TEST REPORT

Reference No.	:	WTD23D06127545W001
FCC ID	:	2A7WS-MGT1302
Applicant.....	:	Moeco IoT Inc.
Address.....	:	919 North Market Street, Suite 950 Wilmington, DE 19801, USA
Manufacturer	:	Moeco IoT Inc.
Address.....	:	919 North Market Street, Suite 950 Wilmington, DE 19801, USA
Product.....	:	Moeco ACT Sensor
Model(s).	:	MGT1302
Standards.....	:	FCC 47CFR Part 15.247
Date of Receipt sample	:	2023-06-13
Date of Test	:	2023-06-13 to 2023-06-16
Date of Issue.....	:	2023-06-25
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
WTD23D06127545W001	2023-06-13	2023-06-13 to 2023-06-16	2023-06-25	Original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	Moeco ACT Sensor
Model(s):	MGT1302
Model Description:	N/A
Wi-Fi Specification:	2.4G-802.11b/g/n HT20/n HT40
Hardware Version:	MGT1302_REV_0_2
Software Version:	v4.1.1

4.2 Details of E.U.T.

Operation Frequency:	802.11b/g/n HT20: 2412~2462MHz 802.11n HT40: 2422~2452MHz
Max. RF output power:	23.49dBm
Type of Modulation:	DSSS, OFDM
Antenna installation:	PCB Antenna
Antenna Gain:	5.3dBi

Note:

#: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, WALTEK lab has not verified the authenticity of its information.

Ratings:	Battery: DC 3.7V 1500mAh

4.3 Channel List

Wi-Fi

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	-	-

4.4 Test Facility

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

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

Waltek Testing Group 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 Testing Group 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.

4.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

4.6 Abnormalities from Standard Conditions

None.

4.7 Test Mode

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.

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

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	FSP30	100091	2023-04-24	2024-04-23
2	Amplifier	Agilent	8447D	2944A10178	2022-08-01	2023-07-31
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2022-08-07	2023-08-06
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2023-04-24	2024-04-23
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2023-02-02	2024-02-01
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2022-07-29	2023-07-28
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2022-08-08	2023-08-07
8	Coaxial Cable (above 1GHz)	ZT26-NJ-NJ-8M/FA	1GHz-18GHz	NA	2023-02-02	2024-02-01
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	2023-04-24	2024-04-23
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2022-10-31	2023-10-30
3	Active Loop Antenna	Com-Power Corp.	AL-130R	10160007	2023-05-07	2024-05-06
4	Amplifier	ANRITSU	MH648A	M43381	2023-04-24	2024-04-23
5	Cable	HUBER+SUHNER	CBL2	525178	2023-04-24	2024-04-23
RF Conducted Testing						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	Spectrum Analyzer	R&S	FSP40	100501	2022-08-01	2023-07-31
2.	EXA Signal Analyzer	Malaysia Keysight	N9010A	MY50520207	2023-04-24	2024-04-23

6.2 Description of Support Units

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

6.3 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission	± 3.64dB (AC mains 150KHz~30MHz)
Radiated Spurious Emissions	± 5.08dB (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 Duty Cycle

Type of Modulation	On time ms	Period ms	Duty Cycle linear	Duty Cycle %	Duty Cycle Factor(dB)	Average Factor(dB)
802.11b	100	100	1.00	100.00	0.00	0.00
802.11g	100	100	1.00	100.00	0.00	0.00
802.11n-HT20	100	100	1.00	100.00	0.00	0.00
802.11n-HT40	100	100	1.00	100.00	0.00	0.00

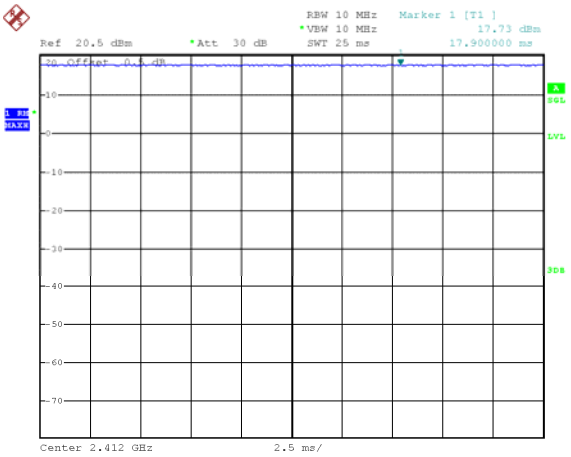
Remark:

Duty cycle=On Time/period;

Duty cycle factor=10*log (1/Duty cycle);

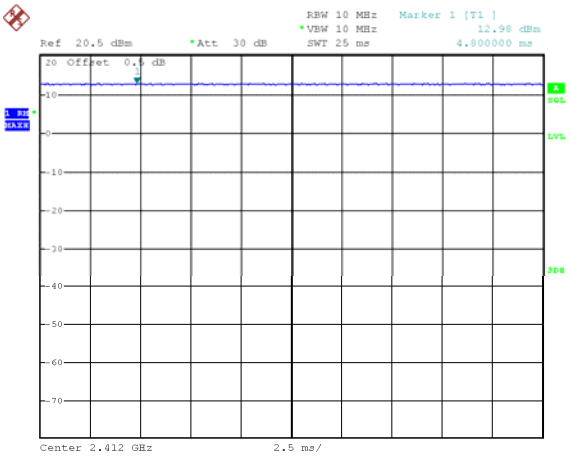
Average factor=$20\log_{10}$Duty cycle

Wi-Fi 802.11b



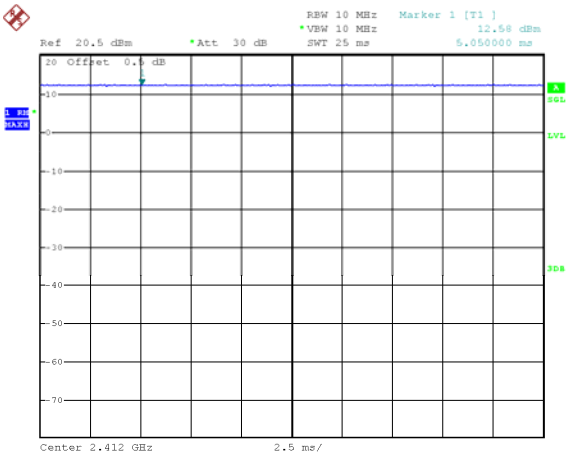
Date: 16.JUN.2023 15:13:33

Wi-Fi 802.11g



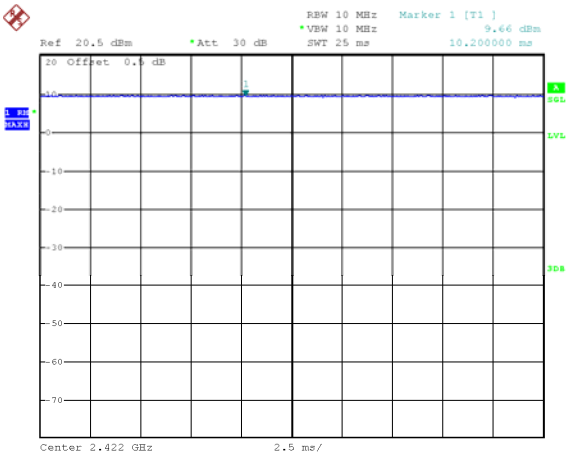
Date: 16.JUN.2023 15:12:28

Wi-Fi 802.11n-HT20



Date: 16.JUN.2023 15:11:50

Wi-Fi 802.11n-HT40



Date: 16.JUN.2023 15:11:19

8 Radiated Emissions

Test Requirement: 47CFR FCC Part15 Subpart C §15.209&15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019; 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

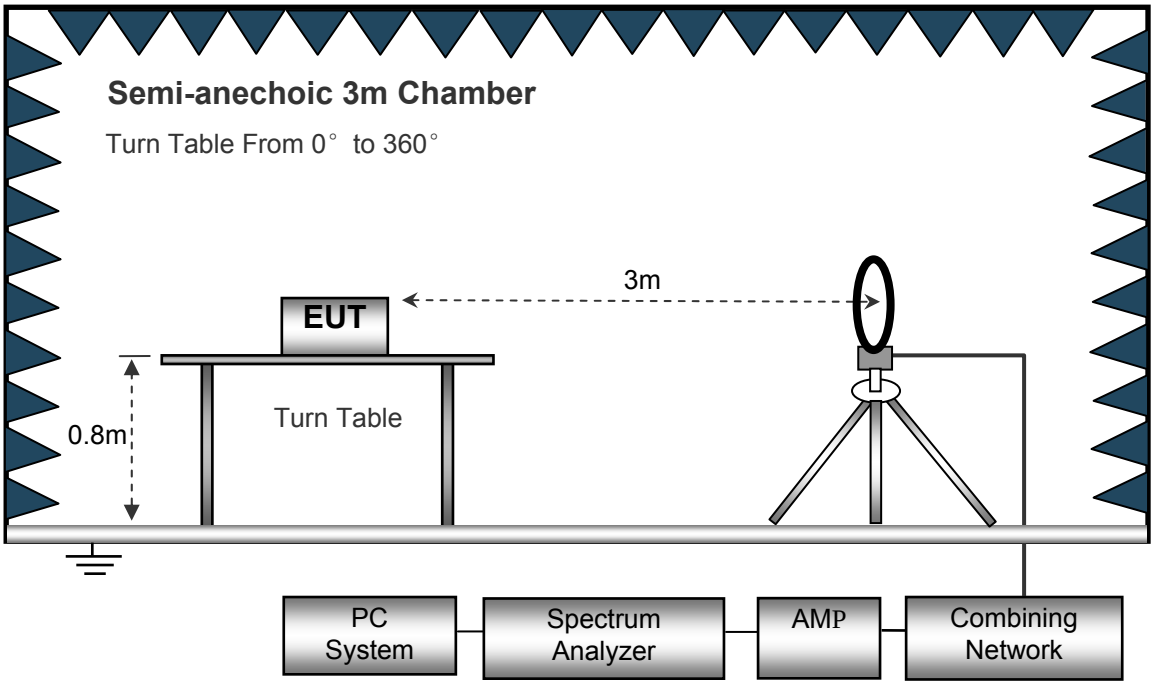
EUT Operation:

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

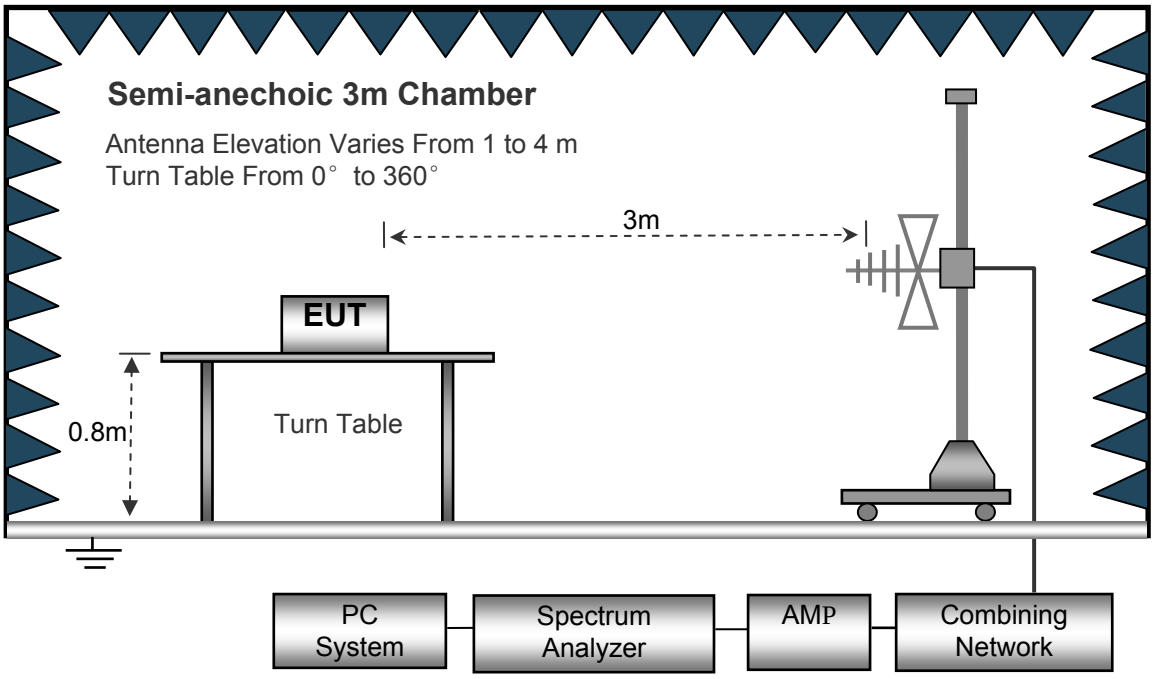
8.2 Test Setup

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

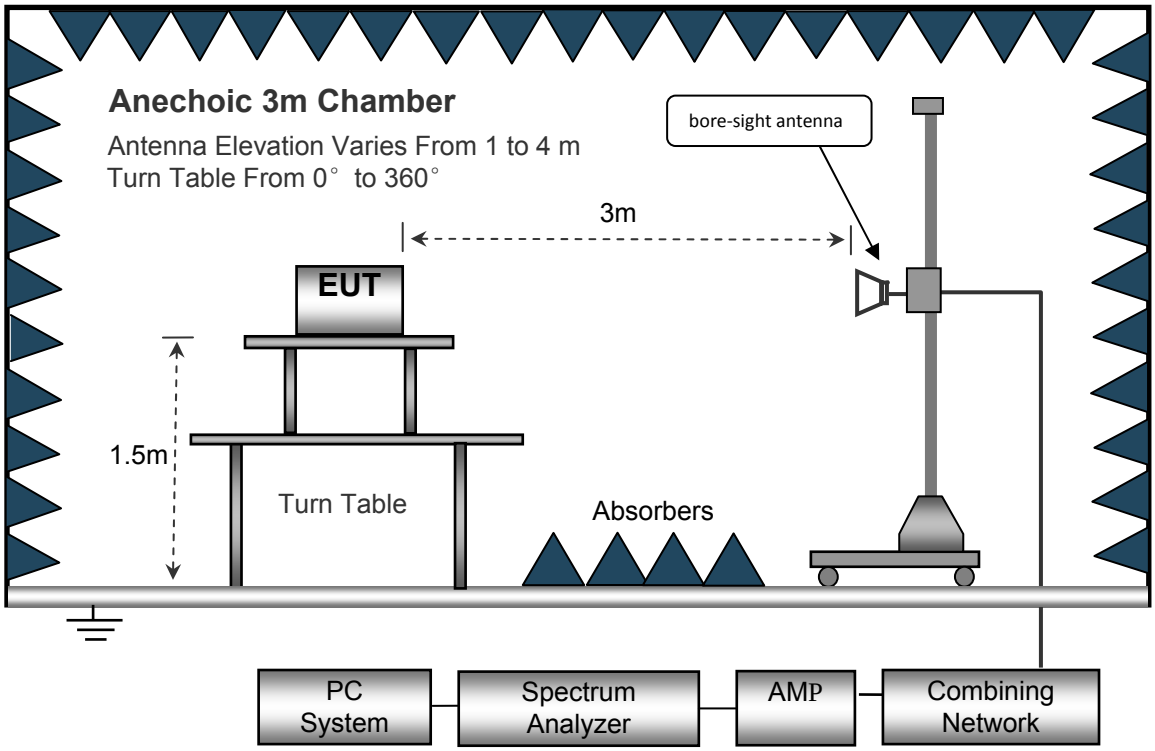
The test setup for emission measurement below 30MHz.



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 druing 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:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - 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:

Margin = Corr. Ampl. – Limit

8.6 Summary of Test Results

Note:

WLAN can transmit simultaneously with FCC ID: RI7ME310G1WW module.

But Only the worst-case 11b mode were record in the report.

Test Frequency: 9kHz ~ 30MHz

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

Test Frequency: 30MHz ~ 8GHz

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
11b: Low Channel 2412MHz									
322.31	41.70	QP	312	1.7	H	-12.36	29.34	46.00	-16.66
322.31	45.34	QP	270	1.8	V	-12.36	32.98	46.00	-13.02
4824.00	54.71	PK	115	1.0	V	-1.06	53.65	74.00	-20.35
4824.00	42.40	Ave	115	1.0	V	-1.06	41.34	54.00	-12.66
7236.00	48.67	PK	57	2.0	H	1.33	50.00	74.00	-24.00
7236.00	37.25	Ave	57	2.0	H	1.33	38.58	54.00	-15.42
2344.31	45.36	PK	84	1.4	V	-13.19	32.17	74.00	-41.83
2344.31	38.23	Ave	84	1.4	V	-13.19	25.04	54.00	-28.96
2386.75	42.57	PK	173	1.0	H	-13.14	29.43	74.00	-44.57
2386.75	37.38	Ave	173	1.0	H	-13.14	24.24	54.00	-29.76
2496.33	43.43	PK	321	1.5	V	-13.08	30.35	74.00	-43.65
2496.33	37.11	Ave	321	1.5	V	-13.08	24.03	54.00	-29.97

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
11b: Middle Channel 2437MHz									
322.31	41.09	QP	313	1.4	H	-12.36	28.73	46.00	-17.27
322.31	45.30	QP	277	1.9	V	-12.36	32.94	46.00	-13.06
4874.00	53.30	PK	243	1.7	V	-0.62	52.68	74.00	-21.32
4874.00	43.04	Ave	243	1.7	V	-0.62	42.42	54.00	-11.58
7311.00	48.50	PK	211	1.7	H	2.21	50.71	74.00	-23.29
7311.00	36.54	Ave	211	1.7	H	2.21	38.75	54.00	-15.25
2311.39	45.31	PK	310	1.4	V	-13.19	32.12	74.00	-41.88
2311.39	39.24	Ave	310	1.4	V	-13.19	26.05	54.00	-27.95
2383.12	44.62	PK	78	1.0	H	-13.14	31.48	74.00	-42.52
2383.12	37.63	Ave	78	1.0	H	-13.14	24.49	54.00	-29.51
2498.89	44.04	PK	170	1.5	V	-13.08	30.96	74.00	-43.04
2498.89	38.07	Ave	170	1.5	V	-13.08	24.99	54.00	-29.01

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
11b: High Channel 2462MHz									
322.31	41.10	QP	89	1.5	H	-12.36	28.74	46.00	-17.26
322.31	45.10	QP	195	1.4	V	-12.36	32.74	46.00	-13.26
4924.00	54.46	PK	51	1.2	V	-0.24	54.22	74.00	-19.78
4924.00	41.83	Ave	51	1.2	V	-0.24	41.59	54.00	-12.41
7386.00	49.12	PK	266	1.6	H	2.84	51.96	74.00	-22.04
7386.00	36.55	Ave	266	1.6	H	2.84	39.39	54.00	-14.61
2329.94	46.20	PK	156	1.3	V	-13.19	33.01	74.00	-40.99
2329.94	37.19	Ave	156	1.3	V	-13.19	24.00	54.00	-30.00
2360.14	42.58	PK	248	1.6	H	-13.14	29.44	74.00	-44.56
2360.14	37.51	Ave	248	1.6	H	-13.14	24.37	54.00	-29.63
2498.88	43.01	PK	294	1.4	V	-13.08	29.93	74.00	-44.07
2498.88	38.78	Ave	294	1.4	V	-13.08	25.70	54.00	-28.30

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 v05r02 April 2, 2019;
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)).

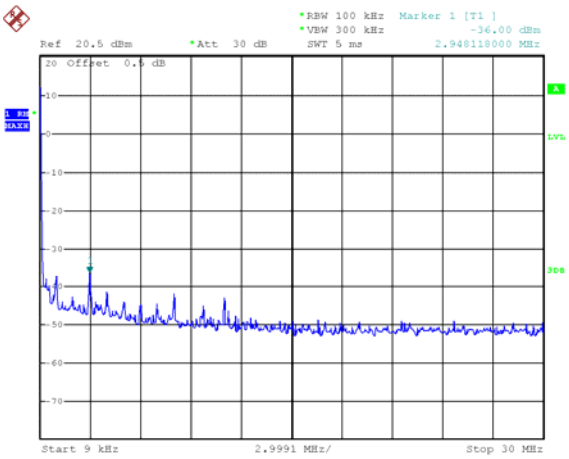
9.1 Test Procedure

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 × 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

