

Test Plots(Note: The 7.0dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):

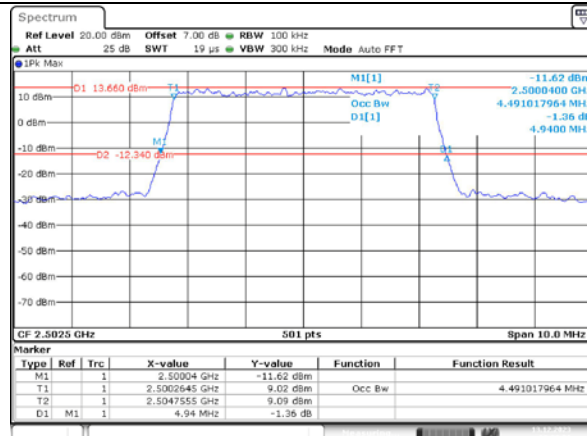
Occupied Bandwidth

Channel

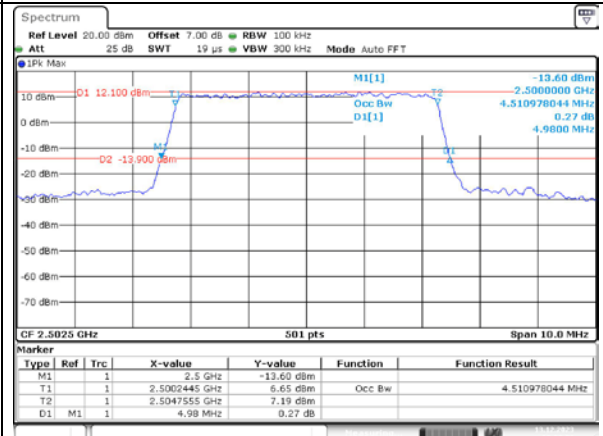
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

Lowest

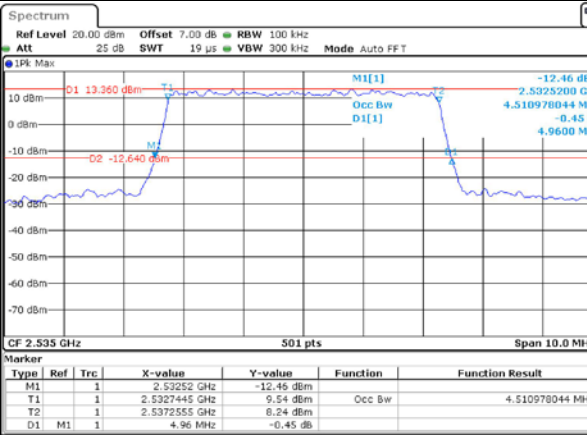


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:32:01

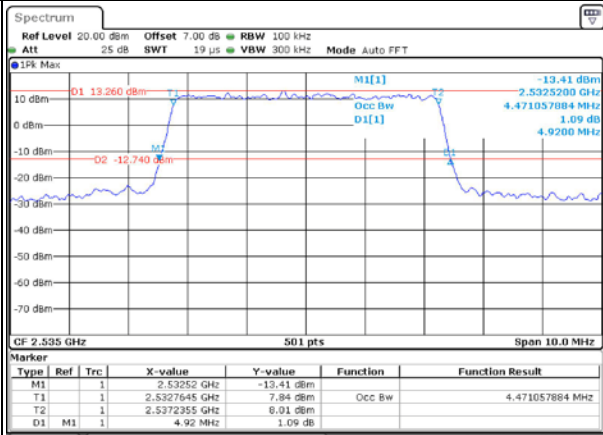


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:32:22

Middle

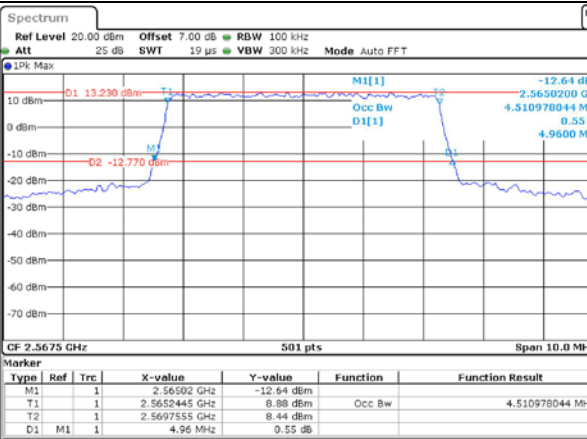


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:32:58

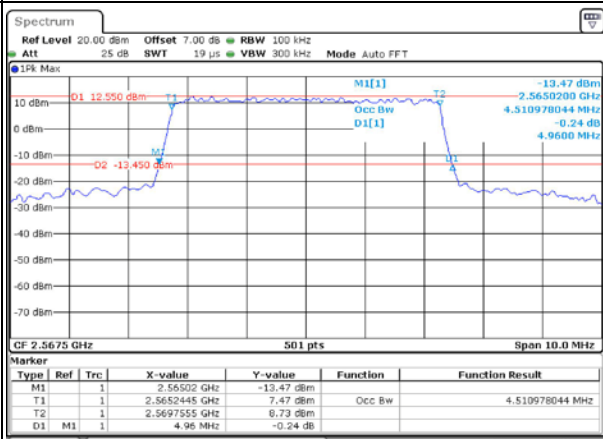


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:32:58

Highest



ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:33:20



ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:33:41

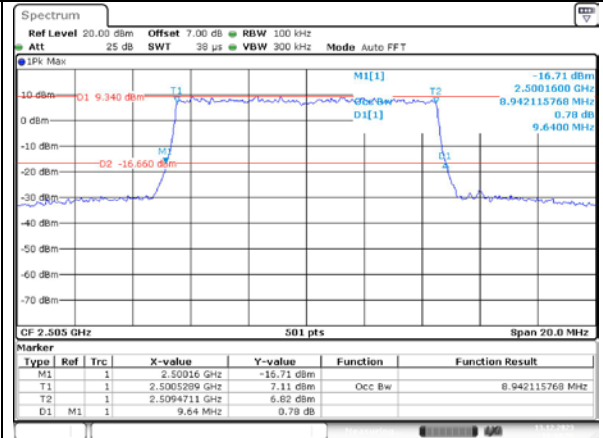
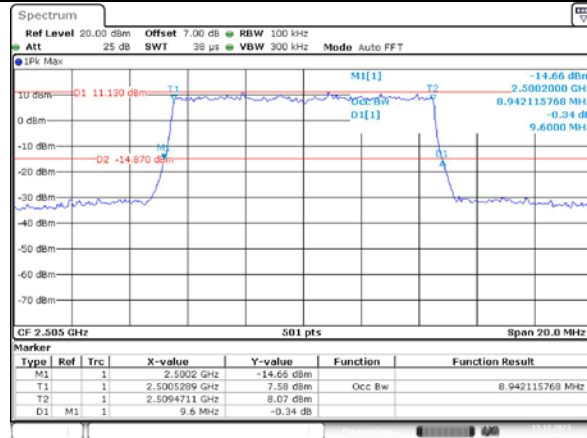
Occupied Bandwidth

Channel

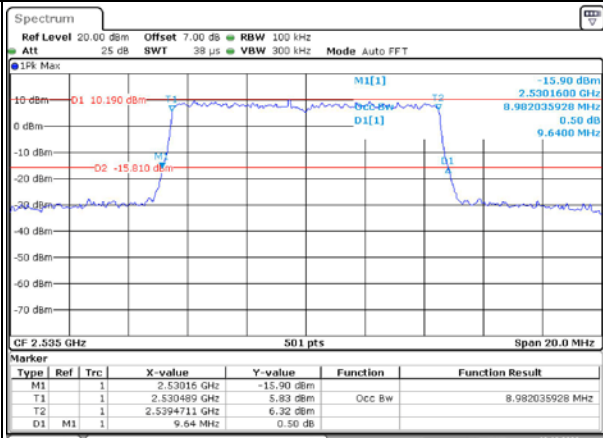
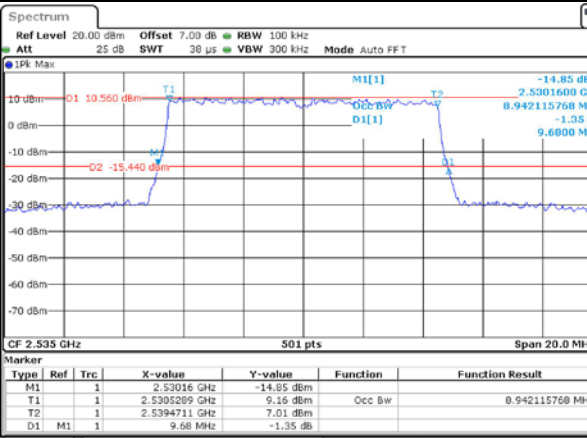
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

