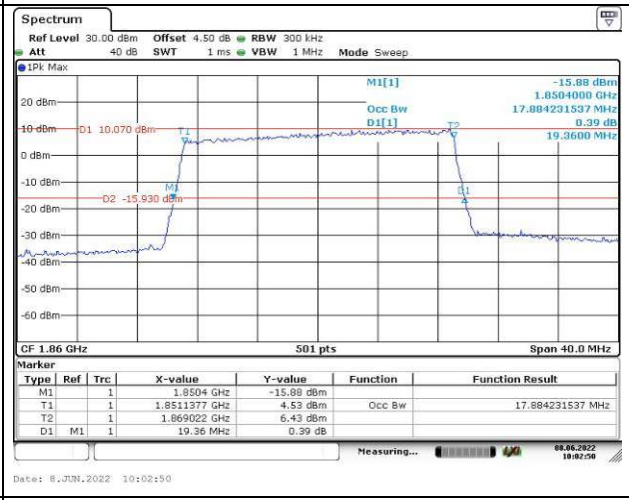
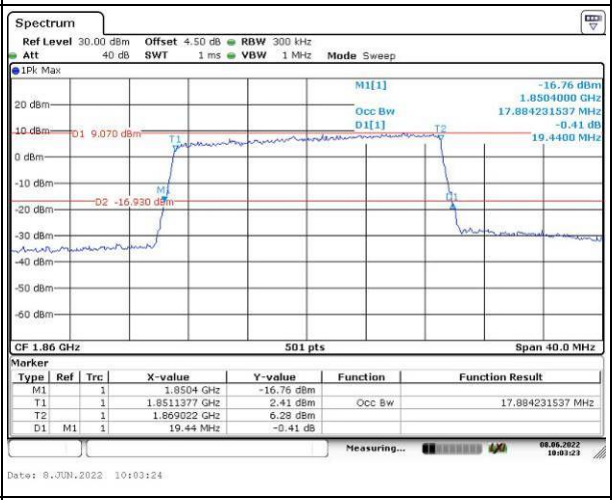
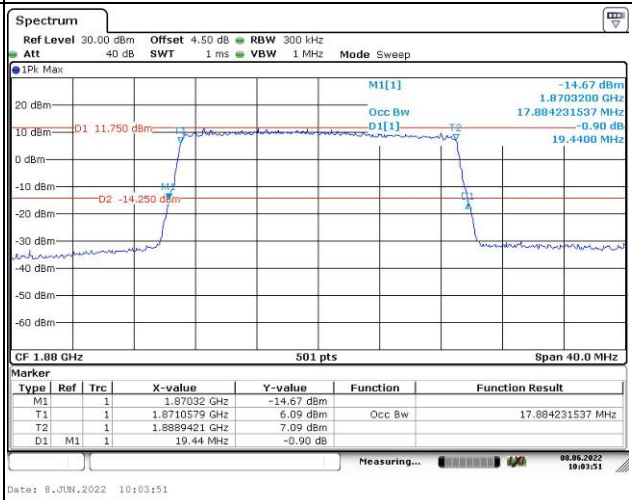
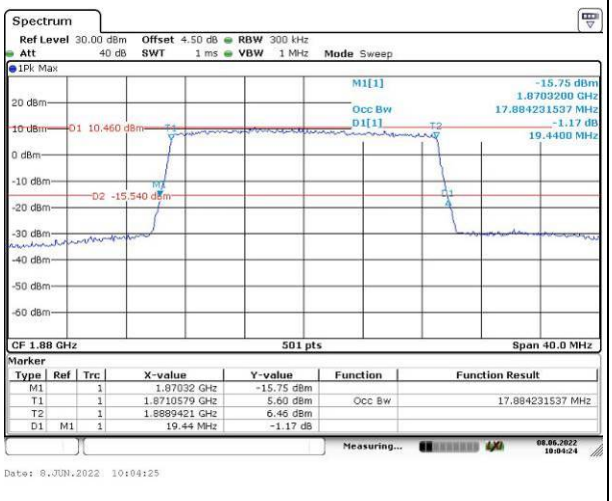
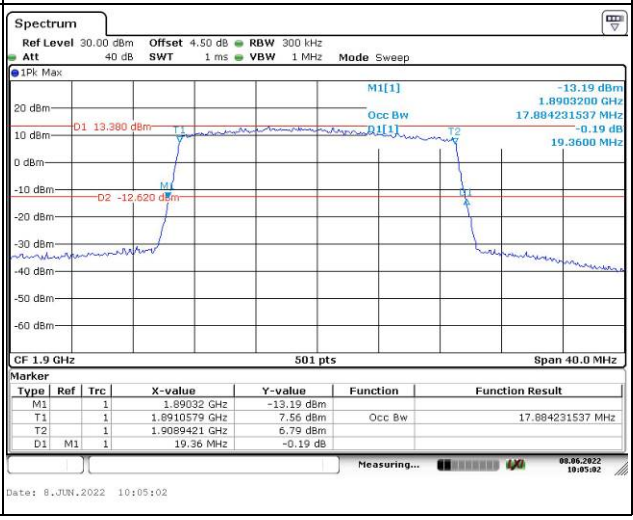
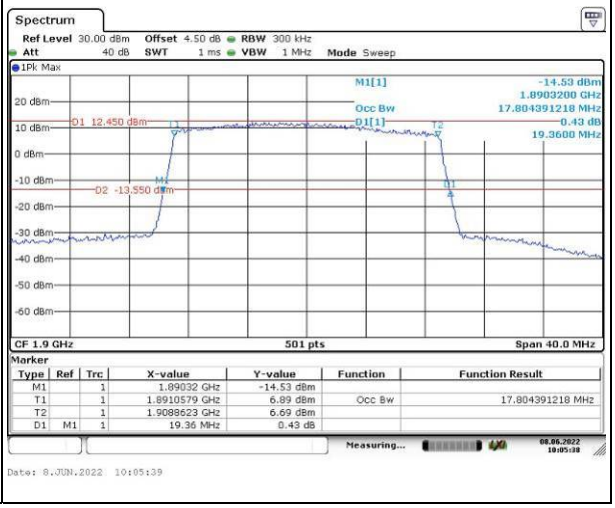
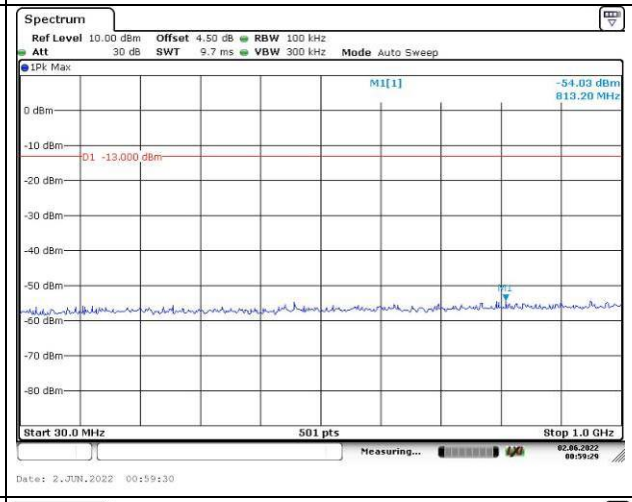
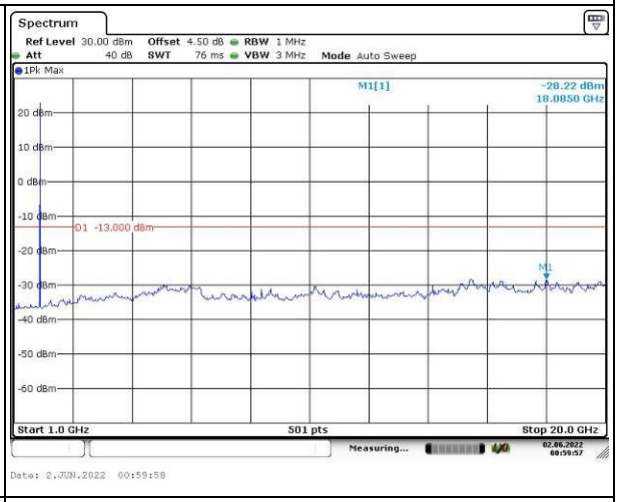
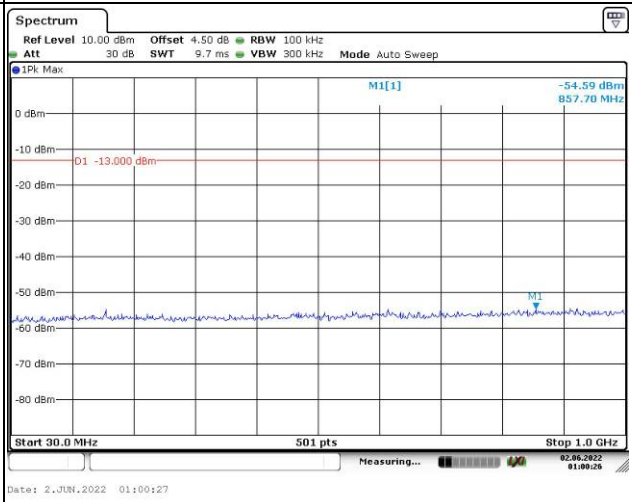
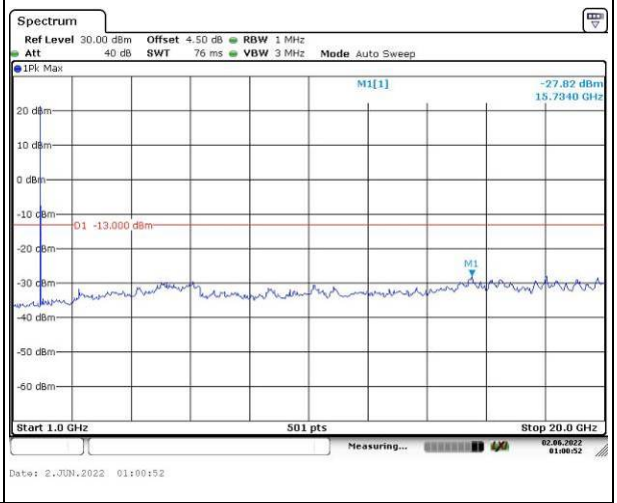
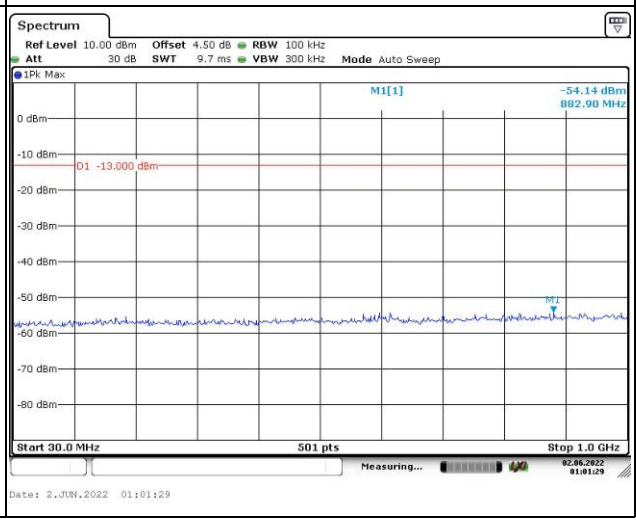
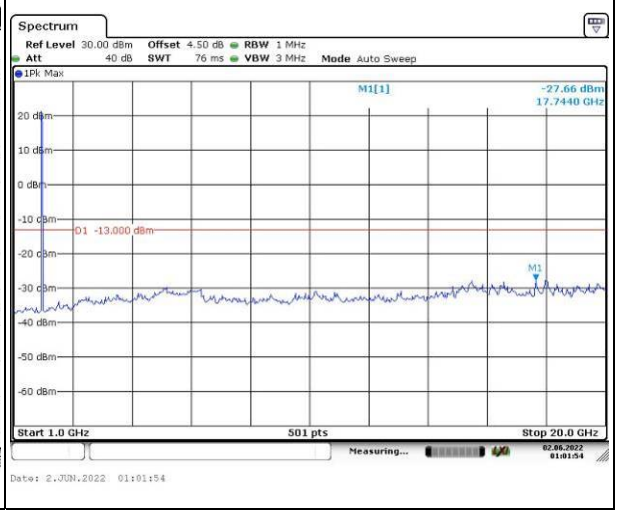
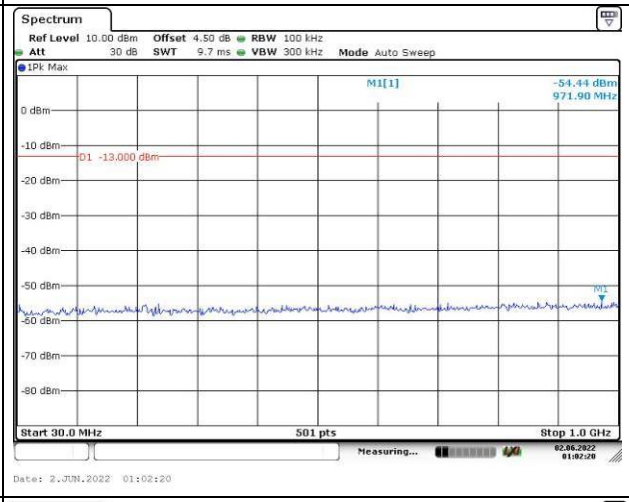
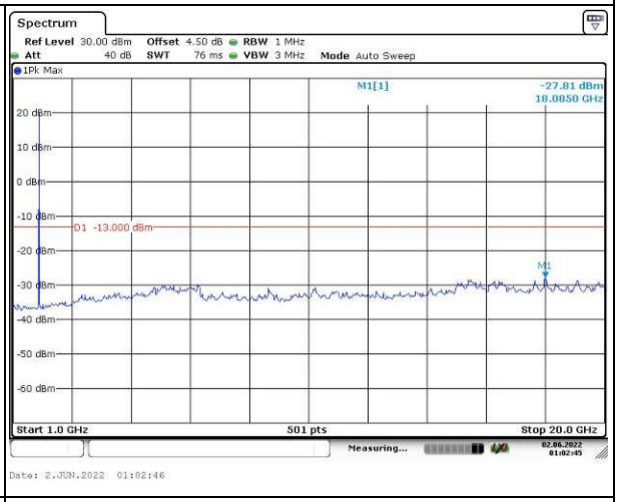
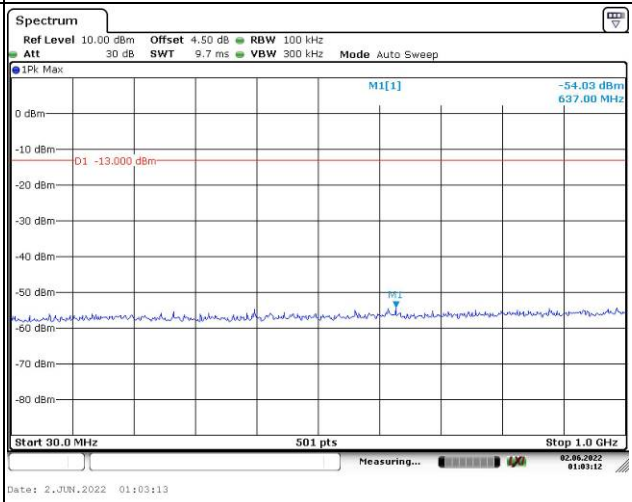
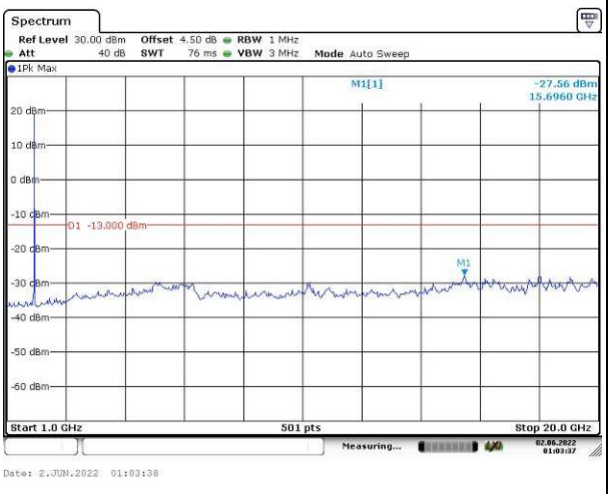
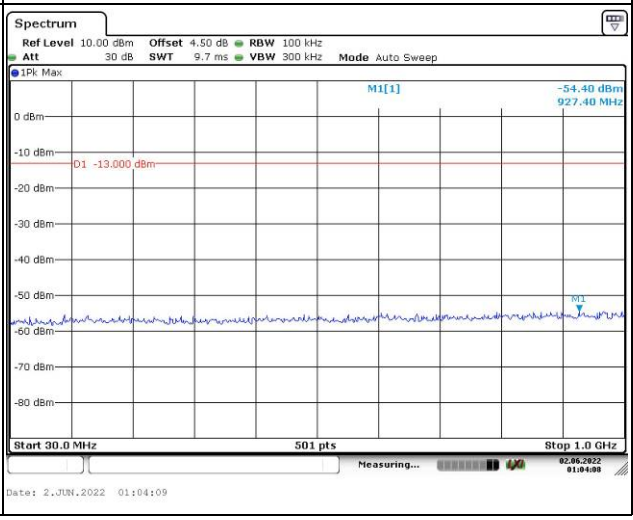
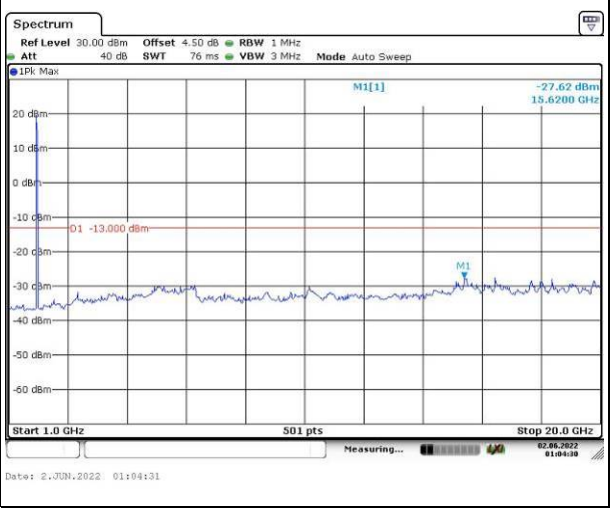
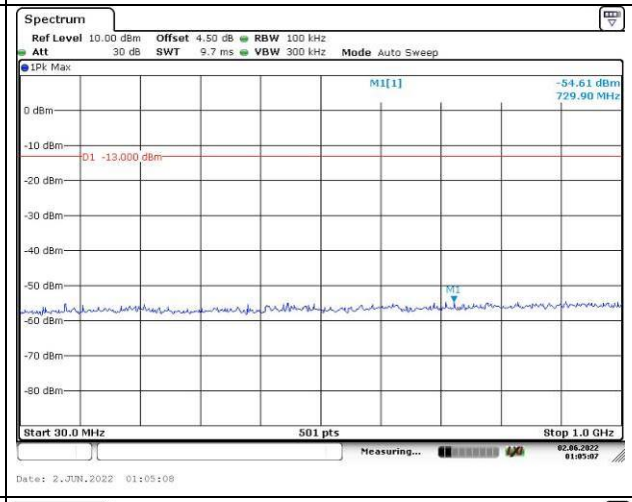
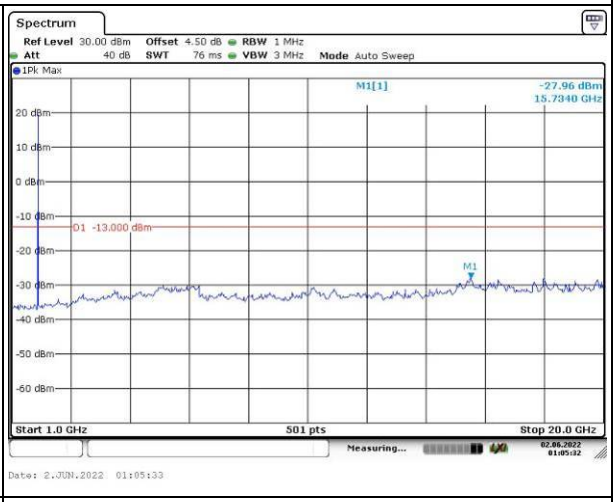
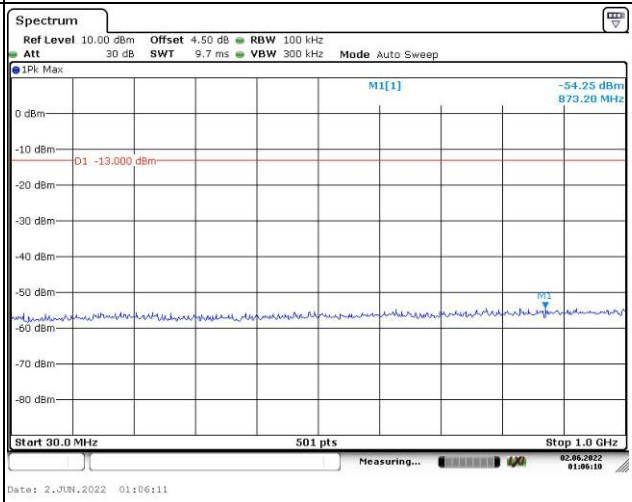
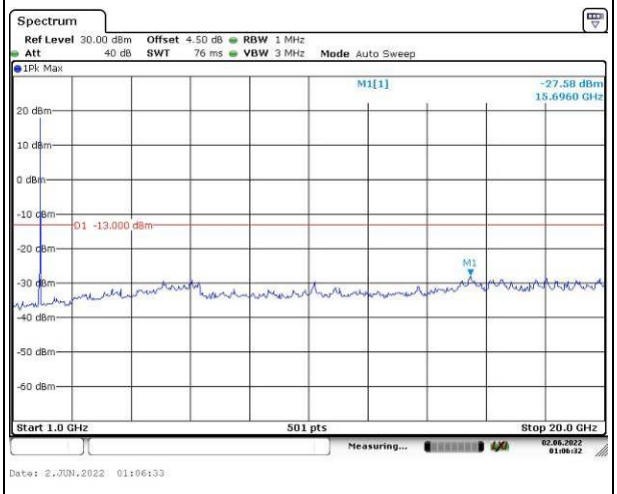
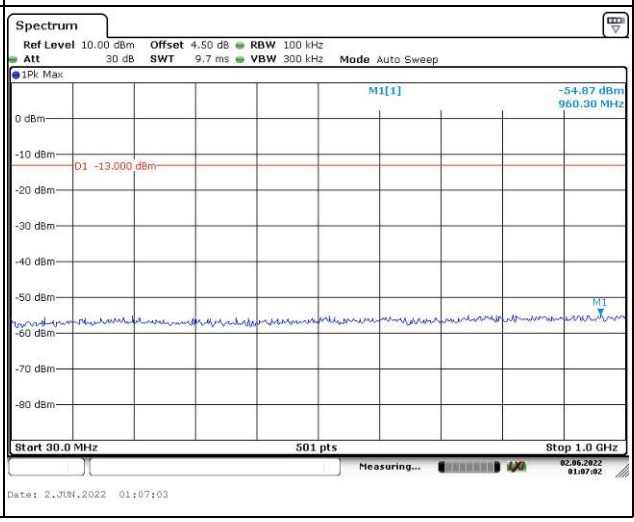
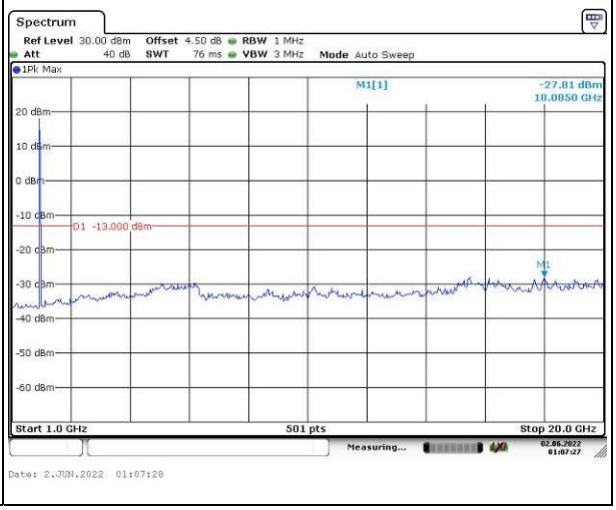
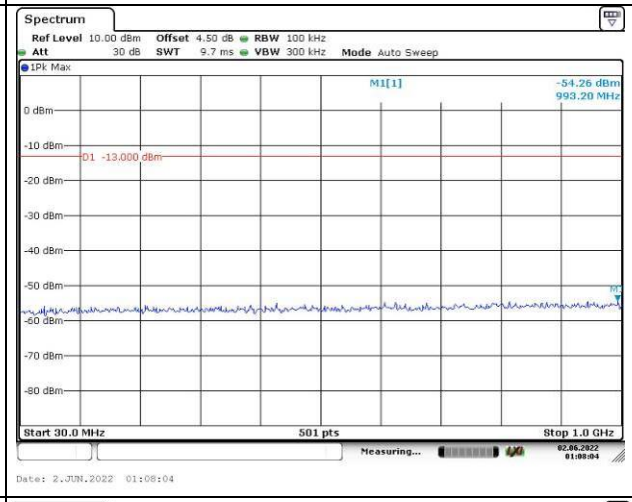
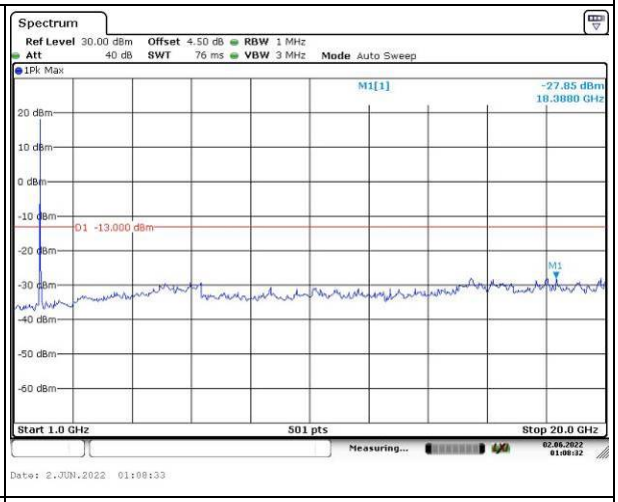
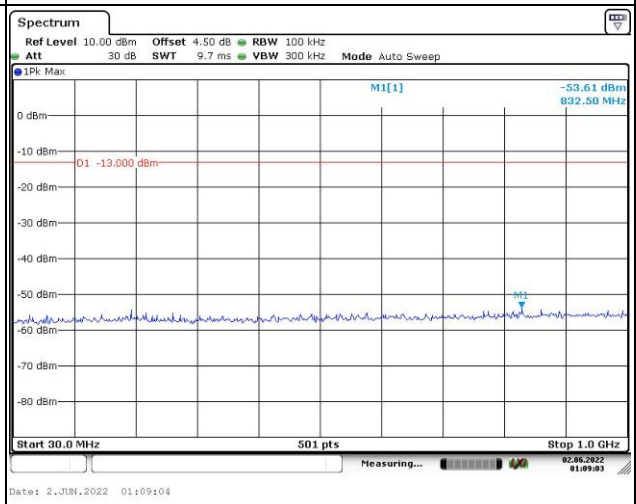
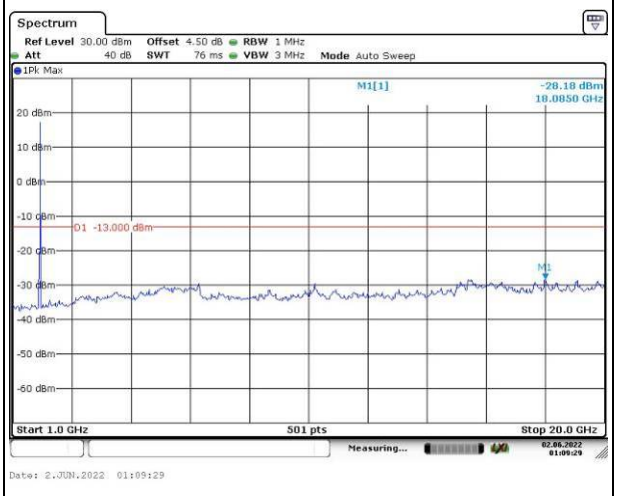
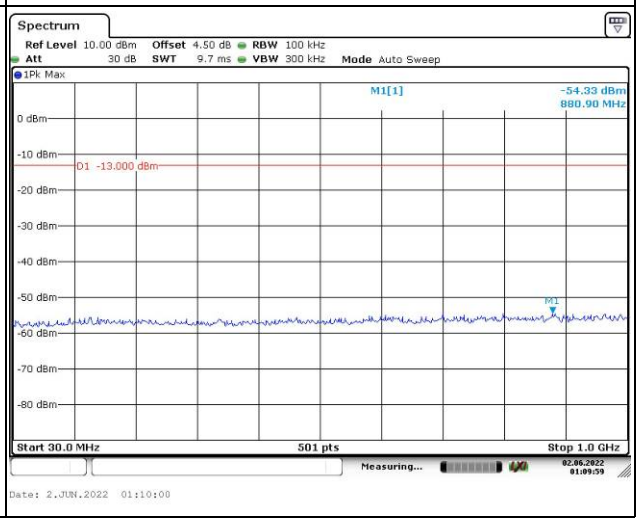
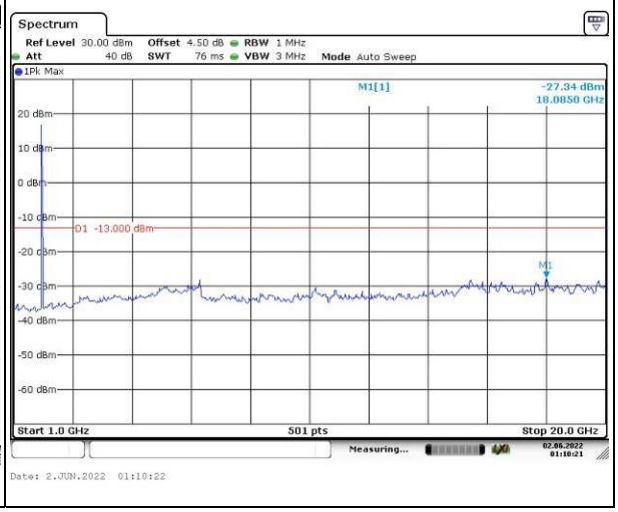
Occupied Bandwidth

