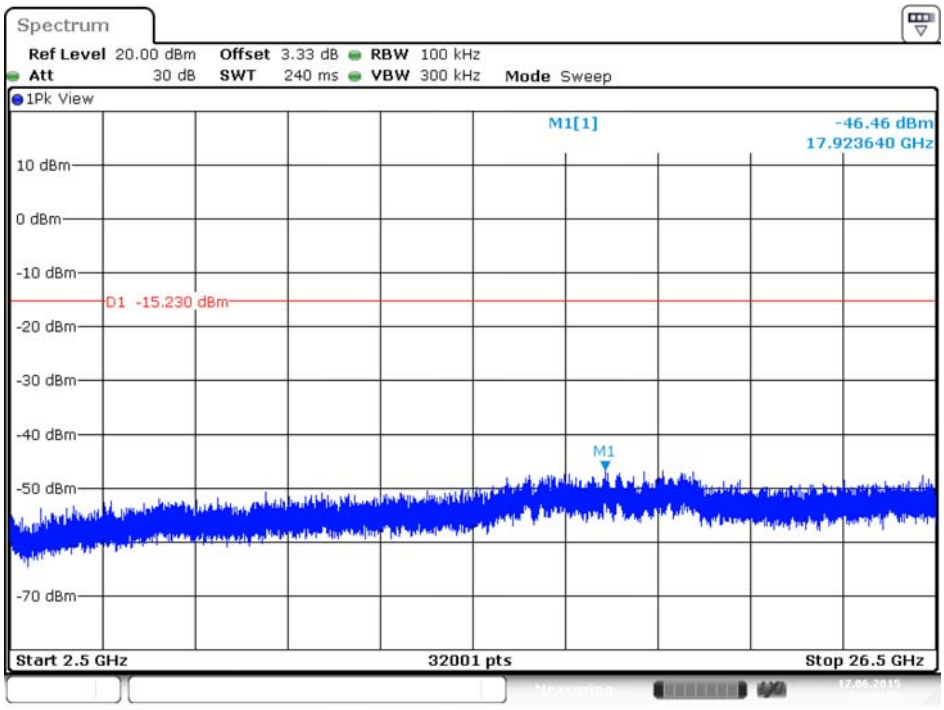
Date: 13.NOV.2015 01:21:35

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 2483.5MHz~2500MHz (down 30dBc)



