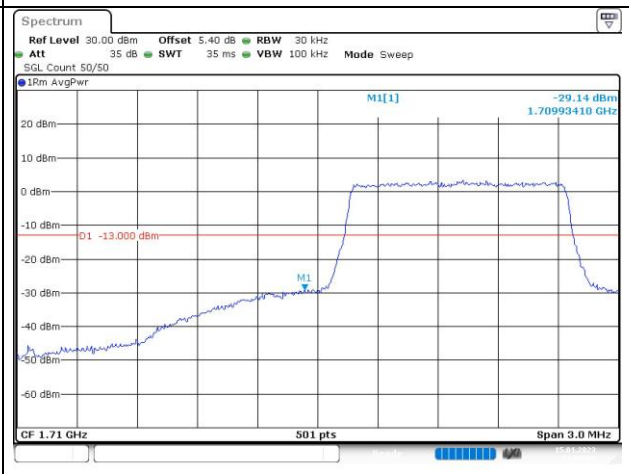
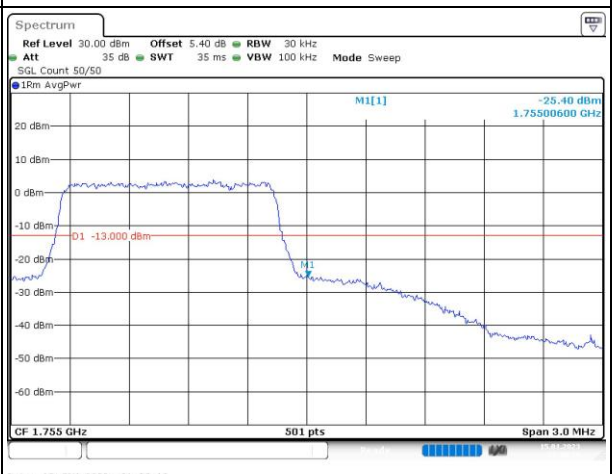
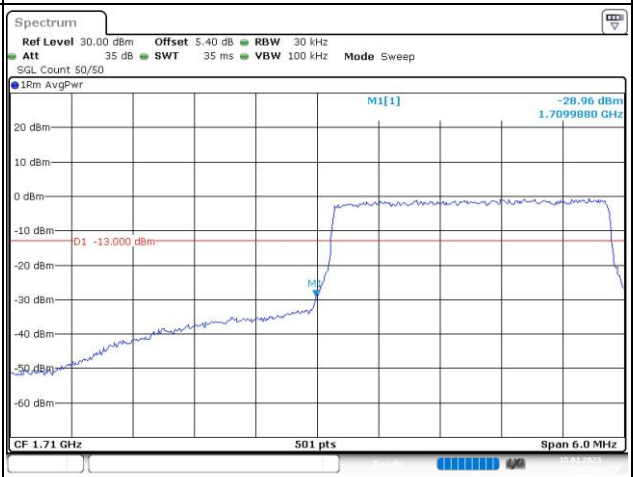
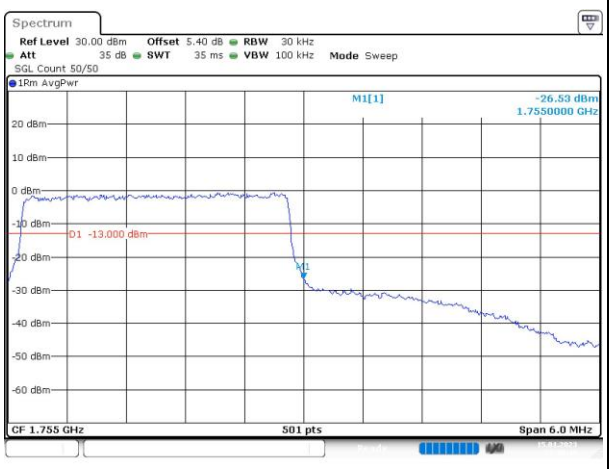
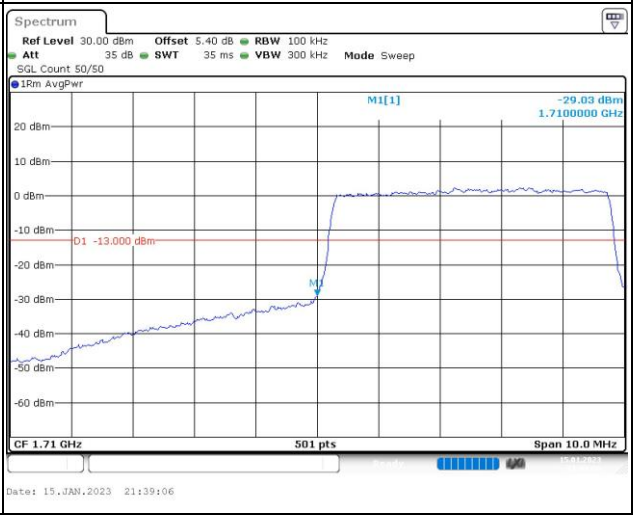
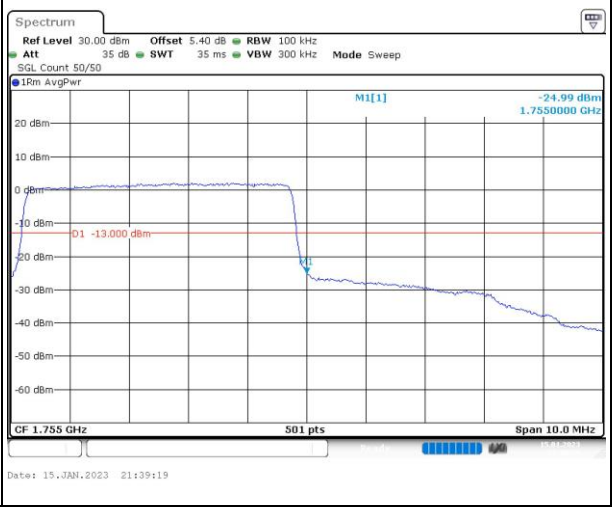
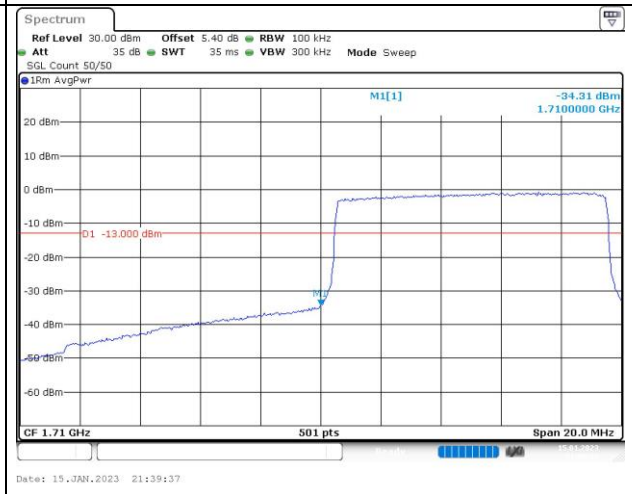
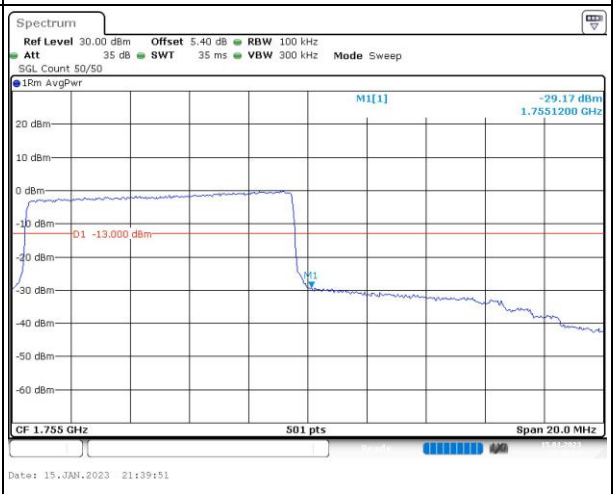
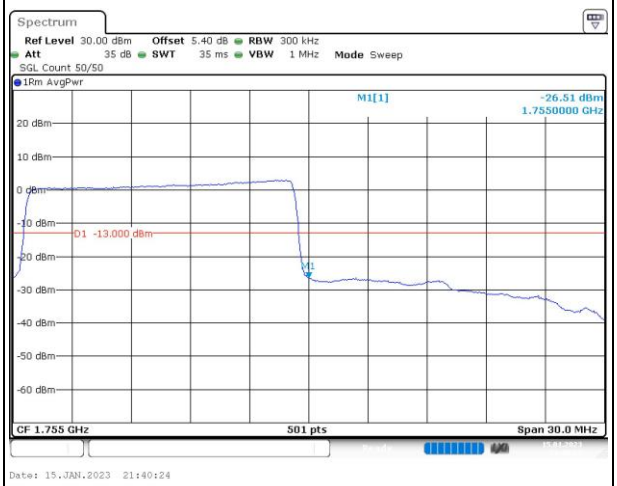
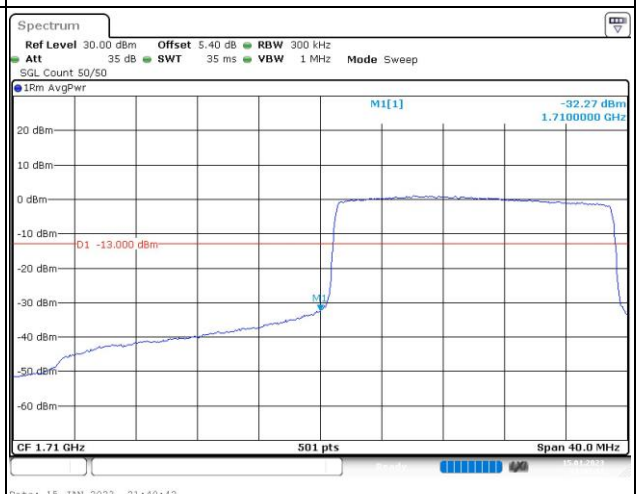
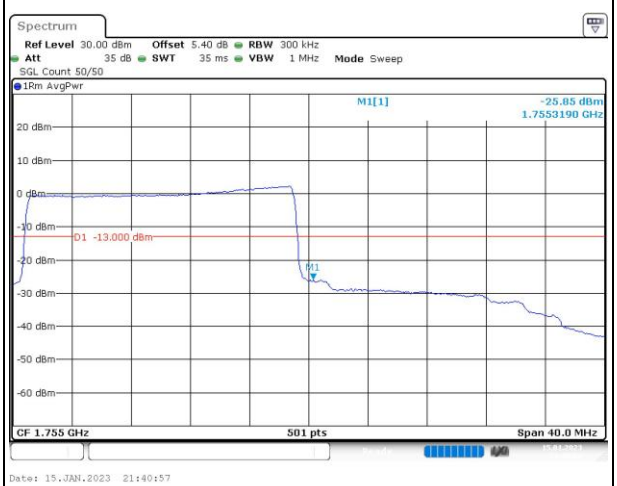
Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 1.4MHz		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 10MHz		
16QAM 15MHz		
16QAM 20MHz		

4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	1XBG-2	Test Date:	2023/1/13~2023/1/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	18.3~24.6	Relative Humidity: (%)	42~58	ATM Pressure: (kPa)	100.6~102.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022-07-15	2023-07-14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-04-06	2023-04-05
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-09-29	2023-09-28
UNI-T	Multimeter	UT39A+	C210582554	N/A	N/A
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	2022-07-15	2023-07-14

** 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	22.84	22.71	22.92	19	38.45
	RB1#3	22.9	22.76	23.12		
	RB1#5	22.94	22.79	23.08		
	RB3#0	23.15	22.94	22.85		
	RB3#3	23.1	23.01	22.93		
	RB6#0	22.07	21.92	21.88		
1.4MHz 16QAM	RB1#0	22.77	21.62	21.92	18.62	38.45
	RB1#3	22.7	21.64	22.07		
	RB1#5	22.72	21.64	22.11		
	RB3#0	21.98	22.08	21.76		
	RB3#3	21.96	22.09	21.99		
	RB6#0	21.14	21.02	21.16		
3MHz QPSK	RB1#0	22.88	22.76	22.76	18.83	38.45
	RB1#8	22.98	22.77	22.83		
	RB1#14	22.85	22.9	22.96		
	RB6#0	22.04	22.09	21.79		
	RB6#9	22.03	22.03	21.94		
	RB15#0	22.09	21.91	21.79		
3MHz 16QAM	RB1#0	22.72	21.6	22.11	18.58	38.45
	RB1#8	22.71	21.62	22.07		
	RB1#14	22.73	21.63	22.32		
	RB6#0	21.1	21.31	20.96		
	RB6#9	21.05	21.23	21.04		
	RB15#0	21.05	21.07	21.09		
5MHz QPSK	RB1#0	22.98	22.63	22.82	18.85	38.45
	RB1#13	22.91	22.77	22.75		
	RB1#24	23	22.85	22.97		
	RB15#0	22.04	21.93	21.74		
	RB15#10	22.01	22.02	21.75		
	RB25#0	21.97	21.9	21.74		
5MHz 16QAM	RB1#0	22.11	21.68	20.88	17.99	38.45
	RB1#13	22.03	21.65	20.88		
	RB1#24	22.14	21.75	20.99		
	RB15#0	20.96	21.06	21.01		
	RB15#10	20.9	21.1	21.15		
	RB25#0	21.02	20.95	21.15		
10MHz QPSK	RB1#0	23.06	22.86	22.71	18.91	38.45

