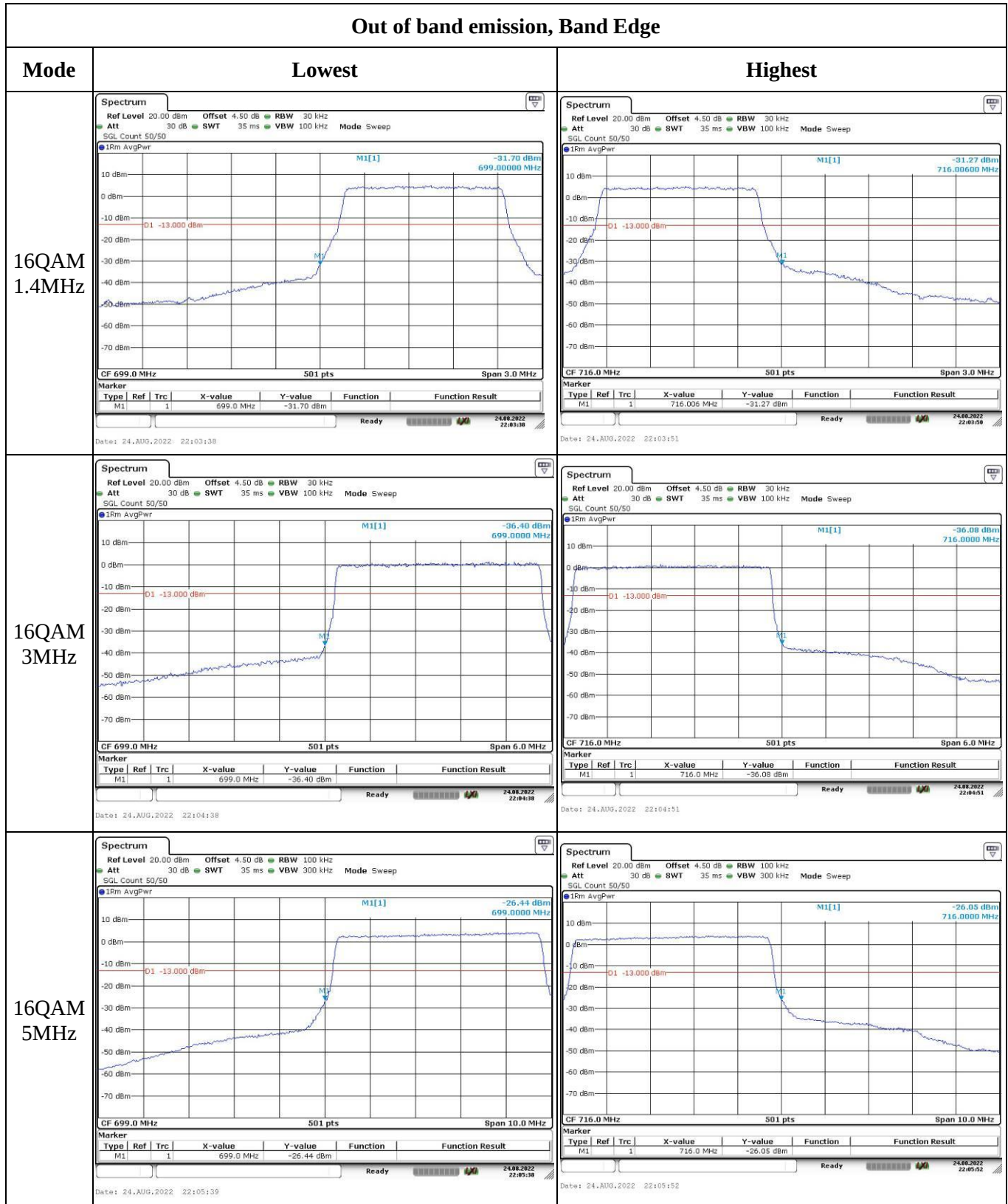
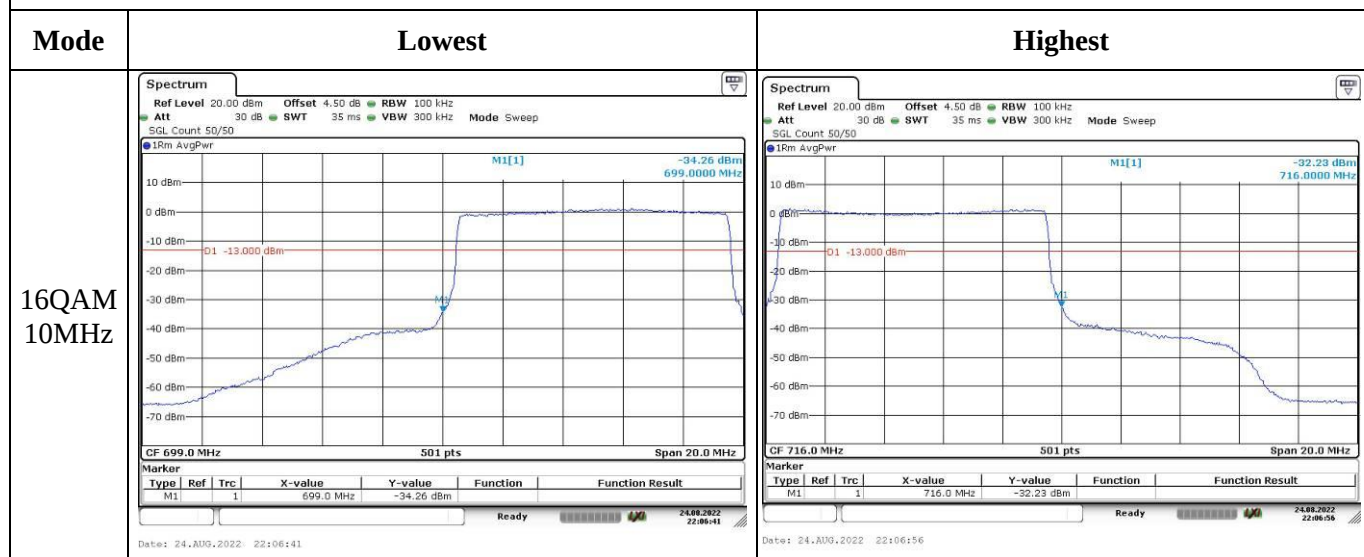


Out of band emission, Band Edge



Out of band emission, Band Edge



4.10 Antenna Port Test Data and Results for LTE Band 17

Serial Number:	CR22070052-RF-S1	Test Date:	2022-08-23~2022-08-25
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.3~25.8	Relative Humidity: (%)	51~59	ATM Pressure: (kPa)	100.2~100.8
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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	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100003	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204004	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 17▲:

Antenna Gain (dBi):	-2.7	Antenna Gain (dBd):	-4.85	Path Loss L _C (dB):	0.2
Operation Voltage(V _{DC}):					
Lowest:	3.5	Normal:	3.85	Highest:	4.4

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	706.5	710	713.5
10MHz	709	710	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		
5MHz QPSK	RB1#0	22.2	22.12	22.15	17.29	34.77
	RB1#13	22.34	22.25	22.28		
	RB1#24	22.16	22.17	22.16		
	RB15#0	21.11	21.41	21.34		
	RB15#10	21.29	21.12	21.4		
	RB25#0	21.19	21.23	21.35		
5MHz 16QAM	RB1#0	21.46	21.18	21.05	16.5	34.77
	RB1#13	21.55	21.32	21.2		
	RB1#24	21.46	21.25	21.02		
	RB15#0	20.03	20.43	20.34		
	RB15#10	20.24	20.14	20.43		
	RB25#0	20.17	20.27	20.36		
10MHz QPSK	RB1#0	22.22	22.21	22.27	17.37	34.77
	RB1#25	22.37	22.35	22.42		
	RB1#49	22.23	22.27	22.34		
	RB25#0	21.08	21.28	21.51		
	RB25#25	21.04	21.17	21.32		
	RB50#0	21.08	21.22	21.44		
10MHz 16QAM	RB1#0	21.74	21.32	21.21	16.85	34.77
	RB1#25	21.88	21.52	21.42		
	RB1#49	21.9	21.38	21.28		
	RB25#0	20.1	20.29	20.59		
	RB25#25	20.08	20.18	20.4		
	RB50#0	20.08	20.19	20.43		

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	4.75	4.75	4.52	13
	RB50#0	4.9	5.1	5.13	13
10MHz 16QAM	RB1#0	5.42	5.77	5.51	13
	RB50#0	6.03	5.94	5.97	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	4.511	4.511	4.551	5.1	5.14	5.2
5MHz 16QAM	4.531	4.531	4.551	5.12	5.18	5.24
10MHz QPSK	8.902	8.982	8.942	9.8	9.96	9.68
10MHz 16QAM	8.902	8.942	8.982	9.72	9.76	9.84
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.
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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.
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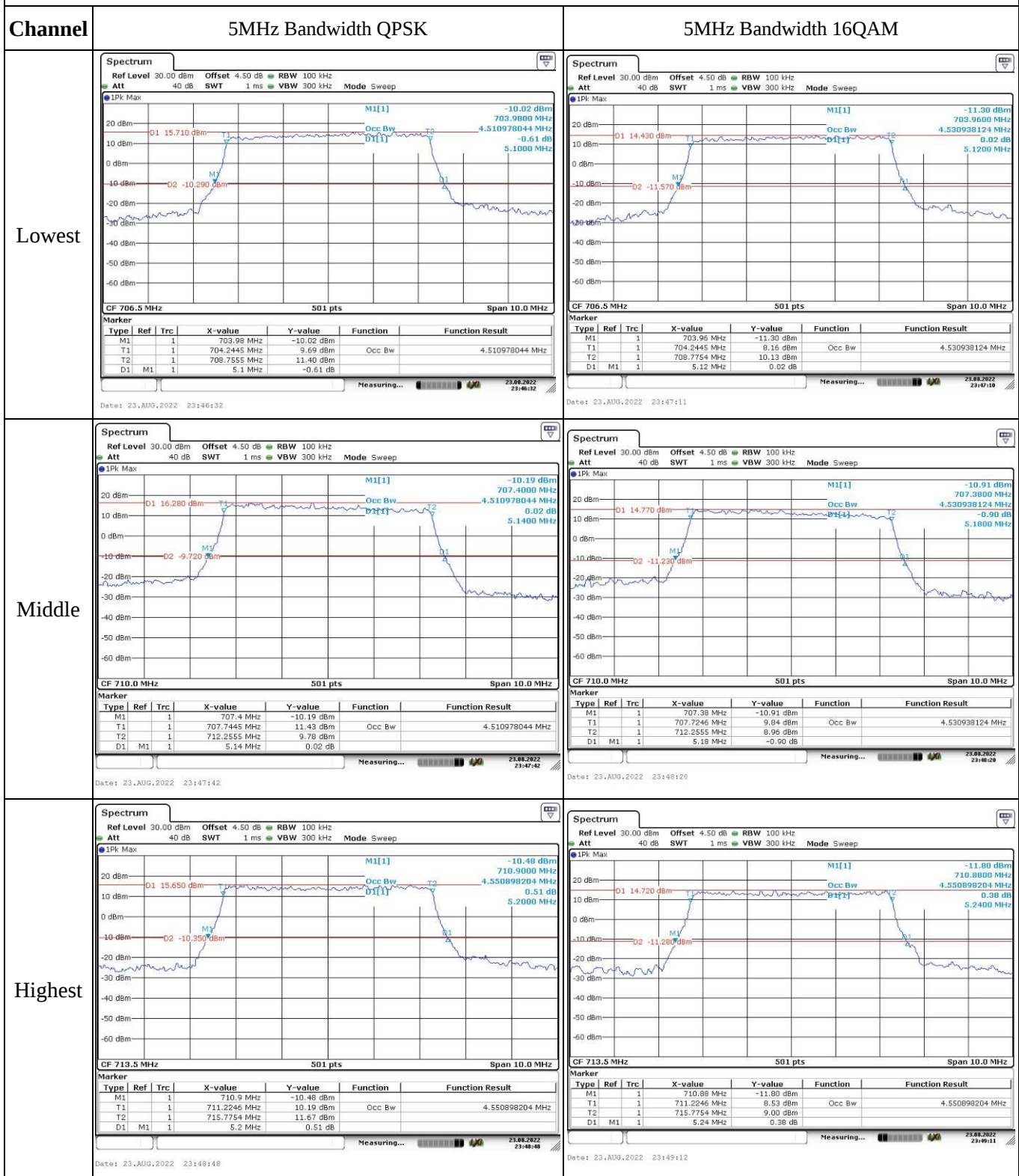
FCC §2.1055, §27.54: Frequency Stability

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	704.489	704.00	715.473	716.00
	-20	3.85	704.489	704.00	715.457	716.00
	-10	3.85	704.530	704.00	715.508	716.00
	0	3.85	704.549	704.00	715.480	716.00
	10	3.85	704.481	704.00	715.439	716.00
	20	3.85	704.529	704.00	715.471	716.00
	30	3.85	704.495	704.00	715.491	716.00
	40	3.85	704.547	704.00	715.473	716.00
	50	3.85	704.566	704.00	715.464	716.00
Frequency Stability vs. Voltage	20	3.5	704.507	704.00	715.440	716.00
	20	4.4	704.523	704.00	715.445	716.00
Result:					Pass	

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	704.530	704.00	715.491	716.00
	-20	3.85	704.532	704.00	715.550	716.00
	-10	3.85	704.502	704.00	715.494	716.00
	0	3.85	704.562	704.00	715.534	716.00
	10	3.85	704.565	704.00	715.487	716.00
	20	3.85	704.529	704.00	715.511	716.00
	30	3.85	704.575	704.00	715.541	716.00
	40	3.85	704.481	704.00	715.544	716.00
	50	3.85	704.570	704.00	715.550	716.00
Frequency Stability vs. Voltage	20	3.5	704.533	704.00	715.549	716.00
	20	4.4	704.514	704.00	715.536	716.00
Result:					Pass	

Test Plots:

Occupied Bandwidth



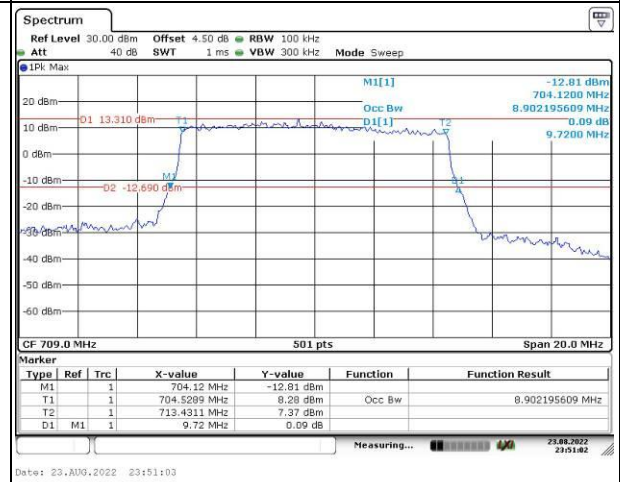
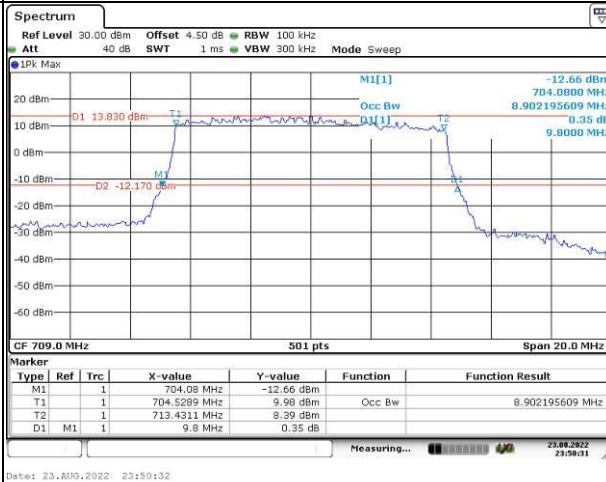
Occupied Bandwidth

Channel

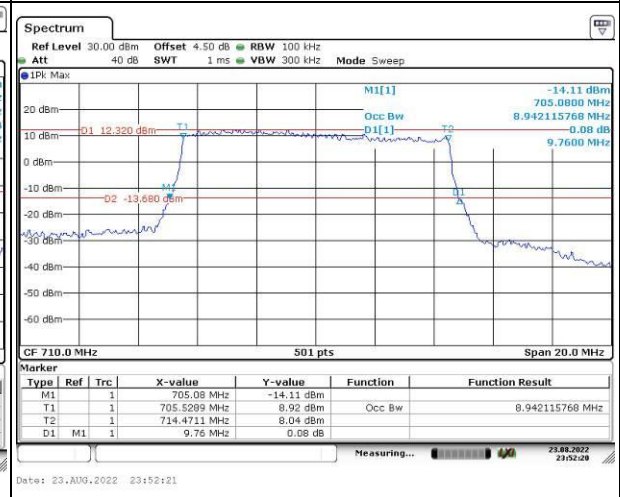
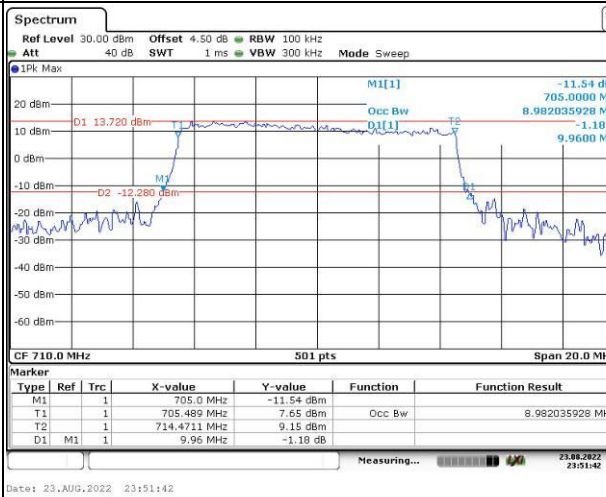
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

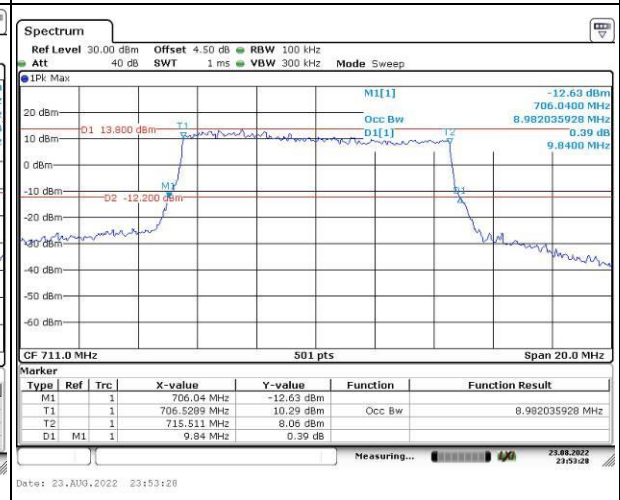
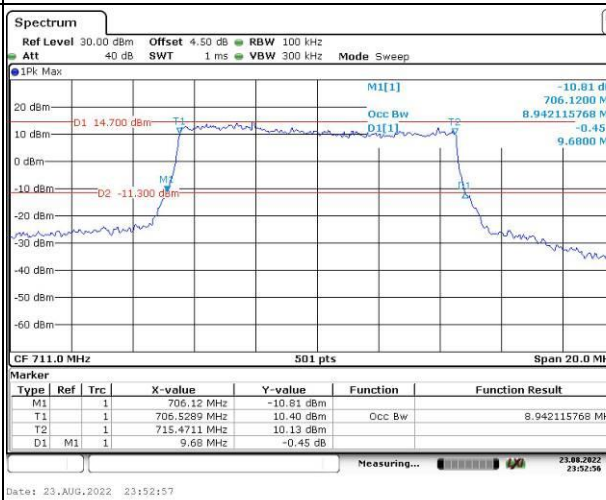
Lowest



Middle



Highest

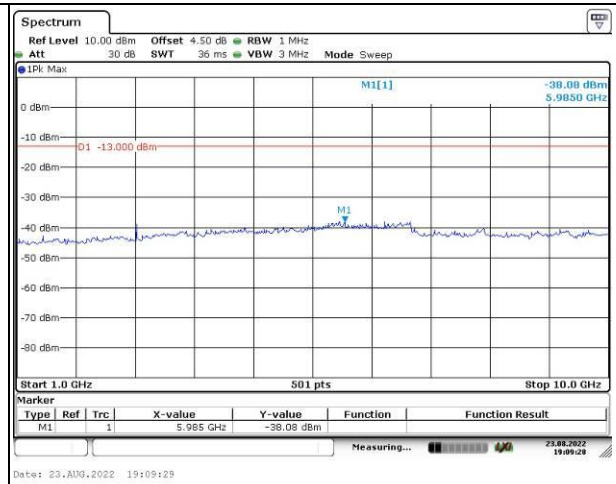
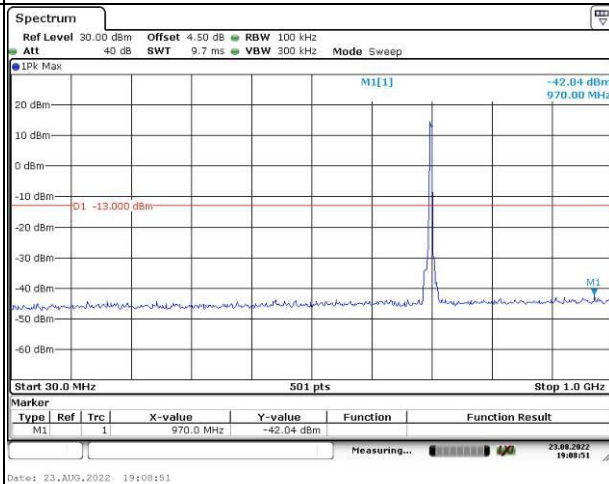


Spurious Emissions at Antenna Terminal

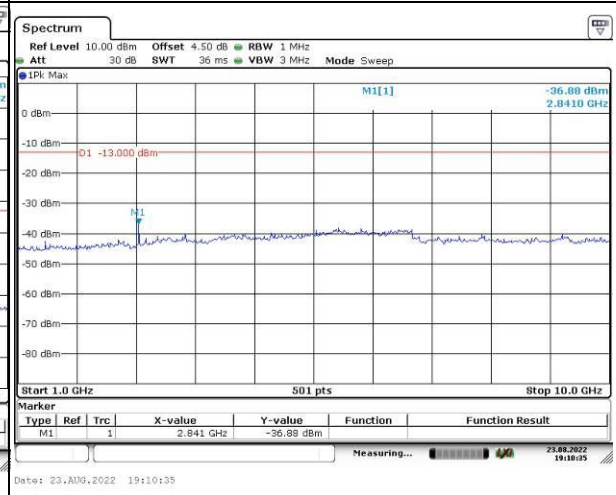
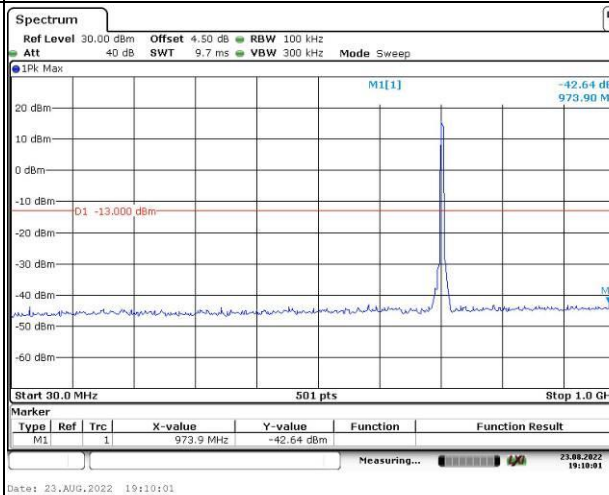
Channel

5MHz Bandwidth QPSK

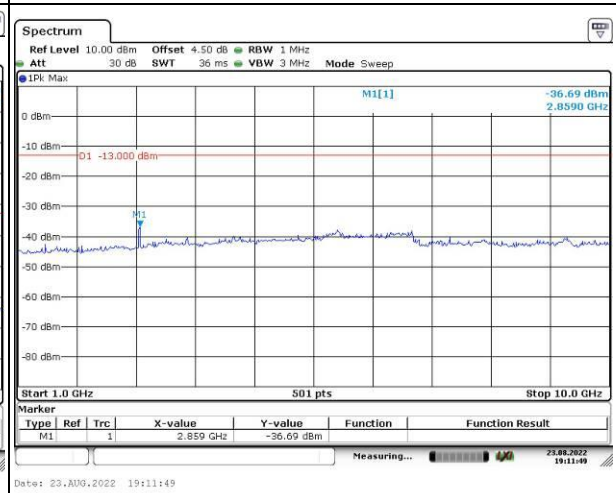
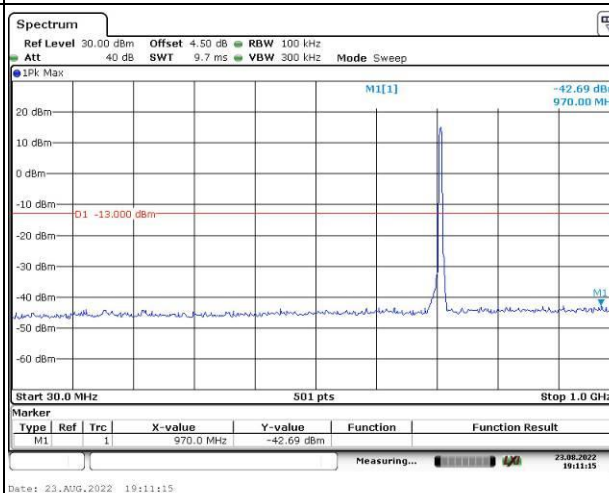
Lowest



Middle



Highest

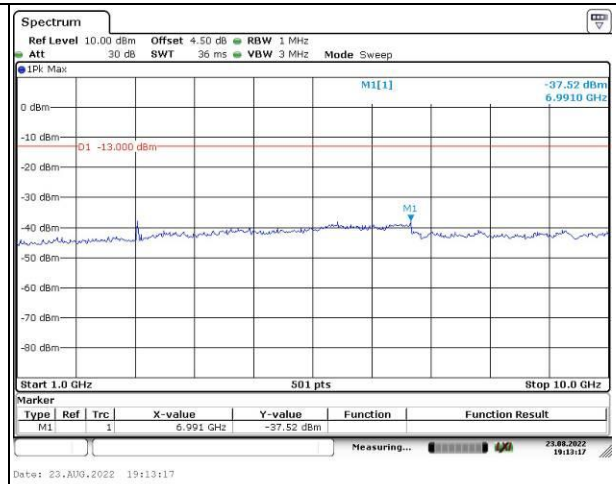
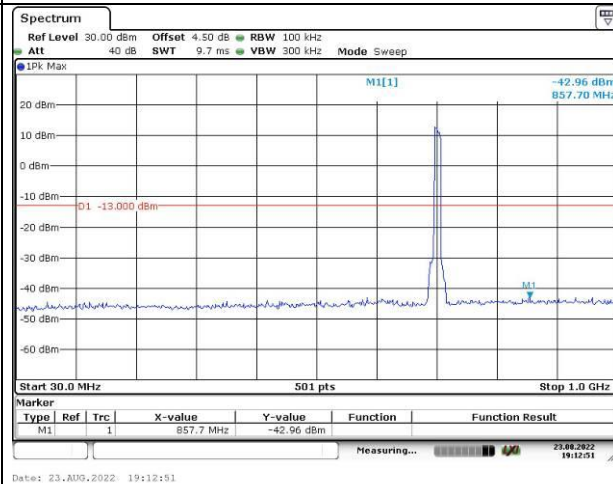


Spurious Emissions at Antenna Terminal

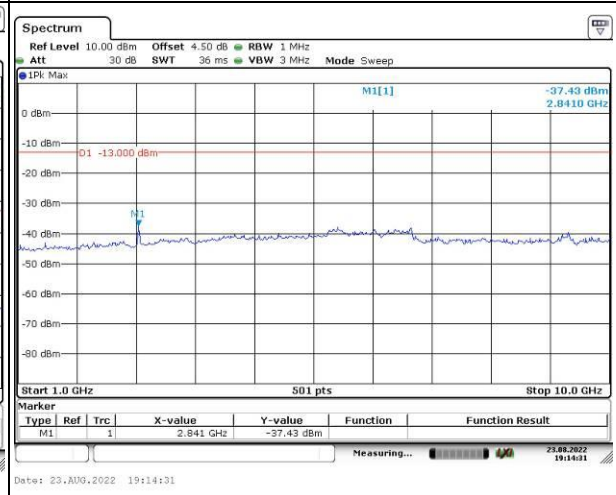
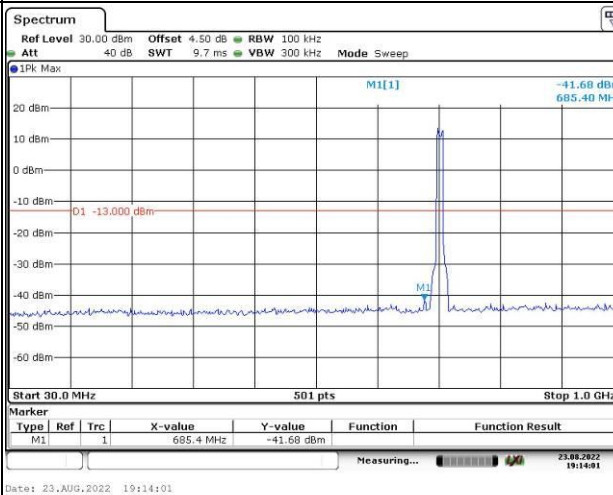
Channel

10MHz Bandwidth QPSK

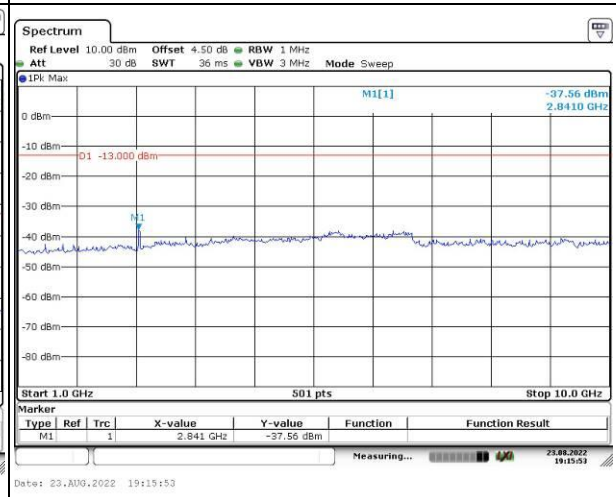
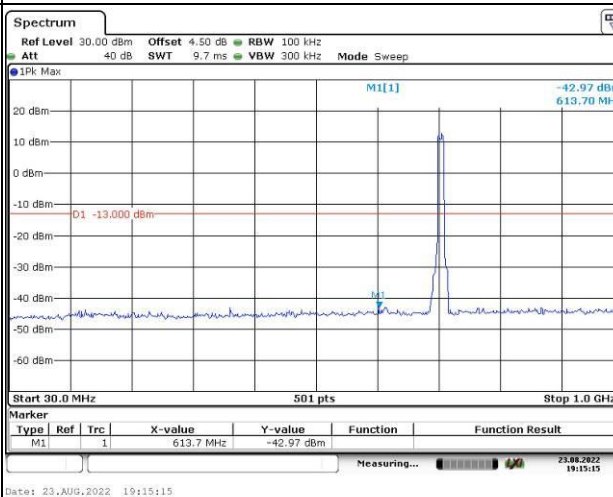
Lowest



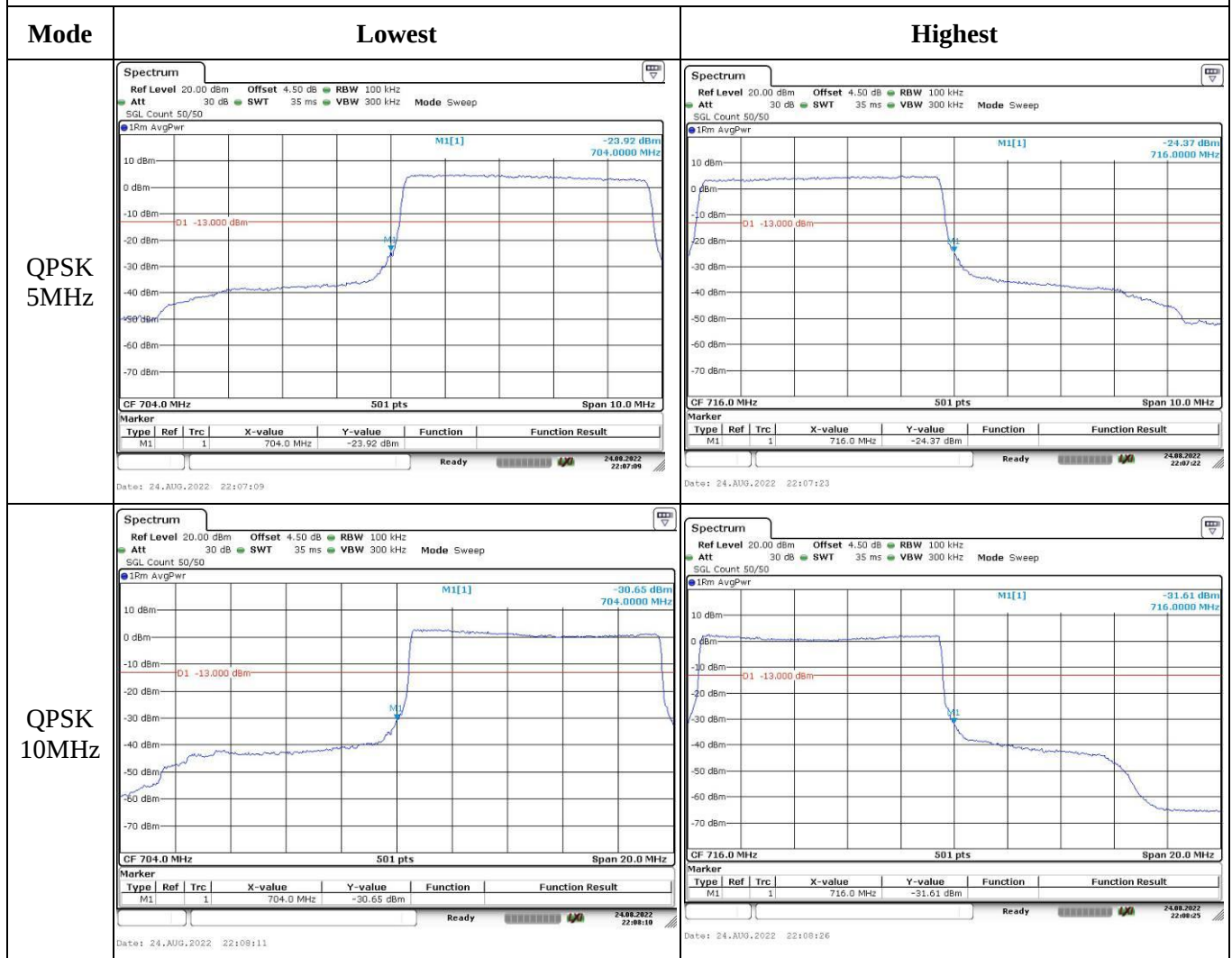
Middle



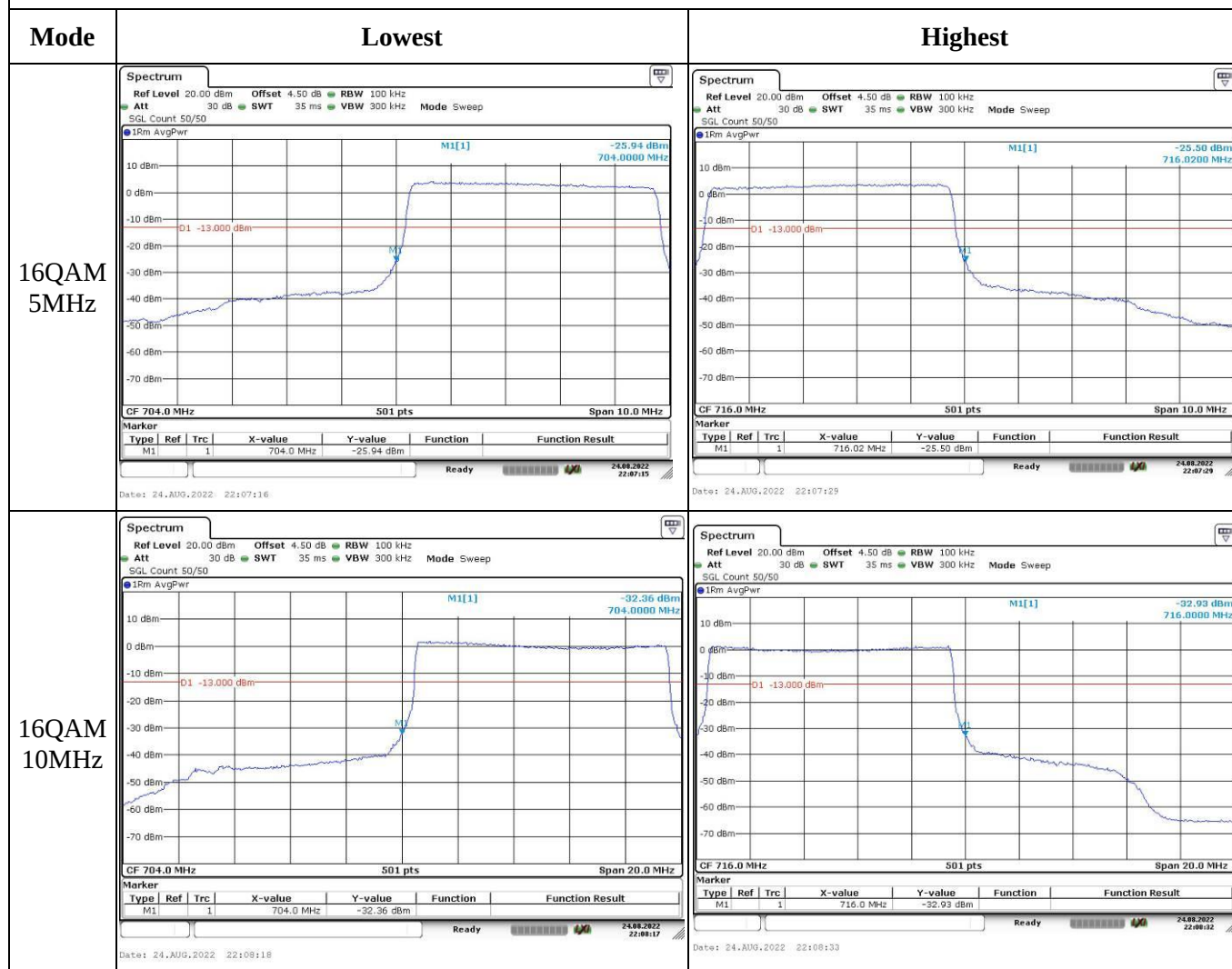
Highest



Out of band emission, Band Edge



Out of band emission, Band Edge



4.11 Antenna Port Test Data and Results for LTE Band 25

Serial Number:	CR22070052-RF-S1	Test Date:	2022-08-23~2022-08-25
Test Site:	RF	Test Mode:	Transmitting
Tester:	George Chen	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.3~25.8	Relative Humidity: (%)	51~59	ATM Pressure: (kPa)	100.2~100.8
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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	211002	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100003	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204004	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 25▲:

Antenna Gain (dBi):	1.34	Path Loss L _C (dB):	0.4
Operation Voltage(V _{DC}):			
Lowest:	3.5	Normal:	3.85
		Highest:	4.4

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1850.7	1882.5	1914.3
3MHz	1851.5	1882.5	1913.5
5MHz	1852.5	1882.5	1912.5
10MHz	1855	1882.5	1910
15MHz	1857.5	1882.5	1907.5
20MHz	1860	1882.5	1905

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	22.99	22.59	22.32	24.11	33
	RB1#3	23.17	22.74	22.51		
	RB1#5	22.99	22.63	22.37		
	RB3#0	23.05	22.73	22.35		
	RB3#3	23.05	22.69	22.39		
	RB6#0	22.08	21.69	21.3		
1.4MHz 16QAM	RB1#0	22.08	21.66	21.19	23.23	33
	RB1#3	22.29	21.83	21.47		
	RB1#5	22.13	21.65	21.23		
	RB3#0	22.01	21.78	21.45		
	RB3#3	22.06	21.77	21.42		
	RB6#0	21.08	20.63	20.39		
3MHz QPSK	RB1#0	23.03	22.69	22.45	24.02	33
	RB1#8	23.08	22.69	22.41		
	RB1#14	23	22.62	22.41		
	RB6#0	22.04	21.7	21.35		
	RB6#9	22.03	21.66	21.32		
	RB15#0	22.07	21.73	21.35		
3MHz 16QAM	RB1#0	22.1	22.24	21.37	23.18	33
	RB1#8	22.1	22.24	21.37		
	RB1#14	22.08	22.22	21.39		
	RB6#0	20.99	20.75	20.33		
	RB6#9	20.97	20.65	20.25		
	RB15#0	21.12	20.77	20.39		
5MHz QPSK	RB1#0	22.93	22.66	22.36	24.01	33
	RB1#13	23.07	22.75	22.46		
	RB1#24	22.94	22.61	22.03		
	RB15#0	22.11	21.79	21.3		
	RB15#10	22.1	21.72	21.18		
	RB25#0	22.1	21.71	21.14		
5MHz 16QAM	RB1#0	22.1	21.54	21.27	23.11	33
	RB1#13	22.17	21.68	21.42		
	RB1#24	22.03	21.54	21.27		
	RB15#0	21.12	20.82	20.04		
	RB15#10	21.13	20.75	20.18		
	RB25#0	21.09	20.81	20.21		
10MHz QPSK	RB1#0	23.05	22.7	22.42	24.11	33
	RB1#25	23.17	22.84	22.5		
	RB1#49	23	22.62	21.86		
	RB25#0	22.1	21.85	21.22		
	RB25#25	22.07	21.72	21.07		
	RB50#0	22.09	21.79	21.1		
10MHz 16QAM	RB1#0	22.1	22.28	21.1	23.35	33
	RB1#25	22.21	22.41	21.43		

	RB1#49	22.03	22.13	21.02		
	RB25#0	21.18	20.87	20.24		
	RB25#25	21.18	20.76	20.23		
	RB50#0	21.13	20.81	20.25		
15MHz QPSK	RB1#0	22.92	22.65	22.31	23.95	33
	RB1#38	23.01	22.71	22.31		
	RB1#74	22.84	22.39	21.83		
	RB36#0	22.11	21.81	21.39		
	RB36#39	22.09	21.53	21.24		
	RB75#0	22.09	21.54	21.26		
15MHz 16QAM	RB1#0	22.3	22.12	21.22	23.37	33
	RB1#38	22.43	22.18	21.45		
	RB1#74	22.24	21.82	21.02		
	RB36#0	21.05	20.72	20.42		
	RB36#39	21.05	20.6	20.3		
	RB75#0	21.01	20.77	20.4		
20MHz QPSK	RB1#0	22.79	22.54	22.17	24.05	33
	RB1#50	23.11	22.86	22.48		
	RB1#99	22.63	22.39	21.65		
	RB50#0	21.91	21.92	21.34		
	RB50#50	22.06	21.63	21.14		
	RB100#0	22	21.75	21.21		
20MHz 16QAM	RB1#0	22.07	21.66	21.42	23.38	33
	RB1#50	22.44	22.07	21.86		
	RB1#99	21.95	21.52	21.35		
	RB50#0	20.94	20.88	20.29		
	RB50#50	21.05	20.61	20.18		
	RB100#0	21.02	20.76	20.31		
Note: EIRP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBi)					Result:	Pass

Peak-to-average Ratio(PAR)					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	5.01	4.67	4.49	13
	RB100#0	5.19	5.19	5.1	13
20MHz 16QAM	RB1#0	6	5.19	5.39	13
	RB100#0	6.29	6.14	6.03	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	1.096	1.108	1.102	1.308	1.29	1.32
1.4MHz 16QAM	1.096	1.102	1.108	1.284	1.35	1.314
3MHz QPSK	2.683	2.683	2.683	2.892	2.88	2.868
3MHz 16QAM	2.683	2.683	2.683	2.88	2.892	2.868
5MHz QPSK	4.531	4.511	4.531	5.48	5.16	5.18
5MHz 16QAM	4.551	4.531	4.511	5.2	5.22	5.18
10MHz QPSK	8.942	8.982	8.942	9.96	9.96	9.84
10MHz 16QAM	8.942	8.942	8.942	9.88	9.8	9.8
15MHz QPSK	13.593	13.593	13.533	15.3	15.84	15.06
15MHz 16QAM	13.593	13.533	13.533	15.24	15.06	15.06
20MHz QPSK	17.964	17.964	17.964	20	19.68	19.52
20MHz 16QAM	18.044	18.044	17.964	19.84	19.68	19.76
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.
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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.
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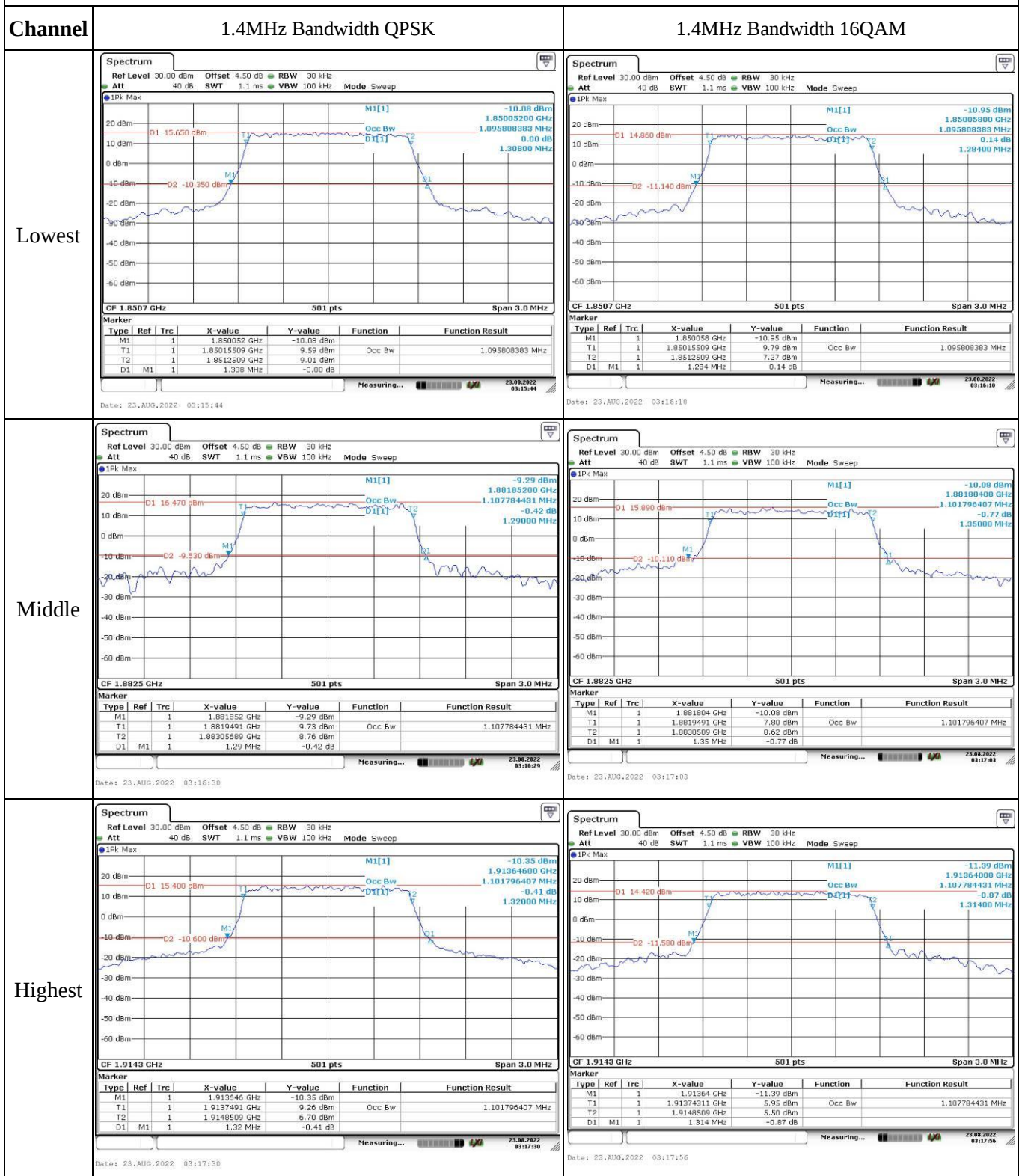
FCC §2.1055, §24.235: Frequency Stability

Test Mode:	20 MHz QPSK		Test Channel:	1882.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.85	-1.14	-0.001	Pass
	-20	3.85	6.09	0.003	Pass
	-10	3.85	-7.02	-0.004	Pass
	0	3.85	7.35	0.004	Pass
	10	3.85	8.23	0.004	Pass
	20	3.85	-9.14	-0.005	Pass
	30	3.85	9.53	0.005	Pass
	40	3.85	-6.52	-0.003	Pass
	50	3.85	-7.83	-0.004	Pass
Frequency Stability vs. Voltage	20	3.5	7.38	0.004	Pass
	20	4.4	7.02	0.004	Pass
				Result:	Pass

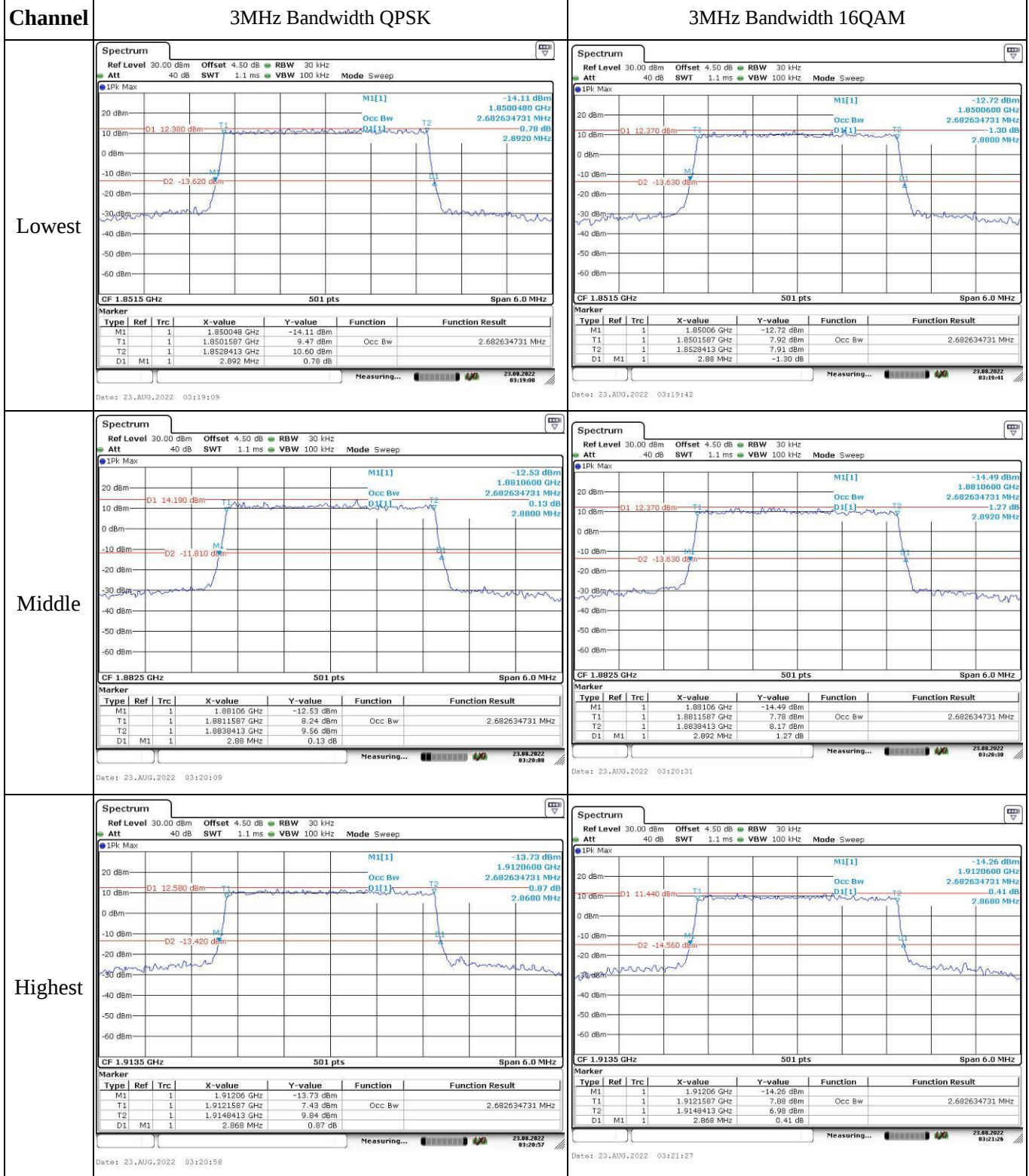
Test Mode:	20 MHz 16QAM		Test Channel:	1882.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.85	-4.48	-0.002	Pass
	-20	3.85	-6.9	-0.004	Pass
	-10	3.85	-8.41	-0.004	Pass
	0	3.85	-8.47	-0.004	Pass
	10	3.85	6.4	0.003	Pass
	20	3.85	-6.95	-0.004	Pass
	30	3.85	6.53	0.003	Pass
	40	3.85	9.18	0.005	Pass
	50	3.85	7.47	0.004	Pass
Frequency Stability vs. Voltage	20	3.5	8.88	0.005	Pass
	20	4.4	-7.46	-0.004	Pass
				Result:	Pass

Test Plots:

Occupied Bandwidth



Occupied Bandwidth



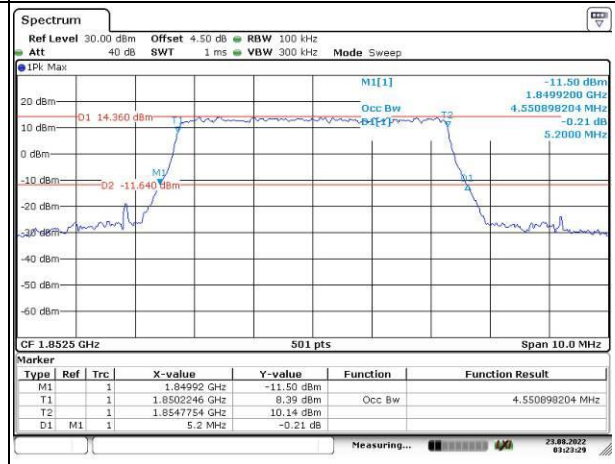
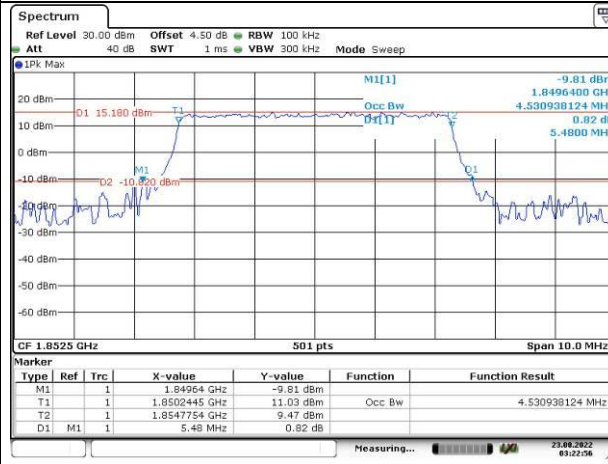
Occupied Bandwidth

Channel

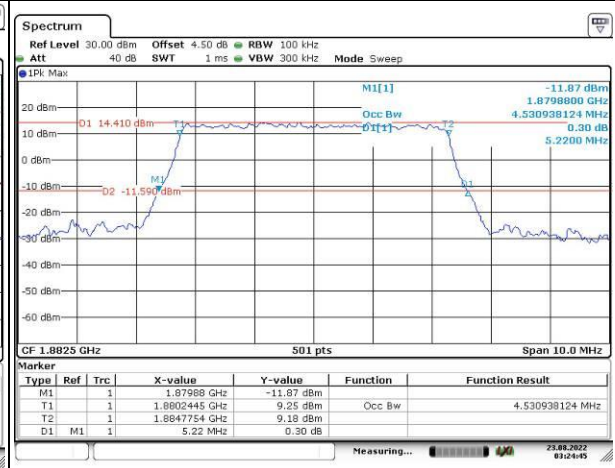
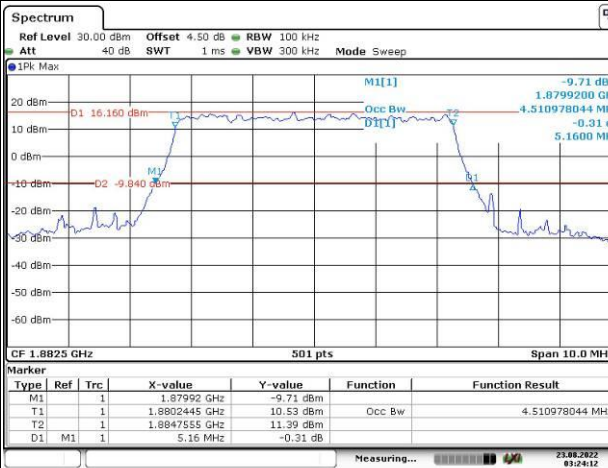
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

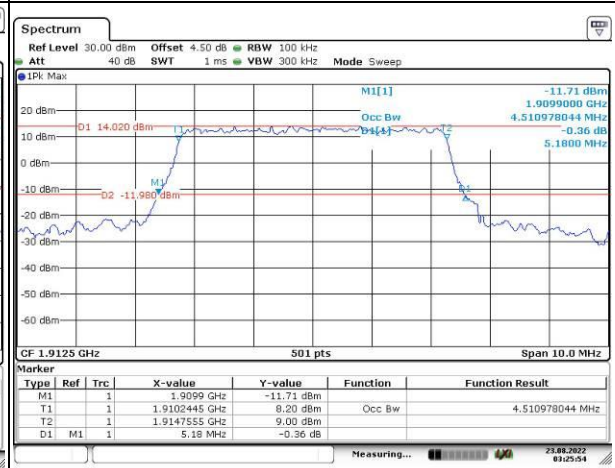
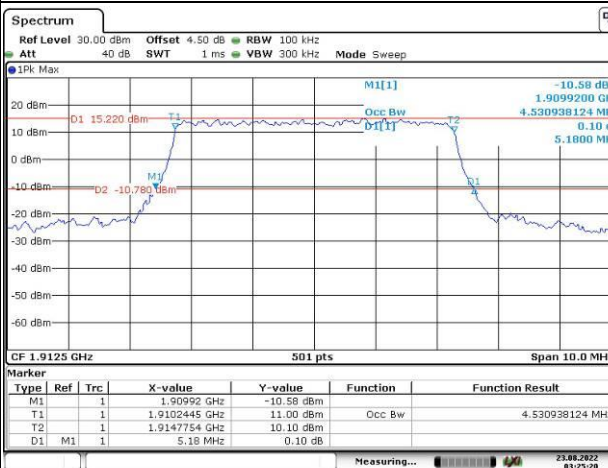
Lowest



Middle



Highest



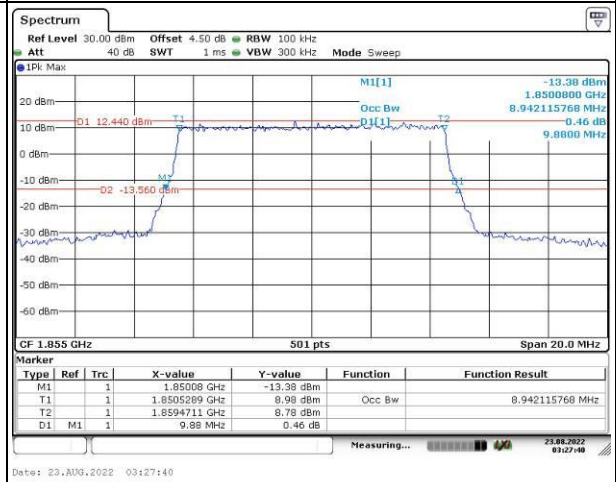
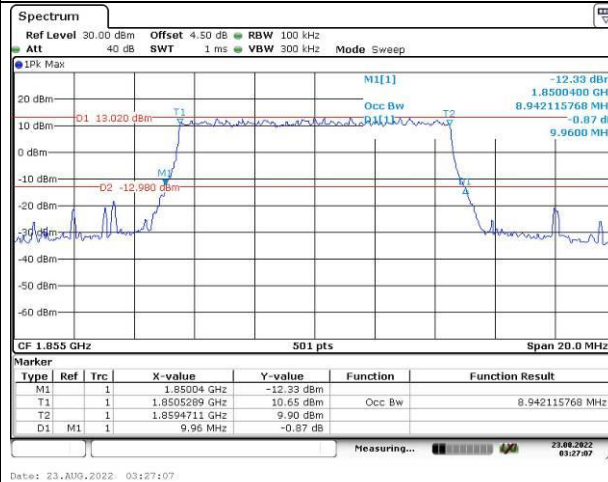
Occupied Bandwidth

Channel

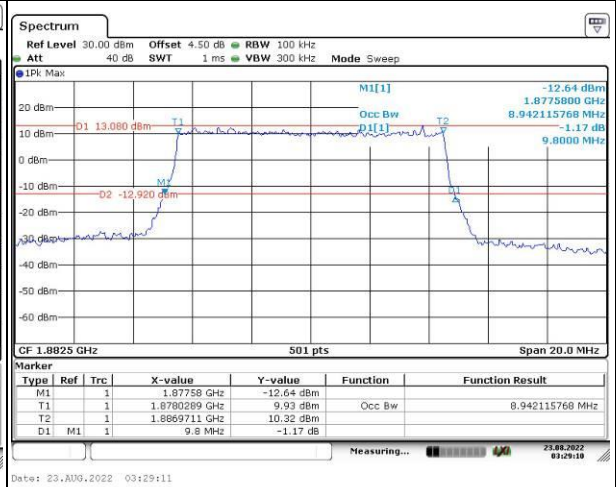
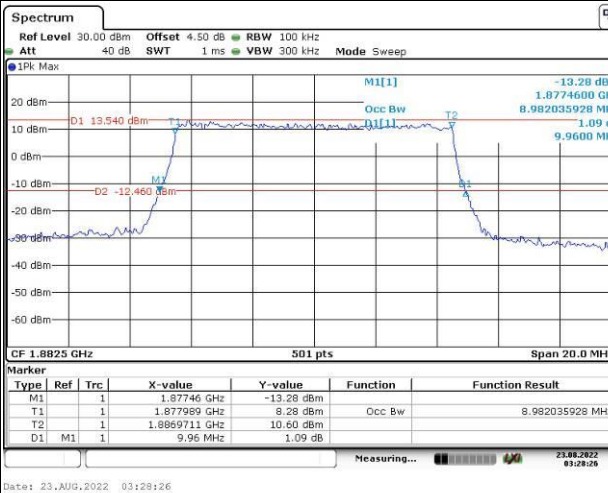
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

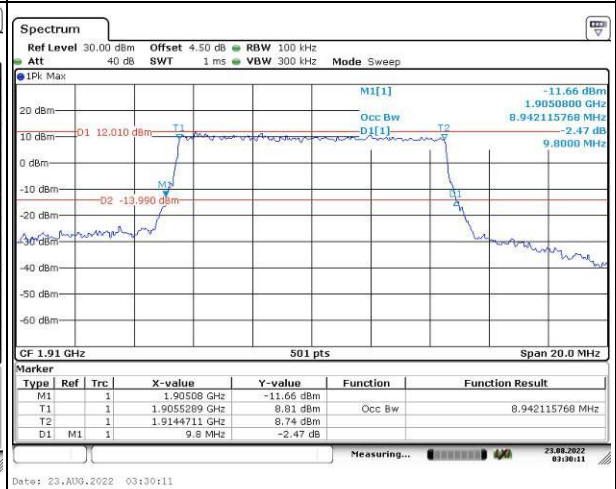
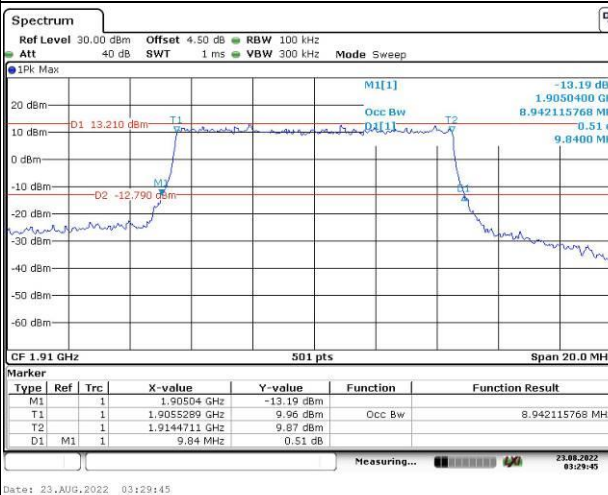
Lowest



Middle



Highest



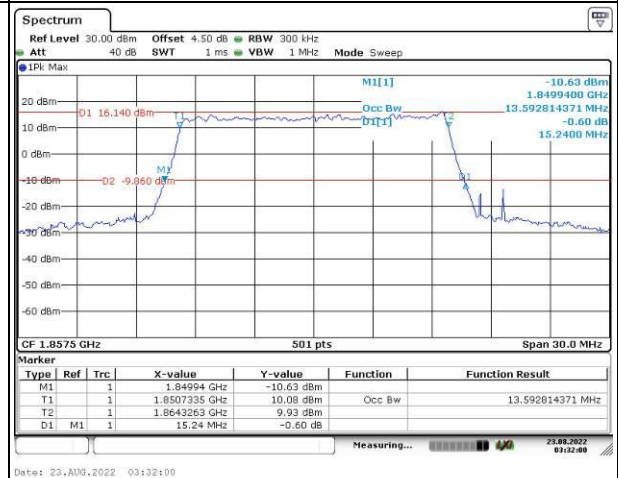
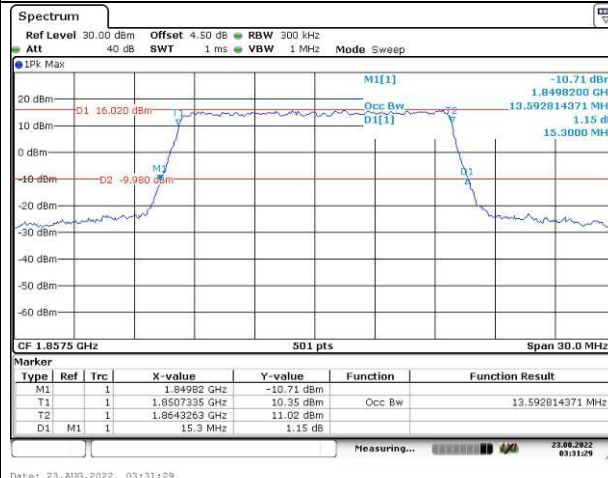
Occupied Bandwidth

Channel

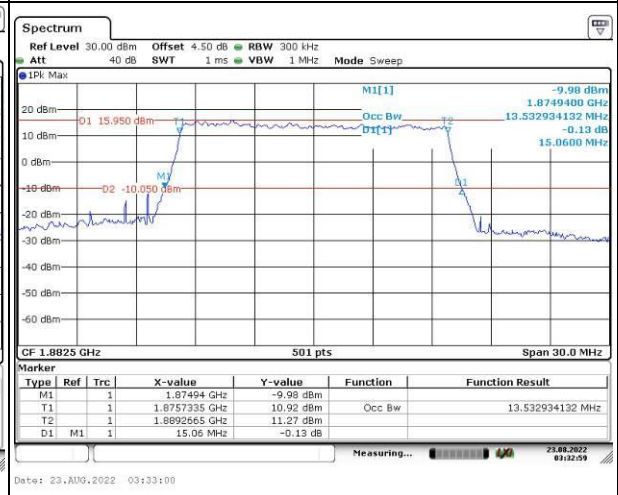
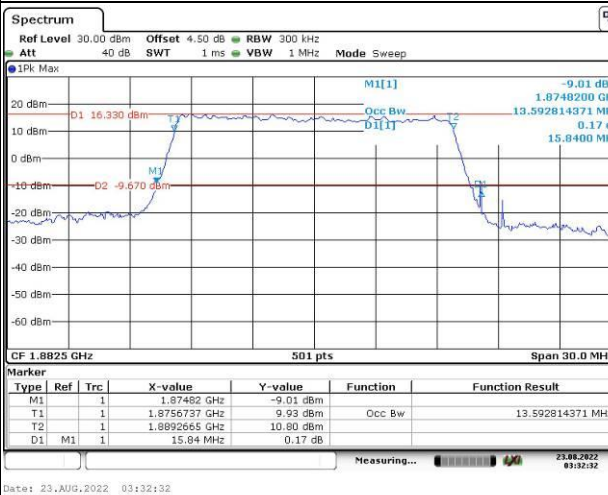
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

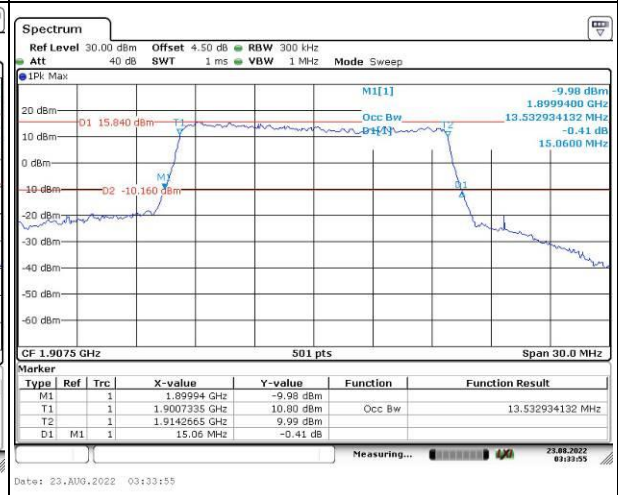
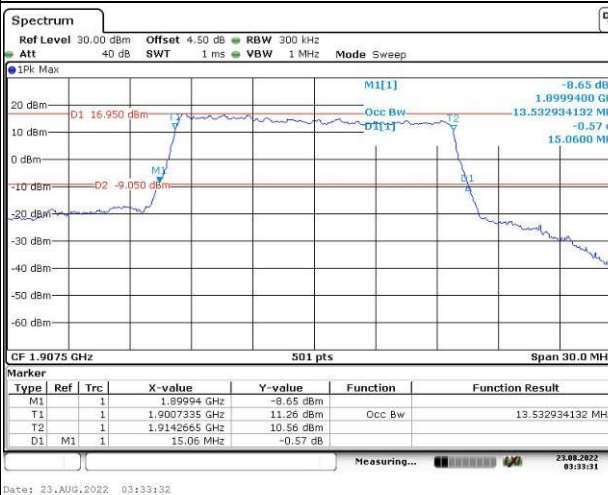
Lowest



Middle



Highest



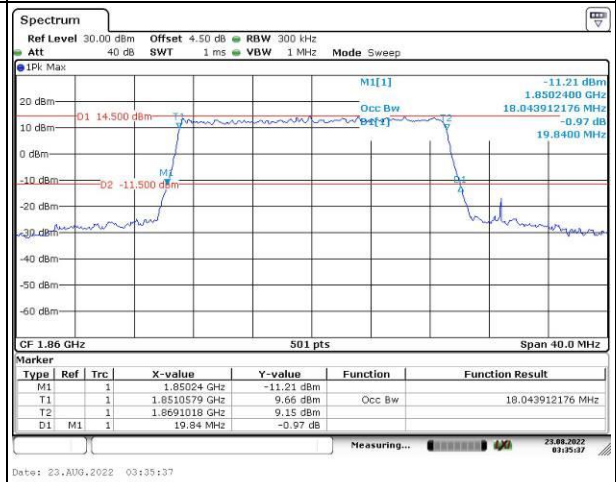
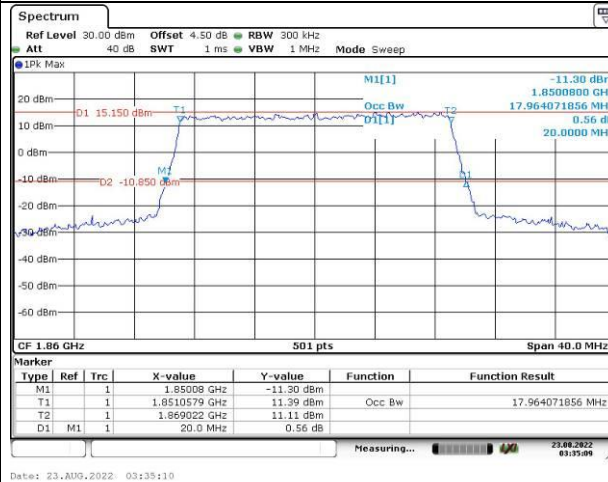
Occupied Bandwidth

Channel

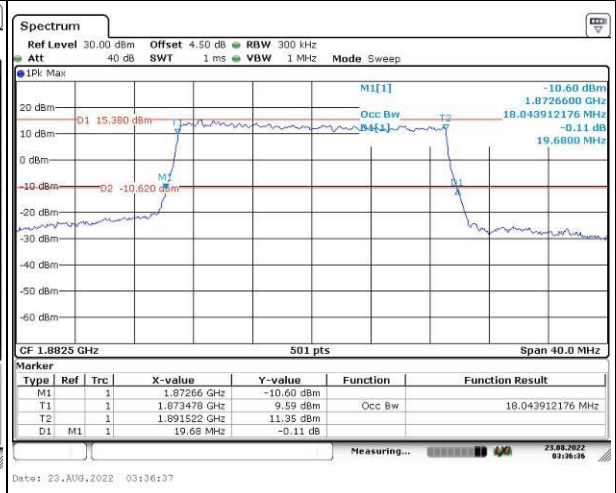
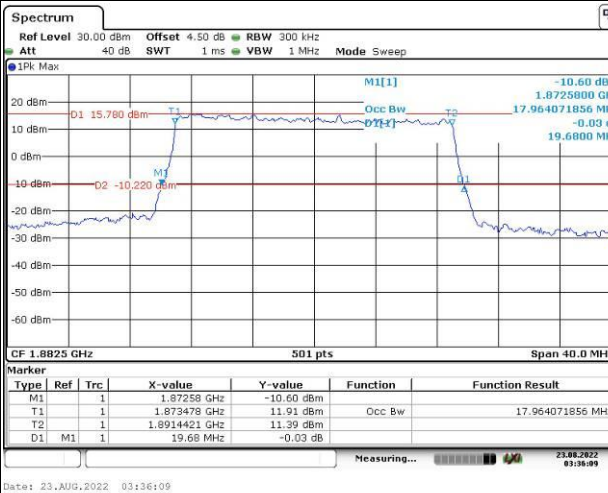
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

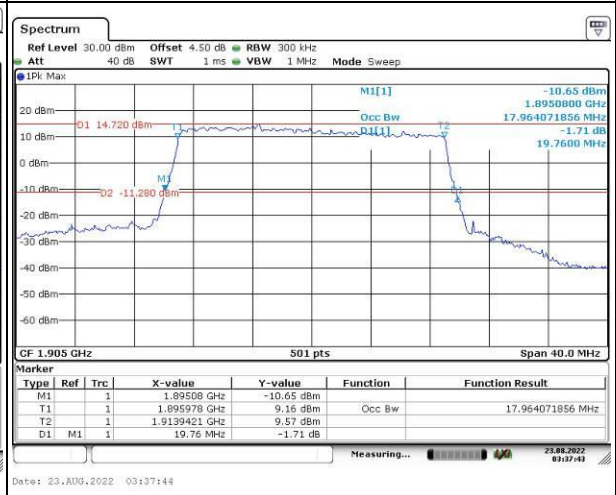
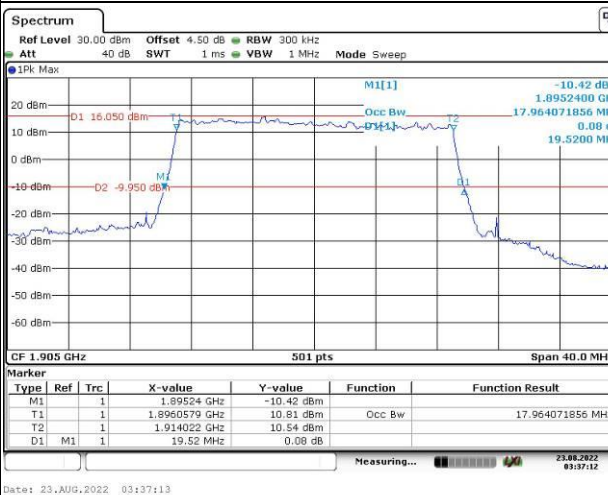
Lowest



Middle



Highest

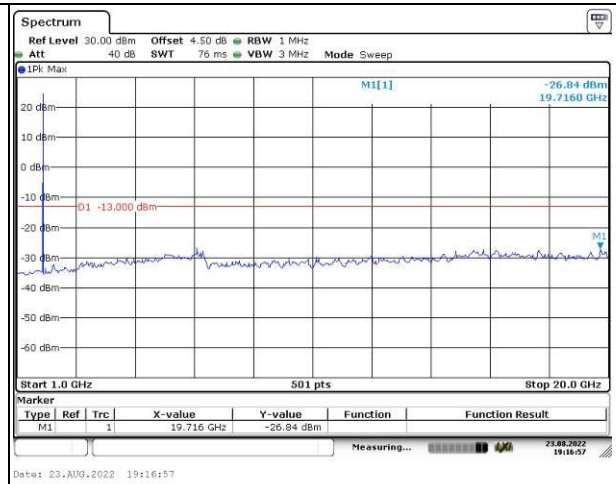
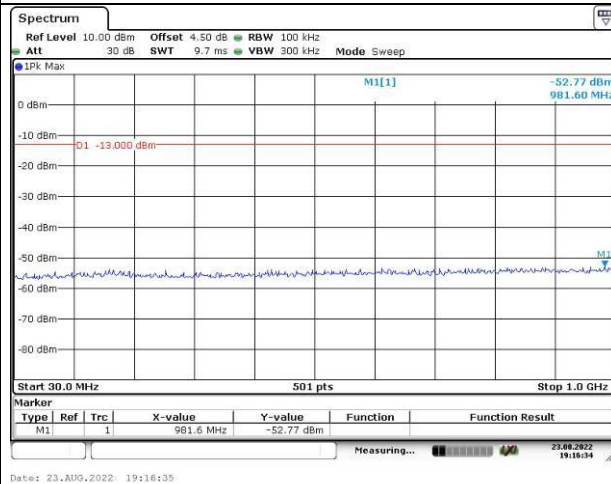


Spurious Emissions at Antenna Terminal

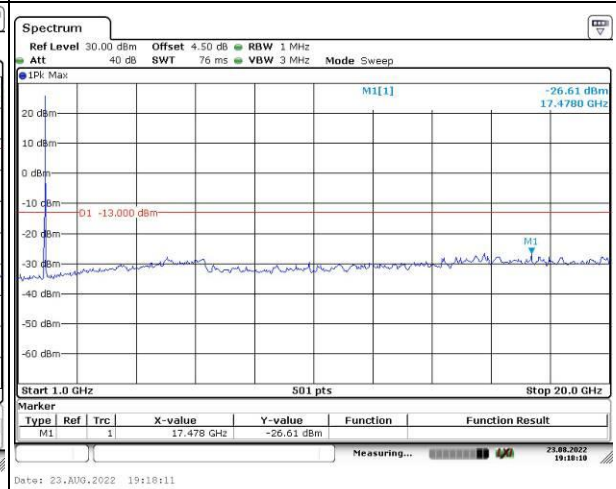
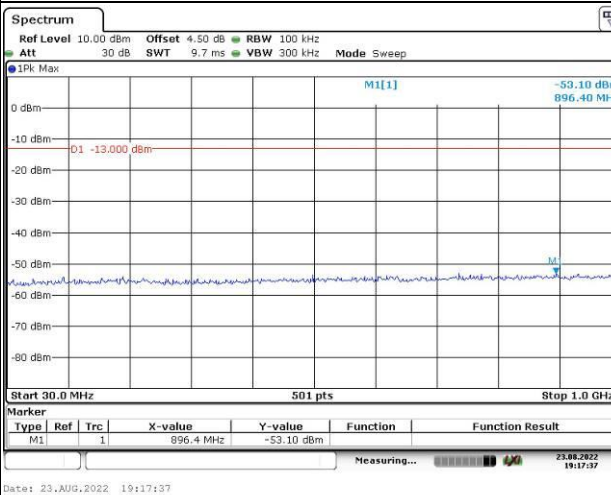
Channel

1.4MHz Bandwidth QPSK

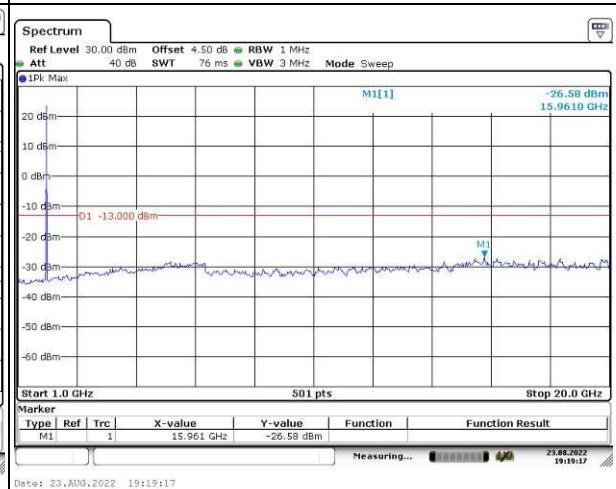
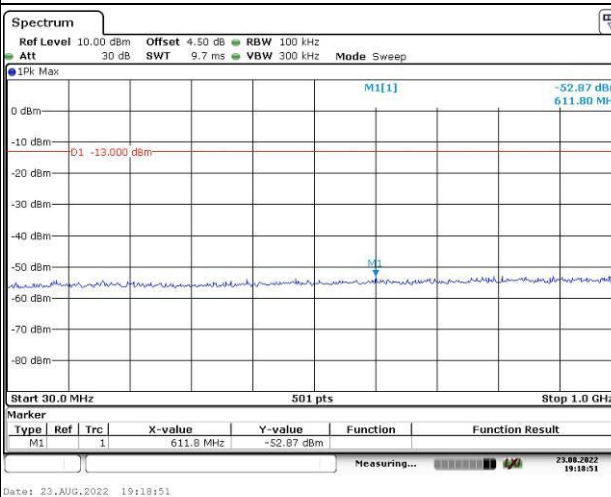
Lowest



Middle



Highest

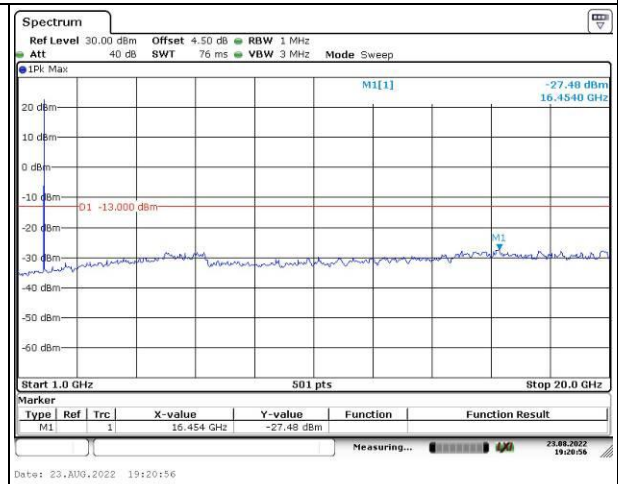
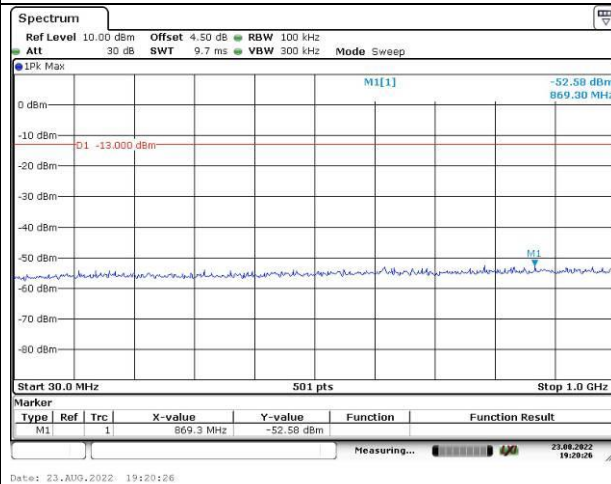


Spurious Emissions at Antenna Terminal

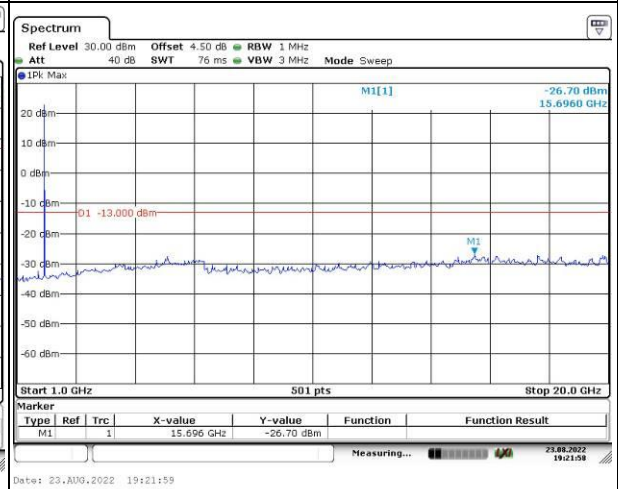
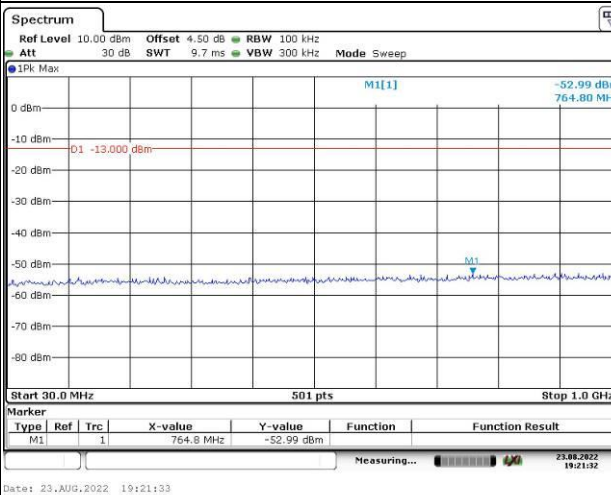
Channel

3MHz Bandwidth QPSK

Lowest



Middle



Highest

