

Occupied Bandwidth

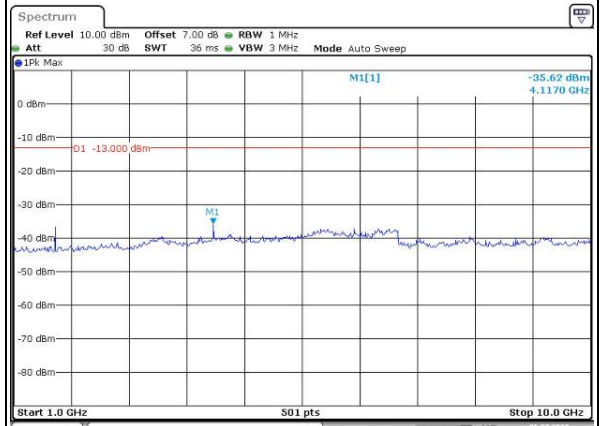
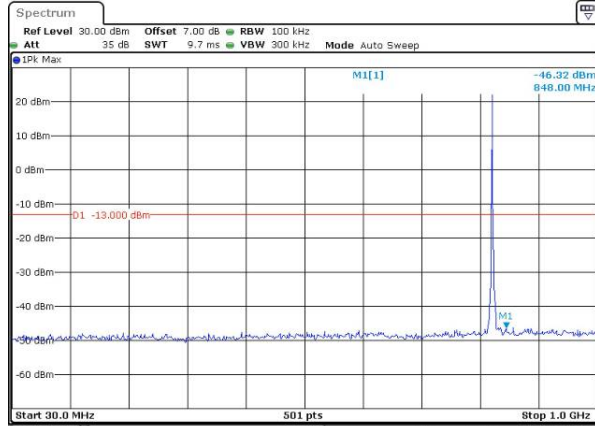
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

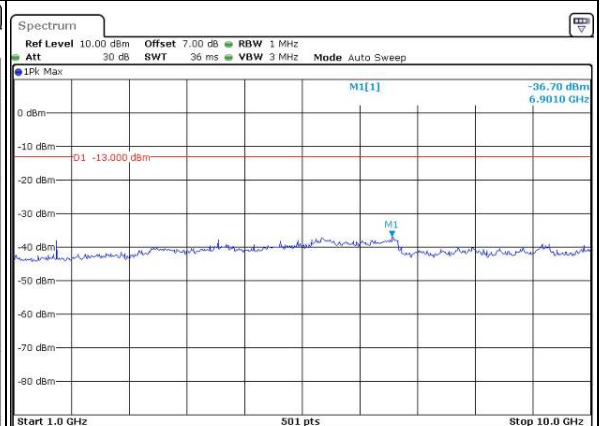
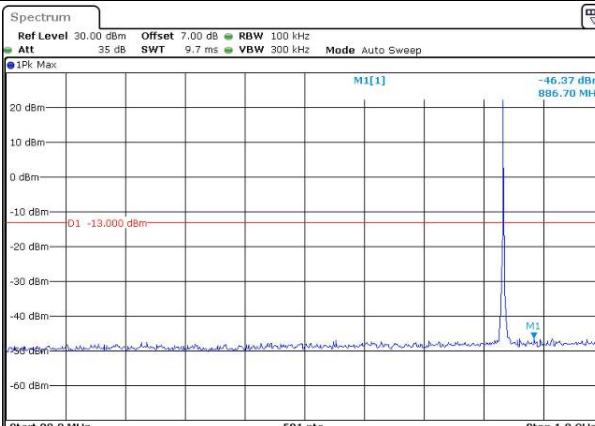
Lowest



Date: 6.JUL.2022 13:51:16

Date: 6.JUL.2022 13:51:38

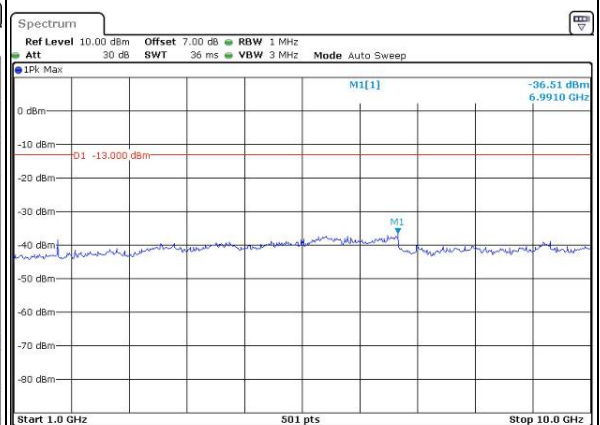
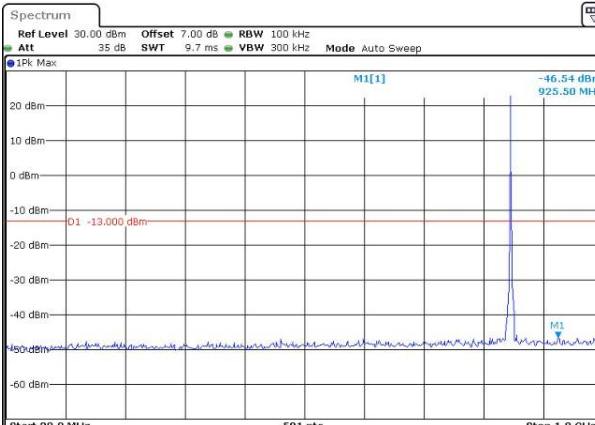
Middle



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Date: 6.JUL.2022 13:52:39

Highest



Date: 6.JUL.2022 13:53:12

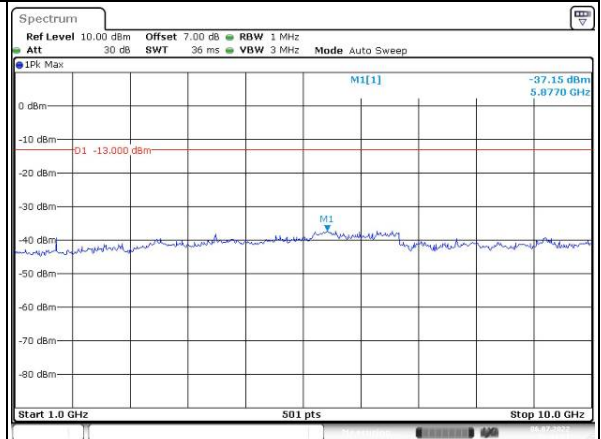
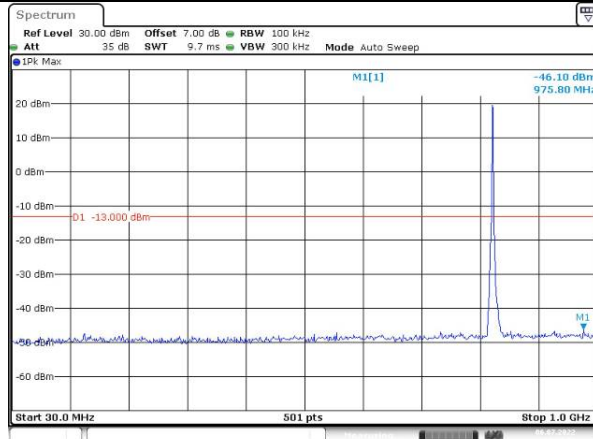
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Spurious Emissions at Antenna Terminal

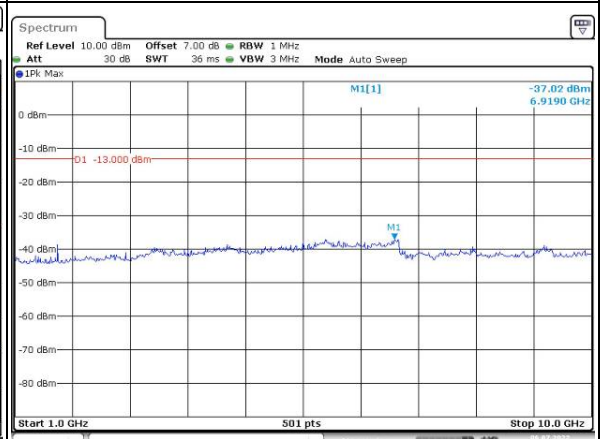
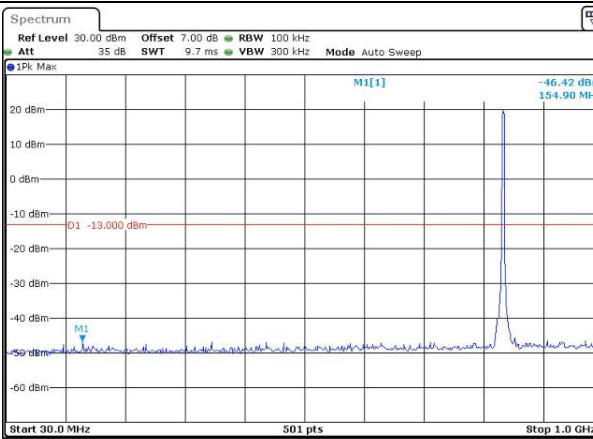
Channel

3MHz Bandwidth QPSK

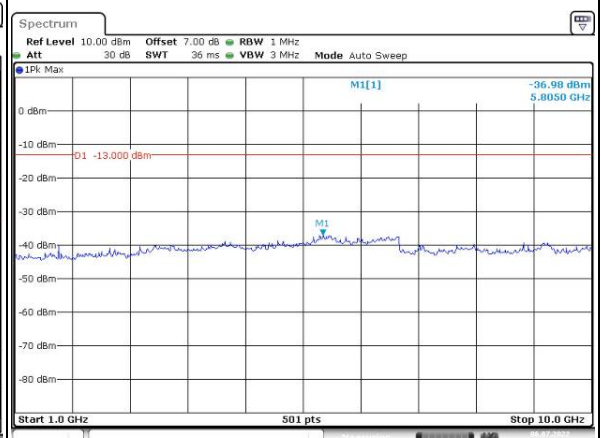
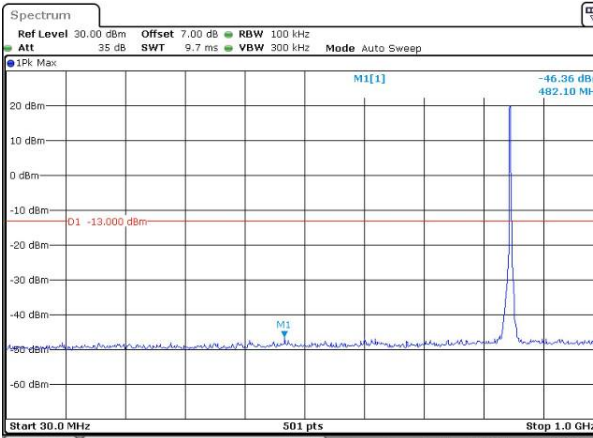
Lowest



Middle



Highest

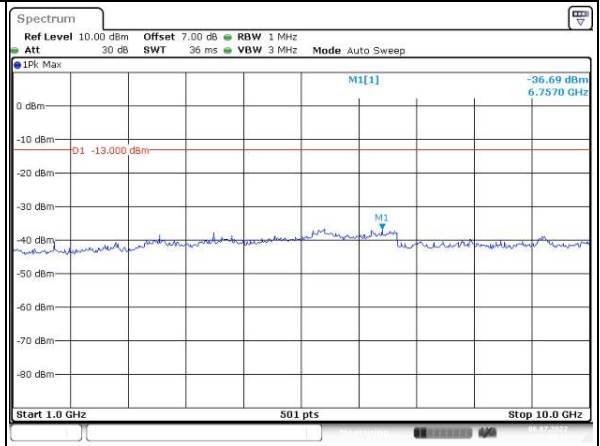
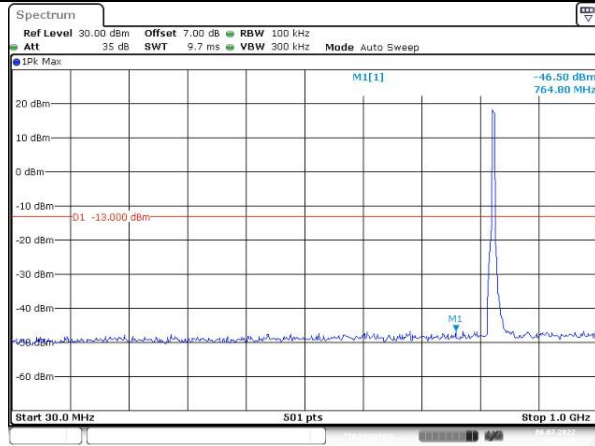


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

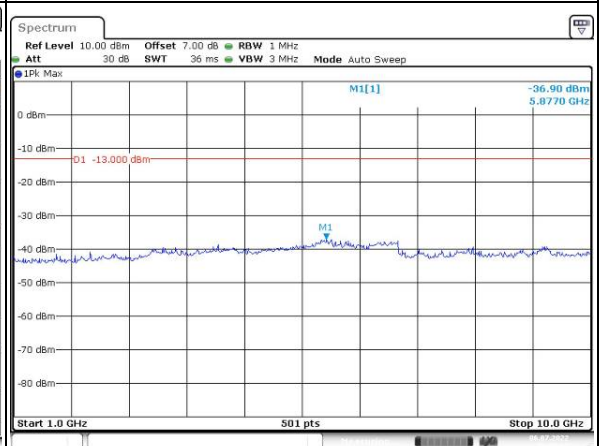
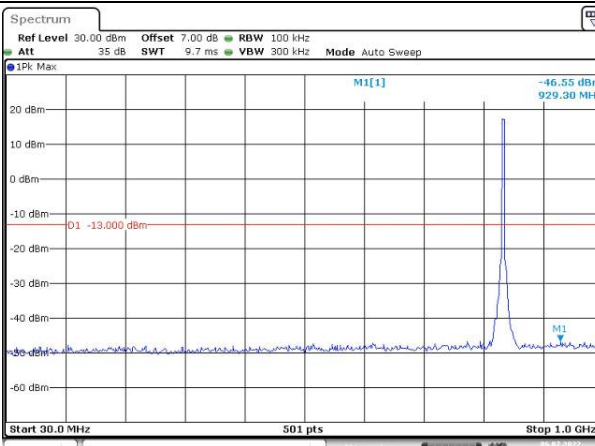
Lowest



Date: 6.JUL.2022 13:56:51

Date: 6.JUL.2022 13:57:19

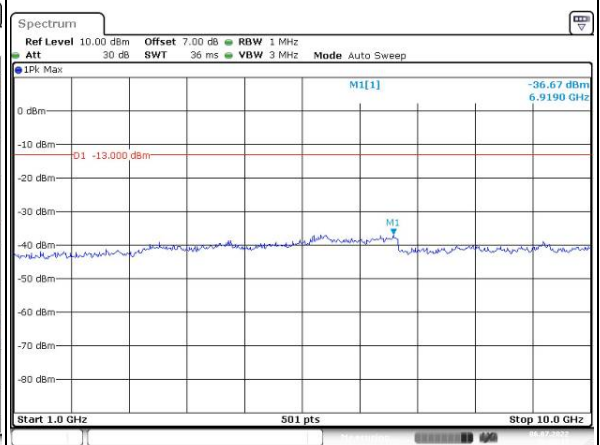
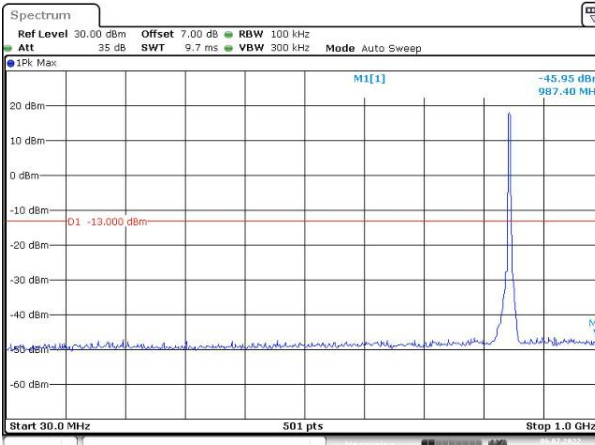
Middle



Date: 6.JUL.2022 13:57:45

Date: 6.JUL.2022 13:58:08

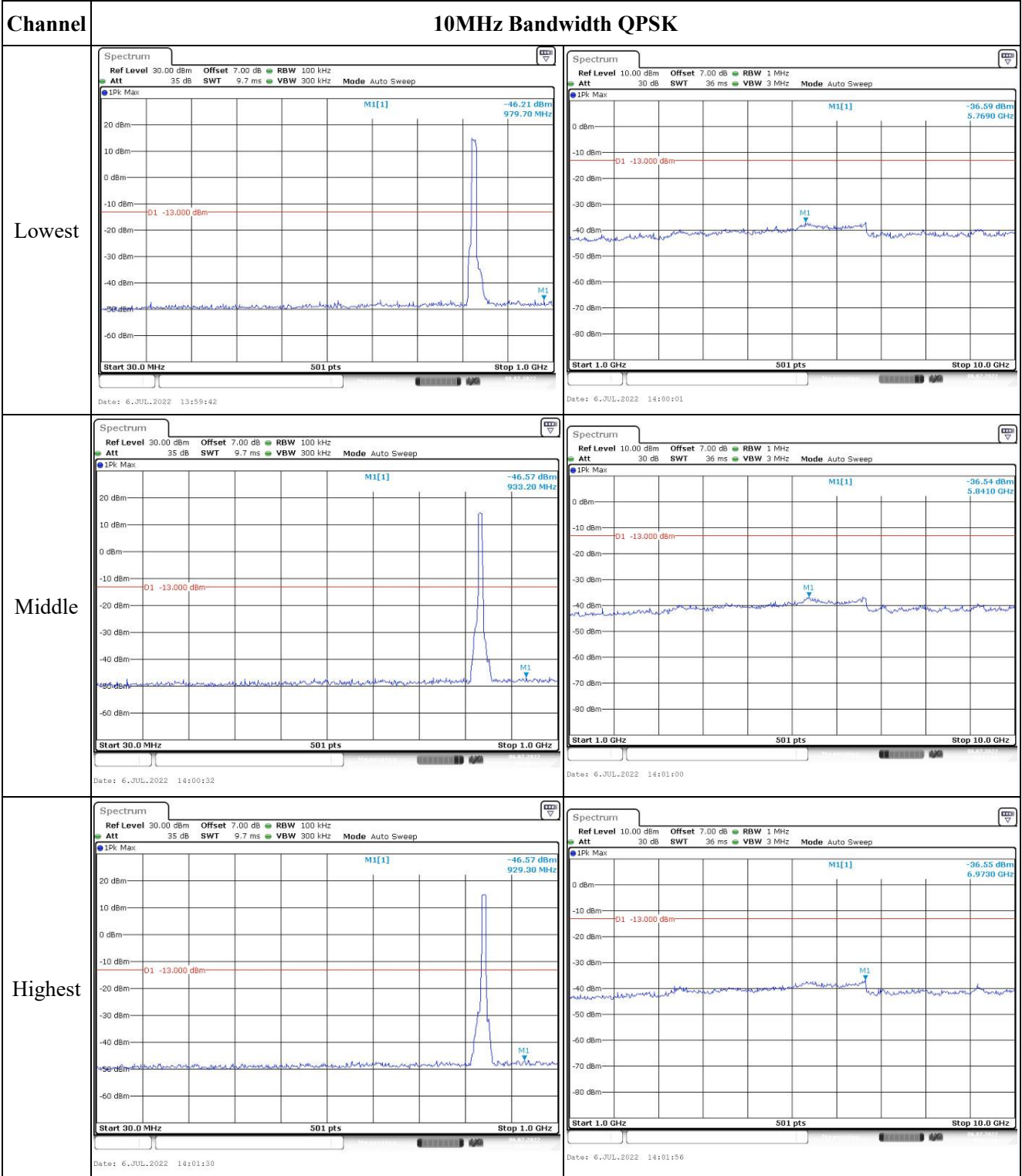
Highest



Date: 6.JUL.2022 13:58:40

Date: 6.JUL.2022 13:59:12

Spurious Emissions at Antenna Terminal

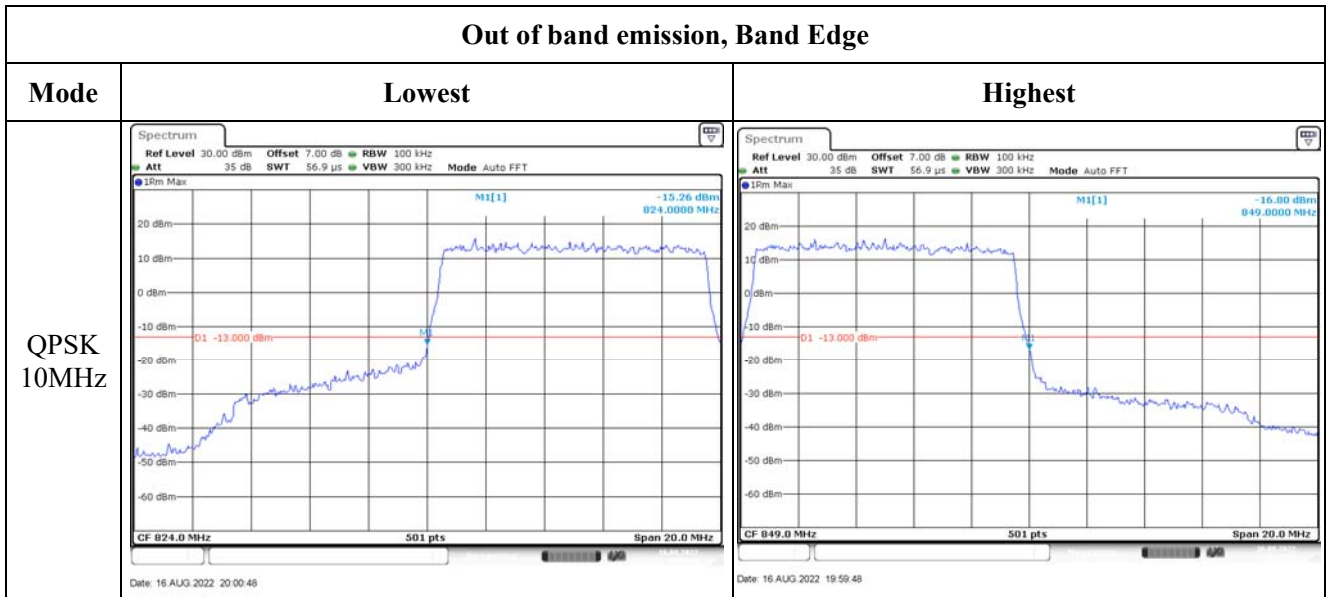




Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 20 kHz Att 35 dB SWT 94.8 μs VBW 100 kHz Mode Auto FFT M1[1] -16.08 dBm 824.00000 MHz 01 -13.000 dBm CF 824.0 MHz 501 pts Span 3.0 MHz Date: 16 AUG 2022 19:22:23</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 20 kHz Att 35 dB SWT 94.8 μs VBW 100 kHz Mode Auto FFT M1[1] -17.05 dBm 849.01200 MHz 01 -13.000 dBm CF 849.0 MHz 501 pts Span 3.0 MHz Date: 16 AUG 2022 19:27:19</p>
QPSK 3MHz	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 30 kHz Att 35 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -13.41 dBm 824.0000 MHz 01 -13.000 dBm CF 824.0 MHz 501 pts Span 6.0 MHz Date: 16 AUG 2022 19:23:18</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 30 kHz Att 35 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT M1[1] -15.55 dBm 849.0000 MHz 01 -13.000 dBm CF 849.0 MHz 501 pts Span 6.0 MHz Date: 16 AUG 2022 19:26:09</p>
QPSK 5MHz	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 50 kHz Att 35 dB SWT 75.9 μs VBW 200 kHz Mode Auto FFT M1[1] -14.96 dBm 824.0000 MHz 01 -13.000 dBm CF 824.0 MHz 501 pts Span 10.0 MHz Date: 16 AUG 2022 19:24:18</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 50 kHz Att 35 dB SWT 75.9 μs VBW 200 kHz Mode Auto FFT M1[1] -16.73 dBm 849.0000 MHz 01 -13.000 dBm CF 849.0 MHz 501 pts Span 10.0 MHz Date: 16 AUG 2022 19:25:17</p>

Out of band emission, Band Edge

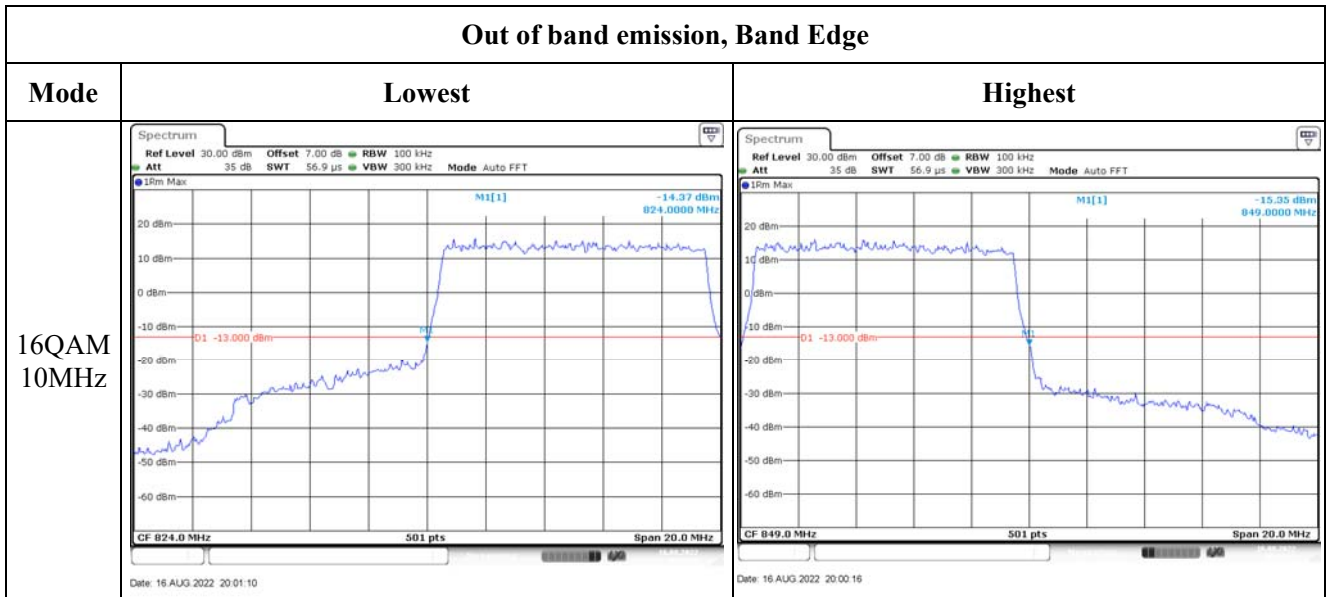


Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 20 kHz Att 35 dB SWT 94.8 μs VBW 100 kHz Mode Auto FFT</p> <p>M1[1] -16.11 dBm 824.0000 MHz</p> <p>01 -13.000 dBm</p> <p>CF 824.0 MHz 501 pts Span 3.0 MHz</p> <p>Date: 16 AUG 2022 19:22:50</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 20 kHz Att 35 dB SWT 94.8 μs VBW 100 kHz Mode Auto FFT</p> <p>M1[1] -17.03 dBm 849.01200 MHz</p> <p>01 -13.000 dBm</p> <p>CF 849.0 MHz 501 pts Span 3.0 MHz</p> <p>Date: 16 AUG 2022 19:27:43</p>
16QAM 3MHz	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 30 kHz Att 35 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT</p> <p>M1[1] -13.19 dBm 824.0000 MHz</p> <p>01 -13.000 dBm</p> <p>CF 824.0 MHz 501 pts Span 6.0 MHz</p> <p>Date: 16 AUG 2022 19:23:35</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 30 kHz Att 35 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT</p> <p>M1[1] -15.33 dBm 849.0000 MHz</p> <p>01 -13.000 dBm</p> <p>CF 849.0 MHz 501 pts Span 6.0 MHz</p> <p>Date: 16 AUG 2022 19:26:27</p>
16QAM 5MHz	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 50 kHz Att 35 dB SWT 75.9 μs VBW 200 kHz Mode Auto FFT</p> <p>M1[1] -14.62 dBm 824.0000 MHz</p> <p>01 -13.000 dBm</p> <p>CF 824.0 MHz 501 pts Span 10.0 MHz</p> <p>Date: 16 AUG 2022 19:24:53</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 50 kHz Att 35 dB SWT 75.9 μs VBW 200 kHz Mode Auto FFT</p> <p>M1[1] -16.57 dBm 849.0000 MHz</p> <p>01 -13.000 dBm</p> <p>CF 849.0 MHz 501 pts Span 10.0 MHz</p> <p>Date: 16 AUG 2022 19:25:34</p>



Out of band emission, Band Edge



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

Serial Number:	CR220050077-RF-S1	Test Date:	2022/7/5~2022/8/25
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ted Min	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5~26.7	Relative Humidity: (%)	51~58	ATM Pressure: (kPa)	100.1~100.3
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
R&S	Wideband Radio Communication Tester	CMW500	149218	2021-07-21	2022-07-20
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-07-15	2023-07-14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-04-06	2023-04-05
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A
Unknown	RF Cable	Unknown	RF Cable 004	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	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 12▲:**

Antenna Gain (dBi):	-2.61	Antenna Gain (dBd):	-4.76	Path Loss L <sub>C</sub> (dB):	0.3
Operation Voltage(V <sub>DC</sub> ):					
Lowest:	6.66	Normal:	7.4	Highest:	8.14

**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	21.83	21.94	21.91	17	34.77
	RB1#3	21.82	22.06	21.86		
	RB1#5	21.84	22.01	21.87		
	RB3#0	21.65	21.83	21.7		
	RB3#3	21.74	21.88	21.79		
	RB6#0	21.36	21.46	21.35		
1.4MHz 16QAM	RB1#0	21.45	21.55	21.41	16.65	34.77
	RB1#3	21.51	21.5	21.56		
	RB1#5	21.68	21.71	21.69		
	RB3#0	21.5	21.38	21.37		
	RB3#3	21.51	21.42	21.47		
	RB6#0	21.24	21.15	21.18		
3MHz QPSK	RB1#0	21.91	21.89	21.93	16.97	34.77
	RB1#8	21.96	21.97	21.89		
	RB1#14	22	22.02	22.03		
	RB6#0	21.94	21.92	21.98		
	RB6#9	21.98	21.93	22.01		
	RB15#0	21.69	21.7	21.69		
3MHz 16QAM	RB1#0	21.55	21.53	21.67	16.77	34.77
	RB1#8	21.6	21.53	21.71		
	RB1#14	21.6	21.68	21.83		
	RB6#0	21.6	21.48	21.77		
	RB6#9	21.72	21.69	21.79		
	RB15#0	21.2	21.27	21.49		
5MHz QPSK	RB1#0	21.87	21.89	21.83	17.08	34.77
	RB1#13	22.02	22.01	21.9		
	RB1#24	22.14	22.1	21.86		
	RB15#0	22.12	21.97	21.85		
	RB15#10	22.05	22.1	21.88		
	RB25#0	21.87	21.69	21.61		
5MHz 16QAM	RB1#0	21.88	21.76	21.65	16.88	34.77
	RB1#13	21.94	21.73	21.71		
	RB1#24	21.92	21.75	21.63		
	RB15#0	21.84	21.58	21.65		
	RB15#10	21.92	21.63	21.67		
	RB25#0	21.45	21.38	21.34		
10MHz QPSK	RB1#0	21.96	21.97	21.91	17.18	34.77
	RB1#25	21.91	22.09	22.01		

	RB1#49	21.95	22.24	22.03		
	RB25#0	21.76	22.13	21.99		
	RB25#25	21.75	22.09	21.95		
	RB50#0	21.41	21.76	21.7		
10MHz 16QAM	RB1#0	21.42	21.62	21.5	16.59	34.77
	RB1#25	21.53	21.59	21.5		
	RB1#49	21.64	21.62	21.48		
	RB25#0	21.5	21.55	21.41		
	RB25#25	21.49	21.65	21.55		
	RB50#0	21.23	21.15	21.06		

Note: ERP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBd)

**Result:**

**Pass**

### Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	3.16	3.21	3.24	13
	RB50#0	5.26	5.3	5.21	13
10MHz 16QAM	RB1#0	4.09	4.16	4.14	13
	RB50#0	6.09	6.15	6.11	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	1.102	1.102	1.106	1.302	1.32	1.29
1.4MHz 16QAM	1.102	1.096	1.096	1.32	1.296	1.296
3MHz QPSK	2.965	2.695	2.683	2.94	2.94	2.952
3MHz 16QAM	2.683	2.683	2.683	2.964	2.964	2.952
5MHz QPSK	4.511	4.531	4.491	5	5.08	4.98
5MHz 16QAM	4.471	4.551	4.511	5	5.06	5.04
10MHz QPSK	8.982	9.022	8.942	9.76	9.84	9.68
10MHz 16QAM	8.942	9.022	8.942	9.64	9.88	9.68

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**

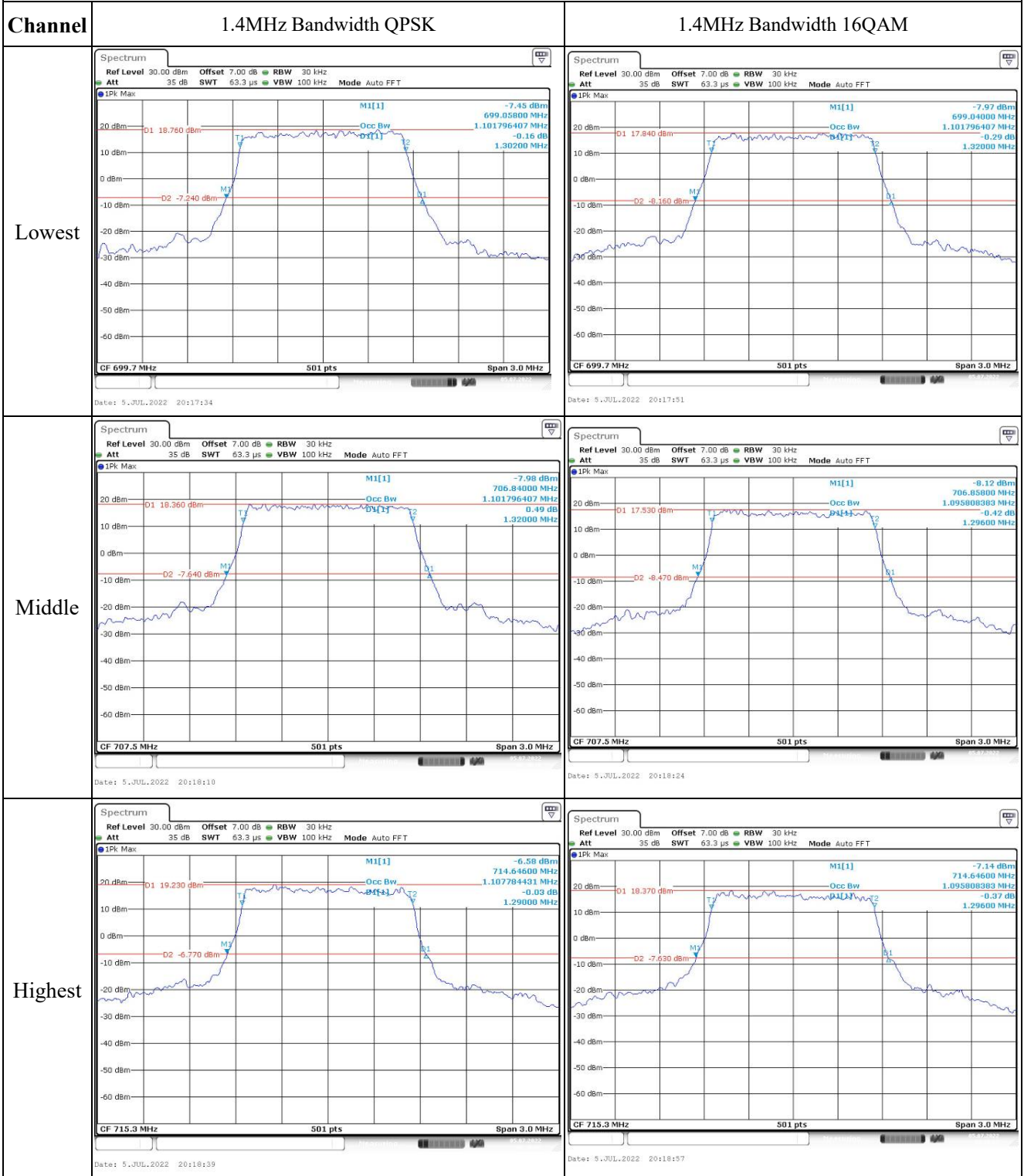
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	7.4	699.296	699.00	715.839	716.00
	-20	7.4	699.447	699.00	715.837	716.00
	-10	7.4	699.318	699.00	715.679	716.00
	0	7.4	699.414	699.00	715.801	716.00
	10	7.4	699.337	699.00	715.709	716.00
	20	7.4	699.304	699.00	715.778	716.00
	30	7.4	699.338	699.00	715.762	716.00
	40	7.4	699.422	699.00	715.707	716.00
Frequency Stability vs. Voltage	50	7.4	699.318	699.00	715.835	716.00
	20	6.66	699.435	699.00	715.805	716.00
	20	8.14	699.333	699.00	715.702	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	7.4	699.447	699.00	715.725	716.00
	-20	7.4	699.352	699.00	715.683	716.00
	-10	7.4	699.405	699.00	715.684	716.00
	0	7.4	699.359	699.00	715.677	716.00
	10	7.4	699.419	699.00	715.701	716.00
	20	7.4	699.282	699.00	715.711	716.00
	30	7.4	699.426	699.00	715.815	716.00
	40	7.4	699.433	699.00	715.837	716.00
Frequency Stability vs. Voltage	50	7.4	699.417	699.00	715.786	716.00
	20	6.66	699.329	699.00	715.771	716.00
	20	8.14	699.253	699.00	715.789	716.00
<b>Result:</b>					<b>Pass</b>	



Test Plots:

Occupied Bandwidth



Occupied Bandwidth

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

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 19 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -6.96 dBm 699.0000 MHz Occ Bw 4.510978044 MHz 0.14 dB 5.0000 MHz</p> <p>D1 18.620 dBm D2 -7.380 dBm</p> <p>CF 701.5 MHz 501 pts Span 10.0 MHz</p> <p>Date: 5.JUL.2022 20:21:05</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 19 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -7.76 dBm 698.9800 MHz Occ Bw 4.471057864 MHz 0.84 dB 5.0000 MHz</p> <p>D1 18.900 dBm D2 -7.000 dBm</p> <p>CF 701.5 MHz 501 pts Span 10.0 MHz</p> <p>Date: 5.JUL.2022 20:21:22</p>
Middle	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 19 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -8.20 dBm 704.9600 MHz Occ Bw 4.530938124 MHz 0.49 dB 5.0800 MHz</p> <p>D1 17.680 dBm D2 -8.320 dBm</p> <p>CF 707.5 MHz 501 pts Span 10.0 MHz</p> <p>Date: 5.JUL.2022 20:21:41</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 19 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -8.06 dBm 704.9800 MHz Occ Bw 4.550898204 MHz -0.47 dB 5.0600 MHz</p> <p>D1 17.440 dBm D2 -8.960 dBm</p> <p>CF 707.5 MHz 501 pts Span 10.0 MHz</p> <p>Date: 5.JUL.2022 20:21:58</p>
Highest	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 19 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -6.25 dBm 711.0200 MHz Occ Bw 4.491017964 MHz -0.42 dB 4.9800 MHz</p> <p>D1 19.310 dBm D2 -5.690 dBm</p> <p>CF 713.5 MHz 501 pts Span 10.0 MHz</p> <p>Date: 5.JUL.2022 20:22:20</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 19 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -8.88 dBm 710.9800 MHz Occ Bw 4.510978044 MHz -0.42 dB 5.0400 MHz</p> <p>D1 17.220 dBm D2 -8.780 dBm</p> <p>CF 713.5 MHz 501 pts Span 10.0 MHz</p> <p>Date: 5.JUL.2022 20:22:37</p>

Occupied Bandwidth

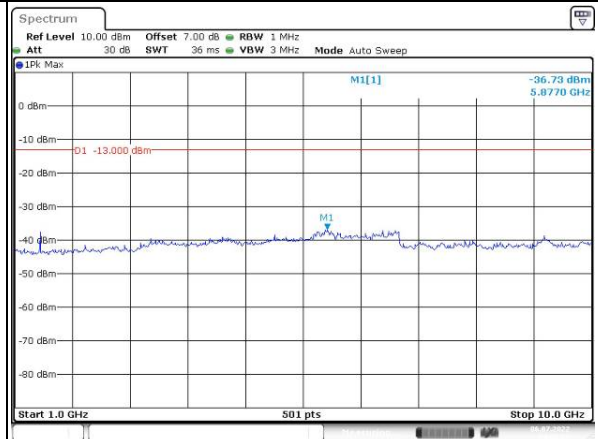
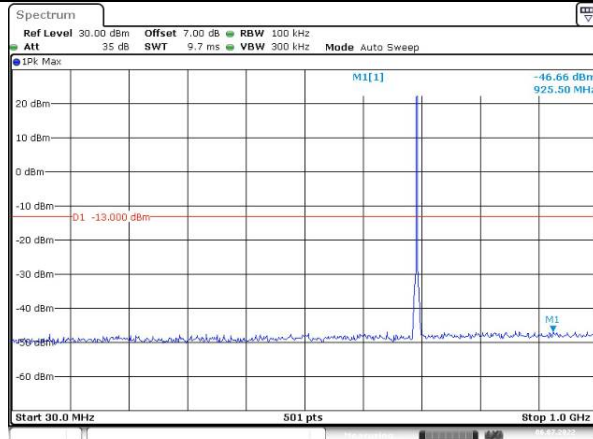
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 38 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -9.00 dBm 699.0800 MHz Occ Bw 8.982035928 MHz D1[1] -0.82 dB 9.7600 MHz</p> <p>D1 16.100 dBm D2 -9.900 dBm</p> <p>CF 704.0 MHz 501 pts Span 20.0 MHz</p> <p>Date: 5.JUL.2022 20:23:12</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 38 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -10.36 dBm 699.1600 MHz Occ Bw 8.942115768 MHz D1[1] -0.30 dB 9.6400 MHz</p> <p>D1 15.780 dBm D2 -10.220 dBm</p> <p>CF 704.0 MHz 501 pts Span 20.0 MHz</p> <p>Date: 5.JUL.2022 20:23:14</p>
Middle	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 38 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -9.62 dBm 702.5800 MHz Occ Bw 9.021956088 MHz D1[1] -0.44 dB 9.8400 MHz</p> <p>D1 16.600 dBm D2 -9.400 dBm</p> <p>CF 707.5 MHz 501 pts Span 20.0 MHz</p> <p>Date: 5.JUL.2022 20:23:56</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 38 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -10.93 dBm 702.5400 MHz Occ Bw 9.021956088 MHz D1[1] -0.81 dB 9.8800 MHz</p> <p>D1 14.590 dBm D2 -11.410 dBm</p> <p>CF 707.5 MHz 501 pts Span 20.0 MHz</p> <p>Date: 5.JUL.2022 20:24:18</p>
Highest	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 38 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -9.90 dBm 706.1500 MHz Occ Bw 8.942115768 MHz D1[1] -1.32 dB 9.6800 MHz</p> <p>D1 16.720 dBm D2 -9.280 dBm</p> <p>CF 711.0 MHz 501 pts Span 20.0 MHz</p> <p>Date: 5.JUL.2022 20:24:43</p>	<p>Ref Level 30.00 dBm Offset 7.00 dB RBW 100 kHz Att 35 dB SWT 38 μs VBW 300 kHz Mode Auto FFT</p> <p>1Pk Max</p> <p>M1[1] -9.44 dBm 706.2000 MHz Occ Bw 8.942115768 MHz D1[1] -1.05 dB 9.6800 MHz</p> <p>D1 16.200 dBm D2 -9.890 dBm</p> <p>CF 711.0 MHz 501 pts Span 20.0 MHz</p> <p>Date: 5.JUL.2022 20:25:08</p>

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

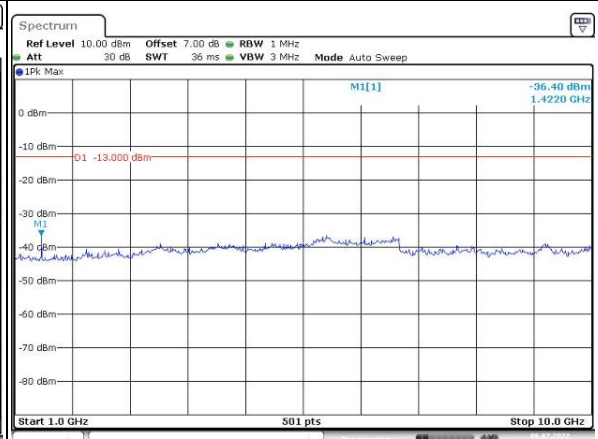
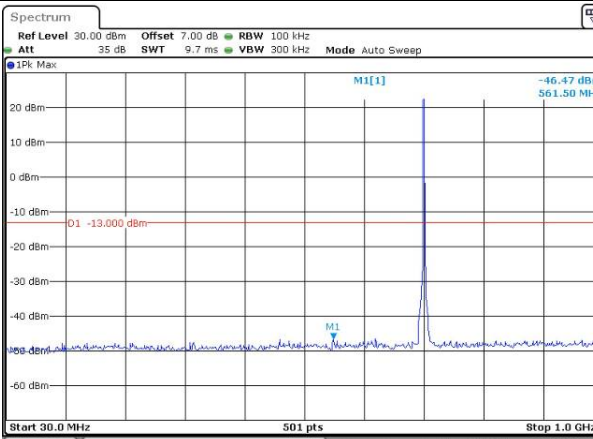
Lowest



Date: 6.JUL.2022 14:02:37

Date: 6.JUL.2022 14:02:59

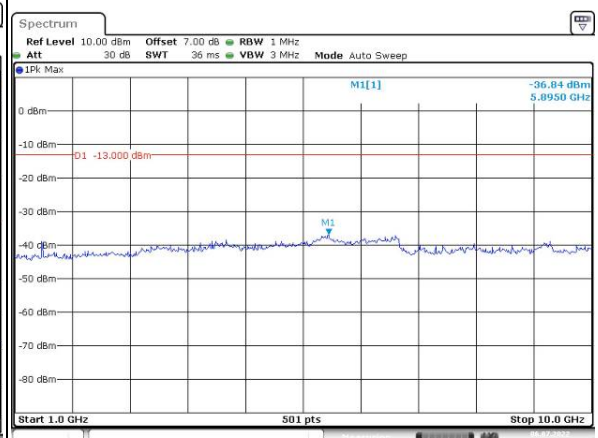
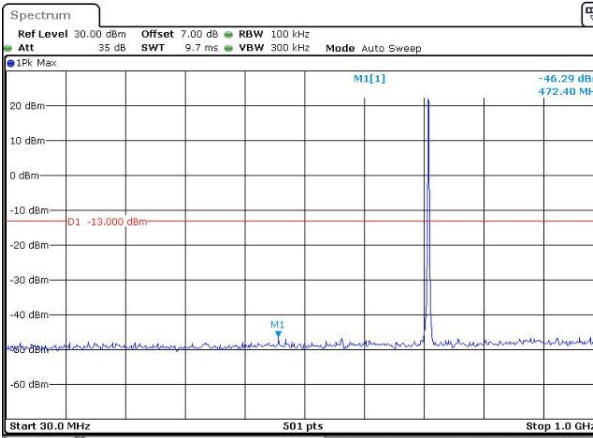
Middle



Date: 6.JUL.2022 14:03:29

Date: 6.JUL.2022 14:03:57

Highest



Date: 6.JUL.2022 14:04:26

Date: 6.JUL.2022 14:04:49

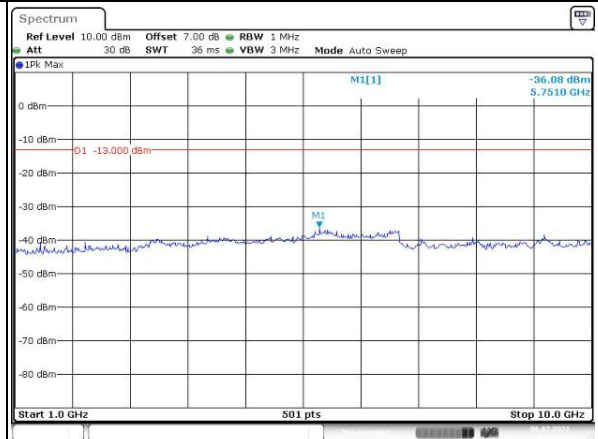
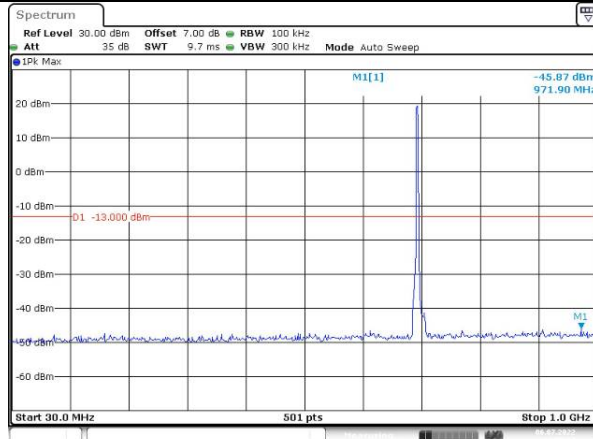


Spurious Emissions at Antenna Terminal

Channel

3MHz Bandwidth QPSK

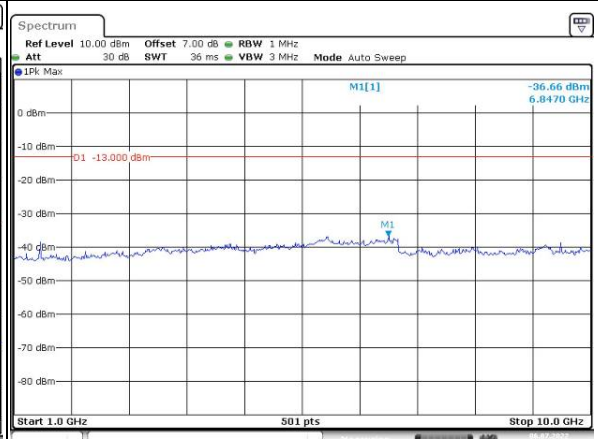
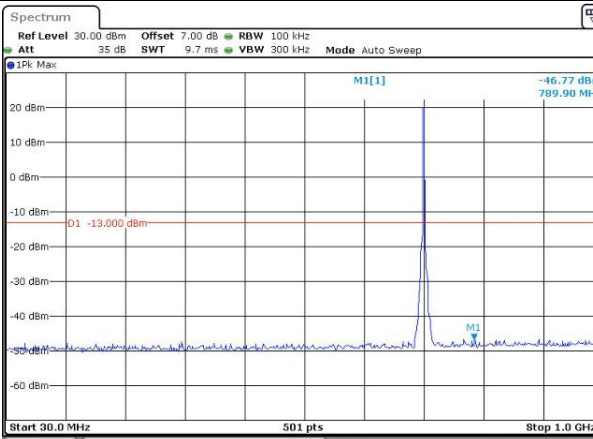
Lowest



Date: 6.JUL.2022 14:05:27

Date: 6.JUL.2022 14:05:56

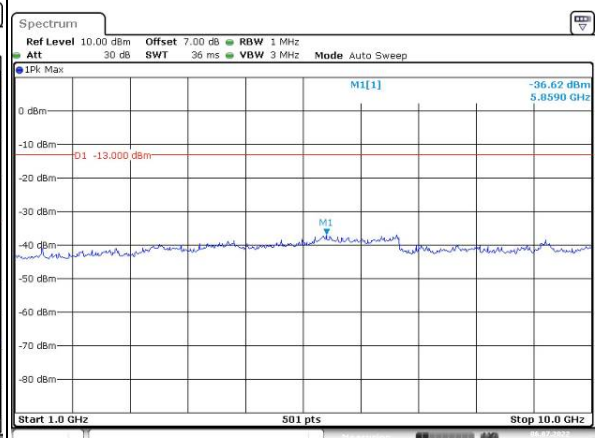
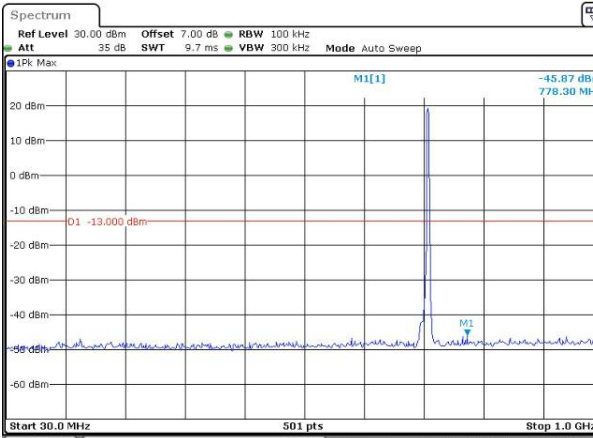
Middle



Date: 6.JUL.2022 14:06:25

Date: 6.JUL.2022 14:06:54

Highest



Date: 6.JUL.2022 14:07:26

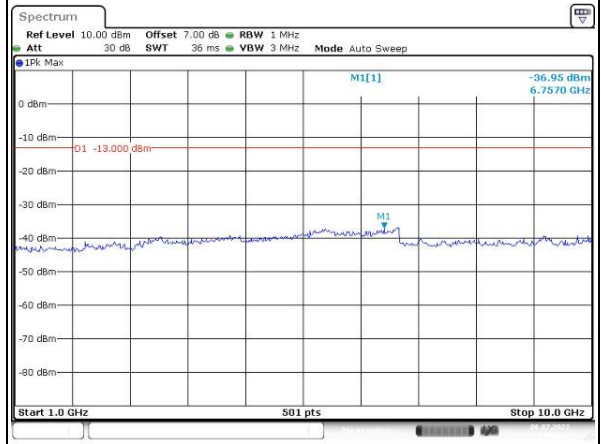
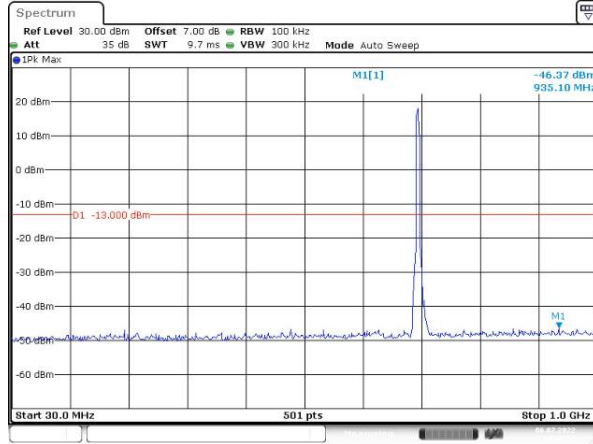
Date: 6.JUL.2022 14:07:55

Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

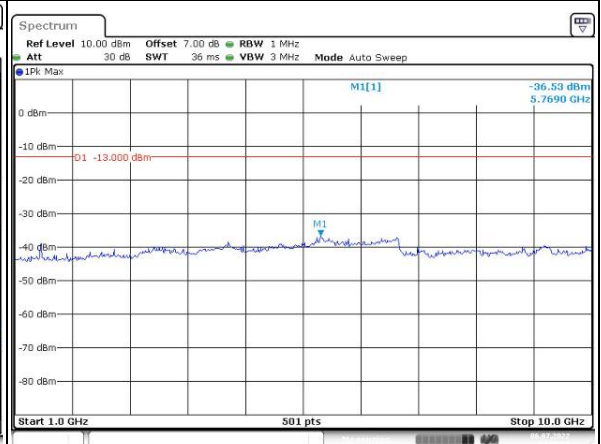
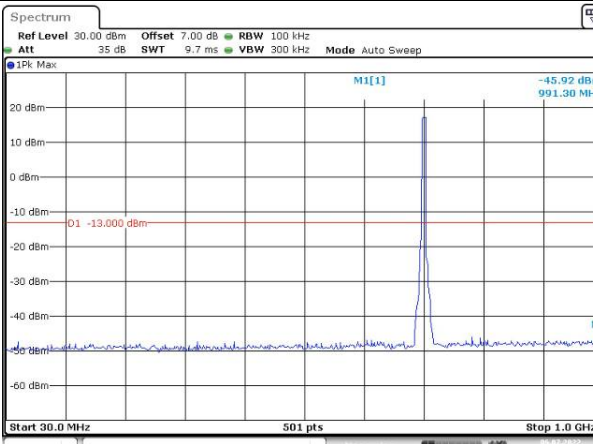
Lowest



Date: 6.JUL.2022 14:08:27

Date: 6.JUL.2022 14:08:56

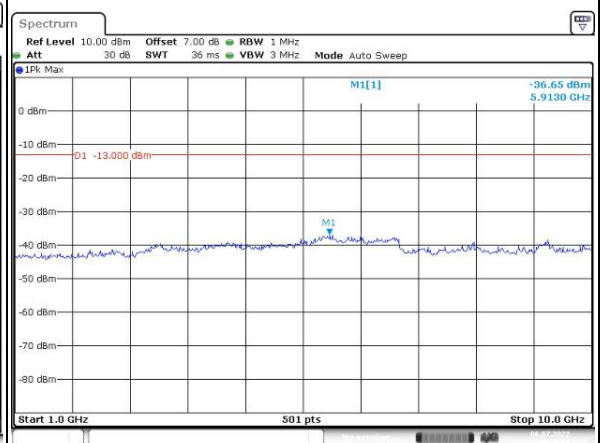
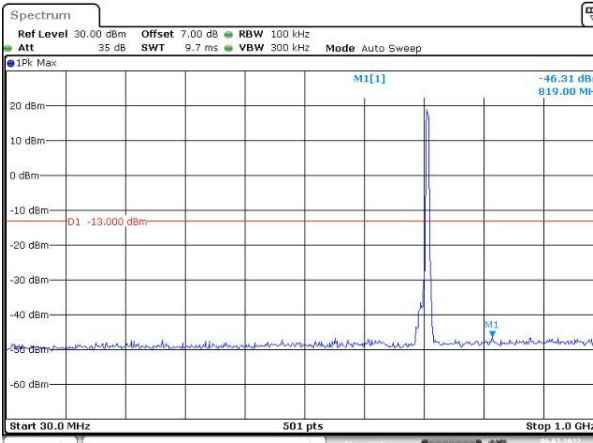
Middle



Date: 6.JUL.2022 14:09:31

Date: 6.JUL.2022 14:09:54

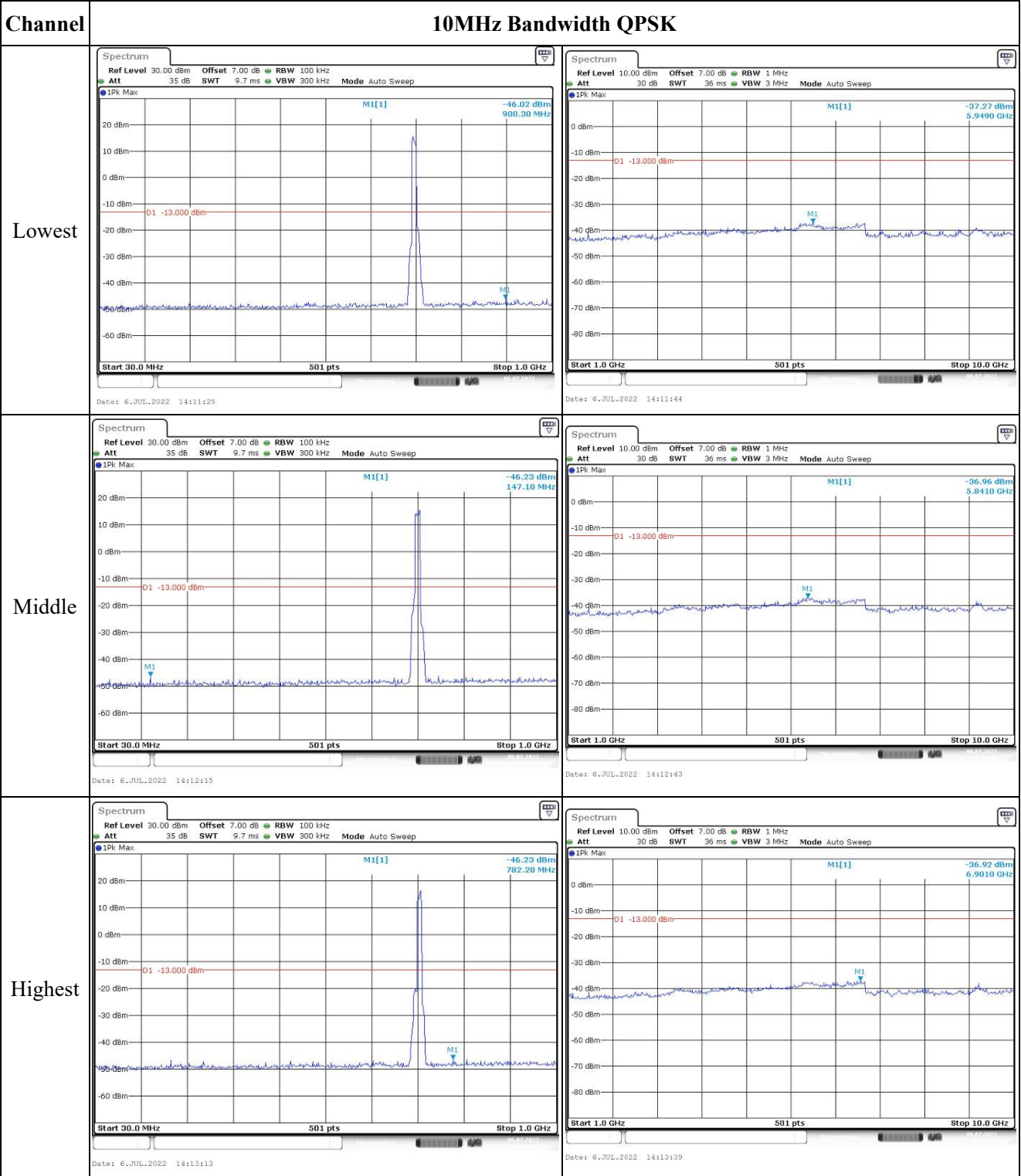
Highest



Date: 6.JUL.2022 14:10:29

Date: 6.JUL.2022 14:10:51

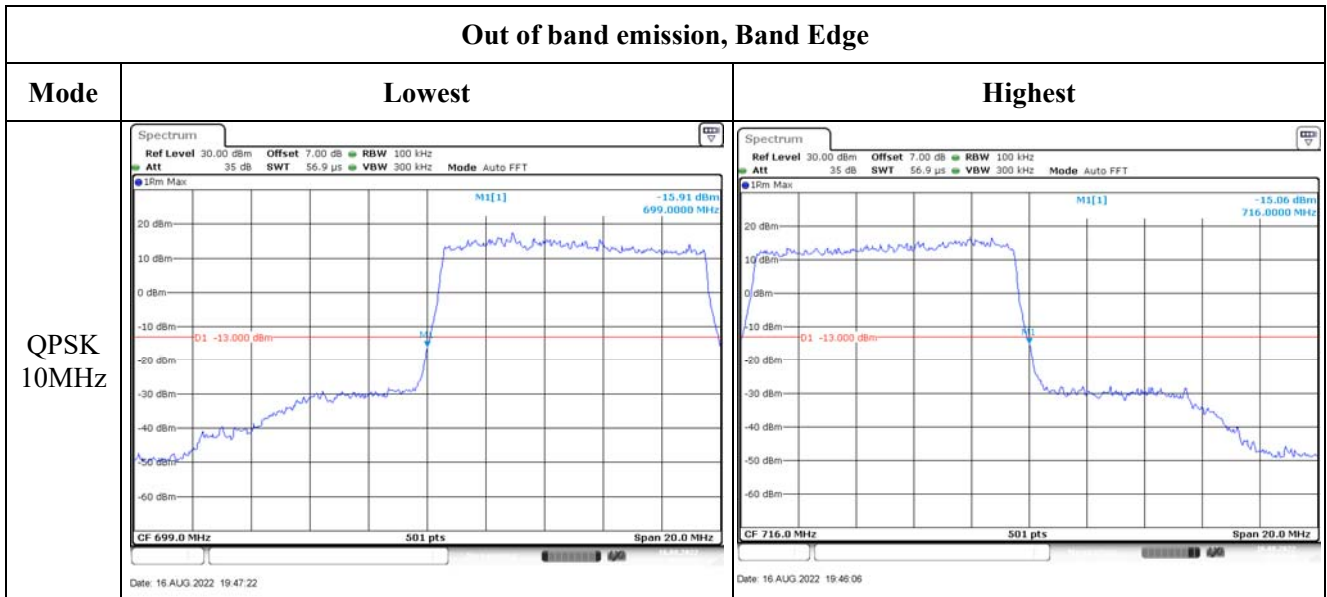
Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz		
QPSK 3MHz		
QPSK 5MHz		

Out of band emission, Band Edge

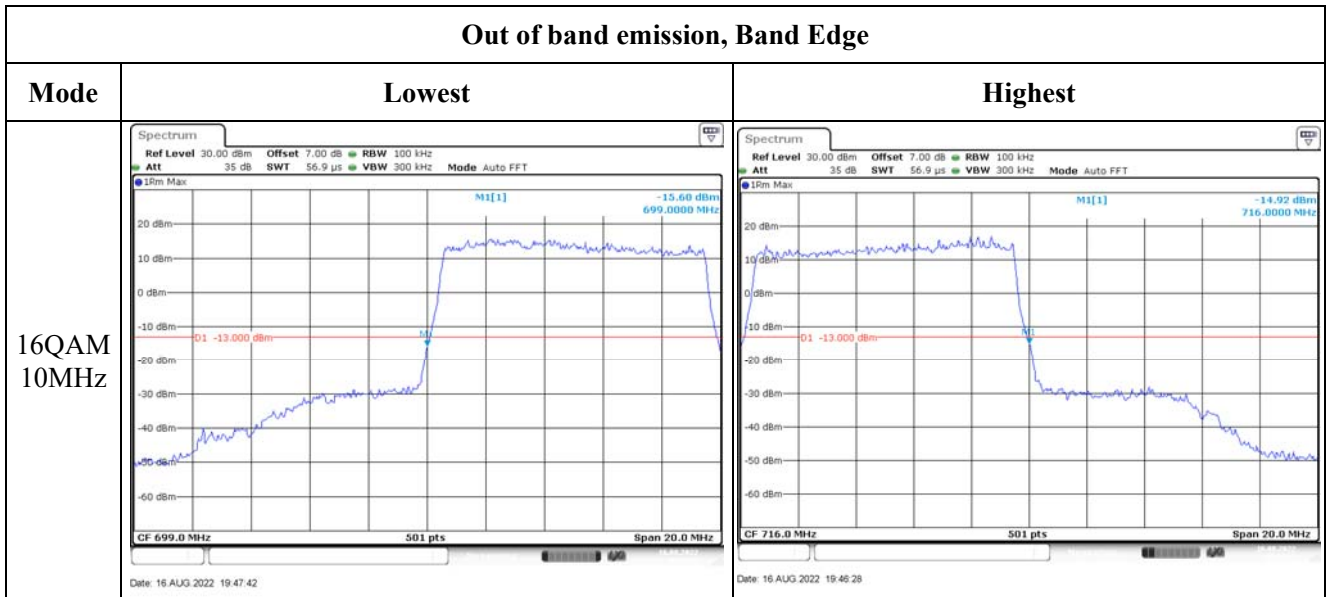




Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge



**4.7 Antenna Port Test Data and Results for LTE Band 13**

Serial Number:	CR220050077-RF-S1	Test Date:	2022/7/5~2022/10/18
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ted Min	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	24.5~26.7	Relative Humidity: (%)	51~65	ATM Pressure: (kPa)	100.1~101.5
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101943	2021-10-10	2022-10-09
R&S	Wideband Radio Communication Tester	CMW500	149218	2021-07-21	2022-07-20
R&S	Wideband Radio Communication Tester	CMW500	149218	2022-07-15	2023-07-14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022-04-06	2023-04-05
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
Unknown	Coaxial tee connector	Unknown	2204006	Each time	N/A
Unknown	RF Cable	Unknown	RF Cable 004	Each time	N/A
HuiXunDa	DC Block	SMA-JK 18G	DCB181108042	Each time	N/A
Weinschel	Coaxial Attenuators	53-20-34	LN751	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 13▲:**

Antenna Gain (dBi):	-3.02	Antenna Gain (dBd):	-5.17	Path Loss $L_c$ (dB):	0.3
Operation Voltage( $V_{DC}$ ):					
Lowest:	6.66	Normal:	7.4	Highest:	8.14

**Test Frequency For Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	779.5	782	784.5
10MHz	/	782	/

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

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	21.79	21.83	21.96	16.63	34.77
	RB1#13	21.92	21.96	21.97		
	RB1#24	22.03	21.92	22.1		
	RB15#0	21.94	21.74	22.04		
	RB15#10	22.08	21.77	22.03		
	RB25#0	21.7	21.51	21.72		
5MHz 16QAM	RB1#0	21.68	21.56	21.57	16.38	34.77
	RB1#13	21.85	21.71	21.7		
	RB1#24	21.83	21.61	21.73		
	RB15#0	21.64	21.59	21.68		
	RB15#10	21.72	21.64	21.63		
	RB25#0	21.33	21.35	21.39		
10MHz QPSK	RB1#0	/	21.93	/	16.64	34.77
	RB1#25	/	21.98	/		
	RB1#49	/	22.11	/		
	RB25#0	/	21.84	/		
	RB25#25	/	21.8	/		
	RB50#0	/	21.58	/		
10MHz 16QAM	RB1#0	/	21.37	/	16.21	34.77
	RB1#25	/	21.49	/		
	RB1#49	/	21.68	/		
	RB25#0	/	21.52	/		
	RB25#25	/	21.67	/		
	RB50#0	/	21.29	/		
Note: ERP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBd)						
					<b>Result:</b>	<b>Pass</b>

<b>Peak-to-average Ratio(PAR)</b>					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	/	3.19	/	13
	RB50#0	/	5.28	/	13
10MHz 16QAM	RB1#0	/	4.11	/	13
	RB50#0	/	6.19	/	13
<b>Result:</b>					<b>Pass</b>

<b>FCC §2.1049, §27.53:Occupied Bandwidth</b>						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.531	4.491	4.511	5.08	5.02	5.04
5MHz 16QAM	4.531	4.511	4.551	5.04	5.04	5.06
10MHz QPSK	/	8.942	/	/	9.84	/
10MHz 16QAM	/	8.942	/	/	9.68	/
Note: The test plots please refer to the Plots of Occupied Bandwidth						

**FCC §2.1051, §27.53:Spurious Emissions at Antenna Terminal**

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

<b>Result:</b>	<b>Pass, Please refer to the test plots of Out of band emission, Band Edge.</b>
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**FCC §2.1055, §27.54: Frequency Stability**

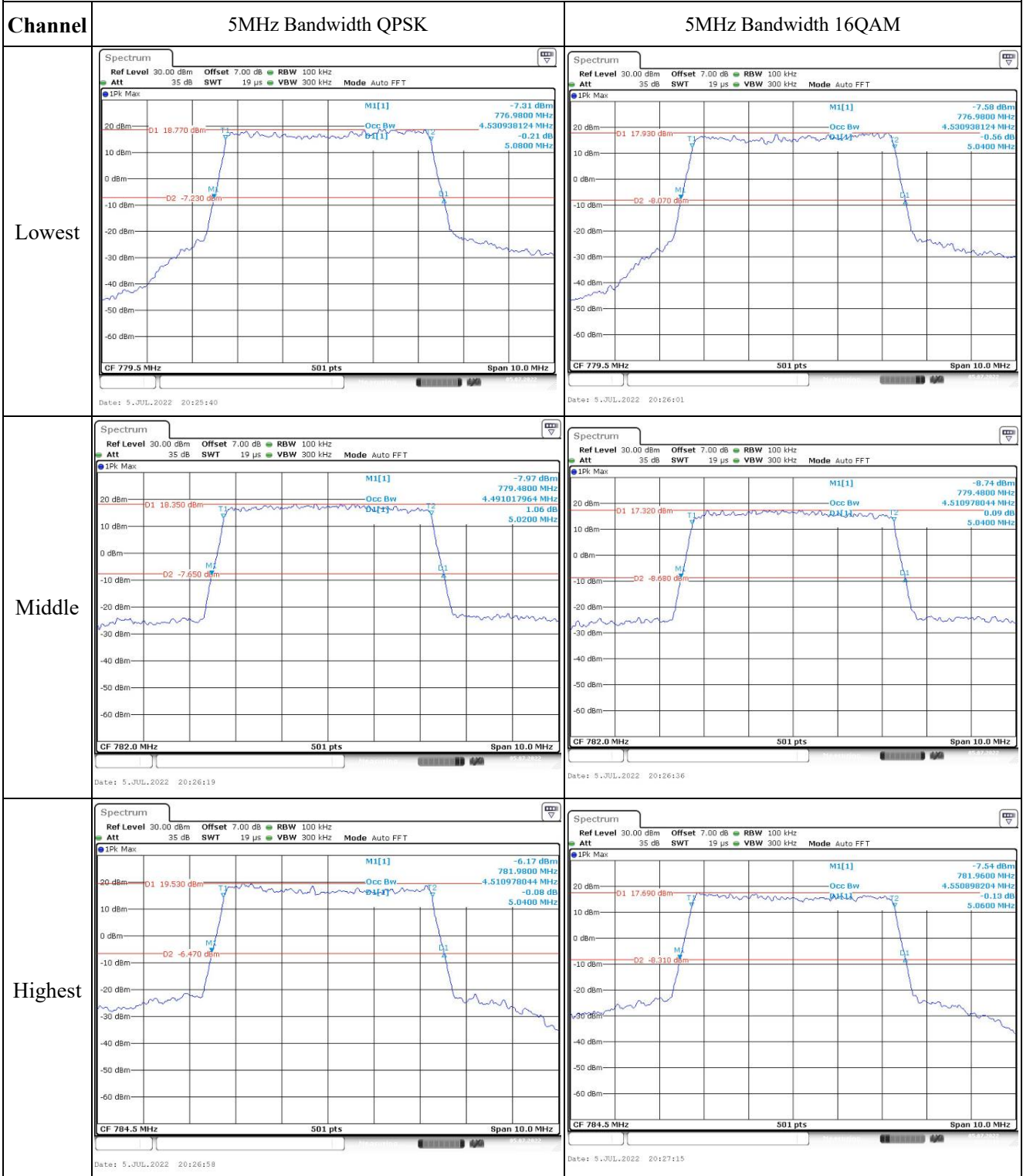
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>Dc</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	7.4	777.350	777.00	786.893	787.00
	-20	7.4	777.233	777.00	786.796	787.00
	-10	7.4	777.329	777.00	786.767	787.00
	0	7.4	777.341	777.00	786.838	787.00
	10	7.4	777.209	777.00	786.782	787.00
	20	7.4	777.353	777.00	786.895	787.00
	30	7.4	777.234	777.00	786.845	787.00
	40	7.4	777.211	777.00	786.835	787.00
Frequency Stability vs. Voltage	20	6.66	777.253	777.00	786.892	787.00
	20	8.14	777.318	777.00	786.784	787.00
					<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	7.4	777.345	777.00	786.820	787.00
	-20	7.4	777.308	777.00	786.891	787.00
	-10	7.4	777.388	777.00	786.740	787.00
	0	7.4	777.253	777.00	786.924	787.00
	10	7.4	777.245	777.00	786.768	787.00
	20	7.4	777.248	777.00	786.908	787.00
	30	7.4	777.203	777.00	786.828	787.00
	40	7.4	777.278	777.00	786.902	787.00
Frequency Stability vs. Voltage	20	6.66	777.239	777.00	786.887	787.00
	20	8.14	777.301	777.00	786.871	787.00
					<b>Result:</b>	<b>Pass</b>

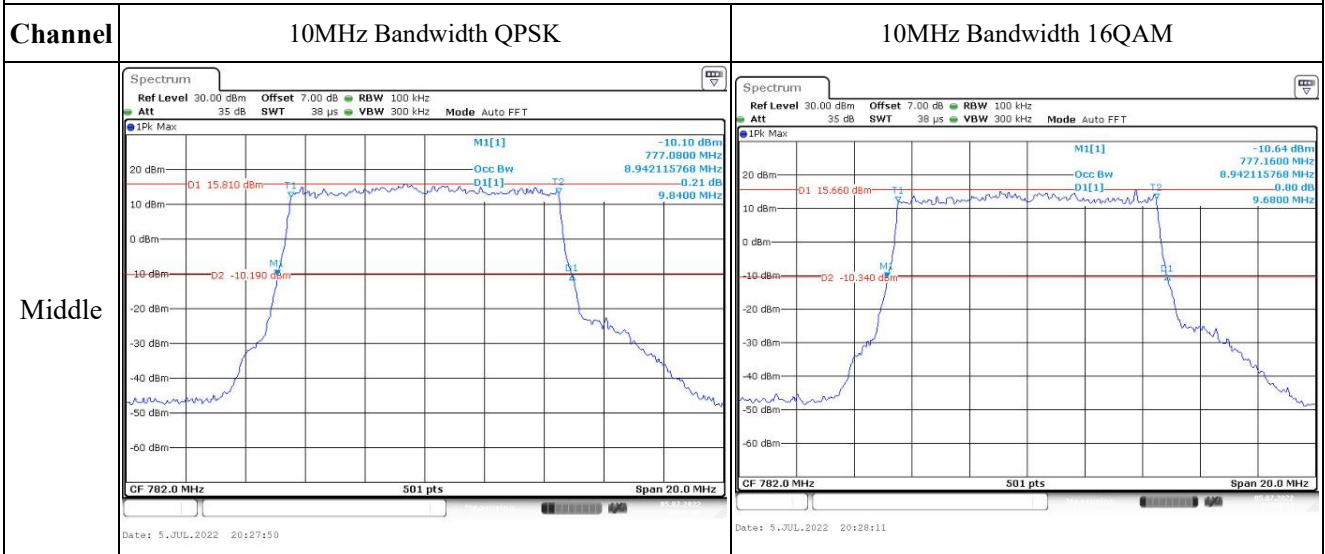


Test Plots:

Occupied Bandwidth



**Occupied Bandwidth**

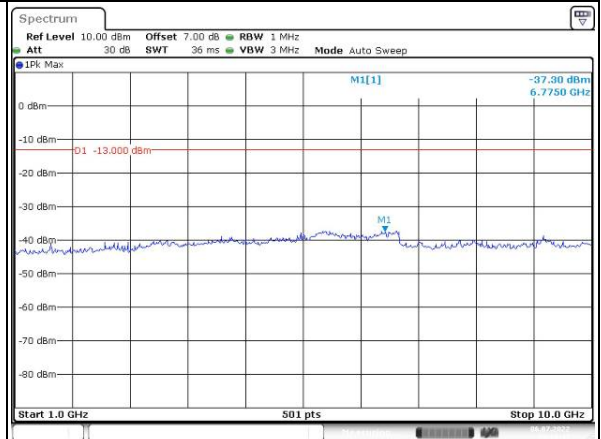
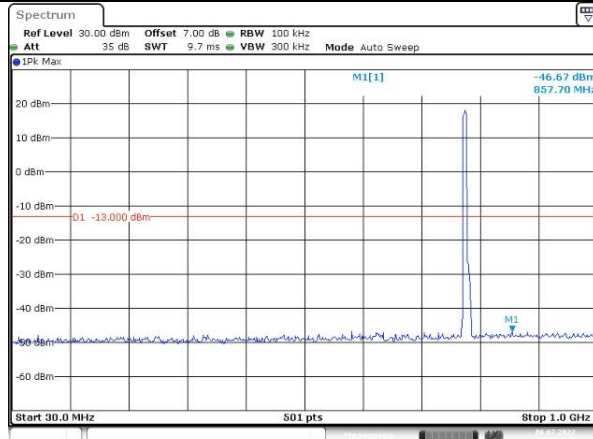


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

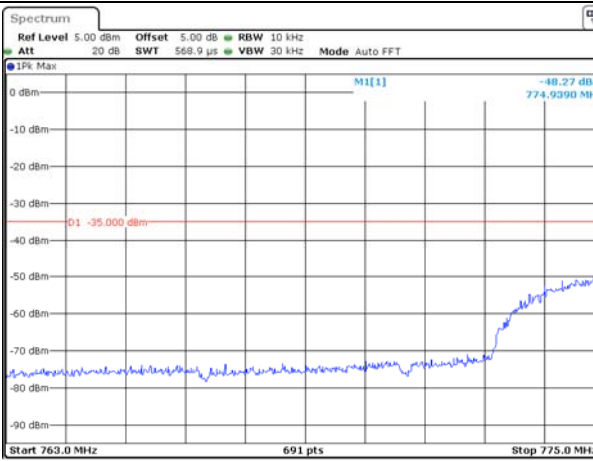
Lowest



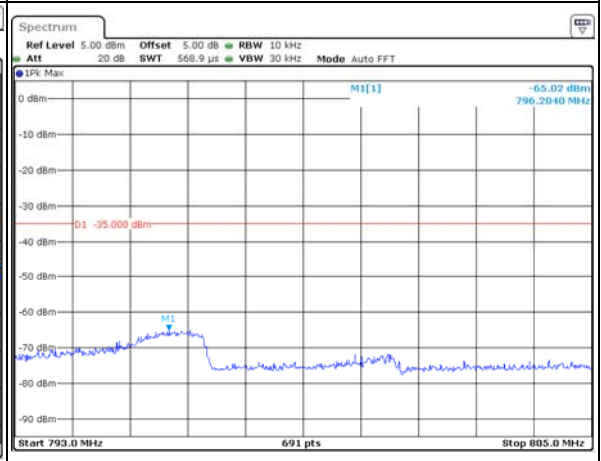
Date: 6.JUL.2022 14:14:15

Date: 6.JUL.2022 14:14:41

Lowest

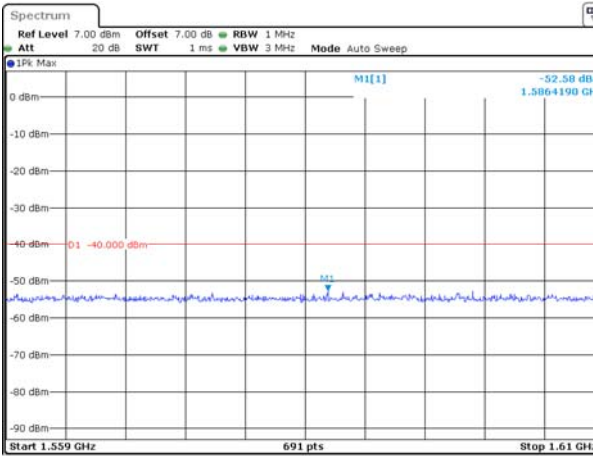


Date: 18.OCT.2022 16:13:08



Date: 18.OCT.2022 16:19:20

Lowest



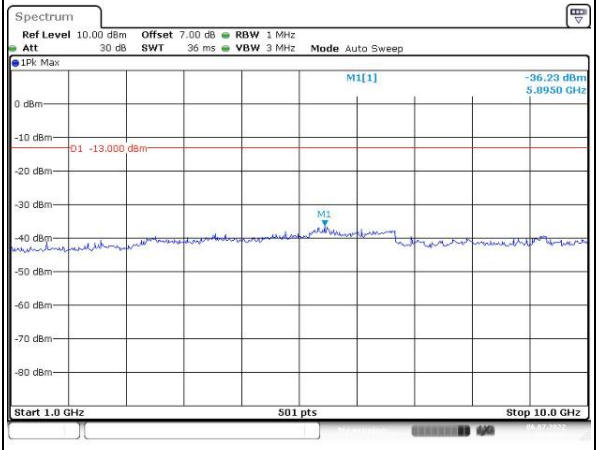
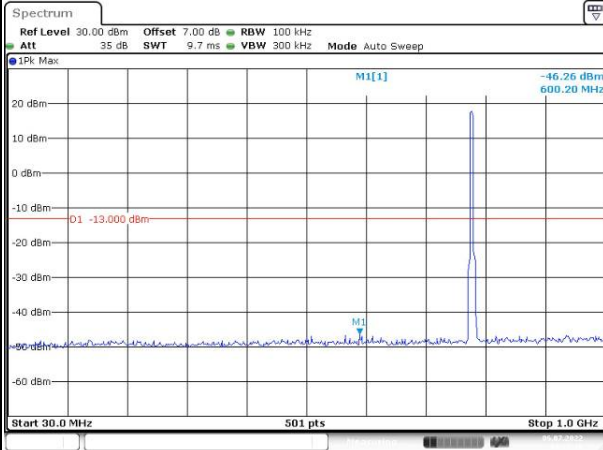
Date: 18.OCT.2022 16:27:54

Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

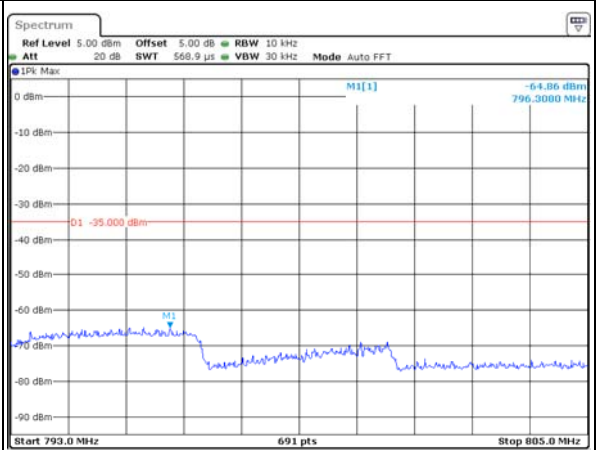
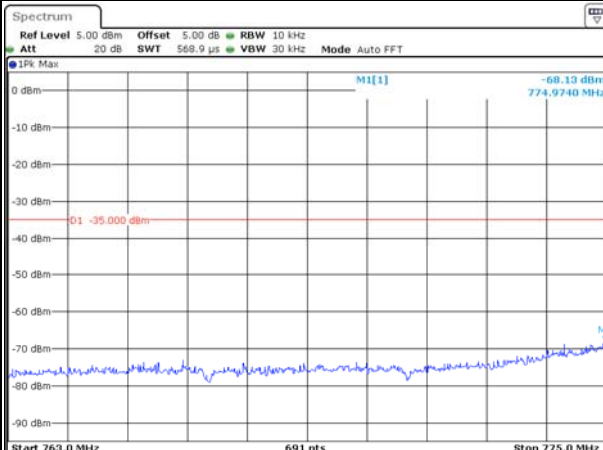
Middle



Date: 6 JUL 2022 14:15:10

Date: 6 JUL 2022 14:15:39

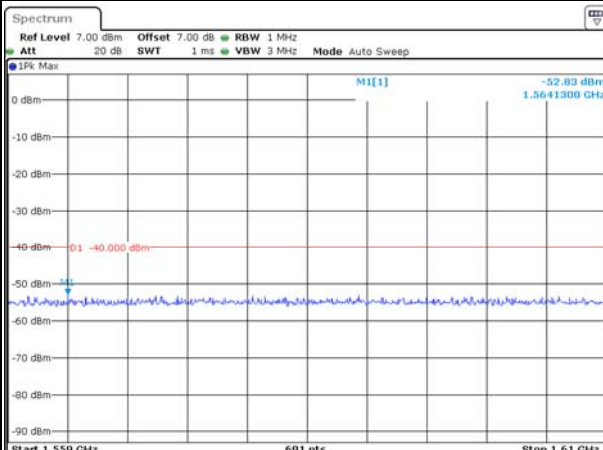
Middle



Date: 18 OCT 2022 16:12:24

Date: 18 OCT 2022 16:17:58

Middle



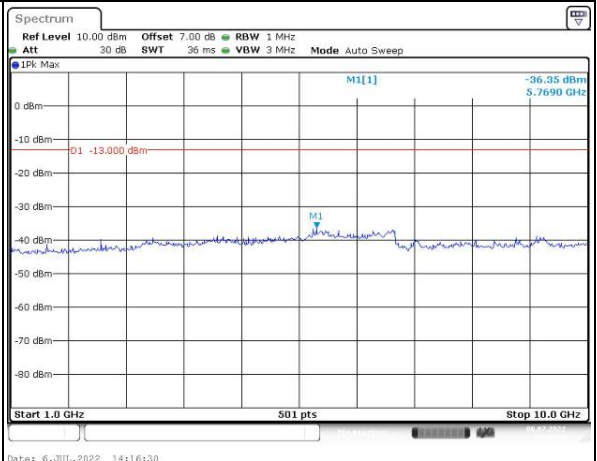
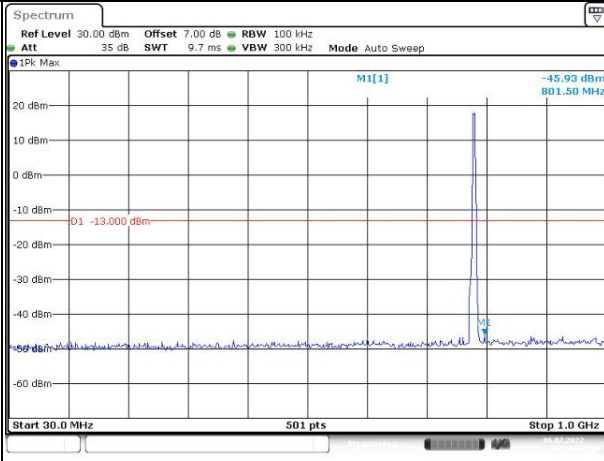
Date: 18 OCT 2022 16:26:45

Spurious Emissions at Antenna Terminal

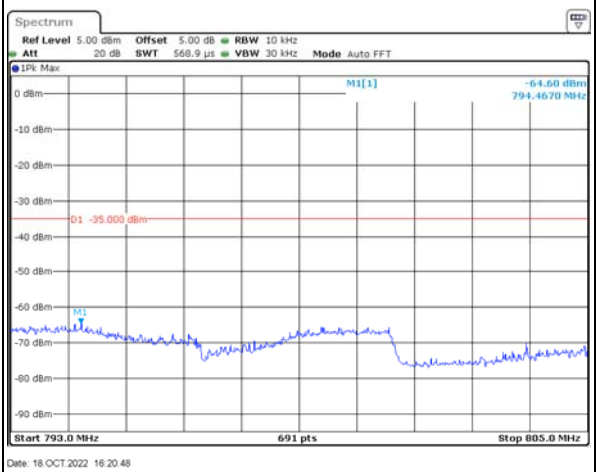
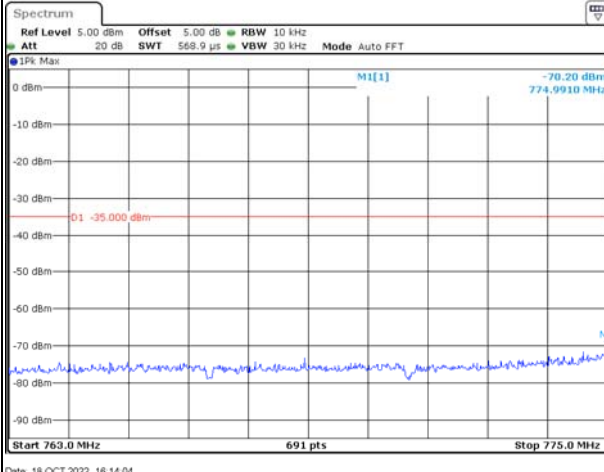
Channel

5MHz Bandwidth QPSK

Highest



Highest



Highest

