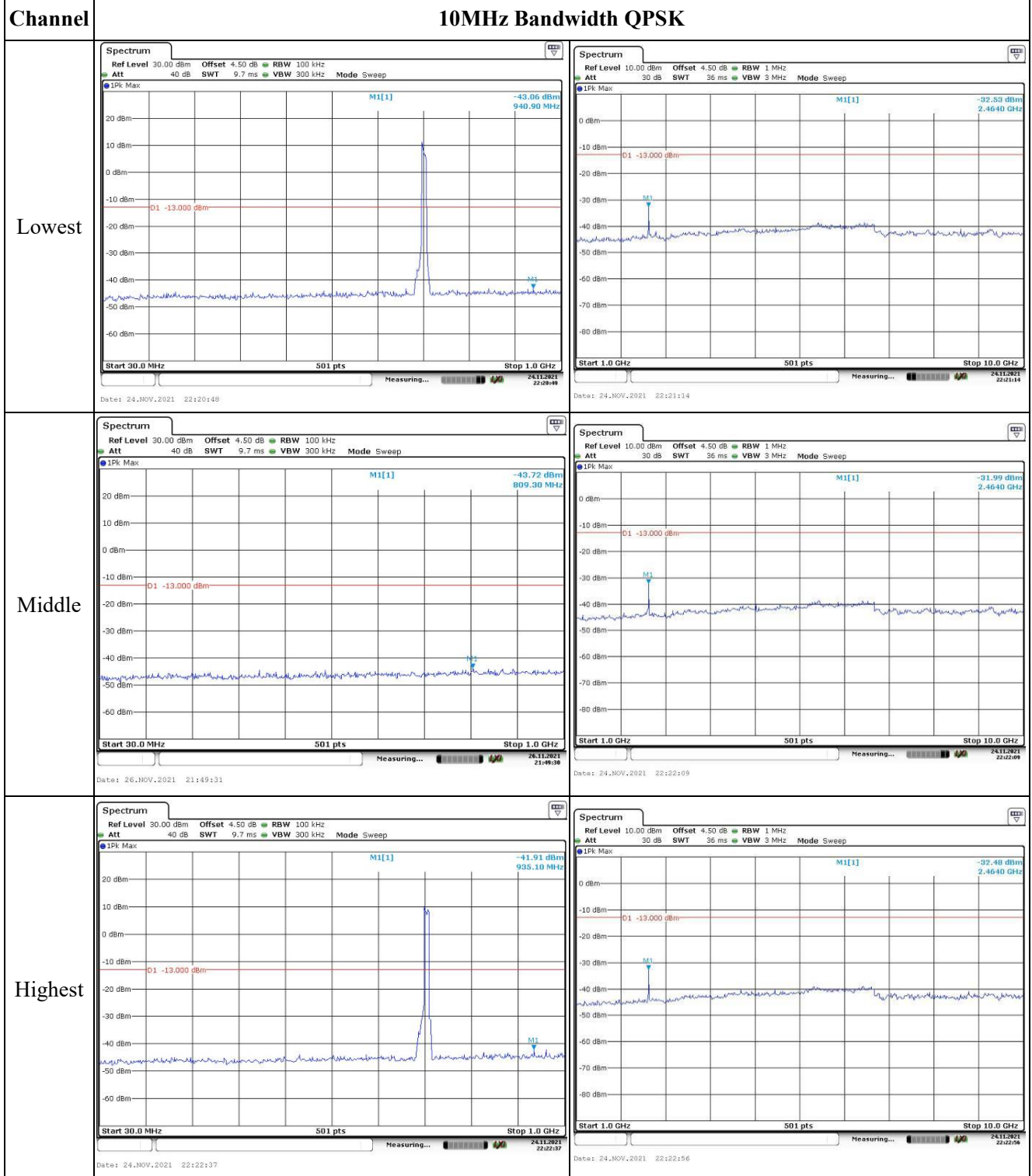
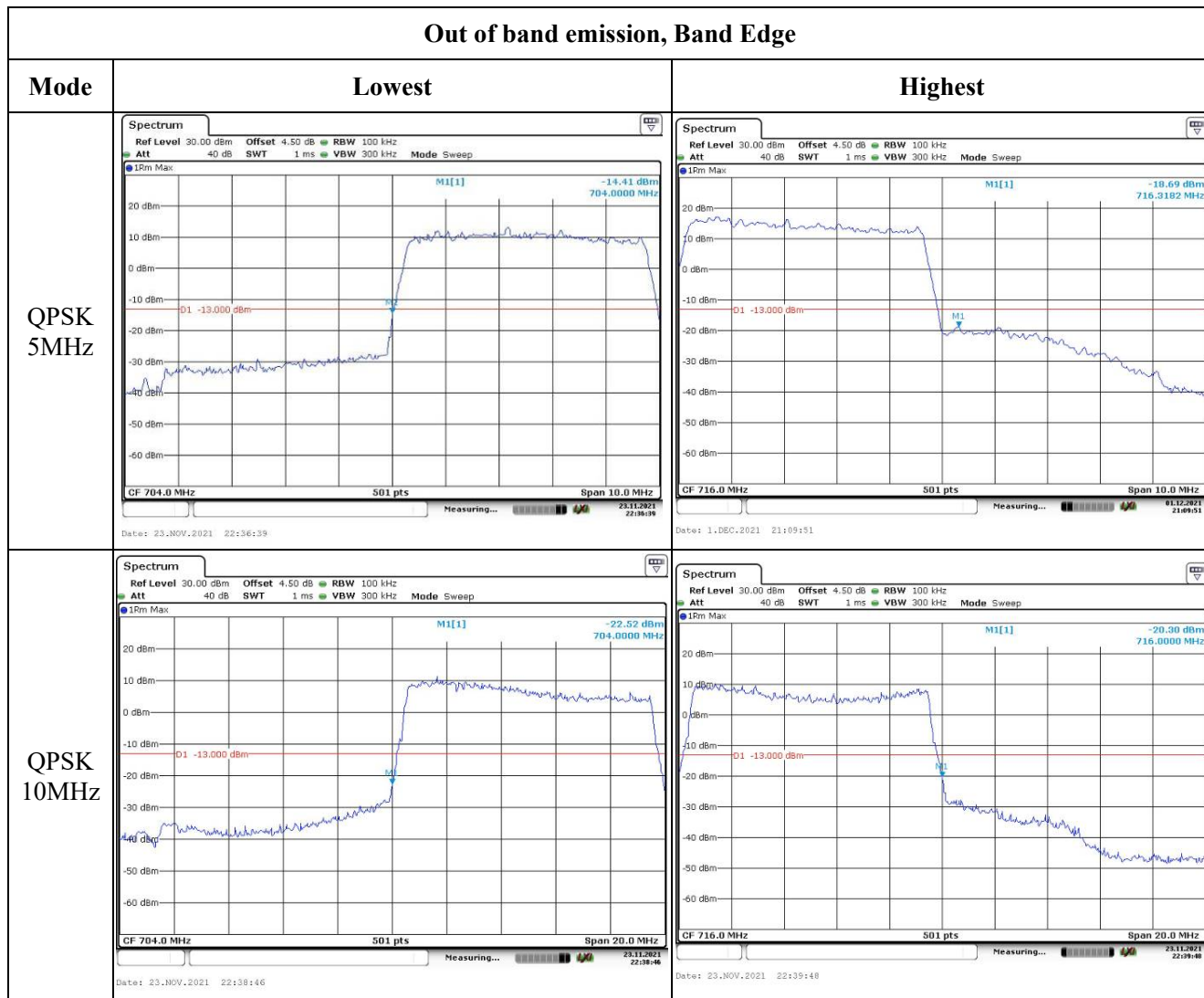


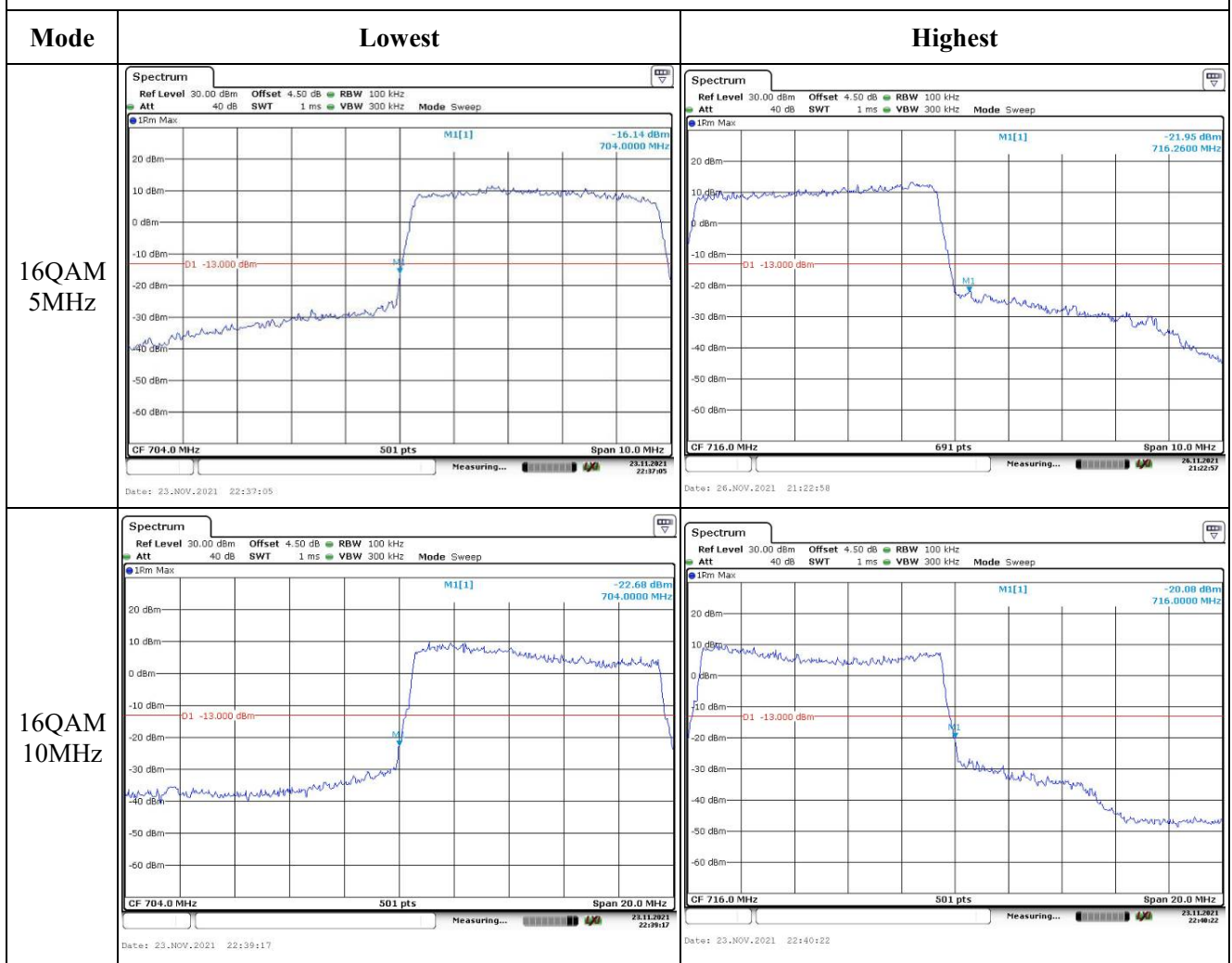
Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge



Out of band emission, Band Edge



4.11 Antenna Port Test Data and Results for LTE Band 26:

Serial Number:	CR21110014-RF-S1	Test Date:	2021/11/23~2021/11/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	21.2~22.1	Relative Humidity: (%)	36~41	ATM Pressure: (kPa)	101.7
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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 26▲:

Antenna Gain (dBi):	3.15	Antenna Gain (dBd):	1	Cable Loss (dB):	0
Operation Voltage(V _{DC}):					
Lowest:	3.5	Normal:	3.7	Highest:	4.2

