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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	6.03	6.00	5.74	13
	RB100#0	5.51	5.62	5.42	13
20MHz 16QAM	RB1#0	6.67	7.10	6.12	13
	RB100#0	6.38	6.41	6.32	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	1.102	1.096	1.102	1.296	1.290	1.314
1.4MHz 16QAM	1.078	1.096	1.09	1.224	1.320	1.29
3MHz QPSK	2.683	2.683	2.683	2.880	2.892	2.880
3MHz 16QAM	2.683	2.683	2.683	2.880	2.868	2.892
5MHz QPSK	4.491	4.511	4.491	4.940	4.940	4.980
5MHz 16QAM	4.511	4.491	4.511	5.000	4.940	4.940
10MHz QPSK	8.942	8.982	8.942	9.680	9.720	9.560
10MHz 16QAM	8.942	8.942	8.982	9.640	9.600	9.600
15MHz QPSK	13.473	13.473	13.473	14.640	14.820	14.580
15MHz 16QAM	13.473	13.533	13.473	14.580	14.580	14.460
20MHz QPSK	17.884	17.964	17.884	19.520	19.280	19.280
20MHz 16QAM	17.964	17.964	17.964	19.280	19.280	19.440

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

FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal

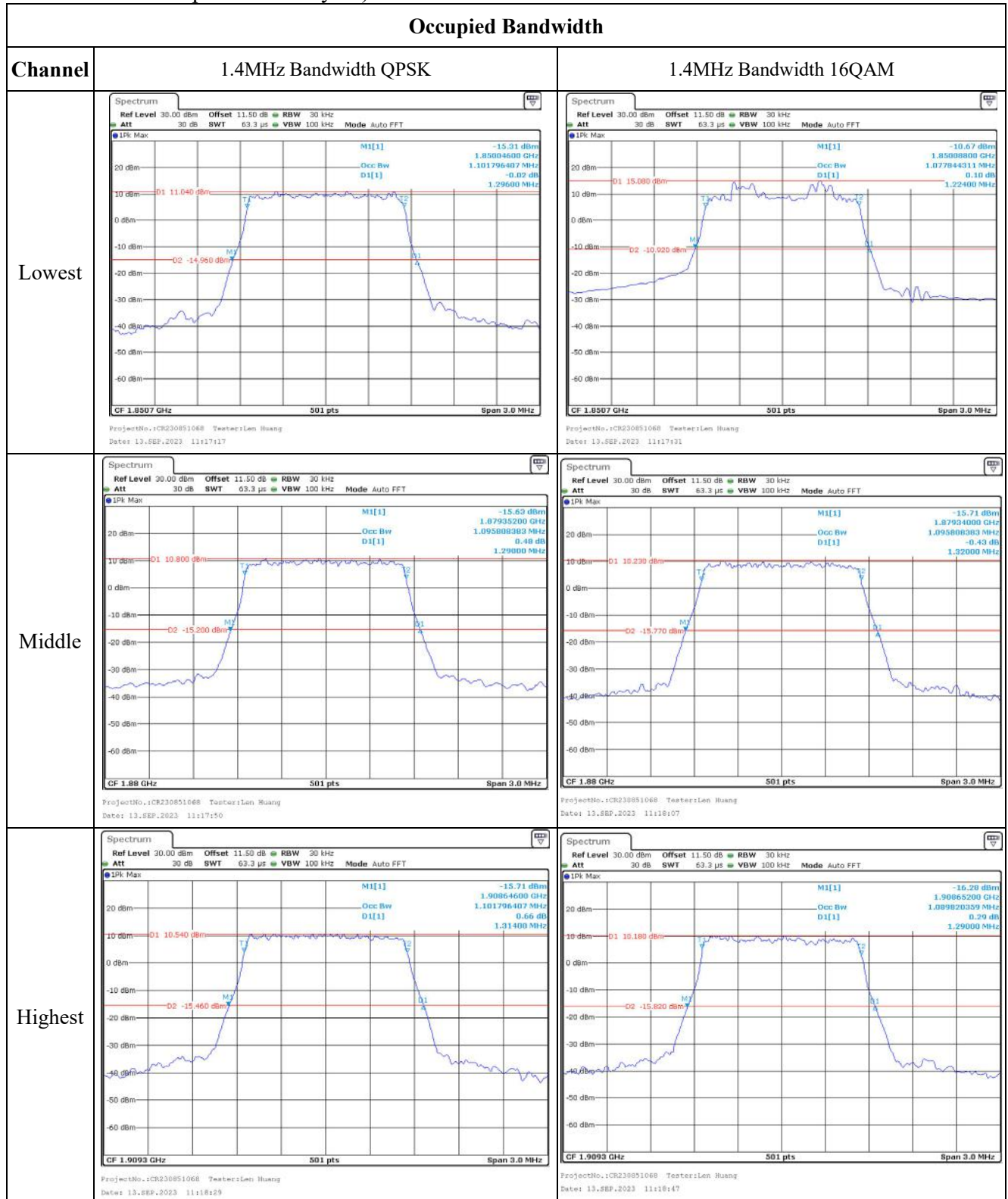
Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.
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FCC §2.1051, § 24.238 (a):Out of band emission, Band Edge

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:	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	1850.118	1850.000	1909.879	1910.000
	-20	3.87	1850.115	1850.000	1909.867	1910.000
	-10	3.87	1850.113	1850.000	1909.891	1910.000
	0	3.87	1850.116	1850.000	1909.859	1910.000
	10	3.87	1850.124	1850.000	1909.876	1910.000
	20	3.87	1850.114	1850.000	1909.848	1910.000
	30	3.87	1850.106	1850.000	1909.874	1910.000
	40	3.87	1850.114	1850.000	1909.860	1910.000
	50	3.87	1850.125	1850.000	1909.871	1910.000
Frequency Stability vs. Voltage	20	3.45	1850.131	1850.000	1909.843	1910.000
	20	4.45	1850.107	1850.000	1909.873	1910.000
					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	1850.104	1850.000	1909.871	1910.000
	-20	3.87	1850.124	1850.000	1909.874	1910.000
	-10	3.87	1850.107	1850.000	1909.868	1910.000
	0	3.87	1850.126	1850.000	1909.887	1910.000
	10	3.87	1850.111	1850.000	1909.879	1910.000
	20	3.87	1850.113	1850.000	1909.872	1910.000
	30	3.87	1850.115	1850.000	1909.886	1910.000
	40	3.87	1850.108	1850.000	1909.878	1910.000
	50	3.87	1850.113	1850.000	1909.871	1910.000
Frequency Stability vs. Voltage	20	3.45	1850.124	1850.000	1909.877	1910.000
	20	4.45	1850.088	1850.000	1909.867	1910.000
					Result:	Pass

Test Plots(Note: The 11.5 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	Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -19.35 dBm Occ Bw 1.8500600 GHz D1[1] 2.682634731 MHz -0.31 dB 2.8800 MHz CF 1.8515 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13,SEP,2023 11:19:49	Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -19.50 dBm Occ Bw 1.8500600 GHz D1[1] 2.682634731 MHz -0.16 dB 2.8800 MHz CF 1.8515 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13,SEP,2023 11:20:10
Middle	Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -19.30 dBm Occ Bw 1.0785480 GHz D1[1] 2.682634731 MHz 0.89 dB 2.8920 MHz CF 1.88 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13,SEP,2023 11:20:32	Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -17.92 dBm Occ Bw 1.8785600 GHz D1[1] 2.682634731 MHz 0.21 dB 2.8860 MHz CF 1.88 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13,SEP,2023 11:20:53
Highest	Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -17.24 dBm Occ Bw 1.9070600 GHz D1[1] 2.682634731 MHz -0.44 dB 2.8800 MHz CF 1.9085 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13,SEP,2023 11:21:18	Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -18.76 dBm Occ Bw 1.9070600 GHz D1[1] 2.682634731 MHz 0.20 dB 2.8920 MHz CF 1.9085 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13,SEP,2023 11:21:36

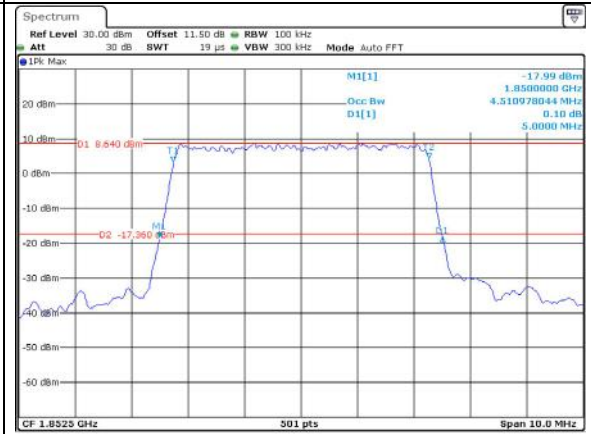
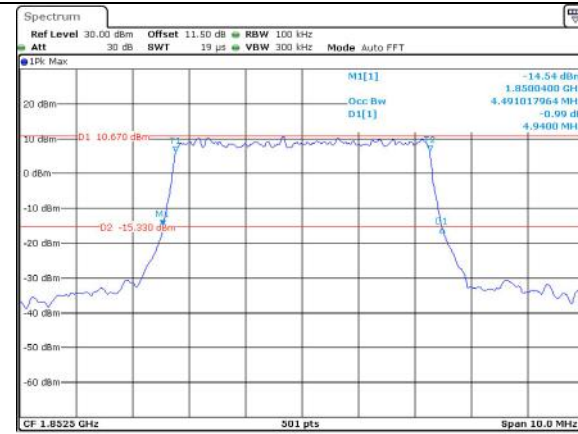
Occupied Bandwidth

Channel

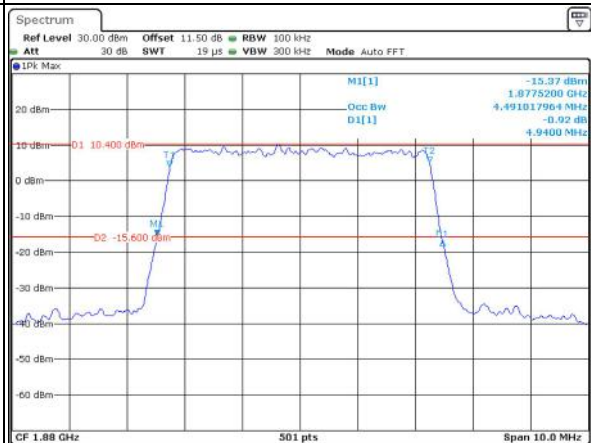
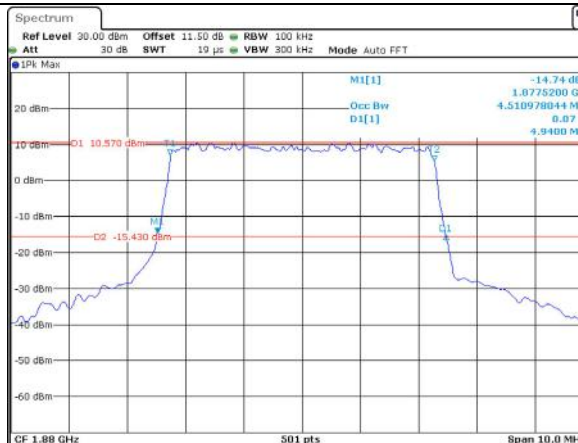
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

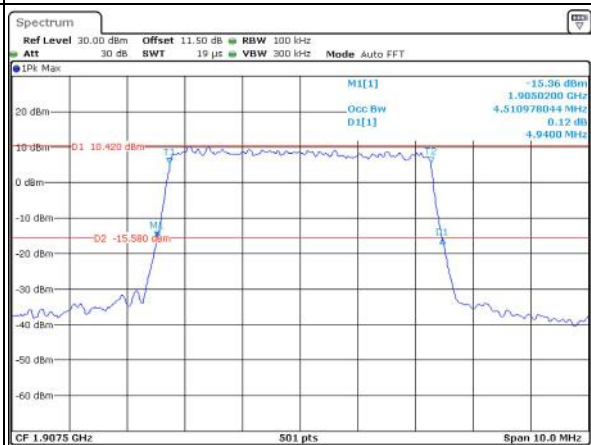
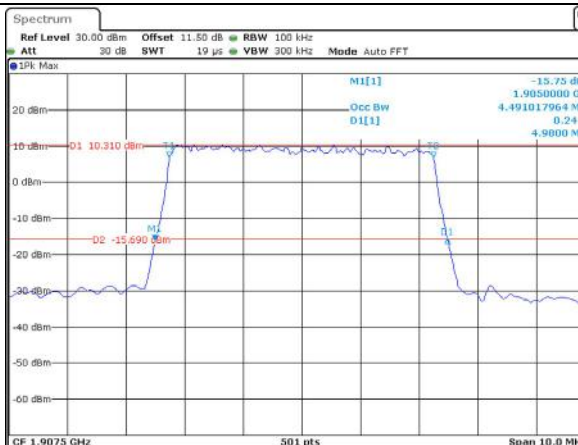
Lowest



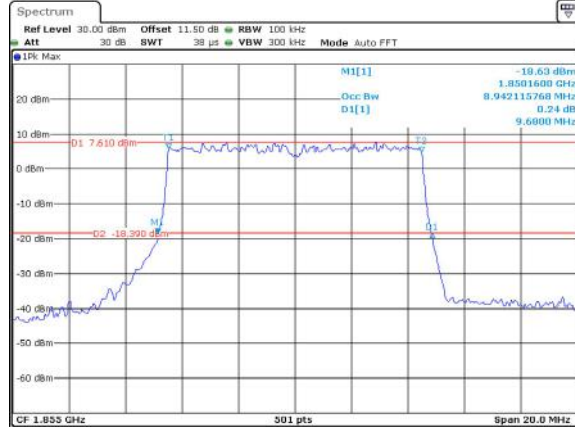
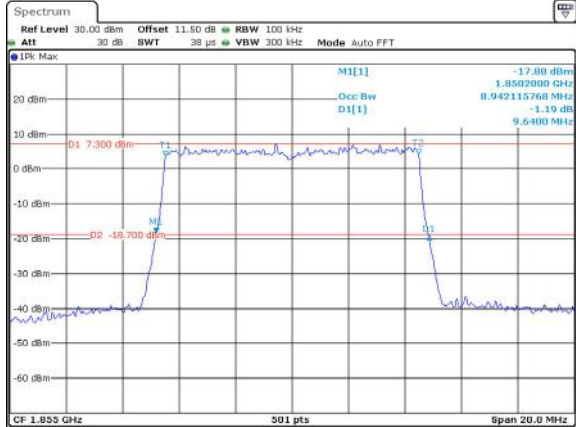
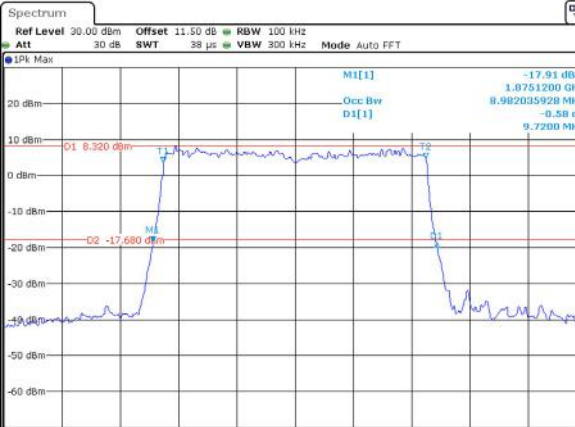
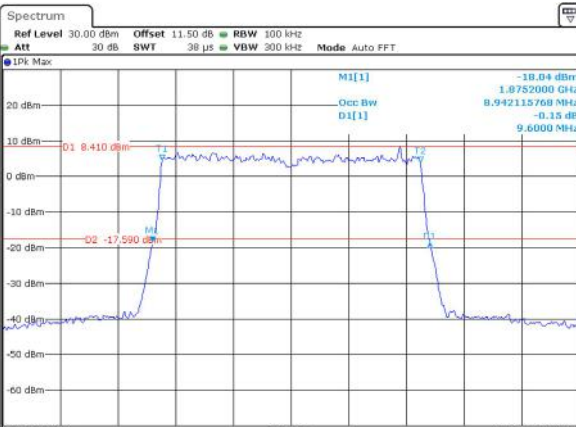
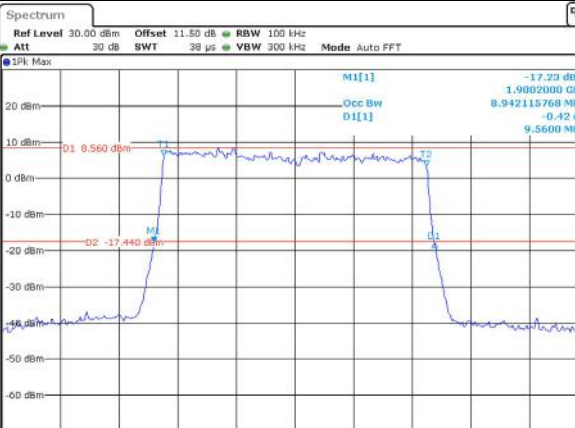
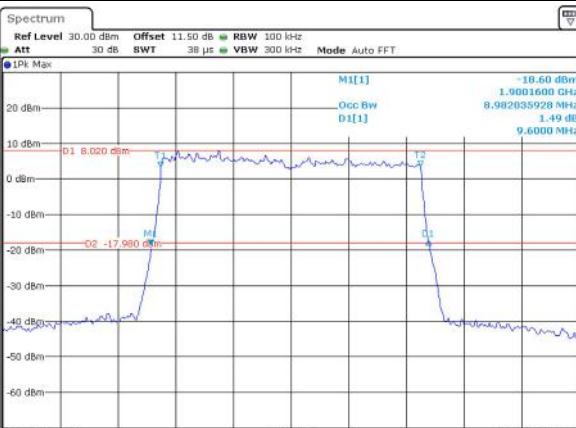
Middle



Highest



Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
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Middle	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:27:02	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:27:34
Highest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:28:03	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:28:31

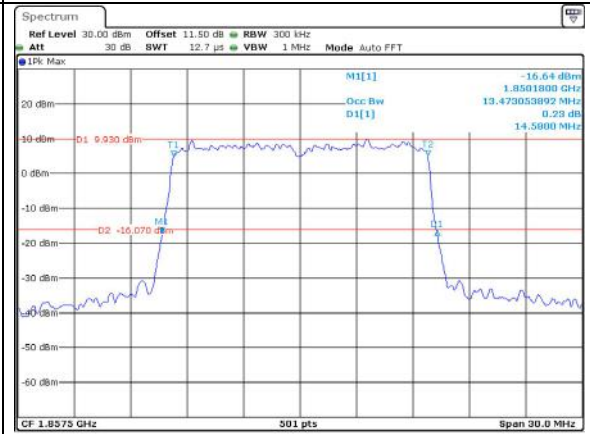
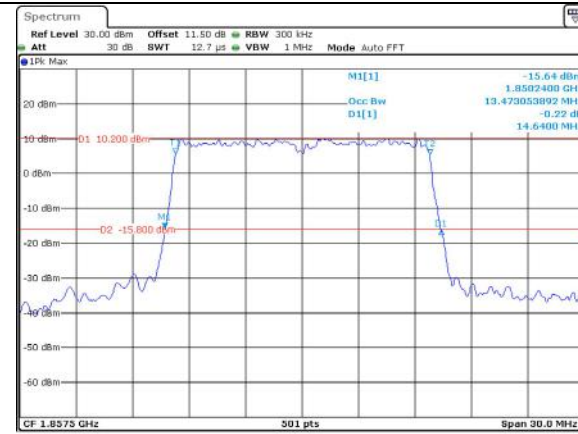
Occupied Bandwidth

Channel

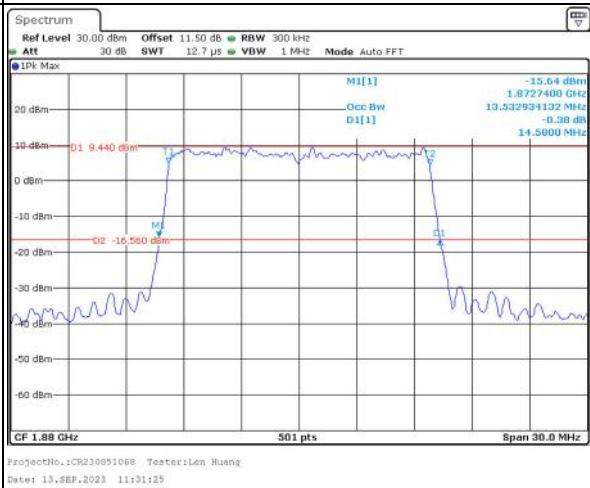
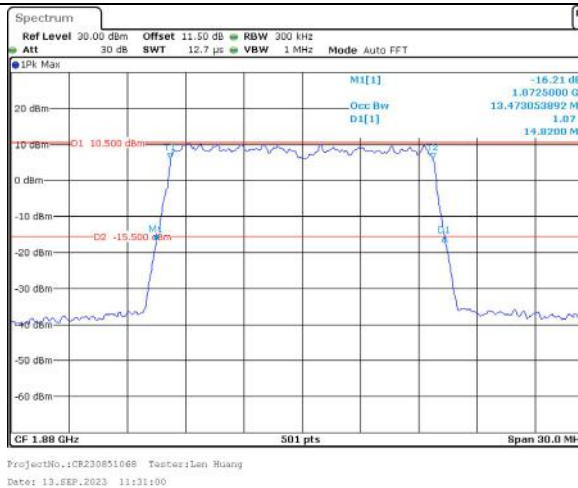
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

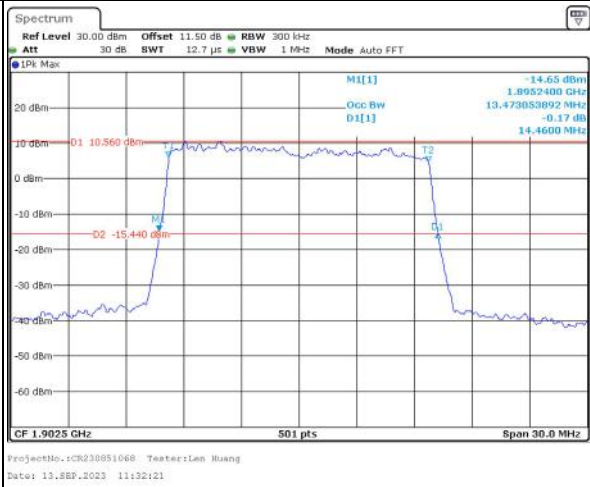
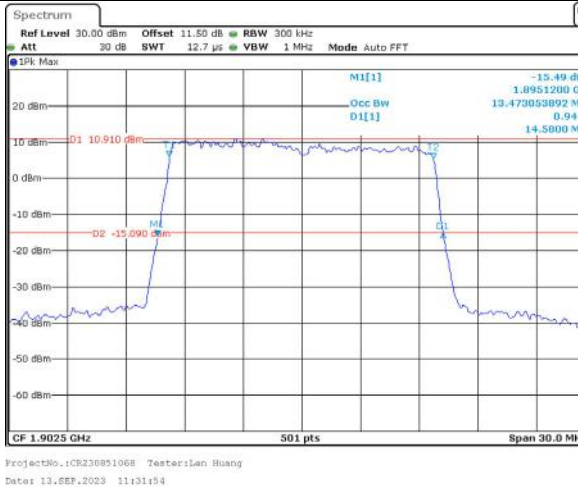
Lowest



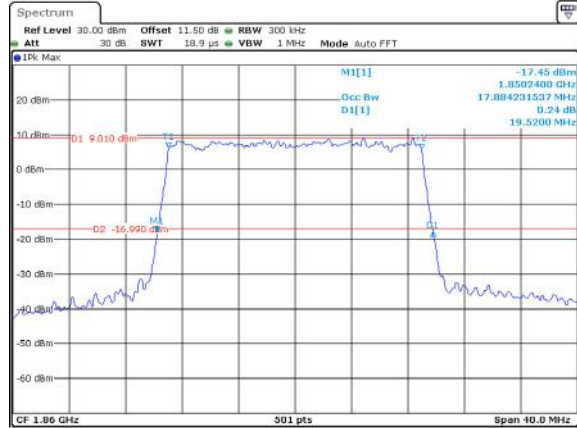
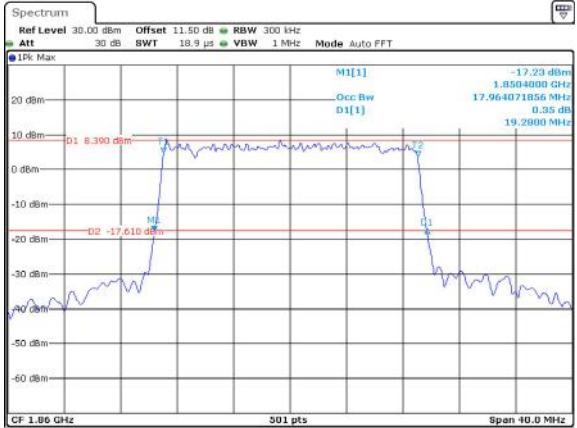
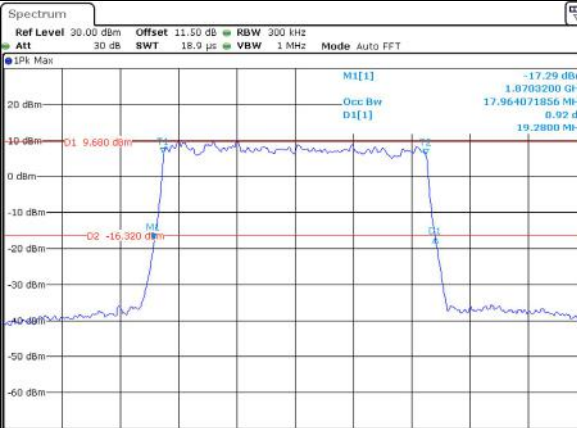
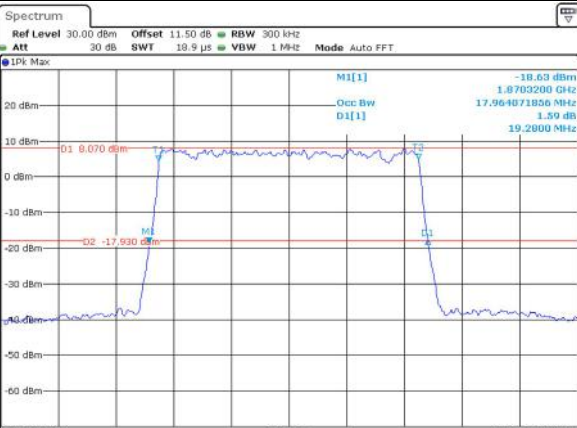
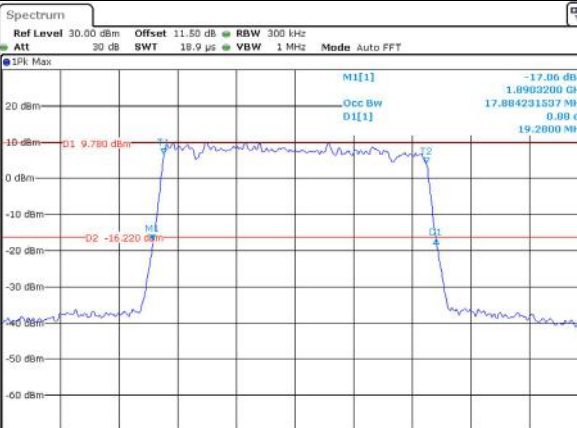
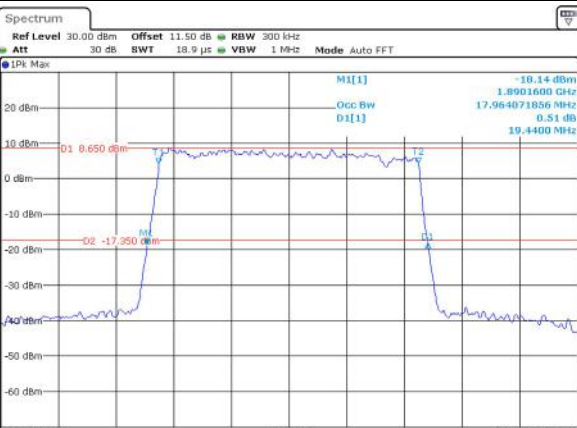
Middle



