

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	3.7	1711.043	1710.00	1754.047	1755
	-20	3.7	1711.066	1710.00	1754.098	1755
	-10	3.7	1711.037	1710.00	1754.071	1755
	0	3.7	1711.035	1710.00	1754.067	1755
	10	3.7	1711.049	1710.00	1754.051	1755
	20	3.7	1711.058	1710.00	1754.022	1755
	30	3.7	1711.012	1710.00	1754.006	1755
	40	3.7	1711.014	1710.00	1754.061	1755
	50	3.7	1711.073	1710.00	1754.004	1755
Frequency Stability vs. Voltage	20	3.3	1711.006	1710.00	1754.054	1755
	20	4.2	1711.030	1710.00	1754.000	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	3.7	1711.000	1710.00	1754.053	1755
	-20	3.7	1710.922	1710.00	1754.090	1755
	-10	3.7	1710.938	1710.00	1754.068	1755
	0	3.7	1710.911	1710.00	1754.047	1755
	10	3.7	1710.947	1710.00	1754.087	1755
	20	3.7	1710.978	1710.00	1754.022	1755
	30	3.7	1710.939	1710.00	1754.005	1755
	40	3.7	1710.935	1710.00	1754.015	1755
	50	3.7	1710.955	1710.00	1754.017	1755
Frequency Stability vs. Voltage	20	3.3	1710.914	1710.00	1754.010	1755
	20	4.2	1710.998	1710.00	1754.082	1755
					Result:	Pass

Test Plots(Note: The 7.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):

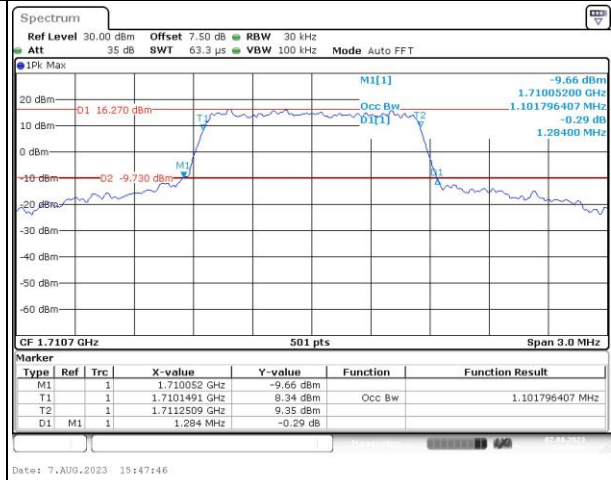
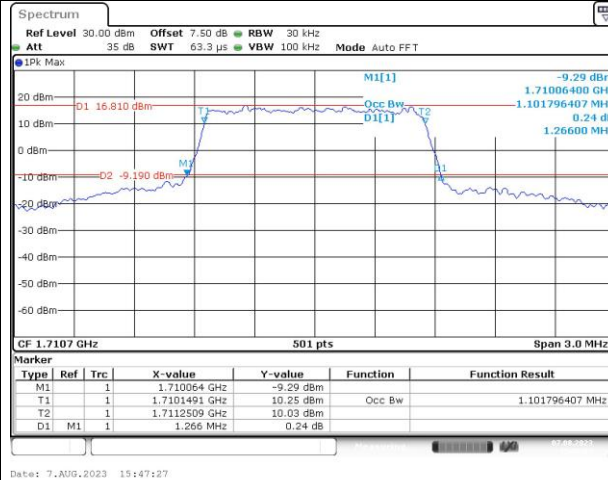
Occupied Bandwidth

Channel

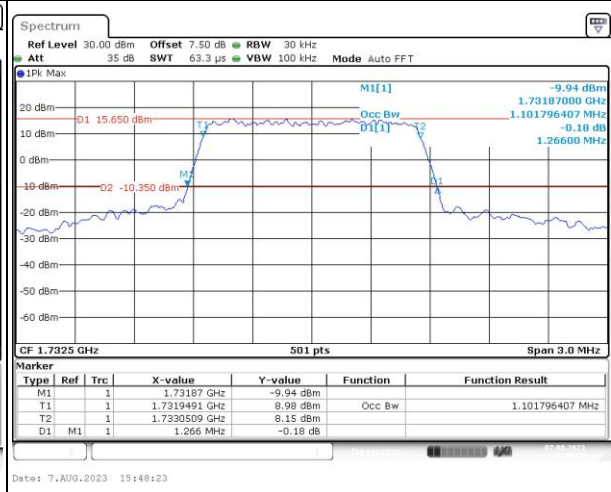
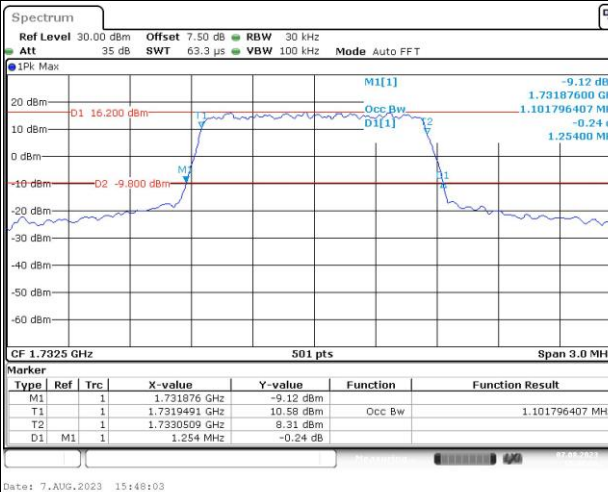
1.4MHz Bandwidth QPSK

1.4MHz Bandwidth 16QAM

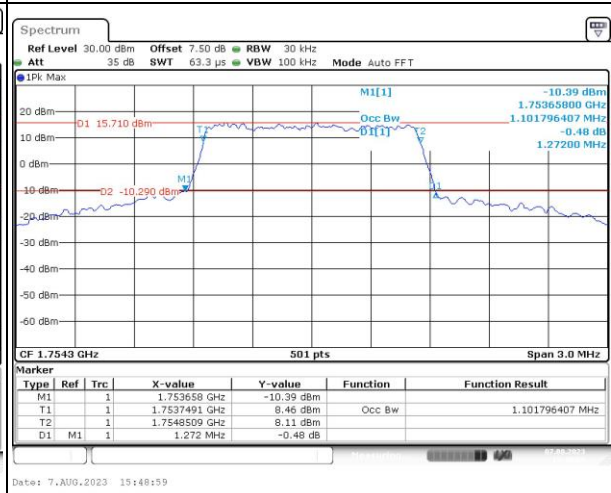
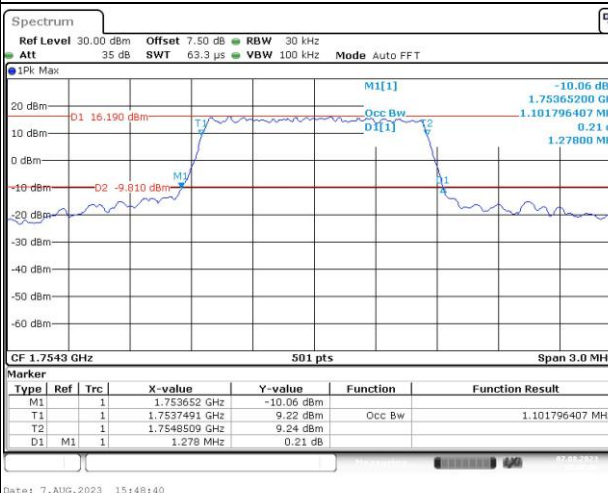
Lowest



Middle



Highest



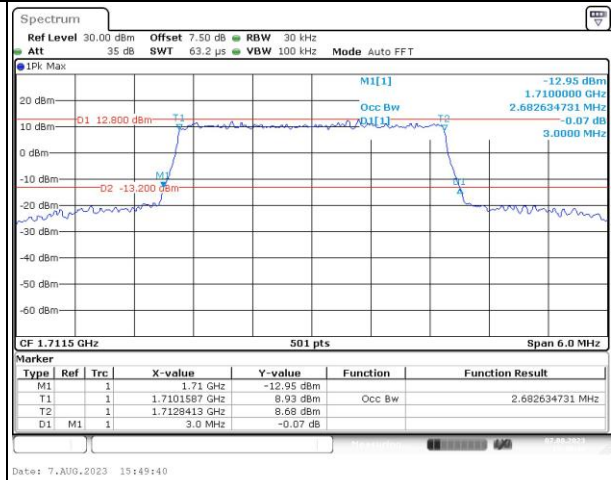
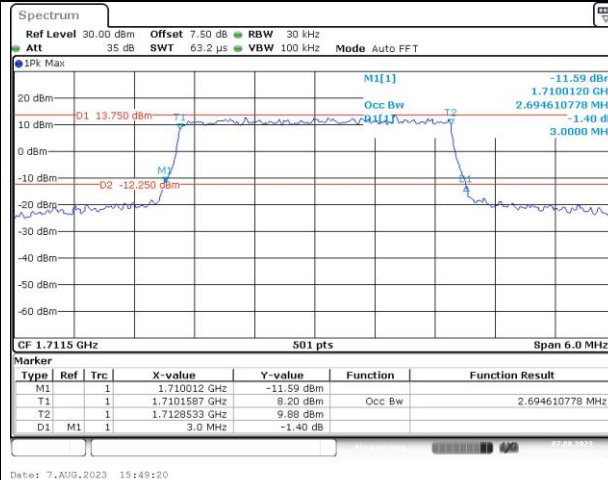
Occupied Bandwidth

Channel

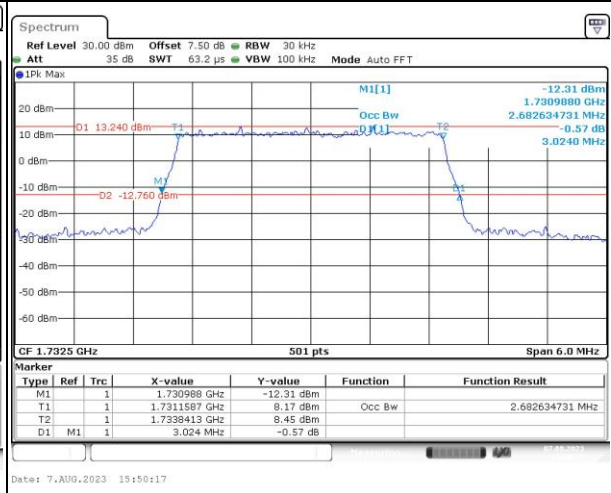
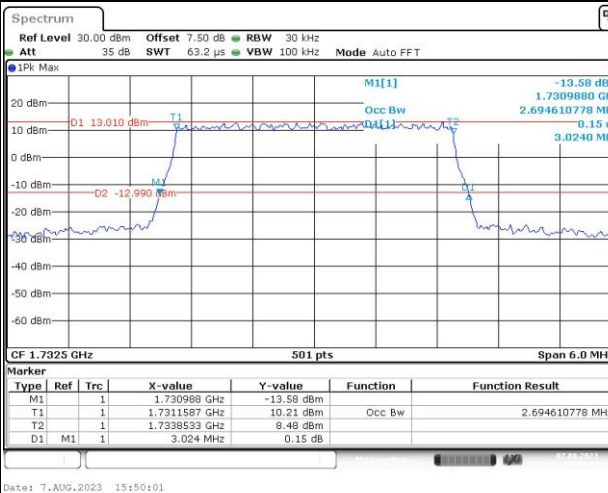
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

