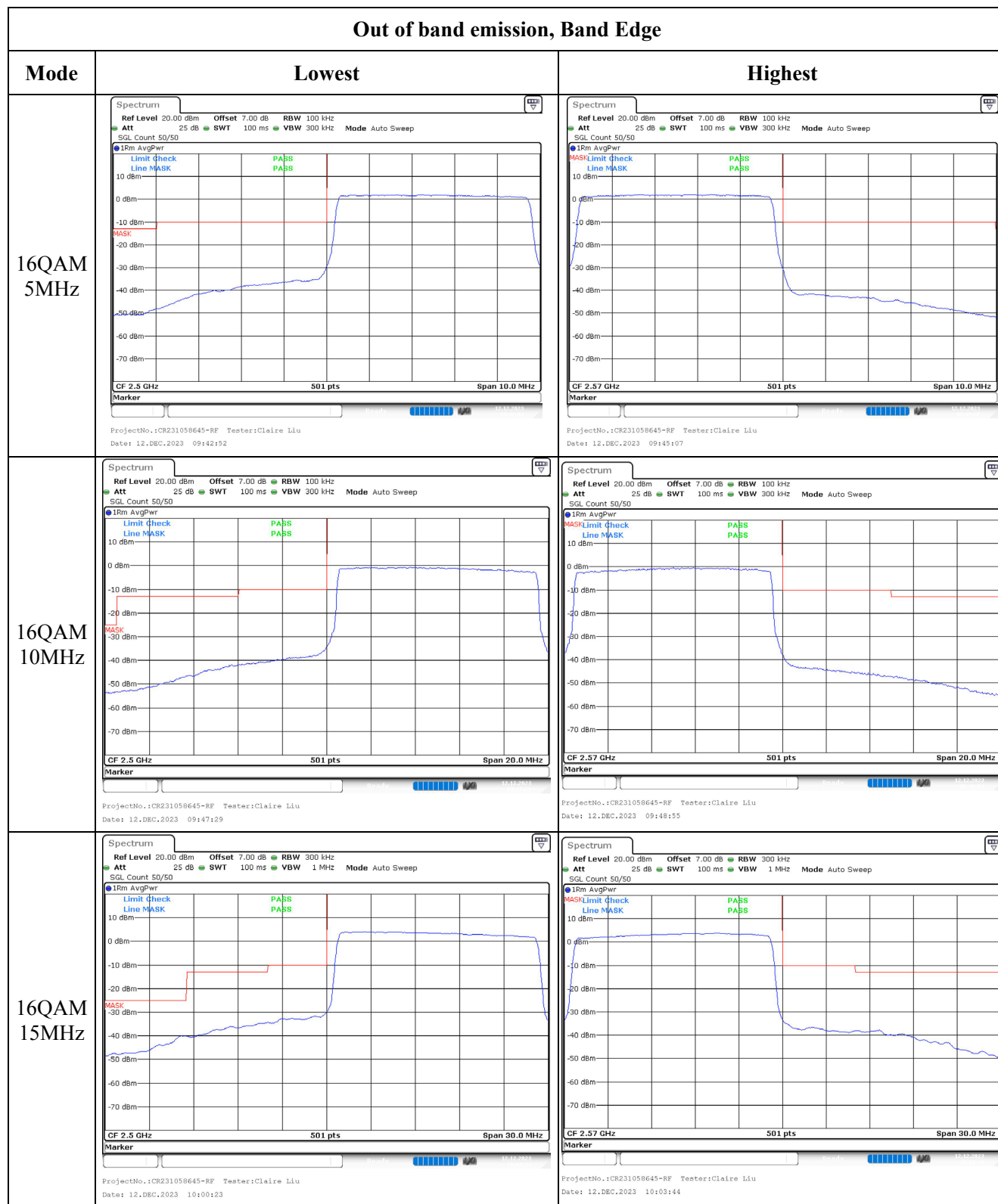
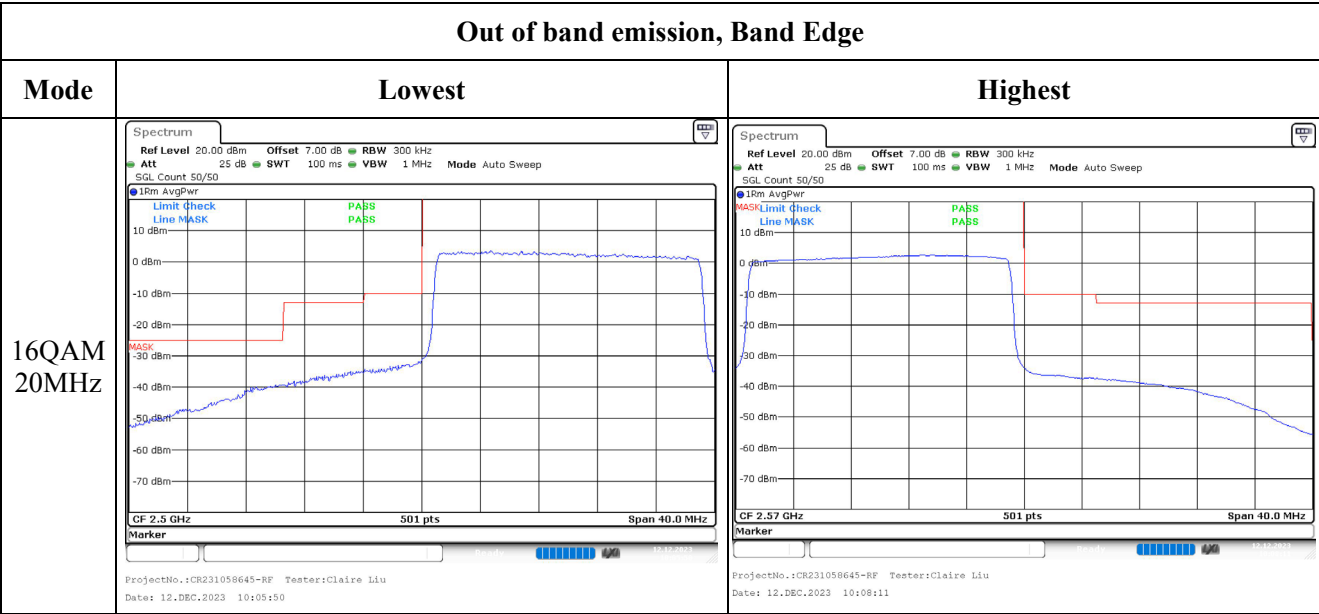


