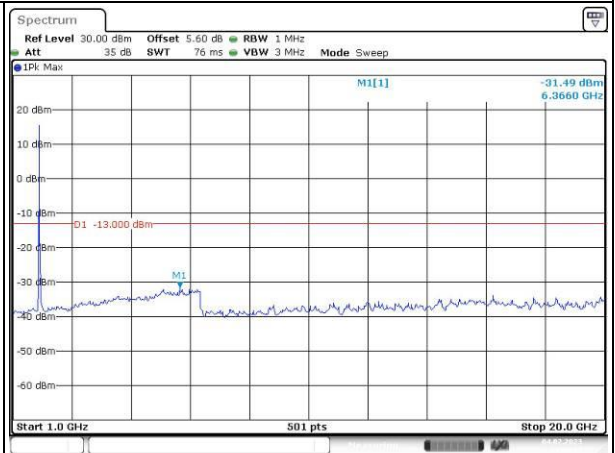
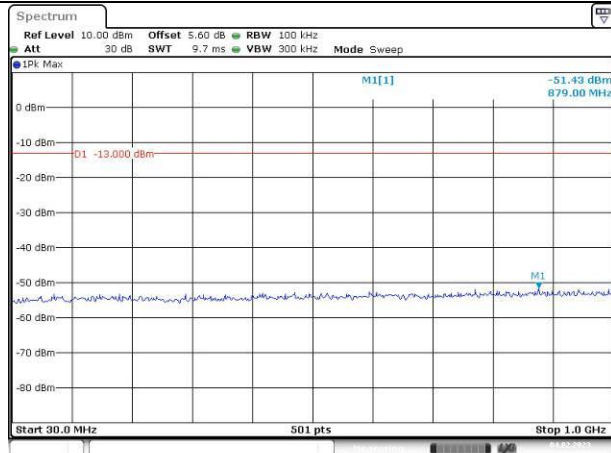


Spurious Emissions at Antenna Terminal

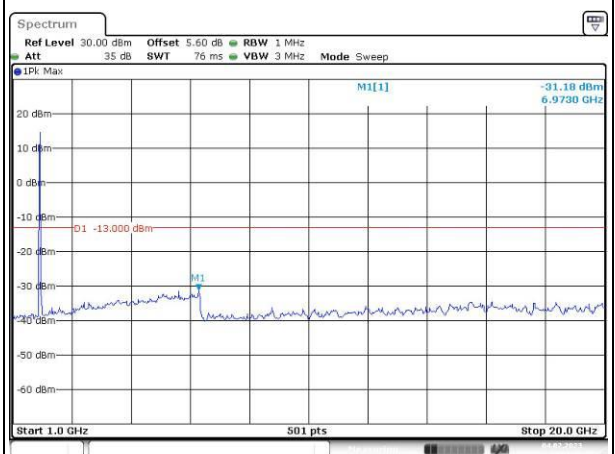
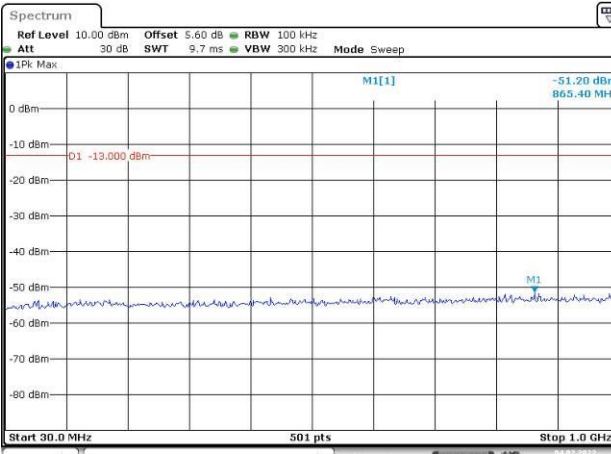
Channel

20MHz Bandwidth QPSK

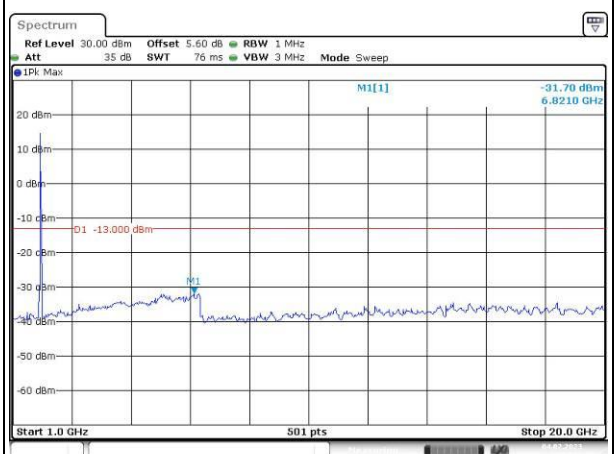
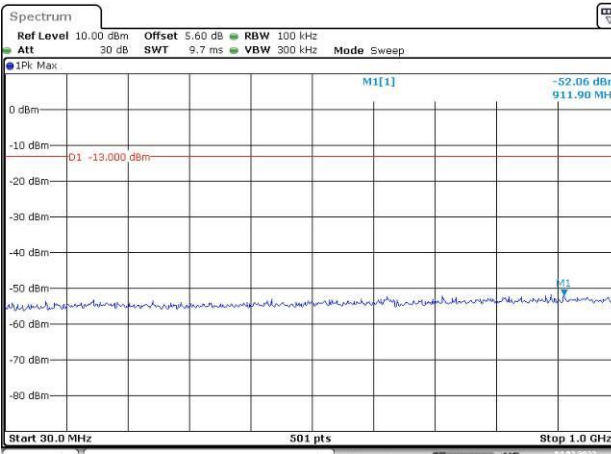
Lowest



