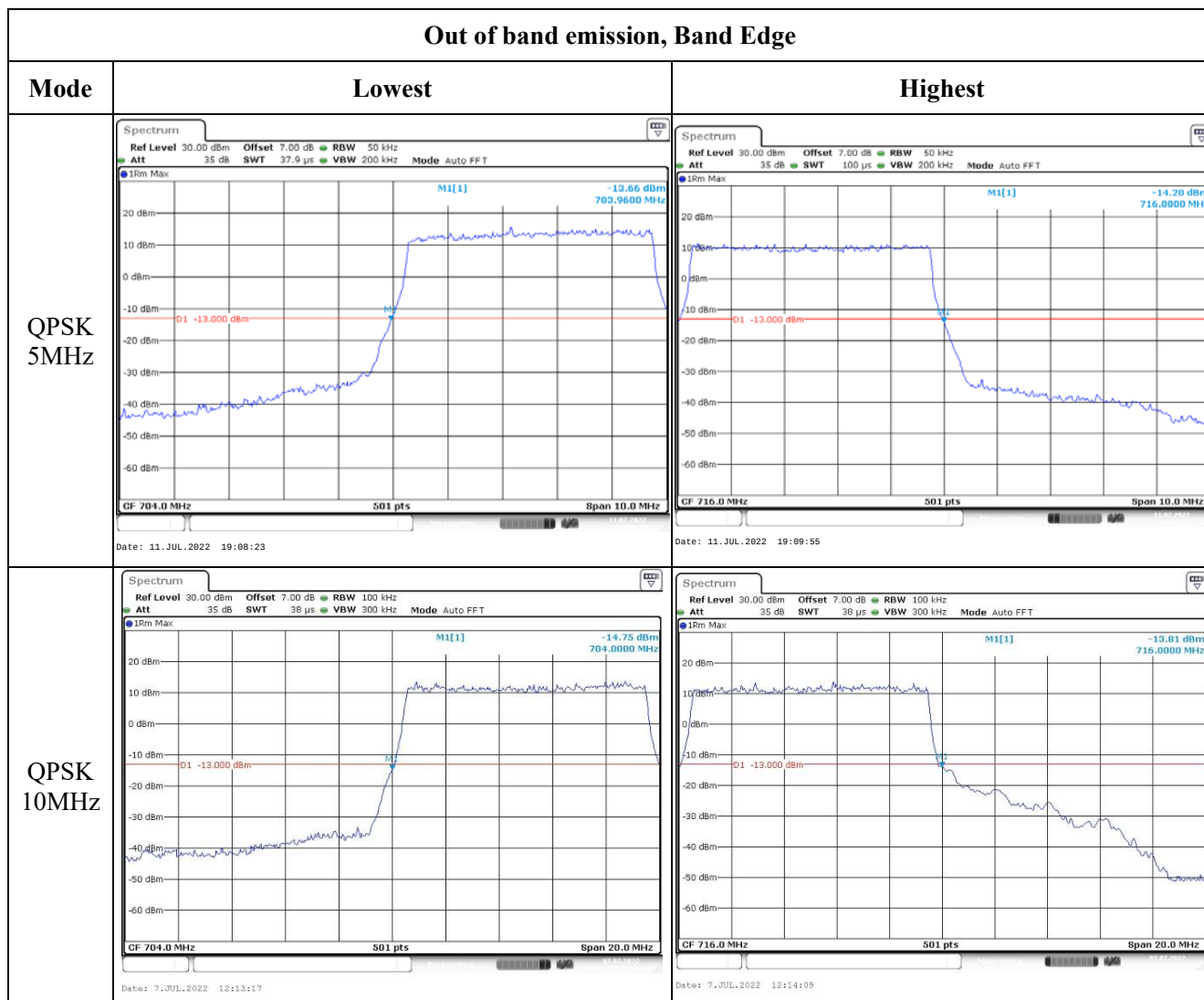
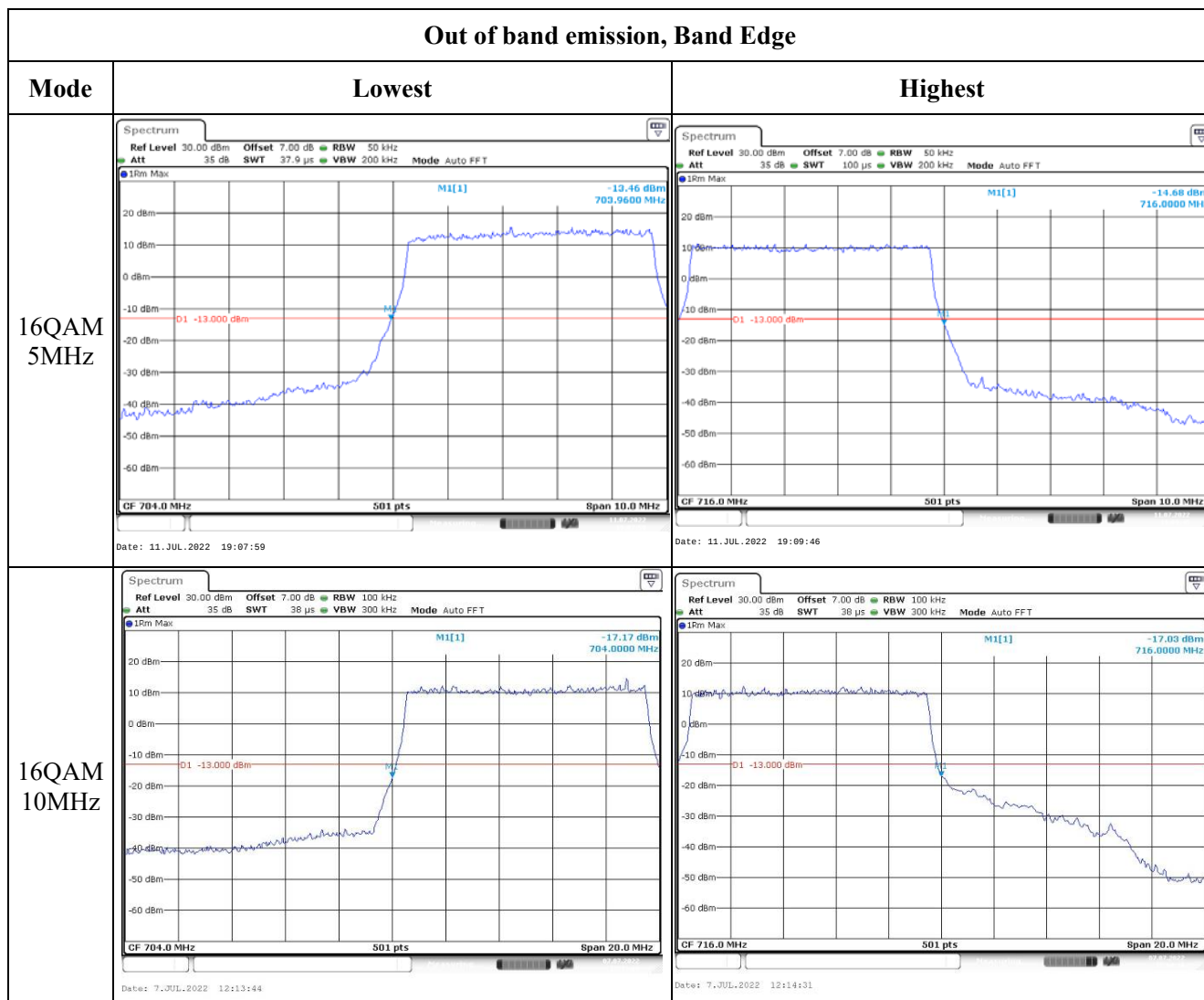


Out of band emission, Band Edge



Out of band emission, Band Edge



4.11 Antenna Port Test Data and Results for LTE Band 25

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 25▲:

Antenna Gain (dBi):	-1.12	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	1850.7	1882.5	1914.3
3MHz	1851.5	1882.5	1913.5
5MHz	1852.5	1882.5	1912.5
10MHz	1855	1882.5	1910
15MHz	1857.5	1882.5	1907.5

20MHz	1860	1882.5	1905
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Test Data:**FCC§2.1046;§ 24.232****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		
1.4MHz QPSK	RB1#0	22.01	21.82	21.95	21.01	33
	RB1#3	22.08	21.9	22		
	RB1#5	22.04	21.87	22.07		
	RB3#0	22.01	21.87	22.06		
	RB3#3	22.13	21.92	22.11		
	RB6#0	21.68	21.57	21.68		
1.4MHz 16QAM	RB1#0	21.88	21.75	21.87	20.84	33
	RB1#3	21.91	21.89	21.93		
	RB1#5	21.86	21.75	21.89		
	RB3#0	21.91	21.87	21.96		
	RB3#3	21.87	21.68	21.89		
	RB6#0	21.51	21.34	21.49		
3MHz QPSK	RB1#0	21.88	21.86	21.87	20.93	33
	RB1#8	22.03	21.96	21.92		
	RB1#14	22.05	21.98	21.96		
	RB6#0	21.89	21.81	21.81		
	RB6#9	21.84	21.84	21.74		
	RB15#0	21.55	21.44	21.56		
3MHz 16QAM	RB1#0	21.53	21.51	21.52	20.76	33
	RB1#8	21.69	21.68	21.75		
	RB1#14	21.87	21.88	21.86		
	RB6#0	21.76	21.73	21.77		
	RB6#9	21.79	21.64	21.84		
	RB15#0	21.53	21.38	21.42		
5MHz QPSK	RB1#0	21.87	21.93	22.03	21.04	33
	RB1#13	21.94	21.91	22.14		
	RB1#24	21.98	21.94	22.16		
	RB15#0	21.96	21.89	22.13		
	RB15#10	21.92	21.85	22.09		
	RB25#0	21.67	21.61	21.78		
5MHz 16QAM	RB1#0	21.59	21.71	21.74	20.83	33
	RB1#13	21.74	21.82	21.93		
	RB1#24	21.7	21.85	21.95		
	RB15#0	21.57	21.64	21.64		
	RB15#10	21.61	21.59	21.63		
	RB25#0	21.2	21.31	21.39		

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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	3.15	3.33	3.29	13
	RB100#0	5.26	5.37	5.13	13
20MHz 16QAM	RB1#0	4.26	4.21	4.35	13
	RB100#0	6.18	6.22	6.28	13
Result:					Pass