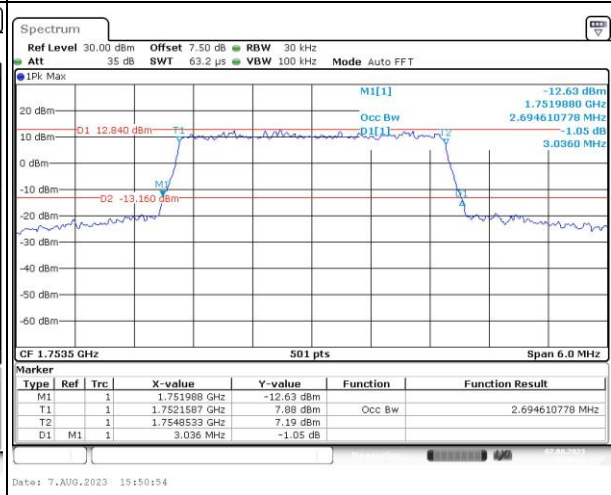
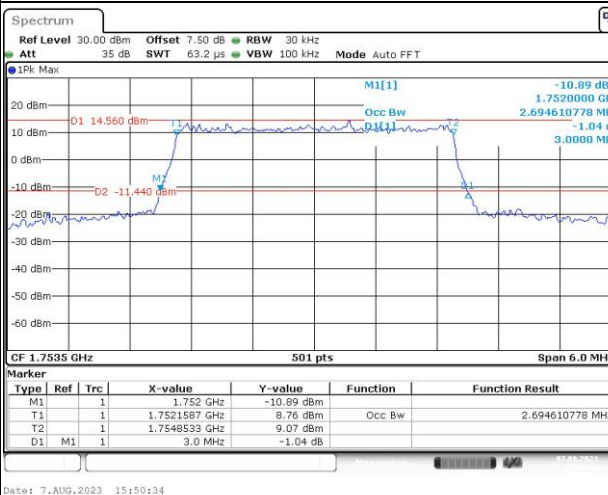
Lowest



Middle



Highest



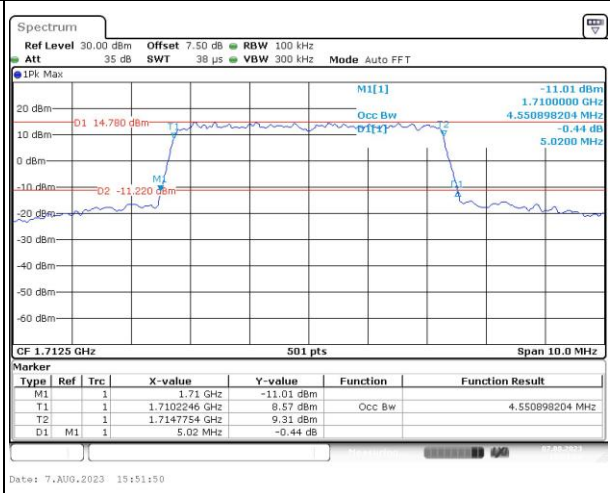
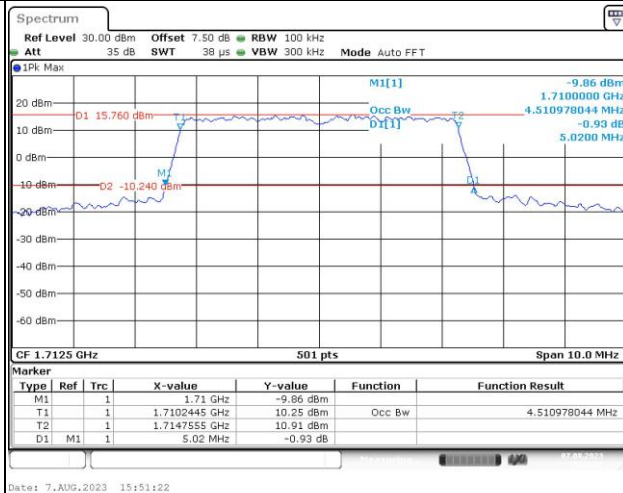
Occupied Bandwidth

Channel

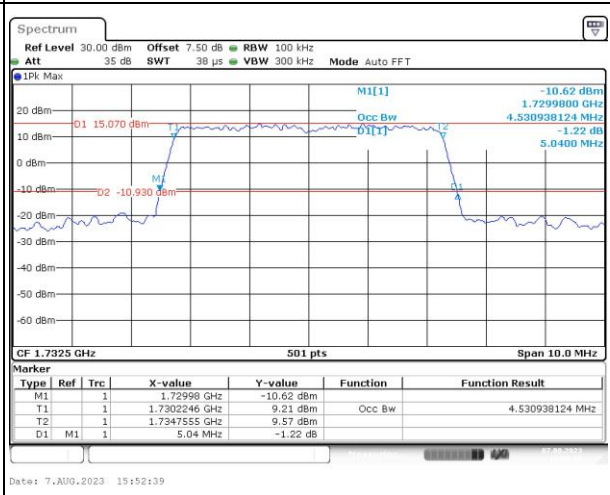
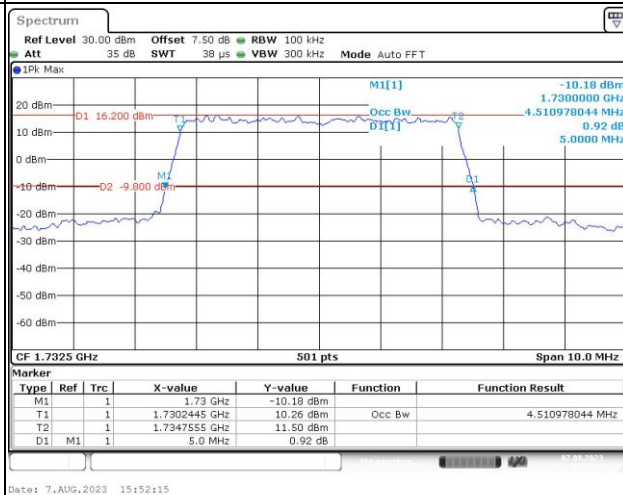
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

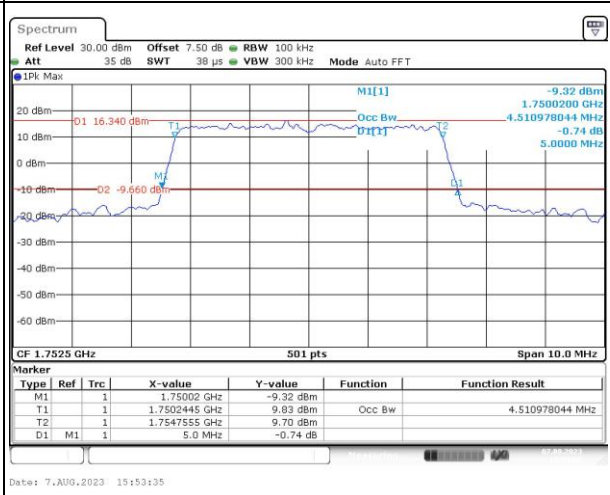
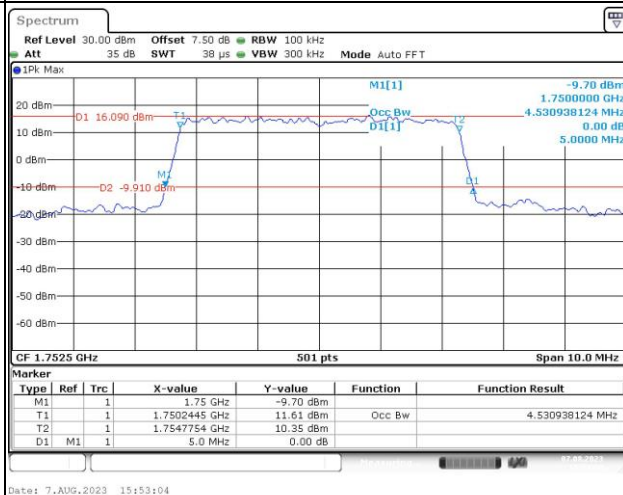
Lowest



Middle



Highest



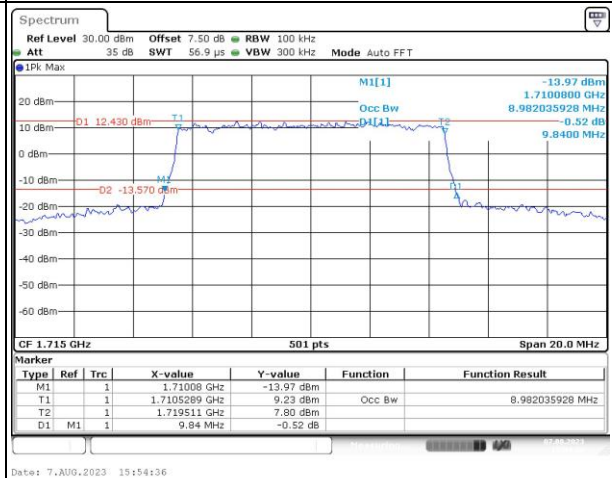
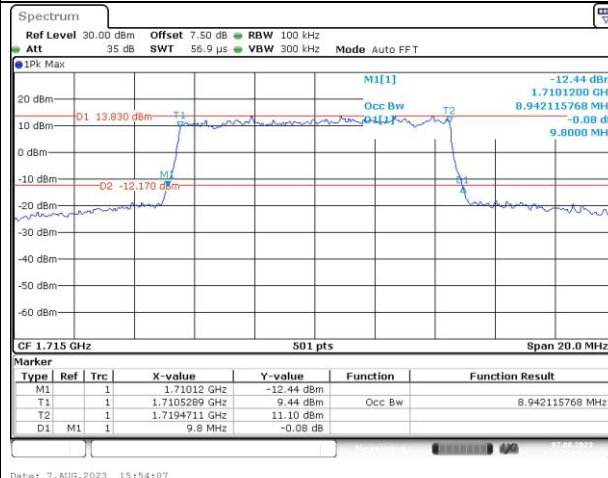
Occupied Bandwidth

Channel

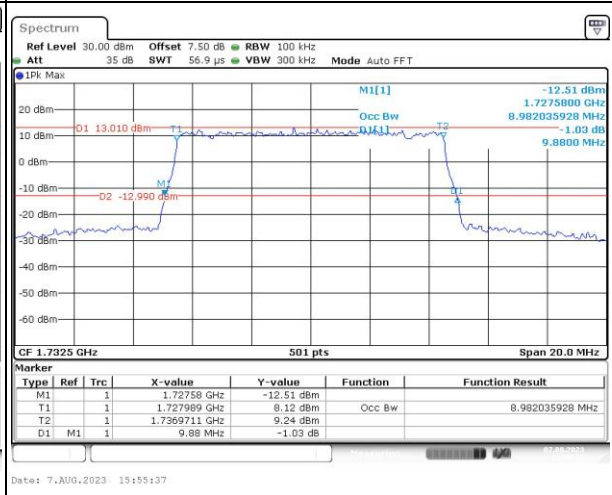
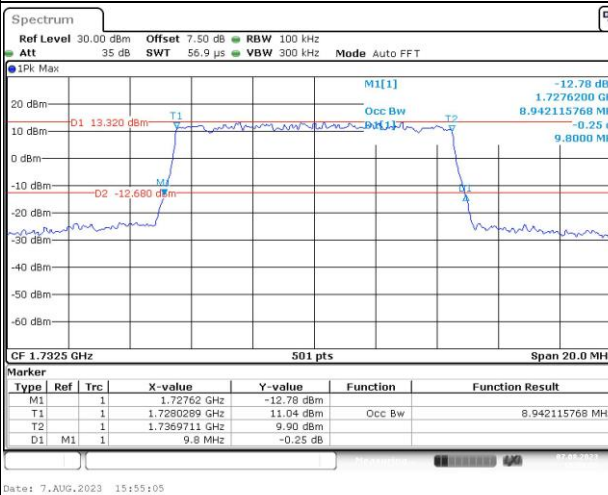
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