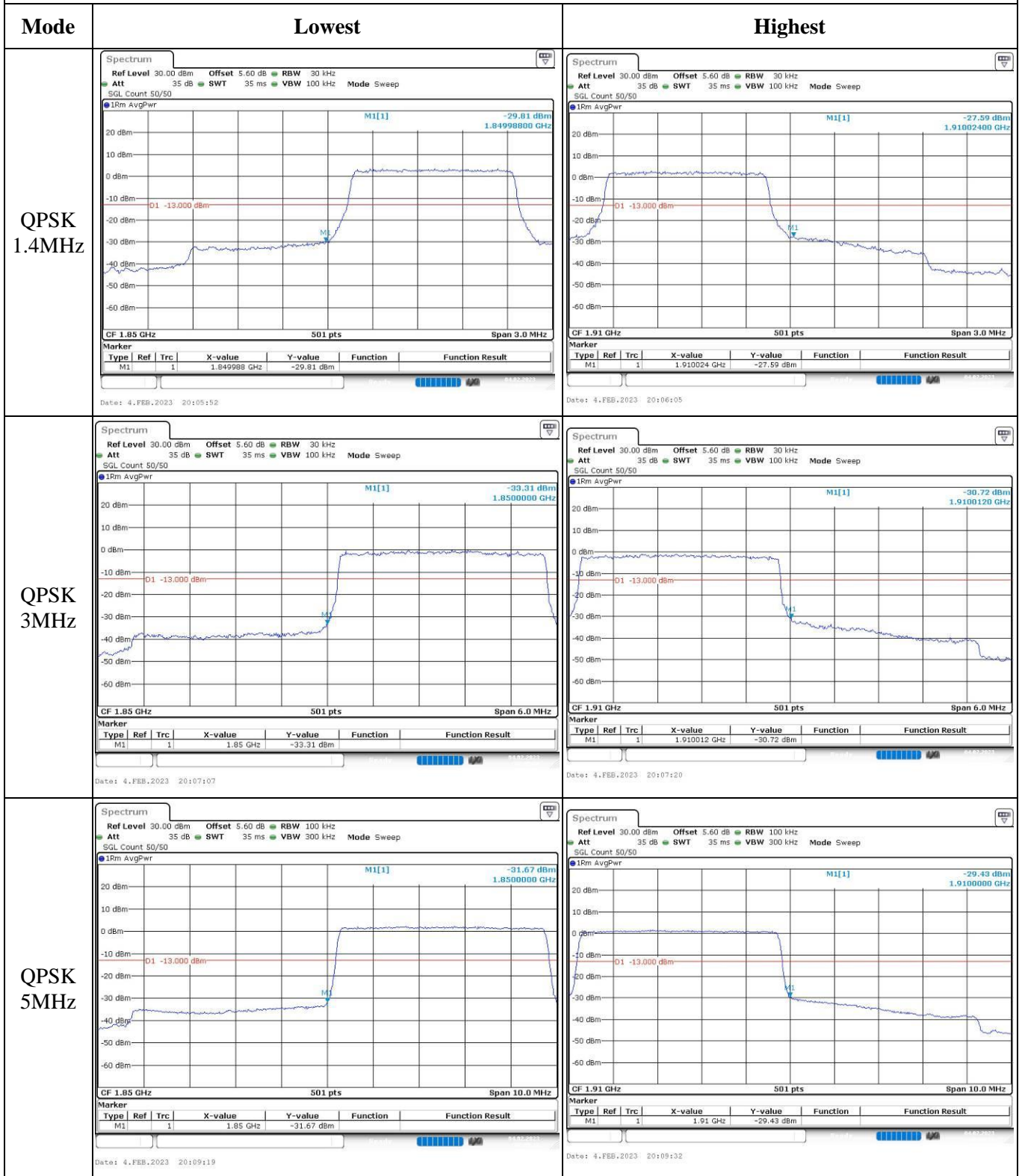
Middle



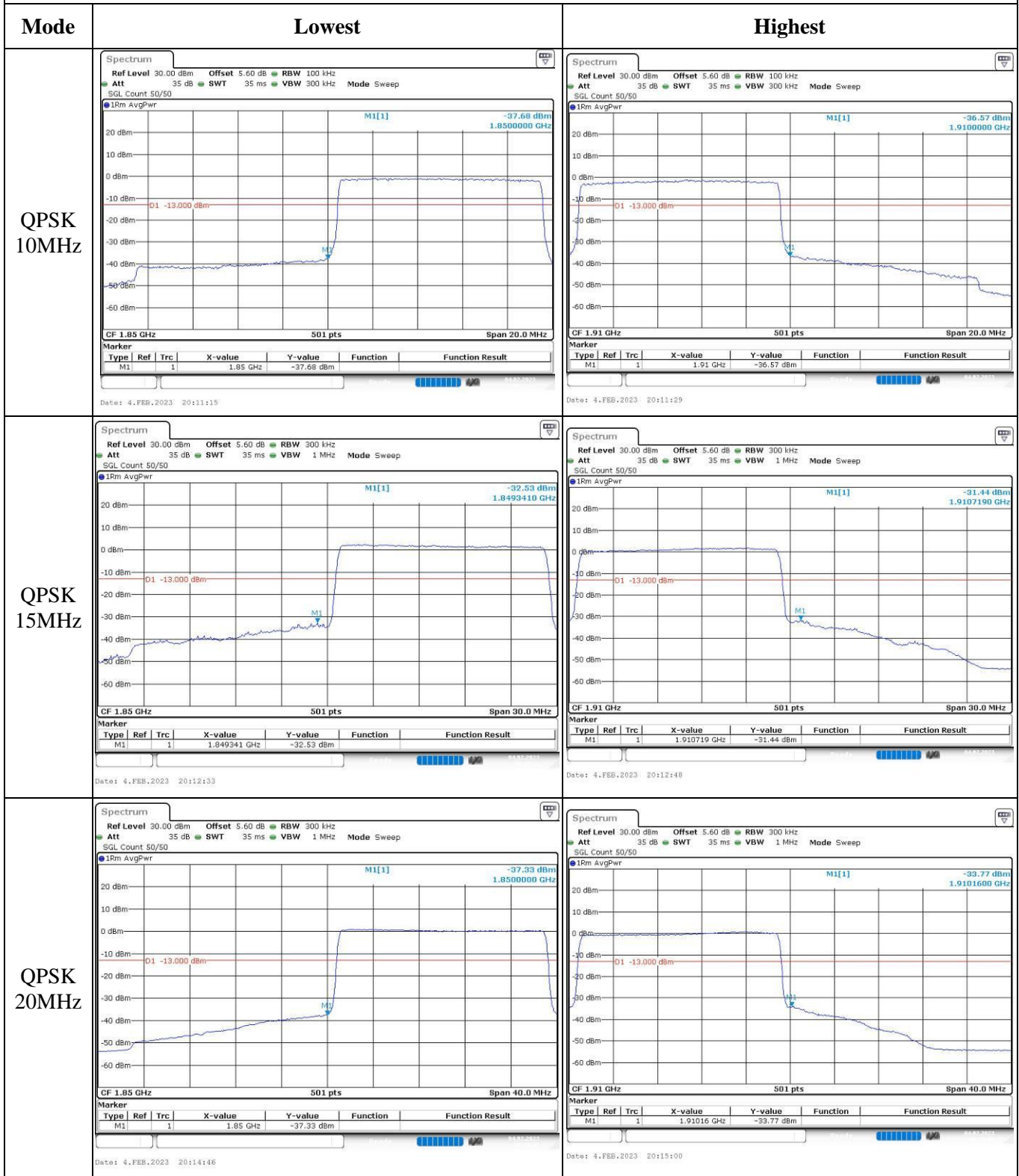
Highest



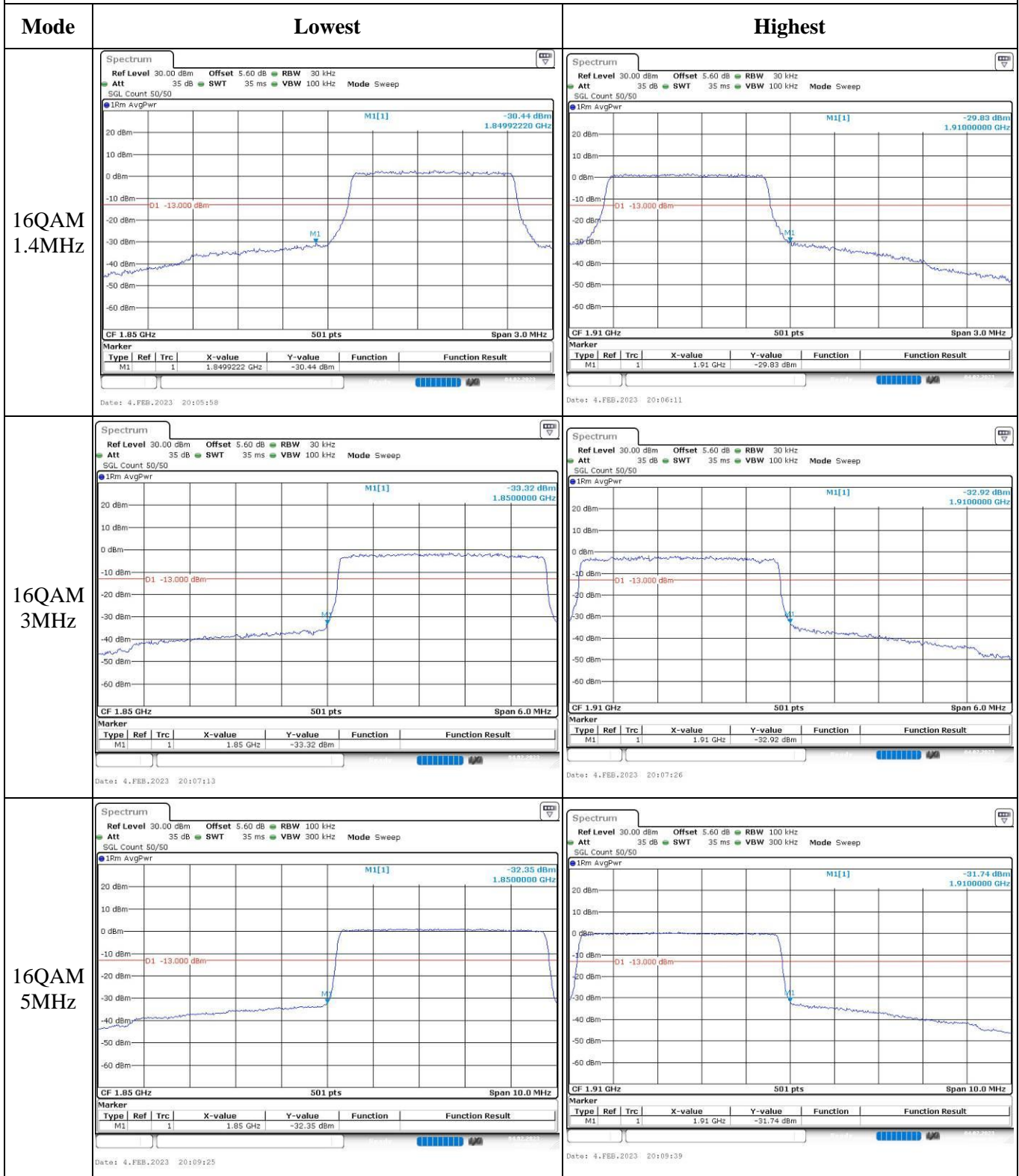
Out of band emission, Band Edge



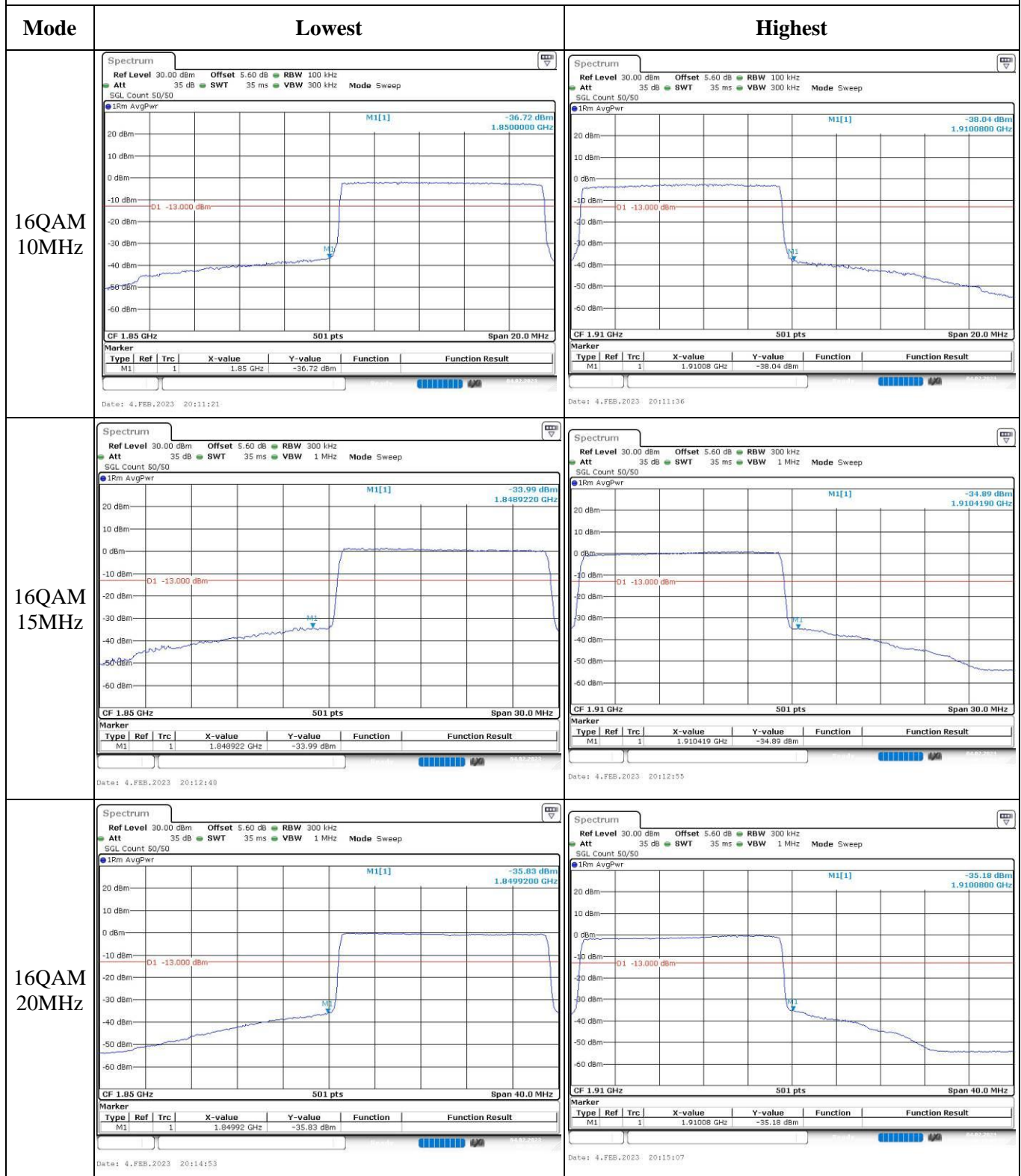
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.7 Antenna Port Test Data and Results for LTE Band 4

Serial Number:	1ZLT	Test Date:	2023/02/04
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	21.3	Relative Humidity: (%)	42	ATM Pressure: (kPa)	101.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022/07/15	2023/07/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/04/06	2023/04/05
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/09/29	2023/09/28
UNI-T	Multimeter	UT39A+	C210582554	2022/07/15	2023/07/14
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1710.7	1732.5	1754.3
3MHz	1711.5	1732.5	1753.5
5MHz	1712.5	1732.5	1752.5
10MHz	1715	1732.5	1750
15MHz	1717.5	1732.5	1747.5
20MHz	1720	1732.5	1745

Test Data:

FCC §2.1046; § 27.50(d)(4)						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	23.04	22.92	22.8	21.56	30
	RB1#3	23.17	23.01	22.85		
	RB1#5	23.1	22.92	22.83		
	RB3#0	23.23	23.06	22.94		
	RB3#3	23.25	23.07	22.93		
	RB6#0	22.25	22.05	21.98		
1.4MHz 16QAM	RB1#0	22.19	21.89	21.85	20.6	30
	RB1#3	22.29	21.99	21.87		
	RB1#5	22.22	21.91	21.81		
	RB3#0	22.2	22.09	22.09		
	RB3#3	22.22	22.1	22.09		
	RB6#0	21.36	21.07	21.08		
3MHz QPSK	RB1#0	22.98	22.87	22.72	21.4	30
	RB1#8	23.09	22.95	22.78		
	RB1#14	23.05	22.82	22.72		
	RB6#0	22.15	22.03	21.89		
	RB6#9	22.18	21.98	21.93		
	RB15#0	22.22	22.04	21.93		
3MHz 16QAM	RB1#0	22.19	21.82	22.31	20.7	30
	RB1#8	22.27	21.94	22.39		
	RB1#14	22.19	21.84	22.29		
	RB6#0	21.27	21.03	21.07		
	RB6#9	21.33	21.04	21.03		
	RB15#0	21.24	21.13	21.02		
5MHz QPSK	RB1#0	23.25	23.07	23.05	21.66	30
	RB1#13	23.35	23.19	23.14		
	RB1#24	23.23	23.08	22.99		
	RB15#0	22.28	22.11	22.04		
	RB15#10	22.32	22.09	22.06		
	RB25#0	22.32	22.09	22.04		
5MHz 16QAM	RB1#0	22.32	21.96	22.33	20.78	30
	RB1#13	22.45	22.06	22.47		
	RB1#24	22.34	21.94	22.31		
	RB15#0	21.35	21.25	21.06		
	RB15#10	21.44	21.18	21.08		
	RB25#0	21.37	21.25	21.09		

