

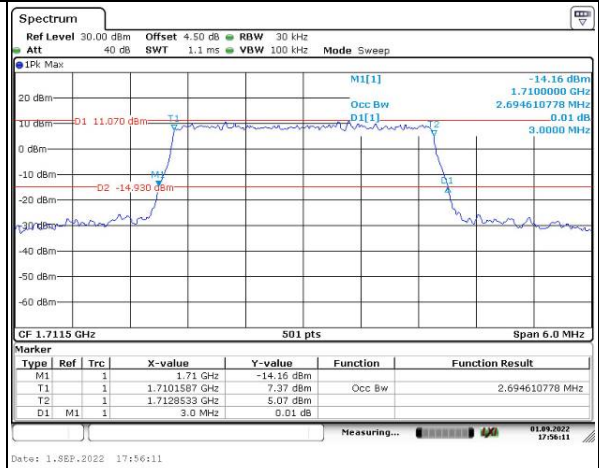
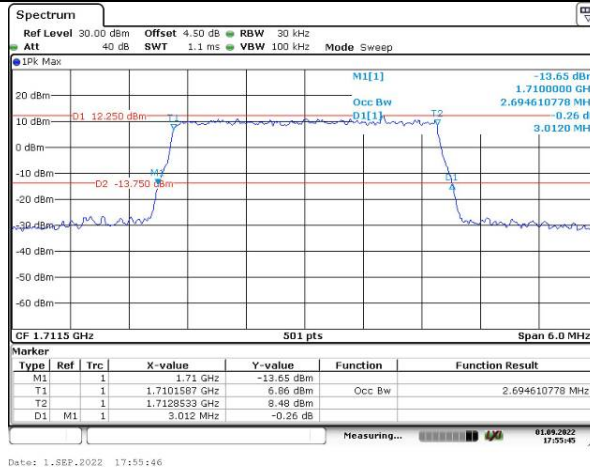
Occupied Bandwidth

Channel

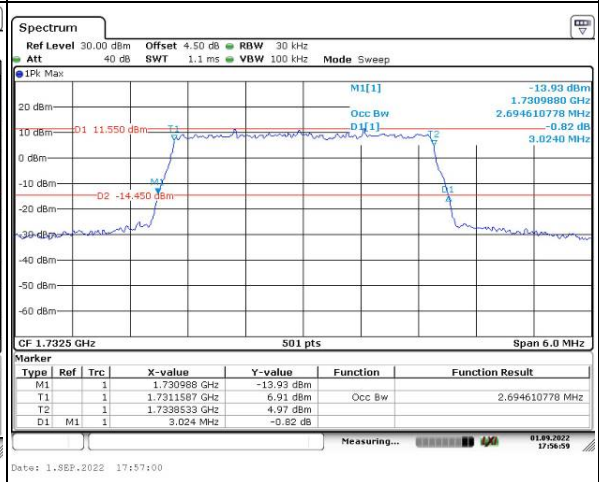
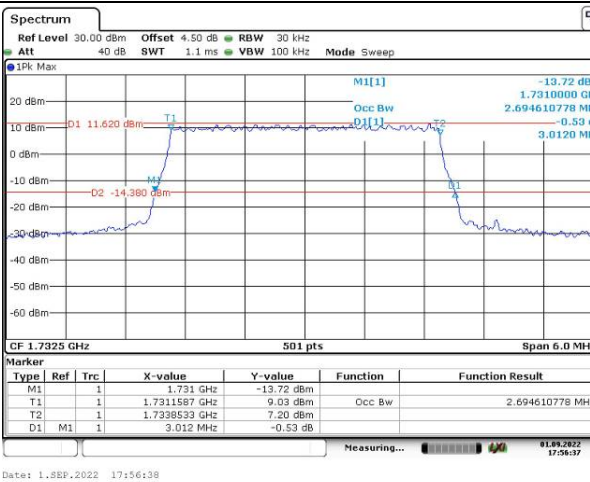
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

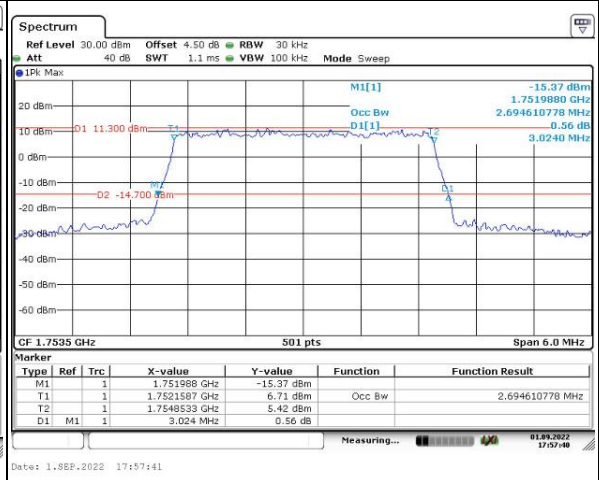
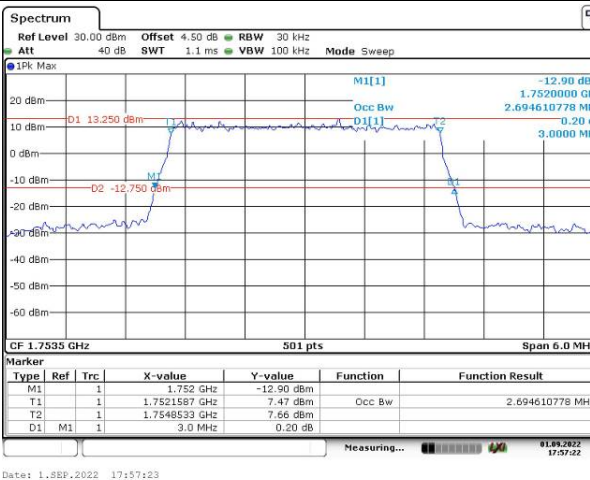
Lowest



Middle



Highest



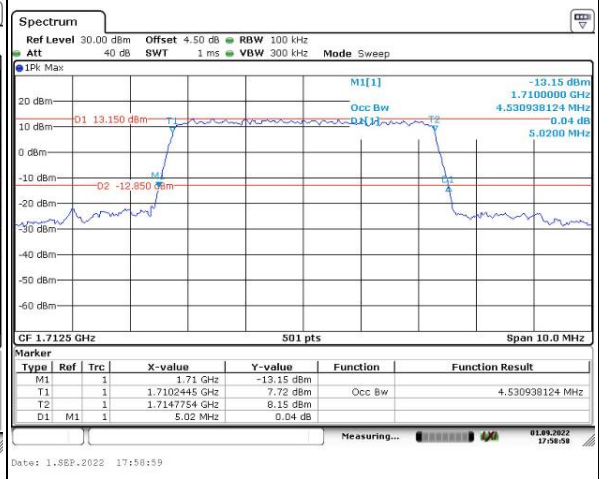
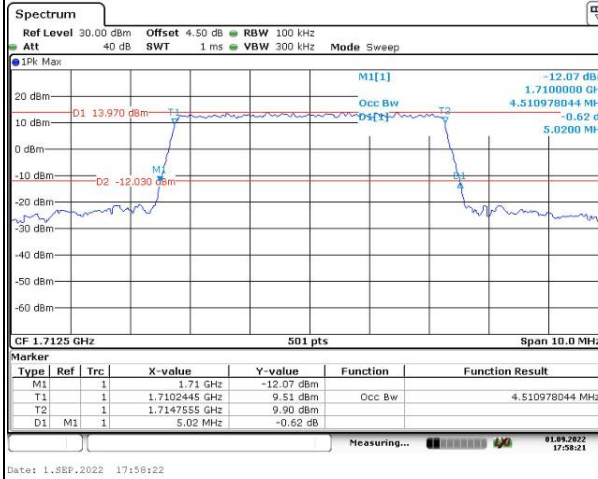
Occupied Bandwidth

Channel

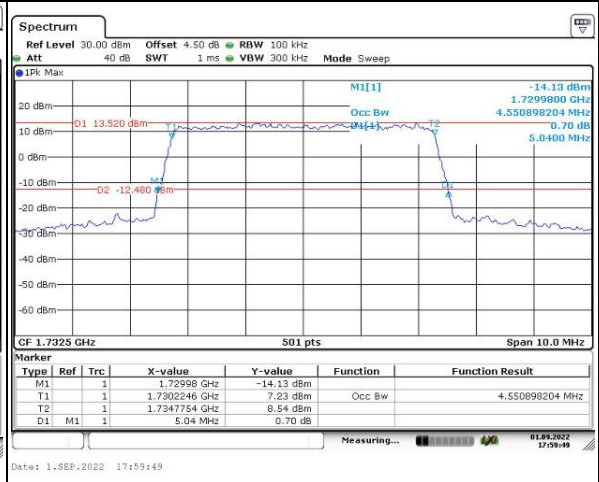
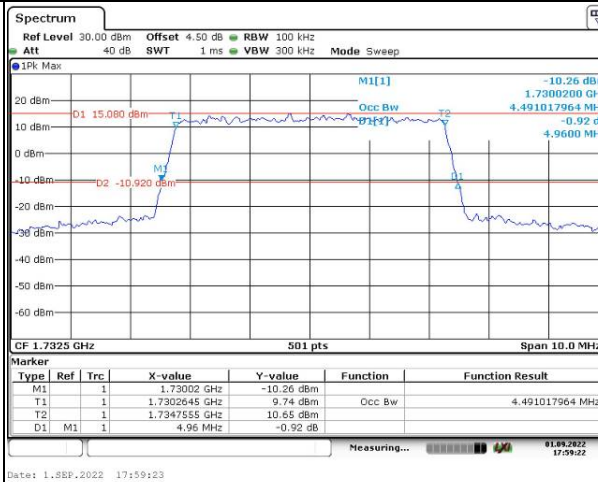
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

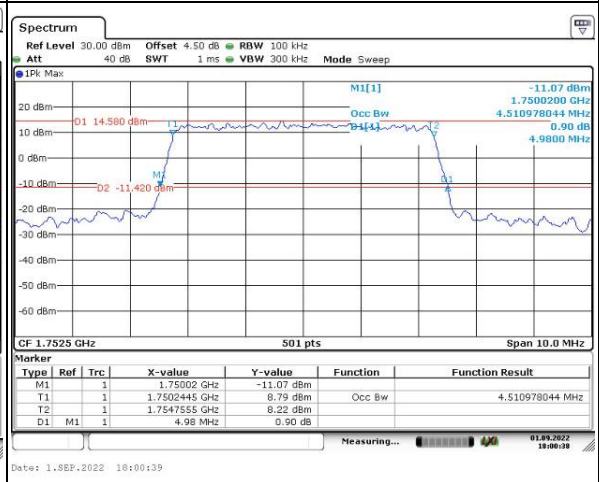
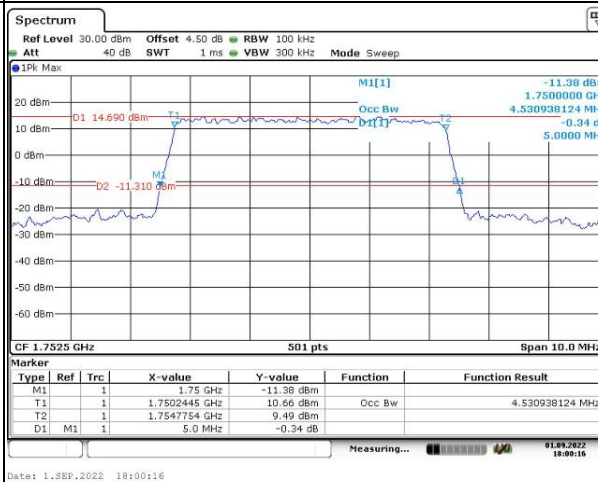
Lowest



