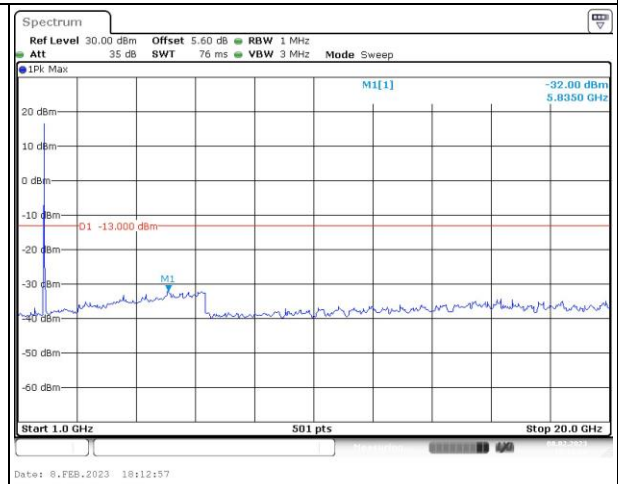
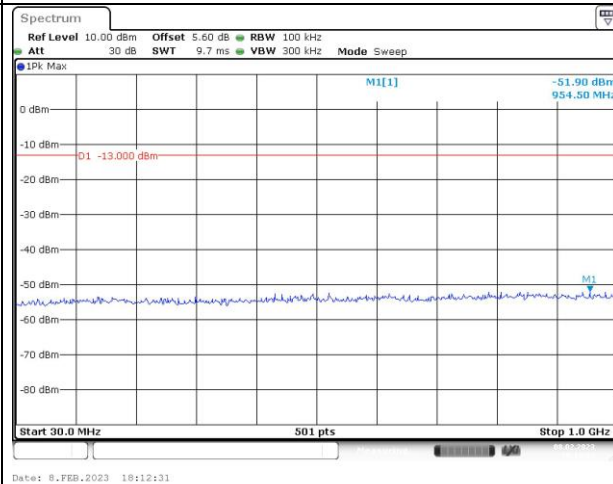


Spurious Emissions at Antenna Terminal

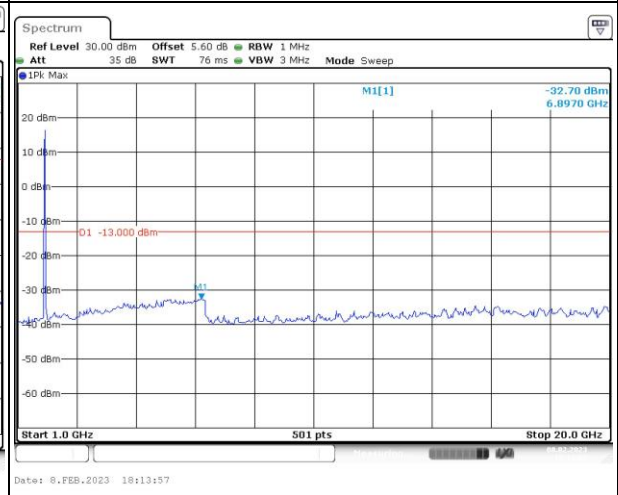
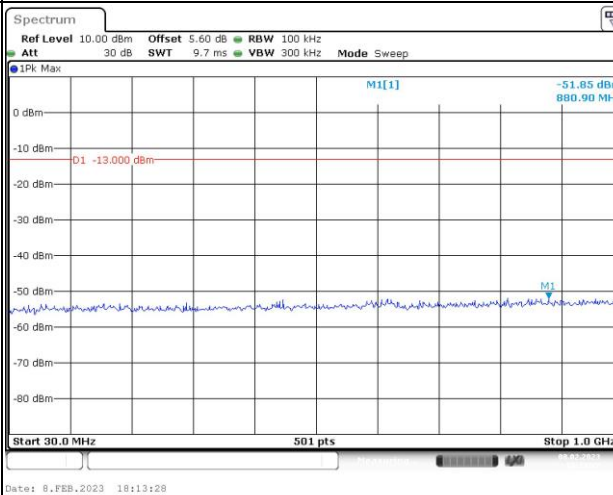
Channel

20MHz Bandwidth QPSK

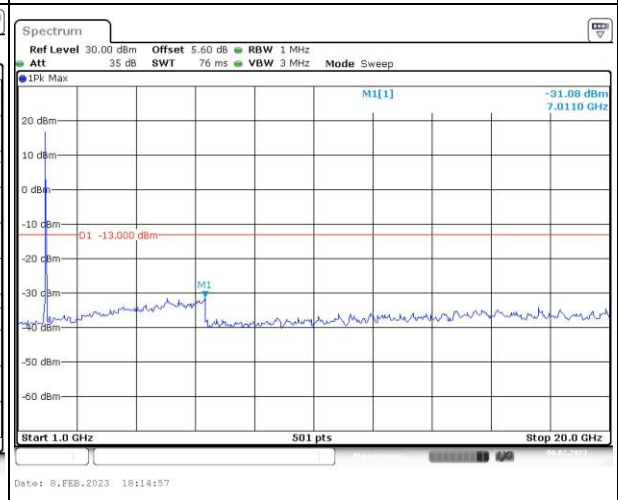
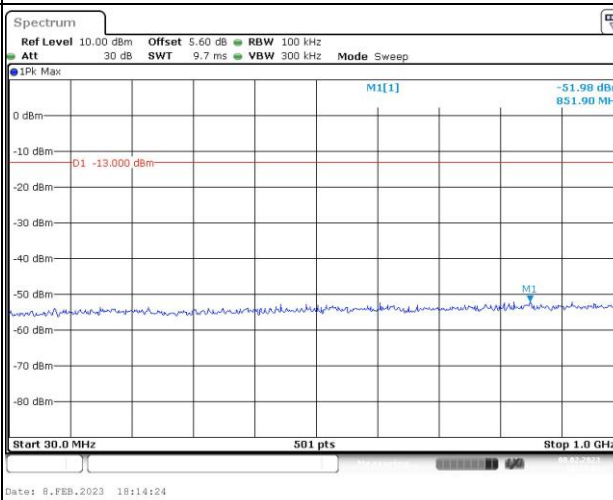
Lowest



