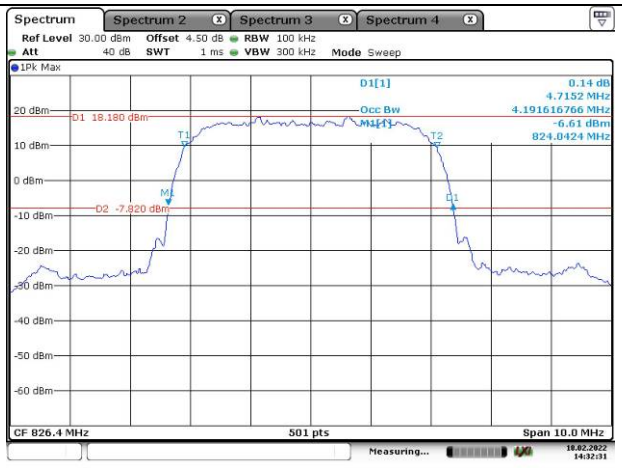
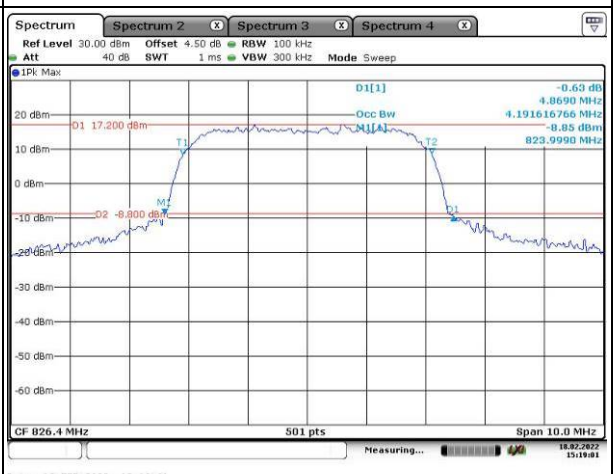
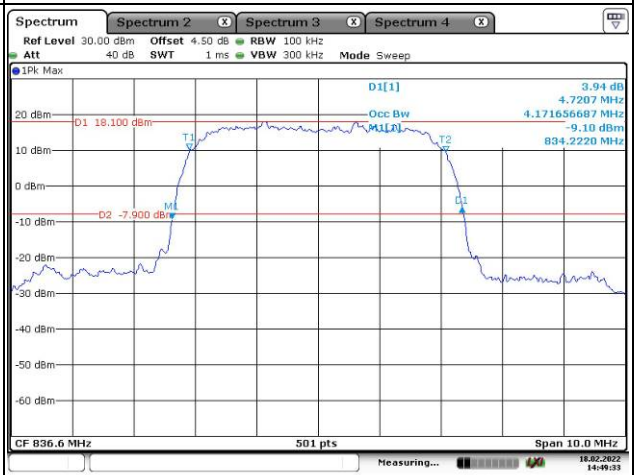
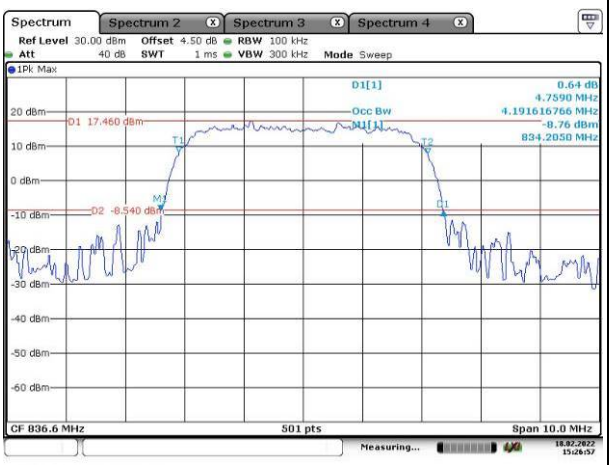
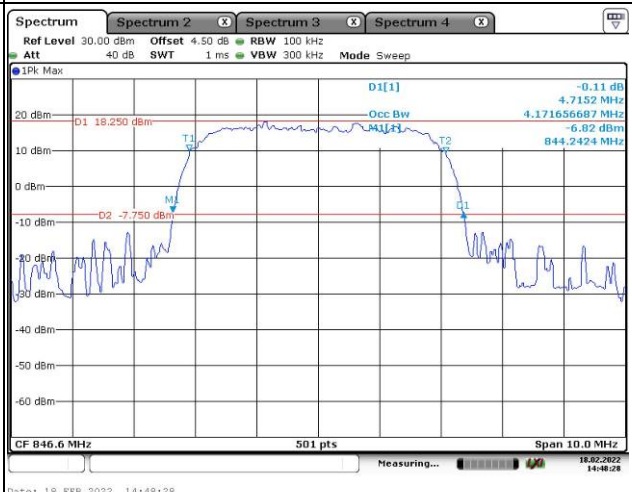
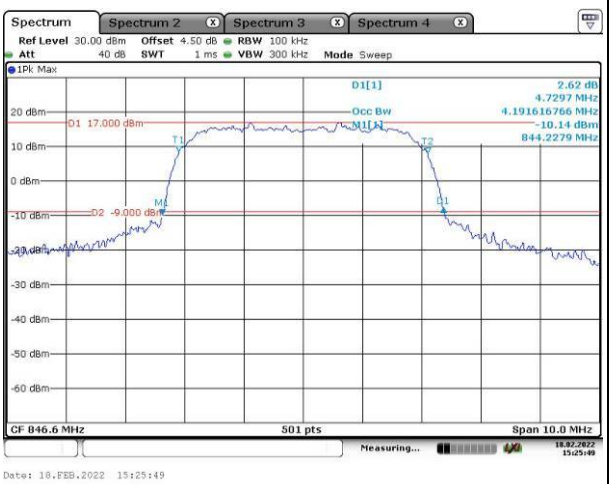
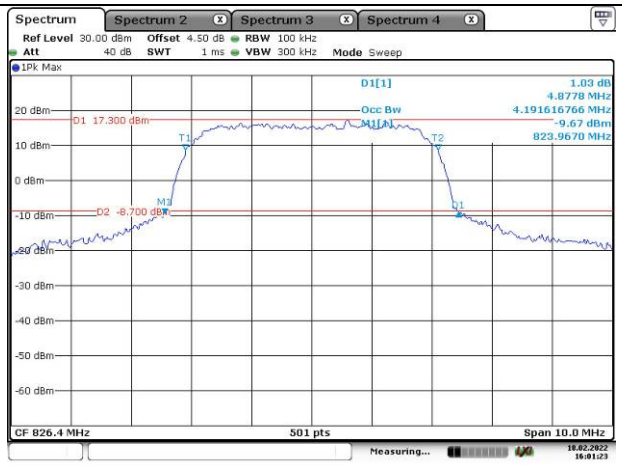
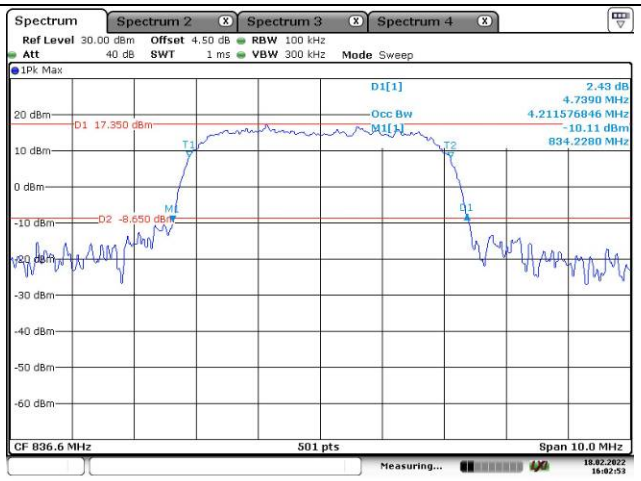
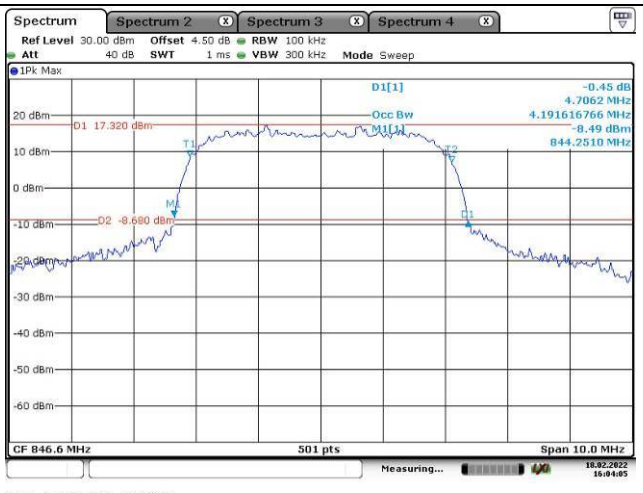
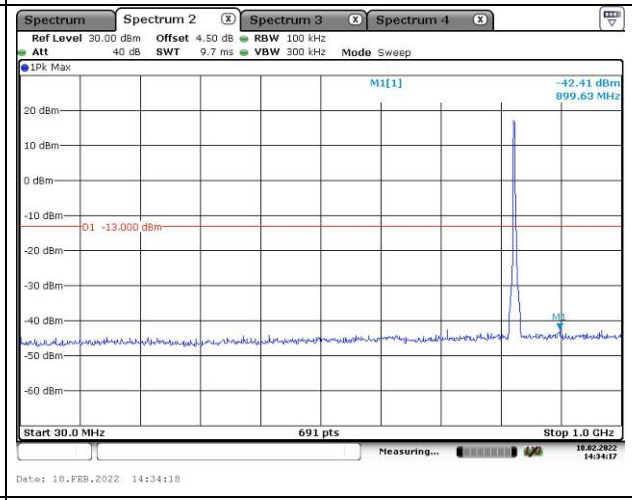
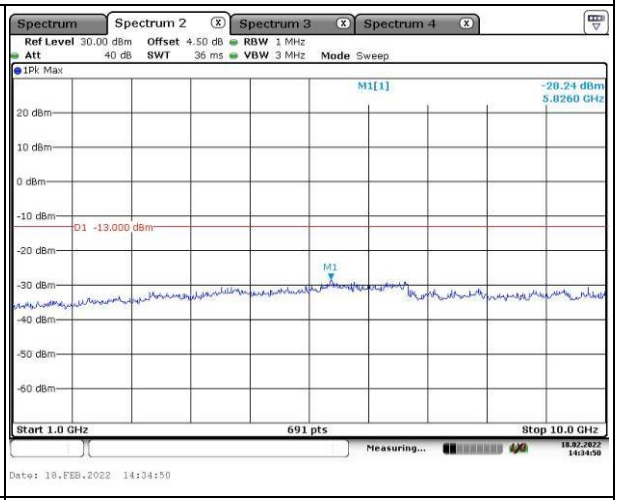
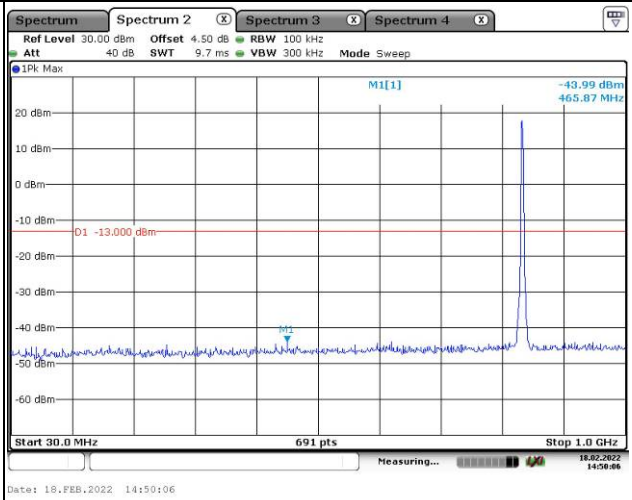
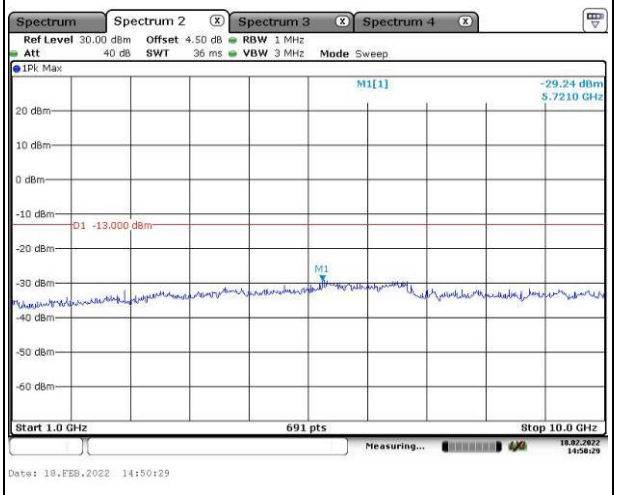
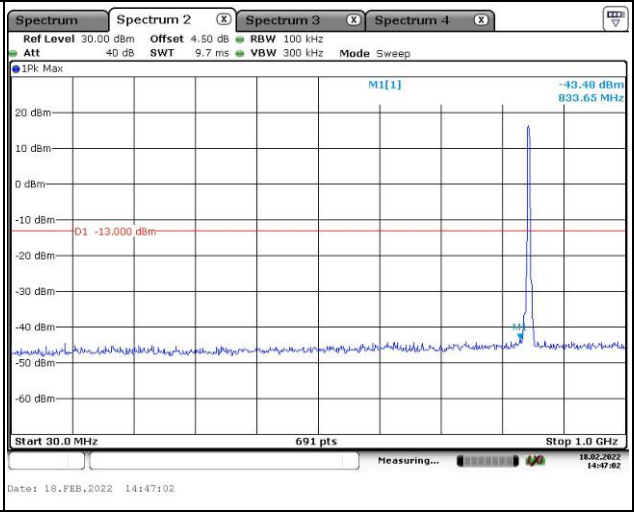
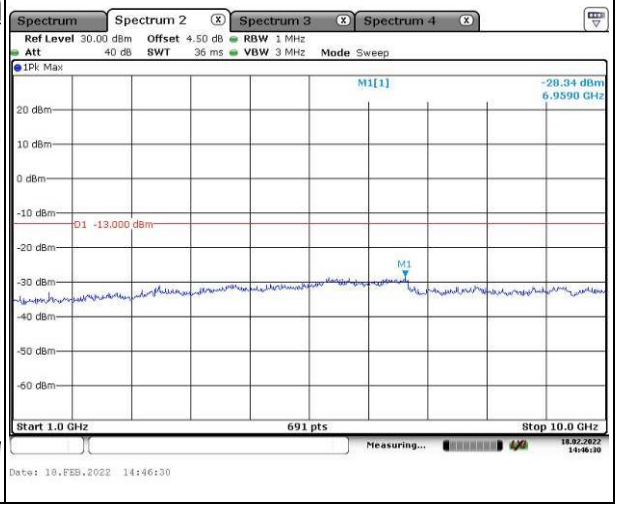
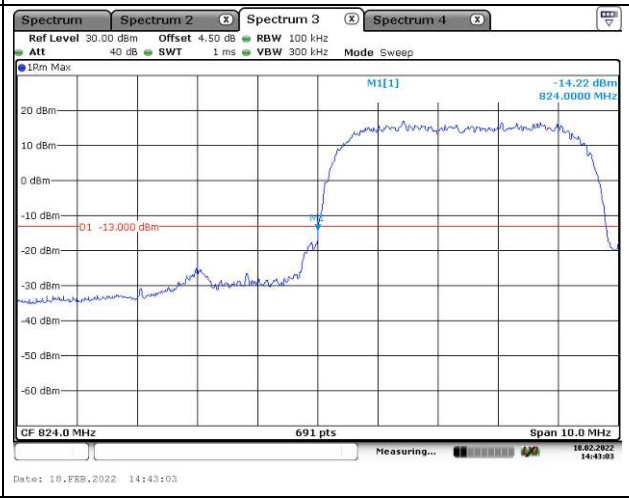
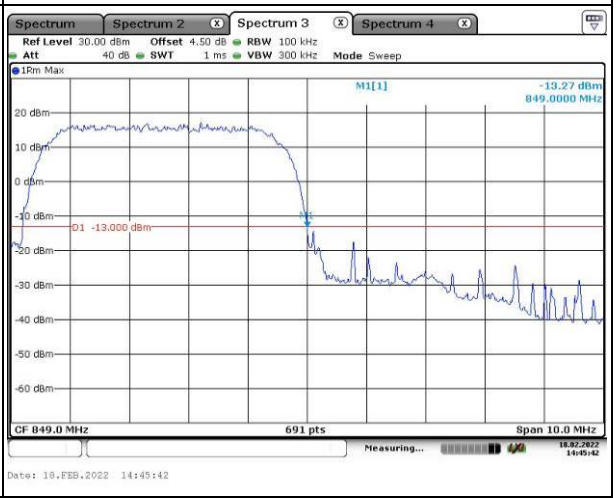
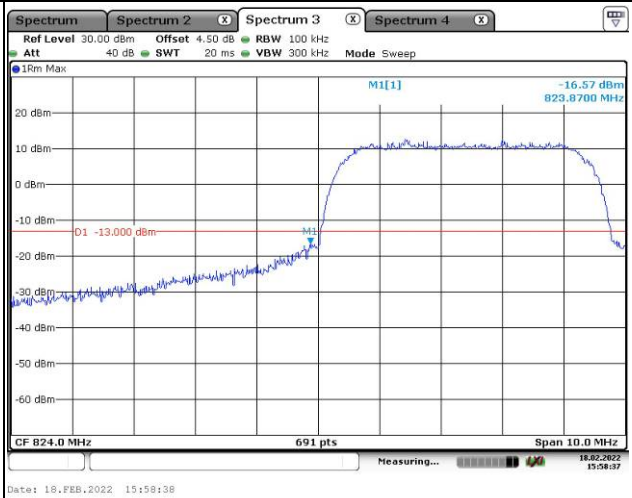
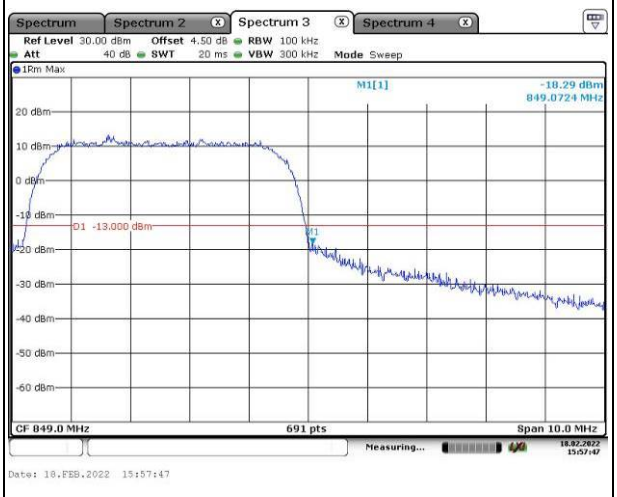
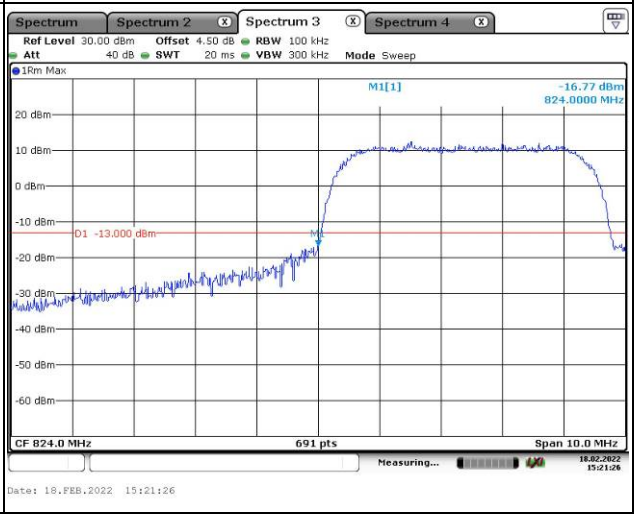
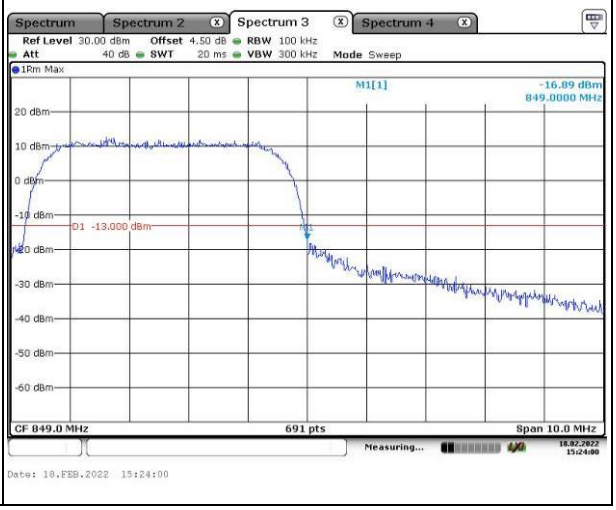
Test Plots:

Occupied Bandwidth		
Channel	WCDMA R99	HSDPA
Lowest		
Middle		
Highest		

Occupied Bandwidth	
Channel	HSUPA
Lowest	
Middle	
Highest	

Spurious Emissions at Antenna Terminal		
Channel	WCDMA R99	
Lowest		
Middle		
Highest		

Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
R99		
HSUPA		
HSDPA		

4.6Antenna Port Test Data and Results for LTE Band 2

Serial Number:	CR22020002-RF-S1/3	Test Date:	2022-02-12~2022-03-02
Test Site:	RF	Test Mode:	Transmitting
Tester:	Le Qiao	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	21~23.1	Relative Humidity: (%)	51~62	ATM Pressure: (kPa)	100.8~101.2

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021/7/22	2022/7/21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2021/7/22	2022/7/21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021/7/22	2022/7/22
UNI-T	Multimeter	UT39A+	C210582554	2021/9/30	2022/9/30
E-Microwave	Two-way Spliter	ODP-1-6	OE0120176	Each Time	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).*

EUT Information@ LTE Band 2▲:					
Antenna Gain (dBi):	1.1			Cable Loss (dB):	0.1
Operation Voltage(V_{DC}):					
Lowest:	3.6	Normal:	3.8	Highest:	4.3

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1850.7	1880	1909.3
3MHz	1851.5	1880	1908.5
5MHz	1852.5	1880	1907.5
10MHz	1855	1880	1905
15MHz	1857.5	1880	1902.5
20MHz	1860	1880	1900

Test Data:

FCC§2.1046;§ 24.232

RF Output Power:

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	21.18	21.09	20.47	22.39	33
	RB1#3	21.39	21.30	20.78		
	RB1#5	21.21	21.04	20.48		
	RB3#0	21.28	20.93	20.55		
	RB3#3	21.30	20.86	20.56		
	RB6#0	20.35	19.87	19.60		
1.4MHz 16QAM	RB1#0	20.28	19.73	19.61	21.47	33
	RB1#3	20.45	19.84	19.88		
	RB1#5	20.26	19.67	19.64		
	RB3#0	20.47	19.93	19.60		
	RB3#3	20.44	19.87	19.63		
	RB6#0	19.17	19.71	19.62		
3MHz QPSK	RB1#0	20.81	20.67	20.49	21.81	33
	RB1#8	20.76	20.65	20.51		
	RB1#14	20.75	20.59	20.52		
	RB6#0	19.74	19.63	19.50		
	RB6#9	19.75	19.66	19.50		
	RB15#0	19.79	19.67	19.58		
3MHz 16QAM	RB1#0	20.38	19.82	19.57	21.38	33
	RB1#8	20.33	19.82	19.57		
	RB1#14	20.32	19.79	19.55		
	RB6#0	19.84	19.63	19.54		
	RB6#9	19.80	19.63	19.97		
	RB15#0	19.86	19.60	19.56		
5MHz QPSK	RB1#0	21.21	21.08	20.89	22.34	33
	RB1#13	21.34	21.17	21.06		
	RB1#24	21.20	21.10	20.90		
	RB15#0	20.34	20.22	20.16		
	RB15#10	20.30	20.21	20.03		
	RB25#0	20.30	20.20	20.04		
5MHz 16QAM	RB1#0	20.08	20.41	20.05	21.49	33
	RB1#13	20.19	20.49	20.15		
	RB1#24	20.10	20.40	20.02		
	RB15#0	19.37	19.19	19.15		
	RB15#10	19.31	19.19	19.05		
	RB25#0	19.34	19.20	19.08		

10MHz QPSK	RB1#0	21.27	21.12	20.95	22.39	33
	RB1#25	21.39	21.30	21.12		
	RB1#49	21.24	21.15	20.99		
	RB25#0	20.43	20.22	20.13		
	RB25#25	20.28	20.25	20.01		
	RB50#0	20.36	20.26	20.09		
10MHz 16QAM	RB1#0	20.84	20.27	20.01	21.98	33
	RB1#25	20.98	20.55	20.18		
	RB1#49	20.81	20.34	20.02		
	RB25#0	19.48	19.23	19.18		
	RB25#25	19.34	19.25	19.12		
	RB50#0	19.34	19.25	19.10		
15MHz QPSK	RB1#0	21.20	21.09	20.95	22.27	33
	RB1#38	21.27	21.19	21.05		
	RB1#74	21.08	21.06	20.97		
	RB36#0	20.37	20.21	20.11		
	RB36#39	20.33	20.24	20.10		
	RB75#0	20.36	20.28	20.08		
15MHz 16QAM	RB1#0	20.73	20.25	20.37	21.87	33
	RB1#38	20.87	20.38	20.49		
	RB1#74	20.79	20.25	20.35		
	RB36#0	19.36	19.26	19.54		
	RB36#39	19.35	19.26	19.56		
	RB75#0	19.38	19.24	19.66		
20MHz QPSK	RB1#0	21.04	20.93	20.75	22.44	33
	RB1#50	21.44	21.33	21.15		
	RB1#99	20.96	20.89	20.77		
	RB50#0	20.29	20.14	20.09		
	RB50#50	20.40	20.13	19.99		
	RB100#0	20.42	20.14	20.02		
20MHz 16QAM	RB1#0	20.34	20.19	20.39	21.8	33
	RB1#50	20.72	20.58	20.80		
	RB1#99	20.31	20.12	20.40		
	RB50#0	19.32	19.56	19.88		
	RB50#50	19.39	19.56	19.86		
	RB100#0	19.36	19.57	19.87		
Note: EIRP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBi)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	6.20	5.54	5.10	13
	RB100#0	5.45	5.39	5.48	13
20MHz 16QAM	RB1#0	6.38	6.41	5.97	13
	RB100#0	6.29	6.26	6.41	13
				Result:	**Pass**

FCC §2.1049, §24.238:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.090	1.108	1.290	1.296	1.356
1.4MHz 16QAM	1.096	1.102	1.096	1.296	1.320	1.338
3MHz QPSK	2.683	2.695	2.683	2.880	2.880	2.880
3MHz 16QAM	2.683	2.683	2.683	2.892	2.880	2.880
5MHz QPSK	4.551	4.511	4.511	5.200	5.200	5.160
5MHz 16QAM	4.511	4.551	4.531	5.180	5.180	5.200
10MHz QPSK	8.981	8.942	8.981	9.960	9.840	9.960
10MHz 16QAM	8.942	8.981	8.981	9.800	9.880	9.920
15MHz QPSK	13.533	13.473	13.533	14.820	14.820	14.880
15MHz 16QAM	13.533	13.533	13.533	14.820	14.820	14.820
20MHz QPSK	17.964	17.964	17.964	19.440	19.520	19.520
20MHz 16QAM	17.964	17.964	17.884	19.680	19.920	19.600
Note: The test plots please refer to the Plots of Occupied Bandwidth						