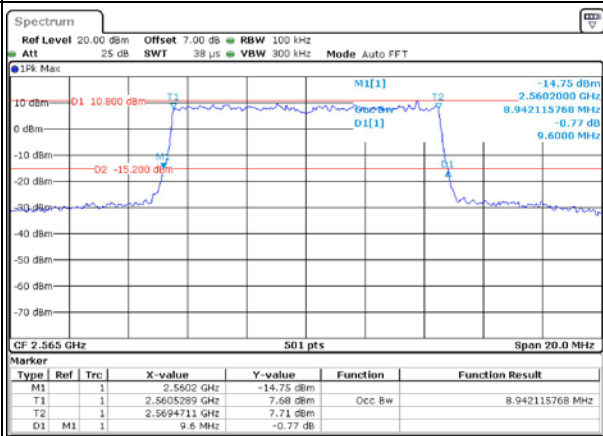
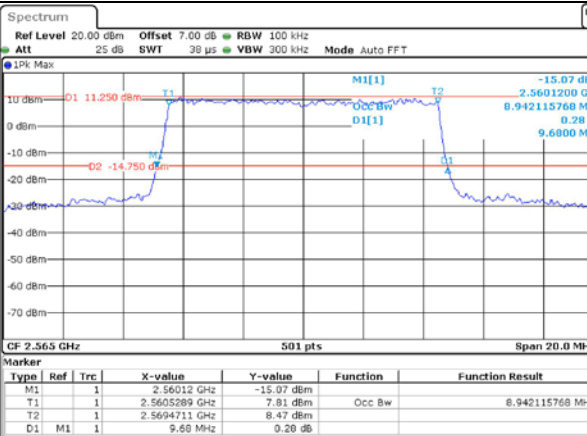
Lowest



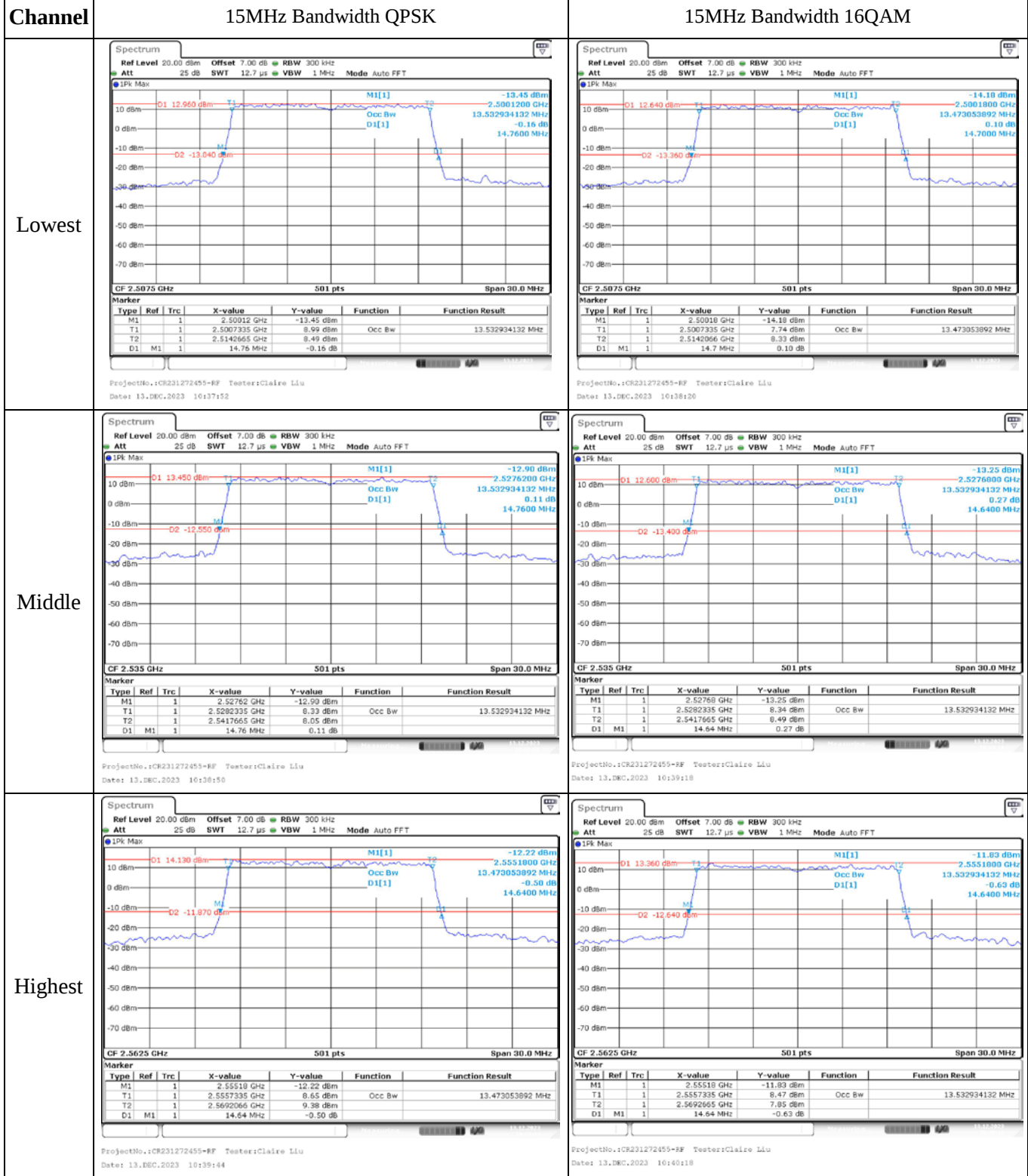
Middle



Highest



Occupied Bandwidth



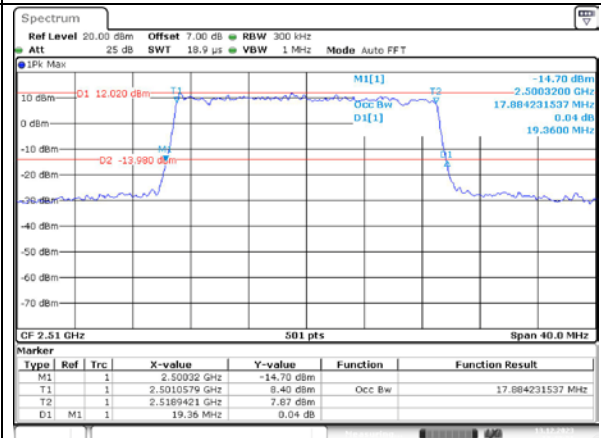
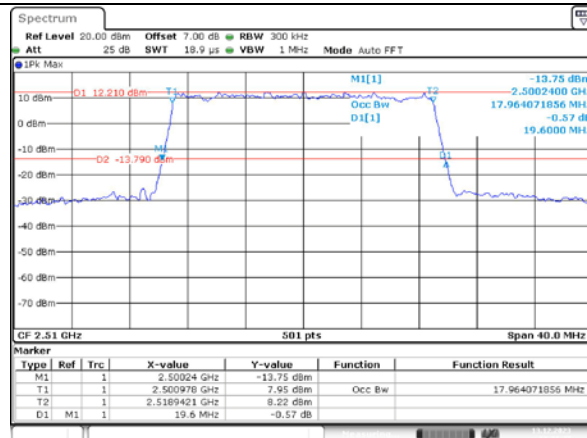
Occupied Bandwidth

Channel

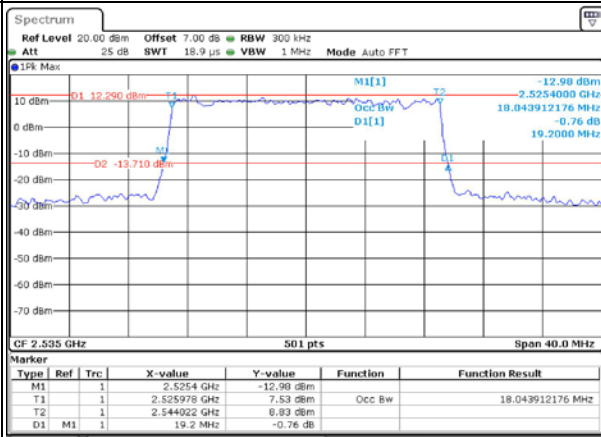
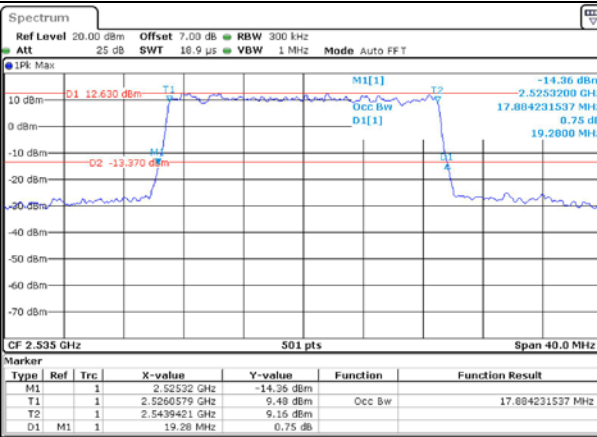
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

