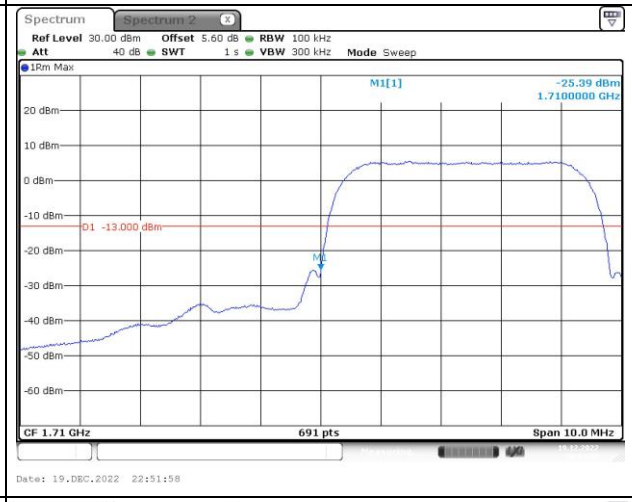
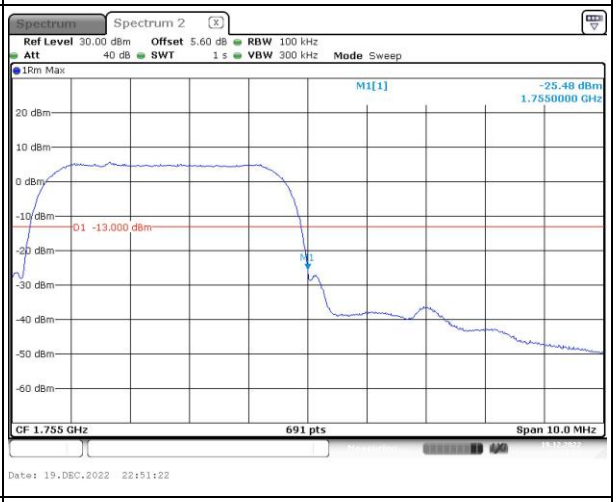
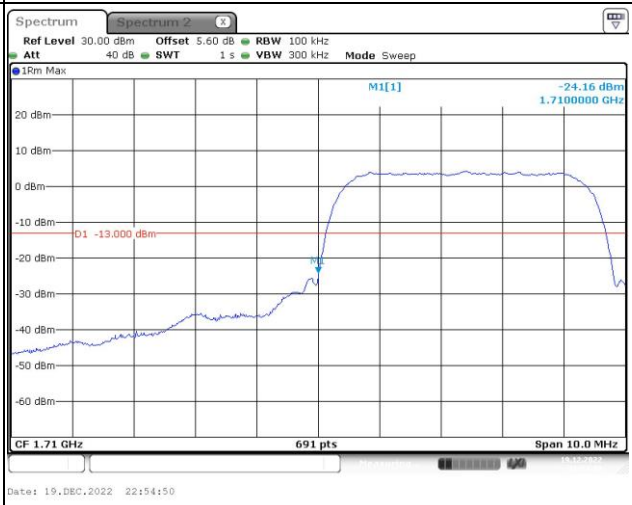
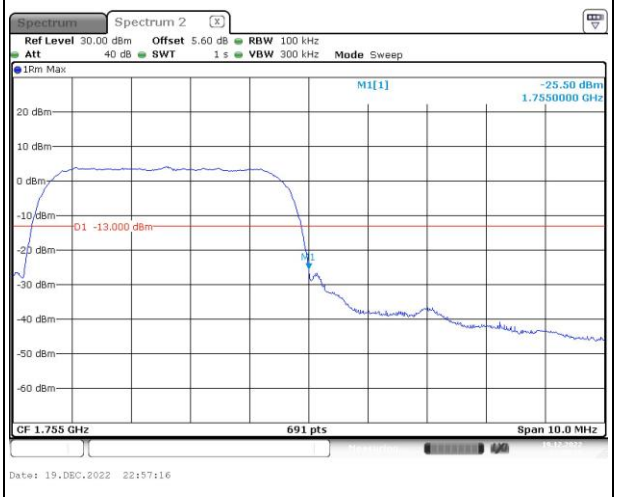
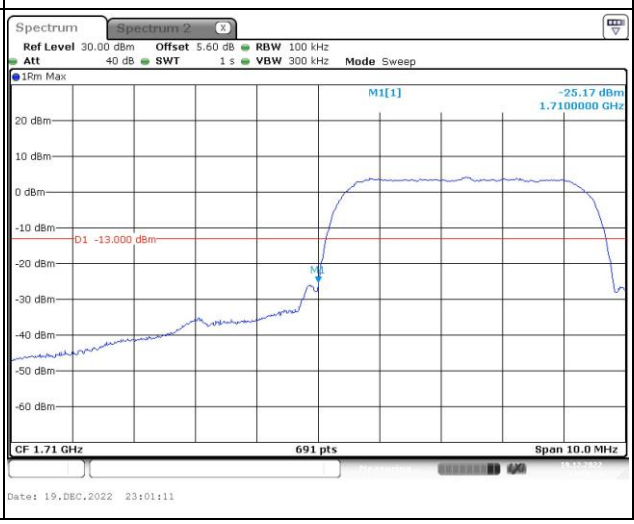
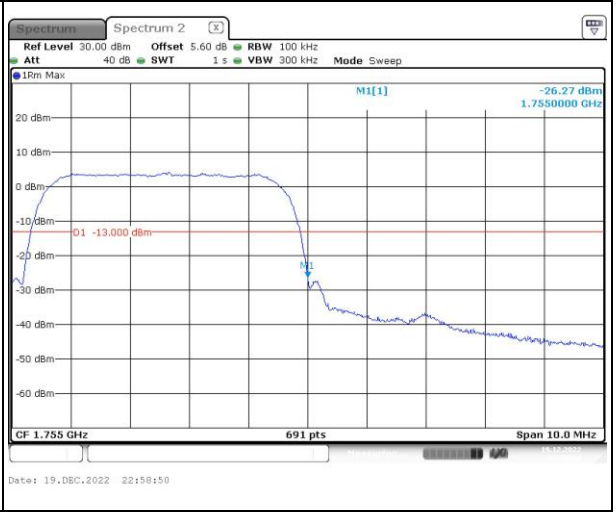
Out of band emission, Band Edge		
Mode	**Lowest**	**Highest**
R99		
HSDPA		
HSUPA		

4.5 Antenna Port Test Data and Results for WCDMA Band 5:

Serial Number:	1TSA	Test Date:	2022/12/19~2022/12/20
Test Site:	RF	Test Mode:	Transmitting
Tester:	George chen	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	21.2~24.3	Relative Humidity: (%)	36~49	ATM Pressure: (kPa)	100.6~101.8

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	202/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	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
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/4/6	2023/4/5
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/4/6	2023/4/5
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

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

Test Frequency:

Operation Modes	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
WCDMA	826.4	836.6	846.6

Test Data:

FCC §2.1046; § 22.913 (a)
RF Output Power:

Test Mode	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99 Subtest 1	22.59	22.23	22.83	20.98	38.45
HSDPA Subtest 1	22.3	22.14	22.74	20.89	38.45
HSDPA Subtest 2	22.09	21.87	22.49	20.64	38.45
HSDPA Subtest 3	22.03	21.8	22.24	20.39	38.45
HSDPA Subtest 4	21.75	21.57	22	20.15	38.45
HSUPA Subtest 1	22.03	22.46	22.1	20.61	38.45
HSUPA Subtest 2	22.4	22.21	21.82	20.55	38.45
HSUPA Subtest 3	22.12	22.06	21.6	20.27	38.45
HSUPA Subtest 4	21.92	21.83	21.42	20.07	38.45
HSUPA Subtest 5	21.73	21.78	21.36	19.93	38.45
DC-HSDPA Subtest 1	21.99	22.54	22.73	20.88	38.45
DC-HSDPA Subtest 2	22.49	22.3	22.48	20.64	38.45
DC-HSDPA Subtest 3	22.23	22.09	22.23	20.38	38.45
DC-HSDPA Subtest 4	22	21.99	22.04	20.19	38.45
HSPA+ Subtest 1	21.75	21.88	21.8	20.03	38.45

Note:
ERP= Conducted Power(dBm) - L_C(dB) + G_T(dBd)
G_T(dBd)=G_T(dBi)-2.15

Result: **Pass**

Peak-to-average Ratio(PAR)

Test Mode	Peak-to-average Ratio(dB)			Limit (dB)
	Lowest Channel	Middle Channel	Highest Channel	
WCDMA R99	3.65	2.7	3.1	13
HSDPA	4.81	4.67	4.87	13
HSUPA	5.59	5.74	6.23	13

Result: **Pass**

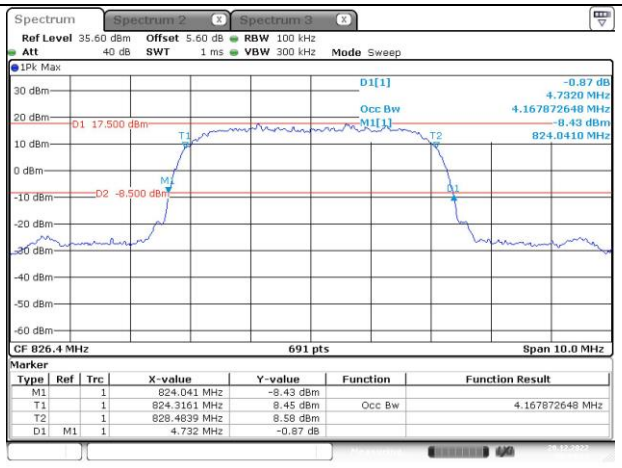
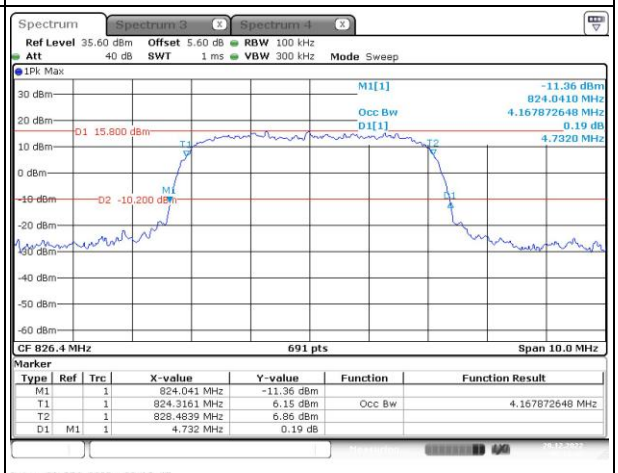
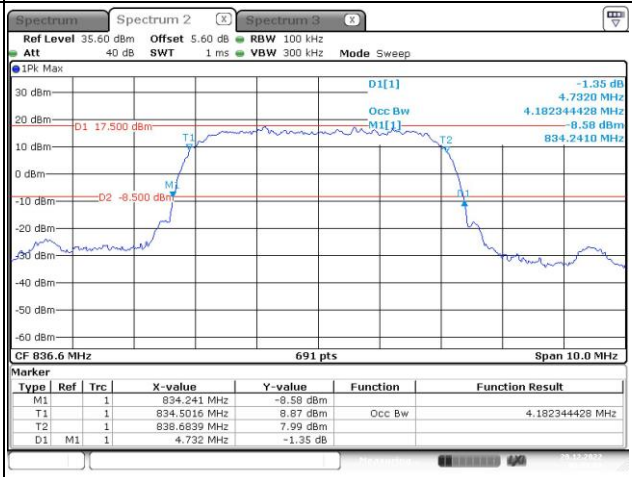
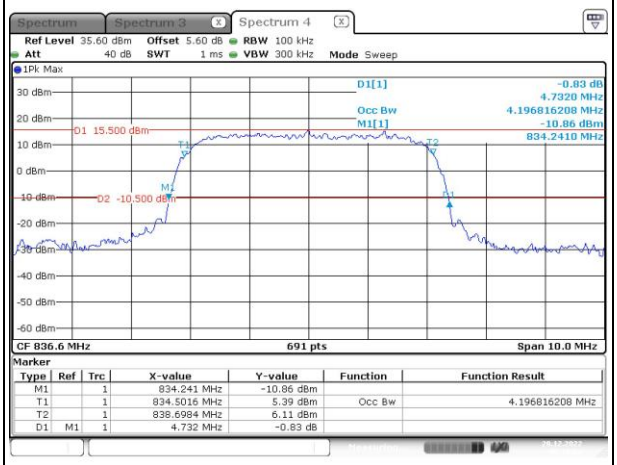
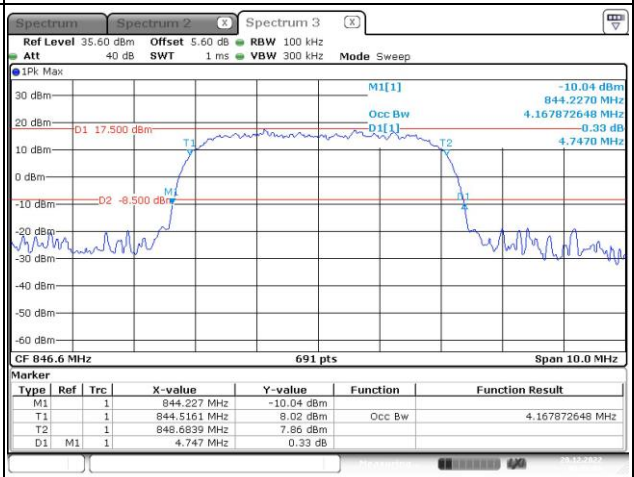
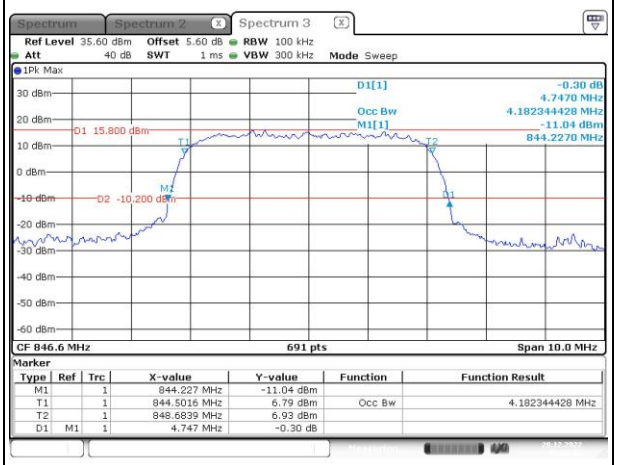
FCC §2.1049, §22.917, §22.905:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA R99	4.168	4.182	4.168	4.732	4.732	4.747
HSDPA	4.168	4.197	4.182	4.732	4.732	4.747
HSUPA	4.182	4.182	4.168	4.732	4.732	4.747
Note: The test plots please refer to the Plots of Occupied Bandwidth						

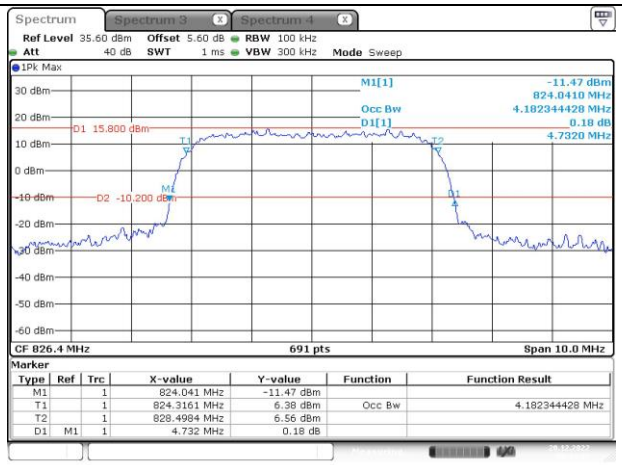
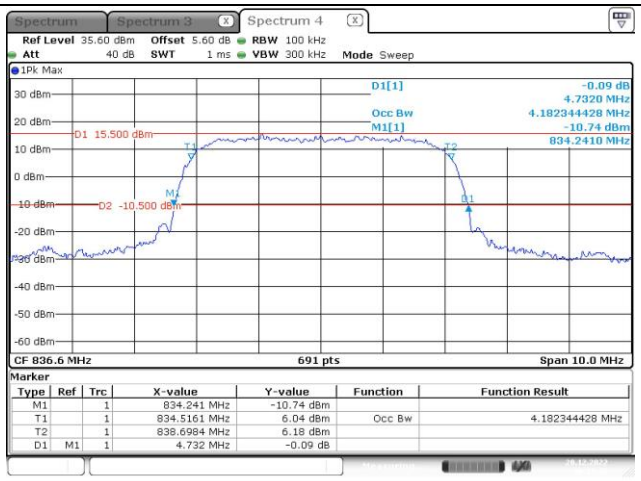
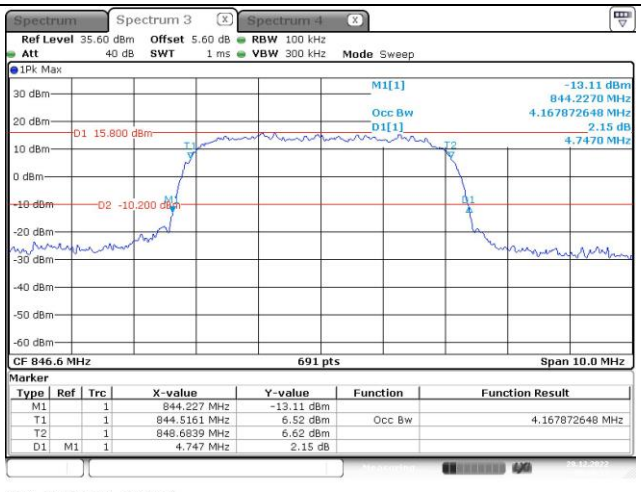
FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

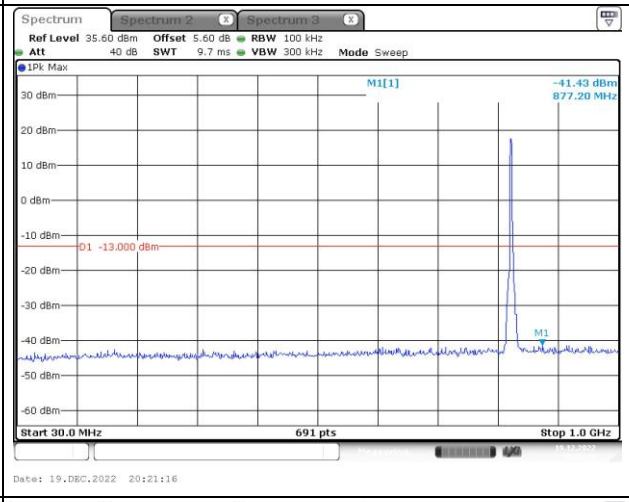
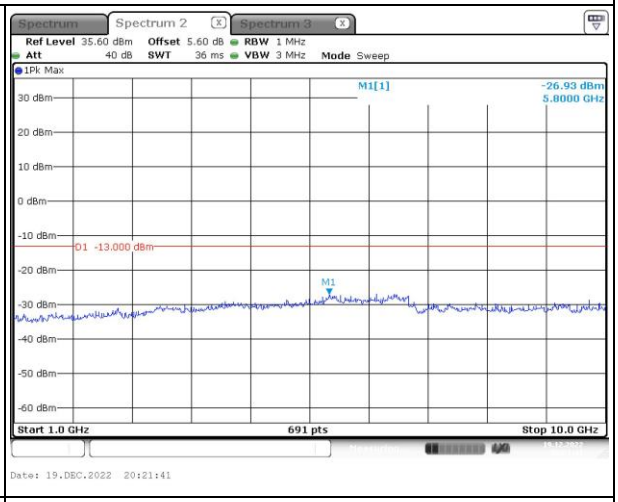
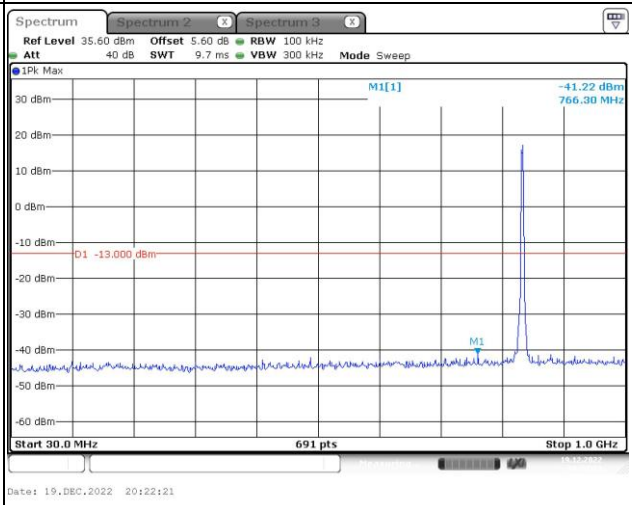
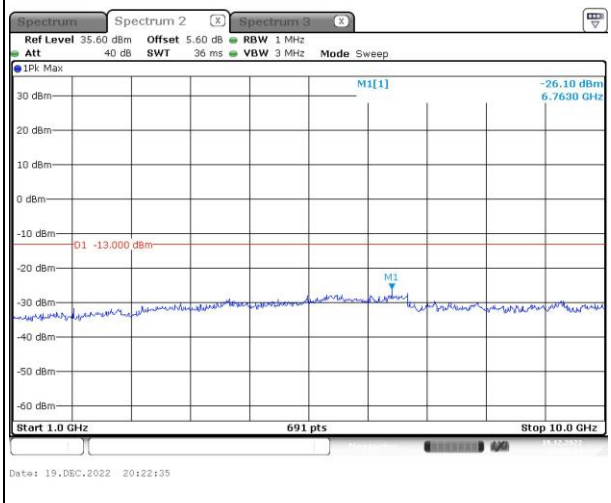
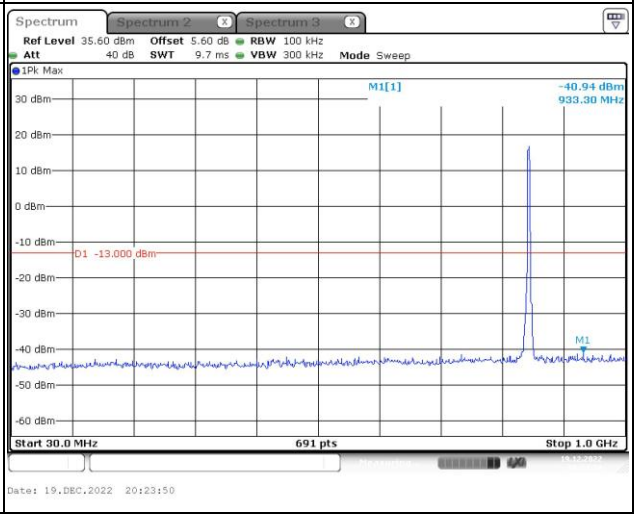
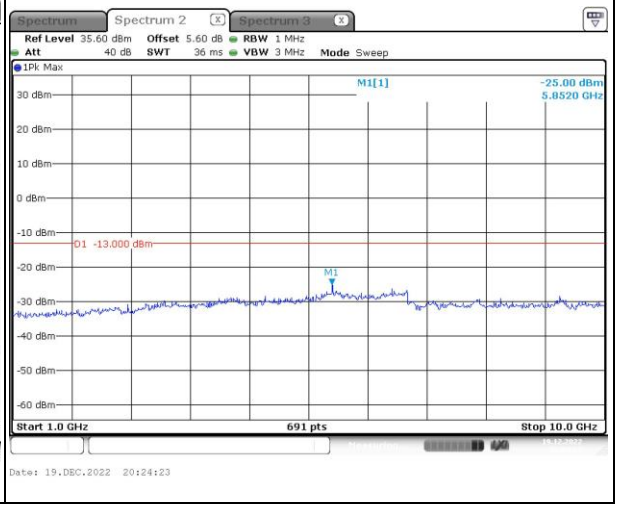
FCC §2.1051, §22.917(a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

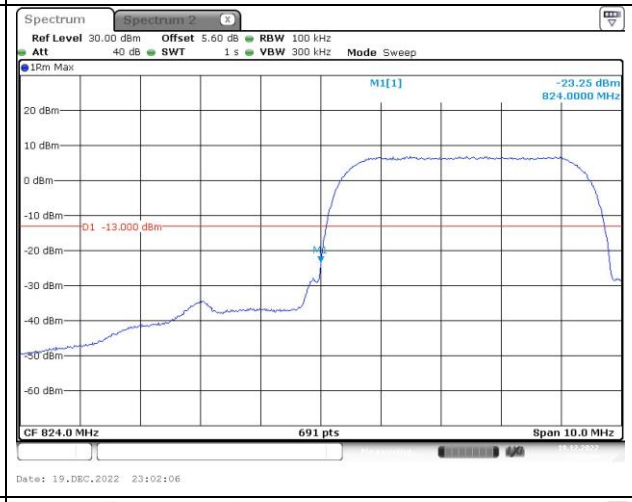
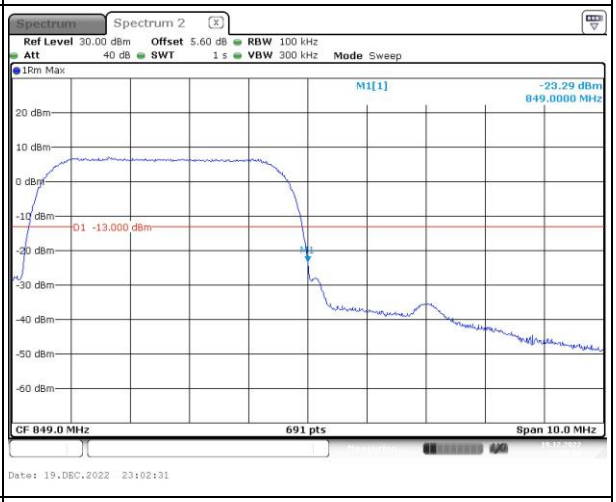
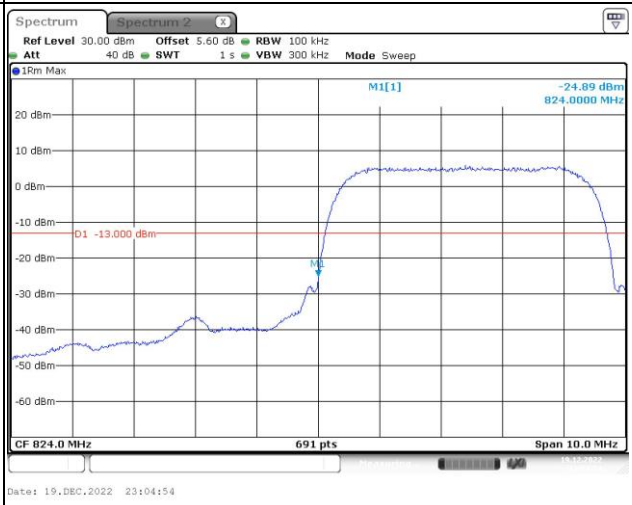
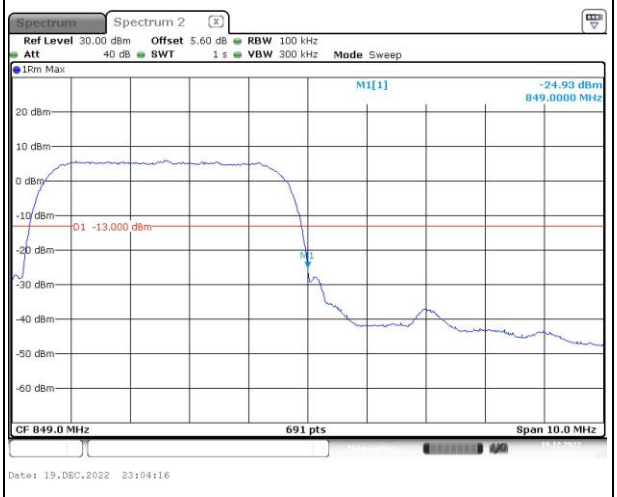
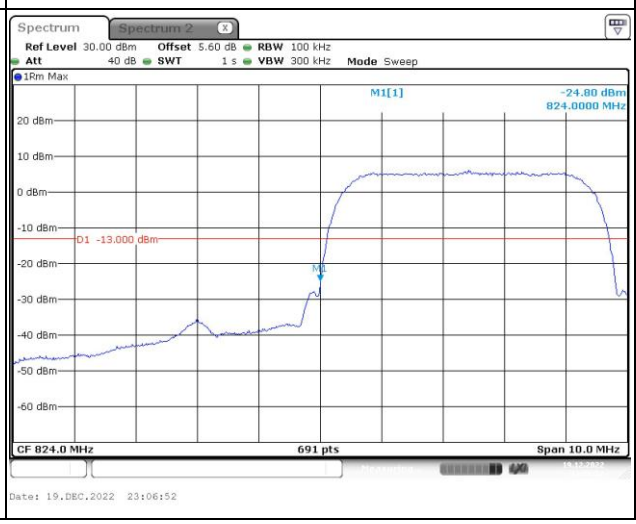
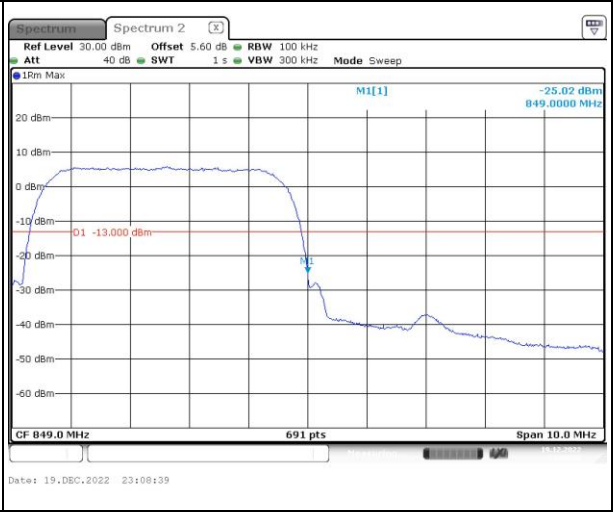
FCC §2.1055, §22.355: Frequency Stability					
Test Modulation:	WCDMA R99		Test Channel:	836.6	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.7	-5.51	-0.007	2.5
	-20	3.7	-5.79	-0.007	2.5
	-10	3.7	-7.69	-0.009	2.5
	0	3.7	-9.71	-0.012	2.5
	10	3.7	-7.72	-0.009	2.5
	20	3.7	5.04	0.006	2.5
	30	3.7	-8.52	-0.010	2.5
	40	3.7	-5.96	-0.007	2.5
	50	3.7	-5.35	-0.006	2.5
Frequency Stability vs. Voltage	20	3.3	-6.8	-0.008	2.5
	20	4.2	9.26	0.011	2.5
				Result:	**Pass**

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

Occupied Bandwidth		
Channel	WCDMA R99	HSDPA
Lowest		
Middle		
Highest		

Occupied Bandwidth	
Channel	HSUPA
Lowest	
Middle	
Highest	

Spurious Emissions at Antenna Terminal		
Channel	WCDMA R99	
Lowest		
Middle		
Highest		

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

4.6 Antenna Port Test Data and Results for LTE Band 2

Serial Number:	1TSA	Test Date:	2022/12/13~2022/12/14
Test Site:	RF	Test Mode:	Transmitting
Tester:	George chen	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	21.2~24.3	Relative Humidity: (%)	36~49	ATM Pressure: (kPa)	100.6~101.8

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/4/6	2023/4/5
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/4/6	2023/4/5
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

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

Test Frequency For Each Mode:

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

Test Data:

FCC §2.1046; § 24.232						
RF Output Power:						
Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.89	22.93	22.96	23.96	33
	RB1#3	23.16	23.12	23.15		
	RB1#5	22.98	22.92	22.96		
	RB3#0	23.08	23.04	23.01		
	RB3#3	23.12	23.04	23		
	RB6#0	22.03	22.02	22.06		
1.4MHz 16QAM	RB1#0	21.97	21.94	22.07	23.1	33
	RB1#3	22.2	22.15	22.28		
	RB1#5	22.09	21.95	22.07		
	RB3#0	22.23	22.26	22.01		
	RB3#3	22.21	22.3	22.03		
	RB6#0	20.99	21.02	21.06		
3MHz QPSK	RB1#0	23.03	23.03	23.09	23.89	33
	RB1#8	23.01	23	23.06		
	RB1#14	23	23.04	23.05		
	RB6#0	21.98	22	22		
	RB6#9	22.05	21.97	22.03		
	RB15#0	22.11	22.05	22.03		
3MHz 16QAM	RB1#0	22.64	22.19	22.09	23.44	33
	RB1#8	22.58	22.2	22.02		
	RB1#14	22.62	22.2	22.02		
	RB6#0	21.1	20.98	20.89		
	RB6#9	21.08	21.03	20.9		
	RB15#0	21.2	21.01	21.07		
5MHz QPSK	RB1#0	22.96	22.93	22.95	23.85	33
	RB1#13	23.05	23.04	23.03		
	RB1#24	22.95	22.99	22.98		
	RB15#0	22.11	22.07	22.1		
	RB15#10	22.12	22.1	22.08		
	RB25#0	22.09	22.02	22.05		
5MHz 16QAM	RB1#0	21.91	22.24	21.99	23.17	33
	RB1#13	22.02	22.37	22.07		
	RB1#24	21.89	22.27	22		
	RB15#0	21.16	21.07	21.11		
	RB15#10	21.2	21.09	21.07		

	RB25#0	21.18	21.07	21.1		
10MHz QPSK	RB1#0	22.98	23.01	22.97	24.03	33
	RB1#25	23.23	23.17	23.21		
	RB1#49	23.05	23.02	23.03		
	RB25#0	22.12	22.12	22.13		
	RB25#25	22.18	22.14	22.06		
	RB50#0	22.16	22.12	22.1		
10MHz 16QAM	RB1#0	22.14	21.97	22.42	23.42	33
	RB1#25	22.38	22.21	22.62		
	RB1#49	22.18	22.01	22.51		
	RB25#0	21.16	21.24	21.17		
	RB25#25	21.18	21.28	21.08		
	RB50#0	21.19	21.18	21.07		
15MHz QPSK	RB1#0	22.92	22.89	22.9	23.92	33
	RB1#38	23.06	23.06	23.12		
	RB1#74	22.94	22.96	23.01		
	RB36#0	22.09	22.12	22.2		
	RB36#39	22.17	22.17	22.16		
	RB75#0	22.2	22.23	22.21		
15MHz 16QAM	RB1#0	22.55	22.03	22.25	23.41	33
	RB1#38	22.61	22.26	22.36		
	RB1#74	22.43	22.13	22.32		
	RB36#0	21.14	21.14	21.15		
	RB36#39	21.18	21.21	21.12		
	RB75#0	21.17	21.15	21.11		
20MHz QPSK	RB1#0	22.79	22.68	22.7	24.05	33
	RB1#50	23.25	23.11	23.2		
	RB1#99	22.84	22.76	22.81		
	RB50#0	22.01	22.08	22.08		
	RB50#50	22.01	22.17	21.92		
	RB100#0	22.04	22.13	22		
20MHz 16QAM	RB1#0	22.04	22.23	22.03	23.56	33
	RB1#50	22.41	22.76	22.47		
	RB1#99	22.06	22.39	22.1		
	RB50#0	21.01	21.1	21.05		
	RB50#50	21.03	21.18	20.9		
	RB100#0	21.06	21.13	21		
Note: EIRP=Conducted Power(dBm) - L_C(dB) + G_T(dBi)						
					Result:	**Pass**

Peak-to-average Ratio(PAR)					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	5.01	4.2	4.96	13
	RB100#0	3.91	4.03	3.88	13
20MHz 16QAM	RB1#0	6.09	4.84	5.74	13
	RB100#0	5.68	5.8	5.62	13
				Result:	**Pass**

FCC §2.1049, §24.238:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.096	1.102	1.296	1.302	1.308
1.4MHz 16QAM	1.102	1.102	1.096	1.302	1.32	1.332
3MHz QPSK	2.683	2.683	2.683	2.856	2.88	2.892
3MHz 16QAM	2.683	2.683	2.683	2.892	2.88	2.88
5MHz QPSK	4.531	4.531	4.531	5.14	5.2	5.22
5MHz 16QAM	4.531	4.511	4.551	5.2	5.16	5.18
10MHz QPSK	8.982	8.982	8.982	10	9.92	9.88
10MHz 16QAM	8.942	8.942	8.982	9.68	9.96	9.96
15MHz QPSK	13.593	13.593	13.533	15.24	15.3	15.12
15MHz 16QAM	13.533	13.533	13.533	15.12	15.12	15.06
20MHz QPSK	17.964	18.044	17.884	19.68	20	19.6
20MHz 16QAM	17.964	17.964	17.964	19.84	19.84	19.6
Note: The test plots please refer to the Plots of Occupied Bandwidth						

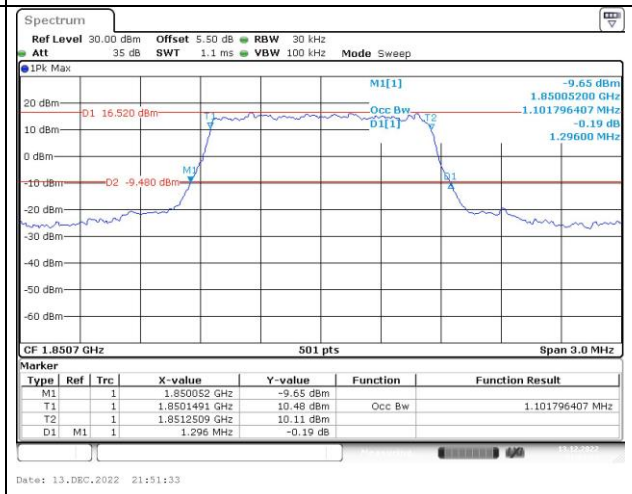
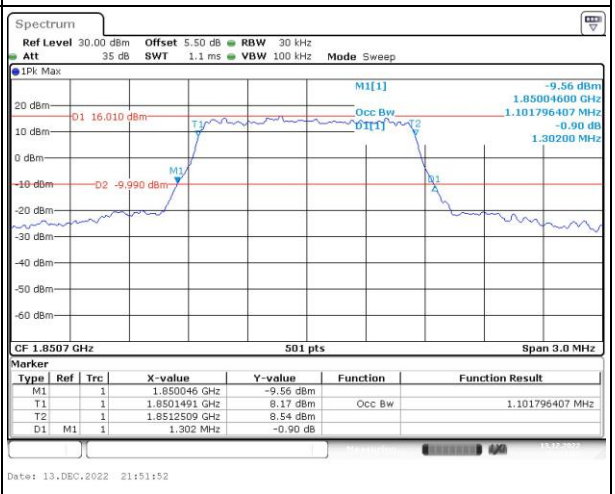
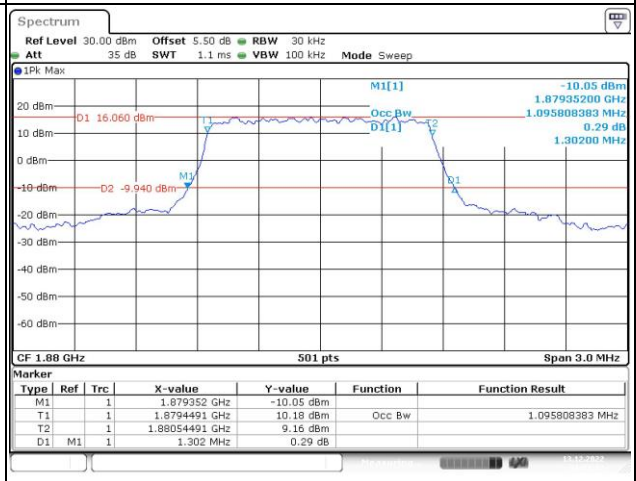
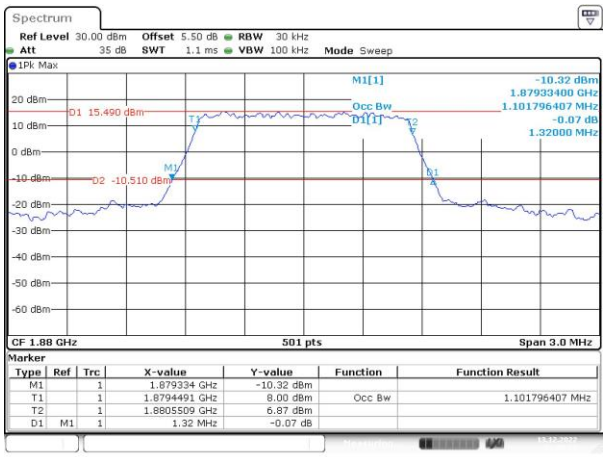
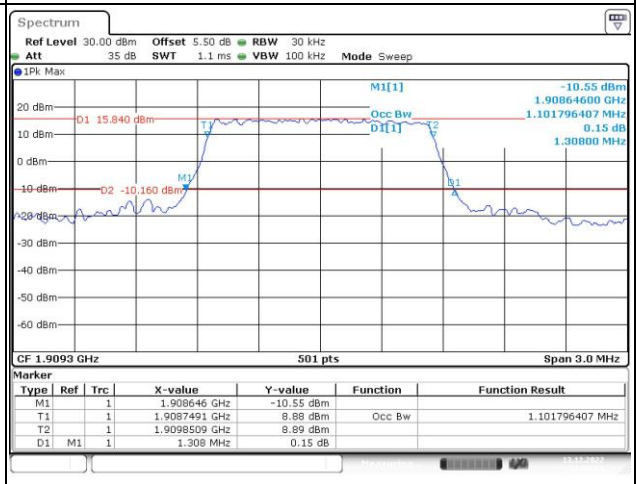
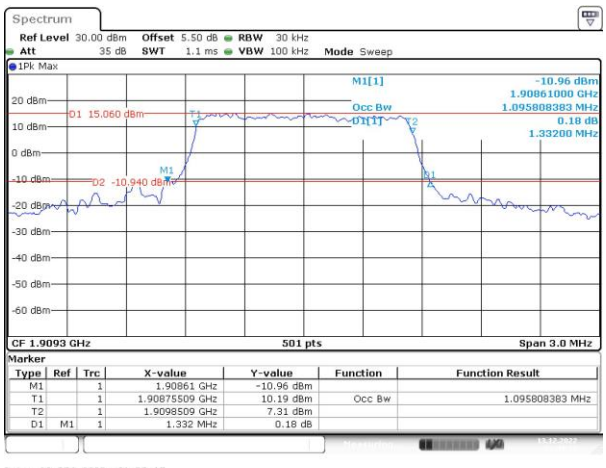
FCC §2.1051, §24.238 (a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

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

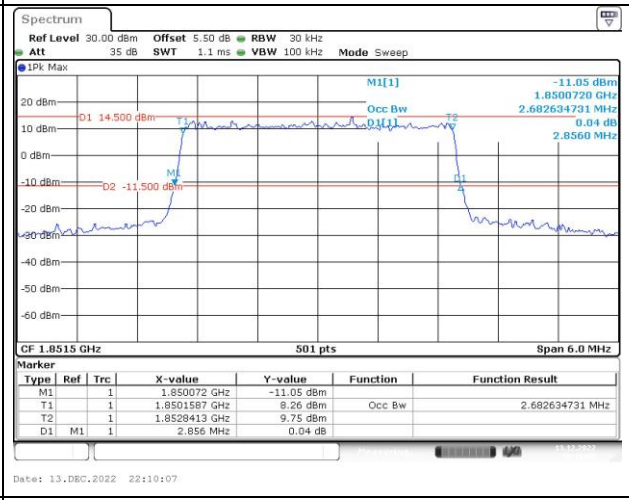
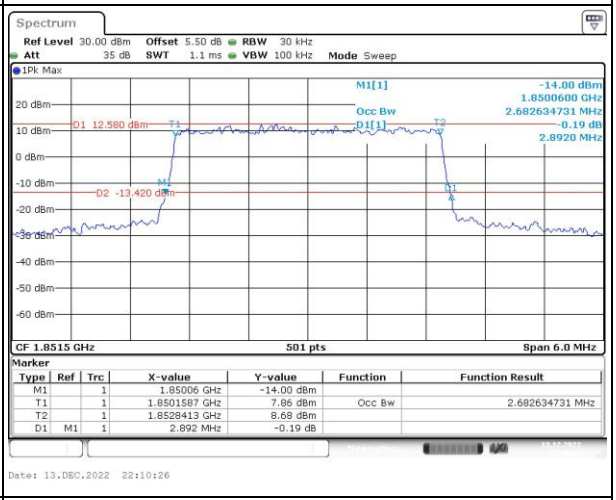
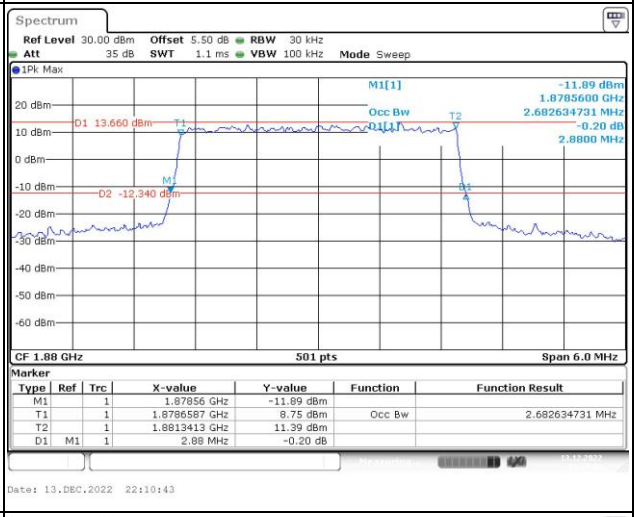
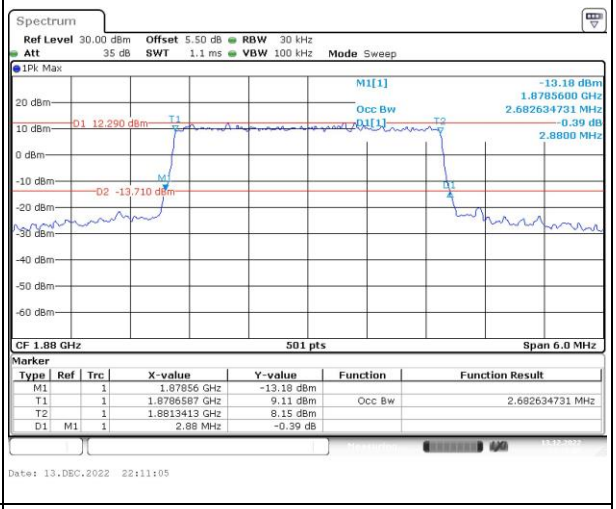
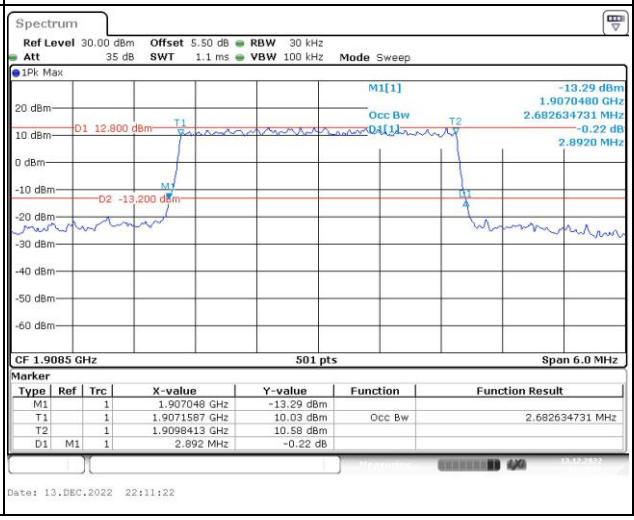
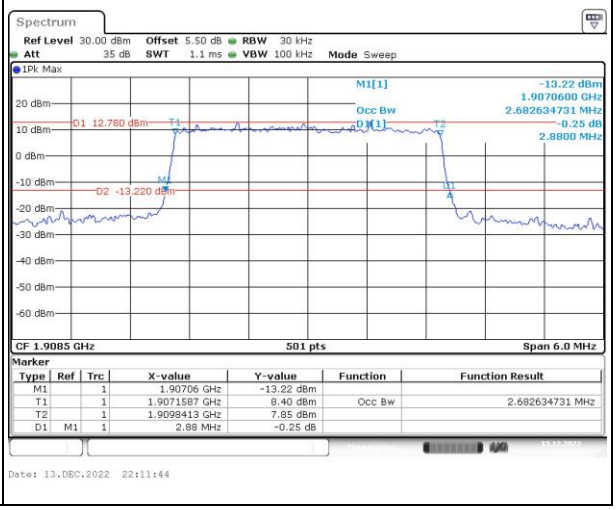
FCC §2.1055, §24.235: Frequency Stability					
Test Mode:	20 MHz QPSK		Test Channel:	1880	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.7	-6.94	-0.004	Pass
	-20	3.7	-9.97	-0.005	Pass
	-10	3.7	-6.13	-0.003	Pass
	0	3.7	6.17	0.003	Pass
	10	3.7	7.92	0.004	Pass
	20	3.7	6.46	0.003	Pass
	30	3.7	-6.52	-0.003	Pass
	40	3.7	7.18	0.004	Pass
	50	3.7	-9.7	-0.005	Pass
Frequency Stability vs. Voltage	20	3.3	-8.17	-0.004	Pass
	20	4.2	-7.05	-0.004	Pass
				Result:	**Pass**

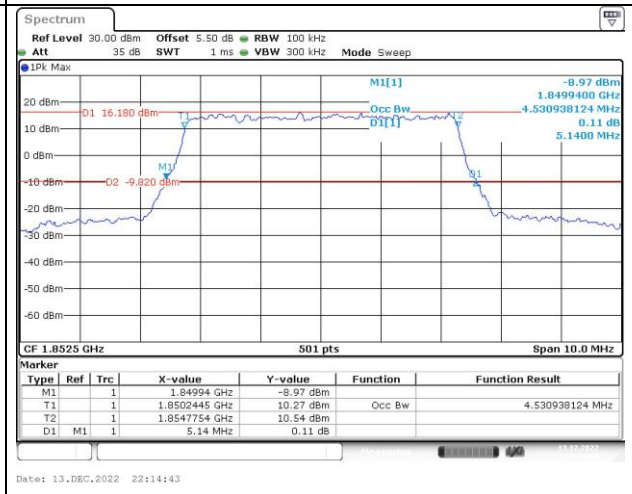
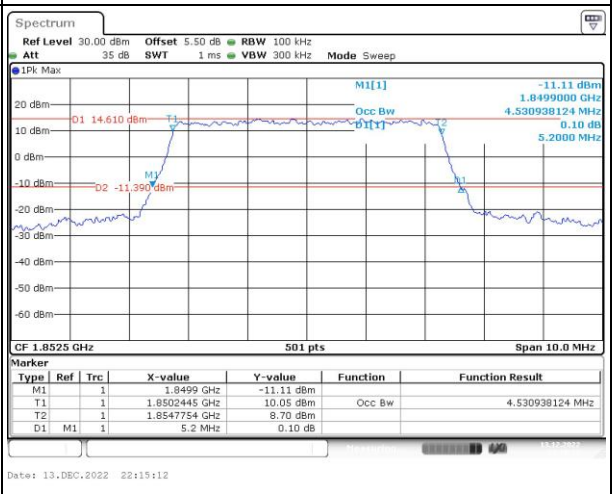
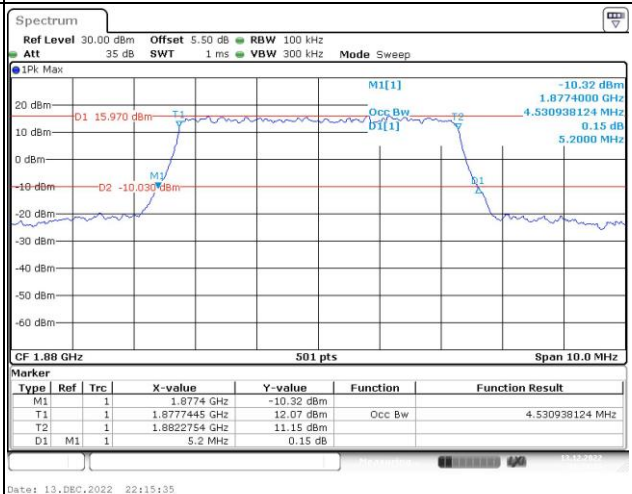
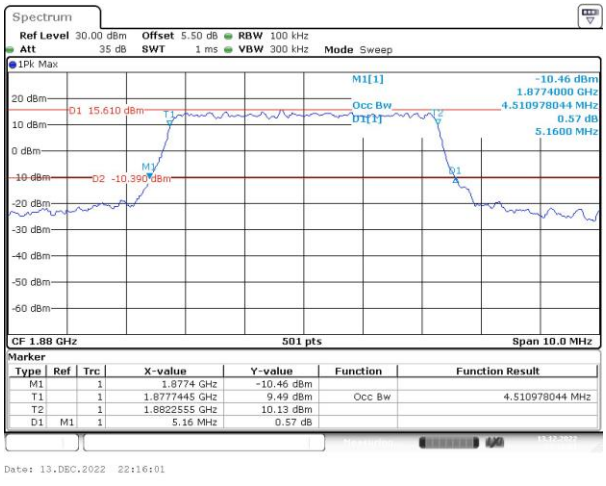
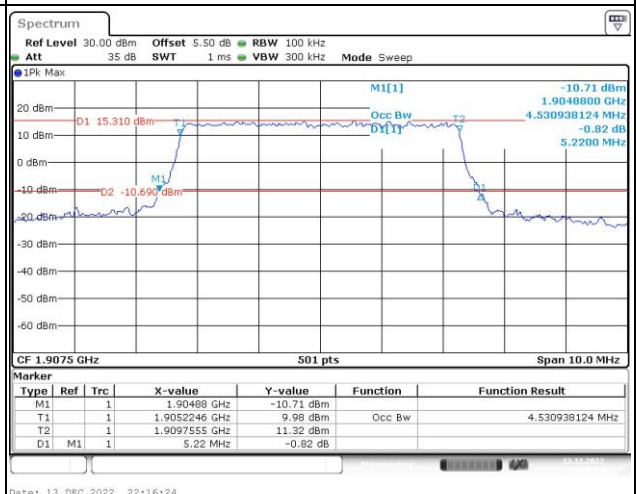
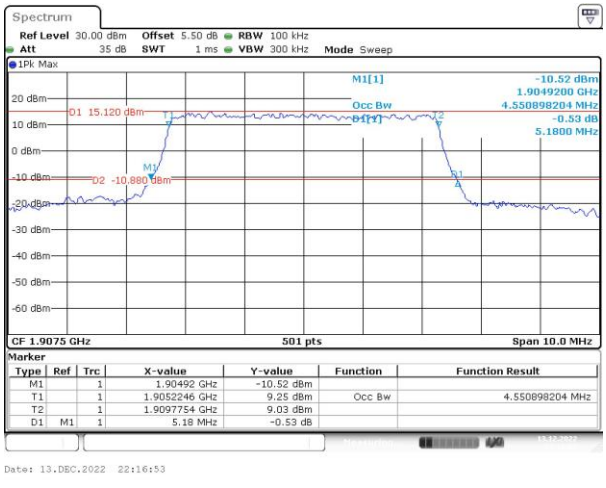
Test Mode:	20 MHz 16QAM		Test Channel:	1880	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.7	-8.2	-0.004	Pass
	-20	3.7	-6.68	-0.004	Pass
	-10	3.7	9.77	0.005	Pass
	0	3.7	-7.62	-0.004	Pass
	10	3.7	-9.91	-0.005	Pass
	20	3.7	-9.82	-0.005	Pass
	30	3.7	-6.68	-0.004	Pass
	40	3.7	-8.86	-0.005	Pass
	50	3.7	5.67	0.003	Pass
Frequency Stability vs. Voltage	20	3.3	6.05	0.003	Pass
	20	4.2	7.52	0.004	Pass
				Result:	**Pass**

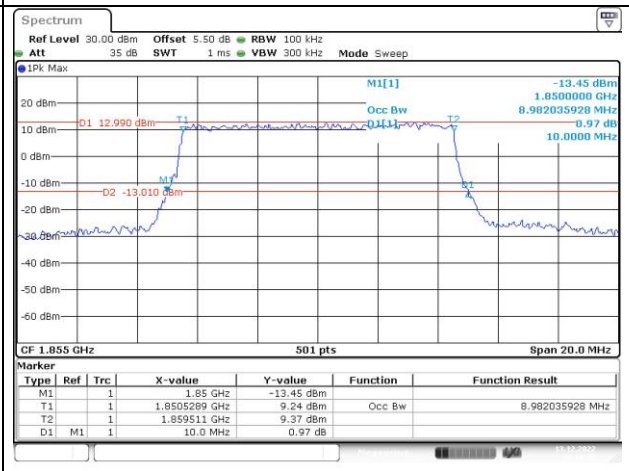
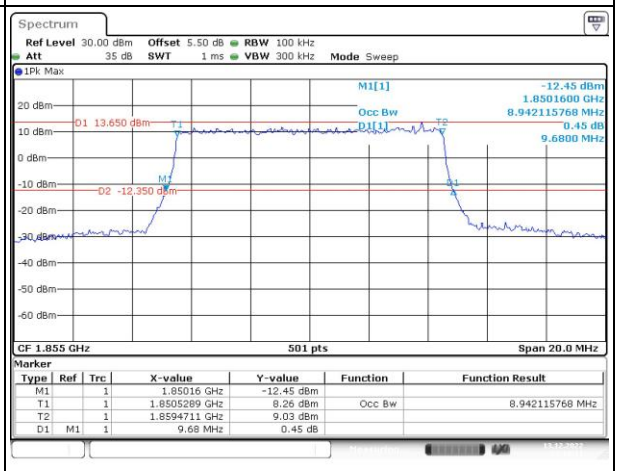
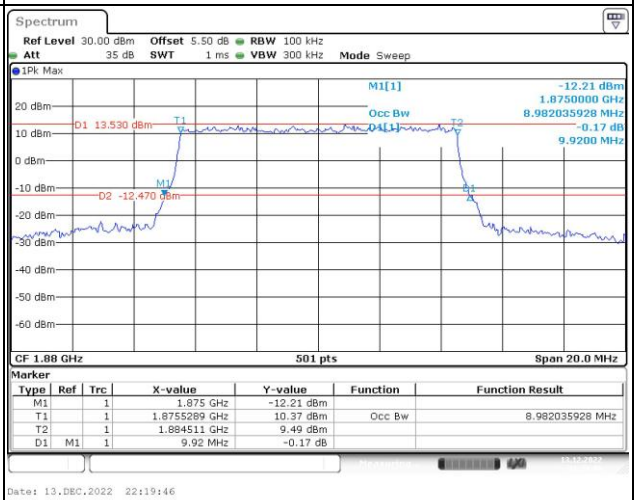
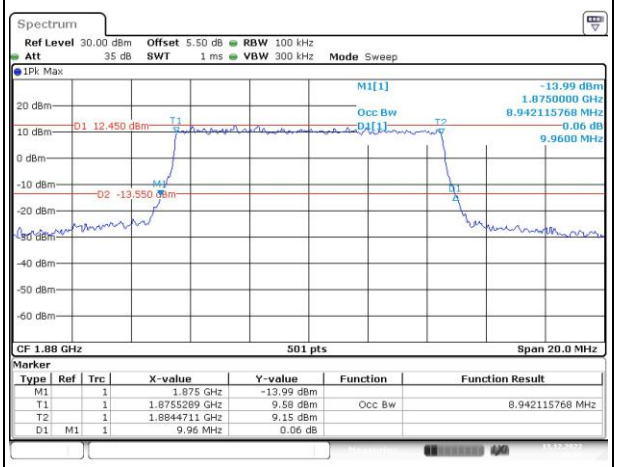
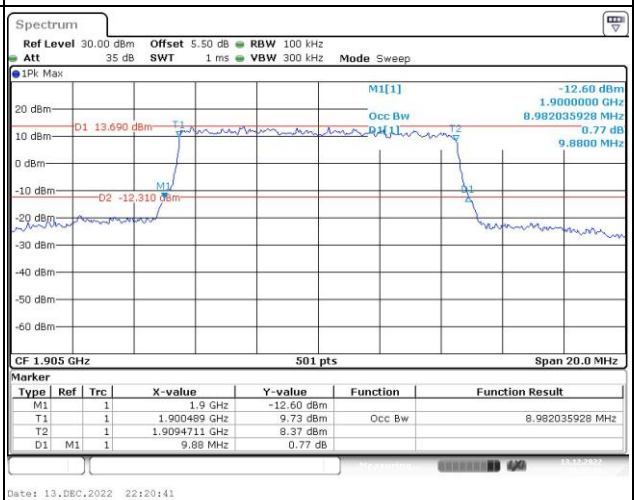
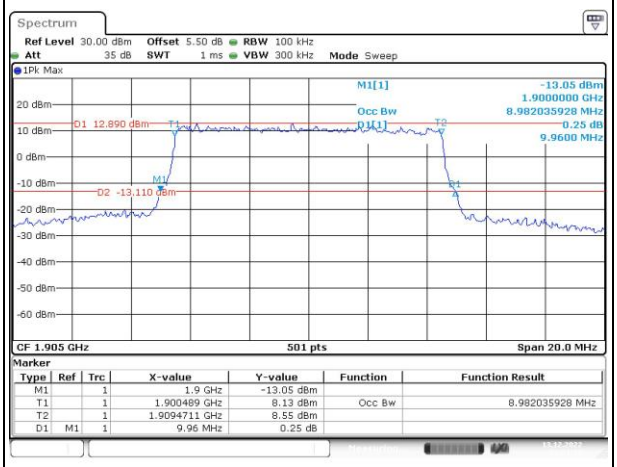
Test Plots(Note: The 5.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer)**:**

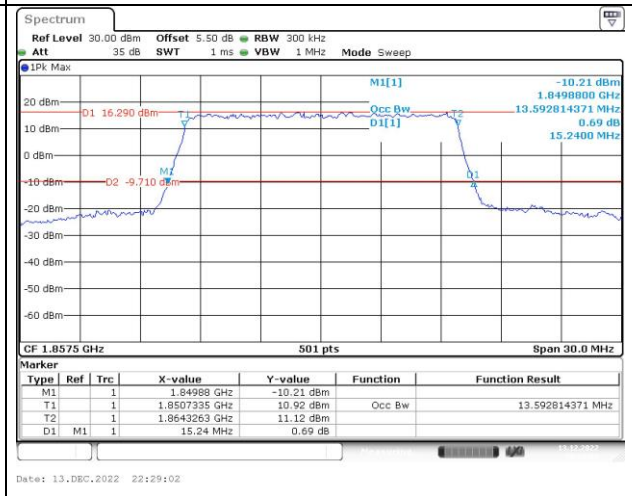
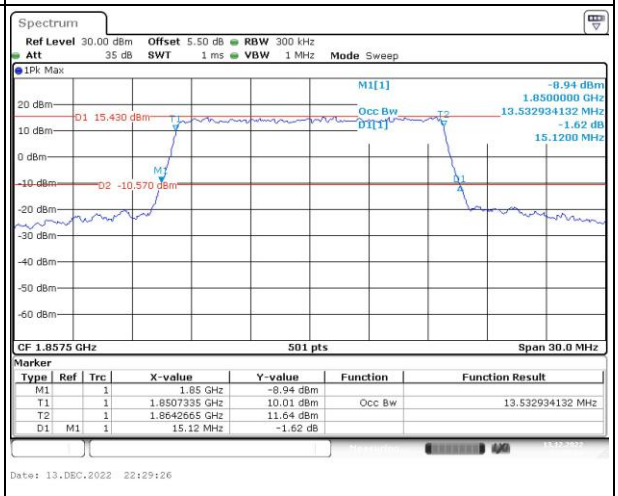
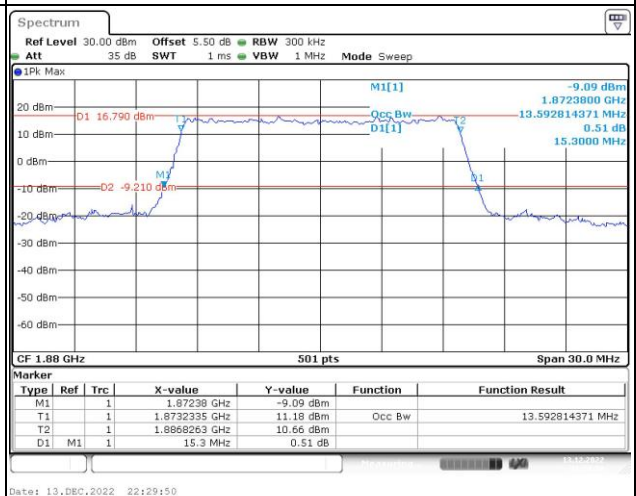
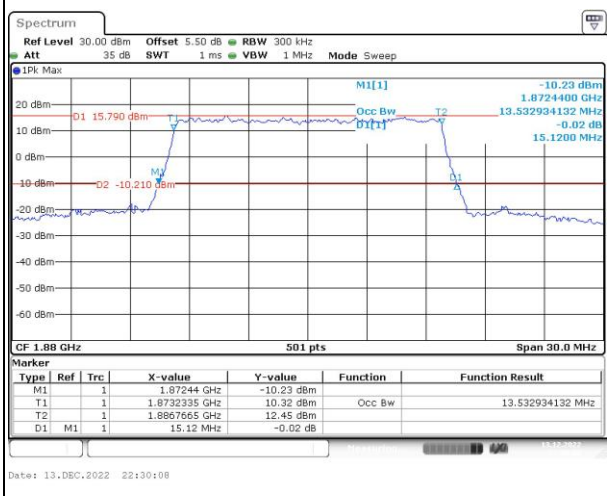
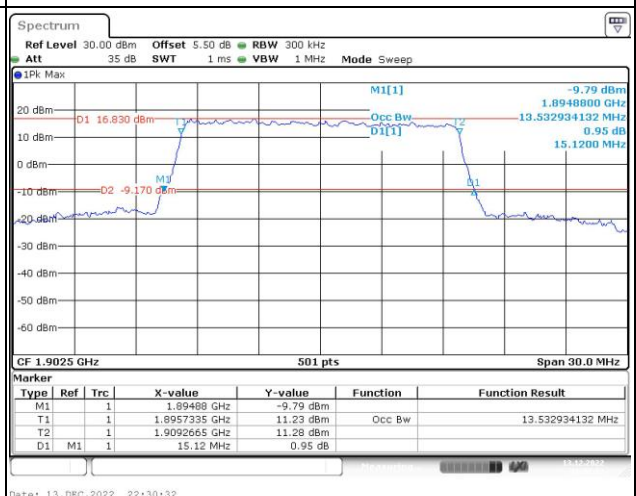
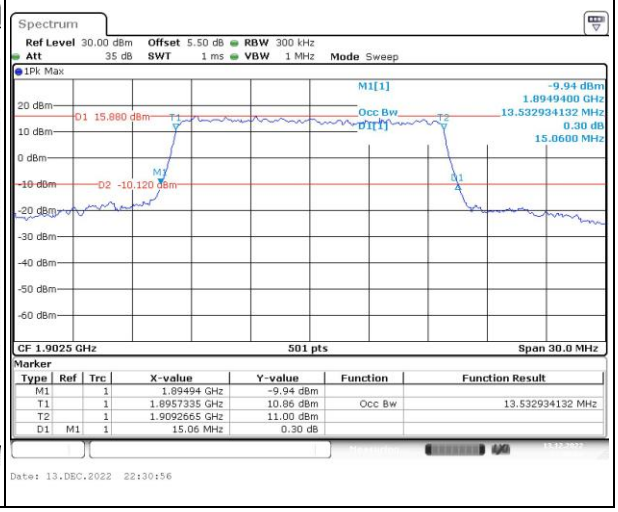
Occupied Bandwidth		
Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

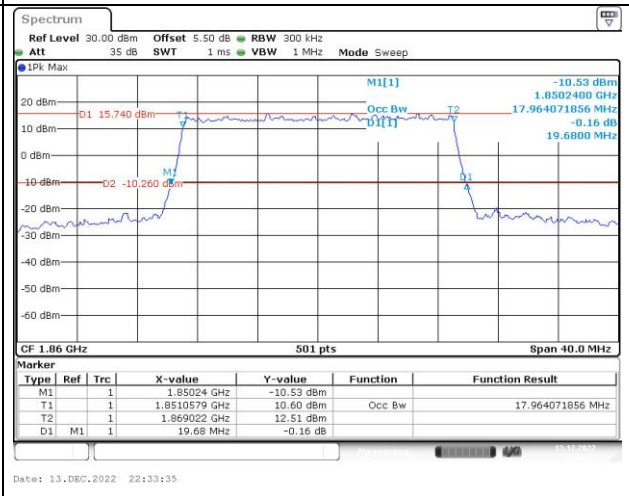
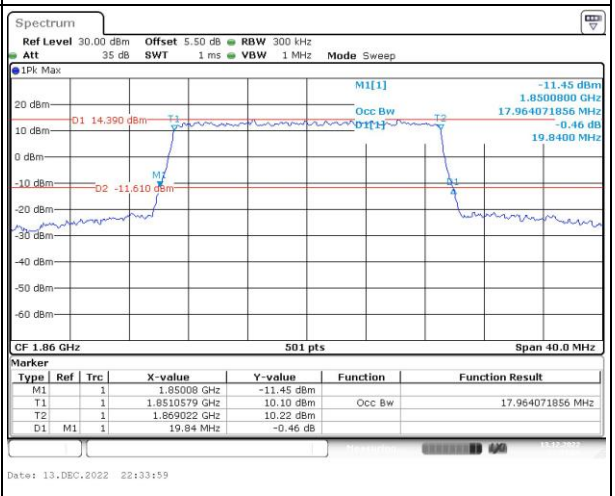
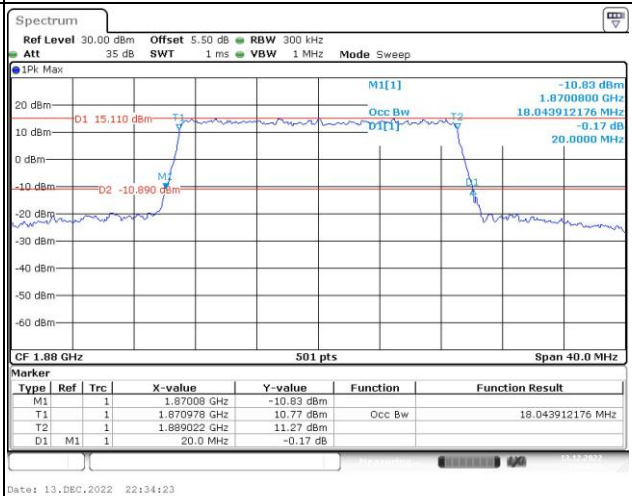
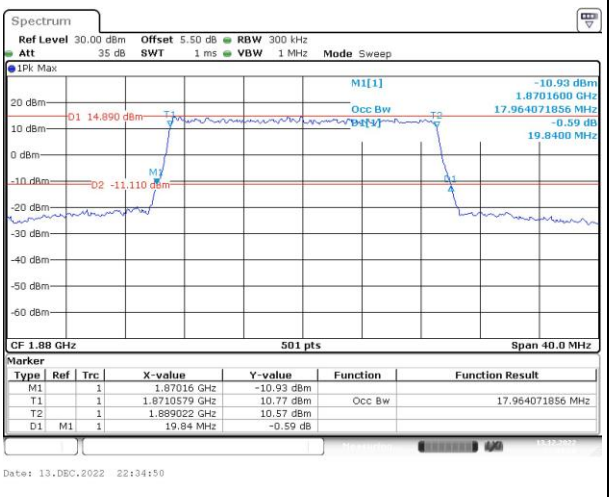
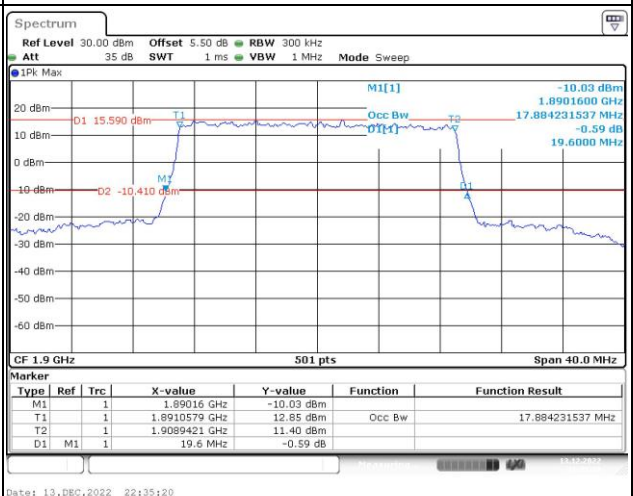
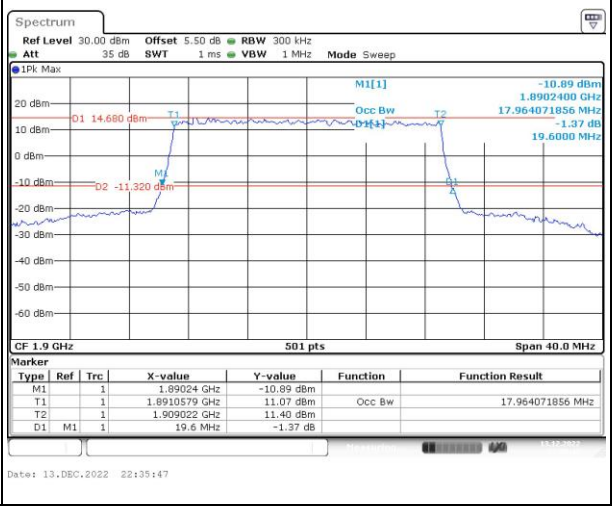
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

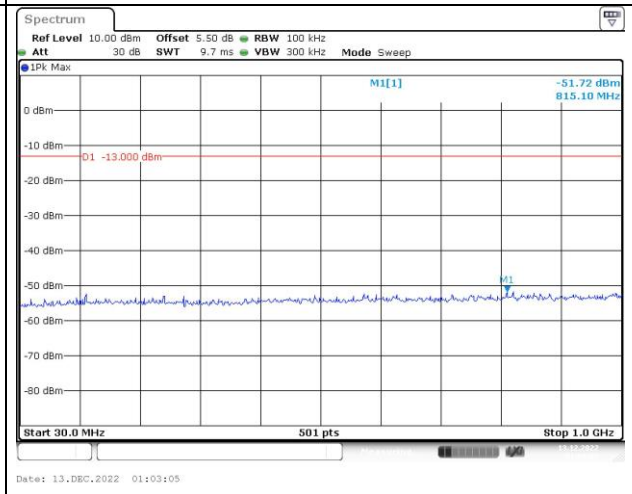
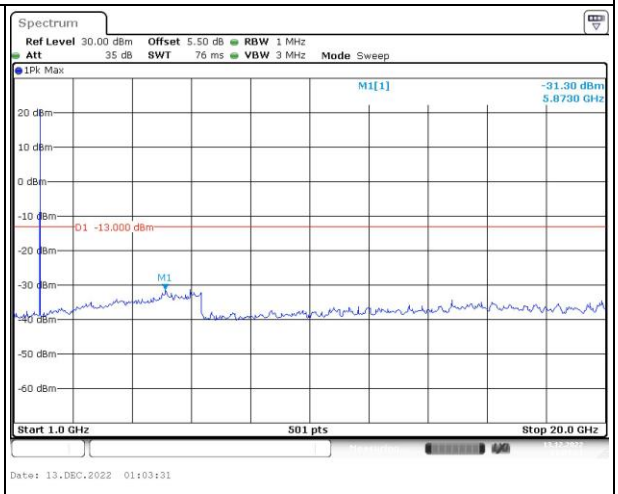
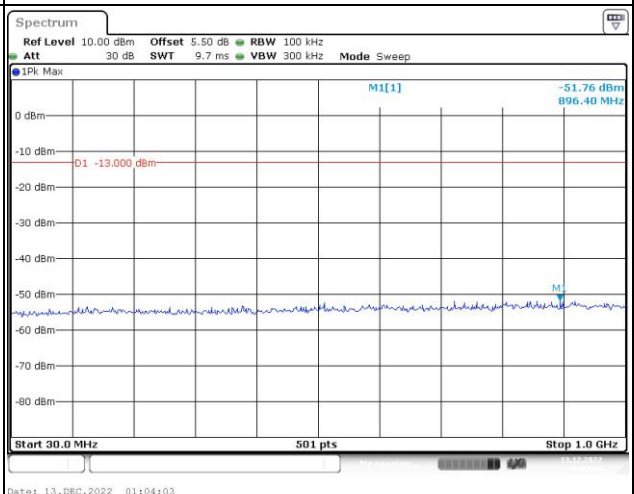
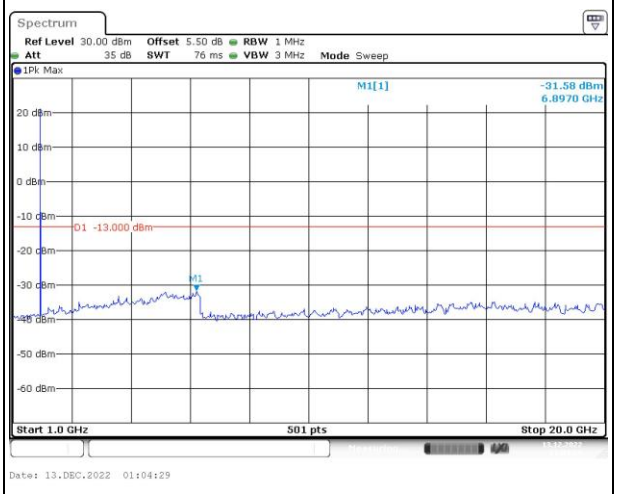
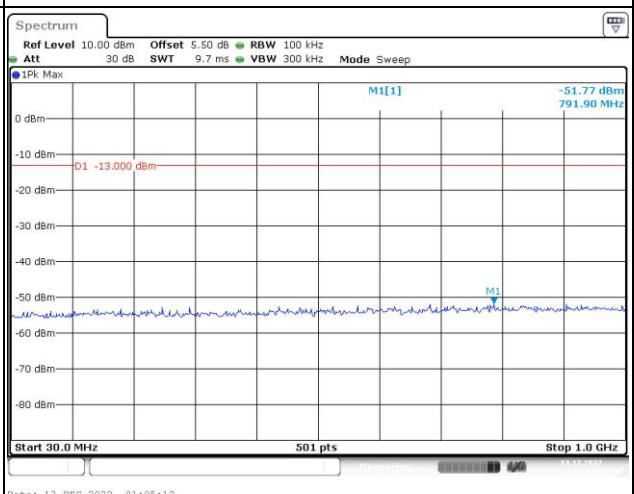
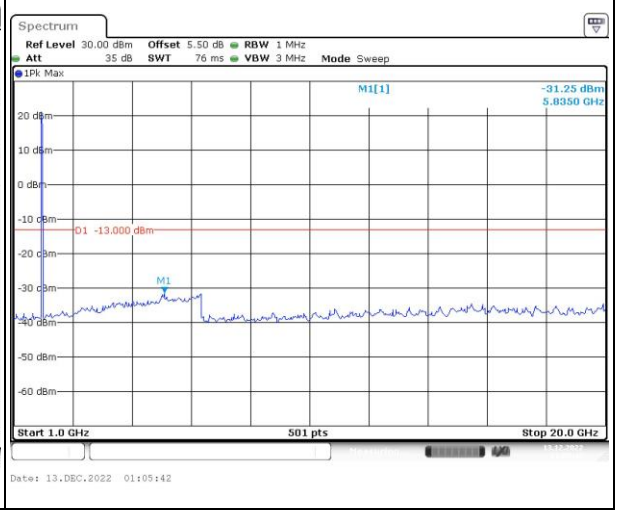
Occupied Bandwidth		
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

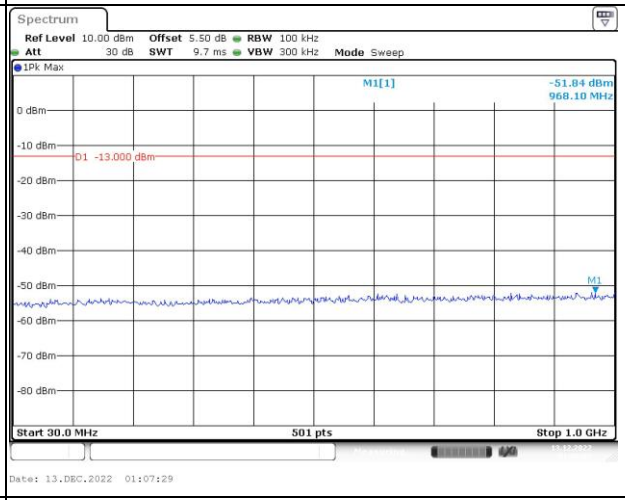
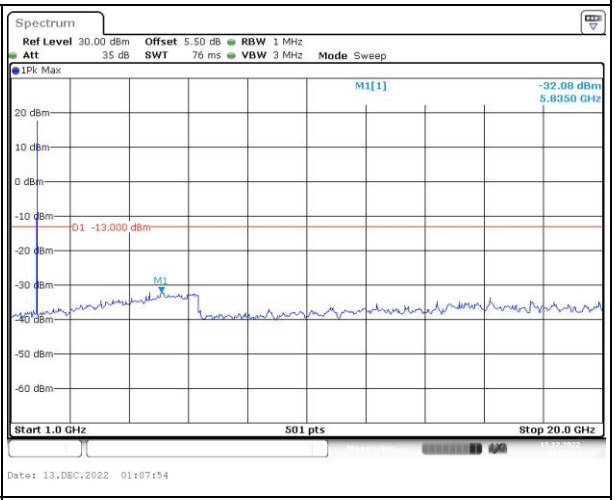
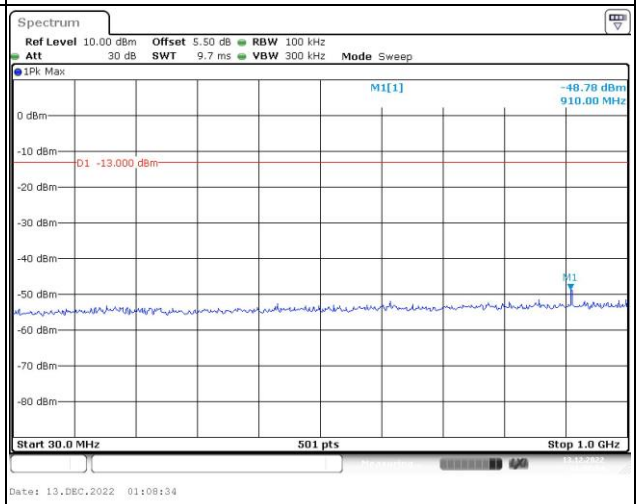
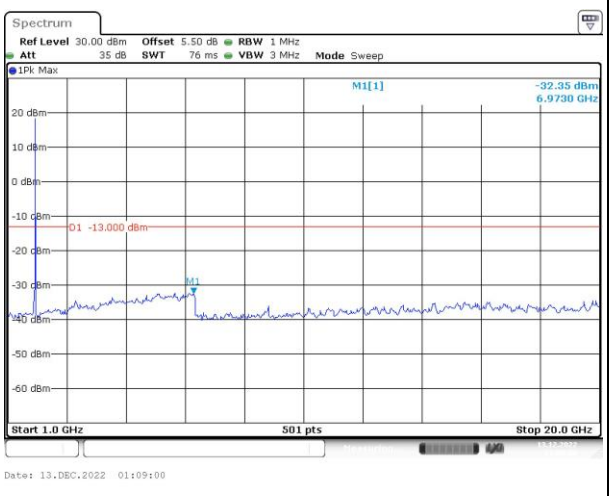
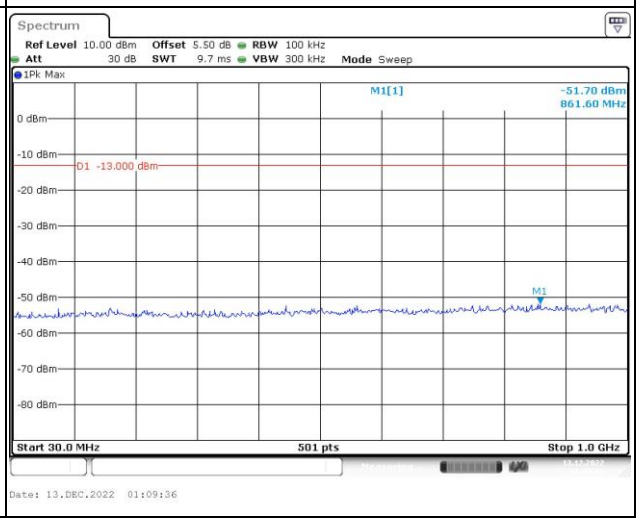
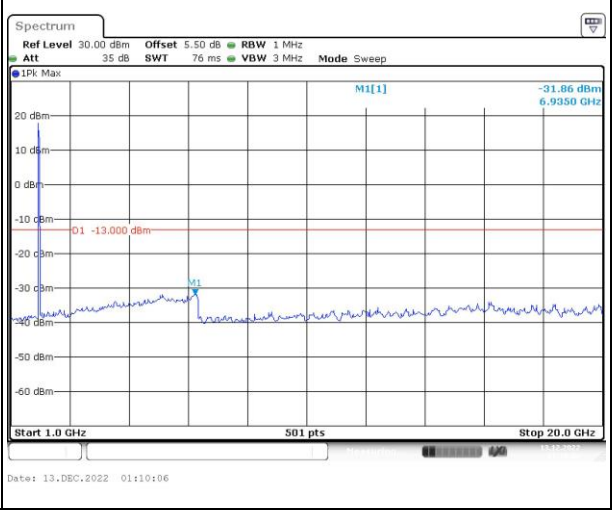
Occupied Bandwidth		
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

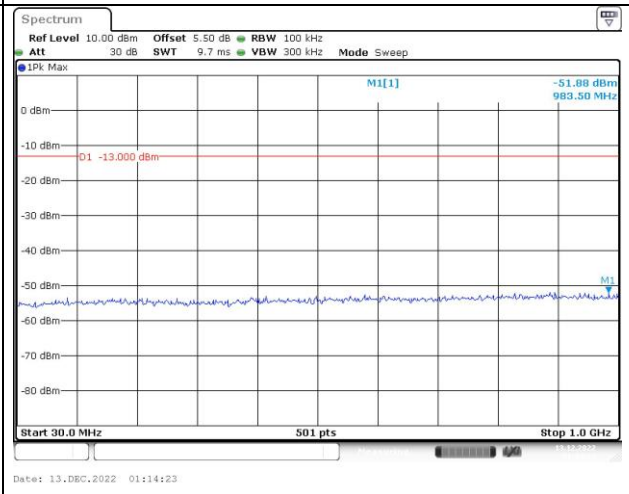
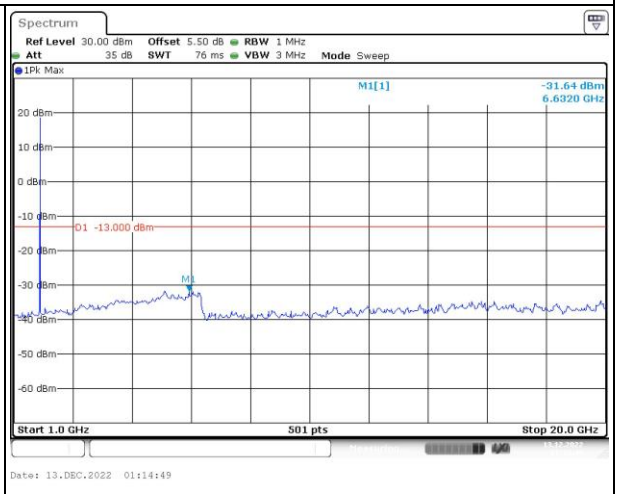
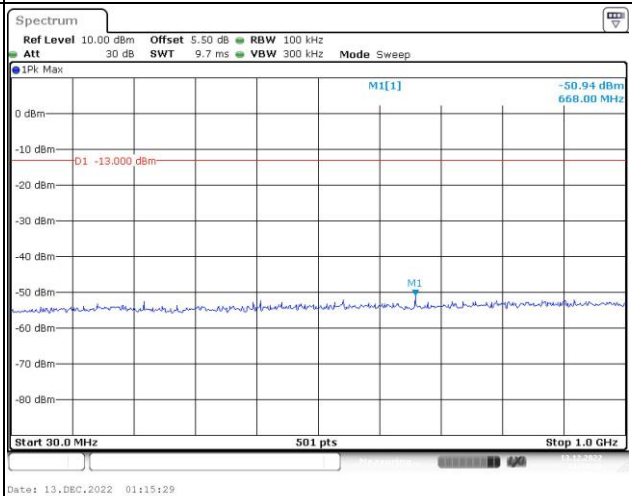
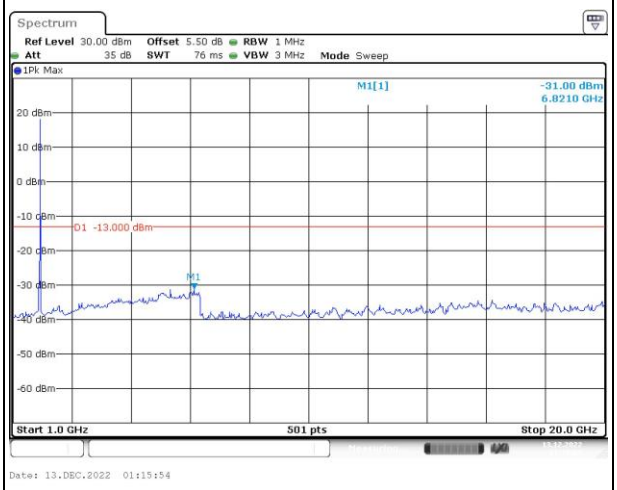
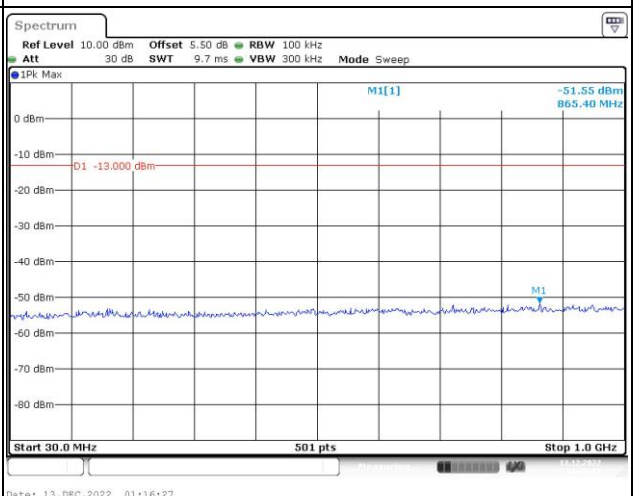
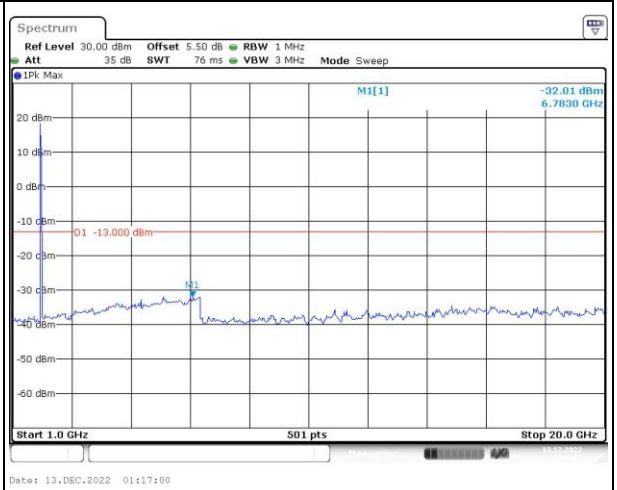
Occupied Bandwidth		
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

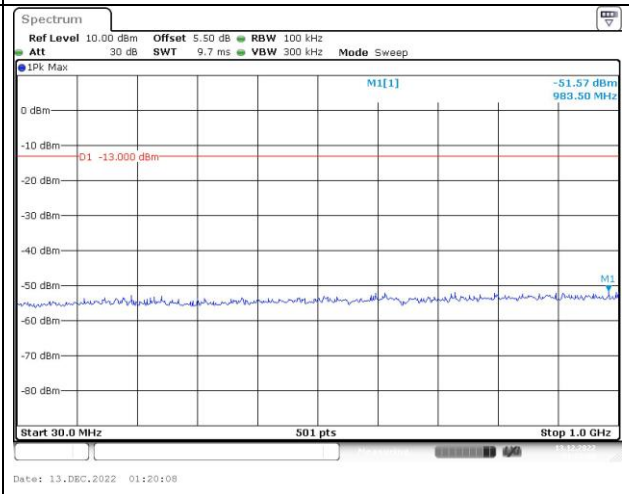
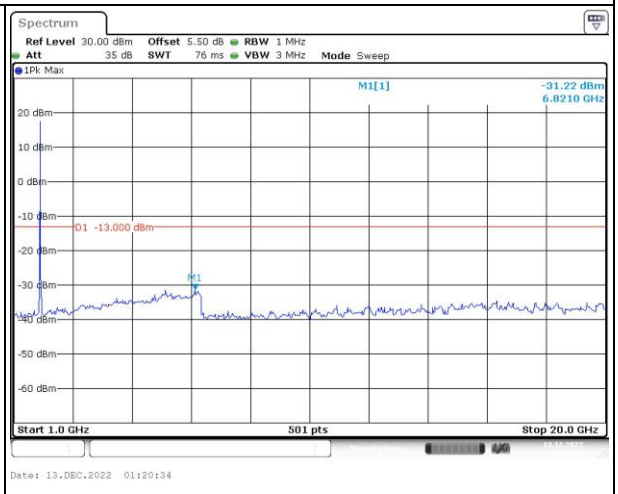
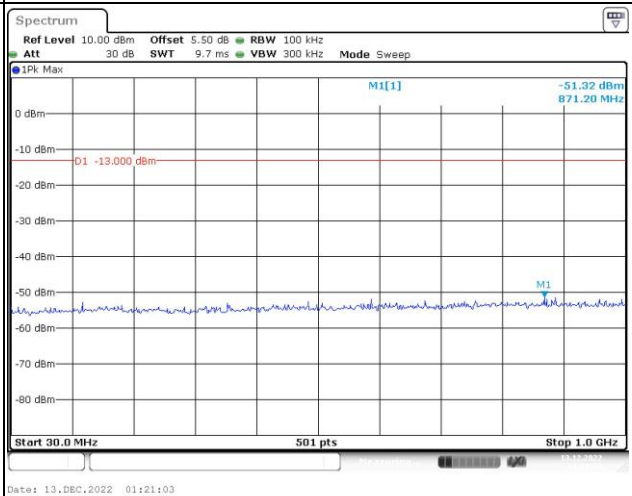
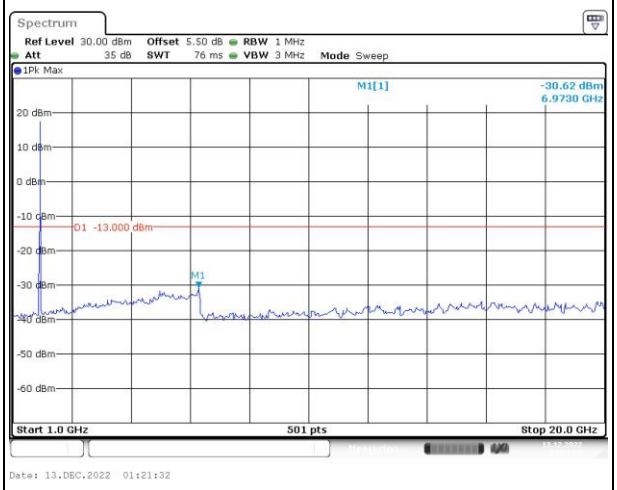
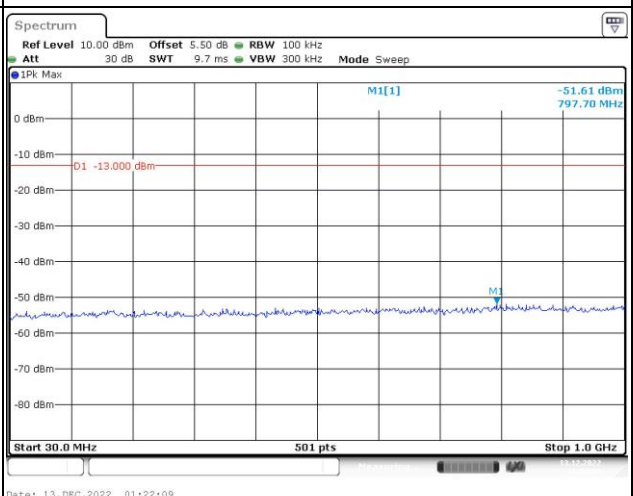
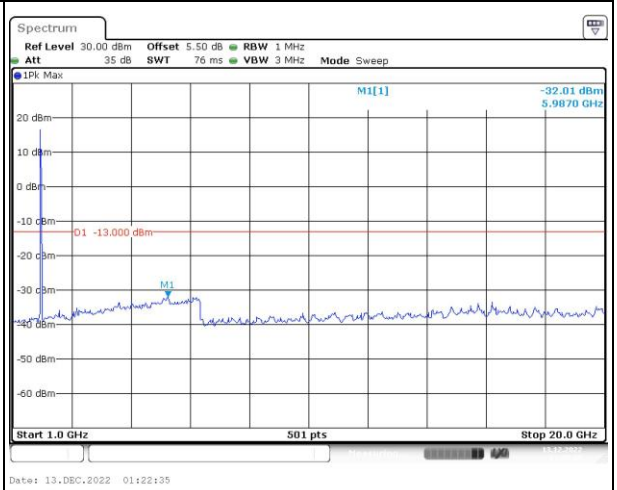
Occupied Bandwidth

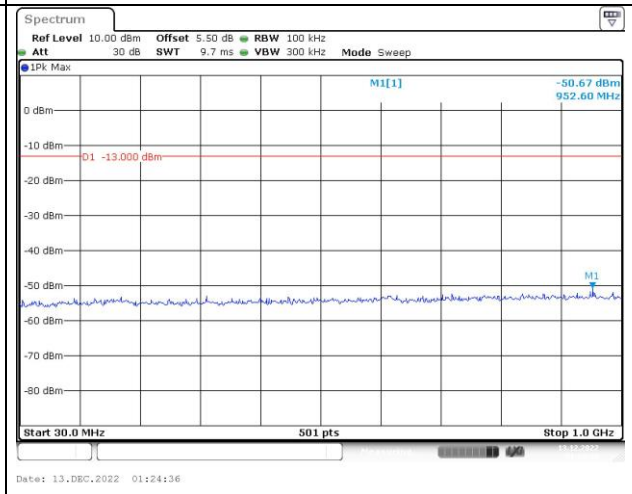
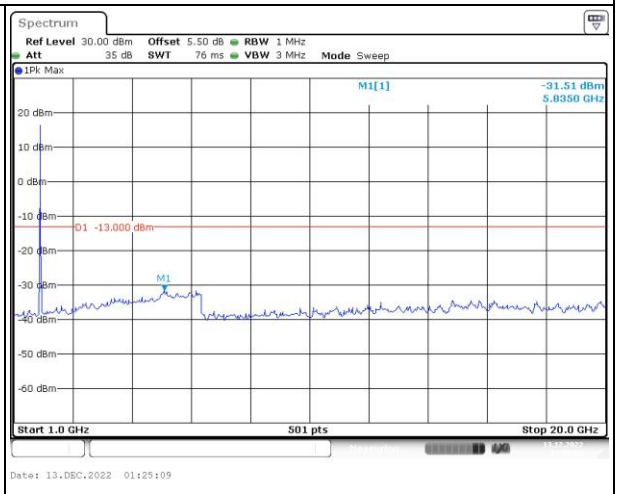
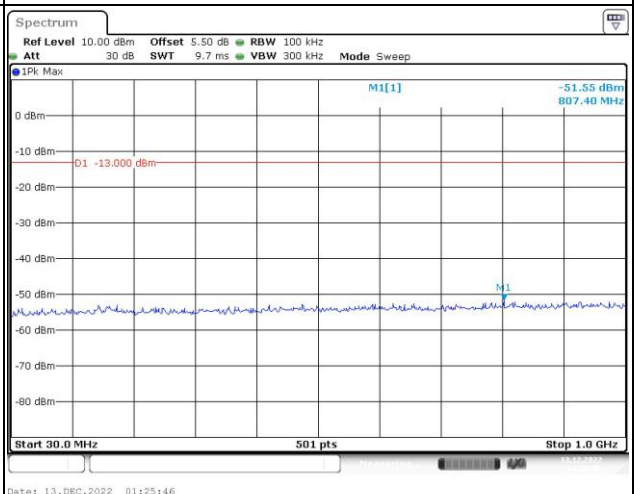
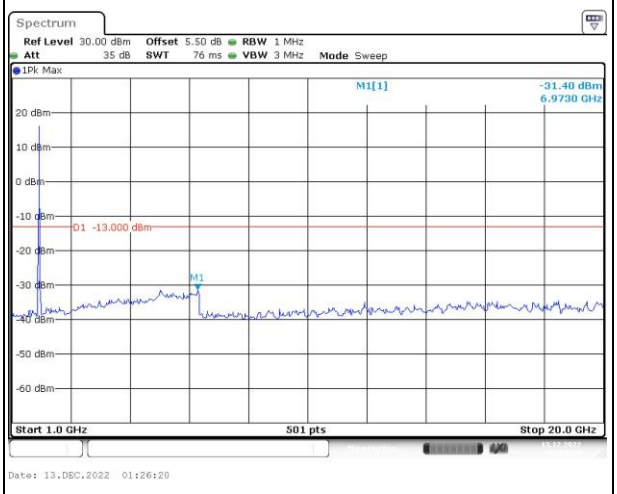
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

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

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

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

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

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