	RB1#25	23.05	22.89	22.88		
	RB1#49	23.05	22.98	22.9		
	RB25#0	22.02	22.08	21.83		
	RB25#25	21.93	22	21.77		
	RB50#0	22.06	22.01	21.97		
10MHz 16QAM	RB1#0	22.16	21.56	22.15	18.02	38.45
	RB1#25	22.17	21.54	22.13		
	RB1#49	22.06	21.4	22.13		
	RB25#0	21.1	21.18	21.01		
	RB25#25	21.18	21.17	20.96		
	RB50#0	21.11	21.08	21.04		

Note:
ERP= Conducted Power(dBm) - L_C(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	3.97	5.86	4.52	13
	RB50#0	5.68	5.42	5.54	13
10MHz 16QAM	RB1#0	4.96	6.96	5.59	13
	RB50#0	6.58	6.43	6.32	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	1.108	1.102	1.35	1.32	1.29
1.4MHz 16QAM	1.102	1.108	1.108	1.29	1.326	1.278
3MHz QPSK	2.707	2.695	2.695	3	3.012	3.024
3MHz 16QAM	2.695	2.695	2.695	3.024	3.06	3.024
5MHz QPSK	4.531	4.531	4.551	5.22	5.4	5.26
5MHz 16QAM	4.551	4.551	4.531	5.26	5.38	5.3
10MHz QPSK	8.942	8.942	8.982	9.88	9.84	9.8
10MHz 16QAM	8.982	8.942	8.942	9.88	10.12	9.88
Note: The test plots please refer to the Plots of Occupied Bandwidth						

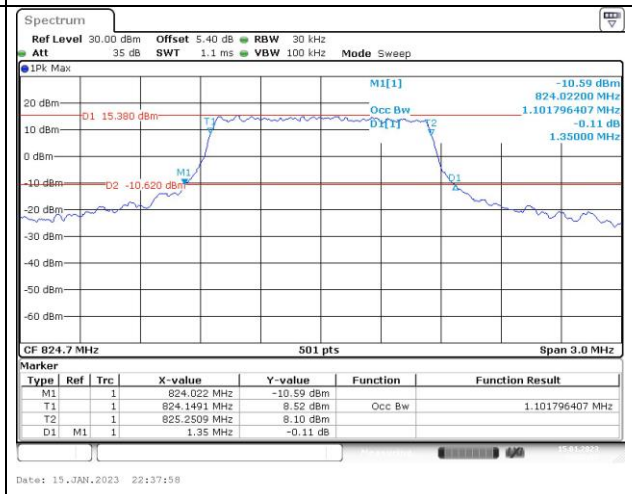
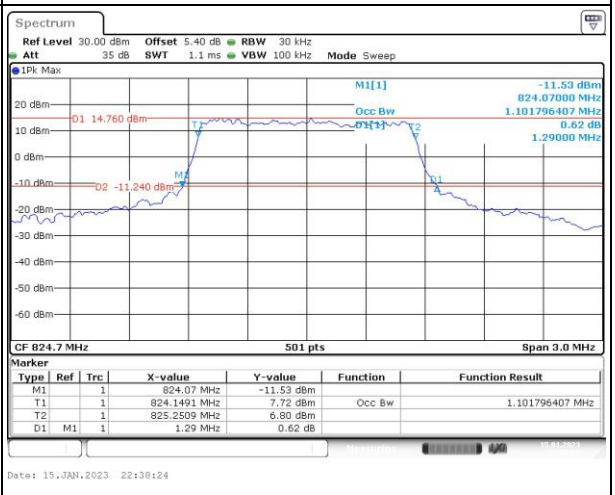
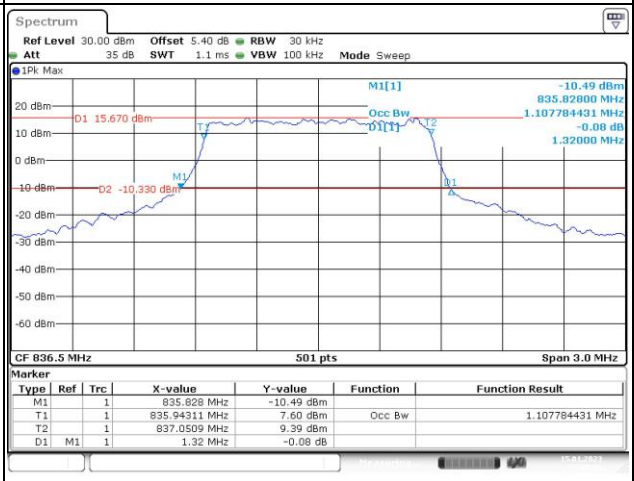
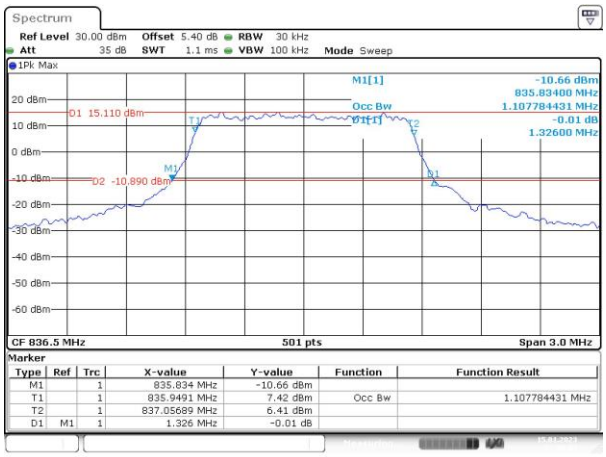
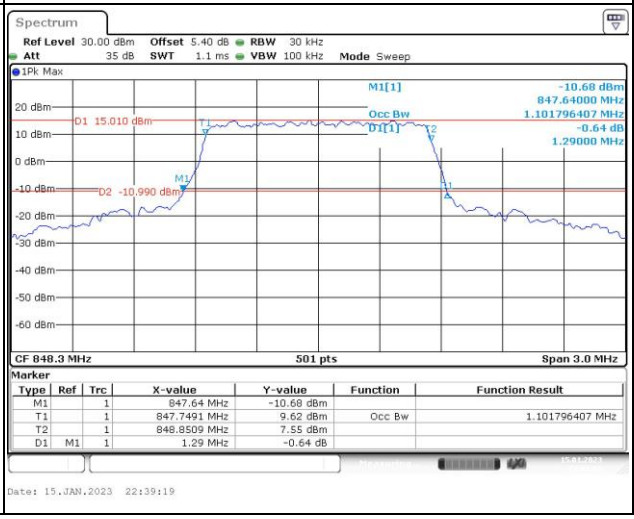
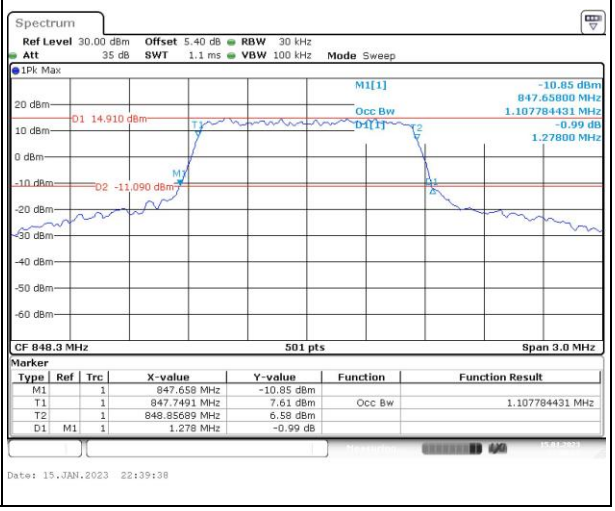
FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

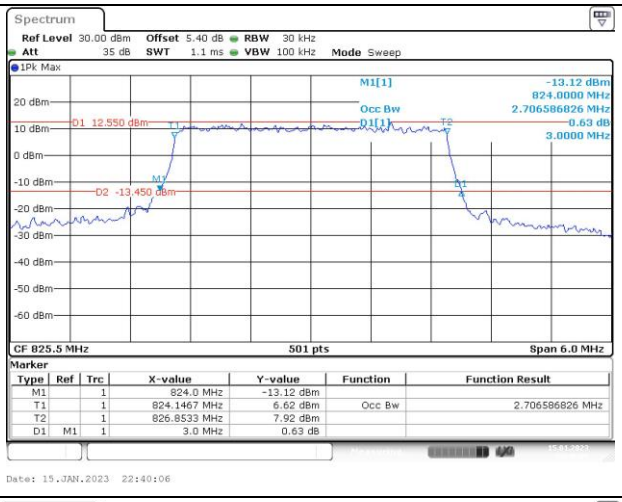
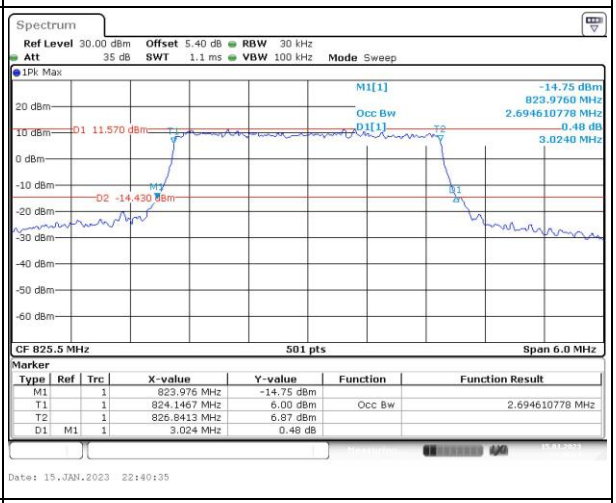
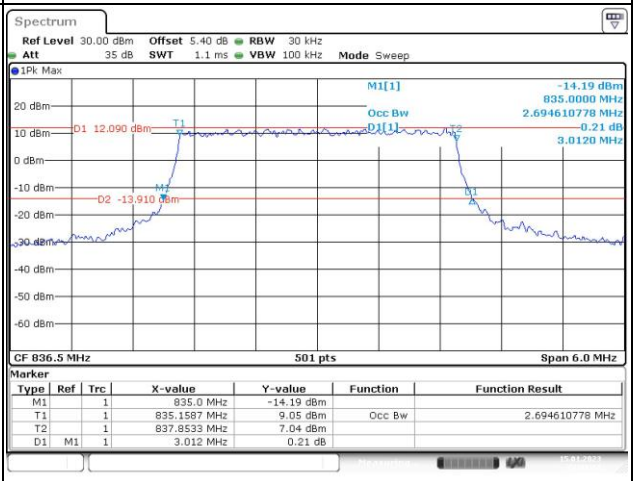
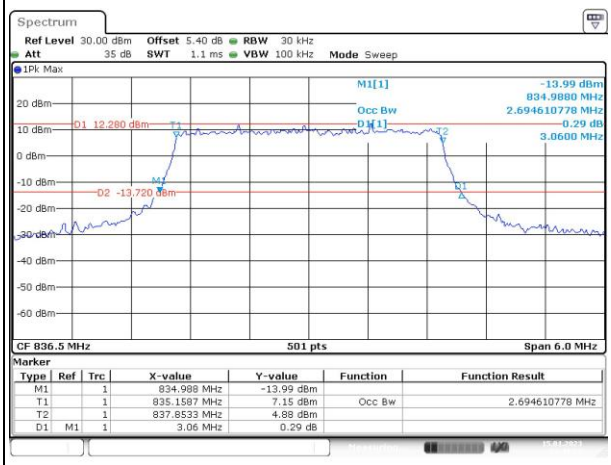
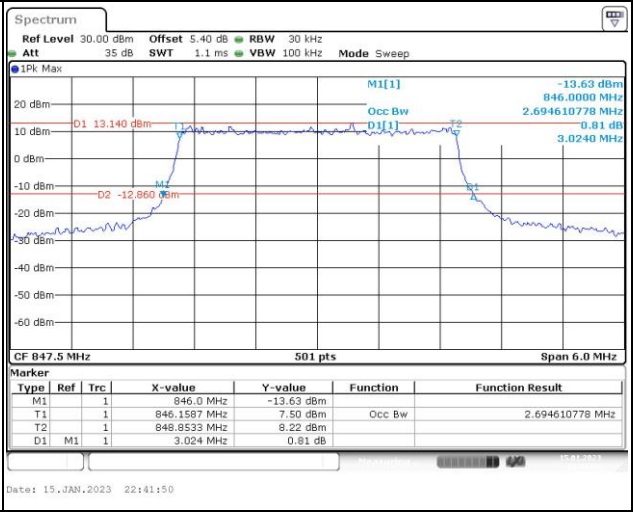
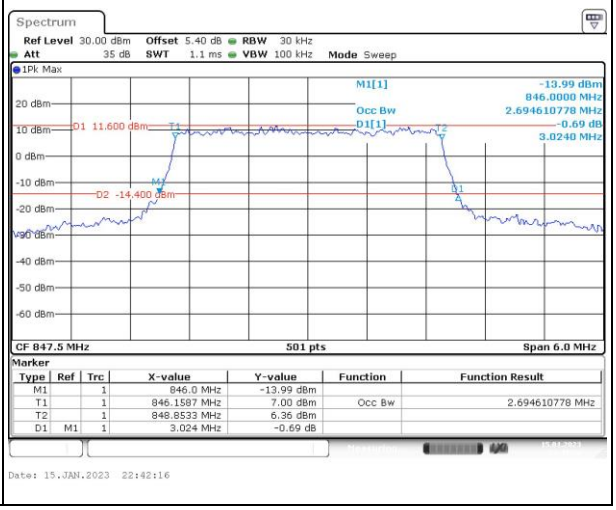
FCC §2.1051, §22.917(a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