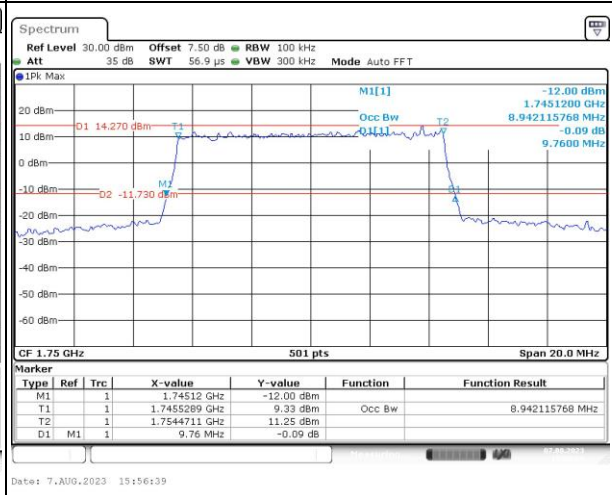
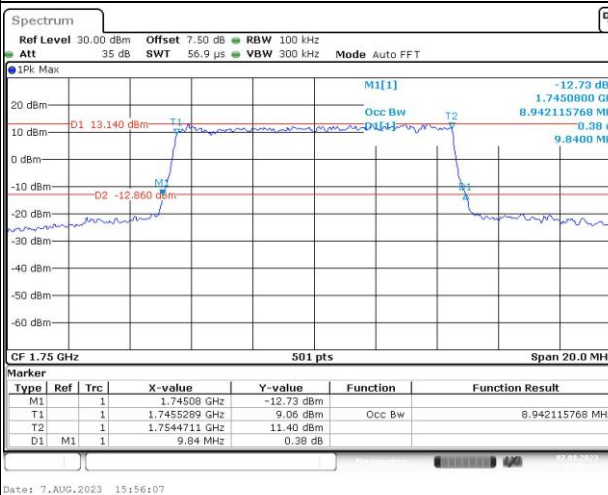
Lowest



Middle



Highest



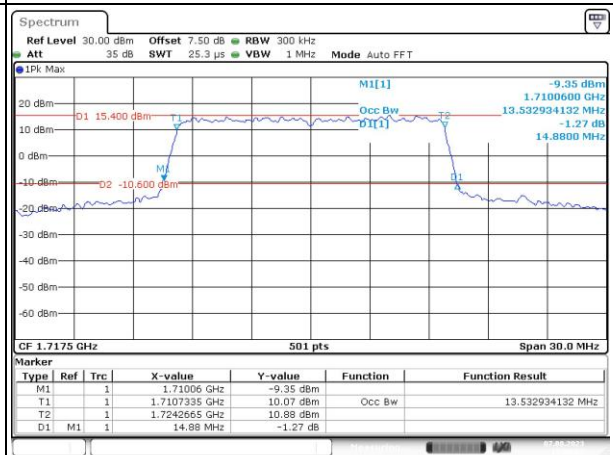
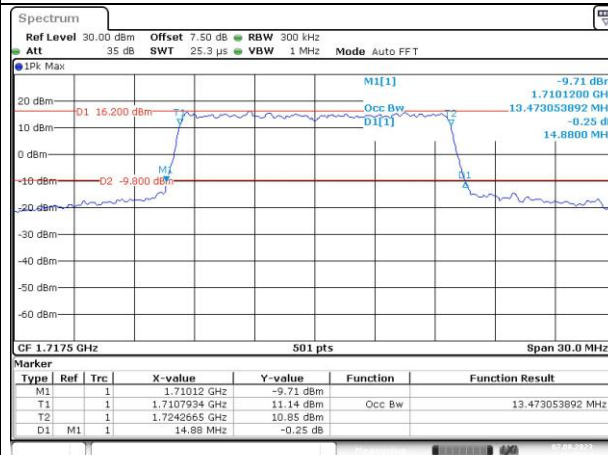
Occupied Bandwidth

Channel

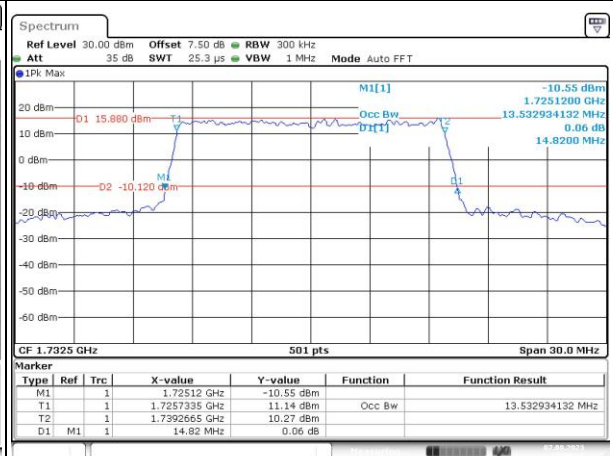
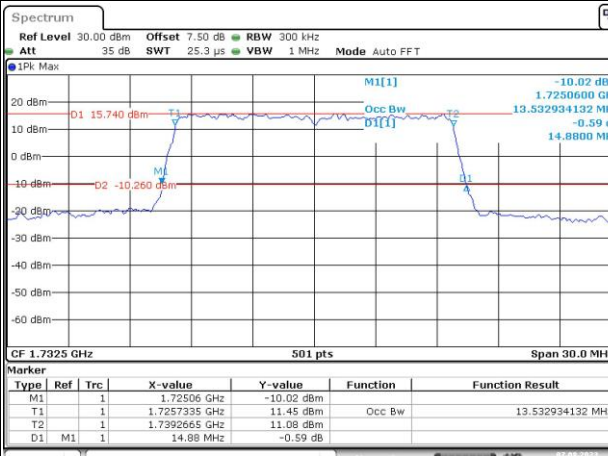
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

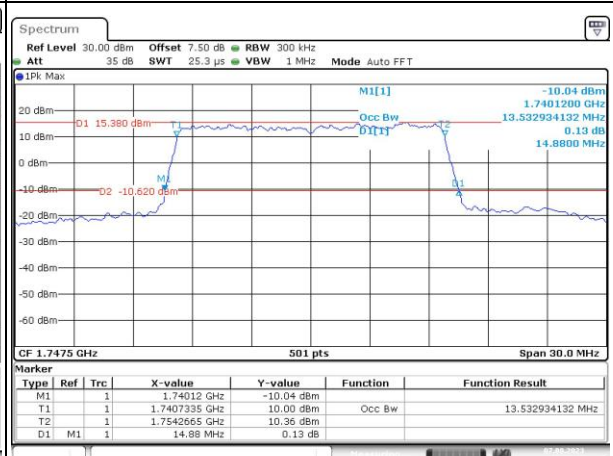
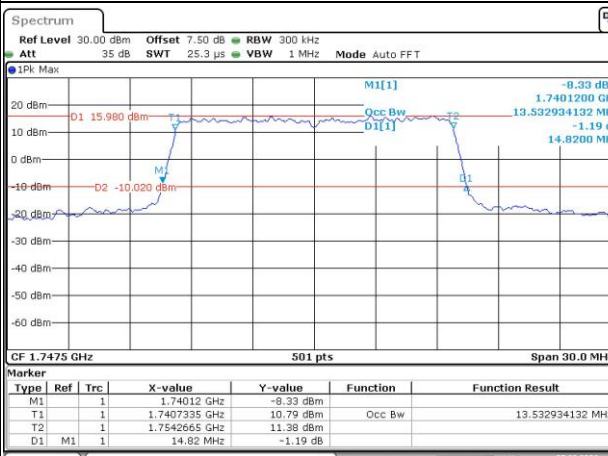
Lowest



Middle



Highest



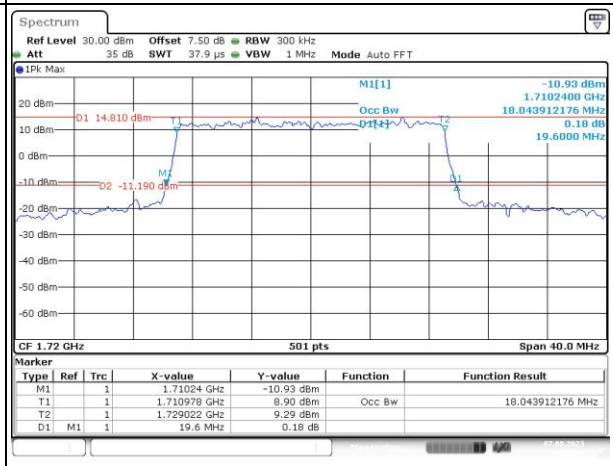
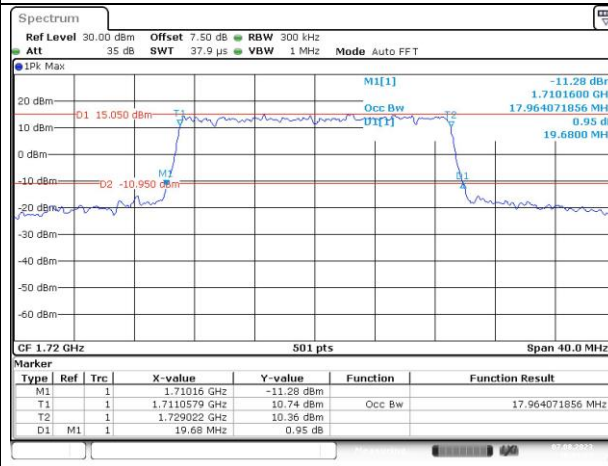
Occupied Bandwidth

Channel

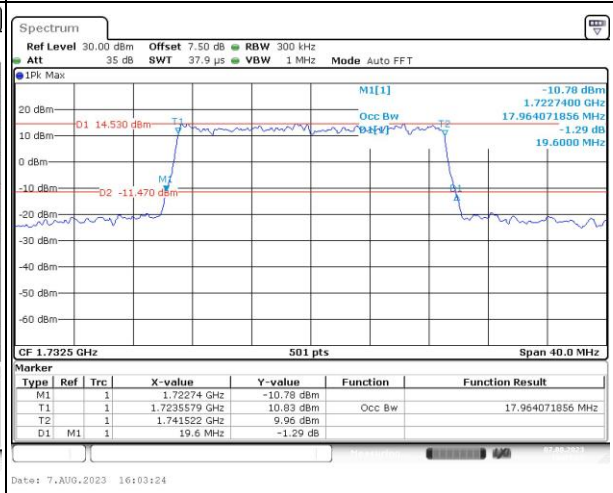
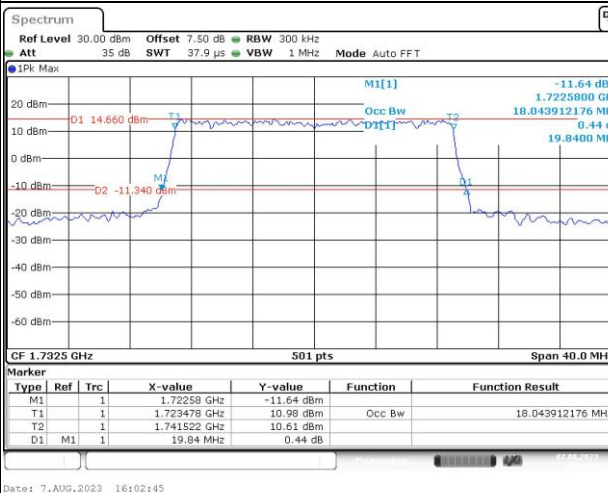
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