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	814.7	831.5	848.3
3MHz	815.5	831.5	847.5
5MHz	816.5	831.5	846.5
10MHz	819	831.5	844
15MHz	821.5	831.5	841.5

Test Data:**FCC§2.1046;§ 22.913 (a),§ 90.542****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	21.09	21.02	21.15	22.23	38.45
	RB1#3	21.13	21.08	21.21		
	RB1#5	21.04	21.03	21.23		
	RB3#0	21.11	21.15	21.18		
	RB3#3	20.98	21.11	21.21		
	RB6#0	20.08	20.16	20.16		
1.4MHz 16QAM	RB1#0	20.50	20.85	20.03	21.85	38.45
	RB1#3	20.52	20.77	20.02		
	RB1#5	20.49	20.74	20.01		
	RB3#0	20.15	20.08	20.28		
	RB3#3	20.25	20.04	20.23		
	RB6#0	19.72	19.99	19.67		
3MHz QPSK	RB1#0	21.10	21.09	21.22	22.26	38.45
	RB1#8	21.09	21.14	21.21		
	RB1#14	21.04	21.17	21.26		
	RB6#0	20.06	20.14	20.16		
	RB6#9	20.04	20.19	20.06		
	RB15#0	20.06	20.12	20.15		
3MHz 16QAM	RB1#0	20.34	20.77	19.96	21.82	38.45
	RB1#8	20.22	20.79	19.90		
	RB1#14	20.25	20.82	19.90		
	RB6#0	19.58	19.99	19.69		
	RB6#9	19.98	19.69	19.58		
	RB15#0	19.49	19.96	19.46		
5MHz QPSK	RB1#0	21.20	21.09	21.09	22.23	38.45
	RB1#13	21.21	21.10	21.09		
	RB1#24	21.13	21.23	21.04		
	RB15#0	20.10	20.18	20.14		
	RB15#10	20.12	19.98	20.19		
	RB25#0	20.01	20.13	20.19		
5MHz 16QAM	RB1#0	19.88	20.19	19.84	21.27	38.45
	RB1#13	19.63	20.27	19.86		
	RB1#24	19.46	20.26	19.88		
	RB15#0	19.53	19.98	19.96		
	RB15#10	19.98	19.69	19.54		
	RB25#0	19.66	19.96	19.96		

10MHz QPSK	RB1#0	21.17	21.02	21.10	22.2	38.45
	RB1#25	21.16	20.95	21.20		
	RB1#49	21.19	21.01	21.12		
	RB25#0	20.03	20.08	20.05		
	RB25#25	20.17	20.06	20.13		
	RB50#0	20.12	20.03	20.08		
10MHz 16QAM	RB1#0	19.63	20.24	20.31	21.35	38.45
	RB1#25	19.66	20.23	20.35		
	RB1#49	19.65	20.30	20.25		
	RB25#0	19.89	19.50	19.25		
	RB25#25	19.58	19.98	19.59		
	RB50#0	19.59	19.99	19.28		
15MHz QPSK	RB1#0	20.96	21.18	21.08	22.21	38.45
	RB1#38	20.92	21.21	21.12		
	RB1#74	20.95	21.12	21.04		
	RB36#0	20.11	20.05	20.13		
	RB36#39	20.07	20.20	20.06		
	RB75#0	20.06	20.11	20.13		
15MHz 16QAM	RB1#0	20.13	20.22	20.51	21.56	38.45
	RB1#38	20.26	20.22	20.53		
	RB1#74	20.18	20.26	20.39		
	RB36#0	19.98	19.60	19.24		
	RB36#39	20.56	19.53	19.26		
	RB75#0	20.36	19.96	19.13		

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	
15MHz QPSK	RB1#0	5.36	6.64	4.58	13
	RB75#0	5.83	6.49	6.00	13
15MHz 16QAM	RB1#0	6.61	3.59	5.39	13
	RB75#0	5.30	4.90	5.62	13
				Result:	Pass

FCC §2.1049, §22.905, §90.209: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	1.102	1.260	1.254	1.278
1.4MHz 16QAM	1.108	1.102	1.096	1.266	1.260	1.266
3MHz QPSK	2.695	2.695	2.695	2.988	3.000	3.000
3MHz 16QAM	2.695	2.695	2.695	3.012	3.000	3.012
5MHz QPSK	4.511	4.511	4.491	4.980	5.000	4.980
5MHz 16QAM	4.511	4.531	4.531	5.000	5.040	5.000
10MHz QPSK	8.901	8.942	8.942	9.760	9.720	9.800
10MHz 16QAM	8.901	8.942	8.942	9.840	9.800	9.840
15MHz QPSK	13.473	13.473	13.533	14.880	15.000	15.180
15MHz 16QAM	13.473	13.533	13.533	14.940	15.000	15.000

Note: The test plots please refer to the Plots of Occupied Bandwidth

FCC §2.1051, §22.917(a),§90.543: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),§90.543:Out of band emission, Band Edge

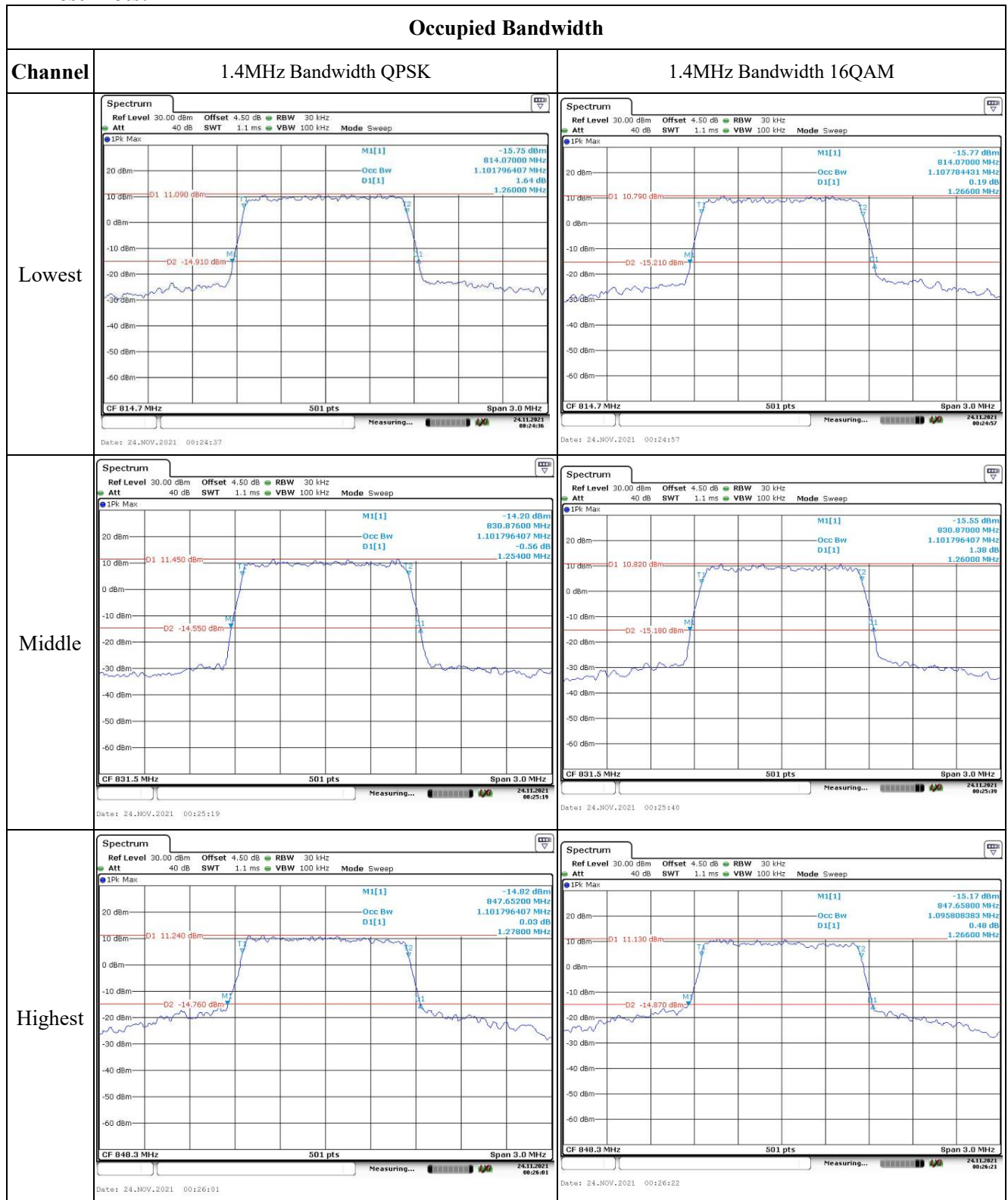
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §22.355,§90.213: Frequency Stability

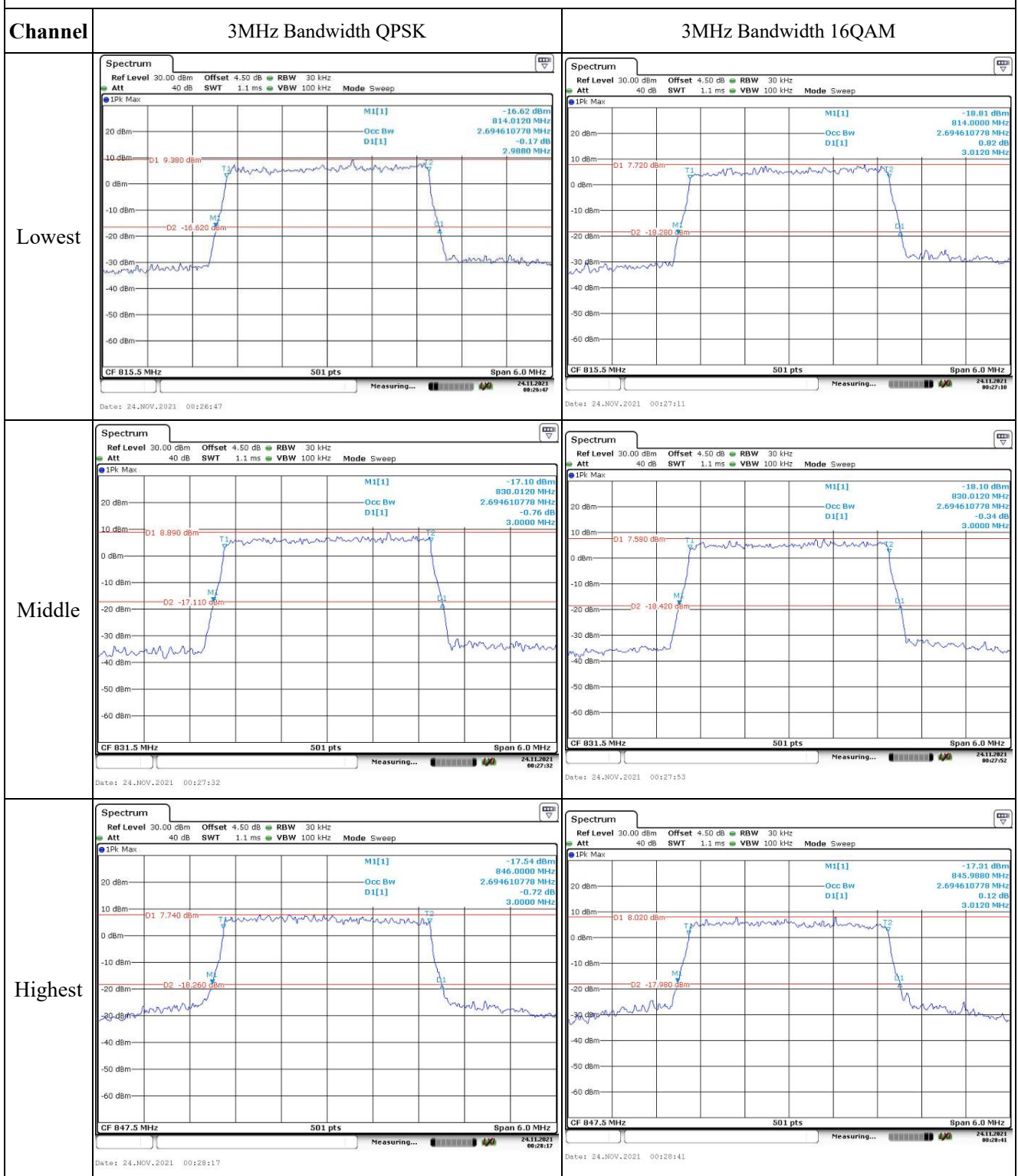
Test Mode:	15 MHz QPSK		Test Channel:	831.5	MHz
Test Item	Temperature (°C)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.7	-4.42	-0.005	2.5
	-20	3.7	8.26	0.010	2.5
	-10	3.7	-5.53	-0.007	2.5
	0	3.7	-7.06	-0.008	2.5
	10	3.7	-5.77	-0.007	2.5
	20	3.7	-5.96	-0.007	2.5
	30	3.7	-9.91	-0.012	2.5
	40	3.7	6.65	0.008	2.5
	50	3.7	9.10	0.011	2.5
Frequency Stability vs. Voltage	20	3.5	6.67	0.008	2.5
	20	4.2	5.86	0.007	2.5
Result:				Pass	