10MHz QPSK	RB1#0	23.32	23.18	23.08	21.67	30
	RB1#25	23.36	23.19	23.12		
	RB1#49	23.29	23.14	23.05		
	RB25#0	22.16	22.12	22		
	RB25#25	22.33	22.12	22.08		
	RB50#0	22.3	22.15	22.1		
10MHz 16QAM	RB1#0	22.3	22.7	22.28	21.04	30
	RB1#25	22.32	22.73	22.29		
	RB1#49	22.27	22.7	22.21		
	RB25#0	21.31	21.25	21.14		
	RB25#25	21.48	21.27	21.18		
	RB50#0	21.35	21.19	21.1		
15MHz QPSK	RB1#0	23.22	23.16	23.05	21.6	30
	RB1#38	23.29	23.21	23.19		
	RB1#74	23.24	23.11	23.03		
	RB36#0	22.2	22.21	22.1		
	RB36#39	22.33	22.19	22.12		
	RB75#0	22.27	22.23	22.17		
15MHz 16QAM	RB1#0	22.8	22.31	22.44	21.22	30
	RB1#38	22.91	22.35	22.62		
	RB1#74	22.76	22.22	22.46		
	RB36#0	21.2	21.21	21.16		
	RB36#39	21.36	21.24	21.15		
	RB75#0	21.32	21.24	21.15		
20MHz QPSK	RB1#0	23.17	23.1	22.89	21.66	30
	RB1#50	23.35	23.26	23.16		
	RB1#99	23.13	23.09	22.95		
	RB50#0	22.1	22.12	22.15		
	RB50#50	22.33	22.14	22.16		
	RB100#0	22.22	22.12	22.12		
20MHz 16QAM	RB1#0	22.49	22.3	22.46	21.05	30
	RB1#50	22.65	22.42	22.74		
	RB1#99	22.39	22.29	22.51		
	RB50#0	21.13	21.21	21.21		
	RB50#50	21.35	21.2	21.2		
	RB100#0	21.24	21.19	21.19		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(dBi)

Result:

Pass

Peak-to-average Ratio(PAR)					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	4.84	4.81	4.43	13
	RB100#0	4.12	4.03	4.2	13
20MHz 16QAM	RB1#0	5.83	5.39	5.28	13
	RB100#0	5.83	5.83	5.91	13
Result:					Pass

FCC §2.1049, §27.53:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.108	1.102	1.302	1.272	1.29
1.4MHz 16QAM	1.096	1.102	1.102	1.278	1.29	1.302
3MHz QPSK	2.683	2.695	2.683	2.916	2.94	2.94
3MHz 16QAM	2.683	2.683	2.683	2.964	2.964	2.928
5MHz QPSK	4.491	4.511	4.511	4.92	4.94	4.94
5MHz 16QAM	4.531	4.511	4.531	4.94	4.9	4.94
10MHz QPSK	8.982	8.942	8.942	9.64	9.6	9.6
10MHz 16QAM	8.982	8.942	8.942	9.6	9.68	9.6
15MHz QPSK	13.413	13.473	13.473	14.64	14.76	14.76
15MHz 16QAM	13.533	13.533	13.473	14.7	14.7	14.7
20MHz QPSK	17.884	17.884	17.964	19.2	19.28	19.52
20MHz 16QAM	17.964	17.964	17.964	19.36	19.36	19.36

Note: The test plots please refer to the Plots of Occupied Bandwidth

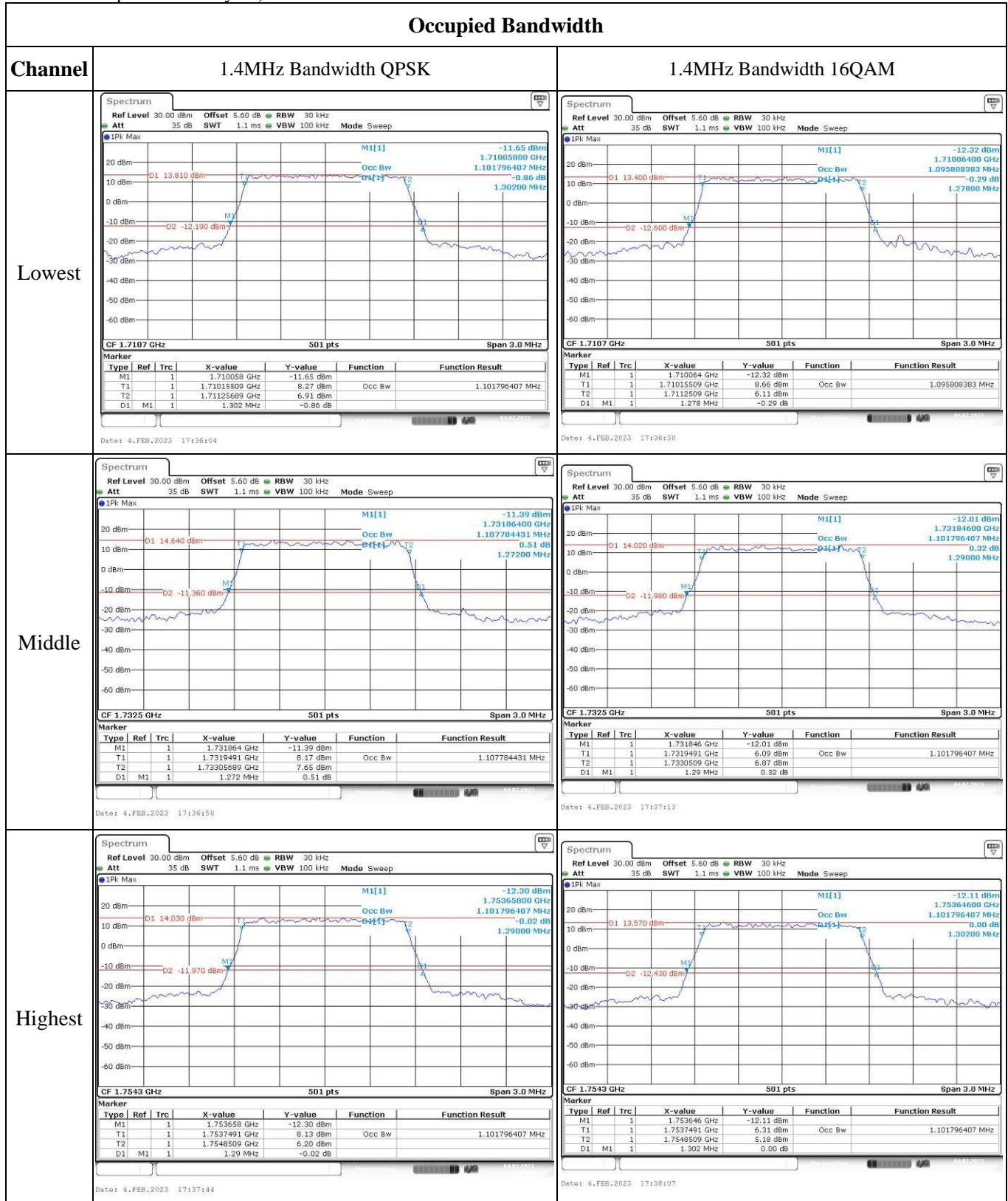
FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal	
Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.

FCC §2.1051, §27.53:Out of band emission, Band Edge	
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.

FCC §2.1055, §27.54: Frequency Stability						
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.89	1710.4102	1710.00	1754.6014	1755
	-20	3.89	1710.4194	1710.00	1754.6046	1755
	-10	3.89	1710.4165	1710.00	1754.6066	1755
	0	3.89	1710.4146	1710.00	1754.6061	1755
	10	3.89	1710.4105	1710.00	1754.6002	1755
	20	3.89	1710.4138	1710.00	1754.6022	1755
	30	3.89	1710.4193	1710.00	1754.6059	1755
	40	3.89	1710.4118	1710.00	1754.6062	1755
Frequency Stability vs. Voltage	20	3.45	1710.4151	1710.00	1754.6089	1755
	20	4.48	1710.4130	1710.00	1754.6069	1755
					Result:	Pass

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.89	1710.4112	1710.00	1754.6008	1755
	-20	3.89	1710.4188	1710.00	1754.6031	1755
	-10	3.89	1710.4172	1710.00	1754.6066	1755
	0	3.89	1710.4114	1710.00	1754.6051	1755
	10	3.89	1710.4164	1710.00	1754.6043	1755
	20	3.89	1710.4138	1710.00	1754.6022	1755
	30	3.89	1710.4101	1710.00	1754.6095	1755
	40	3.89	1710.4193	1710.00	1754.6073	1755
Frequency Stability vs. Voltage	20	3.45	1710.4197	1710.00	1754.6006	1755
	20	4.48	1710.4115	1710.00	1754.6032	1755
					Result:	Pass

Test Plots(Note: The 5.6dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):



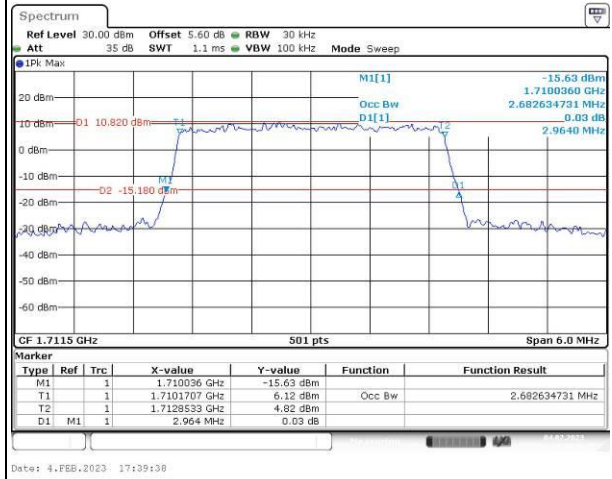
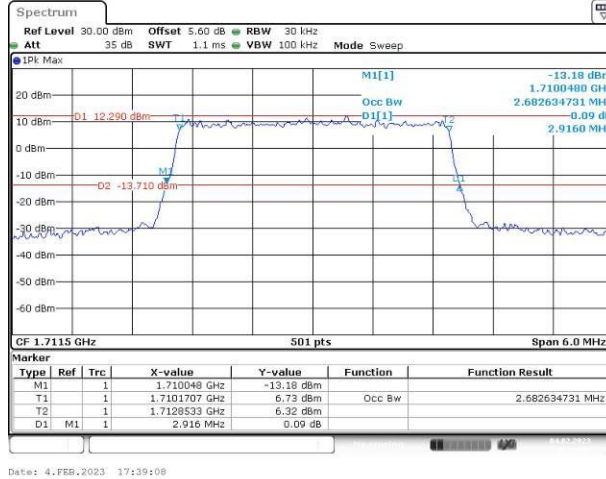
Occupied Bandwidth

