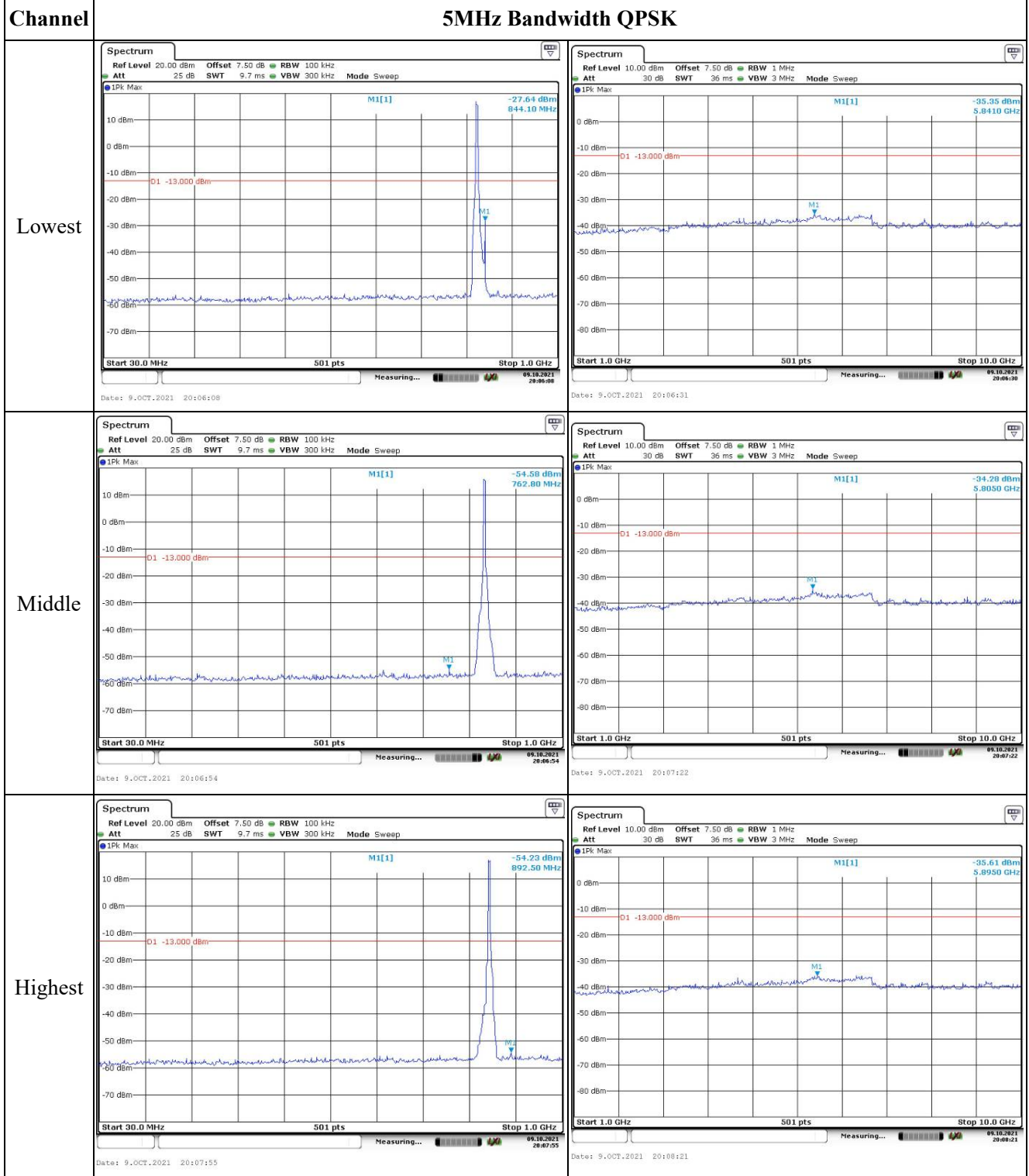
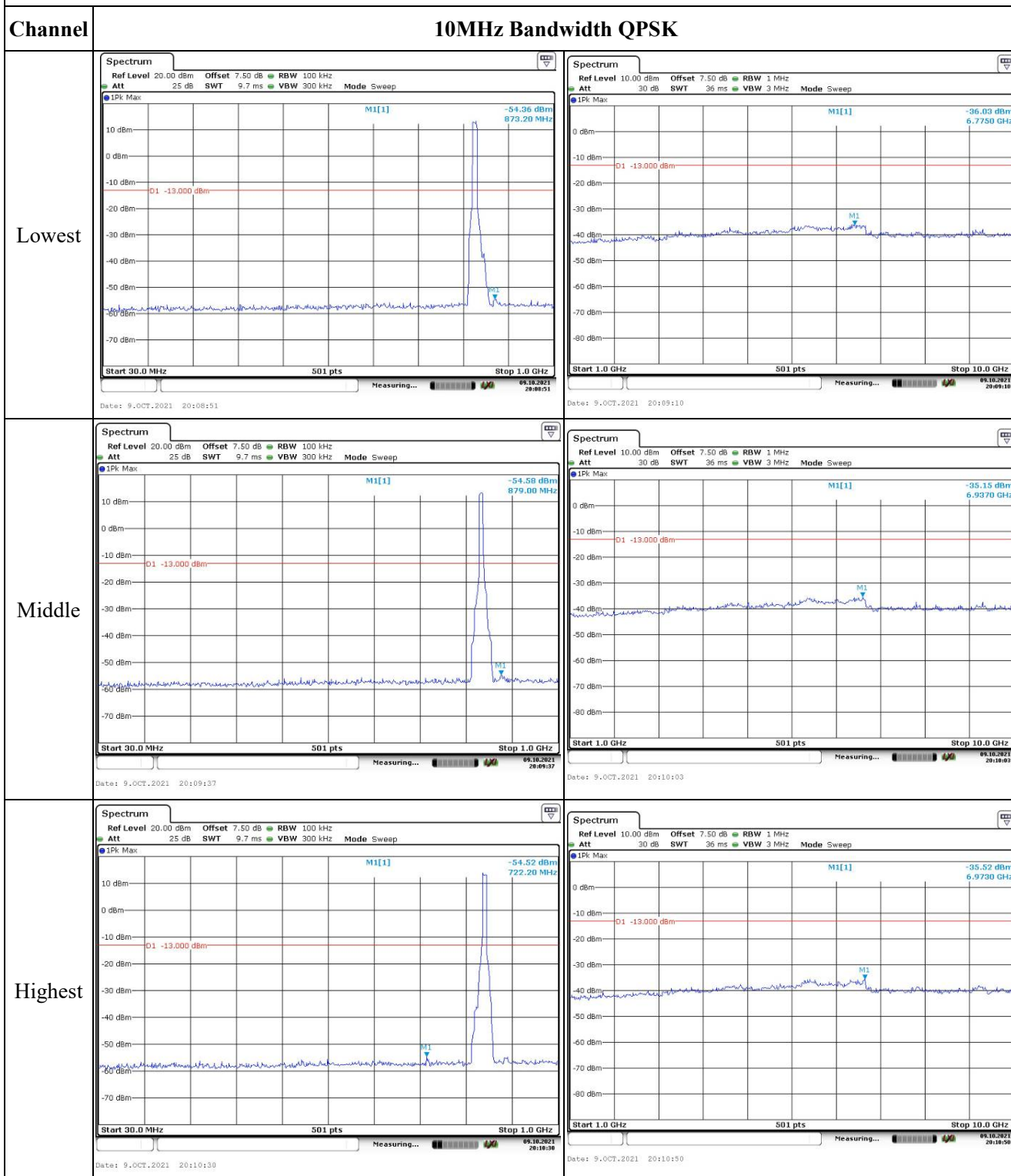


