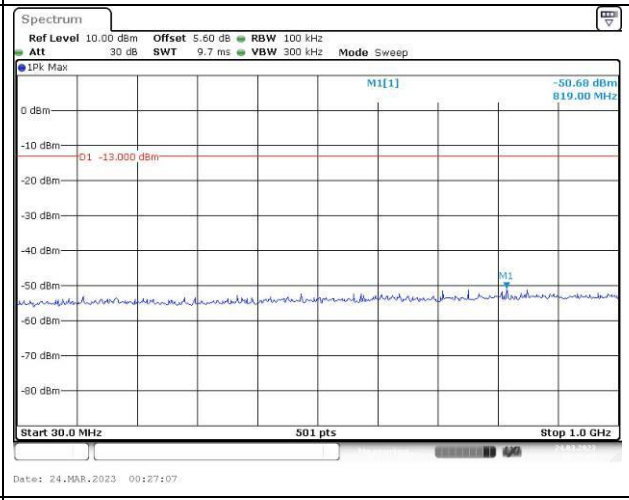
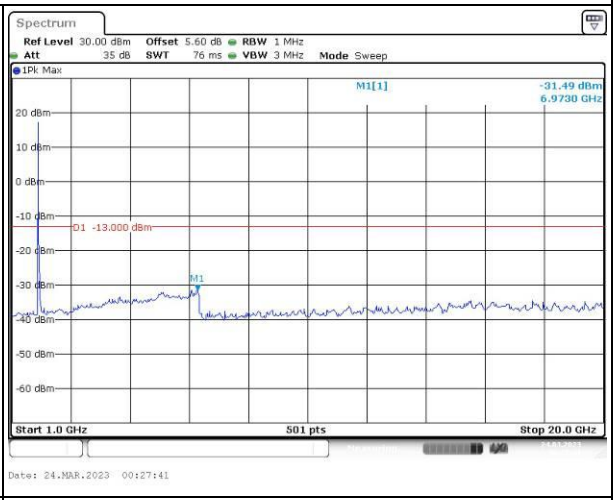
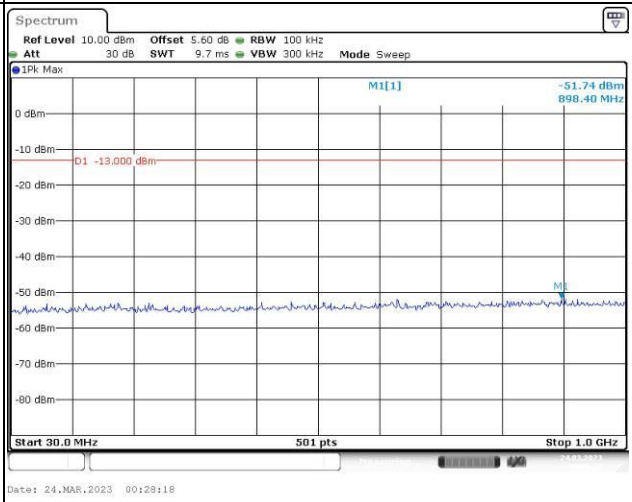
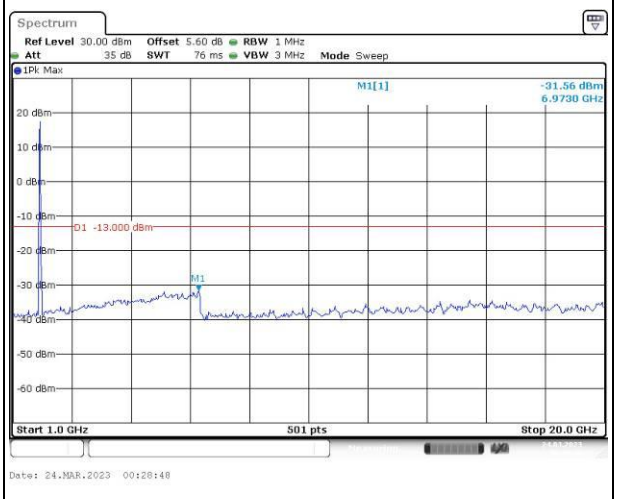
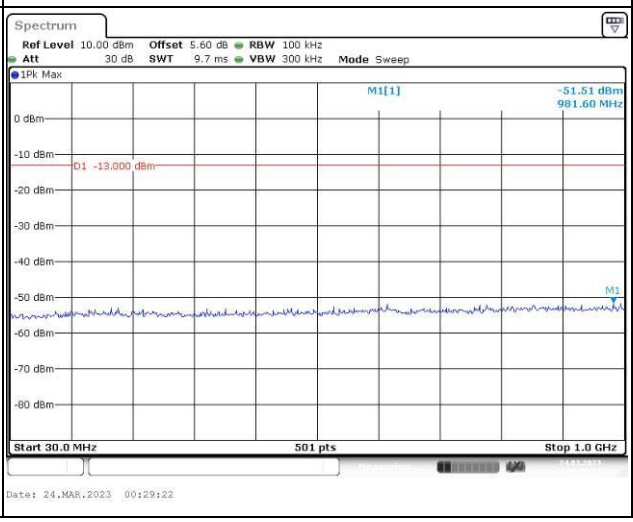
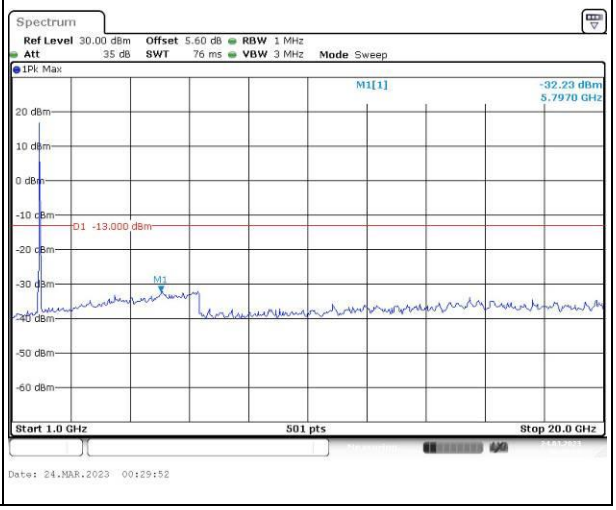
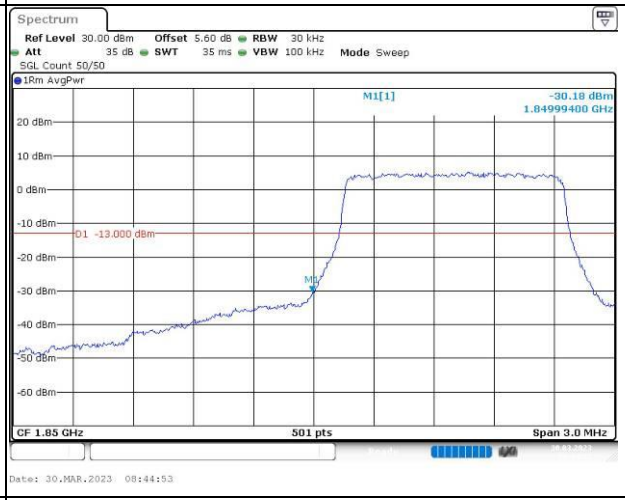
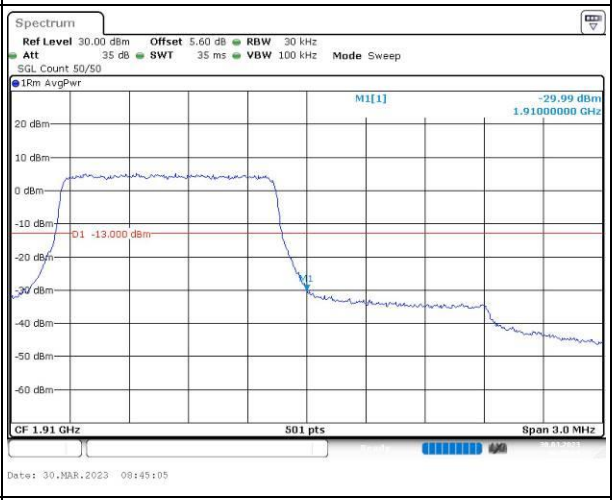
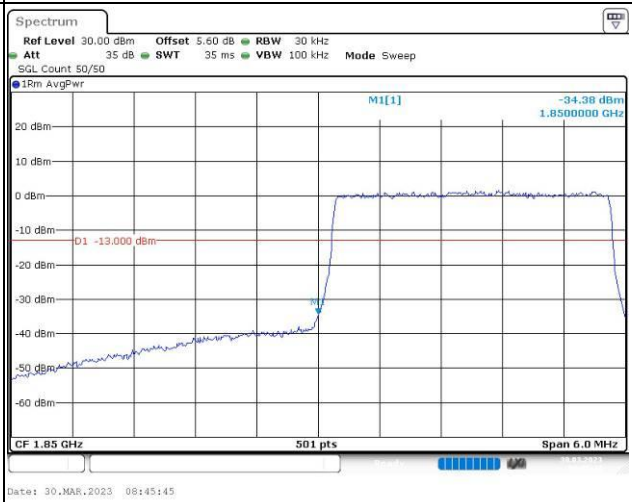
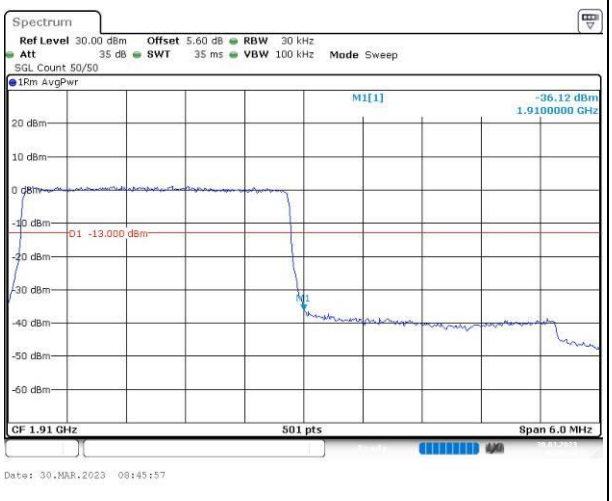
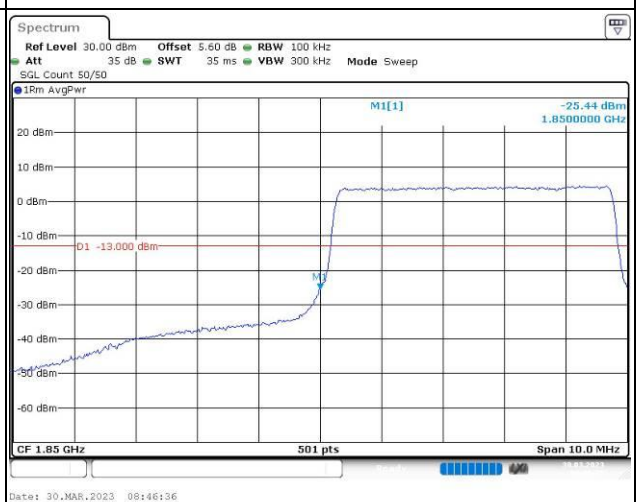
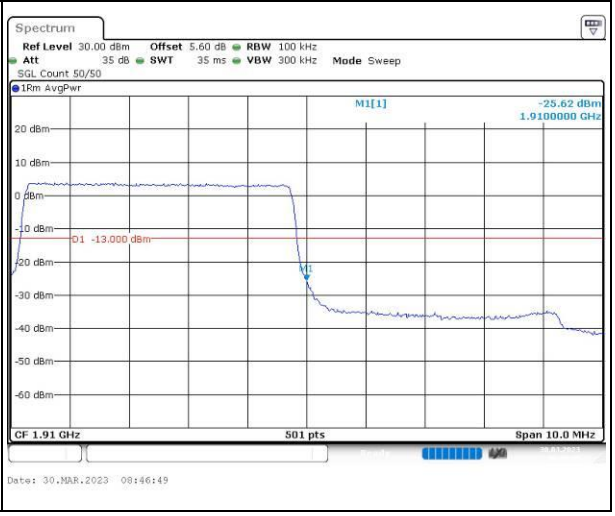
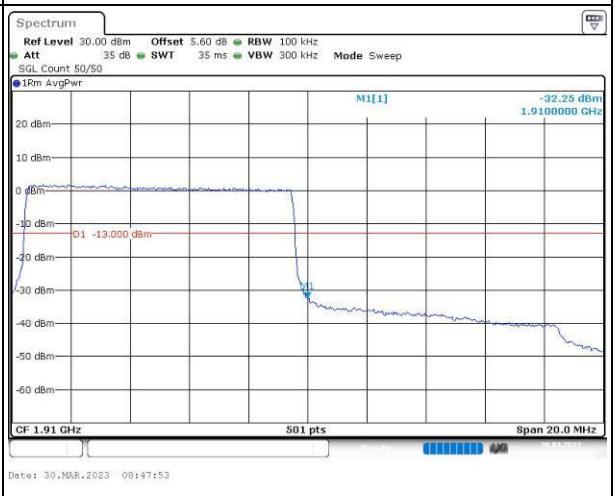
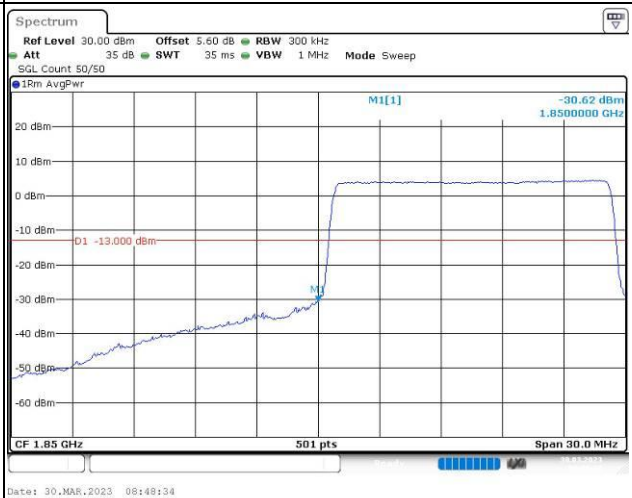
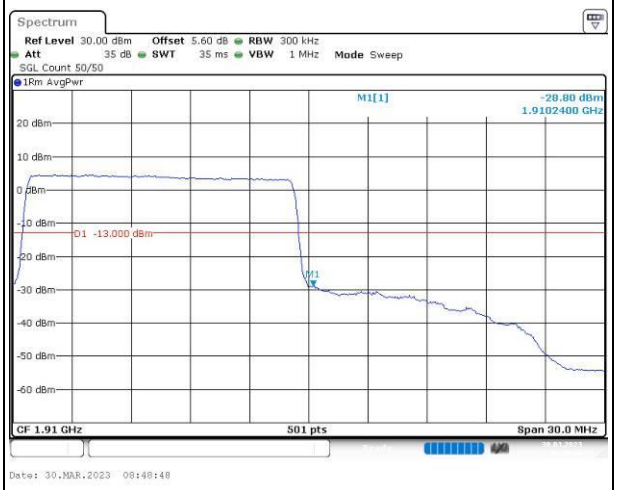
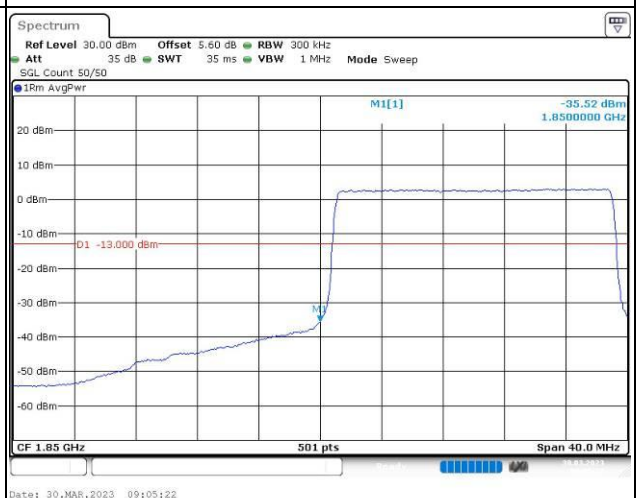