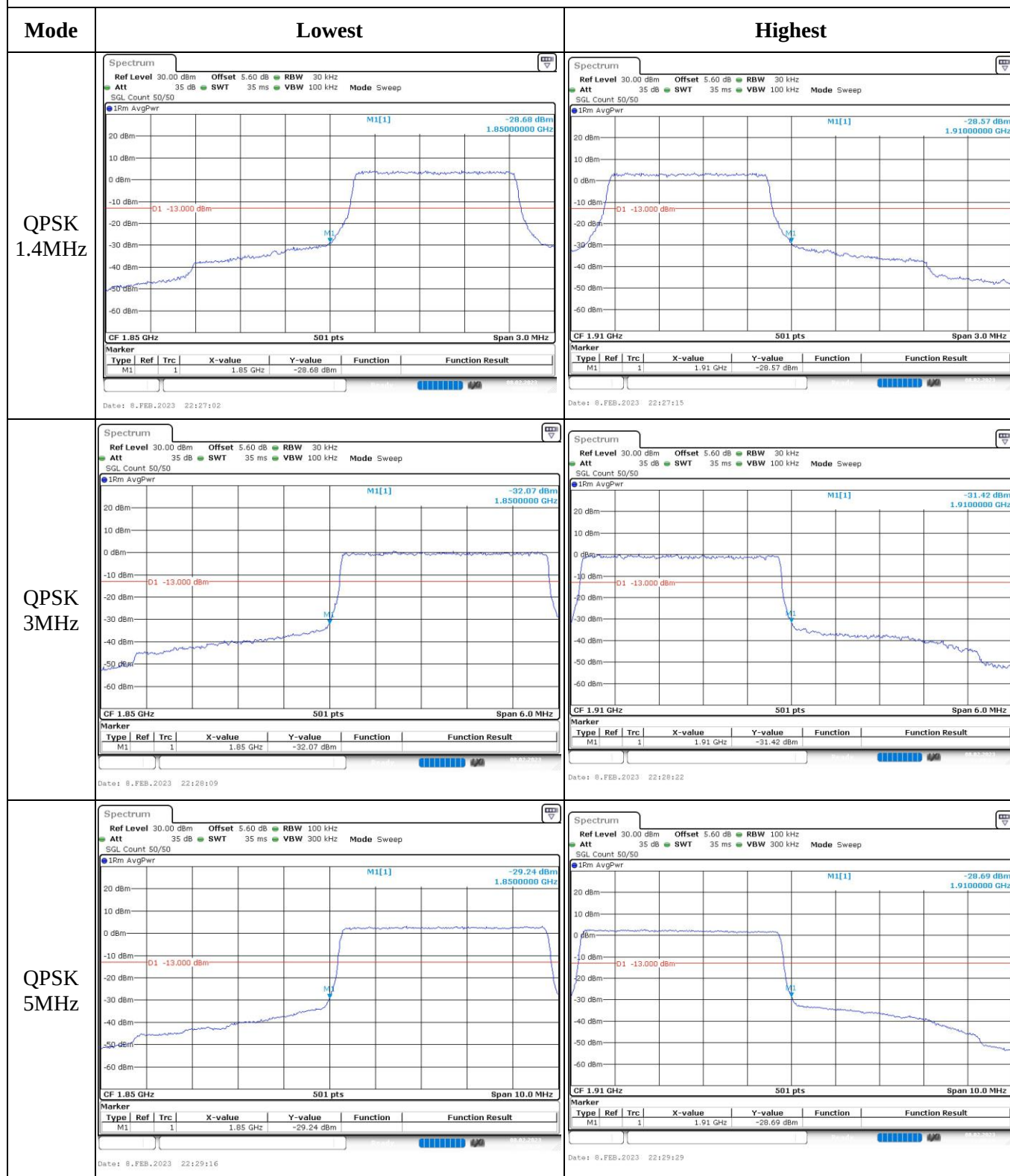
Middle



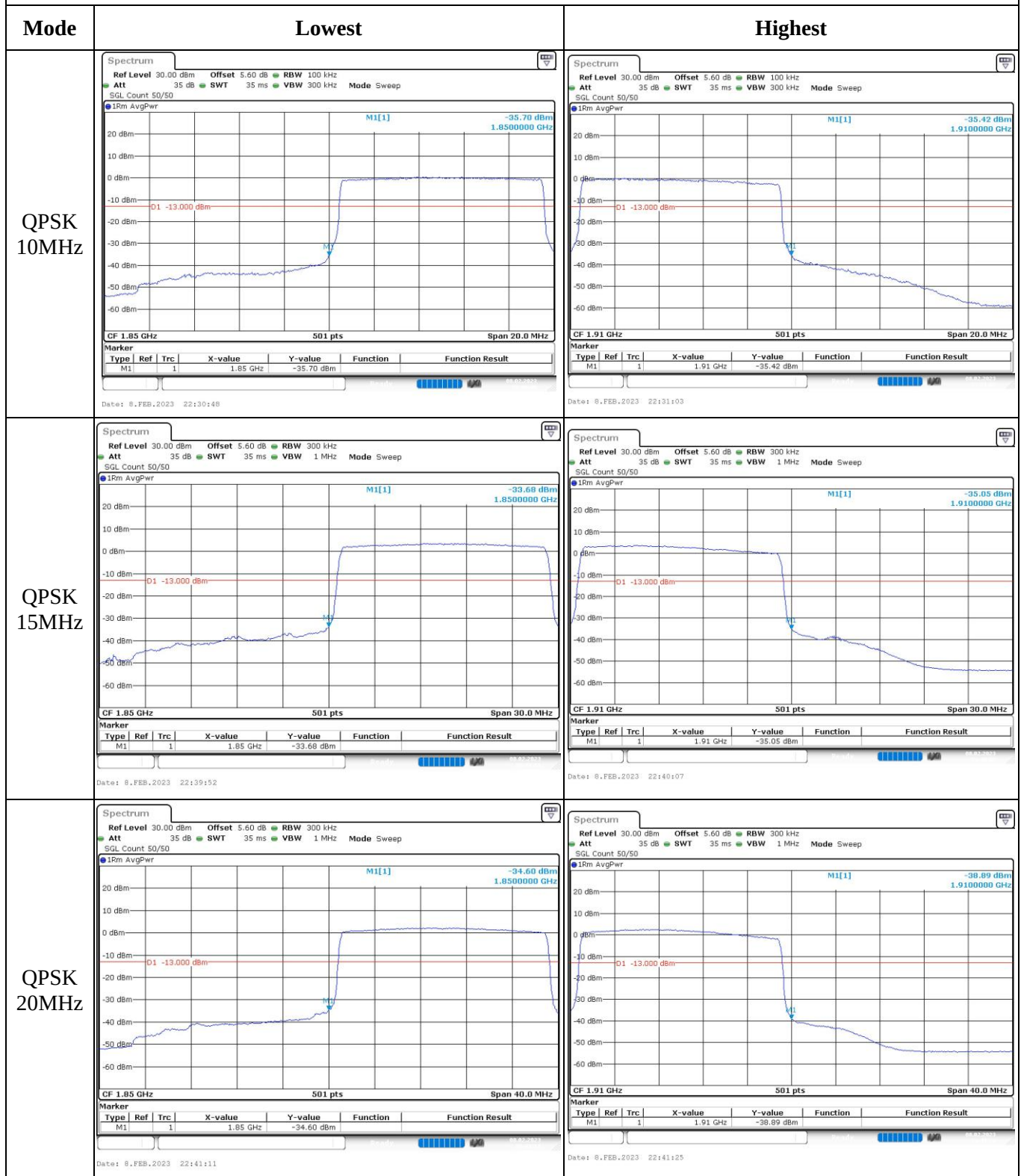
Highest



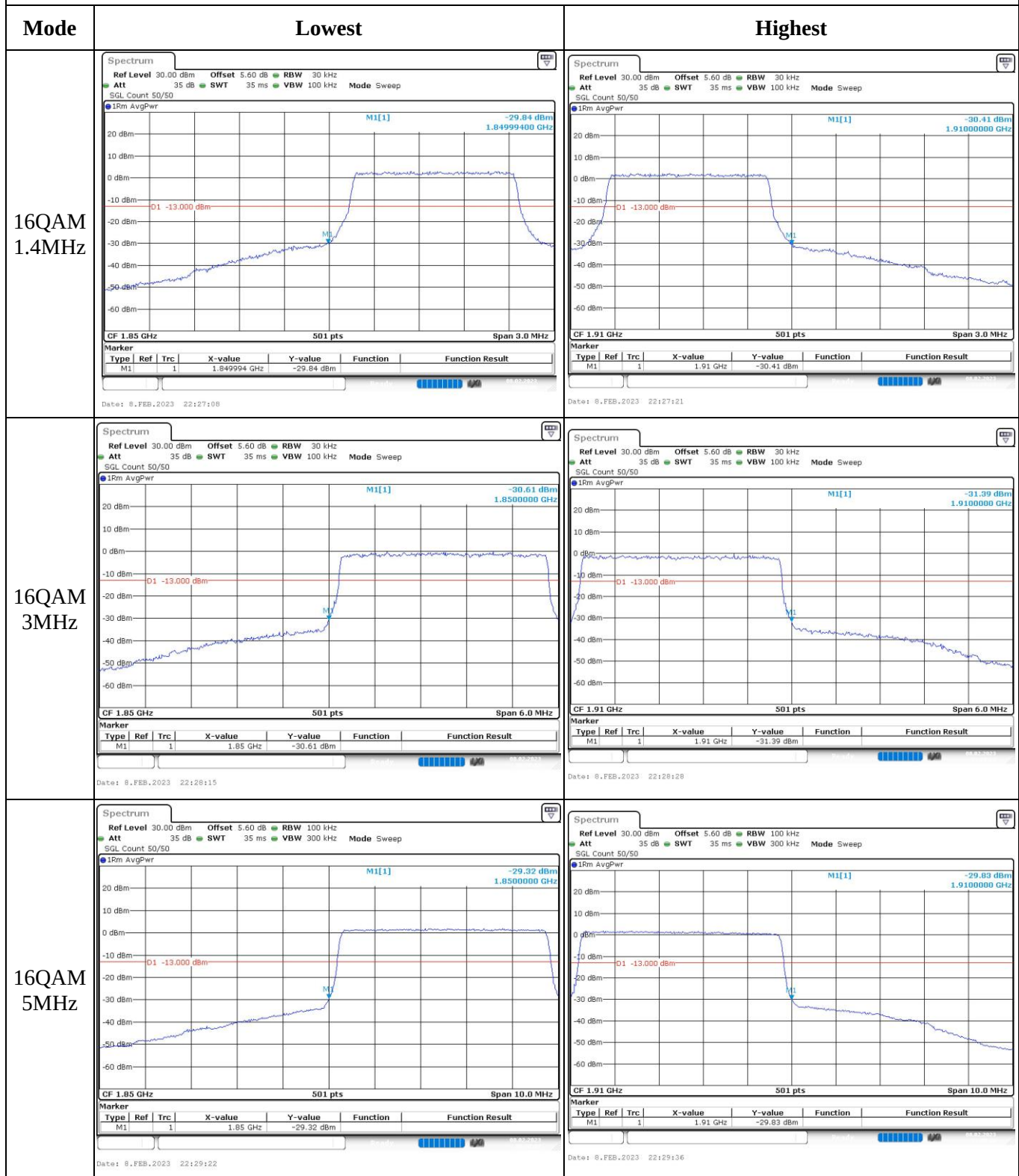
Out of band emission, Band Edge



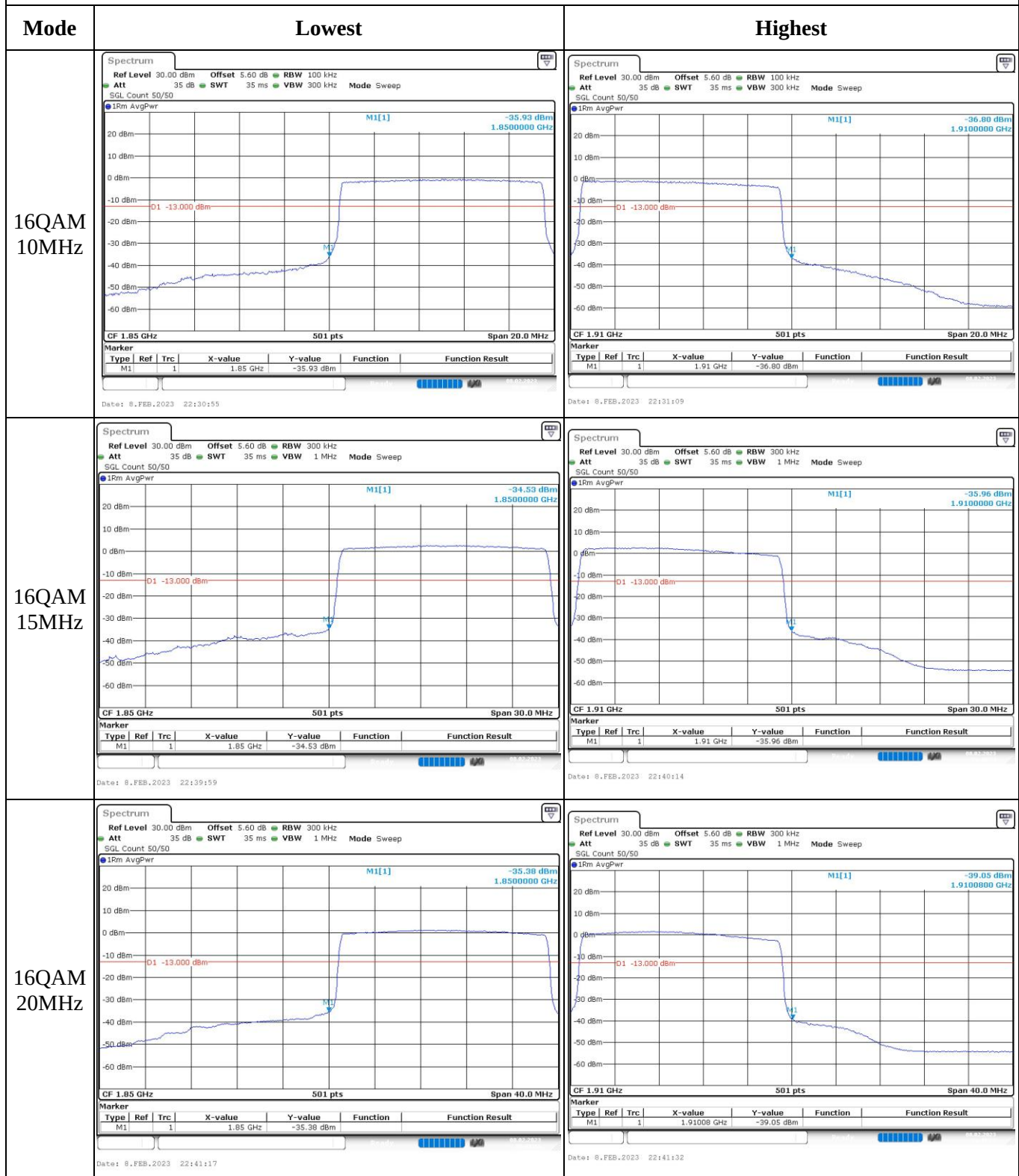
Out of band emission, Band Edge



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:	1ZO9	Test Date:	2023/2/8~2023/2/21
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	21.1~24.2	Relative Humidity: (%)	39~53	ATM Pressure: (kPa)	101.2~102.1
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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	2022/7/15	2023/7/14
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	2022/9/29	2023/9/28

* 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	21.88	21.96	22.27	24.38	30
	RB1#3	22.05	22.57	22.59		
	RB1#5	22.05	22.5	22.51		
	RB3#0	22.12	22.07	22.02		
	RB3#3	22.13	22.12	22.2		
	RB6#0	20.89	21.15	21.28		
1.4MHz 16QAM	RB1#0	21.33	21.39	21.19	23.31	30
	RB1#3	21.46	21.07	21.46		
	RB1#5	21.52	20.84	21.36		
	RB3#0	21.24	21.26	21.23		
	RB3#3	21.18	21.27	21.28		
	RB6#0	20.13	20.38	20.37		
3MHz QPSK	RB1#0	22.31	22.49	22.36	24.4	30
	RB1#8	22.17	22.38	22.4		
	RB1#14	22.35	22.6	22.61		
	RB6#0	21.38	21.45	21.3		
	RB6#9	21.46	21.51	21.54		
	RB15#0	21.39	21.63	21.3		
3MHz 16QAM	RB1#0	21.36	21.72	21.54	23.91	30
	RB1#8	20.87	21.35	22.03		
	RB1#14	21	21.66	22.12		
	RB6#0	20.29	20.35	20.46		
	RB6#9	20.27	20.24	20.61		
	RB15#0	20.41	20.36	20.28		
5MHz QPSK	RB1#0	22.71	22.54	22.24	24.5	30
	RB1#13	22.37	22.65	22.38		
	RB1#24	22.43	22.53	22.64		
	RB15#0	21.5	21.52	21.61		
	RB15#10	21.46	21.56	21.62		
	RB25#0	21.5	21.56	21.59		
5MHz 16QAM	RB1#0	21.76	21.13	20.75	23.8	30
	RB1#13	21.89	21.13	20.87		
	RB1#24	22.01	21.12	20.9		
	RB15#0	20.2	20.42	20.43		
	RB15#10	20.15	20.6	20.45		
	RB25#0	20.58	20.51	20.74		
10MHz QPSK	RB1#0	22.51	22.51	22.37	24.52	30

