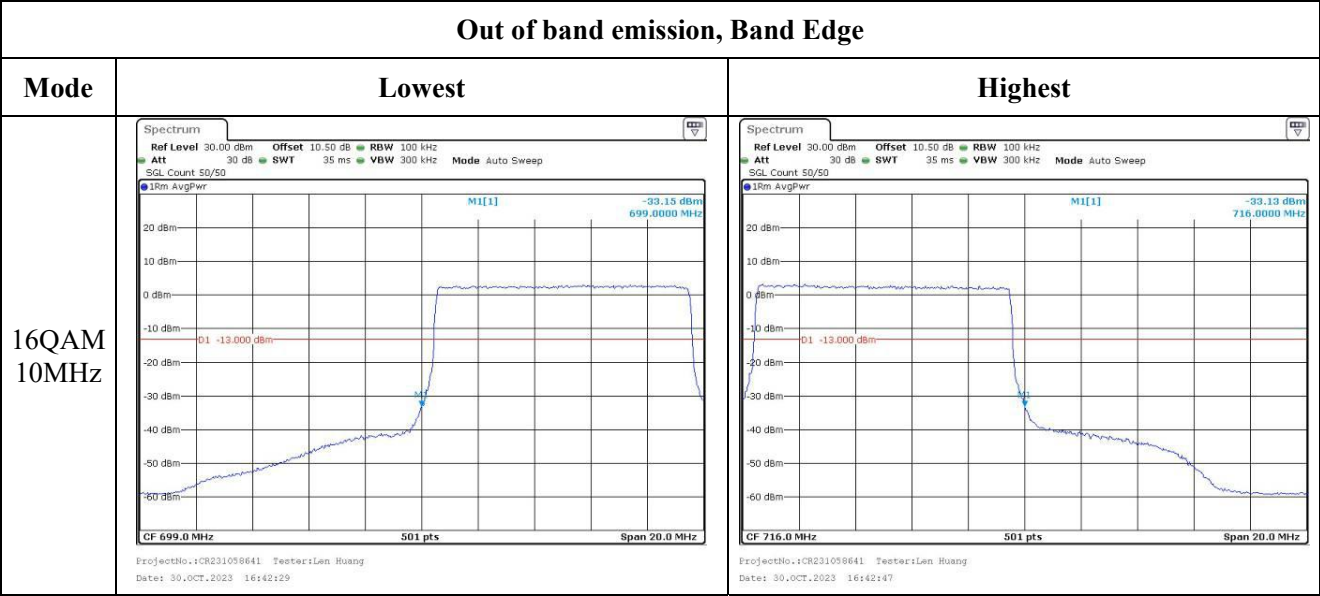




4.11 Antenna Port Test Data and Results for LTE Band 13

Serial Number:	2C02-2	Test Date:	2023/10/29-2023/11/3
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang, Ken Tang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5-26.6	Relative Humidity: (%)	45-62	ATM Pressure: (kPa)	101-101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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	2023/9/28	2024/9/27
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	779.5	782	784.5
10MHz	/	782	/

Test Data:**FCC§2.1046;§ 27.50(c) (10)****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		
5MHz QPSK	RB1#0	23.07	23.09	23.16	15.49	34.77
	RB1#13	23.23	23.19	23.24		
	RB1#24	23.17	23.16	23.18		
	RB15#0	22.17	22.35	22.32		
	RB15#10	22.21	22.27	22.33		
	RB25#0	22.18	22.27	22.31		
5MHz 16QAM	RB1#0	22.35	22.27	22.11	14.76	34.77
	RB1#13	22.51	22.36	22.19		
	RB1#24	22.49	22.26	22.13		
	RB15#0	21.19	21.37	21.39		
	RB15#10	21.24	21.33	21.38		
	RB25#0	21.19	21.34	21.37		
10MHz QPSK	RB1#0	/	23.2	/	15.63	34.77
	RB1#25	/	23.38	/		
	RB1#49	/	23.28	/		
	RB25#0	/	22.29	/		
	RB25#25	/	22.35	/		
	RB50#0	/	22.34	/		
10MHz 16QAM	RB1#0	/	22.2	/	14.58	34.77
	RB1#25	/	22.33	/		
	RB1#49	/	22.29	/		
	RB25#0	/	21.43	/		
	RB25#25	/	21.45	/		
	RB50#0	/	21.38	/		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + G_T(dBd)G_T(dBd)=G_T(dBi)-2.15**Result:****Pass**

Peak-to-average Ratio(PAR)					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	/	4.12	/	13
	RB50#0	/	5.07	/	13
10MHz 16QAM	RB1#0	/	4.84	/	13
	RB50#0	/	6.06	/	13
Result:					Pass

FCC §2.1049, §27.53:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.511	4.511	4.551	5.200	5.120	5.220
5MHz 16QAM	4.531	4.551	4.511	5.220	5.260	5.160
10MHz QPSK	/	8.942	/	/	9.800	/
10MHz 16QAM	/	8.942	/	/	9.920	/
Note: The test plots please refer to the Plots of Occupied Bandwidth						

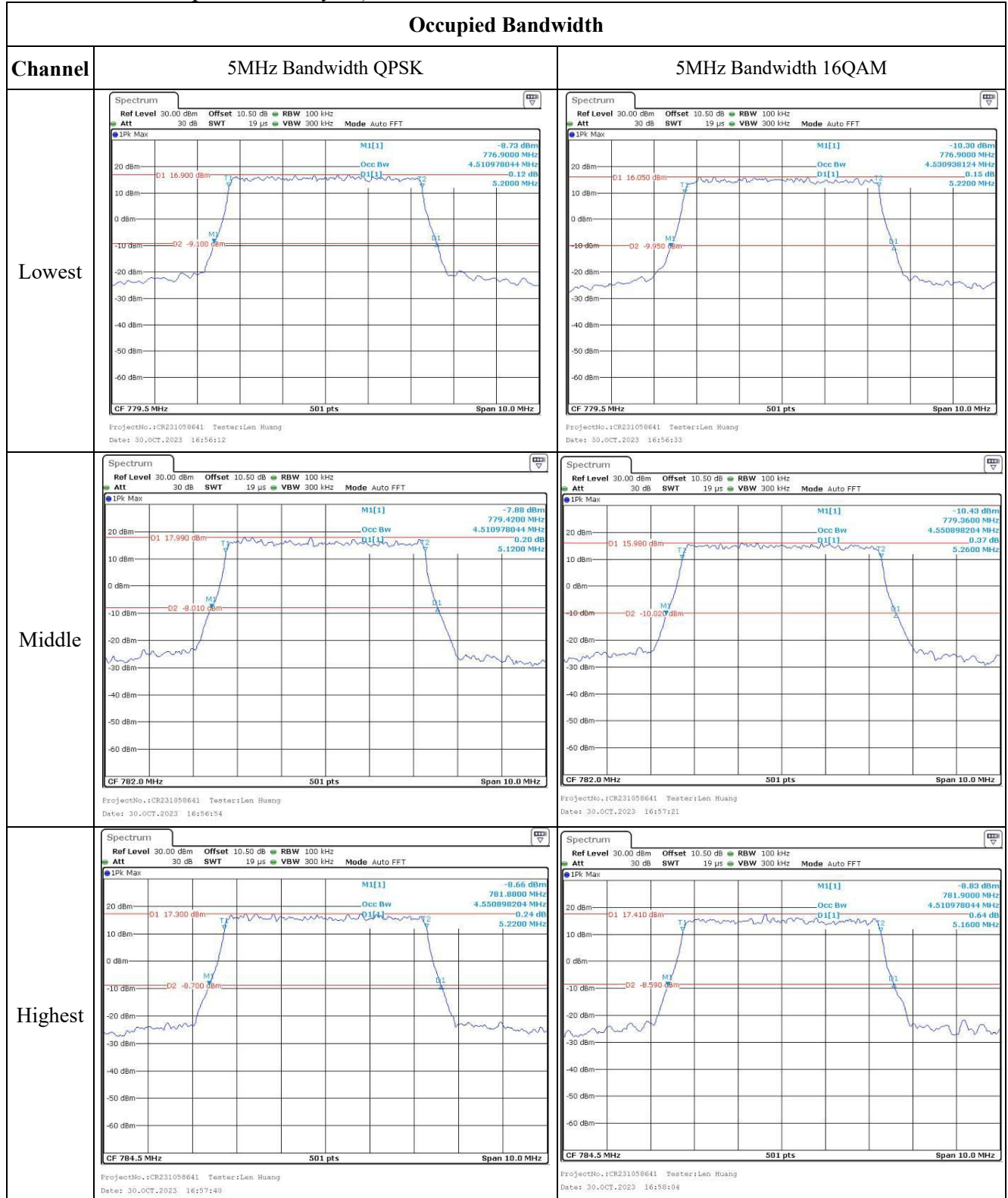
FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal	
Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.

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.

FCC §2.1055, §27.54: Frequency Stability						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	0	777.017	777.00	786.987	787.00
	-20	0	777.020	777.00	786.972	787.00
	-10	0	777.023	777.00	786.994	787.00
	0	0	777.021	777.00	786.981	787.00
	10	0	777.003	777.00	786.996	787.00
	20	0	777.008	777.00	786.976	787.00
	30	0	777.019	777.00	786.984	787.00
	40	0	777.024	777.00	786.987	787.00
	50	0	777.029	777.00	786.978	787.00
Frequency Stability vs. Voltage	20	0	777.020	777.00	786.984	787.00
	20	0	777.024	777.00	786.983	787.00
					Result:	Pass

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	0	777.002	777.00	786.980	787.00
	-20	0	777.007	777.00	786.996	787.00
	-10	0	777.002	777.00	786.997	787.00
	0	0	777.028	777.00	786.992	787.00
	10	0	777.011	777.00	786.998	787.00
	20	0	777.025	777.00	786.983	787.00
	30	0	777.013	777.00	786.974	787.00
	40	0	777.027	777.00	786.994	787.00
	50	0	777.011	777.00	786.977	787.00
Frequency Stability vs. Voltage	20	0	777.011	777.00	786.986	787.00
	20	0	777.020	777.00	786.993	787.00
					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):



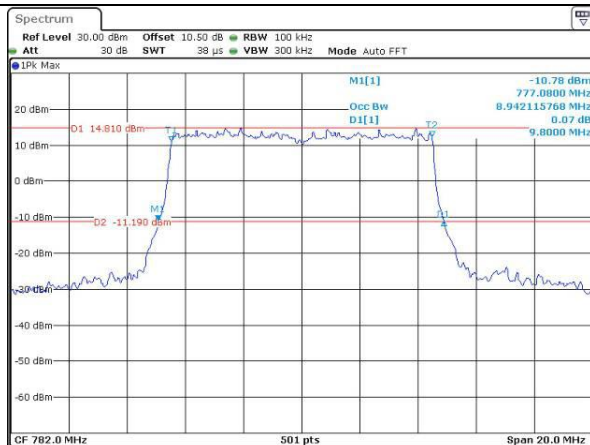
Occupied Bandwidth

Channel

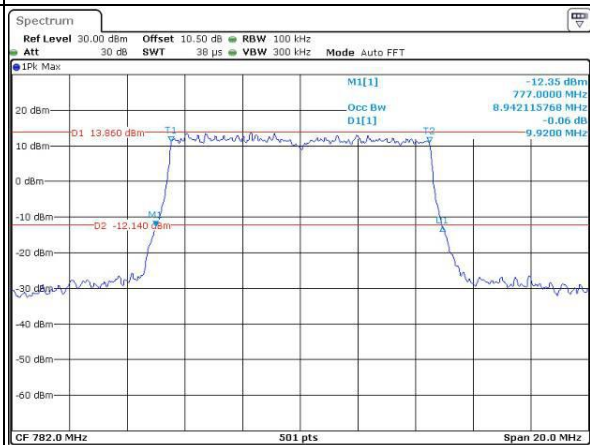
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

Middle



ProjectNo.:CR231058641 Tester:Len Huang
Date: 30.OCT.2023 16:58:58



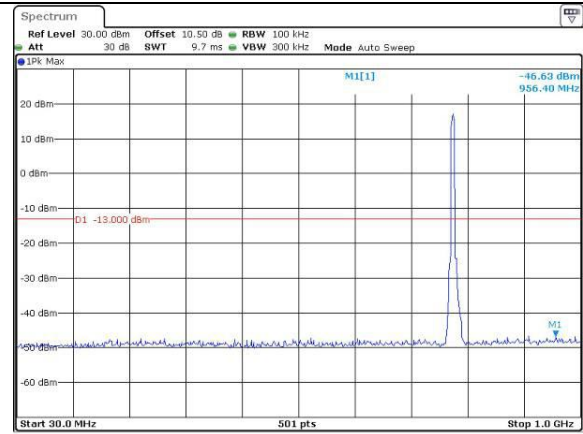
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Date: 30.OCT.2023 16:59:22

Spurious Emissions at Antenna Terminal

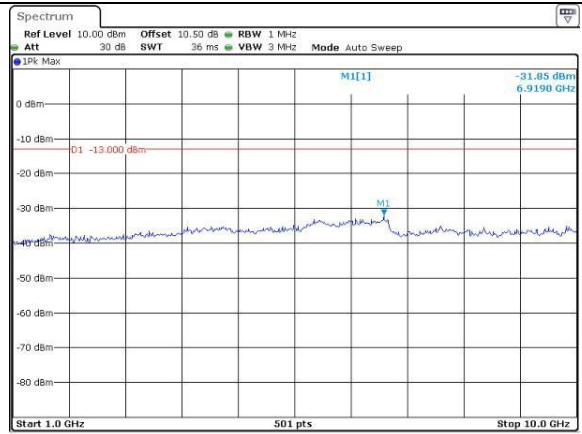
Channel

5MHz Bandwidth QPSK

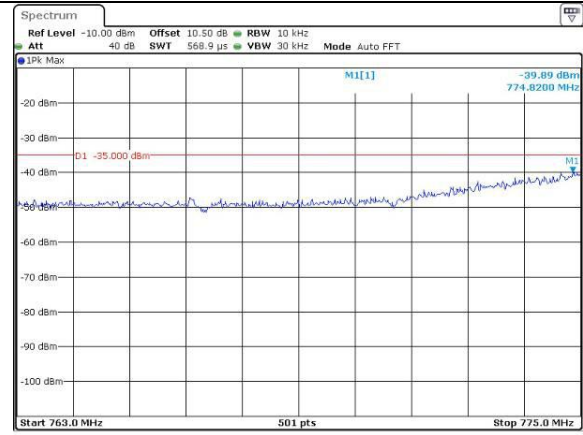
Lowest



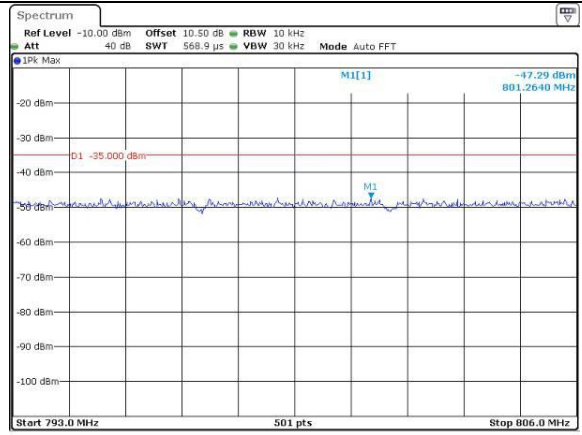
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Date: 30.OCT.2023 16:15:21



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Date: 30.OCT.2023 16:15:50



ProjectNo.:CR231058641 Testers:Len Huang
Date: 30.OCT.2023 16:16:13



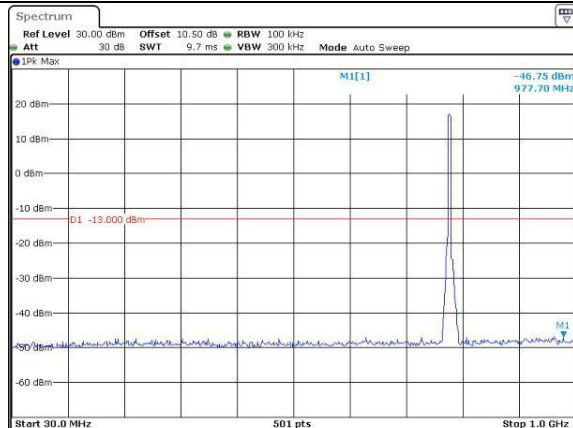
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Spurious Emissions at Antenna Terminal