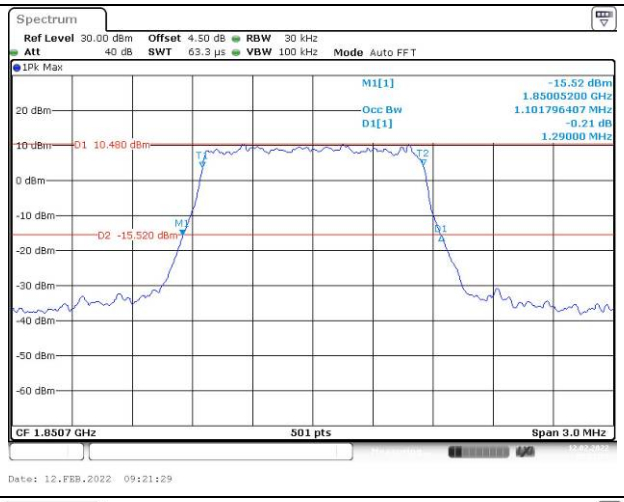
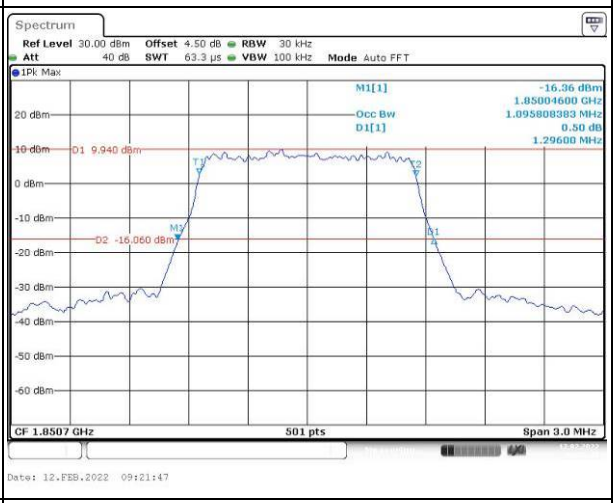
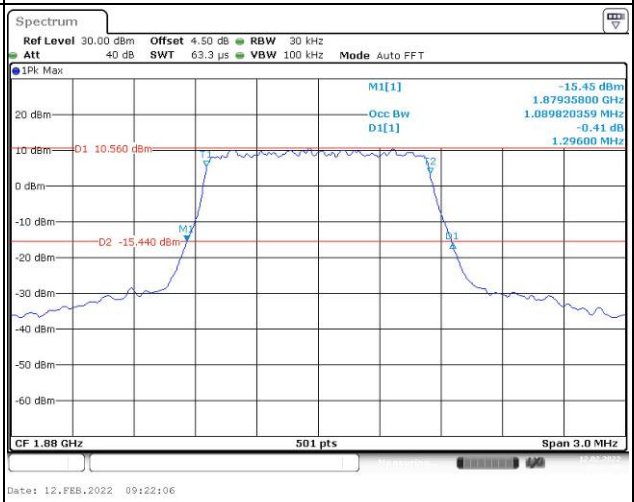
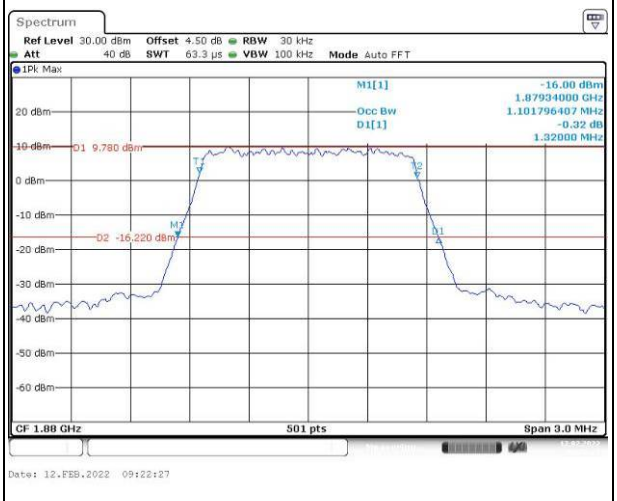
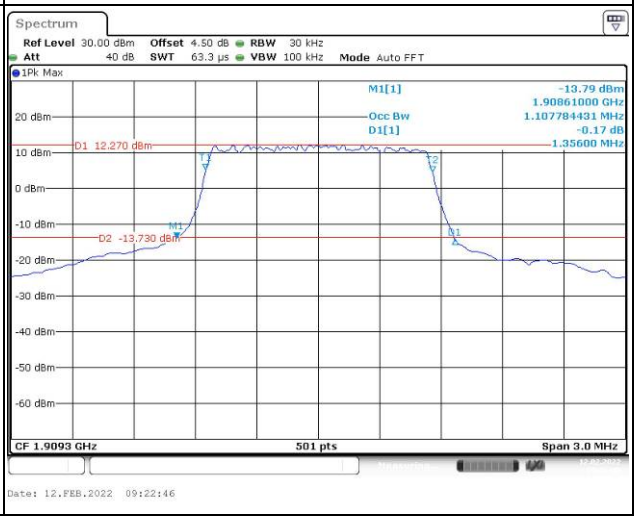
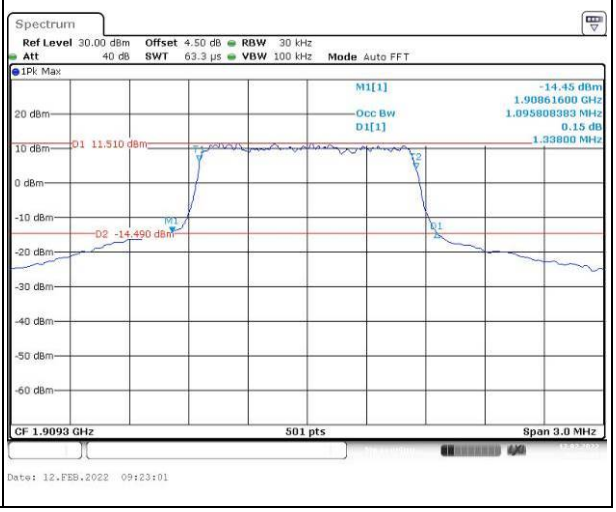
FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

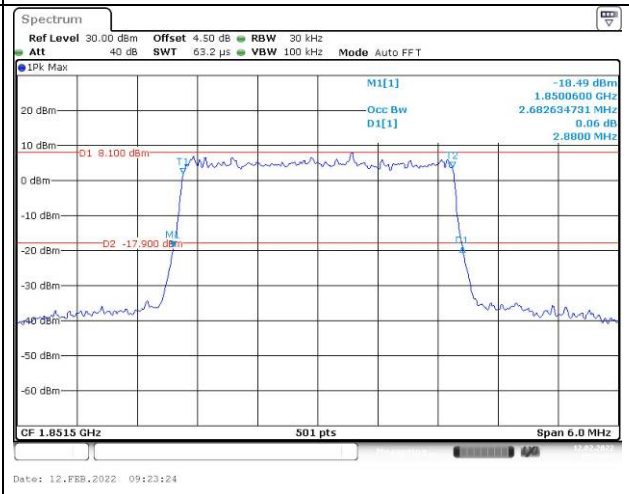
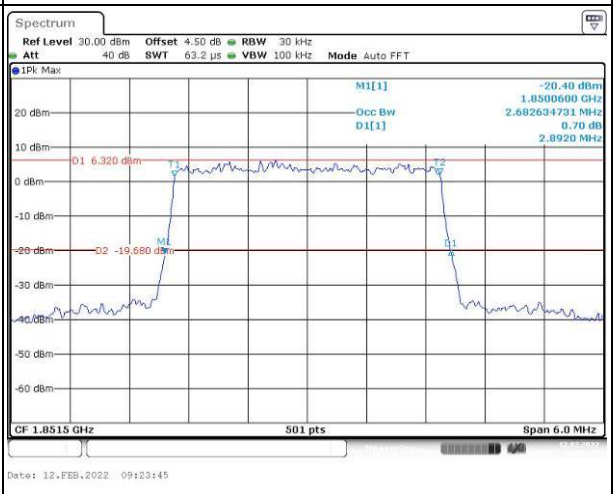
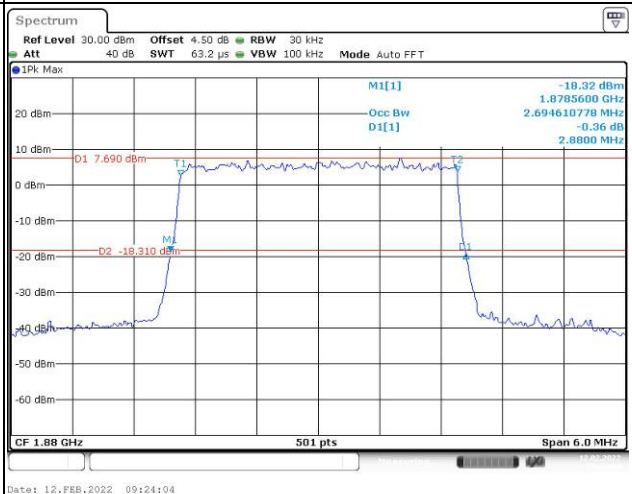
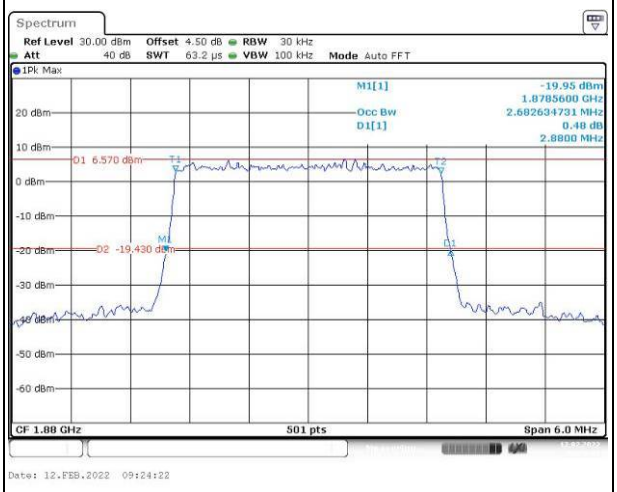
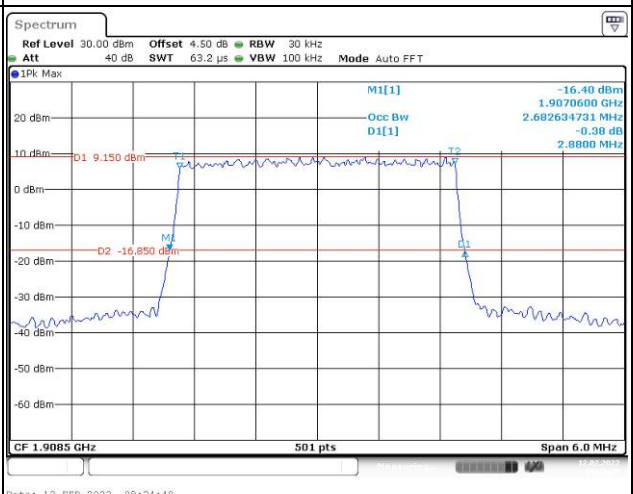
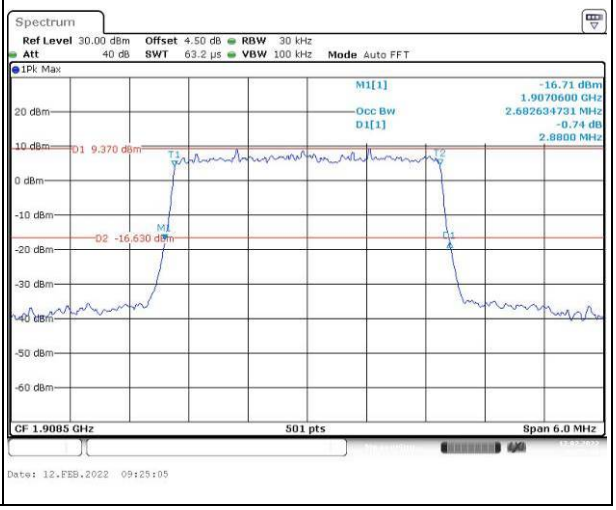
FCC §2.1051, § 24.238 (a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

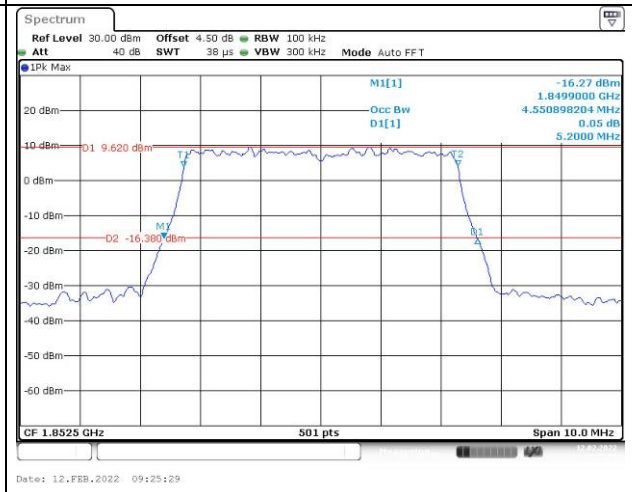
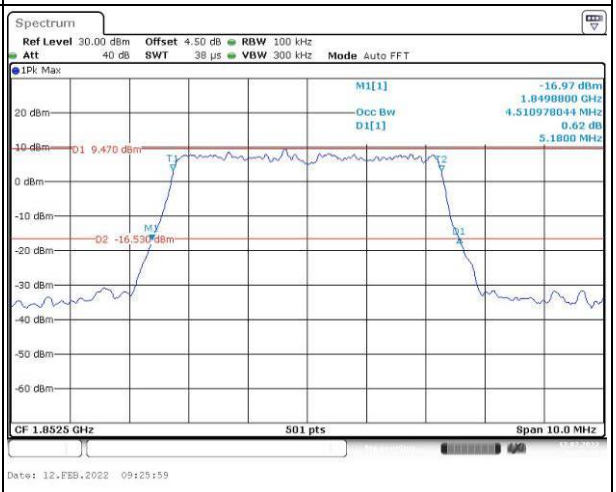
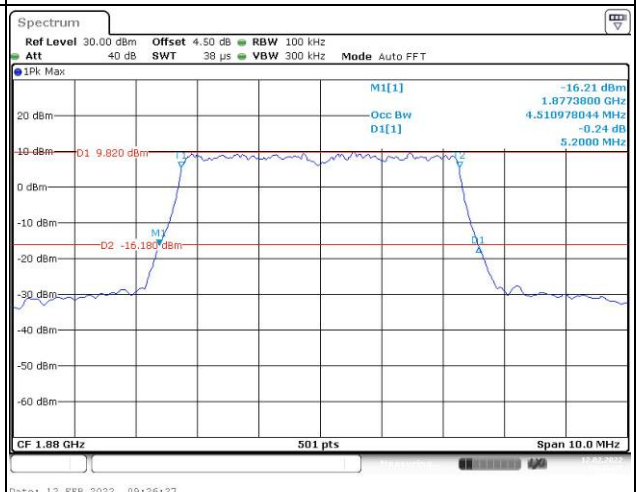
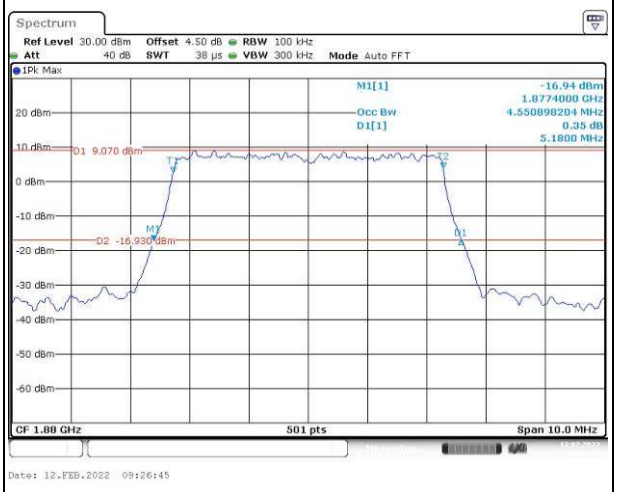
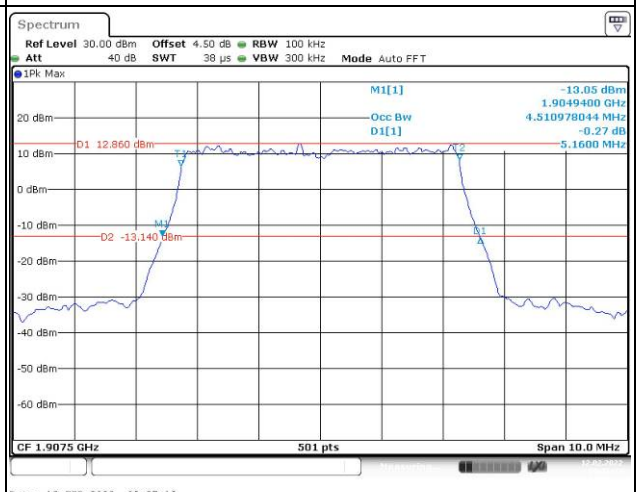
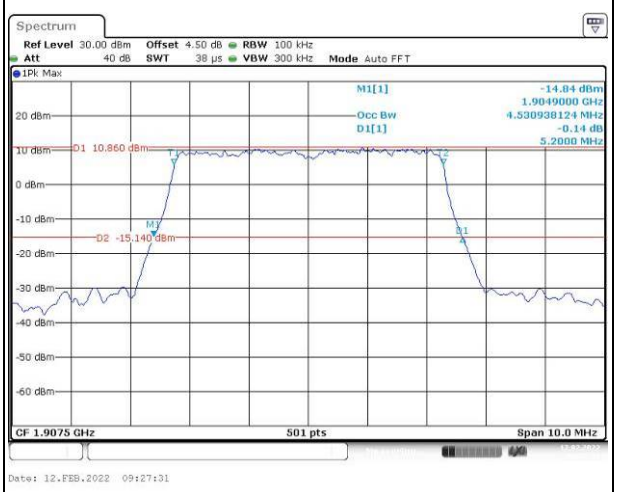
FCC §2.1055, §24.235: Frequency Stability					
Test Mode:	20 MHz QPSK		Test Channel:	1880	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.8	-6.12	-0.003	Pass
	-20	3.8	-7.25	-0.004	Pass
	-10	3.8	7.55	0.004	Pass
	0	3.8	-6.09	-0.003	Pass
	10	3.8	7.95	0.004	Pass
	20	3.8	9.94	0.005	Pass
	30	3.8	-5.39	-0.003	Pass
	40	3.8	6.48	0.003	Pass
	50	3.8	-7.55	-0.004	Pass
Frequency Stability vs. Voltage	20	3.6	9.85	0.005	Pass
	20	4.3	5.29	0.003	Pass
				Result:	**Pass**