Highest



Occupied Bandwidth

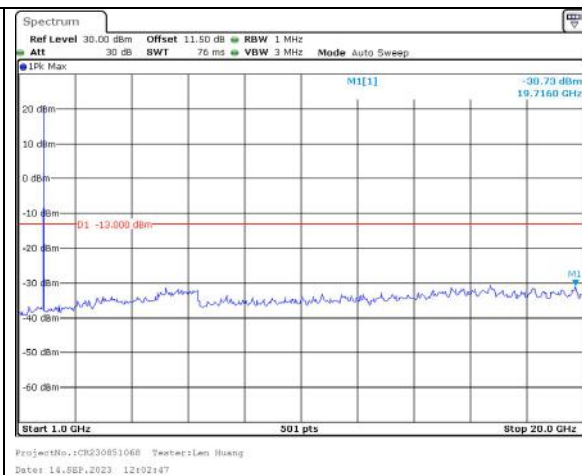
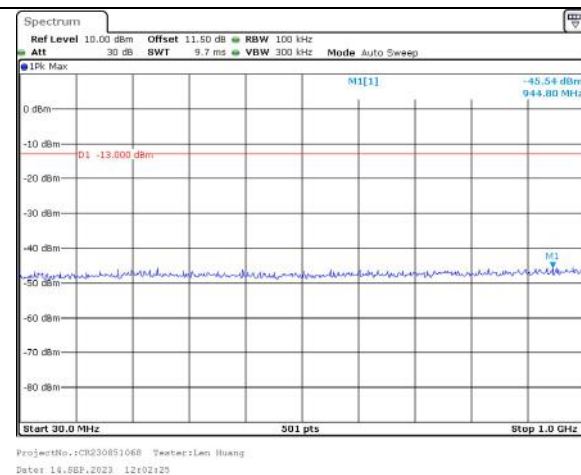
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:33:51	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:34:22
Middle	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:34:56	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:35:32
Highest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:36:10	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:36:51

Spurious Emissions at Antenna Terminal

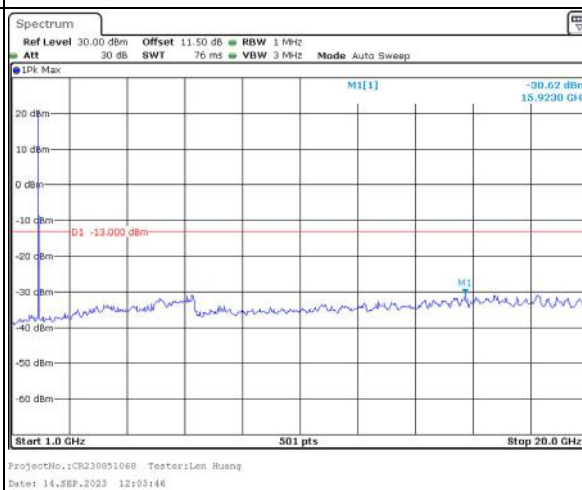
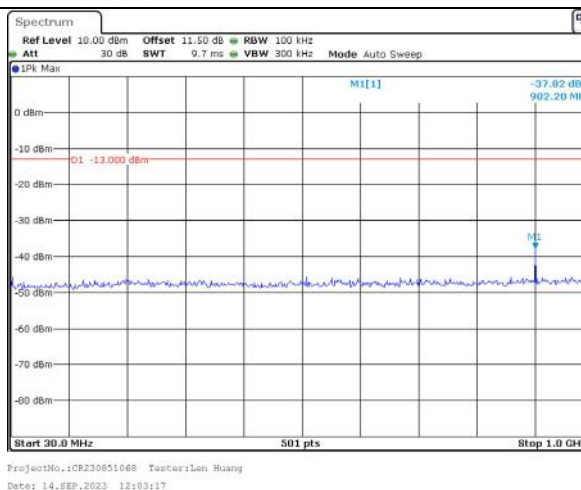
Channel

1.4MHz Bandwidth QPSK

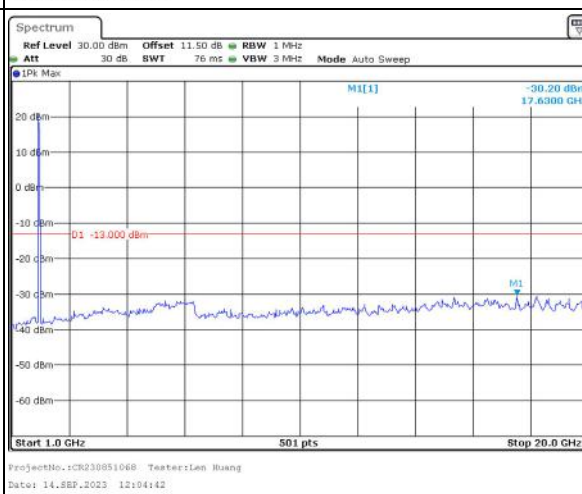
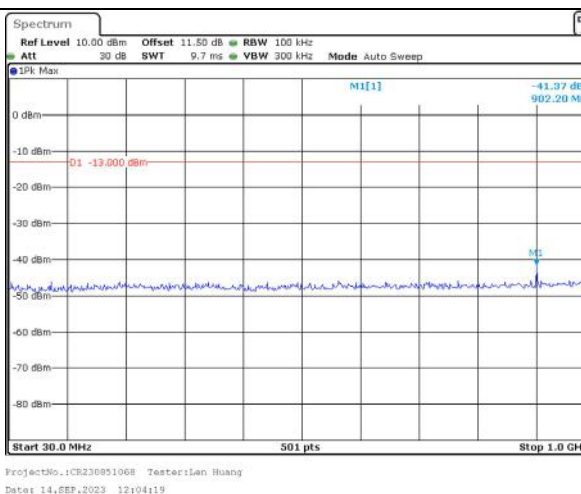
Lowest



Middle



Highest

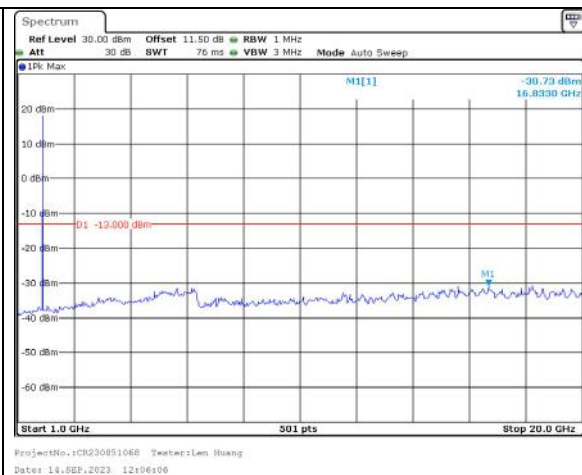
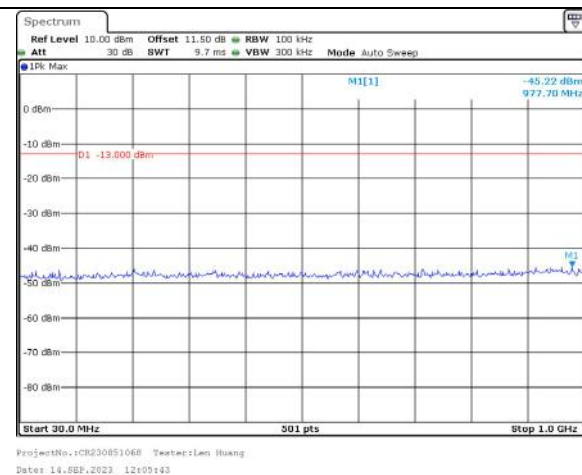


Spurious Emissions at Antenna Terminal

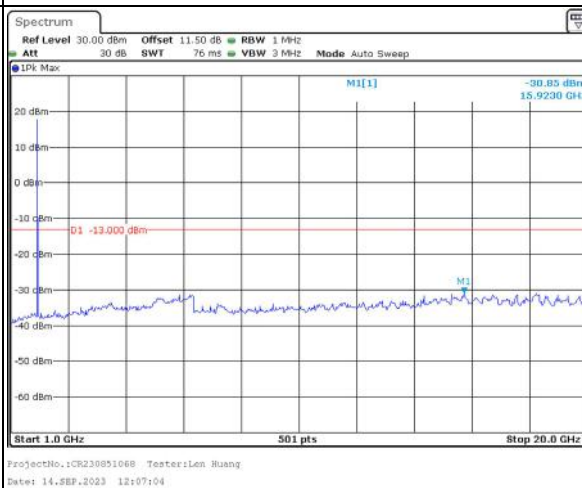
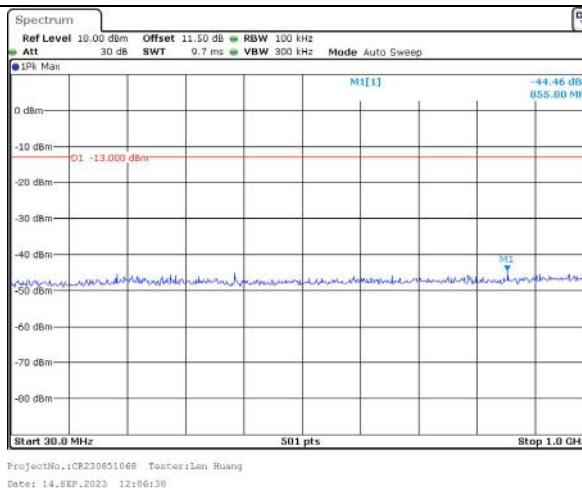
Channel

3MHz Bandwidth QPSK

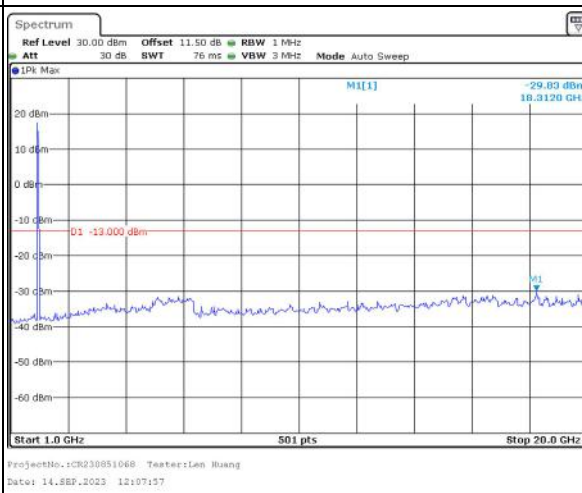
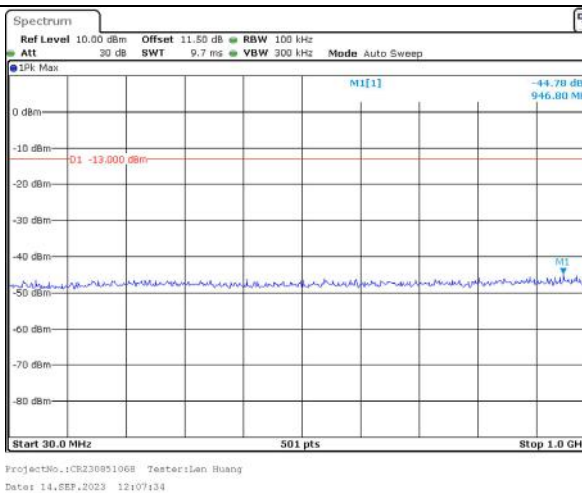
Lowest



Middle



Highest

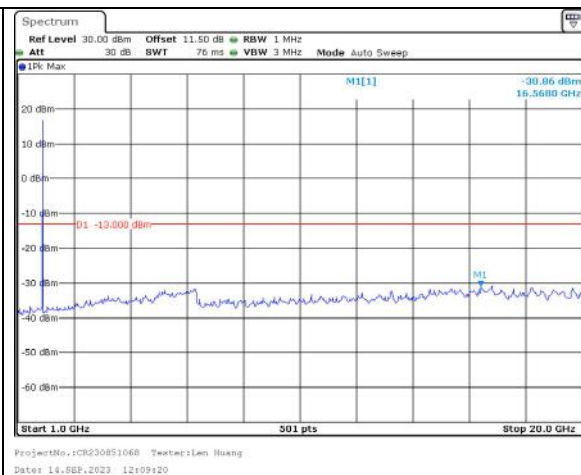
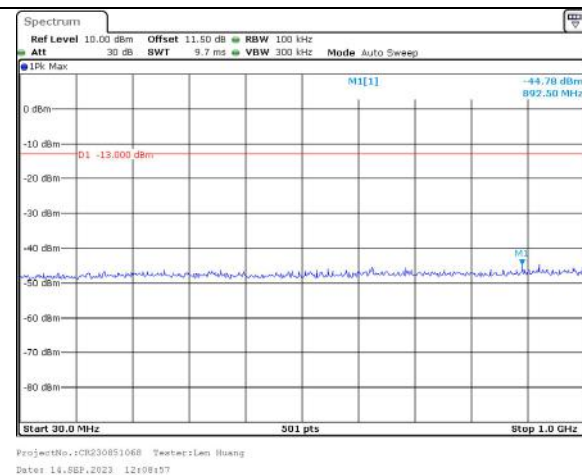


Spurious Emissions at Antenna Terminal

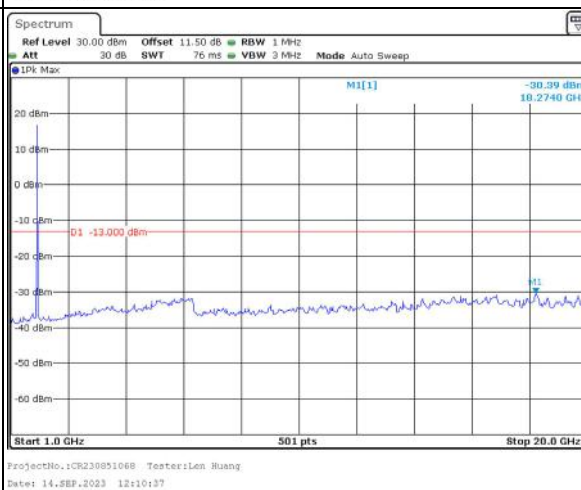
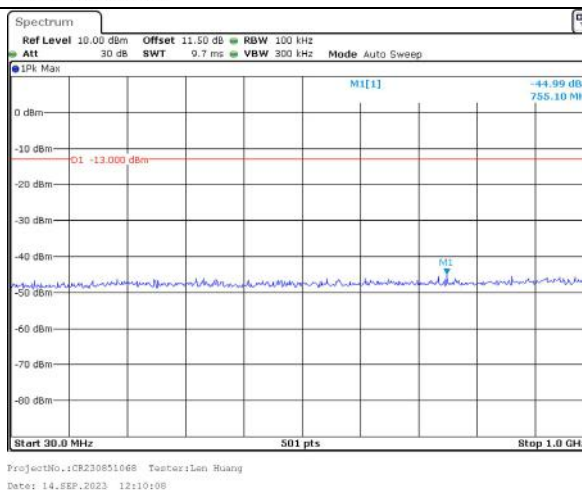
Channel

5MHz Bandwidth QPSK

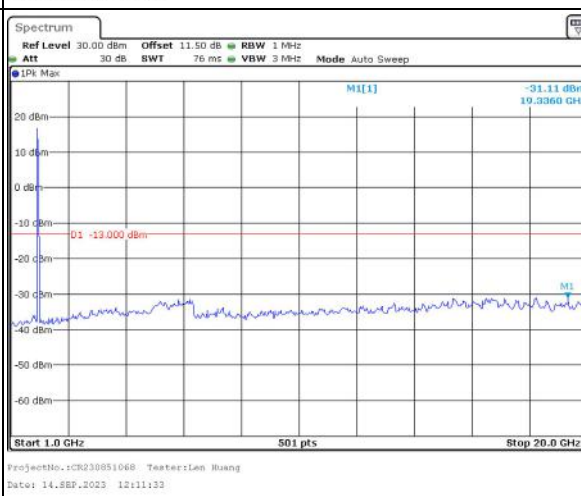
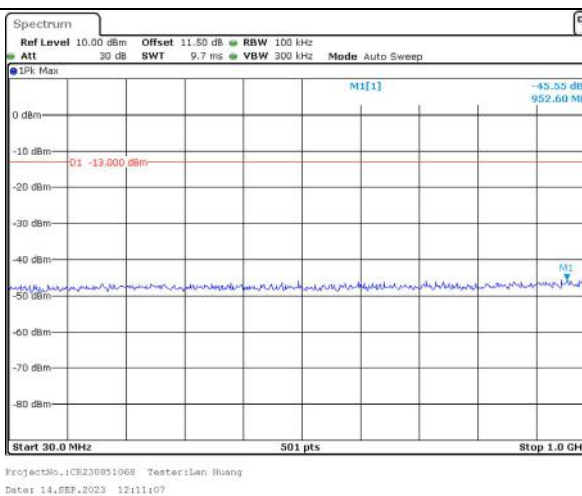
Lowest



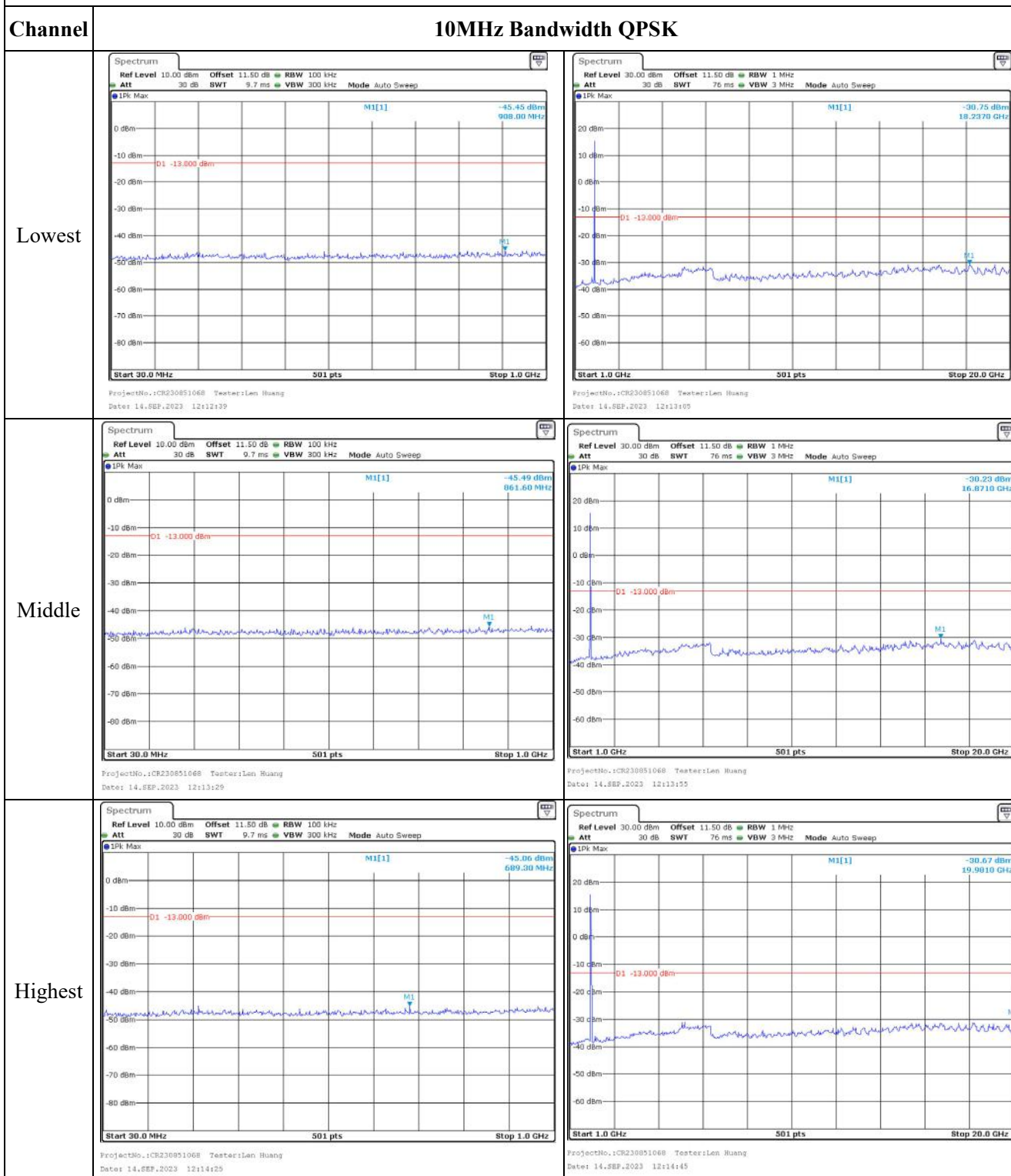
Middle



Highest



Spurious Emissions at Antenna Terminal

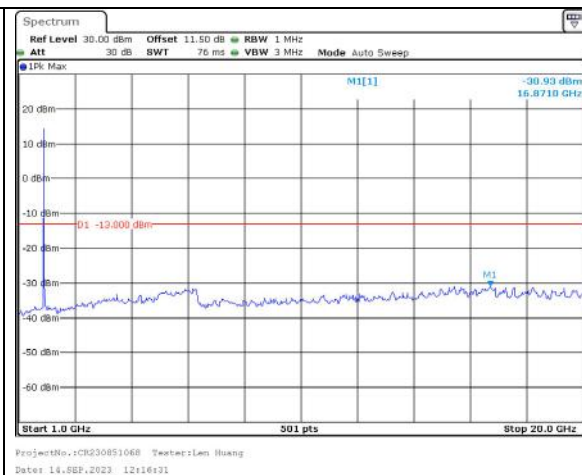
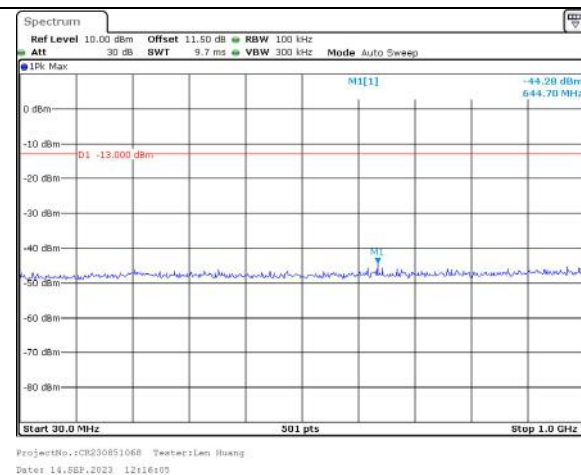


Spurious Emissions at Antenna Terminal

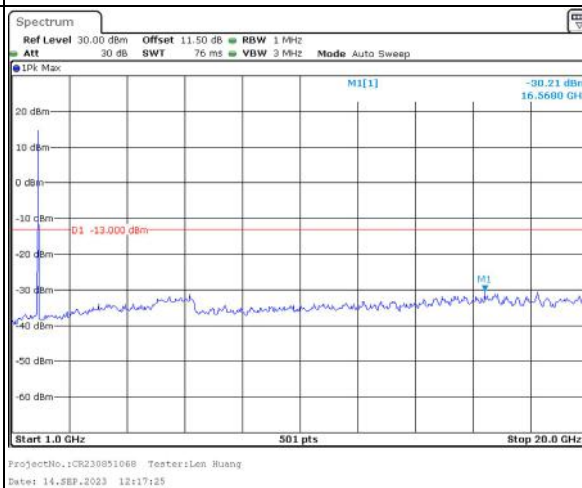
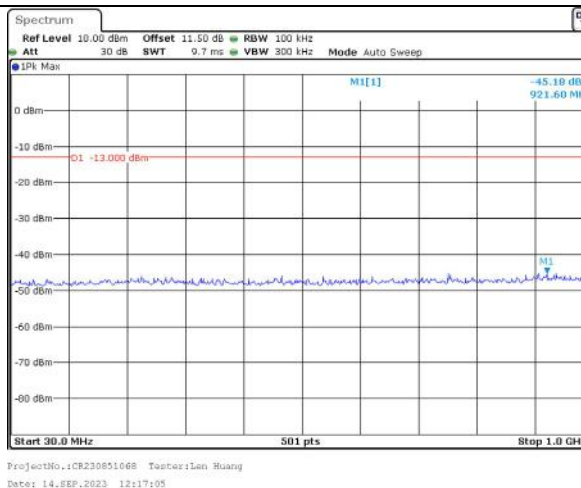
Channel