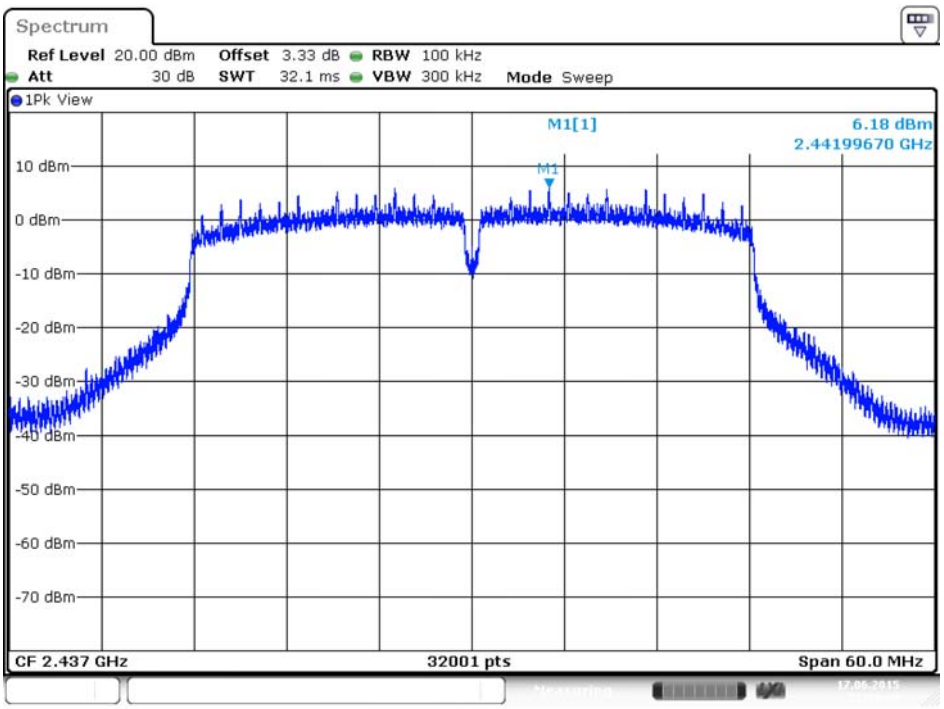
Date: 13.NOV.2015 01:22:17

Plot on Configuration IEEE 802.11n MCS0 HT20 / 2462MHz / 2500MHz~26500MHz (down 30dBc)