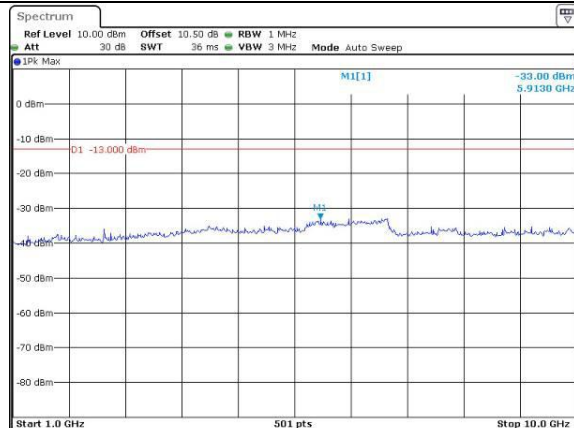
Channel

5MHz Bandwidth QPSK

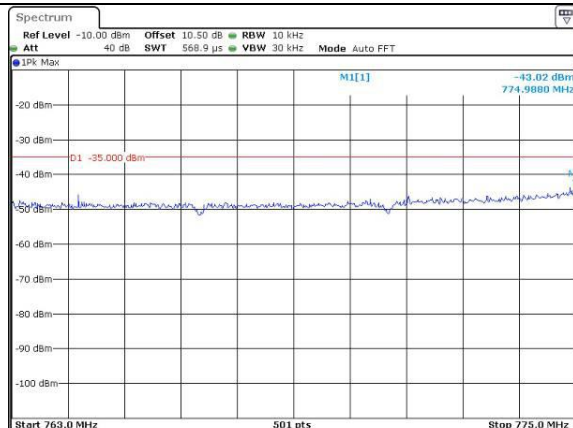
Middle



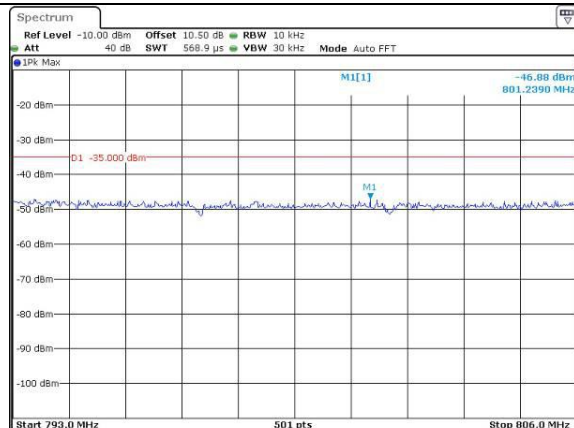
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Date: 30.OCT.2023 16:19:15



ProjectNo.:CR231058641 Tester:Len Huang
Date: 30.OCT.2023 16:19:41



ProjectNo.:CR231058641 Tester:Len Huang
Date: 30.OCT.2023 16:20:17



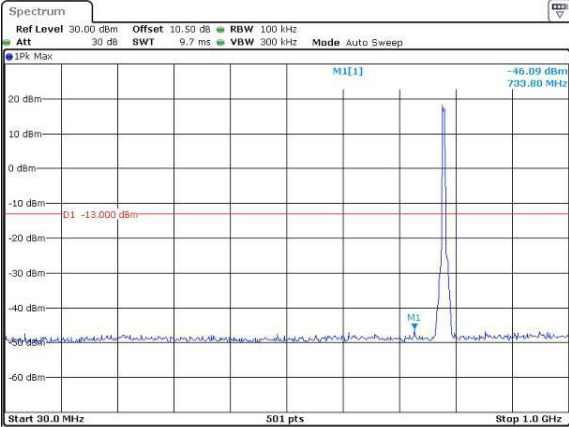
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Date: 30.OCT.2023 16:20:46

Spurious Emissions at Antenna Terminal

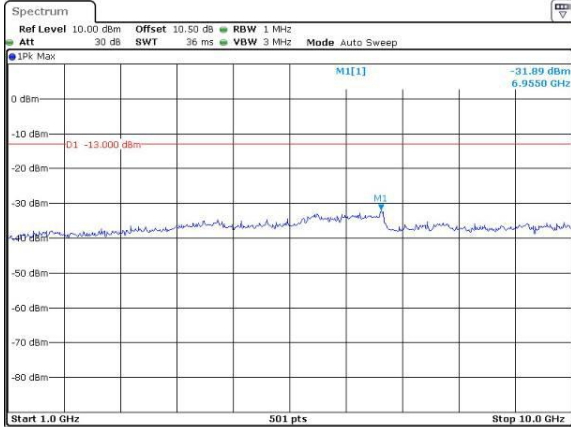
Channel

5MHz Bandwidth QPSK

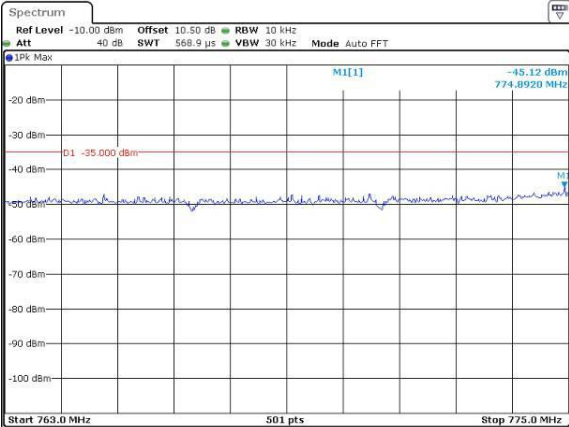
Highest



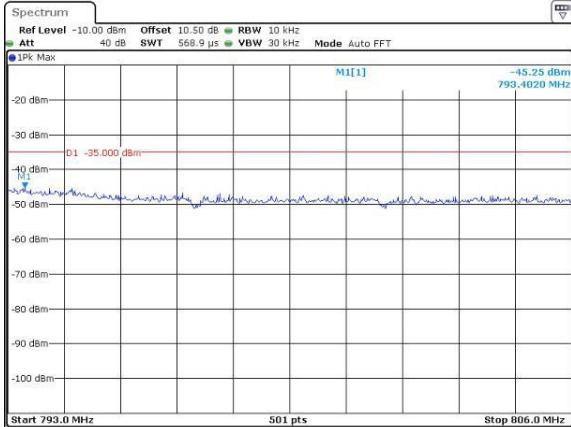
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Date: 30.OCT.2023 16:21:32



ProjectNo.:CR231058641 Testee:Len Huang
Date: 30.OCT.2023 16:21:59



ProjectNo.:CR231058641 Testee:Len Huang
Date: 30.OCT.2023 16:22:25



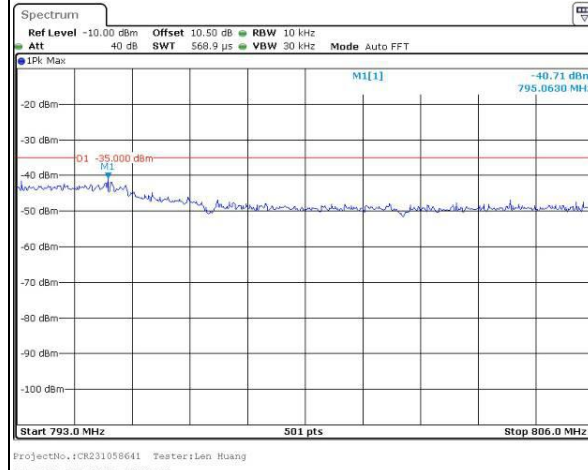
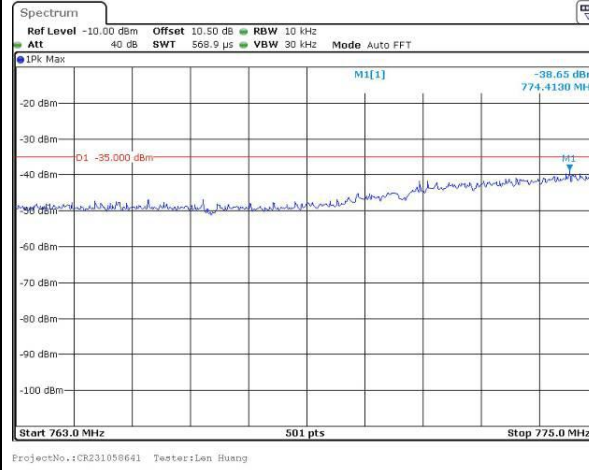
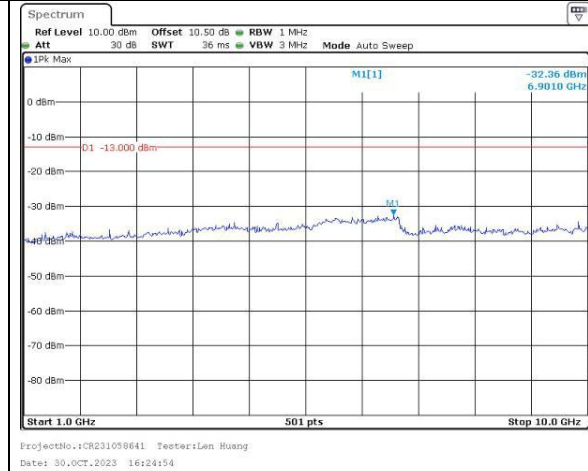
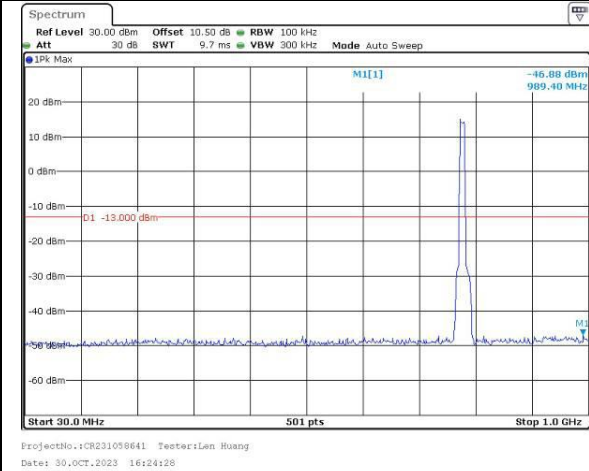
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Date: 30.OCT.2023 16:23:01

Spurious Emissions at Antenna Terminal

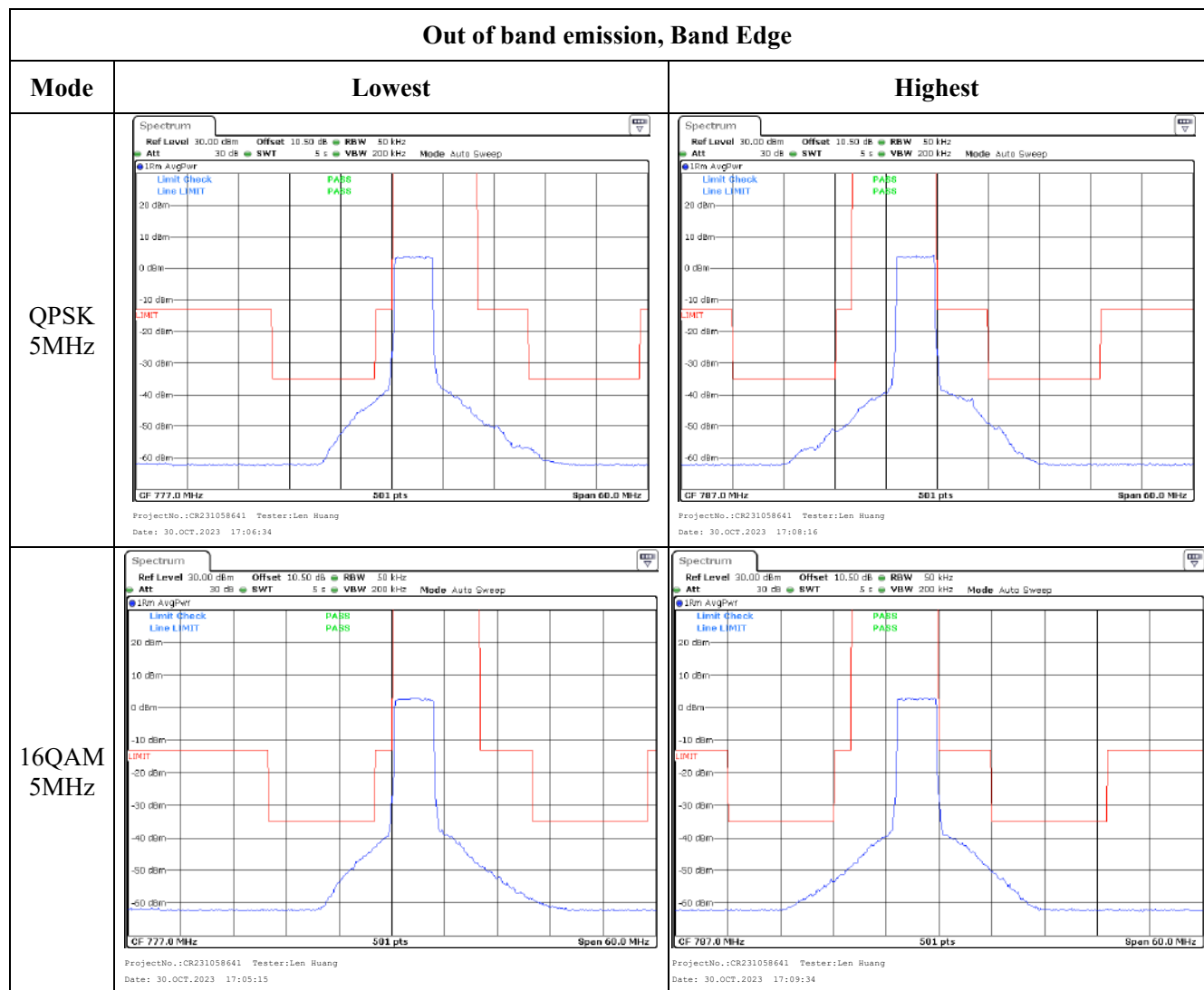
Channel

10MHz Bandwidth QPSK

Middle



Out of band emission, Band Edge



Mode	Middle
QPSK 10MHz	Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 50 kHz Att 30 dB SWT 5 s VBW 200 kHz Mode Auto Sweep 10m AvgPer Limit Check Line LIMIT 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm CF 702.0 MHz 501 pts Span 60.0 MHz Limit PASS PASS ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 17:12:36
16QAM 10MHz	Spectrum Ref Level 30.00 dBm Offset 10.50 dB RBW 50 kHz Att 30 dB SWT 5 s VBW 200 kHz Mode Auto Sweep 10m AvgPer Limit Check Line LIMIT 20 dBm 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm CF 702.0 MHz 501 pts Span 60.0 MHz Limit PASS PASS ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 17:11:34

4.12 Antenna Port Test Data and Results for LTE Band 17

Serial Number:	2C02-2	Test Date:	2023/10/29-2023/11/3
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang, Ken Tang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5-26.6	Relative Humidity: (%)	45-62	ATM Pressure: (kPa)	101-101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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	2023/9/28	2024/9/27
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Frequency for Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	706.5	710	713.5
10MHz	709	710	711

Test Data:**FCC§2.1046;§ 27.50(c) (10)****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		
5MHz QPSK	RB1#0	23.10	23.1	23.06	15.51	34.77
	RB1#13	23.26	23.22	23.2		
	RB1#24	23.1	23.07	23.07		
	RB15#0	22.19	22.27	22.24		
	RB15#10	22.2	22.24	22.19		
	RB25#0	22.16	22.23	22.13		
5MHz 16QAM	RB1#0	22.35	22.19	21.99	14.79	34.77
	RB1#13	22.54	22.24	22.10		
	RB1#24	22.40	22.1	21.89		
	RB15#0	21.18	21.29	21.30		
	RB15#10	21.18	21.31	21.22		
	RB25#0	21.17	21.22	21.21		
10MHz QPSK	RB1#0	23.21	23.15	23.24	15.64	34.77
	RB1#25	23.39	23.31	23.37		
	RB1#49	23.2	23.16	23.21		
	RB25#0	22.26	22.26	22.30		
	RB25#25	22.26	22.24	22.22		
	RB50#0	22.21	22.3	22.29		
10MHz 16QAM	RB1#0	22.14	22.72	22.36	15.14	34.77
	RB1#25	22.42	22.89	22.52		
	RB1#49	22.17	22.64	22.28		
	RB25#0	21.4	21.33	21.35		
	RB25#25	21.36	21.26	21.27		
	RB50#0	21.27	21.27	21.30		

Note: ERP= Conducted Power(dBm) - Lc(dB) + G_T(dBd)G_T(dBd)=G_T(dBi)-2.15**Result:****Pass****Peak-to-average Ratio(PAR)**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.41	4.52	4.55	13
	RB50#0	5.07	5.04	4.99	13
10MHz 16QAM	RB1#0	5.16	5.36	5.51	13
	RB50#0	6.03	6.00	5.97	13
				Result:	Pass

FCC §2.1049, §27.53:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.511	4.511	4.531	5.220	5.140	5.240
5MHz 16QAM	4.551	4.551	4.511	5.200	5.220	5.180
10MHz QPSK	8.982	8.982	8.942	9.960	9.960	9.880
10MHz 16QAM	8.942	8.942	8.942	9.840	9.720	9.920