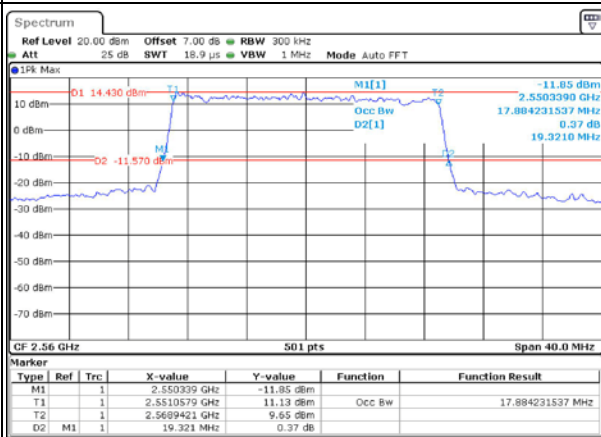
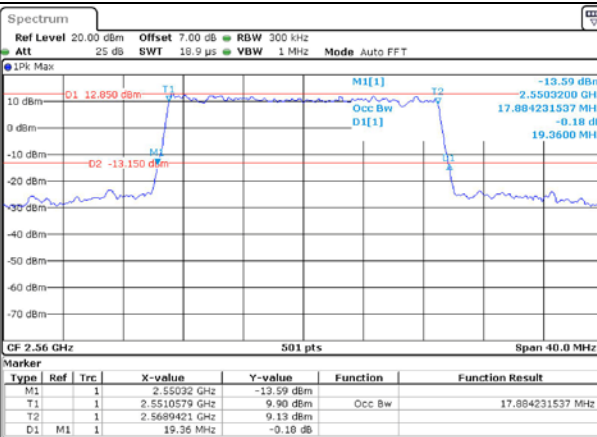
Lowest



Middle



Highest

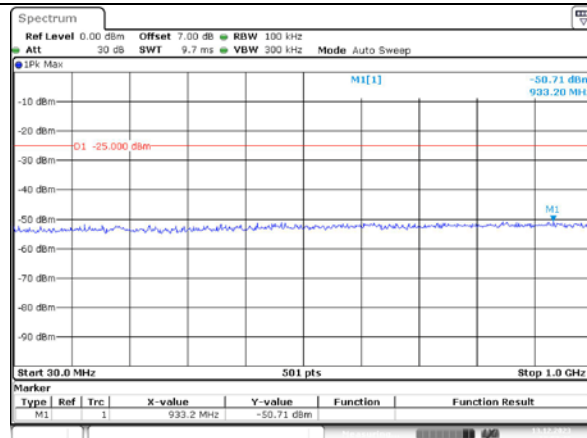


Spurious Emissions at Antenna Terminal

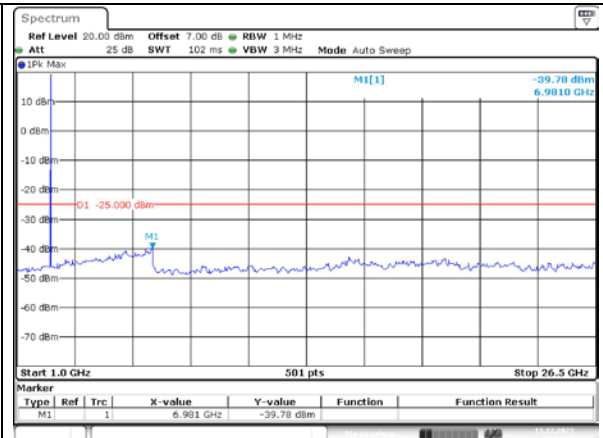
Channel

5MHz Bandwidth QPSK

Lowest

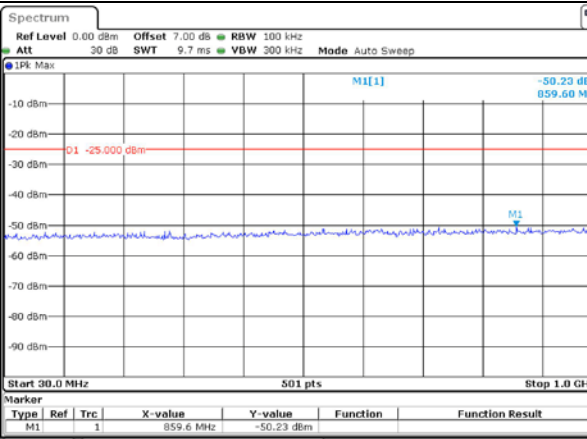


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 12:53:19

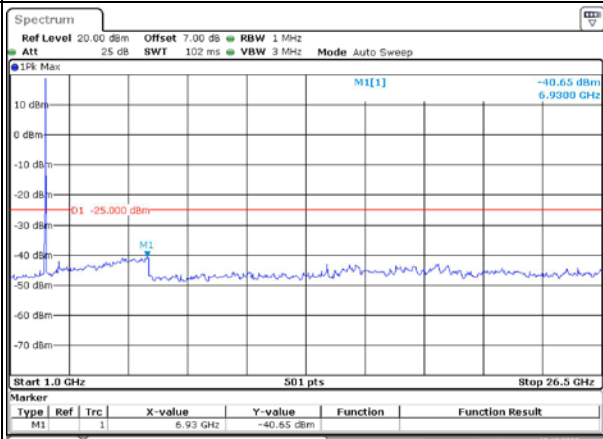


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 12:54:17

Middle

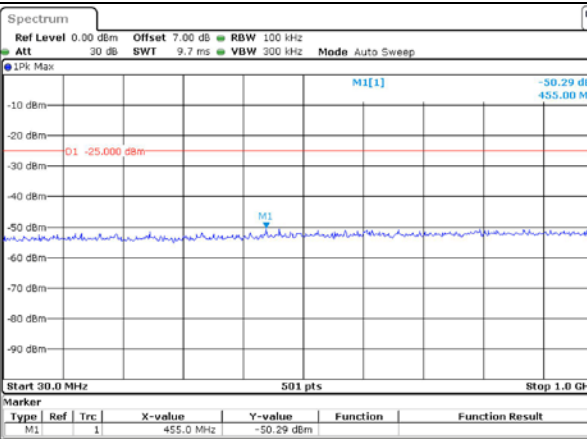


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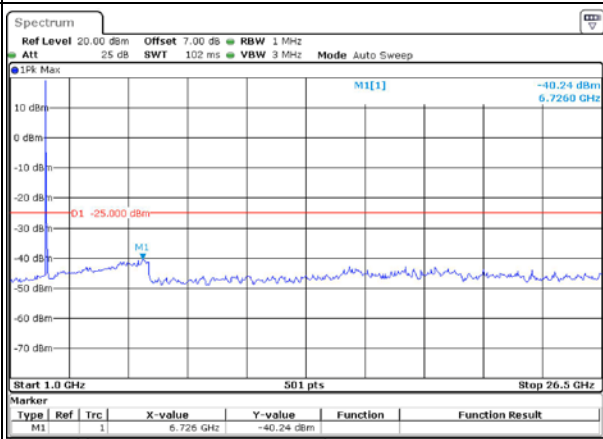


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 12:55:06

Highest



ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 12:55:32



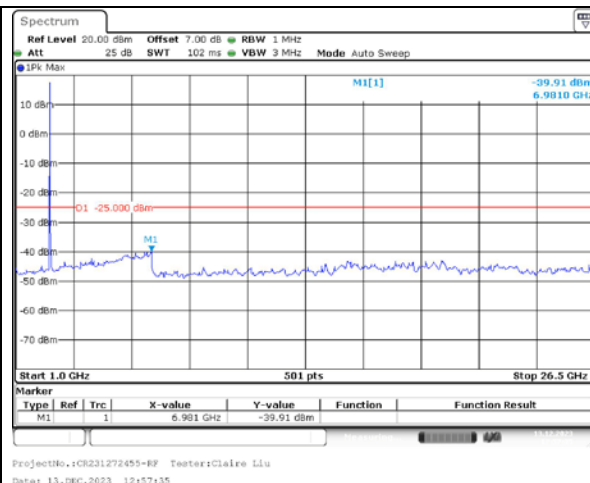
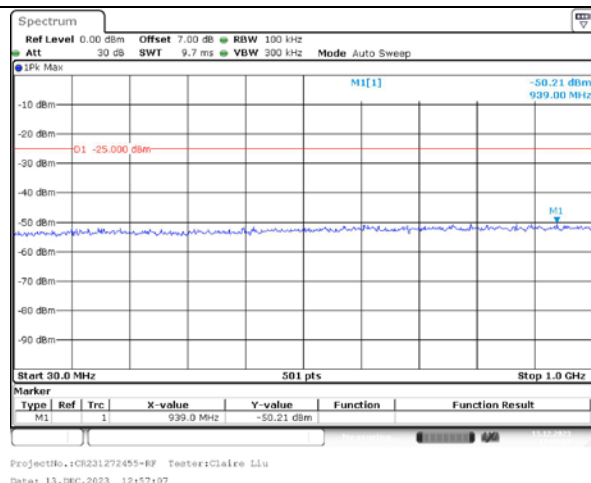
ProjectNo.:CR231272455-RF Testers:Claire Liu
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Spurious Emissions at Antenna Terminal

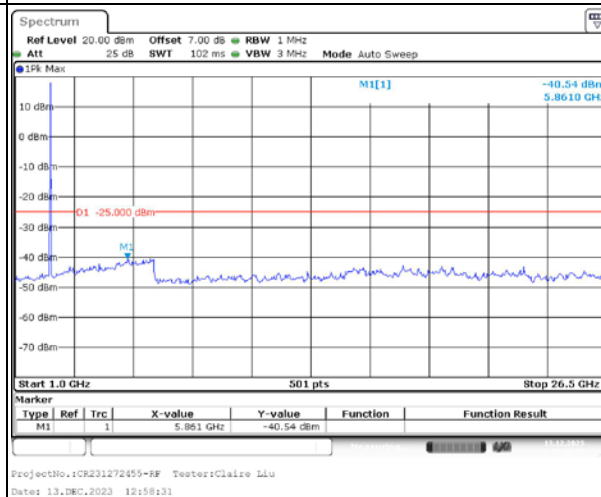
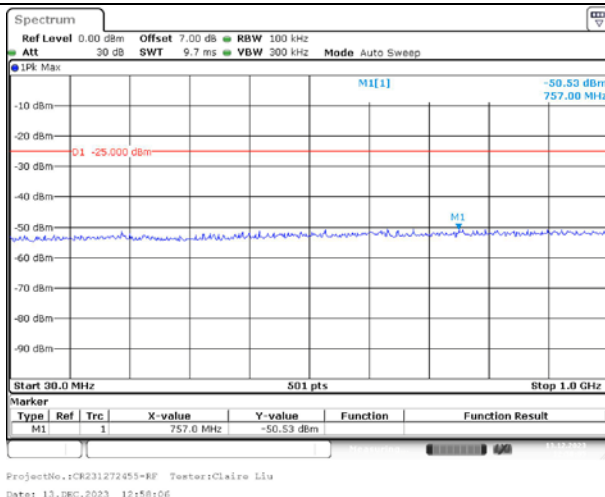
Channel