Channel

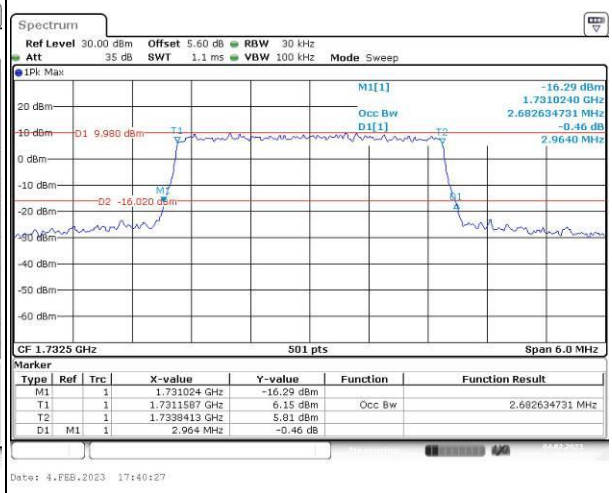
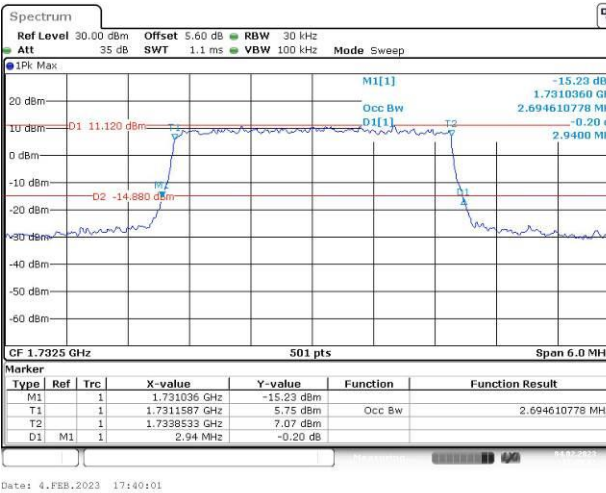
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

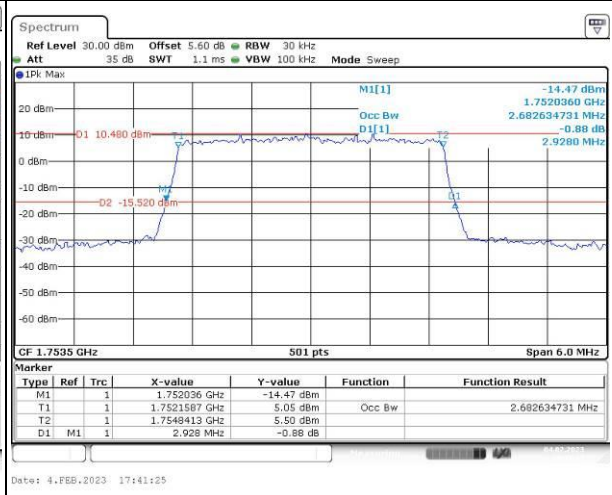
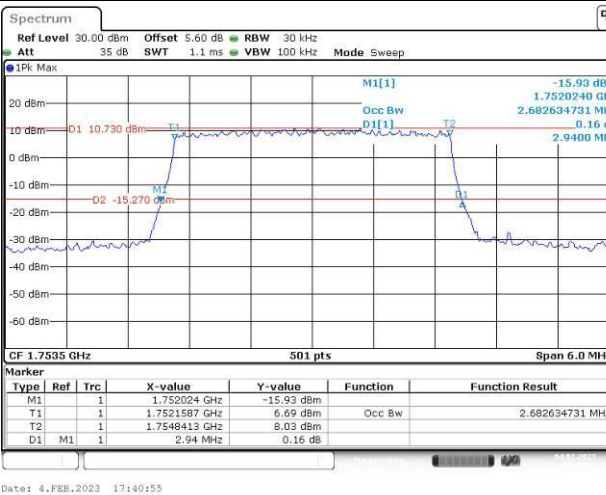
Lowest



Middle



Highest



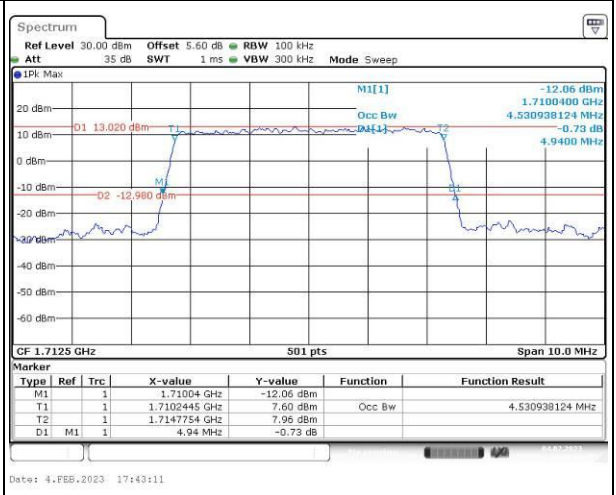
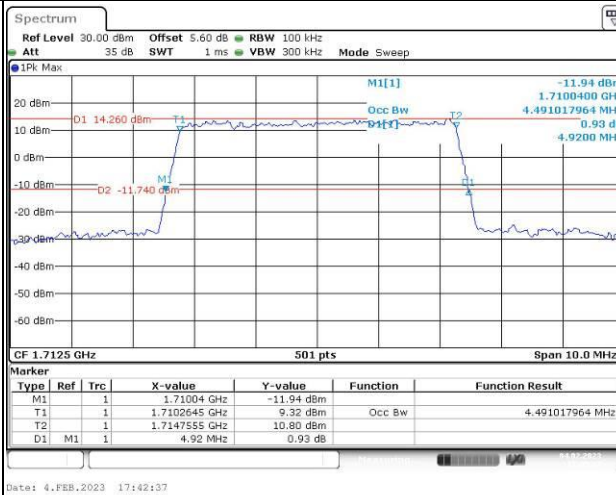
Occupied Bandwidth

Channel

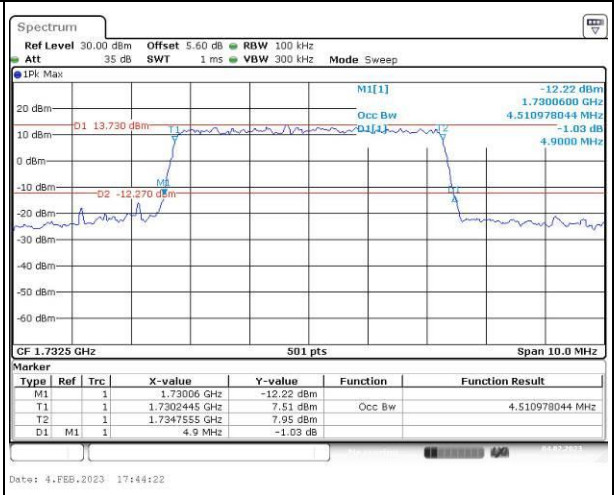
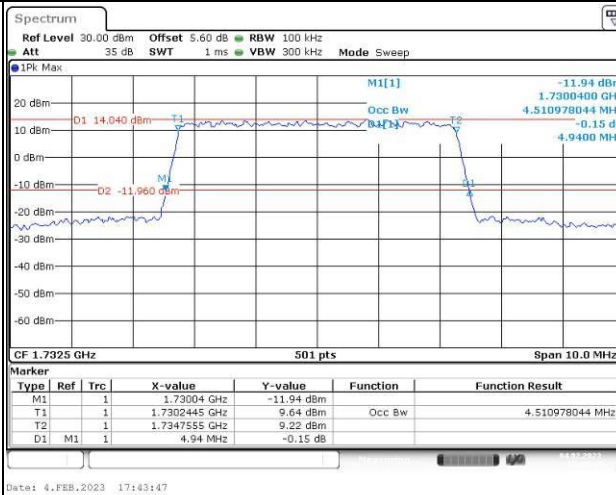
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

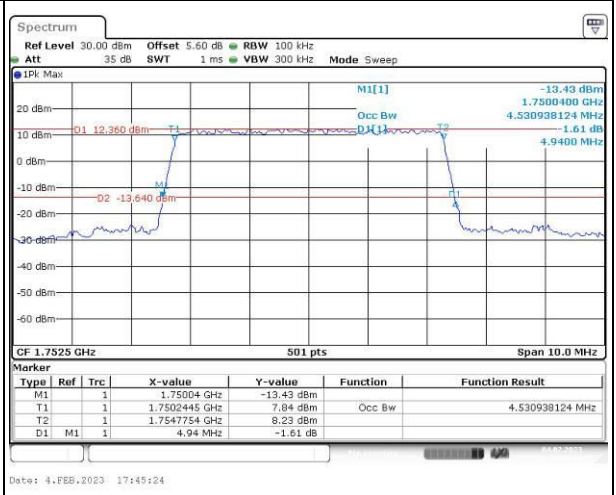
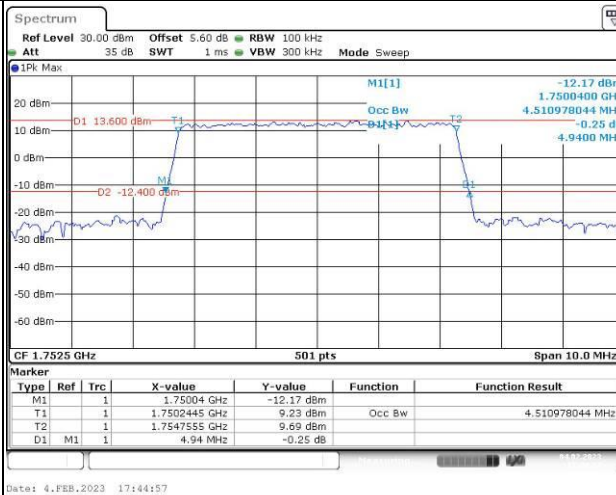
Lowest