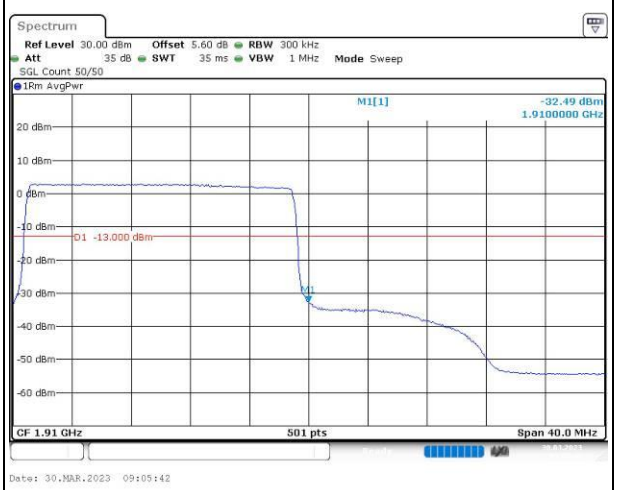
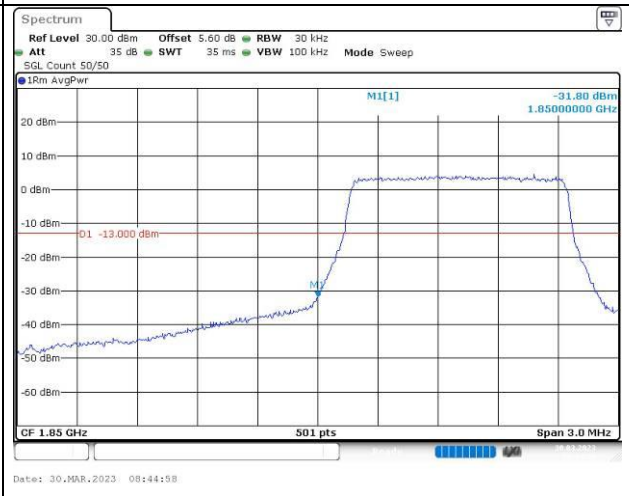
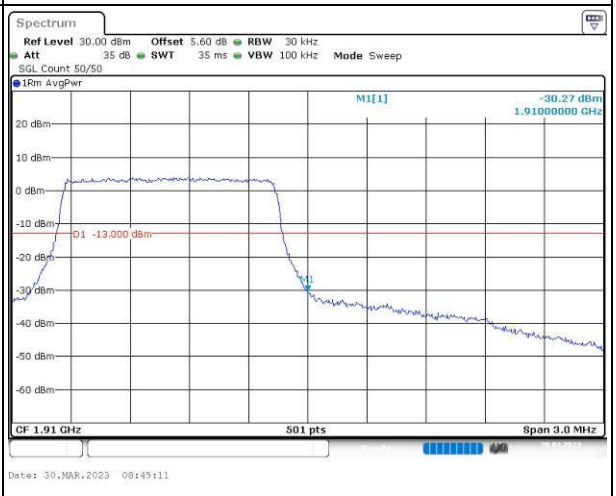
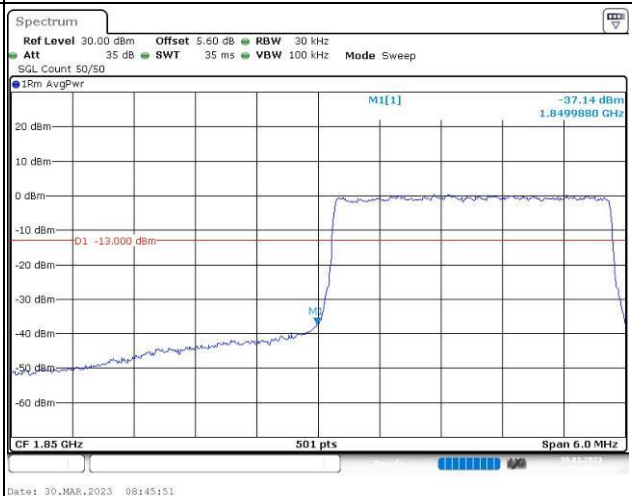
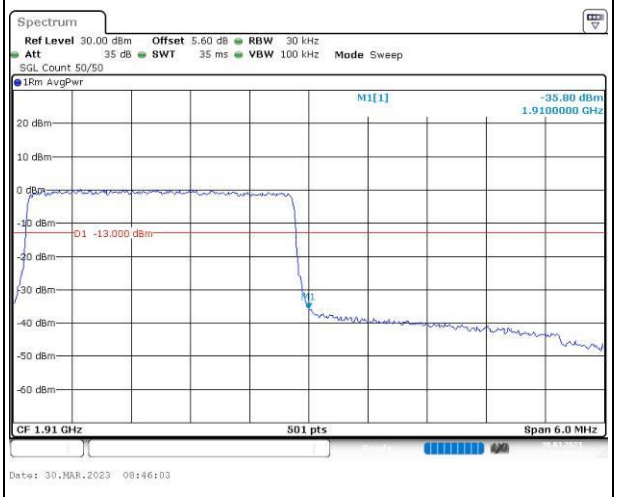
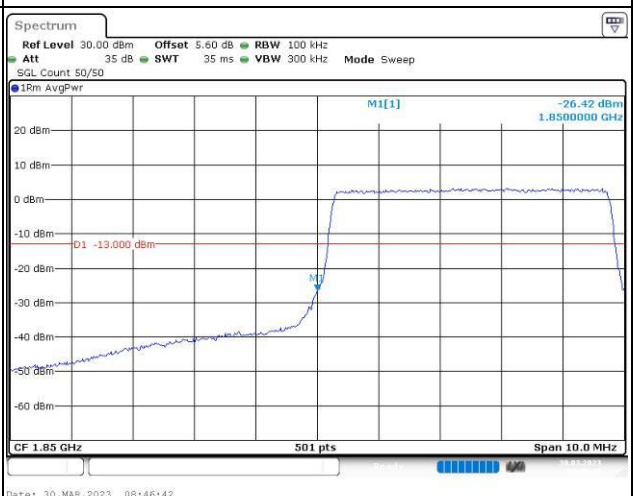
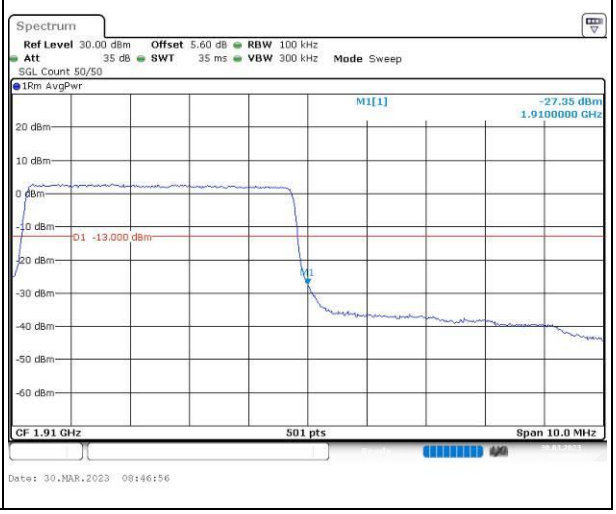
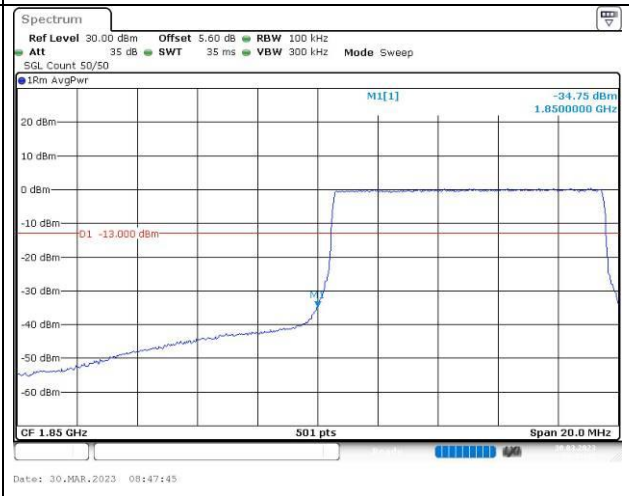
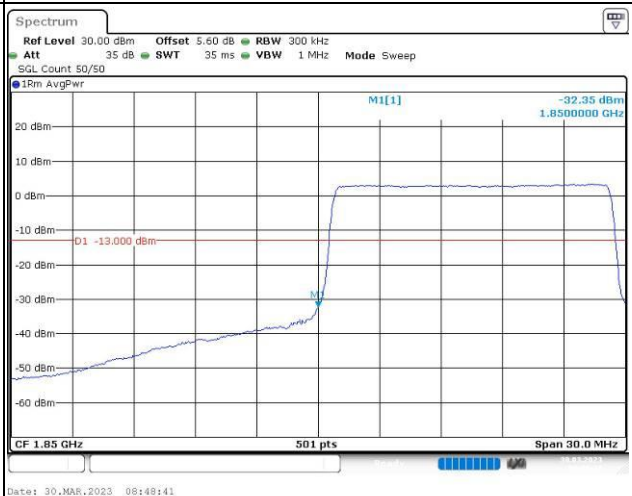
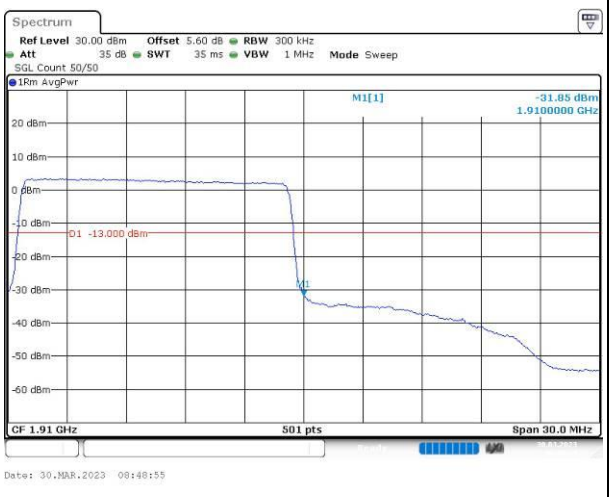
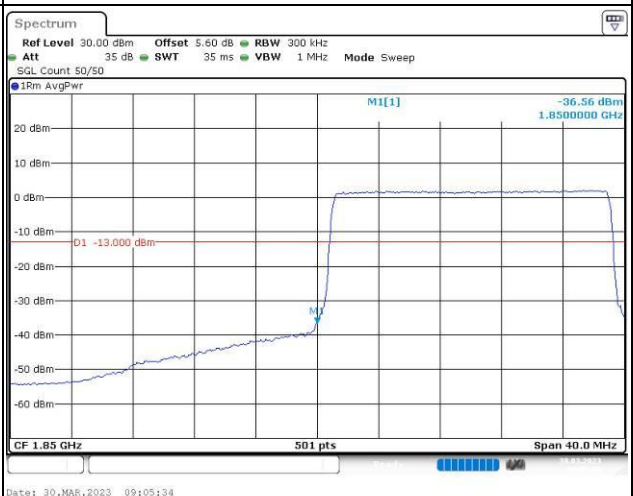
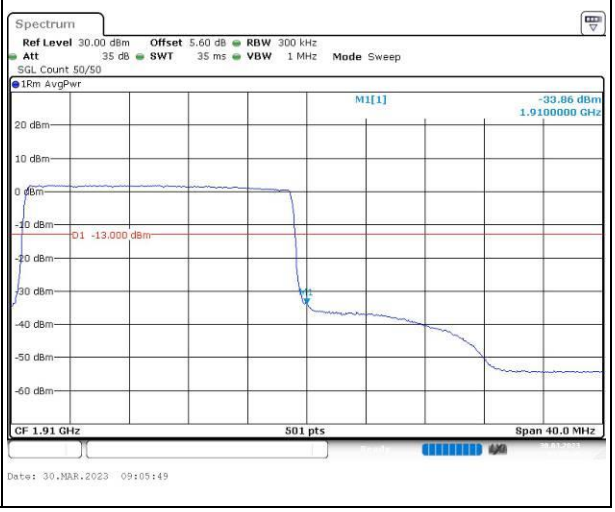
Spurious Emissions at Antenna Terminal		
Channel	**20MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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		
QPSK 15MHz		
QPSK 20MHz		