FCC §2.1049, §24.238: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	1.302	1.338	1.284
1.4MHz 16QAM	1.102	1.09	1.096	1.326	1.284	1.29
3MHz QPSK	2.683	2.695	2.683	2.868	2.868	2.88
3MHz 16QAM	2.683	2.683	2.683	2.904	2.88	2.868
5MHz QPSK	4.551	4.551	4.511	5.46	5.88	5.18
5MHz 16QAM	4.551	4.571	4.531	5.64	5.7	5.2
10MHz QPSK	8.982	8.982	8.982	10.16	10.32	9.92
10MHz 16QAM	8.982	8.982	8.982	9.8	9.96	9.8
15MHz QPSK	13.533	13.533	13.473	15.18	16.32	15.12
15MHz 16QAM	13.533	13.653	13.473	15	16.86	15.36
20MHz QPSK	17.964	17.884	17.964	19.68	19.6	19.76
20MHz 16QAM	17.964	17.964	17.884	19.6	19.52	19.6
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, § 24.238 (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, § 24.238 (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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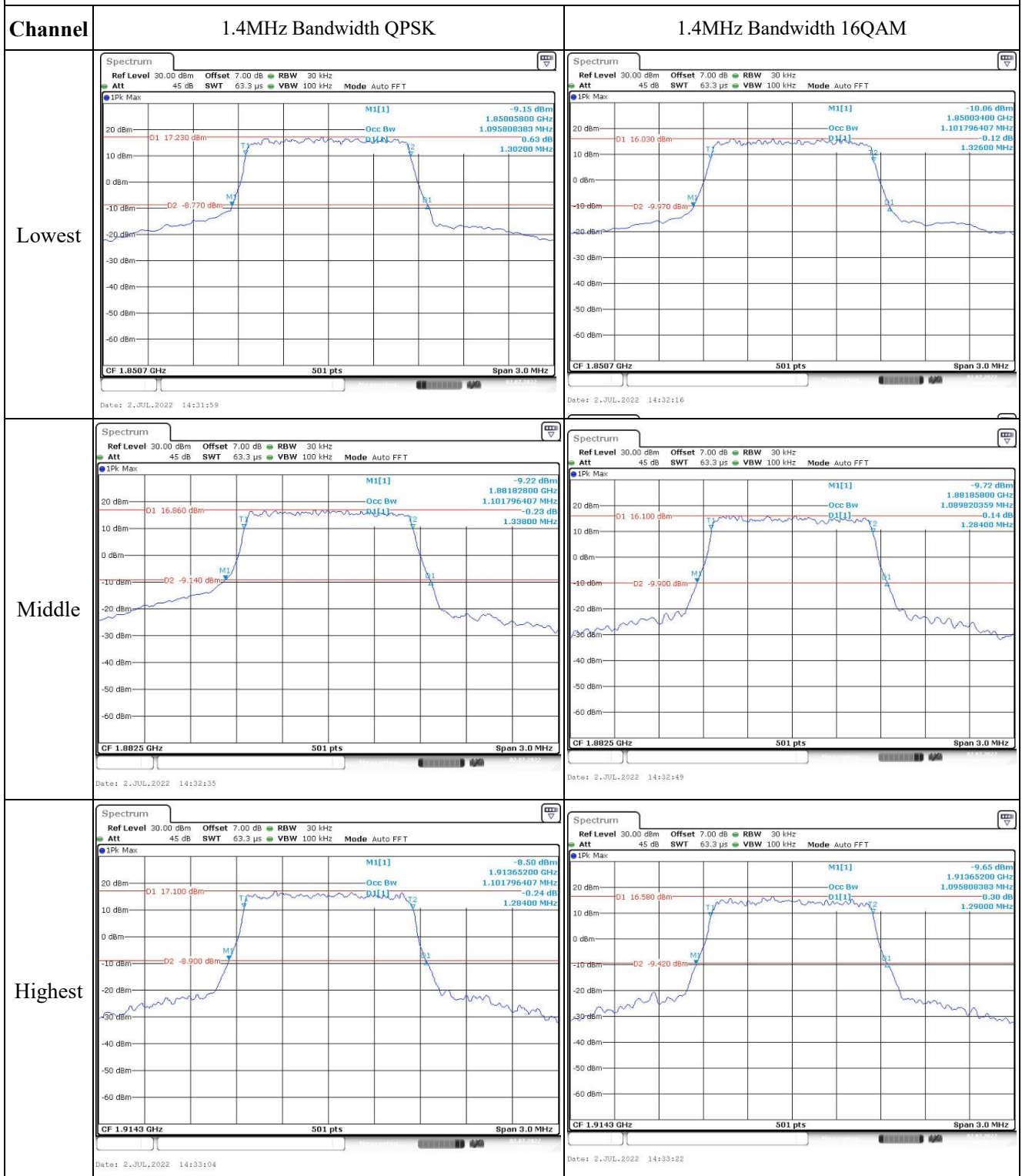
FCC §2.1055, §24.235: Frequency Stability

Test Mode:	20 MHz QPSK		Test Channel:	1882.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.8	13	0.007	Pass
	-20	3.8	12	0.006	Pass
	-10	3.8	10	0.005	Pass
	0	3.8	10	0.005	Pass
	10	3.8	17	0.009	Pass
	20	3.8	10	0.005	Pass
	30	3.8	20	0.011	Pass
	40	3.8	10	0.005	Pass
	50	3.8	18	0.010	Pass
Frequency Stability vs. Voltage	20	3.42	13	0.007	Pass
	20	4.18	19	0.010	Pass
Result:					Pass

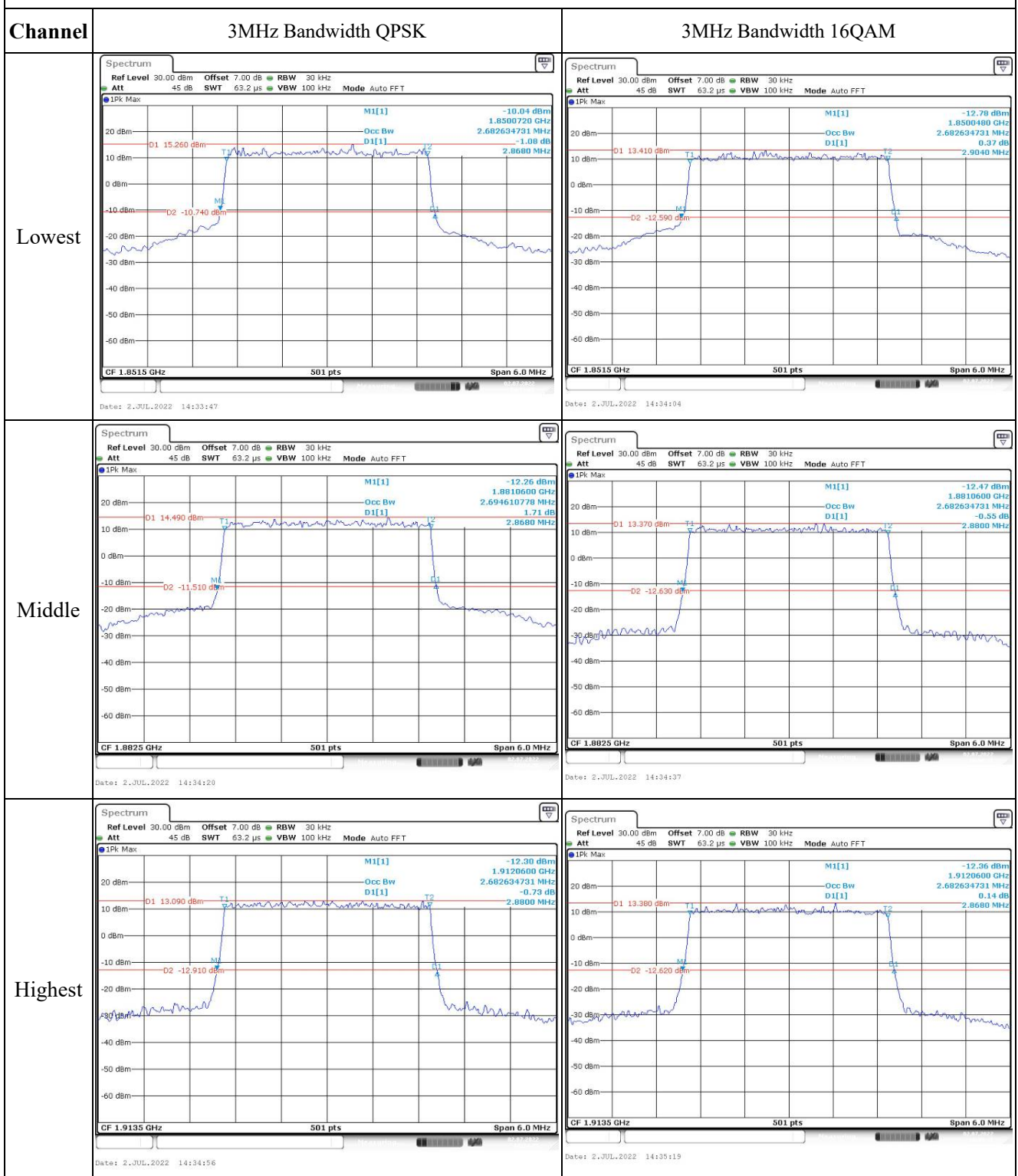
Test Mode:	20 MHz 16QAM		Test Channel:	1882.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.8	18	0.010	Pass
	-20	3.8	18	0.010	Pass
	-10	3.8	17	0.009	Pass
	0	3.8	11	0.006	Pass
	10	3.8	13	0.007	Pass
	20	3.8	15	0.008	Pass
	30	3.8	20	0.011	Pass
	40	3.8	18	0.010	Pass
	50	3.8	11	0.006	Pass
Frequency Stability vs. Voltage	20	3.42	13	0.007	Pass
	20	4.18	19	0.010	Pass
Result:					Pass

Test Plots:

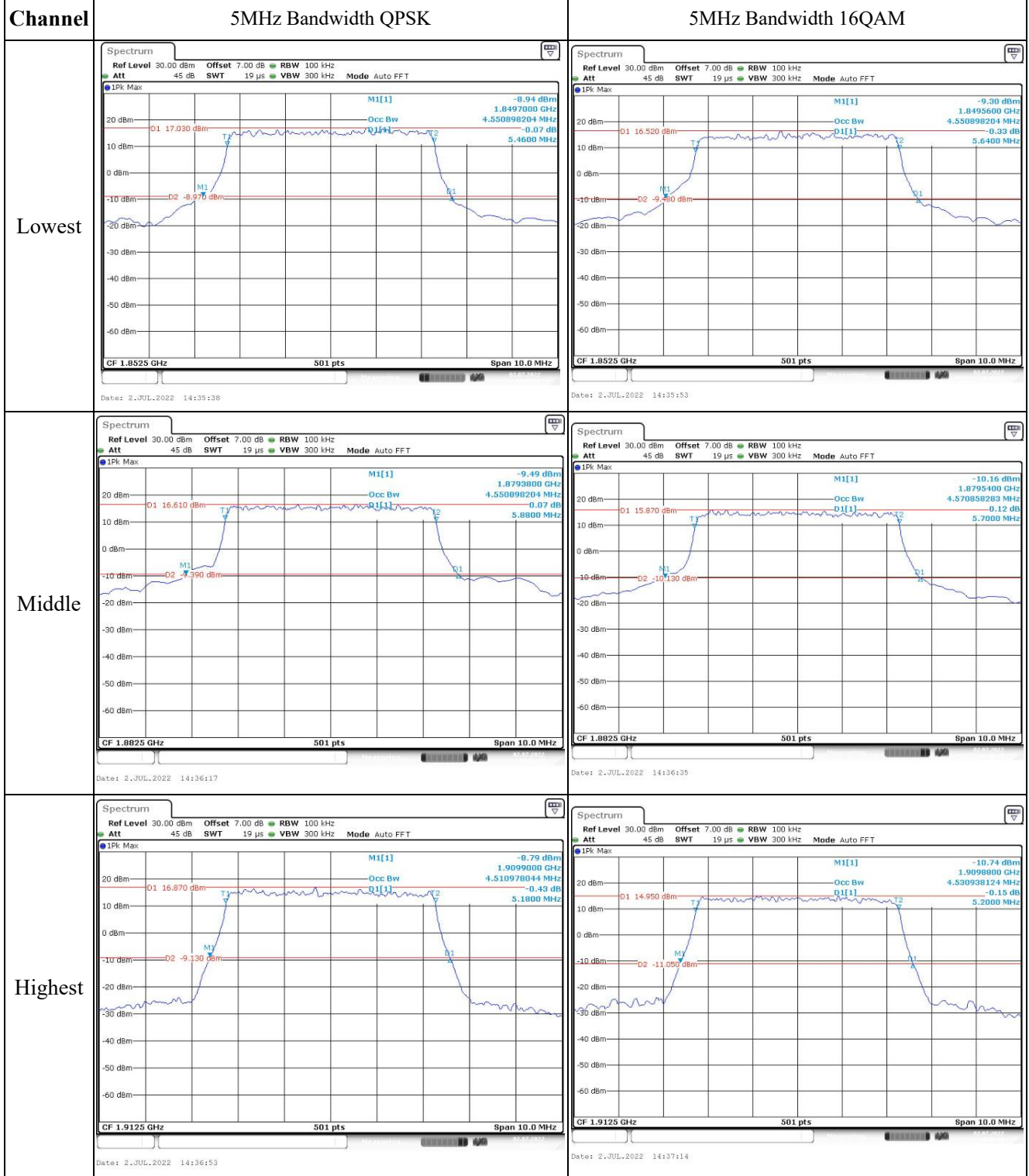
Occupied Bandwidth



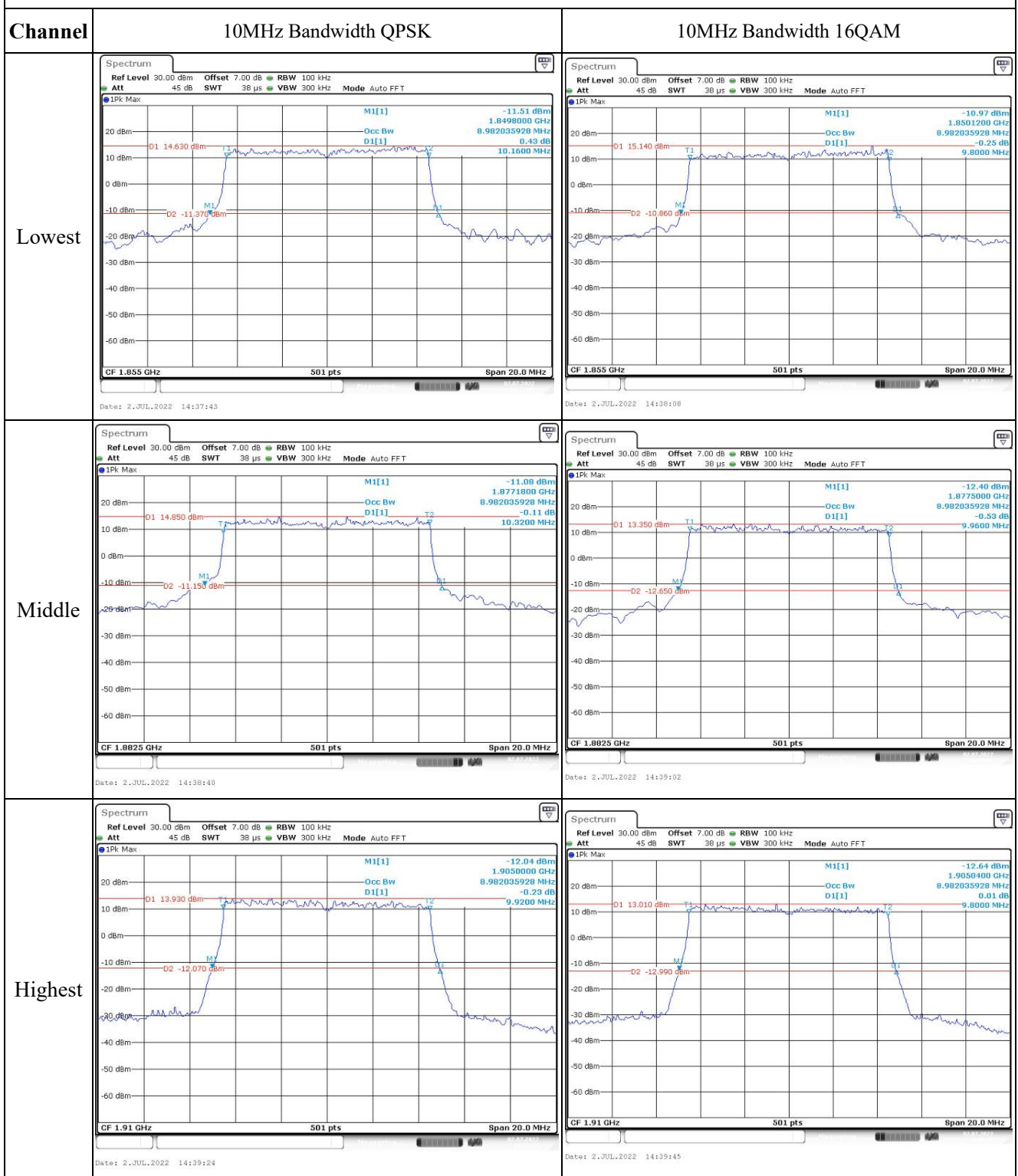
Occupied Bandwidth



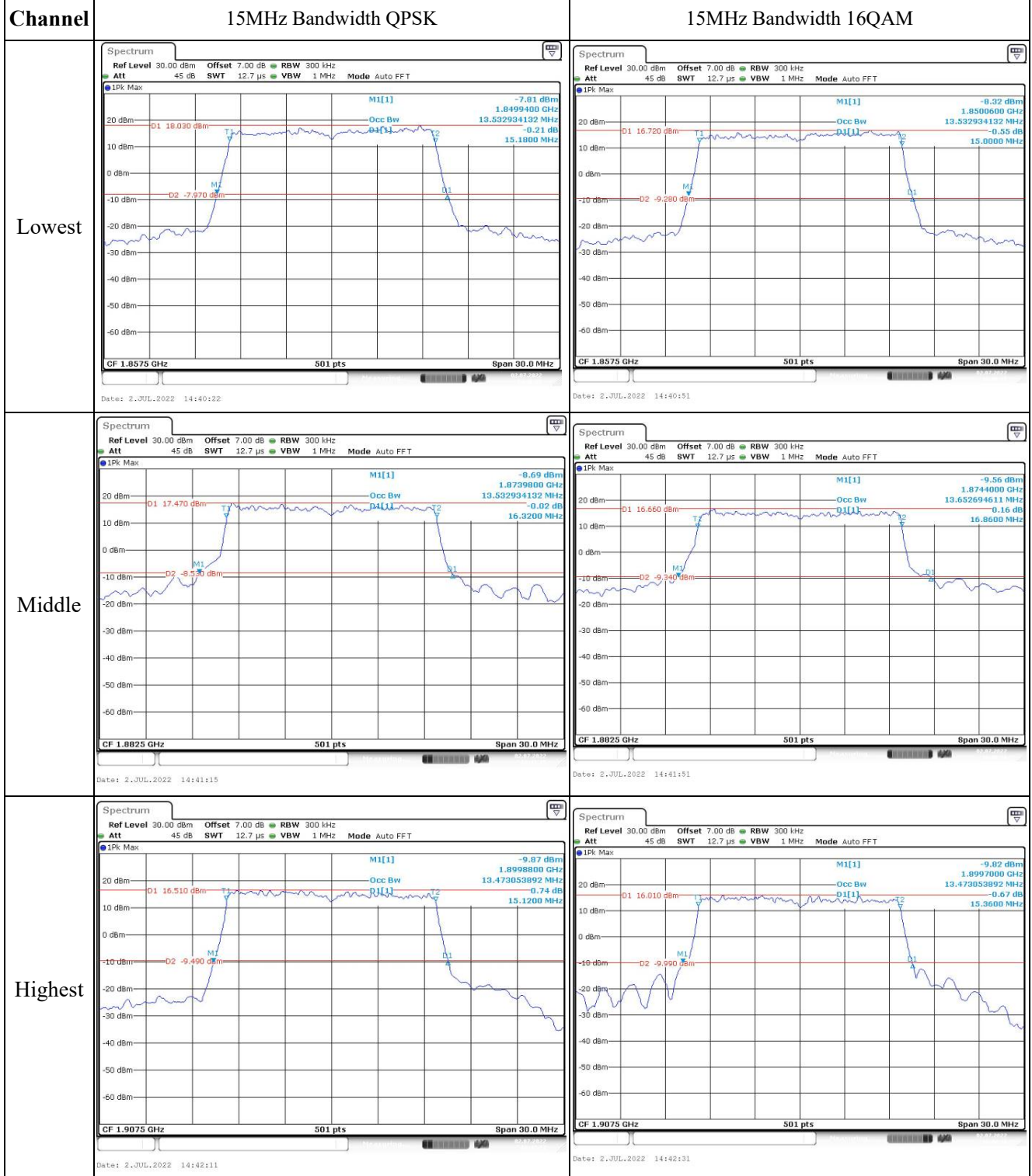
Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth



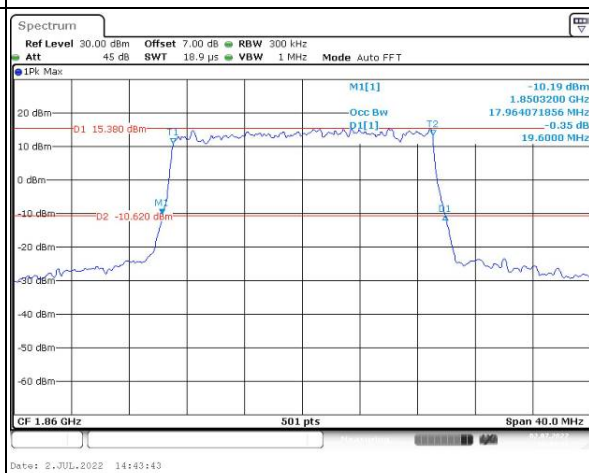
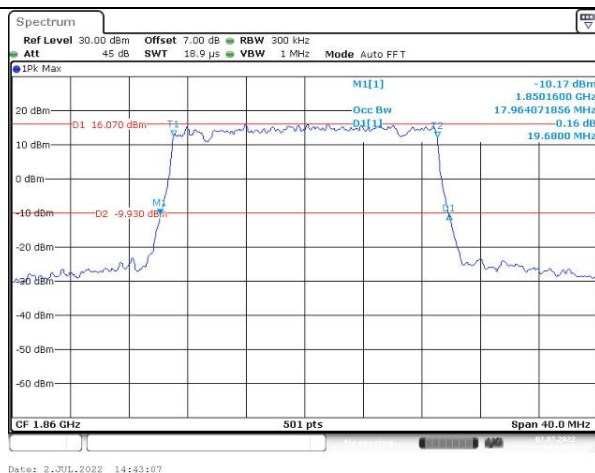
Occupied Bandwidth

Channel

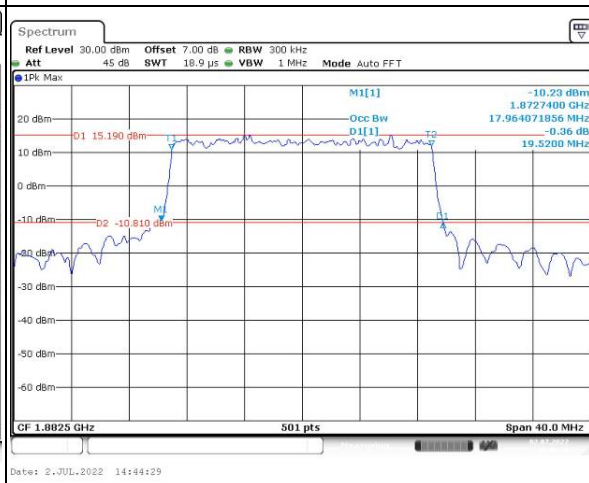
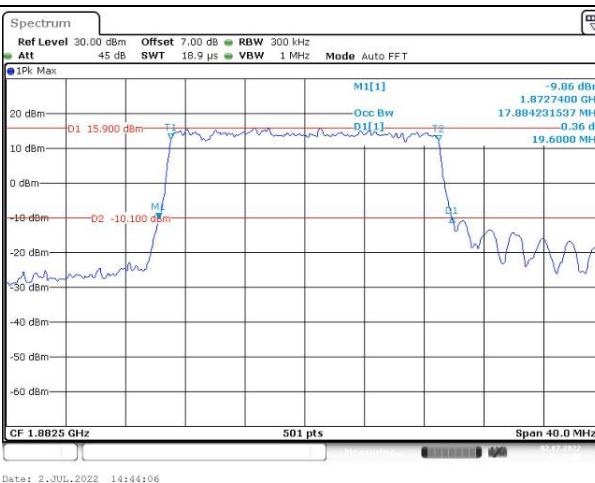
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