Test Mode:	15 MHz 16QAM		Test Channel:	831.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.7	7.70	0.009	2.5
	-20	3.7	-7.40	-0.009	2.5
	-10	3.7	-5.26	-0.006	2.5
	0	3.7	5.66	0.007	2.5
	10	3.7	6.44	0.008	2.5
	20	3.7	-6.55	-0.008	2.5
	30	3.7	8.77	0.011	2.5
	40	3.7	-6.64	-0.008	2.5
	50	3.7	8.22	0.010	2.5
Frequency Stability vs. Voltage	20	3.5	7.68	0.009	2.5
	20	4.2	-9.41	-0.011	2.5
				Result:	Pass

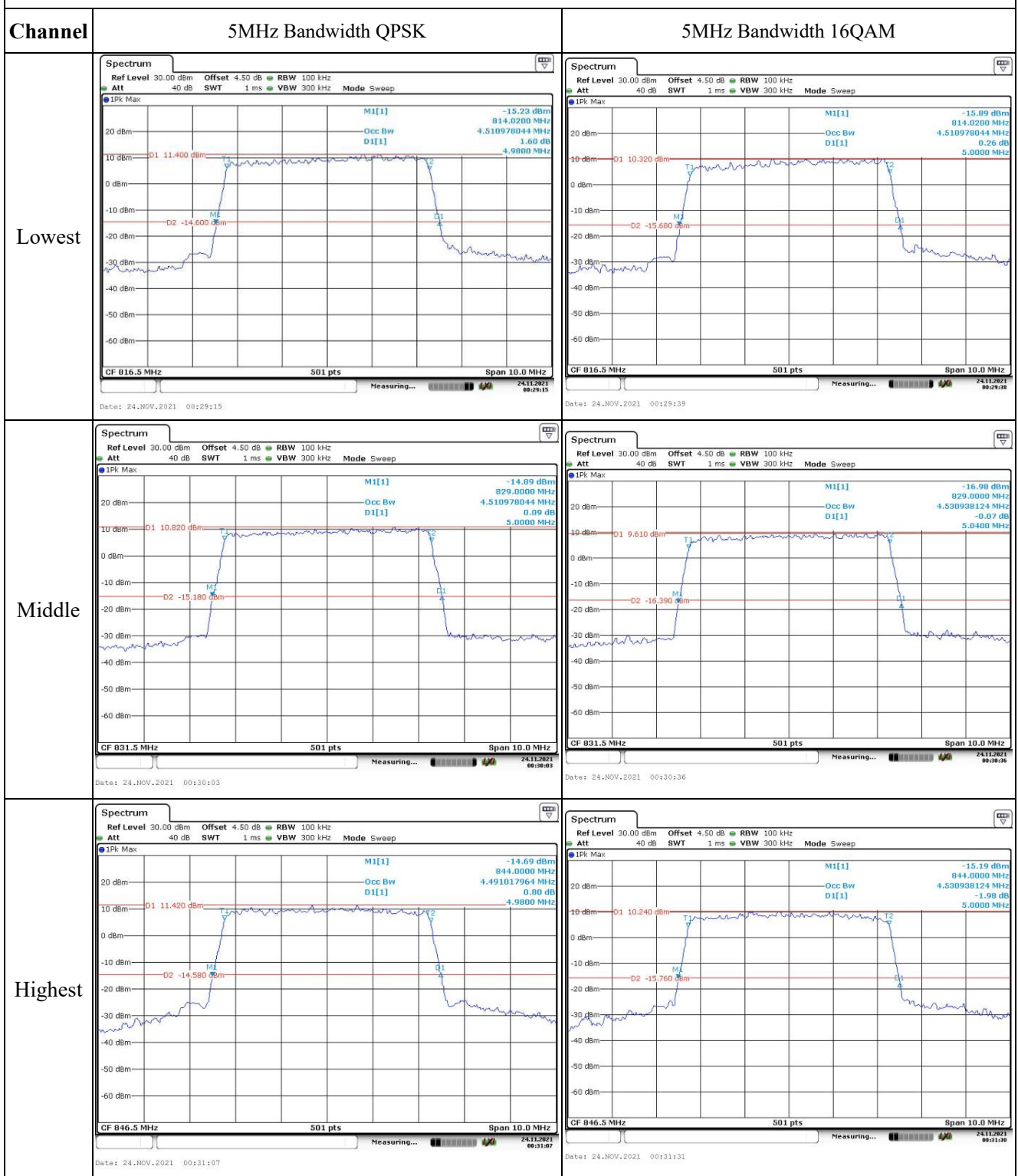
Test Plots:



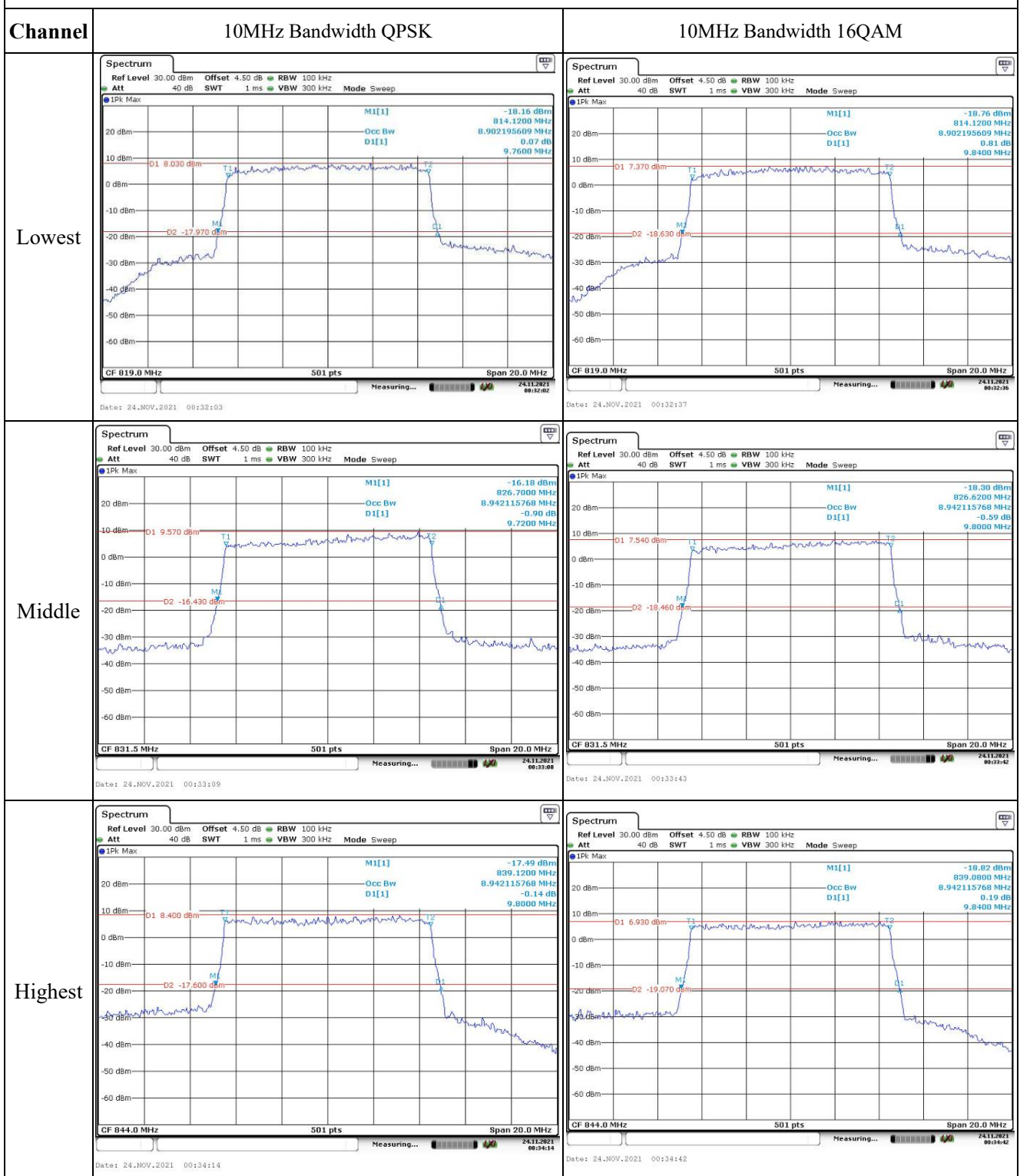
Occupied Bandwidth



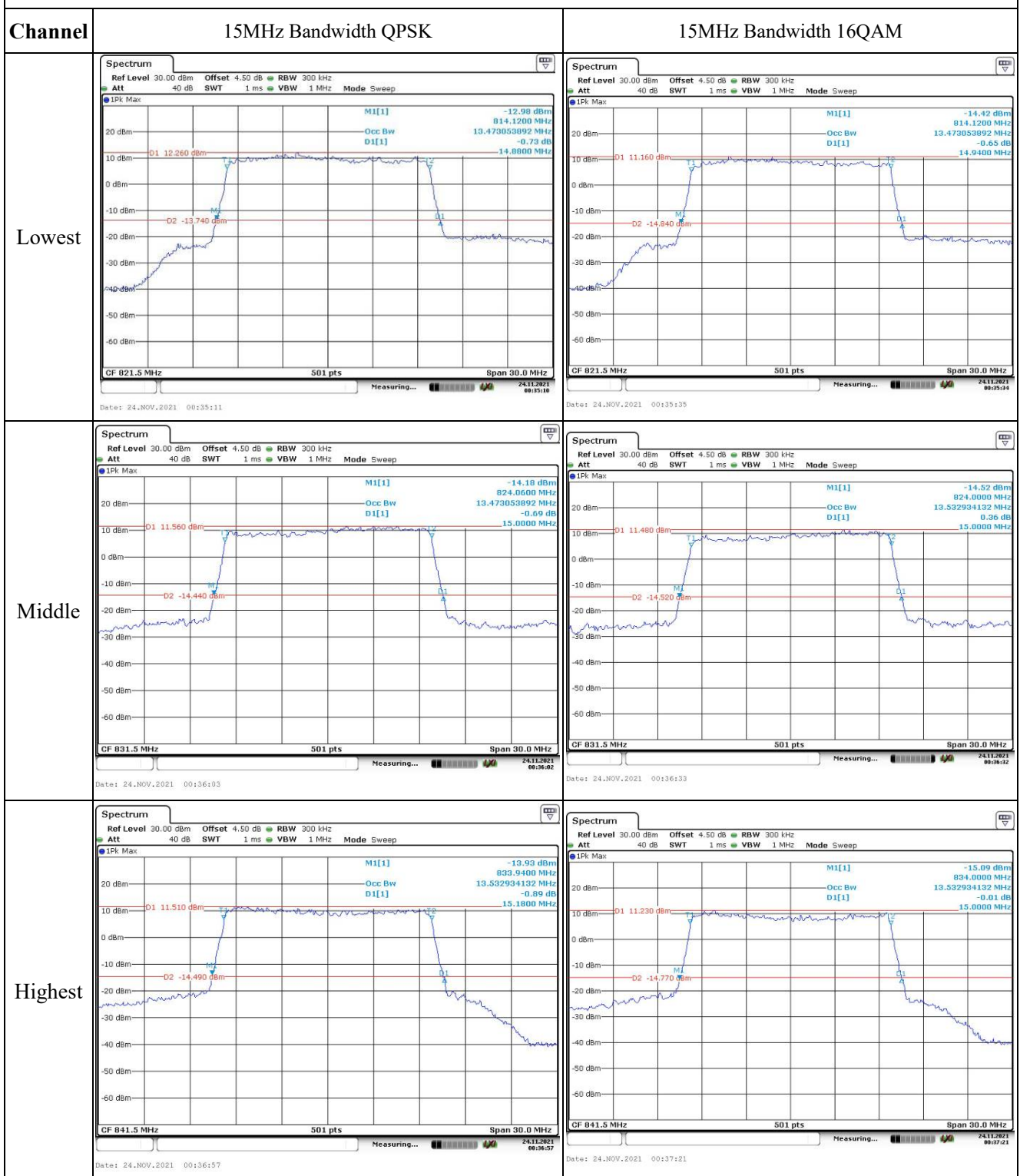
Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