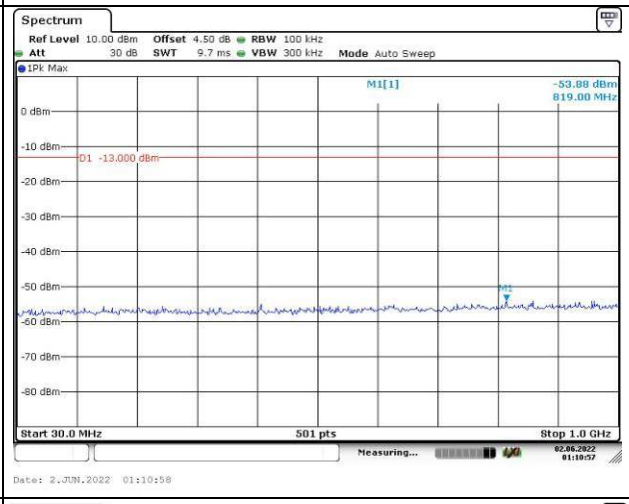
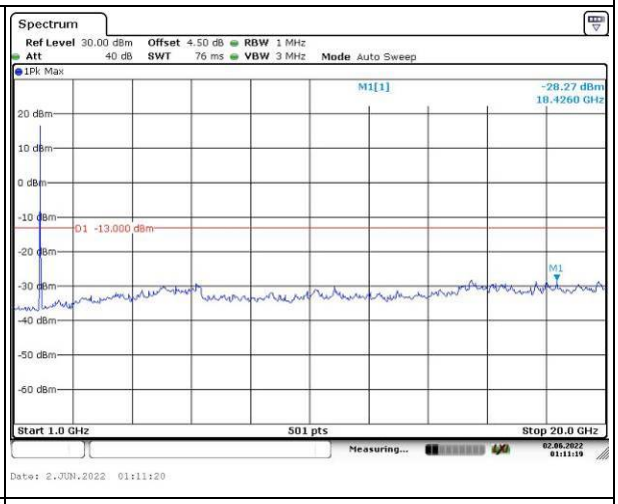
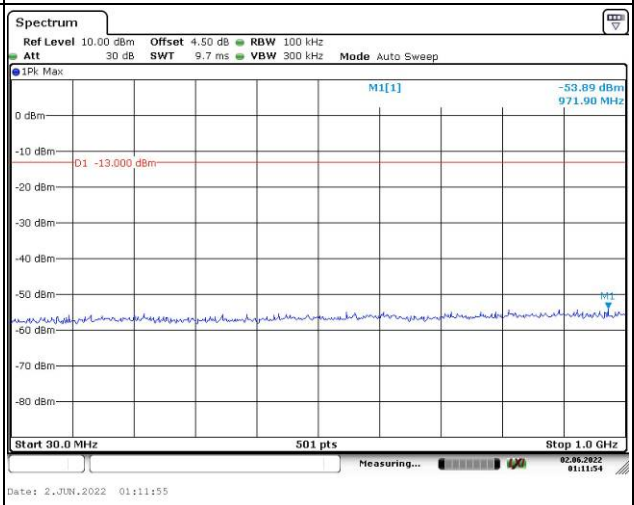
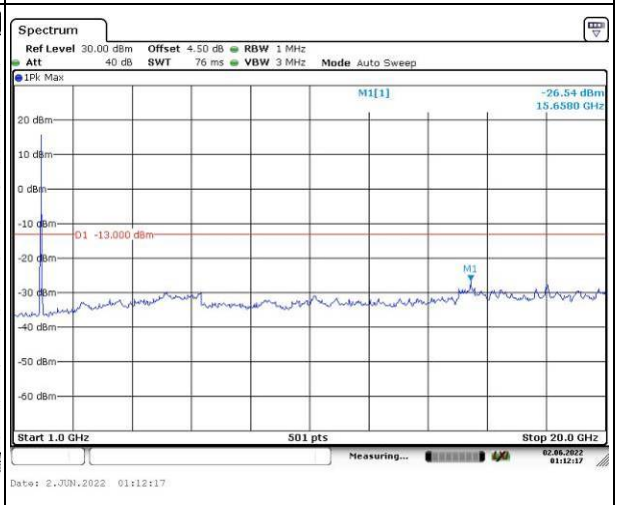
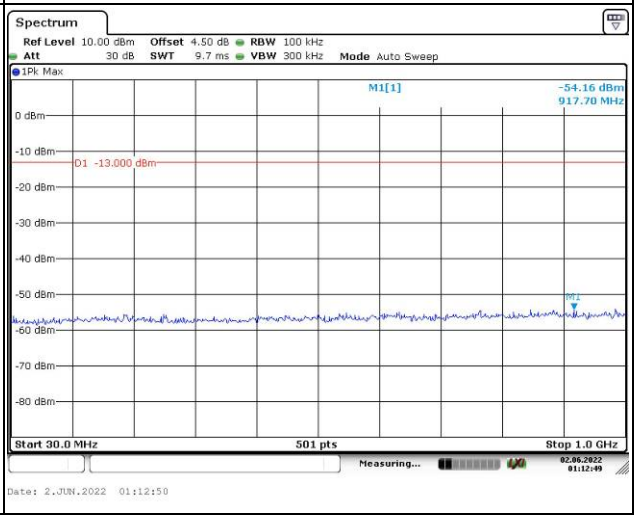
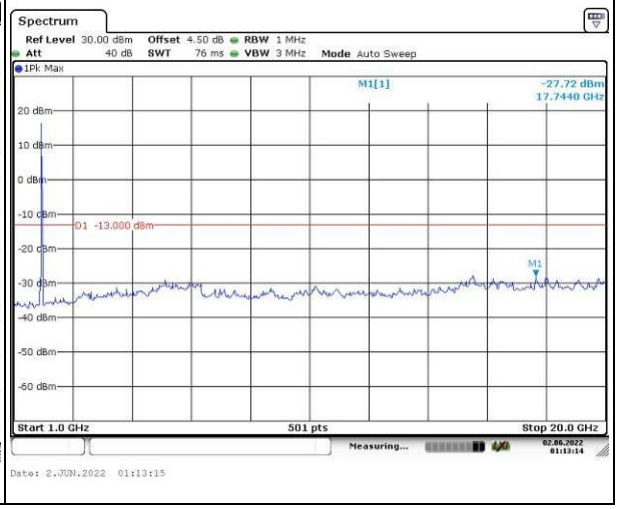
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

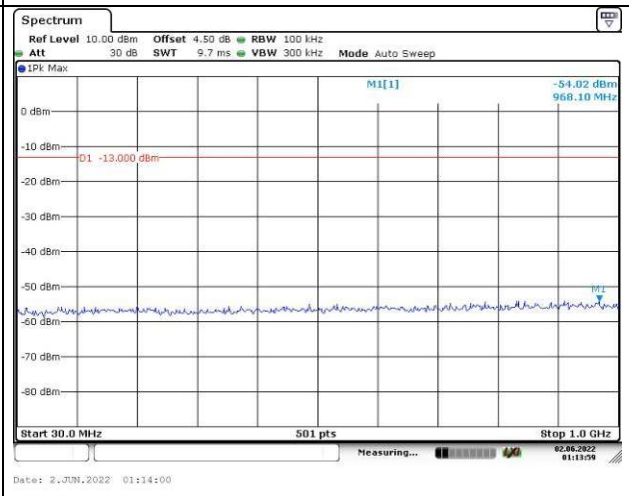
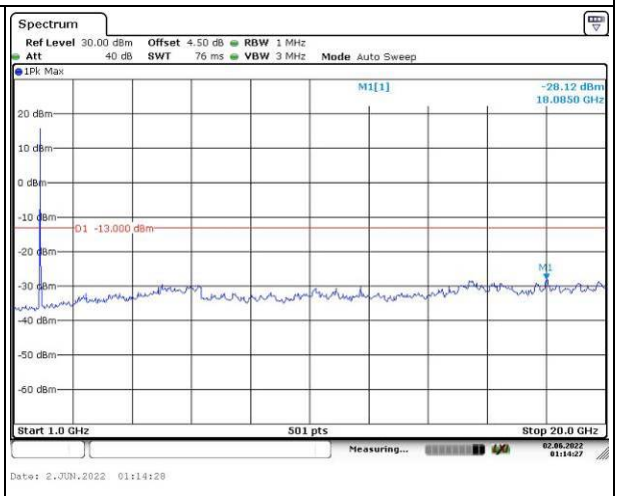
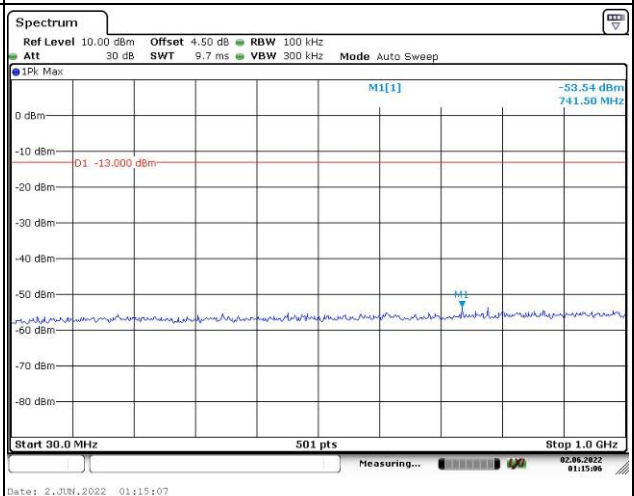
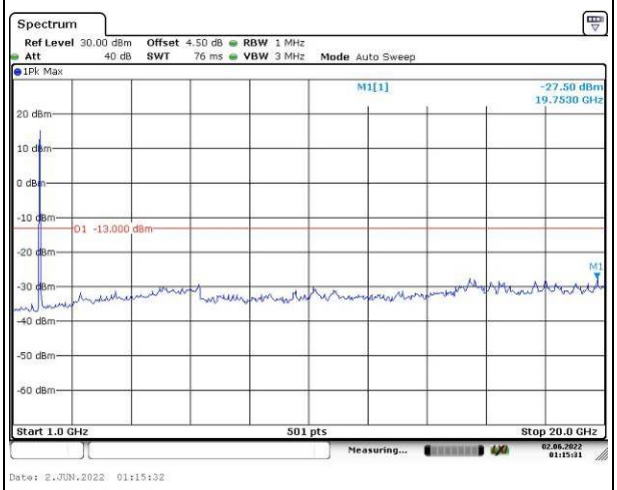
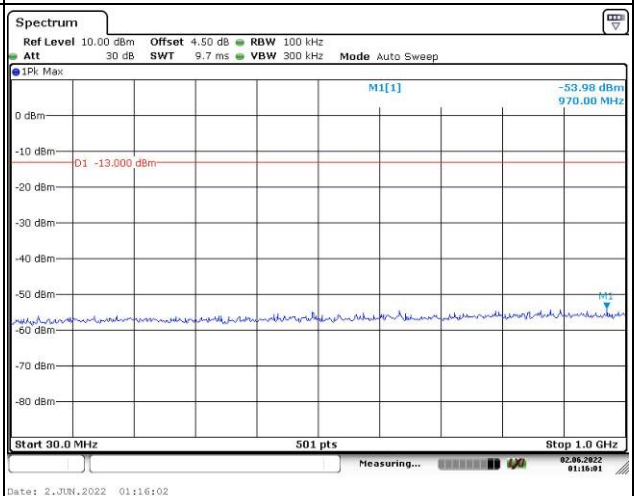
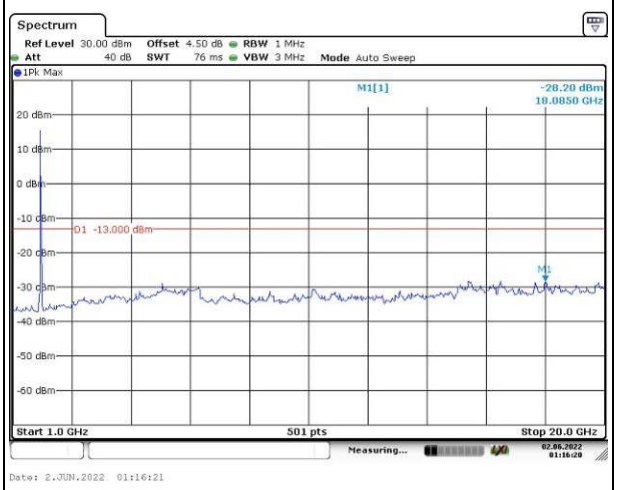
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

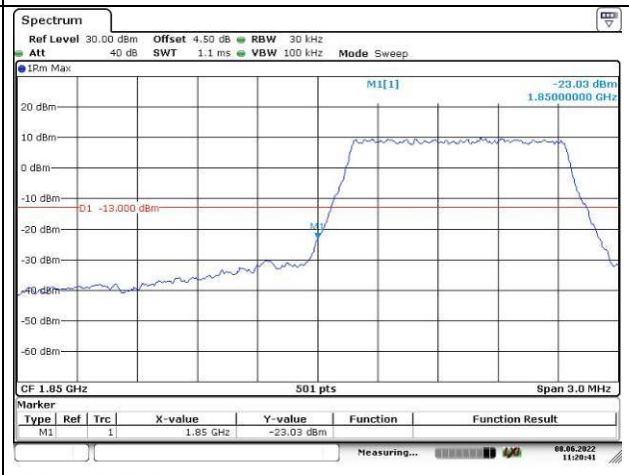
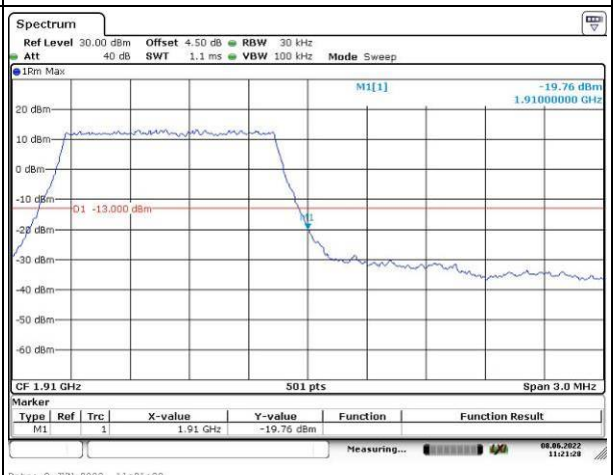
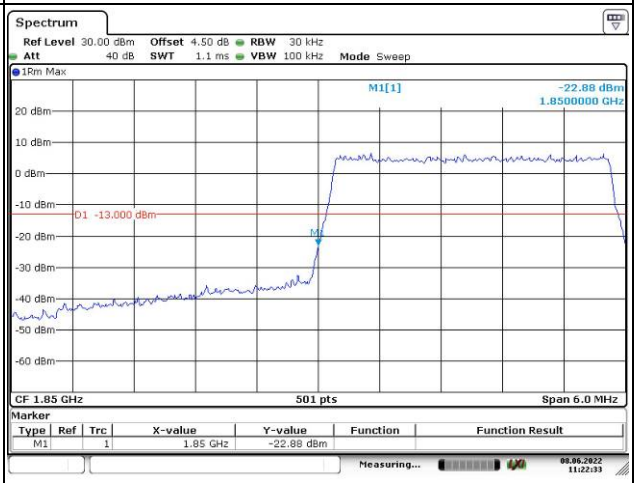
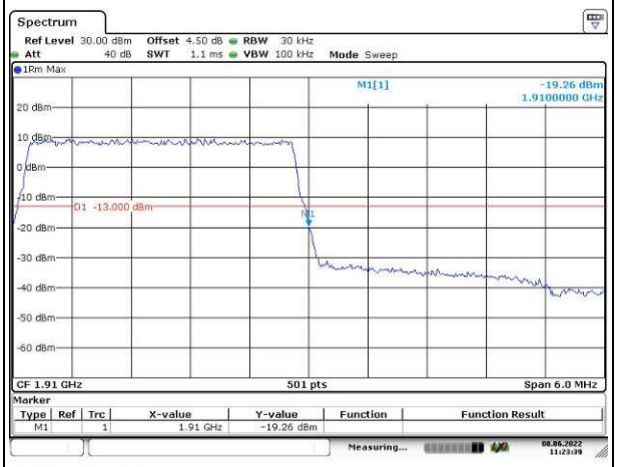
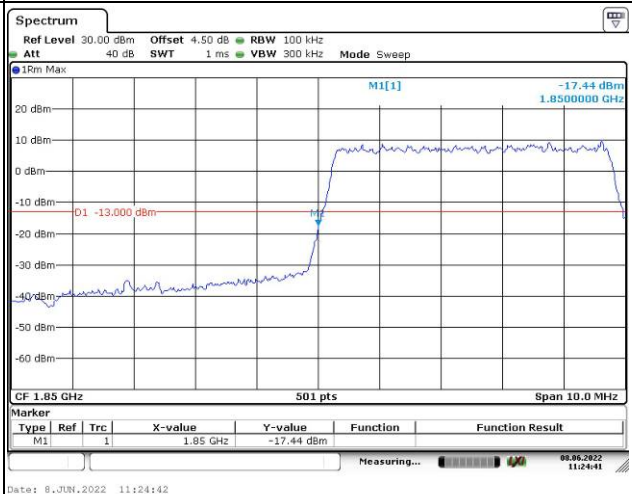
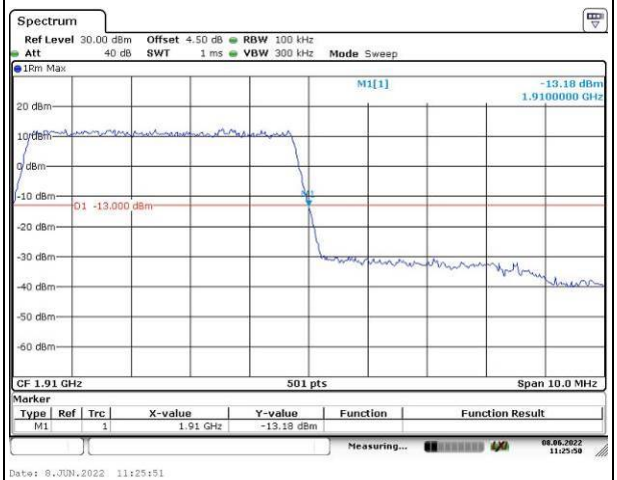
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

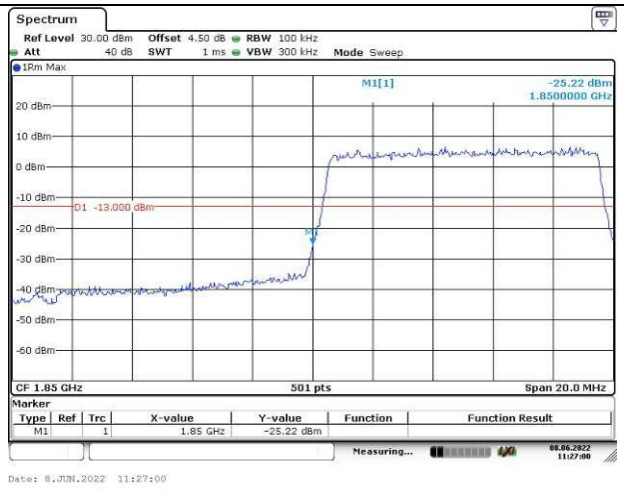
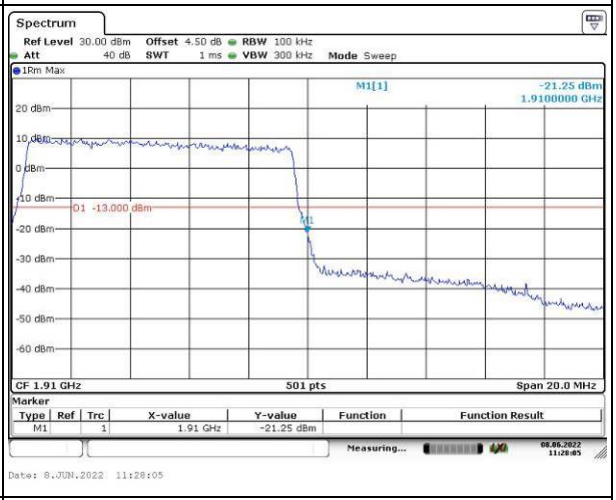
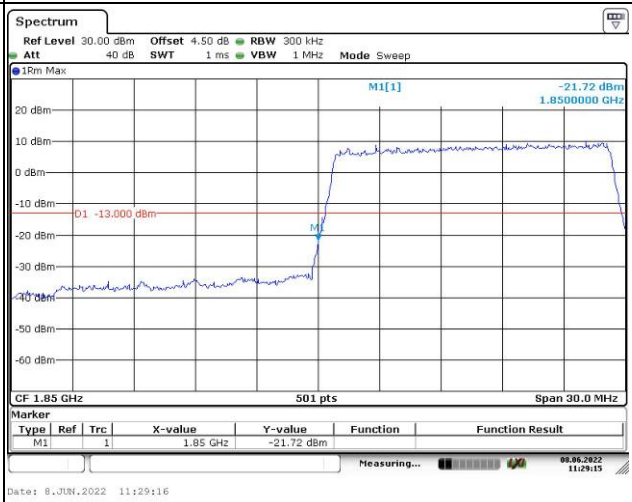
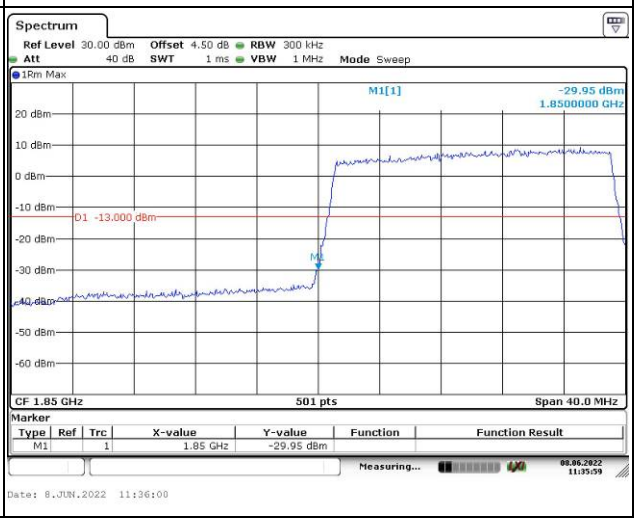
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

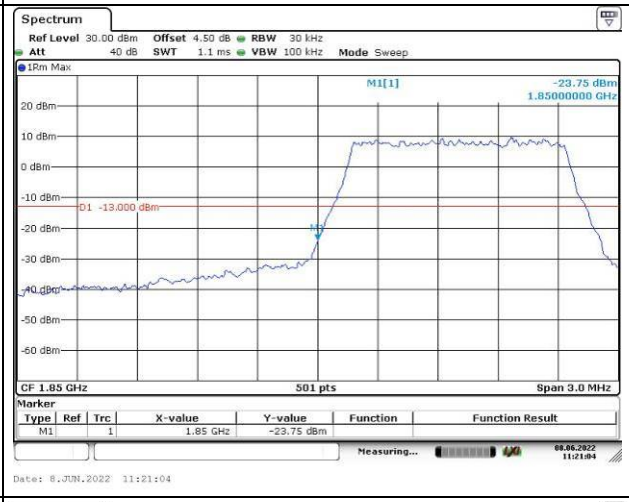
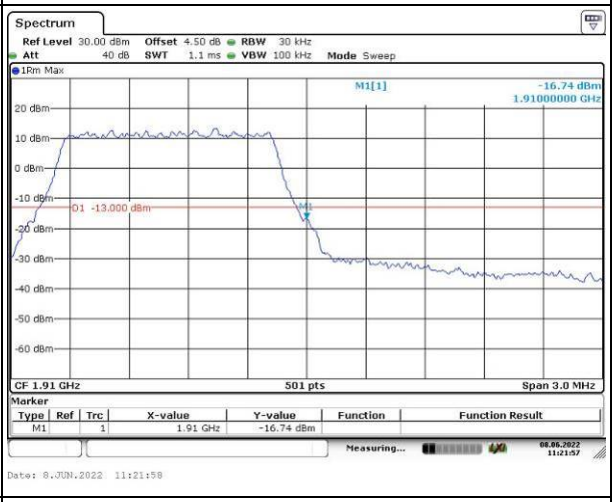
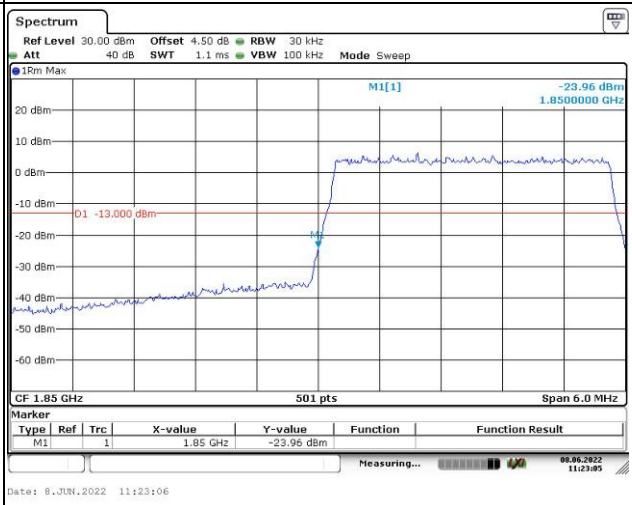
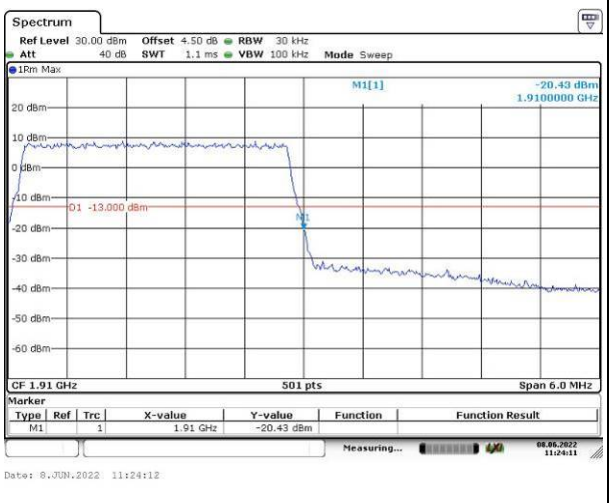
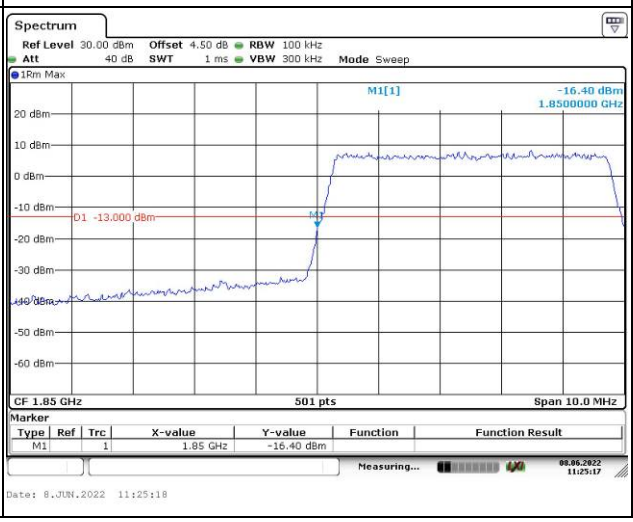
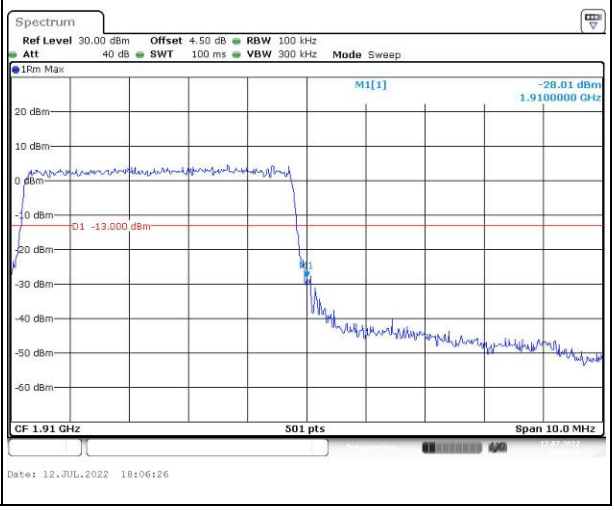
Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

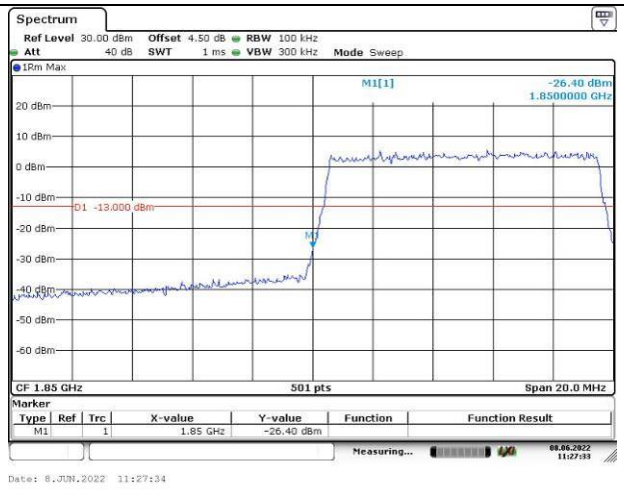
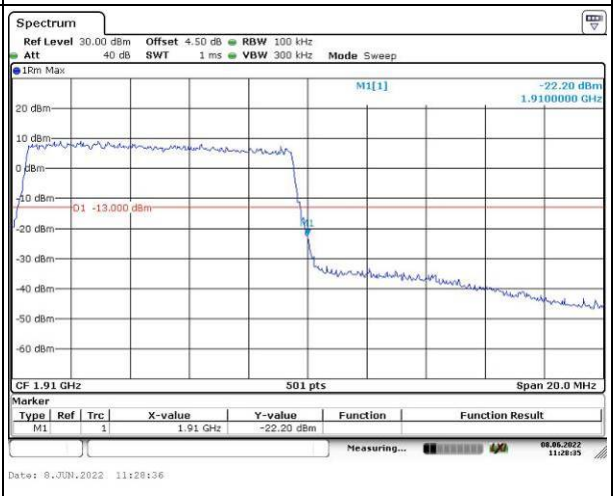
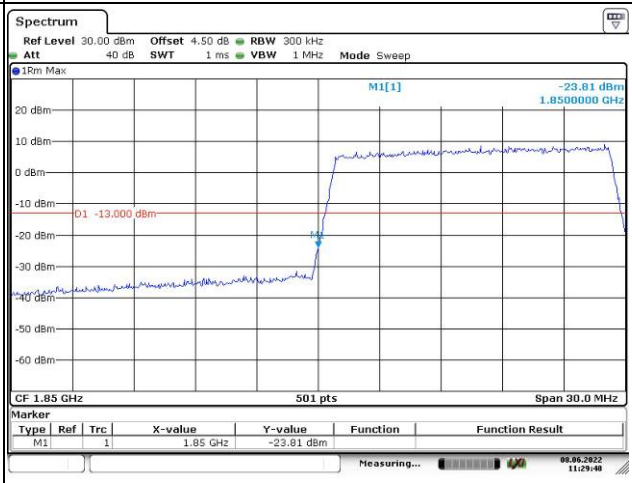
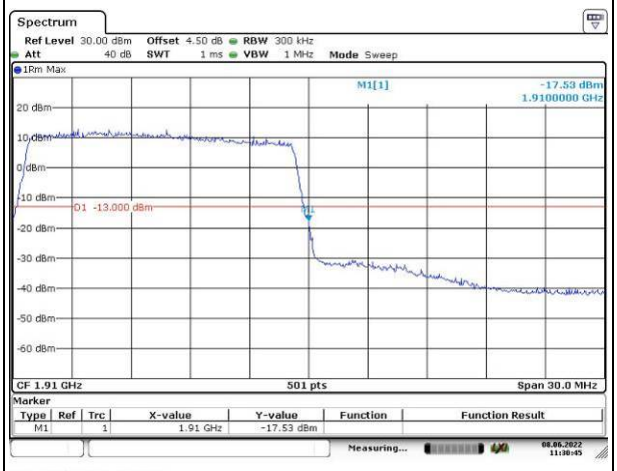
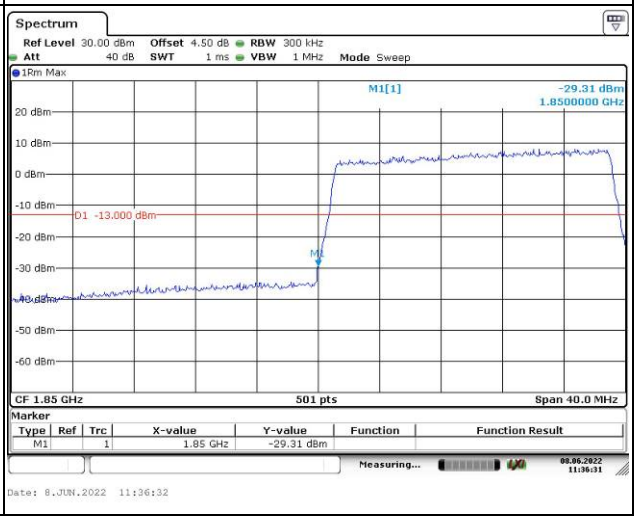
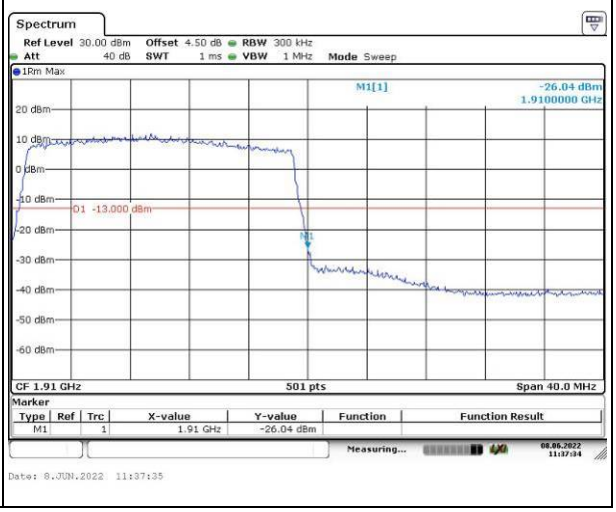
Spurious Emissions at Antenna Terminal		
Channel	**15MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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		

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

4.5 Antenna Port Test Data and Results for LTE Band 4:

Serial Number:	CR22050037-RF-S1	Test Date:	2022-06-02~2022-06-08
Test Site:	RF	Test Mode:	Transmitting
Tester:	Rinka Li	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.9~26	Relative Humidity: (%)	67	ATM Pressure: (kPa)	100.0~100.1

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021-07-22	2022-07-21
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554404	2021-08-08	2022-08-07
R&S	Wideband Radio Communication Tester	CMW500	149218	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
Agilent	MXG Vector Signal Generator	N5182B	MY51350144	2021-07-22	2022-07-21

** 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 4▲:					
Antenna Gain (dBi):	3.87			Cable Loss (dB):	0
Operation Voltage(V_{DC}):					
Lowest:	10.8	Normal:	13.8	Highest:	36

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	22.99	22.87	22.62	26.88	30
	RB1#3	23.01	22.97	22.77		
	RB1#5	22.94	22.82	22.73		
	RB3#0	22.78	22.85	22.59		
	RB3#3	22.83	22.88	22.68		
	RB6#0	21.96	21.99	21.67		
1.4MHz 16QAM	RB1#0	21.88	21.76	21.62	25.97	30
	RB1#3	22.1	21.76	21.59		
	RB1#5	21.86	21.82	21.75		
	RB3#0	21.83	21.86	21.53		
	RB3#3	21.95	21.89	21.56		
	RB6#0	20.89	20.94	20.5		
3MHz QPSK	RB1#0	22.96	22.88	22.66	26.83	30
	RB1#8	22.83	22.76	22.6		
	RB1#14	22.86	22.83	22.74		
	RB6#0	21.86	21.87	21.55		
	RB6#9	22.03	21.9	21.56		
	RB15#0	22.05	21.88	21.55		
3MHz 16QAM	RB1#0	21.81	21.71	21.53	25.78	30
	RB1#8	21.9	21.69	21.52		
	RB1#14	21.89	21.91	21.56		
	RB6#0	20.77	20.84	20.37		
	RB6#9	21.03	20.92	20.39		
	RB15#0	21.05	20.93	20.44		
5MHz QPSK	RB1#0	22.72	22.76	22.57	26.75	30
	RB1#13	22.88	22.77	22.47		
	RB1#24	22.71	22.78	22.67		
	RB15#0	21.88	21.82	21.59		
	RB15#10	21.97	21.83	21.57		
	RB25#0	22.02	21.81	21.52		
5MHz 16QAM	RB1#0	21.79	21.76	21.67	25.84	30
	RB1#13	21.89	21.72	21.57		
	RB1#24	21.8	21.97	21.67		
	RB15#0	20.99	20.82	20.7		

	RB15#10	20.97	20.86	20.69		
	RB25#0	20.97	20.82	20.51		
10MHz QPSK	RB1#0	22.88	22.83	22.81	26.76	30
	RB1#25	22.89	22.87	22.65		
	RB1#49	22.81	22.71	22.74		
	RB25#0	21.88	21.74	21.64		
	RB25#25	21.64	21.8	21.53		
	RB50#0	21.82	21.73	21.7		
10MHz 16QAM	RB1#0	21.78	21.68	21.82	25.73	30
	RB1#25	21.86	21.74	21.77		
	RB1#49	21.68	21.78	21.84		
	RB25#0	20.94	20.79	20.71		
	RB25#25	20.8	20.81	20.61		
	RB50#0	20.91	20.8	20.73		
15MHz QPSK	RB1#0	23.01	22.68	22.76	26.88	30
	RB1#38	22.96	22.63	22.56		
	RB1#74	23.01	22.8	22.58		
	RB36#0	21.81	21.85	21.67		
	RB36#39	21.89	21.88	21.59		
	RB75#0	21.87	21.82	21.64		
15MHz 16QAM	RB1#0	21.81	21.65	21.81	25.8	30
	RB1#38	21.69	21.81	21.5		
	RB1#74	21.88	21.93	21.52		
	RB36#0	20.92	20.94	20.72		
	RB36#39	20.9	20.92	20.66		
	RB75#0	20.91	20.9	20.69		
20MHz QPSK	RB1#0	22.78	22.99	22.81	26.86	30
	RB1#50	22.88	22.94	22.68		
	RB1#99	22.88	22.87	22.7		
	RB50#0	21.83	21.8	21.85		
	RB50#50	21.98	21.83	21.63		
	RB100#0	22	21.88	21.87		
20MHz 16QAM	RB1#0	21.93	21.55	21.81	26.04	30
	RB1#50	22.09	21.67	21.88		
	RB1#99	22.17	21.67	21.73		
	RB50#0	20.87	20.95	20.96		
	RB50#50	21.04	20.94	20.76		
	RB100#0	20.97	20.91	20.86		
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	4	4.35	4.06	13
	RB100#0	4.9	5.01	4.61	13
20MHz 16QAM	RB1#0	5.13	5.04	5.16	13
	RB100#0	5.88	6.03	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	1.314	1.314	1.308
1.4MHz 16QAM	1.102	1.102	1.102	1.314	1.32	1.308
3MHz QPSK	2.695	2.707	2.683	2.988	2.964	2.964
3MHz 16QAM	2.695	2.695	2.683	2.964	2.964	2.976
5MHz QPSK	4.511	4.511	4.531	5.02	5.04	5
5MHz 16QAM	4.531	4.511	4.511	5.02	5.02	5.02
10MHz QPSK	8.981	8.901	8.942	9.8	9.72	9.68
10MHz 16QAM	8.942	8.942	8.942	9.84	9.76	9.76
15MHz QPSK	13.473	13.533	13.413	14.82	14.82	14.76
15MHz 16QAM	13.473	13.473	13.473	14.88	14.82	14.82
20MHz QPSK	17.884	17.964	17.884	19.36	19.44	19.44
20MHz 16QAM	17.884	17.964	17.884	19.36	19.52	19.44
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.**

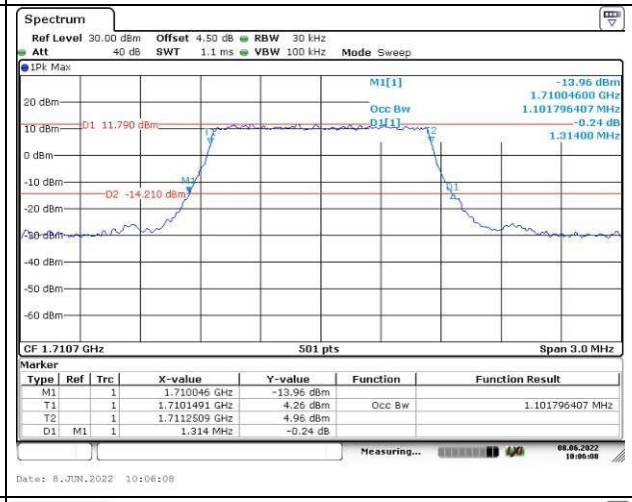
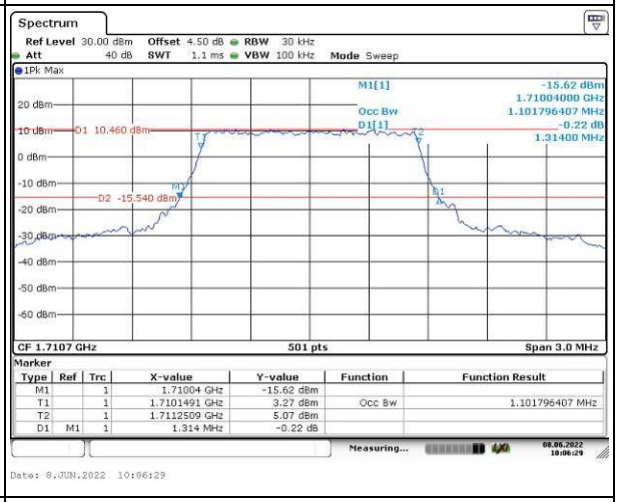
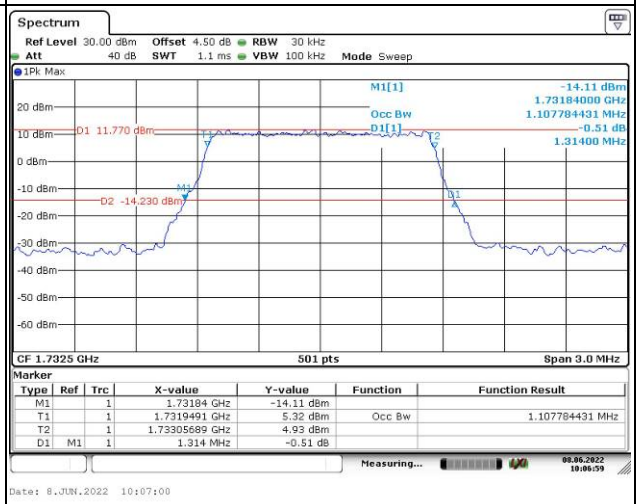
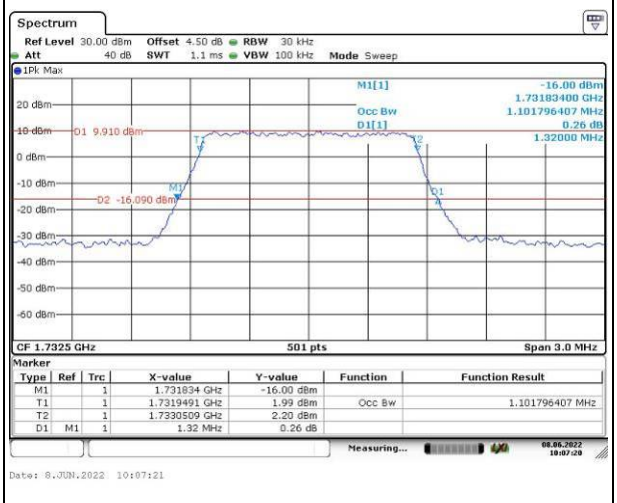
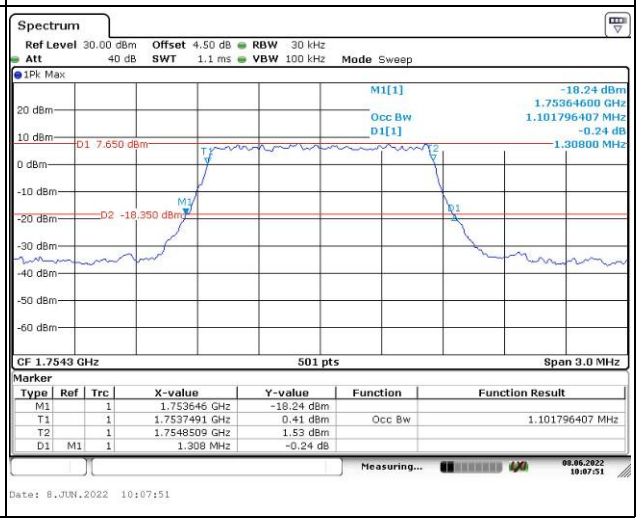
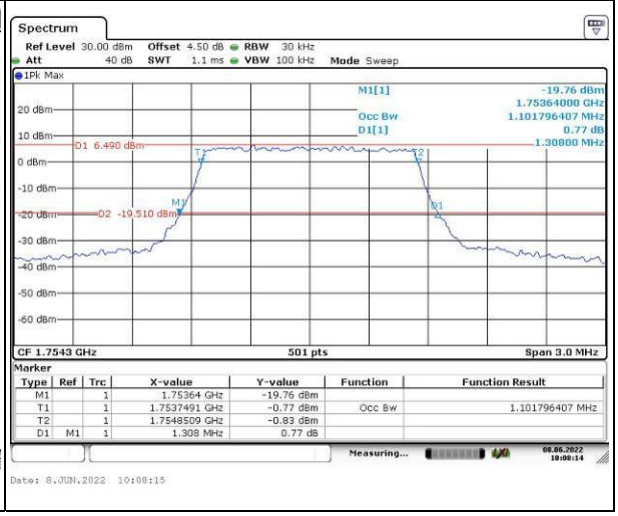
FCC §2.1051, § 27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

FCC §2.1055, §27.54: Frequency Stability

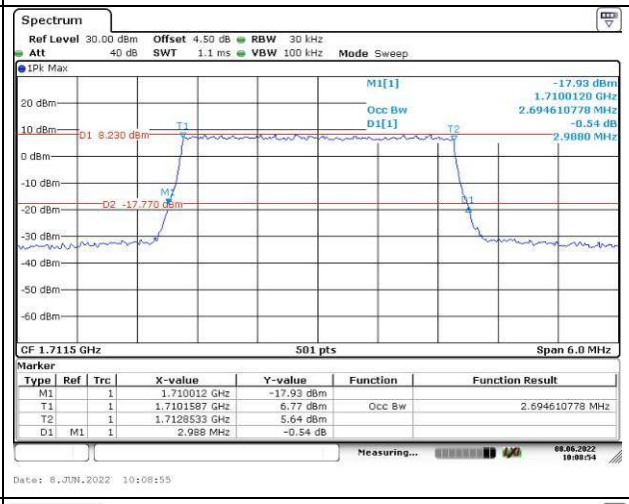
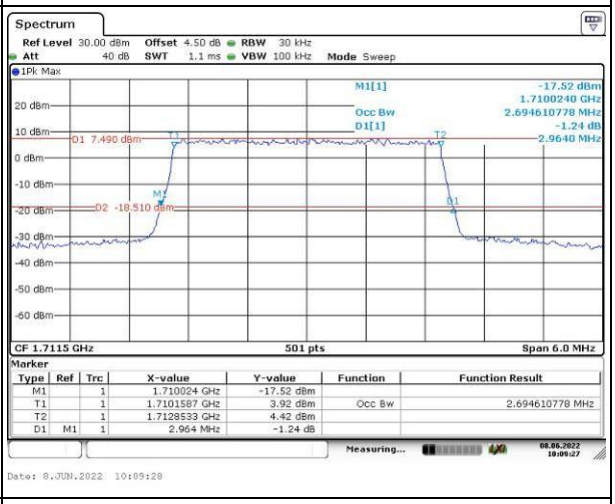
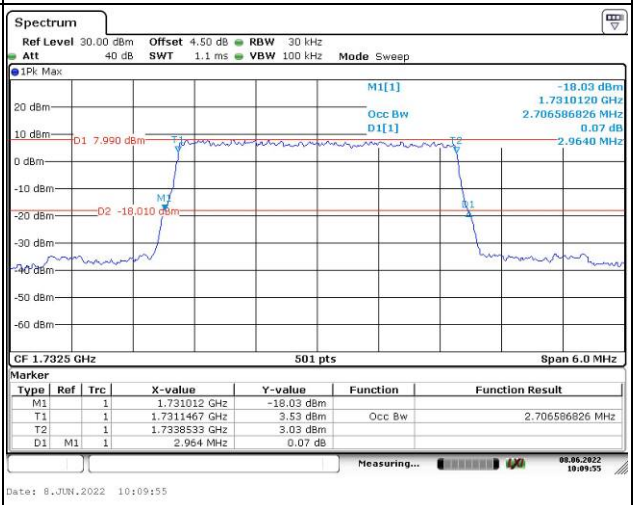
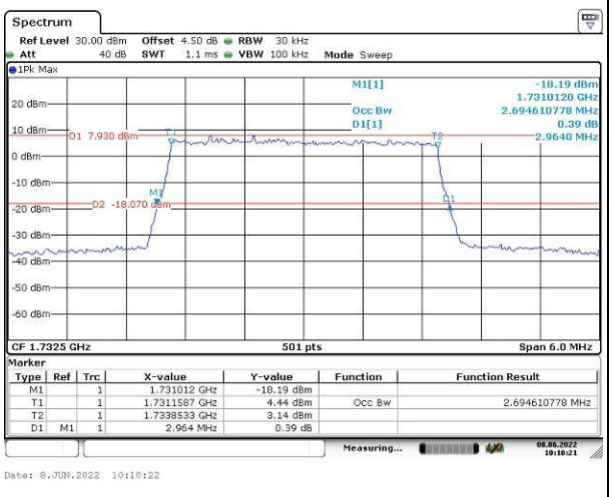
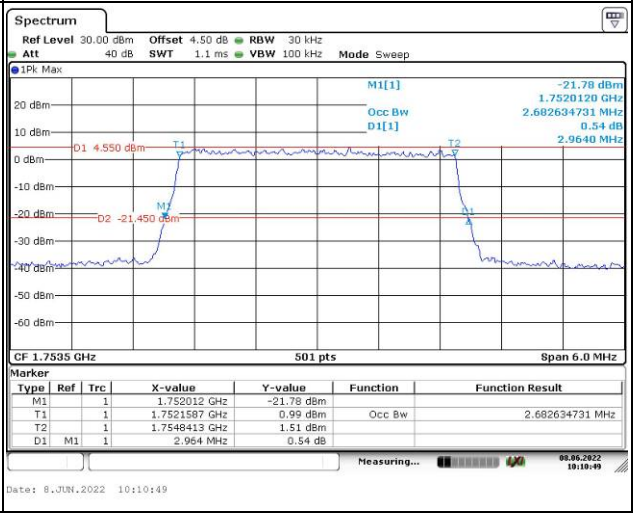
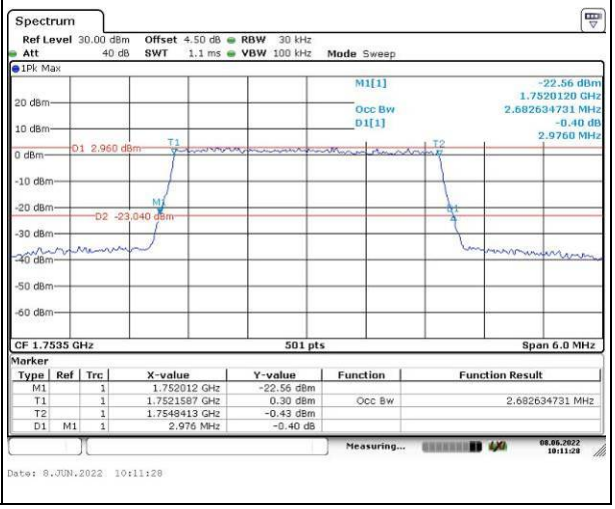
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	13.8	1710.121	1710.00	1754.917	1755
	-20	13.8	1710.108	1710.00	1754.920	1755
	-10	13.8	1710.108	1710.00	1754.918	1755
	0	13.8	1710.106	1710.00	1754.915	1755
	10	13.8	1710.095	1710.00	1754.923	1755
	20	13.8	1710.085	1710.00	1754.915	1755
	30	13.8	1710.089	1710.00	1754.927	1755
	40	13.8	1710.093	1710.00	1754.917	1755
	50	13.8	1710.107	1710.00	1754.918	1755
Frequency Stability vs. Voltage	20	10.8	1710.109	1710.00	1754.916	1755
	20	36	1710.120	1710.00	1754.917	1755
					Result:	**Pass**