Out of band emission, Band Edge





4.9 Antenna Port Test Data and Results for LTE Band 12

Serial Number:	2C04-3	Test Date:	2023/10/29-2023/11/2
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.3-25.6	Relative Humidity: (%)	45-58	ATM Pressure: (kPa)	101-101.54
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101590	2022/11/23	2023/11/24
zhuoxiang	Coaxial Cable	SMA-178	211003	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204004	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2023/9/28	2024/9/27
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).*

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:

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	22.51	22.55	22.51	21.44	34.77
	RB1#3	22.7	22.76	22.46		
	RB1#5	22.92	22.62	22.54		
	RB3#0	22.73	22.79	22.61		
	RB3#3	22.65	22.71	22.53		
	RB6#0	21.7	21.81	21.84		
1.4MHz 16QAM	RB1#0	21.73	22.34	21.74	20.99	34.77
	RB1#3	22.1	22.47	21.86		
	RB1#5	21.9	22.02	21.75		
	RB3#0	21.44	21.8	21.93		
	RB3#3	21.55	21.95	21.66		
	RB6#0	20.97	20.69	20.92		
3MHz QPSK	RB1#0	22.53	22.7	22.64	21.29	34.77
	RB1#8	22.77	22.46	22.37		
	RB1#14	22.45	22.32	22.47		
	RB6#0	21.6	21.7	21.66		
	RB6#9	21.68	21.61	21.55		
	RB15#0	21.62	21.68	21.67		
3MHz 16QAM	RB1#0	22.03	21.91	21.65	20.66	34.77
	RB1#8	21.52	22.14	21.63		
	RB1#14	21.9	21.79	21.2		
	RB6#0	20.76	20.69	20.55		
	RB6#9	20.61	20.76	20.51		
	RB15#0	20.54	20.58	20.67		
5MHz QPSK	RB1#0	22.62	22.62	22.46	21.14	34.77
	RB1#13	22.44	22.61	22.38		
	RB1#24	22.59	22.58	22.34		
	RB15#0	21.4	21.73	21.66		
	RB15#10	21.67	21.69	21.5		
	RB25#0	21.63	21.65	21.54		
5MHz 16QAM	RB1#0	21.33	21.15	21.97	20.54	34.77
	RB1#13	21.36	20.93	22.02		
	RB1#24	21.43	20.92	21.77		
	RB15#0	20.53	20.7	20.49		
	RB15#10	20.68	20.49	20.48		
	RB25#0	20.65	20.84	20.58		
10MHz QPSK	RB1#0	22.65	22.44	22.65	21.28	34.77
	RB1#25	22.72	22.73	22.68		
	RB1#49	22.65	22.76	22.53		