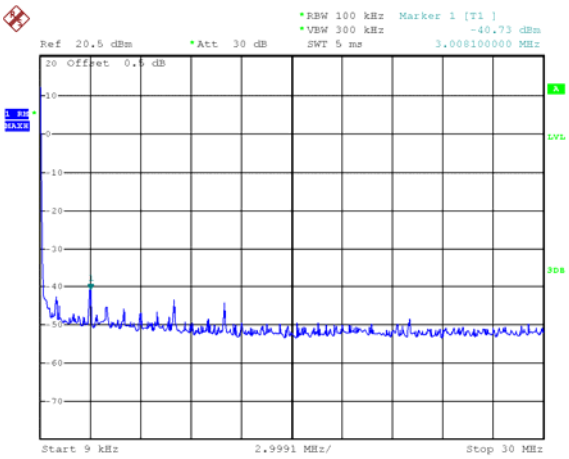
9KHz – 30MHz

Mode: TX 11b channel 1



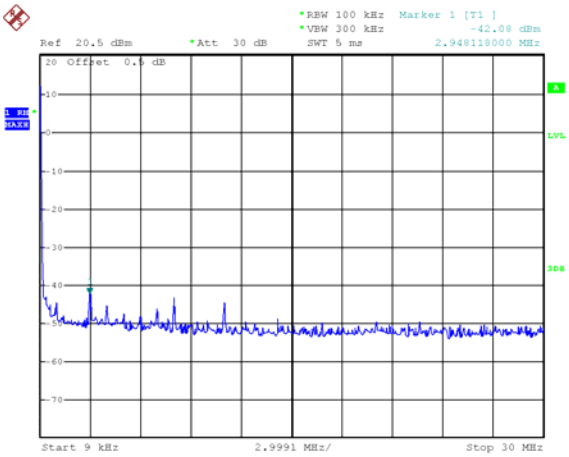
Date: 16.JUN.2023 15:46:45

Mode: TX 11b channel 6



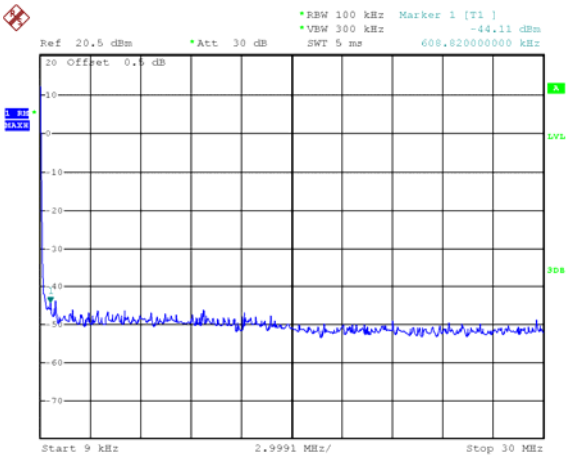
Date: 16.JUN.2023 15:48:40

Mode: TX 11b channel 11



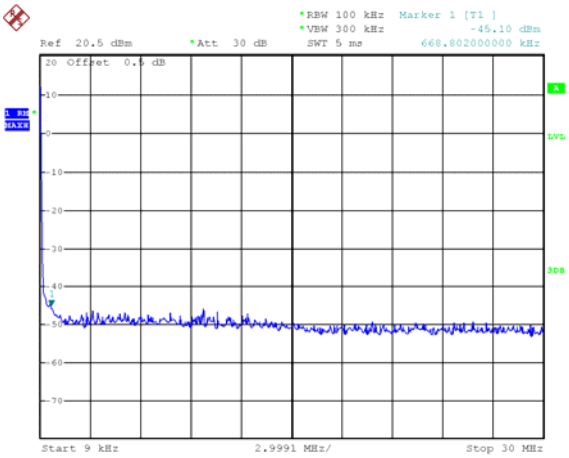
Date: 16.JUN.2023 15:49:41

Mode: TX 11g channel 1



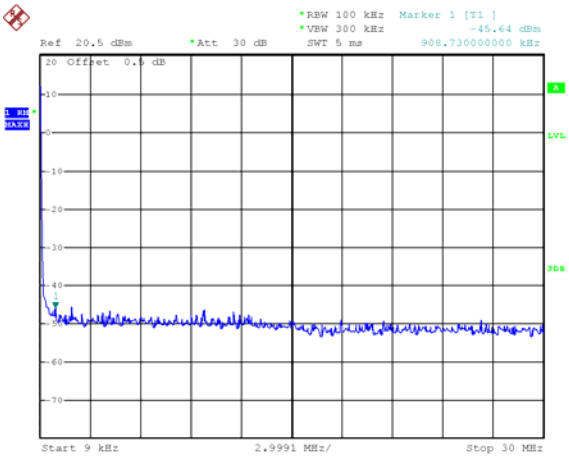
Date: 16.JUN.2023 15:41:41

Mode: TX 11g channel 6



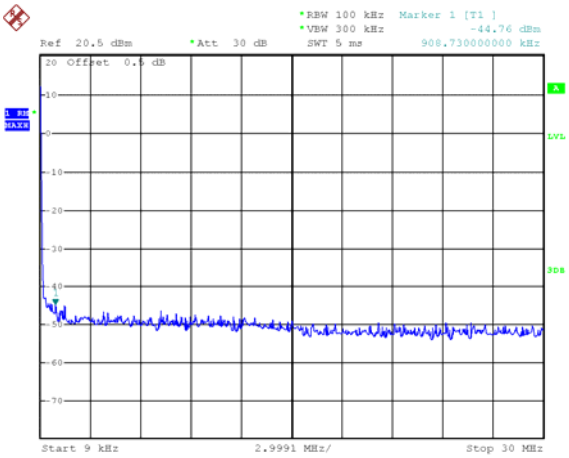
Date: 16.JUN.2023 15:43:30

Mode: TX 11g channel 11



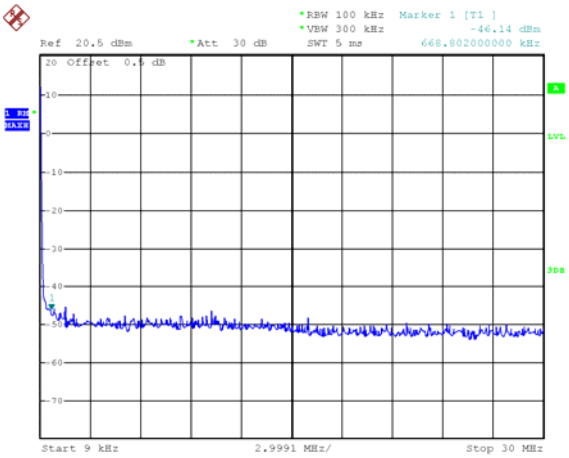
Date: 16.JUN.2023 15:44:56

Mode: TX 11n HT20 channel 1



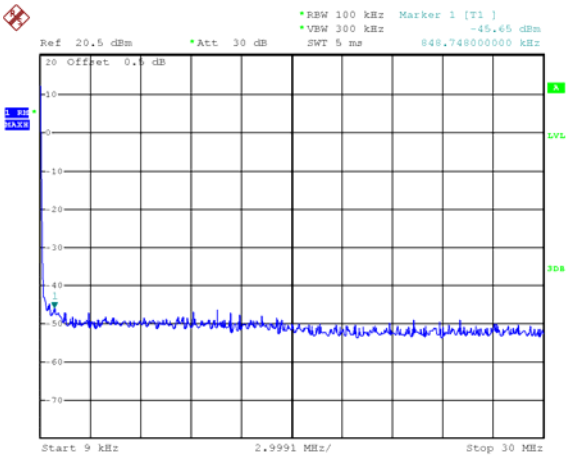
Date: 16.JUN.2023 15:37:41

Mode: TX 11 n HT20 channel 6



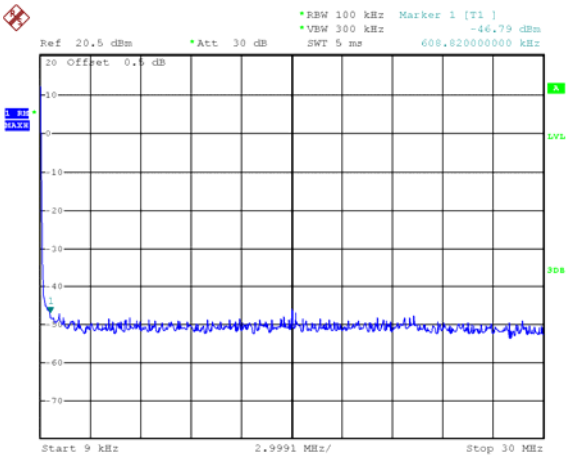
Date: 16.JUN.2023 15:39:02

Mode: TX 11 n HT20 channel 11



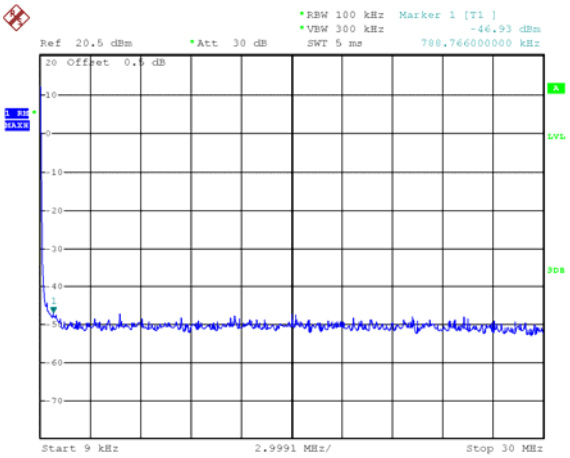
Date: 16.JUN.2023 15:40:17

Mode: TX 11n HT40 channel 3



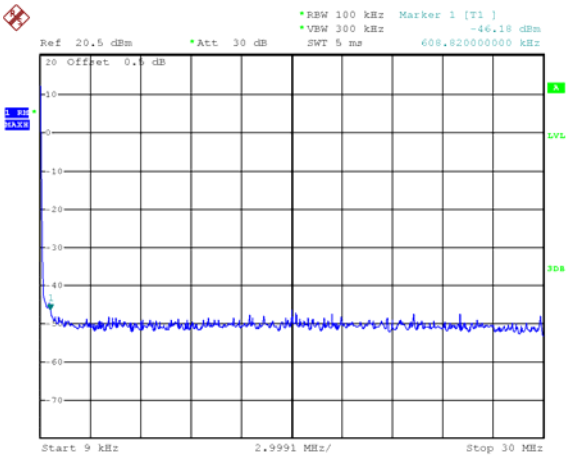
Date: 16.JUN.2023 15:35:27

Mode: TX 11 n HT40 channel 6



Date: 16.JUN.2023 15:33:33

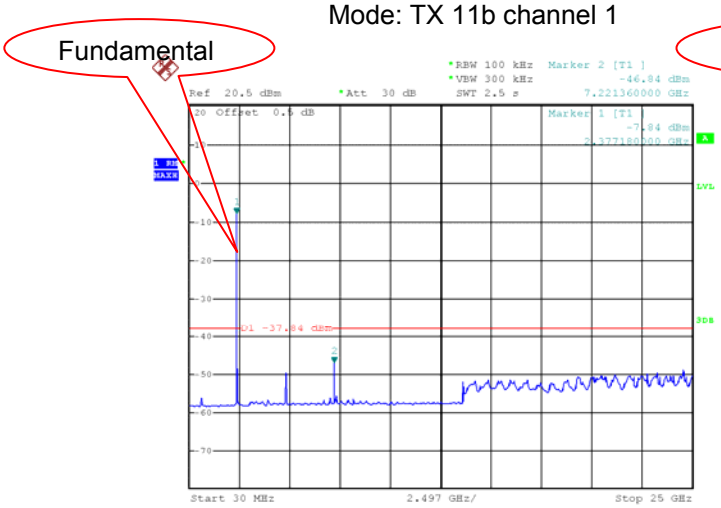
Mode: TX 11 n HT40 channel 9



Date: 16.JUN.2023 15:30:00

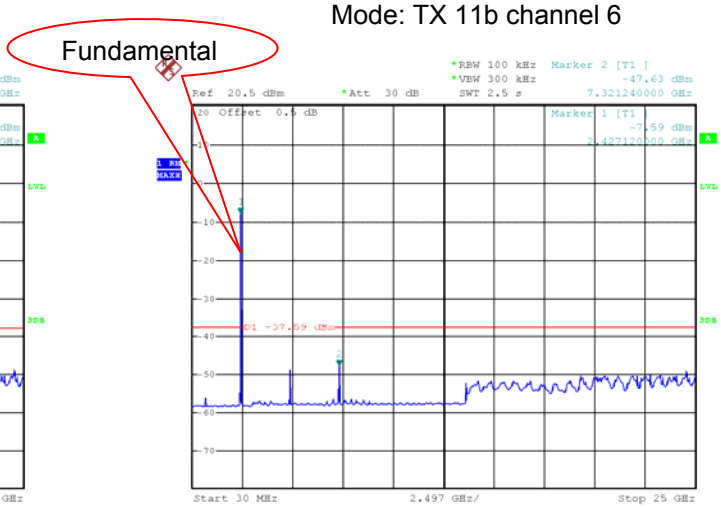
Above 30MHz

Mode: TX 11b channel 1



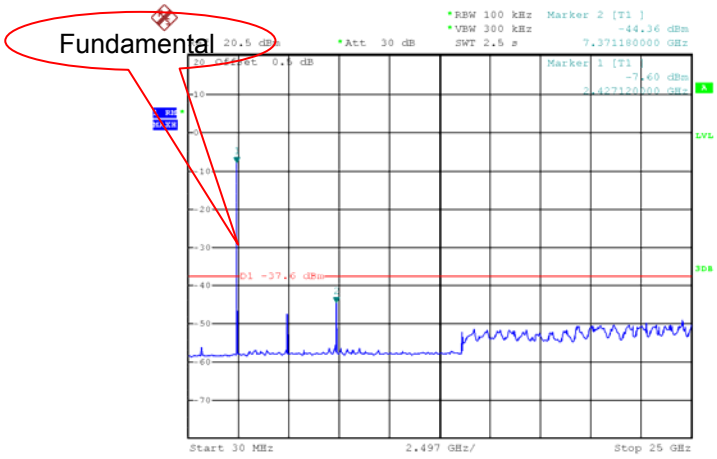
Date: 16.JUN.2023 15:48:03

Mode: TX 11b channel 6



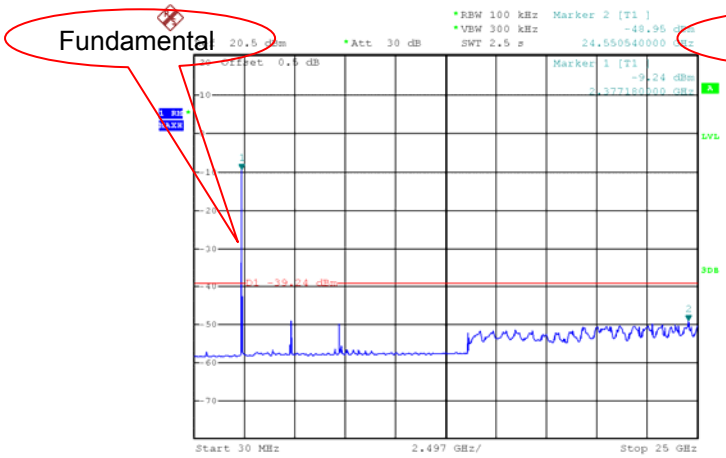