Middle



Highest



Occupied Bandwidth

Channel

10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

Lowest

Spectrum

Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep

1Pk Max

M1[1] -13.92 dBm 1.7101200 GHz 8.942115768 MHz 0.66 dB 9.7600 MHz

D1 11.950 dBm T1 10 dBm D2 -14.050 dBm

CF 1.715 GHz 501 pts Span 20.0 MHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.71012 GHz	-13.92 dBm		
T1	1		1.7105289 GHz	8.59 dBm	Occ Bw	8.942115768 MHz
T2	1		1.7194711 GHz	9.22 dBm		
D1	M1	1	9.76 MHz	0.66 dB		

Measuring... 01.89.2022 18:01:12

Date: 1.8EP.2022 18:01:12

Spectrum

Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep

1Pk Max

M1[1] -15.55 dBm 1.7100400 GHz 8.982035928 MHz -0.32 dB 9.8800 MHz

D1 10.580 dBm T1 10 dBm D2 -15.400 dBm

CF 1.715 GHz 501 pts Span 20.0 MHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.71004 GHz	-15.55 dBm		
T1	1		1.7105289 GHz	7.94 dBm	Occ Bw	8.982035928 MHz
T2	1		1.719511 GHz	6.20 dBm		
D1	M1	1	9.88 MHz	-0.32 dB		

Measuring... 01.89.2022 18:01:42

Date: 1.8EP.2022 18:01:42

Middle

Spectrum

Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep

1Pk Max

M1[1] -13.97 dBm 1.7276200 GHz 8.982035928 MHz -0.57 dB 9.8000 MHz

D1 11.900 dBm T1 10 dBm D2 -14.100 dBm

CF 1.7325 GHz 501 pts Span 20.0 MHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.72762 GHz	-13.97 dBm		
T1	1		1.7280289 GHz	9.00 dBm	Occ Bw	8.982035928 MHz
T2	1		1.737011 GHz	7.71 dBm		
D1	M1	1	9.8 MHz	-0.57 dB		

Measuring... 01.89.2022 18:02:23

Date: 1.8EP.2022 18:02:23

Spectrum

Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep

1Pk Max

M1[1] -13.30 dBm 1.7276200 GHz 8.942115768 MHz -0.66 dB 9.8000 MHz

D1 10.920 dBm T1 10 dBm D2 -15.080 dBm

CF 1.7325 GHz 501 pts Span 20.0 MHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.72762 GHz	-13.30 dBm		
T1	1		1.7280289 GHz	7.23 dBm	Occ Bw	8.942115768 MHz
T2	1		1.7369711 GHz	8.45 dBm		
D1	M1	1	9.8 MHz	-0.66 dB		

Measuring... 01.89.2022 18:02:53

Date: 1.8EP.2022 18:02:53

Highest

Spectrum

Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep

1Pk Max

M1[1] -12.65 dBm 1.7451200 GHz 8.982035928 MHz -0.68 dB 9.7600 MHz

D1 12.030 dBm T1 10 dBm D2 -13.970 dBm

CF 1.75 GHz 501 pts Span 20.0 MHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.74512 GHz	-12.65 dBm		
T1	1		1.7455289 GHz	8.19 dBm	Occ Bw	8.982035928 MHz
T2	1		1.754511 GHz	8.14 dBm		
D1	M1	1	9.76 MHz	-0.68 dB		

Measuring... 01.89.2022 18:03:23

Date: 1.8EP.2022 18:03:23

Spectrum

Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep

1Pk Max

M1[1] -15.06 dBm 1.7451200 GHz 8.942115768 MHz -1.25 dB 9.7600 MHz

D1 12.180 dBm T1 10 dBm D2 -13.820 dBm

CF 1.75 GHz 501 pts Span 20.0 MHz

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		1.74512 GHz	-15.06 dBm		
T1	1		1.7455289 GHz	7.02 dBm	Occ Bw	8.942115768 MHz
T2	1		1.7544711 GHz	8.15 dBm		
D1	M1	1	9.76 MHz	-1.25 dB		

Measuring... 01.89.2022 18:03:49

Date: 1.8EP.2022 18:03:49

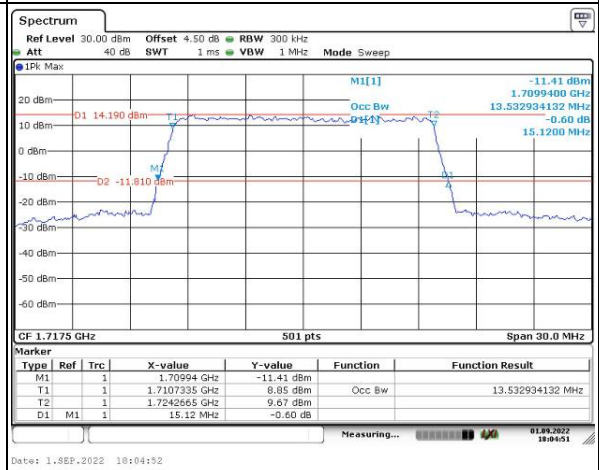
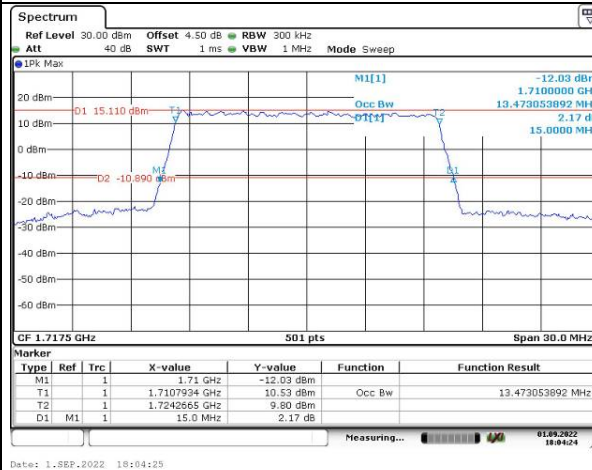
Occupied Bandwidth

Channel

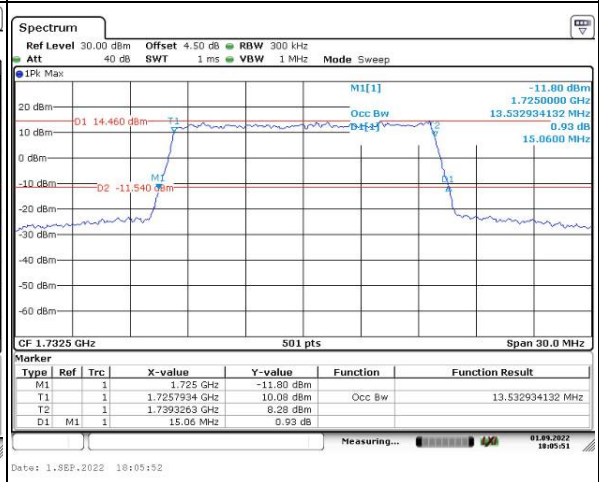
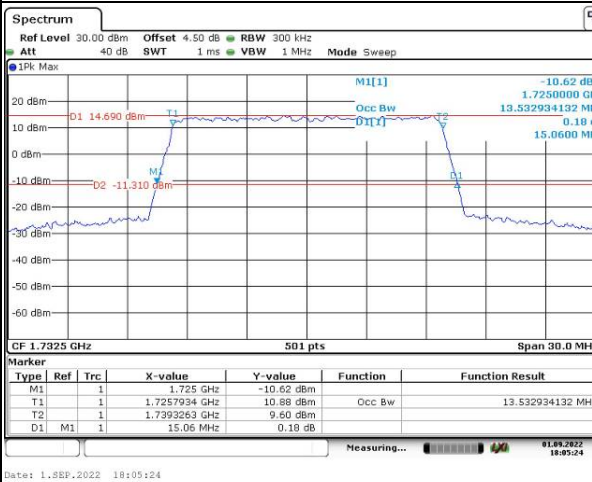
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

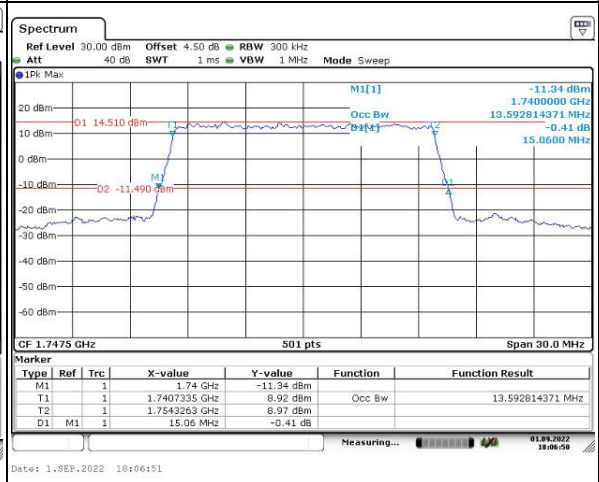
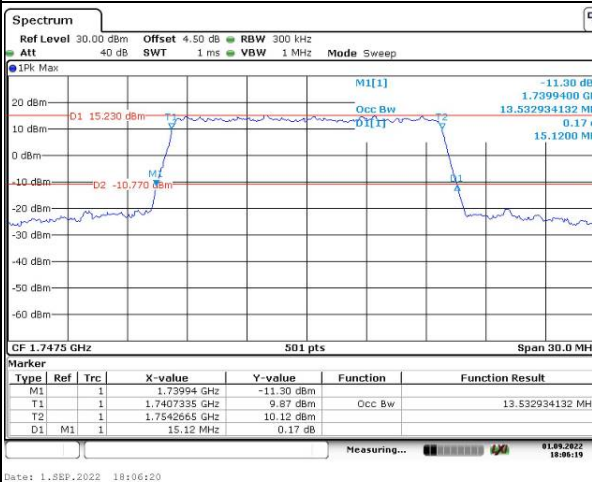
Lowest



Middle



Highest



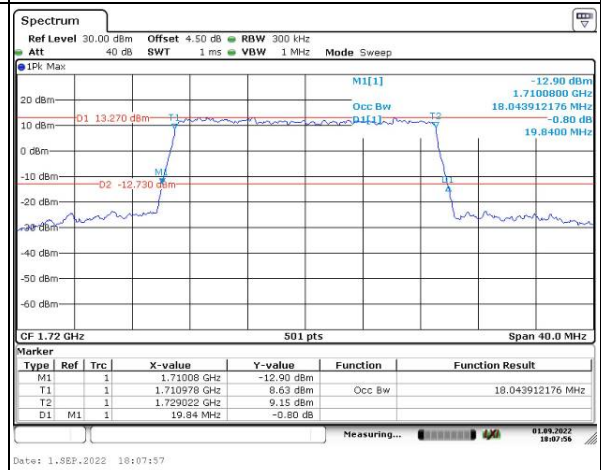
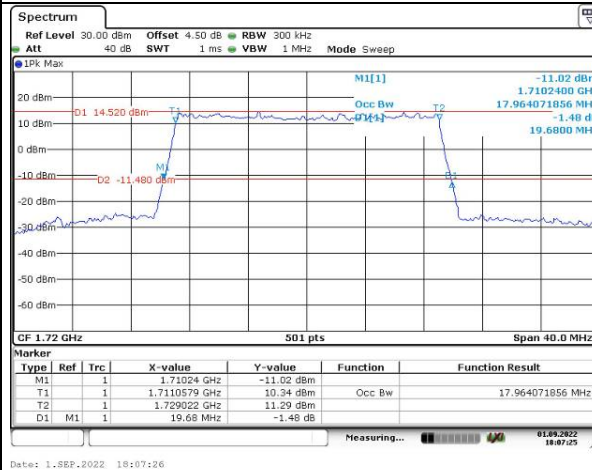
Occupied Bandwidth