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

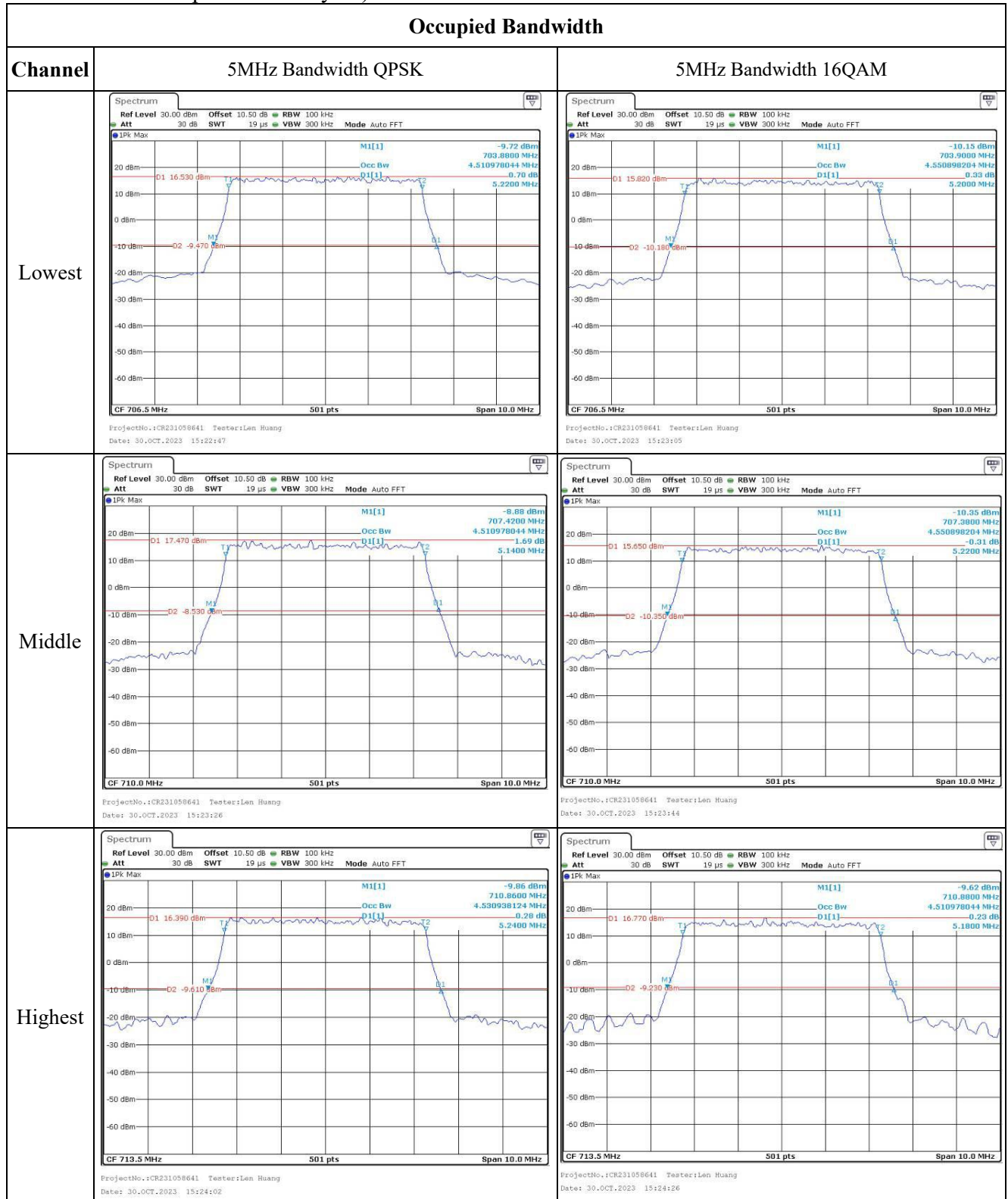
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §27.54: Frequency Stability

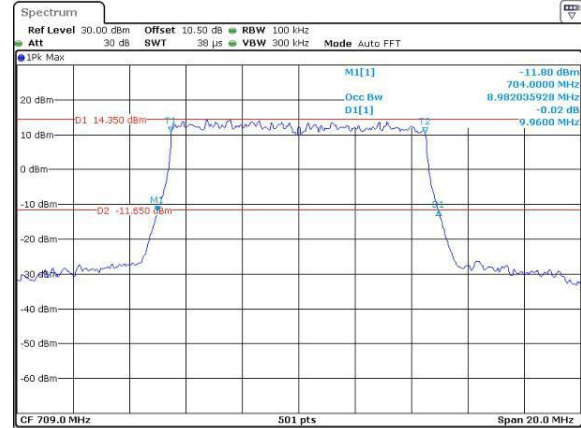
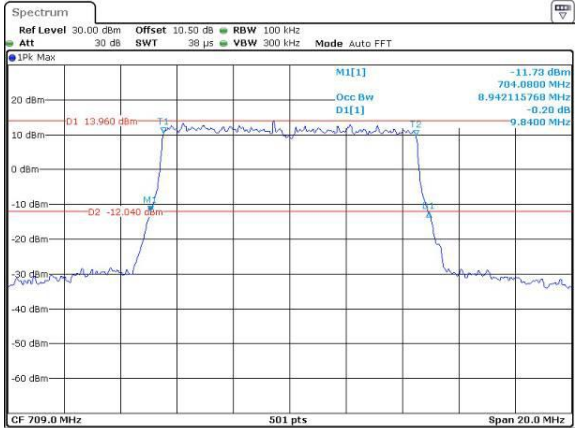
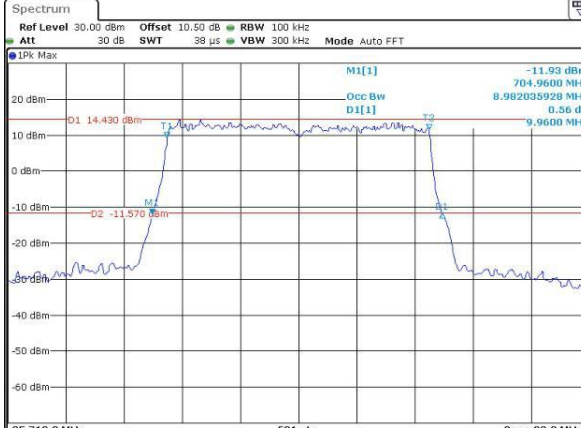
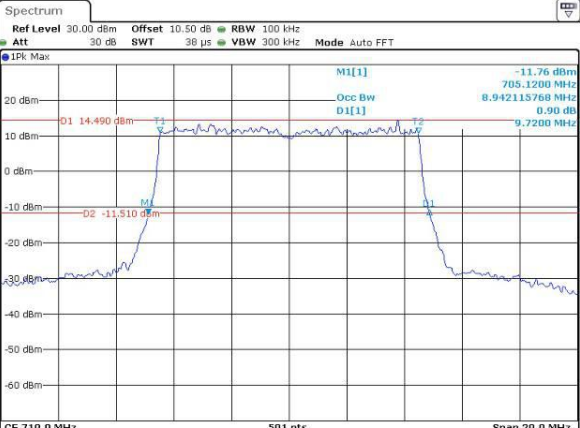
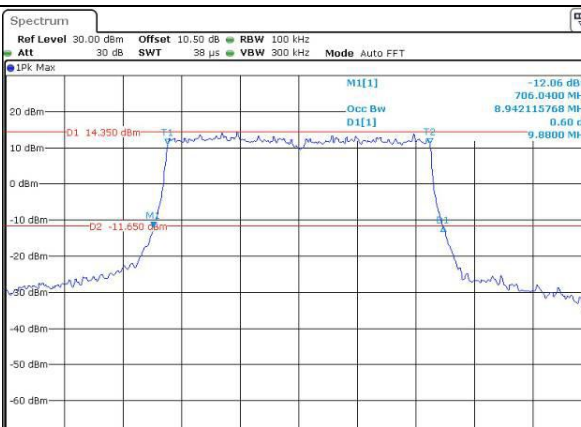
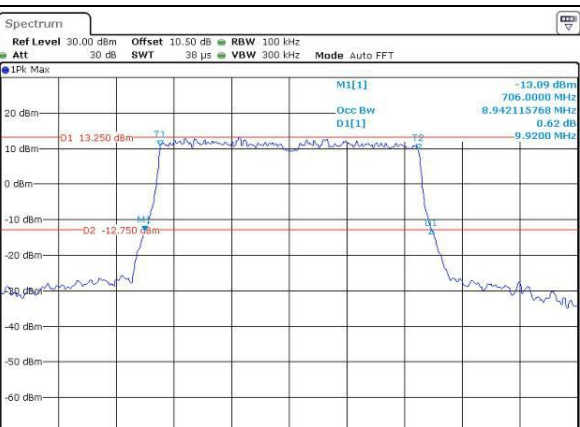
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	0	704.024	704.00	715.974	716.00
	-20	0	704.027	704.00	715.985	716.00
	-10	0	704.006	704.00	715.994	716.00
	0	0	704.002	704.00	715.990	716.00
	10	0	704.011	704.00	715.996	716.00
	20	0	704.016	704.00	715.994	716.00
	30	0	704.023	704.00	715.983	716.00
	40	0	704.004	704.00	715.984	716.00
Frequency Stability vs. Voltage	20	0	704.008	704.00	715.972	716.00
	20	0	704.010	704.00	715.992	716.00
Result:					Pass	

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	0	704.005	704.00	715.984	716.00
	-20	0	704.014	704.00	715.979	716.00
	-10	0	704.022	704.00	715.980	716.00
	0	0	704.015	704.00	715.990	716.00
	10	0	704.030	704.00	715.991	716.00
	20	0	704.003	704.00	715.986	716.00
	30	0	704.023	704.00	715.978	716.00
	40	0	704.027	704.00	715.978	716.00
	50	0	704.017	704.00	715.983	716.00
Frequency Stability vs. Voltage	20	0	704.006	704.00	715.974	716.00
	20	0	704.029	704.00	715.995	716.00
					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

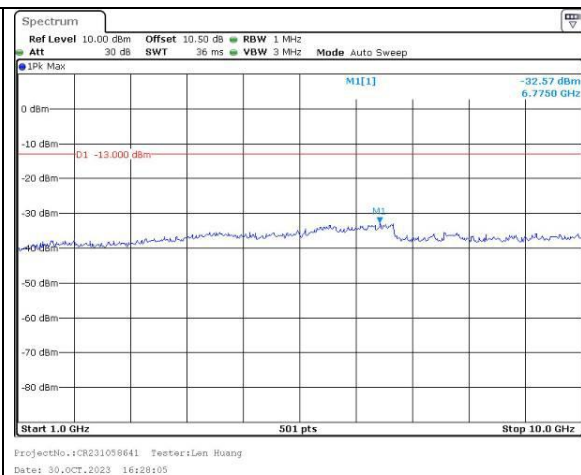
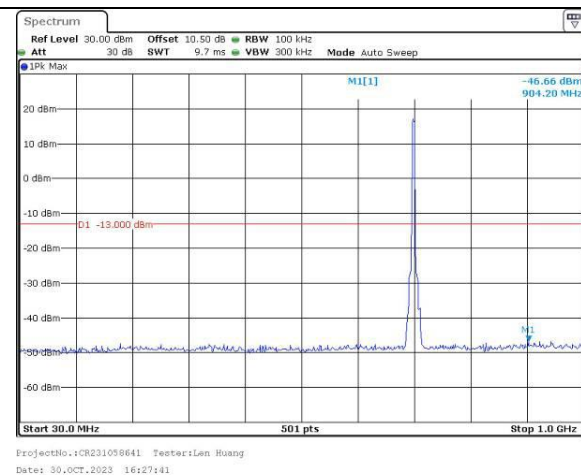
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	 ProjectNo.: CR231058641 Tester: Len Huang Date: 30.OCT.2023 15:25:37	 ProjectNo.: CR231058641 Tester: Len Huang Date: 30.OCT.2023 15:26:04
Middle	 ProjectNo.: CR231058641 Tester: Len Huang Date: 30.OCT.2023 15:26:35	 ProjectNo.: CR231058641 Tester: Len Huang Date: 30.OCT.2023 15:27:08
Highest	 ProjectNo.: CR231058641 Tester: Len Huang Date: 30.OCT.2023 15:27:36	 ProjectNo.: CR231058641 Tester: Len Huang Date: 30.OCT.2023 15:28:10

Spurious Emissions at Antenna Terminal

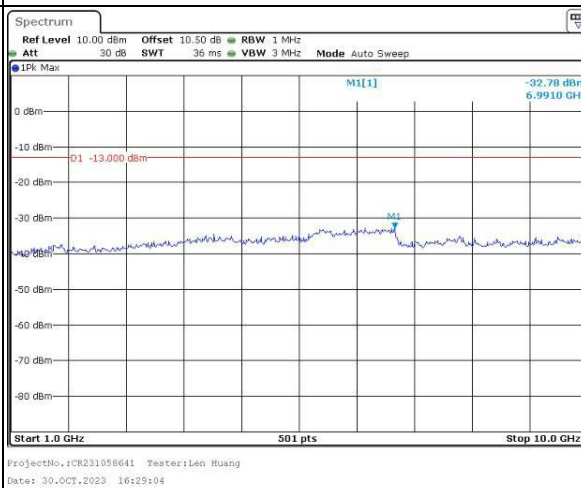
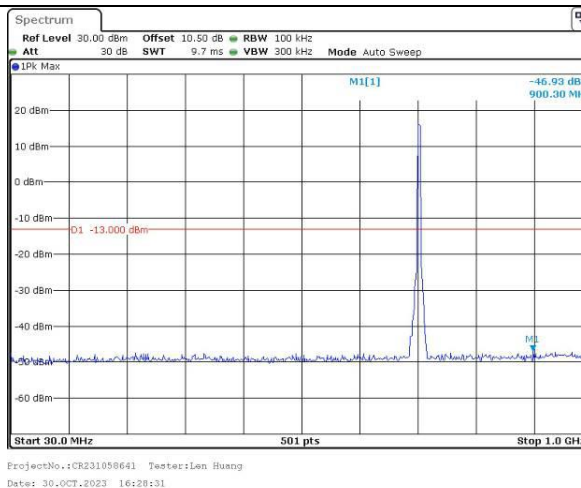
Channel

5MHz Bandwidth QPSK

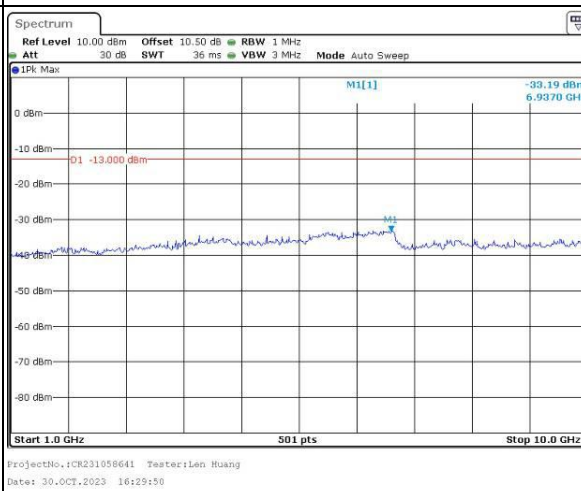
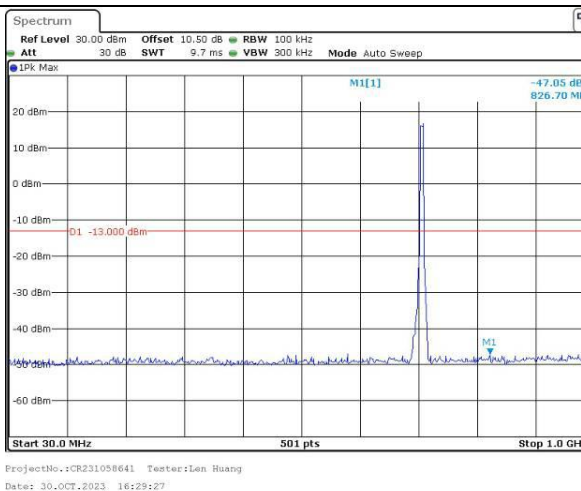
Lowest



Middle



Highest

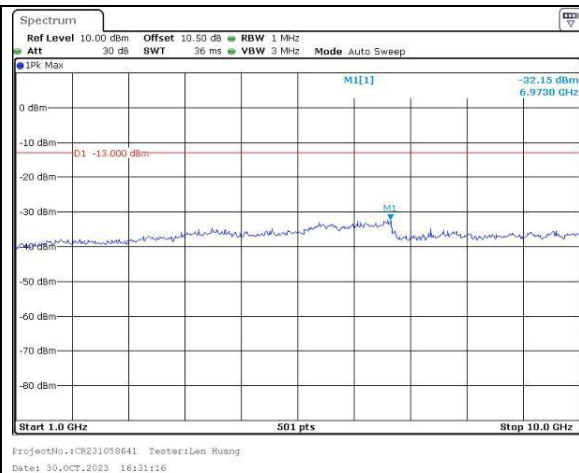
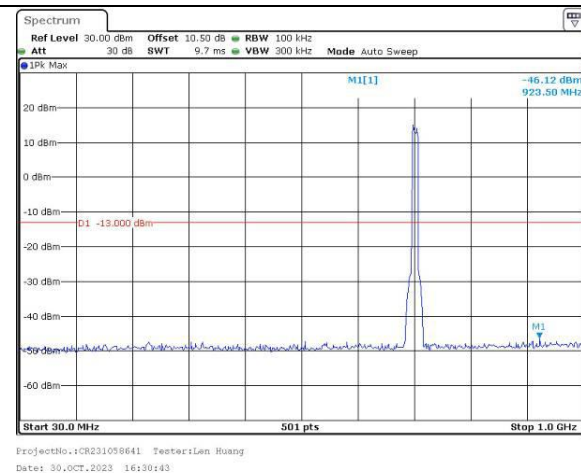


Spurious Emissions at Antenna Terminal

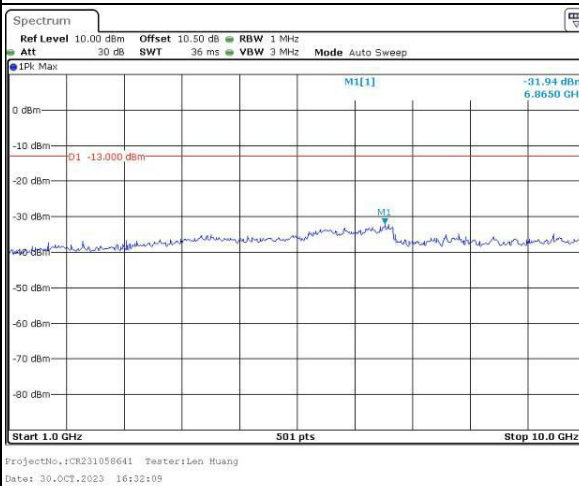
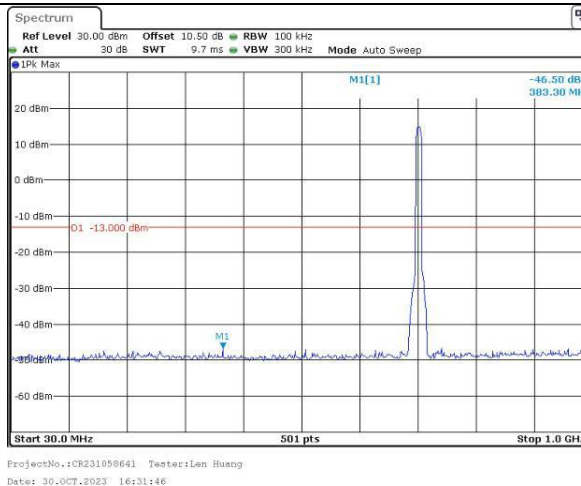
Channel

10MHz Bandwidth QPSK

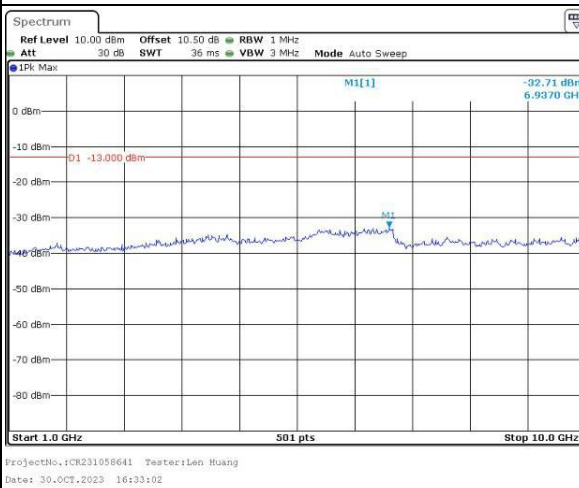
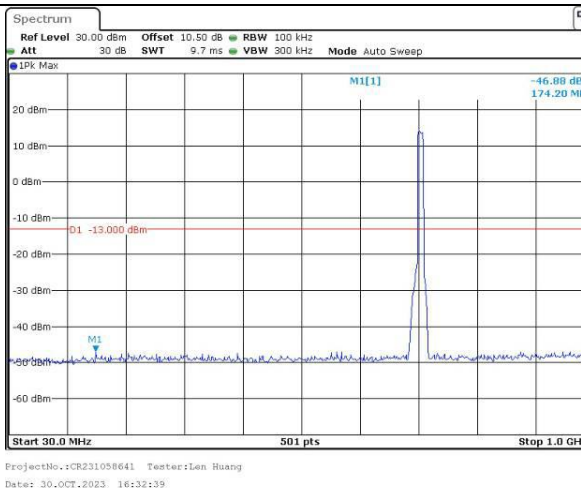
Lowest



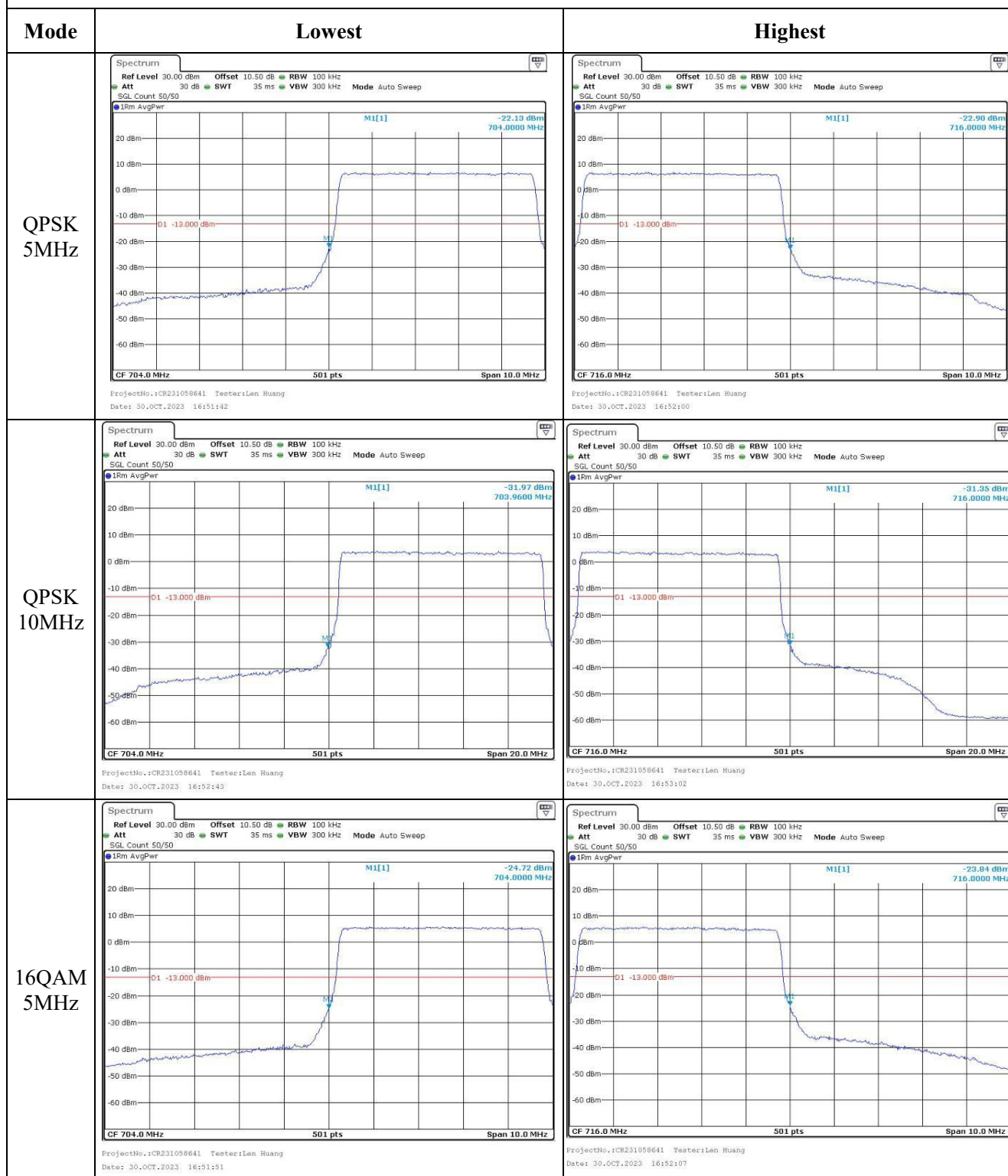
Middle

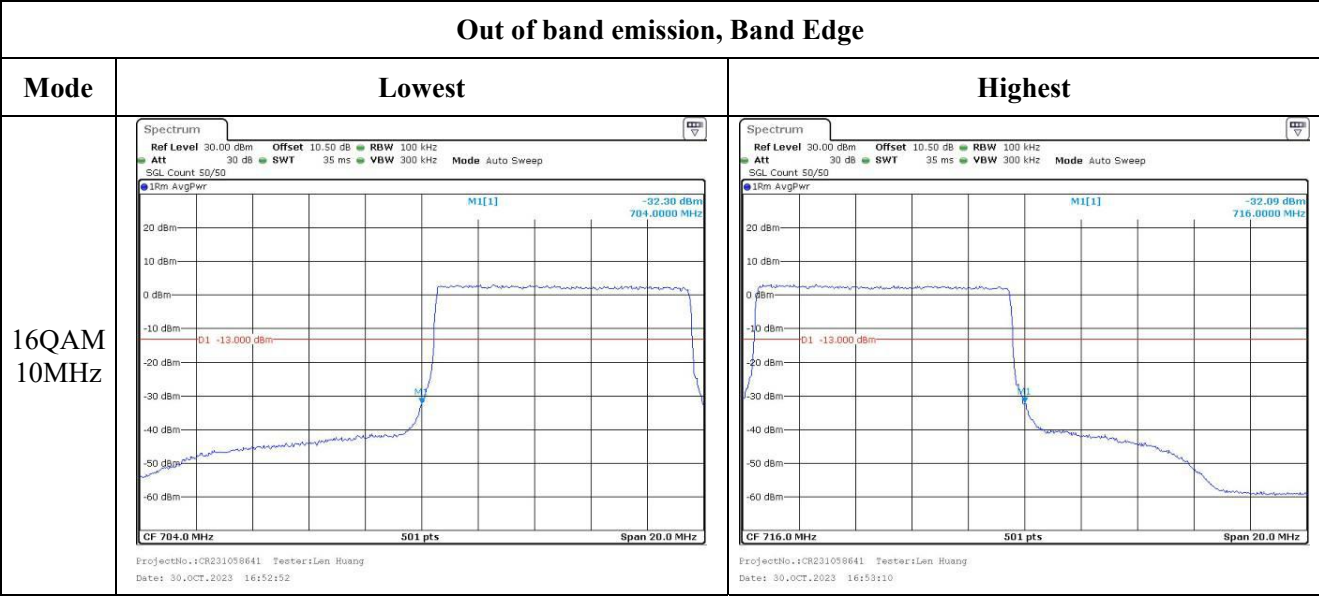


Highest



Out of band emission, Band Edge





4.13 Antenna Port Test Data and Results for LTE Band 38

Serial Number:	2C02-2	Test Date:	2023/10/29-2023/11/3
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang, Ken Tang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5-26.6	Relative Humidity: (%)	45-62	ATM Pressure: (kPa)	101-101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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	2023/9/28	2024/9/27
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
R&S	Spectrum Analyzer	FSU26	200256	2023/3/31	2024/3/30

* 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	2572.5	2595	2617.5
10MHz	2575	2595	2615
15MHz	2577.5	2595	2612.5
20MHz	2580	2595	2610

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	17.1	17.13	16.98	16.87	33
	RB1#13	17.16	17.27	17.16		
	RB1#24	17	17.17	17.06		
	RB15#0	16.16	16.2	16.12		
	RB15#10	16.14	16.23	16.13		
	RB25#0	16.14	16.27	16.12		
5MHz 16QAM	RB1#0	16.25	16.44	16.02	16.2	33
	RB1#13	16.32	16.6	16.21		
	RB1#24	16.16	16.48	16.1		
	RB15#0	15.21	15.3	15.11		
	RB15#10	15.2	15.31	15.09		
	RB25#0	15.23	15.25	15.17		
10MHz QPSK	RB1#0	17.3	17.3	17	17.16	33
	RB1#25	17.47	17.56	17.36		
	RB1#49	17.07	17.3	17.22		
	RB25#0	16.22	16.28	16.04		
	RB25#25	16.18	16.35	16.14		
	RB50#0	16.18	16.31	16.11		
10MHz 16QAM	RB1#0	16.48	16.57	16.04	16.45	33
	RB1#25	16.63	16.85	16.34		
	RB1#49	16.37	16.64	16.18		
	RB25#0	15.28	15.27	15.08		
	RB25#25	15.2	15.39	15.19		
	RB50#0	15.26	15.31	15.1		
15MHz QPSK	RB1#0	17.25	17.11	16.89	16.92	33
	RB1#38	17.1	17.32	17.08		
	RB1#74	16.89	17.23	17.12		
	RB36#0	16.16	16.24	15.93		
	RB36#39	16	16.32	16.06		
	RB75#0	16.06	16.32	16.02		
15MHz 16QAM	RB1#0	16.46	16.42	15.89	16.24	33
	RB1#38	16.42	16.64	16.08		
	RB1#74	16.16	16.55	16.1		
	RB36#0	15.21	15.21	14.89		
	RB36#39	15.07	15.31	15.02		
	RB75#0	15.07	15.28	15.01		
20MHz QPSK	RB1#0	16.98	17	16.7	17.23	33

	RB1#50	17.24	17.63	17.2		
	RB1#99	16.64	17.2	16.92		
	RB50#0	16.15	16.26	15.95		
	RB50#50	16	16.35	16.12		
	RB100#0	16.08	16.27	16.03		
20MHz 16QAM	RB1#0	16.07	16.25	15.9	16.51	33
	RB1#50	16.31	16.91	16.35		
	RB1#99	15.8	16.5	16.11		
	RB50#0	15.21	15.27	14.94		
	RB50#50	15.1	15.37	15.14		
	RB100#0	15.1	15.34	15.03		

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	8.96	8.58	8.72	13
	RB100#0	9.01	8.93	8.93	13
20MHz 16QAM	RB1#0	9.68	9.33	9.57	13
	RB100#0	9.86	9.80	9.77	13
				Result:	Pass

FCC §2.1049, §27.53:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.511	4.511	4.491	4.920	5.200	4.960
5MHz 16QAM	4.511	4.511	4.511	5.180	5.020	5.120
10MHz QPSK	8.942	8.942	8.942	9.520	9.600	9.600
10MHz 16QAM	8.942	8.942	8.942	9.800	9.480	9.520
15MHz QPSK	13.533	13.413	13.533	15.660	14.640	14.700
15MHz 16QAM	13.533	13.533	13.473	15.540	16.140	14.640
20MHz QPSK	17.884	17.884	17.964	19.040	19.200	19.200
20MHz 16QAM	17.964	17.884	17.884	19.280	19.280	19.280

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

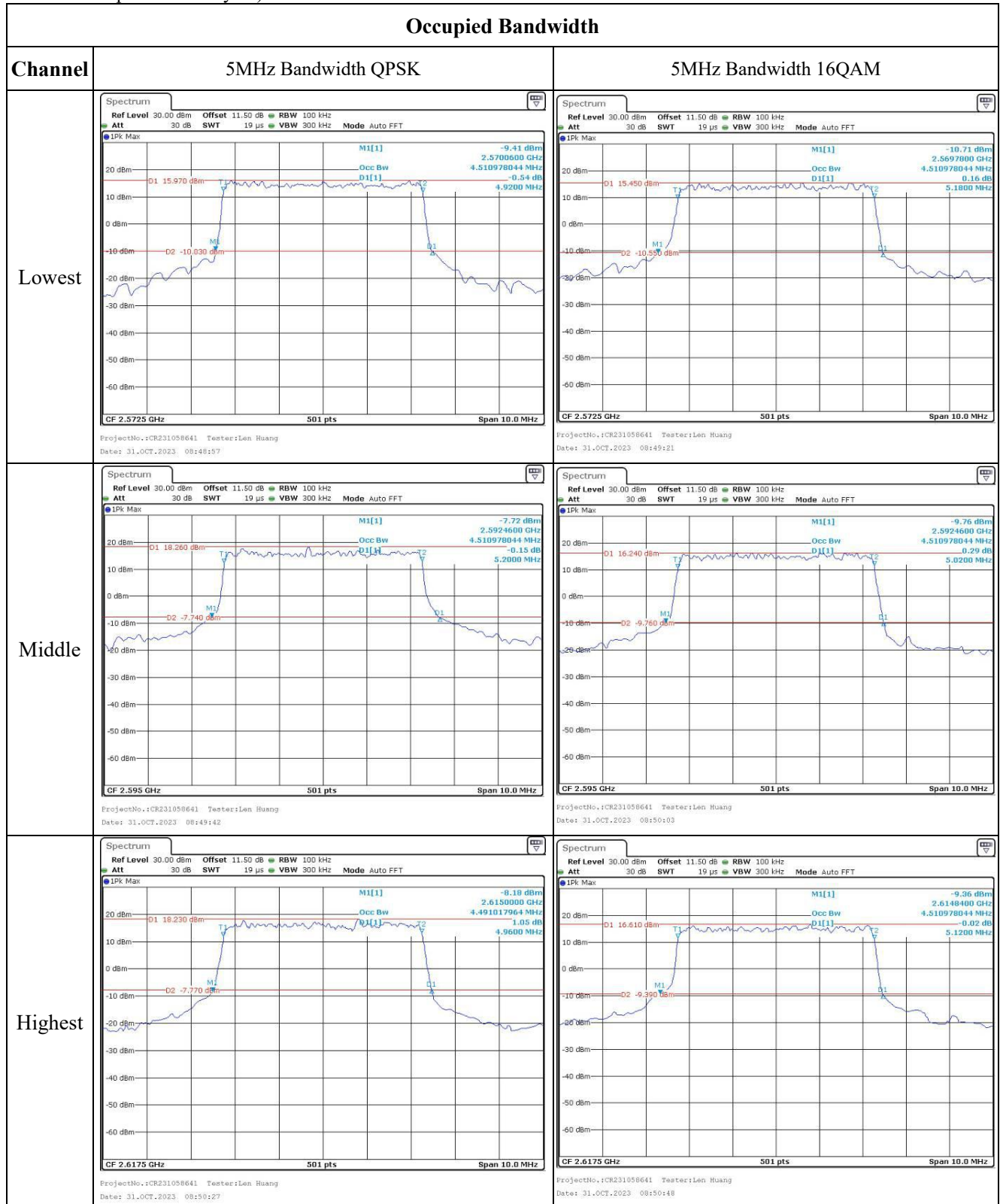
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §27.54: Frequency Stability