FCC §2.1055, §22.355: Frequency Stability					
Test Mode:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	7.4	-12.69	-0.015	2.5
	-20	7.4	-6.97	-0.008	2.5
	-10	7.4	-5.5	-0.007	2.5
	0	7.4	6.06	0.007	2.5
	10	7.4	9.8	0.012	2.5
	20	7.4	5.03	0.006	2.5
	30	7.4	-6.62	-0.008	2.5
	40	7.4	-8.73	-0.010	2.5
	50	7.4	-7.05	-0.008	2.5
Frequency Stability vs. Voltage	20	6.95	8.99	0.011	2.5
	20	8.4	-7.17	-0.009	2.5
				Result:	**Pass**

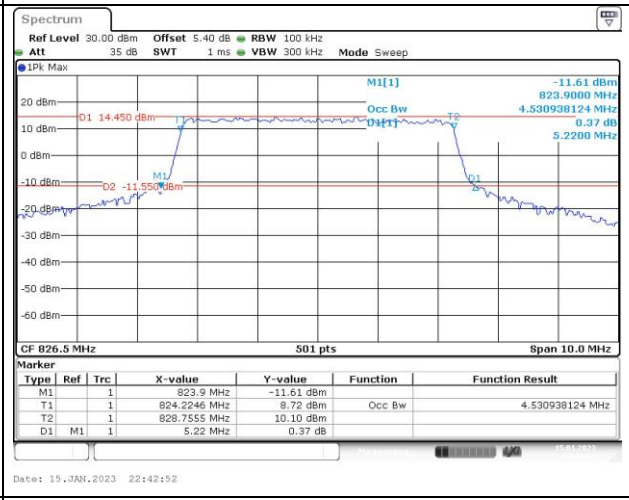
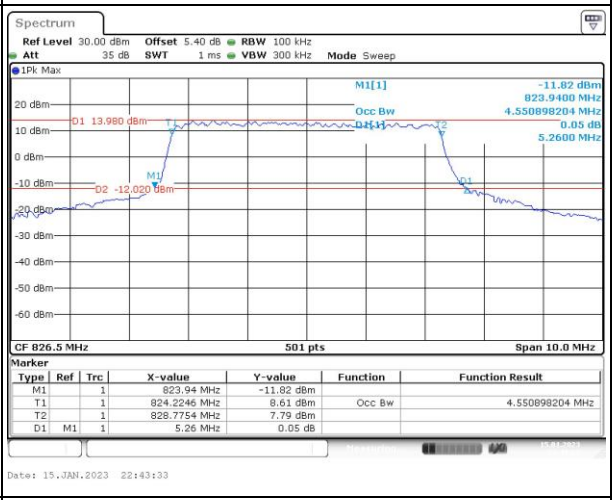
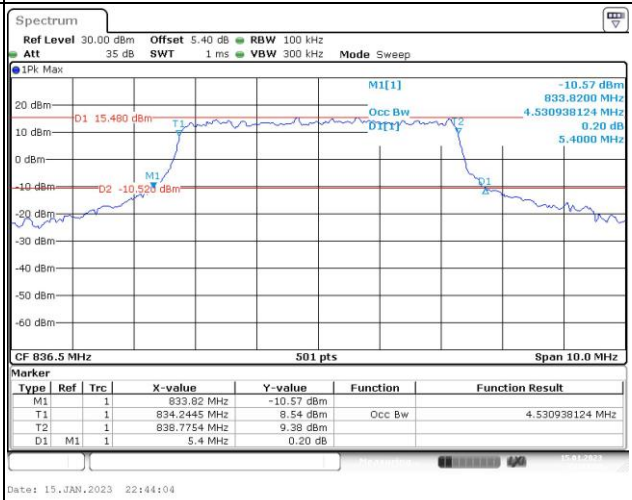
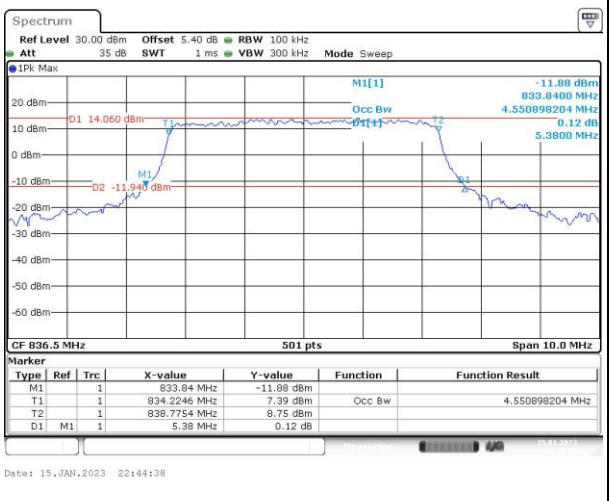
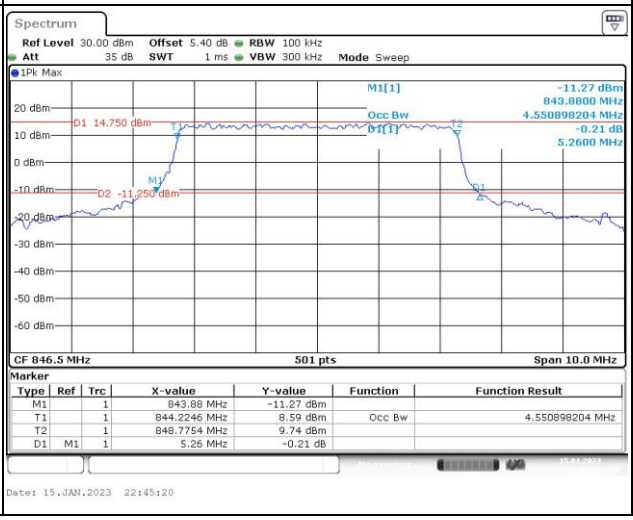
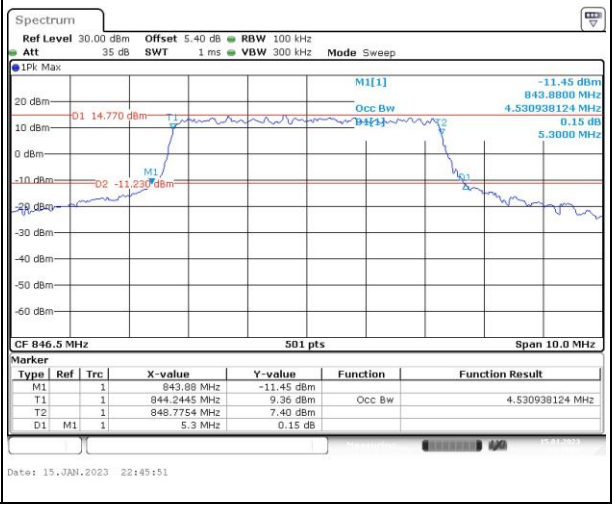
10 MHz 16QAM		Test Channel:	836.5	MHz
Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
		(Hz)	(ppm)	(ppm)
-30	7.4	-22.66	-0.027	2.5
-20	7.4	8.1	0.010	2.5
-10	7.4	-8.59	-0.010	2.5
0	7.4	9.33	0.011	2.5
10	7.4	-6.94	-0.008	2.5
20	7.4	7.54	0.009	2.5
30	7.4	6.43	0.008	2.5
40	7.4	-6.17	-0.007	2.5
50	7.4	-6.44	-0.008	2.5
20	6.95	6.34	0.008	2.5
20	8.4	-6.89	-0.008	2.5
			Result:	**Pass**

Test Plots(Note: The 5.4dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer)**:**

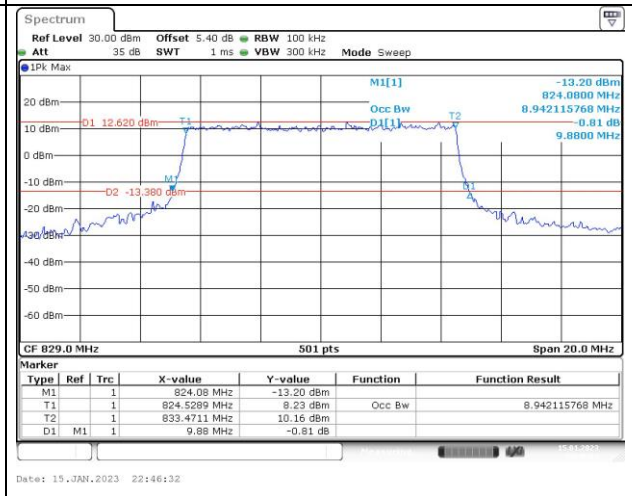
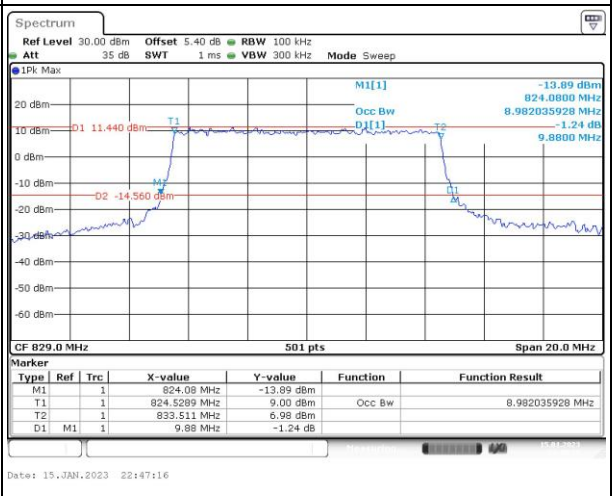
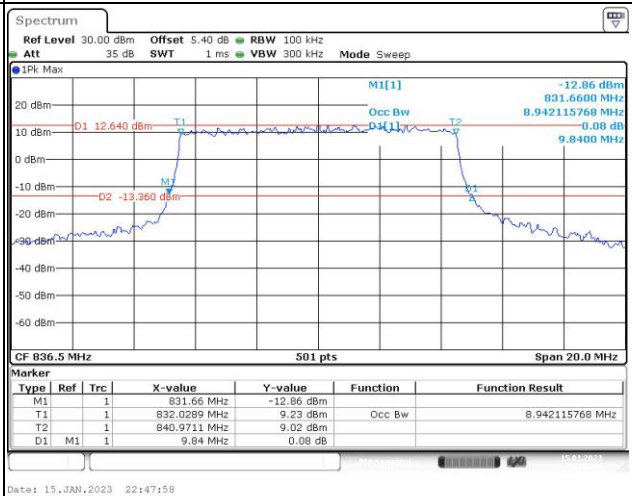
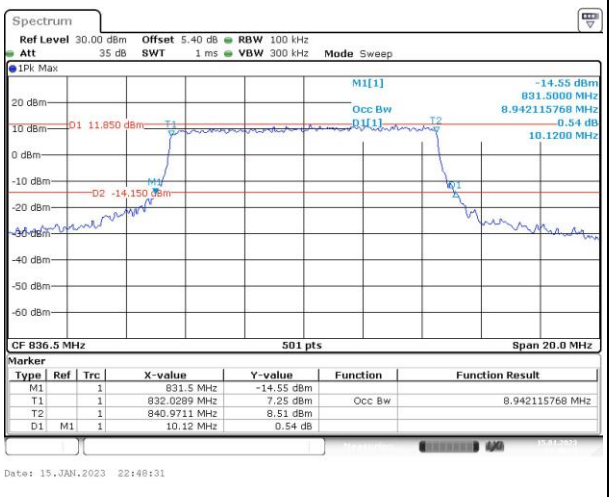
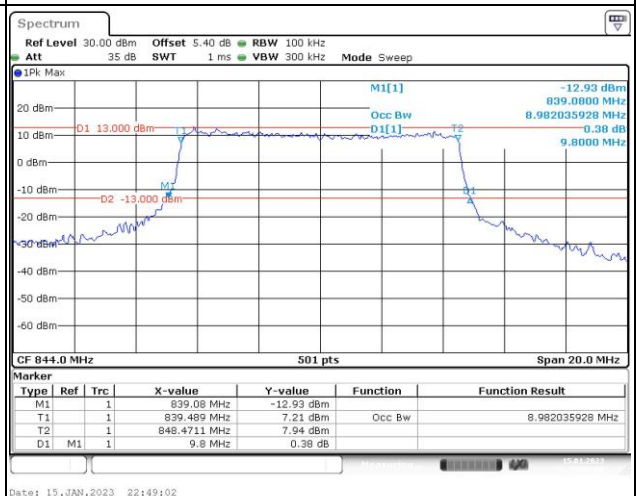
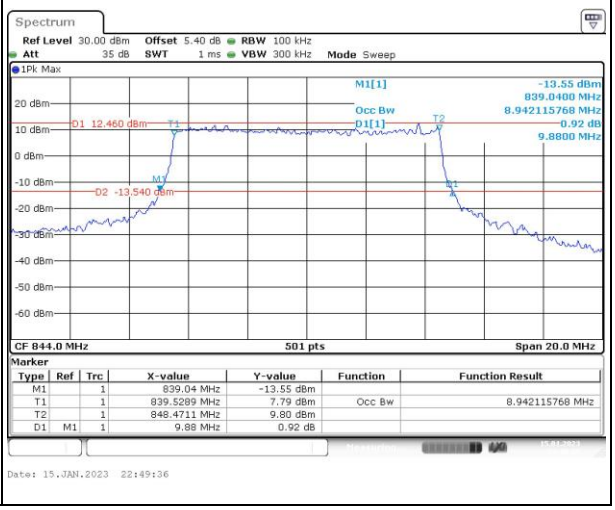
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

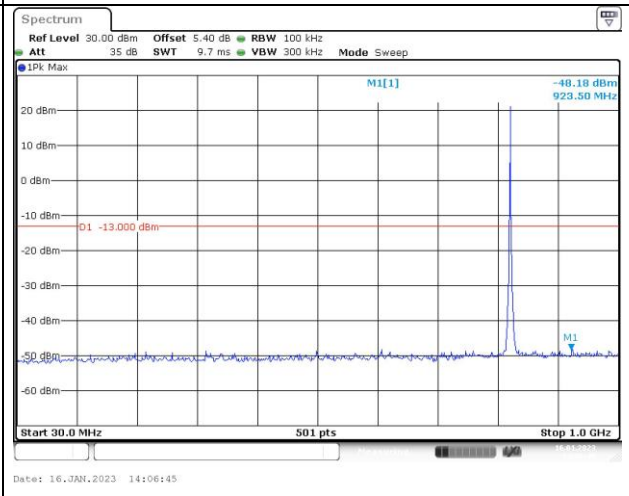
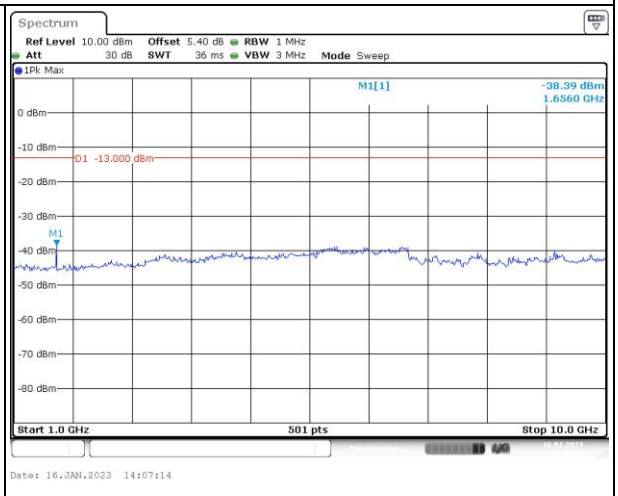
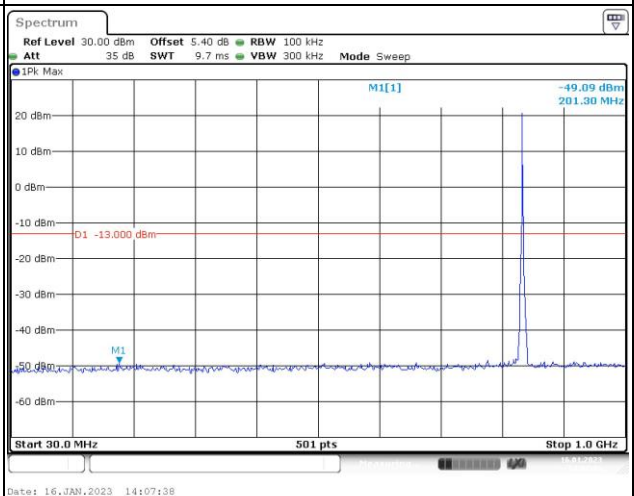
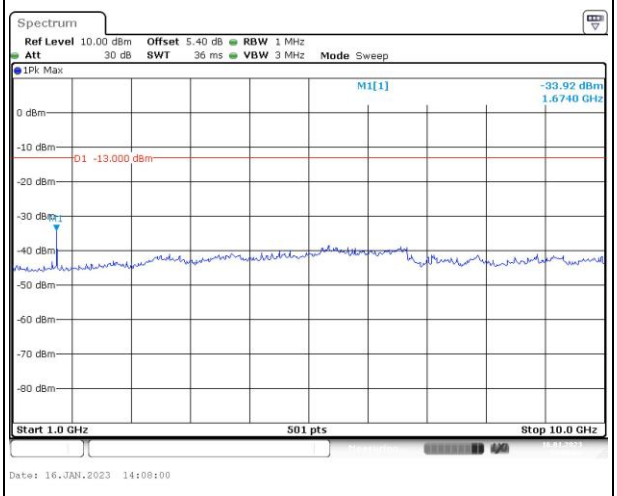
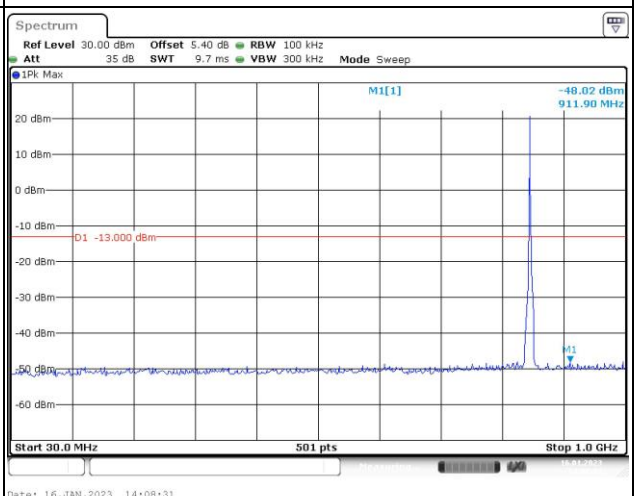
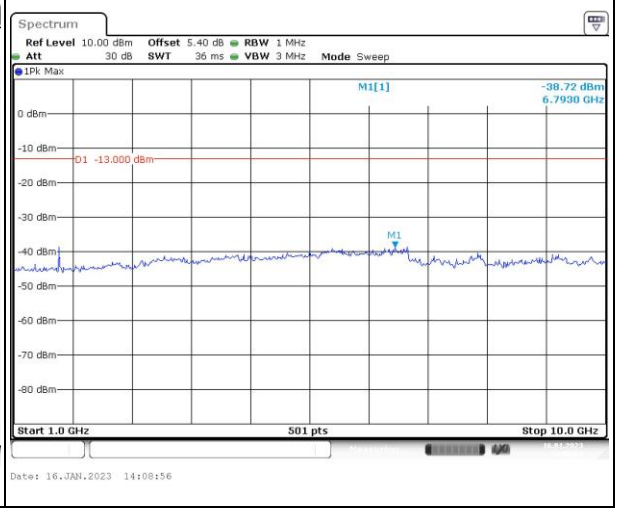
Occupied Bandwidth		
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

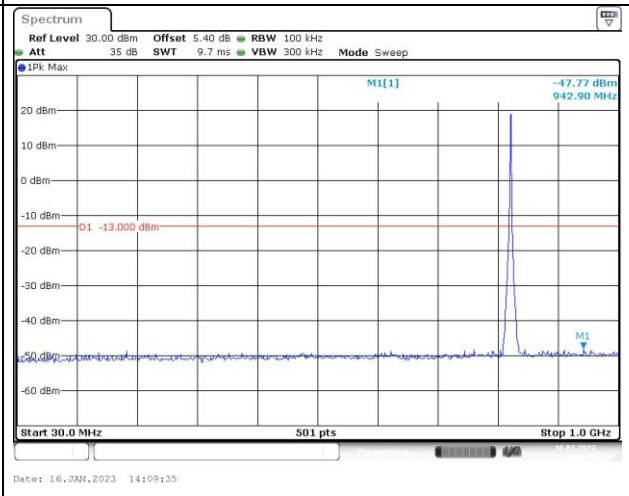
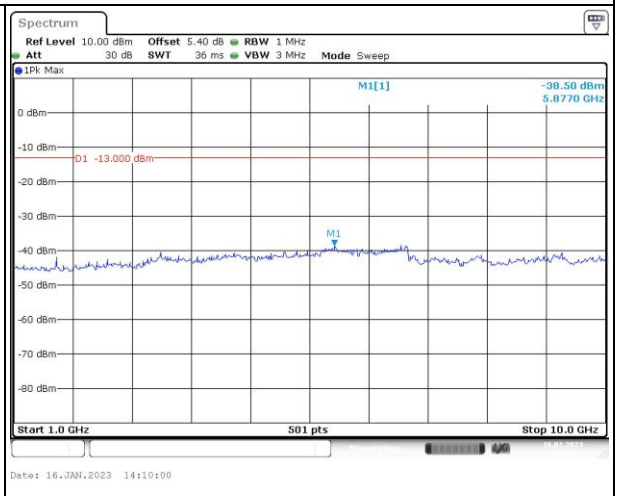
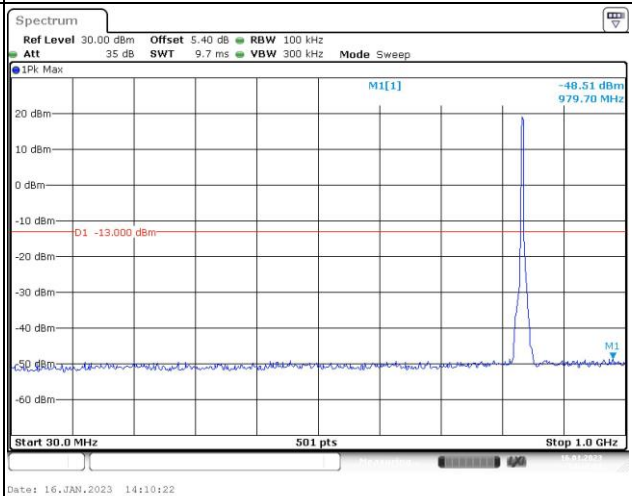
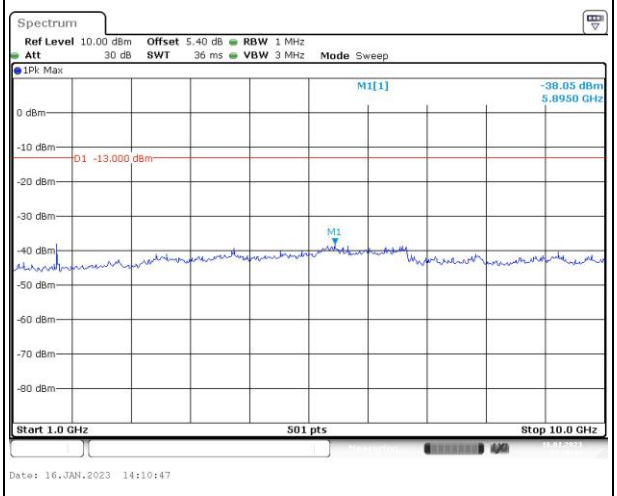
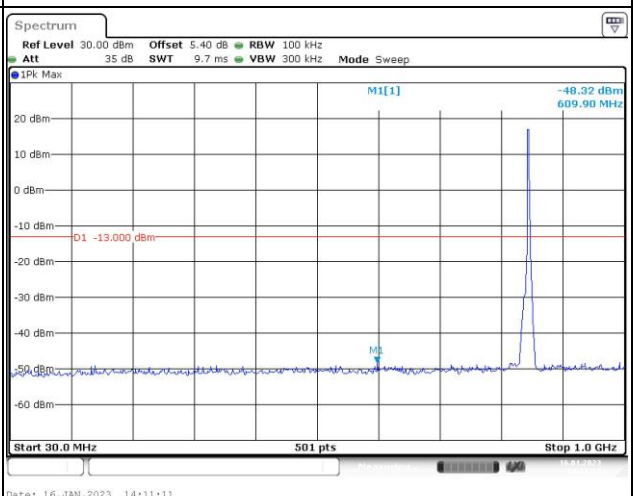
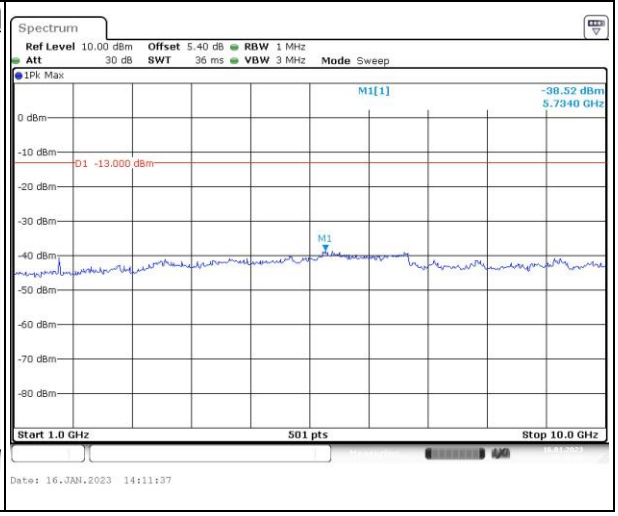
Occupied Bandwidth