	RB1#25	22.39	22.73	22.45		
	RB1#49	22.62	22.62	22.52		
	RB25#0	21.55	21.66	21.5		
	RB25#25	21.43	21.72	21.48		
	RB50#0	21.6	21.55	21.59		
10MHz 16QAM	RB1#0	21.98	22.24	21.3	24.06	30
	RB1#25	21.89	22.21	21.03		
	RB1#49	21.85	22.27	21.34		
	RB25#0	20.52	20.49	20.56		
	RB25#25	20.35	20.58	20.68		
	RB50#0	20.55	20.74	20.59		
15MHz QPSK	RB1#0	22.46	22.28	22.54	24.38	30
	RB1#38	22.59	22.27	22.37		
	RB1#74	22.58	22.4	22.38		
	RB36#0	21.62	21.5	21.45		
	RB36#39	21.71	21.53	21.55		
	RB75#0	21.57	21.6	21.48		
15MHz 16QAM	RB1#0	22.17	21.54	21.87	23.96	30
	RB1#38	22.1	21.38	21.62		
	RB1#74	22.03	21.41	21.7		
	RB36#0	20.41	20.34	20.23		
	RB36#39	20.28	20.61	20.33		
	RB75#0	20.52	20.54	20.35		
20MHz QPSK	RB1#0	22.73	22.37	22.45	24.73	30
	RB1#50	22.94	22.72	22.57		
	RB1#99	22.7	22.37	22.19		
	RB50#0	21.52	21.48	21.47		
	RB50#50	21.66	21.45	21.38		
	RB100#0	21.52	21.46	21.42		
20MHz 16QAM	RB1#0	21.43	22.02	22.08	23.98	30
	RB1#50	21.56	22.19	22.08		
	RB1#99	21.59	22.12	21.86		
	RB50#0	20.54	20.36	20.41		
	RB50#50	20.59	20.28	20.47		
	RB100#0	20.46	20.33	20.41		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + G_T(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	5.04	4.43	4.55	13
	RB100#0	4	3.94	4.09	13
20MHz 16QAM	RB1#0	5.88	5.48	5.48	13
	RB100#0	5.86	5.77	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	1.108	1.102	1.102	1.314	1.29	1.302
1.4MHz 16QAM	1.102	1.096	1.108	1.296	1.302	1.308
3MHz QPSK	2.695	2.683	2.695	2.964	2.952	2.94
3MHz 16QAM	2.695	2.683	2.695	2.964	2.952	2.964
5MHz QPSK	4.511	4.511	4.511	5	5.02	5.06
5MHz 16QAM	4.531	4.511	4.531	5.08	5.02	5.04
10MHz QPSK	8.942	8.942	8.942	9.8	9.72	9.76
10MHz 16QAM	8.942	8.942	8.942	9.68	9.68	9.76
15MHz QPSK	13.473	13.473	13.413	14.82	14.94	14.82
15MHz 16QAM	13.473	13.473	13.473	14.82	14.76	14.82
20MHz QPSK	17.964	17.804	17.884	19.28	19.28	19.6
20MHz 16QAM	17.964	17.884	17.884	19.44	19.36	19.44
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.

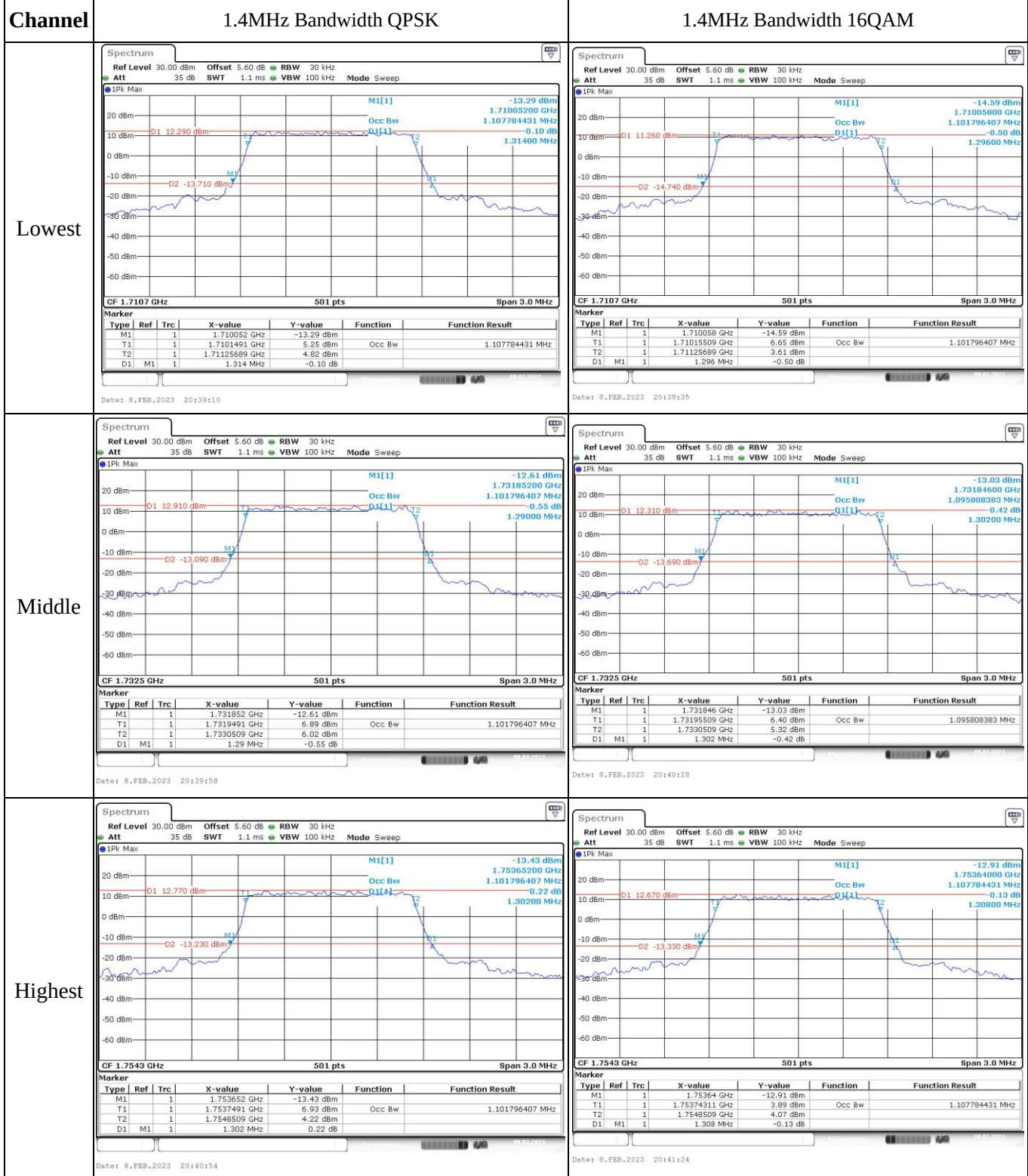
FCC §2.1051, §27.53:Out of band emission, Band Edge	
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.

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 _{AC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	24	1711.004	1710.00	1753.994	1755
	-20	24	1711.004	1710.00	1753.939	1755
	-10	24	1711.069	1710.00	1753.990	1755
	0	24	1711.033	1710.00	1753.927	1755
	10	24	1711.071	1710.00	1753.982	1755
	20	24	1711.058	1710.00	1753.942	1755
	30	24	1711.075	1710.00	1753.930	1755
	40	24	1711.035	1710.00	1753.955	1755
	50	24	1711.050	1710.00	1753.920	1755
Frequency Stability vs. Voltage	20	15	1711.080	1710.00	1753.930	1755
	20	30	1711.092	1710.00	1753.945	1755
Result:					Pass	

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{AC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	24	1711.047	1710.00	1753.935	1755
	-20	24	1711.031	1710.00	1754.000	1755
	-10	24	1711.030	1710.00	1753.941	1755
	0	24	1711.052	1710.00	1753.934	1755
	10	24	1711.047	1710.00	1753.908	1755
	20	24	1711.058	1710.00	1753.942	1755
	30	24	1711.046	1710.00	1753.954	1755
	40	24	1711.019	1710.00	1753.997	1755
	50	24	1711.068	1710.00	1753.926	1755
Frequency Stability vs. Voltage	20	15	1711.014	1710.00	1753.912	1755
	20	30	1711.049	1710.00	1753.962	1755
Result:					Pass	

Test Plots(Note: The 5.60dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):

Occupied Bandwidth



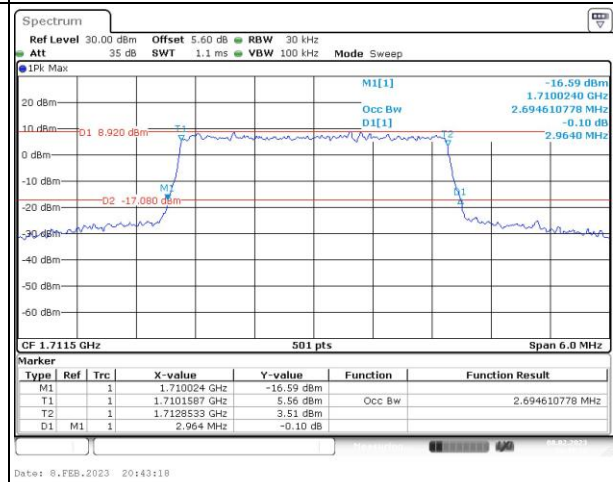
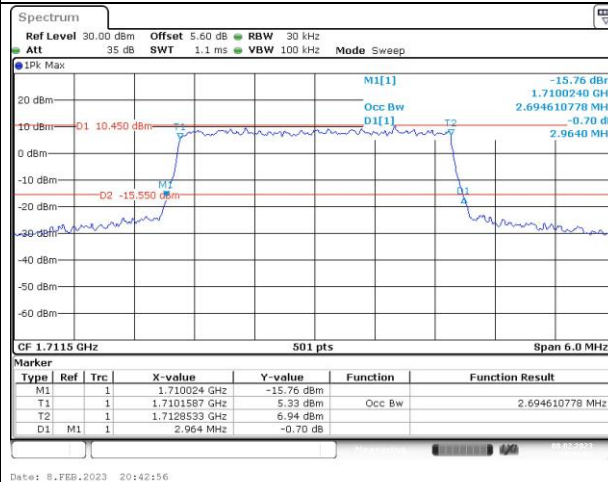
Occupied Bandwidth

Channel

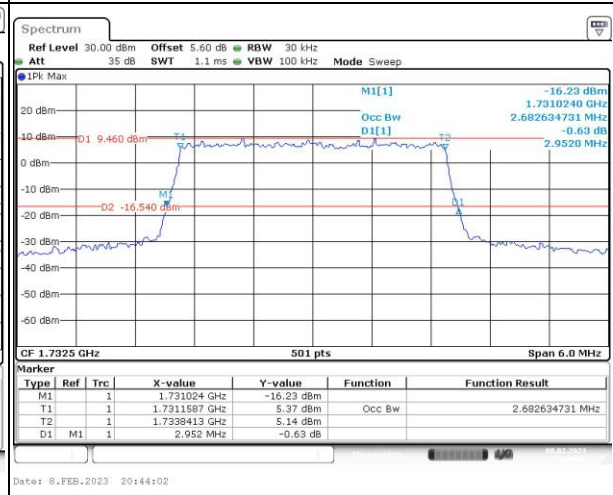
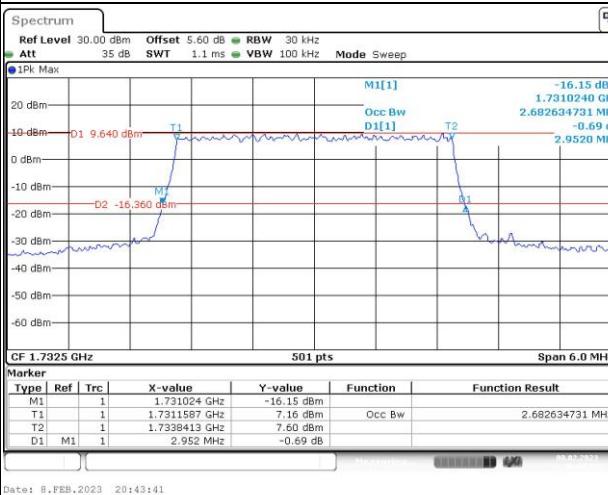
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