15MHz Bandwidth QPSK

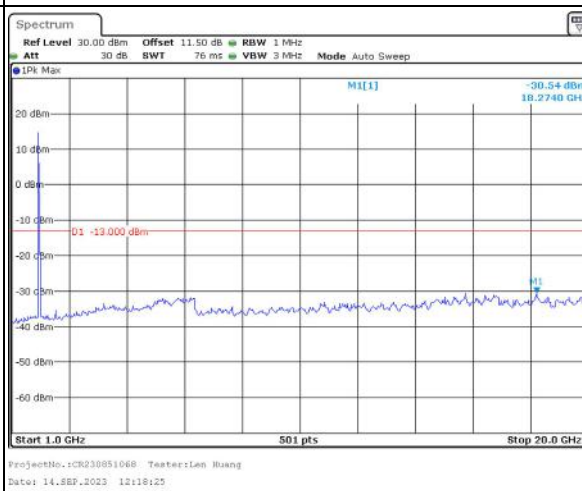
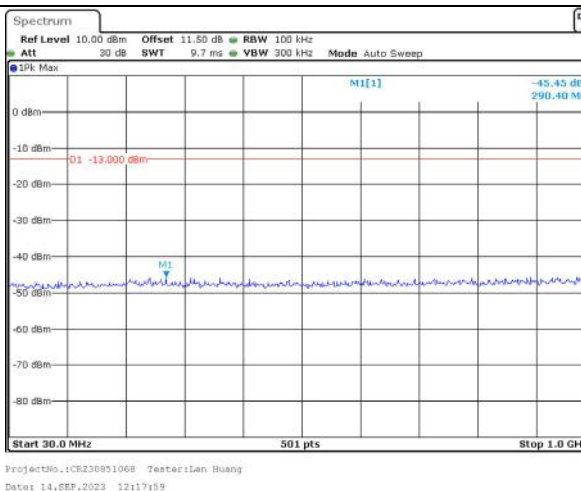
Lowest



Middle



Highest

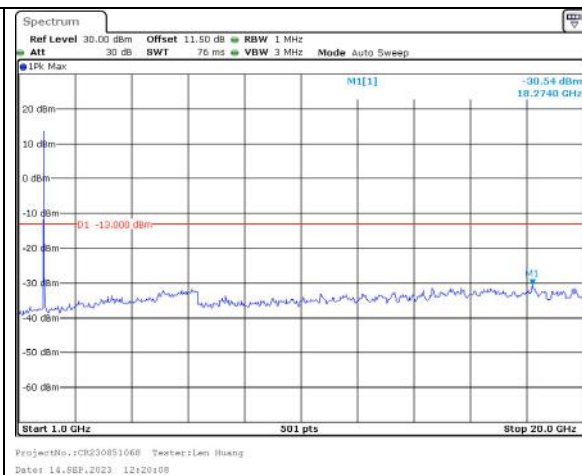
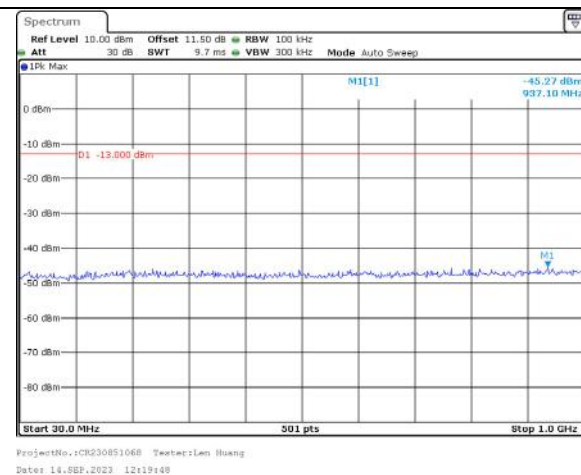


Spurious Emissions at Antenna Terminal

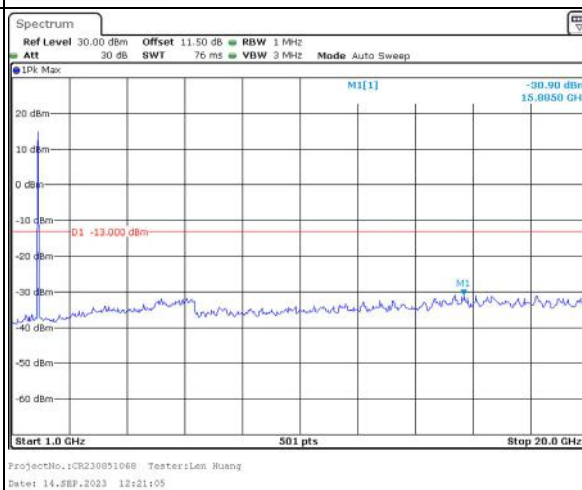
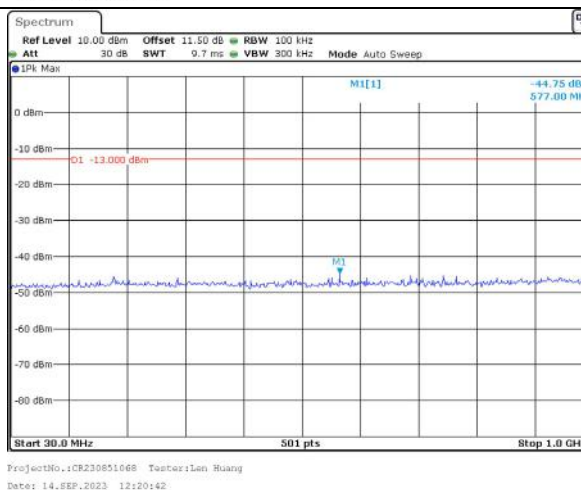
Channel

20MHz Bandwidth QPSK

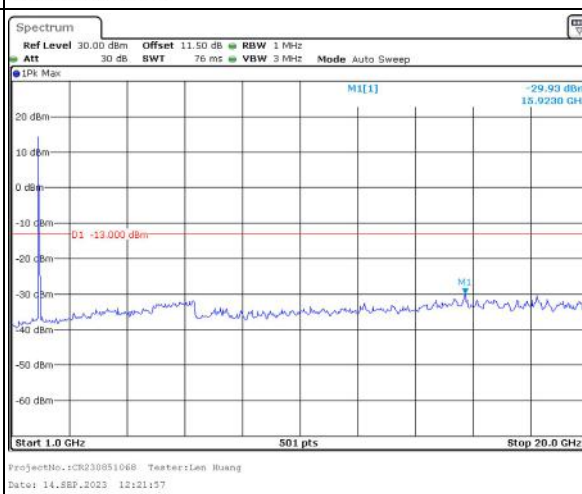
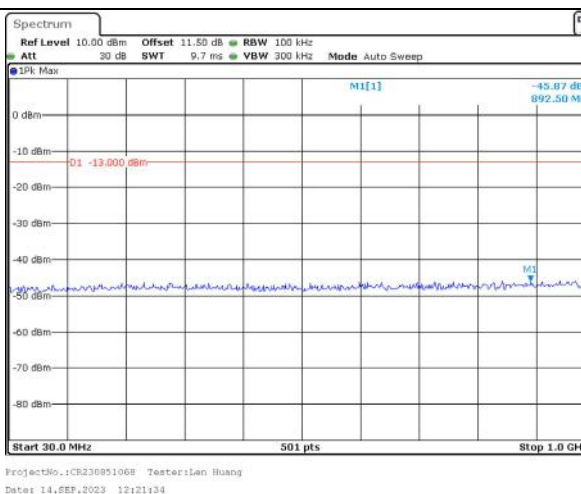
Lowest



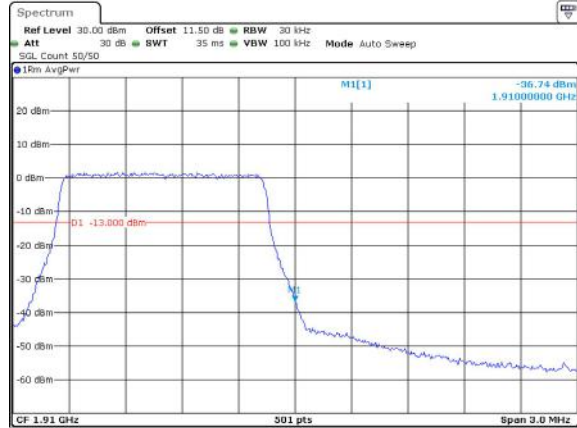
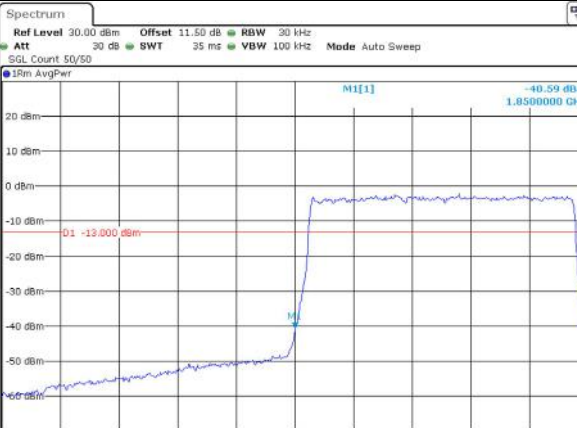
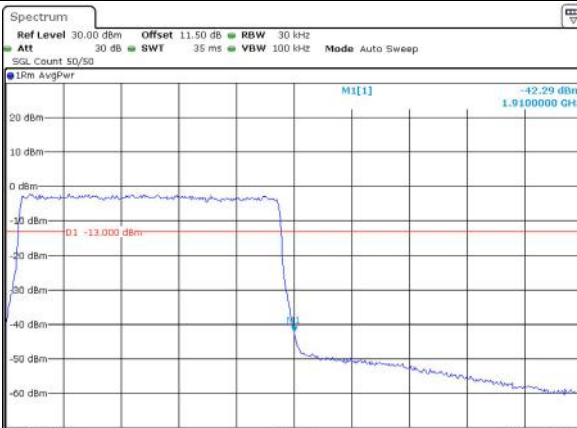
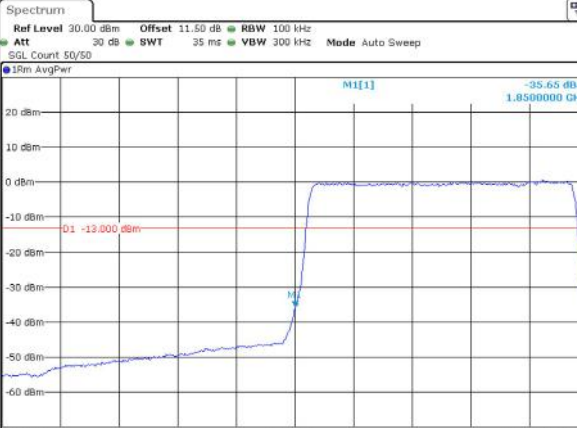
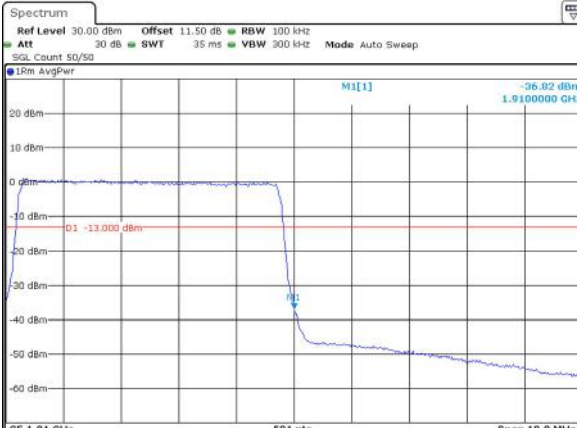
Middle



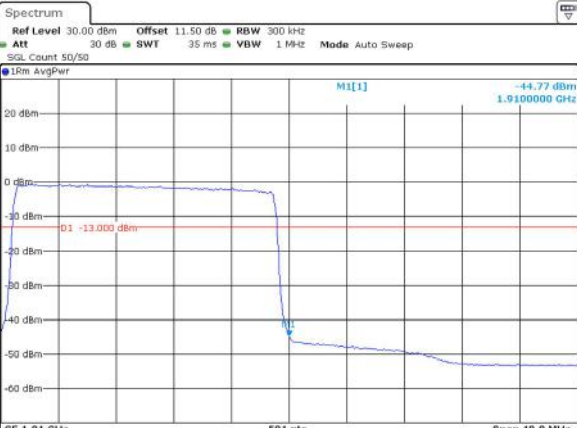
Highest



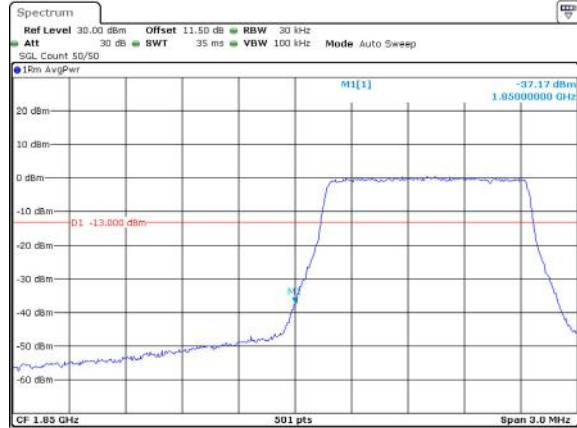
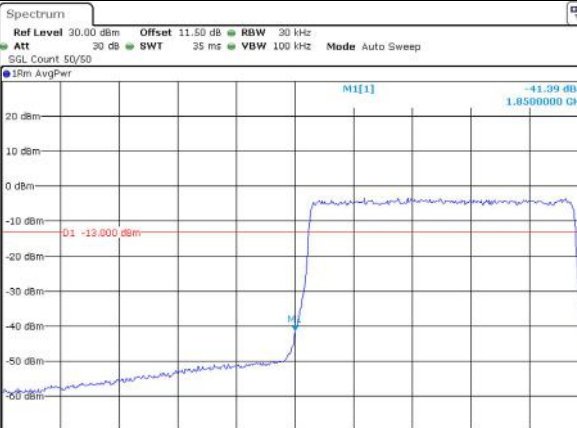
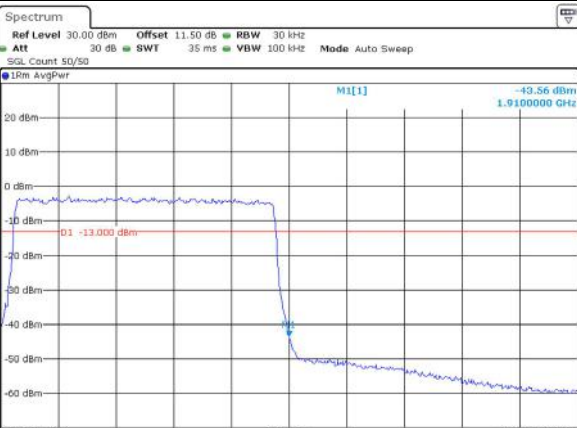
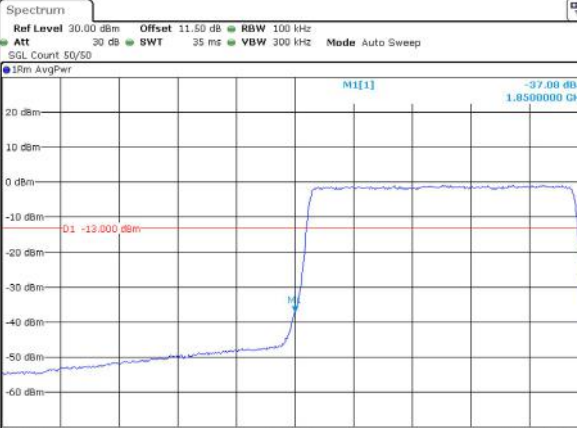
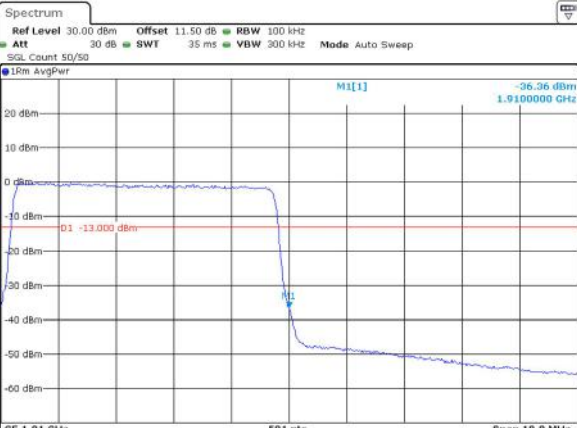
Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	 ProjectNo.: CR230851068 Tester: Len Huang Date: 13. SEP. 2023 16:45:03	 ProjectNo.: CR230851068 Tester: Len Huang Date: 13. SEP. 2023 16:45:17
QPSK 3MHz	 ProjectNo.: CR230851068 Tester: Len Huang Date: 13. SEP. 2023 16:45:57	 ProjectNo.: CR230851068 Tester: Len Huang Date: 13. SEP. 2023 16:46:11
QPSK 5MHz	 ProjectNo.: CR230851068 Tester: Len Huang Date: 13. SEP. 2023 16:47:00	 ProjectNo.: CR230851068 Tester: Len Huang Date: 13. SEP. 2023 16:47:15

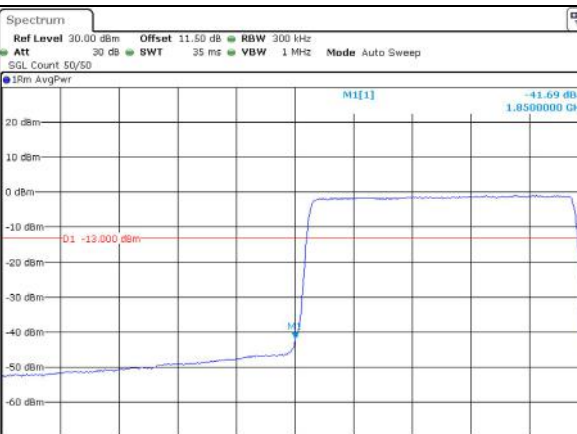
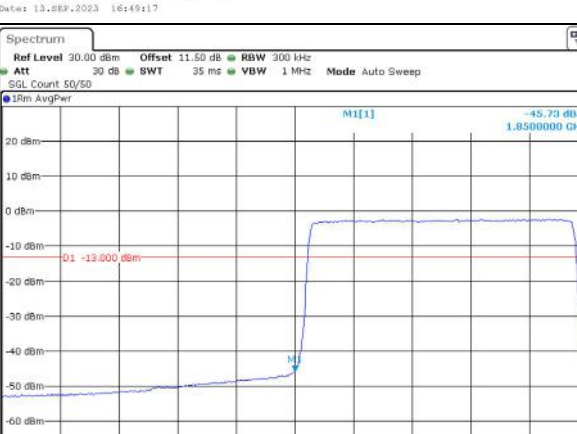
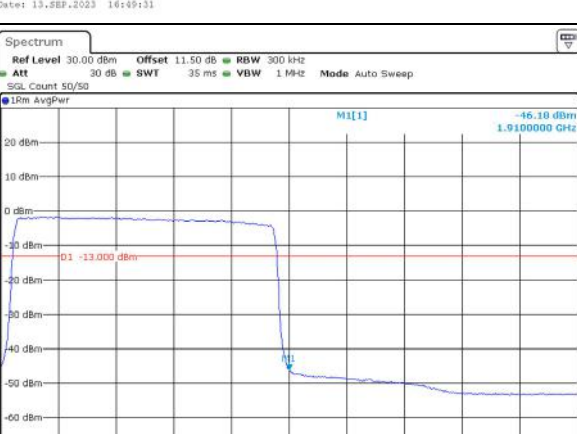
Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	 Ref Level 30.00 dBm Offset 11.50 dB RBW 100 kHz Att 30 dB SWT 35 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -44.52 dBm 1.8500000 GHz CF 1.85 GHz 501 pts Span 20.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:47:57	 Ref Level 30.00 dBm Offset 11.50 dB RBW 100 kHz Att 30 dB SWT 35 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -45.45 dBm 1.9100000 GHz CF 1.91 GHz 501 pts Span 20.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:48:12
QPSK 15MHz	 Ref Level 30.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWT 35 ms VBW 1 MHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -44.10 dBm 1.8500000 GHz CF 1.85 GHz 501 pts Span 30.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:49:10	 Ref Level 30.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWT 35 ms VBW 1 MHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -42.01 dBm 1.9100000 GHz CF 1.91 GHz 501 pts Span 30.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:49:24
QPSK 20MHz	 Ref Level 30.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWT 35 ms VBW 1 MHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -44.91 dBm 1.8500000 GHz CF 1.85 GHz 501 pts Span 40.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:50:05	 Ref Level 30.00 dBm Offset 11.50 dB RBW 300 kHz Att 30 dB SWT 35 ms VBW 1 MHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -44.77 dBm 1.9100000 GHz CF 1.91 GHz 501 pts Span 40.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:50:20

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	 Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -37.17 dBm 1.85000000 GHz CF 1.85 GHz 501 pts Span 3.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:45:09	 Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -37.60 dBm 1.91000000 GHz CF 1.91 GHz 501 pts Span 3.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:45:23
16QAM 3MHz	 Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -41.99 dBm 1.85000000 GHz CF 1.85 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:46:03	 Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -43.56 dBm 1.91000000 GHz CF 1.91 GHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:46:17
16QAM 5MHz	 Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 100 kHz Att 30 dB SWT 35 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -37.00 dBm 1.85000000 GHz CF 1.85 GHz 501 pts Span 10.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:47:07	 Spectrum Ref Level 30.00 dBm Offset 11.50 dB RBW 100 kHz Att 30 dB SWT 35 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -36.56 dBm 1.91000000 GHz CF 1.91 GHz 501 pts Span 10.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:47:22

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:48:04	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:48:19
16QAM 15MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:49:17	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:49:31
16QAM 20MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:50:12	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:50:26

4.7 Antenna Port Test Data and Results for LTE Band 4

Serial Number:	2AQ7-1	Test Date:	2023/9/13~2023/9/14
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.8~26.2	Relative Humidity: (%)	58~60	Temperature: (°C)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	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	2022/9/29	2023/9/28
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	1732.5	1754.3
3MHz	1711.5	1732.5	1753.5
5MHz	1712.5	1732.5	1752.5
10MHz	1715	1732.5	1750
15MHz	1717.5	1732.5	1747.5
20MHz	1720	1732.5	1745

Test Data:**FCC§2.1046;§ 27.50(d)(4)****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	18.8	18.77	18.88	17.38	30
	RB1#3	18.98	18.93	19.03		
	RB1#5	18.8	18.76	18.85		
	RB3#0	18.87	18.84	18.96		
	RB3#3	18.9	18.82	18.92		
	RB6#0	17.88	17.86	17.97		
1.4MHz 16QAM	RB1#0	17.83	17.81	18.02	16.56	30
	RB1#3	18.02	17.96	18.21		
	RB1#5	17.87	17.79	18.03		
	RB3#0	17.97	18	17.93		
	RB3#3	17.93	18.01	17.92		
	RB6#0	16.82	16.84	16.96		
3MHz QPSK	RB1#0	18.9	18.91	18.9	17.26	30
	RB1#8	18.88	18.88	18.91		
	RB1#14	18.88	18.84	18.9		
	RB6#0	17.85	17.85	17.97		
	RB6#9	17.88	17.86	17.95		
	RB15#0	17.9	17.87	17.97		
3MHz 16QAM	RB1#0	18.04	17.95	18.53	16.88	30
	RB1#8	18.02	17.88	18.52		
	RB1#14	18.02	17.84	18.5		
	RB6#0	16.86	16.83	17.01		
	RB6#9	16.93	16.78	16.99		
	RB15#0	16.82	16.89	17.01		
5MHz QPSK	RB1#0	18.78	18.81	18.89	17.33	30
	RB1#13	18.91	18.91	18.98		
	RB1#24	18.78	18.76	18.9		
	RB15#0	17.9	17.94	18		
	RB15#10	17.92	17.93	17.99		
	RB25#0	17.9	17.91	18		
5MHz 16QAM	RB1#0	17.92	17.76	18.21	16.64	30
	RB1#13	18.01	17.82	18.29		
	RB1#24	17.91	17.72	18.19		
	RB15#0	16.92	16.97	16.97		
	RB15#10	16.93	16.94	16.94		
	RB25#0	16.89	16.94	17.01		
10MHz QPSK	RB1#0	18.92	18.94	18.9	17.39	30

	RB1#25	19.04	19	19.03		
	RB1#49	18.93	18.76	18.93		
	RB25#0	17.87	17.92	17.99		
	RB25#25	17.89	17.91	17.97		
	RB50#0	17.86	17.92	17.95		
10MHz 16QAM	RB1#0	18.03	17.97	18.51	17.03	30
	RB1#25	18.21	18.03	18.68		
	RB1#49	18.07	17.81	18.52		
	RB25#0	16.89	16.96	17.06		
	RB25#25	16.93	16.98	17.02		
	RB50#0	16.87	16.9	16.99		
15MHz QPSK	RB1#0	18.82	18.81	18.8	17.26	30
	RB1#38	18.91	18.88	18.91		
	RB1#74	18.9	18.76	18.83		
	RB36#0	17.89	17.9	18.04		
	RB36#39	18.02	17.9	17.98		
	RB75#0	17.9	17.9	18.02		
15MHz 16QAM	RB1#0	17.95	18.23	18.41	16.88	30
	RB1#38	18.03	18.28	18.53		
	RB1#74	18.02	18.18	18.47		
	RB36#0	16.88	16.85	16.96		
	RB36#39	16.98	16.81	16.92		
	RB75#0	16.91	16.86	17		
20MHz QPSK	RB1#0	18.62	18.69	18.59	17.49	30
	RB1#50	19	19.03	19.14		
	RB1#99	18.65	18.76	18.77		
	RB50#0	17.87	17.85	17.92		
	RB50#50	17.98	17.9	17.95		
	RB100#0	17.94	17.9	17.96		
20MHz 16QAM	RB1#0	18.18	18.01	17.78	16.94	30
	RB1#50	18.59	18.34	18.29		
	RB1#99	18.26	18.04	18.01		
	RB50#0	16.84	16.84	16.92		
	RB50#50	16.95	16.89	16.92		
	RB100#0	16.93	16.89	16.94		
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	5.77	5.74	5.39	13
	RB100#0	5.36	5.30	5.25	13
20MHz 16QAM	RB1#0	6.35	6.78	5.83	13
	RB100#0	6.20	6.12	6.09	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
1.4MHz QPSK	1.096	1.102	1.096	1.314	1.296	1.284
1.4MHz 16QAM	1.09	1.102	1.096	1.29	1.290	1.326
3MHz QPSK	2.683	2.683	2.683	2.868	2.892	2.880
3MHz 16QAM	2.683	2.683	2.683	2.880	2.868	2.892
5MHz QPSK	4.511	4.491	4.511	4.960	4.960	4.960
5MHz 16QAM	4.511	4.511	4.491	4.940	4.960	4.960
10MHz QPSK	8.942	8.942	8.942	9.600	9.560	9.680
10MHz 16QAM	8.942	8.942	8.942	9.560	9.600	9.560
15MHz QPSK	13.413	13.533	13.533	14.580	14.760	14.640
15MHz 16QAM	13.473	13.533	13.473	14.580	14.640	14.700
20MHz QPSK	17.964	18.044	17.884	19.360	19.280	19.200
20MHz 16QAM	17.964	17.884	17.884	19.360	19.200	19.200

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

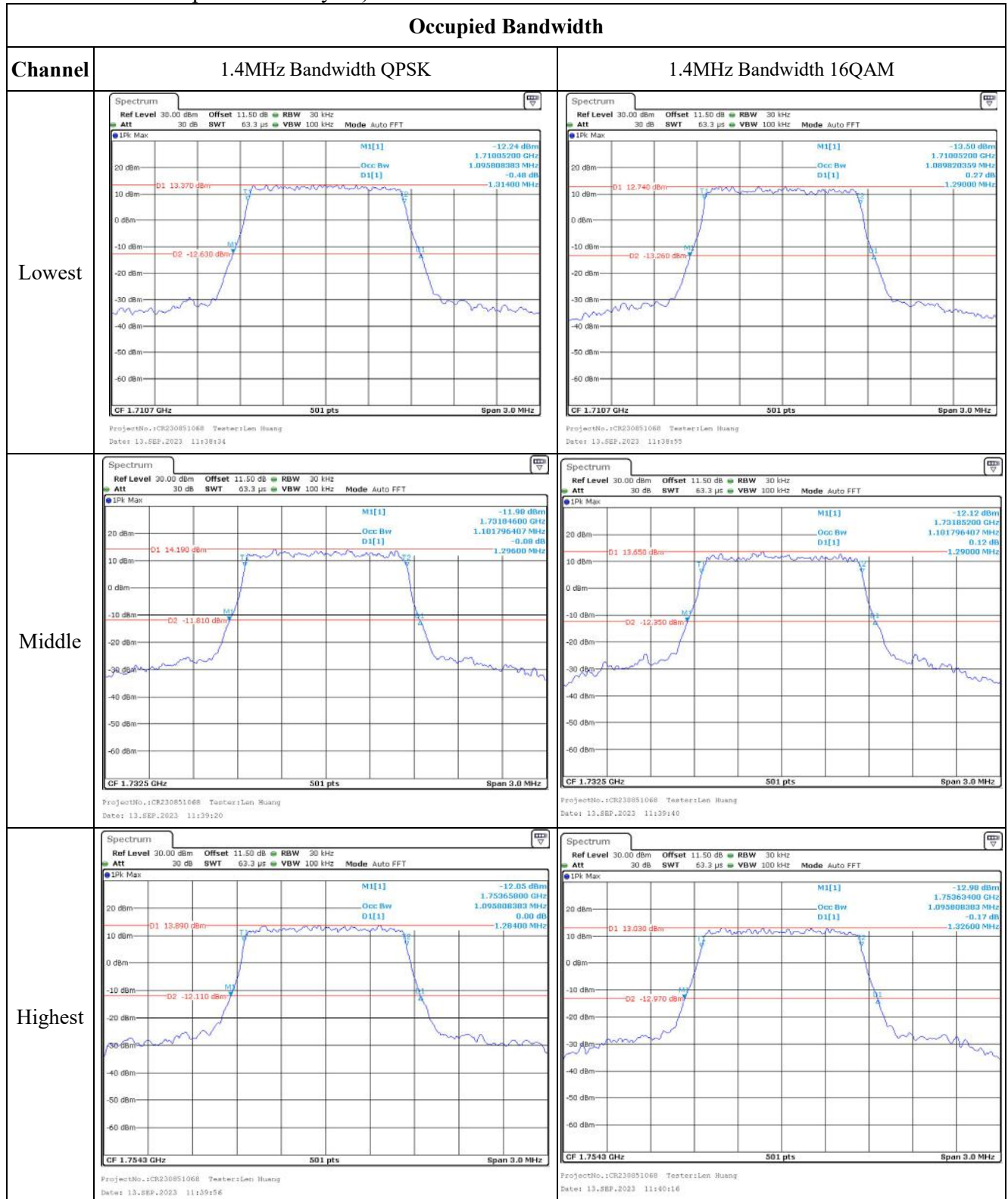
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §27.54: Frequency Stability

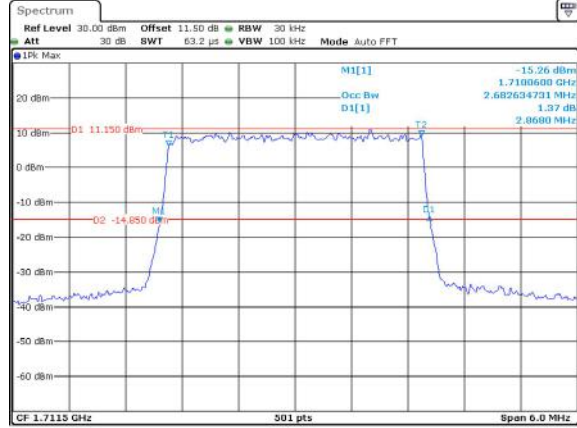
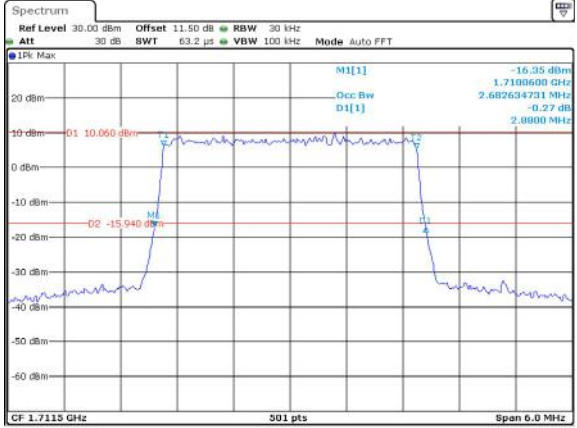
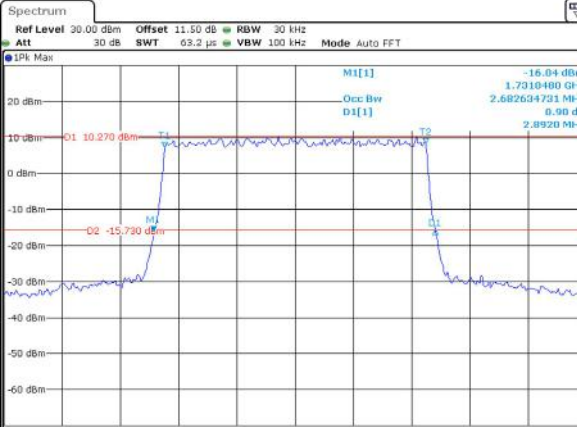
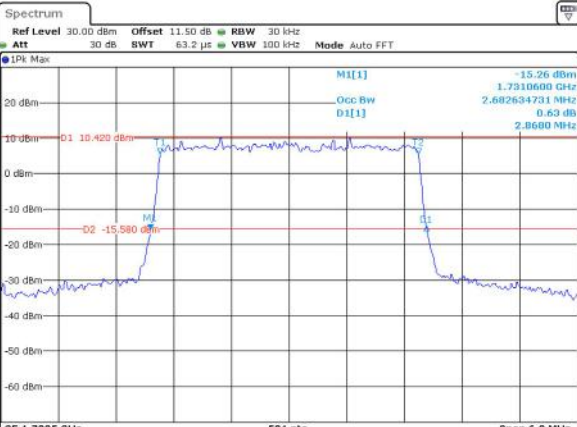
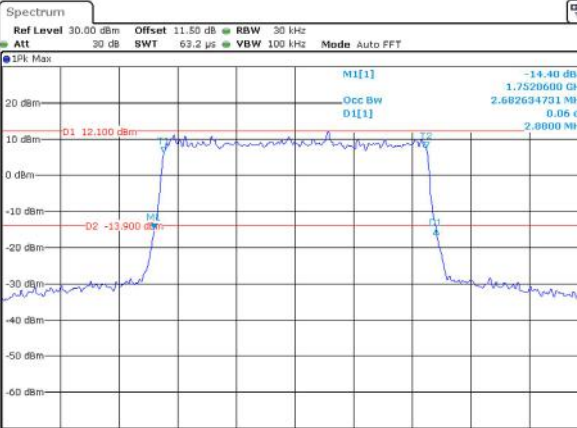
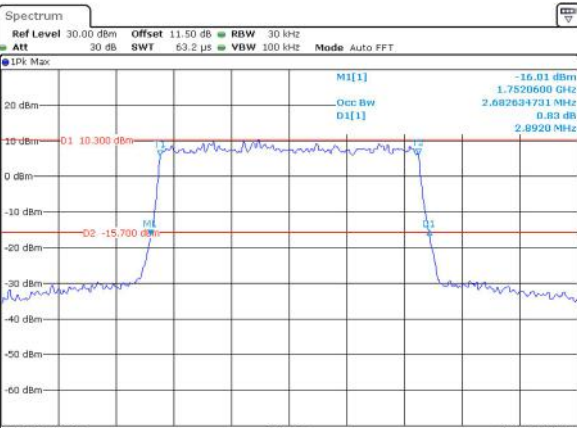
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.87	1710.297	1710.00	1754.776	1755
	-20	3.87	1710.296	1710.00	1754.755	1755
	-10	3.87	1710.288	1710.00	1754.775	1755
	0	3.87	1710.252	1710.00	1754.742	1755
	10	3.87	1710.282	1710.00	1754.733	1755
	20	3.87	1710.273	1710.00	1754.758	1755
	30	3.87	1710.262	1710.00	1754.770	1755
	40	3.87	1710.258	1710.00	1754.760	1755
	50	3.87	1710.255	1710.00	1754.767	1755
Frequency Stability vs. Voltage	20	3.45	1710.252	1710.00	1754.746	1755
	20	4.45	1710.259	1710.00	1754.746	1755
					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	1710.122	1710.00	1754.861	1755
	-20	3.87	1710.127	1710.00	1754.858	1755
	-10	3.87	1710.121	1710.00	1754.880	1755
	0	3.87	1710.123	1710.00	1754.873	1755
	10	3.87	1710.116	1710.00	1754.880	1755
	20	3.87	1710.126	1710.00	1754.872	1755
	30	3.87	1710.119	1710.00	1754.874	1755
	40	3.87	1710.107	1710.00	1754.882	1755
	50	3.87	1710.120	1710.00	1754.867	1755
Frequency Stability vs. Voltage	20	3.45	1710.102	1710.00	1754.888	1755
	20	4.45	1710.089	1710.00	1754.871	1755
					Result:	Pass

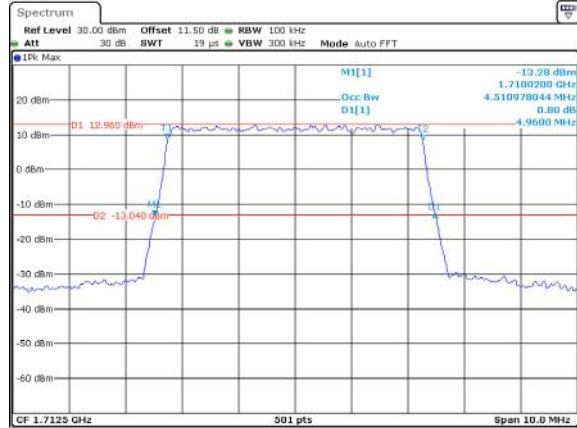
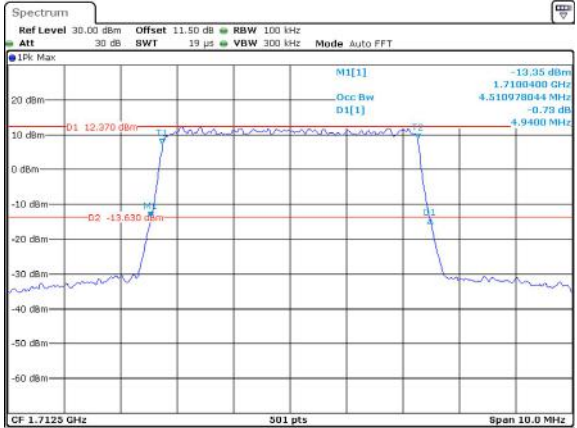
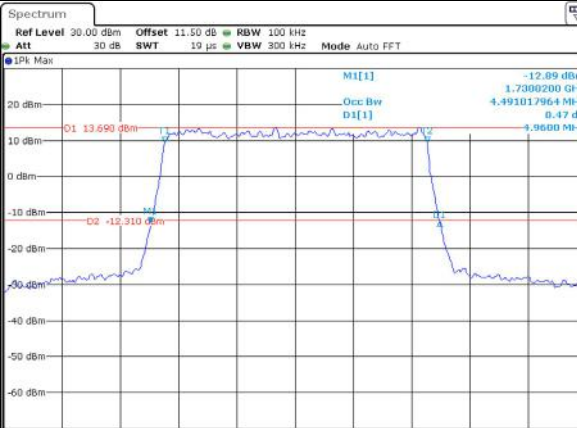
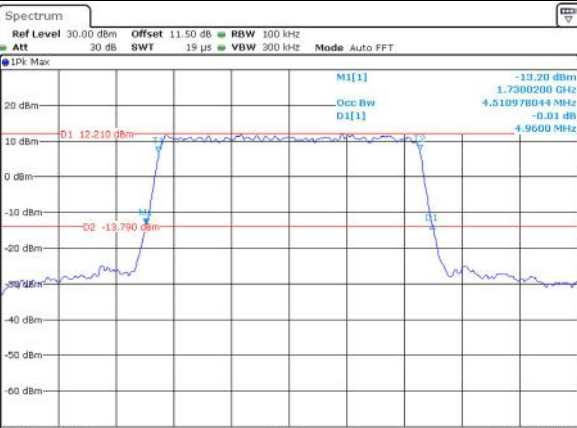
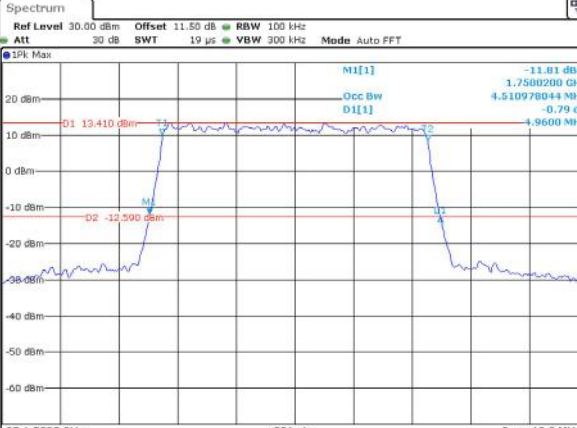
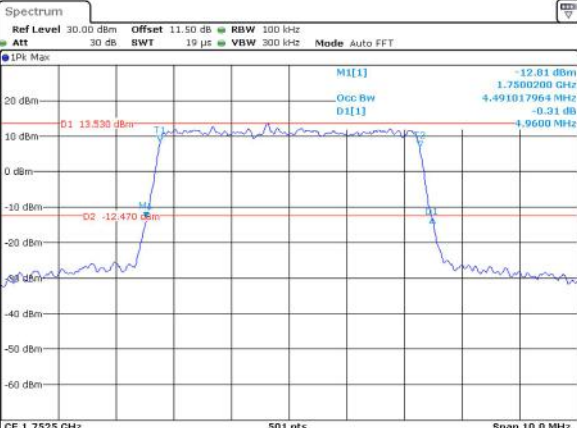
Test Plots(Note: The 11.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 11:41:13	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 11:41:13
Middle	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 11:41:16	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 11:41:16
Highest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 11:42:41	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 11:43:02

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:43:55	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:44:19
Middle	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 12:33:11	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:45:09
Highest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:45:28	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:45:53

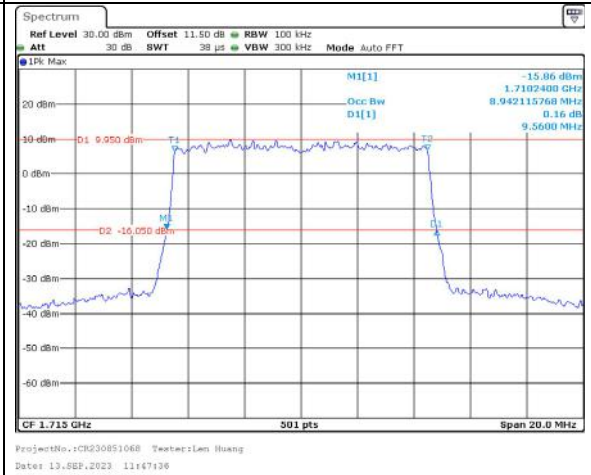
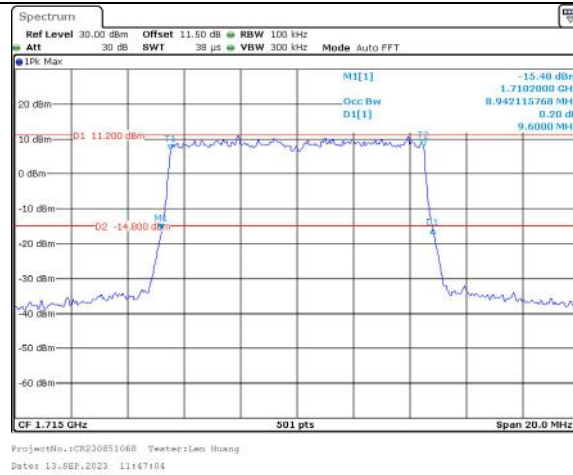
Occupied Bandwidth

Channel

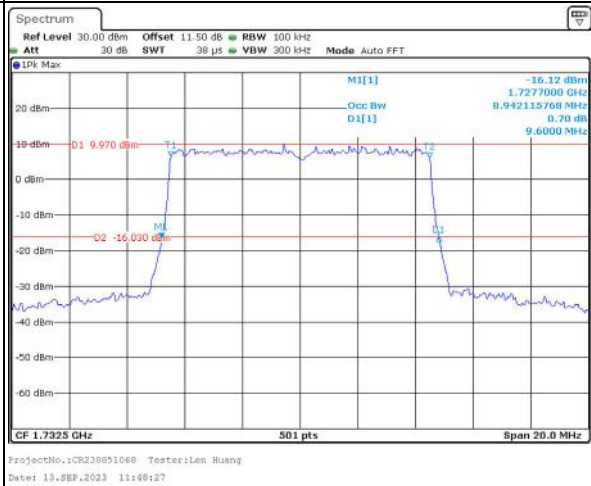
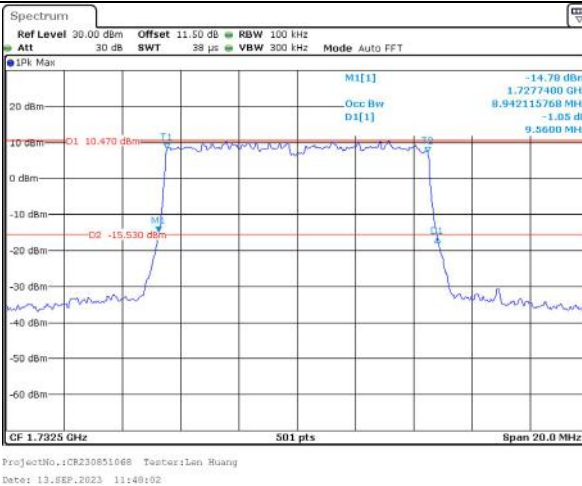
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

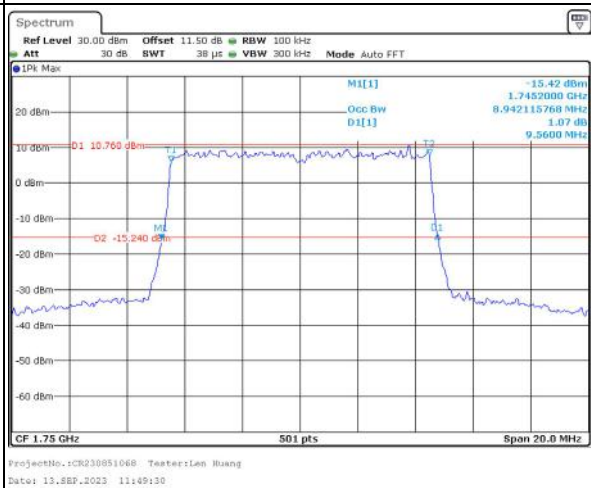
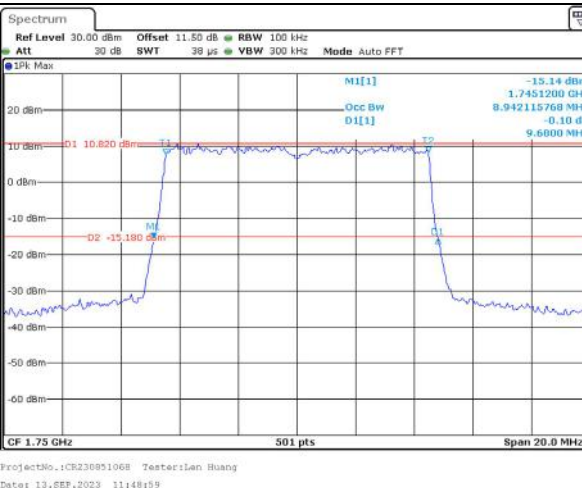
Lowest



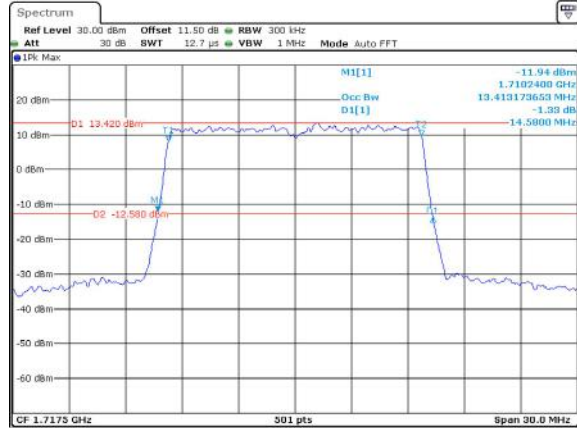
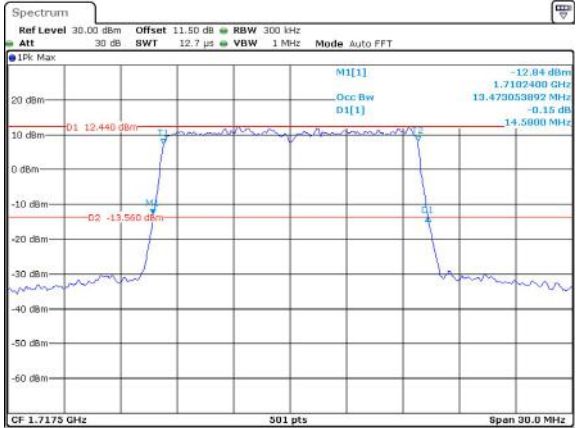
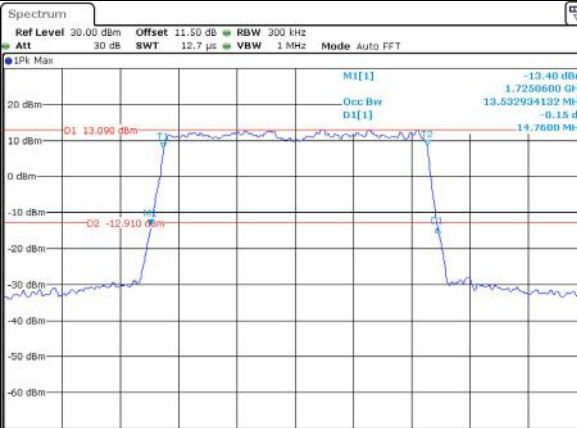
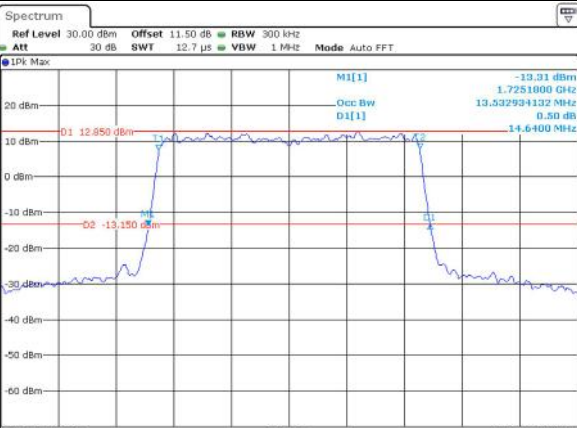
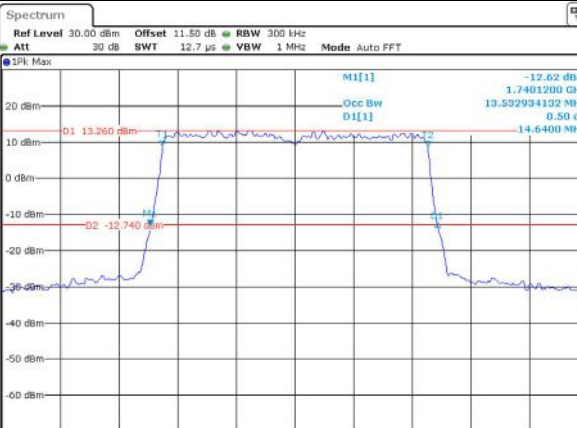
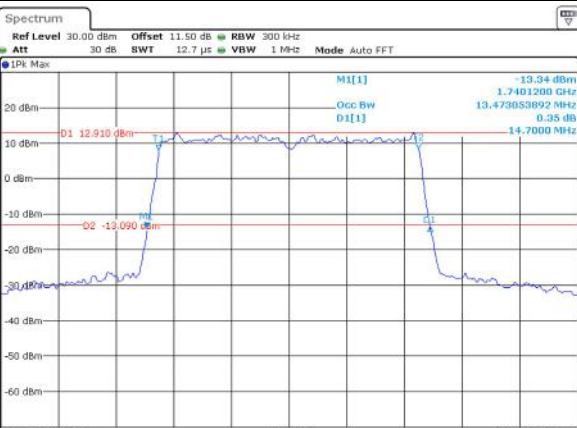
Middle