Channel

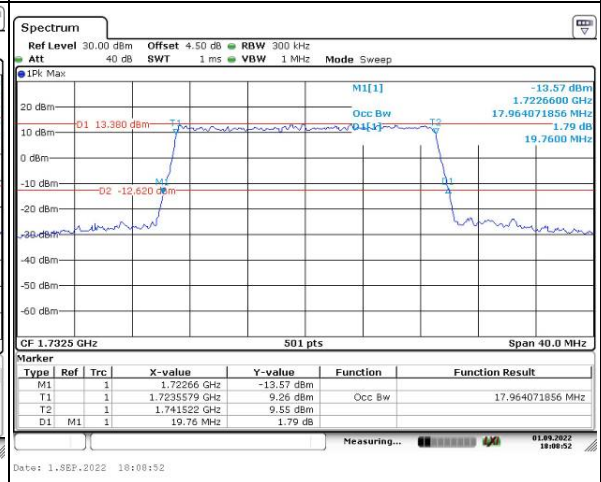
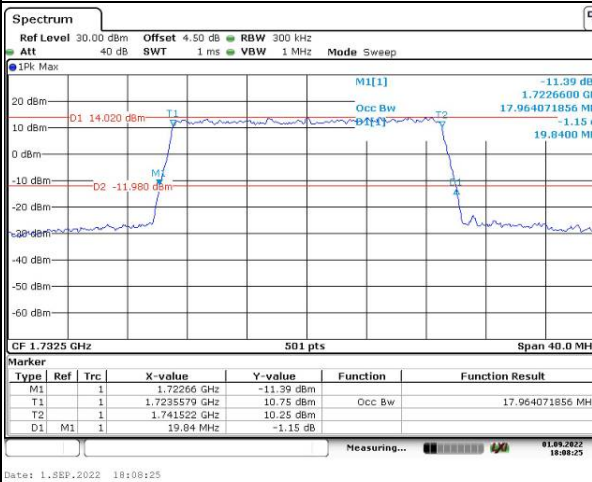
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

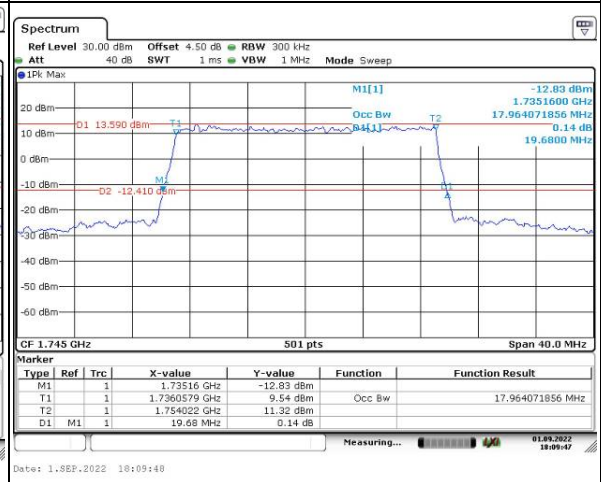
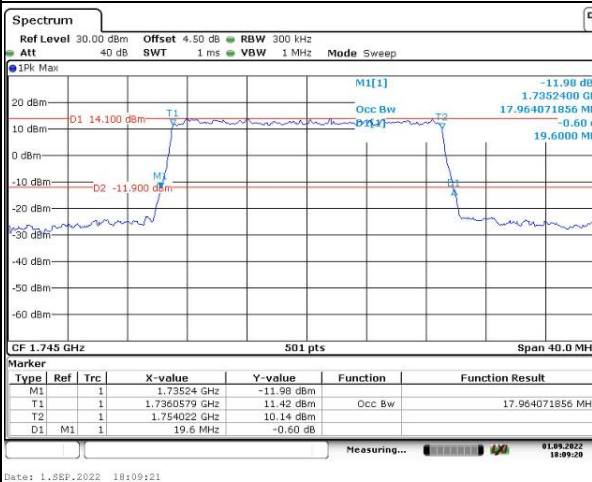
Lowest



Middle



Highest

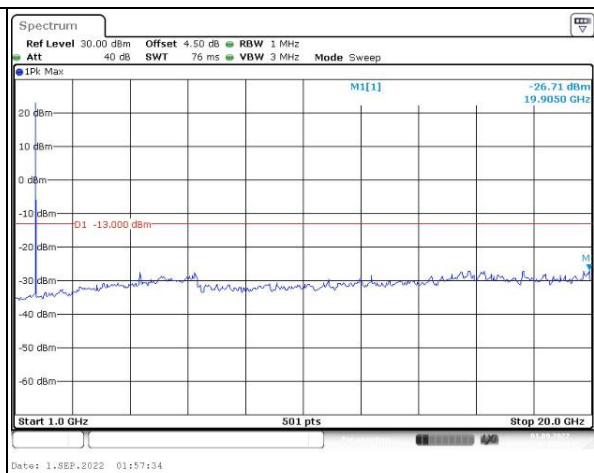
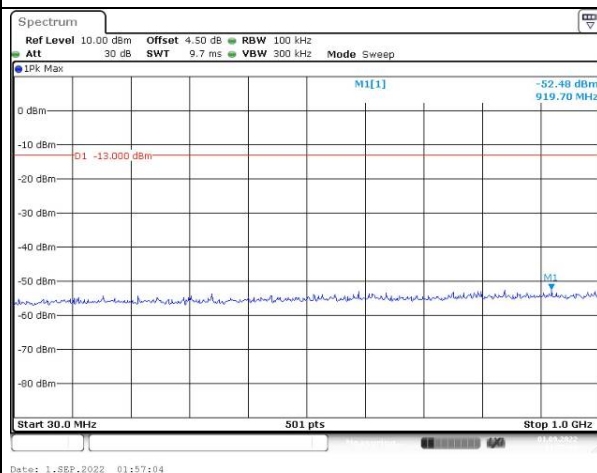


Spurious Emissions at Antenna Terminal

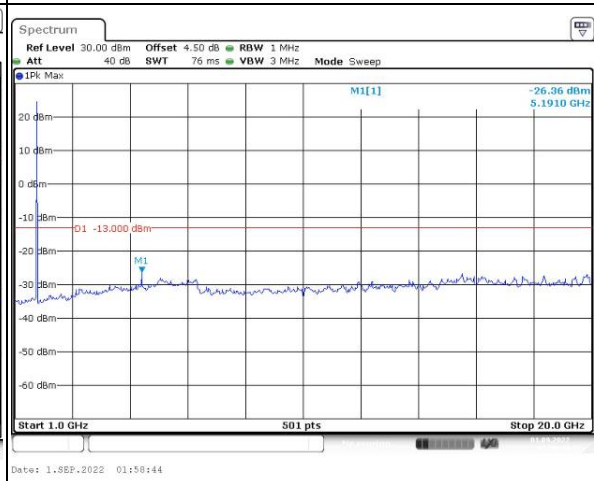
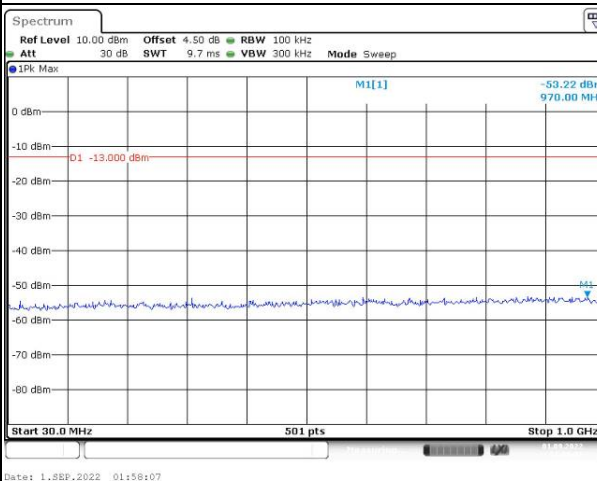
Channel

1.4MHz Bandwidth QPSK

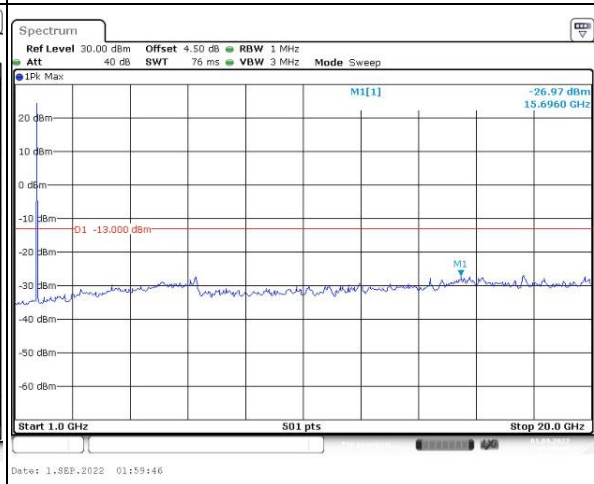
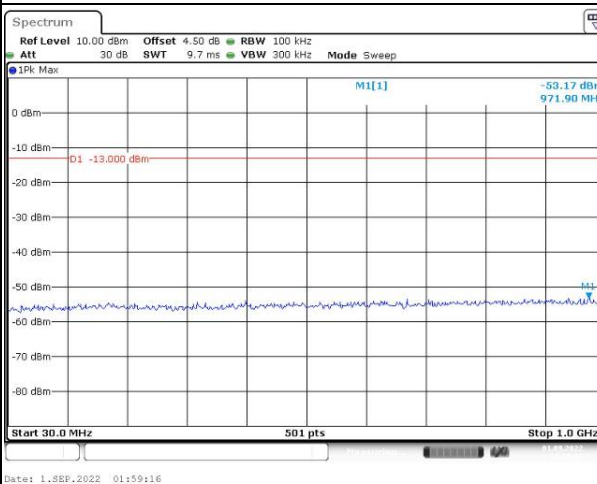
Lowest