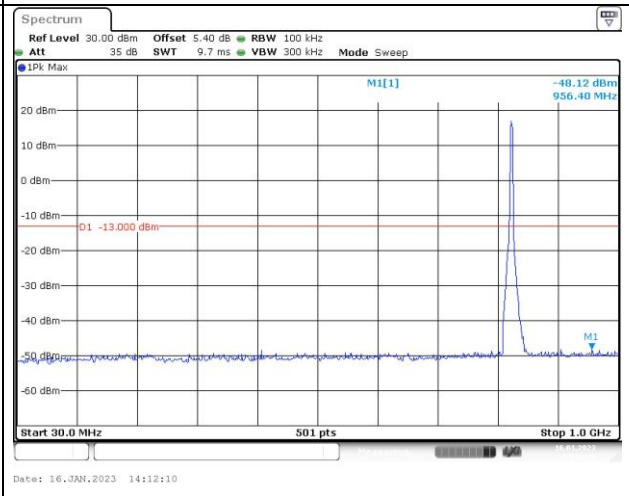
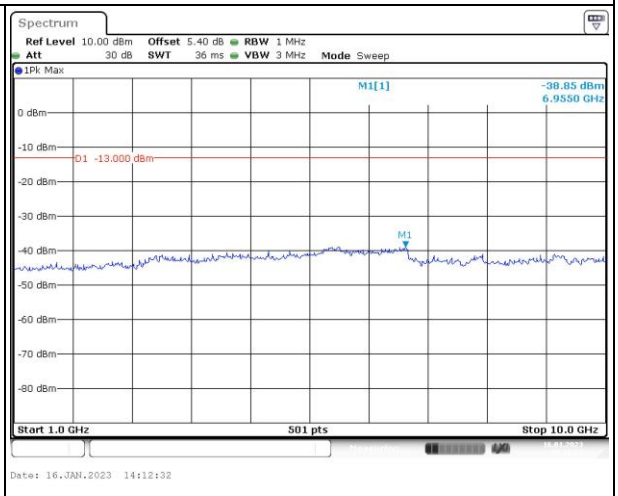
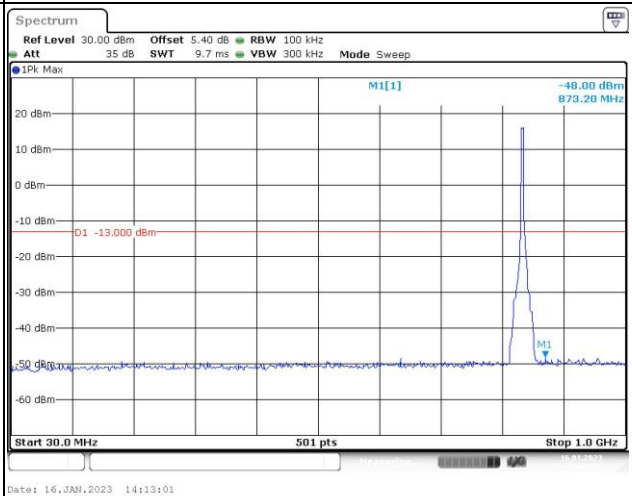
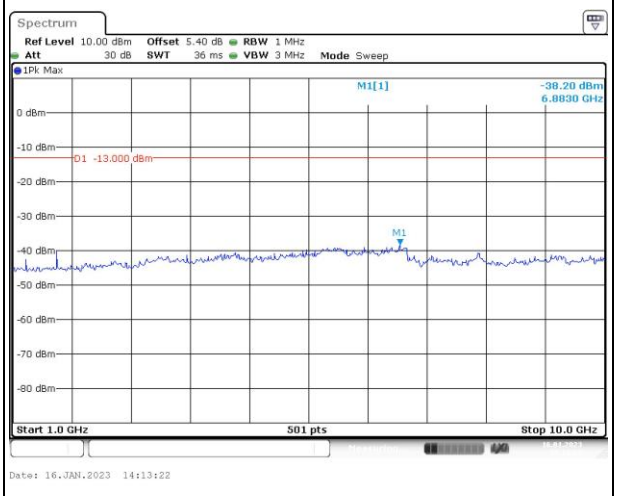
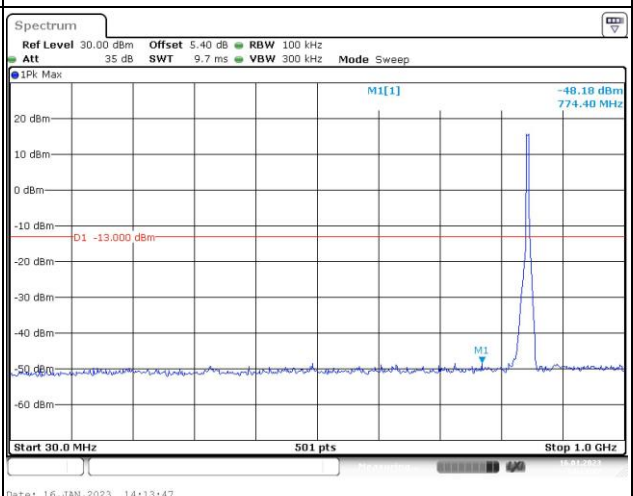
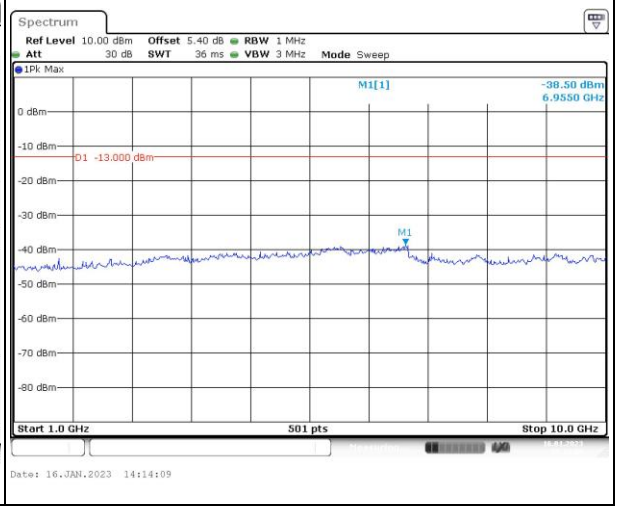
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

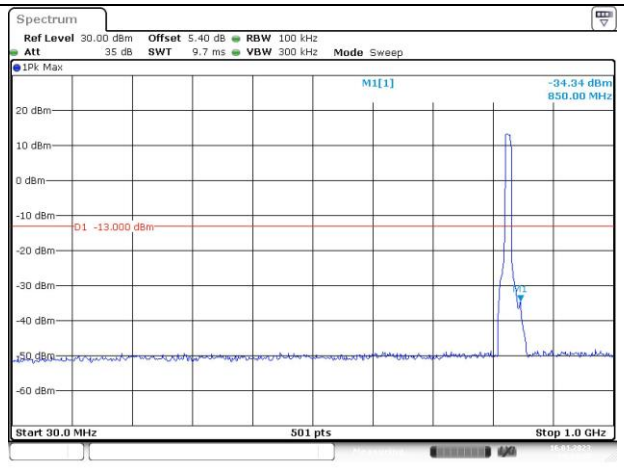
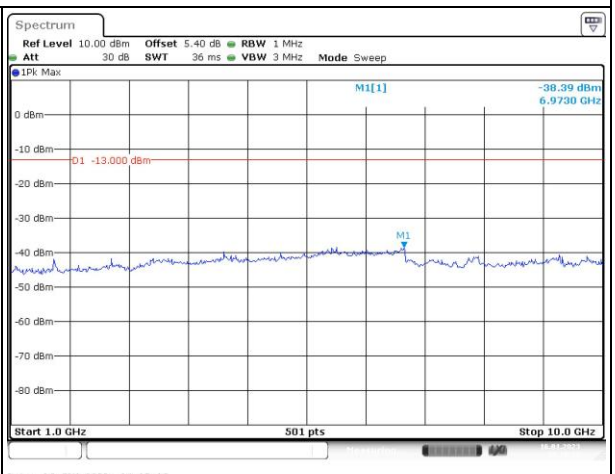
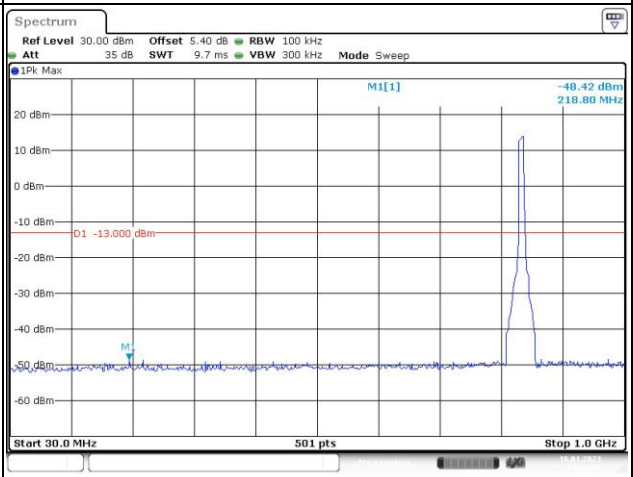
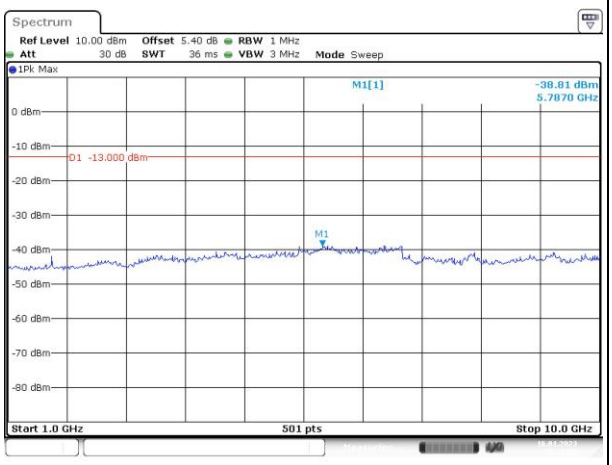
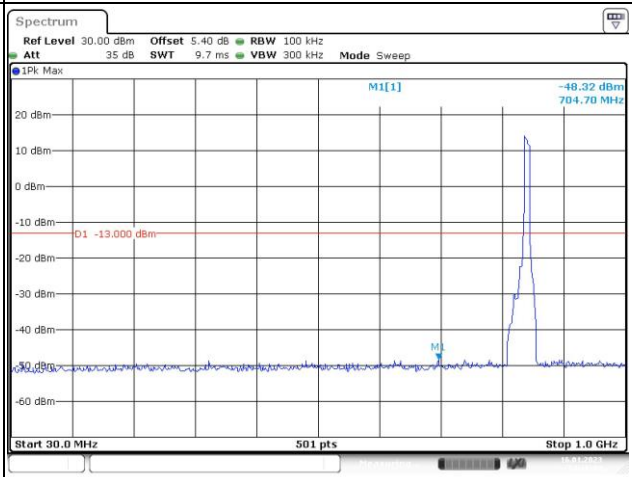
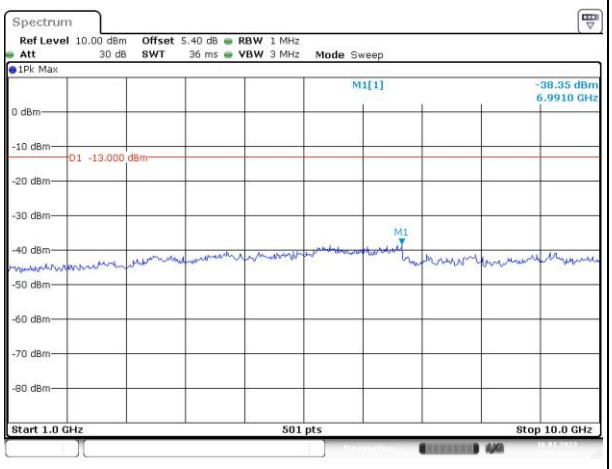
Occupied Bandwidth

