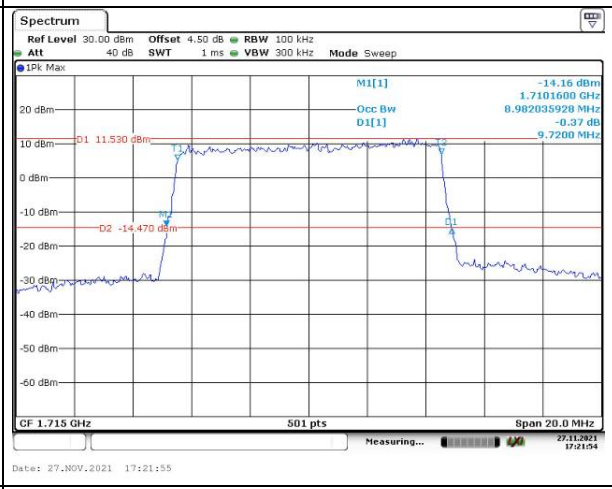
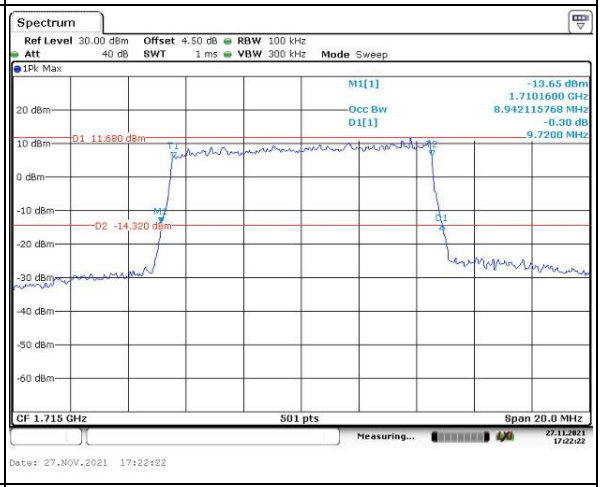
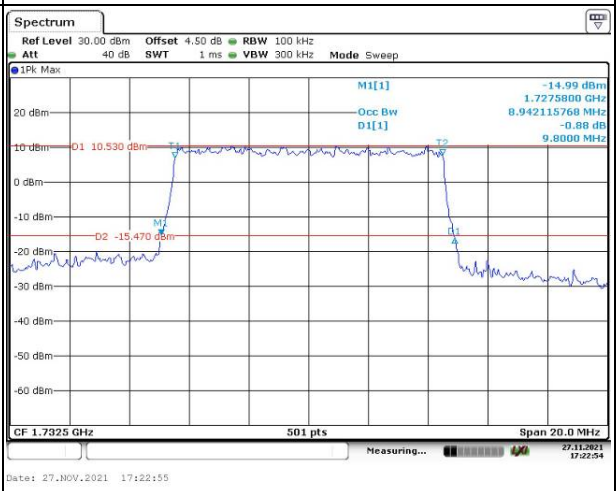
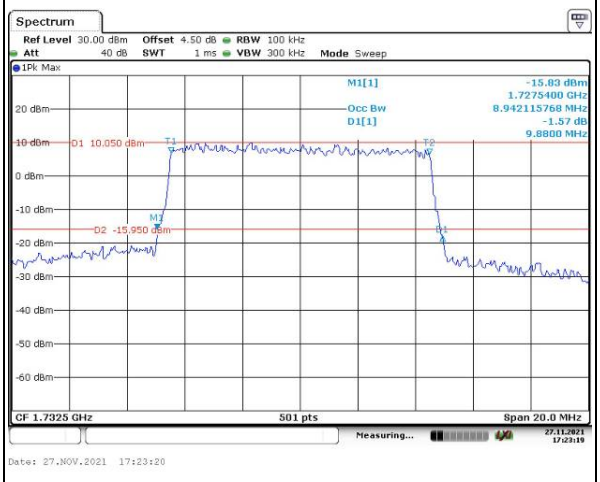
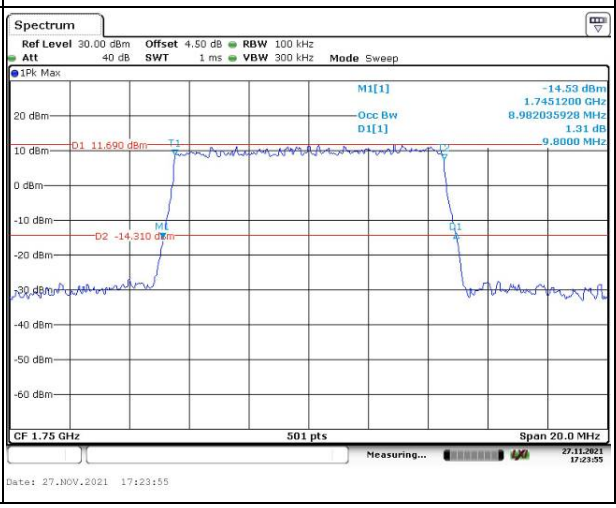
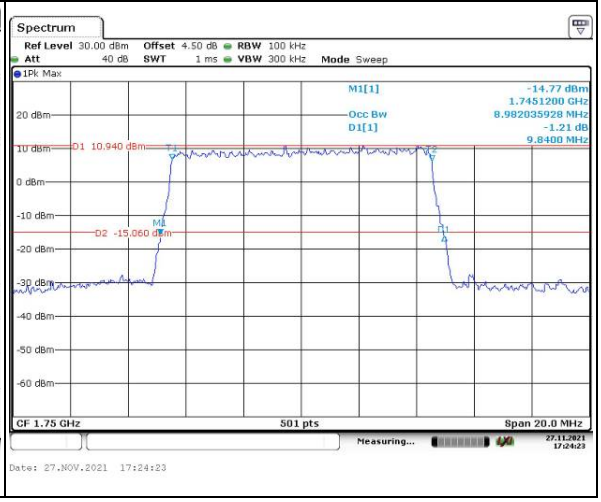
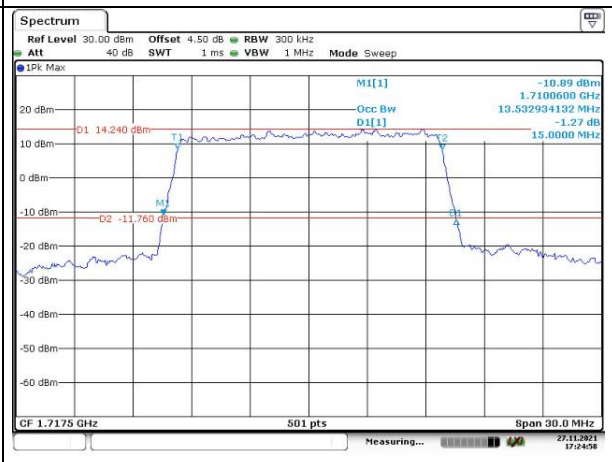
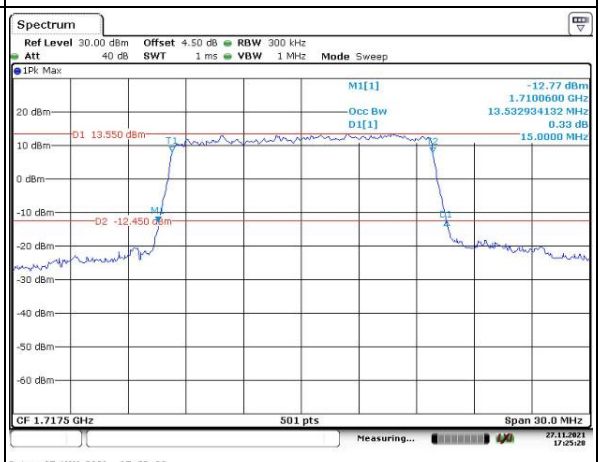
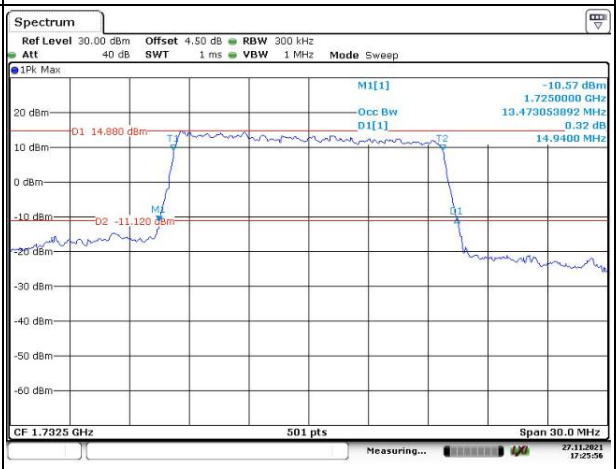
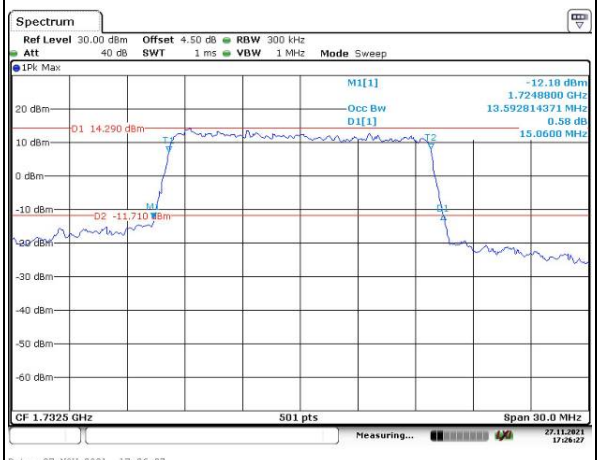
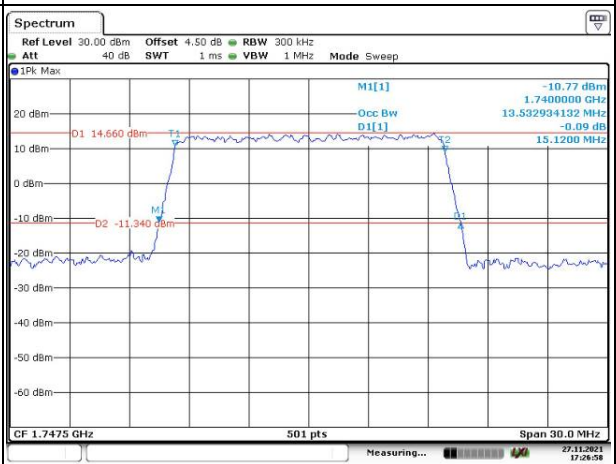
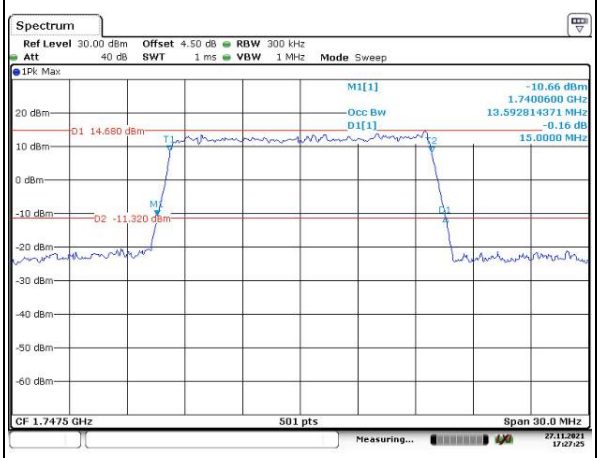
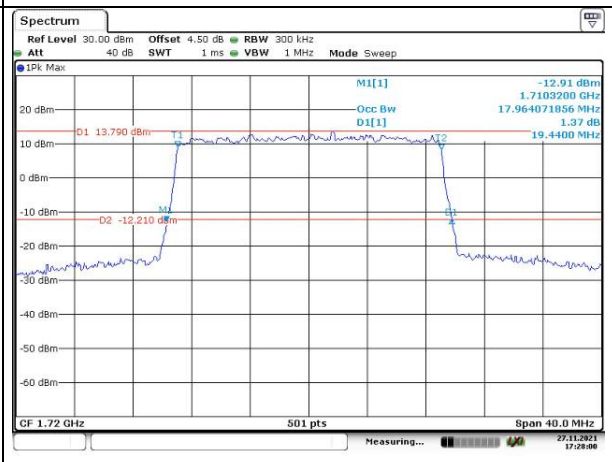
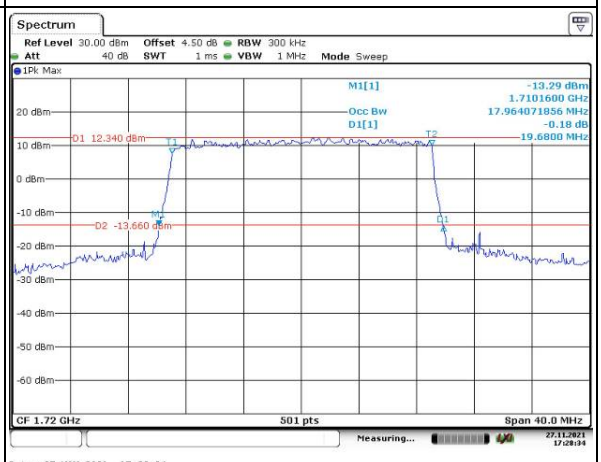
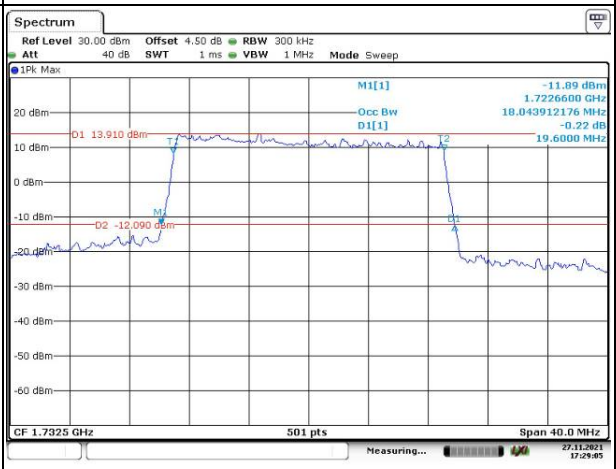
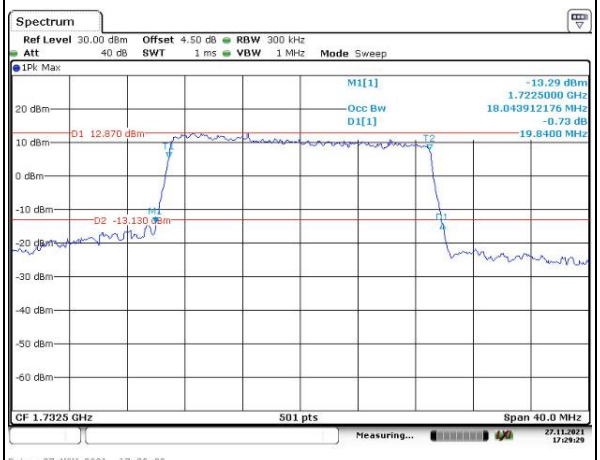
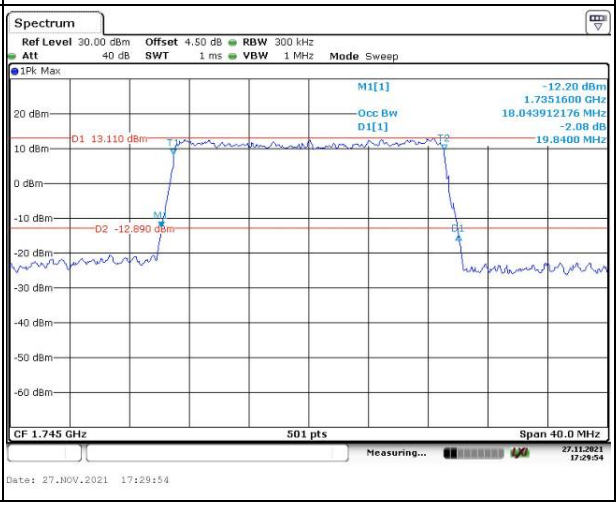
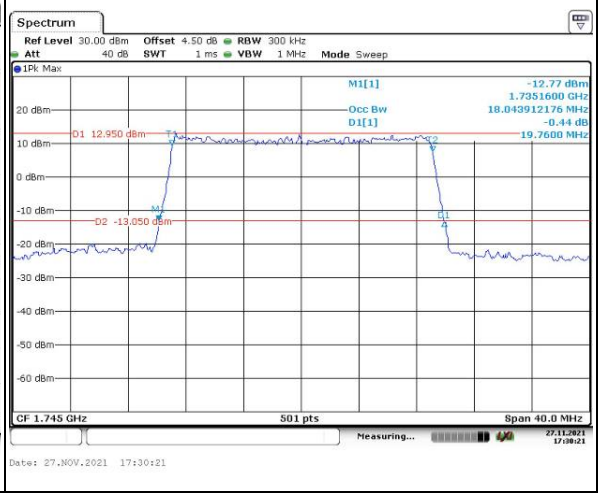
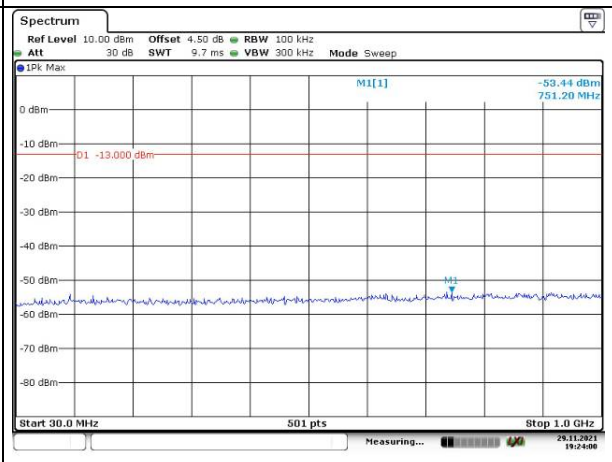
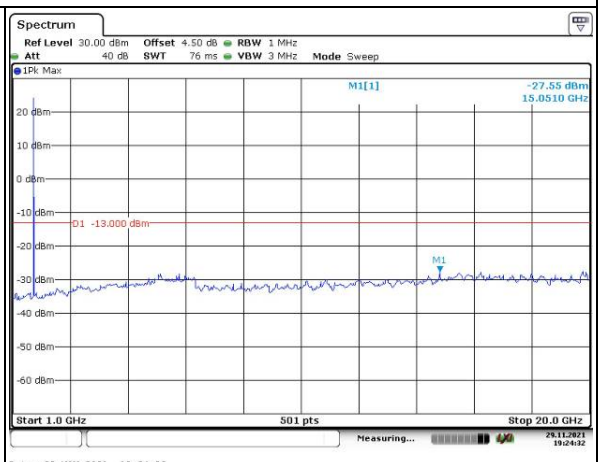
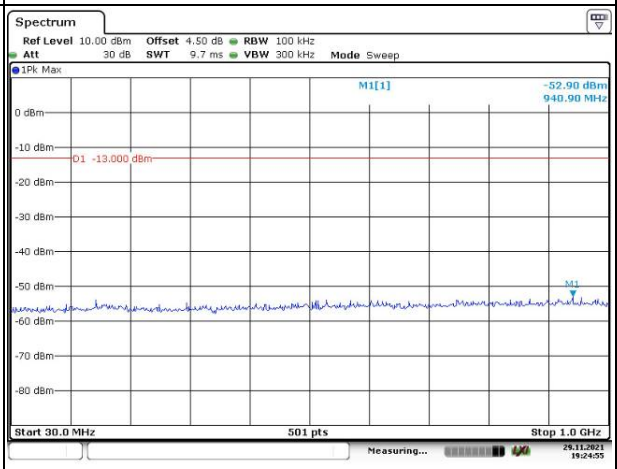
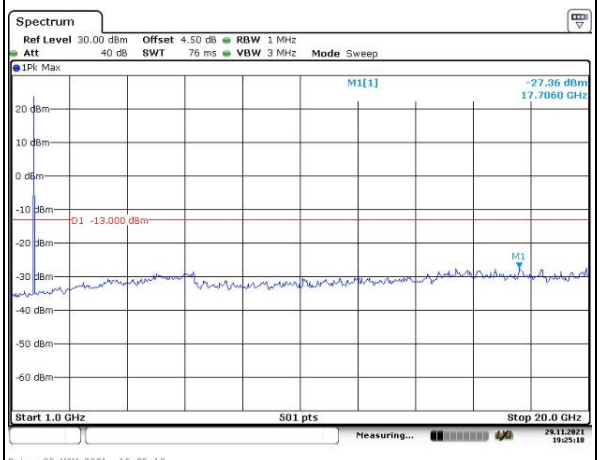
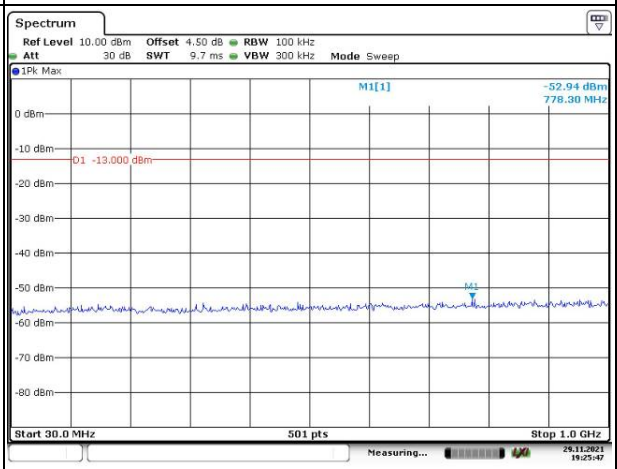
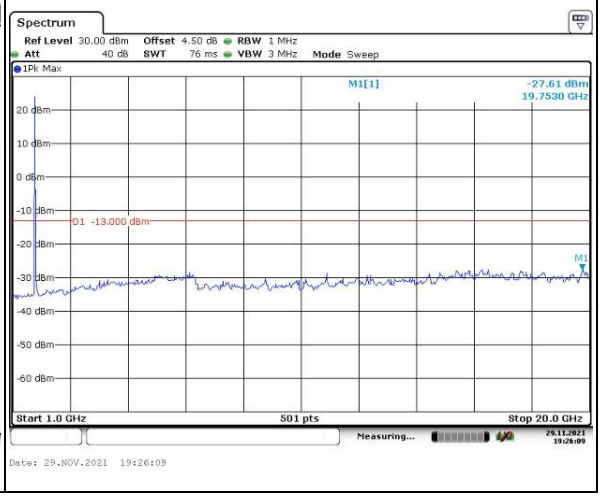
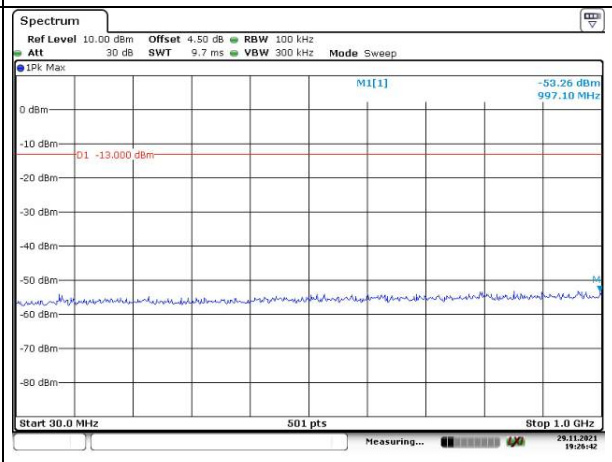
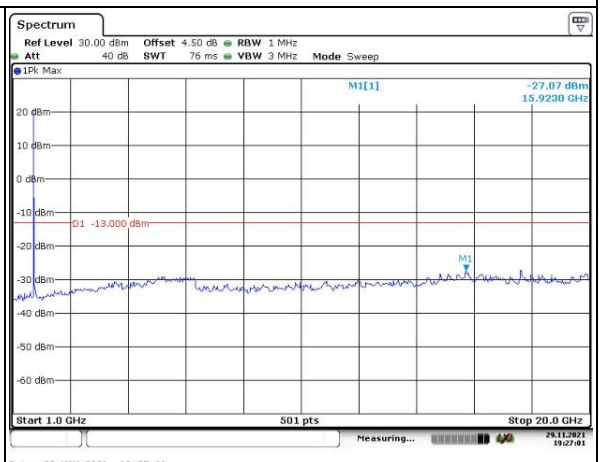
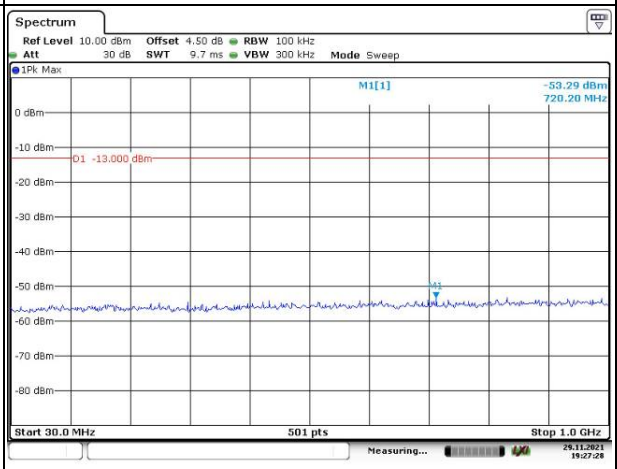
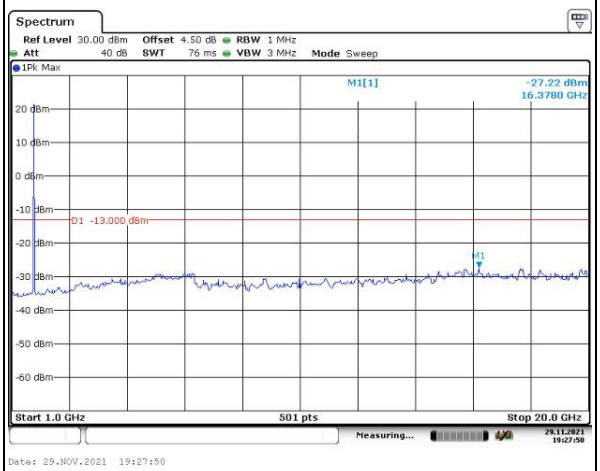
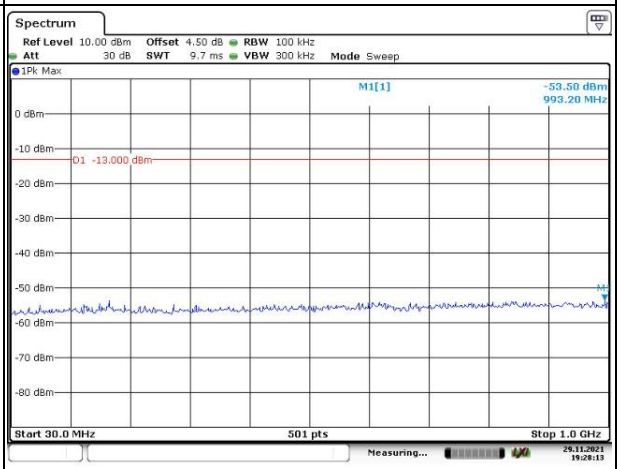
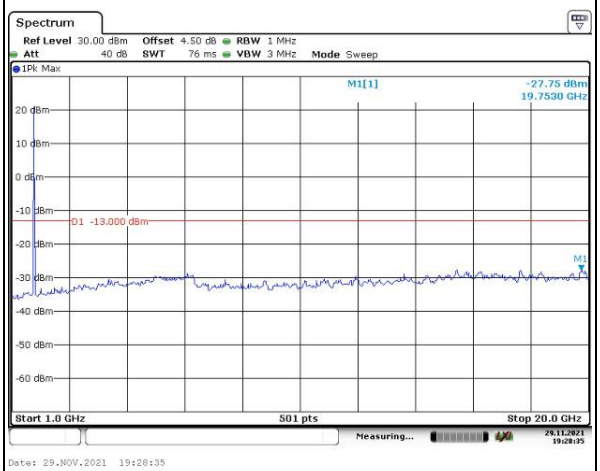
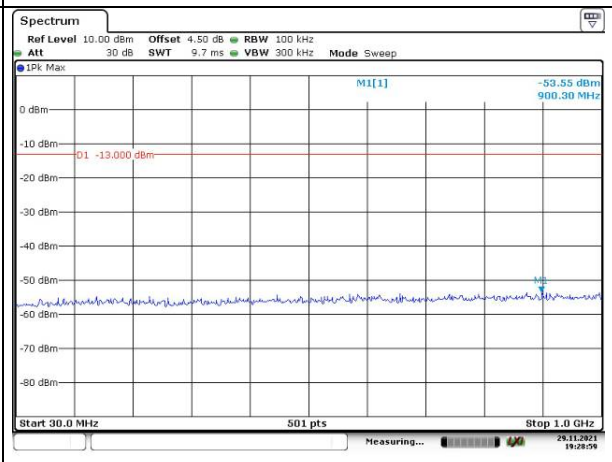
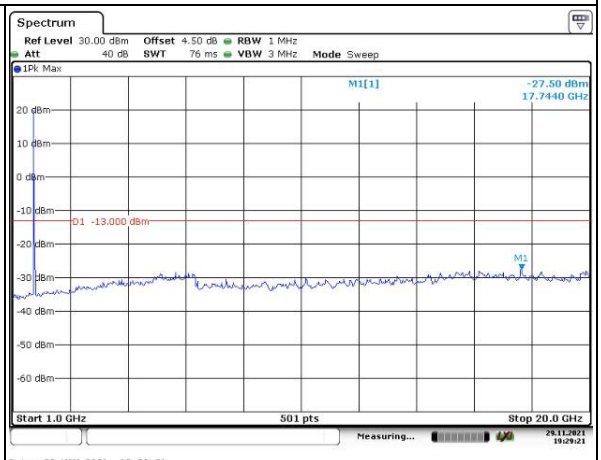
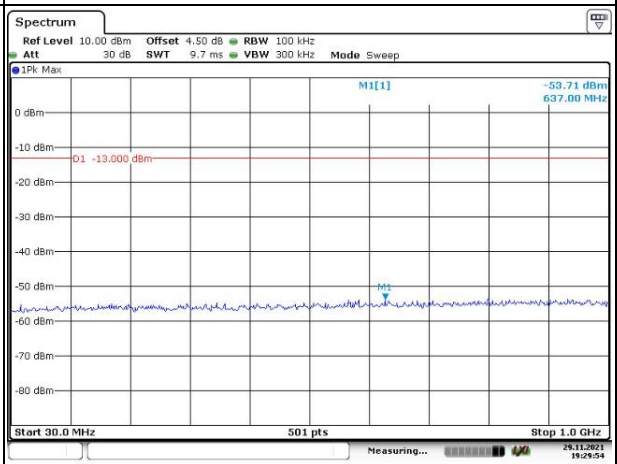
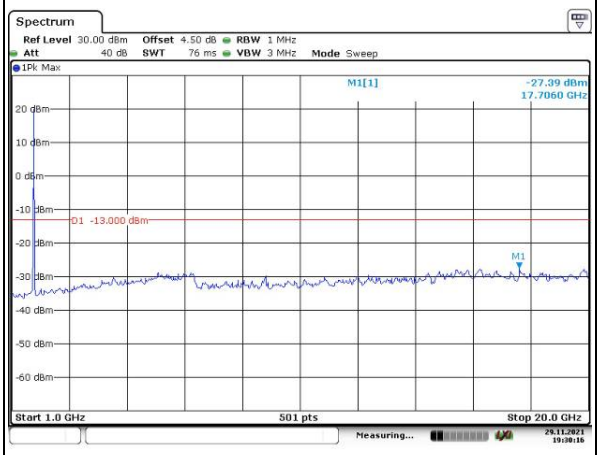
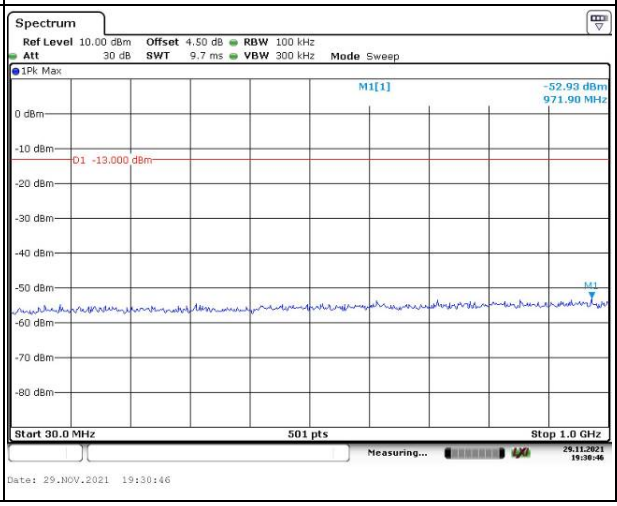
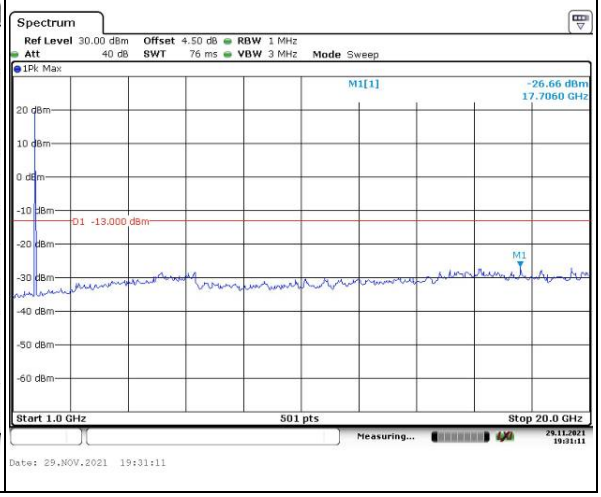
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