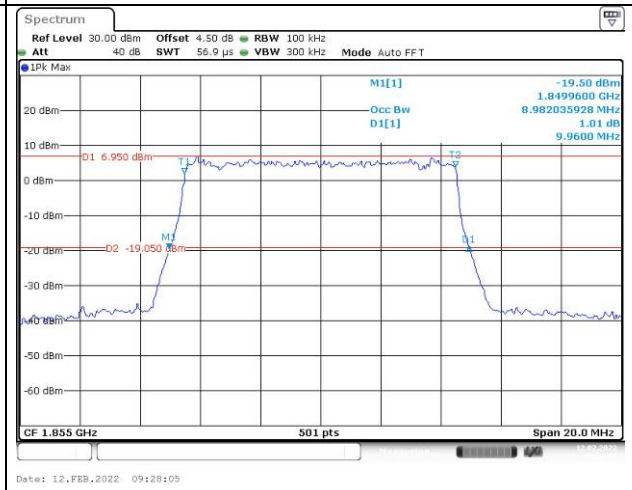
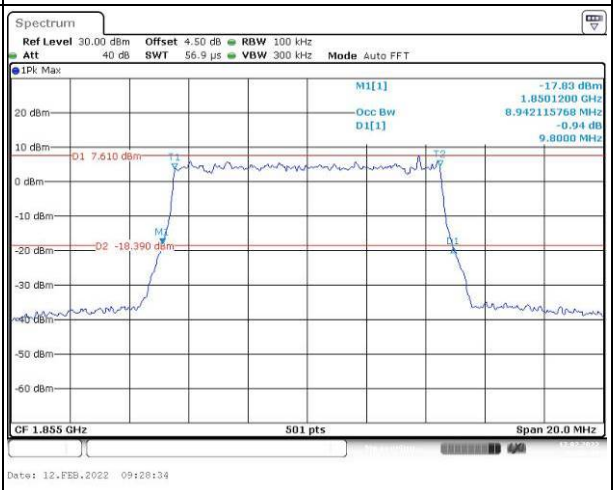
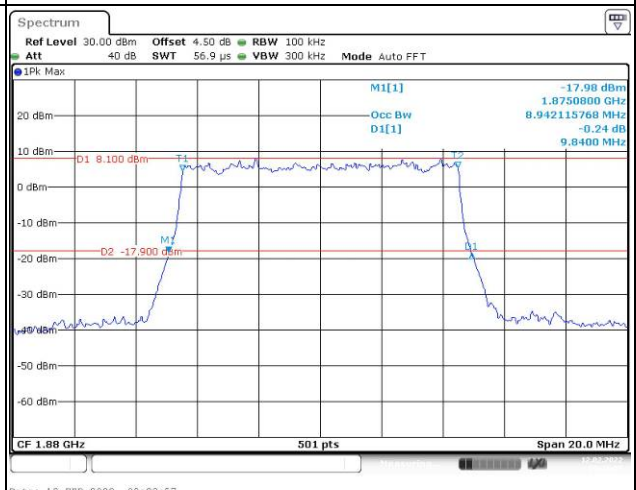
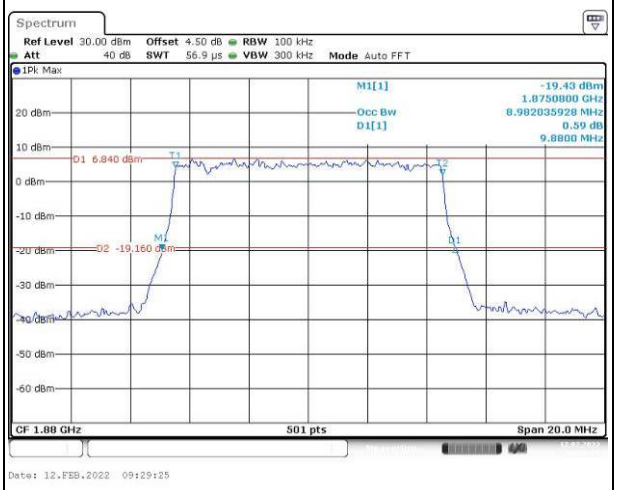
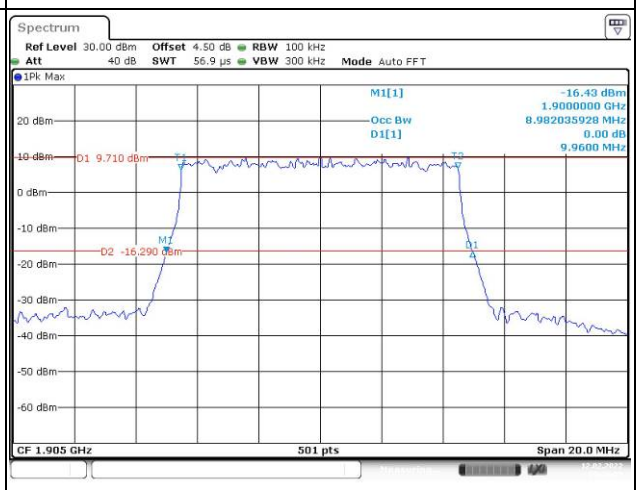
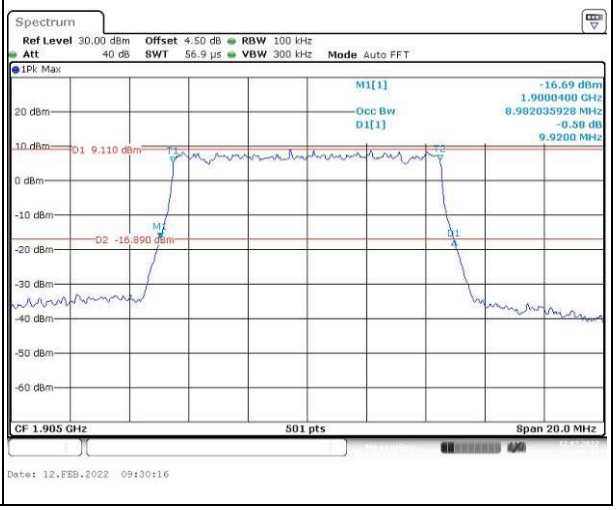
Test Mode:	20 MHz 16QAM		Test Channel:	1880	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.8	-9.94	-0.005	Pass
	-20	3.8	-6.24	-0.003	Pass
	-10	3.8	-6.73	-0.004	Pass
	0	3.8	-8.59	-0.005	Pass
	10	3.8	5.52	0.003	Pass
	20	3.8	8.19	0.004	Pass
	30	3.8	-6.61	-0.004	Pass
	40	3.8	-7.31	-0.004	Pass
	50	3.8	-5.11	-0.003	Pass
Frequency Stability vs. Voltage	20	3.6	-6.98	-0.004	Pass
	20	4.3	-6.12	-0.003	Pass
				Result:	**Pass**

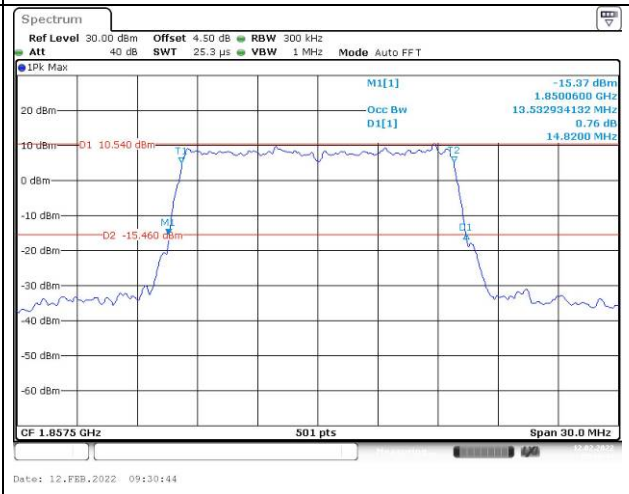
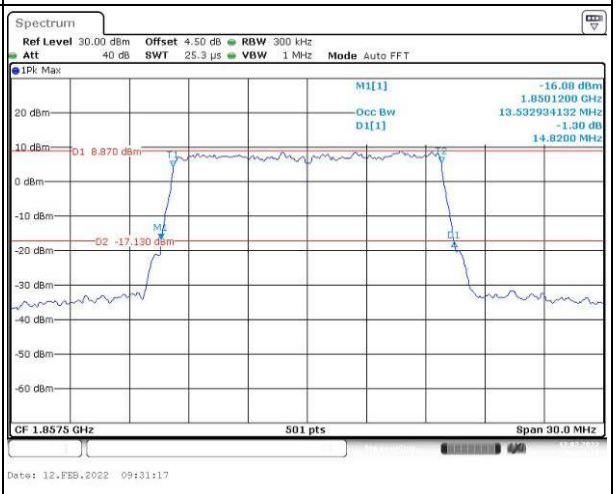
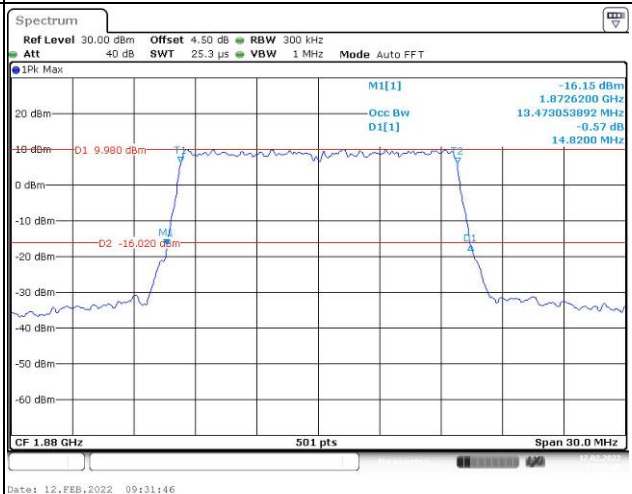
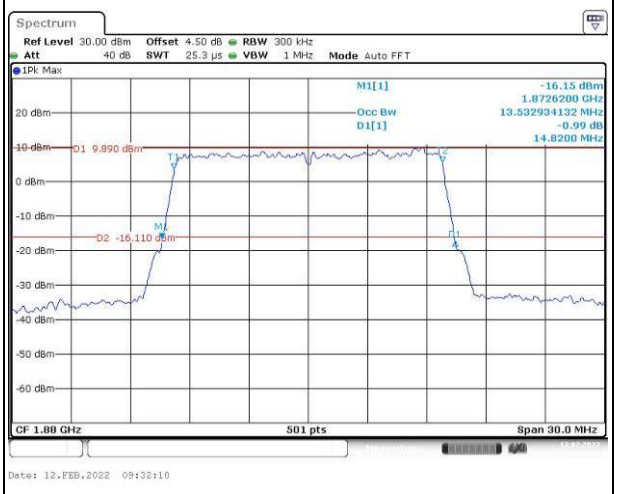
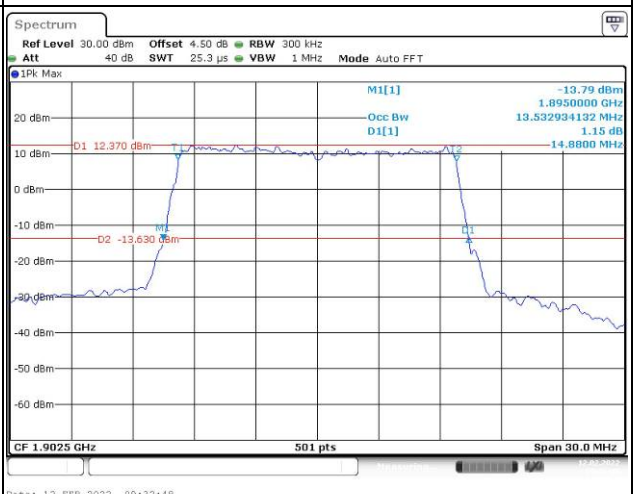
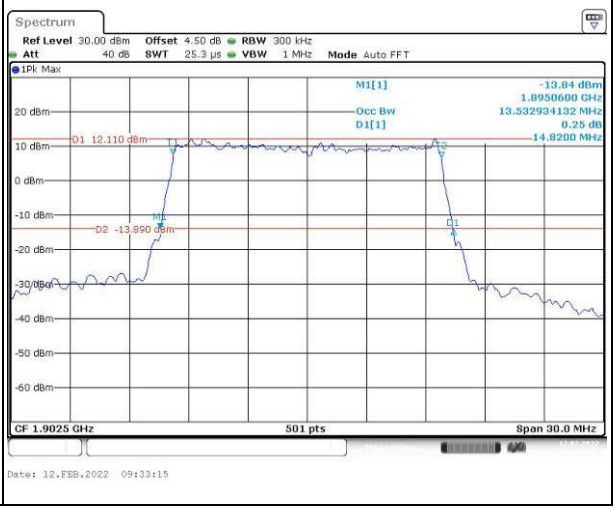
Test Plots:

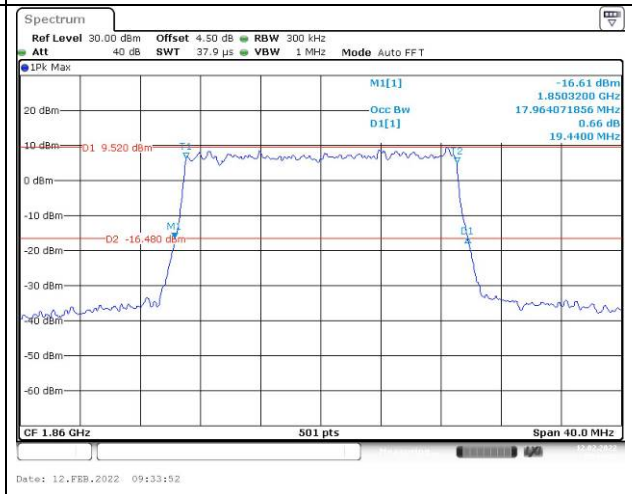
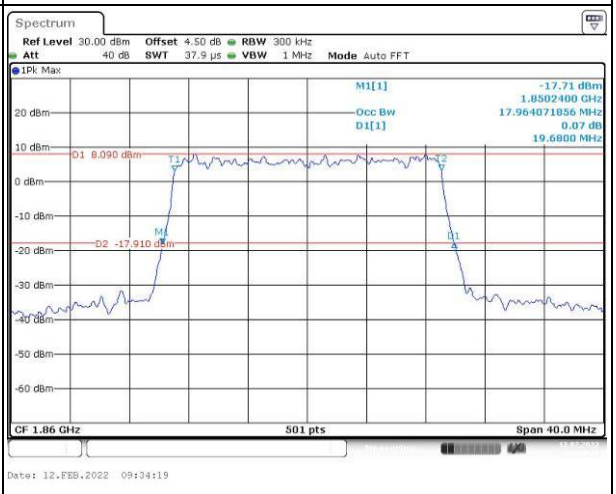
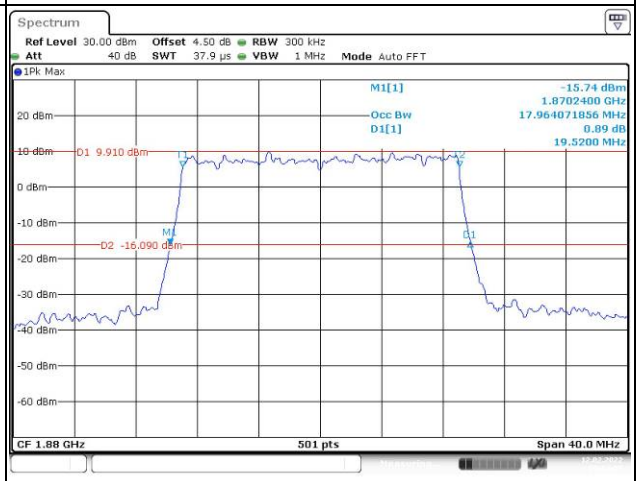
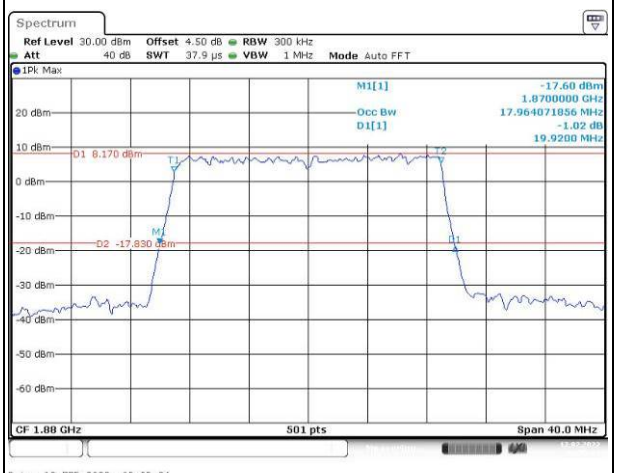
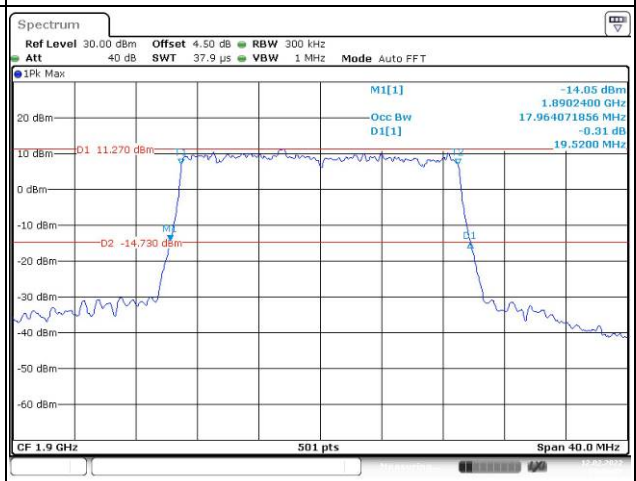
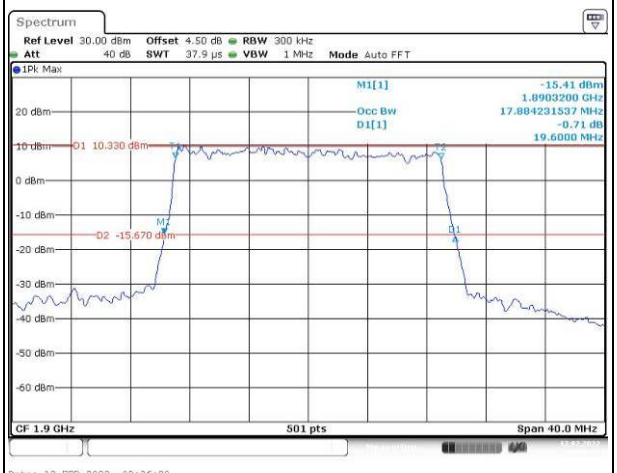
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

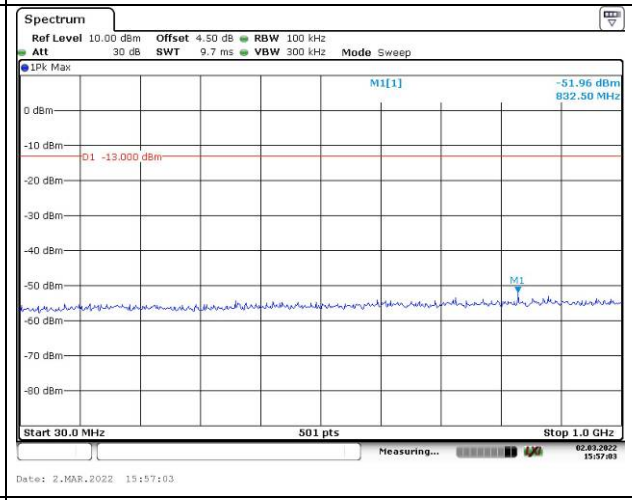
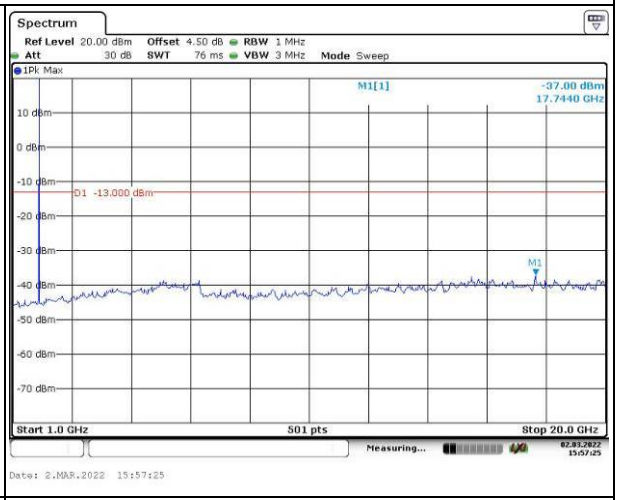
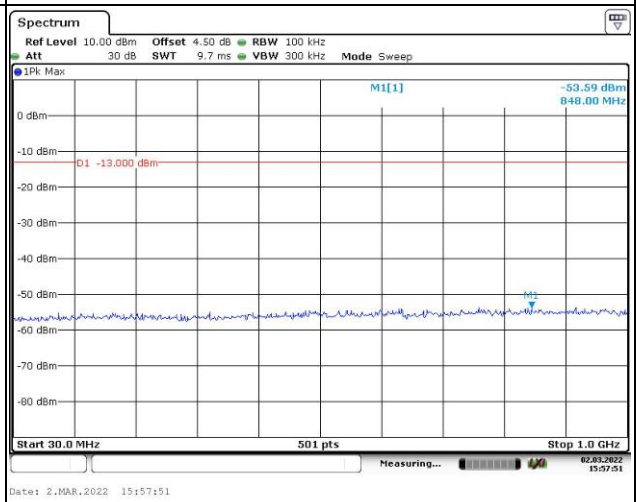
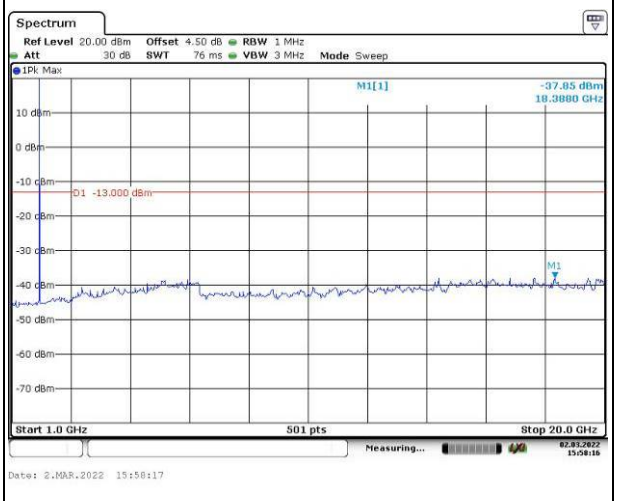
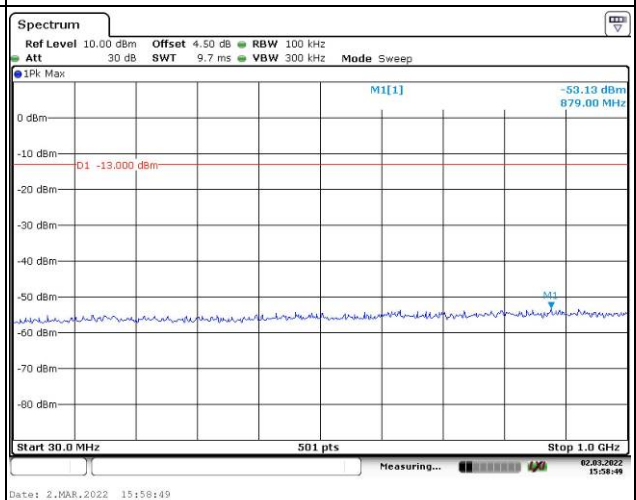
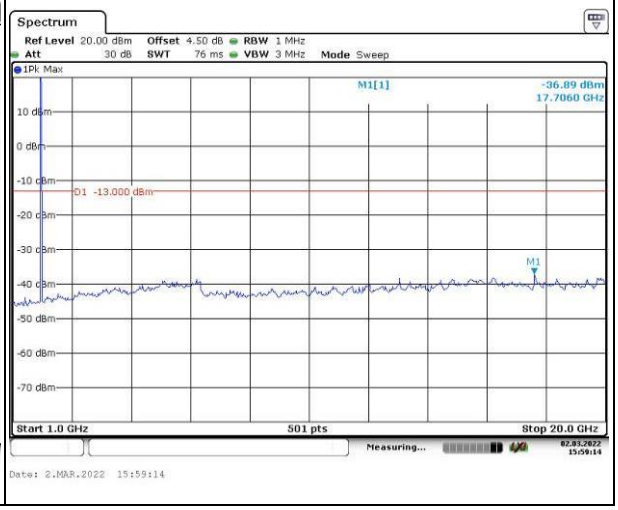
Occupied Bandwidth		
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