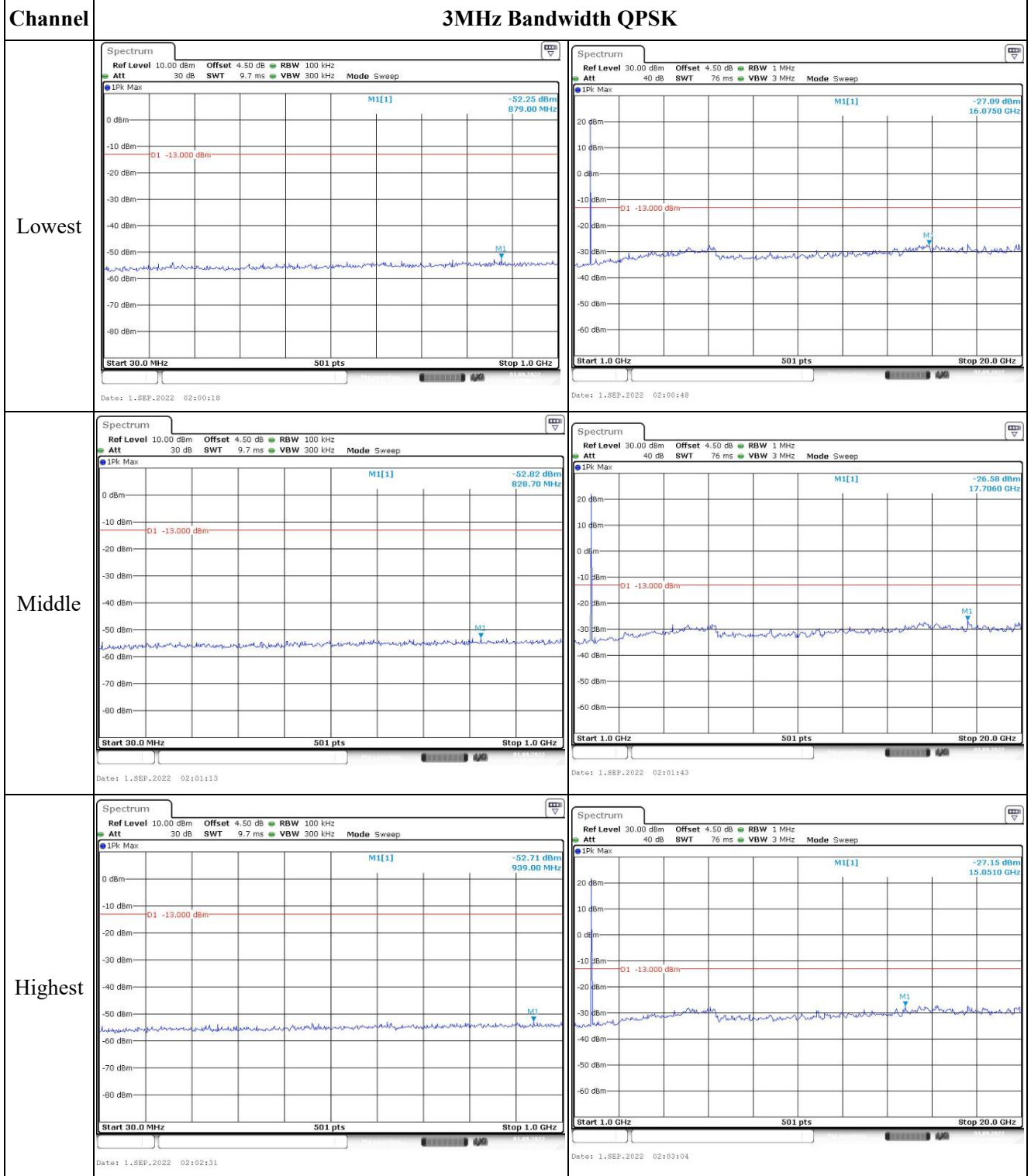
Middle



Highest



Spurious Emissions at Antenna Terminal

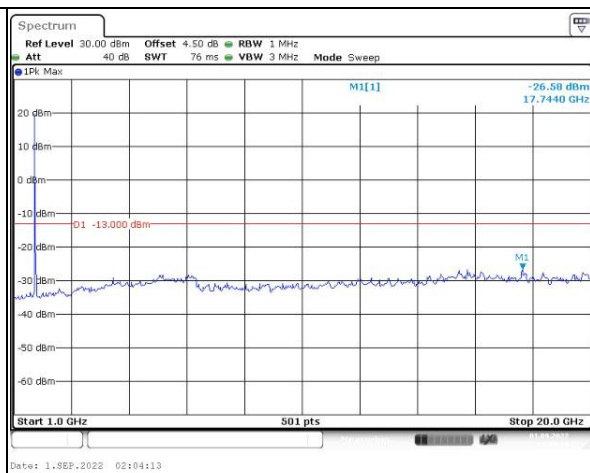
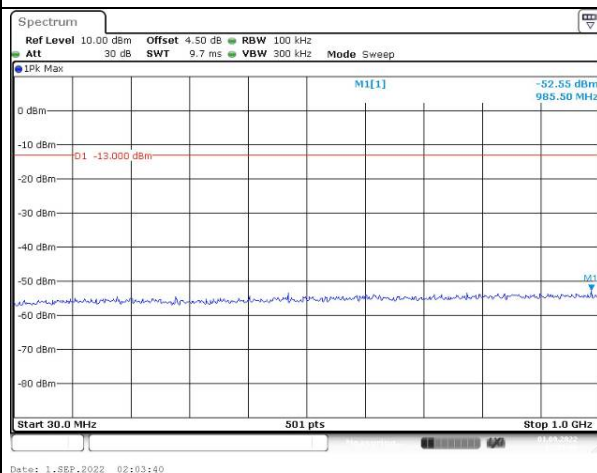


Spurious Emissions at Antenna Terminal

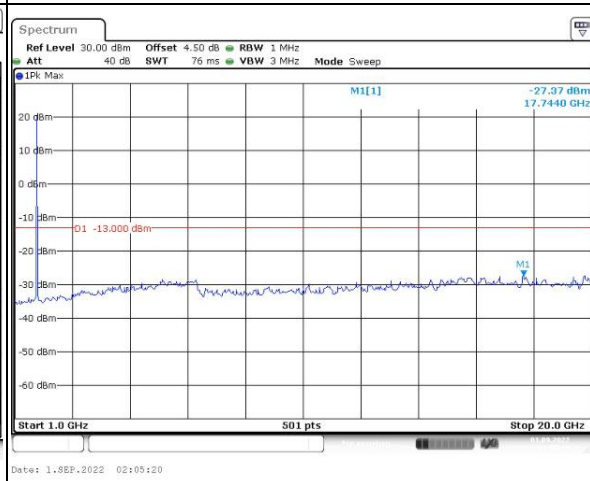
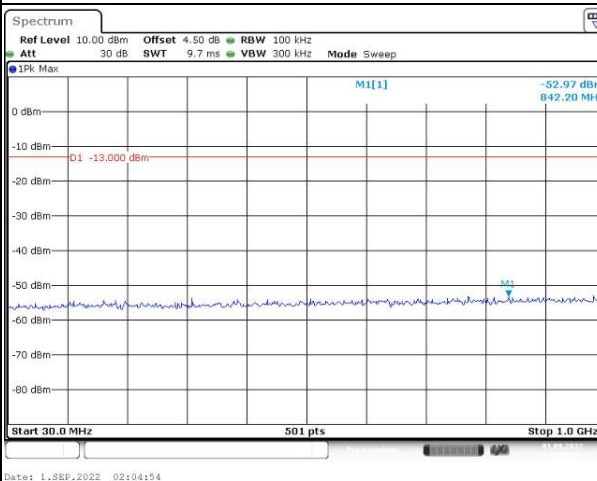
Channel

5MHz Bandwidth QPSK

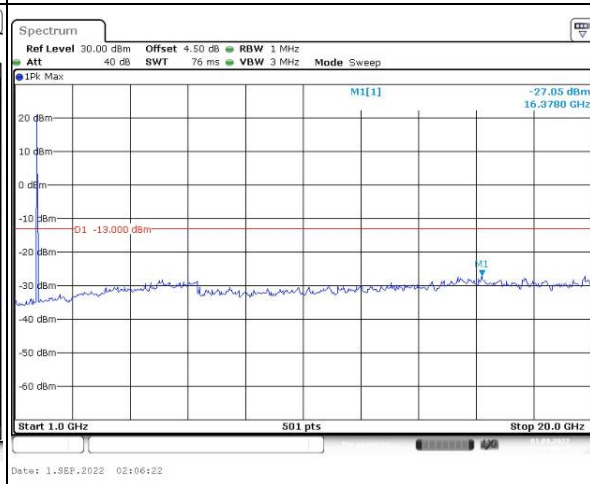
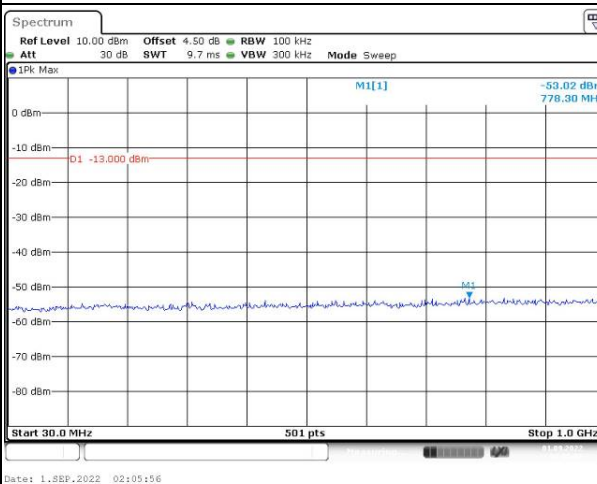
Lowest



Middle



Highest

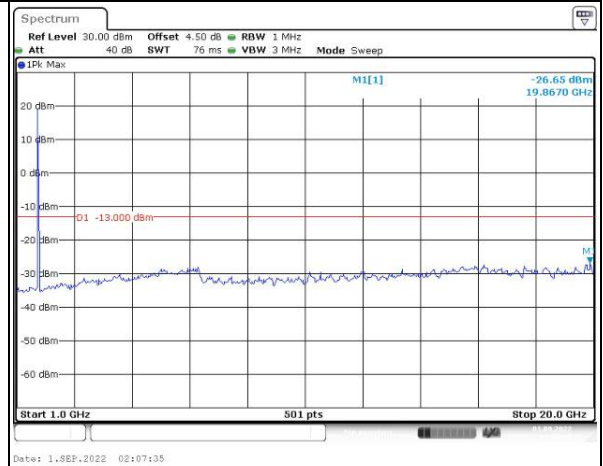
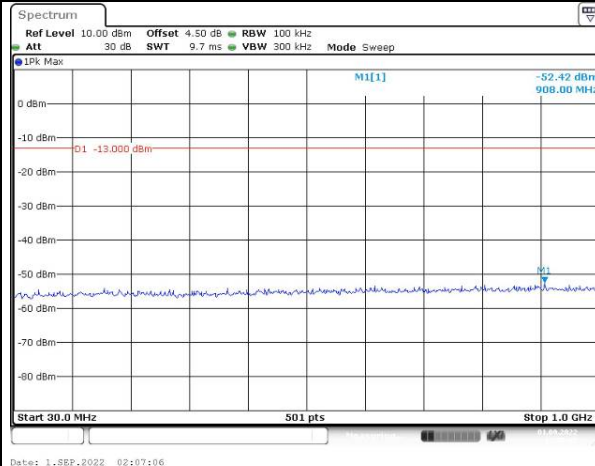


Spurious Emissions at Antenna Terminal

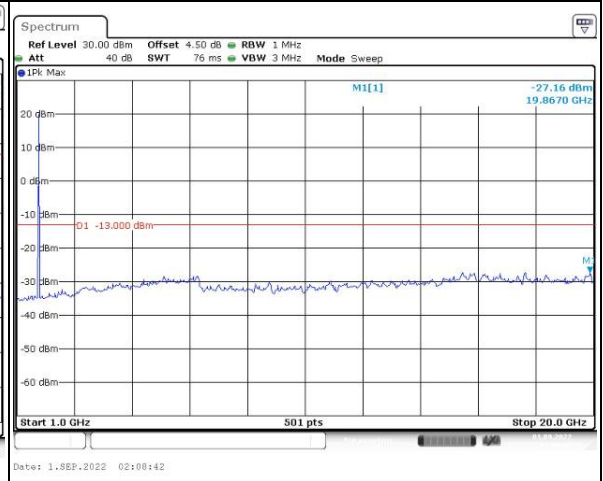
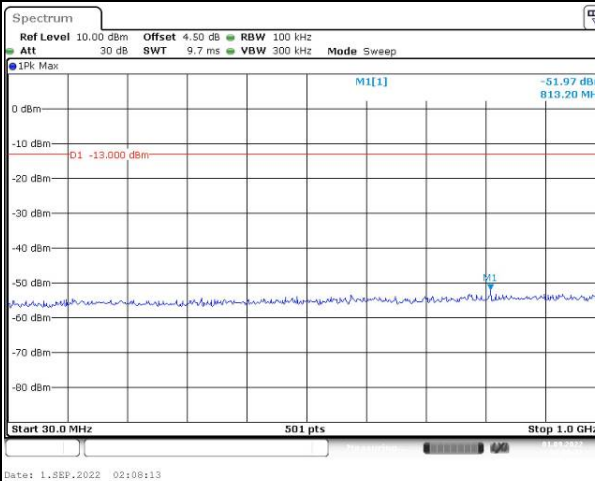
Channel