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	3.85	2570.224	2570.00	2619.916	2620
	-20	3.85	2570.487	2570.00	2619.970	2620
	-10	3.85	2570.550	2570.00	2619.940	2620
	0	3.85	2570.580	2570.00	2619.949	2620
	10	3.85	2570.188	2570.00	2619.913	2620
	20	3.85	2570.444	2570.00	2619.956	2620
	30	3.85	2570.295	2570.00	2619.979	2620
	40	3.85	2570.132	2570.00	2619.924	2620
Frequency Stability vs. Voltage	50	3.85	2570.271	2570.00	2619.962	2620
	20	3.35	2570.390	2570.00	2619.944	2620
	20	4.4	2570.171	2570.00	2619.965	2620
					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	3.85	2570.108	2570.00	2619.963	2620
	-20	3.85	2570.111	2570.00	2619.952	2620
	-10	3.85	2570.146	2570.00	2619.948	2620
	0	3.85	2570.399	2570.00	2619.904	2620
	10	3.85	2570.318	2570.00	2619.949	2620
	20	3.85	2570.228	2570.00	2619.928	2620
	30	3.85	2570.128	2570.00	2619.956	2620
	40	3.85	2570.113	2570.00	2619.947	2620
Frequency Stability vs. Voltage	50	3.85	2570.175	2570.00	2619.984	2620
	20	3.35	2570.179	2570.00	2619.938	2620
	20	4.4	2570.180	2570.00	2619.917	2620
					Result:	Pass

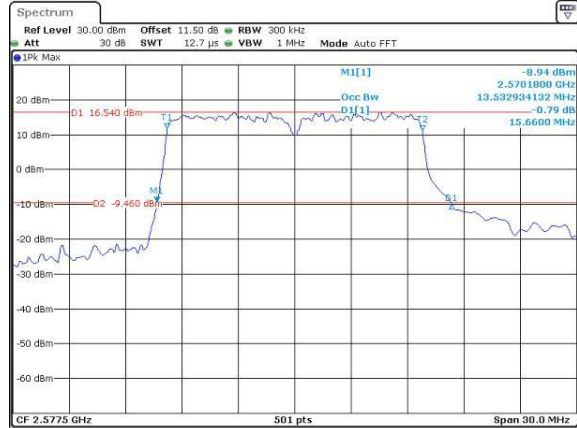
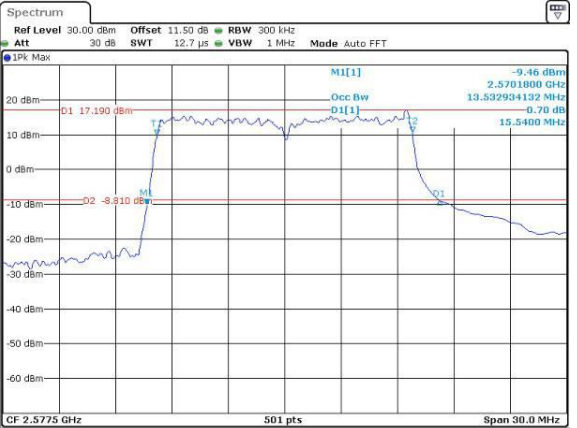
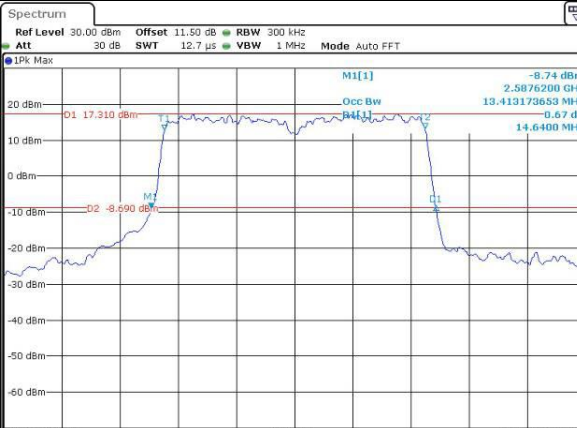
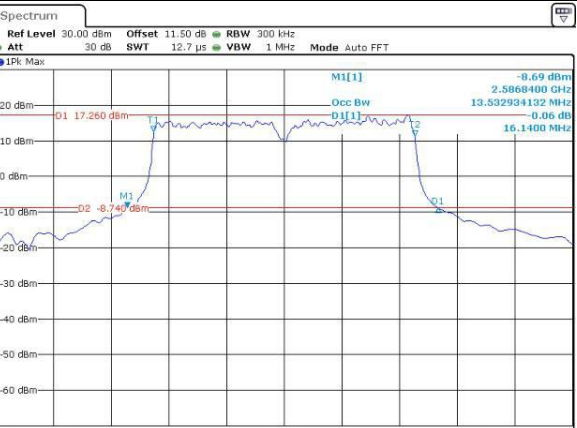
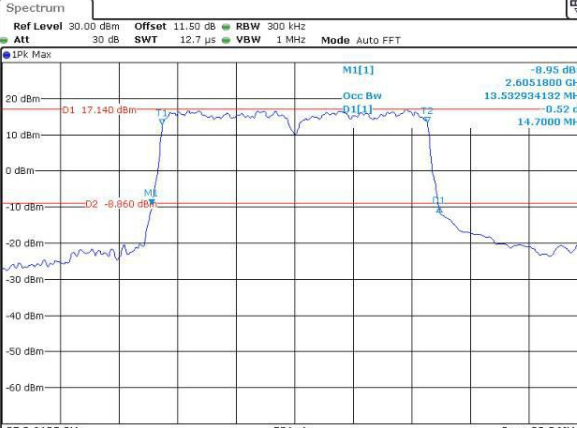
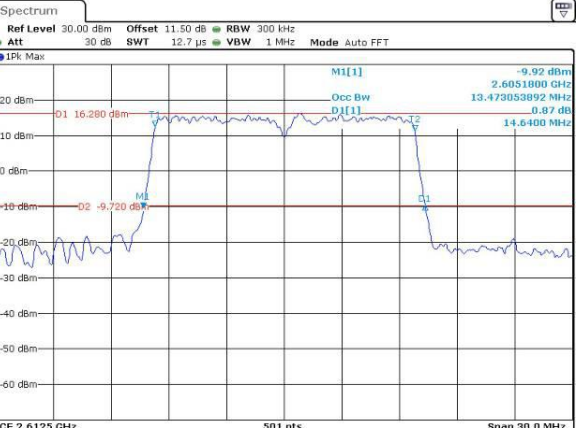
Test Plots(Note: The 11.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):



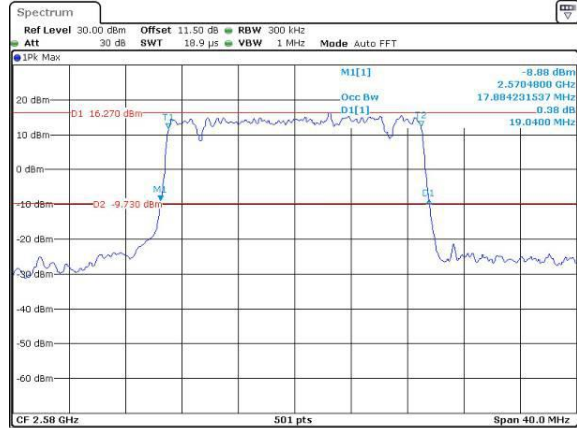
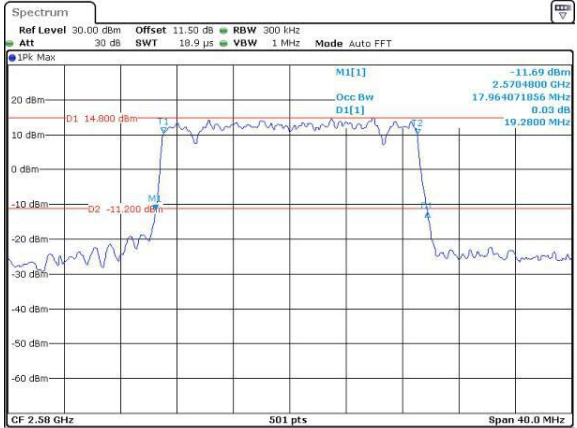
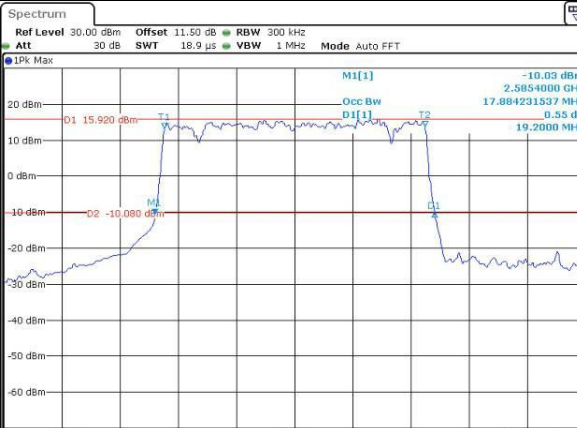
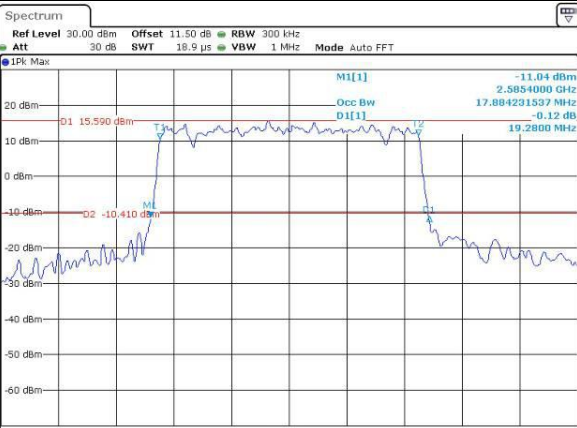
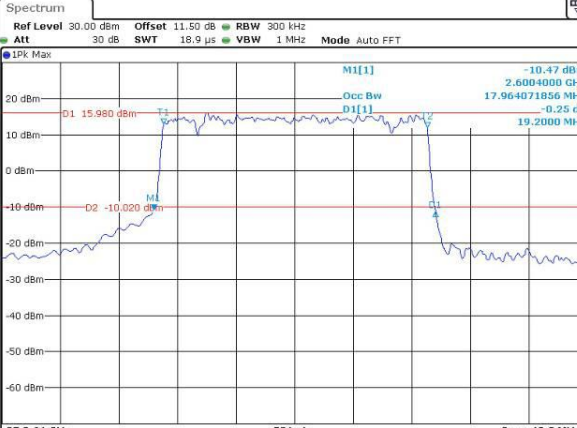
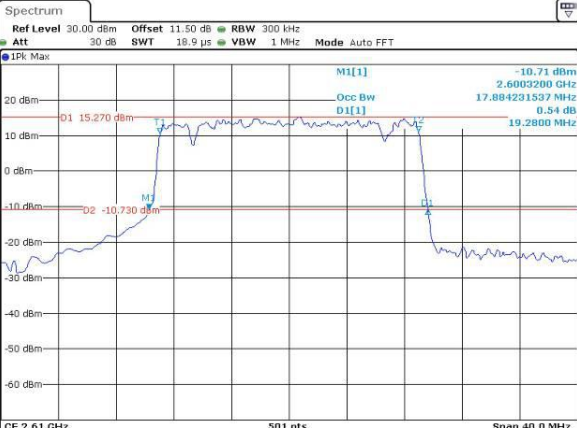
Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:52:16	ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:52:37
Middle	ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:53:05	ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:53:32
Highest	ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:54:00	ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:54:23

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:55:36	 ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:56:05
Middle	 ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:56:47	 ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:57:20
Highest	 ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:57:44	 ProjectNo.:CR231058641 Testeri:Len Huang Date: 31.OCT.2023 08:58:07

Occupied Bandwidth

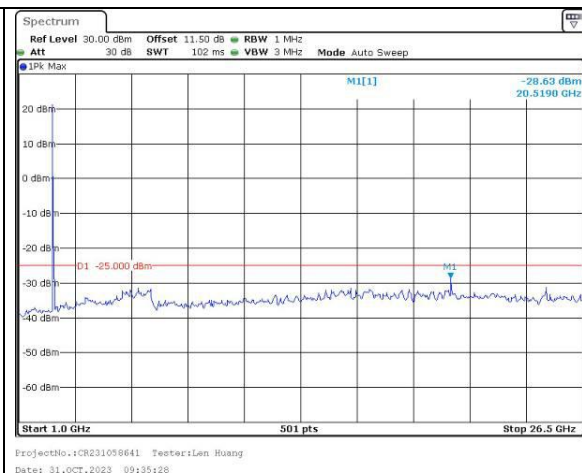
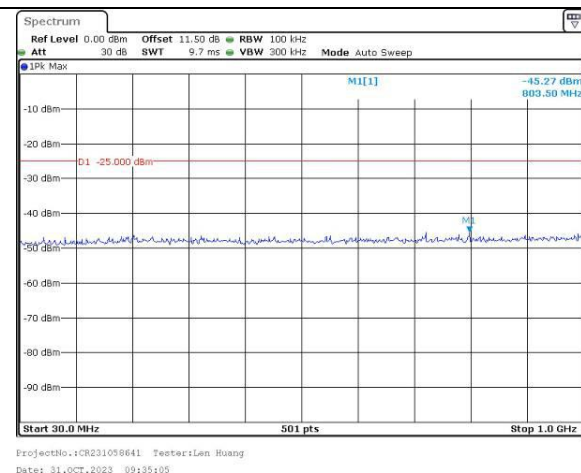
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR231058641 Tester:Len Huang Date: 31.OCT.2023 08:59:31	 ProjectNo.:CR231058641 Tester:Len Huang Date: 31.OCT.2023 08:59:57
Middle	 ProjectNo.:CR231058641 Tester:Len Huang Date: 31.OCT.2023 09:00:30	 ProjectNo.:CR231058641 Tester:Len Huang Date: 31.OCT.2023 09:00:56
Highest	 ProjectNo.:CR231058641 Tester:Len Huang Date: 31.OCT.2023 09:01:23	 ProjectNo.:CR231058641 Tester:Len Huang Date: 31.OCT.2023 09:01:49

Spurious Emissions at Antenna Terminal

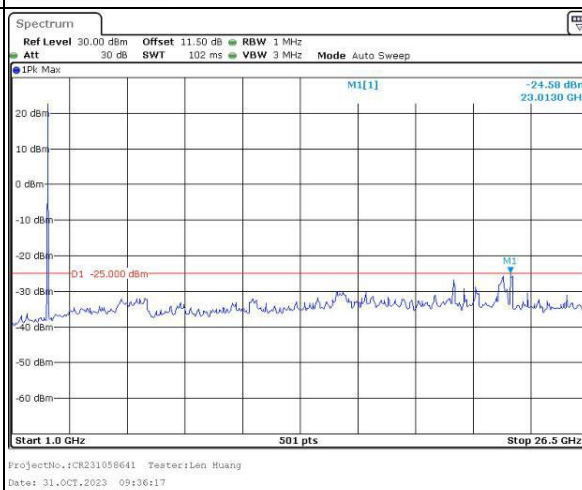
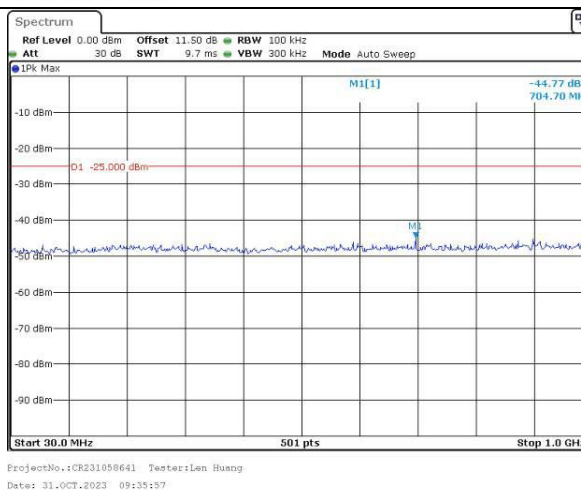
Channel