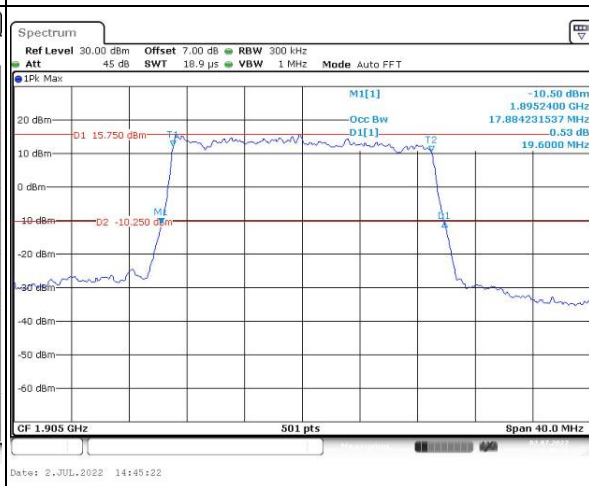
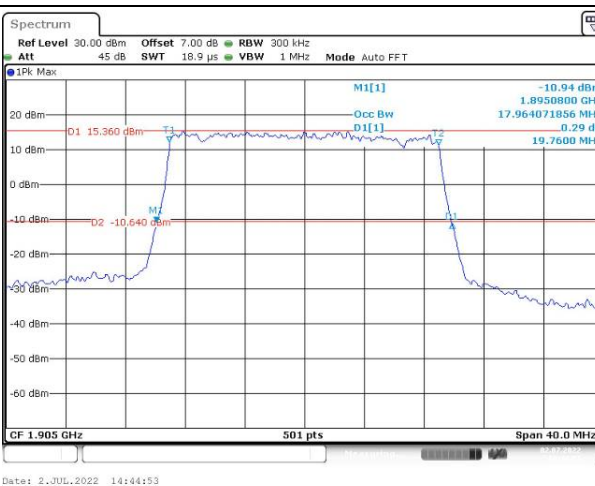
Lowest



Middle



Highest

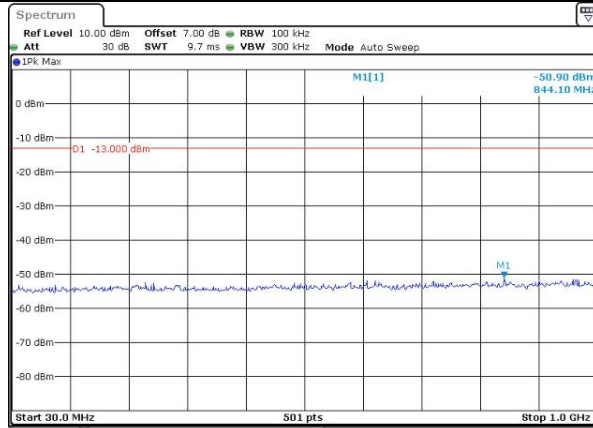


Spurious Emissions at Antenna Terminal

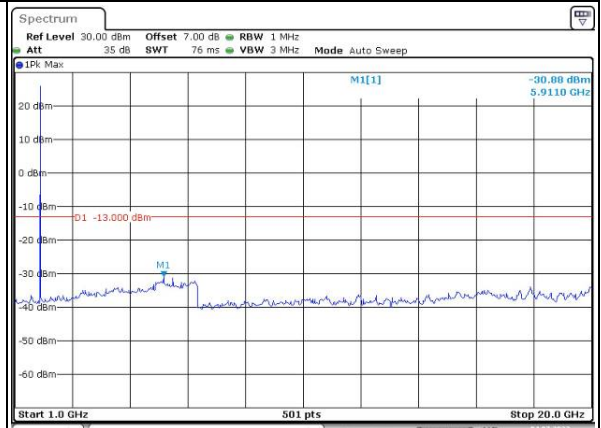
Channel

1.4MHz Bandwidth QPSK

Lowest

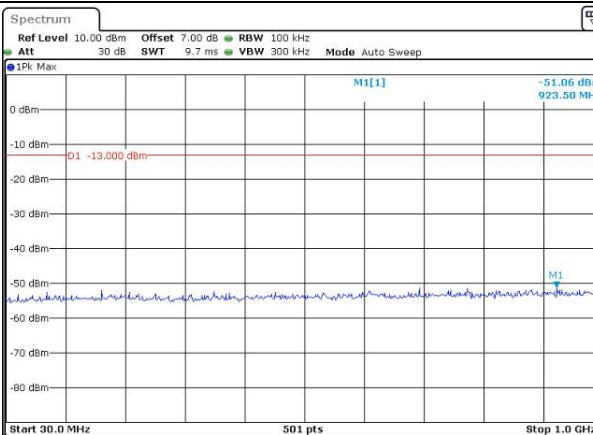


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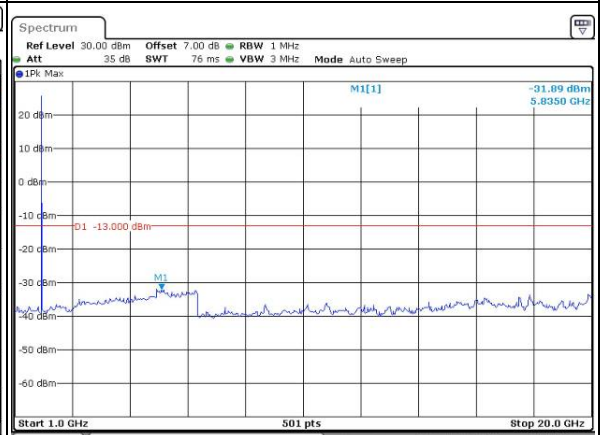


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Middle

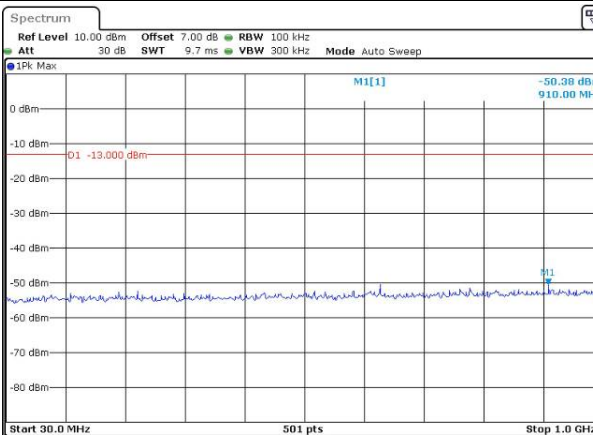


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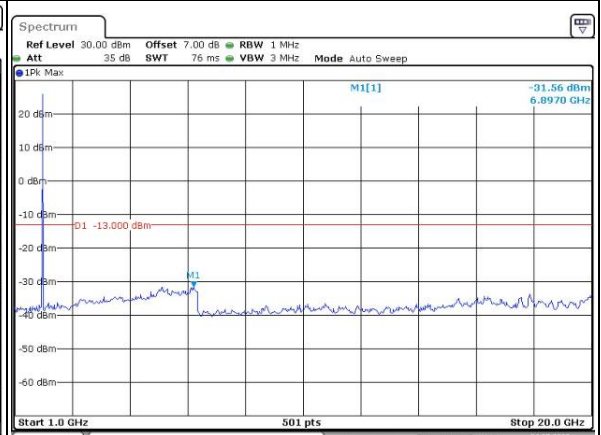


Date: 4.JUL.2022 13:15:09

Highest



Date: 4.JUL.2022 13:15:35



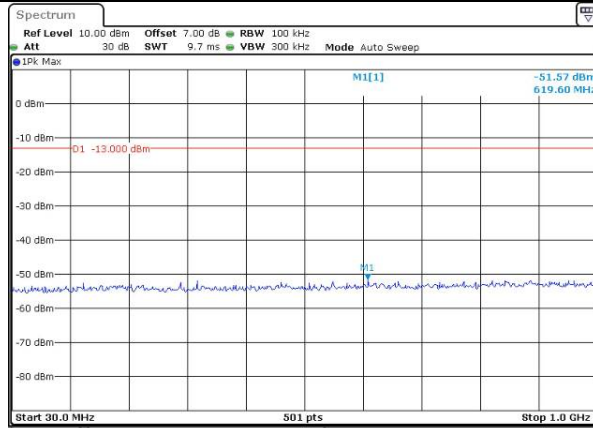
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Spurious Emissions at Antenna Terminal

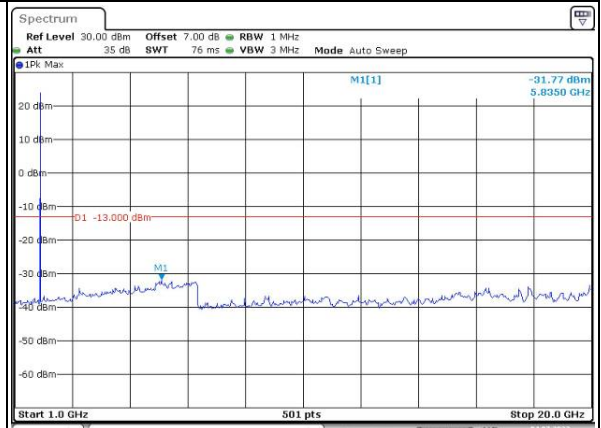
Channel

3MHz Bandwidth QPSK

Lowest

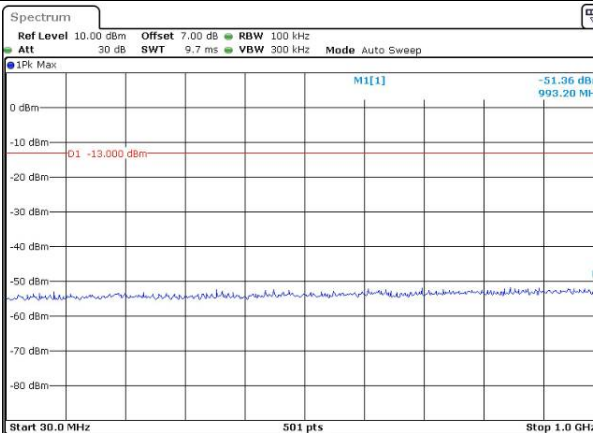


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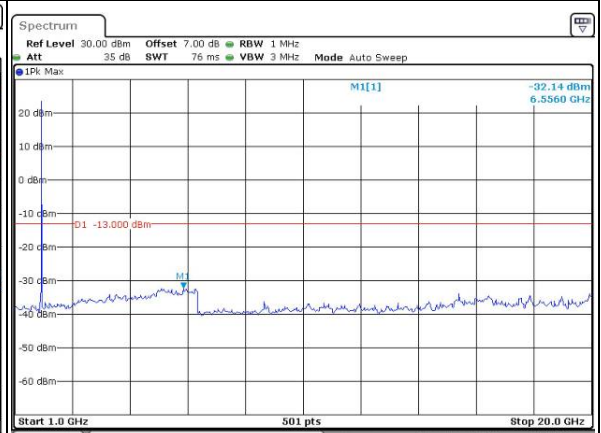


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Middle

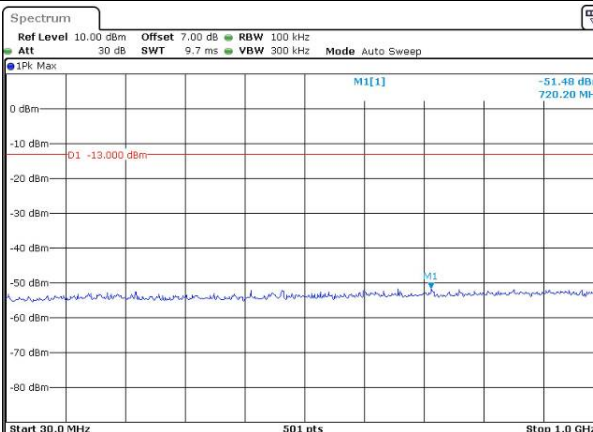


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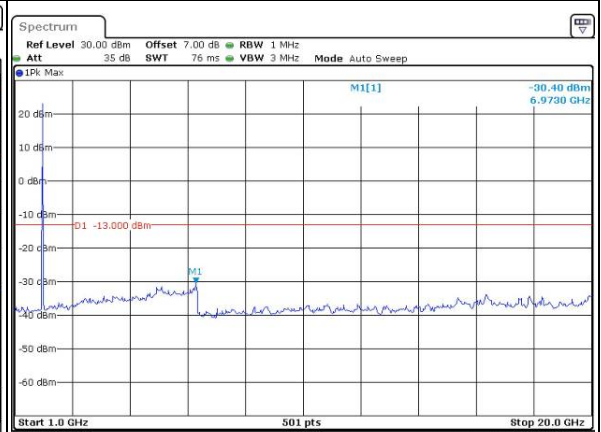