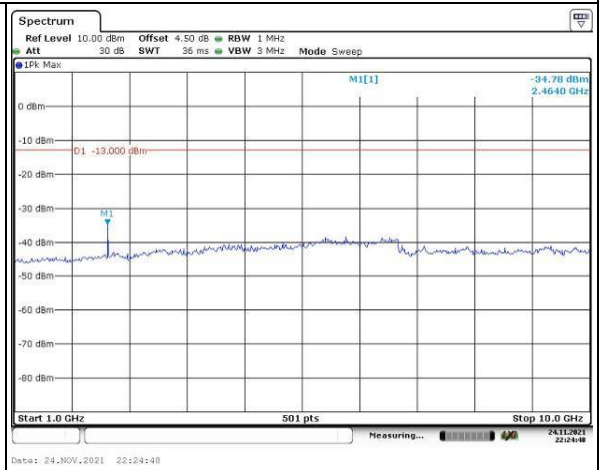
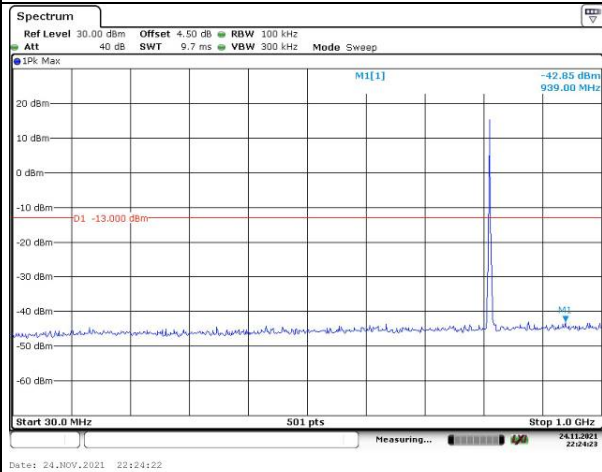


Spurious Emissions at Antenna Terminal

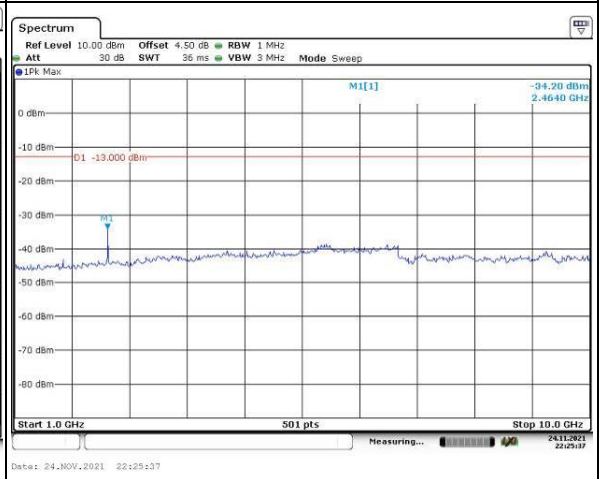
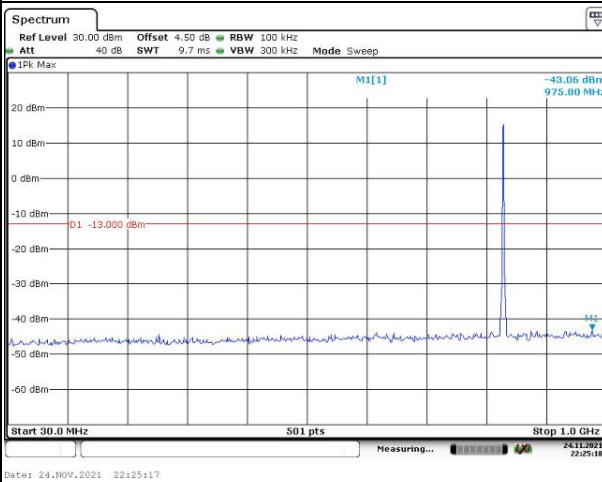
Channel

1.4MHz Bandwidth QPSK

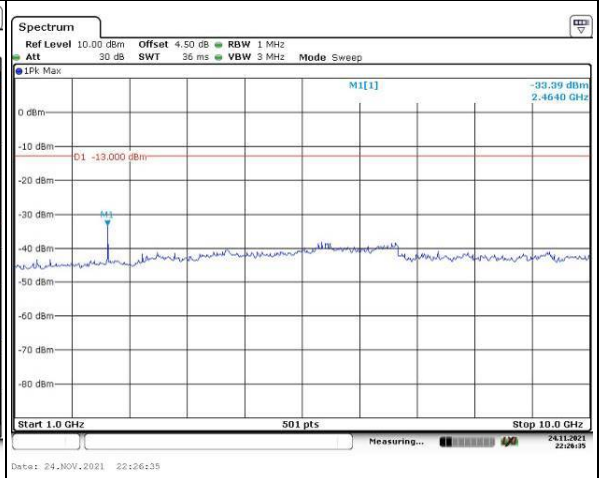
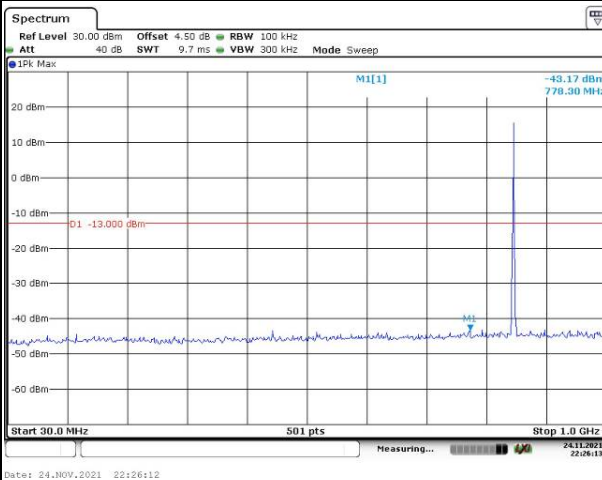
Lowest



Middle



Highest

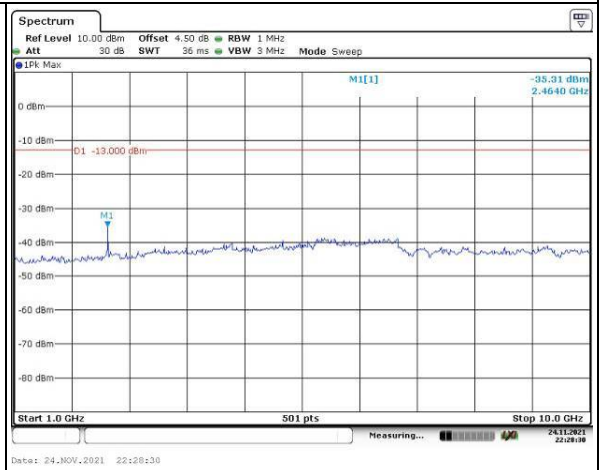
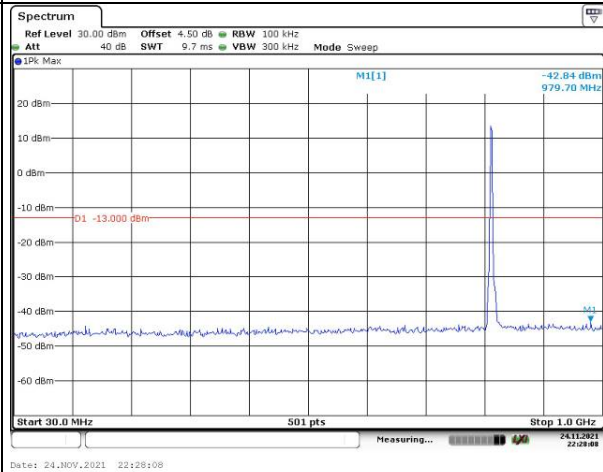


Spurious Emissions at Antenna Terminal

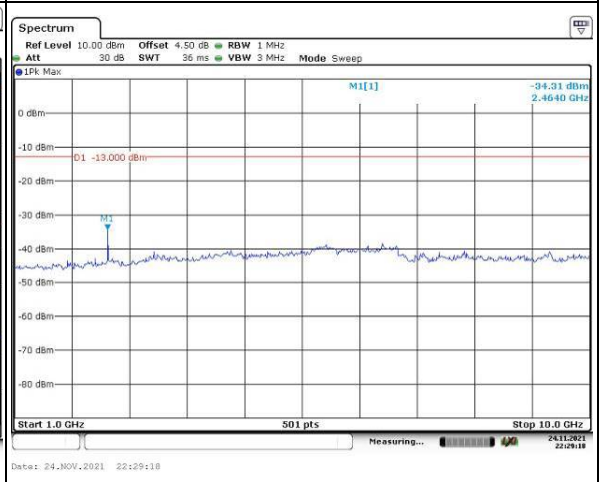
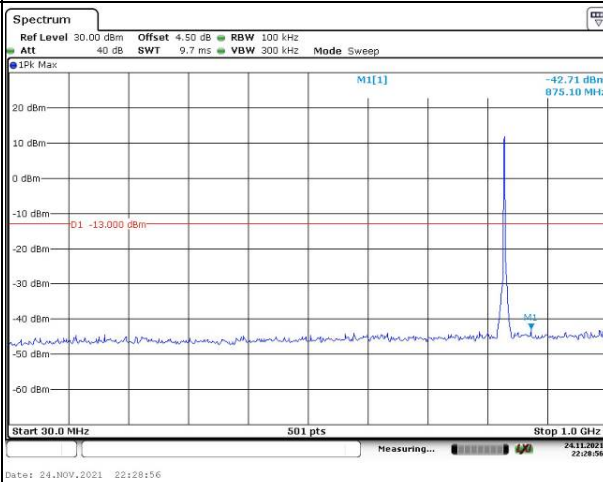
Channel