Date: 16.JUN.2023 15:49:08

Mode: TX 11b channel 11



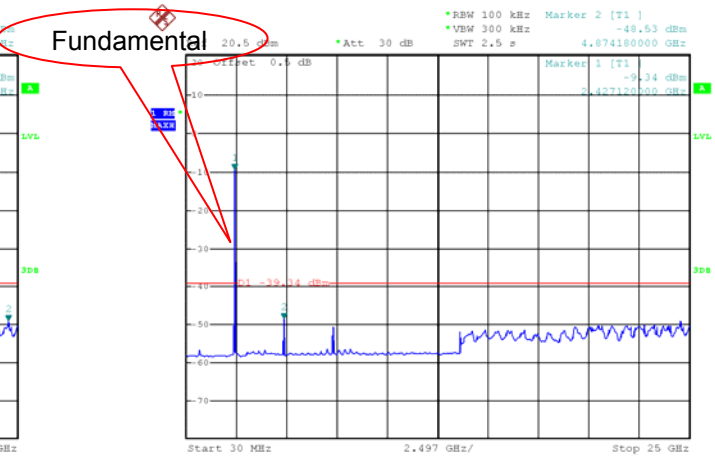
Date: 16.JUN.2023 15:50:06

Mode: TX 11g channel 1



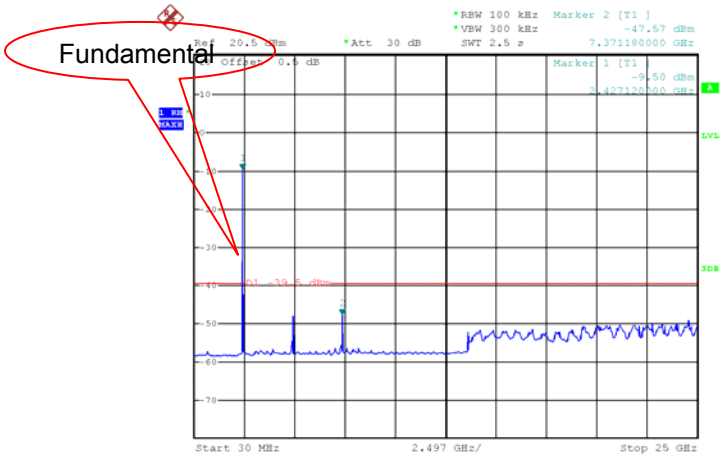
Date: 16.JUN.2023 15:42:14

Mode: TX 11g channel 6



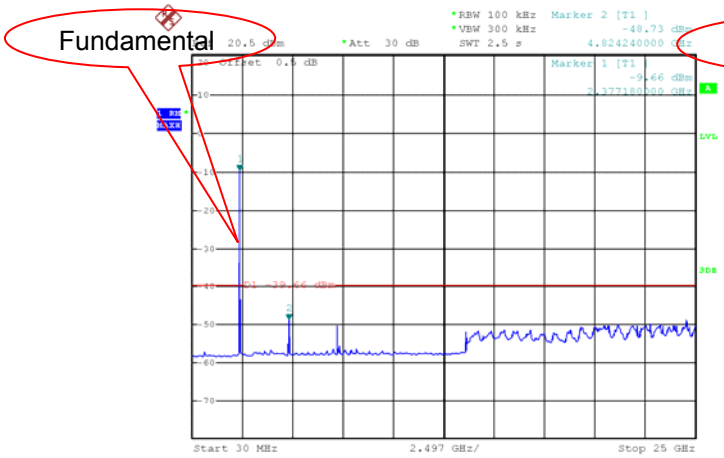
Date: 16.JUN.2023 15:44:23

Mode: TX 11g channel 11



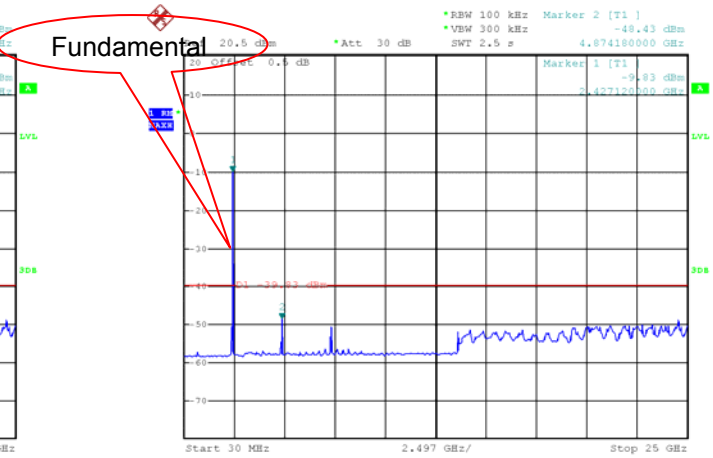
Date: 16.JUN.2023 15:45:32

Mode: TX 11n HT20 channel 1



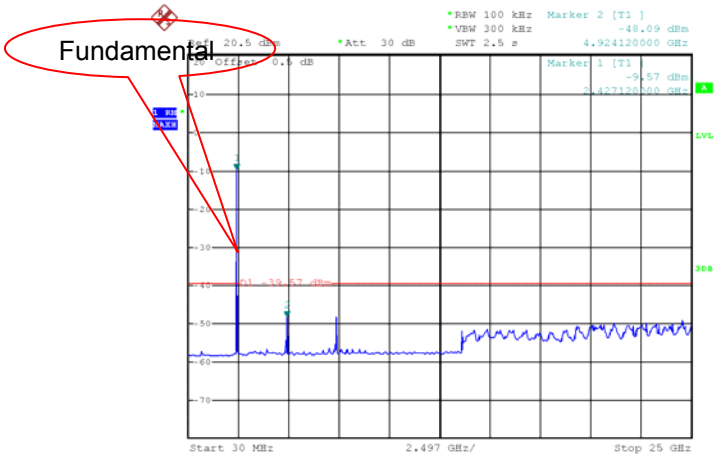
Date: 16.JUN.2023 15:38:23

Mode: TX 11 n HT20 channel 6



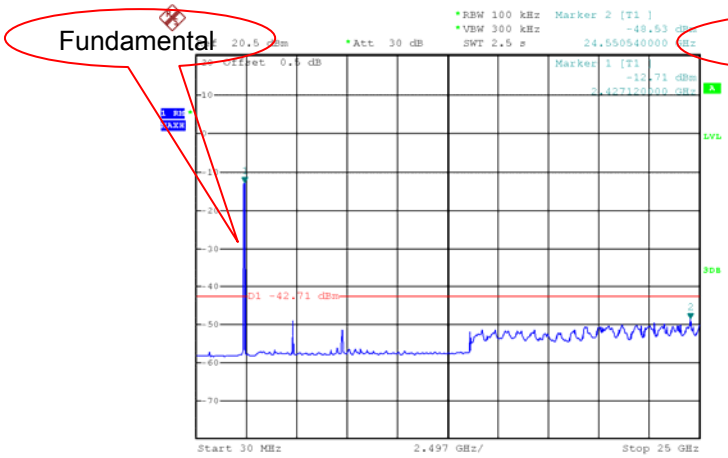
Date: 16.JUN.2023 15:39:35

Mode: TX 11 n HT20 channel 11



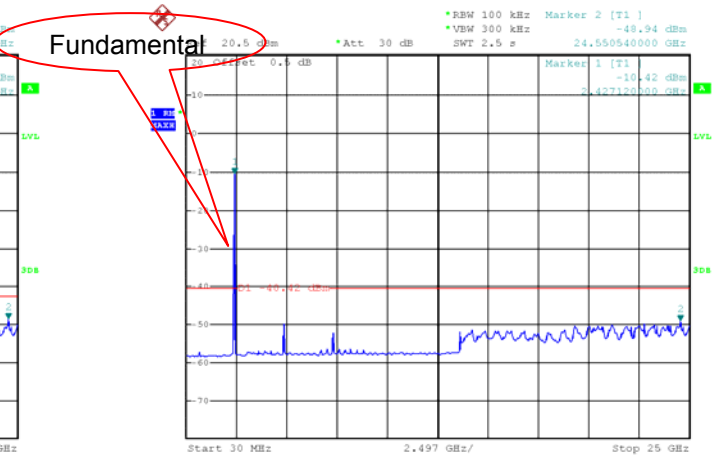
Date: 16.JUN.2023 15:40:56

Mode: TX 11n HT40 channel 3



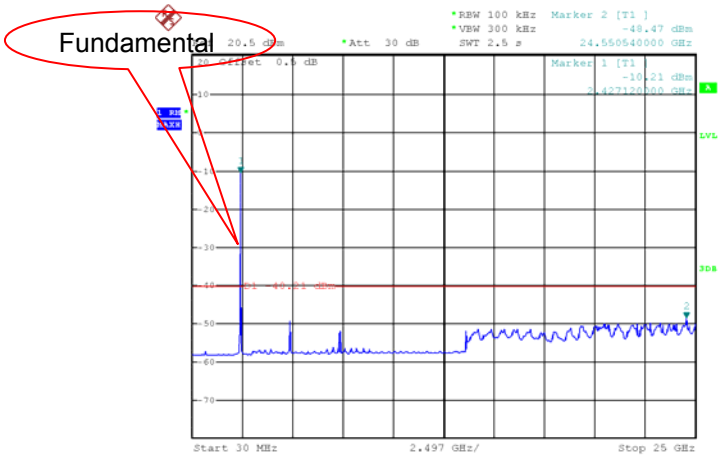
Date: 16.JUN.2023 15:36:51

Mode: TX 11 n HT40 channel 6



Date: 16.JUN.2023 15:34:28

Mode: TX 11 n HT40 channel 9



Date: 16.JUN.2023 15:32:32

10 Band Edge Measurement

Test Requirement:	47CFR FCC Part15 Subpart C §15.247
Test Method:	KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019
Test Limit:	Regulation 15.247 (d), 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 §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

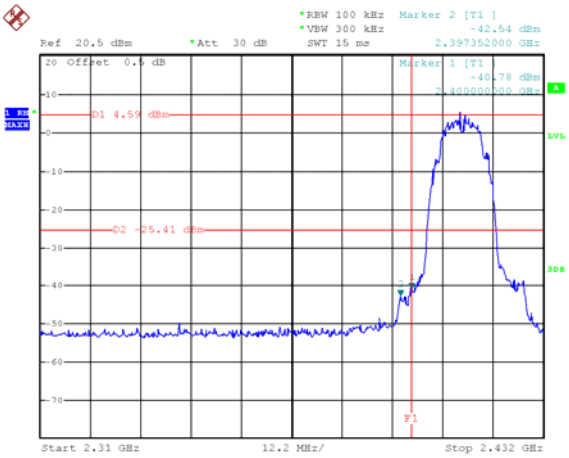
10.1 Test Produce

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

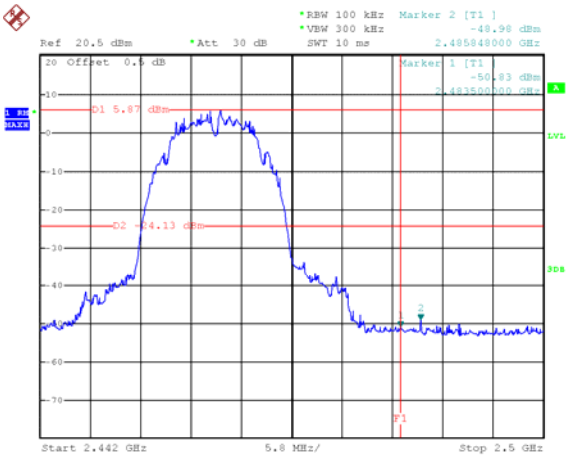
Test result plots shown as follows:

TX 11b: Band edge-left side



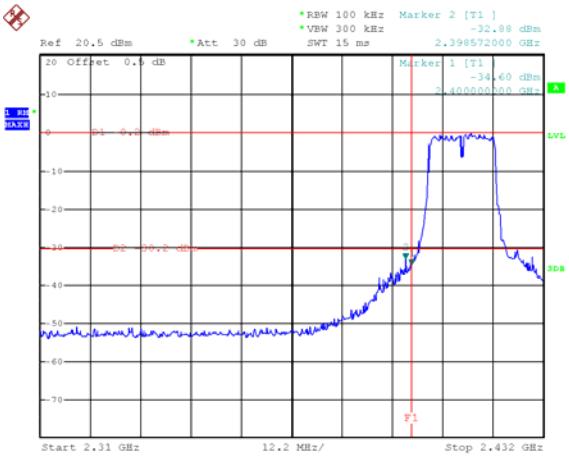
Date: 16.JUN.2023 16:28:32

TX 11b: Band edge-right side



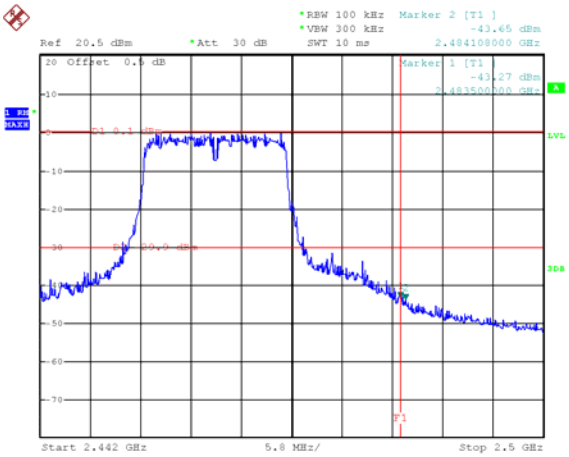
Date: 16.JUN.2023 16:29:46

TX 11g: Band edge-left side



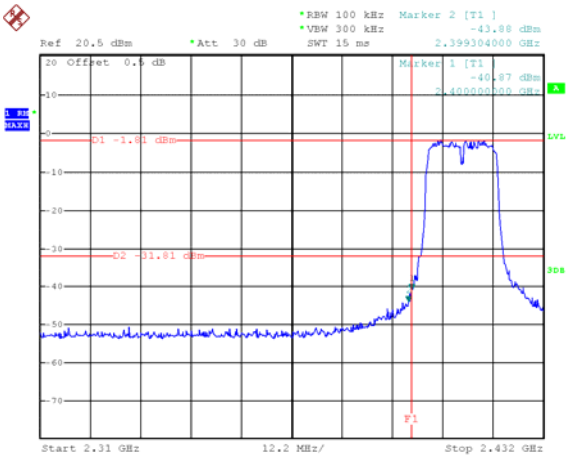
Date: 16.JUN.2023 14:56:11

TX 11g: Band edge-right side



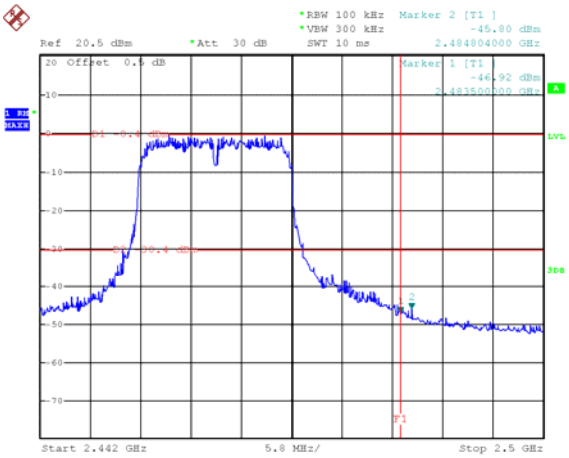
Date: 16.JUN.2023 14:58:50

TX 11n HT20: Band edge-left side



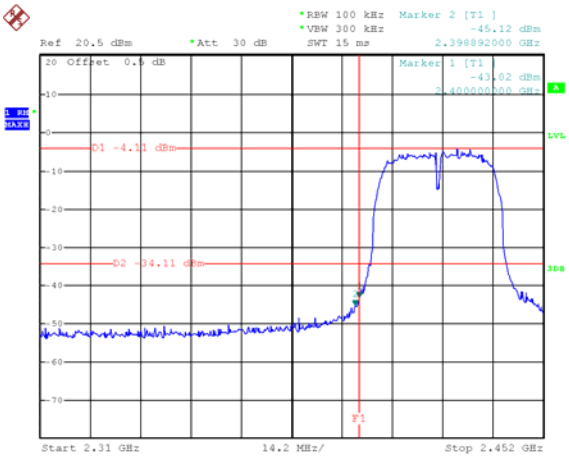
Date: 16.JUN.2023 15:05:34

TX 11n HT20: Band edge-right side



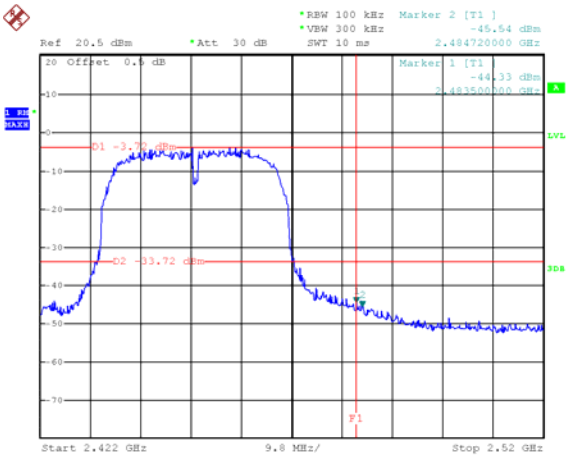
Date: 16.JUN.2023 15:04:05

TX 11n HT40: Band edge-left side



Date: 16.JUN.2023 15:07:10

TX 11n HT40: Band edge-right side



Date: 16.JUN.2023 15:08:27

11 6 dB Bandwidth and 99% Bandwidth Measurement

Test Requirement: 47CFR FCC Part15 Subpart C §15.247

Test Method: ANSI C63.10:2013
KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019

Test Limit: §15.247(a)(2)
Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Mode: Transmitting

11.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

2. 6dB Bandwidth Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

99% Bandwidth Set the spectrum analyzer: 1~5% of the OBW, VBW = 3 times the RBW

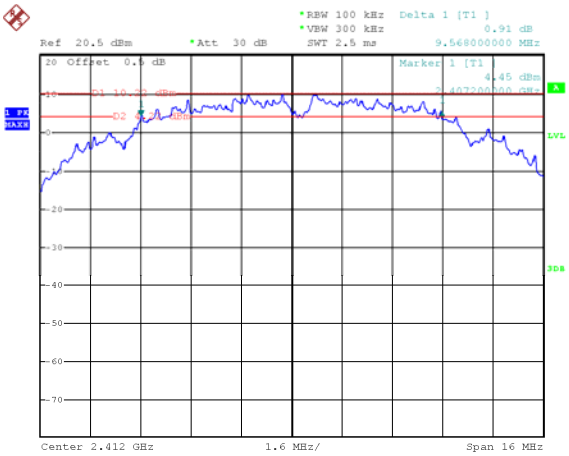
11.2 Test Result:

Operation mode	Test Channel	6dB Bandwidth (MHz)	99% Bandwidth (MHz)
TX 11b	Channel 1	9.568	13.344
	Channel 6	9.600	13.344
	Channel 11	9.152	13.344
TX 11g	Channel 1	16.450	16.500
	Channel 6	16.450	16.500
	Channel 11	16.450	16.500
TX 11n HT20	Channel 1	17.010	17.280
	Channel 6	17.010	17.280
	Channel 11	16.956	17.280
TX 11n HT40	Channel 3	36.300	34.210
	Channel 6	36.300	34.100
	Channel 9	36.300	34.210

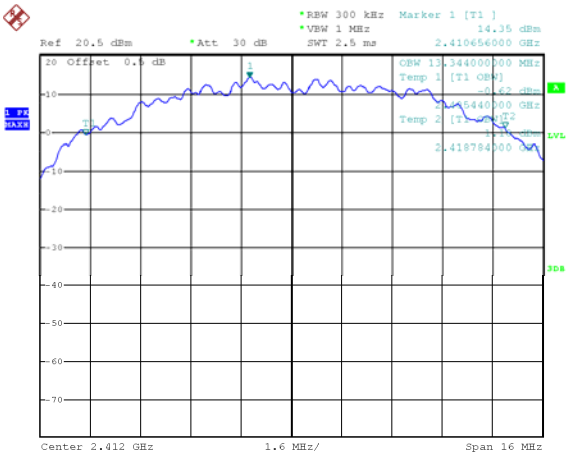
Test result plot:

6 dB Bandwidth 99% Bandwidth

Mode: TX 11b channel 1

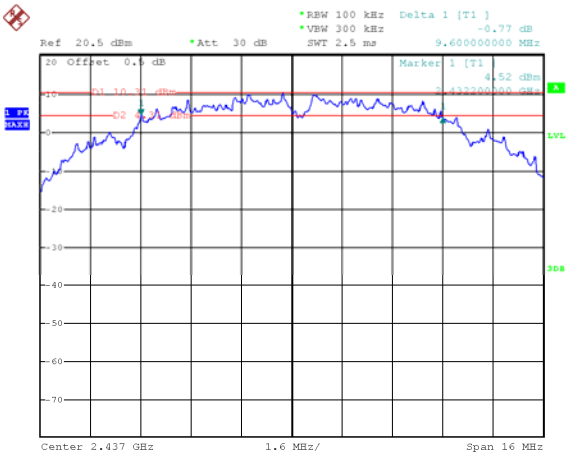


Date: 16.JUN.2023 12:06:51

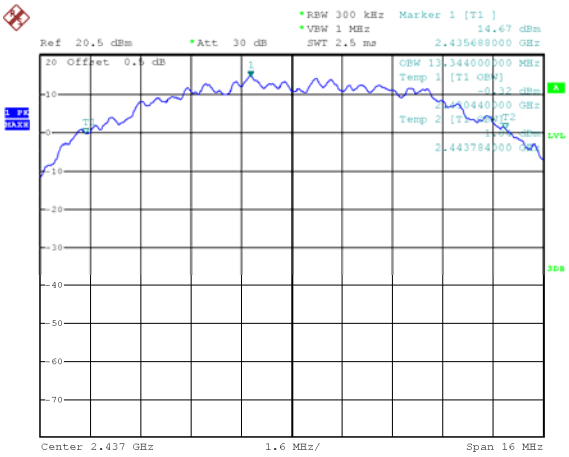


Date: 16.JUN.2023 11:27:21

Mode: TX 11b channel 6



Date: 16.JUN.2023 12:08:02

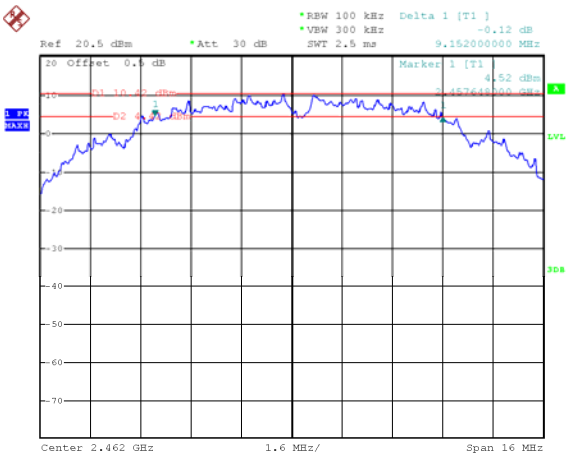


Date: 16.JUN.2023 11:27:53

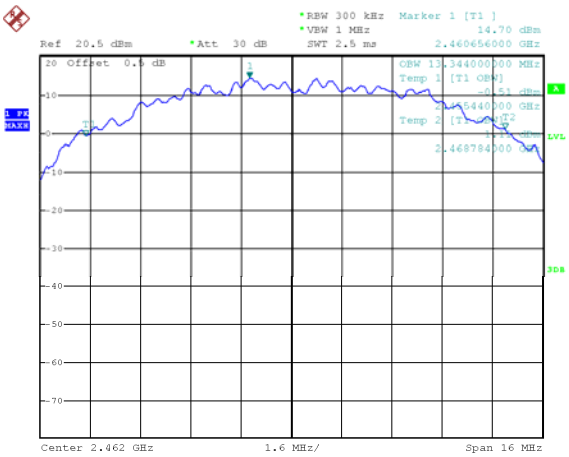
6 dB Bandwidth

99% Bandwidth

Mode: TX 11b channel 11

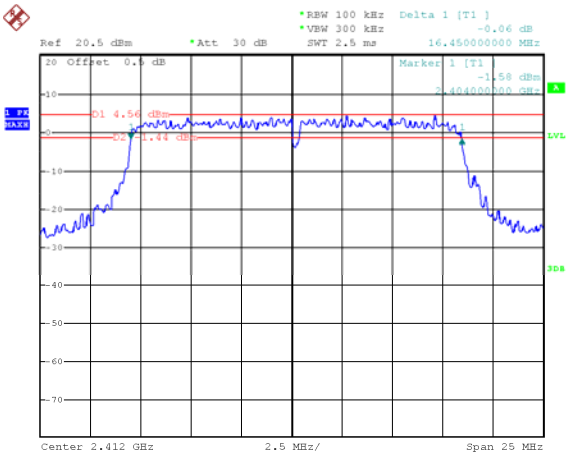


Date: 16.JUN.2023 12:09:12

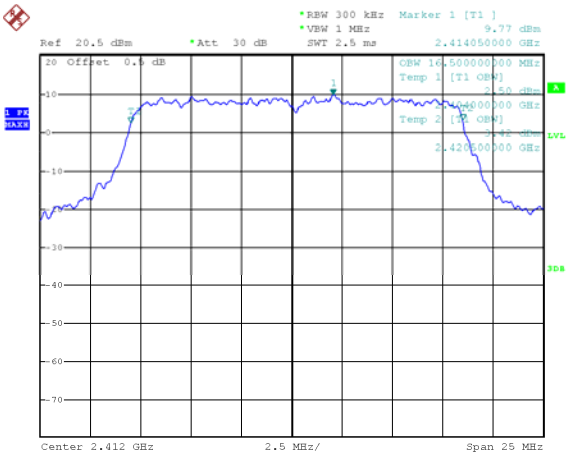


Date: 16.JUN.2023 11:28:30

Mode: TX 11g channel 1



Date: 16.JUN.2023 12:10:44

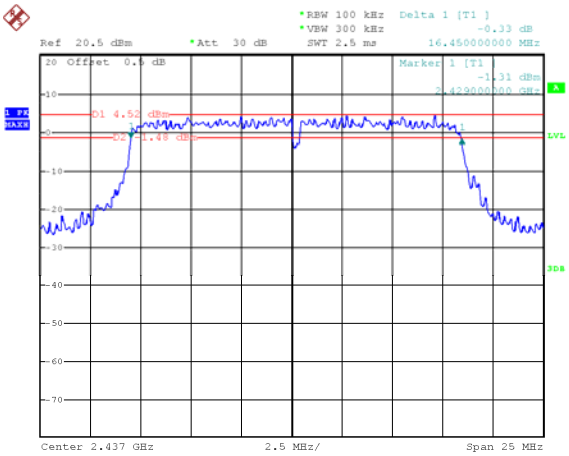


Date: 16.JUN.2023 11:29:19

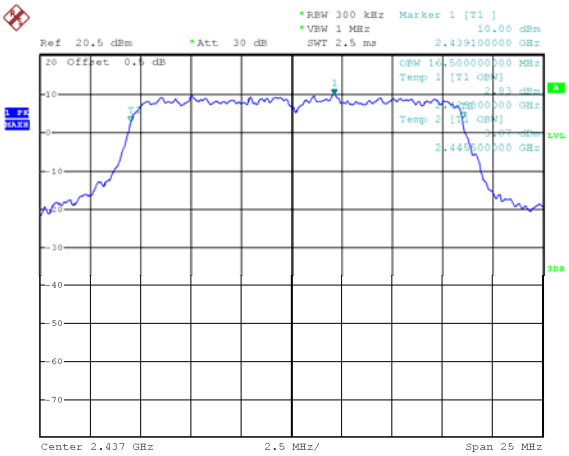
6 dB Bandwidth

99% Bandwidth

Mode: TX 11g channel 6

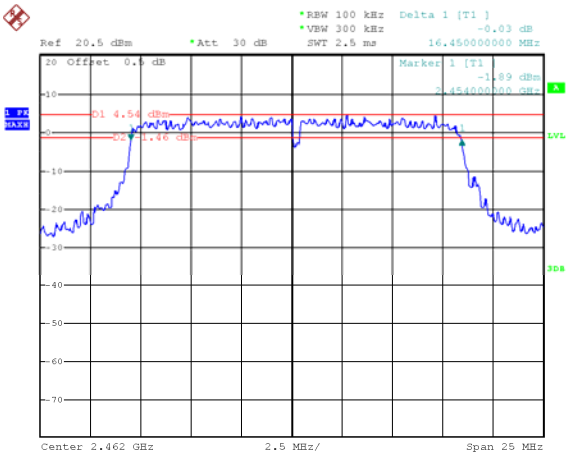


Date: 16.JUN.2023 12:11:41

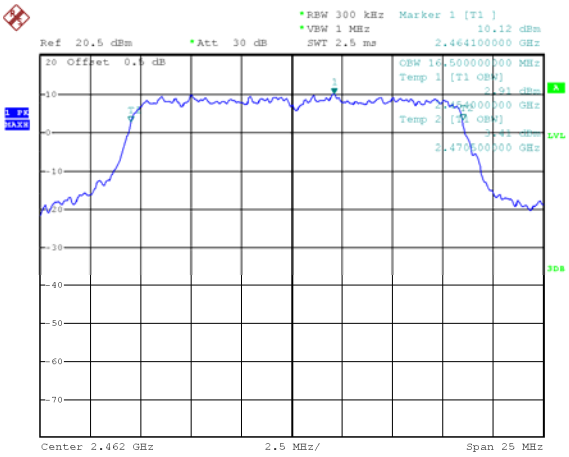


Date: 16.JUN.2023 11:29:52

Mode: TX 11g channel 11



Date: 16.JUN.2023 12:12:38

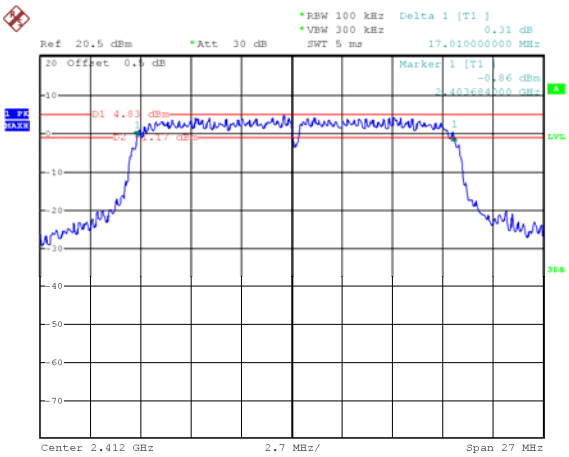


Date: 16.JUN.2023 11:30:24

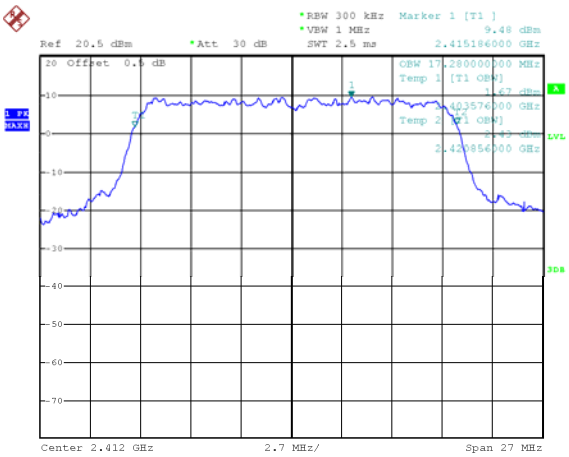
6 dB Bandwidth

99% Bandwidth

Mode: TX 11n HT20 channel 1

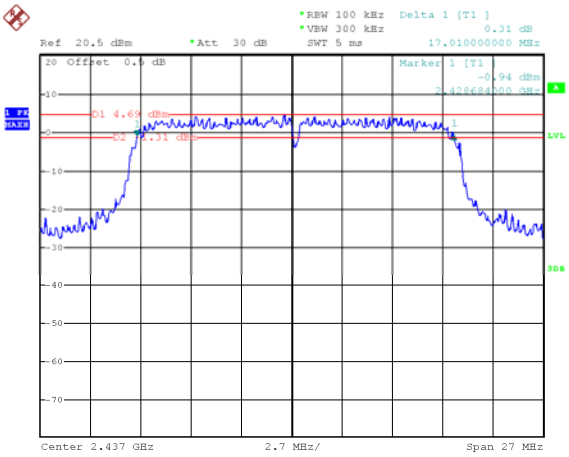


Date: 16.JUN.2023 12:14:17

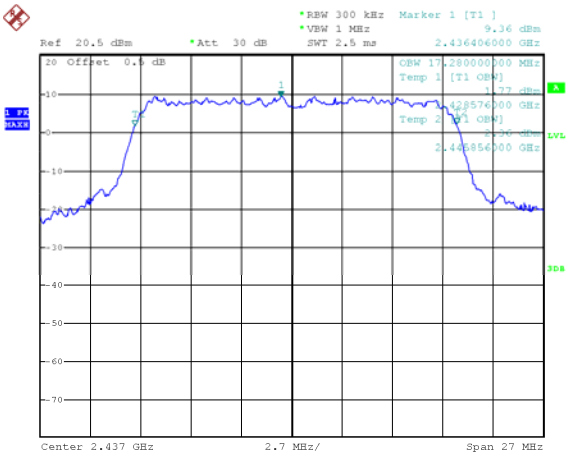


Date: 16.JUN.2023 11:31:11

Mode: TX 11n HT20 channel 6



Date: 16.JUN.2023 12:15:43

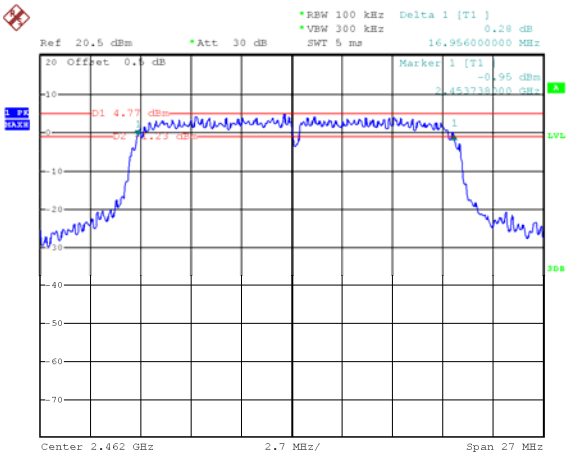


Date: 16.JUN.2023 11:33:32

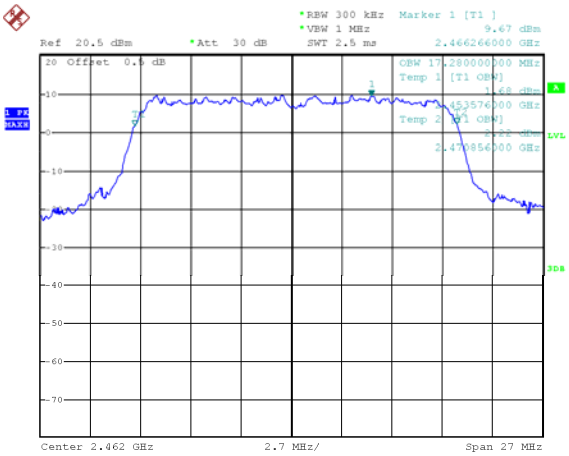
6 dB Bandwidth

99% Bandwidth

Mode: TX 11n HT20 channel 11

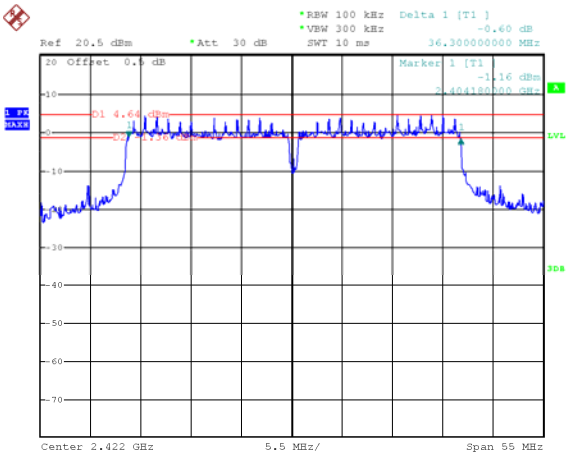


Date: 16.JUN.2023 12:16:54

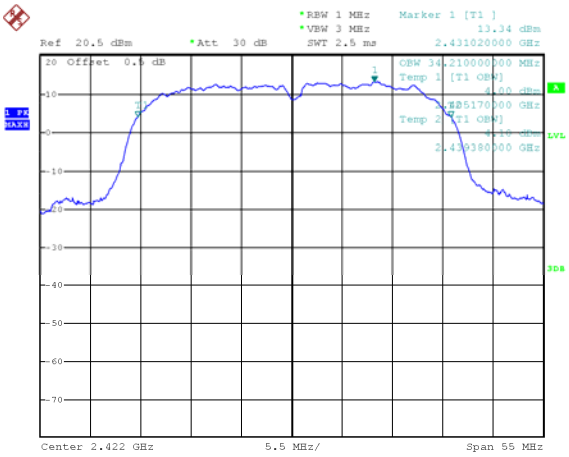


Date: 16.JUN.2023 11:34:12

Mode: TX 11n HT40 channel 3



Date: 16.JUN.2023 12:19:00

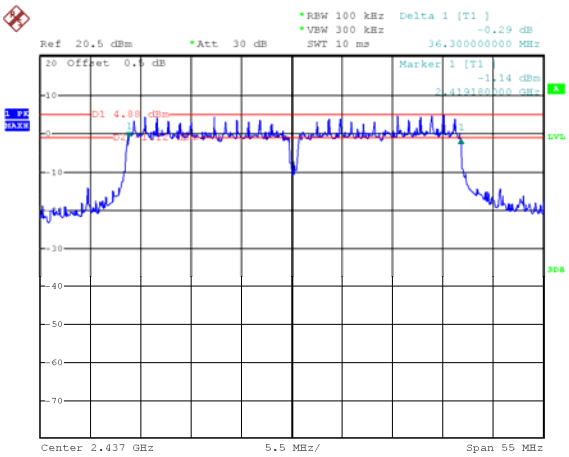


Date: 16.JUN.2023 11:15:26

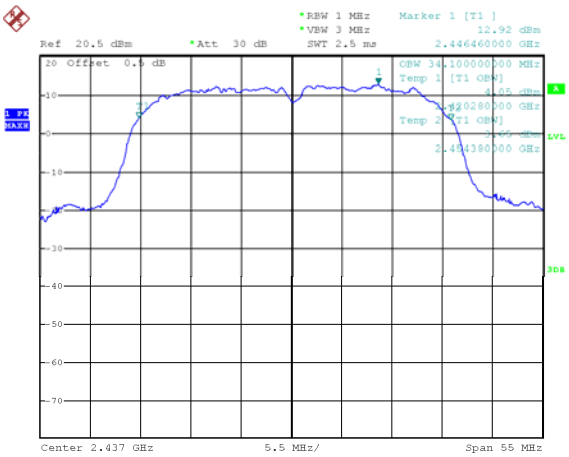
6 dB Bandwidth

99% Bandwidth

Mode: TX 11n HT40 channel 6

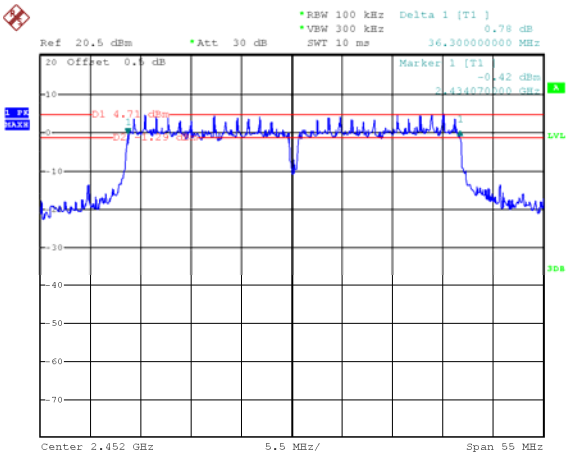


Date: 16.JUN.2023 12:20:17

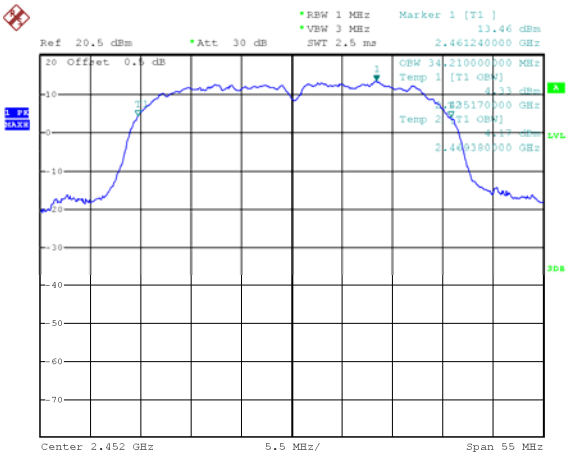


Date: 16.JUN.2023 11:16:04

Mode: TX 11n HT40 channel 9



Date: 16.JUN.2023 12:22:03



Date: 16.JUN.2023 11:21:10

12 Maximum Peak conducted Output Power

Test Requirement:	47CFR FCC Part15 Subpart C §15.247
Test Method:	ANSI C63.10:2013 KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019
Test Limit:	§15.247(b) The maximum peak conducted output power of the intentional radiator shall not exceed 1W.
Test Mode:	Transmitting

12.1 Test Procedure:

According to KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019

Section 8.3.1.1 RBW ≥ DTS bandwidth

Subclause 11.9.1.1 of ANSI C63.10 is applicable.

Section 8.3.1.2 Integrated band power method