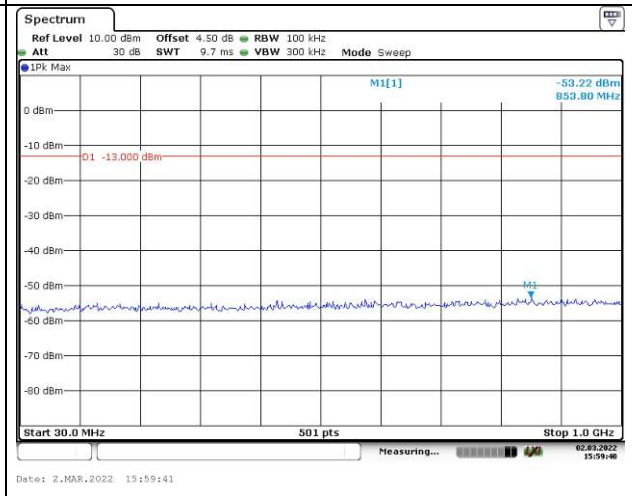
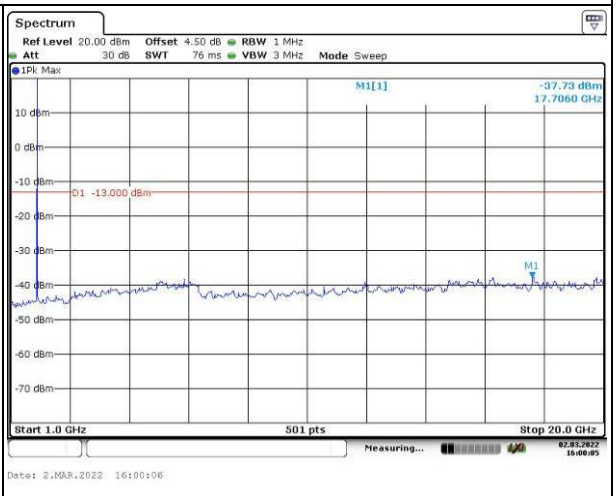
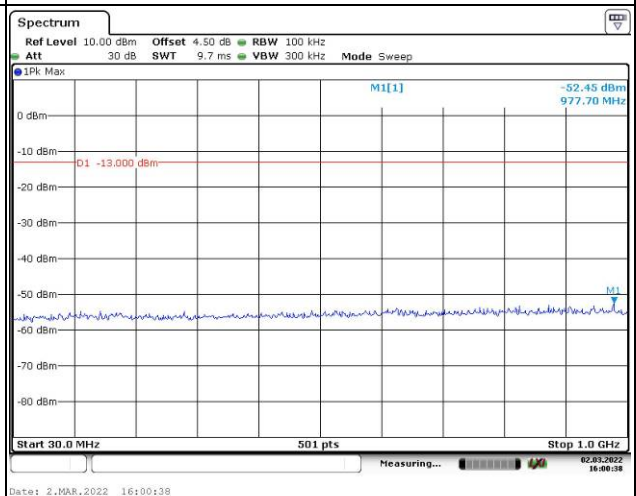
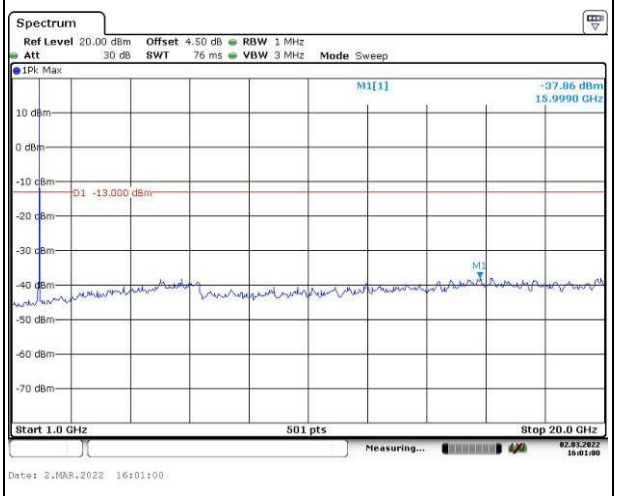
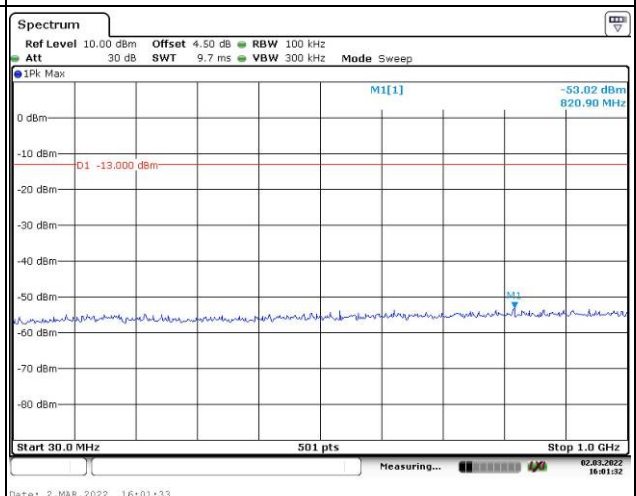
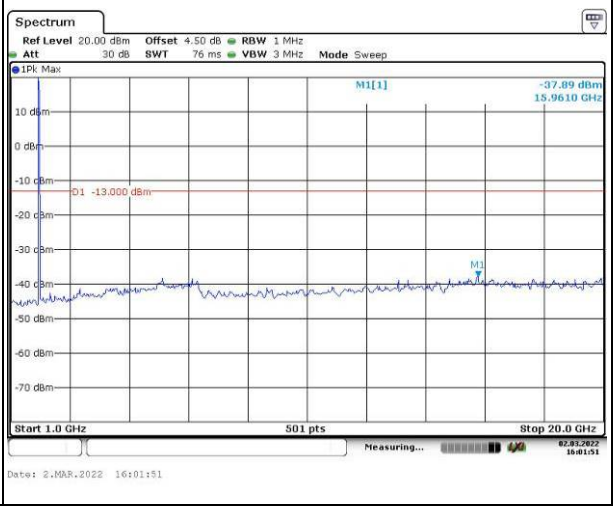
Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

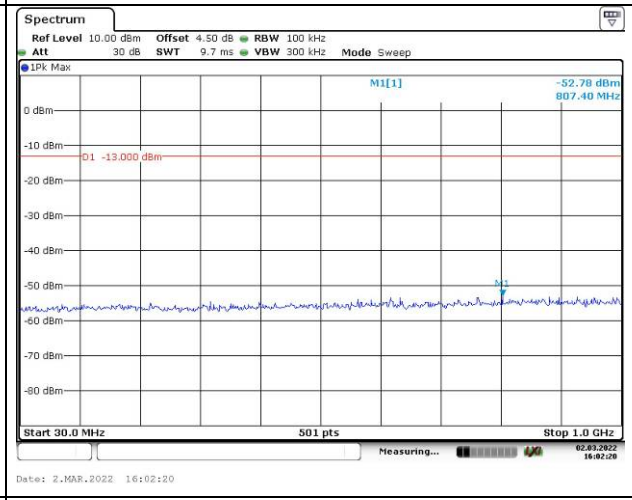
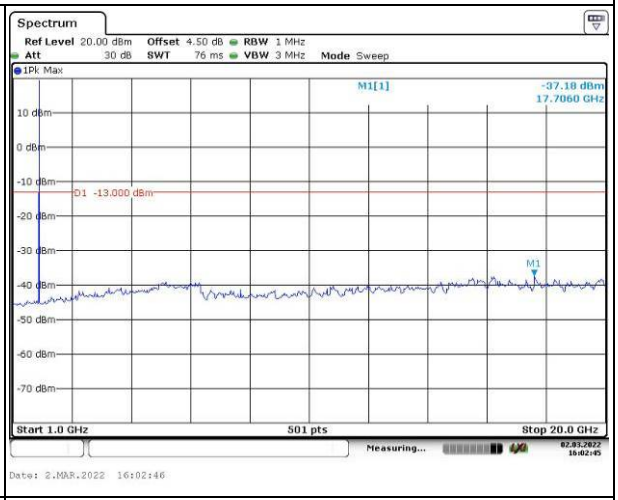
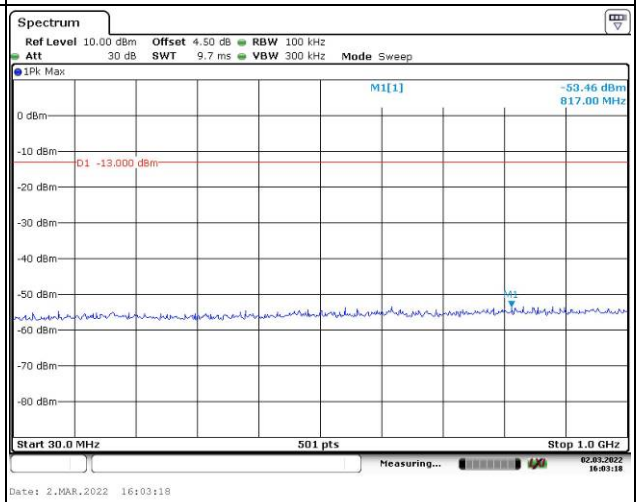
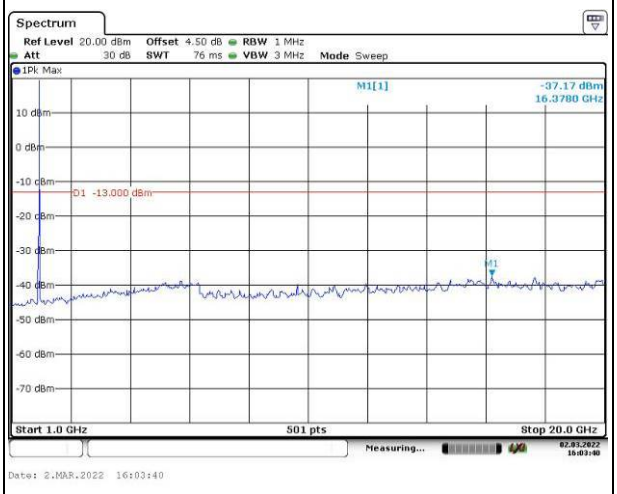
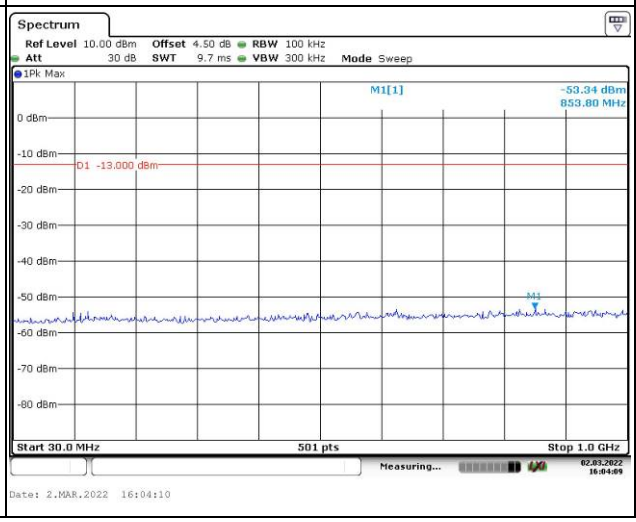
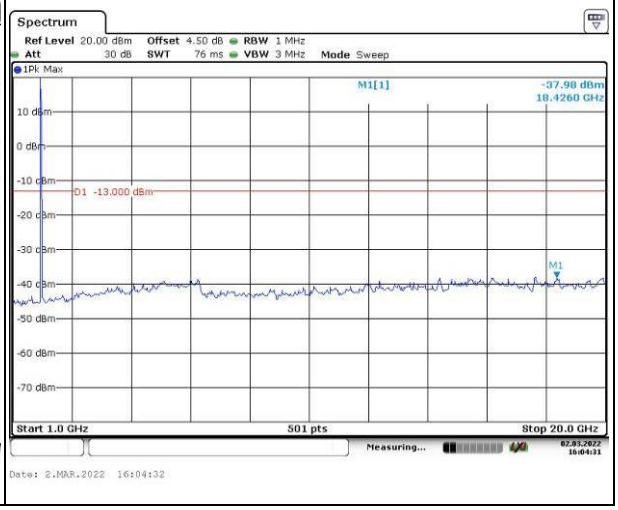
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

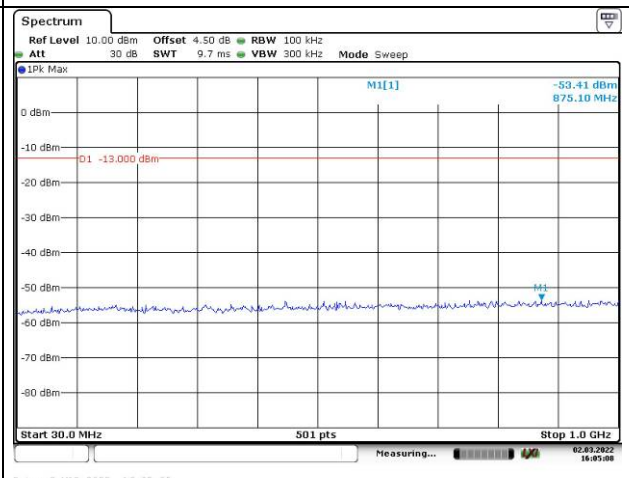
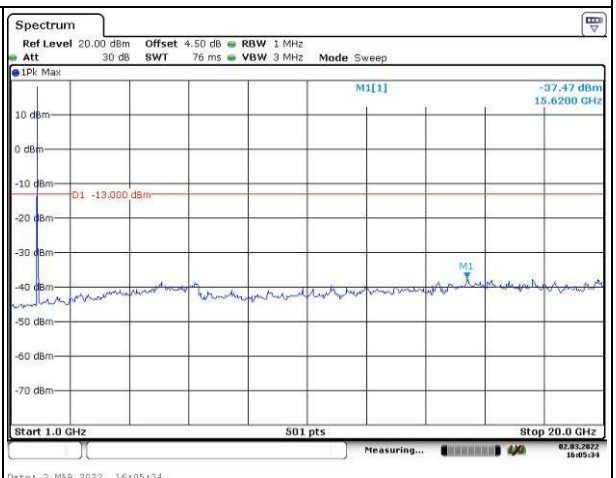
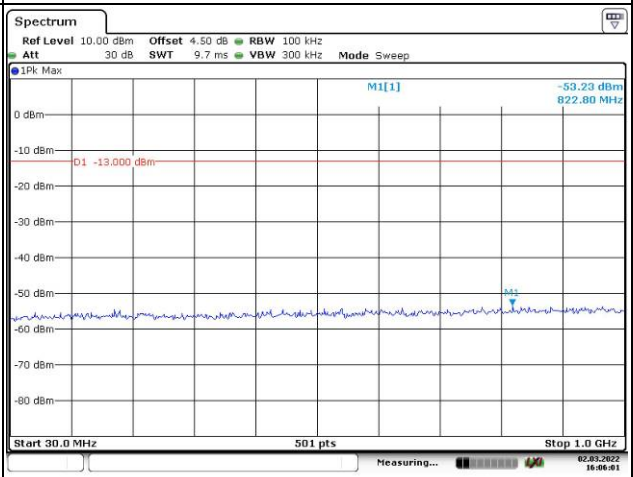
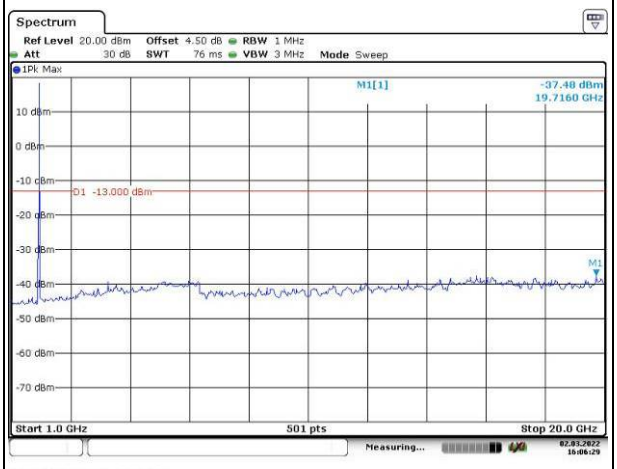
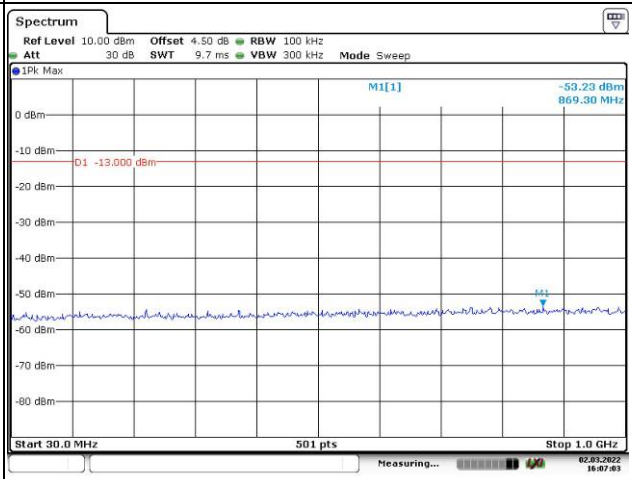
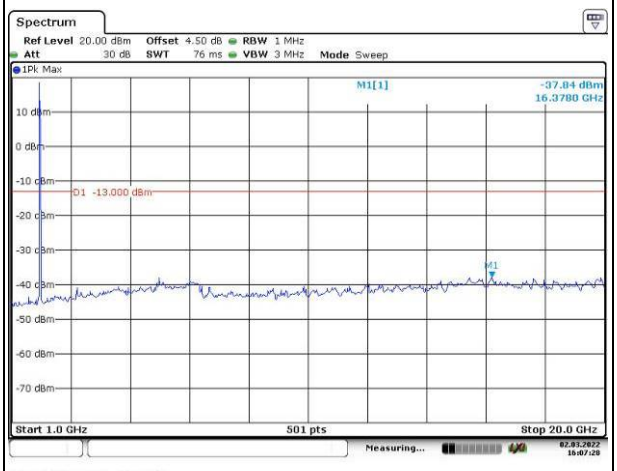
Occupied Bandwidth		
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

