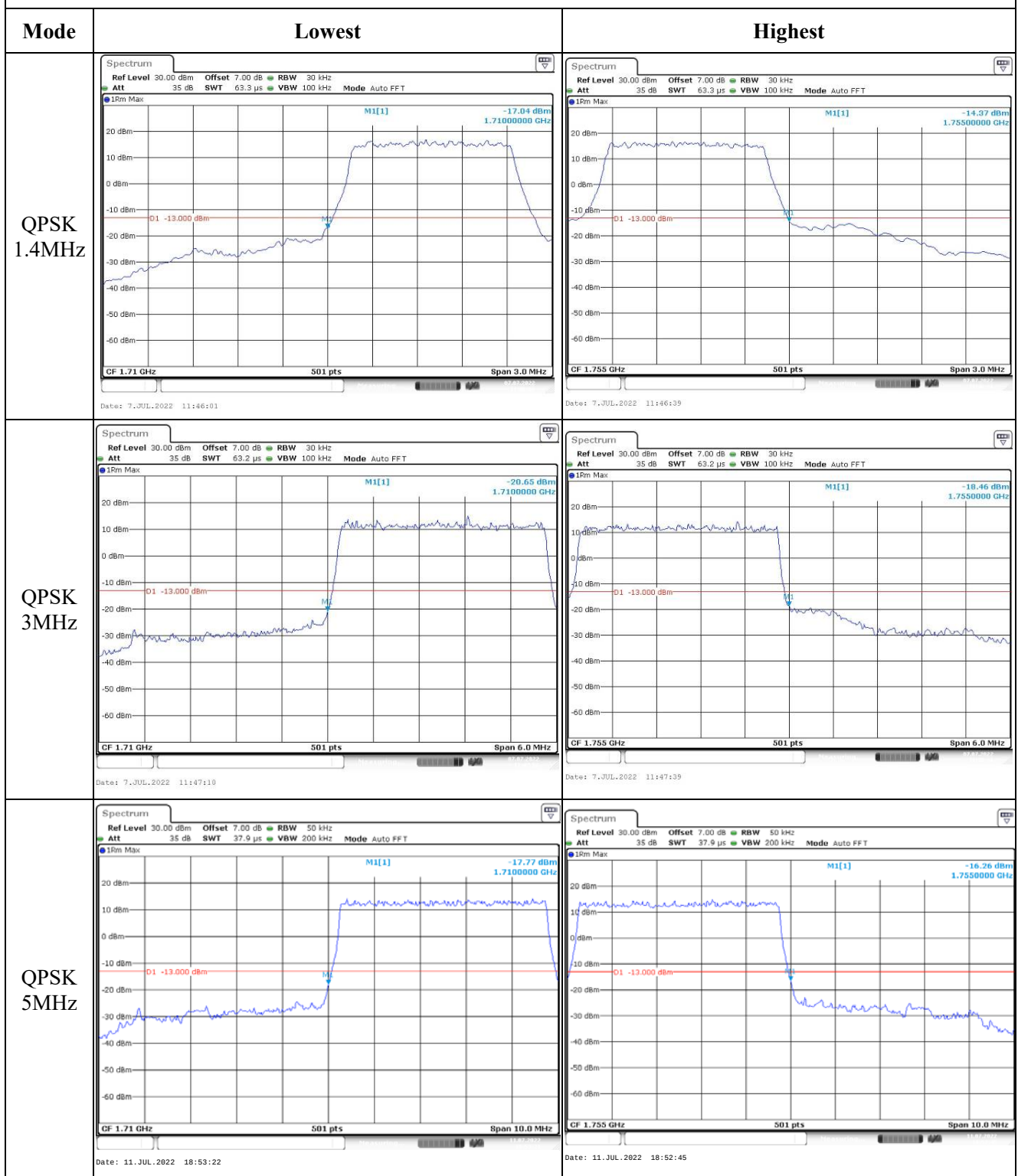
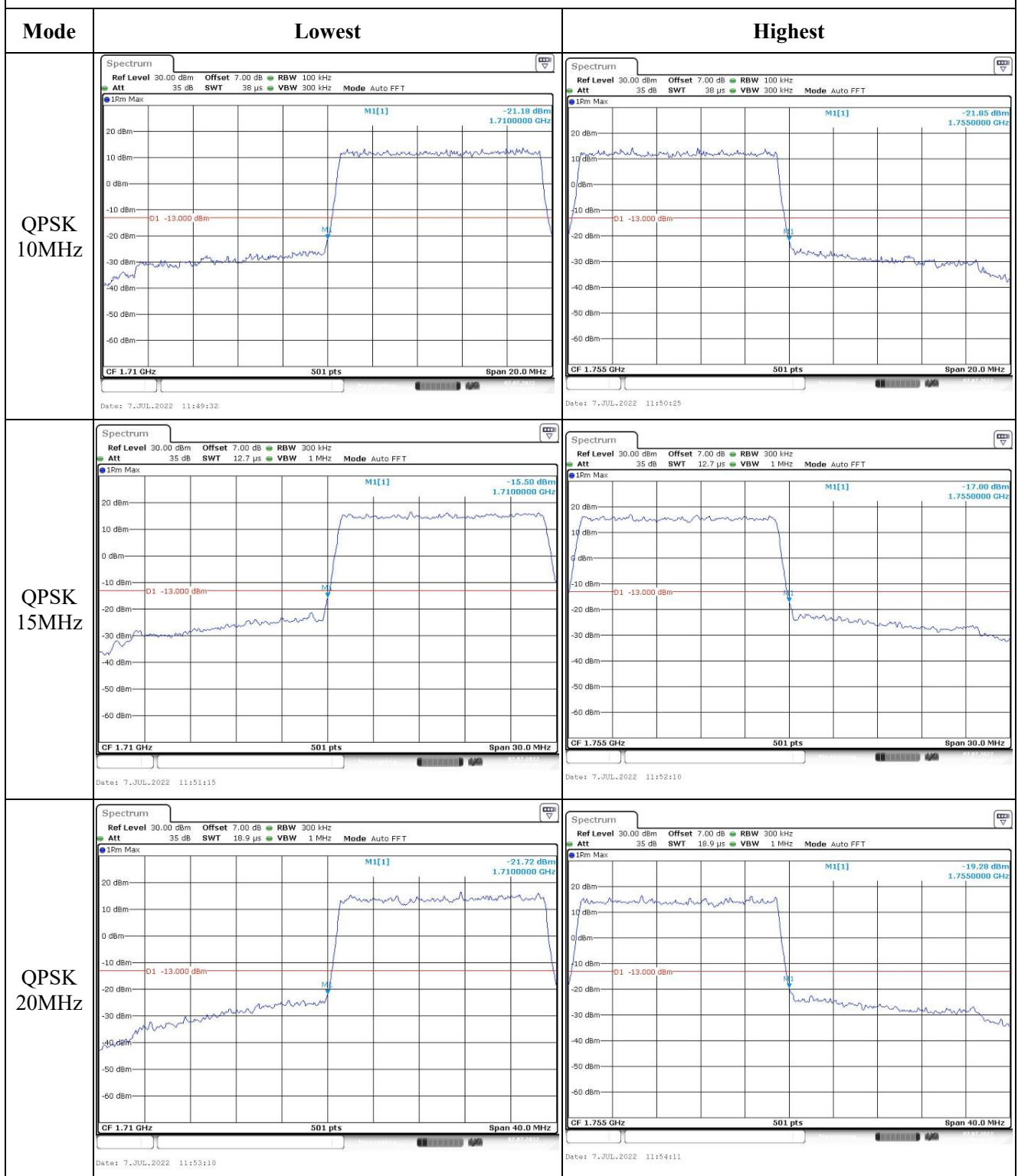