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		

4.7 Antenna Port Test Data and Results for LTE Band 4

Serial Number:	22O5	Test Date:	2023/3/23~2023/3/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jou Zhou	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	24.1~25.3	Relative Humidity: (%)	41~56	ATM Pressure: (kPa)	100.1~101.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100004	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554404	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Power splitter	1515	RA915	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/7/15	2023/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/4/6	2023/4/5
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	19.01	20.36	21.18	24.15	30
	RB1#3	19.2	20.59	21.35		
	RB1#5	19.06	20.4	21.24		
	RB3#0	19.07	20.36	21.16		
	RB3#3	19.09	20.37	21.25		
	RB6#0	18.06	19.45	20.24		
1.4MHz 16QAM	RB1#0	17.96	19.29	20.25	23.25	30
	RB1#3	18.21	19.48	20.45		
	RB1#5	18.07	19.33	20.3		
	RB3#0	18.12	19.43	20.18		
	RB3#3	18.22	19.47	20.19		
	RB6#0	17	18.37	19.27		
3MHz QPSK	RB1#0	19.16	20.34	21.19	24.04	30
	RB1#8	19.12	20.4	21.23		
	RB1#14	19.19	20.44	21.24		
	RB6#0	18.01	19.36	20.2		
	RB6#9	18.09	19.43	20.19		
	RB15#0	18.08	19.35	20.18		
3MHz 16QAM	RB1#0	18.02	19.79	20.28	23.11	30
	RB1#8	18.1	19.85	20.31		
	RB1#14	18.15	19.9	20.31		
	RB6#0	16.93	18.33	19.13		
	RB6#9	17	18.41	19.19		
	RB15#0	17.12	18.33	19.1		
5MHz QPSK	RB1#0	18.93	20.24	21.05	24.01	30
	RB1#13	19.17	20.46	21.21		
	RB1#24	19.27	20.45	21.17		
	RB15#0	18.13	19.31	20.15		
	RB15#10	18.24	19.47	20.17		
	RB25#0	18.15	19.33	20.16		
5MHz 16QAM	RB1#0	17.97	19.07	20.27	23.26	30
	RB1#13	18.24	19.29	20.46		
	RB1#24	18.29	19.32	20.41		
	RB15#0	17.12	18.27	19.11		
	RB15#10	17.24	18.41	19.13		
	RB25#0	17.11	18.34	19.12		
10MHz QPSK	RB1#0	18.99	20.14	20.93	24.04	30
	RB1#25	19.51	20.55	21.24		

	RB1#49	19.66	20.59	21.21		
	RB25#0	18.21	19.26	20.14		
	RB25#25	18.54	19.54	20.15		
	RB50#0	18.4	19.41	20.08		
10MHz 16QAM	RB1#0	17.98	19.59	20.05	23.12	30
	RB1#25	18.44	19.92	20.32		
	RB1#49	18.57	20.05	20.31		
	RB25#0	17.25	18.2	19.05		
	RB25#25	17.57	18.52	19.09		
	RB50#0	17.38	18.29	19.03		
15MHz QPSK	RB1#0	18.98	19.96	20.68	24.01	30
	RB1#38	19.62	20.49	21.07		
	RB1#74	19.92	20.63	21.21		
	RB36#0	18.36	19.23	20.03		
	RB36#39	18.85	19.66	20.16		
	RB75#0	18.66	19.47	20.09		
15MHz 16QAM	RB1#0	18.31	19.42	19.75	23.08	30
	RB1#38	18.97	19.9	20.18		
	RB1#74	19.24	20.13	20.28		
	RB36#0	17.37	18.2	19.02		
	RB36#39	17.8	18.66	19.16		
	RB75#0	17.56	18.43	19.02		
20MHz QPSK	RB1#0	19.39	20.29	20.35	24.02	30
	RB1#50	20.45	21.22	21.15		
	RB1#99	20.61	21.21	21.03		
	RB50#0	19.03	19.62	19.91		
	RB50#50	19.66	20.24	20.04		
	RB100#0	19.36	19.94	19.96		
20MHz 16QAM	RB1#0	18.64	19.43	19.84	23.37	30
	RB1#50	19.71	20.19	20.57		
	RB1#99	19.83	20.15	20.57		
	RB50#0	17.99	18.47	18.8		
	RB50#50	18.61	19.14	19		
	RB100#0	18.34	18.73	18.95		
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	4.35	4.43	4.55	13
	RB100#0	3.97	3.91	3.94	13
20MHz 16QAM	RB1#0	5.36	5.13	5.39	13
	RB100#0	5.65	5.59	5.59	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	1.102	1.108	1.096	1.326	1.314	1.308
1.4MHz 16QAM	1.102	1.096	1.102	1.482	1.284	1.314
3MHz QPSK	2.695	2.683	2.683	2.88	2.892	2.88
3MHz 16QAM	2.683	2.683	2.683	2.916	2.88	2.94
5MHz QPSK	4.511	4.531	4.531	5.2	5.2	5.24
5MHz 16QAM	4.531	4.551	4.511	5.18	5.22	5.14
10MHz QPSK	8.942	8.942	8.982	9.88	9.96	9.96
10MHz 16QAM	8.982	8.942	8.942	9.92	9.92	9.8
15MHz QPSK	13.533	13.533	13.533	15.42	15.18	18.36
15MHz 16QAM	13.593	13.533	13.533	15.24	15.18	15.06
20MHz QPSK	17.964	17.964	17.964	19.76	19.84	19.68
20MHz 16QAM	18.044	17.964	17.964	19.92	19.68	19.76
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.**

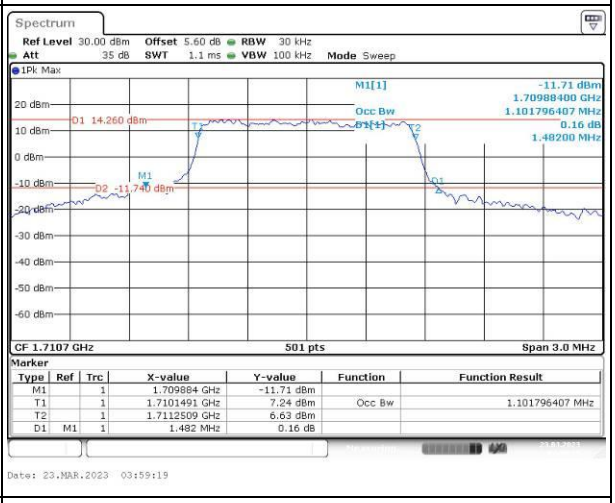
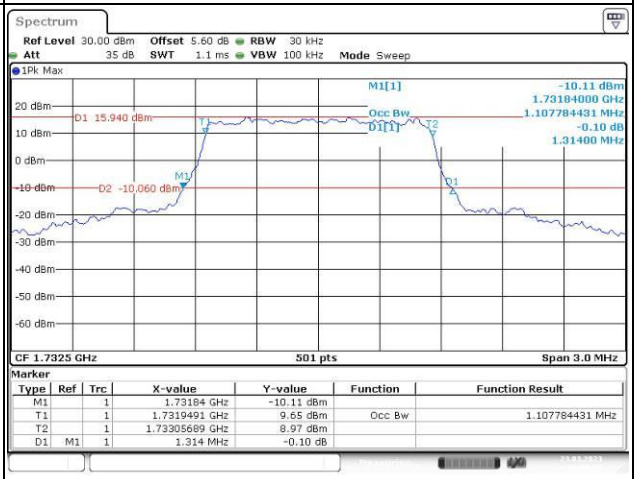
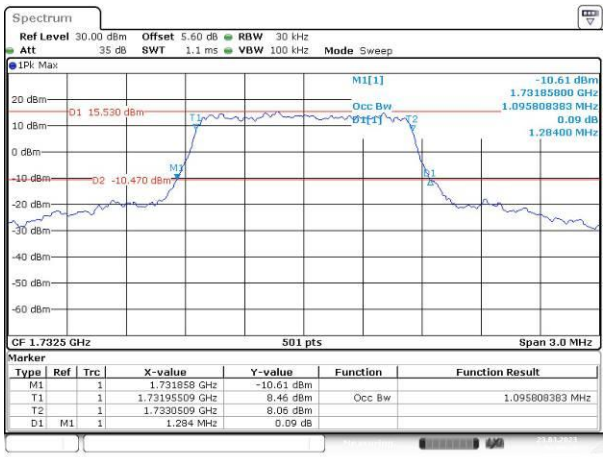
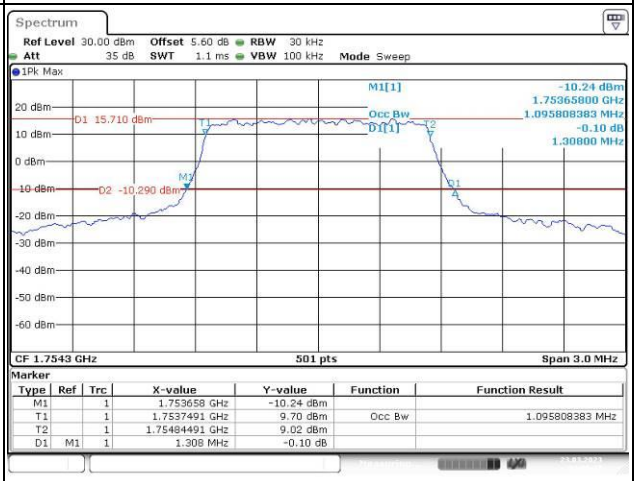
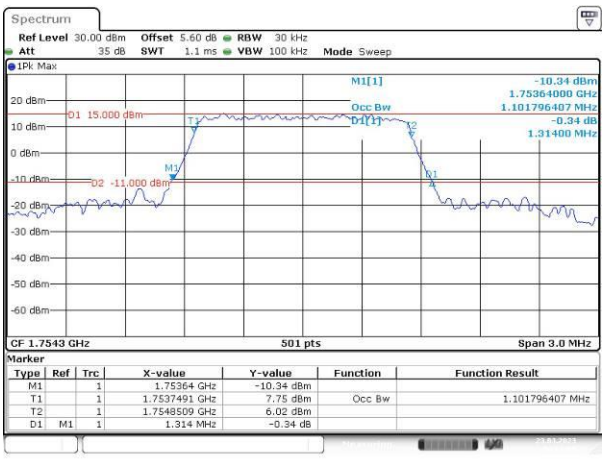
FCC §2.1051, §27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

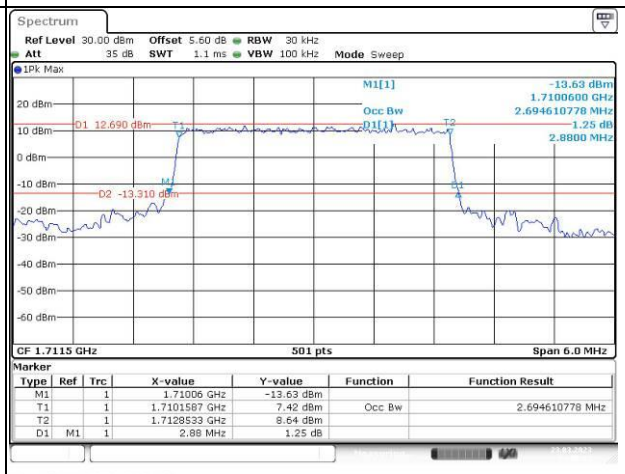
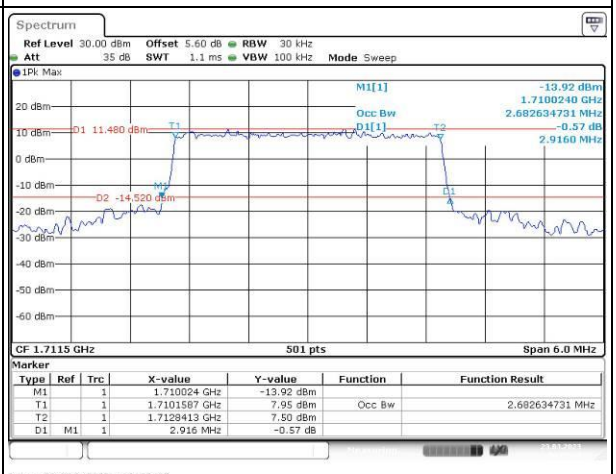
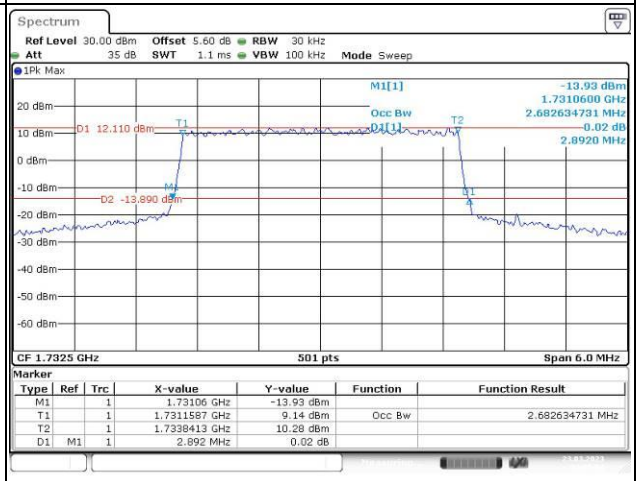
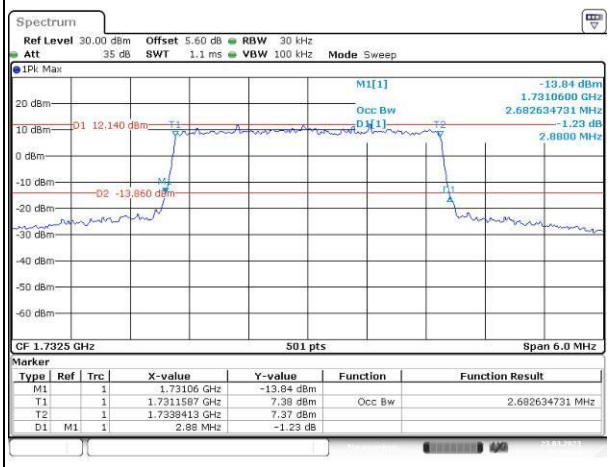
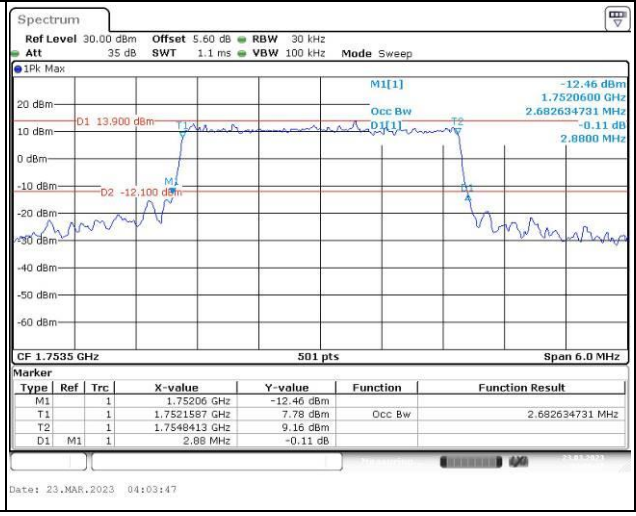
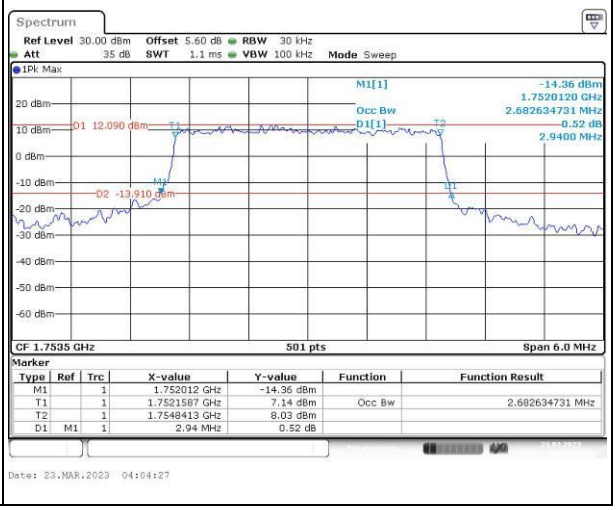
FCC §2.1055, §27.54: Frequency Stability

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	3.8	1711.048	1710.00	1754.037	1755
	-20	3.8	1711.013	1710.00	1754.019	1755
	-10	3.8	1711.073	1710.00	1754.071	1755
	0	3.8	1711.013	1710.00	1754.007	1755
	10	3.8	1711.068	1710.00	1753.957	1755
	20	3.8	1711.058	1710.00	1753.942	1755
	30	3.8	1711.054	1710.00	1753.906	1755
	40	3.8	1711.053	1710.00	1753.901	1755
	50	3.8	1711.050	1710.00	1753.867	1755
Frequency Stability vs. Voltage	20	3.3	1711.051	1710.00	1753.913	1755
	20	4.3	1711.023	1710.00	1753.900	1755
					Result:	**Pass**

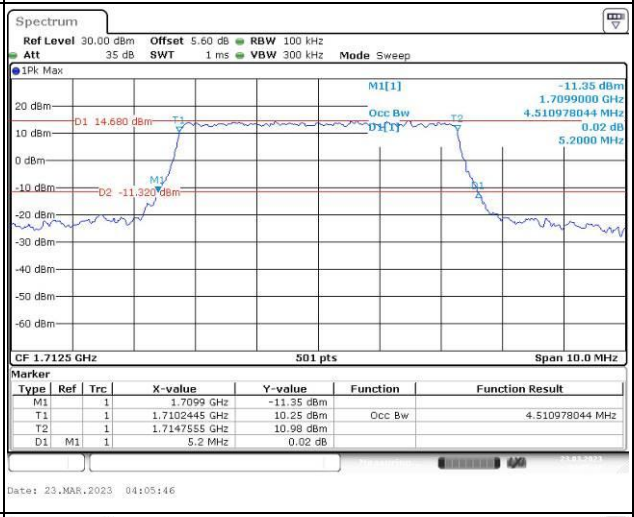
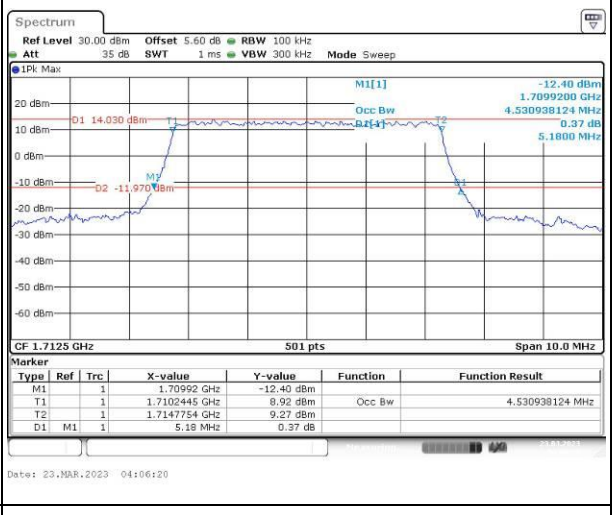
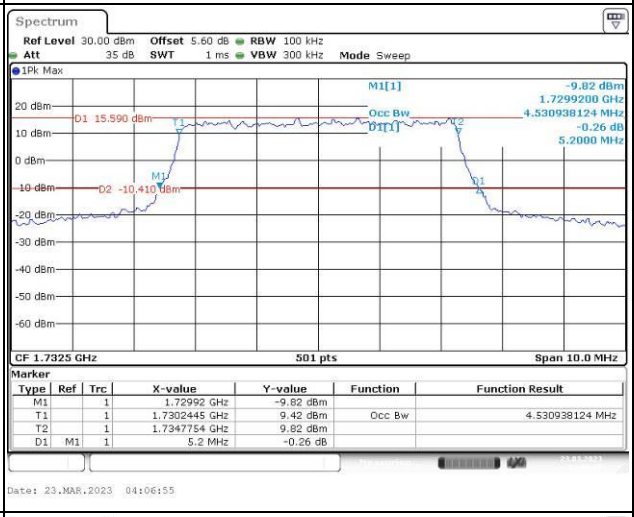
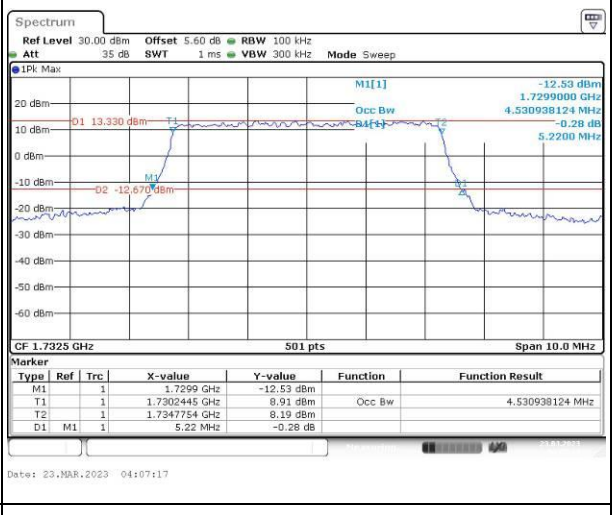
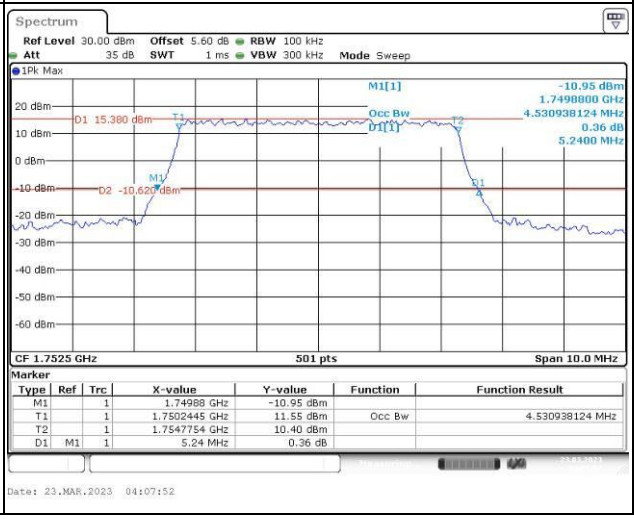
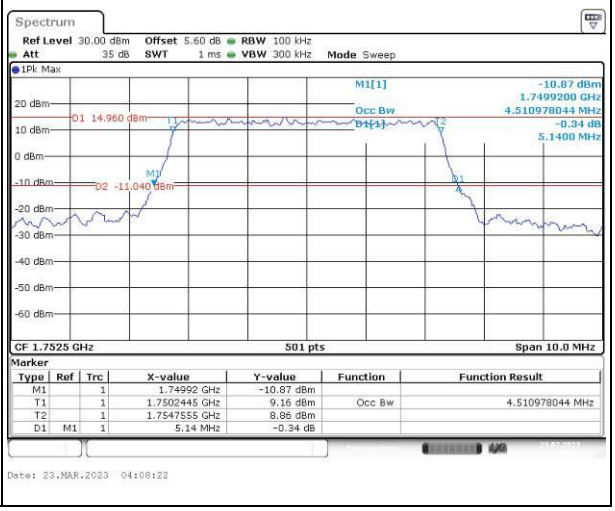
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1711.012	1710.00	1754.065	1755
	-20	3.8	1711.080	1710.00	1754.059	1755
	-10	3.8	1711.053	1710.00	1754.028	1755
	0	3.8	1711.044	1710.00	1754.064	1755
	10	3.8	1711.086	1710.00	1754.024	1755
	20	3.8	1711.058	1710.00	1754.022	1755
	30	3.8	1711.056	1710.00	1753.993	1755
	40	3.8	1711.054	1710.00	1753.979	1755
	50	3.8	1711.051	1710.00	1753.949	1755
Frequency Stability vs. Voltage	20	3.3	1711.057	1710.00	1753.976	1755
	20	4.3	1711.010	1710.00	1753.974	1755
					Result:	**Pass**

Test Plots(Note: The 5.6dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer)**:**