Date: 4.JUL.2022 13:17:47

Highest



Date: 4.JUL.2022 13:18:23



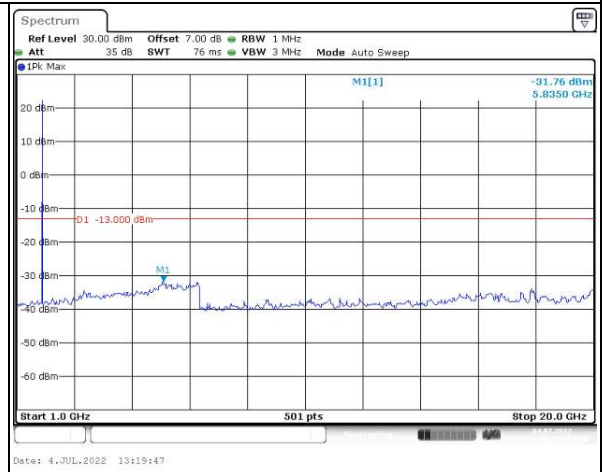
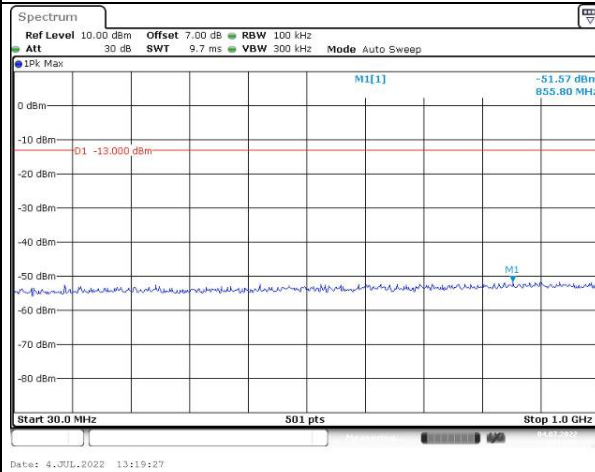
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Spurious Emissions at Antenna Terminal

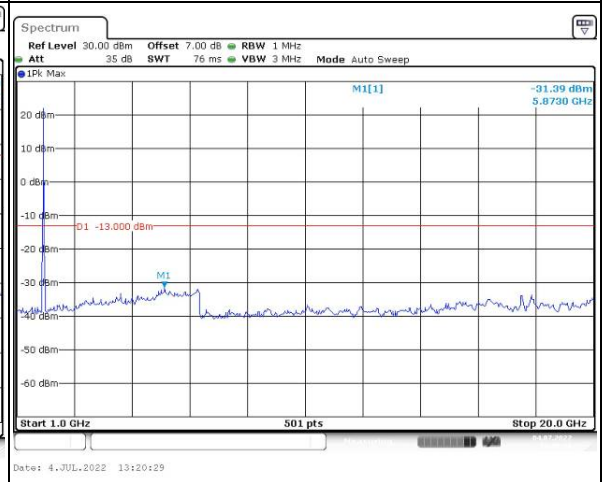
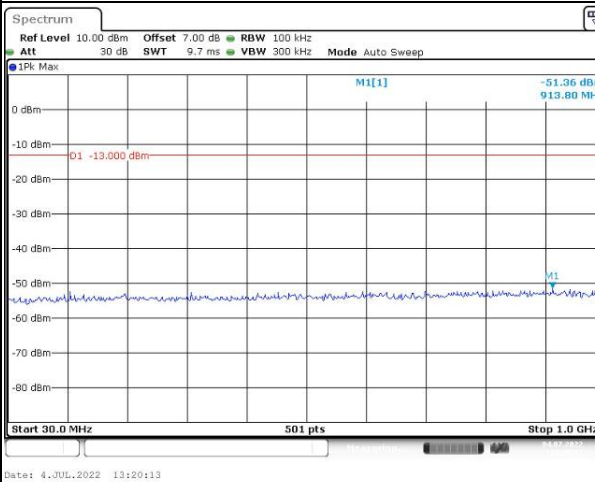
Channel

5MHz Bandwidth QPSK

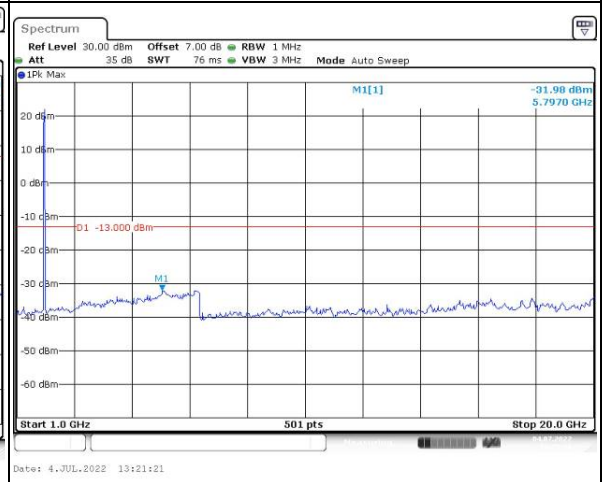
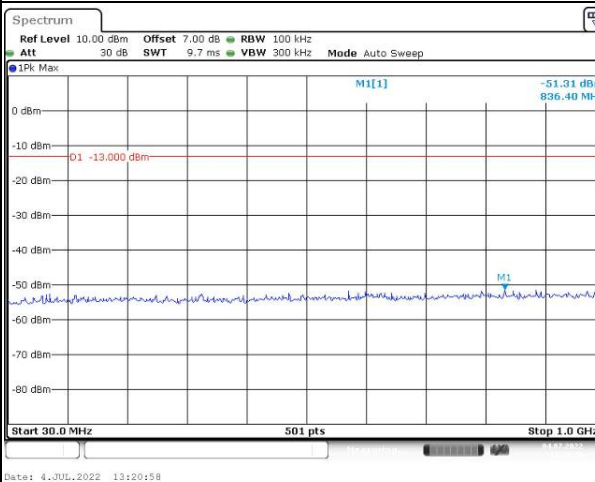
Lowest



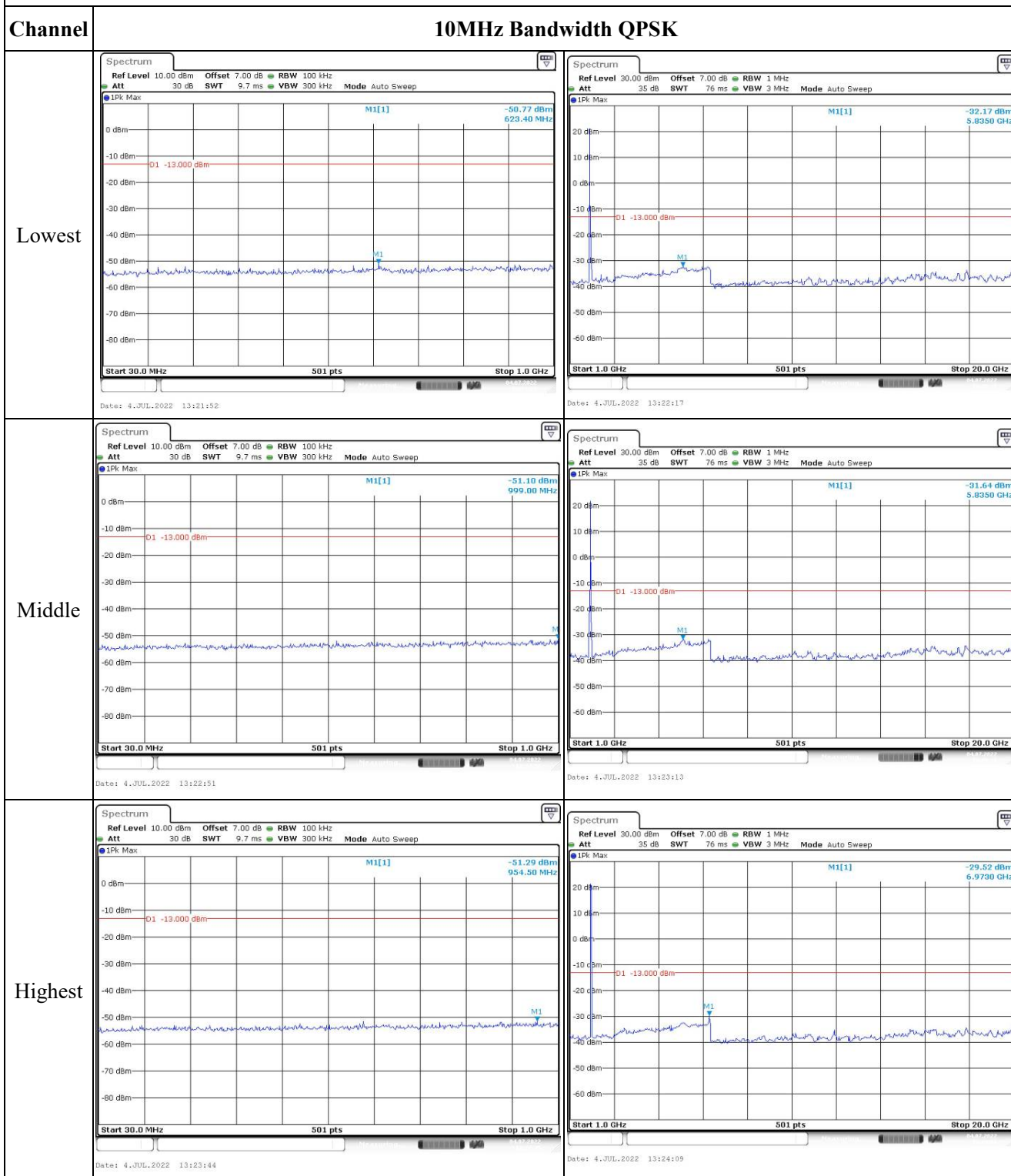
Middle



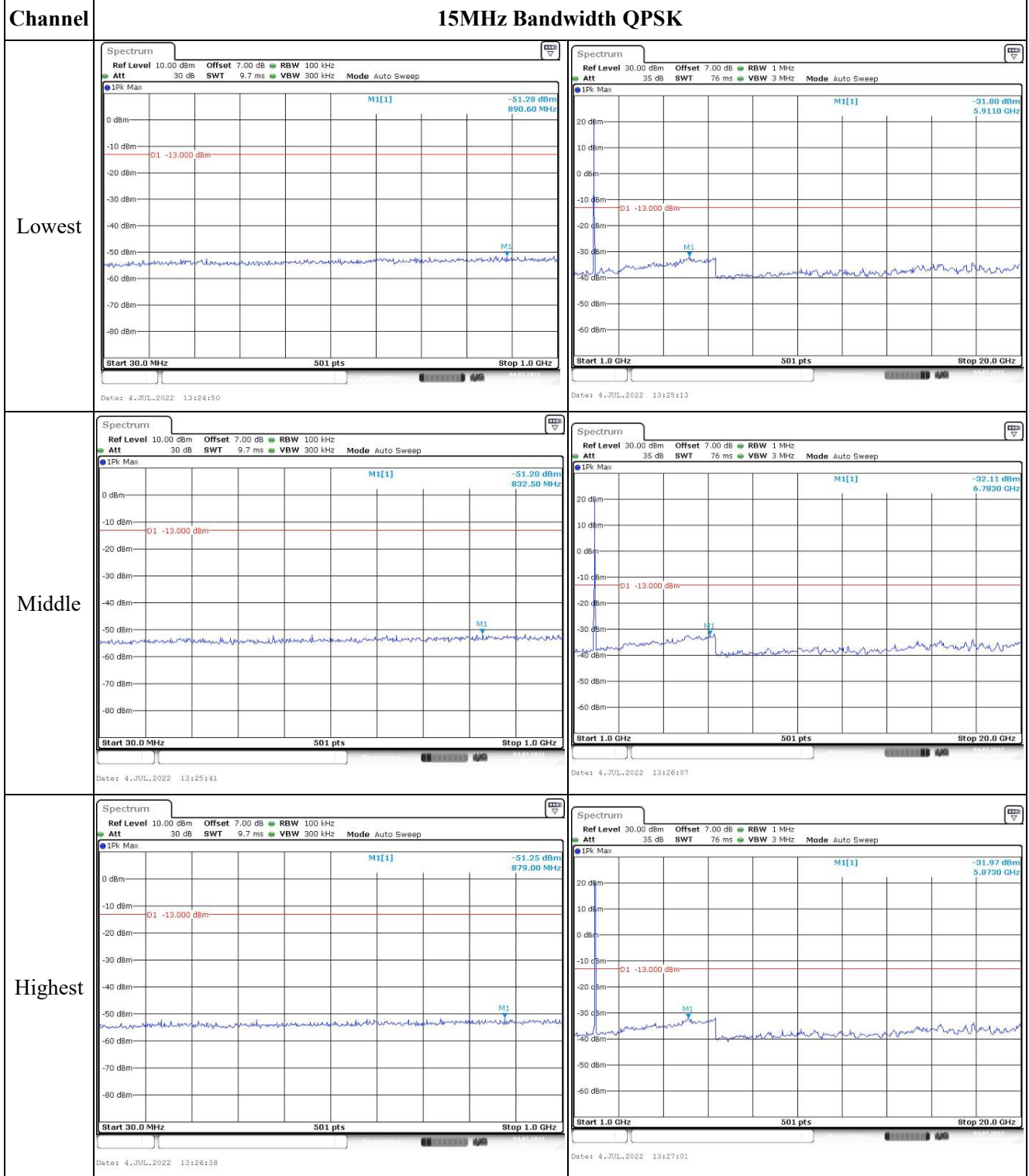
Highest



Spurious Emissions at Antenna Terminal



Spurious Emissions at Antenna Terminal

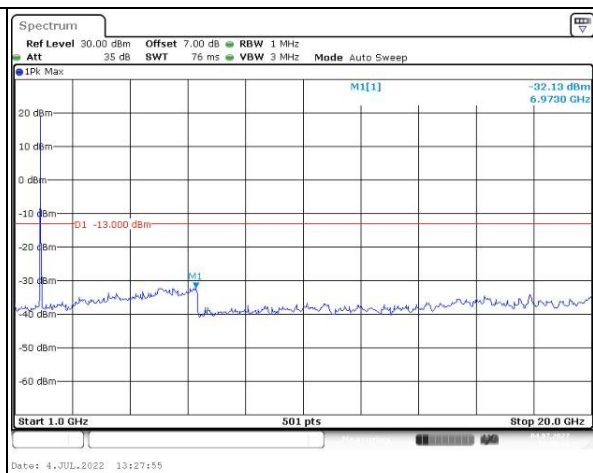
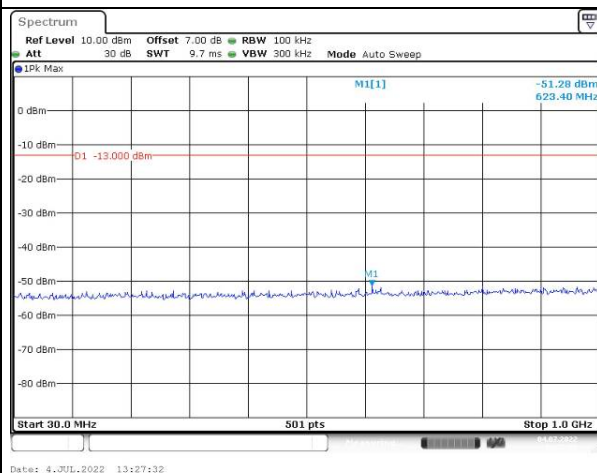


Spurious Emissions at Antenna Terminal

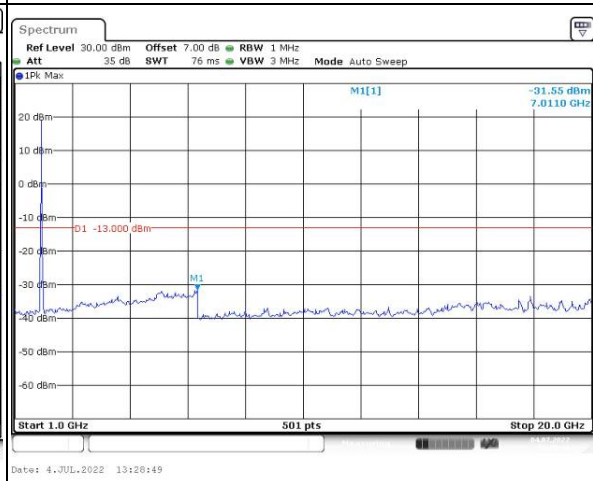
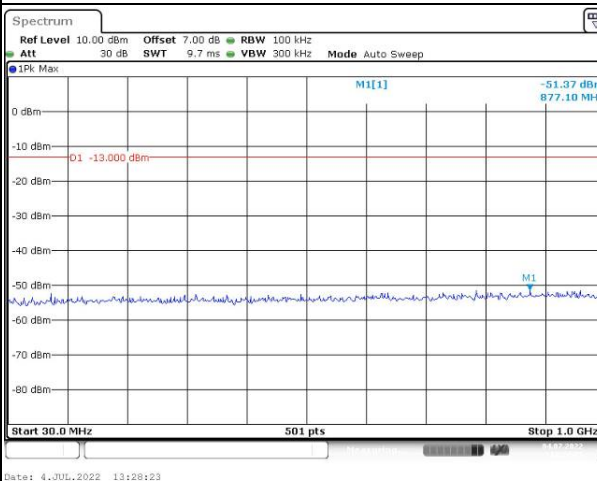
Channel

20MHz Bandwidth QPSK

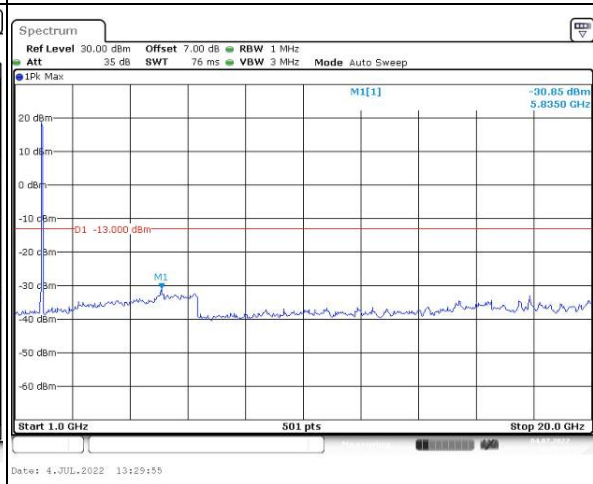
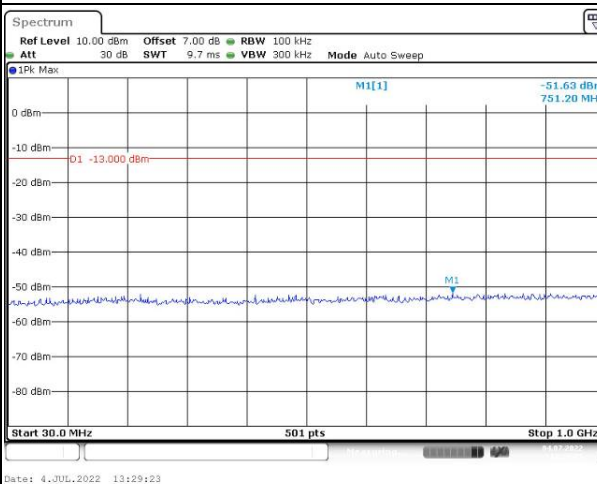
Lowest