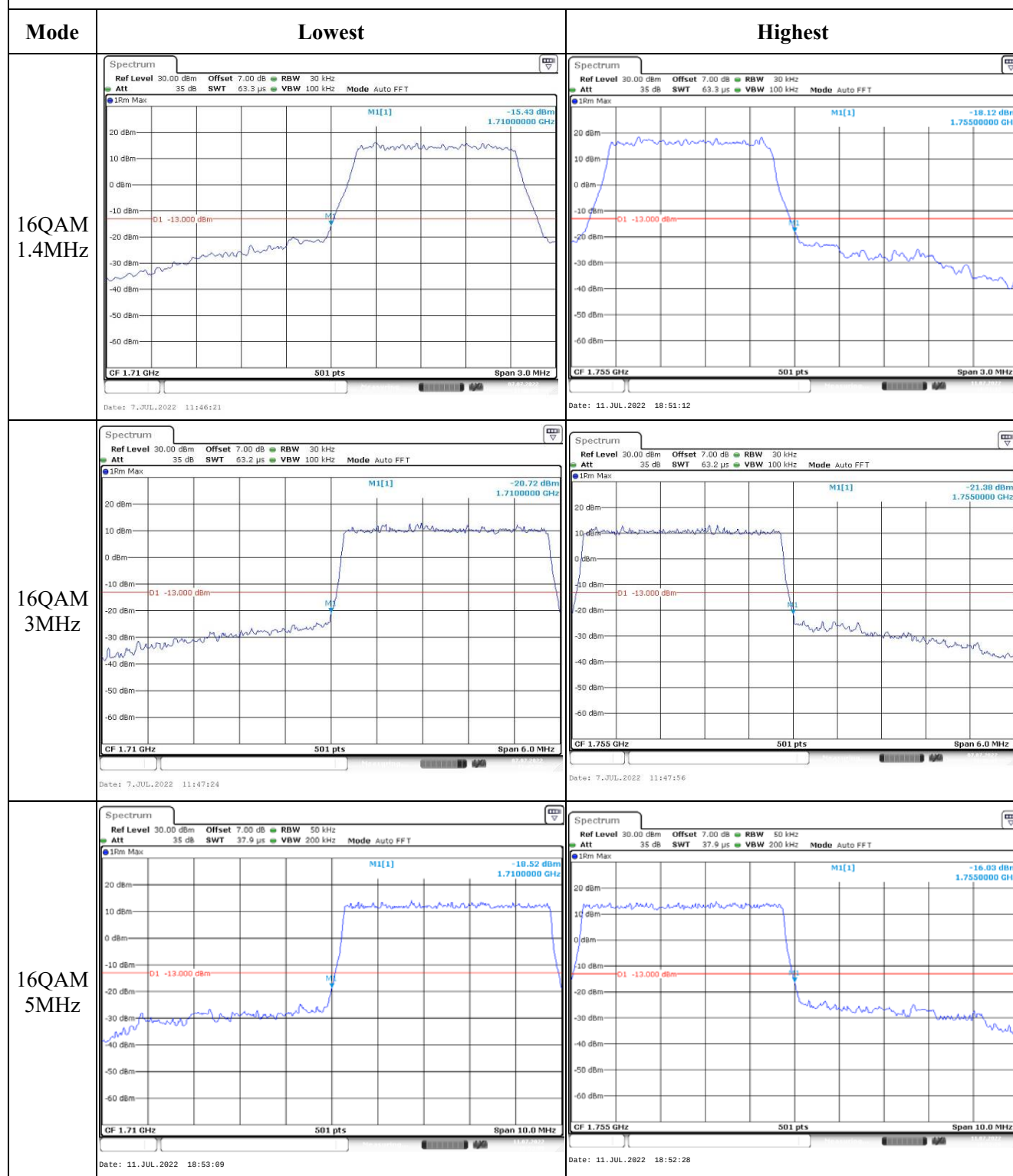
Out of band emission, Band Edge



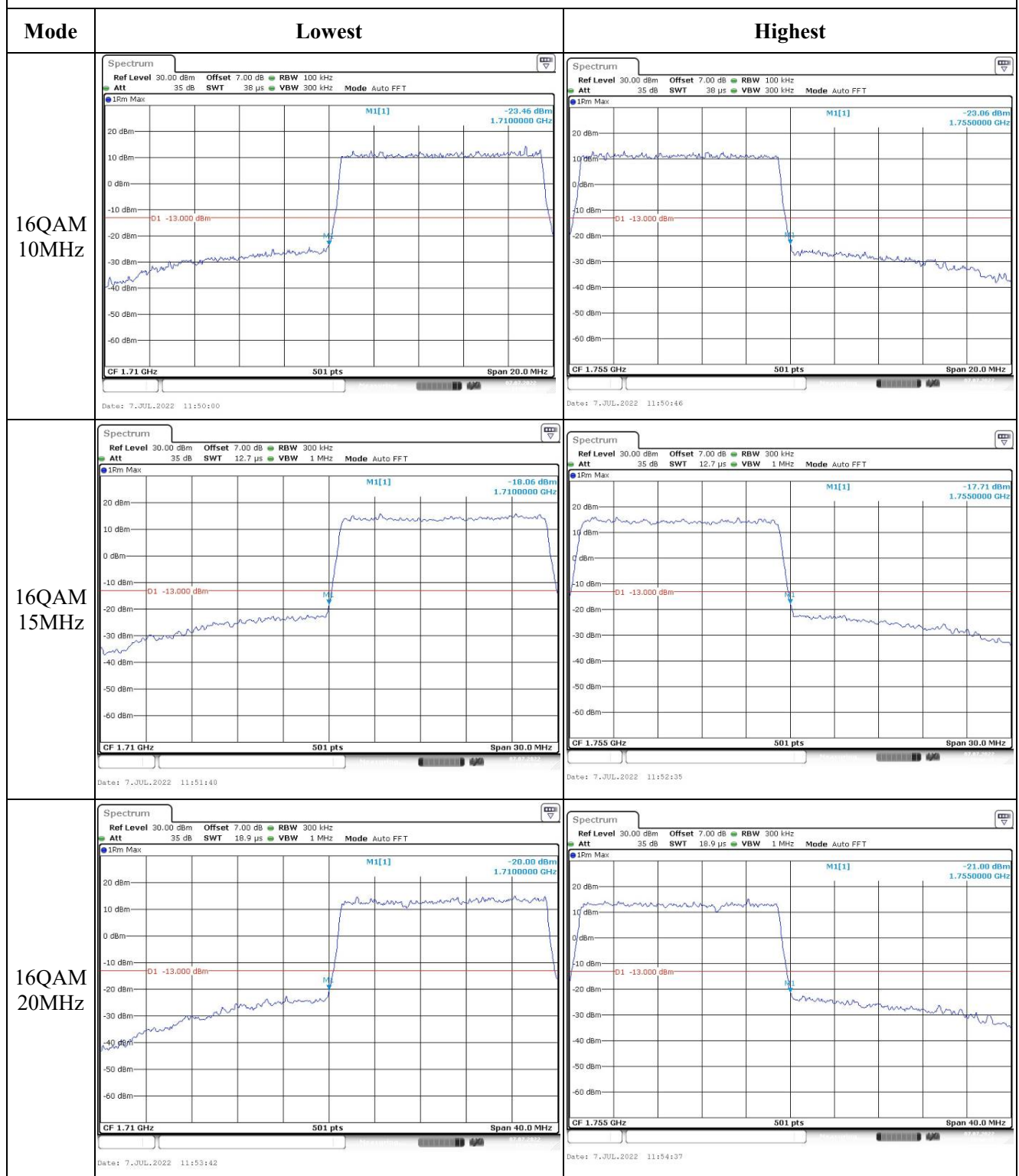
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.7 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	CR220050079-RF-S1	Test Date:	2022/7/2~2022/7/11
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ted Min	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.3~24.8	Relative Humidity: (%)	49~52	ATM Pressure: (kPa)	100.0~100.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
R&S	Wideband Radio Communication Tester	CMW500	149218	2021-07-21	2022-07-20
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
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100003	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 5▲:

Antenna Gain (dBi):	-0.46	Antenna Gain (dBd):	-2.61	Path Loss L _c (dB):	0
Operation Voltage(V _{DC}):					
Lowest:	3.42	Normal:	3.8	Highest:	4.18

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	22.12	21.87	21.99	19.65	38.45
	RB1#3	22.19	21.83	22.13		
	RB1#5	22.24	21.99	22.26		
	RB3#0	22.19	21.92	22.19		
	RB3#3	22.19	21.87	22.11		
	RB6#0	21.82	21.46	21.61		
1.4MHz 16QAM	RB1#0	21.97	21.65	21.93	19.45	38.45
	RB1#3	21.98	21.69	22.06		
	RB1#5	22.01	21.78	22.04		
	RB3#0	21.95	21.73	21.91		
	RB3#3	22.04	21.86	21.97		
	RB6#0	21.61	21.42	21.53		
3MHz QPSK	RB1#0	21.85	22.00	22.09	19.63	38.45
	RB1#8	21.9	22.00	22.17		
	RB1#14	21.88	21.97	22.24		
	RB6#0	21.71	21.88	22.19		
	RB6#9	21.84	21.99	22.23		
	RB15#0	21.43	21.58	21.84		
3MHz 16QAM	RB1#0	21.53	21.69	21.86	19.42	38.45
	RB1#8	21.73	21.88	22.03		
	RB1#14	21.72	21.96	22.02		
	RB6#0	21.62	21.96	21.95		
	RB6#9	21.73	21.96	21.92		
	RB15#0	21.31	21.62	21.68		
5MHz QPSK	RB1#0	22.12	22.16	21.76	19.64	38.45
	RB1#13	22.25	22.15	21.81		
	RB1#24	22.17	22.17	21.94		
	RB15#0	22.22	22.03	21.85		
	RB15#10	22.05	21.98	21.8		
	RB25#0	21.90	21.70	21.52		
5MHz 16QAM	RB1#0	21.87	21.68	21.54	19.5	38.45
	RB1#13	21.96	21.87	21.65		
	RB1#24	22.06	22.01	21.76		
	RB15#0	22.11	21.98	21.56		
	RB15#10	22.03	21.94	21.62		
	RB25#0	21.93	21.77	21.22		

10MHz QPSK	RB1#0	22.02	22.01	21.78	19.66	38.45
	RB1#25	22.14	22.16	21.85		
	RB1#49	22.27	22.17	21.98		
	RB25#0	22.07	22.10	21.64		
	RB25#25	22.13	22.13	21.70		
	RB50#0	21.67	21.77	21.37		
10MHz 16QAM	RB1#0	21.56	21.71	21.35	19.47	38.45
	RB1#25	21.67	21.94	21.55		
	RB1#49	21.88	22.02	21.64		
	RB25#0	21.83	22.08	21.42		
	RB25#25	21.85	22.01	21.52		
	RB50#0	21.55	21.76	21.19		

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	3.26	3.22	3.19	13
	RB50#0	5.14	5.13	5.21	13
10MHz 16QAM	RB1#0	4.09	4.38	4.26	13
	RB50#0	6.23	6.31	6.25	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	1.096	1.102	1.102	1.296	1.314	1.29
1.4MHz 16QAM	1.096	1.09	1.096	1.326	1.284	1.296
3MHz QPSK	2.683	2.683	2.683	2.880	2.880	2.892
3MHz 16QAM	2.671	2.671	2.671	2.892	2.868	2.868
5MHz QPSK	4.531	4.511	4.471	4.960	5.320	4.920
5MHz 16QAM	4.491	4.511	4.491	4.940	4.940	5.260
10MHz QPSK	8.982	8.982	8.942	9.680	9.640	9.560
10MHz 16QAM	8.982	8.942	8.942	9.560	9.560	9.600

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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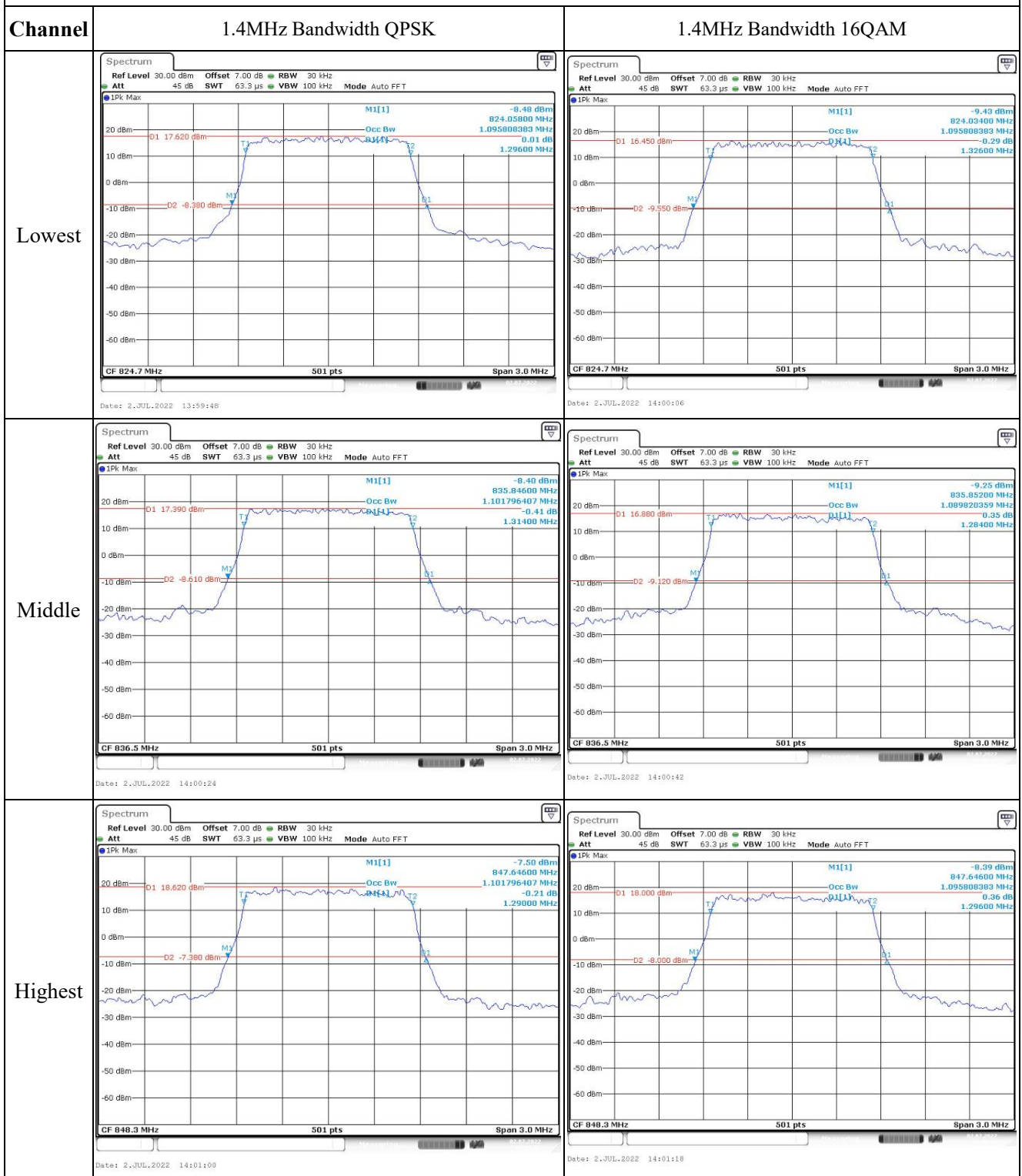
FCC §2.1055, §22.355: Frequency Stability

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	18	0.022	2.5
	-20	3.8	18	0.022	2.5
	-10	3.8	13	0.016	2.5
	0	3.8	18	0.022	2.5
	10	3.8	12	0.014	2.5
	20	3.8	11	0.013	2.5
	30	3.8	12	0.014	2.5
	40	3.8	14	0.017	2.5
	50	3.8	14	0.017	2.5
Frequency Stability vs. Voltage	20	3.42	18	0.022	2.5
	20	4.18	15	0.018	2.5
Result:				Pass	