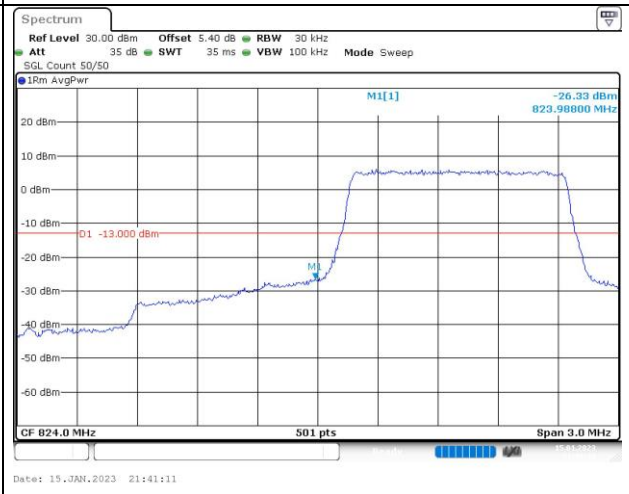
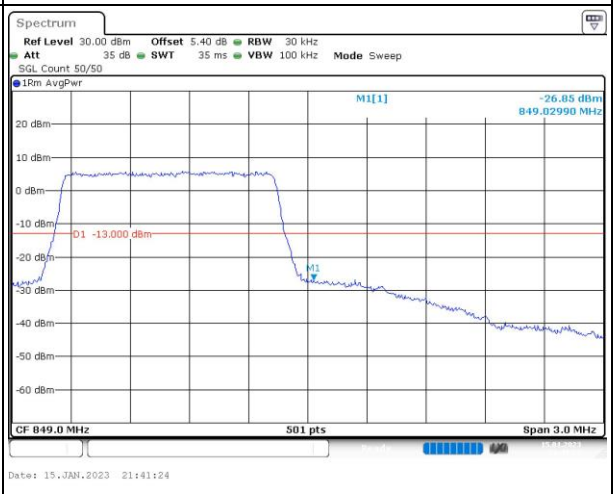
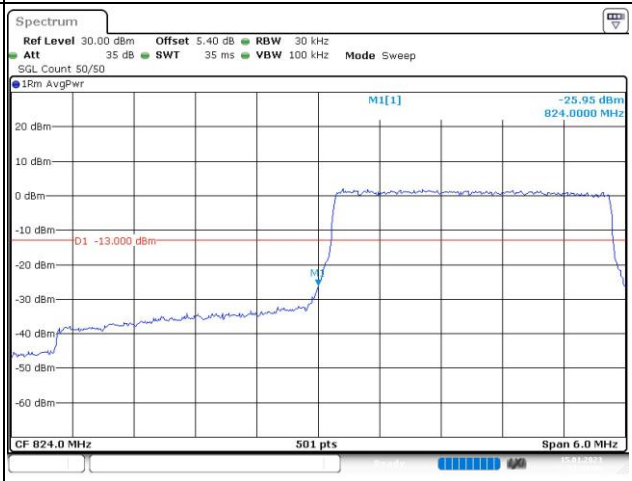
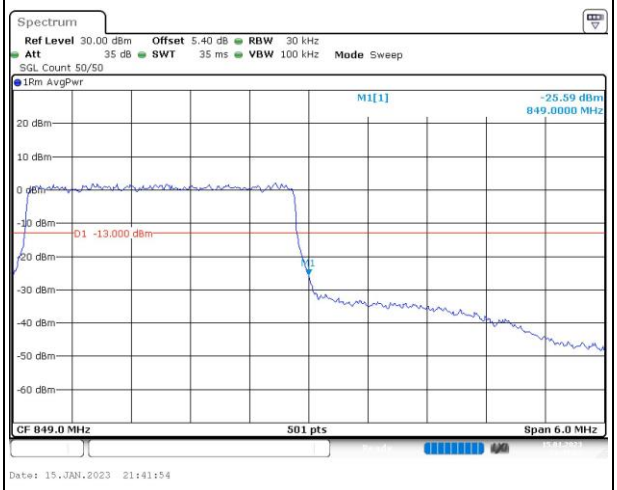
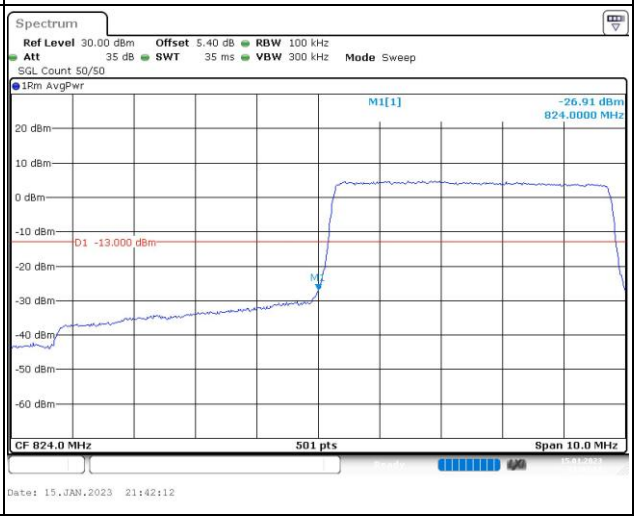
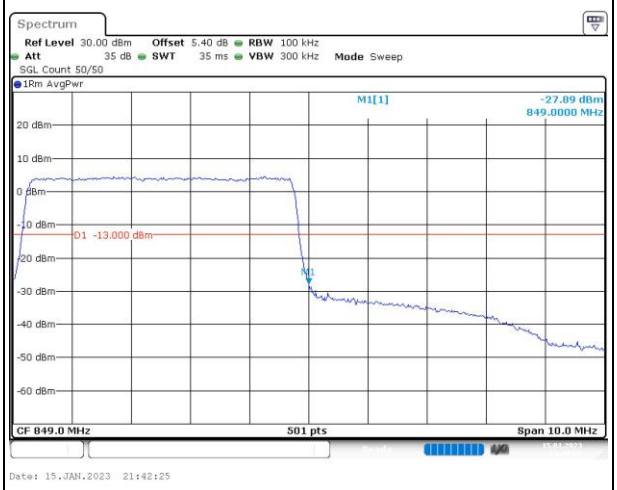
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

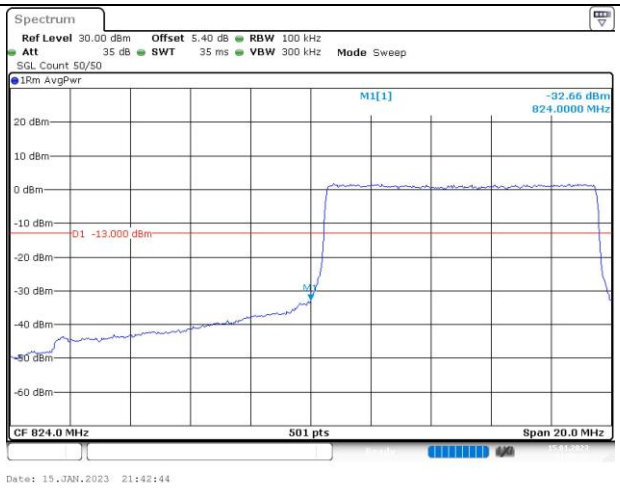
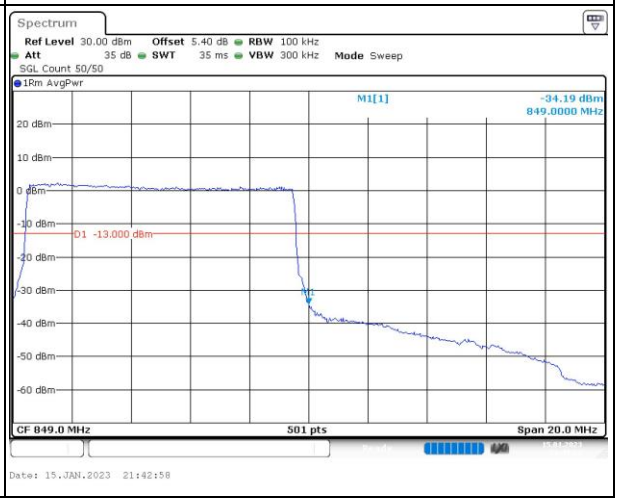
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

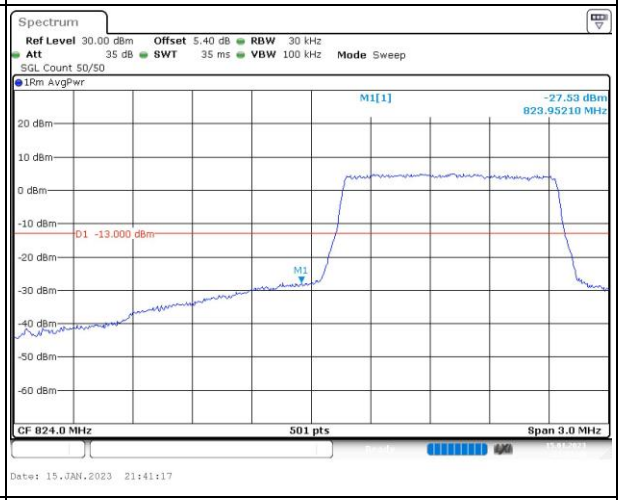
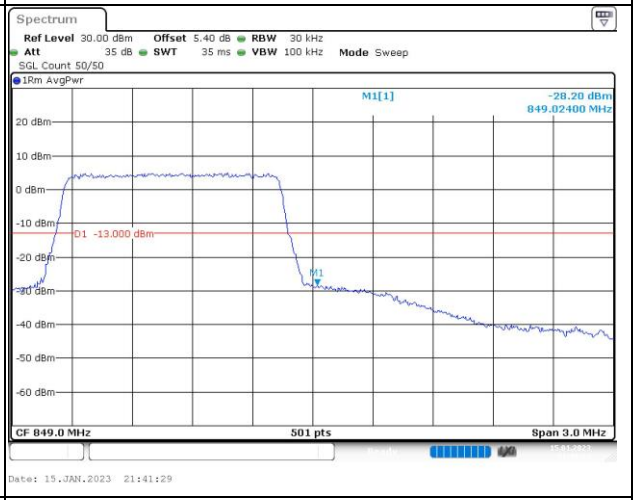
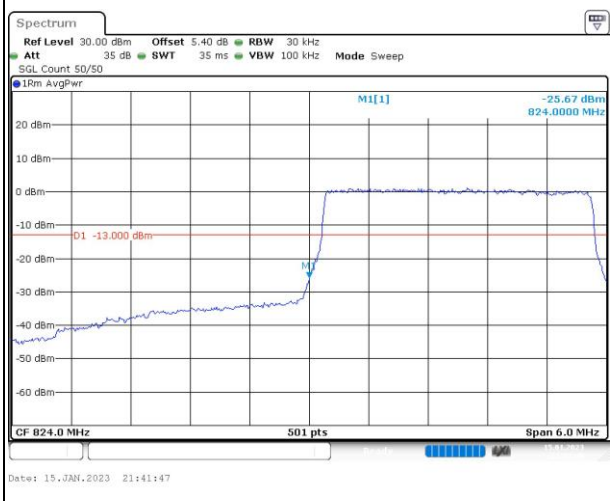
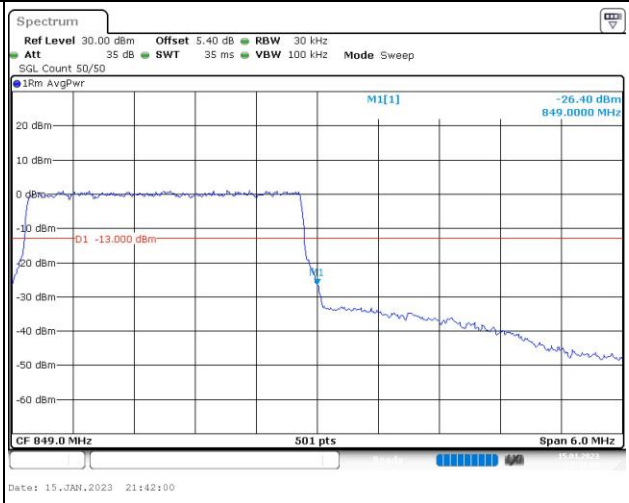
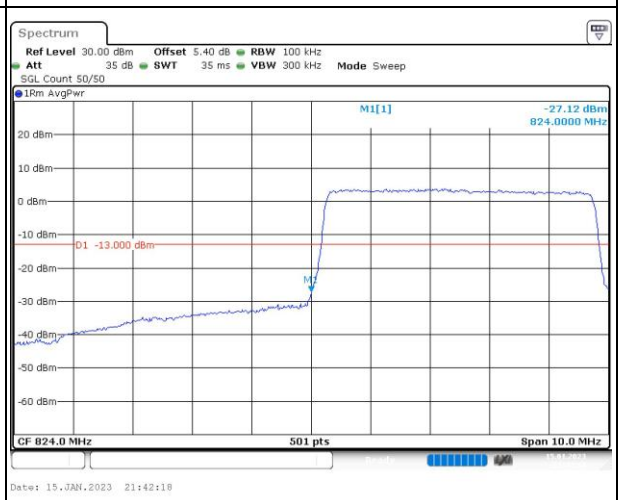
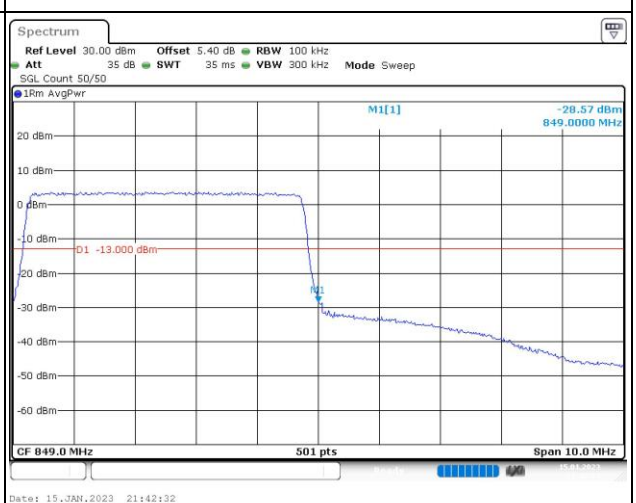
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