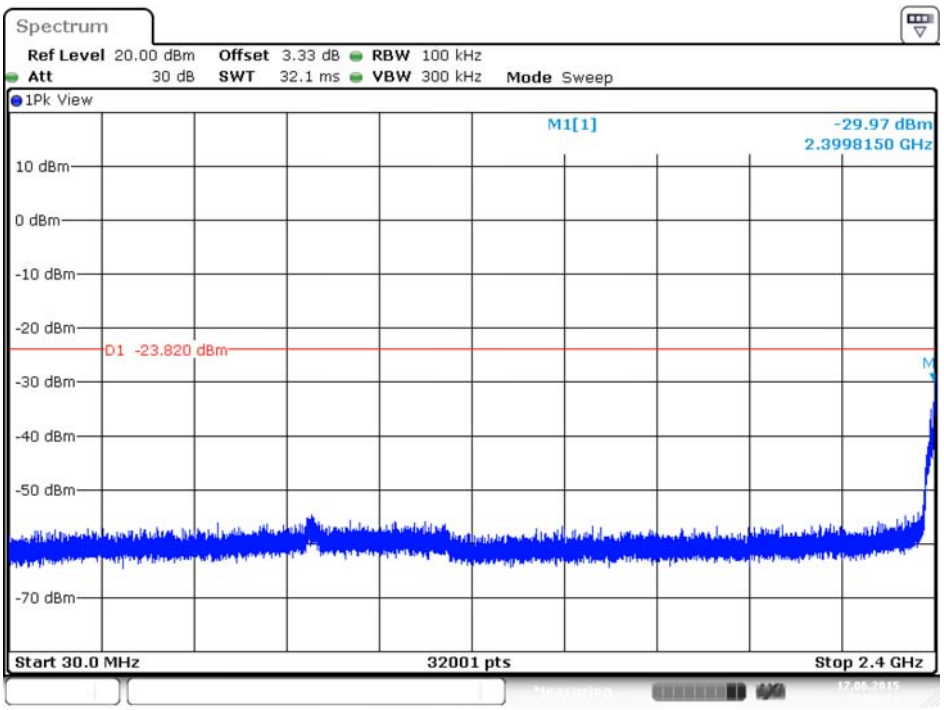
Date: 17.JUN.2015 22:39:50

Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level



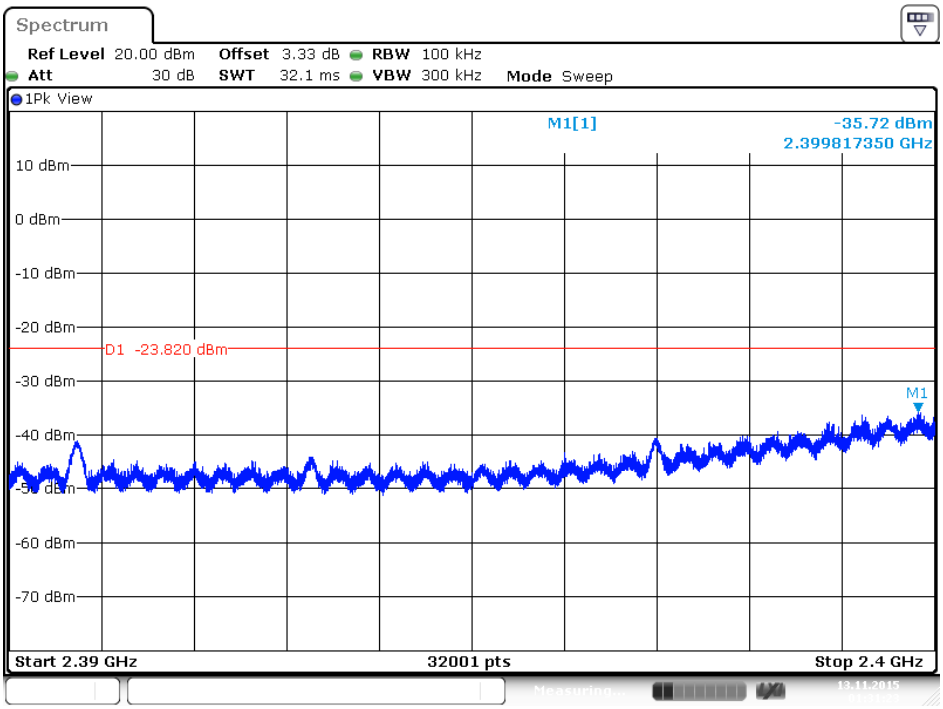
Date: 17.JUN.2015 22:24:34

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 30MHz~2400MHz (down 30dBc)



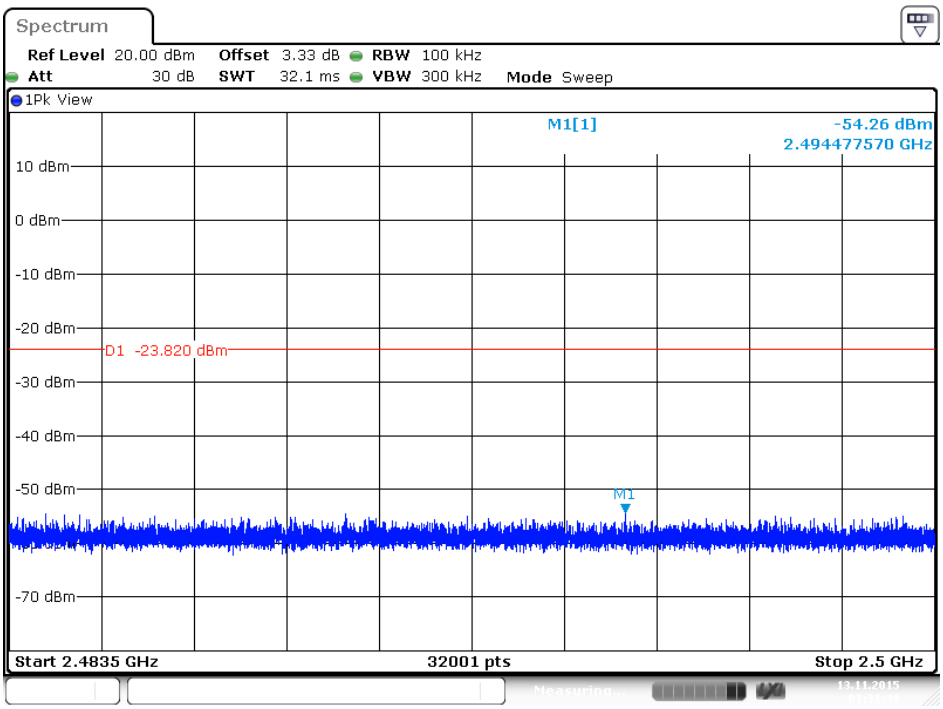
Date: 17.JUN.2015 22:26:38

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 2390MHz~2400MHz (down 30dBc)



