

FCC §2.1051, §22.917(a):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, §22.917(a):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, §22.355: Frequency Stability

Test Mode:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.85	-4.96	-0.006	2.5
	-20	3.85	-6.97	-0.008	2.5
	-10	3.85	-5.5	-0.007	2.5
	0	3.85	6.06	0.007	2.5
	10	3.85	9.8	0.012	2.5
	20	3.85	5.03	0.006	2.5
	30	3.85	-6.62	-0.008	2.5
	40	3.85	-8.73	-0.010	2.5
	50	3.85	-7.05	-0.008	2.5
Frequency Stability vs. Voltage	20	3.5	8.99	0.011	2.5
	20	4.4	-7.17	-0.009	2.5
Result:				Pass	

Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.85	-3.4	-0.004	2.5
	-20	3.85	8.1	0.010	2.5
	-10	3.85	-8.59	-0.010	2.5
	0	3.85	9.33	0.011	2.5
	10	3.85	-6.94	-0.008	2.5
	20	3.85	7.54	0.009	2.5
	30	3.85	6.43	0.008	2.5
	40	3.85	-6.17	-0.007	2.5
	50	3.85	-6.44	-0.008	2.5
Frequency Stability vs. Voltage	20	3.5	6.34	0.008	2.5
	20	4.4	-6.89	-0.008	2.5
Result:				Pass	

Test Plots:

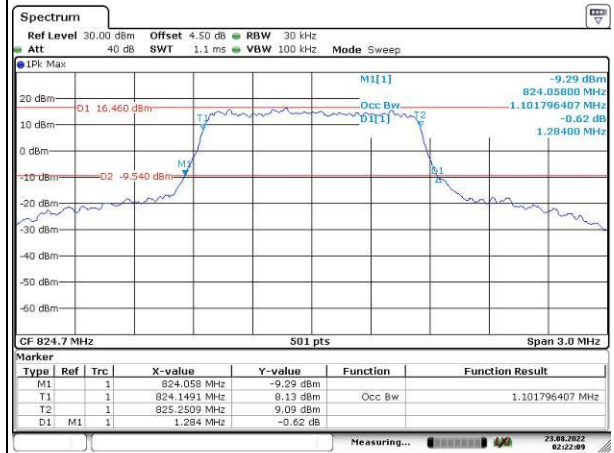
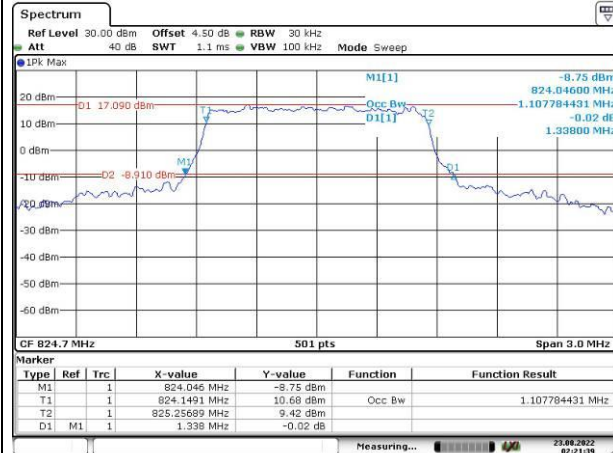
Occupied Bandwidth

Channel

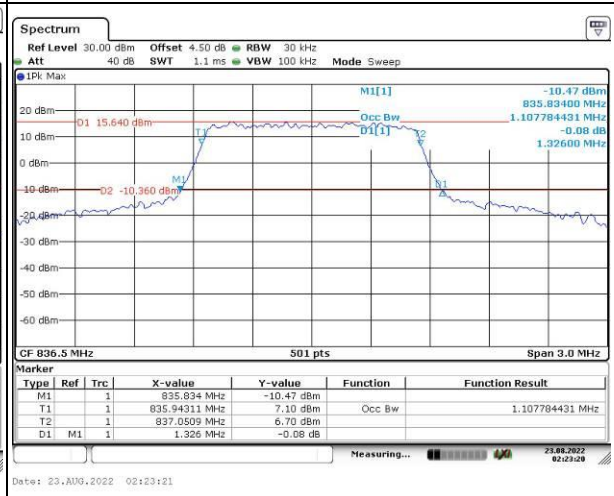
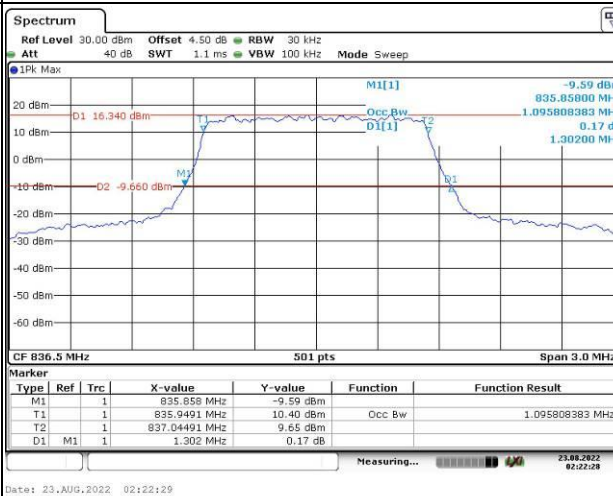
1.4MHz Bandwidth QPSK

1.4MHz Bandwidth 16QAM

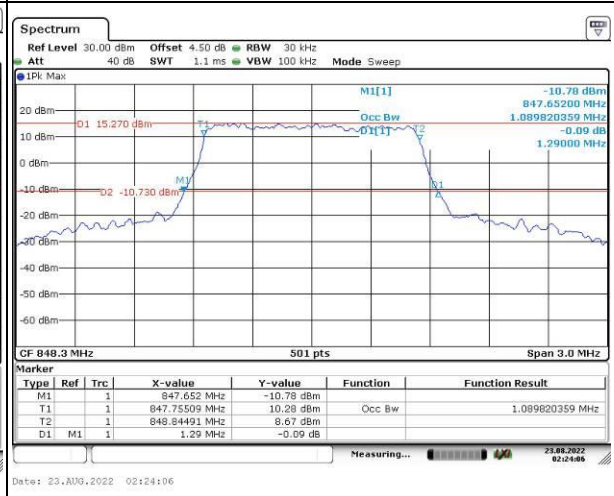
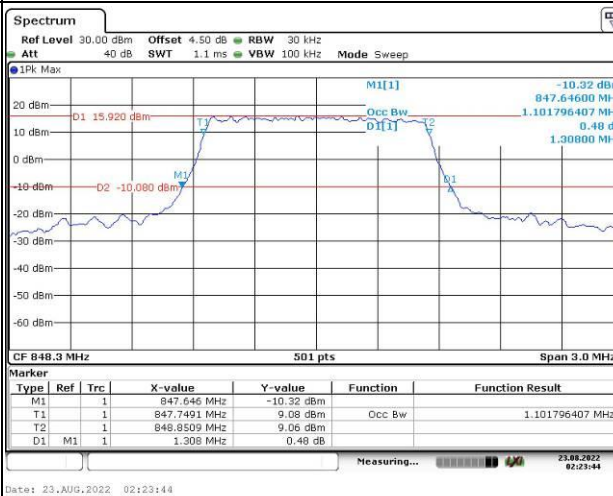
Lowest



Middle



Highest



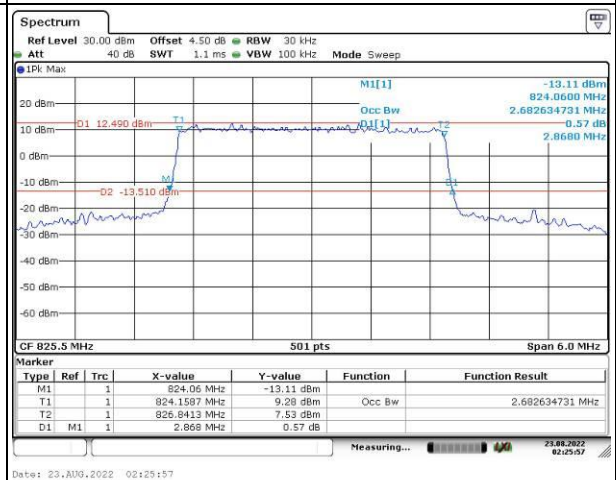
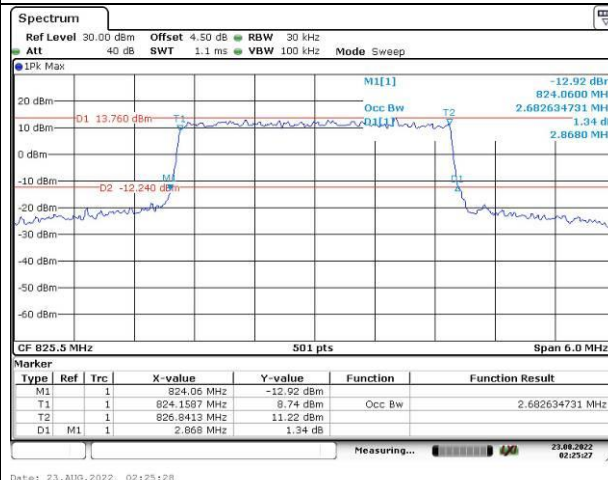
Occupied Bandwidth

Channel

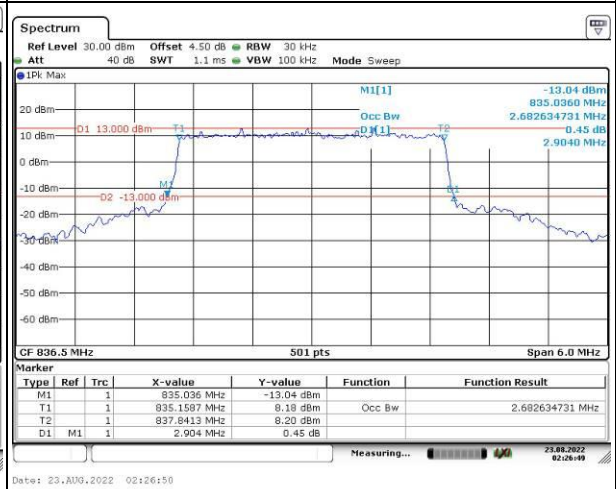
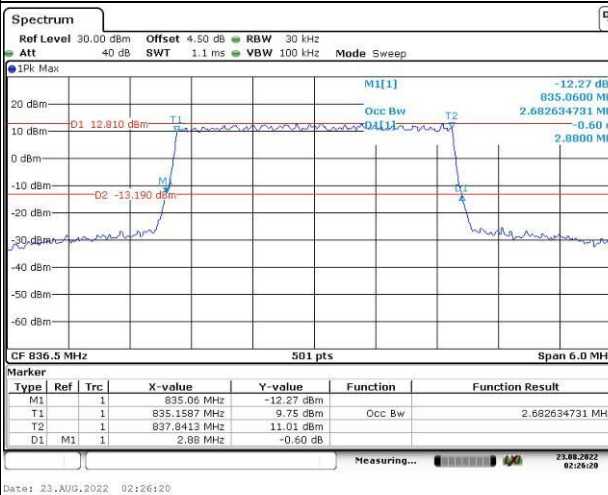
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