10MHz 16QAM	RB25#0	21.72	21.8	21.84	20.81	34.77
	RB25#25	21.72	21.66	21.78		
	RB50#0	21.85	21.78	21.74		
	RB1#0	21.9	22.24	21.67		
	RB1#25	22.16	22.22	21.89		
	RB1#49	22.03	22.29	21.3		
	RB25#0	20.75	20.87	20.83		
	RB25#25	20.77	20.81	21.01		
	RB50#0	20.68	20.74	20.83		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + G_T(dBd)G_T(dBd)=G_T(dBi)-2.15**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	4.43	4.43	13
	RB50#0	4.7	4.78	4.81	13
10MHz 16QAM	RB1#0	5.33	5.3	5.42	13
	RB50#0	5.83	5.88	5.83	13
Result:					Pass

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	1.296	1.308	1.284
1.4MHz 16QAM	1.102	1.096	1.096	1.32	1.296	1.302
3MHz QPSK	2.695	2.695	2.683	2.94	2.928	2.952
3MHz 16QAM	2.683	2.683	2.695	2.94	2.952	2.952
5MHz QPSK	4.511	4.511	4.491	5.02	5	5
5MHz 16QAM	4.491	4.53	4.511	5	5.02	5.04
10MHz QPSK	8.942	8.942	8.902	9.72	9.72	9.76
10MHz 16QAM	8.902	8.942	8.942	9.64	9.68	9.68

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

Spurious Emissions at Antenna Terminal

Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.
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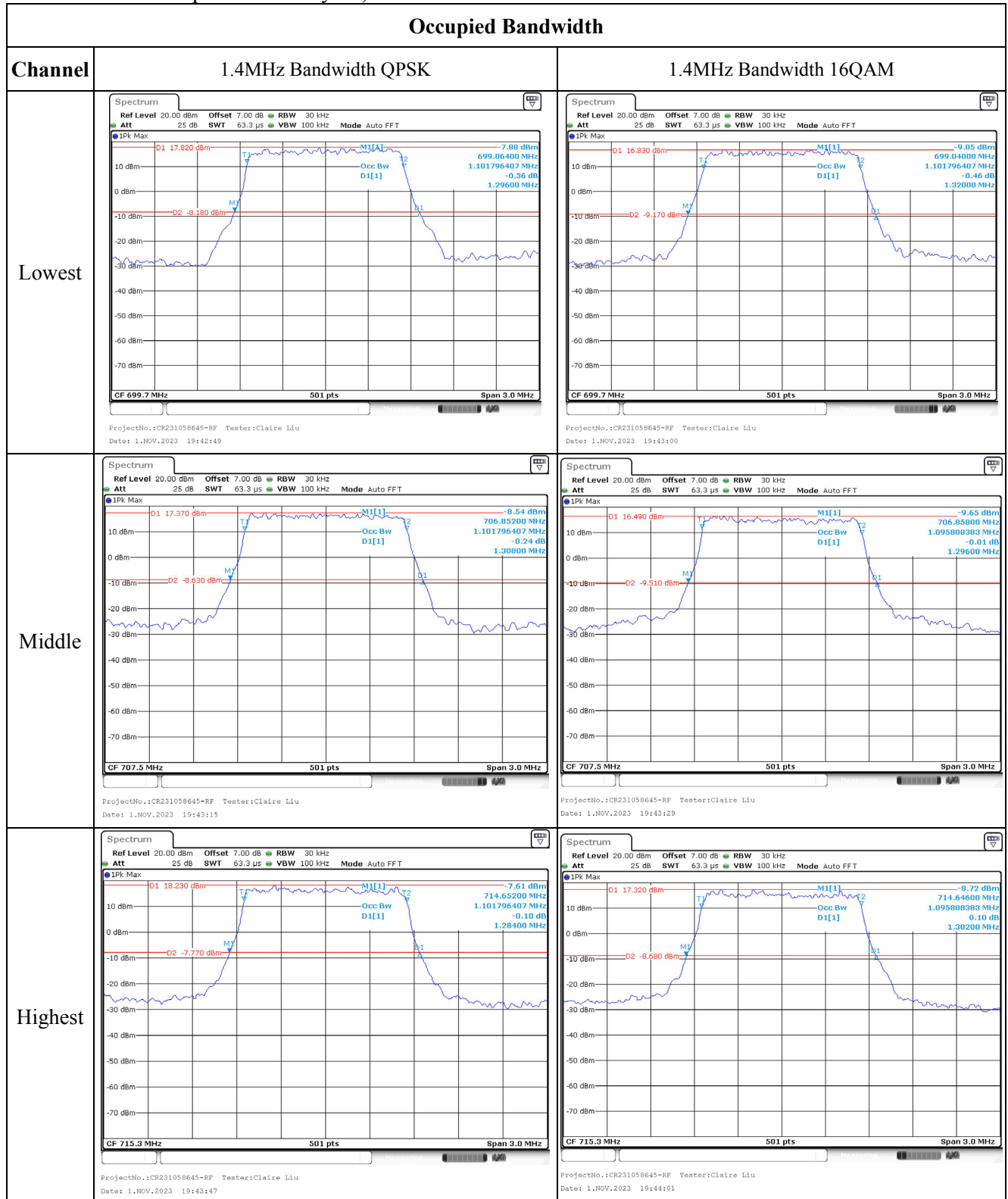
Out of band emission, Band Edge

Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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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	7.6	699.152	699.00	715.862	716.00
	-20	7.6	699.195	699.00	715.865	716.00
	-10	7.6	699.129	699.00	715.912	716.00
	0	7.6	699.088	699.00	715.784	716.00
	10	7.6	699.089	699.00	715.805	716.00
	20	7.6	699.120	699.00	715.840	716.00
	30	7.6	699.147	699.00	715.842	716.00
	40	7.6	699.133	699.00	715.920	716.00
	50	7.6	699.093	699.00	715.798	716.00
Frequency Stability vs. Voltage	20	6.8	699.100	699.00	715.759	716.00
	20	8.7	699.032	699.00	715.819	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	7.6	699.268	699.00	715.711	716.00
	-20	7.6	699.287	699.00	715.741	716.00
	-10	7.6	699.219	699.00	715.867	716.00
	0	7.6	699.212	699.00	715.885	716.00
	10	7.6	699.185	699.00	715.808	716.00
	20	7.6	699.200	699.00	715.800	716.00
	30	7.6	699.251	699.00	715.749	716.00
	40	7.6	699.105	699.00	715.739	716.00
	50	7.6	699.237	699.00	715.799	716.00
Frequency Stability vs. Voltage	20	6.8	699.128	699.00	715.851	716.00
	20	8.7	699.218	699.00	715.850	716.00
					Result:	Pass