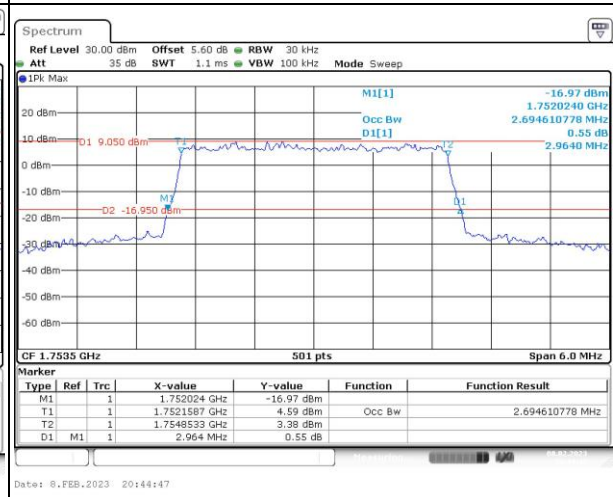
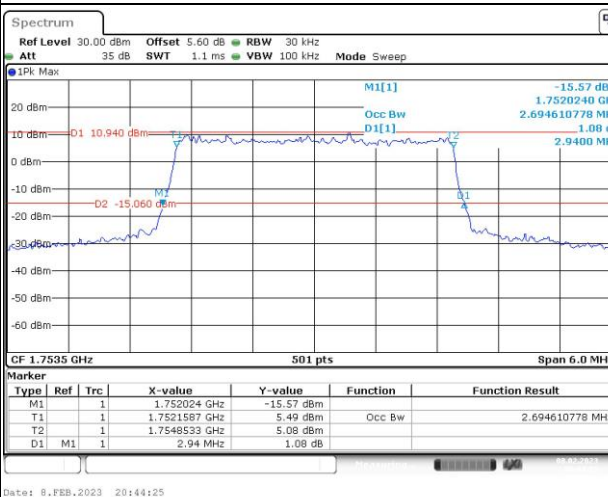
Lowest



Middle



Highest



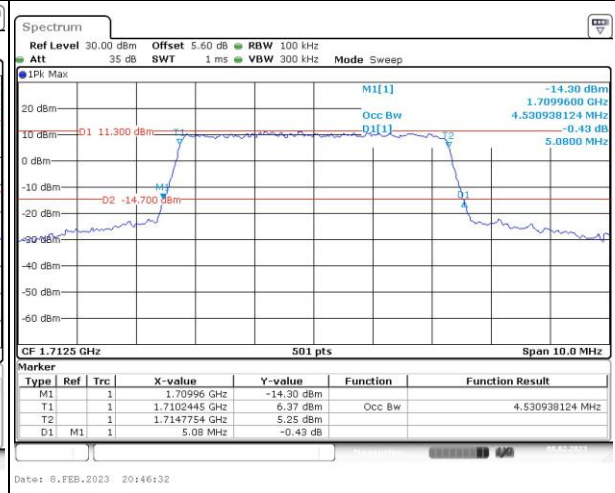
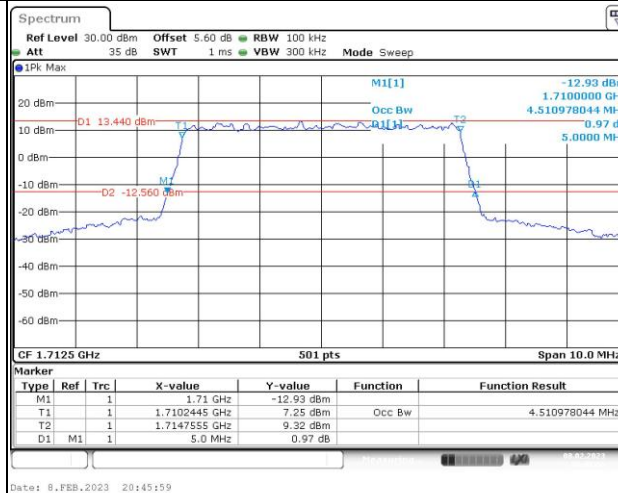
Occupied Bandwidth

Channel

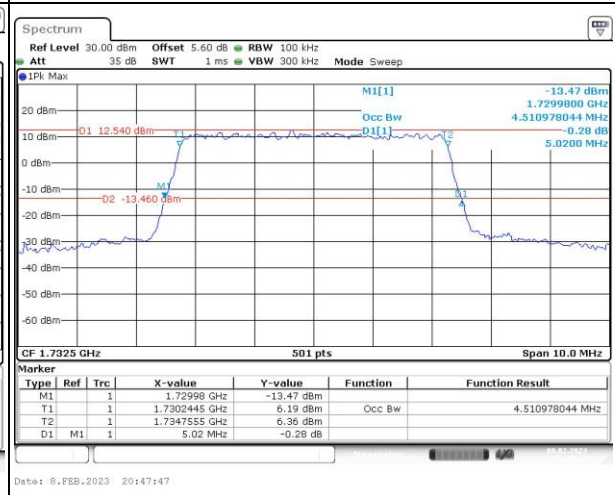
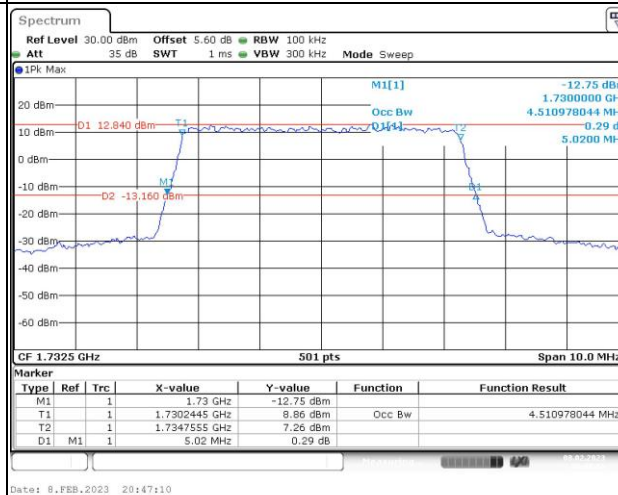
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

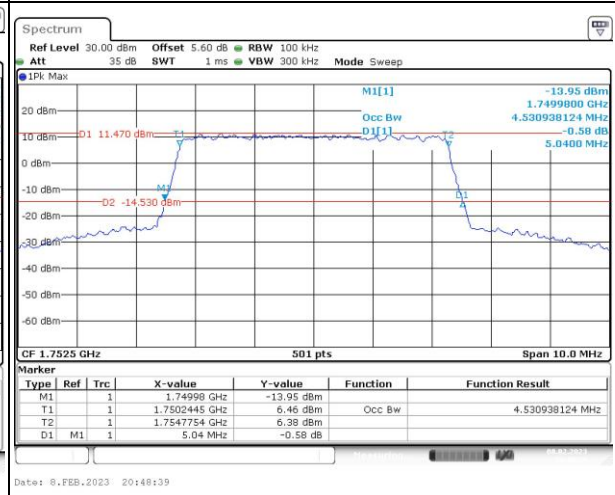
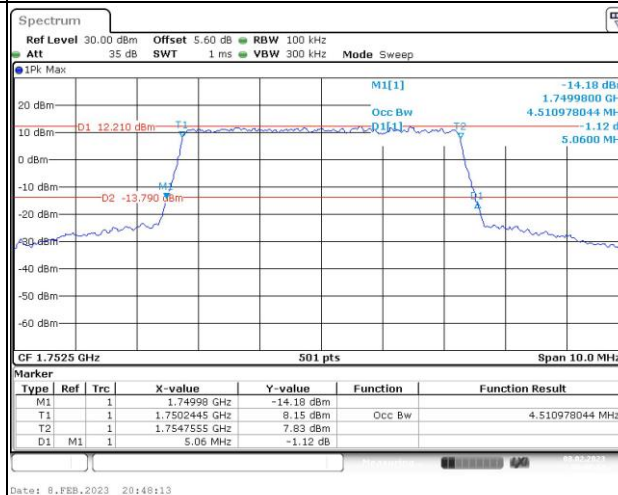
Lowest



Middle



Highest



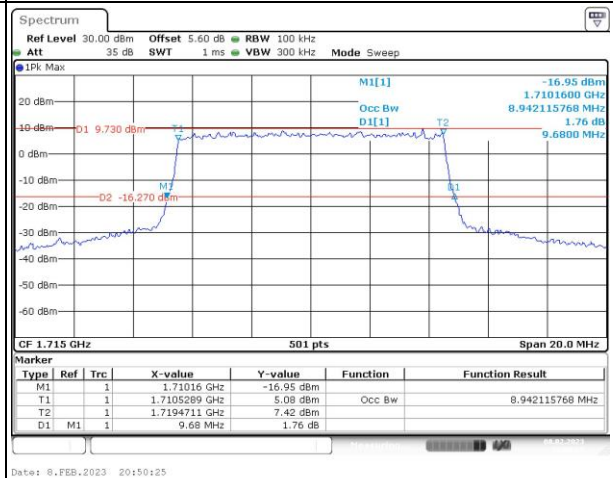
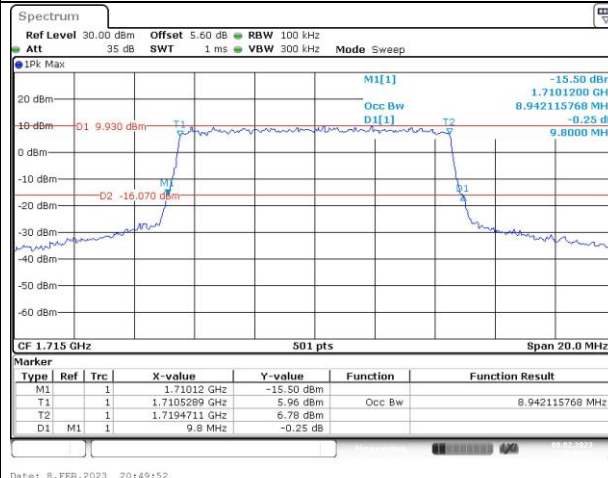
Occupied Bandwidth

Channel

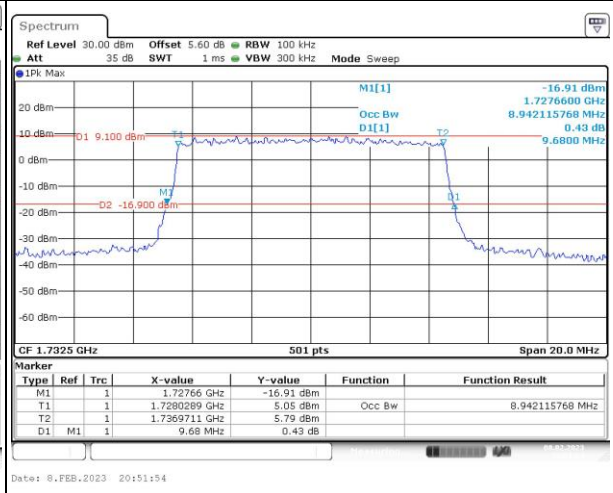
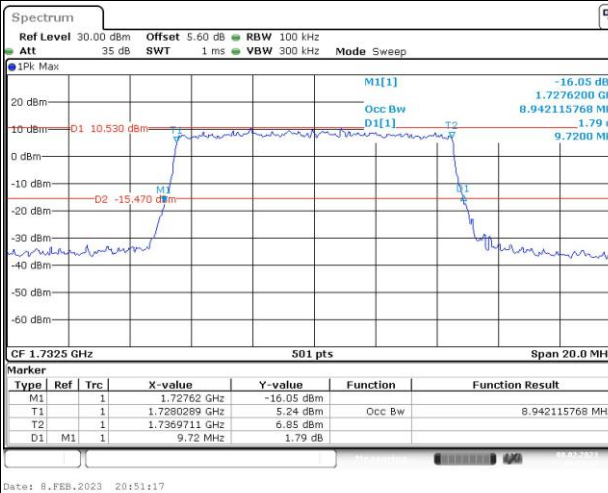
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