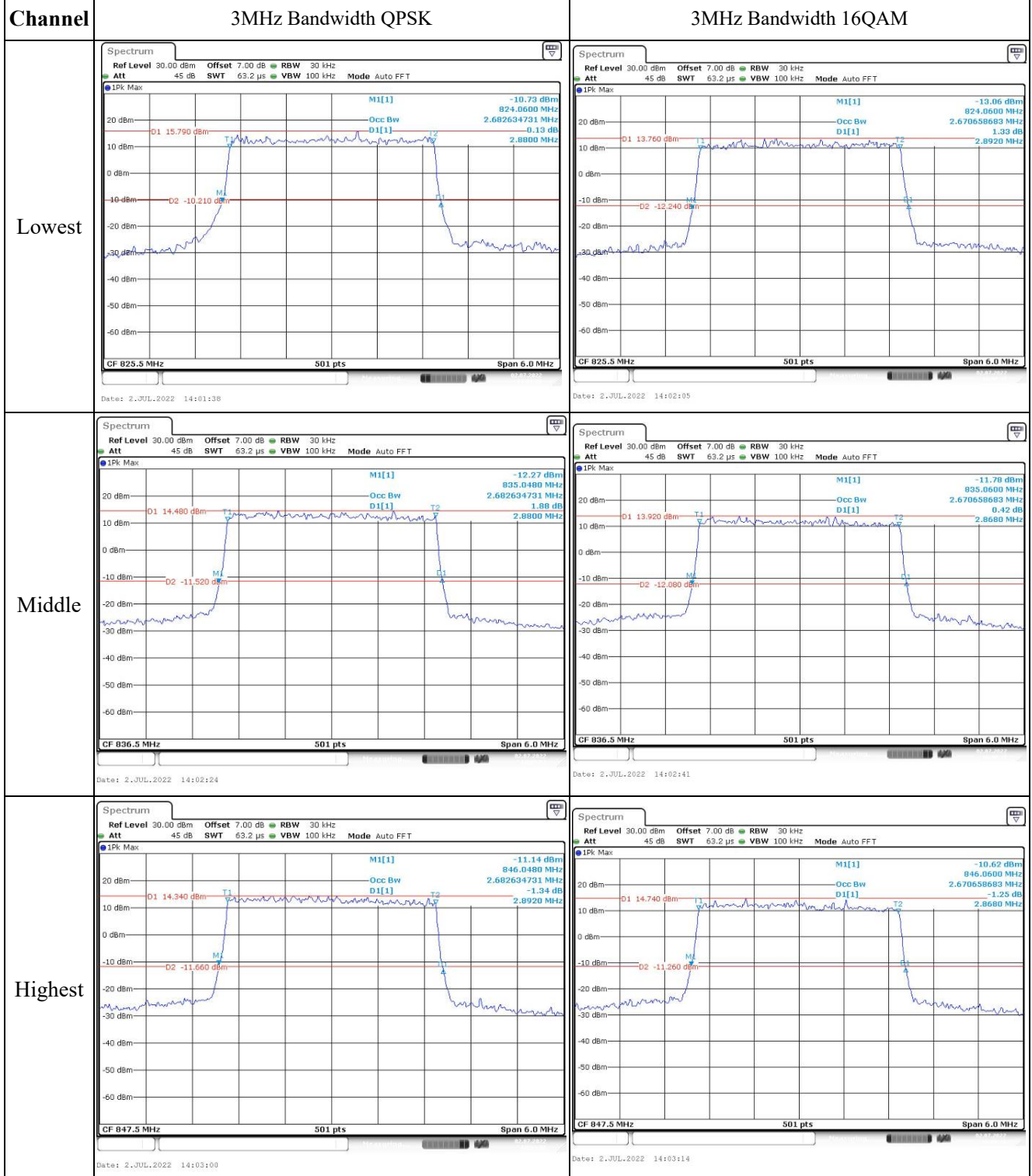
Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	19	0.023	2.5
	-20	3.8	10	0.012	2.5
	-10	3.8	12	0.014	2.5
	0	3.8	17	0.020	2.5
	10	3.8	12	0.014	2.5
	20	3.8	17	0.020	2.5
	30	3.8	14	0.017	2.5
	40	3.8	11	0.013	2.5
	50	3.8	19	0.023	2.5
Frequency Stability vs. Voltage	20	3.42	12	0.014	2.5
	20	4.18	11	0.013	2.5
Result:				Pass	

Test Plots:

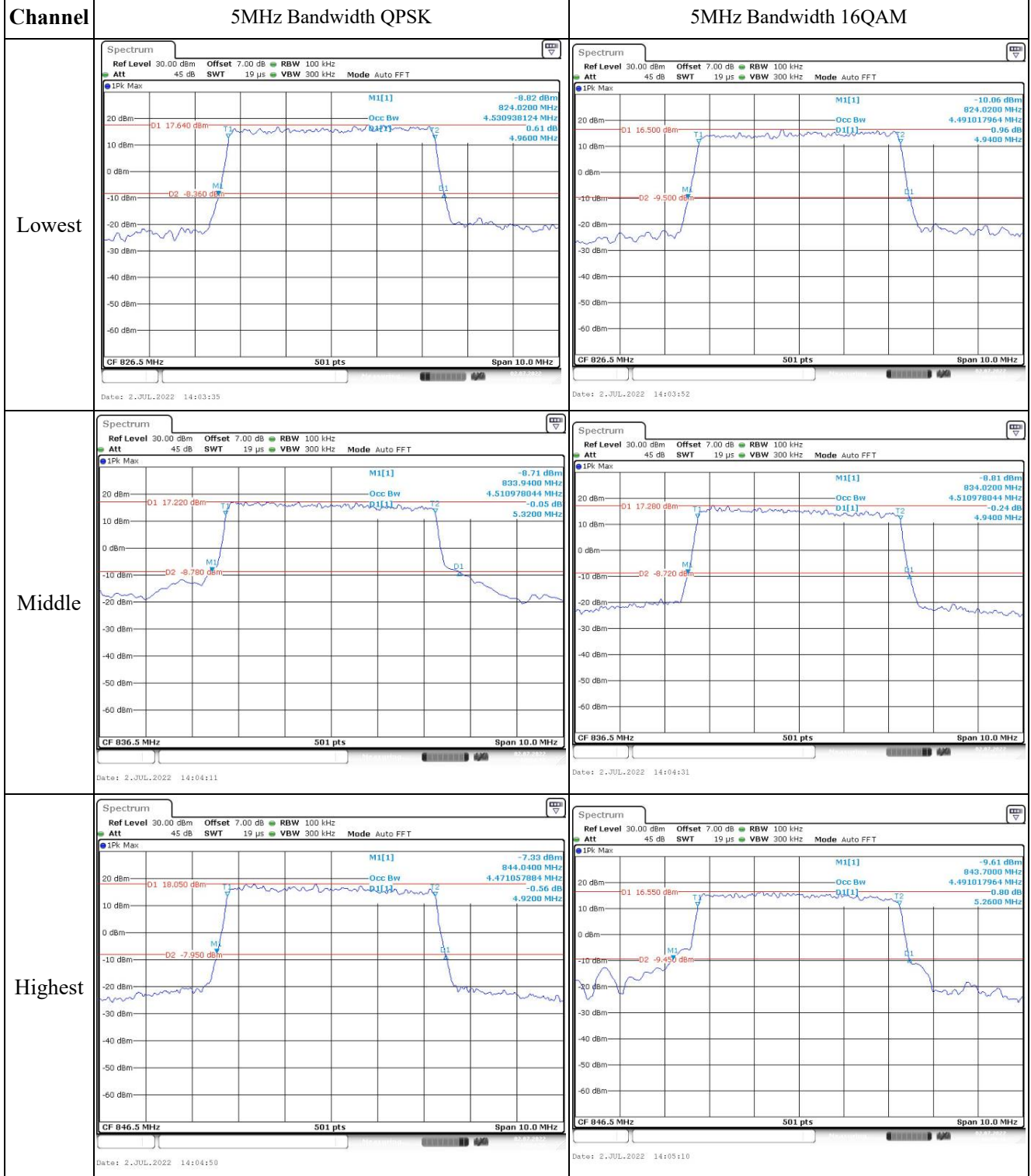
Occupied Bandwidth



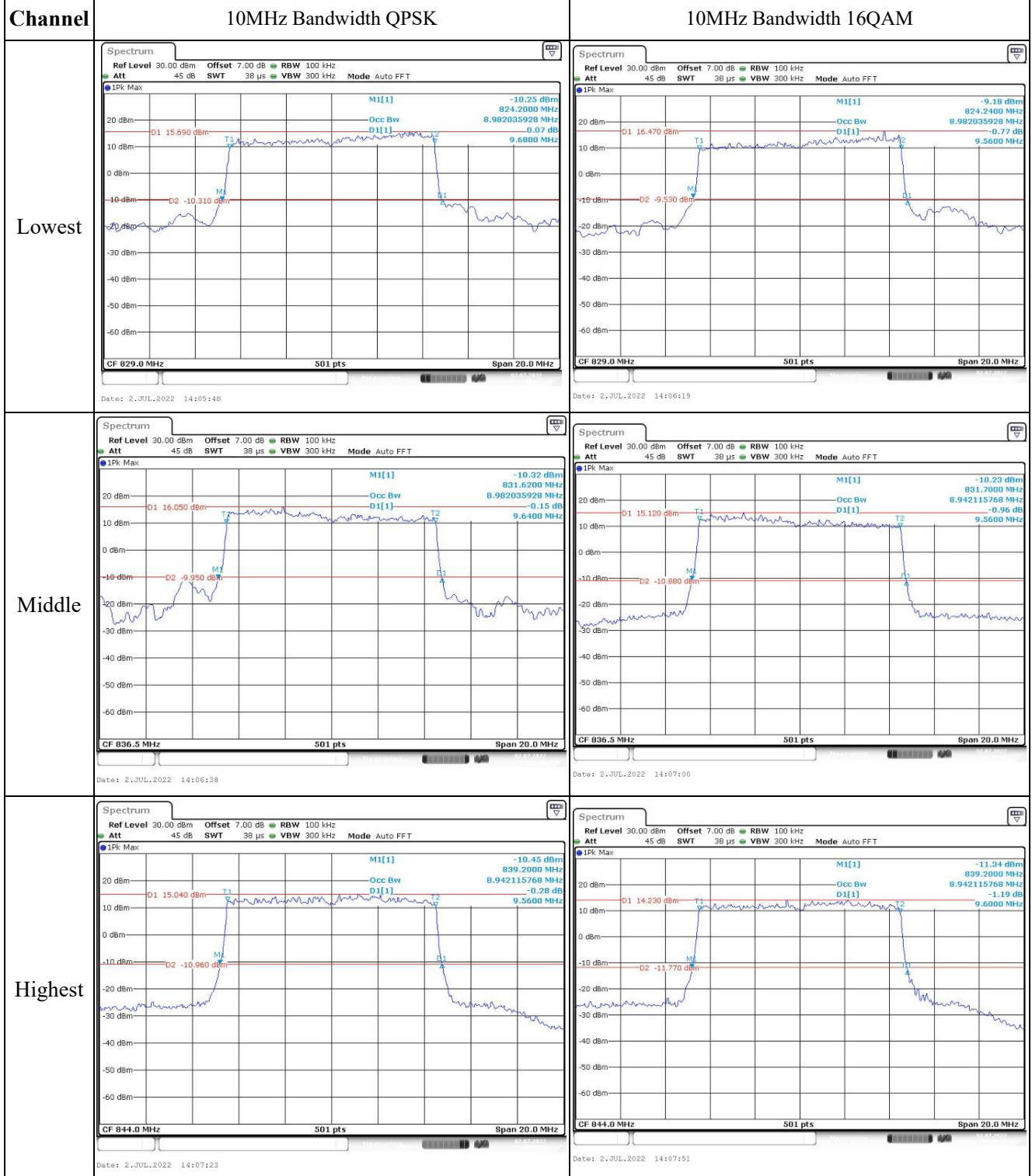
Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

