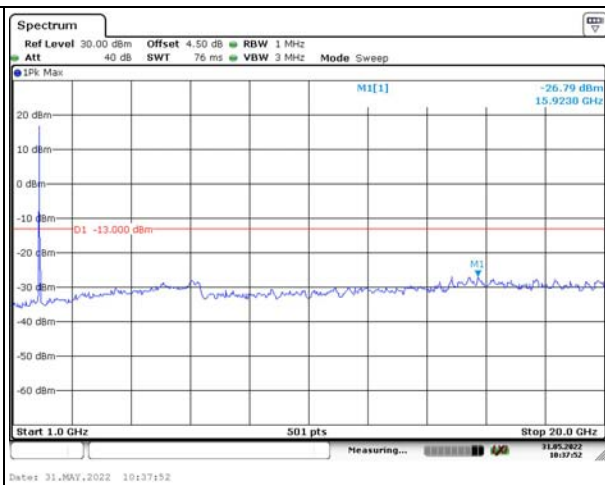
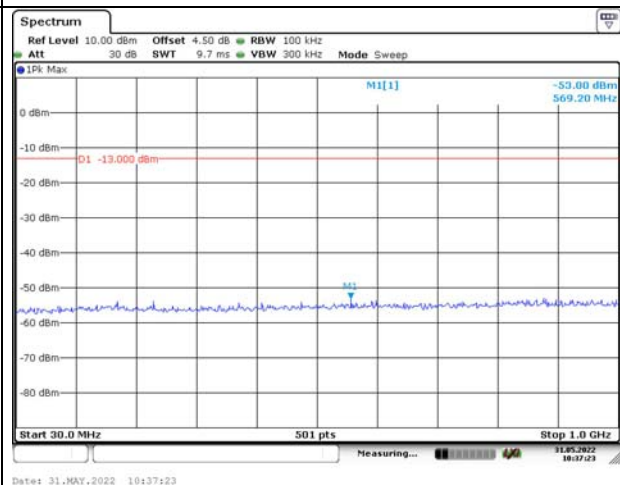


Spurious Emissions at Antenna Terminal

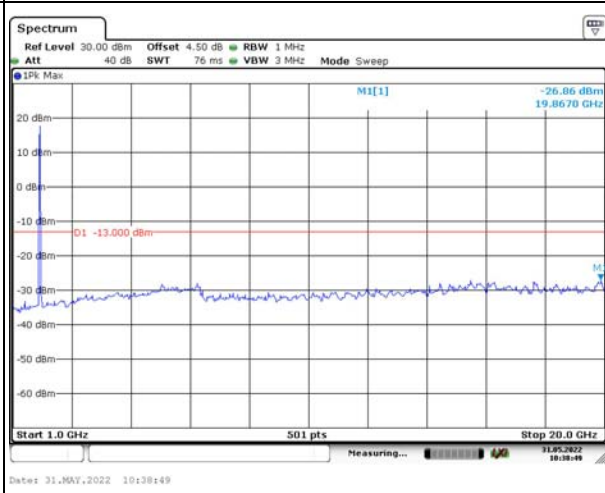
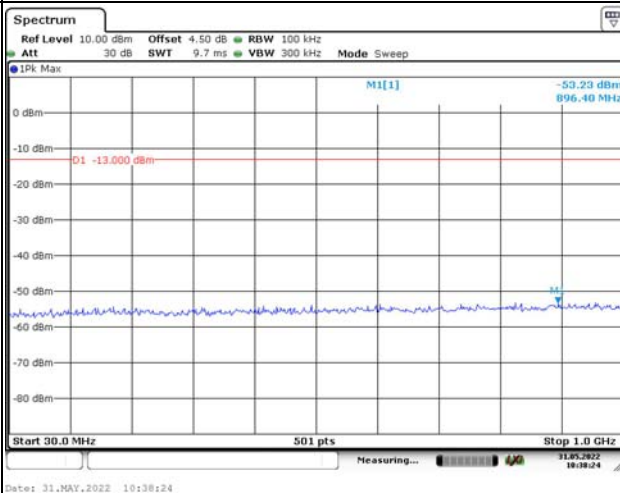
Channel

20MHz Bandwidth QPSK

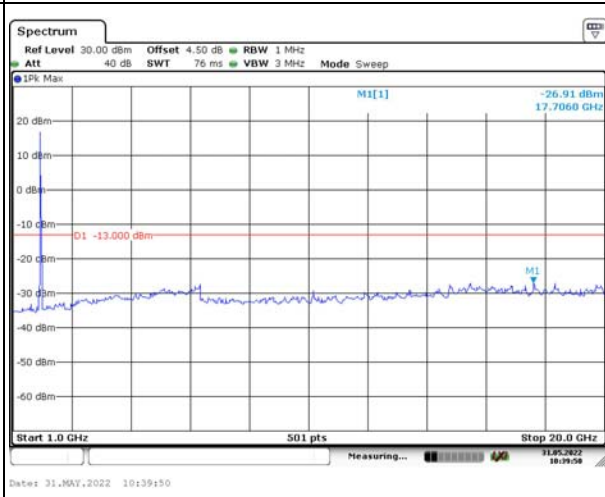
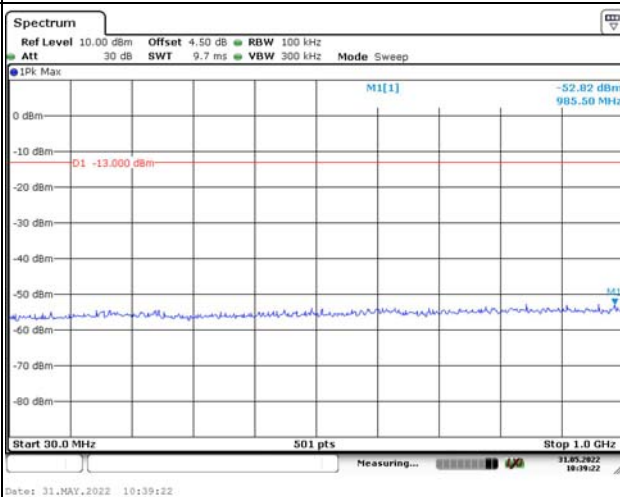
Lowest



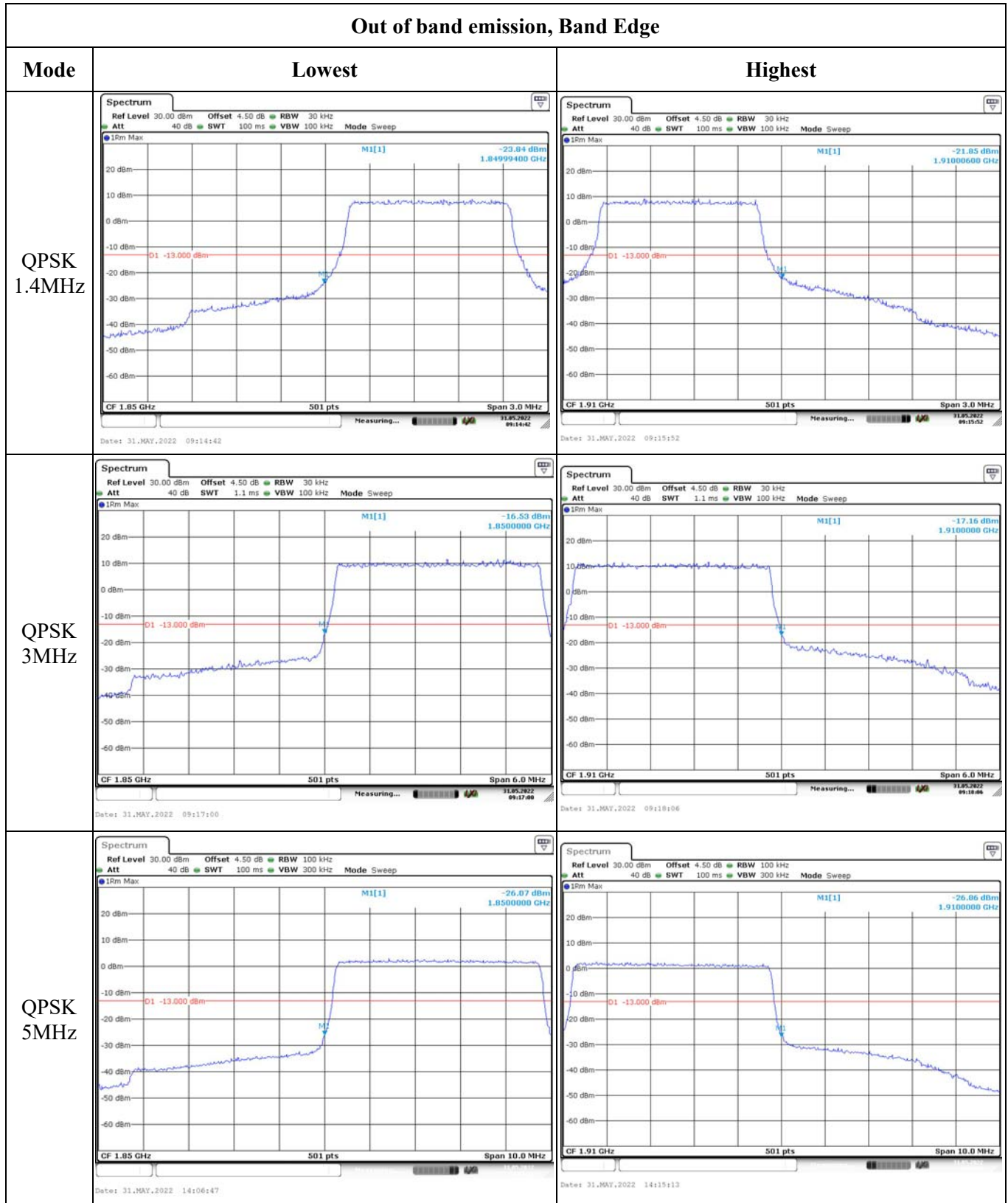
Middle



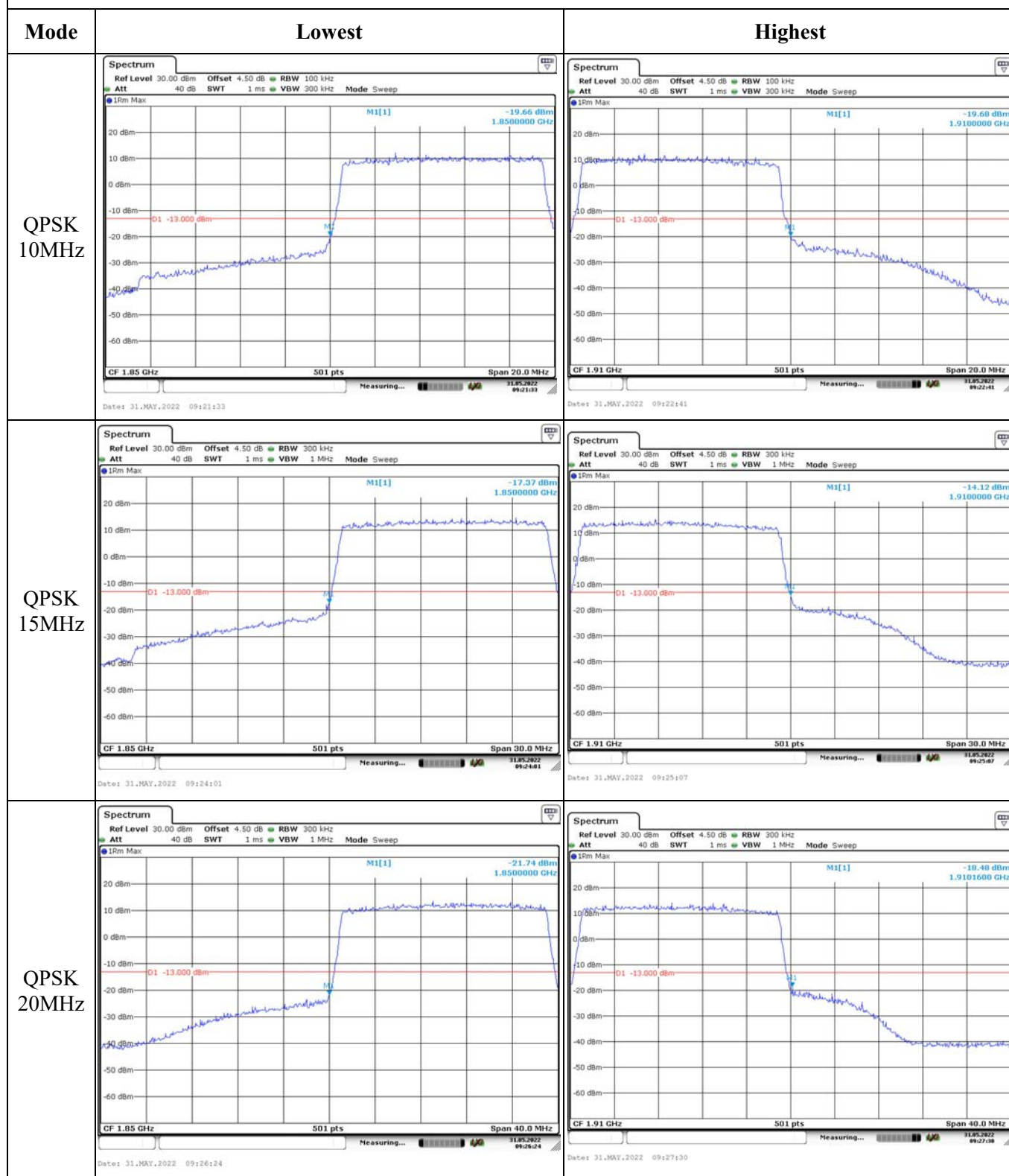
Highest



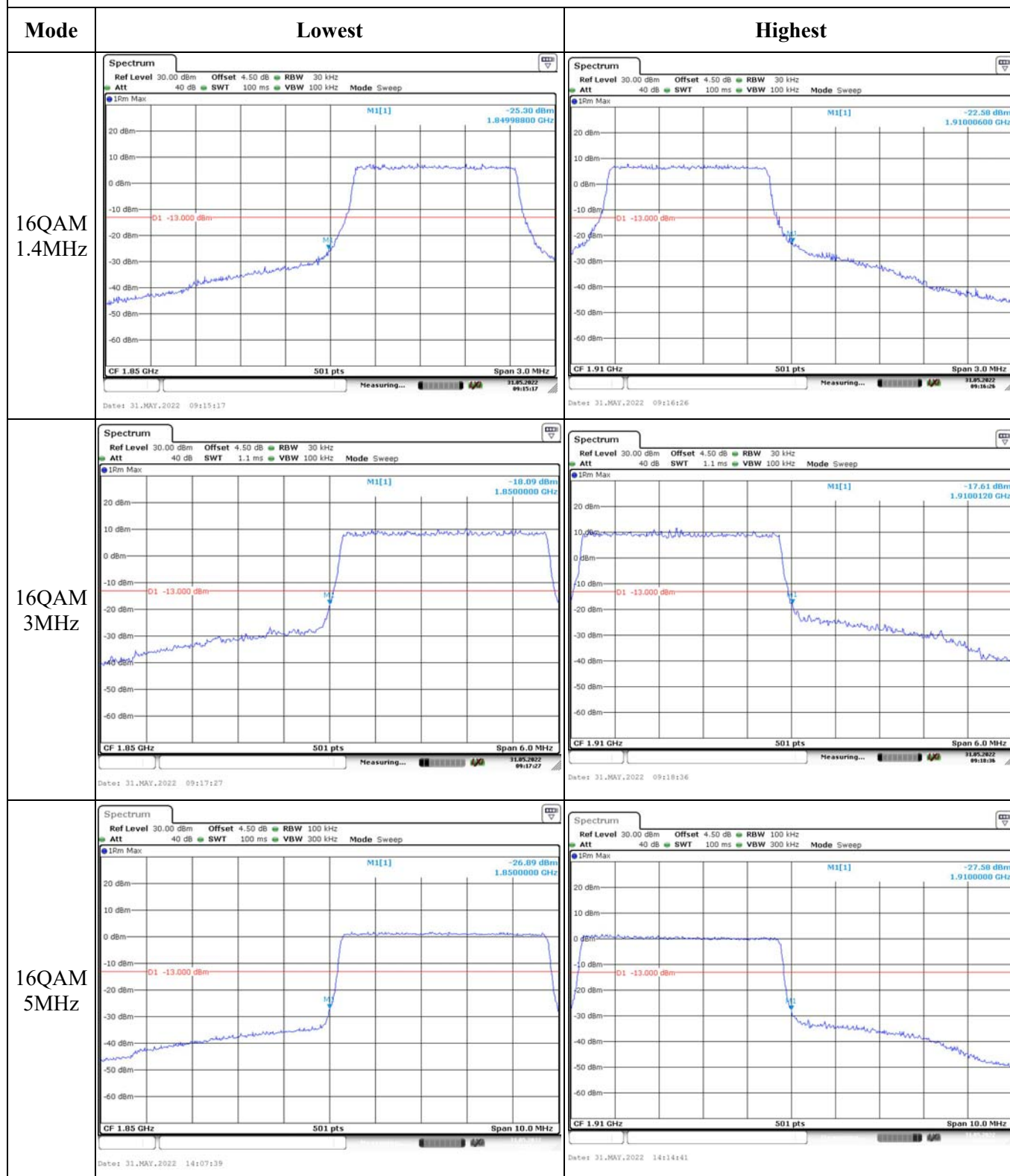
Out of band emission, Band Edge



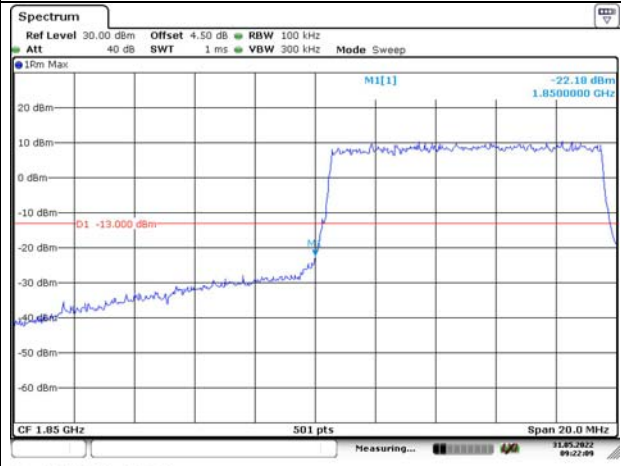
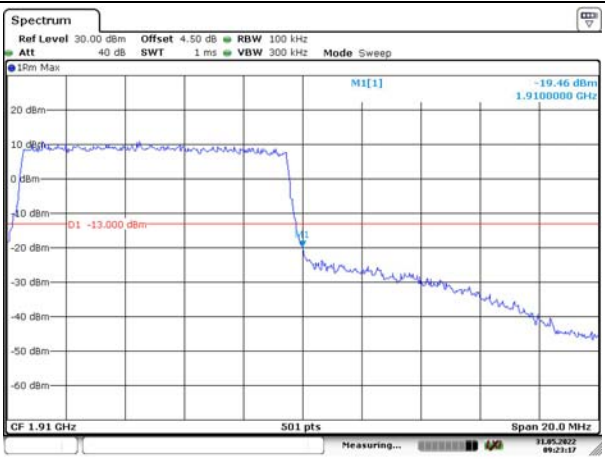
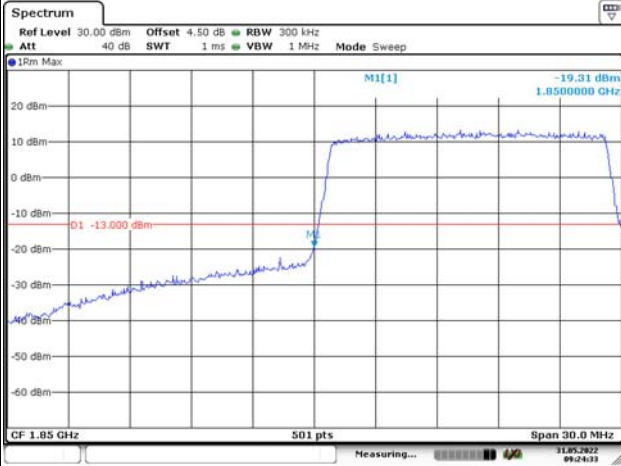
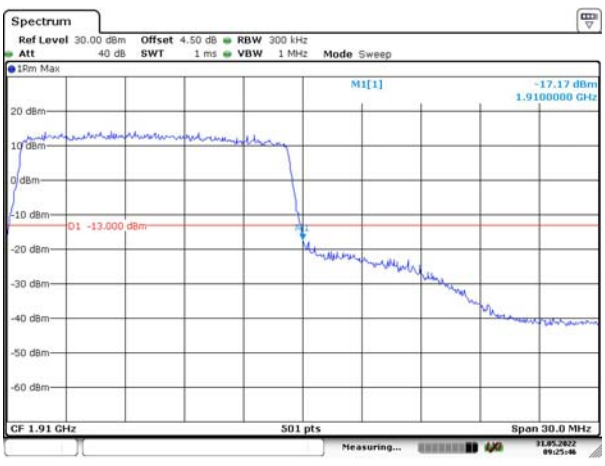
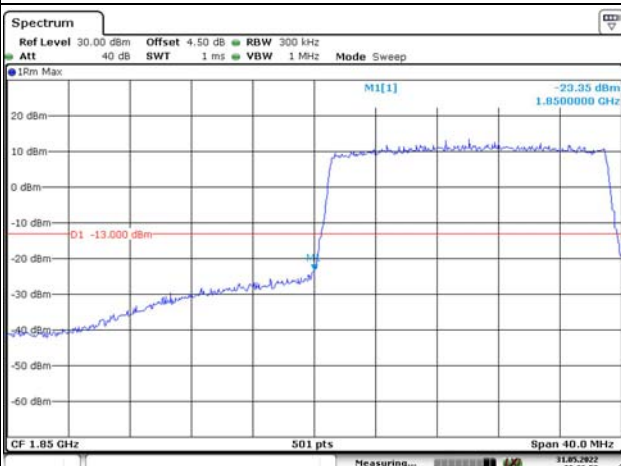
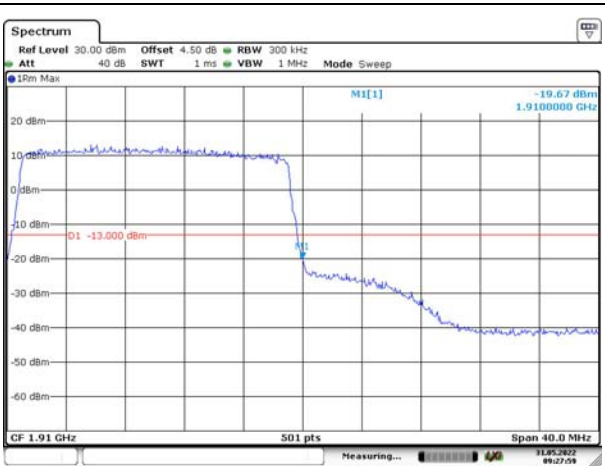
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz		
16QAM 15MHz		
16QAM 20MHz		

4.8 Antenna Port Test Data and Results for Module B LTE Band 2

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/29-2022/7/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.6	Relative Humidity: (%)	43	ATM Pressure: (kPa)	100.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A

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

EUT Information@ LTE Band 2▲:

Antenna Gain G_T (dBi):	0.77	Path Loss L_C (dB):	0
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	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	23.21	23.60	23.12	24.64	33
	RB1#3	23.43	23.66	23.04		
	RB1#5	23.44	23.87	23.08		
	RB3#0	23.39	23.41	22.94		
	RB3#3	23.33	23.28	22.91		
	RB6#0	22.36	22.40	21.84		
1.4MHz 16QAM	RB1#0	22.20	22.15	22.17	23.89	33
	RB1#3	22.41	22.04	22.22		
	RB1#5	22.28	22.26	22.12		
	RB3#0	22.02	22.34	21.98		
	RB3#3	22.60	23.12	22.11		
	RB6#0	21.76	21.09	20.84		
3MHz QPSK	RB1#0	23.07	23.28	23.26	24.06	33
	RB1#8	23.13	23.29	23.06		
	RB1#14	23.11	23.17	23.03		
	RB6#0	21.87	22.26	22.01		
	RB6#9	21.93	22.40	21.90		
	RB15#0	21.93	22.32	21.97		
3MHz 16QAM	RB1#0	22.44	22.40	22.38	23.84	33
	RB1#8	22.38	23.07	22.33		
	RB1#14	22.26	23.07	22.20		
	RB6#0	21.01	21.33	20.88		
	RB6#9	21.07	21.55	20.85		
	RB15#0	21.11	21.40	21.14		
5MHz QPSK	RB1#0	22.98	23.33	22.73	24.1	33
	RB1#13	23.07	23.30	23.16		
	RB1#24	22.98	23.17	22.91		
	RB15#0	21.93	22.39	22.02		
	RB15#10	22.17	22.41	22.02		
	RB25#0	22.14	22.30	22.02		
5MHz 16QAM	RB1#0	21.58	22.57	21.73	23.87	33
	RB1#13	21.47	22.58	21.97		
	RB1#24	21.44	23.10	22.03		
	RB15#0	20.94	21.28	20.96		
	RB15#10	21.12	21.38	20.97		
	RB25#0	21.12	21.38	21.09		
10MHz QPSK	RB1#0	23.37	23.33	23.13	24.18	33

	RB1#25	23.31	23.31	23.41		
	RB1#49	23.16	23.33	23.15		
	RB25#0	22.10	22.36	22.10		
	RB25#25	22.20	22.43	22.16		
	RB50#0	22.22	22.38	22.14		
10MHz 16QAM	RB1#0	22.58	23.38	22.16	24.15	33
	RB1#25	22.81	22.85	22.85		
	RB1#49	22.11	22.61	22.26		
	RB25#0	21.25	21.26	21.27		
	RB25#25	21.33	21.51	21.07		
	RB50#0	21.23	21.22	21.07		
15MHz QPSK	RB1#0	23.24	23.22	23.14	24.16	33
	RB1#38	23.08	23.39	22.93		
	RB1#74	23.09	23.26	22.90		
	RB36#0	22.14	22.33	22.18		
	RB36#39	22.21	22.43	22.12		
	RB75#0	22.13	22.40	22.11		
15MHz 16QAM	RB1#0	22.65	22.57	22.52	23.87	33
	RB1#38	22.68	23.10	22.43		
	RB1#74	22.69	23.00	21.81		
	RB36#0	21.21	21.25	21.02		
	RB36#39	21.20	21.45	20.98		
	RB75#0	21.13	21.39	21.14		
20MHz QPSK	RB1#0	23.17	23.36	23.28	24.65	33
	RB1#50	23.20	23.88	23.03		
	RB1#99	23.19	23.70	22.78		
	RB50#0	22.16	22.32	22.26		
	RB50#50	22.20	22.49	22.26		
	RB100#0	22.20	22.40	22.18		
20MHz 16QAM	RB1#0	22.31	22.45	23.64	24.41	33
	RB1#50	22.40	22.66	23.57		
	RB1#99	22.51	22.44	23.00		
	RB50#0	21.14	21.36	21.17		
	RB50#50	21.39	21.53	21.10		
	RB100#0	21.24	21.37	21.22		
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	4.42	4.62	4.55	13
	RB100#0	5.26	5.29	5.19	13
20MHz 16QAM	RB1#0	5.38	5.51	5.38	13
	RB100#0	6.15	6.15	6.12	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	1.104	1.098	1.104	1.284	1.296	1.326
1.4MHz 16QAM	1.104	1.110	1.092	1.296	1.302	1.284
3MHz QPSK	2.688	2.700	2.688	2.940	2.940	2.964
3MHz 16QAM	2.688	2.688	2.688	2.964	2.952	2.940
5MHz QPSK	4.540	4.520	4.520	4.940	4.980	4.960
5MHz 16QAM	4.520	4.520	4.520	4.980	5.040	5.020
10MHz QPSK	8.960	8.960	8.960	9.680	9.600	9.640
10MHz 16QAM	8.960	8.960	8.960	9.640	9.600	9.640
15MHz QPSK	13.500	13.500	13.440	14.760	14.760	14.700
15MHz 16QAM	13.500	13.500	13.440	14.760	14.820	14.820
20MHz QPSK	17.840	18.000	17.920	19.360	19.280	19.440
20MHz 16QAM	17.920	18.000	17.840	19.280	19.280	19.600
Note: The test plots please refer to the Plots of Occupied Bandwidth						

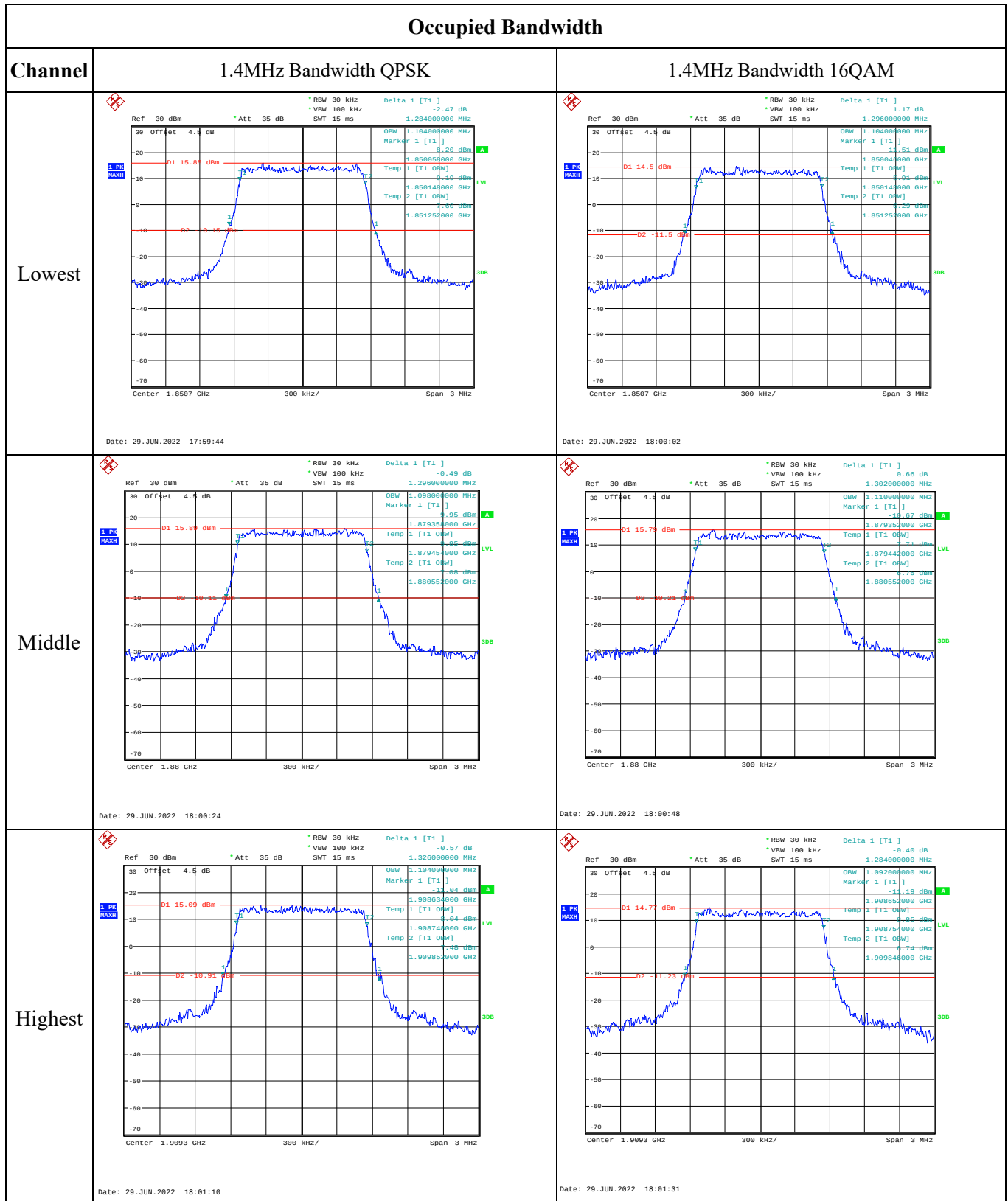
FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal	
Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.