3MHz Bandwidth QPSK

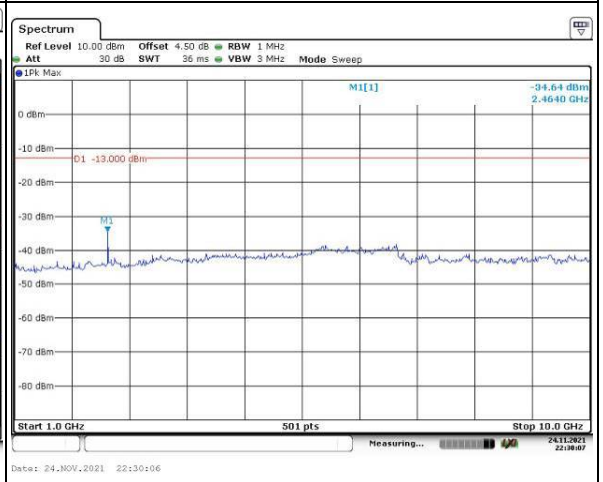
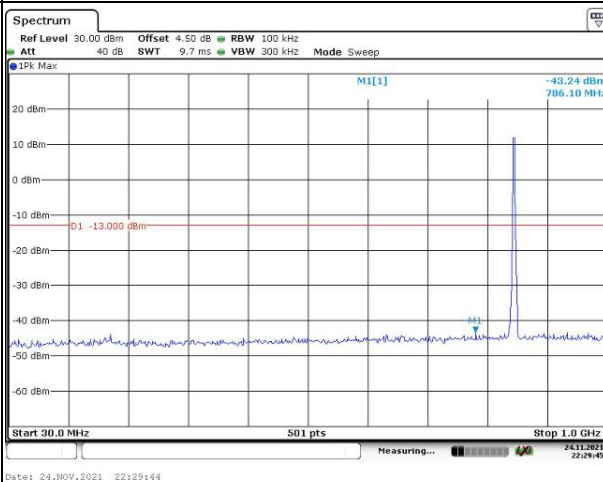
Lowest



Middle



Highest

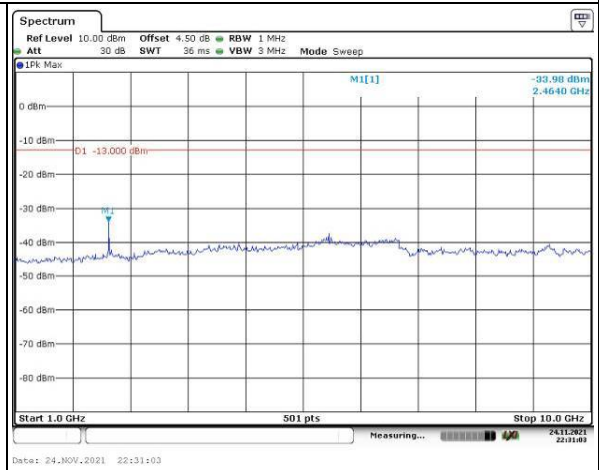
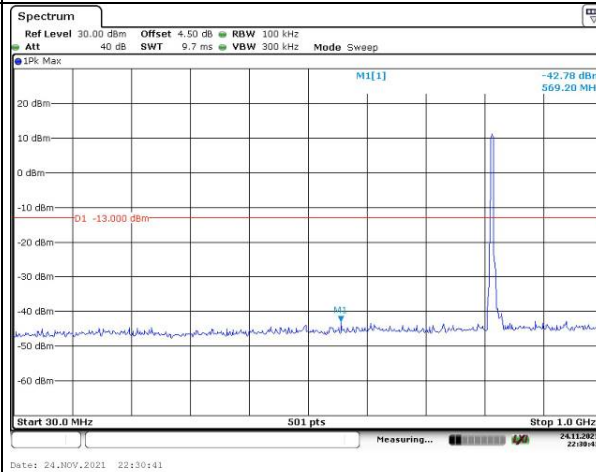


Spurious Emissions at Antenna Terminal

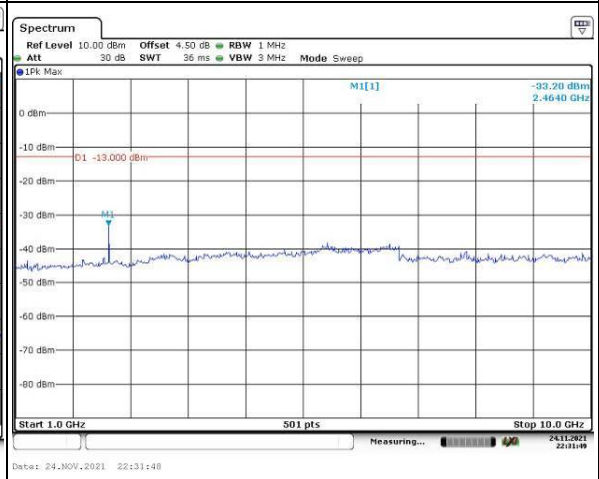
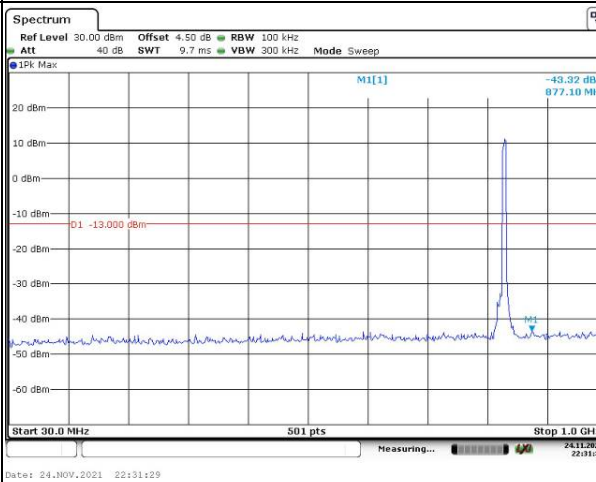
Channel

5MHz Bandwidth QPSK

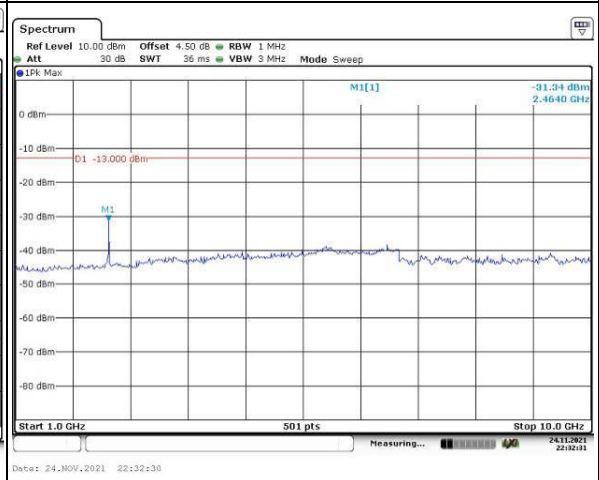
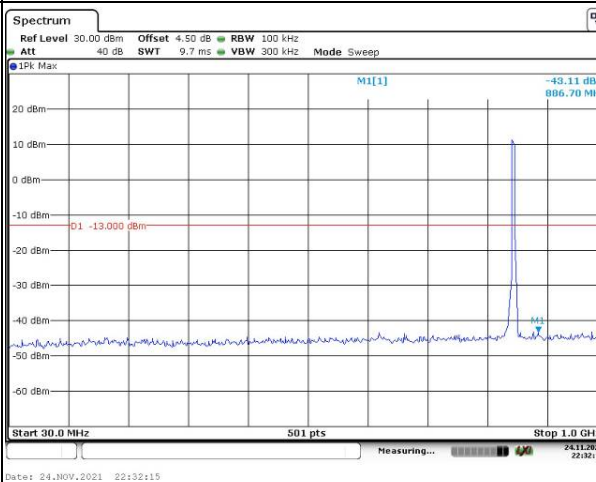
Lowest



Middle



Highest

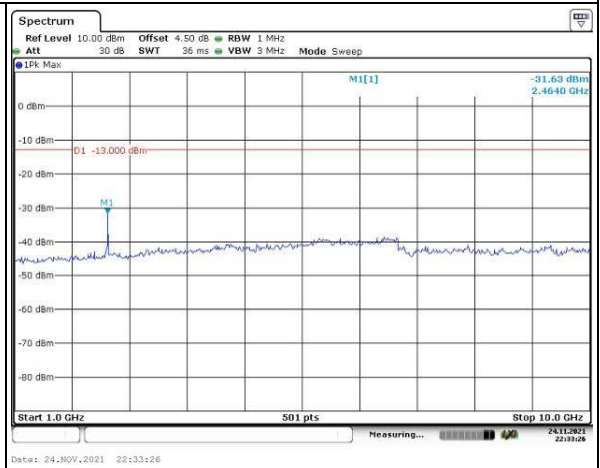
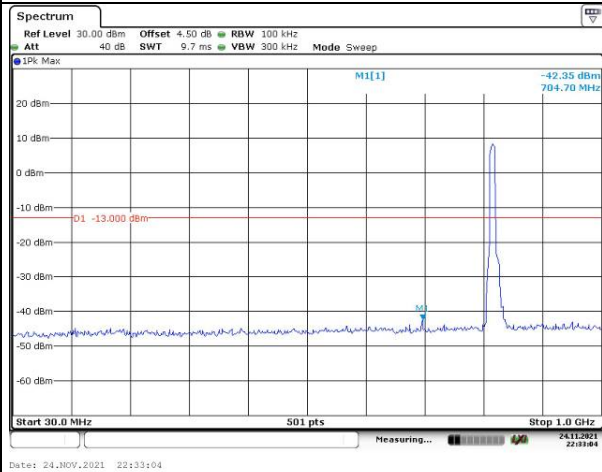


Spurious Emissions at Antenna Terminal

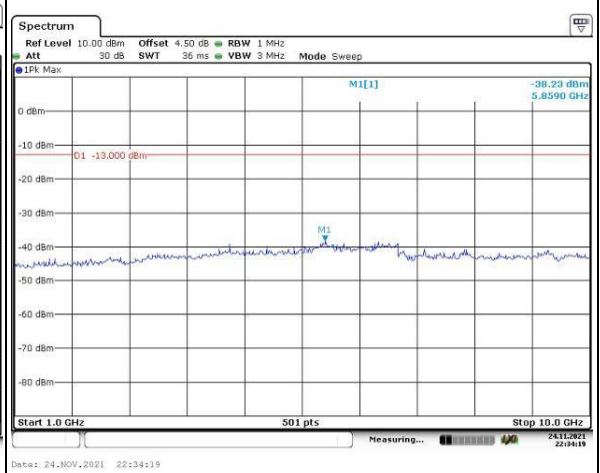
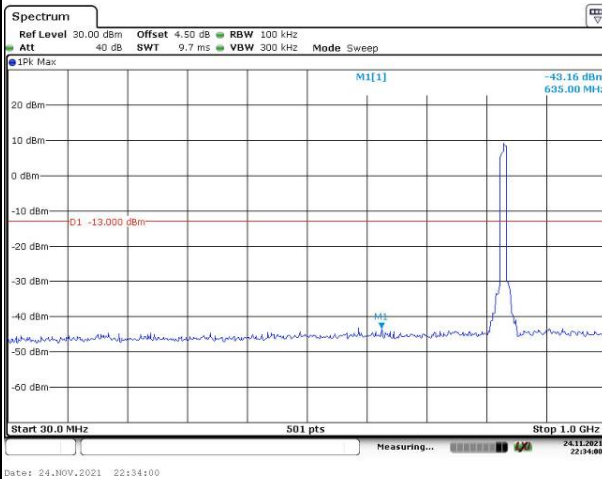
Channel