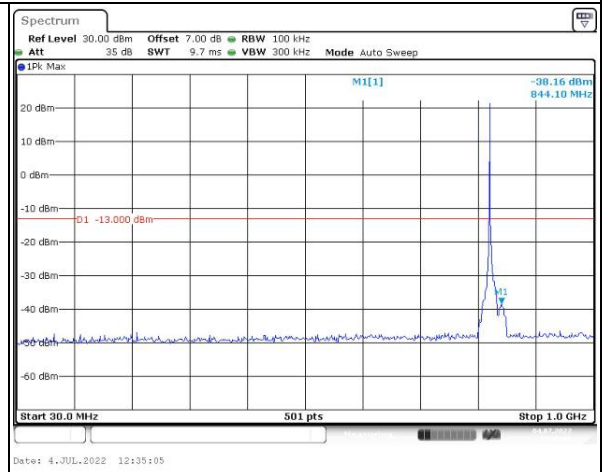
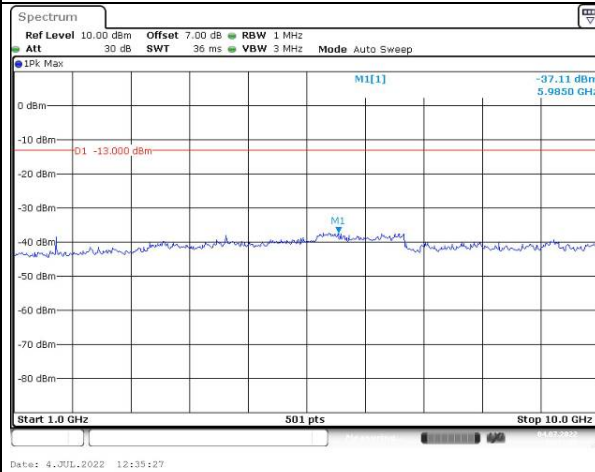


Spurious Emissions at Antenna Terminal

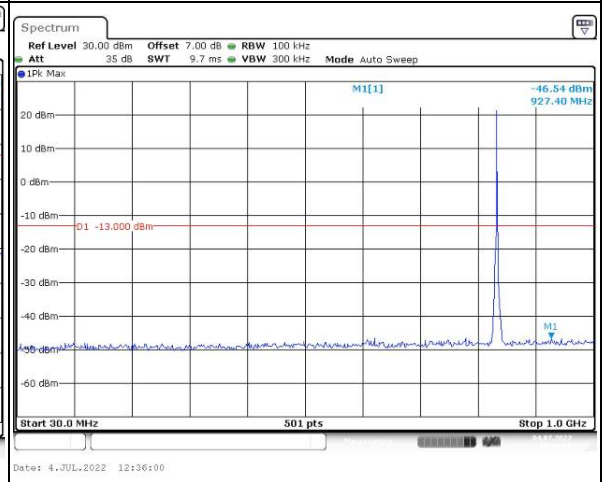
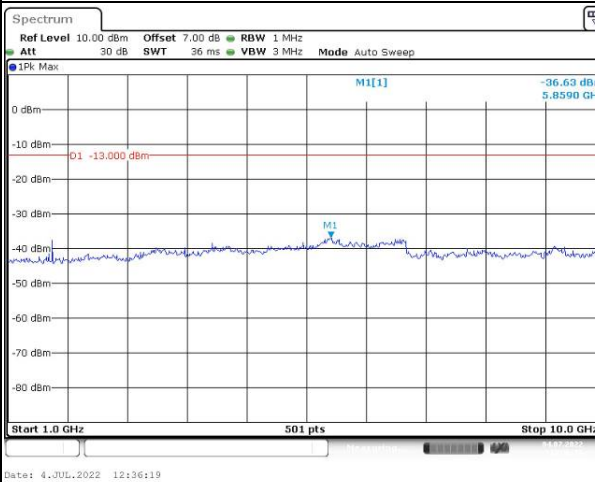
Channel

1.4MHz Bandwidth QPSK

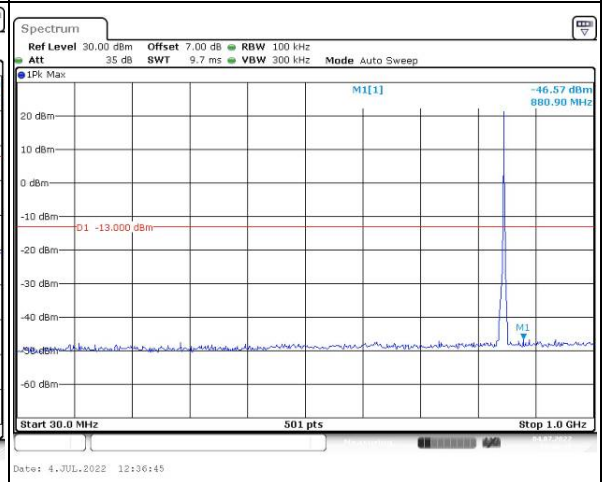
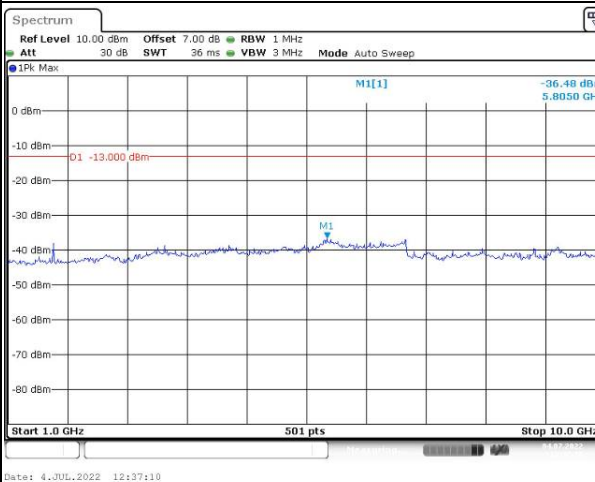
Lowest



Middle



Highest

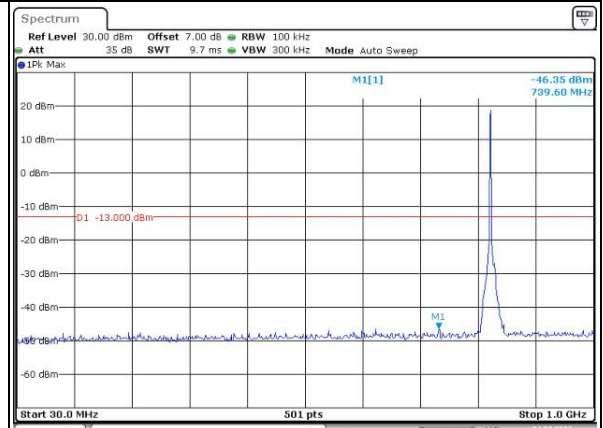
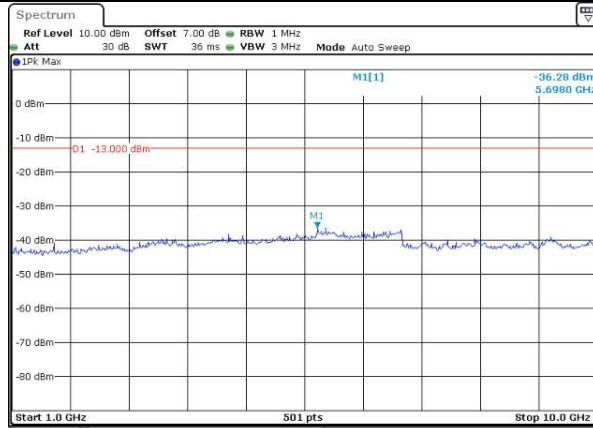


Spurious Emissions at Antenna Terminal

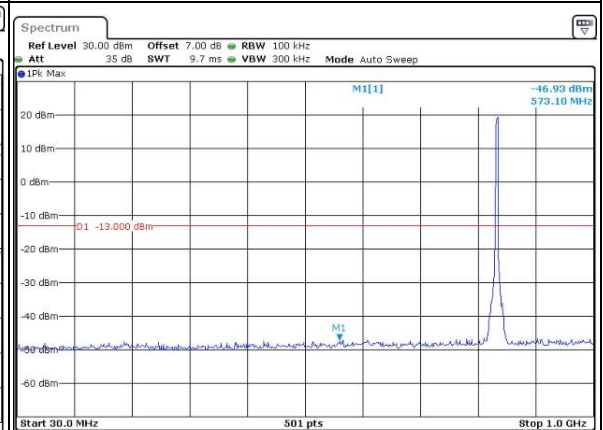
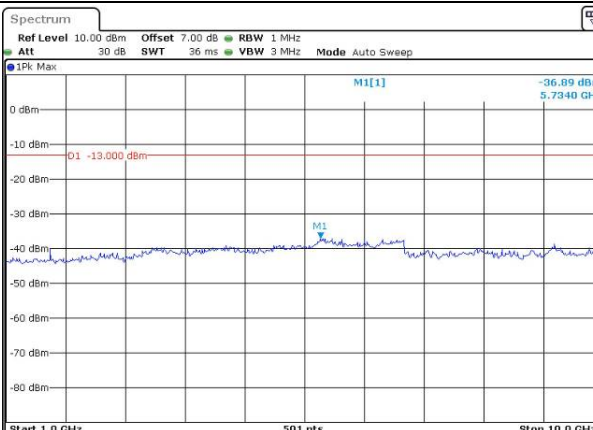
Channel

3MHz Bandwidth QPSK

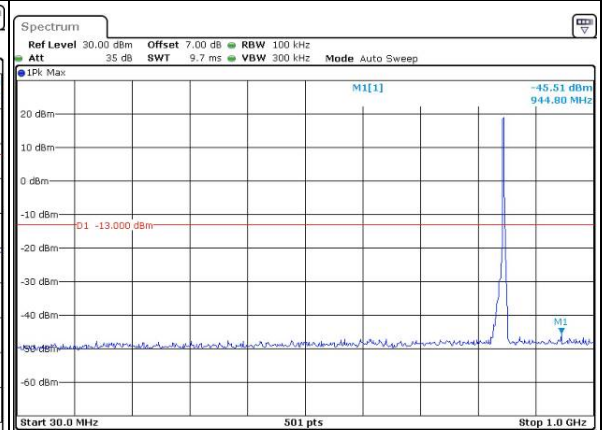
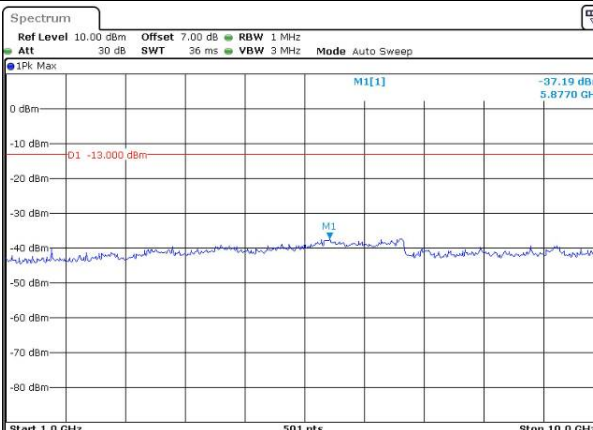
Lowest