10MHz Bandwidth QPSK

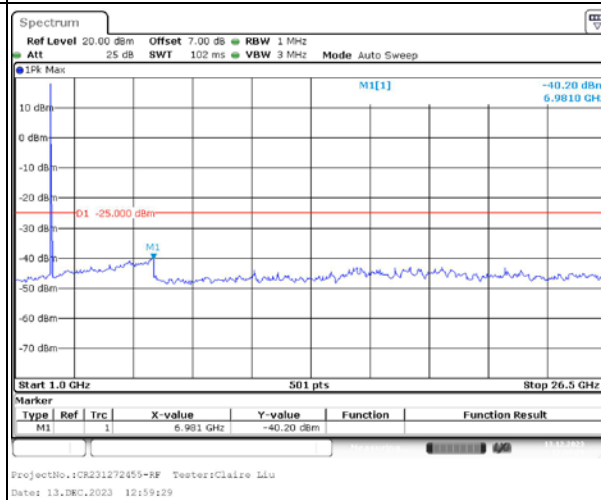
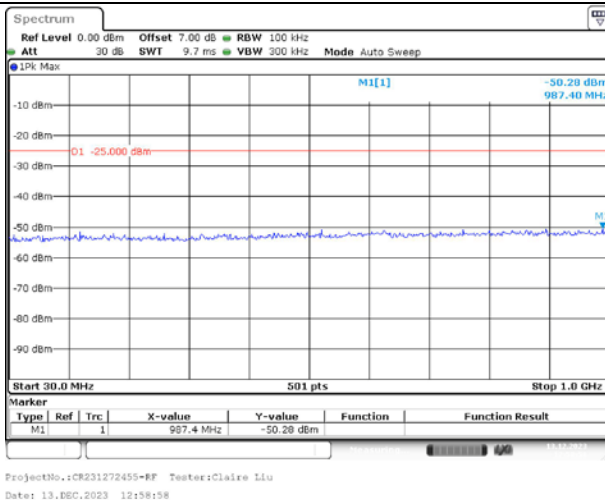
Lowest



Middle



Highest

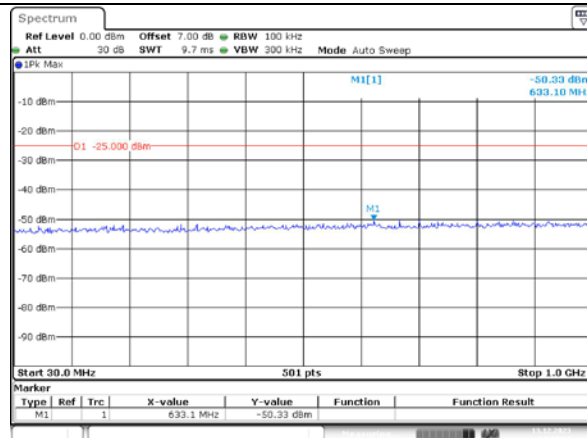


Spurious Emissions at Antenna Terminal

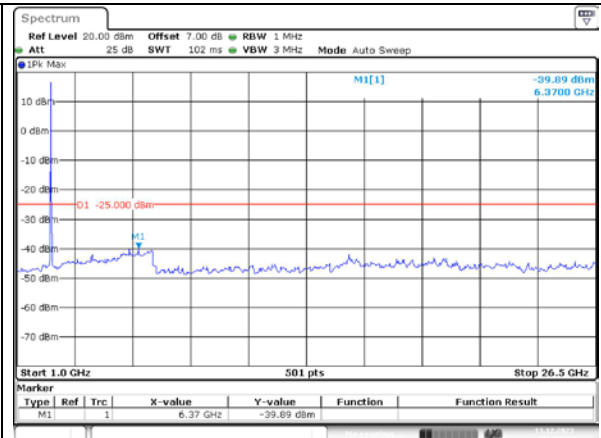
Channel

15MHz Bandwidth QPSK

Lowest

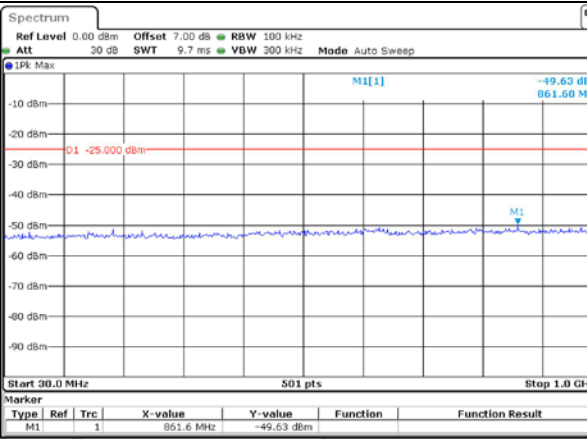


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:00:25

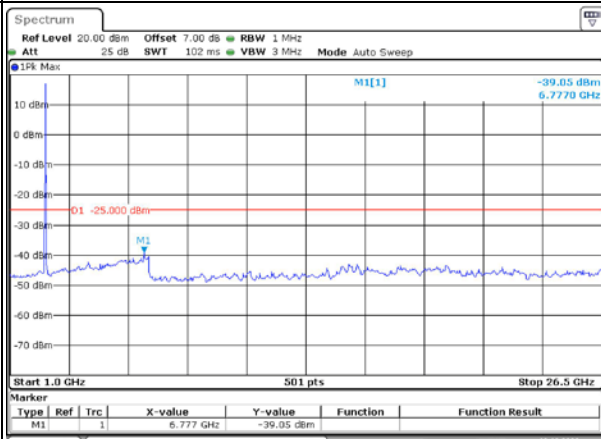


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:00:50

Middle

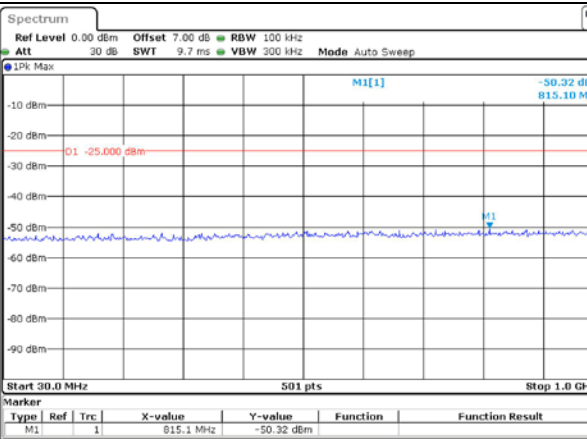


ProjectNo.:CR231272455-RF Testers:Claire Liu
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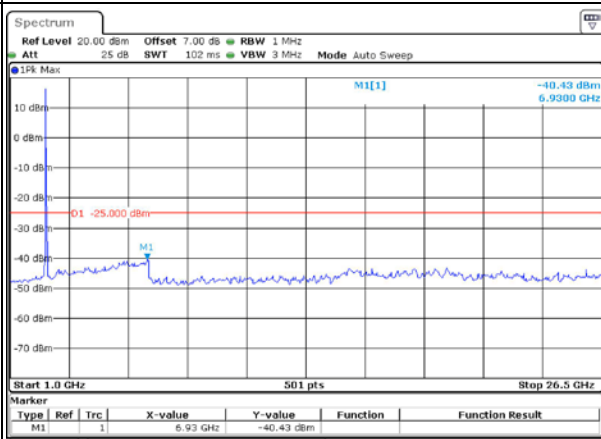


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:01:44

Highest



ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:02:13



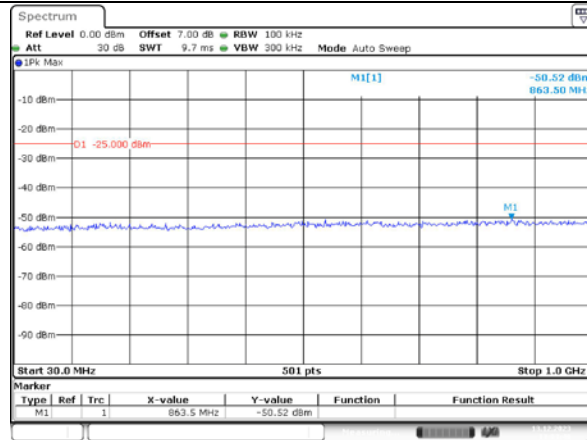
ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:02:32

