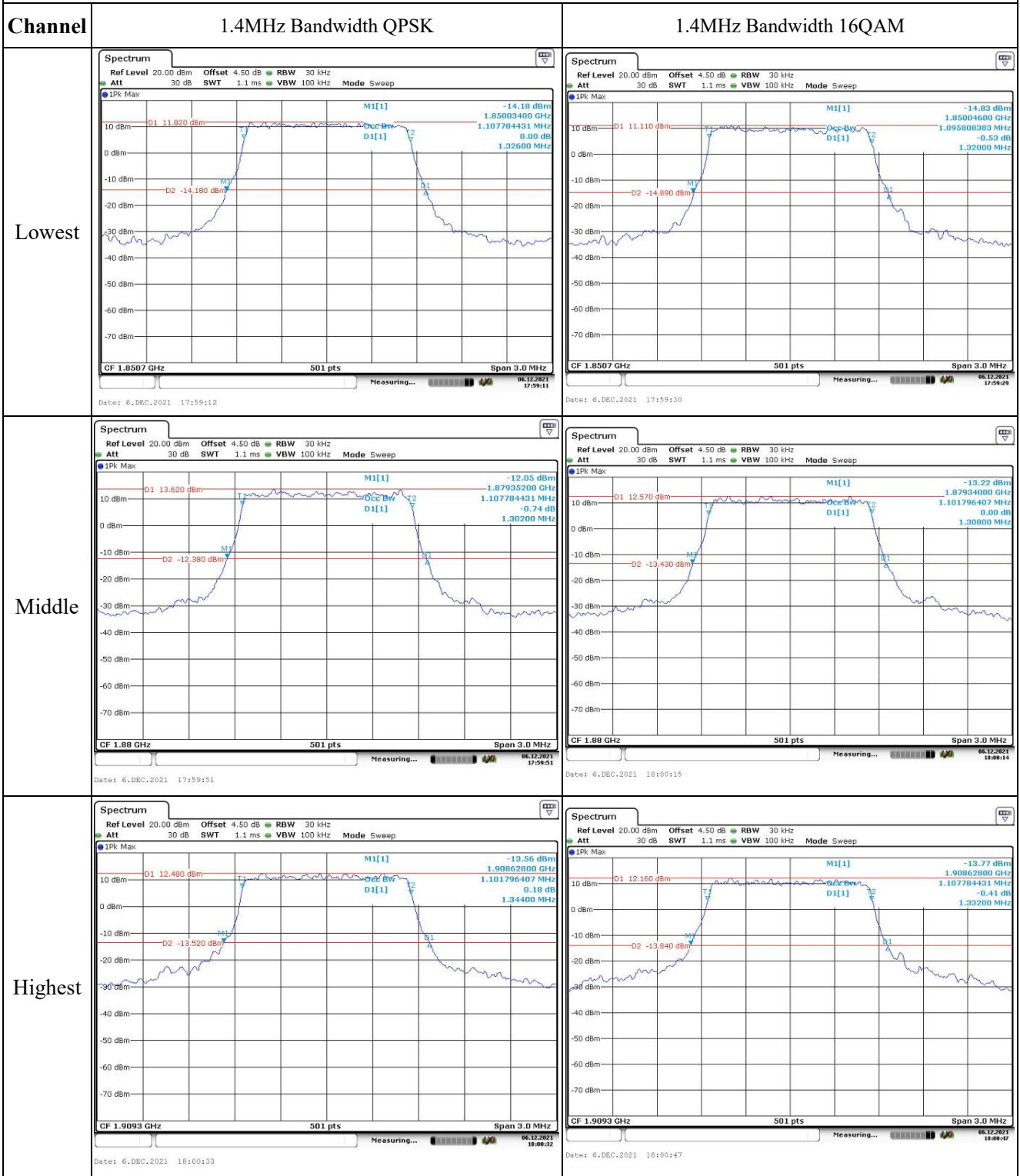


Test Plots:

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>1Pk Max</p> <p>M1[1] -15.39 dBm 1.8508360 GHz Occ Bw 2.694610778 MHz -1.25 dB 2.9400 MHz</p> <p>D1 10.210 dBm D2 -15.790 dBm</p> <p>CF 1.8515 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:01:20</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>1Pk Max</p> <p>M1[1] -17.55 dBm 1.8508360 GHz Occ Bw 2.694610728 MHz -0.65 dB 2.9640 MHz</p> <p>D1 8.160 dBm D2 -17.840 dBm</p> <p>CF 1.8515 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:01:40</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>1Pk Max</p> <p>M1[1] -15.50 dBm 1.8785240 GHz Occ Bw 2.694610778 MHz 0.77 dB 2.9400 MHz</p> <p>D1 10.760 dBm D2 -15.240 dBm</p> <p>CF 1.88 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:02:08</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>1Pk Max</p> <p>M1[1] -17.61 dBm 1.8785120 GHz Occ Bw 2.682634731 MHz -0.21 dB 2.9760 MHz</p> <p>D1 9.110 dBm D2 -16.990 dBm</p> <p>CF 1.88 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:02:26</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>1Pk Max</p> <p>M1[1] -16.91 dBm 1.9070120 GHz Occ Bw 2.682634731 MHz -0.61 dB 2.9760 MHz</p> <p>D1 8.980 dBm D2 -17.020 dBm</p> <p>CF 1.9085 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:02:50</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>1Pk Max</p> <p>M1[1] -15.85 dBm 1.9070240 GHz Occ Bw 2.682634731 MHz -0.69 dB 2.9520 MHz</p> <p>D1 9.300 dBm D2 -16.700 dBm</p> <p>CF 1.9085 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:03:14</p>

Occupied Bandwidth

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

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 1Pk Max M1[1] -16.46 dBm 1.8501200 GHz Occ Bw 8.942115768 MHz -0.48 dB 9.7600 MHz CF 1.855 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 18:06:19</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 1Pk Max M1[1] -16.47 dBm 1.8501600 GHz Occ Bw 8.942115768 MHz 0.56 dB 9.6800 MHz CF 1.855 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 18:06:56</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 1Pk Max M1[1] -15.67 dBm 1.8751600 GHz Occ Bw 8.942115768 MHz 1.47 dB 9.6800 MHz CF 1.88 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 18:07:22</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 1Pk Max M1[1] -16.57 dBm 1.8751600 GHz Occ Bw 8.942115768 MHz -1.06 dB 9.6800 MHz CF 1.88 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 18:07:50</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 1Pk Max M1[1] -15.34 dBm 1.9002000 GHz Occ Bw 8.942115768 MHz -0.82 dB 9.6800 MHz CF 1.905 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 18:08:15</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 1Pk Max M1[1] -16.51 dBm 1.9001600 GHz Occ Bw 8.942115768 MHz -0.81 dB 9.7200 MHz CF 1.905 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 18:08:47</p>

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

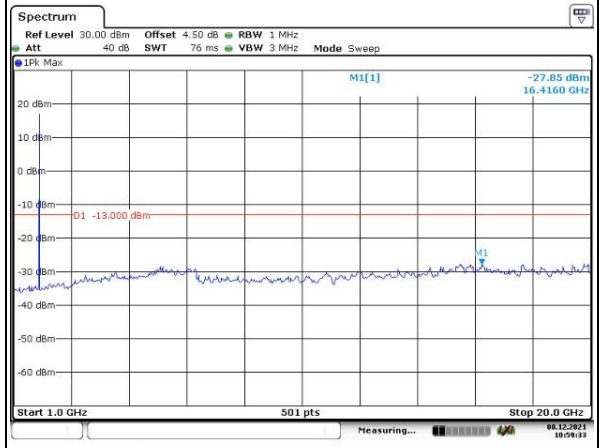
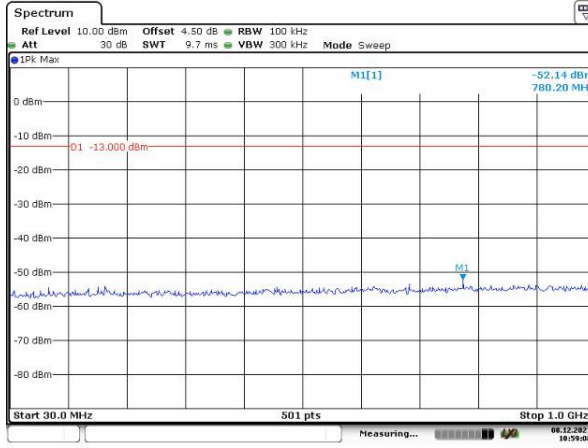
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	<p>Ref Level 20.00 dBm Offset 4.50 dB RBW 300 kHz Att 30 dB SWT 1 ms VBW 1 MHz Mode Sweep 1Pk Max M1[1] -14.55 dBm 1.8503200 GHz D1[1] 17.964071856 MHz -0.06 dB 19.4400 MHz D2 -13.830 dBm CF 1.86 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 18:12:09</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 1Pk Max M1[1] -15.10 dBm 1.8503200 GHz D1[1] 17.964071856 MHz -0.94 dB 19.5200 MHz D2 -15.740 dBm CF 1.86 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 18:12:36</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 1Pk Max M1[1] -12.58 dBm 1.8704000 GHz D1[1] 17.804391218 MHz 0.24 dB 19.2800 MHz D2 -13.150 dBm CF 1.88 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 18:13:08</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 1Pk Max M1[1] -14.00 dBm 1.8702400 GHz D1[1] 17.884231537 MHz -1.12 dB 19.5200 MHz D2 -14.600 dBm CF 1.88 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 18:13:35</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 1Pk Max M1[1] -15.35 dBm 1.8901600 GHz D1[1] 18.043912176 MHz -0.45 dB 19.7600 MHz D2 -14.510 dBm CF 1.9 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 18:14:03</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 1Pk Max M1[1] -13.34 dBm 1.8903200 GHz D1[1] 17.964071856 MHz -1.13 dB 19.5200 MHz D2 -14.640 dBm CF 1.9 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 18:14:33</p>

### Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

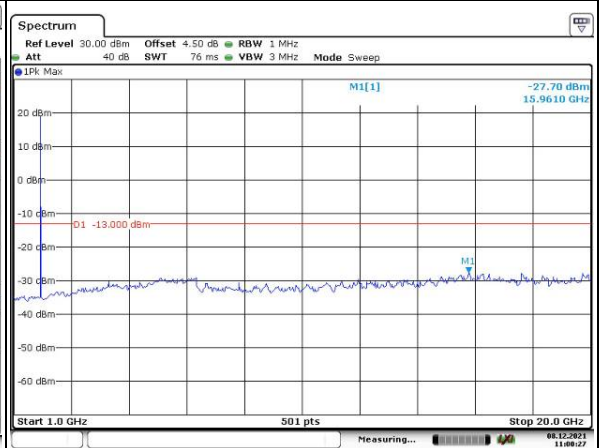
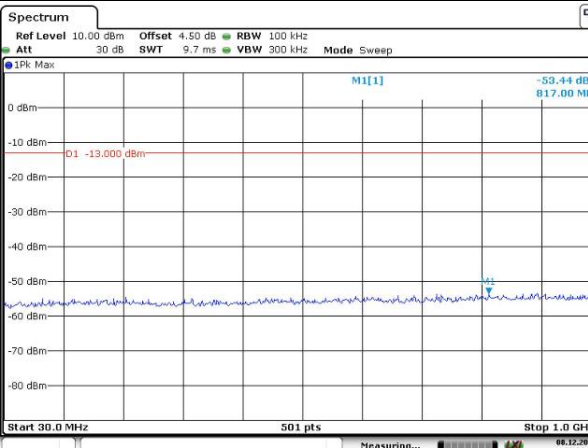
Lowest



Date: 8.DEC.2021 10:59:08

Date: 8.DEC.2021 10:59:33

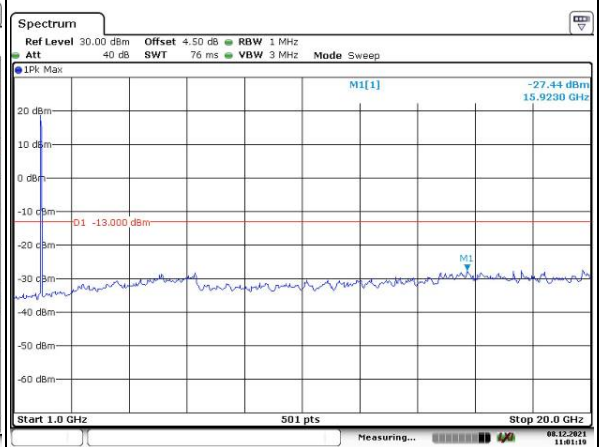
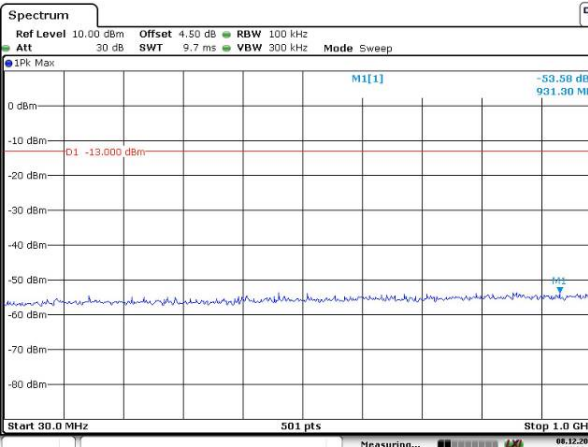
Middle



Date: 8.DEC.2021 11:00:03

Date: 8.DEC.2021 11:00:28

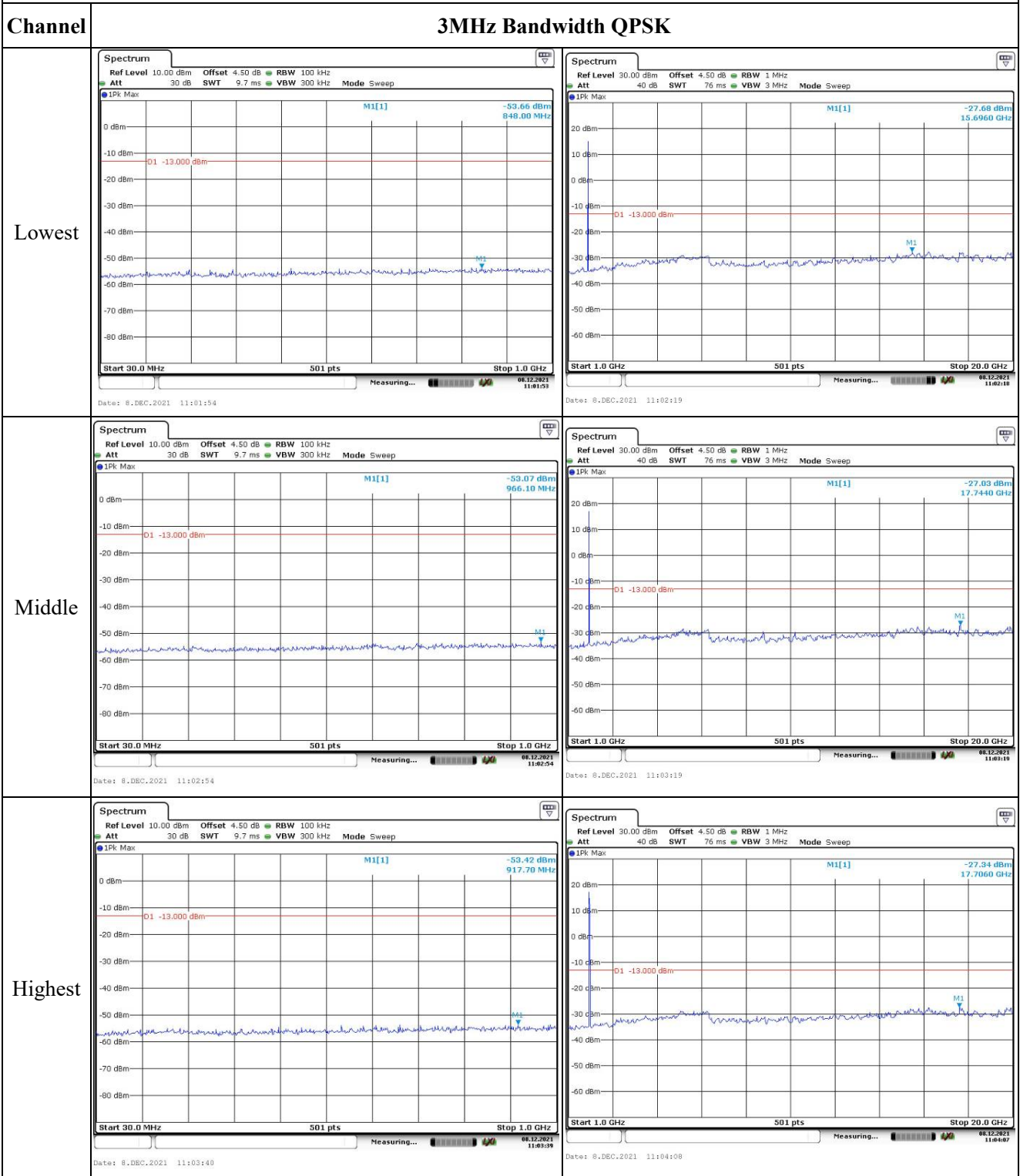
Highest



Date: 8.DEC.2021 11:00:57

Date: 8.DEC.2021 11:01:19

### Spurious Emissions at Antenna Terminal





### Spurious Emissions at Antenna Terminal

Channel	5MHz Bandwidth QPSK	
Lowest	<p><b>Spectrum</b>                      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] -59.51 dBm 999.00 MHz                      -13.000 dBm                      Start 30.0 MHz 501 pts Stop 1.0 GHz                      Date: 8.DEC.2021 11:04:45</p>	<p><b>Spectrum</b>                      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] -27.82 dBm 17.7440 GHz                      -13.000 dBm                      Start 1.0 GHz 501 pts Stop 20.0 GHz                      Date: 8.DEC.2021 11:05:13</p>
Middle	<p><b>Spectrum</b>                      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] -53.11 dBm 913.80 MHz                      -13.000 dBm                      Start 30.0 MHz 501 pts Stop 1.0 GHz                      Date: 8.DEC.2021 11:05:43</p>	<p><b>Spectrum</b>                      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] -27.15 dBm 17.7060 GHz                      -13.000 dBm                      Start 1.0 GHz 501 pts Stop 20.0 GHz                      Date: 8.DEC.2021 11:06:11</p>
Highest	<p><b>Spectrum</b>                      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] -53.13 dBm 939.00 MHz                      -13.000 dBm                      Start 30.0 MHz 501 pts Stop 1.0 GHz                      Date: 8.DEC.2021 11:06:37</p>	<p><b>Spectrum</b>                      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] -27.92 dBm 17.7060 GHz                      -13.000 dBm                      Start 1.0 GHz 501 pts Stop 20.0 GHz                      Date: 8.DEC.2021 11:07:06</p>

### Spurious Emissions at Antenna Terminal

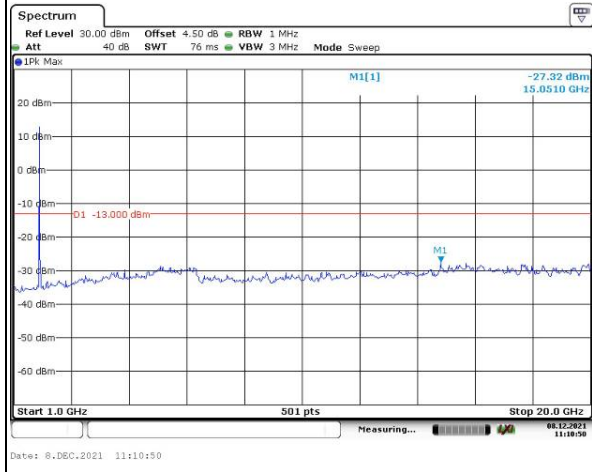
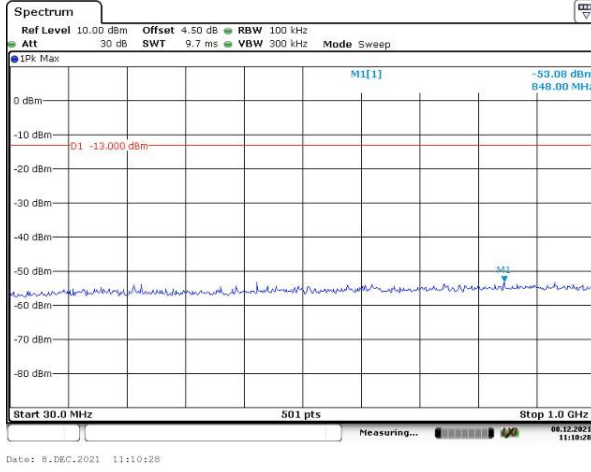
Channel	10MHz Bandwidth QPSK	
Lowest	<p><b>Spectrum</b>                      Ref Level 10.00 dBm Offset 4.50 dB RBW 100 kHz                      Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Sweep                      1Pk Max M1[1] -59.21 dBm 952.60 MHz                      -13.000 dBm                      Start 30.0 MHz 501 pts Stop 1.0 GHz                      Date: 8.DEC.2021 11:07:41</p>	<p><b>Spectrum</b>                      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] -27.70 dBm 19.8290 GHz                      -13.000 dBm                      Start 1.0 GHz 501 pts Stop 20.0 GHz                      Date: 8.DEC.2021 11:08:03</p>
Middle	<p><b>Spectrum</b>                      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] -52.87 dBm 927.40 MHz                      -13.000 dBm                      Start 30.0 MHz 501 pts Stop 1.0 GHz                      Date: 8.DEC.2021 11:08:30</p>	<p><b>Spectrum</b>                      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] -26.67 dBm 15.9230 GHz                      -13.000 dBm                      Start 1.0 GHz 501 pts Stop 20.0 GHz                      Date: 8.DEC.2021 11:08:52</p>
Highest	<p><b>Spectrum</b>                      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 724.10 MHz                      -13.000 dBm                      Start 30.0 MHz 501 pts Stop 1.0 GHz                      Date: 8.DEC.2021 11:09:23</p>	<p><b>Spectrum</b>                      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] -27.38 dBm 17.7440 GHz                      -13.000 dBm                      Start 1.0 GHz 501 pts Stop 20.0 GHz                      Date: 8.DEC.2021 11:09:48</p>

### Spurious Emissions at Antenna Terminal

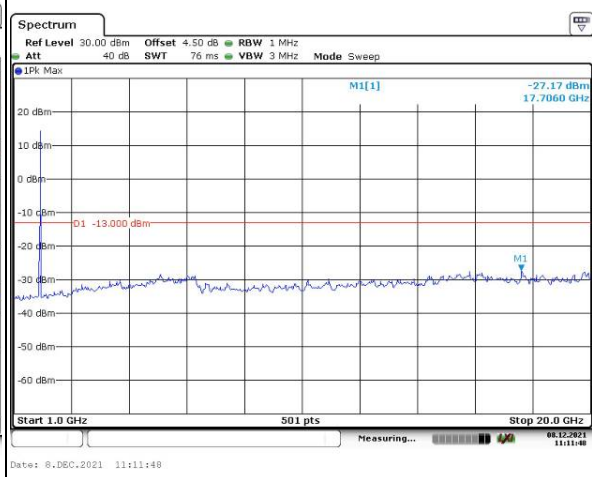
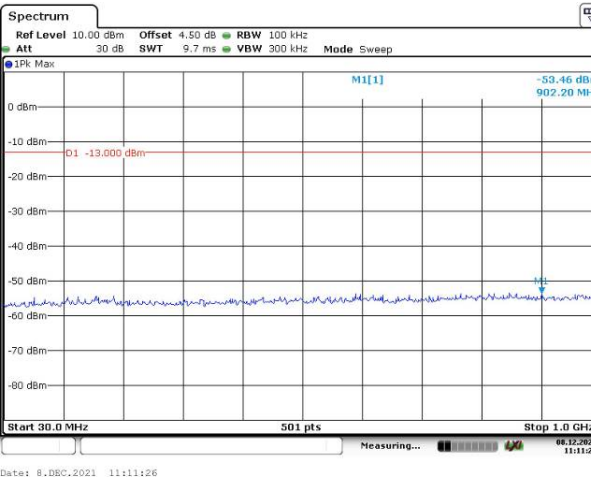
Channel

15MHz Bandwidth QPSK

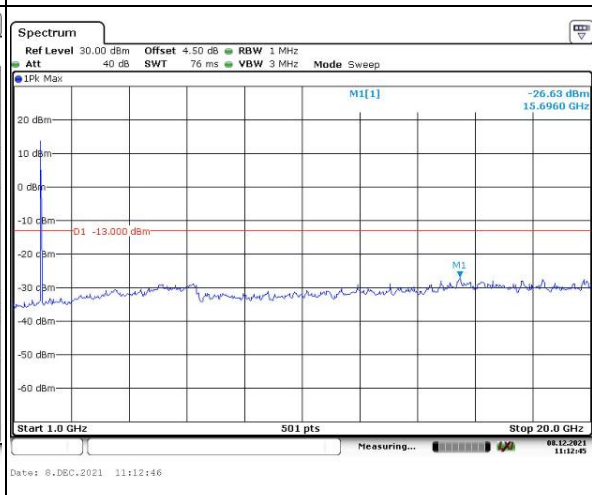
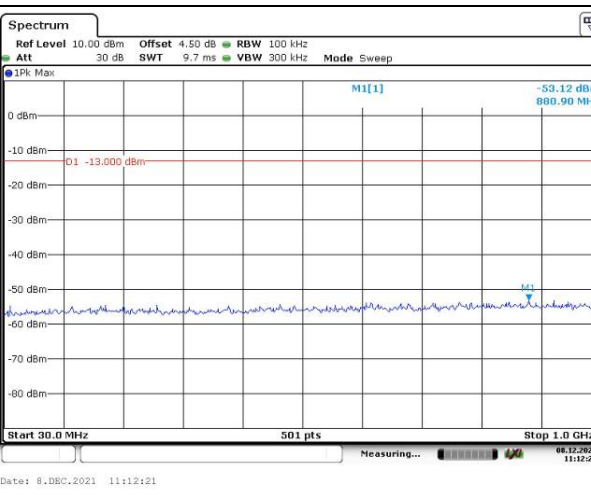
Lowest



Middle



Highest

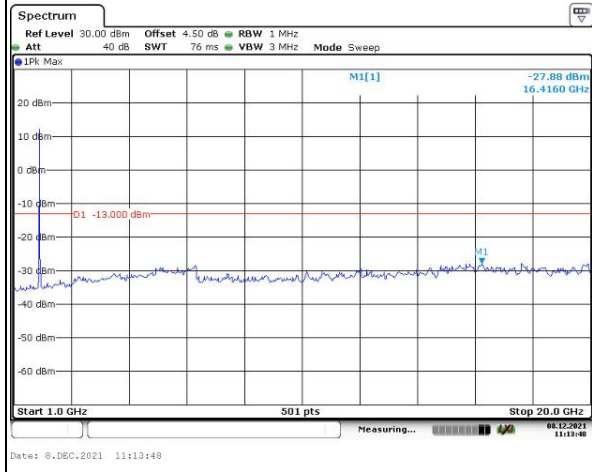
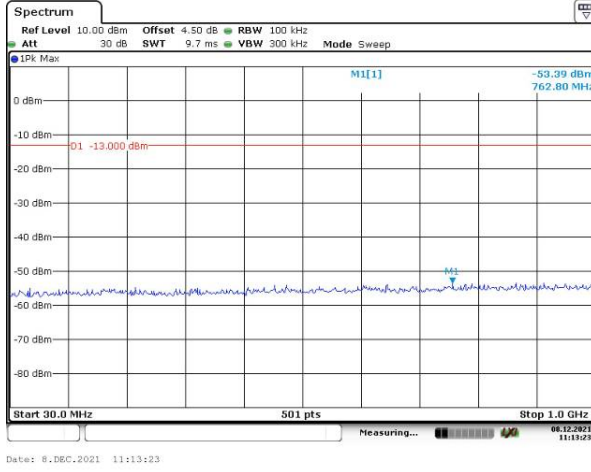


### Spurious Emissions at Antenna Terminal

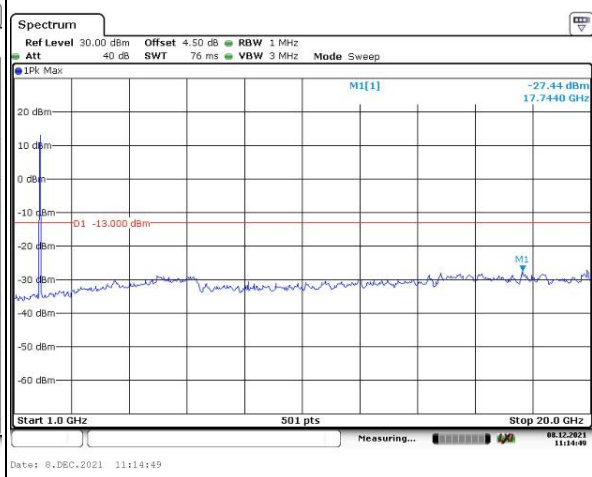
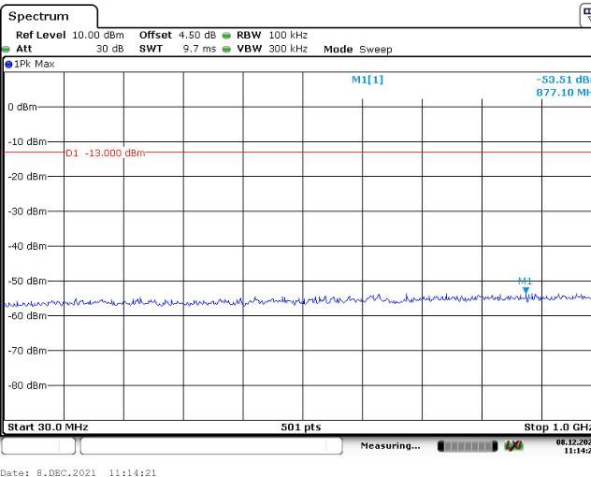
Channel

20MHz Bandwidth QPSK

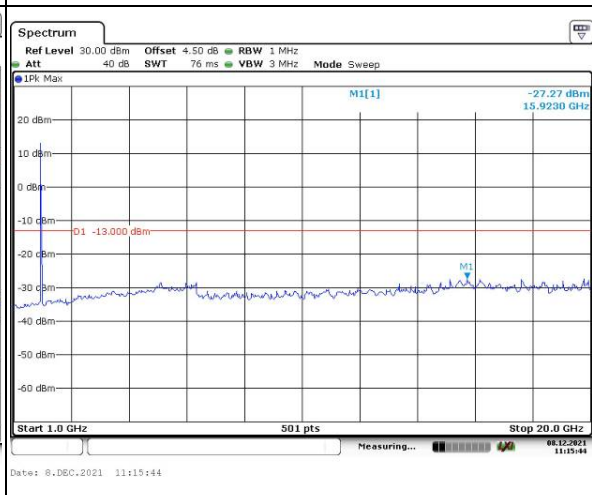
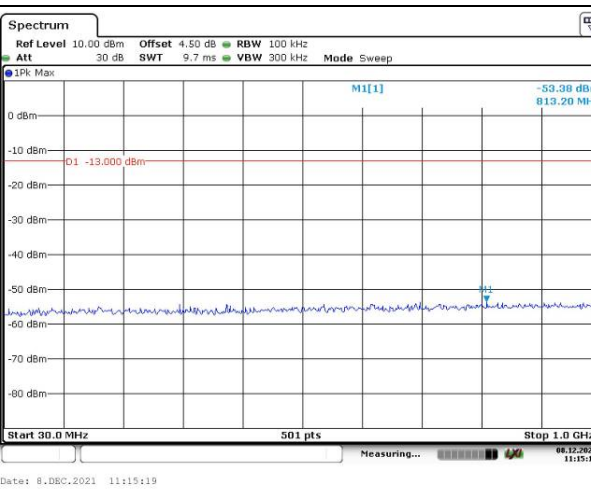
Lowest



Middle



Highest



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<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>M1[1] -19.65 dBm 1.8500000 GHz</p> <p>CF 1.85 GHz 501 pts Span 3.0 MHz</p> <p>Date: 6.DEC.2021 15:00:17</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>M1[1] -20.54 dBm 1.91001800 GHz</p> <p>CF 1.91 GHz 501 pts Span 3.0 MHz</p> <p>Date: 6.DEC.2021 15:00:55</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</p> <p>M1[1] -20.63 dBm 1.8500000 GHz</p> <p>CF 1.85 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 15:01:37</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>M1[1] -19.20 dBm 1.9100000 GHz</p> <p>CF 1.91 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 15:02:23</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</p> <p>M1[1] -13.57 dBm 1.8500000 GHz</p> <p>CF 1.85 GHz 501 pts Span 10.0 MHz</p> <p>Date: 6.DEC.2021 15:03:27</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>M1[1] -13.57 dBm 1.9100000 GHz</p> <p>CF 1.91 GHz 501 pts Span 10.0 MHz</p> <p>Date: 6.DEC.2021 15:04:23</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 1Rm Max M1[1] -22.45 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 15:05:37</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 1Rm Max M1[1] -20.35 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 15:06:42</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 1Rm Max M1[1] -18.51 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 30.0 MHz Date: 6.DEC.2021 15:07:43</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 1Rm Max M1[1] -15.88 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 30.0 MHz Date: 6.DEC.2021 15:08:31</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 1Rm Max M1[1] -20.81 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 15:09:36</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 1Rm Max M1[1] -20.26 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 15:10:40</p>

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 1Fm Max M1[1] -29.36 dBm 1.8500000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 3.0 MHz Date: 6.DEC.2021 15:00:34</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 1Fm Max M1[1] -17.82 dBm 1.9100000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 3.0 MHz Date: 6.DEC.2021 15:01:15</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 1Fm Max M1[1] -22.87 dBm 1.8500000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 6.0 MHz Date: 6.DEC.2021 15:01:59</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 1Fm Max M1[1] -21.12 dBm 1.9100000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 6.0 MHz Date: 6.DEC.2021 15:02:52</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 1Fm Max M1[1] -15.14 dBm 1.8500000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 15:03:59</p>	<p>Spectrum Ref Level 34.50 dBm Offset 4.50 dB RBW 100 kHz Att -40 dB SWT 1 ms VBW 300 kHz Mode Sweep 1Fm Max M1[1] -16.04 dBm 1.9100000 GHz -13.000 dBm CF 1.91 GHz 691 pts Span 10.0 MHz Date: 9.DEC.2021 13:53:16</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 M1[1] -25.30 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 15:06:04</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 M1[1] -23.21 dBm 1.9100400 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 20.0 MHz Date: 6.DEC.2021 15:07:15</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 M1[1] -19.94 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 30.0 MHz Date: 6.DEC.2021 15:08:07</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 M1[1] -17.88 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 30.0 MHz Date: 6.DEC.2021 15:09:00</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 M1[1] -26.16 dBm 1.8500000 GHz D1 -13.000 dBm CF 1.85 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 15:10:05</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 M1[1] -20.84 dBm 1.9100000 GHz D1 -13.000 dBm CF 1.91 GHz 501 pts Span 40.0 MHz Date: 6.DEC.2021 15:11:03</p>



**4.7 Antenna Port Test Data and Results for LTE Band 4:**

Serial Number:	CR21110036-RF-S1	Test Date:	2021/12/06~2021/12/08
Test Site:	RF	Test Mode:	Transmitting
Tester:	LE Qiao	Test Result:	Pass

**Environmental Conditions:**

Temperature: (°C)	21.3~21.5	Relative Humidity: (%)	32~41	ATM Pressure: (kPa)	101.6~101.7
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**Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	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):	3	Cable Loss (dB):	0
Operation Voltage(V <sub>DC</sub> ):			
Lowest:	3.5	Normal:	3.85
		Highest:	4.4

**Test Frequency For Each Mode:**

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1710.7	1732.5	1754.3
3MHz	1711.5	1732.5	1753.5
5MHz	1712.5	1732.5	1752.5
10MHz	1715	1732.5	1750
15MHz	1717.5	1732.5	1747.5
20MHz	1720	1732.5	1745

**Test Data:****FCC§2.1046;§ 27.50(d)(4)****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.59	22.52	22.25	25.59	30
	RB1#3	22.46	22.29	22.37		
	RB1#5	22.38	22.29	22.25		
	RB3#0	22.53	22.40	22.18		
	RB3#3	22.38	22.48	22.25		
	RB6#0	21.48	21.43	21.36		
1.4MHz 16QAM	RB1#0	21.77	21.70	20.90	24.97	30
	RB1#3	21.97	21.83	21.03		
	RB1#5	21.85	21.74	21.43		
	RB3#0	21.69	21.50	21.51		
	RB3#3	21.74	21.52	21.68		
	RB6#0	20.33	20.57	20.61		
3MHz QPSK	RB1#0	22.49	22.60	22.26	25.6	30
	RB1#8	22.37	22.41	22.45		
	RB1#14	22.58	22.50	22.47		
	RB6#0	21.57	21.57	21.41		
	RB6#9	21.52	21.60	21.48		
3MHz 16QAM	RB1#0	21.73	21.84	21.22	24.84	30
	RB1#8	21.44	21.70	21.09		
	RB1#14	21.40	21.68	21.08		
	RB6#0	20.59	20.60	20.52		
	RB6#9	20.60	20.73	20.66		
	RB15#0	20.78	20.48	20.72		
5MHz QPSK	RB1#0	22.28	22.40	22.20	25.56	30
	RB1#13	22.33	22.56	22.06		
	RB1#24	22.22	22.54	22.54		
	RB15#0	21.63	21.51	21.46		
	RB15#10	21.58	21.52	21.39		
	RB25#0	21.66	21.45	21.44		
5MHz 16QAM	RB1#0	21.32	21.67	21.10	24.67	30
	RB1#13	20.60	21.17	21.13		
	RB1#24	20.61	21.58	20.93		
	RB15#0	20.66	20.34	20.38		
	RB15#10	20.56	20.48	20.44		
	RB25#0	20.67	20.46	20.50		
10MHz QPSK	RB1#0	22.42	21.78	22.33	25.97	30

	RB1#25	22.52	22.97	22.19		
	RB1#49	21.37	22.48	22.22		
	RB25#0	22.34	21.36	21.59		
	RB25#25	21.53	21.52	21.37		
	RB50#0	21.66	21.42	21.47		
10MHz 16QAM	RB1#0	22.36	20.84	21.57	25.78	30
	RB1#25	21.73	22.18	21.54		
	RB1#49	20.92	22.78	21.23		
	RB25#0	21.30	20.29	20.69		
	RB25#25	20.52	20.59	20.53		
	RB50#0	20.56	20.45	20.64		
15MHz QPSK	RB1#0	22.53	22.51	22.72	25.72	30
	RB1#38	21.99	22.49	22.39		
	RB1#74	21.59	22.70	22.35		
	RB36#0	21.91	21.60	21.62		
	RB36#39	21.47	21.56	21.51		
	RB75#0	21.61	21.48	21.53		
15MHz 16QAM	RB1#0	22.01	21.71	21.92	25.01	30
	RB1#38	21.45	21.90	21.66		
	RB1#74	21.11	21.75	21.68		
	RB36#0	21.01	20.55	20.73		
	RB36#39	20.46	20.54	20.54		
	RB75#0	20.63	20.46	20.69		
20MHz QPSK	RB1#0	22.47	21.73	22.47	26.08	30
	RB1#50	22.18	23.08	22.50		
	RB1#99	22.16	22.85	22.31		
	RB50#0	22.03	21.51	21.56		
	RB50#50	21.60	21.55	21.40		
	RB100#0	21.68	21.51	21.53		
20MHz 16QAM	RB1#0	21.61	20.87	22.15	25.15	30
	RB1#50	21.37	22.04	21.90		
	RB1#99	21.41	21.66	22.14		
	RB50#0	20.78	20.50	20.67		
	RB50#50	20.51	20.65	20.51		
	RB100#0	20.55	20.47	20.62		

Note: EIRP=Conducted Power(dBm) - Cable loss(dB) + Antenna Gain(dBi)

**Result:**

**Pass**

<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	
20MHz QPSK	RB1#0	4.46	4.12	3.94	13
	RB100#0	4.72	4.43	4.29	13
20MHz 16QAM	RB1#0	5.48	5.16	5.07	13
	RB100#0	5.68	5.48	5.33	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
1.4MHz QPSK	1.102	1.108	1.108	1.302	1.344	1.308
1.4MHz 16QAM	1.108	1.096	1.108	1.320	1.302	1.338
3MHz QPSK	2.695	2.695	2.695	2.952	2.940	2.952
3MHz 16QAM	2.695	2.683	2.683	2.976	2.952	2.952
5MHz QPSK	4.551	4.531	4.511	5.040	5.020	5.060
5MHz 16QAM	4.511	4.531	4.531	5.020	5.040	5.080
10MHz QPSK	8.942	8.981	8.981	9.760	9.760	9.720
10MHz 16QAM	8.942	8.981	8.942	9.720	9.720	9.800
15MHz QPSK	13.533	13.473	13.593	15.000	14.820	14.940
15MHz 16QAM	13.533	13.533	13.593	14.820	14.760	14.880
20MHz QPSK	18.044	17.964	17.964	19.440	19.440	19.680
20MHz 16QAM	18.044	17.964	17.964	19.440	19.600	19.600

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

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

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

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 <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	1710.489	1710.00	1754.511	1755
	-20	3.85	1710.487	1710.00	1754.512	1755
	-10	3.85	1710.485	1710.00	1754.513	1755
	0	3.85	1710.487	1710.00	1754.515	1755
	10	3.85	1710.483	1710.00	1754.517	1755
	20	3.85	1710.489	1710.00	1754.511	1755
	30	3.85	1710.483	1710.00	1754.516	1755
	40	3.85	1710.482	1710.00	1754.519	1755
	50	3.85	1710.483	1710.00	1754.515	1755
Frequency Stability vs. Voltage	20	3.5	1710.487	1710.00	1754.516	1755
	20	4.4	1710.489	1710.00	1754.511	1755
					<b>Result:</b>	<b>Pass</b>

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V <sub>DC</sub> )	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	1710.528	1710.00	1754.511	1755
	-20	3.85	1710.525	1710.00	1754.512	1755
	-10	3.85	1710.523	1710.00	1754.513	1755
	0	3.85	1710.529	1710.00	1754.514	1755
	10	3.85	1710.525	1710.00	1754.515	1755
	20	3.85	1710.529	1710.00	1754.511	1755
	30	3.85	1710.527	1710.00	1754.516	1755
	40	3.85	1710.523	1710.00	1754.517	1755
	50	3.85	1710.522	1710.00	1754.518	1755
Frequency Stability vs. Voltage	20	3.5	1710.523	1710.00	1754.511	1755
	20	4.4	1710.529	1710.00	1754.516	1755
					<b>Result:</b>	<b>Pass</b>

Test Plots:

Occupied Bandwidth

Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest	<p>1.7107 GHz</p>	<p>1.71003400 GHz</p>
Middle	<p>1.7325 GHz</p>	<p>1.73185800 GHz</p>
Highest	<p>1.7543 GHz</p>	<p>1.75364000 GHz</p>

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>1PK Max</p> <p>M1[1] -14.11 dBm 1.7100240 GHz Occ Bw 2.694610778 MHz -0.64 dB 2.9520 MHz</p> <p>D1 11.210 dBm D2 -14.790 dBm</p> <p>CF 1.7115 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:17:33</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>1PK Max</p> <p>M1[1] -16.46 dBm 1.7100240 GHz Occ Bw 2.694610778 MHz -0.52 dB 2.9760 MHz</p> <p>D1 9.650 dBm D2 -16.350 dBm</p> <p>CF 1.7115 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:17:53</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>1PK Max</p> <p>M1[1] -17.20 dBm 1.7310360 GHz Occ Bw 2.694610778 MHz -0.92 dB 2.9400 MHz</p> <p>D1 8.660 dBm D2 -17.340 dBm</p> <p>CF 1.7325 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:18:21</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>1PK Max</p> <p>M1[1] -18.66 dBm 1.7310240 GHz Occ Bw 2.682634731 MHz -0.52 dB 2.9520 MHz</p> <p>D1 6.590 dBm D2 -19.410 dBm</p> <p>CF 1.7325 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:18:41</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>1PK Max</p> <p>M1[1] -15.46 dBm 1.7520240 GHz Occ Bw 2.694610778 MHz 0.83 dB 2.9520 MHz</p> <p>D1 10.440 dBm D2 -15.560 dBm</p> <p>CF 1.7535 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:19:03</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>1PK Max</p> <p>M1[1] -15.87 dBm 1.7520240 GHz Occ Bw 2.682634731 MHz 0.10 dB 2.9520 MHz</p> <p>D1 10.240 dBm D2 -15.760 dBm</p> <p>CF 1.7535 GHz 501 pts Span 6.0 MHz</p> <p>Date: 6.DEC.2021 18:19:23</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 1Pk Max D1 12.860 dBm M1[1] -12.93 dBm 1.7099800 GHz 4.530938124 MHz -0.12 dB 5.0400 MHz D2 -13.140 dBm CF 1.7125 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 18:19:57</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 1Pk Max D1 12.190 dBm M1[1] -13.32 dBm 1.7099800 GHz 4.530938124 MHz -0.61 dB 5.0200 MHz D2 -13.810 dBm CF 1.7125 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 18:20:27</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 1Pk Max D1 10.430 dBm M1[1] -14.90 dBm 1.7300000 GHz 4.530938124 MHz -0.32 dB 5.0200 MHz D2 -15.570 dBm CF 1.7325 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 18:20:54</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 1Pk Max D1 8.950 dBm M1[1] -16.89 dBm 1.7300000 GHz 4.530938124 MHz 0.35 dB 5.0400 MHz D2 -17.050 dBm CF 1.7325 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 18:21:15</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 1Pk Max D1 13.570 dBm M1[1] -12.72 dBm 1.7499800 GHz 4.510978044 MHz 0.17 dB 5.0600 MHz D2 -12.430 dBm CF 1.7525 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 18:21:43</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 1Pk Max D1 11.540 dBm M1[1] -13.69 dBm 1.7499800 GHz 4.530938124 MHz -0.81 dB 5.0800 MHz D2 -14.460 dBm CF 1.7525 GHz 501 pts Span 10.0 MHz Date: 6.DEC.2021 18:22:10</p>