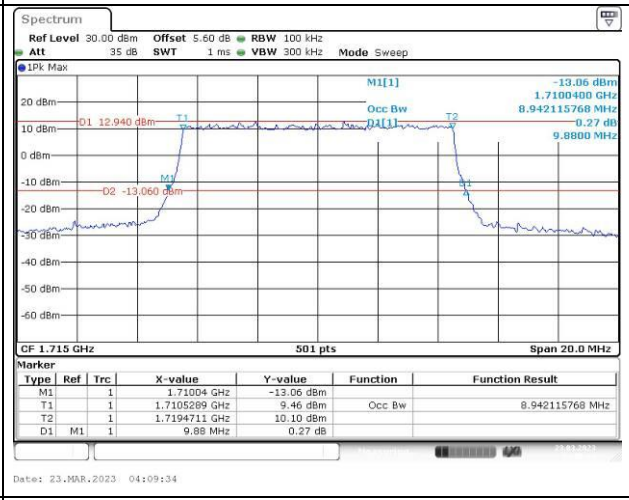
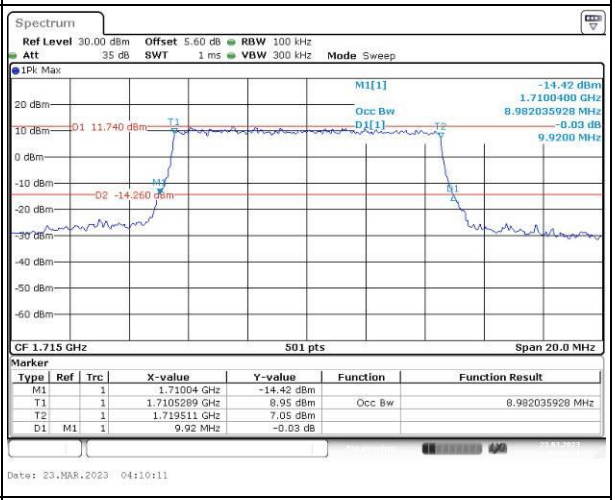
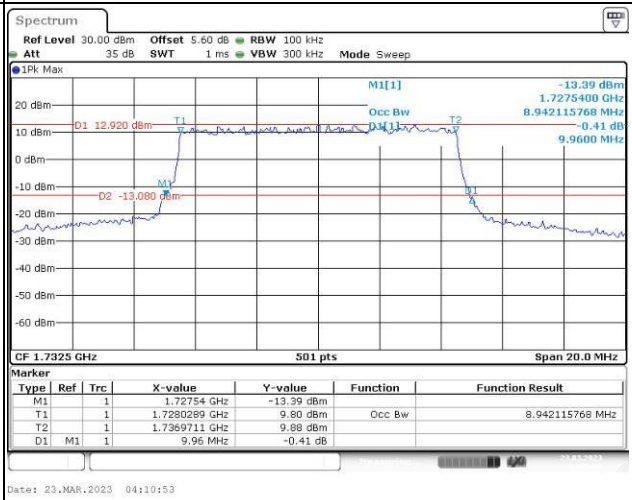
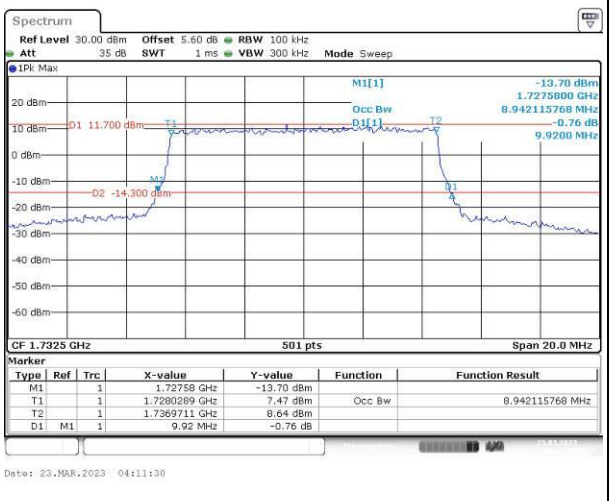
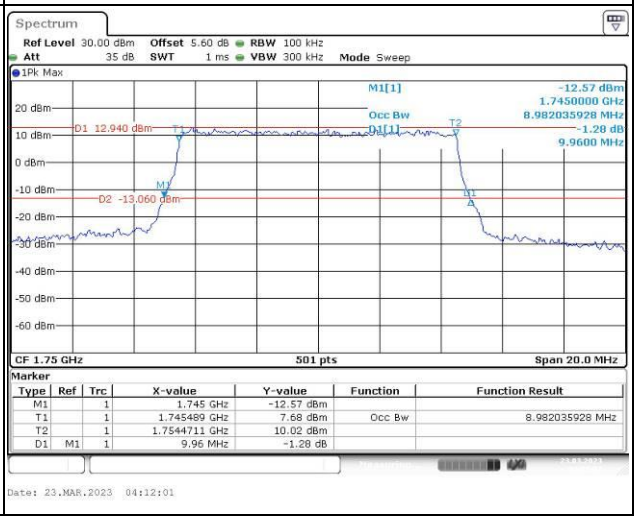
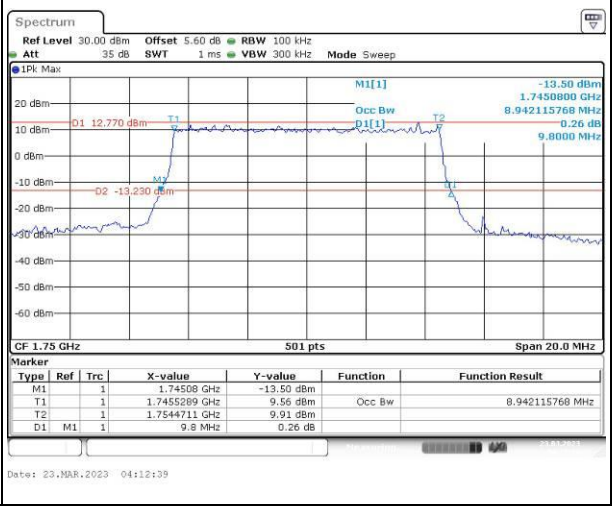
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

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

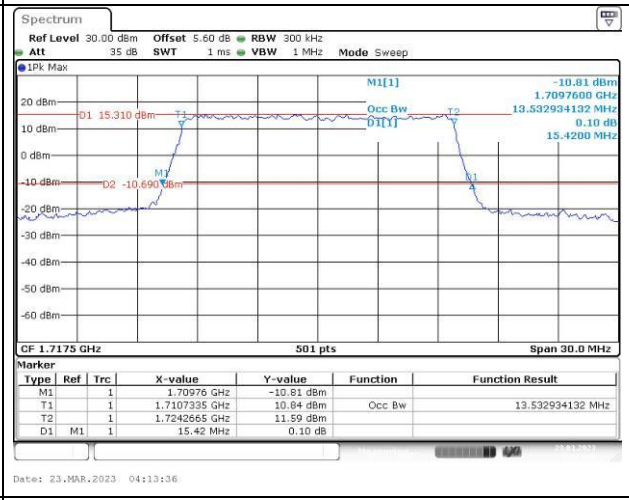
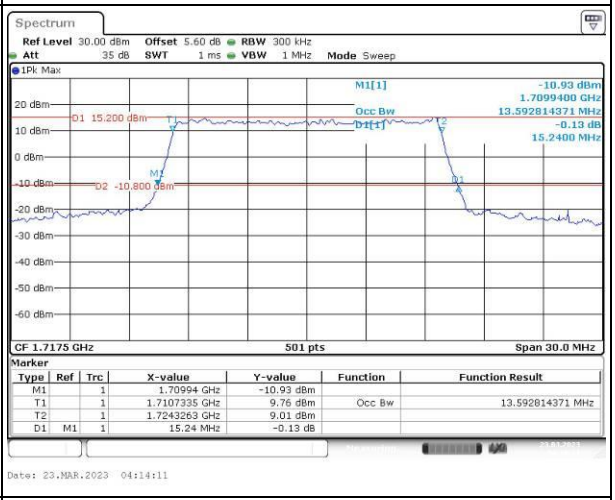
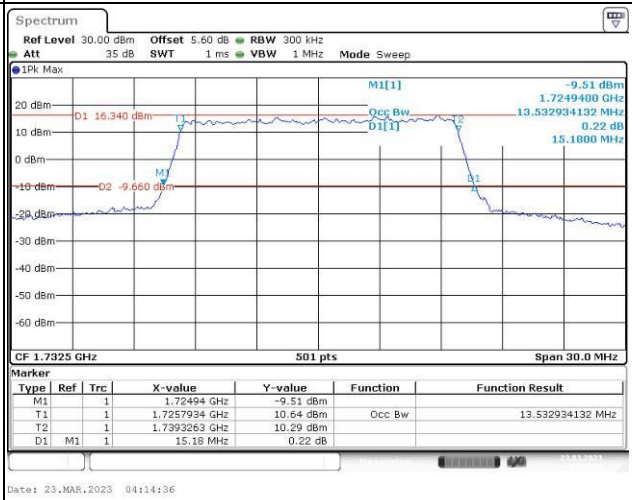
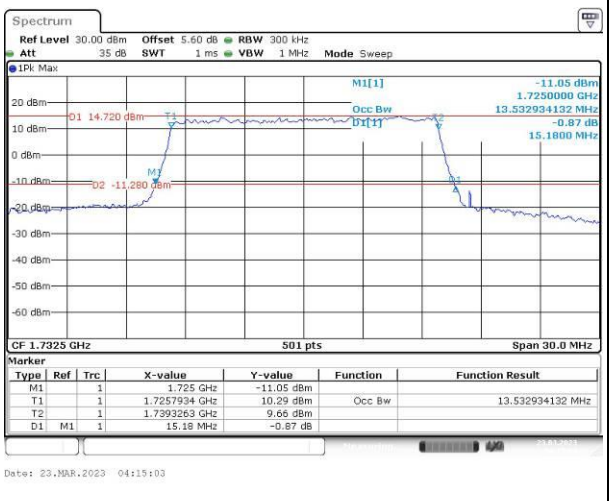
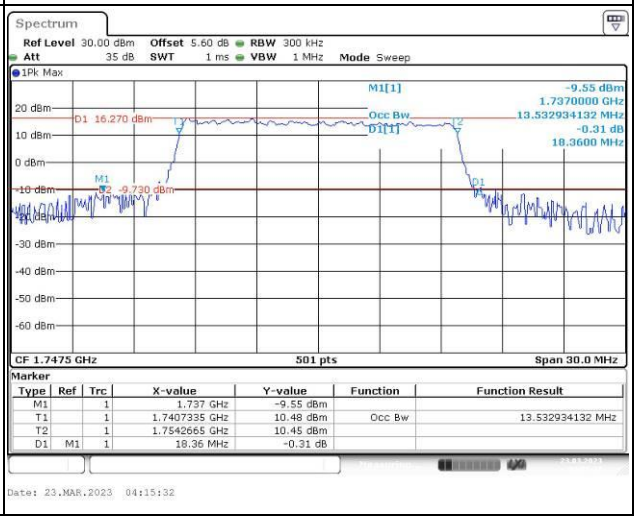
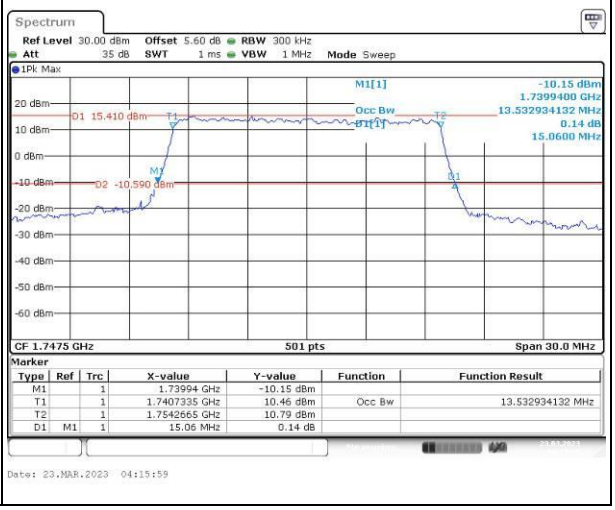
Occupied Bandwidth

