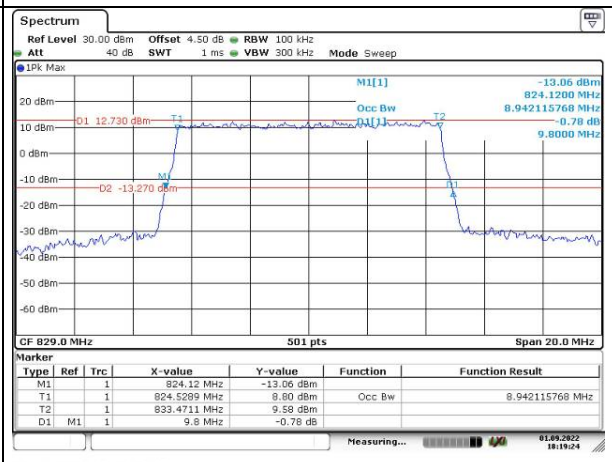
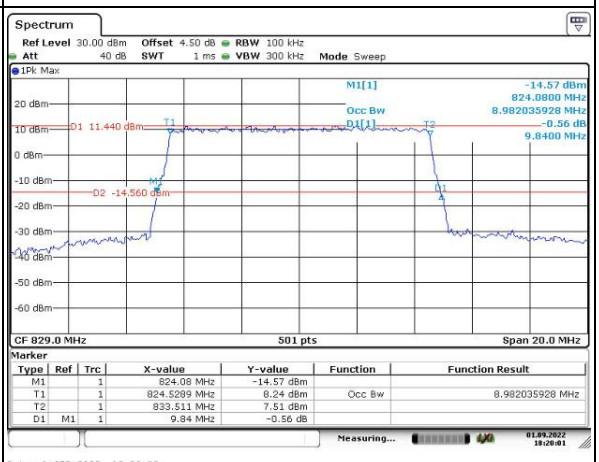
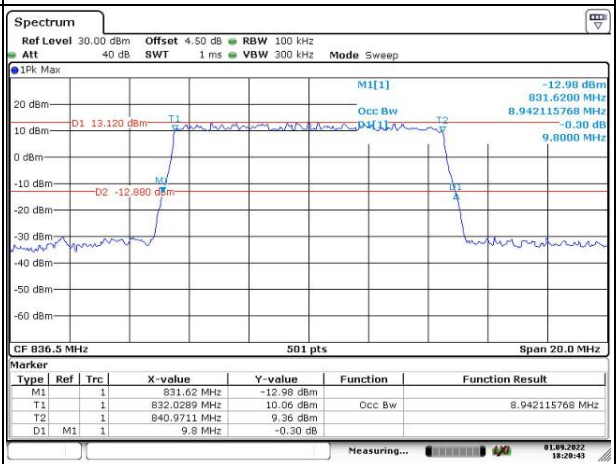
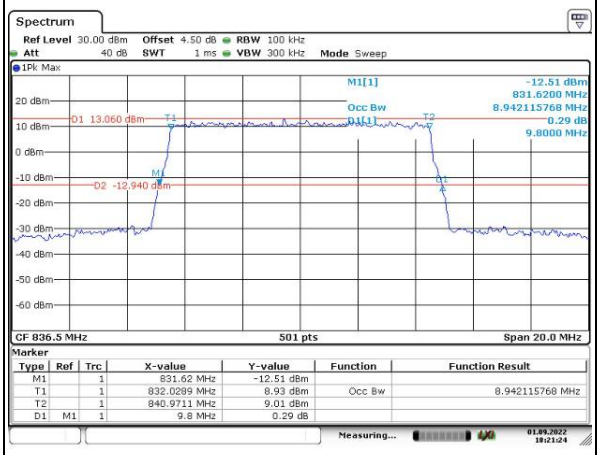
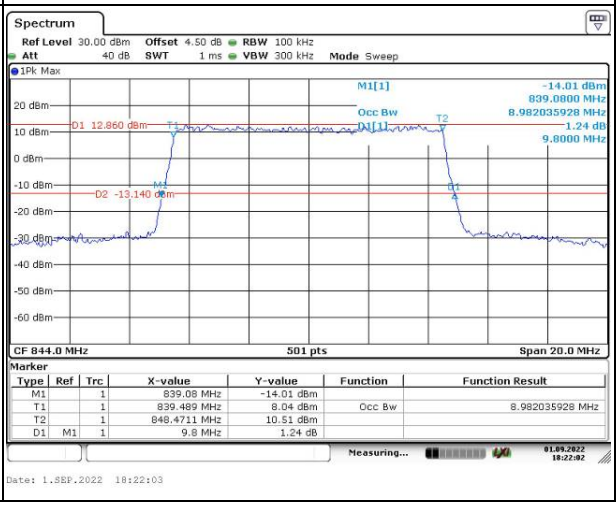
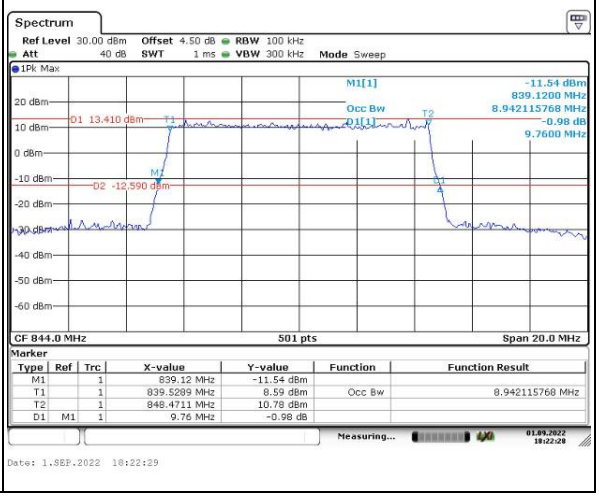
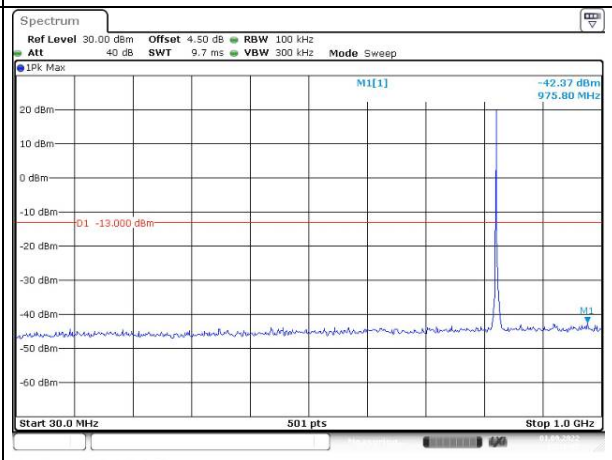
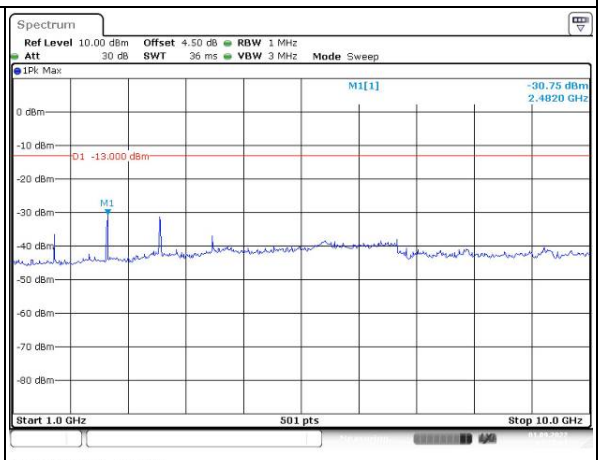
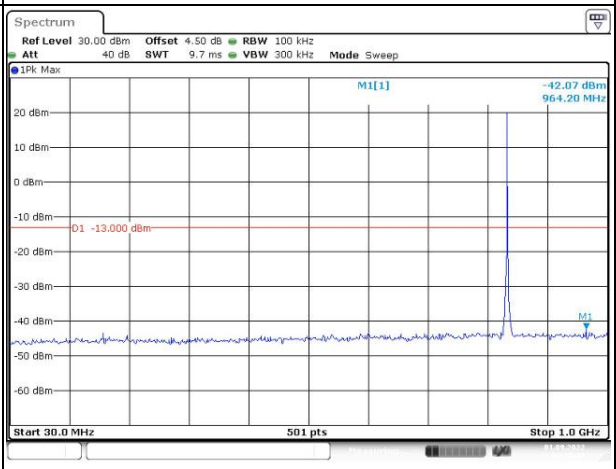
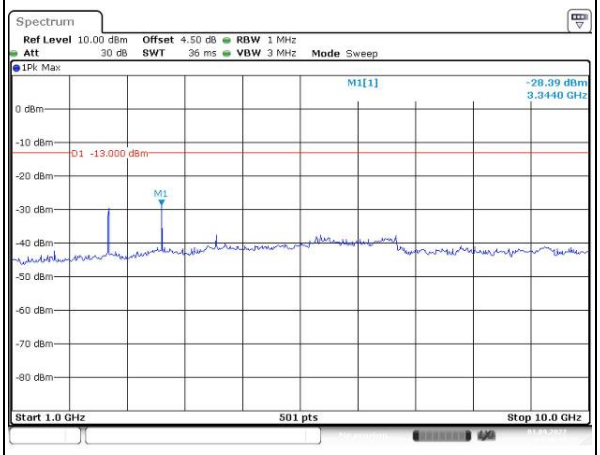
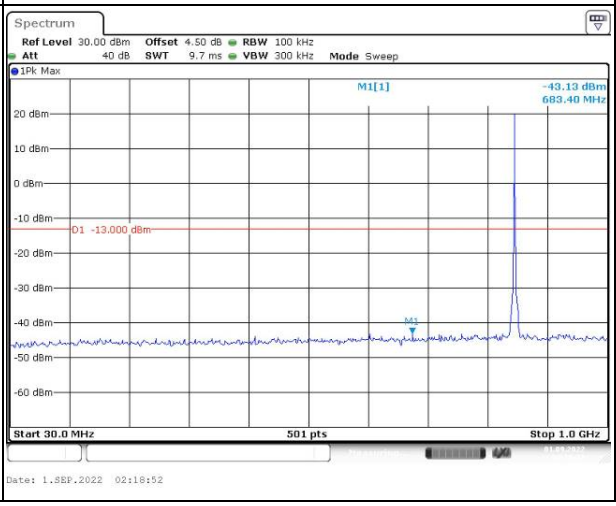
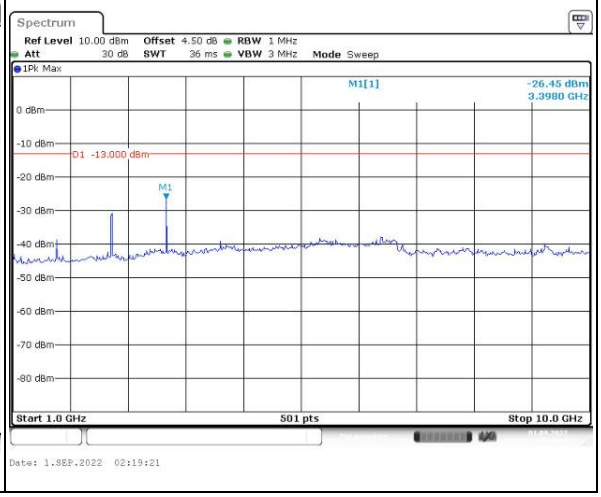
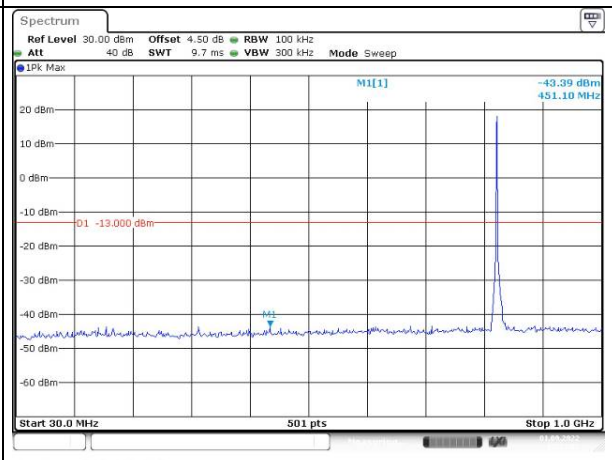
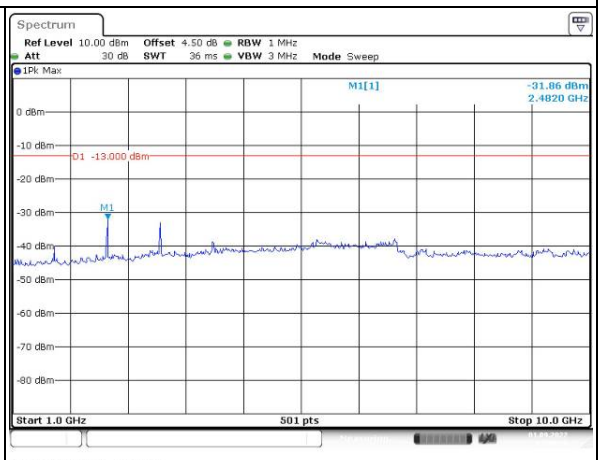
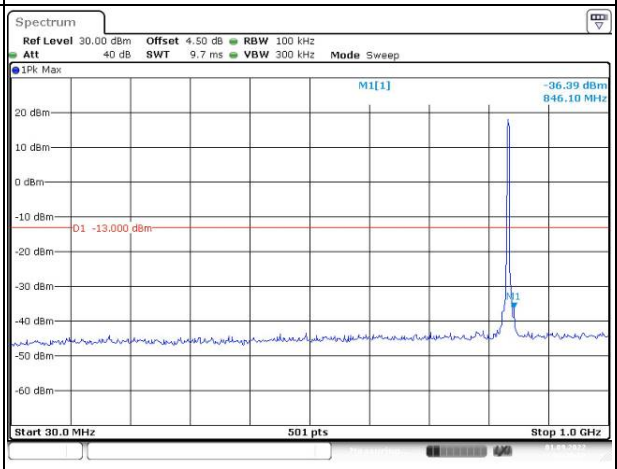
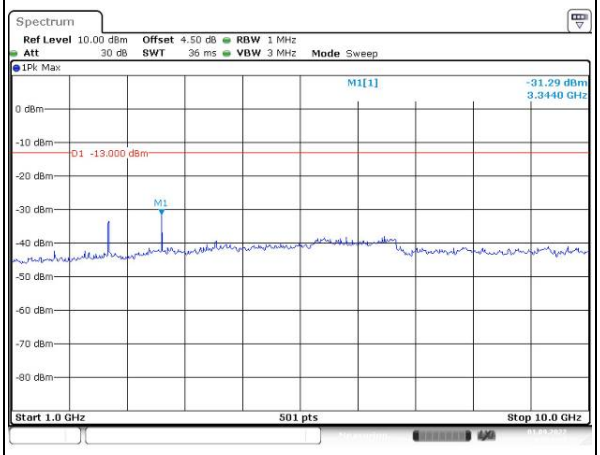
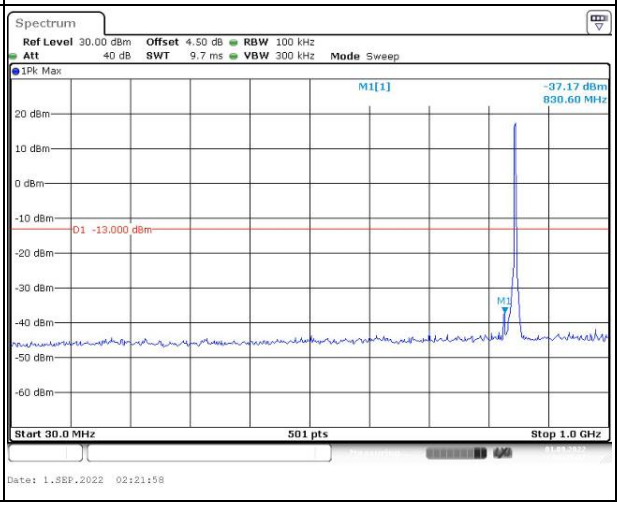
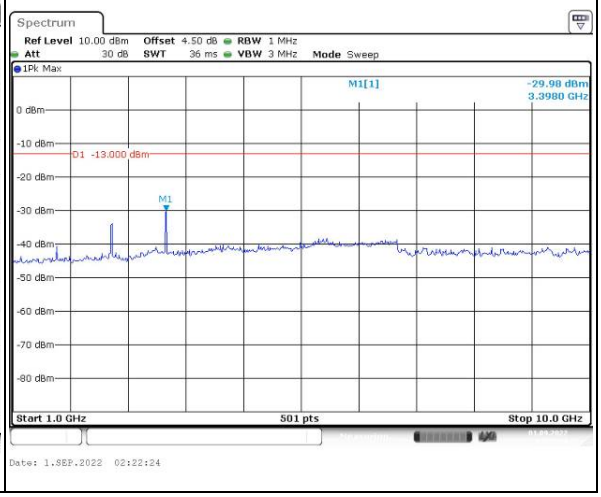
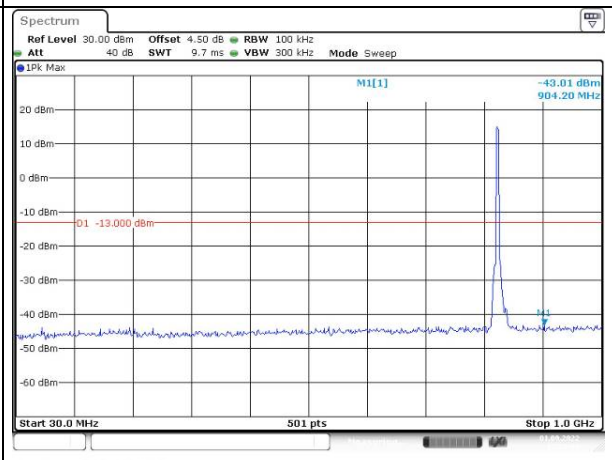
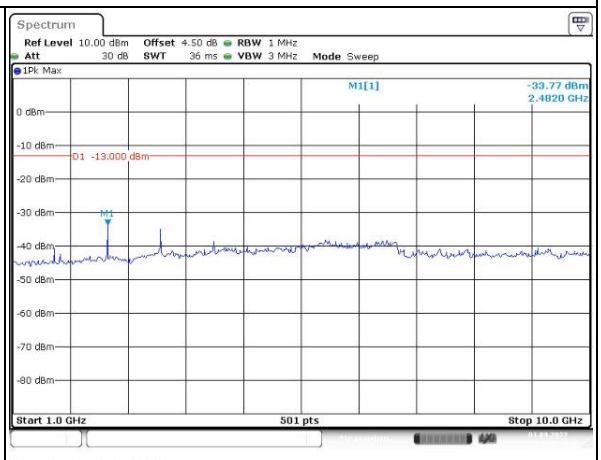
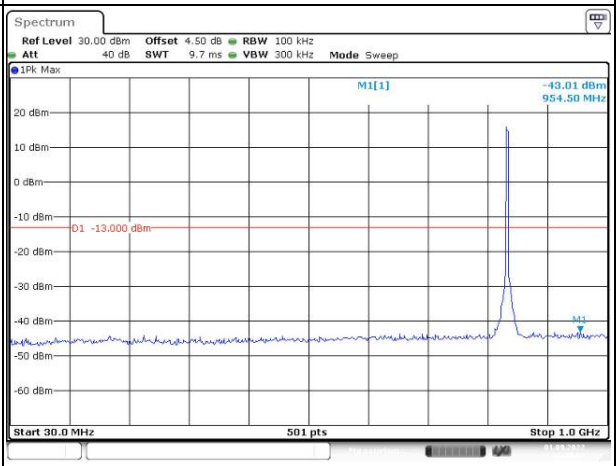
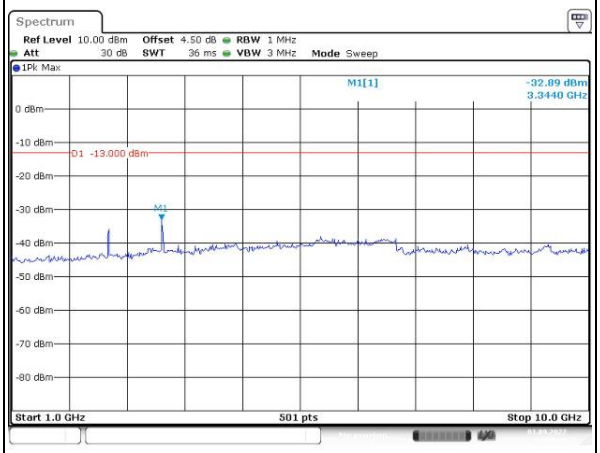
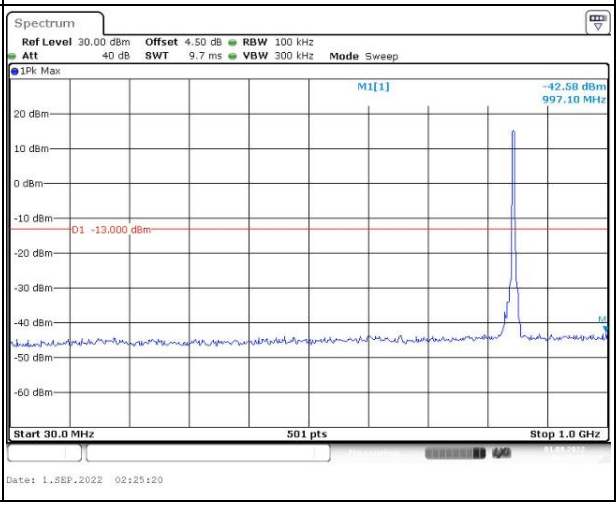
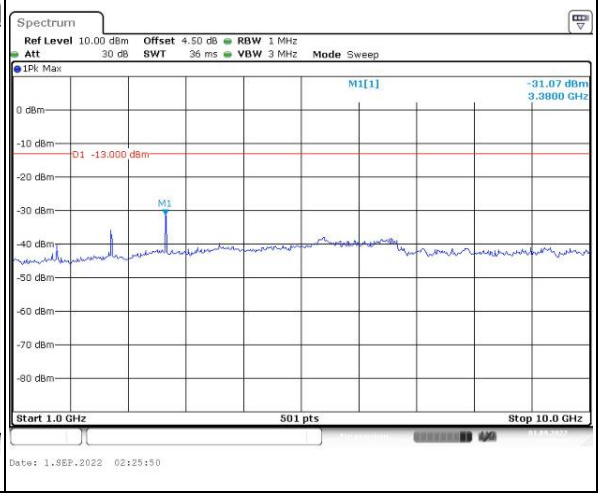
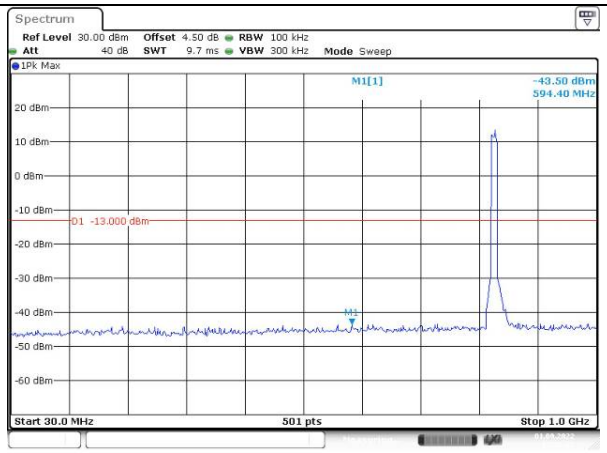
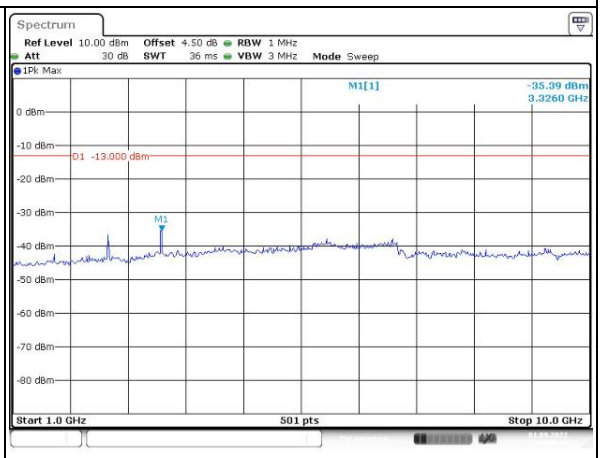
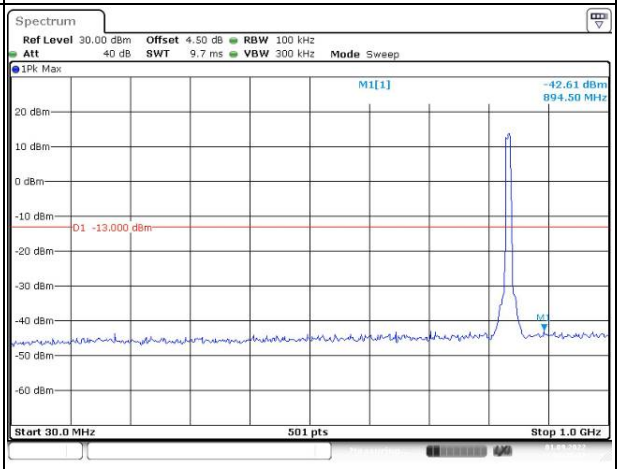
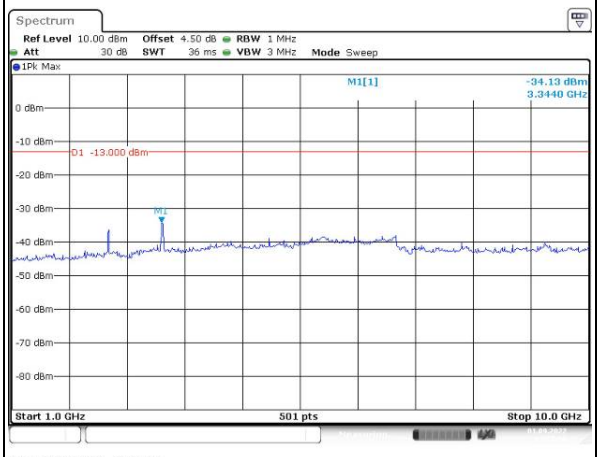
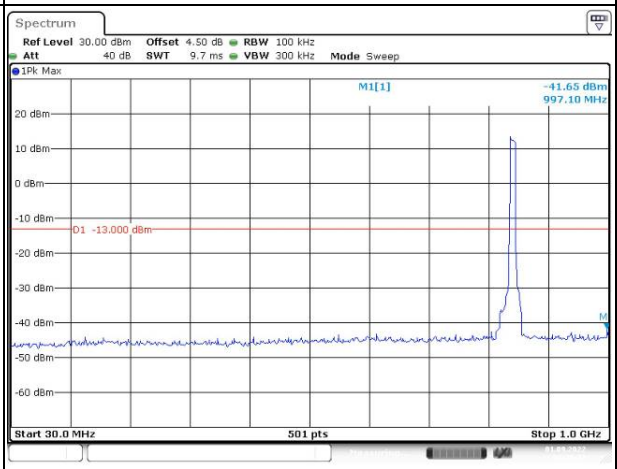
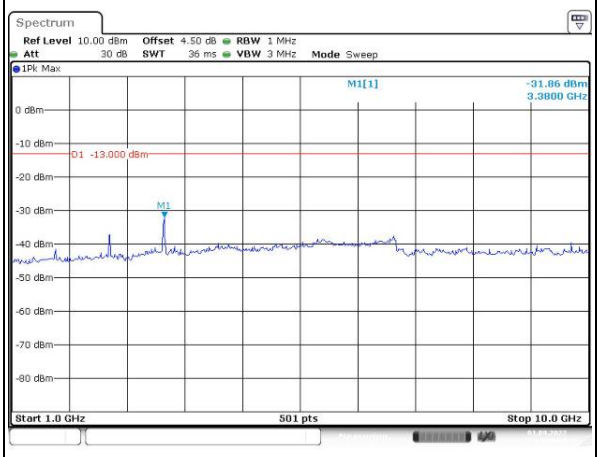
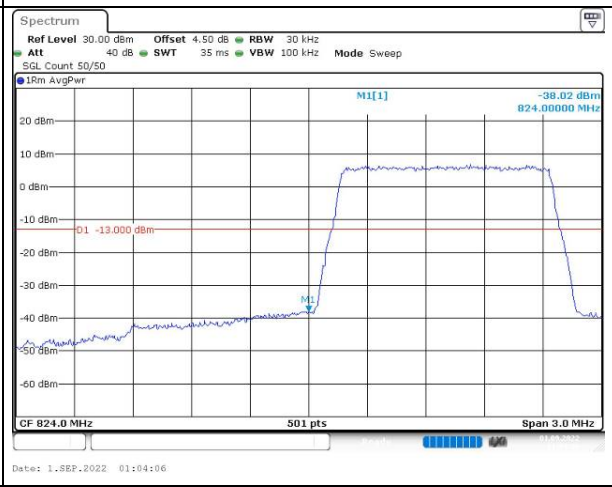
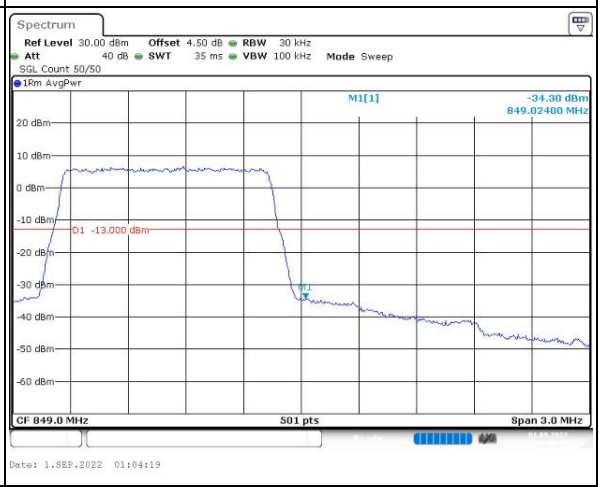
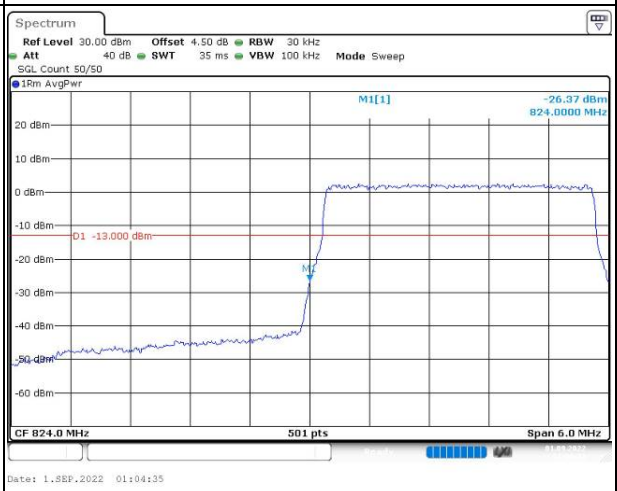
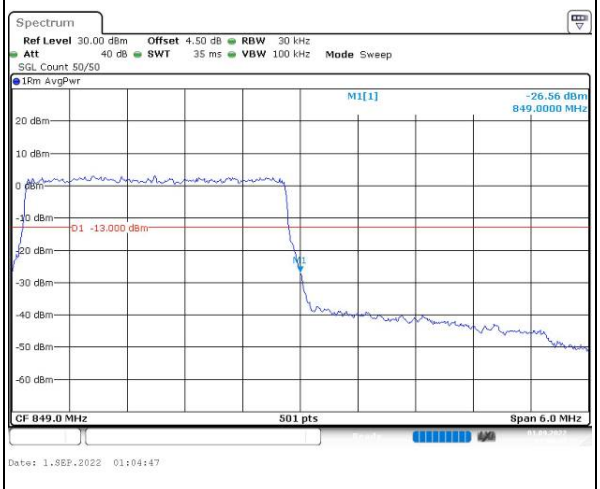
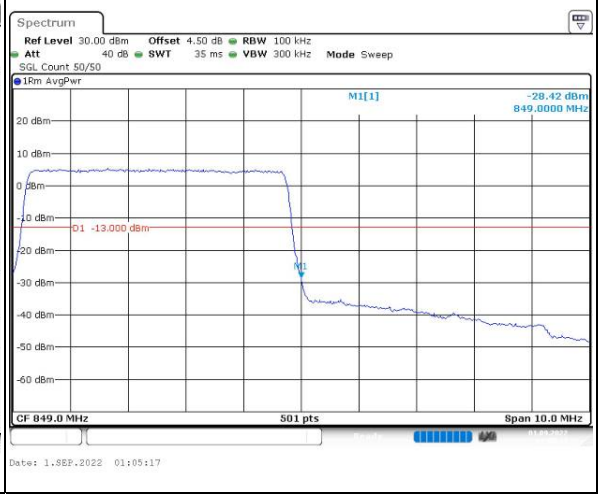
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

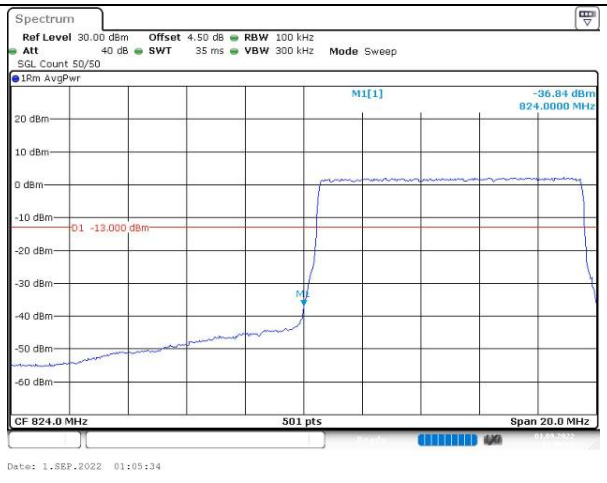
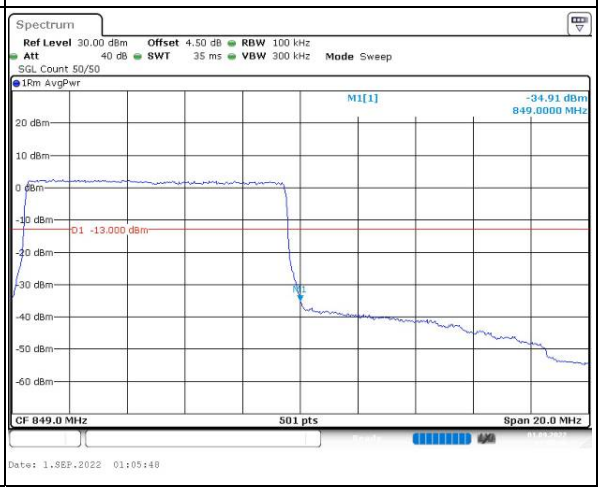
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

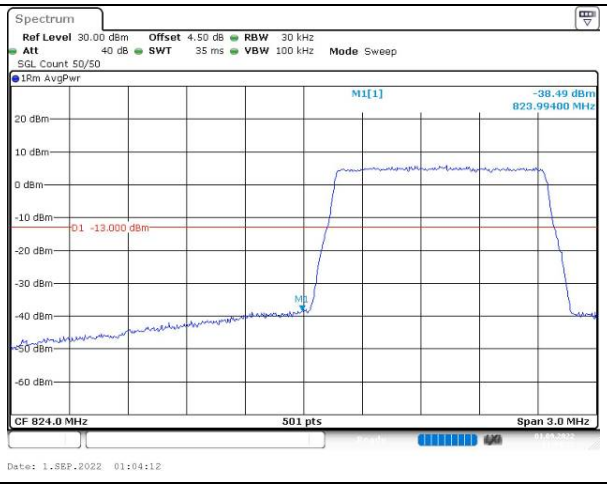
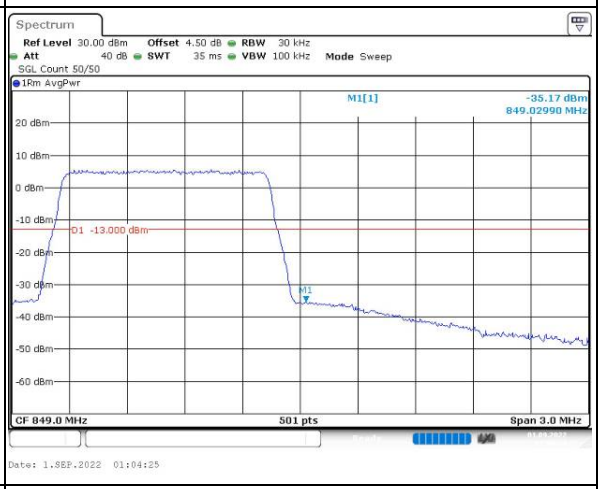
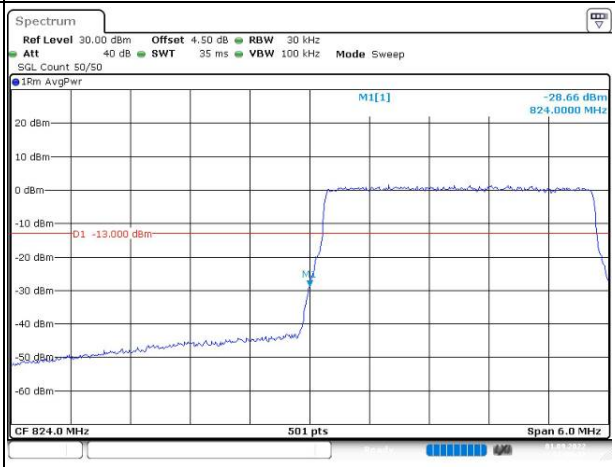
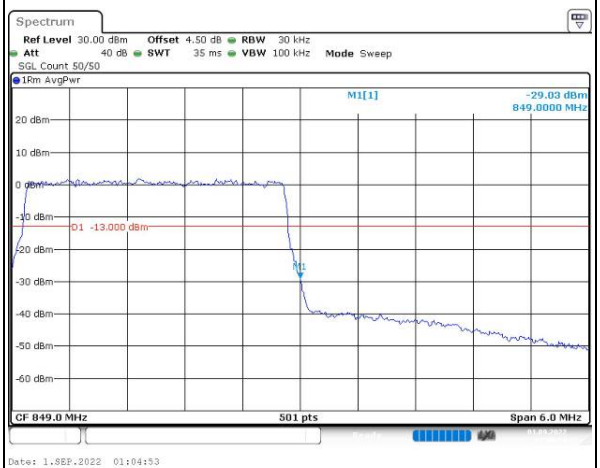
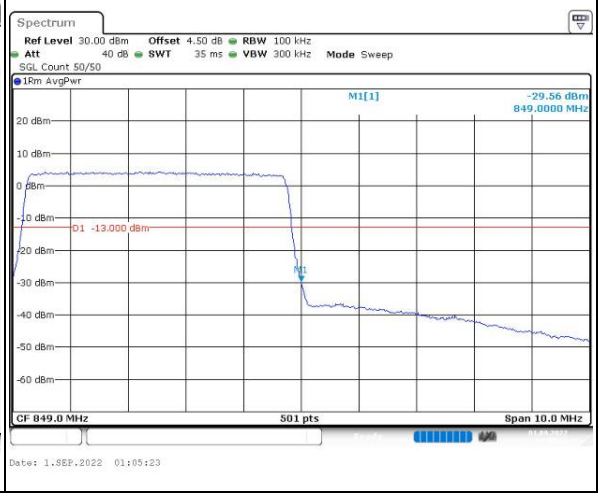
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

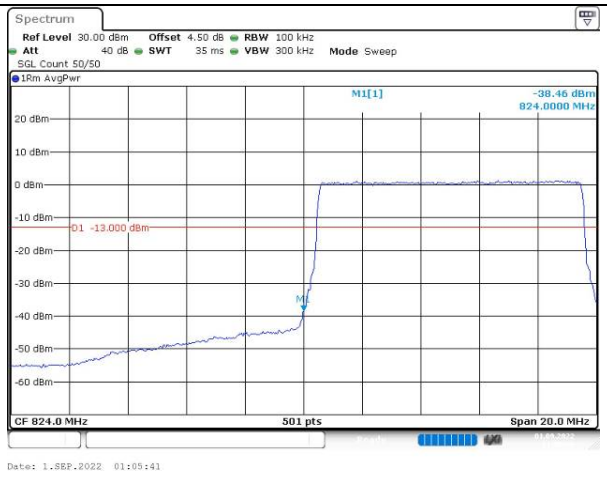
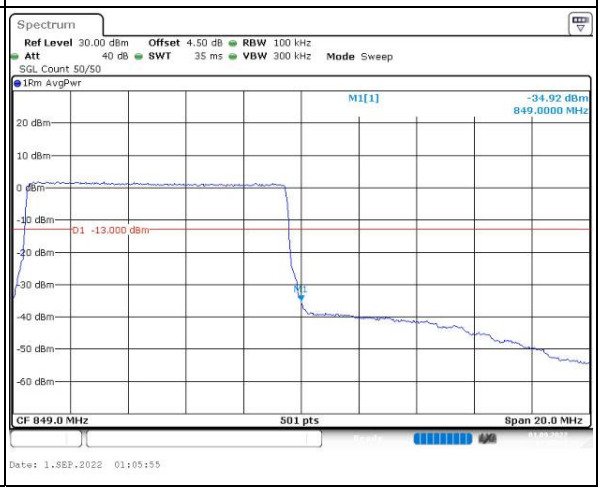
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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

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

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

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

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

4.9 Antenna Port Test Data and Results for LTE Band 12

Serial Number:	CR22080045-RF-S1	Test Date:	2022-08-31~2022-09-02
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.2~25.9	Relative Humidity: (%)	53~61	ATM Pressure: (kPa)	100.1~100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022-07-15	2023-07-14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204004	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-07-15	2023-07-14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-04-06	2023-04-05
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

EUT Information@ LTE Band 12▲:					
Antenna Gain (dBi):	0.21	Antenna Gain (dBd):	-1.94	Path Loss L_C (dB):	0.2
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	699.7	707.5	715.3
3MHz	700.5	707.5	714.5
5MHz	701.5	707.5	713.5
10MHz	704	707.5	711

Test Data:

FCC§2.1046;§ 27.50(c) (10)

RF Output Power:

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.77	22.78	22.7	20.8	34.77
	RB1#3	22.62	22.92	22.68		
	RB1#5	22.83	22.94	22.74		
	RB3#0	22.79	22.85	22.8		
	RB3#3	22.81	22.8	22.68		
	RB6#0	21.72	21.9	21.79		
1.4MHz 16QAM	RB1#0	22.7	21.4	22.21	20.56	34.77
	RB1#3	22.51	21.87	22.19		
	RB1#5	22.5	21.8	22.14		
	RB3#0	21.62	21.78	21.77		
	RB3#3	21.79	21.67	21.77		
	RB6#0	20.96	20.95	21.42		
3MHz QPSK	RB1#0	22.75	22.77	22.77	20.7	34.77
	RB1#8	22.82	22.82	22.77		
	RB1#14	22.8	22.84	22.76		
	RB6#0	21.78	21.57	21.86		
	RB6#9	21.42	21.9	21.83		
	RB15#0	21.64	21.99	21.91		
3MHz 16QAM	RB1#0	22.43	21.05	21.91	20.29	34.77
	RB1#8	22.37	21.45	21.99		
	RB1#14	22.23	21.64	21.85		
	RB6#0	20.82	21.22	20.64		
	RB6#9	20.59	21.08	21.19		
	RB15#0	20.77	20.92	20.66		
5MHz QPSK	RB1#0	22.74	22.57	22.57	20.64	34.77
	RB1#13	22.73	22.71	22.62		
	RB1#24	22.78	22.6	22.43		
	RB15#0	21.69	21.51	21.58		
	RB15#10	21.33	22.01	21.73		
	RB25#0	21.42	21.92	21.66		
5MHz 16QAM	RB1#0	21.76	21.03	20.76	20.22	34.77
	RB1#13	21.61	21.37	20.71		
	RB1#24	22.36	21.44	20.68		
	RB15#0	20.6	21.28	20.71		
	RB15#10	20.54	20.86	20.58		
	RB25#0	20.58	20.77	20.54		
10MHz QPSK	RB1#0	22.55	22.64	22.41	20.65	34.77
	RB1#25	22.54	22.79	22.62		

	RB1#49	22.71	22.78	22.7		
	RB25#0	21.16	21.35	21.66		
	RB25#25	21.57	21.84	21.6		
	RB50#0	21.99	21.68	21.66		
10MHz 16QAM	RB1#0	21.63	20.81	21.36	19.96	34.77
	RB1#25	22.1	21.19	21.63		
	RB1#49	21.9	21.18	21.69		
	RB25#0	20.46	21.1	20.69		
	RB25#25	21.11	20.61	20.42		
	RB50#0	21	20.62	20.52		
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	5.01	5.88	4.84	13
	RB50#0	5.45	5.22	5.45	13
10MHz 16QAM	RB1#0	6.06	7.51	6.17	13
	RB50#0	6.35	6.29	6.43	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	1.102	1.102	1.254	1.254	1.254
1.4MHz 16QAM	1.09	1.102	1.108	1.248	1.248	1.266
3MHz QPSK	2.707	2.695	2.695	3	3.012	3
3MHz 16QAM	2.695	2.695	2.695	3	3.024	3.012
5MHz QPSK	4.531	4.491	4.531	5.02	5	5
5MHz 16QAM	4.551	4.531	4.551	5.02	5	5
10MHz QPSK	8.982	8.942	9.022	9.72	9.72	9.76
10MHz 16QAM	8.982	8.942	8.942	9.8	9.8	9.8
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.**

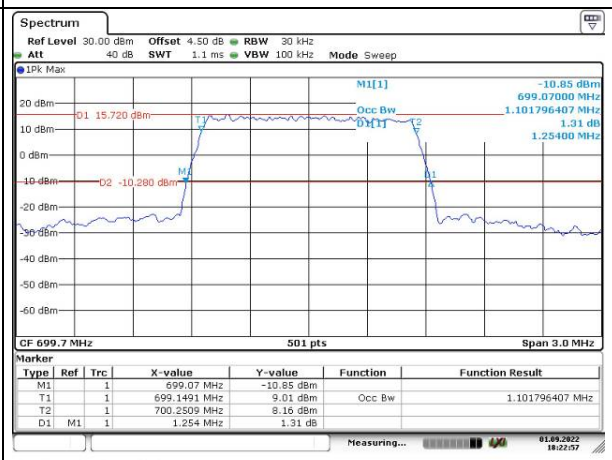
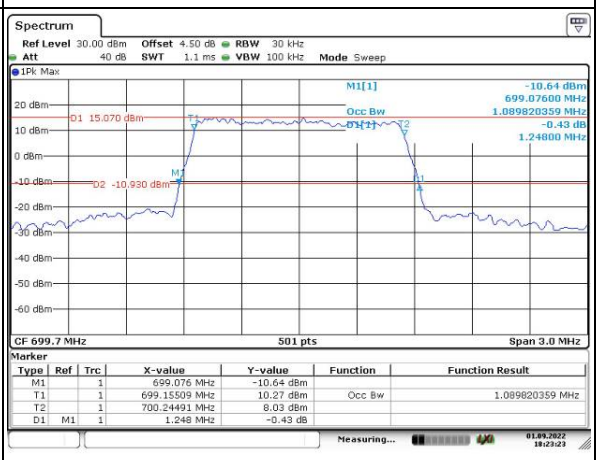
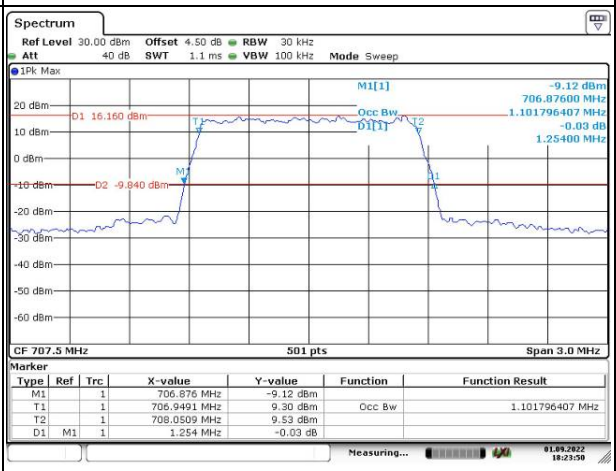
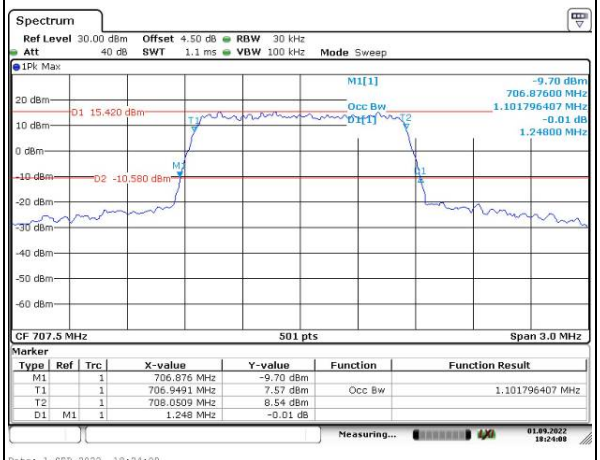
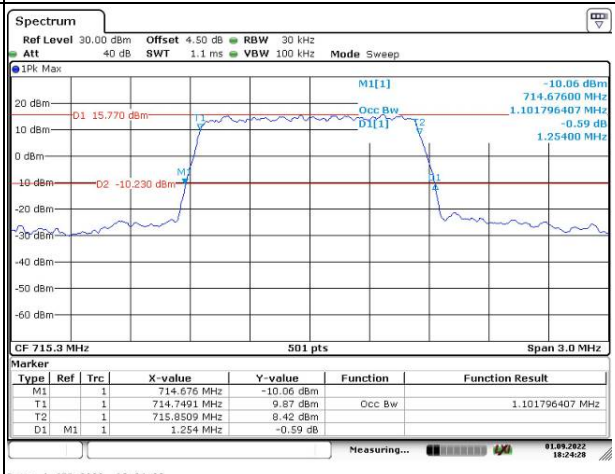
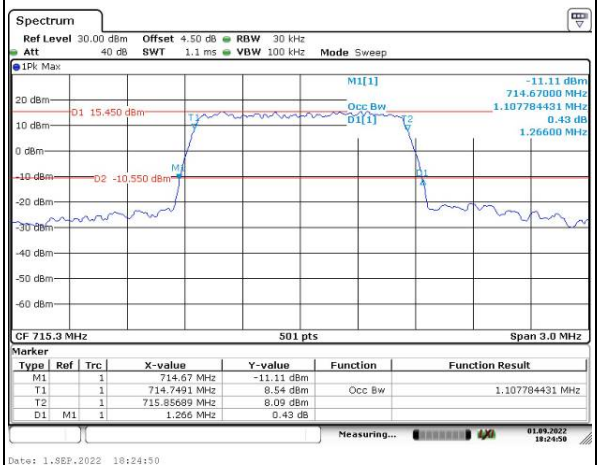
FCC §2.1051, §27.53:Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

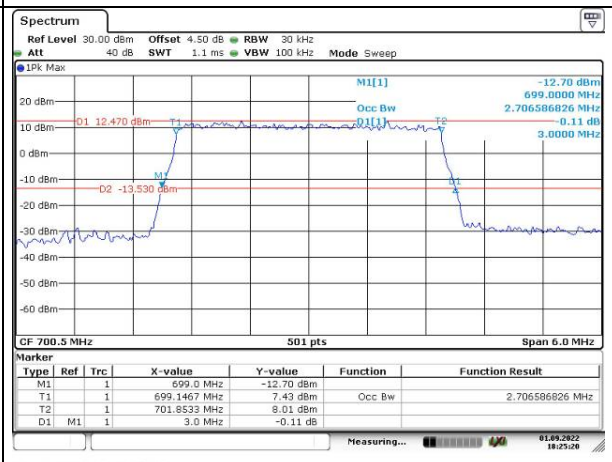
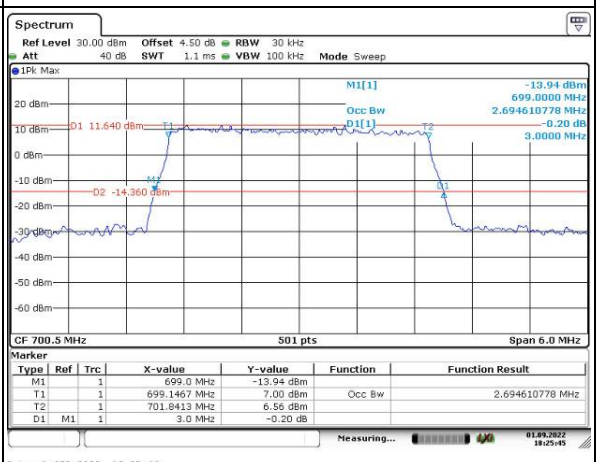
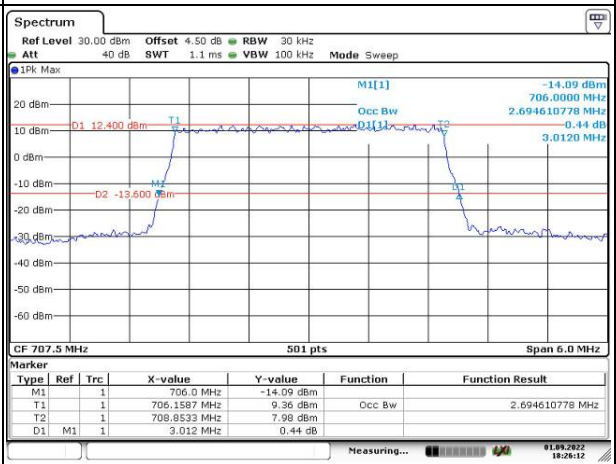
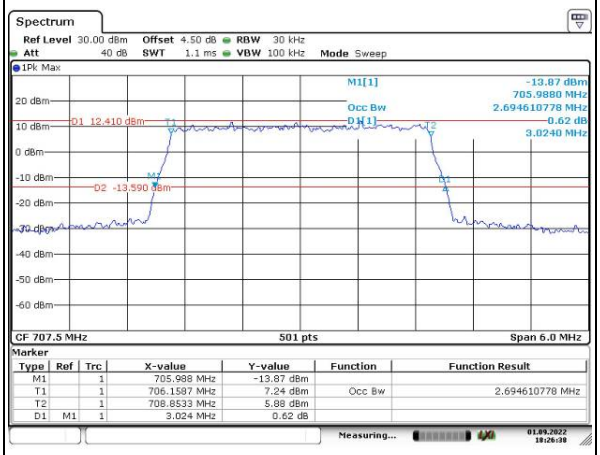
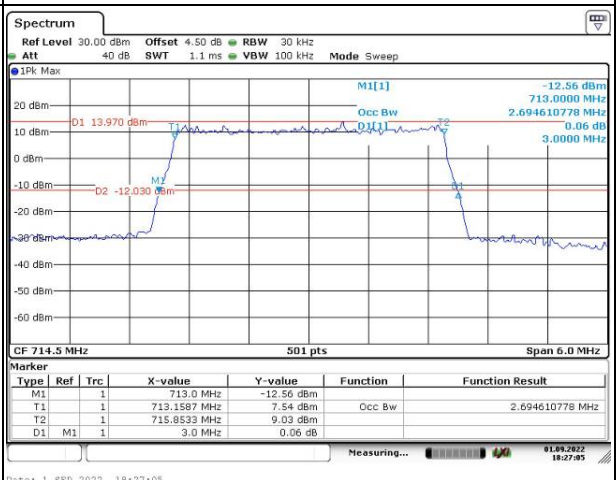
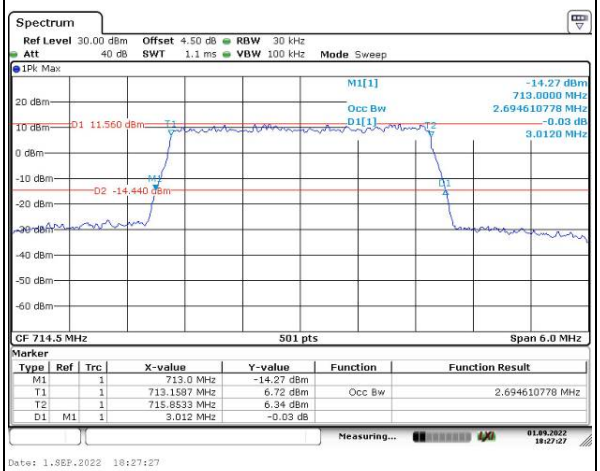
FCC §2.1055, §27.54: Frequency Stability

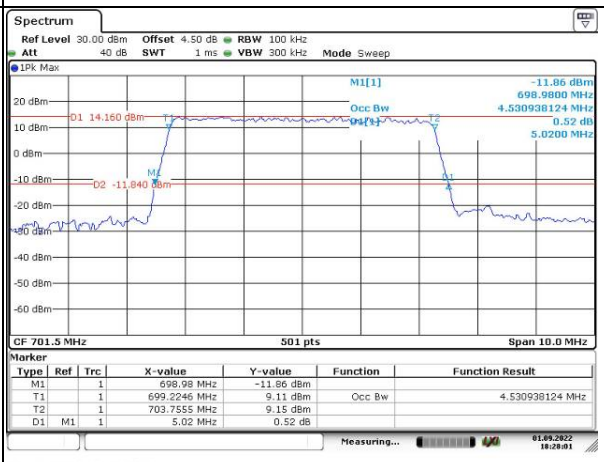
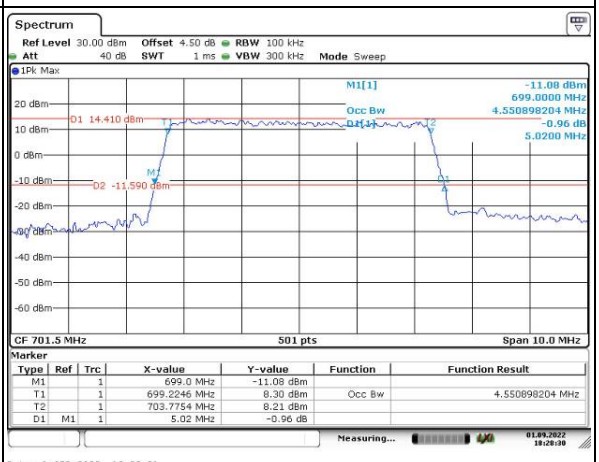
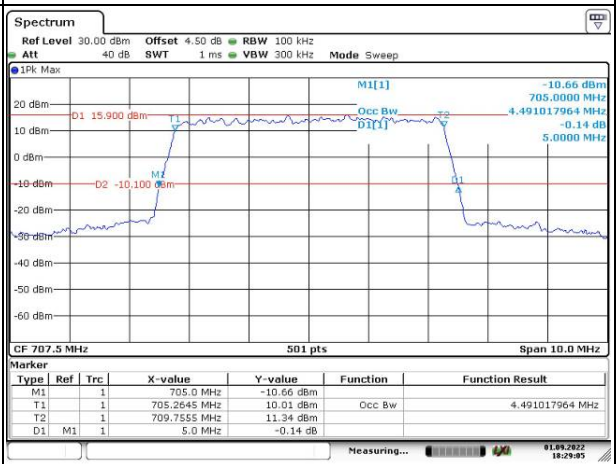
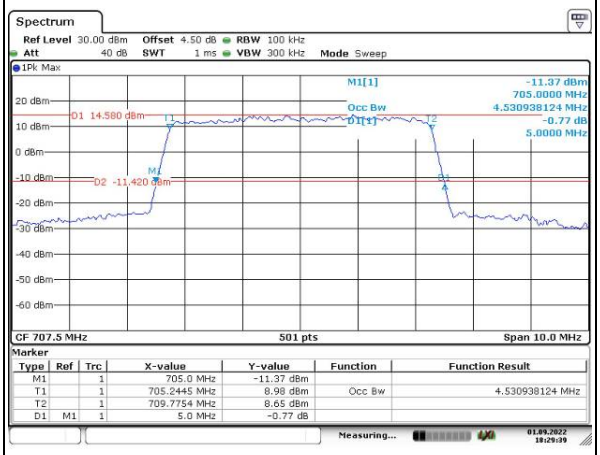
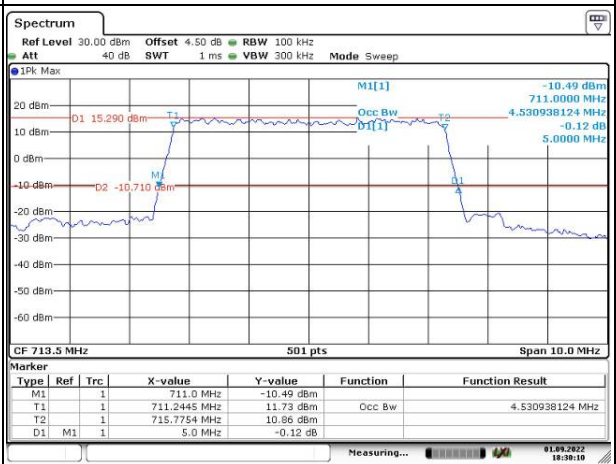
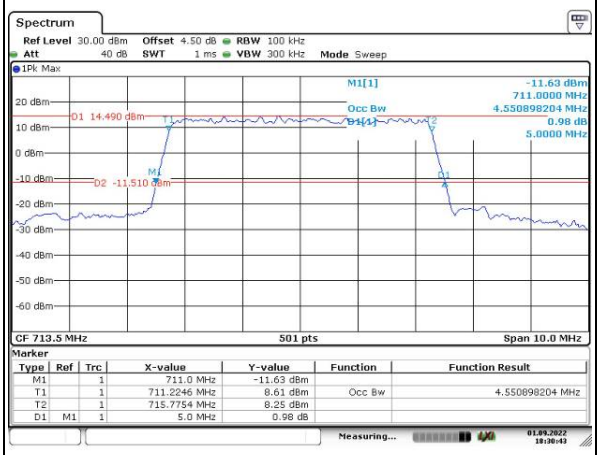
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.531	699.00	715.418	716.00
	-20	3.8	699.497	699.00	715.453	716.00
	-10	3.8	699.507	699.00	715.406	716.00
	0	3.8	699.558	699.00	715.419	716.00
	10	3.8	699.493	699.00	715.427	716.00
	20	3.8	699.529	699.00	715.471	716.00
	30	3.8	699.496	699.00	715.404	716.00
	40	3.8	699.539	699.00	715.495	716.00
	50	3.8	699.519	699.00	715.421	716.00
Frequency Stability vs. Voltage	20	3.5	699.567	699.00	715.482	716.00
	20	4.35	699.533	699.00	715.491	716.00
					Result:	**Pass**

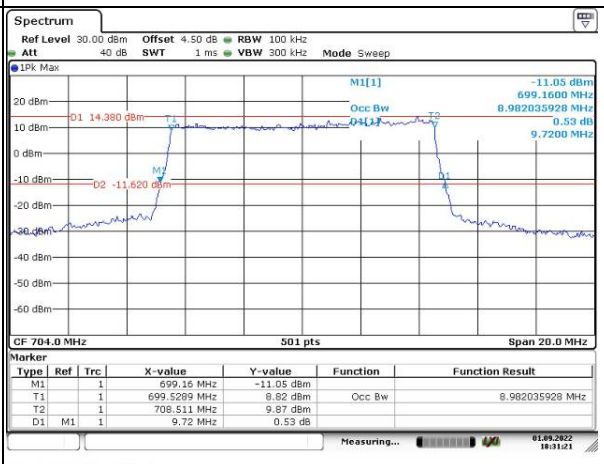
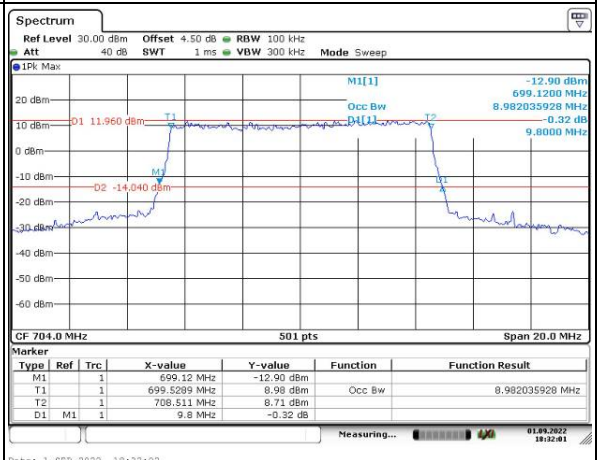
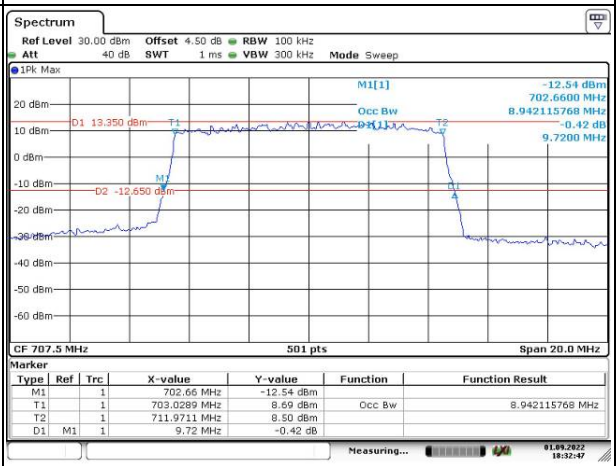
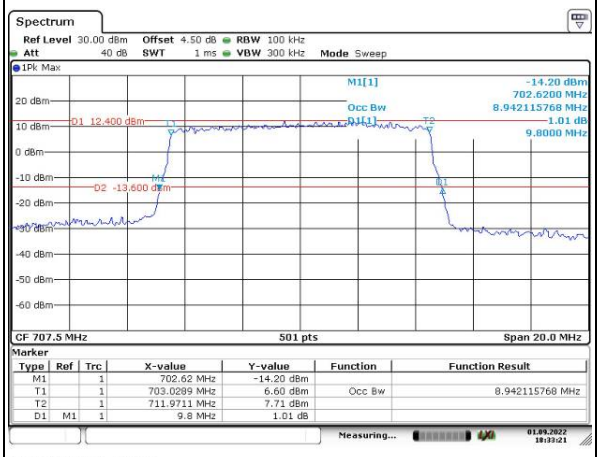
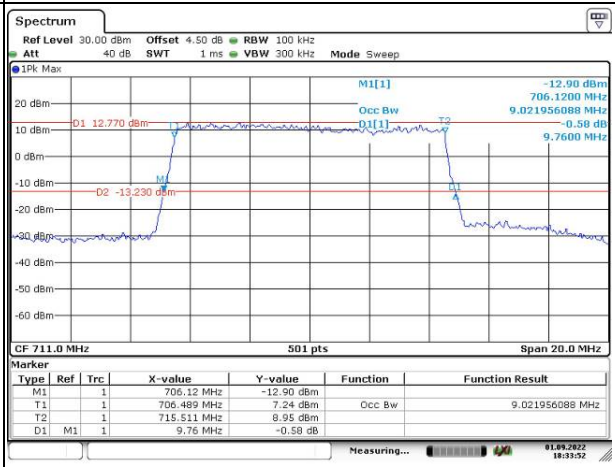
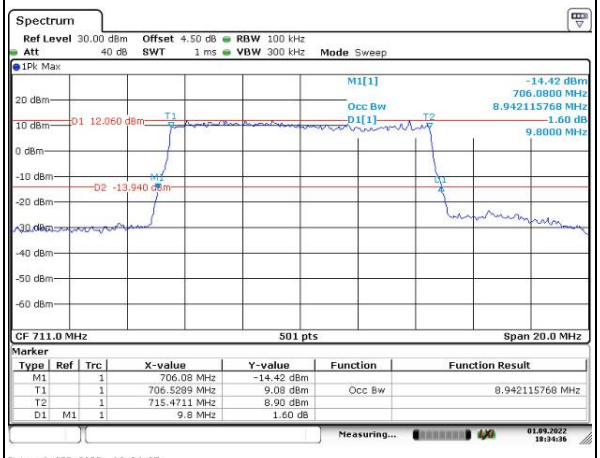
Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.554	699.00	715.553	716.00
	-20	3.8	699.519	699.00	715.523	716.00
	-10	3.8	699.575	699.00	715.573	716.00
	0	3.8	699.544	699.00	715.549	716.00
	10	3.8	699.537	699.00	715.507	716.00
	20	3.8	699.529	699.00	715.511	716.00
	30	3.8	699.537	699.00	715.492	716.00
	40	3.8	699.529	699.00	715.498	716.00
	50	3.8	699.542	699.00	715.490	716.00
Frequency Stability vs. Voltage	20	3.5	699.502	699.00	715.534	716.00
	20	4.35	699.564	699.00	715.566	716.00
					Result:	**Pass**

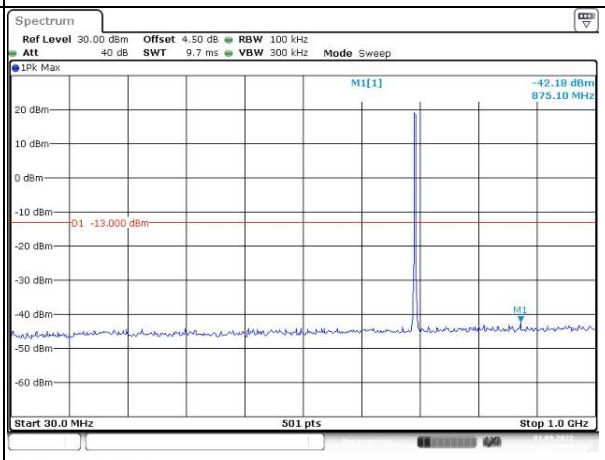
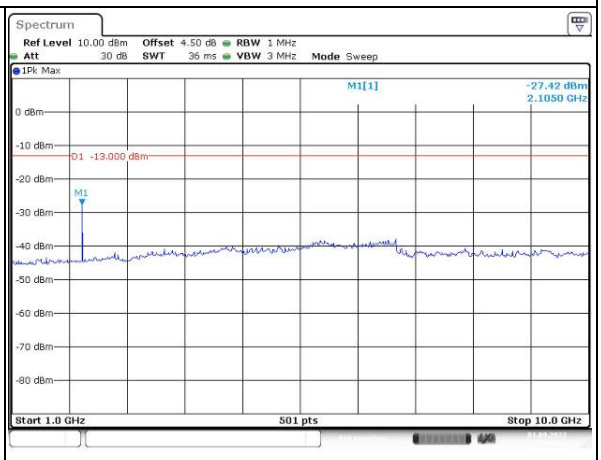
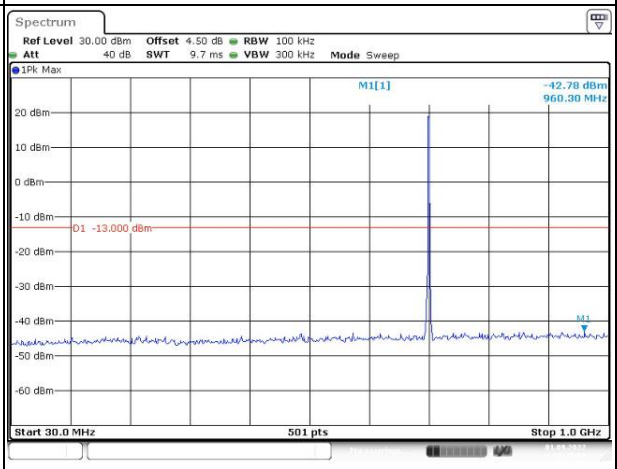
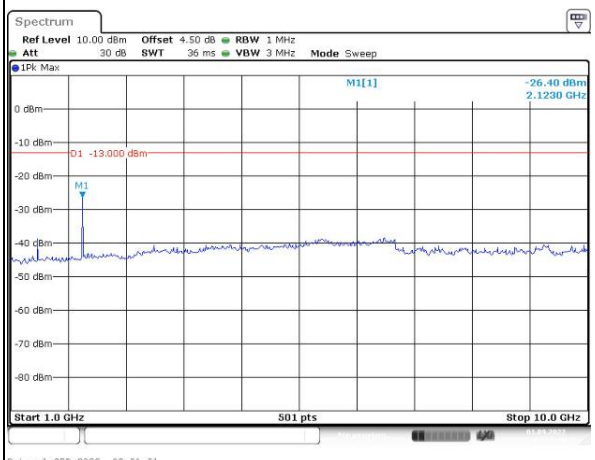
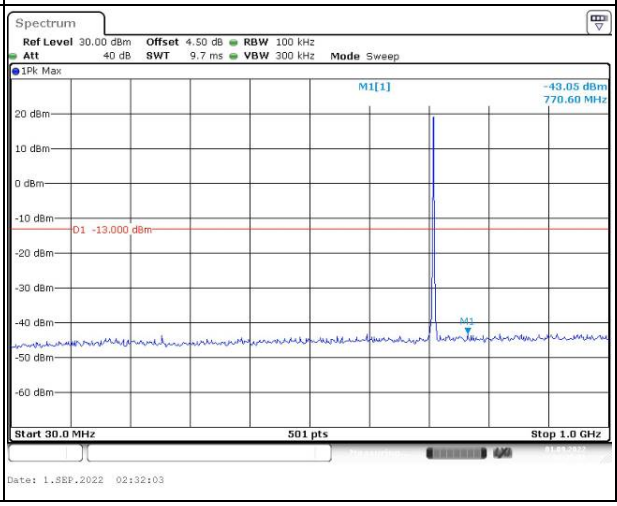
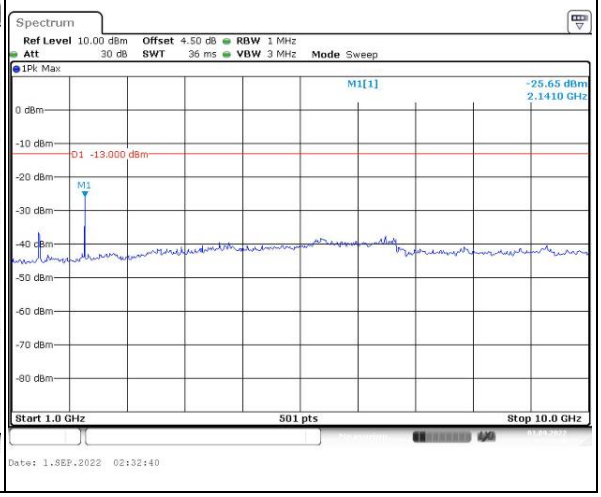
Test Plots:

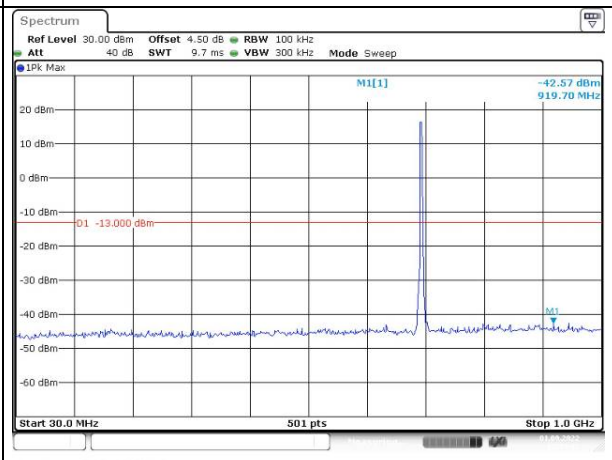
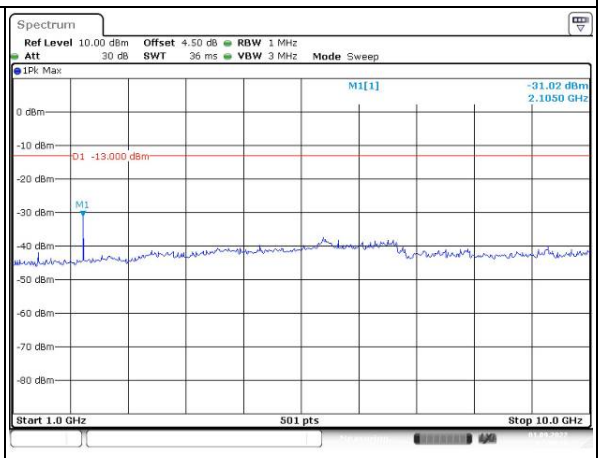
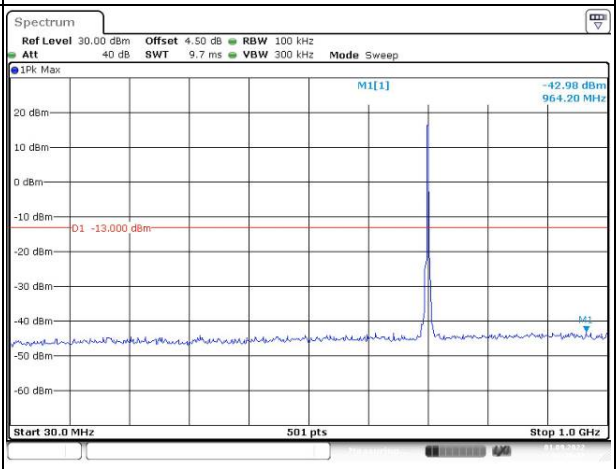
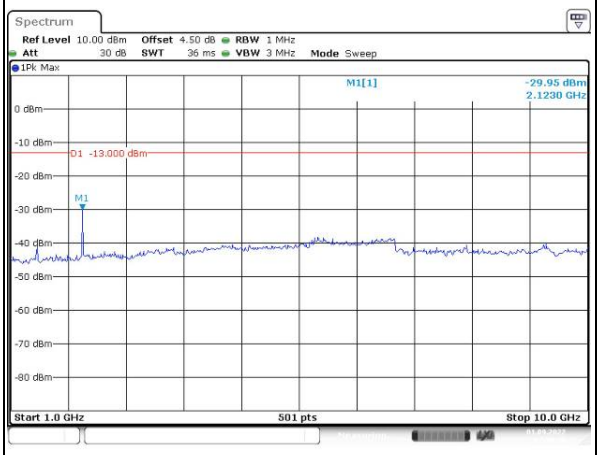
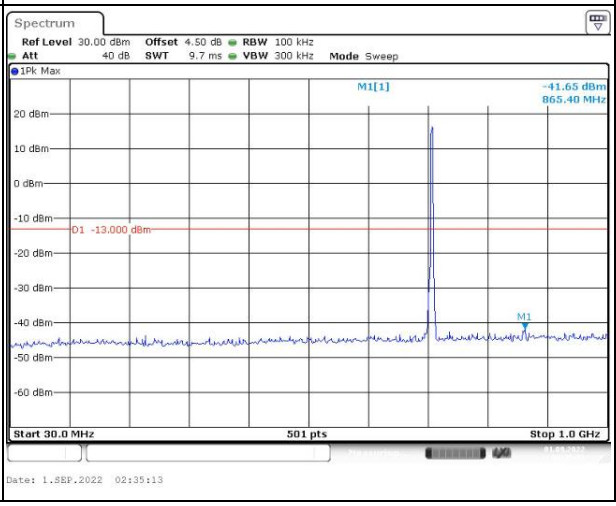
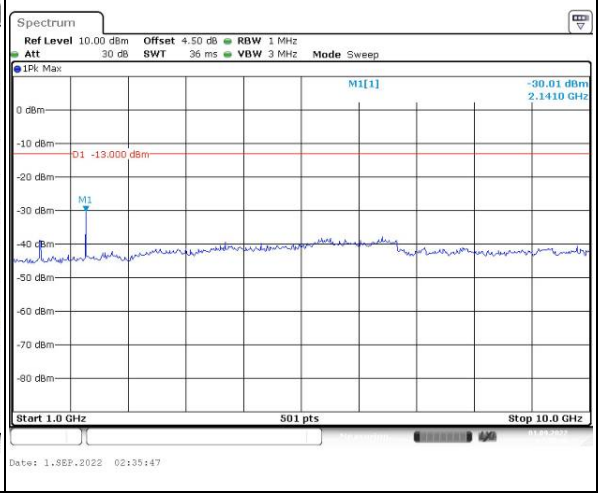
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

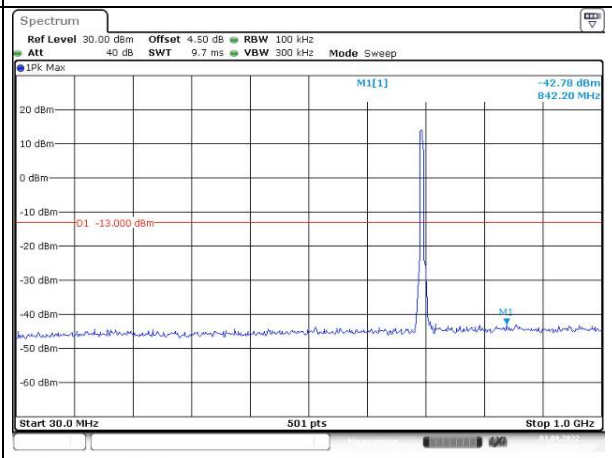
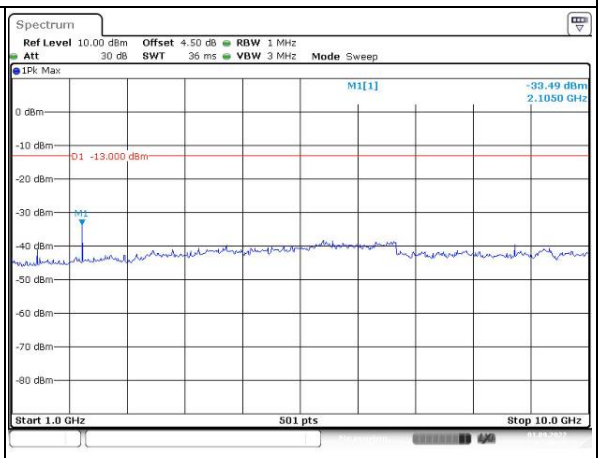
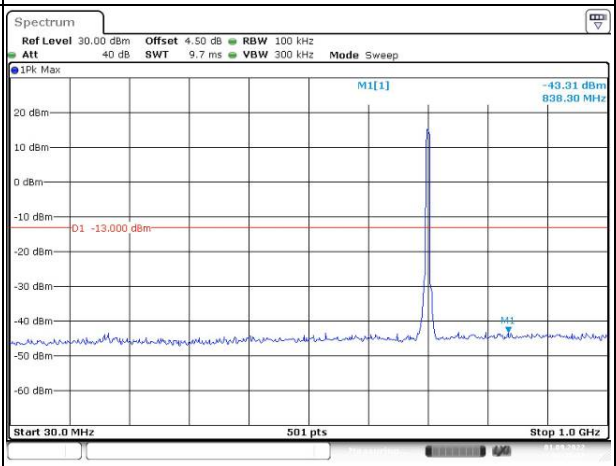
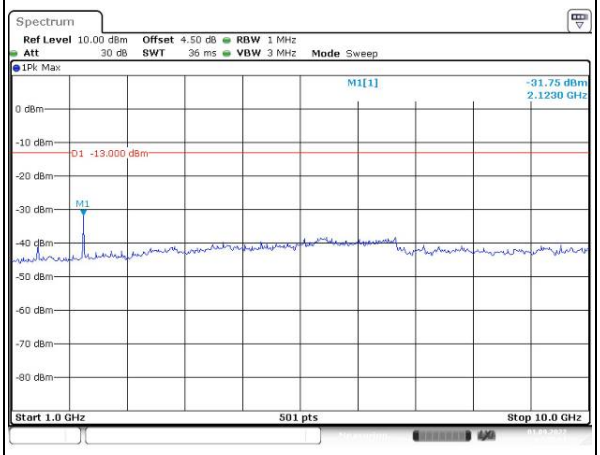
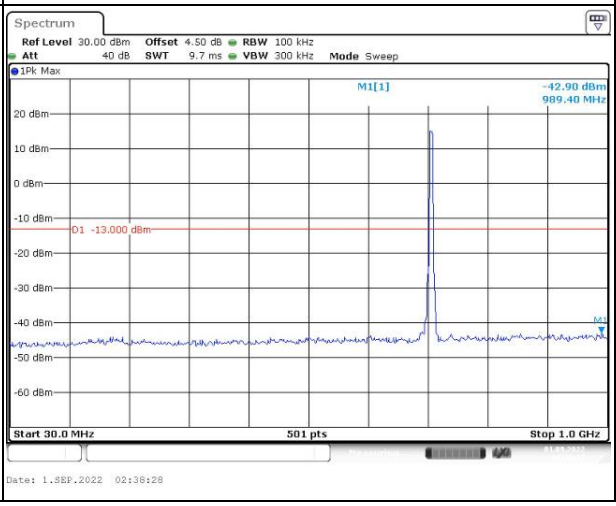
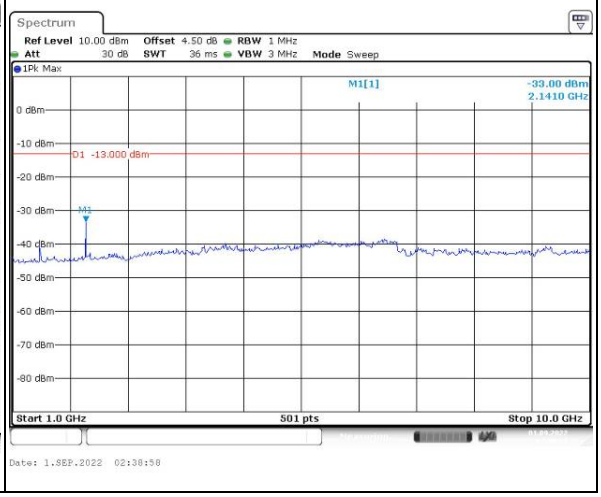
Occupied Bandwidth		
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

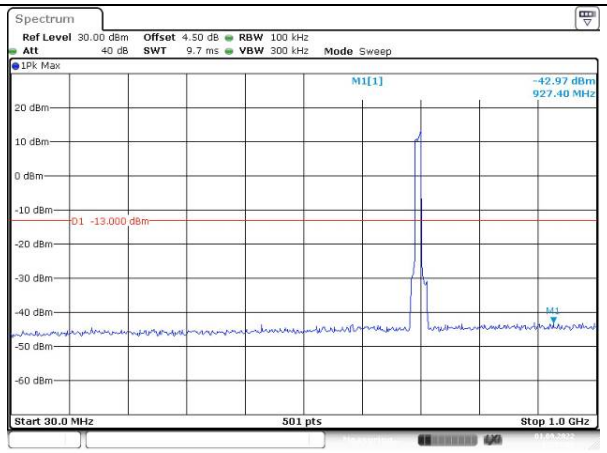
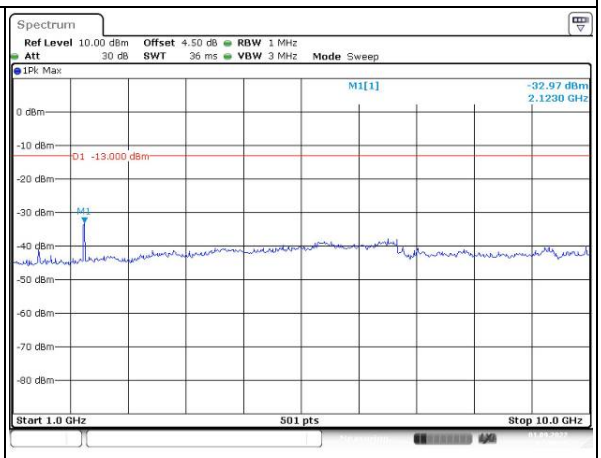
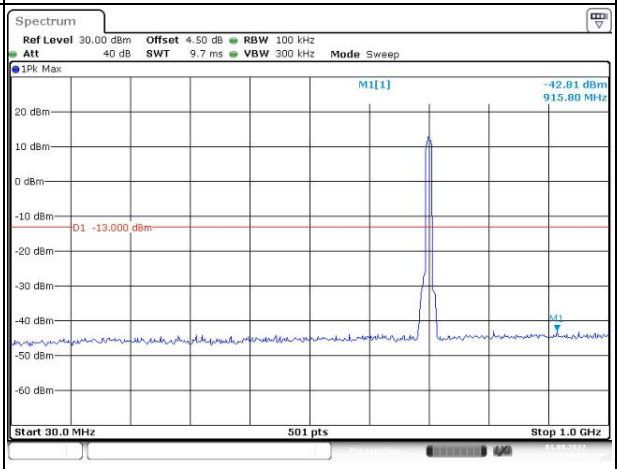
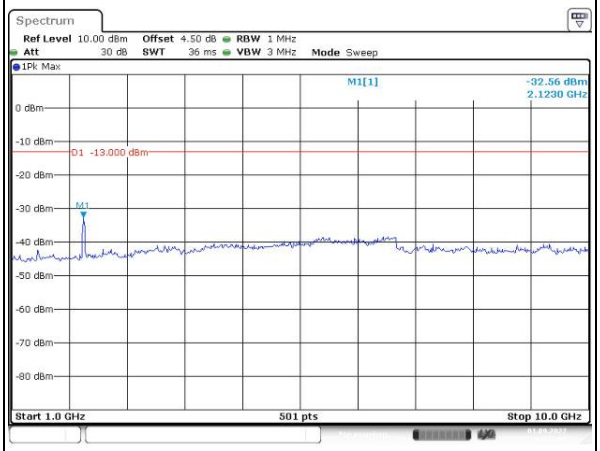
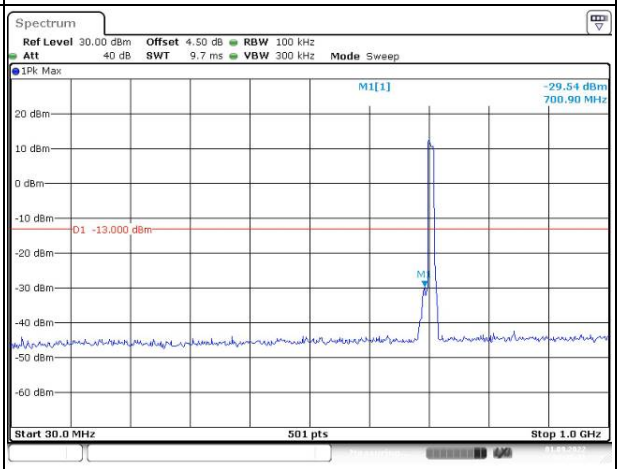
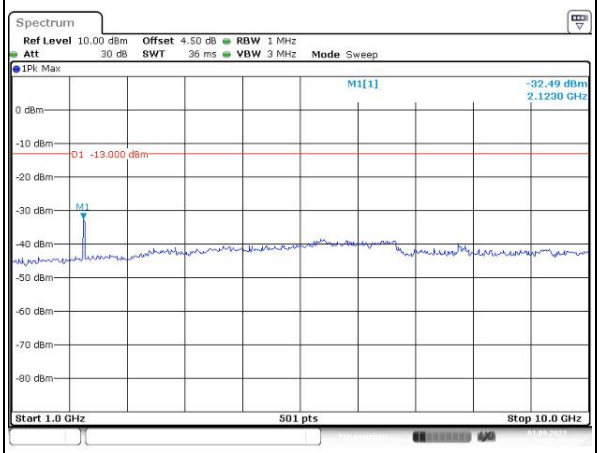
Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

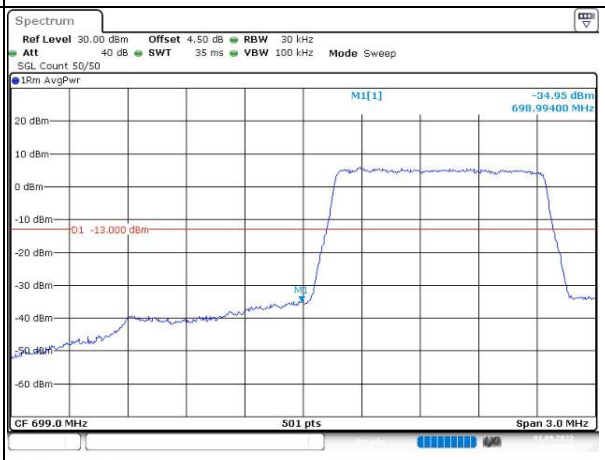
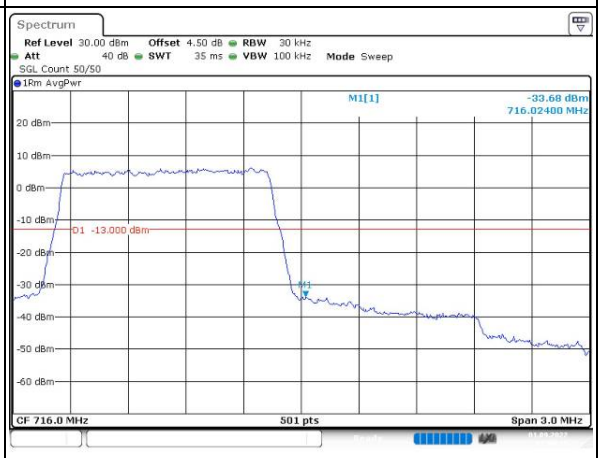
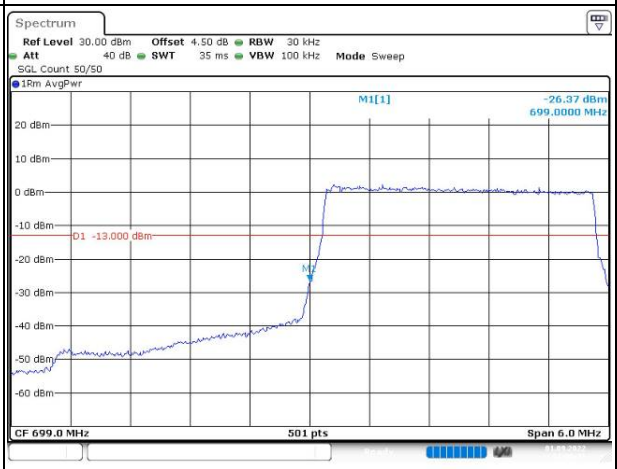
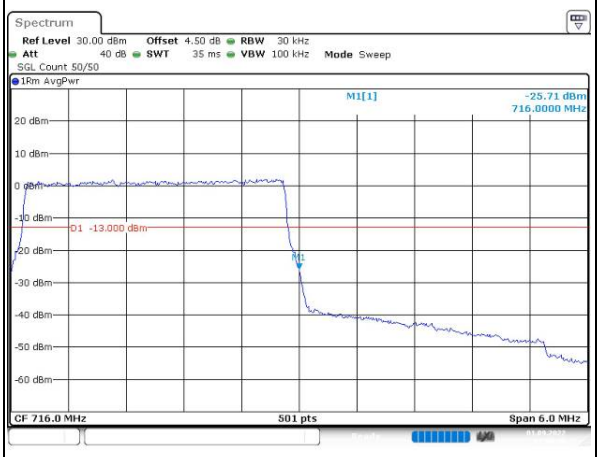
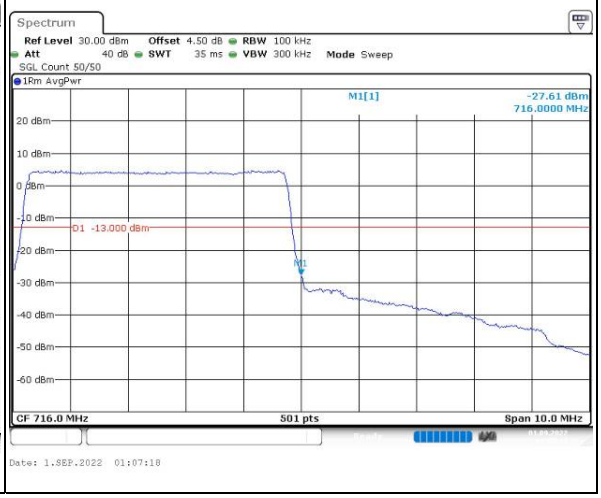
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

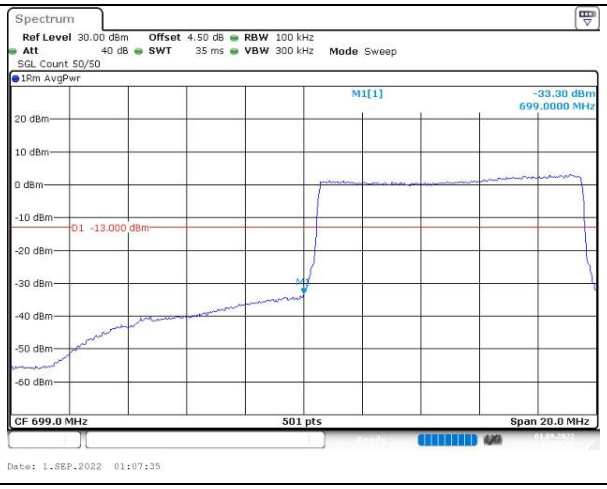
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

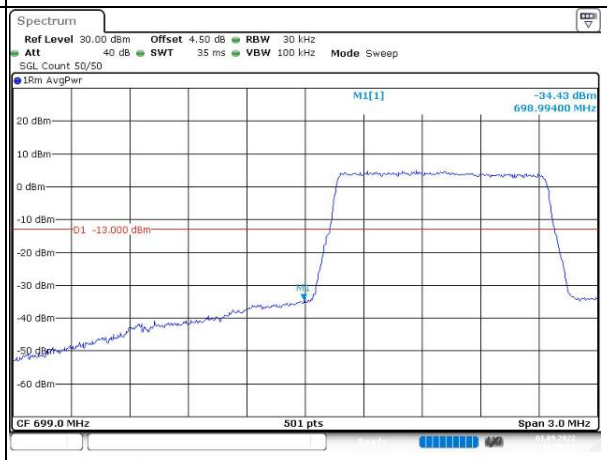
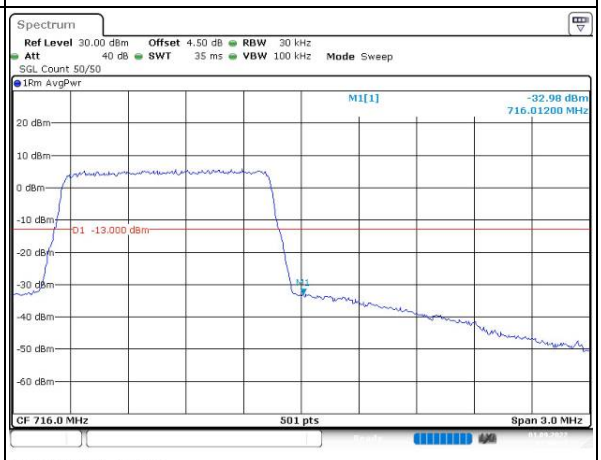
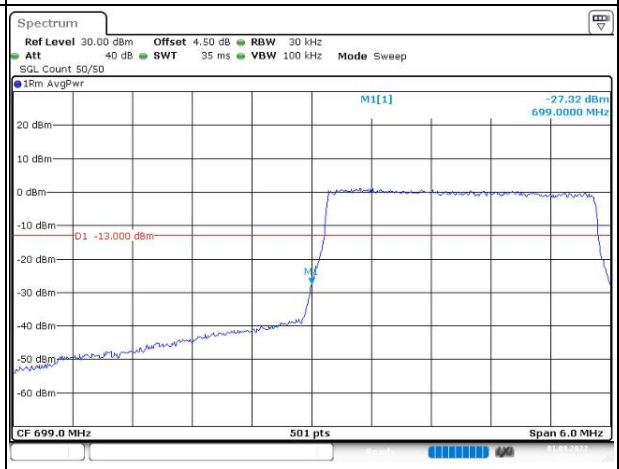
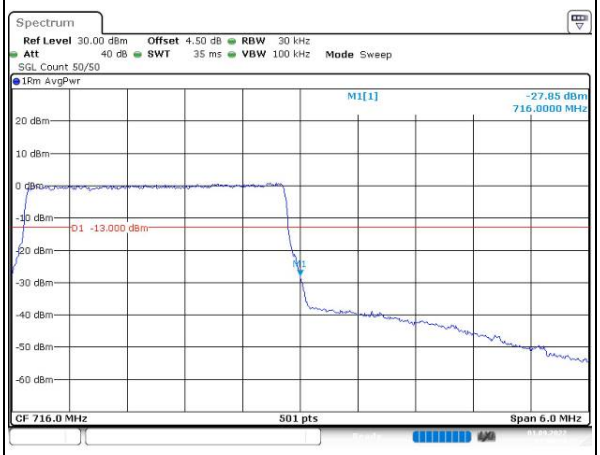
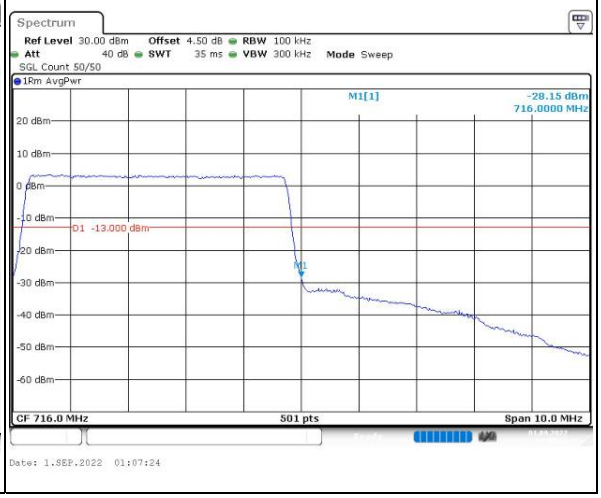
Spurious Emissions at Antenna Terminal		
Channel	**3MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

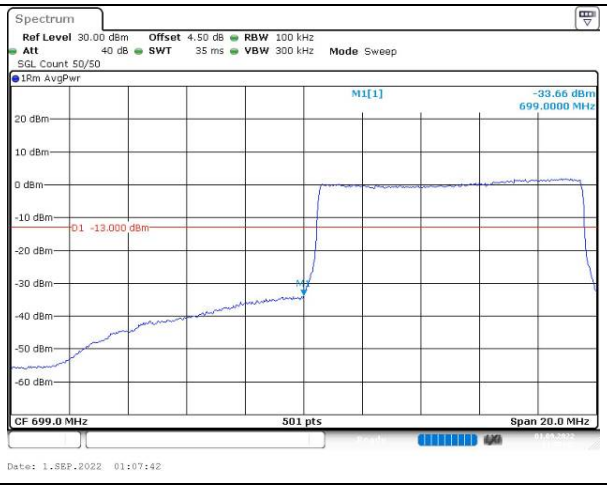
Spurious Emissions at Antenna Terminal		
Channel	**5MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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

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

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

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

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

4.10 Antenna Port Test Data and Results for LTE Band 13

Serial Number:	CR22080045-RF-S1	Test Date:	2022-08-31~2022-09-02
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.2~25.9	Relative Humidity: (%)	53~61	ATM Pressure: (kPa)	100.1~100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022-07-15	2023-07-14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204004	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-07-15	2023-07-14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-04-06	2023-04-05
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

EUT Information@LTE Band 13▲:					
Antenna Gain (dBi):	0.26	Antenna Gain (dBd):	-1.89	Path Loss L_C (dB):	0.2
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)
5MHz	779.5	782	784.5
10MHz	/	782	/

Test Data:

FCC§2.1046;§ 27.50(c) (10)

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		
5MHz QPSK	RB1#0	23.13	22.76	22.79	21.04	34.77
	RB1#13	22.79	22.73	22.9		
	RB1#24	22.8	22.78	23.02		
	RB15#0	21.7	21.61	22.11		
	RB15#10	21.72	21.58	21.89		
	RB25#0	21.7	21.58	21.99		
5MHz 16QAM	RB1#0	21.79	21.23	20.94	19.86	34.77
	RB1#13	21.95	21.17	21.1		
	RB1#24	21.84	21.42	21.01		
	RB15#0	21.09	21.17	20.99		
	RB15#10	20.51	21.34	21.07		
	RB25#0	20.66	21.04	21.05		
10MHz QPSK	RB1#0	/	23.13	/	21.12	34.77
	RB1#25	/	23.11	/		
	RB1#49	/	23.21	/		
	RB25#0	/	21.98	/		
	RB25#25	/	22.10	/		
	RB50#0	/	21.89	/		
10MHz 16QAM	RB1#0	/	22.11	/	20.06	34.77
	RB1#25	/	22.15	/		
	RB1#49	/	22.11	/		
	RB25#0	/	21.01	/		
	RB25#25	/	21.21	/		
	RB50#0	/	21.60	/		

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	/	4.52	/	13
	RB50#0	/	5.28	/	13
10MHz 16QAM	RB1#0	/	5.86	/	13
	RB50#0	/	6.14	/	13
				Result:	**Pass**

FCC §2.1049, §27.53:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.531	4.511	4.511	5.02	4.98	4.98
5MHz 16QAM	4.551	4.531	4.491	5.04	4.98	4.94
10MHz QPSK	/	8.902	/	/	9.72	/
10MHz 16QAM	/	8.982	/	/	9.76	/
Note: The test plots please refer to the Plots of Occupied Bandwidth						

FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

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

FCC §2.1055, §27.54: Frequency Stability

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	777.572	777.00	786.491	787.00
	-20	3.8	777.581	777.00	786.449	787.00
	-10	3.8	777.566	777.00	786.428	787.00
	0	3.8	777.609	777.00	786.440	787.00
	10	3.8	777.592	777.00	786.406	787.00
	20	3.8	777.569	777.00	786.471	787.00
	30	3.8	777.527	777.00	786.495	787.00
	40	3.8	777.547	777.00	786.486	787.00
	50	3.8	777.528	777.00	786.412	787.00
Frequency Stability vs. Voltage	20	3.5	777.574	777.00	786.486	787.00
	20	4.35	777.611	777.00	786.403	787.00
					Result:	**Pass**

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	777.563	777.00	786.487	787.00
	-20	3.8	777.560	777.00	786.523	787.00
	-10	3.8	777.500	777.00	786.462	787.00
	0	3.8	777.579	777.00	786.484	787.00
	10	3.8	777.557	777.00	786.532	787.00
	20	3.8	777.529	777.00	786.511	787.00
	30	3.8	777.539	777.00	786.517	787.00
	40	3.8	777.498	777.00	786.517	787.00
	50	3.8	777.551	777.00	786.494	787.00
Frequency Stability vs. Voltage	20	3.5	777.577	777.00	786.549	787.00
	20	4.35	777.520	777.00	786.465	787.00
					Result:	**Pass**