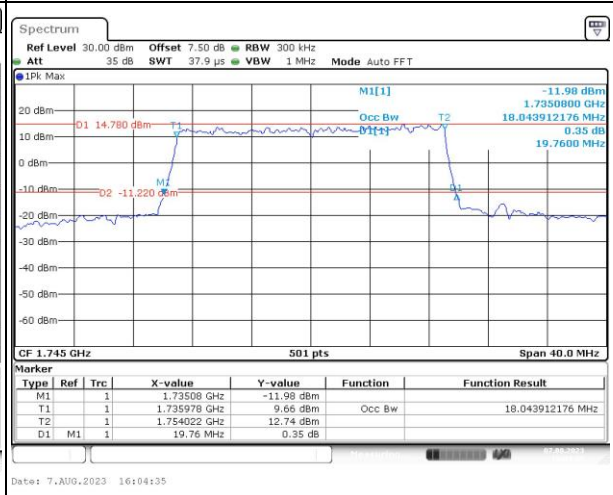
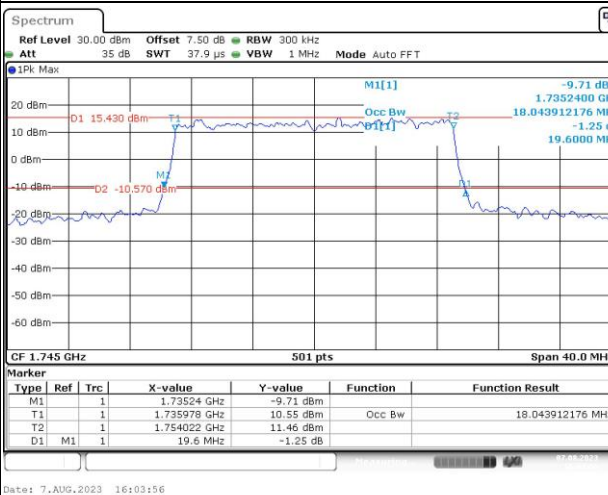
Lowest



Middle



Highest

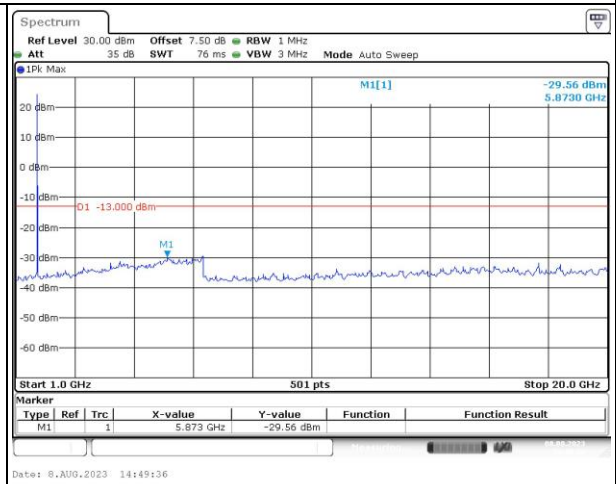
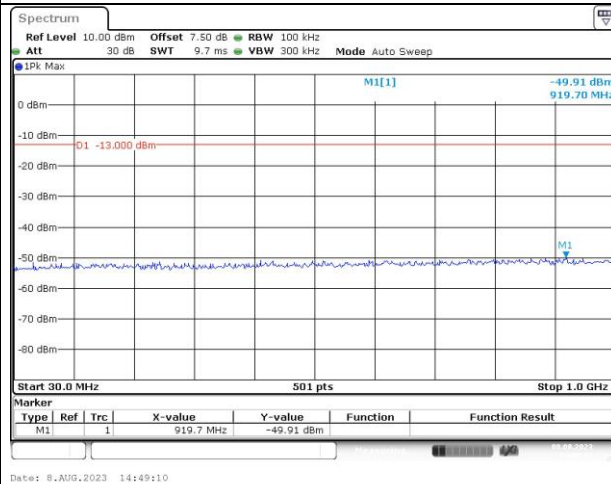


Spurious Emissions at Antenna Terminal

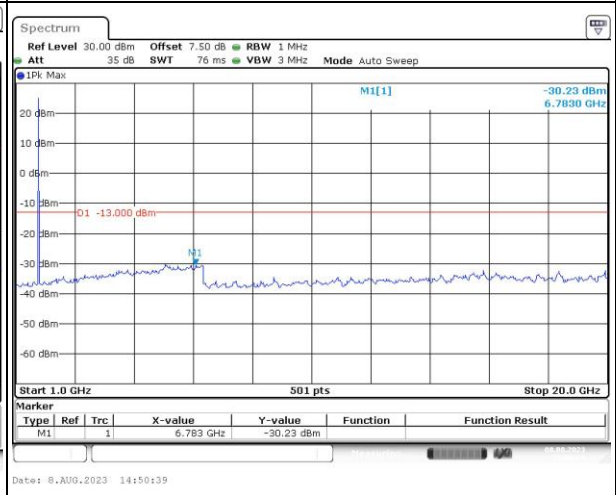
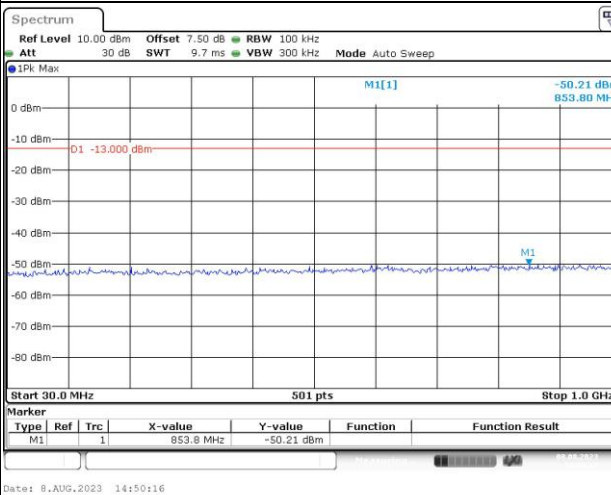
Channel

1.4MHz Bandwidth QPSK

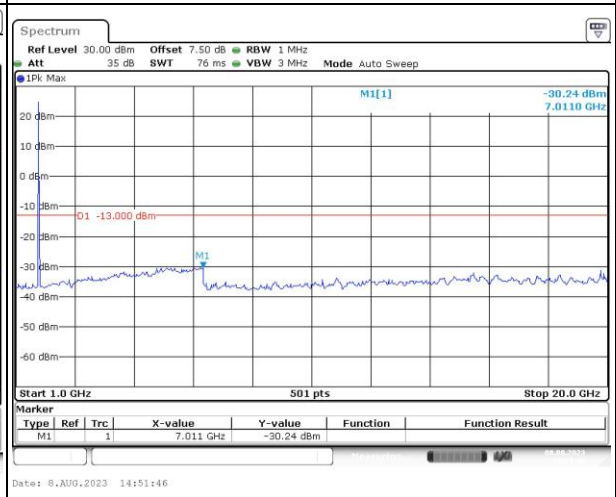
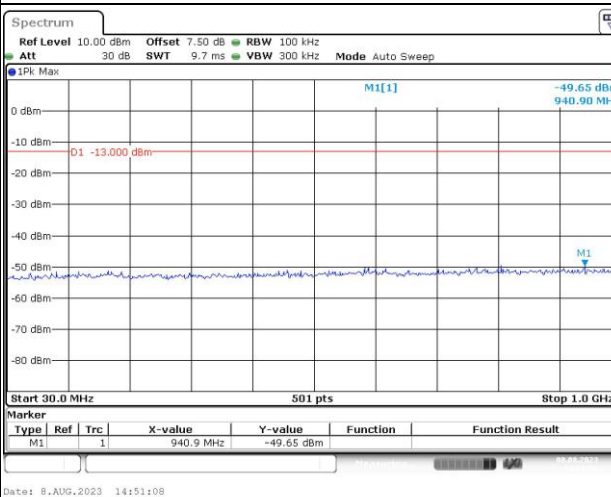
Lowest



Middle



Highest

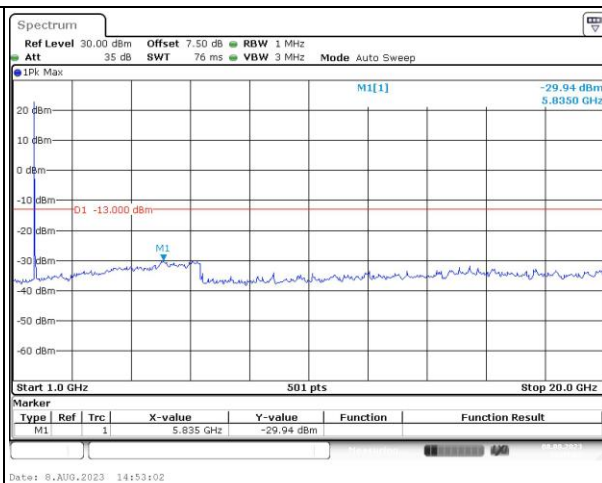
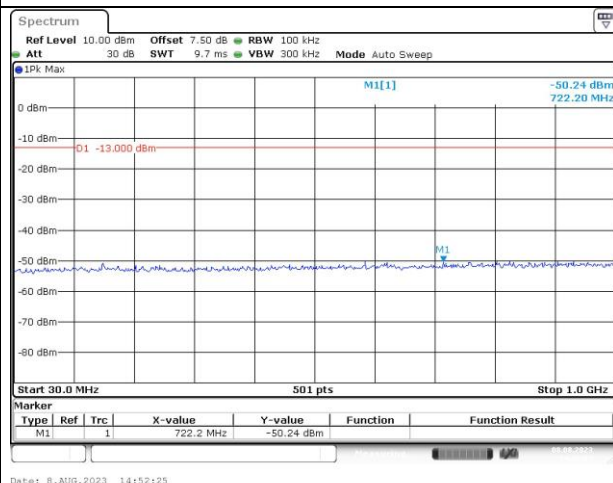


Spurious Emissions at Antenna Terminal

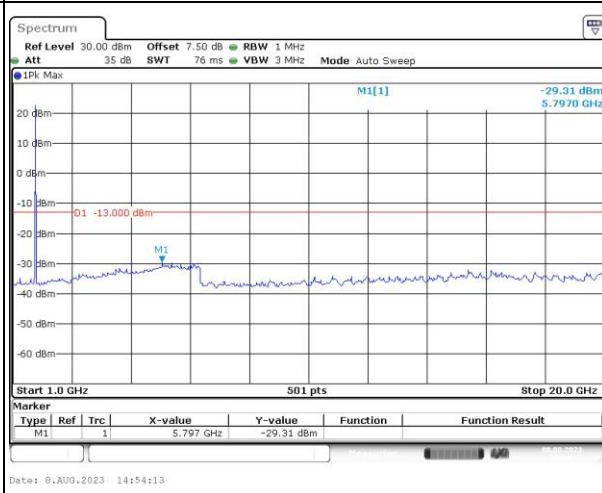
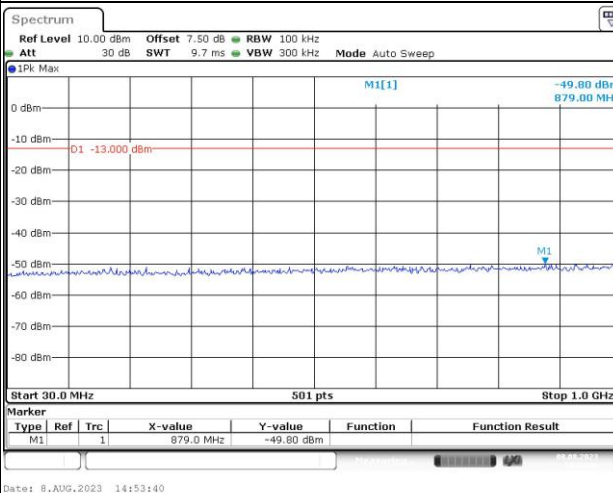
Channel

3MHz Bandwidth QPSK

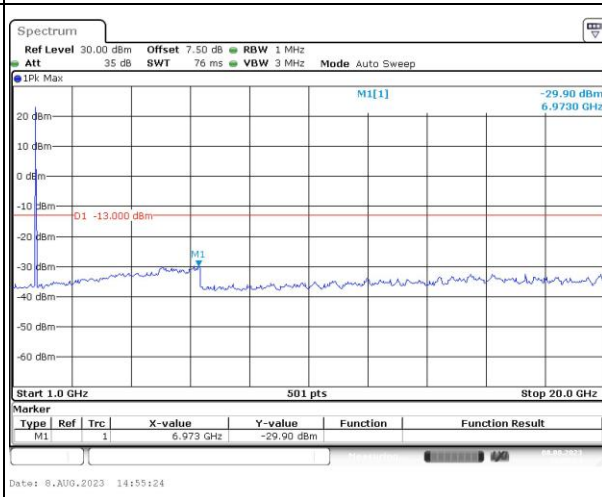
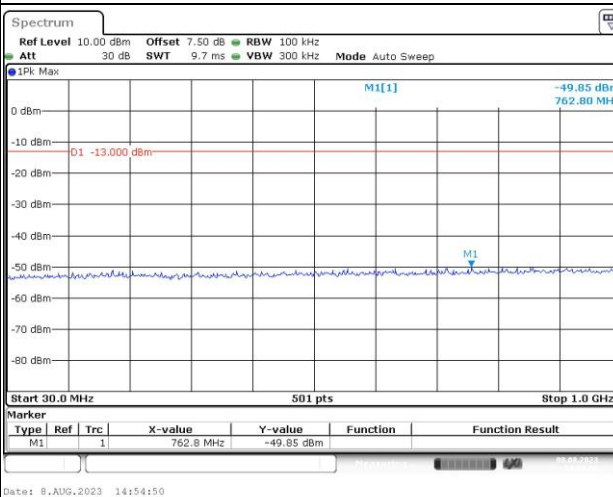
Lowest



Middle



Highest

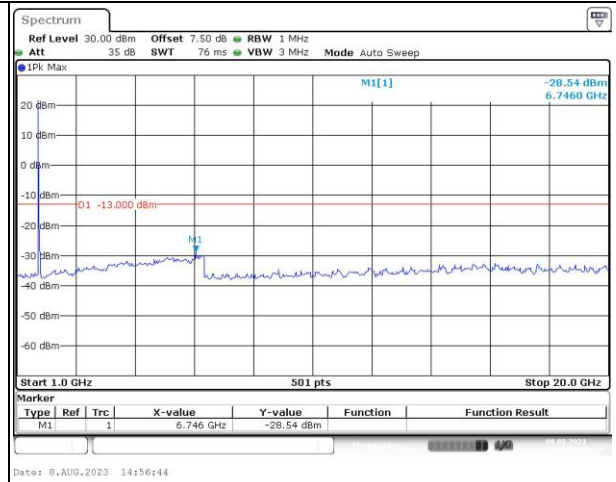
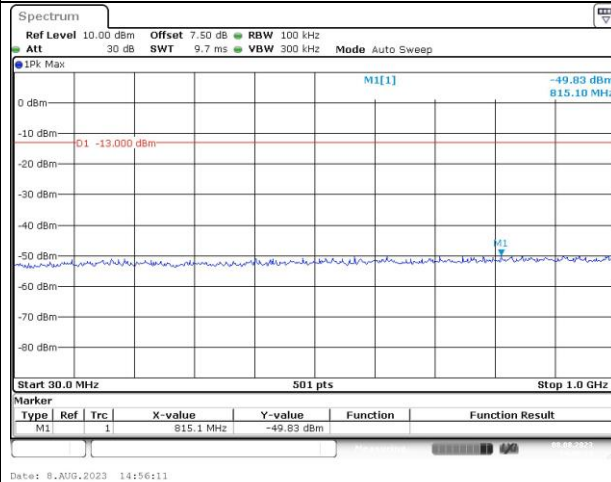


Spurious Emissions at Antenna Terminal

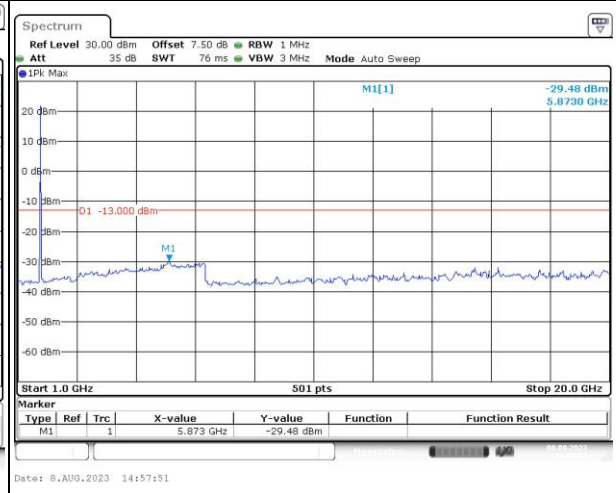
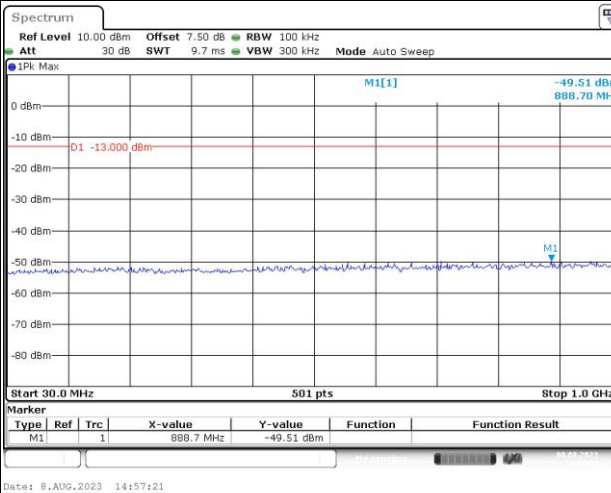
Channel

5MHz Bandwidth QPSK

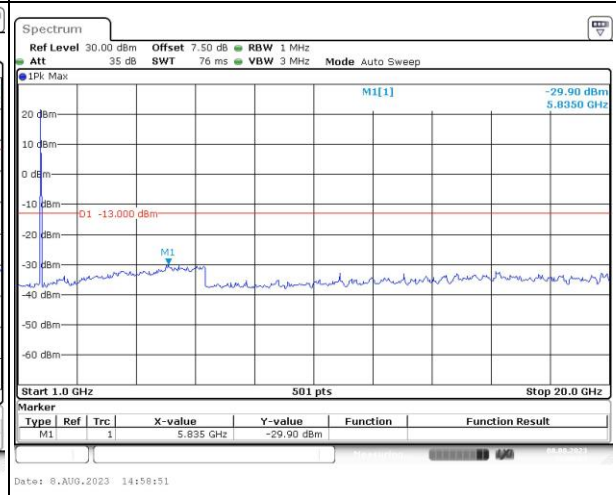
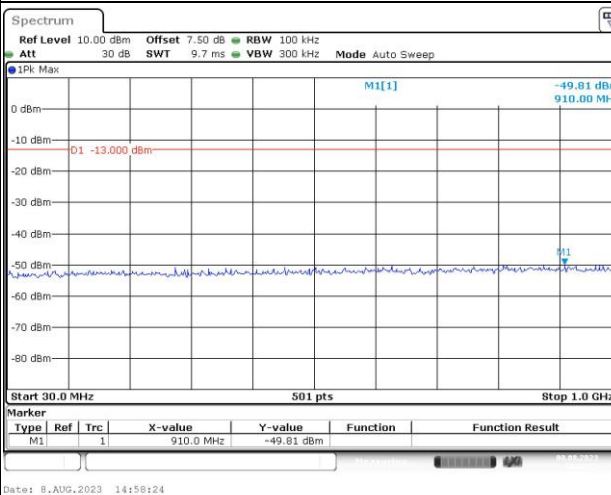
Lowest



Middle



Highest

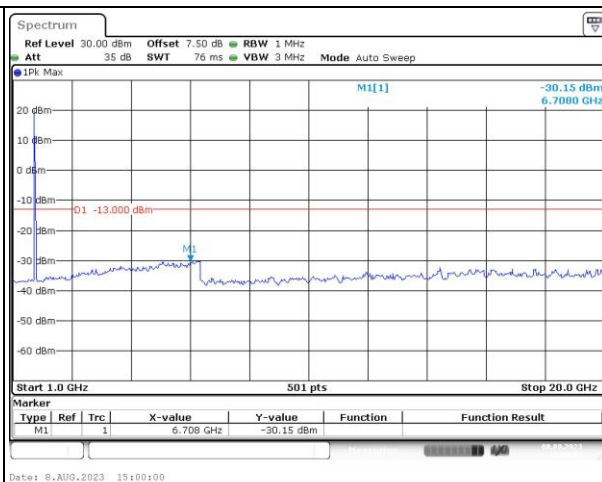
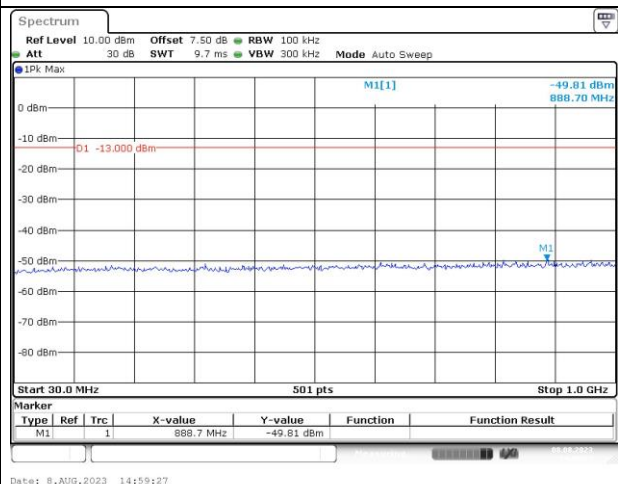


Spurious Emissions at Antenna Terminal

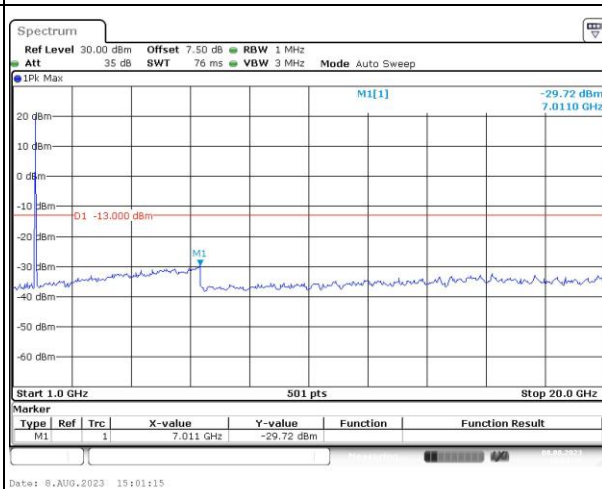
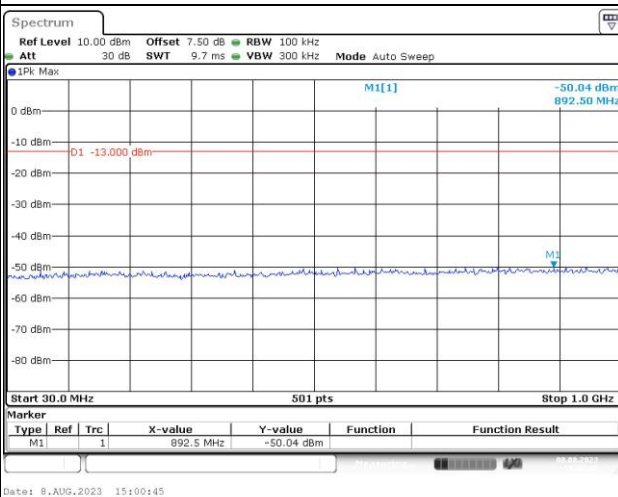
Channel