Middle



Highest

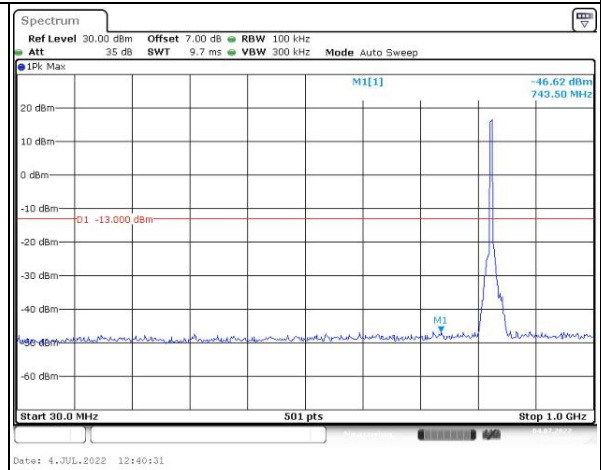
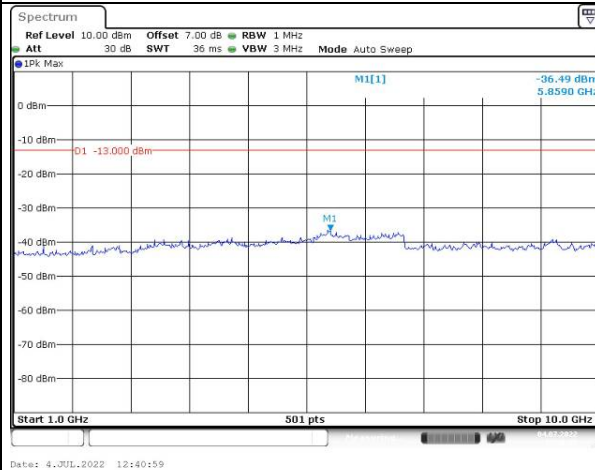


Spurious Emissions at Antenna Terminal

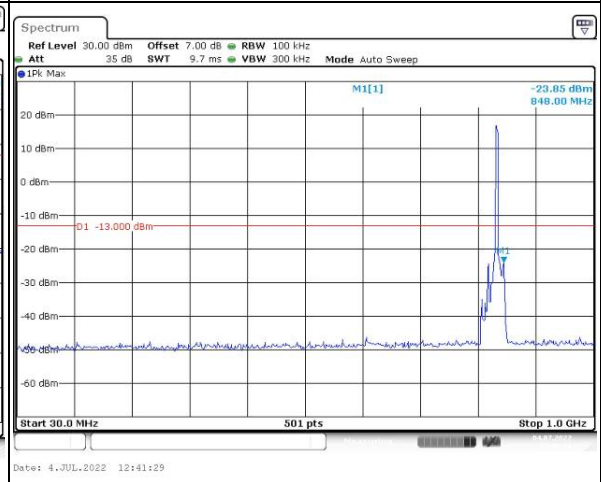
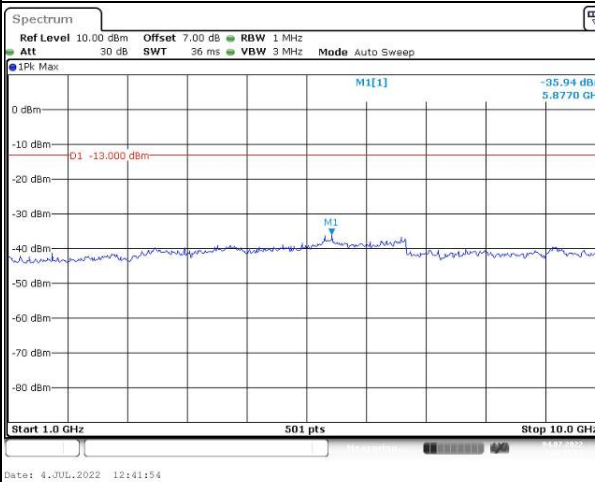
Channel

5MHz Bandwidth QPSK

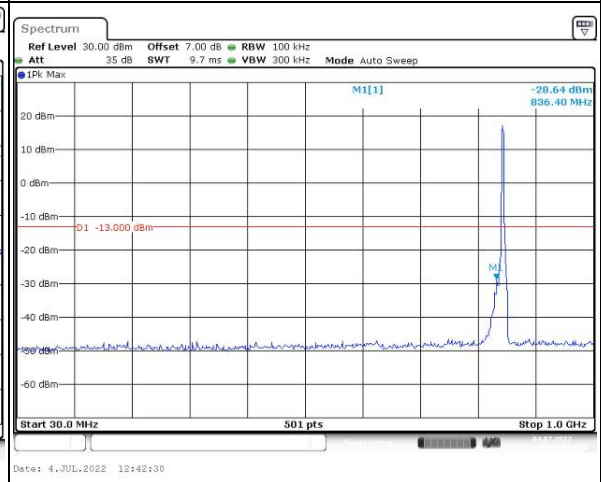
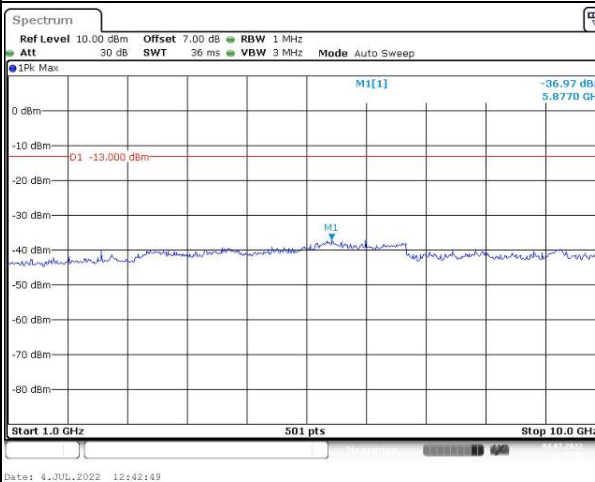
Lowest