Highest



Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:50:26	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:50:56
Middle	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:51:25	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:56:44
Highest	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:57:16	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:57:53

Occupied Bandwidth

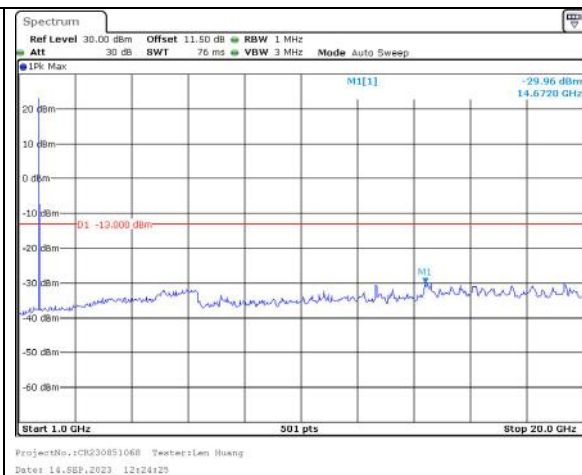
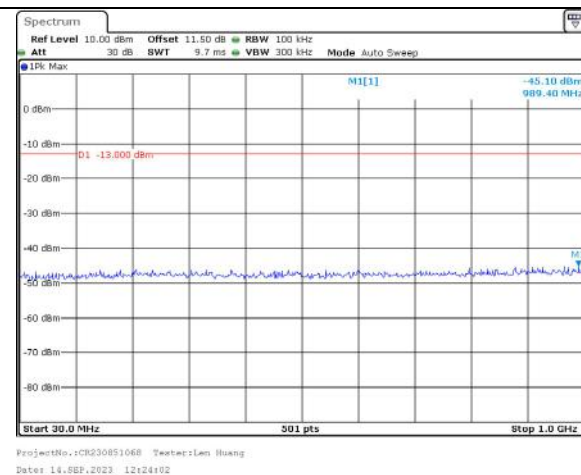
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:59:12	ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 11:59:49
Middle	ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 12:00:26	ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 12:01:10
Highest	ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 12:01:49	ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 12:02:26

Spurious Emissions at Antenna Terminal

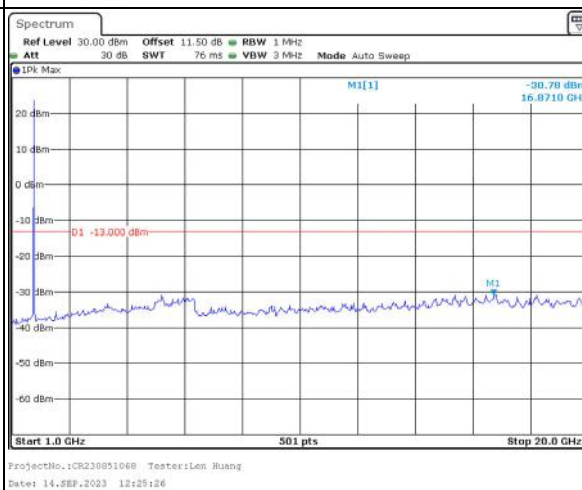
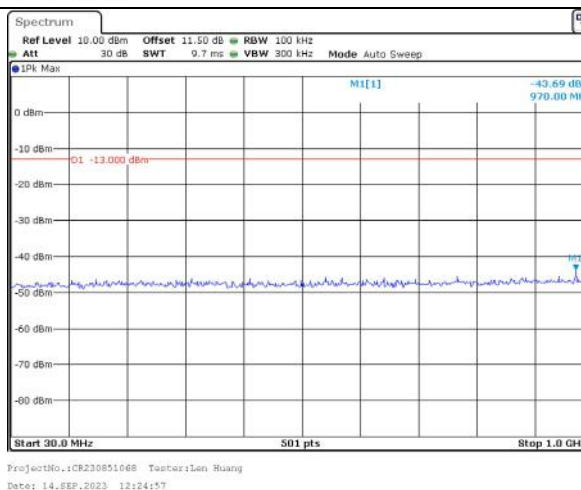
Channel

1.4MHz Bandwidth QPSK

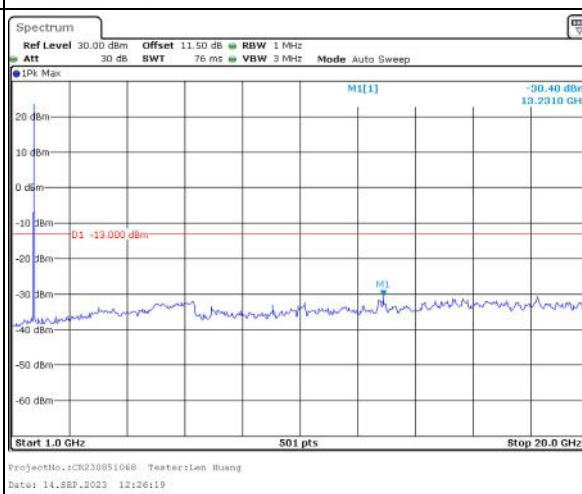
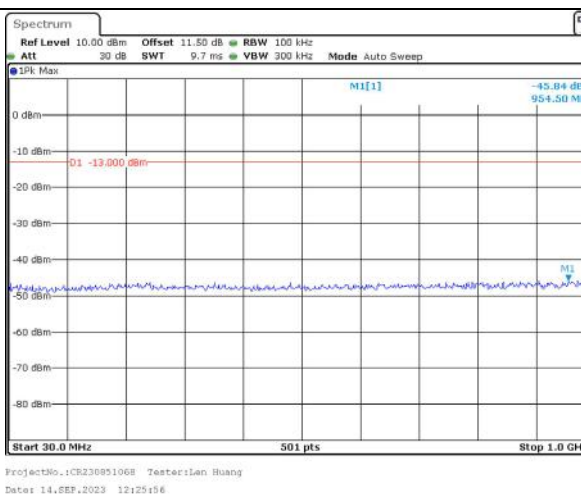
Lowest



Middle



Highest

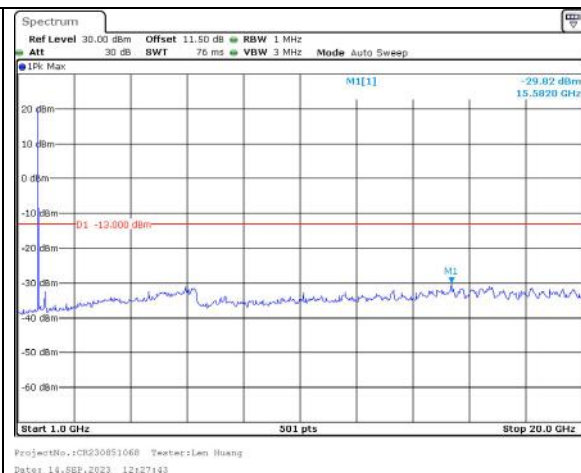
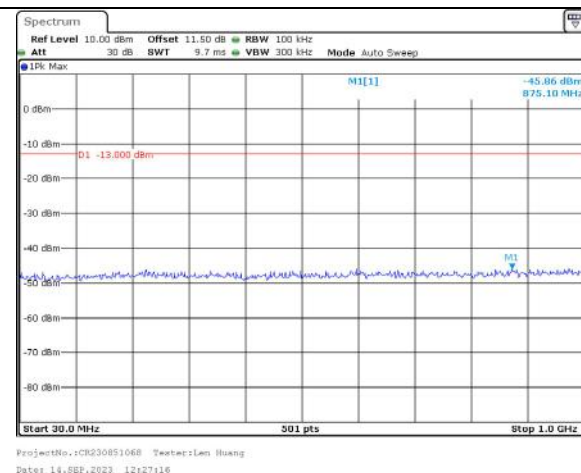


Spurious Emissions at Antenna Terminal

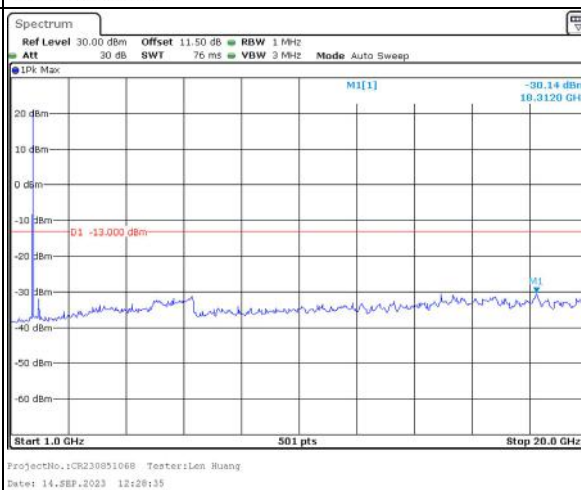
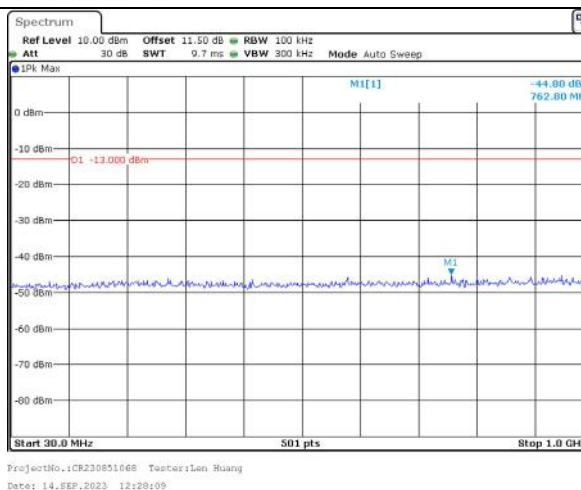
Channel

3MHz Bandwidth QPSK

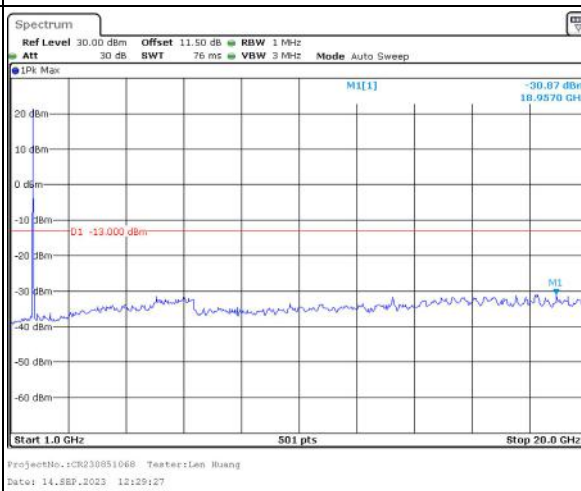
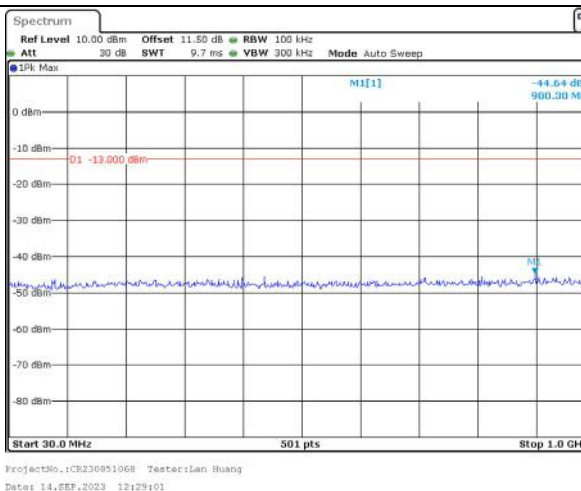
Lowest



Middle



Highest

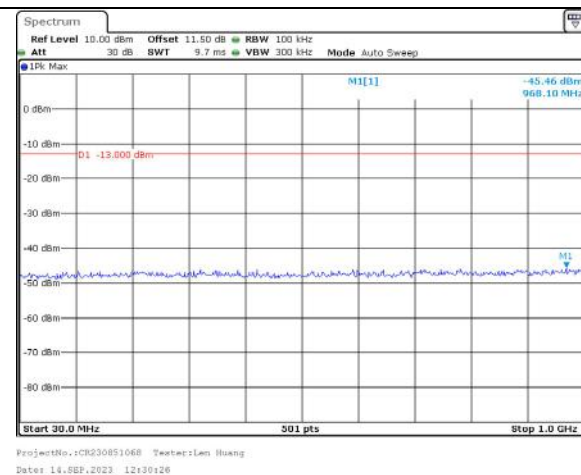
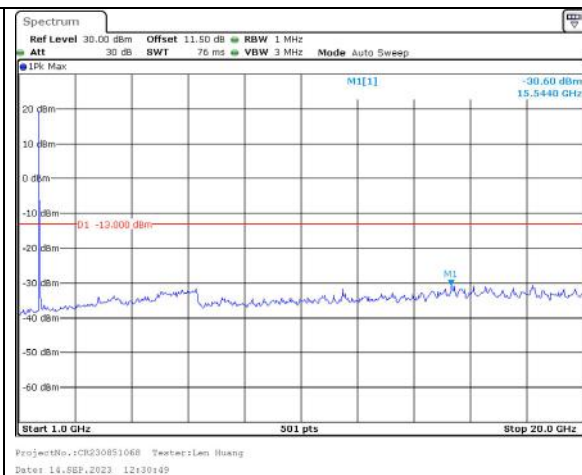


Spurious Emissions at Antenna Terminal

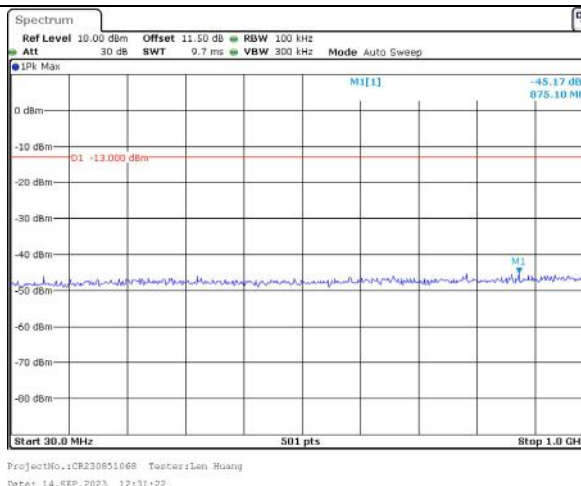
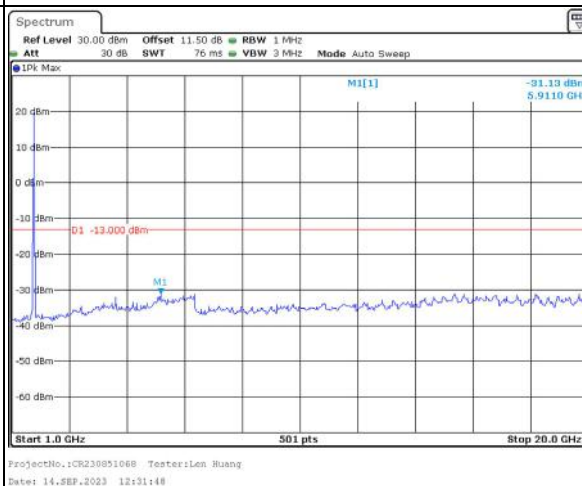
Channel

5MHz Bandwidth QPSK

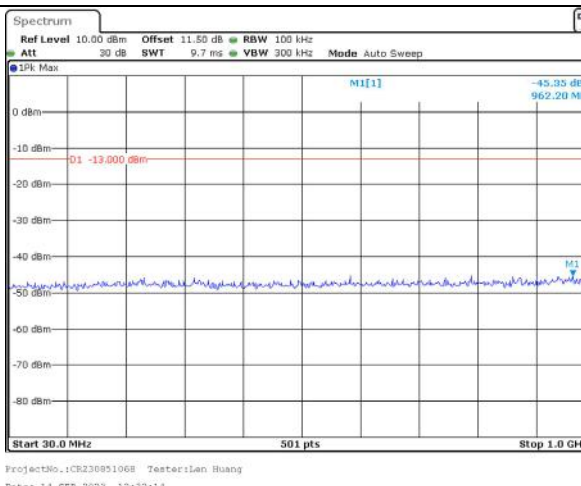
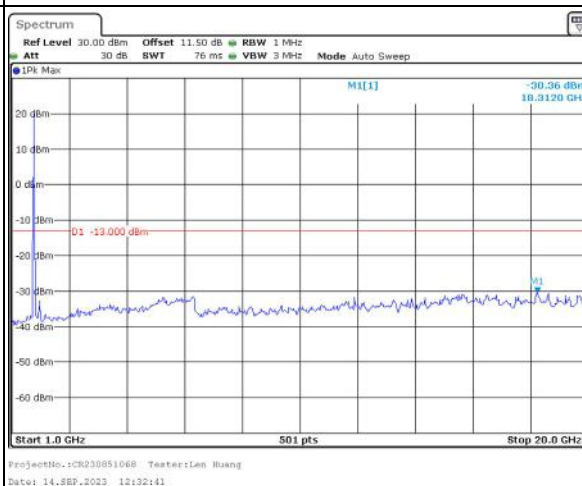
Lowest

ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 12:30:26ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 12:30:49

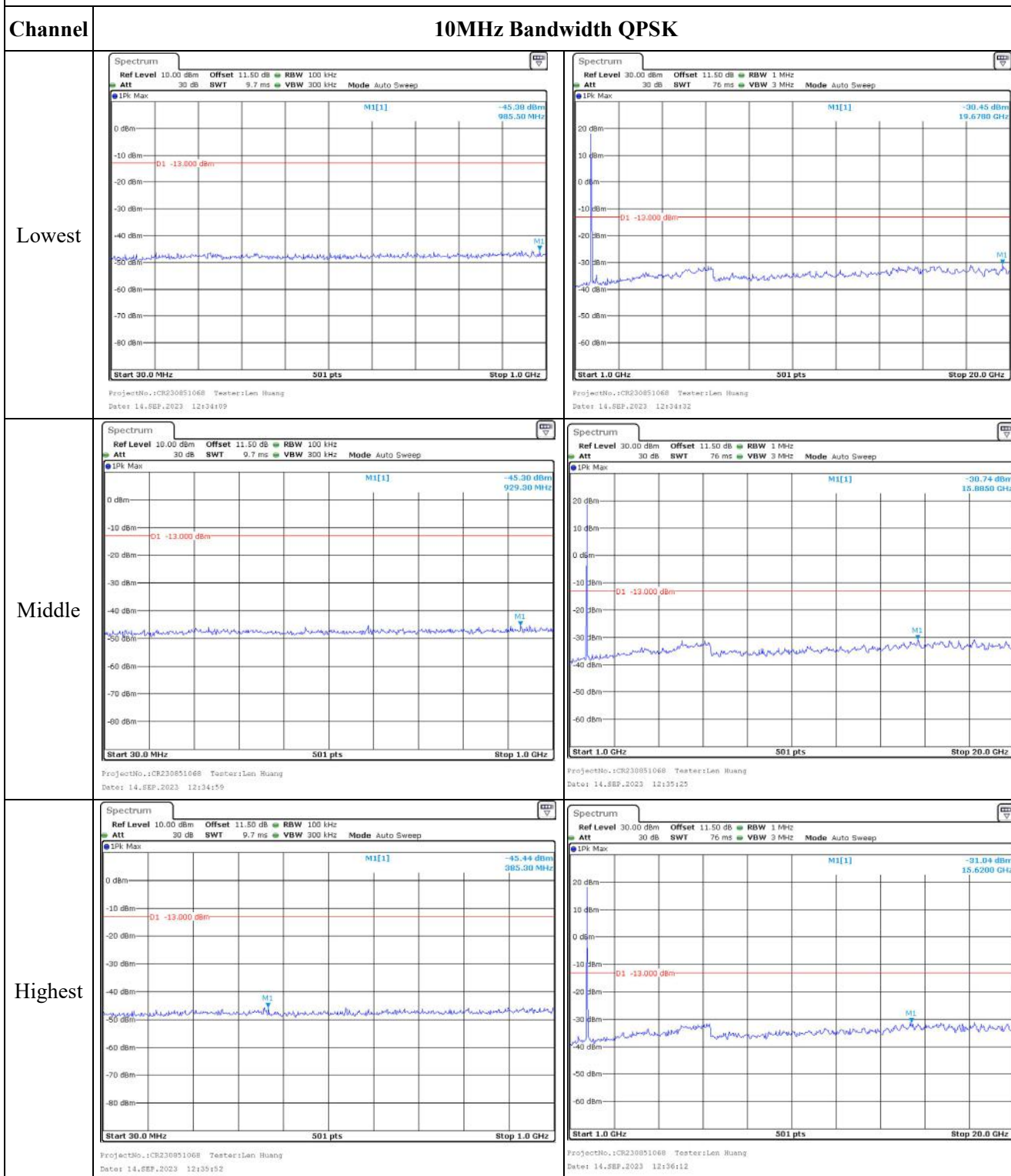
Middle

ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 12:31:22ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 12:31:48

Highest

ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 12:32:14ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 12:32:41

Spurious Emissions at Antenna Terminal

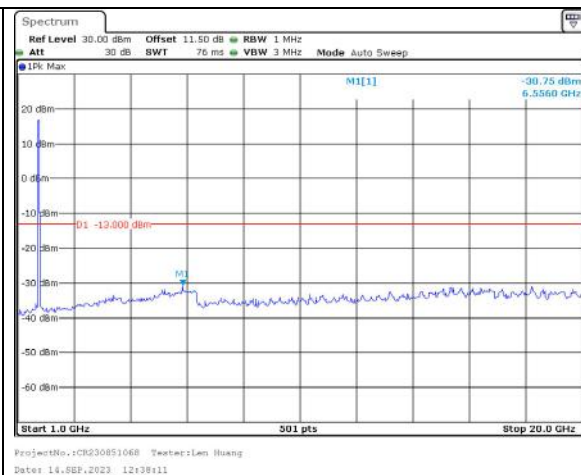
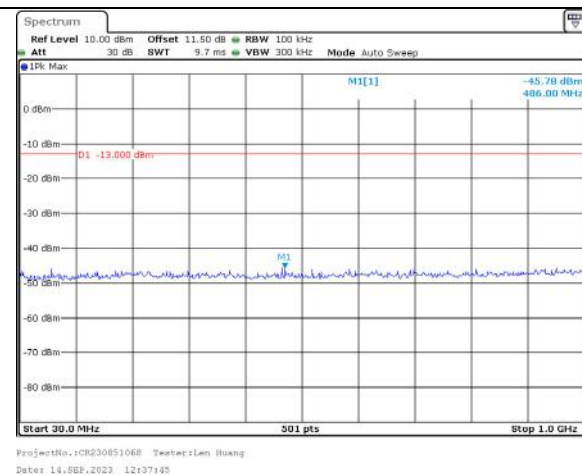


Spurious Emissions at Antenna Terminal

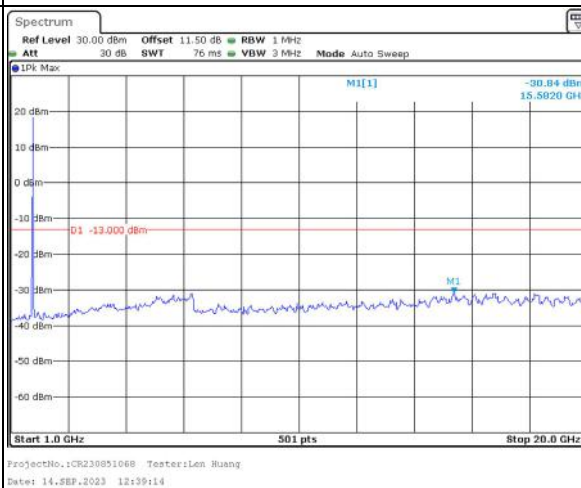
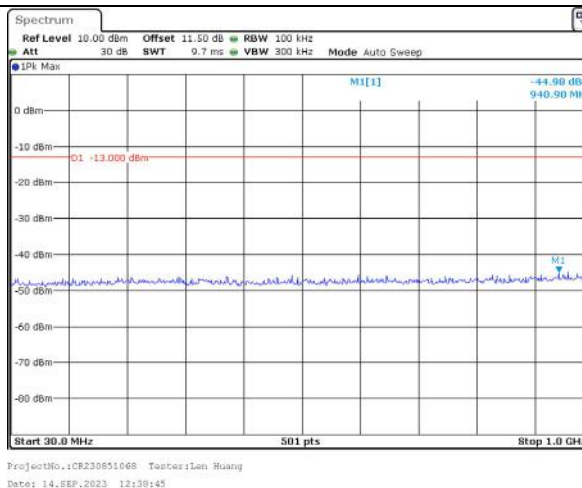
Channel

15MHz Bandwidth QPSK

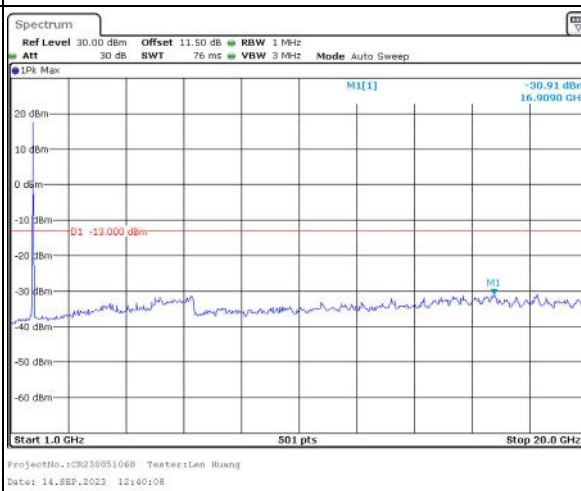
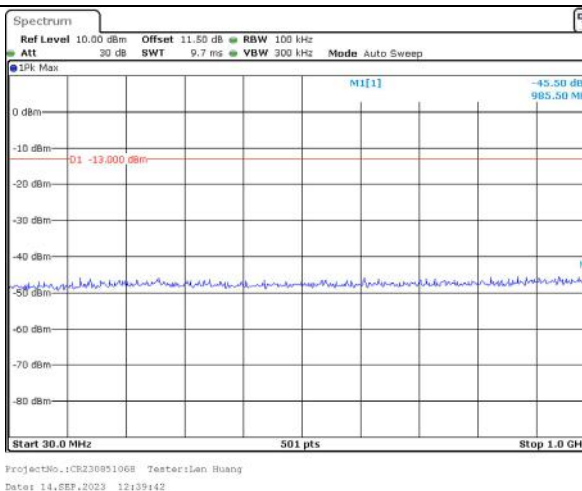
Lowest



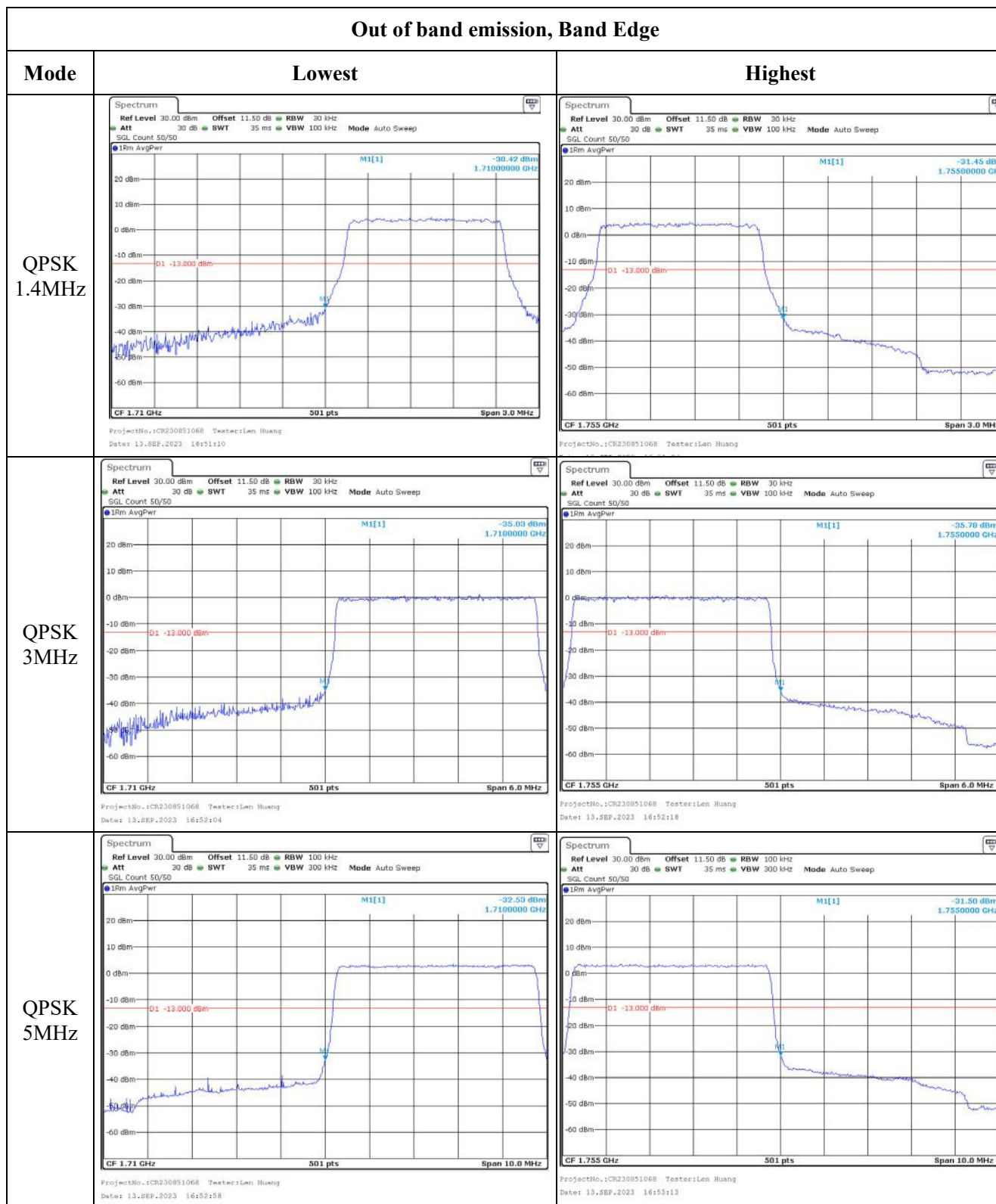
Middle



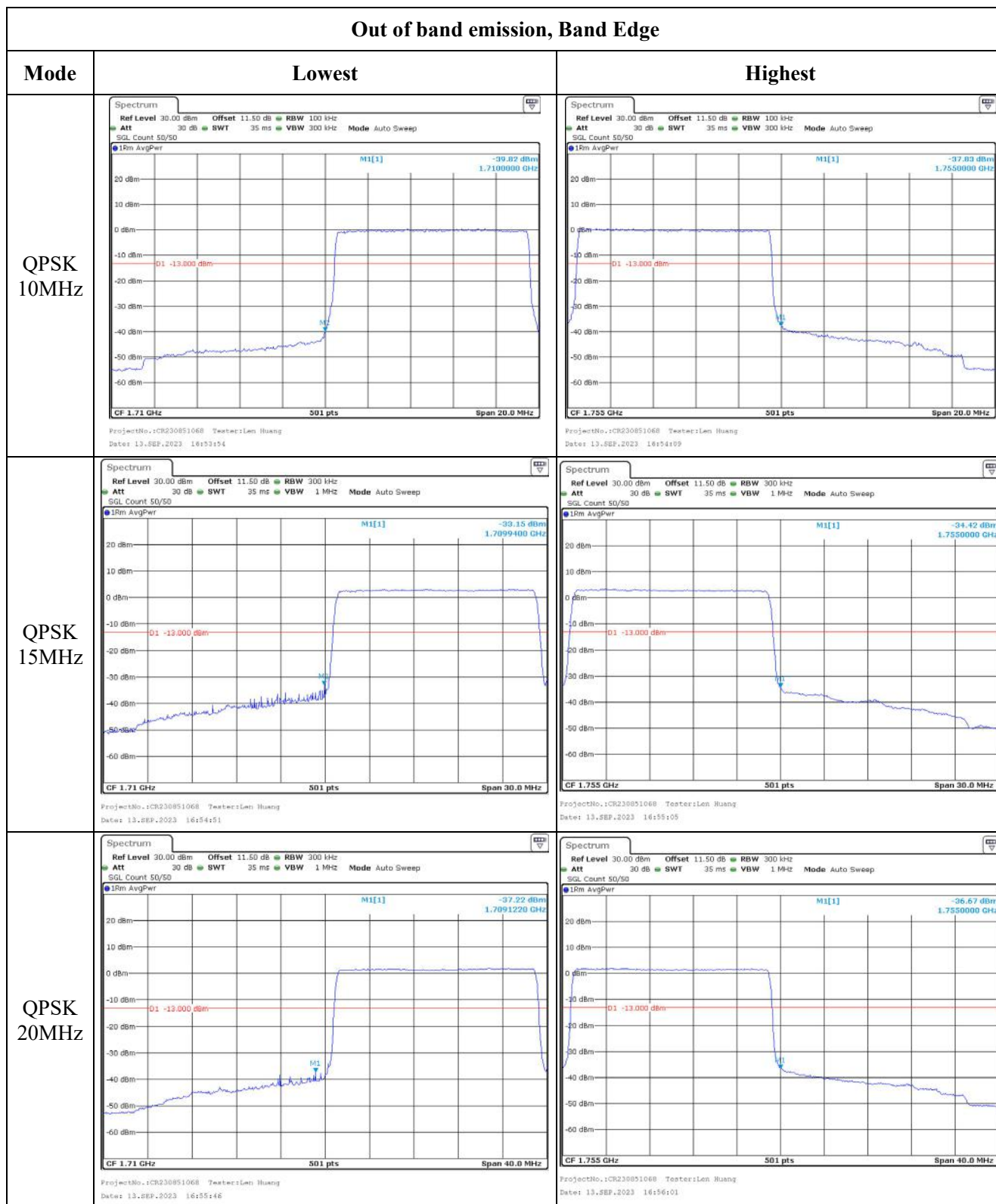
Highest



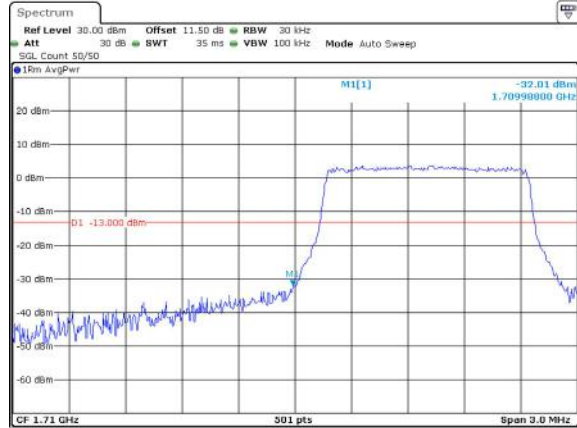
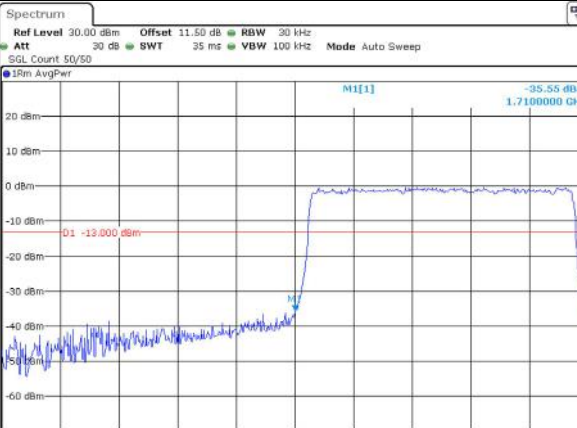
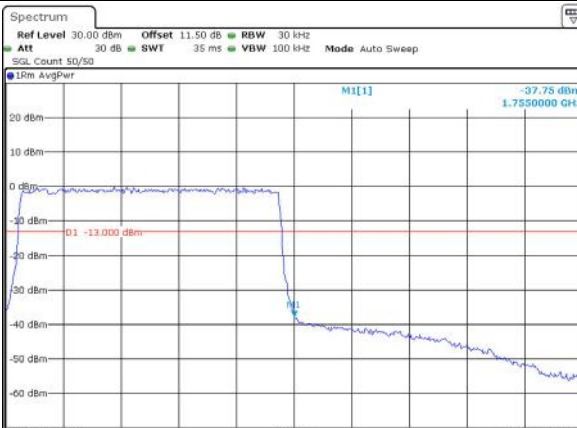
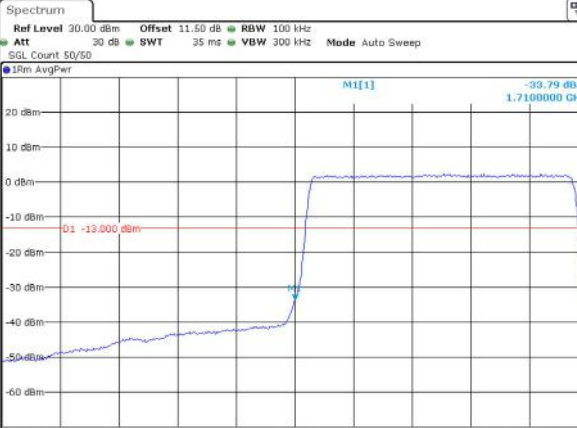
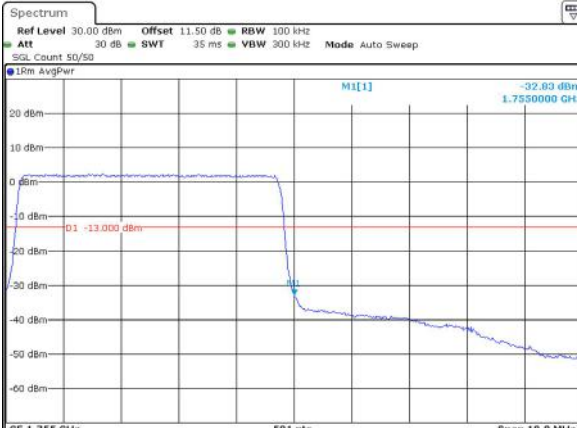
Out of band emission, Band Edge



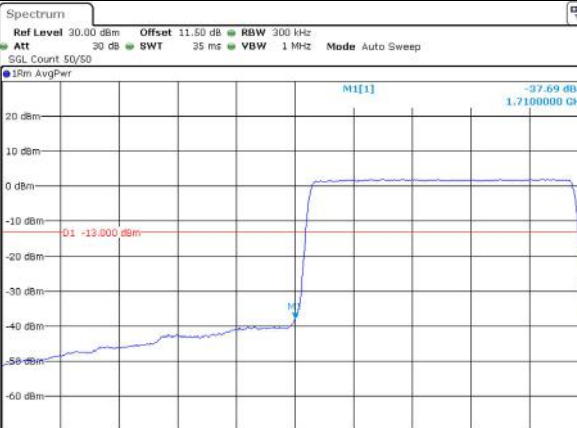
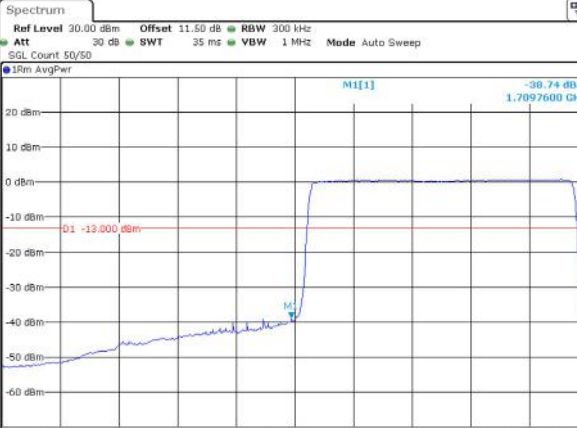
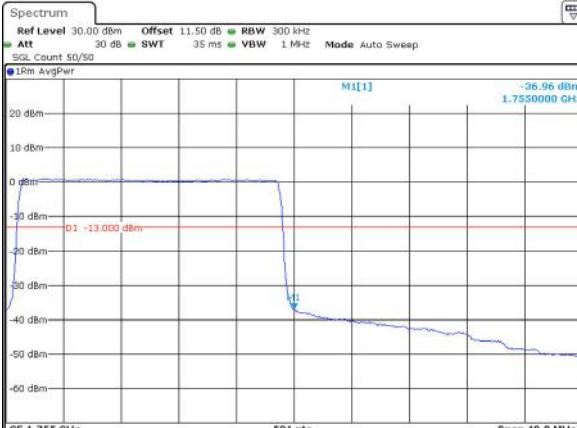
Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:51:16	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:51:31
16QAM 3MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:52:11	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:52:25
16QAM 5MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:53:05	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13.SEP.2023 16:53:19

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 16:54:01	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 16:54:16
16QAM 15MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 16:54:57	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 16:55:12
16QAM 20MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 16:55:53	 ProjectNo.:CR230851068 Tester:Len Huang Date: 13. SEP. 2023 16:56:07

4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	2AQ7-1	Test Date:	2023/9/13~2023/9/14
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.8~26.2	Relative Humidity: (%)	58~60	Temperature: (°C)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	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	2022/9/29	2023/9/28
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	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	23.41	23.41	23.35	15.76	38.45
	RB1#3	23.61	23.59	23.48		
	RB1#5	23.41	23.39	23.35		
	RB3#0	23.53	23.49	23.45		
	RB3#3	23.55	23.49	23.4		
	RB6#0	22.47	22.5	22.41		
1.4MHz 16QAM	RB1#0	22.41	22.4	22.48	14.83	38.45
	RB1#3	22.67	22.58	22.68		
	RB1#5	22.48	22.39	22.46		
	RB3#0	22.62	22.64	22.42		
	RB3#3	22.63	22.63	22.42		
	RB6#0	21.45	21.5	21.43		
3MHz QPSK	RB1#0	23.51	23.47	23.38	15.66	38.45
	RB1#8	23.48	23.44	23.35		
	RB1#14	23.47	23.45	23.33		
	RB6#0	22.41	22.4	22.37		
	RB6#9	22.4	22.44	22.33		
	RB15#0	22.46	22.43	22.39		
3MHz 16QAM	RB1#0	22.61	22.48	22.97	15.12	38.45
	RB1#8	22.59	22.4	22.95		
	RB1#14	22.62	22.41	22.91		
	RB6#0	21.45	21.35	21.41		
	RB6#9	21.49	21.34	21.4		
	RB15#0	21.43	21.46	21.43		
5MHz QPSK	RB1#0	23.45	23.39	23.32	15.71	38.45
	RB1#13	23.56	23.48	23.43		
	RB1#24	23.44	23.34	23.29		
	RB15#0	22.47	22.5	22.4		
	RB15#10	22.51	22.47	22.41		
	RB25#0	22.5	22.41	22.35		
5MHz 16QAM	RB1#0	22.72	22.45	22.18	14.97	38.45
	RB1#13	22.82	22.5	22.3		
	RB1#24	22.73	22.41	22.23		
	RB15#0	21.43	21.47	21.49		
	RB15#10	21.48	21.45	21.44		
	RB25#0	21.48	21.42	21.45		
10MHz QPSK	RB1#0	23.51	23.43	23.39	15.83	38.45

	RB1#25	23.68	23.62	23.53		
	RB1#49	23.49	23.39	23.37		
	RB25#0	22.52	22.49	22.48		
	RB25#25	22.54	22.42	22.43		
	RB50#0	22.55	22.46	22.47		
10MHz 16QAM	RB1#0	22.48	23.06	22.51	15.24	38.45
	RB1#25	22.63	23.09	22.68		
	RB1#49	22.45	22.89	22.5		
	RB25#0	21.59	21.54	21.51		
	RB25#25	21.64	21.46	21.46		
	RB50#0	21.56	21.46	21.47		

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	5.28	4.70	4.52	13
	RB50#0	5.25	5.07	5.10	13
10MHz 16QAM	RB1#0	6.00	5.39	5.42	13
	RB50#0	6.20	5.97	6.00	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	1.102	1.096	1.102	1.284	1.296	1.314
1.4MHz 16QAM	1.090	1.096	1.090	1.290	1.31	1.28
3MHz QPSK	2.683	2.683	2.683	2.880	2.892	2.880
3MHz 16QAM	2.683	2.683	2.683	2.880	2.868	2.880
5MHz QPSK	4.491	4.511	4.511	4.920	4.960	4.960
5MHz 16QAM	4.491	4.491	4.511	4.960	4.920	4.960
10MHz QPSK	8.942	8.942	8.942	9.640	9.640	9.640
10MHz 16QAM	8.942	8.942	8.942	9.600	9.600	9.640

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

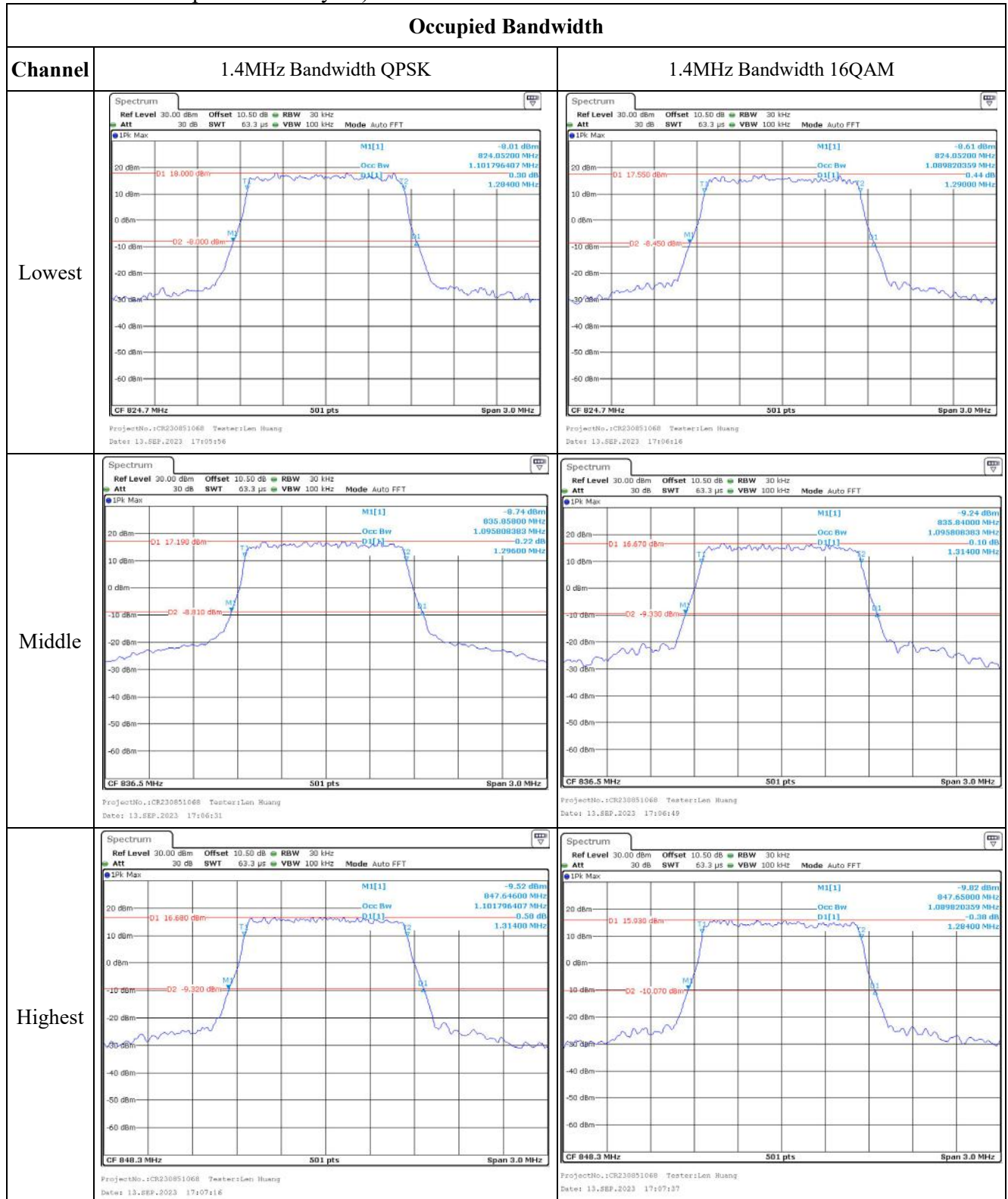
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §22.355: Frequency Stability

Test Modulation:	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	3.87	5.75	0.007	2.5
	-20	3.87	-8.76	-0.010	2.5
	-10	3.87	8.42	0.010	2.5
	0	3.87	-5.37	-0.006	2.5
	10	3.87	-9.13	-0.011	2.5
	20	3.87	6.37	0.008	2.5
	30	3.87	9.45	0.011	2.5
	40	3.87	-9.23	-0.011	2.5
	50	3.87	8.04	0.010	2.5
Frequency Stability vs. Voltage	20	3.45	5.21	0.006	2.5
	20	4.45	9.01	0.011	2.5
Result:				Pass	

Test Modulation:	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	3.87	-16.9	-0.020	2.5
	-20	3.87	6.42	0.008	2.5
	-10	3.87	6.12	0.007	2.5
	0	3.87	8.09	0.010	2.5
	10	3.87	-5.39	-0.006	2.5
	20	3.87	9.41	0.011	2.5
	30	3.87	-7.75	-0.009	2.5
	40	3.87	6.5	0.008	2.5
	50	3.87	11.04	0.013	2.5
Frequency Stability vs. Voltage	20	3.45	9.72	0.012	2.5
	20	4.45	4.5	0.005	2.5
Result:				Pass	

Test Plots(Note: The 10.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



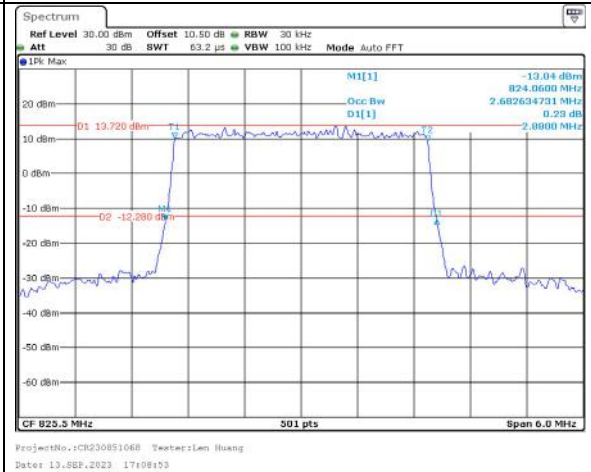
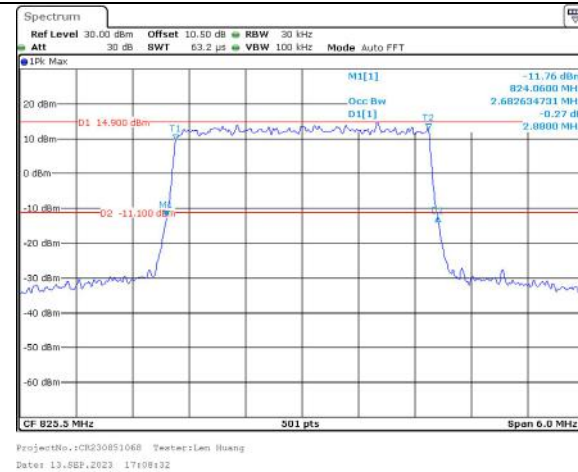
Occupied Bandwidth

Channel

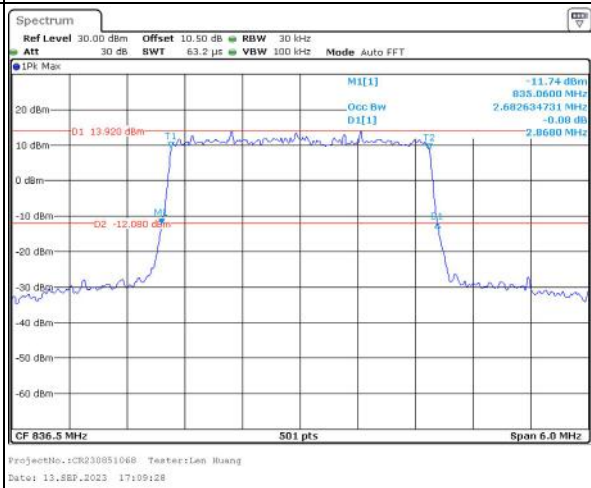
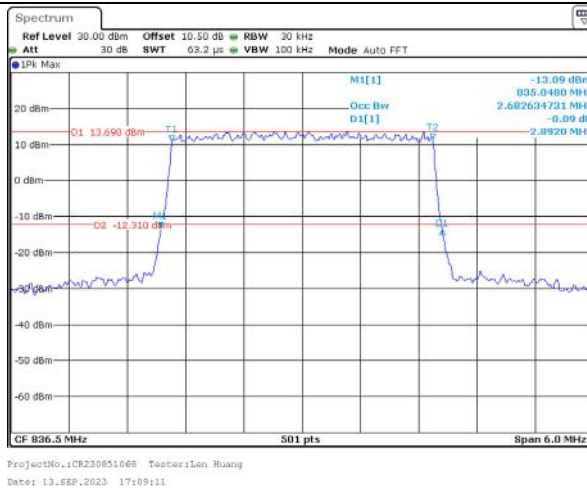
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