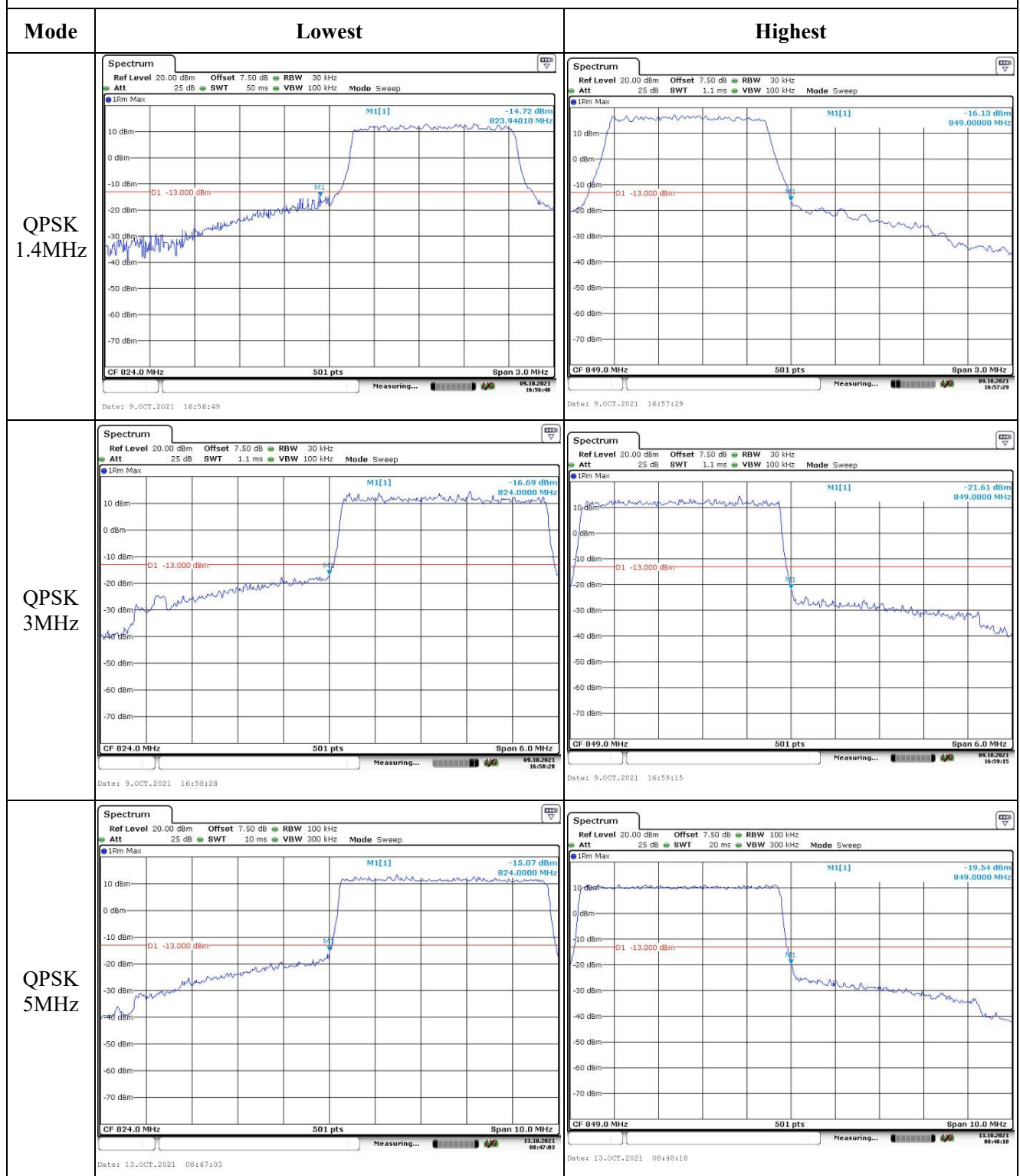
Spurious Emissions at Antenna Terminal



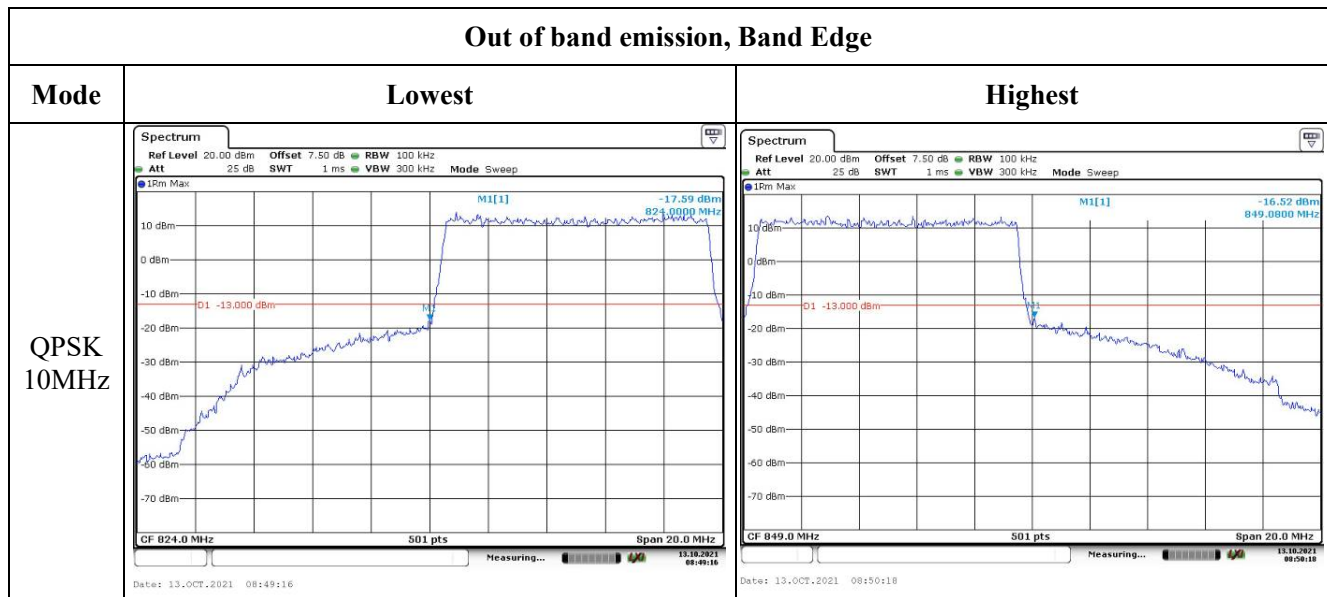
Spurious Emissions at Antenna Terminal



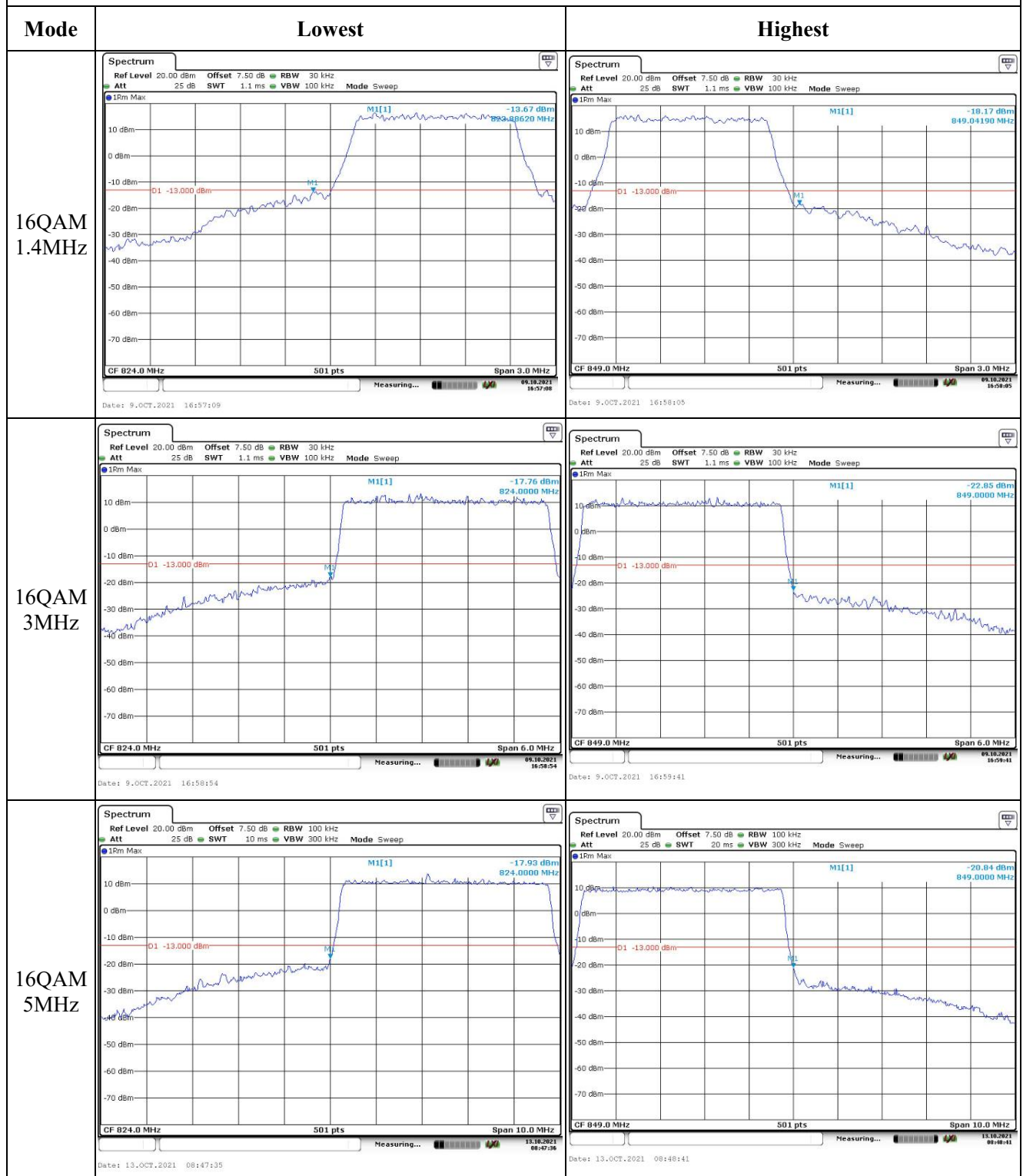
Out of band emission, Band Edge



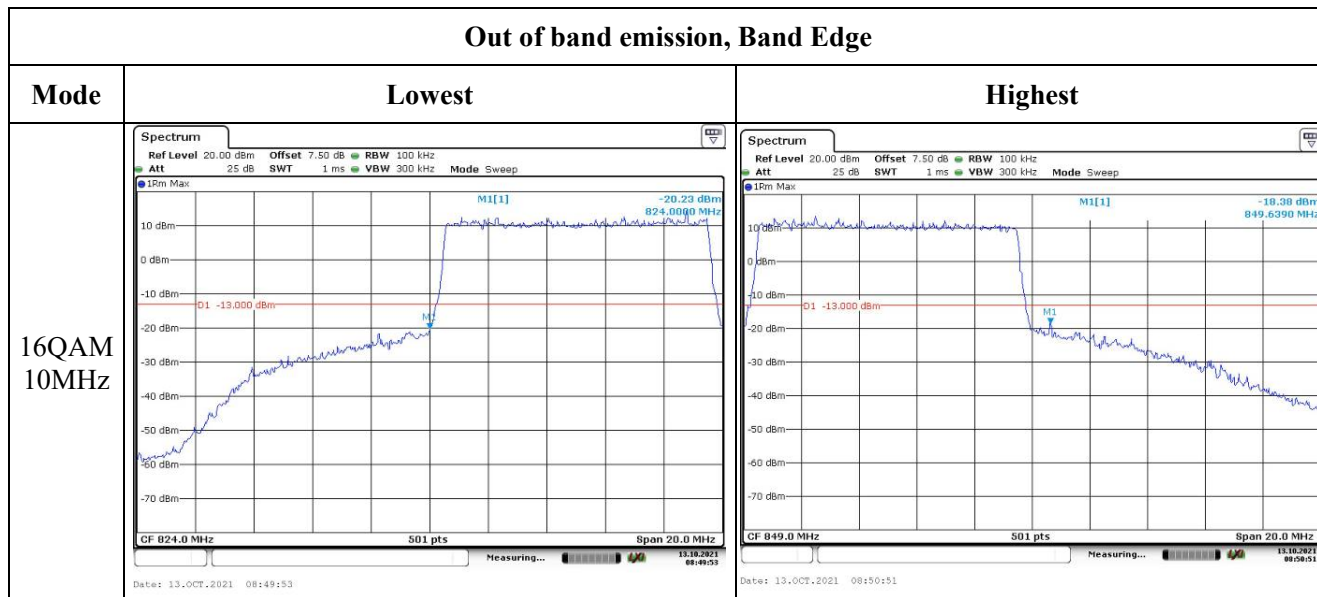
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.9 Antenna Port Test Data and Results for LTE Band 7:

Serial Number:	CR21090086-RF-S1	Test Date:	2021/10/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	Thor Lei	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.7	Relative Humidity: (%)	59	ATM Pressure: (kPa)	101.6
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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	2021/7/22	2022/7/21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2021/7/22	2022/7/21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021/7/22	2022/7/22
UNI-T	Multimeter	UT39A+	C210582554	2021/9/30	2022/9/30
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	Each Time	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):	1	Cable Loss (dB):	0.5
Operation Voltage(V _{DC}):			
Lowest:	3.6	Normal:	3.8
		Highest:	4.3

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	22.15	22.22	22.23	22.95	33
	RB1#13	22.33	22.4	22.45		
	RB1#24	22.17	22.22	22.3		
	RB15#0	21.3	21.3	21.44		
	RB15#10	21.32	21.33	21.43		
	RB25#0	21.29	21.31	21.43		
5MHz 16QAM	RB1#0	21.08	21.47	21.35	22.1	33
	RB1#13	21.19	21.6	21.51		
	RB1#24	21.01	21.46	21.37		
	RB15#0	20.26	20.32	20.51		
	RB15#10	20.37	20.3	20.47		
	RB25#0	20.26	20.29	20.49		
10MHz QPSK	RB1#0	22.29	22.3	22.41	23.07	33
	RB1#25	22.4	22.46	22.57		
	RB1#49	22.26	22.34	22.42		
	RB25#0	21.29	21.37	21.48		
	RB25#25	21.33	21.36	21.49		
	RB50#0	21.33	21.33	21.5		
10MHz 16QAM	RB1#0	21.75	21.4	21.39	22.4	33
	RB1#25	21.9	21.6	21.6		
	RB1#49	21.83	21.39	21.43		
	RB25#0	20.37	20.39	20.63		
	RB25#25	20.44	20.39	20.59		
	RB50#0	20.35	20.37	20.54		
15MHz QPSK	RB1#0	22.22	22.19	22.27	22.94	33
	RB1#38	22.3	22.37	22.44		
	RB1#74	22.17	22.19	22.33		
	RB36#0	21.33	21.39	21.47		
	RB36#39	21.36	21.42	21.45		
	RB75#0	21.39	21.4	21.46		

