

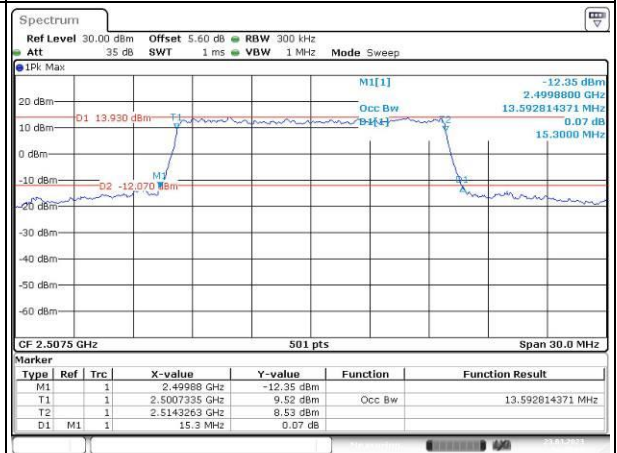
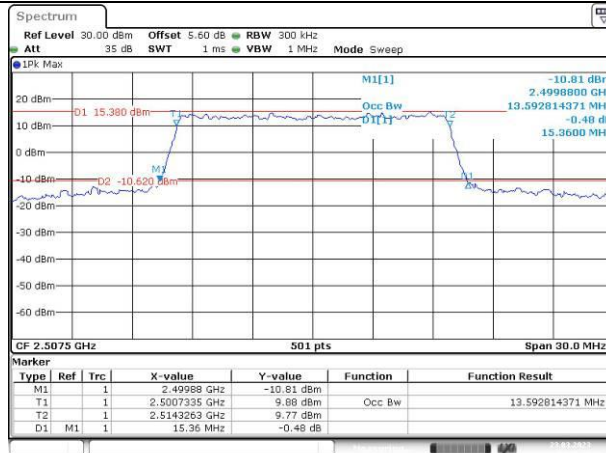
### Occupied Bandwidth

Channel

15MHz Bandwidth QPSK

15MHz Bandwidth 16QAM

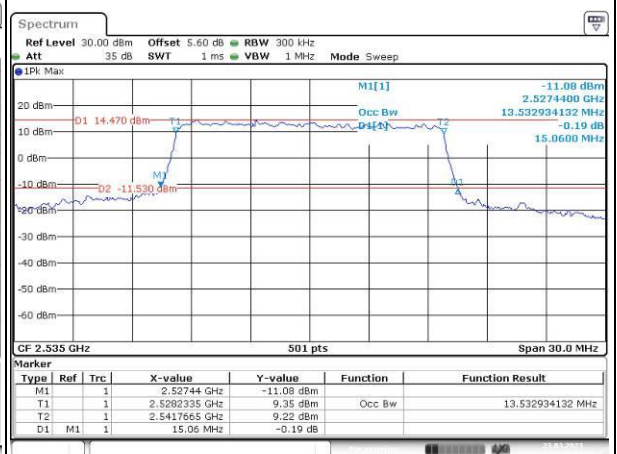
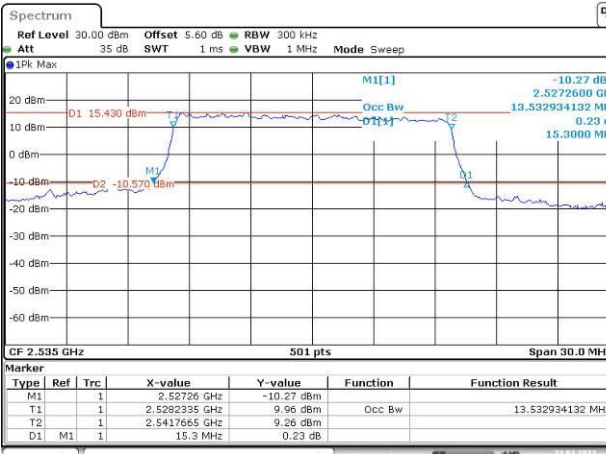
Lowest



Date: 23.MAR.2023 04:46:29

Date: 23.MAR.2023 04:47:01

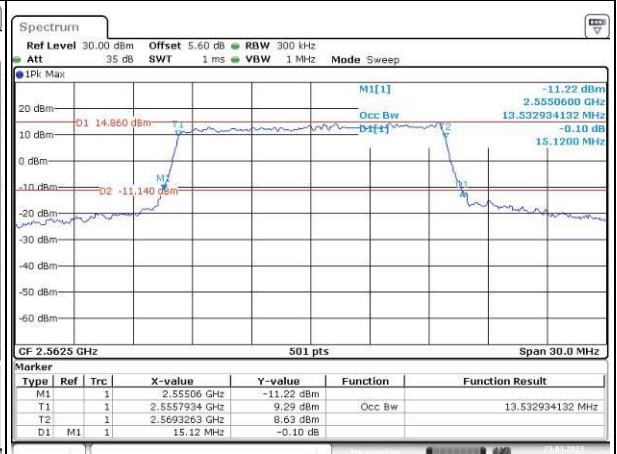
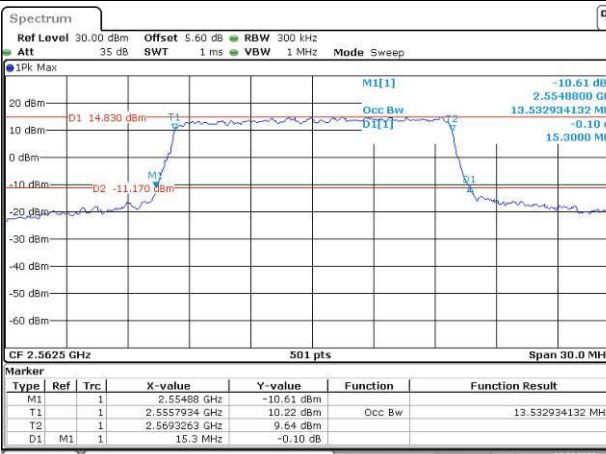
Middle



Date: 23.MAR.2023 04:47:29

Date: 23.MAR.2023 04:47:57

Highest



Date: 23.MAR.2023 04:48:25

Date: 23.MAR.2023 04:48:56

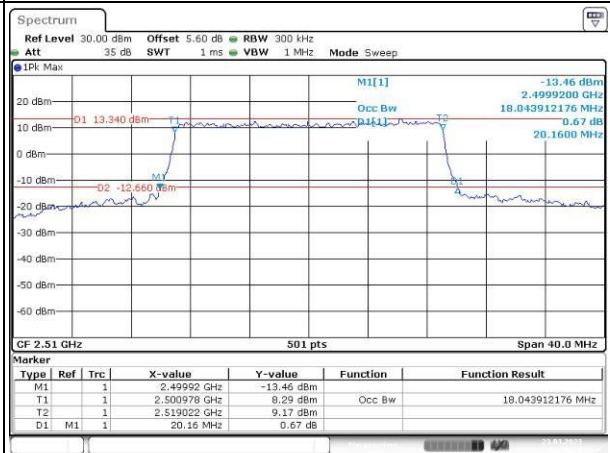
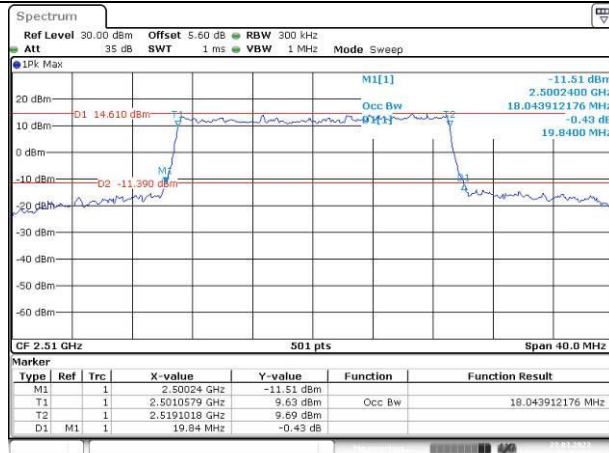
### Occupied Bandwidth

Channel

20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

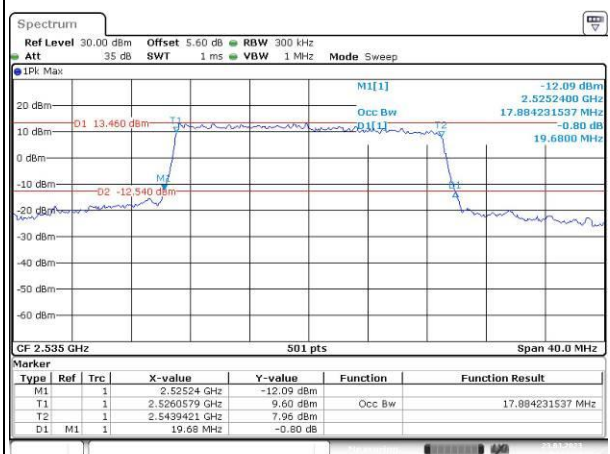
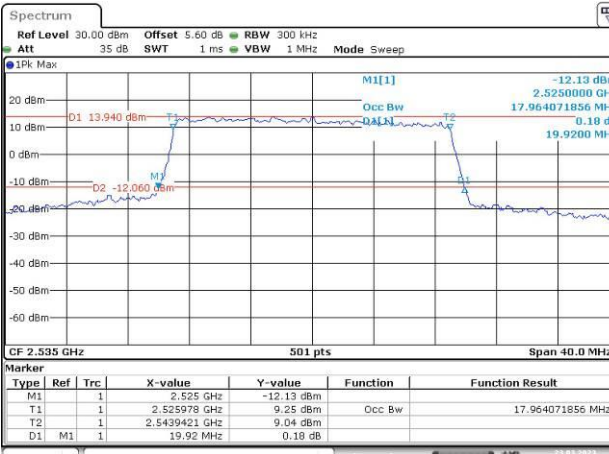
Lowest



Date: 23.MAR.2023 04:49:54

Date: 23.MAR.2023 04:50:25

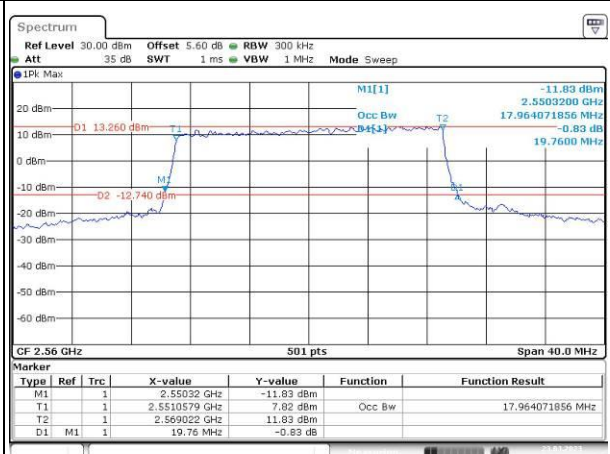
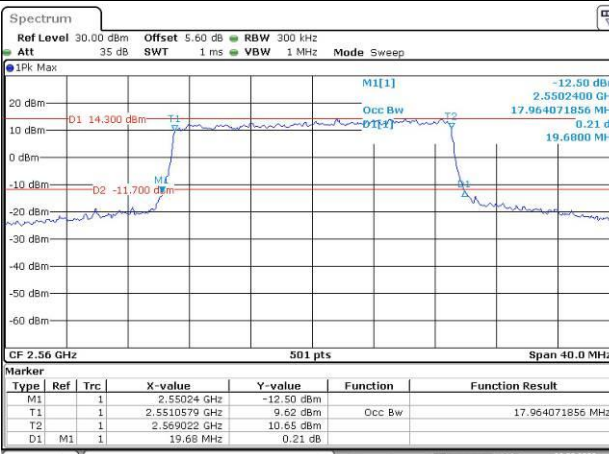
Middle



Date: 23.MAR.2023 04:50:57

Date: 23.MAR.2023 04:51:25

Highest



Date: 23.MAR.2023 04:51:53

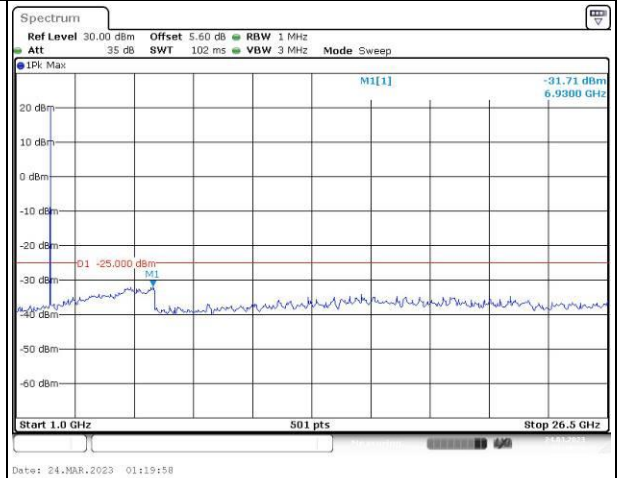
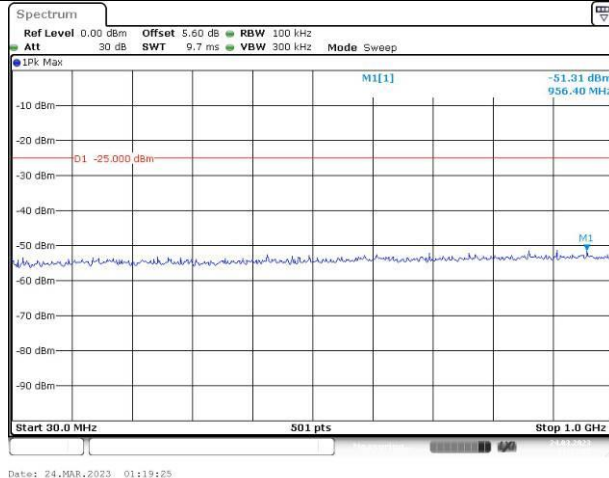
Date: 23.MAR.2023 04:52:24

### Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

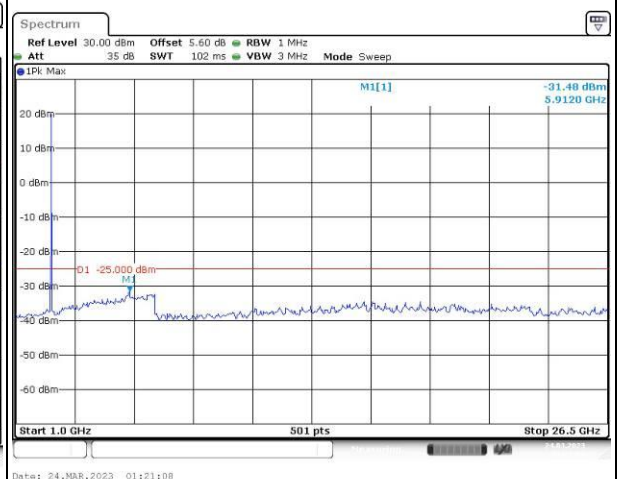
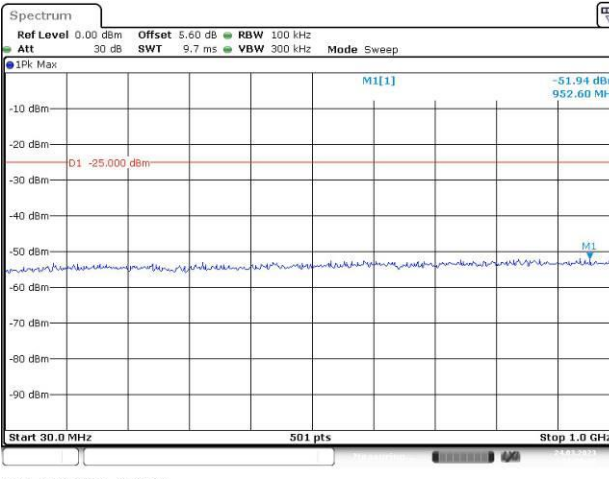
Lowest



Date: 24.MAR.2023 01:19:25

Date: 24.MAR.2023 01:19:58

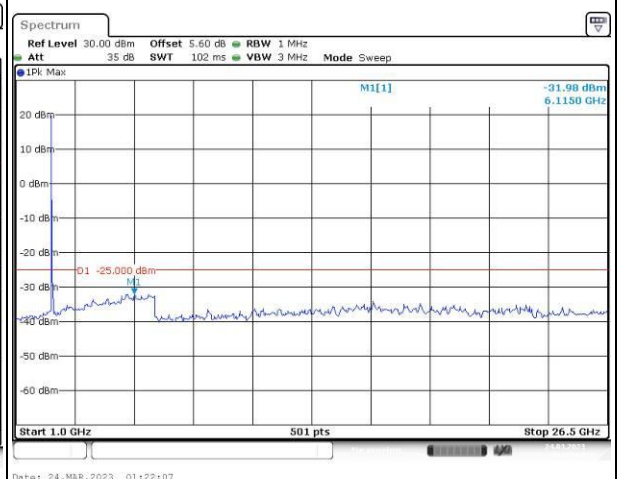
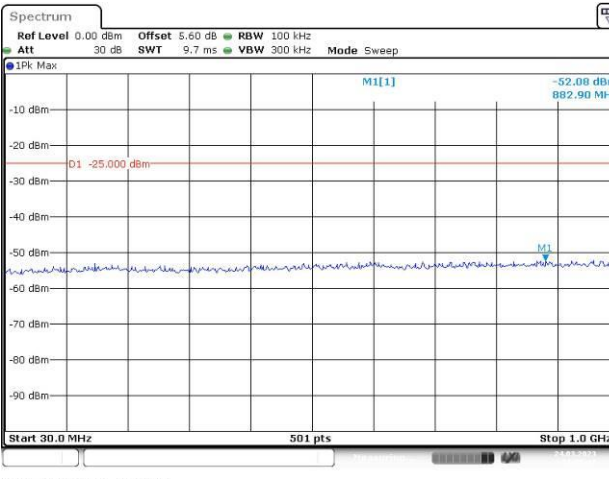
Middle



Date: 24.MAR.2023 01:20:38

Date: 24.MAR.2023 01:21:08

Highest



Date: 24.MAR.2023 01:21:41

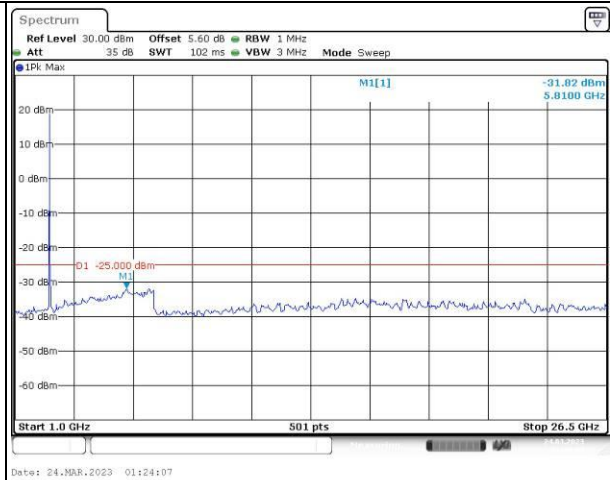
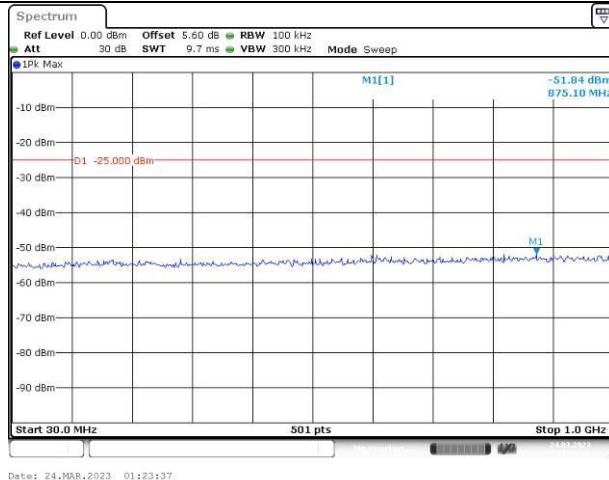
Date: 24.MAR.2023 01:22:07

Spurious Emissions at Antenna Terminal

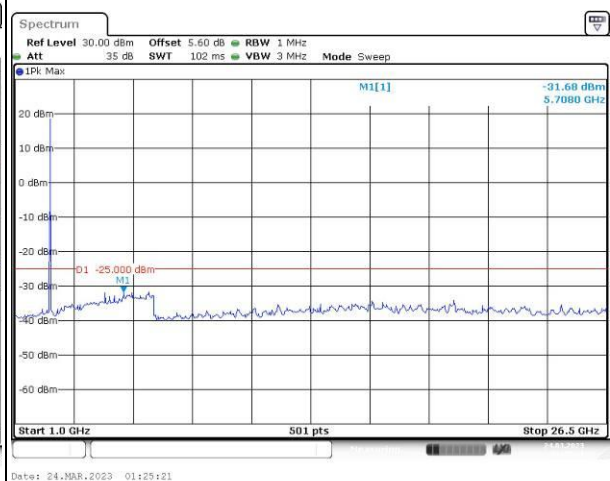
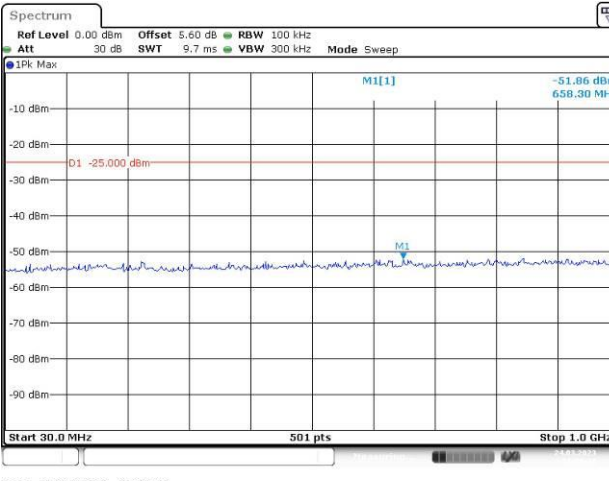
Channel

10MHz Bandwidth QPSK

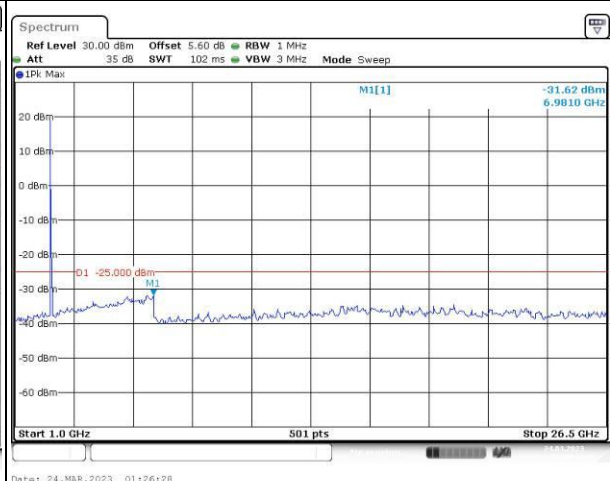
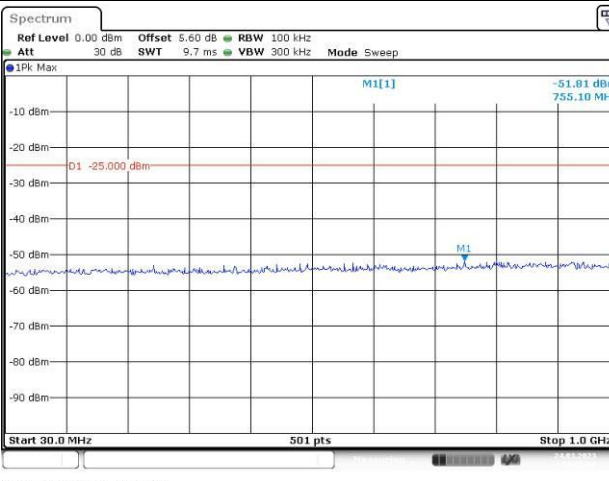
Lowest



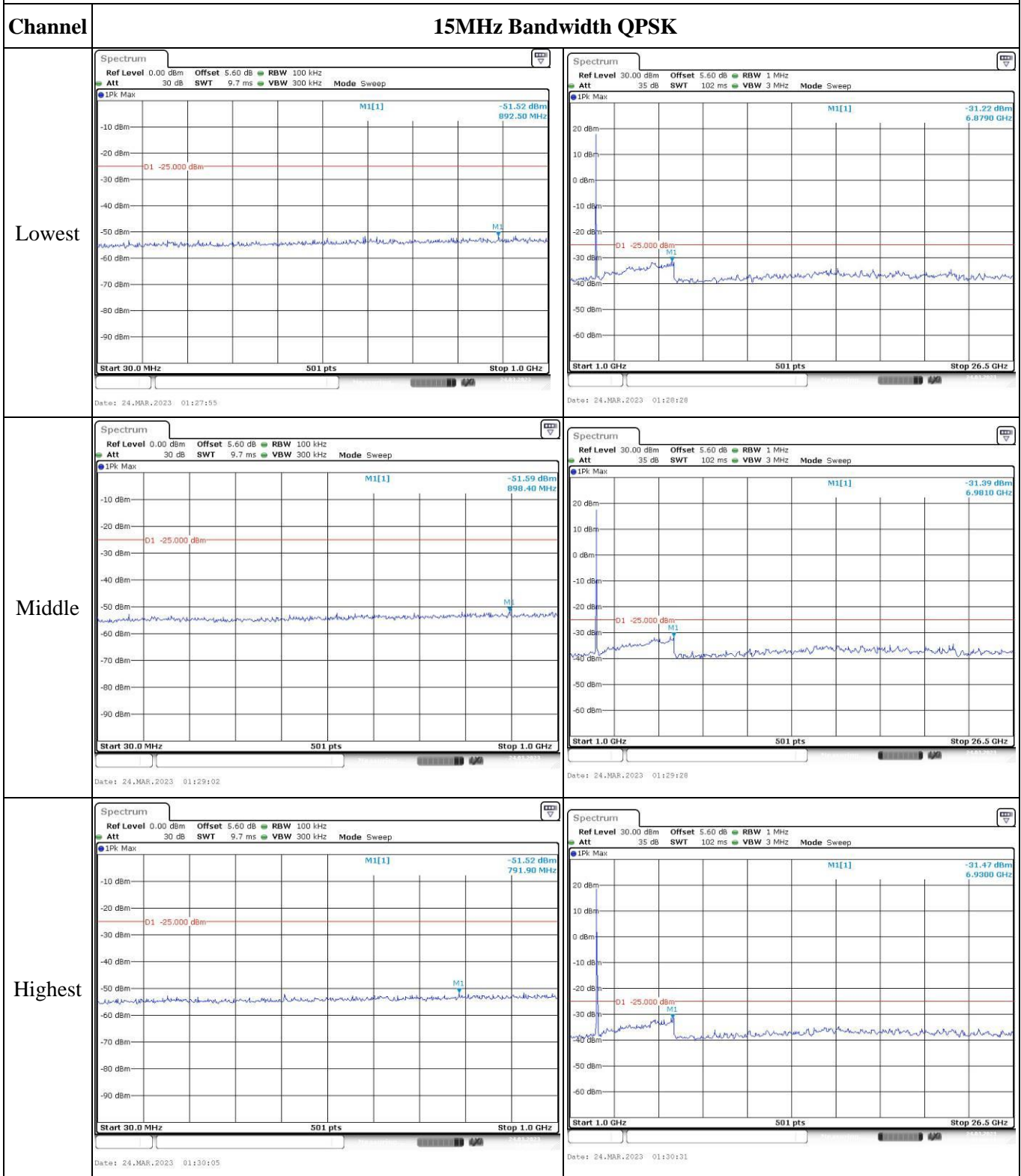
Middle



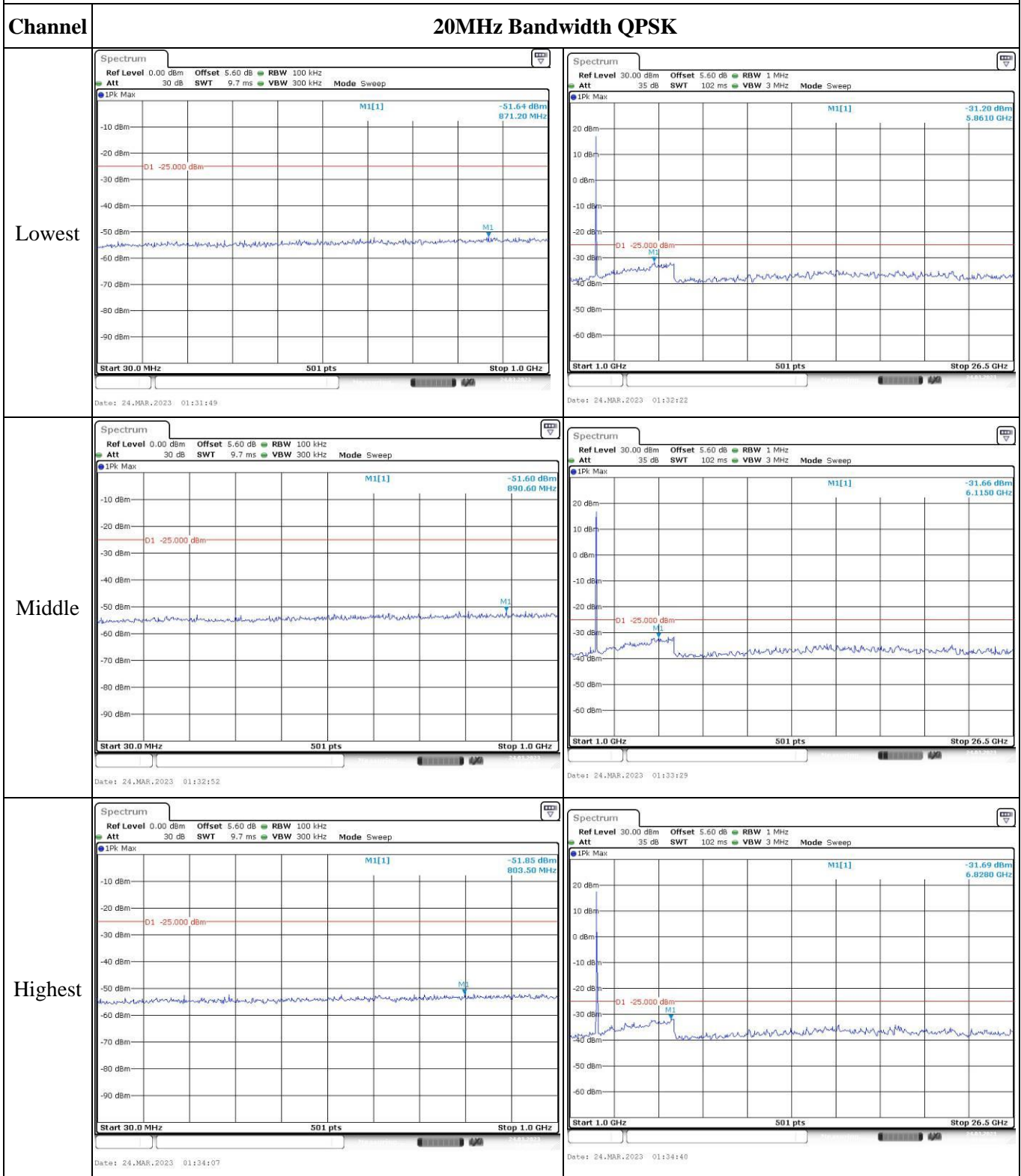
Highest



### Spurious Emissions at Antenna Terminal



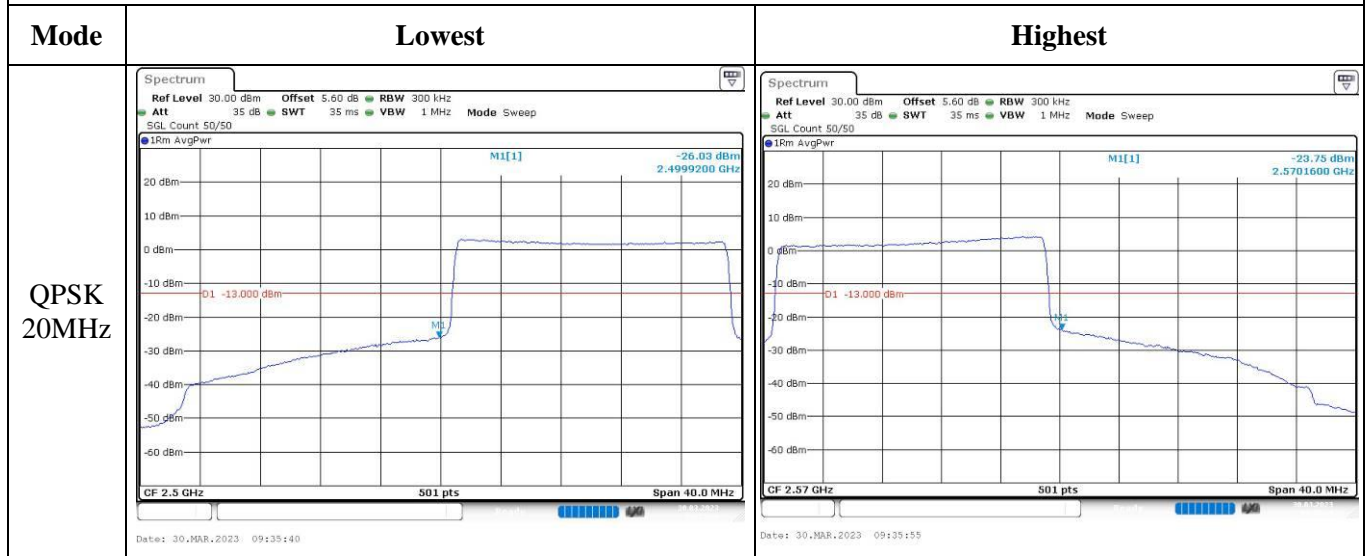
### Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 5MHz		
QPSK 10MHz		
QPSK 15MHz		

Out of band emission, Band Edge

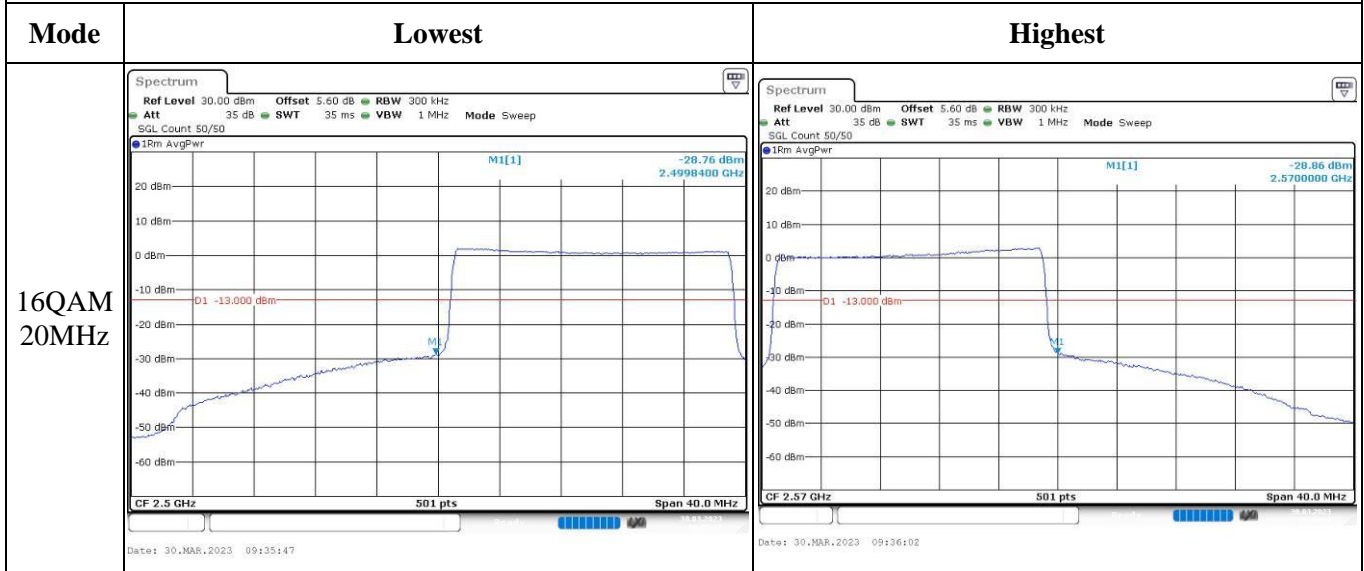




Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 5MHz		
16QAM 10MHz		
16QAM 15MHz		

Out of band emission, Band Edge



**4.10 Antenna Port Test Data and Results for LTE Band 12**

Serial Number:	2205	Test Date:	2023/3/23~2023/3/30
Test Site:	RF	Test Mode:	Transmitting
Tester:	Jou Zhou	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.1~25.3	Relative Humidity: (%)	41~56	ATM Pressure: (kPa)	100.1~101.6
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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	2022/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100004	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554404	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
Weinschel	Power splitter	1515	RA915	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/7/15	2023/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/4/6	2023/4/5
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A

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

**Test Frequency For Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	699.7	707.5	715.3
3MHz	700.5	707.5	714.5
5MHz	701.5	707.5	713.5
10MHz	704	707.5	711

**Test Data:****FCC §2.1046; §27.50(c) (10)****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	23.2	23.13	23.05	20.37	34.77
	RB1#3	23.25	23.28	23.23		
	RB1#5	23.19	23.12	23.05		
	RB3#0	23.23	23.13	23.03		
	RB3#3	23.21	23.18	22.98		
	RB6#0	22.24	22.15	22.13		
1.4MHz 16QAM	RB1#0	22.26	22.06	21.7	19.48	34.77
	RB1#3	22.39	22.26	21.89		
	RB1#5	22.25	22.08	21.63		
	RB3#0	22.13	22.19	21.74		
	RB3#3	22.18	22.19	21.84		
	RB6#0	21.26	21.1	20.77		
3MHz QPSK	RB1#0	23.24	23.17	22.66	20.33	34.77
	RB1#8	23.22	23.19	22.67		
	RB1#14	23.16	23.03	22.62		
	RB6#0	22.18	21.96	21.54		
	RB6#9	22.17	21.9	21.59		
	RB15#0	22.17	21.83	21.54		
3MHz 16QAM	RB1#0	22.74	21.89	21.54	19.83	34.77
	RB1#8	22.67	21.88	21.58		
	RB1#14	22.65	21.79	21.47		
	RB6#0	21.26	20.66	20.53		
	RB6#9	21.24	20.68	20.54		
	RB15#0	21.27	20.64	20.63		
5MHz QPSK	RB1#0	23.17	22.64	22.5	20.33	34.77
	RB1#13	23.24	22.65	22.66		
	RB1#24	23.17	22.53	22.51		
	RB15#0	22.15	21.73	21.57		
	RB15#10	22.15	21.7	21.55		
	RB25#0	22.15	21.68	21.56		
5MHz 16QAM	RB1#0	22.35	21.62	21.4	19.49	34.77
	RB1#13	22.4	21.78	21.56		
	RB1#24	22.07	21.66	21.33		
	RB15#0	20.88	20.74	20.63		
	RB15#10	20.94	20.71	20.64		
	RB25#0	20.96	20.68	20.65		

10MHz QPSK	RB1#0	23.18	22.61	22.61	20.5	34.77
	RB1#25	23.41	22.76	22.78		
	RB1#49	22.86	22.67	22.63		
	RB25#0	21.79	21.73	21.71		
	RB25#25	21.68	21.75	21.68		
	RB50#0	21.68	21.73	21.73		
10MHz 16QAM	RB1#0	21.65	22.17	21.75	19.46	34.77
	RB1#25	21.85	22.37	21.95		
	RB1#49	21.68	22.2	21.66		
	RB25#0	20.76	20.73	20.65		
	RB25#25	20.74	20.75	20.71		
	RB50#0	20.7	20.69	20.67		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + G<sub>T</sub>(dBd)G<sub>T</sub>(dBd)=G<sub>T</sub>(dBi)-2.15**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	4.67	5.04	5.54	13
	RB50#0	5.25	5.36	5.19	13
10MHz 16QAM	RB1#0	5.3	5.91	6.49	13
	RB50#0	6.14	6.2	6.12	13
<b>Result:</b>					<b>Pass</b>

**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	1.096	1.102	1.102	1.314	1.296	1.326
1.4MHz 16QAM	1.09	1.096	1.102	1.29	1.296	1.326
3MHz QPSK	2.683	2.683	2.683	2.856	2.88	2.88
3MHz 16QAM	2.683	2.683	2.683	2.88	2.868	2.892
5MHz QPSK	4.511	4.511	4.531	5.2	5.16	5.2
5MHz 16QAM	4.551	4.551	4.511	5.18	5.2	5.18
10MHz QPSK	8.942	8.942	9.022	9.88	9.96	10
10MHz 16QAM	8.942	8.942	8.982	9.88	10	9.8

Note: The test plots please refer to the Plots of Occupied Bandwidth

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

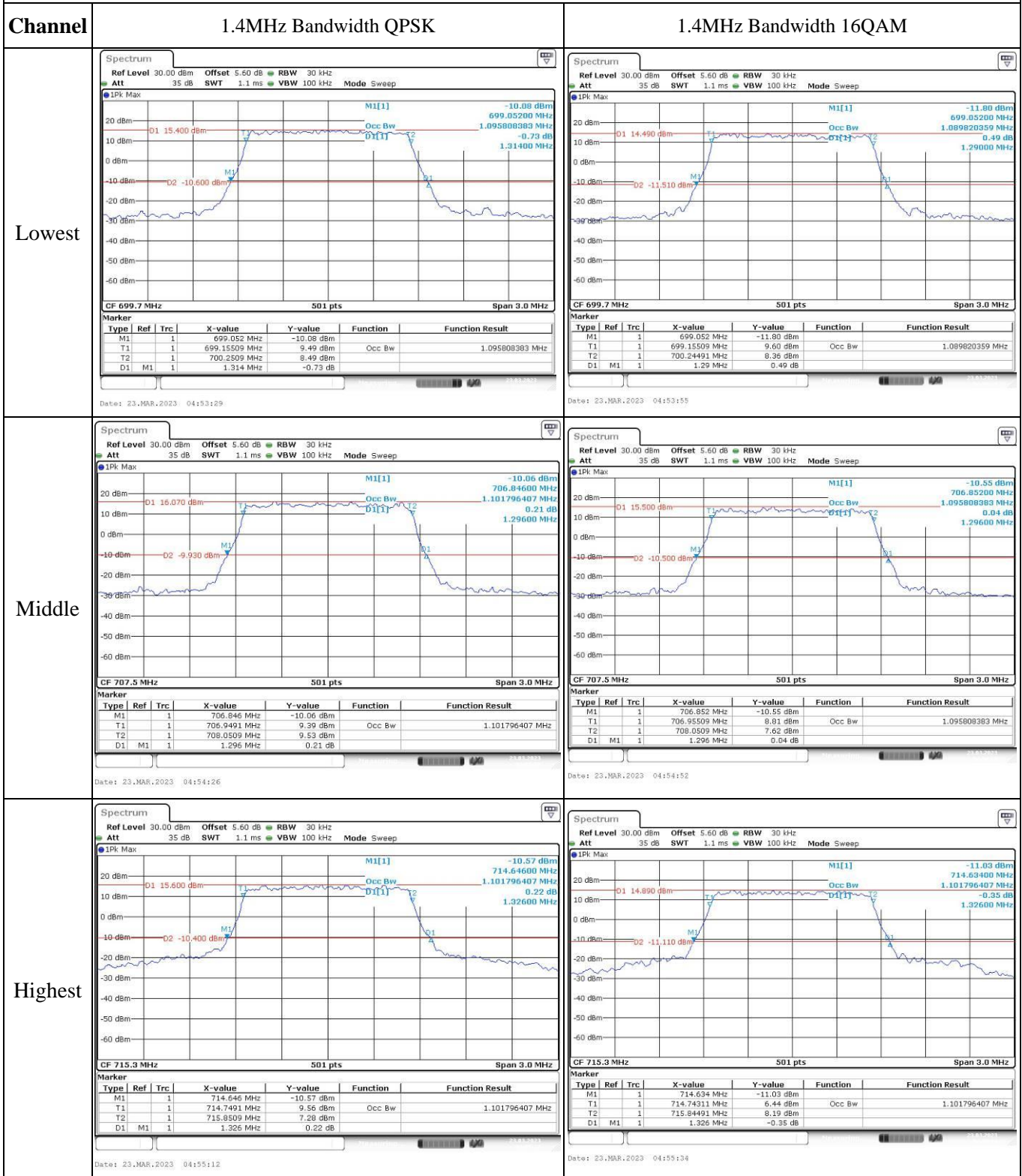
<b>FCC §2.1051, §27.53:Out of band emission, Band Edge</b>	
<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>

<b>FCC §2.1055, §27.54: Frequency Stability</b>						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.345	699.00	715.691	716.00
	-20	3.8	699.388	699.00	715.644	716.00
	-10	3.8	699.338	699.00	715.592	716.00
	0	3.8	699.306	699.00	715.582	716.00
	10	3.8	699.369	699.00	715.523	716.00
	20	3.8	699.329	699.00	715.511	716.00
	30	3.8	699.329	699.00	715.677	716.00
	40	3.8	699.326	699.00	715.671	716.00
Frequency Stability vs. Voltage	20	3.3	699.322	699.00	715.646	716.00
	20	4.3	699.303	699.00	715.602	716.00
					<b>Result:</b>	<b>Pass</b>

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature(°C)	Voltage(V <sub>DC</sub> )	Lower Edge(MHz)		Upper Edge(MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.764	699.00	715.677	716.00
	-20	3.8	699.719	699.00	715.647	716.00
	-10	3.8	699.653	699.00	715.630	716.00
	0	3.8	699.626	699.00	715.698	716.00
	10	3.8	699.668	699.00	715.657	716.00
	20	3.8	699.629	699.00	715.611	716.00
	30	3.8	699.610	699.00	715.602	716.00
	40	3.8	699.672	699.00	715.664	716.00
Frequency Stability vs. Voltage	20	3.3	699.679	699.00	715.633	716.00
	20	4.3	699.623	699.00	715.683	716.00
					<b>Result:</b>	<b>Pass</b>

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

**Occupied Bandwidth**



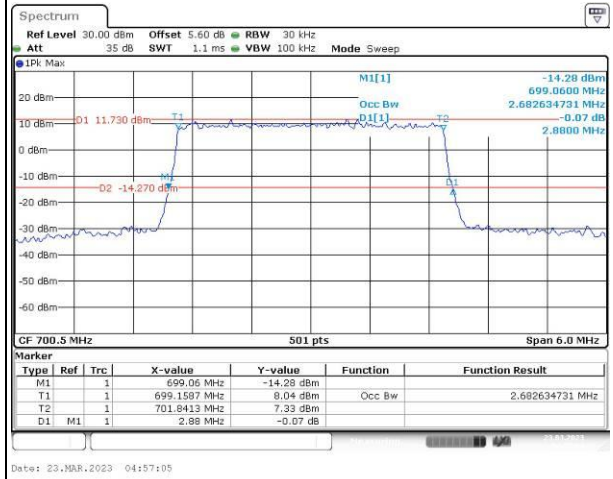
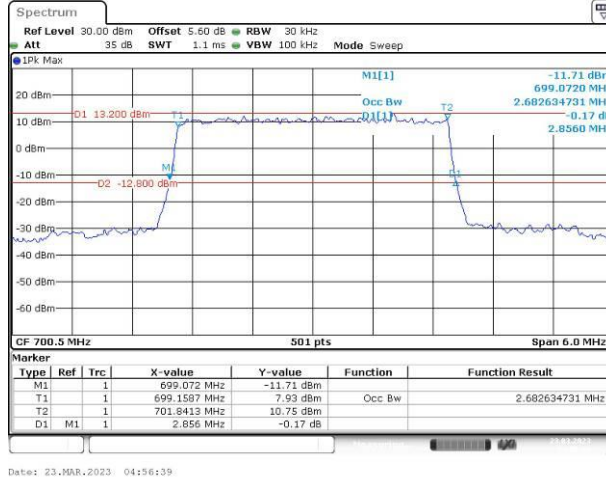
### Occupied Bandwidth

Channel

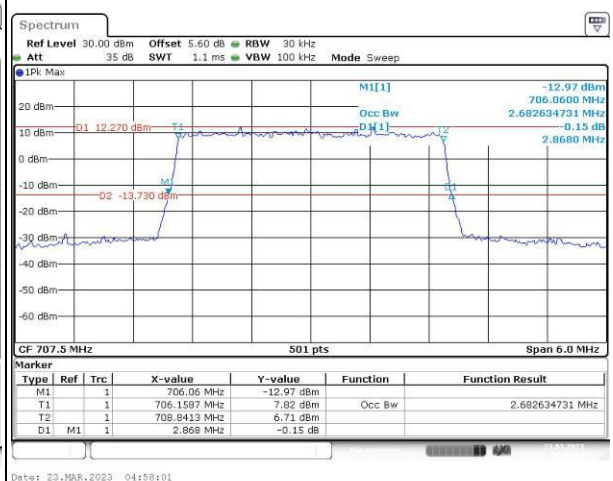
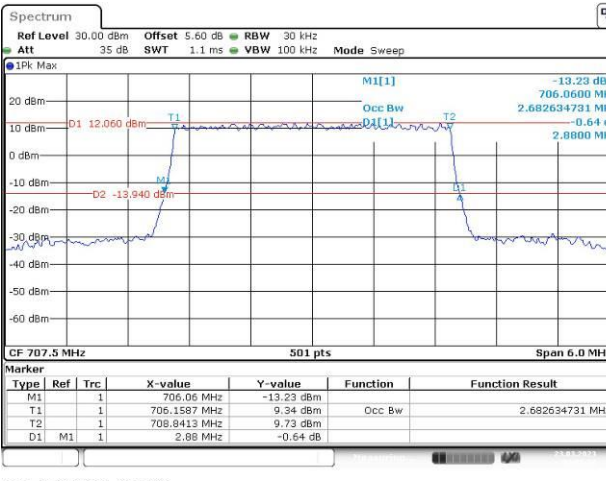
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

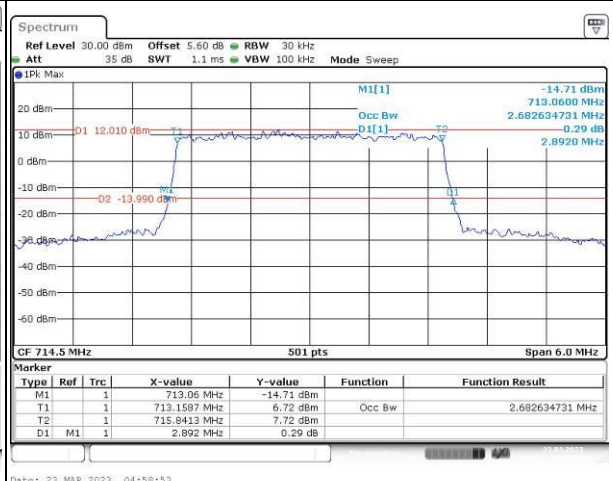
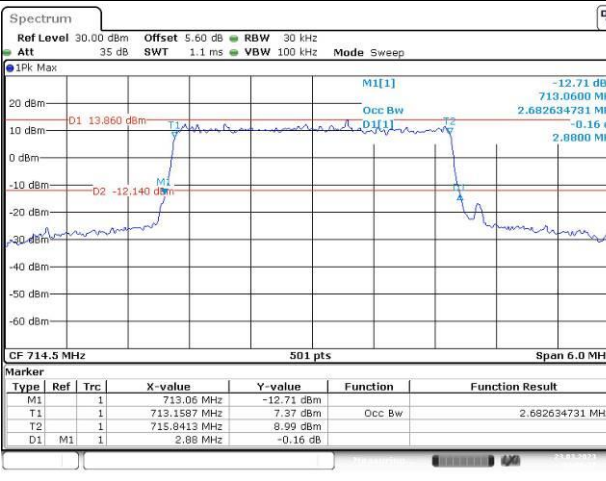
Lowest



Middle



Highest





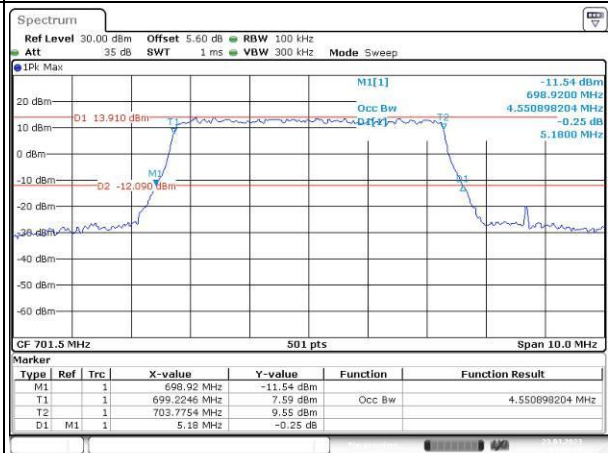
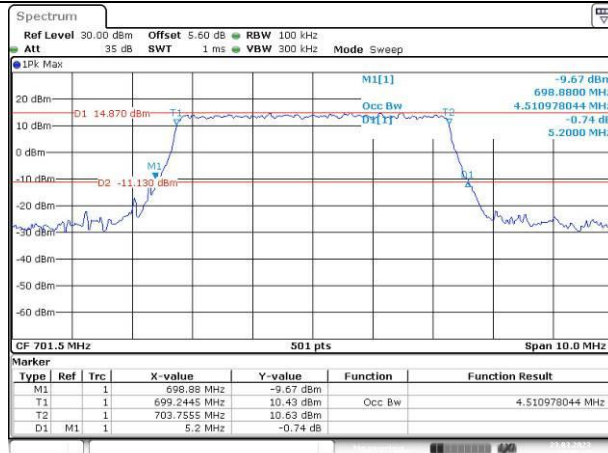
### Occupied Bandwidth

Channel

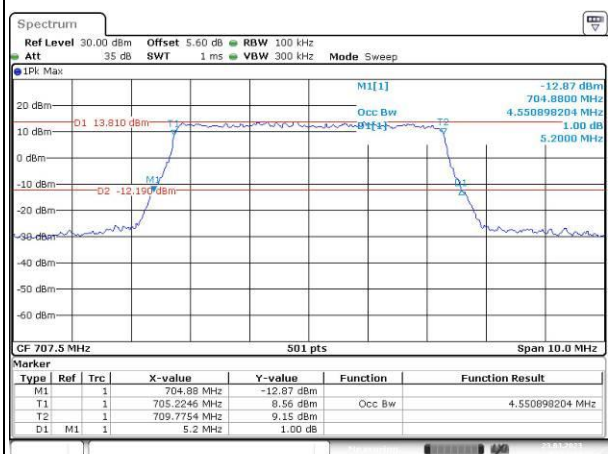
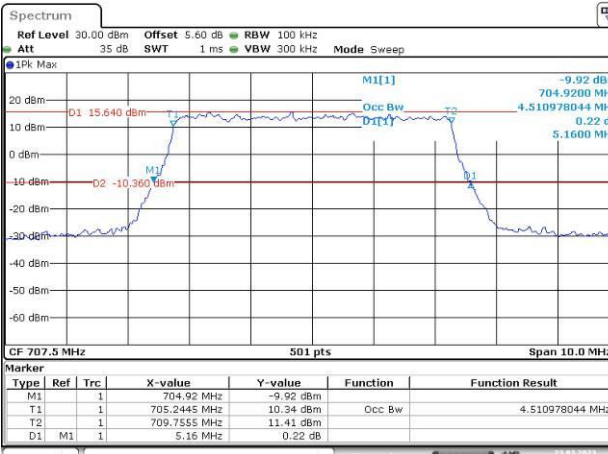
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

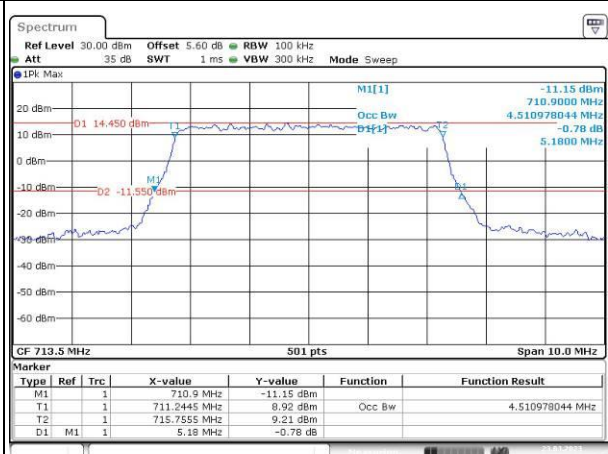
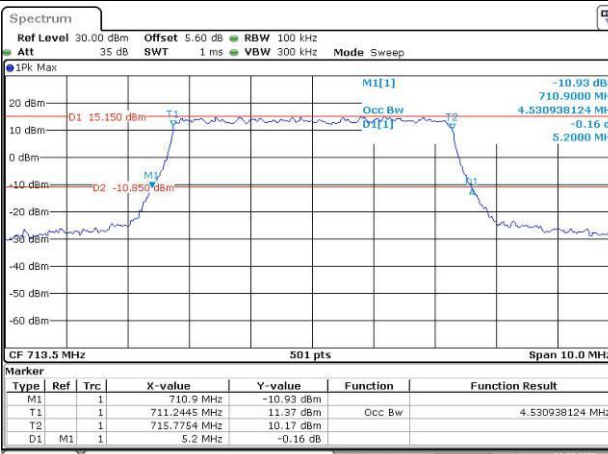
Lowest



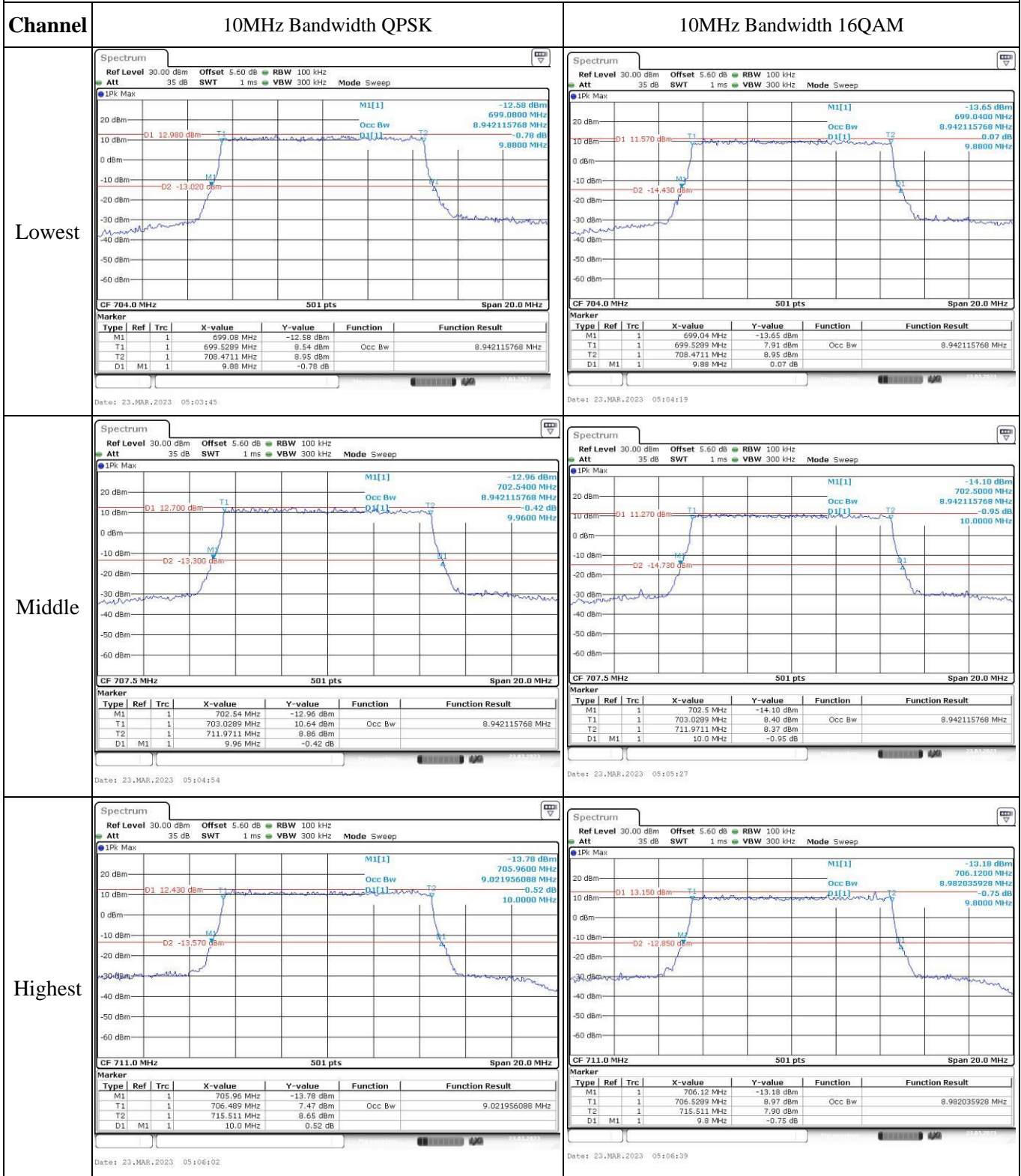
Middle



Highest



### Occupied Bandwidth



### Spurious Emissions at Antenna Terminal

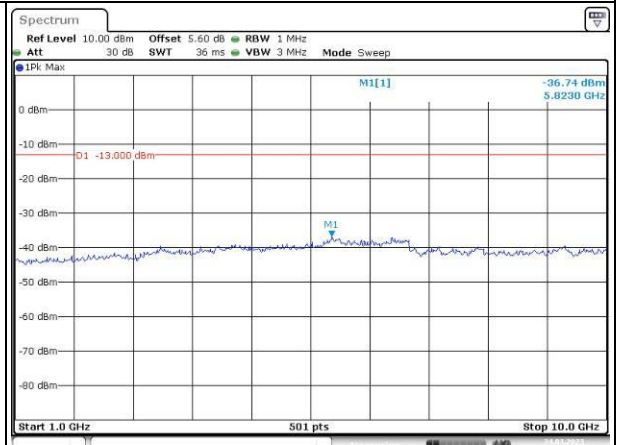
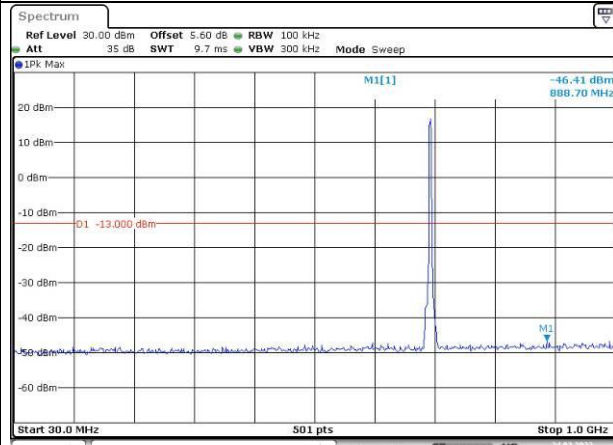
Channel	1.4MHz Bandwidth QPSK	
Lowest	<p>Ref Level 30.00 dBm Offset 5.60 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep</p> <p>IPK Max M1[1] -39.50 dBm 708.60 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>Date: 24.MAR.2023 01:36:13</p>	<p>Ref Level 10.00 dBm Offset 5.60 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Sweep</p> <p>IPK Max M1[1] -37.00 dBm 5.9310 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 10.0 GHz</p> <p>Date: 24.MAR.2023 01:36:37</p>
	Middle	<p>Ref Level 30.00 dBm Offset 5.60 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep</p> <p>IPK Max M1[1] -46.63 dBm 985.50 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>Date: 24.MAR.2023 01:37:10</p>
Highest		<p>Ref Level 30.00 dBm Offset 5.60 dB RBW 100 kHz Att 35 dB SWT 9.7 ms VBW 300 kHz Mode Sweep</p> <p>IPK Max M1[1] -46.93 dBm 884.80 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>Date: 24.MAR.2023 01:38:16</p>

### Spurious Emissions at Antenna Terminal

Channel

3MHz Bandwidth QPSK

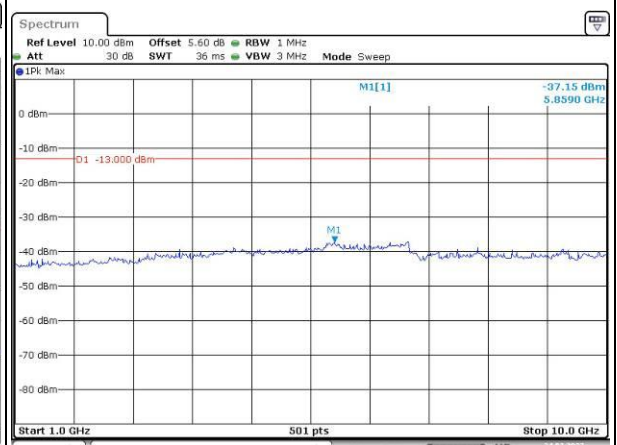
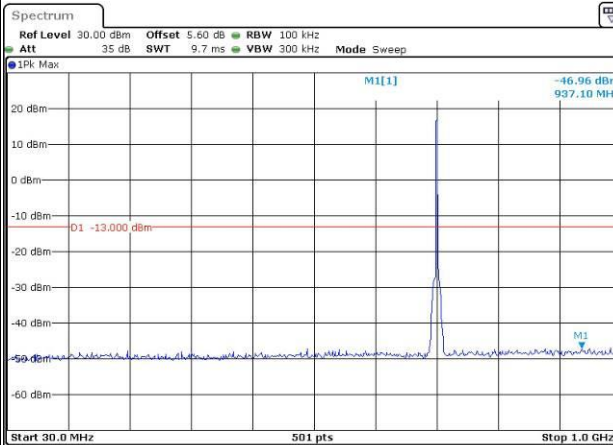
Lowest



Date: 24.MAR.2023 01:39:48

Date: 24.MAR.2023 01:40:18

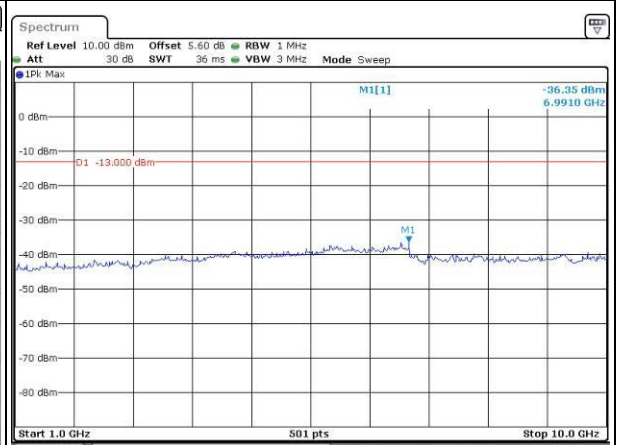
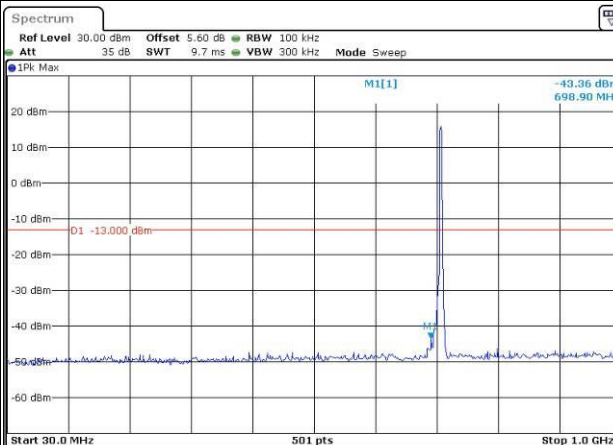
Middle



Date: 24.MAR.2023 01:40:51

Date: 24.MAR.2023 01:41:24

Highest



Date: 24.MAR.2023 01:41:57

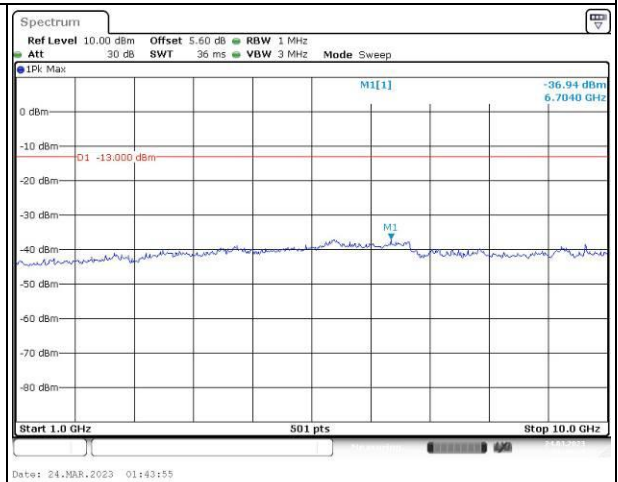
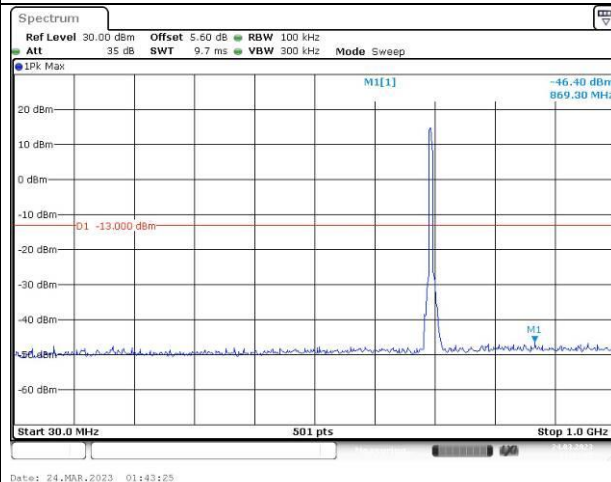
Date: 24.MAR.2023 01:42:26

### Spurious Emissions at Antenna Terminal

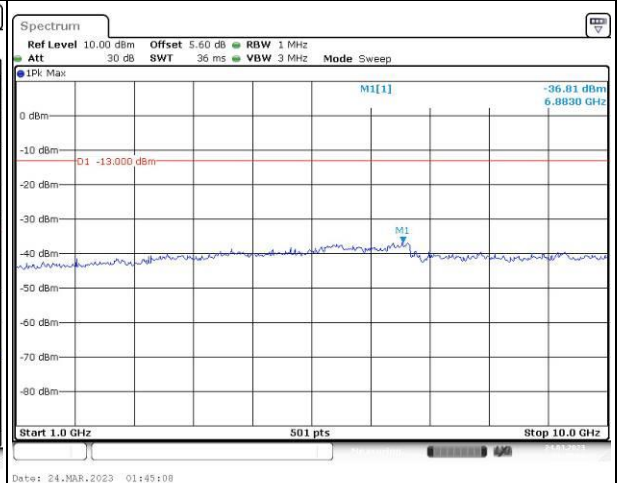
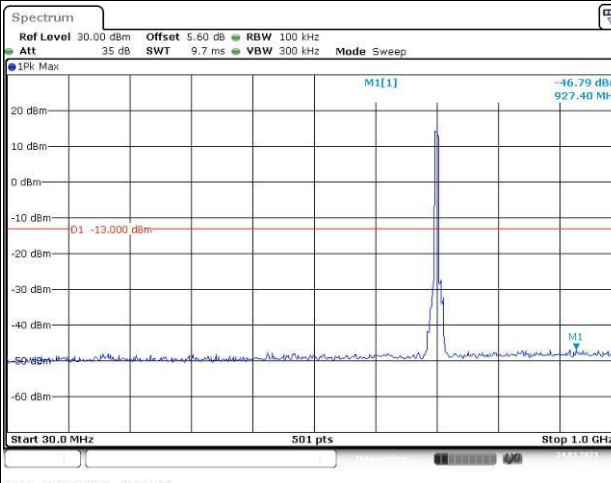
Channel

5MHz Bandwidth QPSK

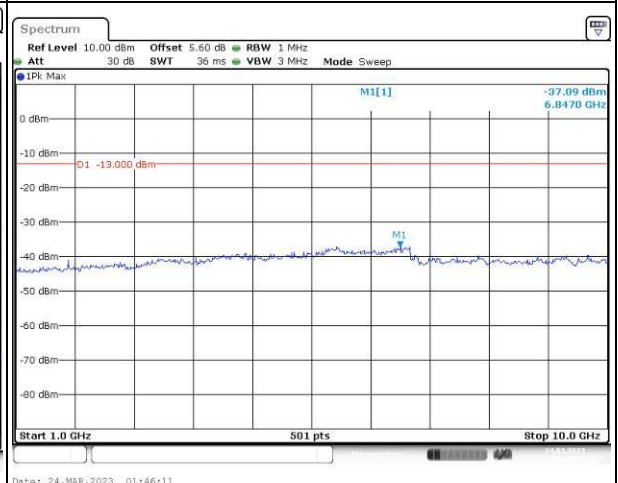
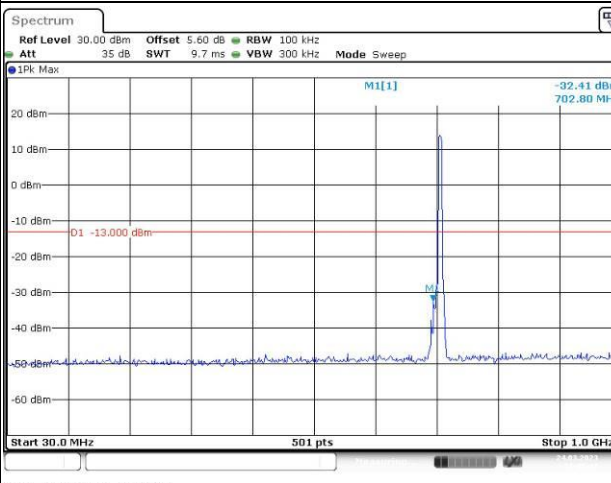
Lowest



Middle



Highest

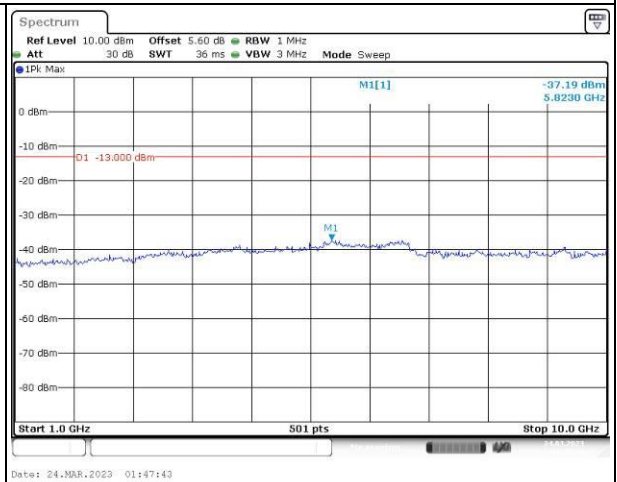
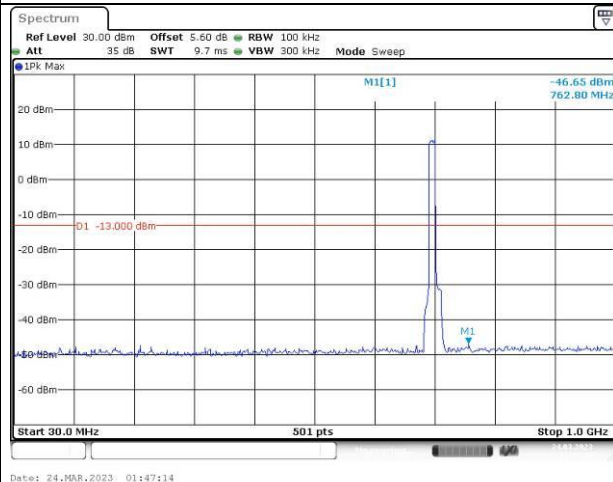


### Spurious Emissions at Antenna Terminal

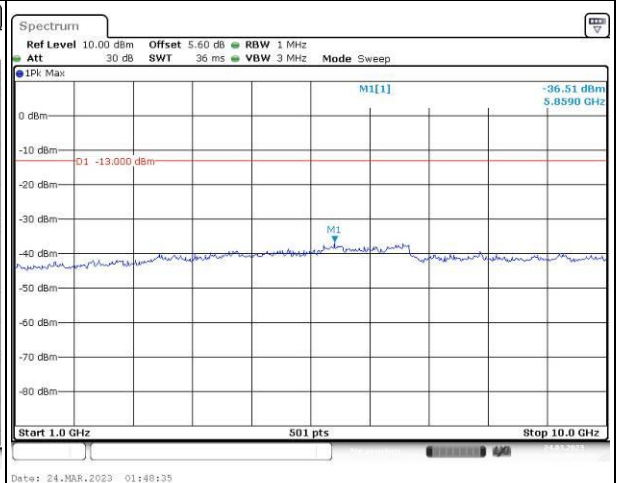
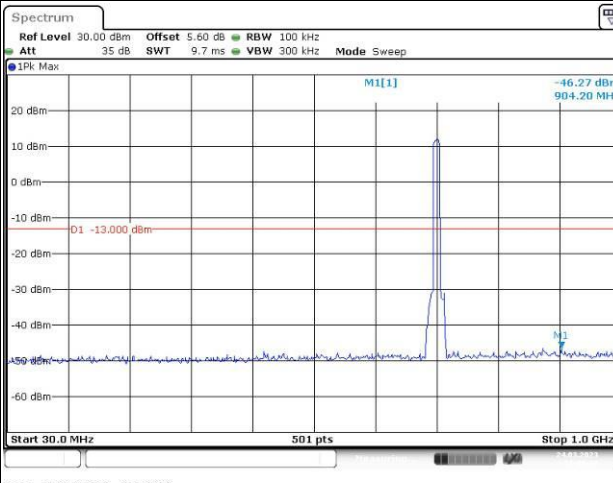
Channel

10MHz Bandwidth QPSK

Lowest



Middle



Highest