10MHz Bandwidth QPSK

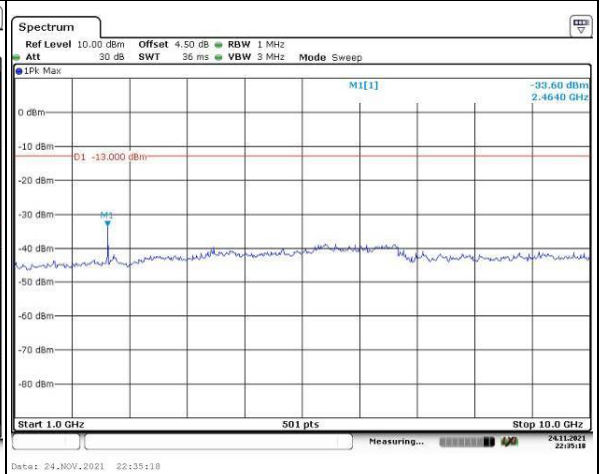
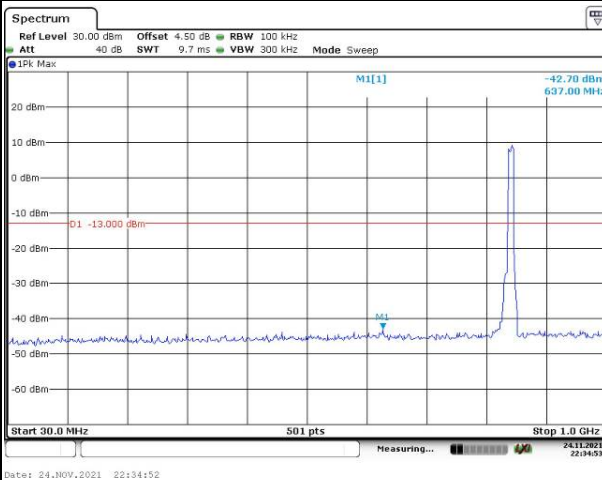
Lowest



Middle



Highest

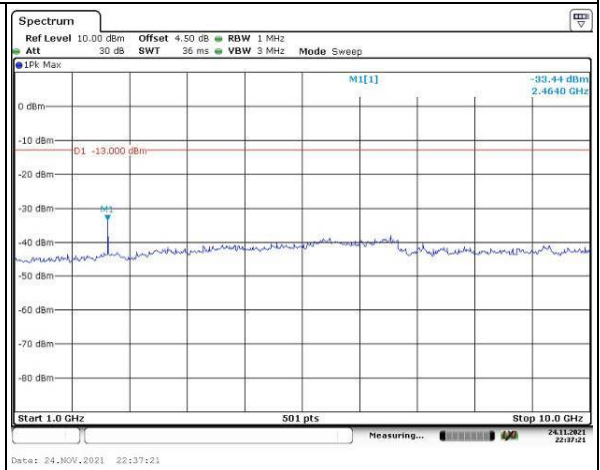
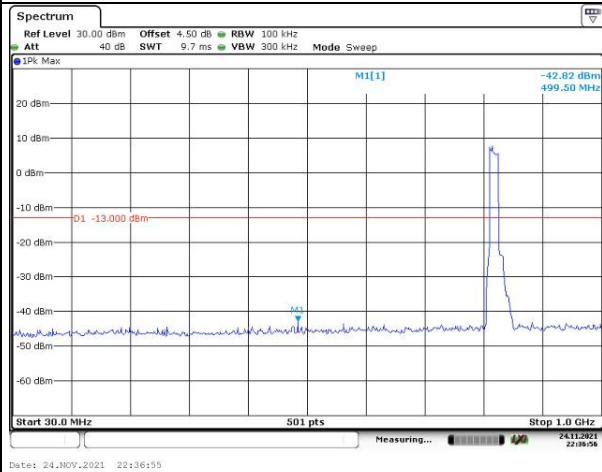


Spurious Emissions at Antenna Terminal

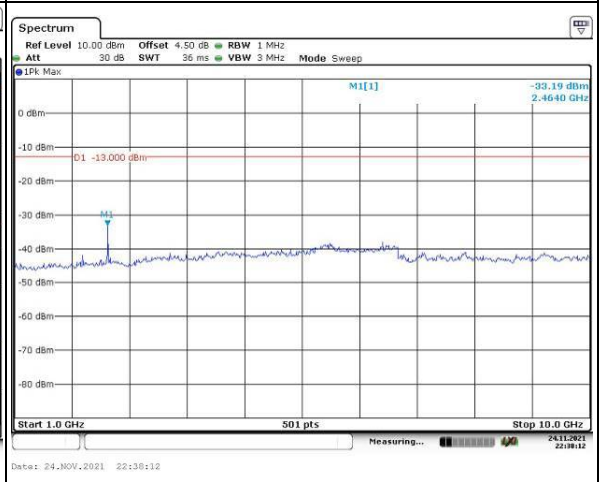
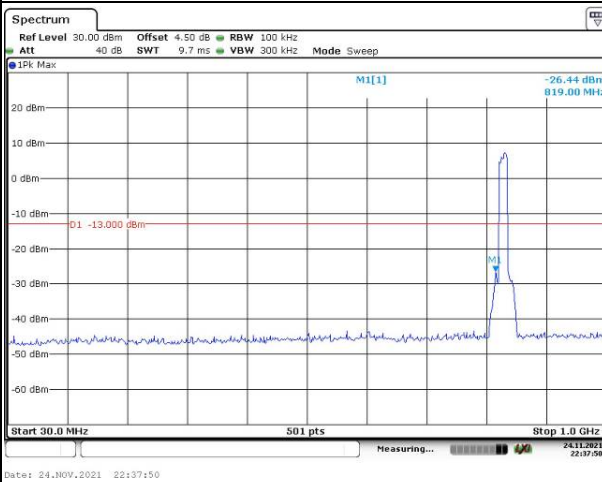
Channel

15MHz Bandwidth QPSK

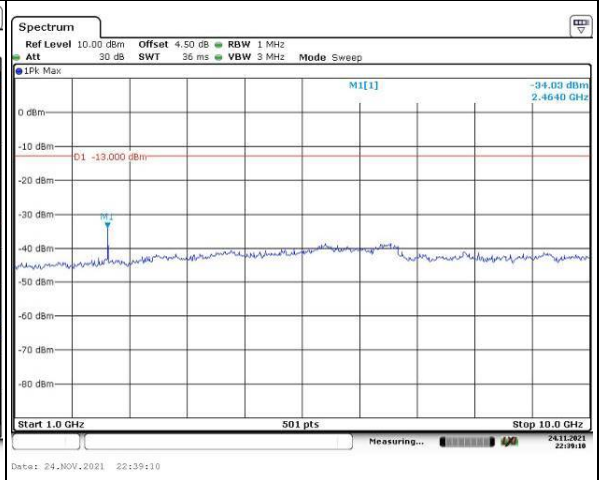
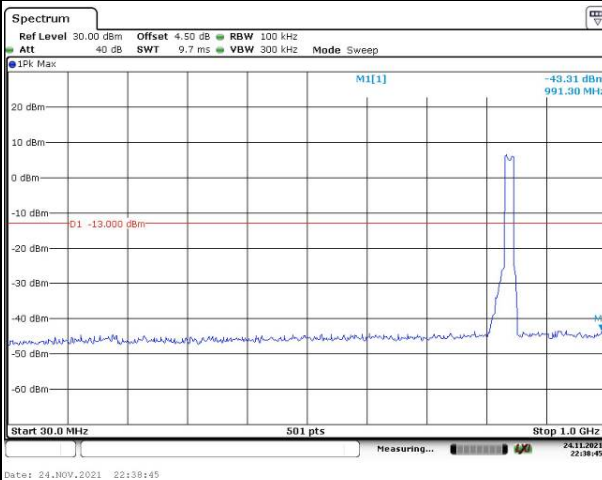
Lowest