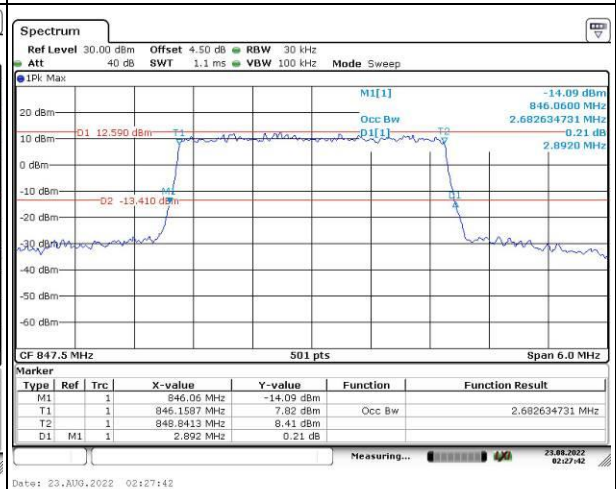
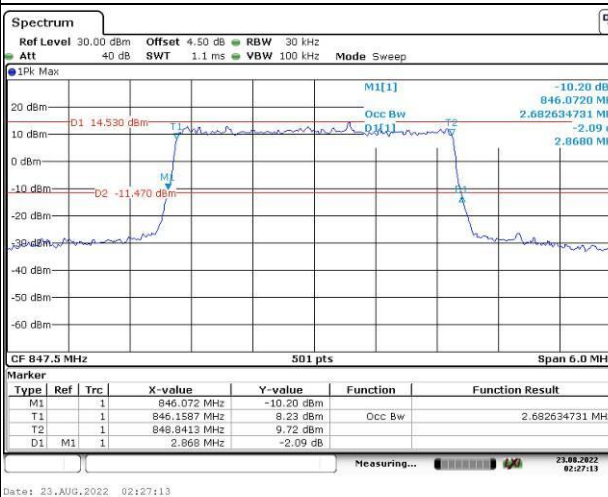
Lowest



Middle



Highest



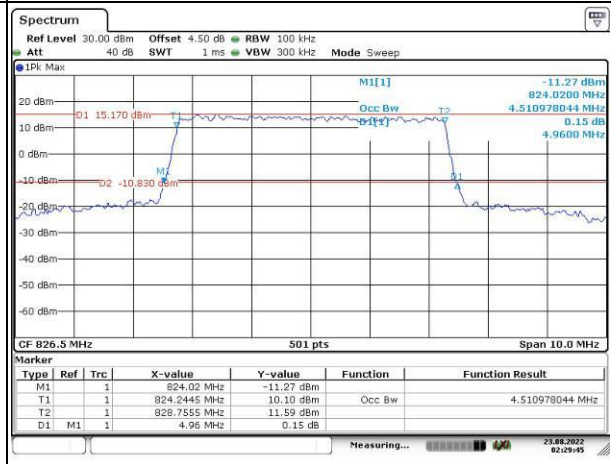
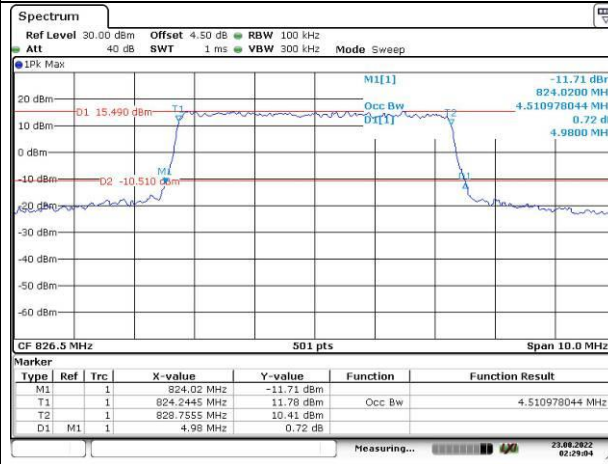
Occupied Bandwidth

Channel

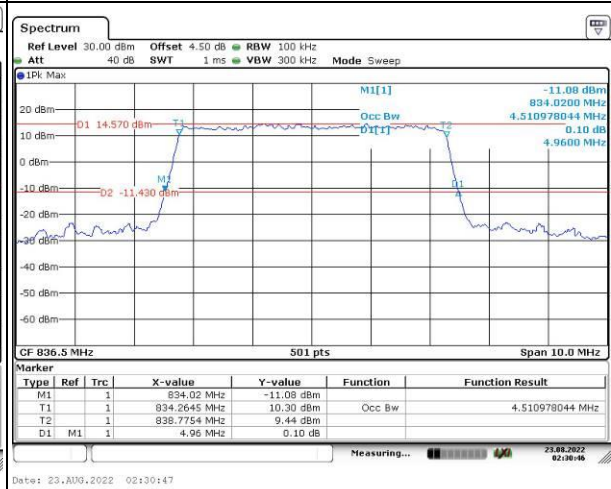
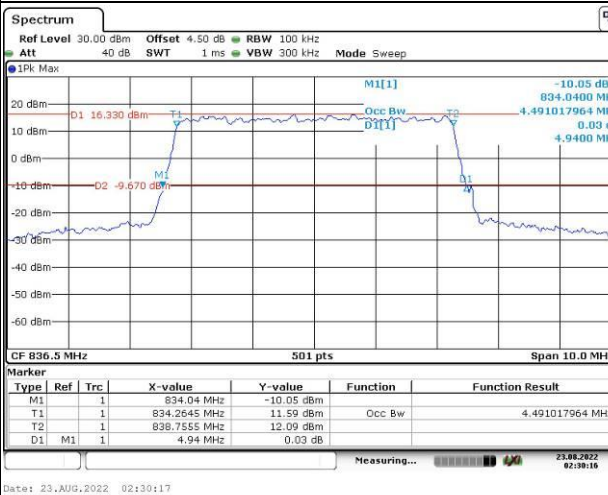
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

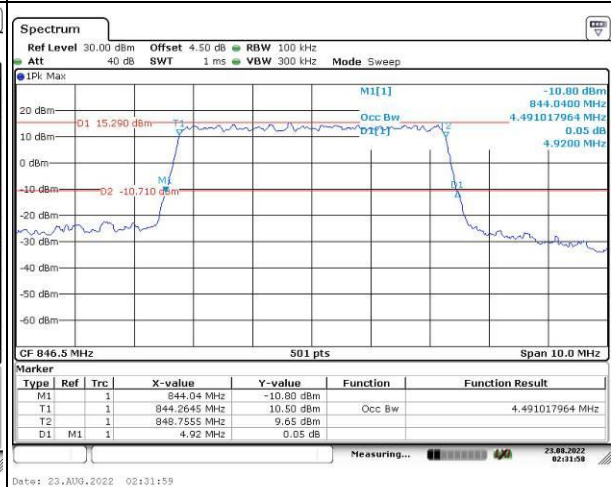
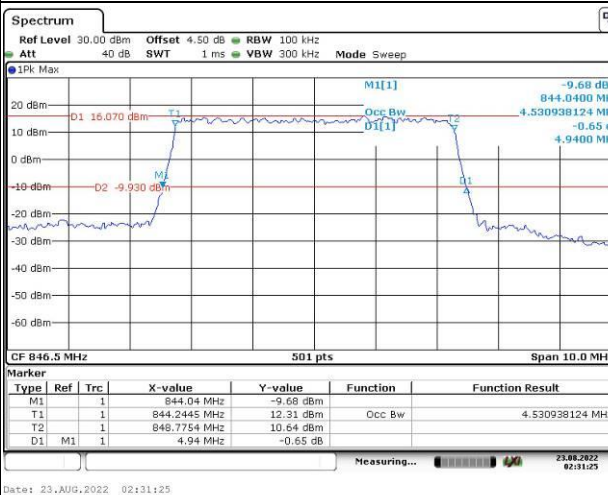
Lowest



Middle



Highest



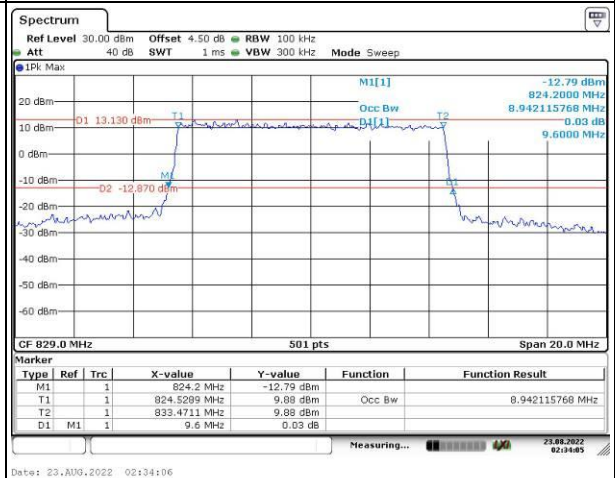
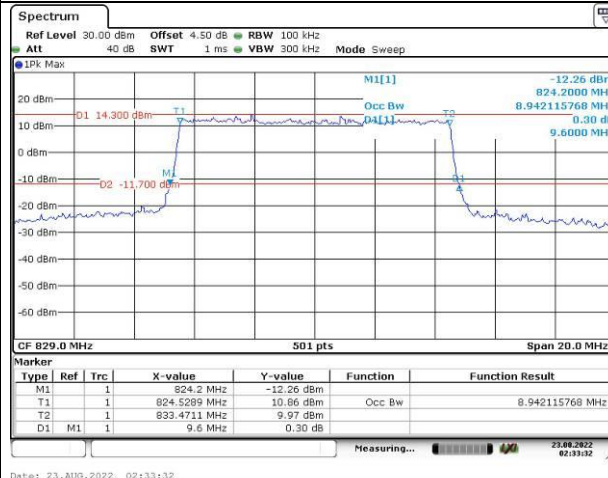
Occupied Bandwidth