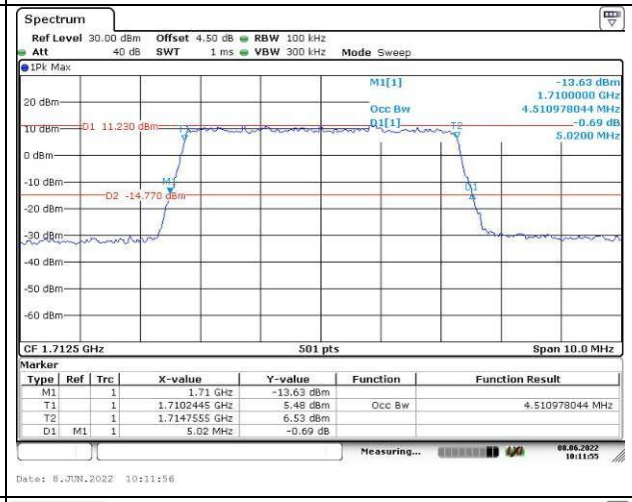
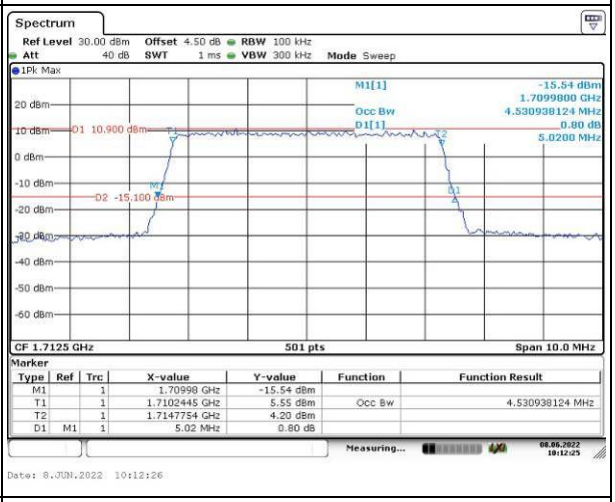
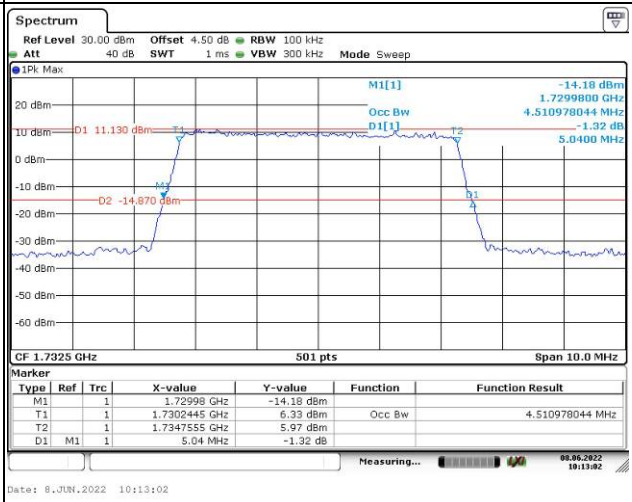
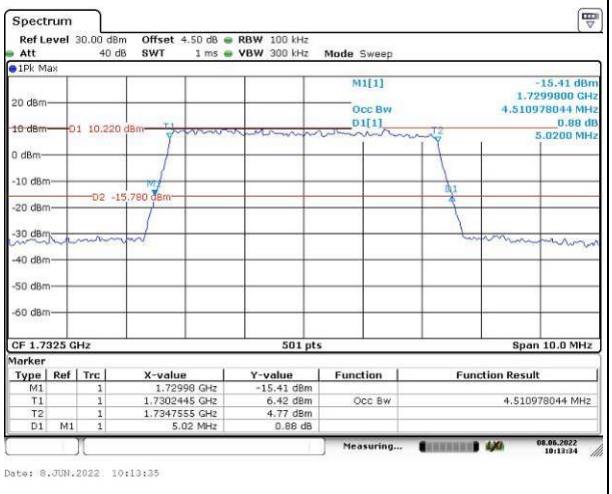
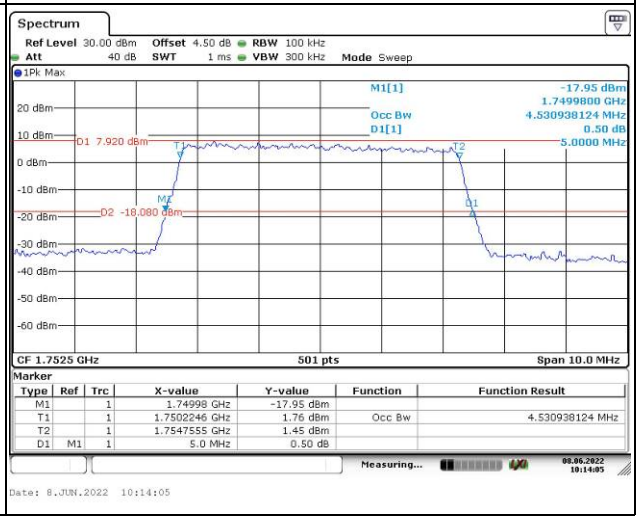
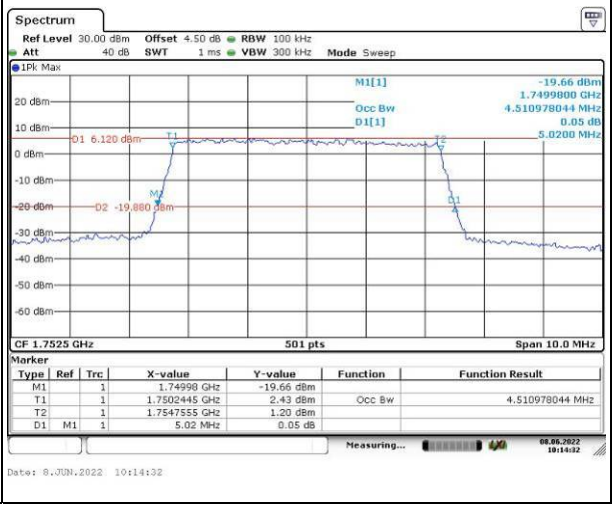
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	13.8	1710.127	1710.00	1754.929	1755
	-20	13.8	1710.116	1710.00	1754.916	1755
	-10	13.8	1710.106	1710.00	1754.929	1755
	0	13.8	1710.098	1710.00	1754.922	1755
	10	13.8	1710.090	1710.00	1754.923	1755
	20	13.8	1710.085	1710.00	1754.915	1755
	30	13.8	1710.085	1710.00	1754.917	1755
	40	13.8	1710.097	1710.00	1754.918	1755
	50	13.8	1710.101	1710.00	1754.917	1755
Frequency Stability vs. Voltage	20	10.8	1710.107	1710.00	1754.929	1755
	20	36	1710.115	1710.00	1754.919	1755
					Result:	**Pass**

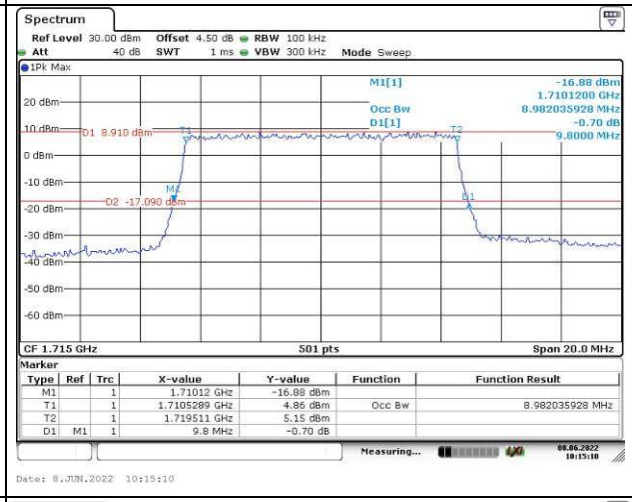
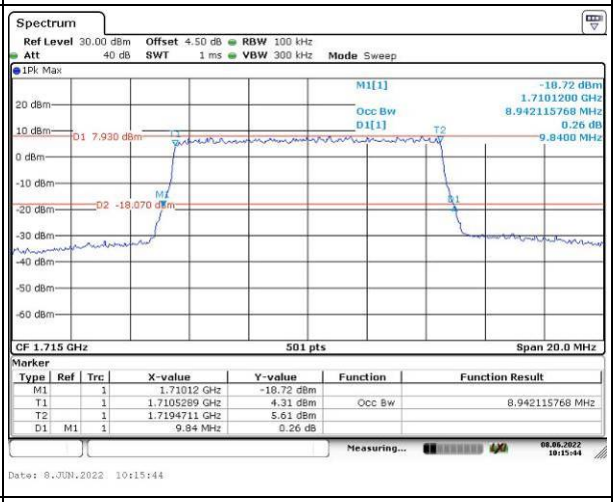
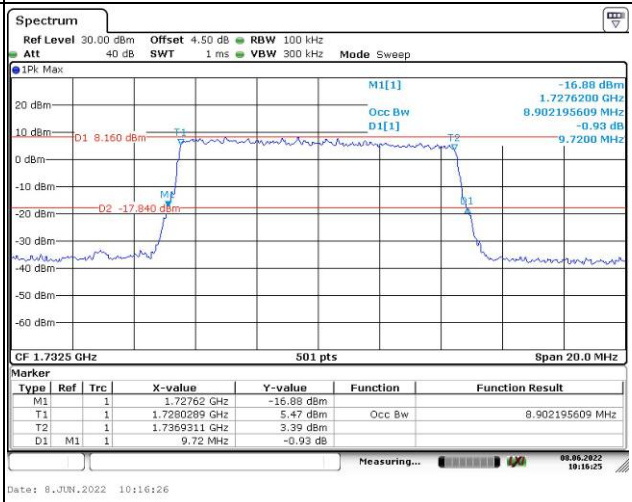
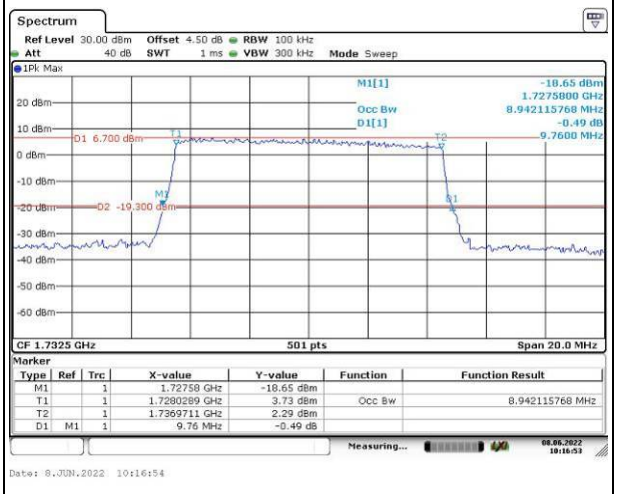
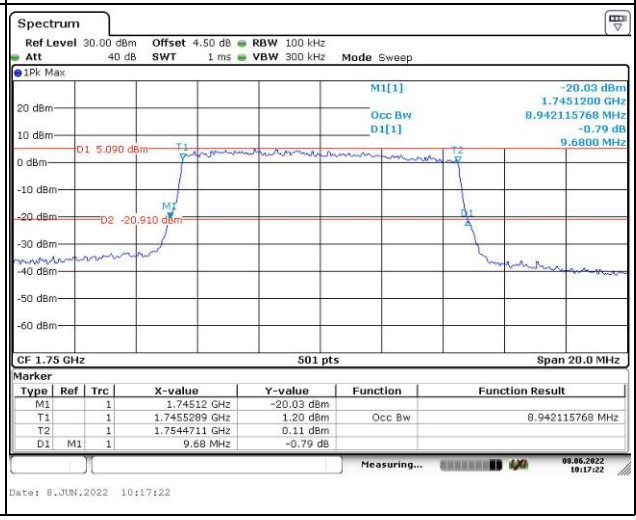
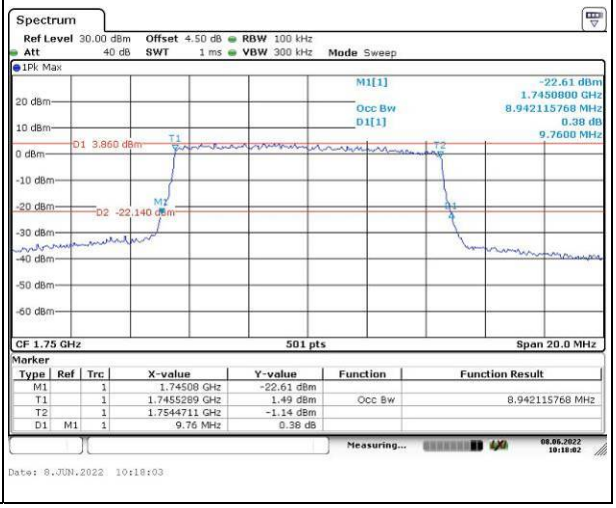
Test Plots:

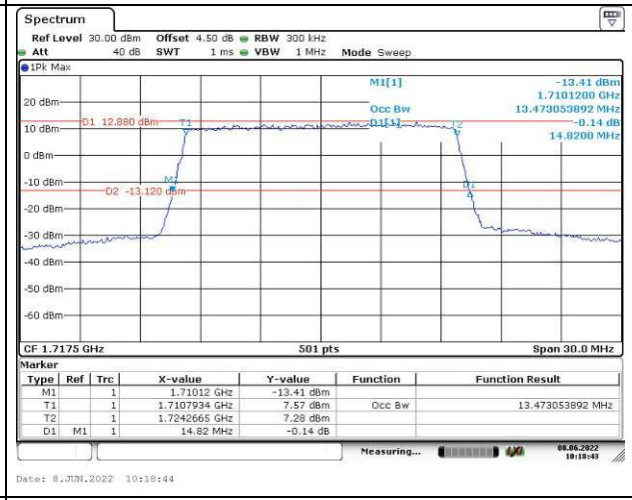
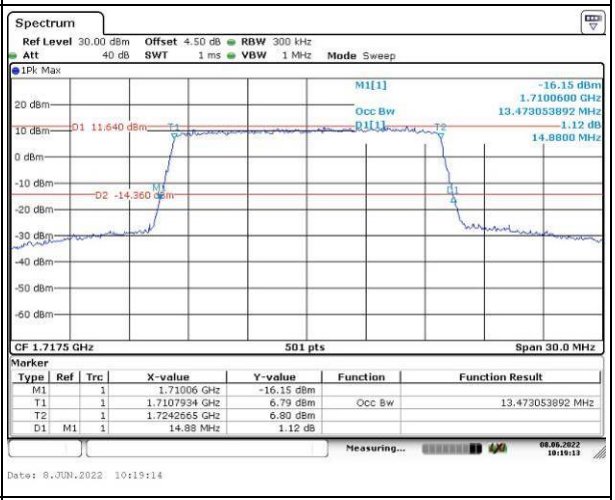
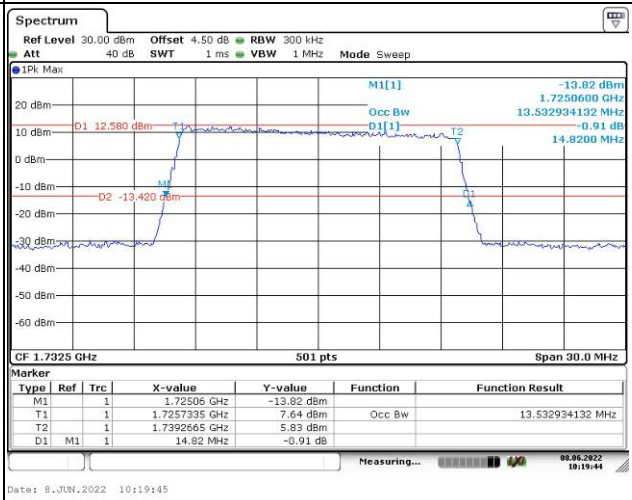
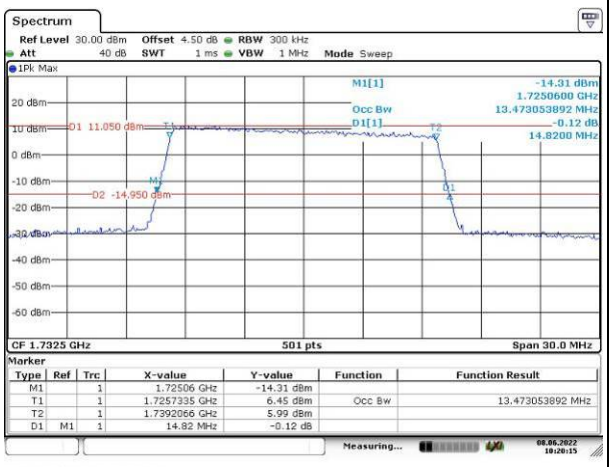
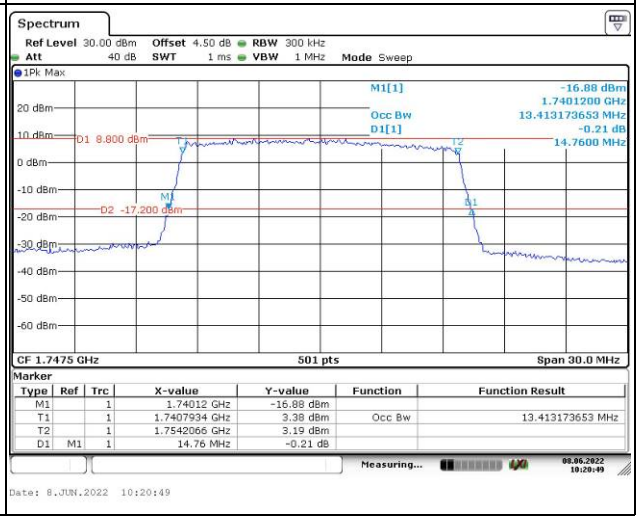
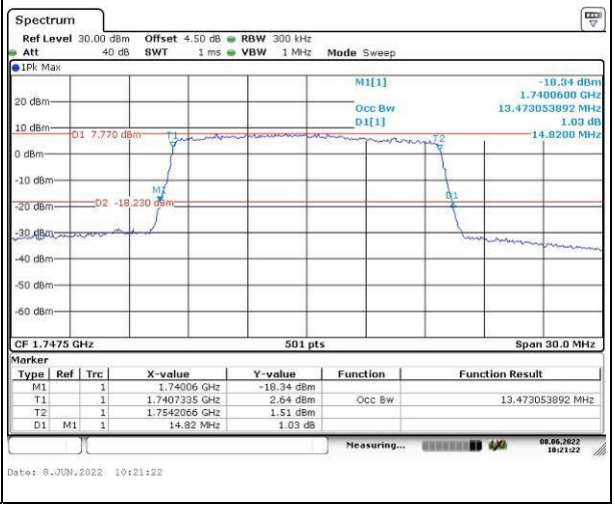
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

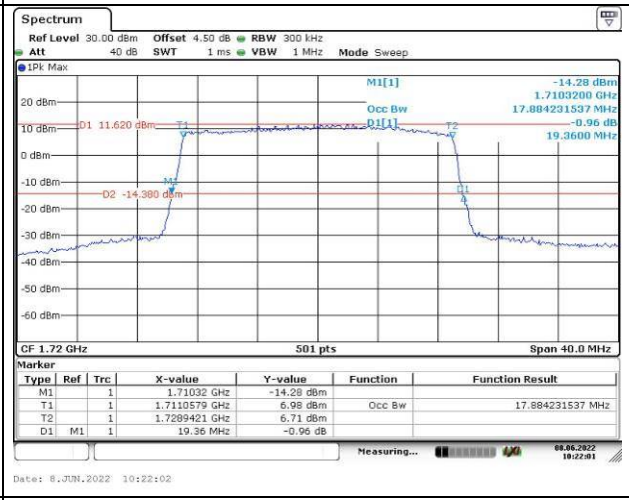
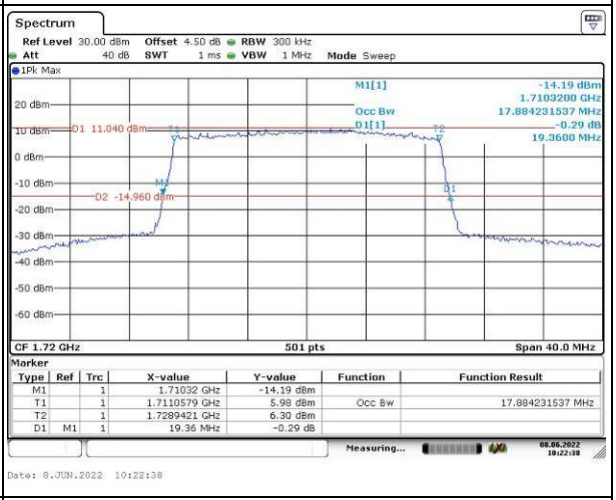
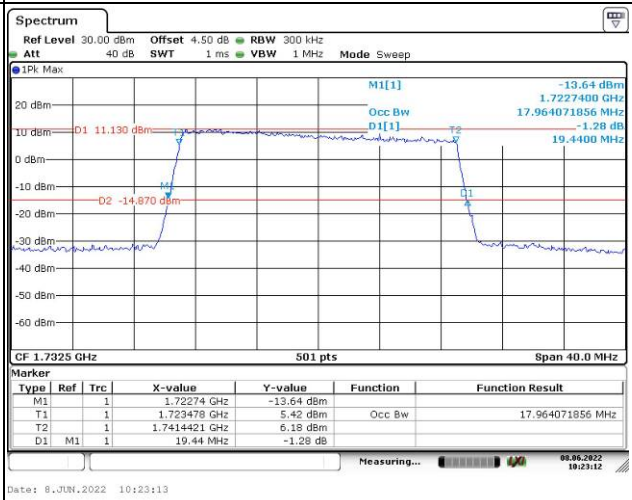
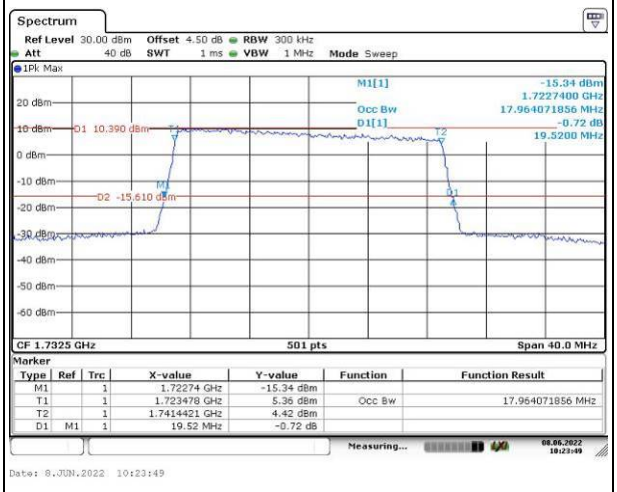
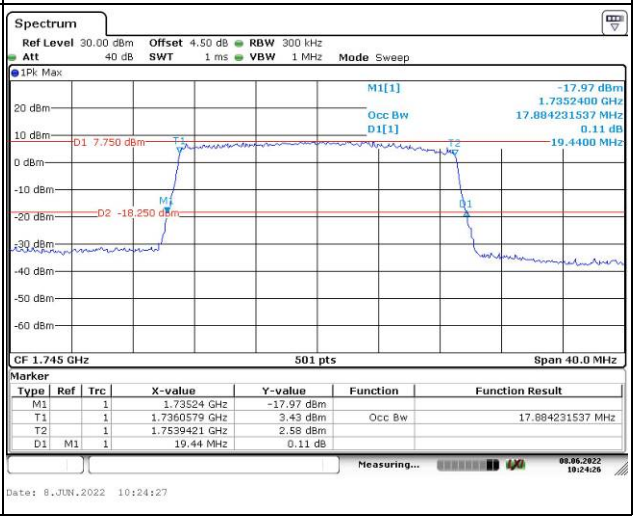
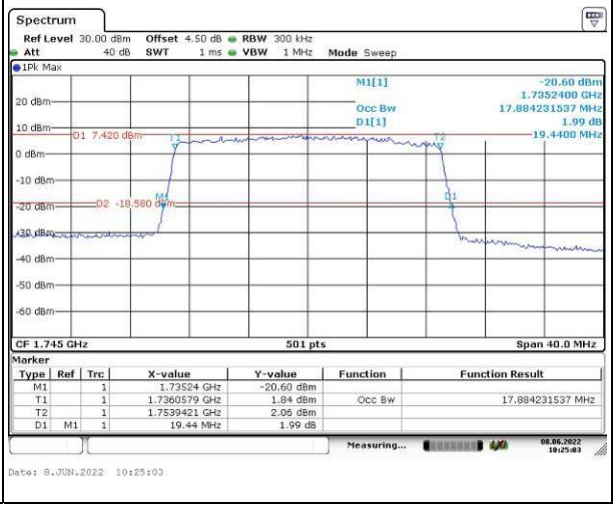
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

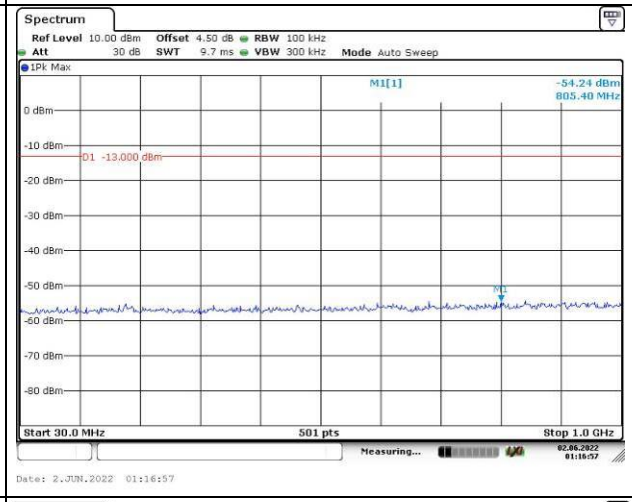
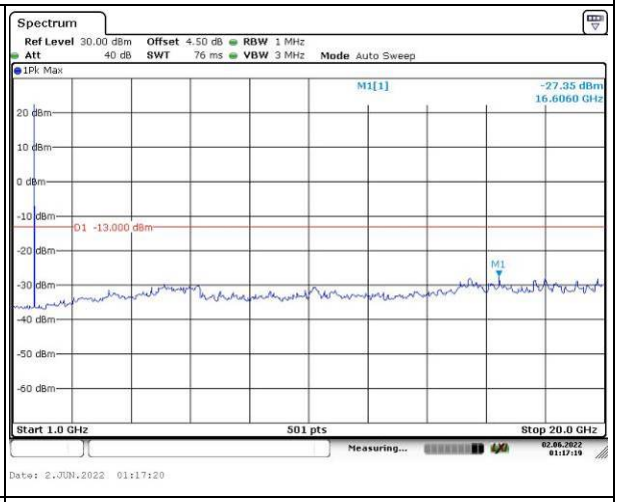
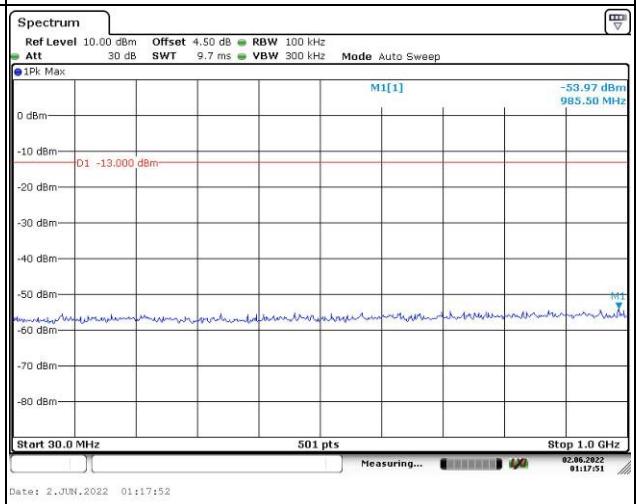
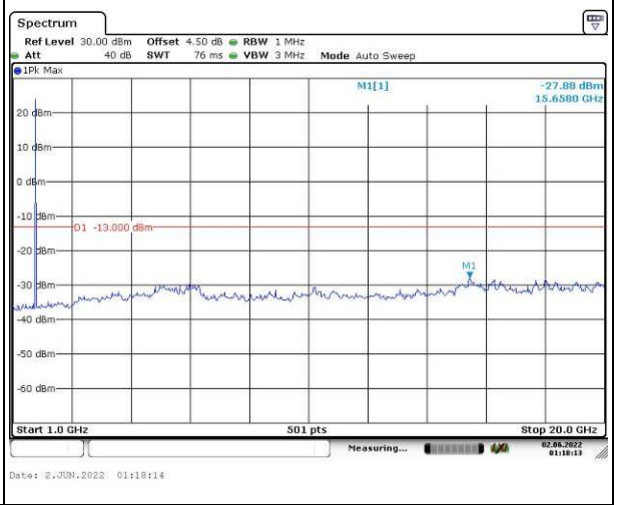
Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

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