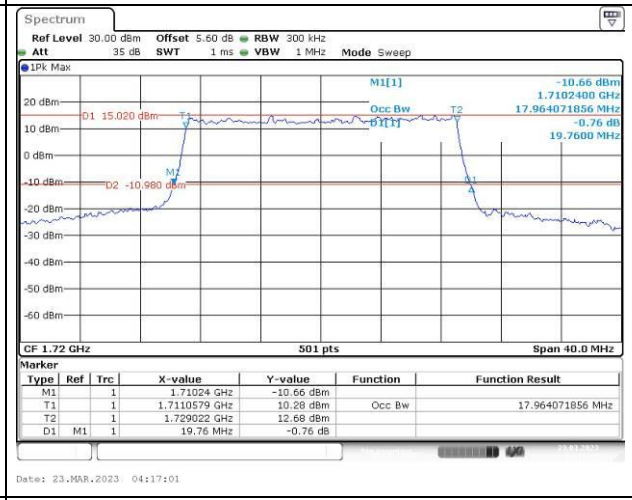
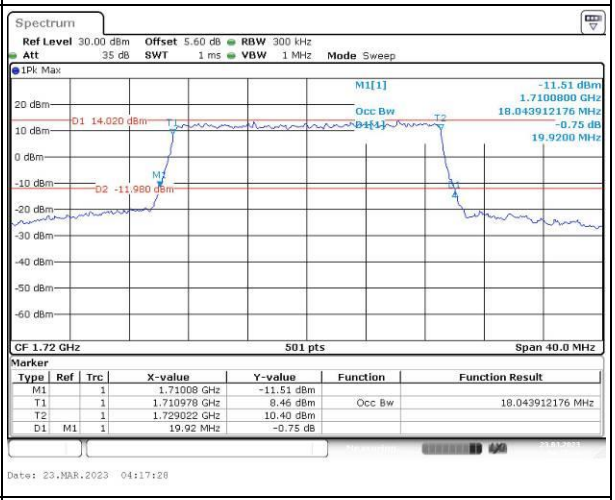
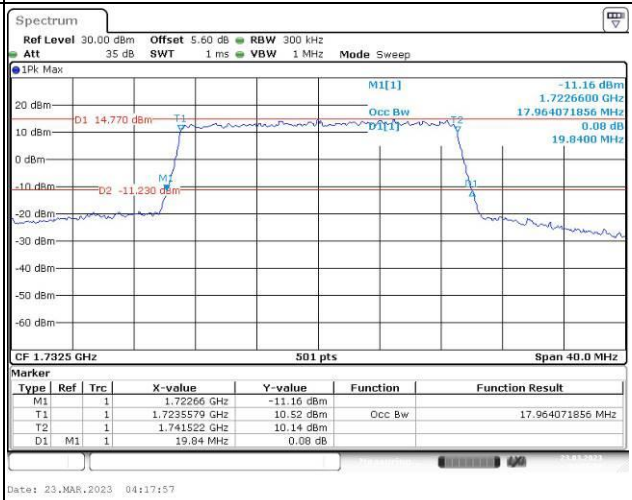
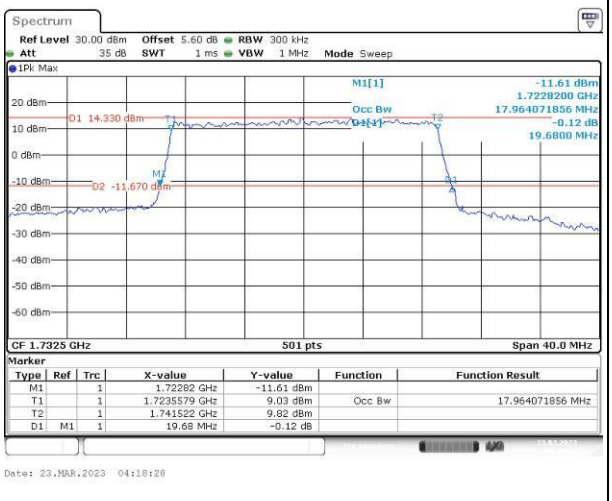
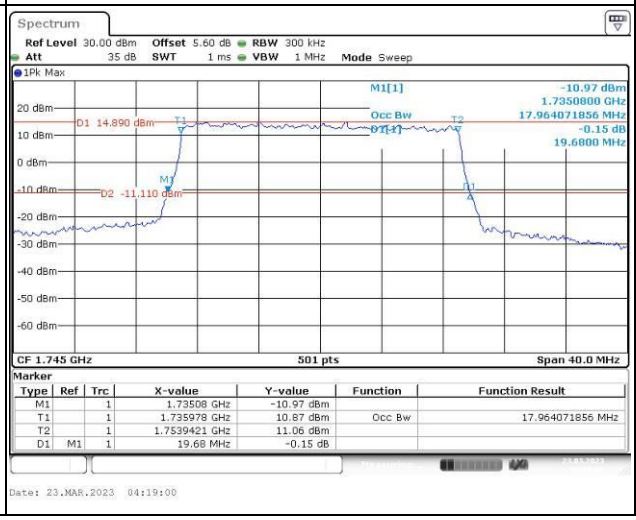
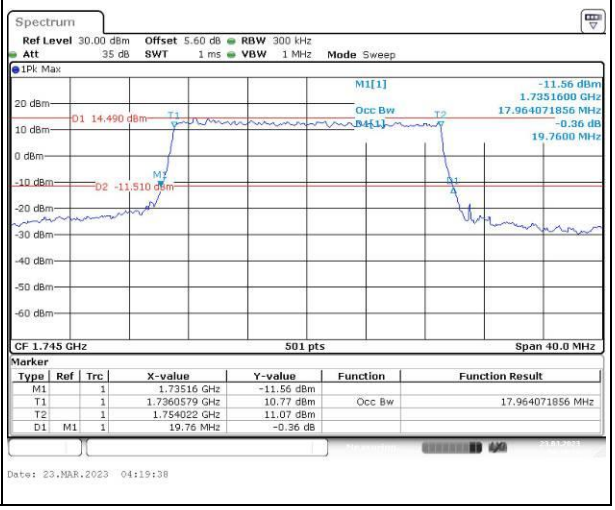
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

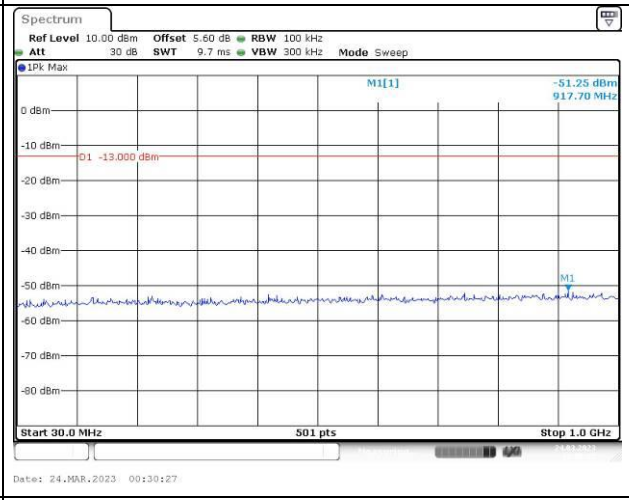
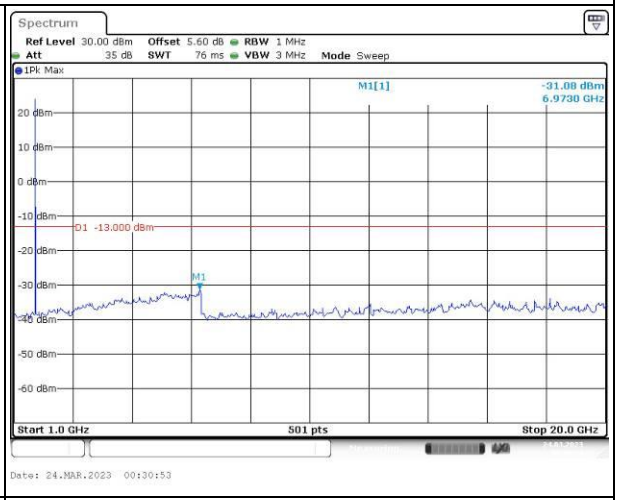
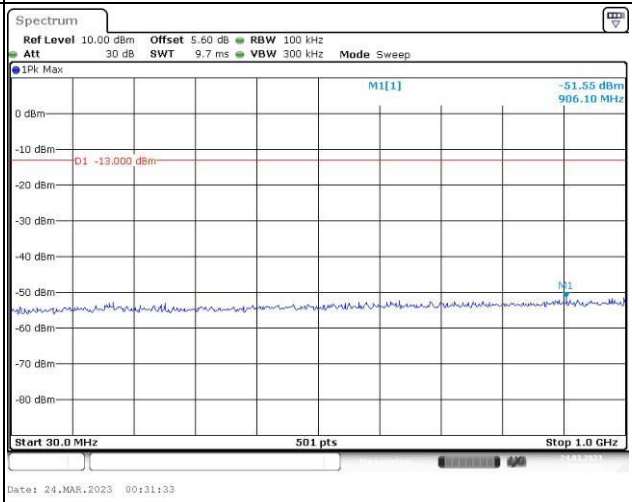
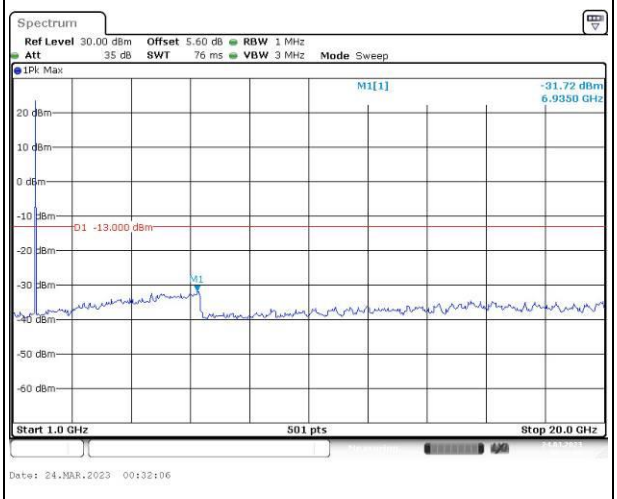
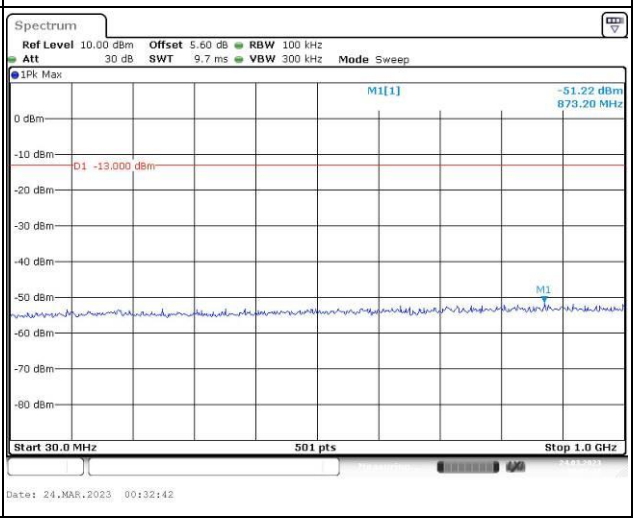
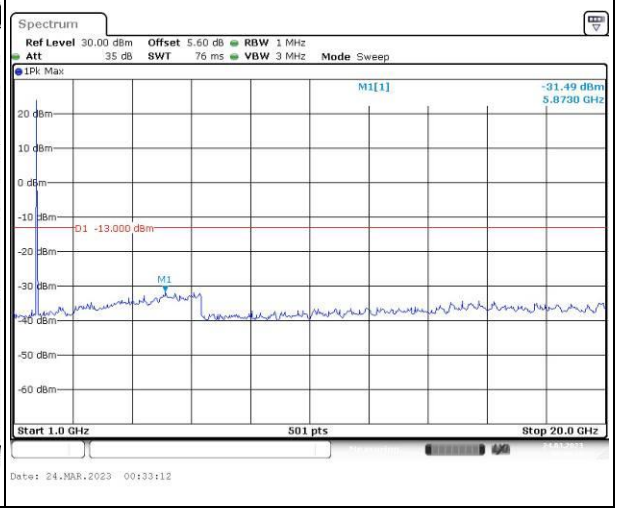
Occupied Bandwidth