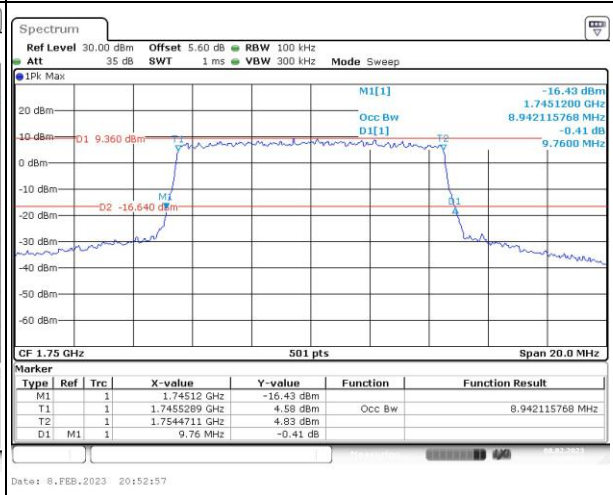
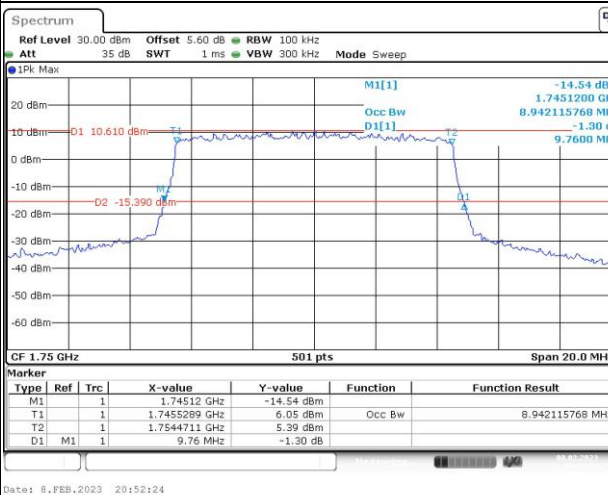
Lowest



Middle



Highest



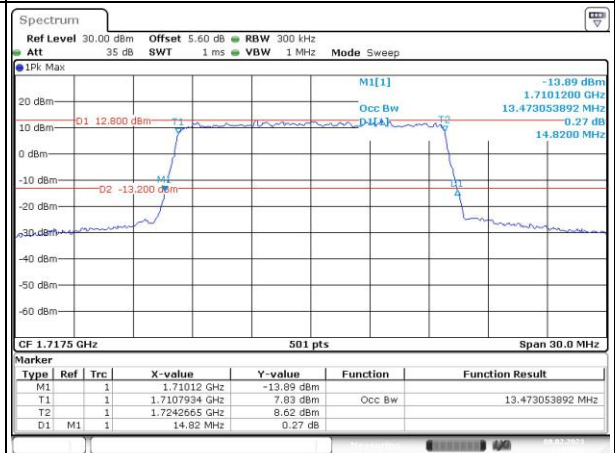
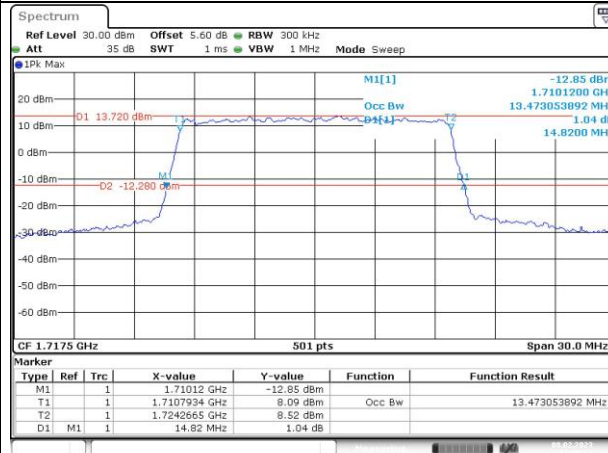
Occupied Bandwidth

Channel

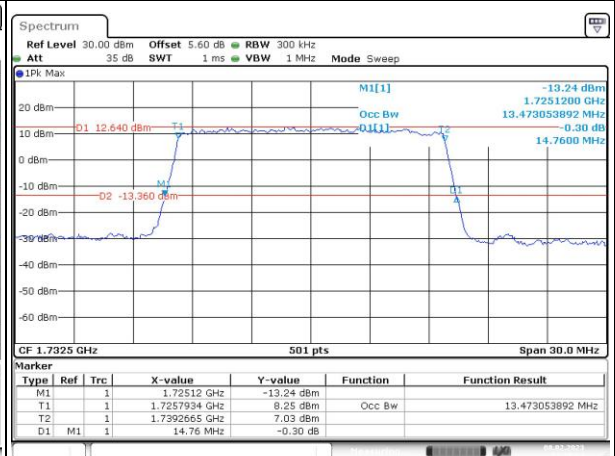
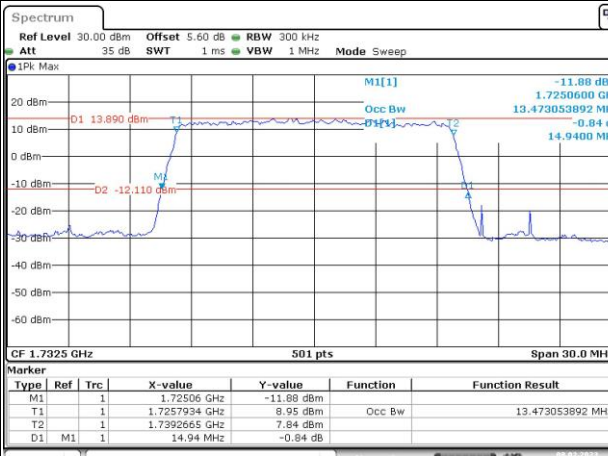
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

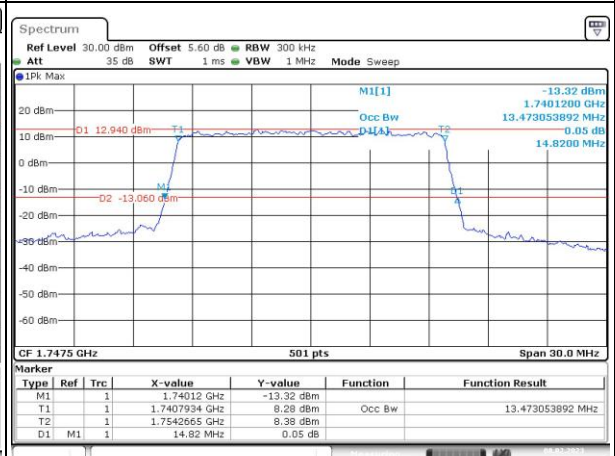
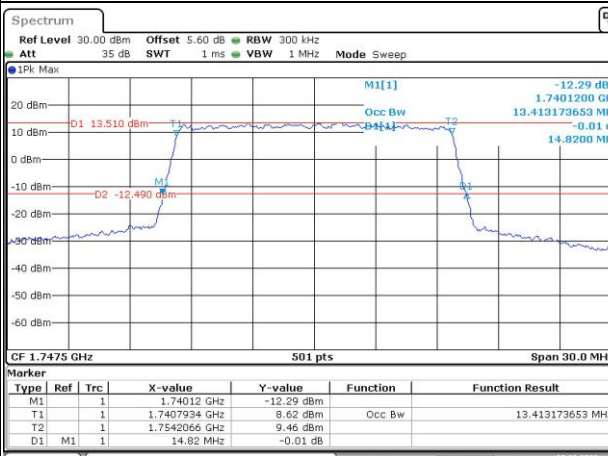
Lowest



Middle



Highest



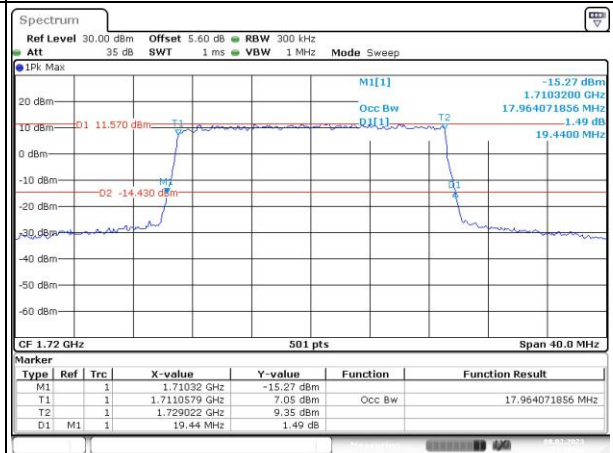
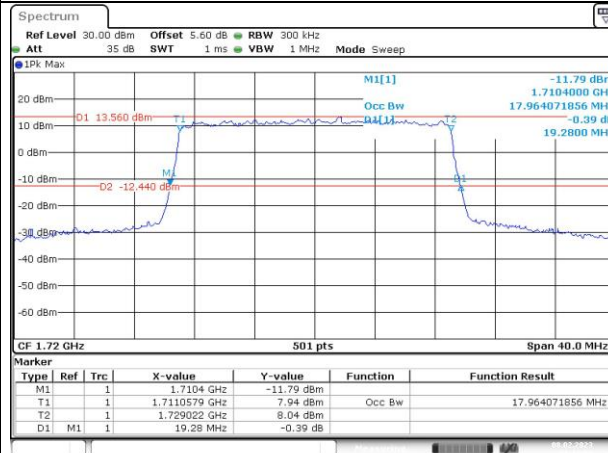
Occupied Bandwidth

Channel

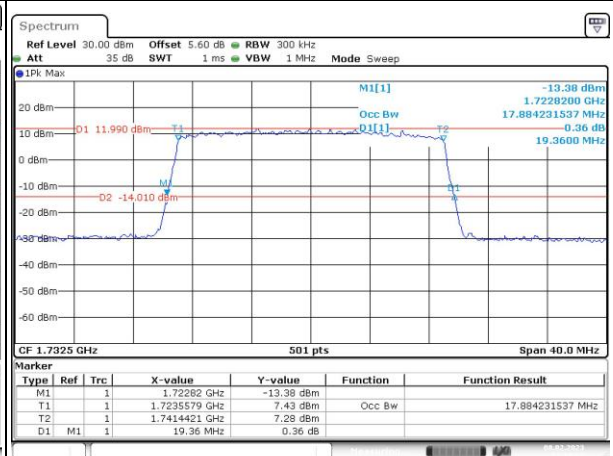
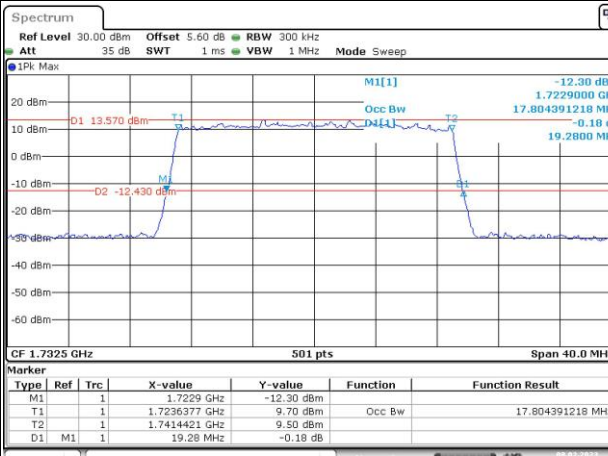
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

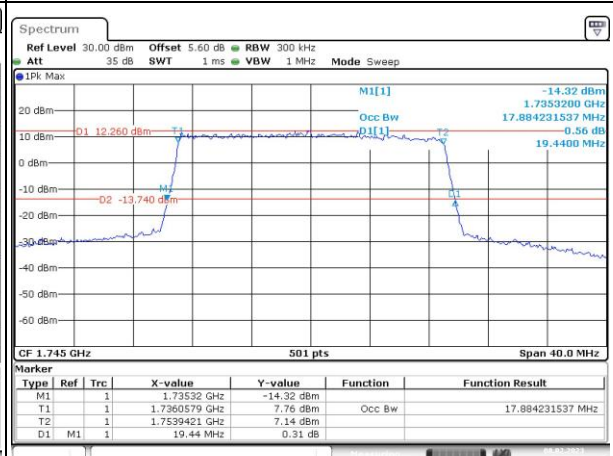
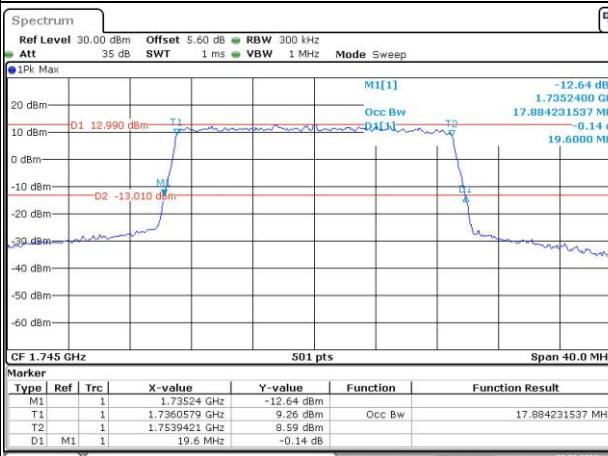
Lowest



Middle



Highest

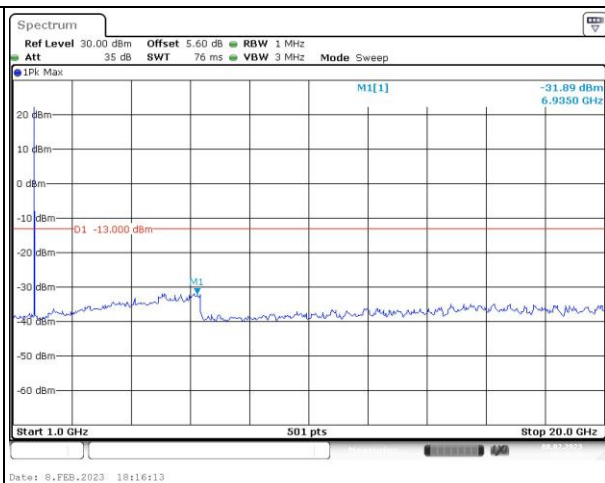
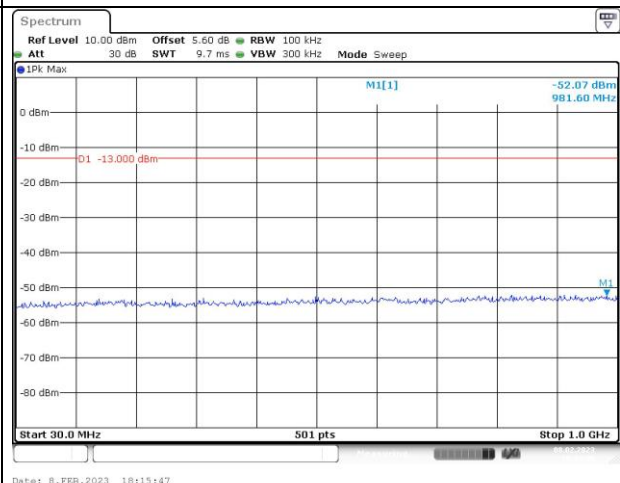


Spurious Emissions at Antenna Terminal

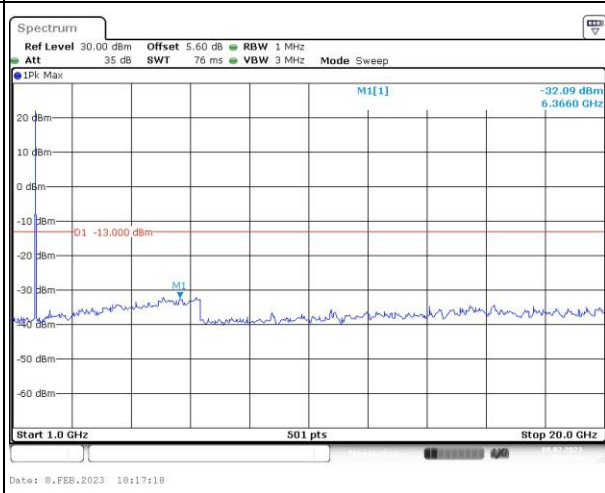
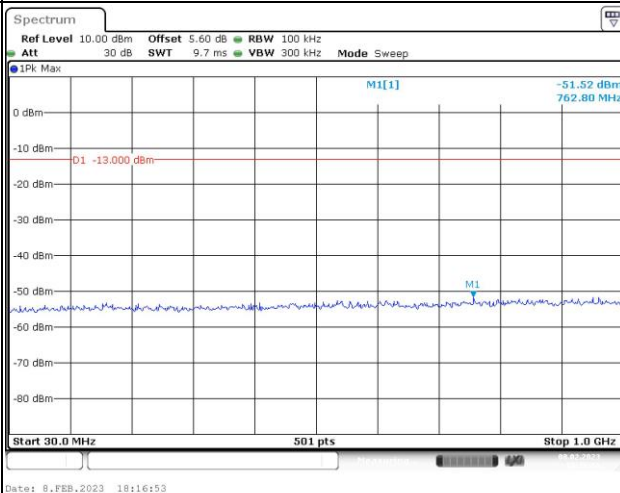
Channel

1.4MHz Bandwidth QPSK

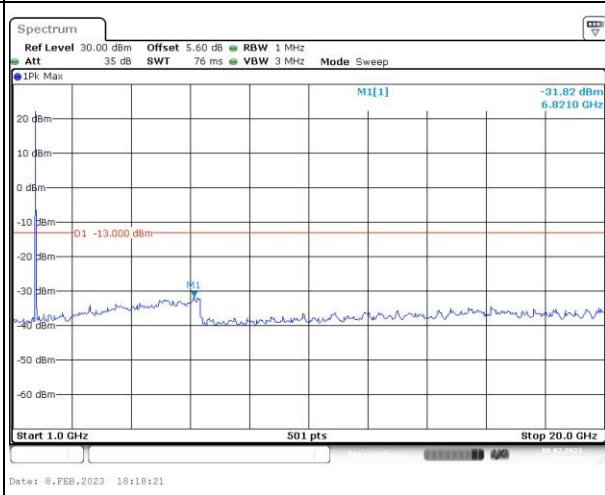
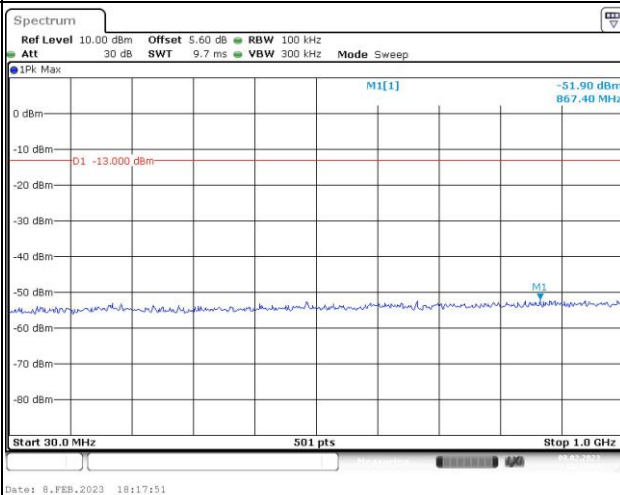
Lowest



Middle



Highest

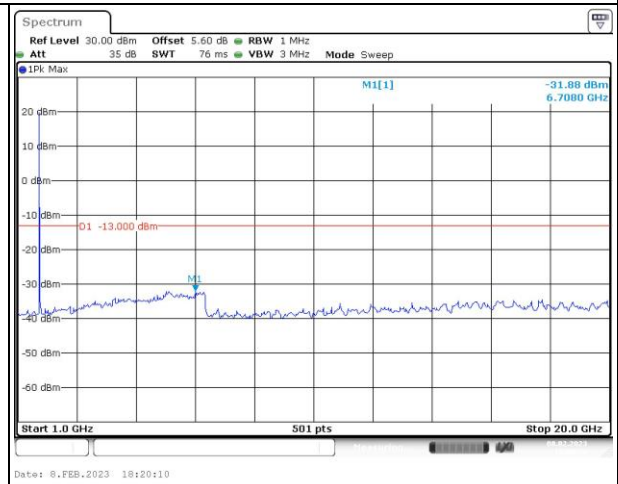
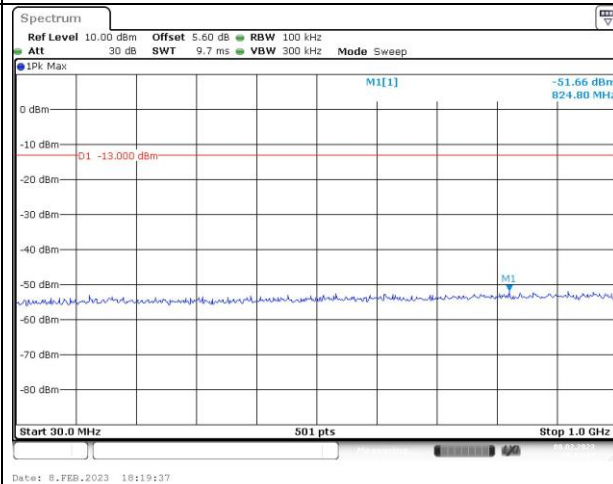


Spurious Emissions at Antenna Terminal

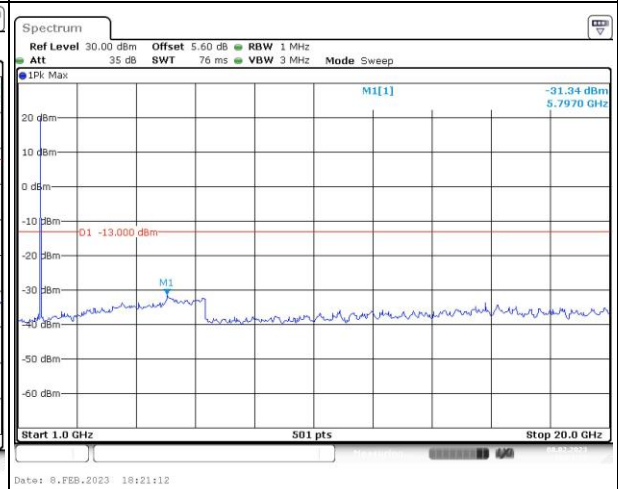
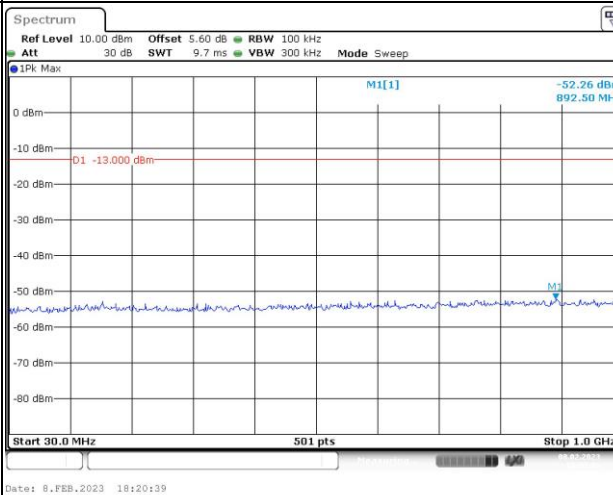
Channel