10MHz Bandwidth QPSK

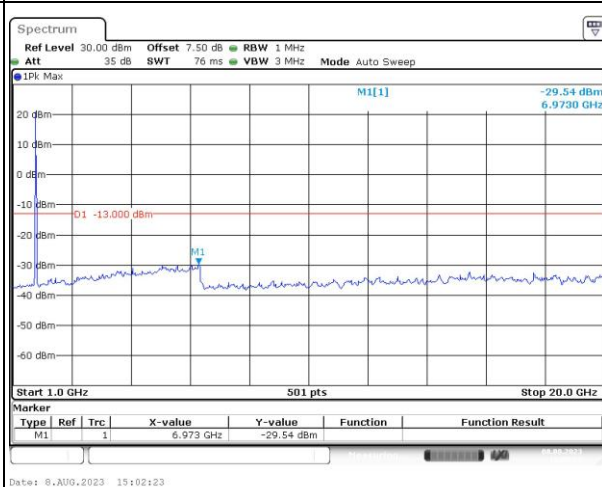
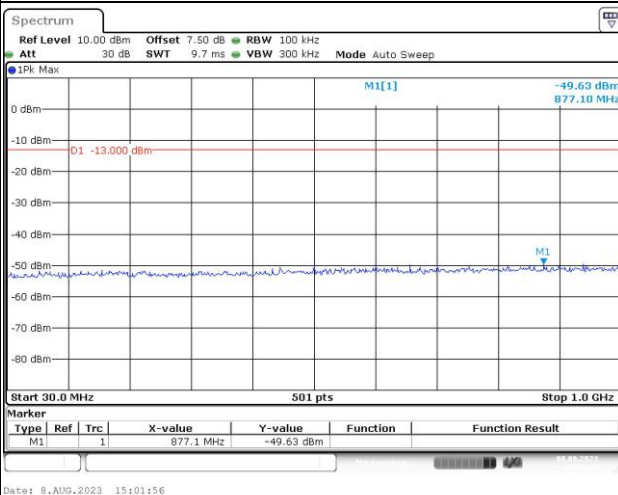
Lowest



Middle



Highest

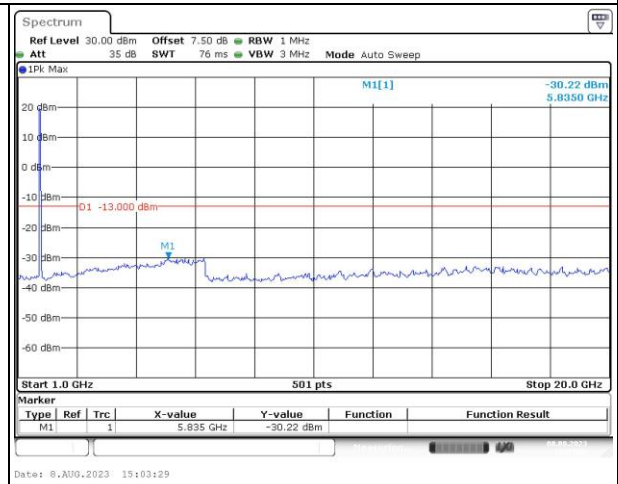
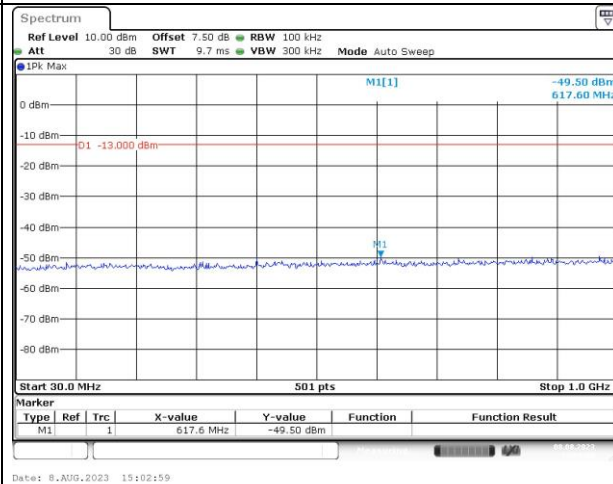


Spurious Emissions at Antenna Terminal

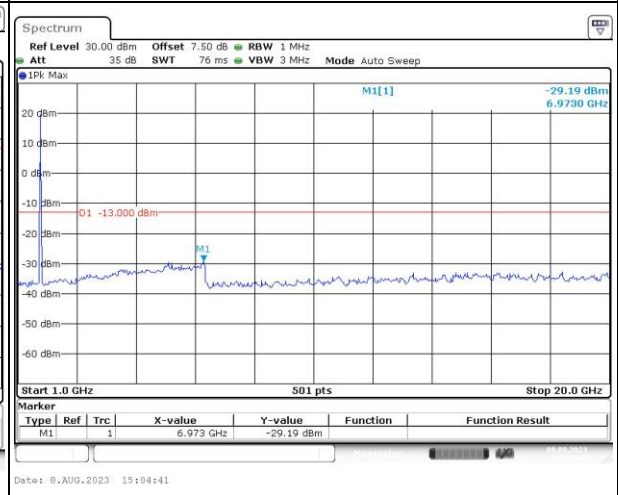
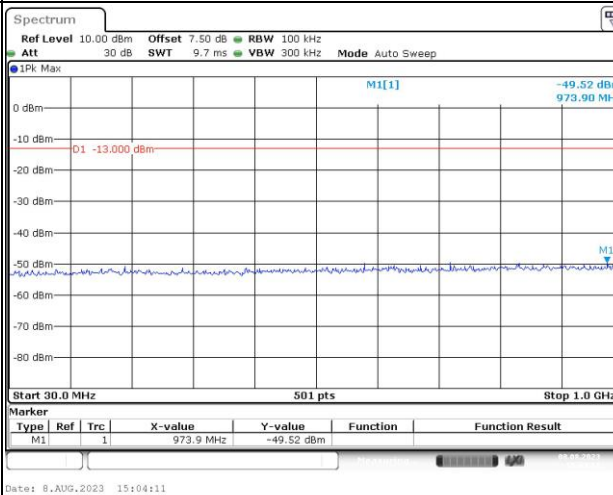
Channel

15MHz Bandwidth QPSK

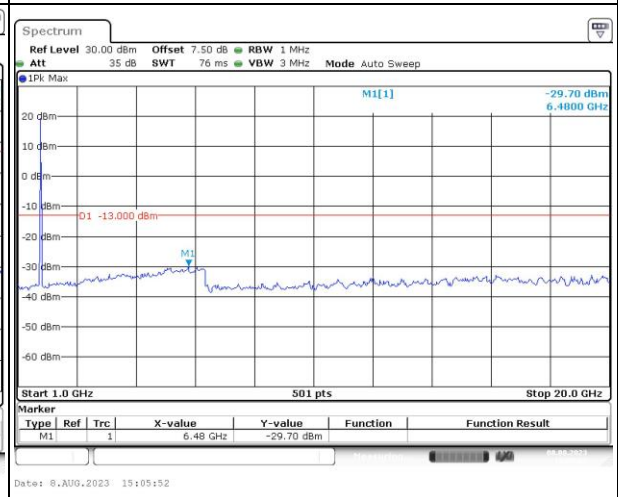
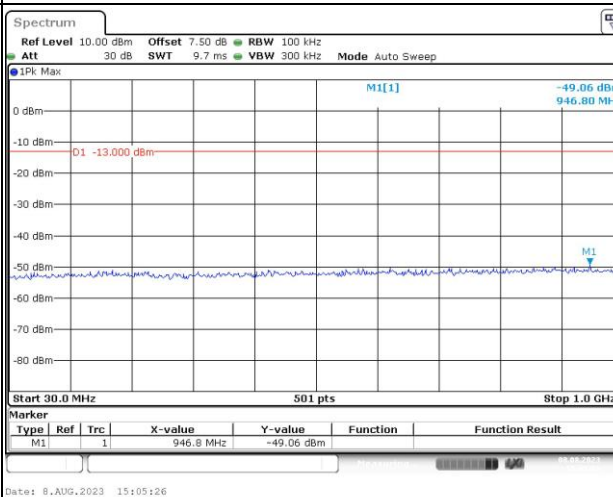
Lowest



Middle



Highest

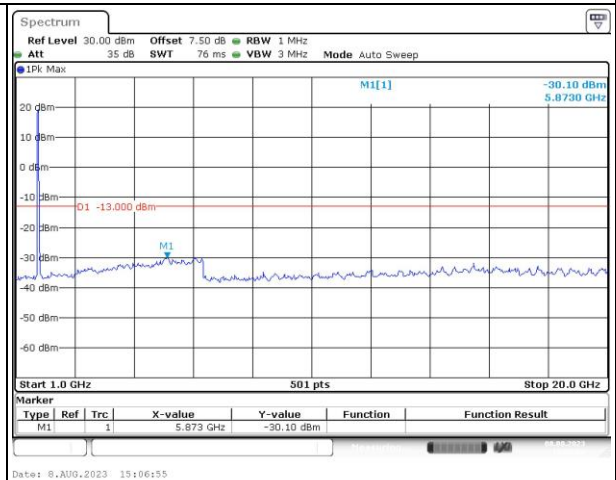
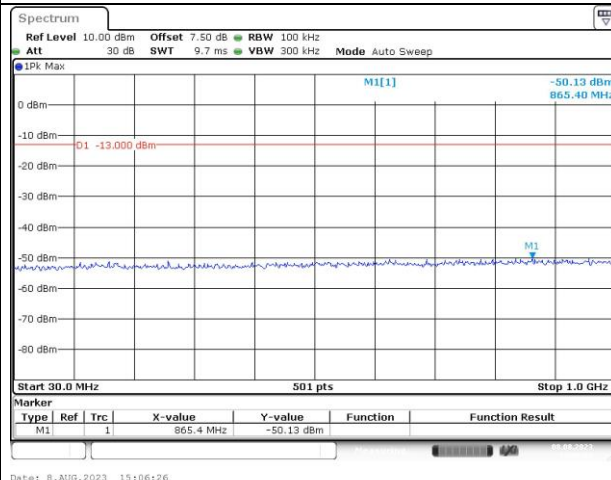


Spurious Emissions at Antenna Terminal

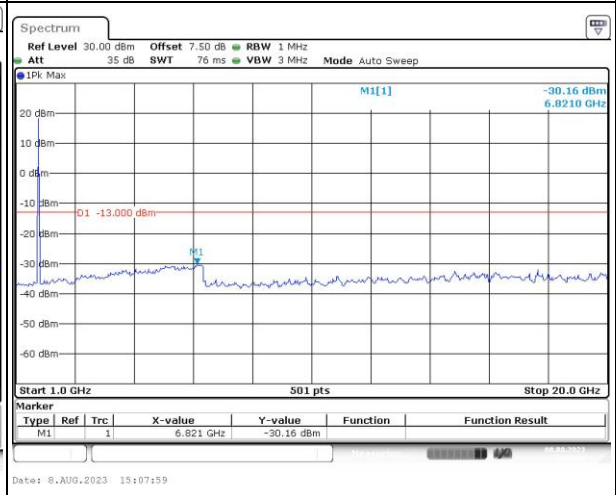
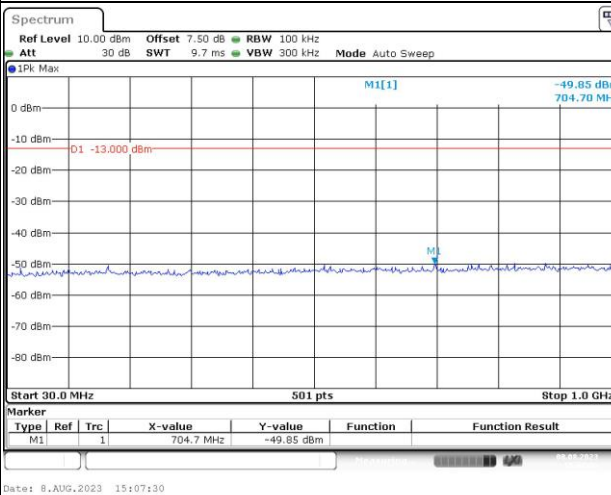
Channel

20MHz Bandwidth QPSK

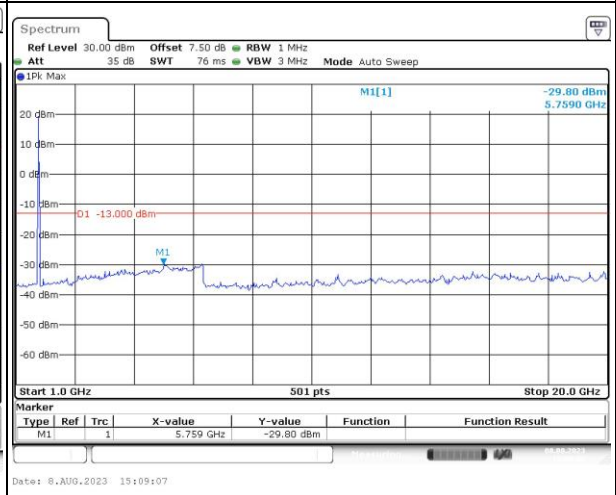
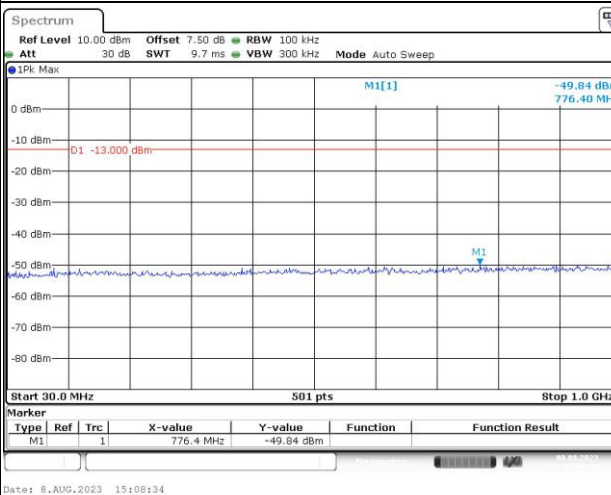
Lowest