Spurious Emissions at Antenna Terminal

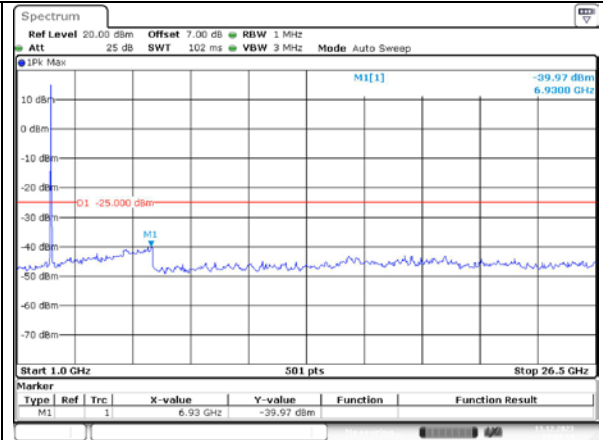
Channel

20MHz Bandwidth QPSK

Lowest

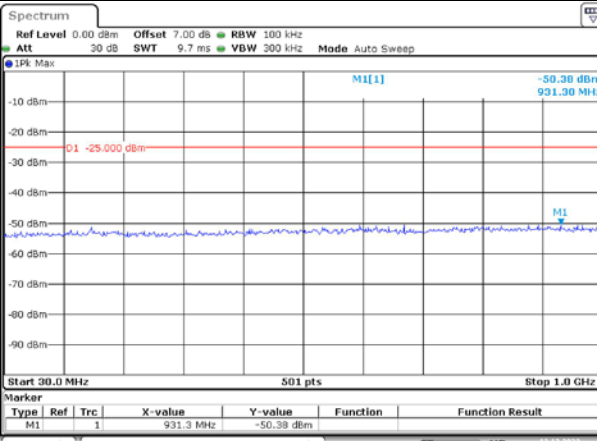


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:03:19

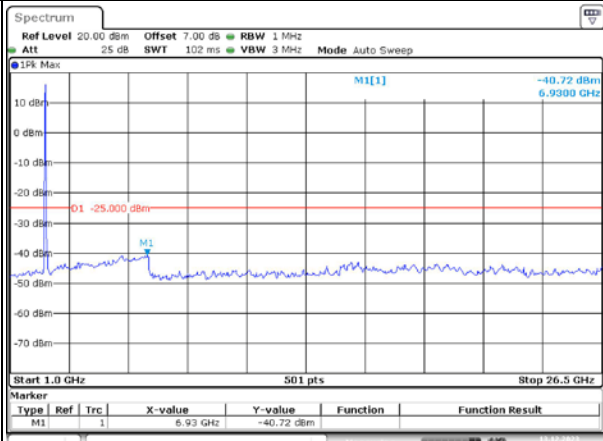


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:04:14

Middle

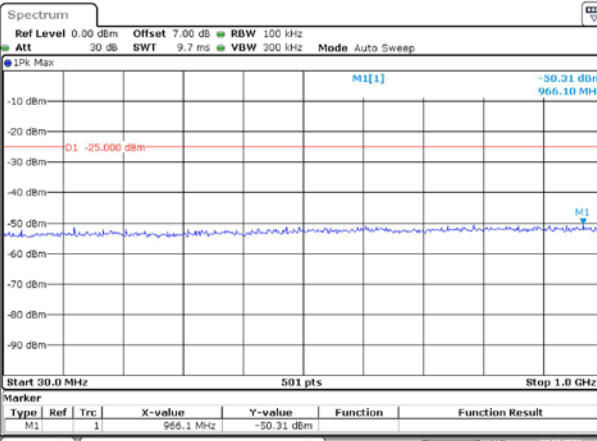


ProjectNo.:CR231272455-RF Testers:Claire Liu
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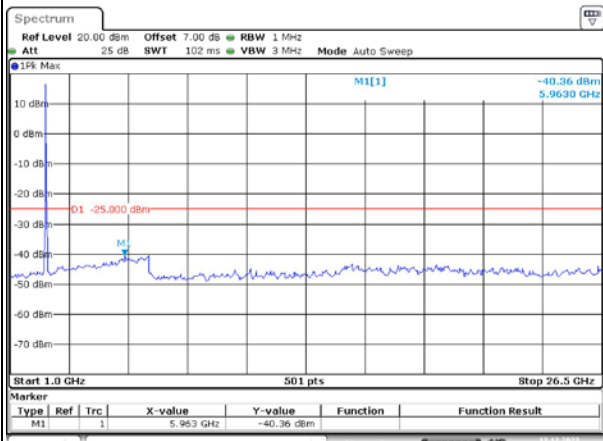


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:05:12

Highest



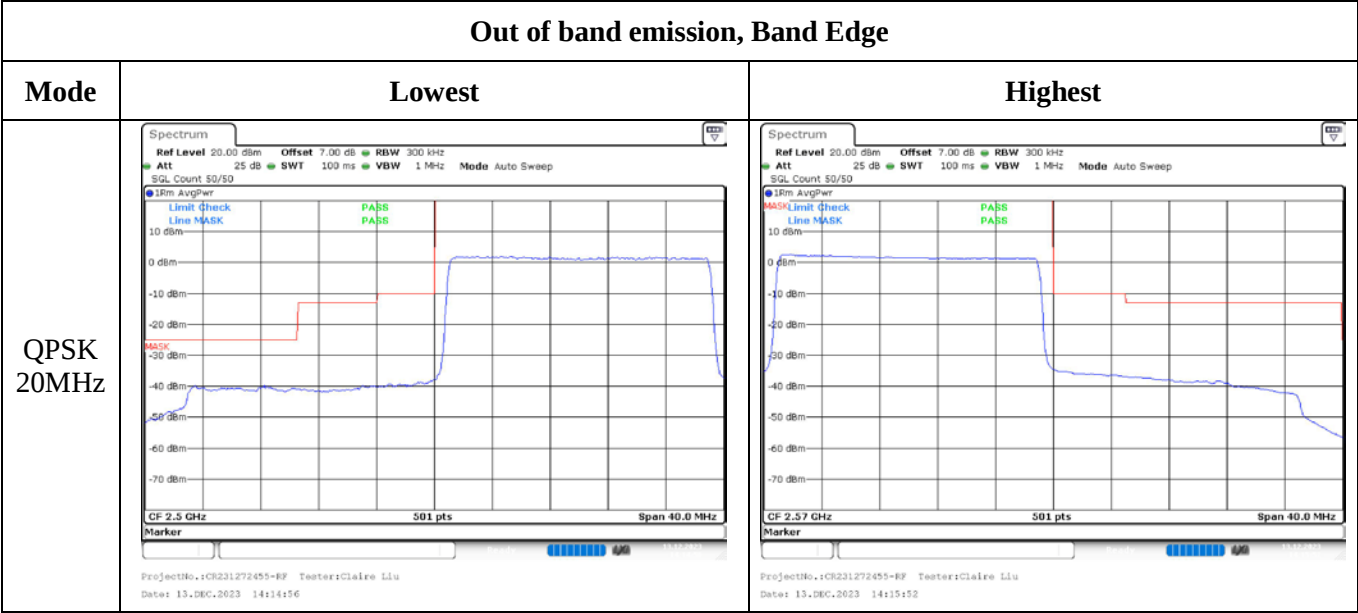
ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 13:05:44