For measuring the output power of a device transmitting a wide-band noise-like signal where the peak power amplitude is a statistical parameter, the preferred methodology is to use an integrated average power measurement, as described in 8.3.2. The peak integrated band power method of 11.9.1 in ANSI C63.10 is not applicable.

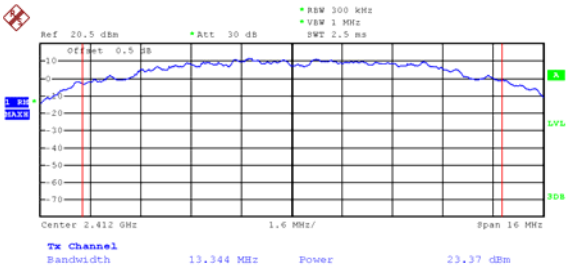
Subclause 11.9.2 of ANSI C63.10 is applicable.

12.2 Test Result:

Operation mode	Channel Frequency (MHz)	Measurements (dBm)	Duty Cycle Factor (dB)	Conducted Output Power (dBm)	Limit
TX 11b	Low-2412	23.37	0.00	23.37	1W/30dBm
	Middle-2437	23.33		23.33	1W/30dBm
	High-2462	23.49		**23.49**	1W/30dBm
TX 11g	Low-2412	21.03	0.00	21.00	1W/30dBm
	Middle-2437	20.87		20.87	1W/30dBm
	High-2462	21.19		21.19	1W/30dBm
TX 11n HT20	Low-2412	21.12	0.00	21.12	1W/30dBm
	Middle-2437	20.98		20.98	1W/30dBm
	High-2462	21.31		21.31	1W/30dBm
TX 11n HT40	Low-2422	18.74	0.00	18.74	1W/30dBm
	Middle-2437	18.53		18.53	1W/30dBm
	High-2452	18.67		18.67	1W/30dBm

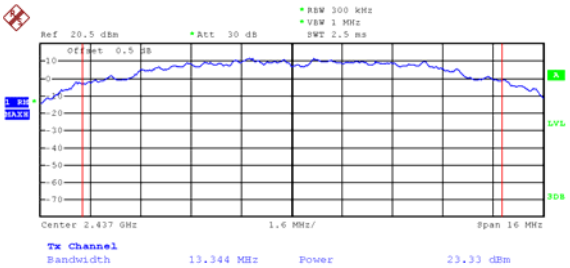
Test Plot:

Mode: TX 11b channel 1



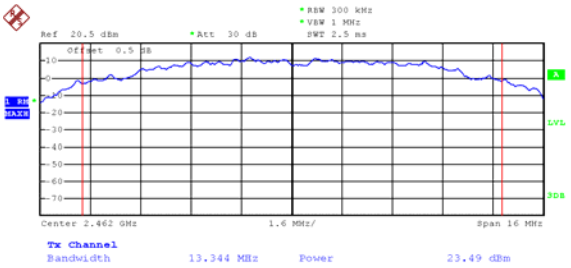
Date: 16.JUN.2023 15:53:32

Mode: TX 11b channel 6



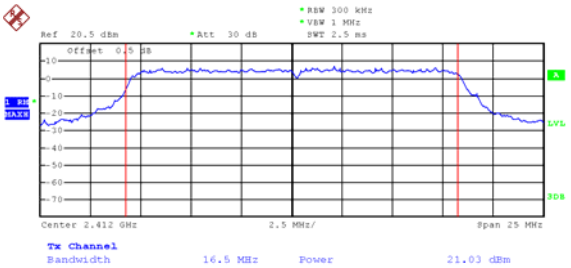
Date: 16.JUN.2023 15:52:40

Mode: TX 11b channel 11



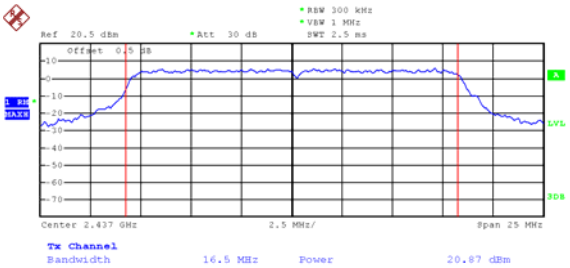
Date: 16.JUN.2023 15:51:46

Mode: TX 11g channel 1



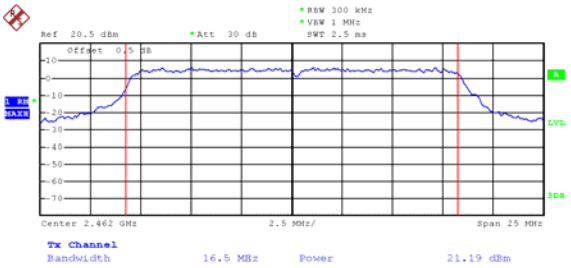
Date: 16.JUN.2023 15:55:07

Mode: TX 11g channel 6



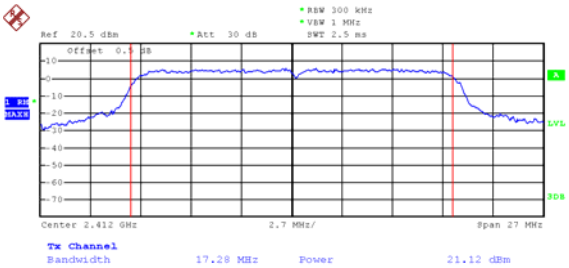
Date: 16.JUN.2023 15:55:54

Mode: TX 11g channel 11



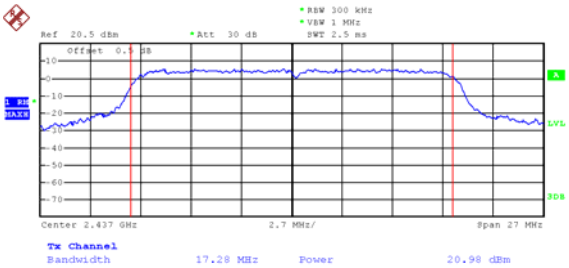
Date: 16.JUN.2023 15:56:40

Mode: TX 11n HT20 channel 1



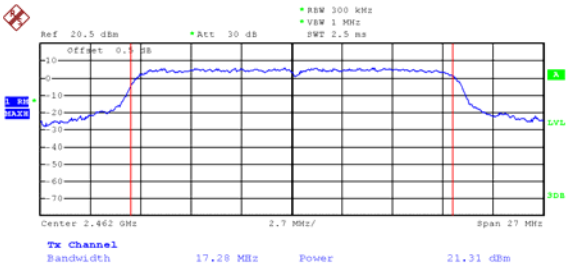
Date: 16.JUN.2023 15:57:45

Mode: TX 11n HT20 channel 6



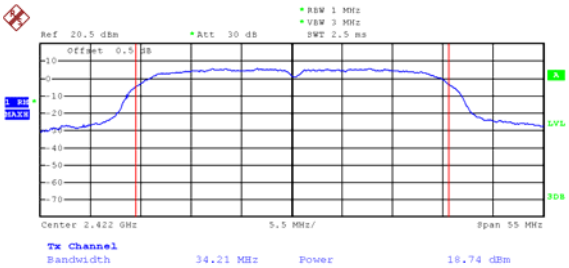
Date: 16.JUN.2023 15:58:27

Mode: TX 11n HT20 channel 11



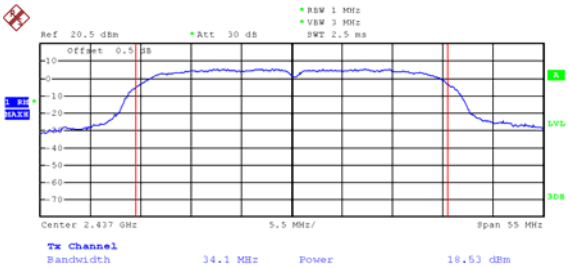
Date: 16.JUN.2023 15:59:19

Mode: TX 11n HT40 channel 3



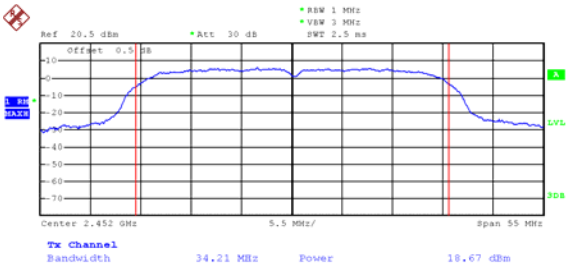
Date: 16.JUN.2023 16:00:19

Mode: TX 11n HT40 channel 6



Date: 16.JUN.2023 16:01:01

Mode: TX 11n HT40 channel 9



Date: 16.JUN.2023 16:01:47

13 Power Spectral density

Test Requirement:	47CFR FCC Part15 Subpart C §15.247
Test Method:	ANSI C63.10:2013 KDB 558074 D01 15.247 Meas Guidance v05r02, April 2, 2019
Test Limit:	§15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
Test Mode:	Transmitting

13.1 Test Procedure:

According to KDB 558074 D01 15.247 Meas Guidance v05r02 April 2, 2019 section 8.4

Subclause 11.10 of ANSI C63.10 is applicable.

Choose the test procedure according to the product type

Peak PSD

Subclause 11.10.2 of ANSI C63.10 is applicable.

AVG PSD

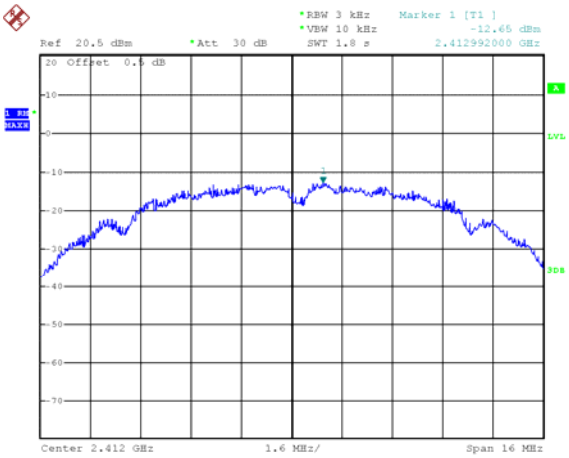
Subclause 11.10.3/4/5/6/7/8 of ANSI C63.10 is applicable.