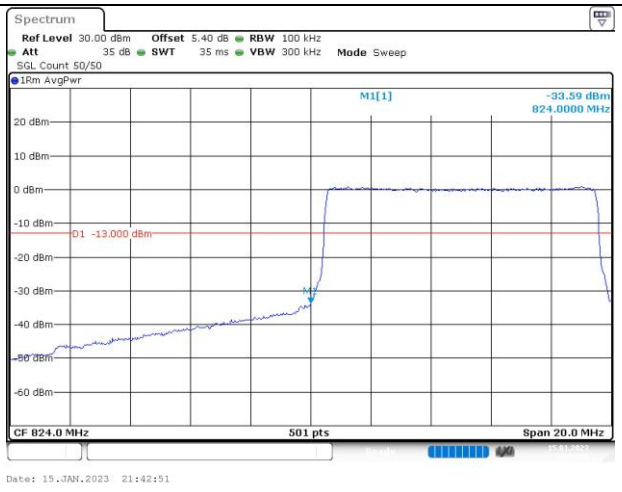
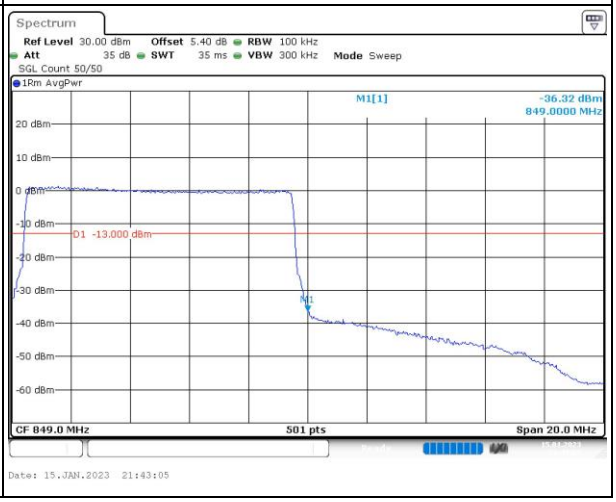
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 1.4MHz		
QPSK 3MHz		
QPSK 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
QPSK 10MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 1.4MHz		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
16QAM 10MHz		

4.9 Antenna Port Test Data and Results for LTE Band 7

Serial Number:	1XBG-2	Test Date:	2023/1/13~2023/4/21
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	18.3~24.6	Relative Humidity: (%)	42~58	ATM Pressure: (kPa)	100.6~102.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022-07-15	2023-07-14
R&S	Spectrum Analyzer	FSU26	200256	2022/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-04-06	2023-04-05
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-09-29	2023-09-28
UNI-T	Multimeter	UT39A+	C210582554	N/A	N/A
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	2022-07-15	2023-07-14

** 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	21.9	21.87	19.93	25.32	33
	RB1#13	21.92	21.87	20.1		
	RB1#24	21.73	21.78	19.58		
	RB15#0	20.84	20.84	20.02		
	RB15#10	20.81	20.93	19.91		
	RB25#0	20.9	20.85	19.89		
5MHz 16QAM	RB1#0	20.97	20.56	19.6	24.38	33
	RB1#13	20.96	20.52	19.86		
	RB1#24	20.98	20.6	19.38		
	RB15#0	19.89	20.1	19.95		
	RB15#10	19.89	20.07	19.85		
	RB25#0	20	19.92	19.87		
10MHz QPSK	RB1#0	21.79	21.91	20.42	25.36	33
	RB1#25	21.91	21.94	20.15		
	RB1#49	21.86	21.96	20.03		
	RB25#0	20.91	20.92	20.29		
	RB25#25	20.91	21	20.15		
	RB50#0	20.86	20.95	20.19		
10MHz 16QAM	RB1#0	21.05	20.48	20.68	24.52	33
	RB1#25	21.07	20.45	20.49		
	RB1#49	21.12	20.51	20.4		
	RB25#0	20.11	20.15	20.23		
	RB25#25	20.13	20.26	20.11		
	RB50#0	20.07	20.11	20.13		
15MHz QPSK	RB1#0	21.84	21.94	21.19	25.39	33
	RB1#38	21.7	21.93	20.27		
	RB1#74	21.53	21.99	19.8		
	RB36#0	20.98	20.97	20.78		
	RB36#39	20.89	20.96	20.06		
	RB75#0	20.97	20.86	20.39		
15MHz 16QAM	RB1#0	21.2	21.37	21.32	24.92	33
	RB1#38	21.21	21.36	20.63		
	RB1#74	21.27	21.52	20.19		
	RB36#0	20.09	20.05	20.35		
	RB36#39	20.09	20.1	20.01		
	RB75#0	20.16	20.12	20.34		
20MHz QPSK	RB1#0	21.84	21.83	22.01	25.48	33

	RB1#50	21.53	21.92	20.54		
	RB1#99	22.08	21.94	20.27		
	RB50#0	20.83	20.88	21.13		
	RB50#50	20.85	20.94	20.29		
	RB100#0	21.02	20.95	20.68		
20MHz 16QAM	RB1#0	21.08	21.76	21.05	25.21	33
	RB1#50	21.08	21.75	20.68		
	RB1#99	21.15	21.81	20.44		
	RB50#0	20.01	20.02	20.23		
	RB50#50	20.1	20.09	20.23		
	RB100#0	19.98	20.22	20.19		
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	4.12	4.84	4.03	13
	RB100#0	3.83	3.86	3.71	13
20MHz 16QAM	RB1#0	4.93	5.59	4.9	13
	RB100#0	5.45	5.51	5.28	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	4.531	4.531	5.22	5.46	5.38
5MHz 16QAM	4.551	4.551	4.531	5.28	5.34	5.38
10MHz QPSK	8.942	8.942	8.982	9.88	10	9.88
10MHz 16QAM	8.982	8.942	8.942	9.96	10.12	9.96
15MHz QPSK	13.473	13.473	13.533	14.52	15.84	15.84
15MHz 16QAM	13.533	13.473	13.533	15.48	15.06	15.48
20MHz QPSK	17.964	17.964	18.044	20.16	20	20.08
20MHz 16QAM	18.044	17.964	18.044	20.24	19.92	19.92
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.**

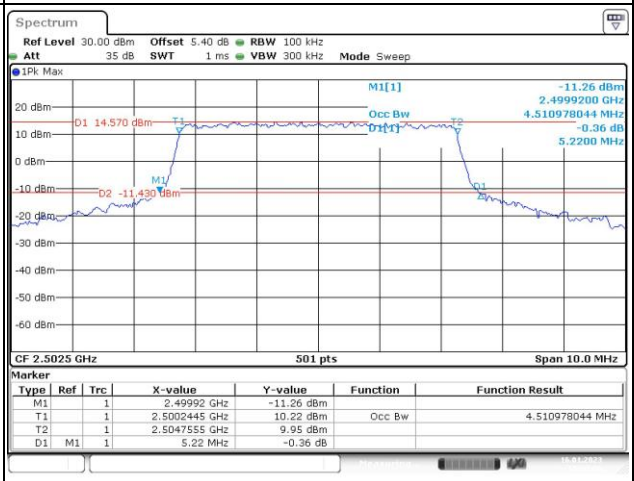
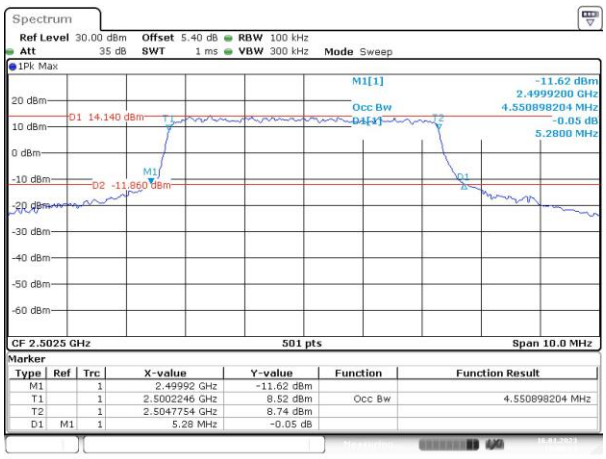
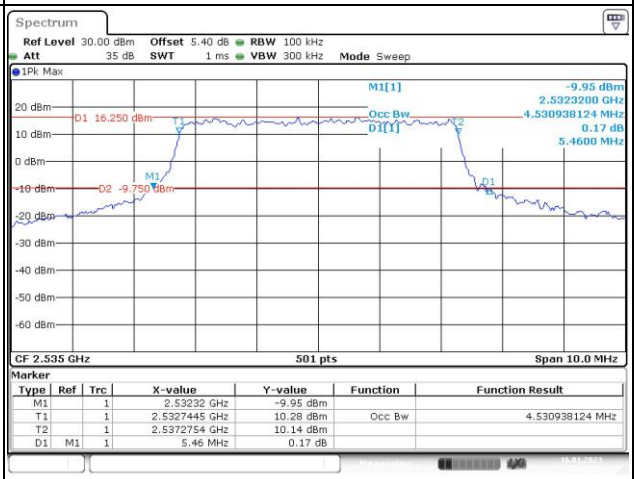
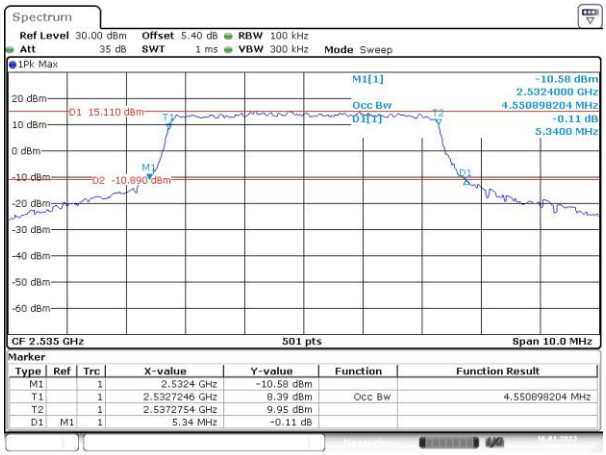
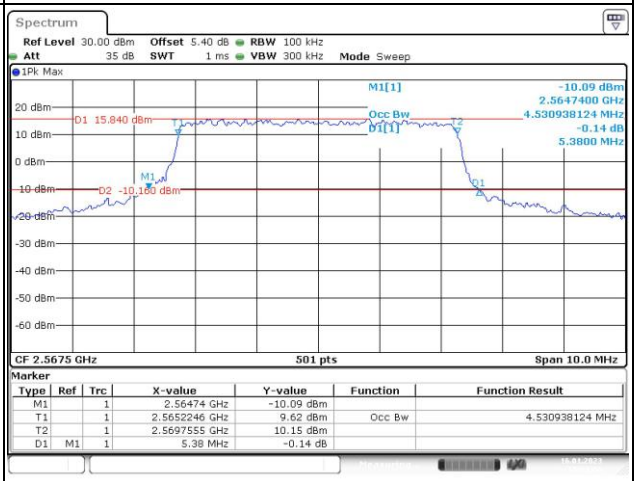
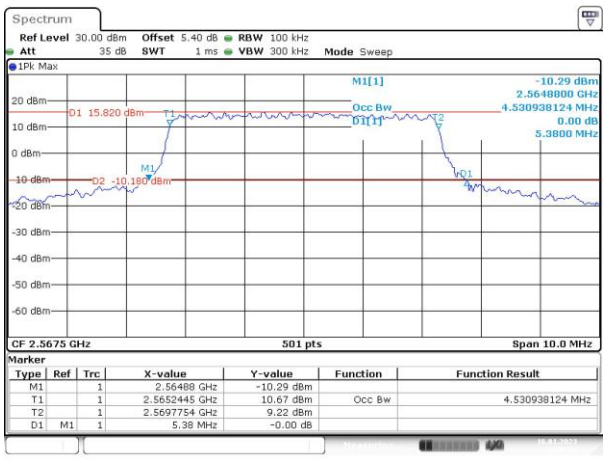
FCC §2.1051, §27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