Channel

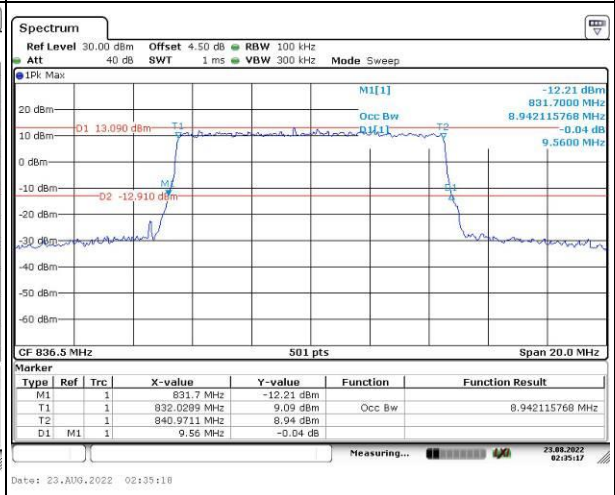
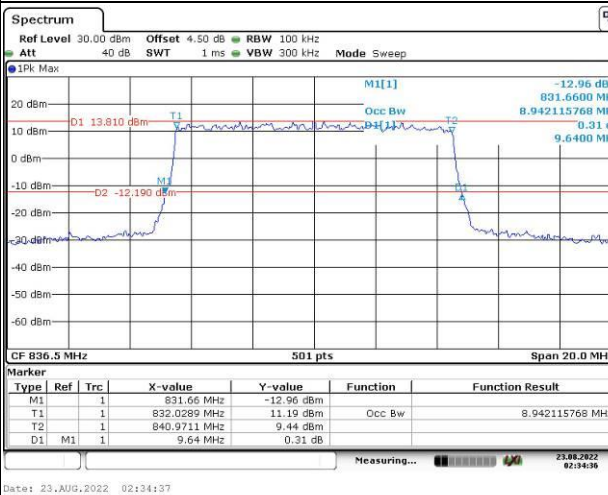
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

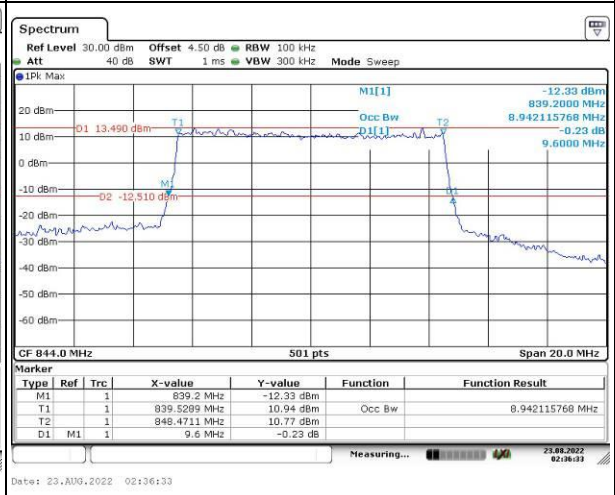
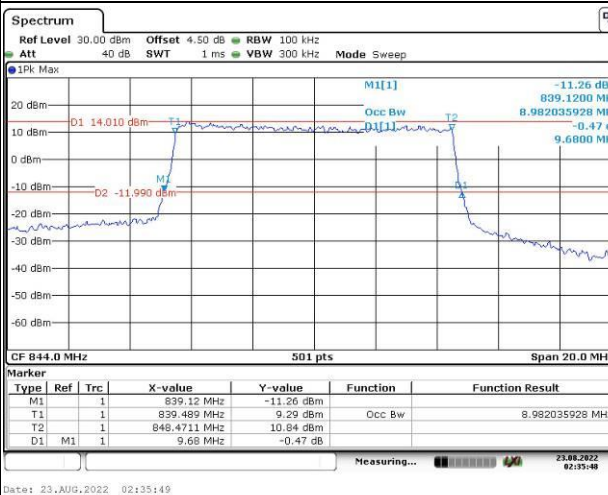
Lowest



Middle



Highest

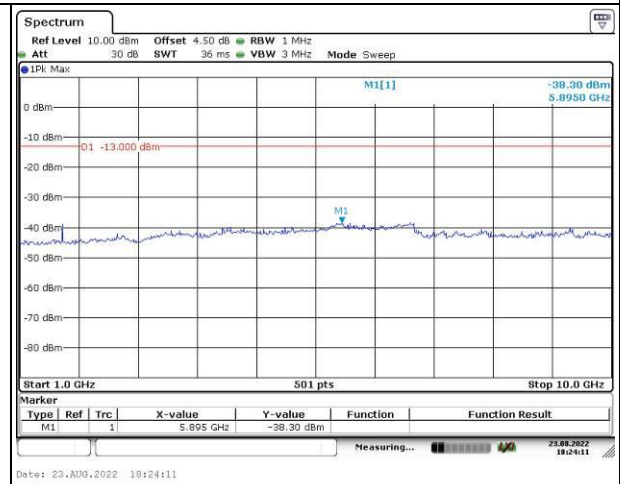
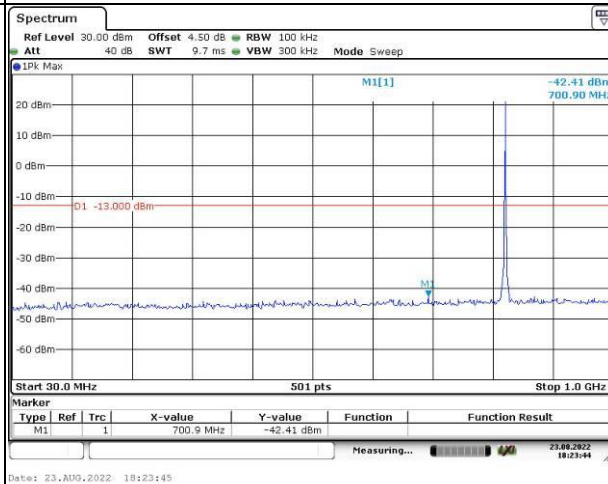


Spurious Emissions at Antenna Terminal

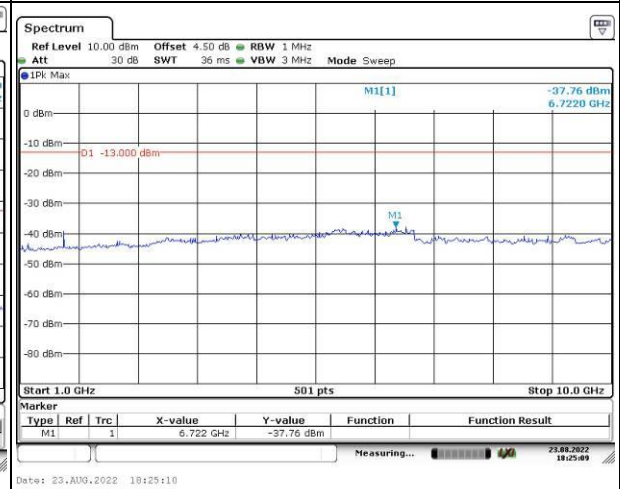
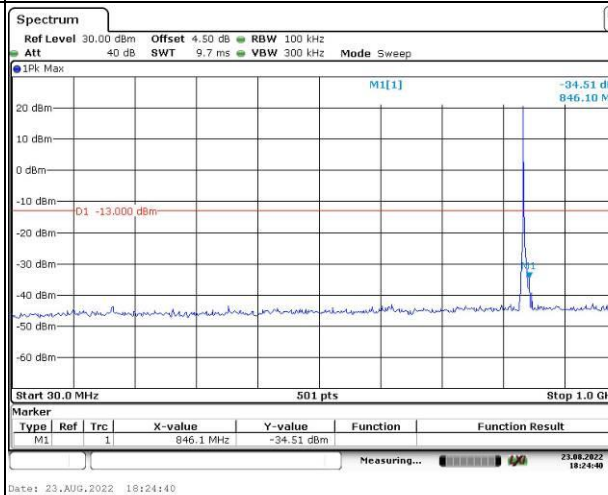
Channel

1.4MHz Bandwidth QPSK

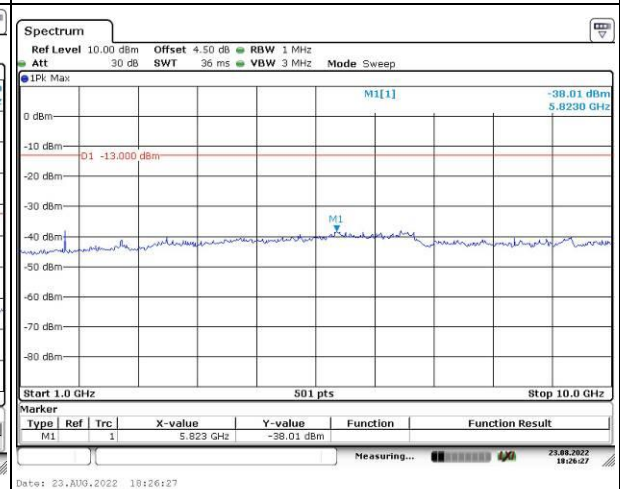
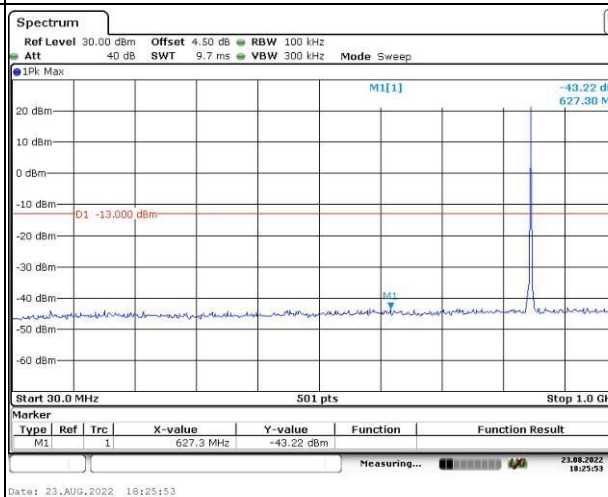
Lowest



Middle



Highest

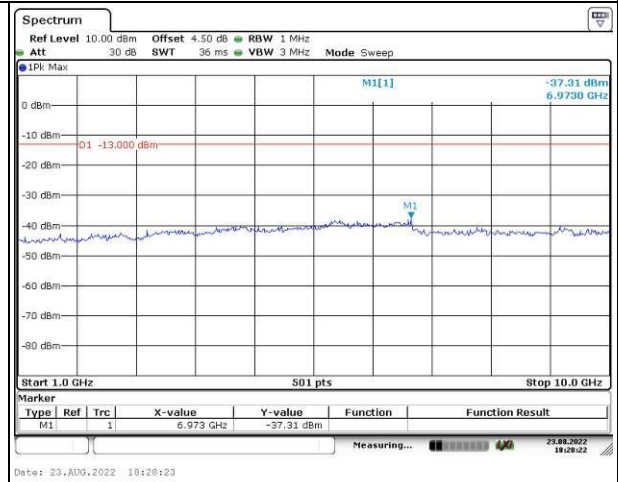
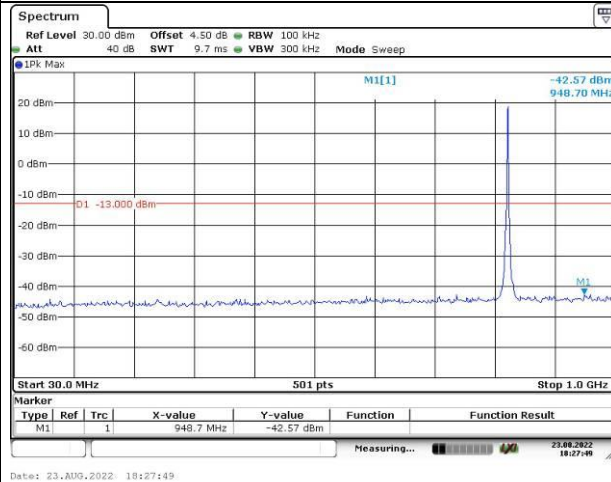


Spurious Emissions at Antenna Terminal

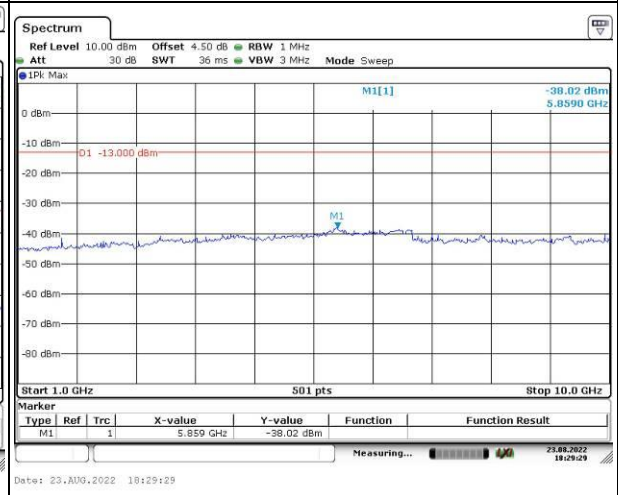
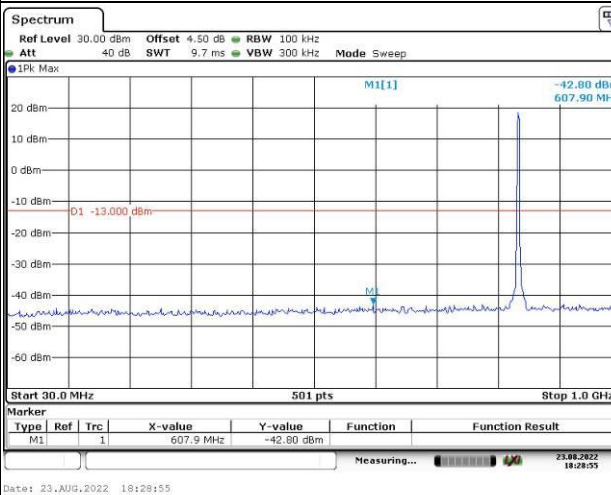
Channel

3MHz Bandwidth QPSK

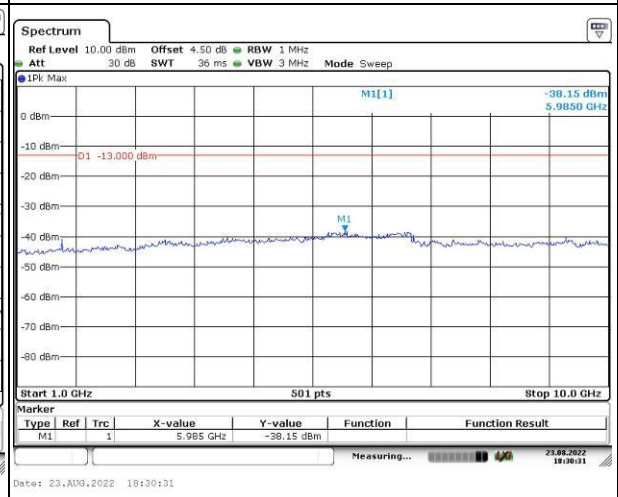
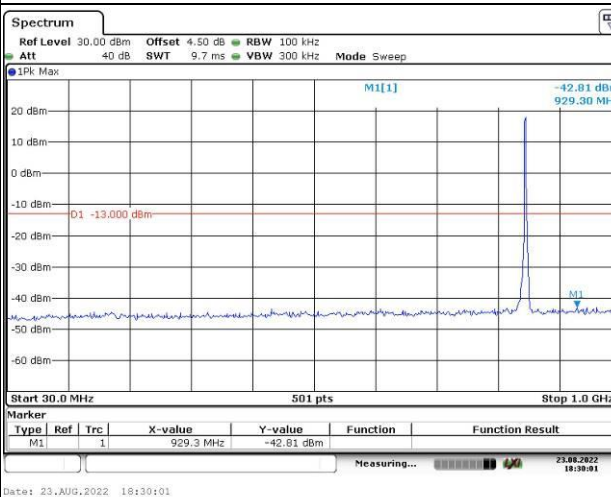
Lowest



Middle



Highest

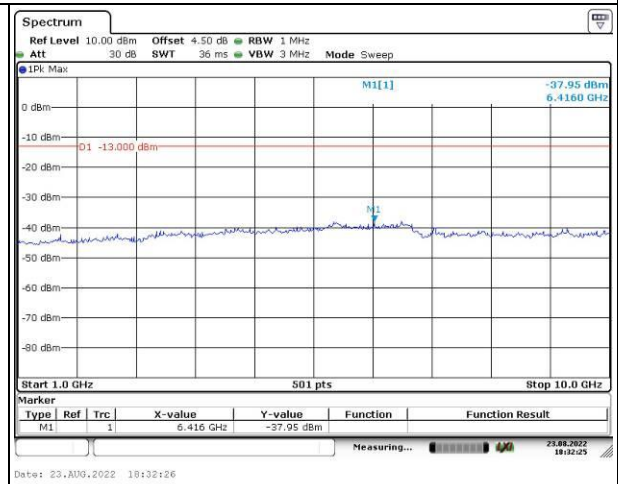
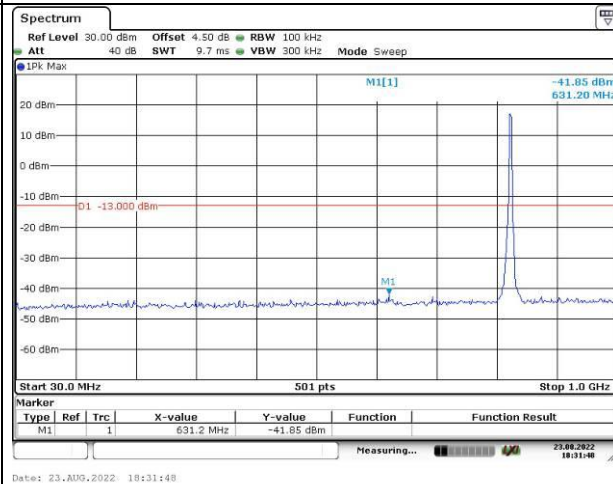


Spurious Emissions at Antenna Terminal

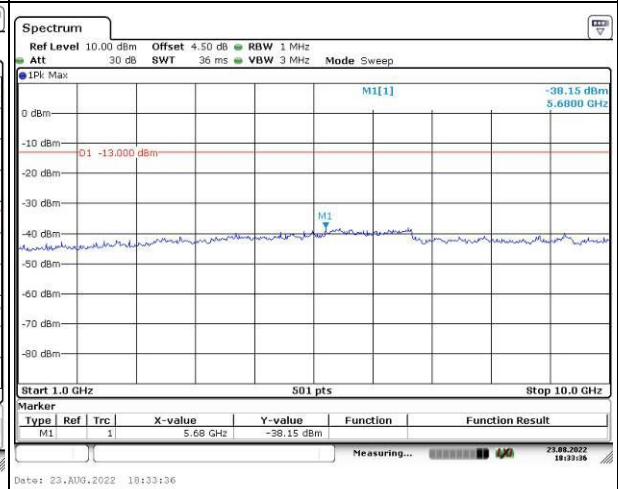
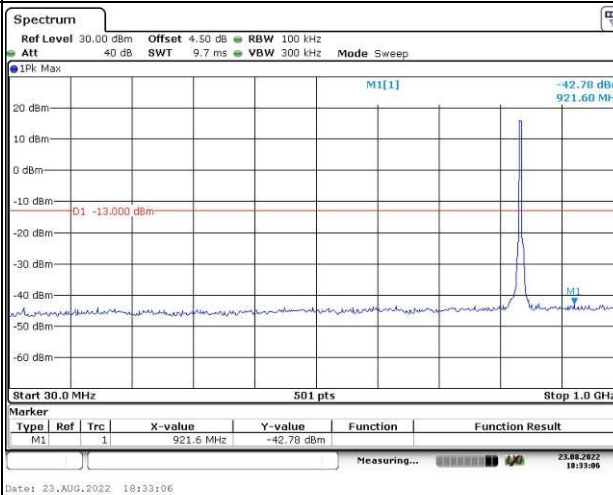
Channel

5MHz Bandwidth QPSK

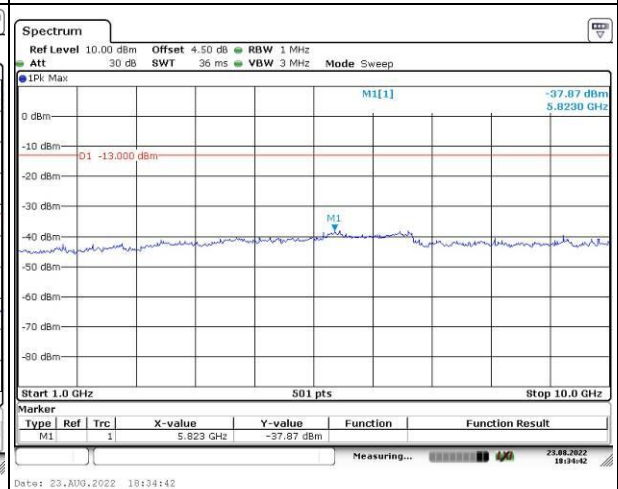
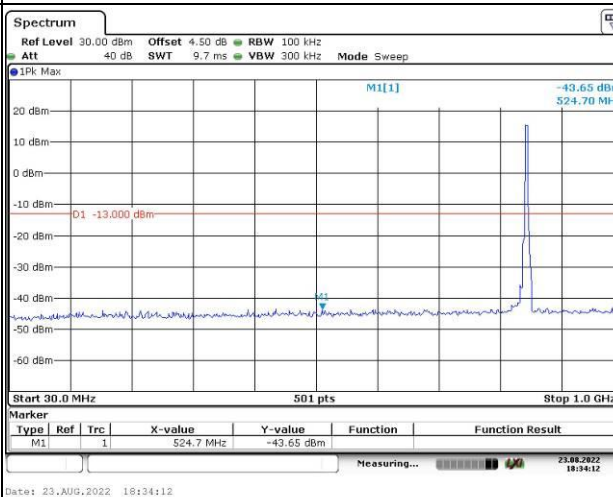
Lowest



Middle



Highest

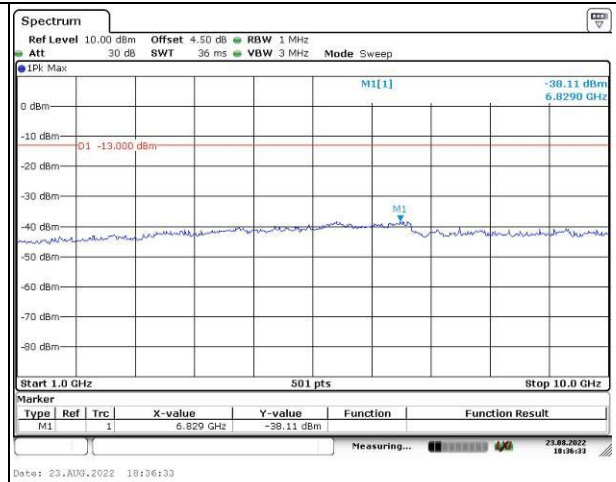
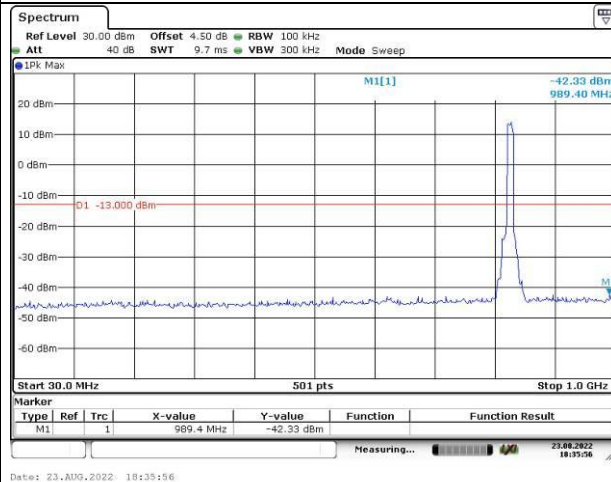


Spurious Emissions at Antenna Terminal

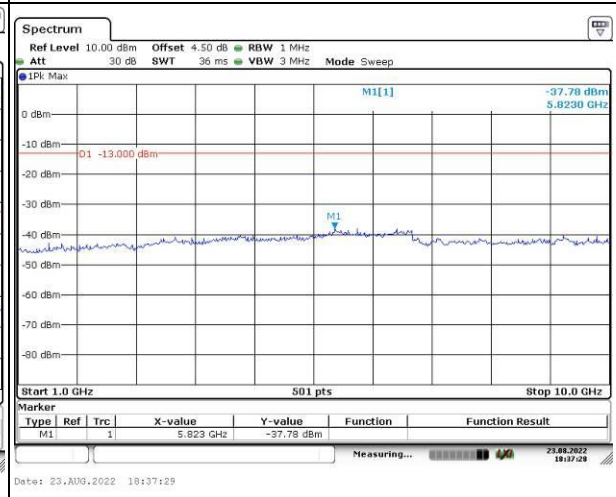
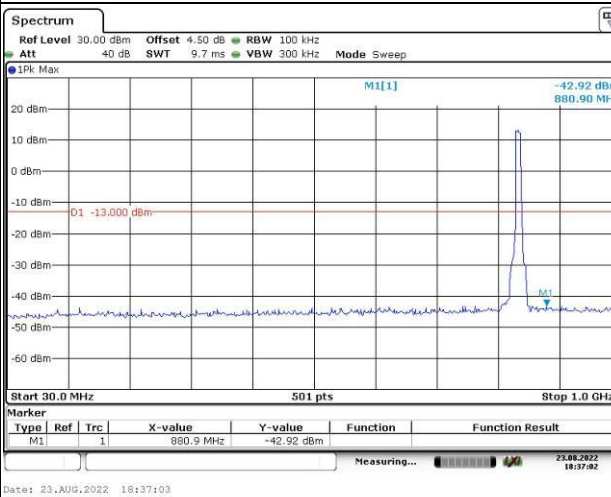
Channel

10MHz Bandwidth QPSK

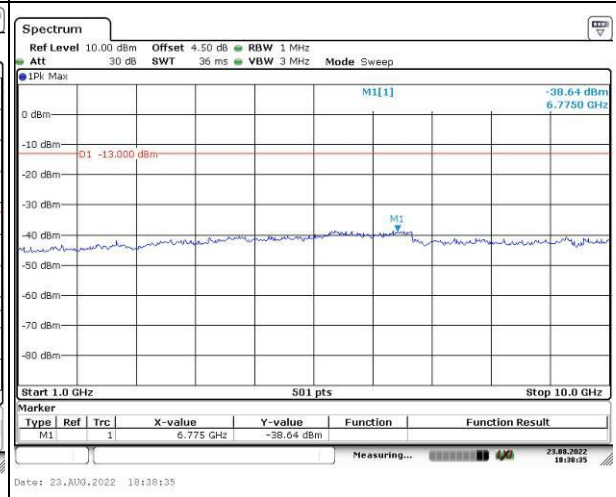
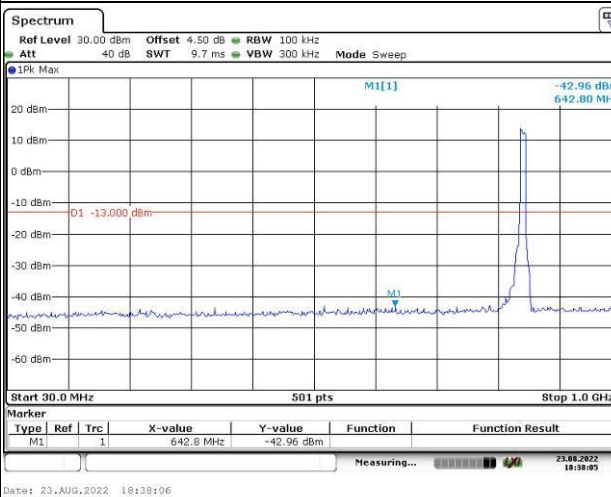
Lowest



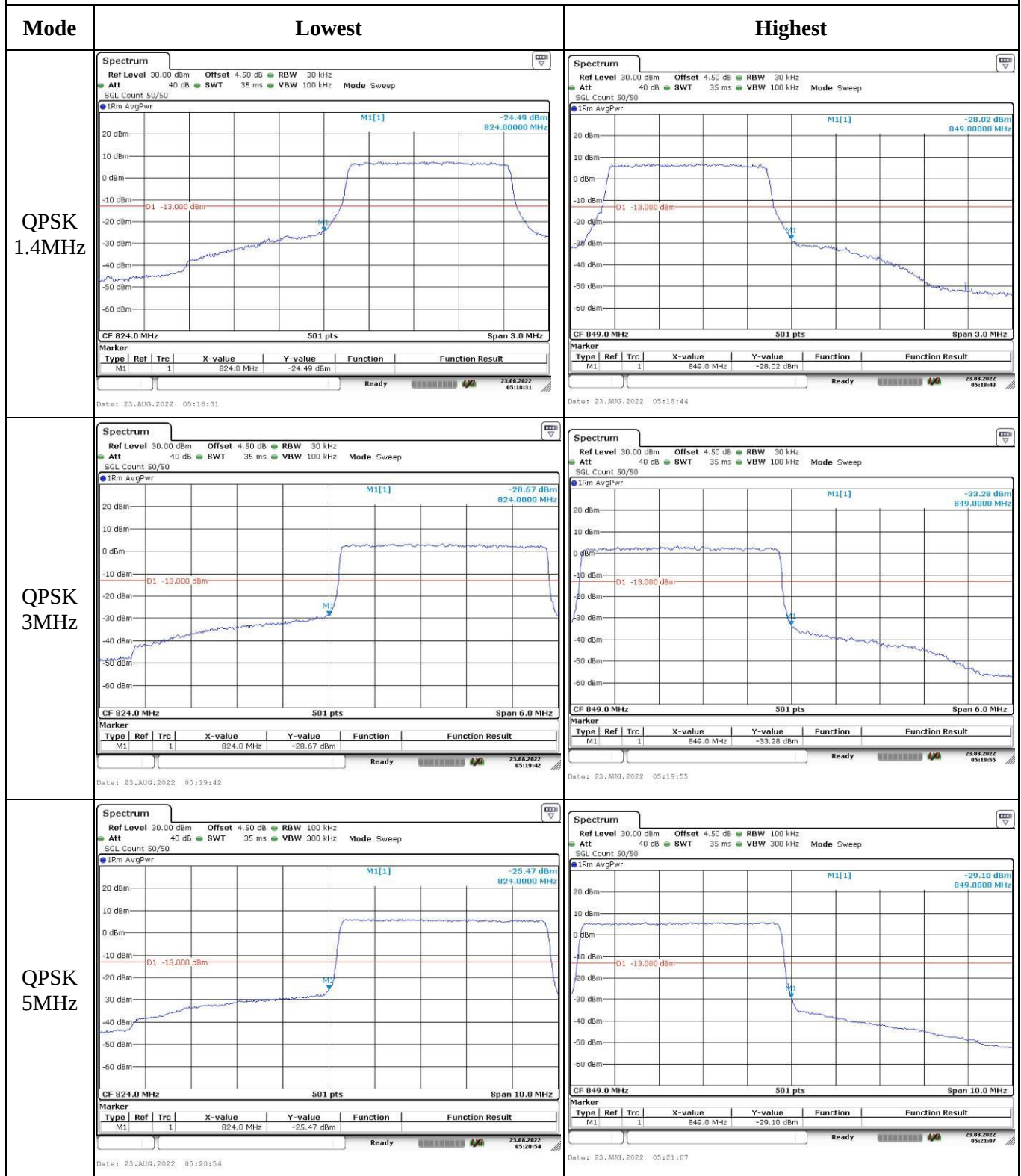
Middle



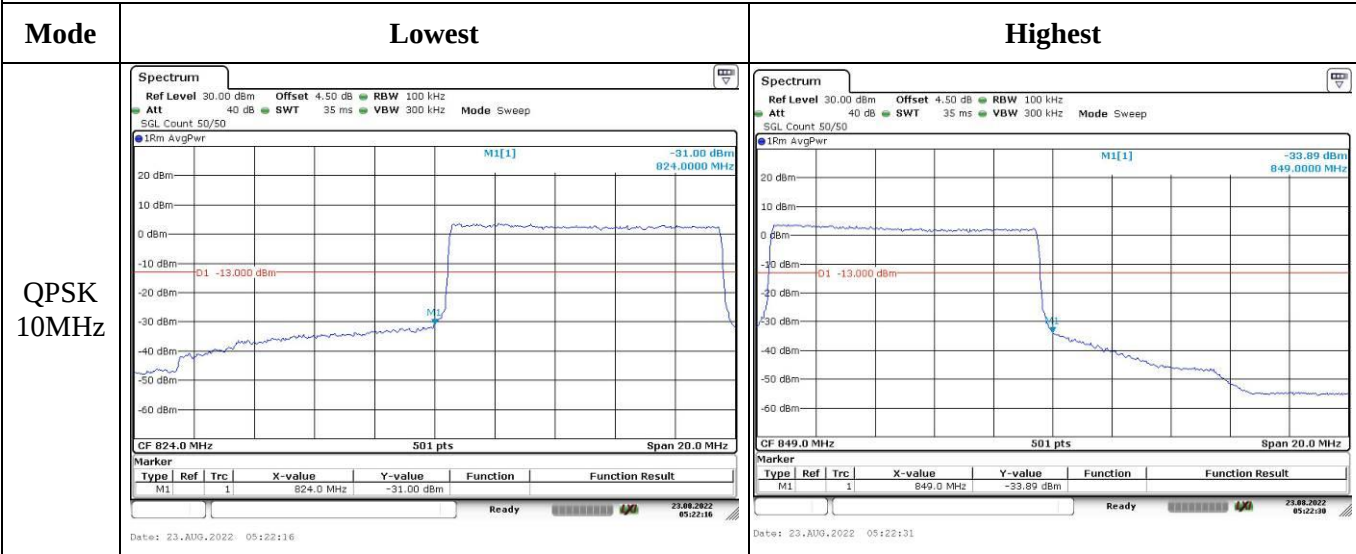
Highest



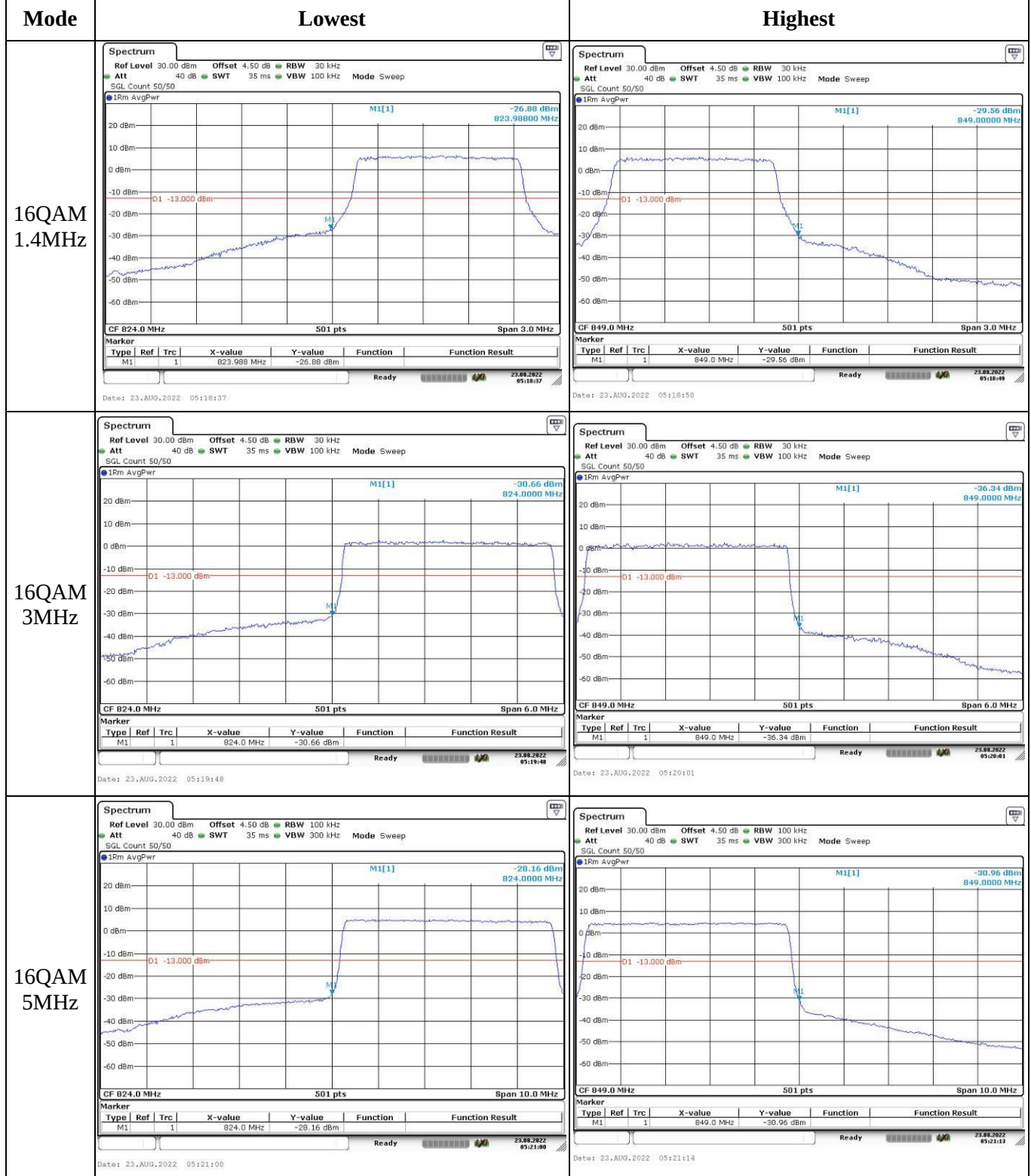
Out of band emission, Band Edge



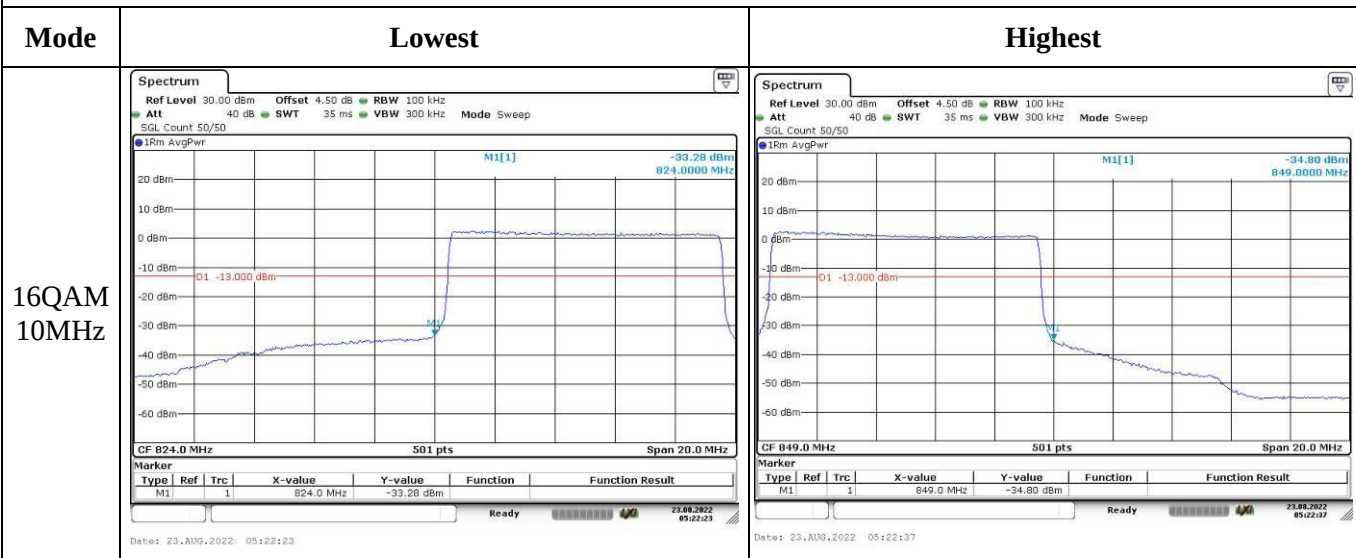
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.8 Antenna Port Test Data and Results for LTE Band 7

Serial Number:	CR22070052-RF-S1	Test Date:	2022-08-23~2022-08-25
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.3~25.8	Relative Humidity: (%)	51~59	ATM Pressure: (kPa)	100.2~100.8
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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	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100003	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204004	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-07-15	2023-07-14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-04-06	2023-04-05
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
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).

EUT Information@LTE Band 7▲:

Antenna Gain (dBi):	2.49	Path Loss L_C (dB):	0.5
Operation Voltage(V_{DC}):			
Lowest:	3.5	Normal:	3.85
		Highest:	4.4

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	21.3	21.72	21.6	23.71	33
	RB1#13	21.5	21.71	21.17		
	RB1#24	21.31	21.37	21.09		
	RB15#0	20.39	20.5	20.21		
	RB15#10	20.27	20.61	20.13		
	RB25#0	20.3	20.77	20.14		
5MHz 16QAM	RB1#0	19.94	20.48	20.42	22.67	33
	RB1#13	20.29	20.68	20.51		
	RB1#24	20.16	20.18	20.35		
	RB15#0	19.4	19.86	19.15		
	RB15#10	19.31	19.86	19.05		
	RB25#0	19.35	19.89	19.18		
10MHz QPSK	RB1#0	21.32	21.89	21.68	23.88	33
	RB1#25	21.67	21.84	21.36		
	RB1#49	21.51	21.38	21.06		
	RB25#0	20.41	20.87	20.3		
	RB25#25	20.52	20.81	20.34		
	RB50#0	20.48	20.79	20.27		
10MHz 16QAM	RB1#0	20.39	20.74	20.72	22.93	33
	RB1#25	20.8	20.87	20.94		
	RB1#49	20.6	20.46	20.66		
	RB25#0	19.42	20.04	19.51		
	RB25#25	19.53	19.98	19.59		
	RB50#0	19.5	19.93	19.68		
15MHz QPSK	RB1#0	21.15	21.69	21.48	23.91	33
	RB1#38	21.5	21.92	21.45		
	RB1#74	21.53	21.48	21.05		
	RB36#0	20.5	20.98	20.33		
	RB36#39	20.67	20.92	20.25		
	RB75#0	20.57	20.92	20.27		
15MHz 16QAM	RB1#0	20.71	20.84	20.55	23.18	33
	RB1#38	21.11	20.89	20.64		
	RB1#74	21.19	20.47	20.48		
	RB36#0	19.4	19.91	19.25		
	RB36#39	19.62	19.85	19.48		
	RB75#0	19.5	19.9	19.39		
20MHz QPSK	RB1#0	20.99	21.18	21	23.78	33

	RB1#50	21.79	21.57	21.39		
	RB1#99	21.47	21.15	20.84		
	RB50#0	20.41	20.49	20.23		
	RB50#50	20.75	20.37	20.1		
	RB100#0	20.64	20.43	20.2		
20MHz 16QAM	RB1#0	19.91	20.24	20.57	22.89	33
	RB1#50	20.72	20.76	20.9		
	RB1#99	20.37	20.34	20.4		
	RB50#0	19.1	19.43	19.22		
	RB50#50	19.46	19.39	19.1		
	RB100#0	19.28	19.44	19.14		

