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

Serial Number:	OSEB119574-2	Test Date:	2024/4/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Karl Liang,Loge Long	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	25.6	Relative Humidity: (%)	70	ATM Pressure: (kPa)	100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101461	2023/11/27	2024/11/26
Micro-Coax	Coaxial Cable	UFB205A	323308-024	2024/1/2	2025/1/1
Eastsheep	Coaxial Attenuator	5W-N-JK-6G-10dB	F-08-EM502	2023/9/10	2024/9/9
Minl-Clrcuits	Coaxial Power Splitters & Combiner	ZFRSC-183-S+	SF448201614	2024/2/25	2025/2/24
R&S	Wideband Radio Communication Tester	CMW500	144976	2023/10/18	2024/10/17
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2023/10/18	2024/10/17
All-sun	Clamp Meter	EM305A	8348897	2023/8/3	2024/8/2
TDK-Lambda	DC Power Supply	Z+60-14	F-08-EM038-1	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (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	19.77	19.75	19.77	11.25	38.45
HSDPA Subtest 1	17.68	17.88	17.83	9.36	38.45
HSDPA Subtest 2	17.56	17.78	17.66	9.26	38.45
HSDPA Subtest 3	17.55	17.7	17.6	9.18	38.45
HSDPA Subtest 4	17.52	17.62	17.48	9.1	38.45
HSUPA Subtest 1	17.96	17.71	17.89	9.44	38.45
HSUPA Subtest 2	17.77	17.7	17.69	9.25	38.45
HSUPA Subtest 3	17.58	17.7	17.6	9.18	38.45
HSUPA Subtest 4	17.53	17.53	17.41	9.01	38.45
HSUPA Subtest 5	17.48	17.42	17.22	8.96	38.45
DC-HSDPA Subtest 1	19.68	19.69	19.74	11.22	38.45
DC-HSDPA Subtest 2	19.6	19.55	19.62	11.1	38.45
DC-HSDPA Subtest 3	19.49	19.39	19.45	10.97	38.45
DC-HSDPA Subtest 4	19.36	19.27	19.44	10.92	38.45
HSPA+ Subtest 1	19.17	19.26	19.38	10.86	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	3.07	3.1	3.1	13
HSDPA	3.39	4.96	4.43	13
HSUPA	5.65	5.68	5.28	13
				Result: **Pass**

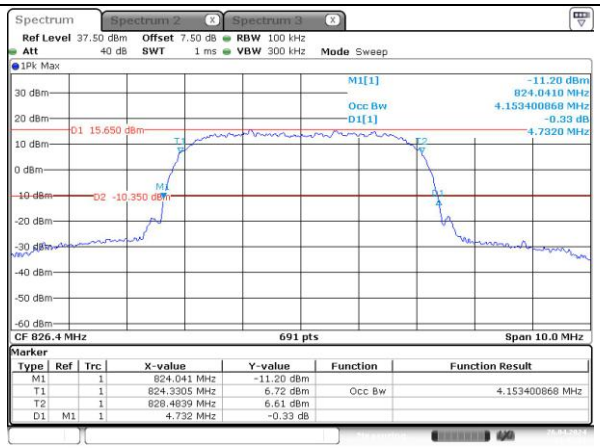
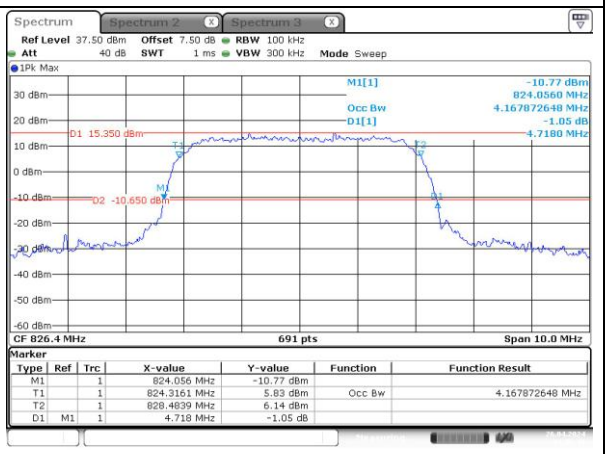
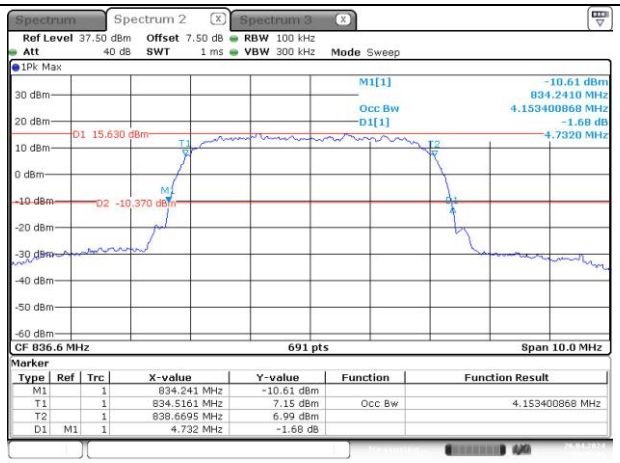
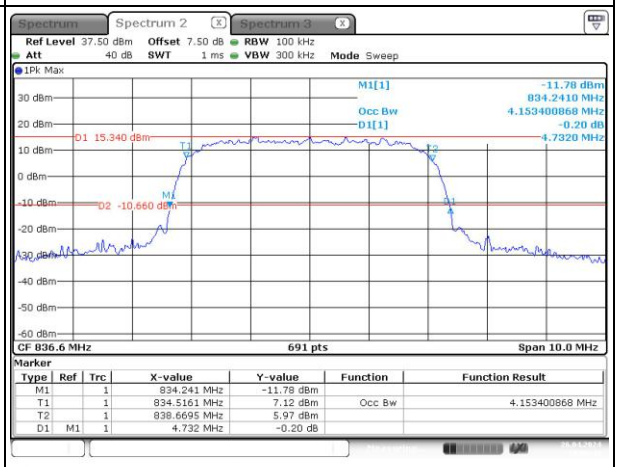
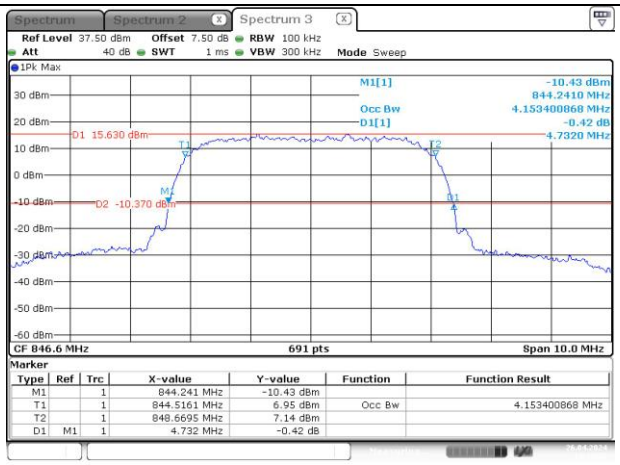
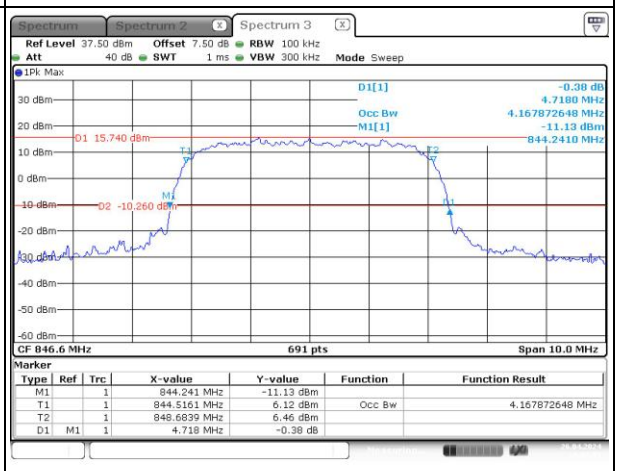
FCC §2.1049, §22.917, §22.905:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
WCDMA R99	4.153	4.153	4.153	4.732	4.732	4.732
HSDPA	4.168	4.153	4.168	4.718	4.732	4.718
HSUPA	4.153	4.153	4.139	4.718	4.732	4.718
Note: The test plots please refer to the Plots of Occupied Bandwidth						

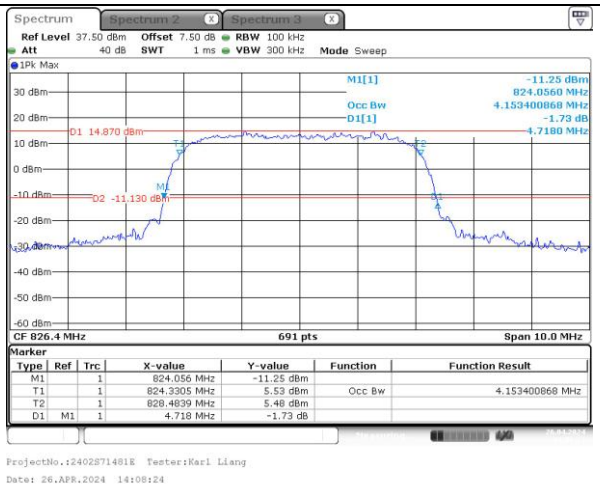
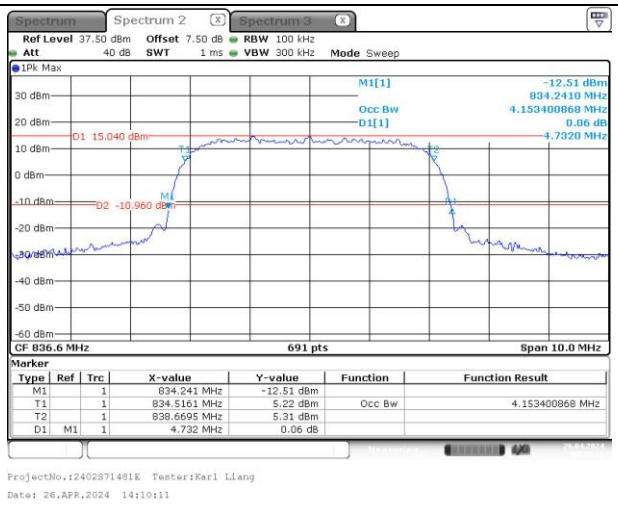
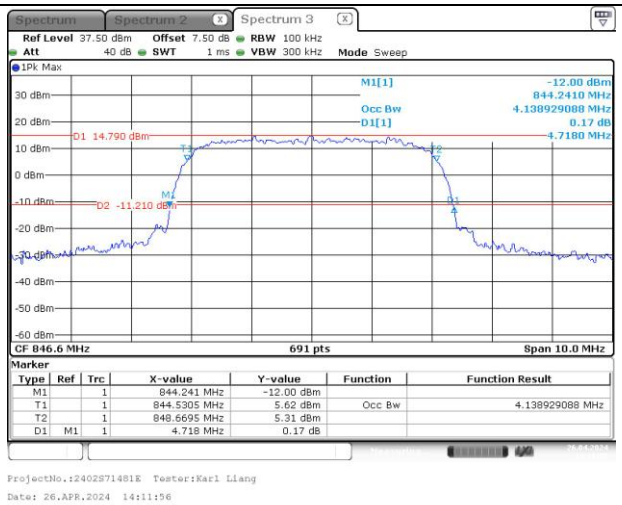
FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal	
Result:	**Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.**