Test Plots (Note: The 7 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



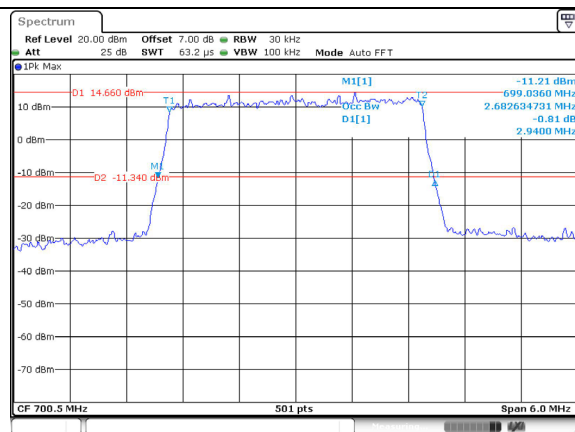
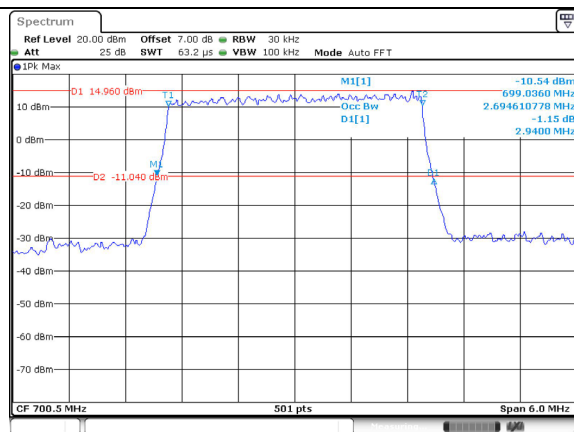
Occupied Bandwidth

Channel

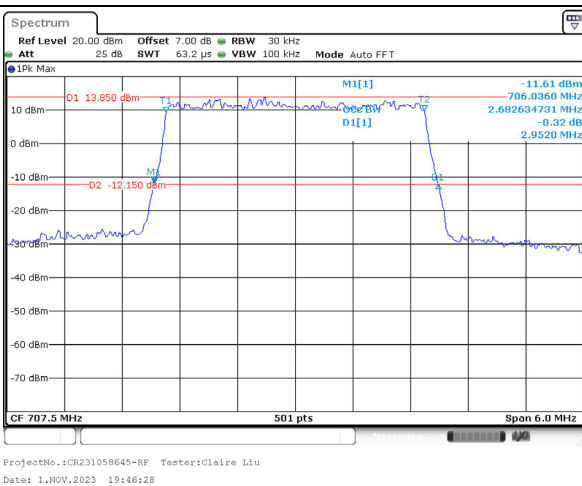
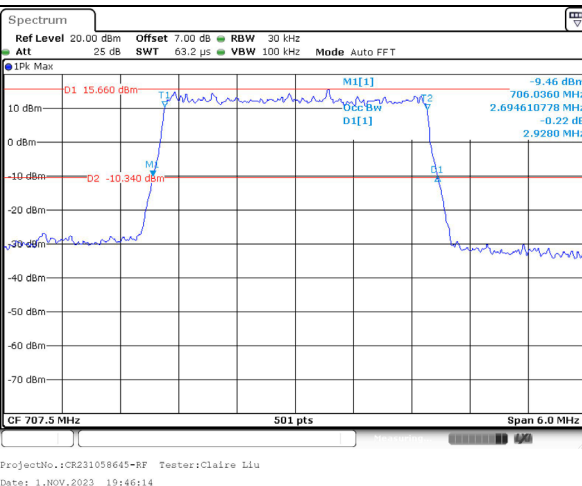
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

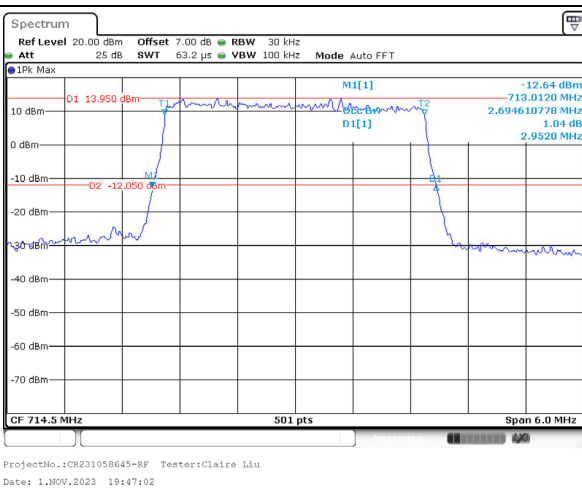
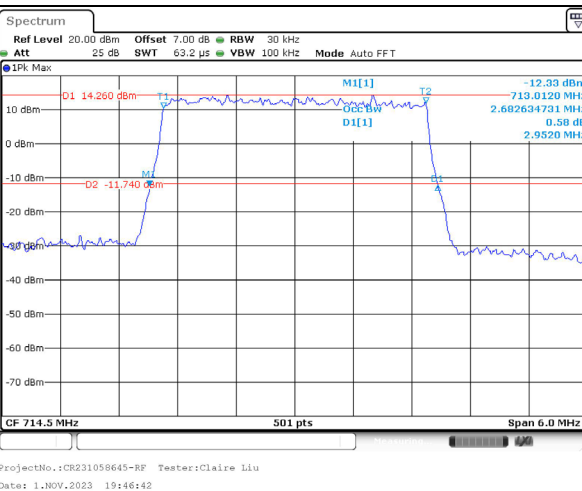
Lowest