Note: EIRP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(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	4.2	4.49	4.9	13
	RB100#0	4.96	4.96	5.04	13
20MHz 16QAM	RB1#0	4.96	5.57	5.86	13
	RB100#0	5.91	5.86	5.83	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	4.491	4.94	4.96	5.26
5MHz 16QAM	4.491	4.511	4.511	4.94	4.94	4.96
10MHz QPSK	8.942	8.942	8.942	9.68	9.56	9.6
10MHz 16QAM	8.942	8.942	8.942	9.56	9.64	9.6
15MHz QPSK	13.533	13.413	13.473	14.82	14.76	14.76
15MHz 16QAM	13.473	13.533	13.473	14.7	14.64	14.7
20MHz QPSK	17.964	17.964	17.884	19.36	19.36	19.44
20MHz 16QAM	18.044	17.964	17.884	19.44	19.84	19.28

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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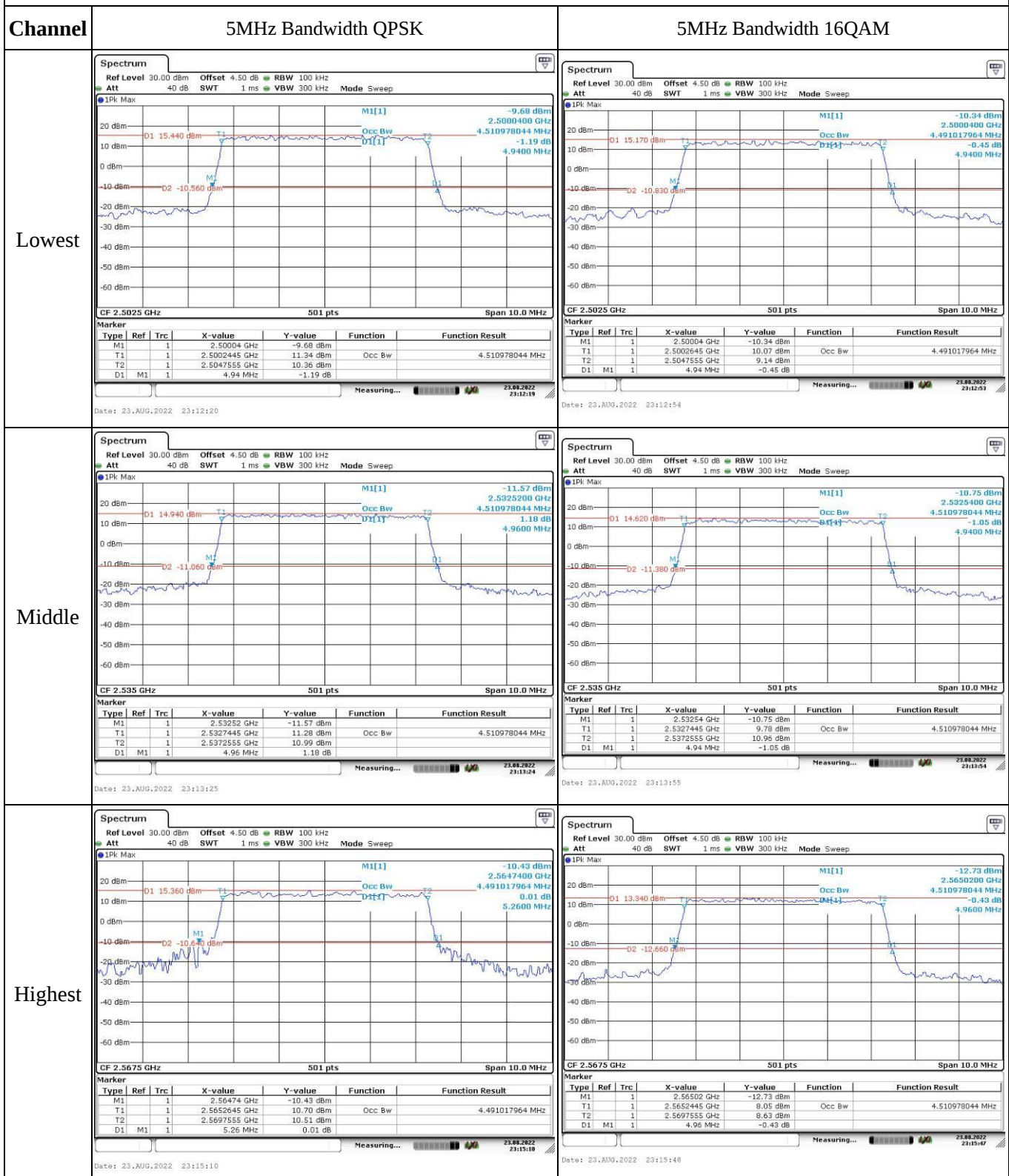
FCC §2.1055, §27.54: Frequency Stability

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	3.85	2501.045	2500.00	2568.949	2570
	-20	3.85	2501.063	2500.00	2568.949	2570
	-10	3.85	2501.089	2500.00	2568.964	2570
	0	3.85	2501.096	2500.00	2568.963	2570
	10	3.85	2501.026	2500.00	2568.917	2570
	20	3.85	2501.058	2500.00	2568.942	2570
	30	3.85	2501.068	2500.00	2568.916	2570
	40	3.85	2501.077	2500.00	2568.919	2570
	50	3.85	2501.076	2500.00	2568.951	2570
Frequency Stability vs. Voltage	20	3.5	2501.015	2500.00	2568.986	2570
	20	4.4	2501.052	2500.00	2568.915	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	3.85	2501.095	2500.00	2568.909	2570
	-20	3.85	2501.073	2500.00	2568.934	2570
	-10	3.85	2501.076	2500.00	2568.921	2570
	0	3.85	2501.085	2500.00	2568.977	2570
	10	3.85	2501.038	2500.00	2568.936	2570
	20	3.85	2501.058	2500.00	2568.942	2570
	30	3.85	2501.038	2500.00	2568.922	2570
	40	3.85	2501.045	2500.00	2568.915	2570
	50	3.85	2501.010	2500.00	2568.979	2570
Frequency Stability vs. Voltage	20	3.5	2501.093	2500.00	2568.910	2570
	20	4.4	2501.011	2500.00	2568.901	2570
					Result:	Pass

Test Plots:

Occupied Bandwidth



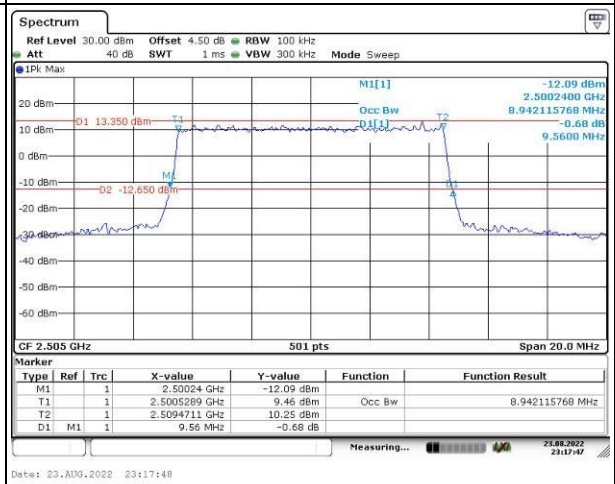
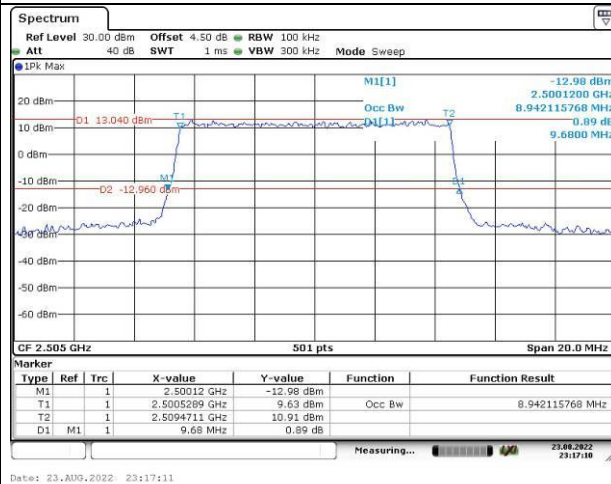
Occupied Bandwidth

Channel

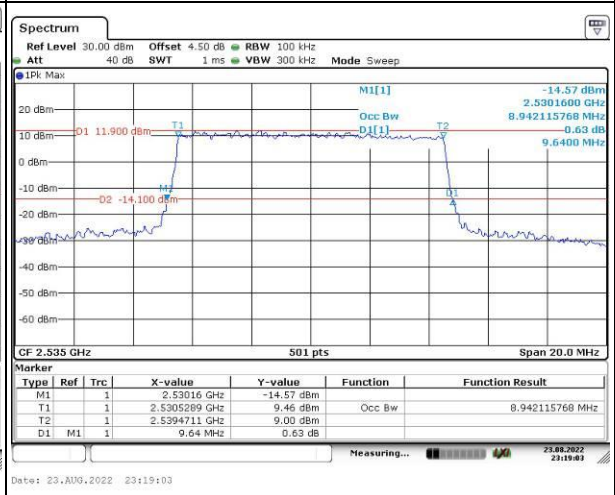
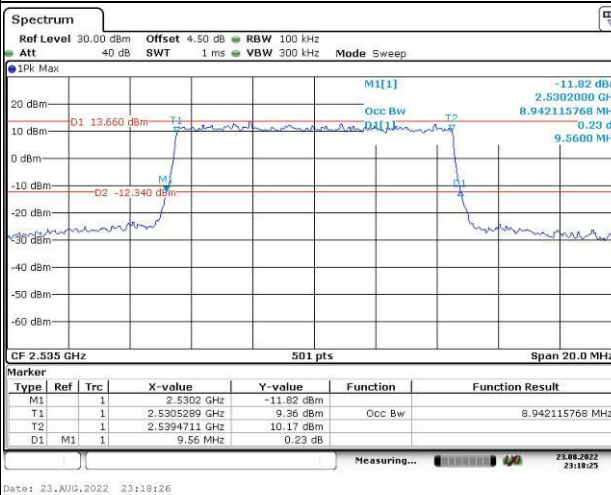
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

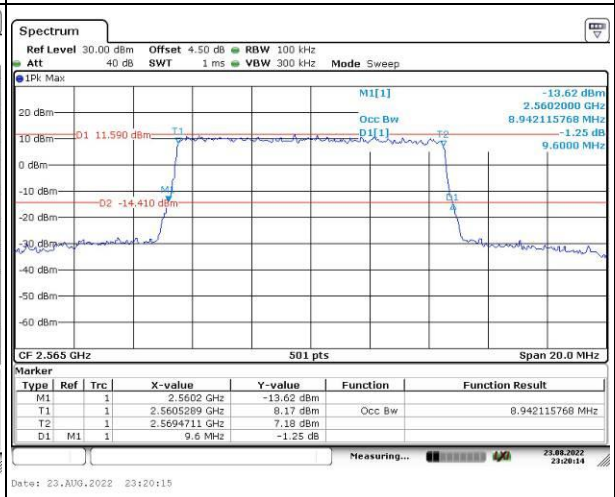
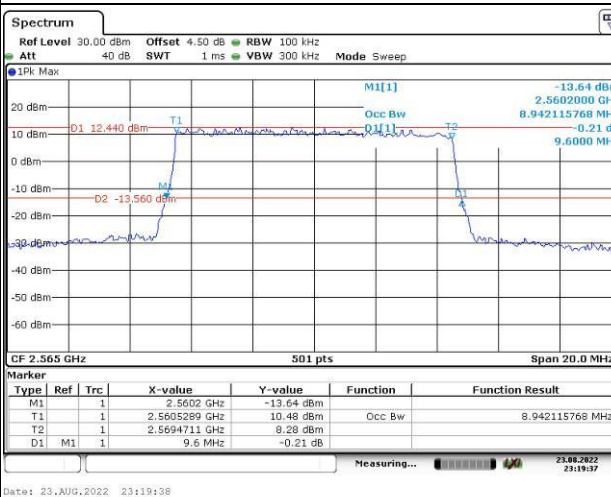
Lowest