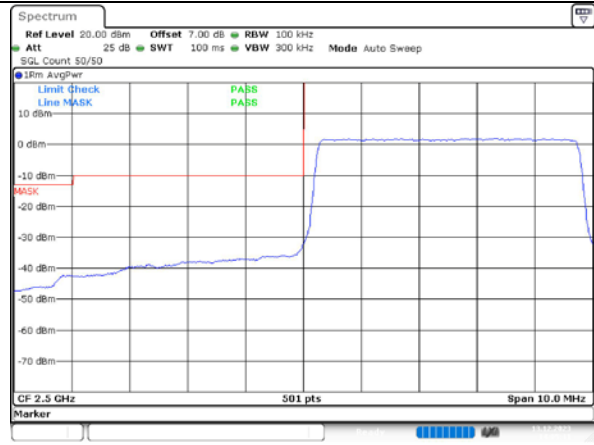
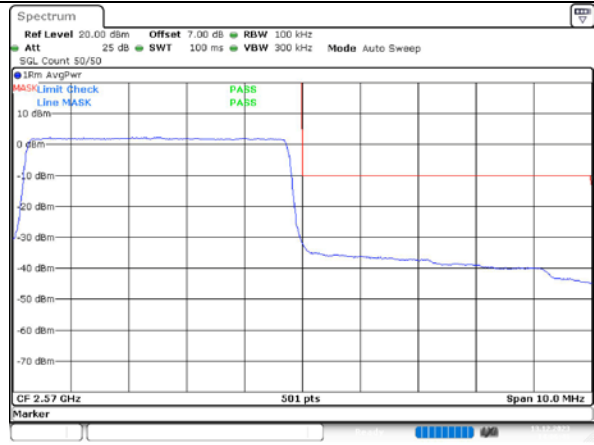
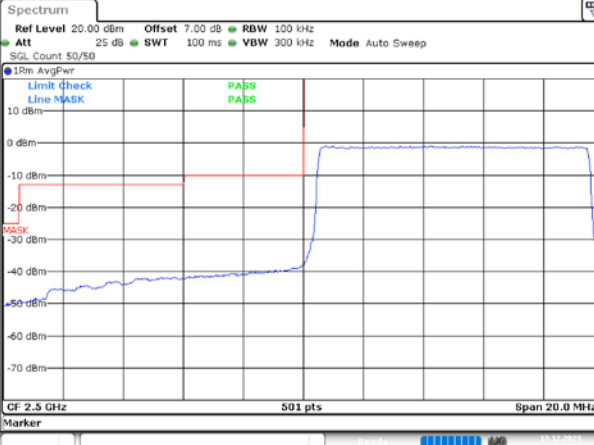
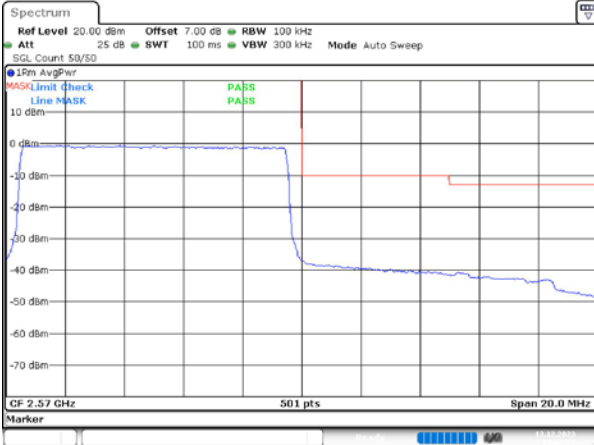
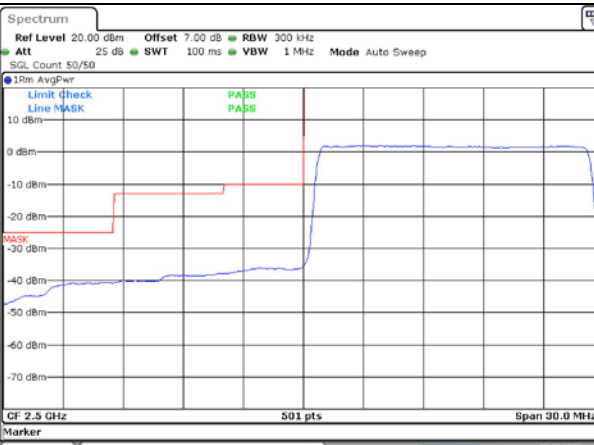
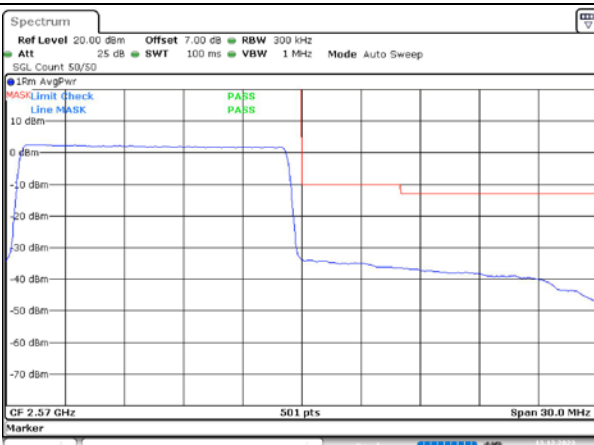
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Date: 13.DEC.2023 13:06:10

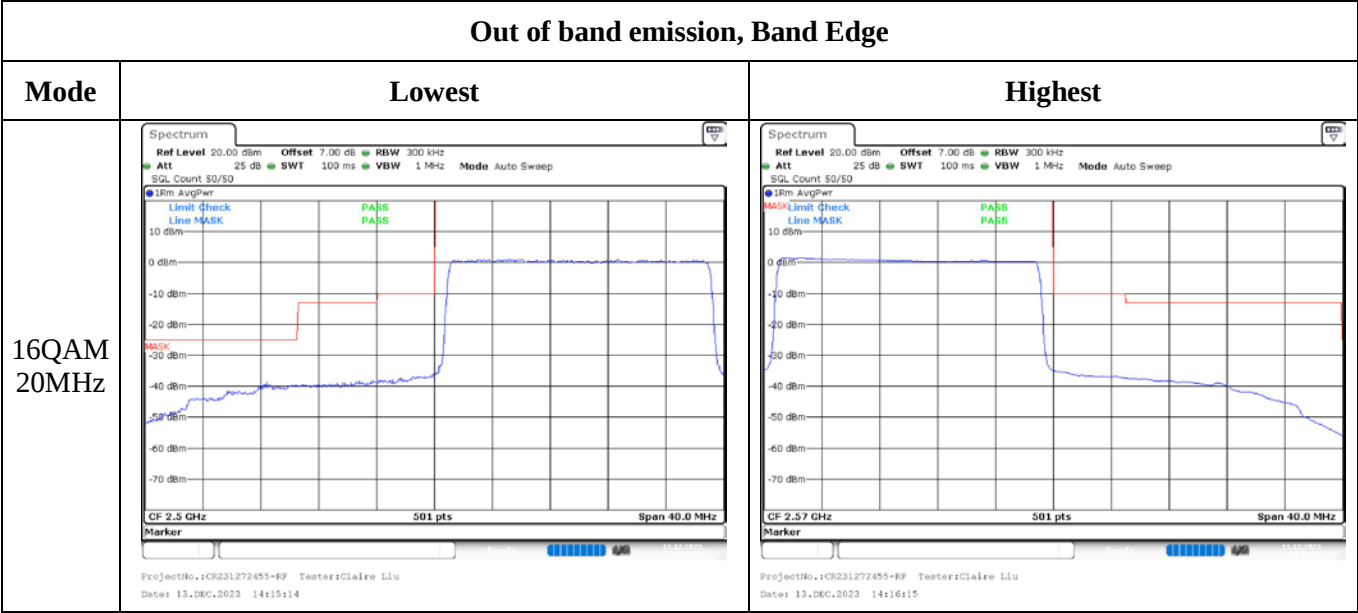
Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 5MHz	ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:04:37	ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:06:26
QPSK 10MHz	ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:08:05	ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:09:09
QPSK 15MHz	ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:11:48	ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:13:30



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 5MHz	 Spectrum Ref Level 20.00 dBm Offset 7.00 dB RBW 100 kHz Att 25 dB SWT 100 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 10m AvgPer Limit check Line MASK PASS PASS CF 2.5 GHz 501 pts Span 10.0 MHz Marker ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:05:11	 Spectrum Ref Level 20.00 dBm Offset 7.00 dB RBW 100 kHz Att 25 dB SWT 100 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 10m AvgPer Limit check Line MASK PASS PASS CF 2.57 GHz 501 pts Span 10.0 MHz Marker ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:06:43
16QAM 10MHz	 Spectrum Ref Level 20.00 dBm Offset 7.00 dB RBW 100 kHz Att 25 dB SWT 100 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 10m AvgPer Limit check Line MASK PASS PASS CF 2.5 GHz 501 pts Span 20.0 MHz Marker ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:08:25	 Spectrum Ref Level 20.00 dBm Offset 7.00 dB RBW 100 kHz Att 25 dB SWT 100 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 10m AvgPer Limit check Line MASK PASS PASS CF 2.57 GHz 501 pts Span 20.0 MHz Marker ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:09:24
16QAM 15MHz	 Spectrum Ref Level 20.00 dBm Offset 7.00 dB RBW 300 kHz Att 25 dB SWT 100 ms VBW 1 MHz Mode Auto Sweep SQL Count 50/50 10m AvgPer Limit check Line MASK PASS PASS CF 2.5 GHz 501 pts Span 30.0 MHz Marker ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:12:48	 Spectrum Ref Level 20.00 dBm Offset 7.00 dB RBW 300 kHz Att 25 dB SWT 100 ms VBW 1 MHz Mode Auto Sweep SQL Count 50/50 10m AvgPer Limit check Line MASK PASS PASS CF 2.57 GHz 501 pts Span 30.0 MHz Marker ProjectNo.:CR231272455-RF Testers:Claire Liu Date: 13.DEC.2023 14:13:49



4.9 Antenna Port Test Data and Results for LTE Band 66

Serial Number:	2EOC-1	Test Date:	2023/12/13~2023/12/19
Test Site:	RF	Test Mode:	Transmitting
Tester:	Claire Liu	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18-22	Relative Humidity: (%)	36-54	ATM Pressure: (kPa)	101.5
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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	2023/11/16	2024/11/15
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2023/3/31	2024/3/30
BACL	EMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	N/A	N/A
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	1710.7	1745	1779.3
3MHz	1711.5	1745	1778.5
5MHz	1712.5	1745	1777.5
10MHz	1715	1745	1775
15MHz	1717.5	1745	1772.5
20MHz	1720	1745	1770