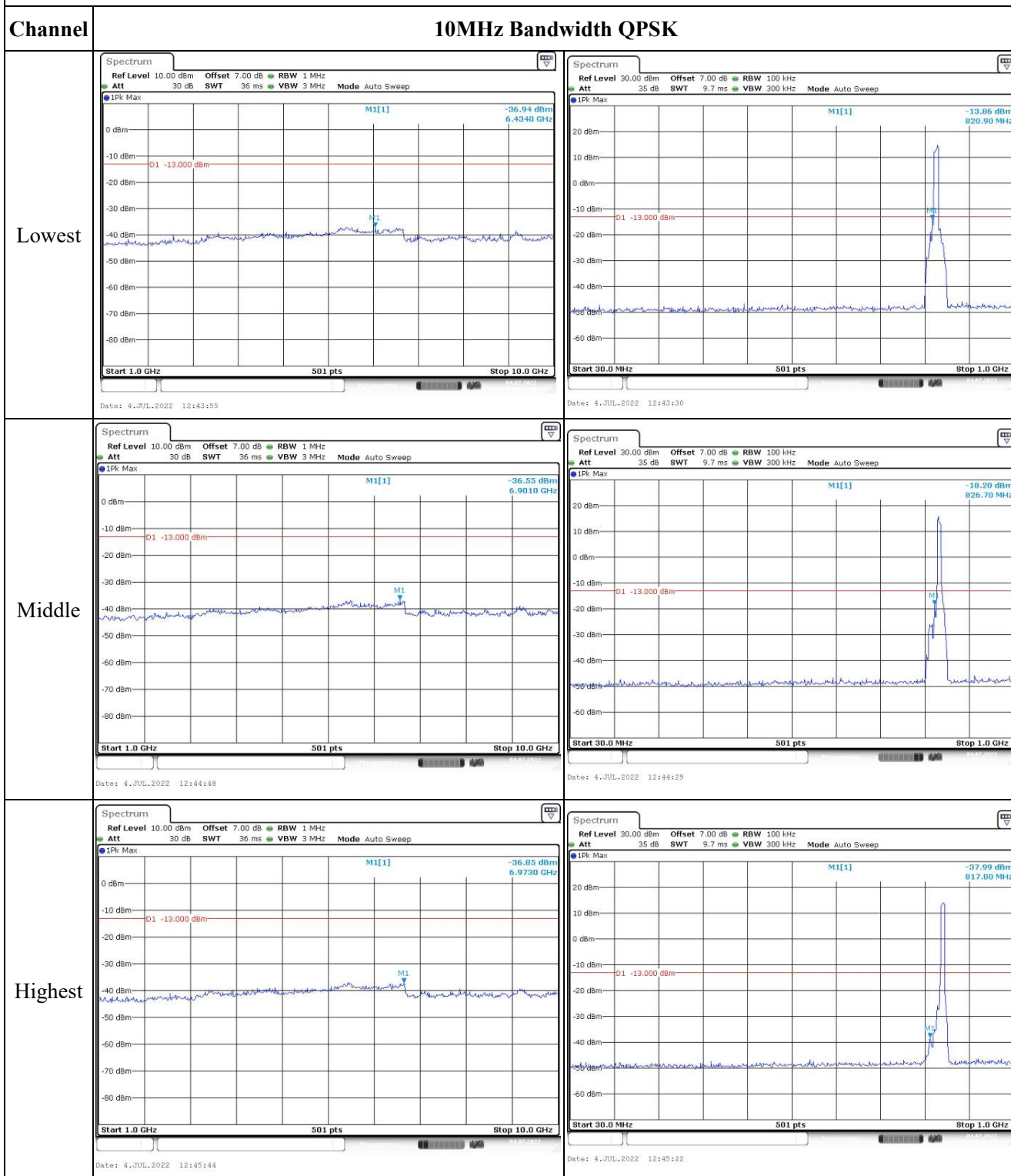
Middle



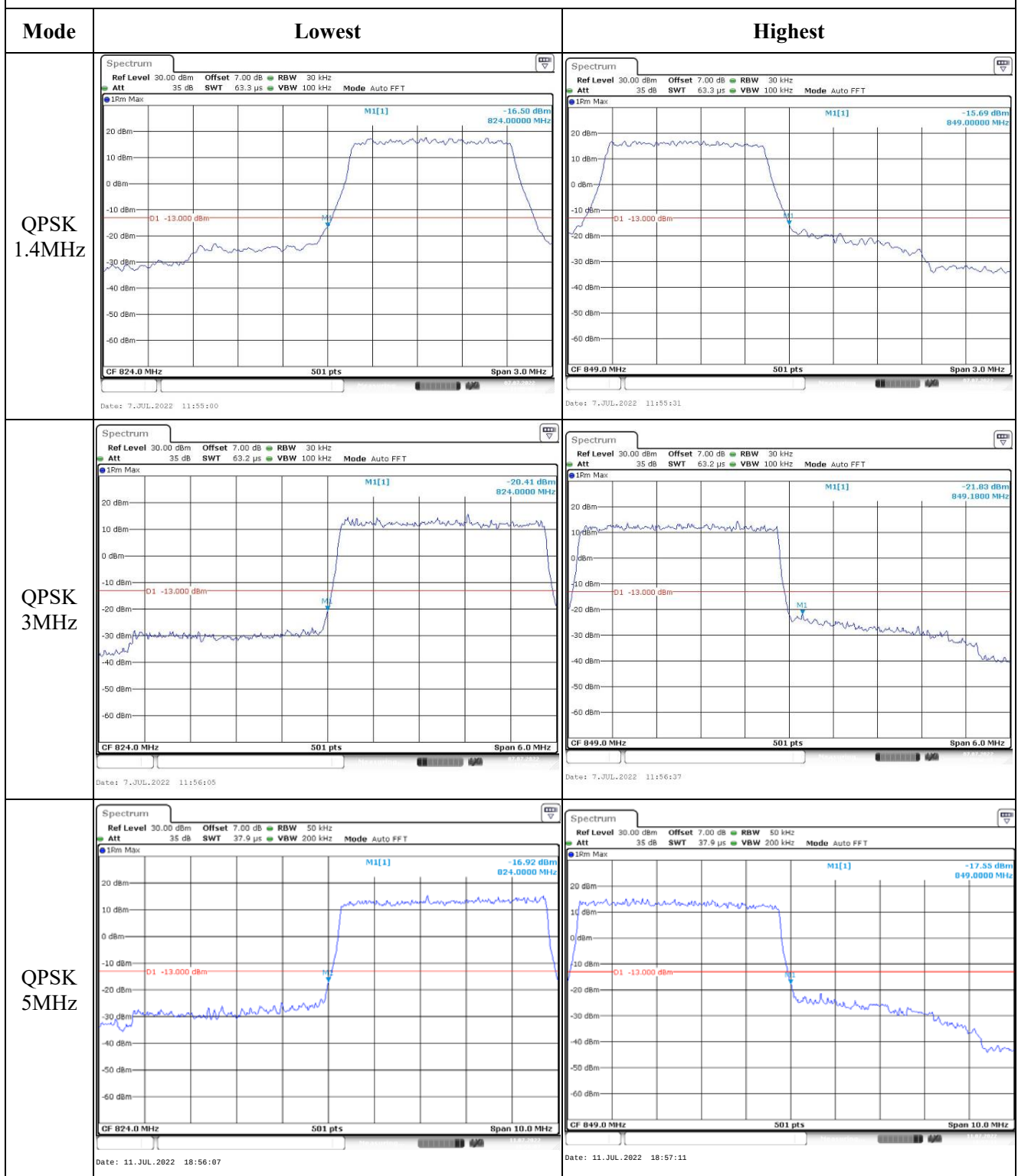
Highest



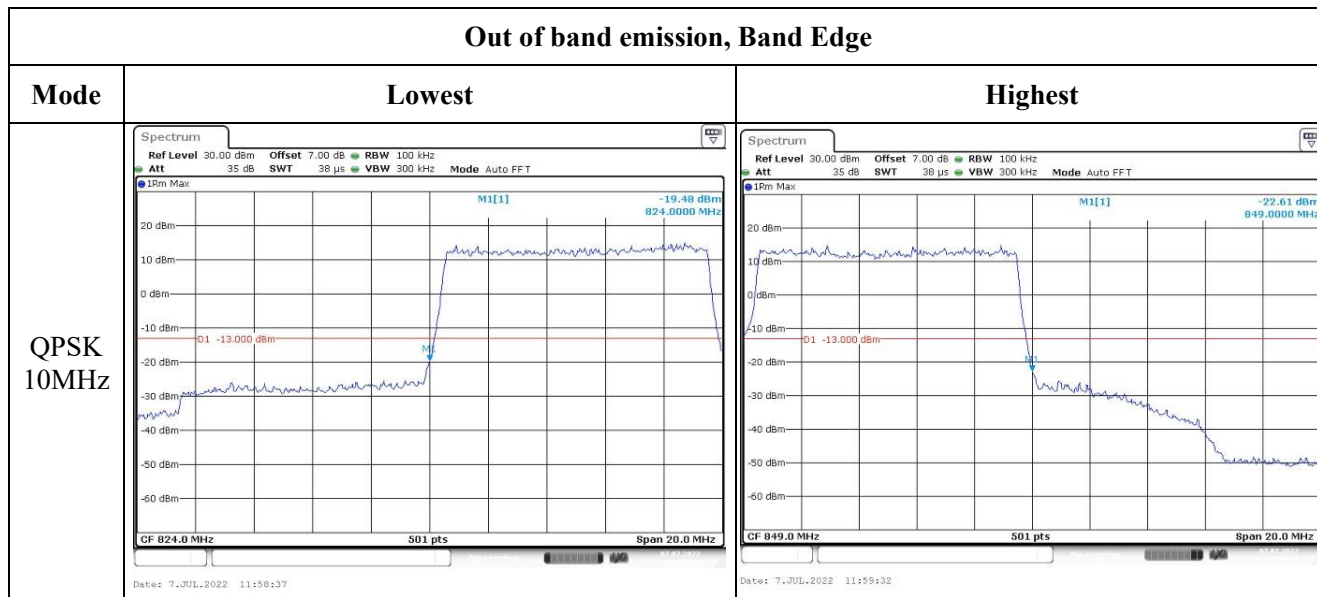
Spurious Emissions at Antenna Terminal



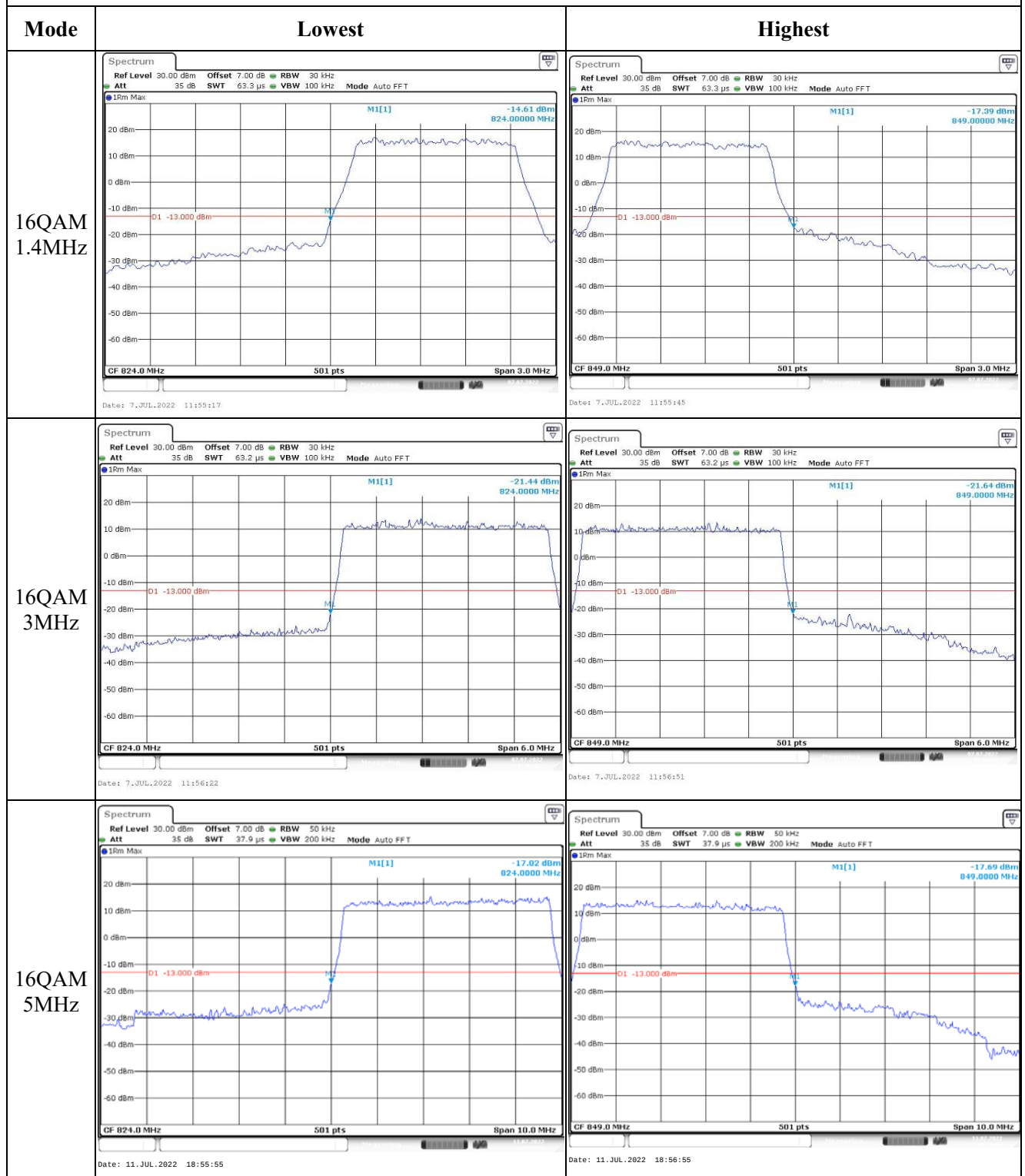
Out of band emission, Band Edge



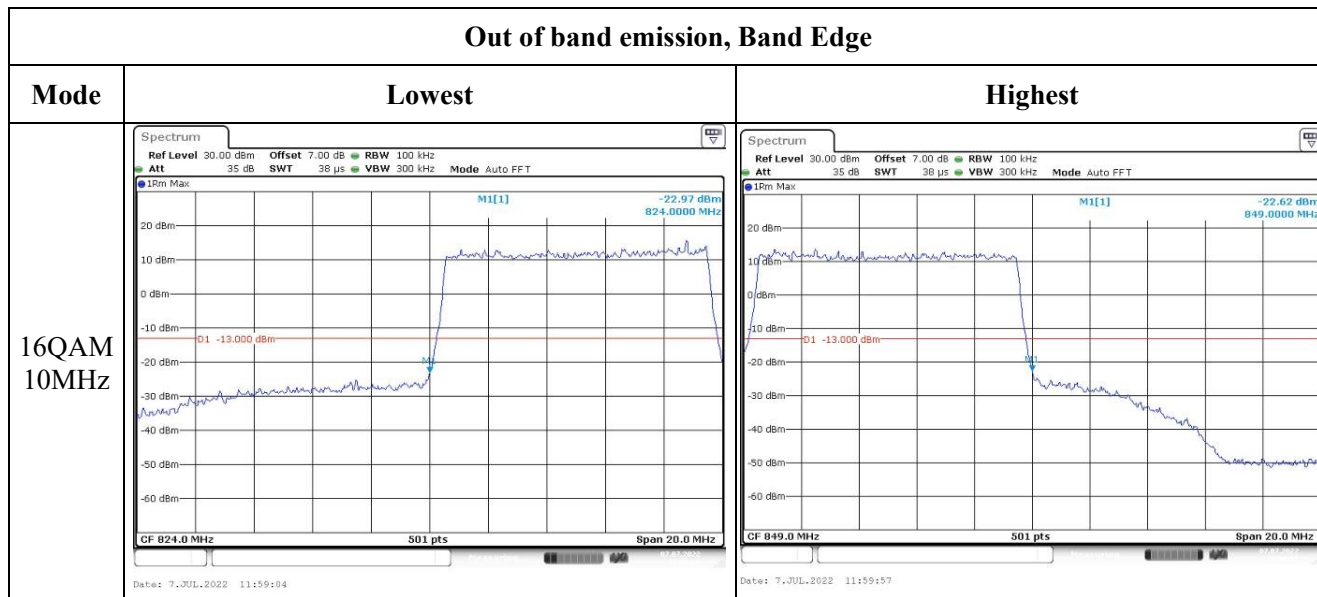
Out of band emission, Band Edge



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:	CR220050079-RF-S1	Test Date:	2022/7/2~2022/7/11
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ted Min	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.3~24.8	Relative Humidity: (%)	49~52	ATM Pressure: (kPa)	100.0~100.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
R&S	Wideband Radio Communication Tester	CMW500	149218	2021-07-21	2022-07-20
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
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100003	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):	0.72	Path Loss L_c (dB):	0
Operation Voltage(V_{DC}):			
Lowest:	3.42	Normal:	3.8
		Highest:	4.18

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	21.8	22.17	21.78	22.95	33
	RB1#13	21.82	22.2	21.89		
	RB1#24	21.91	22.23	22.02		
	RB15#0	21.87	22.15	21.96		
	RB15#10	21.9	22.2	22.07		
	RB25#0	21.56	21.89	21.75		
5MHz 16QAM	RB1#0	21.74	21.95	21.84	22.7	33
	RB1#13	21.69	21.9	21.72		
	RB1#24	21.7	21.98	21.82		
	RB15#0	21.57	21.85	21.83		
	RB15#10	21.62	21.78	21.81		
	RB25#0	21.23	21.59	21.58		
10MHz QPSK	RB1#0	21.95	21.98	21.94	22.79	33
	RB1#25	21.93	21.93	22.05		
	RB1#49	21.96	22.07	22.03		
	RB25#0	21.94	21.93	22.00		
	RB25#25	21.93	22.03	22.05		
	RB50#0	21.73	21.63	21.68		
10MHz 16QAM	RB1#0	21.82	21.89	21.91	22.74	33
	RB1#25	21.92	21.96	21.98		
	RB1#49	21.88	21.98	22.02		
	RB25#0	21.86	21.87	22.01		
	RB25#25	21.96	21.88	21.96		
	RB50#0	21.52	21.59	21.86		
15MHz QPSK	RB1#0	22.09	21.99	22.03	22.93	33
	RB1#38	22.17	22.06	22.16		
	RB1#74	22.21	22.14	22.12		
	RB36#0	22.08	22.08	22.04		
	RB36#39	22.13	22.02	22.06		
	RB75#0	21.75	21.47	21.65		
15MHz 16QAM	RB1#0	21.9	21.85	21.91	22.73	33
	RB1#38	21.97	21.68	21.92		
	RB1#74	21.95	21.89	22.01		
	RB36#0	21.95	21.9	21.87		
	RB36#39	21.97	21.91	22.00		
	RB75#0	21.54	21.60	21.53		

20MHz QPSK	RB1#0	21.96	22.07	22.17	23.1	33
	RB1#50	21.95	22.09	22.30		
	RB1#99	22.01	22.15	22.38		
	RB50#0	22.03	22.13	22.36		
	RB50#50	21.86	21.96	22.13		
	RB100#0	21.68	21.91	22.02		
20MHz 16QAM	RB1#0	21.73	21.91	21.96	22.8	33
	RB1#50	21.88	21.93	22.06		
	RB1#99	21.90	21.95	22.08		
	RB50#0	21.75	21.90	21.96		
	RB50#50	21.75	21.92	21.95		
	RB100#0	21.41	21.55	21.85		

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	3.01	3.07	3.03	13	
	RB100#0	5.13	5.24	5.13	13	
20MHz 16QAM	RB1#0	4.12	4.18	4.06	13	
	RB100#0	6.24	6.15	6.29	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	4.96	4.96	4.94
5MHz 16QAM	4.491	4.511	4.511	4.96	4.96	4.98
10MHz QPSK	8.982	8.942	8.942	9.68	9.64	9.64
10MHz 16QAM	8.942	8.942	8.982	9.60	9.64	9.64
15MHz QPSK	13.533	13.473	13.473	14.82	14.58	14.70
15MHz 16QAM	13.533	13.473	13.473	14.76	14.64	14.70
20MHz QPSK	17.964	17.884	17.884	19.28	19.20	19.44
20MHz 16QAM	17.964	17.964	17.884	19.20	19.28	19.20

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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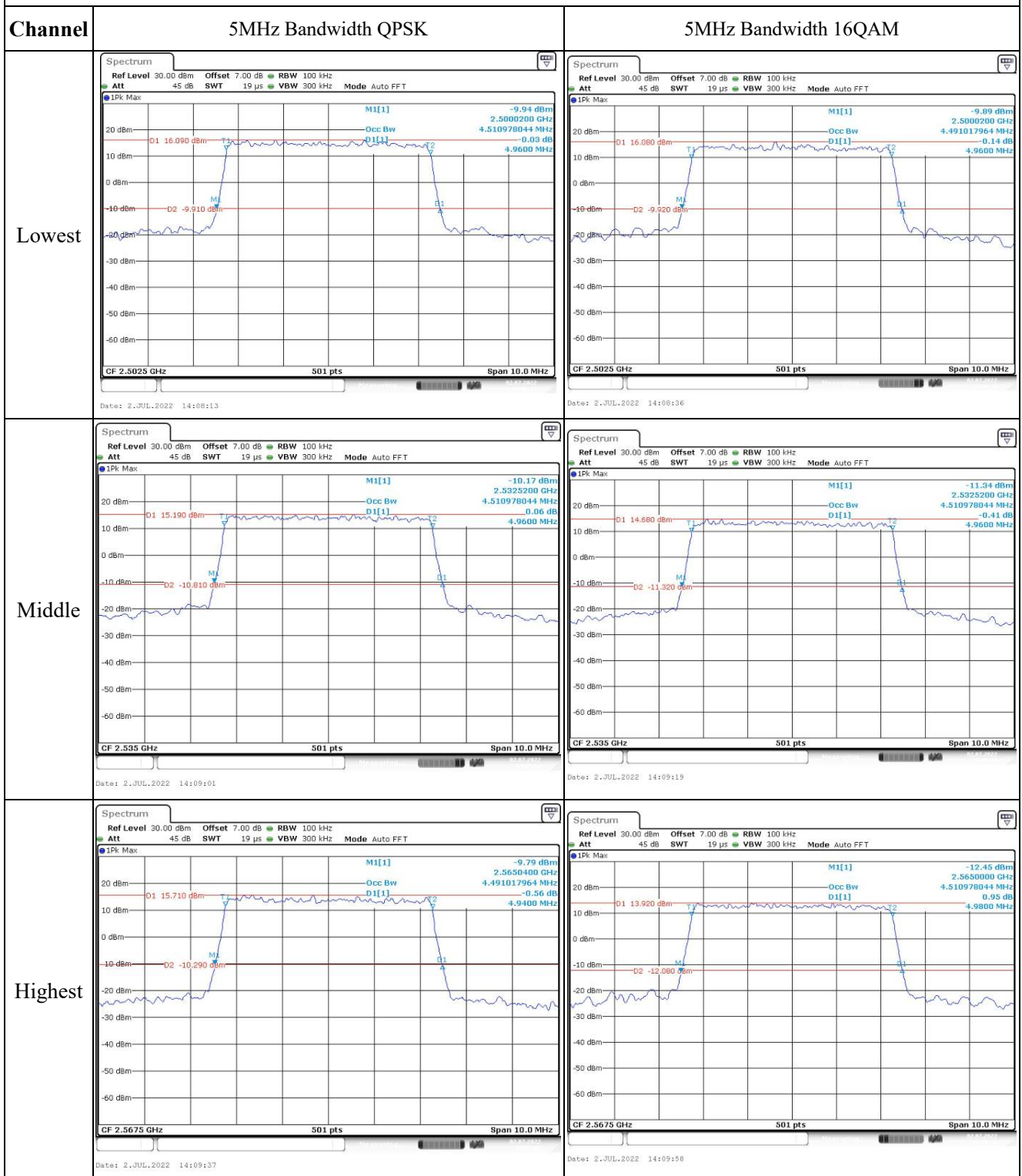
FCC §2.1055, §27.54: Frequency Stability

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	2500.298	2500.00	2569.628	2570
	-20	3.8	2500.222	2500.00	2569.701	2570
	-10	3.8	2500.415	2500.00	2569.697	2570
	0	3.8	2500.391	2500.00	2569.737	2570
	10	3.8	2500.259	2500.00	2569.654	2570
	20	3.8	2500.315	2500.00	2569.721	2570
	30	3.8	2500.398	2500.00	2569.795	2570
	40	3.8	2500.416	2500.00	2569.642	2570
	50	3.8	2500.318	2500.00	2569.656	2570
Frequency Stability vs. Voltage	20	3.42	2500.258	2500.00	2569.782	2570
	20	4.18	2500.404	2500.00	2569.782	2570
Result:					Pass	

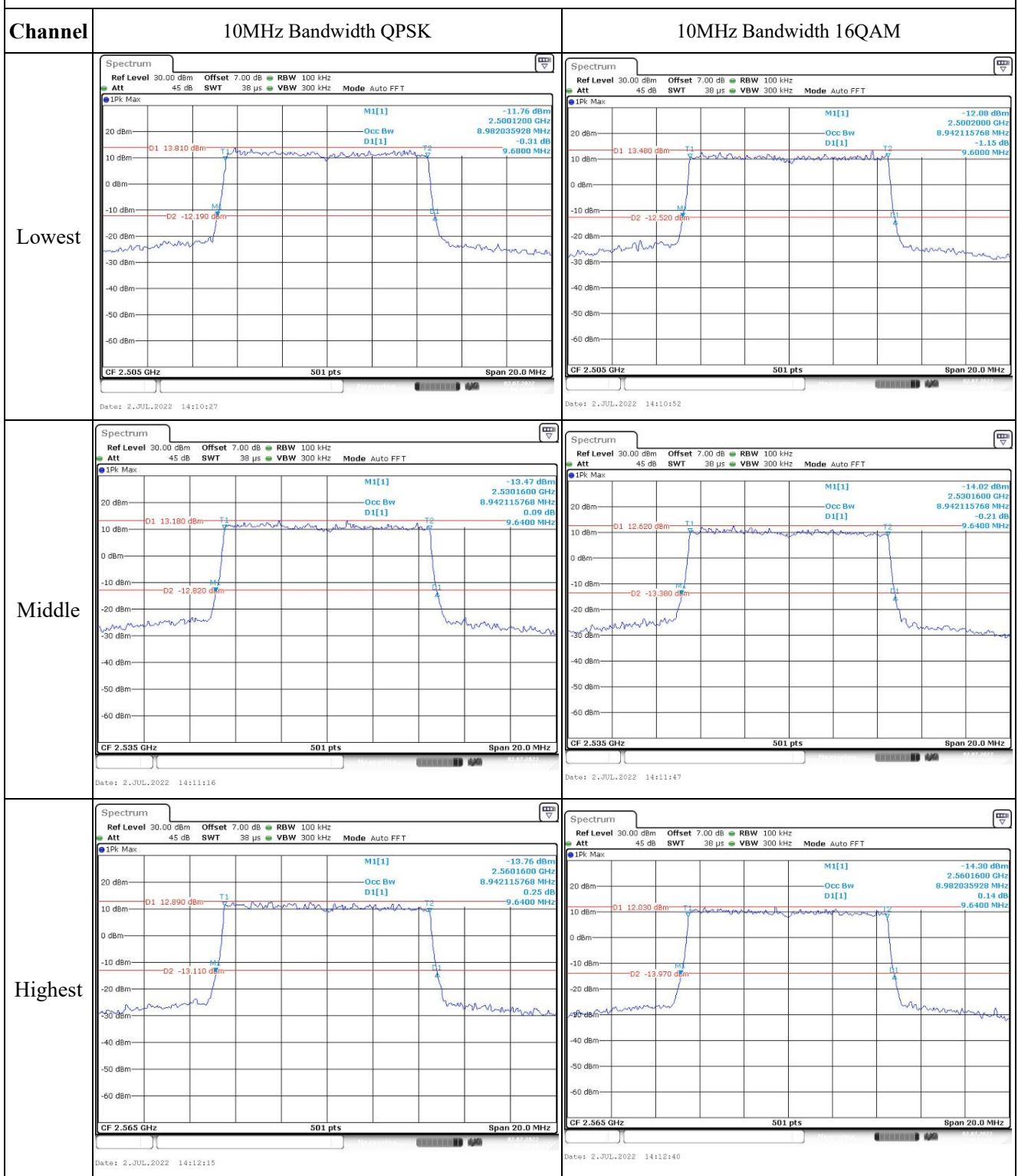
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	2500.409	2500.00	2569.734	2570
	-20	3.8	2500.398	2500.00	2569.696	2570
	-10	3.8	2500.288	2500.00	2569.715	2570
	0	3.8	2500.416	2500.00	2569.635	2570
	10	3.8	2500.290	2500.00	2569.676	2570
	20	3.8	2500.385	2500.00	2569.602	2570
	30	3.8	2500.319	2500.00	2569.667	2570
	40	3.8	2500.417	2500.00	2569.641	2570
	50	3.8	2500.416	2500.00	2569.784	2570
Frequency Stability vs. Voltage	20	3.42	2500.257	2500.00	2569.684	2570
	20	4.18	2500.273	2500.00	2569.710	2570
Result:					Pass	