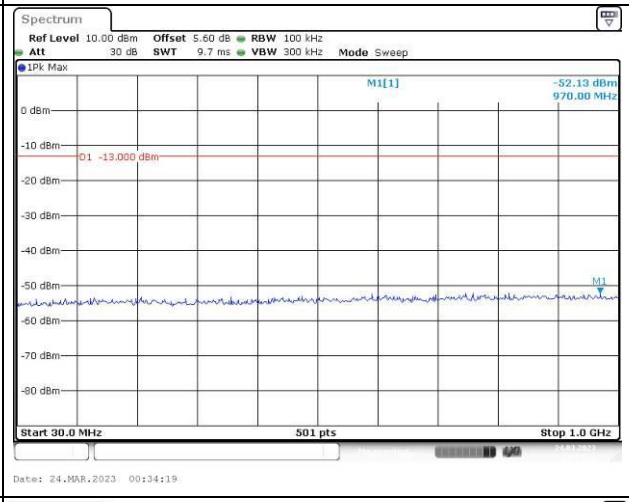
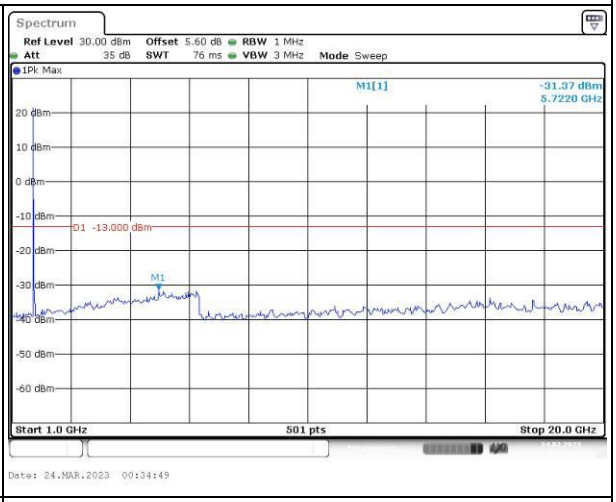
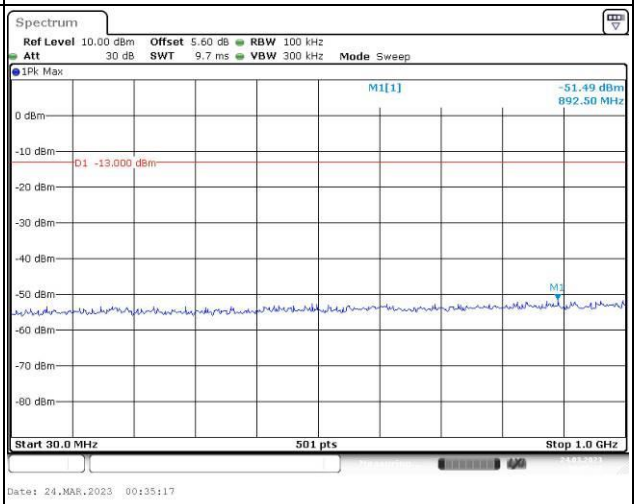
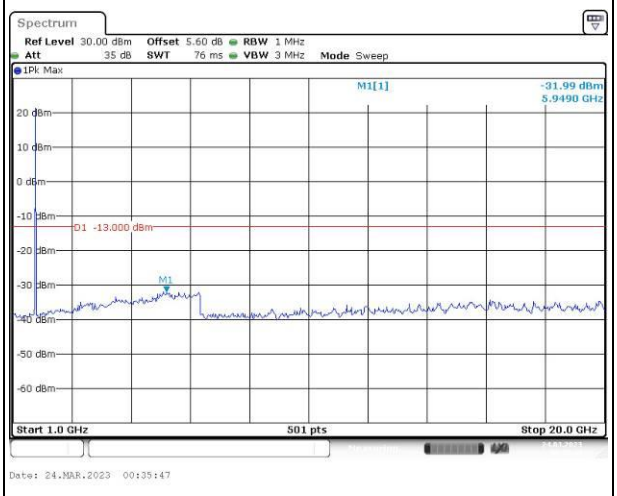
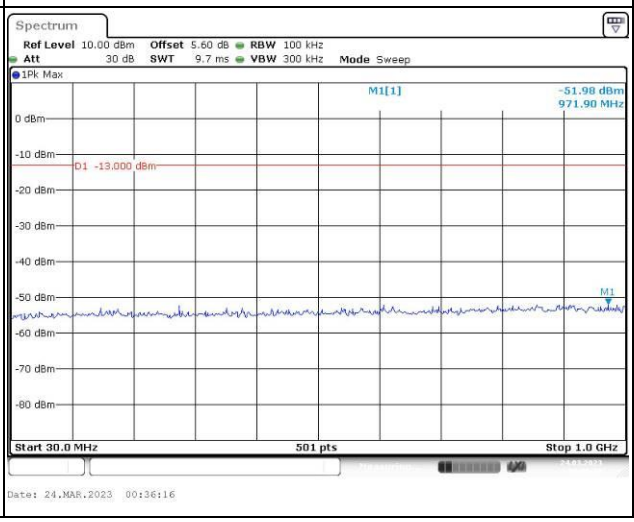
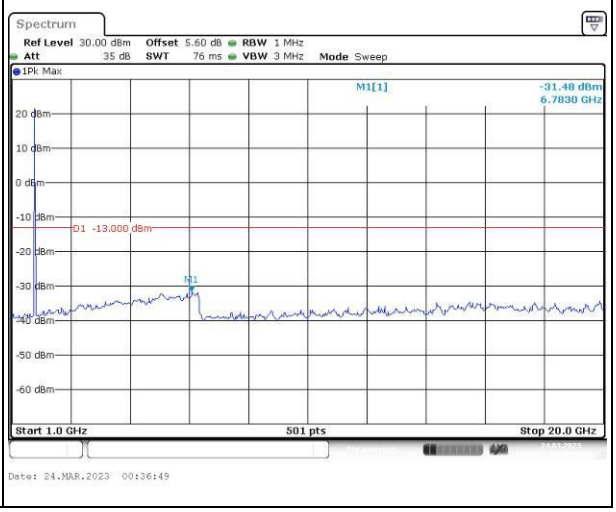
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

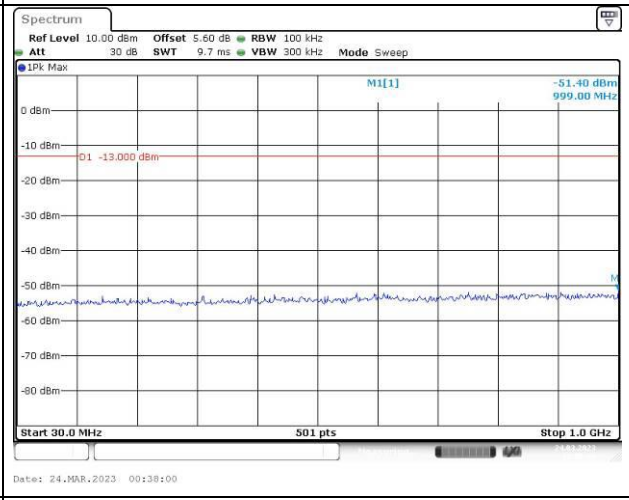
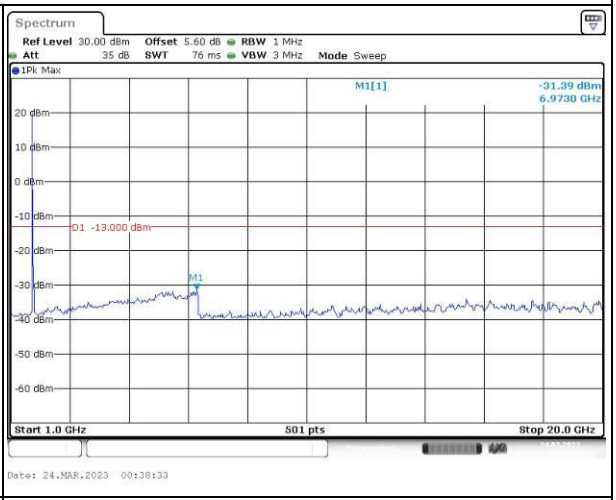
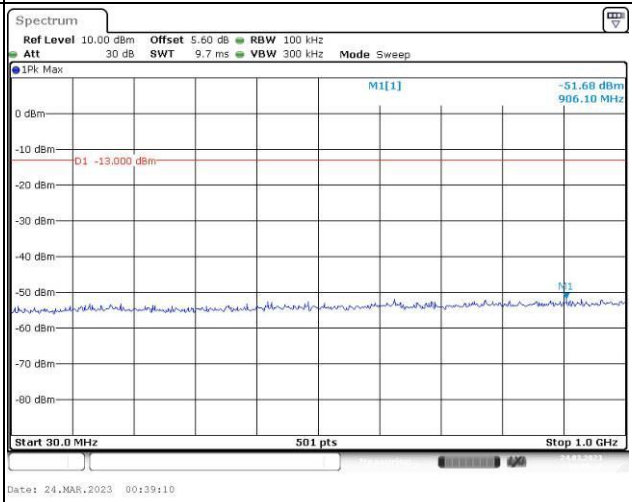
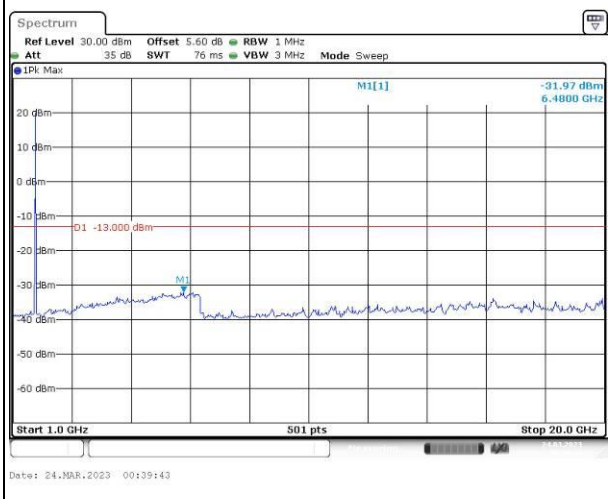
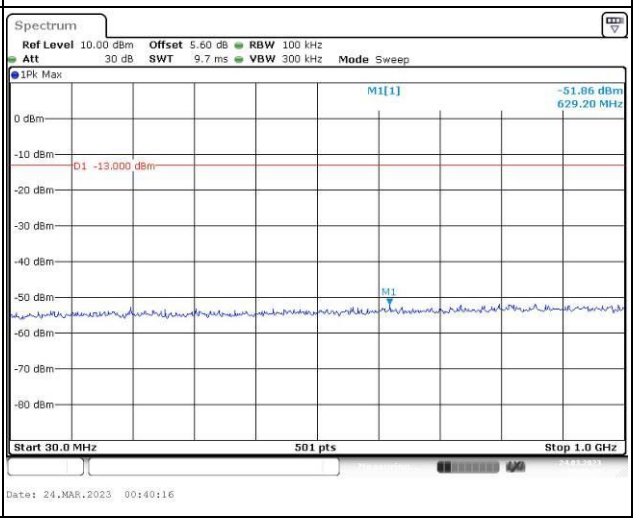
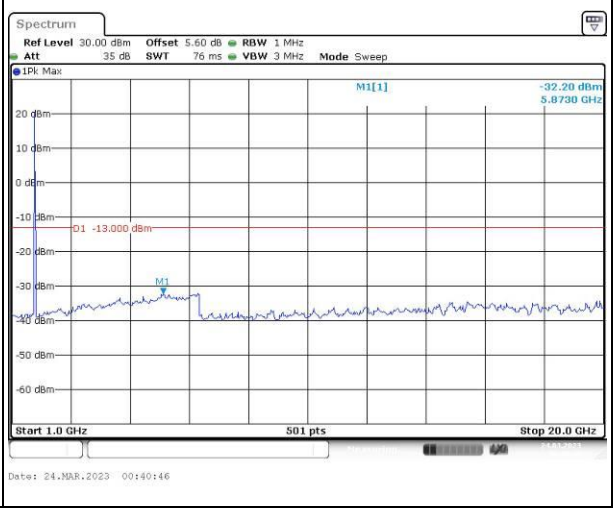
Occupied Bandwidth