Test Data:**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	21.47	20.51	20.26	21.62	30
	RB1#3	21.57	20.65	20.46		
	RB1#5	21.44	20.47	20.29		
	RB3#0	21.49	20.63	20.35		
	RB3#3	21.54	20.53	20.35		
	RB6#0	20.51	19.53	19.35		
1.4MHz 16QAM	RB1#0	20.41	19.45	19.39	20.65	30
	RB1#3	20.6	19.7	19.55		
	RB1#5	20.42	19.46	19.4		
	RB3#0	20.58	19.77	19.31		
	RB3#3	20.53	19.69	19.34		
	RB6#0	19.42	18.56	18.38		
3MHz QPSK	RB1#0	21.64	20.65	20.43	21.69	30
	RB1#8	21.56	20.58	20.45		
	RB1#14	21.56	20.61	20.39		
	RB6#0	20.53	19.66	19.4		
	RB6#9	20.53	19.65	19.4		
	RB15#0	20.55	19.68	19.45		
3MHz 16QAM	RB1#0	20.62	20.22	19.59	20.67	30
	RB1#8	20.55	20.14	19.56		
	RB1#14	20.49	20.19	19.53		
	RB6#0	19.49	18.69	18.43		
	RB6#9	19.45	18.7	18.44		
	RB15#0	19.62	18.68	18.38		
5MHz QPSK	RB1#0	21.46	20.58	20.26	21.53	30
	RB1#13	21.48	20.6	20.39		
	RB1#24	21.33	20.46	20.3		
	RB15#0	20.44	19.57	19.41		
	RB15#10	20.5	19.6	19.32		
	RB25#0	20.44	19.56	19.36		
5MHz 16QAM	RB1#0	20.49	19.4	19.55	20.59	30
	RB1#13	20.54	19.49	19.7		
	RB1#24	20.39	19.39	19.57		
	RB15#0	19.46	18.64	18.38		
	RB15#10	19.5	18.63	18.29		
	RB25#0	19.49	18.65	18.33		
10MHz QPSK	RB1#0	21.48	20.61	20.32	21.67	30
	RB1#25	21.62	20.76	20.58		
	RB1#49	21.27	20.48	20.36		
	RB25#0	20.41	19.65	19.45		

	RB25#25	20.42	19.67	19.42		
	RB50#0	20.42	19.7	19.44		
10MHz 16QAM	RB1#0	20.45	20.17	19.42	20.66	30
	RB1#25	20.61	20.3	19.66		
	RB1#49	20.23	20.04	19.44		
	RB25#0	19.49	18.74	18.5		
	RB25#25	19.53	18.71	18.41		
	RB50#0	19.48	18.71	18.42		
15MHz QPSK	RB1#0	20.81	20.06	19.7	20.97	30
	RB1#38	20.92	20.09	19.85		
	RB1#74	20.56	19.85	19.64		
	RB36#0	19.97	19.21	18.9		
	RB36#39	19.88	19.1	18.84		
	RB75#0	19.89	19.18	18.88		
15MHz 16QAM	RB1#0	20.27	19.64	18.8	20.32	30
	RB1#38	20.26	19.66	19.01		
	RB1#74	19.93	19.39	18.78		
	RB36#0	18.89	18.18	17.9		
	RB36#39	18.8	18.1	17.85		
	RB75#0	18.85	18.19	17.88		
20MHz QPSK	RB1#0	20.72	20.01	19.53	20.99	30
	RB1#50	20.94	20.25	19.98		
	RB1#99	20.26	19.74	19.56		
	RB50#0	19.8	19.24	18.85		
	RB50#50	19.75	19.14	18.77		
	RB100#0	19.73	19.22	18.87		
20MHz 16QAM	RB1#0	20.26	19.34	18.71	20.48	30
	RB1#50	20.43	19.54	19.14		
	RB1#99	19.84	18.99	18.73		
	RB50#0	18.77	18.27	17.82		
	RB50#50	18.75	18.14	17.78		
	RB100#0	18.83	18.23	17.82		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + G_T(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	4.87	5.07	4.23	13
	RB100#0	4.23	3.91	4	13
20MHz 16QAM	RB1#0	5.71	6.14	4.93	13
	RB100#0	5.83	5.54	5.68	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	1.096	1.102	1.326	1.308	1.326
1.4MHz 16QAM	1.102	1.096	1.102	1.326	1.32	1.32
3MHz QPSK	2.683	2.683	2.695	2.904	2.88	2.88
3MHz 16QAM	2.683	2.683	2.683	2.904	2.88	2.868
5MHz QPSK	4.511	4.551	4.511	5.2	5.28	5.2
5MHz 16QAM	4.551	4.511	4.551	5.24	5.18	5.2
10MHz QPSK	8.942	8.982	8.942	9.96	9.96	9.92
10MHz 16QAM	8.982	8.942	8.942	9.92	9.76	9.88
15MHz QPSK	13.533	13.533	13.533	15.18	15.18	15.18
15MHz 16QAM	13.533	13.533	13.533	15.24	15.06	15.12
20MHz QPSK	18.044	18.044	18.044	19.88	19.52	19.76
20MHz 16QAM	18.044	17.964	17.964	19.68	19.68	19.6

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

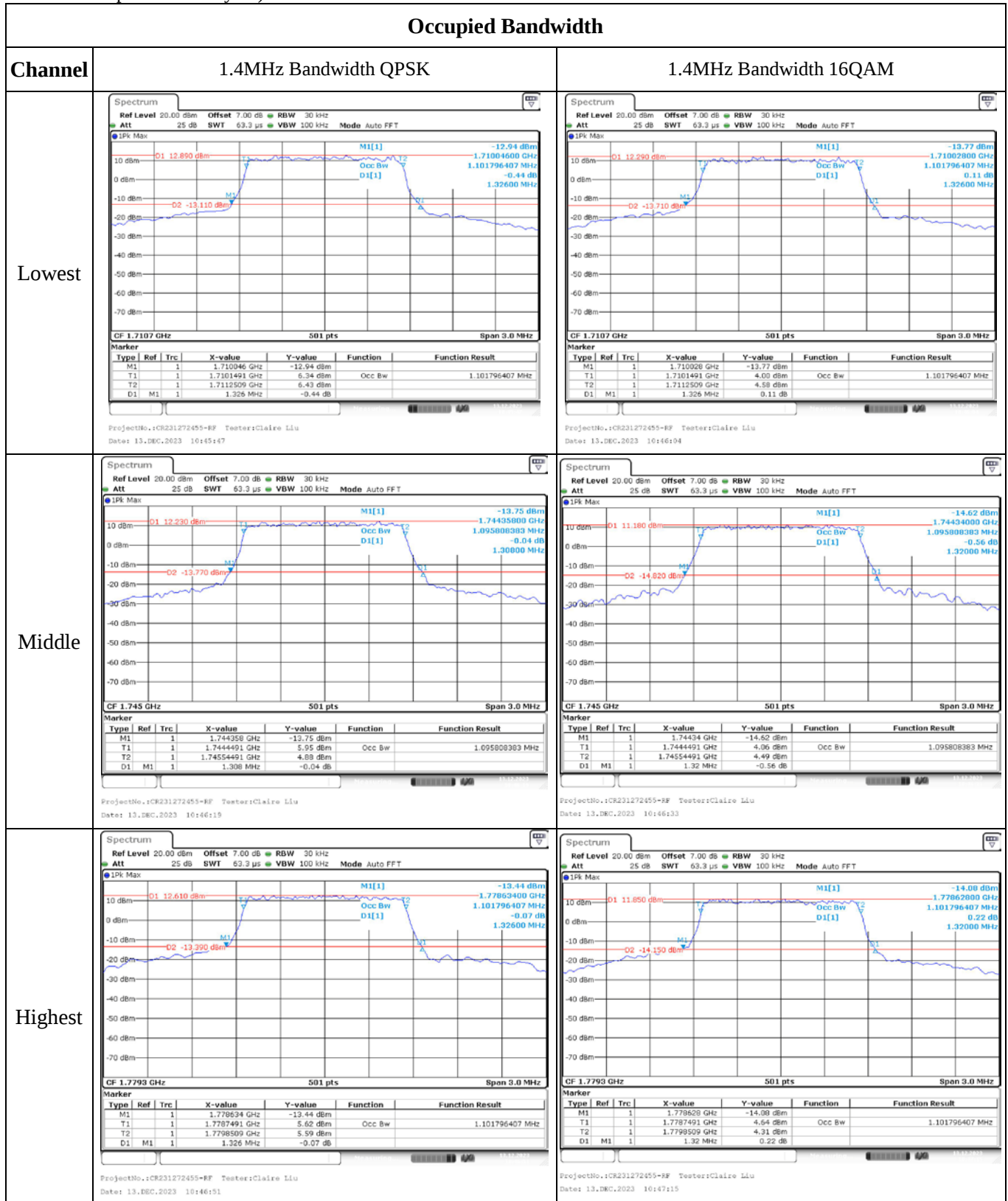
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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Frequency Stability