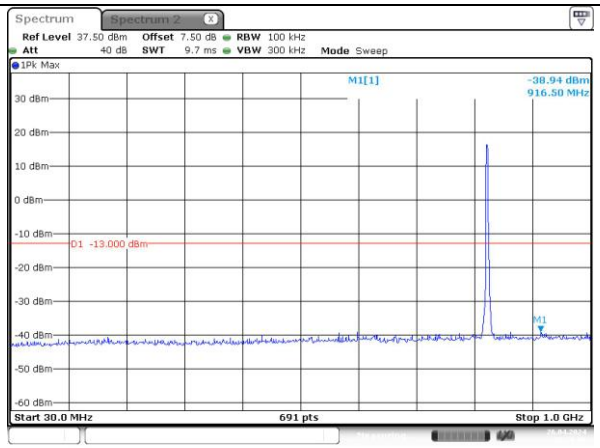
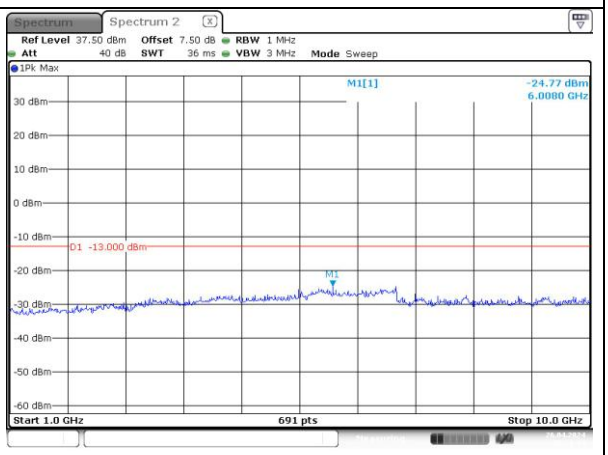
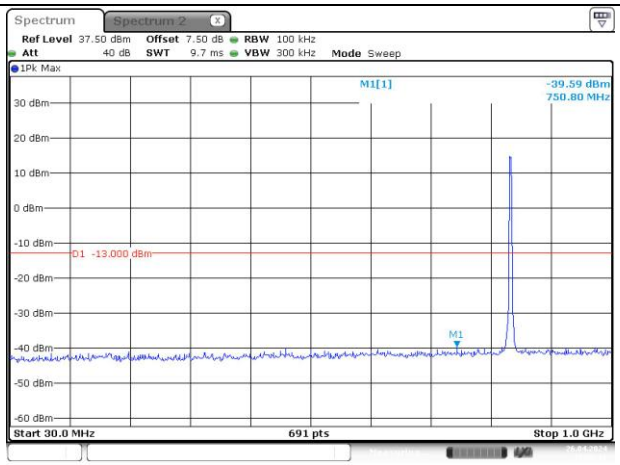
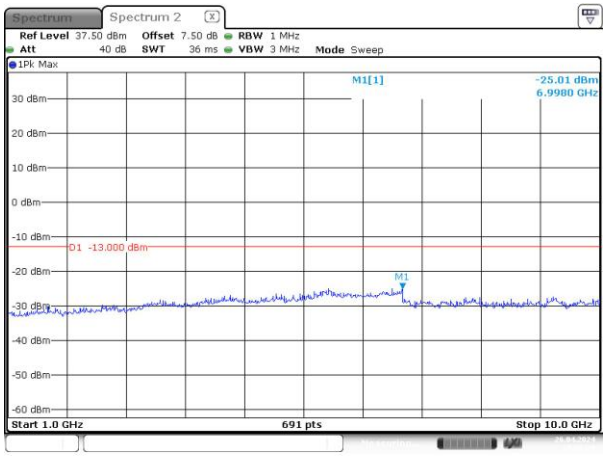
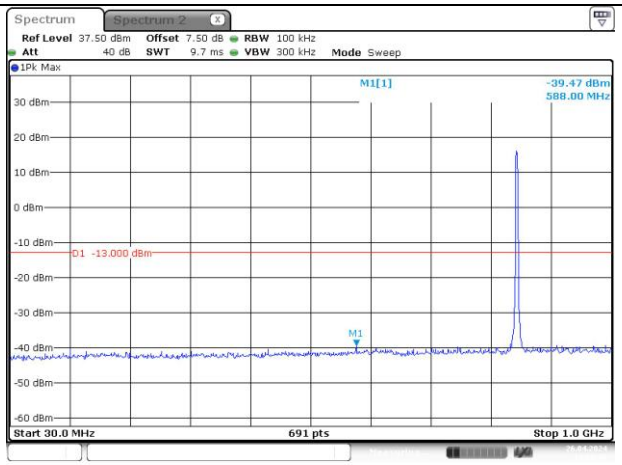
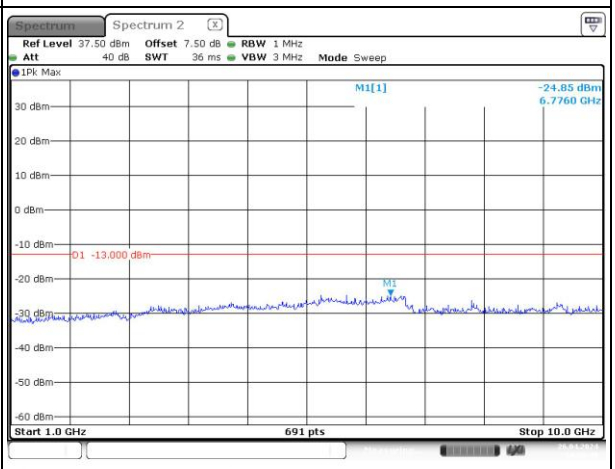
FCC §2.1051, §22.917(a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

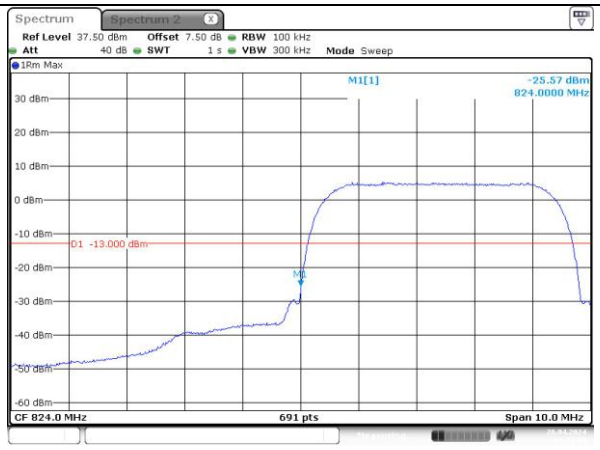
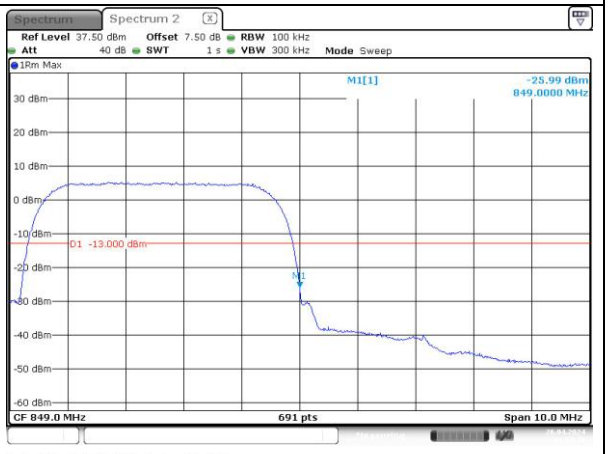
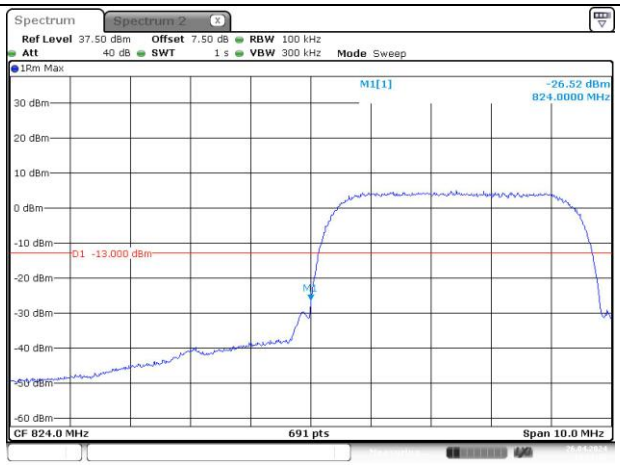
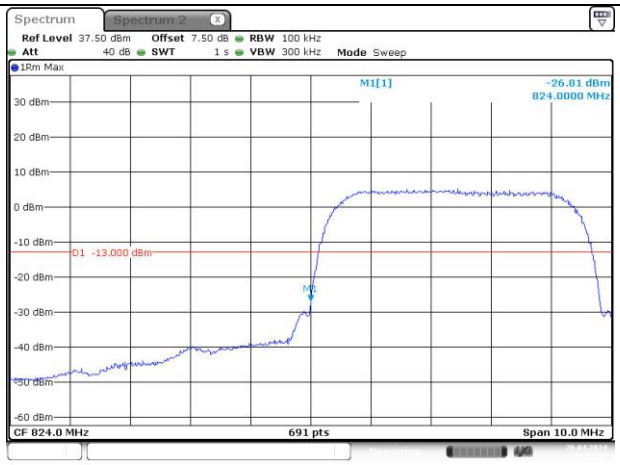
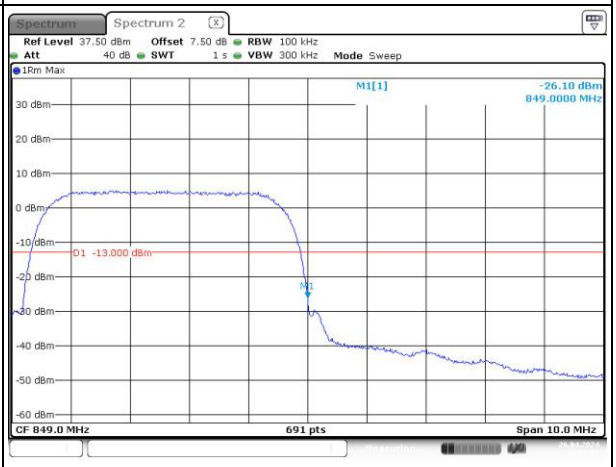
FCC §2.1055, §22.355: Frequency Stability					
Test Modulation:	WCDMA R99		Test Channel:	836.6	MHz
Test Item	Temperature (℃)	Voltage (V_{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.91	7.83	0.009	2.5
	-20	3.91	-0.29	0.000	2.5
	-10	3.91	-0.92	-0.001	2.5
	0	3.91	-6.97	-0.008	2.5
	10	3.91	4.65	0.006	2.5
	20	3.91	-7.86	-0.009	2.5
	30	3.91	2.93	0.004	2.5
	40	3.91	-3.51	-0.004	2.5
	50	3.91	-8.87	-0.011	2.5
Frequency Stability vs. Voltage	20	3.45	9.84	0.012	2.5
	20	4.5	4.44	0.005	2.5
				Result:	**Pass**

Test Plots:

Occupied Bandwidth		
Channel	WCDMA R99	HSDPA
Lowest		
Middle		
Highest		

Occupied Bandwidth	
Channel	HSUPA
Lowest	
Middle	
Highest	

Spurious Emissions at Antenna Terminal		
Channel	WCDMA R99	
Lowest		
Middle		
Highest		

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

5.6 Antenna Port Test Data and Results for LTE Band 2

Serial Number:	OSEB119574-2	Test Date:	2024/5/5
Test Site:	RF	Test Mode:	Transmitting
Tester:	Karl Liang,Loge Long	Test Result:	**Pass**

Environmental Conditions:					
Temperature: (℃)	24.5	Relative Humidity: (%)	65	ATM Pressure: (kPa)	100.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101461	2023/11/27	2024/11/26
Micro-Coax	Coaxial Cable	UFB205A	323308-024	2024/1/2	2025/1/1
Eastsheep	Coaxial Attenuator	5W-N-JK-6G-10dB	F-08-EM502	2023/9/10	2024/9/9
Minl-Clrcuits	Coaxial Power Splitters & Combiner	ZFRSC-183-S+	SF448201614	2024/2/25	2025/2/24
R&S	Wideband Radio Communication Tester	CMW500	144976	2023/10/18	2024/10/17
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2023/10/18	2024/10/17
All-sun	Clamp Meter	EM305A	8348897	2023/8/3	2024/8/2
TDK-Lambda	DC Power Supply	Z+60-14	F-08-EM038-1	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (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	15.34	15.39	15.41	15.16	33
	RB1#3	15.35	15.38	15.45		
	RB1#5	15.31	15.36	15.41		
	RB3#0	15.37	15.35	15.46		
	RB3#3	15.39	15.37	15.45		
	RB6#0	14.35	14.35	14.45		
1.4MHz 16QAM	RB1#0	14.32	14.4	14.56	14.27	33
	RB1#3	14.34	14.39	14.57		
	RB1#5	14.34	14.39	14.56		
	RB3#0	14.44	14.5	14.41		
	RB3#3	14.43	14.53	14.42		
	RB6#0	13.26	13.36	13.48		
3MHz QPSK	RB1#0	15.34	15.36	15.38	15.08	33
	RB1#8	15.29	15.3	15.35		
	RB1#14	15.37	15.29	15.35		
	RB6#0	14.3	14.34	14.43		
	RB6#9	14.3	14.32	14.36		
	RB15#0	14.35	14.31	14.41		
3MHz 16QAM	RB1#0	14.33	14.93	14.51	14.63	33
	RB1#8	14.3	14.91	14.51		
	RB1#14	14.33	14.89	14.46		
	RB6#0	13.28	13.39	13.41		
	RB6#9	13.24	13.41	13.41		
	RB15#0	13.37	13.39	13.33		
5MHz QPSK	RB1#0	15.36	15.48	15.54	15.25	33
	RB1#13	15.35	15.43	15.52		
	RB1#24	15.35	15.48	15.55		
	RB15#0	14.33	14.43	14.56		
	RB15#10	14.43	14.45	14.49		
	RB25#0	14.37	14.43	14.52		
5MHz 16QAM	RB1#0	14.47	14.36	14.81	14.51	33
	RB1#13	14.47	14.33	14.78		
	RB1#24	14.46	14.35	14.77		
	RB15#0	13.37	13.48	13.52		
	RB15#10	13.41	13.43	13.44		
	RB25#0	13.4	13.49	13.5		

10MHz QPSK	RB1#0	15.39	15.44	15.48	15.19	33
	RB1#25	15.45	15.44	15.49		
	RB1#49	15.4	15.35	15.44		
	RB25#0	14.34	14.4	14.45		
	RB25#25	14.39	14.41	14.45		
	RB50#0	14.4	14.46	14.49		
10MHz 16QAM	RB1#0	14.39	15.02	14.56	14.72	33
	RB1#25	14.4	14.98	14.59		
	RB1#49	14.3	14.95	14.58		
	RB25#0	13.47	13.44	13.5		
	RB25#25	13.49	13.42	13.48		
	RB50#0	13.41	13.43	13.43		
15MHz QPSK	RB1#0	15.37	15.3	15.41	15.11	33
	RB1#38	15.35	15.36	15.41		
	RB1#74	15.31	15.3	15.35		
	RB36#0	14.32	14.31	14.47		
	RB36#39	14.34	14.3	14.42		
	RB75#0	14.39	14.39	14.46		
15MHz 16QAM	RB1#0	14.77	14.92	14.52	14.65	33
	RB1#38	14.72	14.95	14.52		
	RB1#74	14.65	14.89	14.49		
	RB36#0	13.33	13.38	13.49		
	RB36#39	13.32	13.34	13.48		
	RB75#0	13.35	13.34	13.48		
20MHz QPSK	RB1#0	15.34	15.36	15.34	15.15	33
	RB1#50	15.31	15.45	15.39		
	RB1#99	15.24	15.32	15.34		
	RB50#0	14.31	14.39	14.5		
	RB50#50	14.38	14.37	14.45		
	RB100#0	14.29	14.3	14.46		
20MHz 16QAM	RB1#0	14.61	14.54	14.89	14.63	33
	RB1#50	14.59	14.62	14.93		
	RB1#99	14.52	14.53	14.89		
	RB50#0	13.29	13.31	13.45		
	RB50#50	13.28	13.31	13.4		
	RB100#0	13.27	13.33	13.46		
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	5.74	5.97	6.14	13
	RB100#0	4.17	4.17	4.38	13
20MHz 16QAM	RB1#0	6.12	6.52	7.25	13
	RB100#0	5.77	5.77	5.88	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	1.108	1.102	1.102	1.302	1.314	1.332
1.4MHz 16QAM	1.096	1.102	1.096	1.314	1.332	1.29
3MHz QPSK	2.695	2.695	2.695	2.904	2.892	2.892
3MHz 16QAM	2.683	2.683	2.683	2.904	2.928	2.904
5MHz QPSK	4.491	4.511	4.511	4.96	5	4.98
5MHz 16QAM	4.531	4.491	4.511	5	4.98	4.98
10MHz QPSK	8.942	8.942	8.942	9.64	9.8	9.6
10MHz 16QAM	8.942	8.942	8.942	10.04	9.6	9.64
15MHz QPSK	13.473	13.473	13.473	14.82	15.06	14.88
15MHz 16QAM	13.473	13.473	13.533	14.76	14.76	14.82
20MHz QPSK	17.964	17.884	17.964	19.52	19.28	19.28
20MHz 16QAM	17.964	17.964	17.884	19.36	19.36	19.44
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.**

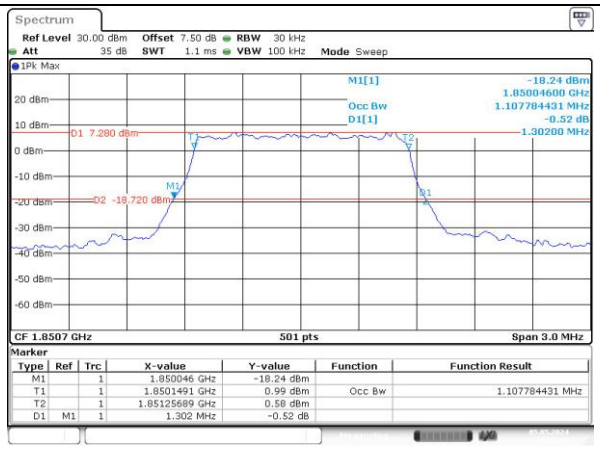
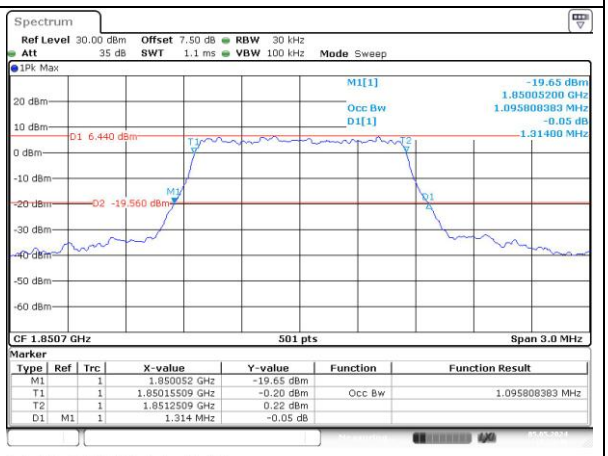
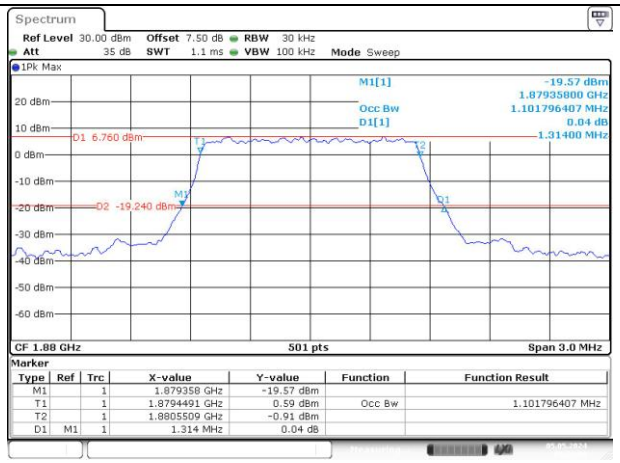
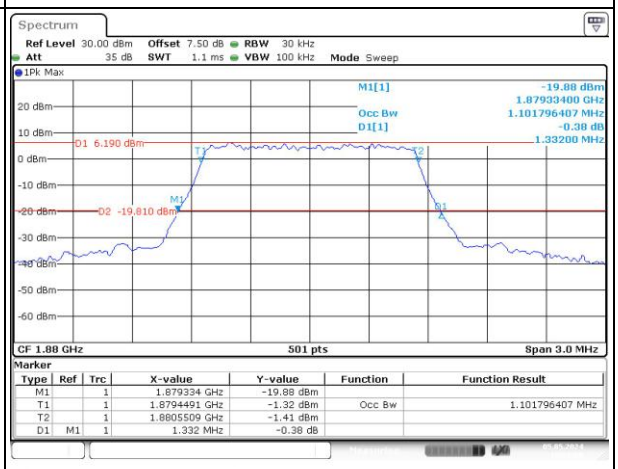
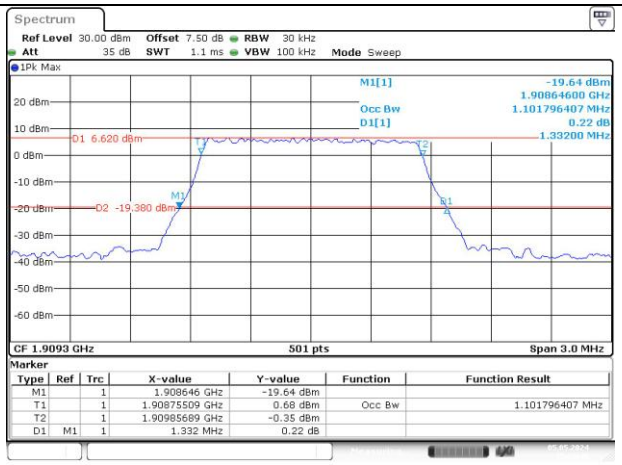
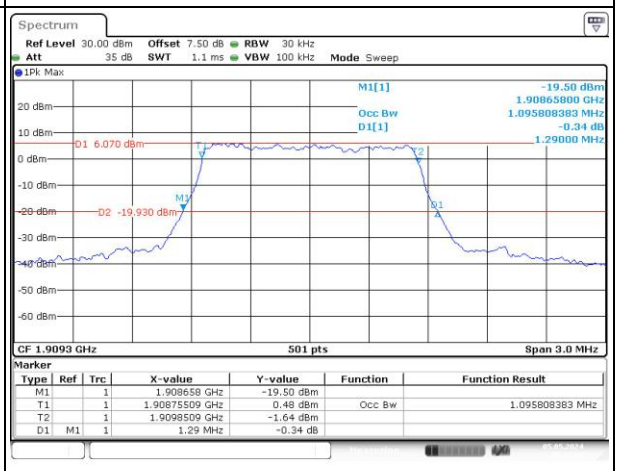
FCC §2.1051, §24.238 (a):Out of band emission, Band Edge	
Result:	**Pass, Please refer to the test plots of Out of band emission, Band Edge.**

FCC §2.1055, §24.235: Frequency Stability

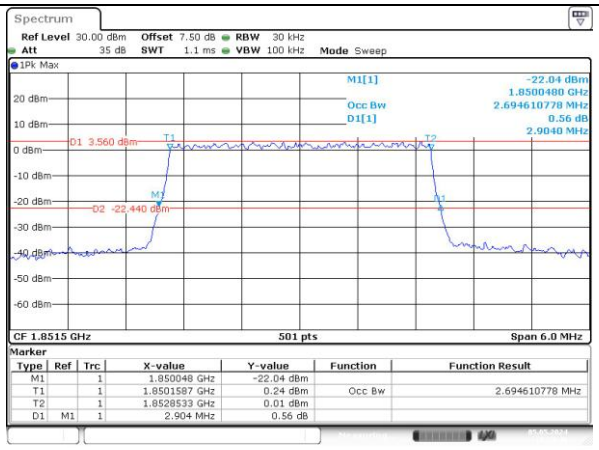
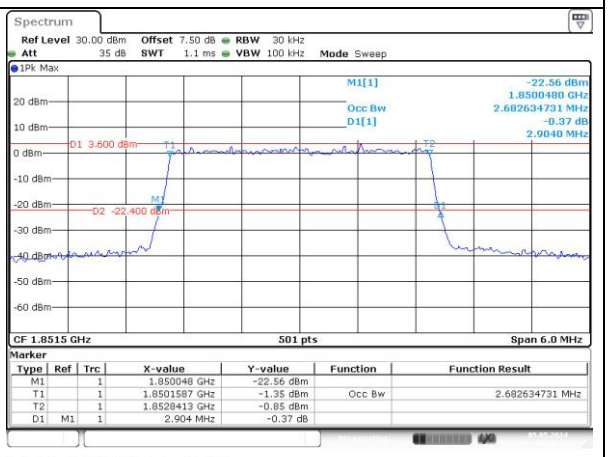
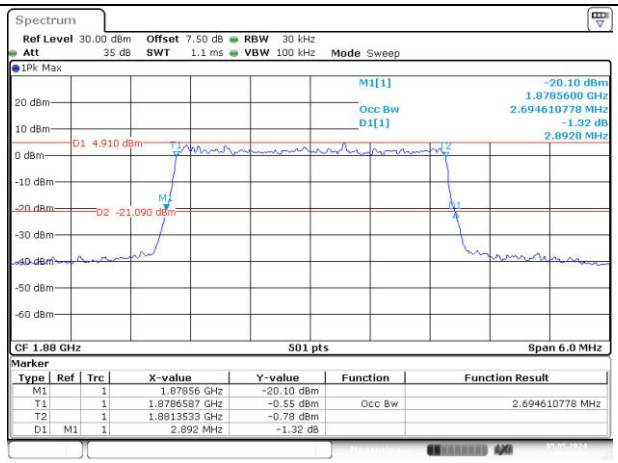
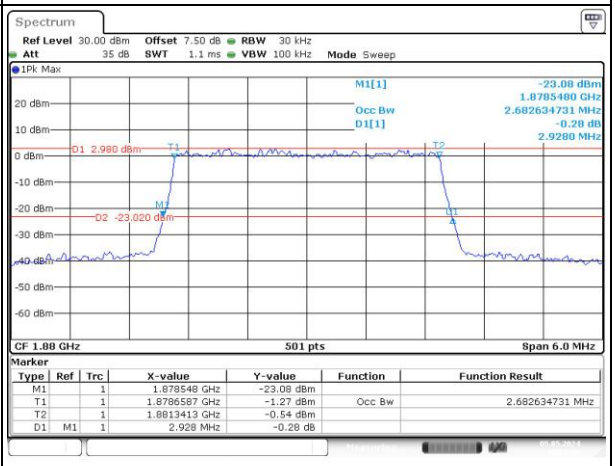
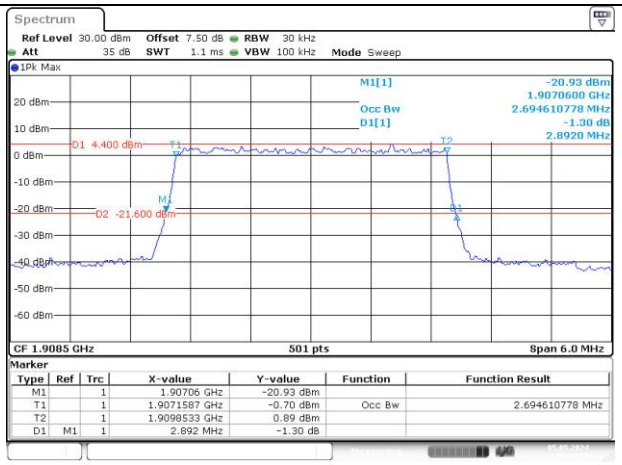
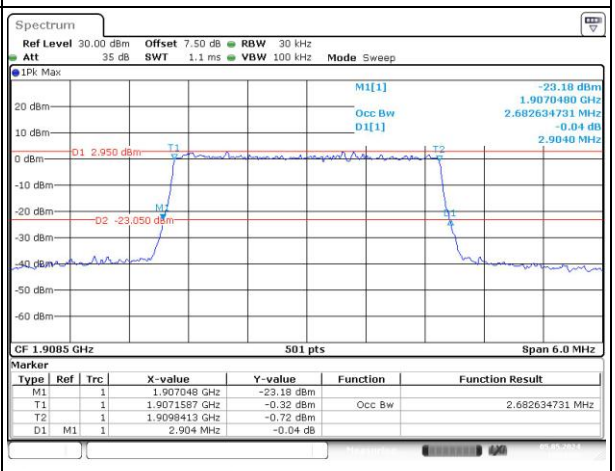
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	1851.016	1850.000	1909.019	1910.000
	-20	3.91	1851.049	1850.000	1909.001	1910.000
	-10	3.91	1851.052	1850.000	1908.998	1910.000
	0	3.91	1851.043	1850.000	1909.007	1910.000
	10	3.91	1851.043	1850.000	1909.001	1910.000
	20	3.91	1851.058	1850.000	1909.022	1910.000
	30	3.91	1851.073	1850.000	1909.037	1910.000
	40	3.91	1851.064	1850.000	1909.034	1910.000
	50	3.91	1851.085	1850.000	1909.046	1910.000
Frequency Stability vs. Voltage	20	3.45	1851.070	1850.000	1909.040	1910.000
	20	4.5	1851.070	1850.000	1909.049	1910.000
					Result:	**Pass**

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (℃)	Voltage (V_{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	1851.010	1850.000	1908.927	1910.000
	-20	3.91	1851.031	1850.000	1908.939	1910.000
	-10	3.91	1851.046	1850.000	1908.927	1910.000
	0	3.91	1851.046	1850.000	1908.939	1910.000
	10	3.91	1851.034	1850.000	1908.927	1910.000
	20	3.91	1851.058	1850.000	1908.942	1910.000
	30	3.91	1851.082	1850.000	1908.963	1910.000
	40	3.91	1851.070	1850.000	1908.963	1910.000
	50	3.91	1851.064	1850.000	1908.954	1910.000
Frequency Stability vs. Voltage	20	3.45	1851.067	1850.000	1908.948	1910.000
	20	4.5	1851.079	1850.000	1908.948	1910.000
					Result:	**Pass**

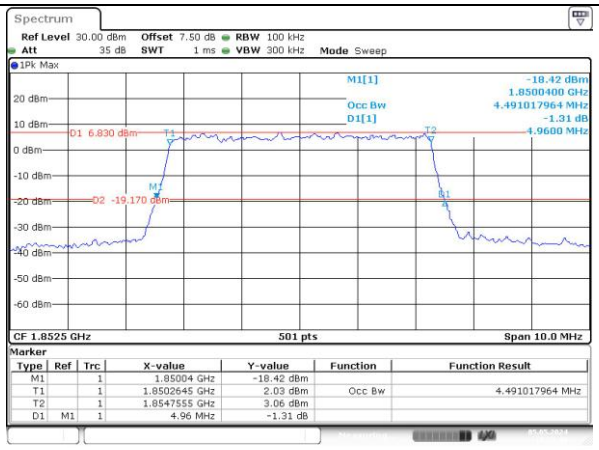
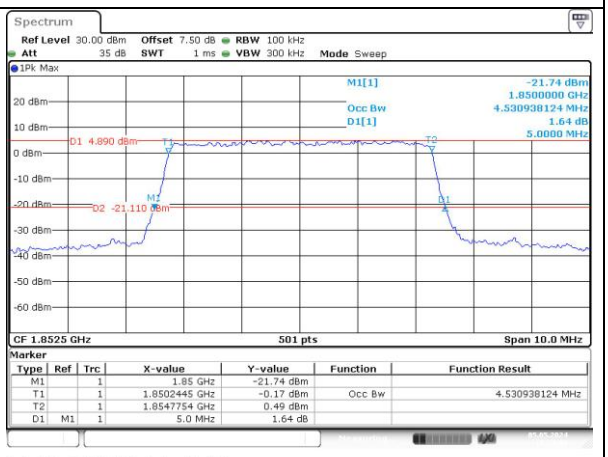
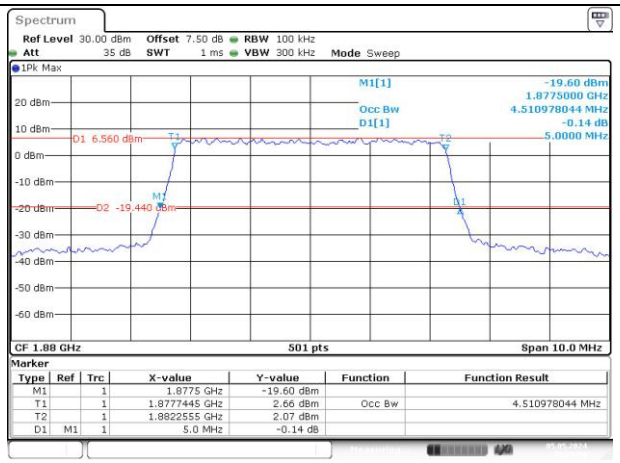
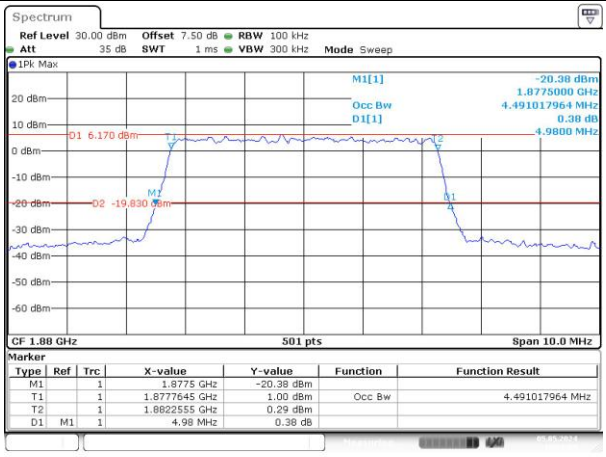
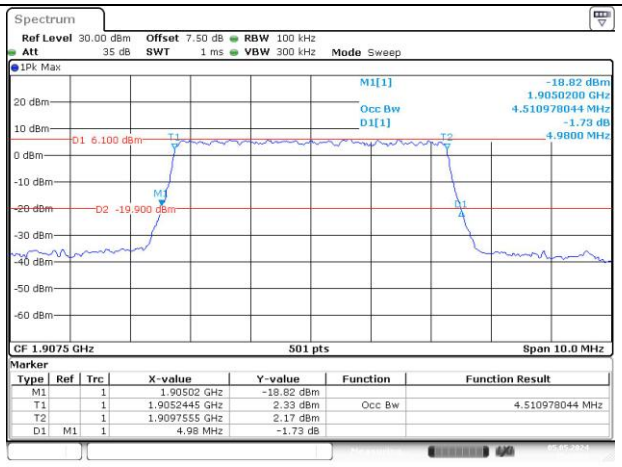
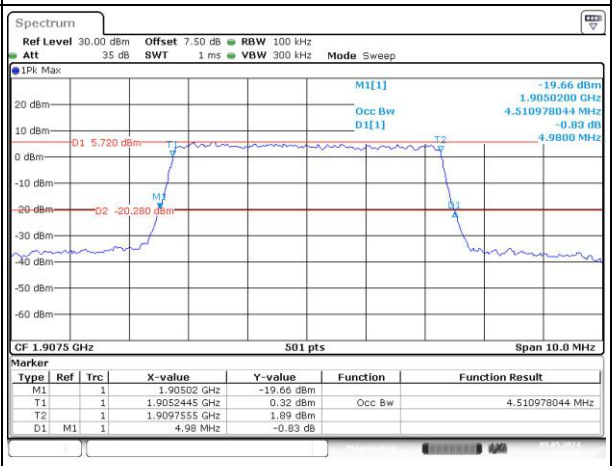
Test Plots:

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

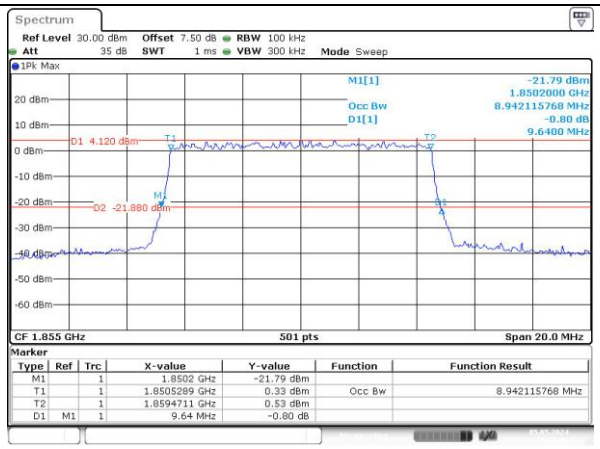
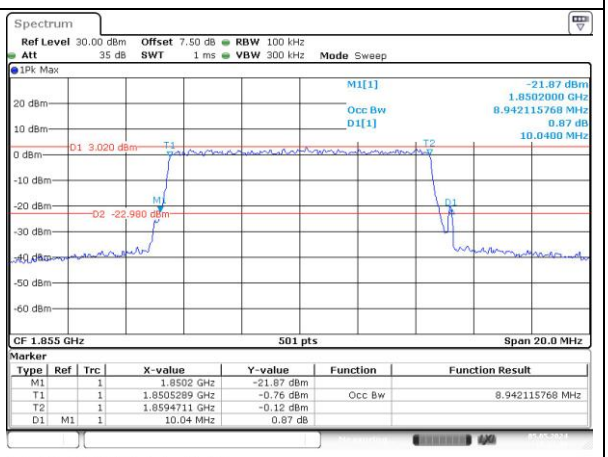
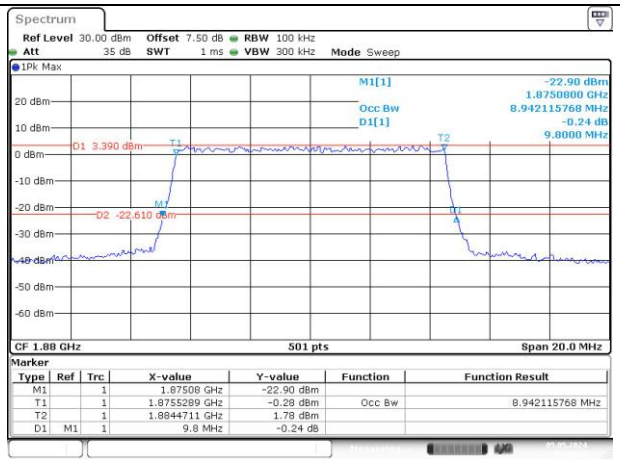
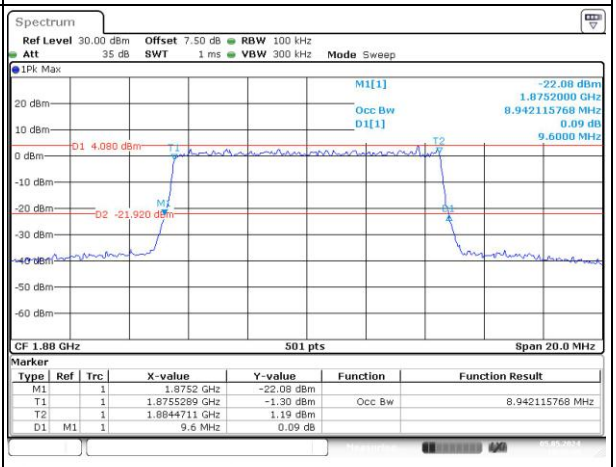
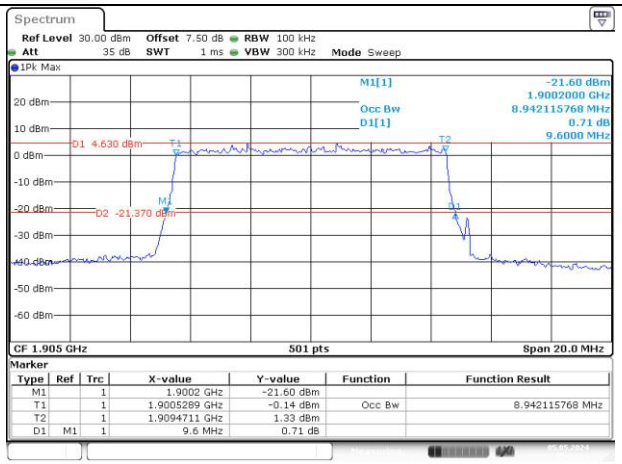
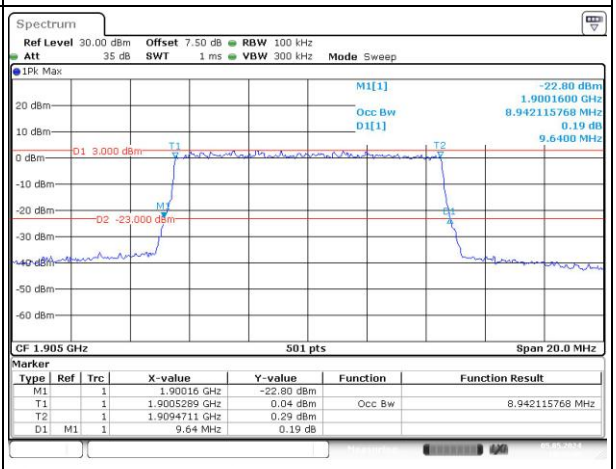
Occupied Bandwidth

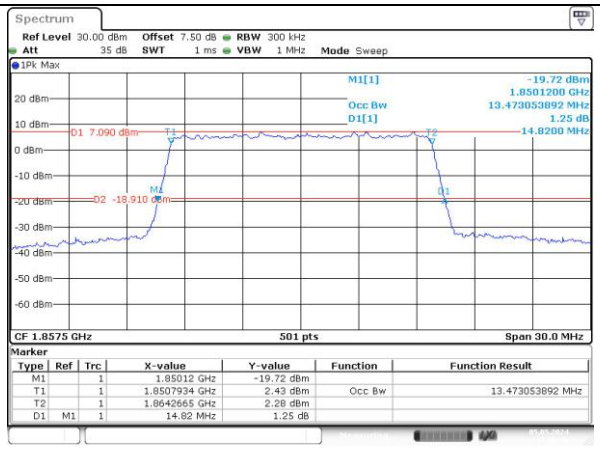
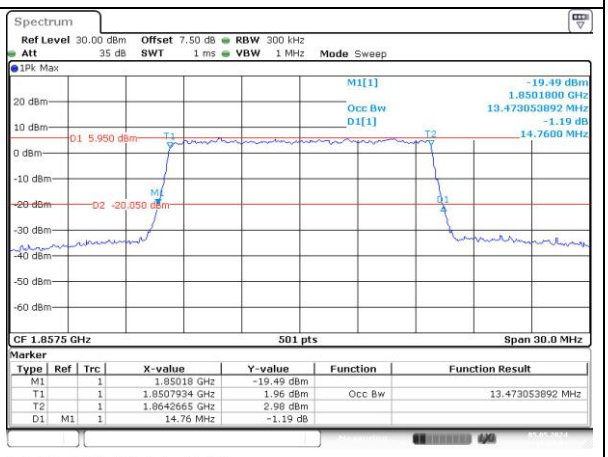
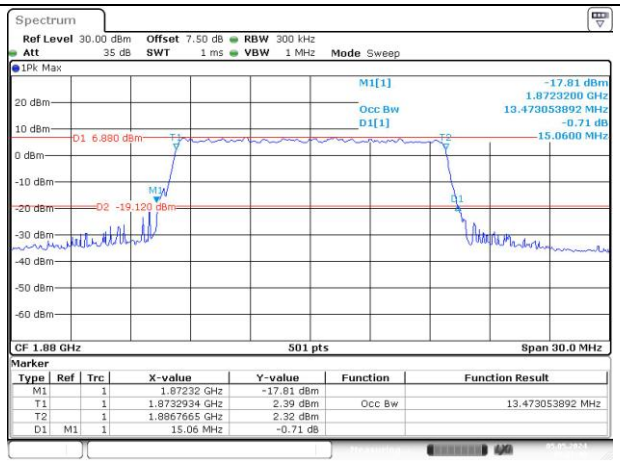
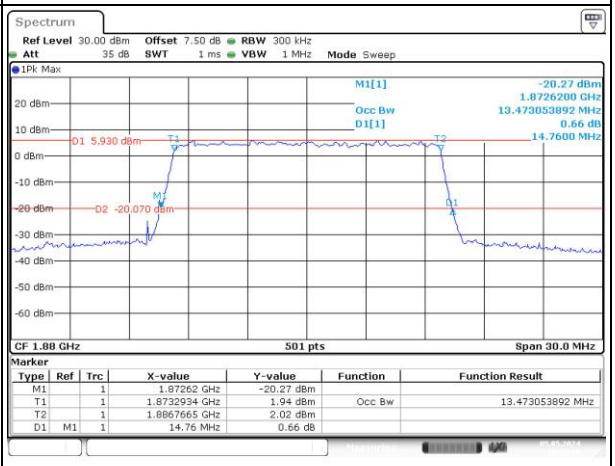
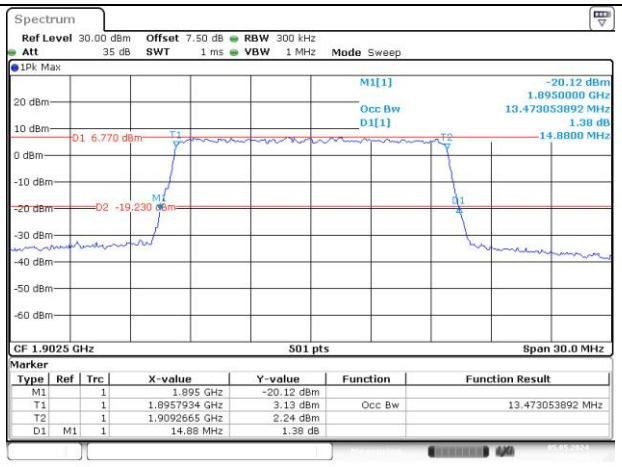
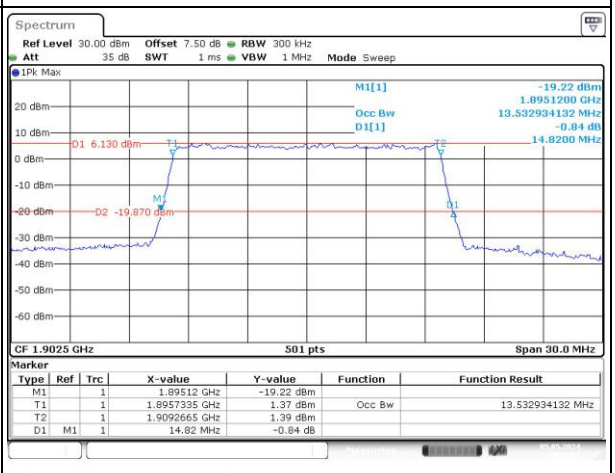
Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

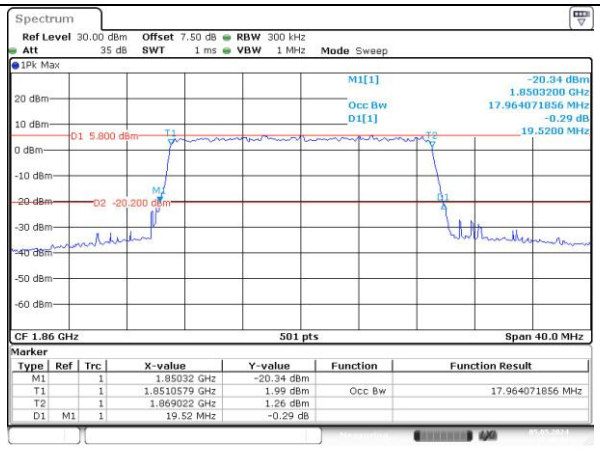
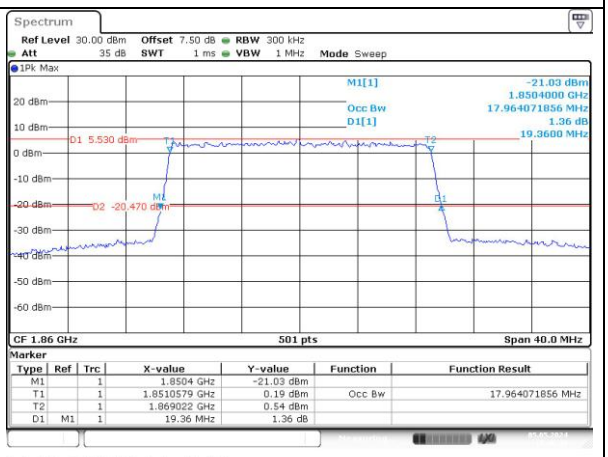
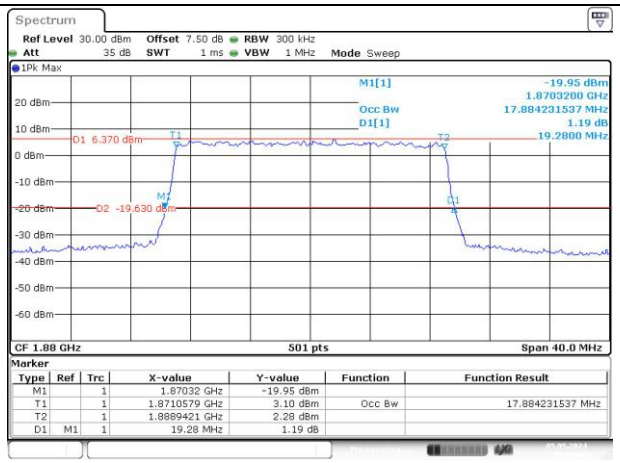
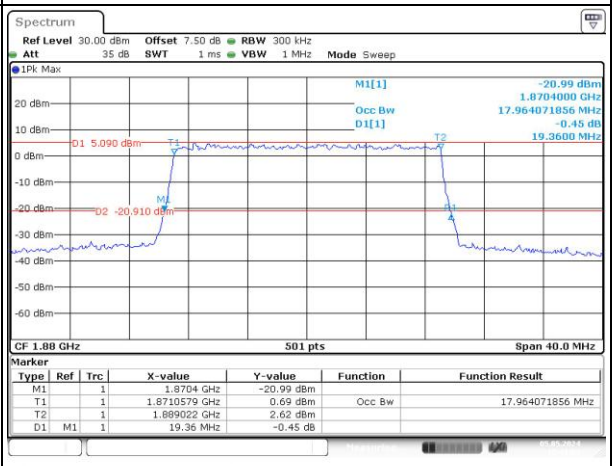
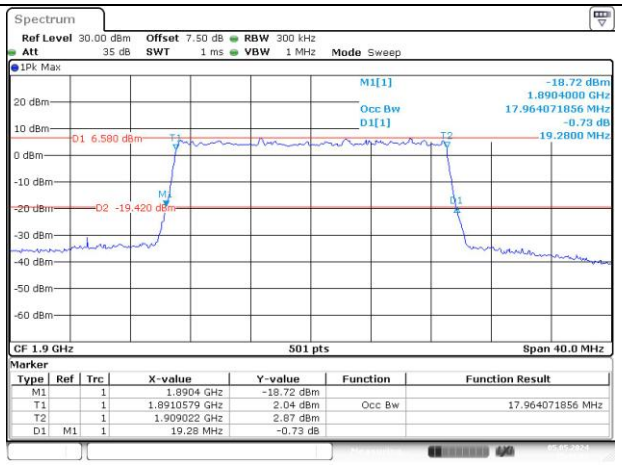
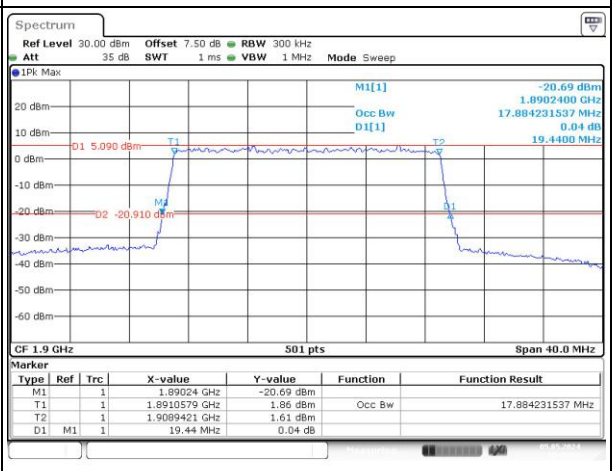
Occupied Bandwidth

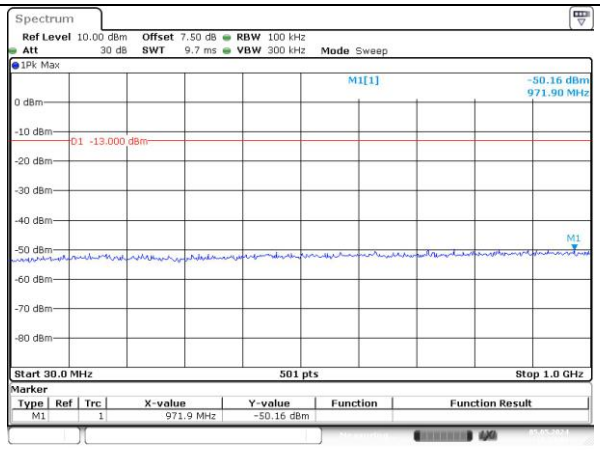
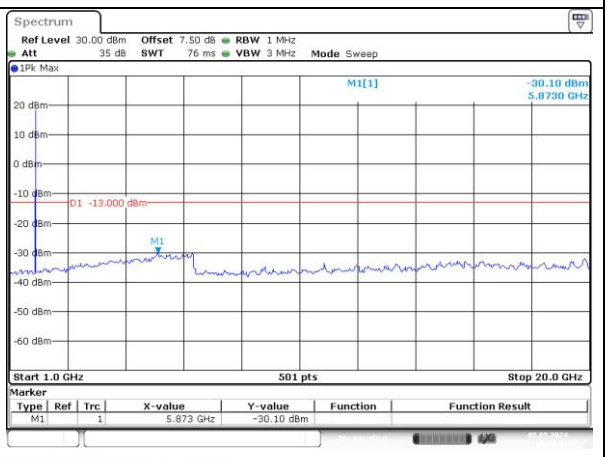
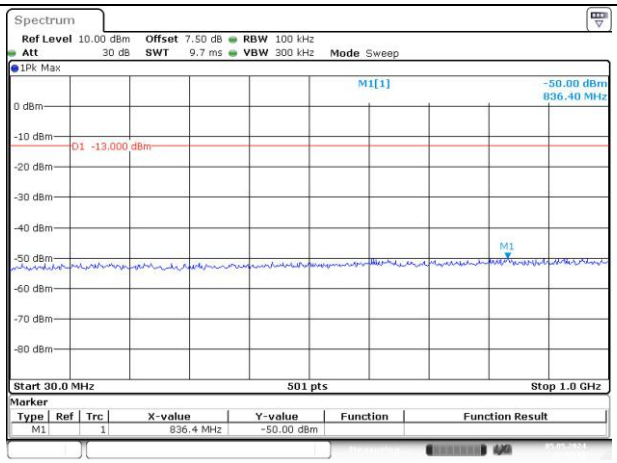
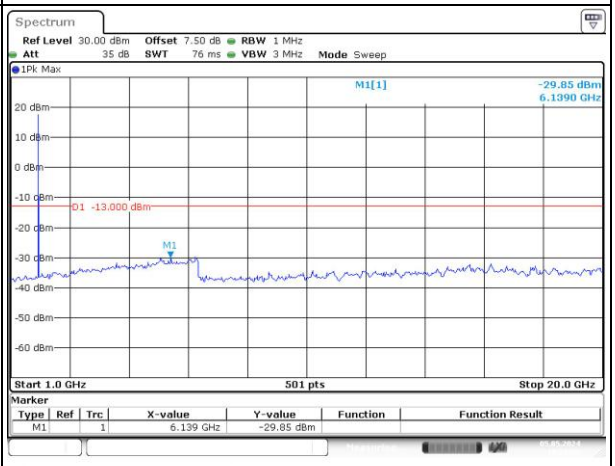
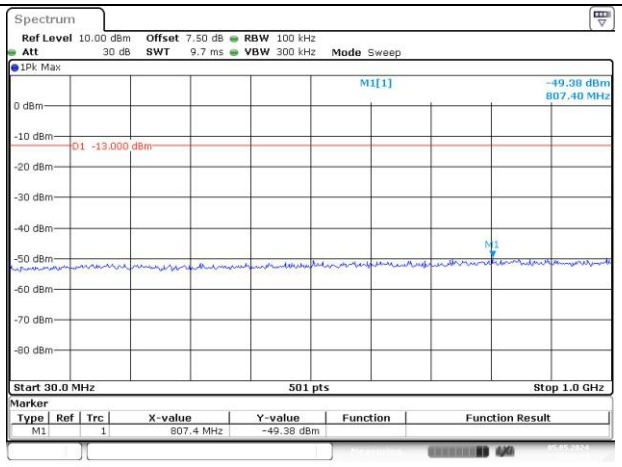
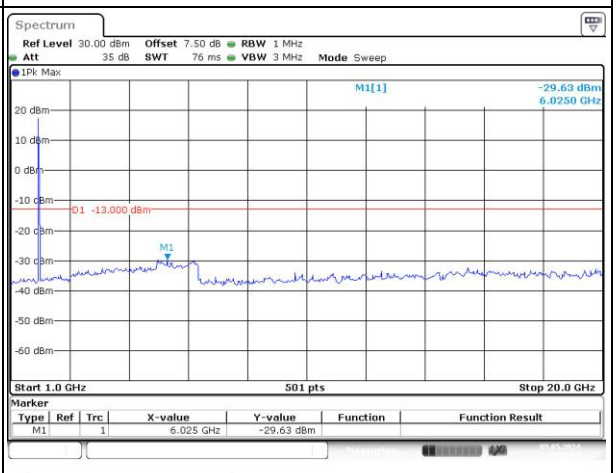
Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

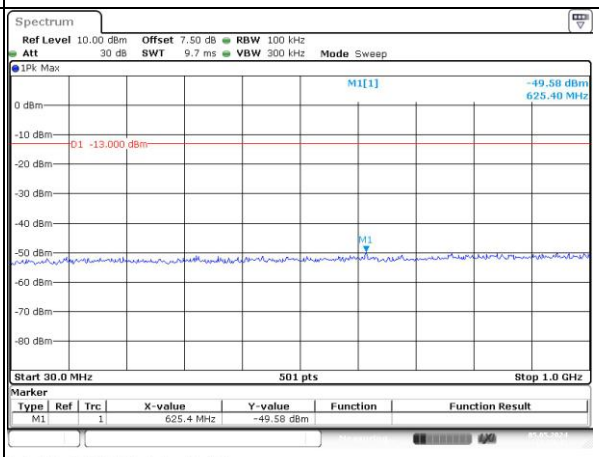
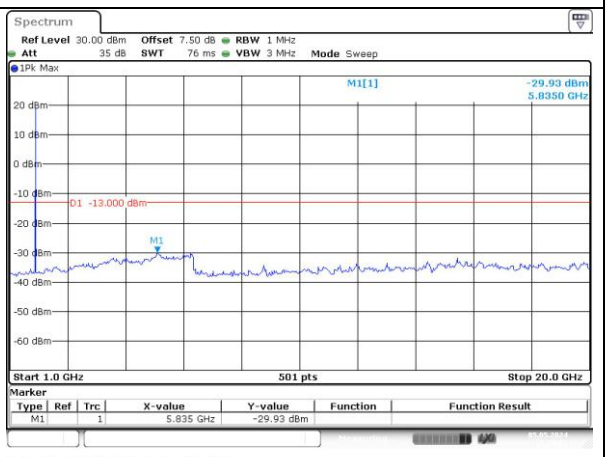
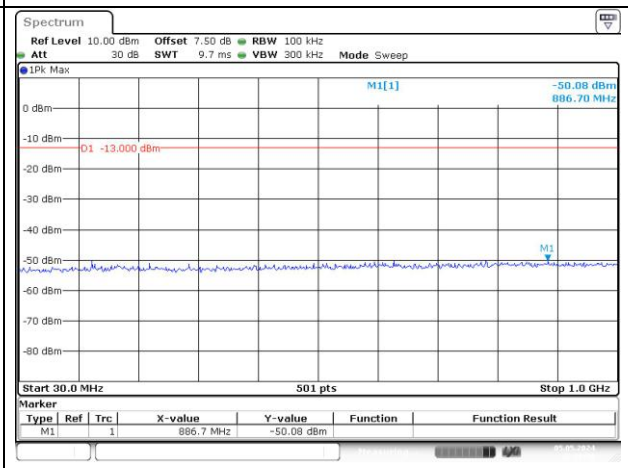
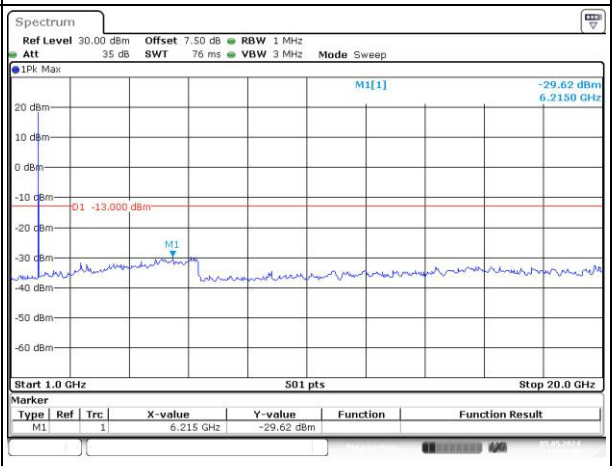
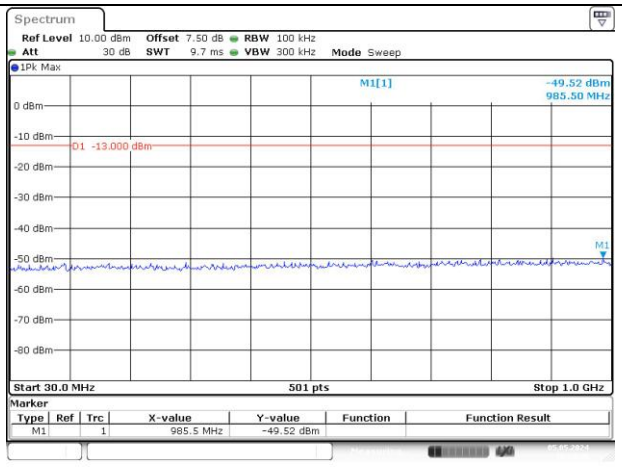
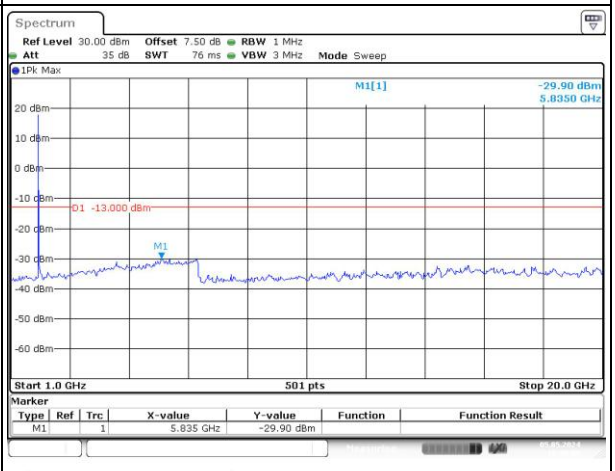
Occupied Bandwidth

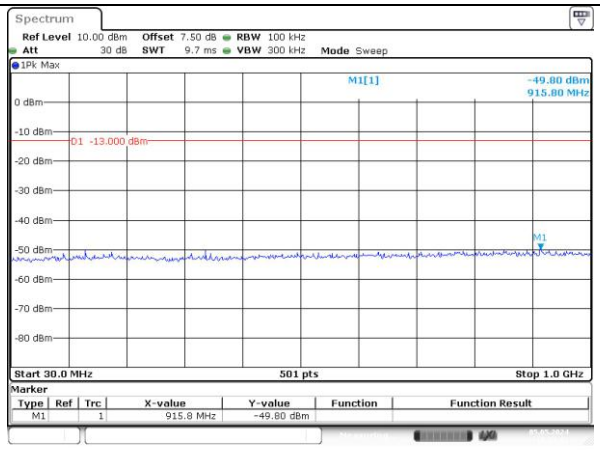
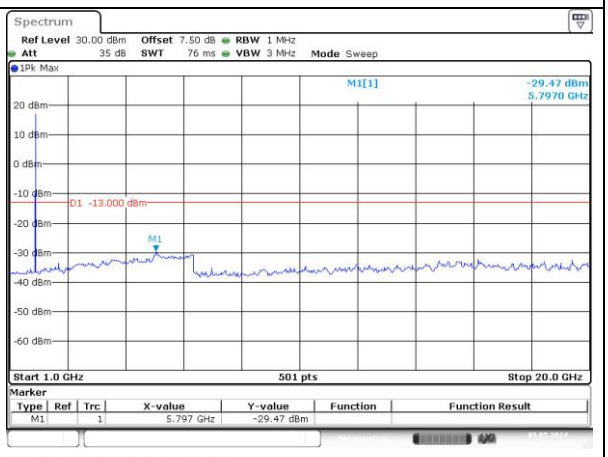
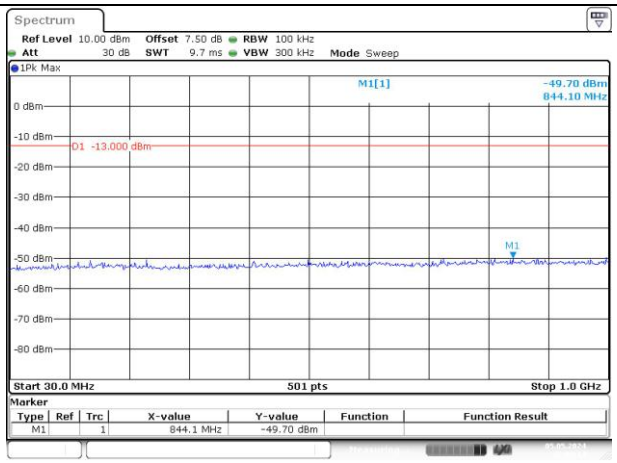
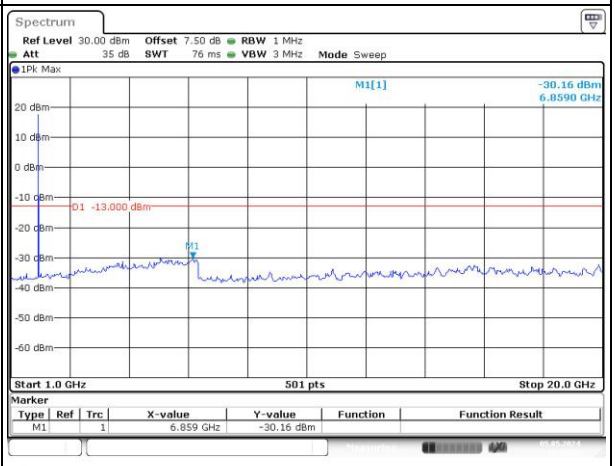
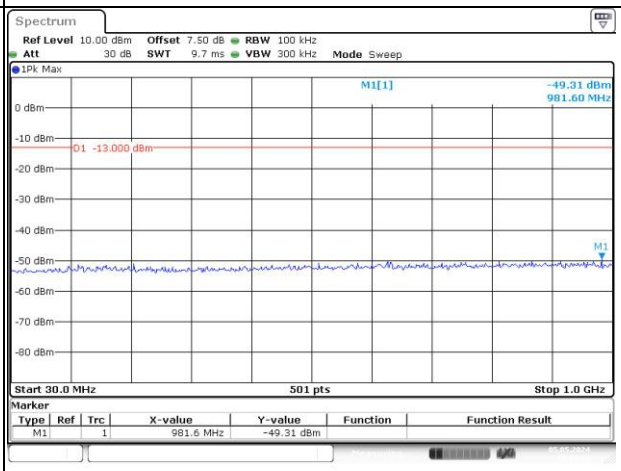
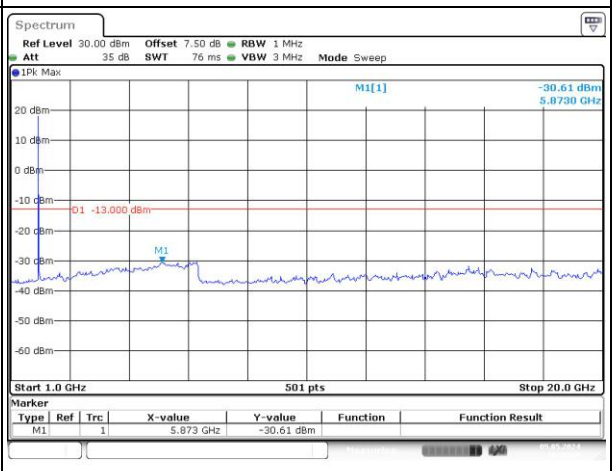
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

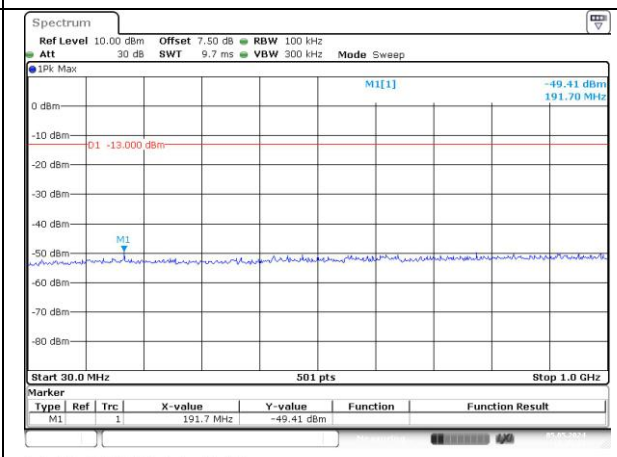
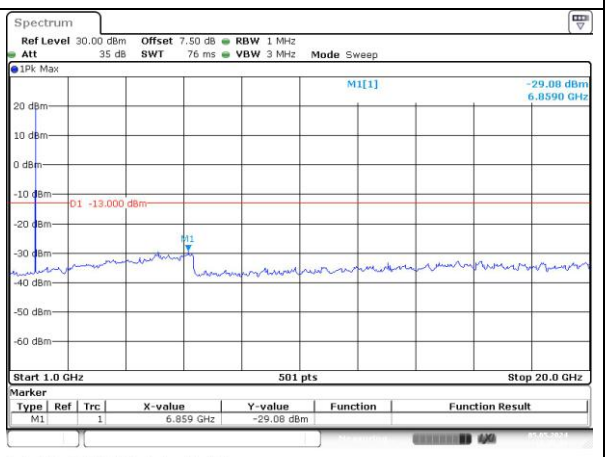
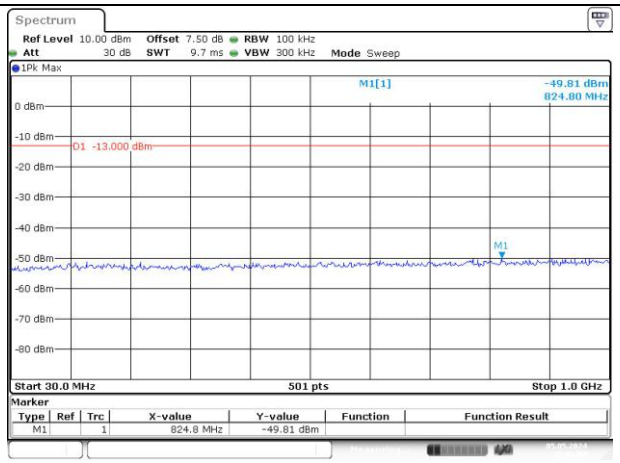
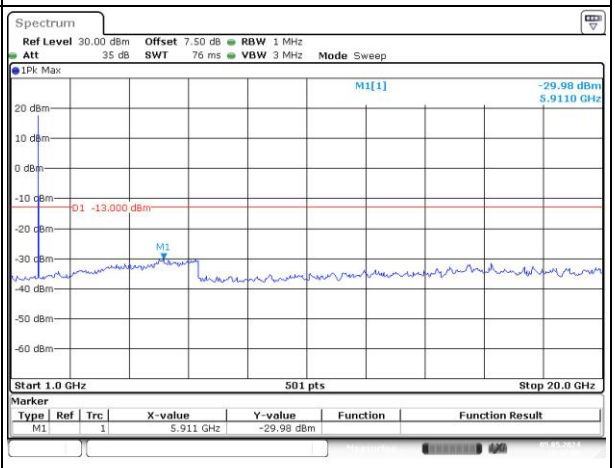
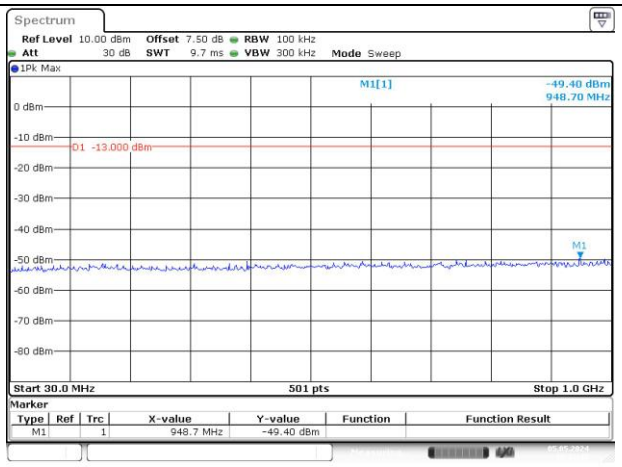
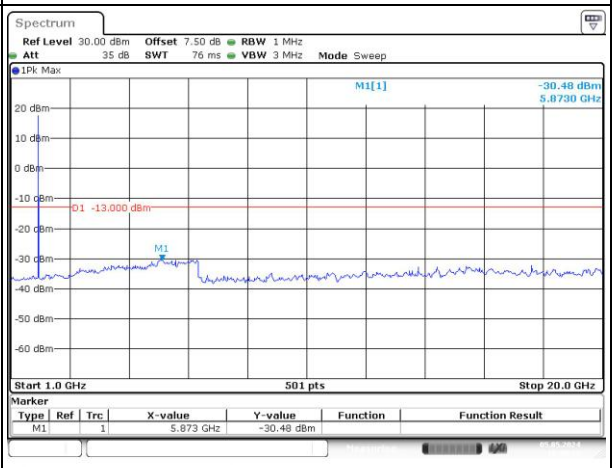
Occupied Bandwidth		
Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

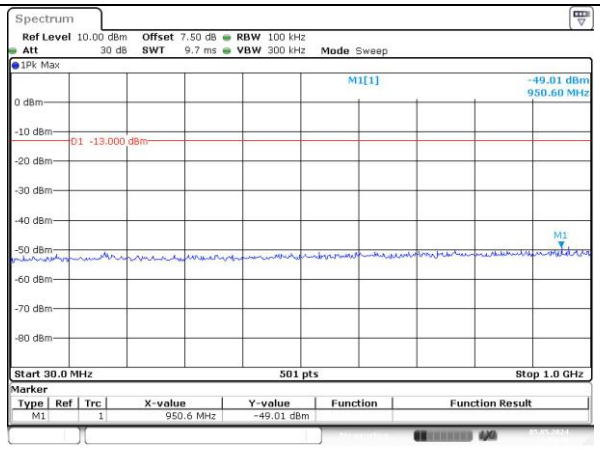
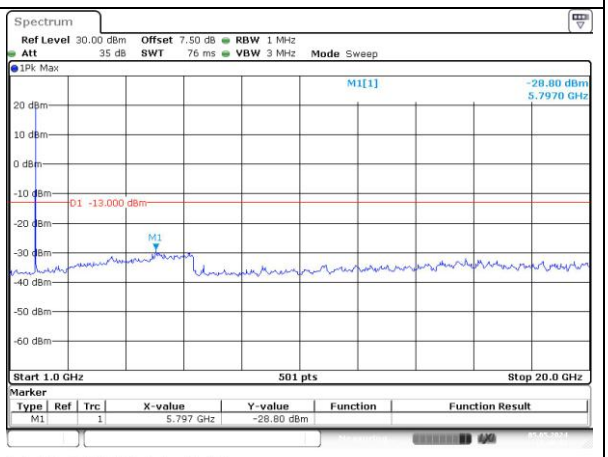
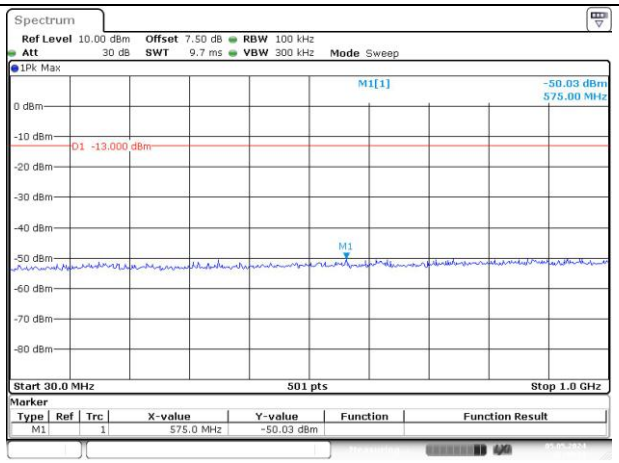
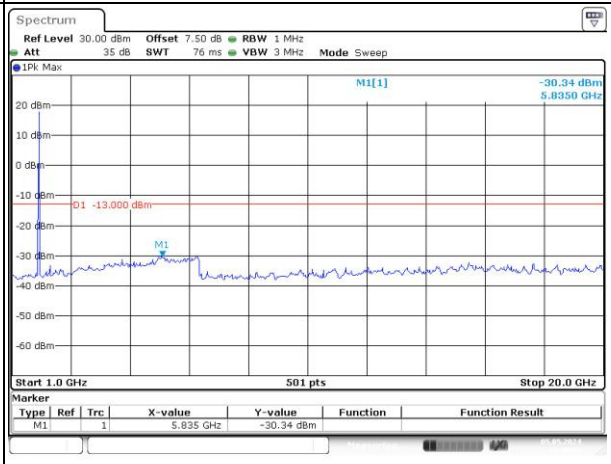
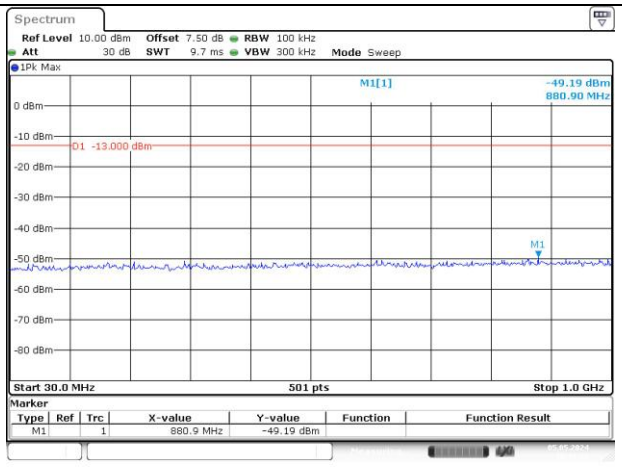
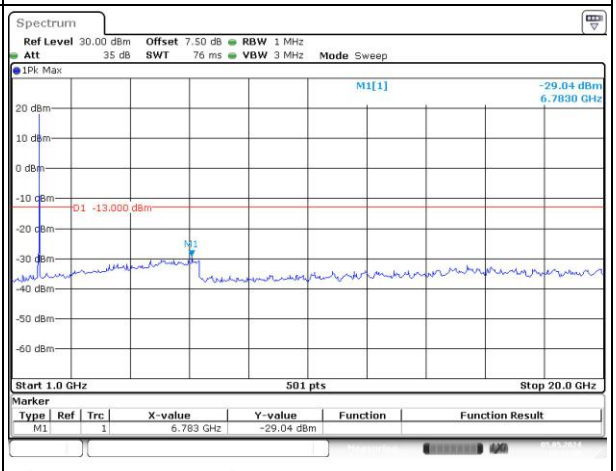
Occupied Bandwidth		
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

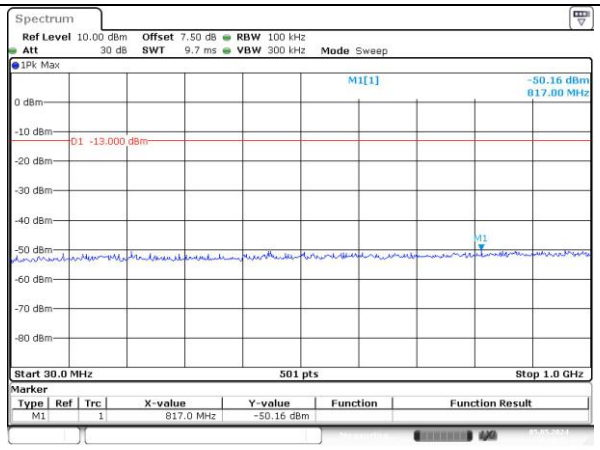
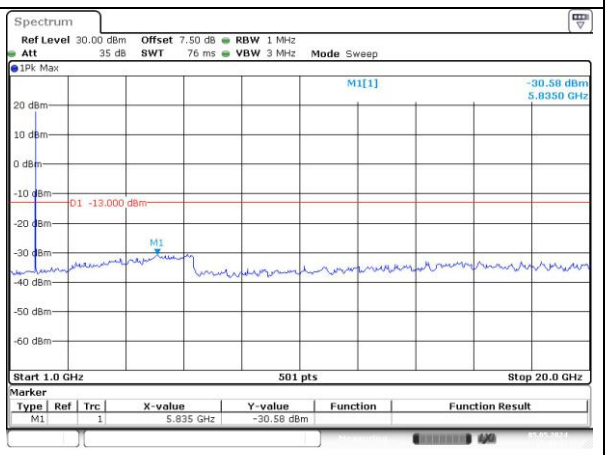
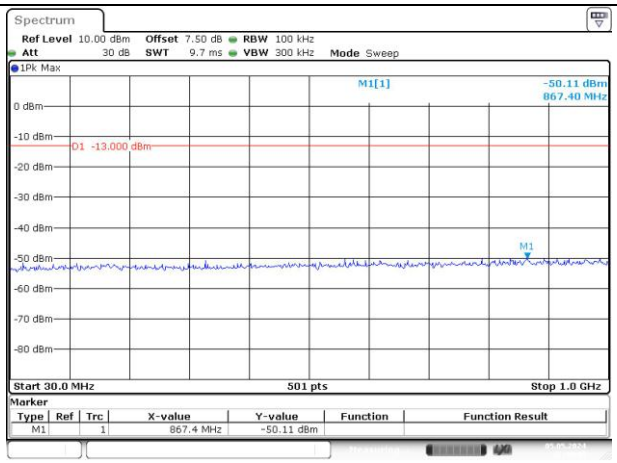
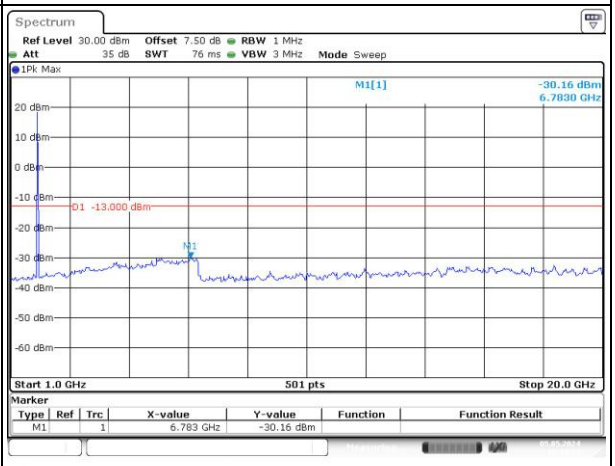
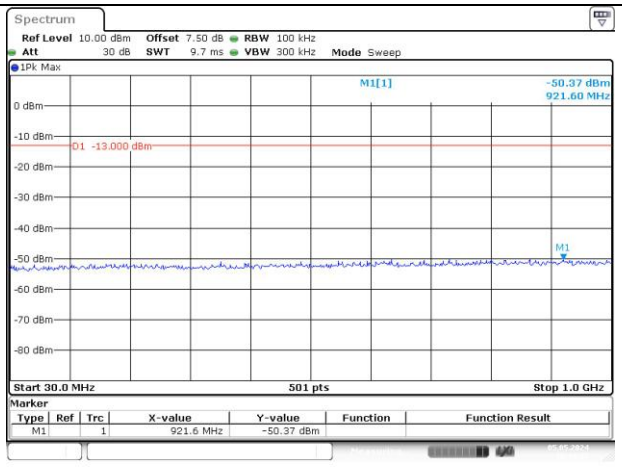
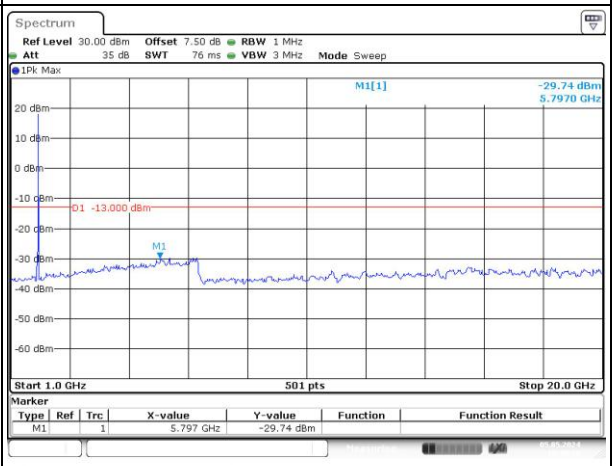
Spurious Emissions at Antenna Terminal		
Channel	**1.4MHz Bandwidth QPSK**	
Lowest		
Middle		
Highest		

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

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

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

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

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