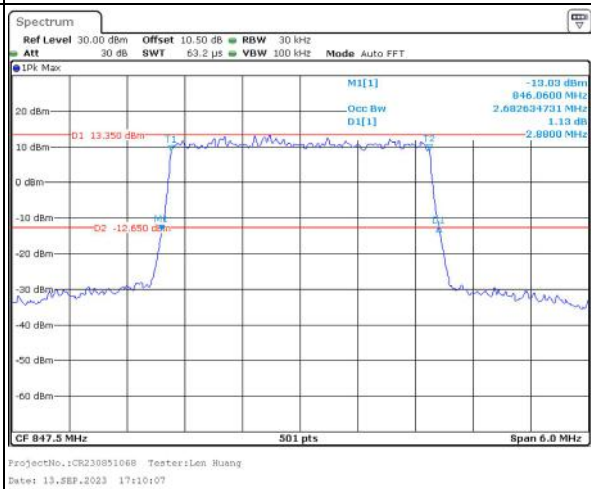
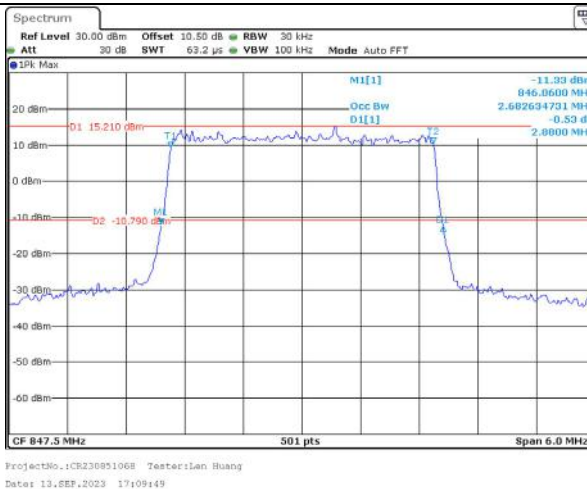
Lowest



Middle



Highest



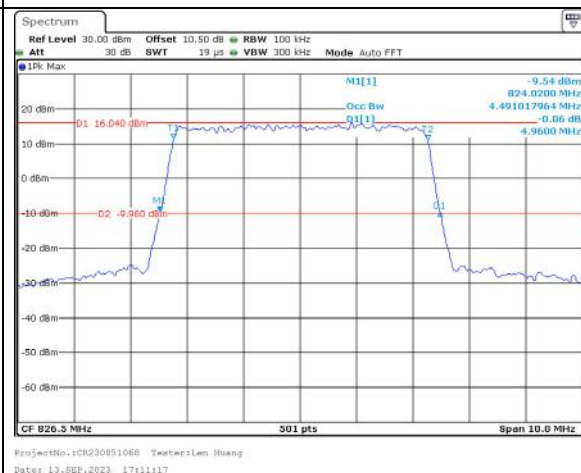
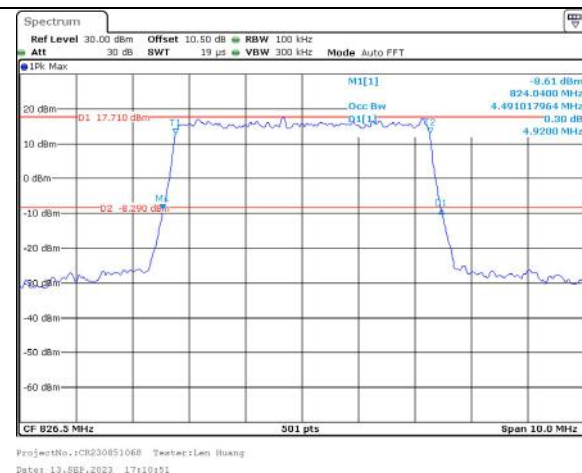
Occupied Bandwidth

Channel

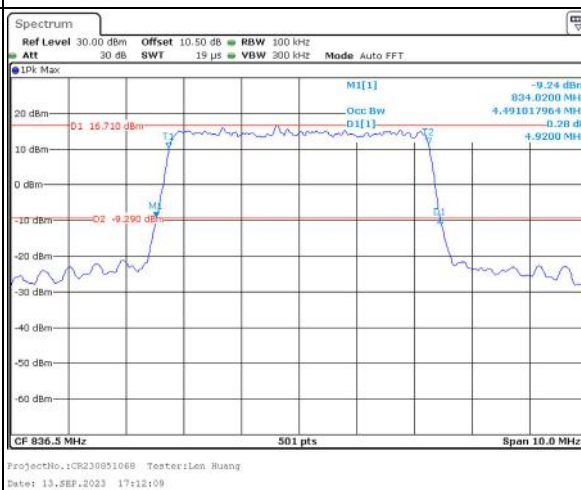
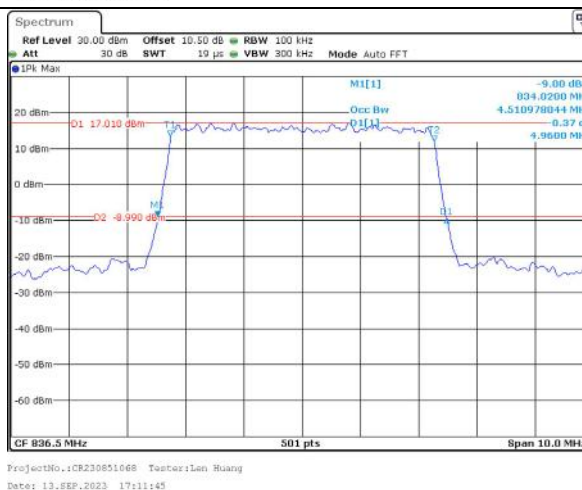
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

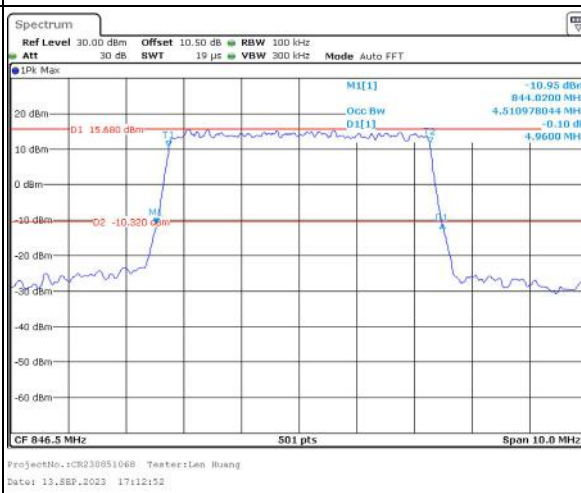
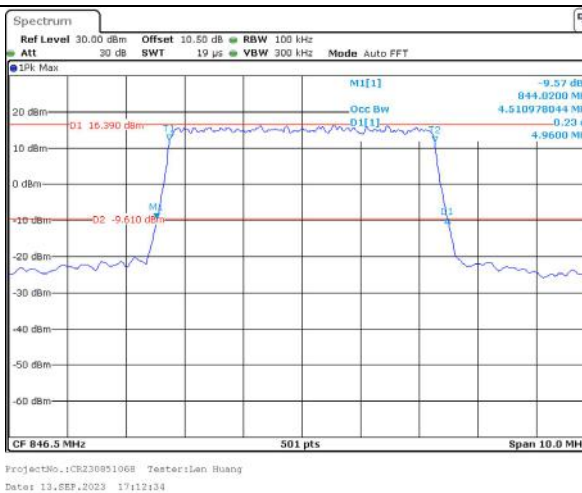
Lowest



Middle



Highest



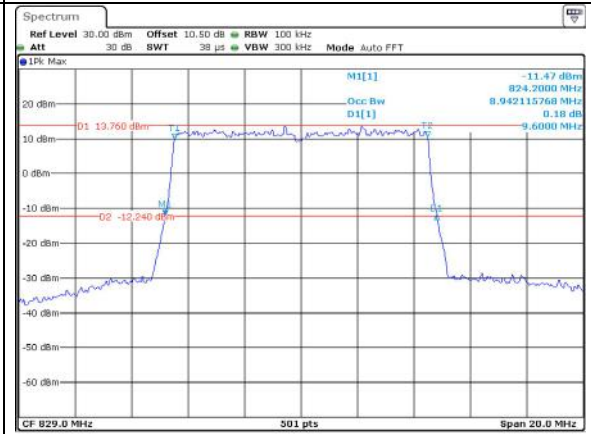
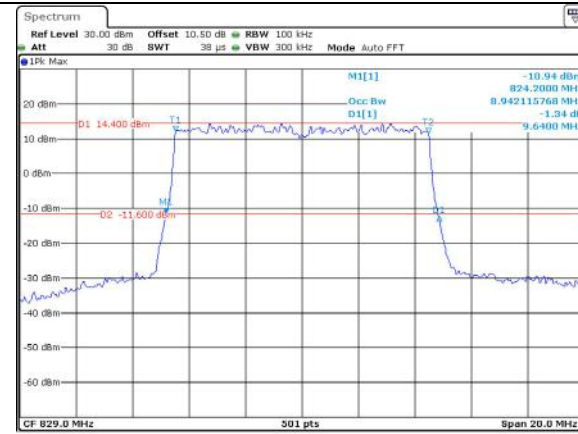
Occupied Bandwidth

Channel

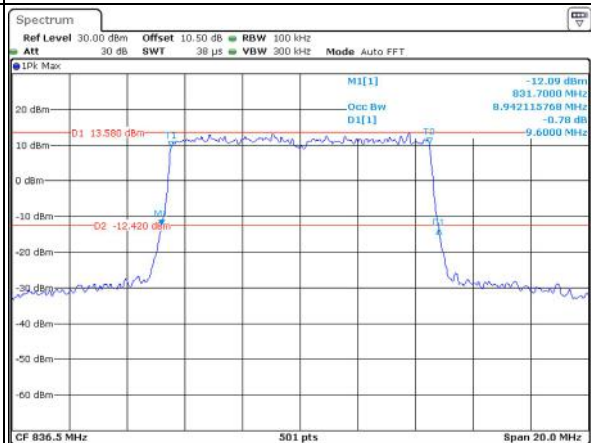
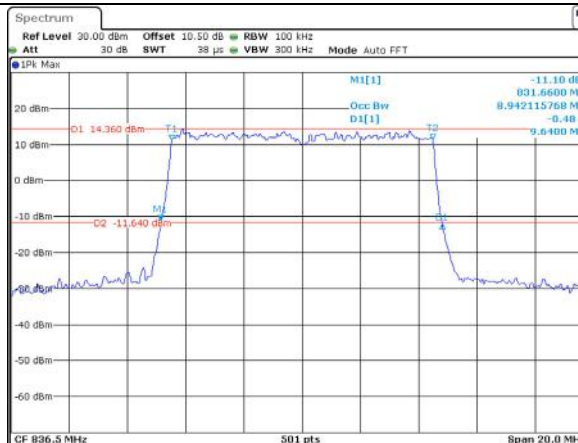
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

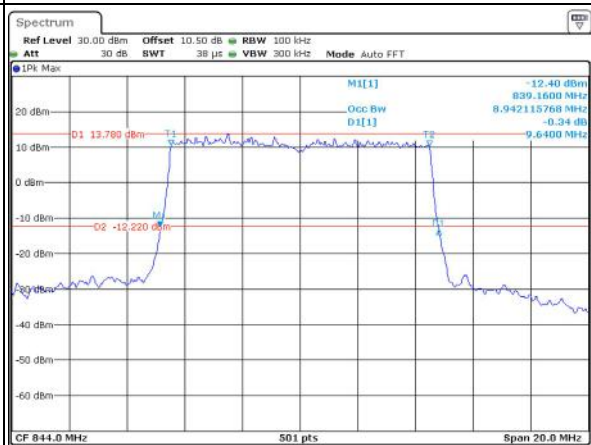
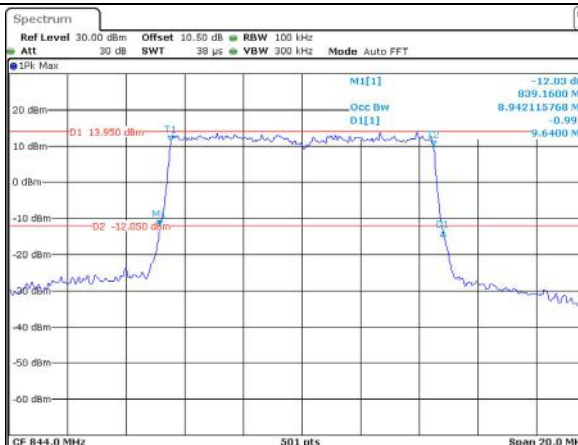
Lowest



Middle



Highest

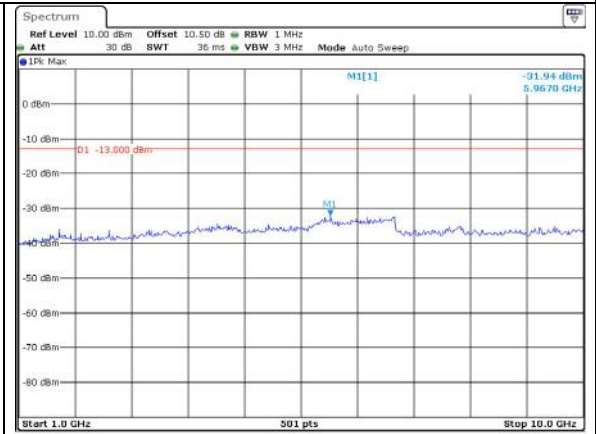
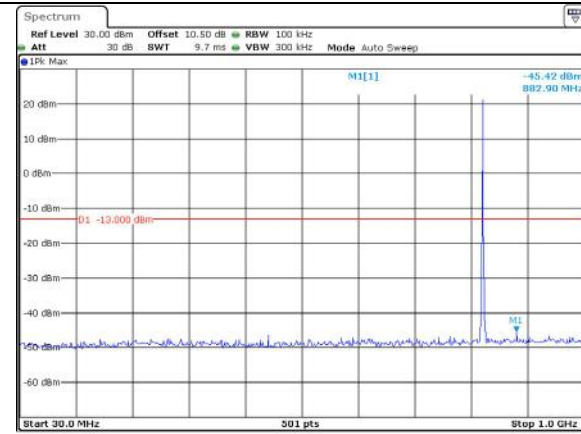


Spurious Emissions at Antenna Terminal

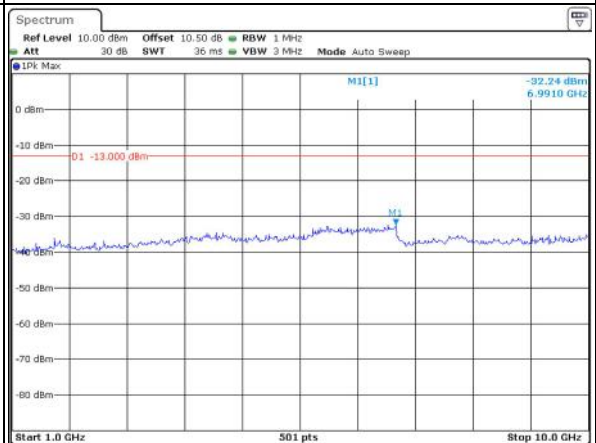
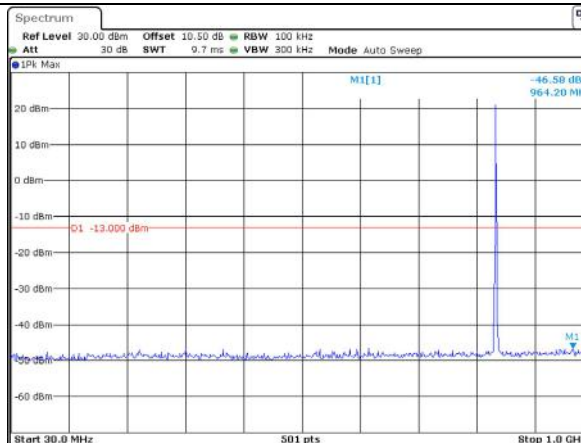
Channel

1.4MHz Bandwidth QPSK

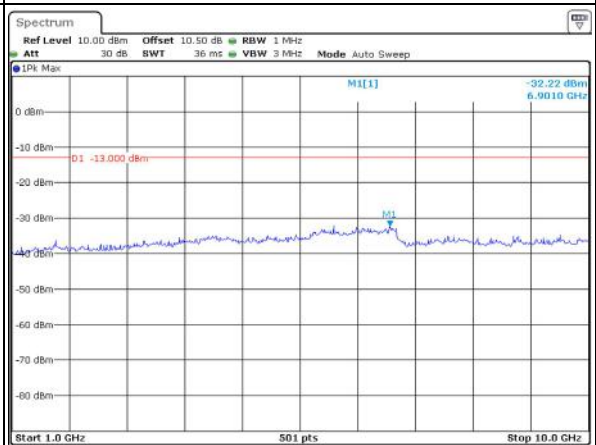
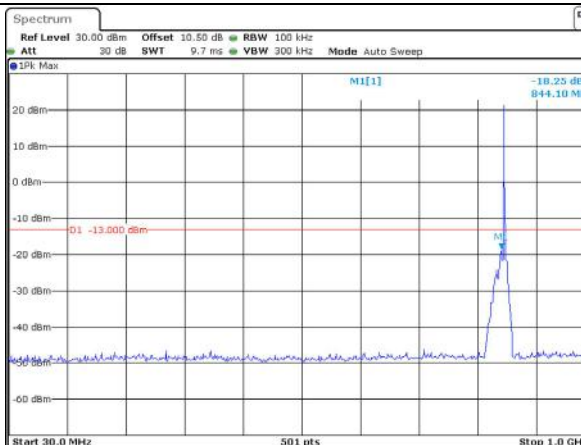
Lowest



Middle



Highest

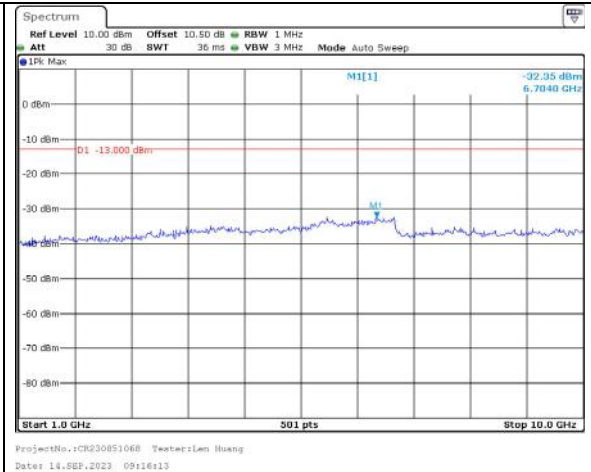
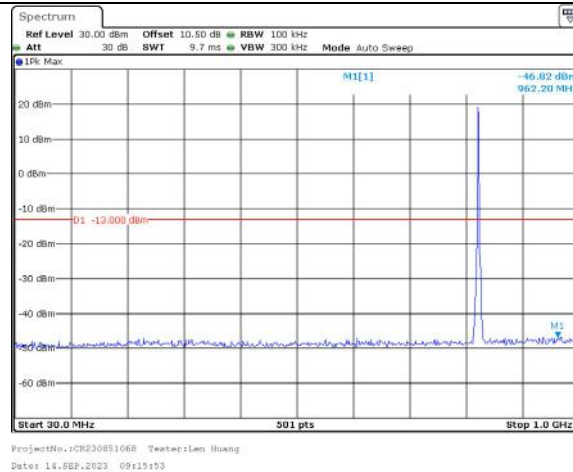


Spurious Emissions at Antenna Terminal

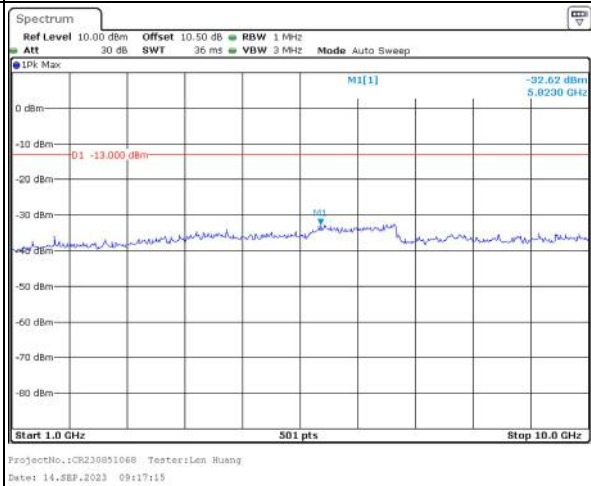
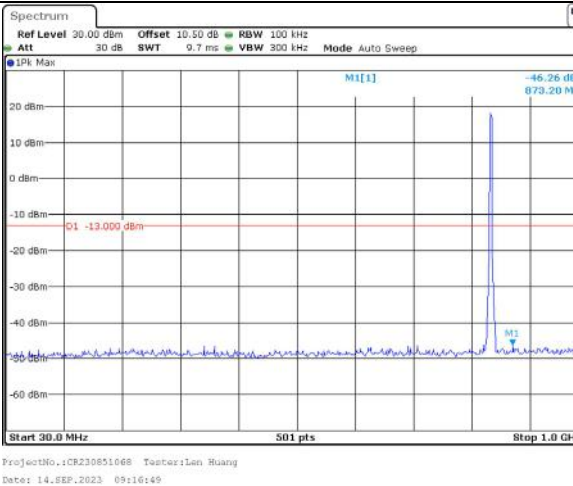
Channel

3MHz Bandwidth QPSK

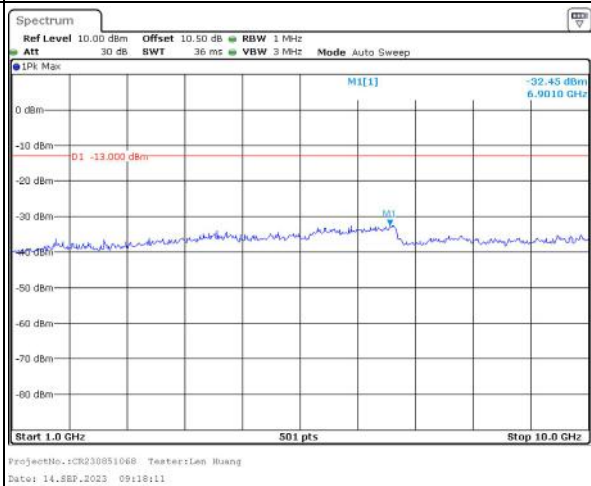
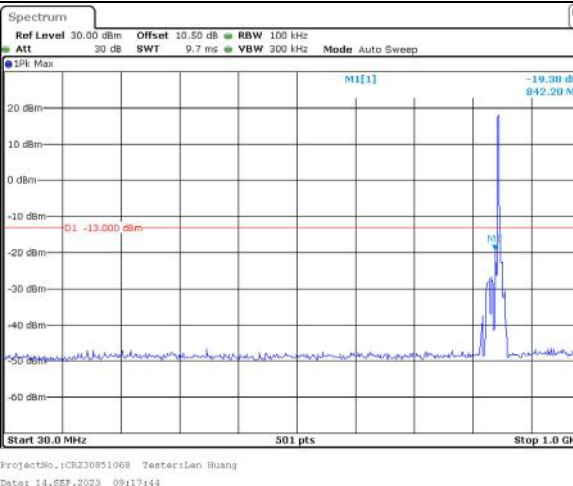
Lowest