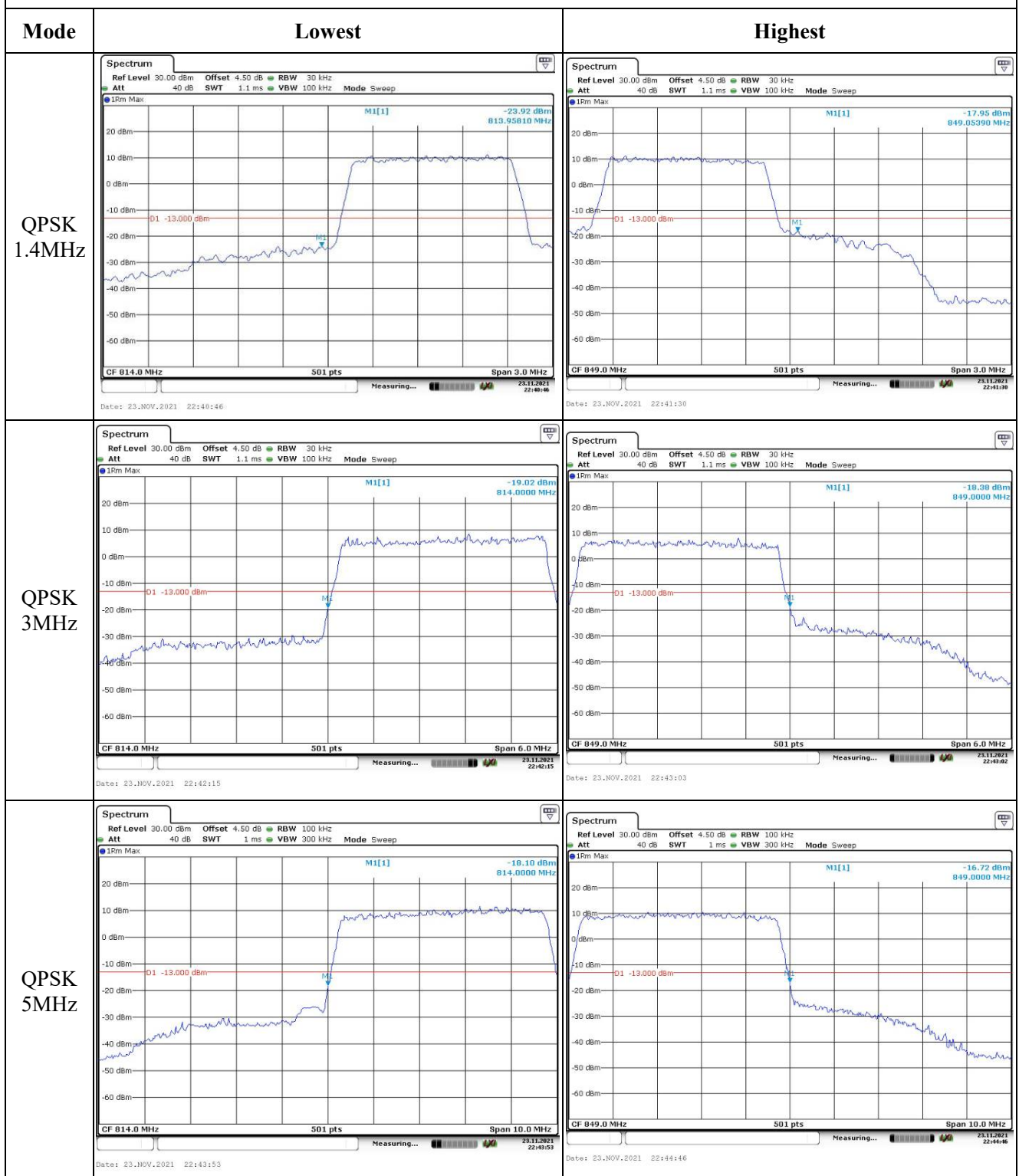
Middle



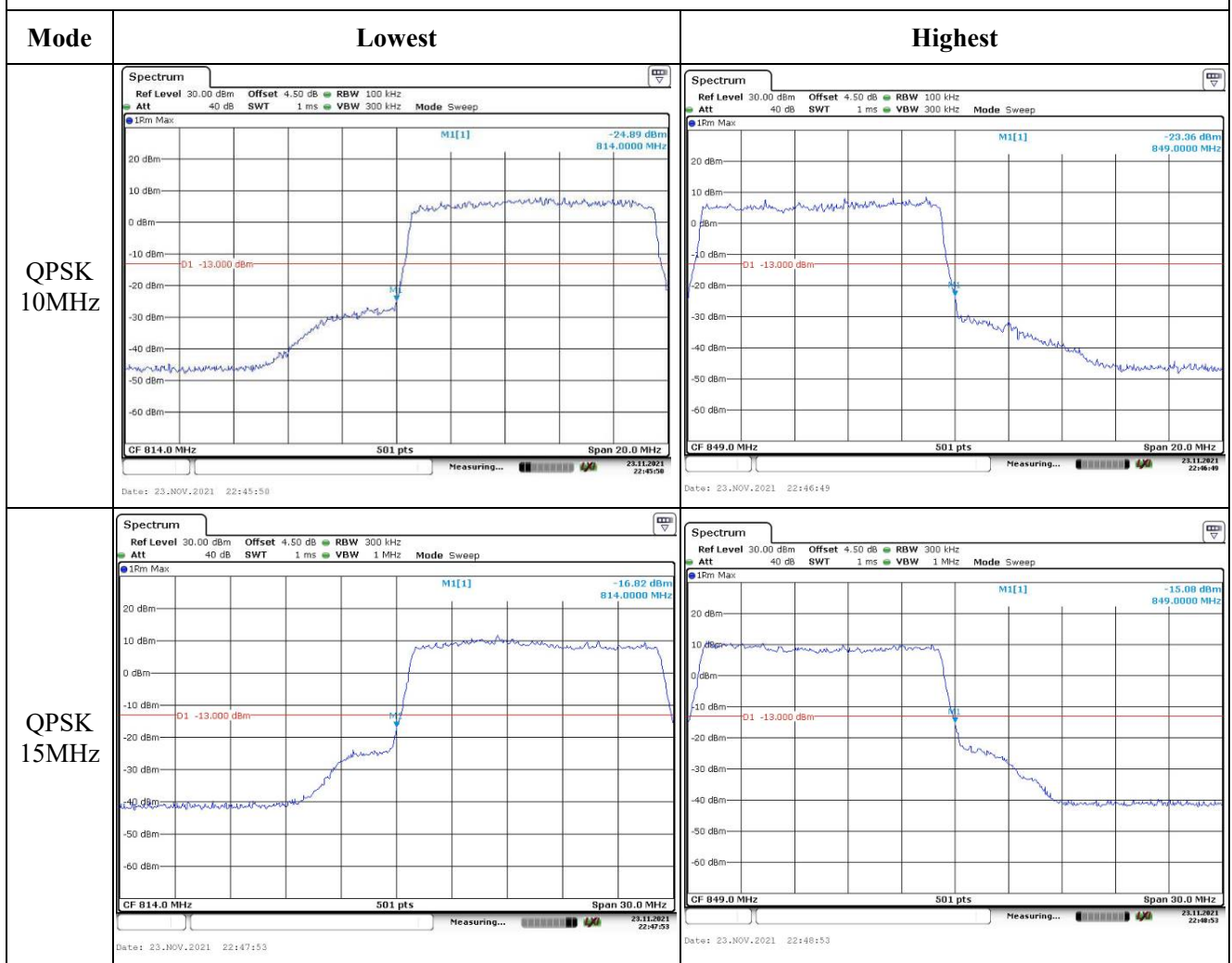
Highest



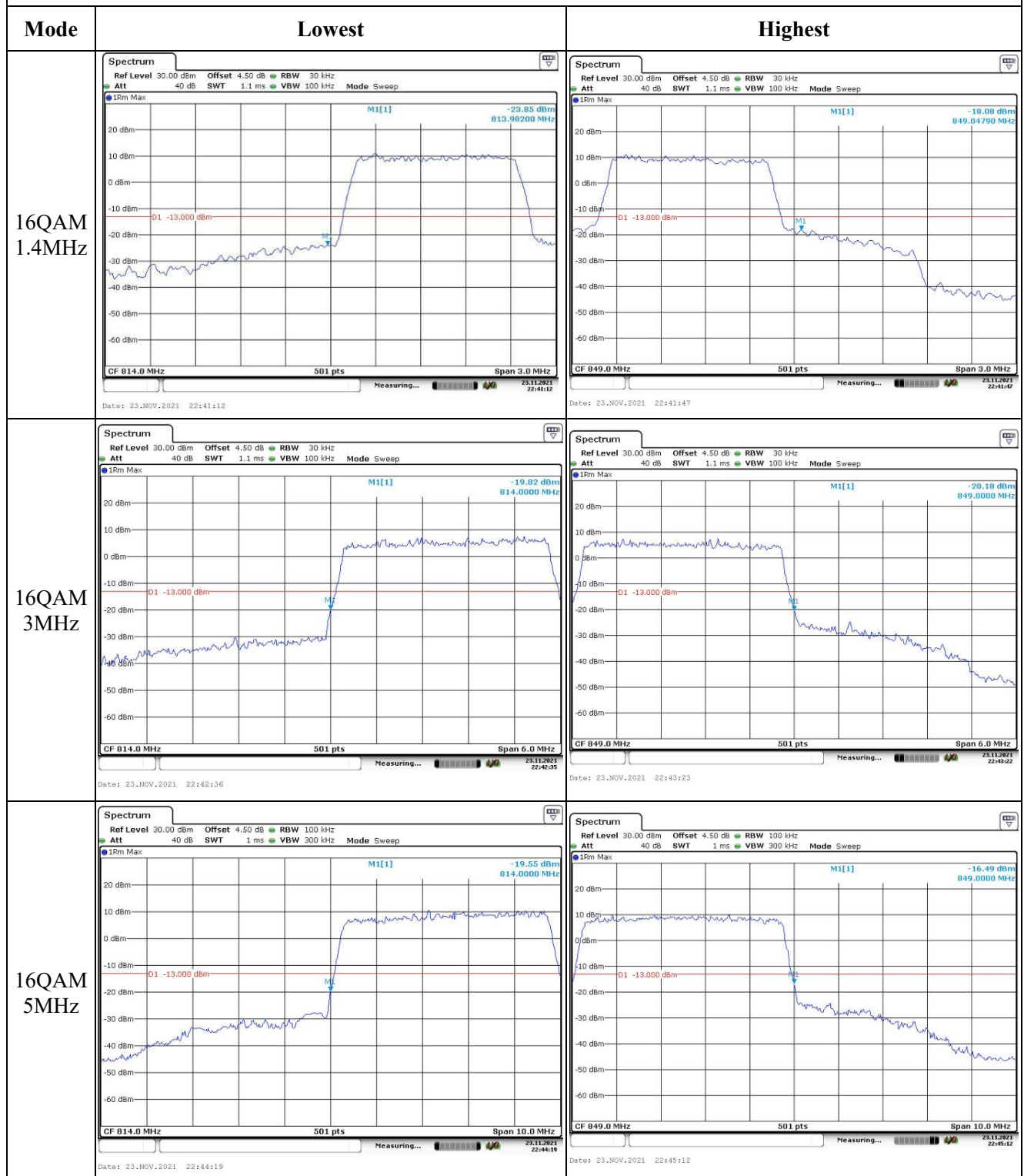
Out of band emission, Band Edge



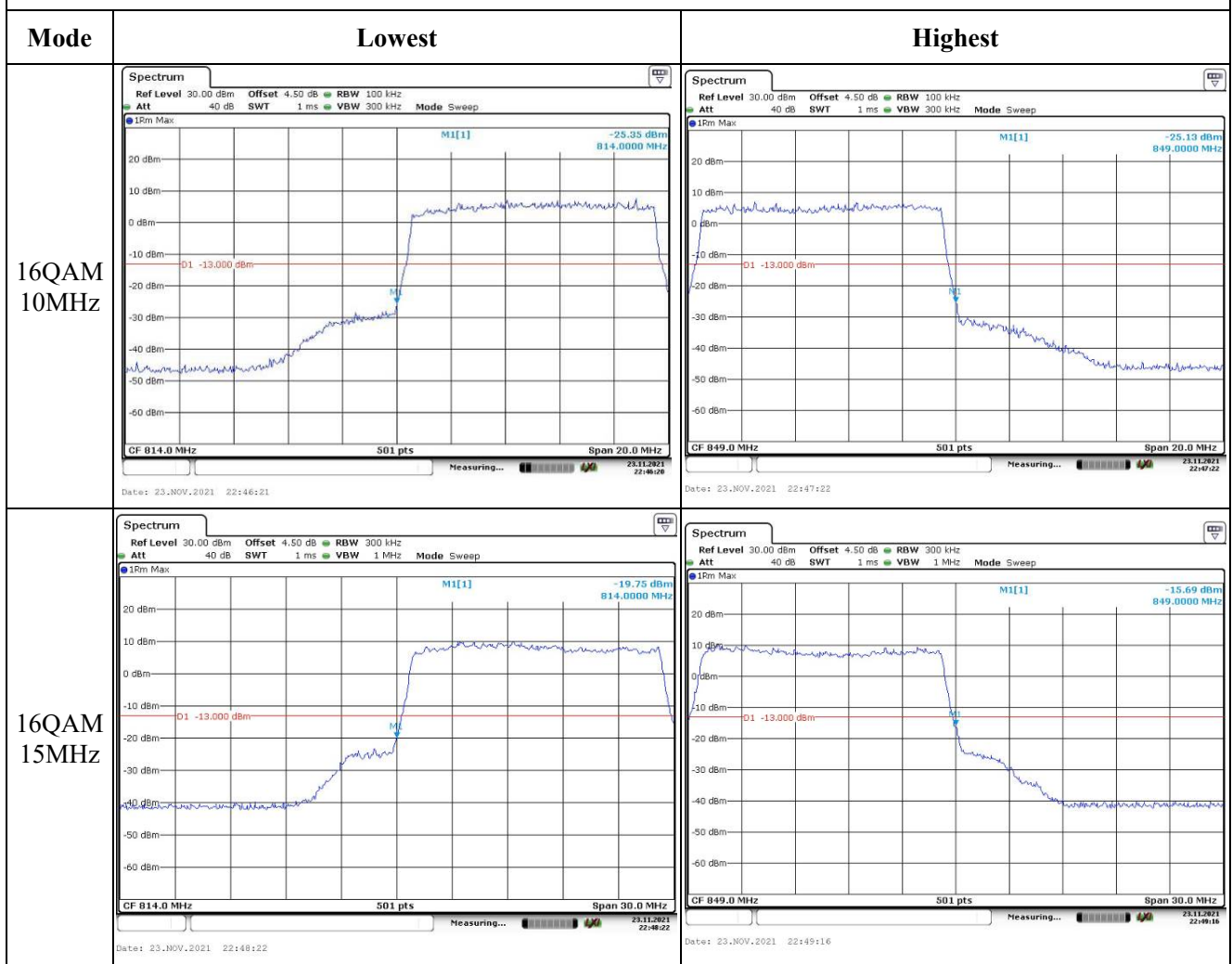
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.12 Antenna Port Test Data and Results for LTE Band 41:

Serial Number:	CR21110014-RF-S1	Test Date:	2021/11/24~2021/12/20
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.1~23.2	Relative Humidity: (%)	36	ATM Pressure: (kPa)	101.3~101.7
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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
R&S	Universal Radio Communication Tester	CMU200	110 825	2021/7/22	2022/7/21
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 41▲:

Antenna Gain (dBi):	1	Cable Loss (dB):	0
Operation Voltage(V _{DC}):			
Lowest:	3.5	Normal:	3.7
		Highest:	4.2

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	2557.5	2605	2652.5
10MHz	2560	2605	2650
15MHz	2562.5	2605	2647.5
20MHz	2565	2605	2645

