

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Spectrum Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Rm Max MI[1] -26.75 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 3.0 MHz Date: 7, JAN, 2022 09:39:35</p>	<p>Spectrum Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Rm Max MI[1] -25.22 dBm 1.91026350 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 3.0 MHz Date: 7, JAN, 2022 09:40:14</p>
16QAM 3MHz	<p>Spectrum Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Rm Max MI[1] -20.25 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 6.0 MHz Date: 7, JAN, 2022 09:41:04</p>	<p>Spectrum Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Rm Max MI[1] -23.02 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 6.0 MHz Date: 7, JAN, 2022 09:41:43</p>
16QAM 5MHz	<p>Spectrum Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Rm Max MI[1] -20.37 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 09:42:36</p>	<p>Spectrum Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Rm Max MI[1] -19.56 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 09:43:28</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -26.20 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 20.0 MHz Date: 7, JAN, 2022 09:44:28</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -25.31 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 20.0 MHz Date: 7, JAN, 2022 09:45:31</p>
16QAM 15MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -15.27 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 09:47:02</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 20 ms VBW 1 MHz Mode Sweep MI[1] -24.78 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 09:48:14</p>
16QAM 20MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -20.49 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 40.0 MHz Date: 7, JAN, 2022 09:49:14</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -19.55 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 40.0 MHz Date: 7, JAN, 2022 09:50:21</p>

4.6 Antenna Port Test Data and Results for LTE Band 4:

Serial Number:	CR21120041-RF	Test Date:	2022/01/07
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24	Relative Humidity: (%)	60	ATM Pressure: (kPa)	101.6
----------------------	----	---------------------------	----	------------------------	-------

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	Spectrum Analyzer	101474	2021/7/22	2022/7/21
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	149218	2021/7/22	2022/7/21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021/7/22	2022/7/22
UNI-T	Multimeter	UT39A+	C210582554	2021/9/30	2022/9/30
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	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 (dBi):	1	Cable Loss (dB):	0
Operation Voltage(V _{DC}):			
Lowest:	3.5	Normal:	3.7
		Highest:	4.2

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	22.71	22.62	22.68	23.88	30
	RB1#3	22.74	22.63	22.59		
	RB1#5	22.71	22.65	22.62		
	RB3#0	22.80	22.81	22.88		
	RB3#3	22.81	22.85	22.83		
	RB6#0	21.79	21.80	21.84		
1.4MHz 16QAM	RB1#0	22.50	21.61	22.46	23.55	30
	RB1#3	22.51	21.66	22.52		
	RB1#5	22.55	21.67	22.50		
	RB3#0	21.90	22.03	21.85		
	RB3#3	21.92	22.02	21.86		
	RB6#0	21.09	21.15	20.84		
3MHz QPSK	RB1#0	22.67	22.74	22.94	23.94	30
	RB1#8	22.69	22.77	22.94		
	RB1#14	22.66	22.72	22.94		
	RB6#0	21.74	21.77	21.74		
	RB6#9	21.74	21.88	21.72		
	RB15#0	21.78	21.79	21.77		
3MHz 16QAM	RB1#0	22.19	22.49	21.89	23.56	30
	RB1#8	22.21	22.56	21.84		
	RB1#14	22.15	22.56	21.93		
	RB6#0	20.80	21.02	21.13		
	RB6#9	20.80	21.04	21.18		
	RB15#0	20.94	20.94	20.96		
5MHz QPSK	RB1#0	22.76	22.82	22.64	23.92	30
	RB1#13	22.78	22.84	22.65		
	RB1#24	22.74	22.92	22.60		
	RB15#0	21.83	21.86	21.72		
	RB15#10	21.80	21.78	21.73		
	RB25#0	21.77	21.79	21.70		
5MHz 16QAM	RB1#0	21.00	22.07	21.35	23.11	30
	RB1#13	21.01	22.03	21.35		
	RB1#24	20.95	22.11	21.38		
	RB15#0	20.93	20.83	20.89		
	RB15#10	20.95	20.80	20.86		
	RB25#0	21.01	20.92	20.73		
10MHz QPSK	RB1#0	22.66	22.78	22.89	23.98	30
	RB1#25	22.64	22.85	22.98		
	RB1#49	22.68	22.81	22.92		

	RB25#0	21.74	21.87	21.68		
	RB25#25	21.77	21.73	21.63		
	RB50#0	21.75	21.81	21.90		
10MHz 16QAM	RB1#0	22.02	21.96	21.27	23.03	30
	RB1#25	22.00	22.03	21.39		
	RB1#49	21.97	22.02	21.34		
	RB25#0	20.89	21.02	20.92		
	RB25#25	20.82	21.03	20.97		
	RB50#0	20.94	21.02	20.93		
15MHz QPSK	RB1#0	22.67	22.73	22.86	23.95	30
	RB1#38	22.64	22.82	22.90		
	RB1#74	22.67	22.82	22.95		
	RB36#0	21.75	21.83	21.75		
	RB36#39	21.67	21.84	21.82		
	RB75#0	21.70	21.85	21.74		
15MHz 16QAM	RB1#0	22.01	21.97	22.15	23.23	30
	RB1#38	22.00	21.99	22.23		
	RB1#74	22.04	21.99	22.20		
	RB36#0	21.04	20.97	20.92		
	RB36#39	20.98	21.06	20.97		
	RB75#0	20.92	20.99	20.91		
20MHz QPSK	RB1#0	22.95	22.69	22.77	23.95	30
	RB1#50	22.81	22.72	22.77		
	RB1#99	22.87	22.80	22.91		
	RB50#0	21.68	21.80	21.74		
	RB50#50	21.82	21.81	21.88		
	RB100#0	21.79	21.88	21.79		
20MHz 16QAM	RB1#0	21.81	22.31	22.35	23.51	30
	RB1#50	21.75	22.28	22.39		
	RB1#99	21.88	22.26	22.51		
	RB50#0	20.95	20.99	20.81		
	RB50#50	20.96	21.05	20.93		
	RB100#0	20.87	20.98	20.91		
Note: EIRP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBi)						
					Result:	Pass

Peak-to-average Ratio(PAR)					
Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	4.17	5.45	4.72	13
	RB100#0	5.10	5.45	4.55	13
20MHz 16QAM	RB1#0	5.48	6.55	5.71	13
	RB100#0	6.17	6.26	5.57	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	1.102	1.102	1.260	1.260	1.260
1.4MHz 16QAM	1.108	1.090	1.102	1.266	1.254	1.260
3MHz QPSK	2.707	2.695	2.695	3.000	3.000	3.012
3MHz 16QAM	2.695	2.683	2.695	3.012	3.012	3.024
5MHz QPSK	4.531	4.511	4.491	5.000	5.020	5.000
5MHz 16QAM	4.491	4.531	4.551	4.980	5.020	4.980
10MHz QPSK	8.942	8.981	8.981	9.760	9.760	9.760
10MHz 16QAM	8.942	8.981	8.981	9.840	9.840	9.840
15MHz QPSK	13.533	13.533	13.533	15.120	15.060	15.060
15MHz 16QAM	13.533	13.533	13.533	15.060	15.180	15.000
20MHz QPSK	17.964	17.964	17.964	19.600	19.520	19.600
20MHz 16QAM	18.044	18.044	17.964	19.680	19.760	19.680

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.

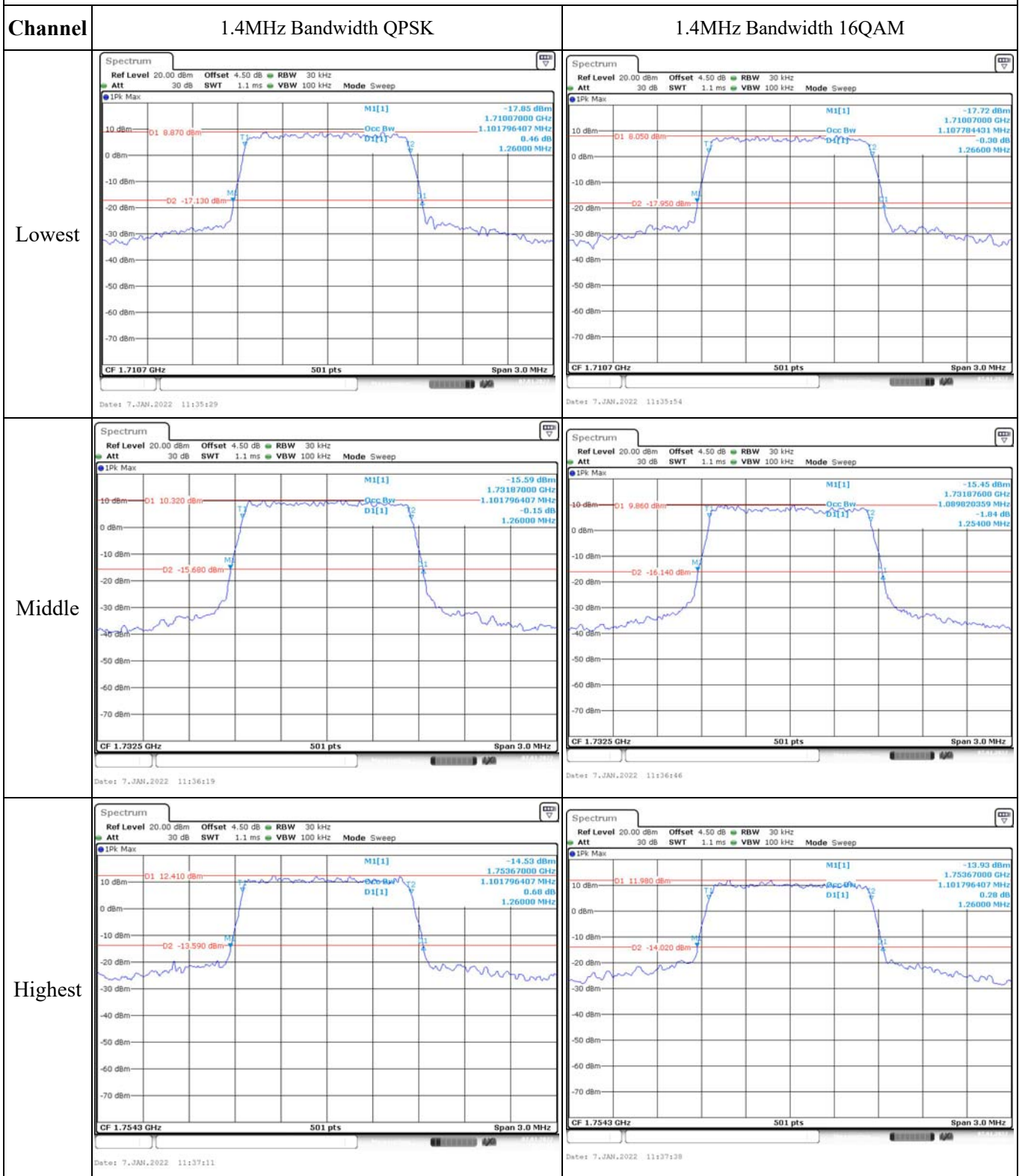
FCC §2.1051, § 27.53:Out of band emission, Band Edge	
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.

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	3.7	1710.514	1710.00	1754.486	1755
	-20	3.7	1710.517	1710.00	1754.484	1755
	-10	3.7	1710.513	1710.00	1754.482	1755
	0	3.7	1710.517	1710.00	1754.486	1755
	10	3.7	1710.516	1710.00	1754.481	1755
	20	3.7	1710.514	1710.00	1754.486	1755
	30	3.7	1710.515	1710.00	1754.485	1755
	40	3.7	1710.514	1710.00	1754.486	1755
Frequency Stability vs. Voltage	20	3.5	1710.518	1710.00	1754.486	1755
	20	4.2	1710.514	1710.00	1754.482	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	3.7	1710.511	1710.00	1754.457	1755
	-20	3.7	1710.514	1710.00	1754.455	1755
	-10	3.7	1710.515	1710.00	1754.457	1755
	0	3.7	1710.514	1710.00	1754.453	1755
	10	3.7	1710.517	1710.00	1754.455	1755
	20	3.7	1710.514	1710.00	1754.457	1755
	30	3.7	1710.513	1710.00	1754.458	1755
	40	3.7	1710.514	1710.00	1754.457	1755
Frequency Stability vs. Voltage	20	3.5	1710.515	1710.00	1754.457	1755
	20	4.2	1710.514	1710.00	1754.453	1755
					Result:	Pass

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 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max MI[1] -17.65 dBm 1.7100000 GHz Occ Bw 4.530938124 MHz -0.52 dB 5.0000 MHz D1[1] D2 -17.240 dBm CF 1.7125 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:40:47</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max MI[1] -16.85 dBm 1.7100200 GHz Occ Bw 4.491017964 MHz -1.36 dB 4.9800 MHz D1[1] D2 -17.930 dBm CF 1.7125 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:41:11</p>
Middle	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max MI[1] -16.05 dBm 1.7300000 GHz Occ Bw 4.510978044 MHz -0.79 dB 5.0000 MHz D1[1] D2 -16.470 dBm CF 1.7325 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:41:39</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max MI[1] -16.90 dBm 1.7300000 GHz Occ Bw 4.530938124 MHz 0.32 dB 5.0200 MHz D1[1] D2 -17.170 dBm CF 1.7325 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:42:10</p>
Highest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max MI[1] -13.26 dBm 1.7500000 GHz Occ Bw 4.491017964 MHz -0.03 dB 5.0000 MHz D1[1] D2 -13.610 dBm CF 1.7525 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:42:38</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max MI[1] -14.95 dBm 1.7500000 GHz Occ Bw 4.550098204 MHz 0.22 dB 4.9800 MHz D1[1] D2 -15.220 dBm CF 1.7525 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:42:56</p>

Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep</p> <p>MI[1] -20.73 dBm 1.7101200 GHz Occ Bw 8.942115760 MHz OI[1] -1.33 dB 9.7600 MHz</p> <p>D1 5.980 dBm D2 -20.020 dBm</p> <p>CF 1.715 GHz 501 pts Span 20.0 MHz</p> <p>Date: 7, JAN, 2022 11:43:25</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep</p> <p>MI[1] -21.34 dBm 1.7100000 GHz Occ Bw 8.942115760 MHz OI[1] -1.05 dB 9.9400 MHz</p> <p>D1 5.020 dBm D2 -20.980 dBm</p> <p>CF 1.715 GHz 501 pts Span 20.0 MHz</p> <p>Date: 7, JAN, 2022 11:43:53</p>
Middle	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep</p> <p>MI[1] -18.29 dBm 1.7275600 GHz Occ Bw 8.982035928 MHz OI[1] 0.58 dB 9.7600 MHz</p> <p>D1 8.320 dBm D2 -17.680 dBm</p> <p>CF 1.7325 GHz 501 pts Span 20.0 MHz</p> <p>Date: 7, JAN, 2022 11:44:29</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep</p> <p>MI[1] -20.48 dBm 1.7275800 GHz Occ Bw 8.982035928 MHz OI[1] -1.66 dB 9.9400 MHz</p> <p>D1 6.430 dBm D2 -19.570 dBm</p> <p>CF 1.7325 GHz 501 pts Span 20.0 MHz</p> <p>Date: 7, JAN, 2022 11:45:01</p>
Highest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep</p> <p>MI[1] -15.32 dBm 1.7451600 GHz Occ Bw 8.982035928 MHz OI[1] -1.33 dB 9.7600 MHz</p> <p>D1 9.570 dBm D2 -16.430 dBm</p> <p>CF 1.75 GHz 501 pts Span 20.0 MHz</p> <p>Date: 7, JAN, 2022 11:45:16</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep</p> <p>MI[1] -17.14 dBm 1.7451200 GHz Occ Bw 8.982035928 MHz OI[1] -1.41 dB 9.9400 MHz</p> <p>D1 8.560 dBm D2 -17.440 dBm</p> <p>CF 1.75 GHz 501 pts Span 20.0 MHz</p> <p>Date: 7, JAN, 2022 11:46:05</p>

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep IPk Max M1[1] -17.61 dBm 1.7099400 GHz Occ Bw 13.532934132 MHz 1.04 dB D1[1] 15.1200 MHz D1 9.450 dBm D2 -16.550 dBm CF 1.7175 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 11:46:43</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep IPk Max M1[1] -17.25 dBm 1.7100000 GHz Occ Bw 13.532934132 MHz 0.57 dB D1[1] 15.0600 MHz D1 6.930 dBm D2 -17.670 dBm CF 1.7175 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 11:47:10</p>
Middle	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep IPk Max M1[1] -15.07 dBm 1.7250600 GHz Occ Bw 13.532934132 MHz 0.60 dB D1[1] 15.0600 MHz D1 10.700 dBm D2 -15.300 dBm CF 1.7325 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 11:47:48</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep IPk Max M1[1] -16.13 dBm 1.7249400 GHz Occ Bw 13.532934132 MHz 0.39 dB D1[1] 15.1000 MHz D1 10.410 dBm D2 -15.590 dBm CF 1.7325 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 11:48:19</p>
Highest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep IPk Max M1[1] -14.12 dBm 1.7400000 GHz Occ Bw 13.532934132 MHz 0.40 dB D1[1] 15.0600 MHz D1 12.450 dBm D2 -13.550 dBm CF 1.7475 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 11:48:44</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep IPk Max M1[1] -14.05 dBm 1.7401200 GHz Occ Bw 13.532934132 MHz 0.60 dB D1[1] 15.0000 MHz D1 12.580 dBm D2 -13.420 dBm CF 1.7475 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 11:49:15</p>

Occupied Bandwidth

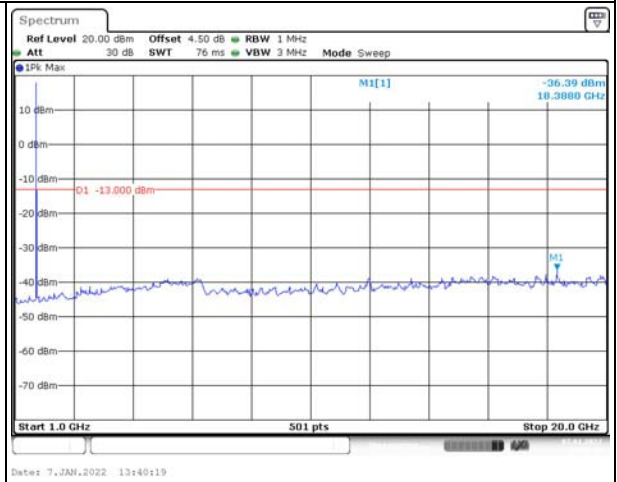
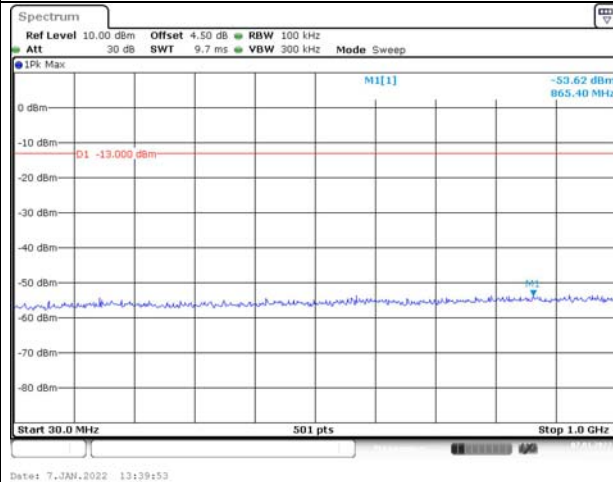
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

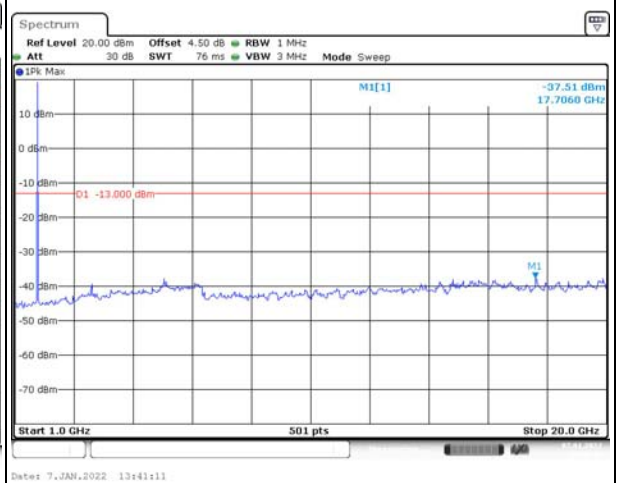
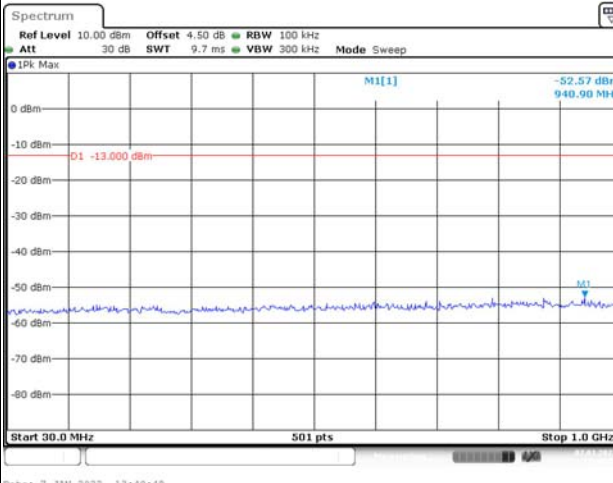
Lowest



Date: 7, JAN, 2022 13:39:53

Date: 7, JAN, 2022 13:40:19

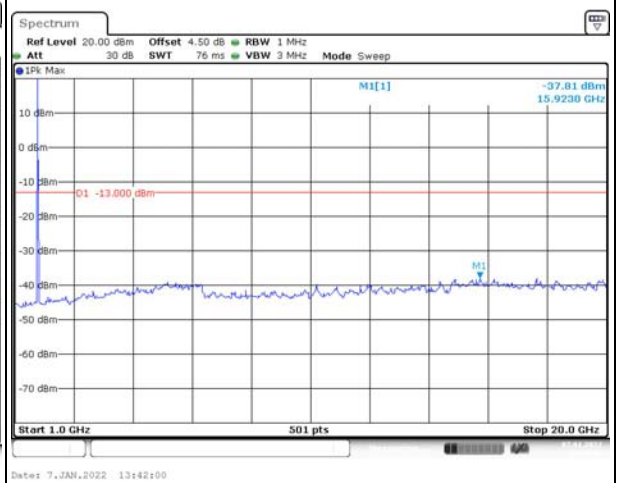
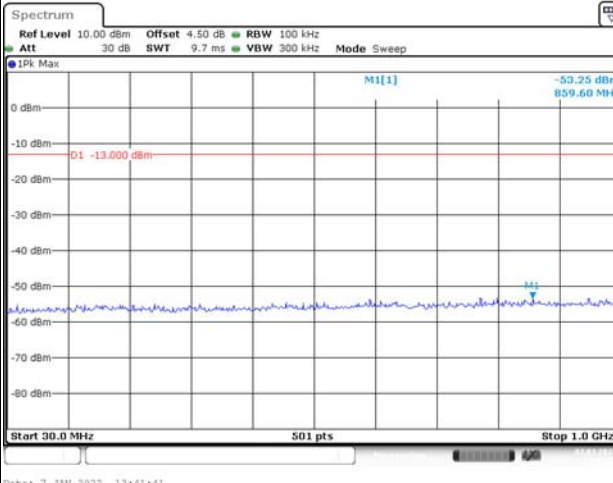
Middle



Date: 7, JAN, 2022 13:40:49

Date: 7, JAN, 2022 13:41:11

Highest



Date: 7, JAN, 2022 13:41:41

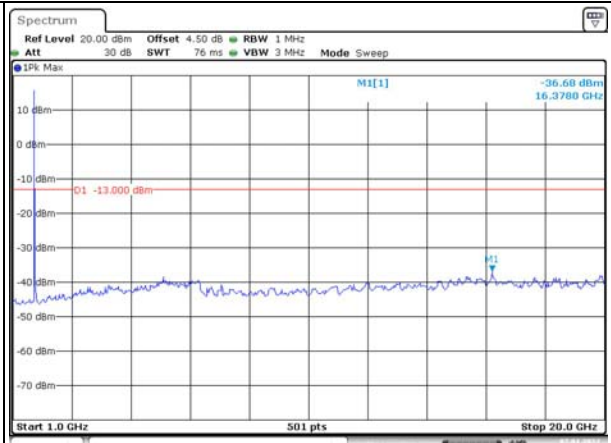
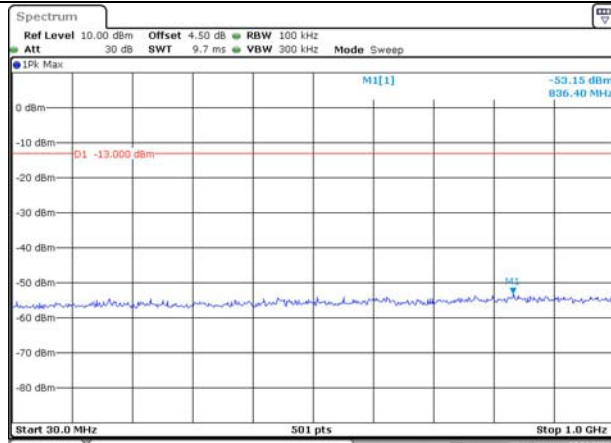
Date: 7, JAN, 2022 13:42:00

Spurious Emissions at Antenna Terminal

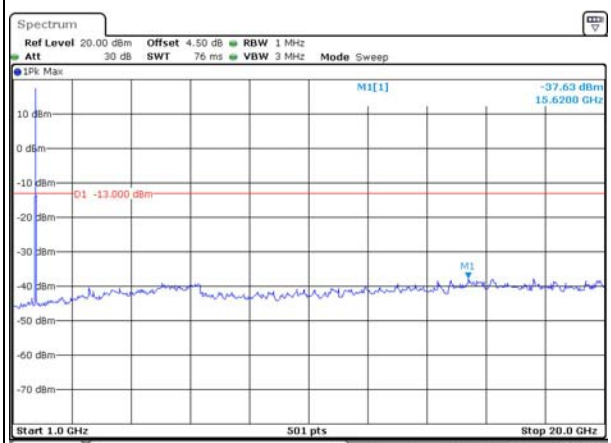
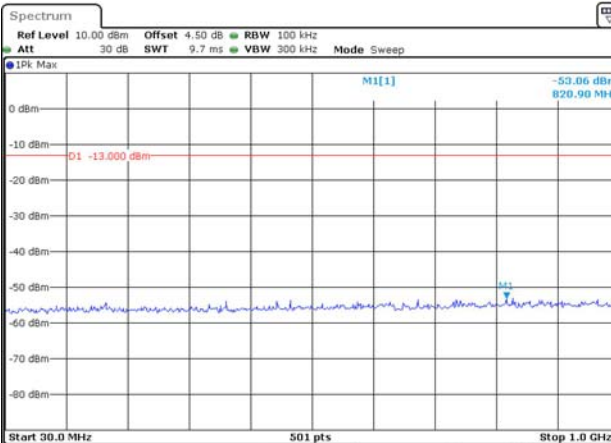
Channel

3MHz Bandwidth QPSK

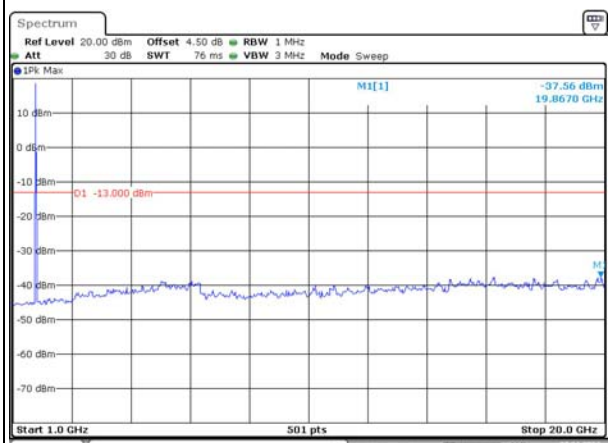
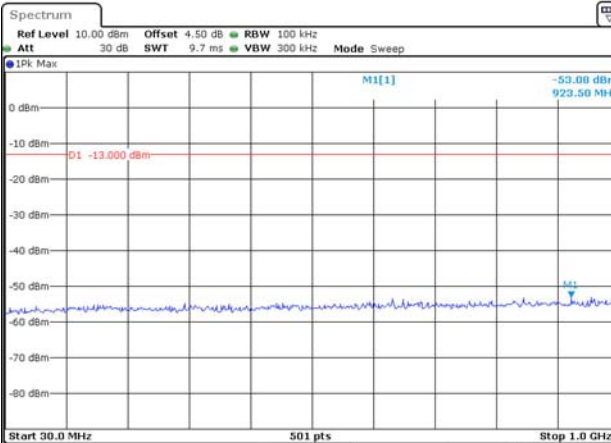
Lowest



Middle



Highest

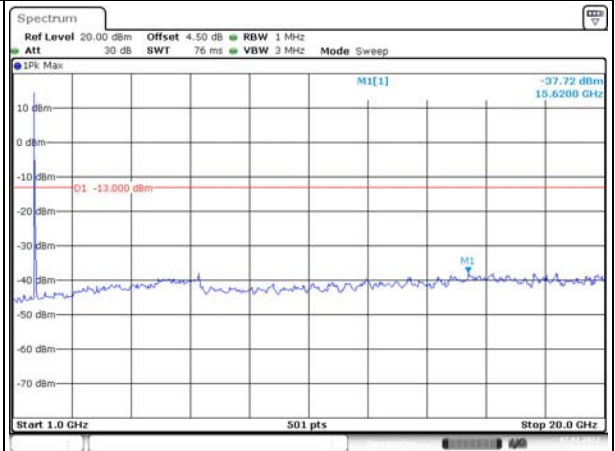
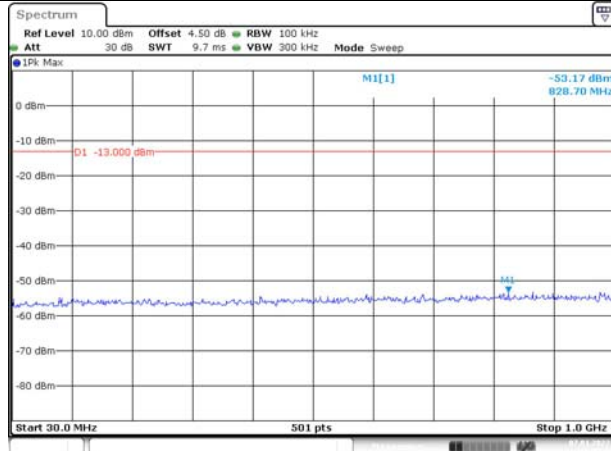


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

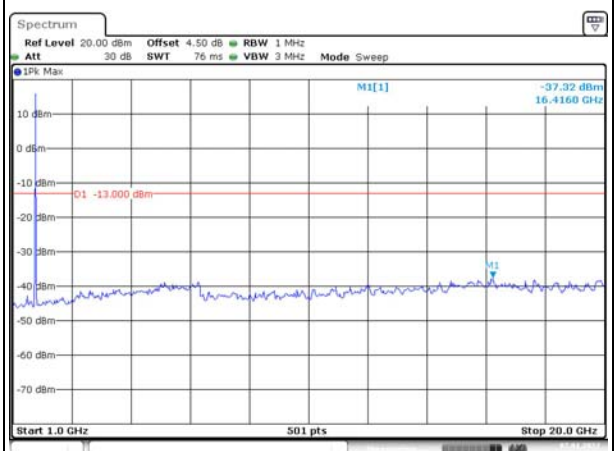
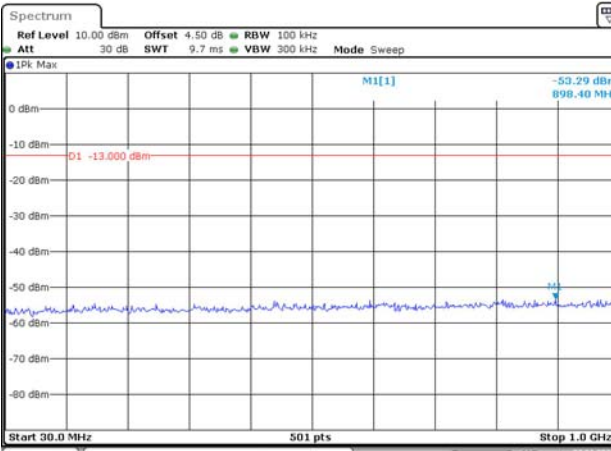
Lowest



Date: 7, JAN, 2022 13:45:11

Date: 7, JAN, 2022 13:45:33

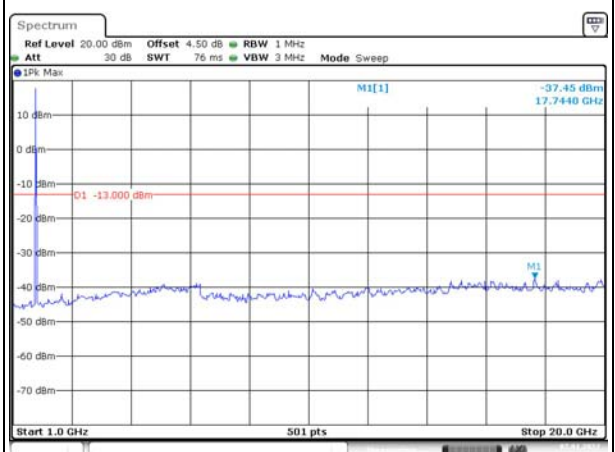
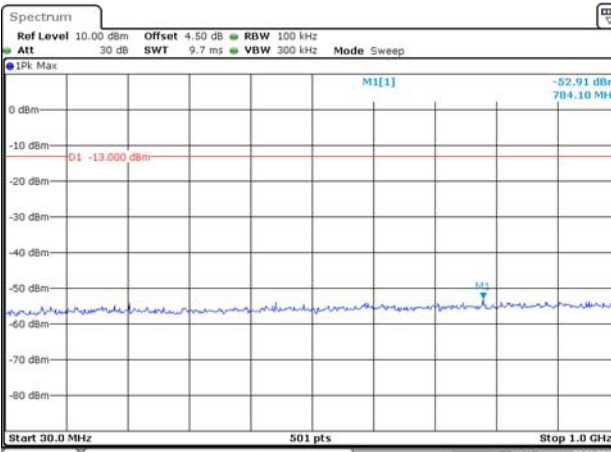
Middle



Date: 7, JAN, 2022 13:46:03

Date: 7, JAN, 2022 13:46:26

Highest



Date: 7, JAN, 2022 13:46:52

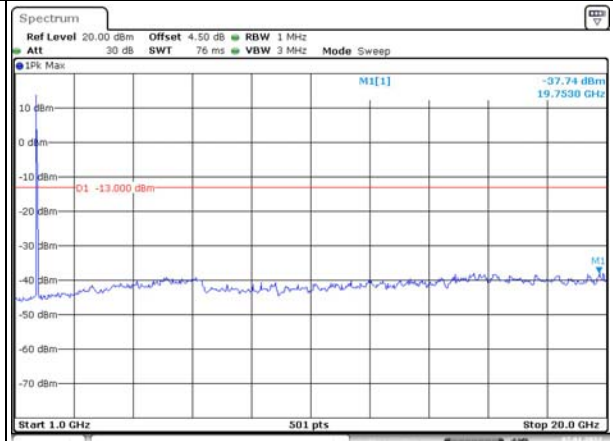
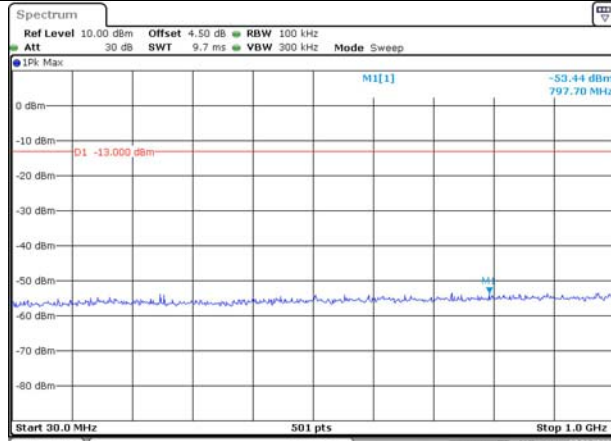
Date: 7, JAN, 2022 13:47:15

Spurious Emissions at Antenna Terminal

Channel

10MHz Bandwidth QPSK

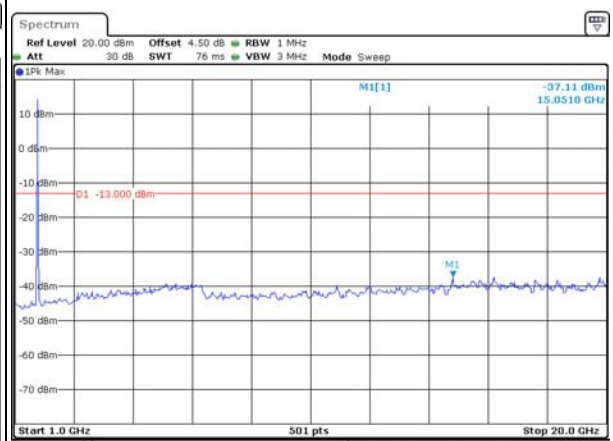
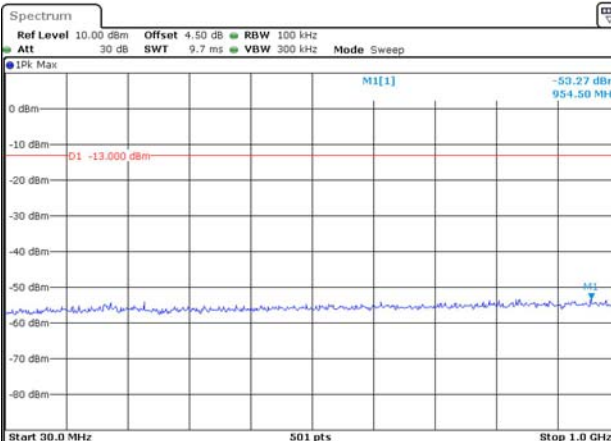
Lowest



Date: 7, JAN, 2022 13:47:52

Date: 7, JAN, 2022 13:48:18

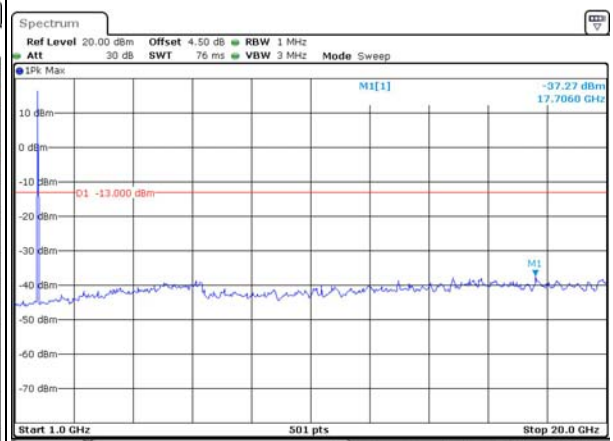
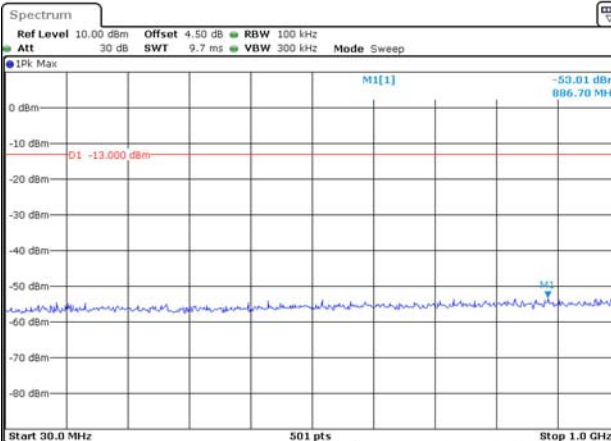
Middle



Date: 7, JAN, 2022 13:48:49

Date: 7, JAN, 2022 13:49:11

Highest



Date: 7, JAN, 2022 13:49:39

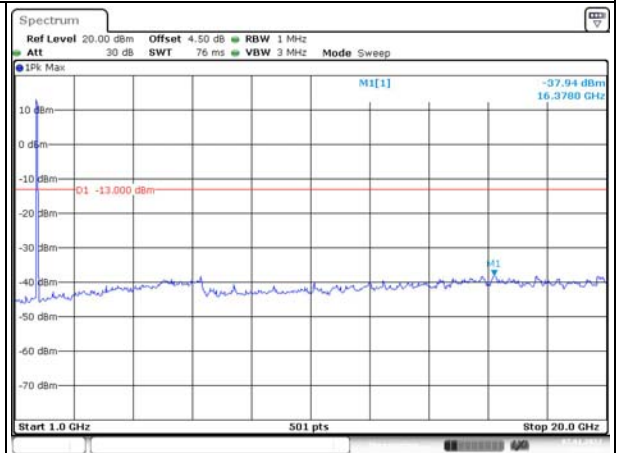
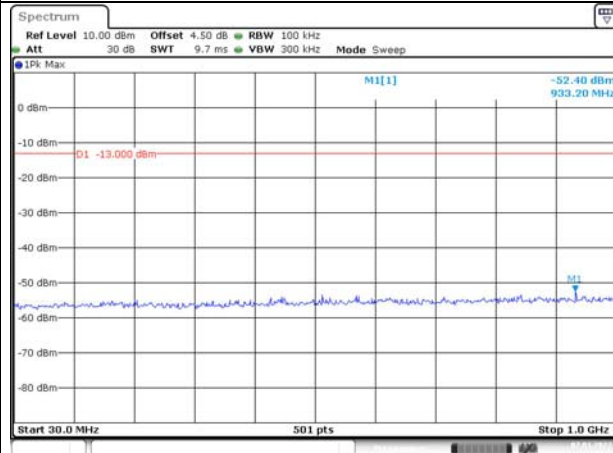
Date: 7, JAN, 2022 13:50:04

Spurious Emissions at Antenna Terminal

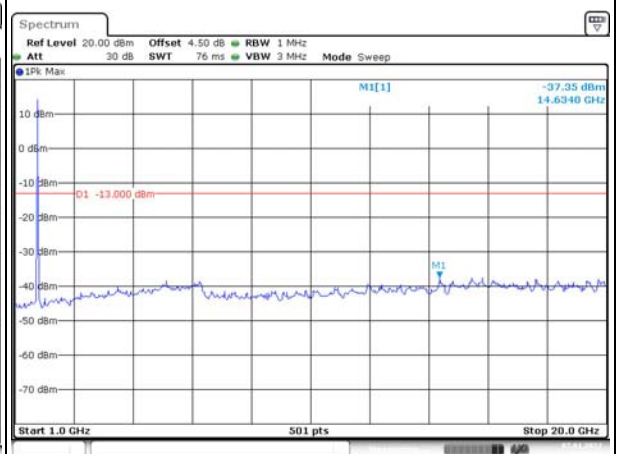
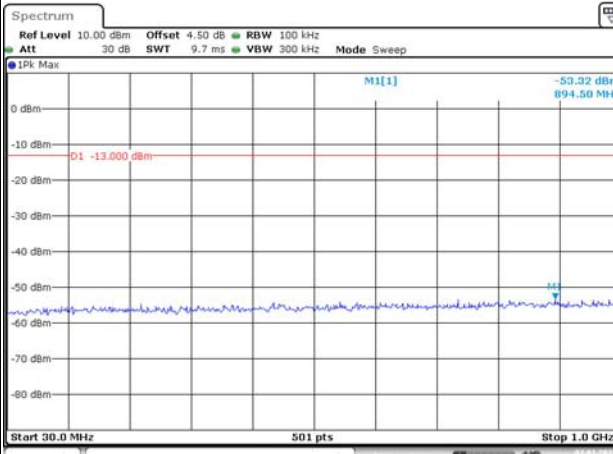
Channel

15MHz Bandwidth QPSK

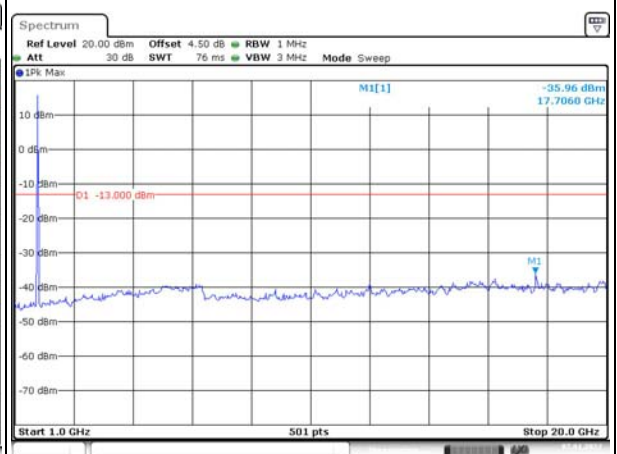
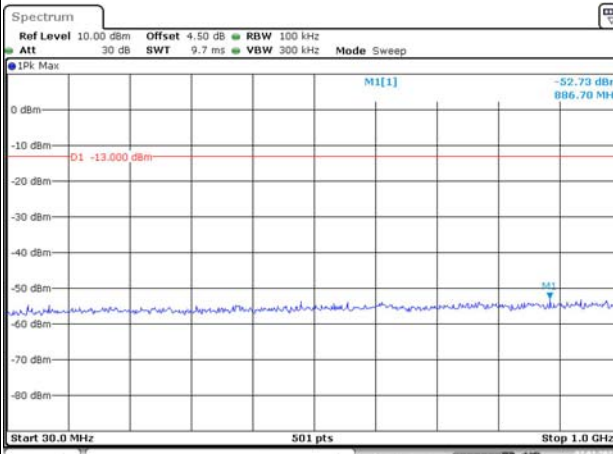
Lowest



Middle



Highest

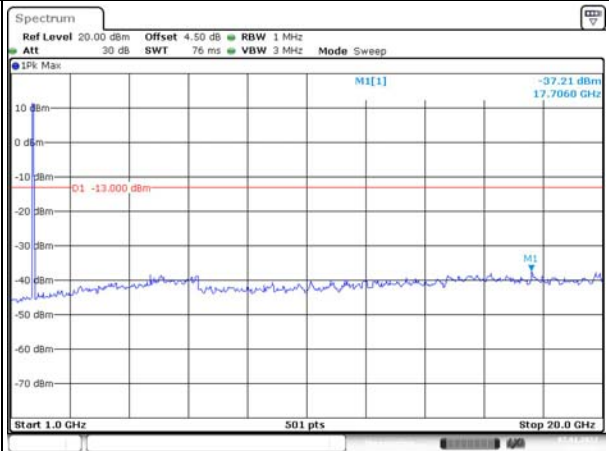
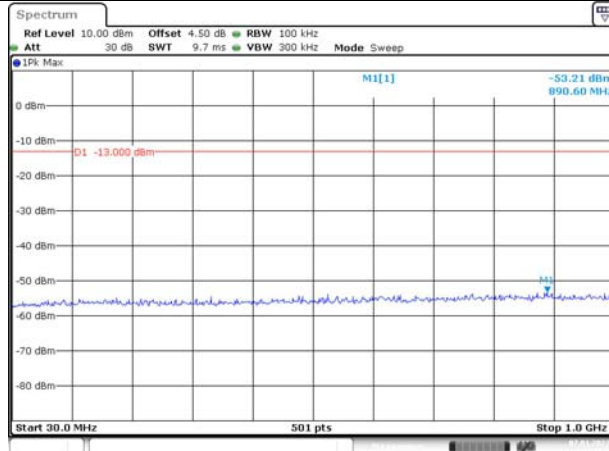


Spurious Emissions at Antenna Terminal

Channel

20MHz Bandwidth QPSK

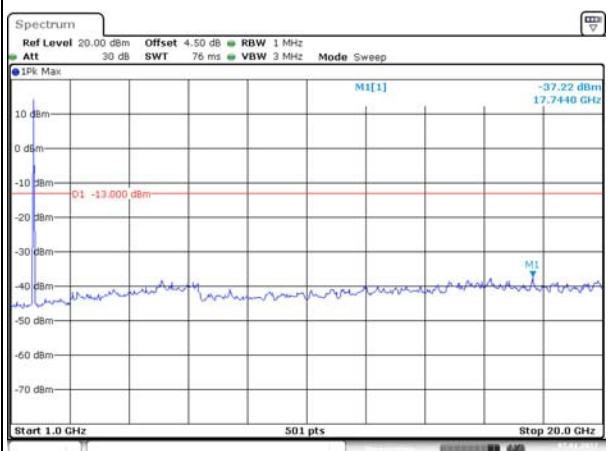
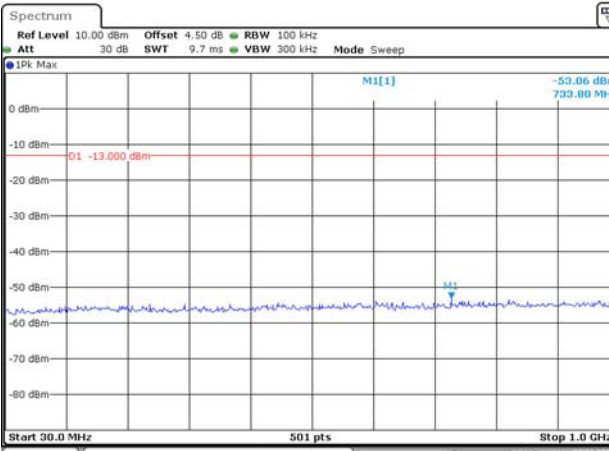
Lowest



Date: 7, JAN, 2022 13:54:32

Date: 7, JAN, 2022 13:54:00

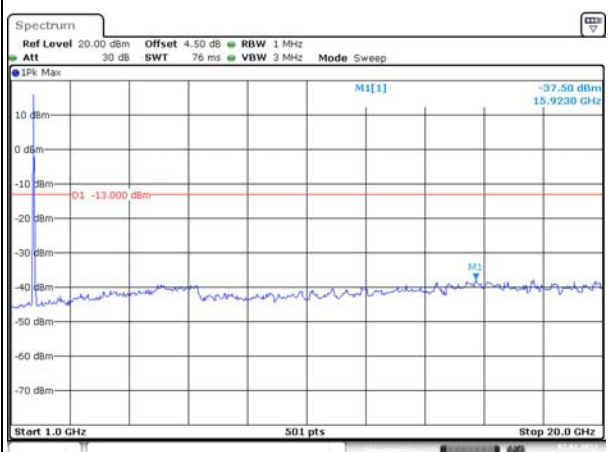
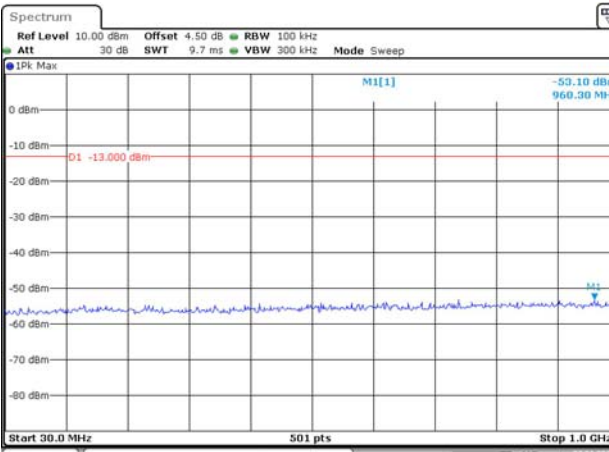
Middle



Date: 7, JAN, 2022 13:54:37

Date: 7, JAN, 2022 13:54:53

Highest



Date: 7, JAN, 2022 13:55:32

Date: 7, JAN, 2022 13:55:58

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -29.37 dBm 1.70995210 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 3.0 MHz Date: 7, JAN, 2022 09:50:49</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -19.23 dBm 1.75506590 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 3.0 MHz Date: 7, JAN, 2022 09:51:37</p>
QPSK 3MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -18.68 dBm 1.71000000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 6.0 MHz Date: 7, JAN, 2022 09:52:15</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -16.33 dBm 1.75500000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 6.0 MHz Date: 7, JAN, 2022 09:53:00</p>
QPSK 5MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -17.52 dBm 1.71000000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 09:53:57</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 20 ms VBW 300 kHz Mode Sweep MI[1] -23.89 dBm 1.75500000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 09:55:00</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -27.01 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 20.0 MHz Date: 7, JAN, 2022 09:56:02</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -21.52 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 20.0 MHz Date: 7, JAN, 2022 09:57:01</p>
QPSK 15MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -18.04 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 09:58:03</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 20 ms VBW 1 MHz Mode Sweep MI[1] -25.02 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 09:59:04</p>
QPSK 20MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -24.16 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 40.0 MHz Date: 7, JAN, 2022 10:00:16</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -18.31 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 40.0 MHz Date: 7, JAN, 2022 10:01:14</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -23.80 dBm 1.70900240 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 3.0 MHz Date: 7, JAN, 2022 09:51:12</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -10.35 dBm 1.75500000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 3.0 MHz Date: 7, JAN, 2022 09:51:54</p>
16QAM 3MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -19.29 dBm 1.71000000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 6.0 MHz Date: 7, JAN, 2022 09:52:36</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 30 kHz Att 30 dB SWT 1.1 ms VBW 100 kHz Mode Sweep MI[1] -10.48 dBm 1.75500000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 6.0 MHz Date: 7, JAN, 2022 09:53:20</p>
16QAM 5MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -19.00 dBm 1.71000000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 09:54:27</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 20 ms VBW 300 kHz Mode Sweep MI[1] -22.60 dBm 1.75500000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 09:55:33</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -24.79 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 20.0 MHz Date: 7, JAN, 2022 09:15:30</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep MI[1] -21.75 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 20.0 MHz Date: 7, JAN, 2022 09:57:29</p>
16QAM 15MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -18.98 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 09:15:30</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 20 ms VBW 1 MHz Mode Sweep MI[1] -26.44 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 30.0 MHz Date: 7, JAN, 2022 09:59:28</p>
16QAM 20MHz	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -22.39 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 40.0 MHz Date: 7, JAN, 2022 10:00:43</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep MI[1] -18.28 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 40.0 MHz Date: 7, JAN, 2022 10:01:44</p>

4.7 Antenna Port Test Data and Results for LTE Band 5:

Serial Number:	CR21120041-RF	Test Date:	2022/01/07~2022/01/10
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.6~23.1	Relative Humidity: (%)	27~41	ATM Pressure: (kPa)	101.2~101.8
----------------------	-----------	---------------------------	-------	------------------------	-------------

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	Spectrum Analyzer	101474	2021/7/22	2022/7/21
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	149218	2021/7/22	2022/7/21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021/7/22	2022/7/22
UNI-T	Multimeter	UT39A+	C210582554	2021/9/30	2022/9/30
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	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 5▲:

Antenna Gain (dBi):	3.15	Antenna Gain (dBd):	1	Cable Loss (dB):	0
Operation Voltage(V _{DC}):					
Lowest:	3.5	Normal:	3.7	Highest:	4.2

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	824.7	836.5	848.3
3MHz	825.5	836.5	847.5
5MHz	826.5	836.5	846.5
10MHz	829	836.5	844

Test Data:**FCC§2.1046;§ 22.913 (a)****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	22.84	22.94	22.79	24.01	38.45
	RB1#3	22.87	22.86	22.82		
	RB1#5	22.90	22.91	22.89		
	RB3#0	22.96	22.94	22.84		
	RB3#3	23.01	22.90	22.84		
	RB6#0	21.89	21.90	21.73		
1.4MHz 16QAM	RB1#0	22.40	21.53	22.40	23.4	38.45
	RB1#3	22.38	21.54	22.39		
	RB1#5	22.40	21.54	22.39		
	RB3#0	21.98	22.03	21.86		
	RB3#3	22.05	21.99	21.91		
	RB6#0	21.42	21.14	21.04		
3MHz QPSK	RB1#0	22.96	22.74	22.81	23.96	38.45
	RB1#8	22.83	22.74	22.85		
	RB1#14	22.84	22.72	22.87		
	RB6#0	21.75	21.72	21.90		
	RB6#9	21.92	21.80	21.89		
3MHz 16QAM	RB1#0	21.49	22.16	22.68	23.68	38.45
	RB1#8	21.46	22.10	22.61		
	RB1#14	21.45	22.14	22.67		
	RB6#0	21.41	20.78	20.87		
	RB6#9	21.15	20.81	20.90		
	RB15#0	21.21	20.90	20.93		
5MHz QPSK	RB1#0	22.76	22.87	22.74	23.93	38.45
	RB1#13	22.75	22.80	22.79		
	RB1#24	22.63	22.93	22.74		
	RB15#0	21.73	21.85	21.80		
	RB15#10	21.90	21.77	21.90		
	RB25#0	21.78	21.80	21.83		
5MHz 16QAM	RB1#0	21.02	21.85	21.40	23.01	38.45
	RB1#13	21.07	22.01	21.44		
	RB1#24	21.06	21.96	21.50		
	RB15#0	21.22	20.73	20.95		
	RB15#10	20.98	20.82	20.83		
	RB25#0	20.99	20.89	20.70		
10MHz QPSK	RB1#0	22.69	22.92	22.76	23.94	38.45

	RB1#25	22.72	22.88	22.81		
	RB1#49	22.80	22.94	22.83		
	RB25#0	21.89	21.86	21.83		
	RB25#25	21.80	21.93	21.83		
	RB50#0	21.89	21.77	21.79		
10MHz 16QAM	RB1#0	22.01	21.90	21.34	23.03	38.45
	RB1#25	22.03	21.97	21.29		
	RB1#49	22.03	22.01	21.28		
	RB25#0	20.88	20.97	20.93		
	RB25#25	20.92	21.04	20.87		
	RB50#0	20.88	21.02	20.88		

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	5.42	5.19	5.54	13
	RB50#0	5.36	5.25	5.19	13
10MHz 16QAM	RB1#0	6.67	6.00	6.93	13
	RB50#0	6.38	6.17	6.09	13
Result:					Pass

FCC §2.1049, §22.905: Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.102	1.096	1.254	1.254	1.260
1.4MHz 16QAM	1.102	1.102	1.102	1.266	1.254	1.260
3MHz QPSK	2.695	2.695	2.707	3.012	3.000	3.000
3MHz 16QAM	2.683	2.695	2.695	3.012	3.024	3.012
5MHz QPSK	4.531	4.511	4.511	5.000	5.020	5.020
5MHz 16QAM	4.531	4.511	4.531	4.980	5.020	5.000
10MHz QPSK	8.942	8.942	8.942	9.720	9.760	9.720
10MHz 16QAM	8.981	8.981	8.942	9.760	9.800	9.760

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

FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal

Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.
----------------	--

FCC §2.1051, §22.917(a):Out of band emission, Band Edge

Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
----------------	---

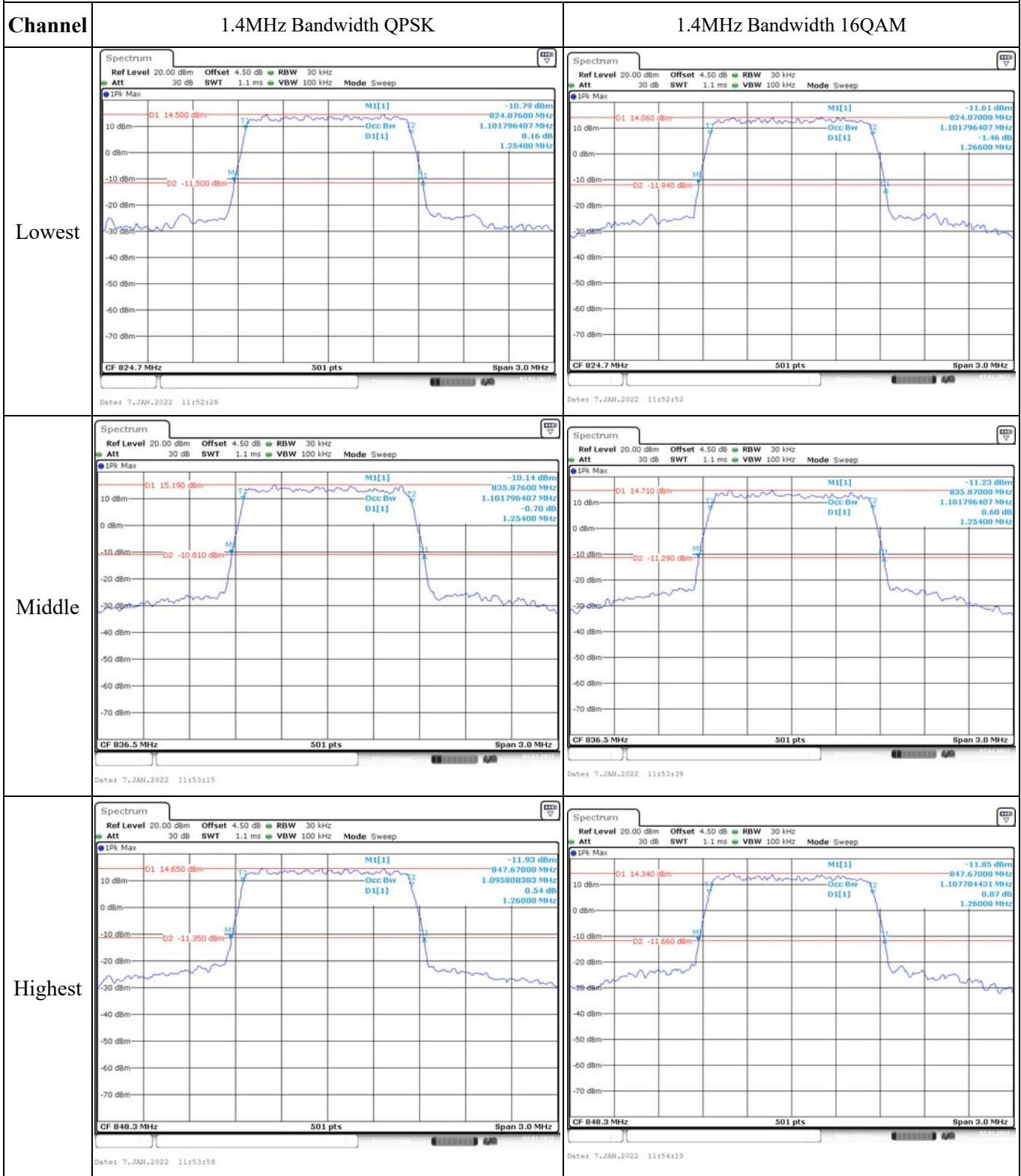
FCC §2.1055, §22.355: Frequency Stability

Test Mode:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.7	-12.60	-0.015	2.5
	-20	3.7	8.90	0.011	2.5
	-10	3.7	-7.11	-0.008	2.5
	0	3.7	-5.48	-0.007	2.5
	10	3.7	7.71	0.009	2.5
	20	3.7	-5.03	-0.006	2.5
	30	3.7	5.70	0.007	2.5
	40	3.7	-5.50	-0.007	2.5
Frequency Stability vs. Voltage	20	3.5	9.31	0.011	2.5
	20	4.2	-5.01	-0.006	2.5
Result:				Pass	

Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.7	-33.52	-0.040	2.5
	-20	3.7	7.85	0.009	2.5
	-10	3.7	9.09	0.011	2.5
	0	3.7	7.47	0.009	2.5
	10	3.7	-8.60	-0.010	2.5
	20	3.7	5.54	0.007	2.5
	30	3.7	5.80	0.007	2.5
	40	3.7	9.10	0.011	2.5
Frequency Stability vs. Voltage	20	3.5	-9.98	-0.012	2.5
	20	4.2	-8.77	-0.010	2.5
Result:				Pass	

Test Plots:

Occupied Bandwidth



Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	<p>Ref Level 20.00 dBm, Offset 4.50 dB, RBW 30 kHz, Att 30 dB, SWT 1.1 ms, VBW 100 kHz, Mode Sweep</p> <p>MI[1] -14.20 dBm, 824.0000 MHz, 2.694610778 MHz, -0.30 dB, 3.0120 MHz</p> <p>D1 11.570 dBm, D2 -14.430 dBm</p> <p>CF 825.5 MHz, 501 pts, Span 6.0 MHz</p> <p>Date: 7, JAN, 2022 11:56:13</p>	<p>Ref Level 20.00 dBm, Offset 4.50 dB, RBW 30 kHz, Att 30 dB, SWT 1.1 ms, VBW 100 kHz, Mode Sweep</p> <p>MI[1] -14.73 dBm, 823.9880 MHz, 2.682634731 MHz, -0.24 dB, 3.0120 MHz</p> <p>D1 11.060 dBm, D2 -14.940 dBm</p> <p>CF 825.5 MHz, 501 pts, Span 6.0 MHz</p> <p>Date: 7, JAN, 2022 11:56:14</p>
Middle	<p>Ref Level 20.00 dBm, Offset 4.50 dB, RBW 30 kHz, Att 30 dB, SWT 1.1 ms, VBW 100 kHz, Mode Sweep</p> <p>MI[1] -12.58 dBm, 835.0000 MHz, 2.694610778 MHz, -1.23 dB, 3.0000 MHz</p> <p>D1 12.670 dBm, D2 -13.330 dBm</p> <p>CF 836.5 MHz, 501 pts, Span 6.0 MHz</p> <p>Date: 7, JAN, 2022 11:56:59</p>	<p>Ref Level 20.00 dBm, Offset 4.50 dB, RBW 30 kHz, Att 30 dB, SWT 1.1 ms, VBW 100 kHz, Mode Sweep</p> <p>MI[1] -15.91 dBm, 834.9880 MHz, 2.694610778 MHz, -0.39 dB, 3.0240 MHz</p> <p>D1 10.700 dBm, D2 -15.300 dBm</p> <p>CF 836.5 MHz, 501 pts, Span 6.0 MHz</p> <p>Date: 7, JAN, 2022 11:57:20</p>
Highest	<p>Ref Level 20.00 dBm, Offset 4.50 dB, RBW 30 kHz, Att 30 dB, SWT 1.1 ms, VBW 100 kHz, Mode Sweep</p> <p>MI[1] -13.81 dBm, 846.0000 MHz, 2.706586826 MHz, 0.13 dB, 3.0000 MHz</p> <p>D1 11.810 dBm, D2 -14.190 dBm</p> <p>CF 847.5 MHz, 501 pts, Span 6.0 MHz</p> <p>Date: 7, JAN, 2022 11:57:48</p>	<p>Ref Level 20.00 dBm, Offset 4.50 dB, RBW 30 kHz, Att 30 dB, SWT 1.1 ms, VBW 100 kHz, Mode Sweep</p> <p>MI[1] -15.89 dBm, 845.9880 MHz, 2.694610778 MHz, 0.49 dB, 3.0120 MHz</p> <p>D1 10.880 dBm, D2 -15.120 dBm</p> <p>CF 847.5 MHz, 501 pts, Span 6.0 MHz</p> <p>Date: 7, JAN, 2022 11:58:15</p>

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max D1 14.500 dBm MI[1] -12.37 dBm 824.0000 MHz 4.530938124 MHz DCC BW 1.65 dB D1[1] 5.0000 MHz CF 826.5 MHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:58:53</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max D1 14.240 dBm MI[1] -11.25 dBm 824.0200 MHz 4.530938124 MHz DCC BW 0.15 dB D1[1] 4.9800 MHz CF 826.5 MHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:59:24</p>
Middle	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max D1 13.840 dBm MI[1] -11.50 dBm 834.0000 MHz 4.510978044 MHz DCC BW 1.58 dB D1[1] 5.0200 MHz CF 836.5 MHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 11:59:52</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max D1 13.300 dBm MI[1] -12.63 dBm 834.0000 MHz 4.510978044 MHz DCC BW 0.54 dB D1[1] 5.0200 MHz CF 836.5 MHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 12:00:20</p>
Highest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max D1 14.650 dBm MI[1] -11.59 dBm 843.9800 MHz 4.510978044 MHz DCC BW 0.23 dB D1[1] 5.0200 MHz CF 846.5 MHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 12:00:48</p>	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 1 ms VBW 300 kHz Mode Sweep IPk Max D1 13.610 dBm MI[1] -11.40 dBm 844.0000 MHz 4.530938124 MHz DCC BW 0.75 dB D1[1] 5.0000 MHz CF 846.5 MHz 501 pts Span 10.0 MHz Date: 7, JAN, 2022 12:01:15</p>

Occupied Bandwidth

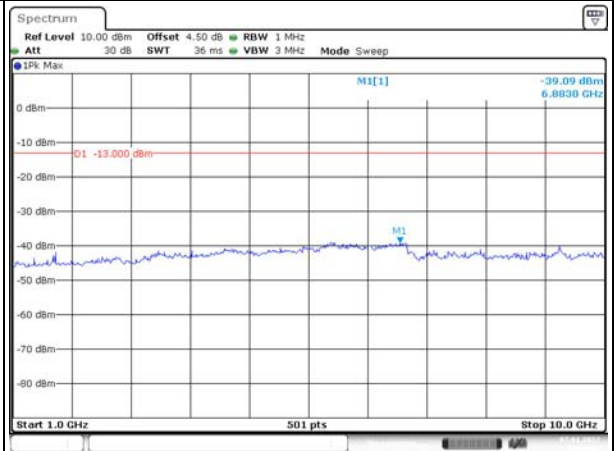
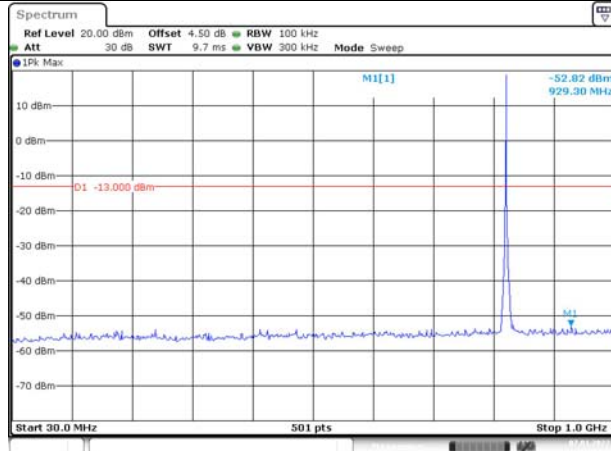
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

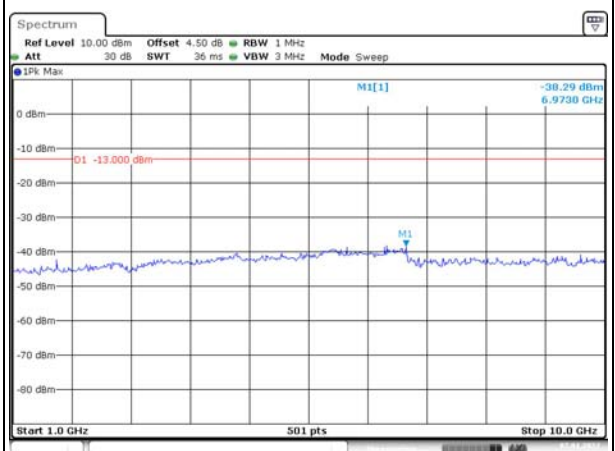
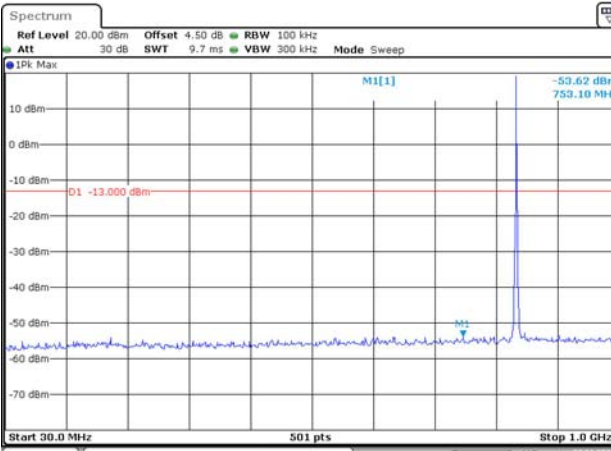
Channel

1.4MHz Bandwidth QPSK

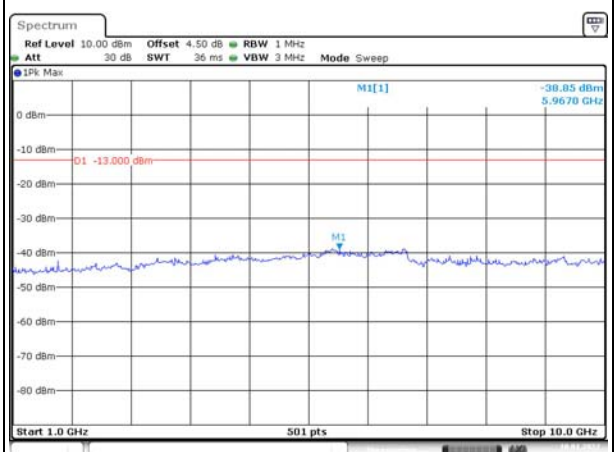
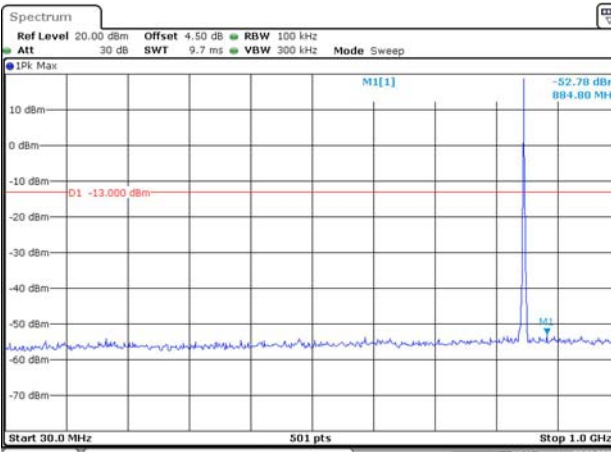
Lowest



Middle



Highest

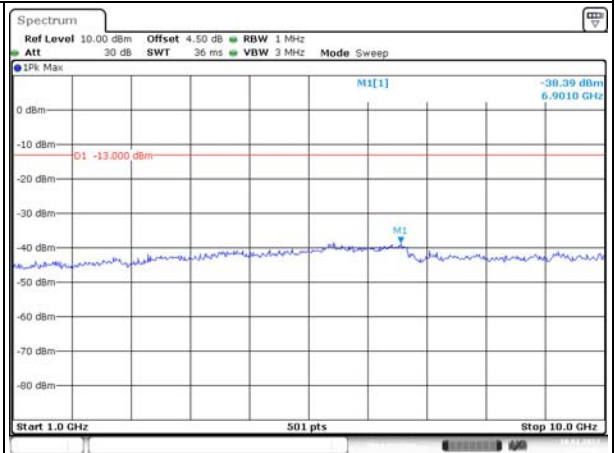
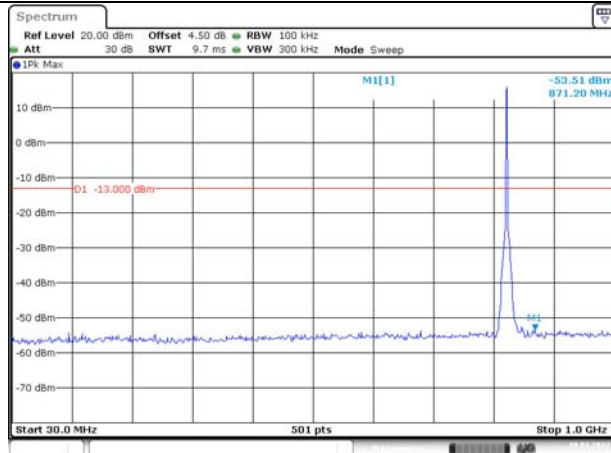


Spurious Emissions at Antenna Terminal

Channel

3MHz Bandwidth QPSK

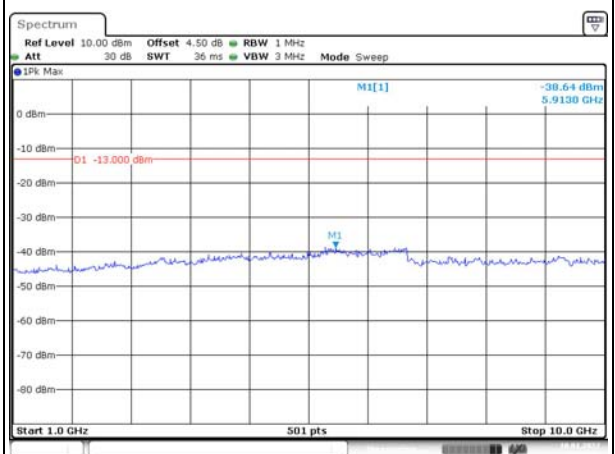
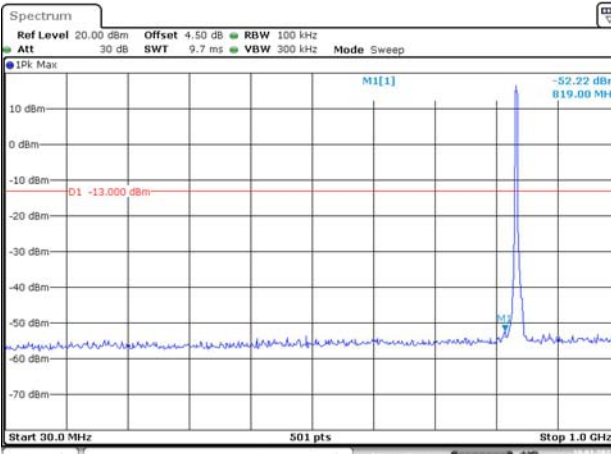
Lowest



Date: 10, JAN, 2022 13:59:40

Date: 10, JAN, 2022 14:00:06

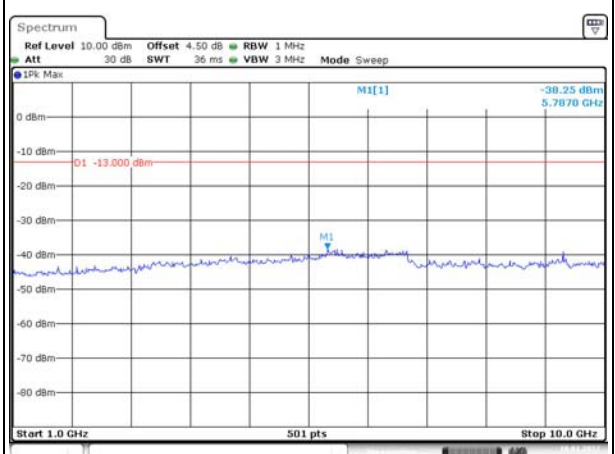
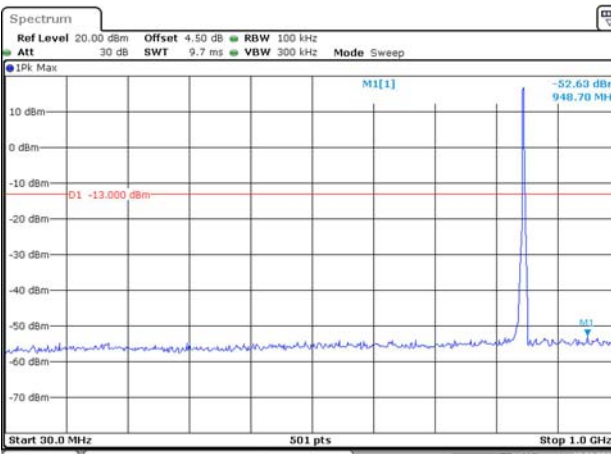
Middle



Date: 10, JAN, 2022 14:00:29

Date: 10, JAN, 2022 14:00:52

Highest



Date: 10, JAN, 2022 14:01:22

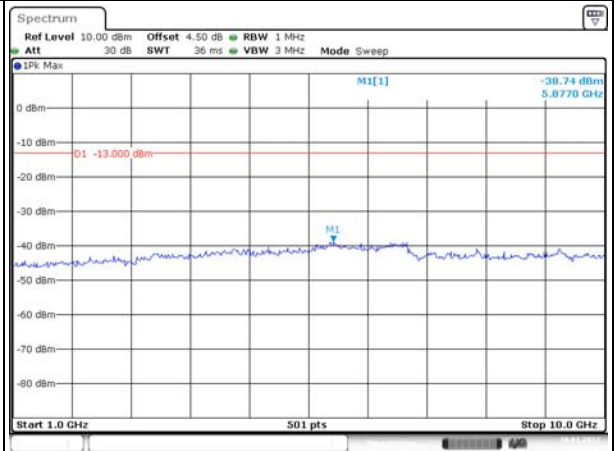
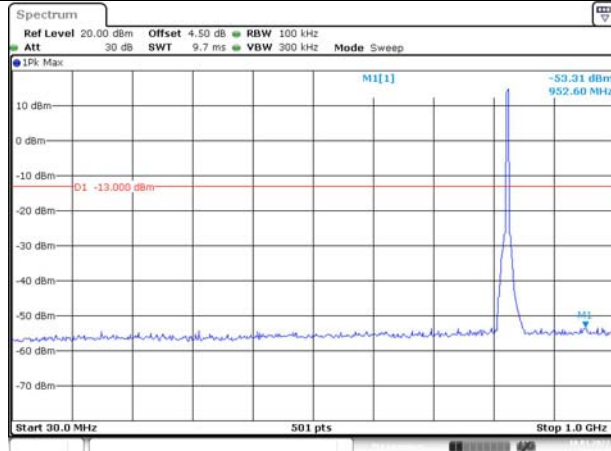
Date: 10, JAN, 2022 14:01:47

Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

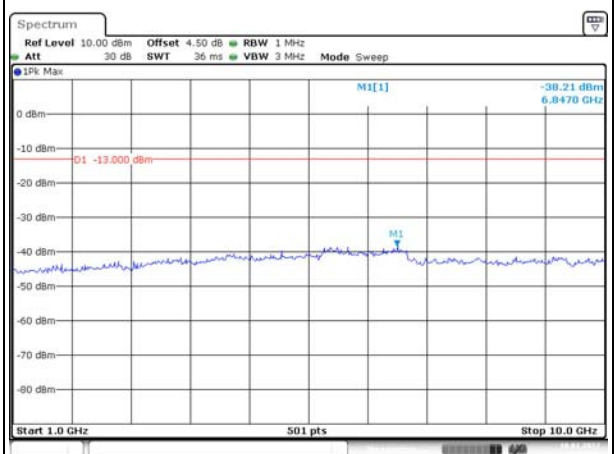
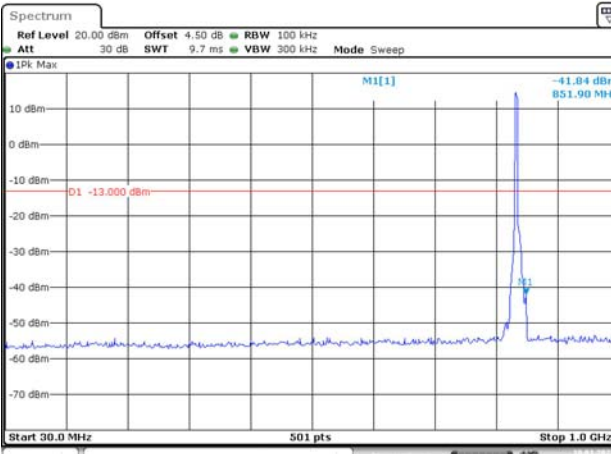
Lowest



Date: 10, JAN, 2022 14:02:10

Date: 10, JAN, 2022 14:02:19

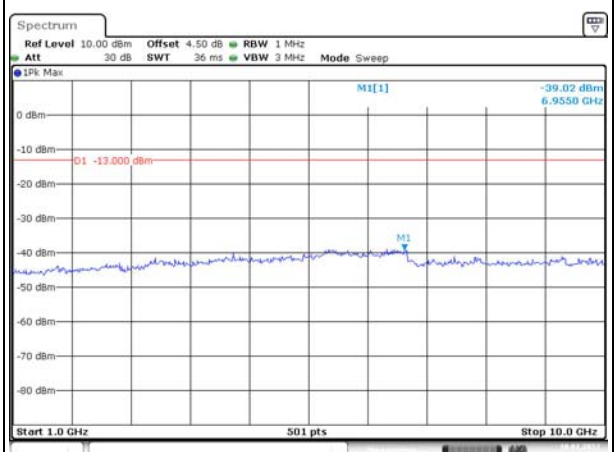
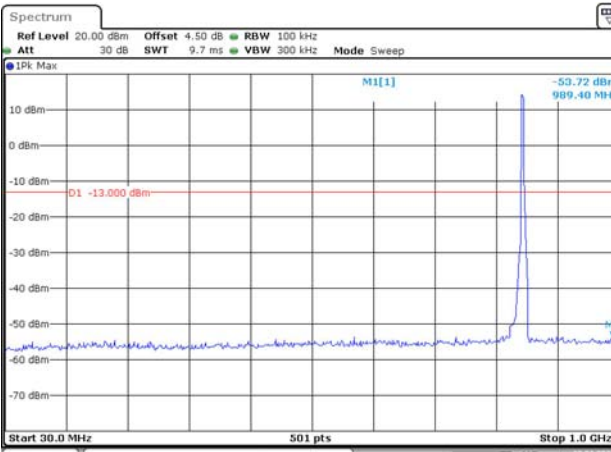
Middle



Date: 10, JAN, 2022 14:03:12

Date: 10, JAN, 2022 14:03:18

Highest



Date: 10, JAN, 2022 14:04:08

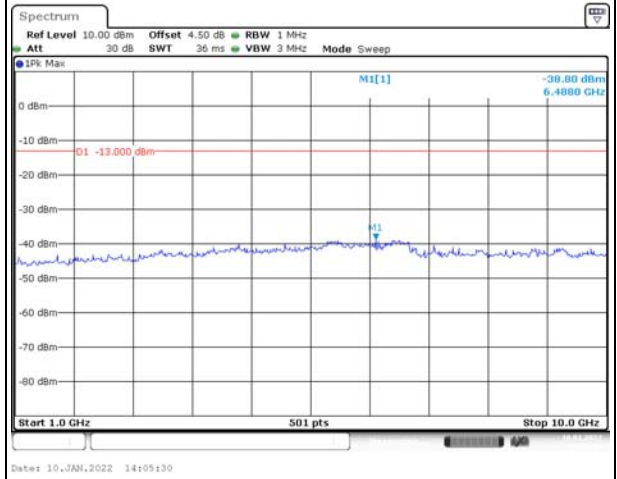
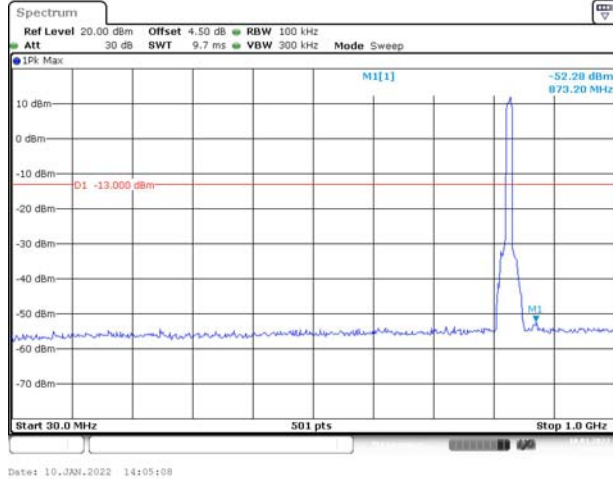
Date: 10, JAN, 2022 14:04:10

Spurious Emissions at Antenna Terminal

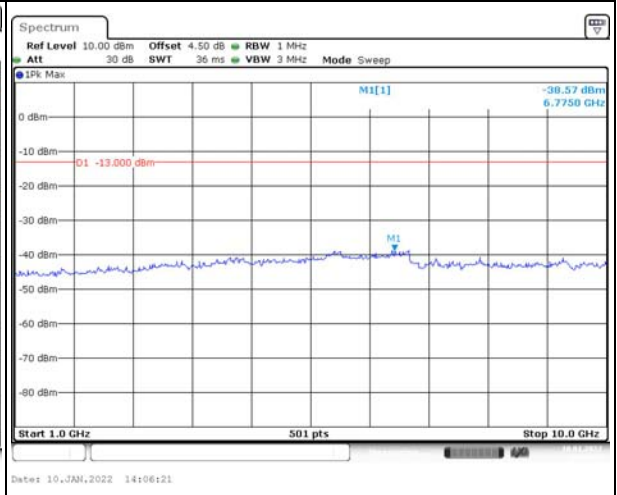
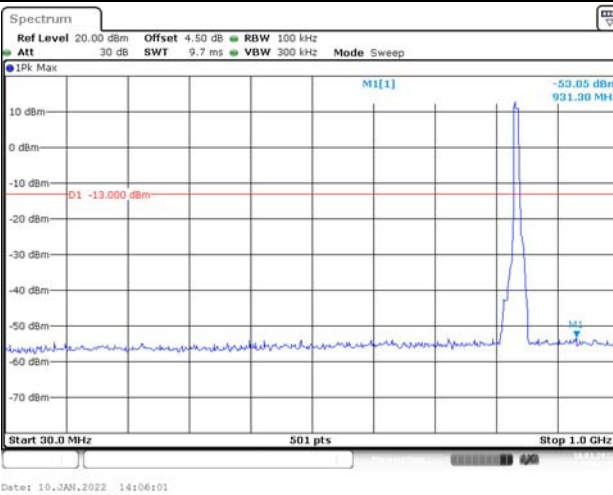
Channel

10MHz Bandwidth QPSK

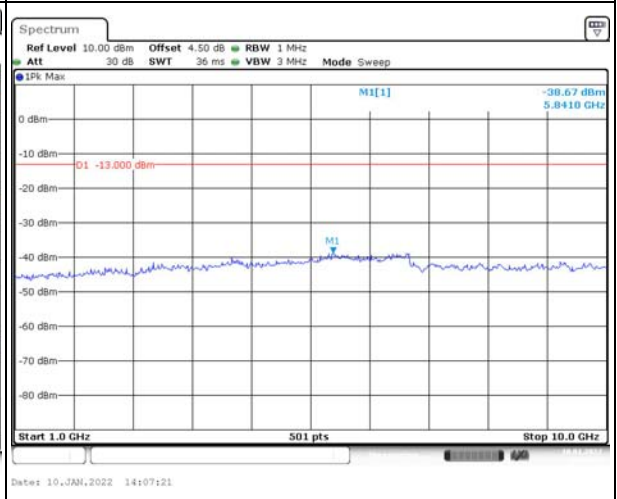
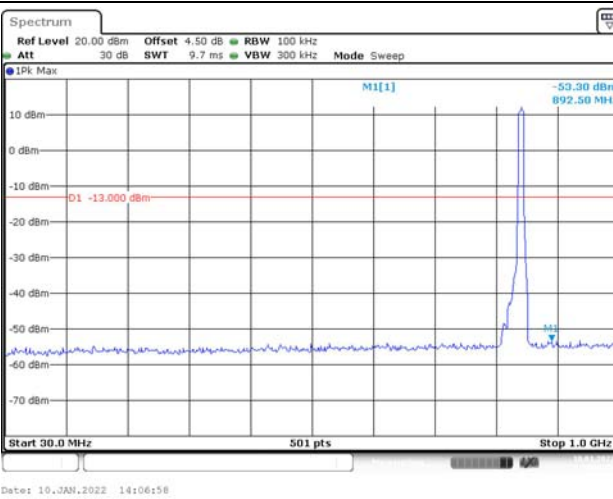
Lowest



Middle



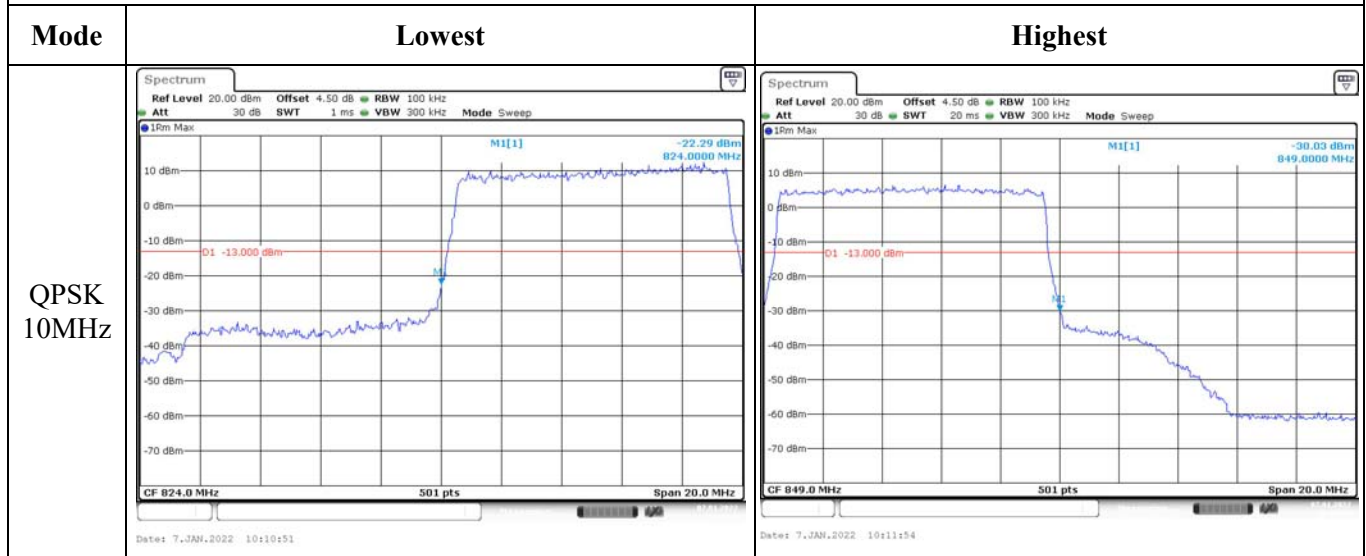
Highest



Out of band emission, Band Edge

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

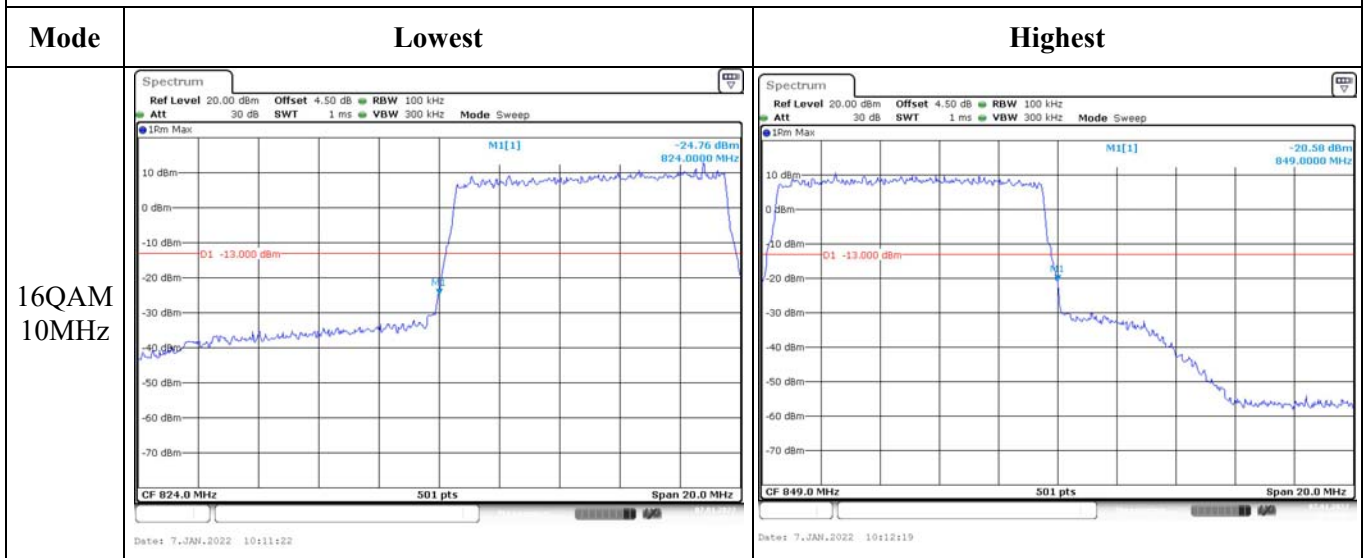
Out of band emission, Band Edge



Out of band emission, Band Edge

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

Out of band emission, Band Edge



4.8 Antenna Port Test Data and Results for LTE Band 12:

Serial Number:	CR21120041-RF	Test Date:	2022/01/07~2022/01/10
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	22.6~23.1	Relative Humidity: (%)	27~41	ATM Pressure: (kPa)	101.2~101.8
----------------------	-----------	---------------------------	-------	------------------------	-------------

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	Spectrum Analyzer	101474	2021/7/22	2022/7/21
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	149218	2021/7/22	2022/7/21
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021/7/22	2022/7/22
UNI-T	Multimeter	UT39A+	C210582554	2021/9/30	2022/9/30
E-Microwave	Two-way Splitter	ODP-1-6	OE0120176	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):	3	Antenna Gain (dBd):	0.85	Cable Loss (dB):	0
Operation Voltage(V _{DC}):					
Lowest:	3.5	Normal:	3.7	Highest:	4.2

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	22.47	22.80	22.76	23.75	34.77
	RB1#3	22.53	22.81	22.64		
	RB1#5	22.48	22.85	22.72		
	RB3#0	22.52	22.86	22.76		
	RB3#3	22.37	22.90	22.65		
	RB6#0	21.25	21.83	21.66		
1.4MHz 16QAM	RB1#0	21.53	21.40	22.17	23.02	34.77
	RB1#3	21.54	21.38	22.16		
	RB1#5	21.53	21.46	22.05		
	RB3#0	21.23	21.89	21.86		
	RB3#3	21.31	21.91	21.83		
	RB6#0	20.45	20.98	20.83		
3MHz QPSK	RB1#0	22.39	22.74	22.83	23.68	34.77
	RB1#8	22.44	22.75	22.81		
	RB1#14	22.77	22.70	22.81		
	RB6#0	21.39	21.79	21.77		
	RB6#9	21.72	21.77	21.72		
	RB15#0	21.42	21.76	21.81		
3MHz 16QAM	RB1#0	21.72	22.43	21.51	23.28	34.77
	RB1#8	21.71	22.41	21.47		
	RB1#14	22.12	22.35	21.41		
	RB6#0	20.38	20.85	21.04		
	RB6#9	20.78	20.81	20.95		
	RB15#0	20.54	20.78	20.87		
5MHz QPSK	RB1#0	22.43	22.77	22.66	23.69	34.77
	RB1#13	22.81	22.81	22.73		
	RB1#24	22.84	22.73	22.67		
	RB15#0	21.55	21.80	21.77		
	RB15#10	21.74	21.77	21.86		
	RB25#0	21.78	21.74	21.88		
5MHz 16QAM	RB1#0	20.57	21.71	21.36	22.7	34.77
	RB1#13	20.96	21.73	21.42		
	RB1#24	20.96	21.85	21.44		
	RB15#0	20.54	20.68	20.86		
	RB15#10	20.88	20.71	20.93		

	RB25#0	20.96	20.79	20.74		
10MHz QPSK	RB1#0	22.31	22.65	22.89	23.86	34.77
	RB1#25	22.72	22.76	22.89		
	RB1#49	22.74	22.71	23.01		
	RB25#0	21.69	21.73	21.81		
	RB25#25	21.73	21.79	21.97		
	RB50#0	21.85	21.83	21.76		
10MHz 16QAM	RB1#0	21.46	21.97	21.32	22.84	34.77
	RB1#25	21.89	21.99	21.36		
	RB1#49	21.84	21.98	21.34		
	RB25#0	20.81	20.84	20.93		
	RB25#25	20.82	20.89	21.01		
	RB50#0	21.14	20.97	20.77		

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	6.09	4.90	4.49	13
	RB50#0	4.90	5.28	5.51	13
10MHz 16QAM	RB1#0	7.30	6.12	5.59	13
	RB50#0	5.80	6.14	6.35	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	1.102	1.102	1.254	1.254	1.254
1.4MHz 16QAM	1.102	1.096	1.102	1.260	1.248	1.266
3MHz QPSK	2.695	2.707	2.695	2.988	3.000	2.988
3MHz 16QAM	2.695	2.695	2.683	3.012	3.012	2.988
5MHz QPSK	4.511	4.511	4.511	4.960	5.000	5.020
5MHz 16QAM	4.511	4.531	4.511	5.000	4.980	4.980
10MHz QPSK	8.901	8.942	9.022	9.760	9.680	9.800
10MHz 16QAM	8.901	8.942	8.981	9.720	9.760	9.880

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.
----------------	---

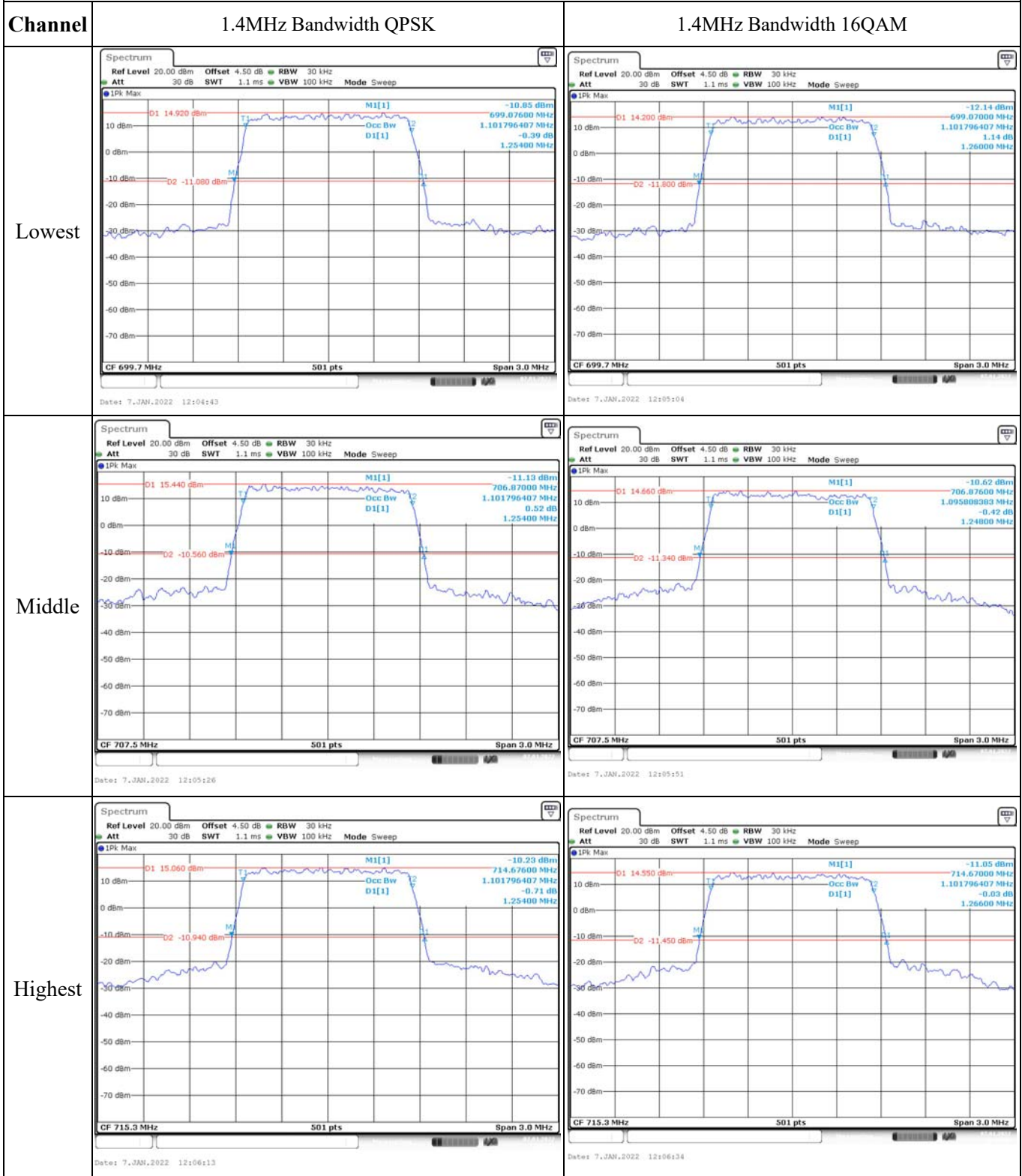
FCC §2.1055, §27.54: Frequency Stability

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.7	699.544	699.00	715.487	716.00
	-20	3.7	699.543	699.00	715.484	716.00
	-10	3.7	699.546	699.00	715.486	716.00
	0	3.7	699.541	699.00	715.485	716.00
	10	3.7	699.542	699.00	715.483	716.00
	20	3.7	699.543	699.00	715.486	716.00
	30	3.7	699.541	699.00	715.488	716.00
	40	3.7	699.547	699.00	715.484	716.00
Frequency Stability vs. Voltage	20	3.5	699.545	699.00	715.484	716.00
	20	4.2	699.543	699.00	715.486	716.00
Result:					Pass	

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.7	699.542	699.00	715.482	716.00
	-20	3.7	699.545	699.00	715.483	716.00
	-10	3.7	699.541	699.00	715.484	716.00
	0	3.7	699.548	699.00	715.485	716.00
	10	3.7	699.547	699.00	715.487	716.00
	20	3.7	699.543	699.00	715.486	716.00
	30	3.7	699.546	699.00	715.488	716.00
	40	3.7	699.547	699.00	715.489	716.00
Frequency Stability vs. Voltage	20	3.5	699.541	699.00	715.487	716.00
	20	4.2	699.543	699.00	715.486	716.00
Result:					Pass	

Test Plots:

Occupied Bandwidth



Occupied Bandwidth

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