15MHz 16QAM	RB1#0	21.68	21.31	21.67	22.37	33
	RB1#38	21.87	21.45	21.81		
	RB1#74	21.81	21.35	21.75		
	RB36#0	20.31	20.34	20.5		
	RB36#39	20.39	20.38	20.5		
	RB75#0	20.36	20.4	20.44		
20MHz QPSK	RB1#0	22.04	22.07	22.17	23.06	33
	RB1#50	22.34	22.54	22.56		
	RB1#99	21.96	22.1	22.17		
	RB50#0	21.13	21.3	21.46		
	RB50#50	21.29	21.37	21.35		
	RB100#0	21.22	21.35	21.4		
20MHz 16QAM	RB1#0	21.48	21.38	21.38	22.48	33
	RB1#50	21.98	21.73	21.75		
	RB1#99	21.6	21.41	21.41		
	RB50#0	20.21	20.26	20.52		
	RB50#50	20.32	20.29	20.4		
	RB100#0	20.28	20.31	20.46		
					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	4.49	4.93	13
	RB100#0	4.87	4.7	5.22	13
20MHz 16QAM	RB1#0	4.99	5.19	5.83	13
	RB100#0	5.65	5.57	6.14	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	4.98	4.94
5MHz 16QAM	4.491	4.531	4.531	4.96	4.94	4.96
10MHz QPSK	8.981	8.942	8.942	9.72	9.6	9.64
10MHz 16QAM	8.942	8.981	8.942	9.56	9.6	9.6
15MHz QPSK	13.473	13.473	13.533	14.88	14.76	14.82
15MHz 16QAM	13.533	13.473	13.533	14.7	14.76	14.82
20MHz QPSK	17.964	17.964	18.044	19.36	19.44	19.52
20MHz 16QAM	17.964	17.964	17.964	19.28	19.44	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.
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FCC §2.1051, § 27.53:Out of band emission, Band Edge

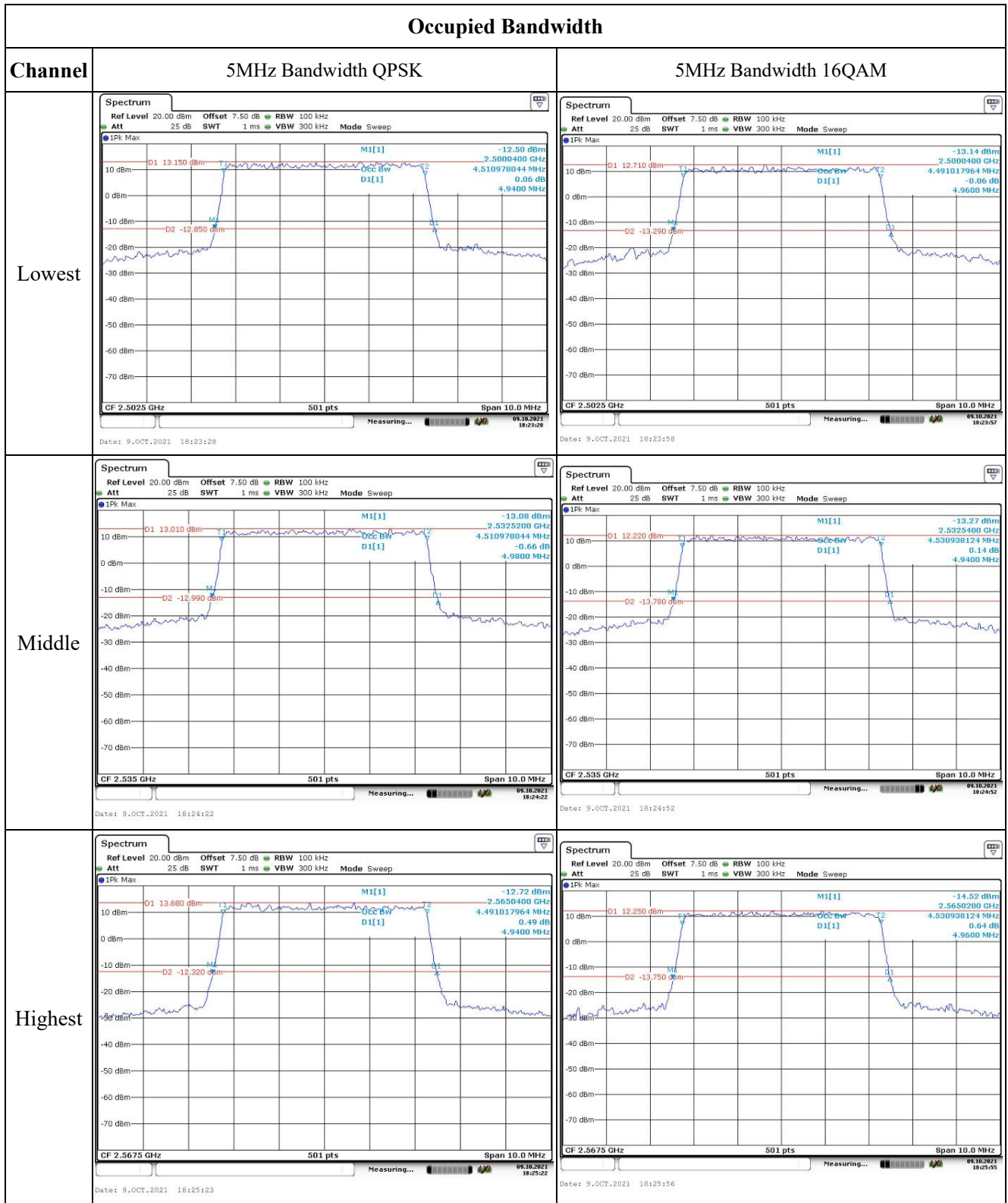
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §27.54: Frequency Stability

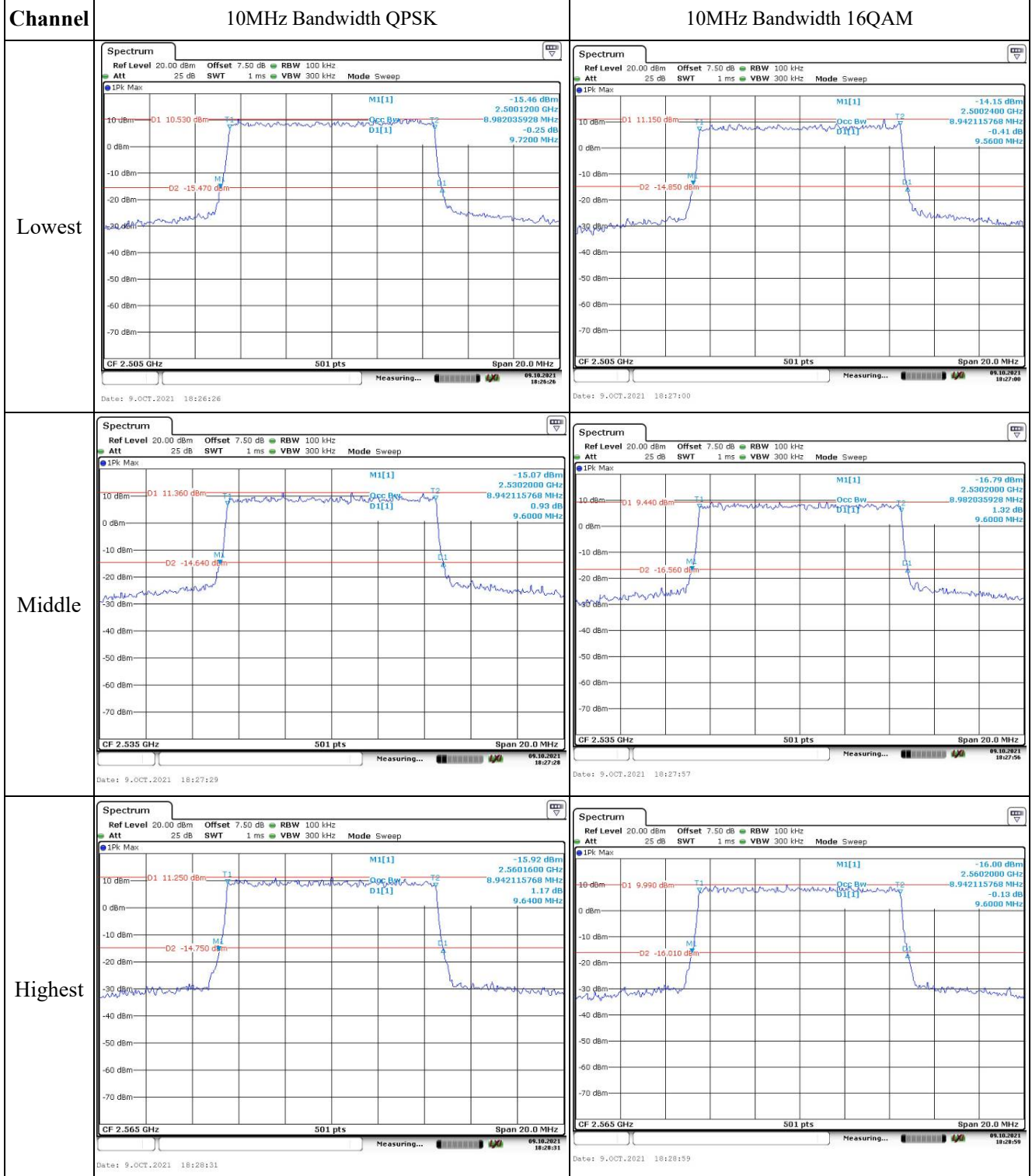
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	2500.5282	2500.00	2569.4712	2570
	-20	3.8	2500.5298	2500.00	2569.4717	2570
	-10	3.8	2500.5285	2500.00	2569.4715	2570
	0	3.8	2500.5284	2500.00	2569.4716	2570
	10	3.8	2500.5282	2500.00	2569.4717	2570
	20	3.8	2500.5289	2500.00	2569.4711	2570
	30	3.8	2500.5284	2500.00	2569.4718	2570
	40	3.8	2500.5278	2500.00	2569.4713	2570
	50	3.8	2500.5285	2500.00	2569.4717	2570
Frequency Stability vs. Voltage	20	3.6	2500.5282	2500.00	2569.4719	2570
	20	4.3	2500.5283	2500.00	2569.4715	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	3.8	2500.5287	2500.00	2569.4717	2570
	-20	3.8	2500.5287	2500.00	2569.4715	2570
	-10	3.8	2500.5285	2500.00	2569.4716	2570
	0	3.8	2500.5282	2500.00	2569.4717	2570
	10	3.8	2500.5286	2500.00	2569.4715	2570
	20	3.8	2500.5289	2500.00	2569.4711	2570
	30	3.8	2500.5287	2500.00	2569.4716	2570
	40	3.8	2500.5285	2500.00	2569.4714	2570
	50	3.8	2500.5287	2500.00	2569.4713	2570
Frequency Stability vs. Voltage	20	3.6	2500.5284	2500.00	2569.4717	2570
	20	4.3	2500.5282	2500.00	2569.4718	2570
					Result:	Pass

