RADIO TEST REPORT

Product	:	IEEE 802.11ax/ac/a/b/g/n 2x2 WiFi with Bluetooth5.0 Combo Module
Model Name	:	WNFB-265AXI(BT)
Series Model	:	AP12275_M2P
FCC ID	:	RYK-WNFB265AXIBT
Test Regulation	:	FCC 47 CFR Part 15 Subpart C (Section 15.247)
Received Date	:	Jul. 22, 2020
Test Date	:	Nov. 16, 2020 ~ Jan. 29, 2021
Issued Date	:	Feb. 22, 2021
Applicant	:	SparkLAN Communications, Inc. 8F., No.257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan (R.O.C.)
Issued By	:	Underwriters Laboratories Taiwan Co., Ltd. Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan

Testing Laboratory
3398

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REVISION HISTORY

Original Test Report No.: 4789558390-US-R0-V0

Rev.	Test report No.	Date	Page revised	Contents
Original	4789558390-US-R0-V0	Feb. 22, 2021	-	Initial issue

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1. Attestation of Test Results

APPLICANT:	SparkLAN Communications, Inc. 8F., No.257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan (R.O.C.)
MANUFACTURER	SparkLAN Communications, Inc. 8F., No.257, Sec. 2, Tiding Blvd., Neihu District, Taipei City 11493, Taiwan (R.O.C.)
EUT DESCRIPTION:	IEEE 802.11ax/ac/a/b/g/n 2x2 WiFi with Bluetooth5.0 Combo Module
MODEL:	WNFB-265AXI(BT)
SERIES MODEL:	AP12275_M2P
SAMPLE STAGE:	Identical Prototype
DATE of TESTED:	Nov. 16, 2020 ~ Jan. 29, 2021

APPLICABLE STANDARDS	
STANDARD	**Test Results**
FCC 47 CFR PART 15 Subpart C (Section 15.247)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

Sally Lu Date : Feb. 22, 2021
Project Handler

Approved and Authorized By:

Waternil Guan Date : Feb. 22, 2021
Engineer

2. Summary of Test Results

Summary of Test Results		
FCC Clause	**Test Items**	**Result**
15.247(a)(2)	6dB Bandwidth	PASS
15.247(b)	Conducted Output Power	PASS
15.247(e)	Power Spectral Density	PASS
15.247(d)	Antenna Port Emission	PASS
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS
15.207	AC Power Conducted Emission	PASS
15.203	Antenna Requirement	PASS

Note:
1. For the Radiated Band Edge test plots were recorded in Appendix I, the Radiated Emissions test plots were recorded in Appendix II.

3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB558074 D01 Meas Guidance v05r02, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013 and KDB 662911 D01 Multiple Transmitter Output v02r01.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building B and Building E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398. The full scope of accreditation can be viewed at http://accreditation.taftw.org.tw/taf/public/basic/viewApplyItems.action?unitNo=3398

5. Measurement Uncertainty

For statement of conformity, accuracy method (Section 8.2.4 and 8.2.5 of ISO Guide 98-4) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	1.5
RF Conducted	9 kHz - 40GHz	2	1.0
Radiated disturbance below 30MHz	9 kHz - 30 MHz	2	1.9
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	2	5.4
Radiated disturbance above 1GHz	1GHz ~ 40GHz	2	4.7

6. Equipment under Test

6.1. Description of EUT

Product	IEEE 802.11ax/ac/a/b/g/n 2x2 WiFi with Bluetooth5.0 Combo Module
Model Name	WNFB-265AXI(BT)
Series Model	AP12275_M2P
Operating Frequency	2412MHz ~ 2462MHz
Modulation	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to MCS15 802.11ax: up to HE11
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20), 802.11ax (HE20)
Maximum Output Power	Non-Beamforming mode: 802.11b: 21.57 dBm 802.11g: 26.46 dBm 802.11ax (HE20)_OFDM: 26.49 dBm 802.11ax (HE20)_OFDMA: 26.51 dBm Beamforming mode: 802.11ax (HE20)_OFDM: 20.85 dBm 802.11ax (HE20)_OFDMA: 20.52 dBm
Normal Voltage	3.3Vdc
S/N	20B65E2100031
Software Version	N/A

Note:

1. The models difference table as below:

Brand	Model	Difference
SparkLAN	WNFB-265AXI(BT)	-
Ampak	AP12275_M2P	Same as WNFB-265AXI(BT), marketing purpose only.

*Except above change, there are no change to technical construction that is included circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction.

2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Tx,Rx Function
802.11b	1TX,1RX
802.11g	2TX,2RX
802.11n (HT20)	2TX,2RX
802.11ax (HE20)	2TX,2RX

* The modulation and bandwidth are similar for 802.11n mode for HT20 and 802.11ax mode for HE20, therefore investigated worst case to representative mode in test report.

3. Since the 802.11ax is the worst case, so the peak output power of 802.11n will quote the value of 802.11ax.

4. The EUT contains following accessory devices.

Product	Brand	Model	Description
Dipole Antenna 1	SparkLAN	AD-103AG	2.4GHz: 2.02dBi 5GHz: 2.03dBi RP-SMA
Dipole Antenna 2	SparkLAN	AD-302N	2.4GHz: 3.14dBi 5GHz: 2.73dBi RP-SMA
Dipole Antenna 3	SparkLAN	AD-303N	2.4GHz: 3.14dBi 5GHz: 3.24dBi RP-SMA

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual.

6.2. Channel List

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz	-	-

6.3. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	23~26°C / 63~68%RH	120Vac / 60 Hz	Nov. 16, 2020 ~ Jan. 29, 2021	Mike Cai
Radiated Spurious Emission	966-2	22~26°C / 62~68%RH	120Vac / 60 Hz	Dec. 6, 2020 ~ Jan. 29, 2021	Mike Cai
AC power Line Conducted Emission	SR1	23~25°C / 63~68%RH	120Vac / 60 Hz	Dec. 6, 2020 ~ Jan. 29, 2021	Mike Cai

FCC Test Firm Registration Number: 498077

6.4. Description Of Available Antennas

Ant. No.	Transmitter Circuit	Brand Name	Model Name	Ant. Type	Maximum Gain (dBi)	Remark
1	Chain (0)+(1)	SparkLAN	AD-103AG	Dipole	2.4GHz: 2.02 5GHz: 2.03	Length of Antenna cable:150mm Connector type of Antenna cable: I-PEX/MHF4 to RP-SMA(F)
2	Chain (0)+(1)	SparkLAN	AD-302N	Dipole	2.4GHz: 3.14 5GHz: 2.73	
3	Chain (0)+(1)	SparkLAN	AD-303N	Dipole	2.4GHz: 3.14 5GHz: 3.24	

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual.

6.5. Test Mode Applicability and Tested Channel Detail

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- For below 1 GHz radiated emission and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
- For Antenna Port Conducted Measurement, this item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.
- For AC power line conducted emissions, the pre-scan has been determined by AC power 120Vac/60Hz (worst case)
- The antennas No.2/ No.3 has the highest gain, therefore, the fundamental of the EUT was investigated in two antennas, it was determined antenna No.3 was worst-case, the Antenna No.3 was selected for the final test.

Non-Beamforming mode:

Test item	Mode	Modulation Technology	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Emissions (Above 1GHz)	802.11b	DSSS	DBPSK	1 to 11	1,6,11	1 Mbps
	802.11g	OFDM	BPSK	1 to 11	1,2,6,10,11	6 Mbps
	802.11ax20	OFDM/ OFDMA	BPSK	1 to 11	1,2,6,10,11	HE0
			BPSK	1 to 11	1,2,6,10,11	HE0
Radiated Emissions (Below 1GHz)	802.11b	DSSS	DBPSK	1 to 11	1	1 Mbps
AC Power Line Conducted Emission	802.11b	DSSS	DBPSK	1 to 11	1	1 Mbps
*Antenna Port Conducted Measurement	802.11b	DSSS	DBPSK	1 to 11	1,6,11	1 Mbps
	802.11g	OFDM	BPSK	1 to 11	1,2,6,10,11	6 Mbps
	802.11ax20	OFDM/ OFDMA	BPSK	1 to 11	1,2,6,10,11	HE0
			BPSK	1 to 11	1,2,6,10,11	HE0

*Note: For Antenna Port Conducted Measurement item, Inner channels only test Power and Conducted Out of Band Emission.

Beamforming mode:

Test item	Mode	Modulation Technology	Modulation Type	Available Channel	Test Channel	Data Rate
Radiated Emissions (Above 1GHz)	802.11ax20	OFDM/ OFDMA	BPSK	1 to 11	1,2,6,10,11	HE0
			BPSK	1 to 11	1,2,6,10,11	HE0
Radiated Emissions (Below 1GHz)	802.11ax20	OFDM	BPSK	1 to 11	6	HE0
AC Power Line Conducted Emission	802.11ax20	OFDM	BPSK	1 to 11	6	HE0
*Antenna Port Conducted Measurement	802.11ax20	OFDM/ OFDMA	BPSK	1 to 11	1,2,6,10,11	HE0
			BPSK	1 to 11	1,2,6,10,11	HE0

*Note: For Antenna Port Conducted Measurement item, Inner channels only test Power and Conducted Out of Band Emission.

6.6. Duty cycle

Non-Beamforming mode

802.11b: Duty cycle = 6.825/6.905 = 0.988, duty cycle of test signal is ≥ 98 %, duty factor is not required.

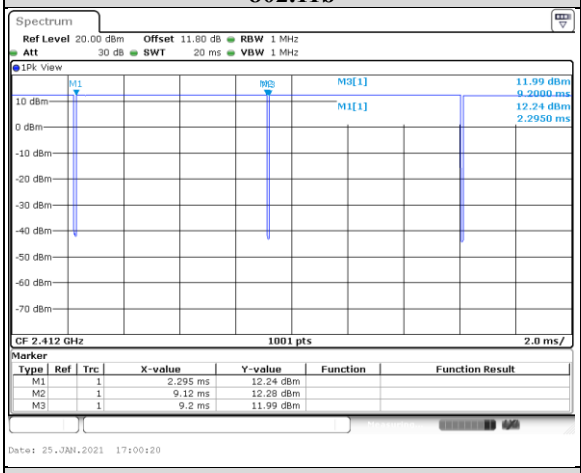
802.11g: Duty cycle = 1.115/1.225 = 0.91, Duty factor(dB) = 10 * log(1/0.91) = 0.41 dB

802.11ax (HE20):

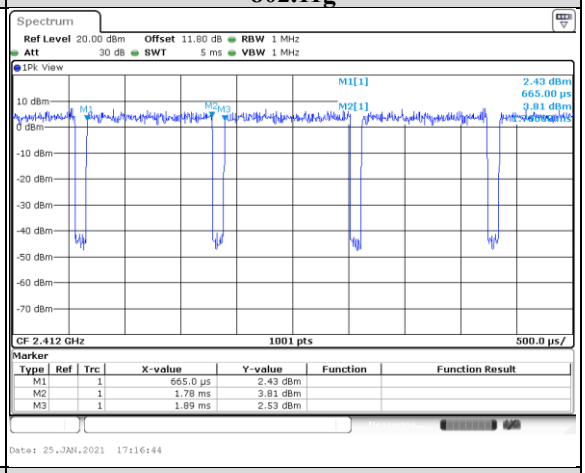
OFDM : Duty cycle = 0.825/0.935 = 0.882, Duty factor(dB) = 10 * log(1/0.882) = 0.55 dB

OFDMA: Duty cycle = 3.94/4.955 = 0.795, Duty factor(dB) = 10 * log(1/0.795) = 1 dB

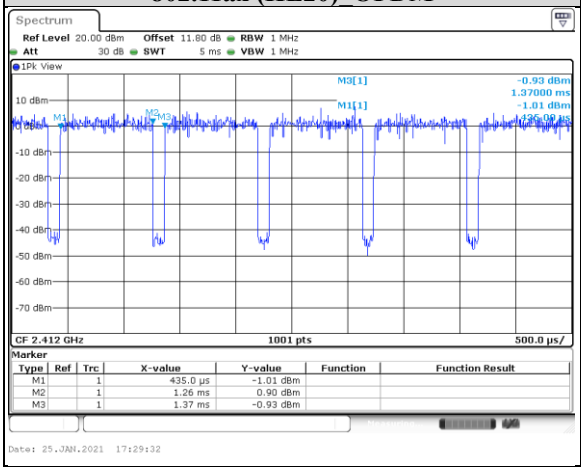
802.11b



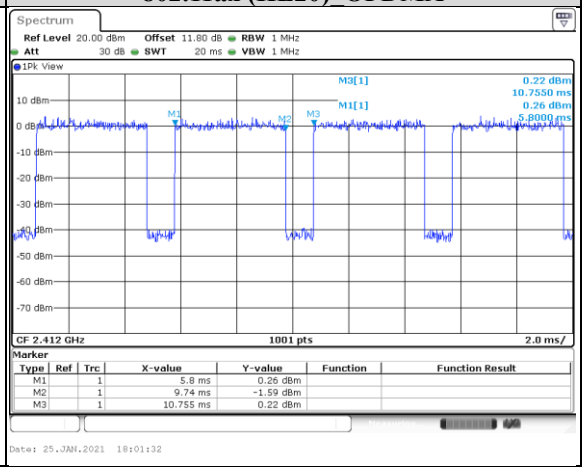
802.11g



802.11ax (HE20)_OFDM



802.11ax (HE20)_OFDMA

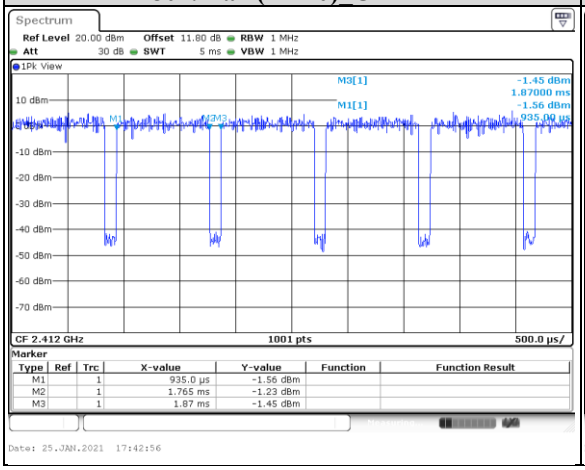
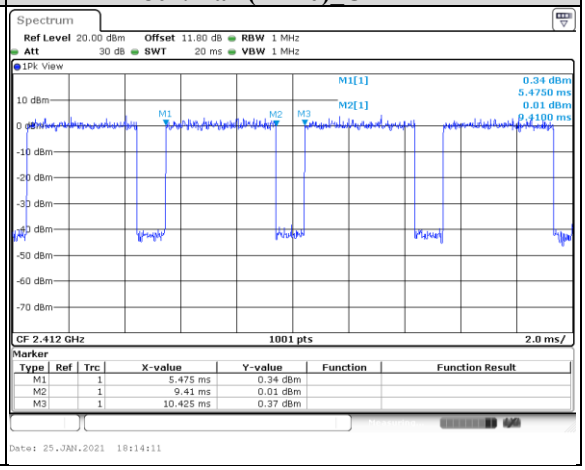


Beamforming mode

802.11ax (HE20):

OFDM: Duty cycle = 0.83/0.935 = 0.888, Duty factor(dB) = 10 * log(1/0.888) = 0.52 dB

OFDMA: Duty cycle = 3.935/4.95 = 0.795, Duty factor(dB) = 10 * log(1/0.795) = 1 dB

802.11ax (HE20)_OFDM	802.11ax (HE20)_OFDMA
	

7. Test Equipment

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070827	2020/11/11	2021/11/10
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2019/12/17	2020/12/16
				2020/12/11	2021/12/10
Loop Antenna	ETS lindgren	6502	00213440	2019/12/19	2020/12/18
				2020/12/25	2021/12/24
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2020/1/3	2021/1/2
				2021/1/13	2022/1/12
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2020/1/3	2021/1/2
				2020/12/30	2021/12/29
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2019/12/27	2020/12/26
				2020/12/30	2021/12/29
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2020/6/9	2021/6/8
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2020/2/4	2021/2/2
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2020/5/19	2021/5/18
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2020/7/2	2021/7/1
Cables	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	2020/1/8	2021/1/7
				2021/1/7	2022/1/6

Test Equipment List					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Expired date**
Antenna Port Conducted Measurement					
Spectrum Analyzer	Keysight	N9010A	MY56070834	2020/11/6	2021/11/5
Pulse Power Sensor	Anritsu	MA2411B	1531202	2019/12/23	2020/12/22
				2020/12/21	2021/12/20
Power Meter	Anritsu	ML2495A	1645002	2019/12/23	2020/12/22
				2020/12/21	2021/12/20
AC power Line Conducted Emission					
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2020/11/17	2021/11/16
Two-Line V-Network	Rohde & Schwarz	ENV216	102136	2020/8/19	2021/8/18
Impuls-Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2020/8/12	2021/8/11
Cables	TITAN	CFD200	T0732ACFD20 020A300-1	2020/9/1	2021/8/31

UL Software		
Description	**Name**	**Version**
Radiated measurement	EZ_EMC	1.1.4.2
Conducted measurement	Keysight.TestSystem	1.0.0.0
AC power Line Conducted Emission	EZ_EMC	1.1.4.2

8. Description of Test Setup

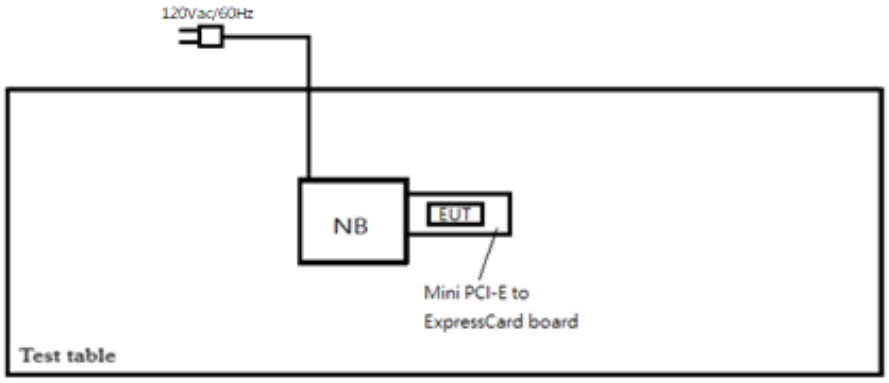
Support Equipment

Equipment	Brand Name	Model Name	S/N	Remark
Notebook	Lenovo	T430	PBE38AK	N/A
Mini PCI-E to ExpressCard board	N/A	N/A	N/A	N/A

Test Setup

The EUT was worked in engineering mode to transmit signal.

Setup Diagram for Test



9. Test Results

9.1. 6dB Bandwidth

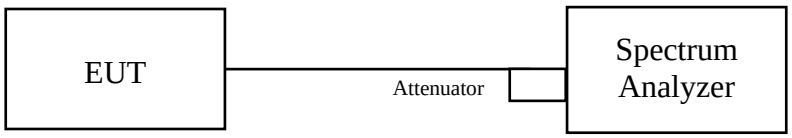
Requirements

The minimum 6 dB bandwidth shall be at least 500 kHz.

Test procedure

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Non-Beamforming mode

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	7.07	0.5	Pass
6	2437	7.07	0.5	Pass
11	2462	7.07	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.10	16.30	0.5	Pass
6	2437	16.02	16.30	0.5	Pass
11	2462	16.34	16.30	0.5	Pass

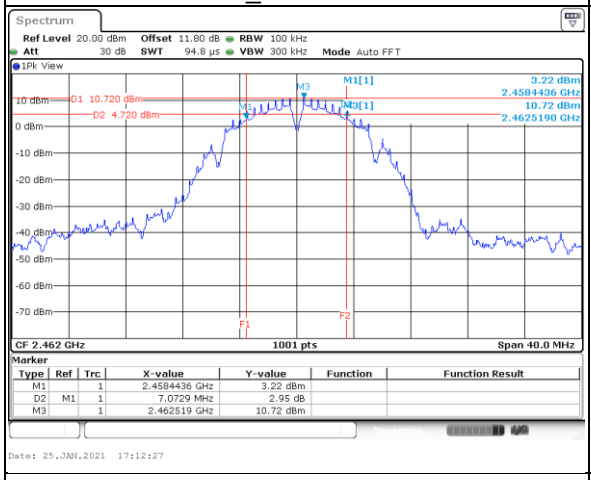
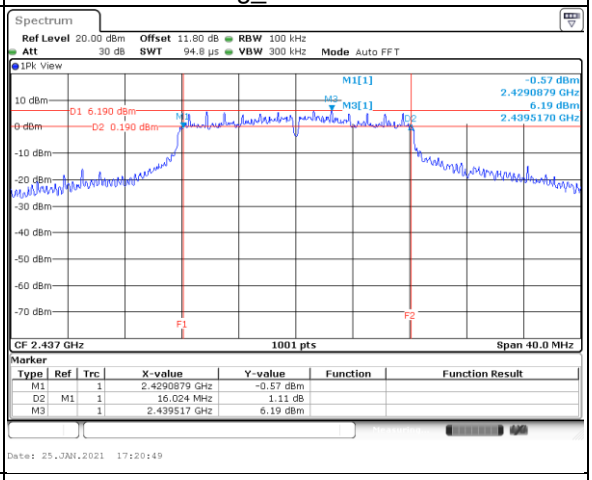
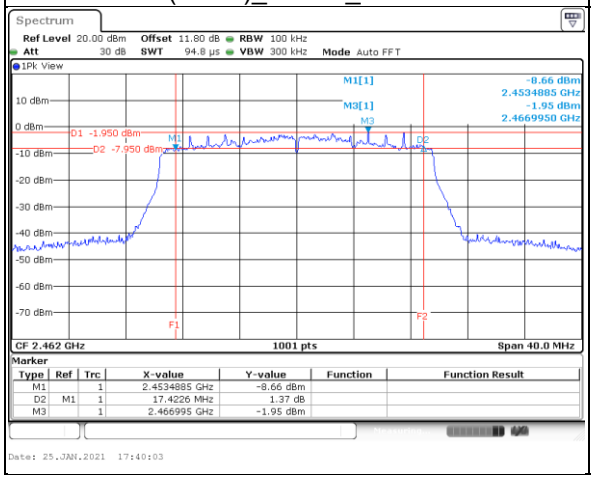
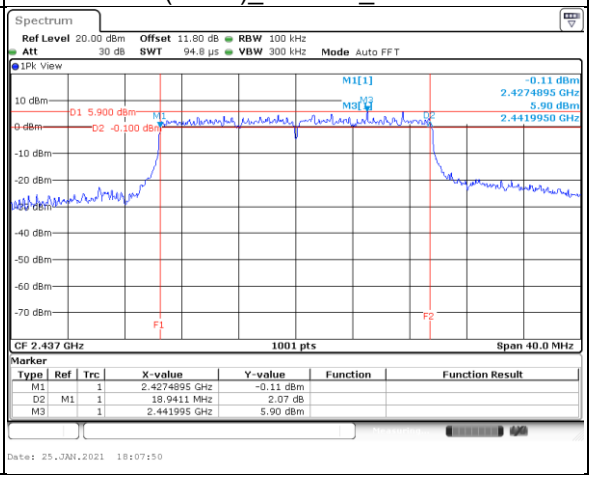
802.11ax (HE20)

OFDM

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.10	18.34	0.5	Pass
6	2437	18.38	17.82	0.5	Pass
11	2462	18.46	17.42	0.5	Pass

OFDMA

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2422	19.06	19.06	0.5	Pass
6	2437	19.06	18.94	0.5	Pass
11	2452	19.10	19.14	0.5	Pass

Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH11	802.11g_Chain 0 / CH6
	
802.11ax (HE20)_OFDM_Chain 1 / CH11	802.11ax (HE20)_OFDMA_Chain 1 / CH6
	

Beamforming mode

802.11ax (HE20)

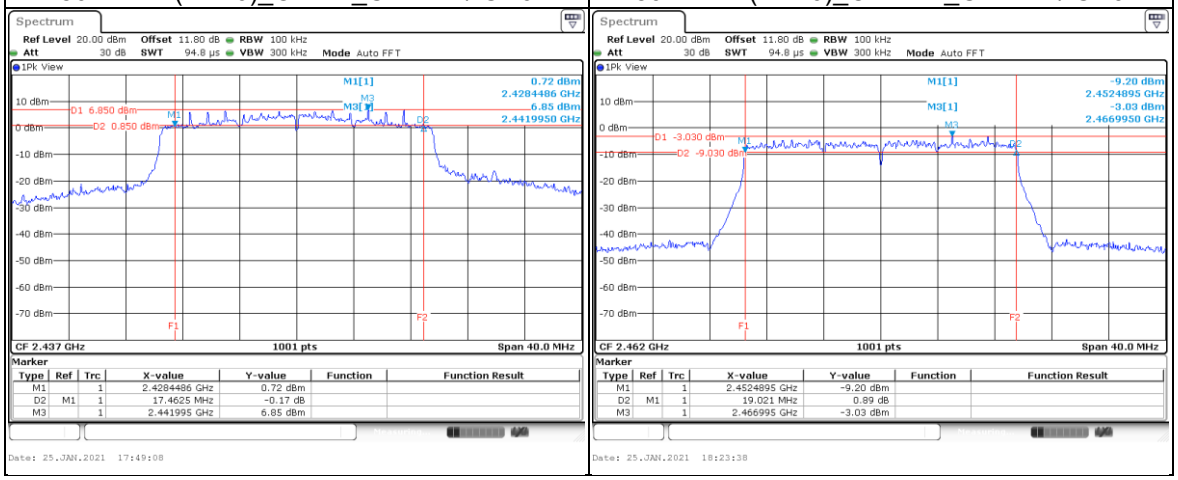
OFDM

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.58	18.70	0.5	Pass
6	2437	18.14	17.46	0.5	Pass
11	2462	18.74	18.38	0.5	Pass

OFDMA

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2422	19.10	19.10	0.5	Pass
6	2437	19.02	19.02	0.5	Pass
11	2452	19.06	19.02	0.5	Pass

Spectrum Plot of Worst Value	
802.11ax (HE20)_OFDM_Chain 1 / CH6	802.11ax (HE20)_OFDMA_Chain 1 / CH9



9.2. Conducted output power

Requirements

For systems using digital modulation in the 2400-2483.5 MHz bands: 1 Watt.

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

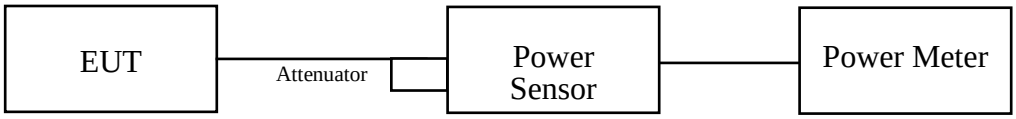
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths $\geq$ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

Test Procedure

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Test Setup



The loss between RF output port of the EUT and the input port of the Power Meter has been taken into consideration.

Test Data

Non-Beamforming mode

Peak Power

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	133.66	21.26	30	Pass
6	2437	143.549	21.57	30	Pass
11	2462	139.316	21.44	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	21.09	22.08	289.734	24.62	30	Pass
2	2417	21.86	23.55	380.189	25.80	30	Pass
6	2437	23.08	23.79	442.588	26.46	30	Pass
10	2457	21.34	23.12	341.193	25.33	30	Pass
11	2462	17.37	18.76	129.718	21.13	30	Pass

802.11ax (HE20)

OFDM

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.45	19.68	148.594	21.72	30	Pass
2	2417	21.68	23.22	357.273	25.53	30	Pass
6	2437	22.93	23.97	445.656	26.49	30	Pass
10	2457	20.78	22.46	295.801	24.71	30	Pass
11	2462	17.93	19.34	147.911	21.70	30	Pass

OFDMA

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.79	18.33	128.233	21.08	30	Pass
2	2417	21.95	22.51	334.965	25.25	30	Pass
6	2437	23.03	23.93	447.713	26.51	30	Pass
10	2457	21.35	21.53	278.612	24.45	30	Pass
11	2462	16.73	16.98	97.051	19.87	30	Pass

Average Power (Reference Only)

802.11b

Channel	Frequency (MHz)	Total Power (mW)	Total Power (dBm)
1	2412	67.92	18.32
6	2437	66.374	18.22
11	2462	70.469	18.48

802.11g

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	11.35	12.89	33.113	15.20
2	2417	14.44	15.53	63.533	18.03
6	2437	17.56	18.12	121.899	20.86
10	2457	13.58	14.53	51.168	17.09
11	2462	8.88	10.32	18.493	12.67

802.11ax (HE20)

OFDM

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	8.85	10.32	18.45	12.66
2	2417	13.58	14.72	52.481	17.20
6	2437	17.52	18.36	125.026	20.97
10	2457	12.87	13.96	44.259	16.46
11	2462	8.88	10.22	18.239	12.61

OFDMA

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	8.72	9.21	15.776	11.98
2	2417	13.52	13.70	45.92	16.62
6	2437	17.75	17.46	115.345	20.62
10	2457	12.86	12.90	38.815	15.89
11	2462	8.04	8.45	13.366	11.26

Beamforming mode

Peak Power

802.11ax (HE20)

OFDM

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.30	19.60	144.877	21.61	29.85	Pass
2	2417	21.59	23.17	351.56	25.46	29.85	Pass
6	2437	22.76	23.79	428.549	26.32	29.85	Pass
10	2457	20.71	22.21	283.792	24.53	29.85	Pass
11	2462	17.90	19.24	145.546	21.63	29.85	Pass

Note: The directional gain = 6.15 dBi > 6 dBi, so the power limit shall be reduced.

OFDMA

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	17.73	18.32	127.35	21.05	29.85	Pass
2	2417	21.74	22.41	323.594	25.10	29.85	Pass
6	2437	22.86	23.93	440.555	26.44	29.85	Pass
10	2457	21.17	21.53	272.898	24.36	29.85	Pass
11	2462	16.68	16.93	95.94	19.82	29.85	Pass

Note: The directional gain = 6.15 dBi > 6 dBi, so the power limit shall be reduced.

Average Power (Reference Only)

802.11ax (HE20)

OFDM

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	8.62	10.32	18.03	12.56
2	2417	13.48	14.48	50.35	17.02
6	2437	17.45	18.19	121.619	20.85
10	2457	12.81	13.87	43.451	16.38
11	2462	8.80	10.16	17.947	12.54

OFDMA

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	8.72	9.17	15.704	11.96
2	2417	13.33	13.54	44.157	16.45
6	2437	17.62	17.40	112.72	20.52
10	2457	12.85	12.68	37.844	15.78
11	2462	7.98	8.45	13.274	11.23

9.3. Power Spectral Density

Requirements

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz (If G_{TX} > 6 dBi, then PSD = 8 – (G_{TX} – 6)).

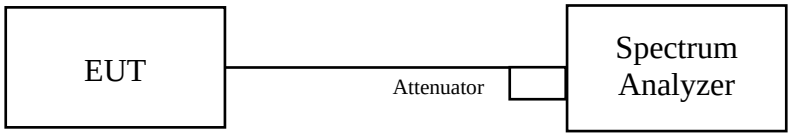
Note:
1. PSD = power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz.
2. G_{TX} = the maximum transmitting antenna directional gain in dBi.
3. Directional Gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$ +...+$10^{Gn/20}$)^2 / Nant] dBi.

   Nant: Number of Transmit Antennas
   G1, G2,..., Gn: Gain of Individual Antennas

Test procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ 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 amplitude level within the RBW.

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

Test Data

Non-Beamforming mode

802.11b

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-1.48	8	Pass
6	2437	-1.82	8	Pass
11	2462	-1.51	8	Pass

802.11g

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-12.63	3.01	-9.62	7.85	Pass
	6	2437	-6.93	3.01	-3.92	7.85	Pass
	11	2462	-15.21	3.01	-12.20	7.85	Pass
1	1	2412	-10.87	3.01	-7.86	7.85	Pass
	6	2437	-5.39	3.01	-2.38	7.85	Pass
	11	2462	-13.94	3.01	-10.93	7.85	Pass

Note: Directional gain = 6.15 dBi > 6 dBi , so the limit shall be reduced.

802.11ax (HE20)

OFDM

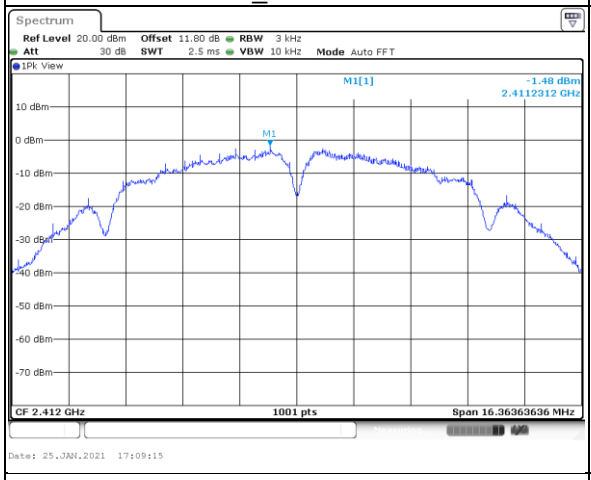
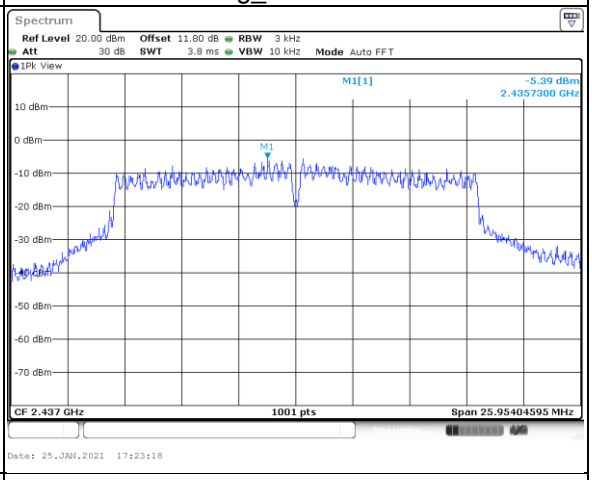
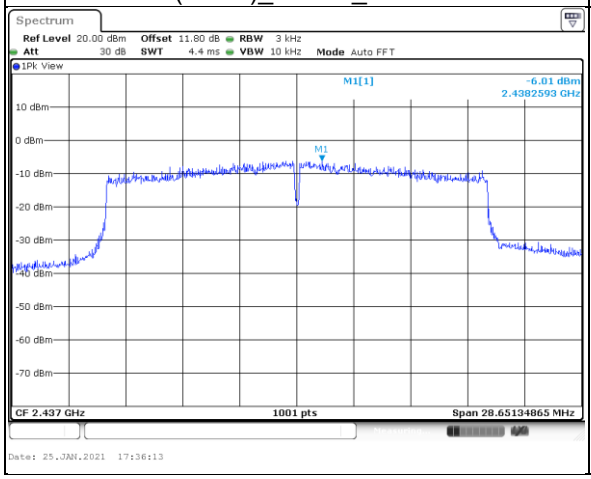
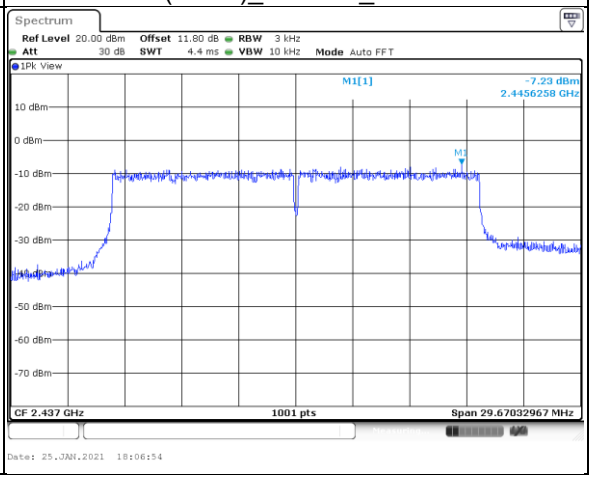
TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-16.25	3.01	-13.24	7.85	Pass
	6	2437	-6.90	3.01	-3.89	7.85	Pass
	11	2462	-15.28	3.01	-12.27	7.85	Pass
1	1	2412	-14.23	3.01	-11.22	7.85	Pass
	6	2437	-6.01	3.01	-3.00	7.85	Pass
	11	2462	-14.38	3.01	-11.37	7.85	Pass

Note: Directional gain = 6.15 dBi > 6 dBi , so the limit shall be reduced.

OFDMA

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-16.74	3.01	-13.73	7.85	Pass
	6	2437	-7.23	3.01	-4.22	7.85	Pass
	11	2462	-16.17	3.01	-13.16	7.85	Pass
1	1	2412	-15.71	3.01	-12.70	7.85	Pass
	6	2437	-7.71	3.01	-4.70	7.85	Pass
	11	2462	-15.93	3.01	-12.92	7.85	Pass

Note: Directional gain = 6.15 dBi > 6 dBi , so the limit shall be reduced.

Spectrum Plot of Worst Value	
802.11b_Chain 0 / CH1	802.11g_Chain 1 / CH6
	
802.11ax (HE20)_OFDM_Chain 1 / CH6	802.11ax (HE20)_OFDMA_Chain 0 / CH6
	

Beamforming mode

802.11ax (HE20)

OFDM

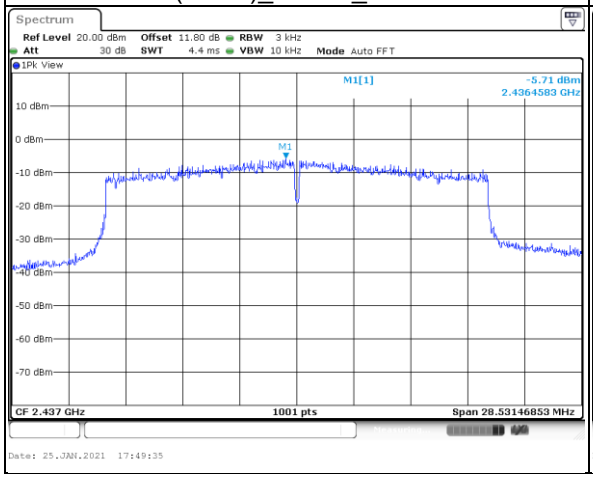
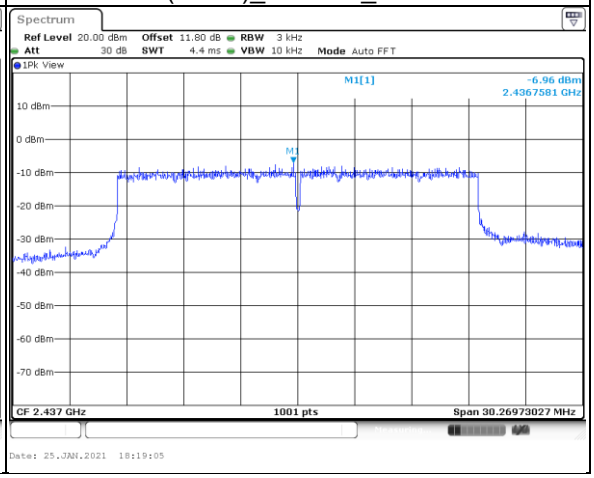
TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-15.46	3.01	-12.45	7.85	Pass
	6	2437	-7.11	3.01	-4.10	7.85	Pass
	11	2462	-15.50	3.01	-12.49	7.85	Pass
1	1	2412	-14.27	3.01	-11.26	7.85	Pass
	6	2437	-5.71	3.01	-2.70	7.85	Pass
	11	2462	-13.98	3.01	-10.97	7.85	Pass

Note: Directional gain = 6.15 dBi > 6 dBi , so the limit shall be reduced.