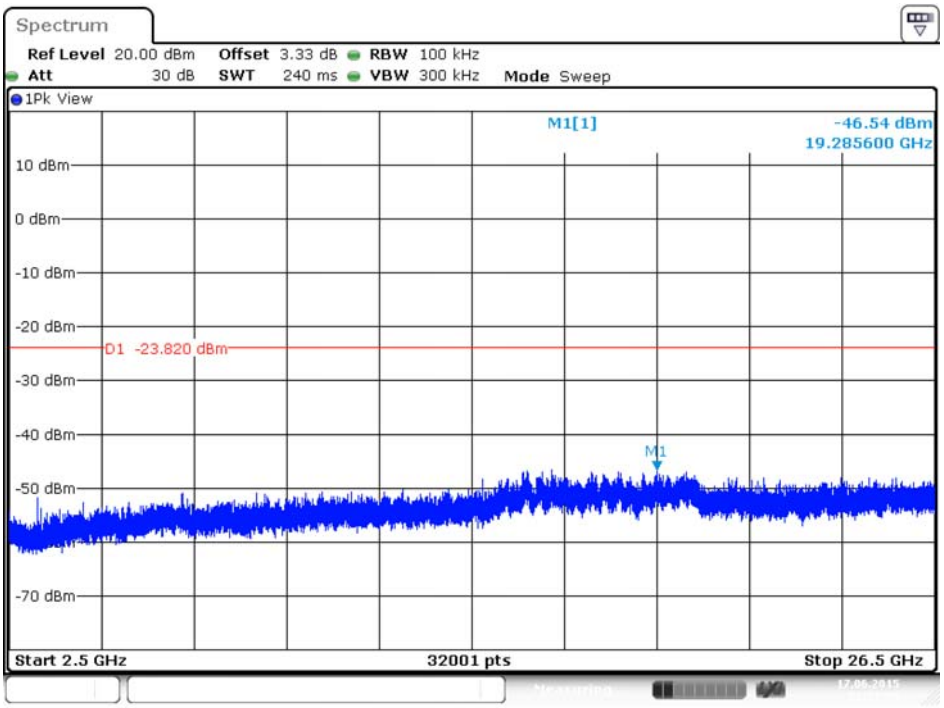
Date: 13.NOV.2015 01:31:23

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 2483.5MHz~2500MHz (down 30dBc)



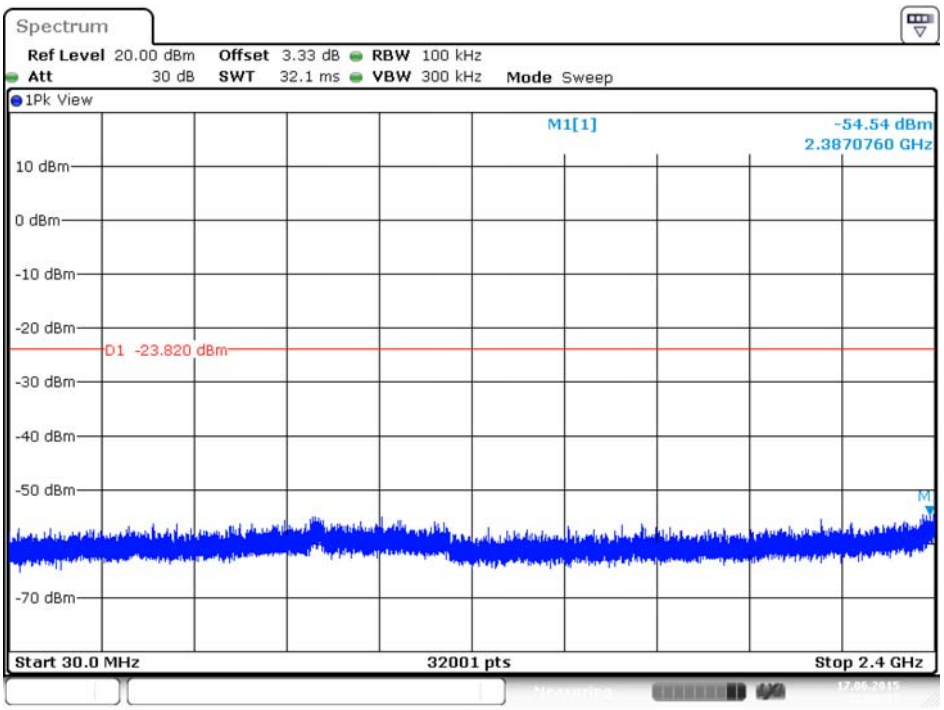
Date: 13.NOV.2015 01:31:49

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2422MHz / 2500MHz~26500MHz (down 30dBc)