3MHz Bandwidth QPSK

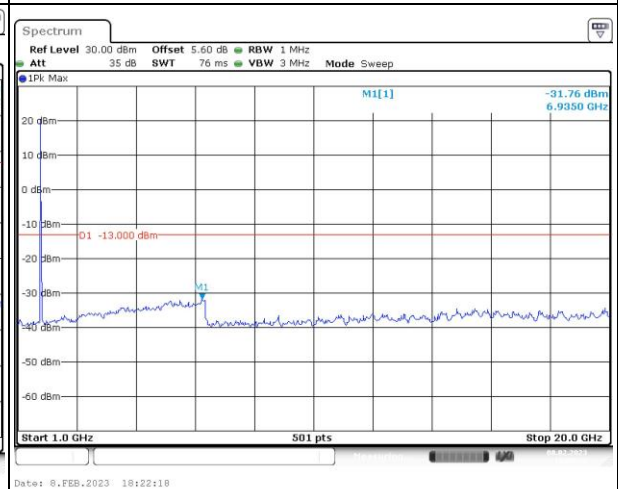
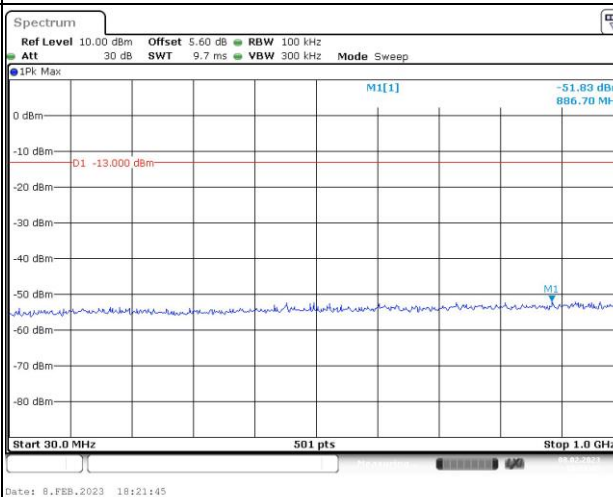
Lowest



Middle



Highest

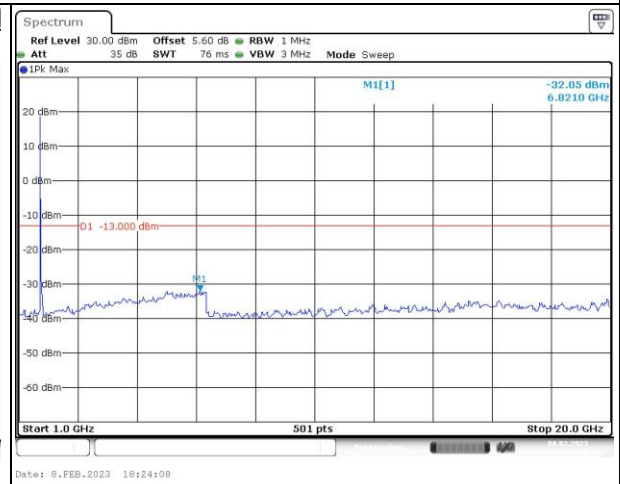
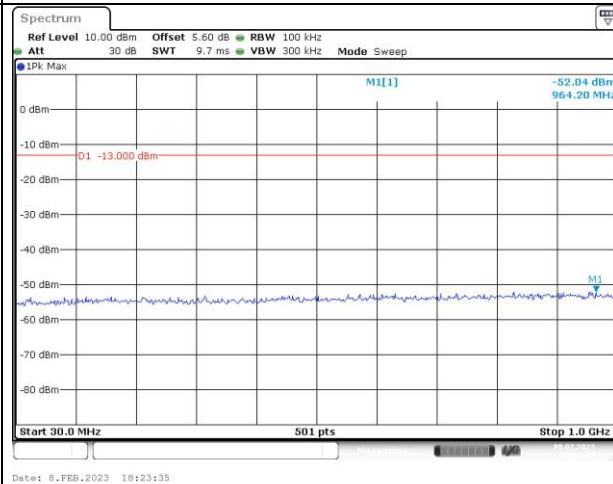


Spurious Emissions at Antenna Terminal

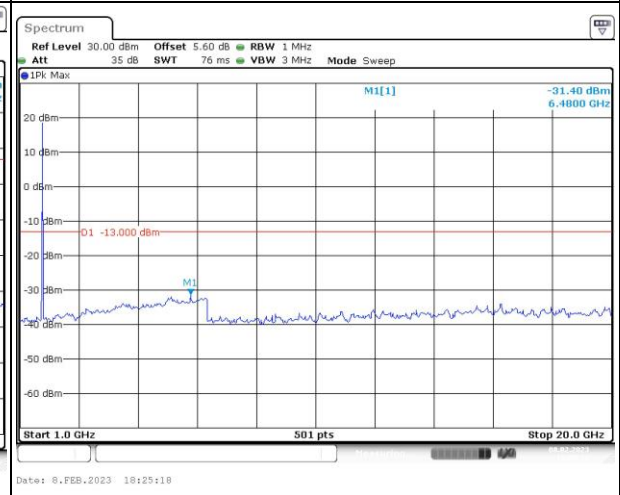
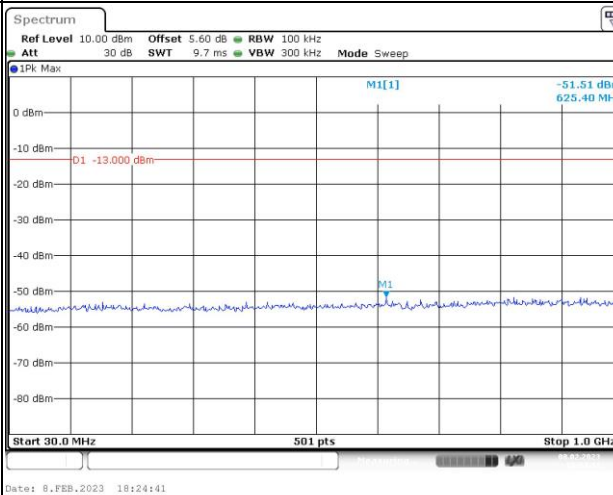
Channel

5MHz Bandwidth QPSK

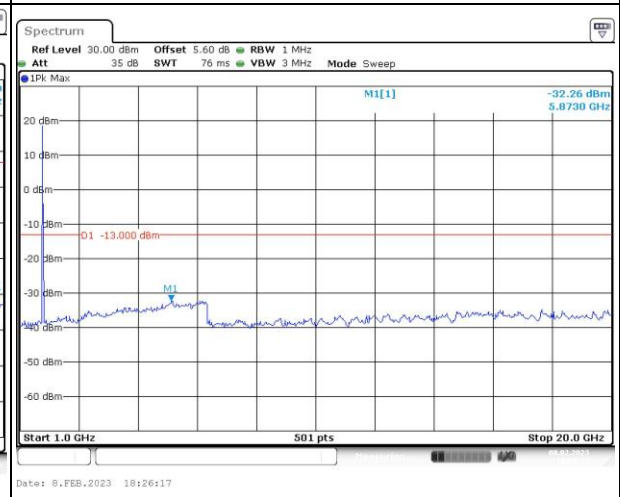
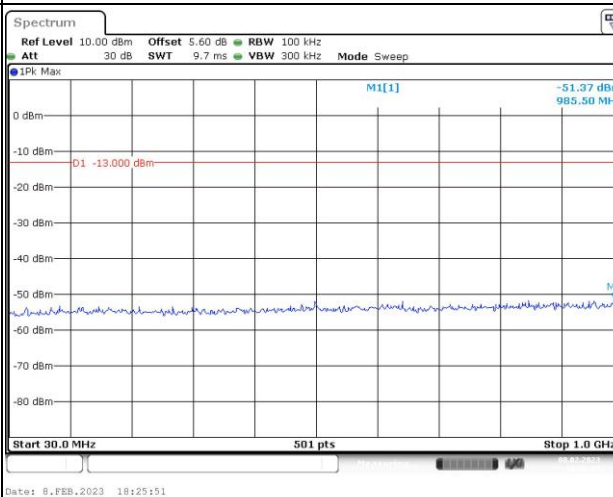
Lowest



Middle



Highest

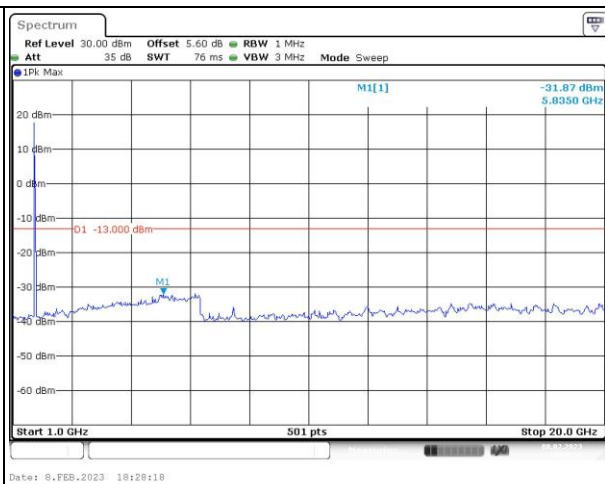
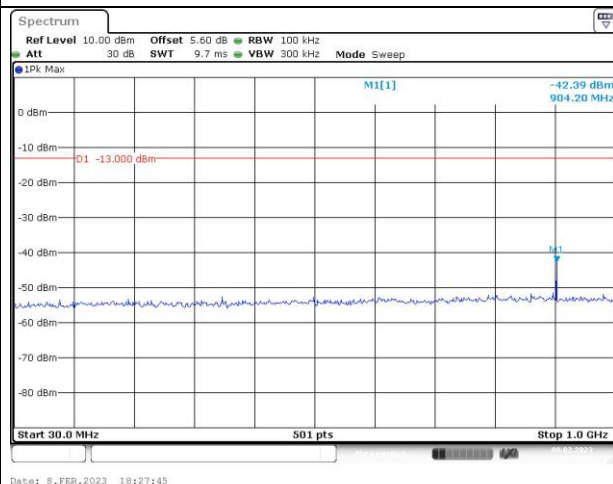


Spurious Emissions at Antenna Terminal

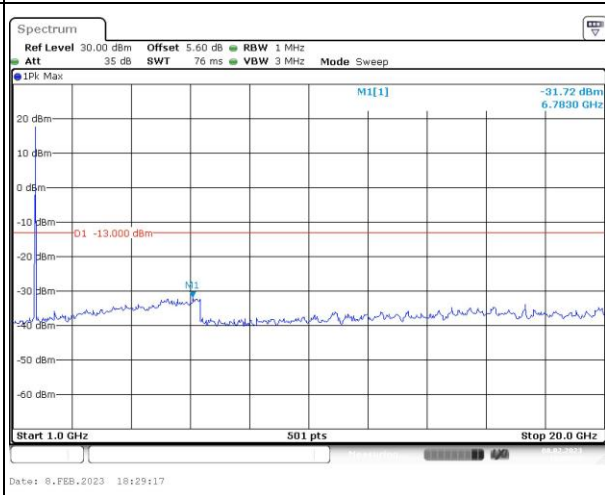
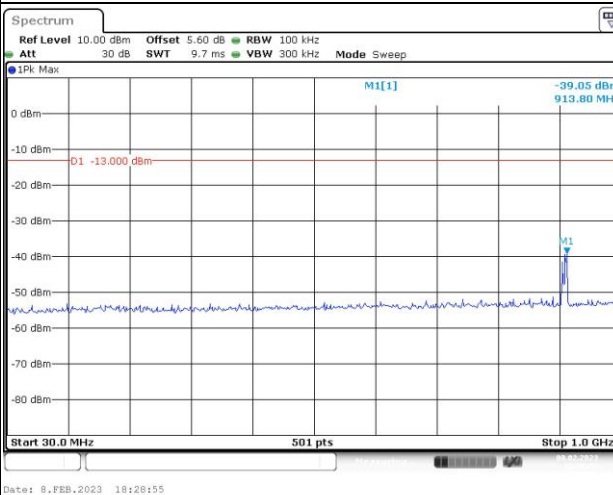
Channel