13.2 Test Result:

Operation mode	Channel Frequency (MHz)	Measurements (dBm per 3kHz)	Duty Cycle Factor (dB)	Power Spectral density (dBm per 3kHz)	Limit
TX 11b	Low-2412	-12.65	0.00	-12.65	8dBm per 3kHz
	Middle-2437	-12.49		-12.49	8dBm per 3kHz
	High-2462	-11.99		-11.99	8dBm per 3kHz
TX 11g	Low-2412	-17.16	0.00	-17.16	8dBm per 3kHz
	Middle-2437	-17.08		-17.08	8dBm per 3kHz
	High-2462	-16.95		-16.95	8dBm per 3kHz
TX 11n HT20	Low-2412	-16.86	0.00	-16.86	8dBm per 3kHz
	Middle-2437	-17.80		-17.80	8dBm per 3kHz
	High-2462	-17.55		-17.55	8dBm per 3kHz
TX 11n HT40	Low-2422	-20.72	0.00	-20.72	8dBm per 3kHz
	Middle-2437	-21.06		-21.06	8dBm per 3kHz
	High-2452	-20.92		-20.92	8dBm per 3kHz

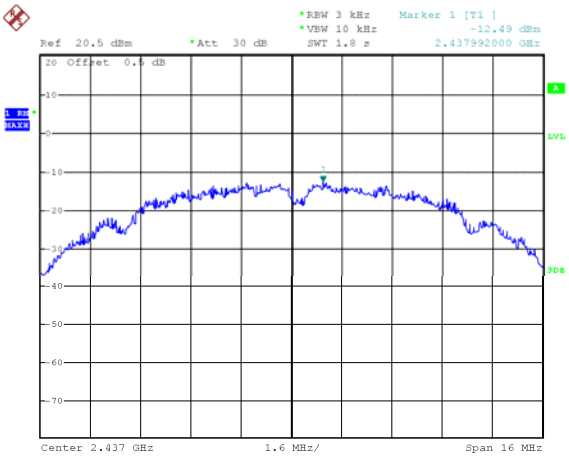
Test Plot:

Mode: TX 11b channel 1



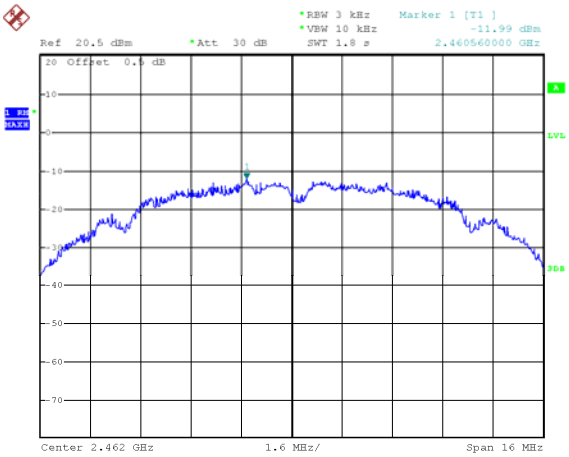
Date: 16.JUN.2023 15:21:32

Mode: TX 11b channel 6



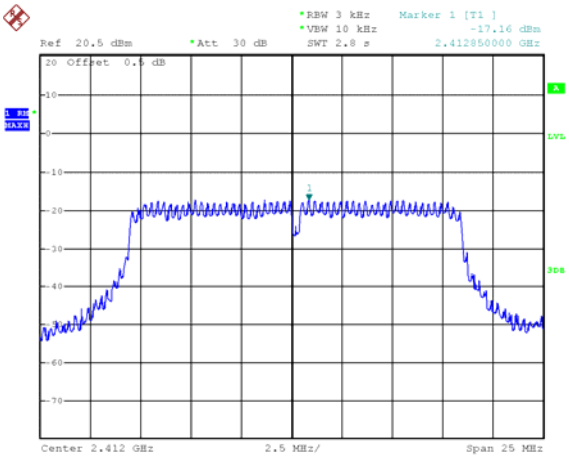
Date: 16.JUN.2023 15:22:18

Mode: TX 11b channel 11



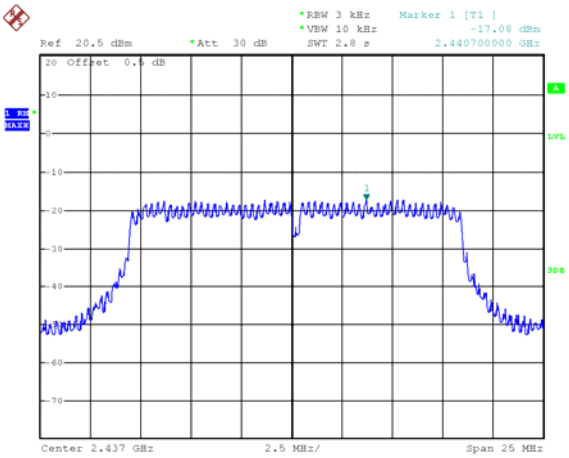
Date: 16.JUN.2023 15:22:49

Mode: TX 11g channel 1



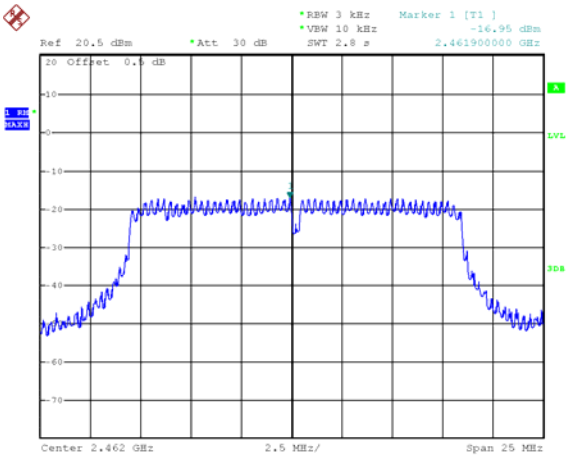
Date: 16.JUN.2023 15:24:00

Mode: TX 11g channel 6



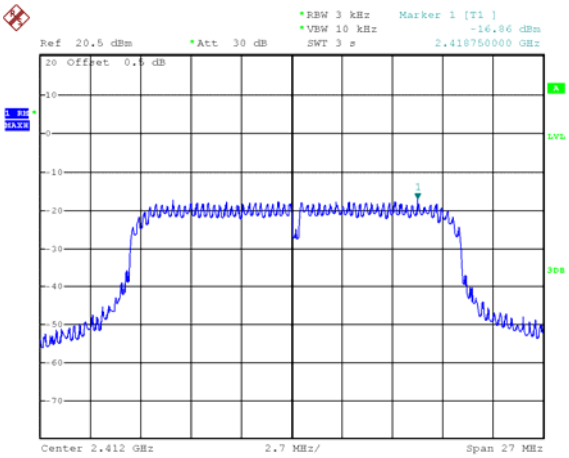
Date: 16.JUN.2023 15:24:30

Mode: TX 11g channel 11



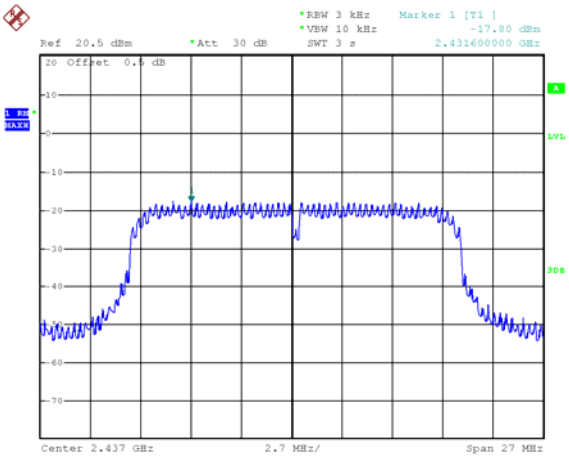
Date: 16.JUN.2023 15:25:01

Mode: TX 11n HT20 channel 1



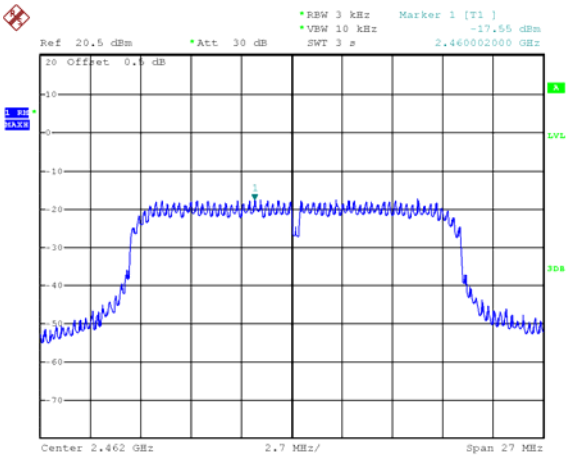
Date: 16.JUN.2023 15:26:11

Mode: TX 11n HT20 channel 6



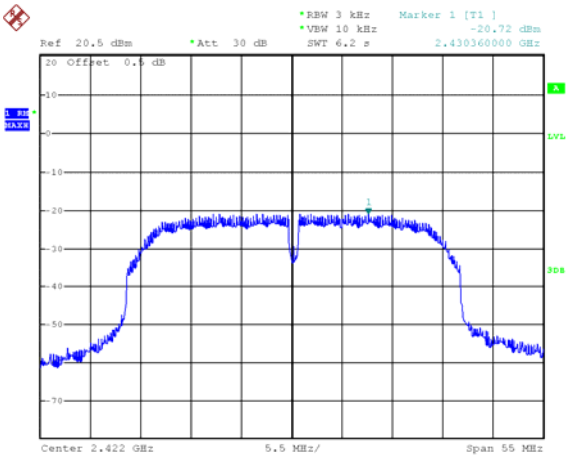
Date: 16.JUN.2023 15:26:38

Mode: TX 11n HT20 channel 11



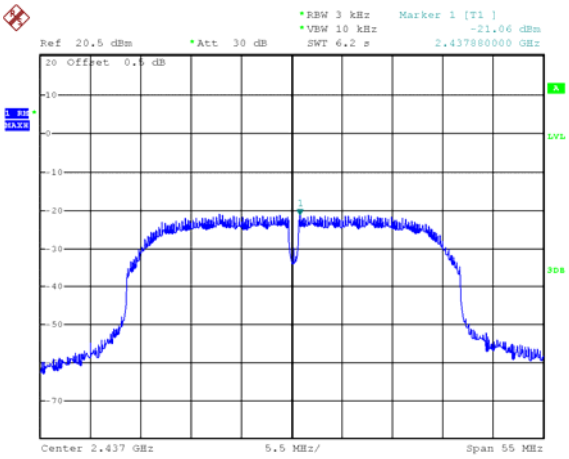
Date: 16.JUN.2023 15:27:12

Mode: TX 11n HT40 channel 3



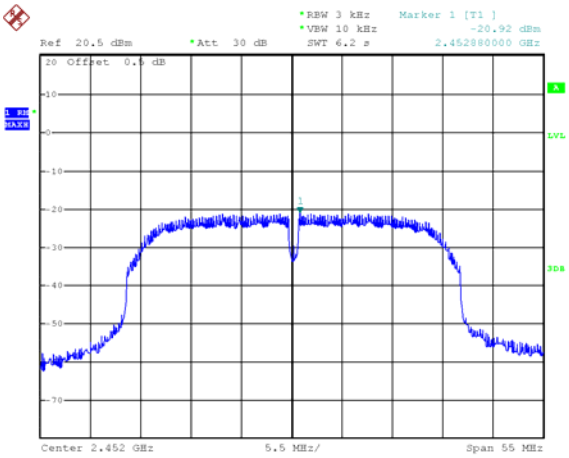
Date: 16.JUN.2023 15:27:52

Mode: TX 11n HT40 channel 6



Date: 16.JUN.2023 15:28:30

Mode: TX 11n HT40 channel 9



Date: 16.JUN.2023 15:29:07

14 Antenna Requirement

According to the FCC Part 15 Paragraph 15.203, 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. This product has an integrated antenna fulfil the requirement of this section.

Note: Please refer to EUT photos for more details.

15 RF Exposure

Note: Please refer to RF Exposure Report: WTD23D06127545W003.

16 Photographs of test setup and EUT.

Note: Please refer to appendix: Appendix-MGT1302-Photos.

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