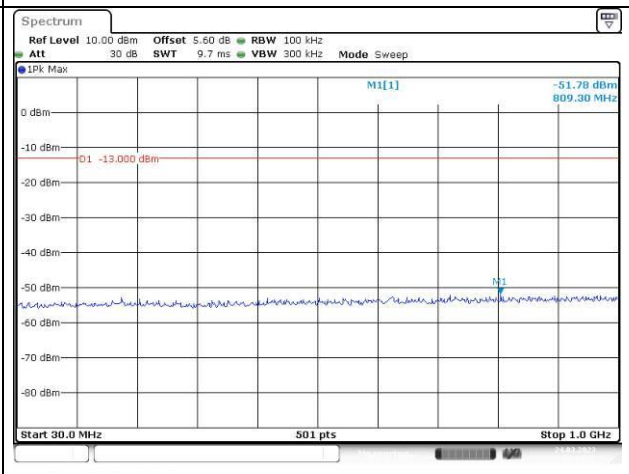
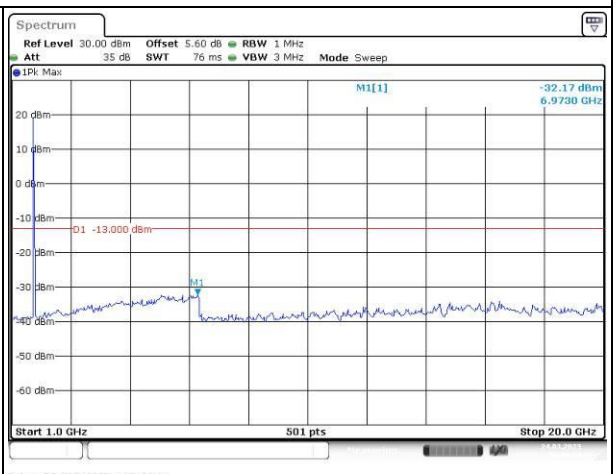
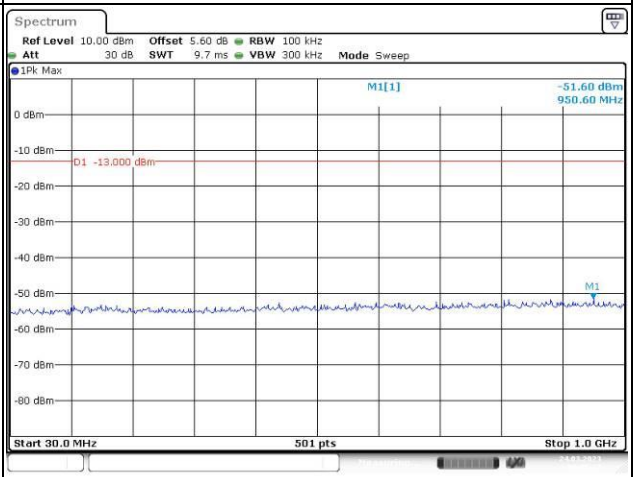
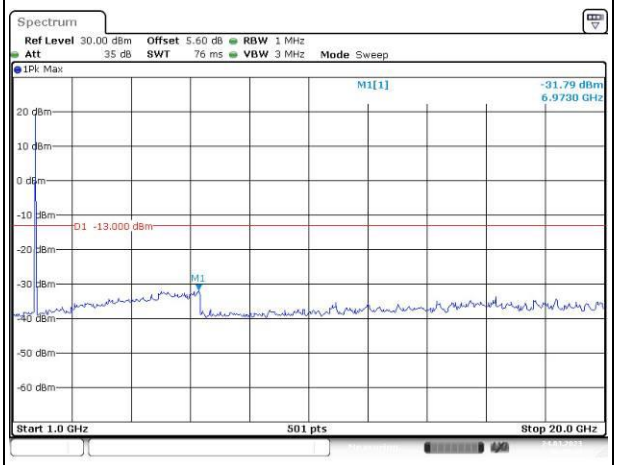
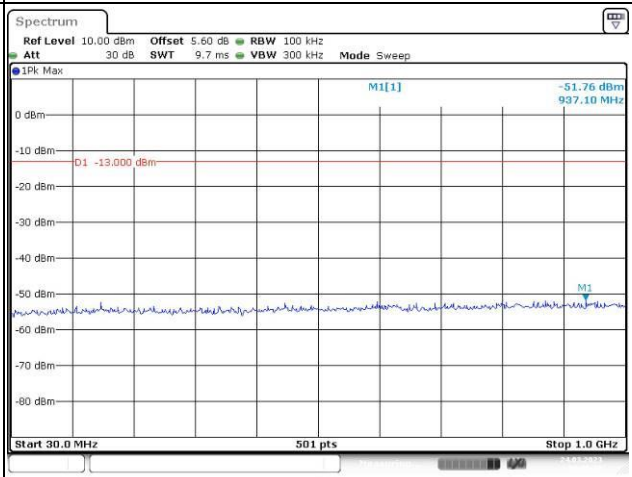
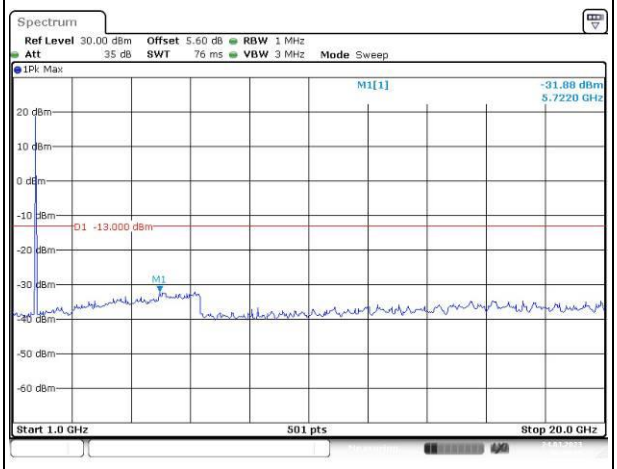
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

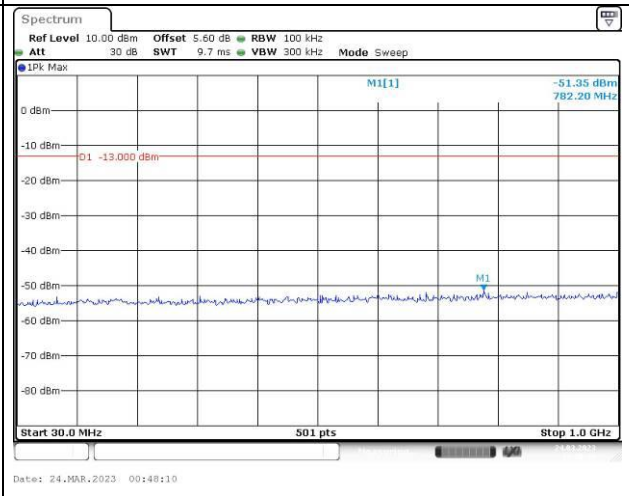
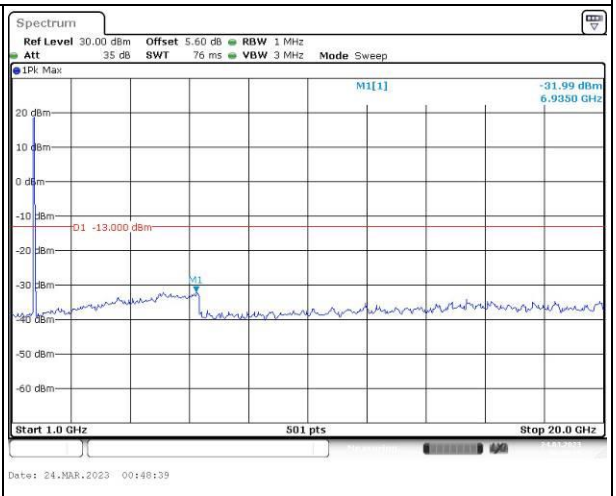
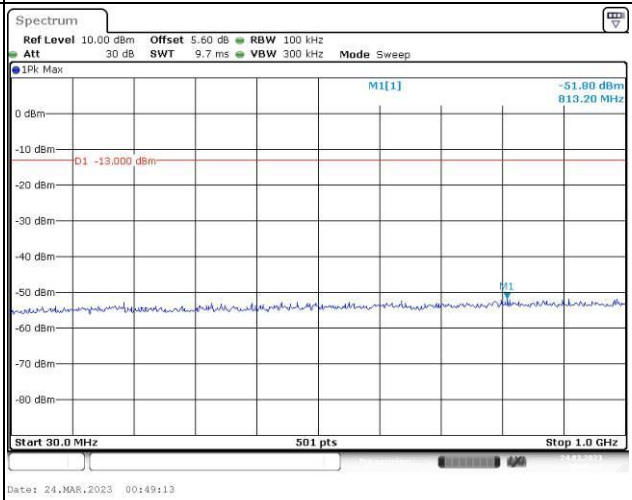
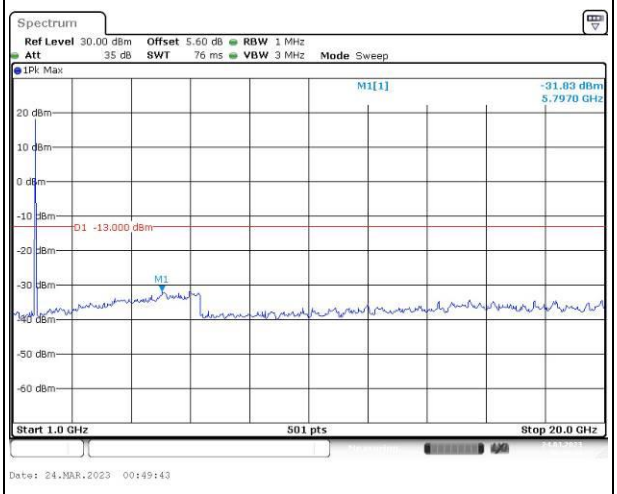
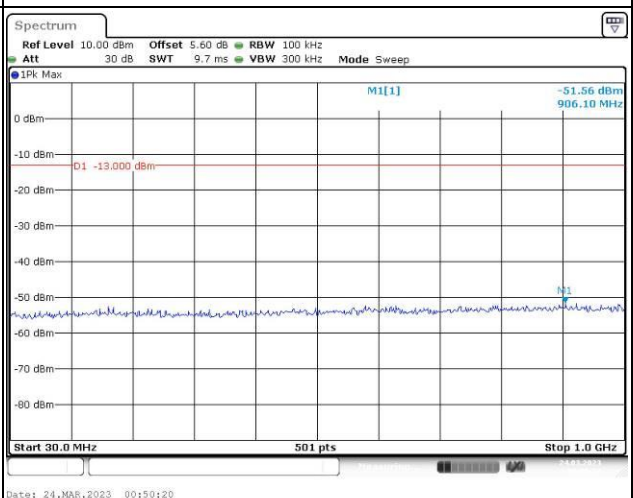
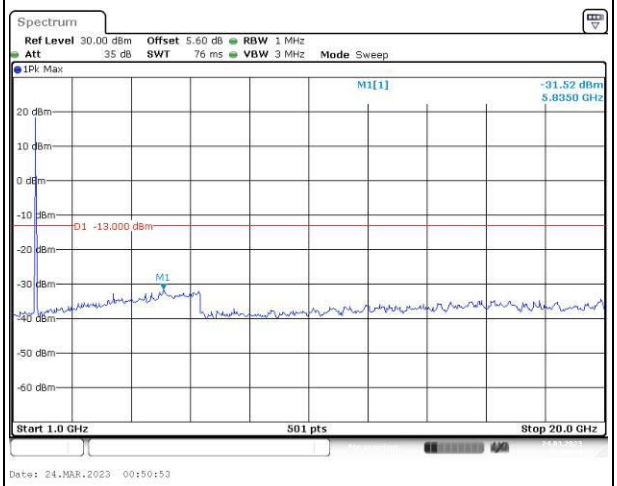
Occupied Bandwidth		
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

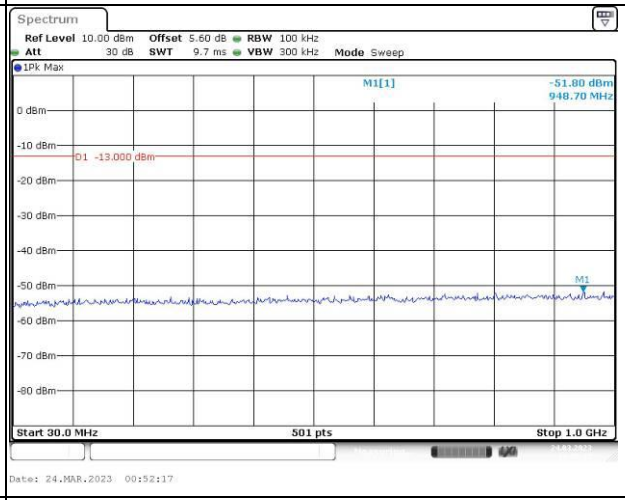
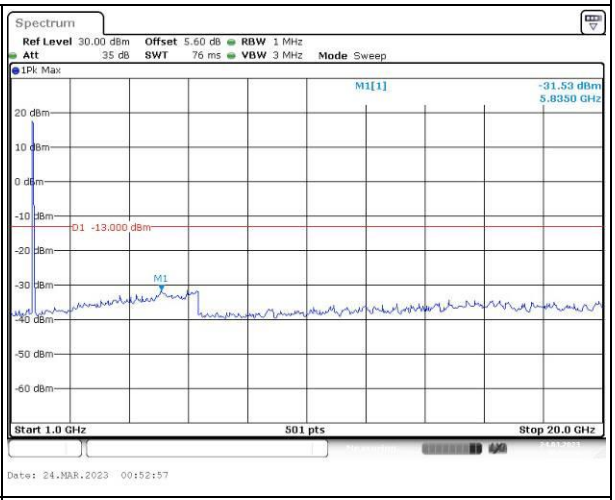
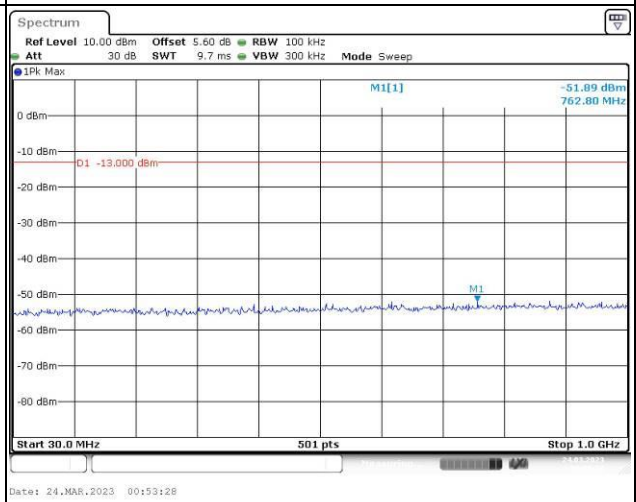
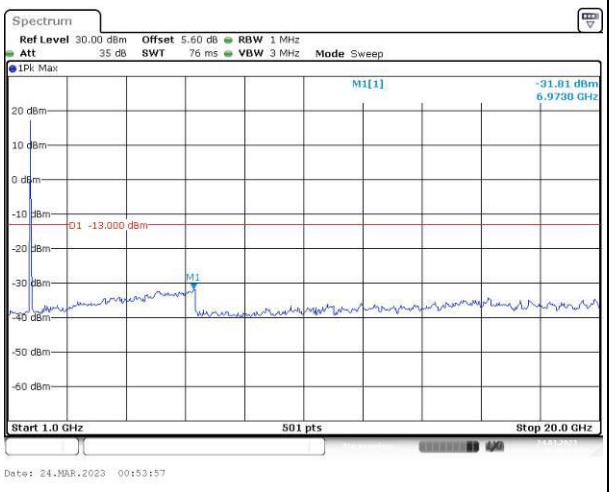
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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		

Spurious Emissions at Antenna Terminal		
Channel	**15MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal		
Channel	**20MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest