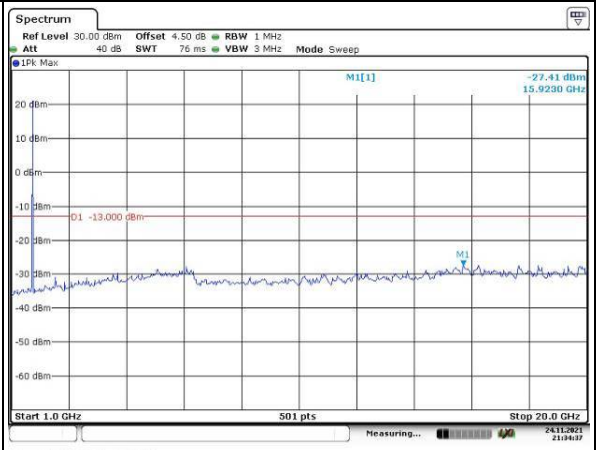
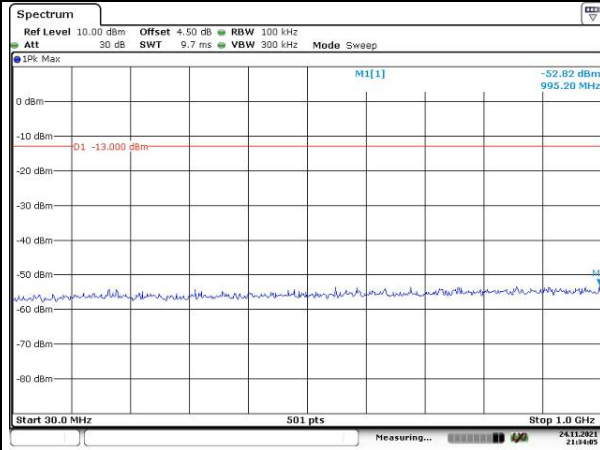


Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

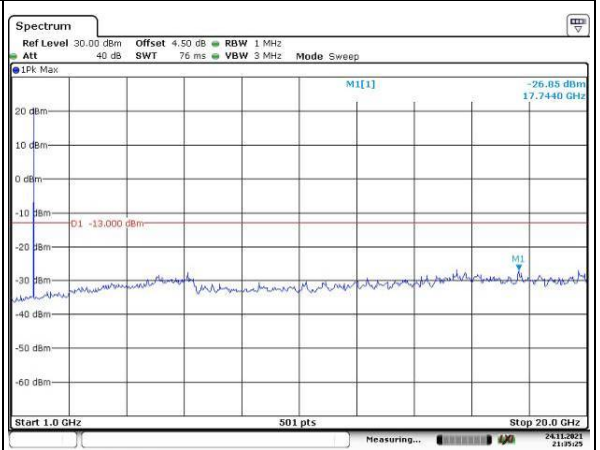
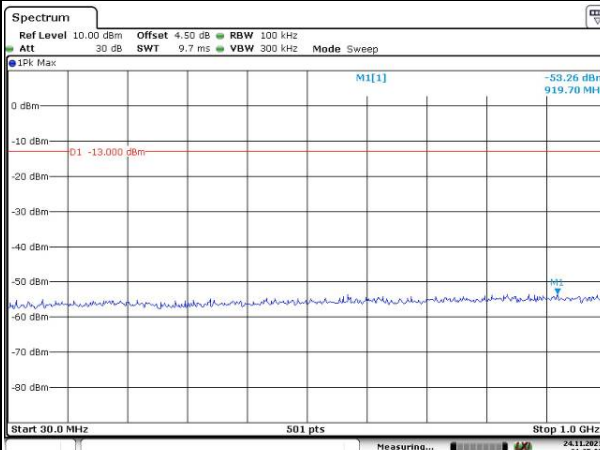
Lowest



Date: 24.NOV.2021 21:34:05

Date: 24.NOV.2021 21:34:06

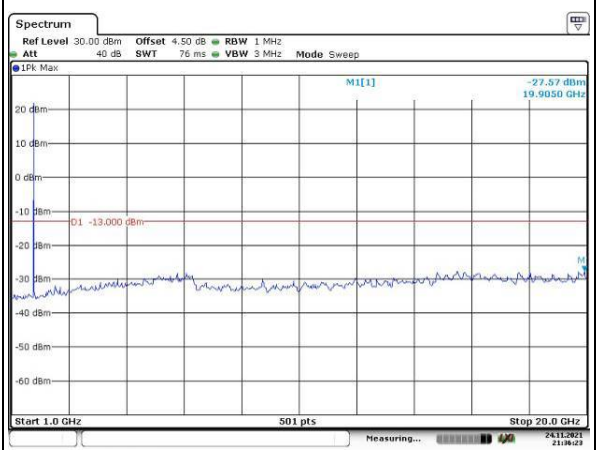
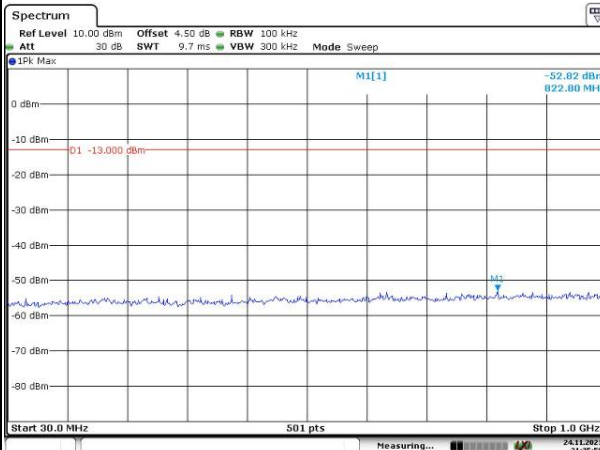
Middle



Date: 24.NOV.2021 21:35:06

Date: 24.NOV.2021 21:35:25

Highest



Date: 24.NOV.2021 21:35:58

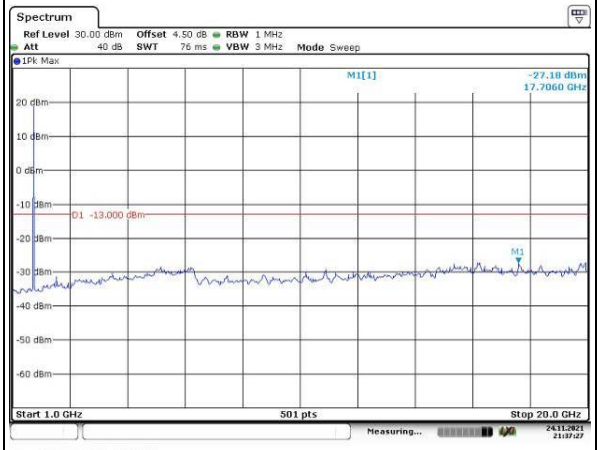
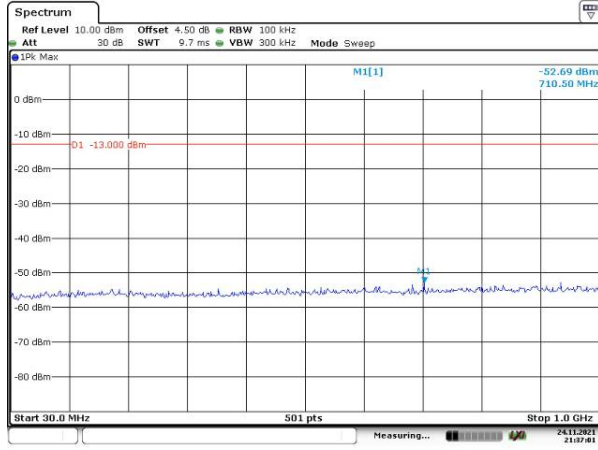
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Spurious Emissions at Antenna Terminal

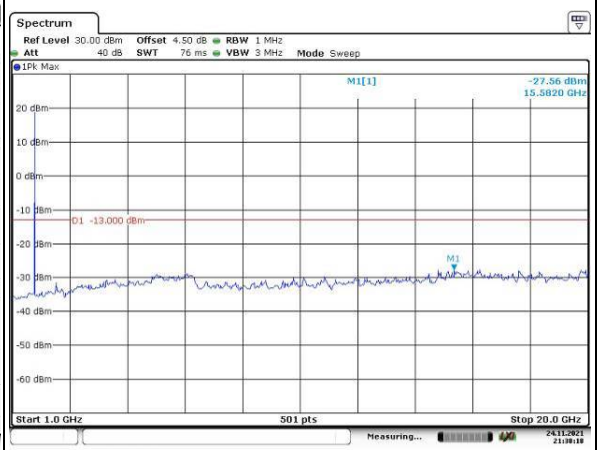
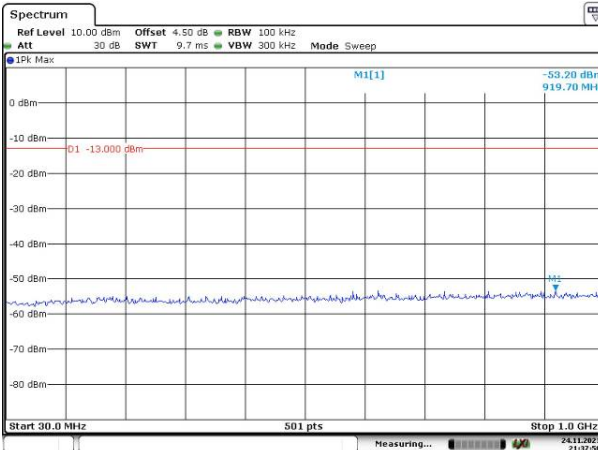
Channel

3MHz Bandwidth QPSK

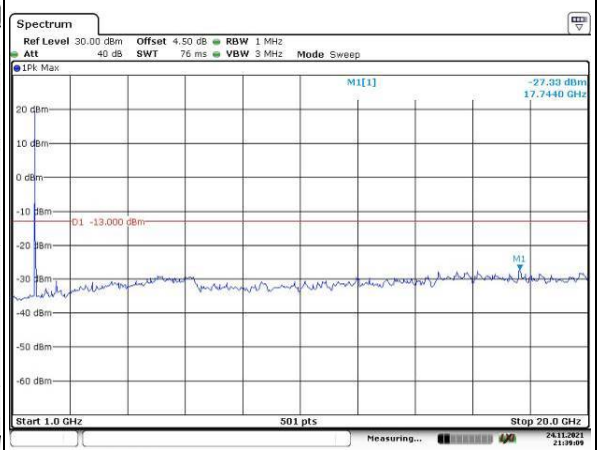
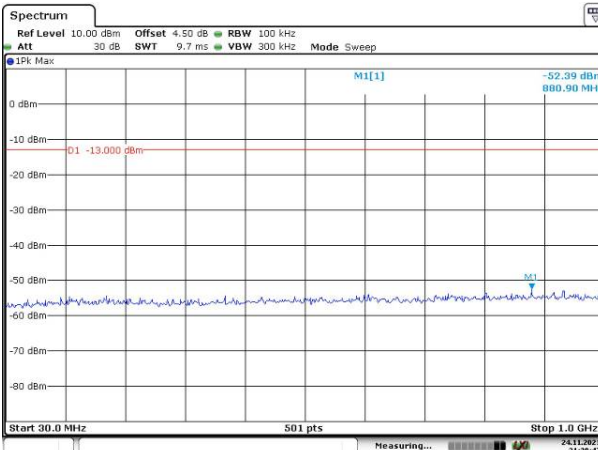
Lowest



Middle



Highest

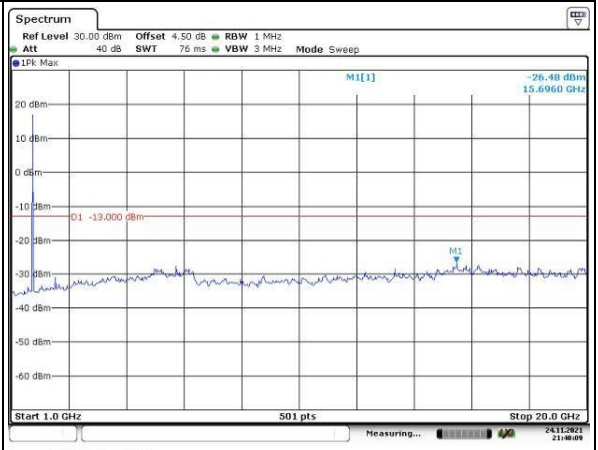
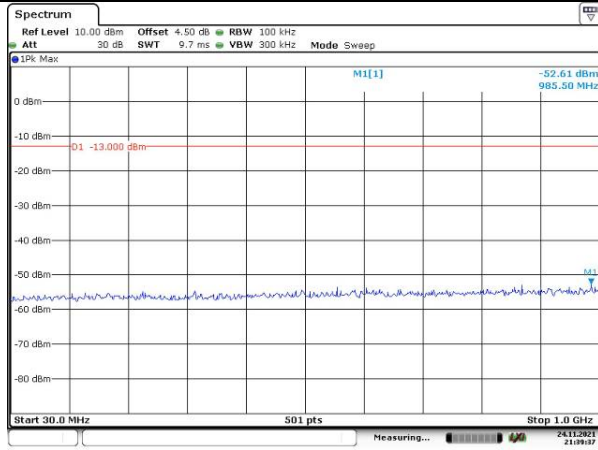


Spurious Emissions at Antenna Terminal

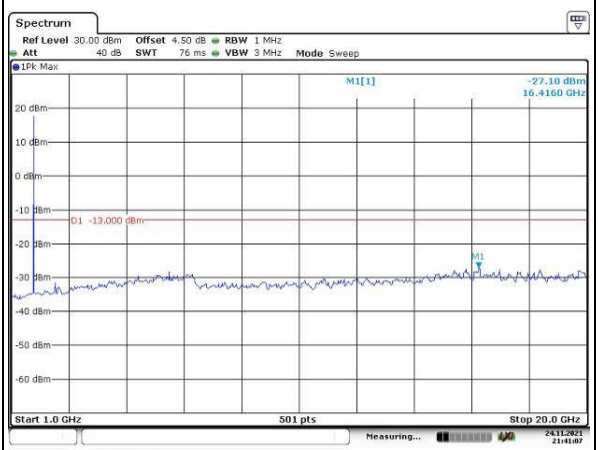
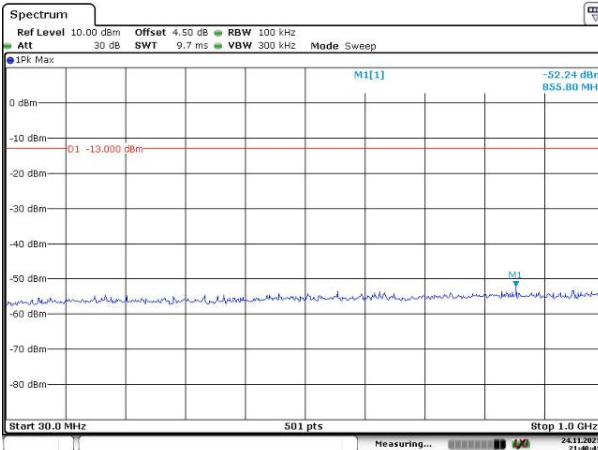
Channel

5MHz Bandwidth QPSK

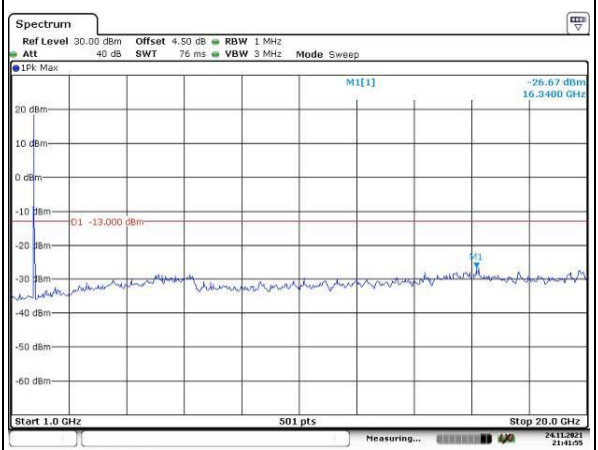
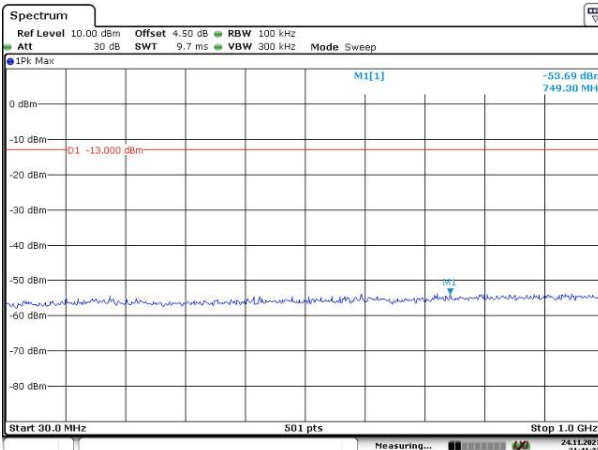
Lowest



Middle



Highest



Spurious Emissions at Antenna Terminal

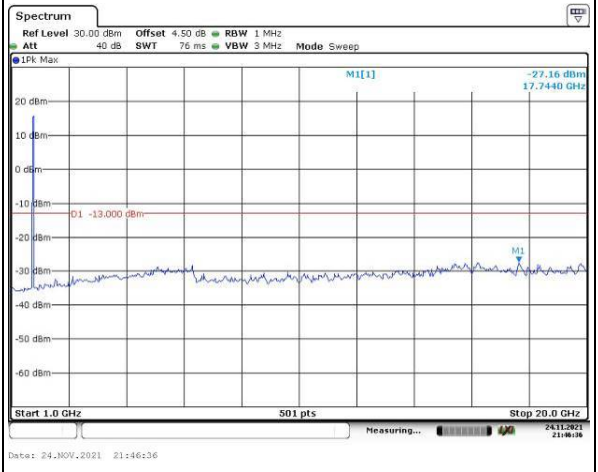
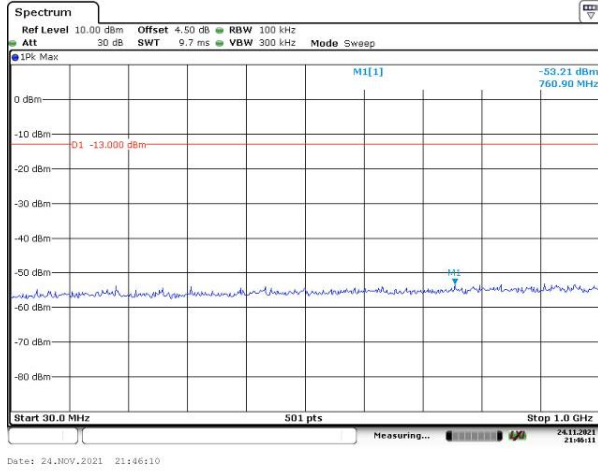
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Spectrum Ref Level 10.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1PK Max M1[1] -53.28 dBm 950.00 MHz -13.000 dBm Start 30.0 MHz 501 pts Stop 1.0 GHz Date: 24.NOV.2021 21:42:33</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 1 MHz Att 40 dB SWT 76 ms VBW 3 MHz Mode Sweep 1PK Max M1[1] -27.53 dBm 7.0110 GHz -13.000 dBm Start 1.0 GHz 501 pts Stop 20.0 GHz Date: 24.NOV.2021 21:42:55</p>
Middle	<p>Spectrum Ref Level 10.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1PK Max M1[1] -53.31 dBm 954.50 MHz -13.000 dBm Start 30.0 MHz 501 pts Stop 1.0 GHz Date: 24.NOV.2021 21:43:26</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 1 MHz Att 40 dB SWT 76 ms VBW 3 MHz Mode Sweep 1PK Max M1[1] -27.32 dBm 16.4160 GHz -13.000 dBm Start 1.0 GHz 501 pts Stop 20.0 GHz Date: 24.NOV.2021 21:43:55</p>
Highest	<p>Spectrum Ref Level 10.00 dBm Offset 4.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1PK Max M1[1] -53.19 dBm 954.50 MHz -13.000 dBm Start 30.0 MHz 501 pts Stop 1.0 GHz Date: 24.NOV.2021 21:44:22</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 1 MHz Att 40 dB SWT 76 ms VBW 3 MHz Mode Sweep 1PK Max M1[1] -27.30 dBm 15.6580 GHz -13.000 dBm Start 1.0 GHz 501 pts Stop 20.0 GHz Date: 24.NOV.2021 21:44:47</p>

Spurious Emissions at Antenna Terminal

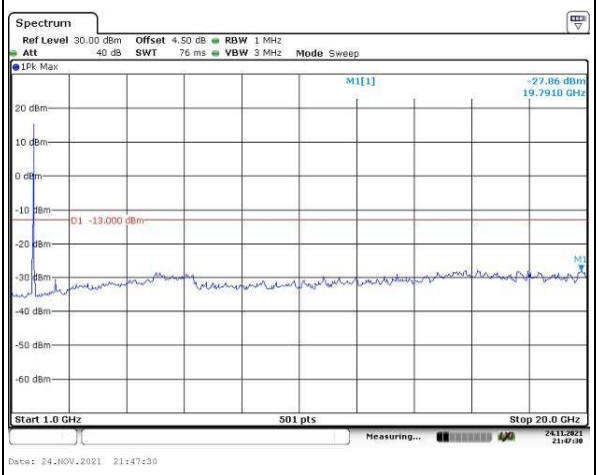
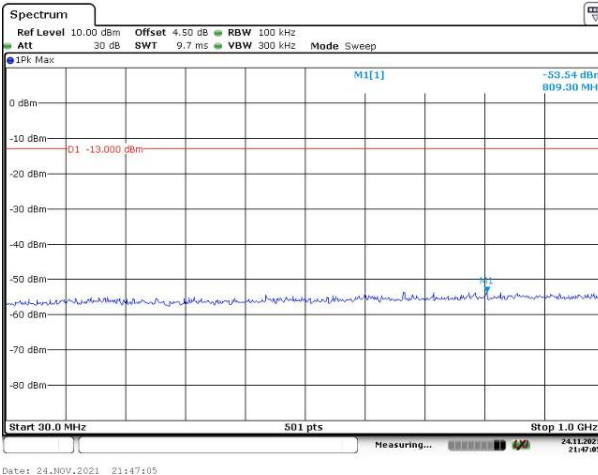
Channel

15MHz Bandwidth QPSK

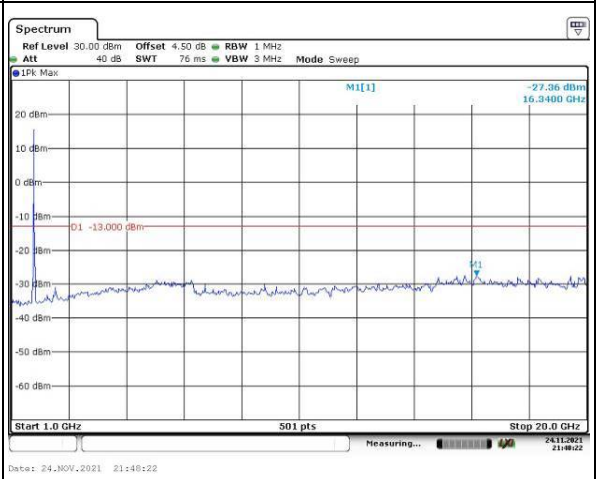
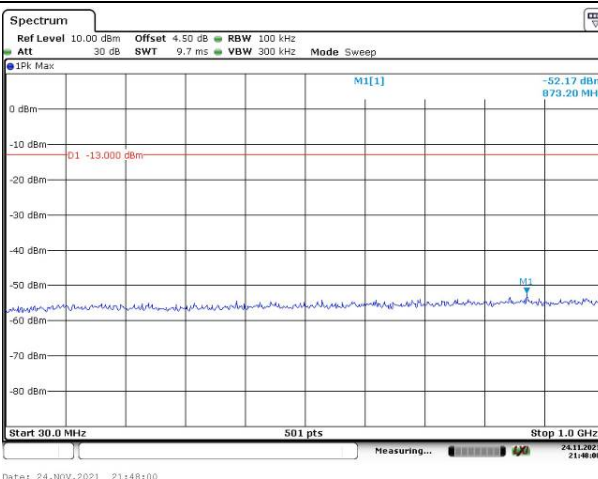
Lowest



Middle



Highest

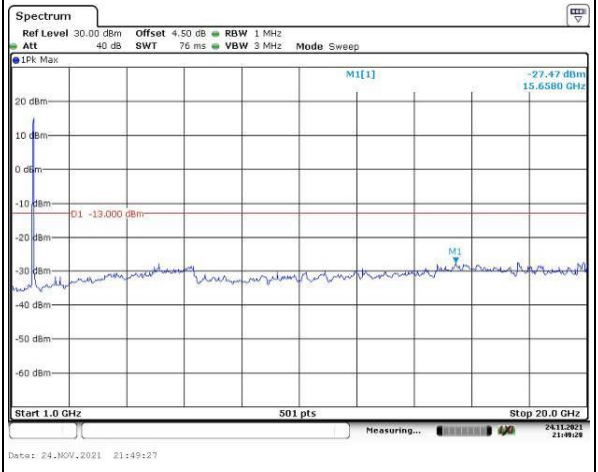
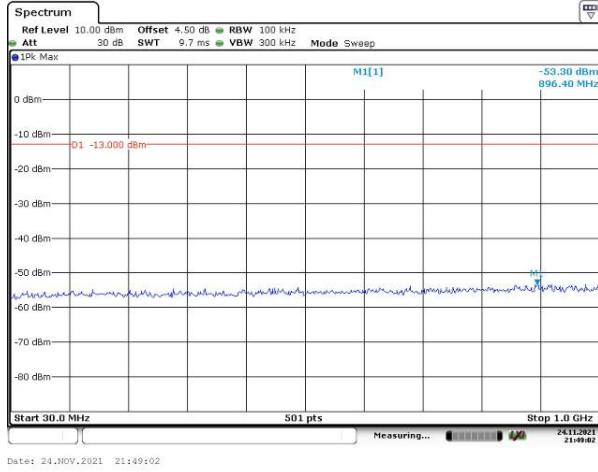


Spurious Emissions at Antenna Terminal

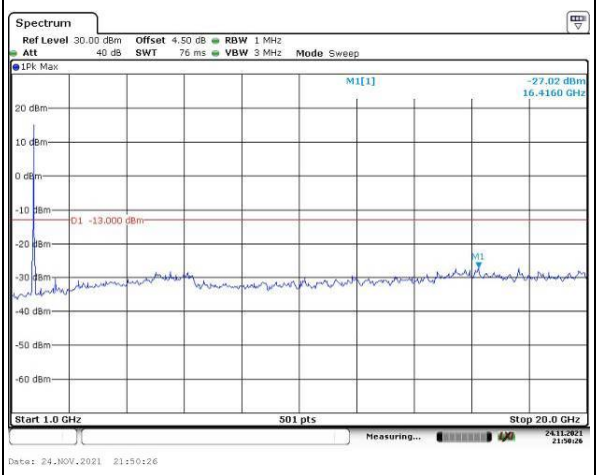
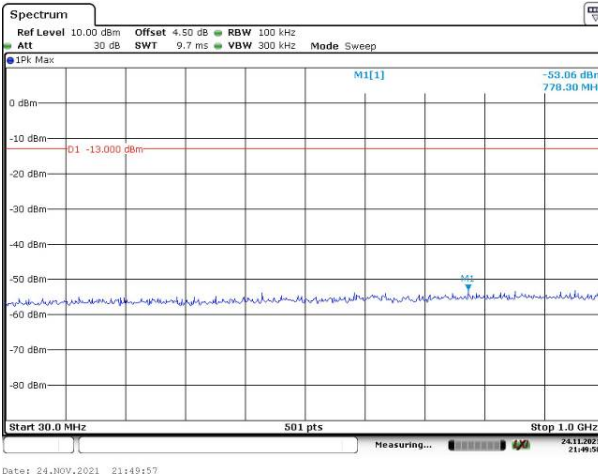
Channel

20MHz Bandwidth QPSK

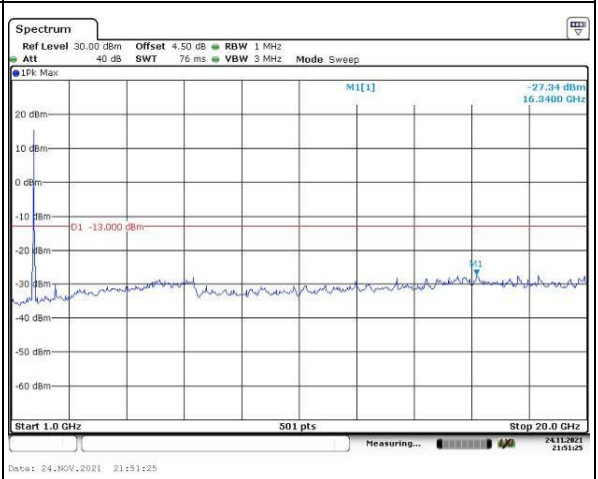
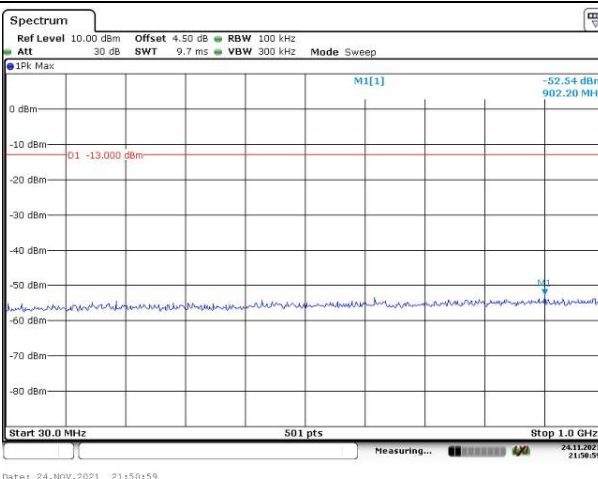
Lowest



Middle



Highest



Out of band emission, Band Edge

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

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Fm Max M1[1] -23.82 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 20.0 MHz Date: 23.NOV.2021 21:46:18</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Fm Max M1[1] -22.26 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 20.0 MHz Date: 23.NOV.2021 21:47:20</p>
QPSK 15MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep 1Fm Max M1[1] -15.88 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 30.0 MHz Date: 23.NOV.2021 21:48:16</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep 1Fm Max M1[1] -14.05 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 30.0 MHz Date: 23.NOV.2021 21:49:10</p>
QPSK 20MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep 1Fm Max M1[1] -23.16 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 40.0 MHz Date: 23.NOV.2021 21:50:13</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep 1Fm Max M1[1] -18.36 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 40.0 MHz Date: 23.NOV.2021 21:51:17</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Fm Max M1[1] -26.67 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 3.0 MHz Date: 23.NOV.2021 21:41:34</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Fm Max M1[1] -20.36 dBm 1.75504190 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 3.0 MHz Date: 23.NOV.2021 21:42:18</p>
16QAM 3MHz	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Fm Max M1[1] -18.85 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 6.0 MHz Date: 23.NOV.2021 21:43:06</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 1.1 ms VBW 100 kHz Mode Sweep 1Fm Max M1[1] -16.50 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 6.0 MHz Date: 23.NOV.2021 21:43:44</p>
16QAM 5MHz	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Fm Max M1[1] -17.23 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 10.0 MHz Date: 23.NOV.2021 21:44:53</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Fm Max M1[1] -23.70 dBm 1.7552030 GHz D1 -13.000 dBm CF 1.755 GHz 691 pts Span 10.0 MHz Date: 26.NOV.2021 21:18:43</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep M1[1] -24.12 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 20.0 MHz Date: 23.NOV.2021 21:46:55</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 1 ms VBW 300 kHz Mode Sweep M1[1] -21.72 dBm 1.7550400 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 20.0 MHz Date: 23.NOV.2021 21:47:44</p>
16QAM 15MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep M1[1] -18.56 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 30.0 MHz Date: 23.NOV.2021 21:48:42</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep M1[1] -14.96 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 30.0 MHz Date: 23.NOV.2021 21:49:39</p>
16QAM 20MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep M1[1] -22.33 dBm 1.7100000 GHz D1 -13.000 dBm CF 1.71 GHz 501 pts Span 40.0 MHz Date: 23.NOV.2021 21:50:43</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep M1[1] -18.61 dBm 1.7550000 GHz D1 -13.000 dBm CF 1.755 GHz 501 pts Span 40.0 MHz Date: 23.NOV.2021 21:51:49</p>

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

Serial Number:	CR21110014-RF-S1	Test Date:	2021/11/23~2021/11/24
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	21.2~22.1	Relative Humidity: (%)	36~41	ATM Pressure: (kPa)	101.7
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2021/7/22	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	21.13	21.20	21.02	22.26	38.45
	RB1#3	21.03	21.21	21.01		
	RB1#5	21.07	21.21	20.97		
	RB3#0	21.14	21.24	21.19		
	RB3#3	21.14	21.26	21.20		
	RB6#0	20.05	20.14	20.16		
1.4MHz 16QAM	RB1#0	20.58	20.12	20.89	21.93	38.45
	RB1#3	20.59	19.91	20.93		
	RB1#5	20.59	19.94	20.92		
	RB3#0	20.23	20.28	20.03		
	RB3#3	20.25	20.28	20.00		
	RB6#0	19.37	19.41	19.47		
3MHz QPSK	RB1#0	21.02	21.07	21.29	22.29	38.45
	RB1#8	21.04	21.08	21.24		
	RB1#14	20.98	20.99	21.24		
	RB6#0	20.10	20.44	20.23		
	RB6#9	20.08	20.20	20.09		
	RB15#0	20.17	20.13	20.12		
3MHz 16QAM	RB1#0	20.52	21.14	19.97	22.14	38.45
	RB1#8	20.52	20.78	19.95		
	RB1#14	20.47	20.83	19.96		
	RB6#0	19.15	19.54	19.39		
	RB6#9	19.15	19.20	19.67		
	RB15#0	19.20	19.19	19.21		
5MHz QPSK	RB1#0	21.13	21.24	21.15	22.29	38.45
	RB1#13	21.15	21.27	21.10		
	RB1#24	21.10	21.29	21.06		
	RB15#0	20.21	20.39	20.16		
	RB15#10	20.14	20.18	20.24		
	RB25#0	20.16	20.11	20.16		
5MHz 16QAM	RB1#0	19.33	20.59	19.83	21.59	38.45
	RB1#13	19.35	20.27	19.80		
	RB1#24	19.35	20.28	19.97		
	RB15#0	19.27	19.49	19.58		
	RB15#10	19.27	19.18	19.23		
	RB25#0	19.28	19.16	19.13		
10MHz QPSK	RB1#0	21.11	21.27	21.15	22.27	38.45

	RB1#25	21.01	21.19	21.16		
	RB1#49	21.05	21.22	21.12		
	RB25#0	20.06	20.35	20.21		
	RB25#25	20.13	20.09	20.26		
	RB50#0	20.12	20.14	20.17		
10MHz 16QAM	RB1#0	20.29	20.23	19.70	21.32	38.45
	RB1#25	20.31	20.29	19.68		
	RB1#49	20.25	20.32	19.66		
	RB25#0	19.26	19.58	19.31		
	RB25#25	19.52	19.96	19.29		
	RB50#0	19.52	19.85	19.55		
Note: ERP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBd)						
					Result:	Pass

Peak-to-average Ratio(PAR)

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	4.35	6.12	3.62	13
	RB50#0	5.62	4.67	4.96	13
10MHz 16QAM	RB1#0	5.22	6.90	4.84	13
	RB50#0	6.46	5.59	5.94	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	1.108	1.260	1.272	1.266
1.4MHz 16QAM	1.108	1.096	1.108	1.272	1.254	1.266
3MHz QPSK	2.695	2.695	2.695	3.000	3.012	3.000
3MHz 16QAM	2.695	2.695	2.695	3.012	3.012	3.036
5MHz QPSK	4.511	4.511	4.491	5.000	5.000	4.940
5MHz 16QAM	4.511	4.531	4.511	5.020	5.000	5.000
10MHz QPSK	8.981	8.942	8.942	9.800	9.720	9.760
10MHz 16QAM	8.981	8.942	8.942	9.720	9.800	9.840

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.
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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.
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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	-3.88	-0.005	2.5
	-20	3.7	-10.00	-0.012	2.5
	-10	3.7	6.55	0.008	2.5
	0	3.7	7.26	0.009	2.5
	10	3.7	7.10	0.008	2.5
	20	3.7	9.49	0.011	2.5
	30	3.7	-9.10	-0.011	2.5
	40	3.7	8.47	0.010	2.5
	50	3.7	6.79	0.008	2.5
Frequency Stability vs. Voltage	20	3.5	7.64	0.009	2.5
	20	4.2	-7.14	-0.009	2.5
Result:				Pass	

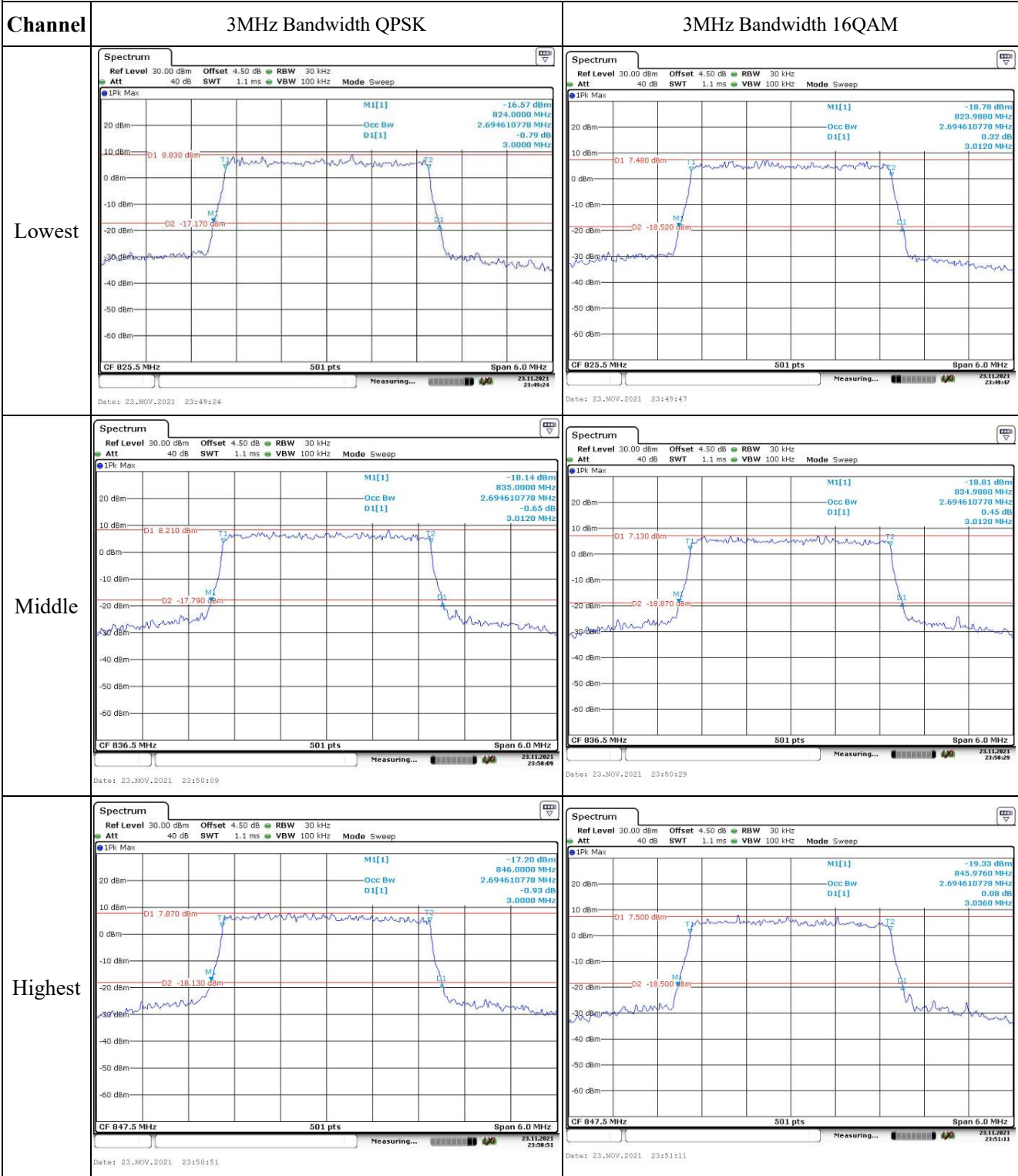
Test Mode:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.7	23.13	0.028	2.5
	-20	3.7	6.45	0.008	2.5
	-10	3.7	-6.86	-0.008	2.5
	0	3.7	6.24	0.007	2.5
	10	3.7	-9.14	-0.011	2.5
	20	3.7	5.01	0.006	2.5
	30	3.7	9.00	0.011	2.5
	40	3.7	-8.67	-0.010	2.5
	50	3.7	-7.79	-0.009	2.5
Frequency Stability vs. Voltage	20	3.5	-6.34	-0.008	2.5
	20	4.2	6.99	0.008	2.5
Result:				Pass	

Test Plots:

Occupied Bandwidth

Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth



Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

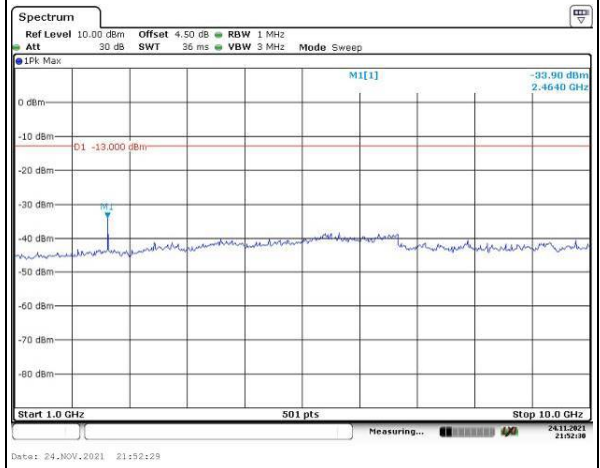
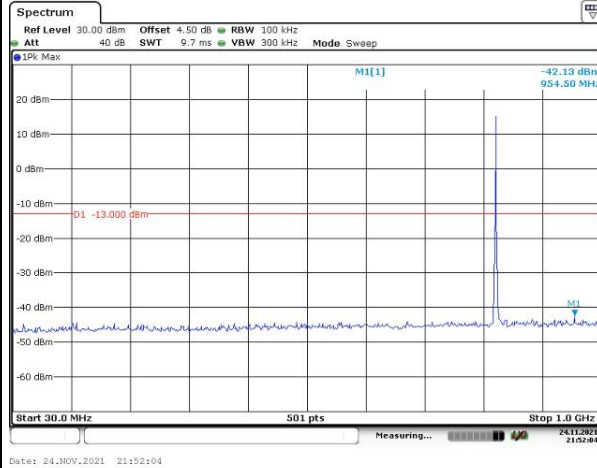
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Spurious Emissions at Antenna Terminal

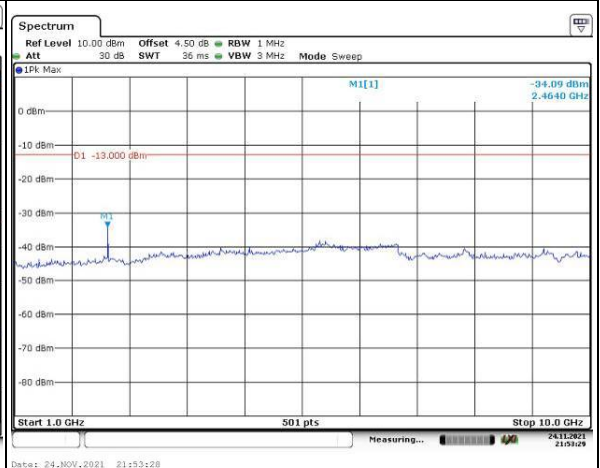
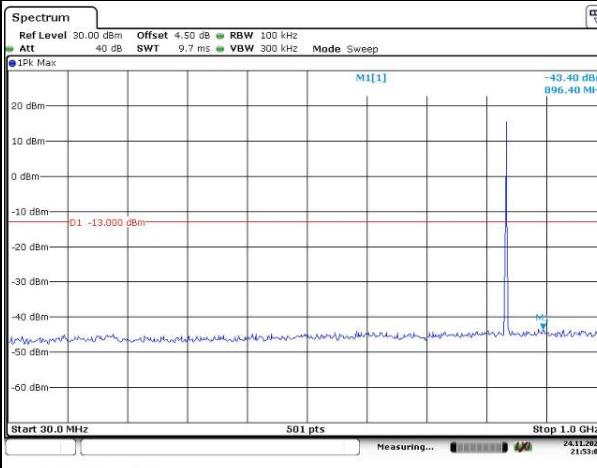
Channel

1.4MHz Bandwidth QPSK

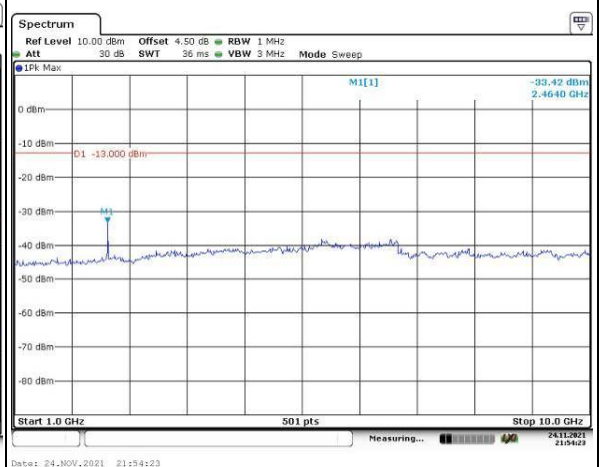
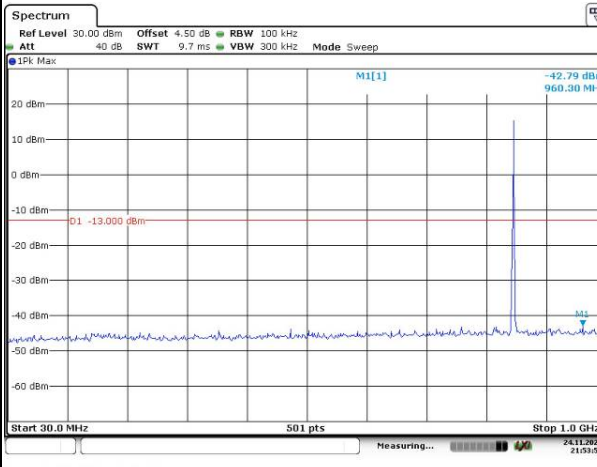
Lowest



Middle



Highest



Spurious Emissions at Antenna Terminal

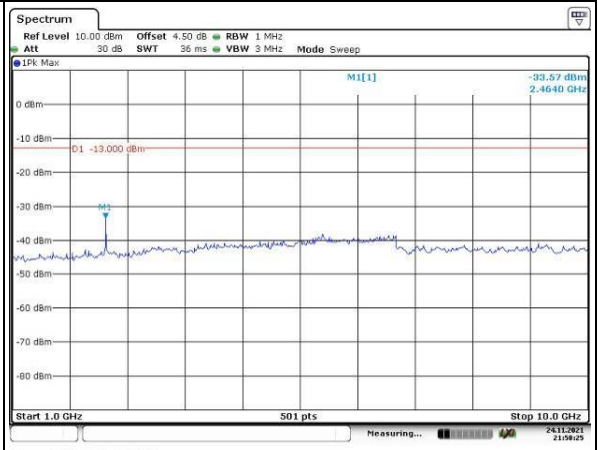
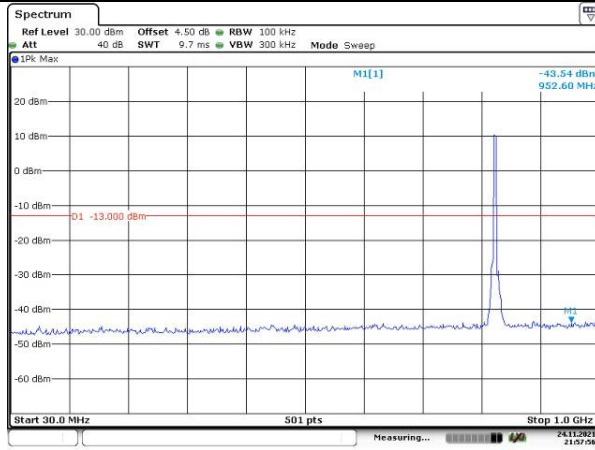
Channel	3MHz Bandwidth QPSK	
Lowest	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1PK Max M1[1] -43.10 dBm 942.90 MHz D1 -13.000 dBm Start 30.0 MHz 501 pts Stop 1.0 GHz Date: 24.NOV.2021 21:55:06</p>	<p>Spectrum Ref Level 10.00 dBm Offset 4.50 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Sweep 1PK Max M1[1] -34.63 dBm 2.4640 GHz D1 -13.000 dBm Start 1.0 GHz 501 pts Stop 10.0 GHz Date: 24.NOV.2021 21:55:31</p>
Middle	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1PK Max M1[1] -43.57 dBm 964.20 MHz D1 -13.000 dBm Start 30.0 MHz 501 pts Stop 1.0 GHz Date: 24.NOV.2021 21:55:57</p>	<p>Spectrum Ref Level 10.00 dBm Offset 4.50 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Sweep 1PK Max M1[1] -33.74 dBm 2.4640 GHz D1 -13.000 dBm Start 1.0 GHz 501 pts Stop 10.0 GHz Date: 24.NOV.2021 21:56:25</p>
Highest	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 9.7 ms VBW 300 kHz Mode Sweep 1PK Max M1[1] -42.77 dBm 774.40 MHz D1 -13.000 dBm Start 30.0 MHz 501 pts Stop 1.0 GHz Date: 24.NOV.2021 21:56:58</p>	<p>Spectrum Ref Level 10.00 dBm Offset 4.50 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Sweep 1PK Max M1[1] -33.95 dBm 2.4640 GHz D1 -13.000 dBm Start 1.0 GHz 501 pts Stop 10.0 GHz Date: 24.NOV.2021 21:57:20</p>

Spurious Emissions at Antenna Terminal

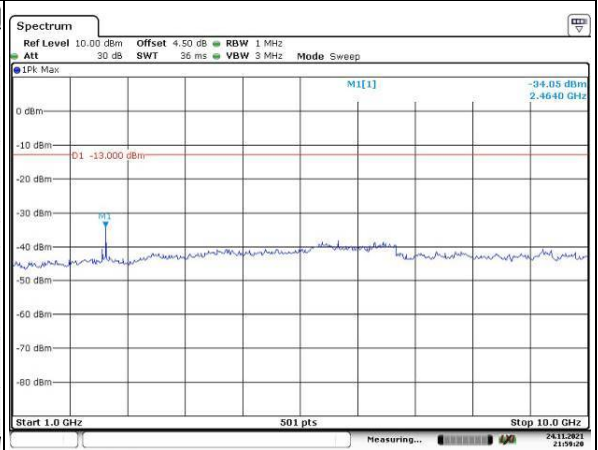
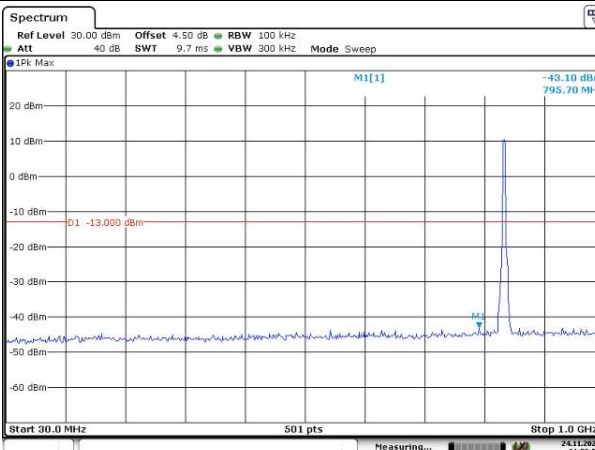
Channel

5MHz Bandwidth QPSK

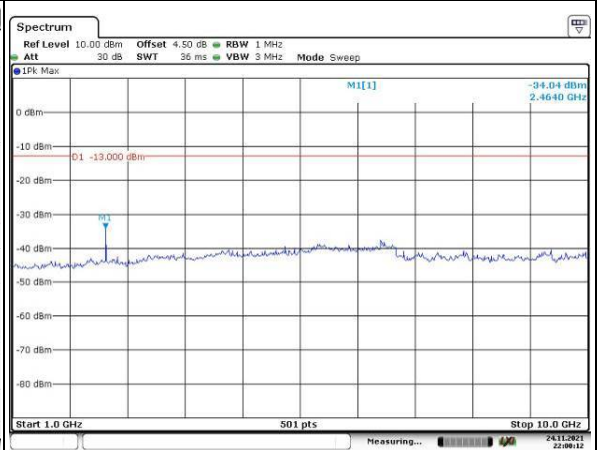
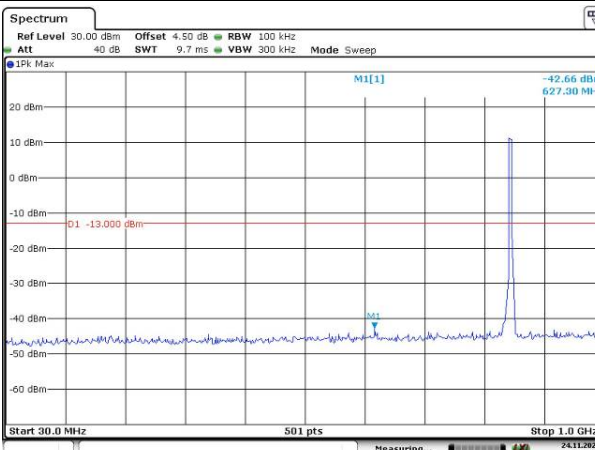
Lowest



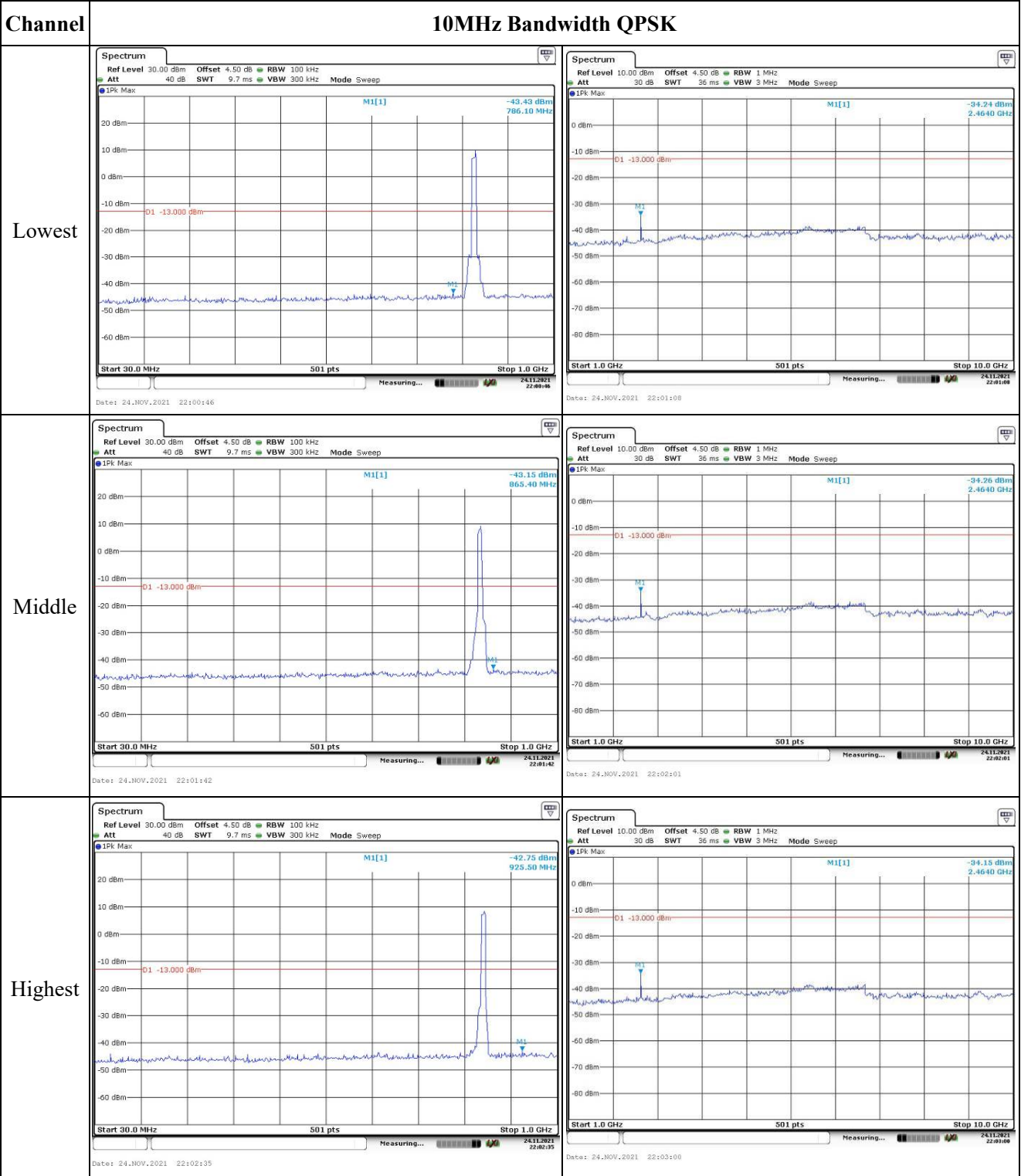
Middle



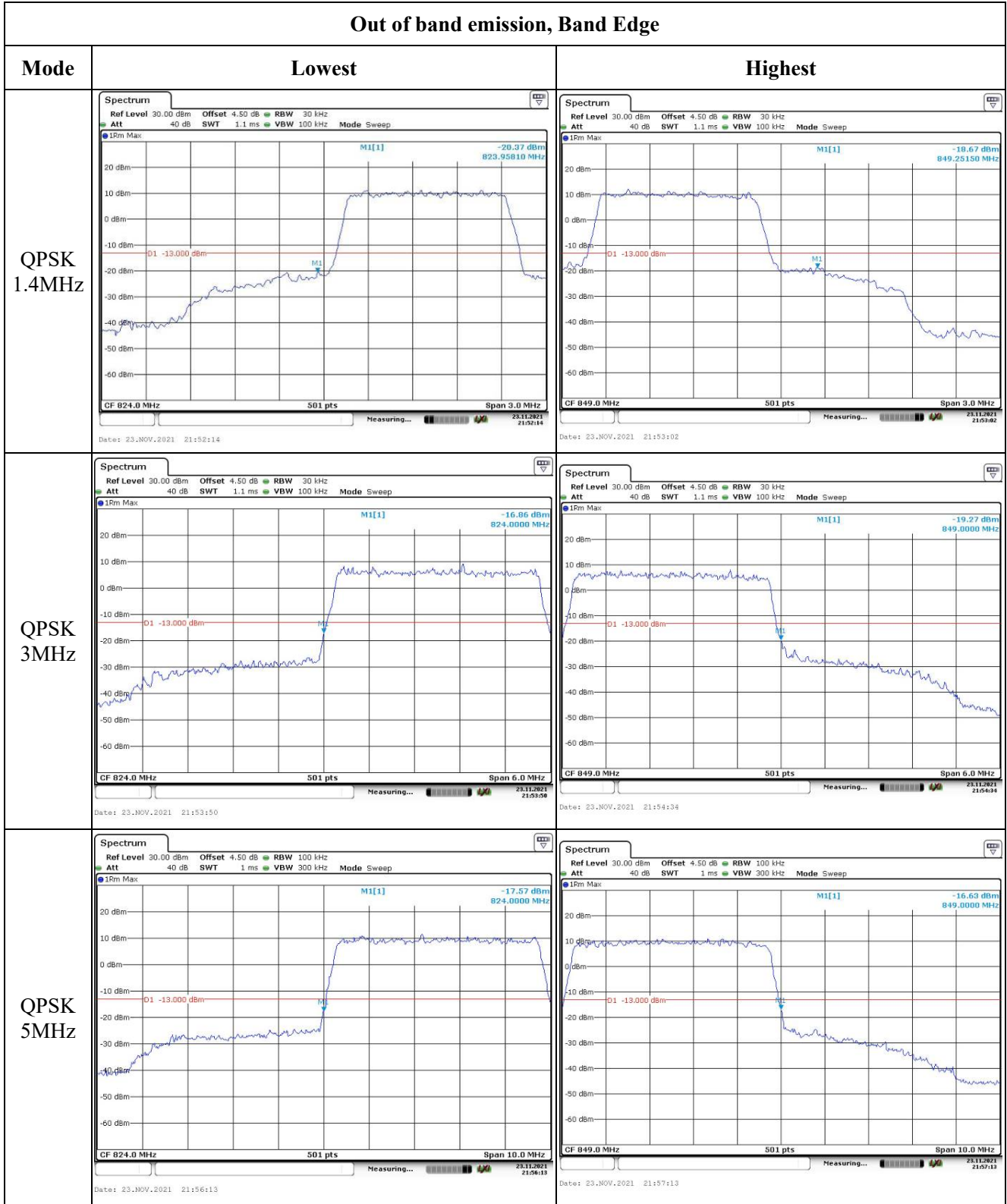
Highest



Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge



Out of band emission, Band Edge