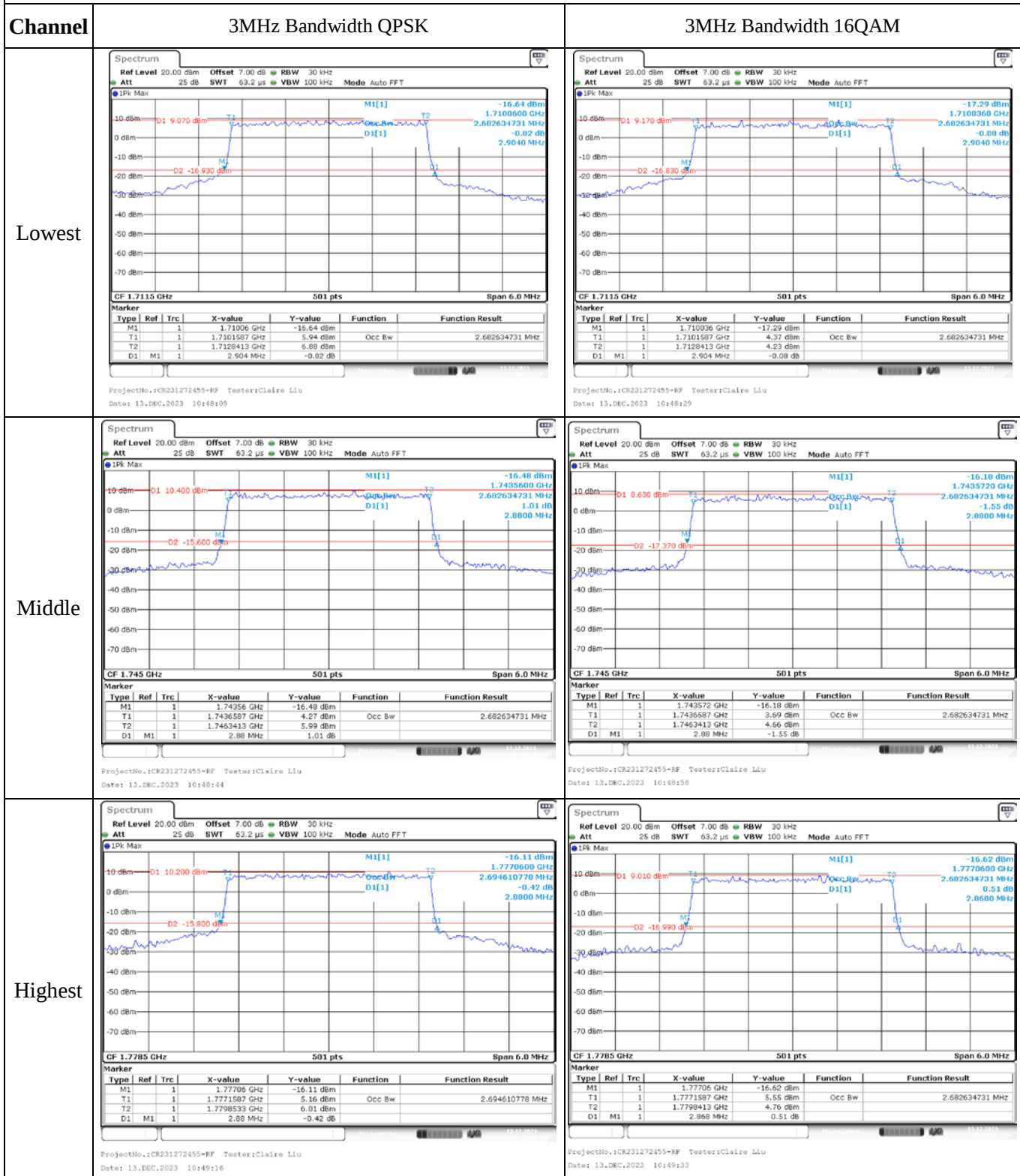
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.87	1710.076	1710.00	1779.977	1780
	-20	3.87	1710.009	1710.00	1779.911	1780
	-10	3.87	1710.014	1710.00	1779.986	1780
	0	3.87	1710.023	1710.00	1779.831	1780
	10	3.87	1710.102	1710.00	1779.883	1780
	20	3.87	1710.100	1710.00	1779.920	1780
	30	3.87	1710.080	1710.00	1779.912	1780
	40	3.87	1710.097	1710.00	1779.847	1780
	50	3.87	1710.024	1710.00	1779.883	1780
Frequency Stability vs. Voltage	20	3.4	1710.147	1710.00	1779.941	1780
	20	4.4	1710.006	1710.00	1779.820	1780
					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	3.87	1710.222	1710.00	1779.803	1780
	-20	3.87	1710.201	1710.00	1779.678	1780
	-10	3.87	1710.114	1710.00	1779.796	1780
	0	3.87	1710.222	1710.00	1779.828	1780
	10	3.87	1710.245	1710.00	1779.786	1780
	20	3.87	1710.160	1710.00	1779.760	1780
	30	3.87	1710.154	1710.00	1779.668	1780
	40	3.87	1710.065	1710.00	1779.685	1780
	50	3.87	1710.074	1710.00	1779.833	1780
Frequency Stability vs. Voltage	20	3.4	1710.197	1710.00	1779.671	1780
	20	4.4	1710.105	1710.00	1779.807	1780
					Result:	Pass

Test Plots(Note: The 7.0dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):



Occupied Bandwidth



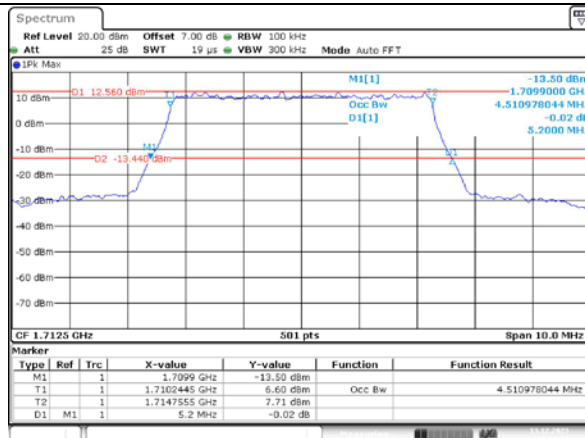
Occupied Bandwidth

Channel

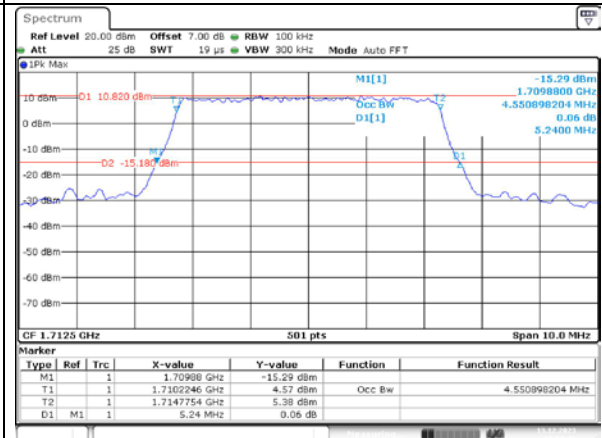
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

Lowest

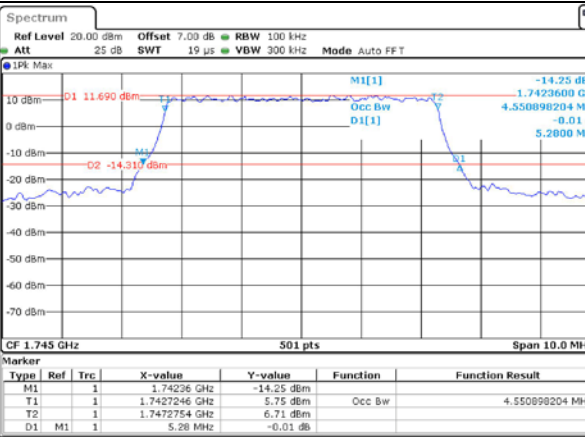


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:50:21

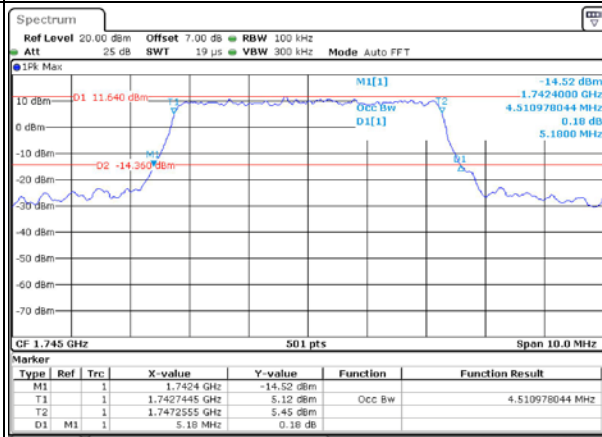


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:50:42

Middle

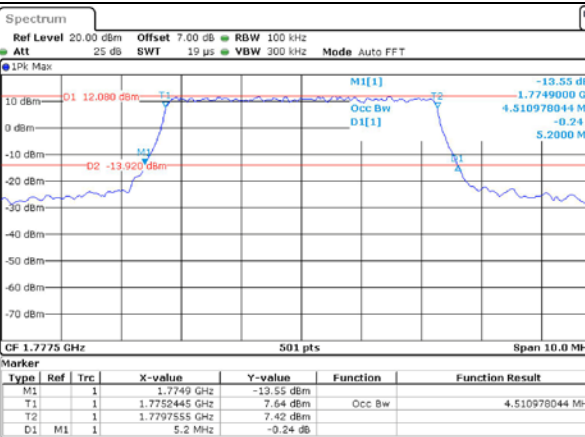


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:51:00

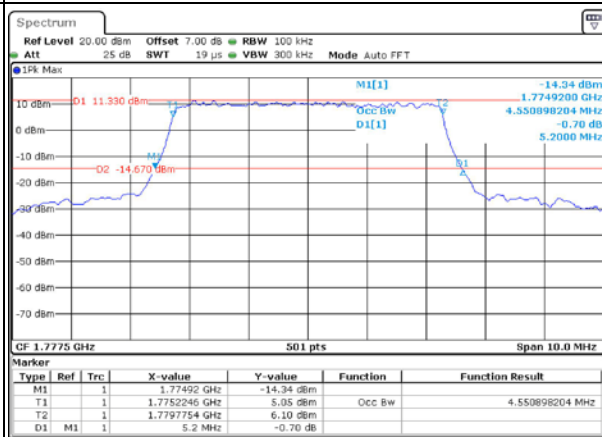


ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:51:18

Highest



ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:51:40



ProjectNo.:CR231272455-RF Testers:Claire Liu
Date: 13.DEC.2023 10:52:01

Occupied Bandwidth