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 (°C)	Voltage (V _{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.85	-4	-0.002	Pass
	-20	3.85	1	0.001	Pass
	-10	3.85	-7	-0.004	Pass
	0	3.85	3	0.002	Pass
	10	3.85	-8	-0.004	Pass
	20	3.85	-4	-0.002	Pass
	30	3.85	-5	-0.003	Pass
	40	3.85	7	0.004	Pass
	50	3.85	-11	-0.006	Pass
Frequency Stability vs. Voltage	20	3.5	4	0.002	Pass
	20	4.4	3	0.002	Pass
				Result:	Pass

Test Mode:	20 MHz 16QAM		Test Channel:	1880	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Result
			(Hz)	(ppm)	
Frequency Stability vs. Temperature	-30	3.85	-4	-0.002	Pass
	-20	3.85	-12	-0.006	Pass
	-10	3.85	4	0.002	Pass
	0	3.85	7	0.004	Pass
	10	3.85	-6	-0.003	Pass
	20	3.85	-3	-0.002	Pass
	30	3.85	4	0.002	Pass
	40	3.85	-7	-0.004	Pass
	50	3.85	2	0.001	Pass
Frequency Stability vs. Voltage	20	3.5	4	0.002	Pass
	20	4.4	-8	-0.004	Pass
				Result:	Pass

Test Plots:



Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.86 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] 2.688000000 MHz 1.850000000 GHz 1.850150000 GHz 1.852840000 GHz Temp 1 [T1] -13.05 dBm Temp 2 [T1] -12.37 dBm LVL 30B Center 1.8515 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:01:55	Ref 30 dBm * Att 35 dB Delta 1 [T1] -1.56 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] 2.688000000 MHz 1.850000000 GHz 1.850150000 GHz 1.852840000 GHz Temp 1 [T1] -13.12 dBm Temp 2 [T1] -14.89 dBm LVL 30B Center 1.8515 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:02:16
Middle	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.89 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] 2.700000000 MHz 1.878000000 GHz 1.878650000 GHz 1.881350000 GHz Temp 1 [T1] -13.21 dBm Temp 2 [T1] -12.79 dBm LVL 30B Center 1.88 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:02:38	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.93 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] 2.952000000 MHz 1.878000000 GHz 1.878650000 GHz 1.881340000 GHz Temp 1 [T1] -13.23 dBm Temp 2 [T1] -13.77 dBm LVL 30B Center 1.88 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:03:02
Highest	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.05 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] 2.964000000 MHz 1.907000000 GHz 1.907150000 GHz 1.909840000 GHz Temp 1 [T1] -11.83 dBm Temp 2 [T1] -14.17 dBm LVL 30B Center 1.9085 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:03:21	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.69 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] 2.968000000 MHz 1.907000000 GHz 1.907150000 GHz 1.909840000 GHz Temp 1 [T1] -11.88 dBm Temp 2 [T1] -14.11 dBm LVL 30B Center 1.9085 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:03:42

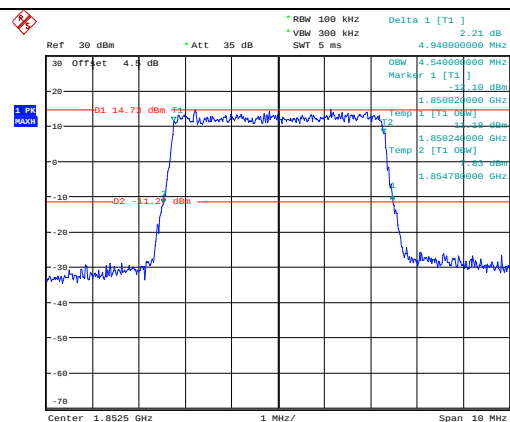
Occupied Bandwidth

Channel

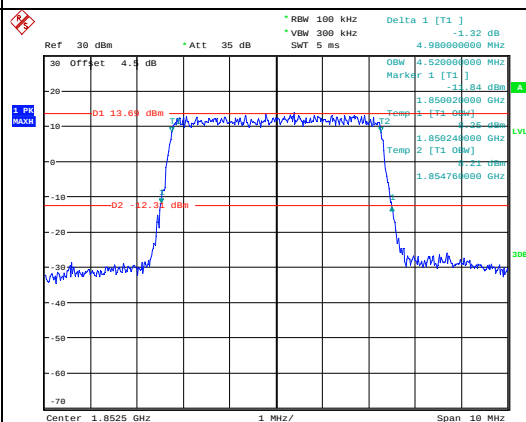
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

Lowest

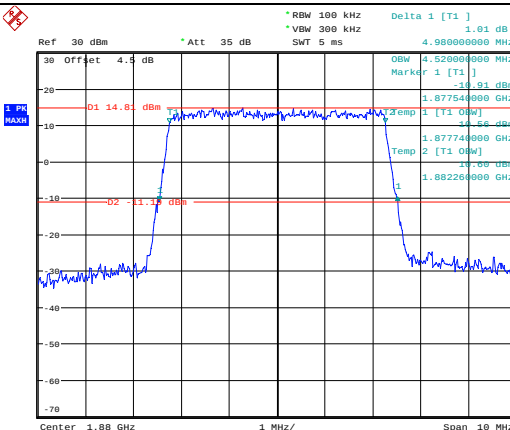


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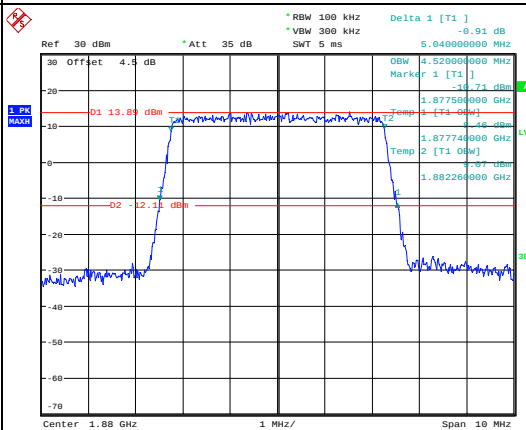


Date: 29.JUN.2022 18:04:24

Middle

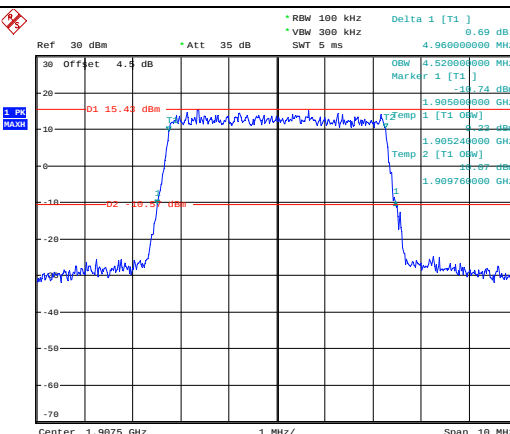


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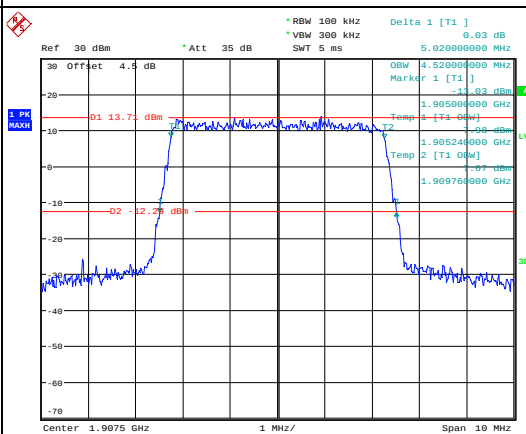


Date: 29.JUN.2022 18:05:07

Highest

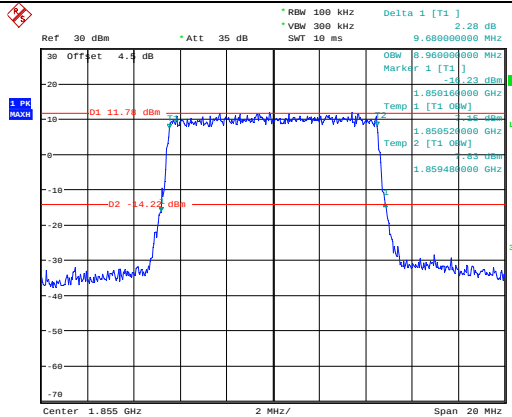
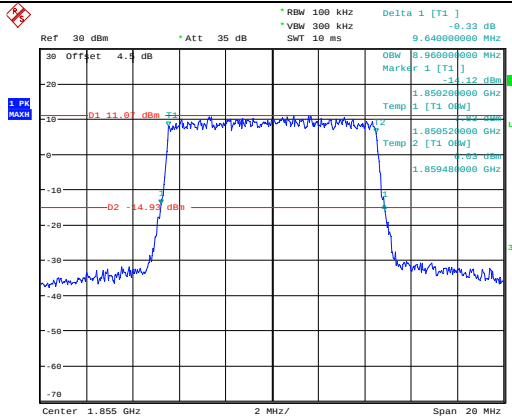
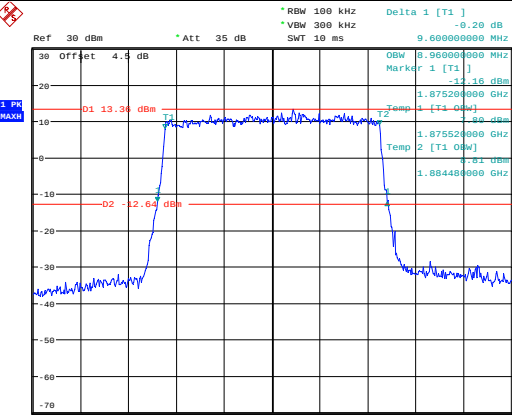
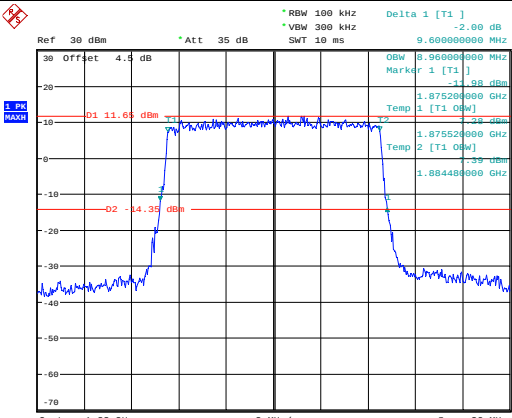
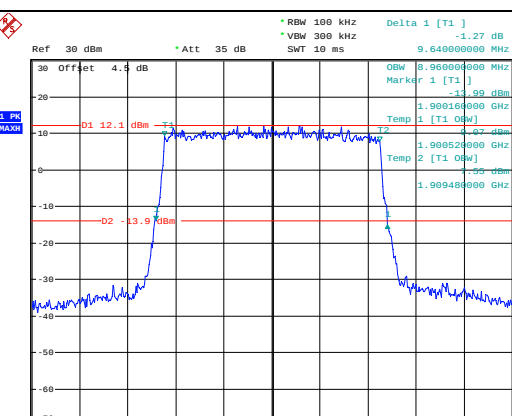
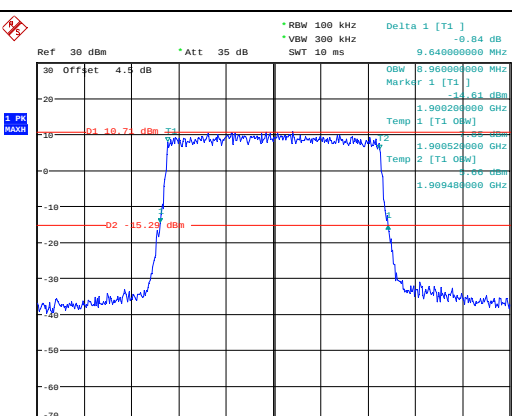


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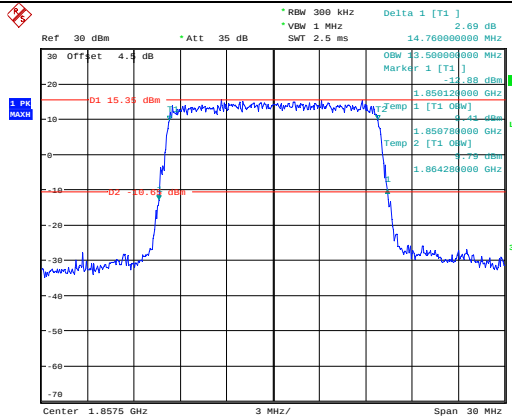
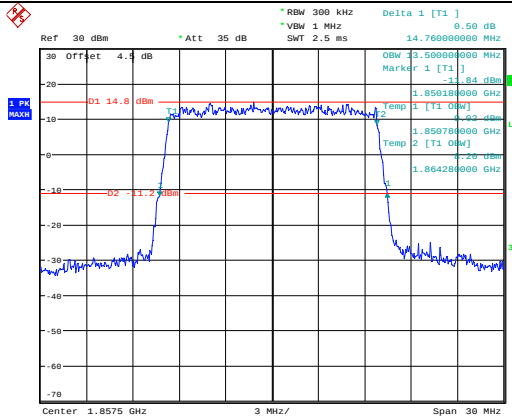
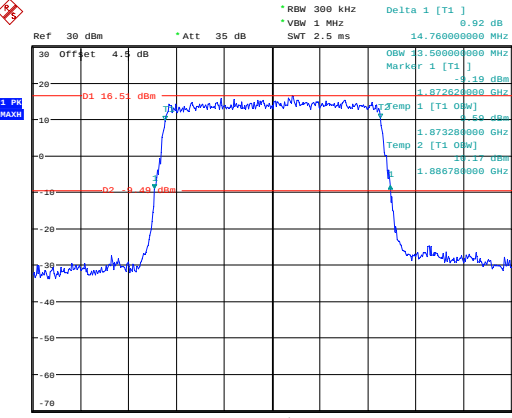
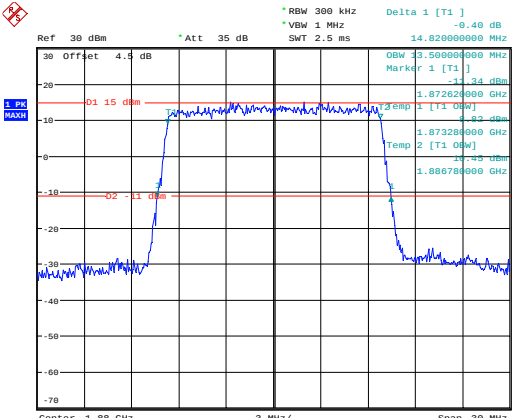
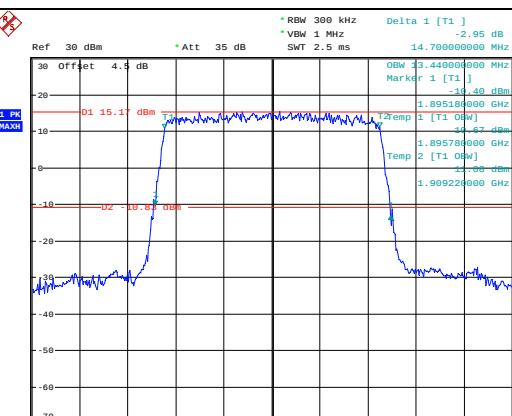
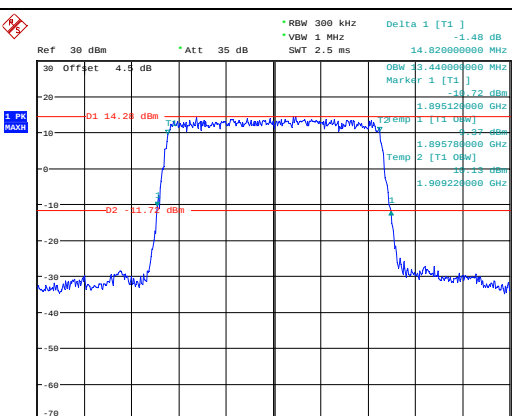


Date: 29.JUN.2022 18:05:49

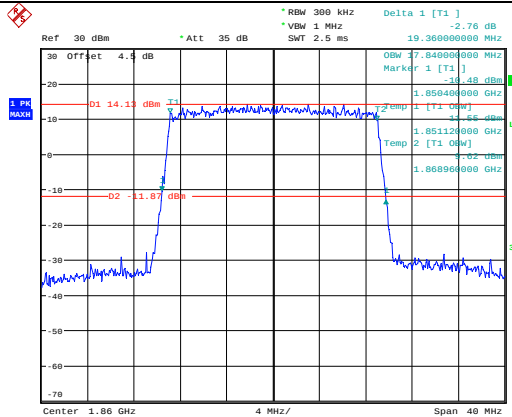
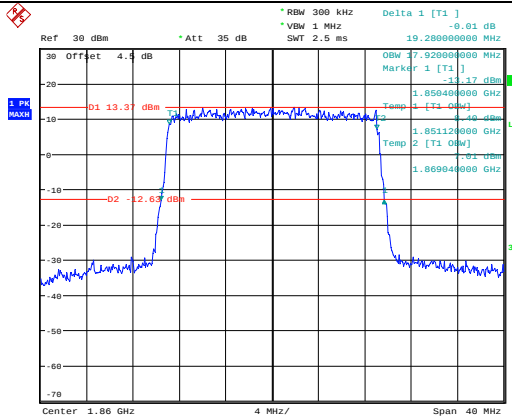
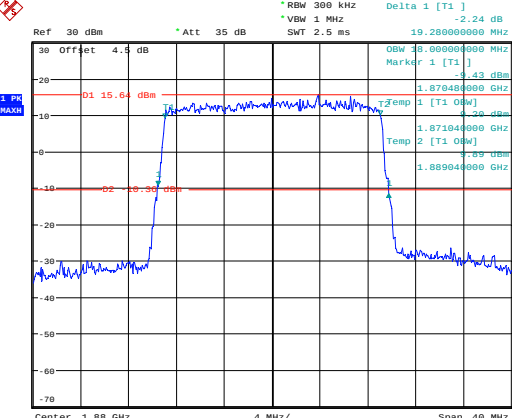
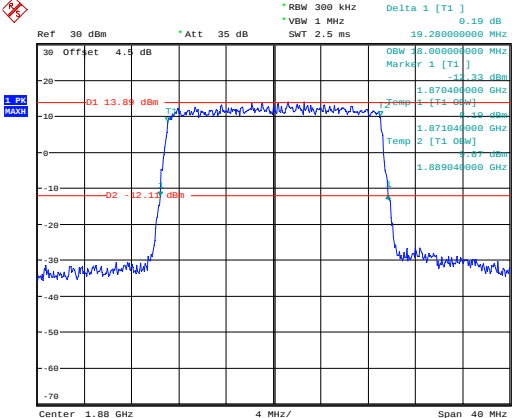
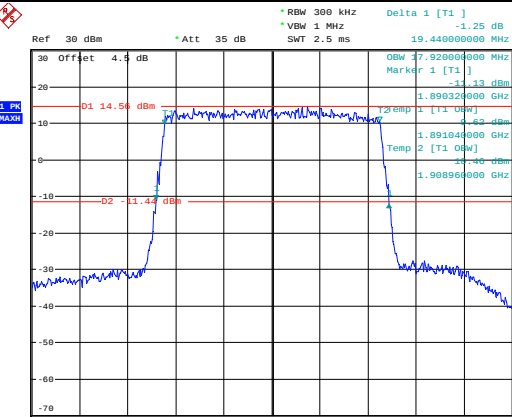
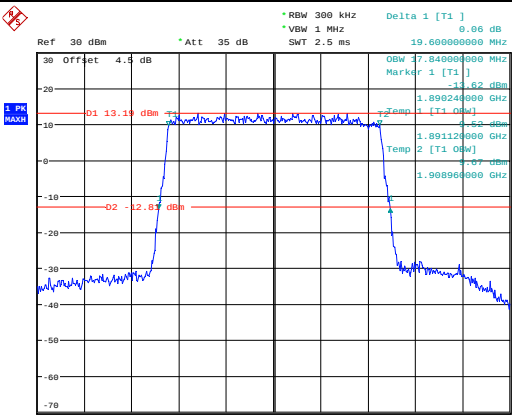
Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	 Date: 29.JUN.2022 18:06:17	 Date: 29.JUN.2022 18:06:38
Middle	 Date: 29.JUN.2022 18:07:01	 Date: 29.JUN.2022 18:07:23
Highest	 Date: 29.JUN.2022 18:07:46	 Date: 29.JUN.2022 18:08:08

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	 Ref 30 dBm Offset 4.5 dB Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 2.69 dB Marker 1 [T1] 14.760000000 MHz OBW 13.500000000 MHz Marker 1 [T1] 1.859120000 GHz Temp 1 [T1] 1.859780000 GHz Temp 2 [T1] 1.864280000 GHz Center 1.8575 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 18:08:36	 Ref 30 dBm Offset 4.5 dB Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 0.50 dB Marker 1 [T1] 14.760000000 MHz OBW 13.500000000 MHz Marker 1 [T1] 1.859120000 GHz Temp 1 [T1] 1.859780000 GHz Temp 2 [T1] 1.864280000 GHz Center 1.8575 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 18:09:00
Middle	 Ref 30 dBm Offset 4.5 dB Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 0.92 dB Marker 1 [T1] 14.760000000 MHz OBW 13.500000000 MHz Marker 1 [T1] 1.872620000 GHz Temp 1 [T1] 1.873280000 GHz Temp 2 [T1] 1.886780000 GHz Center 1.88 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 18:09:29	 Ref 30 dBm Offset 4.5 dB Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] -0.40 dB Marker 1 [T1] 14.820000000 MHz OBW 13.500000000 MHz Marker 1 [T1] 1.872620000 GHz Temp 1 [T1] 1.873280000 GHz Temp 2 [T1] 1.886780000 GHz Center 1.88 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 18:09:53
Highest	 Ref 30 dBm Offset 4.5 dB Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] -2.95 dB Marker 1 [T1] 14.760000000 MHz OBW 13.440000000 MHz Marker 1 [T1] 1.895180000 GHz Temp 1 [T1] 1.895780000 GHz Temp 2 [T1] 1.909220000 GHz Center 1.9025 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 18:10:19	 Ref 30 dBm Offset 4.5 dB Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] -1.48 dB Marker 1 [T1] 14.820000000 MHz OBW 13.440000000 MHz Marker 1 [T1] 1.895120000 GHz Temp 1 [T1] 1.895780000 GHz Temp 2 [T1] 1.909220000 GHz Center 1.9025 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 18:10:43

Occupied Bandwidth

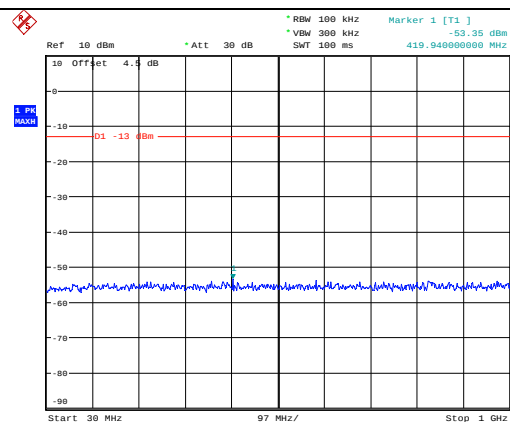
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	 Ref 30 dBm * Att 35 dB RBW 300 kHz Delta 1 [T1] -2.76 dB VBW 1 MHz SWT 2.5 ms 19.360000000 MHz Marker 1 [T1] -2.76 dB 1.859400000 GHz 1.861200000 GHz Temp 2 [T1 0dB] -1.87 dB 1.869400000 GHz Center 1.86 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:11:12	 Ref 30 dBm * Att 35 dB RBW 300 kHz Delta 1 [T1] -0.01 dB VBW 1 MHz SWT 2.5 ms 19.280000000 MHz Marker 1 [T1] -12.63 dB 1.859400000 GHz 1.861200000 GHz Temp 2 [T1 0dB] -12.63 dB 1.869400000 GHz Center 1.86 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:11:36
Middle	 Ref 30 dBm * Att 35 dB RBW 300 kHz Delta 1 [T1] -2.24 dB VBW 1 MHz SWT 2.5 ms 19.280000000 MHz Marker 1 [T1] -12.30 dB 1.870400000 GHz 1.871040000 GHz Temp 2 [T1 0dB] -12.30 dB 1.889400000 GHz Center 1.88 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:12:02	 Ref 30 dBm * Att 35 dB RBW 300 kHz Delta 1 [T1] 0.19 dB VBW 1 MHz SWT 2.5 ms 19.280000000 MHz Marker 1 [T1] -12.17 dB 1.870400000 GHz 1.871040000 GHz Temp 2 [T1 0dB] -12.17 dB 1.889400000 GHz Center 1.88 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:12:26
Highest	 Ref 30 dBm * Att 35 dB RBW 300 kHz Delta 1 [T1] -1.25 dB VBW 1 MHz SWT 2.5 ms 19.440000000 MHz Marker 1 [T1] -11.44 dB 1.899320000 GHz 1.891040000 GHz Temp 2 [T1 0dB] -11.44 dB 1.908960000 GHz Center 1.9 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:12:55	 Ref 30 dBm * Att 35 dB RBW 300 kHz Delta 1 [T1] 0.06 dB VBW 1 MHz SWT 2.5 ms 19.600000000 MHz Marker 1 [T1] -12.87 dB 1.899320000 GHz 1.891040000 GHz Temp 2 [T1 0dB] -12.87 dB 1.908960000 GHz Center 1.9 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:13:20

Spurious Emissions at Antenna Terminal

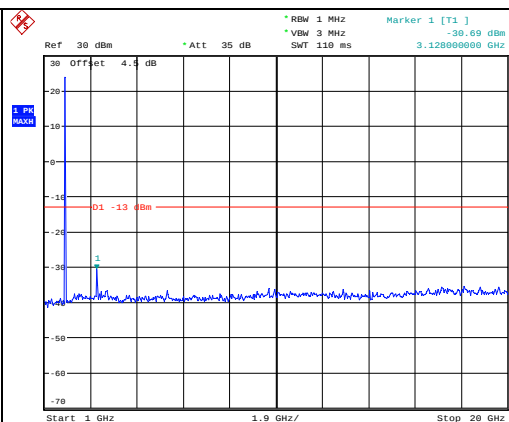
Channel

1.4MHz Bandwidth QPSK

Lowest

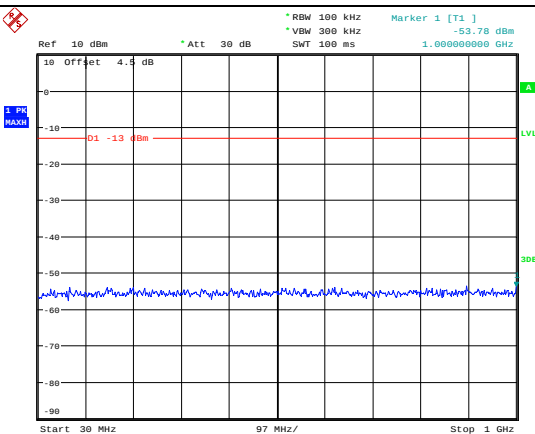


Date: 29.JUN.2022 16:41:14

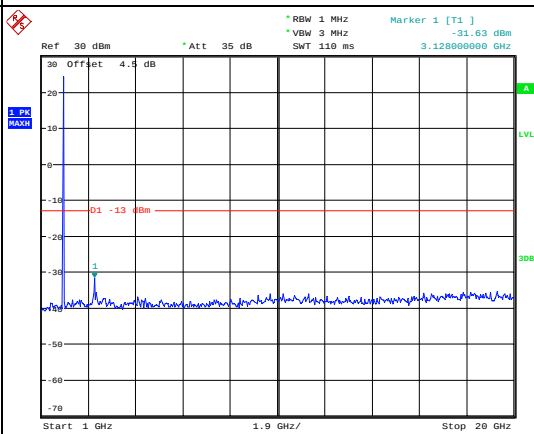


Date: 29.JUN.2022 16:41:28

Middle

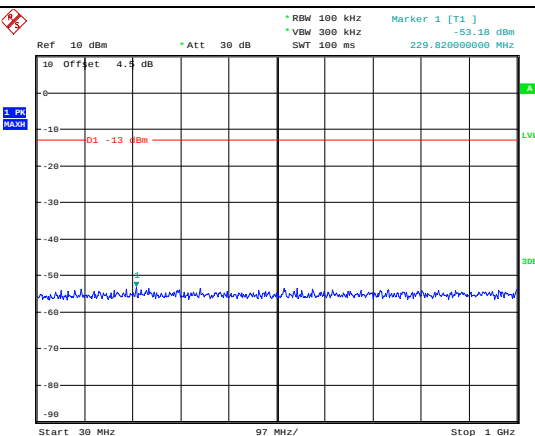


Date: 29.JUN.2022 16:41:44

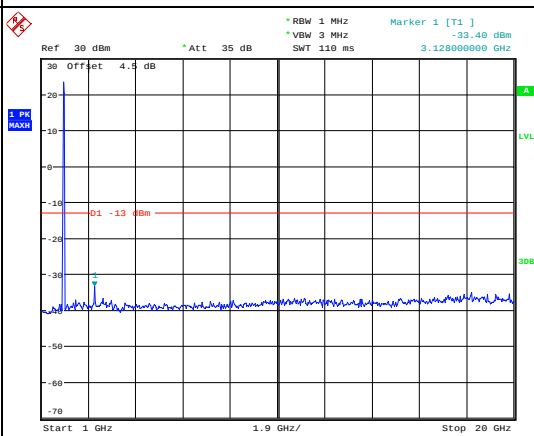


Date: 29.JUN.2022 16:41:57

Highest



Date: 29.JUN.2022 16:42:16



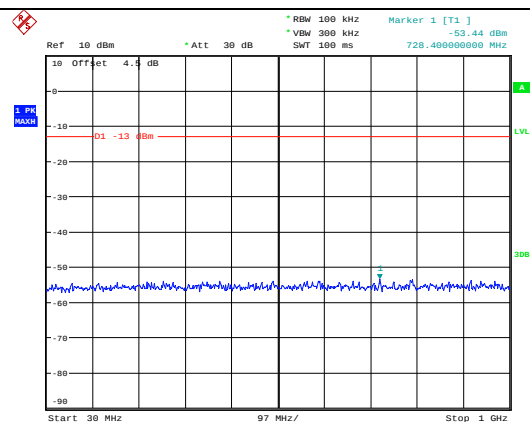
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Spurious Emissions at Antenna Terminal

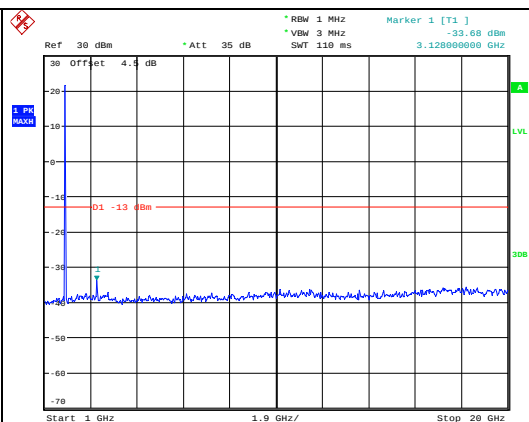
Channel

3MHz Bandwidth QPSK

Lowest

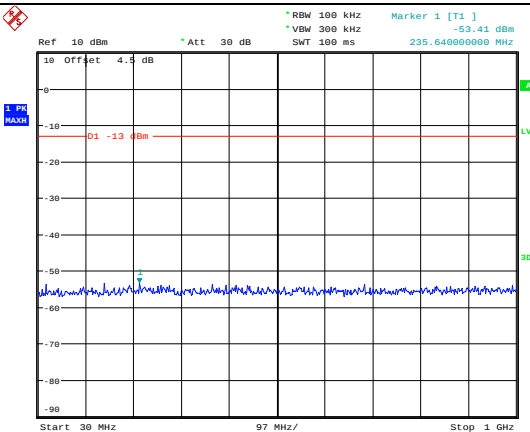


Date: 29.JUN.2022 16:42:48

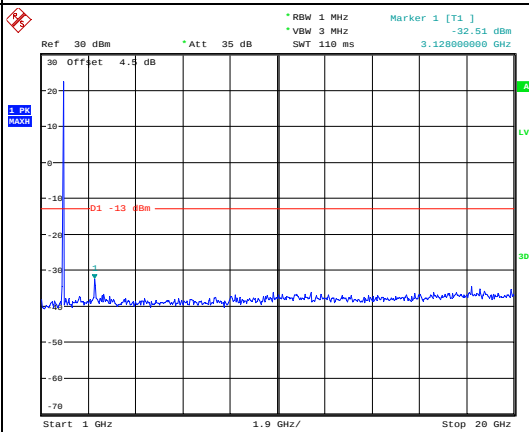


Date: 29.JUN.2022 16:43:01

Middle

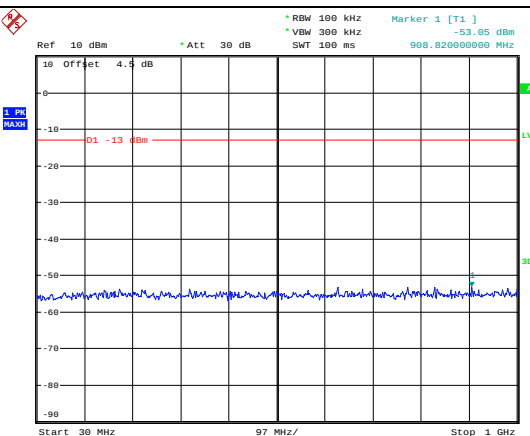


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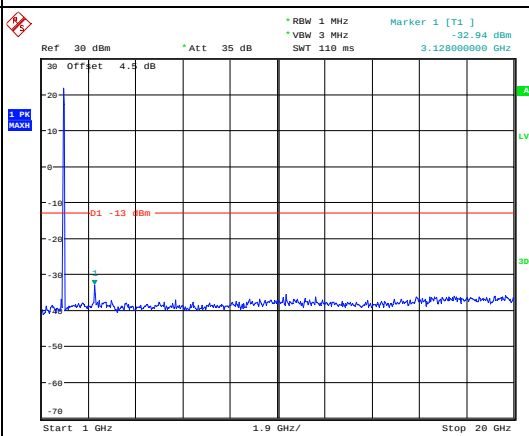


Date: 29.JUN.2022 16:43:30

Highest



Date: 29.JUN.2022 16:43:49



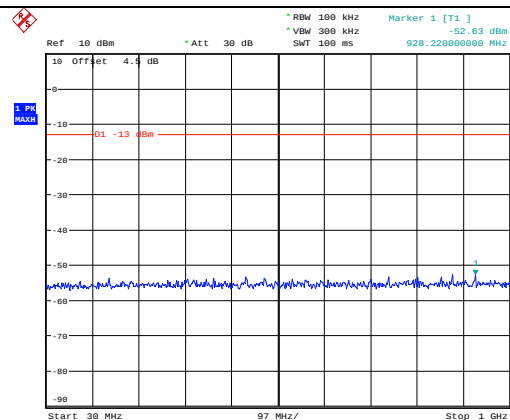
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Spurious Emissions at Antenna Terminal

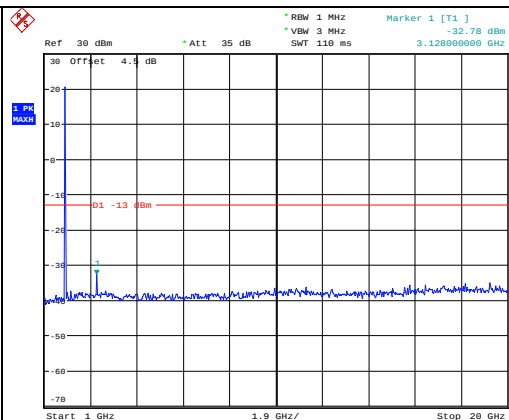
Channel

5MHz Bandwidth QPSK

Lowest

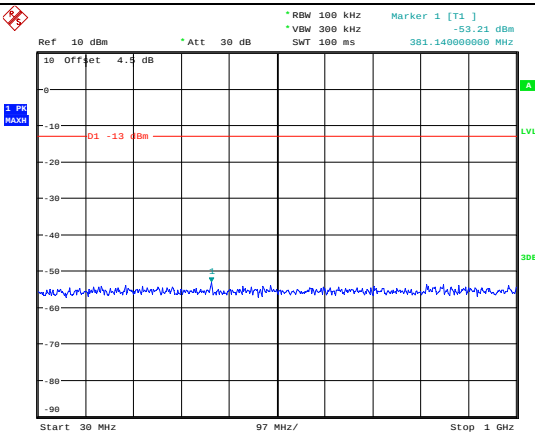


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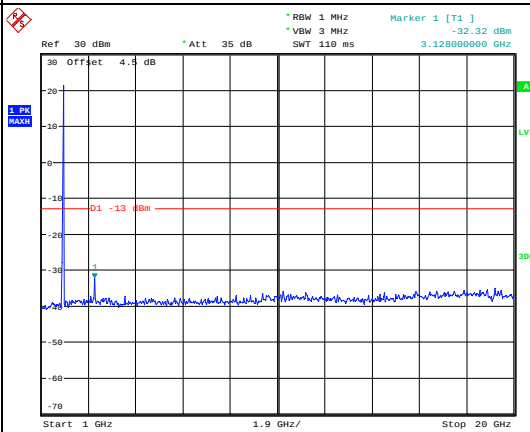


Date: 29.JUN.2022 16:44:34

Middle

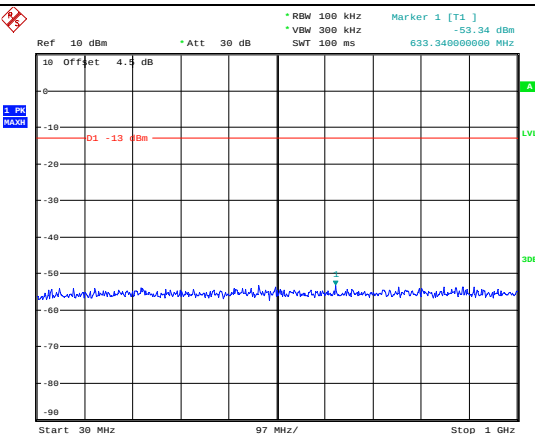


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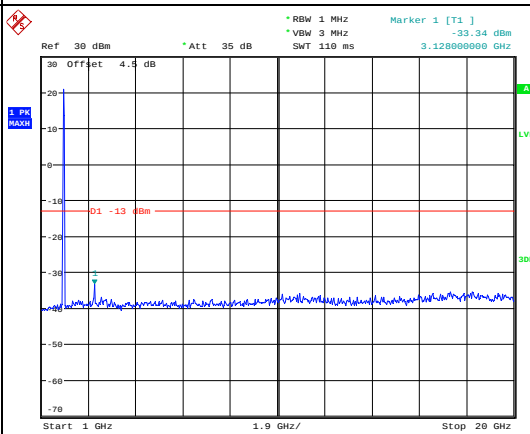


Date: 29.JUN.2022 16:45:03

Highest



Date: 29.JUN.2022 16:45:19



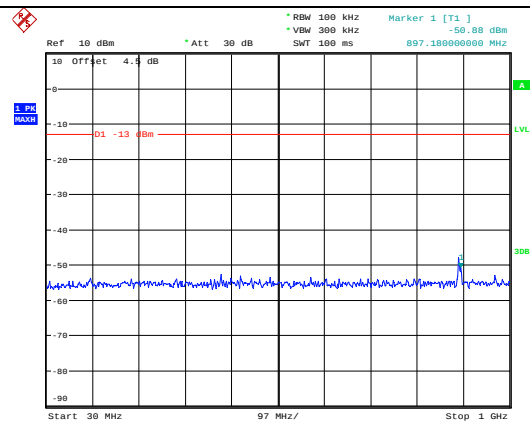
Date: 29.JUN.2022 16:45:32

Spurious Emissions at Antenna Terminal

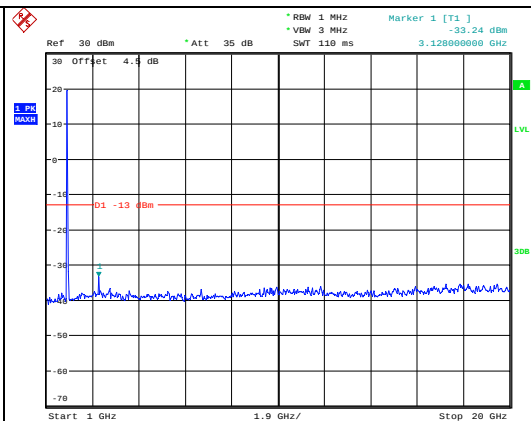
Channel

10MHz Bandwidth QPSK

Lowest

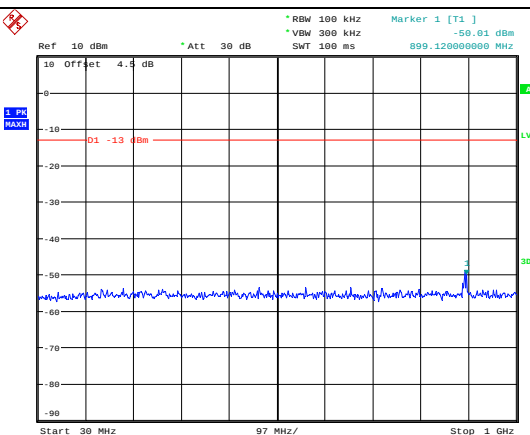


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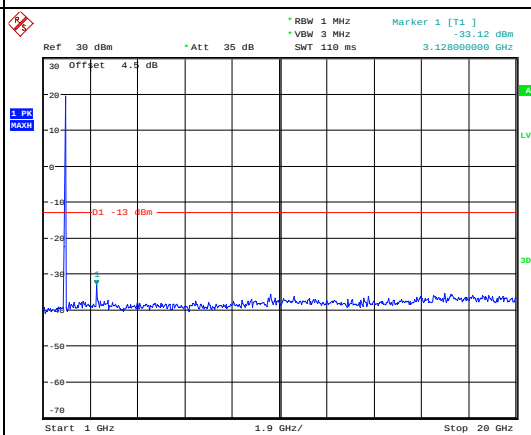


Date: 29.JUN.2022 16:46:08

Middle

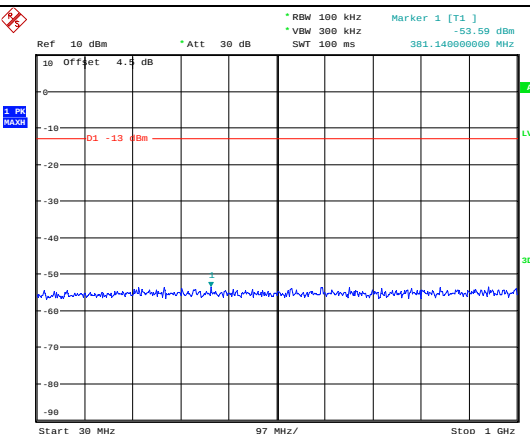


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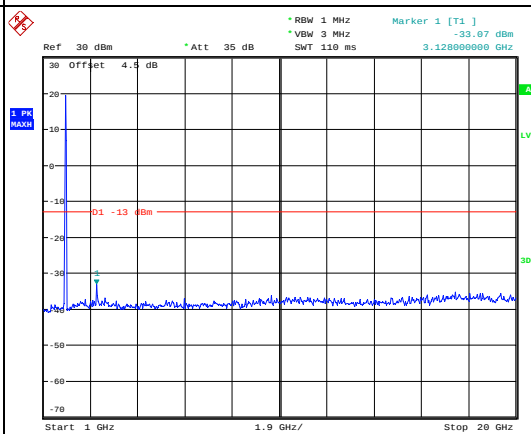


Date: 29.JUN.2022 16:46:38

Highest



Date: 29.JUN.2022 16:46:59



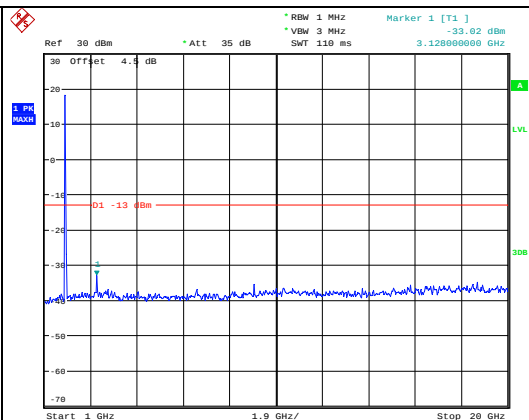
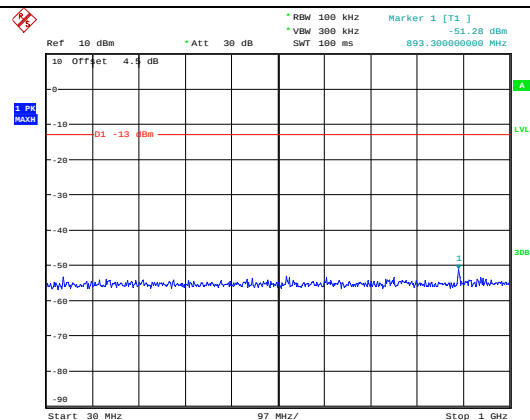
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Spurious Emissions at Antenna Terminal

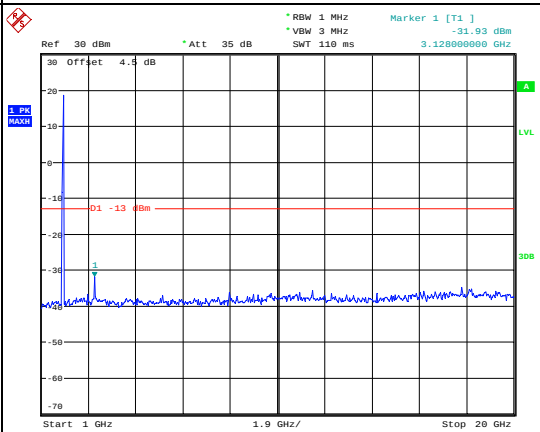
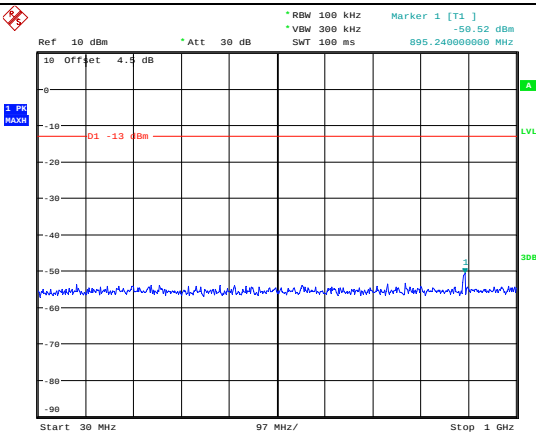
Channel

15MHz Bandwidth QPSK

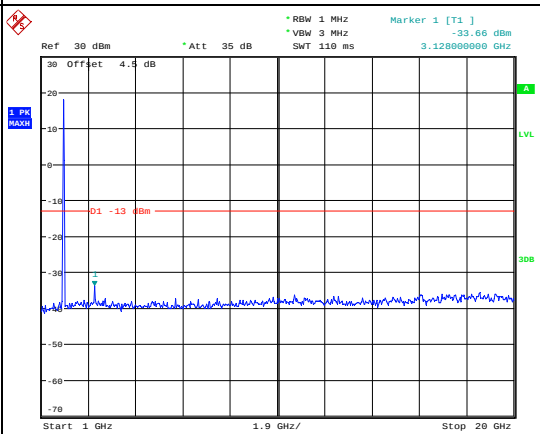
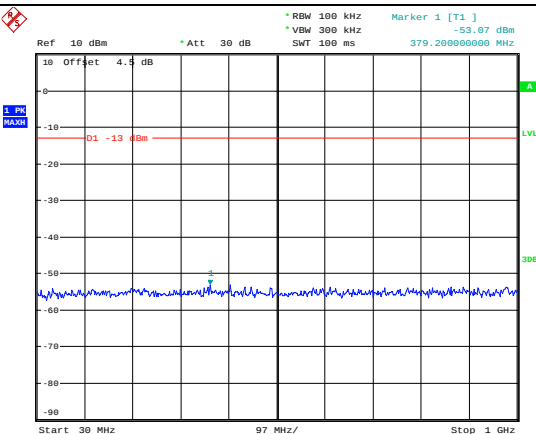
Lowest



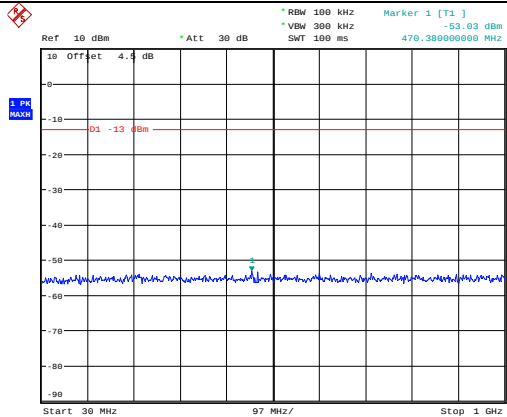
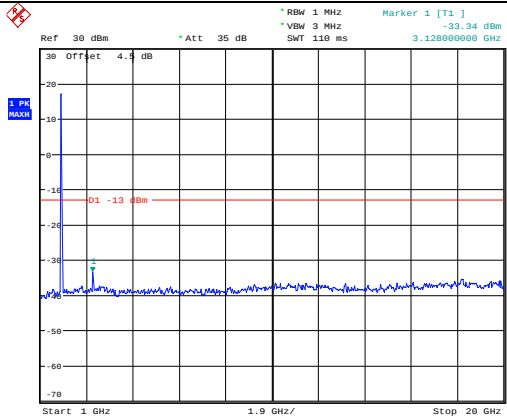
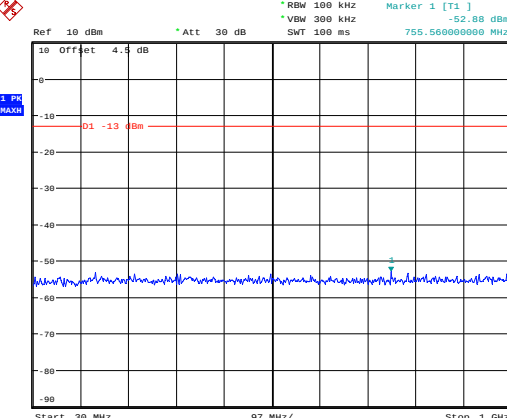
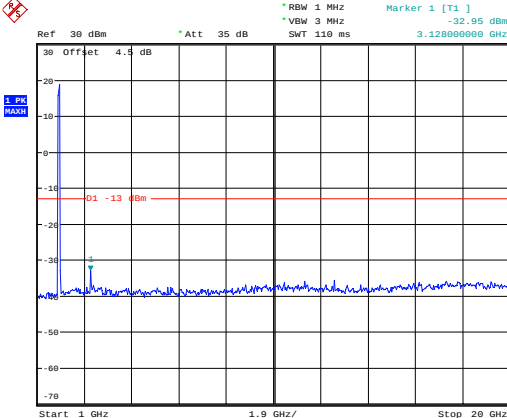
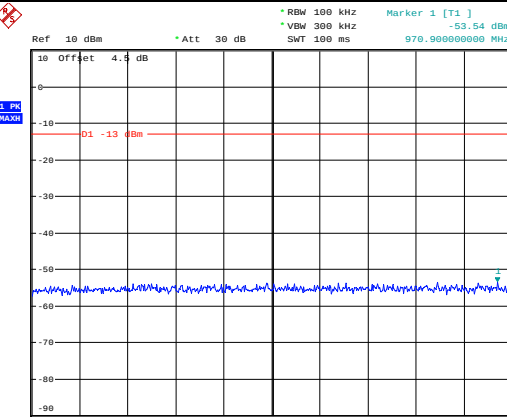
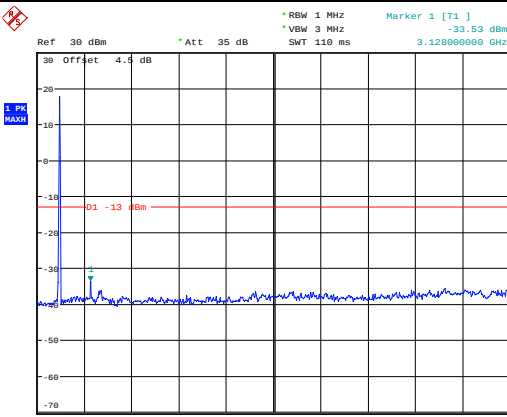
Middle



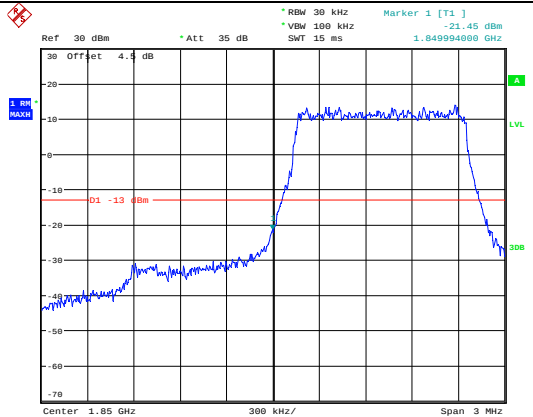
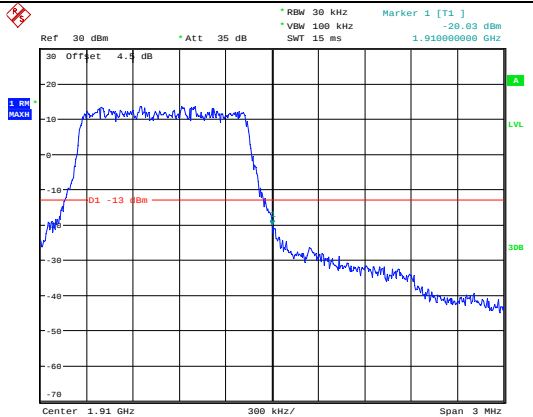
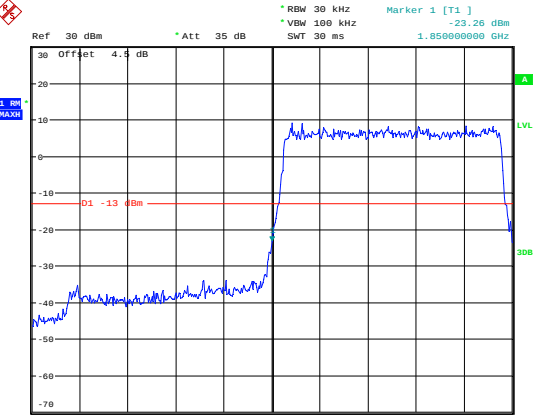
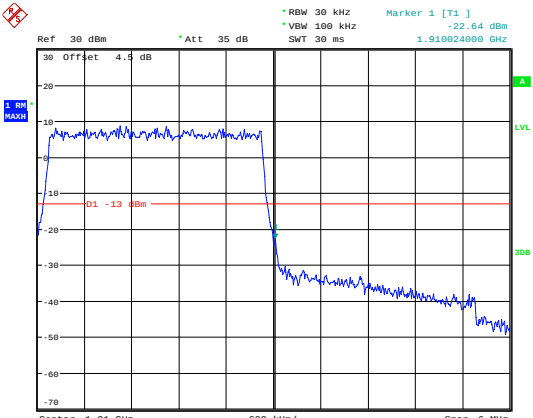
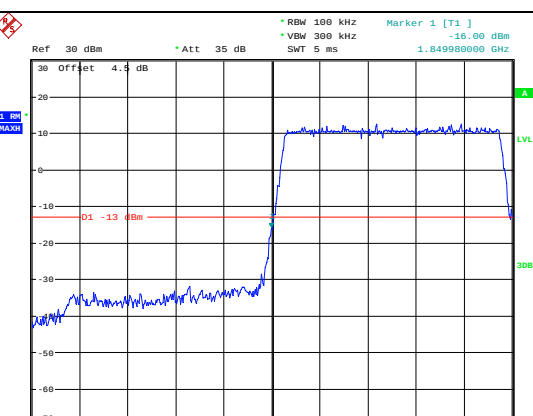
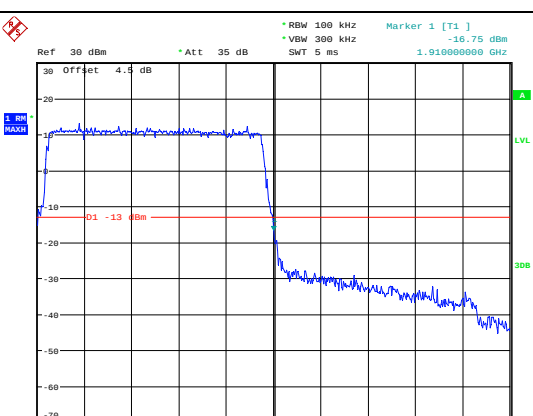
Highest



Spurious Emissions at Antenna Terminal

Channel	20MHz Bandwidth QPSK	
Lowest	 Ref 10 dBm * Att 30 dB RBW 100 kHz * VBW 300 kHz SWT 100 ms Marker 1 [T1] -53.83 dBm 470.38000000 MHz Start 30 MHz 97 MHz/ Stop 1 GHz Date: 29 JUN.2022 16:49:20	 Ref 30 dBm * Att 35 dB RBW 1 MHz * VBW 3 MHz SWT 110 ms Marker 1 [T1] -33.34 dBm 3.128000000 GHz Start 1 GHz 1.9 GHz/ Stop 20 GHz Date: 29 JUN.2022 16:49:33
	 Ref 10 dBm * Att 30 dB RBW 100 kHz * VBW 300 kHz SWT 100 ms Marker 1 [T1] -52.88 dBm 755.56000000 MHz Start 30 MHz 97 MHz/ Stop 1 GHz Date: 29 JUN.2022 16:49:56	 Ref 30 dBm * Att 35 dB RBW 1 MHz * VBW 3 MHz SWT 110 ms Marker 1 [T1] -32.95 dBm 3.128000000 GHz Start 1 GHz 1.9 GHz/ Stop 20 GHz Date: 29 JUN.2022 16:50:08
Highest	 Ref 10 dBm * Att 30 dB RBW 100 kHz * VBW 300 kHz SWT 100 ms Marker 1 [T1] -53.54 dBm 976.90000000 MHz Start 30 MHz 97 MHz/ Stop 1 GHz Date: 29 JUN.2022 16:50:31	 Ref 30 dBm * Att 35 dB RBW 1 MHz * VBW 3 MHz SWT 110 ms Marker 1 [T1] -33.53 dBm 3.128000000 GHz Start 1 GHz 1.9 GHz/ Stop 20 GHz Date: 29 JUN.2022 16:50:44

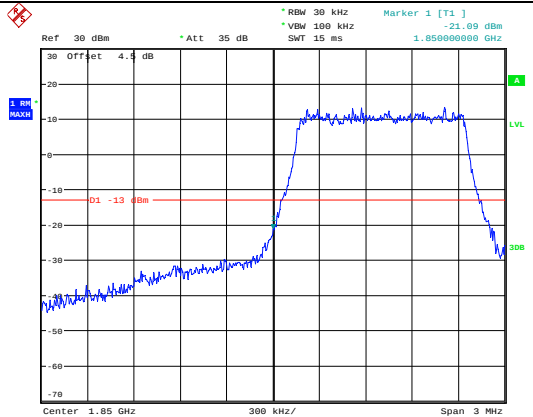
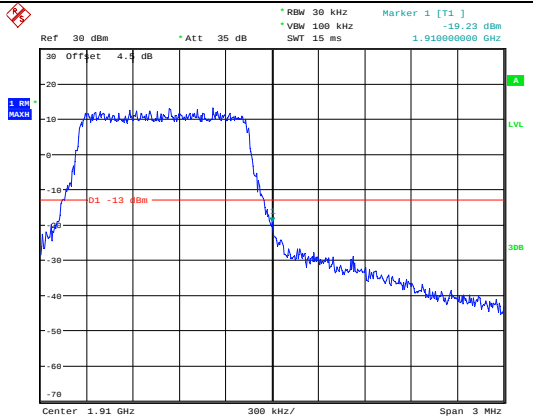
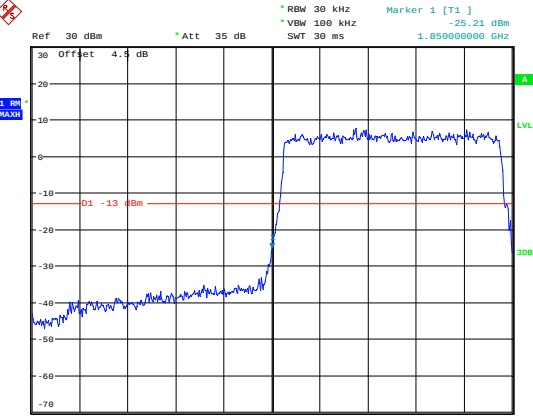
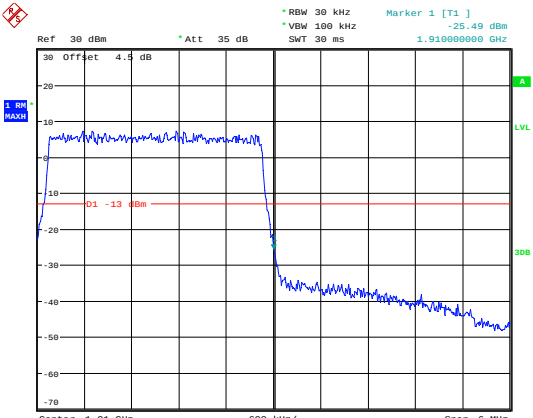
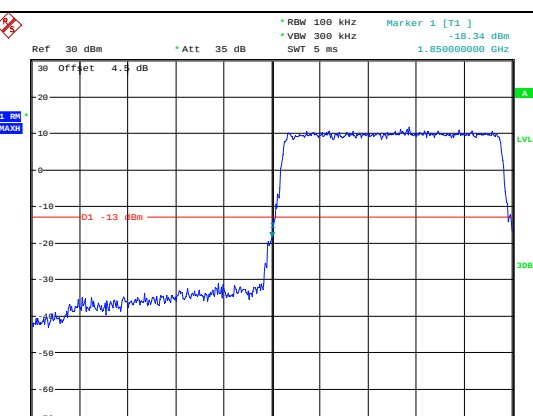
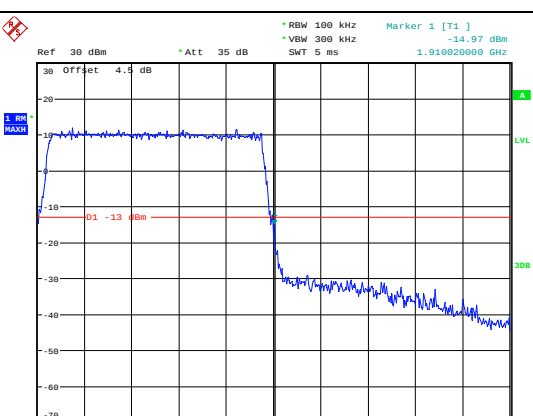
Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	 Date: 29.JUN.2022 19:13:40	 Date: 29.JUN.2022 19:14:19
QPSK 3MHz	 Date: 29.JUN.2022 19:14:58	 Date: 29.JUN.2022 19:15:34
QPSK 5MHz	 Date: 29.JUN.2022 19:16:13	 Date: 29.JUN.2022 19:16:49

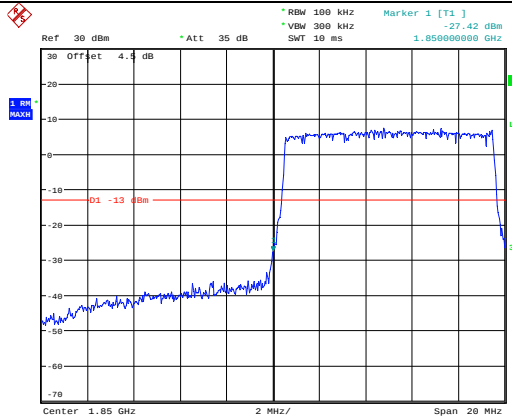
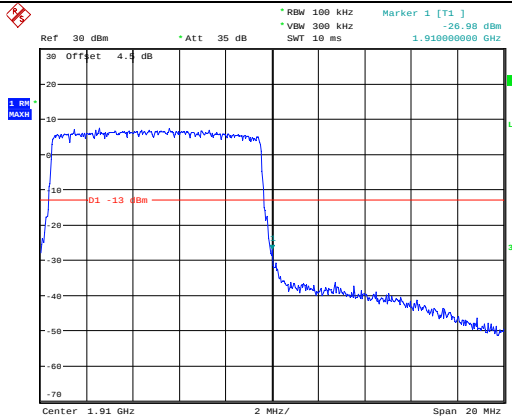
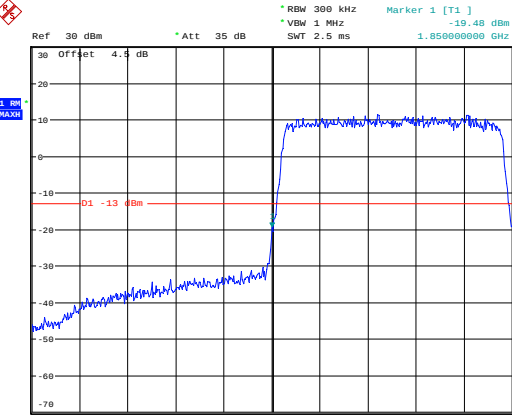
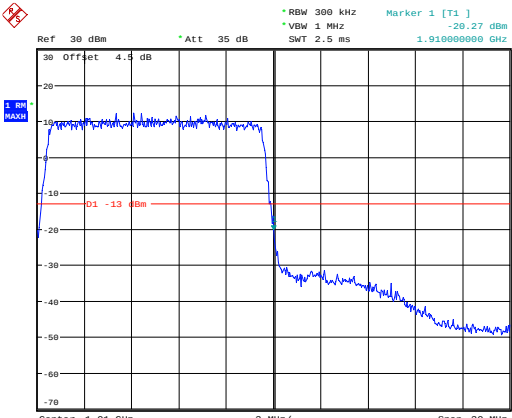
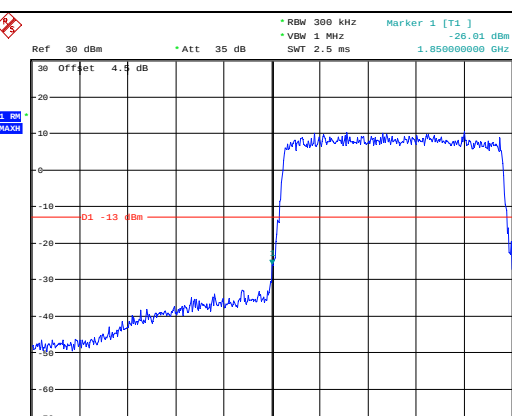
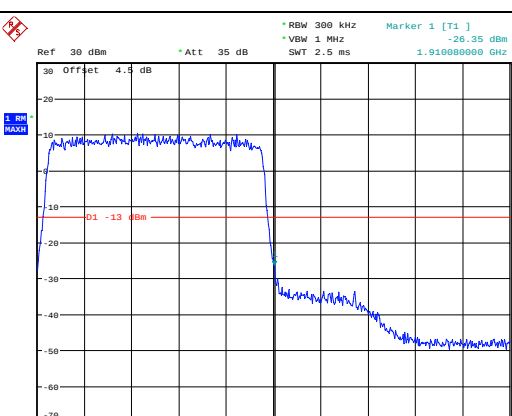
Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 300 kHz SWT 10 ms Marker 1 [T1] -25.70 dBm 1.849900000 GHz Center 1.85 GHz 2 MHz/ Span 20 MHz Date: 29.JUN.2022 19:17:28	Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 300 kHz SWT 10 ms Marker 1 [T1] -26.29 dBm 1.910040000 GHz Center 1.91 GHz 2 MHz/ Span 20 MHz Date: 29.JUN.2022 19:18:06
QPSK 15MHz	Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Marker 1 [T1] -24.43 dBm 1.849820000 GHz Center 1.85 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 19:18:49	Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Marker 1 [T1] -26.62 dBm 1.910000000 GHz Center 1.91 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 19:19:33
QPSK 20MHz	Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Marker 1 [T1] -29.24 dBm 1.850000000 GHz Center 1.85 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 19:20:18	Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Marker 1 [T1] -24.53 dBm 1.910000000 GHz Center 1.91 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 19:21:01

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 15 ms Marker 1 [T1] -21.09 dBm 1.85000000 GHz Center 1.85 GHz 300 kHz/ Span 3 MHz Date: 29 JUN.2022 19:13:59	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 15 ms Marker 1 [T1] -19.23 dBm 1.91000000 GHz Center 1.91 GHz 300 kHz/ Span 3 MHz Date: 29 JUN.2022 19:14:38
16QAM 3MHz	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -25.21 dBm 1.85000000 GHz Center 1.85 GHz 600 kHz/ Span 6 MHz Date: 29 JUN.2022 19:15:14	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -25.49 dBm 1.91000000 GHz Center 1.91 GHz 600 kHz/ Span 6 MHz Date: 29 JUN.2022 19:15:53
16QAM 5MHz	 Ref 30 dBm * Att 35 dB RBW 100 kHz VBW 300 kHz SWT 5 ms Marker 1 [T1] -18.34 dBm 1.85000000 GHz Center 1.85 GHz 1 MHz/ Span 10 MHz Date: 29 JUN.2022 19:16:29	 Ref 30 dBm * Att 35 dB RBW 100 kHz VBW 300 kHz SWT 5 ms Marker 1 [T1] -14.97 dBm 1.91000000 GHz Center 1.91 GHz 1 MHz/ Span 10 MHz Date: 29 JUN.2022 19:17:08

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	 Ref 30 dBm * Att 35 dB RBW 300 kHz Marker 1 [T1] -27.42 dBm VBW 300 kHz SWT 10 ms Center 1.85 GHz 2 MHz/ Span 20 MHz Date: 29.JUN.2022 19:17:45	 Ref 30 dBm * Att 35 dB RBW 300 kHz Marker 1 [T1] -26.98 dBm VBW 300 kHz SWT 10 ms Center 1.91 GHz 2 MHz/ Span 20 MHz Date: 29.JUN.2022 19:18:26
16QAM 15MHz	 Ref 30 dBm * Att 35 dB RBW 300 kHz Marker 1 [T1] -19.48 dBm VBW 1 MHz SWT 2.5 ms Center 1.85 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 19:19:12	 Ref 30 dBm * Att 35 dB RBW 300 kHz Marker 1 [T1] -20.27 dBm VBW 1 MHz SWT 2.5 ms Center 1.91 GHz 3 MHz/ Span 30 MHz Date: 29.JUN.2022 19:19:55
16QAM 20MHz	 Ref 30 dBm * Att 35 dB RBW 300 kHz Marker 1 [T1] -26.01 dBm VBW 1 MHz SWT 2.5 ms Center 1.85 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 19:20:38	 Ref 30 dBm * Att 35 dB RBW 300 kHz Marker 1 [T1] -26.35 dBm VBW 1 MHz SWT 2.5 ms Center 1.91 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 19:21:21

4.9 Antenna Port Test Data and Results for Module A LTE Band 4

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/1-2022/7/15
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.1	Relative Humidity: (%)	60	ATM Pressure: (kPa)	100.1
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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	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A

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

EUT Information@ LTE Band 4▲:

Antenna Gain G_T (dBi):	-1.61	Path Loss L_C (dB):	0
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	1710.7	1732.5	1754.3
3MHz	1711.5	1732.5	1753.5
5MHz	1712.5	1732.5	1752.5
10MHz	1715	1732.5	1750
15MHz	1717.5	1732.5	1747.5
20MHz	1720	1732.5	1745

Test Data:**FCC§2.1046;§ 27.50(d)(4)****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	22.79	21.97	21.68	21.18	30
	RB1#3	22.59	21.89	21.57		
	RB1#5	22.51	21.84	21.49		
	RB3#0	22.46	21.76	21.46		
	RB3#3	22.47	21.79	21.44		
	RB6#0	21.87	21.78	21.46		
1.4MHz 16QAM	RB1#0	21.55	20.89	20.74	20.06	30
	RB1#3	21.67	21.05	20.76		
	RB1#5	21.67	20.99	20.74		
	RB3#0	21.50	20.89	20.69		
	RB3#3	21.41	20.89	20.69		
	RB6#0	20.47	20.88	20.60		
3MHz QPSK	RB1#0	22.68	21.98	21.80	21.07	30
	RB1#8	22.57	21.95	21.68		
	RB1#14	22.40	21.85	21.52		
	RB6#0	21.56	21.82	21.60		
	RB6#9	21.52	21.37	21.33		
	RB15#0	21.54	21.35	21.41		
3MHz 16QAM	RB1#0	21.42	20.95	20.75	19.84	30
	RB1#8	21.44	21.09	20.86		
	RB1#14	21.45	21.06	20.63		
	RB6#0	20.44	20.92	20.72		
	RB6#9	20.63	20.43	20.34		
	RB15#0	20.67	20.45	20.38		
5MHz QPSK	RB1#0	22.60	21.86	21.83	20.99	30
	RB1#13	22.60	21.99	21.73		
	RB1#24	22.38	21.89	21.48		
	RB15#0	21.73	21.67	21.68		
	RB15#10	21.64	21.37	21.47		
	RB25#0	21.61	21.33	21.51		
5MHz 16QAM	RB1#0	21.52	20.92	20.91	20.03	30
	RB1#13	21.64	21.09	20.92		
	RB1#24	21.44	21.15	20.75		
	RB15#0	20.66	20.69	20.81		
	RB15#10	20.58	20.33	20.53		
	RB25#0	20.61	20.38	20.56		
10MHz QPSK	RB1#0	21.85	21.01	21.32	20.85	30

	RB1#25	22.46	22.00	21.93		
	RB1#49	21.24	21.34	20.76		
	RB25#0	21.90	21.54	21.68		
	RB25#25	21.53	21.47	21.43		
	RB50#0	21.59	21.31	21.53		
10MHz 16QAM	RB1#0	20.78	19.98	20.35	20.09	30
	RB1#25	21.70	21.29	21.10		
	RB1#49	20.42	20.56	19.95		
	RB25#0	20.82	20.61	20.77		
	RB25#25	20.58	20.35	20.51		
	RB50#0	20.63	20.39	20.64		
15MHz QPSK	RB1#0	21.76	20.91	21.24	20.65	30
	RB1#38	22.26	21.92	21.98		
	RB1#74	20.82	21.10	20.63		
	RB36#0	21.69	21.43	21.67		
	RB36#39	21.49	21.57	21.43		
	RB75#0	21.48	21.34	21.57		
15MHz 16QAM	RB1#0	20.68	19.89	20.27	19.79	30
	RB1#38	21.40	21.10	21.19		
	RB1#74	20.07	20.29	19.86		
	RB36#0	20.75	20.52	20.71		
	RB36#39	20.57	20.41	20.54		
	RB75#0	20.55	20.42	20.68		
20MHz QPSK	RB1#0	21.48	20.68	20.89	20.48	30
	RB1#50	22.09	21.89	22.02		
	RB1#99	20.56	21.02	20.41		
	RB50#0	21.71	21.36	21.68		
	RB50#50	21.46	21.61	21.43		
	RB100#0	21.53	21.35	21.53		
20MHz 16QAM	RB1#0	20.47	19.66	20.14	19.64	30
	RB1#50	21.15	20.97	21.25		
	RB1#99	19.55	20.18	19.71		
	RB50#0	20.74	20.43	20.74		
	RB50#50	20.52	20.65	20.53		
	RB100#0	20.70	20.45	20.64		
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	4.72	4.61	4.67	13
	RB100#0	4.84	4.90	4.61	13
20MHz 16QAM	RB1#0	5.77	5.54	5.80	13
	RB100#0	5.88	5.94	5.74	13
Result:					Pass

FCC §2.1049, §27.53:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.096	1.102	1.314	1.332	1.338
1.4MHz 16QAM	1.102	1.102	1.102	1.308	1.320	1.338
3MHz QPSK	2.695	2.695	2.695	2.964	2.976	2.964
3MHz 16QAM	2.695	2.683	2.695	2.964	2.940	2.988
5MHz QPSK	4.511	4.511	4.531	5.020	5.020	5.020
5MHz 16QAM	4.511	4.511	4.551	5.020	5.040	5.060
10MHz QPSK	8.942	8.942	8.942	9.720	9.720	9.760
10MHz 16QAM	8.942	8.942	8.942	9.800	9.800	9.720
15MHz QPSK	13.473	13.473	13.473	14.820	14.820	14.880
15MHz 16QAM	13.473	13.413	13.473	14.820	14.760	14.880
20MHz QPSK	17.884	17.884	17.964	19.440	19.360	19.520
20MHz 16QAM	17.964	17.884	17.964	19.520	19.520	19.440
Note: The test plots please refer to the Plots of Occupied Bandwidth						

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

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

FCC §2.1055, §27.54: Frequency Stability						
Test Mode:	20M 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	1710.546	1710.00	1754.459	1755
	-20	3.85	1710.548	1710.00	1754.463	1755
	-10	3.85	1710.548	1710.00	1754.458	1755
	0	3.85	1710.545	1710.00	1754.462	1755
	10	3.85	1710.547	1710.00	1754.458	1755
	20	3.85	1710.543	1710.00	1754.457	1755
	30	3.85	1710.542	1710.00	1754.452	1755
	40	3.85	1710.543	1710.00	1754.453	1755
	50	3.85	1710.540	1710.00	1754.454	1755
Frequency Stability vs. Voltage	20	3.5	1710.538	1710.00	1754.457	1755
	20	4.4	1710.539	1710.00	1754.451	1755
Result:					Pass	

Test Mode:	20M 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	1710.544	1710.00	1754.489	1755
	-20	3.85	1710.543	1710.00	1754.488	1755
	-10	3.85	1710.546	1710.00	1754.492	1755
	0	3.85	1710.544	1710.00	1754.486	1755
	10	3.85	1710.549	1710.00	1754.491	1755
	20	3.85	1710.543	1710.00	1754.486	1755
	30	3.85	1710.540	1710.00	1754.481	1755
	40	3.85	1710.541	1710.00	1754.486	1755
	50	3.85	1710.543	1710.00	1754.485	1755
Frequency Stability vs. Voltage	20	3.5	1710.539	1710.00	1754.484	1755
	20	4.4	1710.536	1710.00	1754.482	1755
Result:					Pass	

Test Plots:

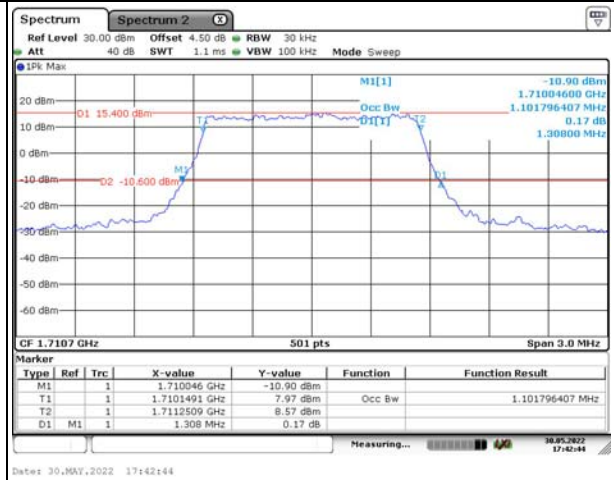
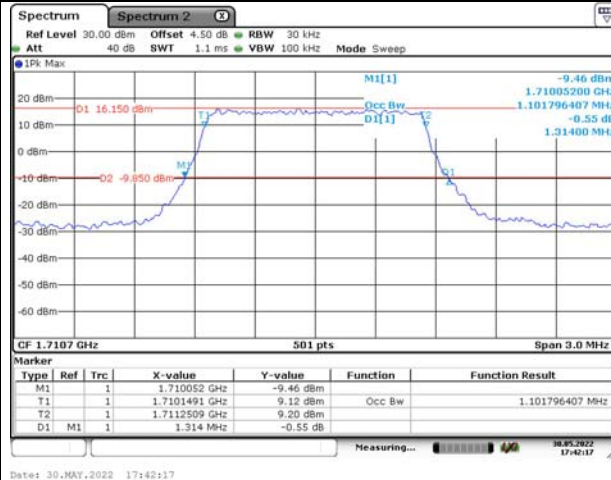
Occupied Bandwidth

Channel

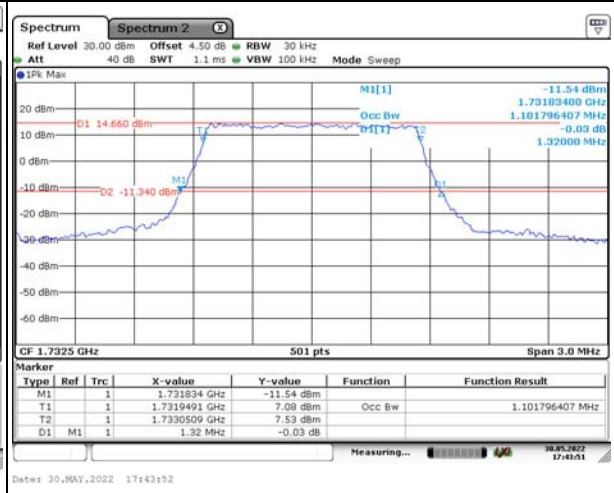
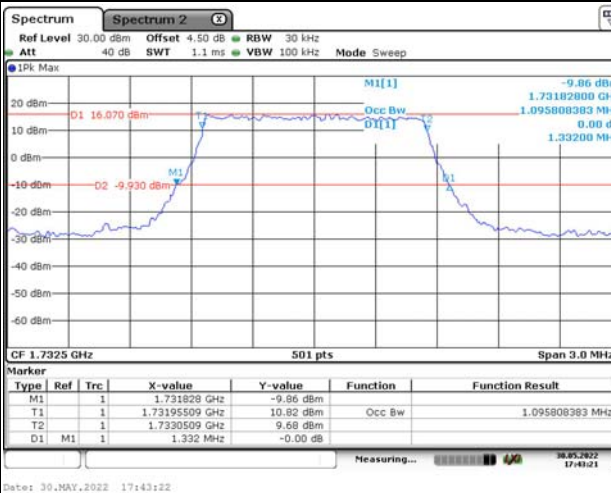
1.4MHz Bandwidth QPSK

1.4MHz Bandwidth 16QAM

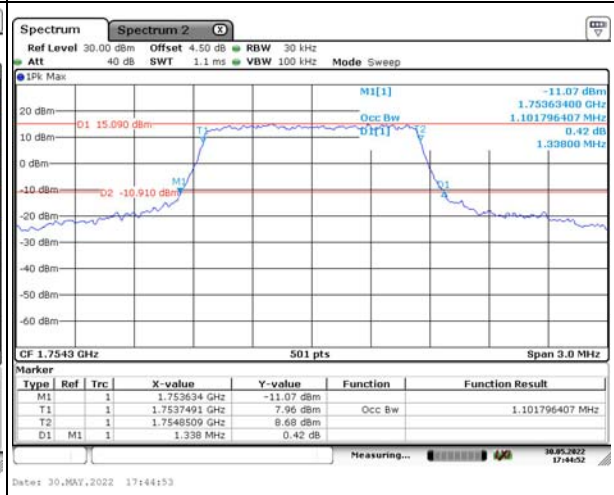
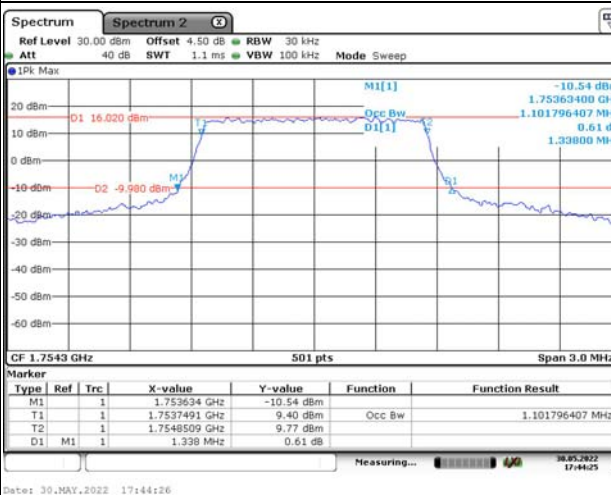
Lowest



Middle



Highest



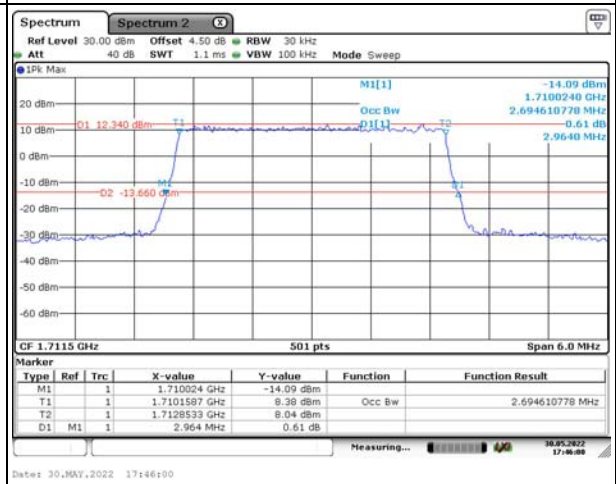
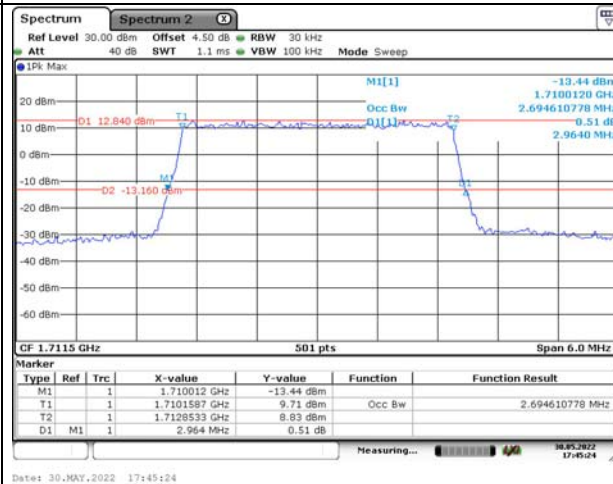
Occupied Bandwidth

Channel

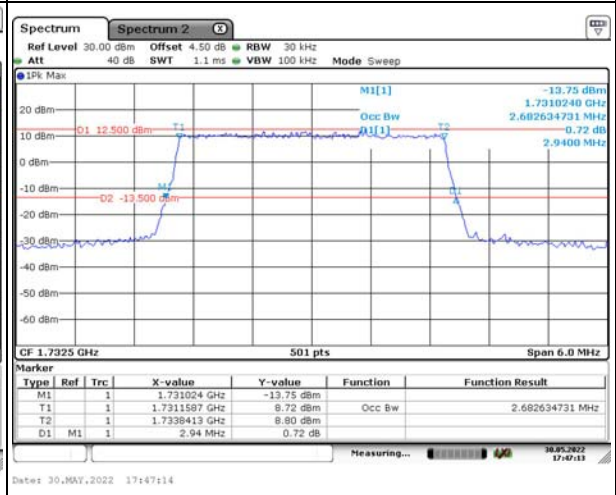
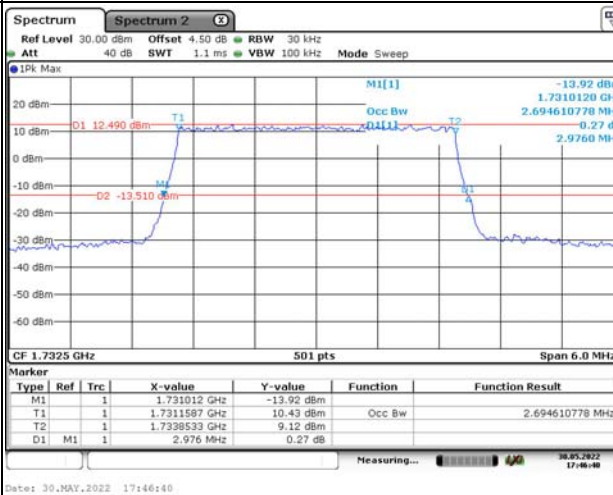
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

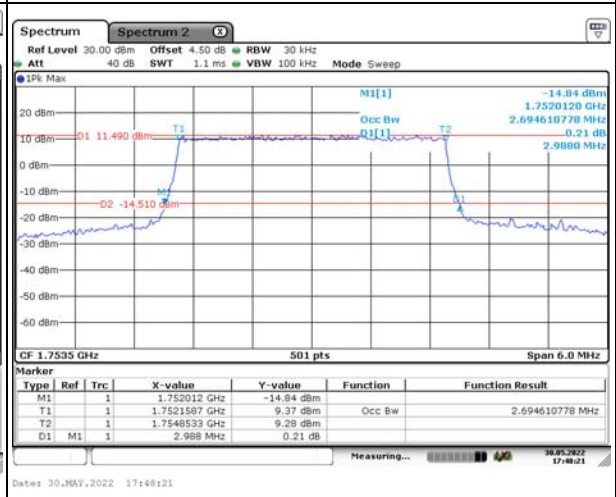
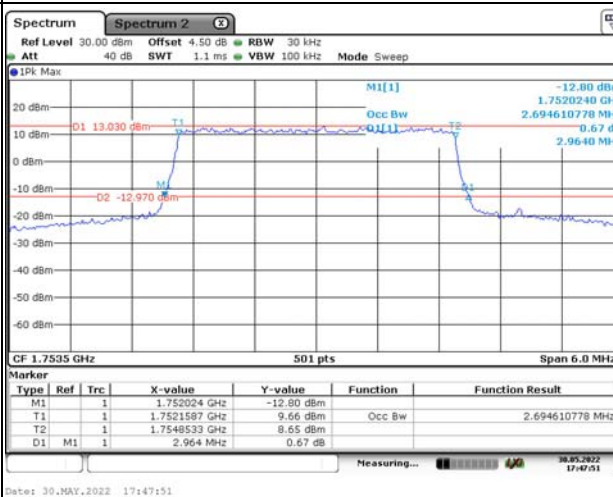
Lowest



Middle



Highest



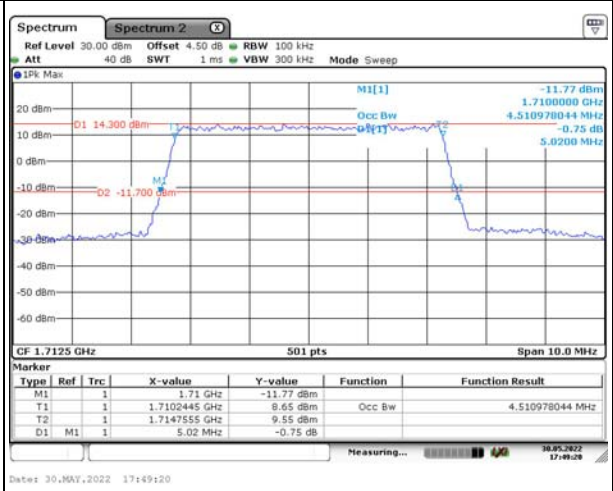
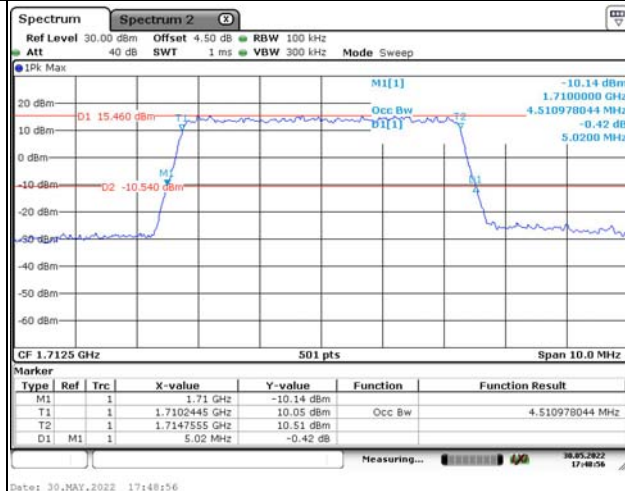
Occupied Bandwidth

Channel

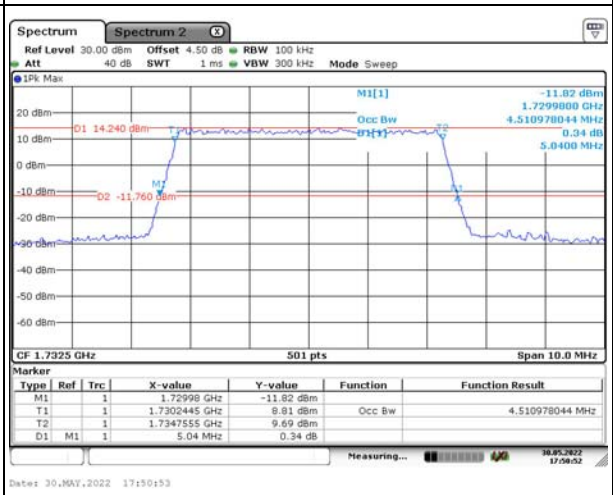
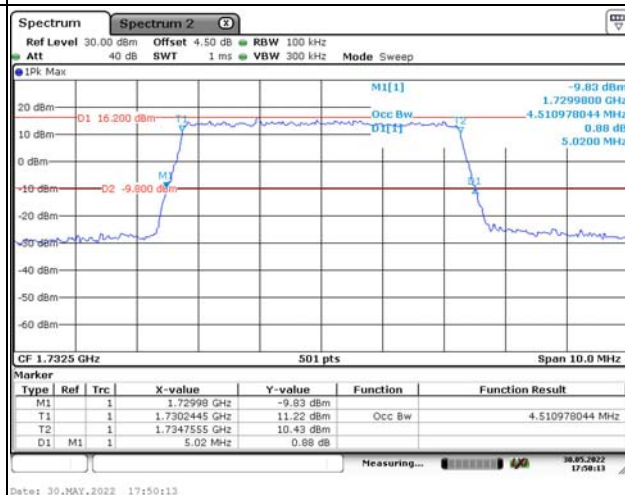
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

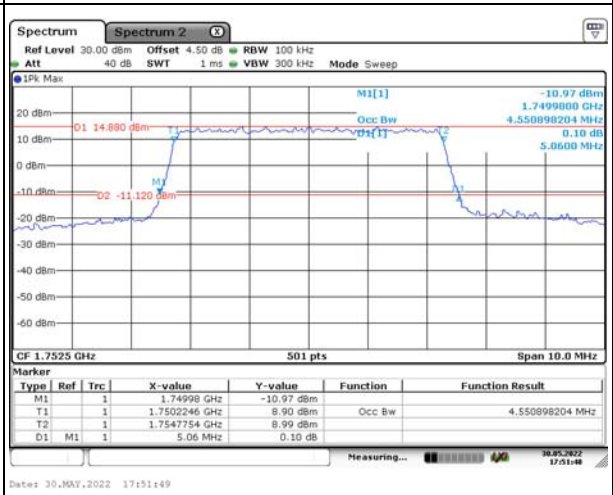
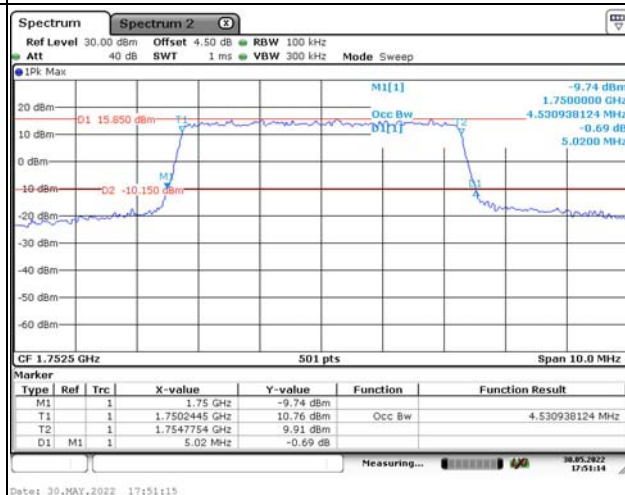
Lowest



Middle



Highest



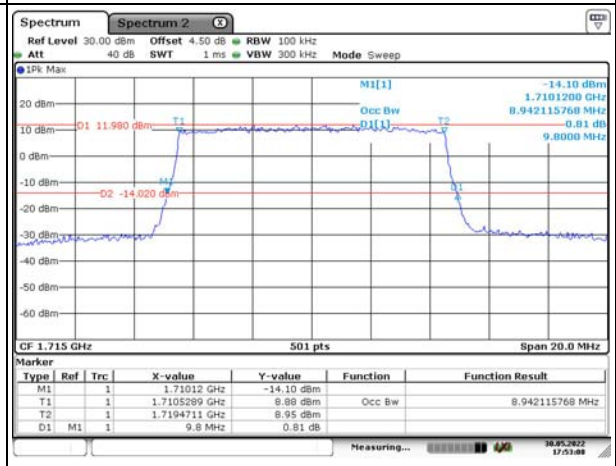
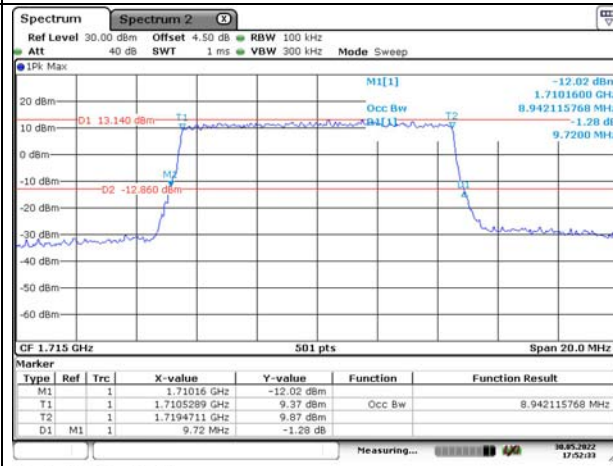
Occupied Bandwidth

Channel

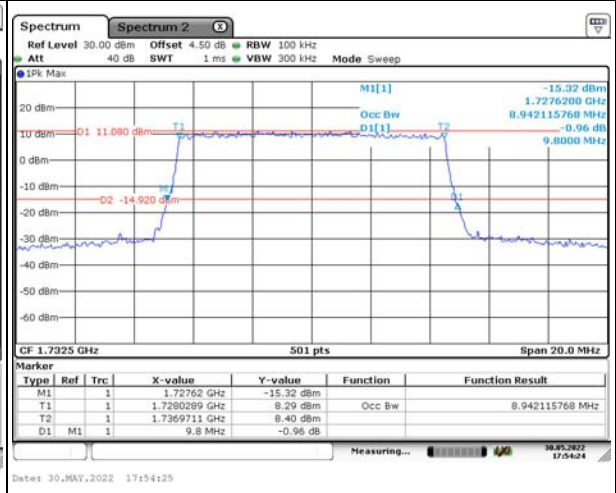
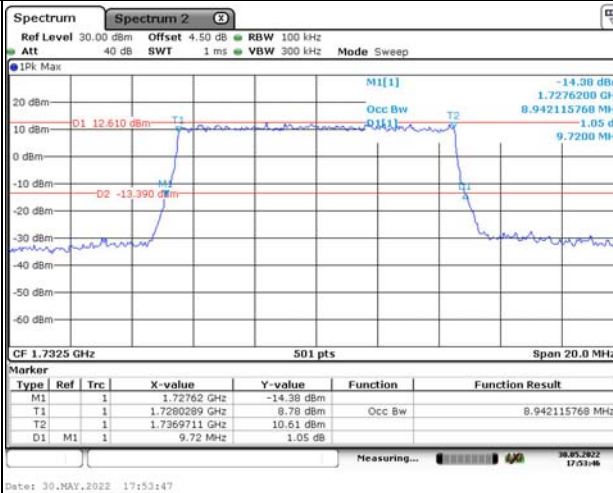
10MHz Bandwidth QPSK

10MHz Bandwidth 16QAM

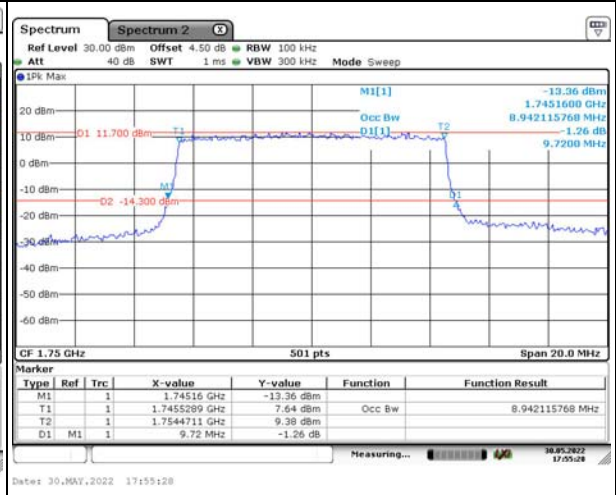
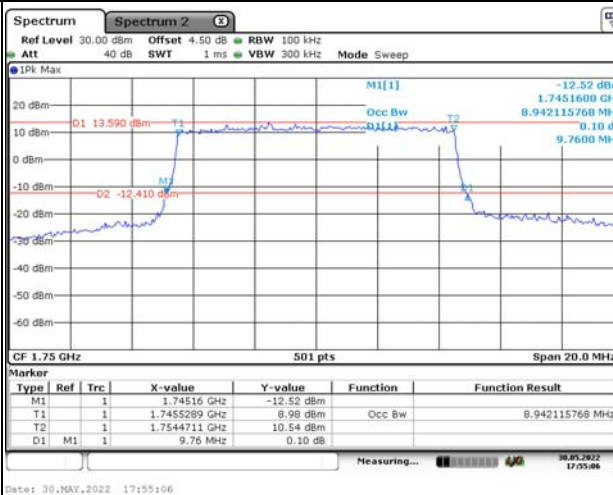
Lowest



Middle



Highest



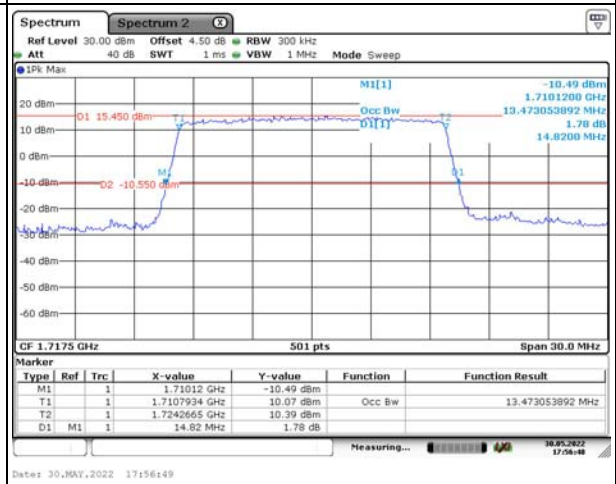
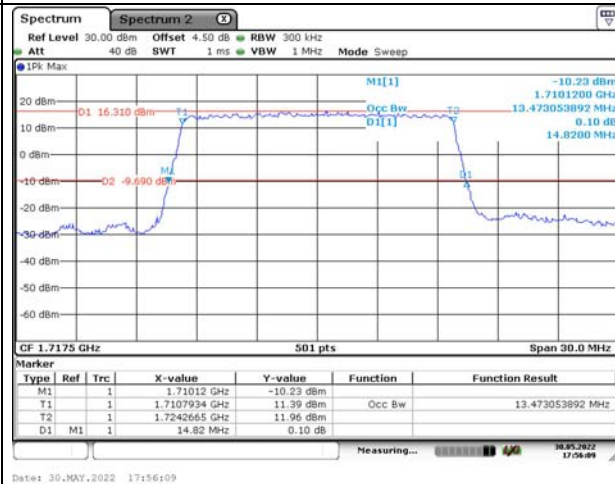
Occupied Bandwidth

Channel

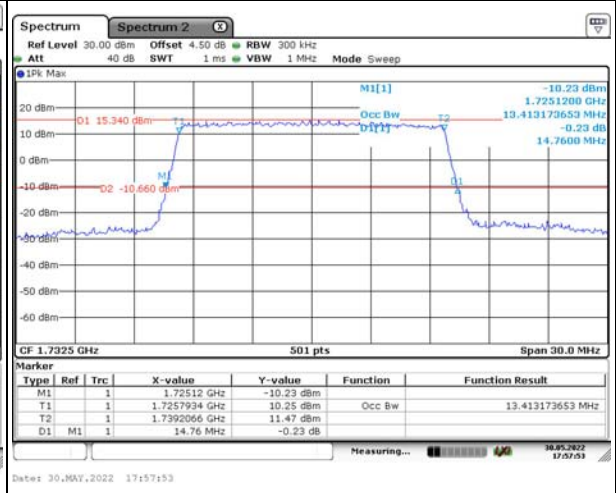
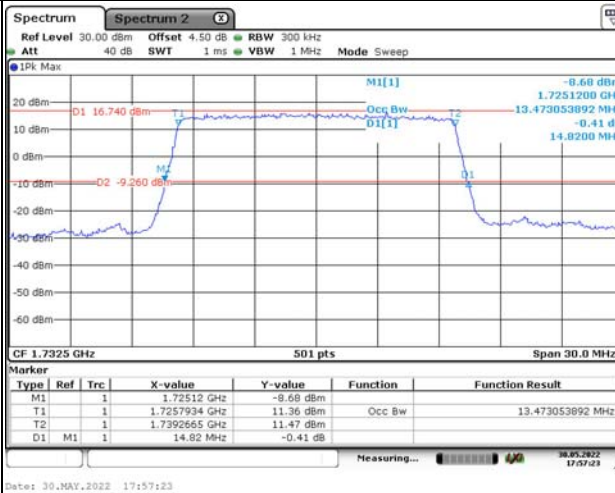
15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

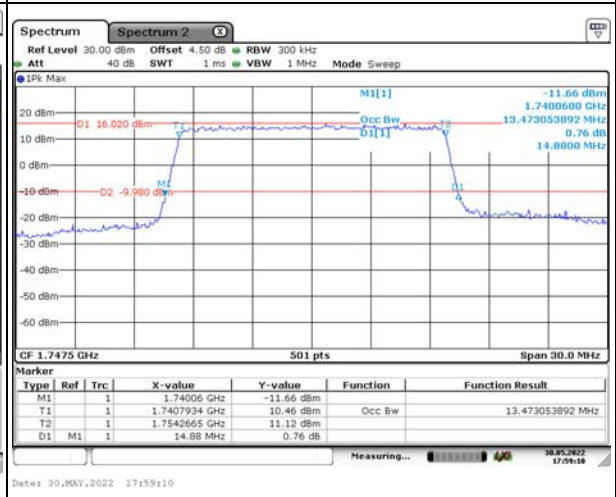
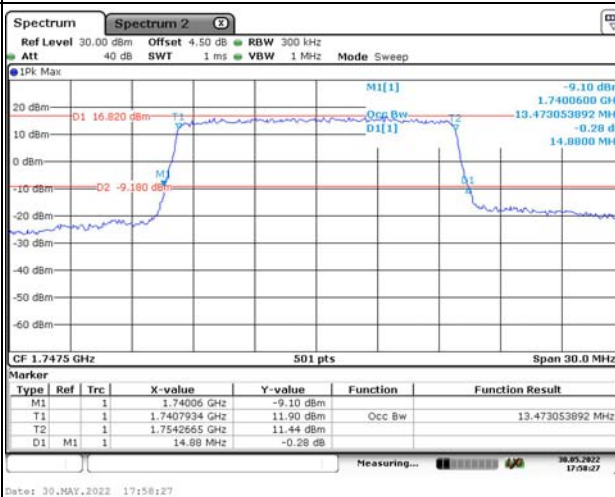
Lowest



Middle



Highest



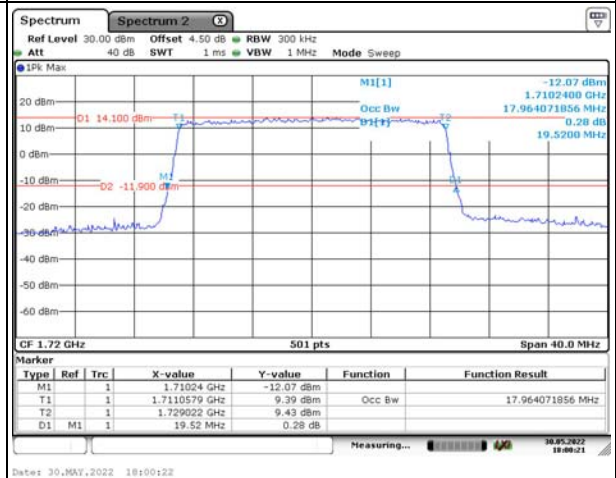
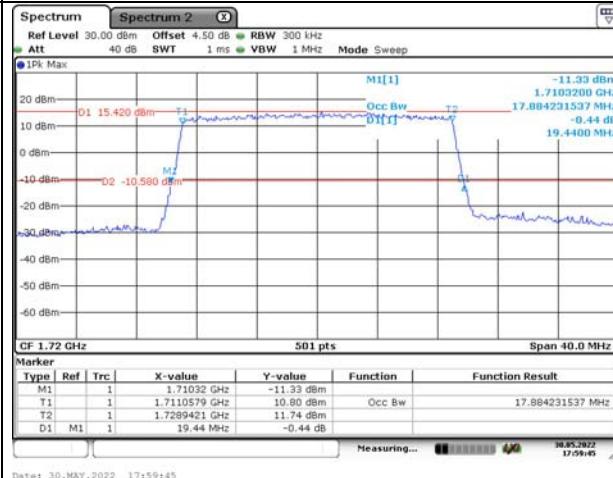
Occupied Bandwidth

Channel

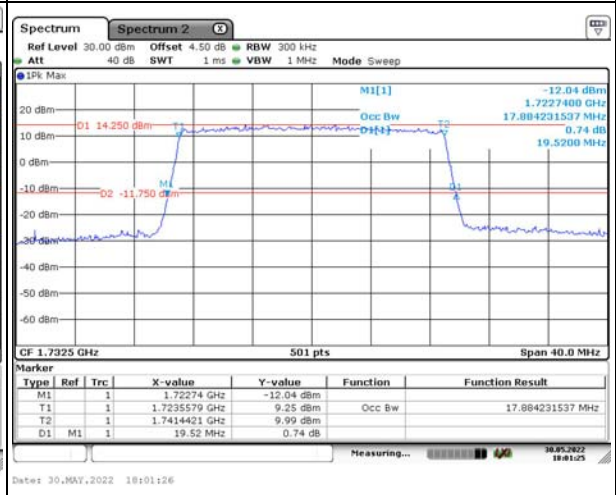
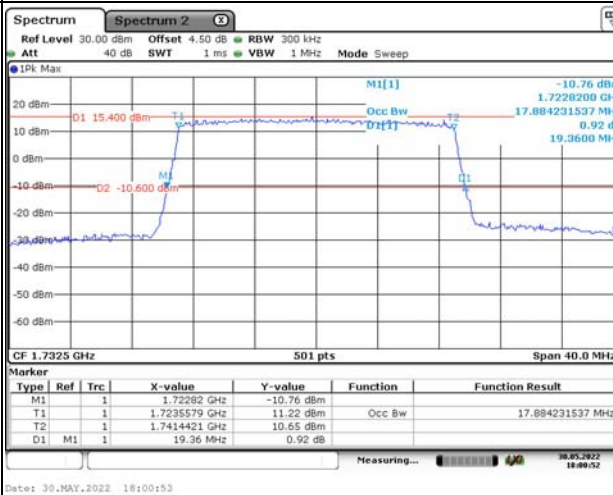
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

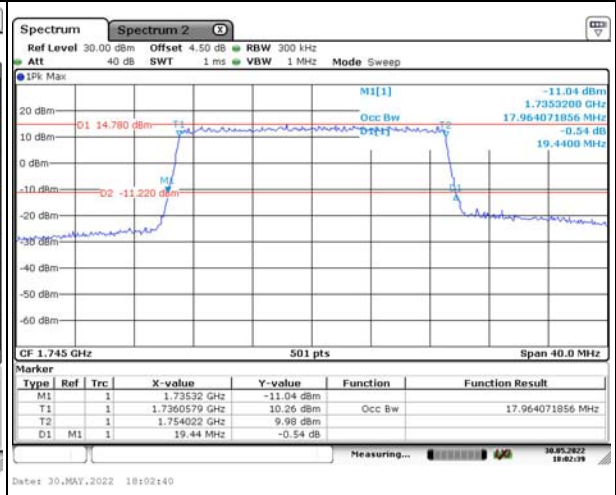
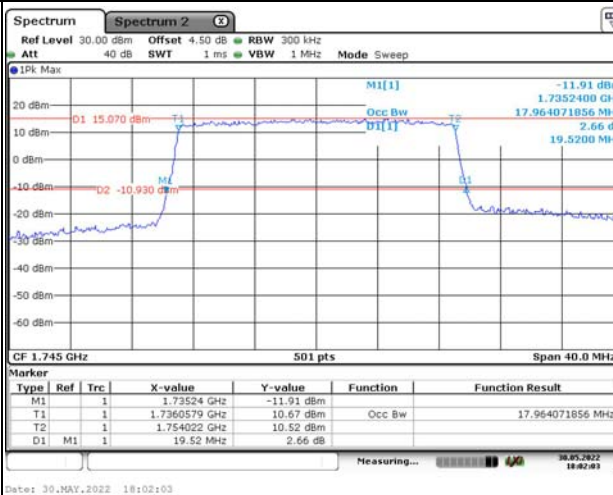
Lowest



Middle



Highest

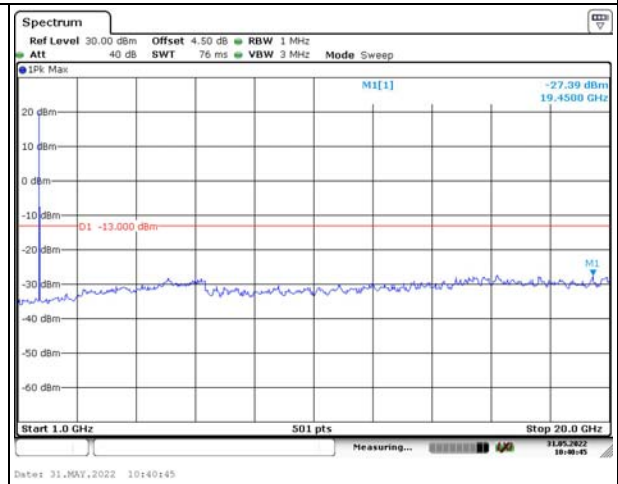
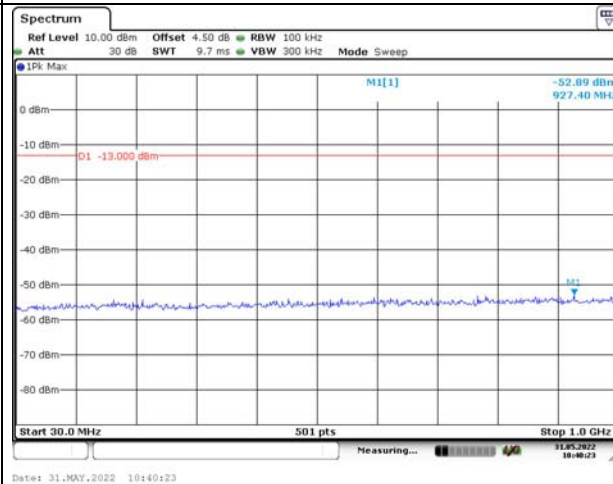


Spurious Emissions at Antenna Terminal

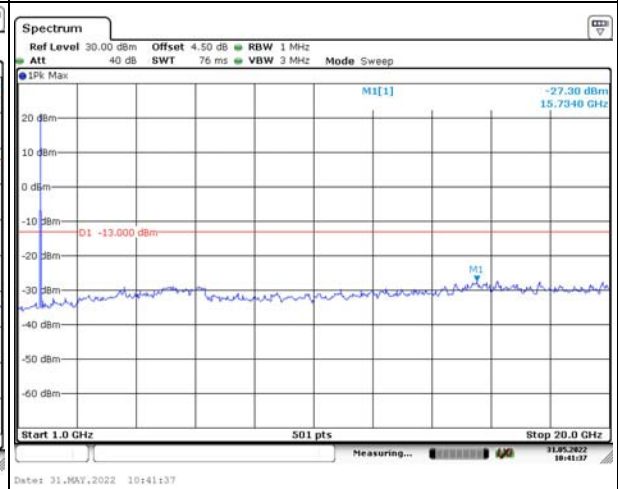
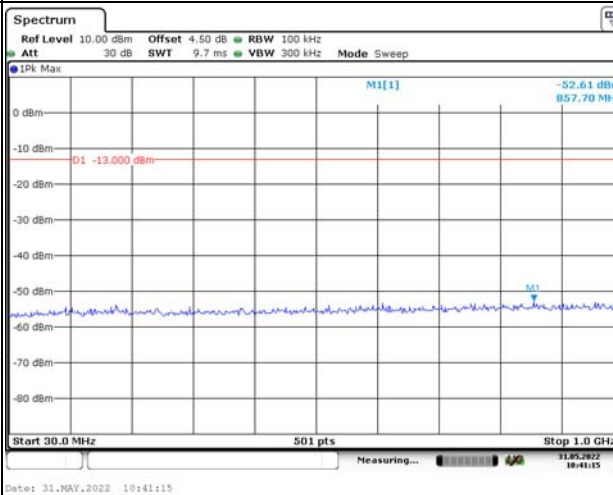
Channel

1.4MHz Bandwidth QPSK

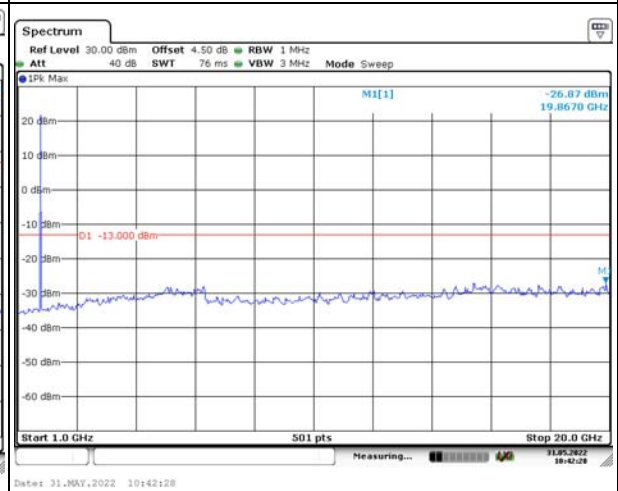
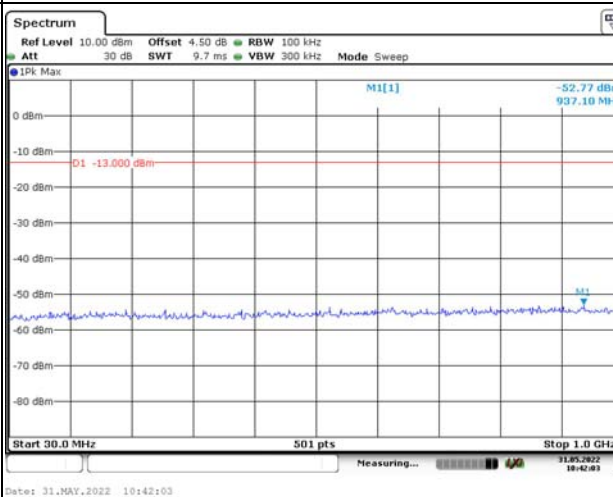
Lowest



Middle



Highest

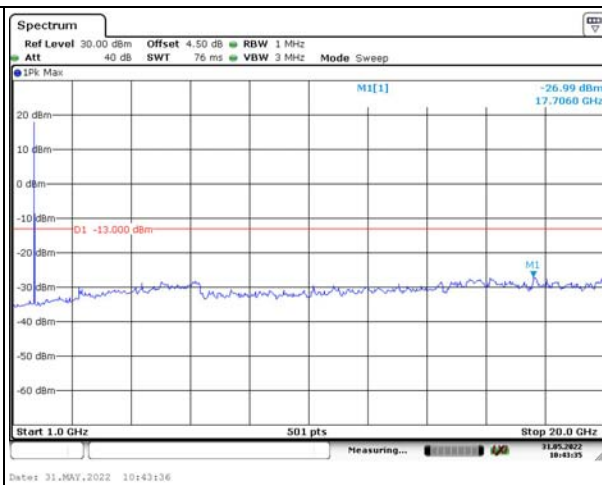
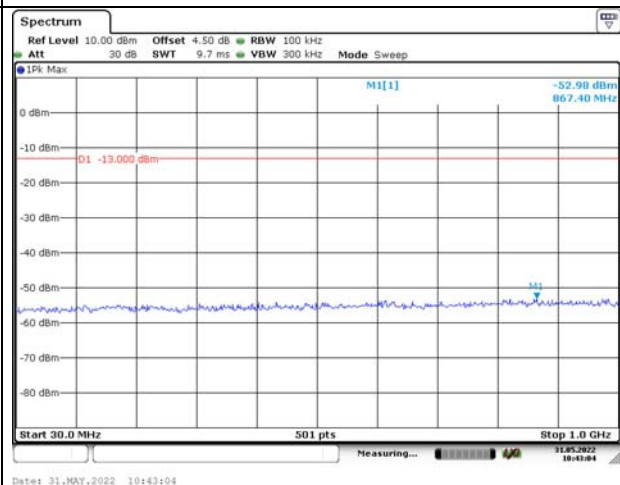


Spurious Emissions at Antenna Terminal

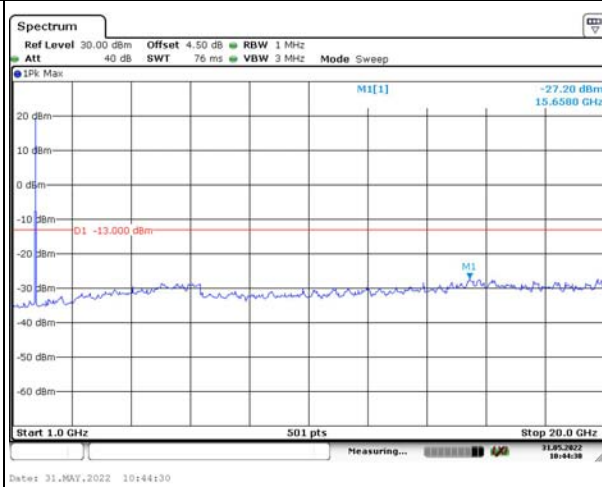
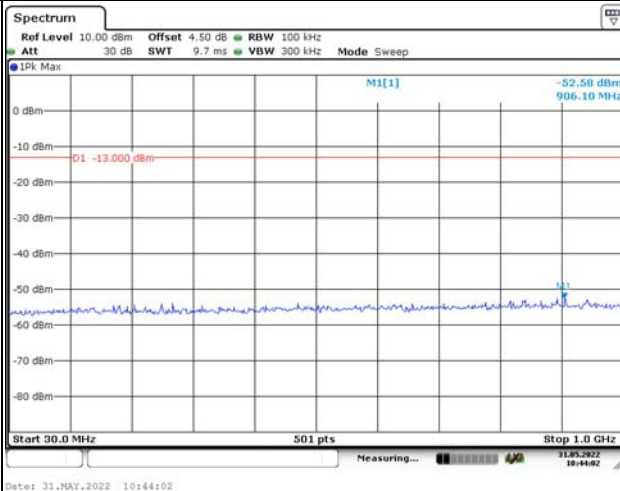
Channel

3MHz Bandwidth QPSK

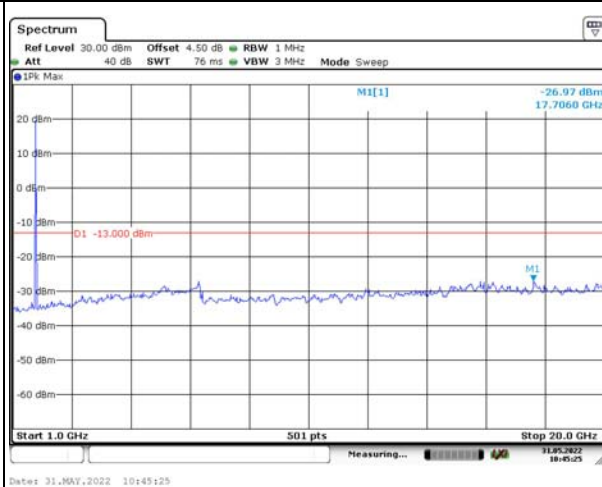
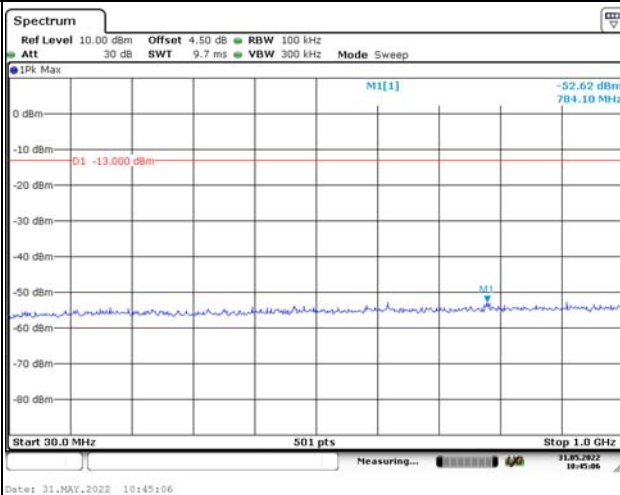
Lowest



Middle



Highest

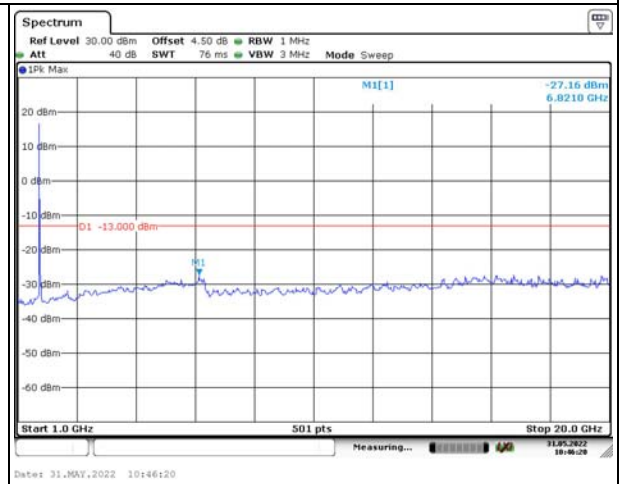
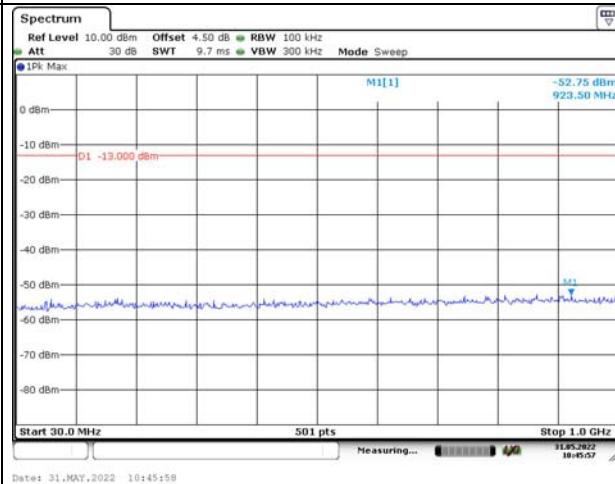


Spurious Emissions at Antenna Terminal

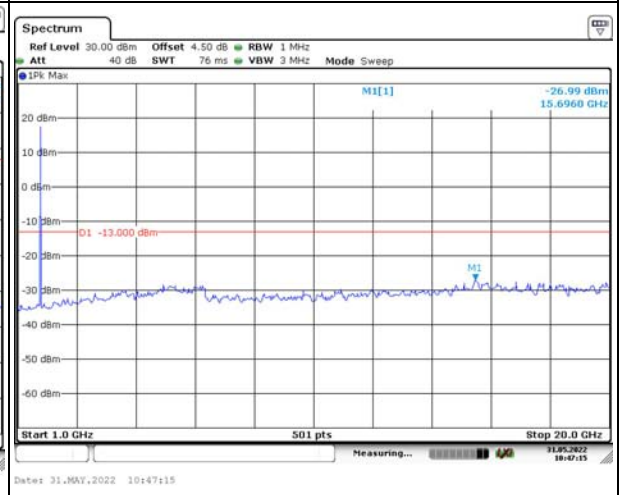
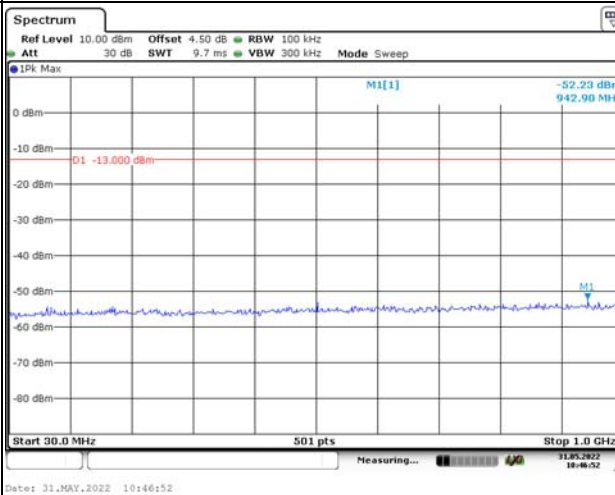
Channel

5MHz Bandwidth QPSK

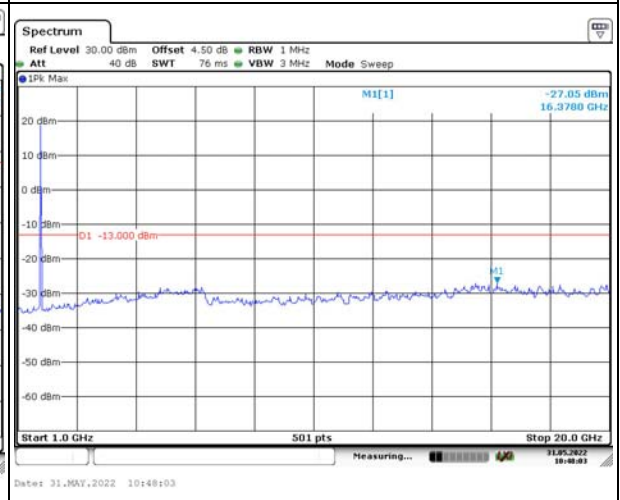
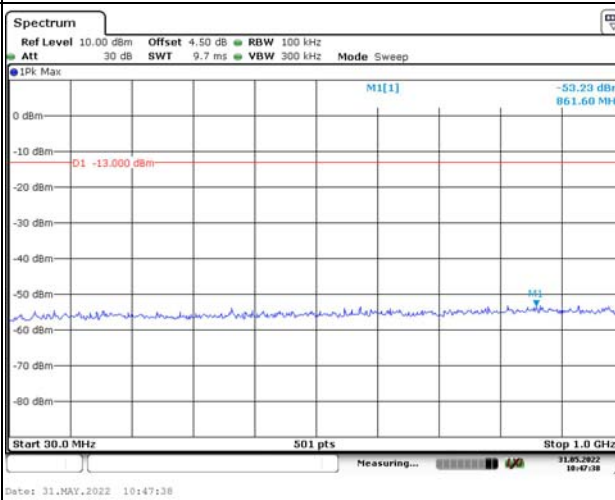
Lowest



Middle



Highest

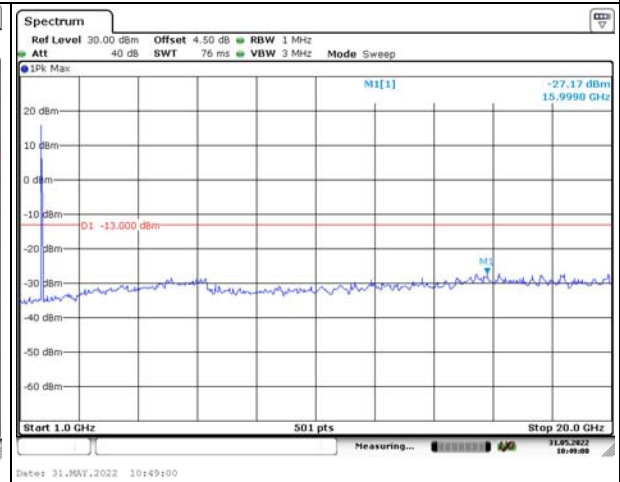
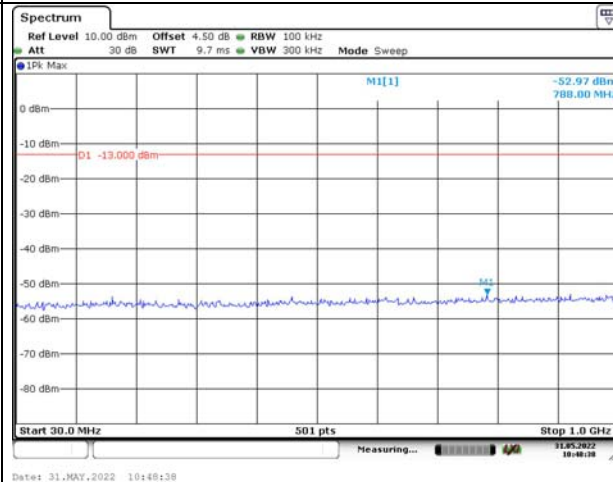


Spurious Emissions at Antenna Terminal

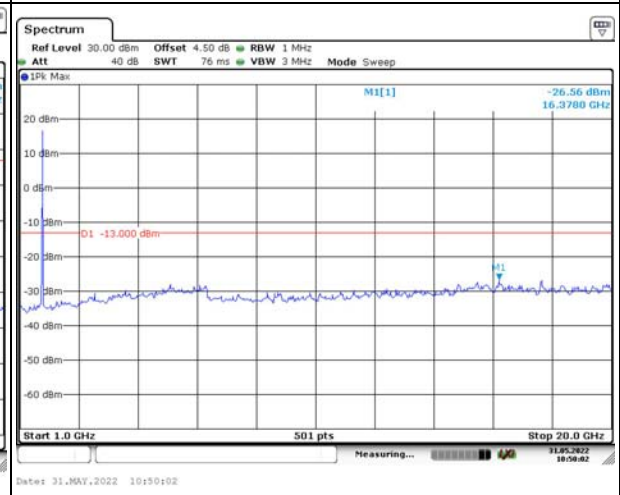
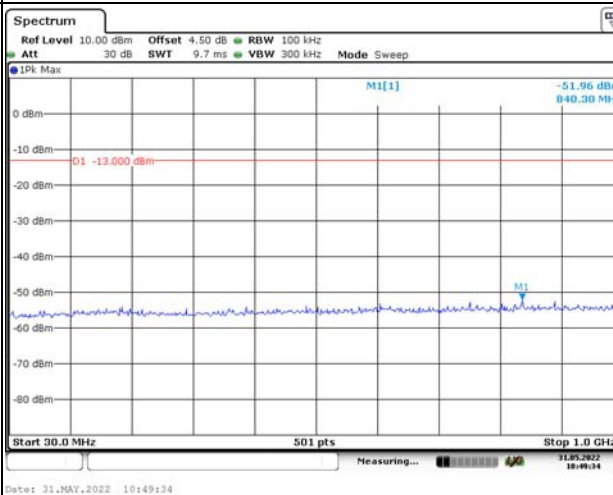
Channel

10MHz Bandwidth QPSK

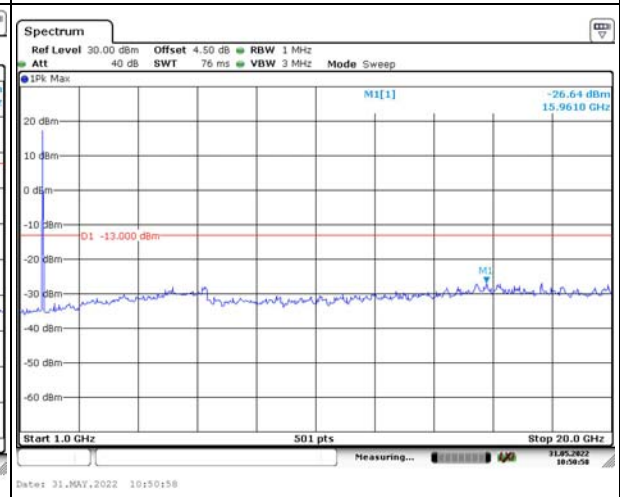
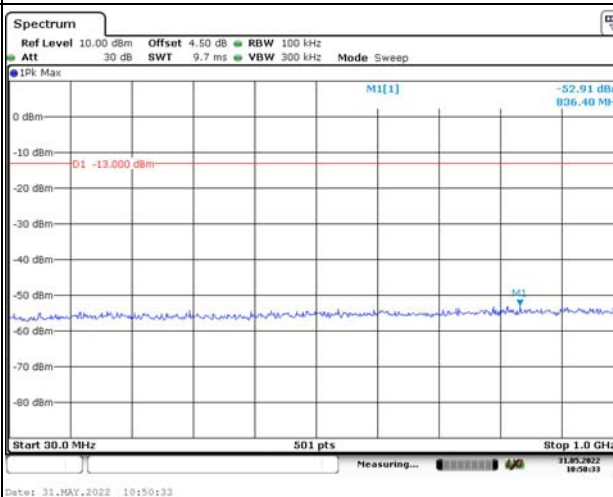
Lowest



Middle



Highest

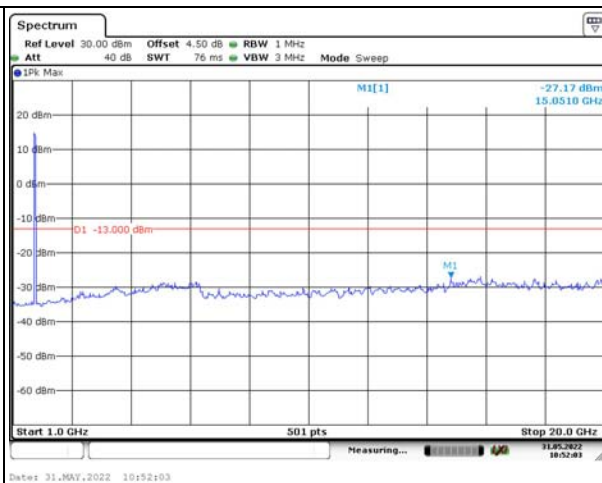
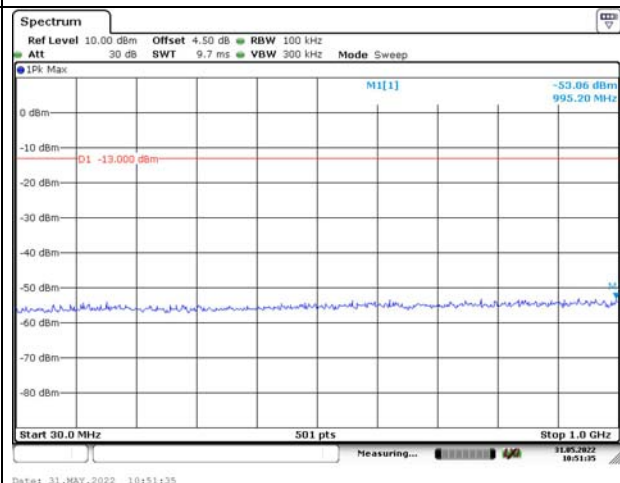


Spurious Emissions at Antenna Terminal

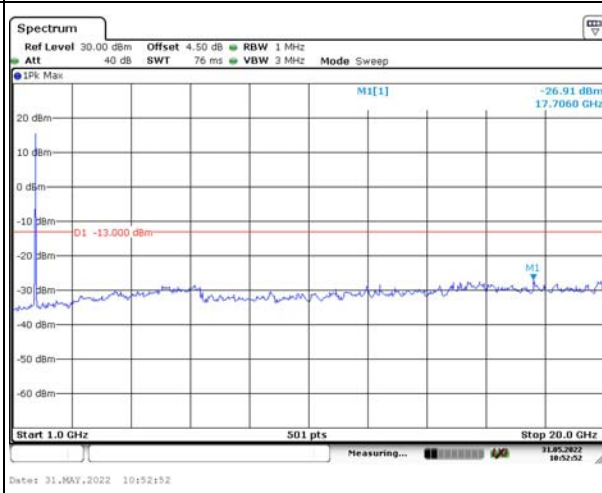
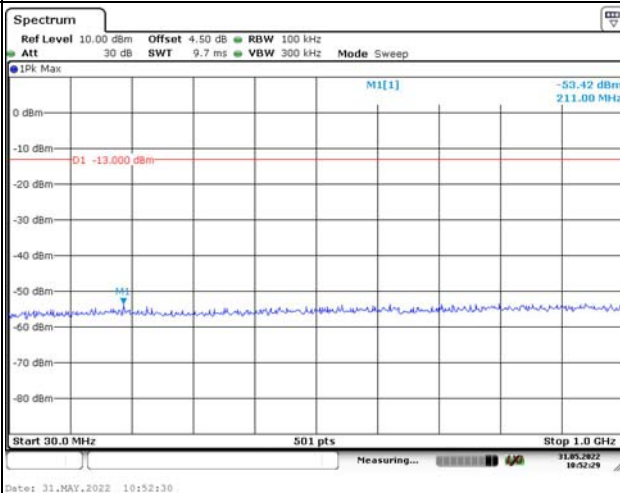
Channel

15MHz Bandwidth QPSK

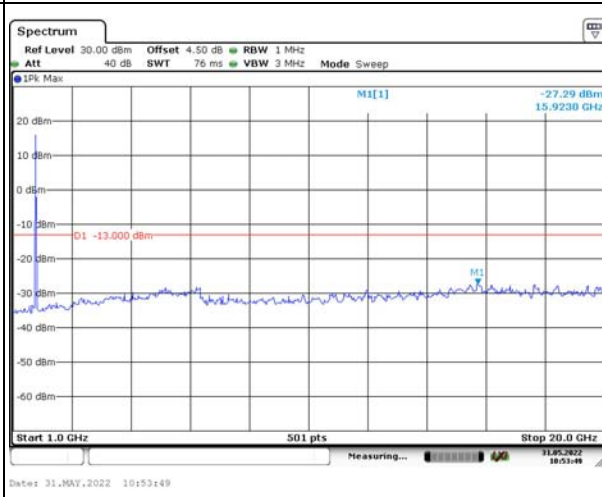
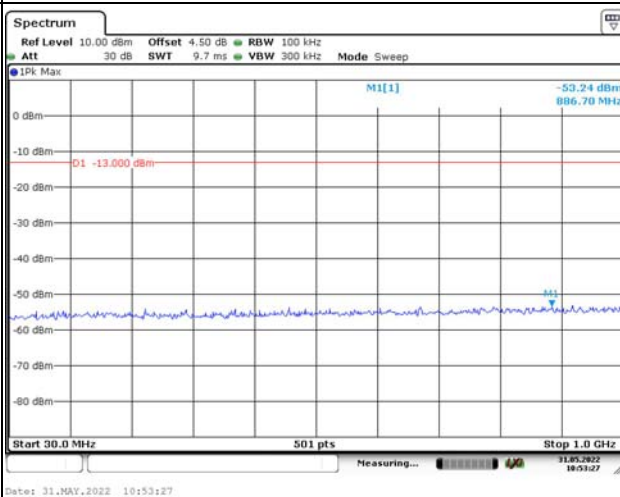
Lowest



Middle



Highest

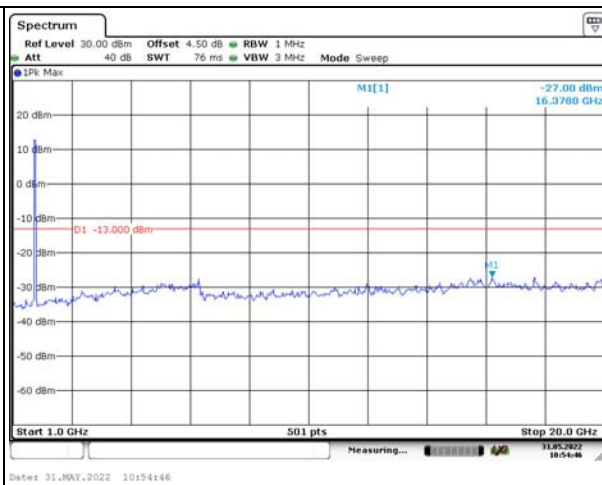
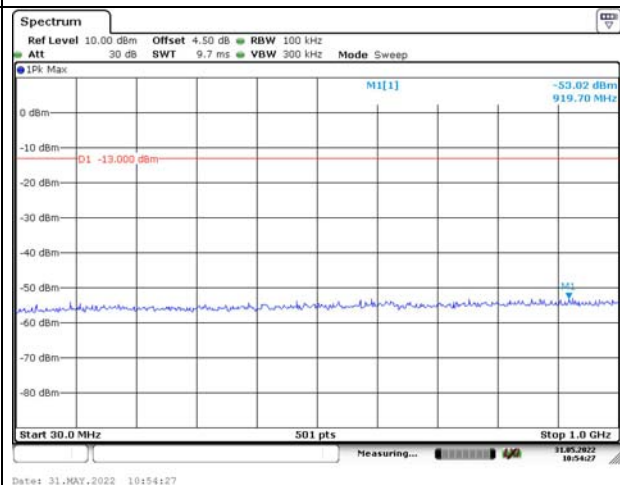


Spurious Emissions at Antenna Terminal

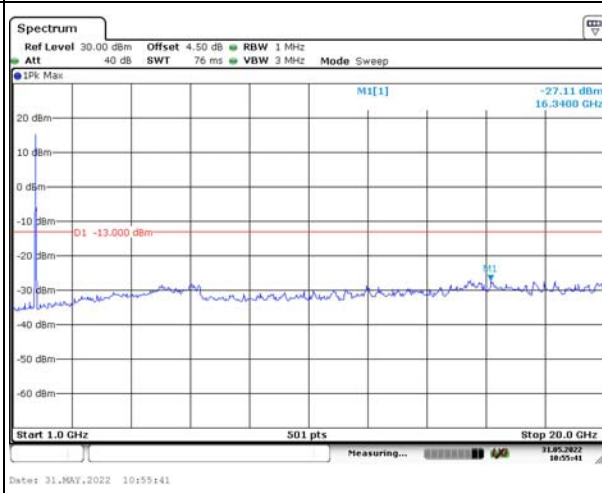
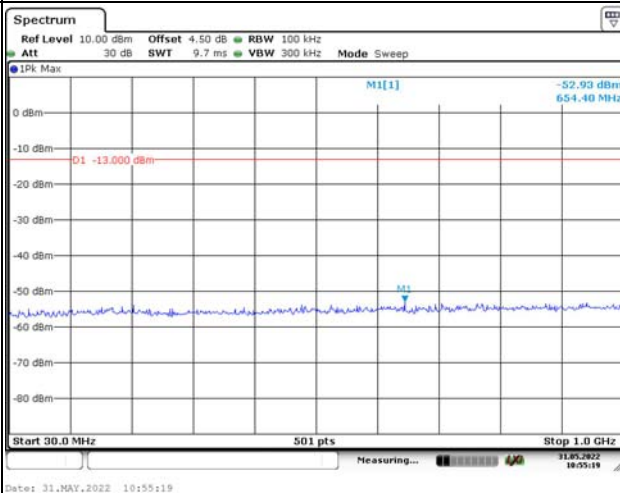
Channel

20MHz Bandwidth QPSK

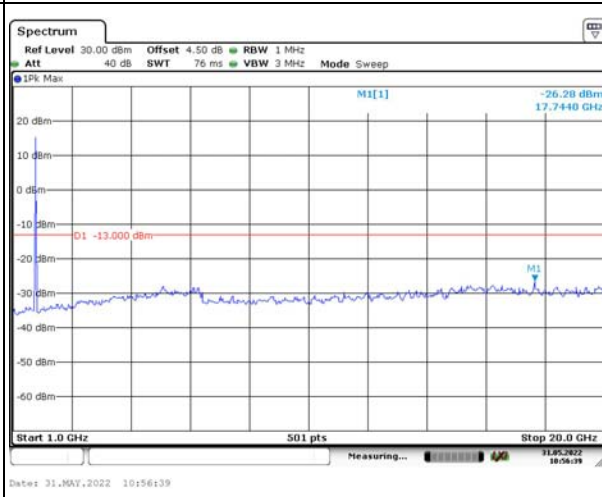
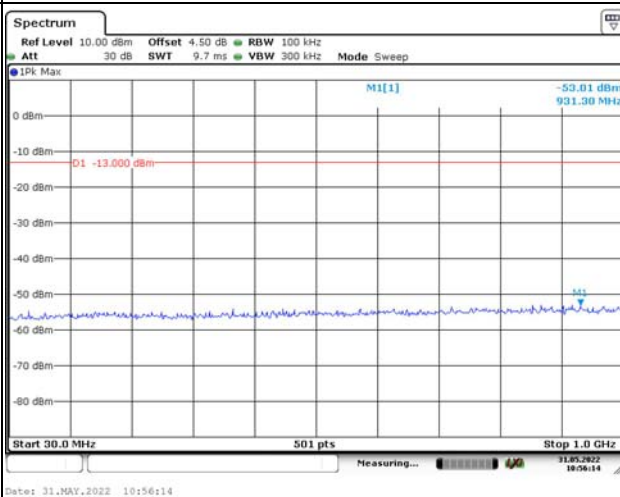
Lowest



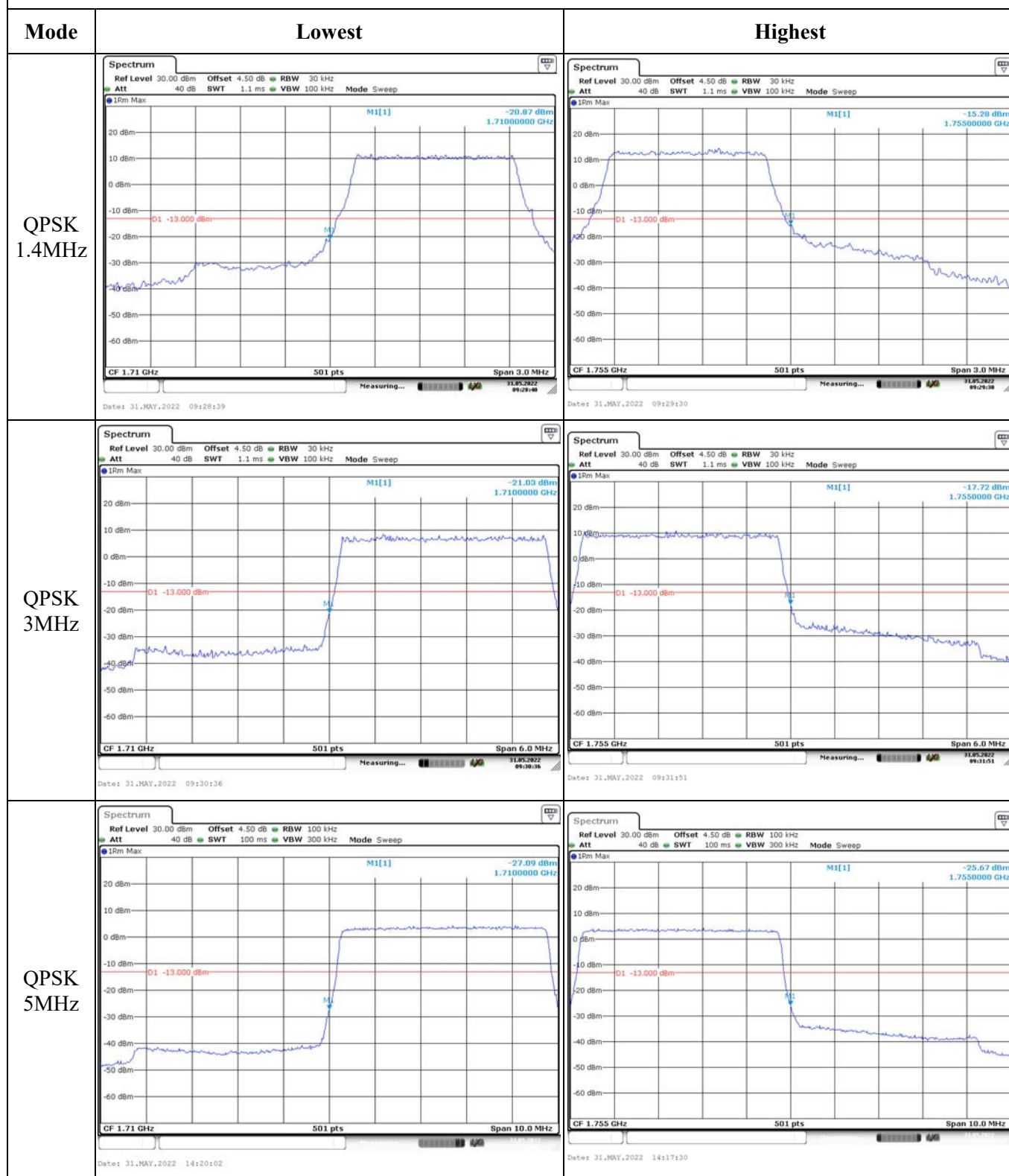
Middle



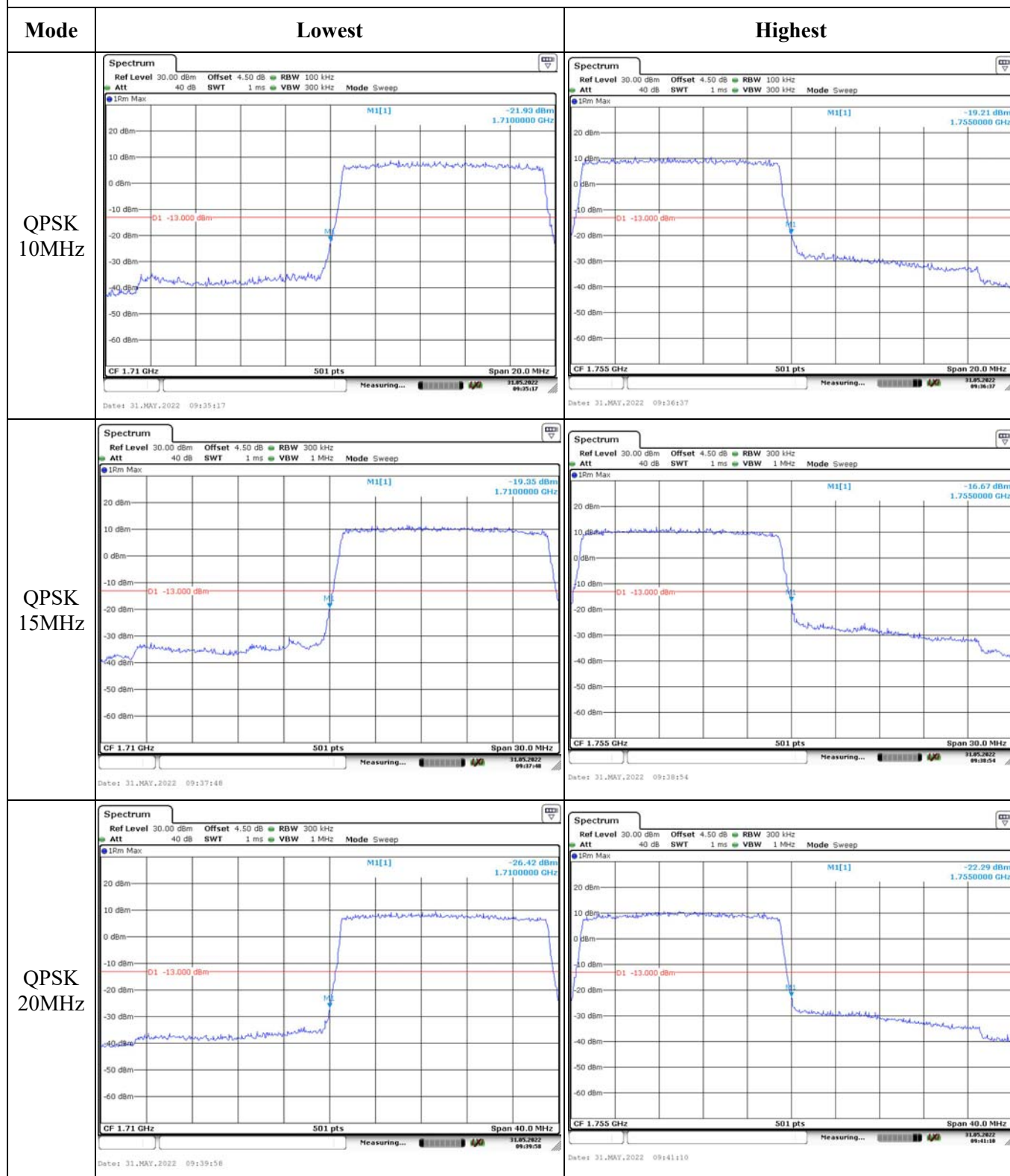
Highest



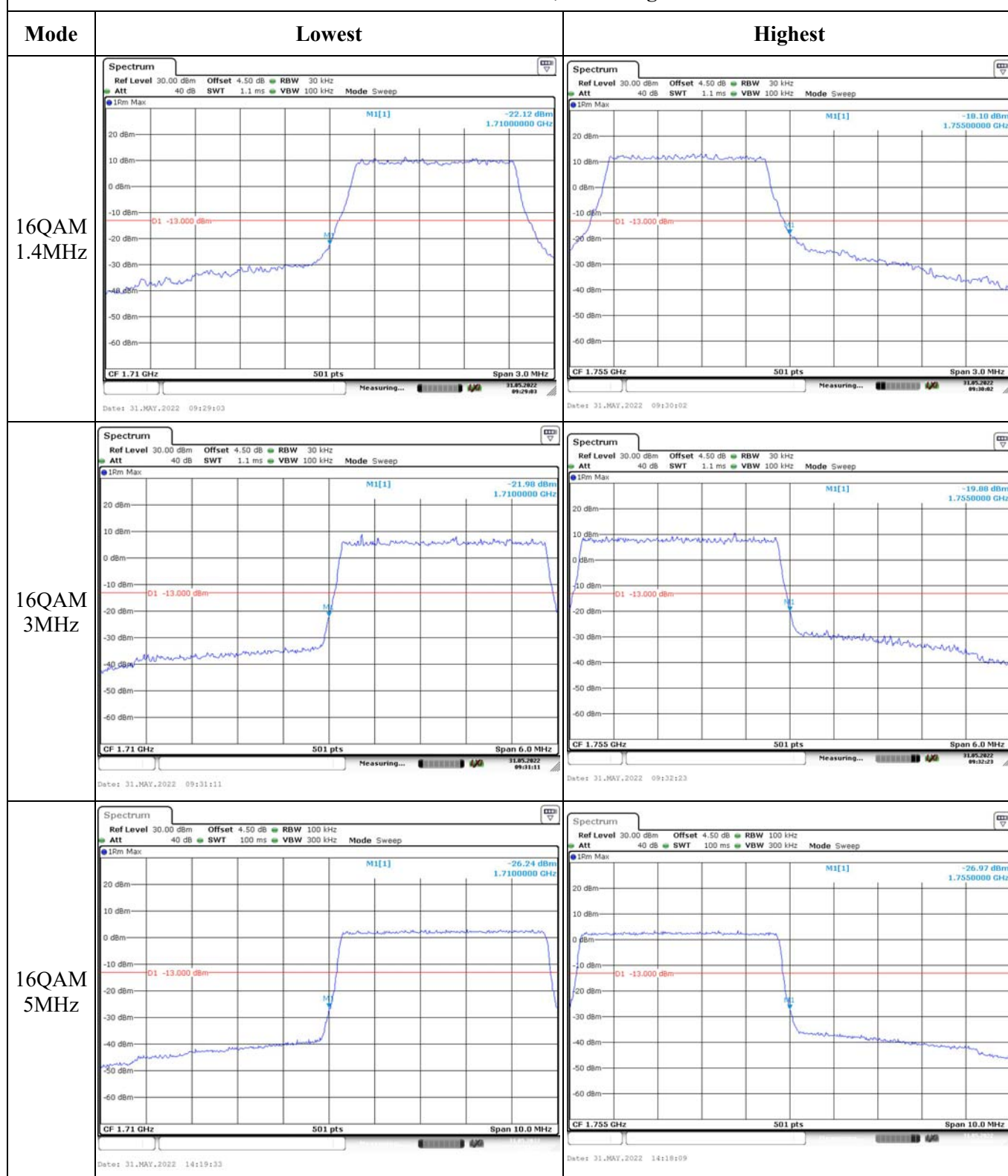
Out of band emission, Band Edge



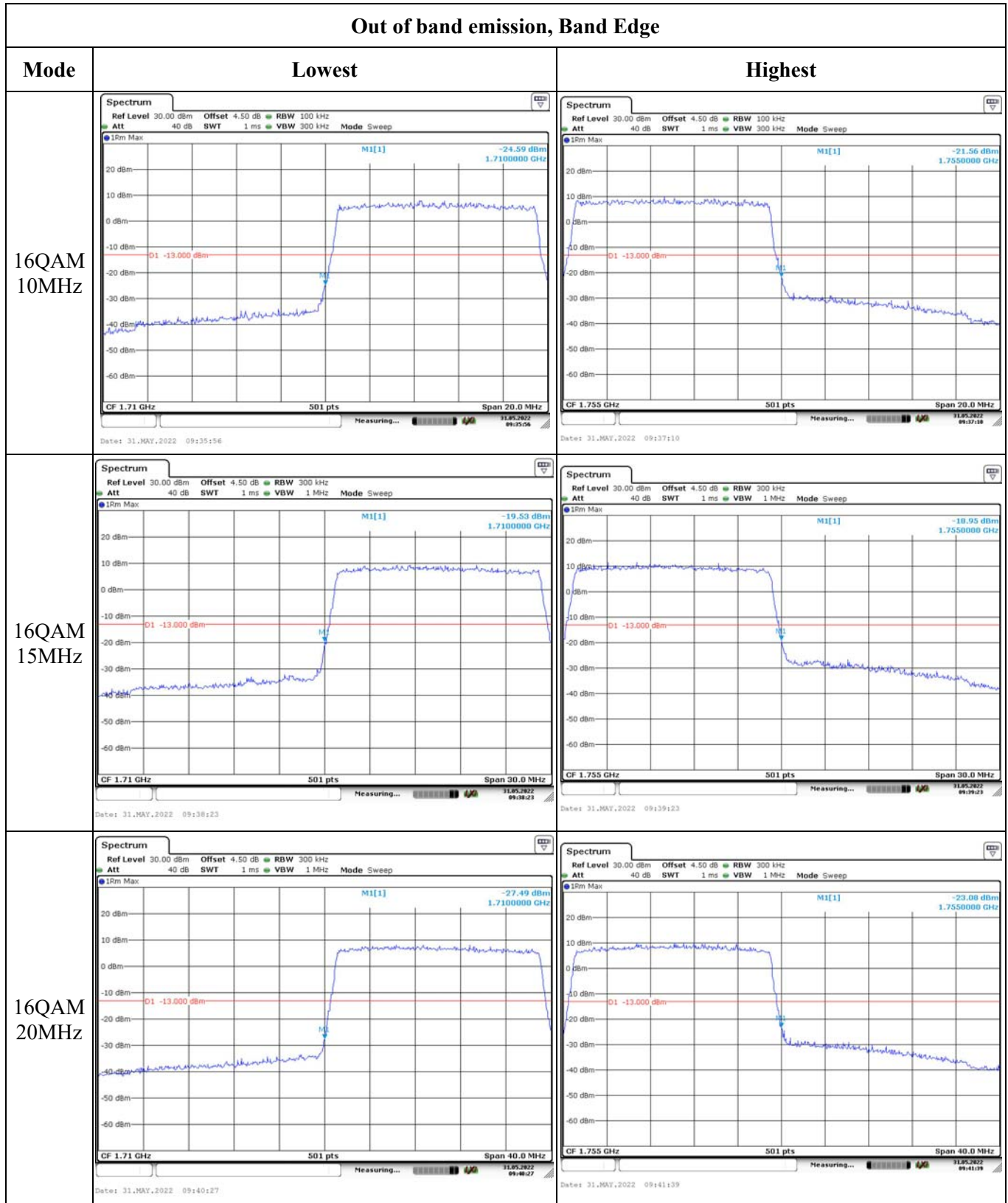
Out of band emission, Band Edge



Out of band emission, Band Edge



Out of band emission, Band Edge



4.10 Antenna Port Test Data and Results for Module B LTE Band 4

Serial Number:	CR22050041-RF-S1	Test Date:	2022/6/29-2022/7/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26.6	Relative Humidity: (%)	43	ATM Pressure: (kPa)	100.2
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2021-07-22	2023-07-21
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	144976	2021-07-22	2022-07-21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A

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

EUT Information@ LTE Band 4▲:

Antenna Gain G_T (dBi):	-0.59	Path Loss L_C (dB):	0
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	1710.7	1732.5	1754.3
3MHz	1711.5	1732.5	1753.5
5MHz	1712.5	1732.5	1752.5
10MHz	1715	1732.5	1750
15MHz	1717.5	1732.5	1747.5
20MHz	1720	1732.5	1745

Test Data:**FCC§2.1046;§ 27.50(d)(4)****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	23.33	23.12	22.95	22.91	30
	RB1#3	23.45	23.20	23.13		
	RB1#5	23.50	23.20	23.07		
	RB3#0	23.17	23.22	22.84		
	RB3#3	23.18	23.38	22.88		
	RB6#0	22.18	22.28	22.01		
1.4MHz 16QAM	RB1#0	22.39	22.47	21.78	22.5	30
	RB1#3	22.59	23.09	21.96		
	RB1#5	22.39	22.96	21.85		
	RB3#0	22.23	22.70	22.06		
	RB3#3	22.10	22.33	22.20		
	RB6#0	21.10	21.37	21.11		
3MHz QPSK	RB1#0	23.11	23.31	23.19	22.76	30
	RB1#8	23.29	23.31	22.88		
	RB1#14	23.35	23.13	22.88		
	RB6#0	22.09	22.25	22.04		
	RB6#9	22.18	22.38	21.90		
	RB15#0	22.24	22.33	22.03		
3MHz 16QAM	RB1#0	22.67	22.78	21.85	22.19	30
	RB1#8	22.51	22.76	21.66		
	RB1#14	22.54	22.71	21.46		
	RB6#0	21.17	21.42	20.81		
	RB6#9	21.16	21.43	20.73		
	RB15#0	21.13	21.17	21.10		
5MHz QPSK	RB1#0	22.95	22.92	23.07	22.67	30
	RB1#13	22.99	23.16	22.86		
	RB1#24	23.04	23.26	22.93		
	RB15#0	22.14	22.23	22.20		
	RB15#10	22.24	22.27	22.02		
	RB25#0	22.19	22.21	22.22		
5MHz 16QAM	RB1#0	21.69	22.62	22.32	22.38	30
	RB1#13	21.64	22.94	21.80		
	RB1#24	21.51	22.97	21.71		
	RB15#0	21.03	21.17	21.23		
	RB15#10	21.25	21.21	20.96		
	RB25#0	21.10	21.13	21.14		
10MHz QPSK	RB1#0	23.10	23.22	23.10	22.78	30

	RB1#25	23.35	23.36	23.37		
	RB1#49	23.18	23.15	22.95		
	RB25#0	22.27	22.16	22.32		
	RB25#25	22.34	22.34	22.09		
	RB50#0	22.24	22.31	22.26		
10MHz 16QAM	RB1#0	22.64	22.87	21.99	22.93	30
	RB1#25	23.39	23.52	22.16		
	RB1#49	22.51	22.79	21.86		
	RB25#0	21.23	21.12	21.38		
	RB25#25	21.35	21.40	21.18		
	RB50#0	21.09	21.21	21.28		
15MHz QPSK	RB1#0	23.06	23.21	23.06	22.8	30
	RB1#38	23.30	23.35	23.39		
	RB1#74	23.12	23.00	22.86		
	RB36#0	22.29	22.24	22.34		
	RB36#39	22.25	22.32	22.15		
	RB75#0	22.30	22.25	22.30		
15MHz 16QAM	RB1#0	22.68	22.86	22.53	22.3	30
	RB1#38	22.73	22.89	22.57		
	RB1#74	21.91	22.55	21.30		
	RB36#0	21.24	21.13	21.36		
	RB36#39	21.15	21.25	21.08		
	RB75#0	21.36	21.26	21.27		
20MHz QPSK	RB1#0	22.92	23.35	23.37	23.08	30
	RB1#50	23.53	23.50	23.67		
	RB1#99	23.07	23.33	22.95		
	RB50#0	22.29	22.31	22.35		
	RB50#50	22.22	22.33	22.28		
	RB100#0	22.35	22.31	22.22		
20MHz 16QAM	RB1#0	22.48	22.42	23.27	23.13	30
	RB1#50	23.08	22.36	23.72		
	RB1#99	22.63	22.16	22.99		
	RB50#0	21.33	21.24	21.20		
	RB50#50	21.21	21.34	21.19		
	RB100#0	21.36	21.21	21.22		
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	4.55	4.81	4.62	13
	RB100#0	5.22	5.29	5.26	13
20MHz 16QAM	RB1#0	5.48	5.77	5.58	13
	RB100#0	6.12	6.28	6.19	13
Result:					Pass

FCC §2.1049, §27.53:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.098	1.098	1.110	1.302	1.326	1.290
1.4MHz 16QAM	1.104	1.098	1.098	1.326	1.308	1.308
3MHz QPSK	2.688	2.700	2.688	2.940	2.940	2.964
3MHz 16QAM	2.700	2.688	2.688	2.940	2.976	2.952
5MHz QPSK	4.520	4.520	4.520	5.040	5.020	4.960
5MHz 16QAM	4.520	4.520	4.540	5.000	5.020	5.020
10MHz QPSK	8.960	8.960	8.920	9.640	9.640	9.760
10MHz 16QAM	8.960	8.960	8.960	9.600	9.640	9.680
15MHz QPSK	13.500	13.440	13.500	14.640	14.760	14.700
15MHz 16QAM	13.440	13.560	13.440	14.700	14.820	14.640
20MHz QPSK	17.920	17.920	17.840	19.200	19.440	19.280
20MHz 16QAM	17.840	17.920	17.920	19.520	19.360	19.360
Note: The test plots please refer to the Plots of Occupied Bandwidth						

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

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

FCC §2.1055, §27.54: Frequency Stability

Test Mode:	20M 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	1710.519	1710.00	1754.498	1755
	-20	3.85	1710.515	1710.00	1754.487	1755
	-10	3.85	1710.516	1710.00	1754.492	1755
	0	3.85	1710.520	1710.00	1754.488	1755
	10	3.85	1710.522	1710.00	1754.487	1755
	20	3.85	1710.513	1710.00	1754.487	1755
	30	3.85	1710.510	1710.00	1754.480	1755
	40	3.85	1710.513	1710.00	1754.483	1755
	50	3.85	1710.507	1710.00	1754.487	1755
Frequency Stability vs. Voltage	20	3.5	1710.508	1710.00	1754.484	1755
	20	4.4	1710.503	1710.00	1754.480	1755
Result:					Pass	

Test Mode:	20M 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	1710.549	1710.00	1754.453	1755
	-20	3.85	1710.558	1710.00	1754.488	1755
	-10	3.85	1710.554	1710.00	1754.452	1755
	0	3.85	1710.547	1710.00	1754.455	1755
	10	3.85	1710.548	1710.00	1754.488	1755
	20	3.85	1710.545	1710.00	1754.487	1755
	30	3.85	1710.540	1710.00	1754.481	1755
	40	3.85	1710.543	1710.00	1754.484	1755
	50	3.85	1710.541	1710.00	1754.480	1755
Frequency Stability vs. Voltage	20	3.5	1710.538	1710.00	1754.483	1755
	20	4.4	1710.541	1710.00	1754.487	1755
Result:					Pass	

Test Plots:

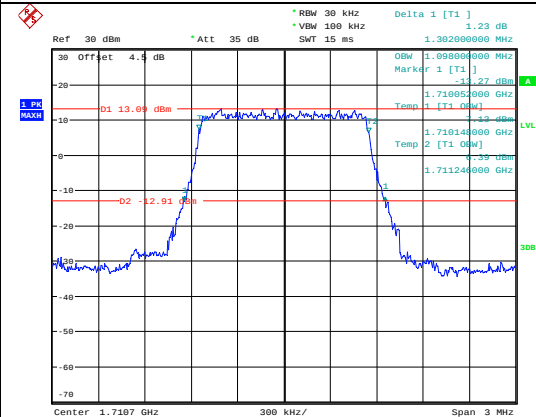
Occupied Bandwidth

Channel

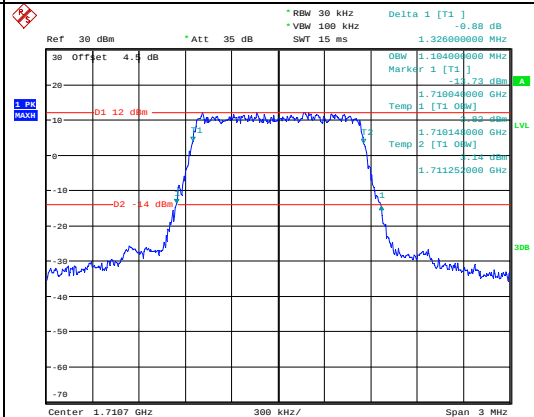
1.4MHz Bandwidth QPSK

1.4MHz Bandwidth 16QAM

Lowest

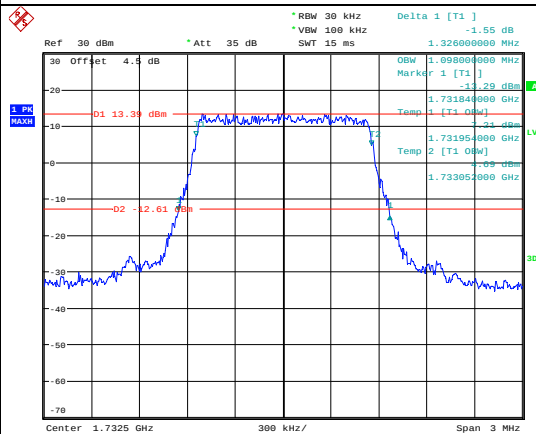


Date: 29.JUN.2022 18:13:51

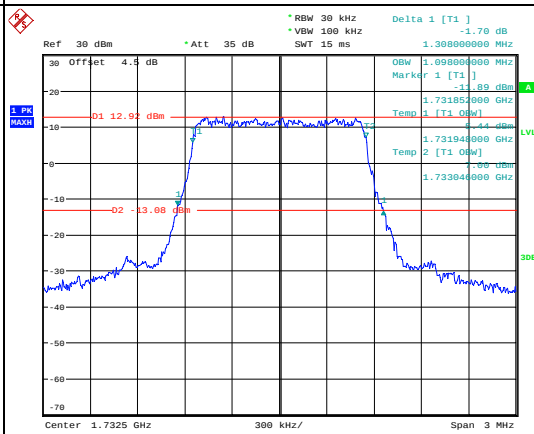


Date: 29.JUN.2022 18:14:11

Middle

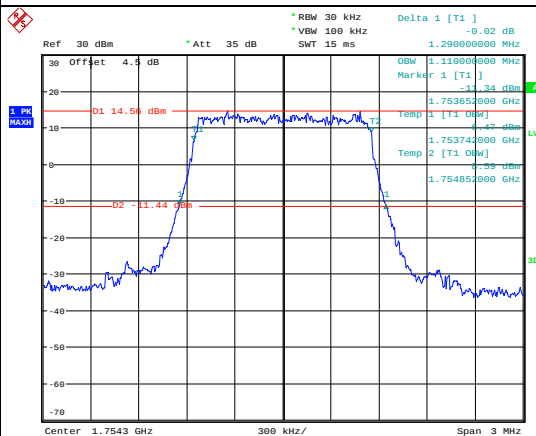


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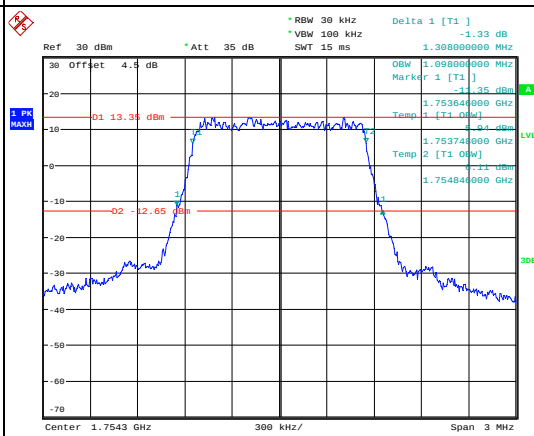


Date: 29.JUN.2022 18:14:51

Highest



Date: 29.JUN.2022 18:15:16

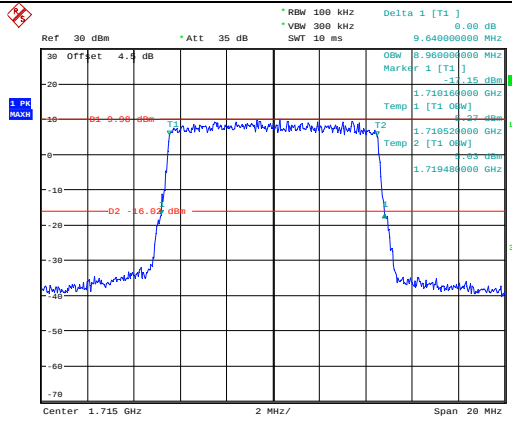
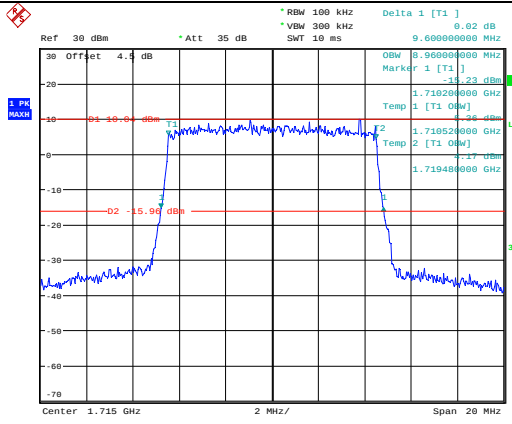
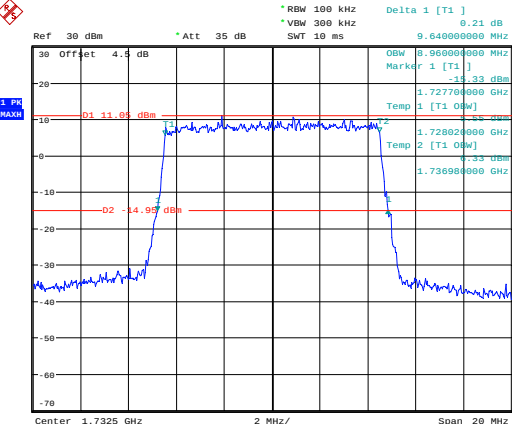
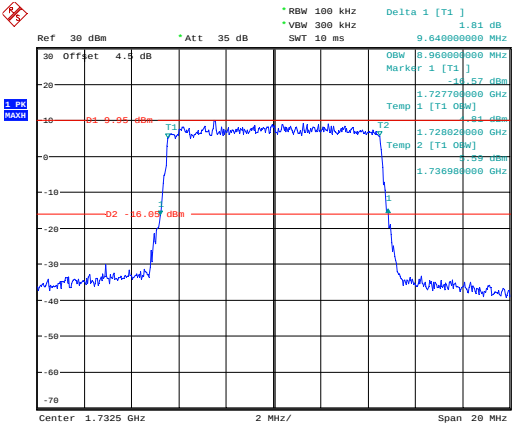
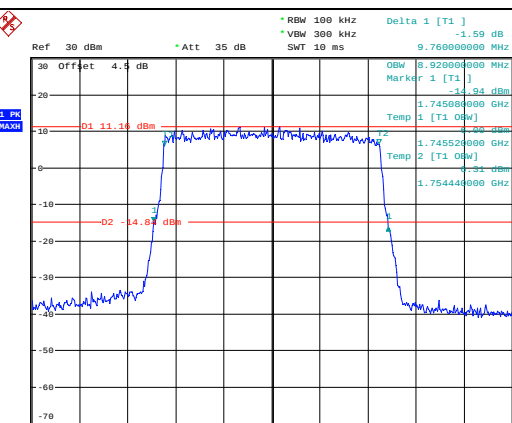
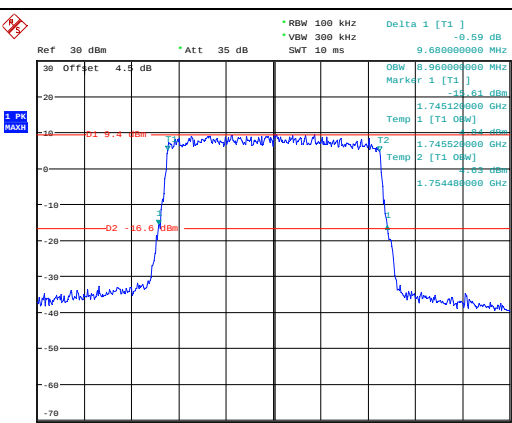


Date: 29.JUN.2022 18:15:37

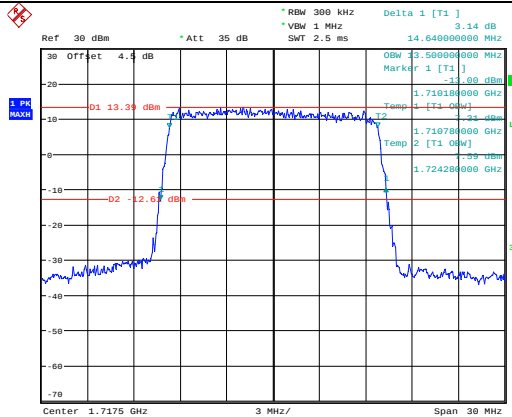
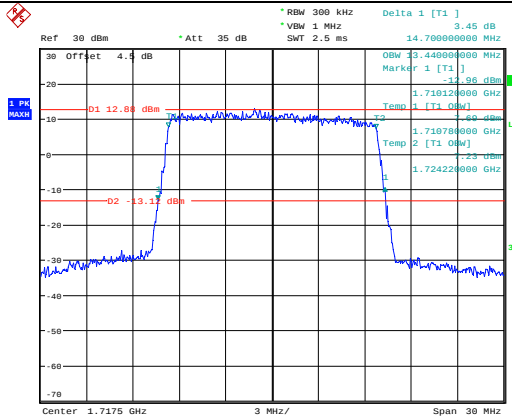
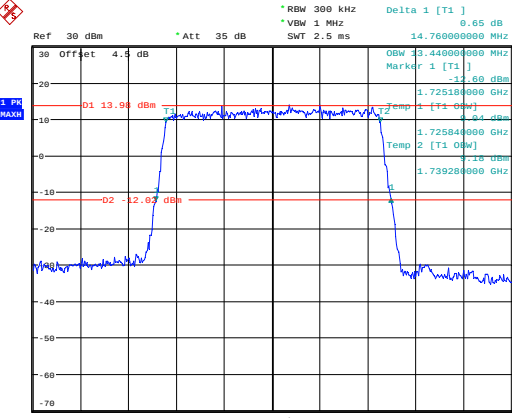
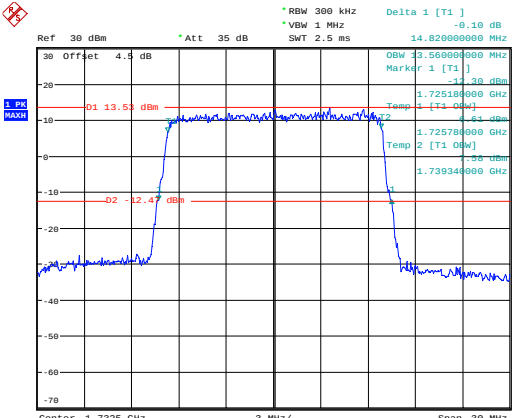
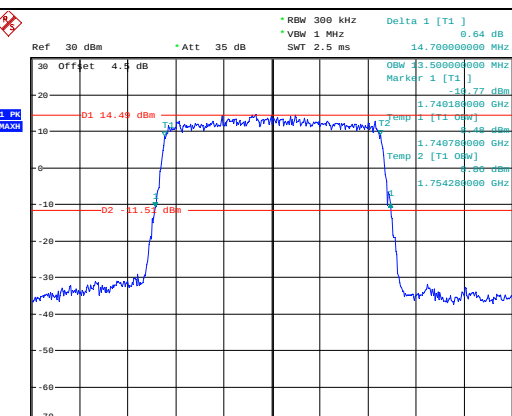
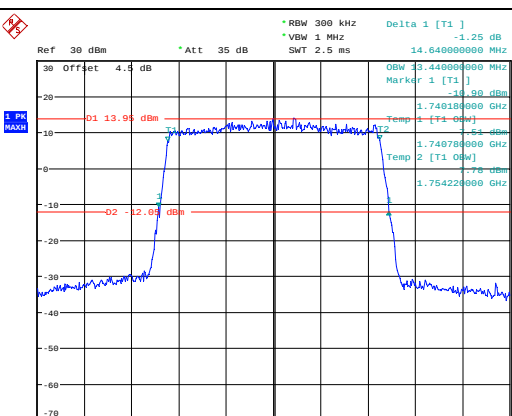
Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.20 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -15.20 dBm Temp 1 [T1] 0.000000 MHz Temp 2 [T1] 0.000000 MHz Center 1.7115 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:15:59	Ref 30 dBm * Att 35 dB Delta 1 [T1] -1.16 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -16.94 dBm Temp 1 [T1] 0.000000 MHz Temp 2 [T1] 0.000000 MHz Center 1.7115 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:16:19
Middle	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.42 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -15.14 dBm Temp 1 [T1] 0.000000 MHz Temp 2 [T1] 0.000000 MHz Center 1.7325 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:16:38	Ref 30 dBm * Att 35 dB Delta 1 [T1] 0.67 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -16.24 dBm Temp 1 [T1] 0.000000 MHz Temp 2 [T1] 0.000000 MHz Center 1.7325 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:16:59
Highest	Ref 30 dBm * Att 35 dB Delta 1 [T1] -0.40 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -15.7 dBm Temp 1 [T1] 0.000000 MHz Temp 2 [T1] 0.000000 MHz Center 1.7535 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:17:17	Ref 30 dBm * Att 35 dB Delta 1 [T1] 1.14 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -15.44 dBm Temp 1 [T1] 0.000000 MHz Temp 2 [T1] 0.000000 MHz Center 1.7535 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 18:17:35

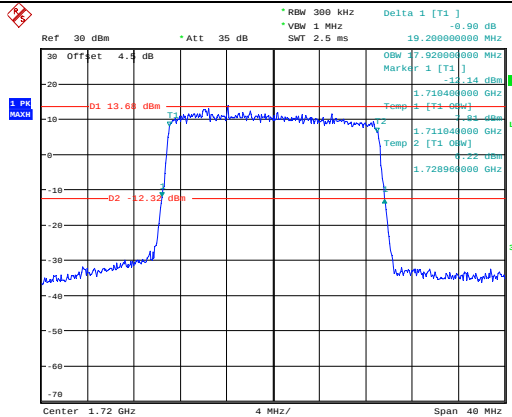
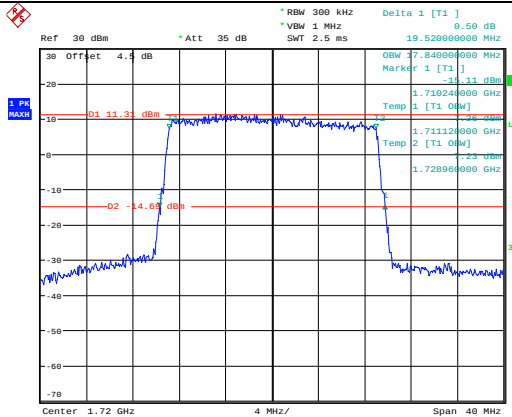
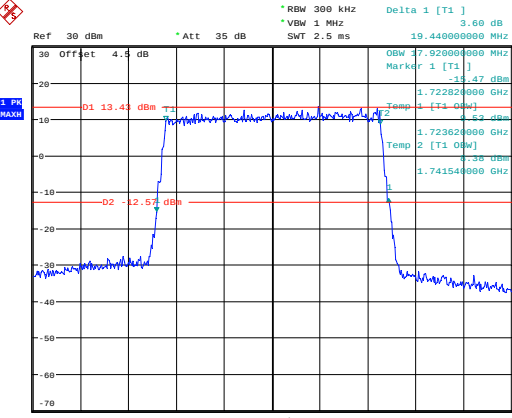
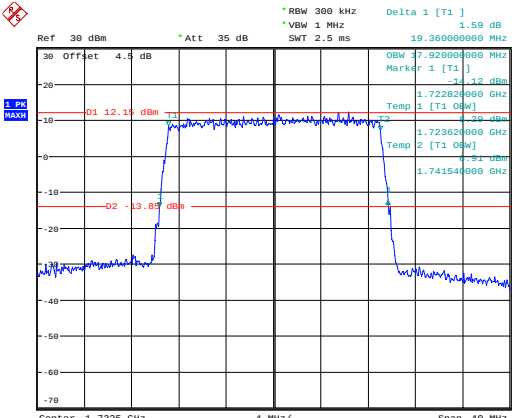
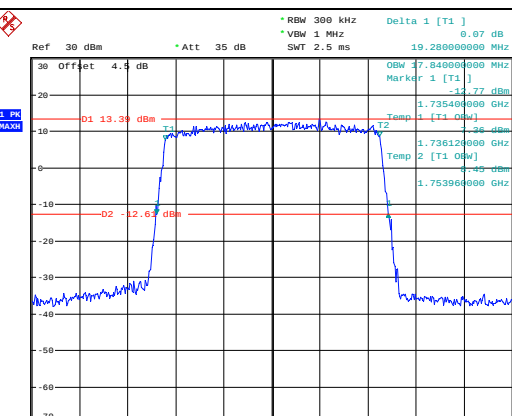
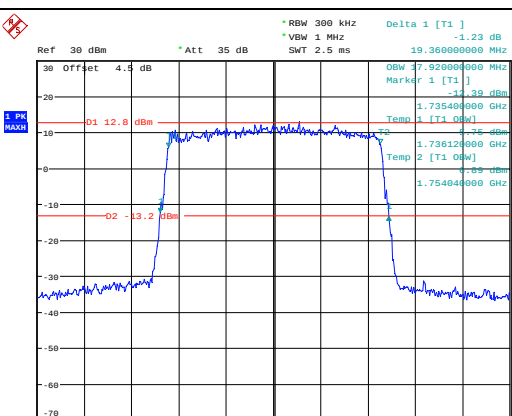
Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	 Ref 30 dBm * Att 35 dB RBW 100 kHz Delta 1 [T1] 0.00 dB VBW 300 kHz 9.640000000 MHz SWT 10 ms Marker 1 [T1] -15.00 dB Temp 1 [T1 OBW] -15.00 dB Temp 2 [T1 OBW] -15.00 dB Temp 1 [T1 OBW] -15.00 dB Temp 2 [T1 OBW] -15.00 dB D2 -16.02 dBm Center 1.715 GHz 2 MHz/ Span 20 MHz Date: 29 JUN.2022 18:20:12	 Ref 30 dBm * Att 35 dB RBW 100 kHz Delta 1 [T1] 0.02 dB VBW 300 kHz 9.600000000 MHz SWT 10 ms Marker 1 [T1] -15.23 dBm Temp 1 [T1 OBW] -15.23 dBm Temp 2 [T1 OBW] -15.23 dBm Temp 1 [T1 OBW] -15.23 dBm Temp 2 [T1 OBW] -15.23 dBm D2 -15.96 dBm Center 1.715 GHz 2 MHz/ Span 20 MHz Date: 29 JUN.2022 18:20:33
Middle	 Ref 30 dBm * Att 35 dB RBW 100 kHz Delta 1 [T1] 0.21 dB VBW 300 kHz 9.640000000 MHz SWT 10 ms Marker 1 [T1] -14.33 dBm Temp 1 [T1 OBW] -14.33 dBm Temp 2 [T1 OBW] -14.33 dBm Temp 1 [T1 OBW] -14.33 dBm Temp 2 [T1 OBW] -14.33 dBm D2 -14.95 dBm Center 1.7325 GHz 2 MHz/ Span 20 MHz Date: 29 JUN.2022 18:20:54	 Ref 30 dBm * Att 35 dB RBW 100 kHz Delta 1 [T1] 1.81 dB VBW 300 kHz 9.640000000 MHz SWT 10 ms Marker 1 [T1] -14.57 dBm Temp 1 [T1 OBW] -14.57 dBm Temp 2 [T1 OBW] -14.57 dBm Temp 1 [T1 OBW] -14.57 dBm Temp 2 [T1 OBW] -14.57 dBm D2 -16.05 dBm Center 1.7325 GHz 2 MHz/ Span 20 MHz Date: 29 JUN.2022 18:21:12
Highest	 Ref 30 dBm * Att 35 dB RBW 100 kHz Delta 1 [T1] -1.59 dB VBW 300 kHz 9.760000000 MHz SWT 10 ms Marker 1 [T1] -14.84 dBm Temp 1 [T1 OBW] -14.84 dBm Temp 2 [T1 OBW] -14.84 dBm Temp 1 [T1 OBW] -14.84 dBm Temp 2 [T1 OBW] -14.84 dBm D2 -14.84 dBm Center 1.75 GHz 2 MHz/ Span 20 MHz Date: 29 JUN.2022 18:21:39	 Ref 30 dBm * Att 35 dB RBW 100 kHz Delta 1 [T1] -0.59 dB VBW 300 kHz 9.680000000 MHz SWT 10 ms Marker 1 [T1] -15.61 dBm Temp 1 [T1 OBW] -15.61 dBm Temp 2 [T1 OBW] -15.61 dBm Temp 1 [T1 OBW] -15.61 dBm Temp 2 [T1 OBW] -15.61 dBm D2 -16.6 dBm Center 1.75 GHz 2 MHz/ Span 20 MHz Date: 29 JUN.2022 18:22:01

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	 Date: 29.JUN.2022 18:22:29	 Date: 29.JUN.2022 18:22:53
Middle	 Date: 29.JUN.2022 18:23:18	 Date: 29.JUN.2022 18:23:44
Highest	 Date: 29.JUN.2022 18:24:10	 Date: 29.JUN.2022 18:24:34

Occupied Bandwidth

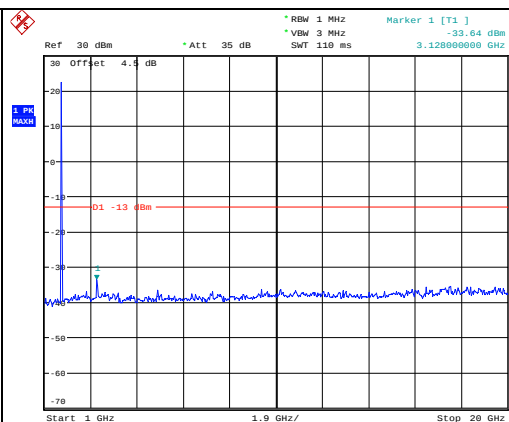
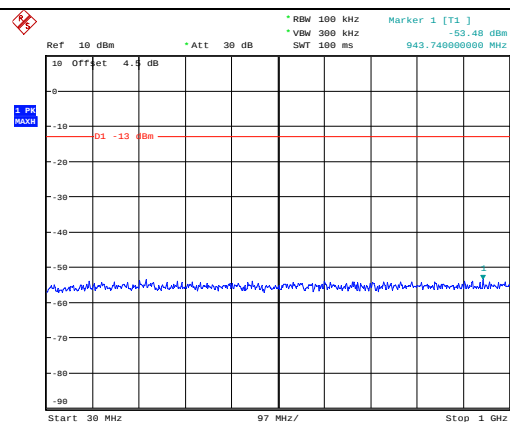
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	 Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] -0.90 dB Marker 1 [T1] -13.44 dBm Temp 1 [T1] 1.71040000 GHz Temp 2 [T1] 1.72890000 GHz Center 1.72 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:25:02	 Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 0.50 dB Marker 1 [T1] -13.11 dBm Temp 1 [T1] 1.71024000 GHz Temp 2 [T1] 1.72896000 GHz Center 1.72 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:25:27
Middle	 Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 3.60 dB Marker 1 [T1] -13.47 dBm Temp 1 [T1] 1.72262000 GHz Temp 2 [T1] 1.74154000 GHz Center 1.7325 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:25:52	 Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 1.59 dB Marker 1 [T1] -13.12 dBm Temp 1 [T1] 1.72262000 GHz Temp 2 [T1] 1.74154000 GHz Center 1.7325 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:26:17
Highest	 Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] 0.07 dB Marker 1 [T1] -13.77 dBm Temp 1 [T1] 1.73540000 GHz Temp 2 [T1] 1.75396000 GHz Center 1.745 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:26:43	 Ref 30 dBm * Att 35 dB RBW 300 kHz VBW 1 MHz SWT 2.5 ms Delta 1 [T1] -1.23 dB Marker 1 [T1] -13.38 dBm Temp 1 [T1] 1.73540000 GHz Temp 2 [T1] 1.75404000 GHz Center 1.745 GHz 4 MHz/ Span 40 MHz Date: 29.JUN.2022 18:27:07

Spurious Emissions at Antenna Terminal

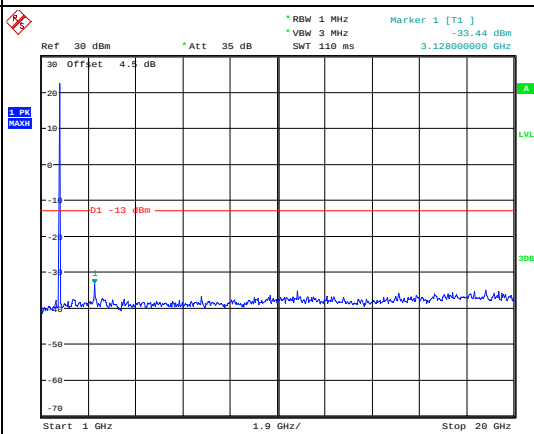
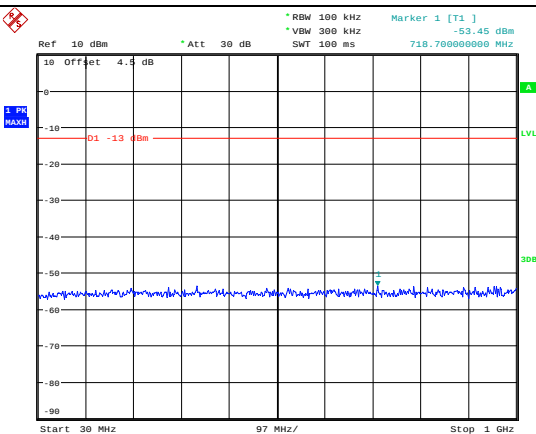
Channel

1.4MHz Bandwidth QPSK

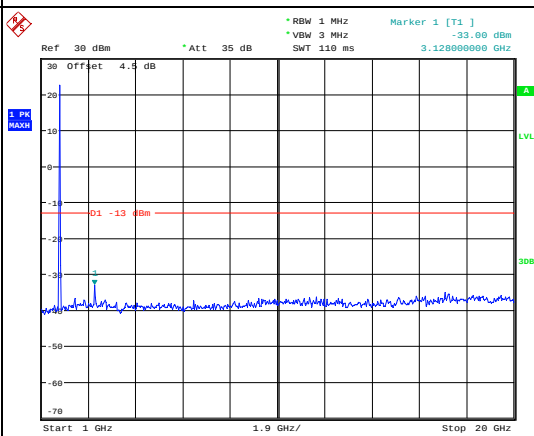
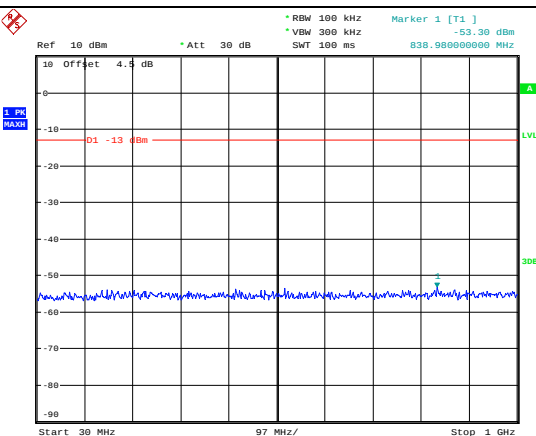
Lowest



Middle



Highest

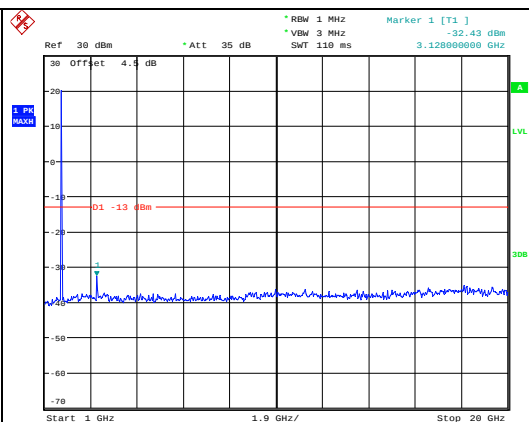
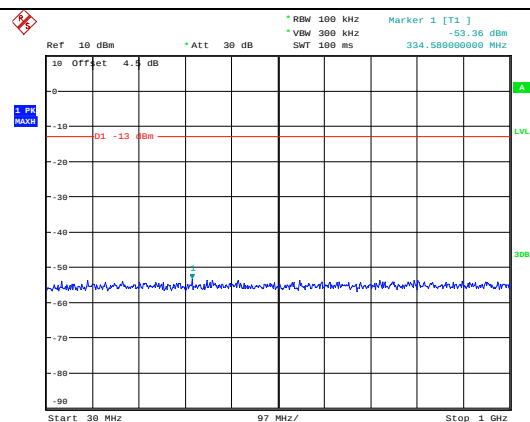


Spurious Emissions at Antenna Terminal

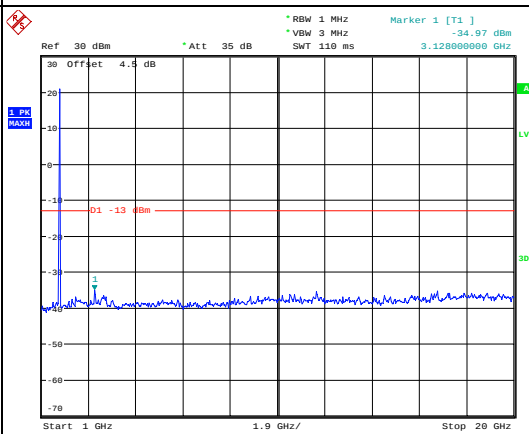
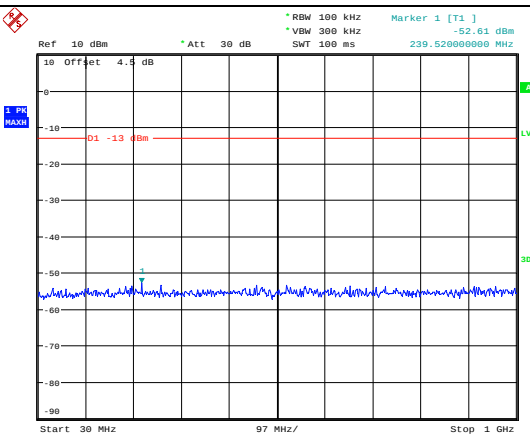
Channel

3MHz Bandwidth QPSK

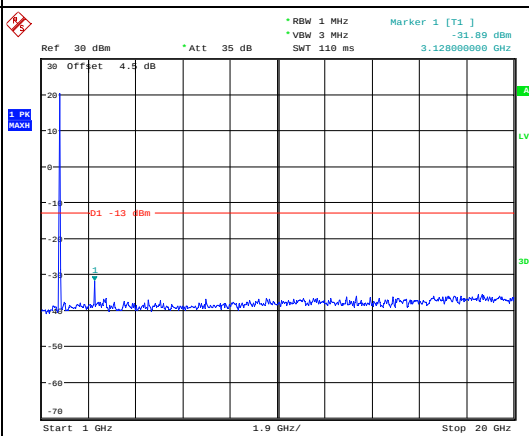
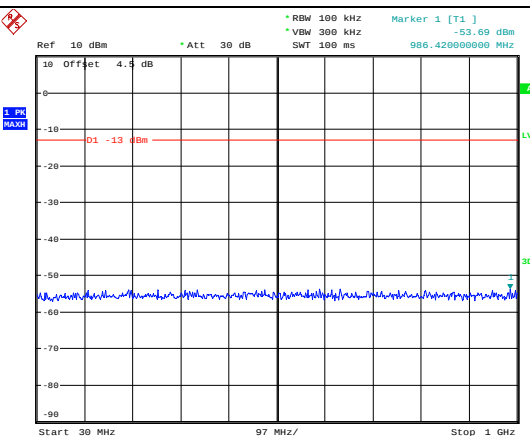
Lowest



Middle



Highest

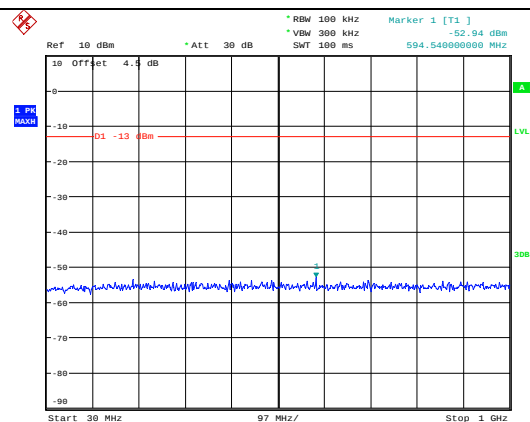


Spurious Emissions at Antenna Terminal

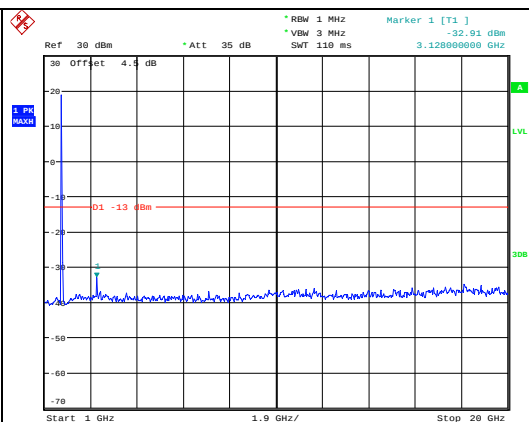
Channel

5MHz Bandwidth QPSK

Lowest

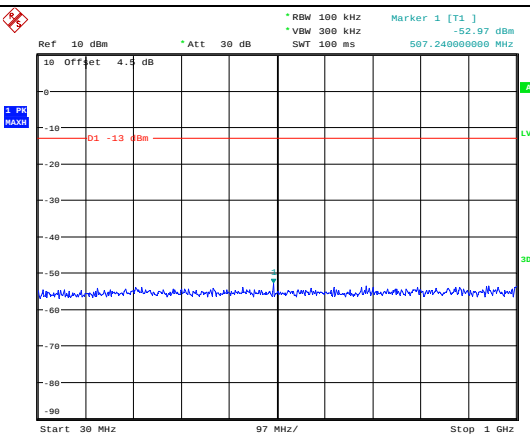


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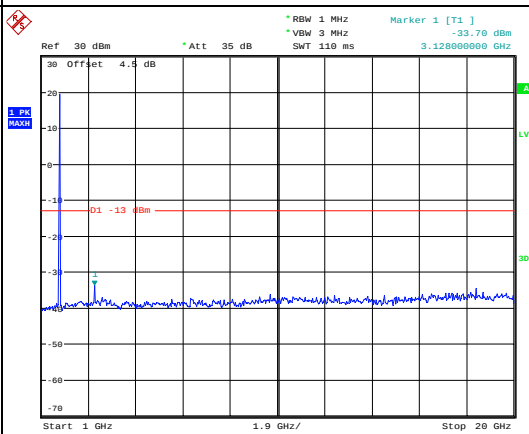


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Middle

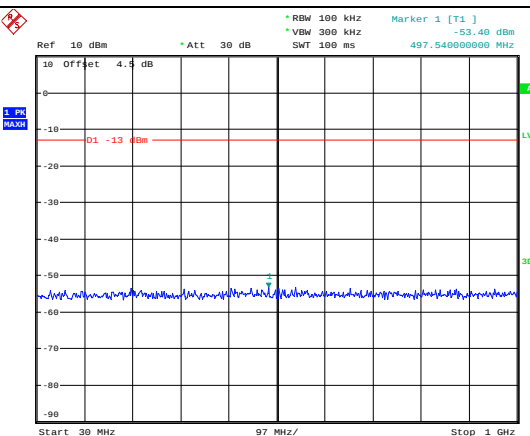


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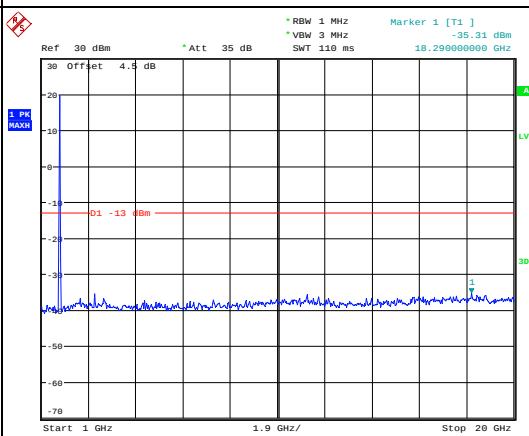


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Highest



Date: 29.JUN.2022 16:55:15



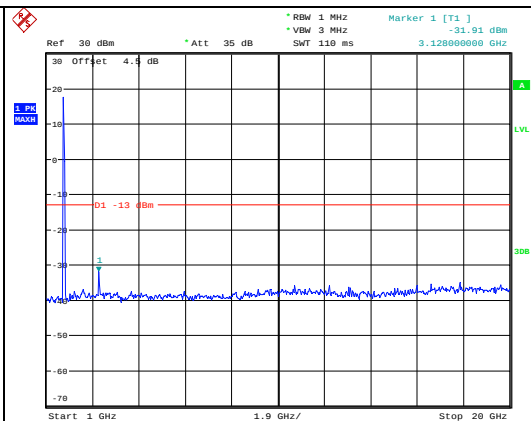
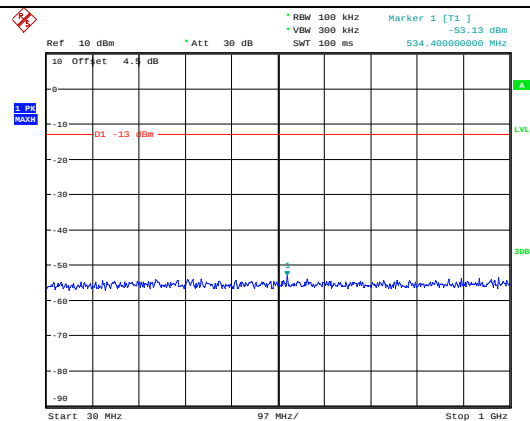
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Spurious Emissions at Antenna Terminal

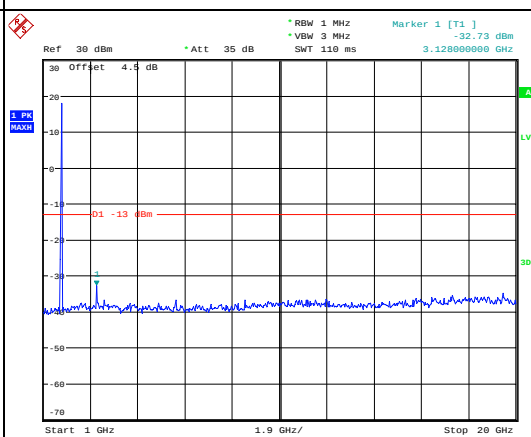
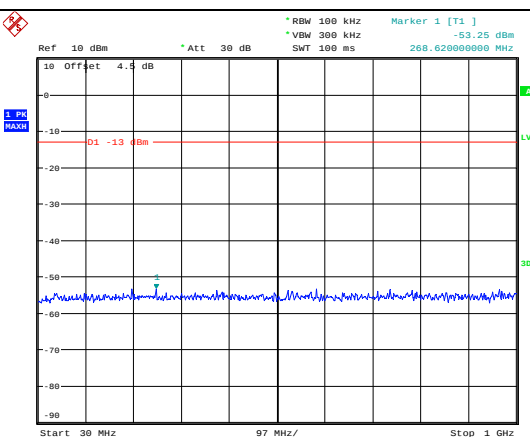
Channel

10MHz Bandwidth QPSK

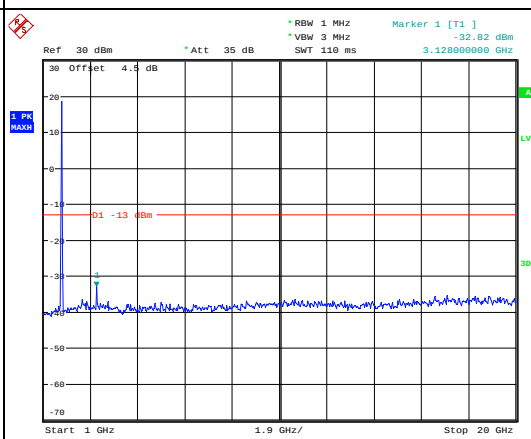
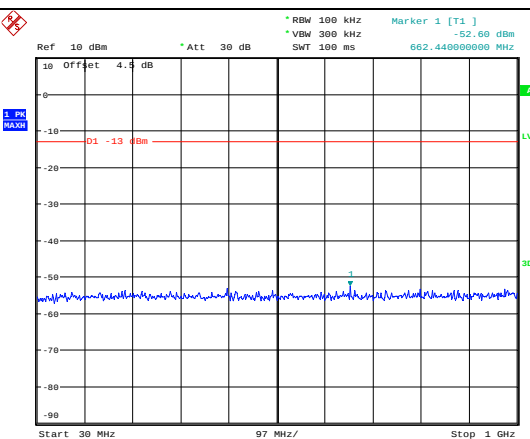
Lowest



Middle



Highest

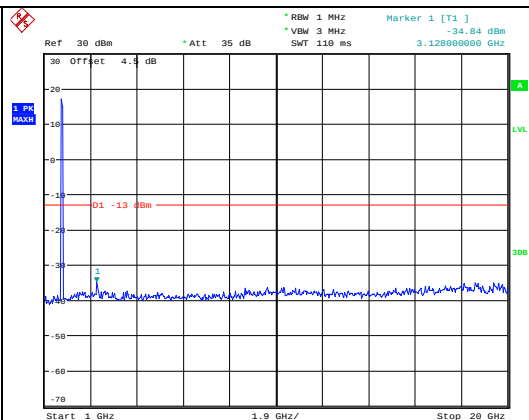
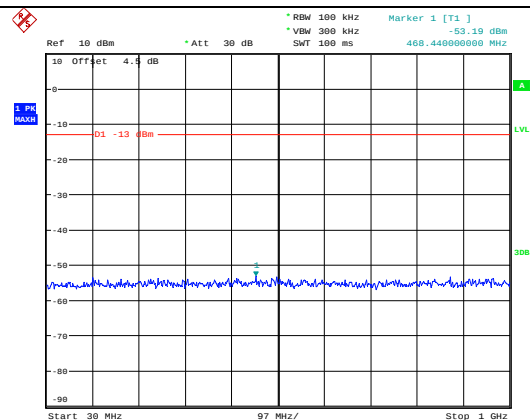


Spurious Emissions at Antenna Terminal

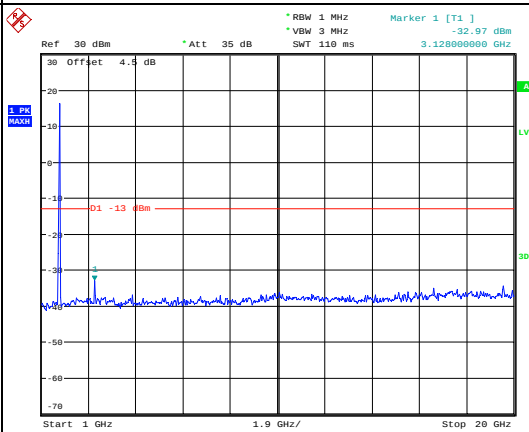
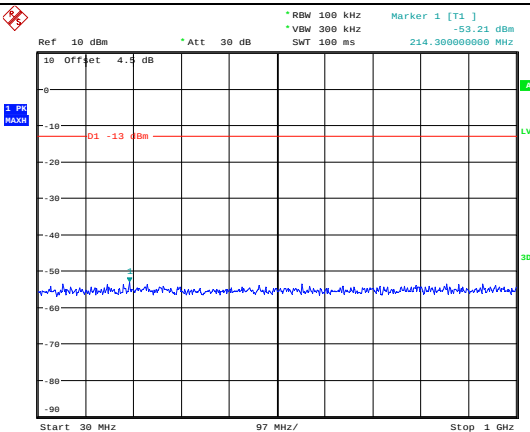
Channel

15MHz Bandwidth QPSK

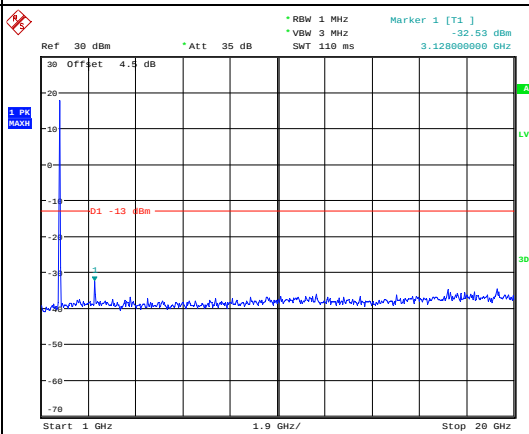
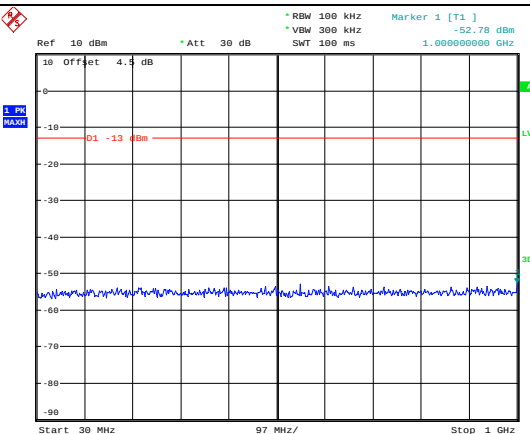
Lowest



Middle



Highest

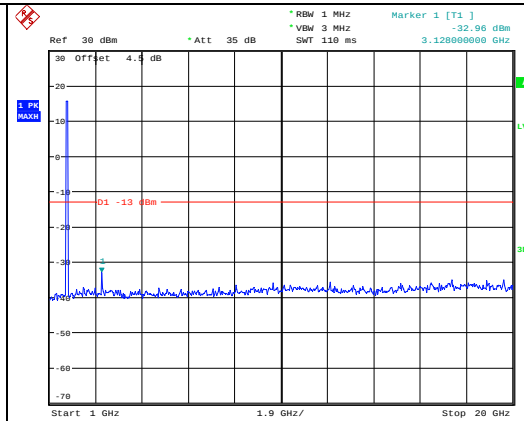
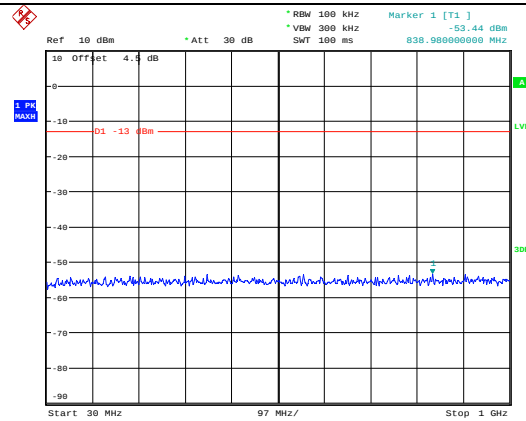


Spurious Emissions at Antenna Terminal

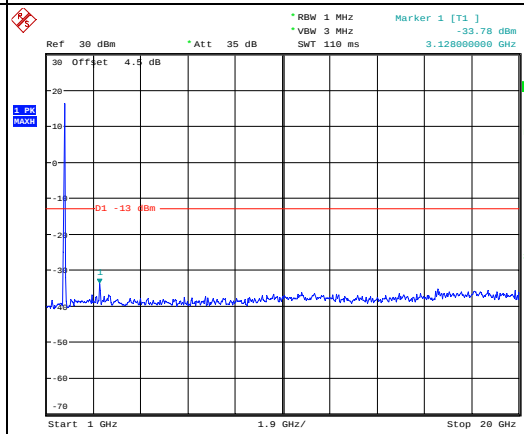
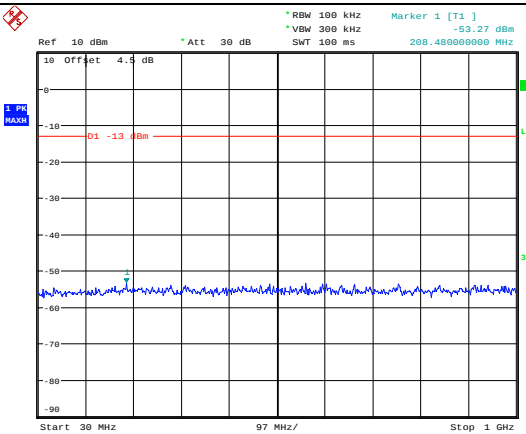
Channel

20MHz Bandwidth QPSK

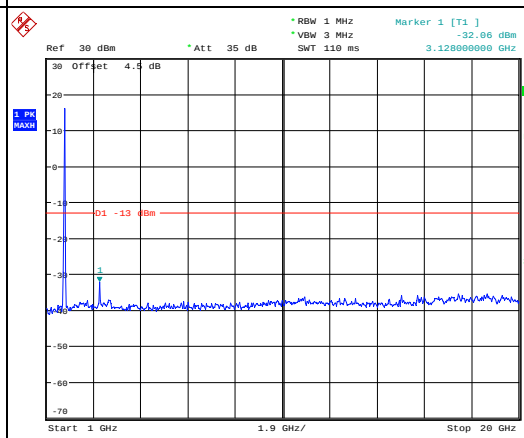
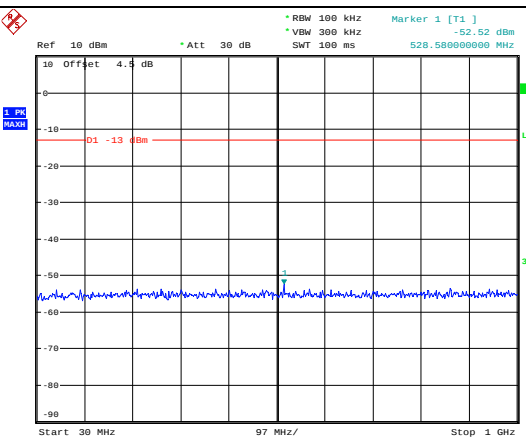
Lowest



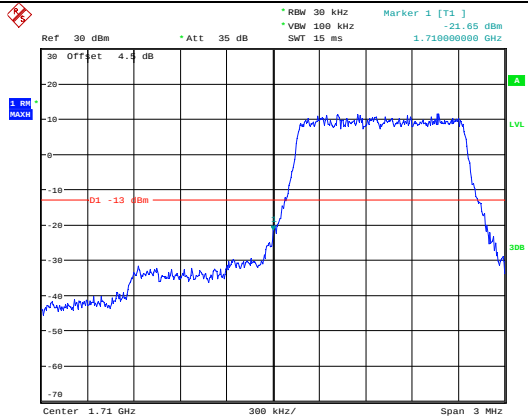
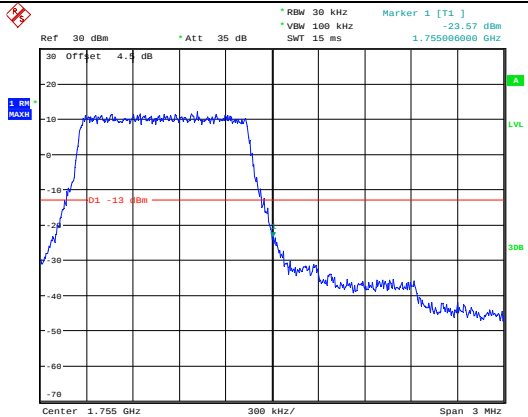
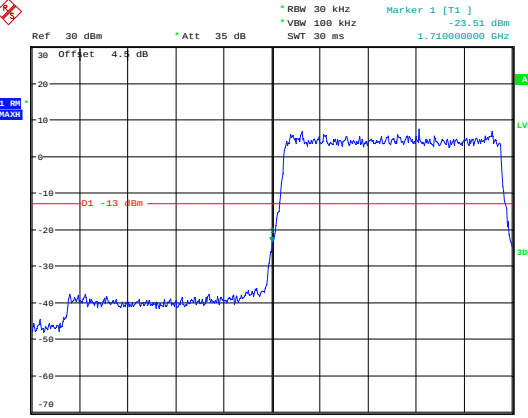
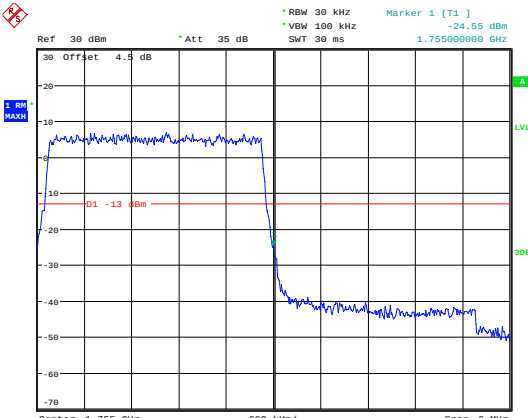
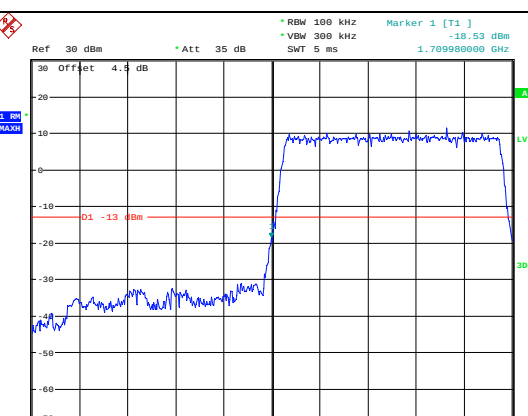
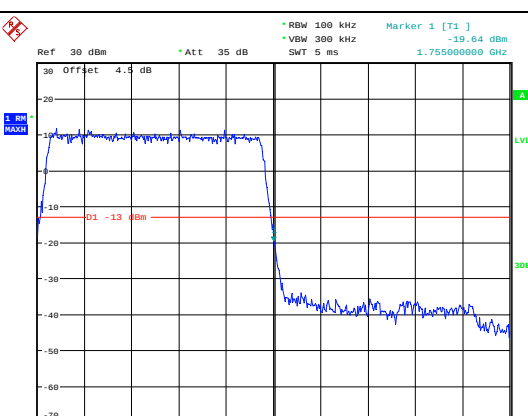
Middle



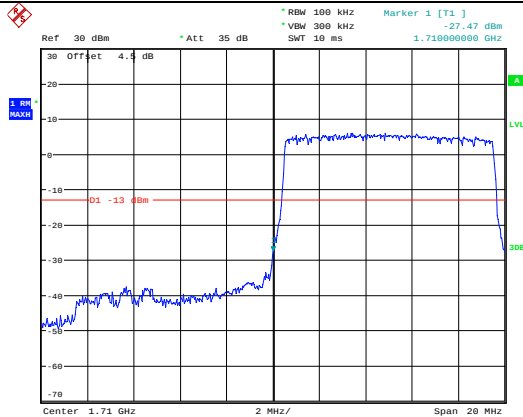
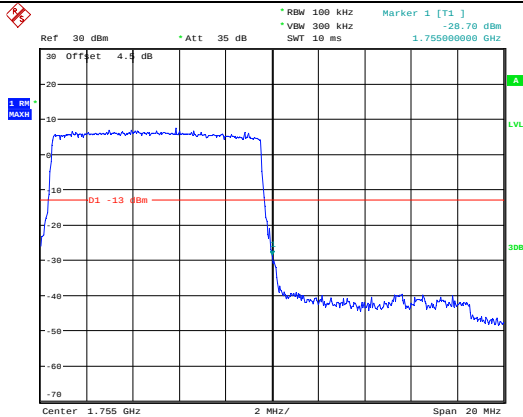
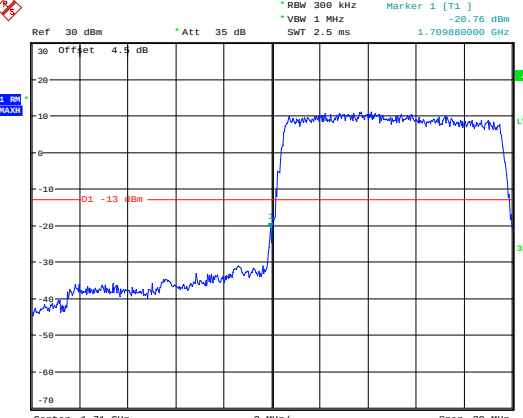
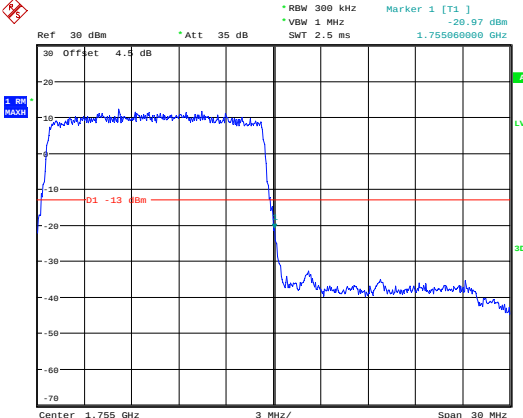
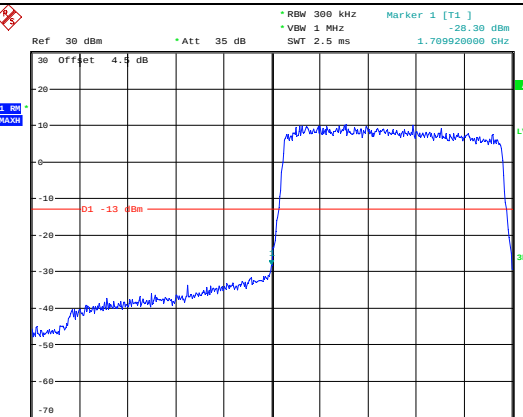
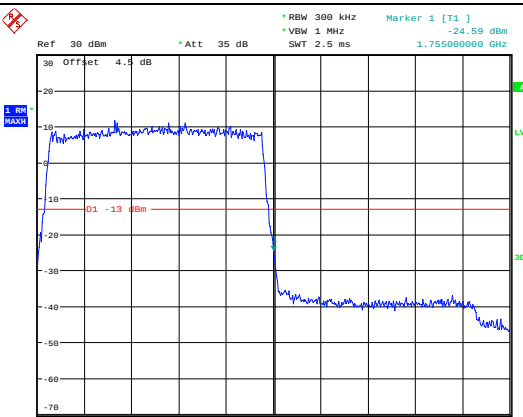
Highest



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 15 ms Marker 1 [T1] -21.65 dBm 1.71000000 GHz Center 1.71 GHz 300 kHz/ Span 3 MHz Date: 29.JUN.2022 19:21:49	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 15 ms Marker 1 [T1] -23.57 dBm 1.75500000 GHz Center 1.755 GHz 300 kHz/ Span 3 MHz Date: 29.JUN.2022 19:22:25
QPSK 3MHz	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -23.51 dBm 1.71000000 GHz Center 1.71 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 19:23:04	 Ref 30 dBm * Att 35 dB RBW 30 kHz VBW 100 kHz SWT 30 ms Marker 1 [T1] -24.55 dBm 1.75500000 GHz Center 1.755 GHz 600 kHz/ Span 6 MHz Date: 29.JUN.2022 19:23:40
QPSK 5MHz	 Ref 30 dBm * Att 35 dB RBW 100 kHz VBW 300 kHz SWT 5 ms Marker 1 [T1] -19.53 dBm 1.70990000 GHz Center 1.71 GHz 1 MHz/ Span 10 MHz Date: 29.JUN.2022 19:24:16	 Ref 30 dBm * Att 35 dB RBW 100 kHz VBW 300 kHz SWT 5 ms Marker 1 [T1] -19.64 dBm 1.75500000 GHz Center 1.755 GHz 1 MHz/ Span 10 MHz Date: 29.JUN.2022 19:24:52

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	 Date: 29.JUN.2022 19:25:34	 Date: 29.JUN.2022 19:26:07
QPSK 15MHz	 Date: 29.JUN.2022 19:26:43	 Date: 29.JUN.2022 19:27:19
QPSK 20MHz	 Date: 29.JUN.2022 19:27:57	 Date: 29.JUN.2022 19:28:32