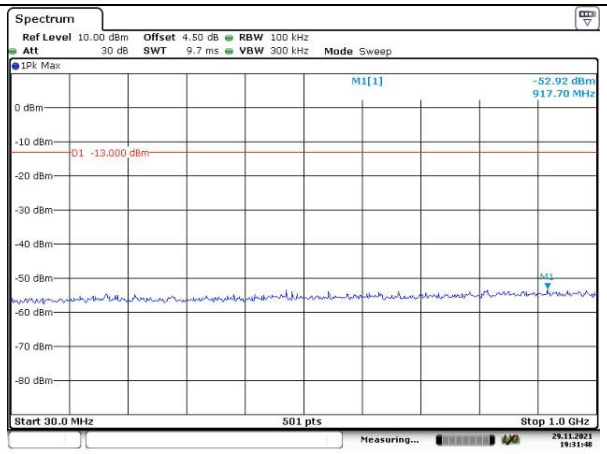
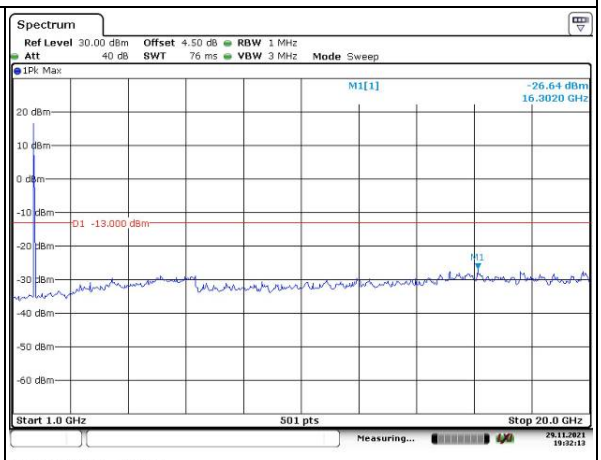
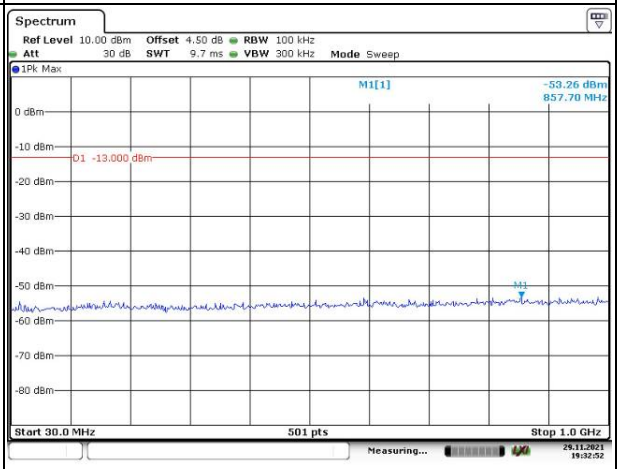
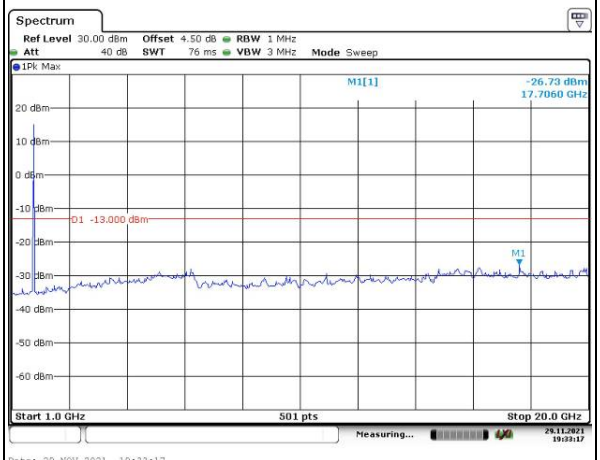
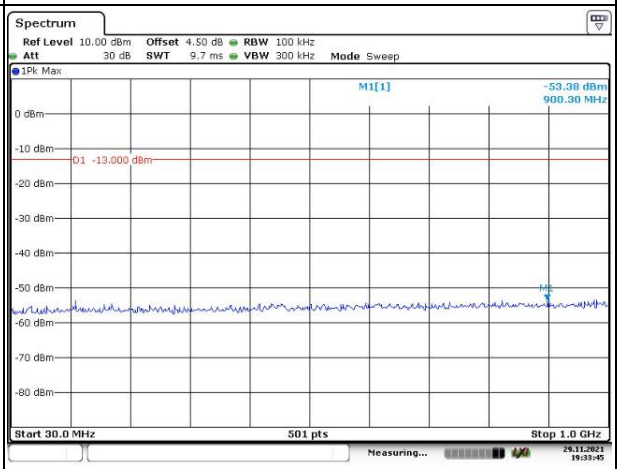
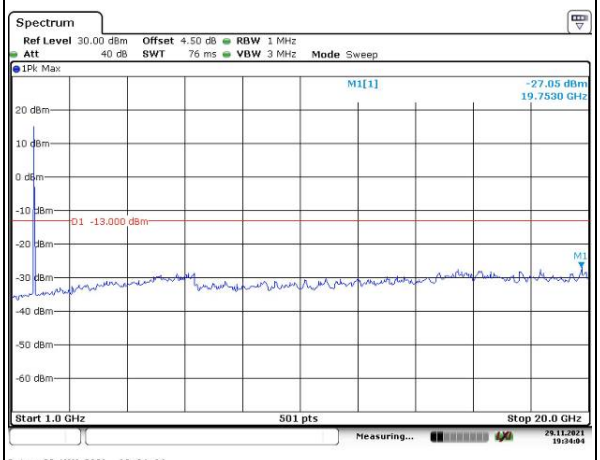
Occupied Bandwidth		
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