5MHz Bandwidth QPSK

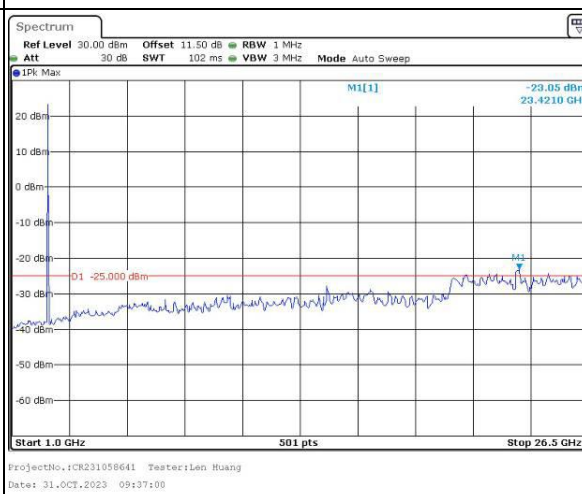
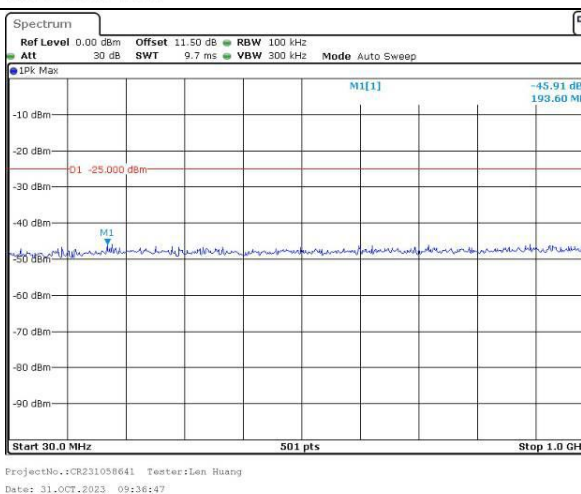
Lowest



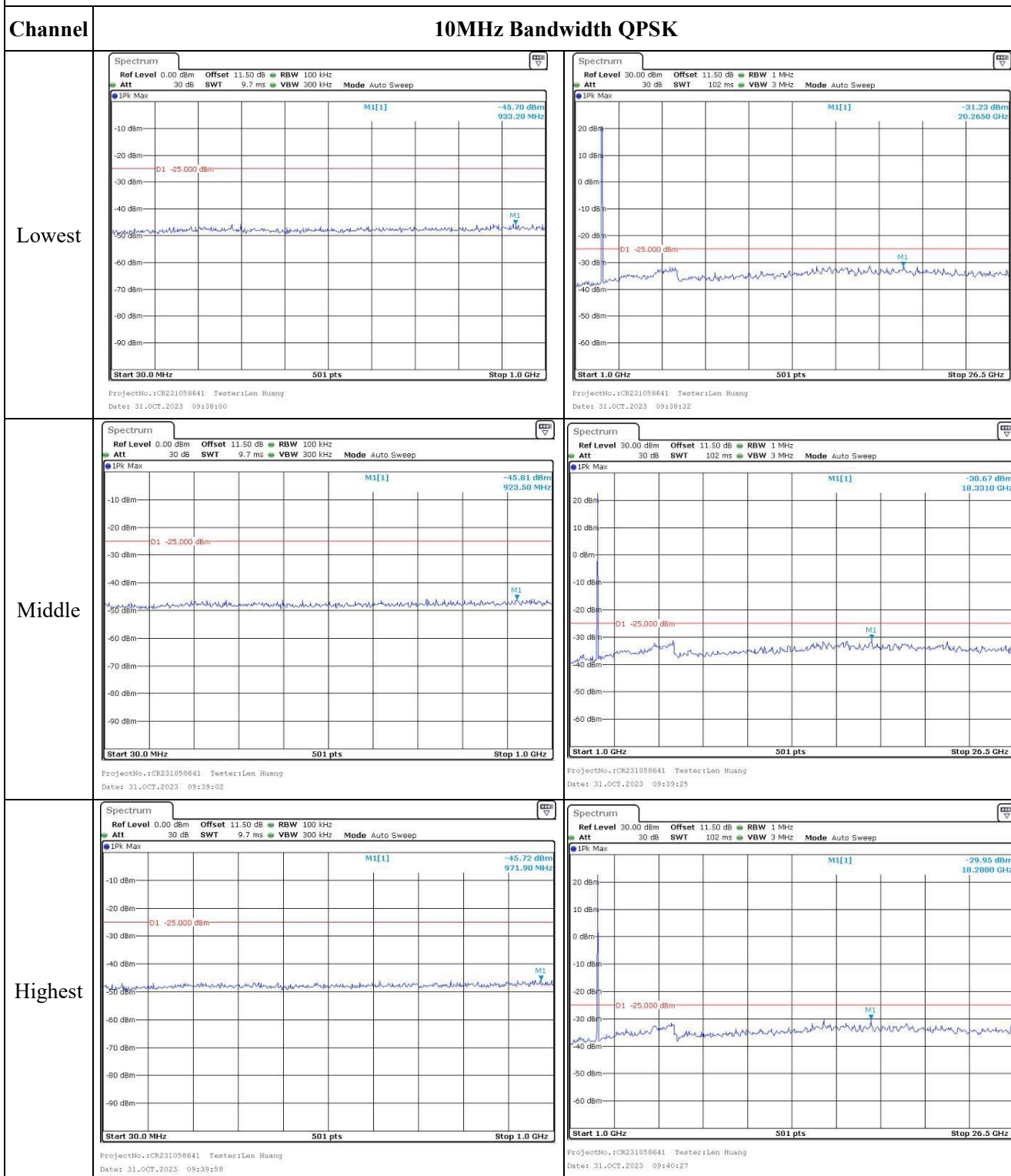
Middle



Highest



Spurious Emissions at Antenna Terminal

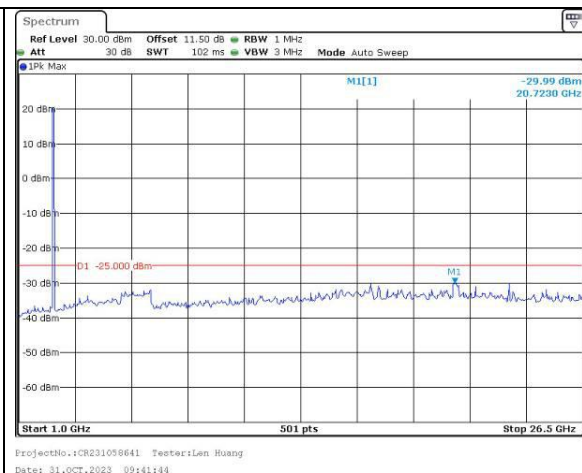
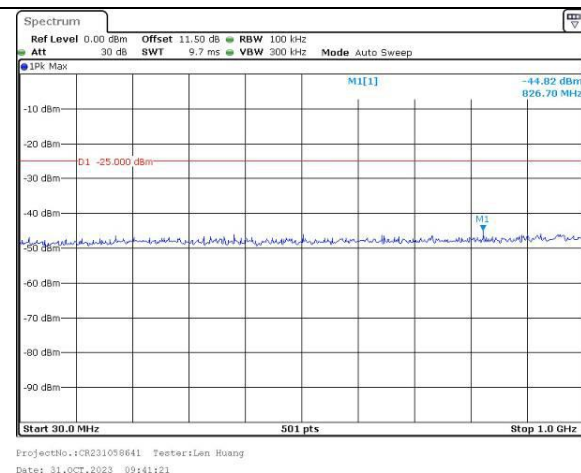


Spurious Emissions at Antenna Terminal

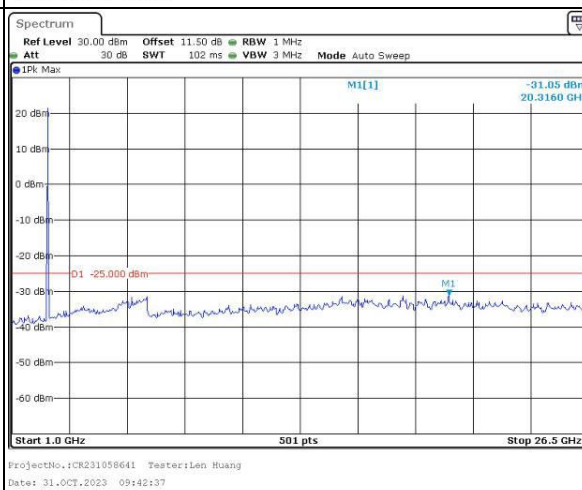
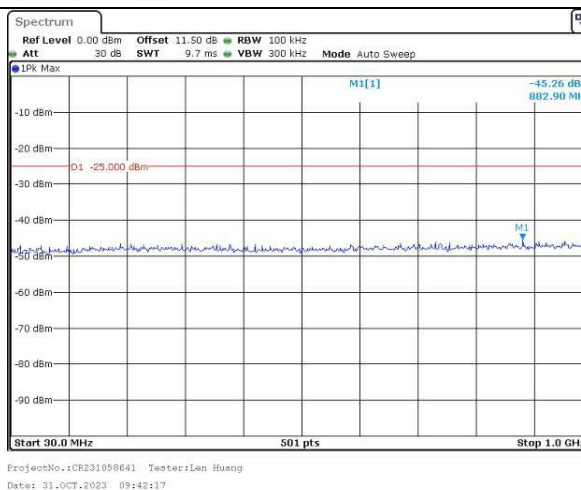
Channel

15MHz Bandwidth QPSK

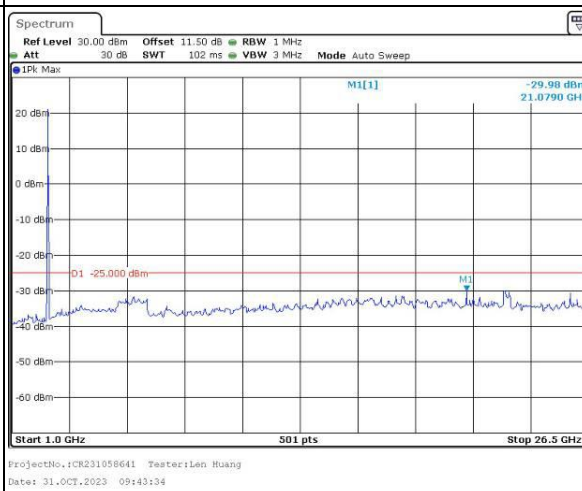
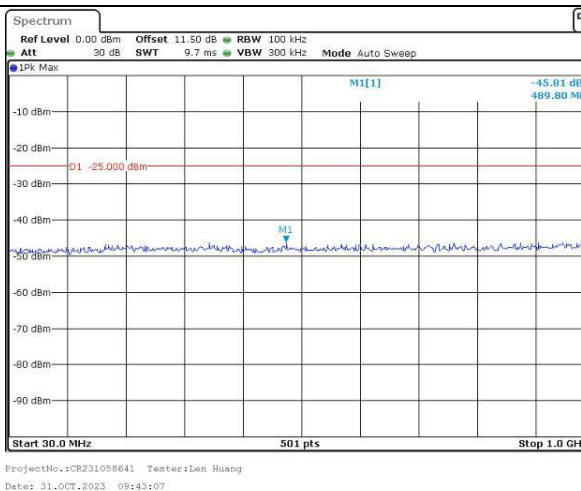
Lowest



Middle



Highest

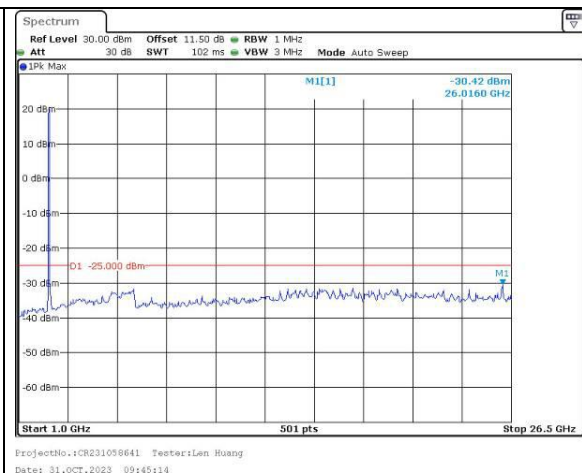
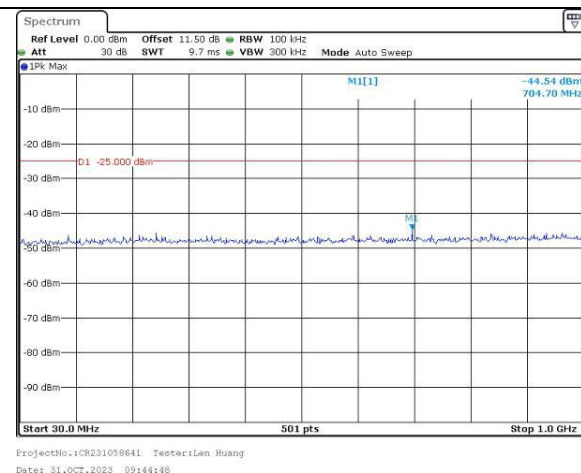


Spurious Emissions at Antenna Terminal

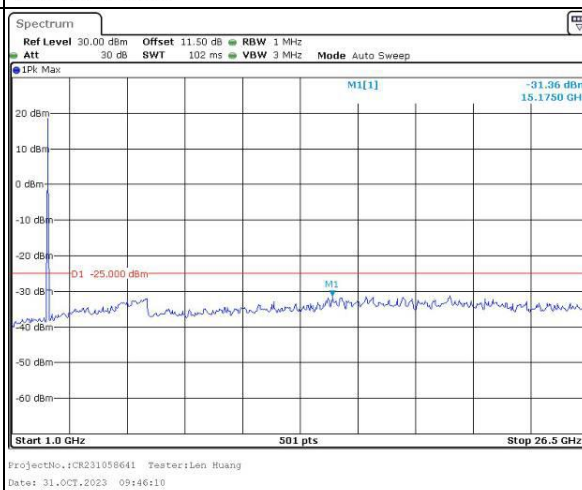
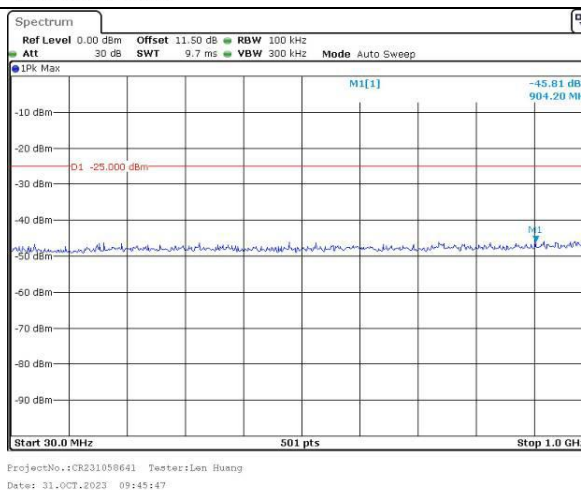
Channel

20MHz Bandwidth QPSK

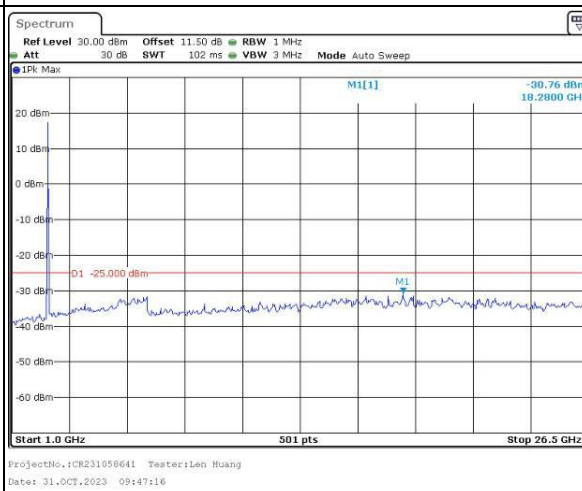
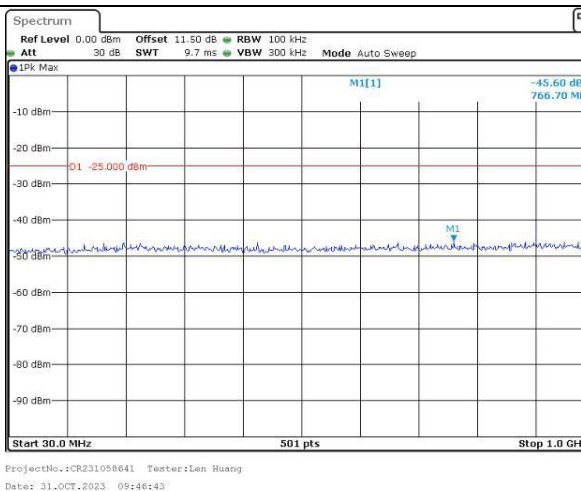
Lowest