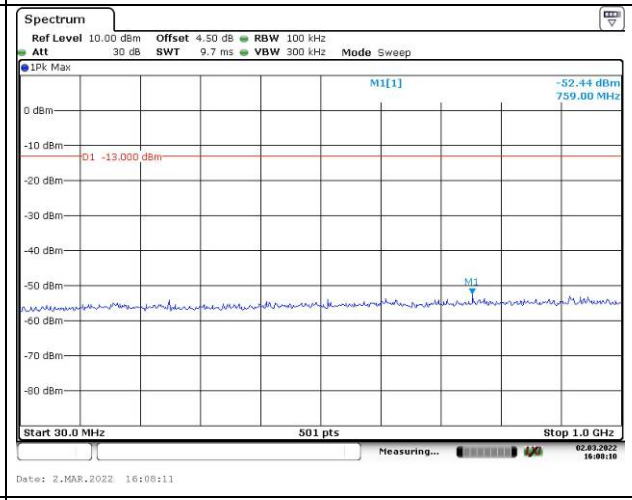
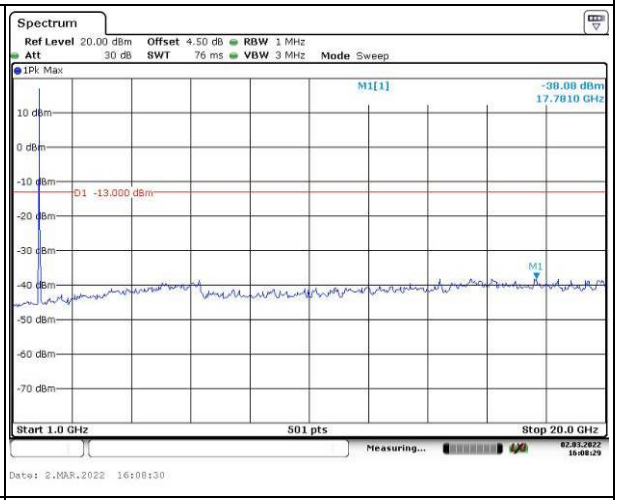
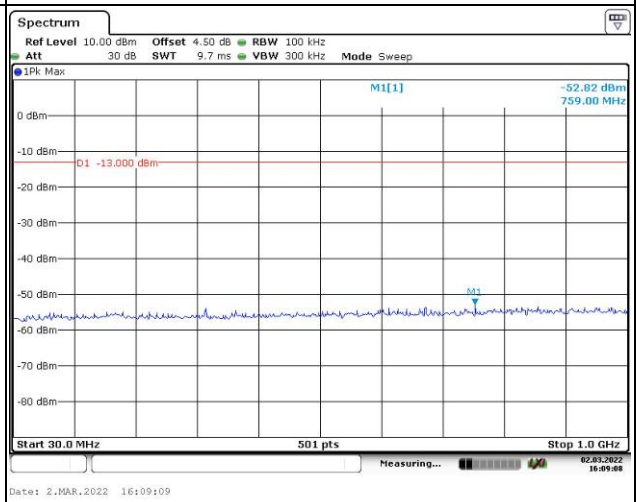
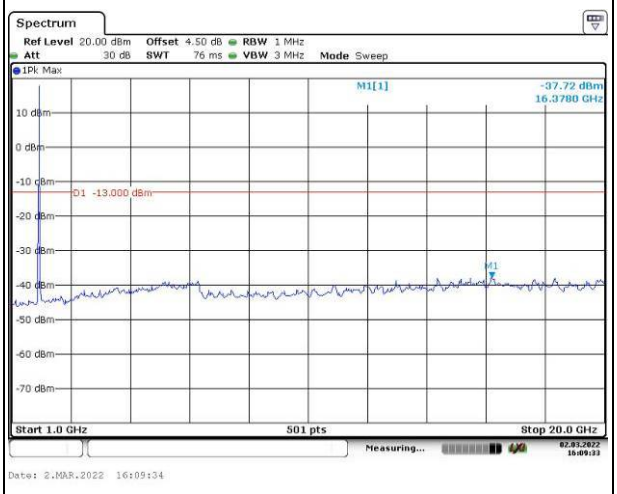
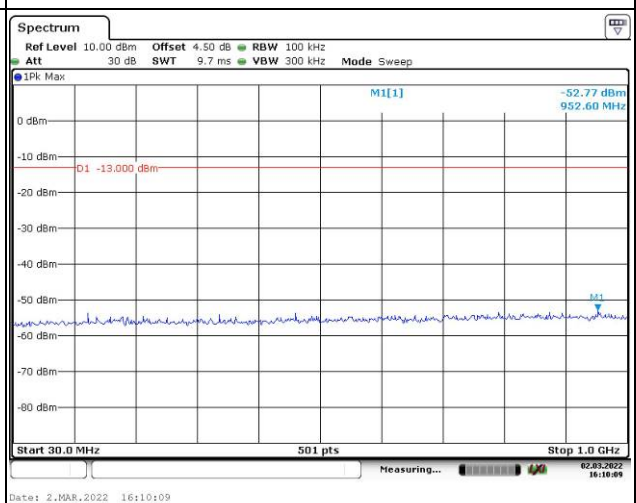
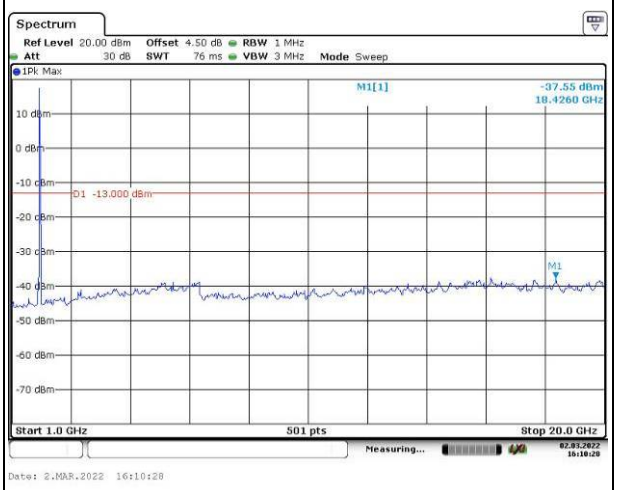
Occupied Bandwidth		
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

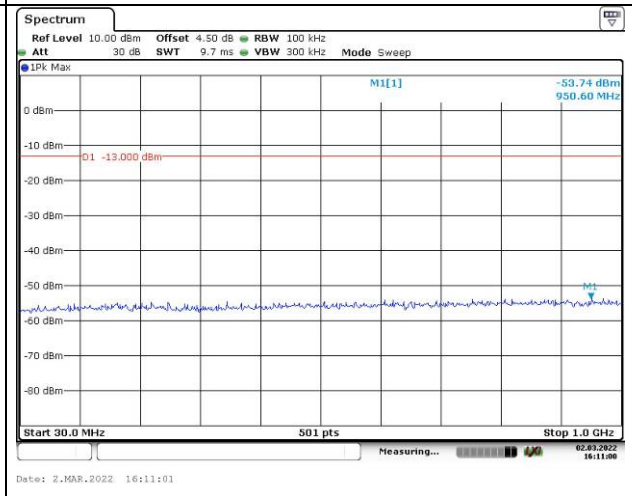
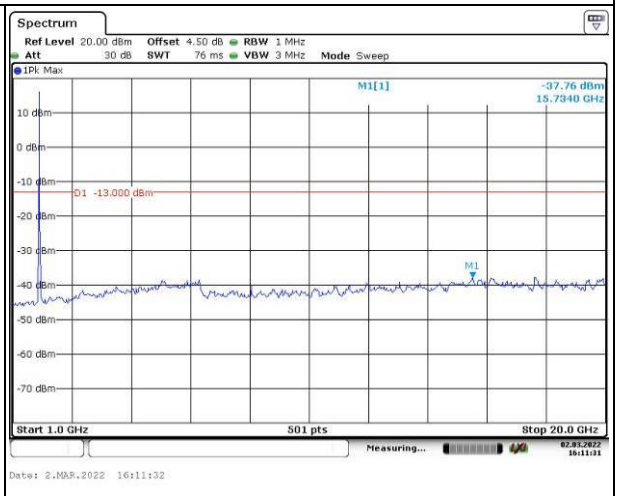
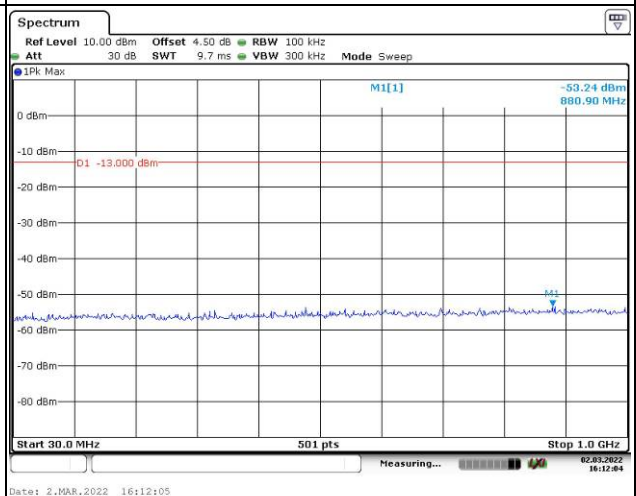
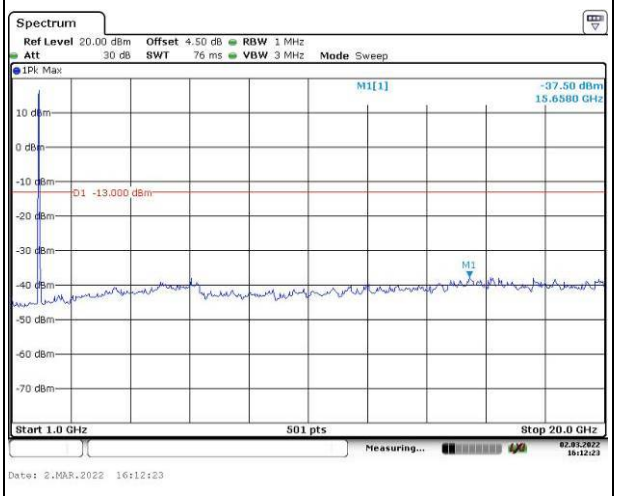
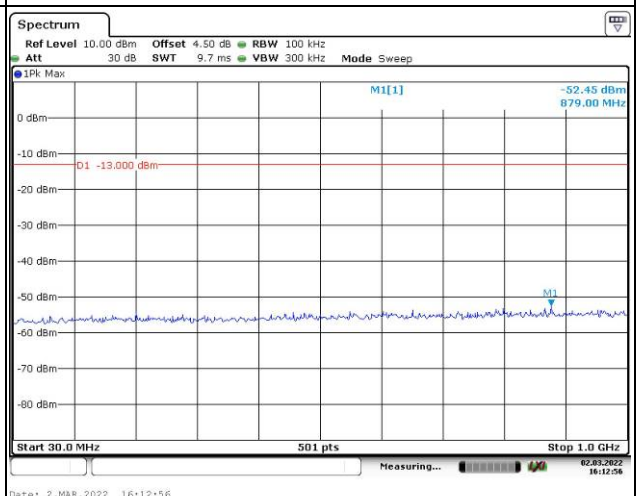
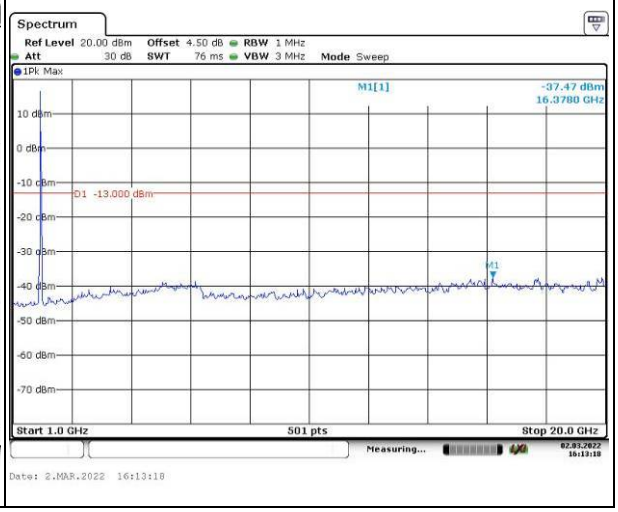
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