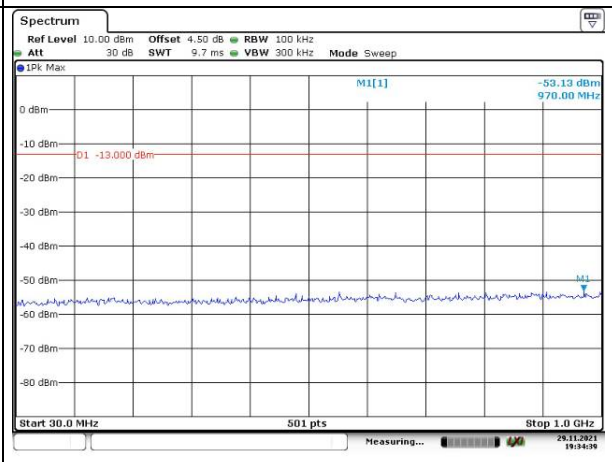
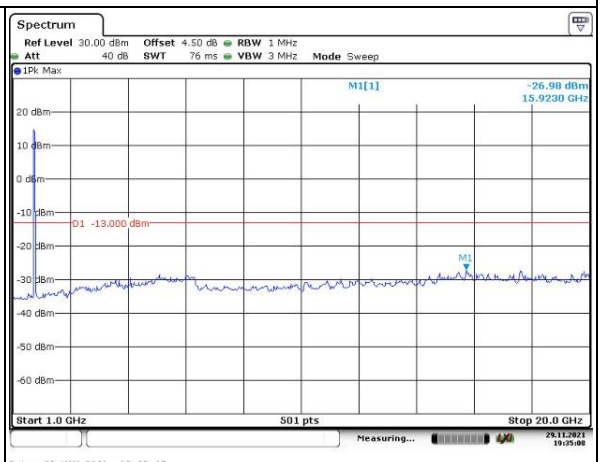
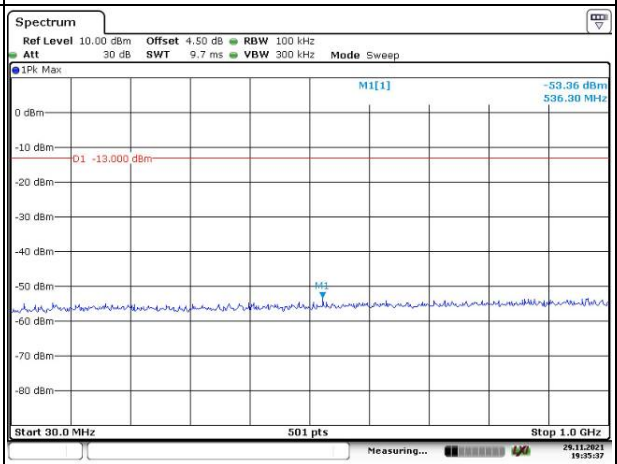
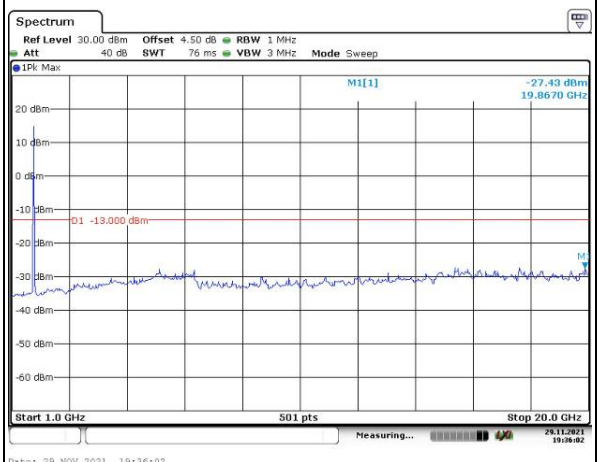
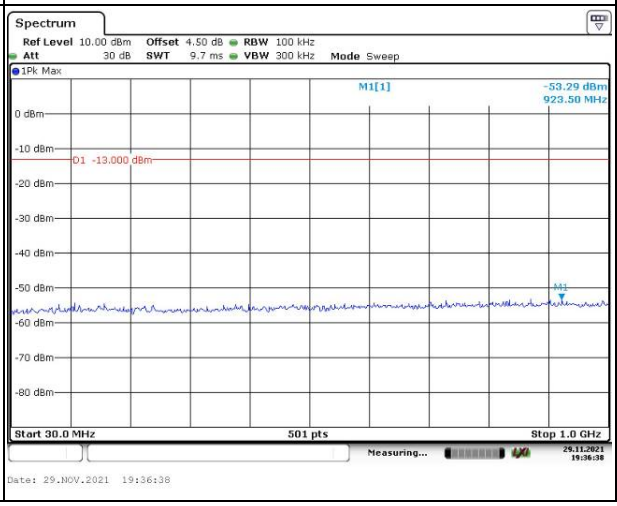
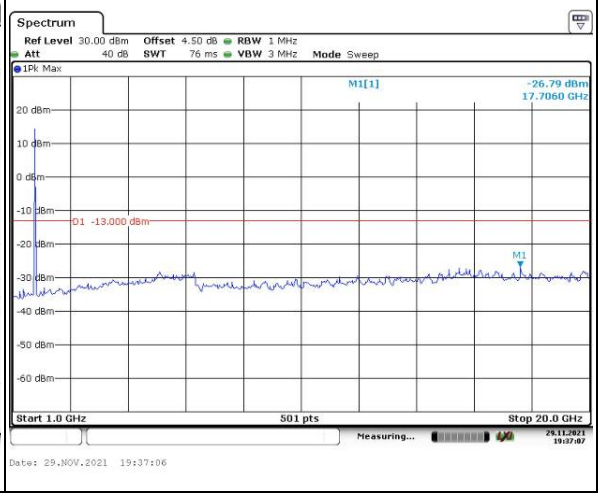
Occupied Bandwidth		
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