Middle



Highest



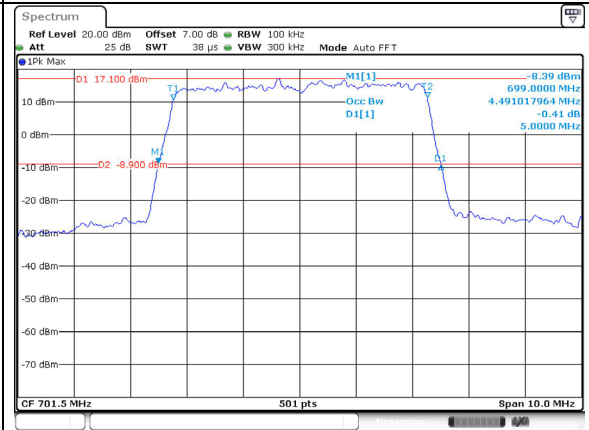
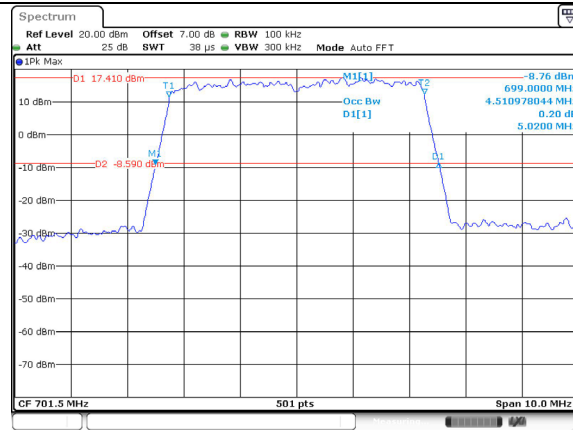
Occupied Bandwidth

Channel

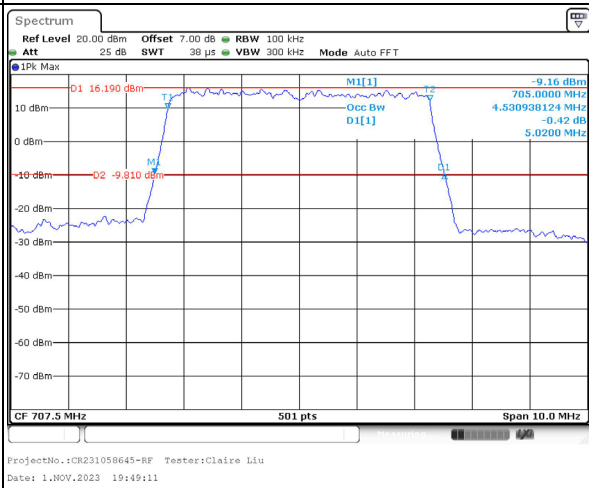
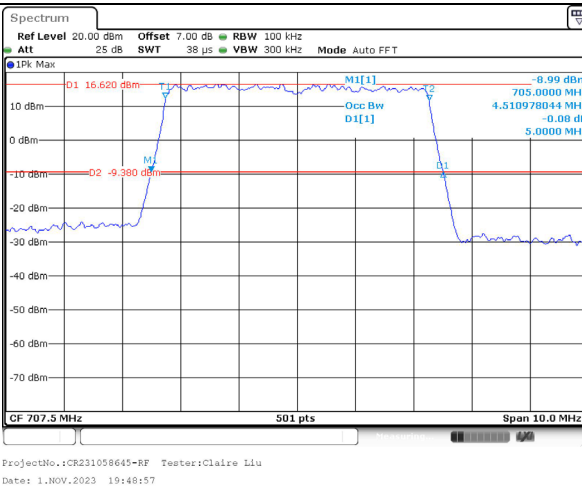
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