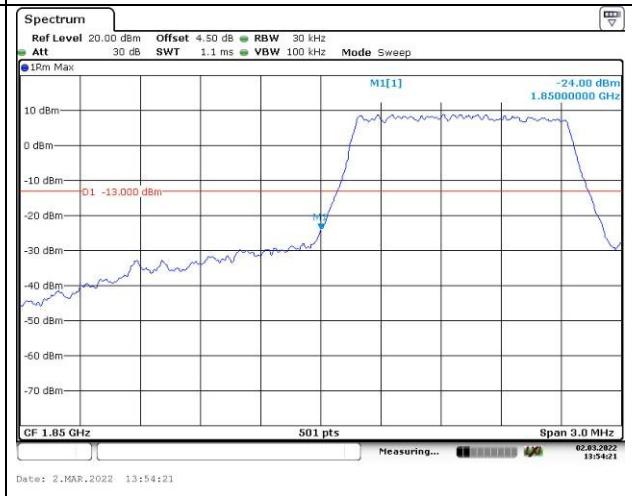
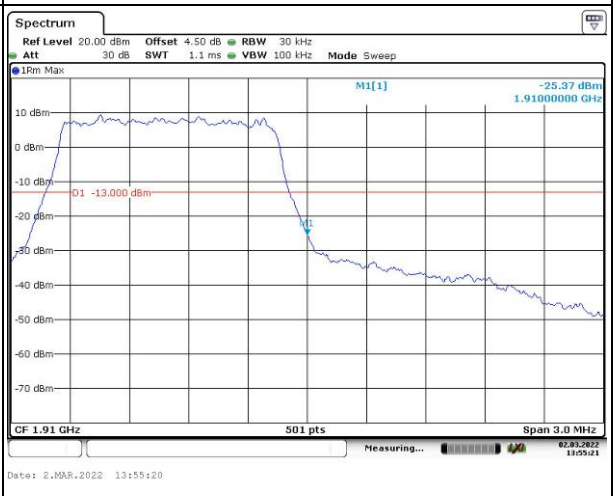
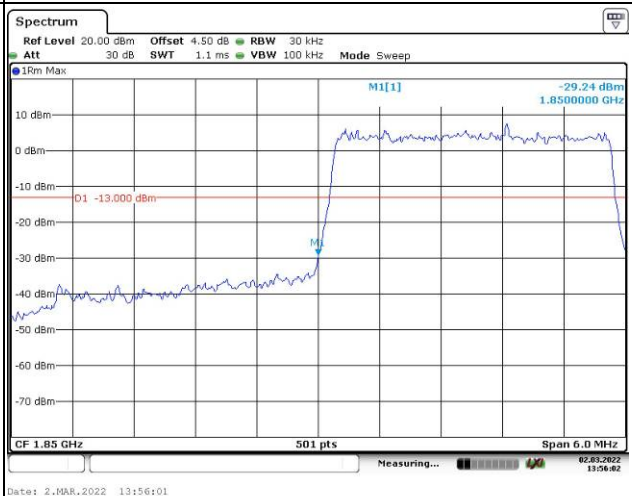
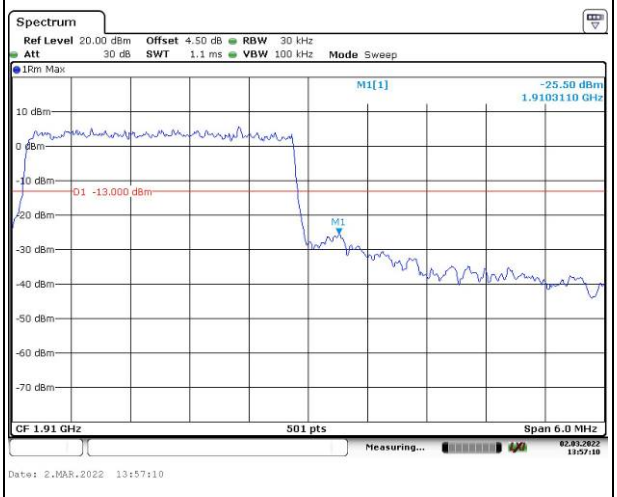
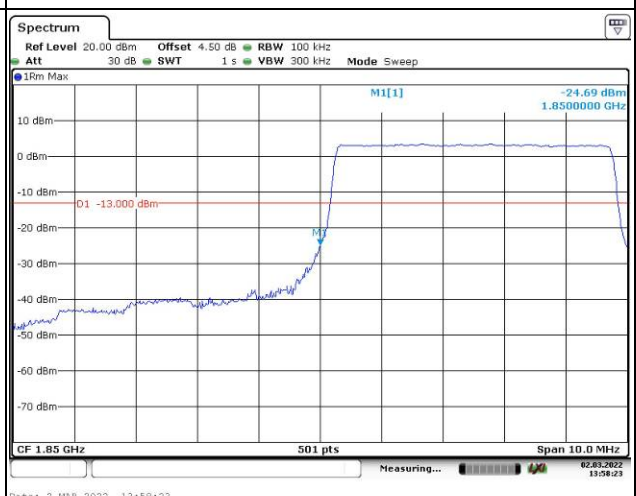
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

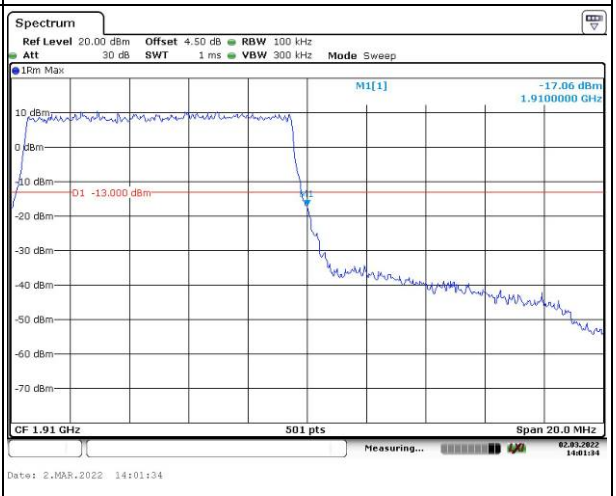
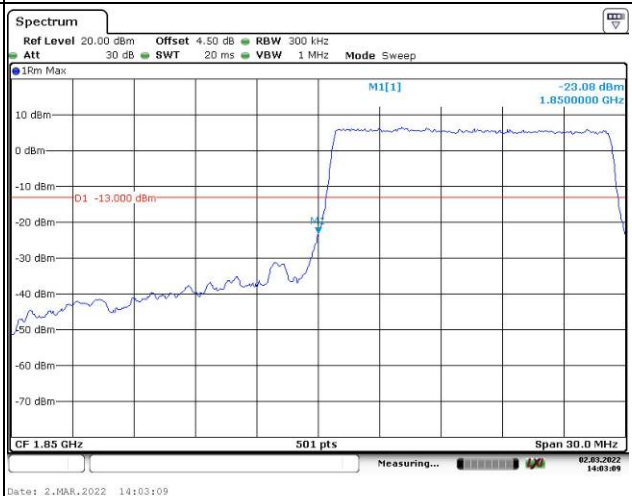
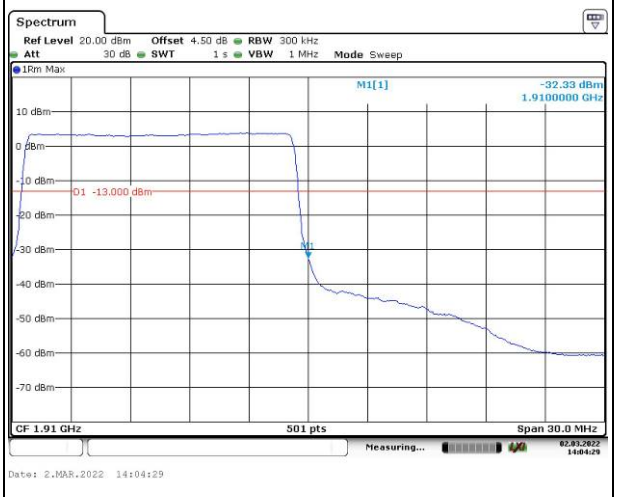
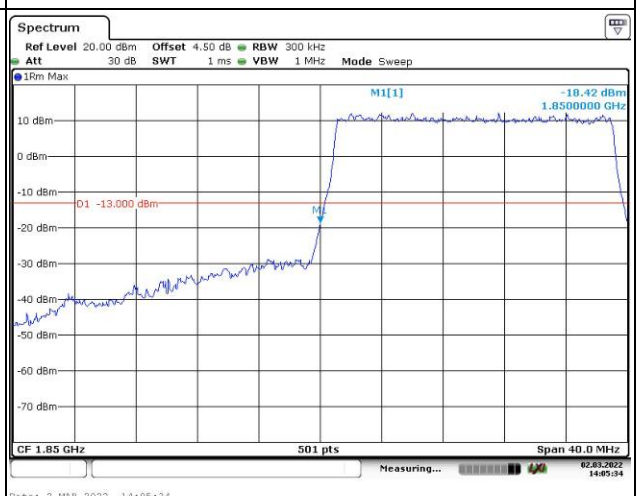
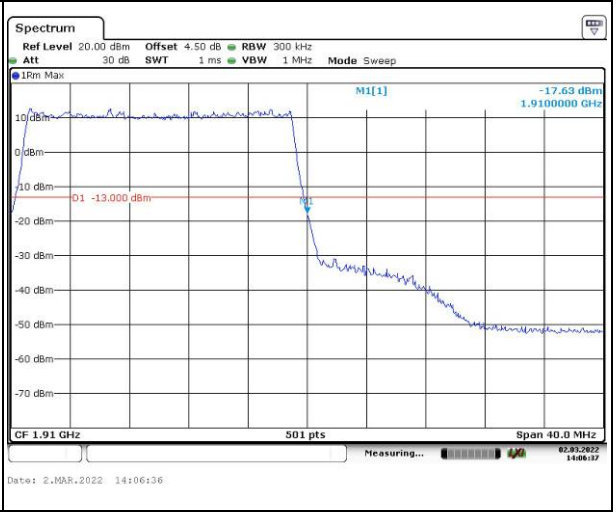
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

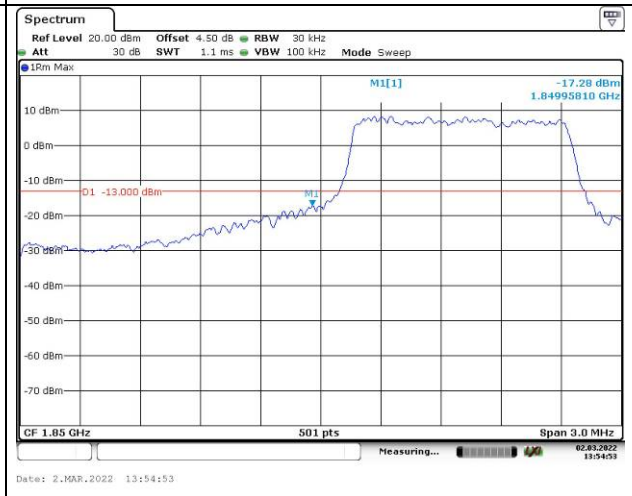
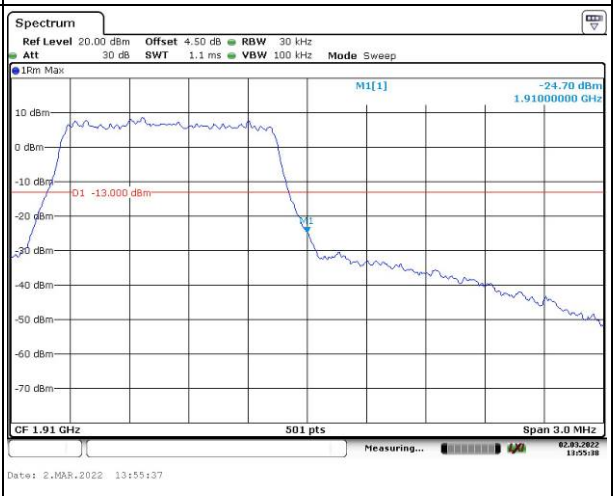
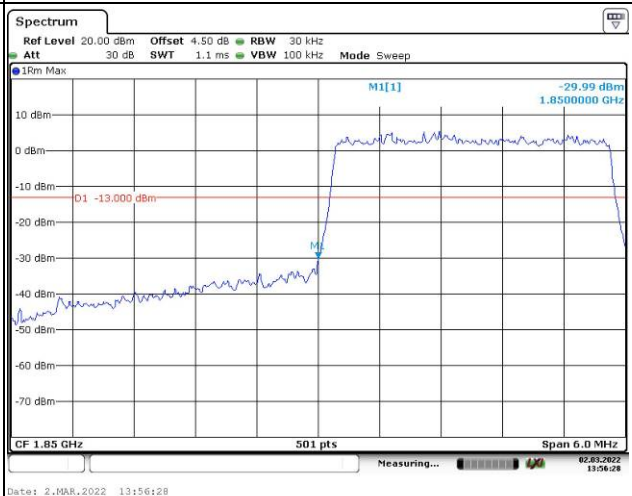
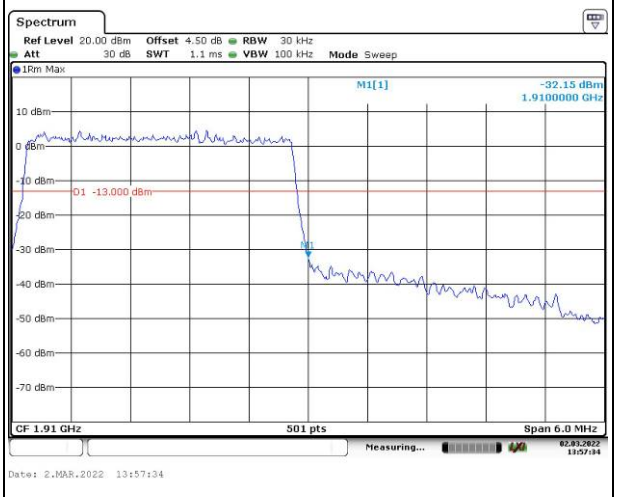
Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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

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

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