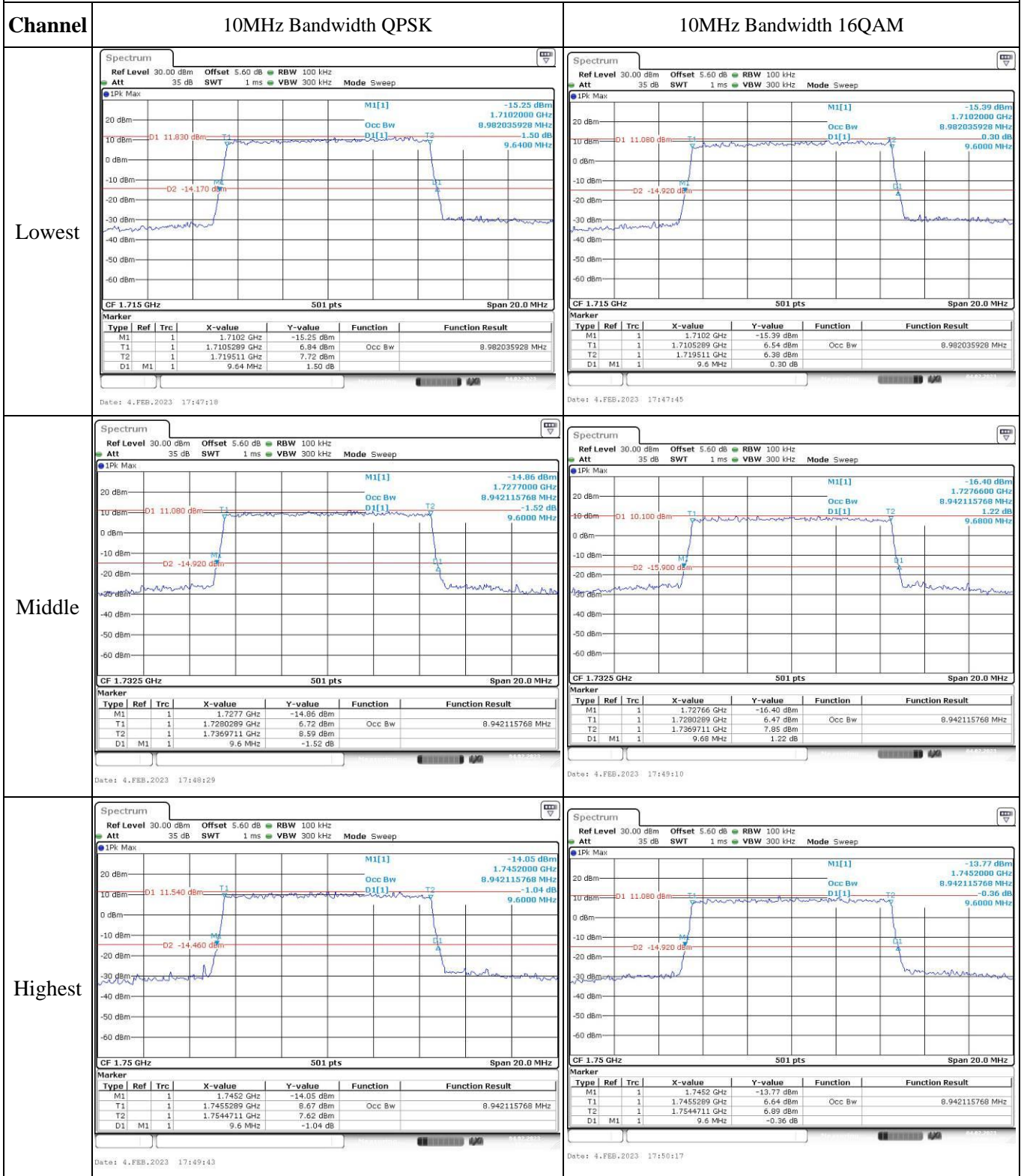
Middle



Highest



Occupied Bandwidth



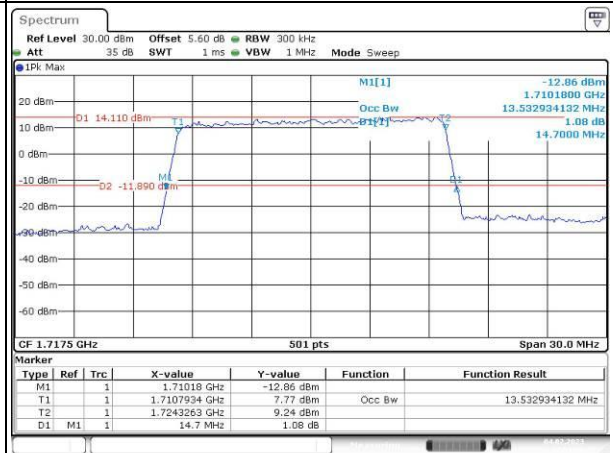
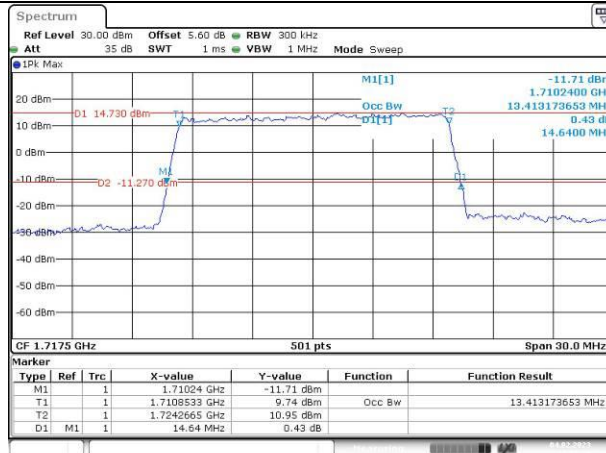
Occupied Bandwidth

Channel

15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

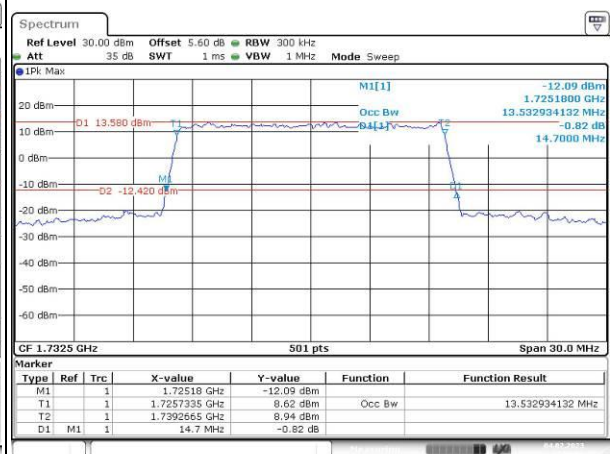
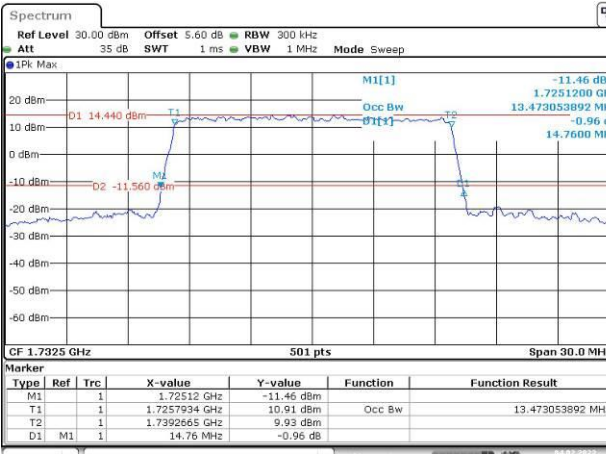
Lowest



Date: 4.FEB.2023 17:51:26

Date: 4.FEB.2023 17:51:36

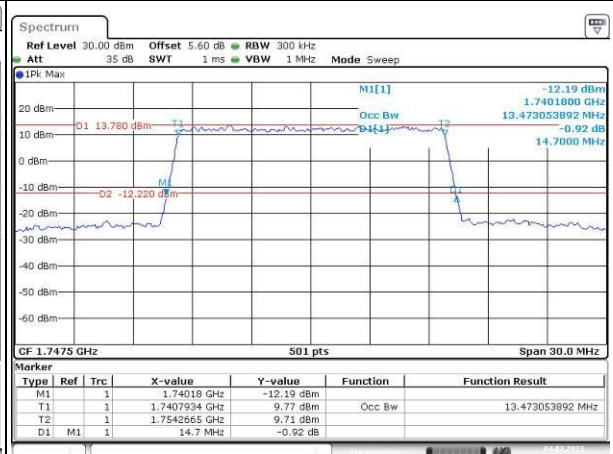
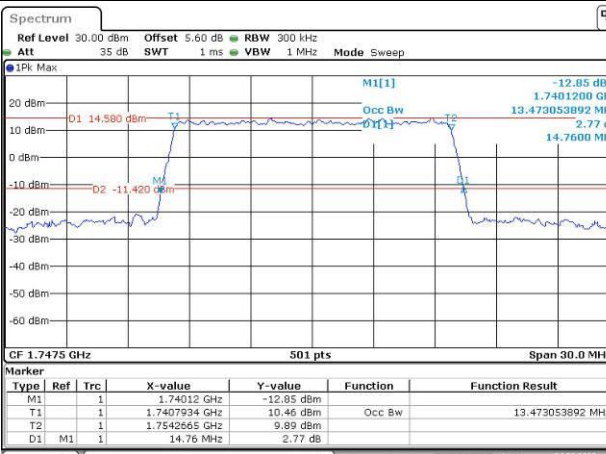
Middle



Date: 4.FEB.2023 17:52:28

Date: 4.FEB.2023 17:53:02

Highest



Date: 4.FEB.2023 17:53:33

Date: 4.FEB.2023 17:54:04

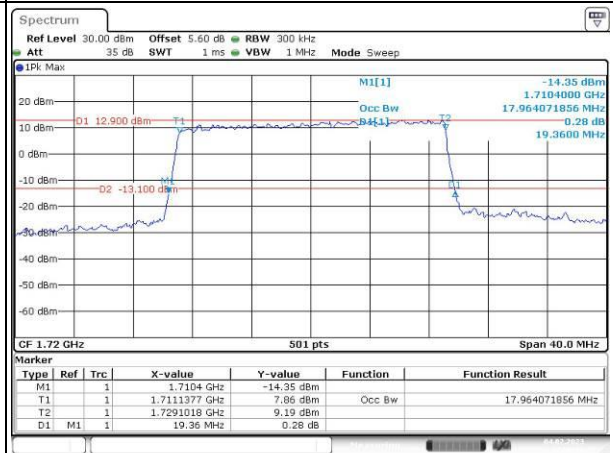
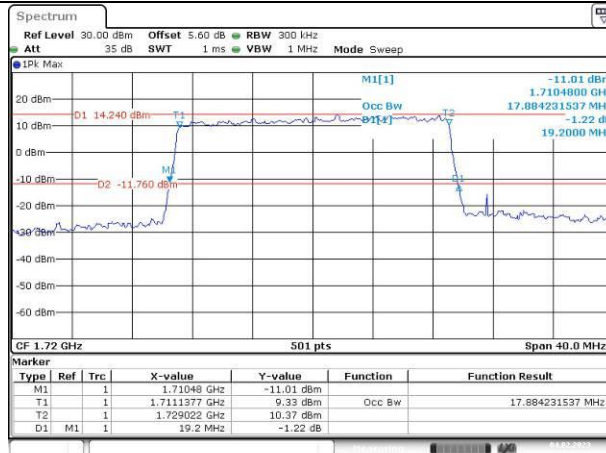
Occupied Bandwidth

Channel

20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

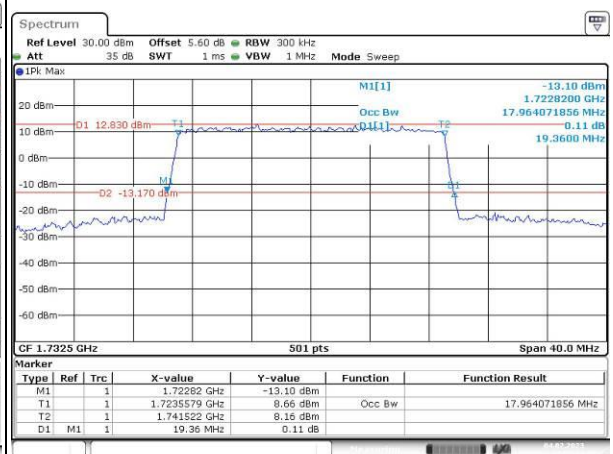
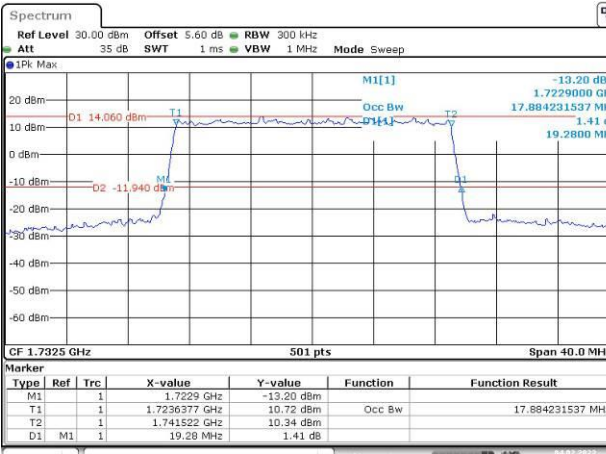
Lowest



Date: 4.FEB.2023 17:56:01

Date: 4.FEB.2023 17:56:31

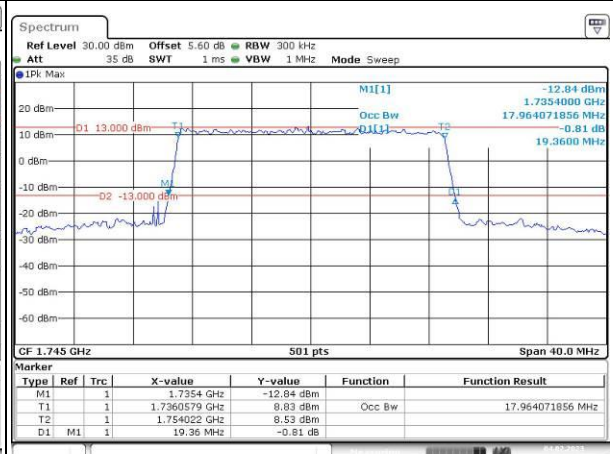
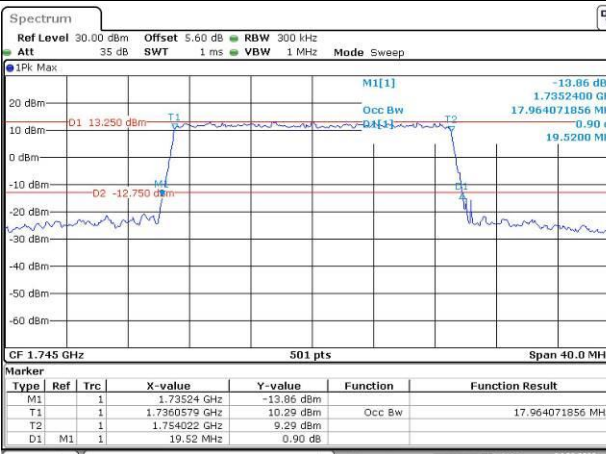
Middle



Date: 4.FEB.2023 17:57:03

Date: 4.FEB.2023 17:57:30

Highest



Date: 4.FEB.2023 17:58:02

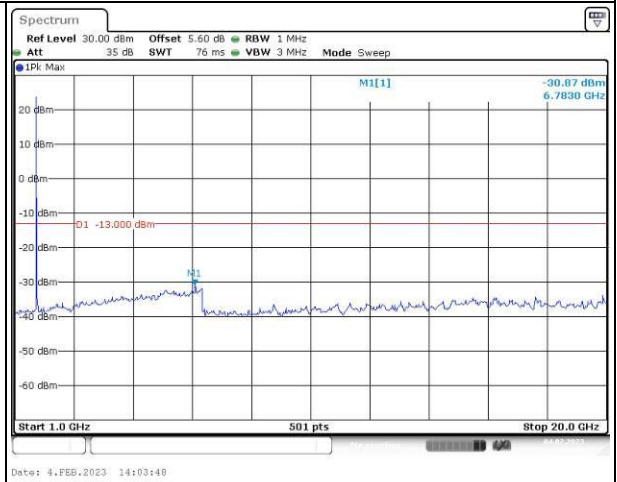
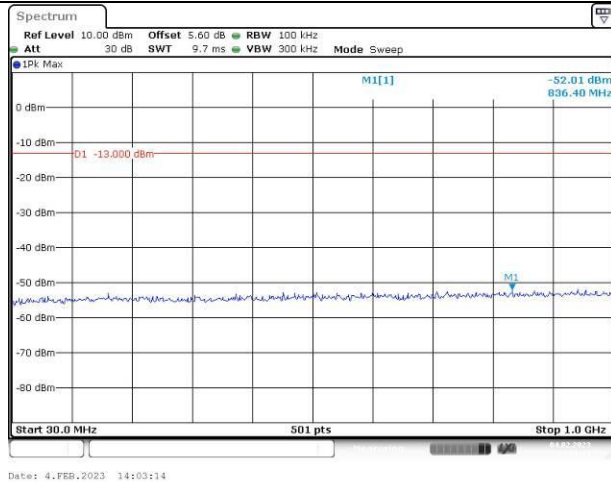
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Spurious Emissions at Antenna Terminal

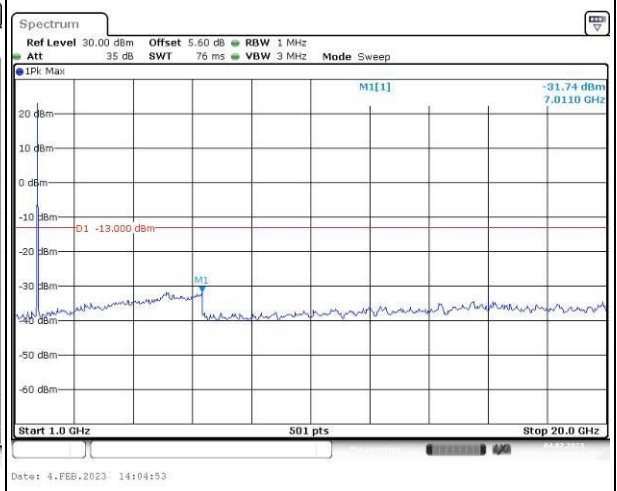
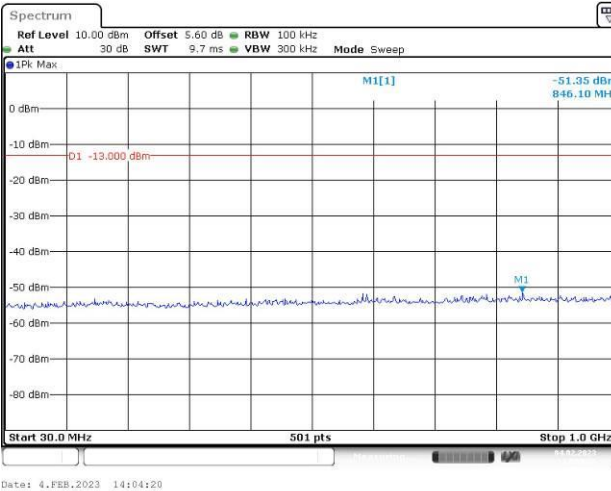
Channel

1.4MHz Bandwidth QPSK

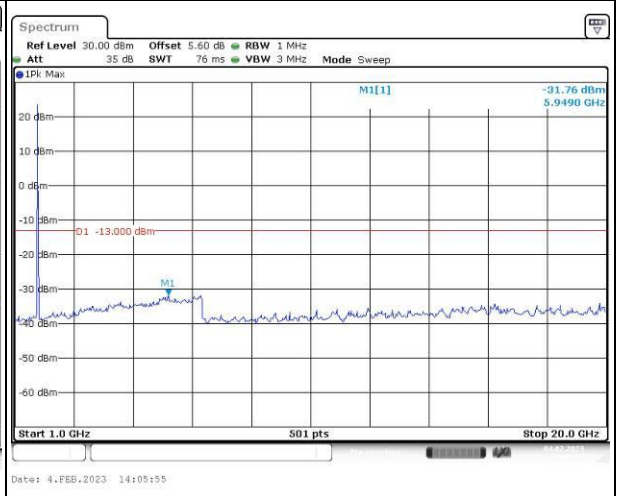
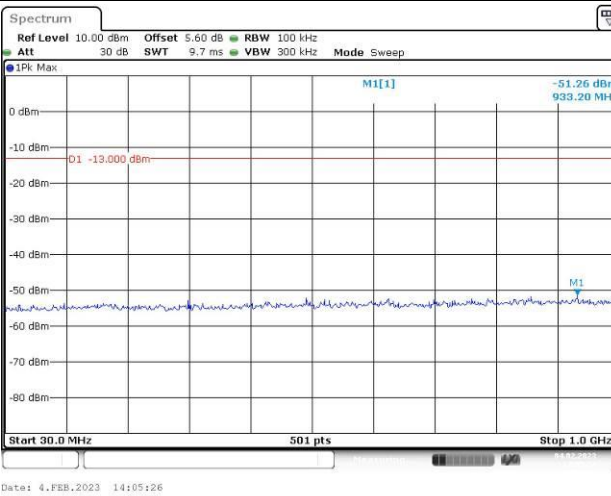
Lowest



Middle



Highest

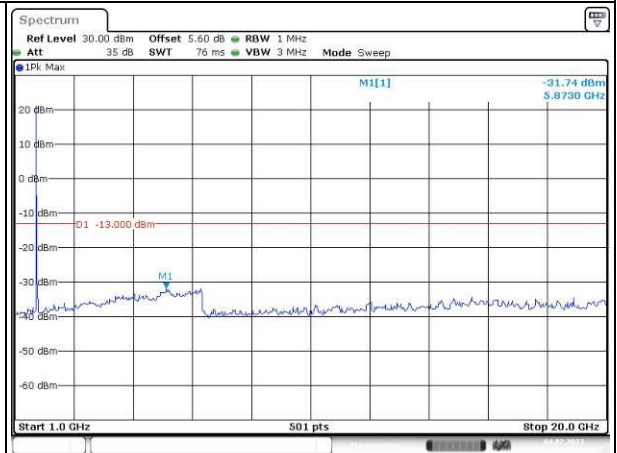
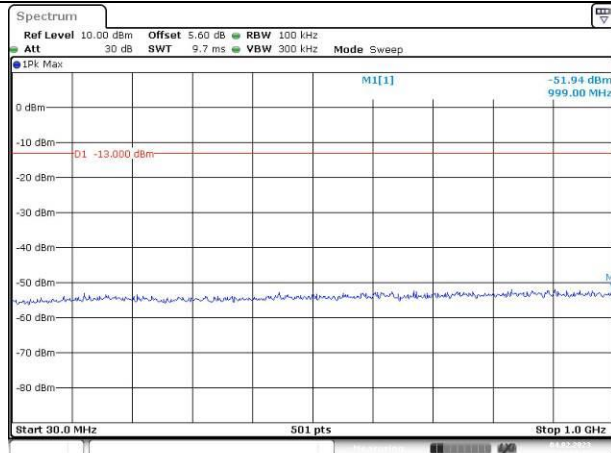


Spurious Emissions at Antenna Terminal

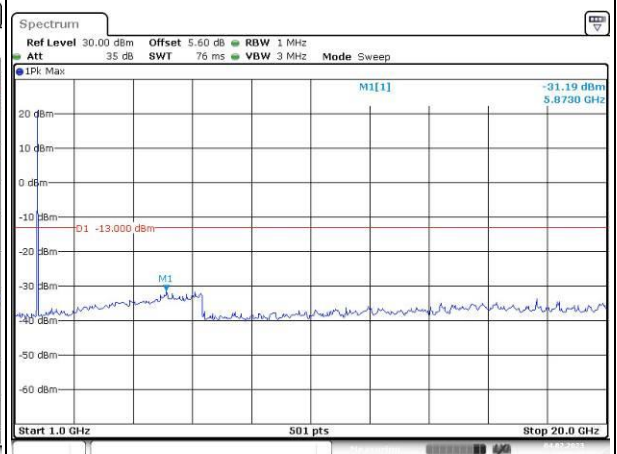
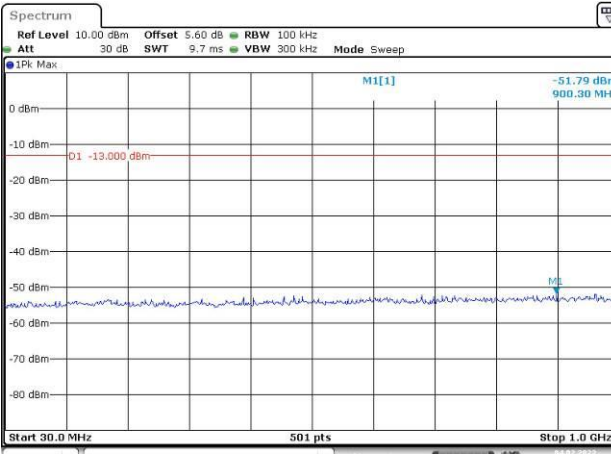
Channel

3MHz Bandwidth QPSK

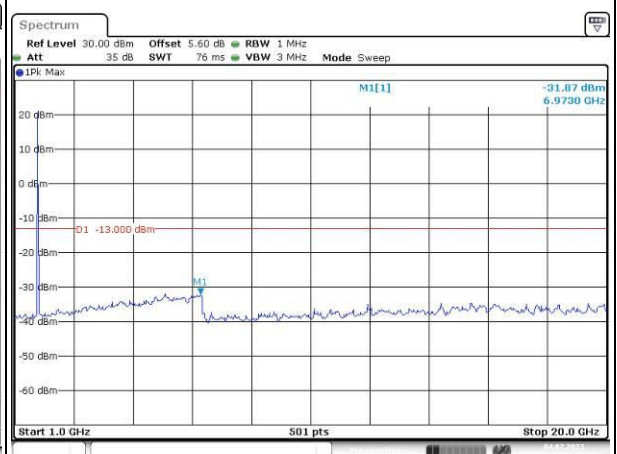
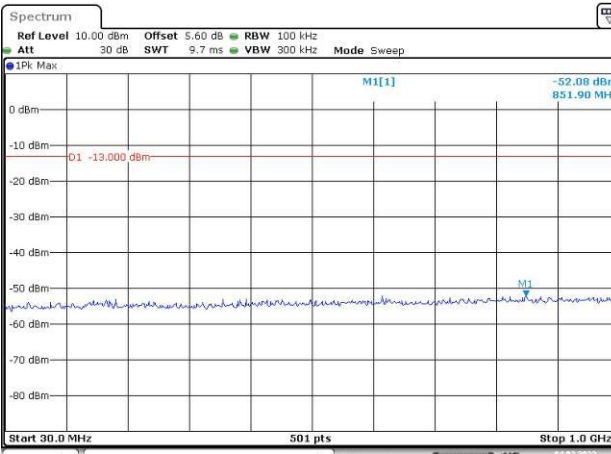
Lowest



Middle



Highest

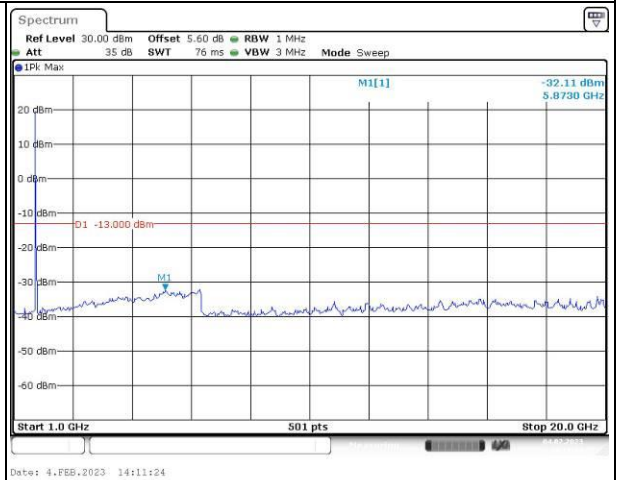
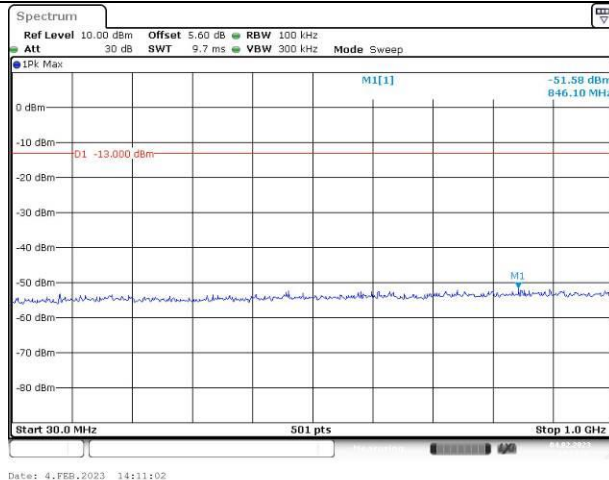


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

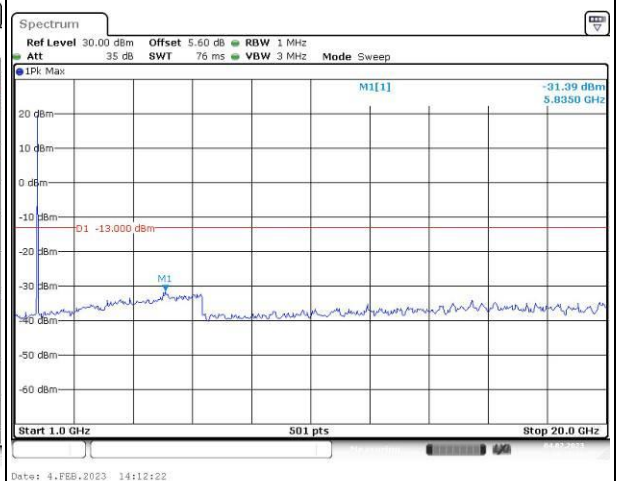
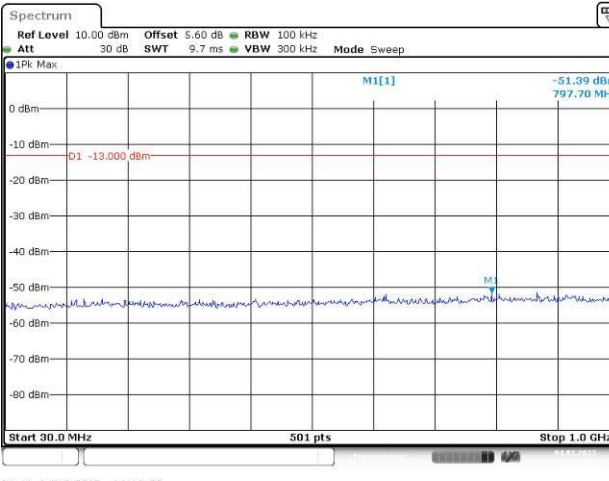
Lowest



Date: 4.FEB.2023 14:11:02

Date: 4.FEB.2023 14:11:24

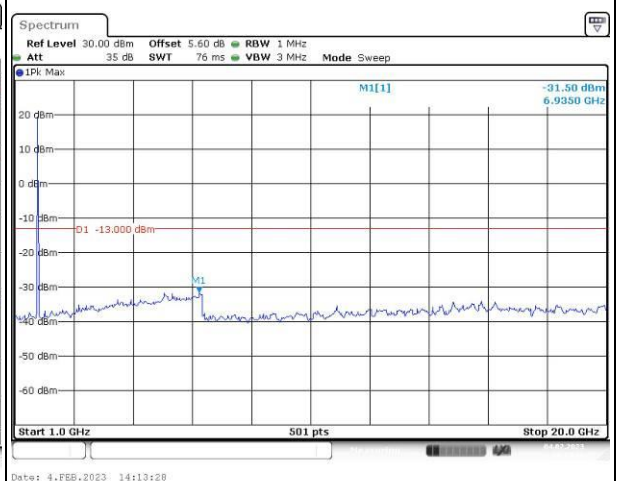
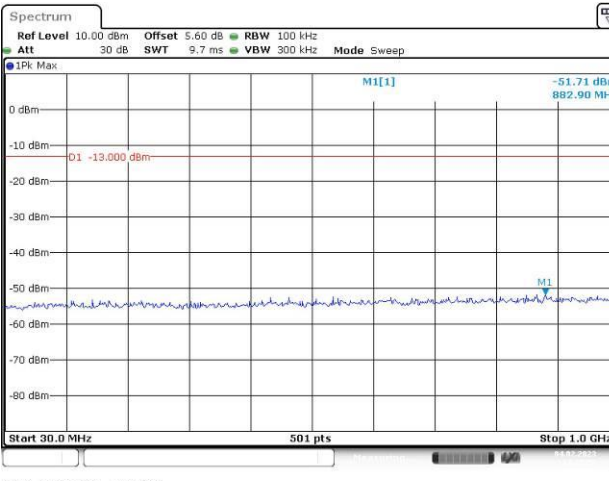
Middle



Date: 4.FEB.2023 14:11:53

Date: 4.FEB.2023 14:12:22

Highest



Date: 4.FEB.2023 14:12:58

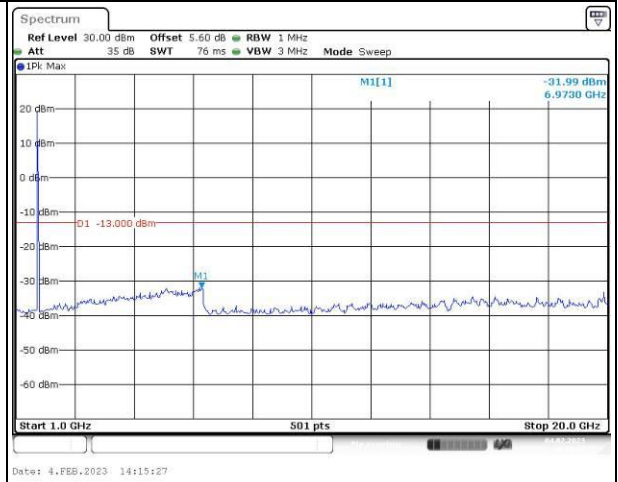
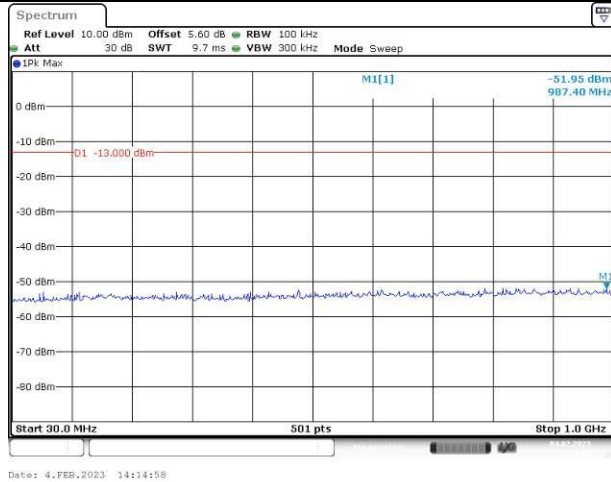
Date: 4.FEB.2023 14:13:20

Spurious Emissions at Antenna Terminal

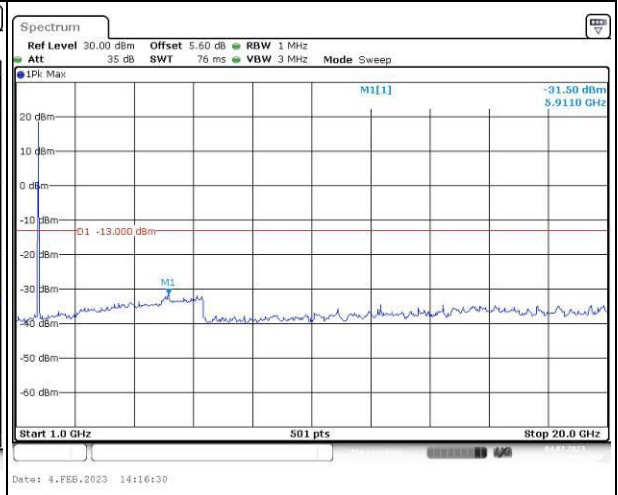
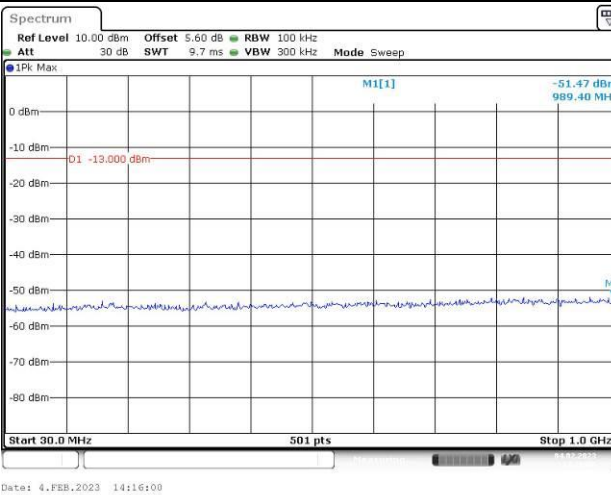
Channel

10MHz Bandwidth QPSK

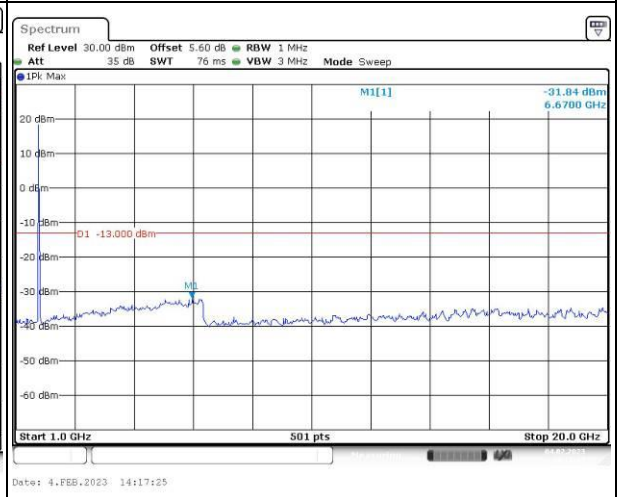
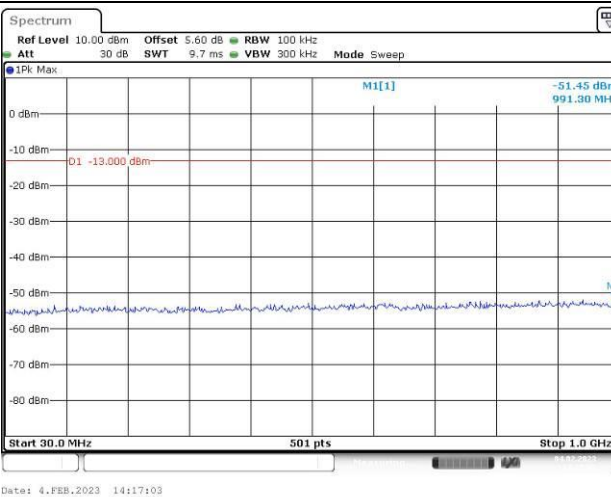
Lowest



Middle



Highest

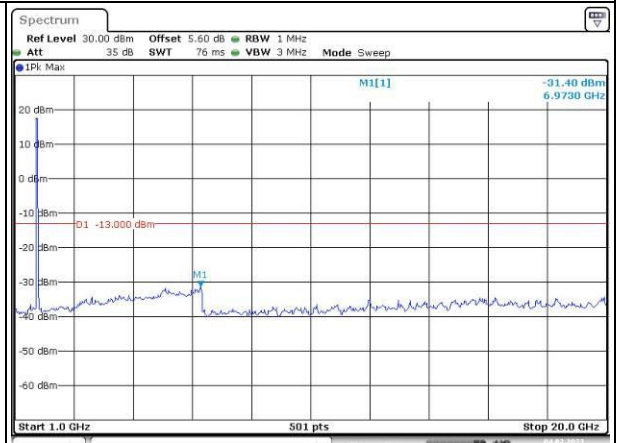
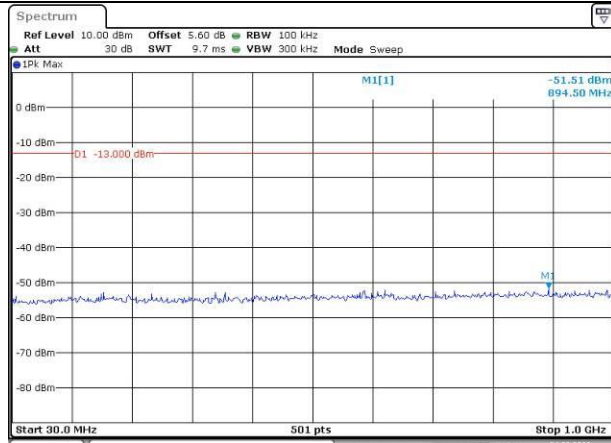


Spurious Emissions at Antenna Terminal

Channel

15MHz Bandwidth QPSK

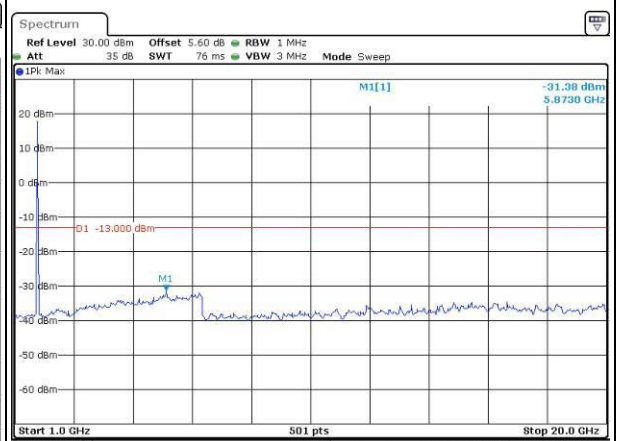
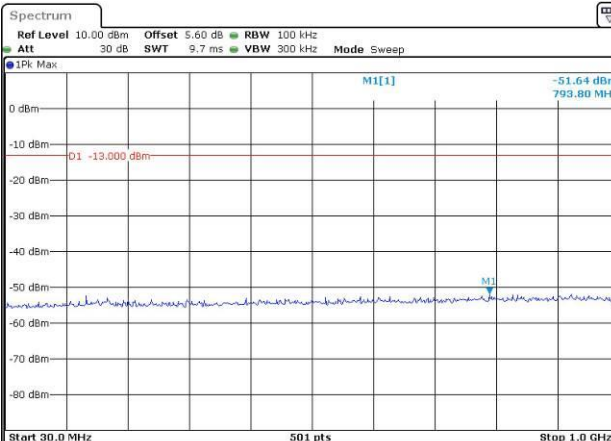
Lowest



Date: 4.FEB.2023 14:19:02

Date: 4.FEB.2023 14:19:35

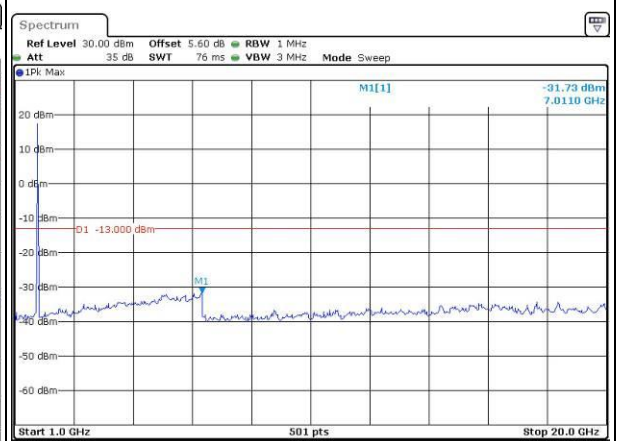
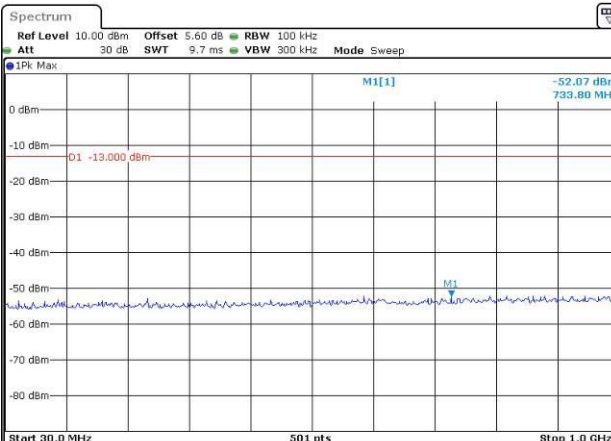
Middle



Date: 4.FEB.2023 14:20:16

Date: 4.FEB.2023 14:20:42

Highest



Date: 4.FEB.2023 14:21:19

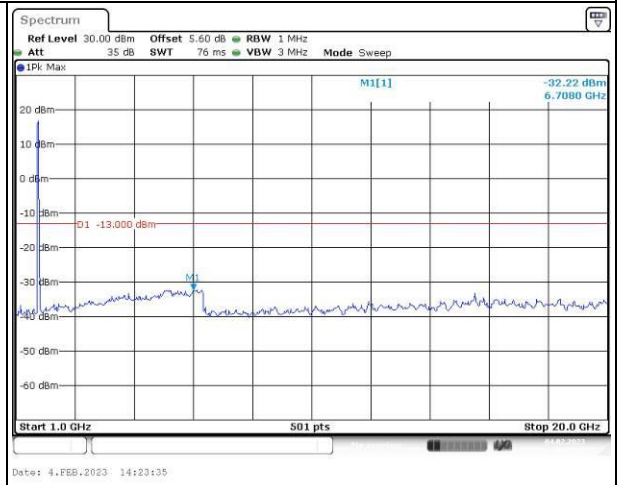
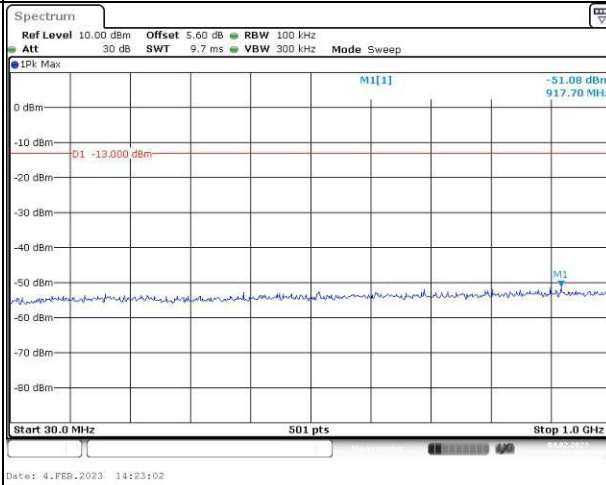
Date: 4.FEB.2023 14:21:48

Spurious Emissions at Antenna Terminal

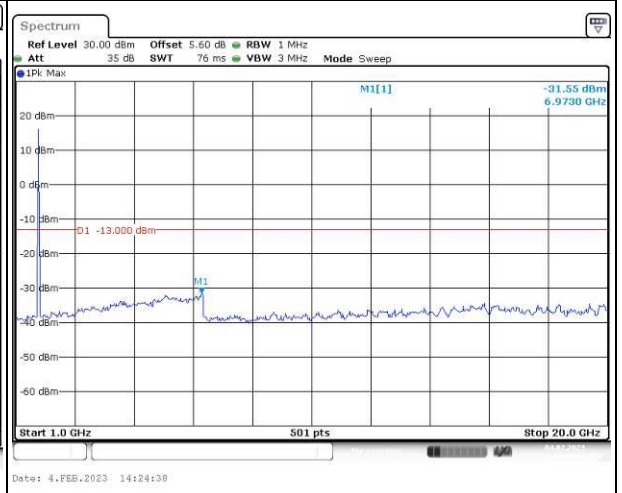
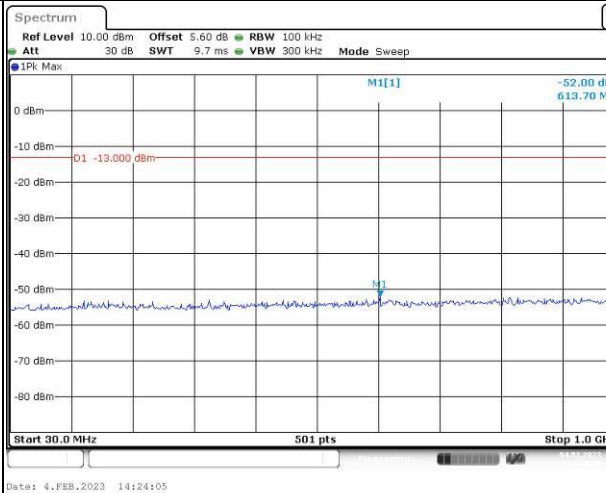
Channel

20MHz Bandwidth QPSK

Lowest



Middle



Highest