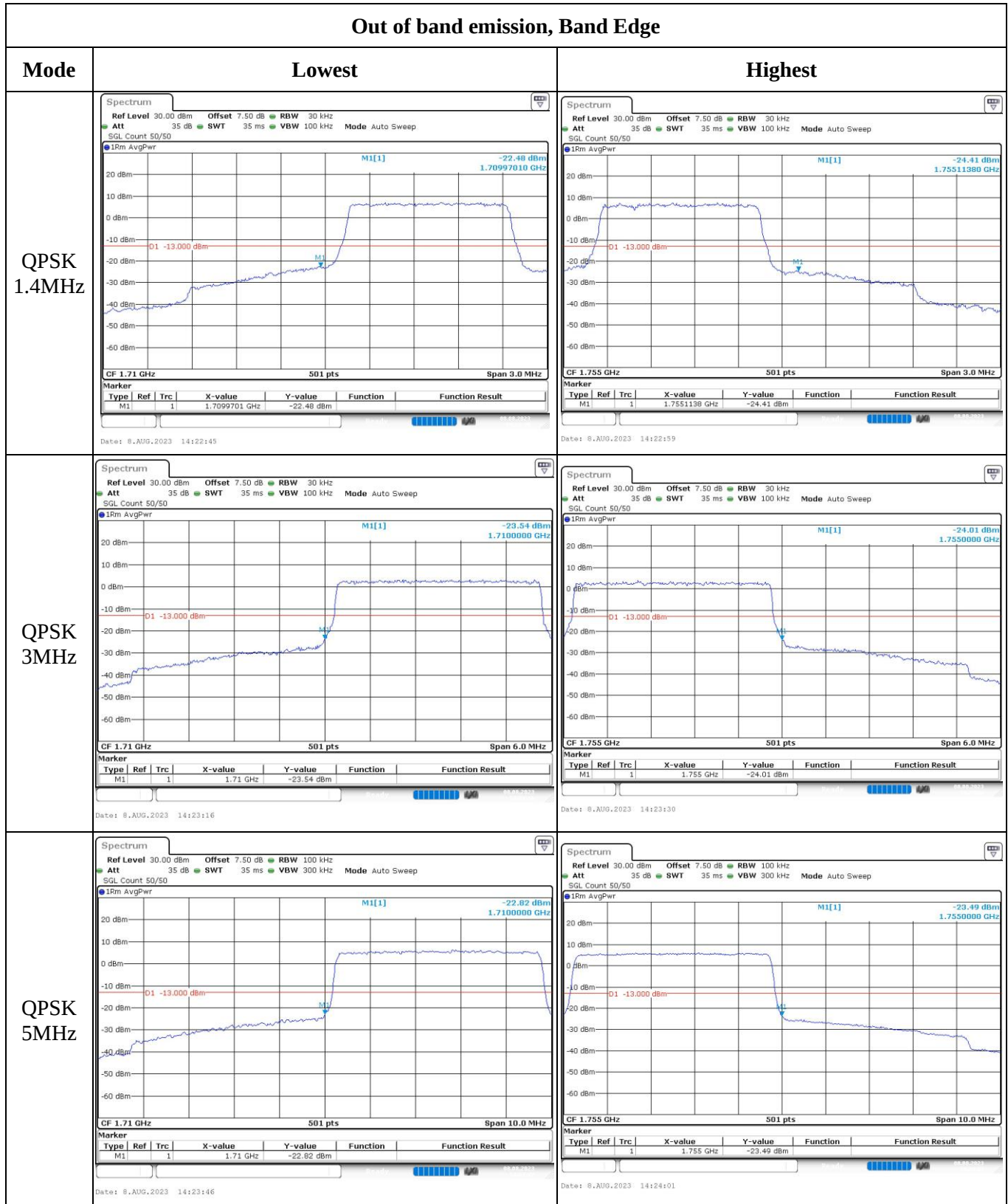
Middle



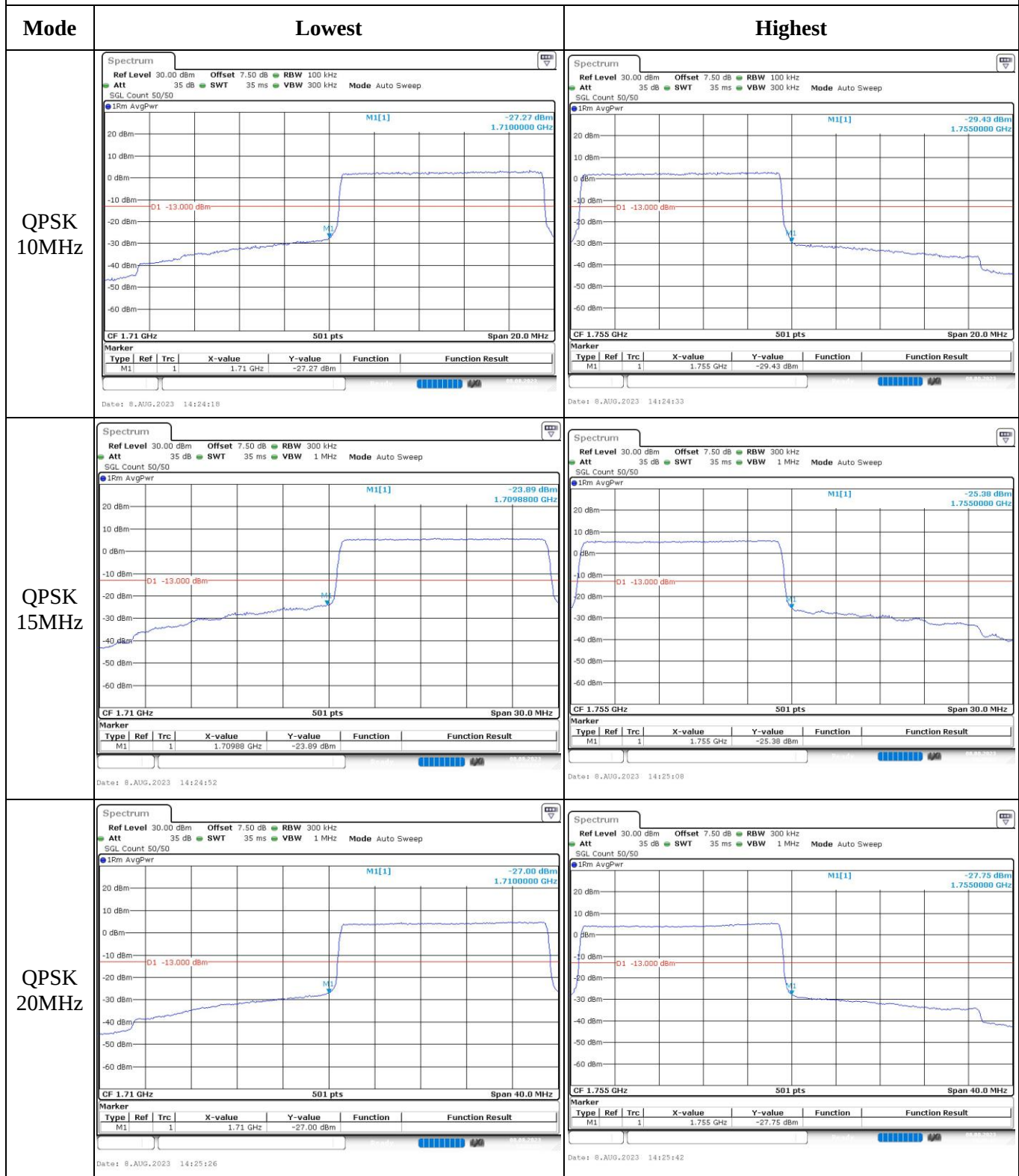
Highest



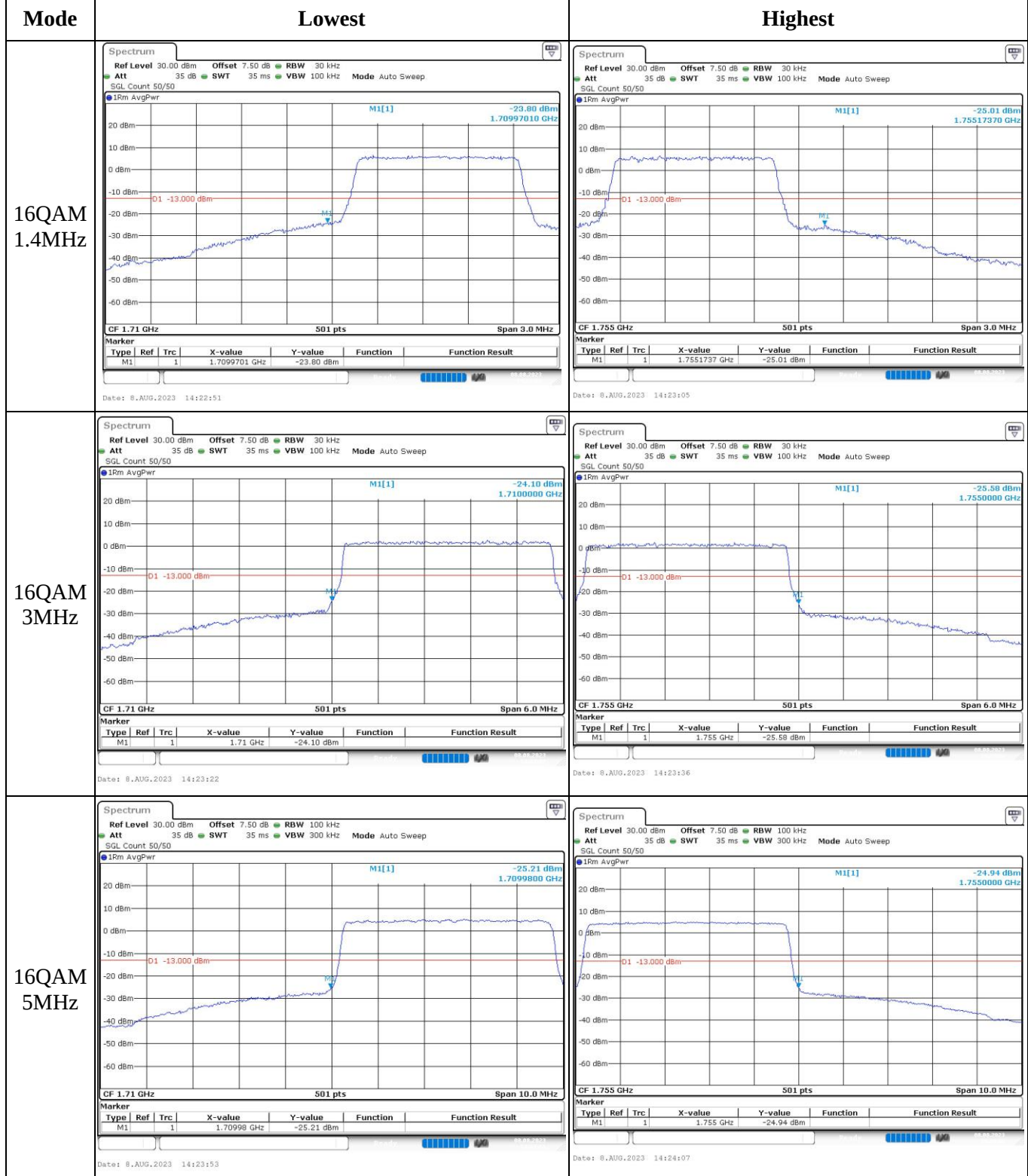
Out of band emission, Band Edge



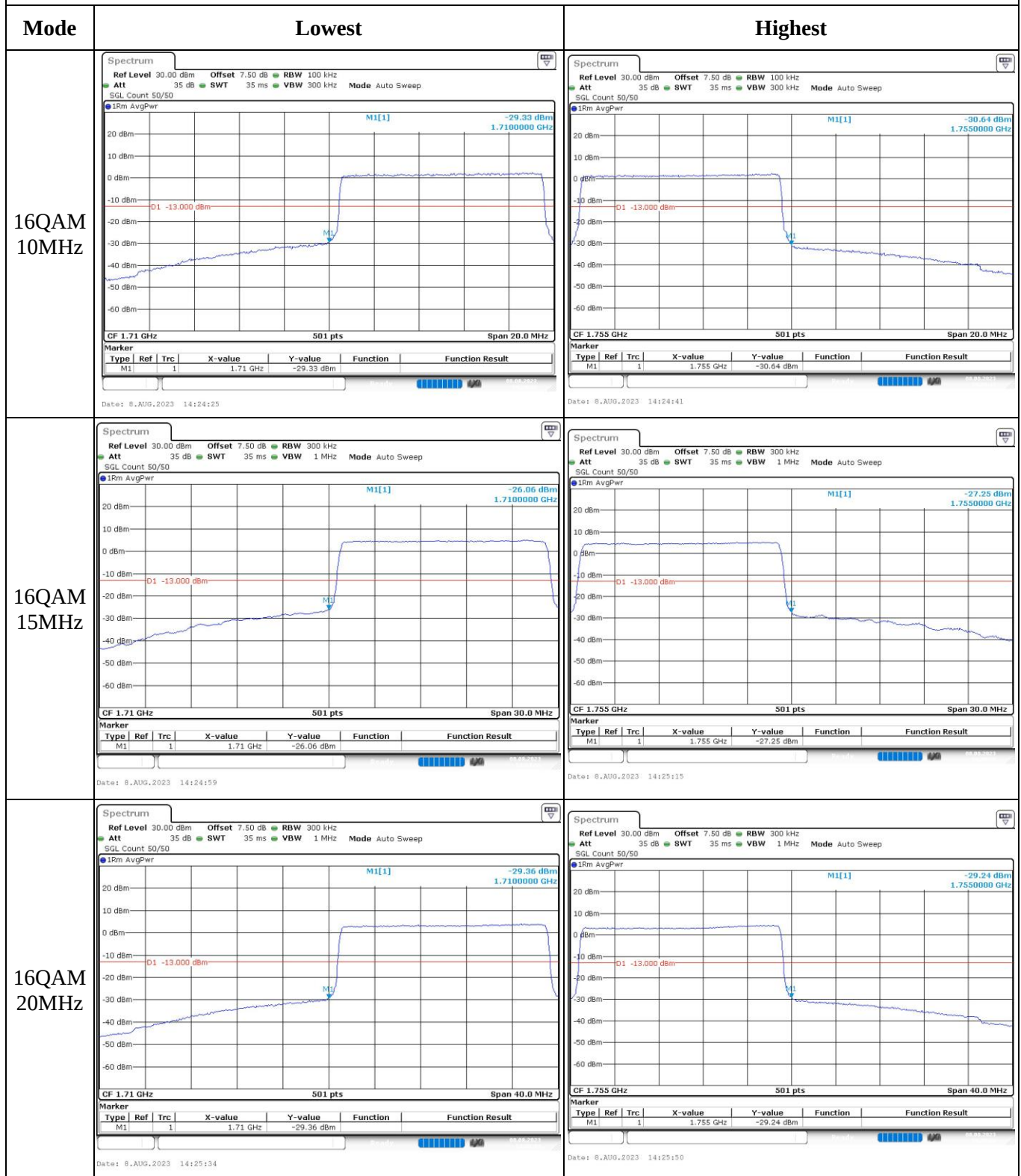
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.7 Antenna Port Test Data and Results for LTE Band 7

Serial Number:	294Q-2	Test Date:	2023/08/07~2023/08/08
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.2~26.5	Relative Humidity: (%)	42~58	ATM Pressure: (kPa)	99.7~102.2
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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	2023/7/15	2024/7/14
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	2023/7/15	2024/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/9/29	2023/9/28
UNI-T	Multimeter	UT39A+	C210582554	2023/7/15	2024/7/14
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)
5MHz	2502.5	2535	2567.5
10MHz	2505	2535	2565
15MHz	2507.5	2535	2562.5
20MHz	2510	2535	2560

Test Data:**FCC §2.1046; § 27.50(h)(2)****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		
5MHz QPSK	RB1#0	23.09	23.04	22.96	21.61	33
	RB1#13	23.11	22.98	22.95		
	RB1#24	23.05	23.07	22.93		
	RB15#0	22	22.09	21.96		
	RB15#10	21.89	22.07	22.01		
	RB25#0	21.89	22.06	22.04		
5MHz 16QAM	RB1#0	22.08	21.72	21.26	20.58	33
	RB1#13	22.04	21.63	21.35		
	RB1#24	22.06	21.64	21.26		
	RB15#0	21.04	21.22	21.15		
	RB15#10	21	21.17	21.09		
	RB25#0	21.17	21	21.22		
10MHz QPSK	RB1#0	23.04	22.91	23	21.58	33
	RB1#25	23.03	23.01	22.94		
	RB1#49	23.08	23.05	22.98		
	RB25#0	21.89	22.17	22.06		
	RB25#25	21.94	22.1	21.95		
	RB50#0	22.05	22.05	22.06		
10MHz 16QAM	RB1#0	22.1	21.57	22.32	20.82	33
	RB1#25	22.05	21.61	22.24		
	RB1#49	22.13	21.59	22.2		
	RB25#0	21.18	21.34	21.09		
	RB25#25	21.22	21.34	21.09		
	RB50#0	21.14	21.17	21.13		
15MHz QPSK	RB1#0	23	23.09	22.97	21.6	33
	RB1#38	23.03	23.08	22.96		
	RB1#74	23.1	23.08	22.8		
	RB36#0	22.02	22.06	22.11		
	RB36#39	22.13	22.07	22.05		
	RB75#0	22.03	22.11	22.03		
15MHz 16QAM	RB1#0	22.3	22.54	22.3	21.04	33
	RB1#38	22.18	22.51	22.26		
	RB1#74	22.29	22.53	22.26		
	RB36#0	21.14	21.13	21.32		
	RB36#39	21.24	21.25	21.28		
	RB75#0	21.14	21.2	21.25		
20MHz QPSK	RB1#0	23.2	22.99	23.09	21.73	33
	RB1#50	23.17	23.05	23.08		
	RB1#99	23.23	23.06	23.03		

20MHz 16QAM	RB50#0	21.94	22.12	22.12	21.47	33
	RB50#50	22.06	22.1	22.01		
	RB100#0	22.05	22.03	22.06		
	RB1#0	22.23	22.86	22.11		
	RB1#50	22.24	22.92	22.04		
	RB1#99	22.26	22.97	22.04		
	RB50#0	21.06	21.16	21.33		
	RB50#50	21.1	21.2	21.16		
	RB100#0	21.06	21.28	21.21		

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	3.94	3.62	4.23	13
	RB100#0	3.91	3.94	3.77	13
20MHz 16QAM	RB1#0	4.96	4.32	5.25	13
	RB100#0	5.68	5.59	5.51	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
5MHz QPSK	4.511	4.511	4.551	5.02	5	5.02
5MHz 16QAM	4.551	4.551	4.531	5.02	5.04	5.02
10MHz QPSK	8.942	8.942	8.982	9.76	9.8	10.44
10MHz 16QAM	8.982	8.942	8.982	9.84	9.84	10.72
15MHz QPSK	13.473	13.473	13.533	14.76	14.82	14.82
15MHz 16QAM	13.533	13.533	13.533	14.82	14.82	14.76
20MHz QPSK	17.964	18.044	18.044	19.52	20.96	19.6
20MHz 16QAM	17.964	18.044	18.044	19.84	19.84	19.84

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.
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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.
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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	3.7	2501.076	2500.00	2569.057	2570
	-20	3.7	2501.053	2500.00	2569.018	2570
	-10	3.7	2501.001	2500.00	2569.046	2570
	0	3.7	2501.076	2500.00	2569.047	2570
	10	3.7	2501.029	2500.00	2569.014	2570
	20	3.7	2501.058	2500.00	2569.022	2570
	30	3.7	2501.065	2500.00	2569.012	2570
	40	3.7	2501.026	2500.00	2569.064	2570
	50	3.7	2501.100	2500.00	2569.031	2570
Frequency Stability vs. Voltage	20	3.3	2501.037	2500.00	2569.092	2570
	20	4.2	2501.049	2500.00	2569.043	2570
					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	3.7	2501.011	2500.00	2569.040	2570
	-20	3.7	2501.092	2500.00	2569.008	2570
	-10	3.7	2501.090	2500.00	2569.085	2570
	0	3.7	2501.028	2500.00	2569.004	2570
	10	3.7	2501.089	2500.00	2569.051	2570
	20	3.7	2501.058	2500.00	2569.022	2570
	30	3.7	2501.050	2500.00	2569.061	2570
	40	3.7	2501.026	2500.00	2569.006	2570
	50	3.7	2501.015	2500.00	2569.016	2570
Frequency Stability vs. Voltage	20	3.3	2501.084	2500.00	2569.055	2570
	20	4.2	2501.003	2500.00	2569.003	2570
					Result:	Pass