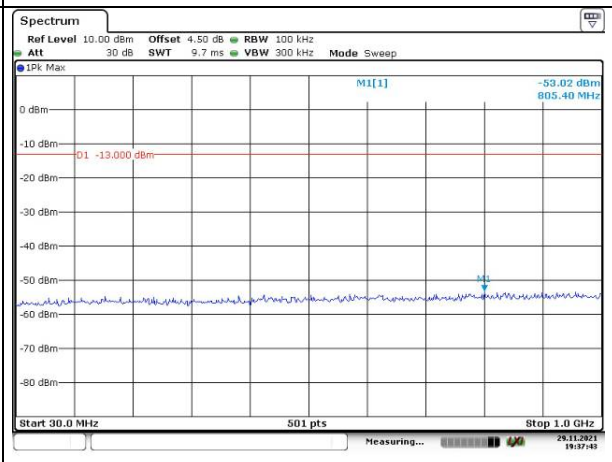
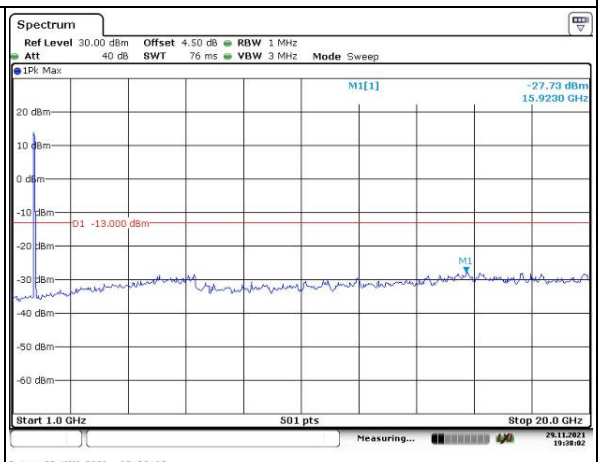
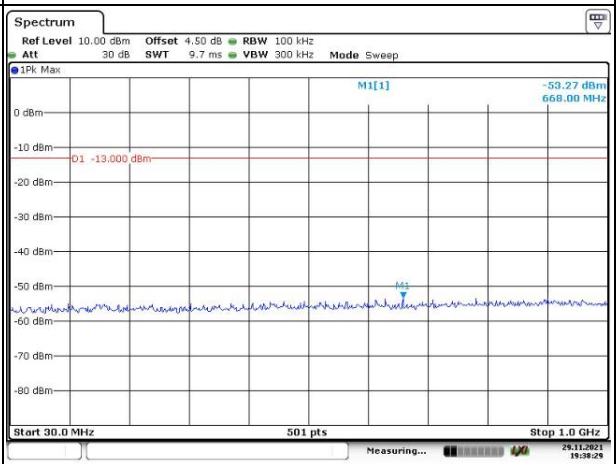
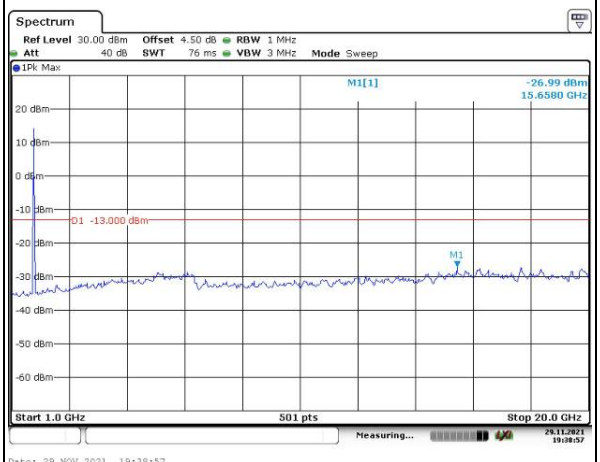
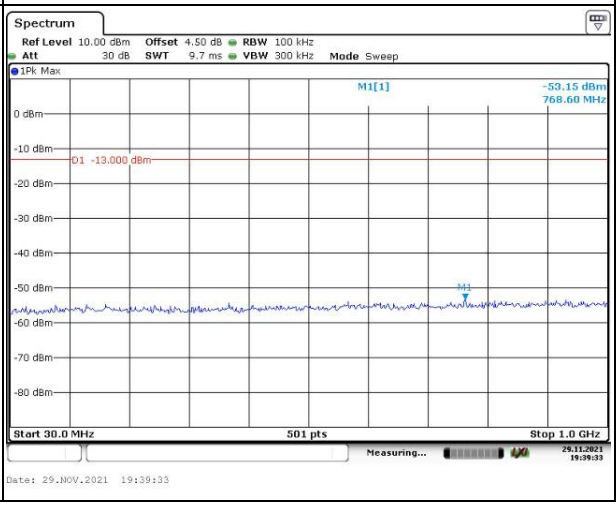
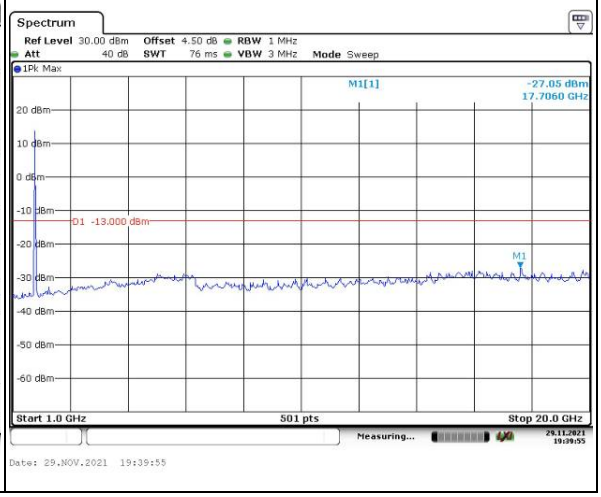
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

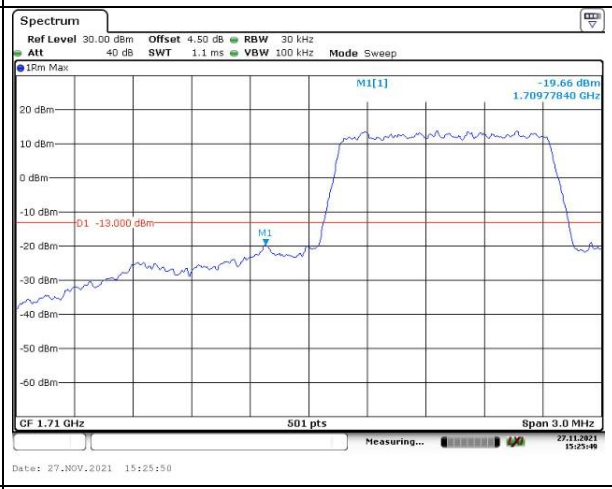
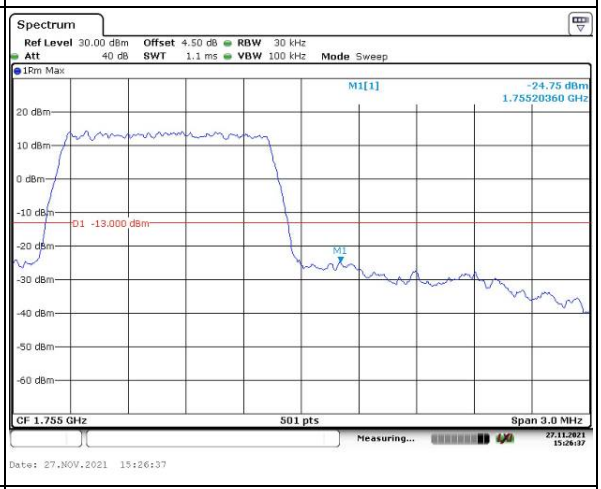
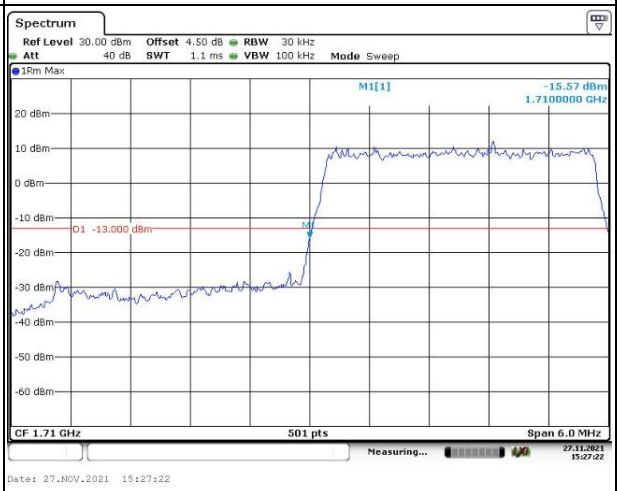
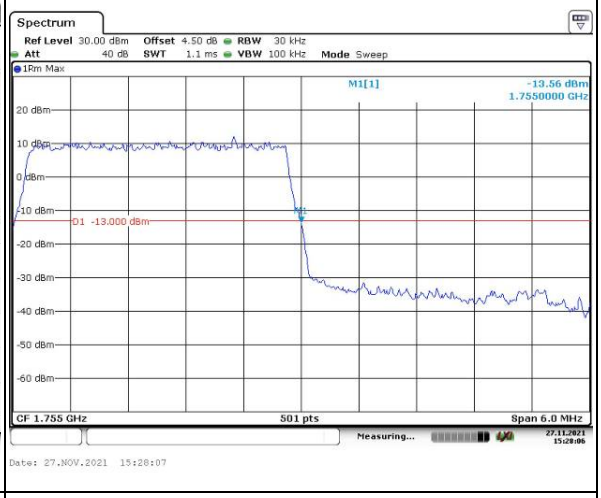
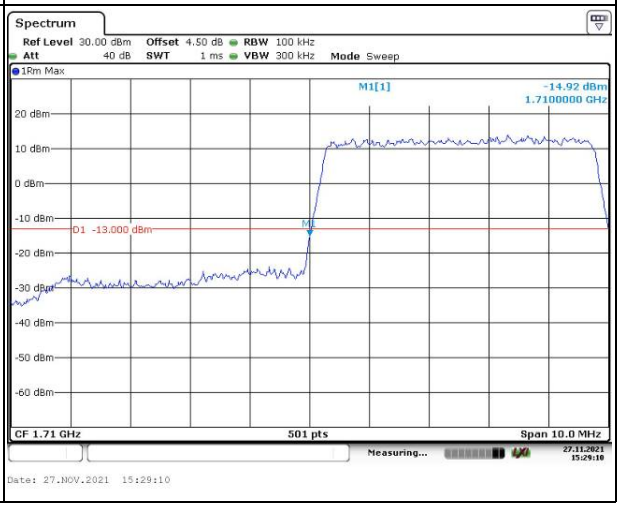
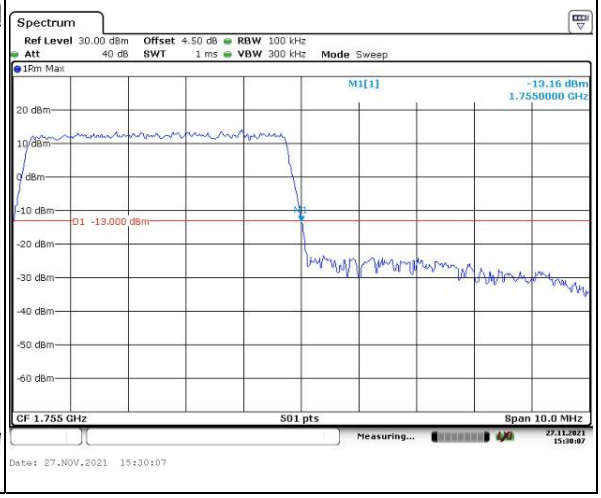
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

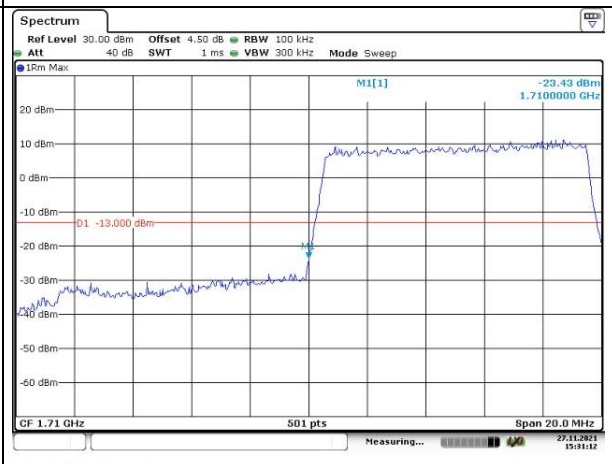
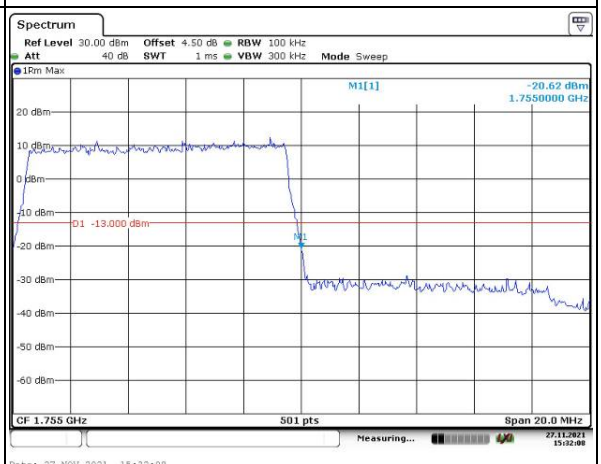
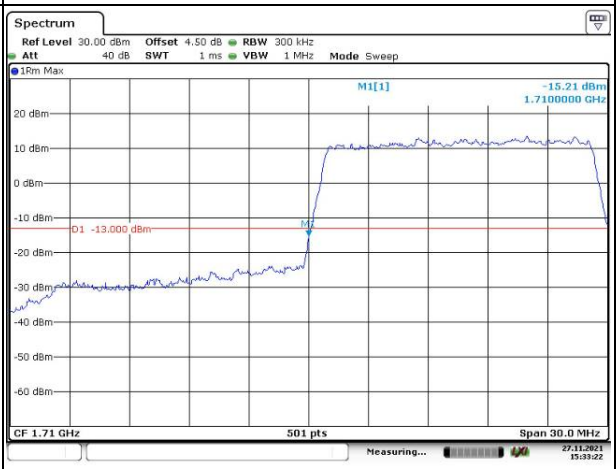
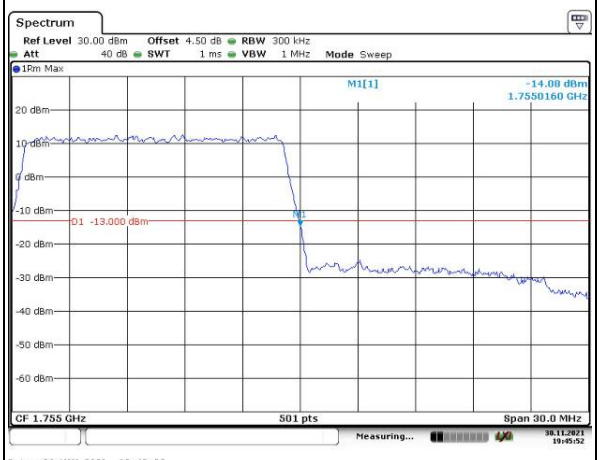
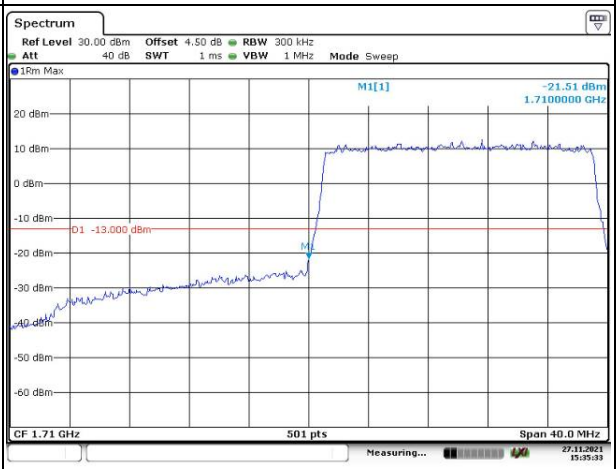
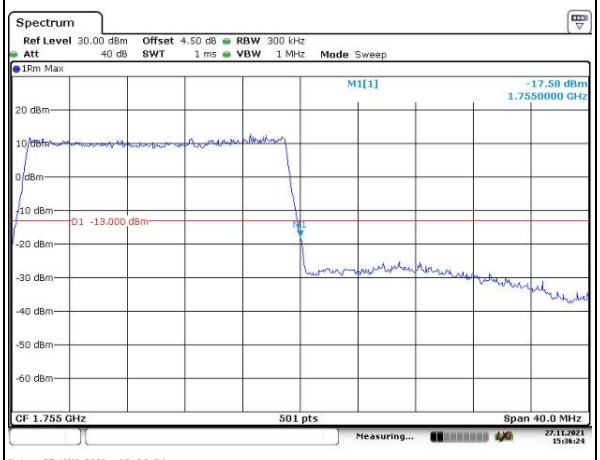
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

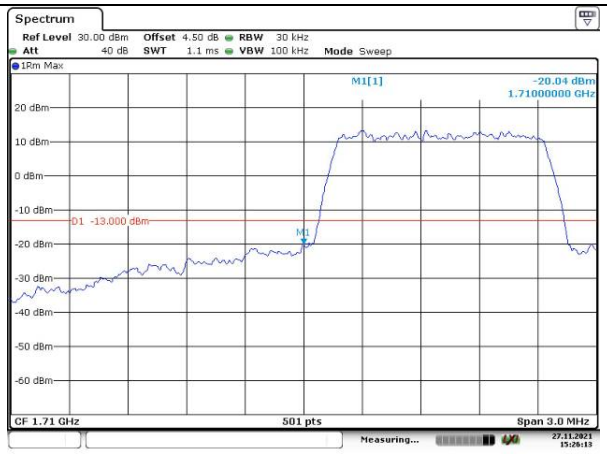
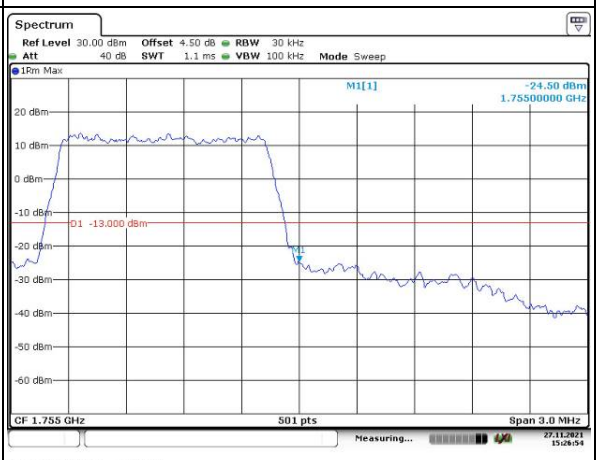
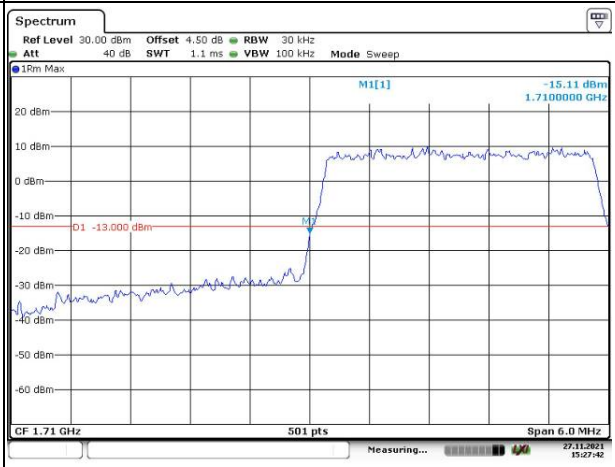
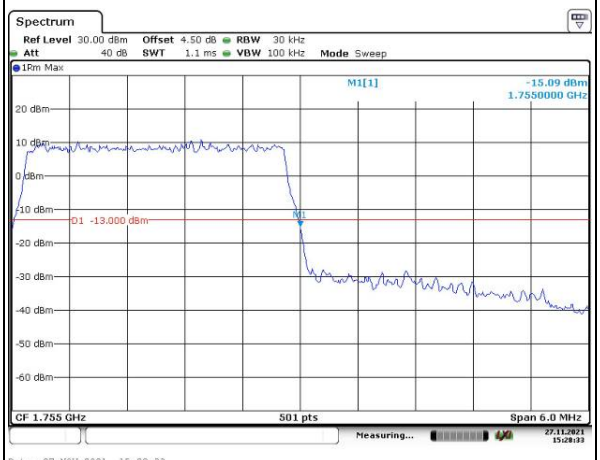
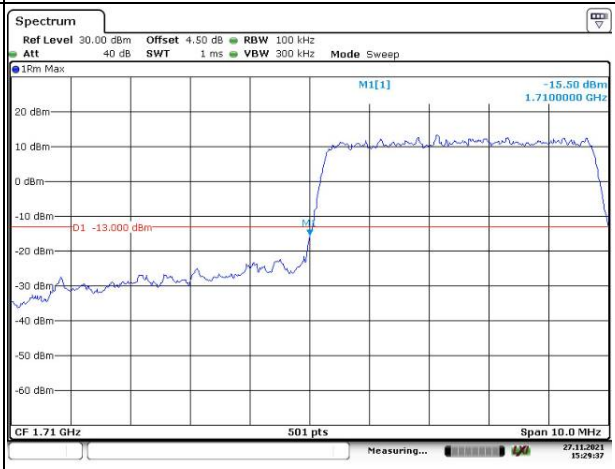
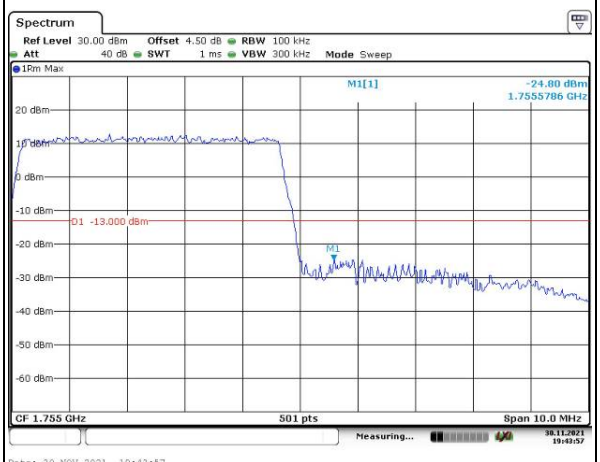
Spurious Emissions at Antenna Terminal		
Channel	**10MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

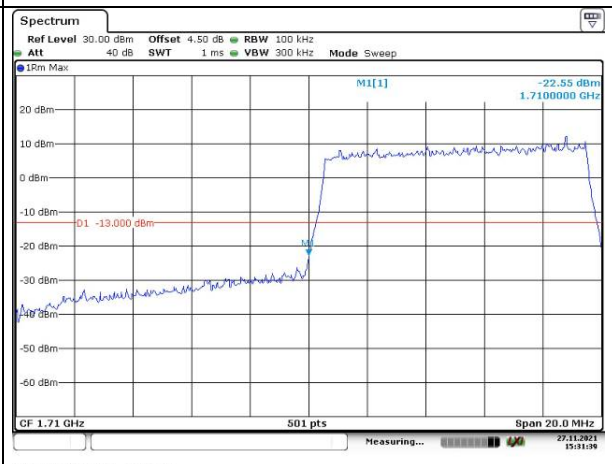
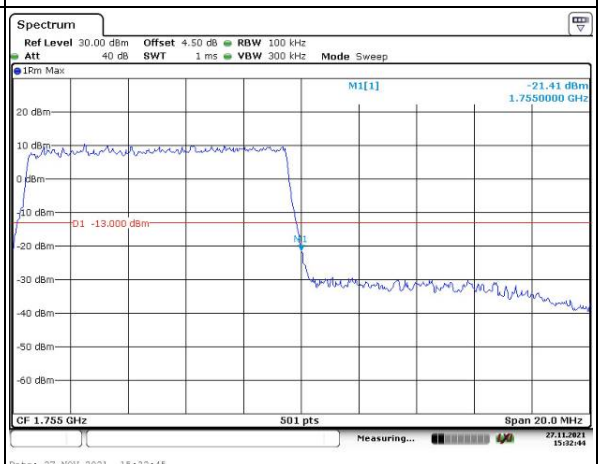
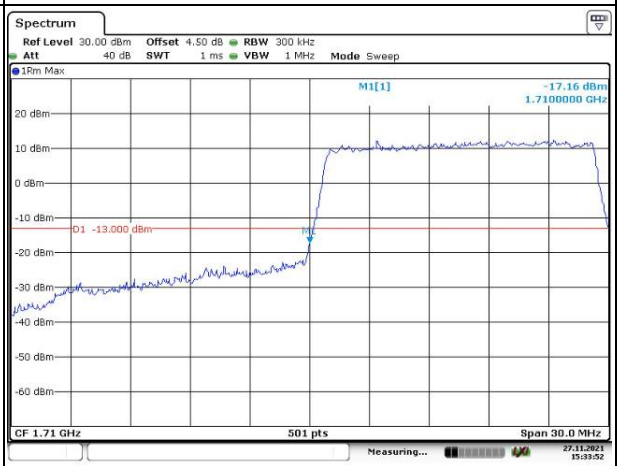
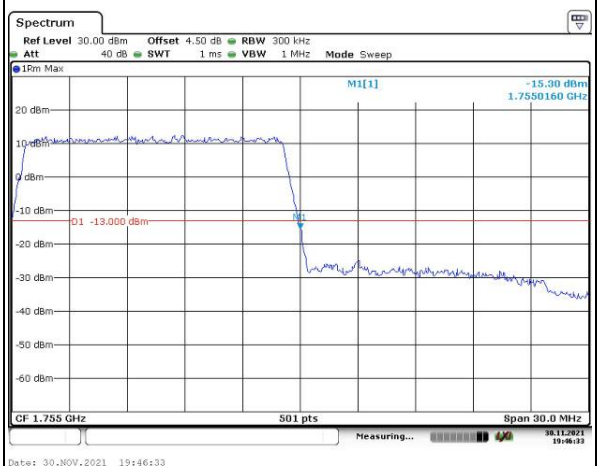
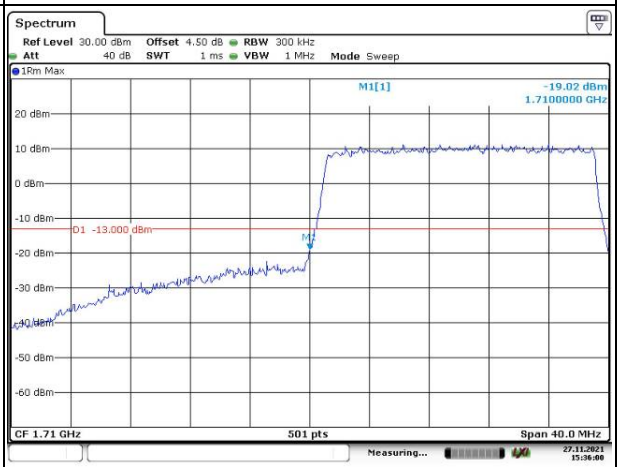
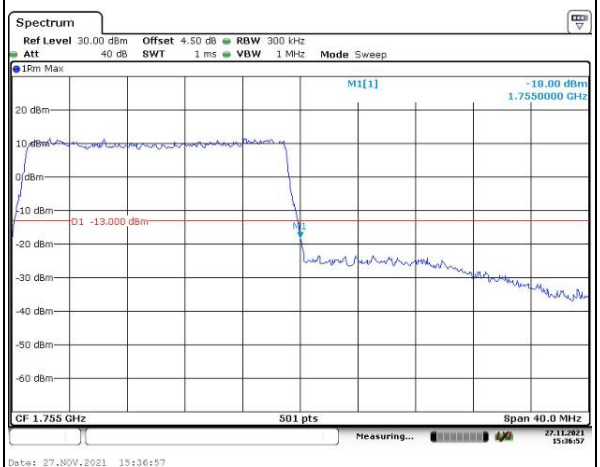
Spurious Emissions at Antenna Terminal		
Channel	**15MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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		

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

4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	CR21110024-RF-S4	Test Date:	2021-11-27~2022-01-06
Test Site:	RF	Test Mode:	Transmitting
Tester:	Le Qiao	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	22.1~22.9	Relative Humidity: (%)	40~66	ATM Pressure: (kPa)	101.4~101.7

Test Equipment List and Details:					
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	Spectrum Analyzer	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 5▲:					
Antenna Gain (dBi):	3	Antenna Gain (dBd):	0.85	Cable Loss (dB):	0.1
Operation Voltage(V_{DC}):					
Lowest:	3.5	Normal:	3.8	Highest:	4.35

Test Frequency For Each Mode:			
Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	824.7	836.5	848.3
3MHz	825.5	836.5	847.5
5MHz	826.5	836.5	846.5
10MHz	829	836.5	844

Test Data:

FCC§2.1046;§ 22.913 (a)						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	23.38	23.36	23.53	24.36	38.45
	RB1#3	23.32	23.42	23.54		
	RB1#5	23.34	23.51	23.52		
	RB3#0	23.37	23.61	23.41		
	RB3#3	23.35	23.59	23.46		
	RB6#0	22.40	22.52	22.51		
1.4MHz 16QAM	RB1#0	22.77	23.12	21.99	23.89	38.45
	RB1#3	22.75	23.10	22.03		
	RB1#5	22.75	23.14	22.02		
	RB3#0	22.23	22.39	22.17		
	RB3#3	22.27	22.40	22.22		
	RB6#0	21.35	21.55	21.71		
3MHz QPSK	RB1#0	23.27	23.36	23.61	24.39	38.45
	RB1#8	23.20	23.43	23.58		
	RB1#14	23.26	23.45	23.64		
	RB6#0	22.39	22.48	22.50		
	RB6#9	22.50	22.48	22.45		
	RB15#0	22.18	22.48	22.37		
3MHz 16QAM	RB1#0	22.50	22.69	22.00	23.49	38.45
	RB1#8	22.43	22.72	21.94		
	RB1#14	22.64	22.74	22.07		
	RB6#0	21.47	21.66	21.50		
	RB6#9	21.50	21.65	21.64		
	RB15#0	21.38	21.55	21.41		
5MHz QPSK	RB1#0	23.29	23.55	23.35	24.46	38.45
	RB1#13	23.27	23.64	23.27		
	RB1#24	23.30	23.71	23.30		
	RB15#0	22.31	22.49	22.47		
	RB15#10	22.48	22.42	22.46		
	RB25#0	22.52	22.56	22.57		
5MHz 16QAM	RB1#0	21.77	22.40	22.50	23.26	38.45
	RB1#13	21.86	22.41	22.36		
	RB1#24	21.81	22.51	22.45		
	RB15#0	21.39	21.40	21.48		
	RB15#10	21.46	21.42	21.38		
	RB25#0	21.43	21.46	21.59		

10MHz QPSK	RB1#0	23.29	23.35	23.39	24.26	38.45
	RB1#25	23.33	23.47	23.40		
	RB1#49	23.45	23.51	23.41		
	RB25#0	22.47	22.57	22.45		
	RB25#25	22.41	22.39	22.52		
	RB50#0	22.37	22.58	22.33		
10MHz 16QAM	RB1#0	22.80	23.05	22.29	23.92	38.45
	RB1#25	22.78	23.13	22.20		
	RB1#49	22.79	23.17	22.31		
	RB25#0	21.36	21.57	21.67		
	RB25#25	21.46	21.61	21.60		
	RB50#0	21.47	21.48	21.47		
Note: ERP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBd)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.14	3.13	3.97	13
	RB50#0	4.20	4.35	4.38	13
10MHz 16QAM	RB1#0	4.93	4.17	4.61	13
	RB50#0	5.25	5.36	5.62	13
				Result:	**Pass**

FCC §2.1049, §22.905:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.102	1.114	1.254	1.278	1.302
1.4MHz 16QAM	1.108	1.096	1.108	1.272	1.254	1.332
3MHz QPSK	2.707	2.695	2.695	3.000	3.012	2.940
3MHz 16QAM	2.695	2.695	2.695	3.024	3.012	2.952
5MHz QPSK	4.531	4.531	4.511	5.000	5.040	5.020
5MHz 16QAM	4.511	4.551	4.551	5.000	5.000	5.040
10MHz QPSK	8.981	8.942	8.942	9.880	9.840	9.720
10MHz 16QAM	8.942	8.981	8.942	9.800	9.840	9.840
Note: The test plots please refer to the Plots of Occupied Bandwidth						

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

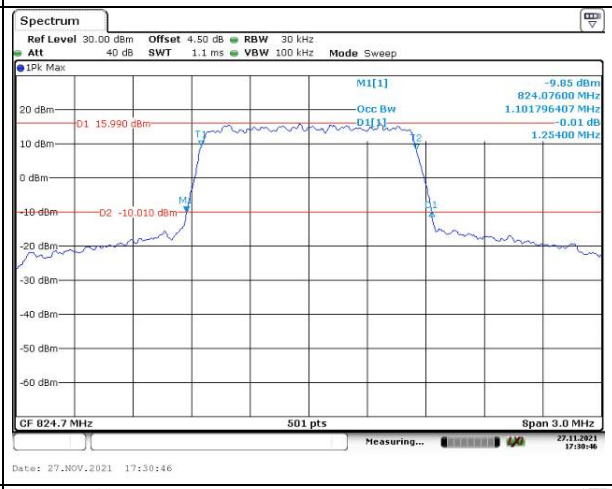
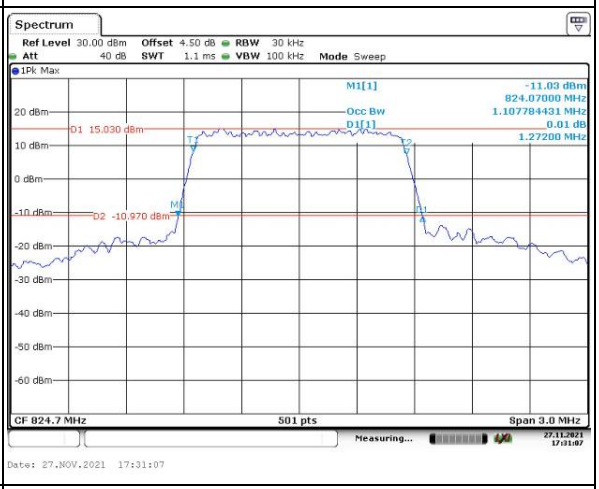
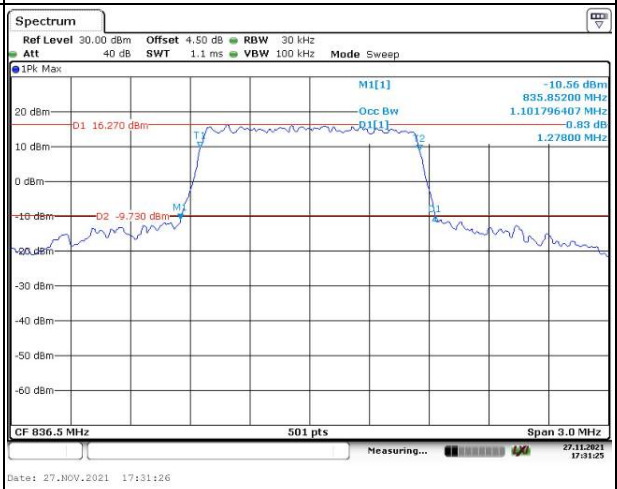
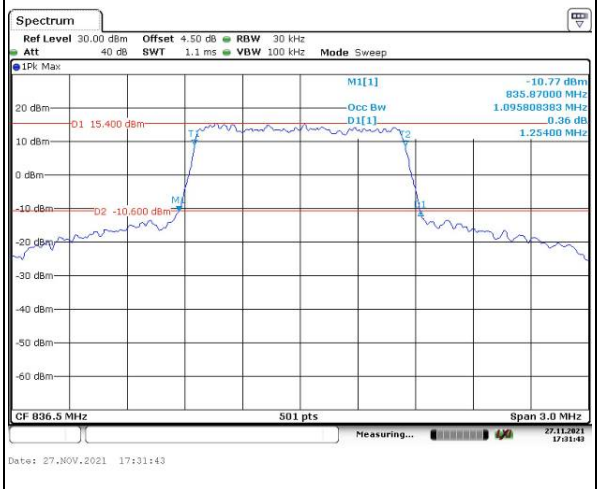
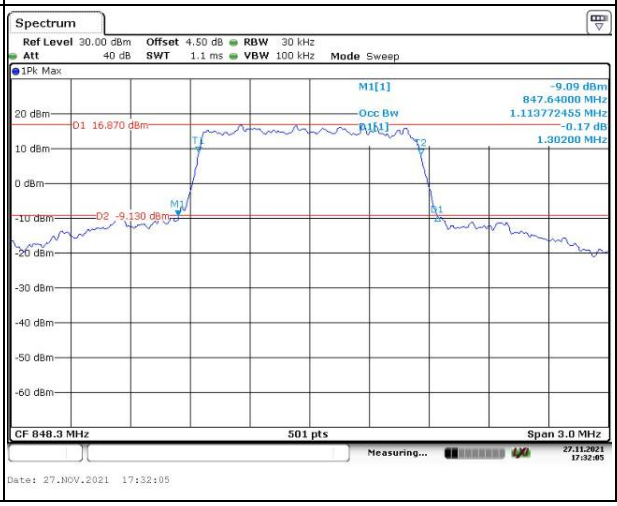
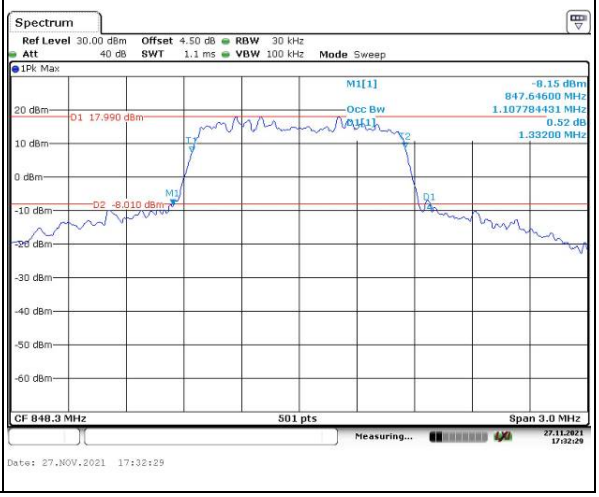
FCC §2.1051, §22.917(a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

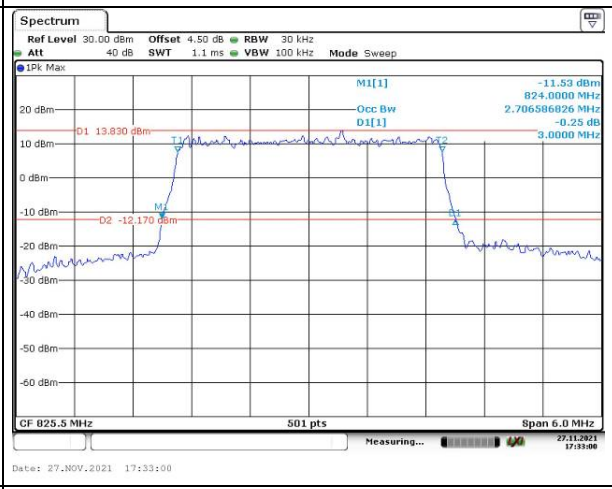
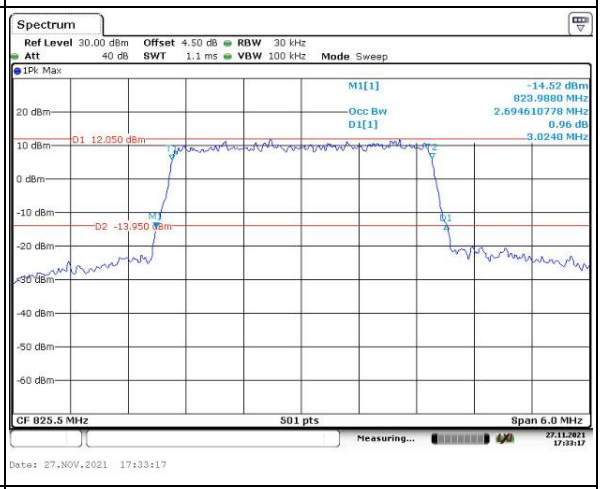
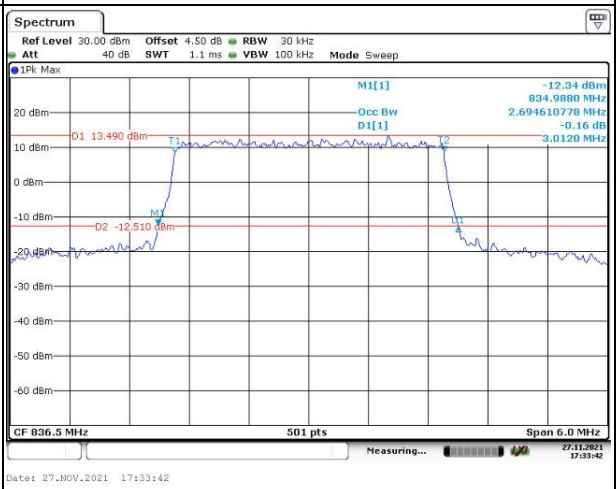
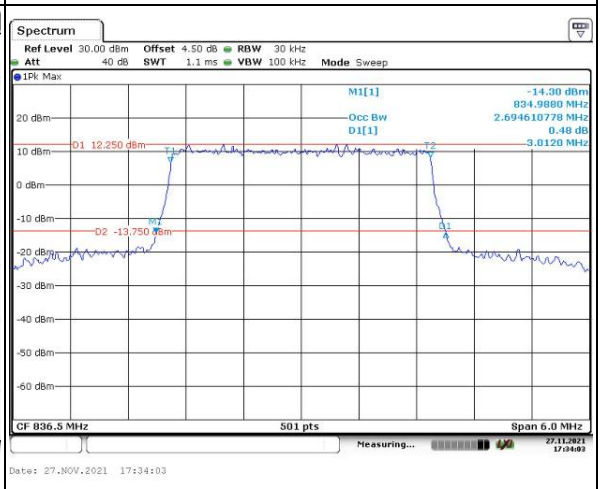
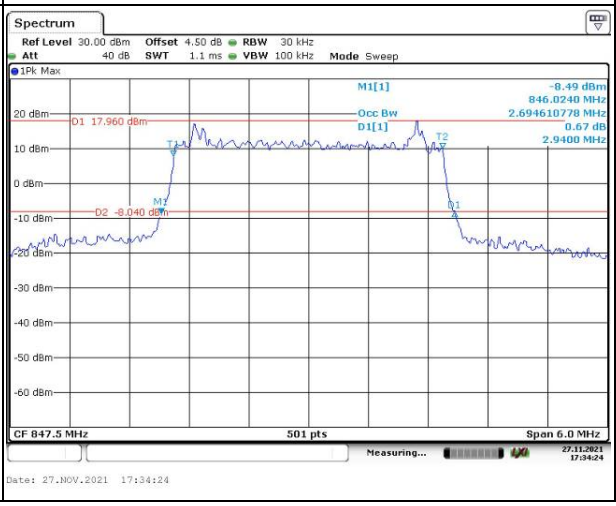
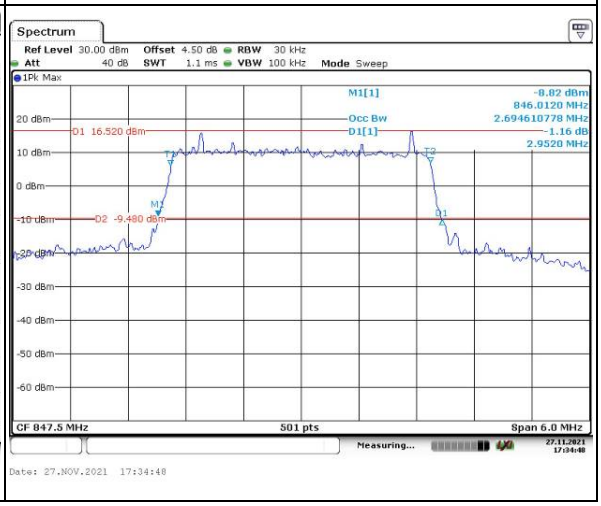
FCC §2.1055, §22.355: Frequency Stability

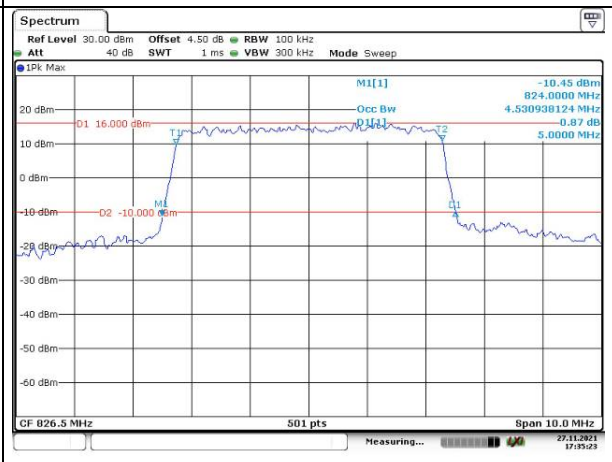
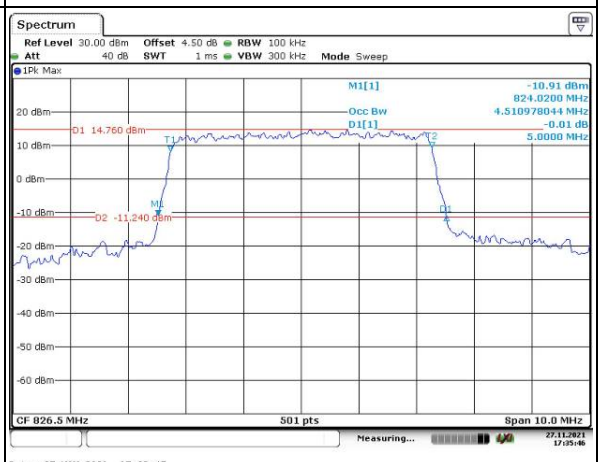
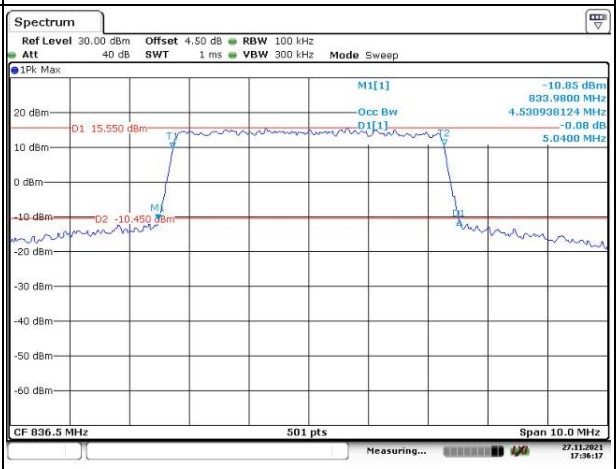
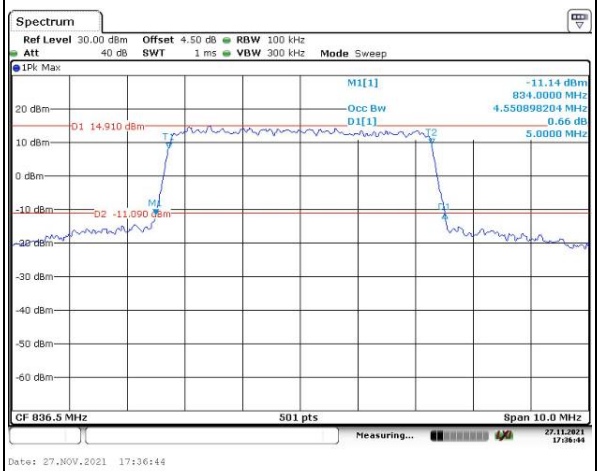
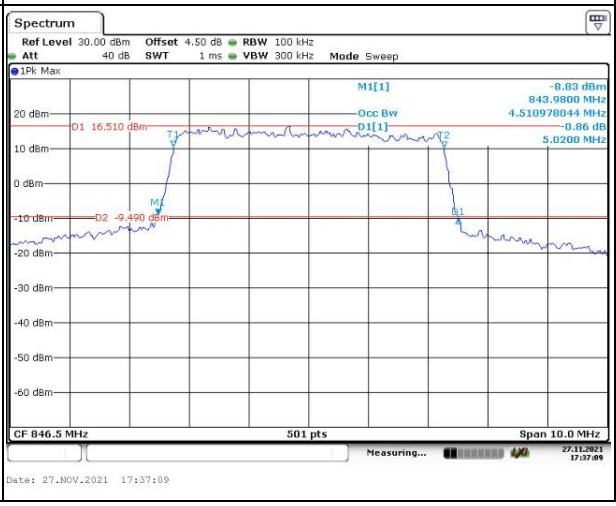
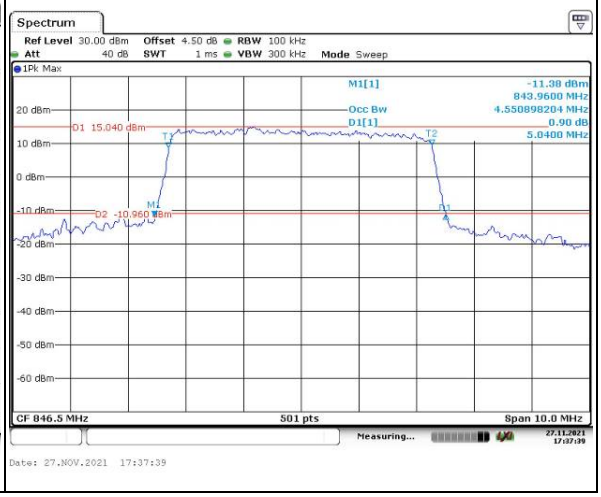
Test Mode:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	-10.47	-0.013	2.5
	-20	3.8	9.22	0.011	2.5
	-10	3.8	-8.73	-0.010	2.5
	0	3.8	-7.38	-0.009	2.5
	10	3.8	6.34	0.008	2.5
	20	3.8	-9.27	-0.011	2.5
	30	3.8	-8.46	-0.010	2.5
	40	3.8	7.44	0.009	2.5
	50	3.8	-7.38	-0.009	2.5
Frequency Stability vs. Voltage	20	3.5	-9.56	-0.011	2.5
	20	4.35	-5.53	-0.007	2.5
				Result:	**Pass**

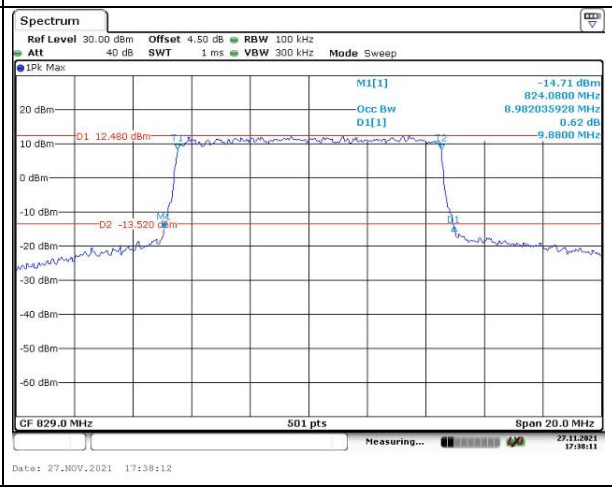
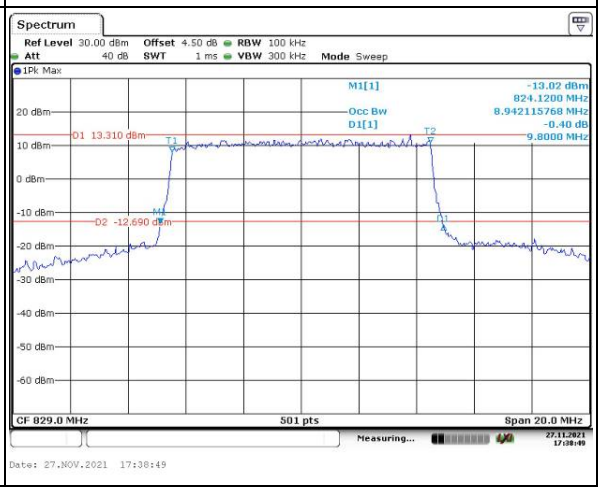
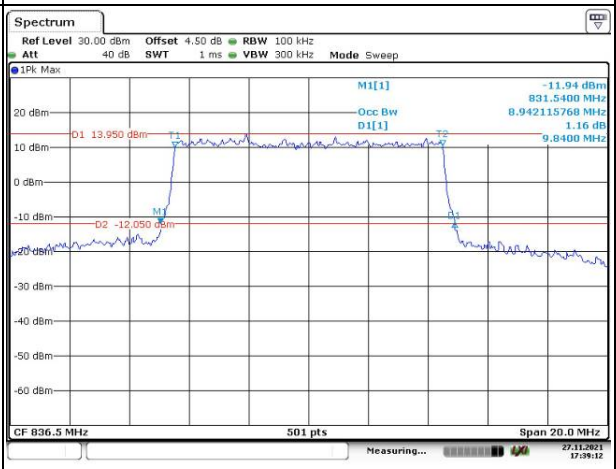
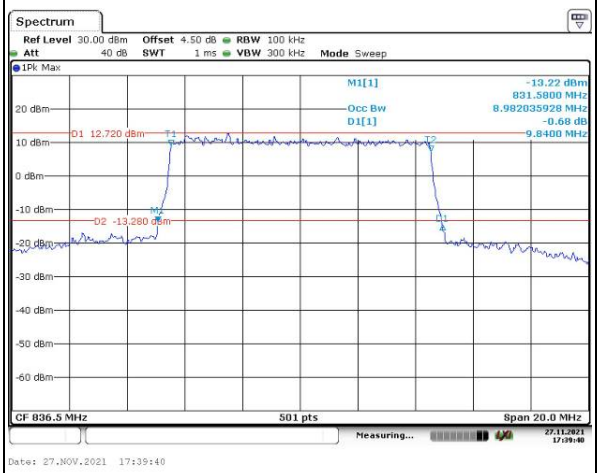
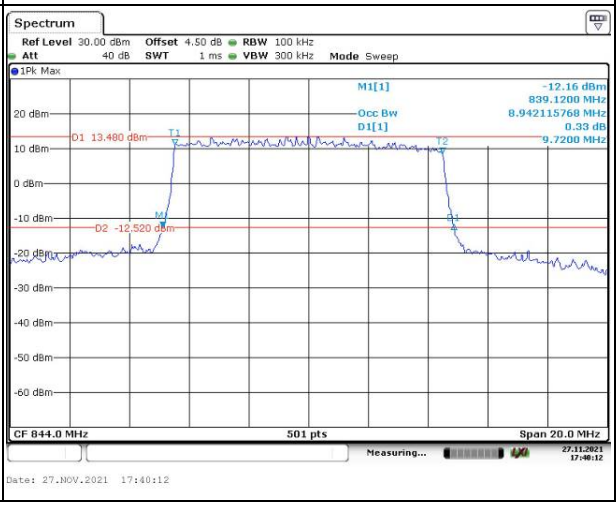
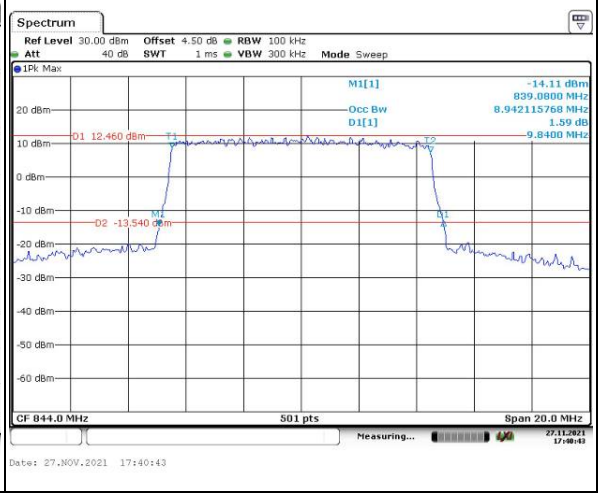
Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	-46.01	-0.055	2.5
	-20	3.8	8.52	0.010	2.5
	-10	3.8	-9.15	-0.011	2.5
	0	3.8	6.27	0.007	2.5
	10	3.8	-5.58	-0.007	2.5
	20	3.8	-7.90	-0.009	2.5
	30	3.8	-8.31	-0.010	2.5
	40	3.8	7.90	0.009	2.5
	50	3.8	-6.20	-0.007	2.5
Frequency Stability vs. Voltage	20	3.5	8.42	0.010	2.5
	20	4.35	7.56	0.009	2.5
				Result:	**Pass**

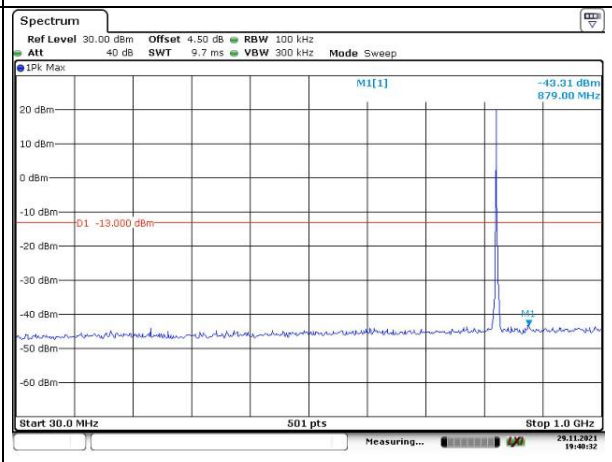
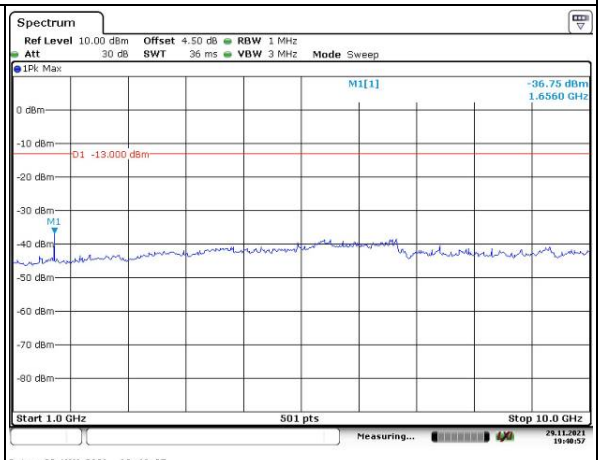
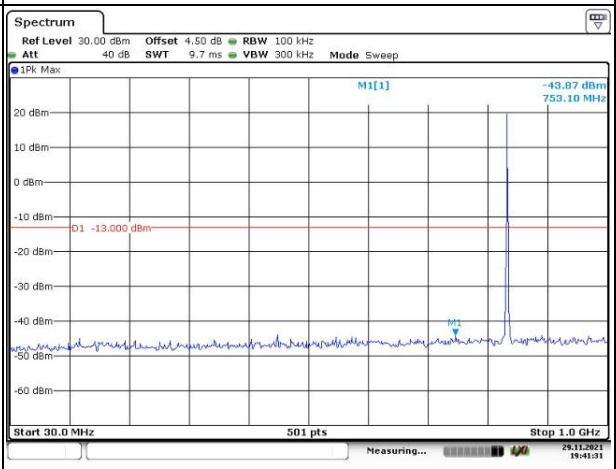
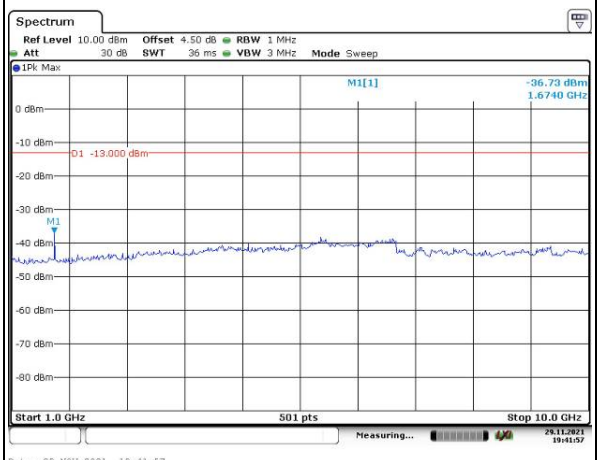
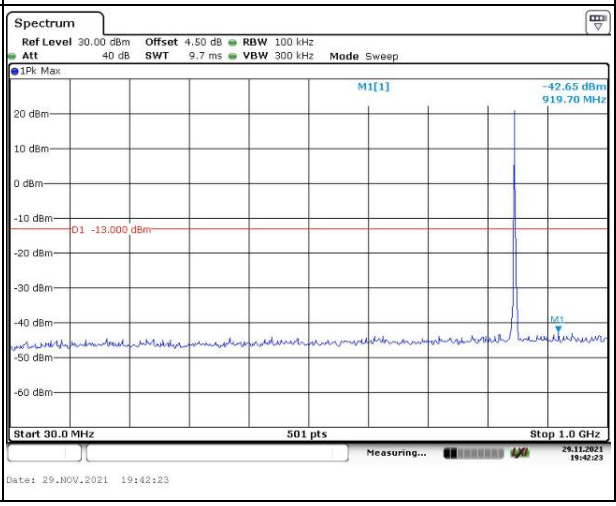
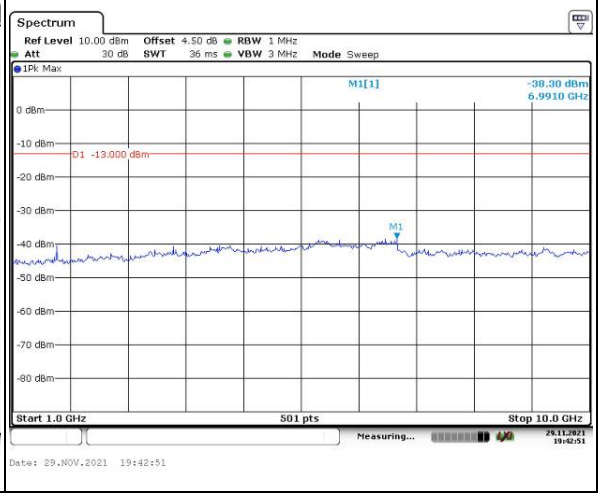
Test Plots:

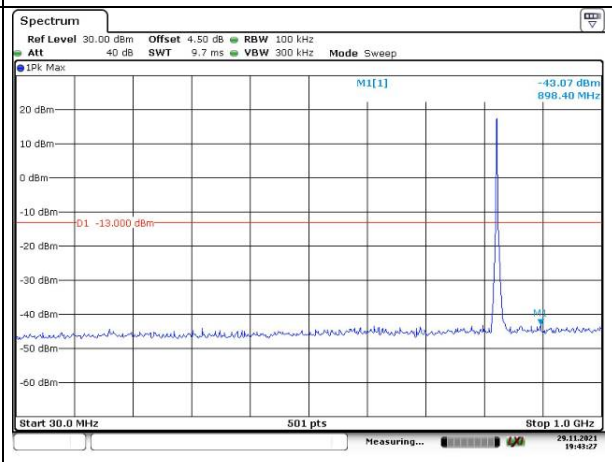
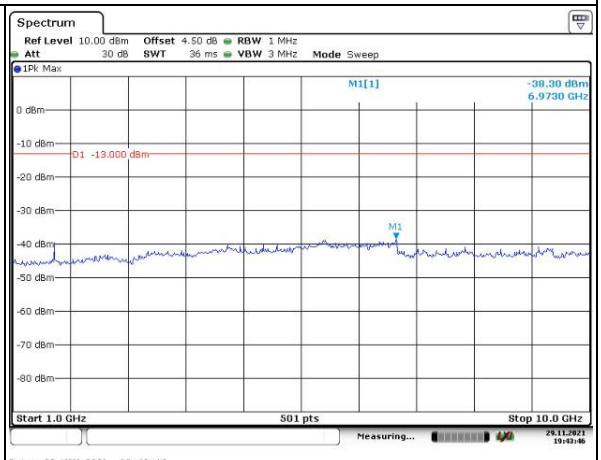
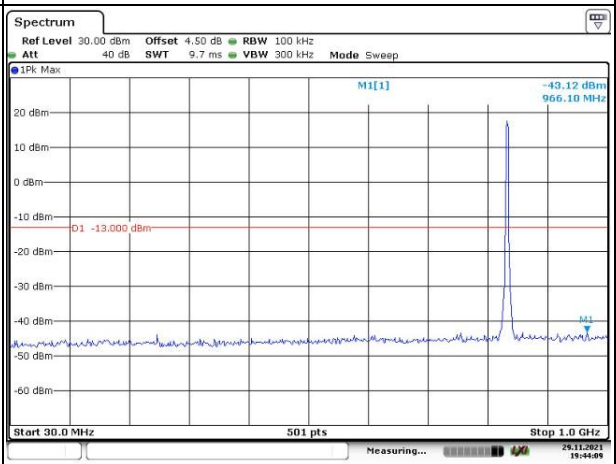
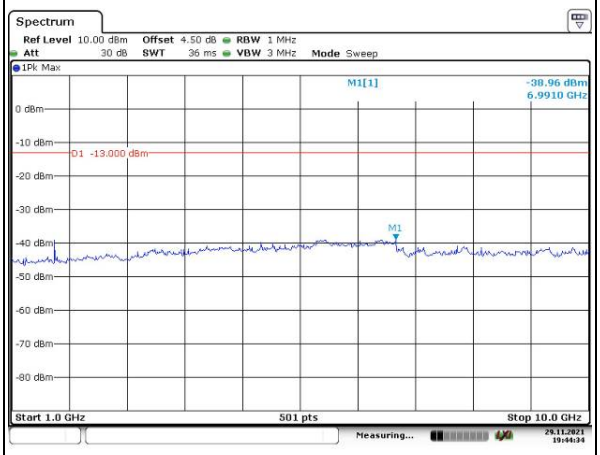
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

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		

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