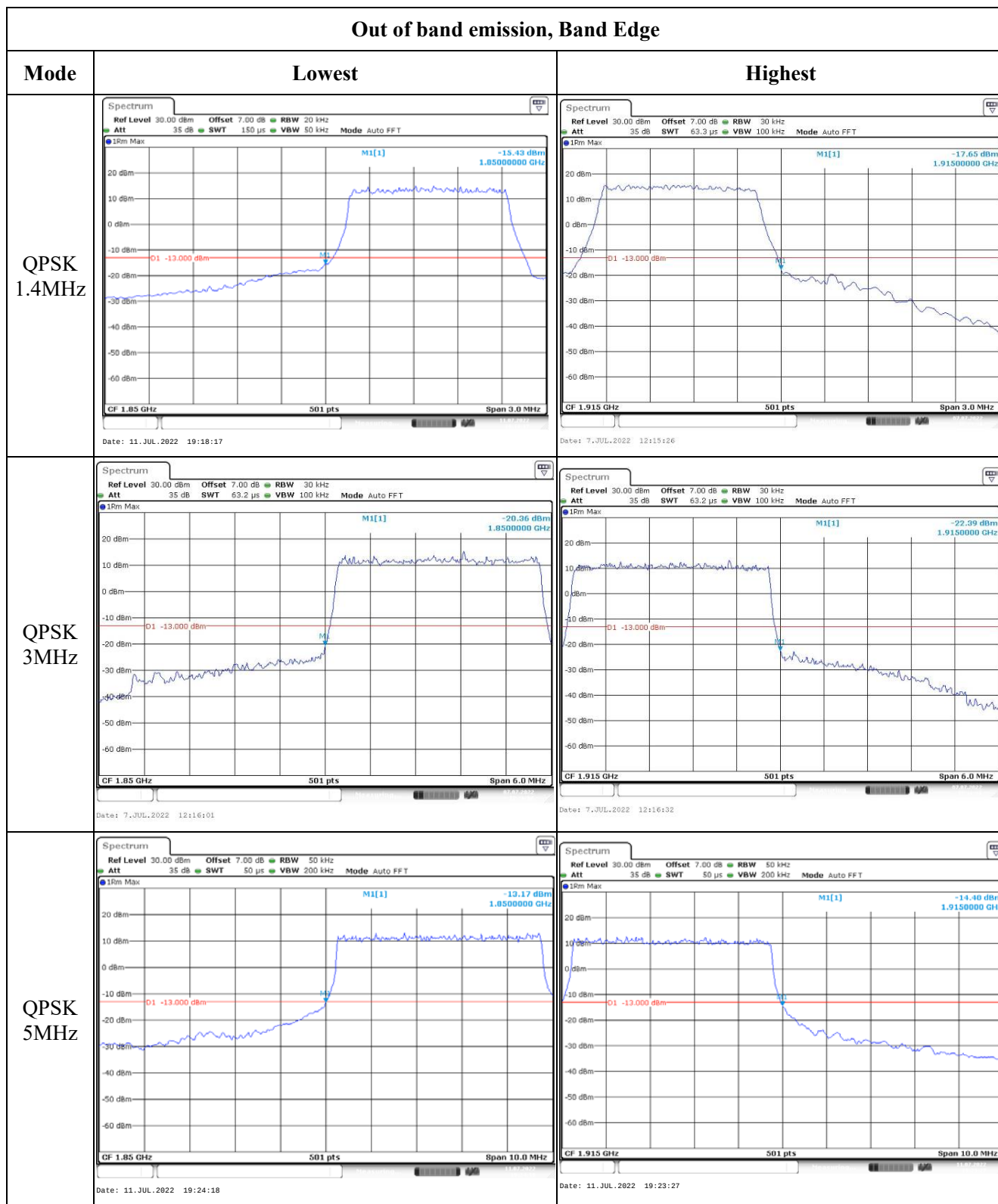
Middle



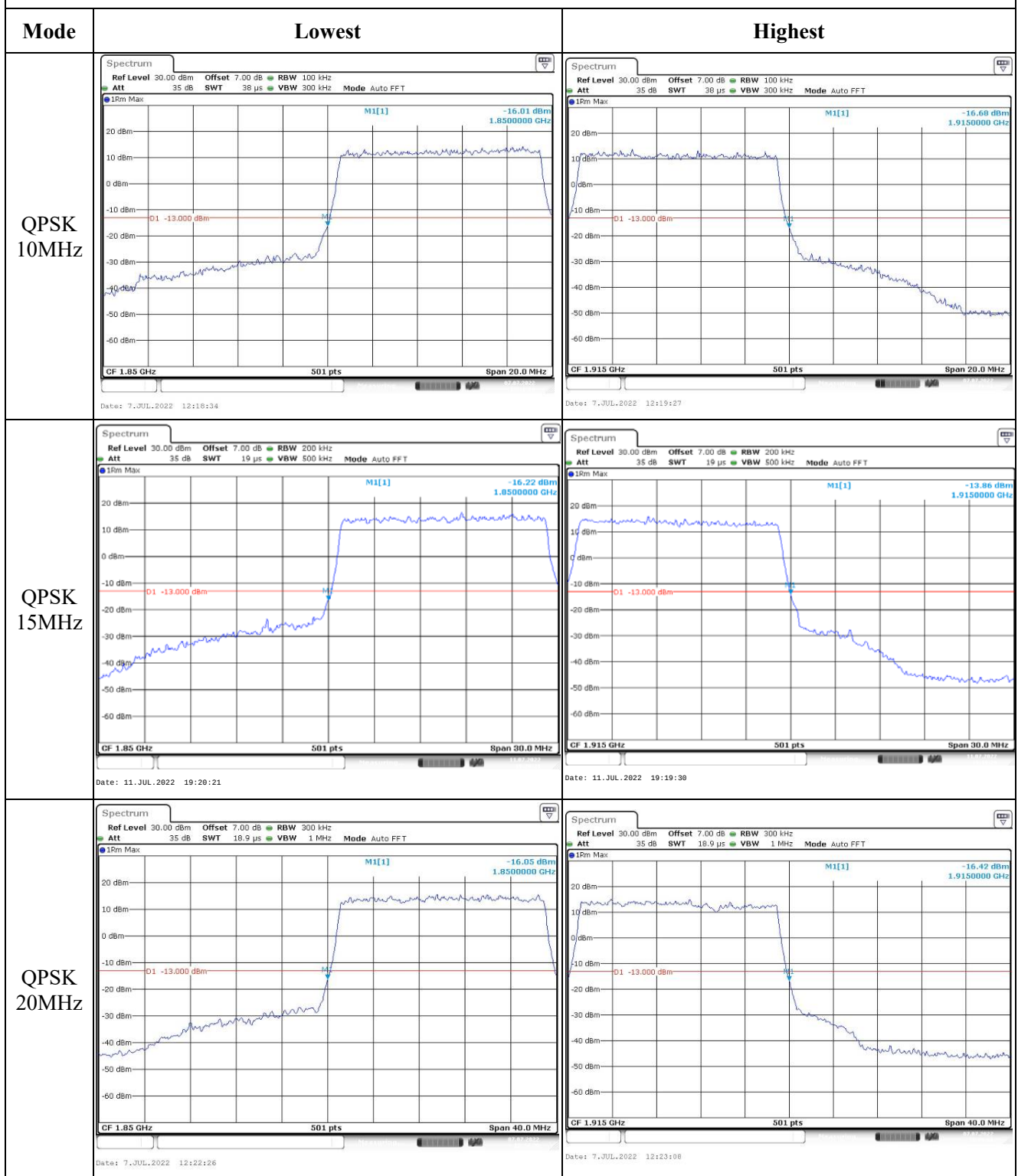
Highest



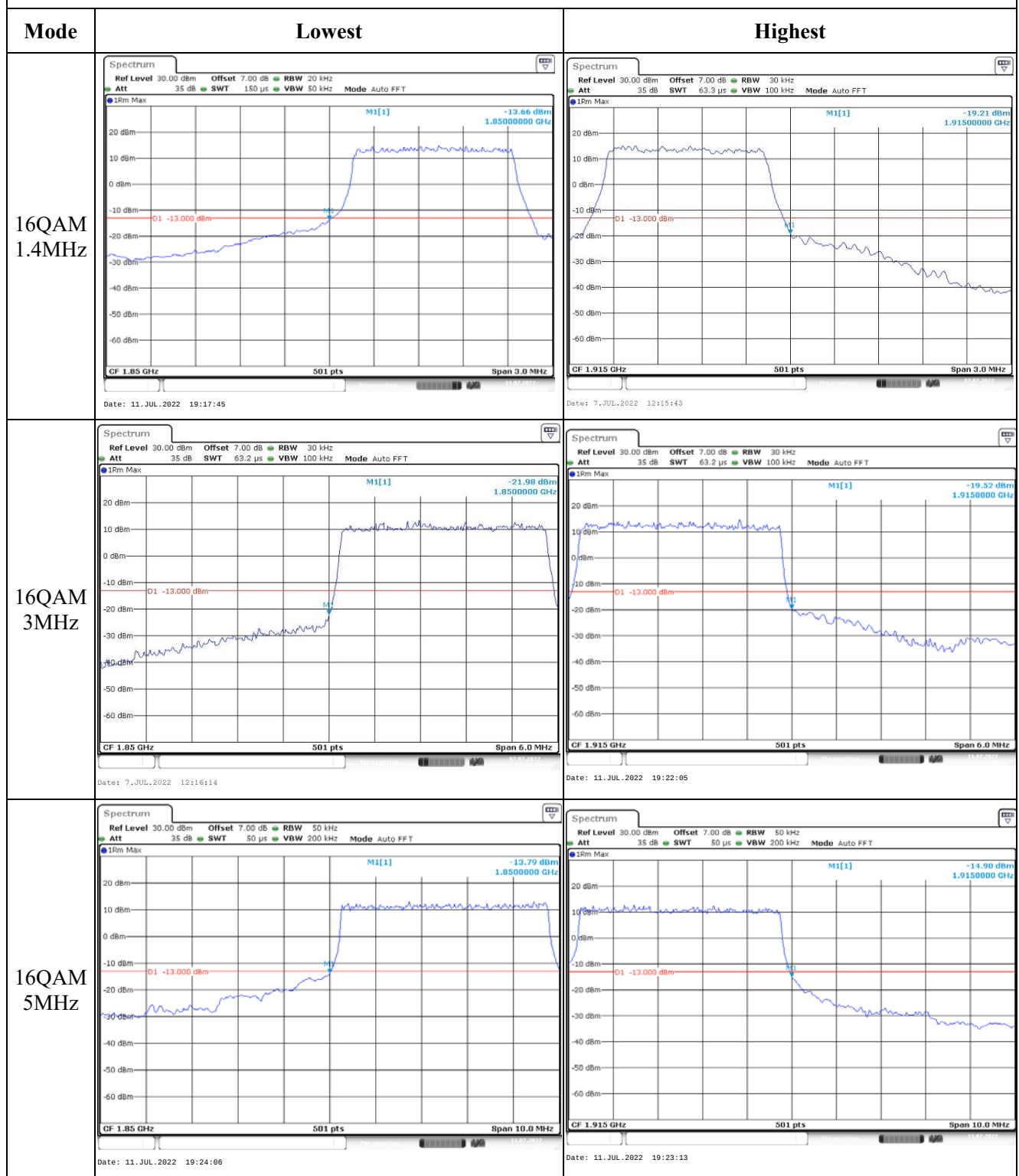
Out of band emission, Band Edge



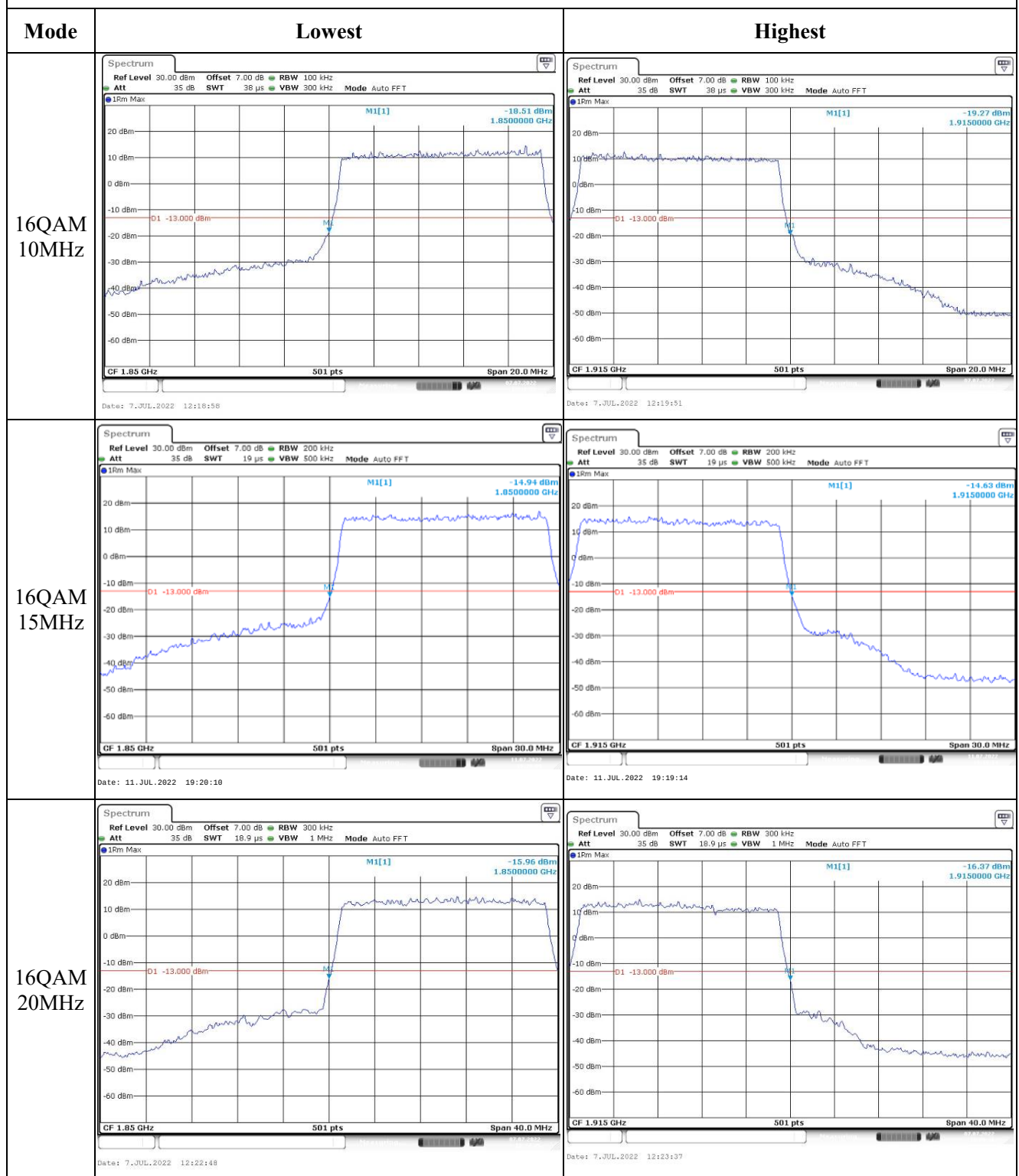
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.12 Antenna Port Test Data and Results for LTE Band 26

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 26▲:

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	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),§ 90.635****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	21.86	22.01	22.11	19.68	38.45
	RB1#3	21.99	22.12	22.18		
	RB1#5	22.1	22.19	22.29		
	RB3#0	22	22.02	22.14		
	RB3#3	22.02	22.13	22.25		
	RB6#0	21.57	21.73	21.76		
1.4MHz 16QAM	RB1#0	21.61	21.65	21.72	19.35	38.45
	RB1#3	21.81	21.87	21.93		
	RB1#5	21.88	21.95	21.96		
	RB3#0	21.86	21.91	21.95		
	RB3#3	21.76	21.83	21.78		
	RB6#0	21.38	21.34	21.49		
3MHz QPSK	RB1#0	22.01	22.1	21.9	19.51	38.45
	RB1#8	22.12	22.07	21.93		
	RB1#14	22.09	22.03	22.02		
	RB6#0	21.98	21.97	21.85		
	RB6#9	22.08	21.93	21.86		
	RB15#0	21.58	21.58	21.51		
3MHz 16QAM	RB1#0	21.57	21.54	21.45	19.36	38.45
	RB1#8	21.97	21.97	21.89		
	RB1#14	21.86	21.91	21.77		
	RB6#0	21.73	21.64	21.56		
	RB6#9	21.69	21.73	21.55		
	RB15#0	21.27	21.24	21.17		
5MHz QPSK	RB1#0	22.02	21.97	22.04	19.7	38.45
	RB1#13	22.17	21.95	22.11		
	RB1#24	22.31	21.21	22.14		
	RB15#0	22.19	21.12	22.05		
	RB15#10	22.3	22.19	22.13		
	RB25#0	21.85	21.67	21.81		
5MHz 16QAM	RB1#0	21.68	21.6	21.82	19.35	38.45
	RB1#13	21.78	21.66	21.85		
	RB1#24	21.96	21.91	21.93		
	RB15#0	21.78	21.73	21.88		
	RB15#10	21.82	21.82	21.85		
	RB25#0	21.45	21.45	21.55		

10MHz QPSK	RB1#0	21.95	21.76	21.88	19.52	38.45
	RB1#25	21.91	21.9	21.84		
	RB1#49	22.12	22.01	22.13		
	RB25#0	21.95	21.71	21.76		
	RB25#25	21.99	21.74	21.89		
	RB50#0	21.6	21.45	21.43		
10MHz 16QAM	RB1#0	21.56	21.55	21.52	19.34	38.45
	RB1#25	21.9	21.6	21.84		
	RB1#49	21.91	21.68	21.95		
	RB25#0	21.81	21.5	21.77		
	RB25#25	21.82	21.52	21.74		
	RB50#0	21.45	21.26	21.32		
15MHz QPSK	RB1#0	21.95	21.86	21.92	19.7	38.45
	RB1#38	22.15	22.06	22.12		
	RB1#74	22.31	22.26	22.16		
	RB36#0	21.92	21.9	21.81		
	RB36#39	21.9	21.96	21.85		
	RB75#0	21.42	21.43	21.34		
15MHz 16QAM	RB1#0	21.52	21.52	21.44	19.36	38.45
	RB1#38	21.76	21.67	21.55		
	RB1#74	21.96	21.97	21.83		
	RB36#0	21.53	21.56	21.47		
	RB36#39	21.51	21.49	21.43		
	RB75#0	21.18	21.16	21.02		
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	3.11	3.15	3.27	13
	RB75#0	5.21	5.13	5.24	13
15MHz 16QAM	RB1#0	4.11	4.24	4.29	13
	RB75#0	6.16	6.2	6.21	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	1.096	1.096	1.102	1.296	1.308	1.29
1.4MHz 16QAM	1.096	1.096	1.096	1.32	1.284	1.29
3MHz QPSK	2.671	2.683	2.683	2.868	2.856	2.88
3MHz 16QAM	2.671	2.683	2.671	2.88	2.88	2.868
5MHz QPSK	4.491	4.491	4.471	4.94	4.96	4.92
5MHz 16QAM	4.471	4.491	4.491	4.9	4.96	4.94
10MHz QPSK	8.982	8.902	8.942	9.64	9.64	9.56
10MHz 16QAM	8.942	8.942	8.942	9.56	9.56	9.56
15MHz QPSK	13.593	13.413	13.473	14.7	14.64	14.76
15MHz 16QAM	13.533	13.413	13.533	14.58	14.52	14.7
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.

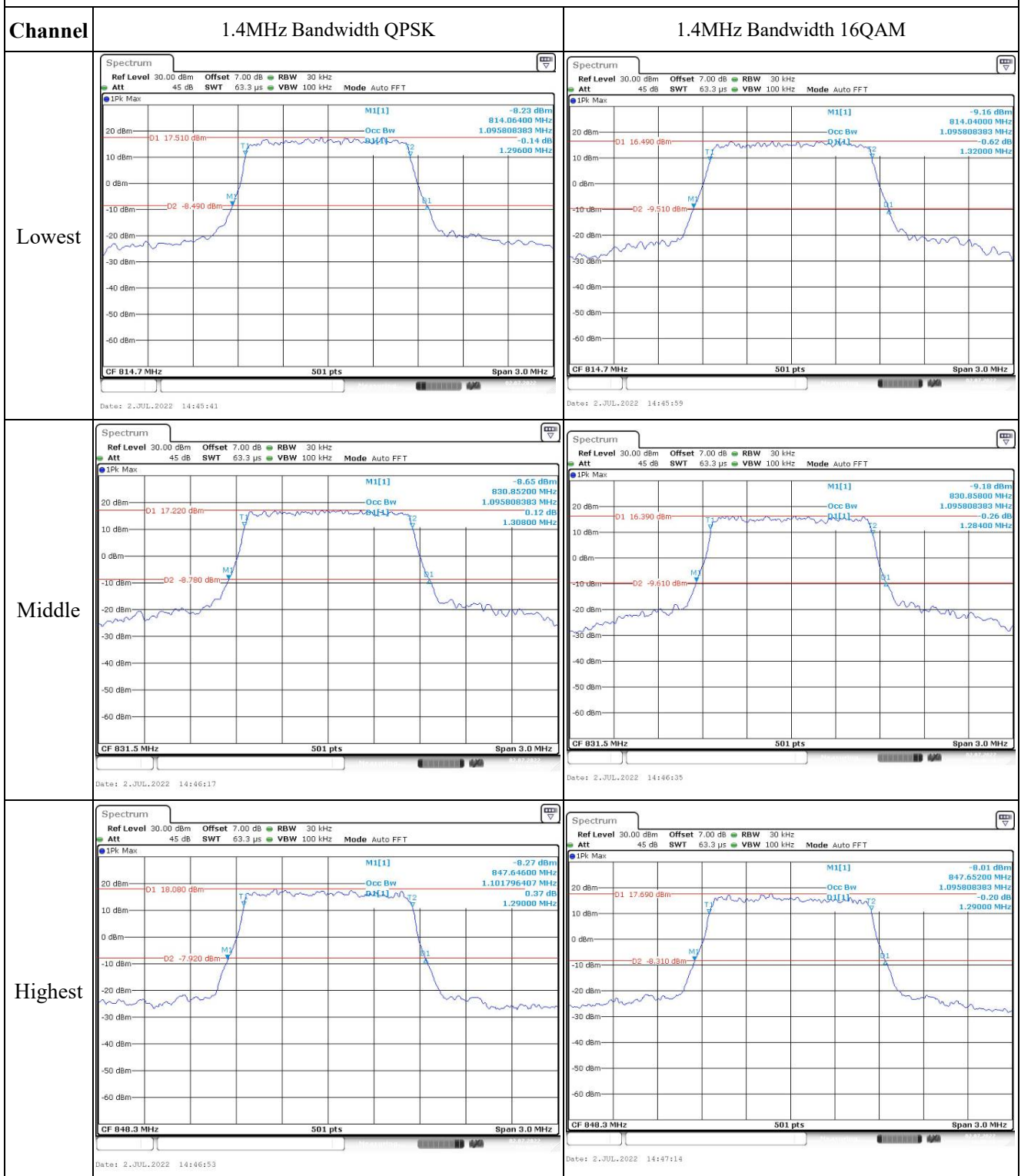
FCC §2.1051, §22.917(a),§90.543:Out of band emission, Band Edge	
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.

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	3.8	12	0.014	2.5
	-20	3.8	16	0.019	2.5
	-10	3.8	17	0.020	2.5
	0	3.8	15	0.018	2.5
	10	3.8	16	0.019	2.5
	20	3.8	17	0.020	2.5
	30	3.8	15	0.018	2.5
	40	3.8	10	0.012	2.5
	50	3.8	11	0.013	2.5
Frequency Stability vs. Voltage	20	3.42	15	0.018	2.5
	20	4.18	19	0.023	2.5
Result:				Pass	

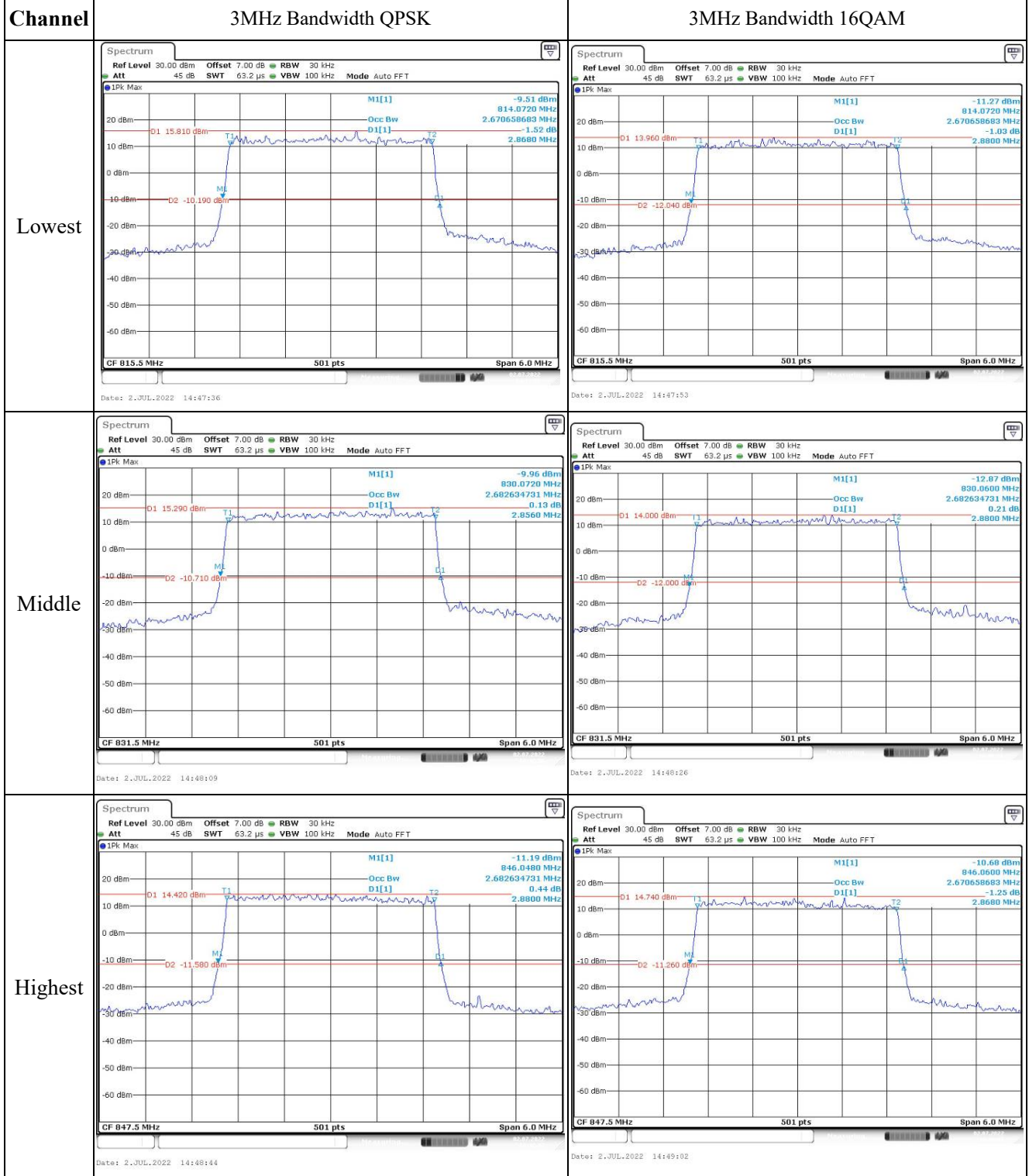
Test Mode:	15 MHz 16QAM		Test Channel:	831.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	11	0.013	2.5
	-20	3.8	15	0.018	2.5
	-10	3.8	12	0.014	2.5
	0	3.8	20	0.024	2.5
	10	3.8	10	0.012	2.5
	20	3.8	19	0.023	2.5
	30	3.8	19	0.023	2.5
	40	3.8	14	0.017	2.5
	50	3.8	15	0.018	2.5
Frequency Stability vs. Voltage	20	3.42	10	0.012	2.5
	20	4.18	12	0.014	2.5
				Result:	Pass

Test Plots:

Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