10MHz Bandwidth QPSK

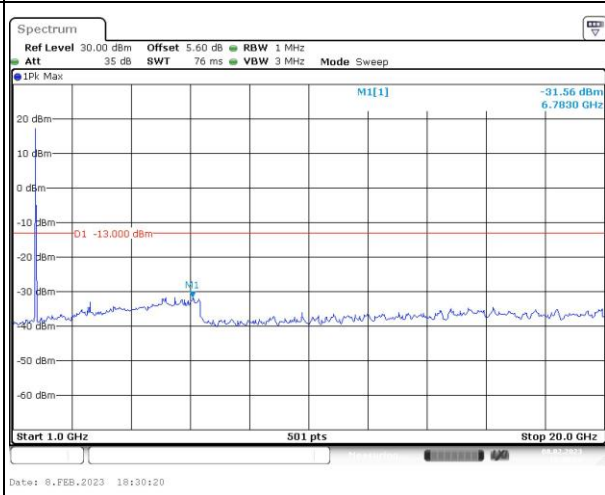
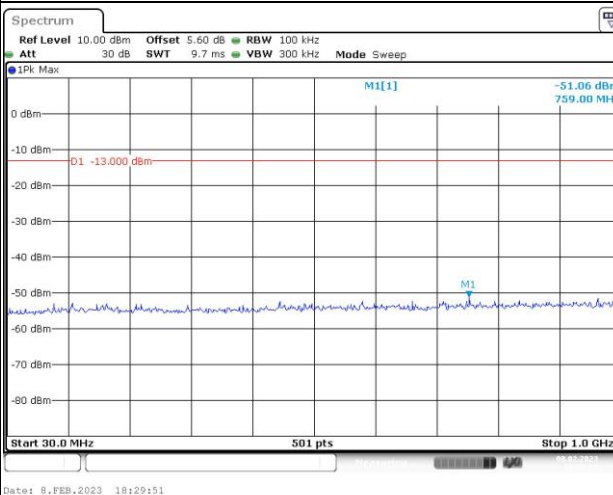
Lowest



Middle



Highest

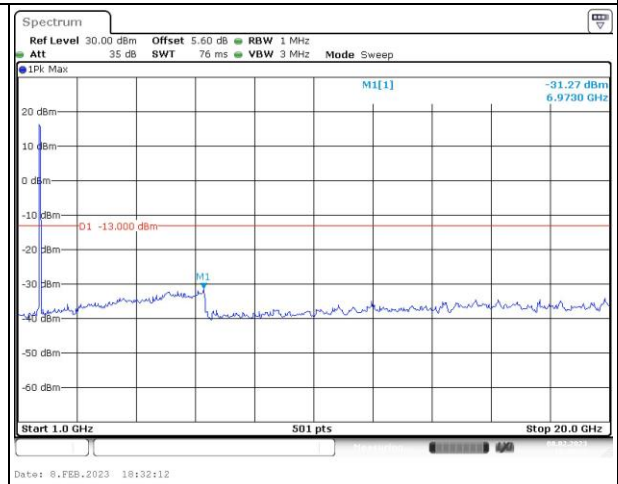
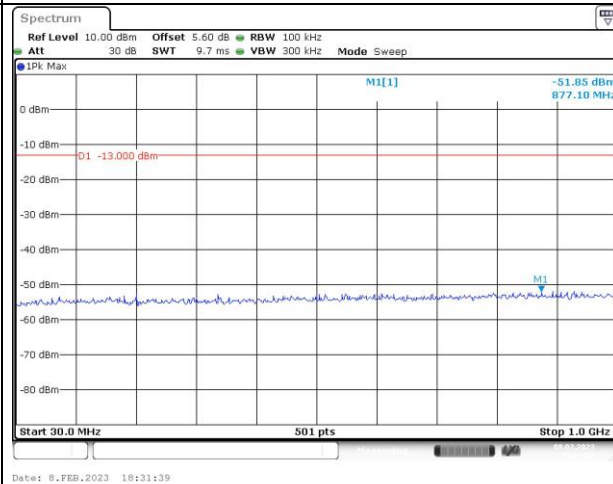


Spurious Emissions at Antenna Terminal

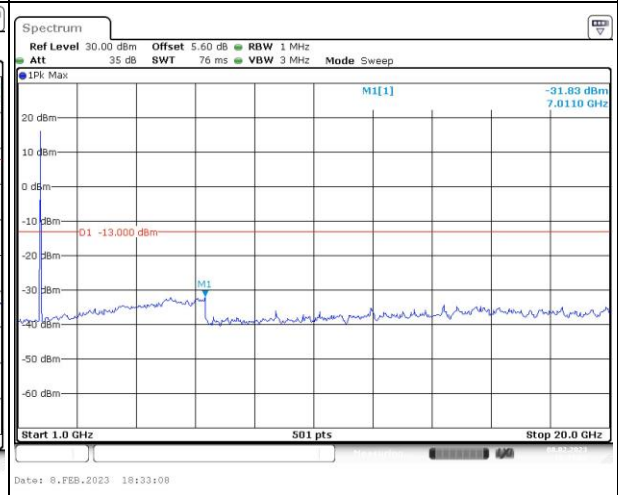
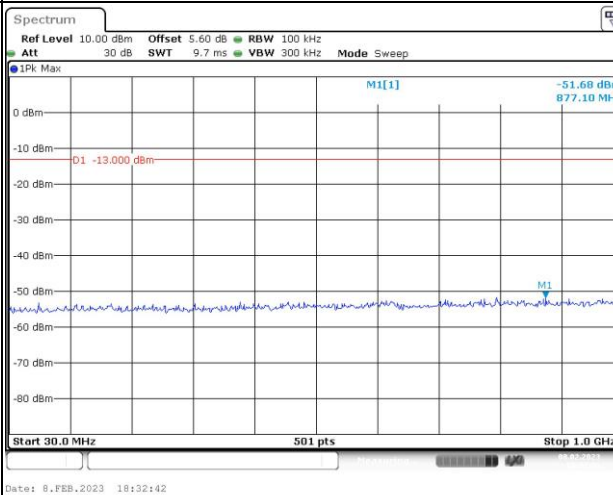
Channel

15MHz Bandwidth QPSK

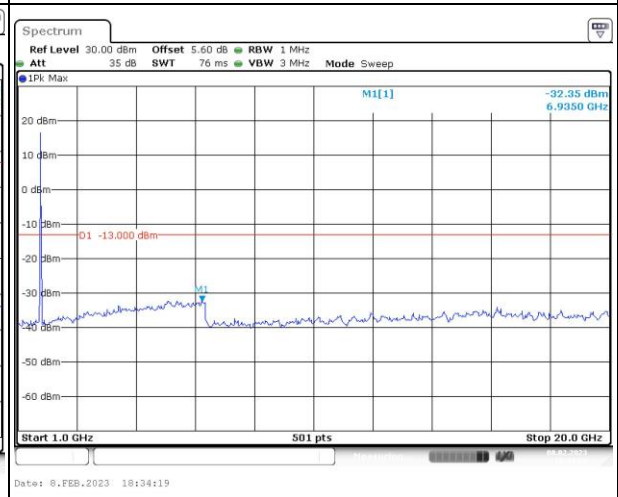
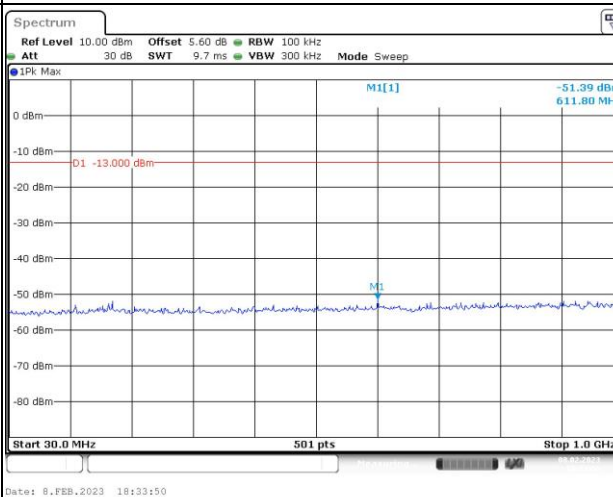
Lowest



Middle



Highest

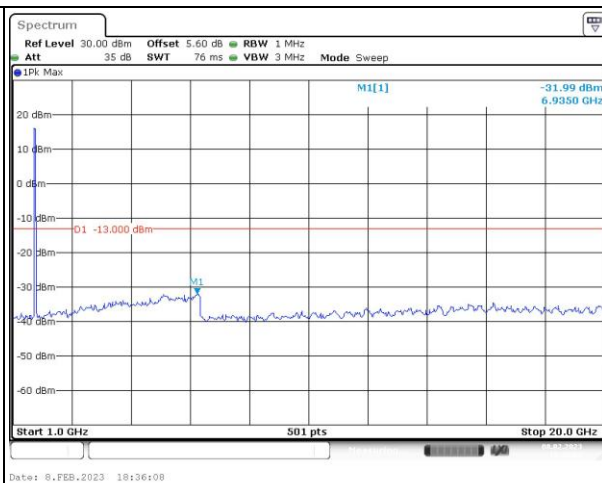
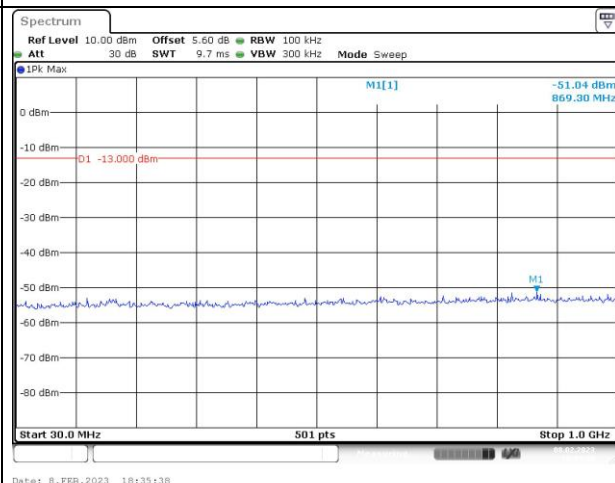


Spurious Emissions at Antenna Terminal

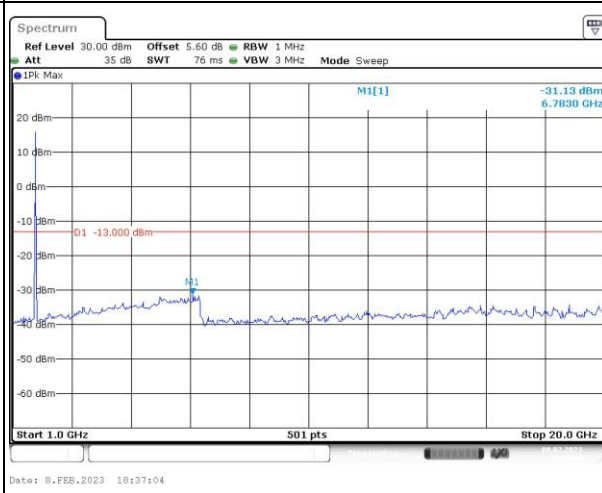
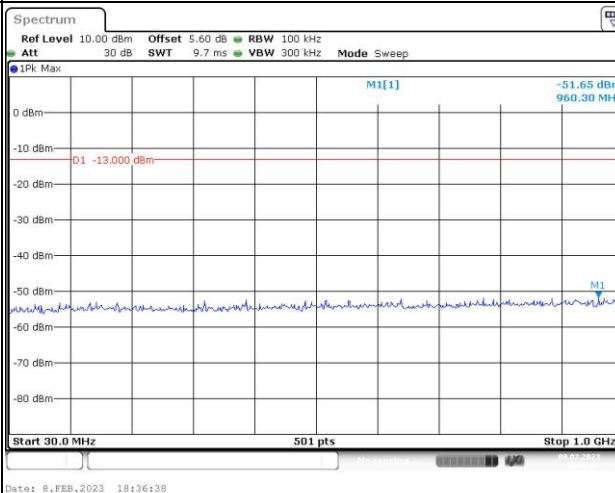
Channel

20MHz Bandwidth QPSK

Lowest



Middle



Highest