10MHz Bandwidth QPSK

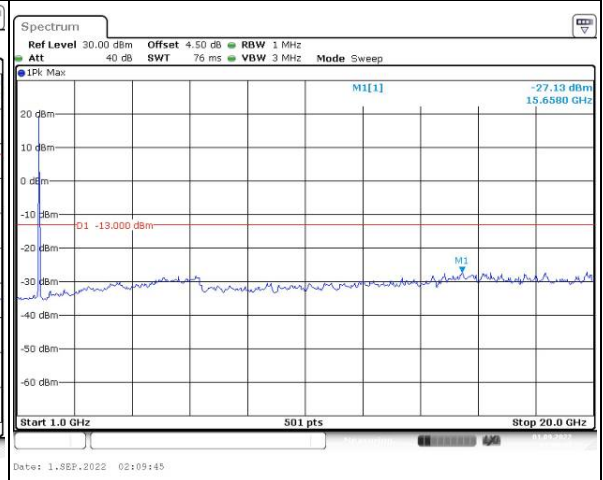
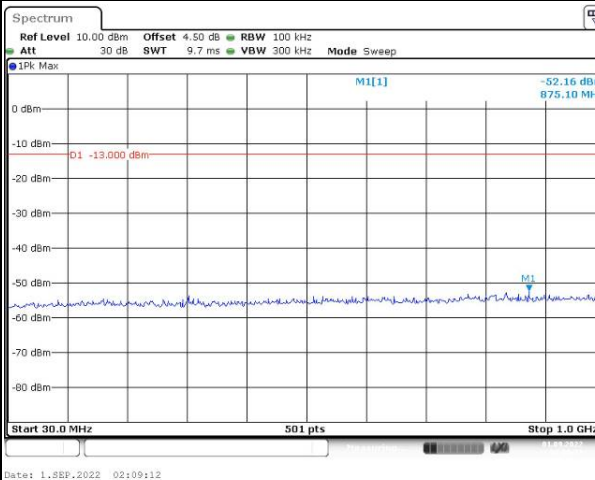
Lowest



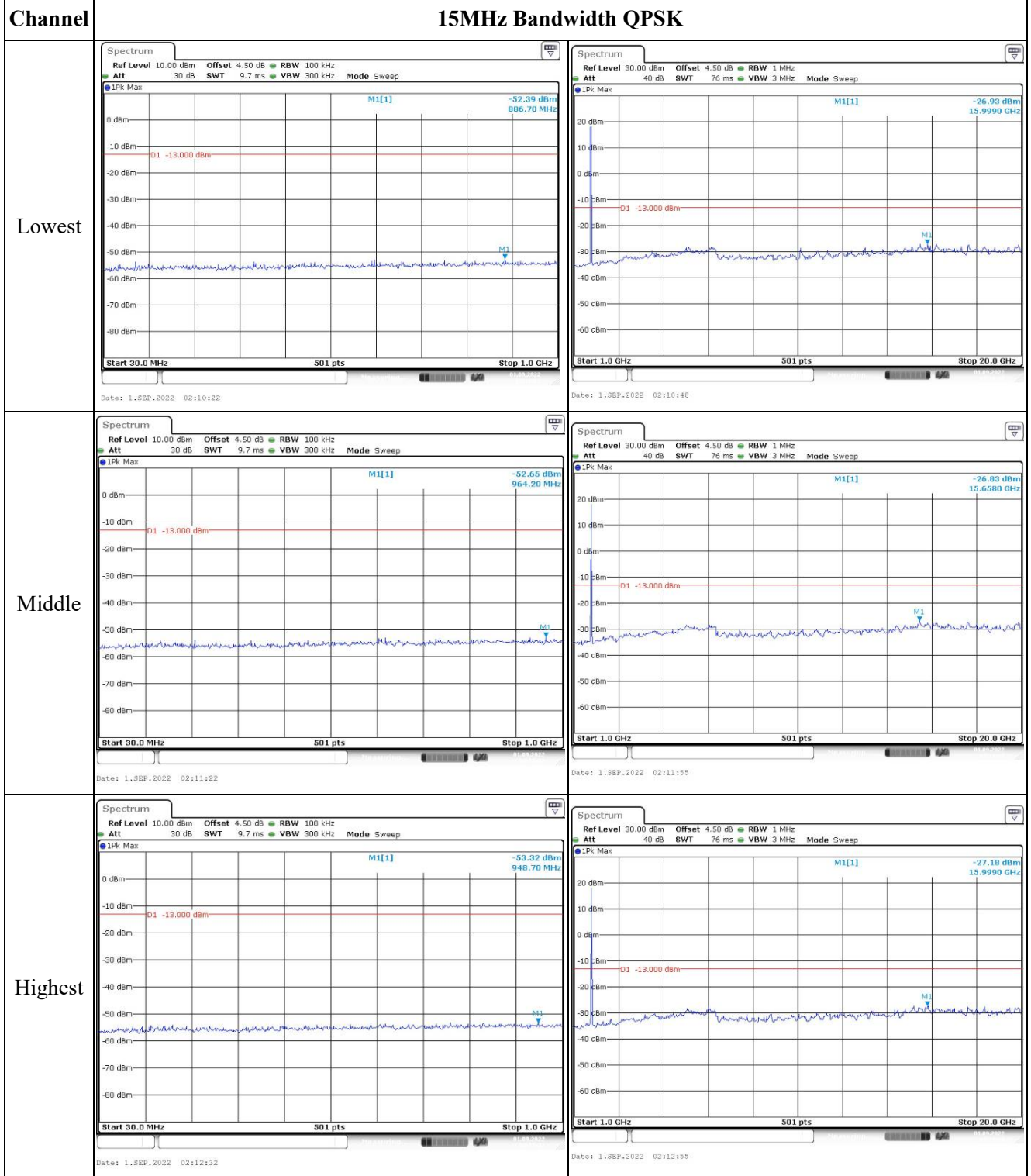
Middle



Highest



Spurious Emissions at Antenna Terminal

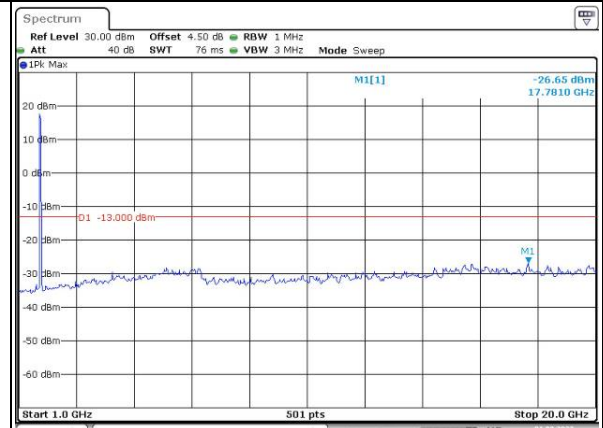
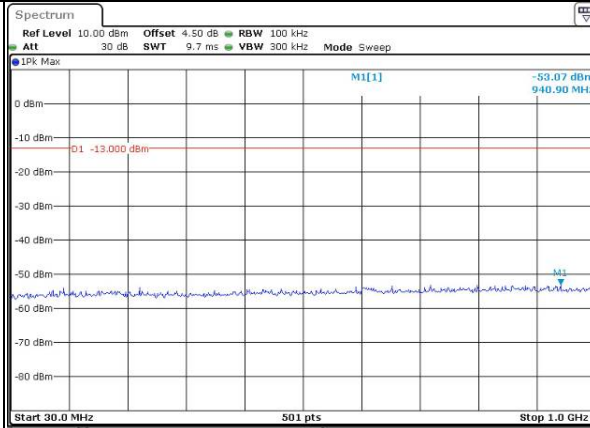


Spurious Emissions at Antenna Terminal

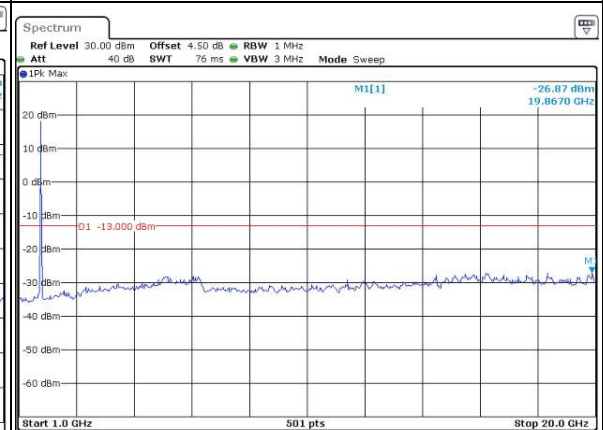
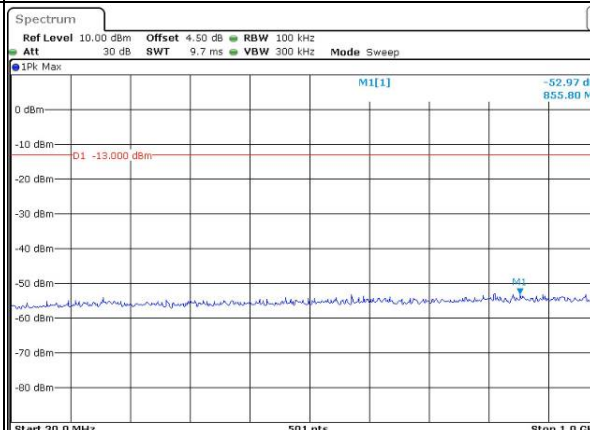
Channel

20MHz Bandwidth QPSK

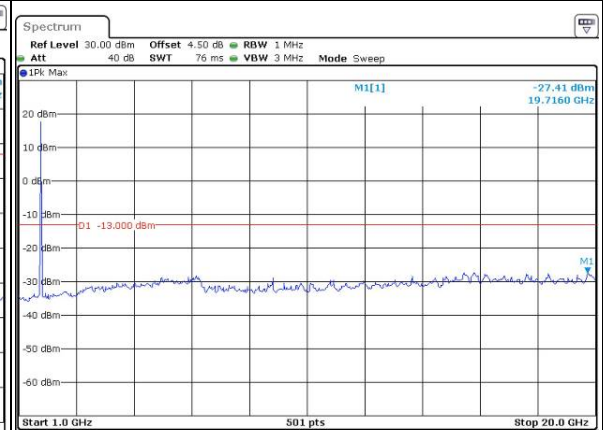
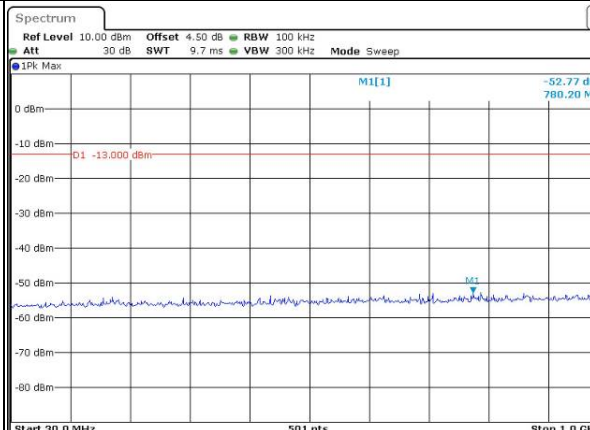
Lowest