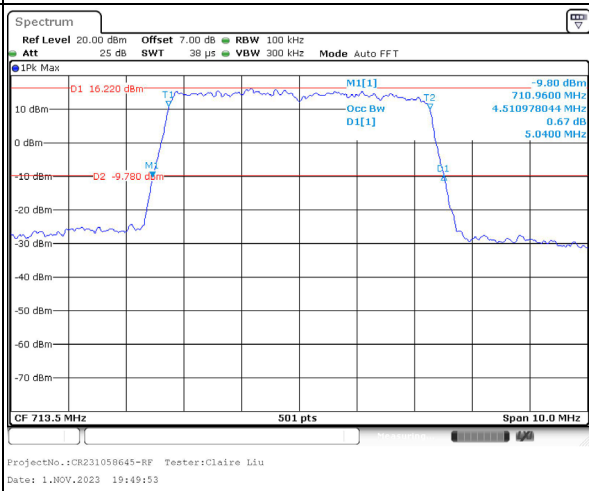
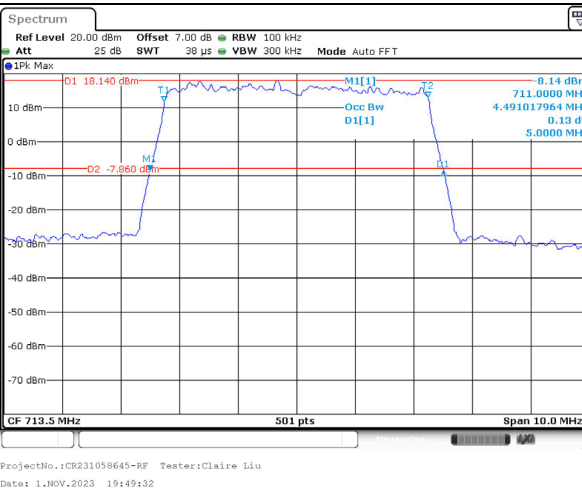
Lowest