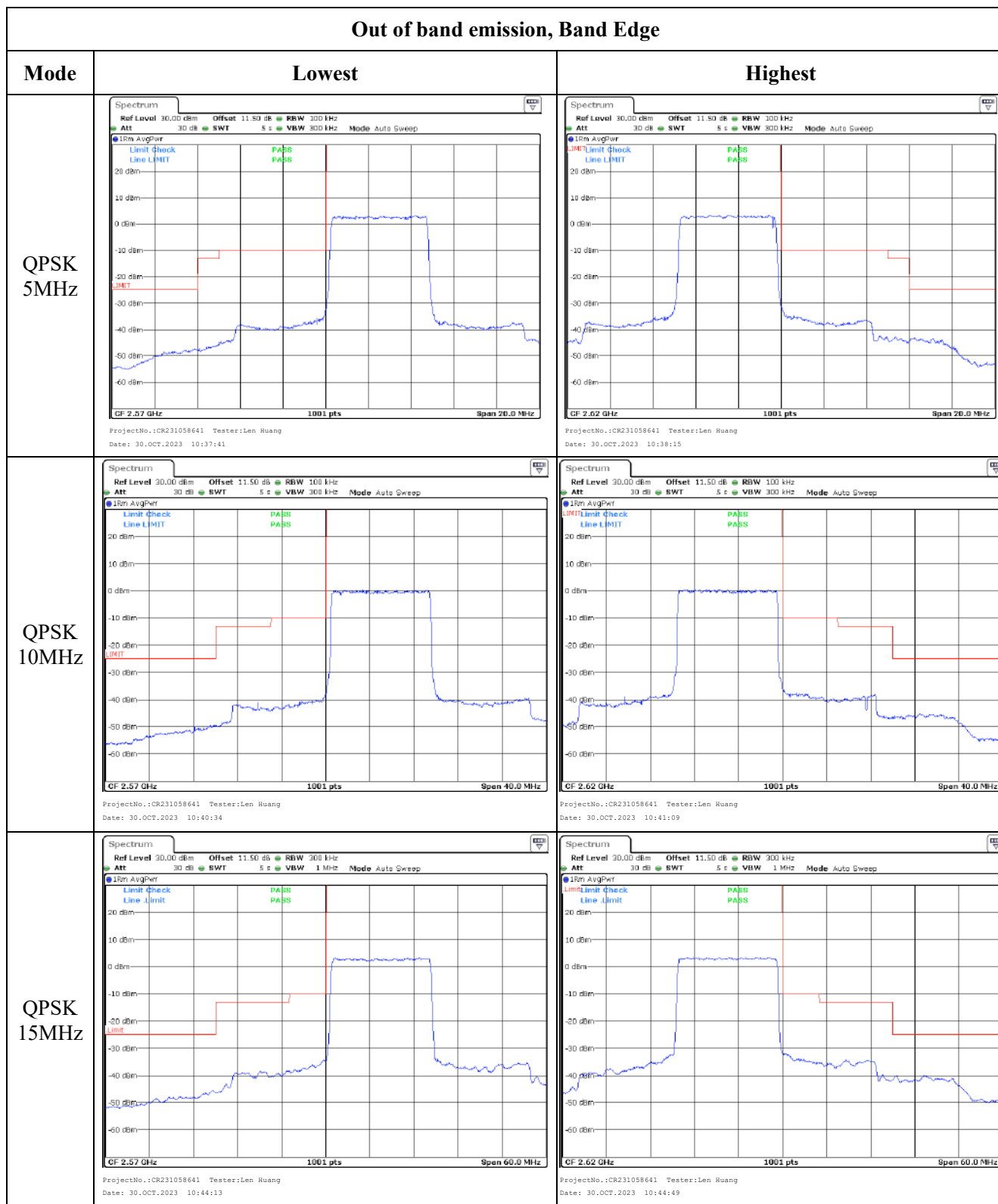
Middle

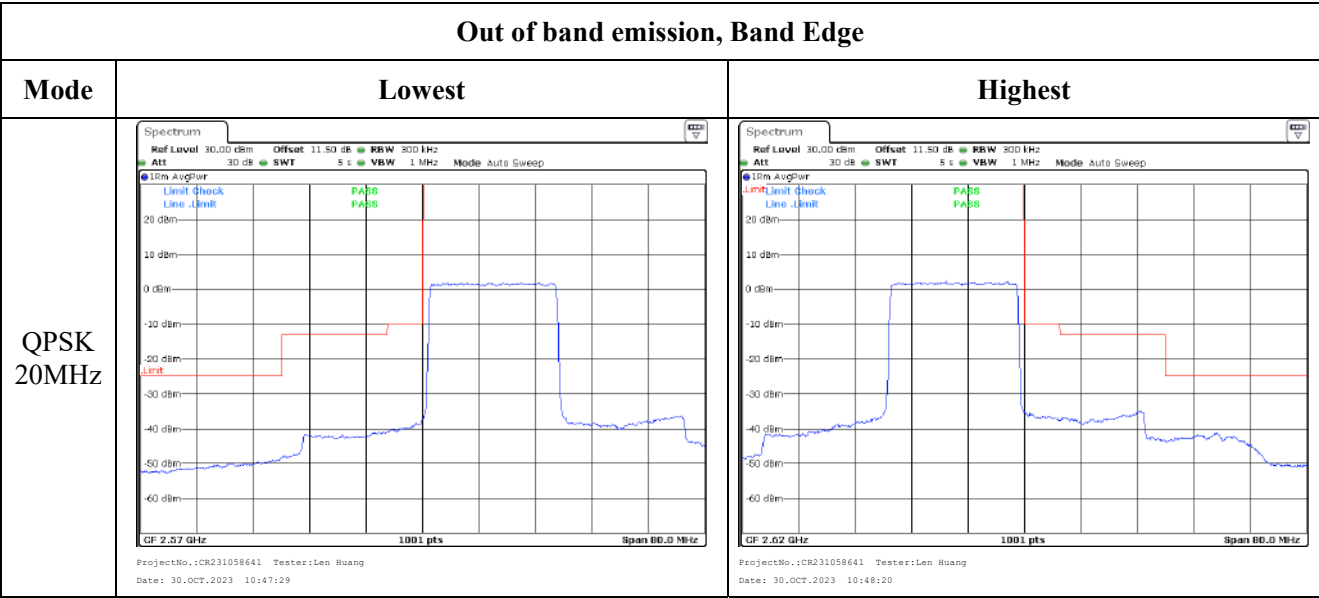


Highest

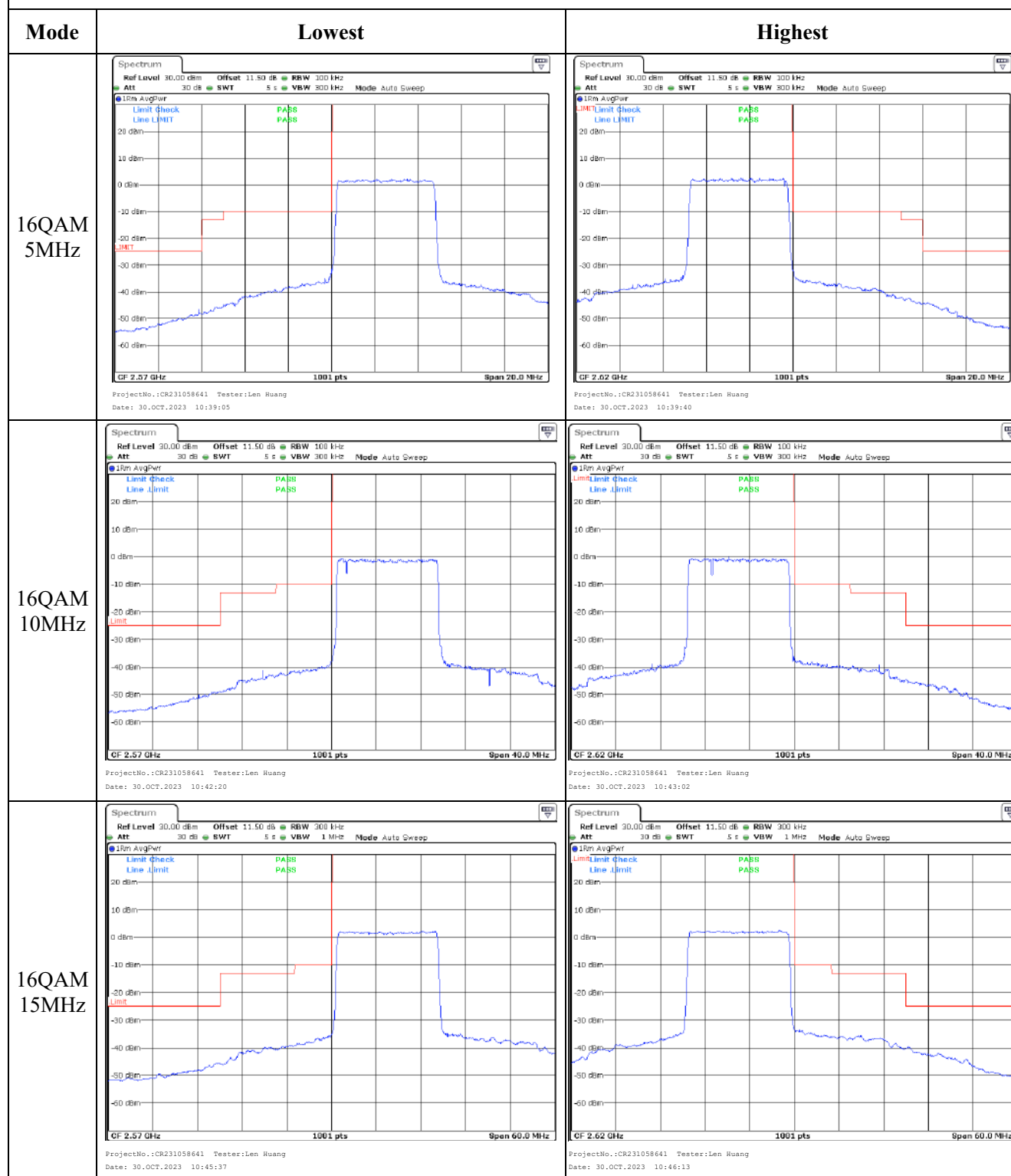


Out of band emission, Band Edge

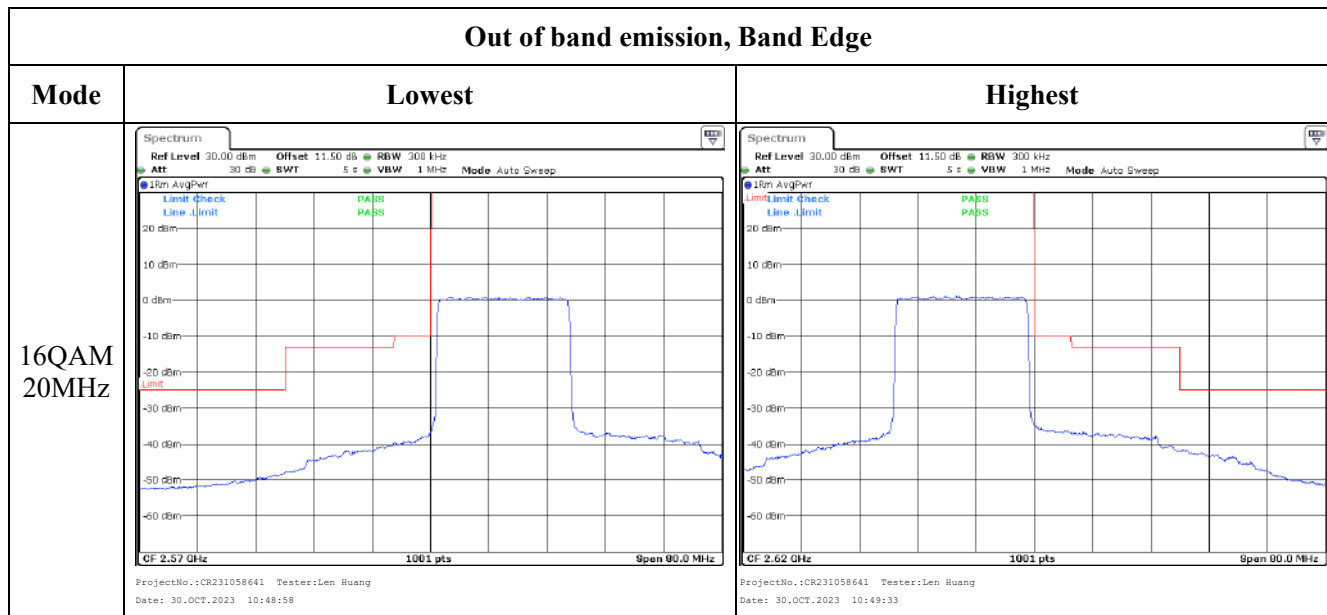




Out of band emission, Band Edge



Out of band emission, Band Edge



4.14 Antenna Port Test Data and Results for LTE Band 40

Serial Number:	2C02-2	Test Date:	2023/10/29-2023/11/3
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang, Ken Tang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5-26.6	Relative Humidity: (%)	45-62	ATM Pressure: (kPa)	101-101.1
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2023/3/31	2024/3/30
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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	2023/9/28	2024/9/27
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Frequency for Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	2307.5	2310	2312.5
10MHz	/	2310	/
5MHz	2352.5	2355	2357.5
10MHz	/	2355	/

Test Data:

(Note: Uplink Downlink configuration 3 was tested)

FCC§2.1046;§ 27.50(a)(3)**LTE Band 40 Lower:****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	19.63	19.65	19.68	19.1	24
	RB1#13	19.77	19.77	19.8		
	RB1#24	19.63	19.65	19.66		
	RB15#0	18.71	18.77	18.8		
	RB15#10	18.75	18.8	18.78		
	RB25#0	18.74	18.79	18.8		
5MHz 16QAM	RB1#0	18.66	18.81	19.02	18.44	24
	RB1#13	18.85	18.94	19.14		
	RB1#24	18.73	18.81	19.01		
	RB15#0	17.7	17.85	17.88		
	RB15#10	17.71	17.85	17.9		
	RB25#0	17.85	17.88	17.81		
10MHz QPSK	RB1#0	/	19.79	/	19.39	24
	RB1#25	/	20.09	/		
	RB1#49	/	19.77	/		
	RB25#0	/	18.75	/		
	RB25#25	/	18.81	/		
	RB50#0	/	18.8	/		
10MHz 16QAM	RB1#0	/	18.71	/	18.3	24
	RB1#25	/	19	/		
	RB1#49	/	18.75	/		
	RB25#0	/	17.85	/		
	RB25#25	/	17.87	/		
	RB50#0	/	17.86	/		

Note:

For 5MHz mode, the channel power is equal to the test result in dBm/5MHz.

For 10MHz mode, the channel power is sum of 10MHz bandwidth, the result is less than 24dBm, so in any 5MHz bandwidth, it's will not exceed limit

EIRP=Conducted Power(dBm) - LC(dB) + GT(dBi)

EIRP PSD=Conducted PSD(dBm/5MHz) - LC(dB) + GT(dBi)

LTE Band 40 Upper:**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	19.4	19.43	19.45	18.9	24
	RB1#13	19.55	19.59	19.6		
	RB1#24	19.44	19.46	19.5		
	RB15#0	18.51	18.56	18.59		
	RB15#10	18.5	18.53	18.6		
	RB25#0	18.55	18.54	18.59		
5MHz 16QAM	RB1#0	18.7	18.39	18.58	18.14	24
	RB1#13	18.84	18.55	18.73		
	RB1#24	18.73	18.49	18.64		
	RB15#0	17.62	17.55	17.63		
	RB15#10	17.59	17.52	17.65		
	RB25#0	17.53	17.61	17.68		
10MHz QPSK	RB1#0	/	19.52	/	19.12	24
	RB1#25	/	19.82	/		
	RB1#49	/	19.65	/		
	RB25#0	/	18.51	/		
	RB25#25	/	18.59	/		
	RB50#0	/	18.56	/		
10MHz 16QAM	RB1#0	/	18.47	/	18.07	24
	RB1#25	/	18.77	/		
	RB1#49	/	18.59	/		
	RB25#0	/	17.62	/		
	RB25#25	/	17.64	/		
	RB50#0	/	17.62	/		

Note:

For 5MHz mode, the channel power is equal to the test result in dBm/5MHz.

For 10MHz mode, the channel power is sum of 10MHz bandwidth, the result is less than 24dBm, so in any 5MHz bandwidth, it's will not exceed limit

EIRP=Conducted Power(dBm) - LC(dB) + GT(dBi)

EIRP PSD=Conducted PSD(dBm/5MHz) - LC(dB) + GT(dBi)

Result:**Pass**

Duty Cycle

Operation Band	Modulation	Bandwidth	Ton (ms)	Ton+off (ms)	Duty Cycle (%)	Limit (%)
LTE Band 40 Lower	QPSK	5M	3	10.005	29.99	38
		10M	3	10.005	29.99	38
	16QAM	5M	3	10.005	29.99	38
		10M	3	10.005	29.99	38
LTE Band 40 Upper	QPSK	5M	3	10.005	29.99	38
		10M	3	10.005	29.99	38
	16QAM	5M	3	10.005	29.99	38
		10M	3	10.005	29.99	38
					Result:	Pass

FCC §2.1049, §27.53:Occupied Bandwidth**LTE Band 40 Lower:**

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle channel	High Channel
5MHz QPSK	4.511	4.511	4.511	5.100	5.140	5.180
5MHz 16QAM	4.511	4.531	4.531	5.140	5.220	5.380
10MHz QPSK	/	8.942	/	/	9.960	/
10MHz 16QAM	/	8.942	/	/	9.760	/

LTE Band 40 Upper:

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	4.531	4.511	4.511	5.240	5.200	5.180
5MHz 16QAM	4.511	4.531	4.531	5.220	5.200	5.160
10MHz QPSK	/	8.982	/	/	9.960	/
10MHz 16QAM	/	8.942	/	/	9.760	/

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.
----------------	--

FCC §2.1055, §27.54: Frequency Stability**LTE Band 40 Lower:**

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2305.124	2305.000	2314.815	2315.000
	-20	3.85	2305.618	2305.000	2314.479	2315.000
	-10	3.85	2305.469	2305.000	2314.540	2315.000
	0	3.85	2305.254	2305.000	2314.091	2315.000
	10	3.85	2305.484	2305.000	2314.177	2315.000
	20	3.85	2305.395	2305.000	2314.326	2315.000
	30	3.85	2305.156	2305.000	2314.144	2315.000
	40	3.85	2305.480	2305.000	2314.425	2315.000
Frequency Stability vs. Voltage	20	3.35	2305.664	2305.000	2314.104	2315.000
	20	4.4	2305.183	2305.000	2314.290	2315.000
					Result:	Pass

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2305.960	2305.000	2314.241	2315.000
	-20	3.85	2305.944	2305.000	2314.601	2315.000
	-10	3.85	2305.867	2305.000	2314.766	2315.000
	0	3.85	2305.039	2305.000	2314.895	2315.000
	10	3.85	2305.779	2305.000	2314.689	2315.000
	20	3.85	2305.676	2305.000	2314.203	2315.000
	30	3.85	2305.355	2305.000	2314.385	2315.000
	40	3.85	2305.792	2305.000	2314.017	2315.000
Frequency Stability vs. Voltage	20	3.35	2305.132	2305.000	2314.935	2315.000
	20	4.4	2305.976	2305.000	2314.059	2315.000
					Result:	Pass

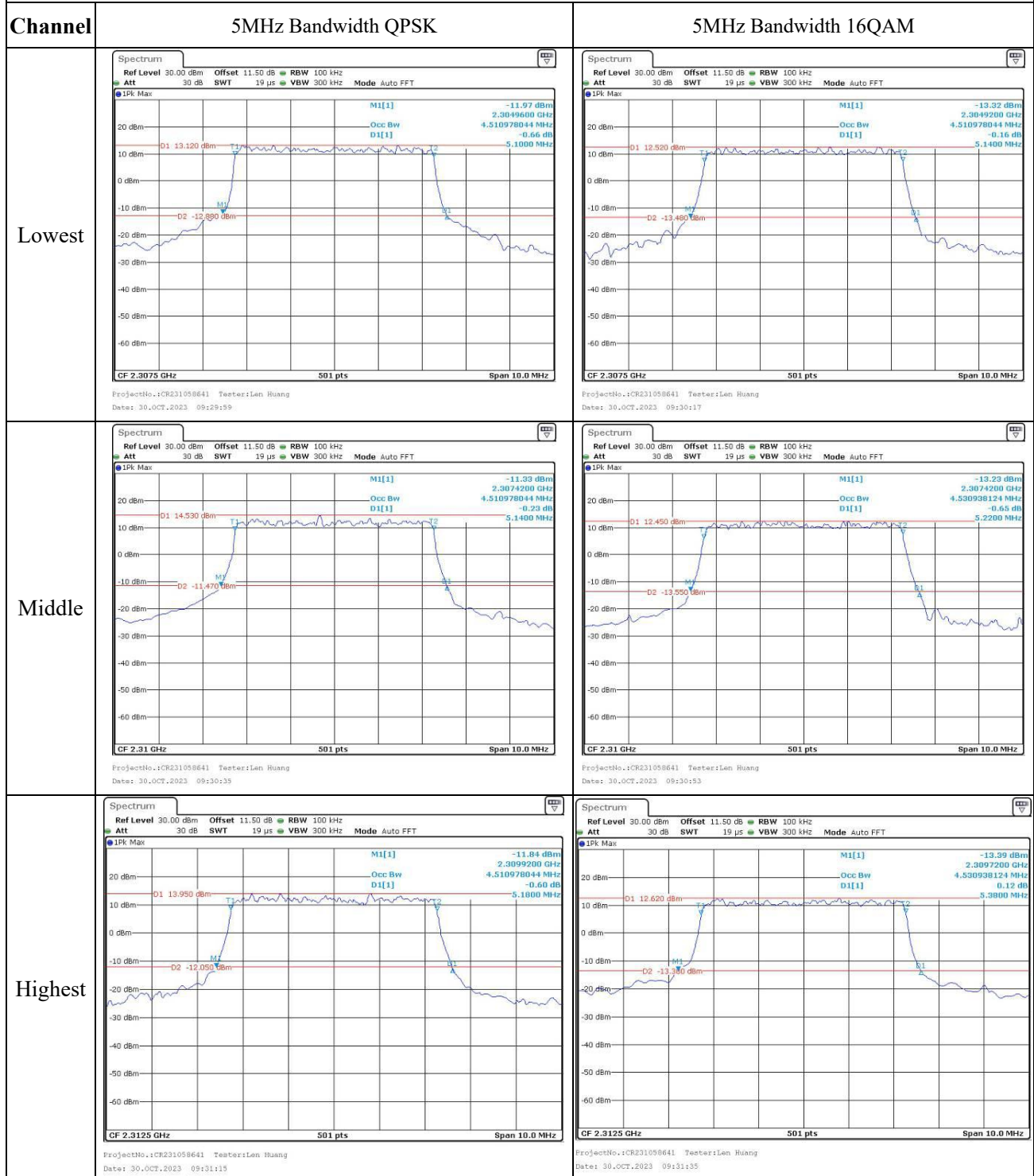
LTE Band 40 Upper:

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit

Frequency Stability vs. Temperature	-30	3.85	2350.224	2350.000	2359.135	2360.000
	-20	3.85	2350.980	2350.000	2359.079	2360.000
	-10	3.85	2350.739	2350.000	2359.495	2360.000
	0	3.85	2350.824	2350.000	2359.428	2360.000
	10	3.85	2350.916	2350.000	2359.639	2360.000
	20	3.85	2350.989	2350.000	2359.692	2360.000
	30	3.85	2350.003	2350.000	2359.896	2360.000
	40	3.85	2350.917	2350.000	2359.472	2360.000
	50	3.85	2350.121	2350.000	2359.897	2360.000
Frequency Stability vs. Voltage	20	3.35	2350.954	2350.000	2359.732	2360.000
	20	4.4	2350.440	2350.000	2359.154	2360.000
Result:					Pass	

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	2350.466	2350.000	2359.850	2360.000
	-20	3.85	2350.096	2350.000	2359.886	2360.000
	-10	3.85	2350.968	2350.000	2359.737	2360.000
	0	3.85	2350.704	2350.000	2359.840	2360.000
	10	3.85	2350.401	2350.000	2359.783	2360.000
	20	3.85	2350.906	2350.000	2359.894	2360.000
	30	3.85	2350.564	2350.000	2359.436	2360.000
	40	3.85	2350.916	2350.000	2359.802	2360.000
	50	3.85	2350.680	2350.000	2359.324	2360.000
Frequency Stability vs. Voltage	20	3.35	2350.915	2350.000	2359.744	2360.000
	20	4.4	2350.783	2350.000	2359.829	2360.000
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):
2305-2315 MHz:

Occupied Bandwidth

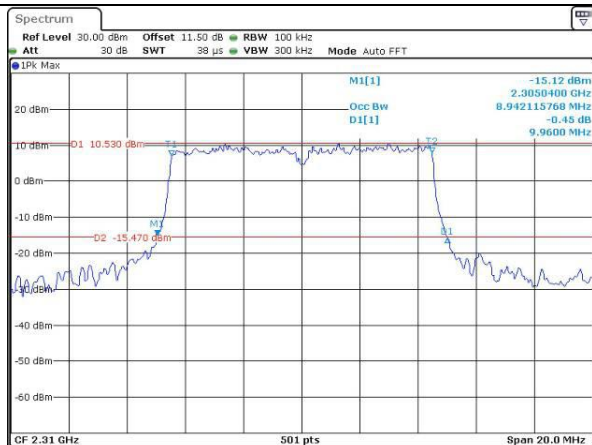
Occupied Bandwidth

Channel

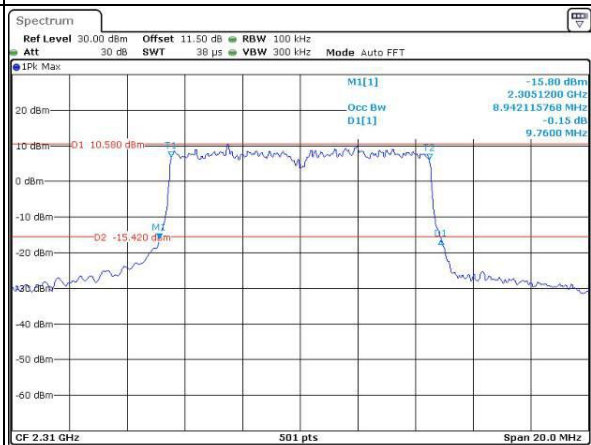
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

Middle



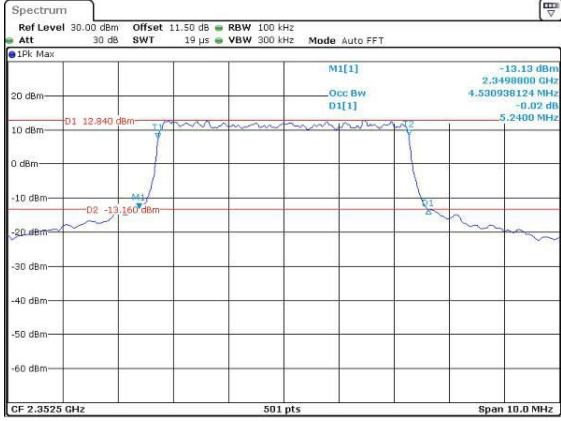
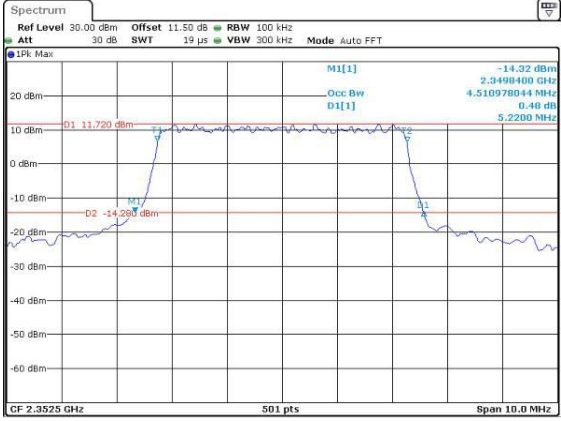
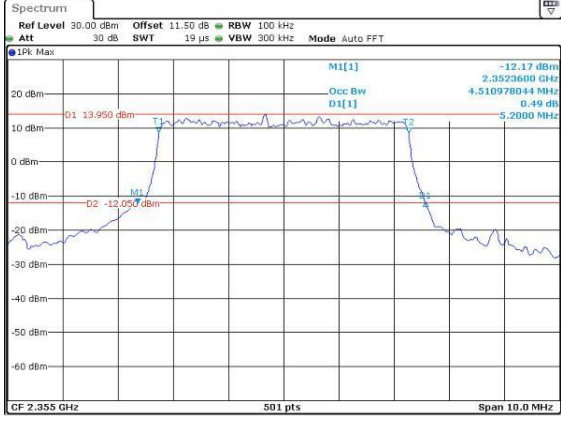
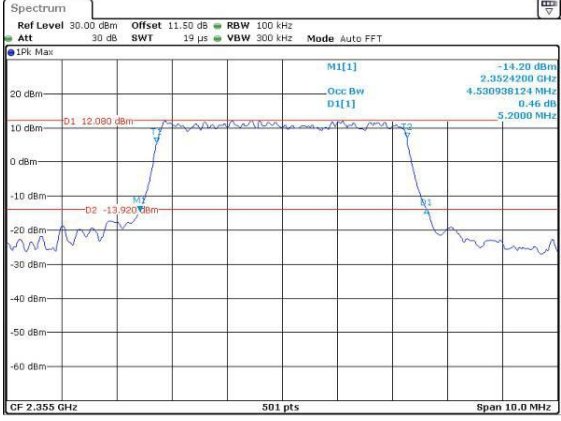
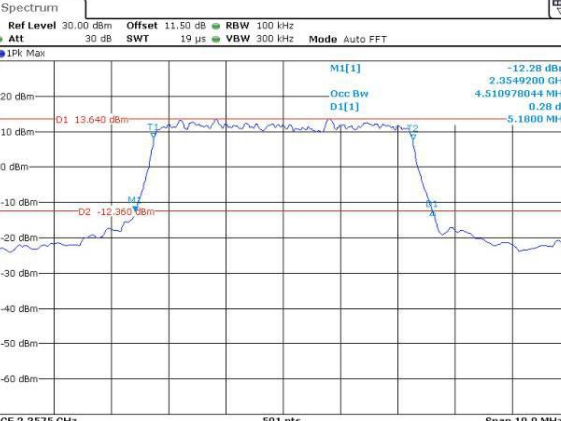
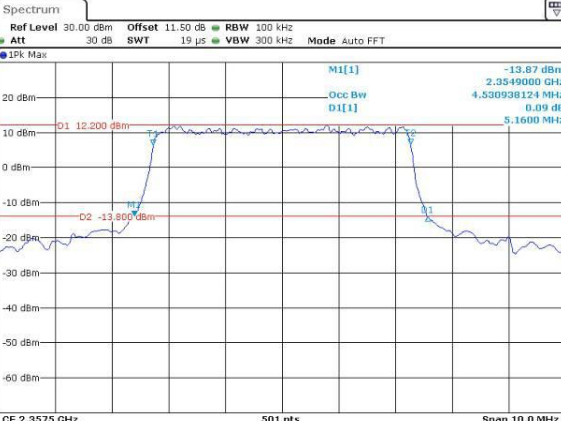
ProjectNo.:CR231058641 Tester:Len Huang
Date: 30.OCT.2023 09:32:05



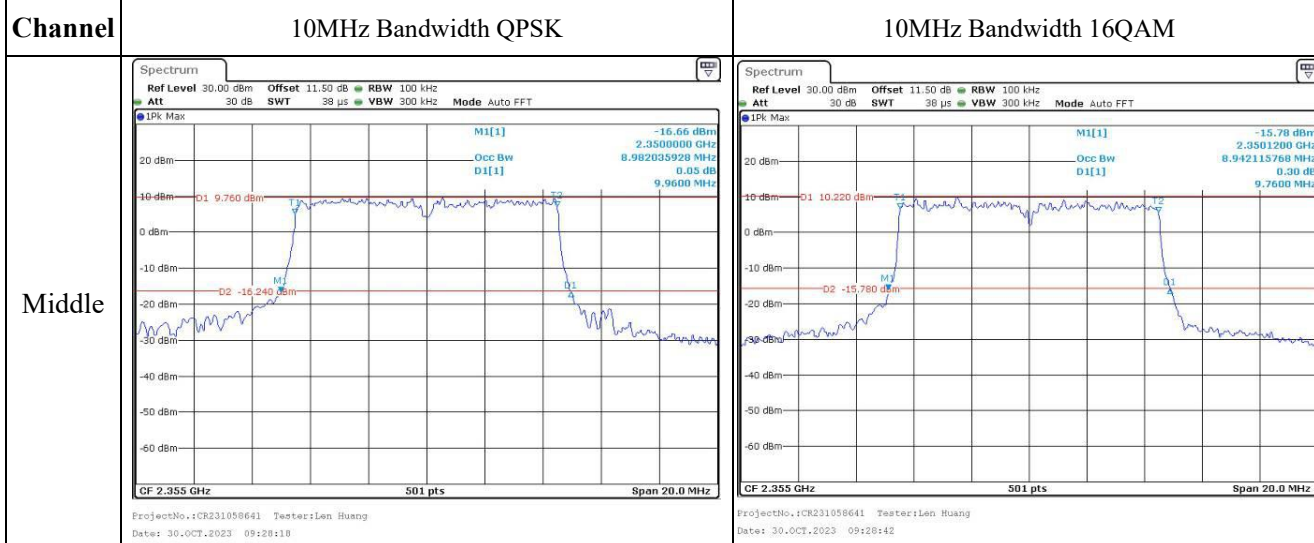
ProjectNo.:CR231058641 Tester:Len Huang
Date: 30.OCT.2023 09:32:29

2350-2360 MHz:

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	 ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 09:26:10	 ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 09:26:27
Middle	 ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 09:26:49	 ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 09:27:12
Highest	 ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 09:27:34	 ProjectNo.:CR231058641 Tester:Len Huang Date: 30.OCT.2023 09:27:51

Occupied Bandwidth



2305-2315 MHz:

