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Shenzhen Branch**

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Report No.: SZEM161000852203

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FCC REPORT

Application No: SZEM1610008522RG
Applicant: Huawei Technologies Co.,Ltd.
Manufacturer: Huawei Technologies Co.,Ltd.
Product Name: Mobile WiFi
Model No.(EUT): 601HW
Trade Mark: HUAWEI
FCC ID: QIS601HW
Standards: 47 CFR Part 15, Subpart C (2015)
Date of Receipt: 2016-10-09
Date of Test: 2016-10-13 to 2016-10-21
Date of Issue: 2016-11-23

Test Result:	PASS *
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. * In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Derek Yang
Wireless Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

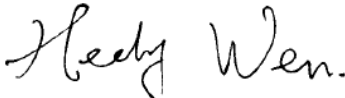
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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-11-23		Original

Authorized for issue by:			
Tested By		 (David Chen) /Project Engineer	2016-10-20 Date
Prepared By		 (Hedy Wen) /Clerk	2016-11-22 Date
Checked By		 (Jim Huang) /Reviewer	2016-11-23 Date



3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2013	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS



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5 General Information

5.1 Client Information

Applicant:	Huawei Technologies Co.,Ltd.
Address of Applicant:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer:	Huawei Technologies Co.,Ltd.
Address of Manufacturer:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

5.2 General Description of EUT

Product Name:	Mobile WiFi
Model No.:	601HW
Trade Mark:	HUAWEI
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK,BPSK)
Sample Type:	Portable Device
Antenna Type:	PIFA
Antenna Gain:	Antenna 0:0.2dBi, Antenna 1:0.2dBi
EUT Power Supply:	DC3.8V (1 x 3.8V Rechargeable battery) 2400mAh Battery: Charge by DC 5V
AC adaptor:	Adaptor: Model No.: HW-050200U01 Input: AC100-240V 50/60Hz 0.5A Output:DC5V 2.0A



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Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		
Operation Frequency each of channel(802.11n HT40)							
Channel		Frequency		Channel		Frequency	
3		2422MHz		6		2437MHz	
4		2427MHz		7		2442MHz	
5		2432MHz		8		2447MHz	

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11b/g/n (HT20):

Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

For 802.11n (HT40):

Channel	Frequency
The Lowest channel	2422MHz
The Middle channel	2437MHz
The Highest channel	2452MHz



5.3 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	55 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

5.4 Description of Support Units

The EUT has been tested independent unit.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.



5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.



5.10 Equipment List

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2016-05-13	2017-05-13
2	LISN	Rohde & Schwarz	ENV216	SEM007-01	2016-10-09	2017-10-09
3	LISN	ETS-LINDGREN	3816/2	SEM007-02	2016-04-25	2017-04-25
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8- 02	EMC0120	2016-09-28	2017-09-28
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4- 02	EMC0121	2016-09-28	2017-09-28
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2- 02	EMC0122	2016-09-28	2017-09-28
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2016-04-25	2017-04-25
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2016-10-09	2017-10-09

RF connected test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
2	Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
3	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
4	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09



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RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2016-05-13	2017-05-13
2	EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2016-10-09	2017-10-09
3	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2014-11-01	2017-11-01
4	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEM003-11	2015-10-17	2018-10-17
5	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEM003-12	2014-11-24	2017-11-24
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2016-04-25	2017-04-25
7	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
9	Loop Antenna	Beijing Daze	ZN30401	SEM003-09	2015-05-13	2018-05-13

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2016-05-13	2017-05-13
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEM004-04	2016-04-25	2017-04-25
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2014-11-15	2017-11-15
4	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2016-10-09	2017-10-09
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14
6	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
7	Horn Antenna(26GHz-40GHz)	A.H.Systems, inc.	SAS-573	SEM003-13	2015-02-12	2018-02-12
8	Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2016-10-09	2017-10-09
9	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A



6 Test results and Measurement Data

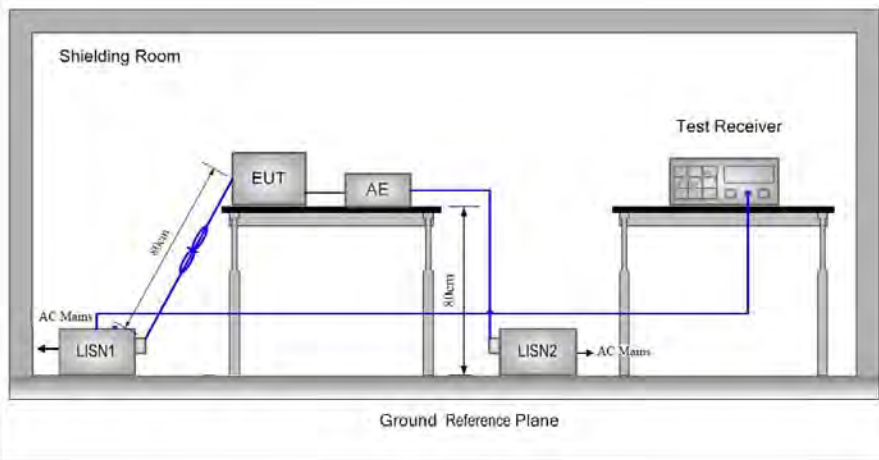
6.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
15.203 requirement: 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna 1 is 0.2dBi, antenna 2 is 0.2dBi.	



6.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.		

Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel. Transmitting mode.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate of 802.11b at lowest channel is the worst case. Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

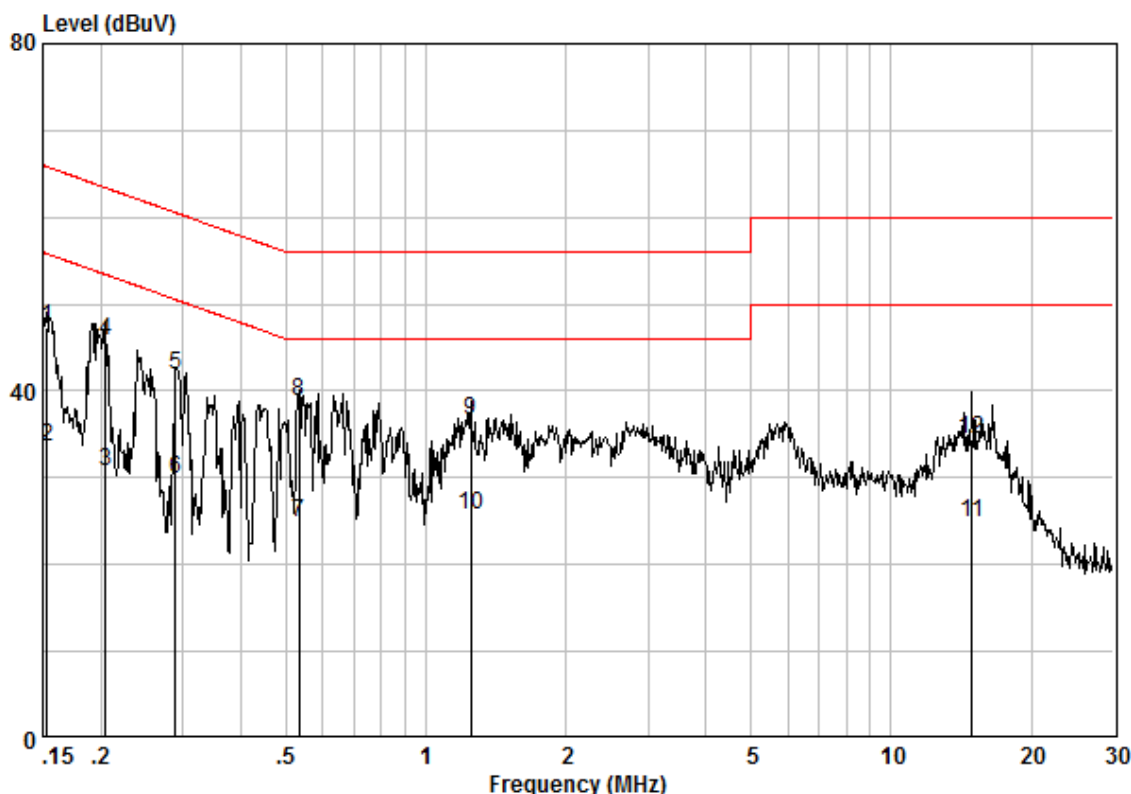


Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:

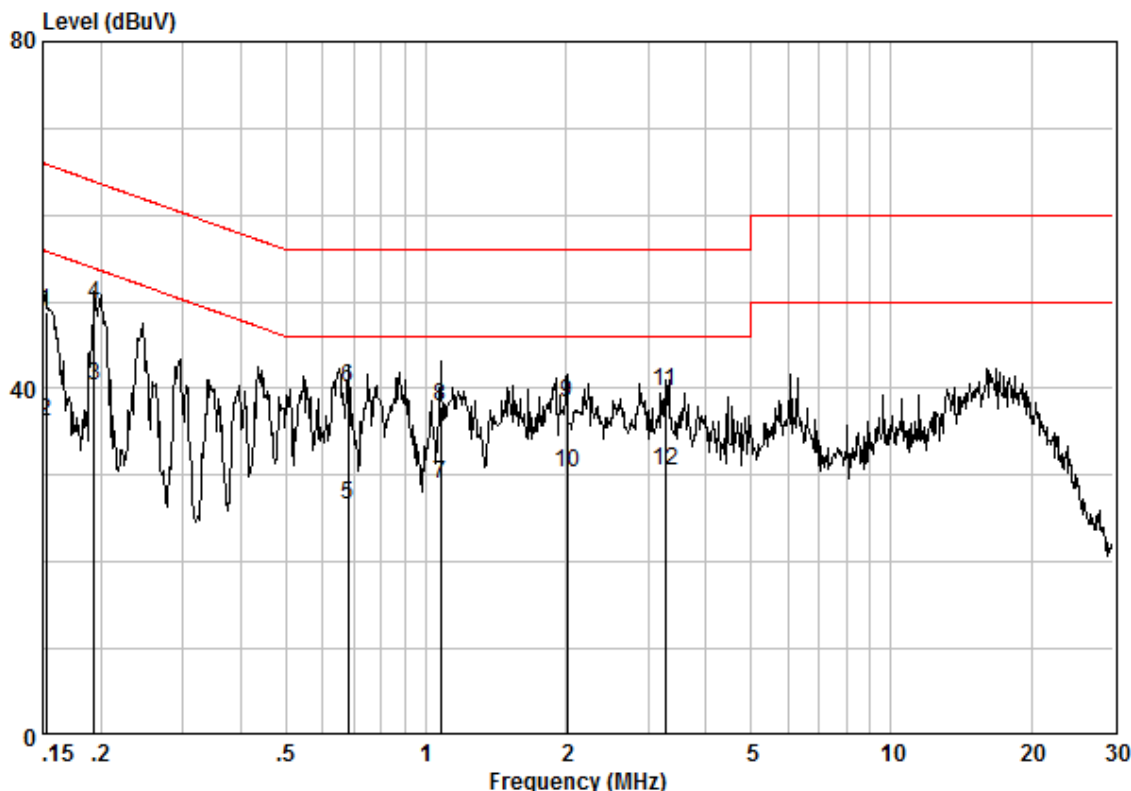


Site : Shielding Room
Condition : CE LINE
Job No. : 8522RG
Test Mode : TX

	Freq	Cable	LISN	Read	Limit	Over	
	MHz	Loss	Factor	Level	Line	Limit	Remark
		dB		dBuV	dBuV	dB	
1	0.15321	0.02	9.59	37.63	47.24	65.82	-18.59 QP
2	0.15321	0.02	9.59	23.92	33.54	55.82	-22.29 AVERAGE
3	0.20505	0.02	9.60	21.14	30.76	53.40	-22.64 AVERAGE
4	0.20505	0.02	9.60	36.20	45.82	63.40	-17.58 QP
5	0.28935	0.02	9.59	32.17	41.78	60.54	-18.76 QP
6	0.28935	0.02	9.59	20.19	29.80	50.54	-20.74 AVERAGE
7	0.53215	0.02	9.60	15.23	24.85	46.00	-21.15 AVERAGE
8	0.53215	0.02	9.60	29.29	38.91	56.00	-17.09 QP
9	1.249	0.03	9.60	27.08	36.71	56.00	-19.29 QP
10	1.249	0.03	9.60	16.12	25.75	46.00	-20.25 AVERAGE
11	14.907	0.16	9.76	14.99	24.91	50.00	-25.09 AVERAGE
12	14.907	0.16	9.76	24.54	34.46	60.00	-25.54 QP



Neutral Line:



Site : Shielding Room

Condition : CE NEUTRAL

Job No. : 8522RG

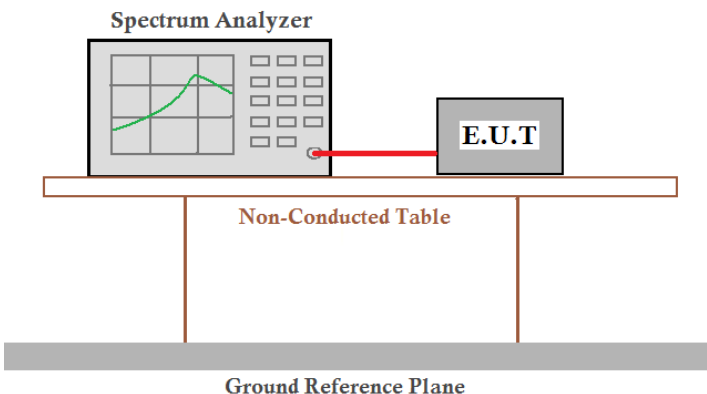
Test Mode : TX

	Freq	Cable	LISN	Read	Limit	Over	
	MHz	Loss	Factor	Level	Line	Limit	Remark
		dB	dB	dBuV	dBuV	dB	
1 @	0.15240	0.02	9.62	39.26	48.90	65.87	-16.97 QP
2	0.15240	0.02	9.62	26.59	36.23	55.87	-19.64 AVERAGE
3 @	0.19344	0.02	9.62	30.70	40.34	53.89	-13.55 AVERAGE
4 @	0.19344	0.02	9.62	40.17	49.80	63.89	-14.09 QP
5	0.67902	0.02	9.63	16.99	26.64	46.00	-19.36 AVERAGE
6 @	0.67902	0.02	9.63	30.56	40.21	56.00	-15.79 QP
7	1.077	0.03	9.65	19.23	28.91	46.00	-17.09 AVERAGE
8	1.077	0.03	9.65	28.33	38.01	56.00	-17.99 QP
9	2.012	0.03	9.66	28.57	38.26	56.00	-17.74 QP
10 @	2.012	0.03	9.66	20.71	30.40	46.00	-15.60 AVERAGE
11 @	3.276	0.02	9.67	29.88	39.58	56.00	-16.42 QP
12 @	3.276	0.02	9.67	20.83	30.53	46.00	-15.47 AVERAGE

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

6.3 Conducted Peak Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10 :2013 Section 11.9.1
Test Setup:	 <i>Remark:</i> Offset the High-Frequency cable loss 1 dB in the spectrum analyzer.
Test Instruments:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; 13.5Mbps of rate is the worst case of 802.11n(HT40)
Limit:	30dBm
Test Results:	Pass



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Measurement Data

802.11b mode				
Test channel	Peak Output Power (dBm)		Limit (dBm)	Result
	Antenna 0	Antenna 1		
Lowest	19.96	18.61	30.00	Pass
Middle	19.01	18.63	30.00	Pass
Highest	19.40	18.81	30.00	Pass
802.11g mode				
Test channel	Peak Output Power (dBm)		Limit (dBm)	Result
	Antenna 0	Antenna 1		
Lowest	21.26	19.80	30.00	Pass
Middle	20.46	20.31	30.00	Pass
Highest	20.73	20.31	30.00	Pass
802.11n(HT20)mode				
Test channel	Peak Output Power (dBm)		Limit (dBm)	Result
	Antenna 0	Antenna 1		
Lowest	20.57	19.19	30.00	Pass
Middle	19.66	19.29	30.00	Pass
Highest	20.23	19.24	30.00	Pass
802.11n(HT40)mode				
Test channel	Peak Output Power (dBm)		Limit (dBm)	Result
	Antenna 0	Antenna 1		
Lowest	18.40	18.26	30.00	Pass
Middle	18.56	18.07	30.00	Pass
Highest	18.76	18.01	30.00	Pass



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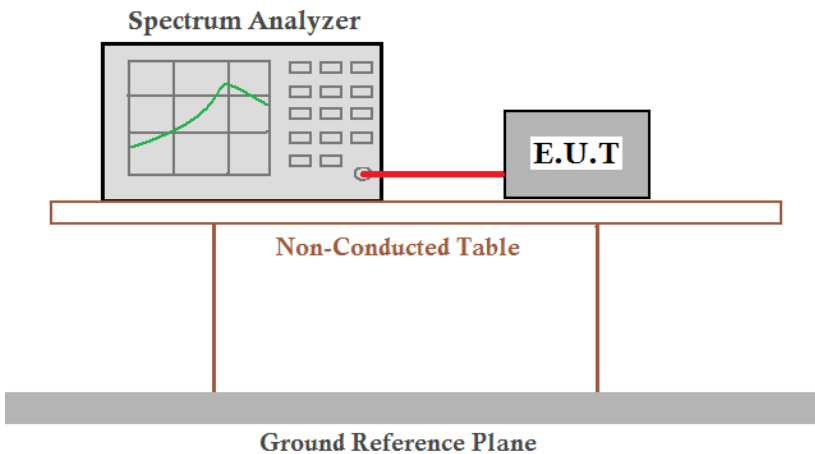
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MIMO

802.11n(HT20)mode				
Test channel	Peak Output Power (dBm)		Limit (dBm)	Result
	Antenna 0	Antenna 1		
Lowest	20.32	19.10	30.00	Pass
Middle	20.13	19.33	30.00	Pass
Highest	20.40	19.28	30.00	Pass
802.11n(HT40)mode				
Test channel	Peak Output Power (dBm)		Limit (dBm)	Result
	Antenna 0	Antenna 1		
Lowest	19.23	18.86	30.00	Pass
Middle	19.37	18.97	30.00	Pass
Highest	18.96	19.01	30.00	Pass

6.4 6dB Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013 Section 11.8
Test Setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by two vertical legs. Below the table is a Ground Reference Plane.
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; 13.5Mbps of rate is the worst case of 802.11n(HT40)
Limit:	≥ 500 kHz
Test Results:	Pass



Measurement Data

802.11b mode				
Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 0	Antenna 1		
Lowest	8.04	8.06	≥500	Pass
Middle	8.54	8.06	≥500	Pass
Highest	9.03	8.07	≥500	Pass
802.11g mode				
Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 0	Antenna 1		
Lowest	15.70	16.04	≥500	Pass
Middle	15.73	15.78	≥500	Pass
Highest	15.56	16.03	≥500	Pass
802.11n(HT20)mode				
Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 0	Antenna 1		
Lowest	17.30	17.69	≥500	Pass
Middle	17.31	17.52	≥500	Pass
Highest	17.55	17.65	≥500	Pass
802.11n(HT40)mode				
Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 0	Antenna 1		
Lowest	36.34	36.35	≥500	Pass
Middle	36.34	36.36	≥500	Pass
Highest	35.32	35.76	≥500	Pass



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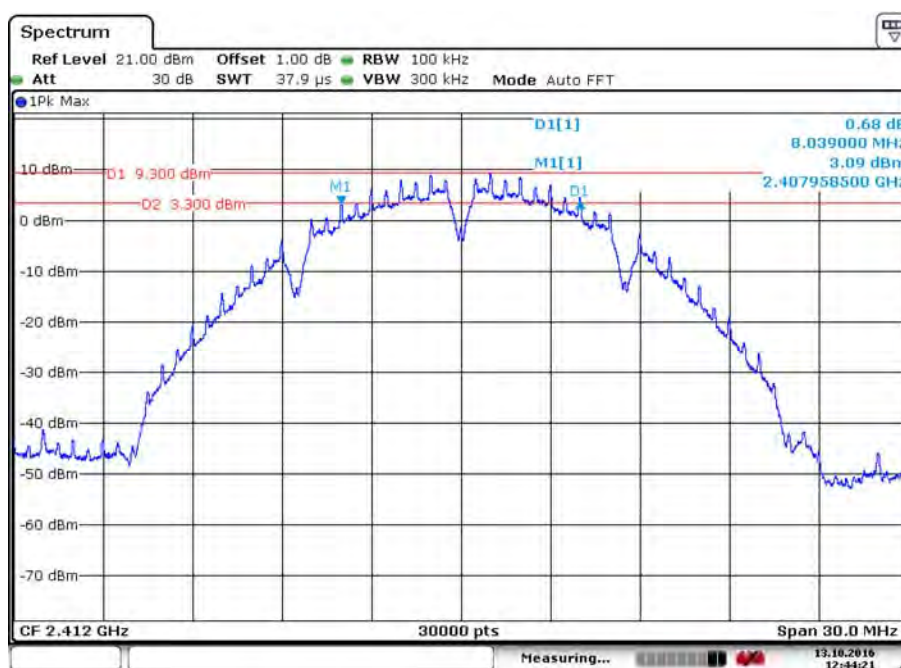
MIMO

802.11n(HT20)mode				
Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 0	Antenna 1		
Lowest	16.42	16.42	≥500	Pass
Middle	16.44	16.45	≥500	Pass
Highest	16.45	16.46	≥500	Pass
802.11n(HT40)mode				
Test channel	6dB Occupy Bandwidth (MHz)		Limit (kHz)	Result
	Antenna 0	Antenna 1		
Lowest	36.34	36.37	≥500	Pass
Middle	36.35	36.38	≥500	Pass
Highest	35.68	35.98	≥500	Pass

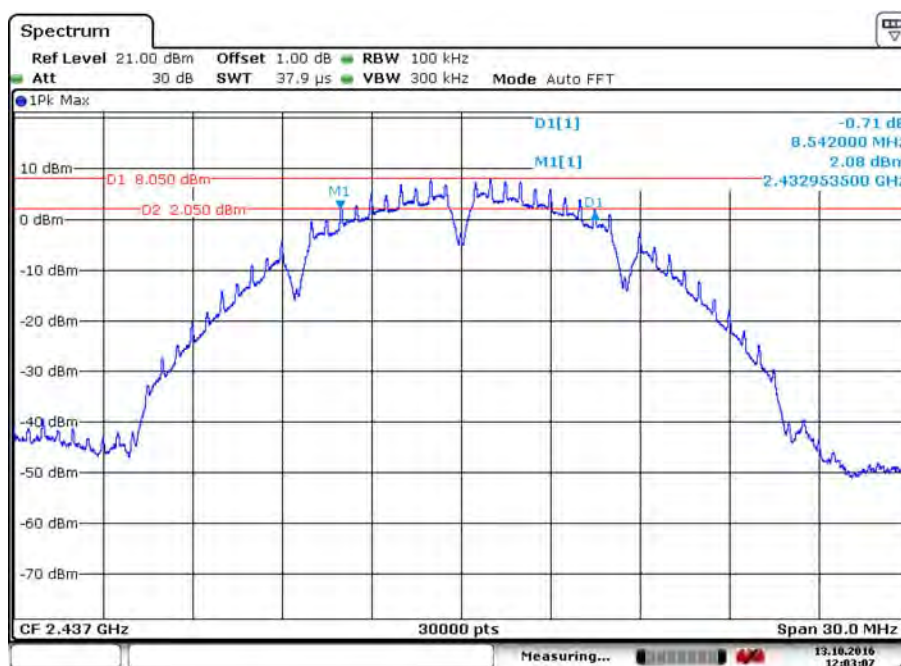
Test plot as follows:

Antenna 0:

Test mode:	802.11b	Test channel:	Lowest
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Test mode:	802.11b	Test channel:	Middle
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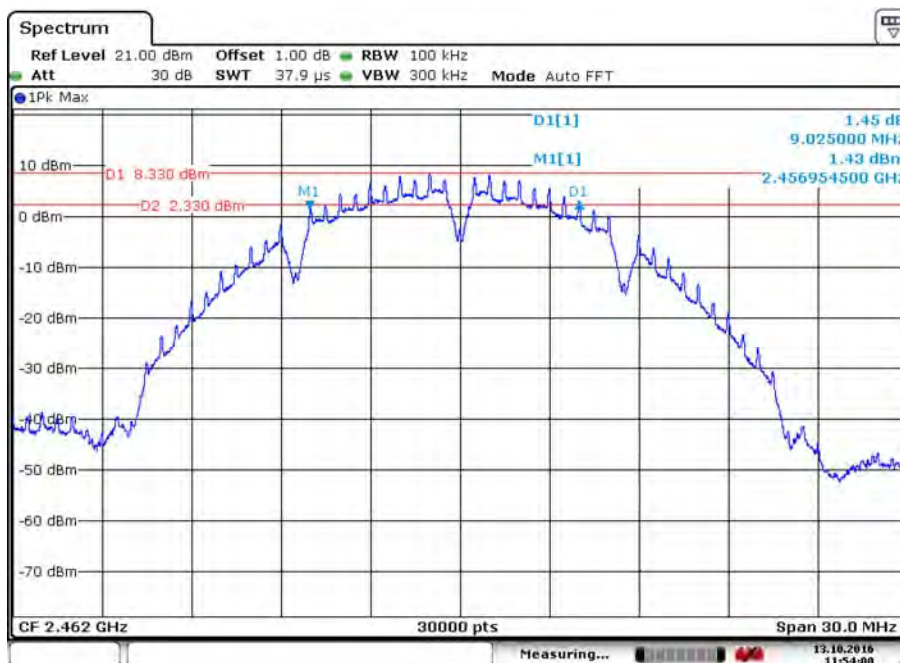




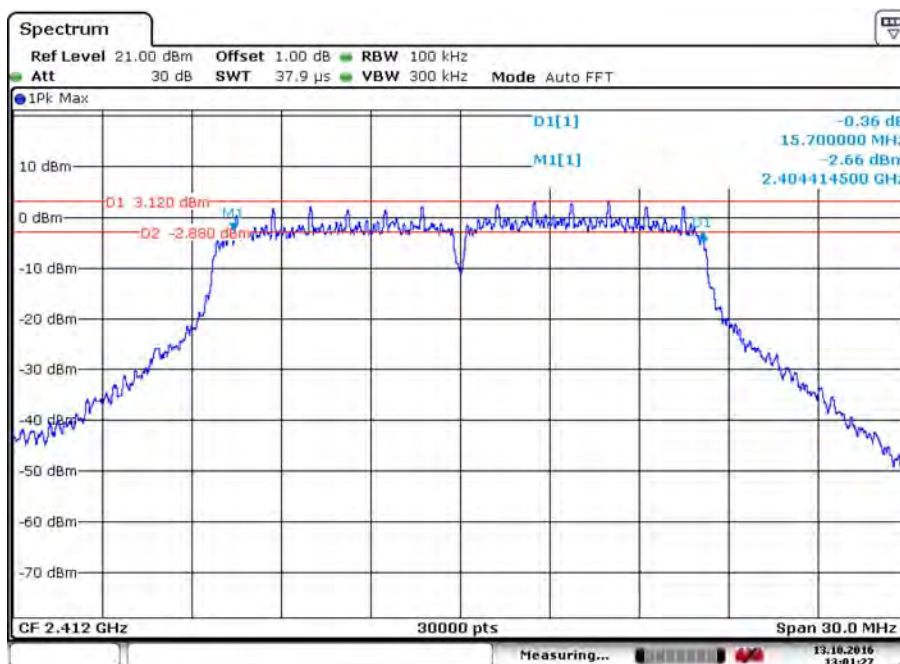
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Test mode:	802.11b	Test channel:	Highest
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Test mode:	802.11g	Test channel:	Lowest
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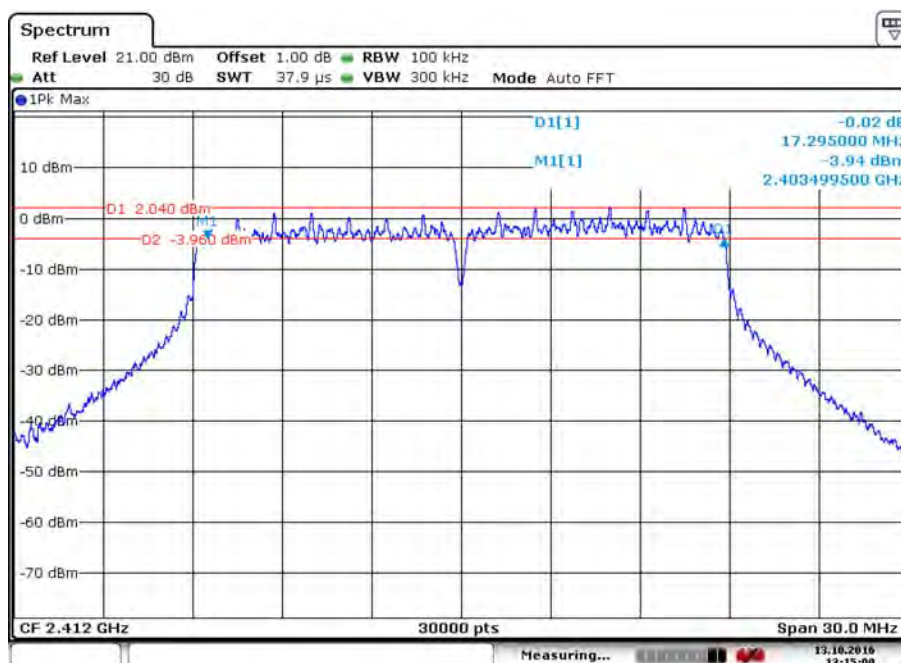




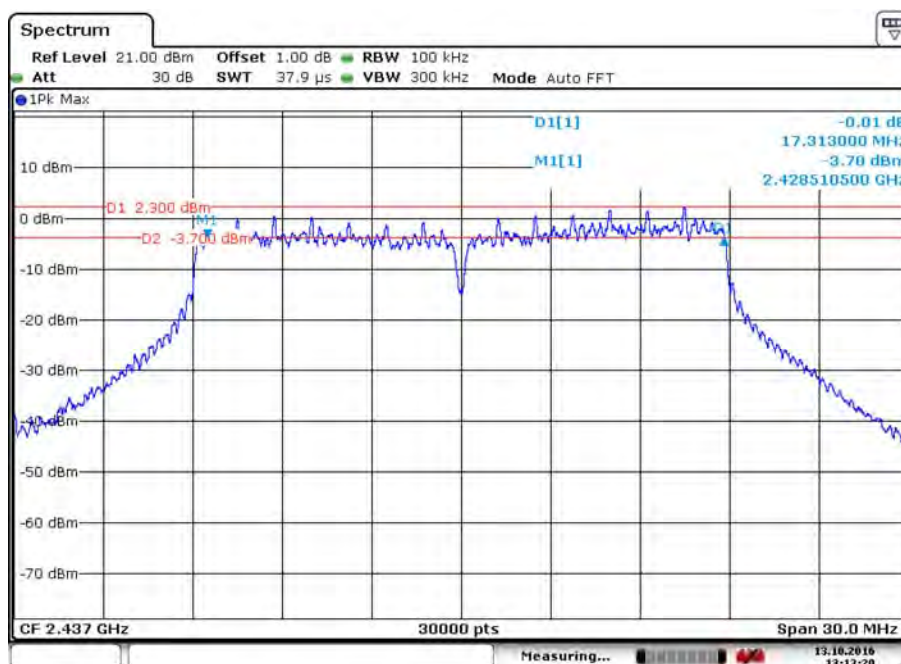
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Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Middle
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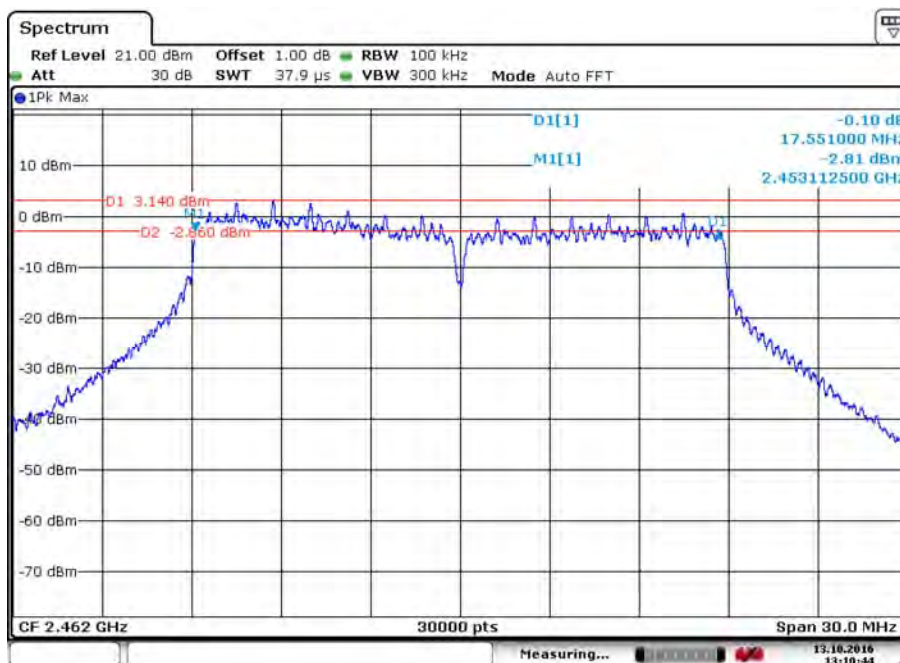




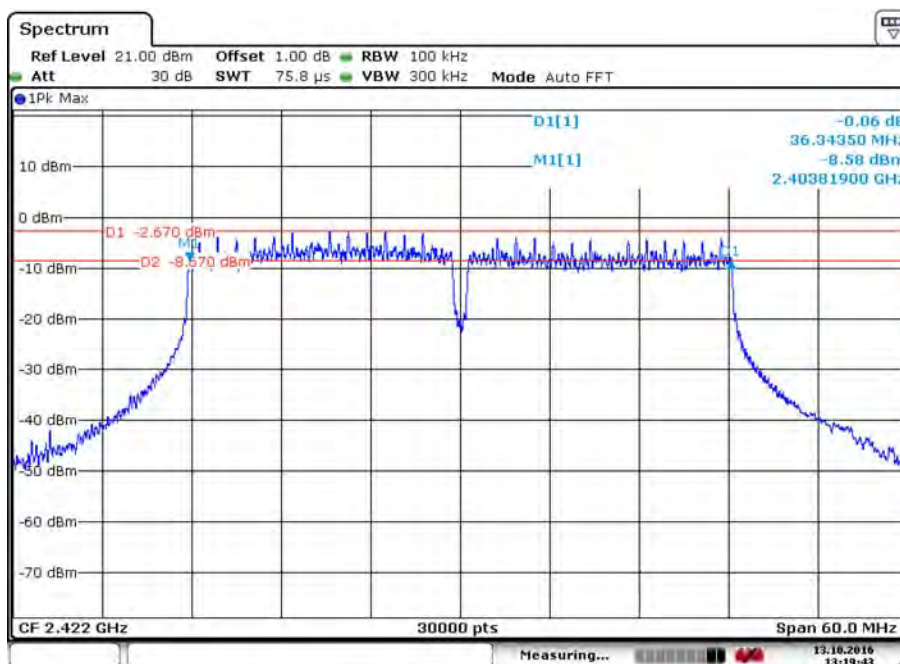
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Test mode:	802.11n(HT20)	Test channel:	Highest
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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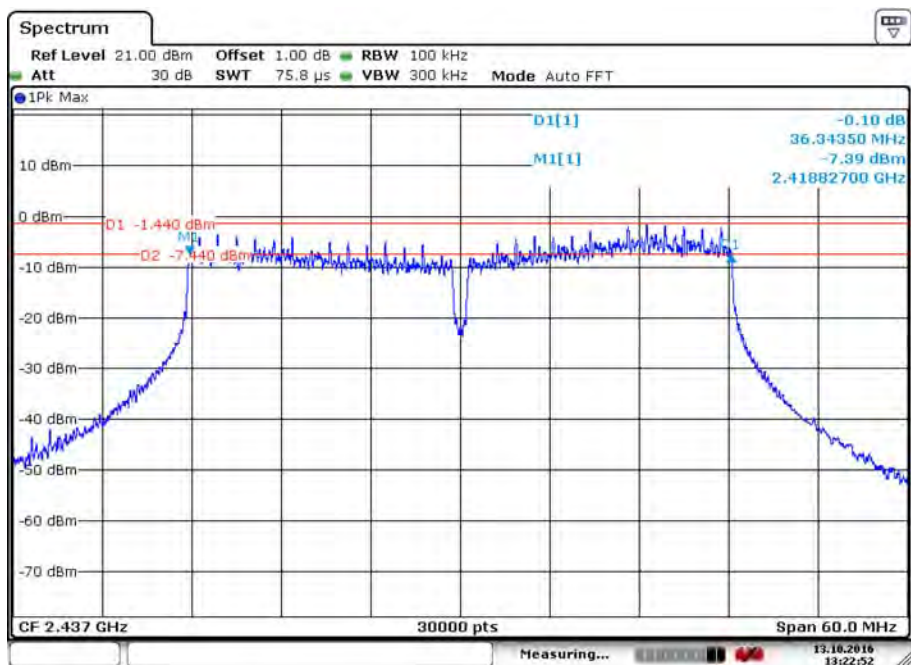




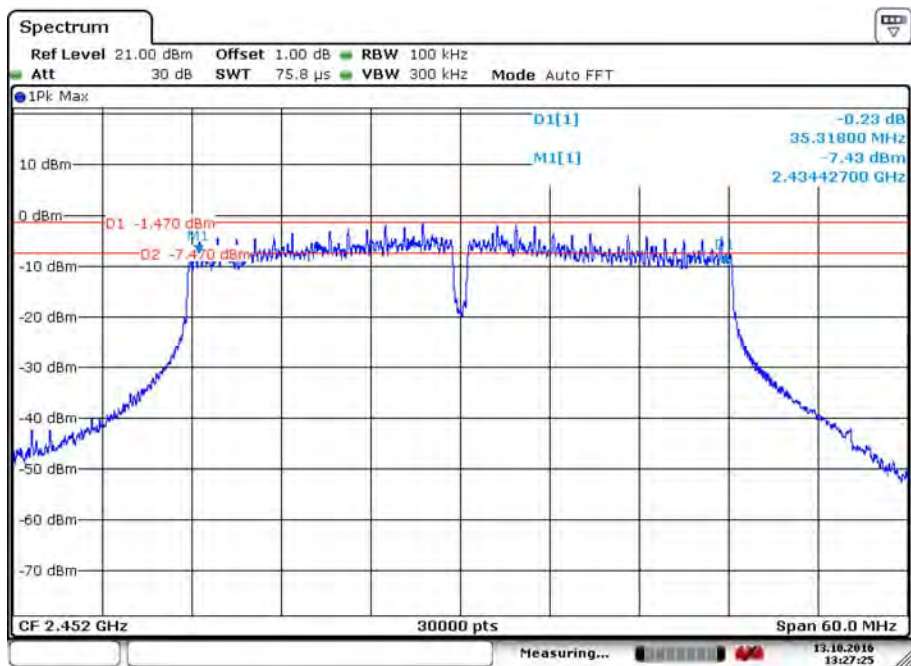
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Test mode:	802.11n(HT40)	Test channel:	Middle
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Test mode:	802.11n(HT40)	Test channel:	Highest
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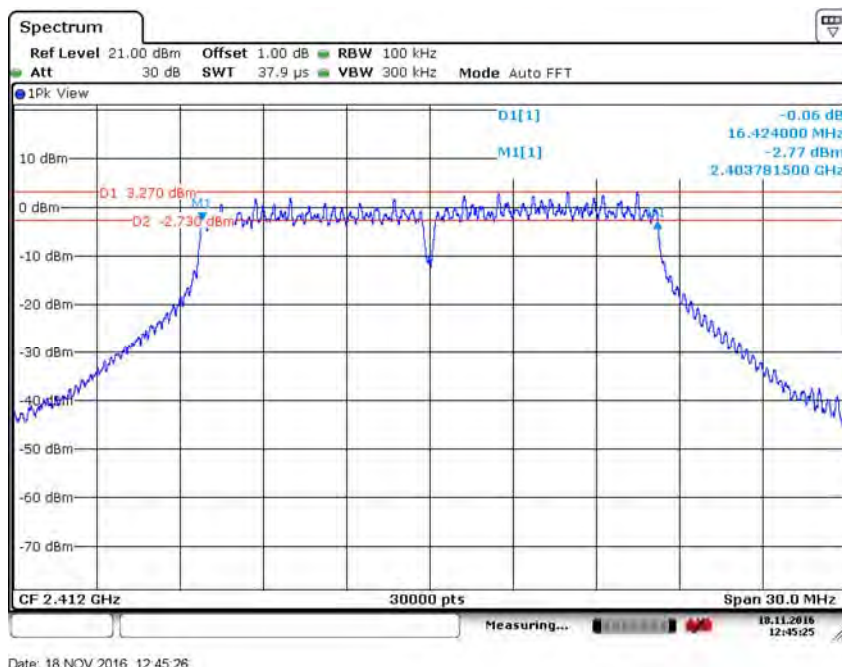




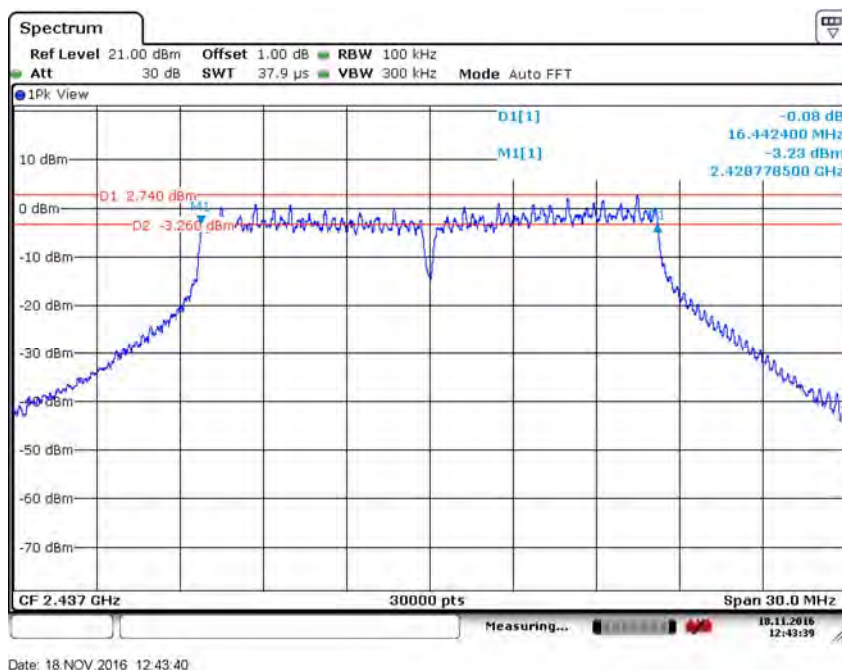
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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT20)MIMO	Test channel:	Middle
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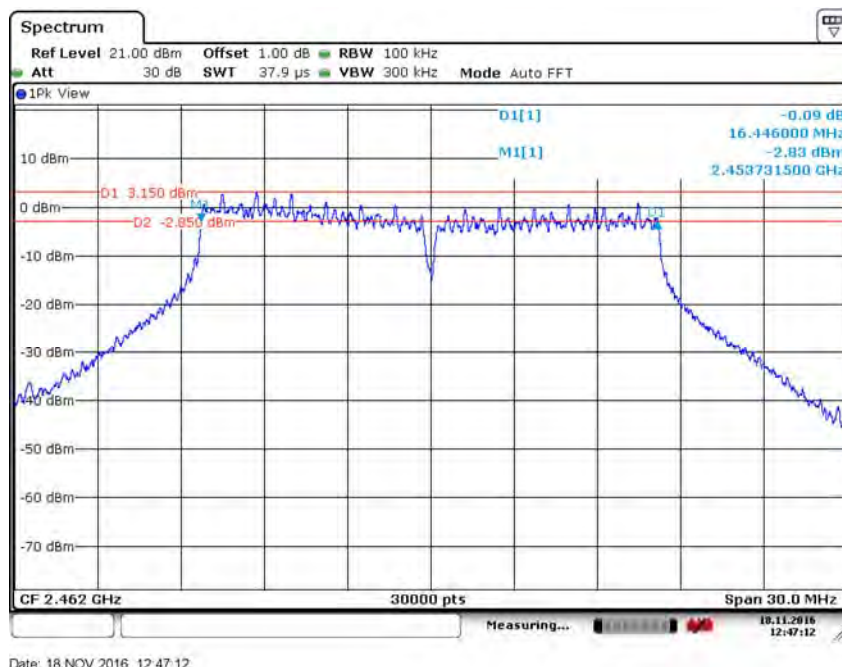




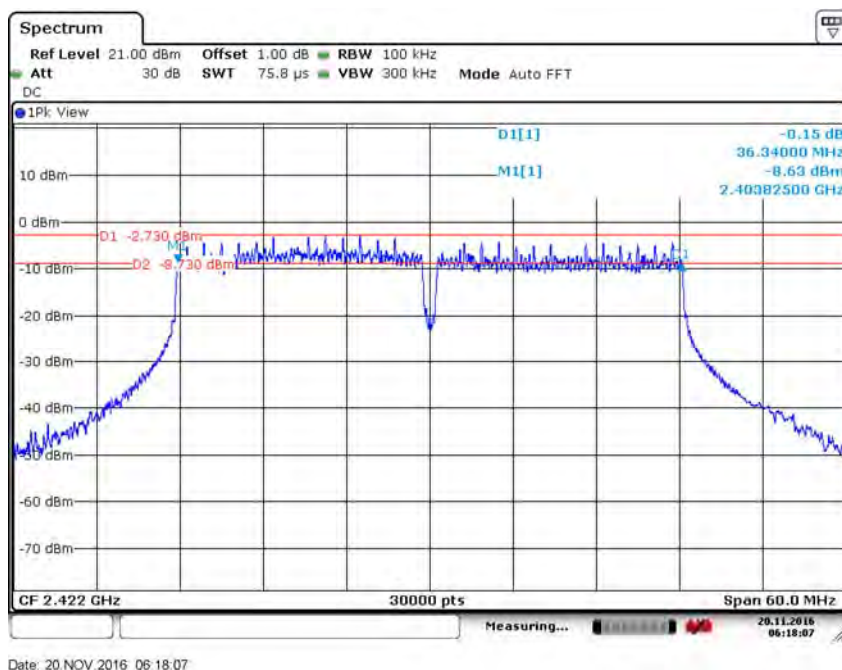
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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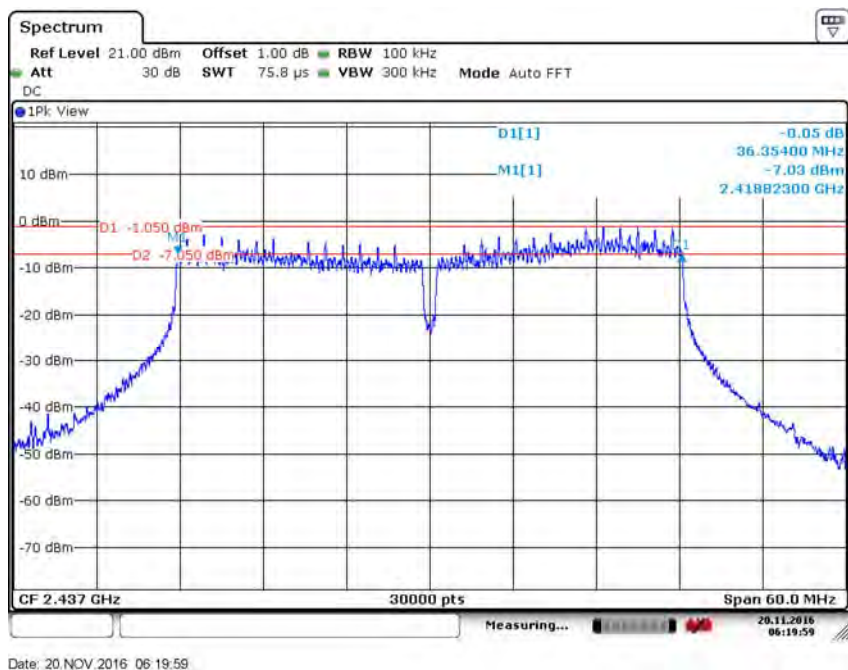




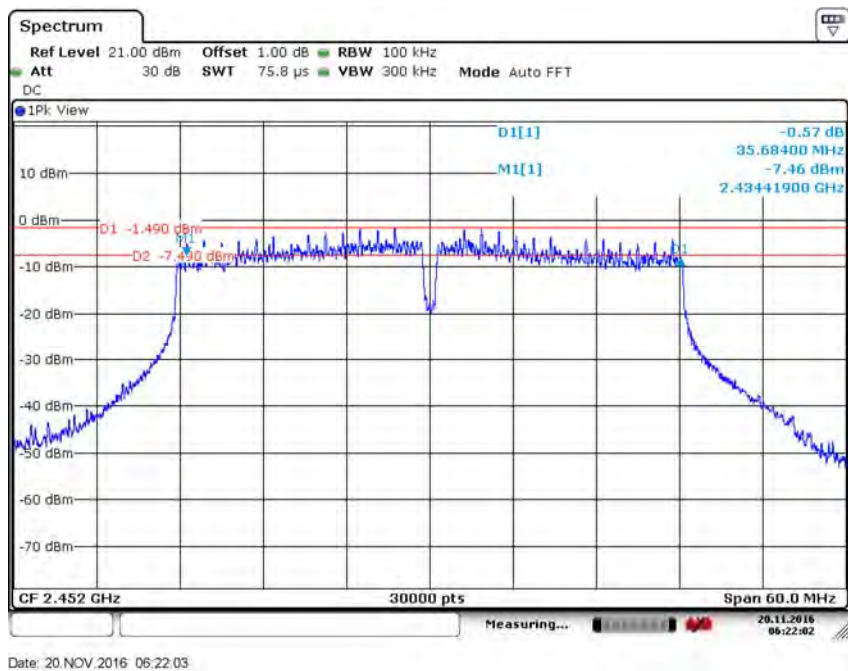
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Test mode:	802.11n(HT40)MIMO	Test channel:	Middle
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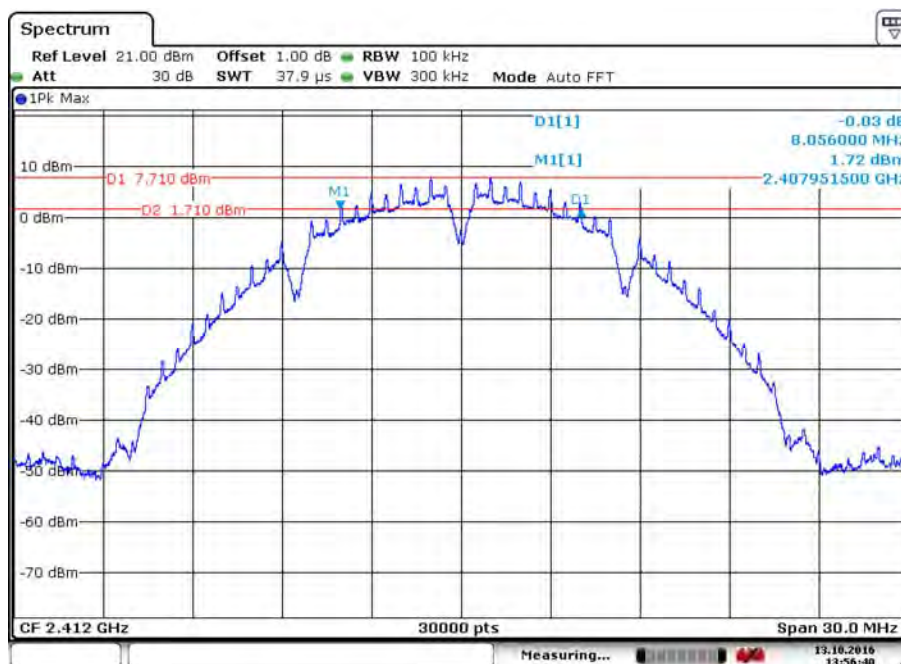
Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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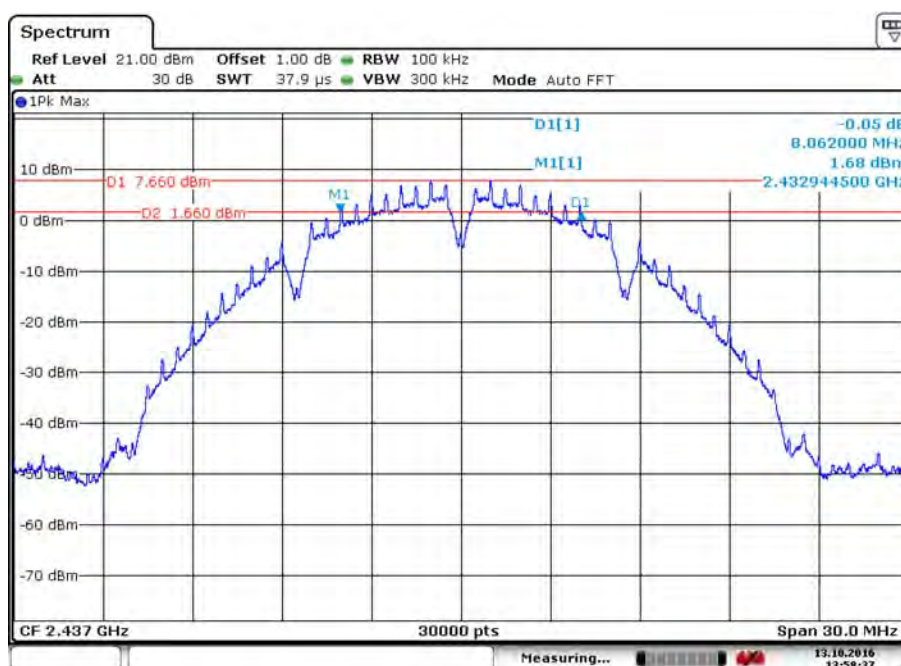


Antenna 1:

Test mode:	802.11b	Test channel:	Lowest
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Test mode:	802.11b	Test channel:	Middle
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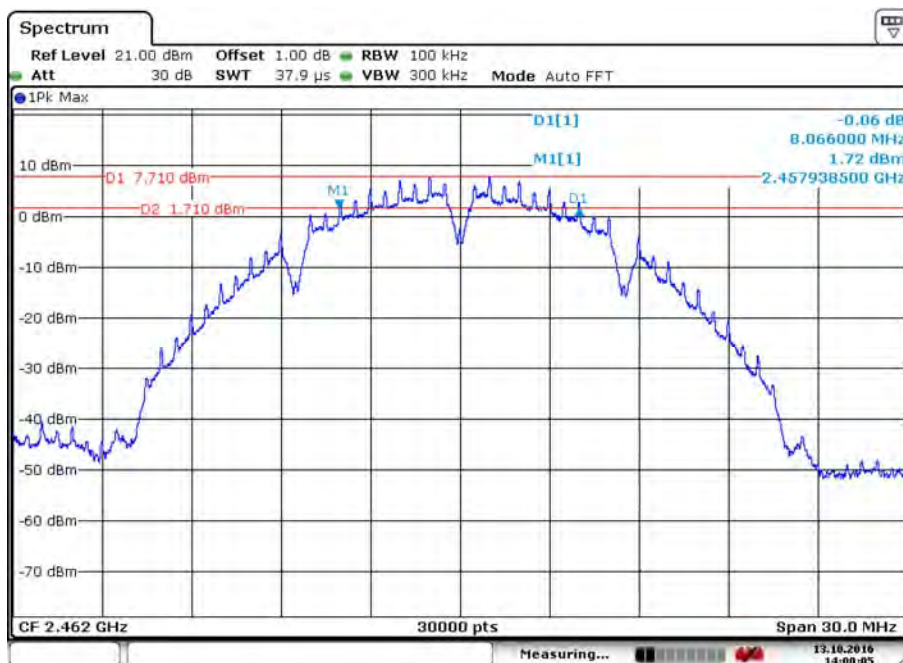




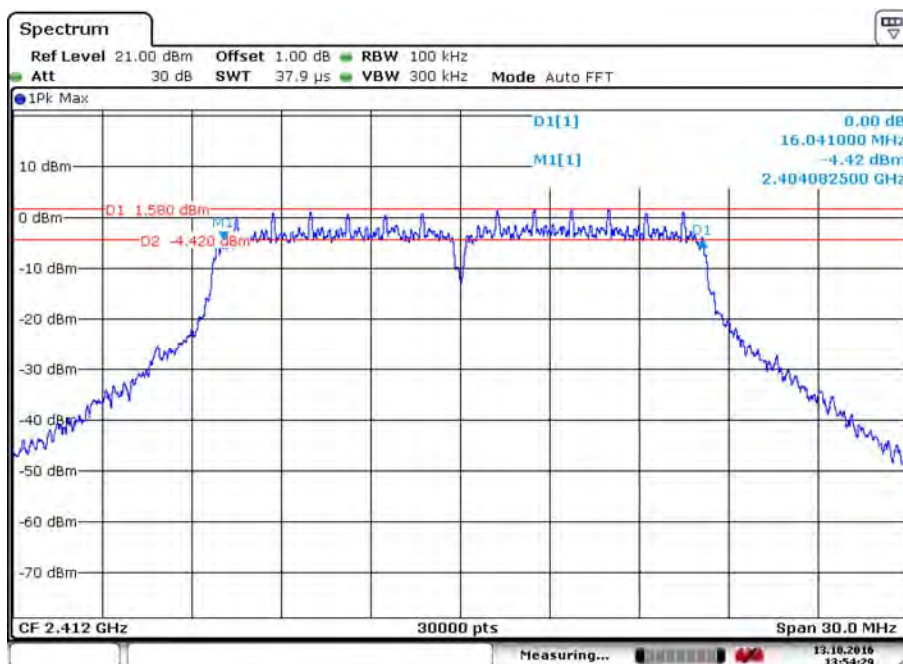
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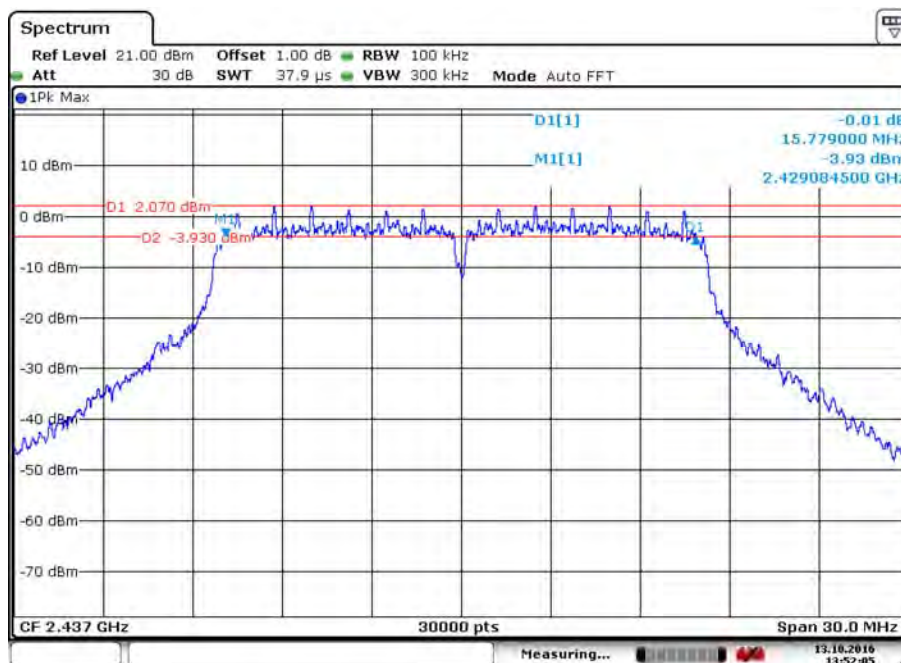
Test mode:	802.11b	Test channel:	Highest
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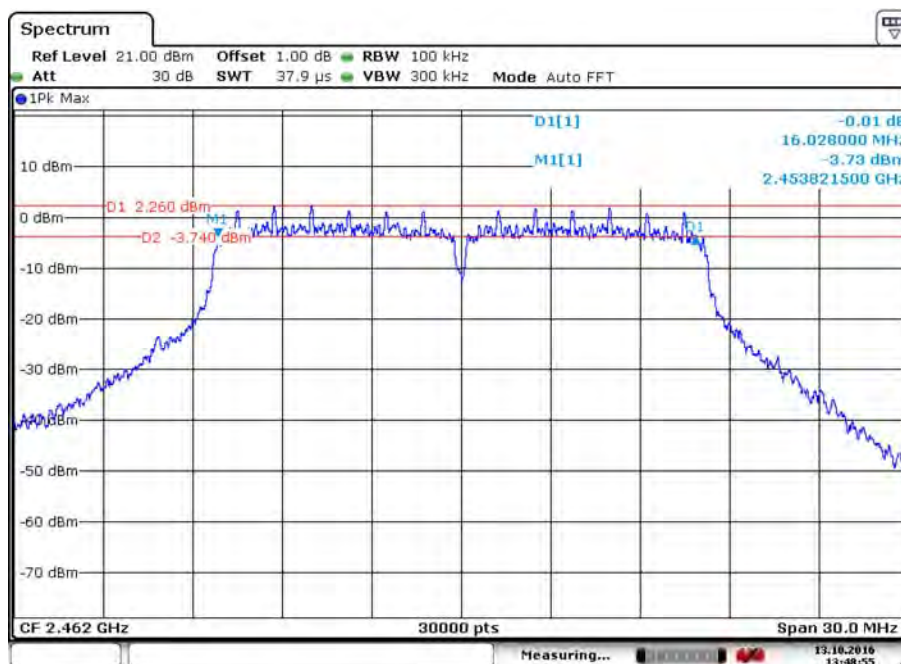
Test mode:	802.11g	Test channel:	Lowest
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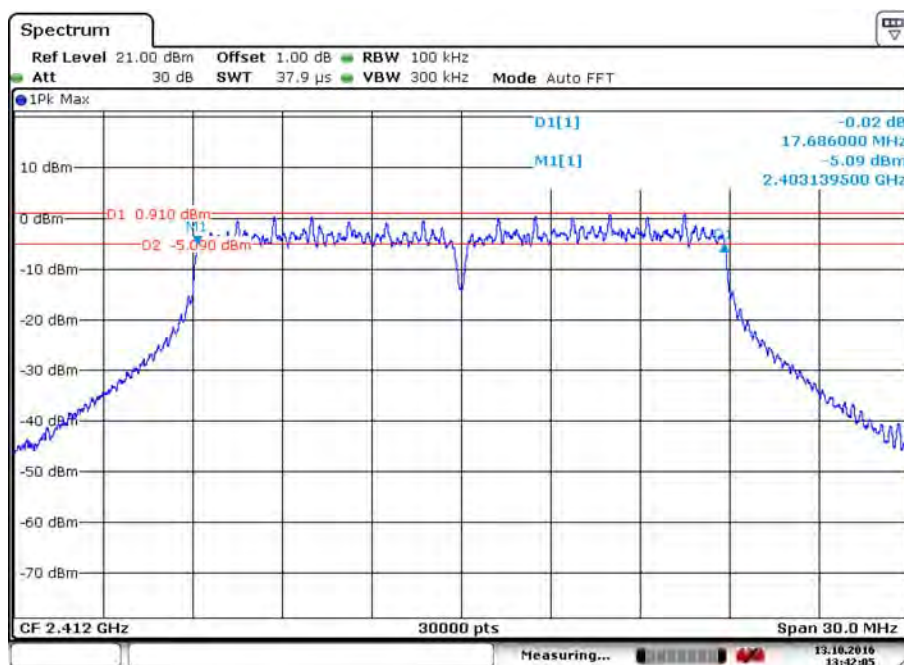
Test mode:	802.11g	Test channel:	Middle
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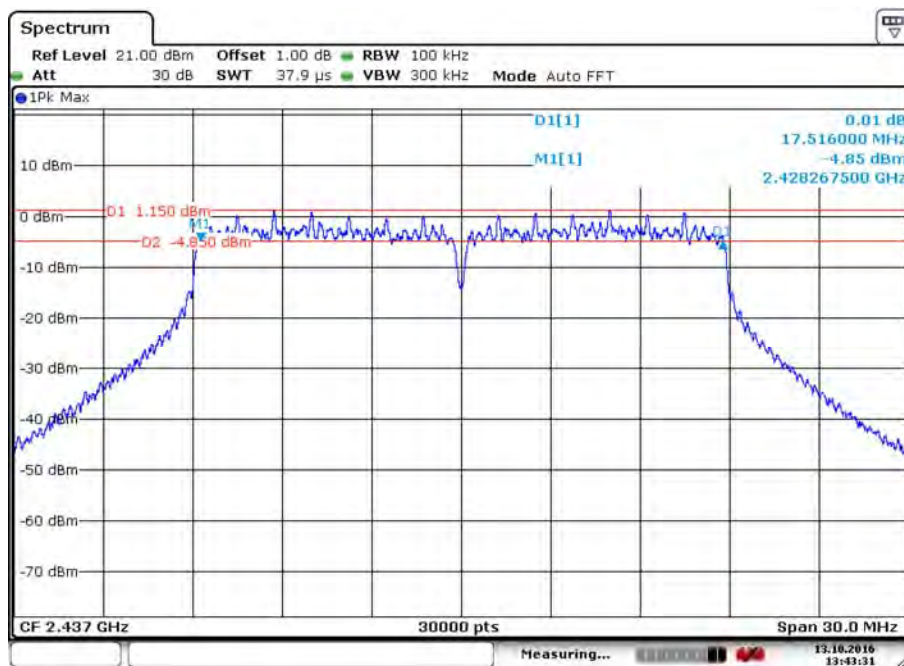
Test mode:	802.11g	Test channel:	Highest
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Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Middle
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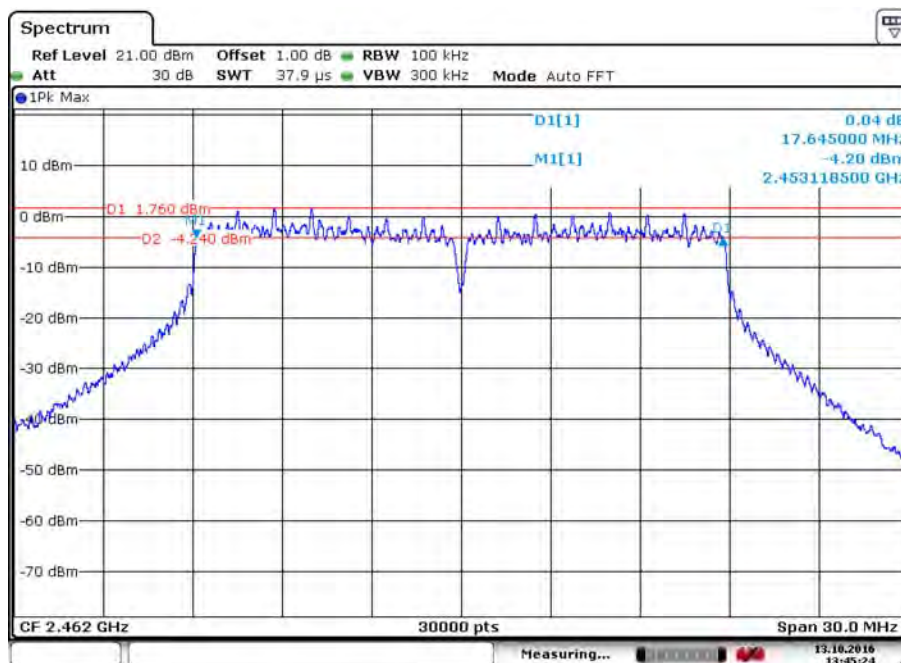




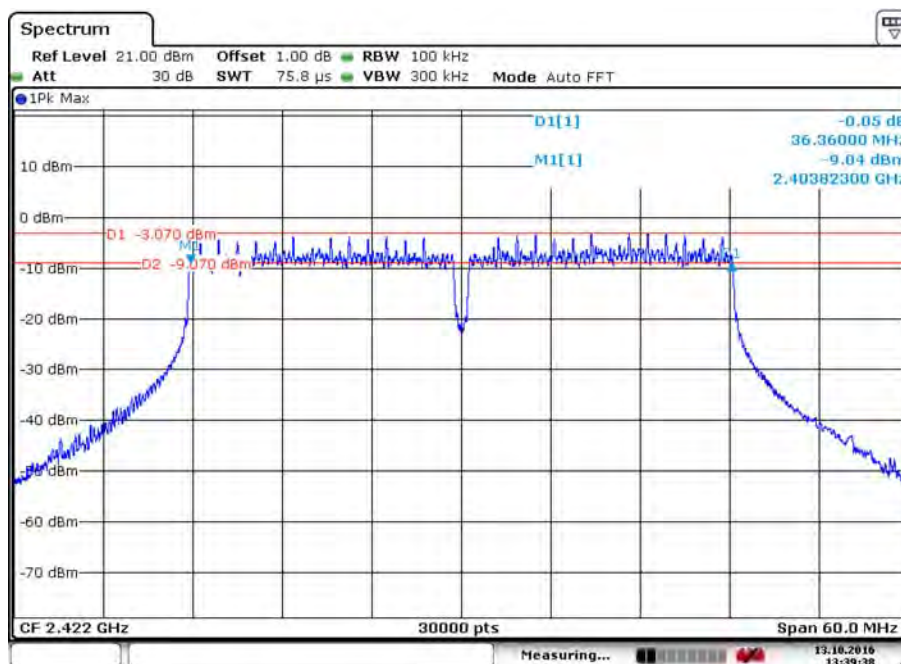
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Test mode:	802.11n(HT20)	Test channel:	Highest
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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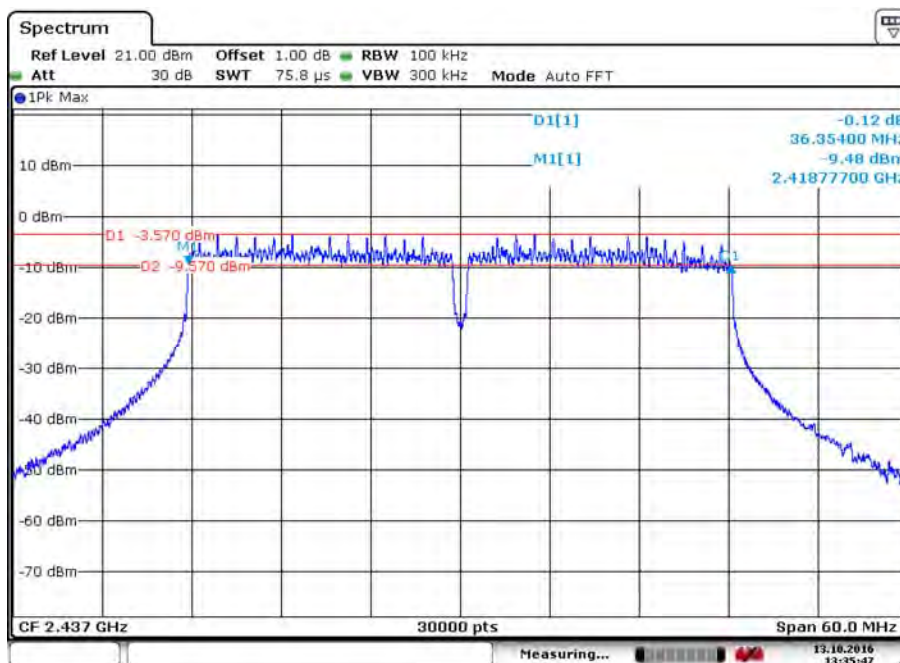




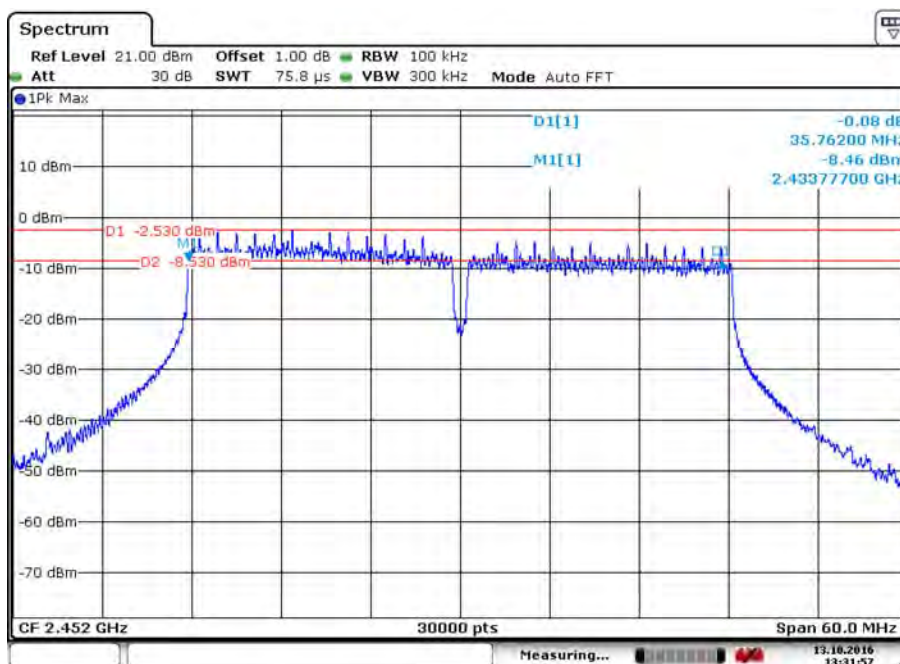
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Test mode:	802.11n(HT40)	Test channel:	Middle
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Test mode:	802.11n(HT40)	Test channel:	Highest
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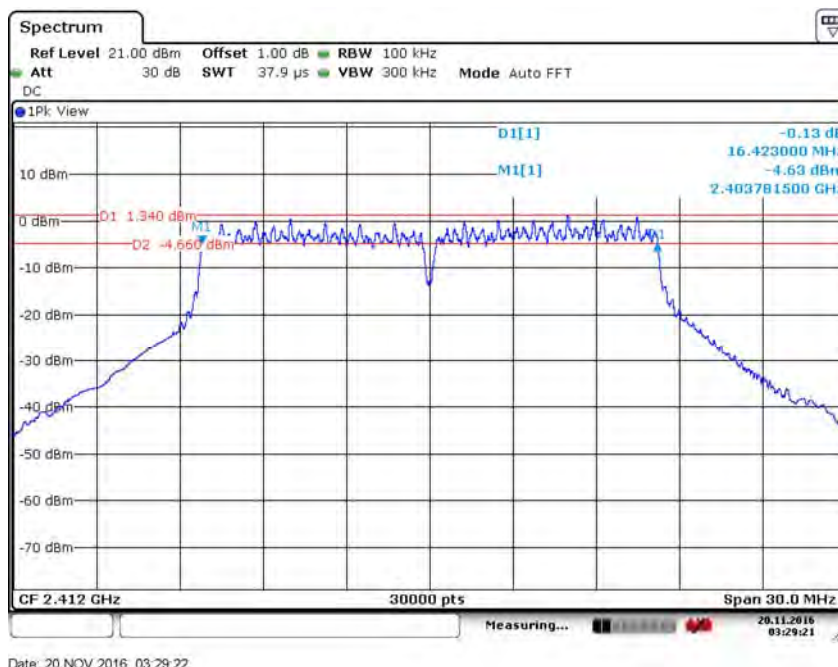




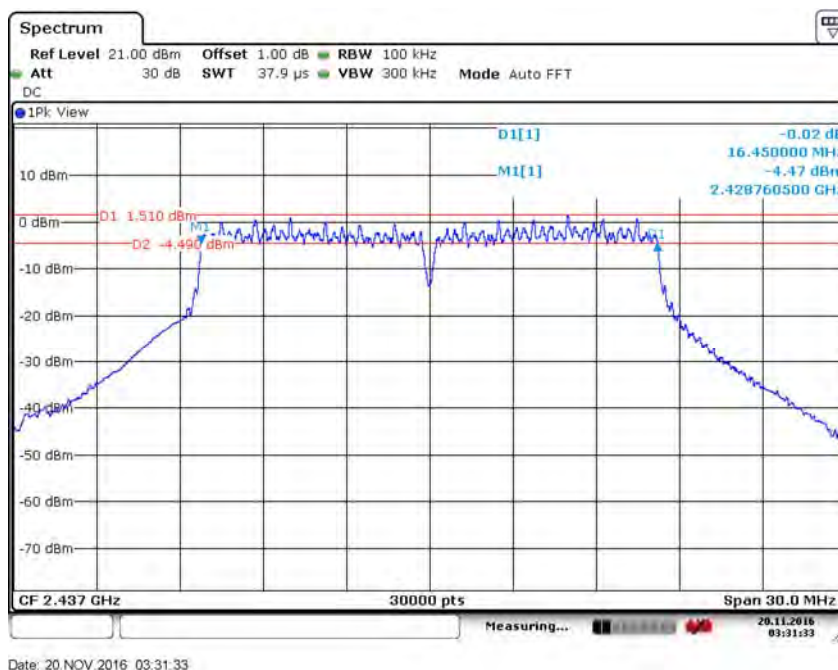
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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT20)MIMO	Test channel:	Middle
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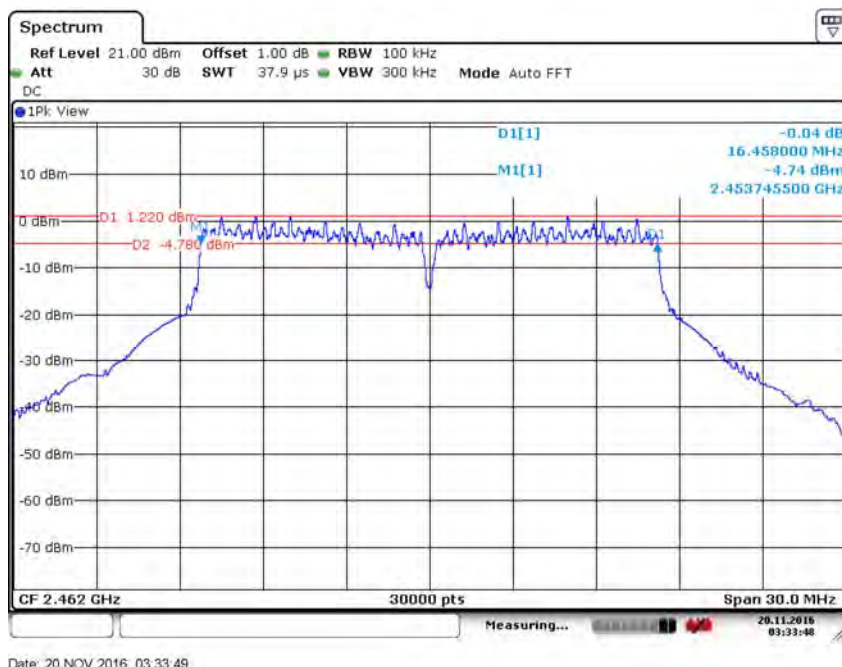




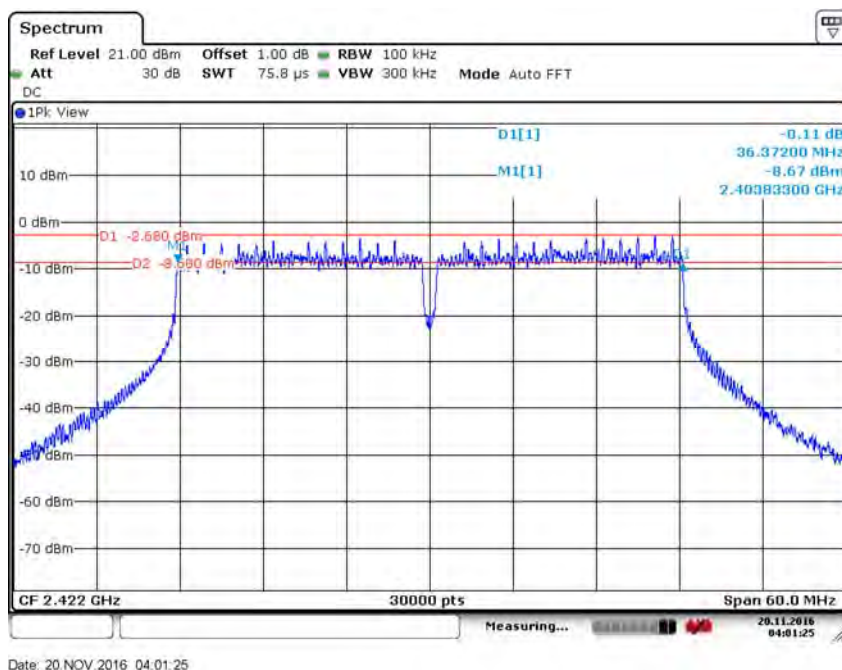
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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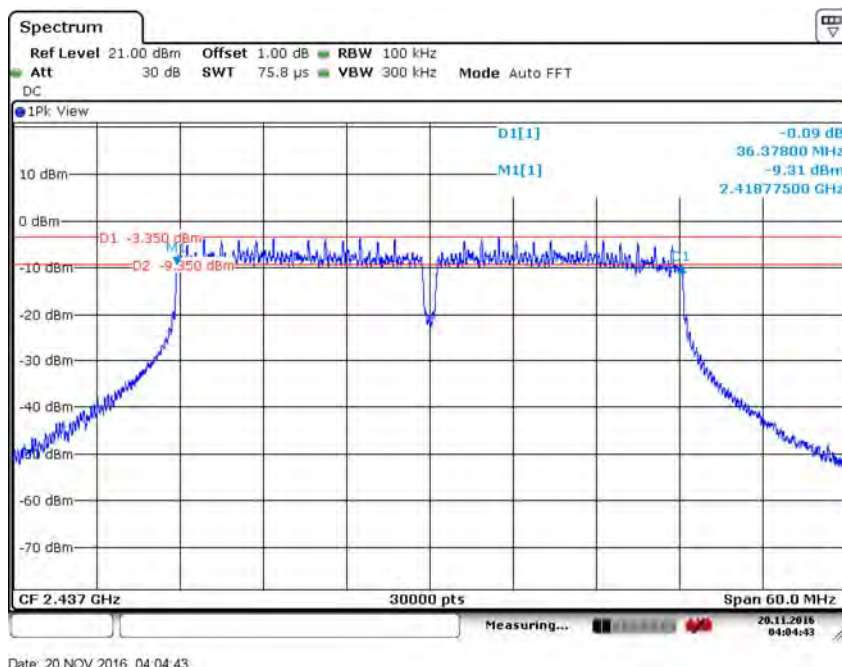




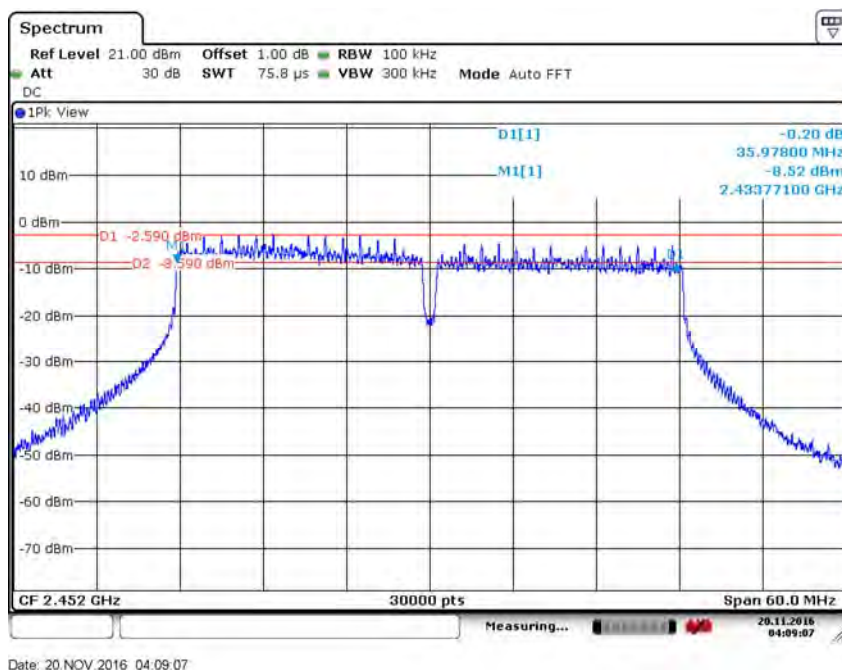
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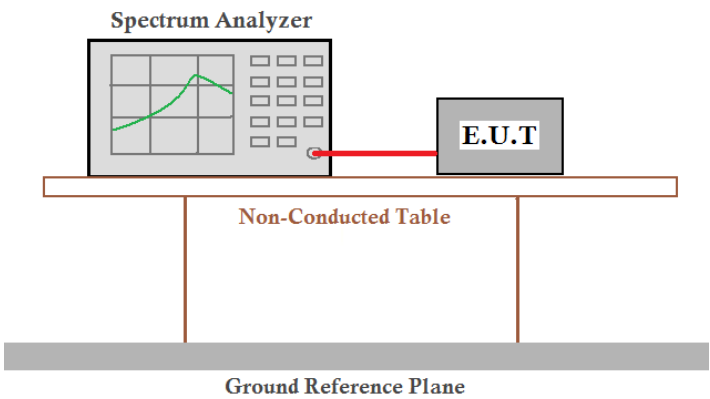
Test mode:	802.11n(HT40)MIMO	Test channel:	Middle
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Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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6.5 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 :2013 Section 11.10.2
Test Setup:	 <i>Remark:</i> Offset the High-Frequency cable loss 1dB in the spectrum analyzer.
Test Instruments:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; 13.5Mbps of rate is the worst case of 802.11n(HT40)
Limit:	≤8.00dBm/3kHz
Test Results:	Pass



Measurement Data

802.11b mode				
Test channel	Power Spectral Density (dBm/3kHz)		Limit (dBm/3kHz)	Result
	Antenna 0	Antenna 1		
Lowest	-4.37	-5.58	≤8.00	Pass
Middle	-6.03	-5.64	≤8.00	Pass
Highest	-6.05	-5.44	≤8.00	Pass
802.11g mode				
Test channel	Power Spectral Density (dBm/3kHz)		Limit (dBm/3kHz)	Result
	Antenna 0	Antenna 1		
Lowest	-12.21	-13.88	≤8.00	Pass
Middle	-12.32	-12.69	≤8.00	Pass
Highest	-11.53	-13.70	≤8.00	Pass
802.11n(HT20) mode				
Test channel	Power Spectral Density (dBm/3kHz)		Limit (dBm/3kHz)	Result
	Antenna 0	Antenna 1		
Lowest	-13.21	-14.21	≤8.00	Pass
Middle	-13.78	-14.51	≤8.00	Pass
Highest	-13.03	-14.60	≤8.00	Pass
802.11n(HT40) mode				
Test channel	Power Spectral Density (dBm/3kHz)		Limit (dBm/3kHz)	Result
	Antenna 0	Antenna 1		
Lowest	-17.93	-18.61	≤8.00	Pass
Middle	-16.85	-19.10	≤8.00	Pass
Highest	-17.12	-17.47	≤8.00	Pass



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MIMO

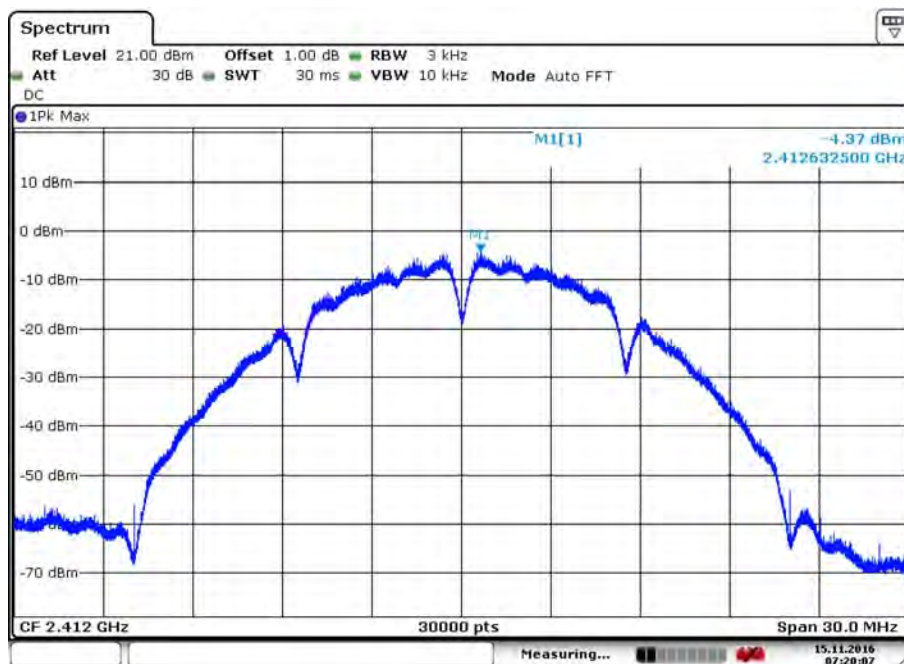
802.11n(HT20) mode				
Test channel	Power Spectral Density (dBm/3kHz)		Limit (dBm/3kHz)	Result
	Antenna 0	Antenna 1		
Lowest	-12.81	-14.16	≤8.00	Pass
Middle	-13.48	-14.11	≤8.00	Pass
Highest	-13.18	-14.52	≤8.00	Pass
802.11n(HT40) mode				
Test channel	Power Spectral Density (dBm/3kHz)		Limit (dBm/3kHz)	Result
	Antenna 0	Antenna 1		
Lowest	-16.67	-17.97	≤8.00	Pass
Middle	-16.12	-17.98	≤8.00	Pass
Highest	-16.63	-16.86	≤8.00	Pass



Test plot as follows:

Antenna 0:

Test mode:	802.11b	Test channel:	Lowest
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Test mode:	802.11b	Test channel:	Middle
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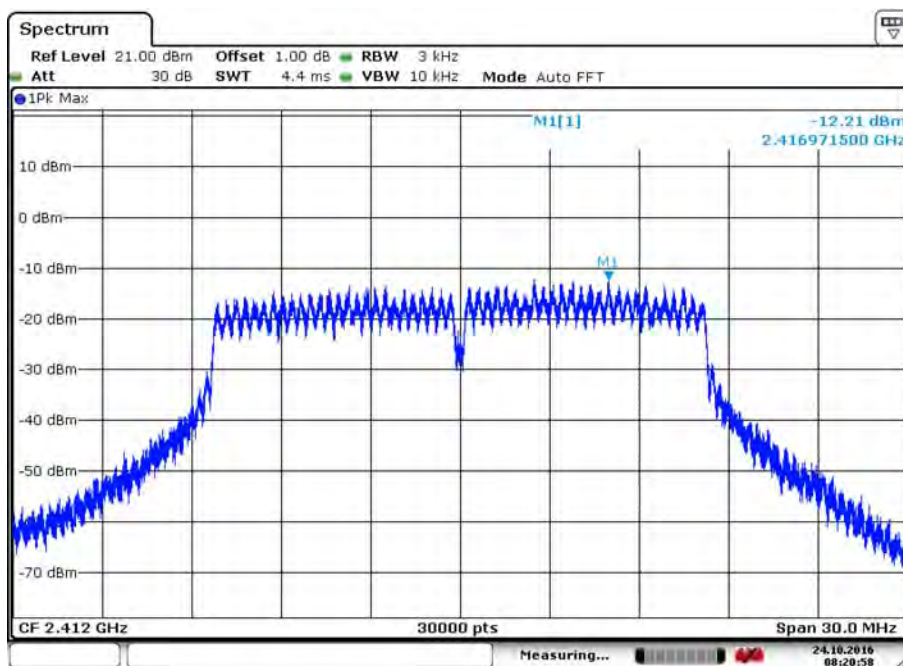
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Test mode:	802.11b	Test channel:	Highest
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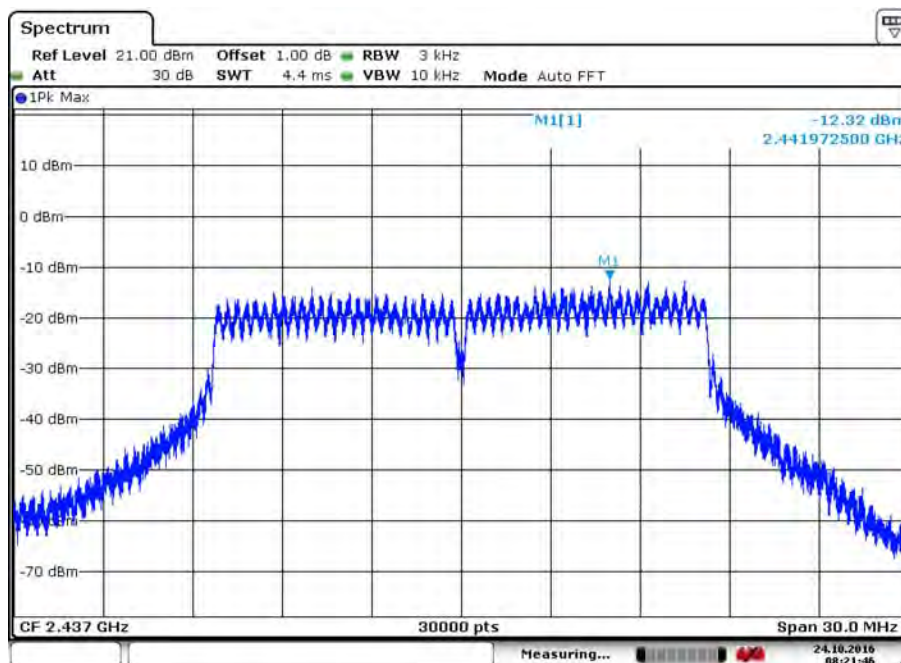


Test mode:	802.11g	Test channel:	Lowest
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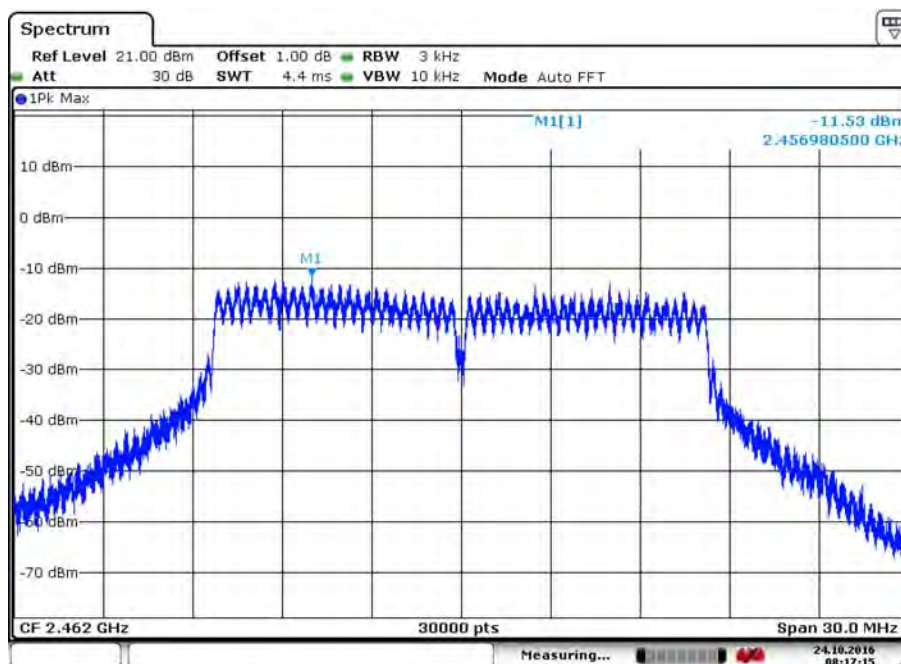




Test mode:	802.11g	Test channel:	Middle
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Test mode:	802.11g	Test channel:	Highest
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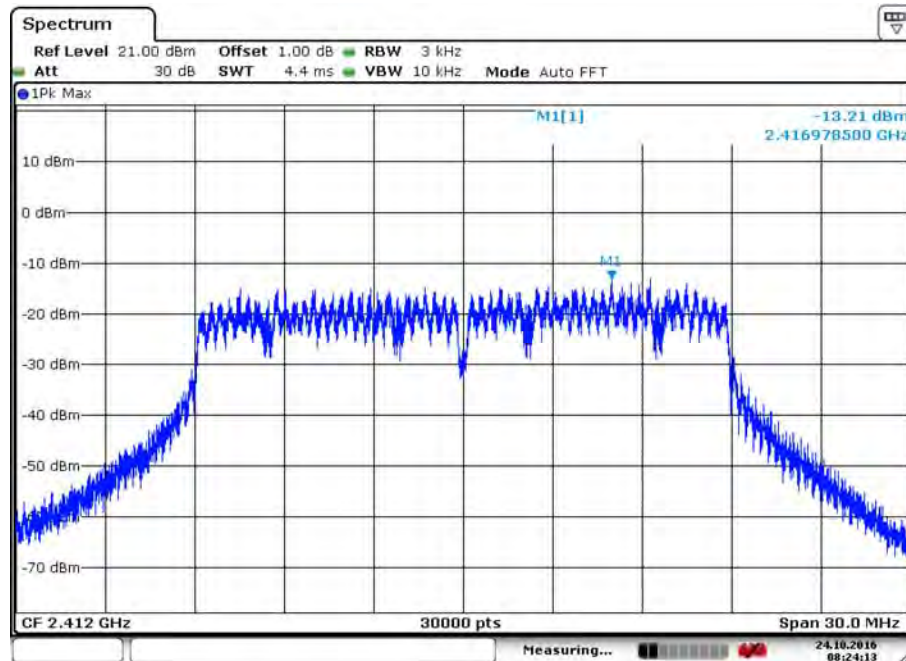


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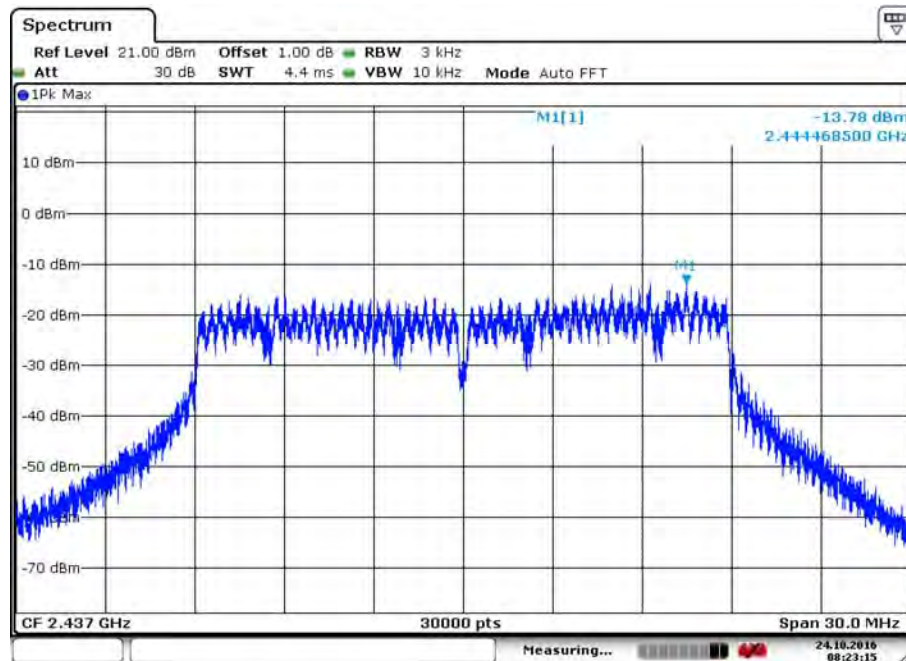
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Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Middle
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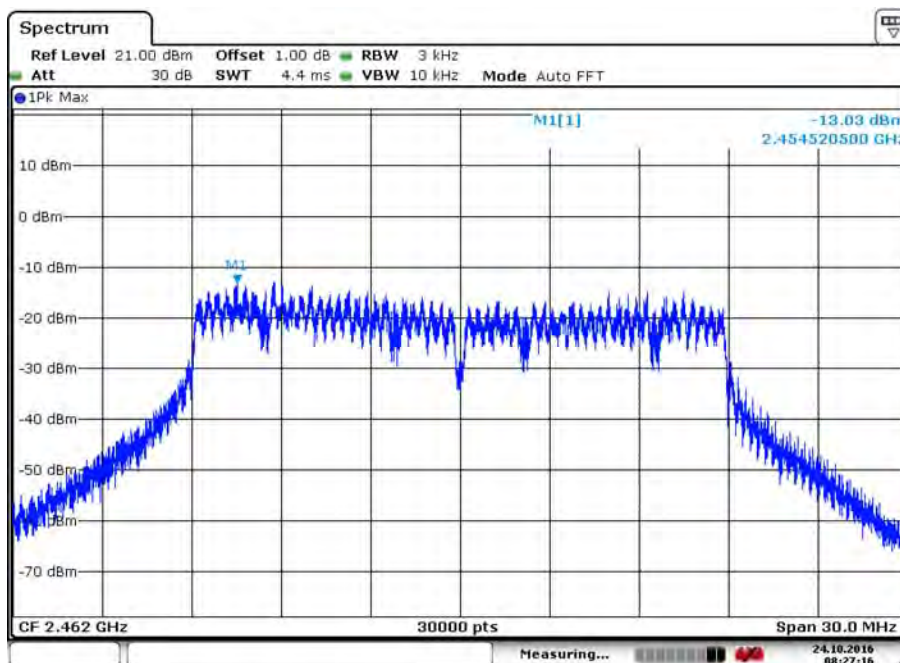




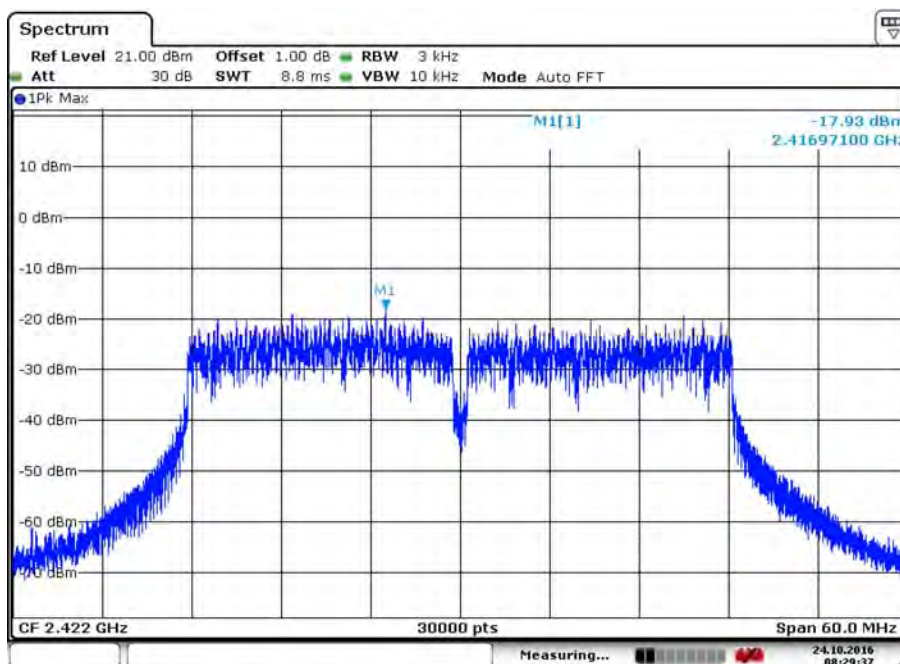
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Test mode:	802.11n(HT20)	Test channel:	Highest
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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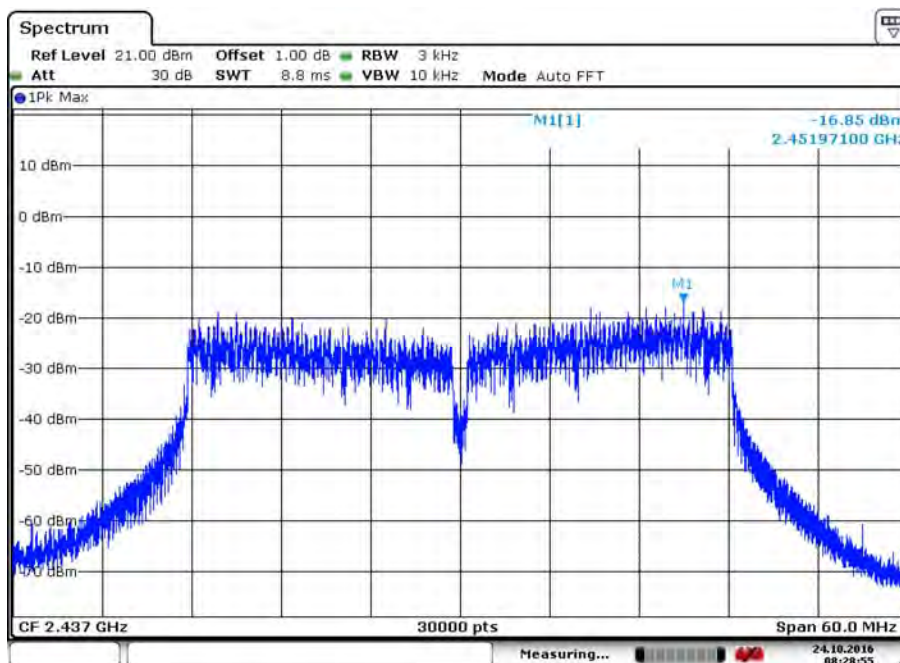




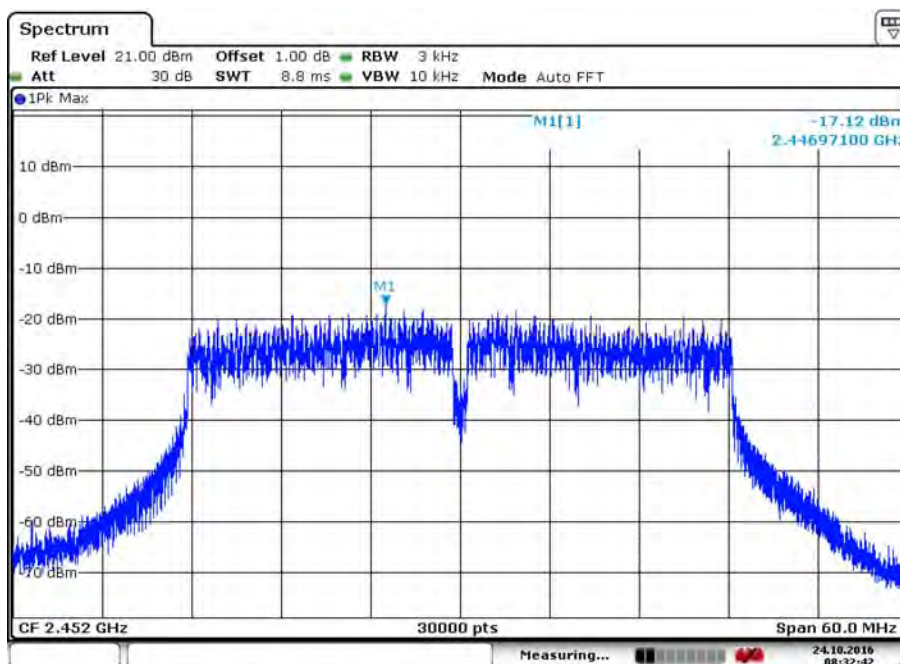
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Test mode:	802.11n(HT40)	Test channel:	Middle
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Test mode:	802.11n(HT40)	Test channel:	Highest
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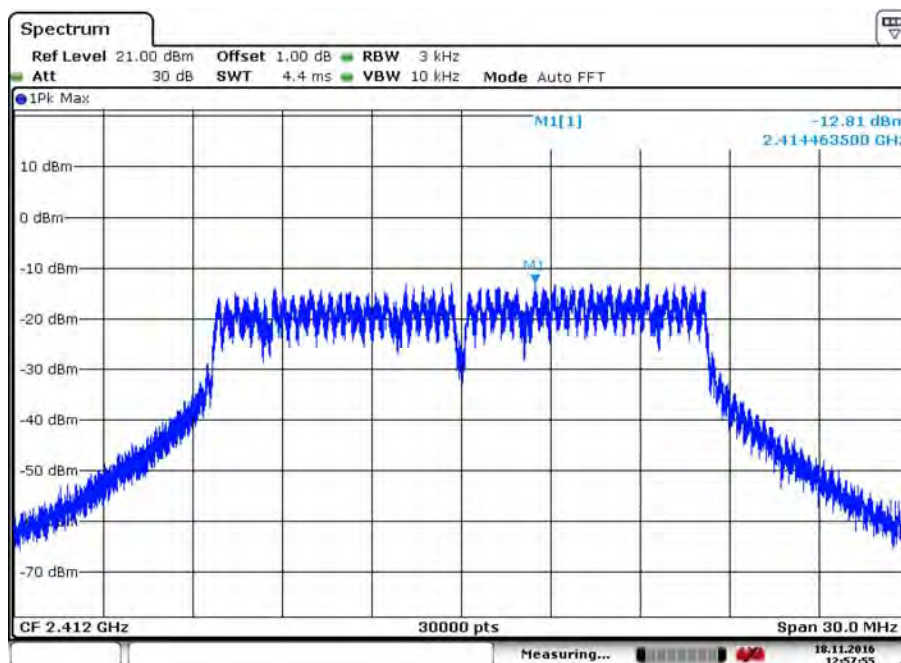




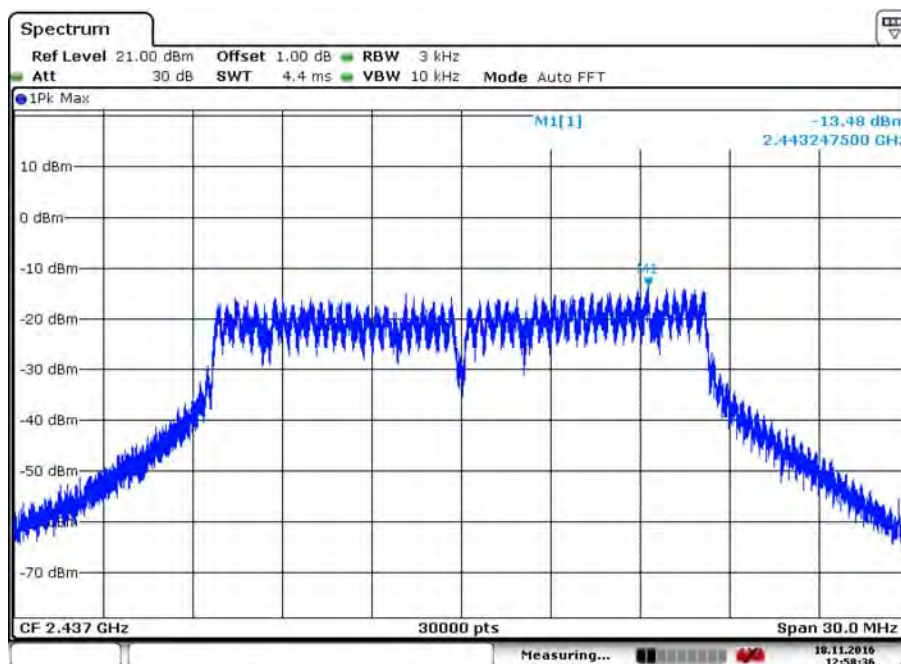
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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT20)MIMO	Test channel:	Middle
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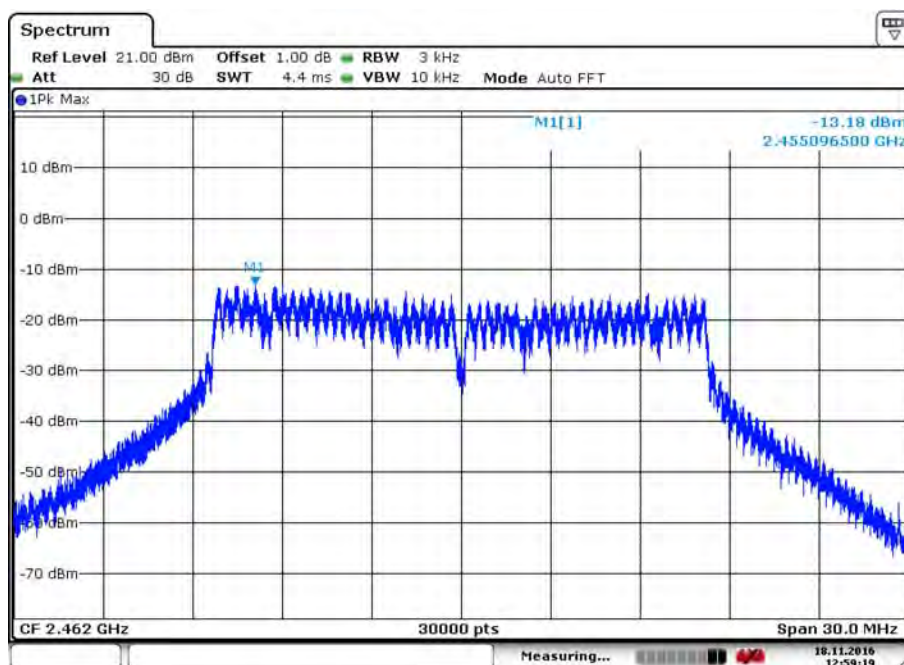




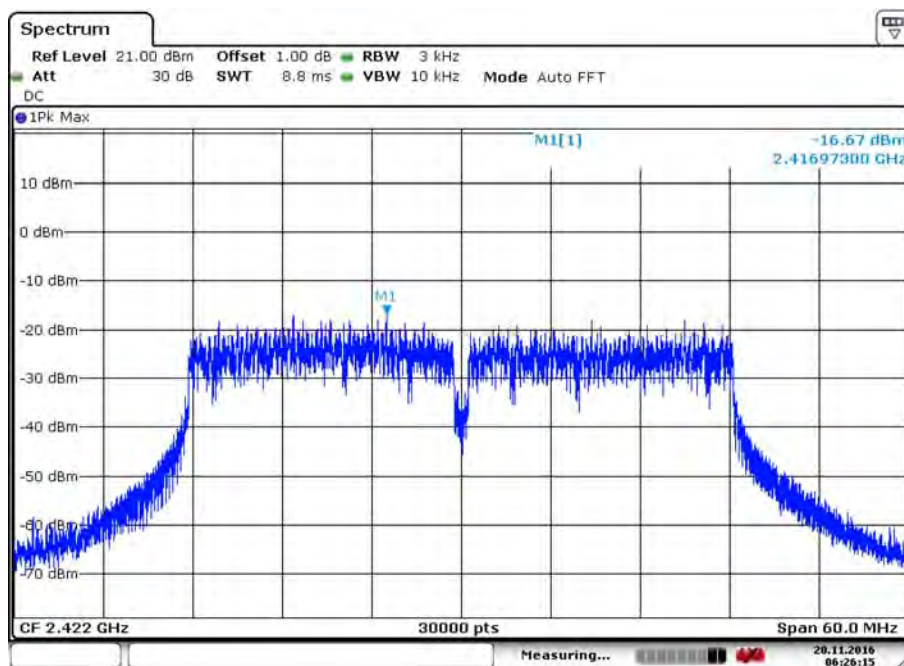
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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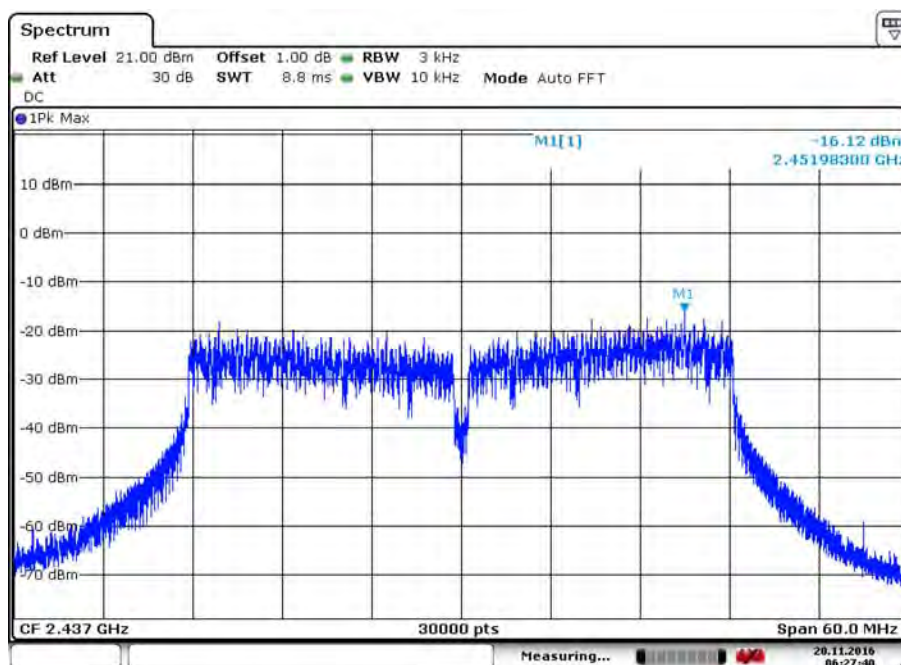




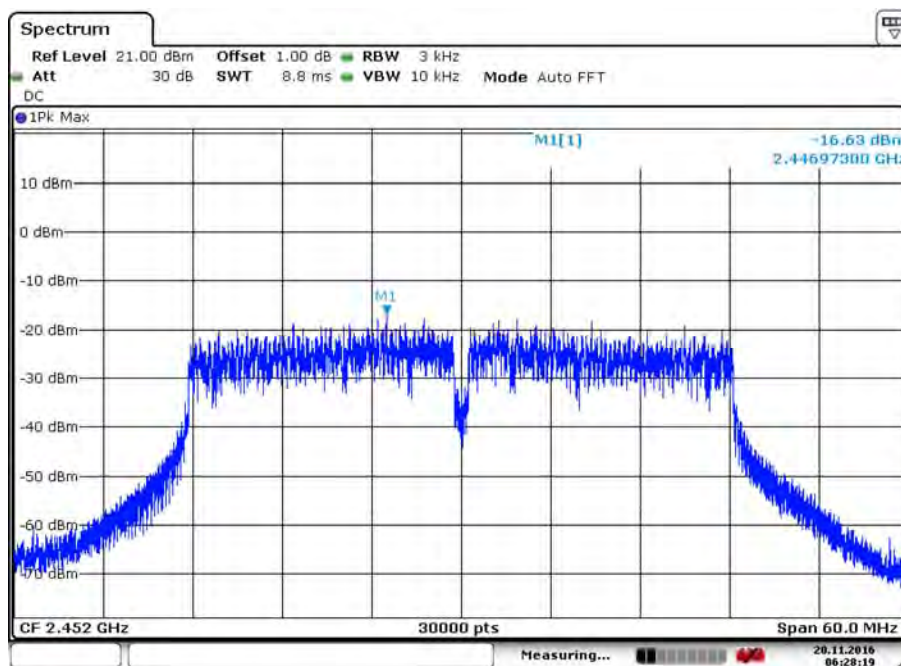
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Test mode:	802.11n(HT40)MIMO	Test channel:	Middle
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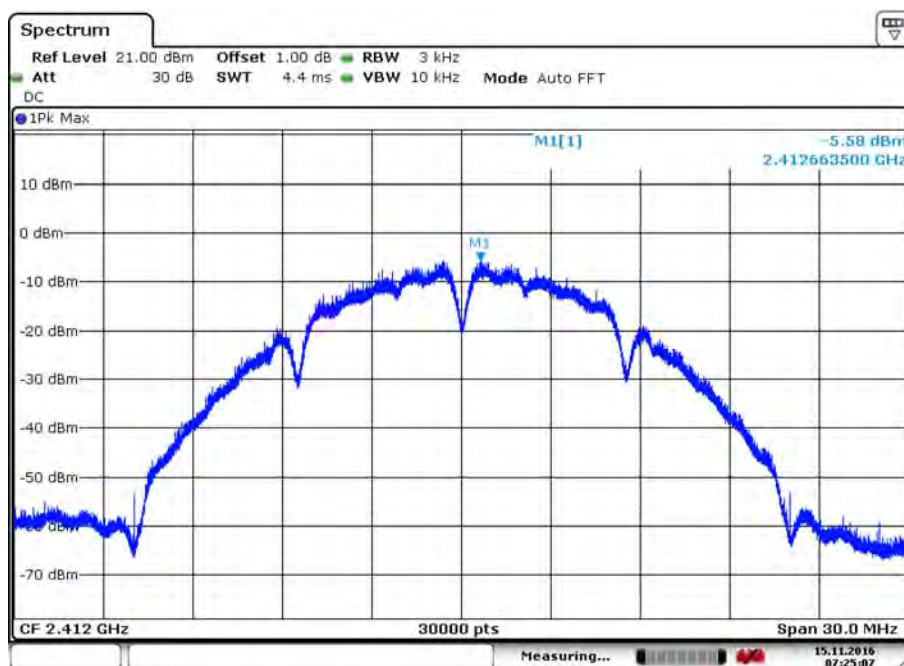


Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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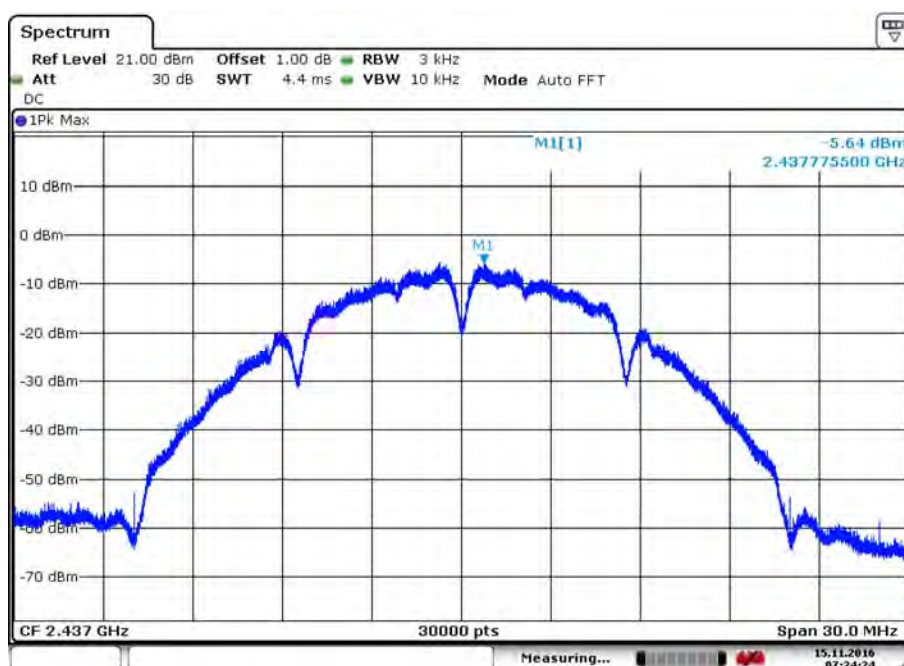


Antenna 1:

Test mode:	802.11b	Test channel:	Lowest
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Test mode:	802.11b	Test channel:	Middle
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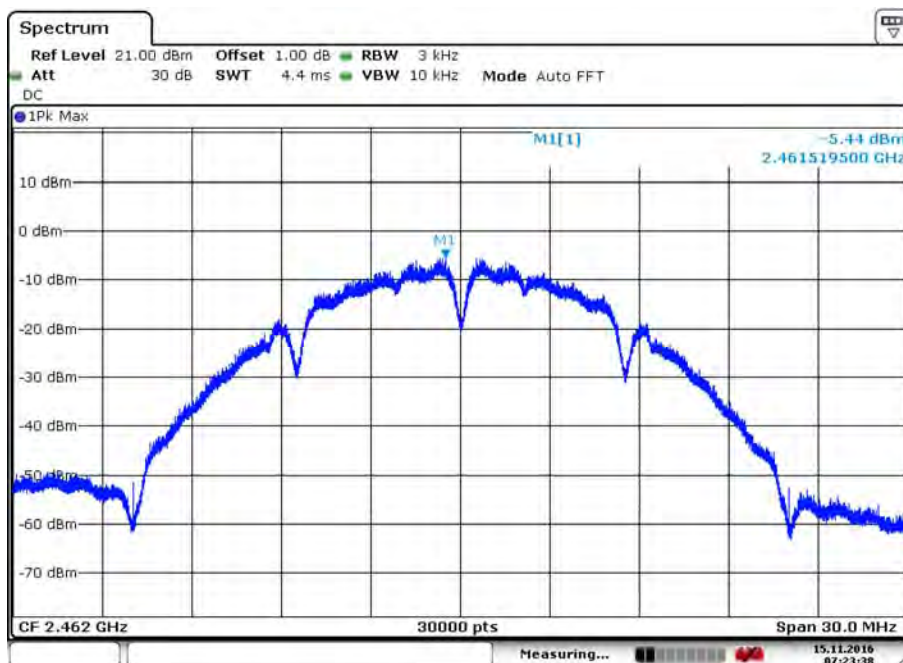




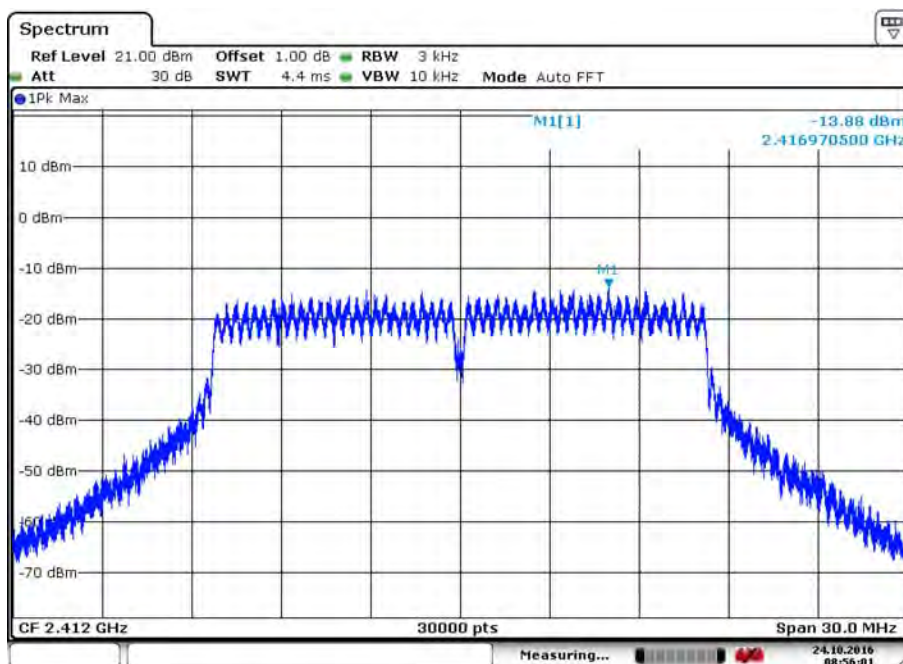
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Test mode:	802.11b	Test channel:	Highest
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Test mode:	802.11g	Test channel:	Lowest
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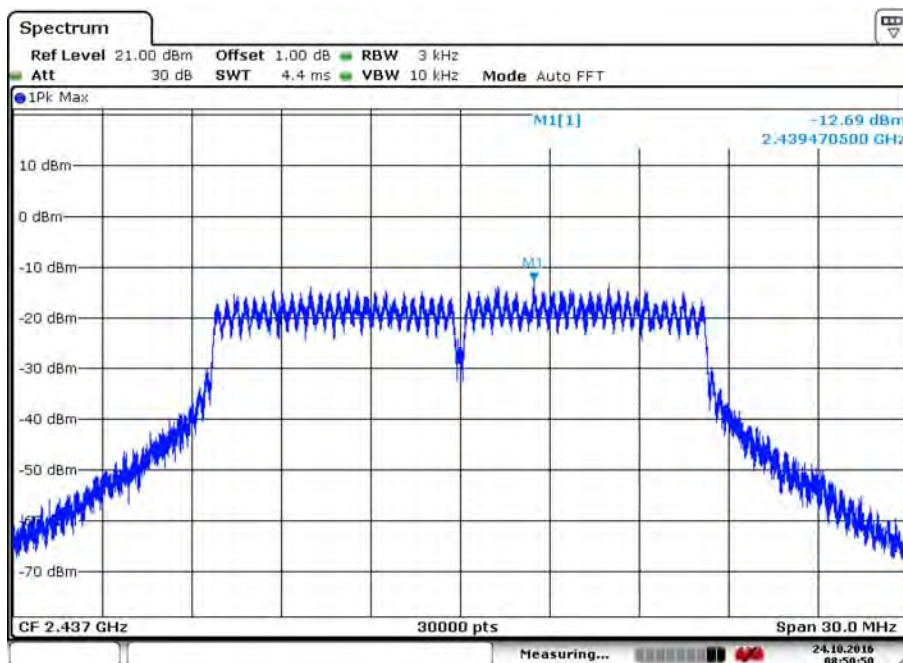




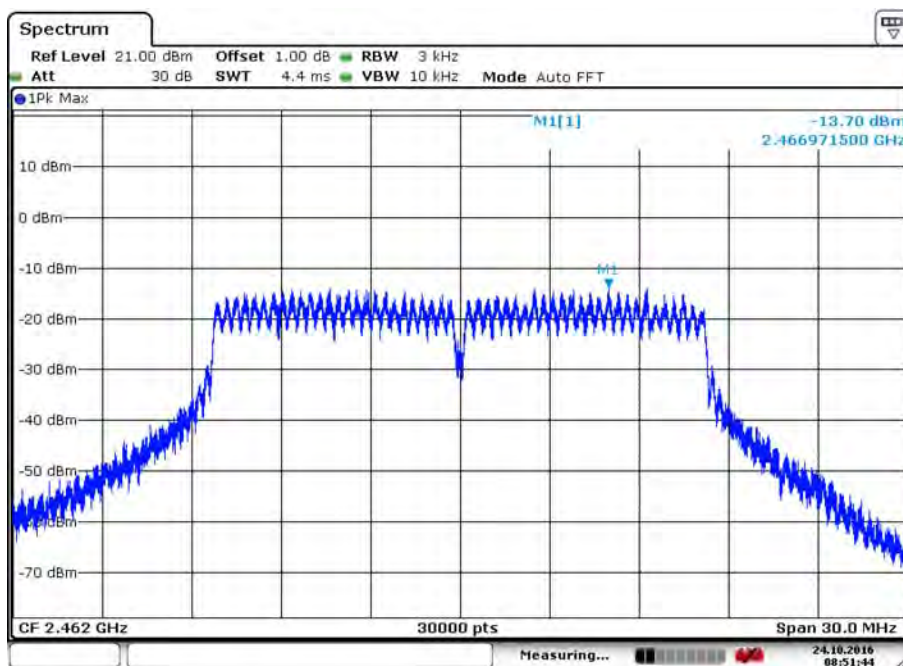
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Test mode:	802.11g	Test channel:	Middle
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Test mode:	802.11g	Test channel:	Highest
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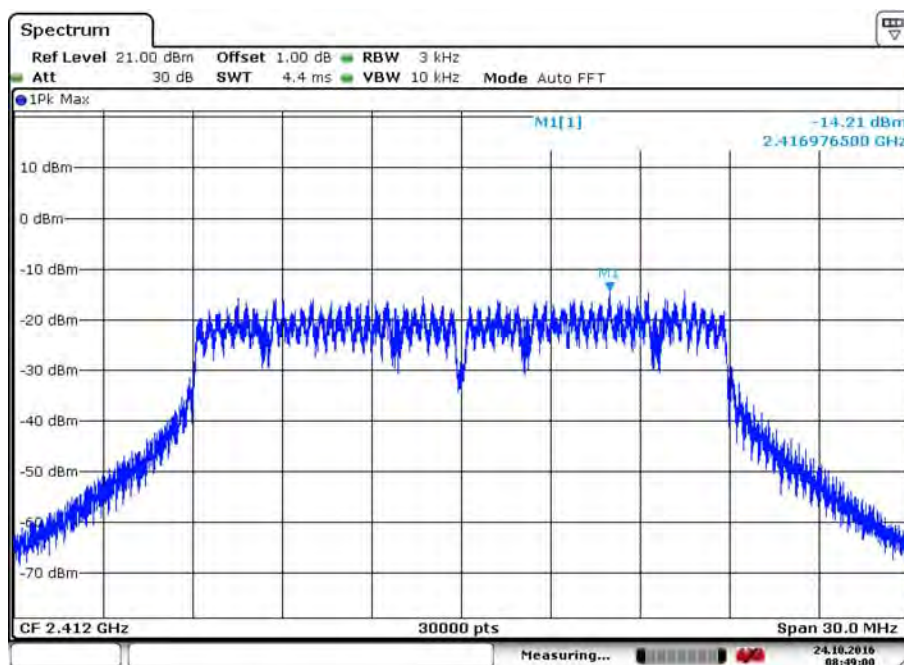




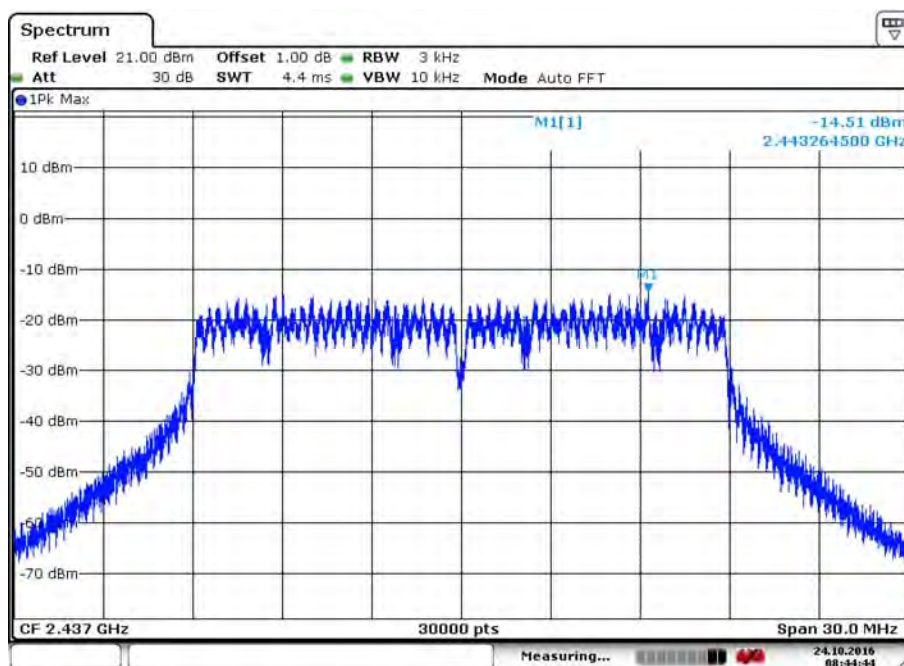
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Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Middle
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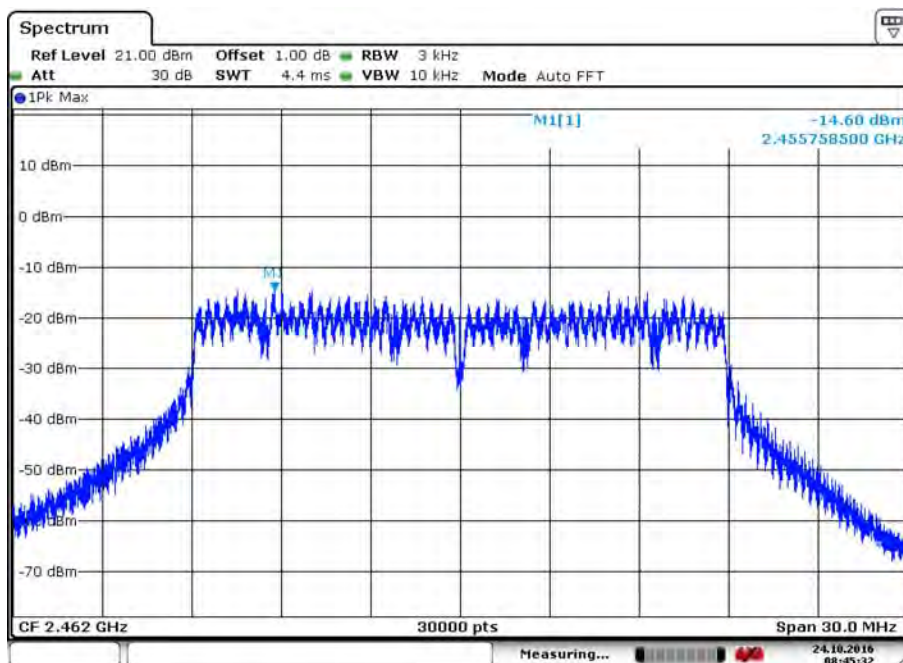


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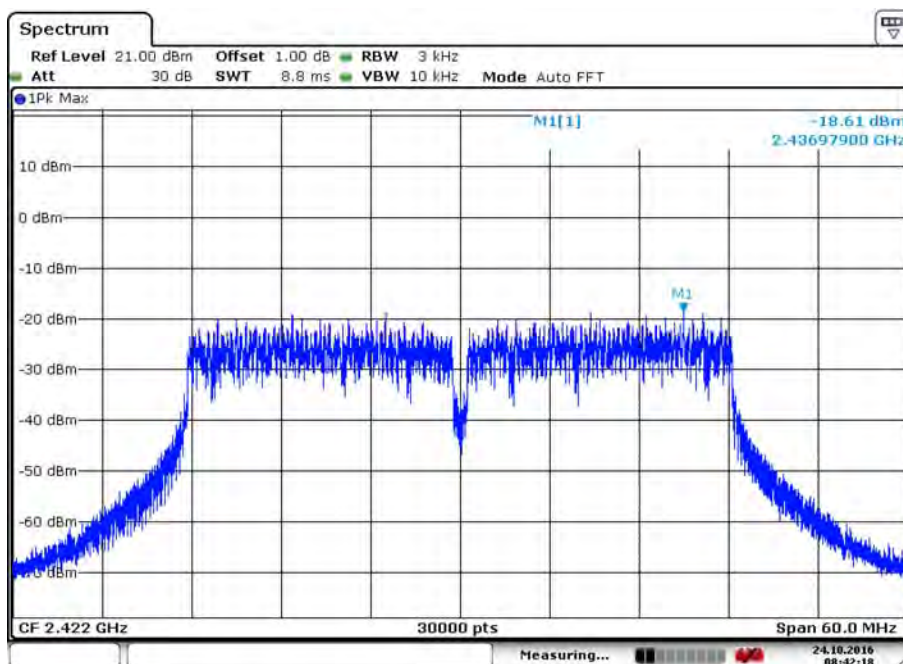
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Test mode:	802.11n(HT20)	Test channel:	Highest
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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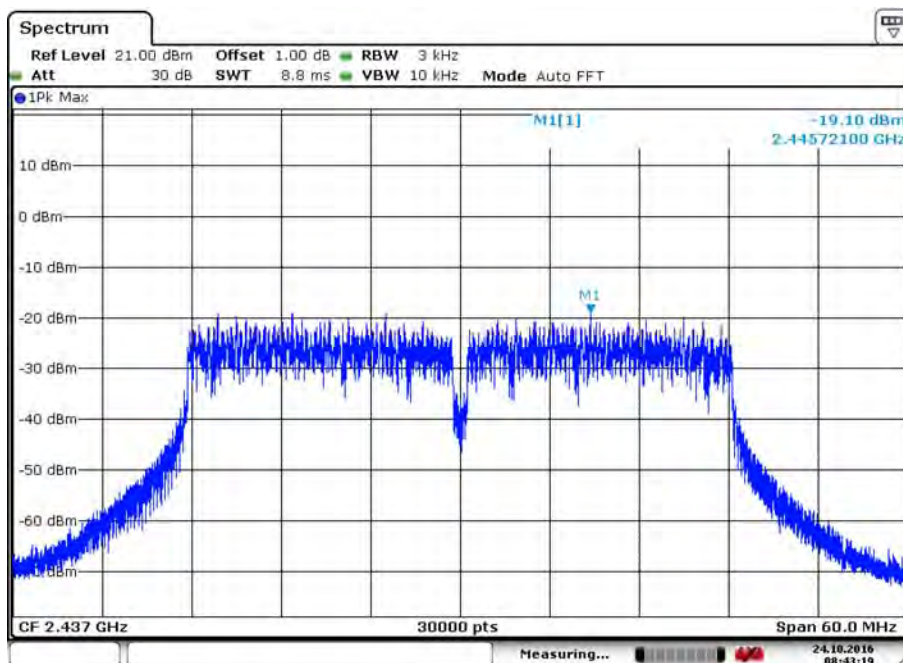




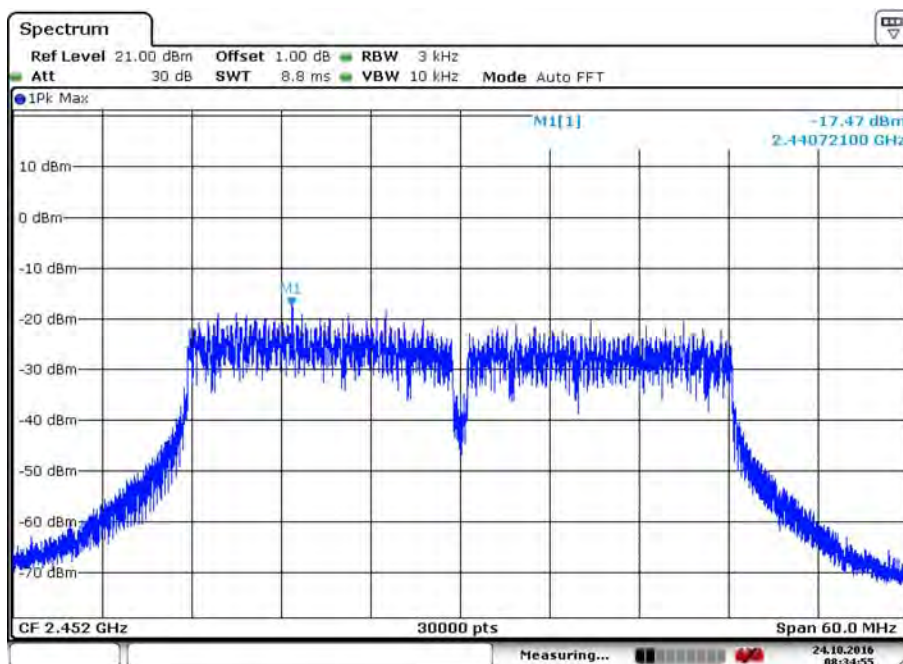
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Test mode:	802.11n(HT40)	Test channel:	Middle
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Test mode:	802.11n(HT40)	Test channel:	Highest
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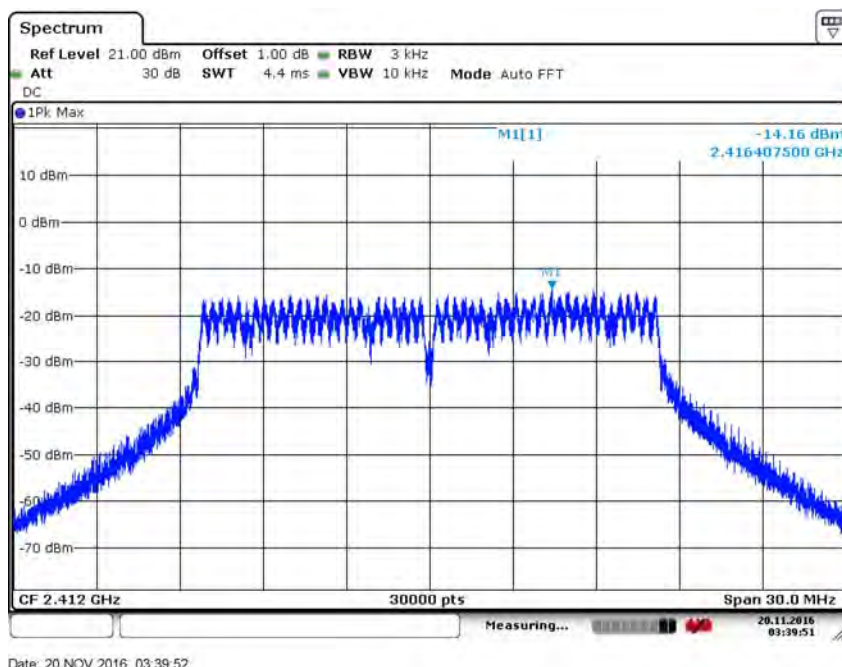




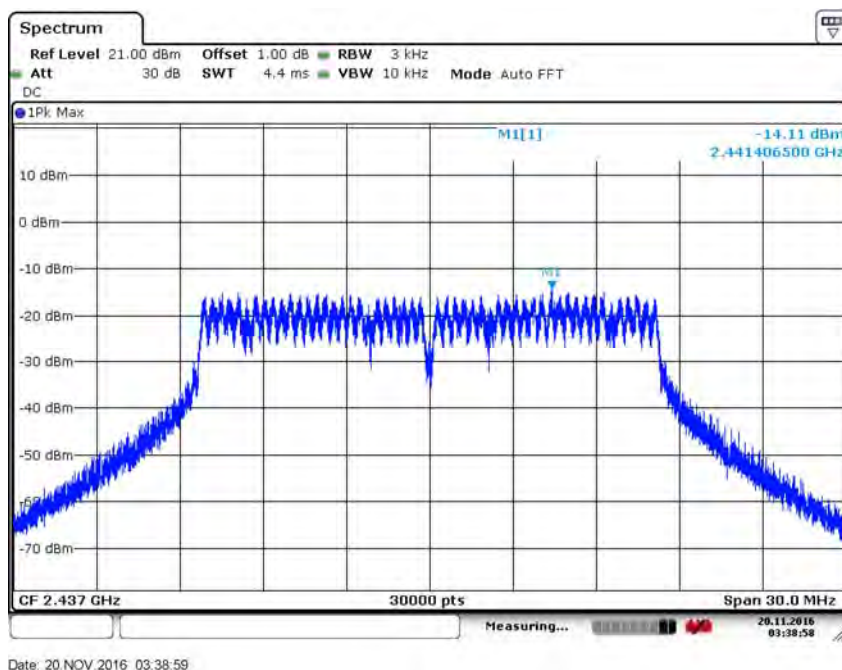
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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT20)MIMO	Test channel:	Middle
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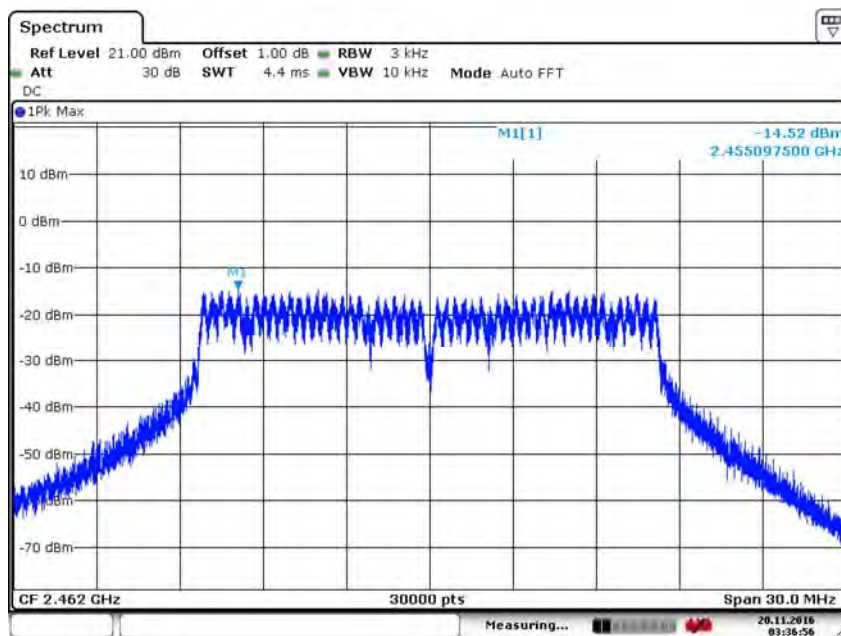




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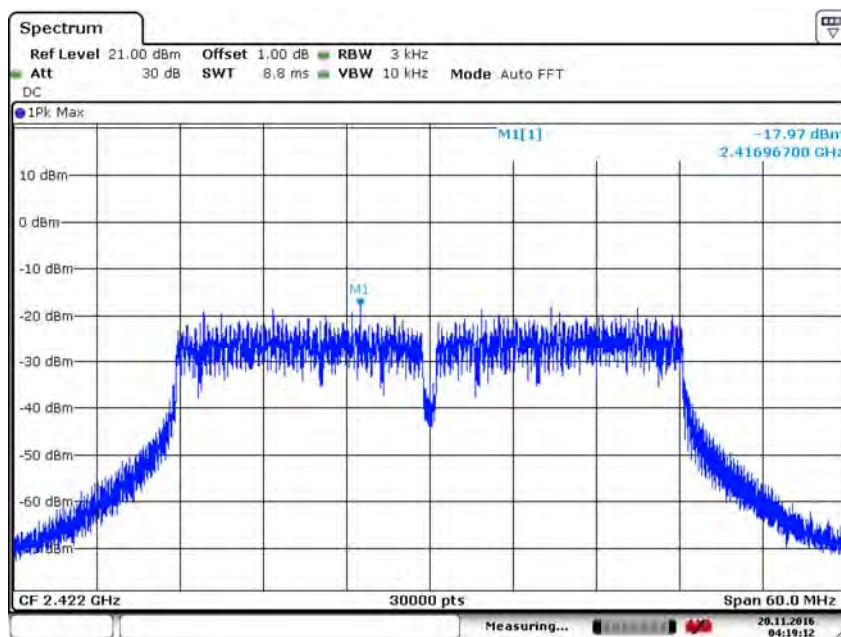
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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Date: 20.NOV.2016 03:36:56

Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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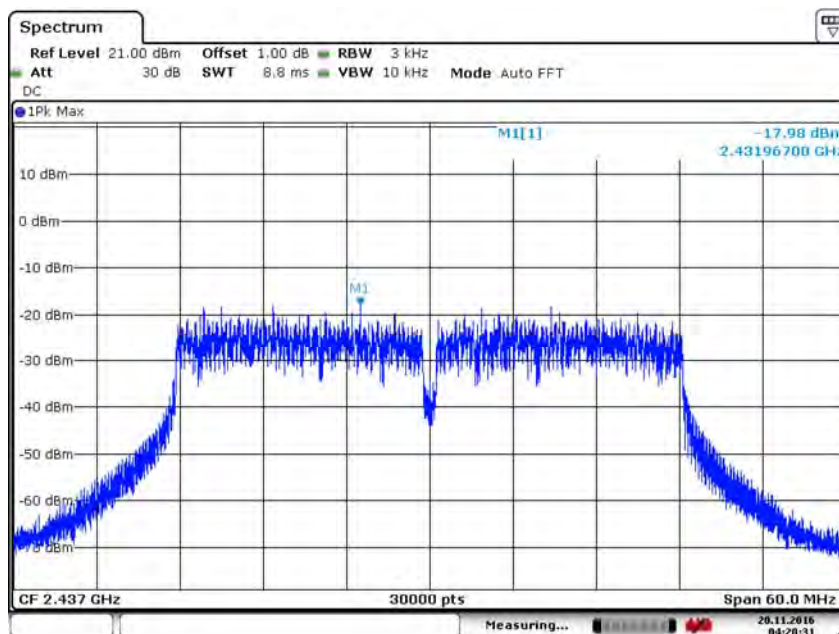
Date: 20.NOV.2016 04:19:12



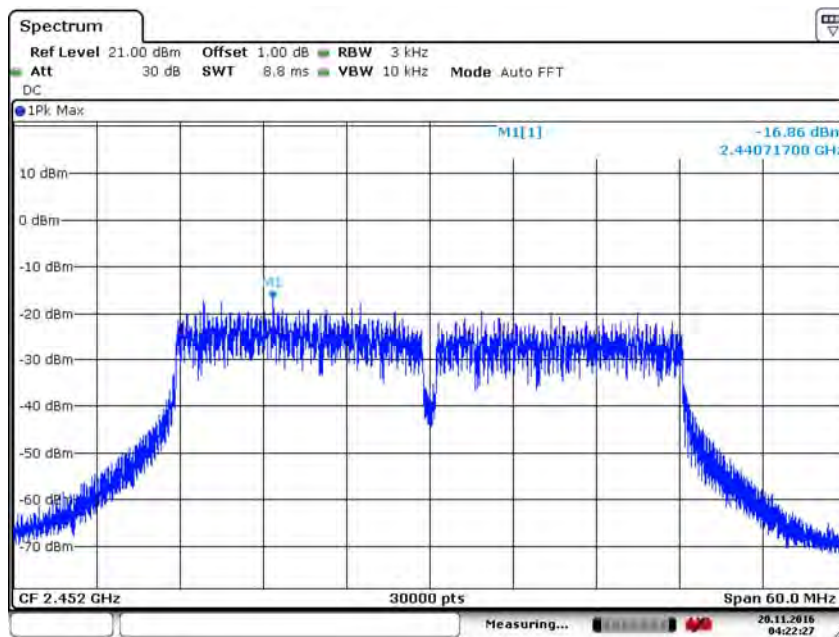
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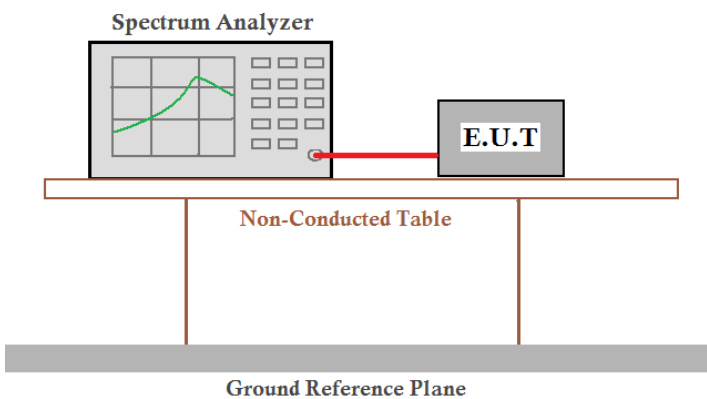
Test mode:	802.11n(HT40)MIMO	Test channel:	Middle
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Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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6.6 Band-edge for RF Conducted Emissions

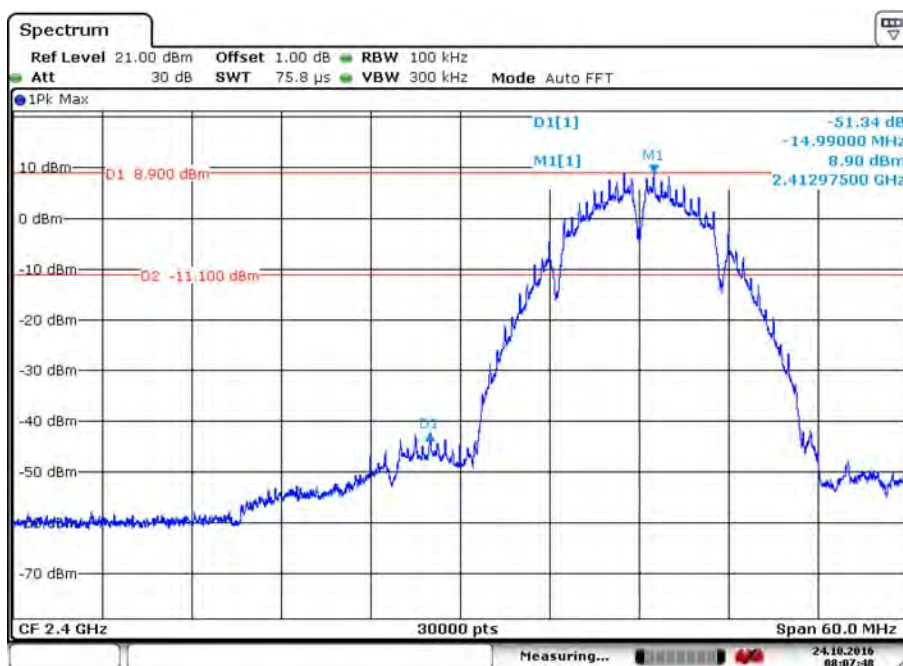
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.13
Test Setup:	 <i>Remark:</i> Offset the High-Frequency cable loss 1dB in the spectrum analyzer.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; 13.5Mbps of rate is the worst case of 802.11n(HT40)
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



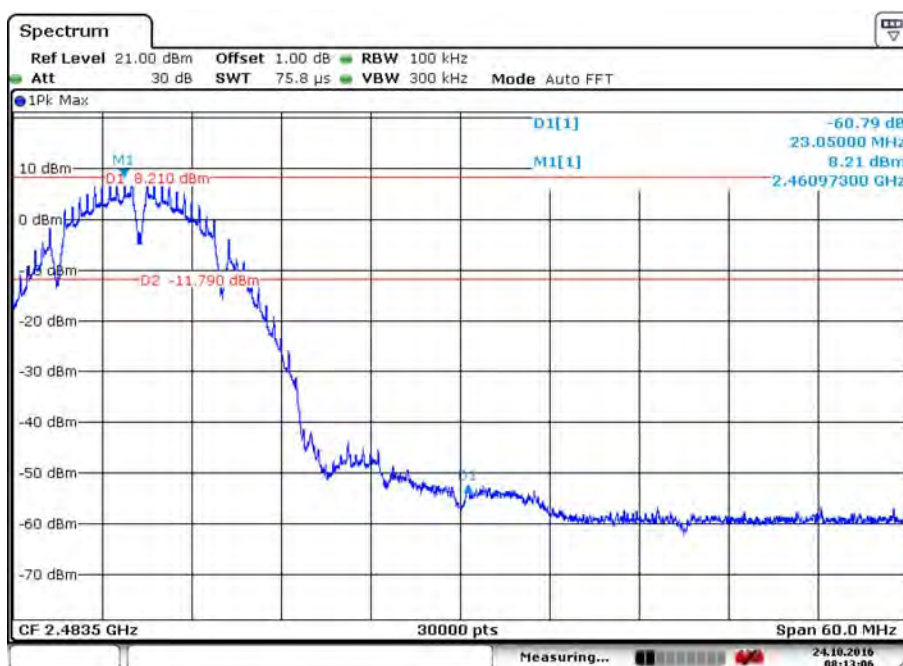
Test plot as follows:

Antenna 0:

Test mode:	802.11b	Test channel:	Lowest
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Test mode:	802.11b	Test channel:	Highest
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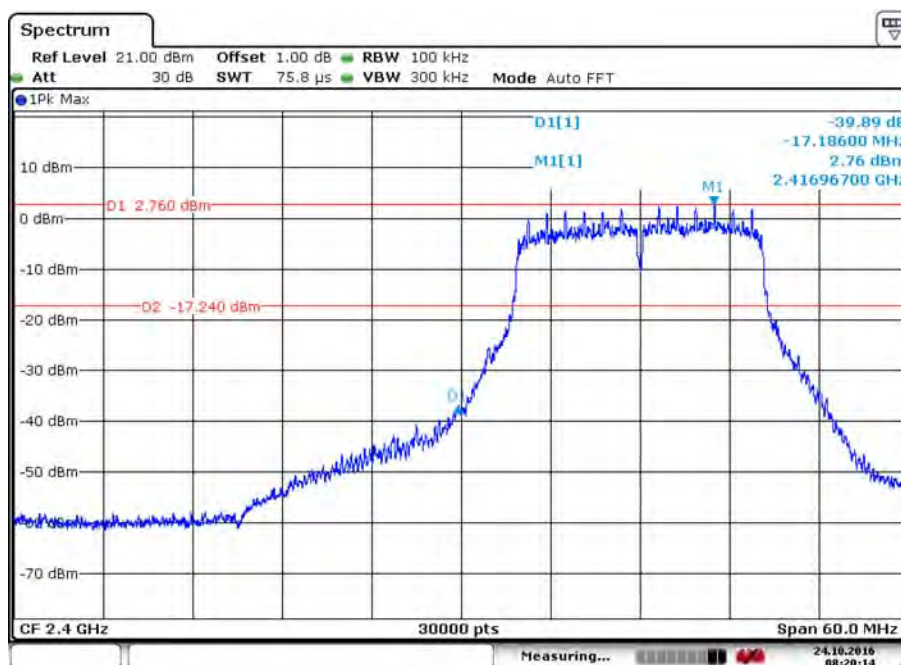


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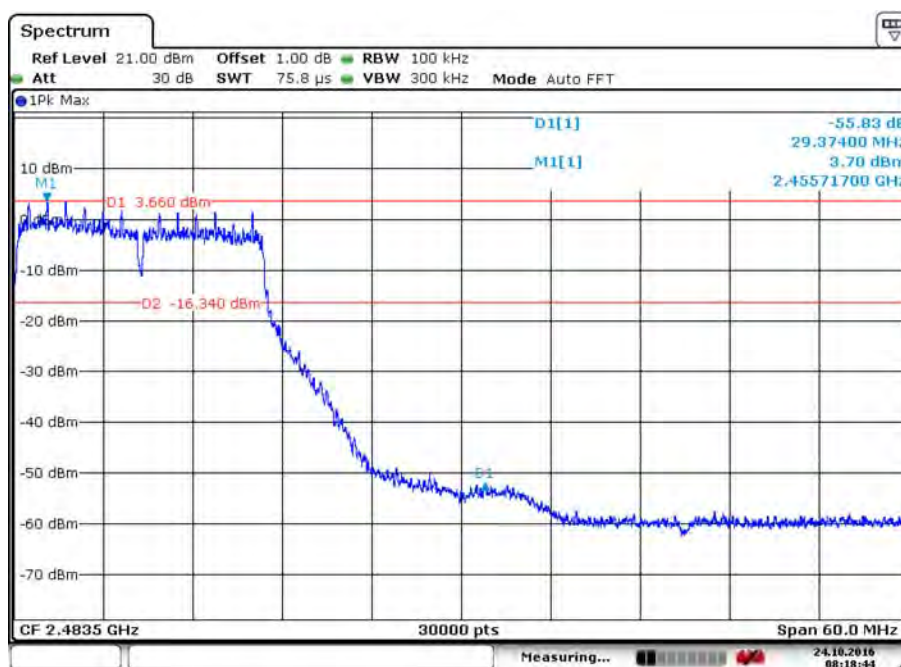
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Test mode:	802.11g	Test channel:	Lowest
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Test mode:	802.11g	Test channel:	Highest
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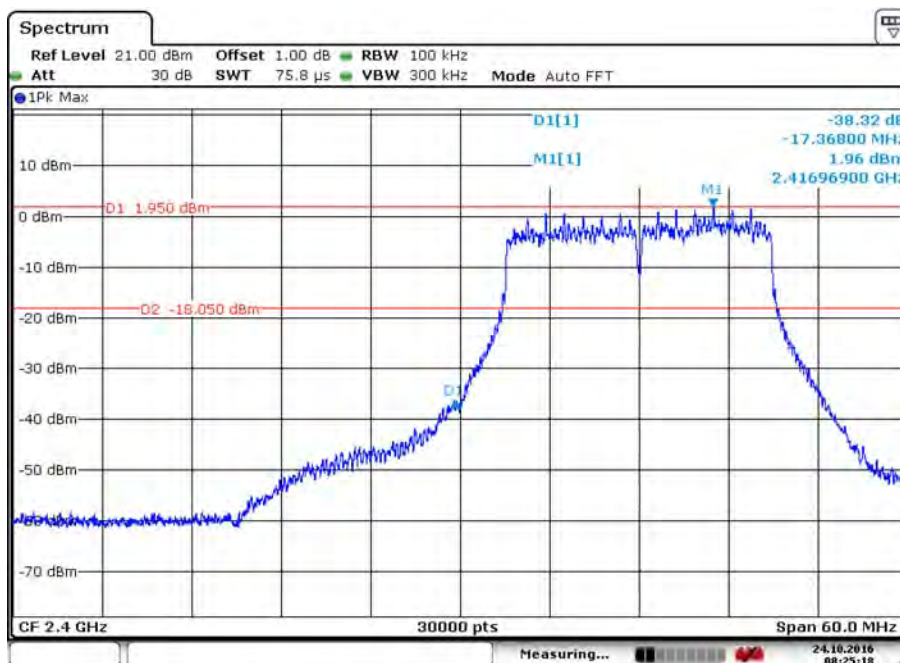




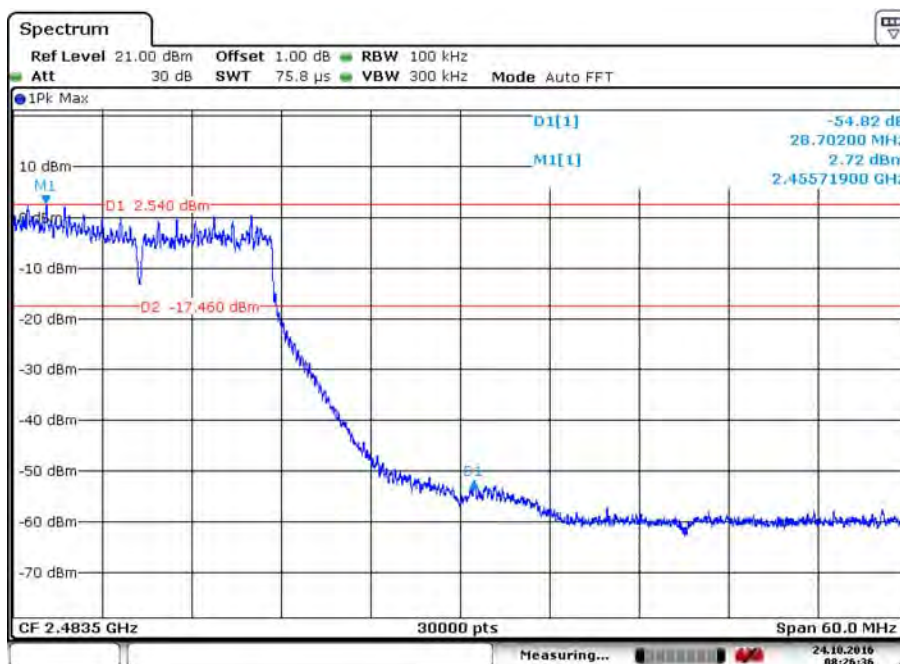
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Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Highest
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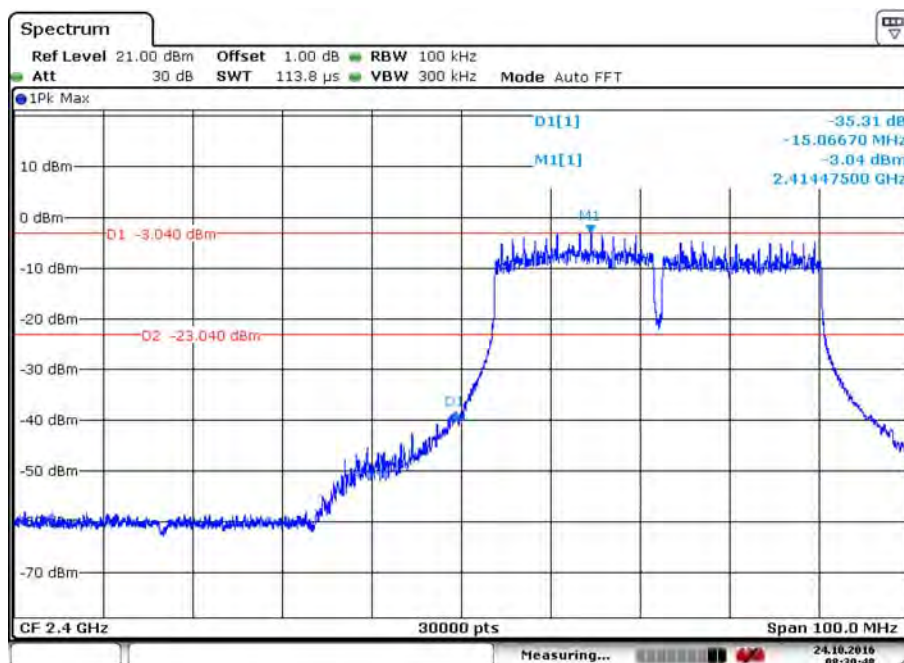




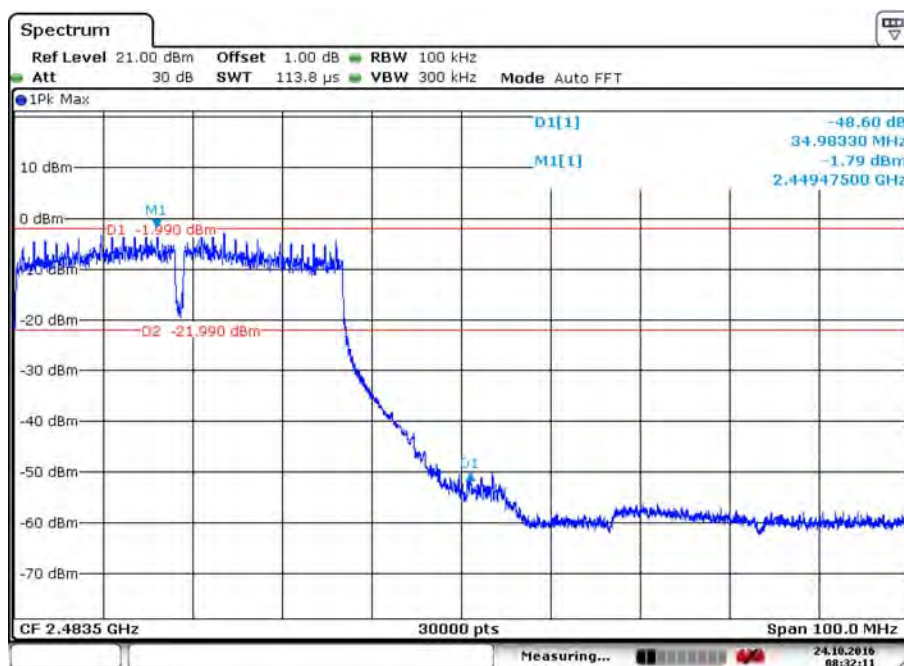
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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Test mode:	802.11n(HT40)	Test channel:	Highest
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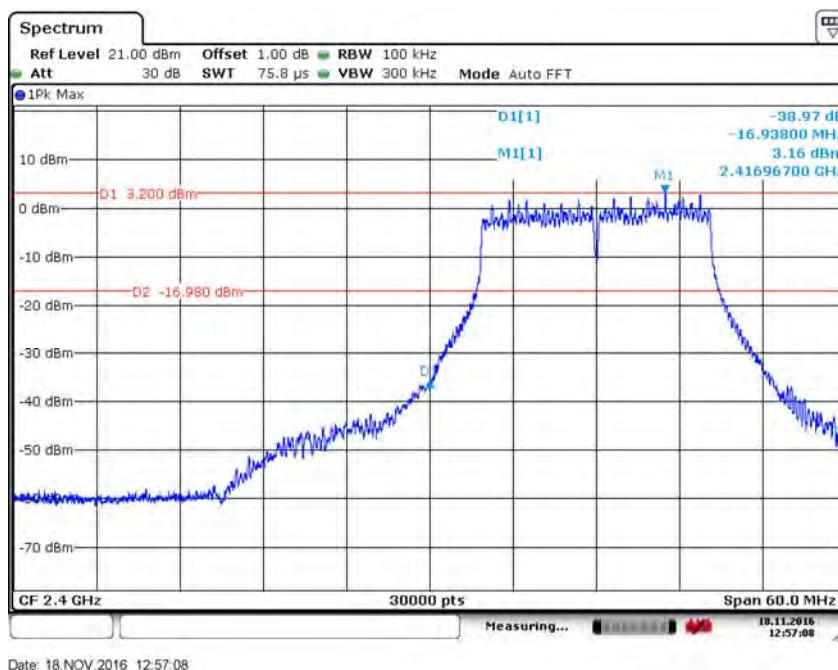




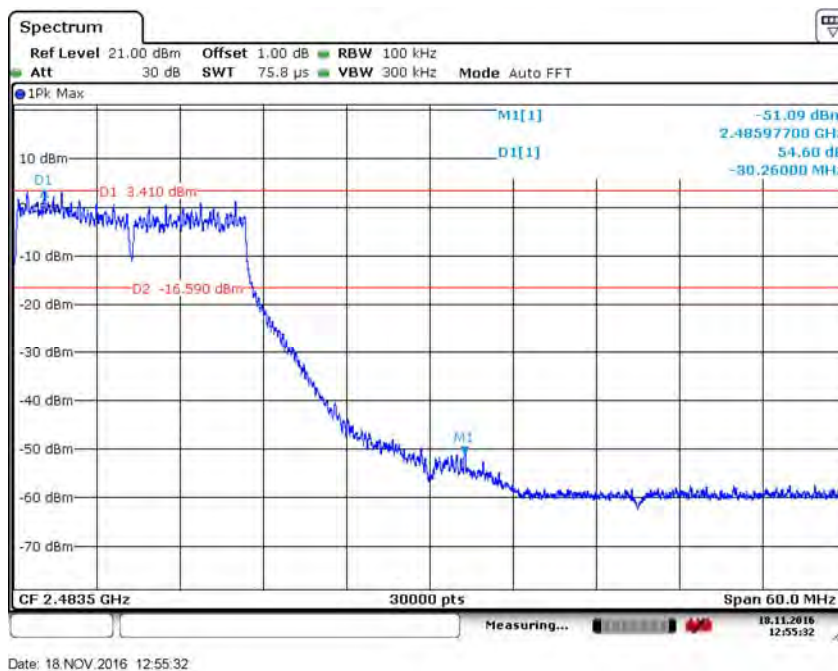
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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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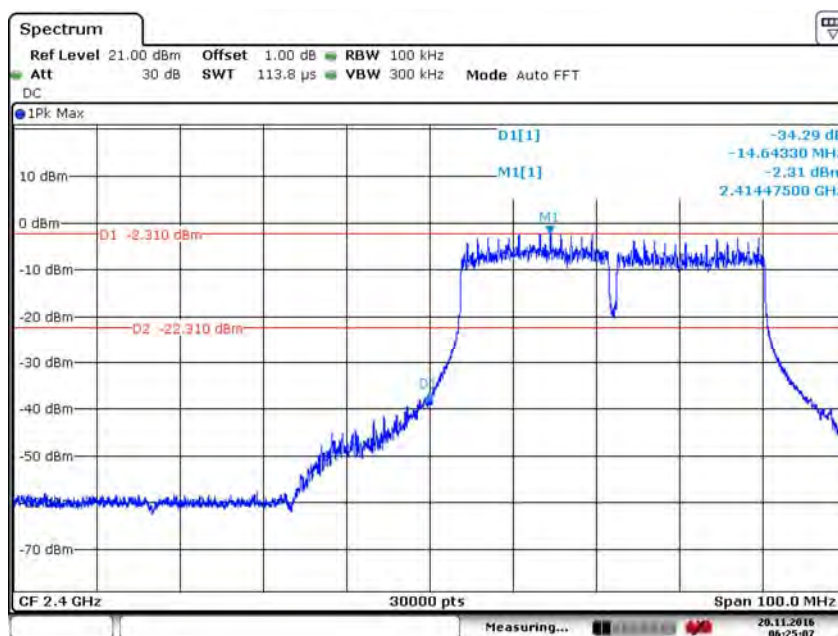




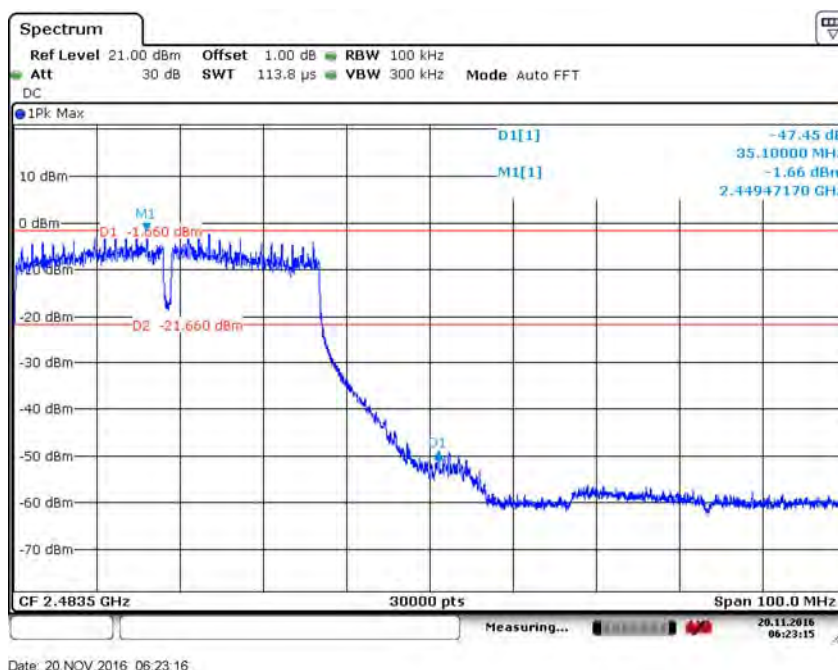
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Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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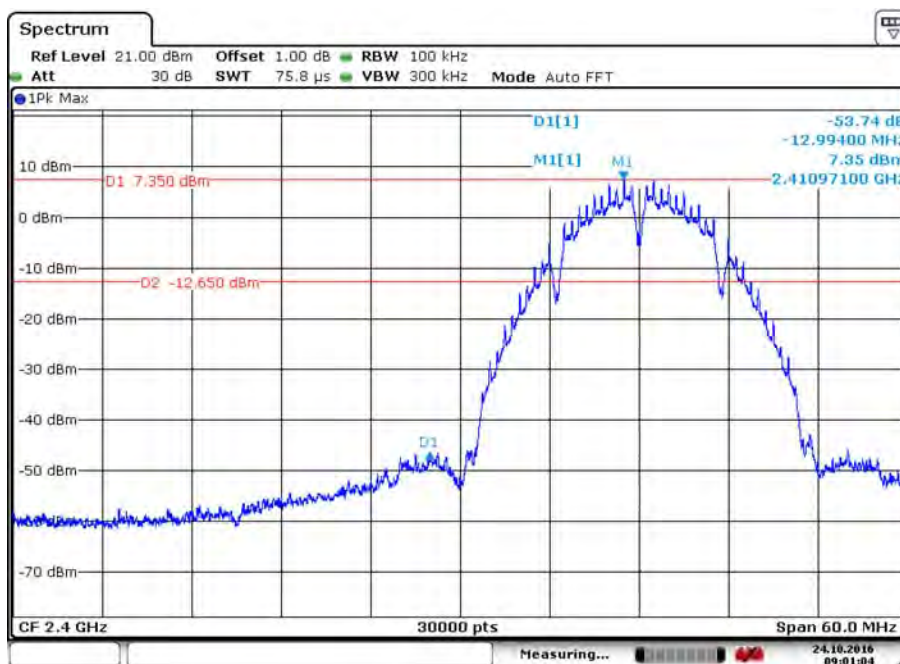
Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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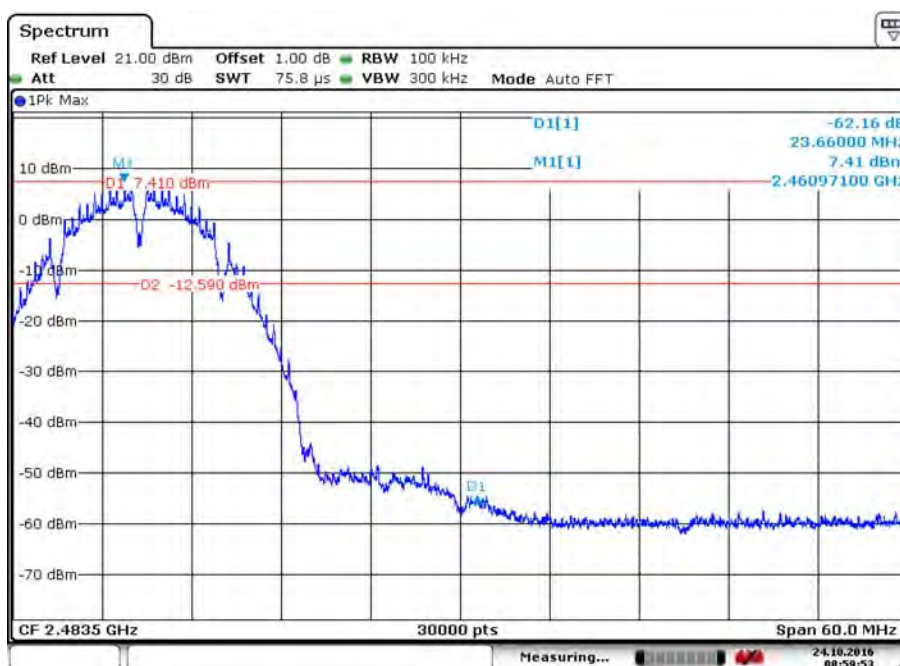


Antenna 1:

Test mode:	802.11b	Test channel:	Lowest
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Test mode:	802.11b	Test channel:	Highest
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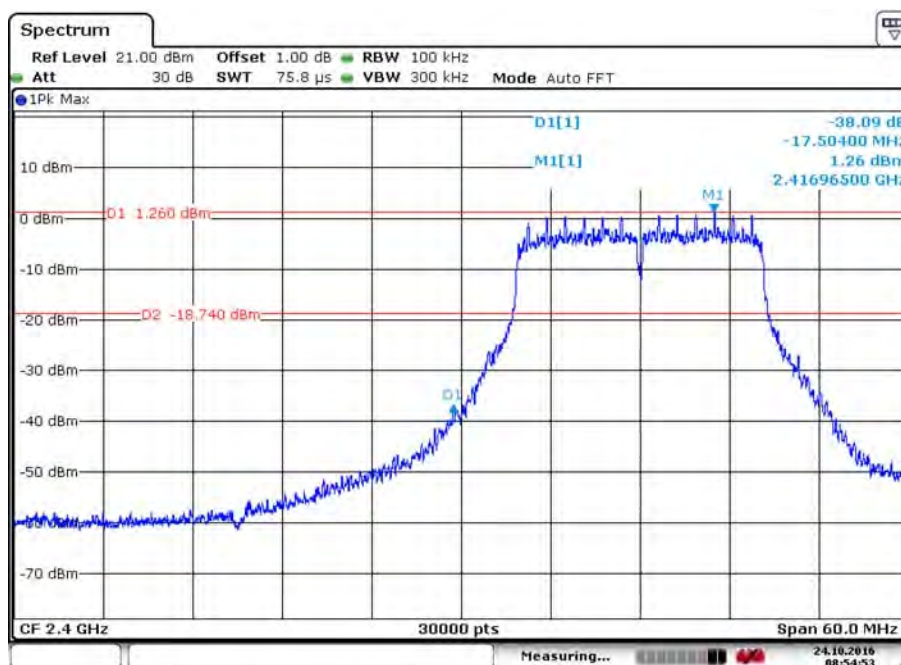




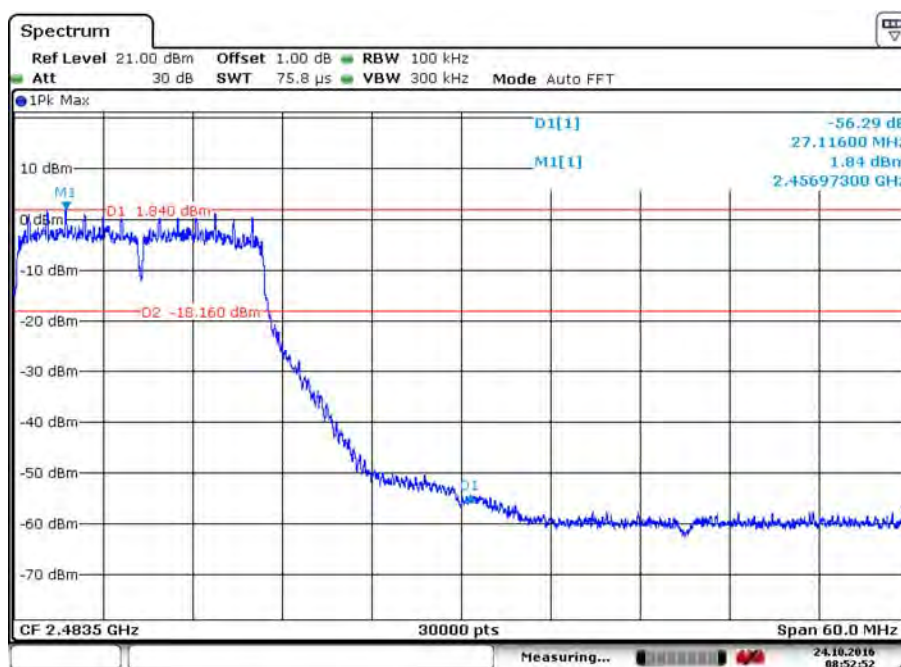
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Test mode:	802.11g	Test channel:	Lowest
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Test mode:	802.11g	Test channel:	Highest
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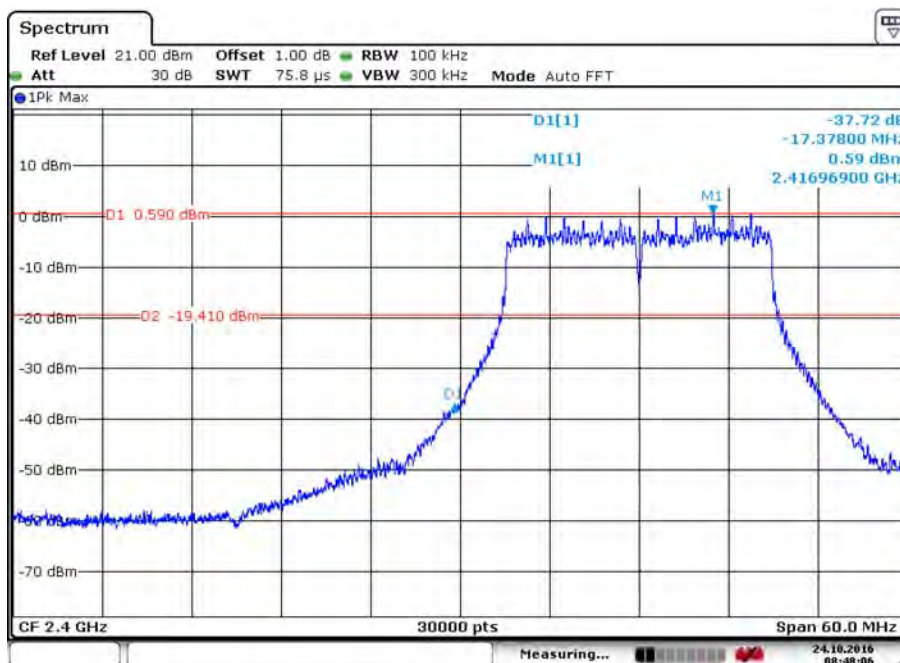




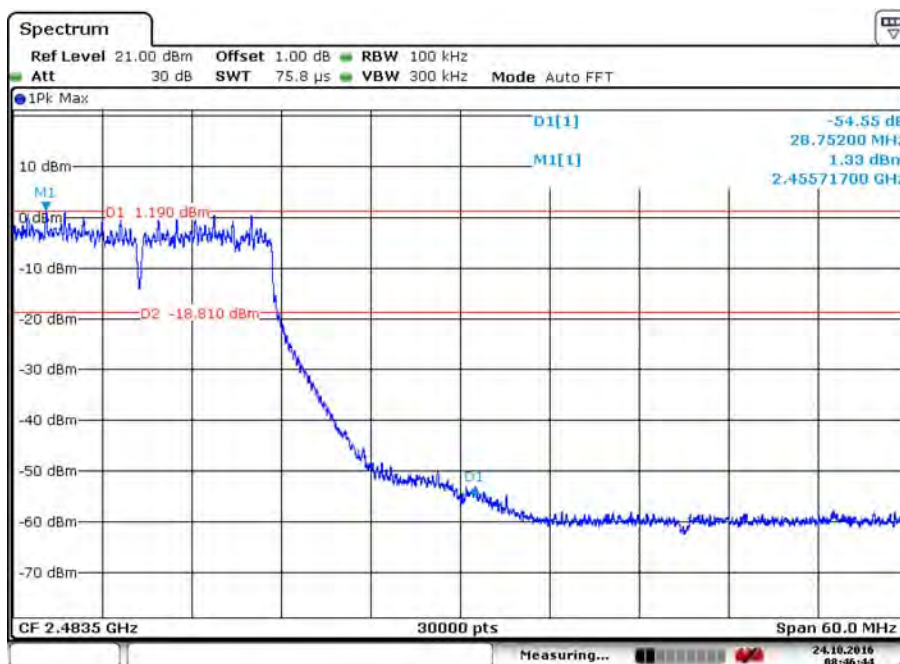
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Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Highest
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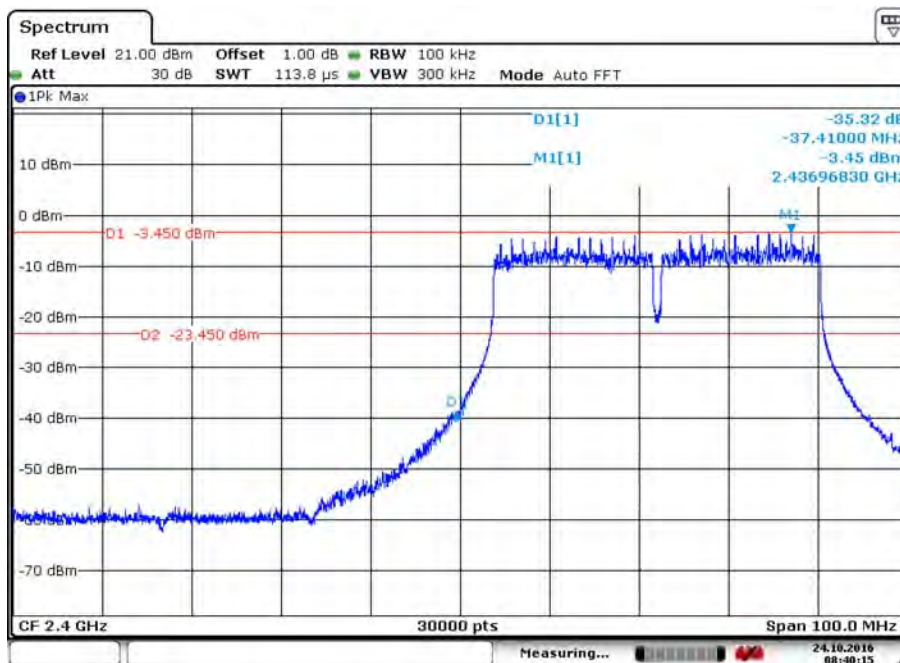




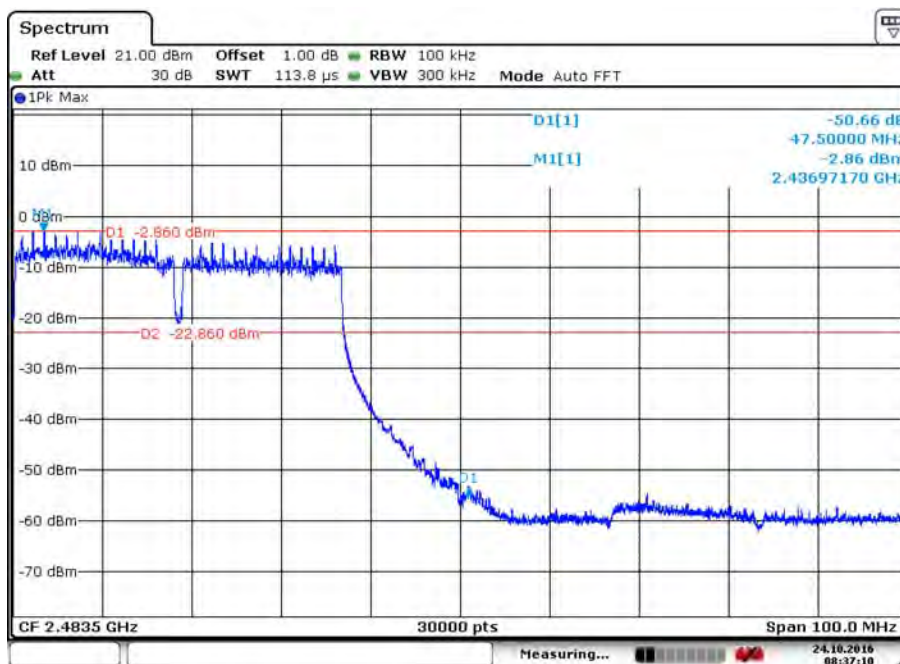
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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Test mode:	802.11n(HT40)	Test channel:	Highest
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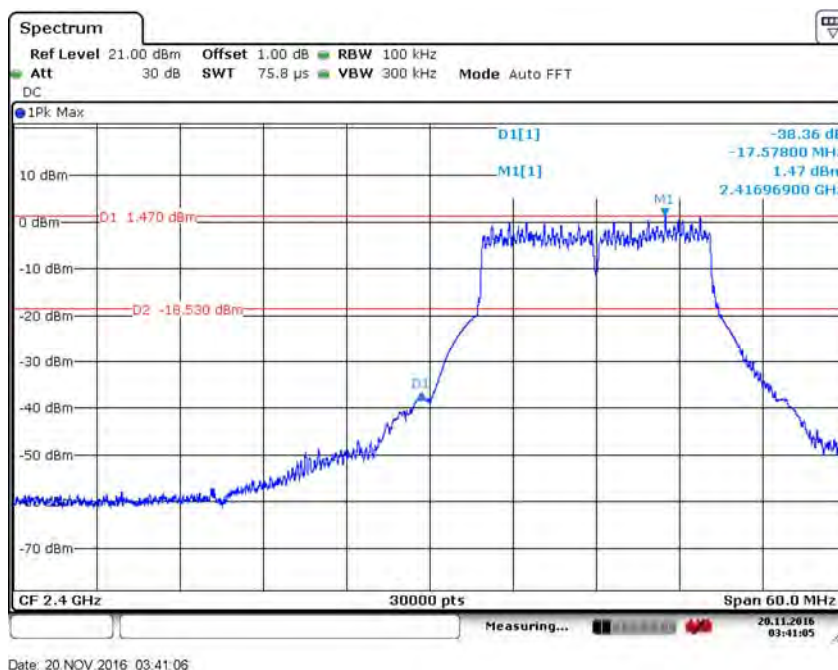




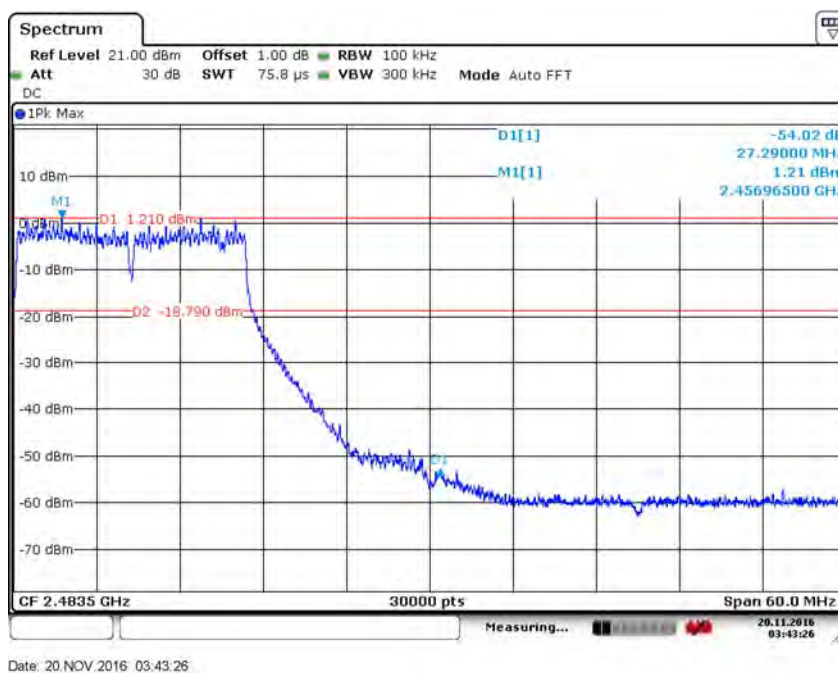
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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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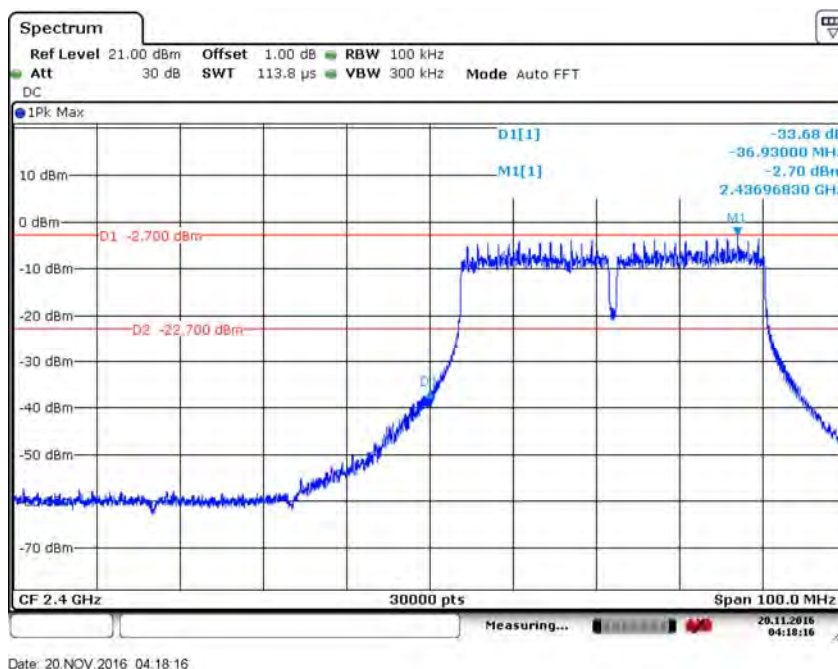


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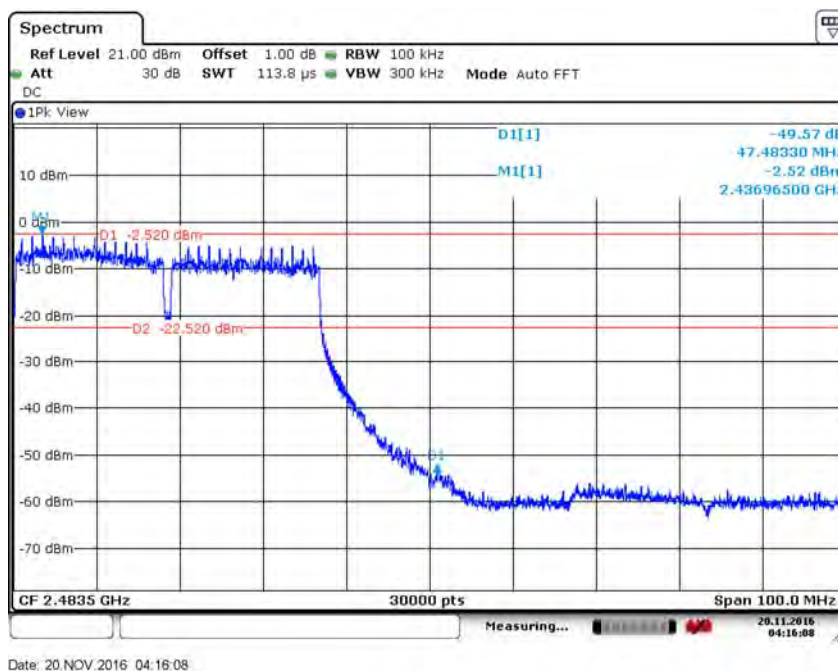
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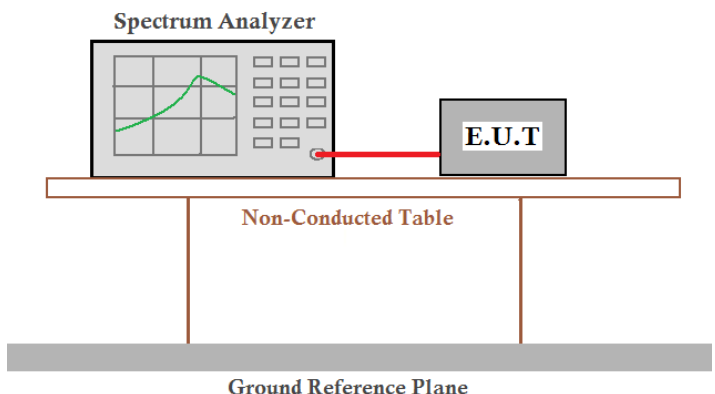
Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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6.7 RF Conducted Spurious Emissions

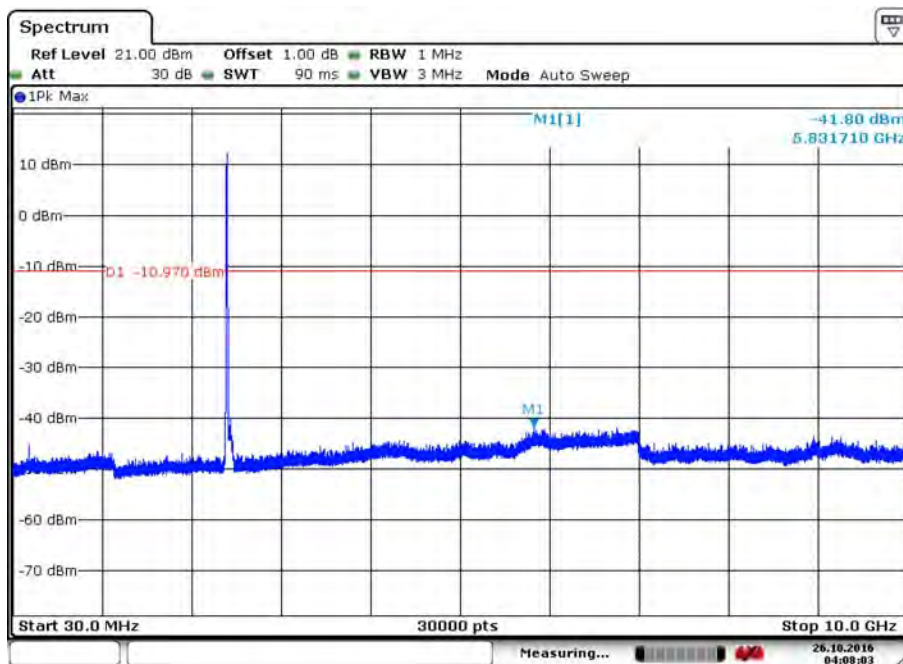
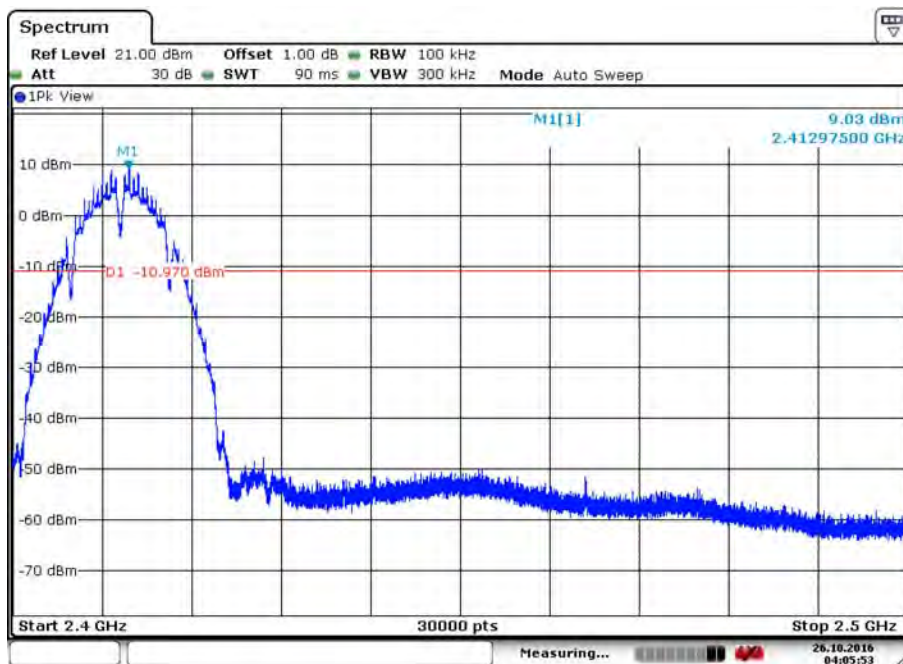
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.11
Test Setup:	 <i>Remark:</i> Offset the High-Frequency cable loss 1dB in the spectrum analyzer.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; 13.5Mbps of rate is the worst case of 802.11n(HT40)
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

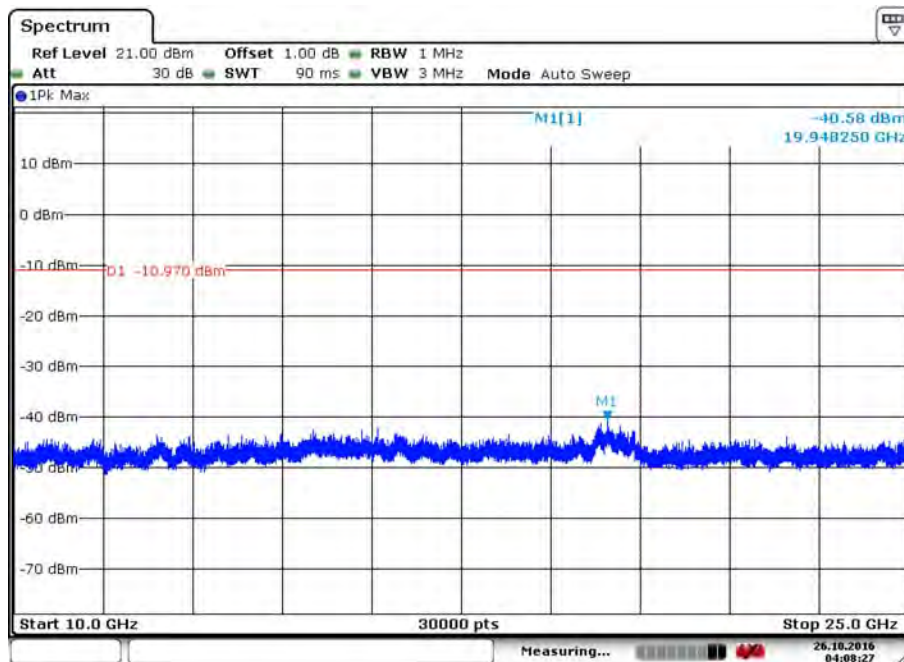


Test plot as follows:

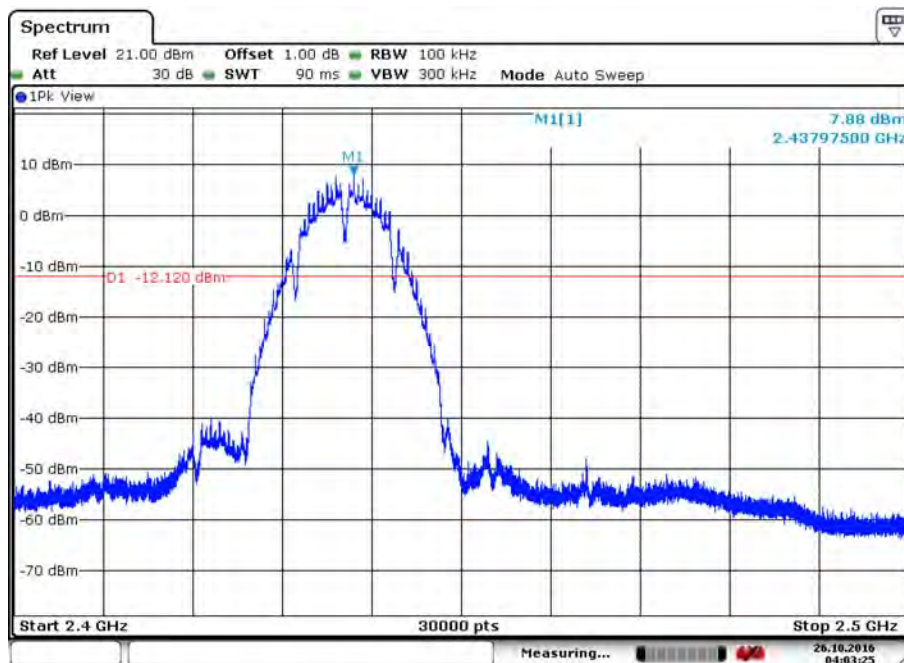
Antenna 0:

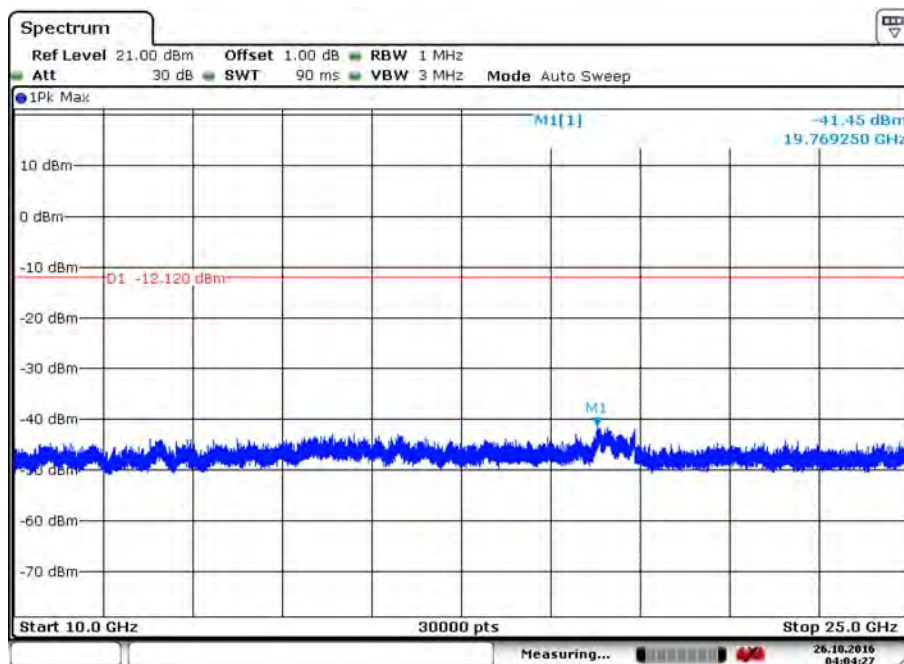
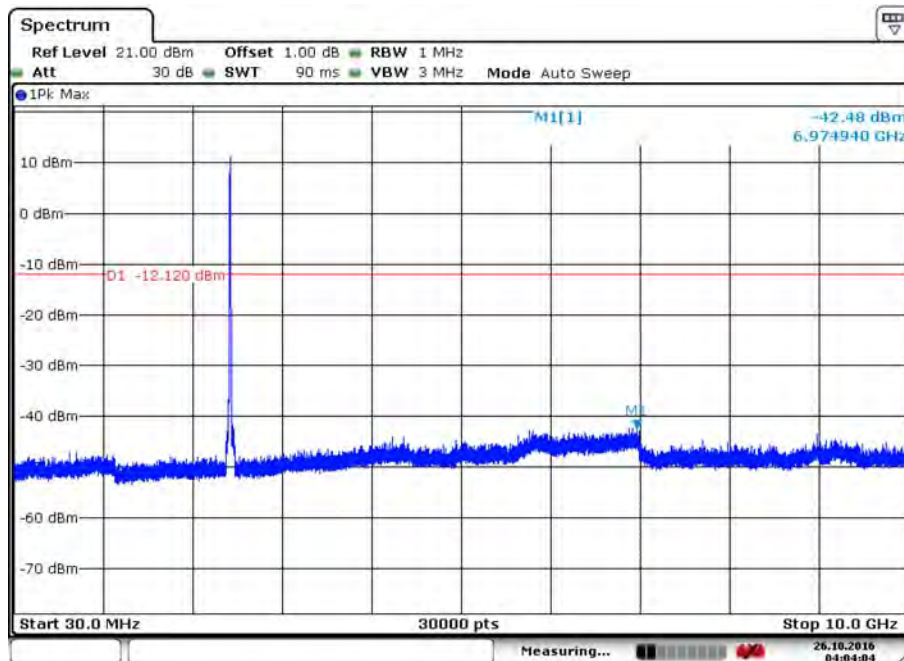
Test mode:	802.11b	Test channel:	Lowest
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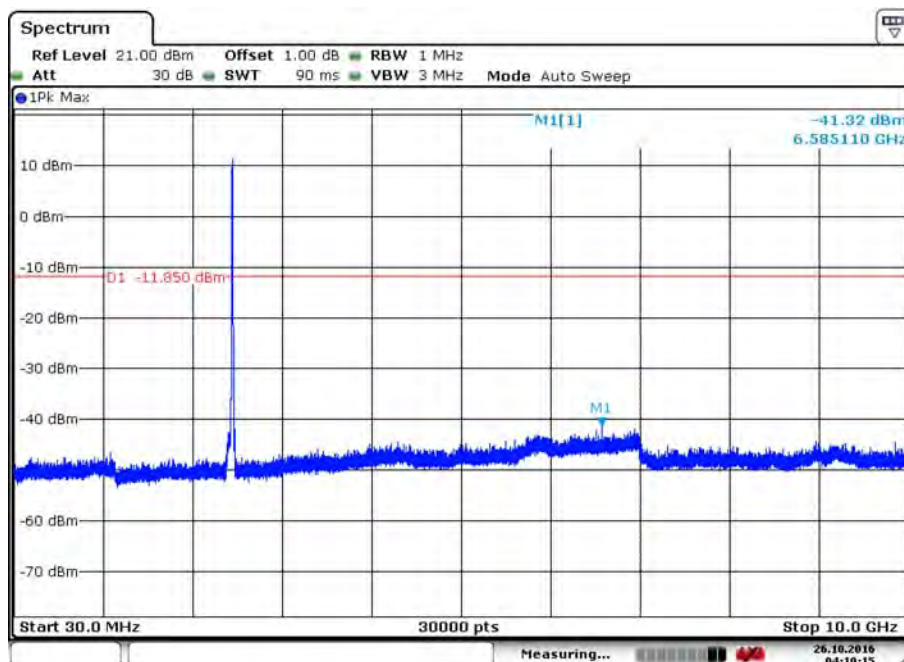
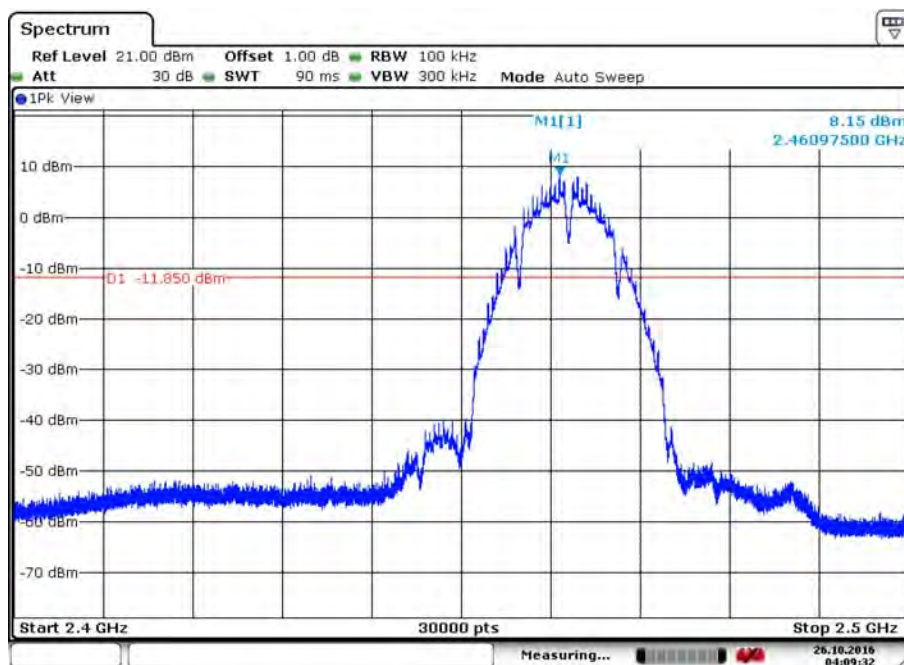
Test mode:	802.11b	Test channel:	Middle
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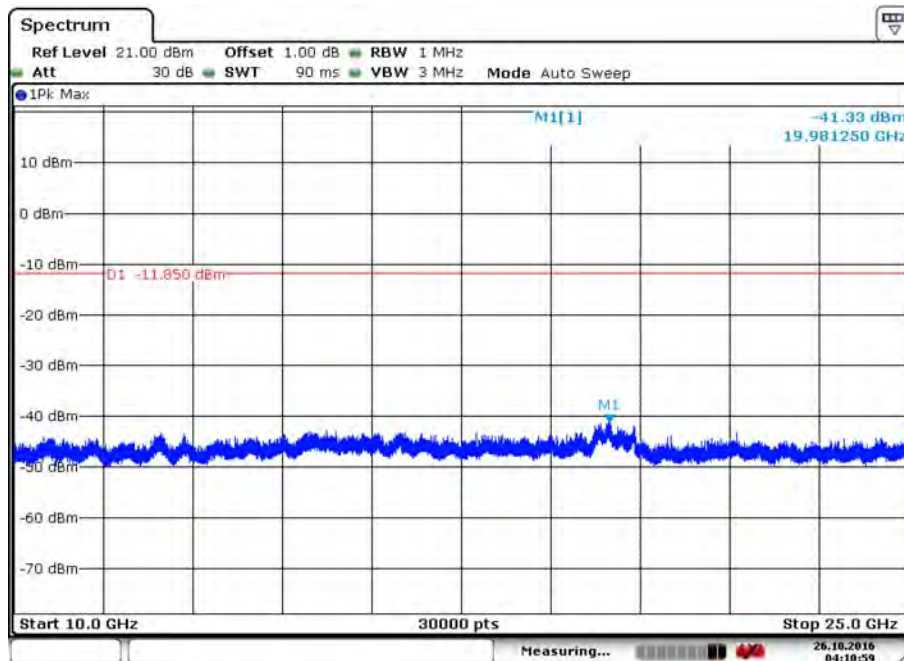




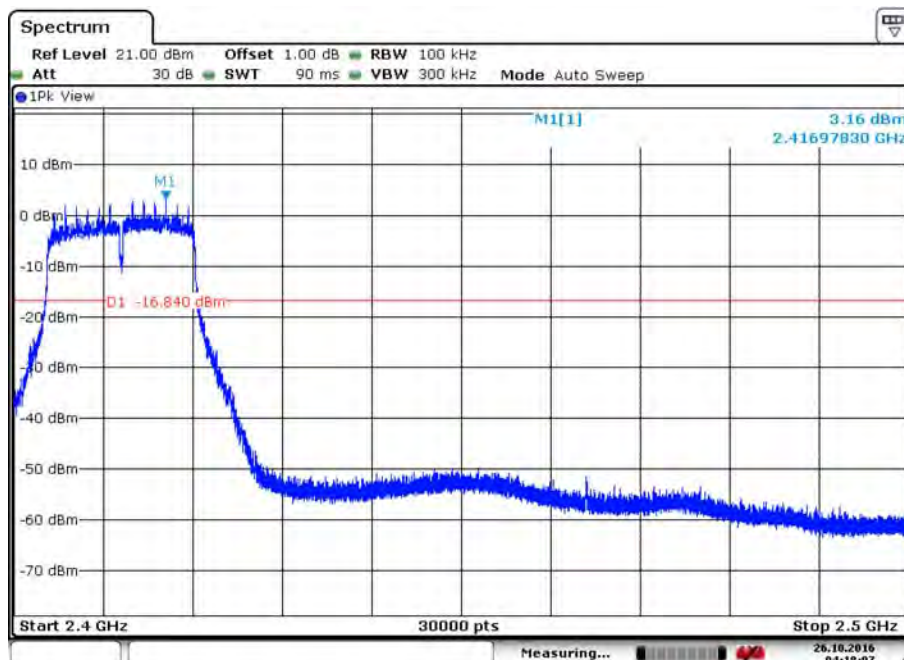


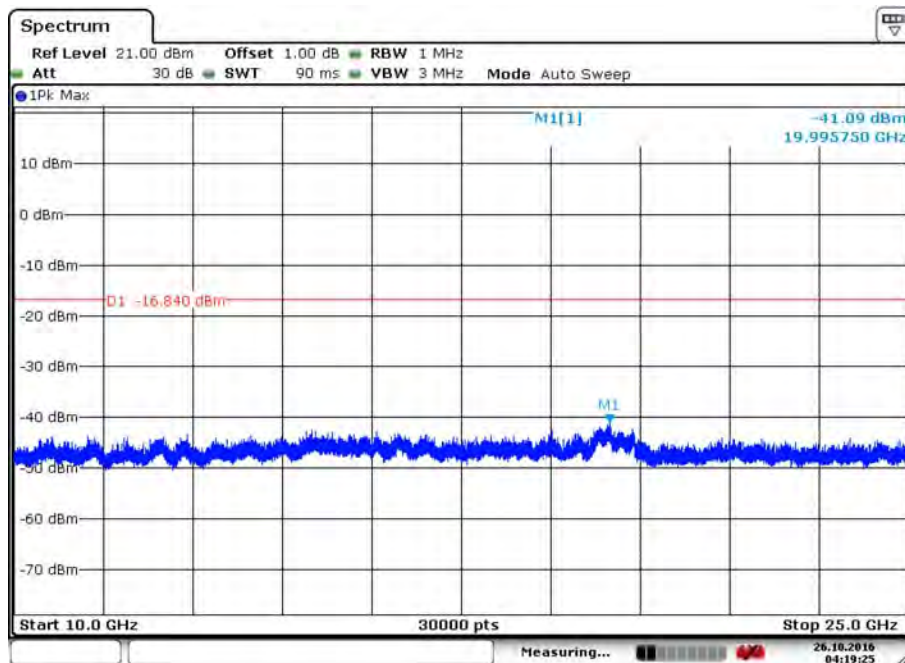
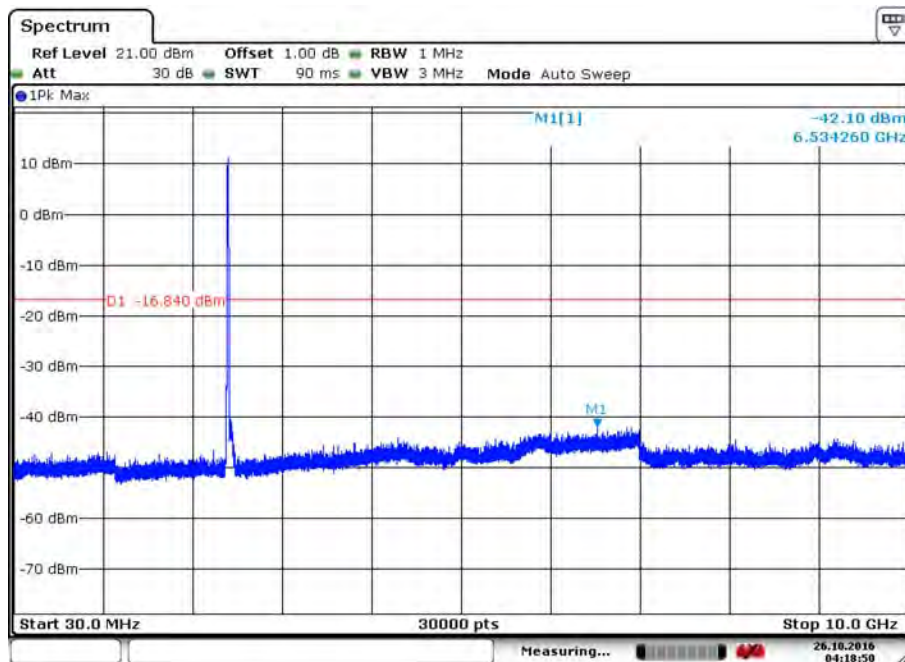
Test mode:	802.11b	Test channel:	Highest
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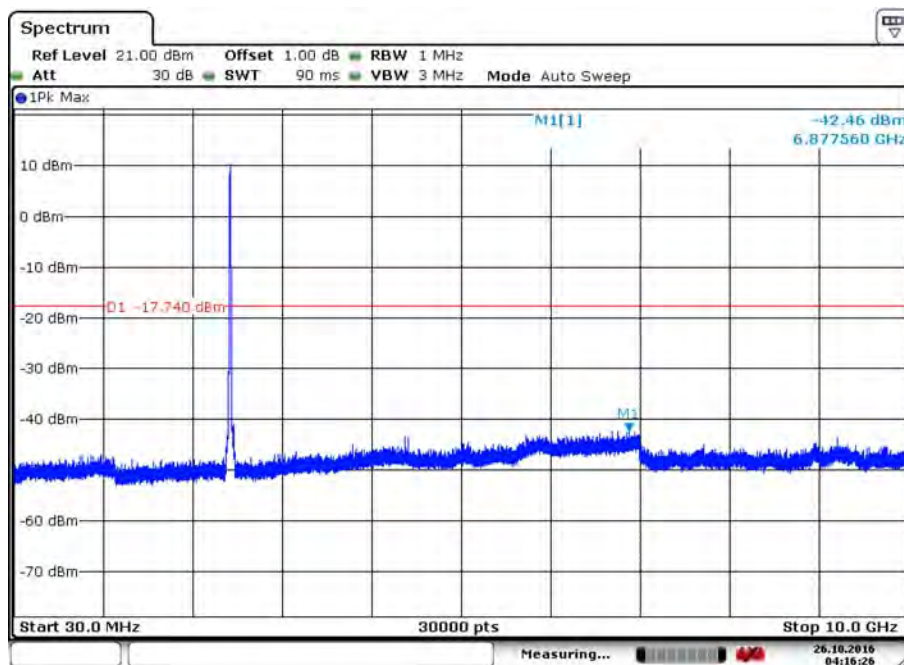
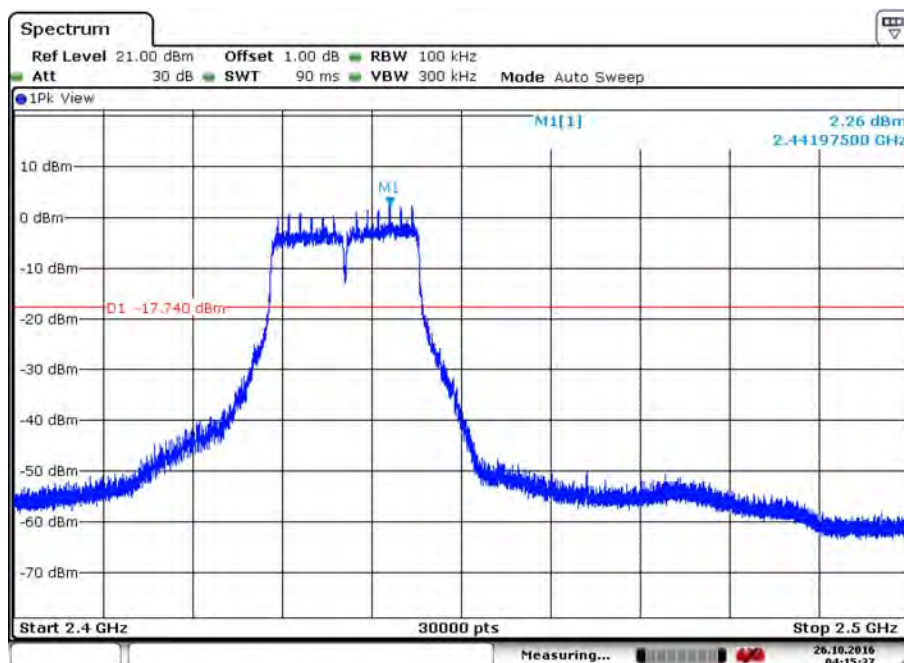
Test mode:	802.11g	Test channel:	Lowest
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Test mode:	802.11g	Test channel:	Middle
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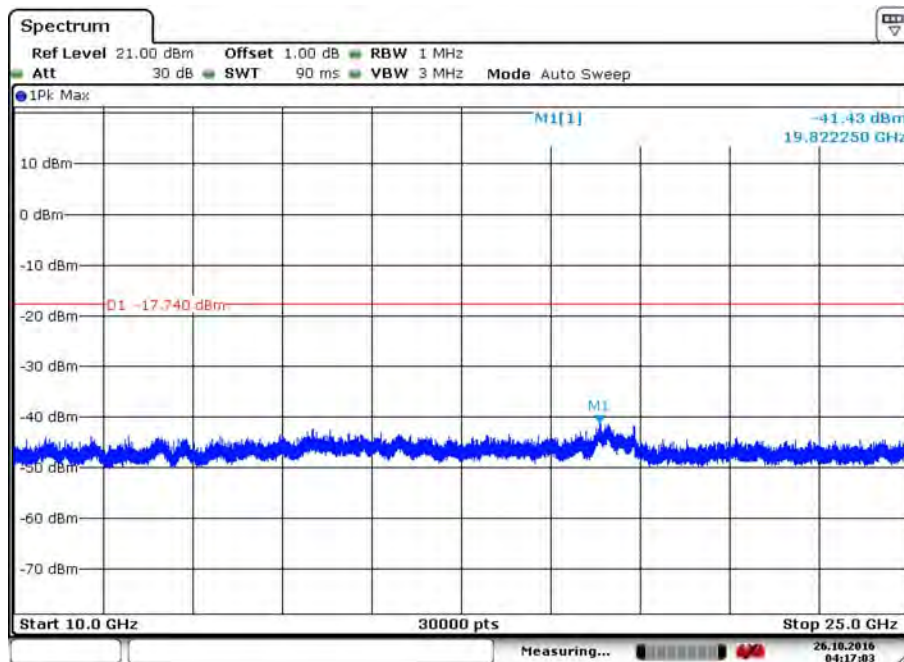




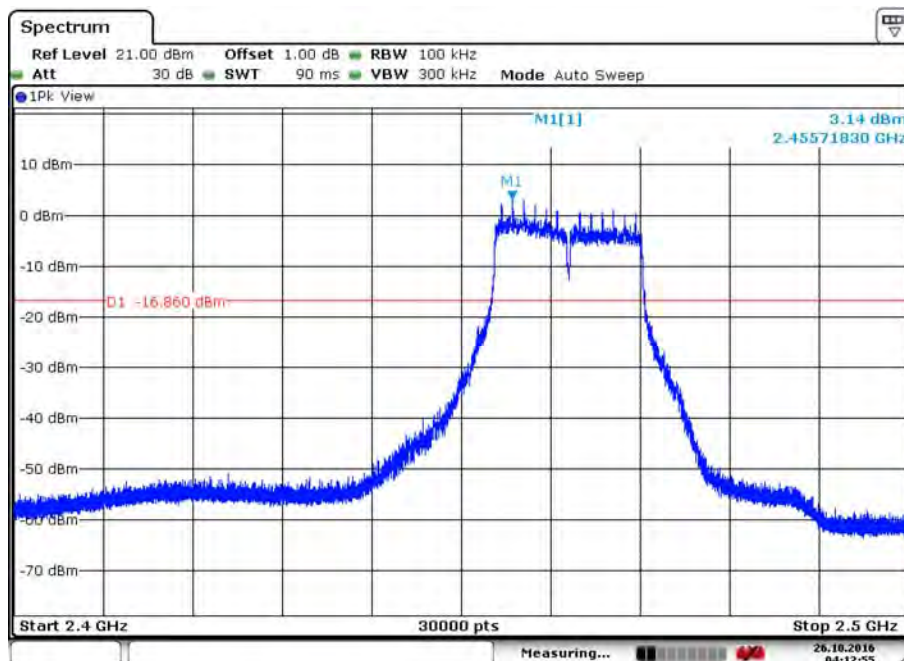
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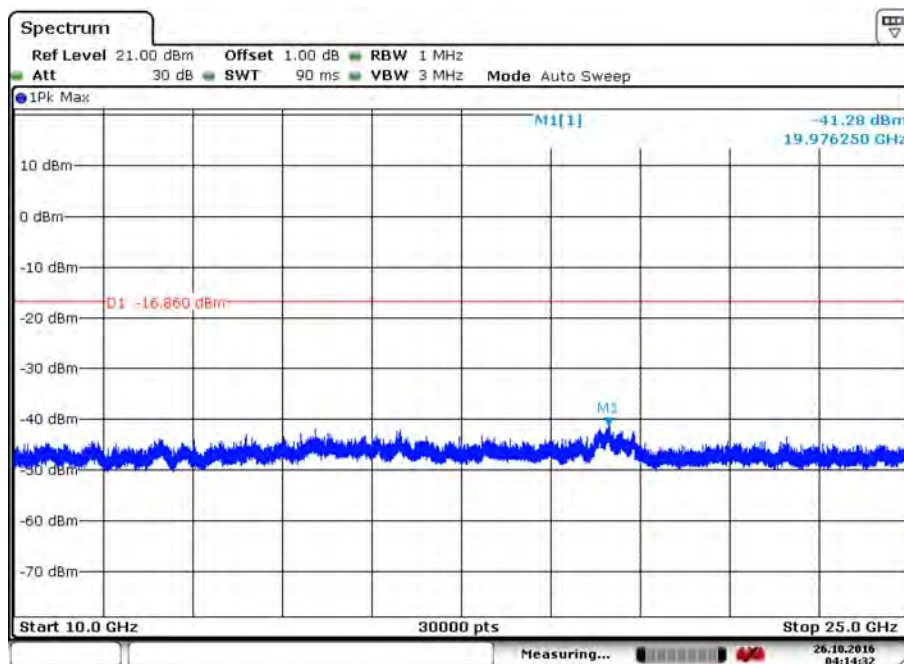
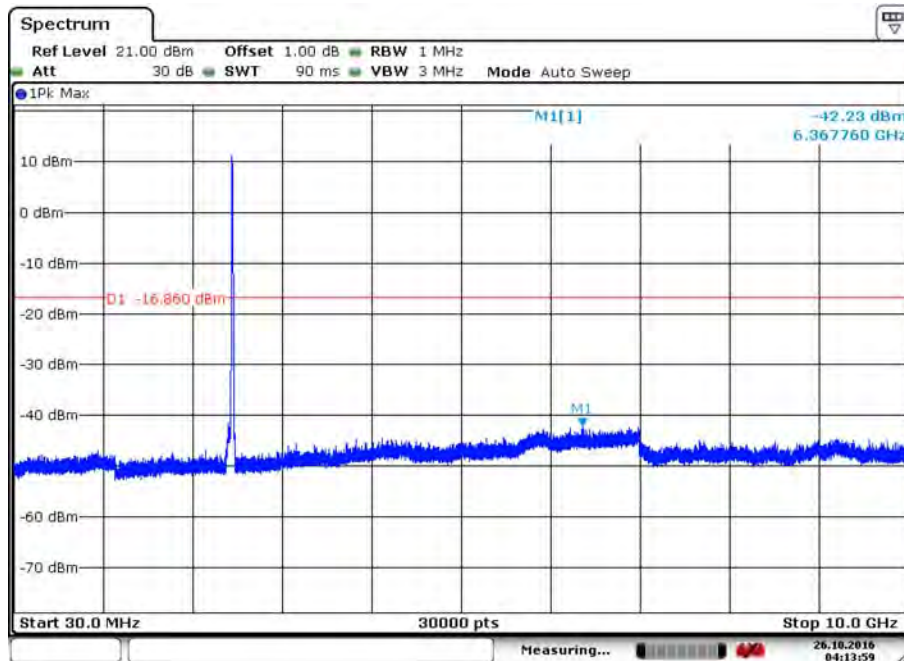
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Test mode:	802.11g	Test channel:	Highest
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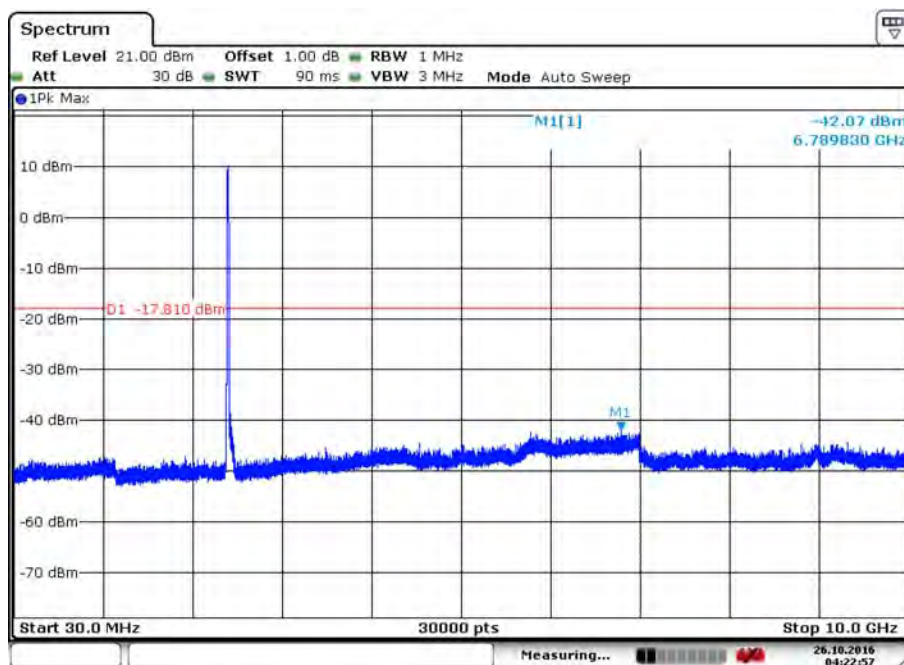
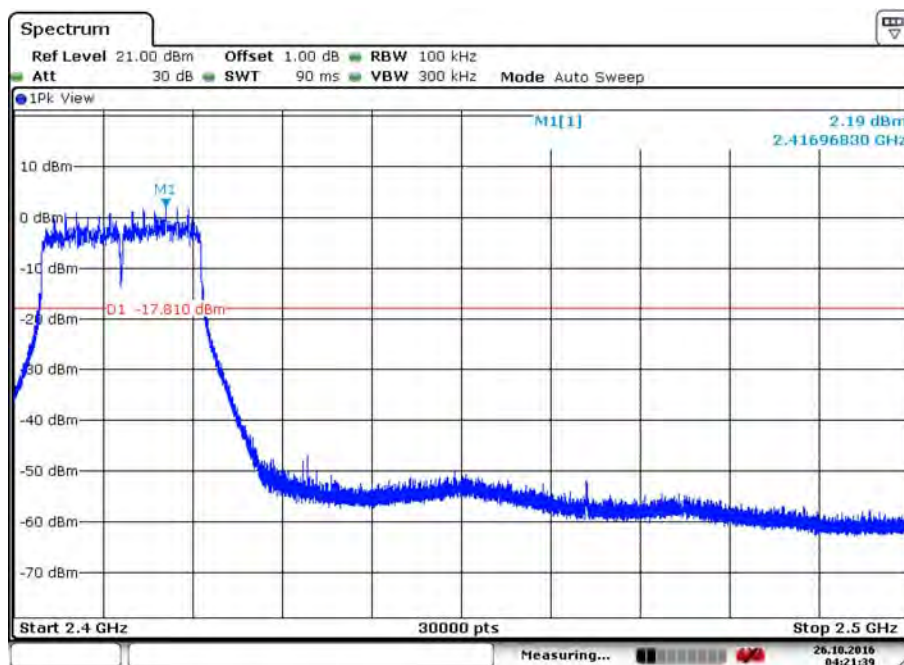


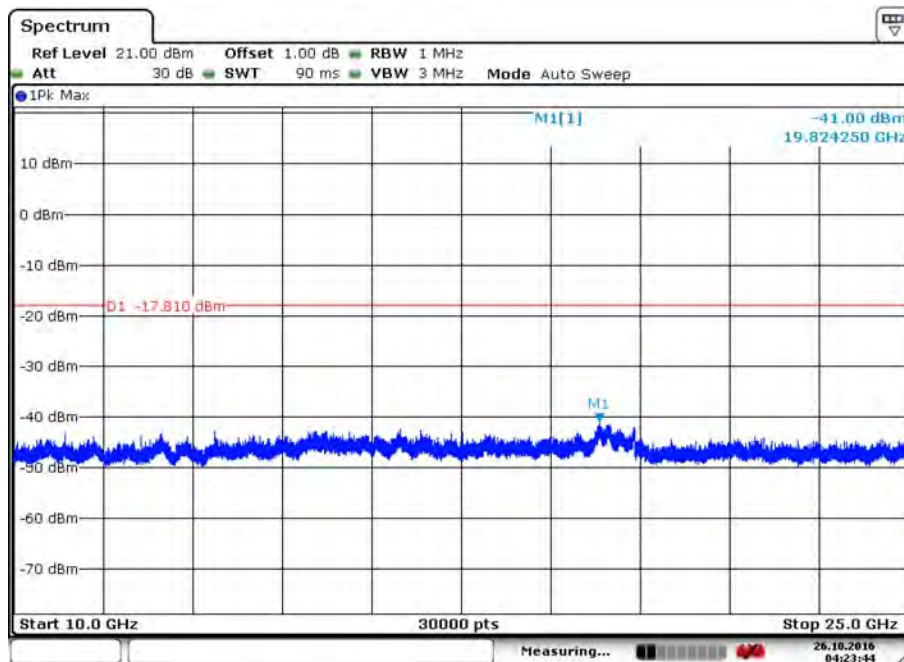


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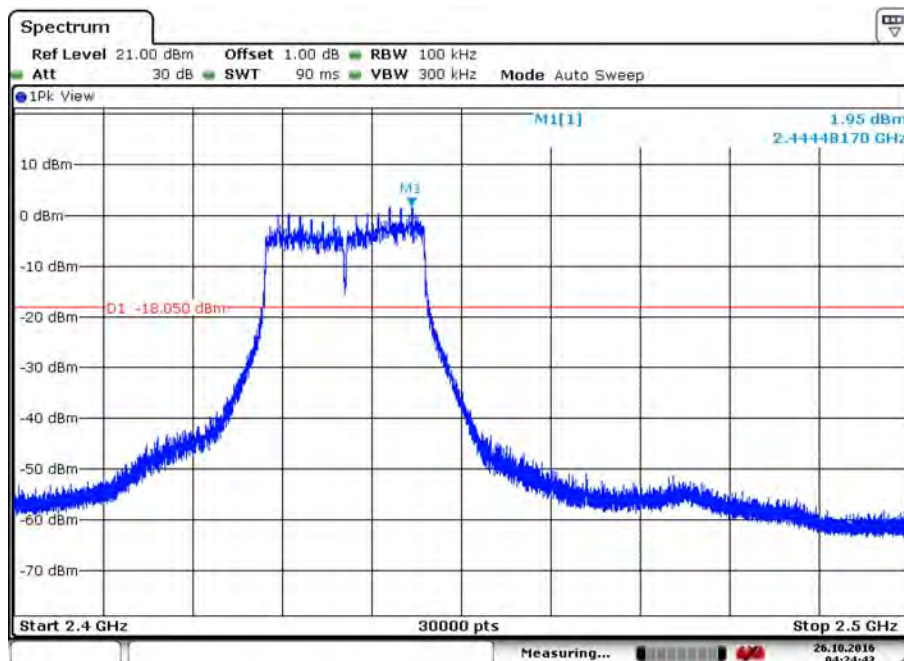
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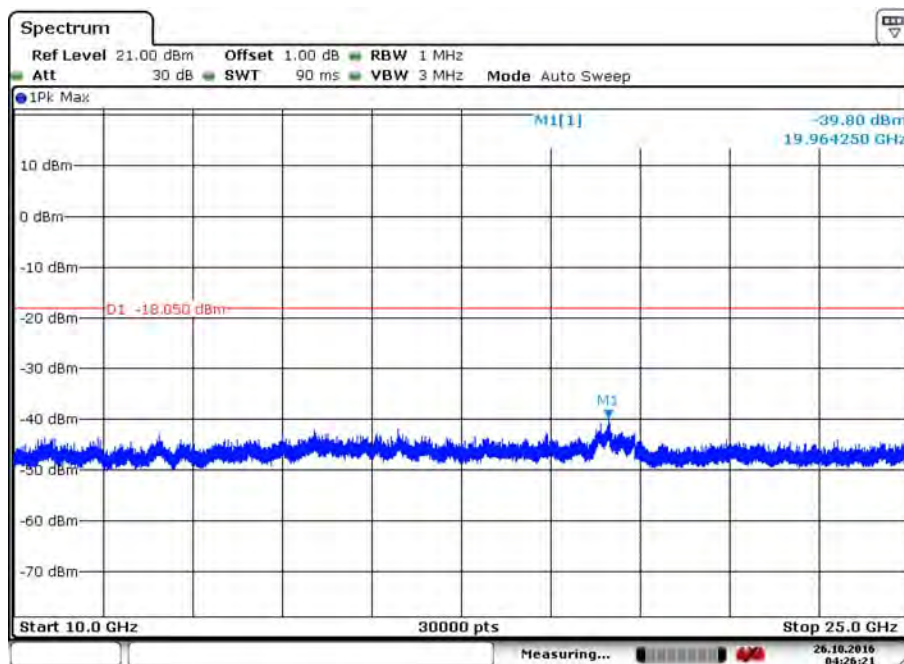
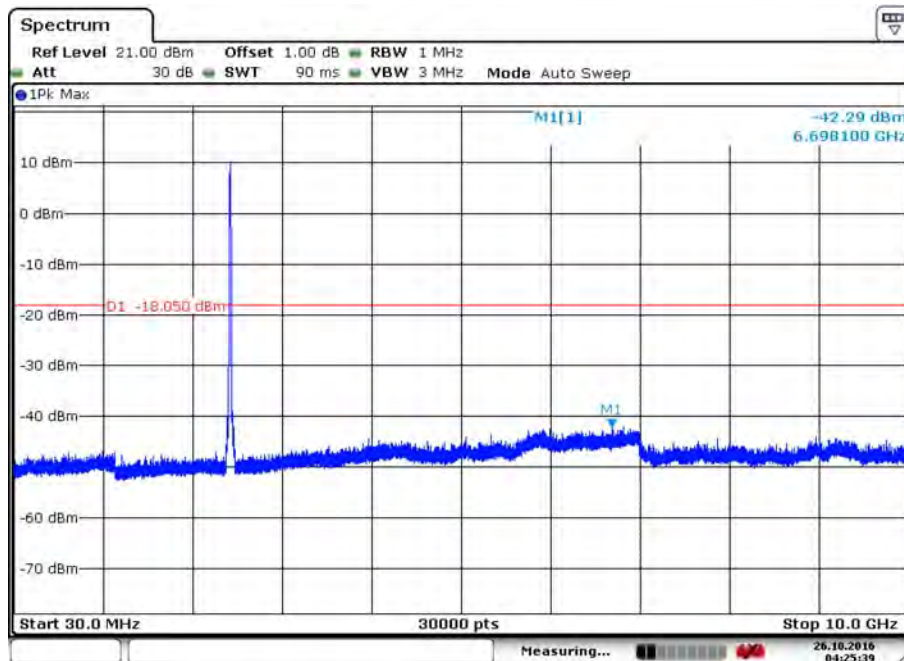
Test mode:	802.11n(HT20)	Test channel:	Lowest
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Test mode:	802.11n(HT20)	Test channel:	Middle
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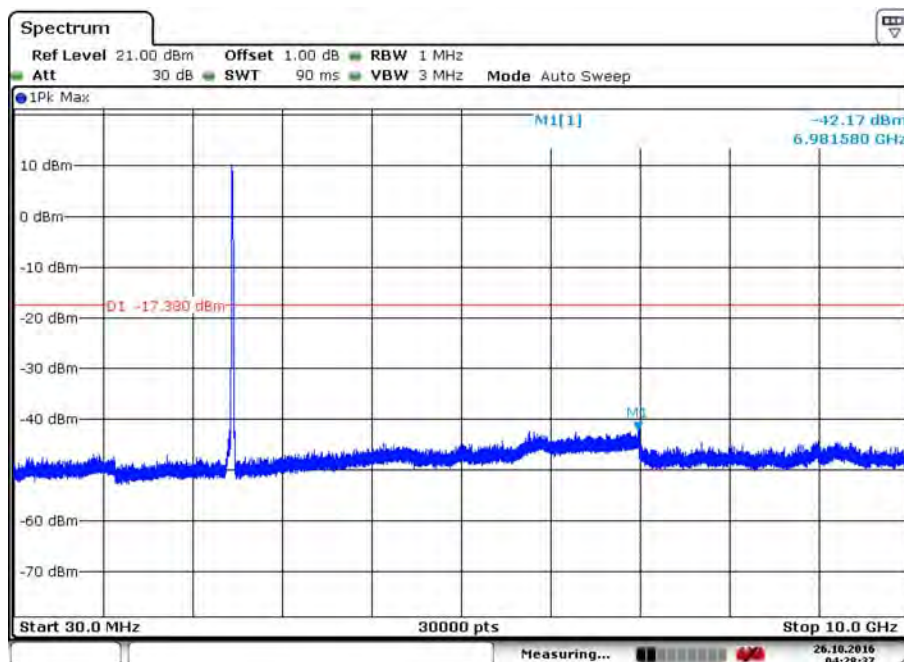
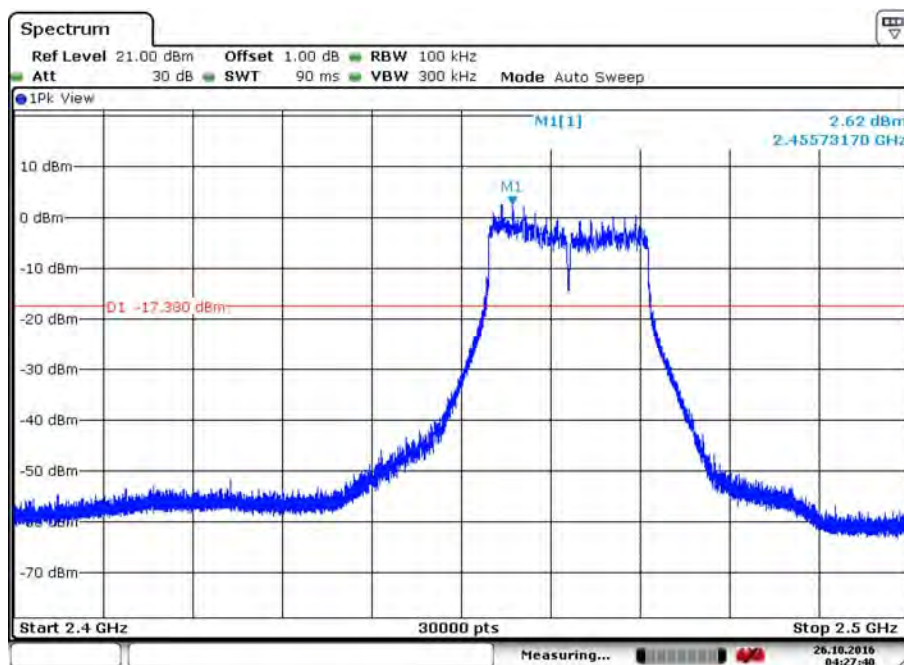


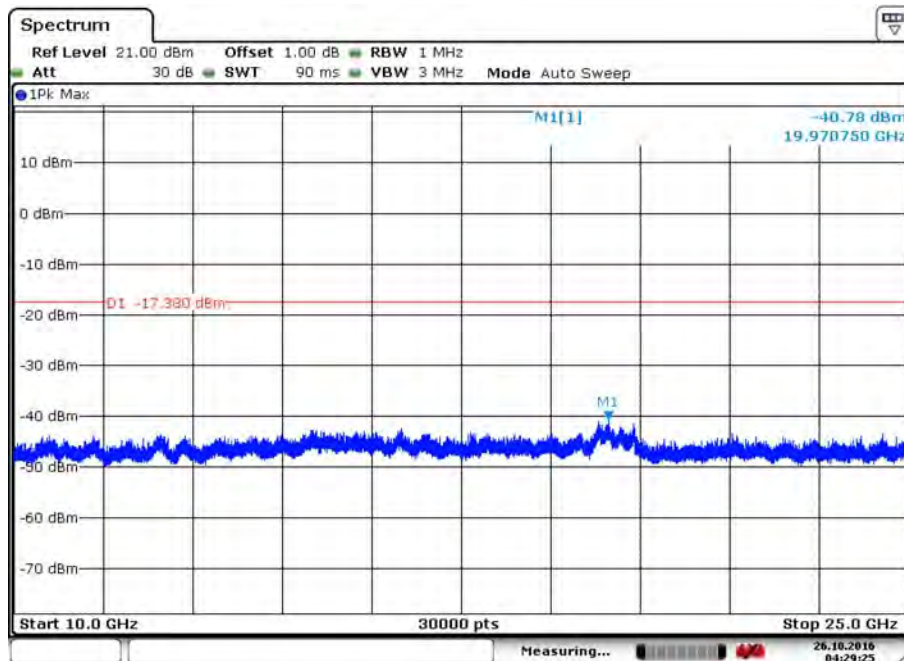


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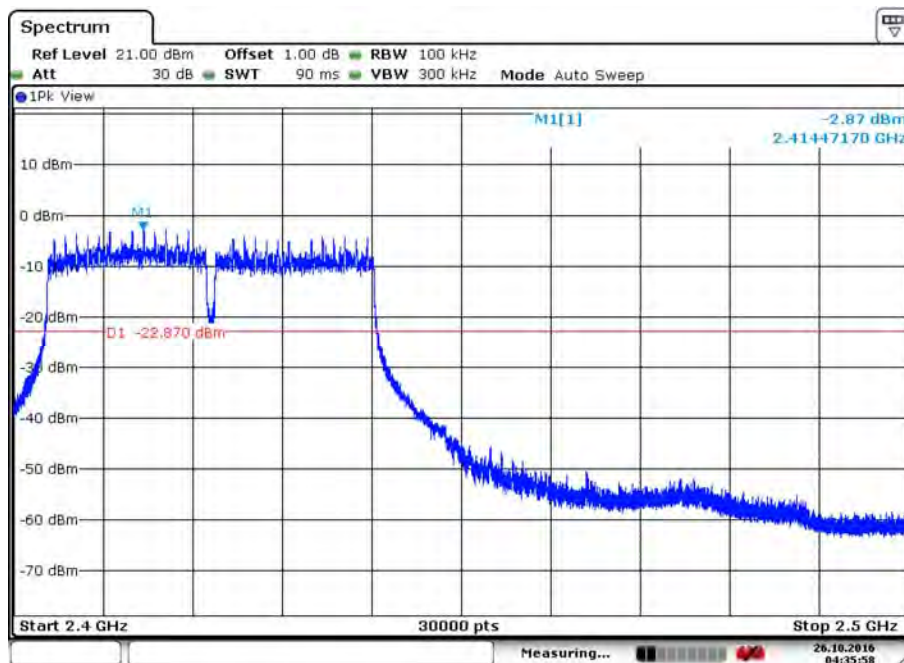
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Test mode:	802.11n(HT20)	Test channel:	Highest
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Test mode:	802.11n(HT40)	Test channel:	Lowest
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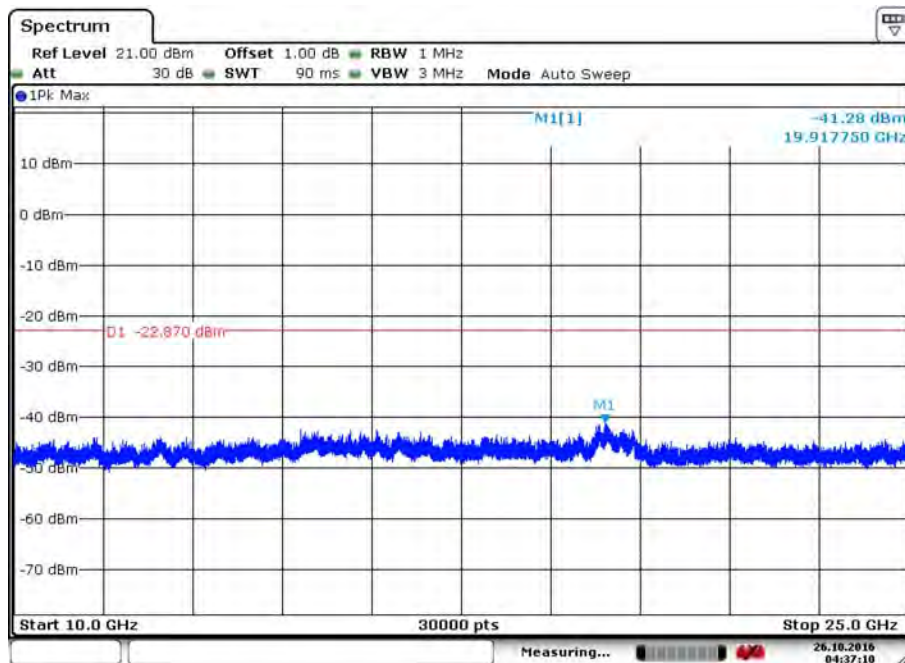
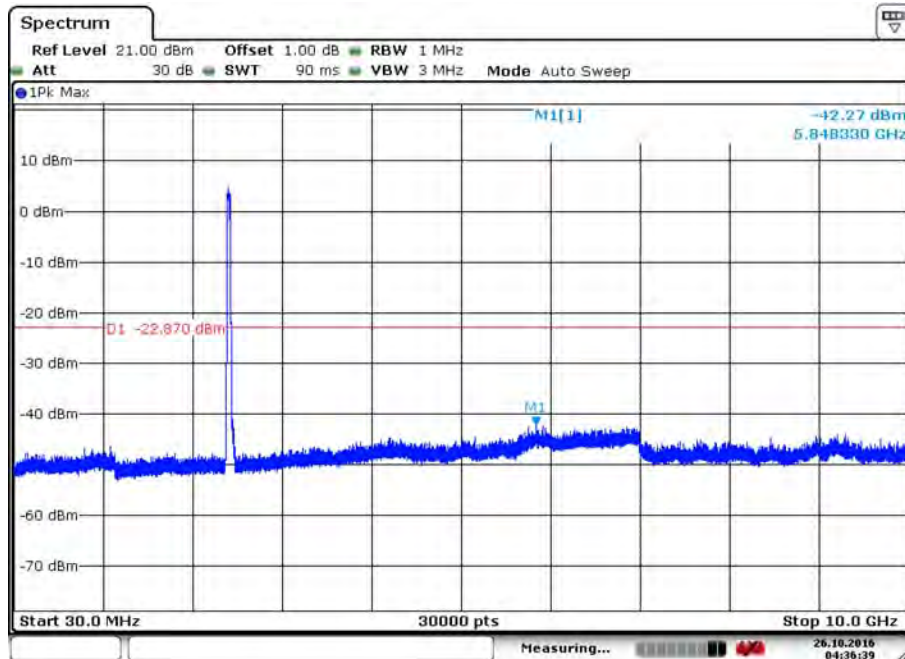




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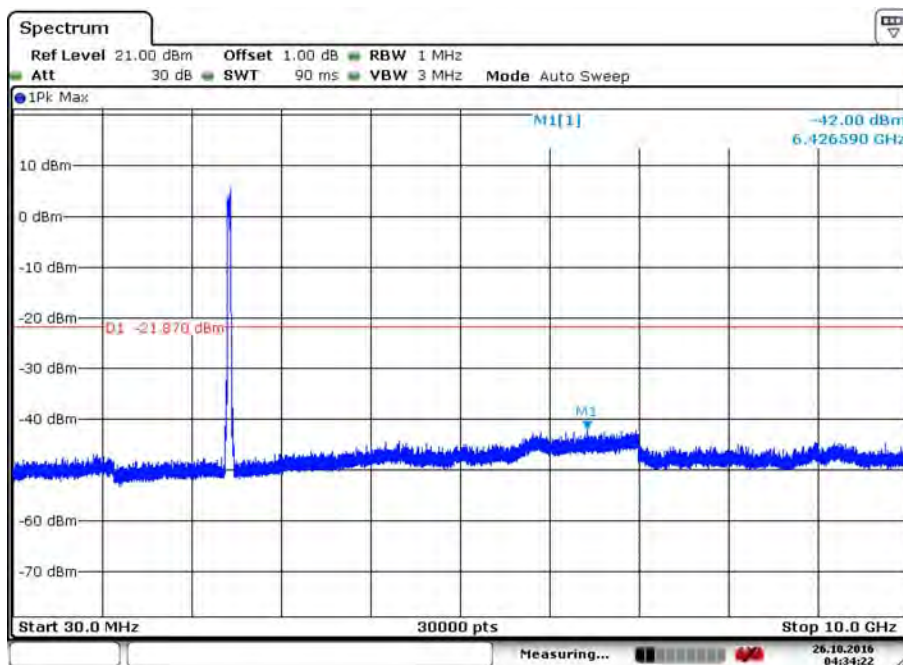
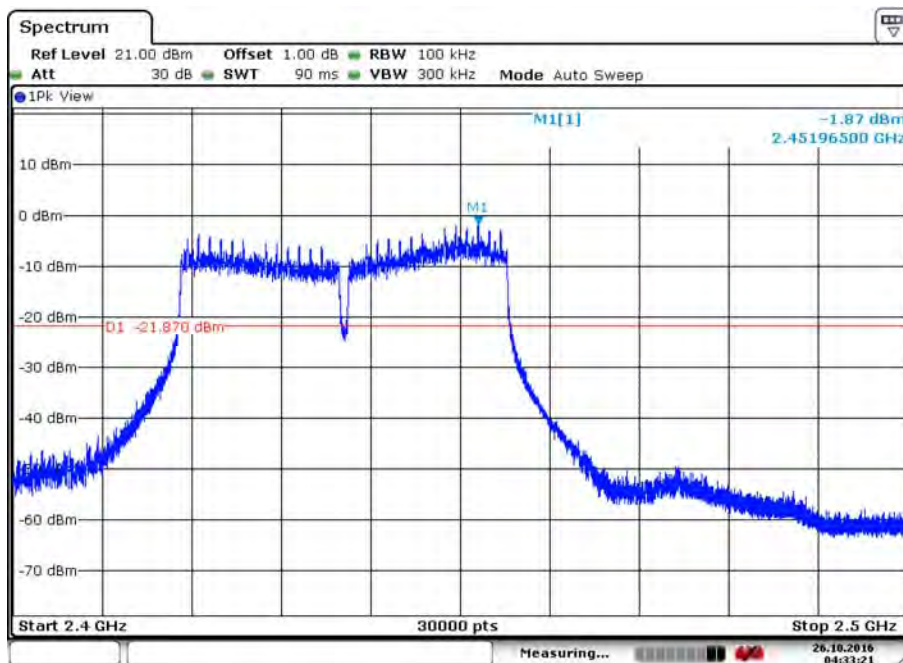




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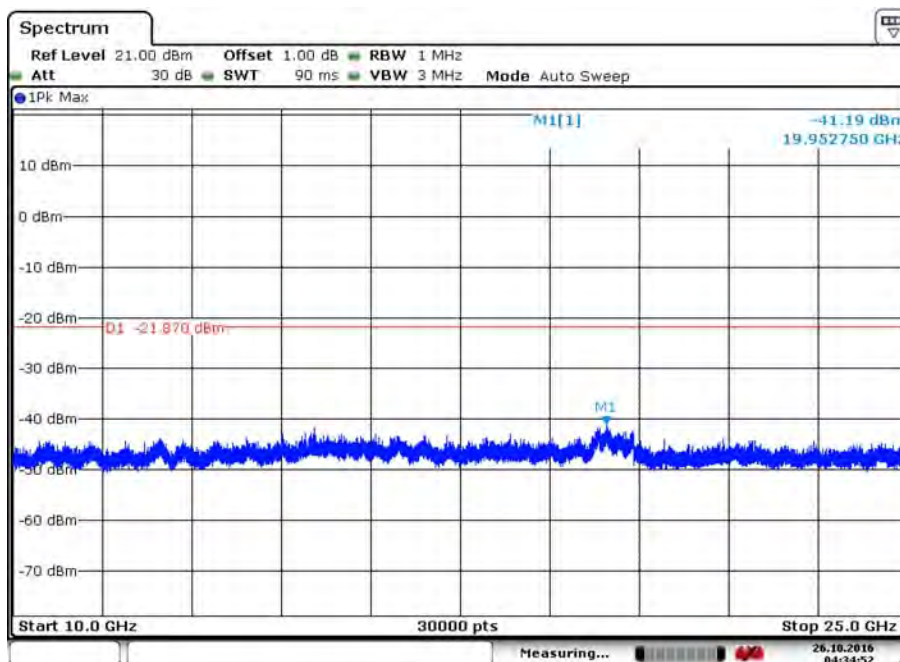
Test mode:	802.11n(HT40)	Test channel:	Middle
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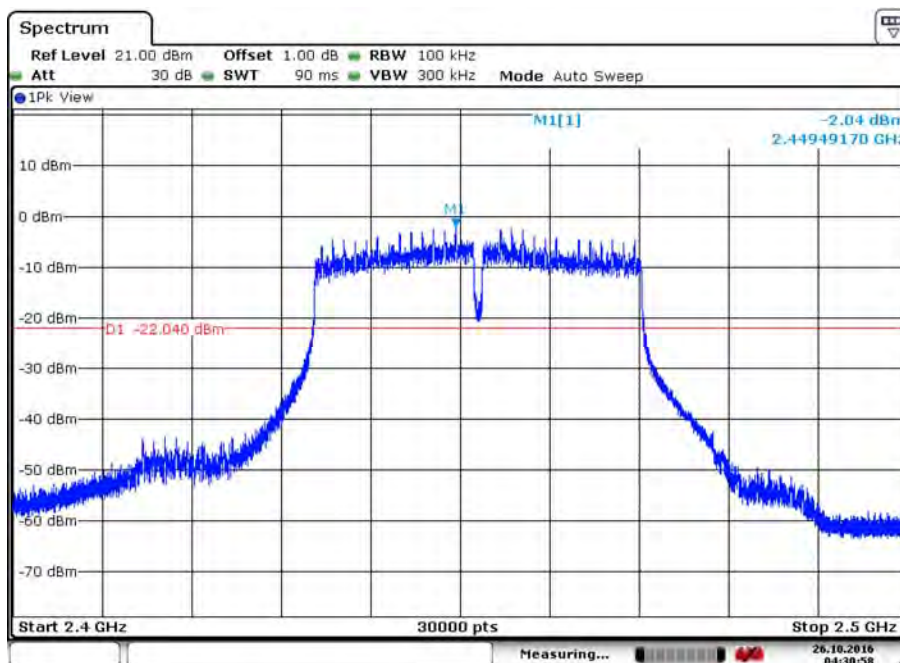


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Test mode:	802.11n(HT40)	Test channel:	Highest
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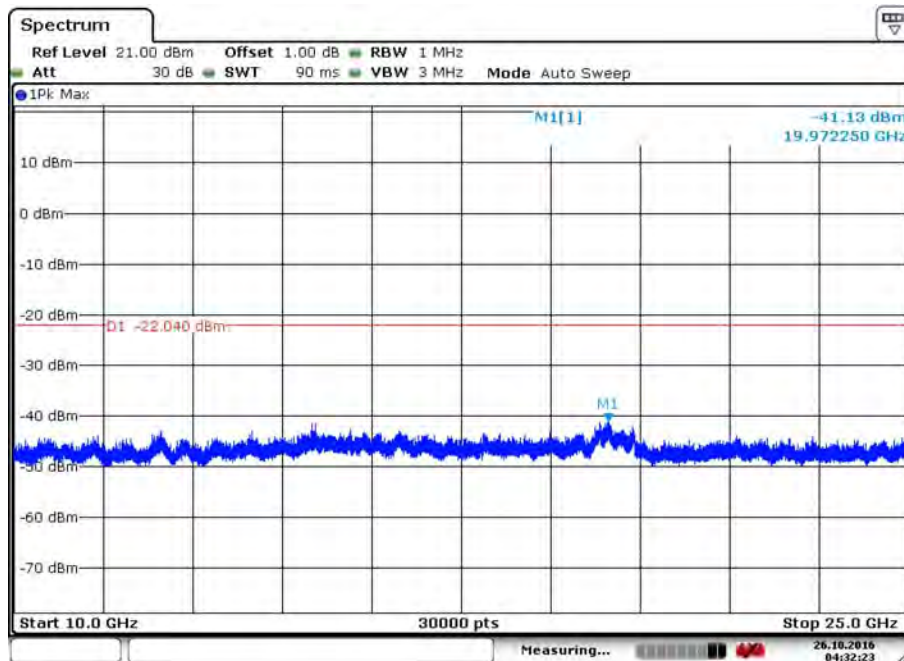
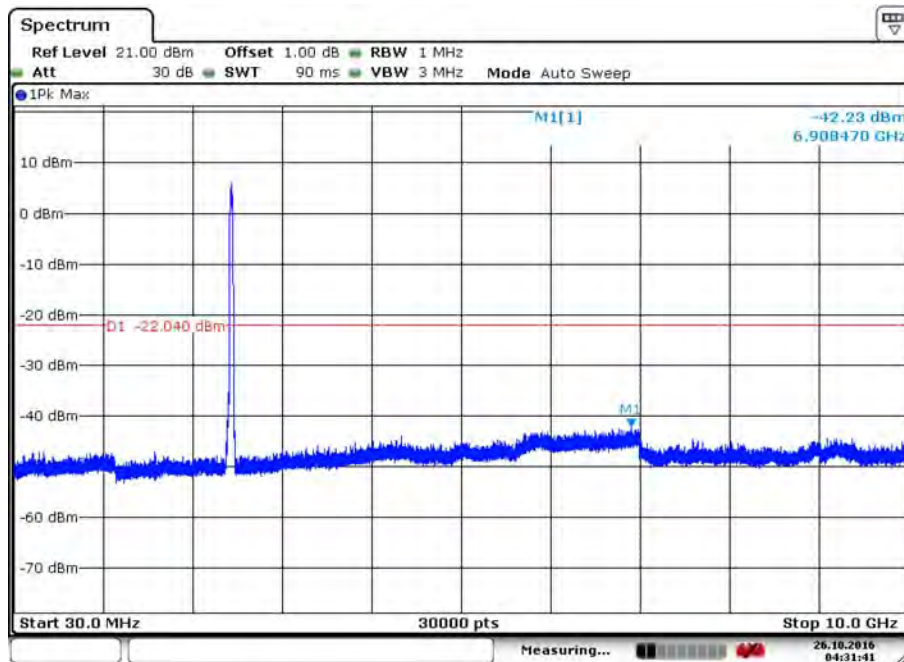




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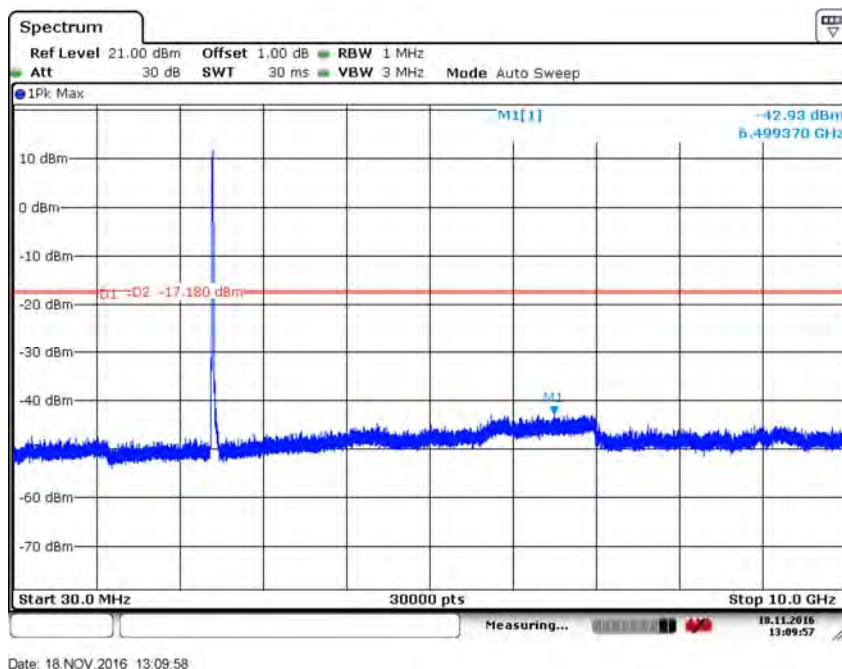
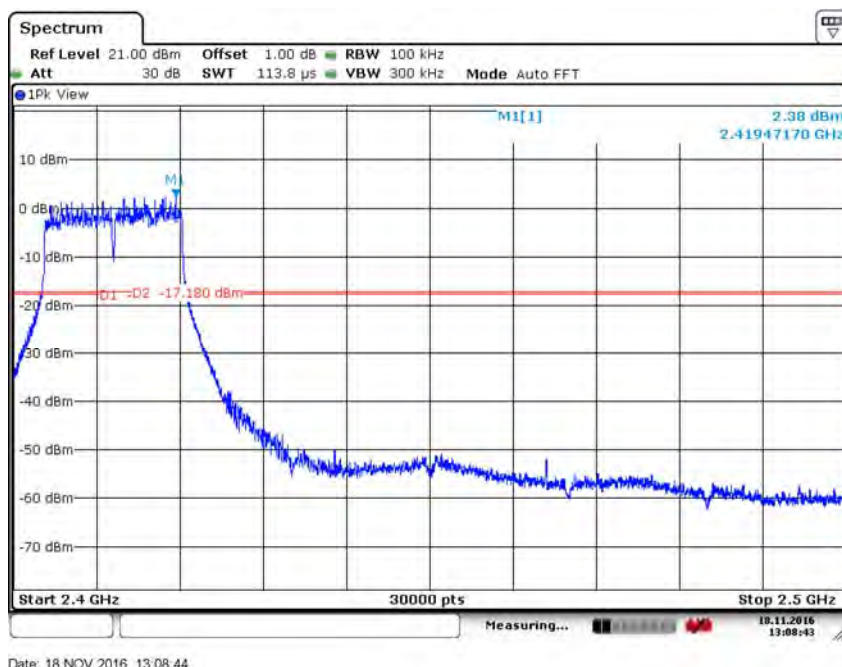


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Test mode:	802.11n(HT20)MIMO	Test channel:	Lowest
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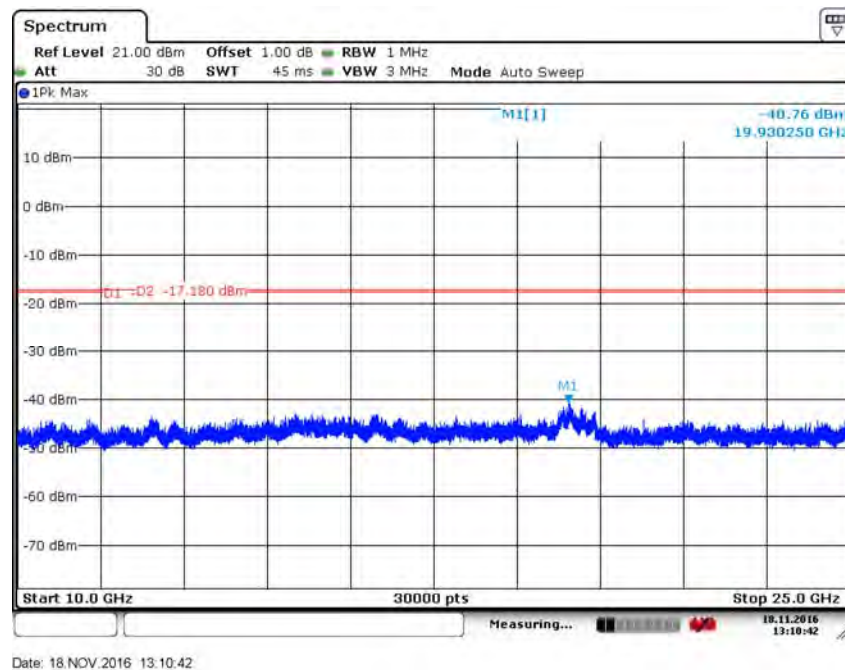




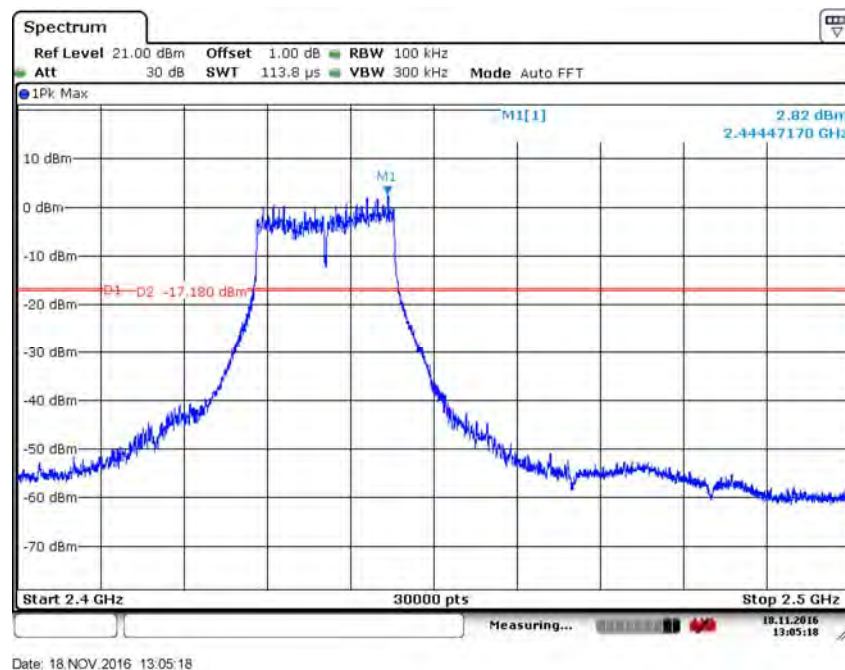
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Test mode:	802.11n(HT20)MIMO	Test channel:	Middle
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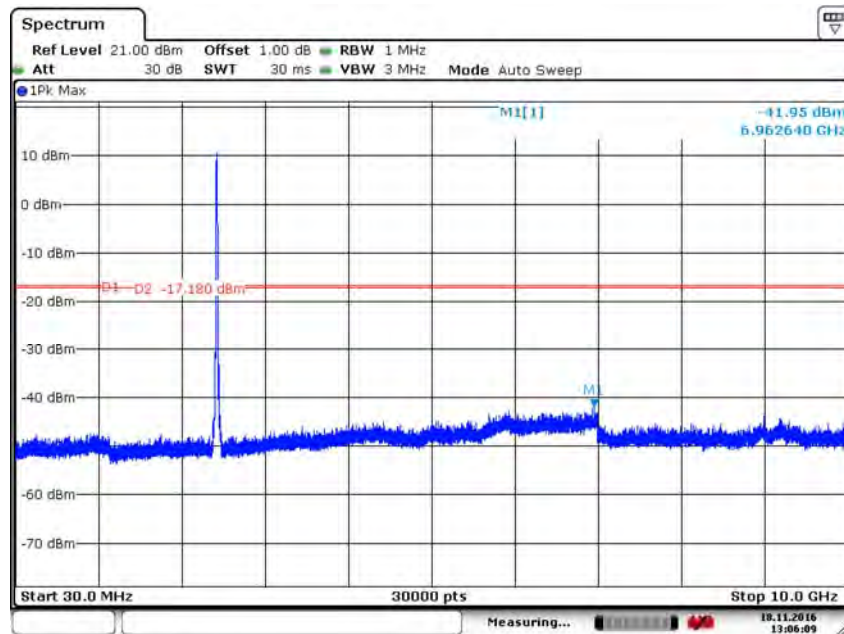




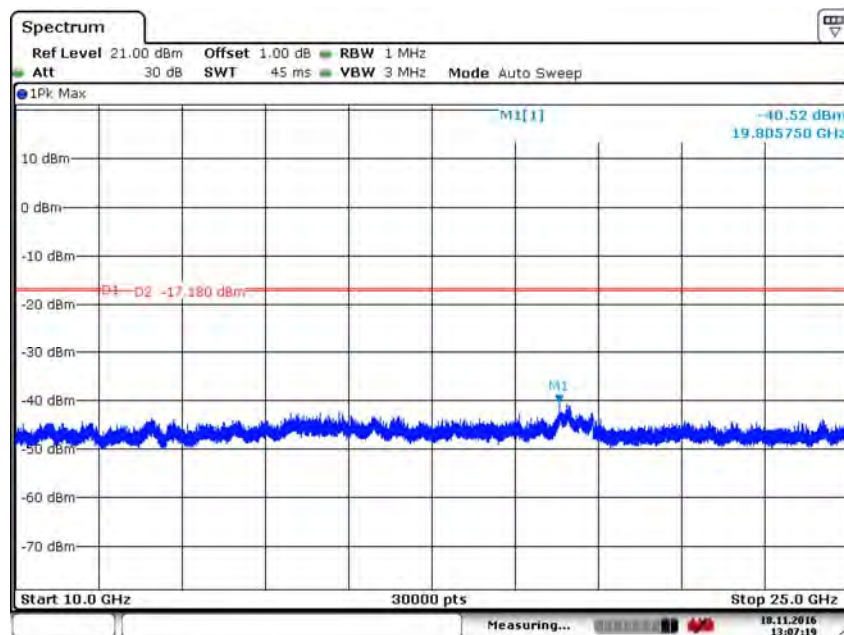
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Date: 18 NOV.2016 13:06:10



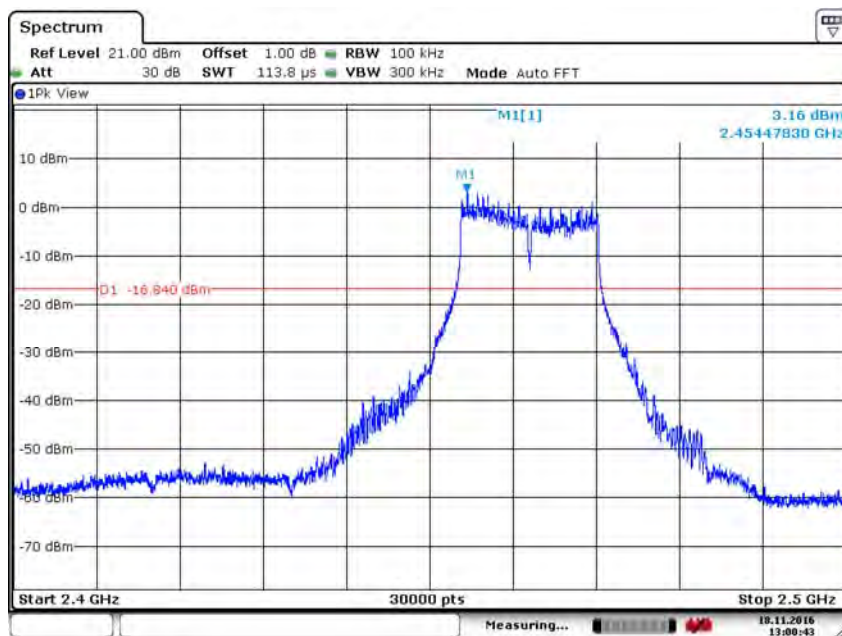
Date: 18 NOV.2016 13:07:20



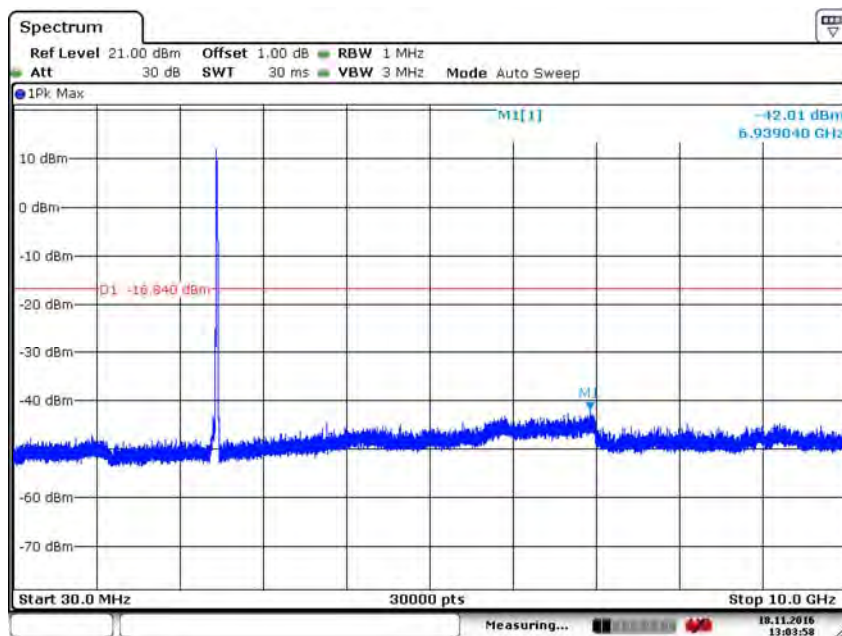
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Test mode:	802.11n(HT20)MIMO	Test channel:	Highest
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Date: 18.NOV.2016 13:00:43



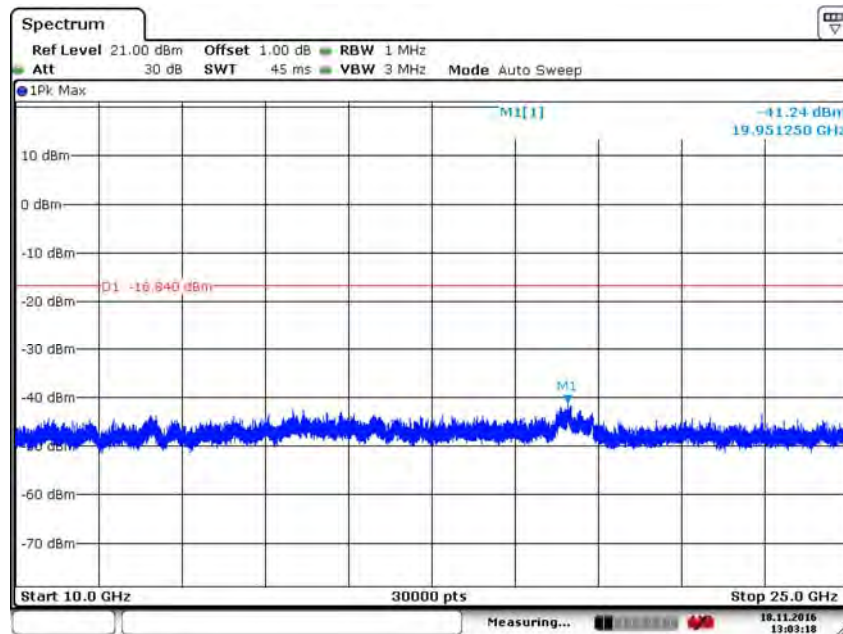
Date: 18.NOV.2016 13:03:58



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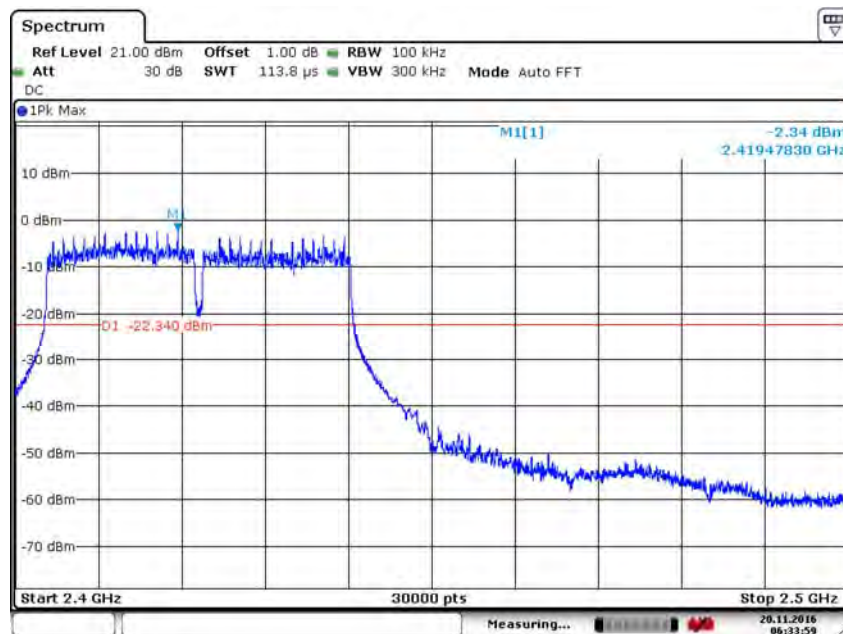
Report No.: SZEM161000852203

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Date: 18 NOV.2016 13:03:18

Test mode:	802.11n(HT40)MIMO	Test channel:	Lowest
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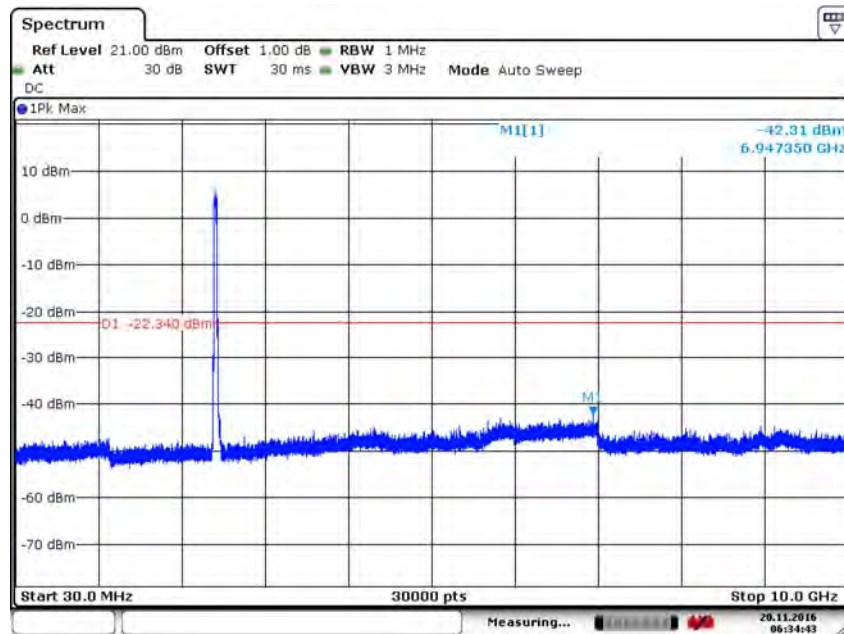
Date: 20 NOV.2016 06:33:59



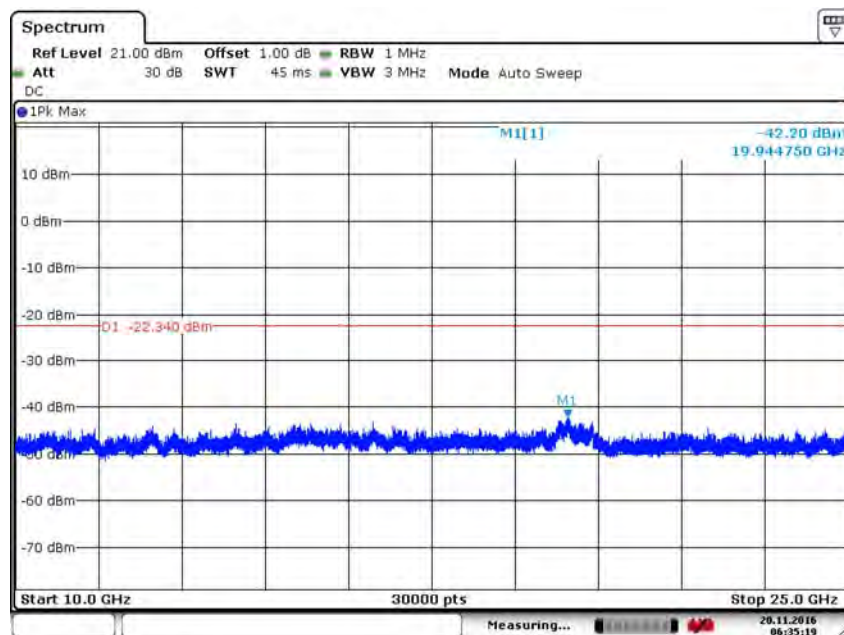
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Date: 20.NOV.2016 06:34:44



Date: 20.NOV.2016 06:35:20

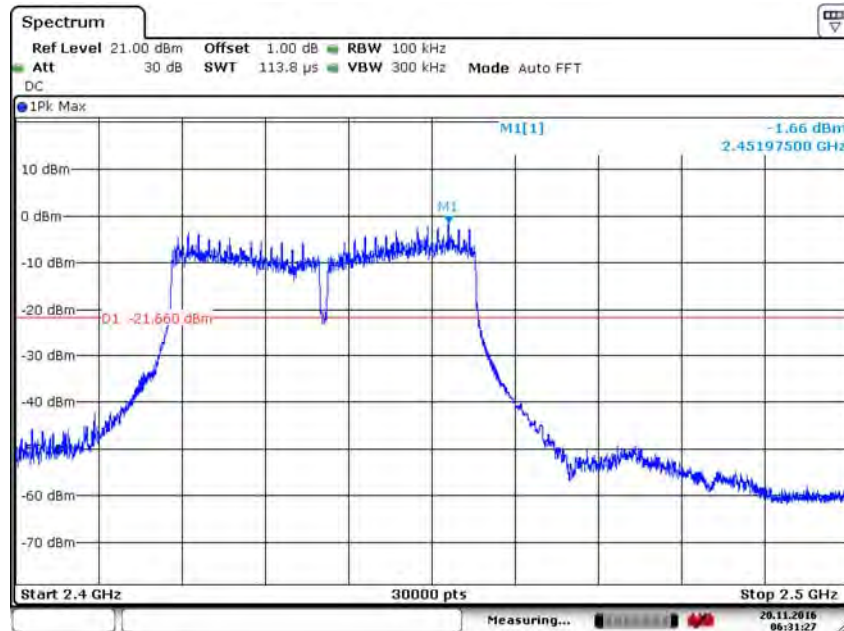


SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

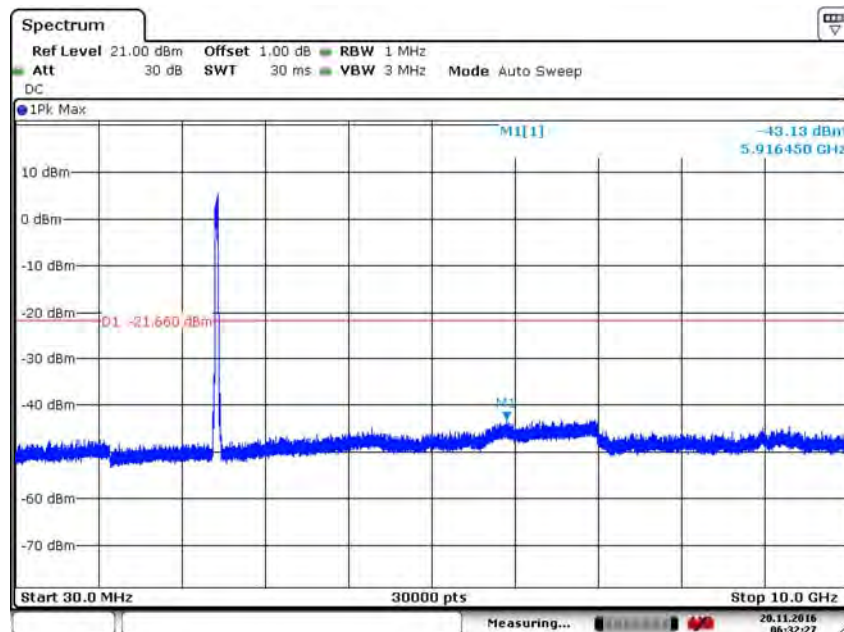
Report No.: SZEM161000852203

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Test mode:	802.11n(HT40)MIMO	Test channel:	Middle
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Date: 20.NOV.2016 06:31:27



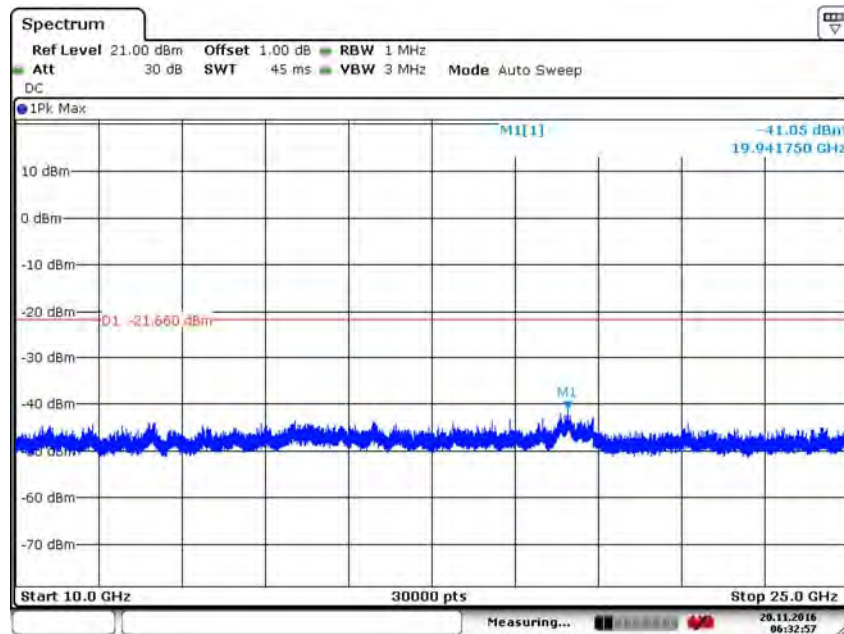
Date: 20.NOV.2016 06:32:27



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

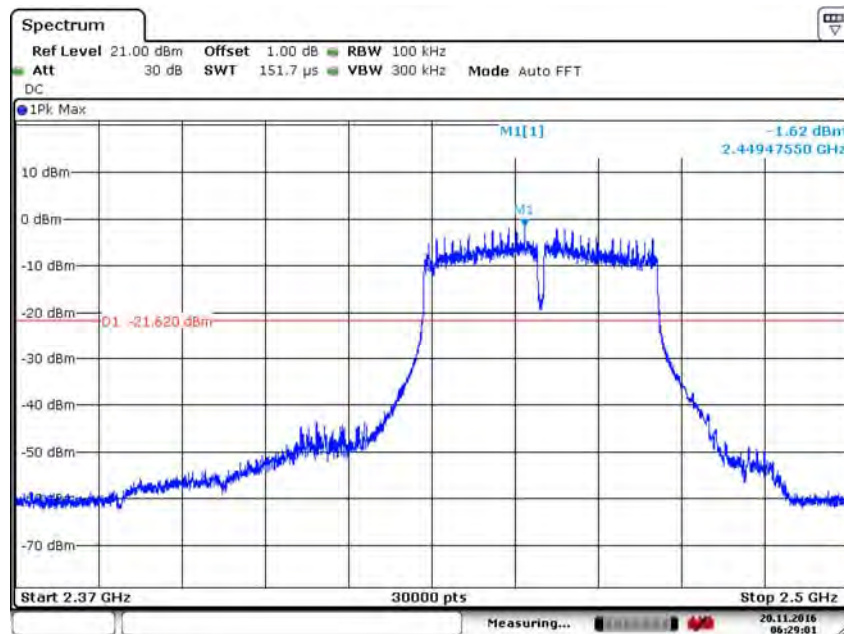
Report No.: SZEM161000852203

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Date: 20.NOV.2016 06:32:58

Test mode:	802.11n(HT40)MIMO	Test channel:	Highest
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Date: 20.NOV.2016 06:29:02