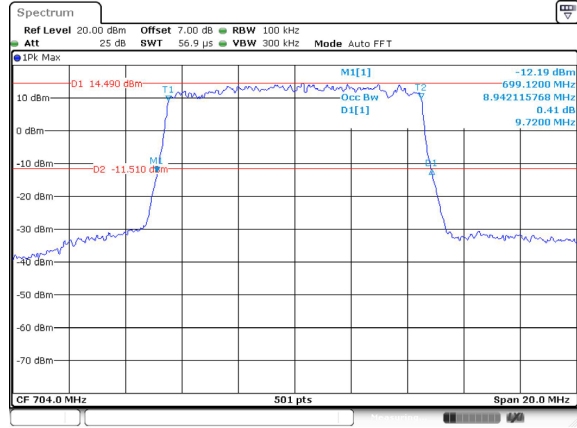
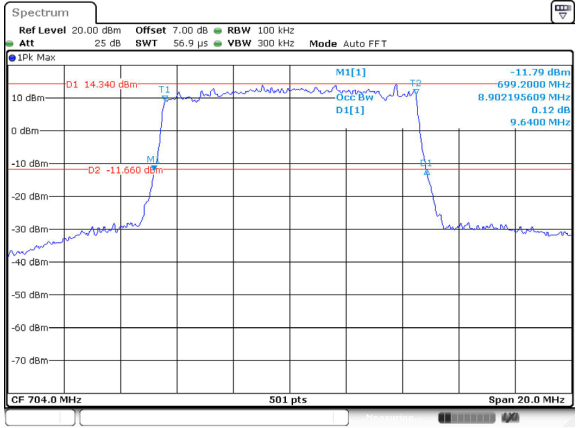
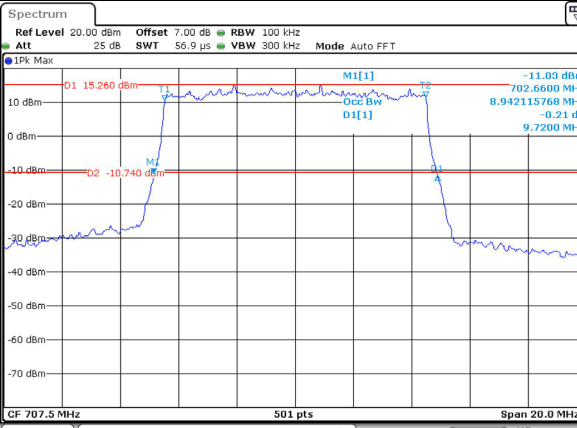
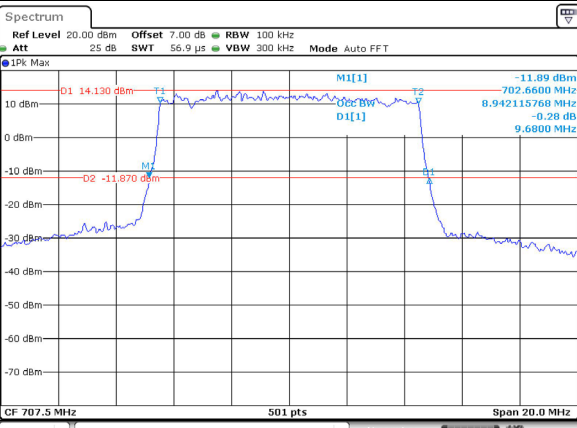
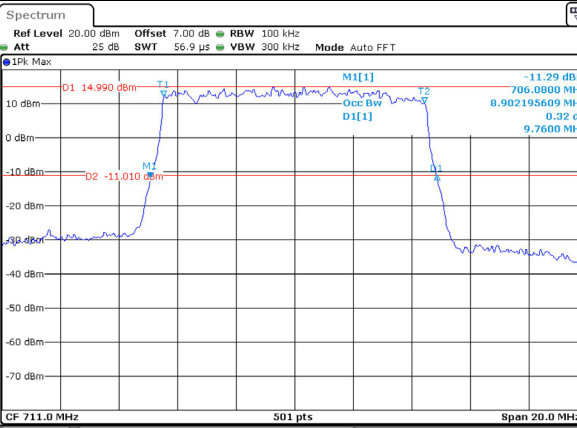
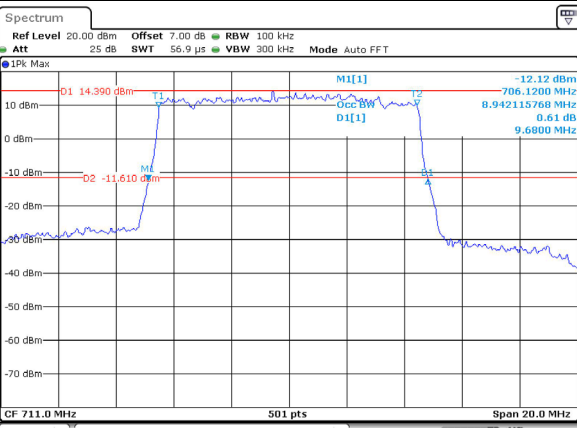
Middle



Highest



Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	 ProjectNo.: CR231058645-RF Tester: Claire Liu Date: 1.NOV.2023 19:51:21	 ProjectNo.: CR231058645-RF Tester: Claire Liu Date: 1.NOV.2023 19:51:42
Middle	 ProjectNo.: CR231058645-RF Tester: Claire Liu Date: 1.NOV.2023 19:52:03	 ProjectNo.: CR231058645-RF Tester: Claire Liu Date: 1.NOV.2023 19:52:24
Highest	 ProjectNo.: CR231058645-RF Tester: Claire Liu Date: 1.NOV.2023 19:52:46	 ProjectNo.: CR231058645-RF Tester: Claire Liu Date: 1.NOV.2023 19:53:06