Middle



Highest



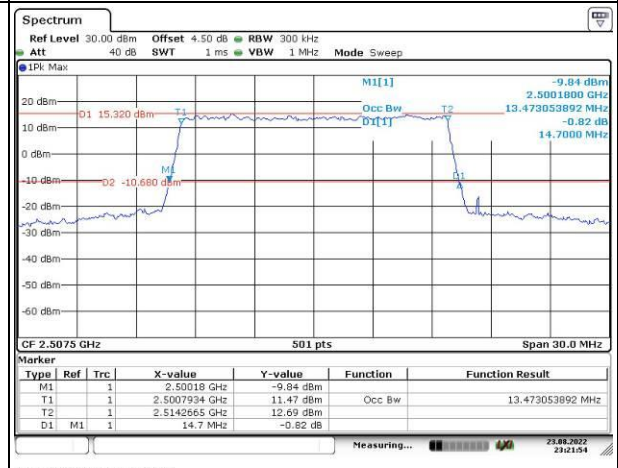
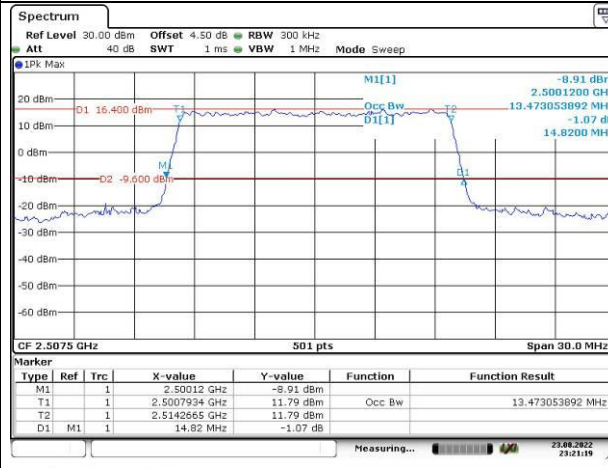
Occupied Bandwidth

Channel

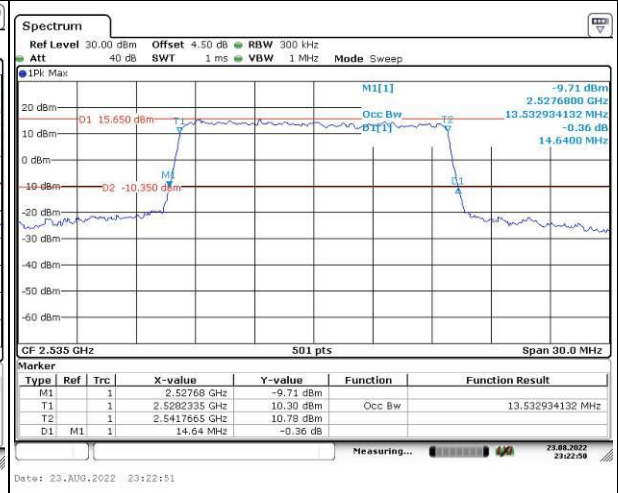
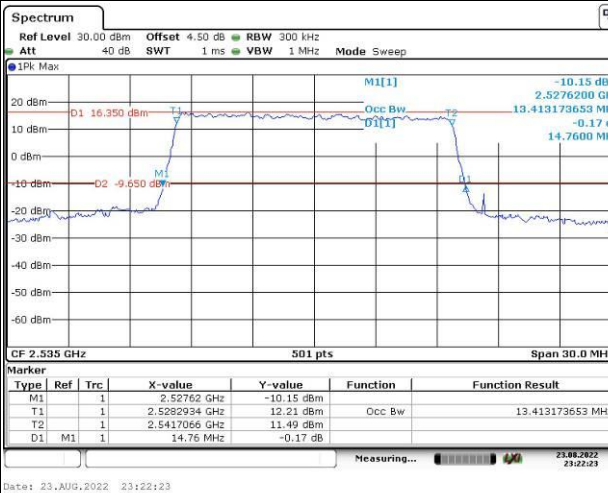
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

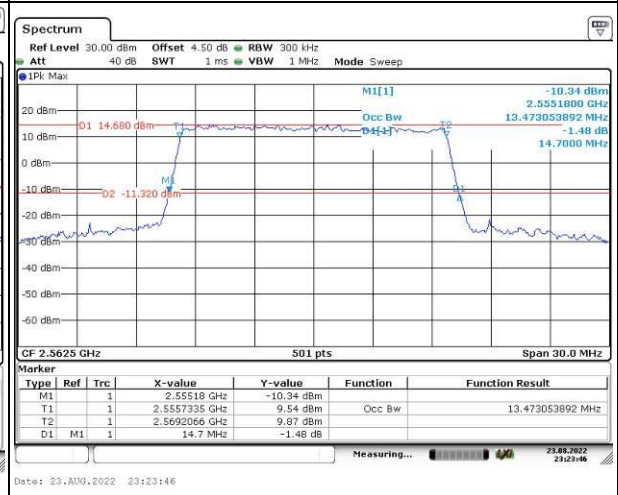
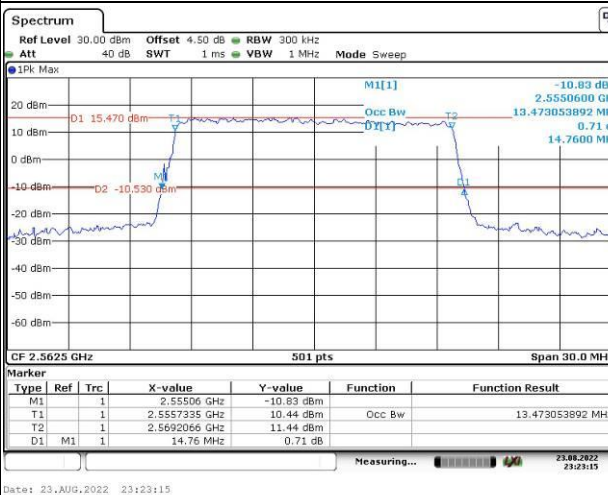
Lowest



Middle



Highest



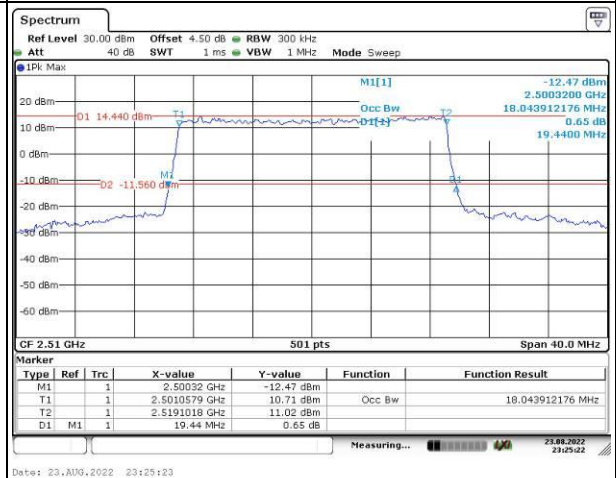
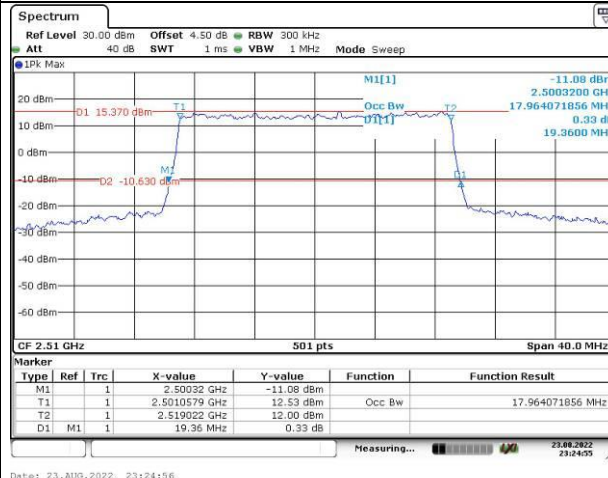
Occupied Bandwidth

Channel

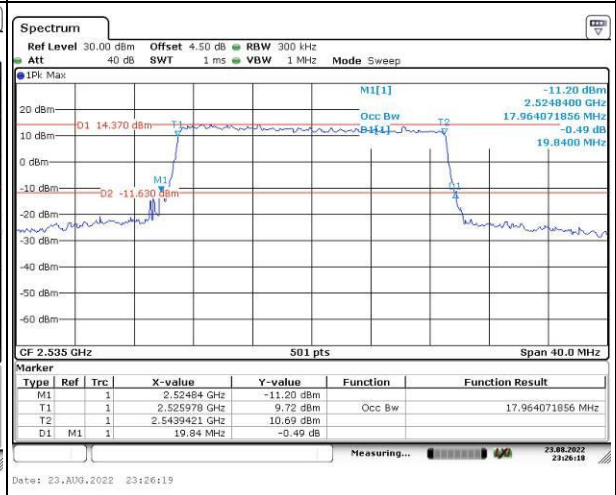
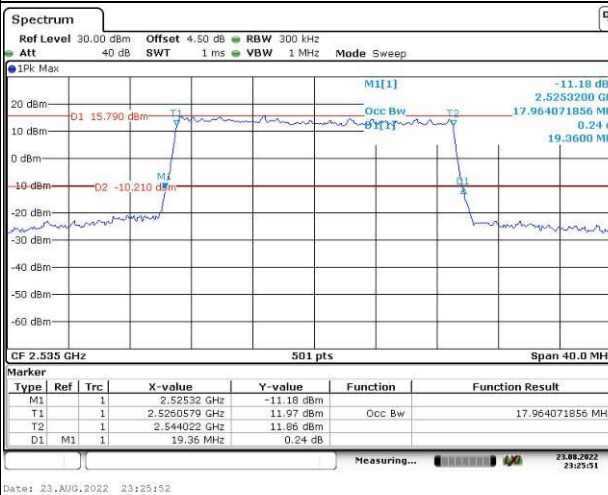
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

Lowest



Middle



Highest