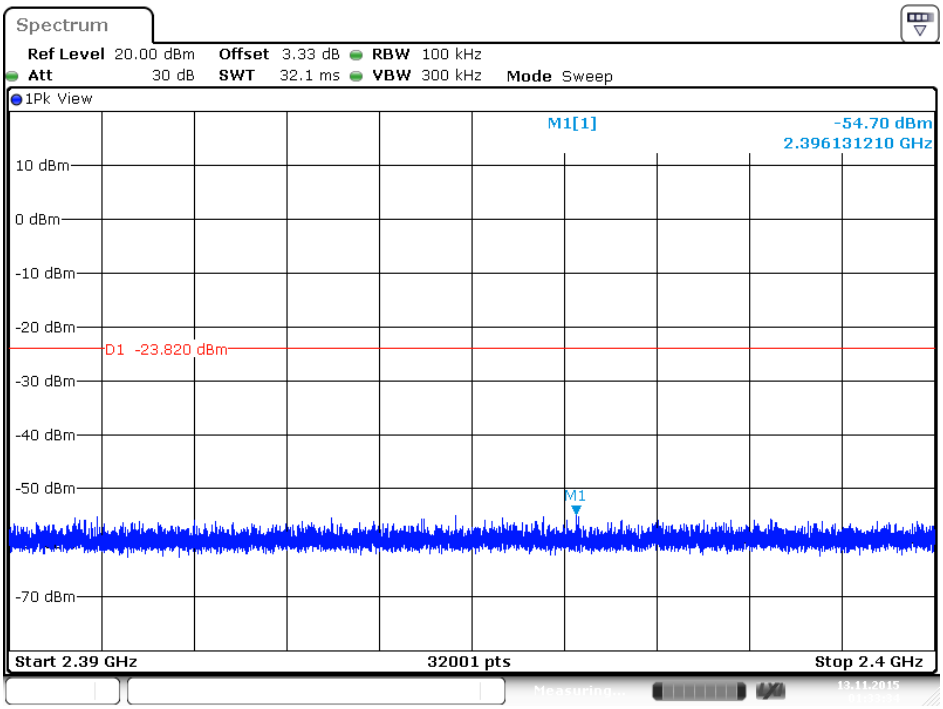
Date: 17.JUN.2015 22:27:36

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 30MHz~2400MHz (down 30dBc)



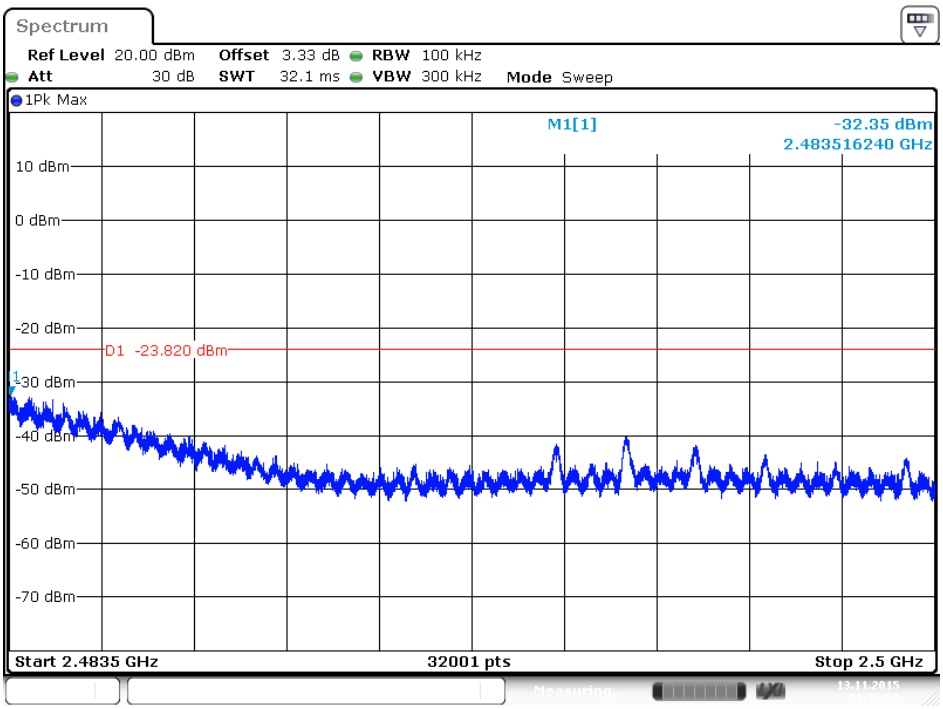
Date: 17.JUN.2015 22:28:51

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 2390MHz~2400MHz (down 30dBc)