Test Plots:

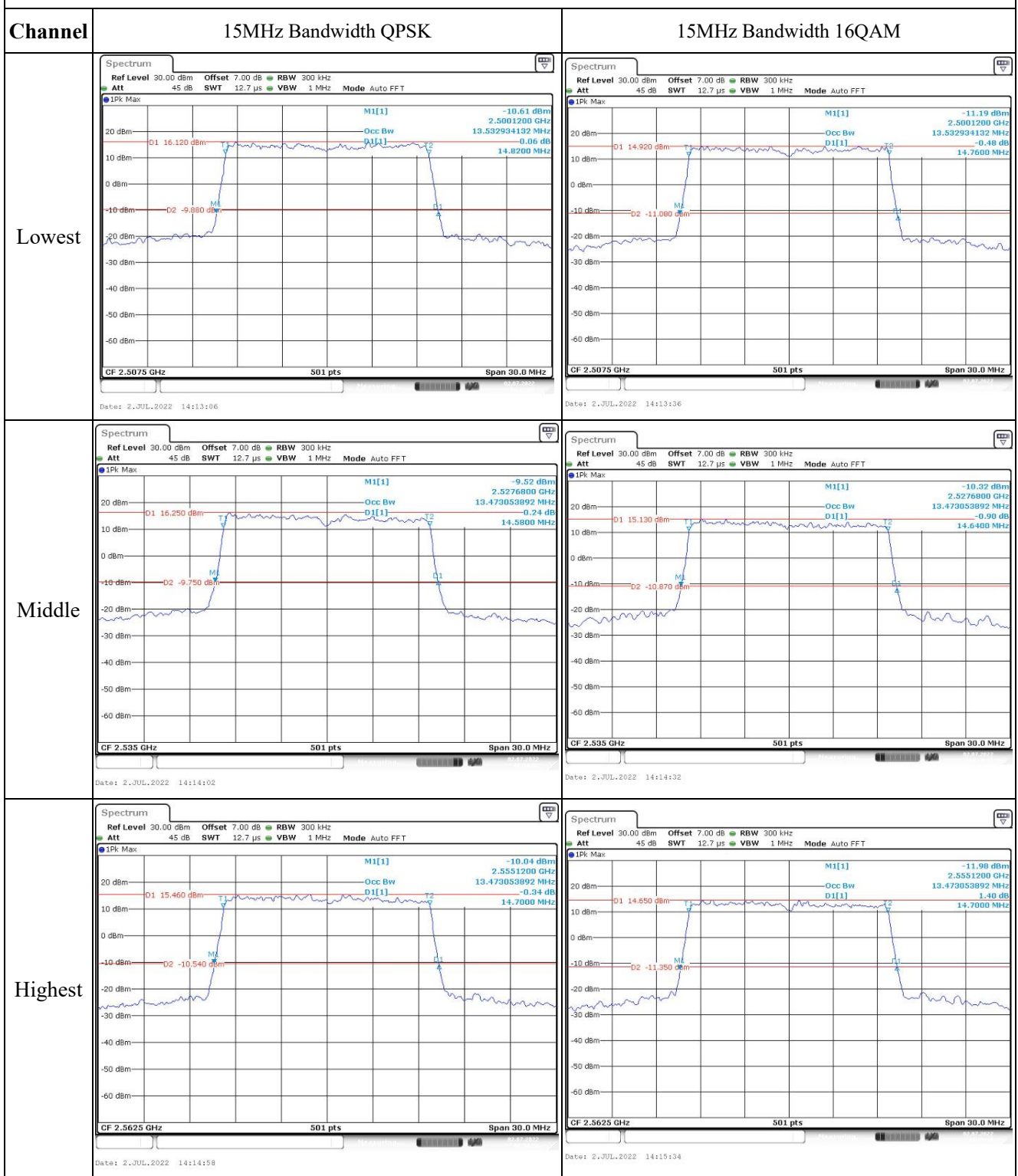
Occupied Bandwidth



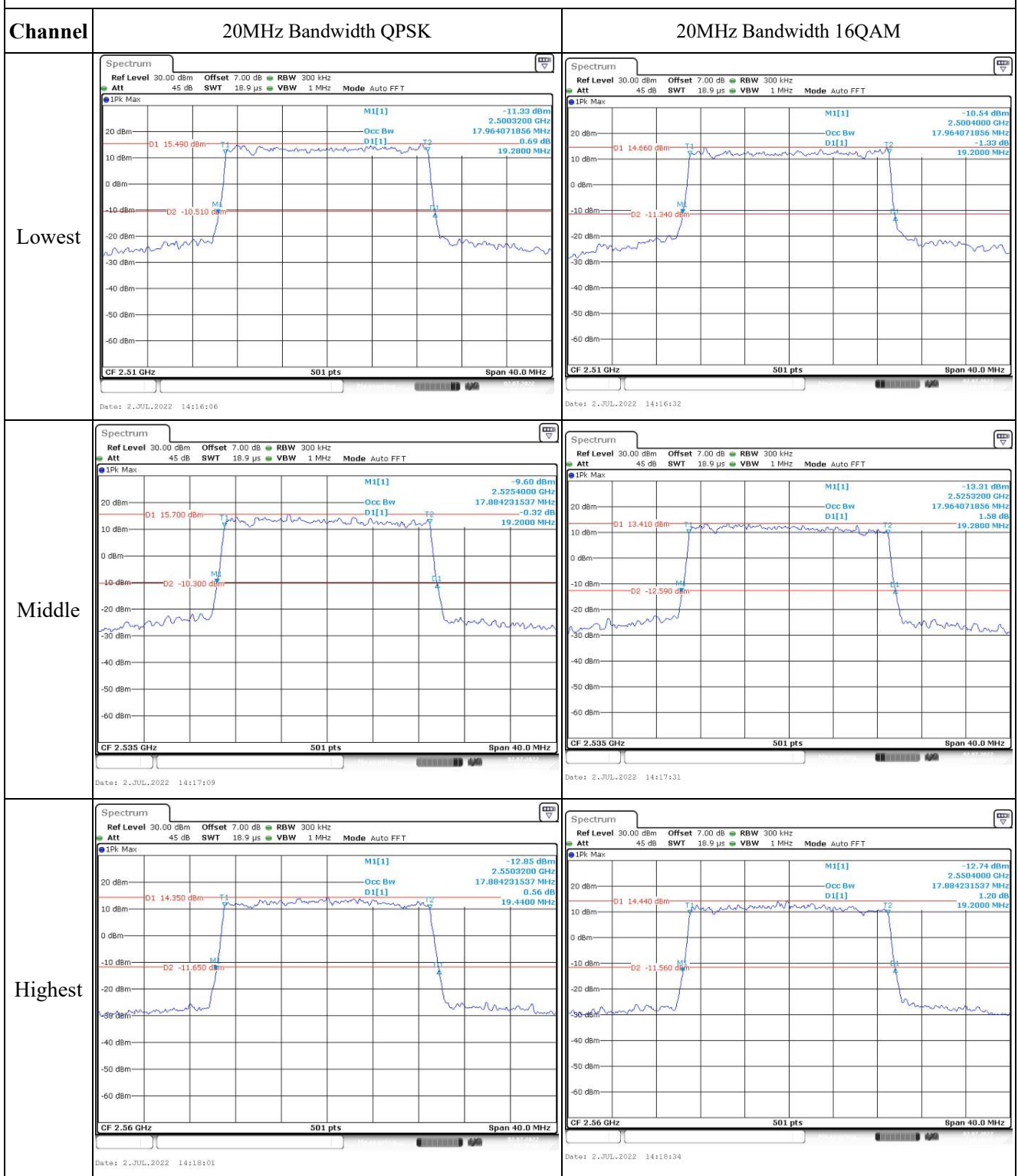
Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

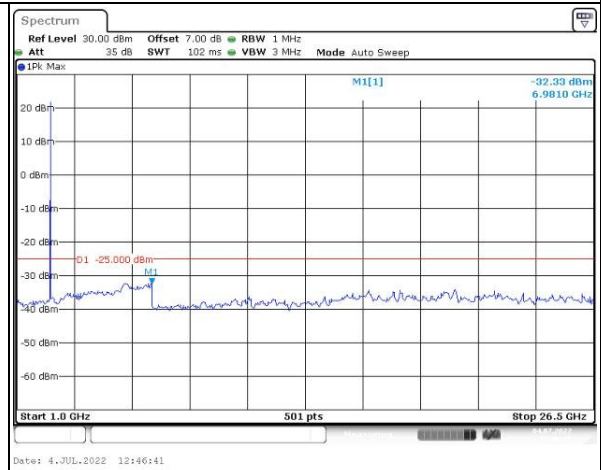
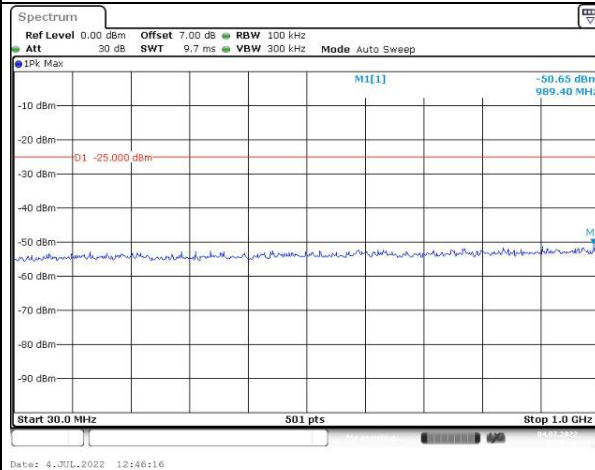


Spurious Emissions at Antenna Terminal

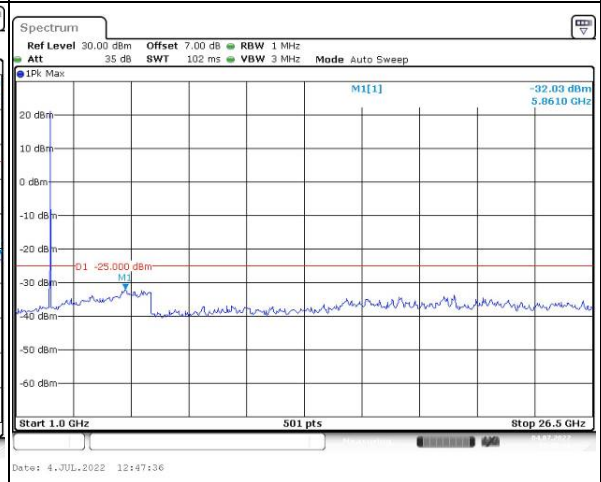
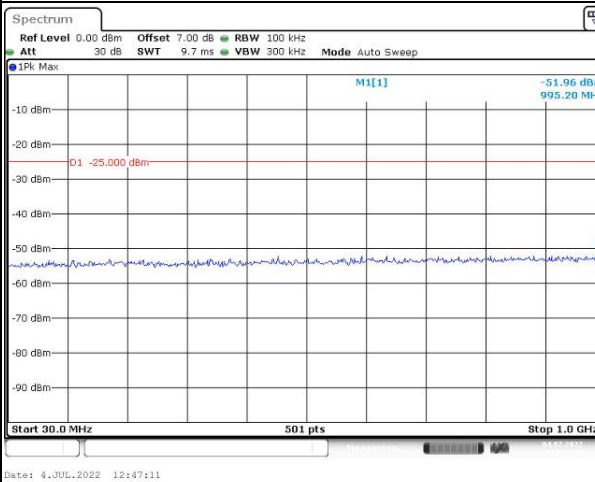
Channel

5MHz Bandwidth QPSK

Lowest



Middle



Highest

