

TEST REPORT

Reference No..... : WTF20S04018829W001
FCC ID : W2X-AUR524
Applicant..... : HANGZHOU LINGFENG ELECTRONIC Co.,LTD
Address..... : No.1 Hetai Road, ZhongTai Street, Yuhang District, Hangzhou, Zhejiang, China
Manufacturer : The same as above
Address..... : The same as above
Product..... : STAGE ROUTER
Model(s) : AUR524/WRC-1
Brand Name : N/A
Standards..... : FCC CFR47 Part 15.247:2017
Date of Receipt sample : 2020-04-14
Date of Test : 2020-04-15 to 2020-05-25
Date of Issue..... : 2020-05-25
Test Result..... : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTF20S04018 829W001	2020-04-14	2020-04-15 to 2020-05- 25	2020-05-26	original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	STAGE ROUTER
Model(s):	AUR524/WRC-1
Model Description:	N/A
Wi-Fi Specification:	2.4G-802.11b/g/n HT20/n HT40 5G-802.11a/n/ac HT20 /n/ac HT40 /ac HT80
Hardware Version:	we1326v05
Software Version:	19.1101

4.2 Details of E.U.T.

Operation Frequency:	WiFi: 802.11b/g/n HT20: 2412~2462MHz 802.11n HT40: 2422~2452MHz
Max. RF output power:	WiFi(2.4G): 22.28dBm
Type of Modulation:	WiFi: CCK, OFDM
Antenna installation:	WiFi: internal permanent antenna
Antenna Gain:	WiFi(2.4G): 3.0dBi
Ratings:	AC 120V 60Hz

4.3 Channel List

WIFI

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	2	2417	3	2422	4	2427
5	2432	6	2437	7	2442	8	2447
9	2452	10	2457	11	2462	12	-

4.4 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

Test Items	Mode	Data Rate	Channel	TX/RX
Maximum Peak Output Power	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
Power Spectral Density	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
6dB Bandwidth	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
Band Edge	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX
Transmitter Spurious Emissions	802.11b	1 Mbps	1/6/11	TX
	802.11g	6 Mbps	1/6/11	TX
	802.11n HT20	MCS0	1/6/11	TX
	802.11n HT40	MCS0	3/6/9	TX

Note :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product .

4.5 Test Facility

The test facility has a test site registered with the following organizations:

ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.

Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

FCC Designation No.: CN1201. Test Firm Registration No.: 523476.

Waltek Services(Shenzhen) Co., Ltd. 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 number 523476, September 10, 2019.

5 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.247(d) 15.205(a) 15.209(a)	PASS
Conducted Spurious Emissions	15.247(d)	PASS
Conducted Emissions	15.207(a)	N/A
6dB Bandwidth	15.247(a)(2)	PASS
Maximum Peak Output Power	15.247(b)(3),(4)	PASS
Power Spectral Density	15.247(e)	PASS
Band Edge	15.247(d)	PASS
Antenna Requirement	15.203	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

6 Equipment Used during Test

6.1 Equipments List

Conducted Emissions Test Site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	100947	2019-09-17	2020-09-16
2.	LISN	R&S	ENV216	101215	2019-09-17	2020-09-16
3.	Cable	Top	TYPE16(3.5M)	-	2019-09-17	2020-09-16
Conducted Emissions Test Site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMI Test Receiver	R&S	ESCI	101155	2019-09-17	2020-09-16
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2019-09-17	2020-09-16
3.	Limiter	York	MTS-IMP-136	261115-001-0024	2019-09-17	2020-09-16
4.	Cable	LARGE	RF300	-	2019-09-17	2020-09-16
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Spectrum Analyzer	R&S	FSP	100091	2020-04-20	2021-04-19
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2020-04-20	2021-04-19
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2019-08-11	2020-08-10
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2019-09-17	2020-09-16
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2020-04-19	2021-04-18
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2020-04-20	2021-04-19
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2020-04-20	2021-04-19
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2020-04-20	2021-04-19
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	2020-04-20	2021-04-19
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2020-04-25	2021-04-24
3	Amplifier	Compliance direction systems inc	PAP-0203	22024	2020-04-20	2021-04-19
4	Cable	HUBER+SUHNER	CBL2	525178	2020-04-20	2021-04-19

RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	2019-09-17	2020-09-16
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	2019-09-17	2020-09-16
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	2019-09-17	2020-09-16

6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
/	/	/	/

6.3 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64 dB(AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Radio Frequency	± 1 x 10 ⁻⁷ Hz
RF Power	± 0.42 dB
RF Power Density	± 0.7dB
Conducted Spurious Emissions	± 2.76 dB (9kHz~26500MHz)
Confidence interval: 95%. Confidence factor:k=2	

6.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

7 Conducted Emission

Test Requirement: FCC CFR 47 Part 15 Section 15.207

Test Method: ANSI C63.10:2013

Test Result: PASS

Frequency Range: 150kHz to 30MHz

Class/Severity: Class B

Limit:

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

7.1 E.U.T. Operation

Operating Environment :

Temperature: 21.5 °C

Humidity: 51.9 % RH

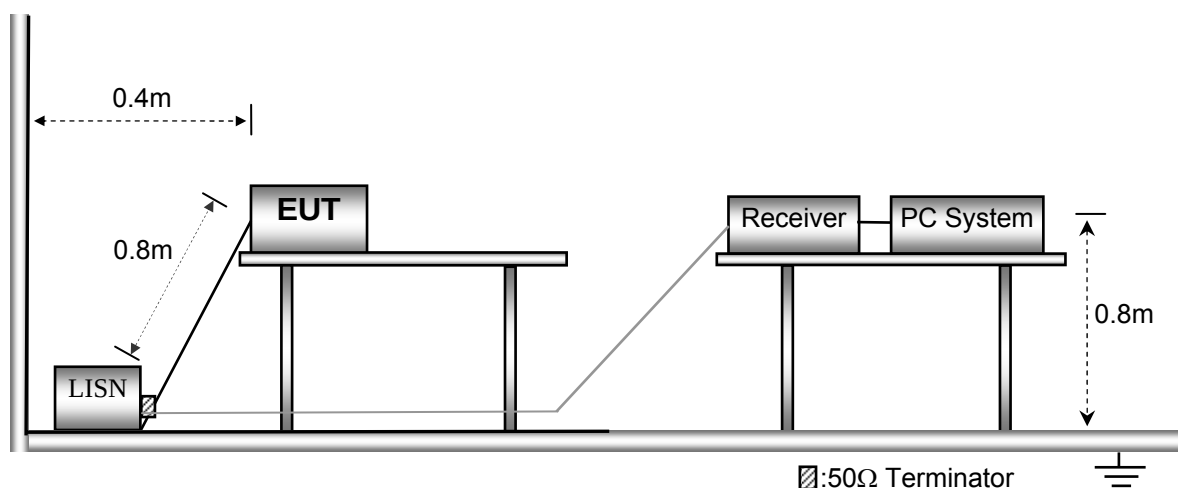
Atmospheric Pressure: 101.2kPa

EUT Operation :

The test was performed in TX transmitting mode, the worst data were shown in the report.

7.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10.



7.3 Measurement Description

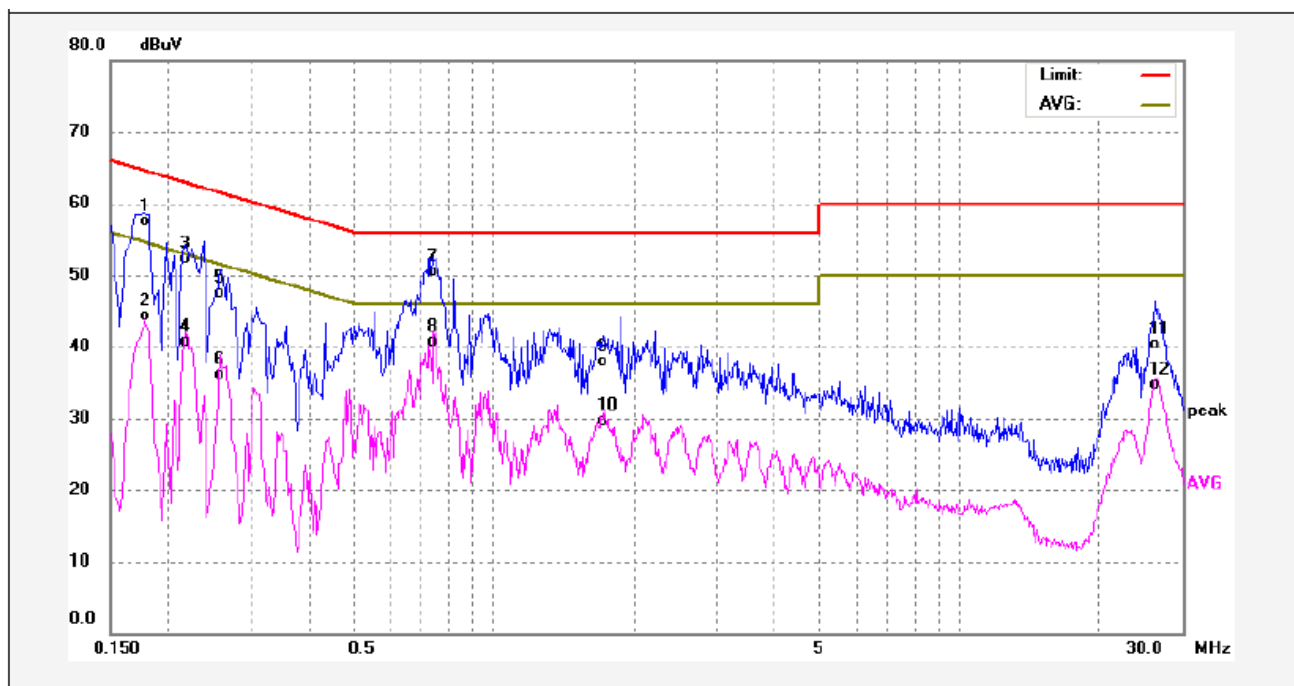
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

7.4 Conducted Emission Test Result

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

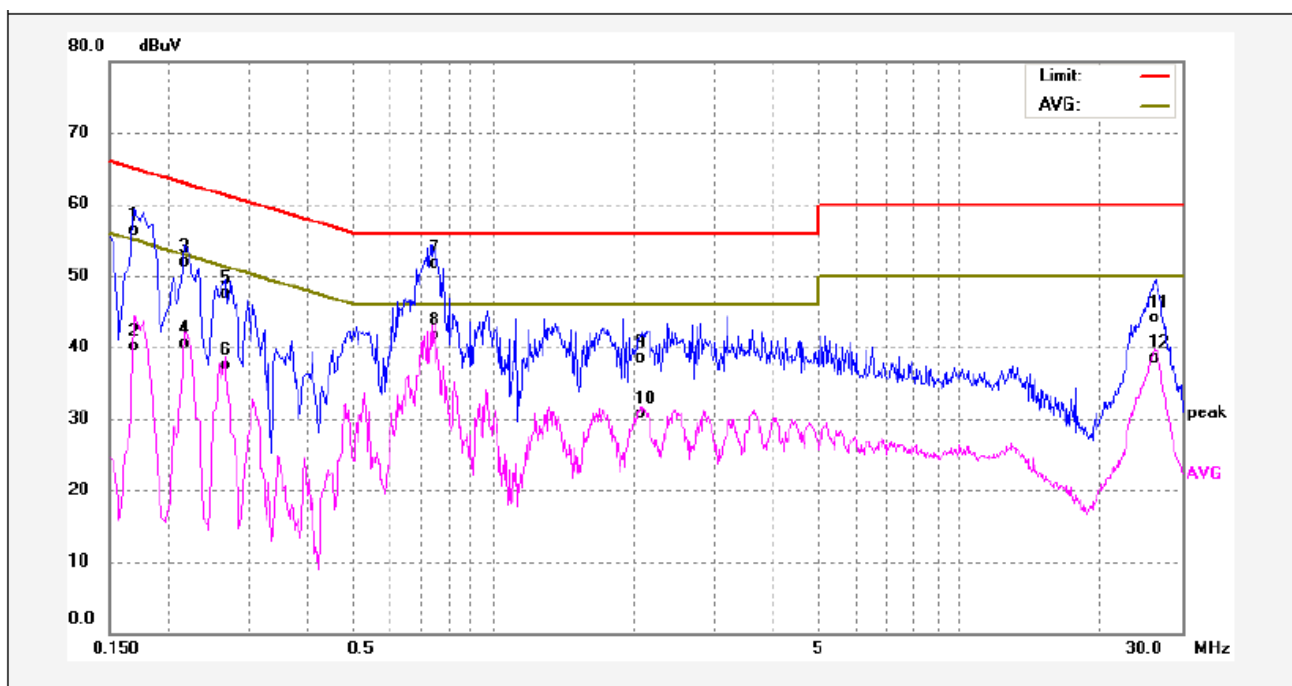
Worst Mode: 2.4G WIFI mode (802.11b mode low channel)

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1780	47.75	9.78	57.53	64.57	-7.04	QP	
2	0.1780	34.52	9.78	44.30	54.57	-10.27	AVG	
3	0.2180	42.48	9.77	52.25	62.89	-10.64	QP	
4	0.2180	30.90	9.77	40.67	52.89	-12.22	AVG	
5	0.2580	37.80	9.77	47.57	61.49	-13.92	QP	
6	0.2580	26.40	9.77	36.17	51.49	-15.32	AVG	
7	0.7420	40.57	9.84	50.41	56.00	-5.59	QP	
8	0.7420	30.87	9.84	40.71	46.00	-5.29	AVG	
9	1.7220	28.02	9.93	37.95	56.00	-18.05	QP	
10	1.7220	19.83	9.93	29.76	46.00	-16.24	AVG	
11	26.3700	29.97	10.35	40.32	60.00	-19.68	QP	
12	26.3700	24.40	10.35	34.75	50.00	-15.25	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Remark
1	0.1700	46.51	9.78	56.29	64.96	-8.67	QP	
2	0.1700	30.35	9.78	40.13	54.96	-14.83	AVG	
3	0.2180	42.21	9.77	51.98	62.89	-10.91	QP	
4	0.2180	30.72	9.77	40.49	52.89	-12.40	AVG	
5	0.2660	37.66	9.78	47.44	61.24	-13.80	QP	
6	0.2660	27.67	9.78	37.45	51.24	-13.79	AVG	
7	0.7500	41.96	9.84	51.80	56.00	-4.20	QP	
8	0.7500	31.94	9.84	41.78	46.00	-4.22	AVG	
9	2.0820	28.59	9.96	38.55	56.00	-17.45	QP	
10	2.0820	20.81	9.96	30.77	46.00	-15.23	AVG	
11	26.1940	33.74	10.35	44.09	60.00	-15.91	QP	
12	26.1940	28.12	10.35	38.47	50.00	-11.53	AVG	

8 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018;
ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

8.1 EUT Operation

Operating Environment :

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

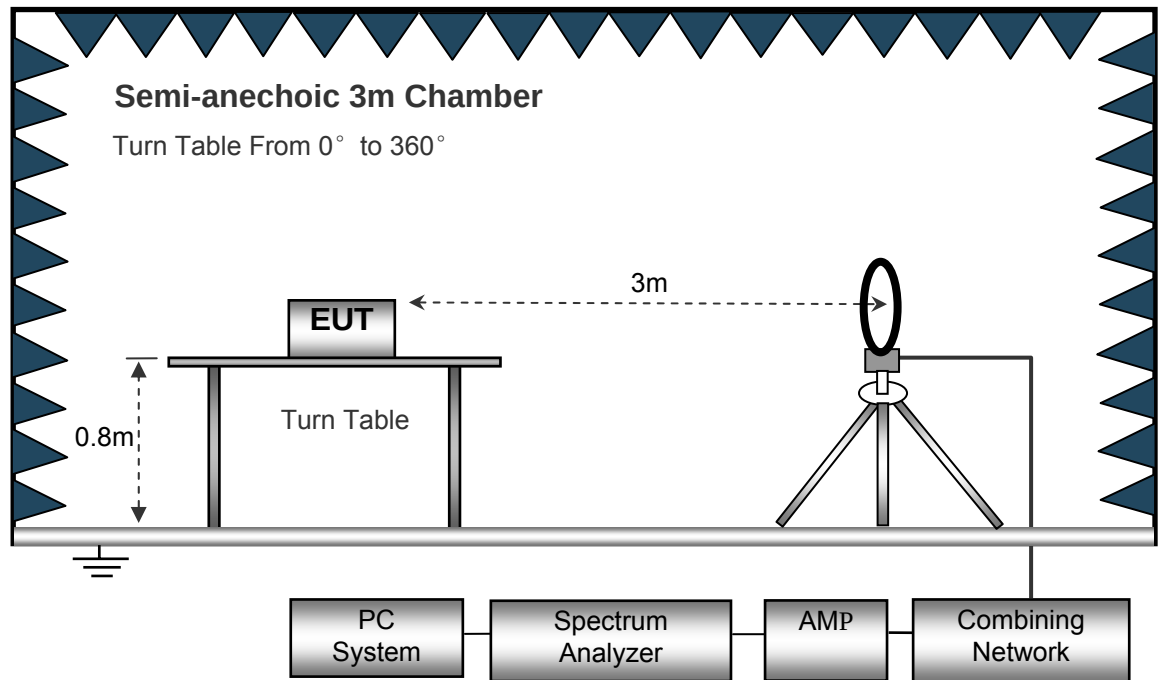
EUT Operation :

The test was performed in TX transmitting mode, the test data were shown in the report.

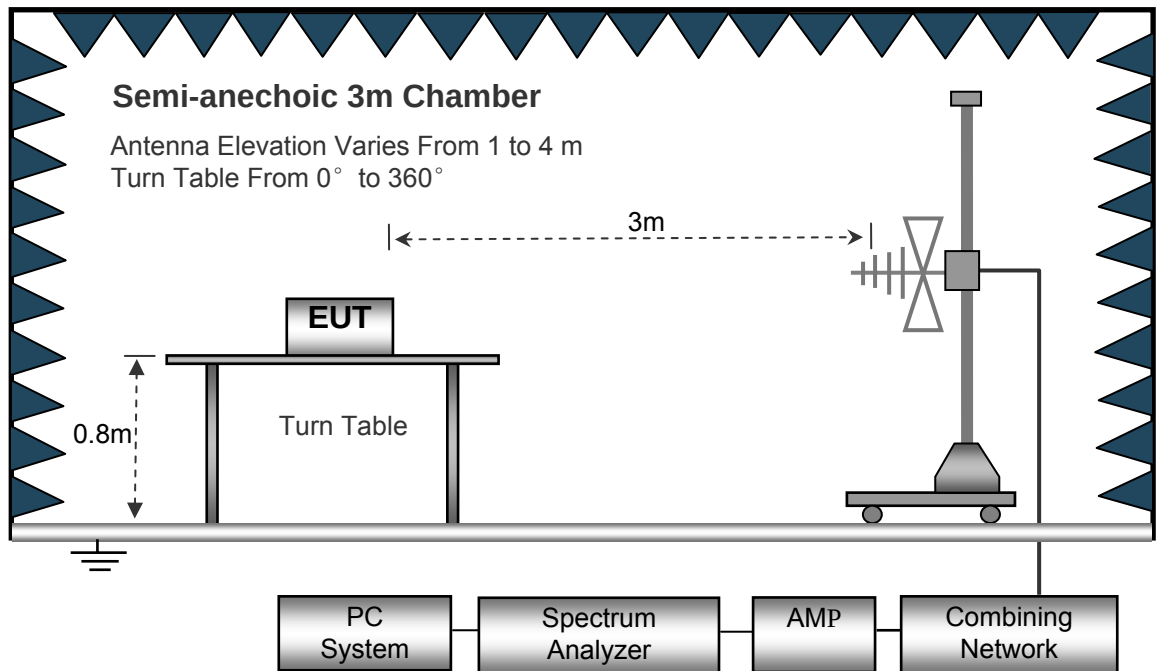
8.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

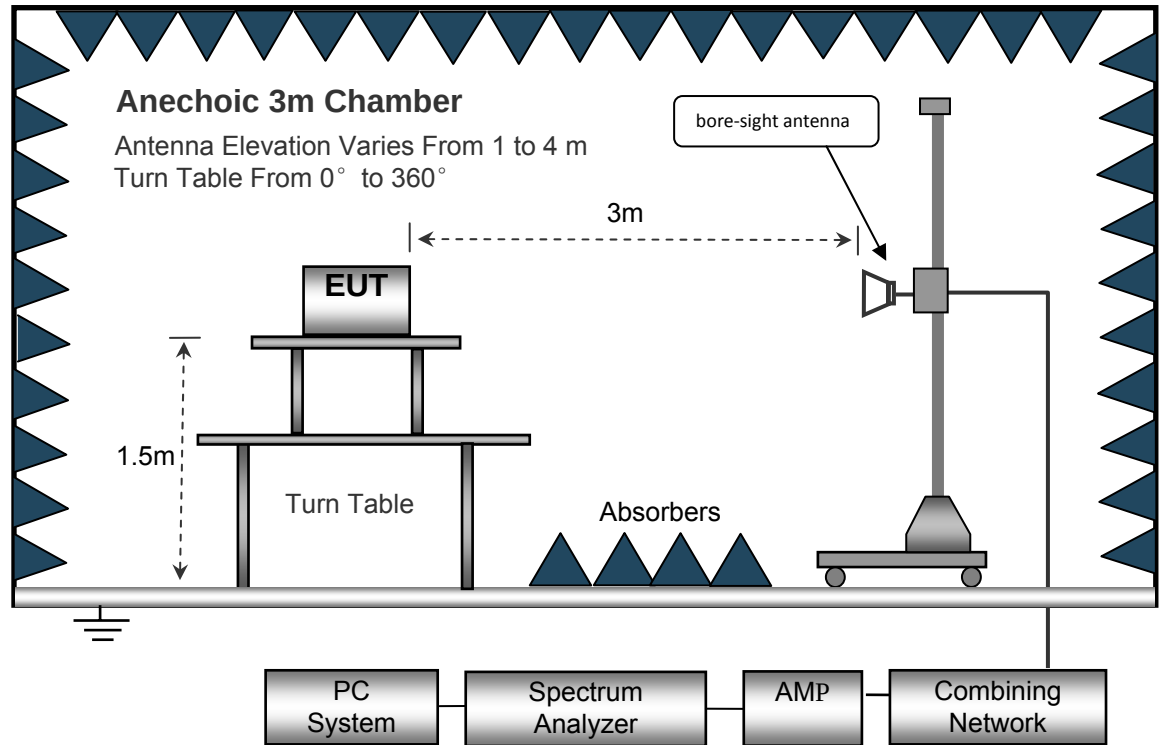
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



8.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed Auto
IF Bandwidth.....10kHz
Video Bandwidth.....10kHz
Resolution Bandwidth.....10kHz

30MHz ~ 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth.....100kHz
Video Bandwidth.....300kHz

Above 1GHz

Sweep Speed Auto
Detector PK
Resolution Bandwidth.....1MHz
Video Bandwidth.....3MHz
Detector Ave.
Resolution Bandwidth.....1MHz
Video Bandwidth.....10Hz

8.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in Z axis,so the worst data were shown as follow.
8. A 2.4GHz high –pass filter is used during radiated emissions above 1GHz measurement.

8.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

8.6 Summary of Test Results

Wifi:

Test Frequency: 9KHz~30MHz

Remark: only the worst data (802.11b/g/n Low channel mode) were recorded.

Frequency	Measurement results dBμV @3m	Detector PK/QP	Correct factor dB/m	Extrapolation factor dB	Measurement results (calculated) dBμV/m @30m	Limits dBμV/m @30m	Margin dB
(MHz)	Measurement results	Detector	Correct factor	Extrapolation factor	Measurement results (calculated)	Limits	Margin
ANT1+ANT2 802.11b							
6.021	25.30	QP	21.84	40.00	7.14	29.54	-22.40
15.730	24.87	QP	21.35	40.00	6.22	29.54	-23.32
25.680	25.06	QP	20.67	40.00	5.73	29.54	-23.81
ANT1+ANT2 802.11g							
6.021	24.15	QP	21.84	40.00	5.99	29.54	-23.55
15.730	25.86	QP	21.35	40.00	7.21	29.54	-22.33
25.680	25.33	QP	20.67	40.00	6.00	29.54	-23.54
ANT1+ANT2 802.11n(HT20)							
6.021	24.06	QP	21.84	40.00	5.90	29.54	-23.64
15.730	25.82	QP	21.35	40.00	7.17	29.54	-22.37
25.680	24.55	QP	20.67	40.00	5.22	29.54	-24.32
ANT1+ANT2 802.11n(HT40)							
6.021	24.56	QP	21.84	40.00	6.40	29.54	-23.14
15.730	25.13	QP	21.35	40.00	6.48	29.54	-23.06
25.680	24.66	QP	20.67	40.00	5.33	29.54	-24.21

Test Frequency : 30MHz ~ 8GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11b: Low Channel 2412MHz									
223.45	41.76	QP	151	1.9	H	-11.62	30.14	46.00	-15.86
223.45	36.44	QP	20	1.2	V	-11.62	24.82	46.00	-21.18
4824.00	49.30	PK	110	2.0	V	-1.06	48.24	74.00	-25.76
4824.00	44.39	Ave	110	2.0	V	-1.06	43.33	54.00	-10.67
7236.00	41.28	PK	107	1.8	H	1.33	42.61	74.00	-31.39
7236.00	42.06	Ave	107	1.8	H	1.33	43.39	54.00	-10.61
2316.90	45.67	PK	248	1.1	V	-13.19	32.48	74.00	-41.52
2316.90	37.88	Ave	248	1.1	V	-13.19	24.69	54.00	-29.31
2363.70	43.30	PK	59	1.7	H	-13.14	30.16	74.00	-43.84
2363.70	36.22	Ave	59	1.7	H	-13.14	23.08	54.00	-30.92
2498.49	43.11	PK	283	1.6	V	-13.08	30.03	74.00	-43.97
2498.49	38.11	Ave	283	1.6	V	-13.08	25.03	54.00	-28.97

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11b: Middle Channel 2437MHz									
223.45	42.61	QP	132	1.1	H	-11.62	30.99	46.00	-15.01
223.45	36.12	QP	77	1.2	V	-11.62	24.50	46.00	-21.50
4874.00	47.99	PK	90	1.3	V	-0.62	47.37	74.00	-26.63
4874.00	45.73	Ave	90	1.3	V	-0.62	45.11	54.00	-8.89
7311.00	41.74	PK	208	1.9	H	2.21	43.95	74.00	-30.05
7311.00	42.54	Ave	208	1.9	H	2.21	44.75	54.00	-9.25
2331.66	46.69	PK	247	1.3	V	-13.19	33.50	74.00	-40.50
2331.66	39.94	Ave	247	1.3	V	-13.19	26.75	54.00	-27.25
2364.62	44.97	PK	108	1.1	H	-13.14	31.83	74.00	-42.17
2364.62	38.56	Ave	108	1.1	H	-13.14	25.42	54.00	-28.58
2496.11	44.82	PK	314	2.0	V	-13.08	31.74	74.00	-42.26
2496.11	36.98	Ave	314	2.0	V	-13.08	23.90	54.00	-30.10

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11b: High Channel 2462MHz									
223.45	42.72	QP	111	1.2	H	-11.62	31.10	46.00	-14.90
223.45	36.63	QP	98	1.5	V	-11.62	25.01	46.00	-20.99
4924.00	47.32	PK	324	1.8	V	-0.24	47.08	74.00	-26.92
4924.00	44.75	Ave	324	1.8	V	-0.24	44.51	54.00	-9.49
7386.00	41.42	PK	206	1.8	H	2.84	44.26	74.00	-29.74
7386.00	44.00	Ave	206	1.8	H	2.84	46.84	54.00	-7.16
2316.98	46.11	PK	114	1.6	V	-13.19	32.92	74.00	-41.08
2316.98	38.53	Ave	114	1.6	V	-13.19	25.34	54.00	-28.66
2366.11	44.19	PK	241	2.0	H	-13.14	31.05	74.00	-42.95
2366.11	38.26	Ave	241	2.0	H	-13.14	25.12	54.00	-28.88
2484.59	42.27	PK	140	1.0	V	-13.08	29.19	74.00	-44.81
2484.59	36.54	Ave	140	1.0	V	-13.08	23.46	54.00	-30.54

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11g: Low Channel 2412MHz									
223.45	43.28	QP	179	1.2	H	-11.62	31.66	46.00	-14.34
223.45	37.46	QP	137	1.6	V	-11.62	25.84	46.00	-20.16
4824.00	47.26	PK	115	1.3	V	-1.06	46.20	74.00	-27.80
4824.00	45.28	Ave	115	1.3	V	-1.06	44.22	54.00	-9.78
7236.00	41.95	PK	65	1.6	H	1.33	43.28	74.00	-30.72
7236.00	44.47	Ave	65	1.6	H	1.33	45.80	54.00	-8.20
2315.84	46.92	PK	16	1.7	V	-13.19	33.73	74.00	-40.27
2315.84	38.48	Ave	16	1.7	V	-13.19	25.29	54.00	-28.71
2384.73	43.86	PK	171	1.6	H	-13.14	30.72	74.00	-43.28
2384.73	37.84	Ave	171	1.6	H	-13.14	24.70	54.00	-29.30
2484.38	43.28	PK	210	1.8	V	-13.08	30.20	74.00	-43.80
2484.38	38.60	Ave	210	1.8	V	-13.08	25.52	54.00	-28.48

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11g: Middle Channel 2437MHz									
223.45	42.01	QP	124	1.4	H	-11.62	30.39	46.00	-15.61
223.45	36.38	QP	8	1.8	V	-11.62	24.76	46.00	-21.24
4874.00	47.86	PK	73	1.2	V	-0.62	47.24	74.00	-26.76
4874.00	44.15	Ave	73	1.2	V	-0.62	43.53	54.00	-10.47
7311.00	43.19	PK	334	1.0	H	2.21	45.40	74.00	-28.60
7311.00	43.44	Ave	334	1.0	H	2.21	45.65	54.00	-8.35
2318.14	45.24	PK	233	1.4	V	-13.19	32.05	74.00	-41.95
2318.14	39.22	Ave	233	1.4	V	-13.19	26.03	54.00	-27.97
2383.78	42.32	PK	126	1.9	H	-13.14	29.18	74.00	-44.82
2383.78	38.46	Ave	126	1.9	H	-13.14	25.32	54.00	-28.68
2496.25	42.71	PK	25	1.2	V	-13.08	29.63	74.00	-44.37
2496.25	38.39	Ave	25	1.2	V	-13.08	25.31	54.00	-28.69

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11g: High Channel 2462MHz									
223.45	42.42	QP	229	1.3	H	-11.62	30.80	46.00	-15.20
223.45	35.56	QP	42	1.5	V	-11.62	23.94	46.00	-22.06
4924.00	47.96	PK	75	1.2	V	-0.24	47.72	74.00	-26.28
4924.00	44.84	Ave	75	1.2	V	-0.24	44.60	54.00	-9.40
7386.00	41.71	PK	352	1.8	H	2.84	44.55	74.00	-29.45
7386.00	42.17	Ave	352	1.8	H	2.84	45.01	54.00	-8.99
2342.19	45.04	PK	196	1.3	V	-13.19	31.85	74.00	-42.15
2342.19	37.80	Ave	196	1.3	V	-13.19	24.61	54.00	-29.39
2369.67	43.01	PK	178	1.4	H	-13.14	29.87	74.00	-44.13
2369.67	36.45	Ave	178	1.4	H	-13.14	23.31	54.00	-30.69
2488.65	42.62	PK	30	1.6	V	-13.08	29.54	74.00	-44.46
2488.65	38.69	Ave	30	1.6	V	-13.08	25.61	54.00	-28.39

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11n20: Low Channel 2412MHz									
223.45	42.61	QP	131	1.4	H	-11.62	30.99	46.00	-15.01
223.45	35.21	QP	70	1.5	V	-11.62	23.59	46.00	-22.41
4824.00	48.58	PK	329	1.6	V	-1.06	47.52	74.00	-26.48
4824.00	44.78	Ave	329	1.6	V	-1.06	43.72	54.00	-10.28
7236.00	41.80	PK	136	1.7	H	1.33	43.13	74.00	-30.87
7236.00	41.27	Ave	136	1.7	H	1.33	42.60	54.00	-11.40
2341.75	46.28	PK	76	1.5	V	-13.19	33.09	74.00	-40.91
2341.75	38.19	Ave	76	1.5	V	-13.19	25.00	54.00	-29.00
2376.64	44.88	PK	61	1.1	H	-13.14	31.74	74.00	-42.26
2376.64	36.87	Ave	61	1.1	H	-13.14	23.73	54.00	-30.27
2495.79	44.40	PK	301	1.3	V	-13.08	31.32	74.00	-42.68
2495.79	36.76	Ave	301	1.3	V	-13.08	23.68	54.00	-30.32

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11n20: Middle Channel 2437MHz									
223.45	41.93	QP	349	2.0	H	-11.62	30.31	46.00	-15.69
223.45	35.51	QP	108	1.7	V	-11.62	23.89	46.00	-22.11
4874.00	47.30	PK	259	1.2	V	-0.62	46.68	74.00	-27.32
4874.00	43.59	Ave	259	1.2	V	-0.62	42.97	54.00	-11.03
7311.00	42.85	PK	51	1.3	H	2.21	45.06	74.00	-28.94
7311.00	40.35	Ave	51	1.3	H	2.21	42.56	54.00	-11.44
2318.36	45.96	PK	243	1.2	V	-13.19	32.77	74.00	-41.23
2318.36	37.64	Ave	243	1.2	V	-13.19	24.45	54.00	-29.55
2383.42	43.75	PK	203	1.3	H	-13.14	30.61	74.00	-43.39
2383.42	36.51	Ave	203	1.3	H	-13.14	23.37	54.00	-30.63
2483.85	43.10	PK	354	1.9	V	-13.08	30.02	74.00	-43.98
2483.85	36.24	Ave	354	1.9	V	-13.08	23.16	54.00	-30.84

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11n20: High Channel 2462MHz									
223.45	42.36	QP	245	1.1	H	-11.62	30.74	46.00	-15.26
223.45	35.86	QP	184	1.2	V	-11.62	24.24	46.00	-21.76
4924.00	47.93	PK	110	1.8	V	-0.24	47.69	74.00	-26.31
4924.00	43.90	Ave	110	1.8	V	-0.24	43.66	54.00	-10.34
7386.00	43.47	PK	105	1.4	H	2.84	46.31	74.00	-27.69
7386.00	41.72	Ave	105	1.4	H	2.84	44.56	54.00	-9.44
2311.61	45.18	PK	332	2.0	V	-13.19	31.99	74.00	-42.01
2311.61	37.50	Ave	332	2.0	V	-13.19	24.31	54.00	-29.69
2365.03	43.81	PK	135	1.6	H	-13.14	30.67	74.00	-43.33
2365.03	36.43	Ave	135	1.6	H	-13.14	23.29	54.00	-30.71
2497.79	43.54	PK	8	1.5	V	-13.08	30.46	74.00	-43.54
2497.79	38.23	Ave	8	1.5	V	-13.08	25.15	54.00	-28.85

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11n40: Low Channel 2422MHz									
223.45	42.61	QP	63	1.6	H	-11.62	30.99	46.00	-15.01
223.45	36.53	QP	6	1.4	V	-11.62	24.91	46.00	-21.09
4844.00	46.66	PK	43	1.5	V	-1.06	45.60	74.00	-28.40
4844.00	41.31	Ave	43	1.5	V	-1.06	40.25	54.00	-13.75
7266.00	41.69	PK	220	1.4	H	1.33	43.02	74.00	-30.98
7266.00	39.41	Ave	220	1.4	H	1.33	40.74	54.00	-13.26
2318.83	46.88	PK	79	1.6	V	-13.19	33.69	74.00	-40.31
2318.83	39.29	Ave	79	1.6	V	-13.19	26.10	54.00	-27.90
2372.77	42.06	PK	40	1.5	H	-13.14	28.92	74.00	-45.08
2372.77	37.39	Ave	40	1.5	H	-13.14	24.25	54.00	-29.75
2498.17	43.46	PK	343	1.5	V	-13.08	30.38	74.00	-43.62
2498.17	38.85	Ave	343	1.5	V	-13.08	25.77	54.00	-28.23

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11n40: Middle Channel 2437MHz									
223.45	43.60	QP	305	1.9	H	-11.62	31.98	46.00	-14.02
223.45	36.88	QP	259	1.7	V	-11.62	25.26	46.00	-20.74
4874.00	46.53	PK	12	1.9	V	-0.62	45.91	74.00	-28.09
4874.00	40.34	Ave	12	1.9	V	-0.62	39.72	54.00	-14.28
7311.00	41.26	PK	266	1.8	H	2.21	43.47	74.00	-30.53
7311.00	39.39	Ave	266	1.8	H	2.21	41.60	54.00	-12.40
2319.11	46.21	PK	57	1.1	V	-13.19	33.02	74.00	-40.98
2319.11	38.19	Ave	57	1.1	V	-13.19	25.00	54.00	-29.00
2370.15	42.50	PK	131	1.9	H	-13.14	29.36	74.00	-44.64
2370.15	36.30	Ave	131	1.9	H	-13.14	23.16	54.00	-30.84
2487.52	43.90	PK	213	1.3	V	-13.08	30.82	74.00	-43.18
2487.52	38.01	Ave	213	1.3	V	-13.08	24.93	54.00	-29.07

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	FCC Part 15.247/209/205	
				Height	Polar			Limit	Margin
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
ANT1+ANT2 11n40: High Channel 2452MHz									
223.45	44.40	QP	0	1.3	H	-11.62	32.78	46.00	-13.22
223.45	37.80	QP	332	1.9	V	-11.62	26.18	46.00	-19.82
4904.00	46.72	PK	130	1.5	V	-0.24	46.48	74.00	-27.52
4904.00	39.77	Ave	130	1.5	V	-0.24	39.53	54.00	-14.47
7356.00	40.61	PK	249	1.4	H	2.84	43.45	74.00	-30.55
7356.00	39.15	Ave	249	1.4	H	2.84	41.99	54.00	-12.01
2331.26	45.00	PK	47	1.3	V	-13.19	31.81	74.00	-42.19
2331.26	38.96	Ave	47	1.3	V	-13.19	25.77	54.00	-28.23
2363.22	42.36	PK	11	1.6	H	-13.14	29.22	74.00	-44.78
2363.22	37.36	Ave	11	1.6	H	-13.14	24.22	54.00	-29.78
2489.00	43.84	PK	333	1.4	V	-13.08	30.76	74.00	-43.24
2489.00	36.18	Ave	333	1.4	V	-13.08	23.10	54.00	-30.90

Test Frequency: 8GHz~25GHz

The measurements were more than 20 dB below the limit and not reported.

9 Conducted Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018;
ANSI C63.10:2013

Test Result: PASS

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

9.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:
 - a) Set instrument center frequency to DTS channel center frequency.
 - b) Set the span to _ 1.5 times the DTS bandwidth.
 - c) Set the RBW = 100 kHz.
 - d) Set the VBW _ $[3 \times \text{RBW}]$.
 - e) Detector = peak.
 - f) Sweep time = auto couple.
 - g) Trace mode = max hold.
 - h) Allow trace to fully stabilize.
 - i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

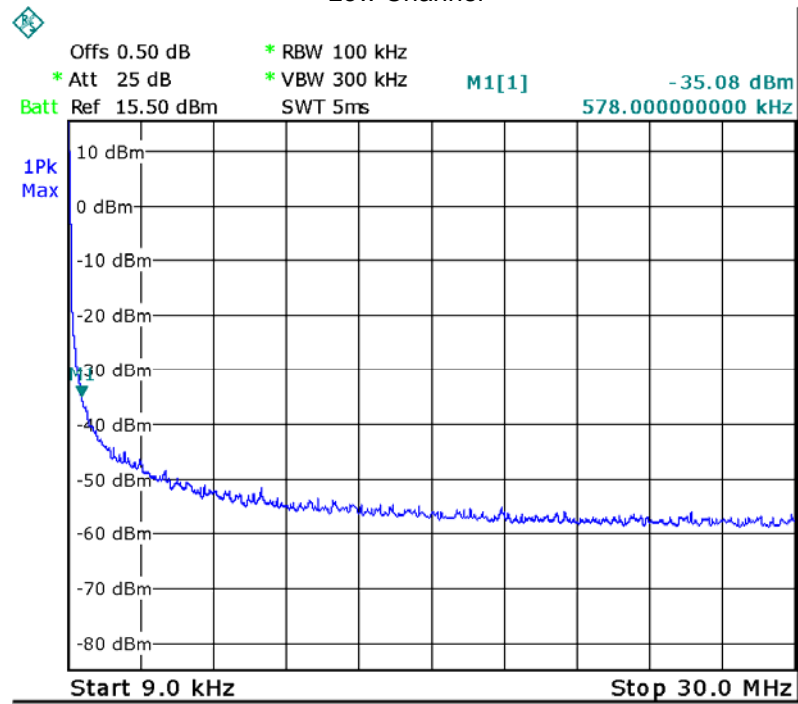
9.2 Test Result

9KHz – 30MHz

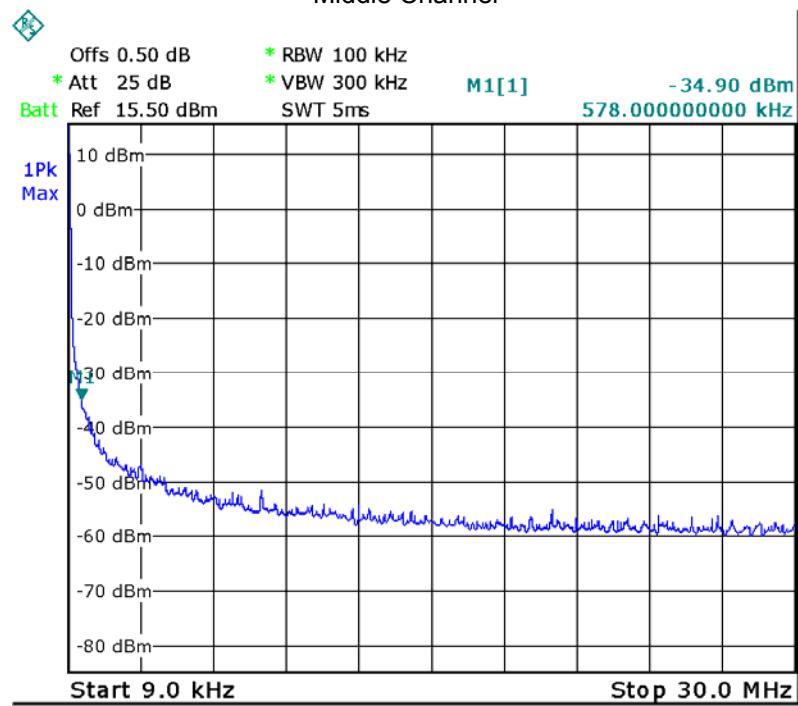
ANT 1

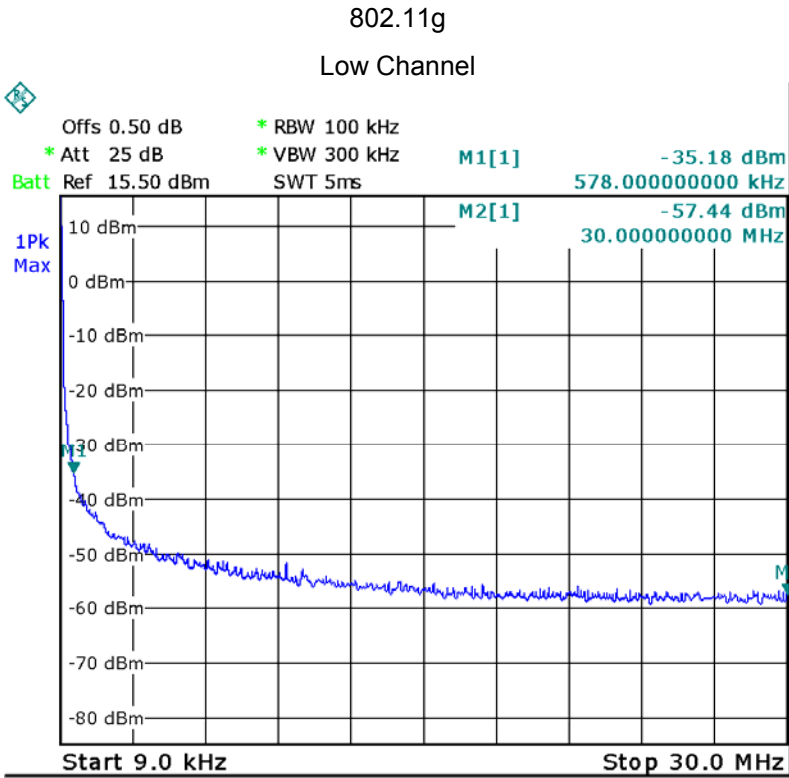
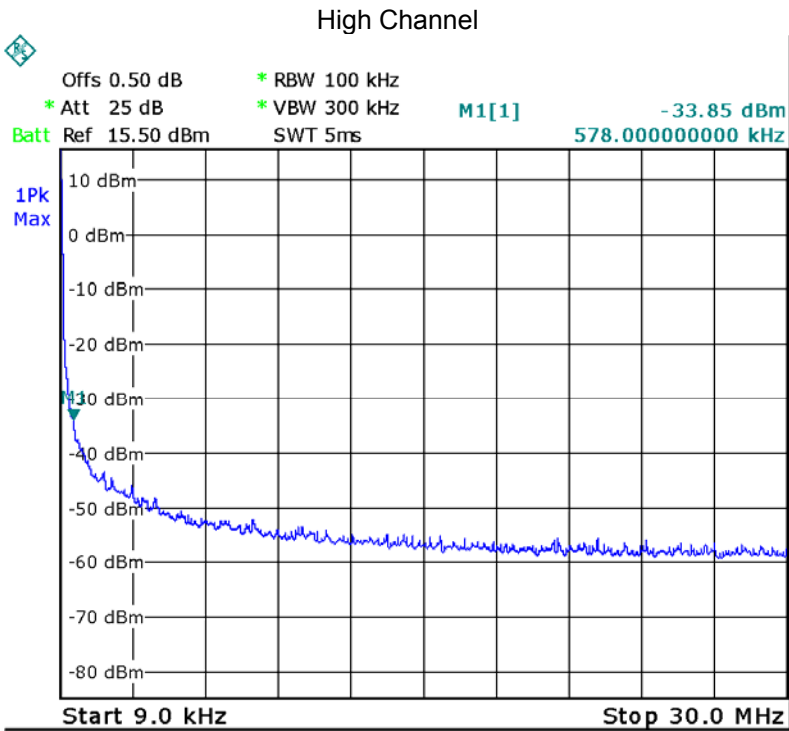
802.11b

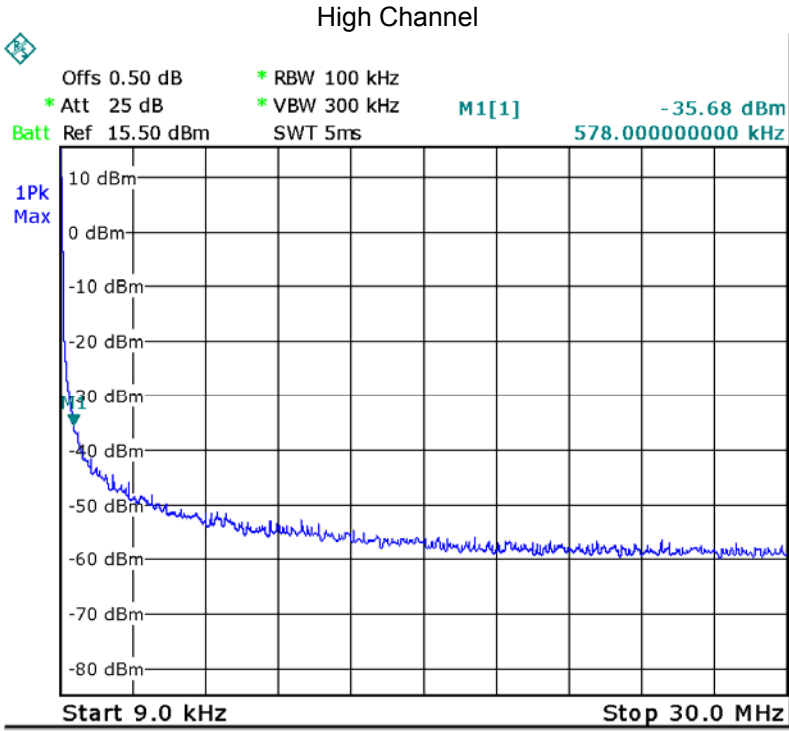
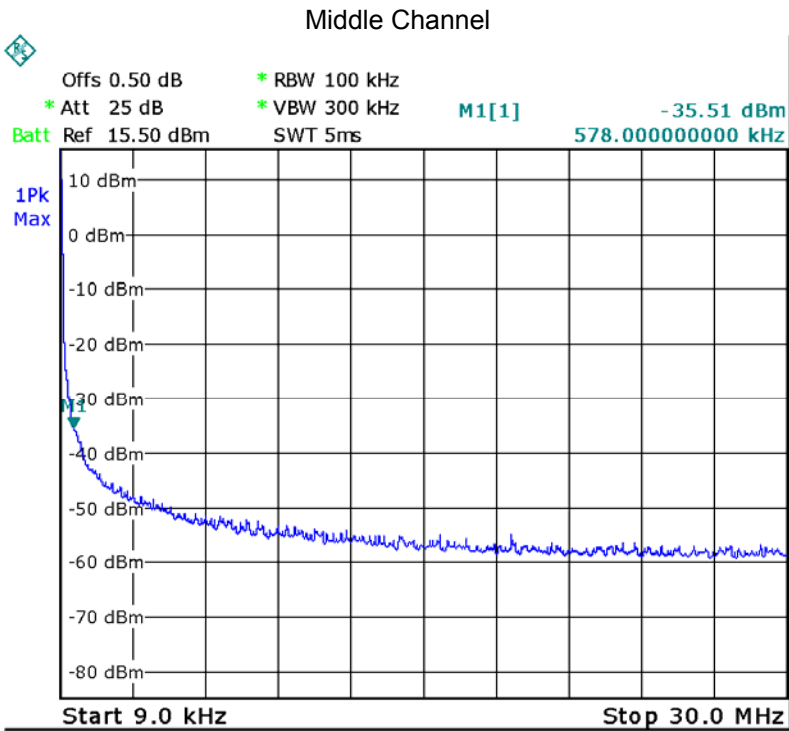
Low Channel



Middle Channel

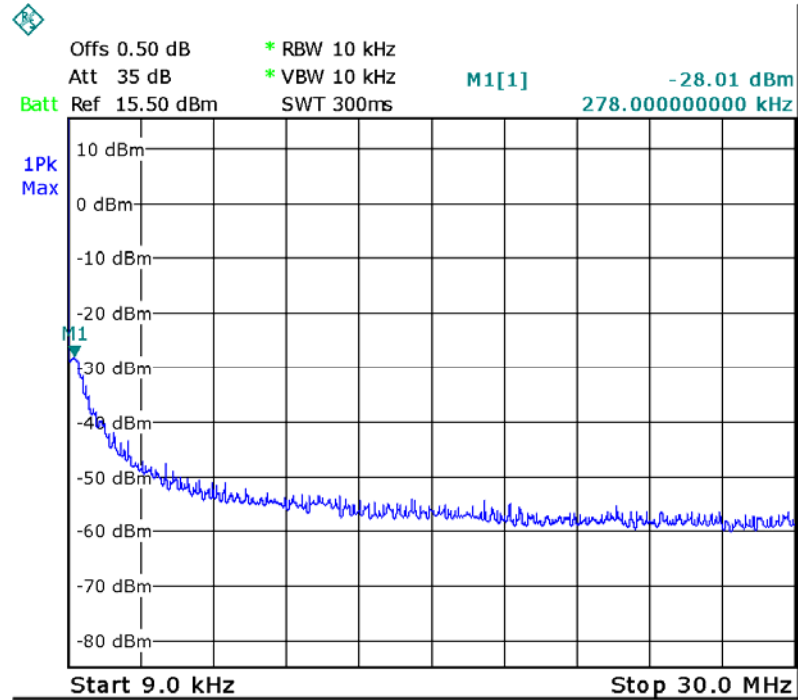




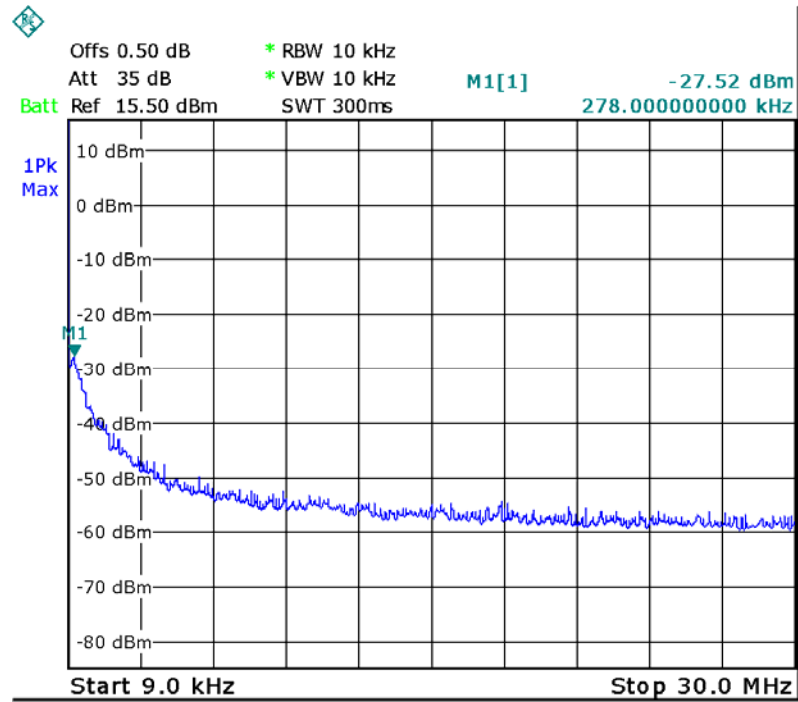


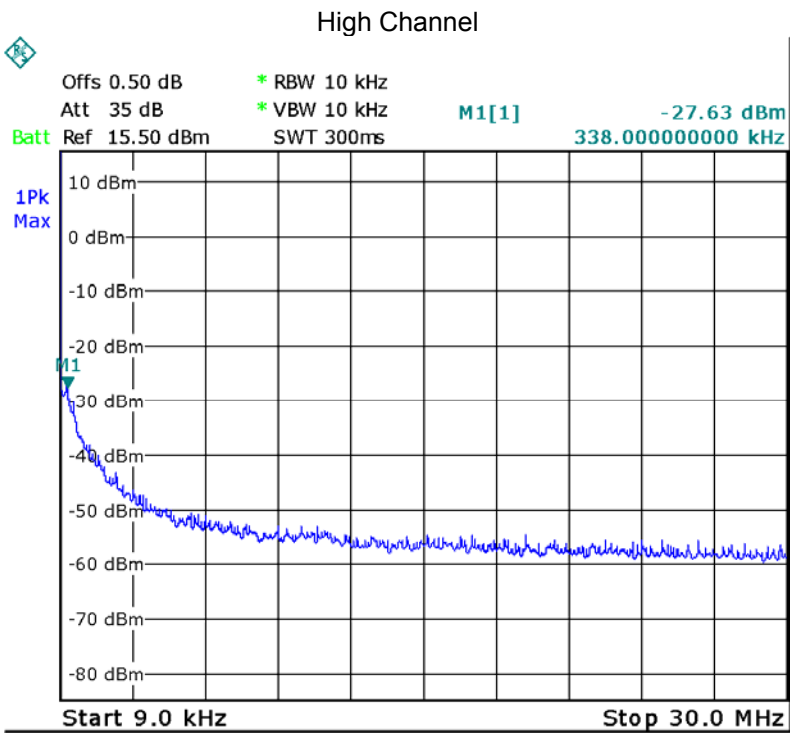
802.11n HT20

Low Channel

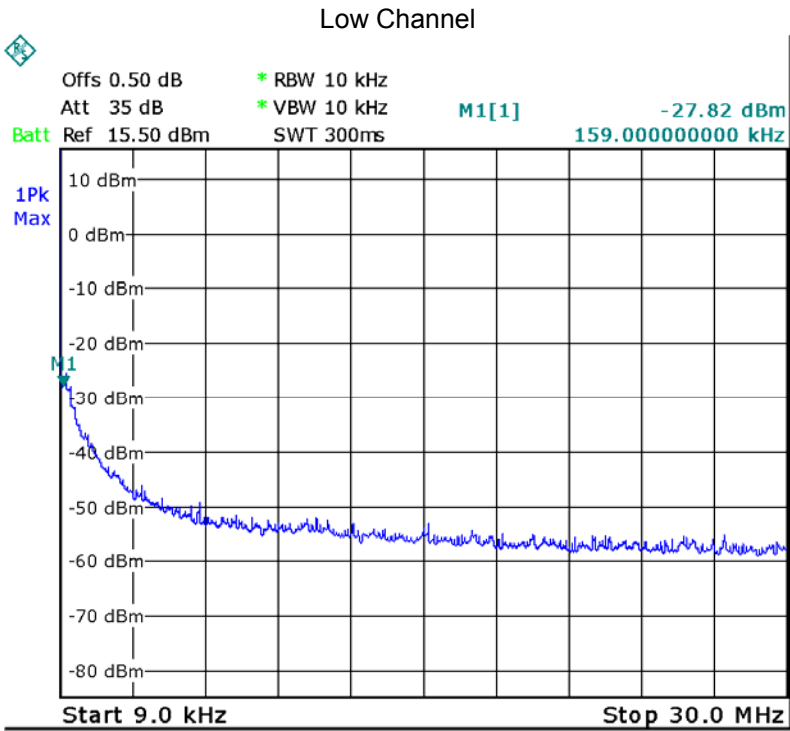


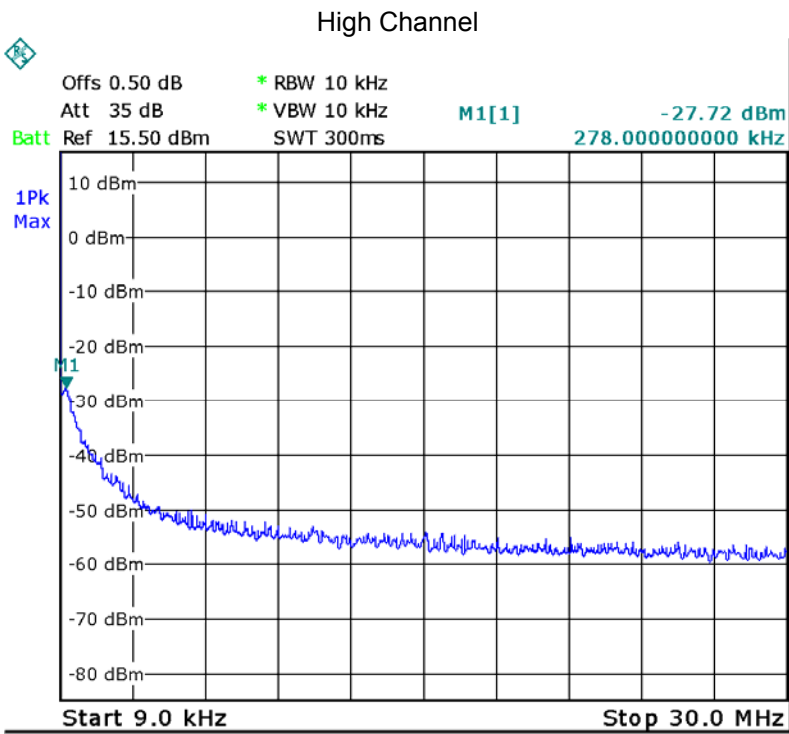
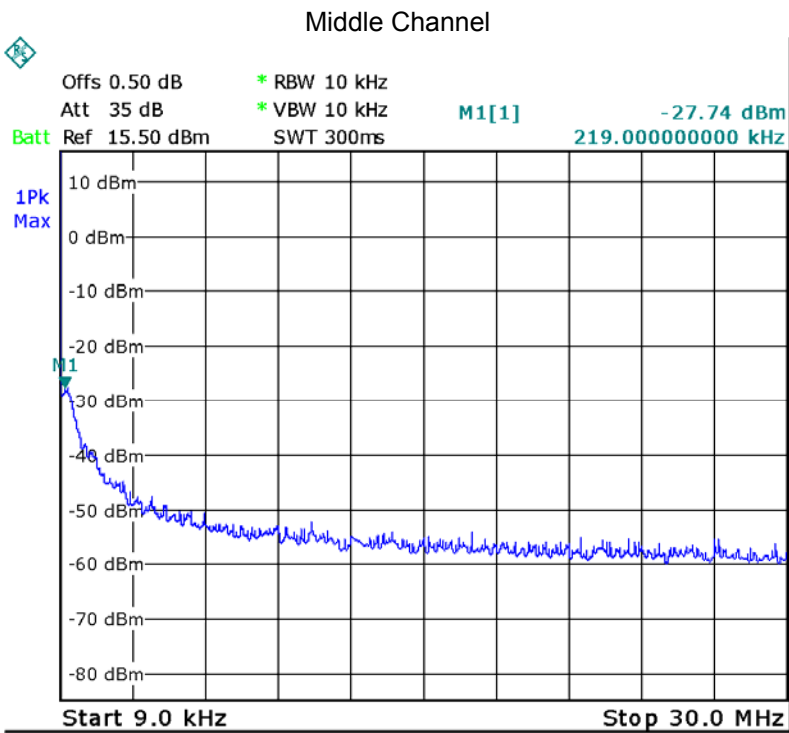
Middle Channel





802.11n HT40

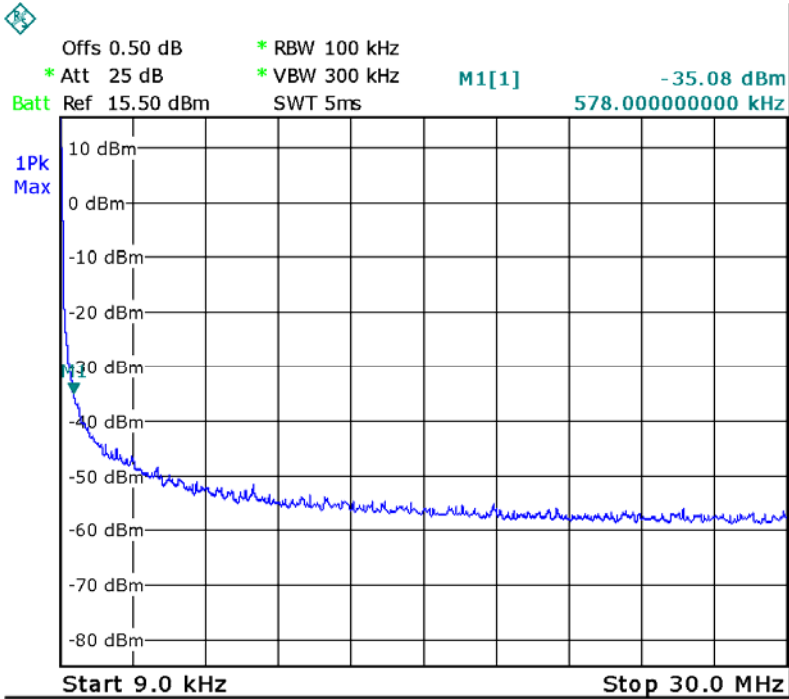




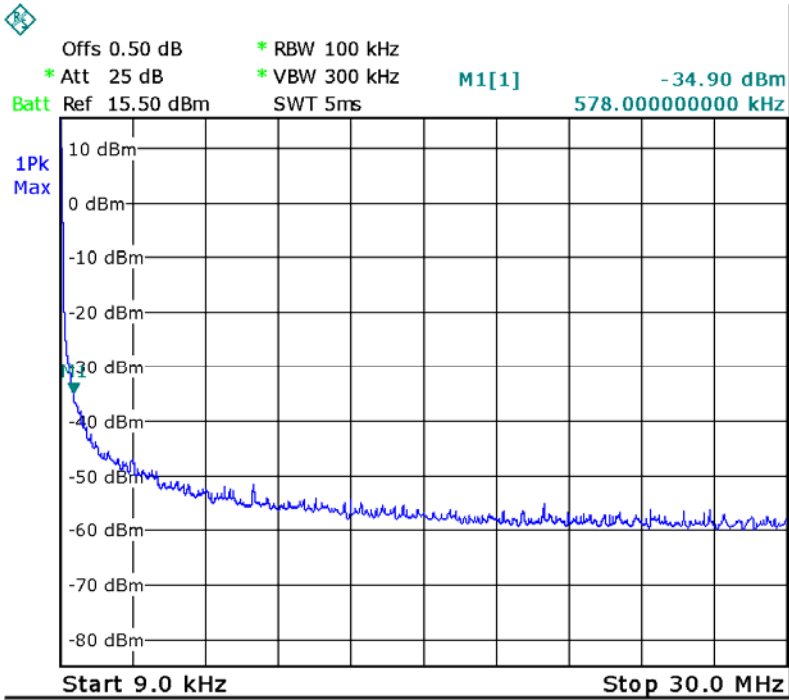
ANT 2

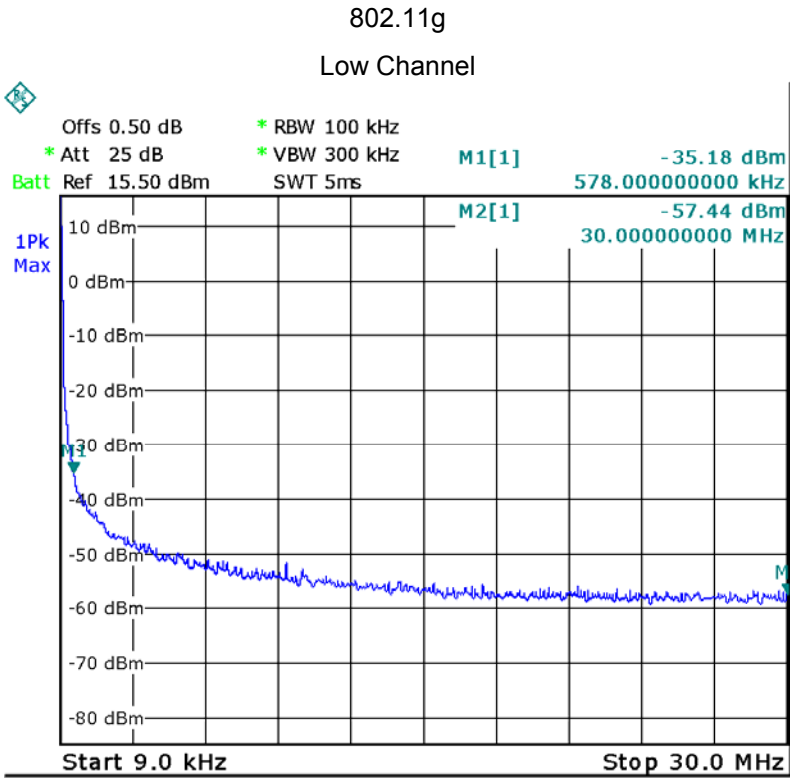
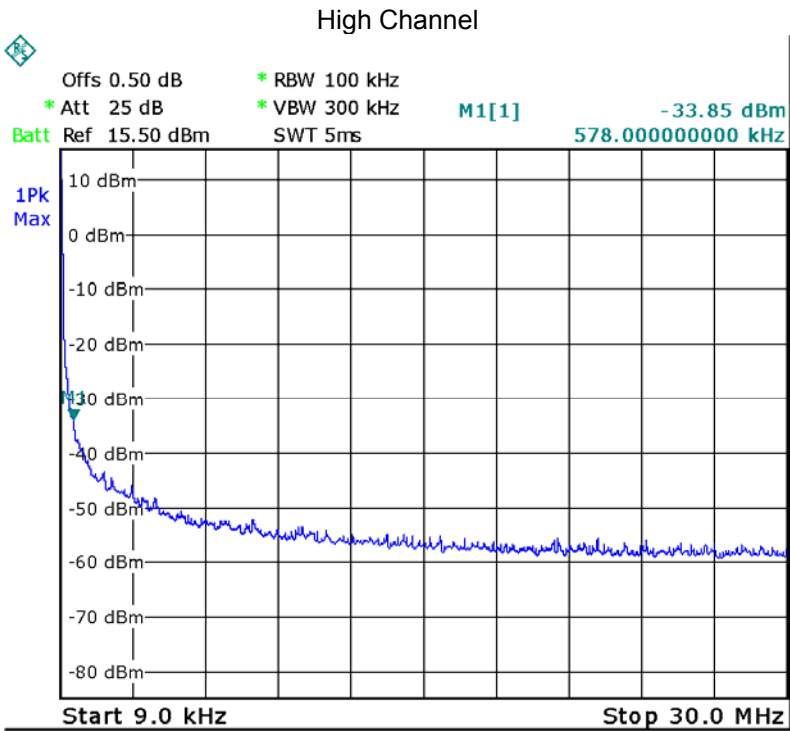
802.11b

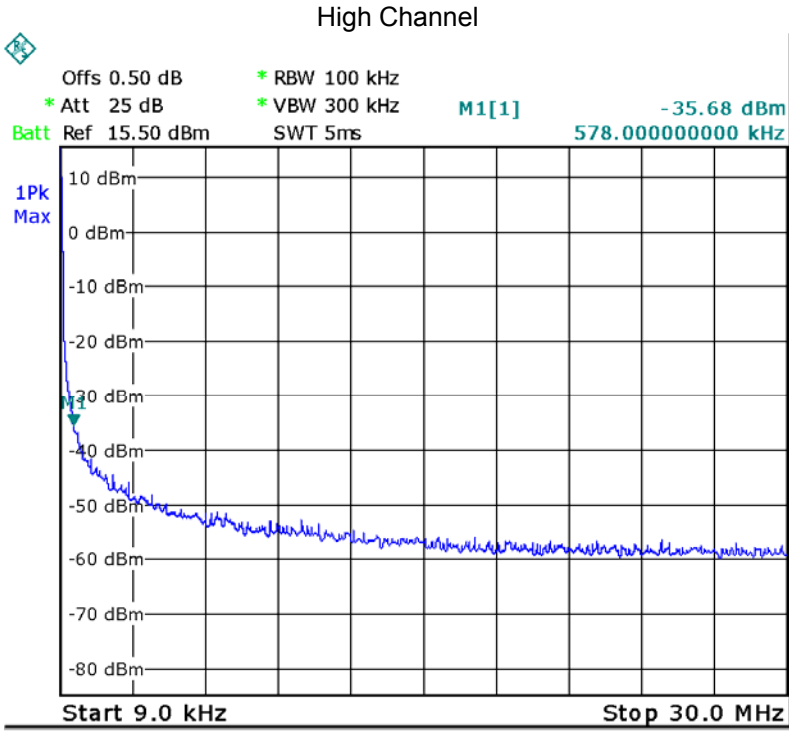
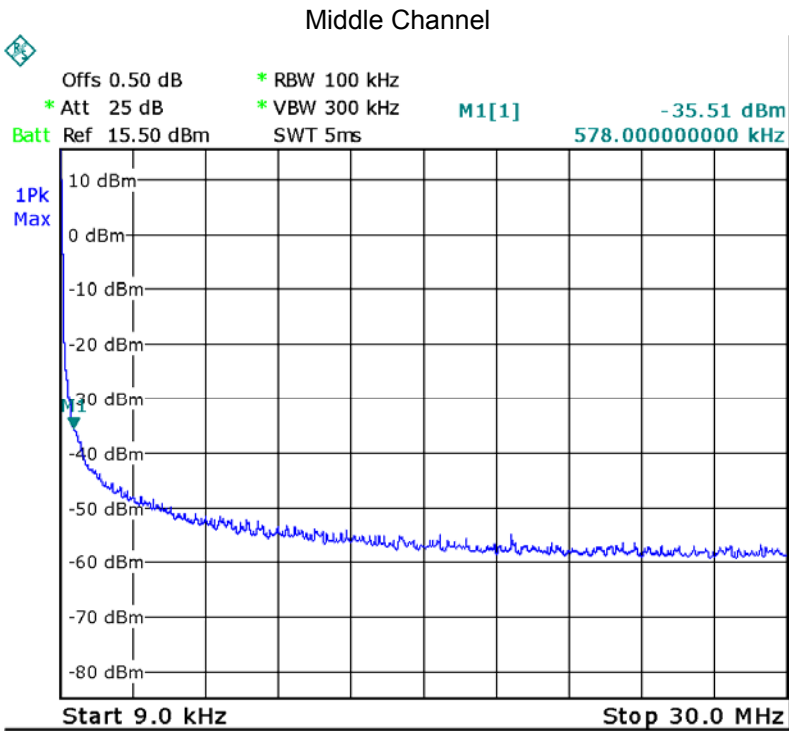
Low Channel



Middle Channel

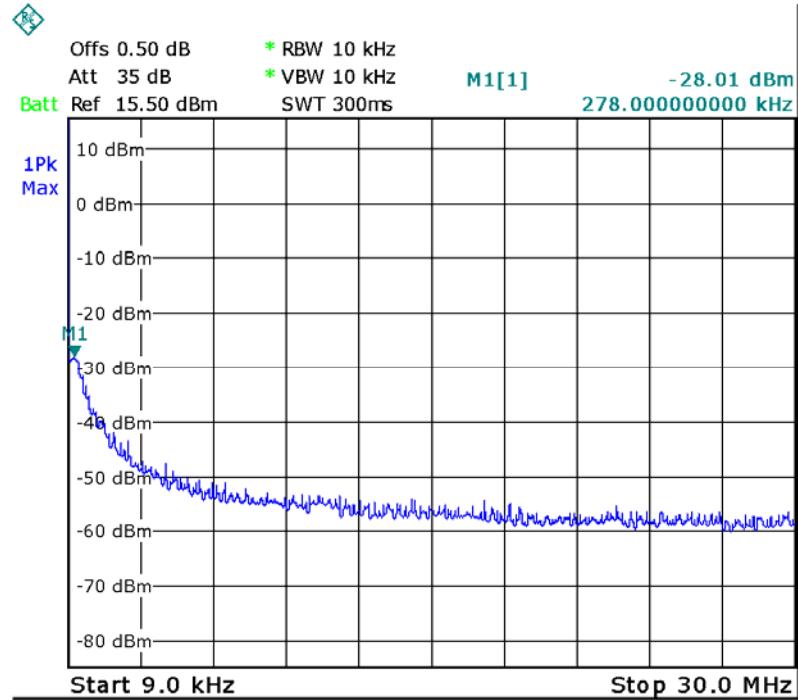




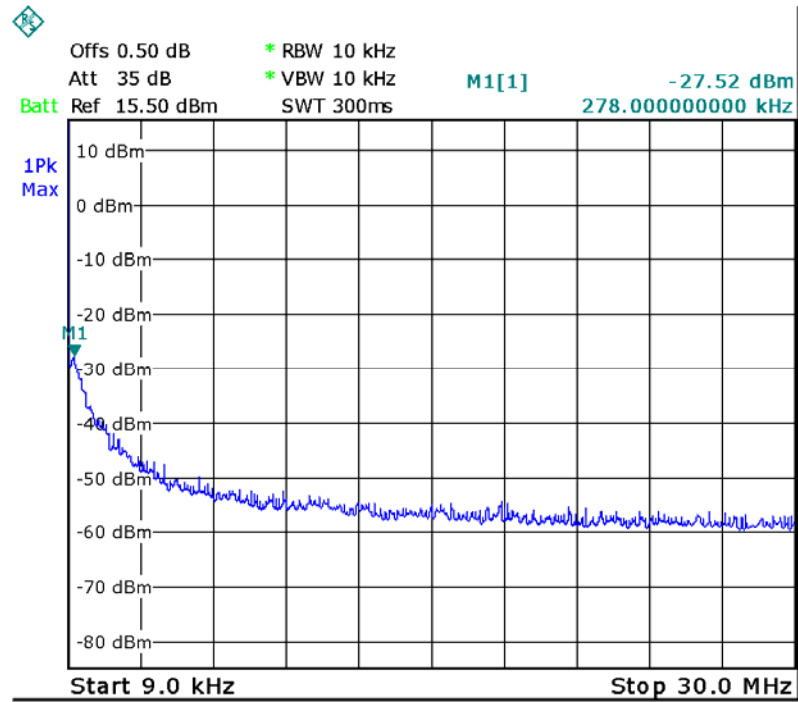


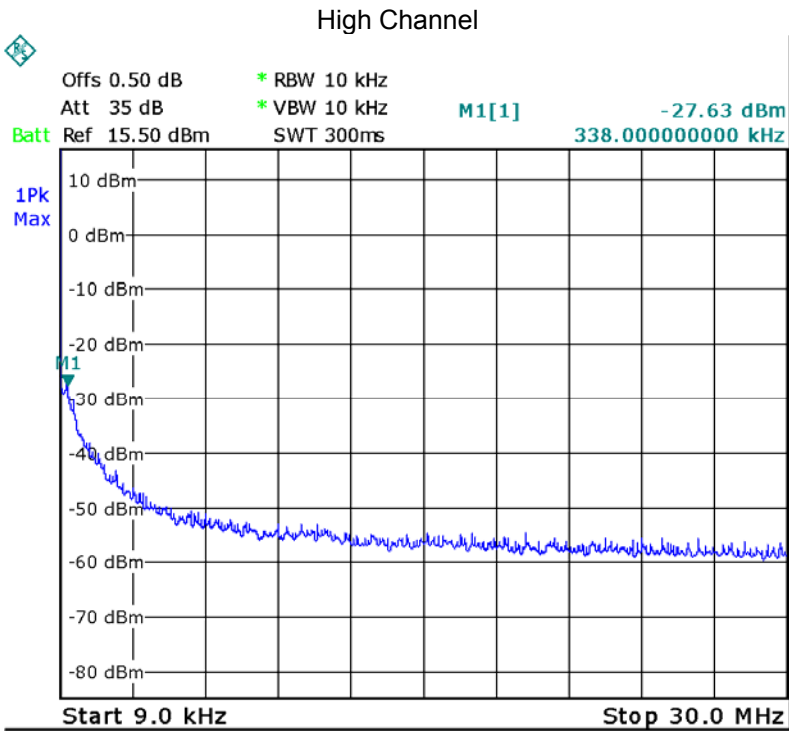
802.11n HT20

Low Channel

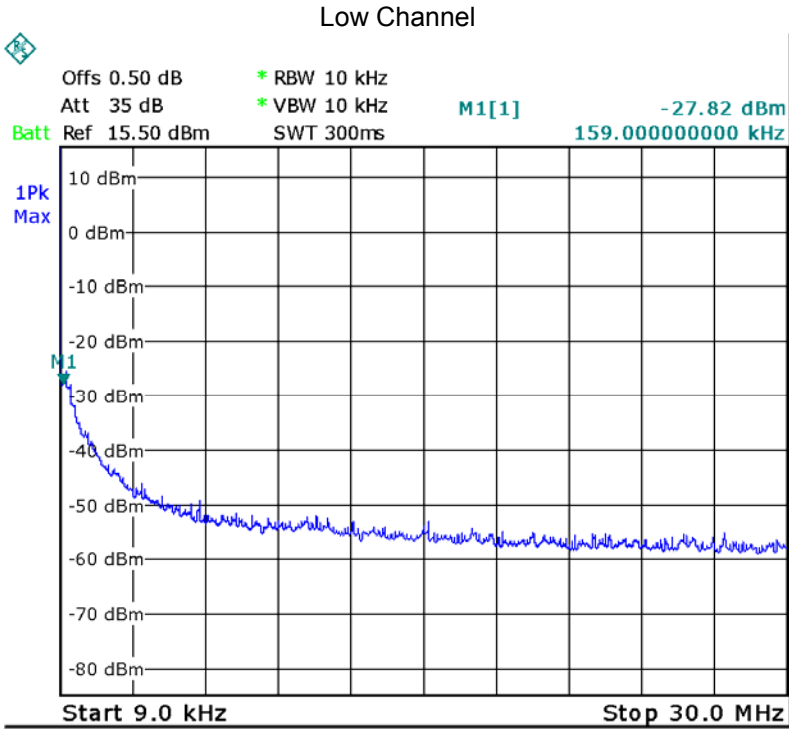


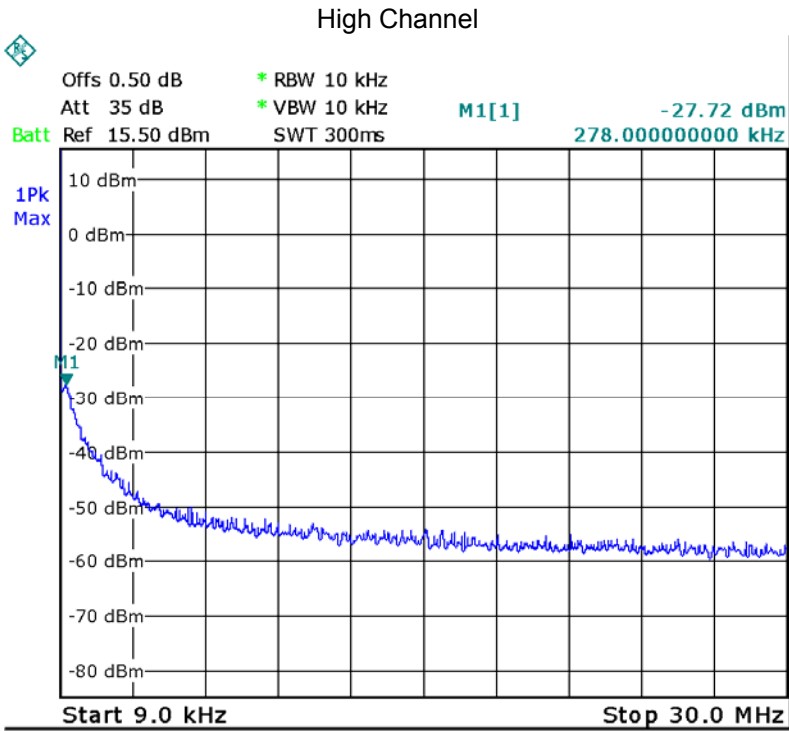
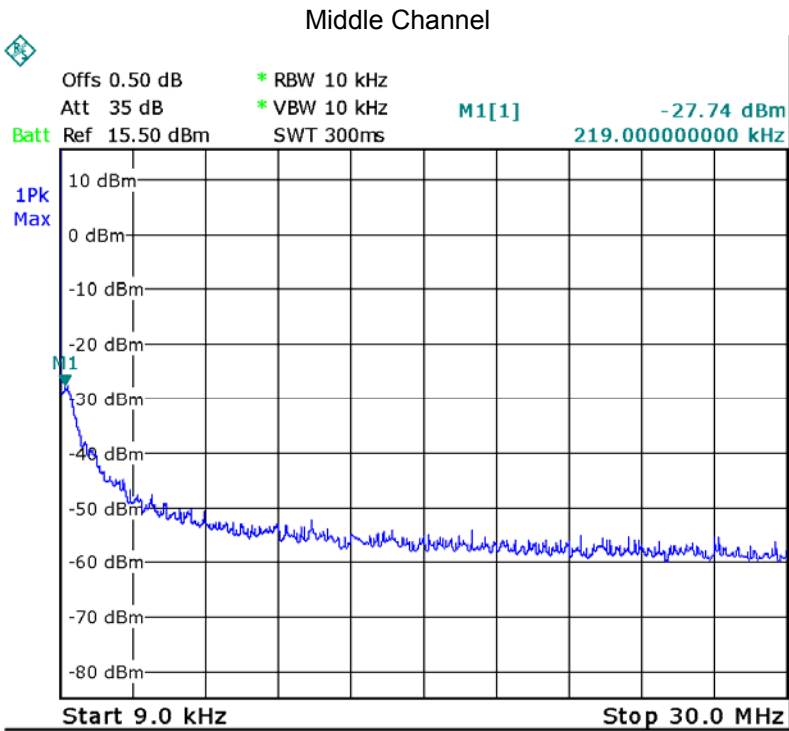
Middle Channel





802.11n HT40





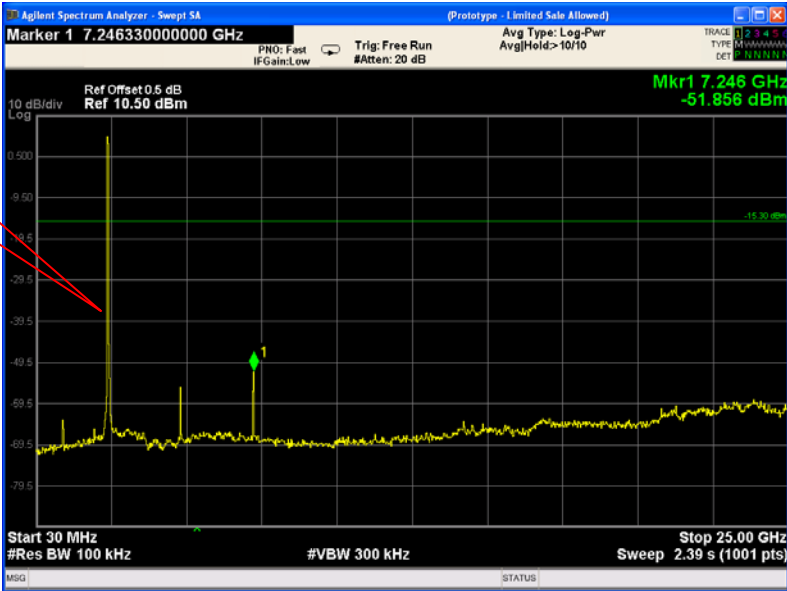
Above 30MHz

ANT 1

802.11b

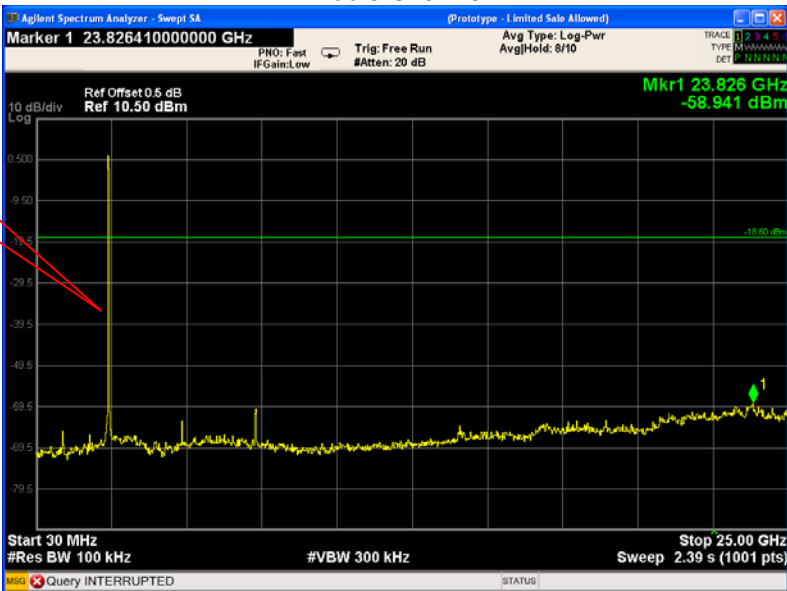
Low Channel

Fundamental



Middle Channel

Fundamental



High Channel

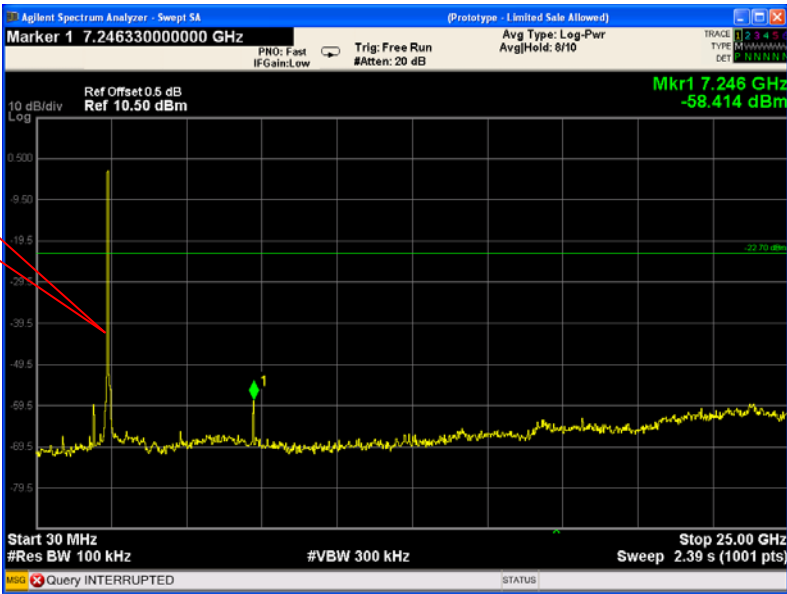
Fundamental



802.11g

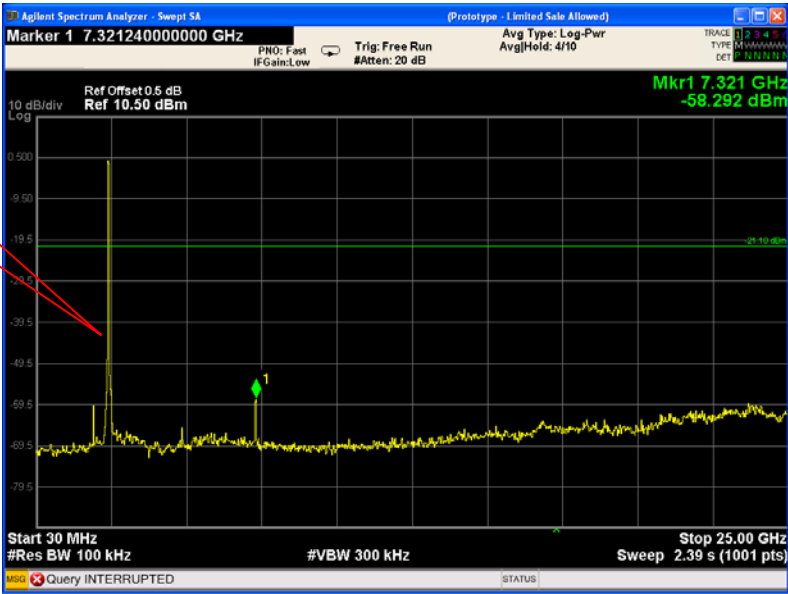
Low Channel

Fundamental



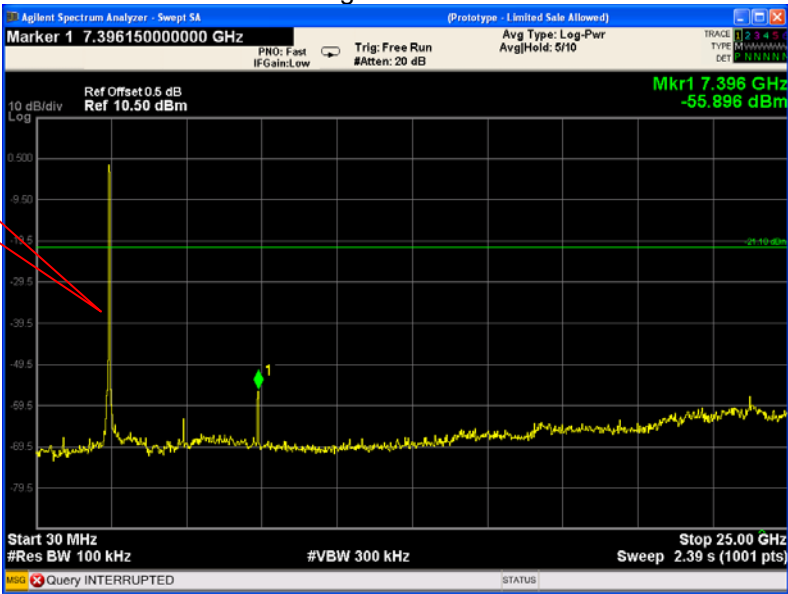
Middle Channel

Fundamental



High Channel

Fundamental



802.11n HT20

Low Channel

Fundamental



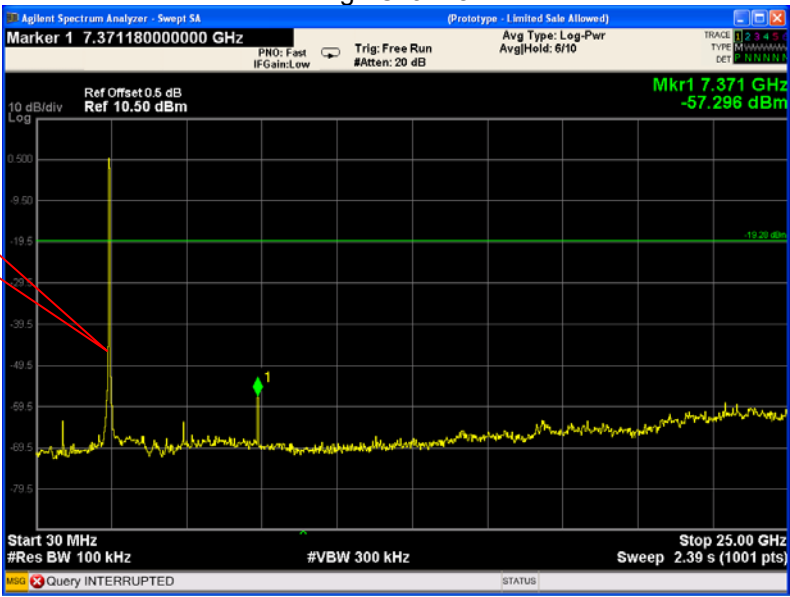
Middle Channel

Fundamental



High Channel

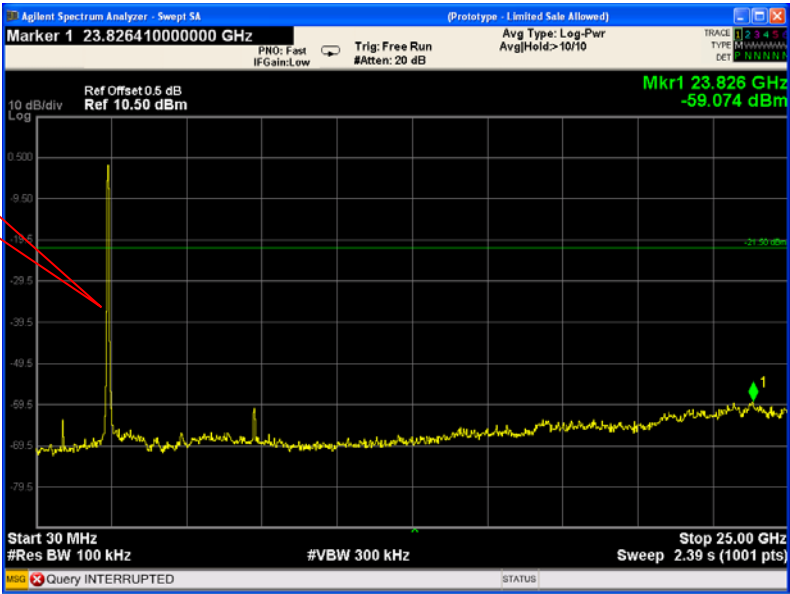
Fundamental



802.11n HT40

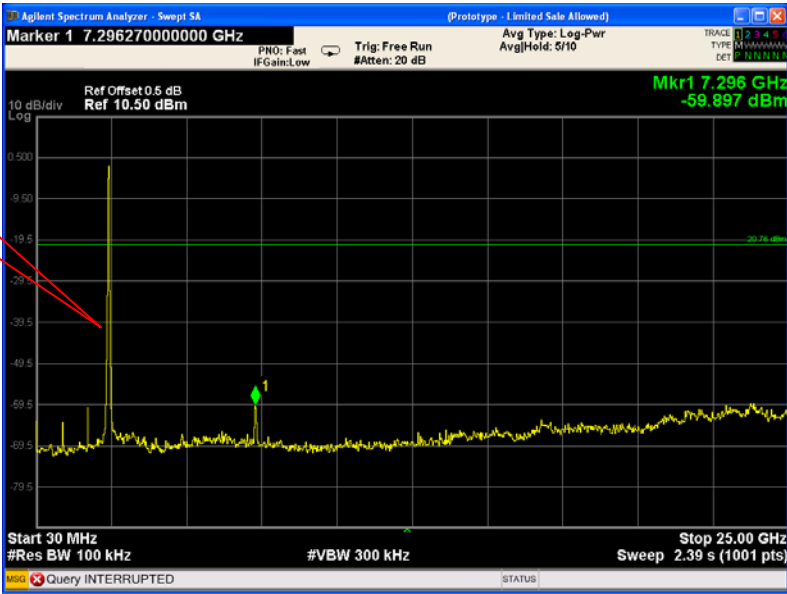
Low Channel

Fundamental



Middle Channel

Fundamental



High Channel

Fundamental

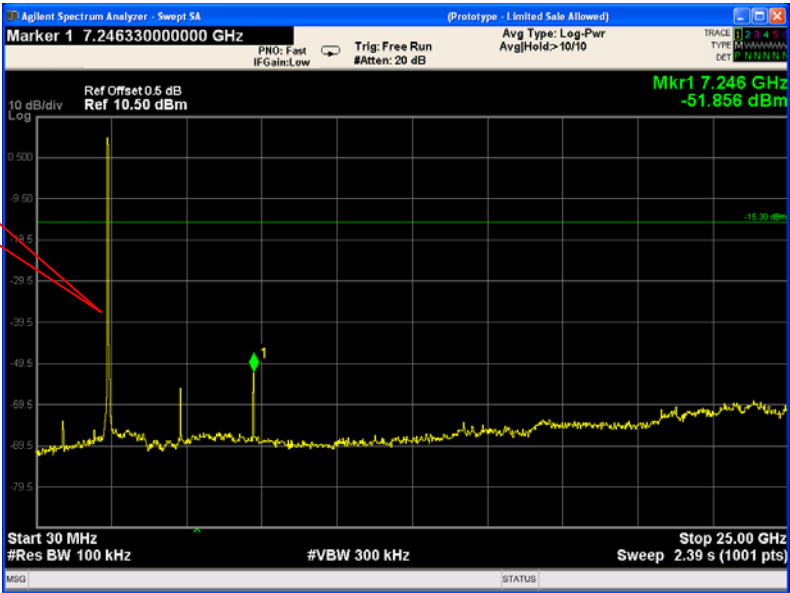


ANT 2

802.11b

Low Channel

Fundamental



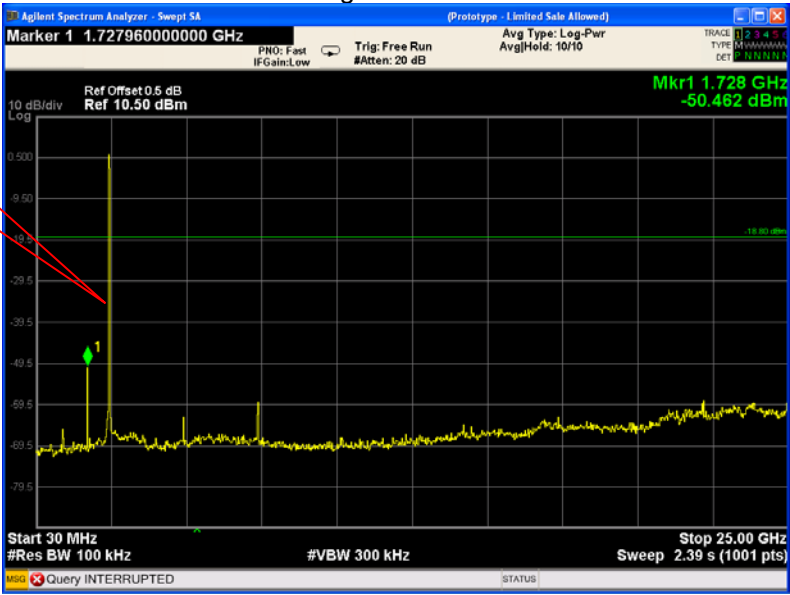
Middle Channel

Fundamental



High Channel

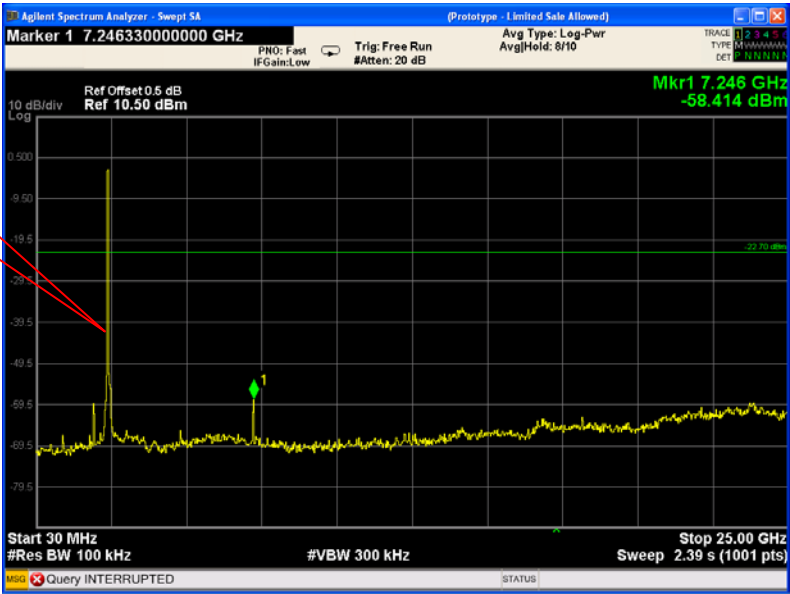
Fundamental



802.11g

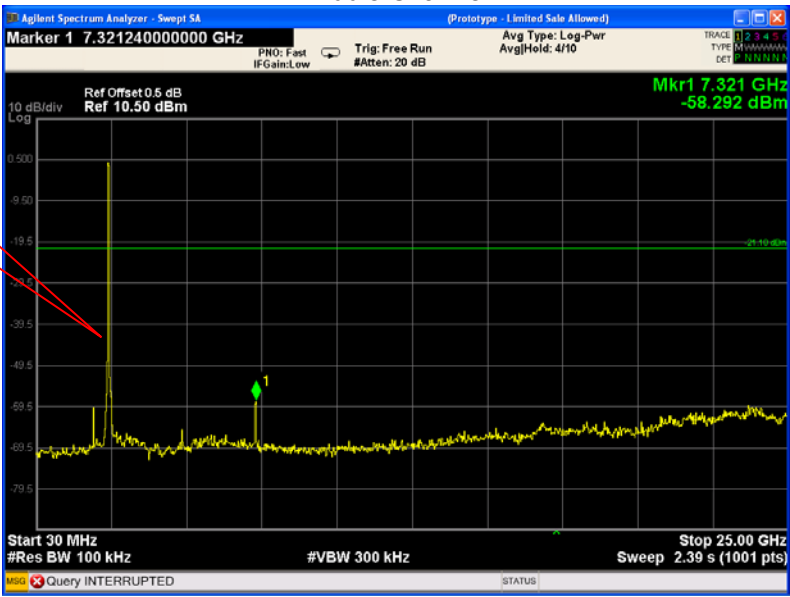
Low Channel

Fundamental



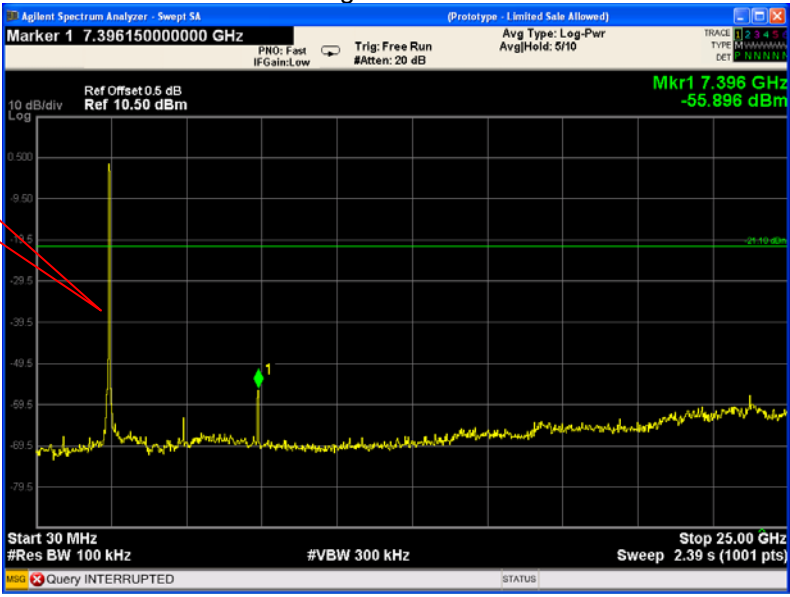
Middle Channel

Fundamental



High Channel

Fundamental



802.11n HT20

Low Channel

Fundamental



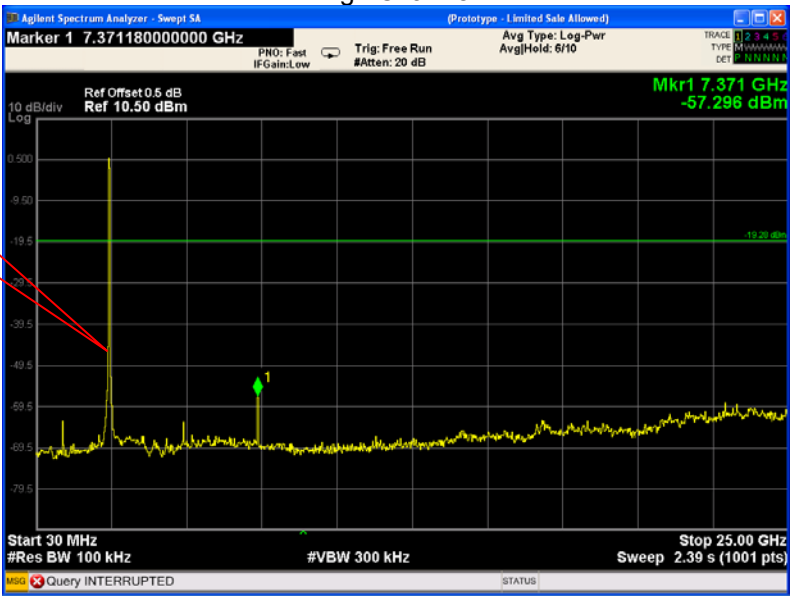
Middle Channel

Fundamental



High Channel

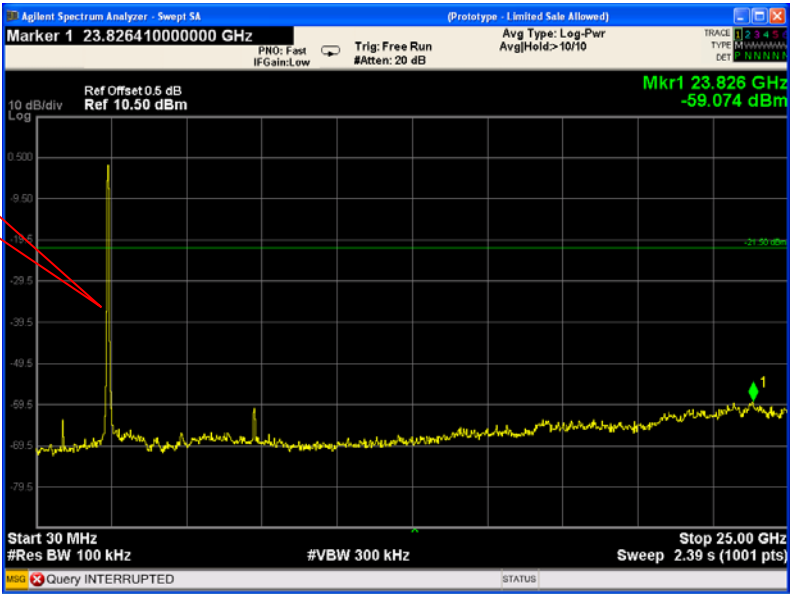
Fundamental



802.11n HT40

Low Channel

Fundamental



Middle Channel

Fundamental



High Channel

Fundamental



10 Band Edge Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018;
ANSI C63.10:2013

Test Limit: Regulation 15.247 (d), In any 100 kHz bandwidth outside the frequency band which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Mode: Transmitting

10.1 Test Produce

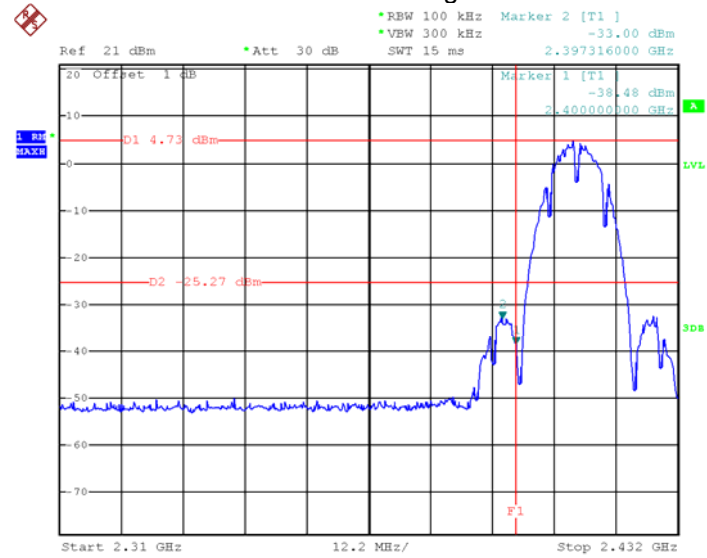
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

10.2 Test Result

Test result plots shown as follows:

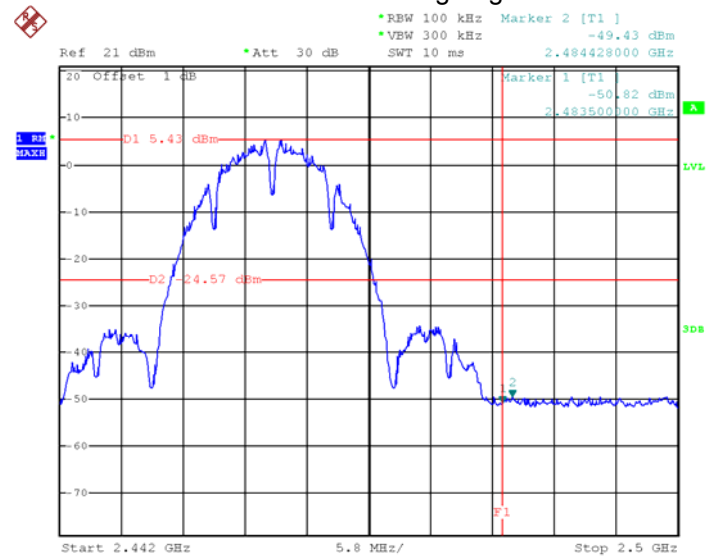
ANT 1

TX 11b: Band edge-left side



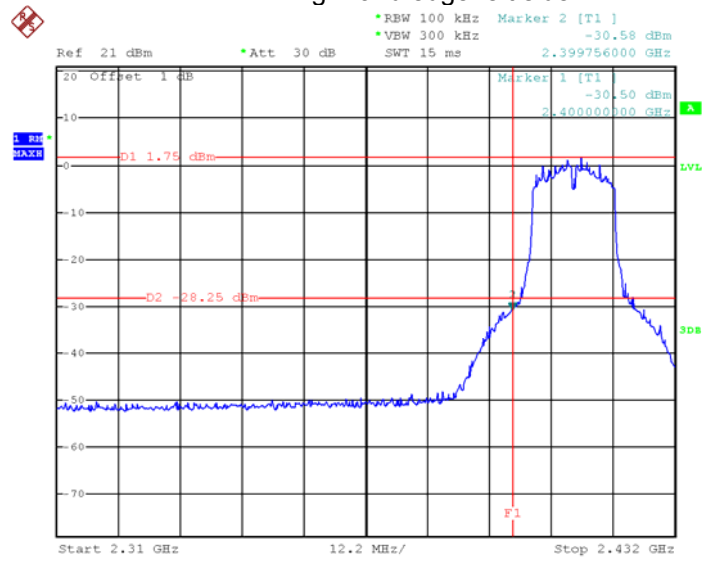
Date: 15.APR.2020 21:06:57

TX 11b: Band edge-right side



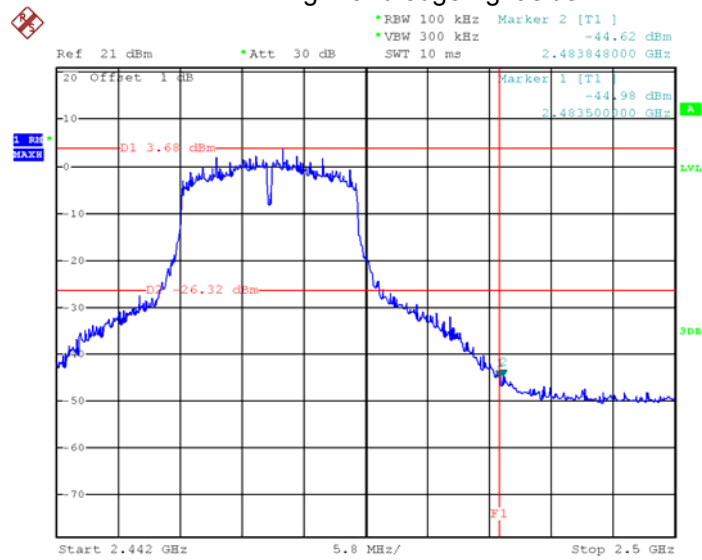
Date: 15.APR.2020 21:42:33

TX 11g: Band edge-left side

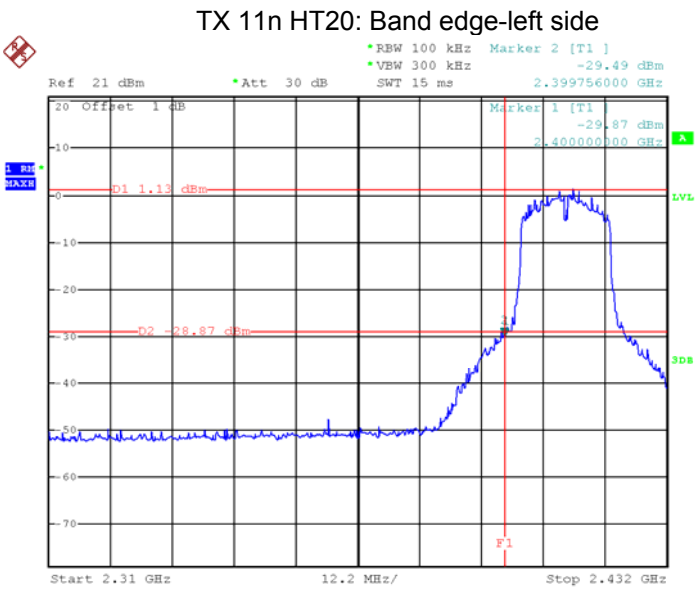


Date: 15.APR.2020 22:11:44

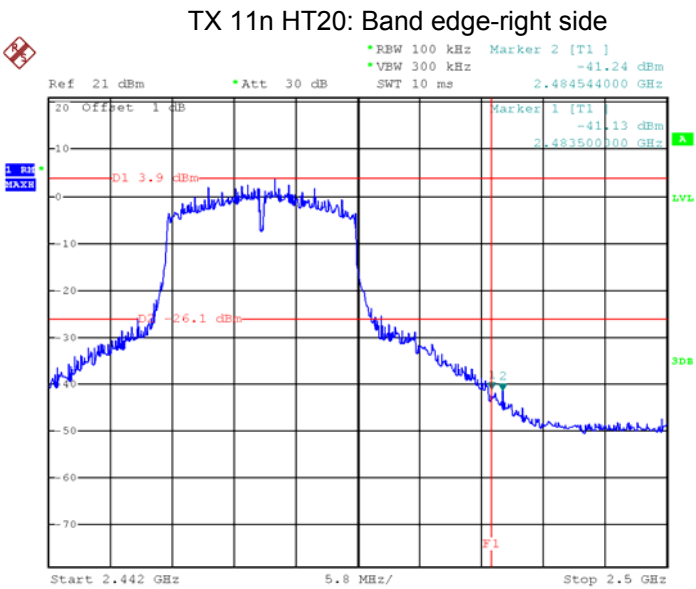
TX 11g: Band edge-right side



Date: 15.APR.2020 22:24:41

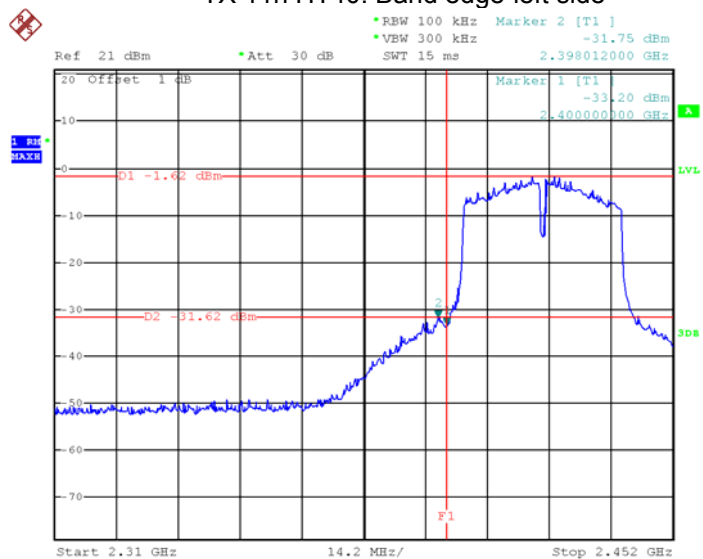


Date: 15.APR.2020 22:47:37



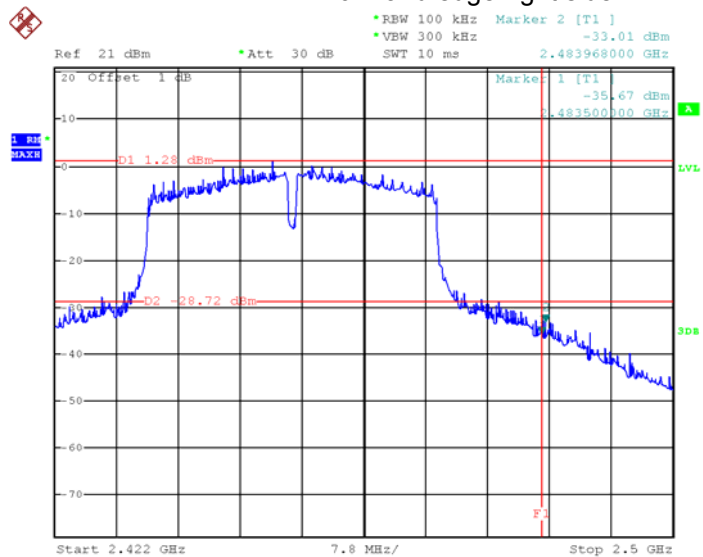
Date: 16.APR.2020 00:41:16

TX 11n HT40: Band edge-left side



Date: 16.APR.2020 01:01:08

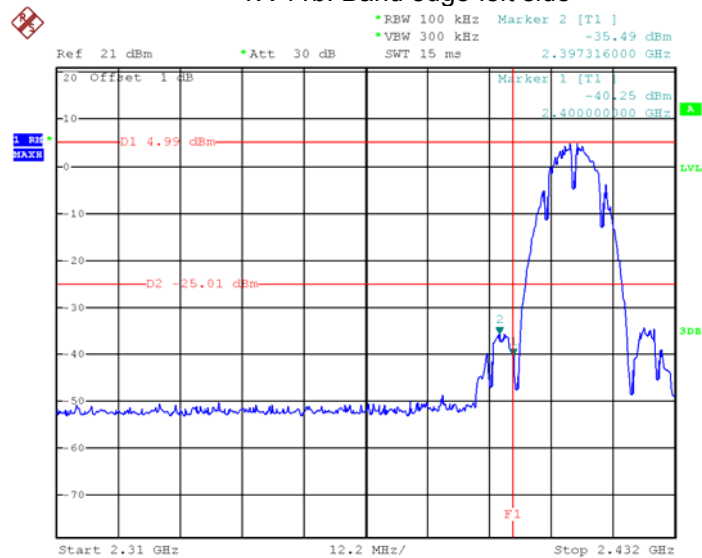
TX 11n HT40: Band edge-right side



Date: 16.APR.2020 01:19:37

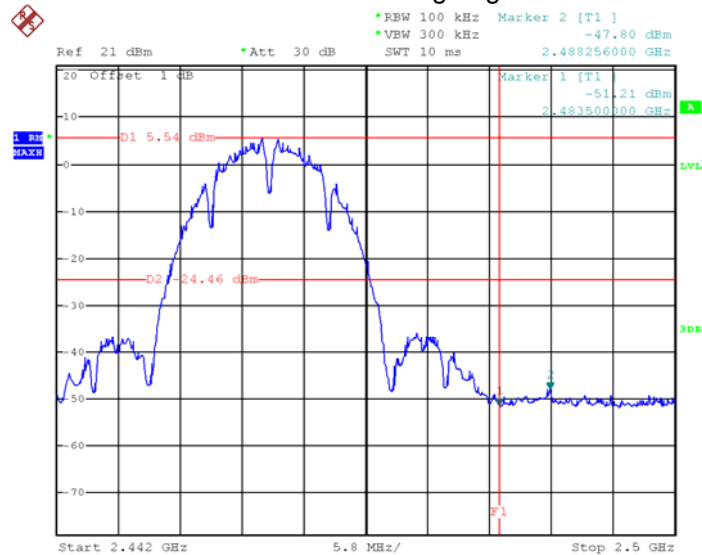
ANT 2

TX 11b: Band edge-left side



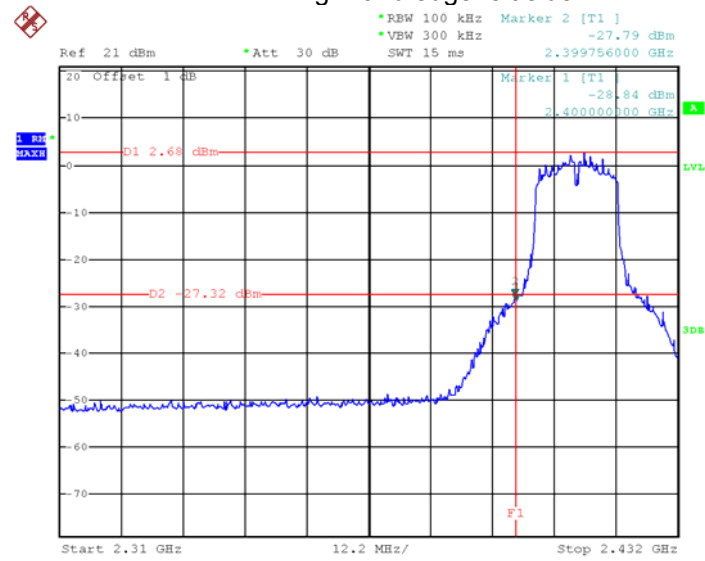
Date: 16.APR.2020 01:41:38

TX 11b: Band edge-right side



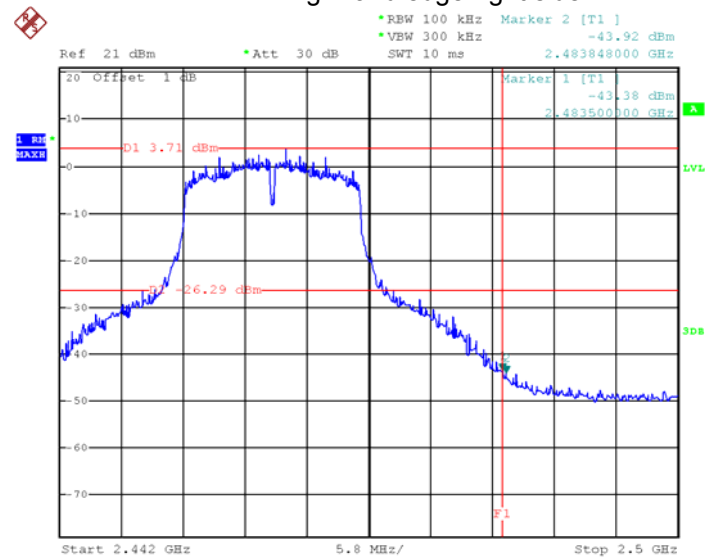
Date: 16.APR.2020 02:00:42

TX 11g: Band edge-left side

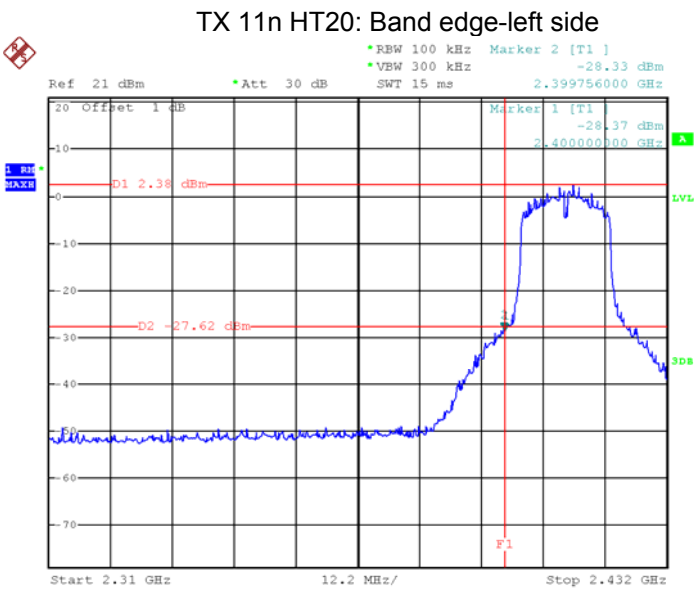


Date: 16.APR.2020 02:10:19

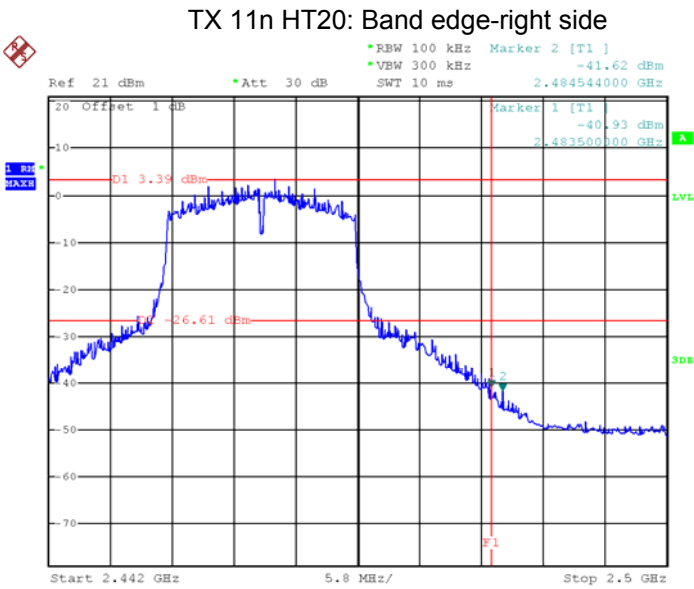
TX 11g: Band edge-right side



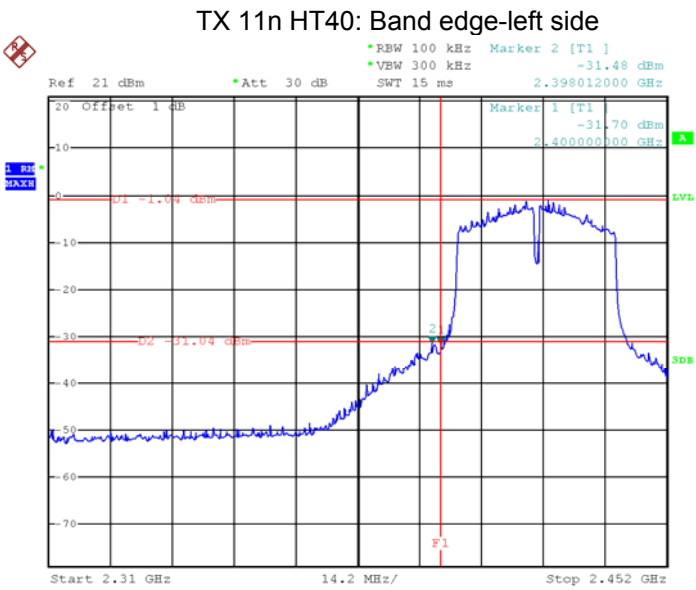
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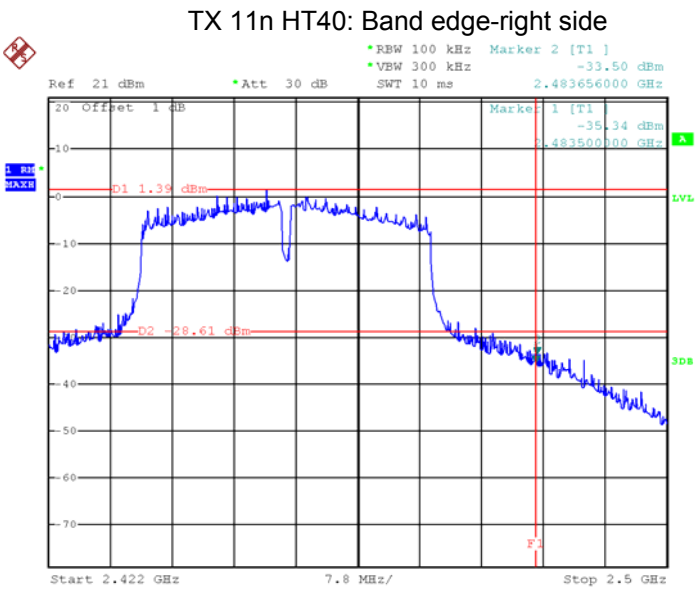
Date: 16.APR.2020 02:31:50



Date: 16.APR.2020 03:46:29



Date: 16.APR.2020 03:58:38



Date: 16.APR.2020 04:19:14

6 dB Bandwidth and 99% Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018;
ANSI C63.10:2013

10.3 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

10.4 Test Result:

ANT 1

Operation mode	Test Channel	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
TX 11b	Channel 1	10.032	14.608
	Channel 6	10.120	14.564
	Channel 11	9.996	14.448
TX 11g	Channel 1	14.250	16.400
	Channel 6	15.200	16.400
	Channel 11	14.250	16.400
TX 11n HT20	Channel 1	15.336	17.550
	Channel 6	15.174	17.604
	Channel 11	15.336	17.550
TX 11n HT40	Channel 3	35.200	35.970
	Channel 6	35.200	36.080
	Channel 9	35.200	35.860

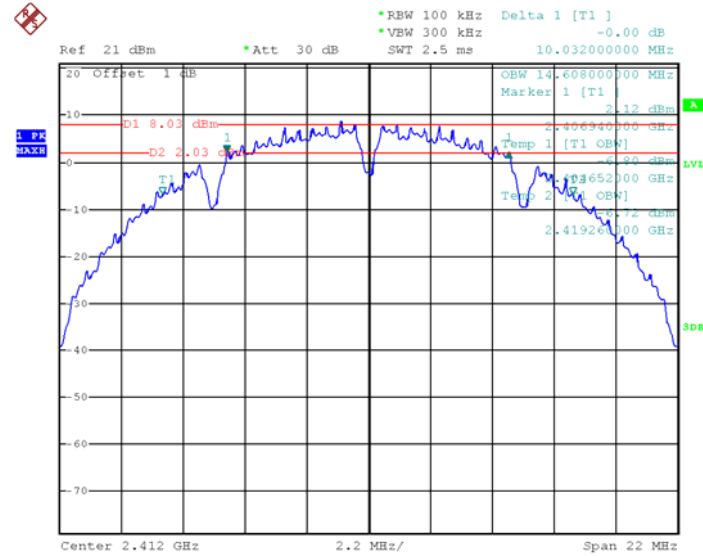
ANT 2

Operation mode	Test Channel	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
TX 11b	Channel 1	10.080	14.490
	Channel 6	9.996	14.490
	Channel 11	10.038	14.448
TX 11g	Channel 1	15.000	16.400
	Channel 6	15.200	16.450
	Channel 11	15.350	16.400
TX 11n HT20	Channel 1	15.012	17.604
	Channel 6	15.174	17.550
	Channel 11	15.012	17.550
TX 11n HT40	Channel 3	35.090	35.860
	Channel 6	35.090	35.860
	Channel 9	35.090	35.970

Test result plot:

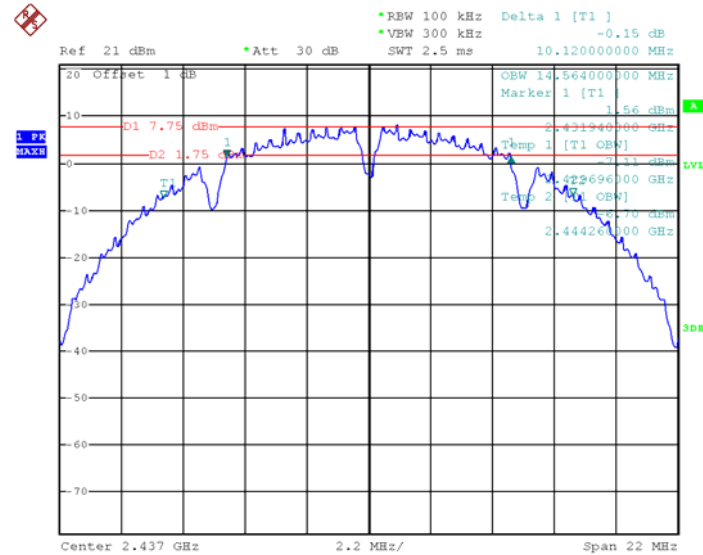
ANT 1

Mode: TX 11b channel 1

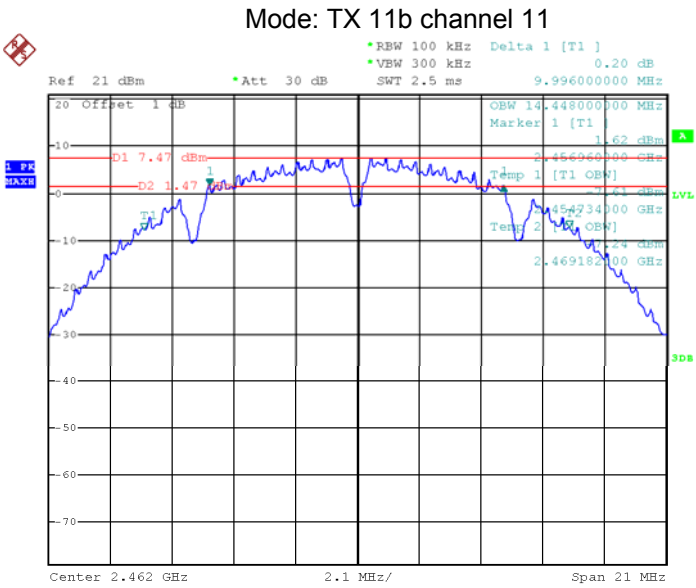


Date: 15.APR.2020 20:58:38

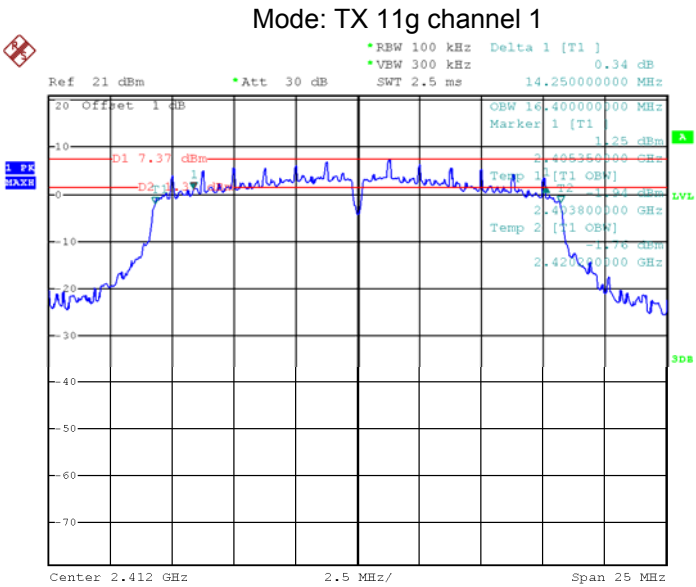
Mode: TX 11b channel 6



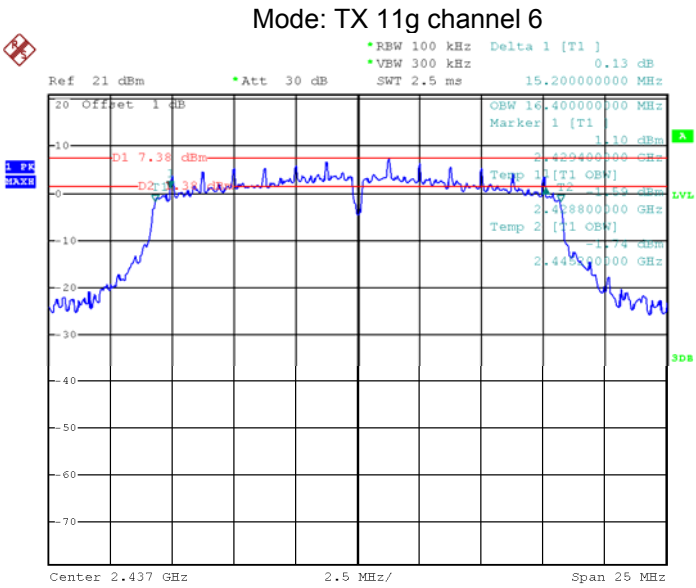
Date: 15.APR.2020 21:24:05



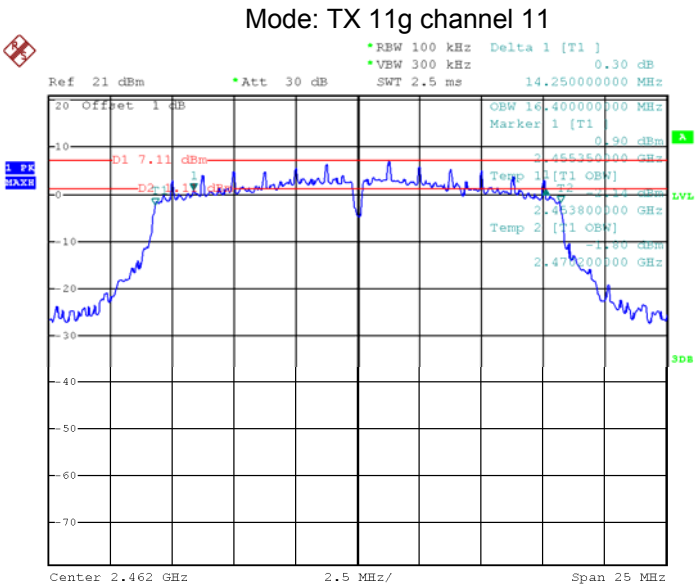
Date: 15.APR.2020 21:35:34



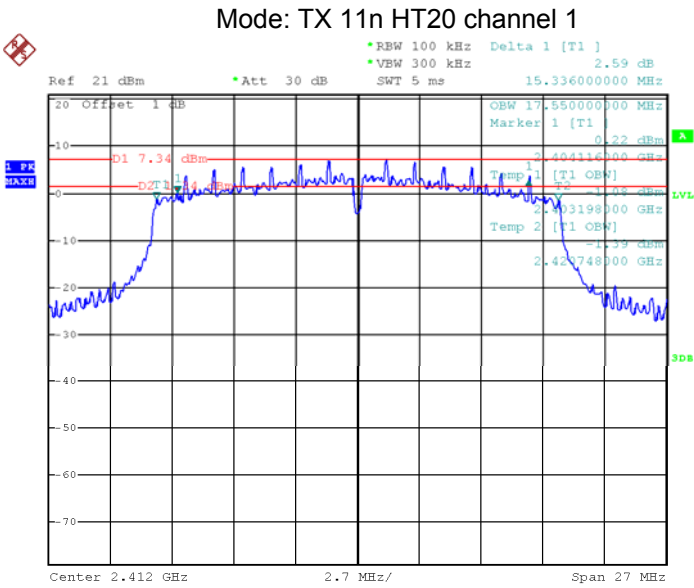
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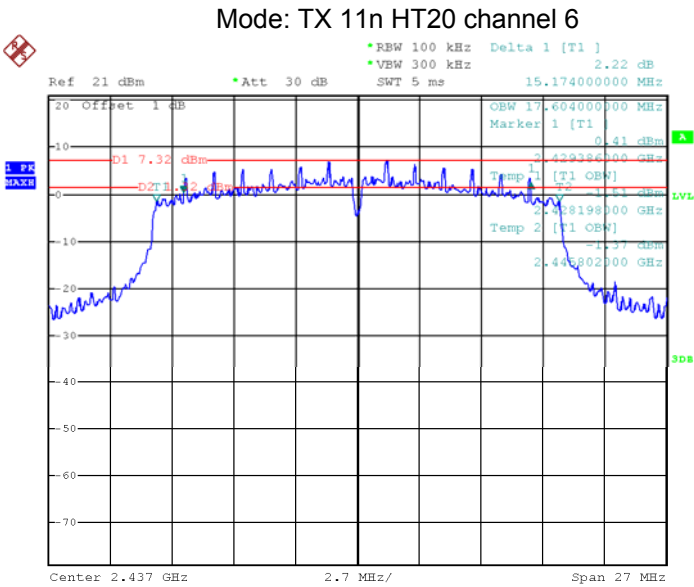
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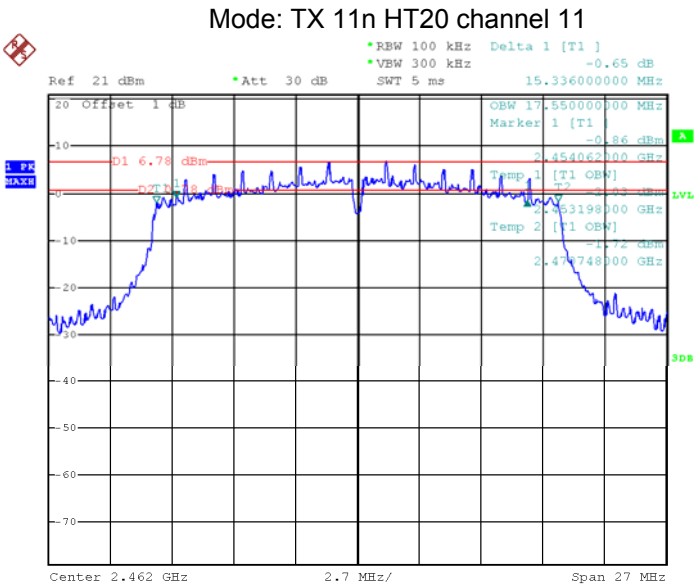
Date: 15.APR.2020 22:20:53



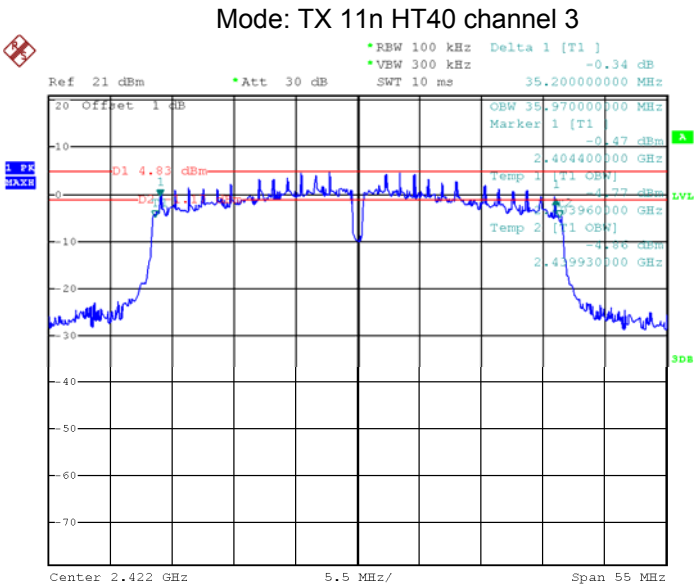
Date: 16.APR.2020 00:31:06



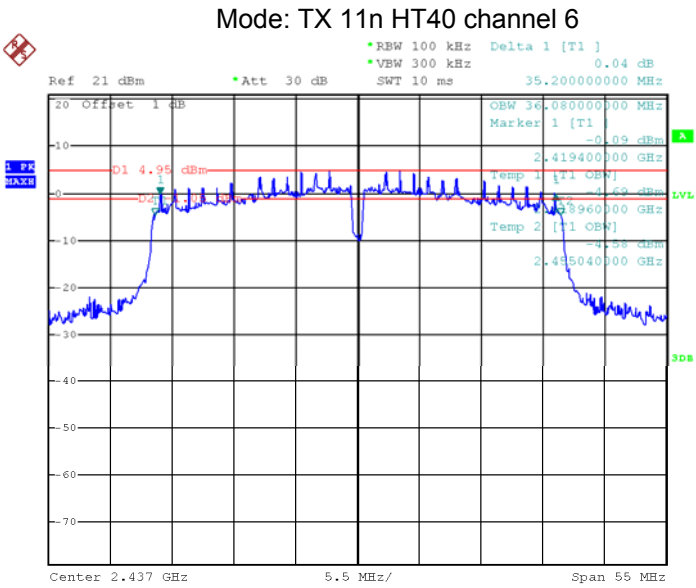
Date: 15.APR.2020 22:55:48



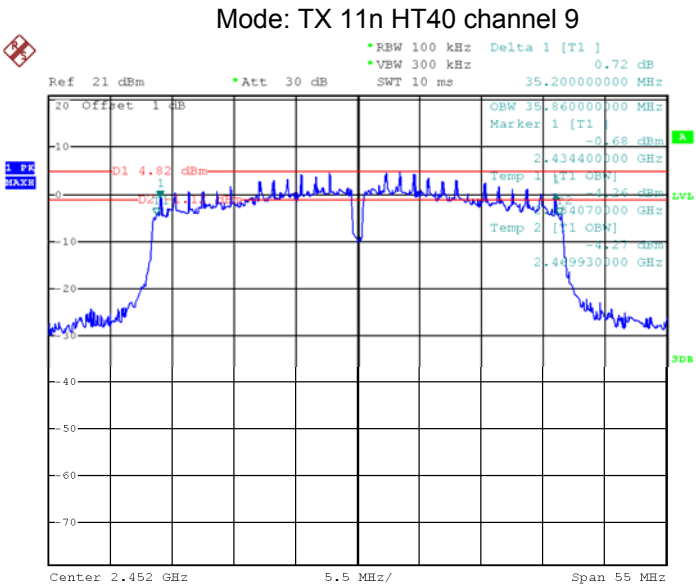
Date: 16.APR.2020 00:37:03



Date: 16.APR.2020 00:48:10



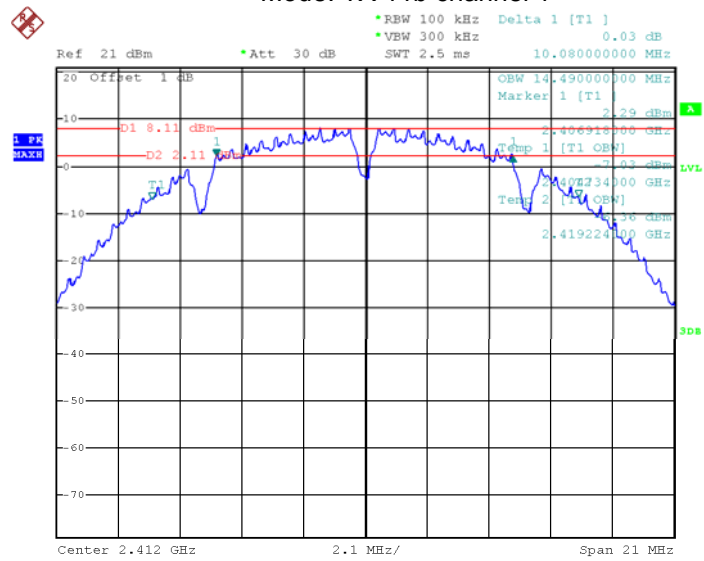
Date: 16.APR.2020 01:05:40



Date: 16.APR.2020 01:14:47

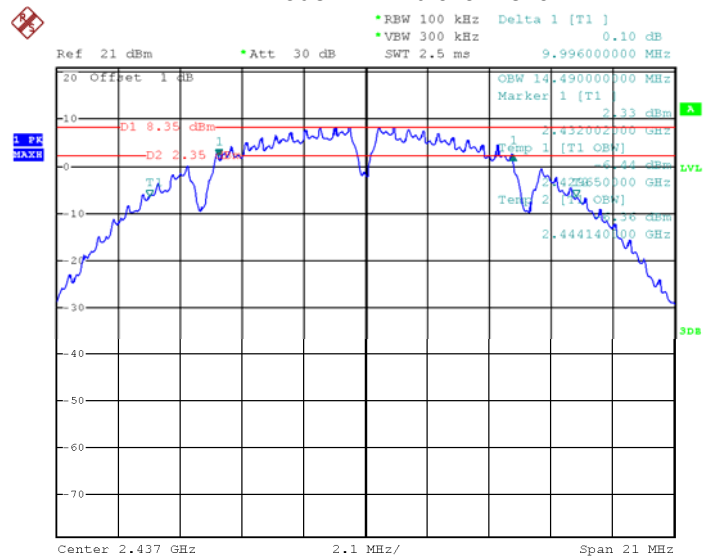
ANT 2

Mode: TX 11b channel 1

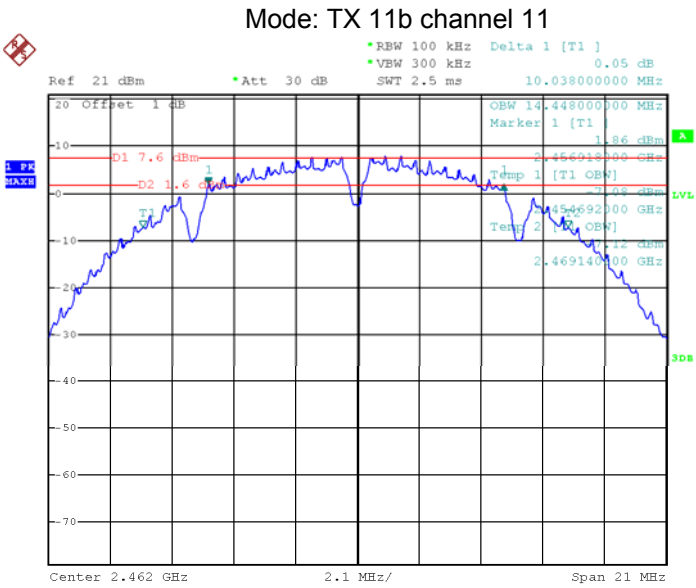


Date: 16.APR.2020 01:35:14

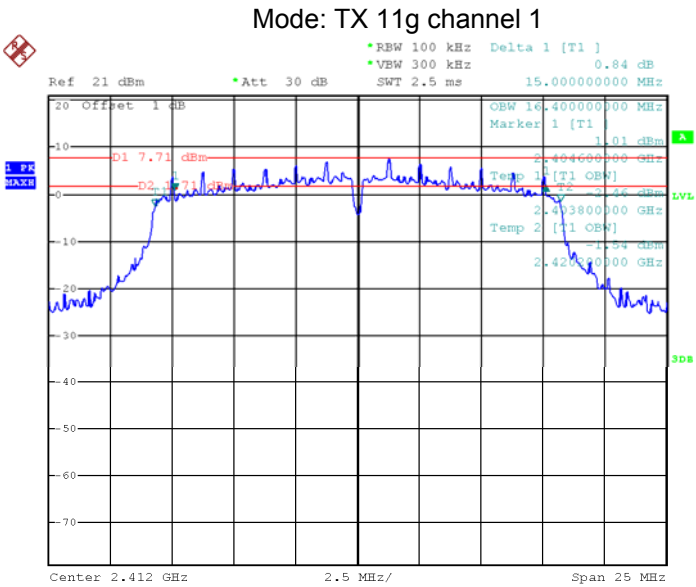
Mode: TX 11b channel 6



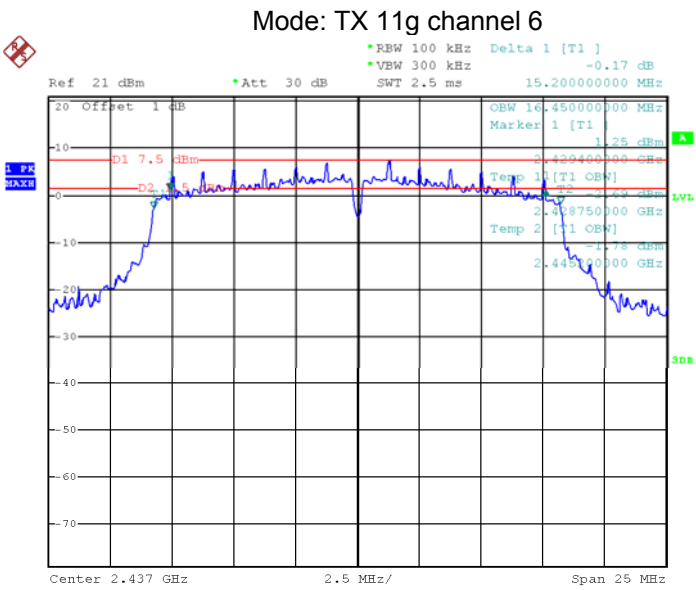
Date: 16.APR.2020 01:45:45



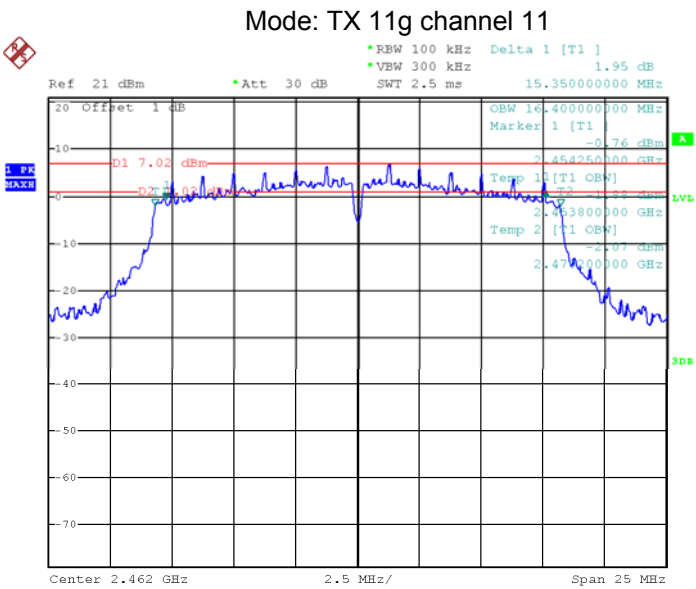
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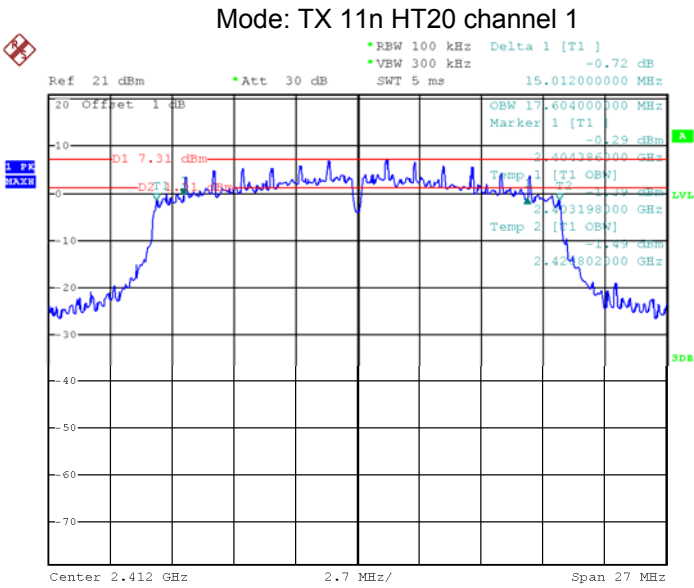
Date: 16.APR.2020 02:05:10



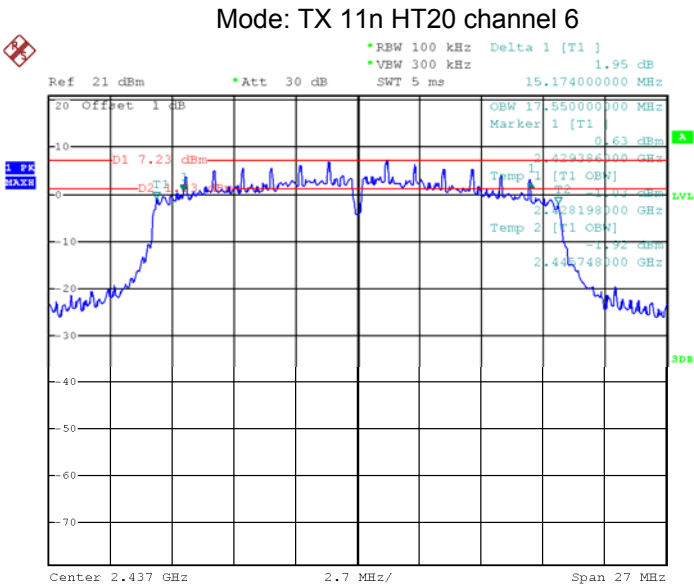
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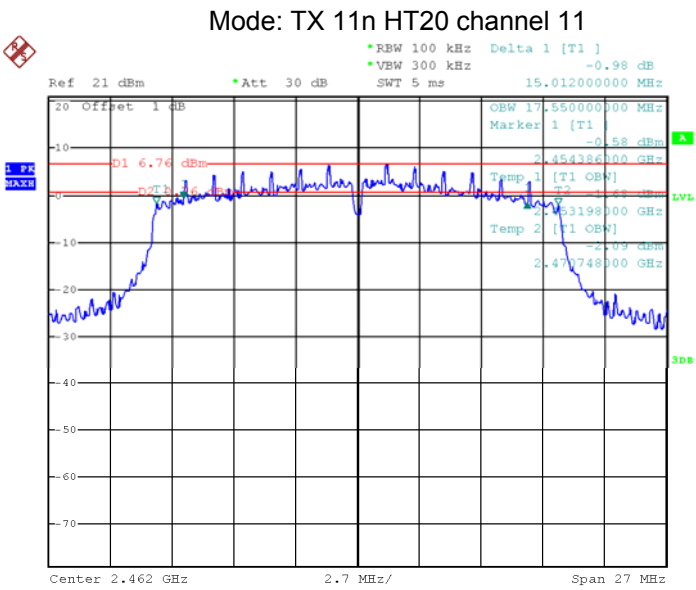
Date: 16.APR.2020 02:20:59



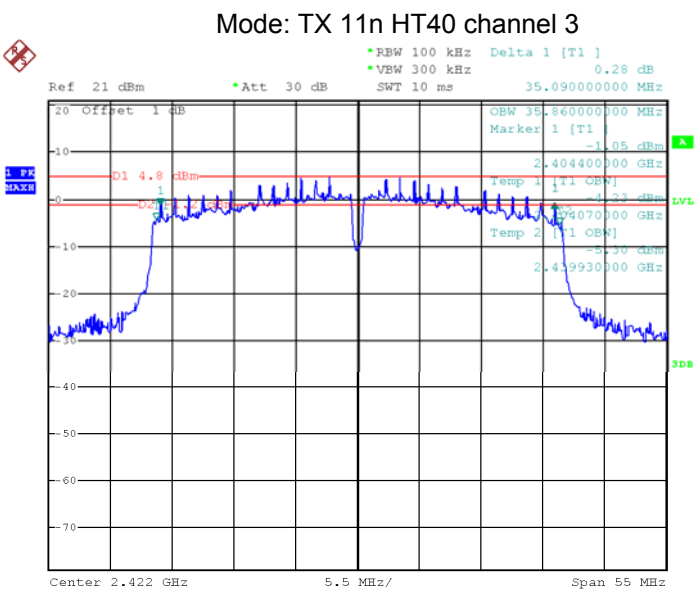
Date: 16.APR.2020 02:28:15



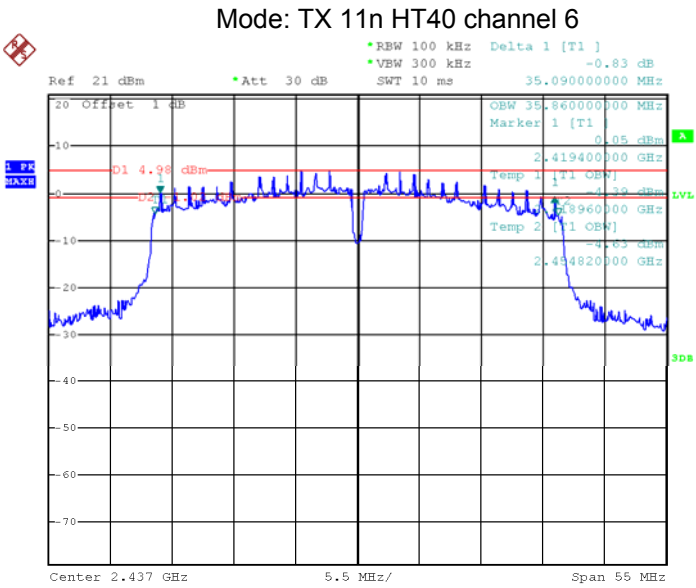
Date: 16.APR.2020 03:38:55



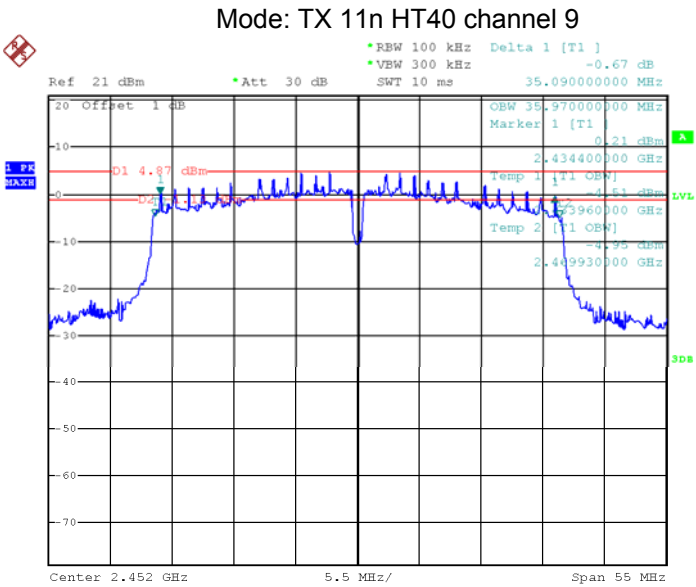
Date: 16.APR.2020 03:43:33



Date: 16.APR.2020 03:48:58



Date: 16.APR.2020 04:00:59



Date: 16.APR.2020 04:11:29

11 Maximum Peak conducted Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018;
ANSI C63.10:2013

11.1 Test Procedure:

KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018

section 8.3.1.1 (For BLE)

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

- a) Set the $RBW \geq DTS$ bandwidth.
- b) Set $VBW \geq 3 \times RBW$.
- c) Set $span \geq 3 \times RBW$
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

section 8.3.1.2 (For WIFI)

This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.

- a) Set the $RBW = 1\%$ to 5% of the OBW, not to exceed 1 MHz..
- b) Set the $VBW \geq 3 \times RBW$
- c) Set the $span \geq 1.5 \times OBW$.
- d) Detector = RMS.
- e) Sweep time = auto couple.
- f) trigger = free run..
- g) Number of points in sweep $\geq [2 \times span / RBW]$. (This gives bin-to-bin spacing $\geq RBW / 2$, so that narrowband signals are not lost between frequency bins.)
- h) Trace average at least 100 traces in power averaging (rms) mode.
- i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum..

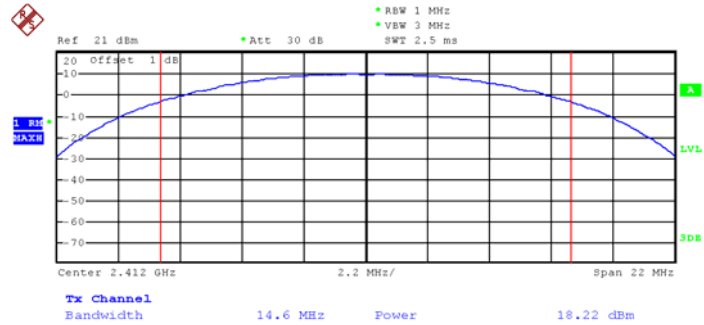
11.2 Test Result:**ANT 1+ ANT 2**

Operation mode	Channel Frequency (MHz)	ANT1 (dBm)	ANT2 (dBm)	Maximum Peak Output Power (dBm)	Limit
TX 11b	Low-2412	18.22	18.53	21.39	1W/30dBm
	Middle-2437	18.15	18.86	21.53	1W/30dBm
	High-2462	17.84	17.99	20.93	1W/30dBm
TX 11g	Low-2412	18.94	18.93	21.95	1W/30dBm
	Middle-2437	18.84	18.95	21.91	1W/30dBm
	High-2462	18.41	18.42	21.43	1W/30dBm
TX 11n HT20	Low-2412	18.85	18.86	21.87	1W/30dBm
	Middle-2437	18.88	18.76	21.83	1W/30dBm
	High-2462	18.41	18.29	21.36	1W/30dBm
TX 11n HT40	Low-2422	19.40	19.13	22.28	1W/30dBm
	Middle-2437	19.18	19.18	22.19	1W/30dBm
	High-2452	19.16	19.20	22.19	1W/30dBm

Test Plot

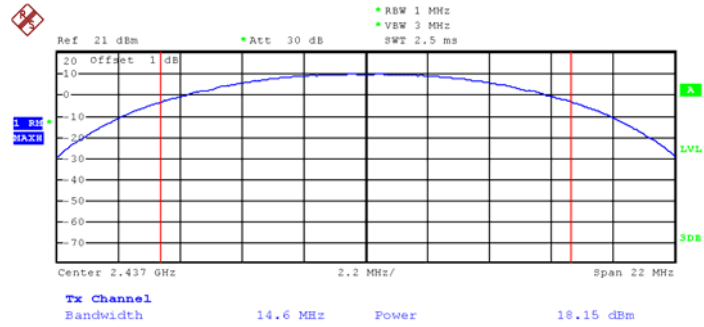
ANT 1

Mode: TX 11b channel 1

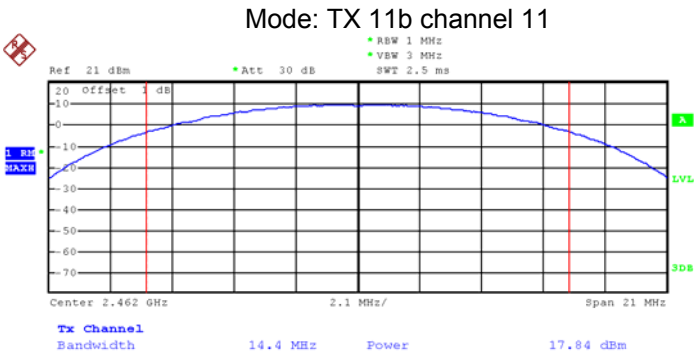


Date: 15.APR.2020 21:04:11

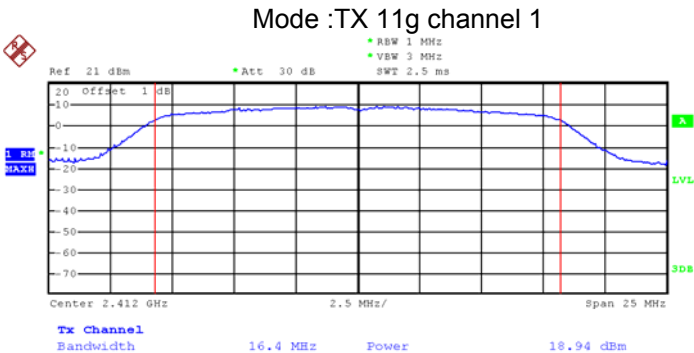
Mode: TX 11b channel 6



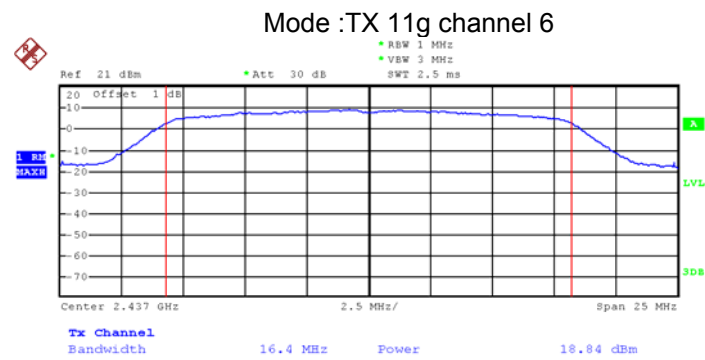
Date: 15.APR.2020 21:27:52



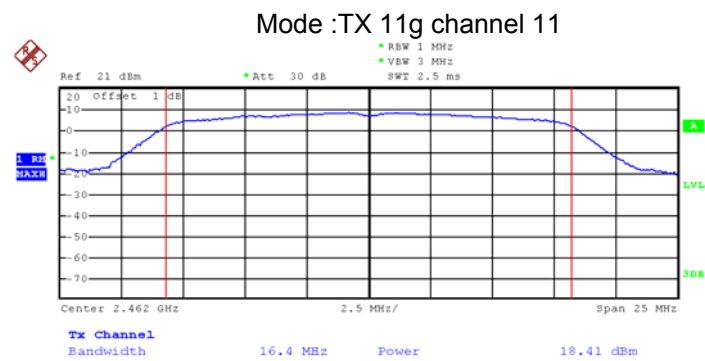
Date: 15.APR.2020 21:39:43



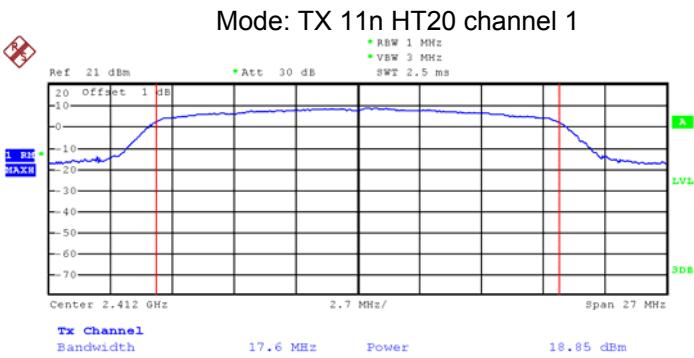
Date: 15.APR.2020 21:53:05



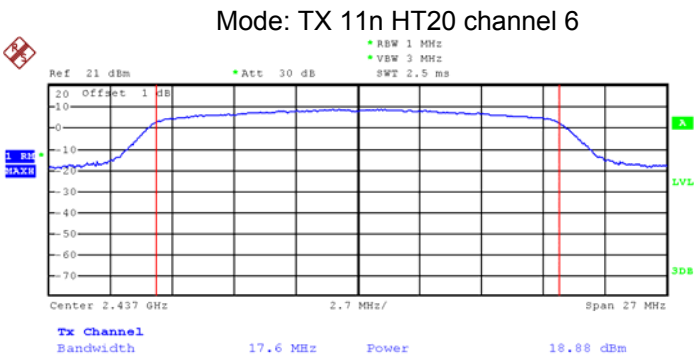
Date: 15.APR.2020 22:17:11



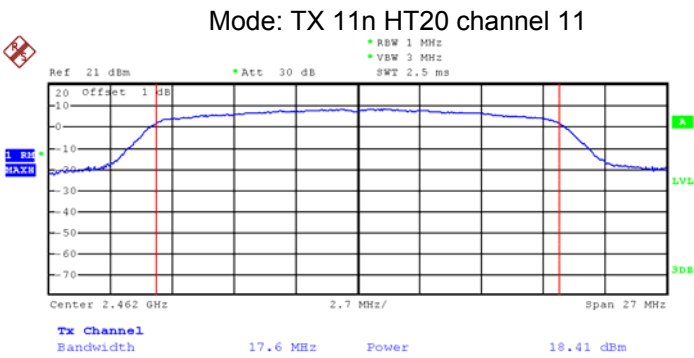
Date: 15.APR.2020 22:22:50



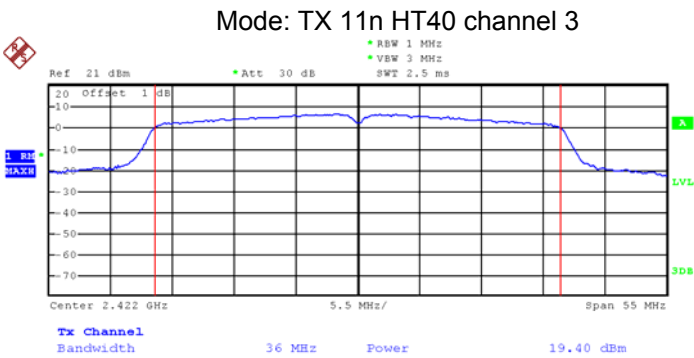
Date: 15.APR.2020 22:39:46



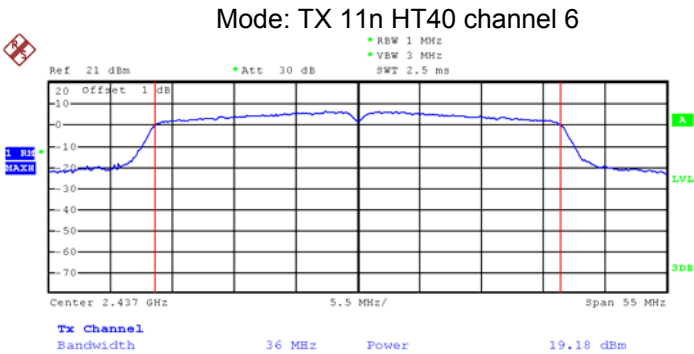
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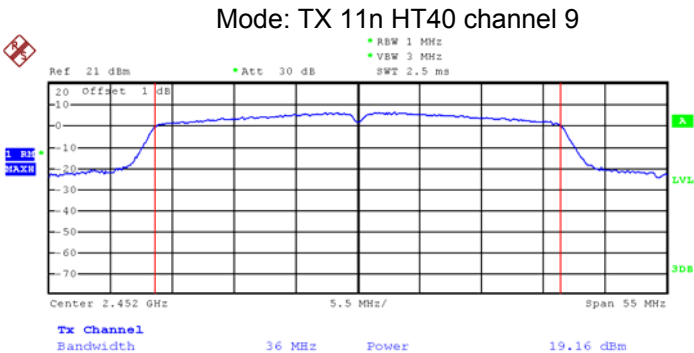
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Date: 16.APR.2020 00:54:57



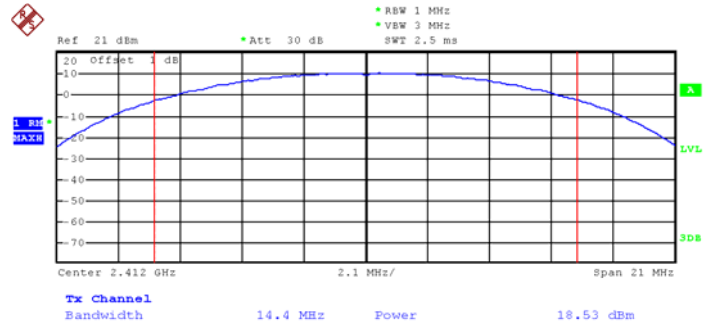
Date: 16.APR.2020 01:12:37



Date: 16.APR.2020 01:17:16

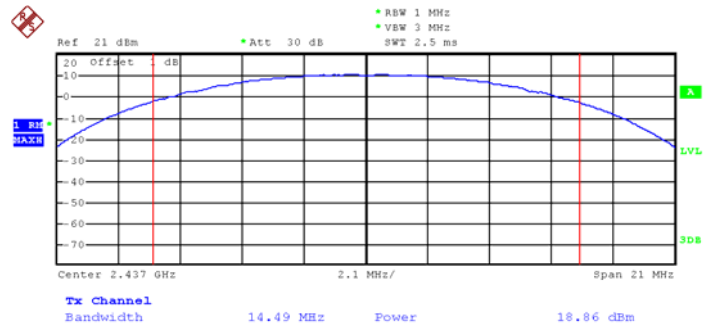
ANT 2

Mode: TX 11b channel 1

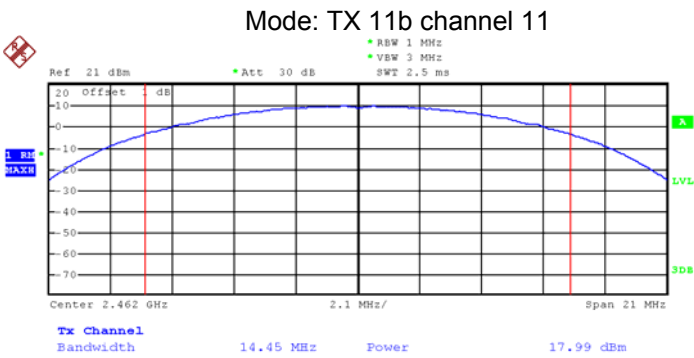


Date: 16.APR.2020 01:40:12

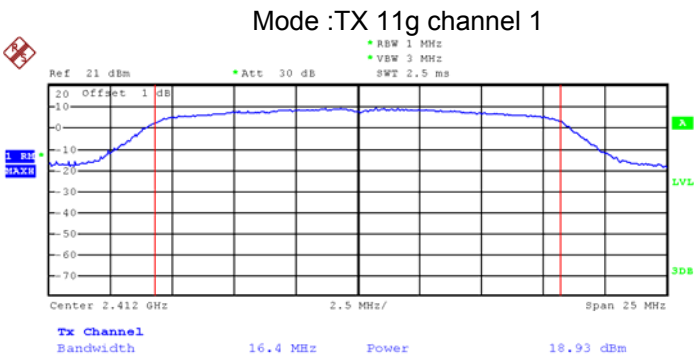
Mode: TX 11b channel 6



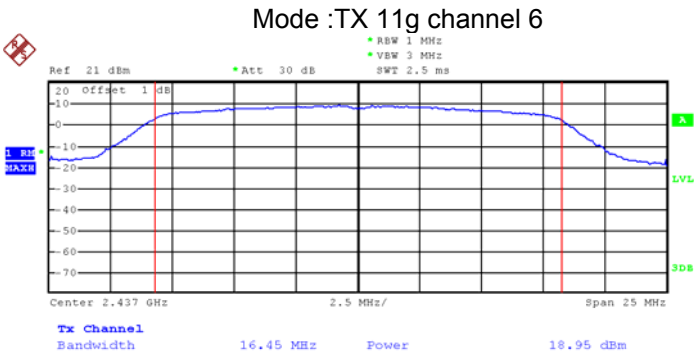
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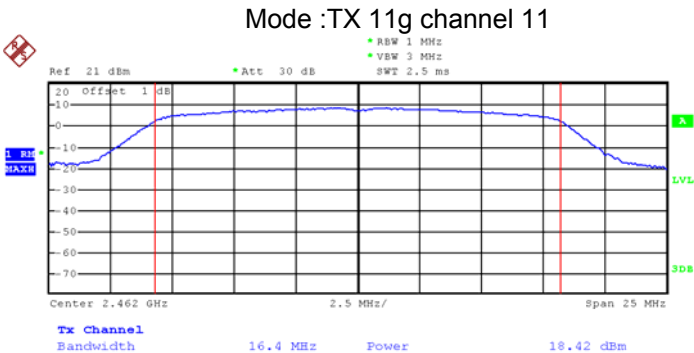
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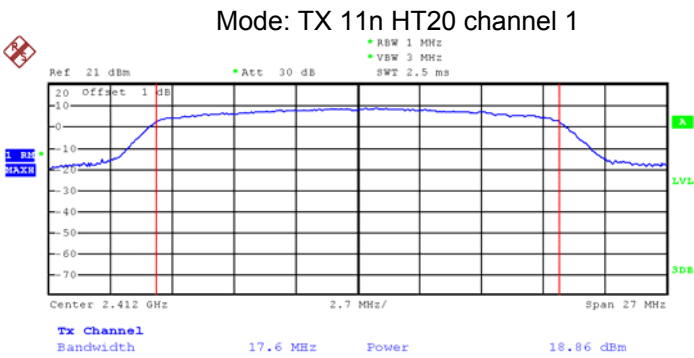
Date: 16.APR.2020 02:07:20



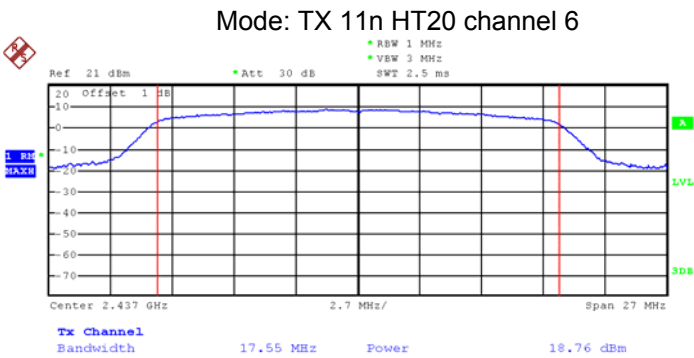
Date: 16.APR.2020 02:17:01



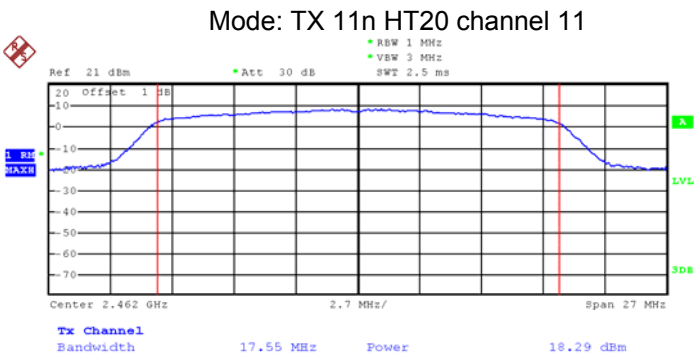
Date: 16.APR.2020 02:22:51



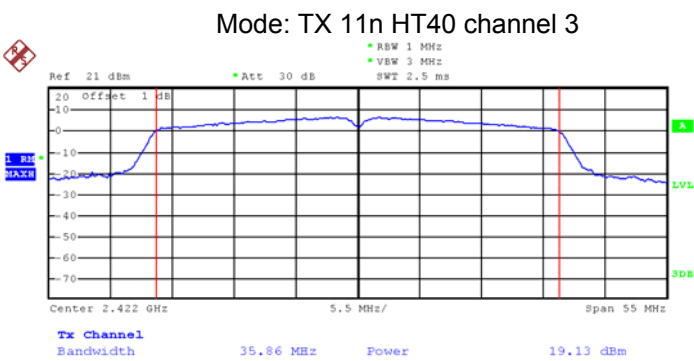
Date: 16.APR.2020 02:30:06



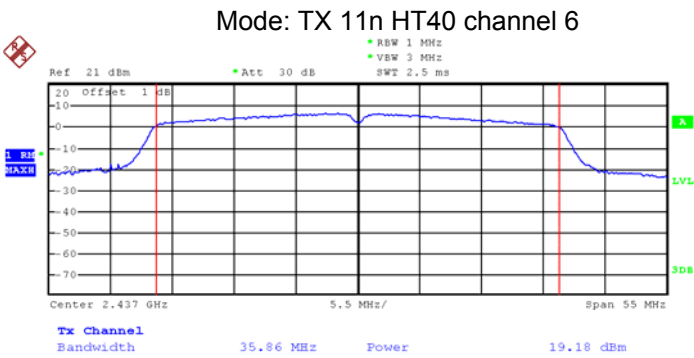
Date: 16.APR.2020 03:40:43



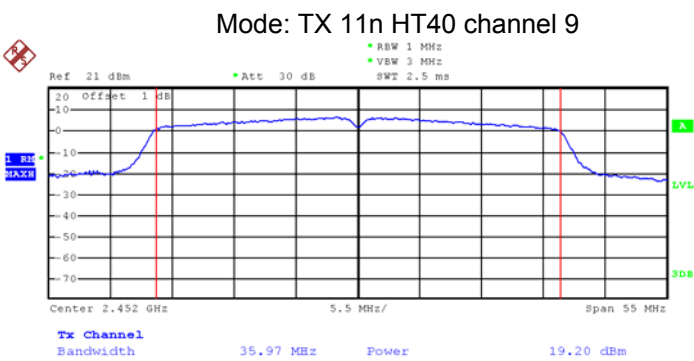
Date: 16.APR.2020 03:45:09



Date: 16.APR.2020 03:52:09



Date: 16.APR.2020 04:08:40



Date: 16.APR.2020 04:15:40

12 Duty cycle

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	ANSI C63.10: 2013
Test Limit:	N/A
Test Result:	PASS
Remark:	EUT transmitting continuously

13 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018;
ANSI C63.10:2013

13.1 Test Procedure:

KDB 558074 D01 15.247 Meas Guidance v05 August 24, 2018 section 10.2

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

13.2 Test Result:

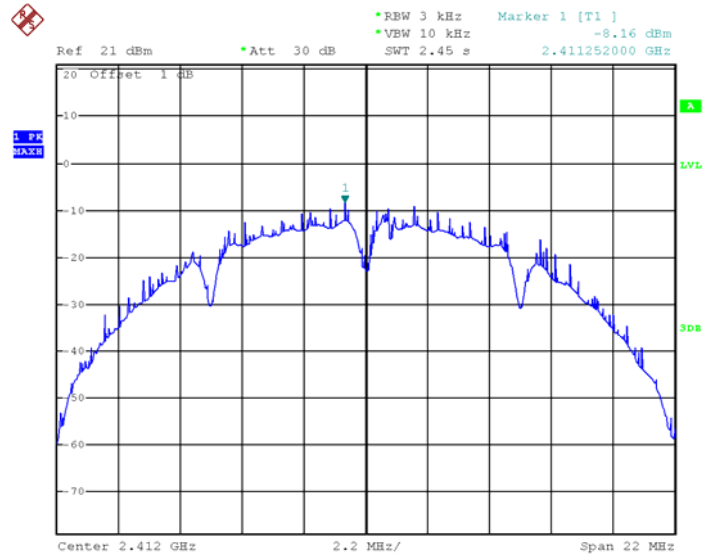
ANT 1+ ANT 2

Operation mode	Channel Frequency (MHz)	ANT1 (dBm/3kHz)	ANT2 (dBm/3kHz)	Power Spectral (dBm/3kHz)	Limit
TX 11b	Low-2412	-8.16	-7.64	-4.88	8dBm/3kHz
	Middle-2437	-8.09	-7.31	-4.67	8dBm/3kHz
	High-2462	-8.32	-7.19	-4.71	8dBm/3kHz
TX 11g	Low-2412	-10.24	-9.44	-6.81	8dBm/3kHz
	Middle-2437	-9.79	-9.59	-6.68	8dBm/3kHz
	High-2462	-8.96	-9.42	-6.17	8dBm/3kHz
TX 11n HT20	Low-2412	-9.70	-8.73	-6.18	8dBm/3kHz
	Middle-2437	-9.37	-8.61	-5.96	8dBm/3kHz
	High-2462	-8.96	-10.23	-6.54	8dBm/3kHz
TX 11n HT40	Low-2422	-11.73	-12.00	-8.85	8dBm/3kHz
	Middle-2437	-12.38	-10.81	-8.51	8dBm/3kHz
	High-2452	-11.73	-11.23	-8.46	8dBm/3kHz

Test Plot

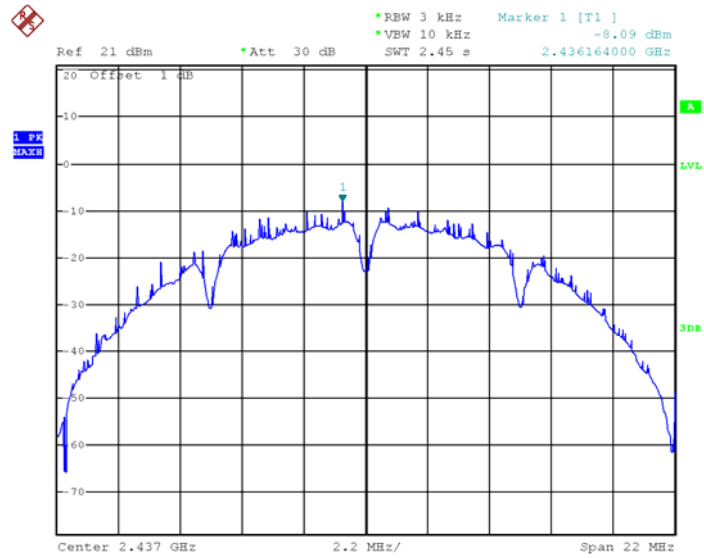
ANT 1

Mode: TX 11b channel 1

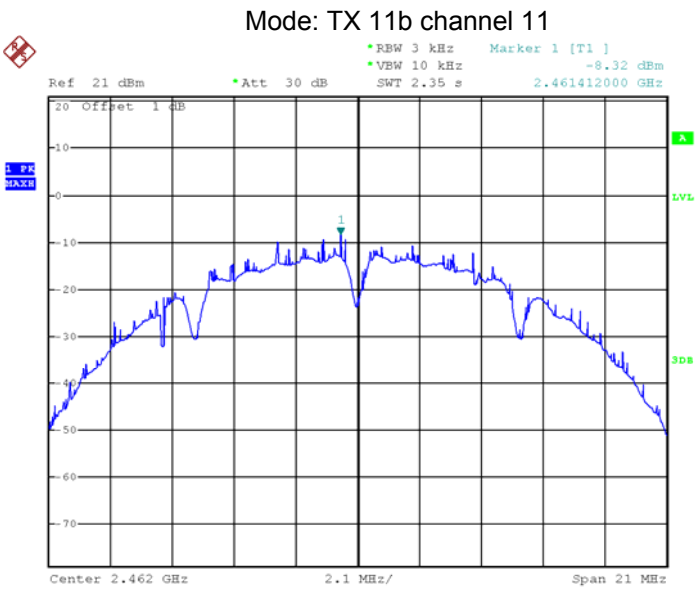


Date: 15.APR.2020 21:20:30

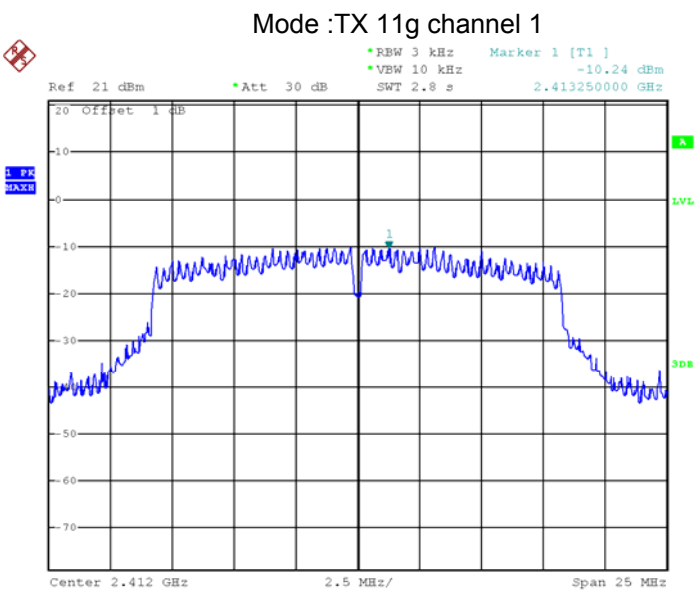
Mode: TX 11b channel 6



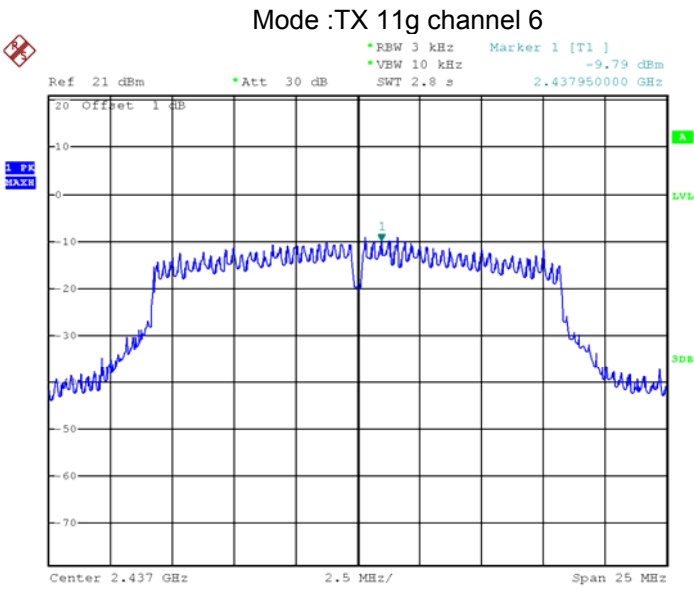
Date: 15.APR.2020 21:26:05



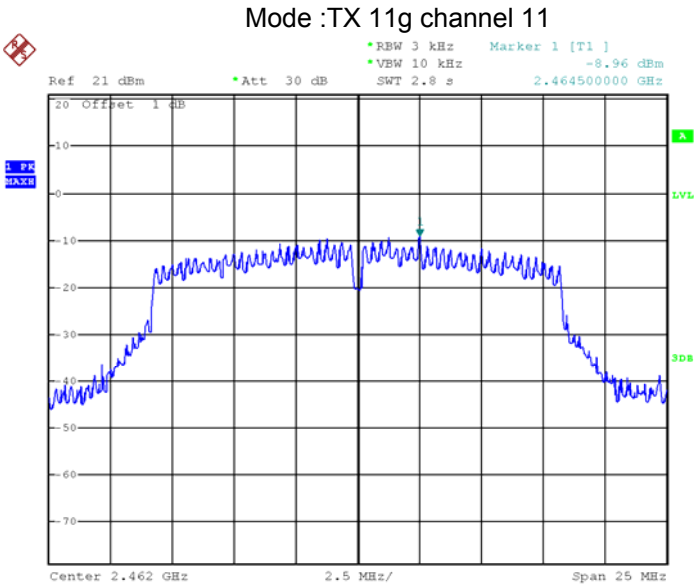
Date: 15.APR.2020 21:37:49



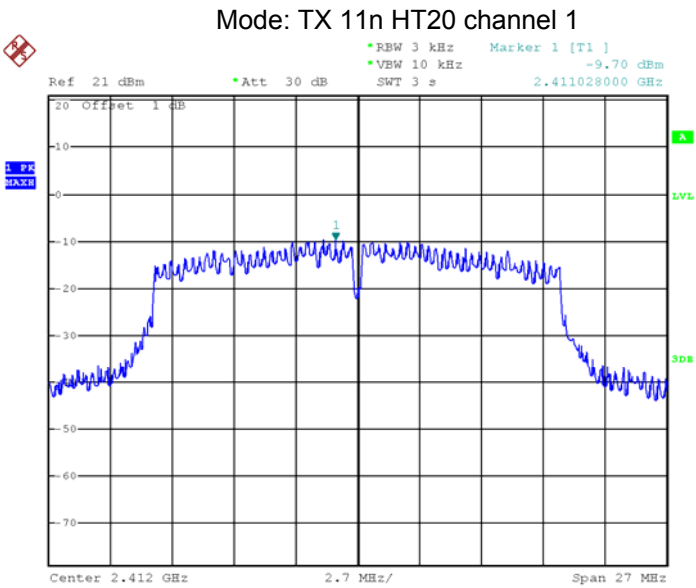
Date: 15.APR.2020 21:51:07



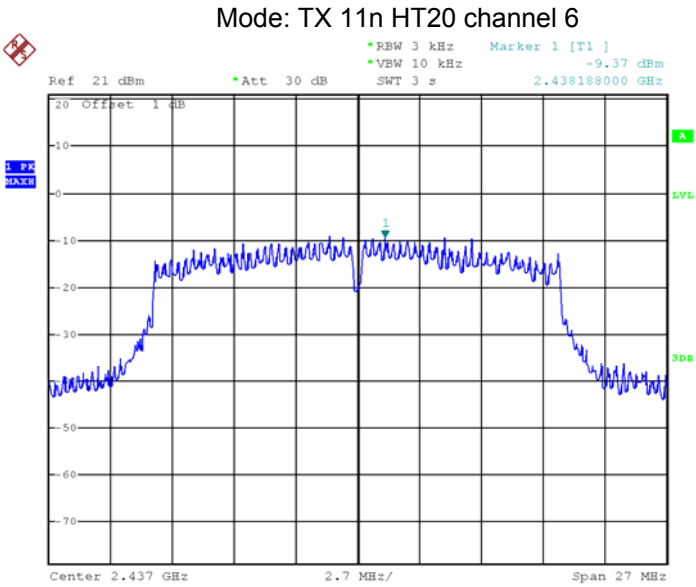
Date: 15.APR.2020 22:16:01



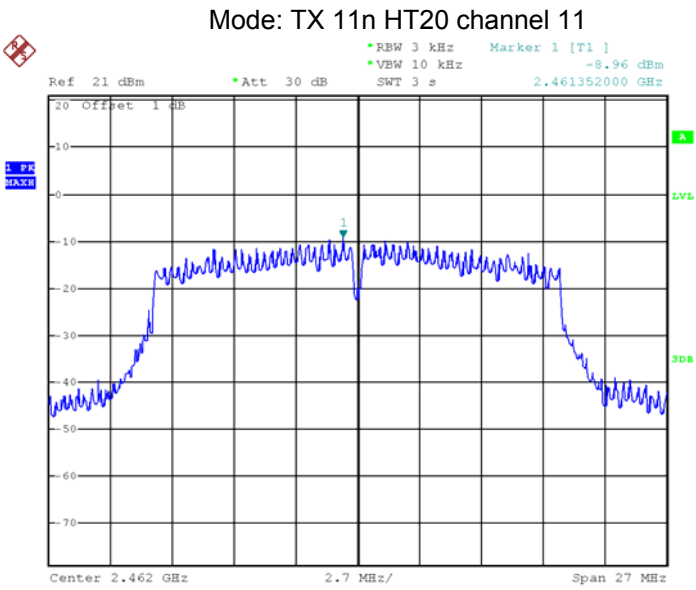
Date: 15.APR.2020 22:21:47



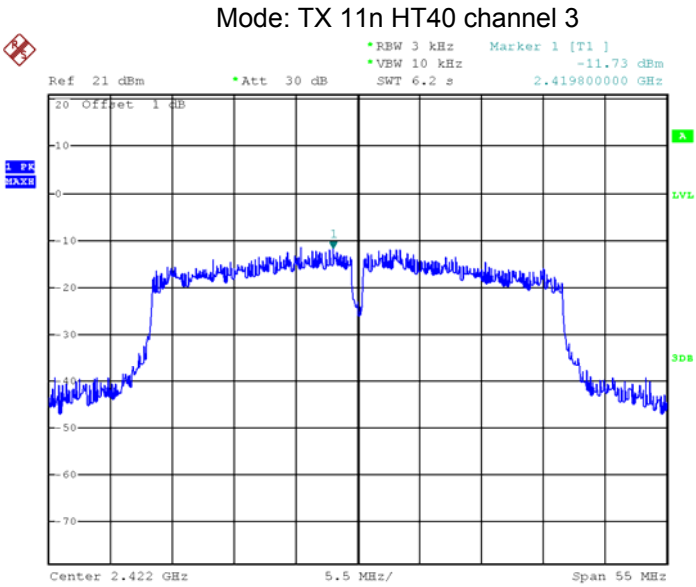
Date: 15.APR.2020 22:37:53



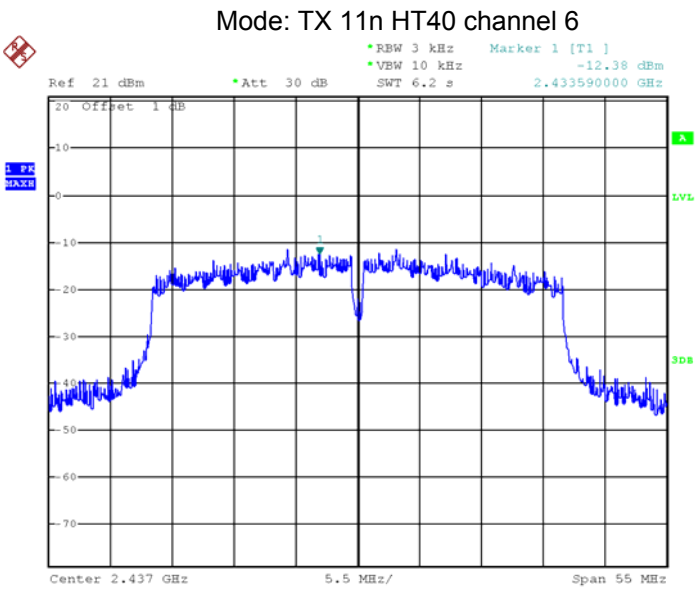
Date: 15.APR.2020 22:52:10



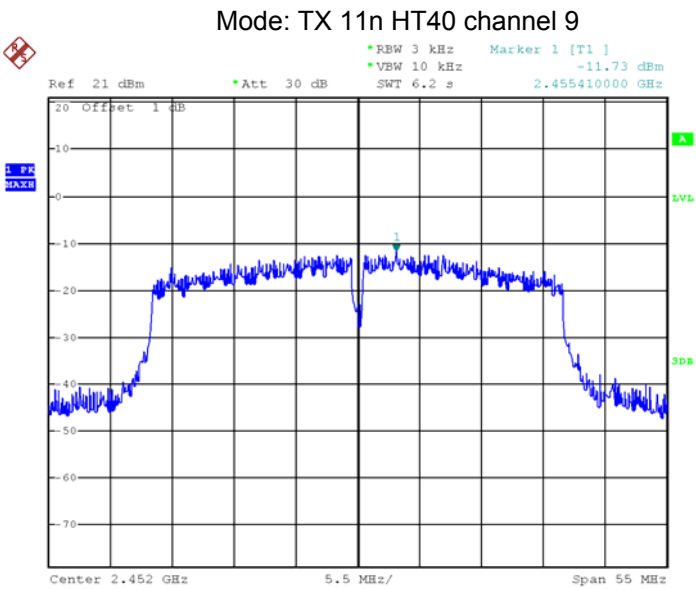
Date: 16.APR.2020 00:38:02



Date: 16.APR.2020 00:49:17

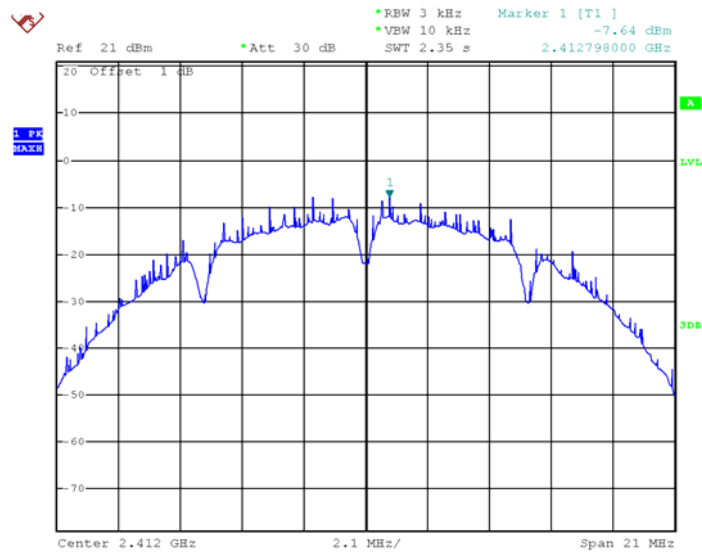


Date: 16.APR.2020 01:06:31



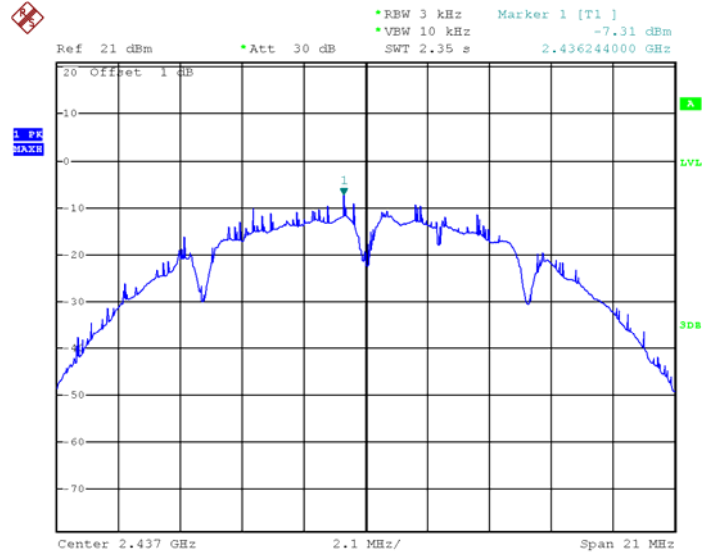
Date: 16.APR.2020 01:16:11

ANT 2
Mode: TX 11b channel 1

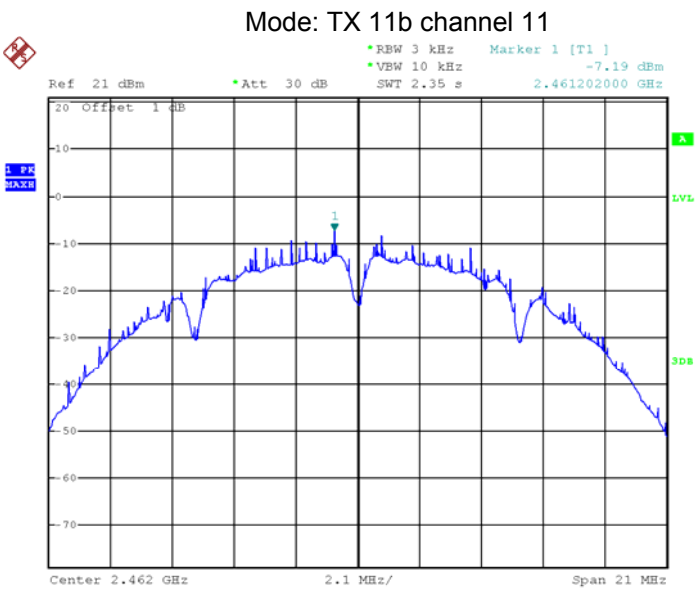


Date: 16.APR.2020 01:36:58

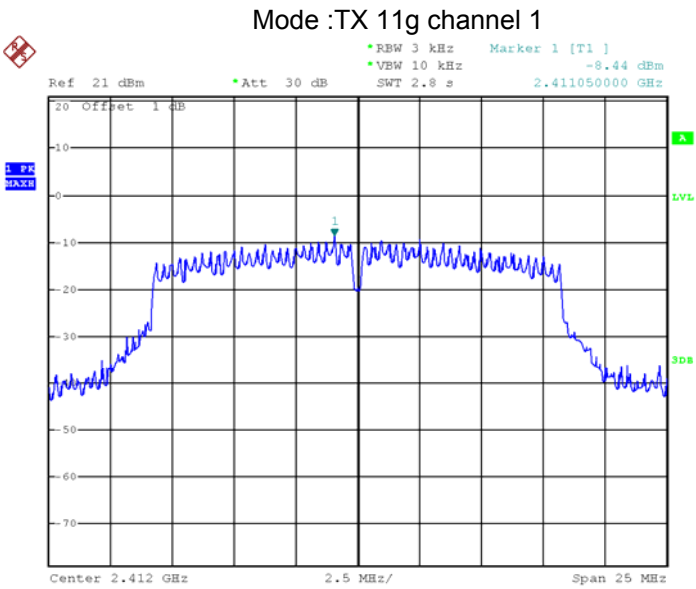
Mode: TX 11b channel 6



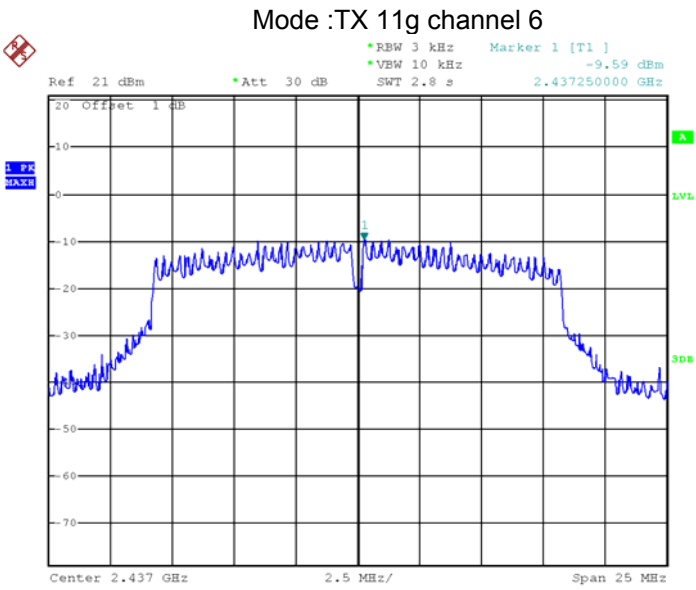
Date: 16.APR.2020 01:48:56



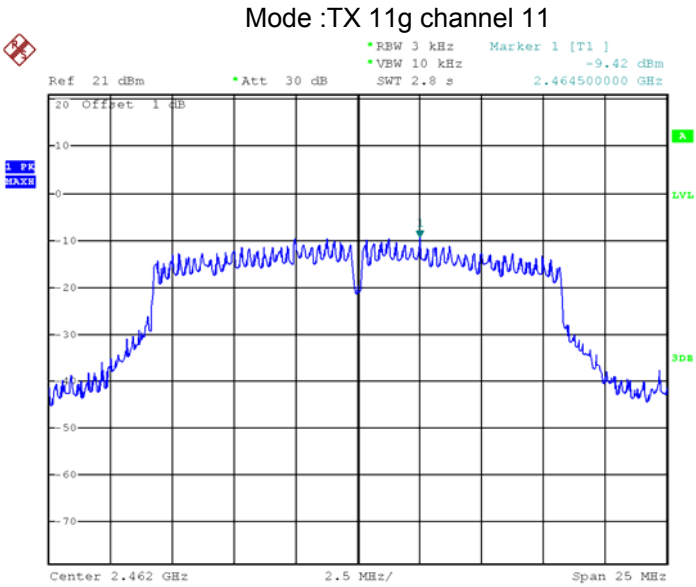
Date: 16.APR.2020 01:56:57



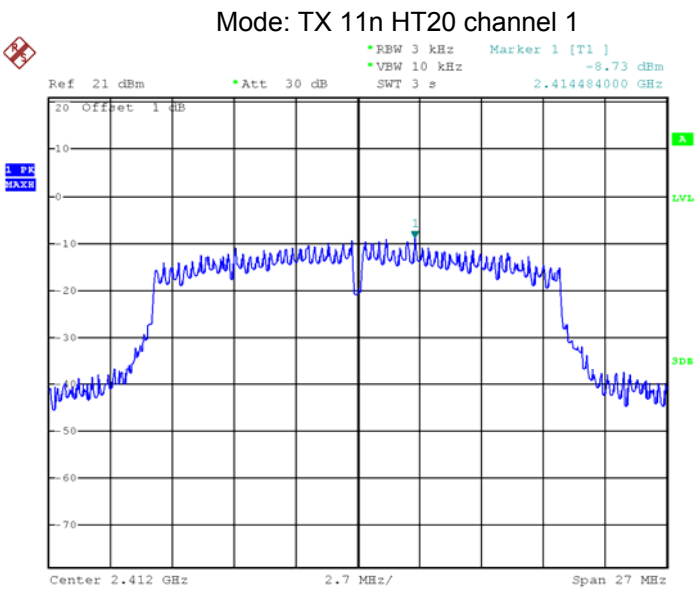
Date: 16.APR.2020 02:06:08



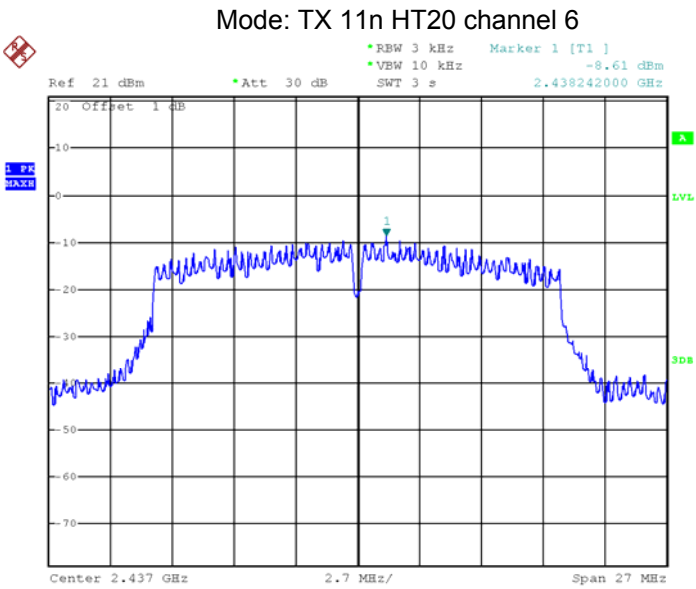
Date: 16.APR.2020 02:15:49



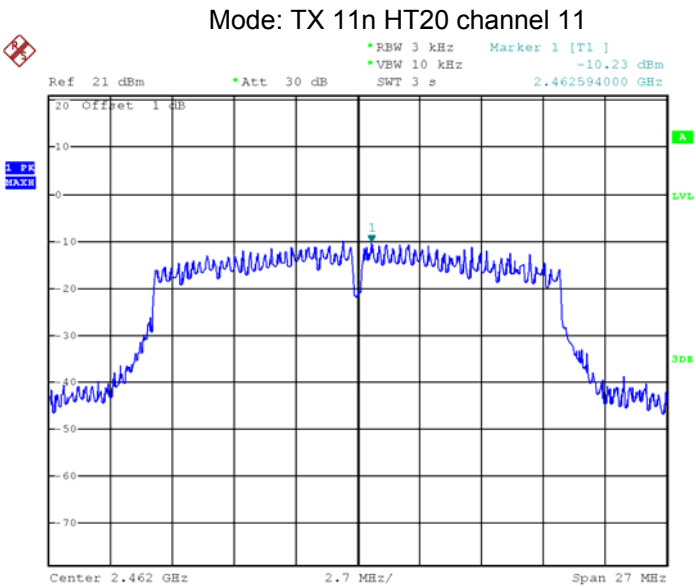
Date: 16.APR.2020 02:22:03



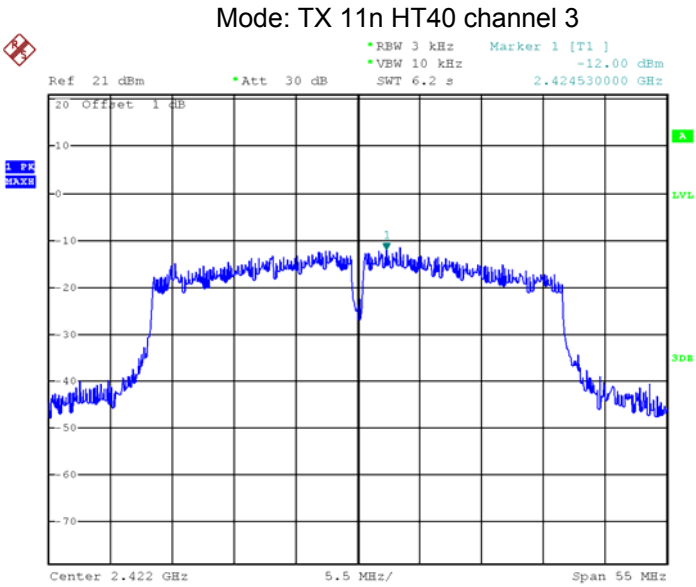
Date: 16.APR.2020 02:29:08



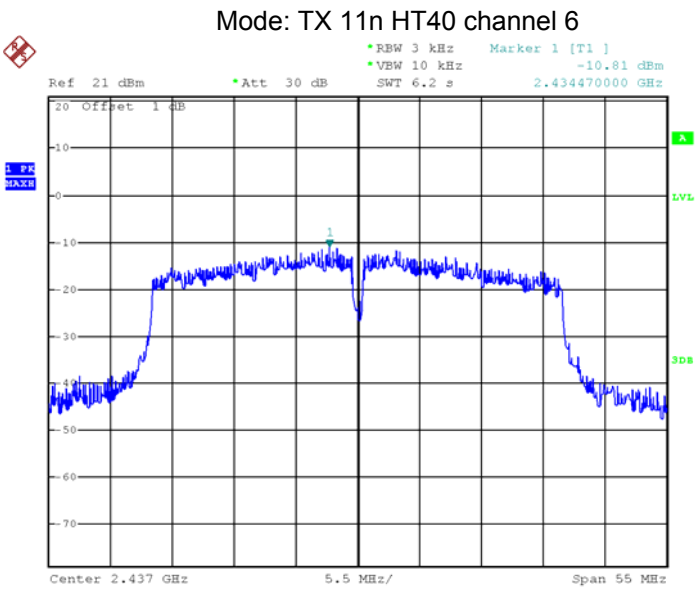
Date: 16.APR.2020 03:39:45



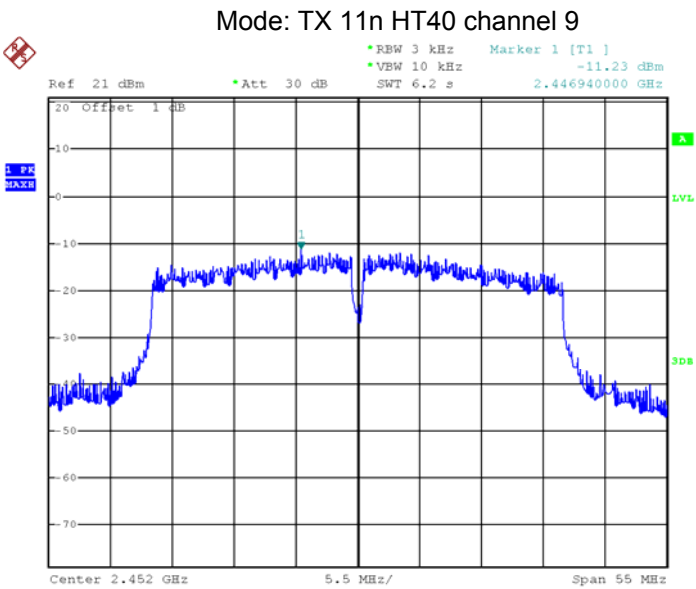
Date: 16.APR.2020 03:44:21



Date: 16.APR.2020 03:50:25



Date: 16.APR.2020 04:07:28



Date: 16.APR.2020 04:13:02

14 Antenna 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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

This device uses an anti-helix interface antenna to the intentional radiator. Antenna connectors complied with the requirement.

15 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix- AUR524/WRC-1-Photos.

=====End of Report=====