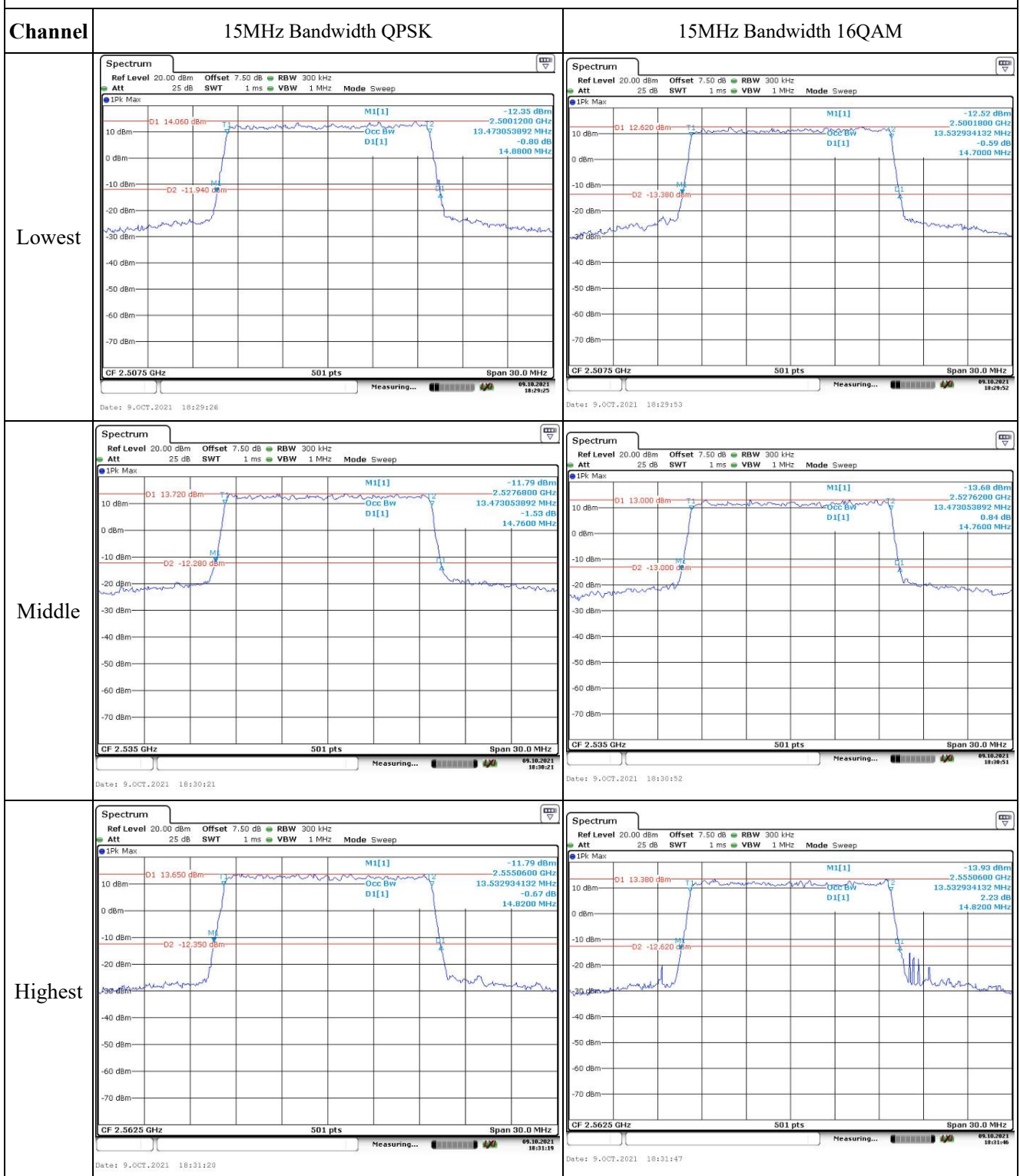
Test Plots:



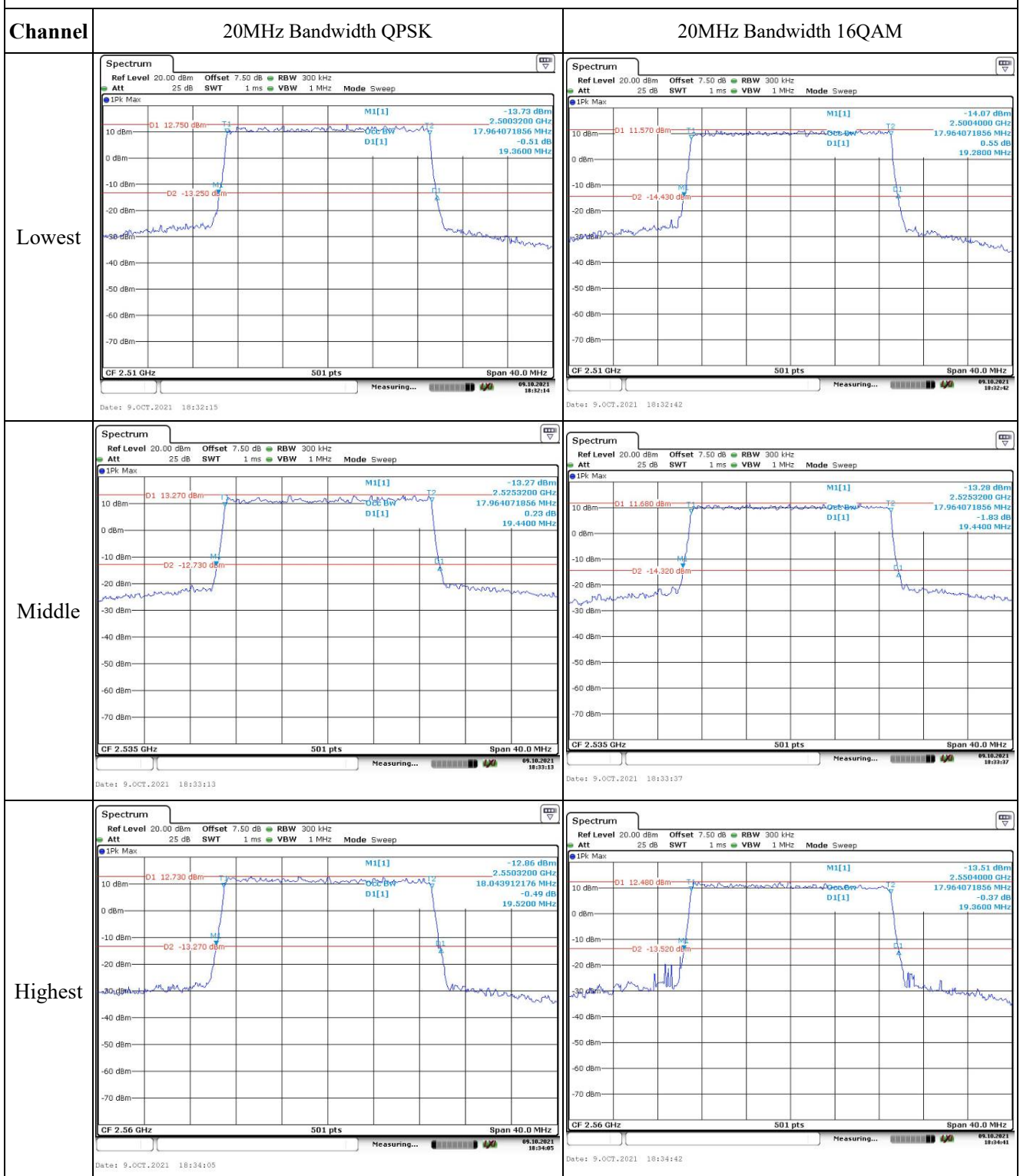
Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

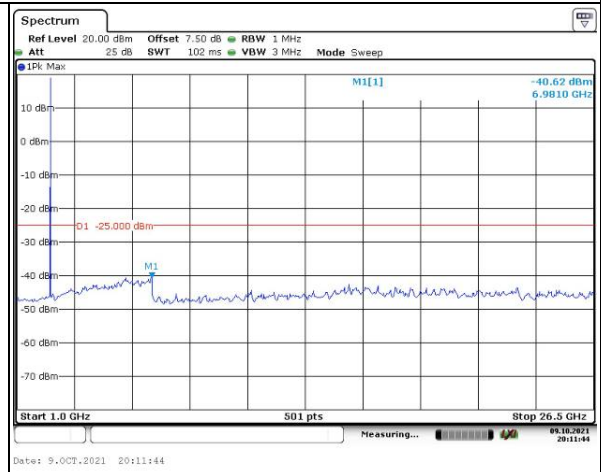
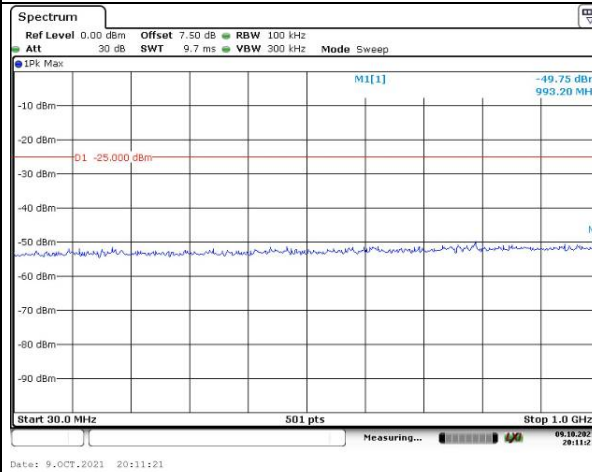


Spurious Emissions at Antenna Terminal

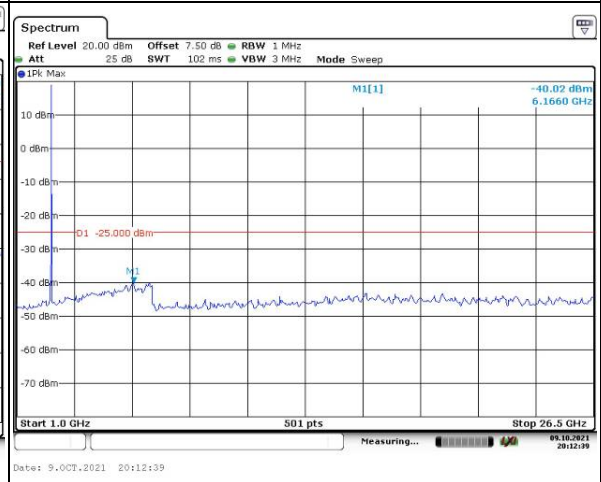
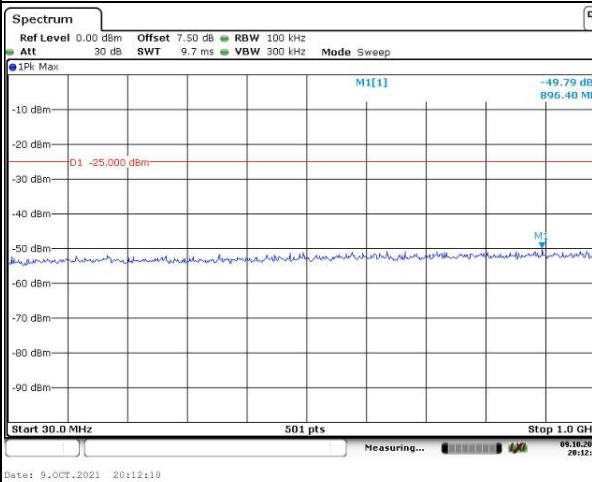
Channel

5MHz Bandwidth QPSK

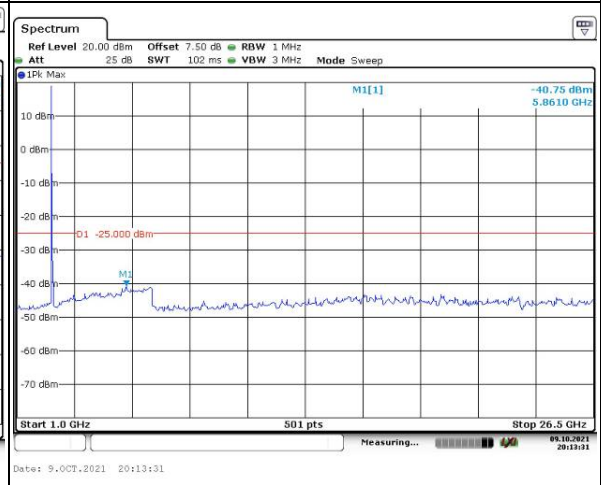
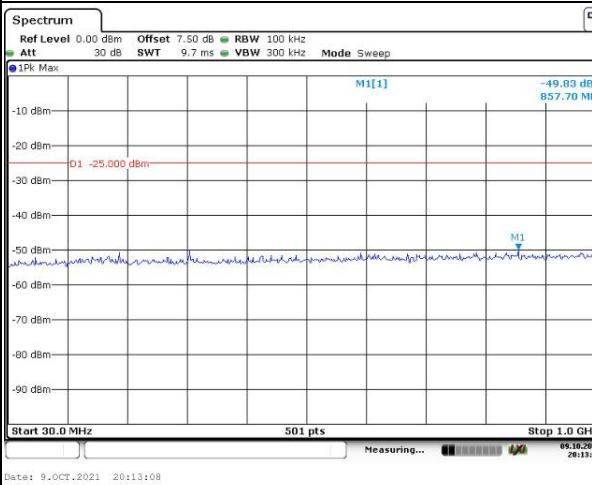
Lowest



Middle



Highest

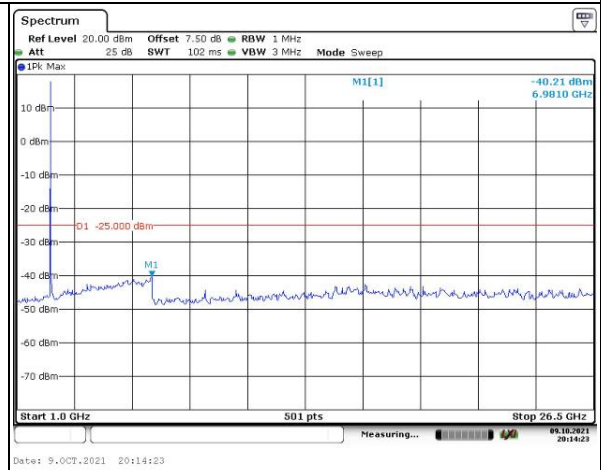
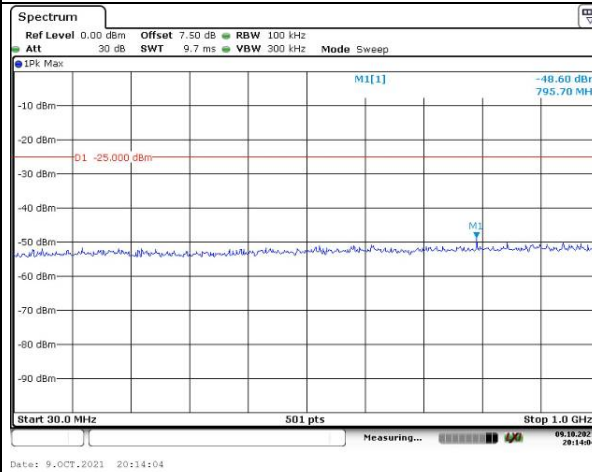


Spurious Emissions at Antenna Terminal

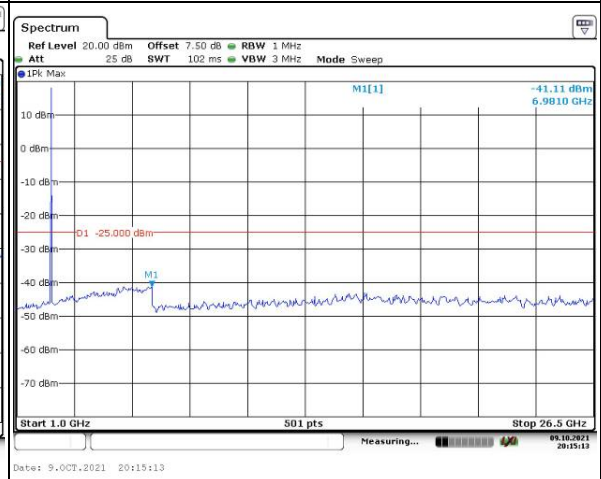
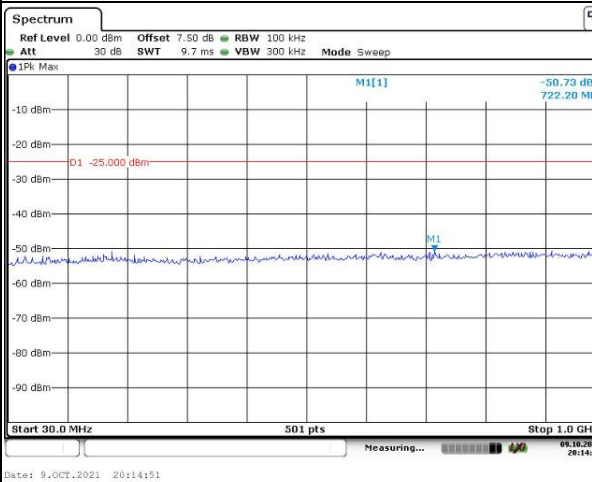
Channel

10MHz Bandwidth QPSK

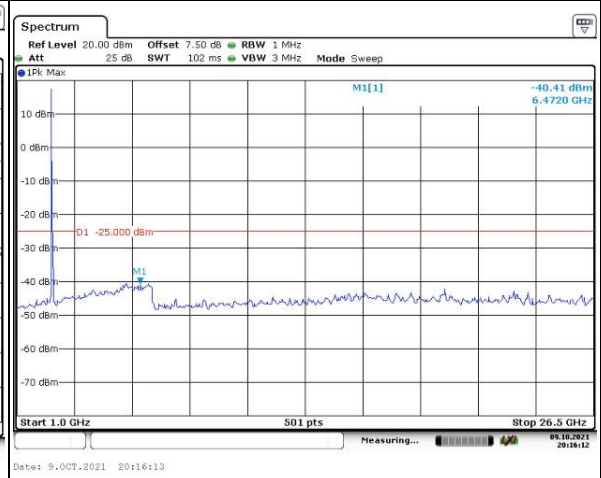
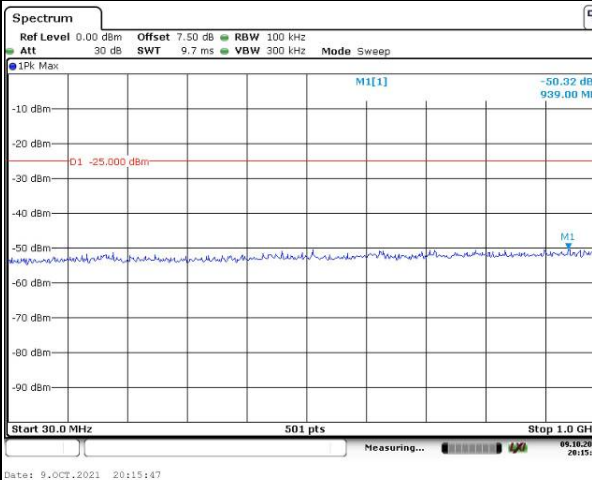
Lowest



Middle



Highest

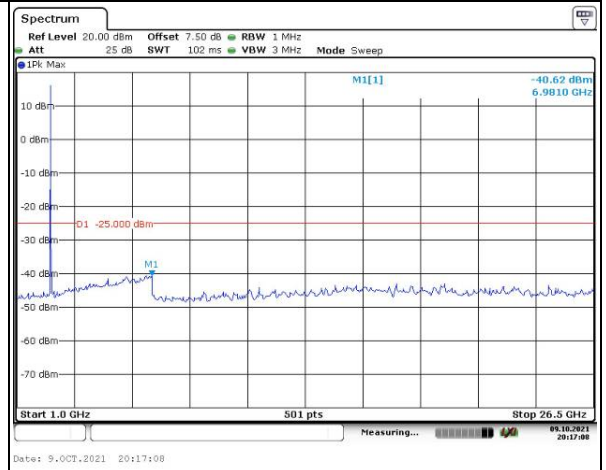
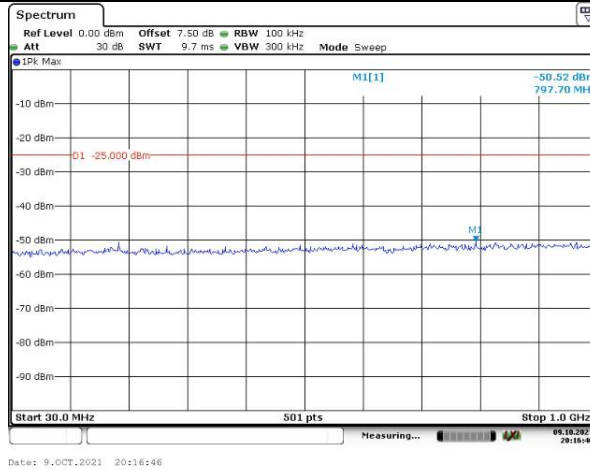


Spurious Emissions at Antenna Terminal

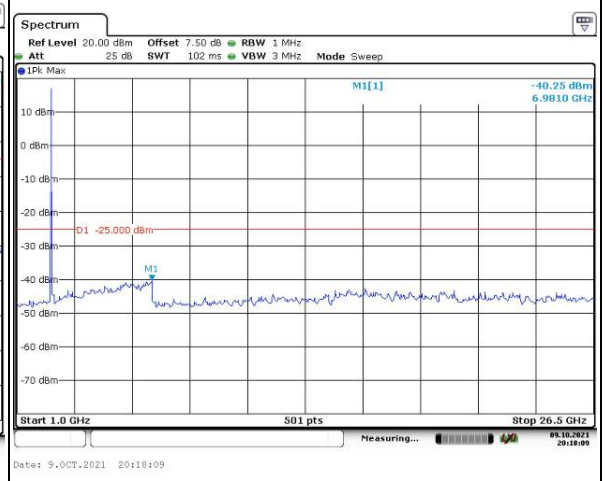
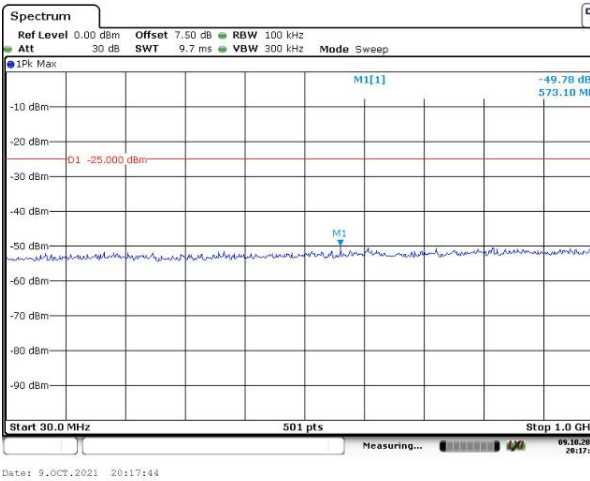
Channel

15MHz Bandwidth QPSK

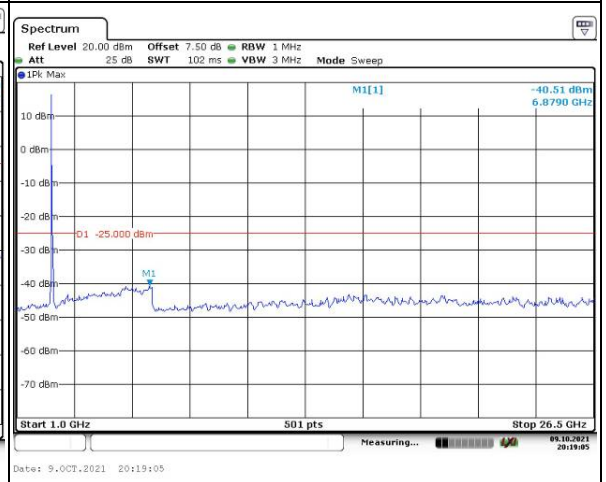
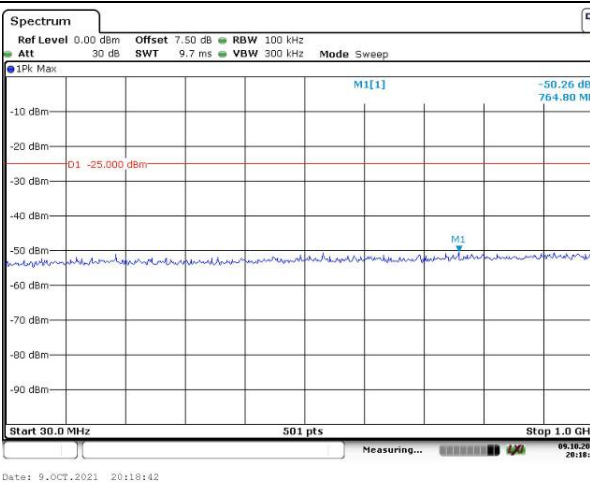
Lowest



Middle



Highest

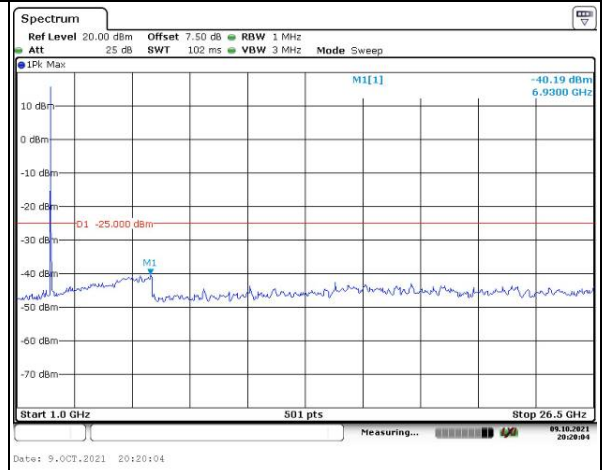
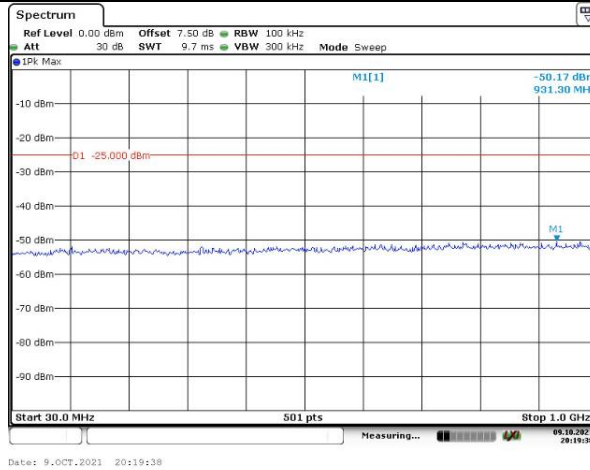


Spurious Emissions at Antenna Terminal

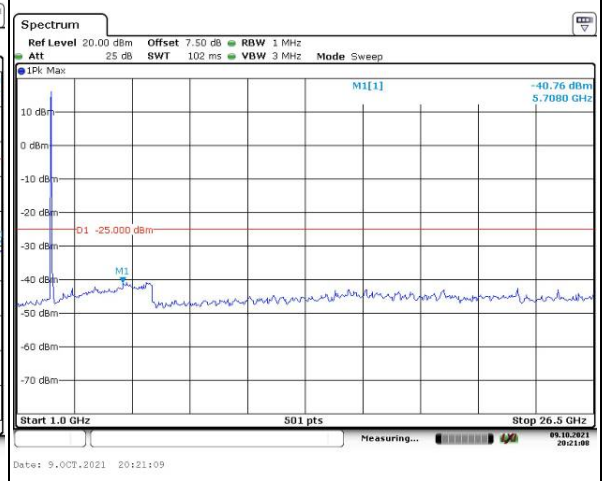
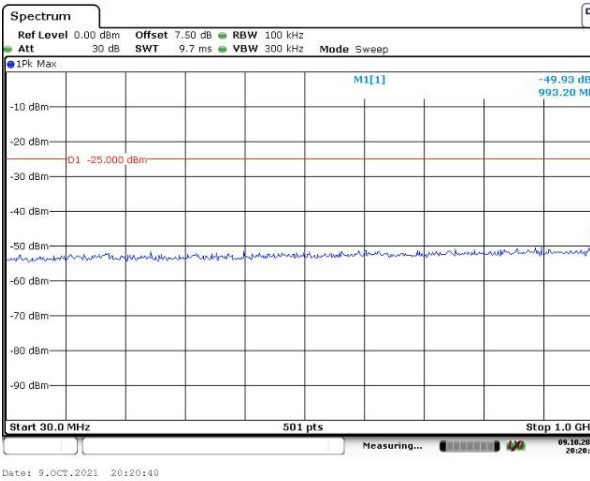
Channel

20MHz Bandwidth QPSK

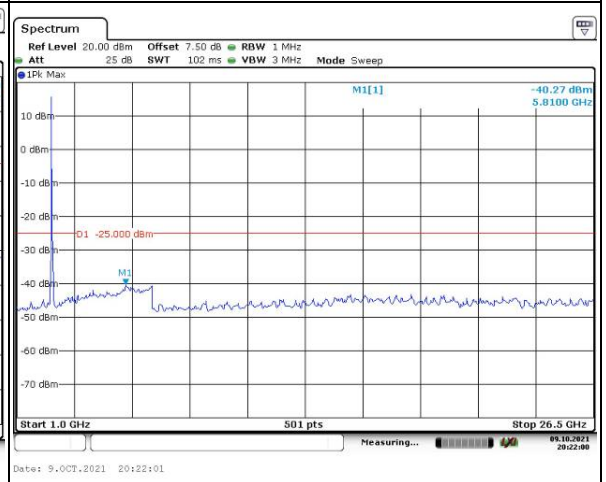
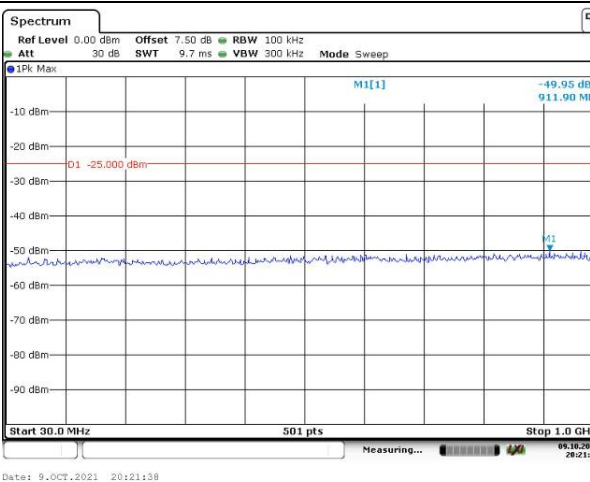
Lowest



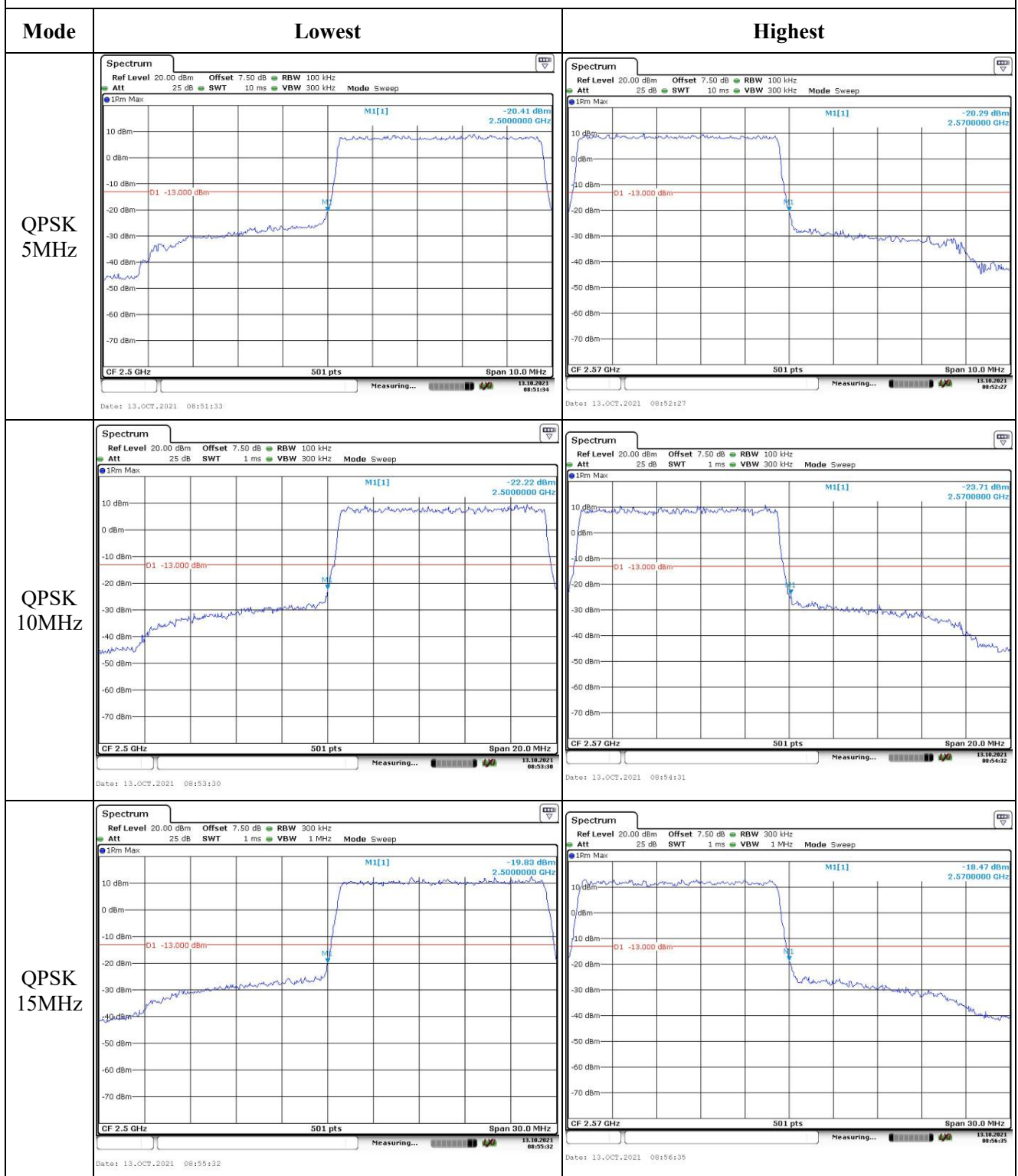
Middle



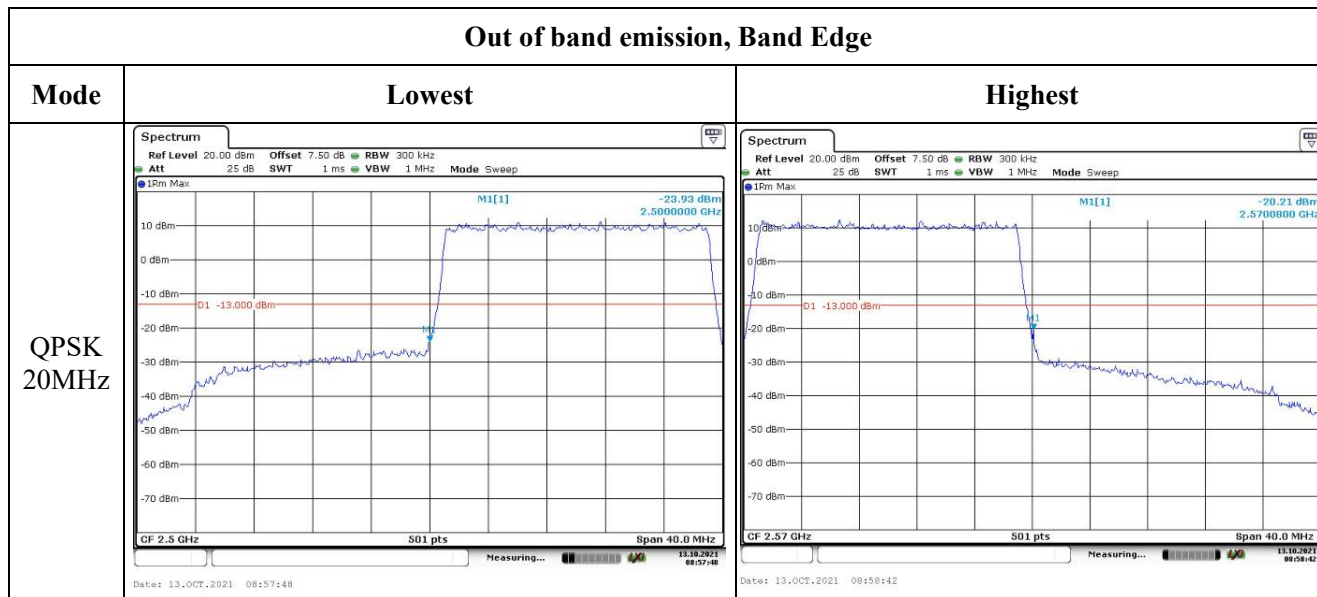
Highest



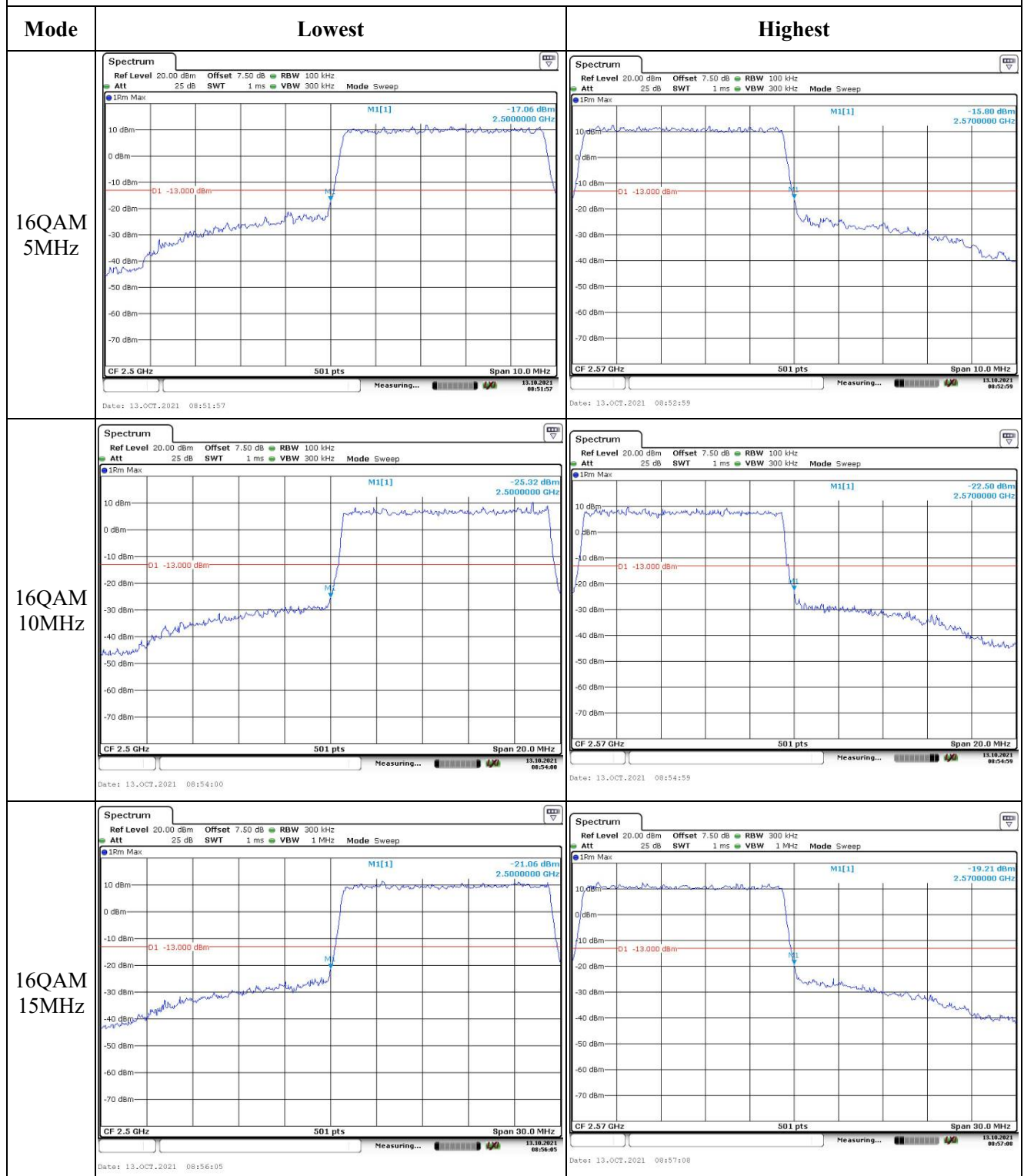
Out of band emission, Band Edge



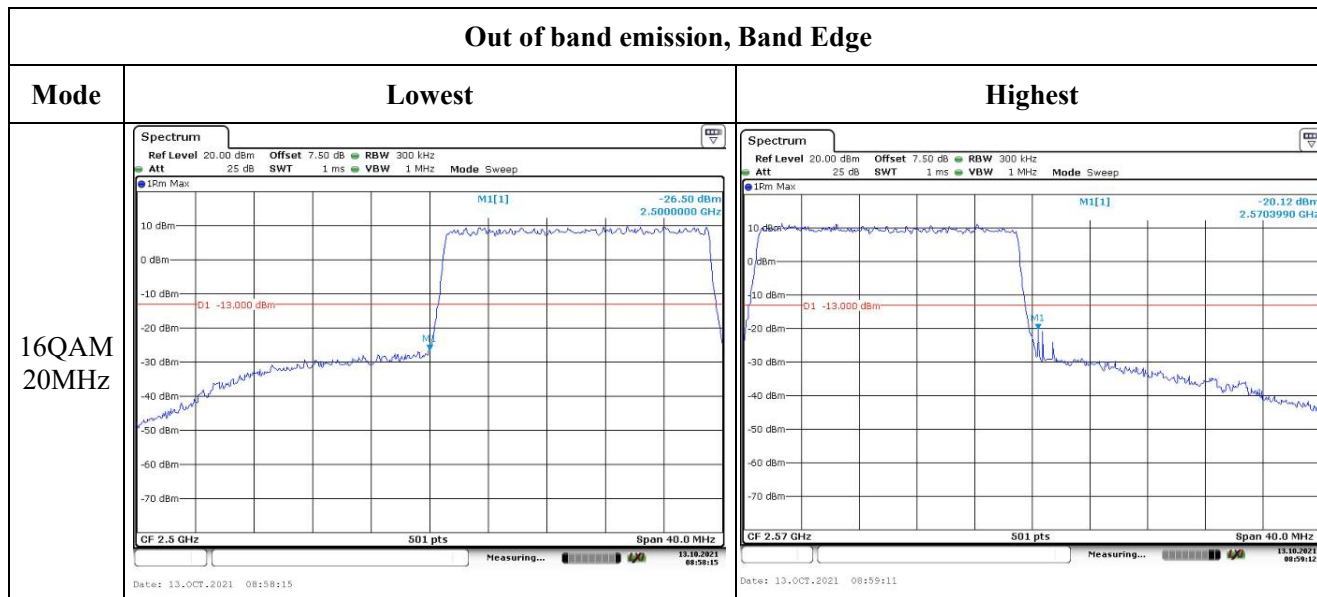
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.10 Antenna Port Test Data and Results for LTE Band 12:

Serial Number:	CR21090086-RF-S1	Test Date:	2021/10/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	Thor Lei	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.7	Relative Humidity: (%)	59	ATM Pressure: (kPa)	101.6
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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	2021/7/22	2022/7/21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2021/7/22	2022/7/21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021/7/22	2022/7/22
UNI-T	Multimeter	UT39A+	C210582554	2021/9/30	2022/9/30
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	Each Time	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 12▲:

Antenna Gain (dBi):	3	Antenna Gain (dBd):	0.85	Cable Loss (dB):	0.2
Operation Voltage(V _{DC}):					
Lowest:	3.6	Normal:	3.8	Highest:	4.3

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency(MHz)	Middle Frequency(MHz)	Highest Frequency(MHz)
1.4MHz	699.7	707.5	715.3
3MHz	700.5	707.5	714.5
5MHz	701.5	707.5	713.5
10MHz	704	707.5	711

Test Data:**FCC§2.1046;§ 27.50(c) (10)****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	24.38	24.41	24.3	25.22	34.77
	RB1#3	24.57	24.57	24.5		
	RB1#5	24.4	24.37	24.32		
	RB3#0	24.43	24.34	24.27		
	RB3#3	24.45	24.32	24.33		
	RB6#0	23.45	23.48	23.37		
1.4MHz 16QAM	RB1#0	23.33	23.37	23.24	24.23	34.77
	RB1#3	23.51	23.58	23.48		
	RB1#5	23.35	23.43	23.25		
	RB3#0	23.57	23.22	23.33		
	RB3#3	23.56	23.24	23.34		
	RB6#0	22.48	22.44	22.28		
3MHz QPSK	RB1#0	23.91	23.89	23.82	24.72	34.77
	RB1#8	24.05	24.04	24.07		
	RB1#14	23.85	23.9	23.8		
	RB6#0	23.97	23.89	23.85		
	RB6#9	23.95	23.81	23.83		
	RB15#0	22.97	22.98	22.89		
3MHz 16QAM	RB1#0	22.86	22.89	22.74	23.72	34.77
	RB1#8	23	23.06	22.95		
	RB1#14	22.84	22.88	22.77		
	RB6#0	23.07	22.71	22.81		
	RB6#9	23.07	22.76	22.86		
	RB15#0	21.96	21.94	21.78		
5MHz QPSK	RB1#0	23.82	23.83	23.78	24.57	34.77
	RB1#13	23.9	23.9	23.84		
	RB1#24	23.87	23.92	23.8		
	RB15#0	22.79	22.91	22.81		
	RB15#10	22.95	22.82	22.85		
	RB25#0	22.82	22.81	22.77		

5MHz 16QAM	RB1#0	22.73	23	22.82	23.72	34.77
	RB1#13	22.72	23.07	22.9		
	RB1#24	22.71	23.07	22.81		
	RB15#0	21.83	21.86	21.86		
	RB15#10	21.97	21.72	21.81		
	RB25#0	21.87	21.77	21.8		
10MHz QPSK	RB1#0	23.83	23.83	23.88	24.75	34.77
	RB1#25	24.08	24.07	24.1		
	RB1#49	23.94	23.89	23.9		
	RB25#0	22.77	22.96	22.93		
	RB25#25	22.81	22.93	22.91		
	RB50#0	22.82	22.93	22.9		
10MHz 16QAM	RB1#0	23.3	22.93	22.76	24.15	34.77
	RB1#25	23.5	23.09	23.01		
	RB1#49	23.26	23.01	22.84		
	RB25#0	21.83	21.94	21.96		
	RB25#25	21.86	21.9	21.99		
	RB50#0	21.79	21.9	21.9		
					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	4.46	3.86	4.38	13
	RB50#0	4.64	4.52	4.7	13
10MHz 16QAM	RB1#0	5.45	4.84	4.81	13
	RB50#0	5.68	5.51	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
1.4MHz QPSK	1.108	1.102	1.102	1.656	1.308	1.296
1.4MHz 16QAM	1.102	1.09	1.102	1.32	1.284	1.302
3MHz QPSK	2.683	2.683	2.683	2.88	2.868	2.88
3MHz 16QAM	2.683	2.683	2.683	2.892	2.88	2.88
5MHz QPSK	4.531	4.511	4.511	5.24	5.2	5.18
5MHz 16QAM	4.511	4.551	4.551	5.2	5.18	5.22
10MHz QPSK	8.942	8.942	8.942	10	9.88	10
10MHz 16QAM	8.942	8.981	8.942	9.68	9.96	9.92

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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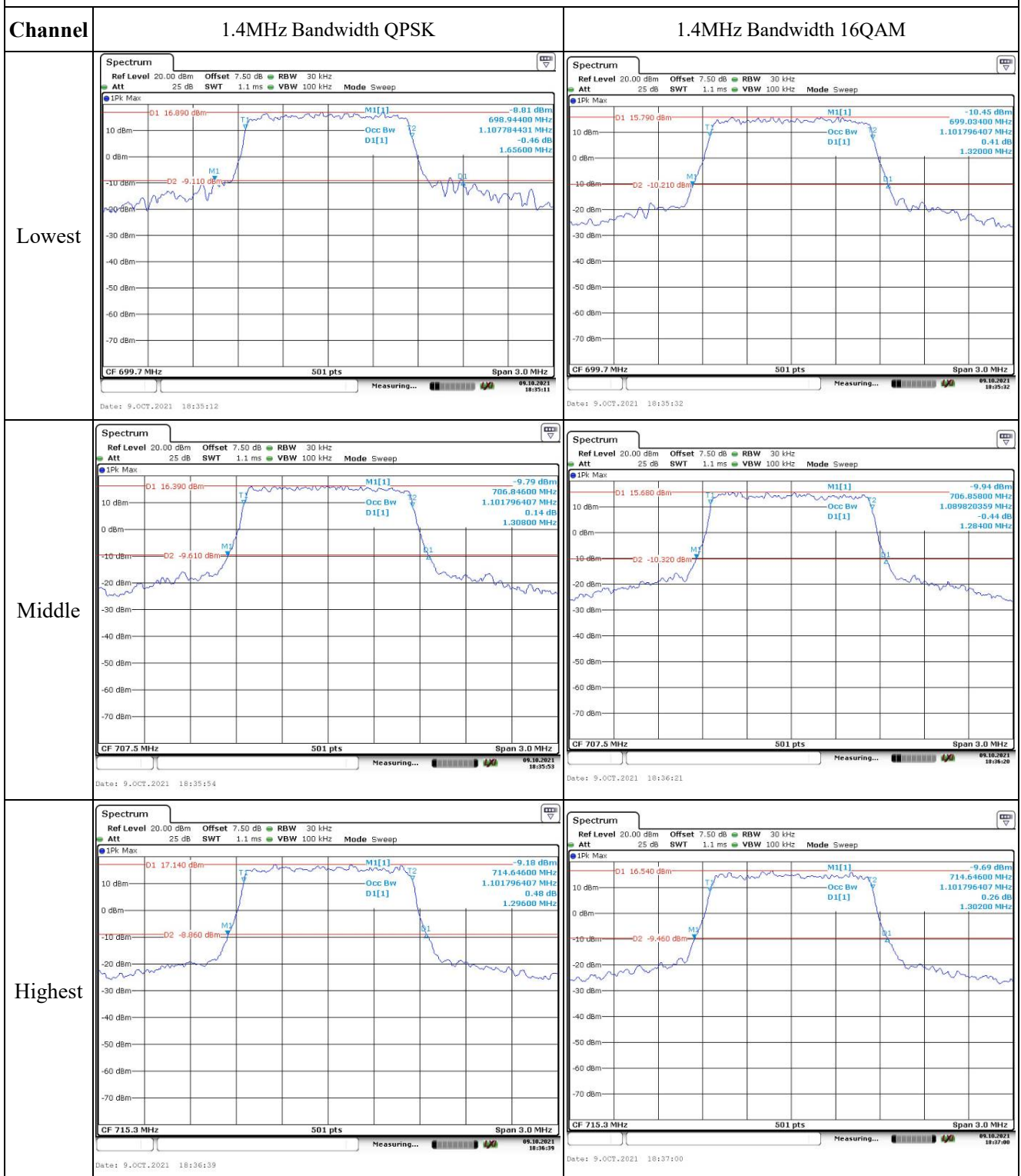
FCC §2.1055, §27.54: Frequency Stability

Test Mode:	10M 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	3.8	699.5292	699.00	715.5117	716.00
	-20	3.8	699.5287	699.00	715.5115	716.00
	-10	3.8	699.5282	699.00	715.5116	716.00
	0	3.8	699.5284	699.00	715.5114	716.00
	10	3.8	699.5282	699.00	715.5131	716.00
	20	3.8	699.5289	699.00	715.511	716.00
	30	3.8	699.5287	699.00	715.5115	716.00
	40	3.8	699.5285	699.00	715.5112	716.00
	50	3.8	699.5287	699.00	715.5117	716.00
Frequency Stability vs. Voltage	20	3.6	699.5282	699.00	715.5114	716.00
	20	4.3	699.5283	699.00	715.5116	716.00
					Result:	Pass

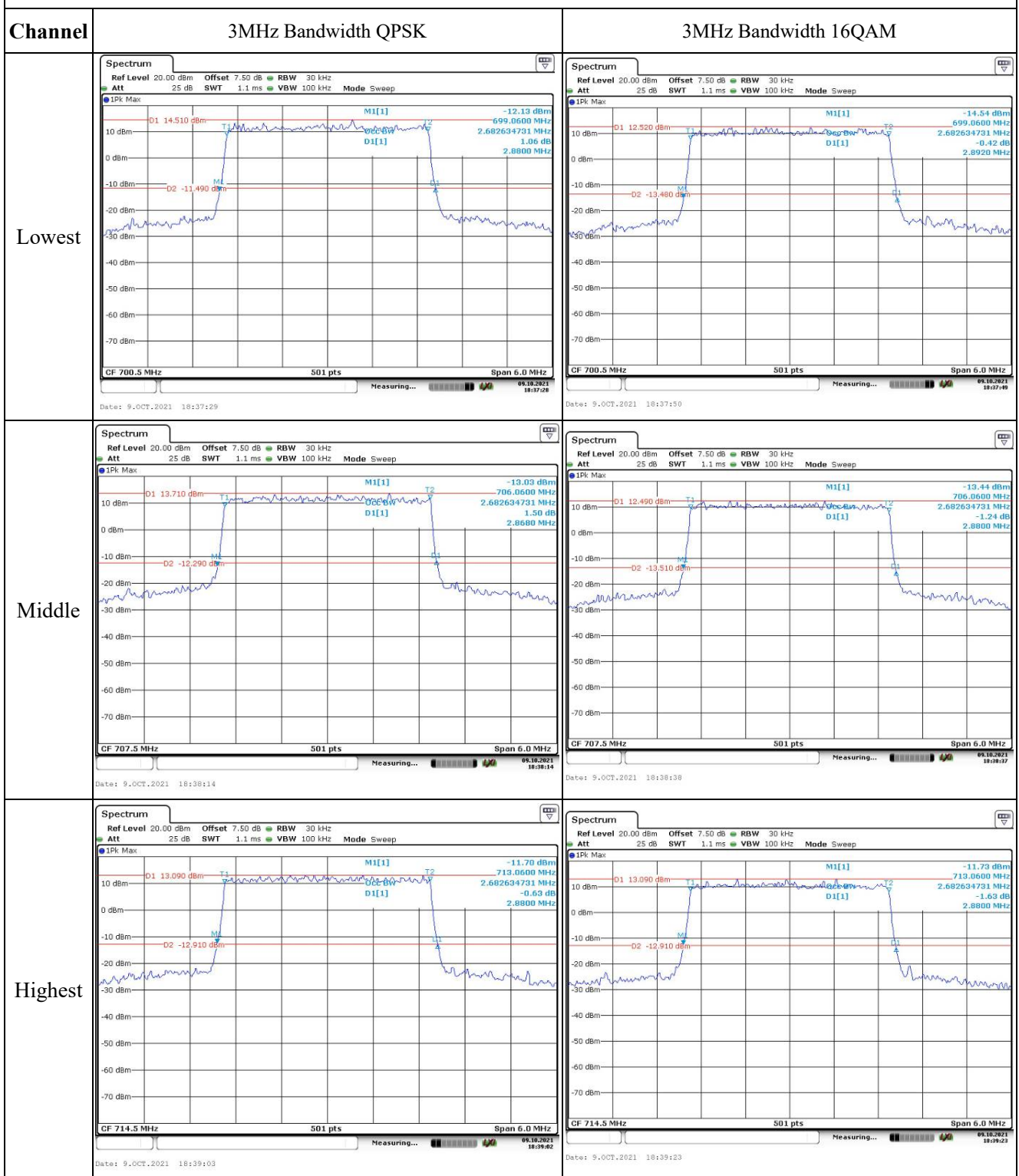
Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.5287	699.00	715.5117	716.00
	-20	3.8	699.5285	699.00	715.5115	716.00
	-10	3.8	699.5292	699.00	715.5117	716.00
	0	3.8	699.5288	699.00	715.5114	716.00
	10	3.8	699.5282	699.00	715.5112	716.00
	20	3.8	699.5289	699.00	715.511	716.00
	30	3.8	699.5287	699.00	715.5118	716.00
	40	3.8	699.5282	699.00	715.5117	716.00
	50	3.8	699.5287	699.00	715.5114	716.00
Frequency Stability vs. Voltage	20	3.6	699.5282	699.00	715.5117	716.00
	20	4.3	699.5284	699.00	715.5116	716.00
					Result:	Pass

Test Plots:

Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