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	21.08	21.05	21.06	22.23	33
	RB1#13	21.11	21.08	21.07		
	RB1#24	20.96	20.93	20.92		
	RB15#0	21.14	21.11	21.23		
	RB15#10	21.08	21.20	21.18		
	RB25#0	20.11	20.16	20.15		
5MHz 16QAM	RB1#0	19.96	19.94	19.93	21.28	33
	RB1#13	19.95	19.94	19.93		
	RB1#24	20.02	20.00	19.99		
	RB15#0	20.20	20.19	20.18		
	RB15#10	20.19	20.28	20.27		
	RB25#0	19.90	19.55	19.56		
10MHz QPSK	RB1#0	21.05	21.02	21.03	22.07	33
	RB1#25	21.06	21.07	21.06		
	RB1#49	20.92	20.91	20.91		
	RB25#0	20.12	20.12	20.12		
	RB25#25	20.09	20.03	20.12		
	RB50#0	20.19	20.07	20.19		
10MHz 16QAM	RB1#0	19.93	19.93	19.92	20.99	33
	RB1#25	19.95	19.90	19.91		
	RB1#49	19.99	19.99	19.98		
	RB25#0	19.98	19.63	19.98		
	RB25#25	19.99	19.66	19.95		
	RB50#0	19.56	19.56	19.56		
15MHz QPSK	RB1#0	21.01	21.05	21.04	22.05	33
	RB1#38	21.05	21.05	21.04		
	RB1#74	20.90	20.90	20.90		
	RB36#0	20.10	20.09	20.09		
	RB36#39	20.04	20.04	20.05		
	RB75#0	20.10	20.09	20.09		
15MHz 16QAM	RB1#0	19.91	19.90	19.90	22.36	33
	RB1#38	19.90	19.93	19.91		
	RB1#74	19.97	19.95	19.98		
	RB36#0	20.37	20.36	19.55		
	RB36#39	20.66	20.33	19.55		
	RB75#0	21.36	20.36	19.59		
20MHz QPSK	RB1#0	21.02	21.05	21.14	22.14	33

	RB1#50	21.04	21.04	21.06		
	RB1#99	20.96	20.99	20.96		
	RB50#0	20.08	20.20	20.07		
	RB50#50	20.06	20.16	20.07		
	RB100#0	20.18	20.18	20.05		
20MHz 16QAM	RB1#0	20.11	20.10	19.90	21.59	33
	RB1#50	20.13	20.12	19.99		
	RB1#99	20.08	20.08	19.95		
	RB50#0	20.23	20.36	20.36		
	RB50#50	20.36	20.59	20.56		
	RB100#0	20.33	20.36	20.22		
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	5.39	4.93	6.32	13
	RB100#0	5.62	6.58	6.55	13
20MHz 16QAM	RB1#0	6.67	5.57	6.23	13
	RB100#0	6.43	6.87	5.68	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	4.491	4.511	4.511	5.140	5.000	4.980
5MHz 16QAM	4.511	4.511	4.511	4.960	5.000	4.980
10MHz QPSK	8.981	8.942	8.942	9.800	9.840	9.840
10MHz 16QAM	8.981	8.942	8.942	9.680	9.760	9.840
15MHz QPSK	13.533	13.533	13.473	15.300	15.480	15.360
15MHz 16QAM	13.533	13.593	13.593	15.480	15.900	15.660
20MHz QPSK	18.044	17.964	17.964	19.680	19.680	19.680
20MHz 16QAM	17.964	18.044	17.964	19.680	20.560	19.600
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

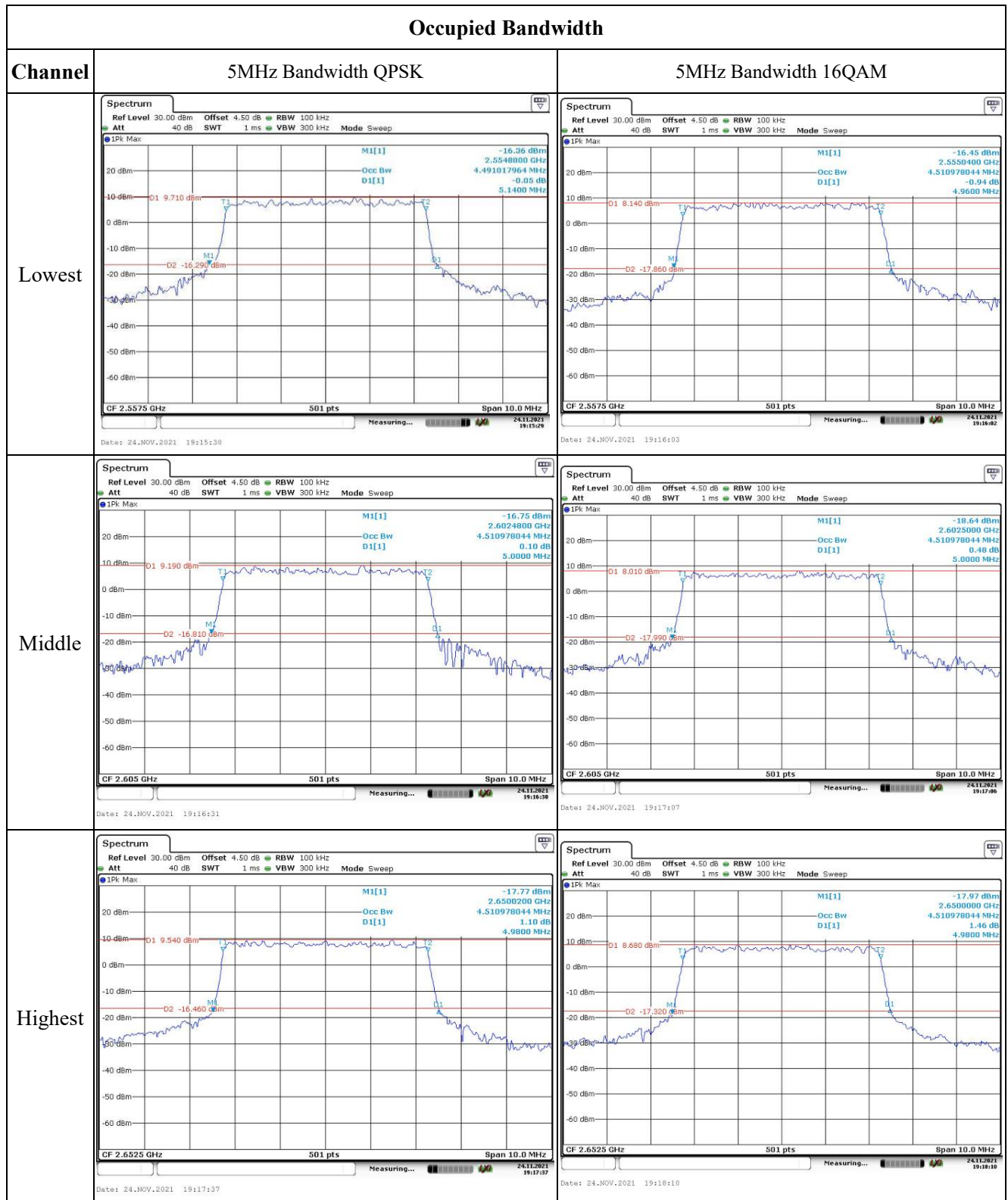
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §27.54: Frequency Stability

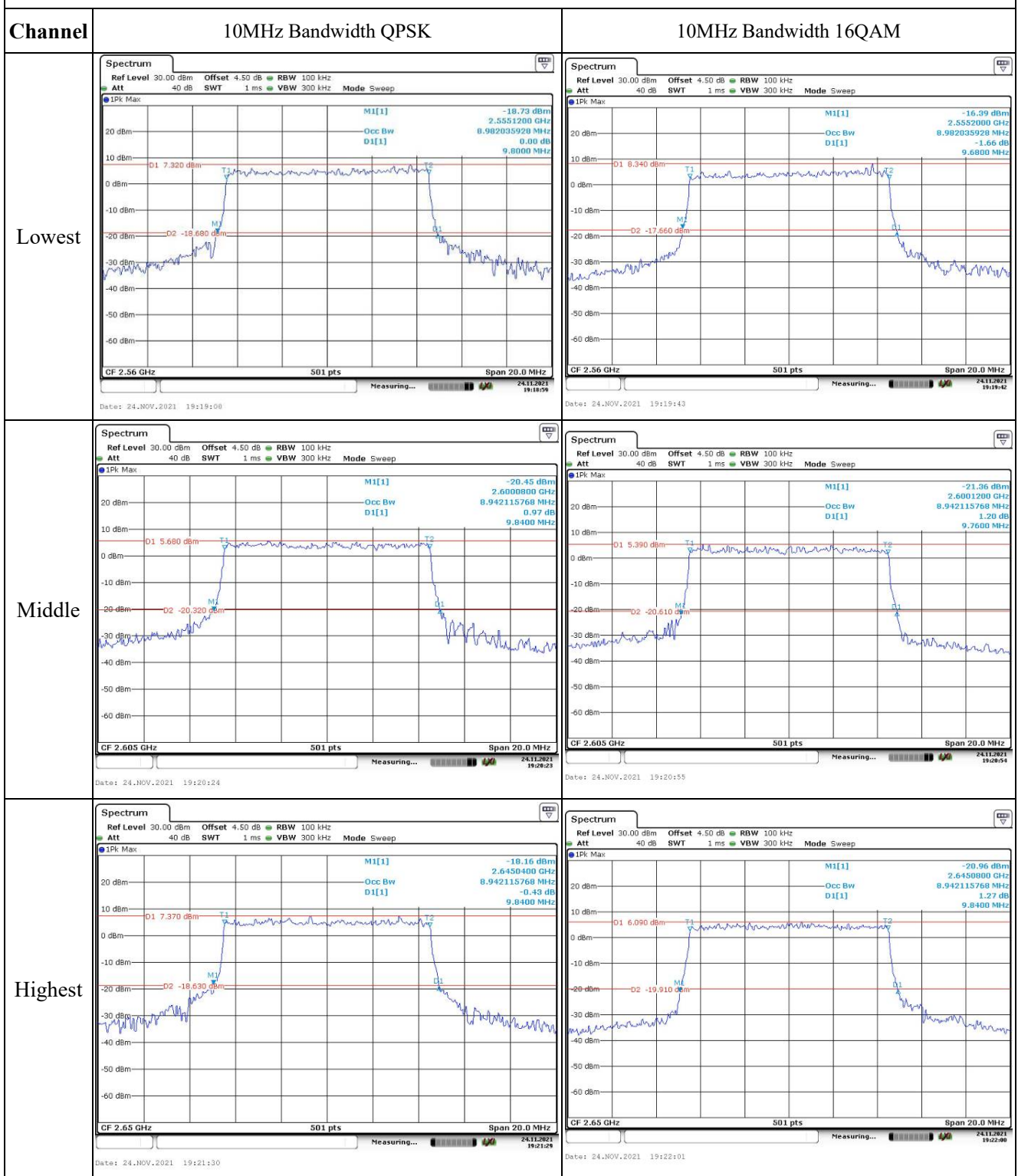
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.7	2555.529	2555.00	2654.471	2655
	-20	3.7	2555.525	2555.00	2654.472	2655
	-10	3.7	2555.521	2555.00	2654.474	2655
	0	3.7	2555.525	2555.00	2654.475	2655
	10	3.7	2555.527	2555.00	2654.476	2655
	20	3.7	2555.528	2555.00	2654.471	2655
	30	3.7	2555.522	2555.00	2654.477	2655
	40	3.7	2555.526	2555.00	2654.478	2655
	50	3.7	2555.523	2555.00	2654.479	2655
Frequency Stability vs. Voltage	20	3.5	2555.529	2555.00	2654.474	2655
	20	4.2	2555.521	2555.00	2654.471	2655
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	2555.524	2555.00	2654.471	2655
	-20	3.7	2555.521	2555.00	2654.474	2655
	-10	3.7	2555.522	2555.00	2654.475	2655
	0	3.7	2555.525	2555.00	2654.476	2655
	10	3.7	2555.524	2555.00	2654.477	2655
	20	3.7	2555.529	2555.00	2654.471	2655
	30	3.7	2555.524	2555.00	2654.478	2655
	40	3.7	2555.525	2555.00	2654.472	2655
	50	3.7	2555.523	2555.00	2654.473	2655
Frequency Stability vs. Voltage	20	3.5	2555.527	2555.00	2654.474	2655
	20	4.2	2555.529	2555.00	2654.471	2655
Result:					Pass	

Test Plots:



Occupied Bandwidth



Occupied Bandwidth