Middle



Highest

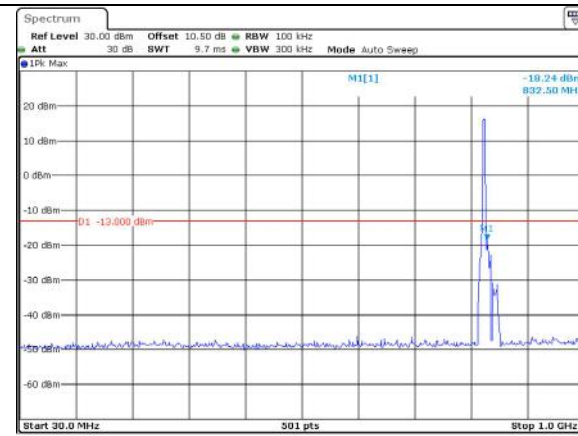


Spurious Emissions at Antenna Terminal

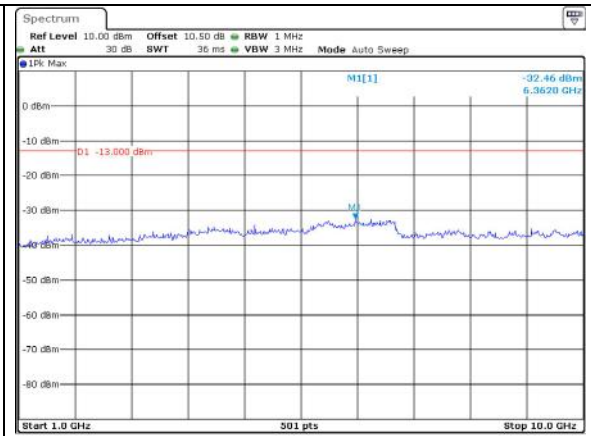
Channel

5MHz Bandwidth QPSK

Lowest

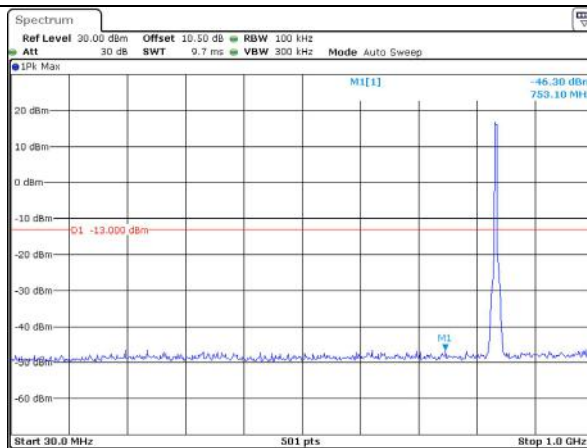


ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 09:19:08

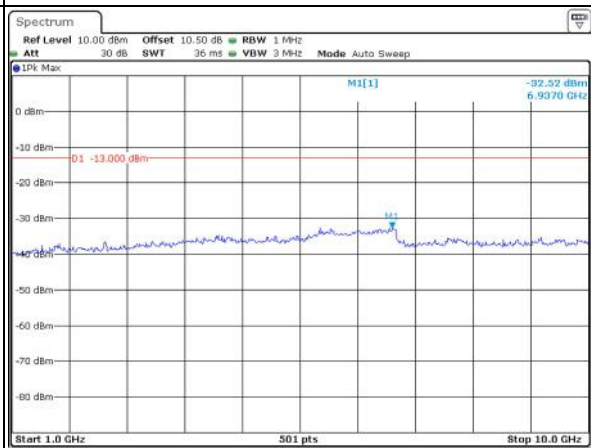


ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 09:19:26

Middle

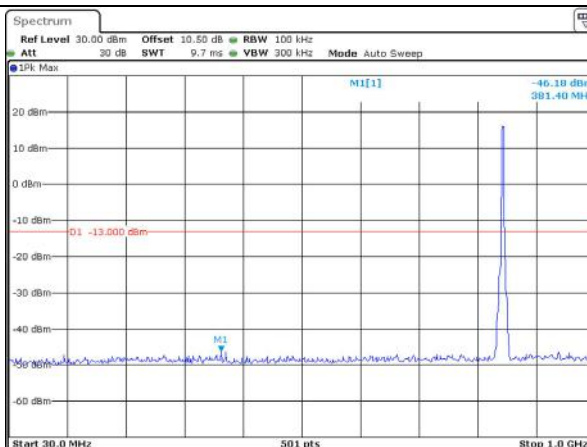


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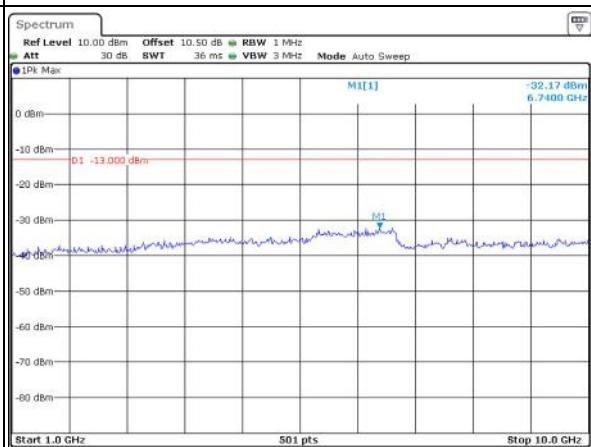


ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 09:20:24

Highest

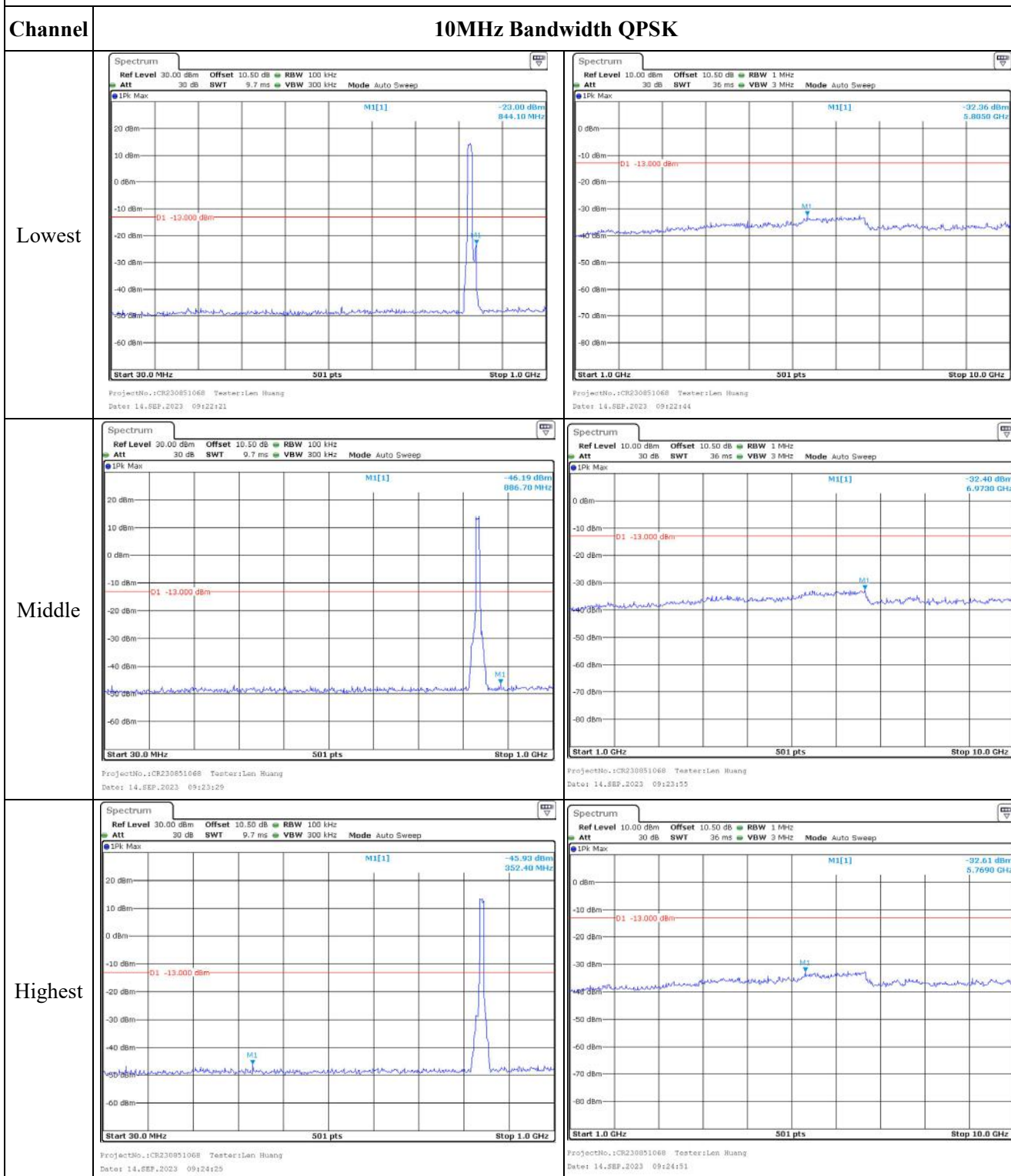


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Date: 14.SEP.2023 09:20:57

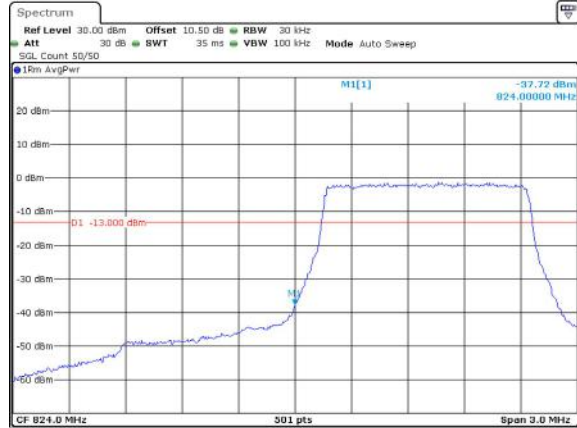
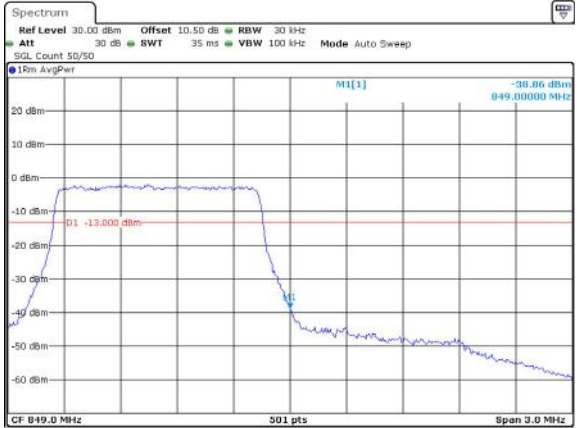
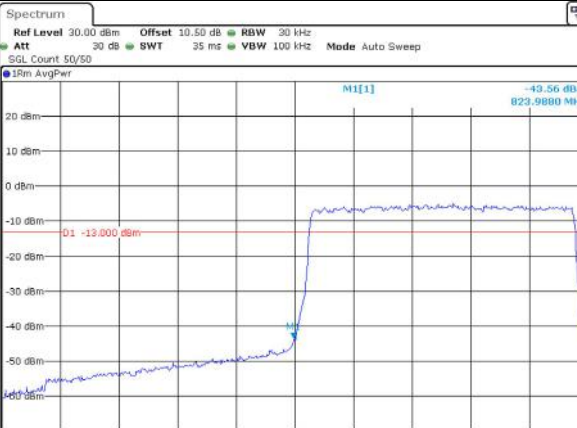
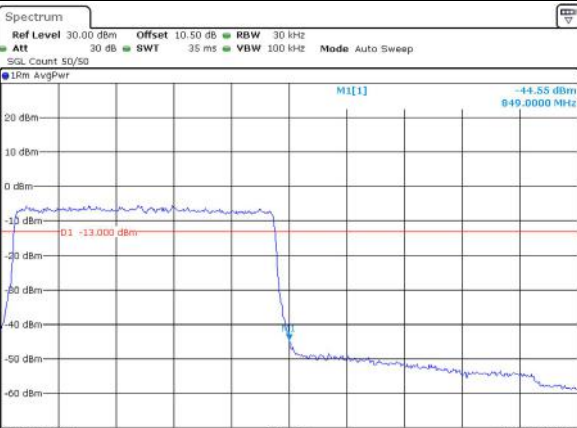
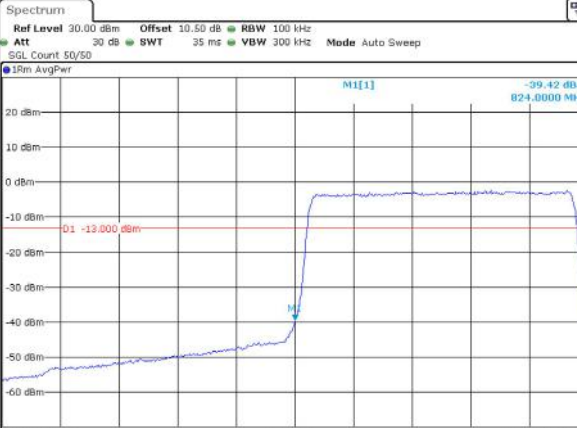
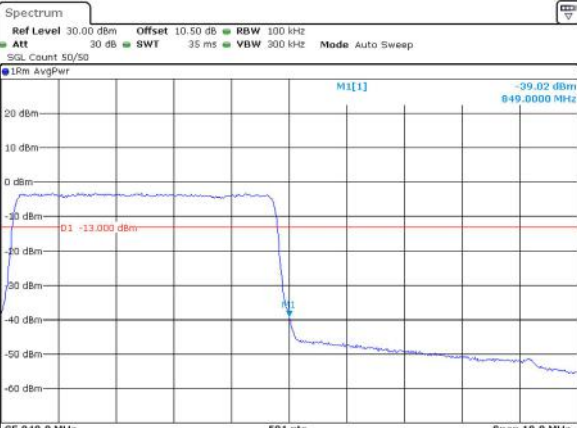


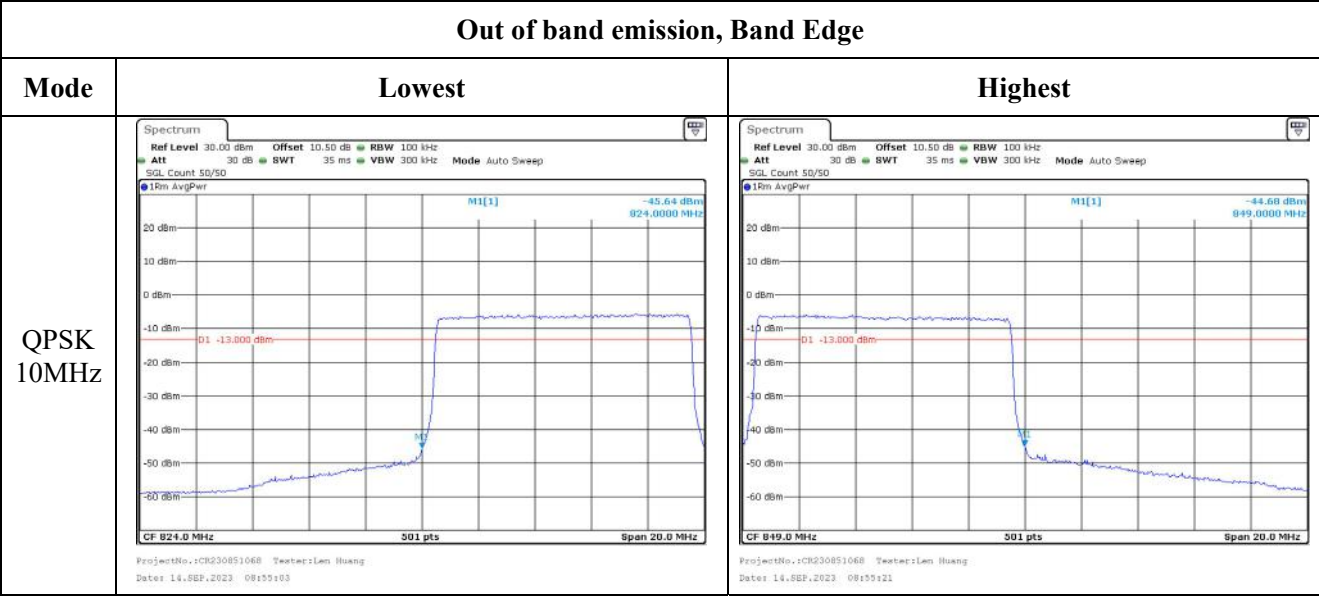
ProjectNo.:CR230851068 Tester:Len Huang
Date: 14.SEP.2023 09:21:24

Spurious Emissions at Antenna Terminal

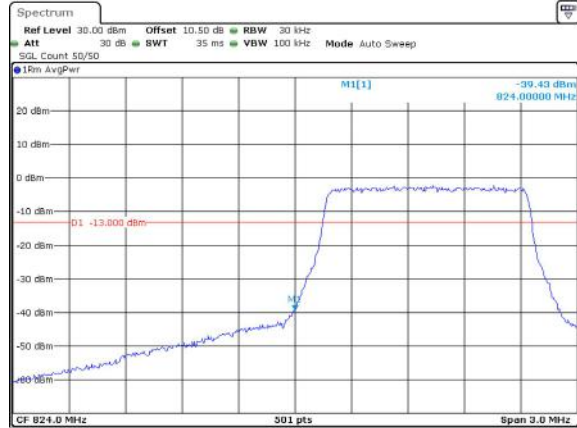
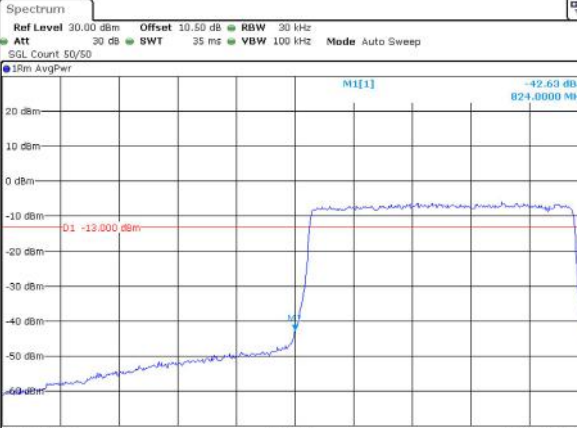
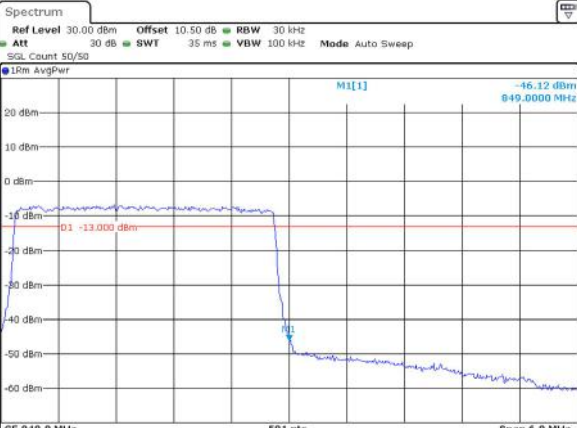
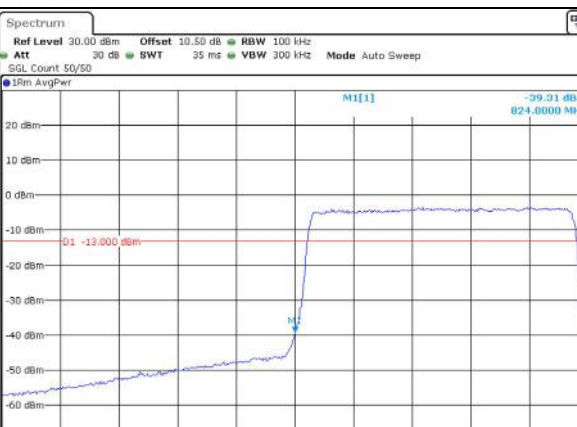


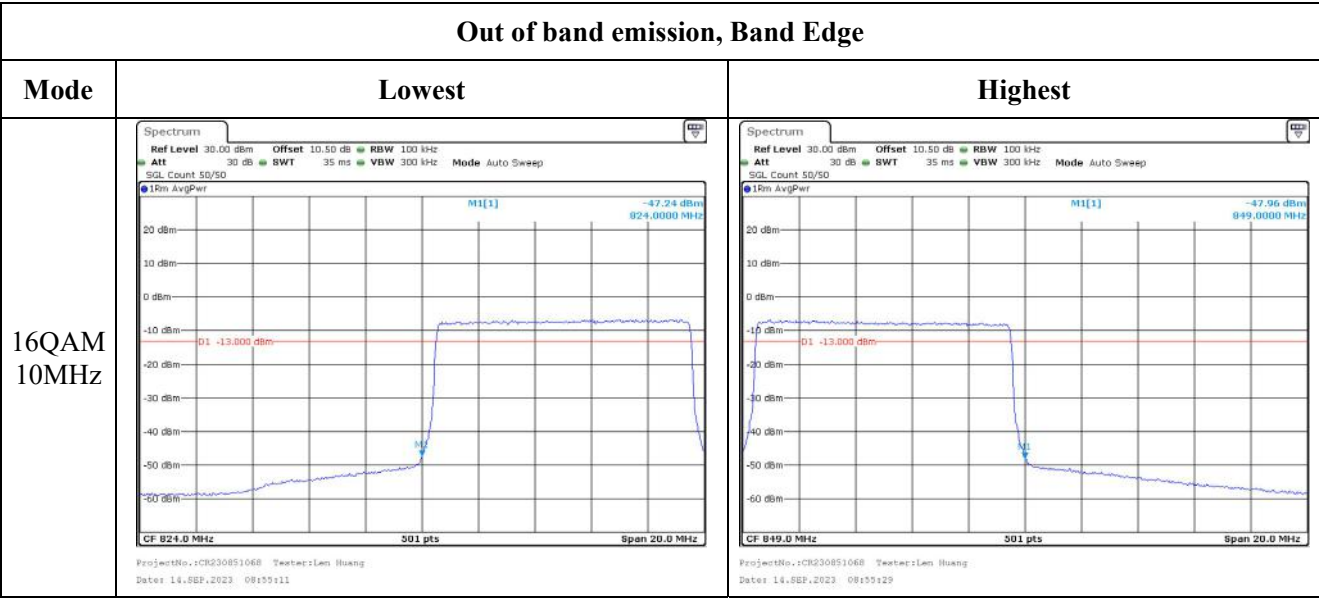
Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:51:51	 ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:52:06
QPSK 3MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:52:47	 ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:53:03
QPSK 5MHz	 ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:53:54	 ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:54:10



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	 Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -39.43 dBm 824.00000 MHz D1 -13.000 dBm CF 824.0 MHz 501 pts Span 3.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:51:59	 Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -41.40 dBm 849.00000 MHz D1 -13.000 dBm CF 849.0 MHz 501 pts Span 3.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:52:13
16QAM 3MHz	 Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -42.63 dBm 824.00000 MHz D1 -13.000 dBm CF 824.0 MHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:52:55	 Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 30 kHz Att 30 dB SWT 35 ms VBW 100 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -46.12 dBm 849.00000 MHz D1 -13.000 dBm CF 849.0 MHz 501 pts Span 6.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:53:10
16QAM 5MHz	 Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 35 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -39.31 dBm 824.00000 MHz D1 -13.000 dBm CF 824.0 MHz 501 pts Span 10.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:54:02	 Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 35 ms VBW 300 kHz Mode Auto Sweep SQL Count 50/50 1Rm AvgPer M1[1] -39.94 dBm 849.00000 MHz D1 -13.000 dBm CF 849.0 MHz 501 pts Span 10.0 MHz ProjectNo.:CR230851068 Tester:Len Huang Date: 14.SEP.2023 08:54:18



4.9 Antenna Port Test Data and Results for LTE Band 7

Serial Number:	2AQ7-1	Test Date:	2023/9/13~2023/9/14
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.8~26.2	Relative Humidity: (%)	58~60	Temperature: (°C)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	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	2022/9/29	2023/9/28
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)
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	15.65	15.52	15.63	15.24	33
	RB1#13	15.75	15.63	15.75		
	RB1#24	15.62	15.51	15.64		
	RB15#0	14.75	14.71	14.79		
	RB15#10	14.72	14.66	14.7		
	RB25#0	14.75	14.64	14.77		
5MHz 16QAM	RB1#0	14.97	14.67	14.57	14.59	33
	RB1#13	15.1	14.78	14.7		
	RB1#24	14.96	14.65	14.58		
	RB15#0	13.73	13.75	13.88		
	RB15#10	13.76	13.7	13.83		
	RB25#0	13.75	13.71	13.83		
10MHz QPSK	RB1#0	15.65	15.58	15.68	15.3	33
	RB1#25	15.81	15.7	15.73		
	RB1#49	15.64	15.63	15.68		
	RB25#0	14.68	14.65	14.78		
	RB25#25	14.74	14.67	14.76		
	RB50#0	14.69	14.72	14.73		
10MHz 16QAM	RB1#0	14.88	14.72	15.46	15.02	33
	RB1#25	15.04	14.79	15.53		
	RB1#49	14.86	14.7	15.44		
	RB25#0	13.74	13.77	13.89		
	RB25#25	13.76	13.83	13.86		
	RB50#0	13.73	13.73	13.81		
15MHz QPSK	RB1#0	15.59	15.52	15.6	15.16	33
	RB1#38	15.62	15.56	15.67		
	RB1#74	15.49	15.49	15.64		
	RB36#0	14.63	14.62	14.67		
	RB36#39	14.61	14.64	14.68		
	RB75#0	14.63	14.63	14.68		
15MHz 16QAM	RB1#0	15.07	15.26	14.8	14.79	33
	RB1#38	15.15	15.3	14.91		
	RB1#74	15.07	15.28	14.9		
	RB36#0	13.64	13.63	13.76		
	RB36#39	13.6	13.65	13.71		
	RB75#0	13.62	13.66	13.7		
20MHz QPSK	RB1#0	15.44	15.49	15.47	15.35	33

	RB1#50	15.72	15.73	15.86		
	RB1#99	15.34	15.44	15.49		
	RB50#0	14.66	14.65	14.73		
	RB50#50	14.65	14.67	14.77		
	RB100#0	14.72	14.65	14.72		
20MHz 16QAM	RB1#0	15.13	14.8	14.79	14.93	33
	RB1#50	15.44	15.13	15.16		
	RB1#99	15.07	14.83	14.84		
	RB50#0	13.75	13.72	13.78		
	RB50#50	13.71	13.68	13.8		
	RB100#0	13.75	13.74	13.78		

Note: EIRP=Conducted Power(dBm) - L_c(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	6.41	6.52	6.14	13
	RB100#0	5.88	5.83	5.80	13
20MHz 16QAM	RB1#0	7.19	7.65	6.55	13
	RB100#0	6.78	6.67	6.70	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	4.940	4.960	4.940
5MHz 16QAM	4.511	4.511	4.511	4.960	4.960	4.960
10MHz QPSK	8.942	8.942	8.942	9.680	9.680	9.720
10MHz 16QAM	8.942	8.942	8.942	9.640	9.600	9.640
15MHz QPSK	13.473	13.473	13.413	14.760	14.700	14.580
15MHz 16QAM	13.533	13.533	13.533	14.640	14.700	14.640
20MHz QPSK	17.964	17.964	17.884	19.200	19.200	19.280
20MHz 16QAM	17.964	18.044	17.964	19.120	19.520	19.360

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	3.87	2500.787	2500.00	2569.926	2570
	-20	3.87	2500.838	2500.00	2569.936	2570
	-10	3.87	2500.891	2500.00	2569.901	2570
	0	3.87	2500.406	2500.00	2569.914	2570
	10	3.87	2500.708	2500.00	2569.942	2570
	20	3.87	2500.350	2500.00	2569.982	2570
	30	3.87	2500.263	2500.00	2569.943	2570
	40	3.87	2500.487	2500.00	2569.984	2570
	50	3.87	2500.700	2500.00	2569.945	2570
Frequency Stability vs. Voltage	20	3.45	2500.278	2500.00	2569.940	2570
	20	4.45	2500.690	2500.00	2569.980	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	3.87	2500.197	2500.00	2569.926	2570
	-20	3.87	2500.251	2500.00	2569.960	2570
	-10	3.87	2500.304	2500.00	2569.911	2570
	0	3.87	2500.218	2500.00	2569.897	2570
	10	3.87	2500.194	2500.00	2569.972	2570
	20	3.87	2500.303	2500.00	2569.970	2570
	30	3.87	2500.196	2500.00	2569.952	2570
	40	3.87	2500.321	2500.00	2569.947	2570
	50	3.87	2500.392	2500.00	2569.923	2570
Frequency Stability vs. Voltage	20	3.45	2500.167	2500.00	2569.935	2570
	20	4.45	2500.284	2500.00	2569.897	2570
					Result:	Pass