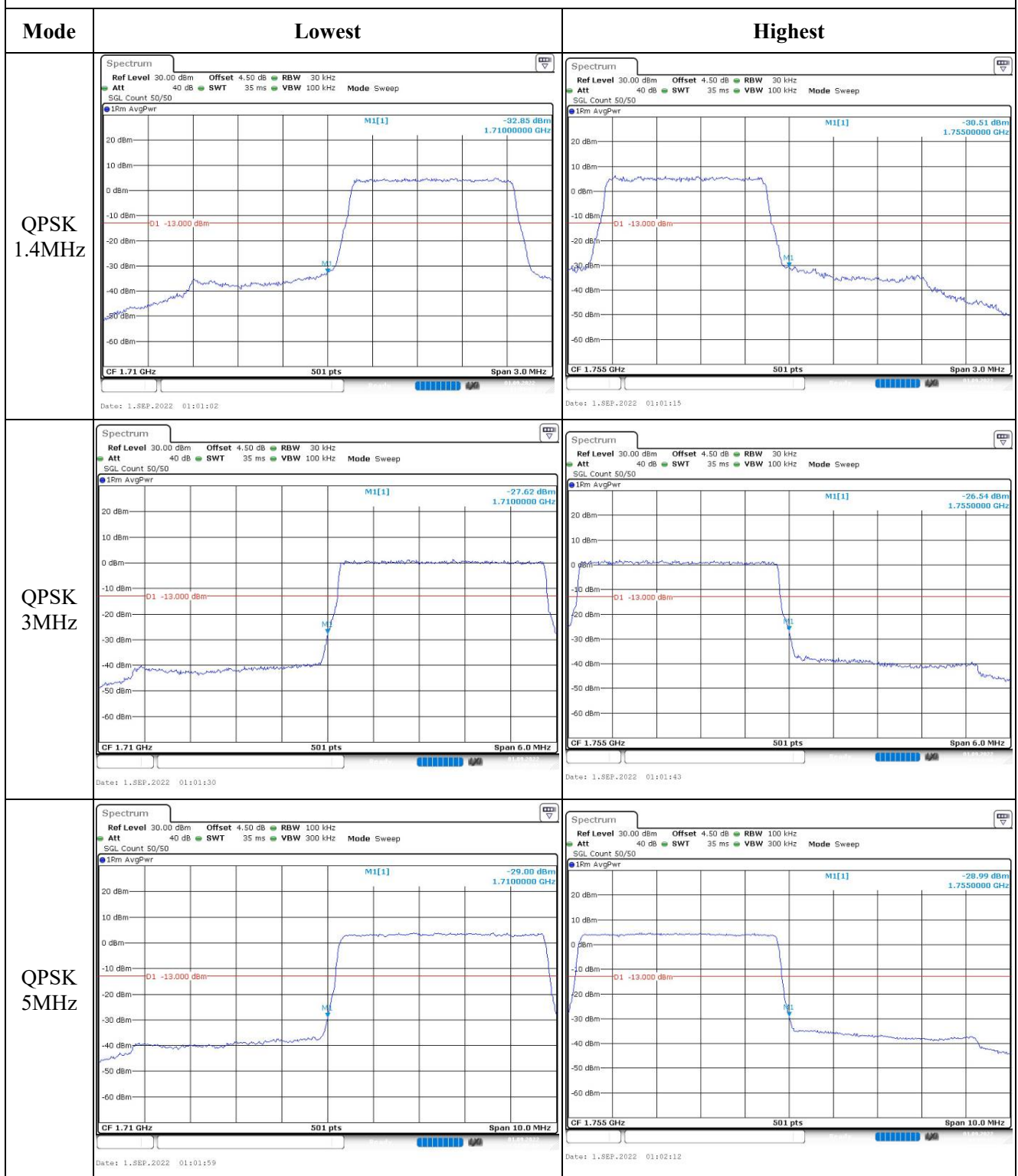
Middle



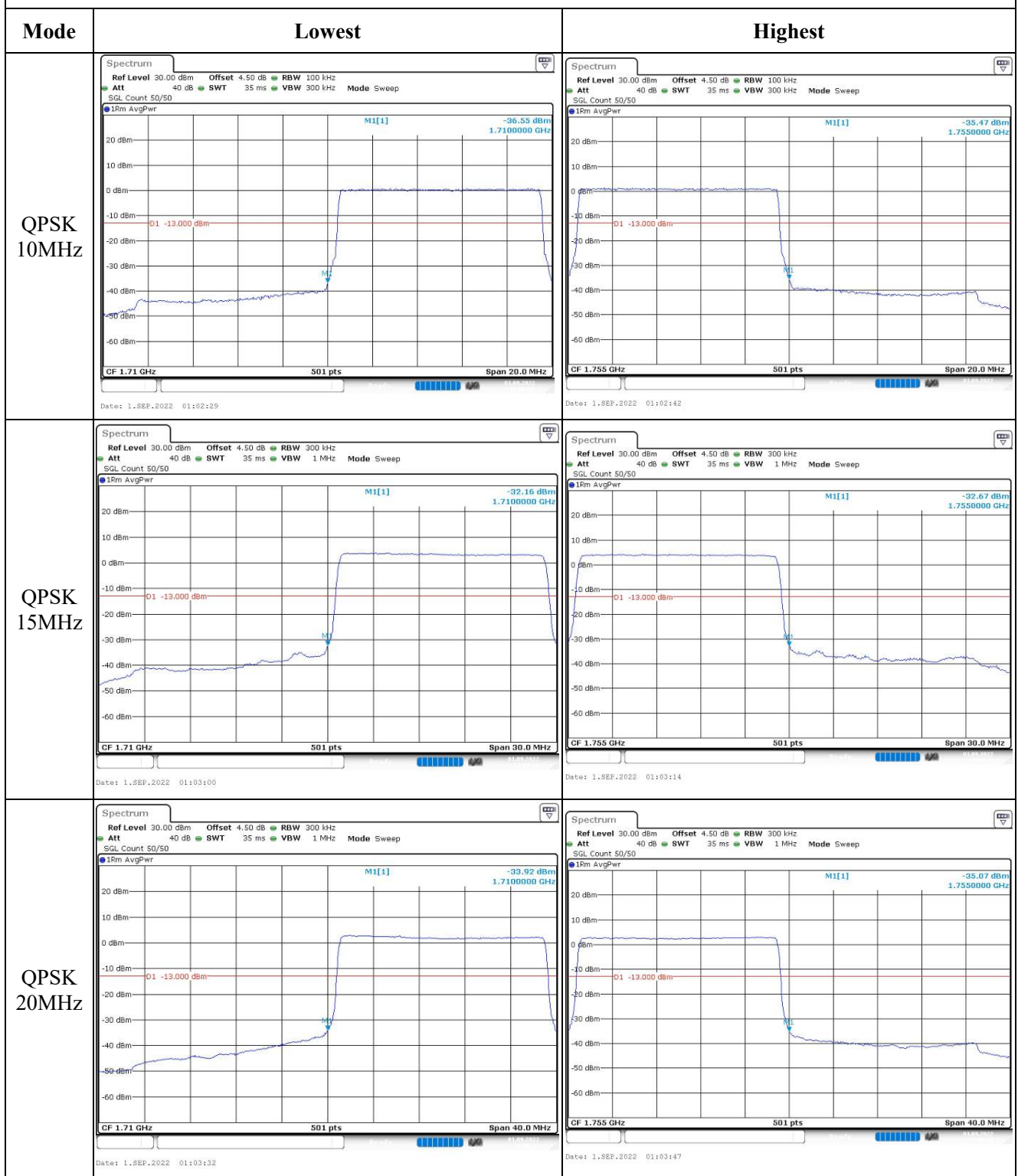
Highest



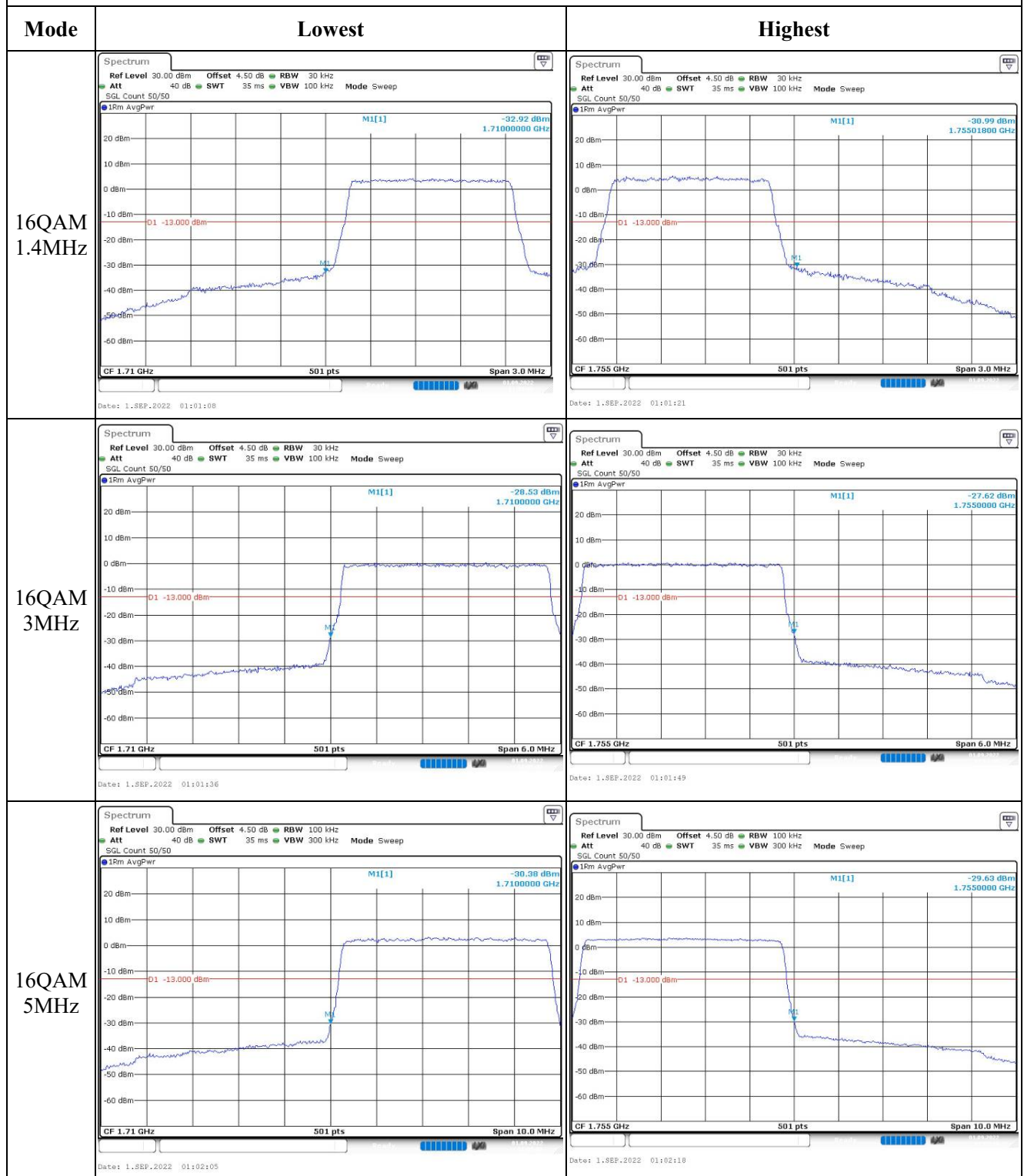
Out of band emission, Band Edge



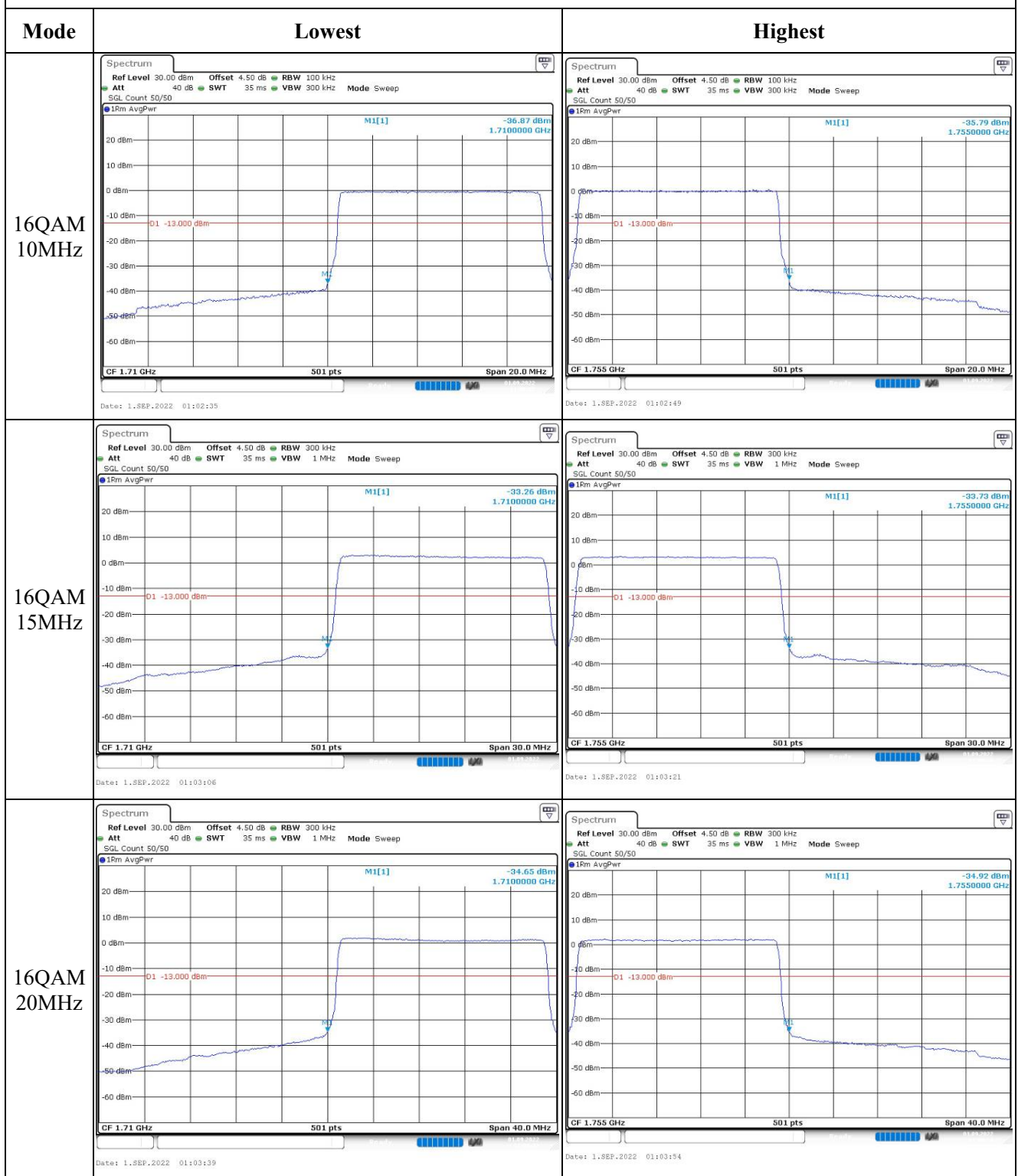
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	CR22080045-RF-S1	Test Date:	2022-08-31~2022-09-02
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.2~25.9	Relative Humidity: (%)	53~61	ATM Pressure: (kPa)	100.1~100.6
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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
Unknown	Coaxial tee connector	Unknown	2204004	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
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 5▲:

Antenna Gain (dBi):	0.43	Antenna Gain (dBd):	-1.72	Path Loss L _C (dB):	0.2
Operation Voltage(V _{DC}):					
Lowest:	3.5	Normal:	3.8	Highest:	4.35

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	824.7	836.5	848.3
3MHz	825.5	836.5	847.5
5MHz	826.5	836.5	846.5
10MHz	829	836.5	844

Test Data:**FCC§2.1046;§ 22.913 (a)****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.89	22.87	23.03	21.12	38.45
	RB1#3	22.89	22.98	23.02		
	RB1#5	22.88	22.94	23.04		
	RB3#0	22.98	22.86	22.99		
	RB3#3	23	22.94	22.99		
	RB6#0	21.85	21.69	21.89		
1.4MHz 16QAM	RB1#0	22.52	21.2	22.65	20.73	38.45
	RB1#3	22.48	21.34	22.36		
	RB1#5	22.45	21.28	22.37		
	RB3#0	21.93	21.85	22.17		
	RB3#3	21.83	21.74	21.88		
	RB6#0	20.69	21.44	21.09		
3MHz QPSK	RB1#0	22.93	22.92	22.95	21.29	38.45
	RB1#8	22.75	23.04	23.19		
	RB1#14	22.88	23.03	23.21		
	RB6#0	22.02	21.87	22.08		
	RB6#9	21.9	21.93	22.07		
	RB15#0	21.7	21.92	22.14		
3MHz 16QAM	RB1#0	22.64	21.48	22.25	20.72	38.45
	RB1#8	22.39	21.49	22.46		
	RB1#14	22.43	21.45	22.35		
	RB6#0	20.76	21.09	21.05		