OFDMA

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-15.83	3.01	-12.82	7.85	Pass
	6	2437	-6.96	3.01	-3.95	7.85	Pass
	11	2462	-15.98	3.01	-12.97	7.85	Pass
1	1	2412	-15.80	3.01	-12.79	7.85	Pass
	6	2437	-7.56	3.01	-4.55	7.85	Pass
	11	2462	-15.76	3.01	-12.75	7.85	Pass

Note: Directional gain = 6.15 dBi > 6 dBi , so the limit shall be reduced.

Spectrum Plot of Worst Value	
802.11ax (HE20)_OFDM_Chain 1 / CH6	802.11ax (HE20)_OFDMA_Chain 0 / CH6
	

9.4. Conducted Out of Band Emission

Requirements

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.

Test procedure

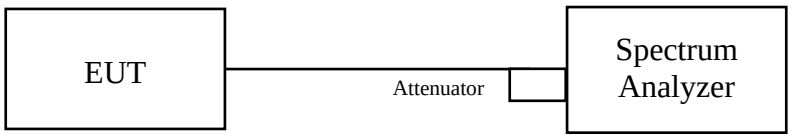
Measurement Procedure REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Set the span to 1.5 times the DTS bandwidth.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Measurement Procedure OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

Test Setup



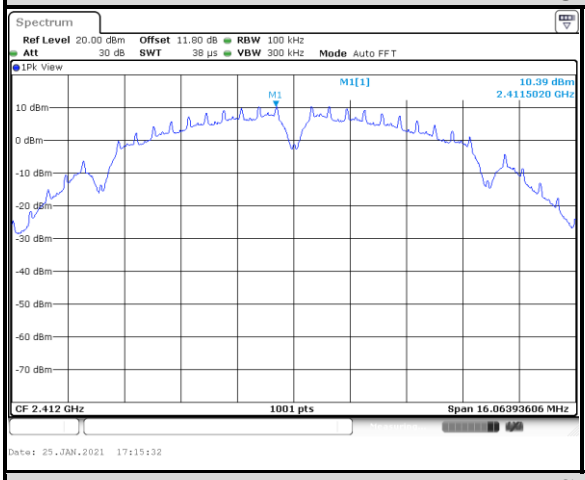
The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

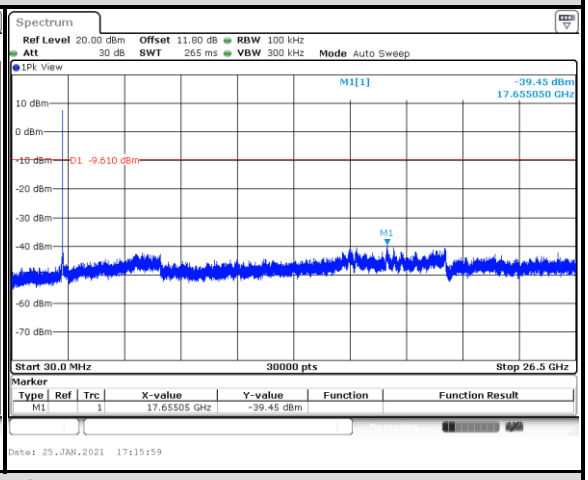
Test Data

Non-Beamforming mode

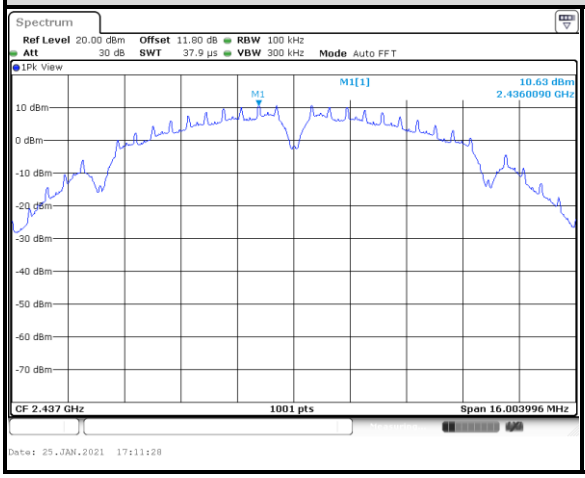
802.11b

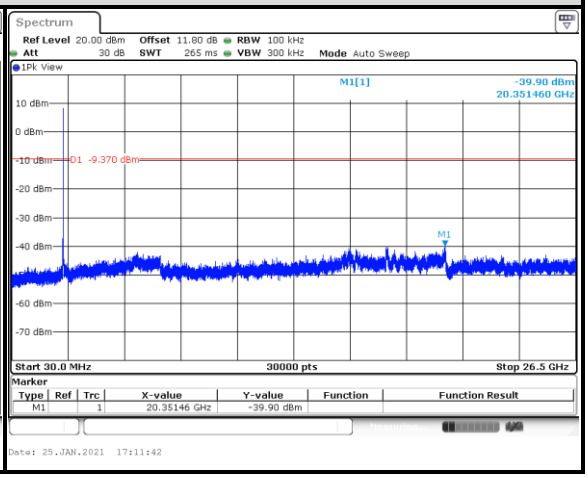
Ch 1



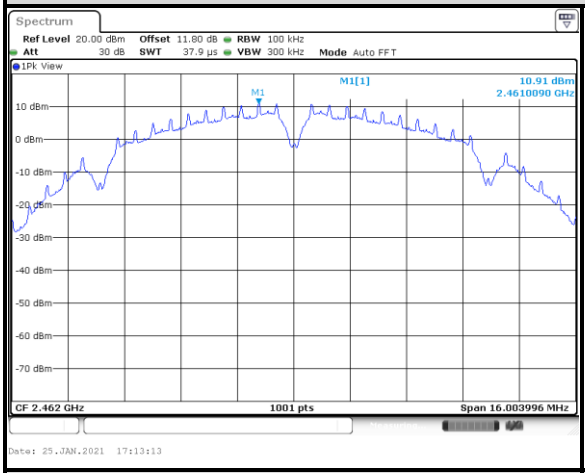


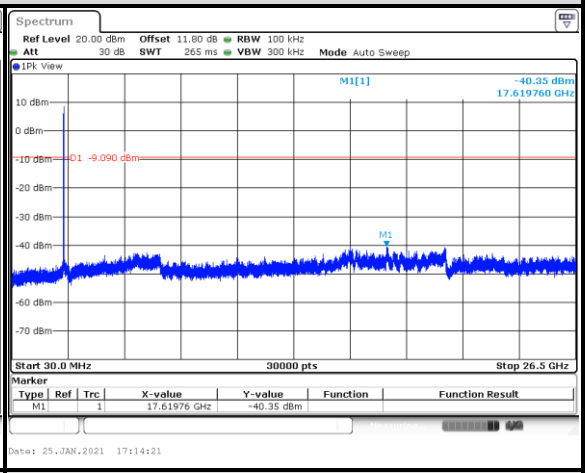
Ch 6



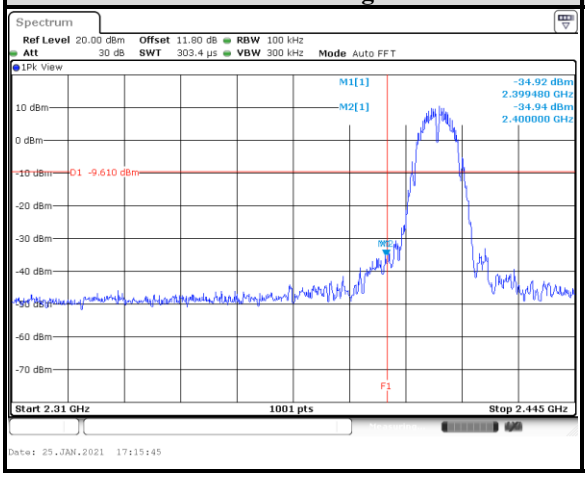


Ch 11

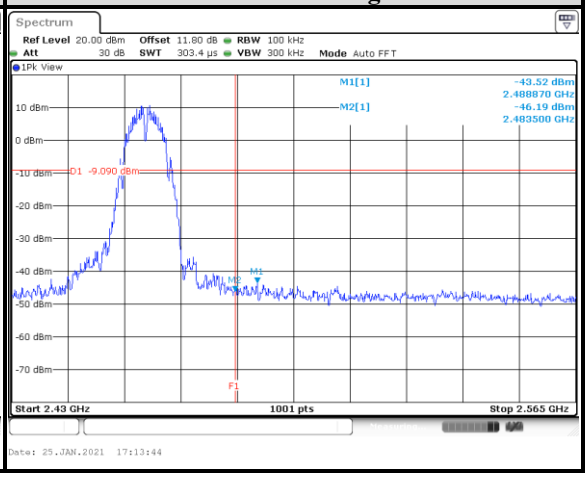




Ch 1 Band Edge



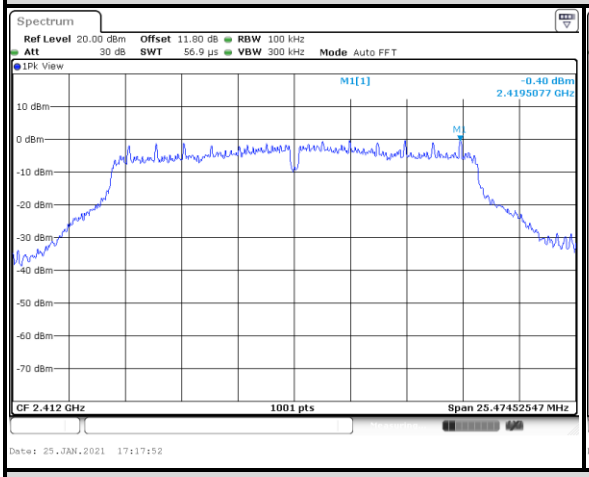
Ch 11 Band Edge

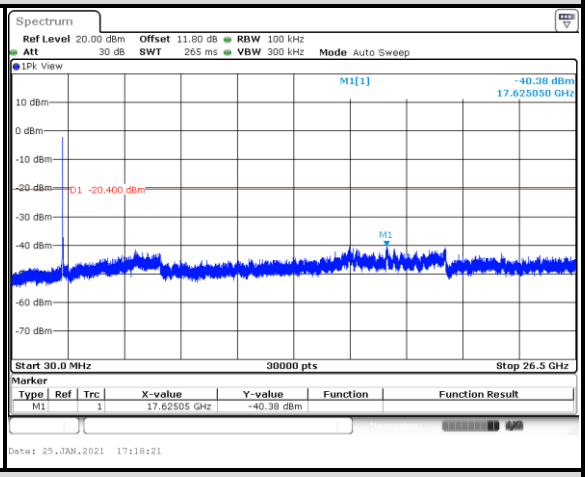


802.11g

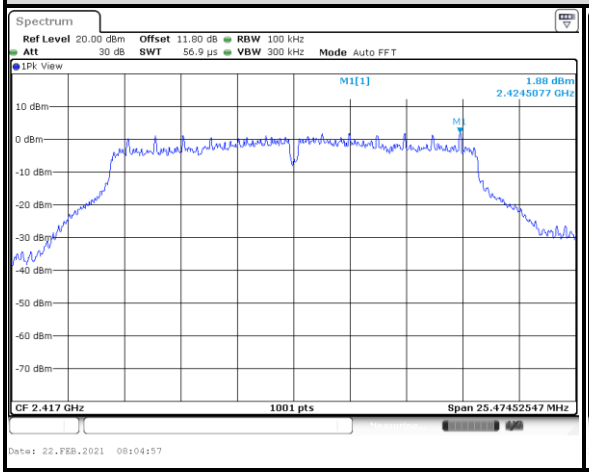
CHAIN 0

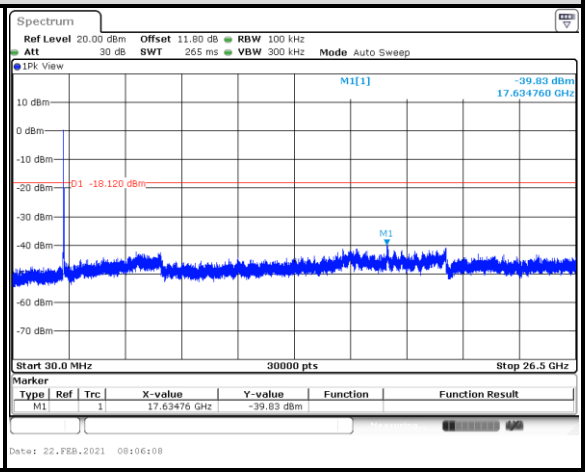
Ch 1



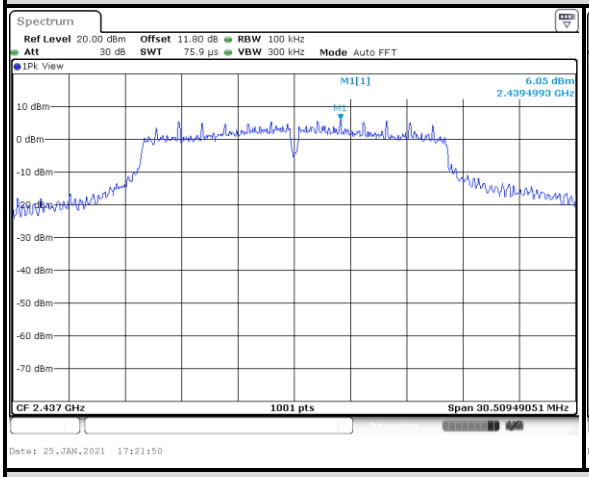


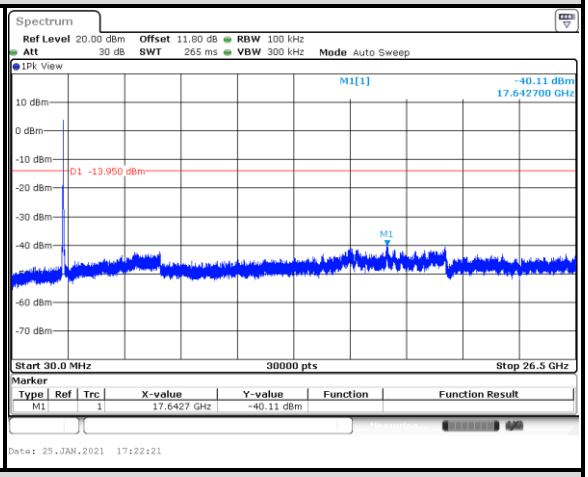
Ch 2



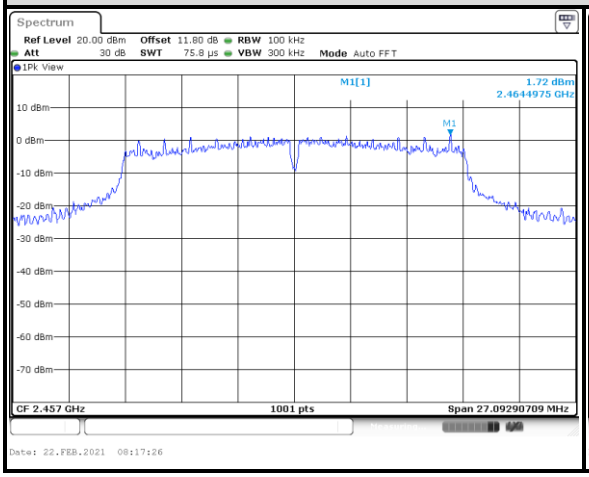


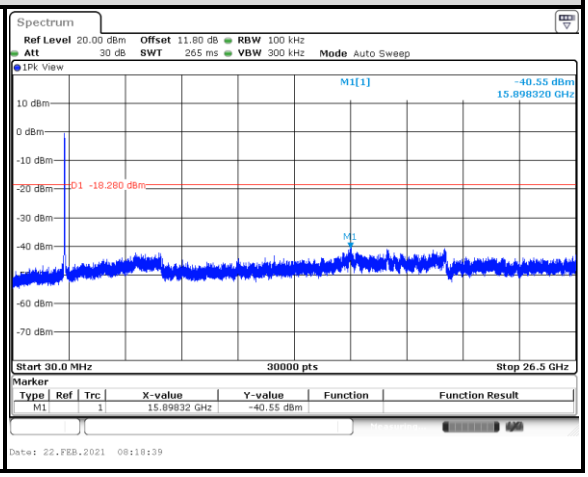
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 6.05 dBm
2.4394993 GHz
CF 2.437 GHz 1001 pts Span 30.50949051 MHz
Date: 25.JAN.2021 17:21:50

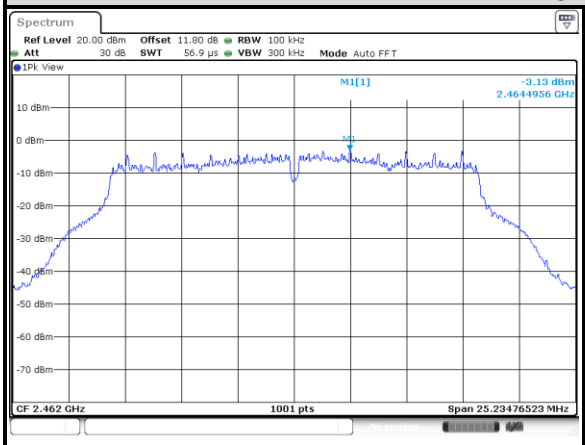

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.11 dBm
17.642700 GHz
D1 -13.950 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 17.6427 GHz -40.11 dBm
Date: 25.JAN.2021 17:22:21

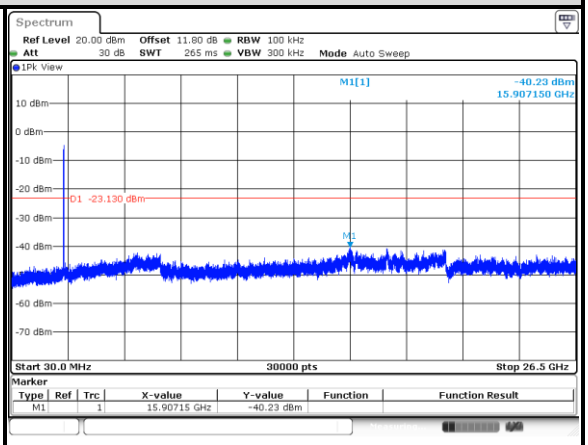
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 1.72 dBm
2.4644975 GHz
CF 2.457 GHz 1001 pts Span 27.09290709 MHz
Date: 22.FEB.2021 08:17:26

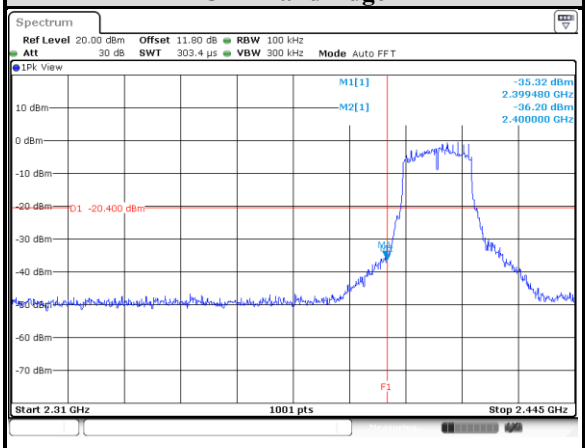

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.55 dBm
15.898320 GHz
D1 -18.280 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 15.89832 GHz -40.55 dBm
Date: 22.FEB.2021 08:18:39

Ch 11

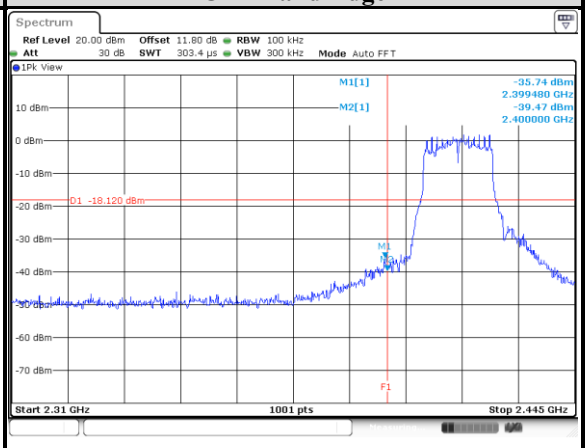




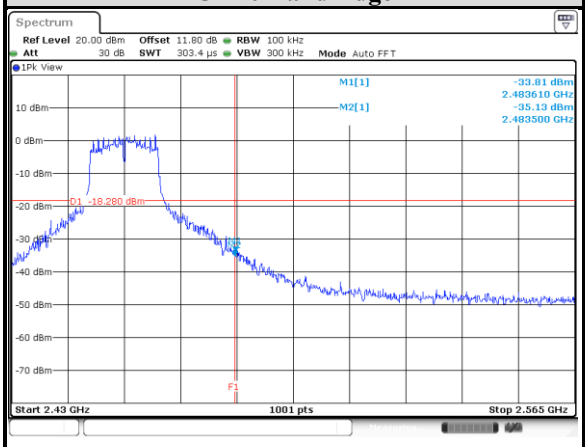
Ch 1 Band Edge



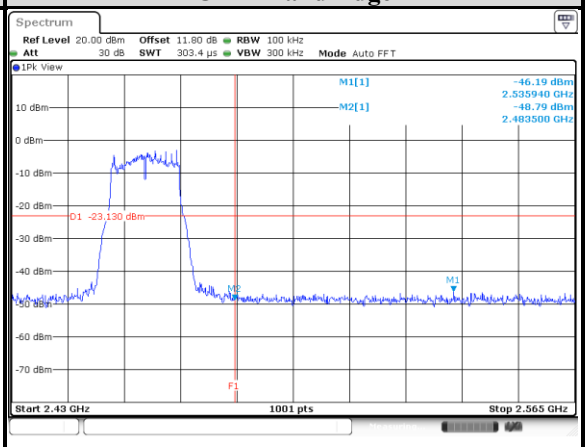
Ch 2 Band Edge



Ch 10 Band Edge

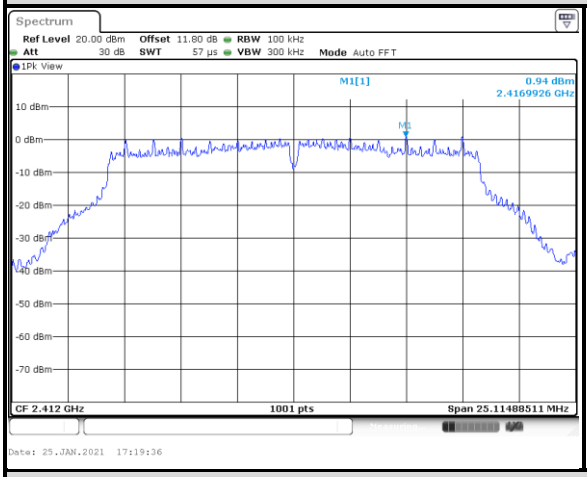


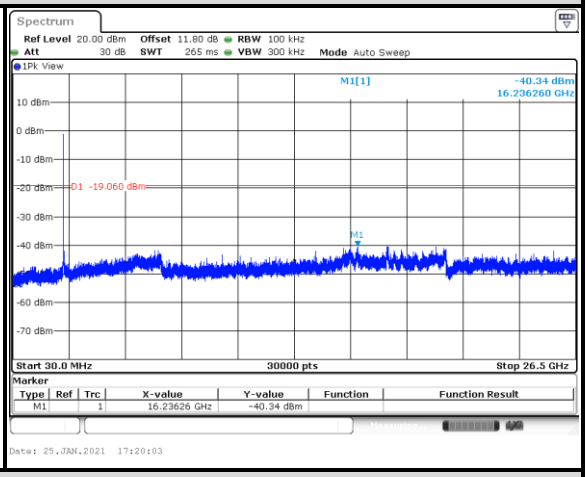
Ch 11 Band Edge



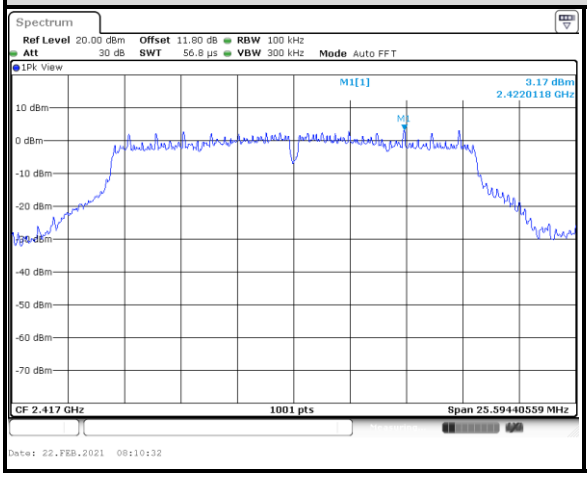
CHAIN 1

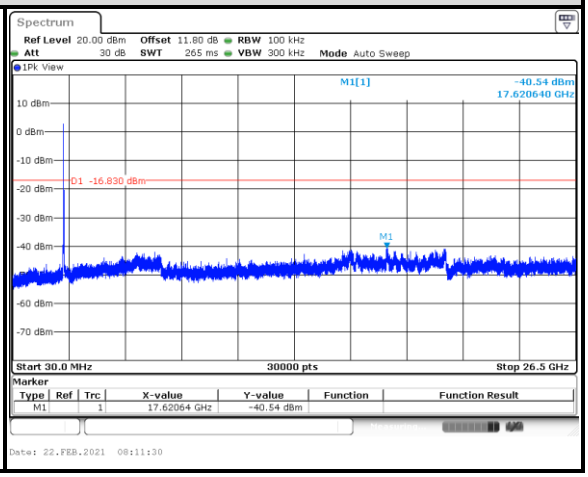
Ch 1



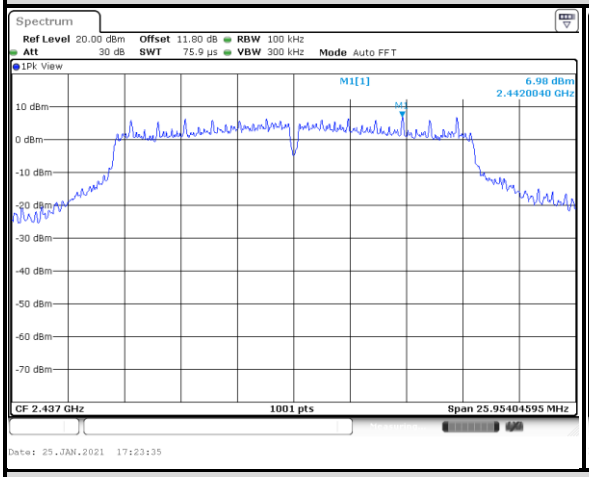


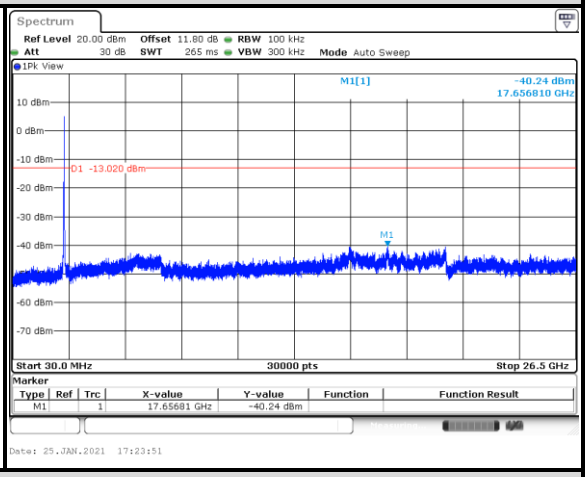
Ch 2



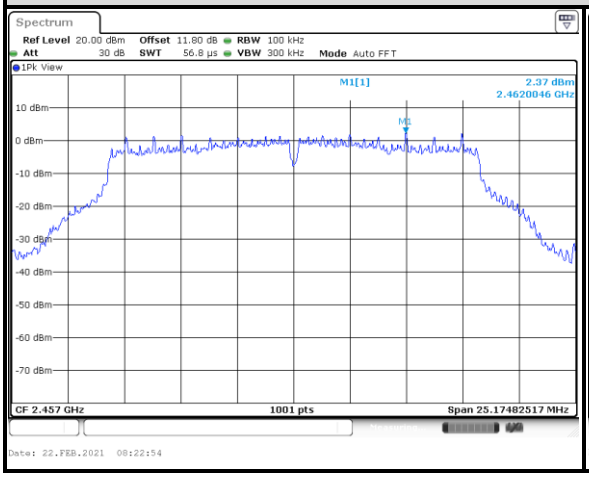


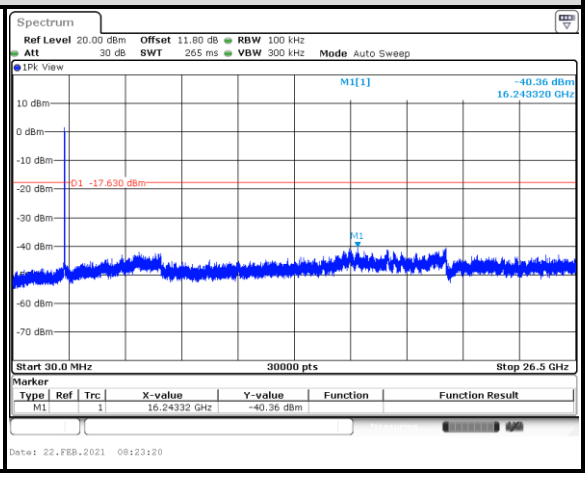
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 6.98 dBm
2.4420040 GHz
CF 2.437 GHz 1001 pts Span 25.95404595 MHz
Date: 25.JAN.2021 17:23:35

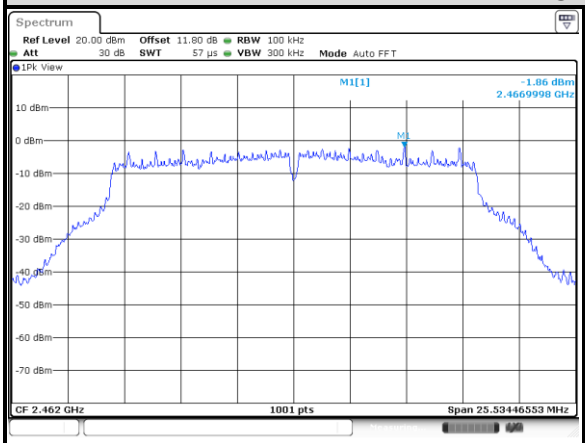

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.24 dBm
17.656810 GHz
D1 -13.020 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 17.65681 GHz -40.24 dBm
Date: 25.JAN.2021 17:23:51

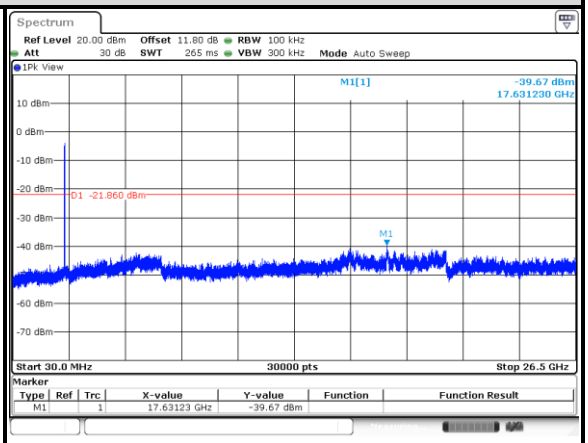
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 56.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 2.37 dBm
2.4620046 GHz
CF 2.457 GHz 1001 pts Span 25.17482517 MHz
Date: 22.FEB.2021 08:22:54

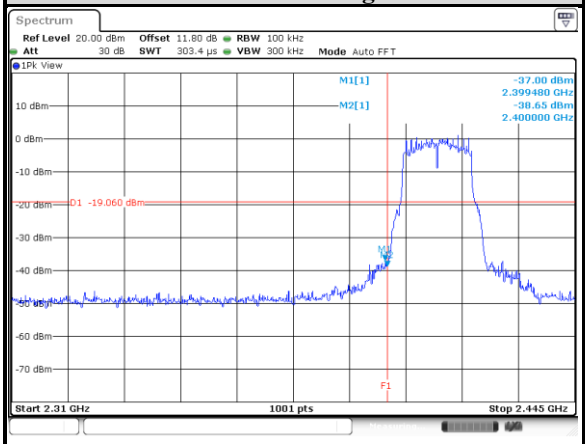

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.36 dBm
16.243320 GHz
D1 -17.630 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 16.24332 GHz -40.36 dBm
Date: 22.FEB.2021 08:23:20

Ch 11

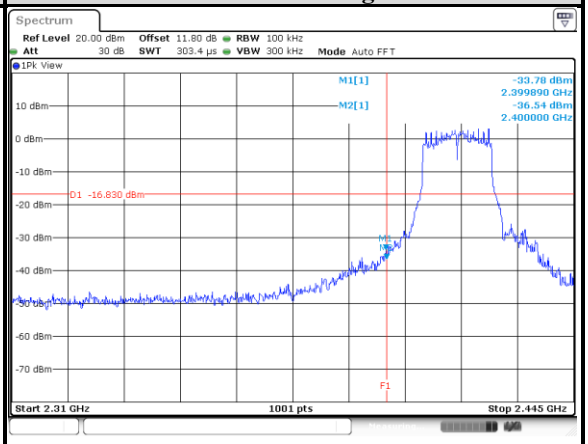




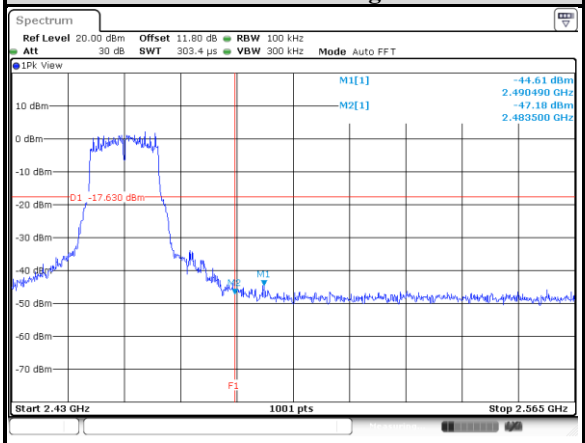
Ch 1 Band Edge



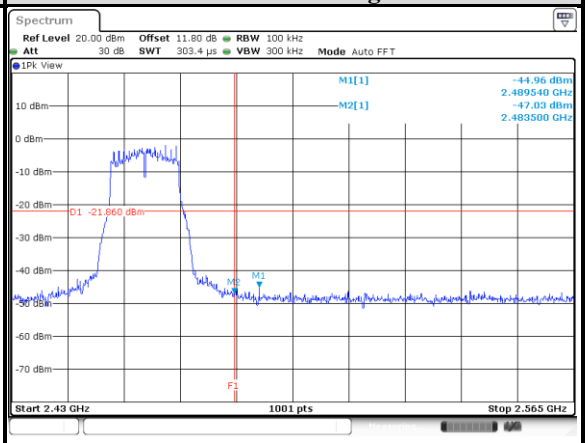
Ch 2 Band Edge



Ch 10 Band Edge



Ch 11 Band Edge

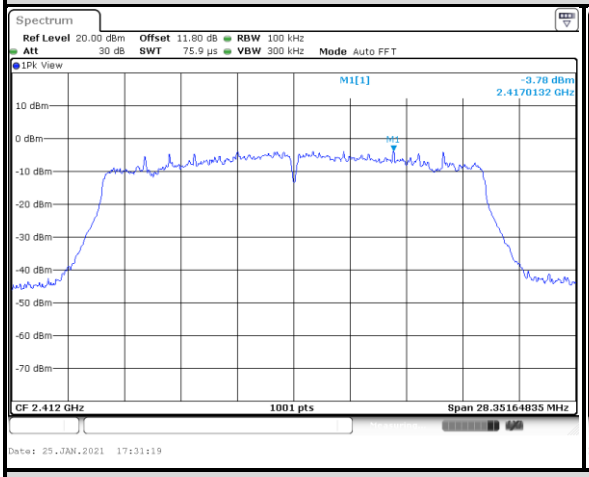


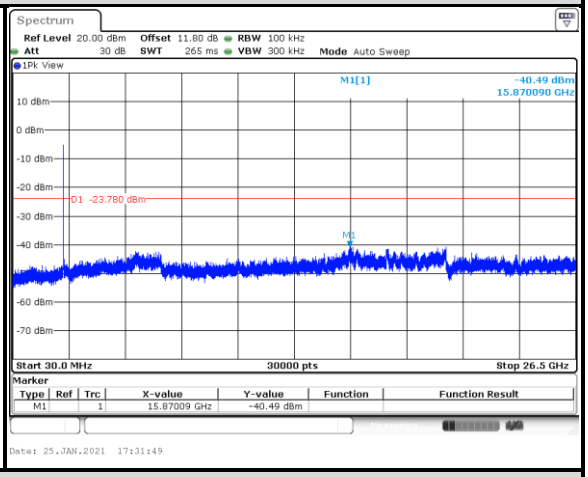
802.11ax (HE20)

OFDM

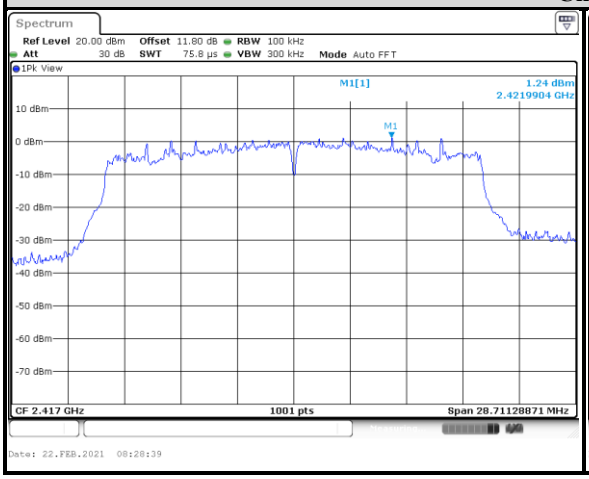
CHAIN 0

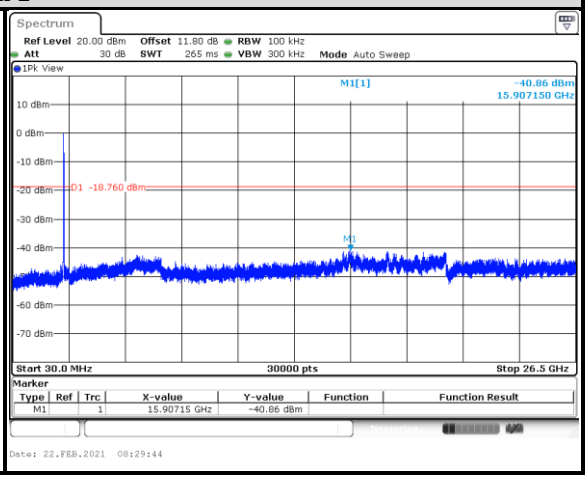
Ch 1



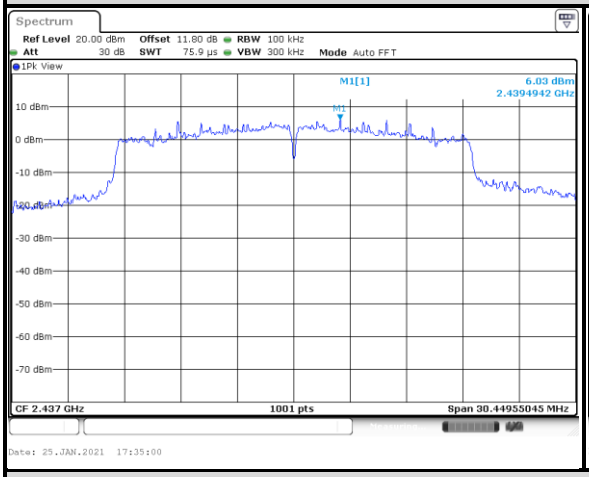


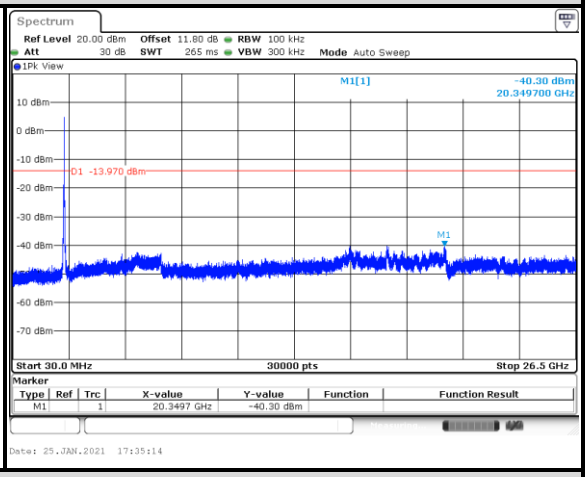
Ch 2



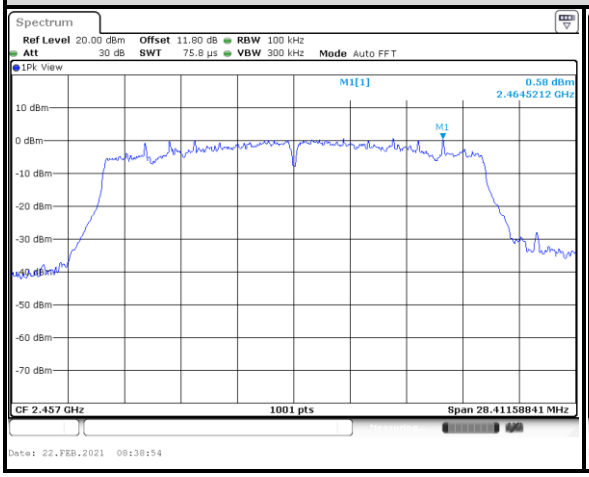


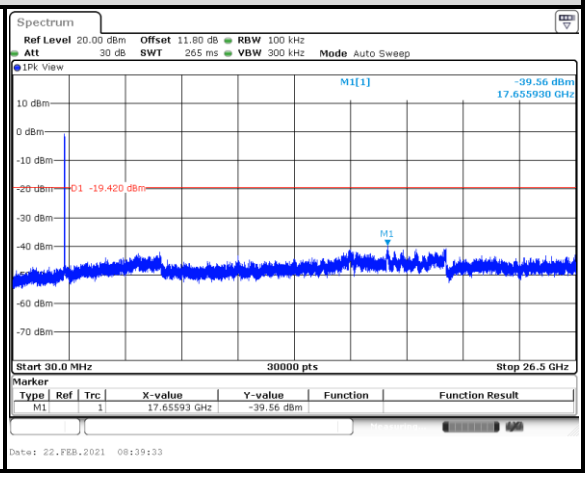
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 6.03 dBm
2.4394942 GHz
CF 2.437 GHz 1001 pts Span 30.44955045 MHz
Date: 25.JAN.2021 17:35:00

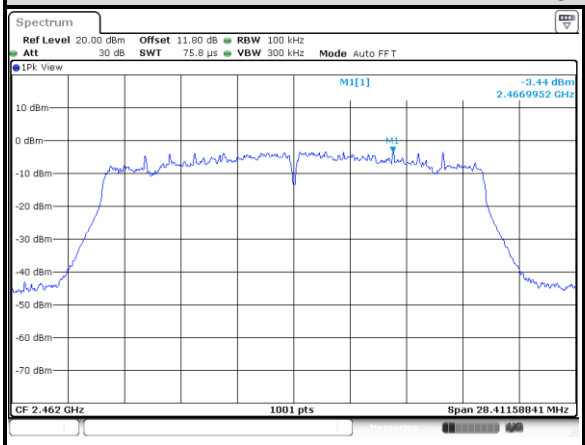

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.30 dBm
20.349700 GHz
D1 -13.970 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.3497 GHz -40.30 dBm
Date: 25.JAN.2021 17:35:14

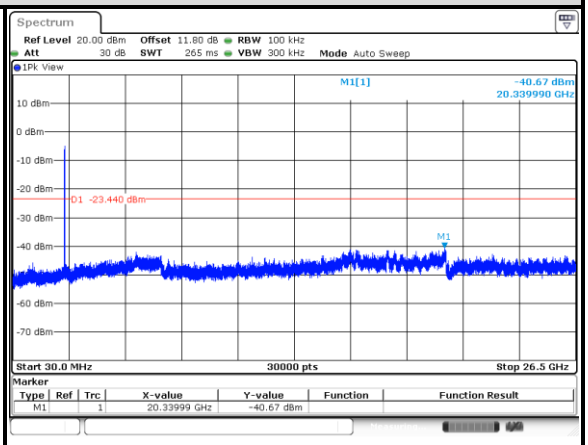
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 0.58 dBm
2.4645212 GHz
CF 2.457 GHz 1001 pts Span 28.41158841 MHz
Date: 22.FEB.2021 08:38:54

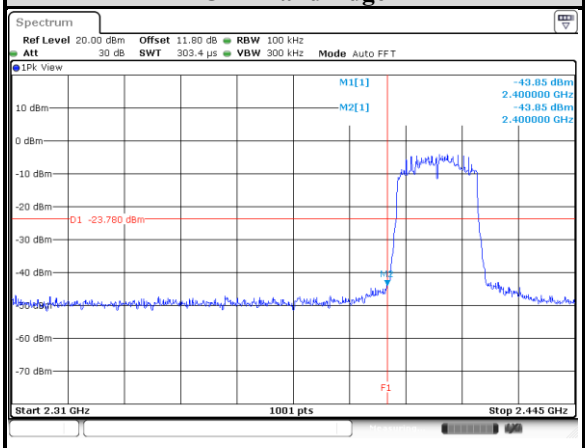

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -39.56 dBm
17.655930 GHz
D1 -19.420 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 17.65593 GHz -39.56 dBm
Date: 22.FEB.2021 08:39:33

Ch 11

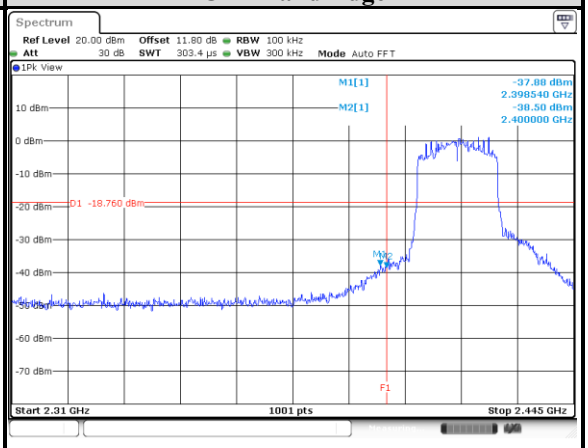




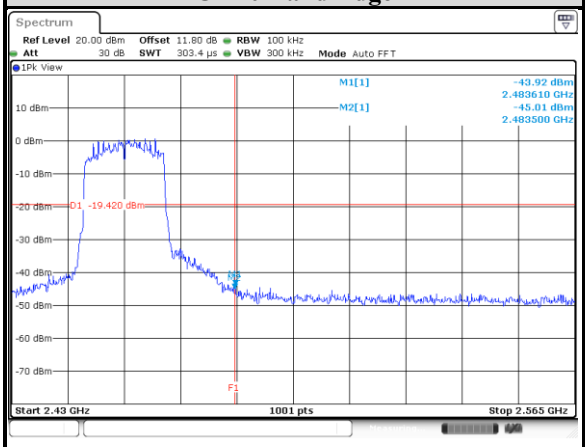
Ch 1 Band Edge



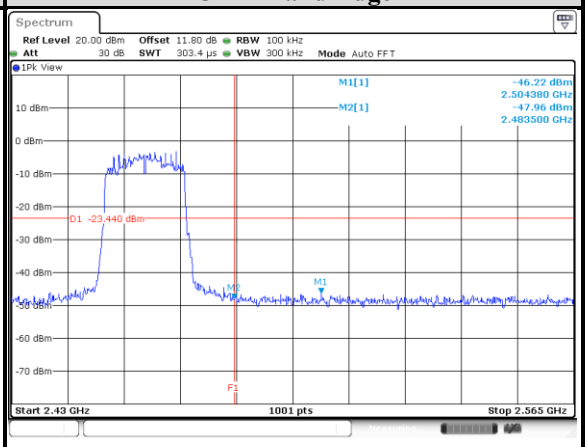
Ch 2 Band Edge



Ch 10 Band Edge

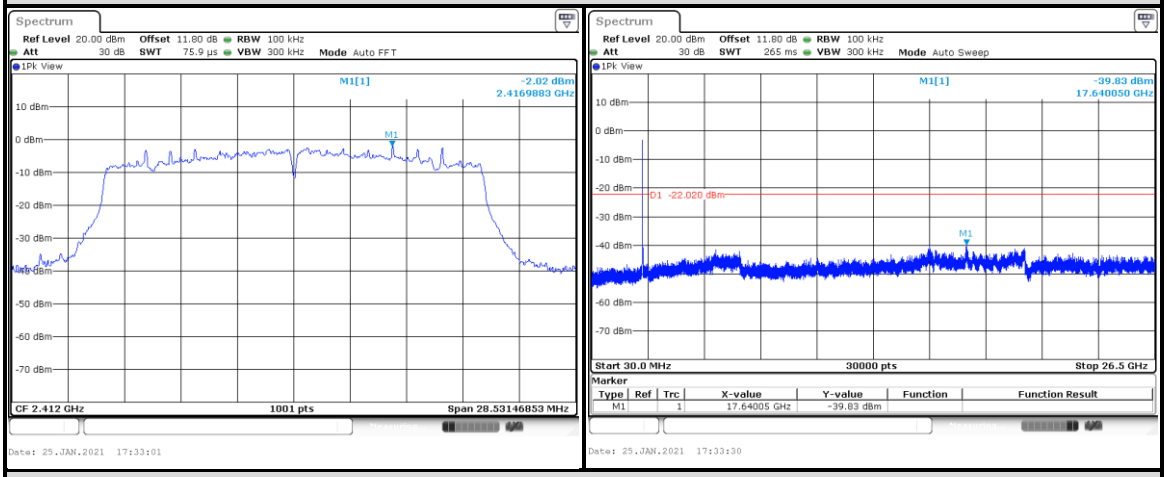


Ch 11 Band Edge

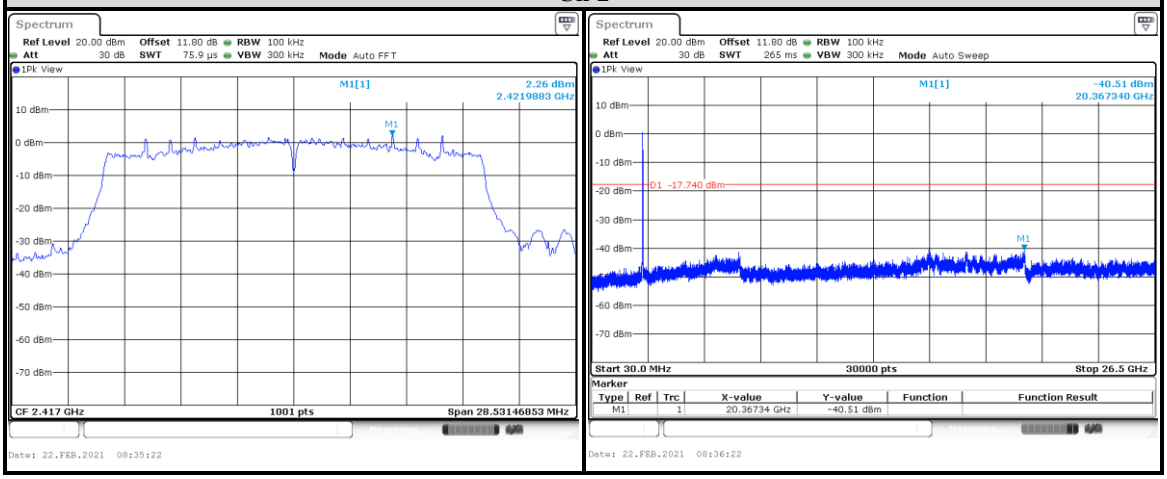


CHAIN 1

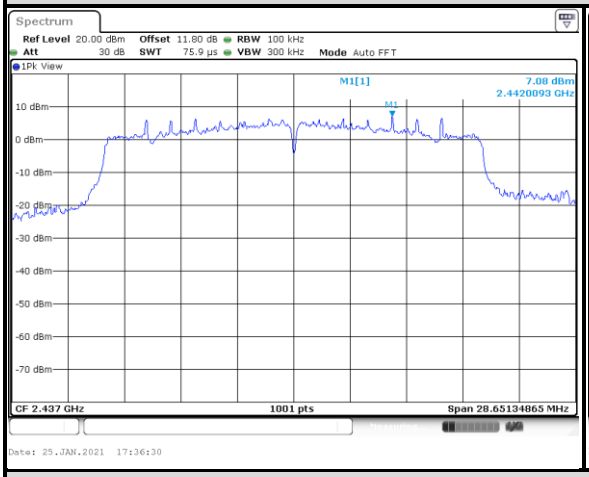
Ch 1

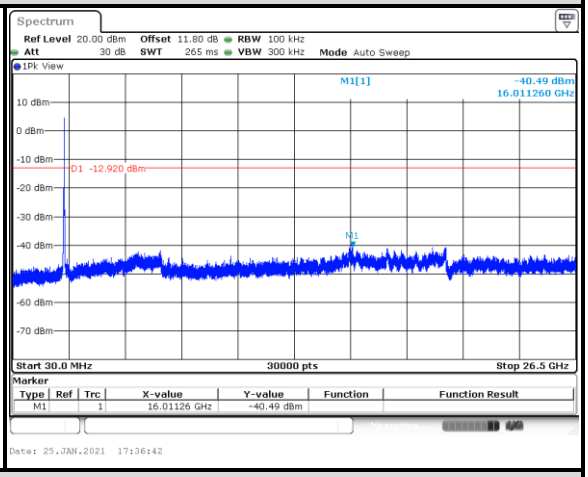


Ch 2

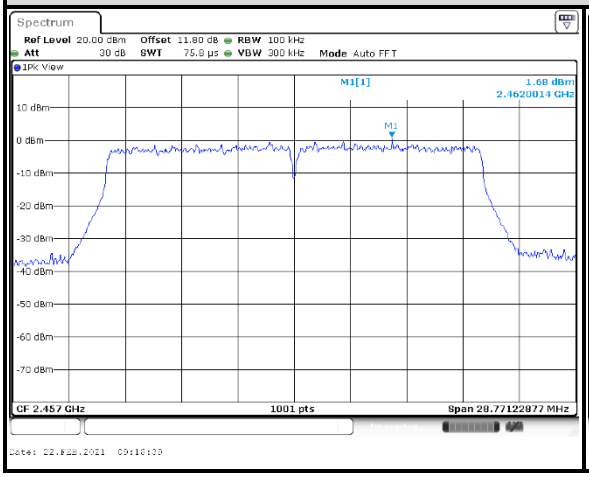


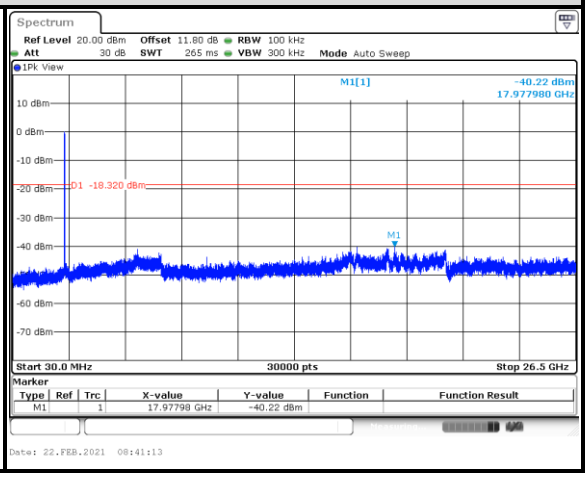
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 7.08 dBm
2.4420093 GHz
CF 2.437 GHz 1001 pts Span 28.65134865 MHz
Date: 25.JAN.2021 17:36:30

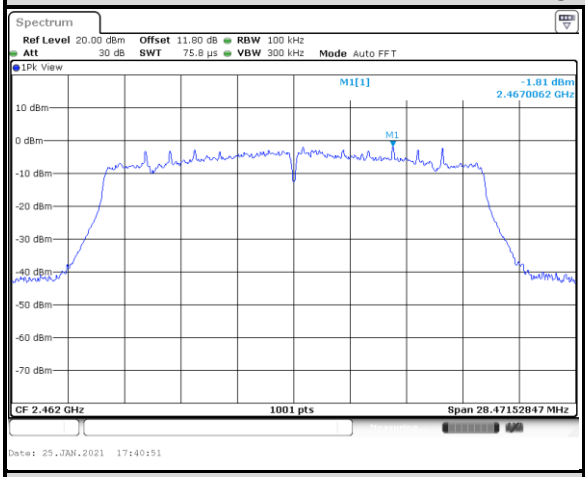

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.49 dBm
16.011260 GHz
D1 -12.920 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 16.01126 GHz -40.49 dBm
Date: 25.JAN.2021 17:36:42

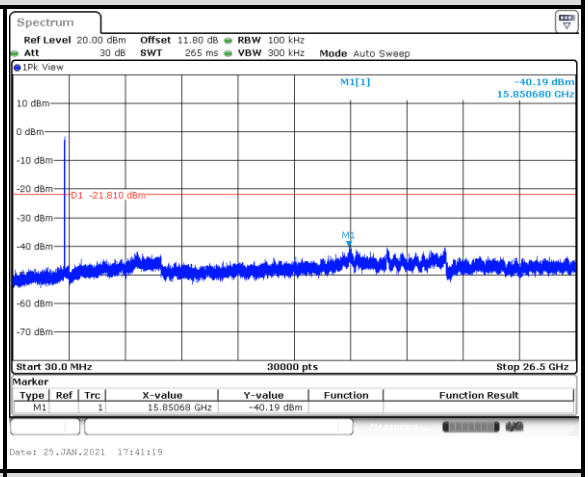
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 1.68 dBm
2.4620014 GHz
CF 2.457 GHz 1001 pts Span 28.77122977 MHz

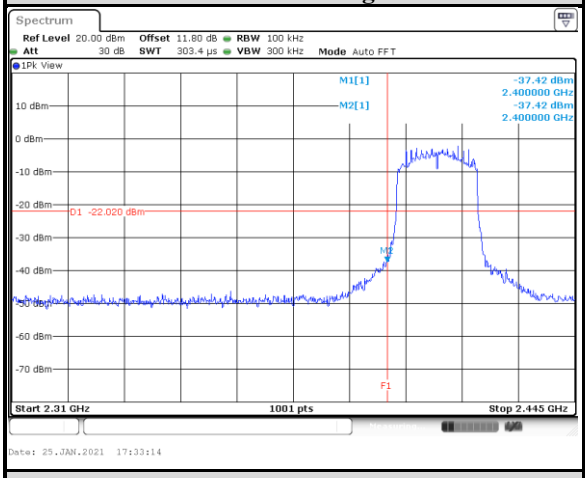

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.22 dBm
17.977980 GHz
D1 -18.320 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 17.97798 GHz -40.22 dBm
Date: 22.FEB.2021 08:41:13

Ch 11

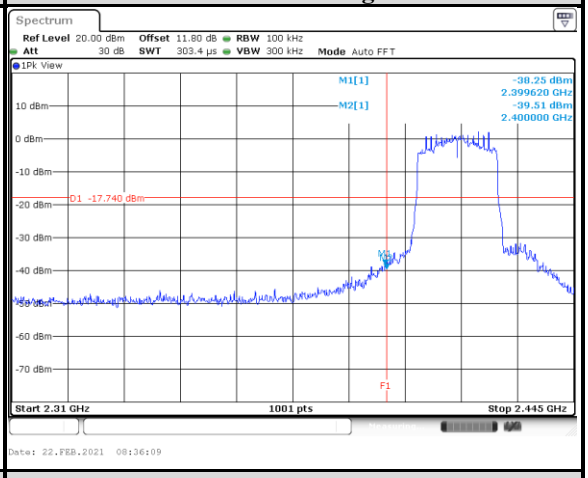




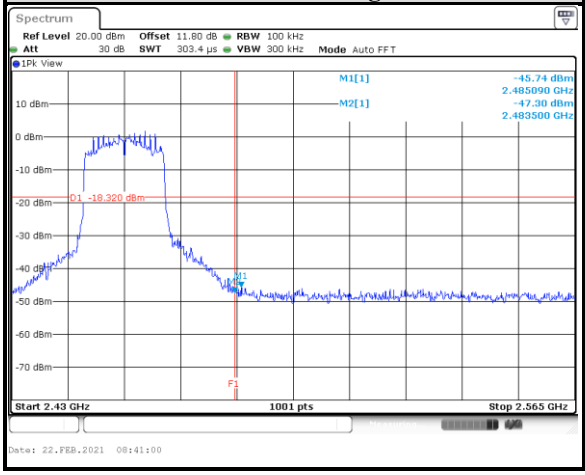
Ch 1 Band Edge



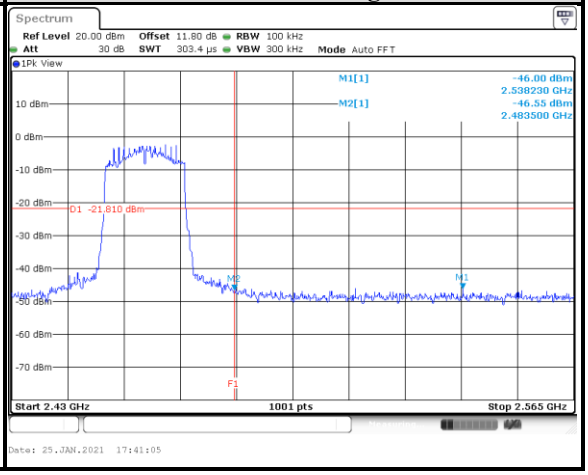
Ch 2 Band Edge



Ch 10 Band Edge



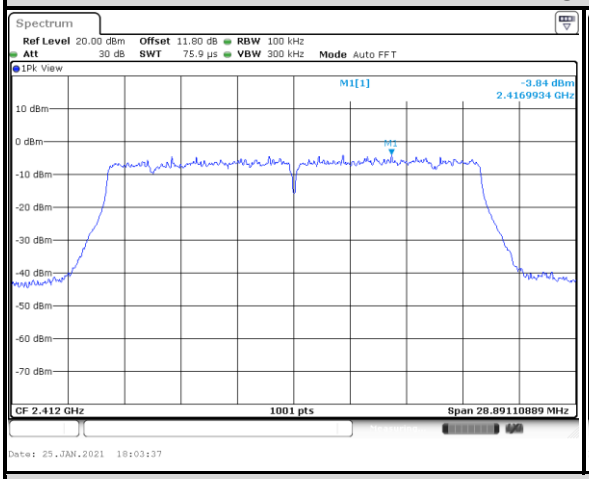
Ch 11 Band Edge

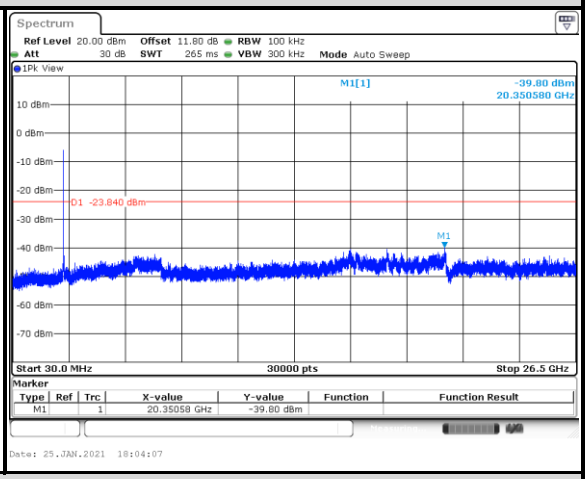


OFDMA

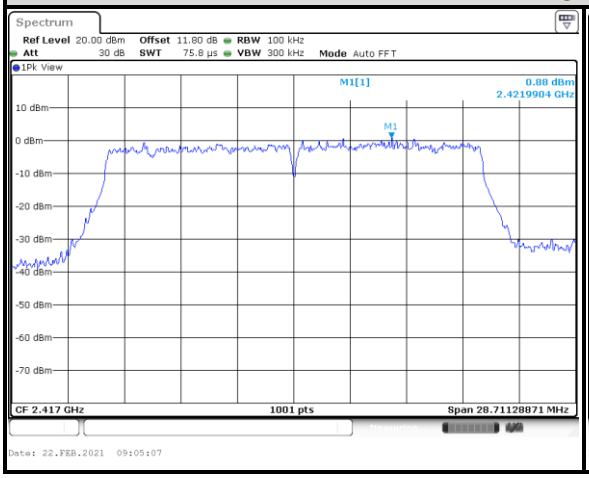
CHAIN 0

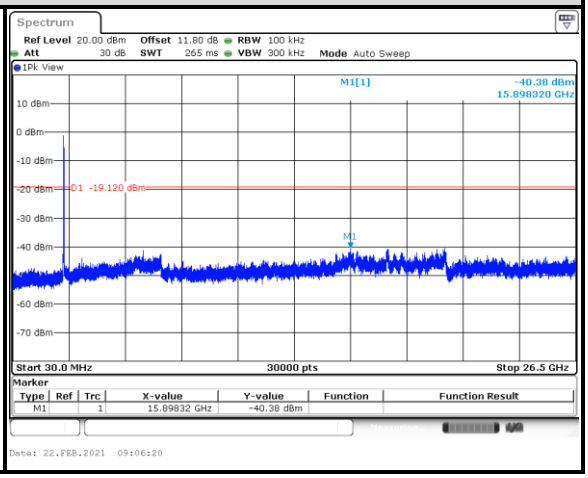
Ch 1



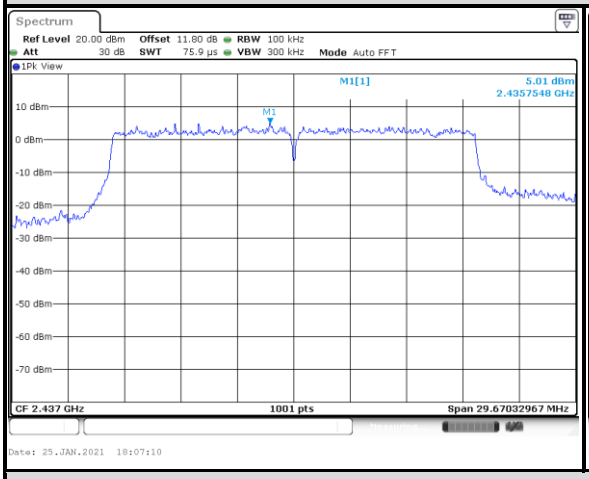


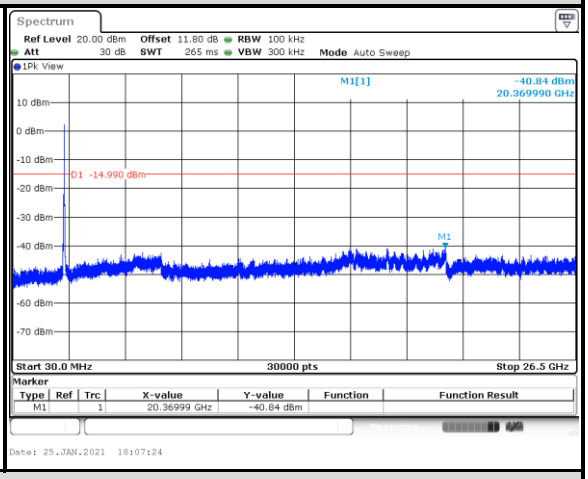
Ch 2



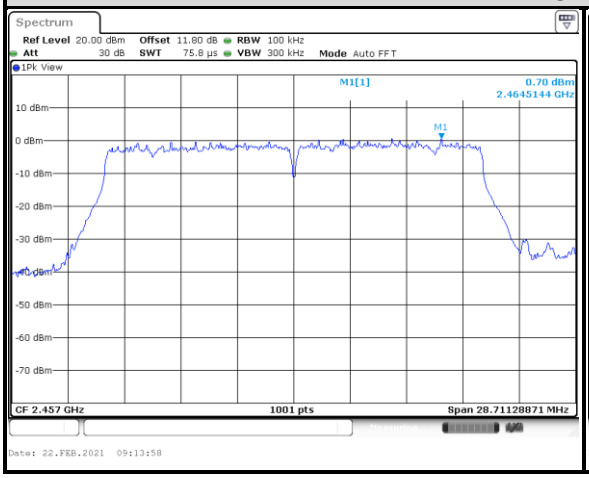


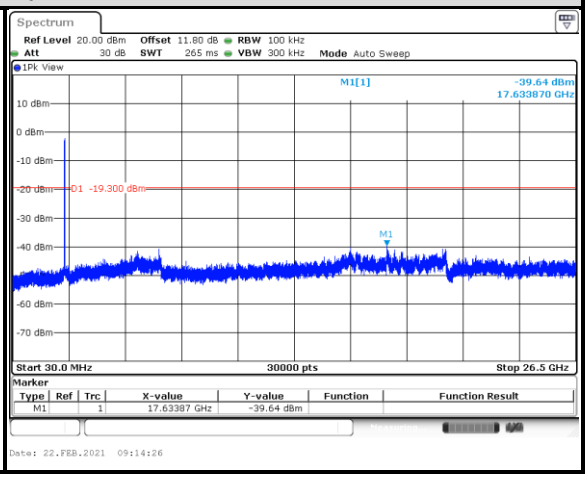
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 5.01 dBm
2.4357548 GHz
CF 2.437 GHz 1001 pts Span 29.67032967 MHz
Date: 25.JAN.2021 18:07:10

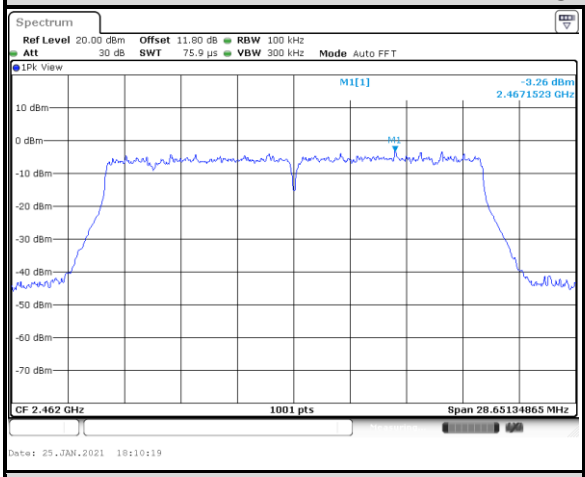

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.84 dBm
20.369990 GHz
D1 -14.990 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.36999 GHz -40.84 dBm
Date: 25.JAN.2021 18:07:24

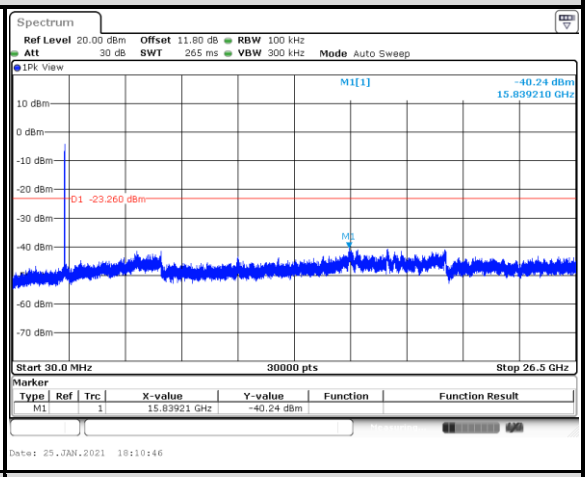
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 0.70 dBm
2.4645144 GHz
CF 2.457 GHz 1001 pts Span 28.71128871 MHz
Date: 22.FEB.2021 09:13:58

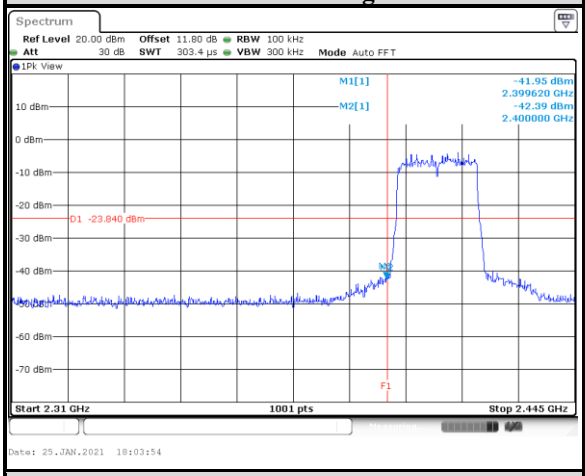

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -39.64 dBm
17.633870 GHz
D1 -19.300 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 17.63387 GHz -39.64 dBm
Date: 22.FEB.2021 09:14:26

Ch 11

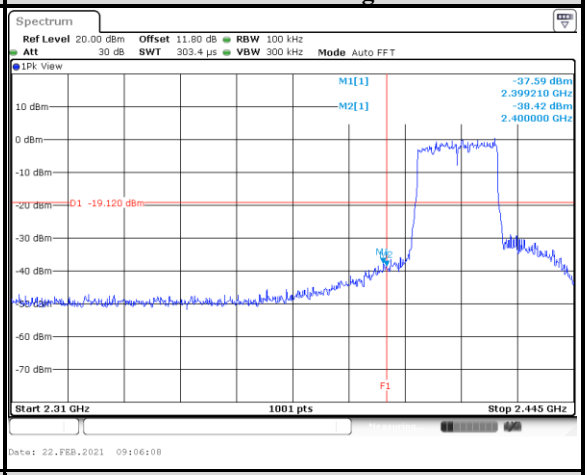




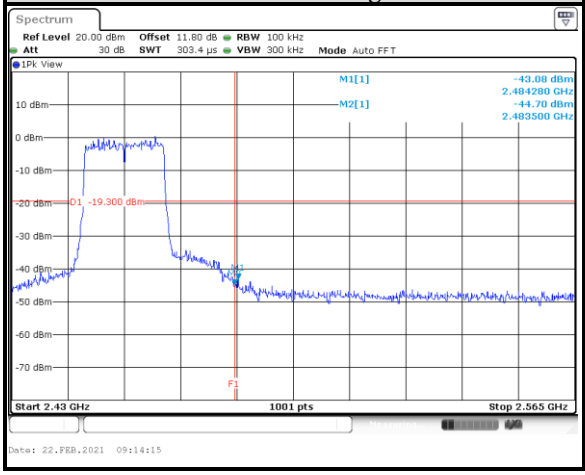
Ch 1 Band Edge



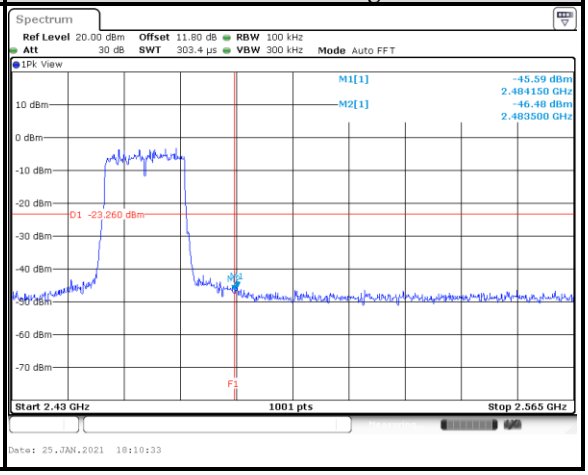
Ch 2 Band Edge



Ch 10 Band Edge

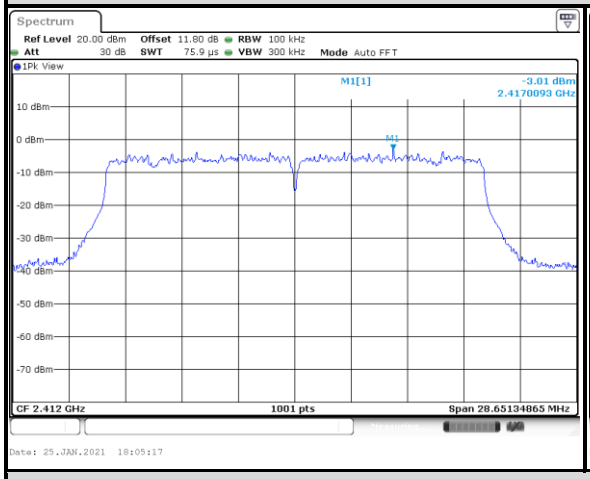


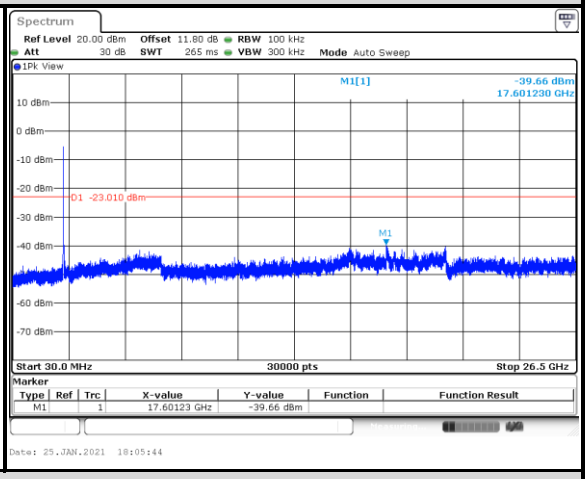
Ch 11 Band Edge



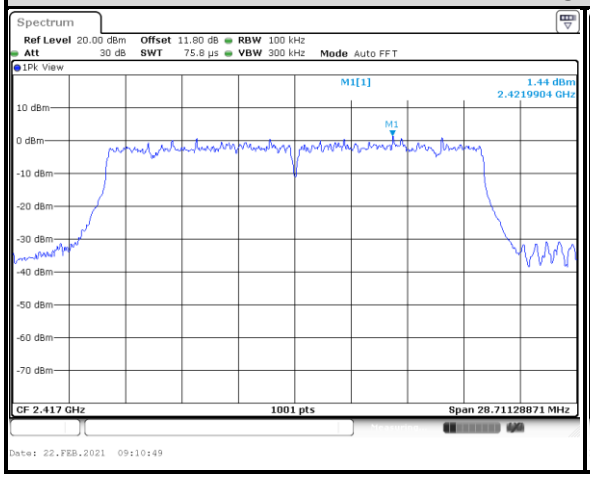
CHAIN 1

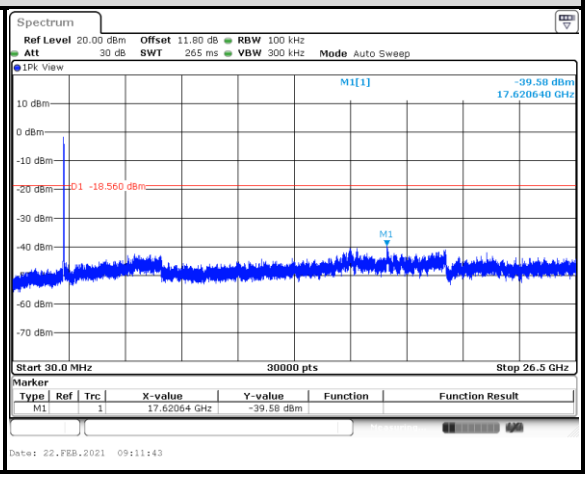
Ch 1



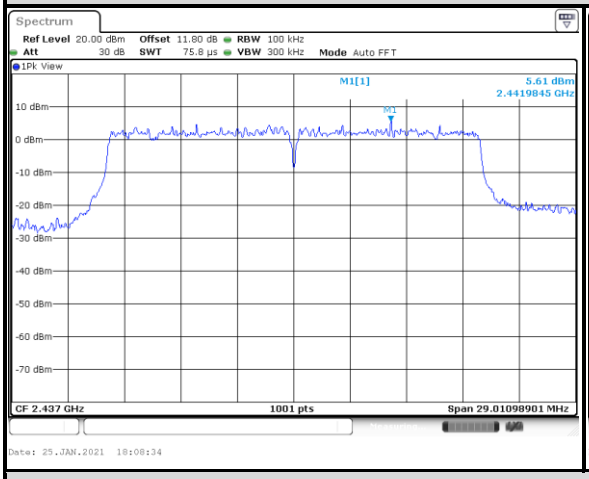


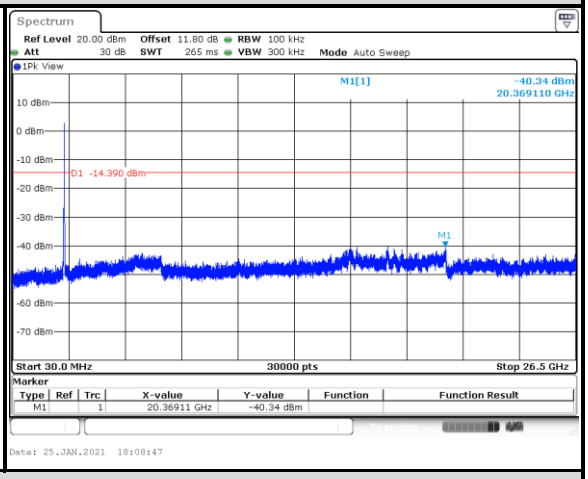
Ch 2



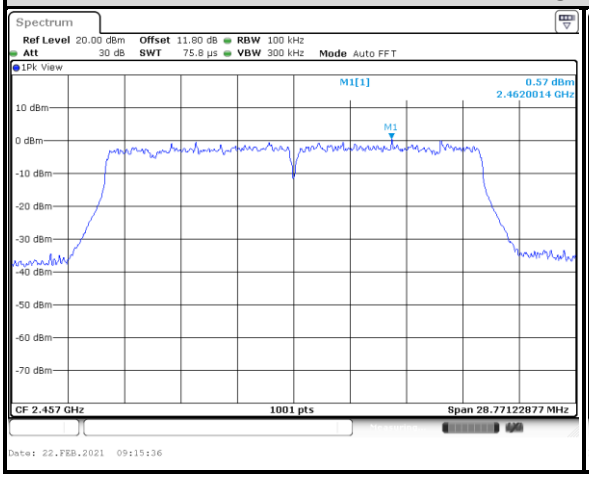


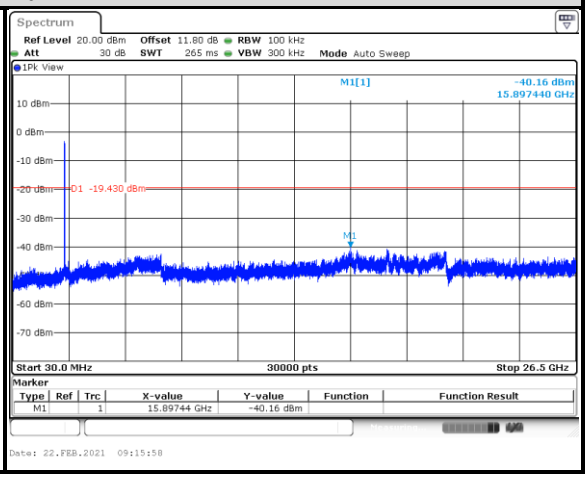
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 5.61 dBm
2.4419845 GHz
CF 2.437 GHz 1001 pts Span 29.01098901 MHz
Date: 25.JAN.2021 18:08:34

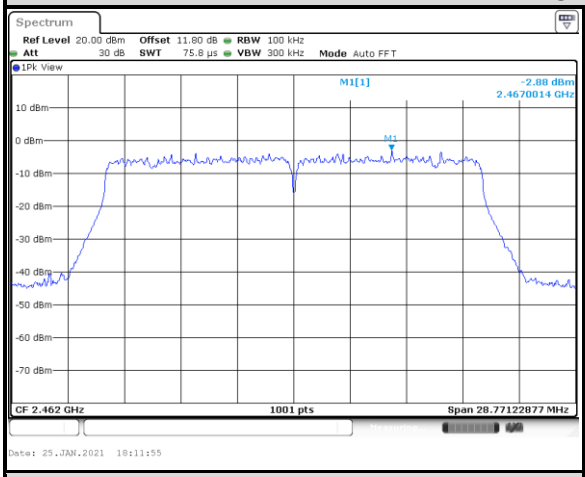

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.34 dBm
20.369110 GHz
D1 -14.390 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.36911 GHz -40.34 dBm
Date: 25.JAN.2021 18:08:47

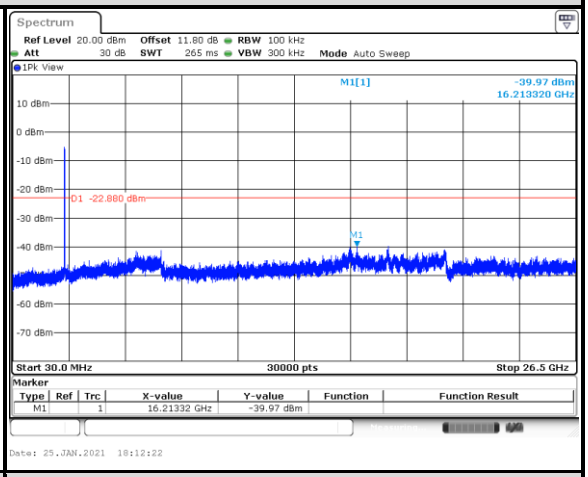
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 0.57 dBm
2.4620014 GHz
CF 2.457 GHz 1001 pts Span 28.77122877 MHz
Date: 22.FEB.2021 09:15:36

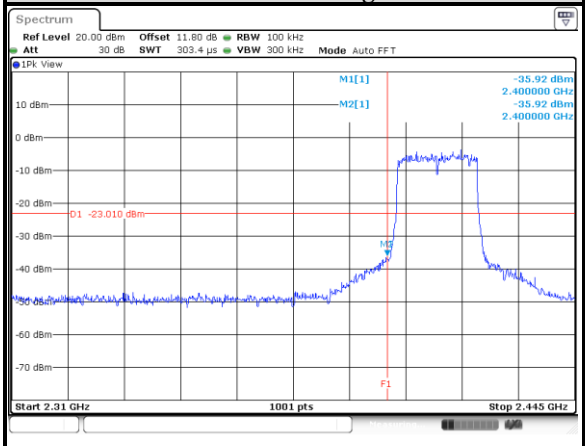

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.16 dBm
15.897440 GHz
D1 -19.430 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 15.89744 GHz -40.16 dBm
Date: 22.FEB.2021 09:15:58

Ch 11

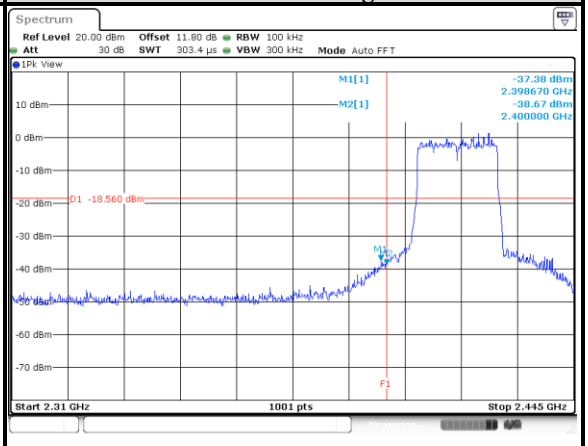




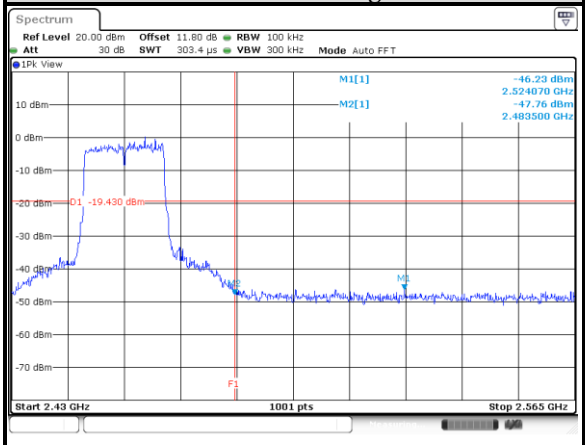
Ch 1 Band Edge



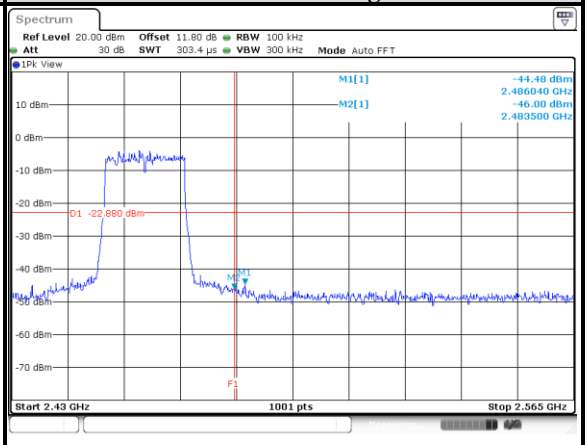
Ch 2 Band Edge



Ch 10 Band Edge



Ch 11 Band Edge



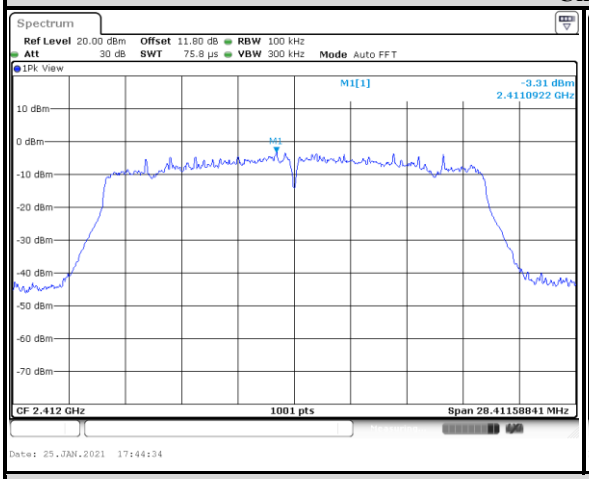
Beamforming mode

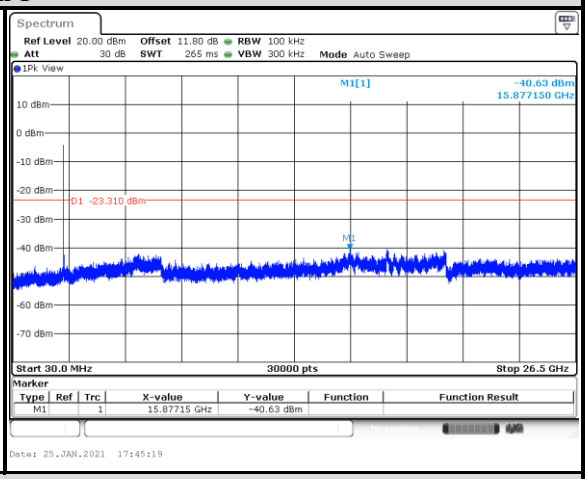
802.11ax (HE20)

OFDM

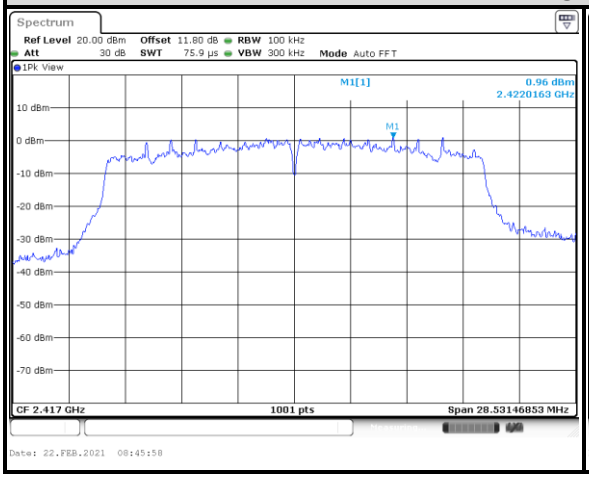
CHAIN 0

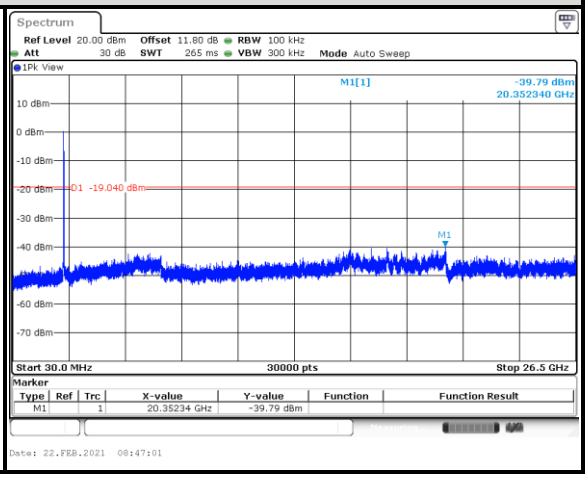
Ch 1



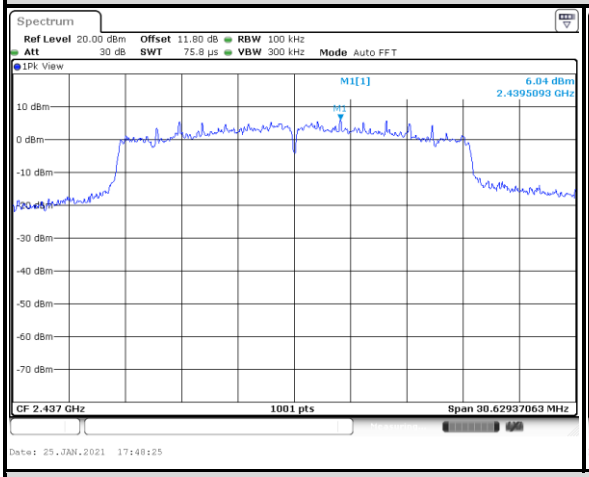


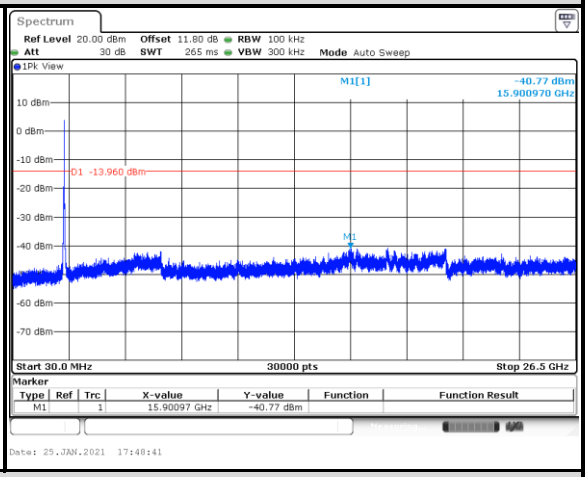
Ch 2



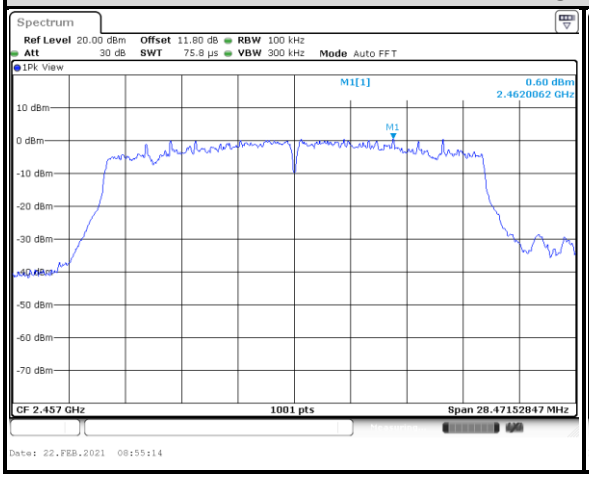


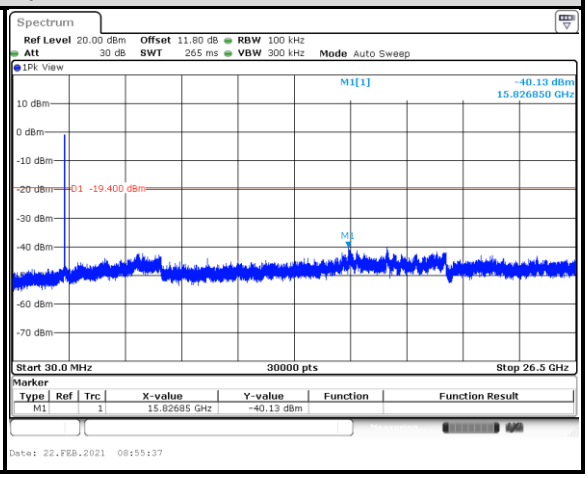
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 6.04 dBm
2.4395093 GHz
CF 2.437 GHz 1001 pts Span 30.62937063 MHz
Date: 25.JAN.2021 17:48:25

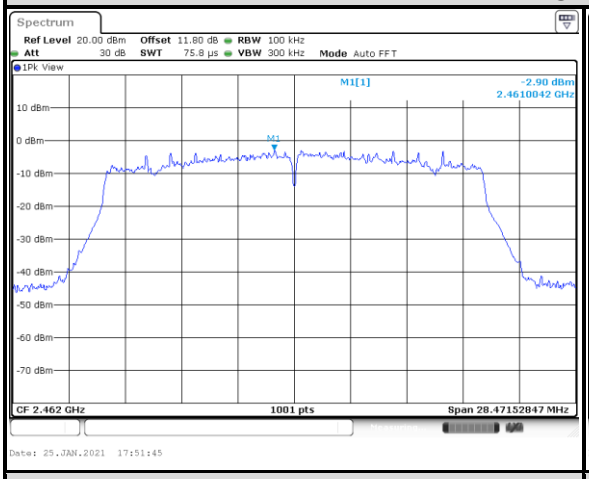

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.77 dBm
15.900970 GHz
D1 -13.960 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 15.90097 GHz -40.77 dBm
Date: 25.JAN.2021 17:48:41

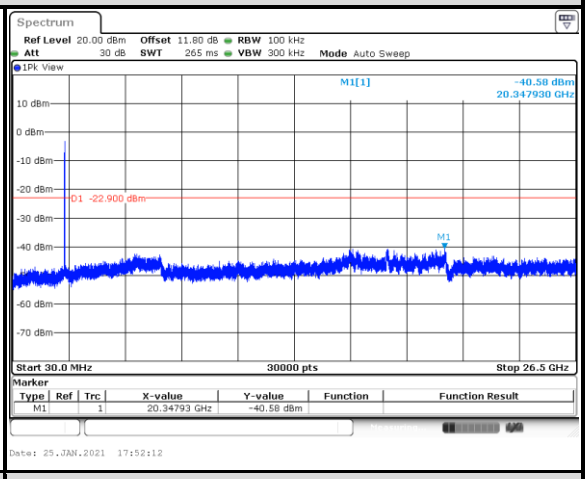
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 0.60 dBm
2.4620062 GHz
CF 2.457 GHz 1001 pts Span 28.47152847 MHz
Date: 22.FEB.2021 08:55:14

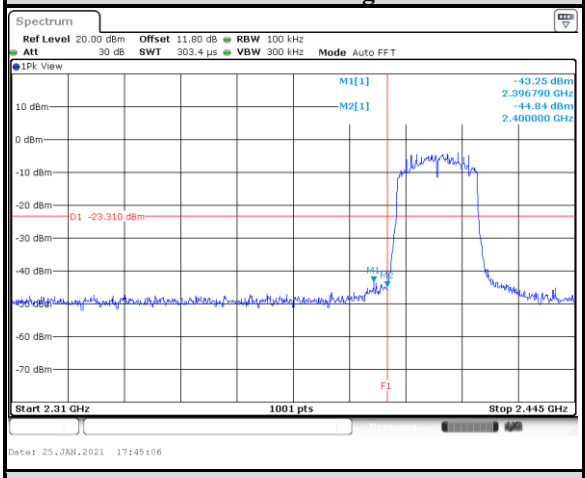

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.13 dBm
15.826850 GHz
D1 -19.400 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 15.82685 GHz -40.13 dBm
Date: 22.FEB.2021 08:55:37

Ch 11

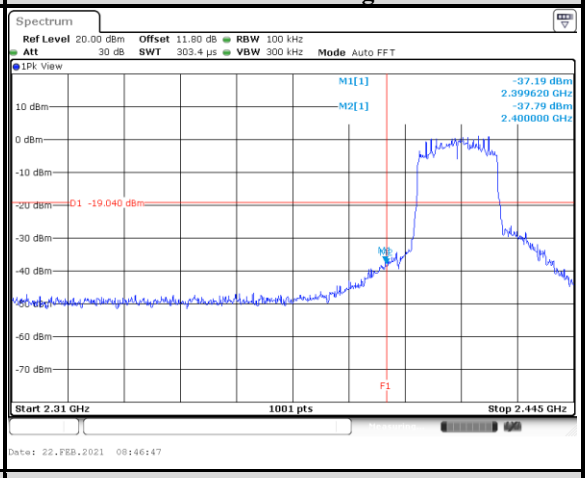




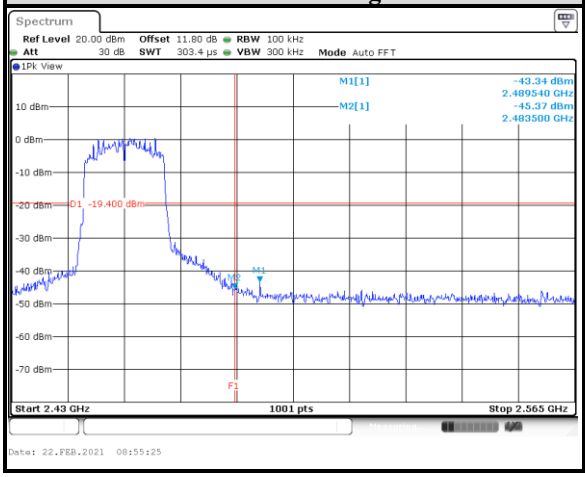
Ch 1 Band Edge



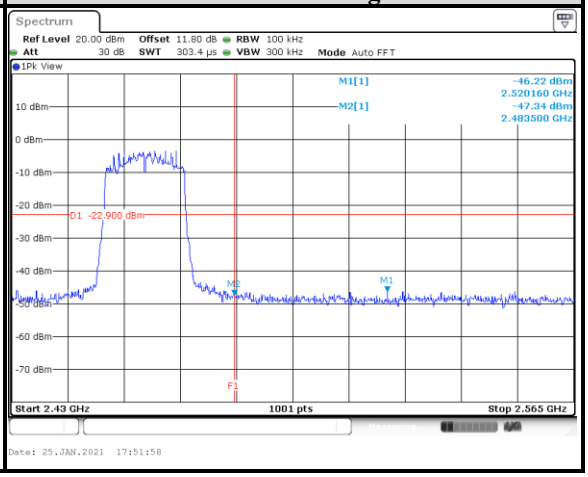
Ch 2 Band Edge



Ch 10 Band Edge

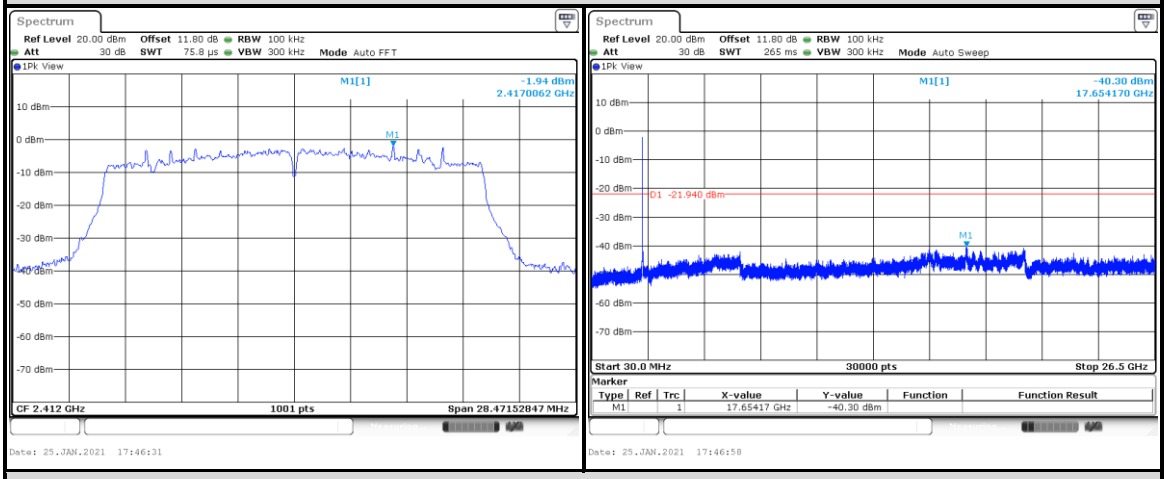


Ch 11 Band Edge

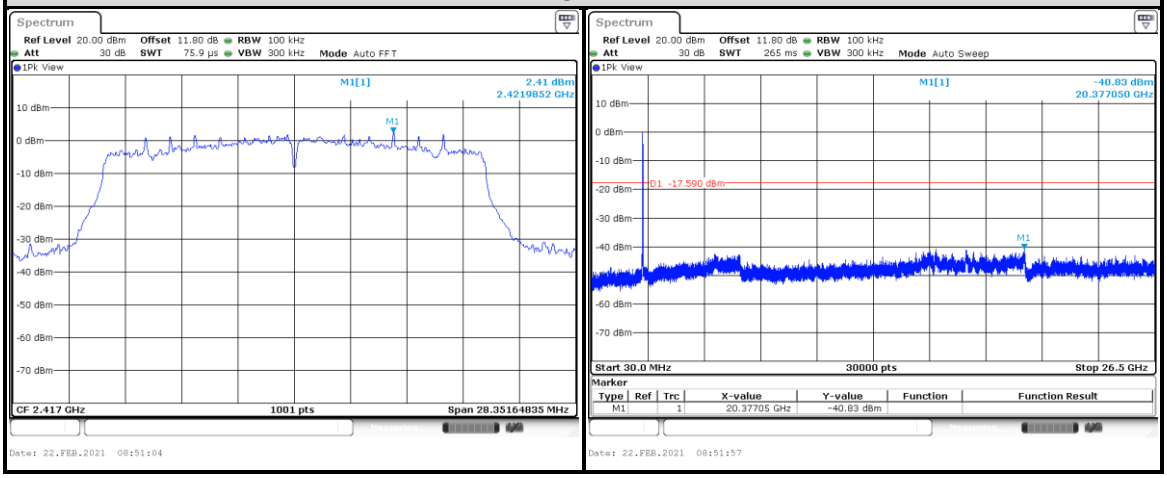


CHAIN 1

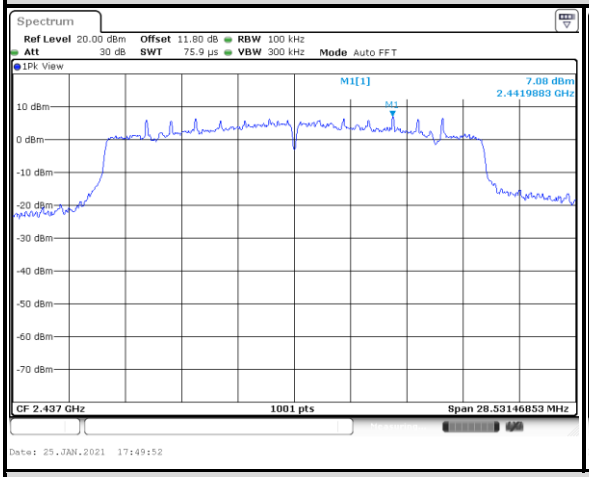
Ch 1

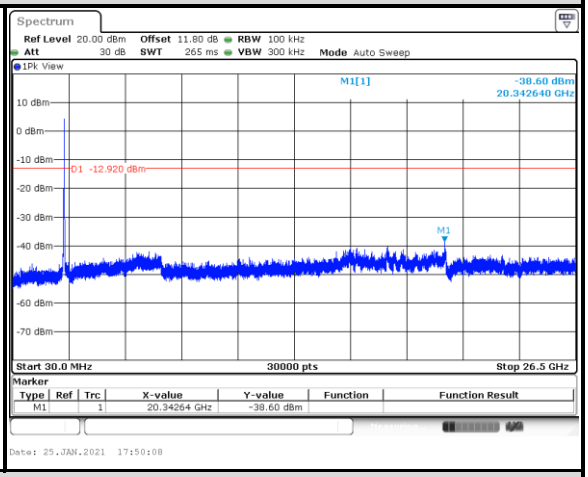


Ch 2

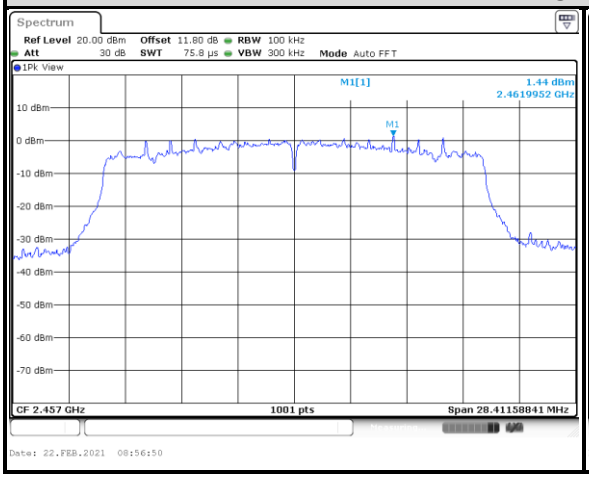


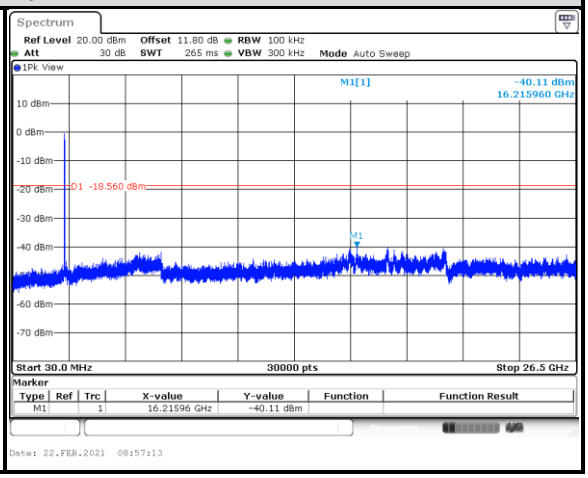
Ch 6


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 7.08 dBm 2.4419883 GHz
CF 2.437 GHz 1001 pts Span 28.53146853 MHz
Date: 25.JAN.2021 17:49:52

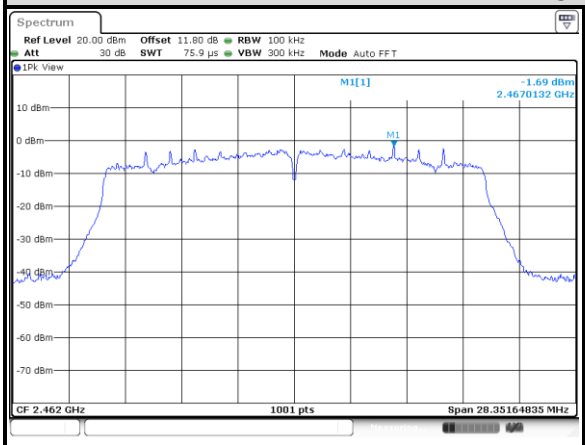

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -38.60 dBm 20.342640 GHz
D1 -12.920 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 20.34264 GHz -38.60 dBm
Date: 25.JAN.2021 17:50:08

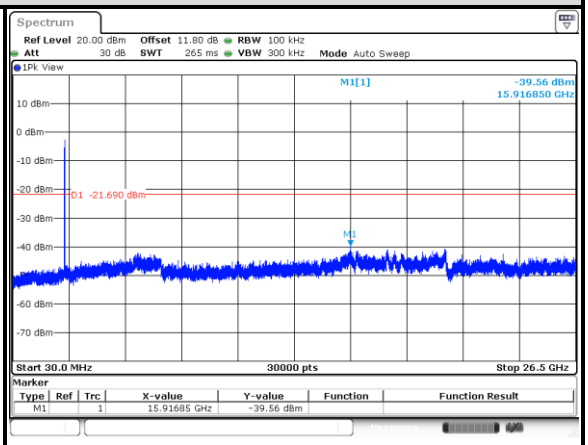
Ch 10


Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 75.8 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 1.44 dBm 2.4619952 GHz
CF 2.457 GHz 1001 pts Span 28.41158841 MHz
Date: 22.FEB.2021 08:56:50

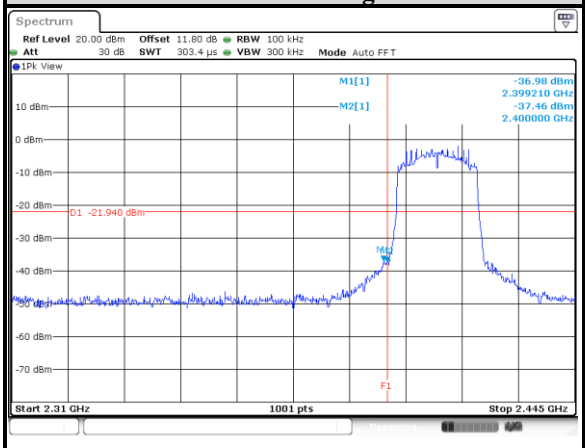

Spectrum
Ref Level 20.00 dBm Offset 11.80 dB RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Auto Sweep
1Pk View
M1[1] -40.11 dBm 16.215960 GHz
D1 -18.560 dBm
Start 30.0 MHz 30000 pts Stop 26.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 16.21596 GHz -40.11 dBm
Date: 22.FEB.2021 08:57:13

Ch 11

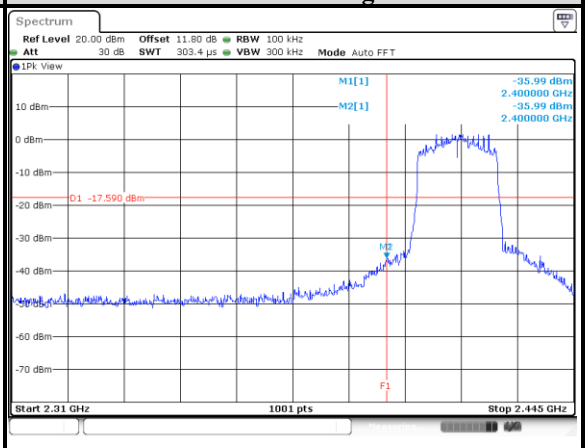




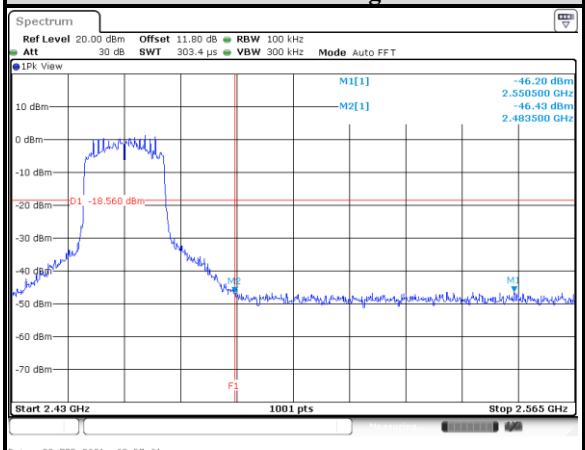
Ch 1 Band Edge



Ch 2 Band Edge



Ch 10 Band Edge



Ch 11 Band Edge