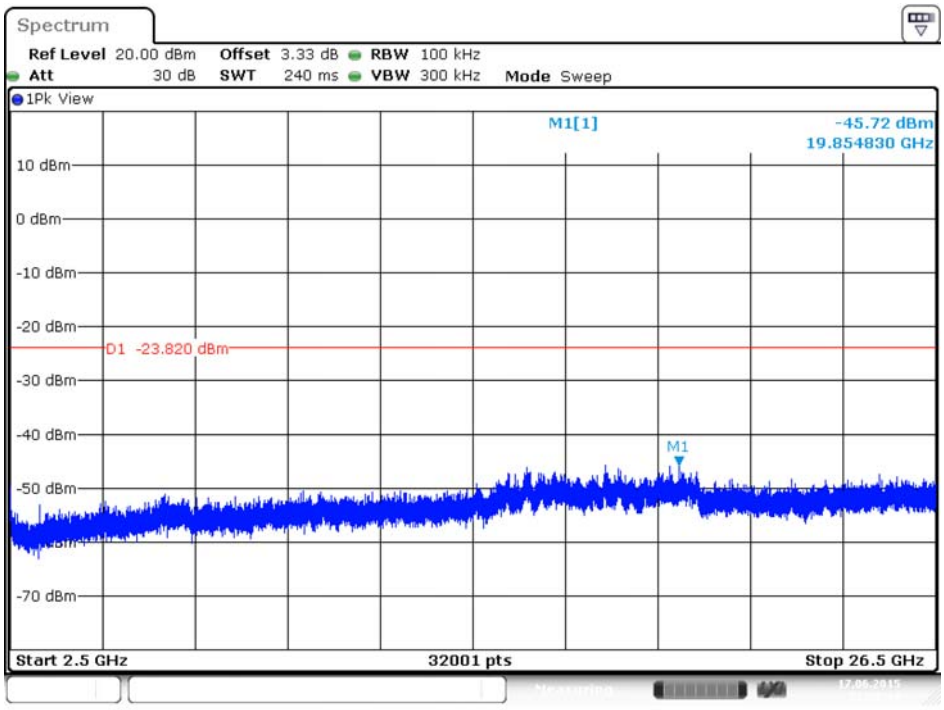
Date: 13.NOV.2015 01:33:34

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 2483.5MHz~26500MHz (down 30dBc)



Date: 13.NOV.2015 01:32:57

Plot on Configuration IEEE 802.11n MCS0 HT40 / 2452MHz / 2500MHz~26500MHz (down 30dBc)



Date: 17.JUN.2015 22:28:13

4.7. Antenna Requirements

4.7.1. Limit

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

4.7.2. Antenna Connector Construction

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

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Test Receiver	R&S	ESCS 30	100355	9kHz ~ 2.75GHz	Apr. 22, 2015	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 02, 2014	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 02, 2014	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	Dec. 03, 2014	Conduction (CO01-CB)
Software	Audix	E3	5.410e	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	May 06, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 28, 2014	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2014	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Feb. 24, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 12, 2015	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 25, 2014	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 06, 2014	Radiation (03CH01-CB)
EMI Test Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8GHz	Jan. 21, 2015	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-40G-1	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	1 GHz ~ 40 GHz	Nov. 15, 2014	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Oct. 16, 2014	Conducted (TH01-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Sep. 21, 2015	Conducted (TH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 12, 2014	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-8	1 GHz – 26.5 GHz	Nov. 15, 2014	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
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-10	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. 15, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 03, 2014	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	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%