	RB6#9	21.1	21.59	21.12		
	RB15#0	20.69	21.48	21.22		
5MHz QPSK	RB1#0	22.9	22.92	22.9	21.25	38.45
	RB1#13	22.91	22.96	22.93		
	RB1#24	22.91	23.04	23.17		
	RB15#0	21.87	21.87	22		
	RB15#10	21.57	22.01	22.08		
	RB25#0	21.67	22.02	22.04		
5MHz 16QAM	RB1#0	21.97	21.55	21.03	20.05	38.45
	RB1#13	21.88	21.54	21.13		
	RB1#24	21.95	21.72	21.23		
	RB15#0	20.43	20.89	21.05		
	RB15#10	20.75	21.43	21.24		
	RB25#0	21.02	21.29	21.1		
10MHz QPSK	RB1#0	23.08	22.81	22.9	21.18	38.45
	RB1#25	23	23.1	22.99		

	RB1#49	23.05	22.99	23.06		
	RB25#0	21.8	22.05	21.91		
	RB25#25	22.03	21.93	22.04		
	RB50#0	21.75	21.96	22.19		
10MHz 16QAM	RB1#0	22.04	21.24	22.1	20.23	38.45
	RB1#25	22.06	21.44	22.15		
	RB1#49	22.14	21.48	22.13		
	RB25#0	21.12	21.15	20.95		
	RB25#25	21.07	21.05	20.97		
	RB50#0	20.89	21.56	21.59		
Note: ERP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBd)						
					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	
10MHz QPSK	RB1#0	4.78	5.25	5.1	13
	RB50#0	5.36	5.36	5.51	13
10MHz 16QAM	RB1#0	5.97	5.74	5.88	13
	RB50#0	6.2	6	6.32	13
Result:					Pass

FCC §2.1049, §22.905: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	1.102	1.096	1.26	1.254	1.26
1.4MHz 16QAM	1.09	1.102	1.102	1.248	1.254	1.26
3MHz QPSK	2.695	2.683	2.695	2.988	3.012	2.988
3MHz 16QAM	2.683	2.683	2.695	3	3.024	3.012
5MHz QPSK	4.511	4.511	4.531	5.02	4.98	5
5MHz 16QAM	4.531	4.551	4.511	5	5.02	5
10MHz QPSK	8.942	8.942	8.982	9.8	9.8	9.8
10MHz 16QAM	8.982	8.942	8.942	9.84	9.8	9.76
Note: The test plots please refer to the Plots of Occupied Bandwidth						

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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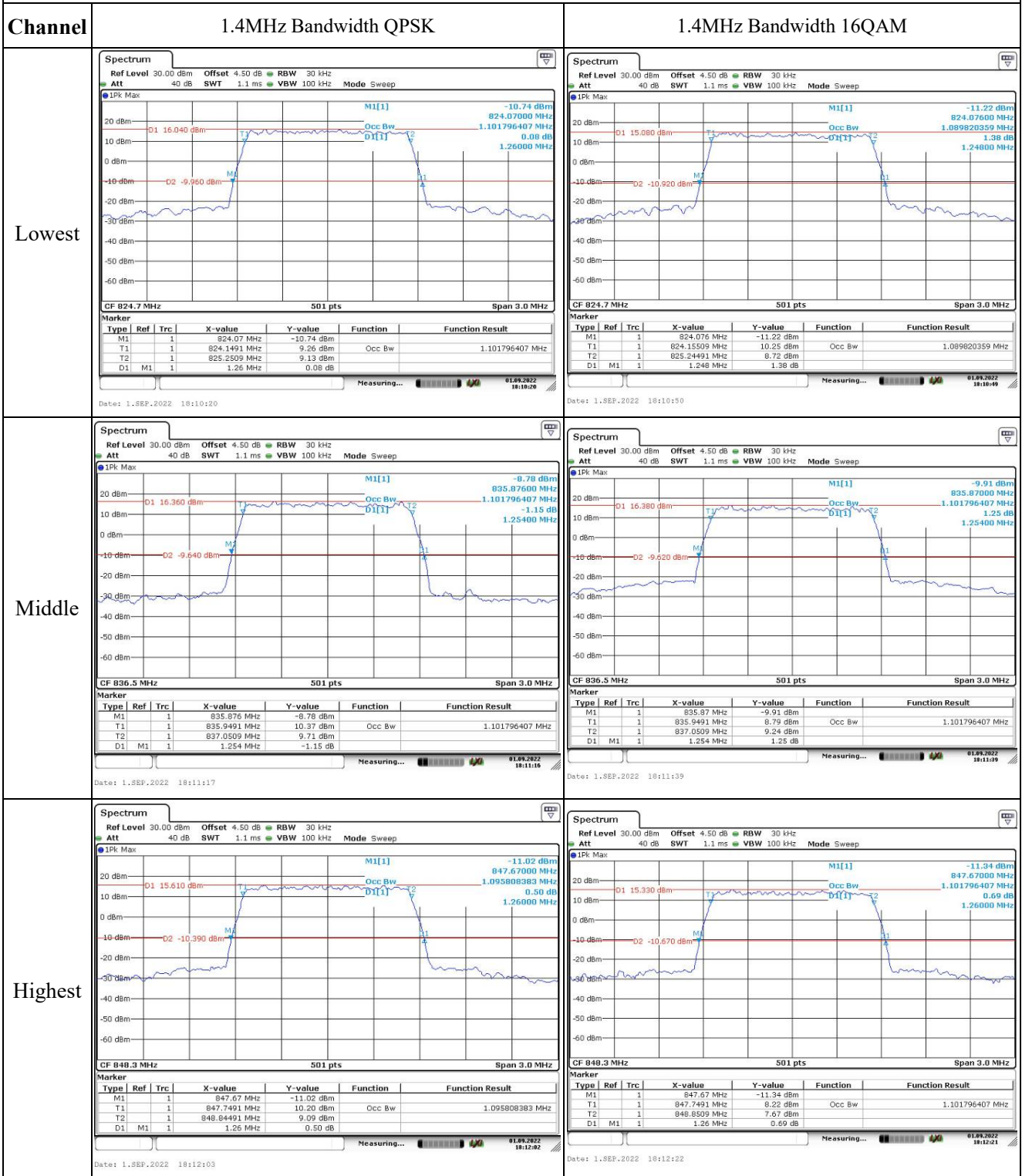
FCC §2.1055, §22.355: Frequency Stability

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	3.8	-6.49	-0.008	2.5
	-20	3.8	-6.97	-0.008	2.5
	-10	3.8	-5.5	-0.007	2.5
	0	3.8	6.06	0.007	2.5
	10	3.8	9.8	0.012	2.5
	20	3.8	5.03	0.006	2.5
	30	3.8	-6.62	-0.008	2.5
	40	3.8	-8.73	-0.010	2.5
	50	3.8	-7.05	-0.008	2.5
Frequency Stability vs. Voltage	20	3.5	8.99	0.011	2.5
	20	4.35	-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	3.8	-15.18	-0.018	2.5
	-20	3.8	8.1	0.010	2.5
	-10	3.8	-8.59	-0.010	2.5
	0	3.8	9.33	0.011	2.5
	10	3.8	-6.94	-0.008	2.5
	20	3.8	7.54	0.009	2.5
	30	3.8	6.43	0.008	2.5
	40	3.8	-6.17	-0.007	2.5
	50	3.8	-6.44	-0.008	2.5
Frequency Stability vs. Voltage	20	3.5	6.34	0.008	2.5
	20	4.35	-6.89	-0.008	2.5
Result:				Pass	

Test Plots:

Occupied Bandwidth



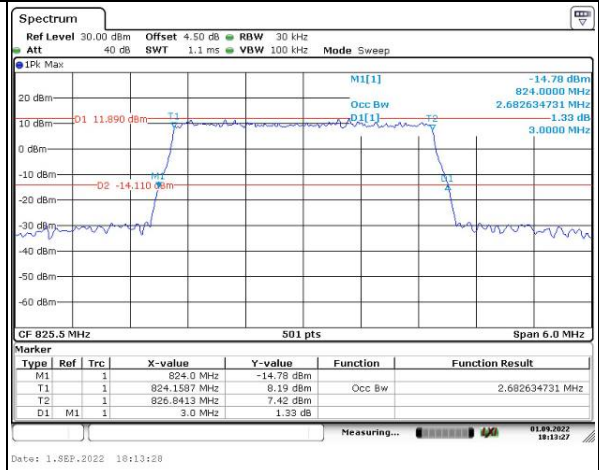
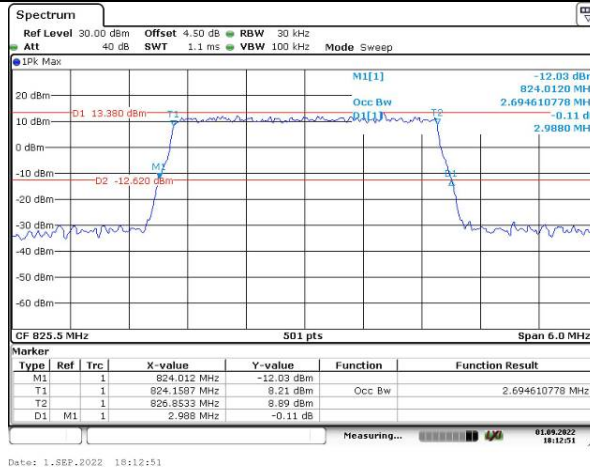
Occupied Bandwidth

Channel

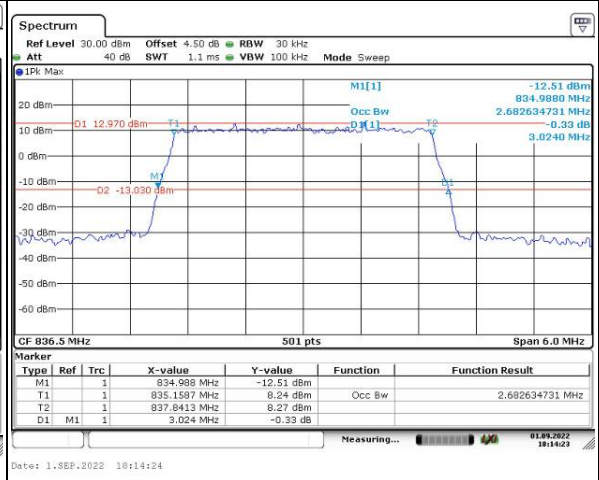
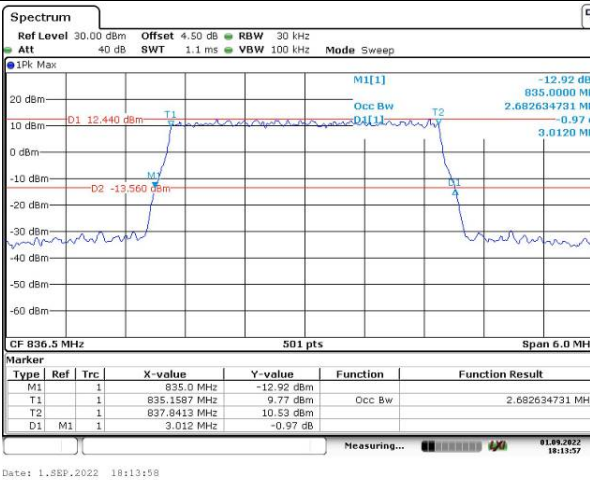
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

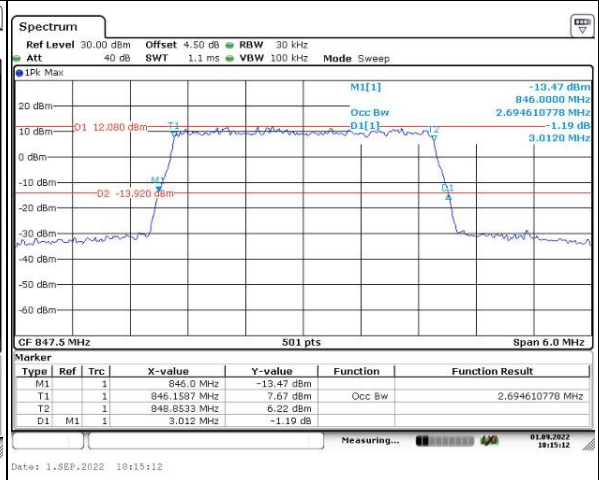
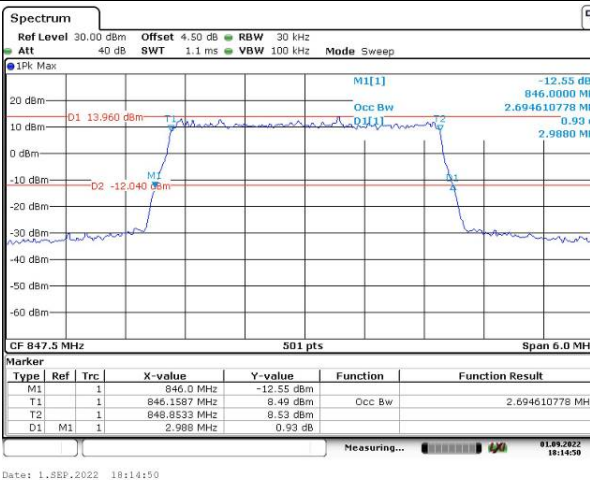
Lowest



Middle



Highest



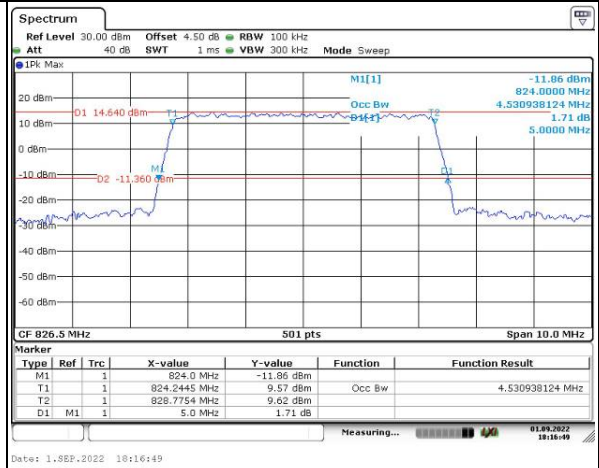
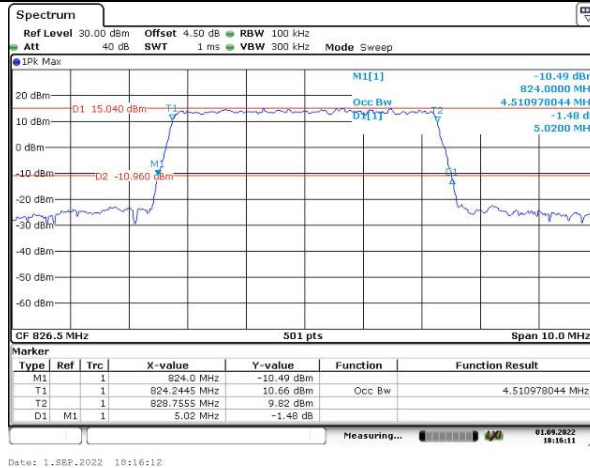
Occupied Bandwidth

Channel

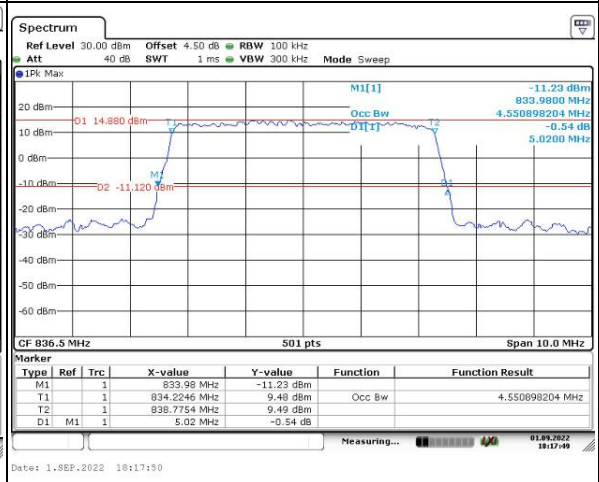
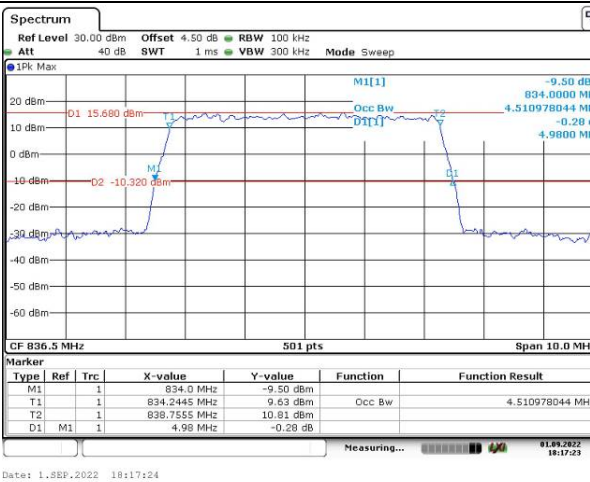
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

Lowest



Middle



Highest