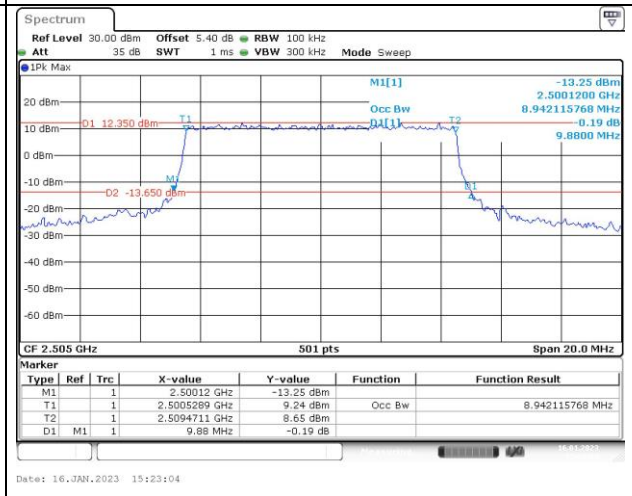
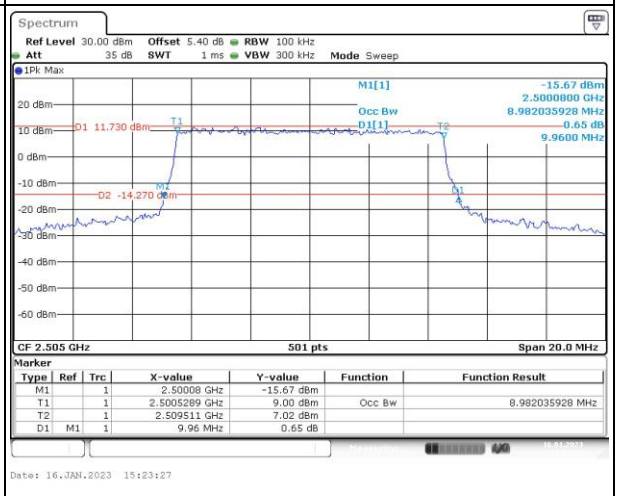
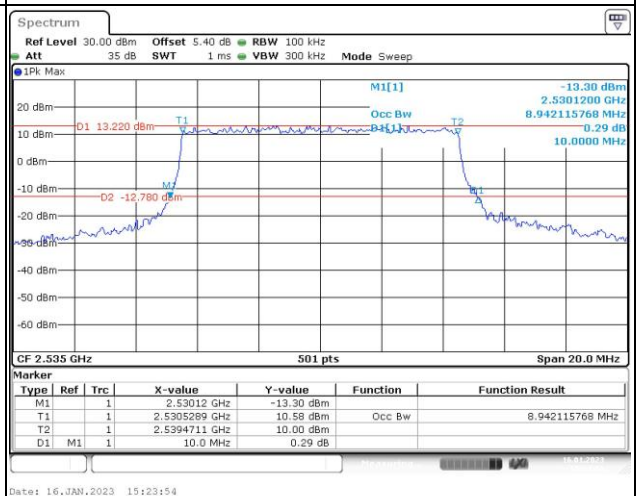
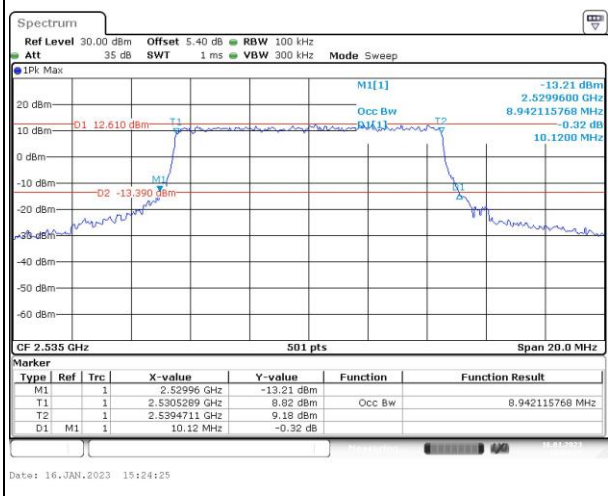
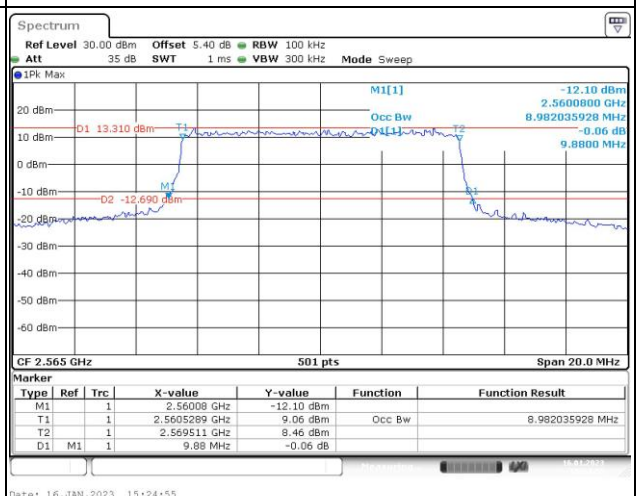
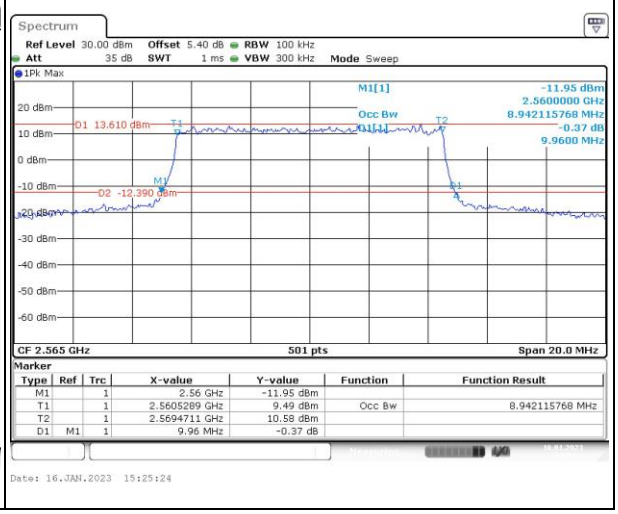
FCC §2.1055, §27.54: Frequency Stability

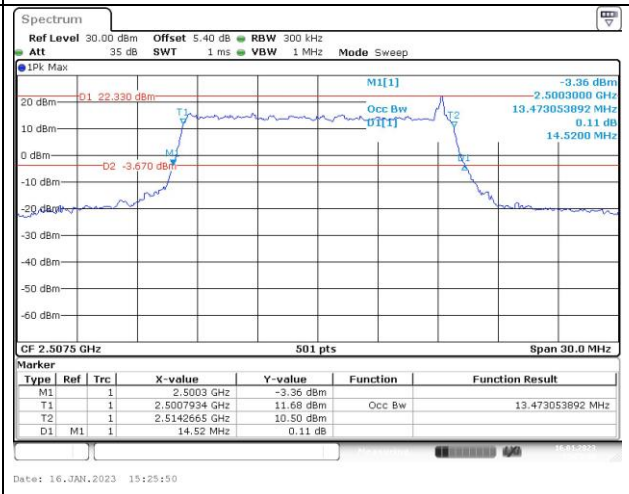
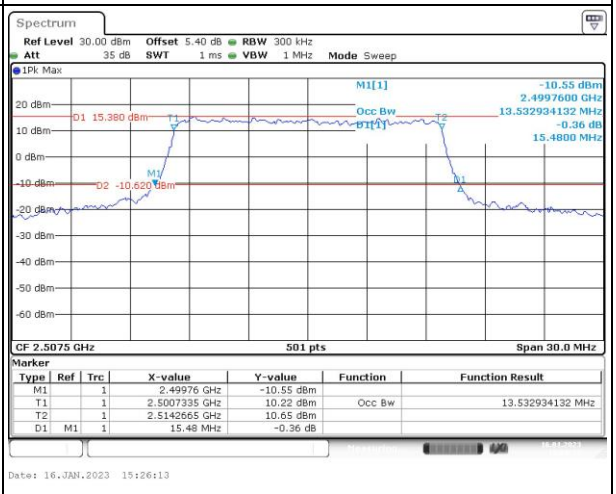
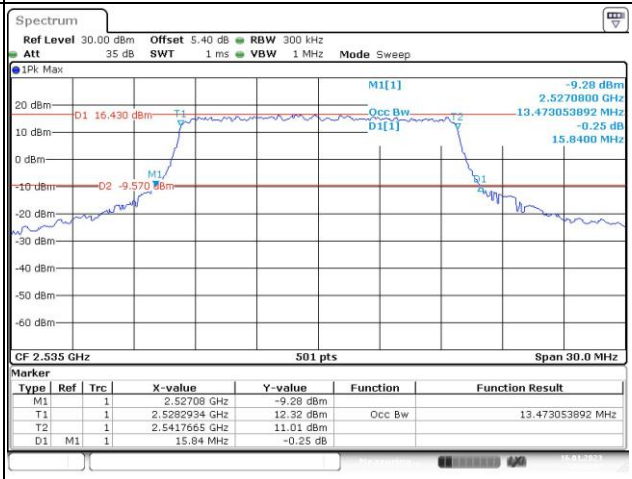
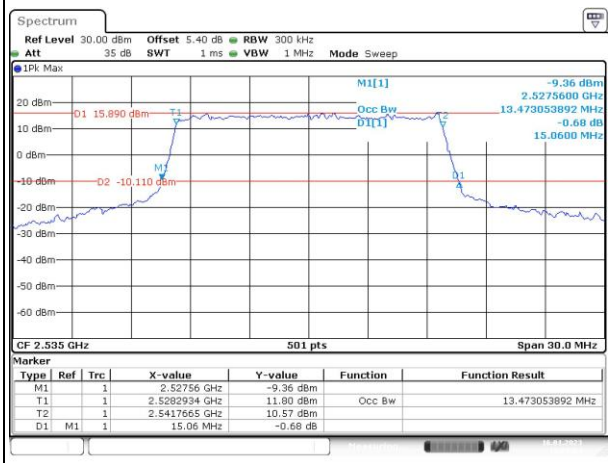
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	7.4	2501.077	2500.00	2569.013	2570
	-20	7.4	2501.027	2500.00	2569.018	2570
	-10	7.4	2501.098	2500.00	2569.058	2570
	0	7.4	2501.030	2500.00	2569.053	2570
	10	7.4	2501.084	2500.00	2569.058	2570
	20	7.4	2501.058	2500.00	2569.022	2570
	30	7.4	2501.011	2500.00	2569.008	2570
	40	7.4	2501.075	2500.00	2569.040	2570
	50	7.4	2501.077	2500.00	2569.085	2570
Frequency Stability vs. Voltage	20	6.95	2501.041	2500.00	2569.053	2570
	20	8.4	2501.045	2500.00	2569.081	2570
					Result:	**Pass**

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	7.4	2500.924	2500.00	2569.042	2570
	-20	7.4	2500.914	2500.00	2569.010	2570
	-10	7.4	2500.995	2500.00	2569.090	2570
	0	7.4	2500.925	2500.00	2569.059	2570
	10	7.4	2500.974	2500.00	2569.085	2570
	20	7.4	2500.978	2500.00	2569.022	2570
	30	7.4	2500.903	2500.00	2569.045	2570
	40	7.4	2500.948	2500.00	2569.091	2570
	50	7.4	2500.917	2500.00	2569.026	2570
Frequency Stability vs. Voltage	20	6.95	2500.949	2500.00	2569.059	2570
	20	8.4	2500.965	2500.00	2569.059	2570
					Result:	**Pass**

Test Plots(Note: The 5.4dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer)**:**

Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth		
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest