

Out of band emission, Band Edge

Mode	Lowest	Highest
R99		
HSUPA		
HSDPA		

4.5 Antenna Port Test Data and Results for LTE Band 2

Serial Number:	2711-3	Test Date:	2023/06/16~2023/06/22
Test Site:	RF	Test Mode:	Transmitting
Tester:	Zero Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	23.7~27.5	Relative Humidity: (%)	38~59	ATM Pressure: (kPa)	99.8~100.9
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/7/15	2023/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/9/29	2023/9/28
UNI-T	Multimeter	UT39A+	C210582554	N/A	N/A
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	2022/7/15	2023/7/14

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

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	1850.7	1880	1909.3
3MHz	1851.5	1880	1908.5
5MHz	1852.5	1880	1907.5
10MHz	1855	1880	1905
15MHz	1857.5	1880	1902.5
20MHz	1860	1880	1900

Test Data:

FCC §2.1046; § 24.232						
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	22.84	22.82	22.76	22.45	33
	RB1#3	22.83	22.83	22.77		
	RB1#5	22.76	22.85	22.74		
	RB3#0	22.99	22.9	22.93		
	RB3#3	22.87	22.94	22.83		
	RB6#0	21.74	21.92	21.85		
1.4MHz 16QAM	RB1#0	22.44	22.36	22.48	21.97	33
	RB1#3	22.43	22.38	22.45		
	RB1#5	22.51	22.39	22.41		
	RB3#0	21.89	21.86	21.99		
	RB3#3	21.92	21.82	21.92		
	RB6#0	21.1	21.25	21.05		
3MHz QPSK	RB1#0	22.82	22.8	22.81	22.4	33
	RB1#8	22.82	22.94	22.82		
	RB1#14	22.93	22.87	22.78		
	RB6#0	21.91	21.99	21.91		
	RB6#9	21.91	21.89	21.88		
	RB15#0	21.94	21.82	21.9		
3MHz 16QAM	RB1#0	22.56	21.7	22.26	22.08	33
	RB1#8	22.62	21.73	22.25		
	RB1#14	22.6	21.66	22.22		
	RB6#0	21	21.2	20.85		
	RB6#9	21.01	21.01	20.78		
	RB15#0	20.94	21.13	20.97		
5MHz QPSK	RB1#0	22.85	22.91	22.84	22.49	33
	RB1#13	22.94	22.83	22.82		
	RB1#24	23.03	22.95	22.79		
	RB15#0	21.86	21.93	21.98		
	RB15#10	21.91	21.85	21.88		
	RB25#0	21.89	21.92	21.88		
5MHz 16QAM	RB1#0	21.88	21.57	21.09	21.53	33
	RB1#13	22.07	21.59	21.14		
	RB1#24	22	21.67	21.14		
	RB15#0	20.82	21.21	21		
	RB15#10	20.85	21.04	20.92		
	RB25#0	20.98	20.99	21.02		
10MHz QPSK	RB1#0	22.93	22.88	22.75	22.45	33
	RB1#25	22.94	22.88	22.78		
	RB1#49	22.98	22.99	22.83		

	RB25#0	21.85	21.94	21.96		
	RB25#25	21.9	22.01	21.9		
	RB50#0	21.91	21.93	21.9		
10MHz 16QAM	RB1#0	22.04	21.41	22.02	21.56	33
	RB1#25	22.01	21.36	22.07		
	RB1#49	22.07	21.49	22.1		
	RB25#0	21.08	21.08	20.95		
	RB25#25	21.06	21.05	20.97		
	RB50#0	21.26	21.13	20.98		
15MHz QPSK	RB1#0	22.89	22.96	22.83	22.5	33
	RB1#38	22.97	23	22.78		
	RB1#74	22.96	23.04	22.83		
	RB36#0	21.83	21.9	21.86		
	RB36#39	21.86	21.96	21.98		
	RB75#0	21.98	21.89	21.82		
15MHz 16QAM	RB1#0	21.98	22.29	22.11	21.77	33
	RB1#38	22.14	22.27	22.1		
	RB1#74	22.05	22.31	22.15		
	RB36#0	21.21	20.95	20.99		
	RB36#39	21.04	21.01	21.07		
	RB75#0	21	21.17	21.04		
20MHz QPSK	RB1#0	22.93	22.94	22.95	22.47	33
	RB1#50	23.01	22.94	23		
	RB1#99	23	22.99	22.98		
	RB50#0	21.89	21.97	21.94		
	RB50#50	21.86	21.95	21.99		
	RB100#0	21.96	21.94	21.97		
20MHz 16QAM	RB1#0	21.93	22.61	21.99	22.15	33
	RB1#50	21.94	22.59	21.97		
	RB1#99	22.06	22.69	22.11		
	RB50#0	21.21	20.9	20.99		
	RB50#50	21.04	21.06	21.03		
	RB100#0	20.96	21.27	20.97		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(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	4.29	4.84	4.09	13
	RB100#0	3.97	3.94	3.86	13
20MHz 16QAM	RB1#0	5.59	5.59	5.22	13
	RB100#0	5.62	5.57	5.59	13
Result:					Pass

FCC §2.1049, §24.238: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	1.266	1.266	1.272
1.4MHz 16QAM	1.108	1.09	1.114	1.26	1.254	1.278
3MHz QPSK	2.695	2.695	2.707	3.012	3.024	3
3MHz 16QAM	2.683	2.683	2.695	3.012	3.024	3.024
5MHz QPSK	4.511	4.511	4.531	5.02	5	5
5MHz 16QAM	4.531	4.551	4.531	5.02	5.04	5
10MHz QPSK	8.982	8.942	8.982	9.76	9.76	9.72
10MHz 16QAM	8.982	8.942	8.942	9.84	9.84	9.76
15MHz QPSK	13.473	13.533	13.473	15	15.12	14.94
15MHz 16QAM	13.533	13.533	13.473	15.12	15.06	14.88
20MHz QPSK	17.964	18.044	17.884	19.6	19.84	19.36
20MHz 16QAM	17.964	17.964	17.964	19.84	19.76	19.68

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

FCC §2.1051, § 24.238 (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, § 24.238 (a):Out of band emission, Band Edge

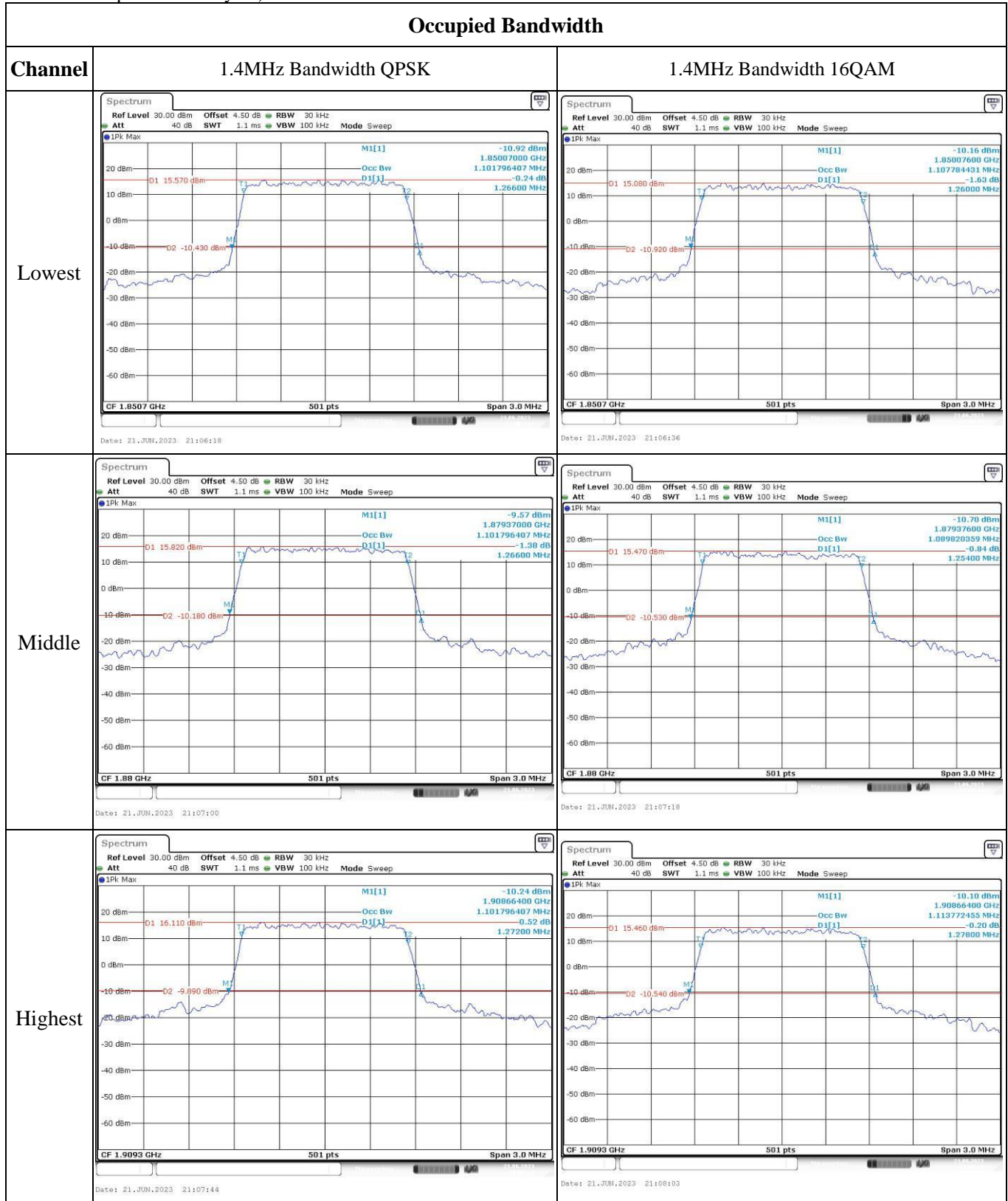
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §24.235: Frequency Stability

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	1851.156	1850.000	1908.912	1910.000
	-20	3.7	1851.172	1850.000	1908.875	1910.000
	-10	3.7	1851.169	1850.000	1908.835	1910.000
	0	3.7	1851.146	1850.000	1908.854	1910.000
	10	3.7	1851.126	1850.000	1908.864	1910.000
	20	3.7	1851.138	1850.000	1908.942	1910.000
	30	3.7	1851.105	1850.000	1908.902	1910.000
	40	3.7	1851.189	1850.000	1908.845	1910.000
Frequency Stability vs. Voltage	20	3.3	1851.109	1850.000	1908.899	1910.000
	20	4.2	1851.160	1850.000	1908.860	1910.000
					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	1851.135	1850.000	1908.856	1910.000
	-20	3.7	1851.146	1850.000	1908.832	1910.000
	-10	3.7	1851.175	1850.000	1908.810	1910.000
	0	3.7	1851.106	1850.000	1908.896	1910.000
	10	3.7	1851.169	1850.000	1908.842	1910.000
	20	3.7	1851.138	1850.000	1908.942	1910.000
	30	3.7	1851.111	1850.000	1908.885	1910.000
	40	3.7	1851.194	1850.000	1908.824	1910.000
Frequency Stability vs. Voltage	20	3.3	1851.127	1850.000	1908.875	1910.000
	20	4.2	1851.155	1850.000	1908.822	1910.000
					Result:	Pass

Test Plots(Note: The 4.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):



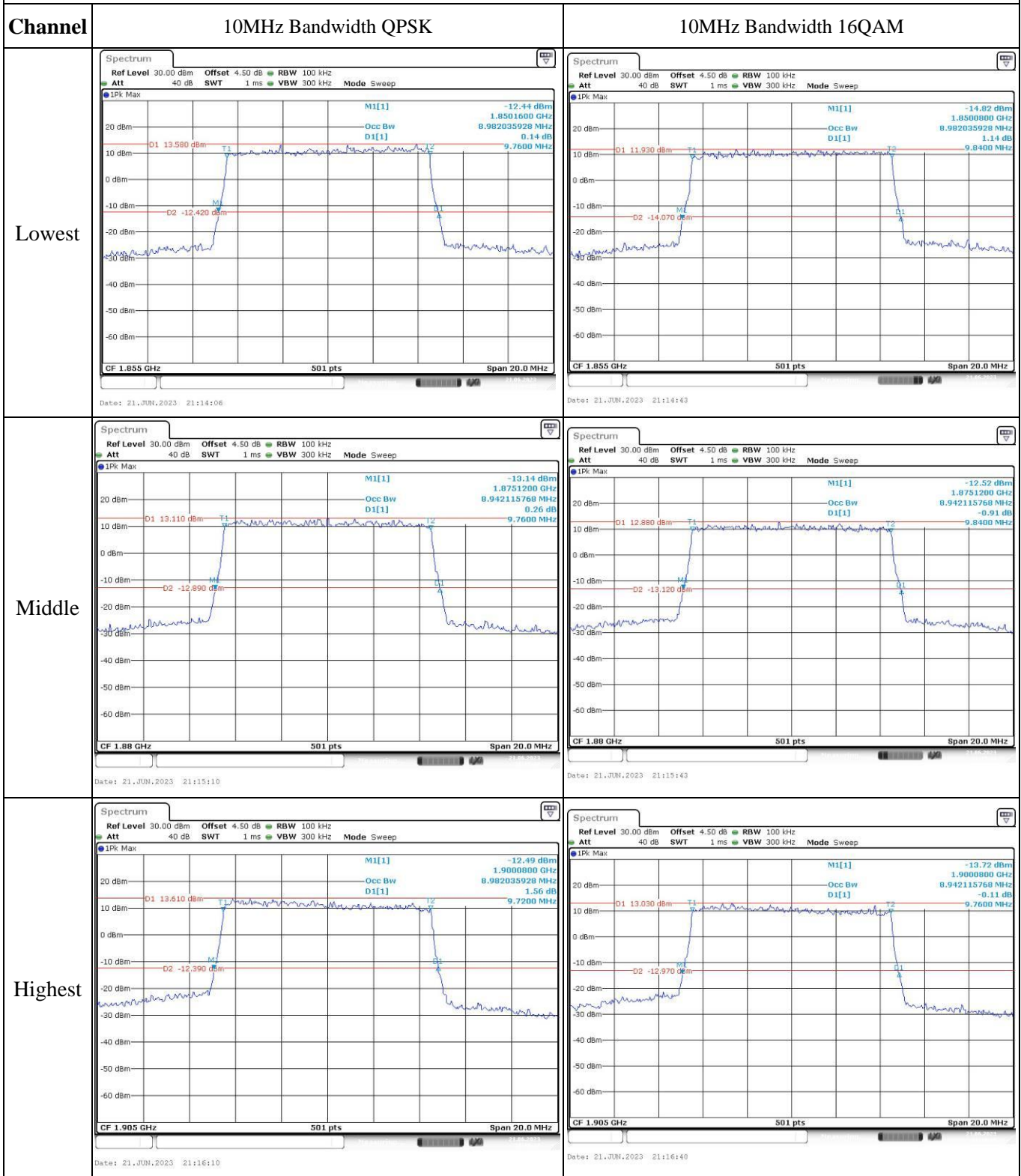
Occupied Bandwidth

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

Occupied Bandwidth

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

Occupied Bandwidth



Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep</p> <p>M1[1] -0.34 dBm 1.8500600 GHz Occ Bw 13.473053892 MHz D1[1] -0.56 dB 15.0000 MHz</p> <p>O1 15.830 dBm O2 -10.170 dBm</p> <p>CF 1.8575 GHz 501 pts Span 30.0 MHz</p> <p>Date: 21 JUN 2023 21:17:07</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</p> <p>M1[1] -10.60 dBm 1.8499400 GHz Occ Bw 13.532934132 MHz D1[1] -0.57 dB 15.1200 MHz</p> <p>O1 15.500 dBm O2 -10.300 dBm</p> <p>CF 1.8575 GHz 501 pts Span 30.0 MHz</p> <p>Date: 21 JUN 2023 21:17:34</p>
Middle	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep</p> <p>M1[1] -11.34 dBm 1.8724400 GHz Occ Bw 13.532934132 MHz D1[1] -1.16 dB 15.1200 MHz</p> <p>O1 15.950 dBm O2 -10.950 dBm</p> <p>CF 1.88 GHz 501 pts Span 30.0 MHz</p> <p>Date: 21 JUN 2023 21:18:02</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</p> <p>M1[1] -9.65 dBm 1.8725000 GHz Occ Bw 13.532934132 MHz D1[1] -0.08 dB 15.0600 MHz</p> <p>O1 15.970 dBm O2 -10.030 dBm</p> <p>CF 1.88 GHz 501 pts Span 30.0 MHz</p> <p>Date: 21 JUN 2023 21:18:30</p>
Highest	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep</p> <p>M1[1] -9.55 dBm 1.8950000 GHz Occ Bw 13.473053892 MHz D1[1] -0.60 dB 14.9400 MHz</p> <p>O1 17.050 dBm O2 -8.950 dBm</p> <p>CF 1.9025 GHz 501 pts Span 30.0 MHz</p> <p>Date: 21 JUN 2023 21:19:02</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</p> <p>M1[1] -10.29 dBm 1.8950600 GHz Occ Bw 13.473053892 MHz D1[1] -1.15 dB 14.8800 MHz</p> <p>O1 16.070 dBm O2 -9.930 dBm</p> <p>CF 1.9025 GHz 501 pts Span 30.0 MHz</p> <p>Date: 21 JUN 2023 21:19:33</p>

Occupied Bandwidth

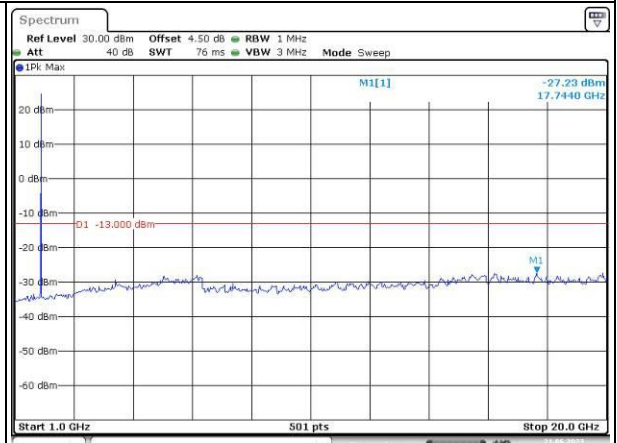
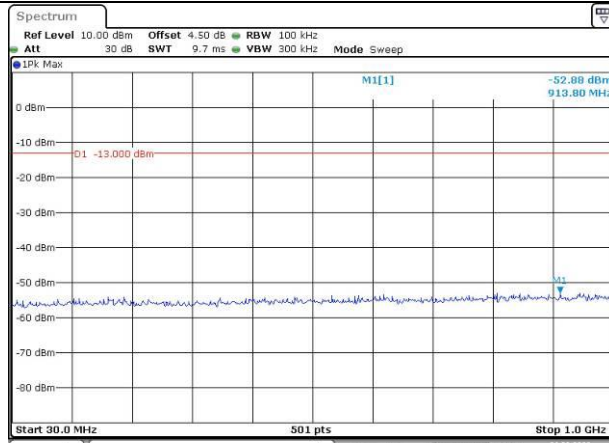
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep</p> <p>M1[1] -9.93 dBm 1.8903200 GHz Occ Bw 17.964071856 MHz D1[1] -0.18 dB 19.6000 MHz</p> <p>D1 16.390 dBm D2 -9.610 dBm</p> <p>CF 1.86 GHz 501 pts Span 40.0 MHz</p> <p>Date: 21 JUN 2023 21:20:04</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</p> <p>M1[1] -10.93 dBm 1.8901600 GHz Occ Bw 17.964071856 MHz D1[1] -1.19 dB 19.8400 MHz</p> <p>D1 14.920 dBm D2 -11.080 dBm</p> <p>CF 1.86 GHz 501 pts Span 40.0 MHz</p> <p>Date: 21 JUN 2023 21:20:31</p>
Middle	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep</p> <p>M1[1] -11.48 dBm 1.8700800 GHz Occ Bw 18.043912176 MHz D1[1] -1.50 dB 19.8400 MHz</p> <p>D1 14.820 dBm D2 -11.180 dBm</p> <p>CF 1.88 GHz 501 pts Span 40.0 MHz</p> <p>Date: 21 JUN 2023 21:20:59</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</p> <p>M1[1] -10.82 dBm 1.8701600 GHz Occ Bw 17.964071856 MHz D1[1] 0.38 dB 19.7600 MHz</p> <p>D1 14.720 dBm D2 -11.080 dBm</p> <p>CF 1.88 GHz 501 pts Span 40.0 MHz</p> <p>Date: 21 JUN 2023 21:21:26</p>
Highest	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 300 kHz Att 40 dB SWT 1 ms VBW 1 MHz Mode Sweep</p> <p>M1[1] -9.13 dBm 1.8903200 GHz Occ Bw 17.884231537 MHz D1[1] -0.75 dB 19.3600 MHz</p> <p>D1 16.500 dBm D2 -9.500 dBm</p> <p>CF 1.9 GHz 501 pts Span 40.0 MHz</p> <p>Date: 21 JUN 2023 21:21:58</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</p> <p>M1[1] -10.86 dBm 1.8901600 GHz Occ Bw 17.964071856 MHz D1[1] -1.55 dB 19.6800 MHz</p> <p>D1 14.520 dBm D2 -11.480 dBm</p> <p>CF 1.9 GHz 501 pts Span 40.0 MHz</p> <p>Date: 21 JUN 2023 21:22:29</p>

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

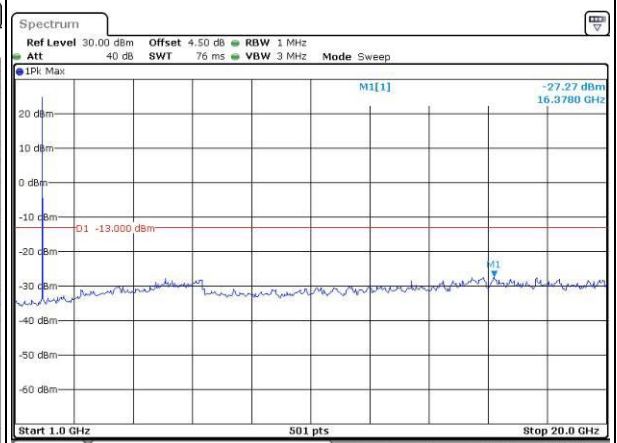
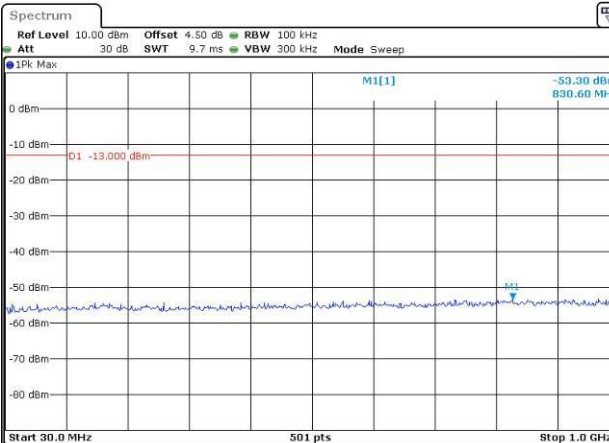
Lowest



Date: 21 JUN, 2023 20:07:59

Date: 21 JUN, 2023 20:08:29

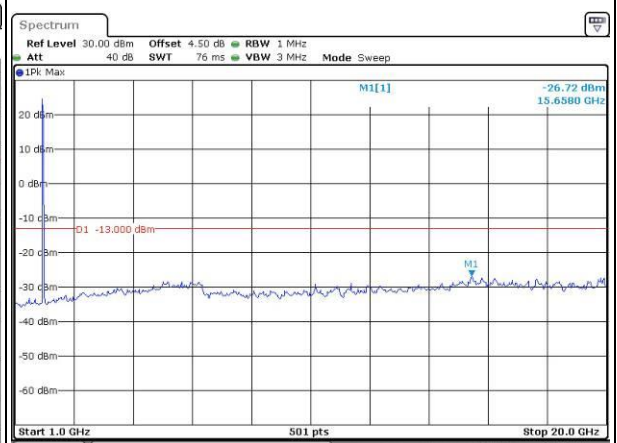
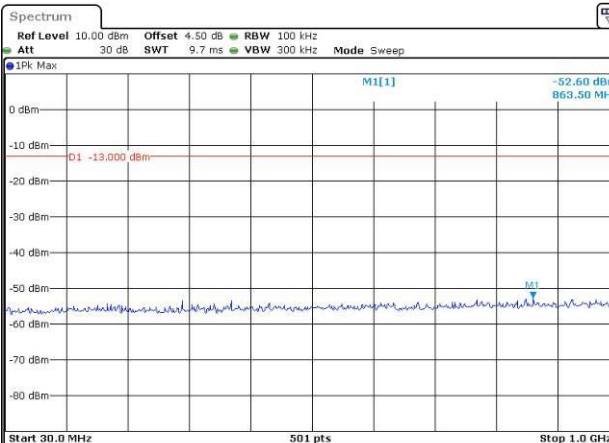
Middle



Date: 21 JUN, 2023 20:09:09

Date: 21 JUN, 2023 20:09:39

Highest



Date: 21 JUN, 2023 20:10:00

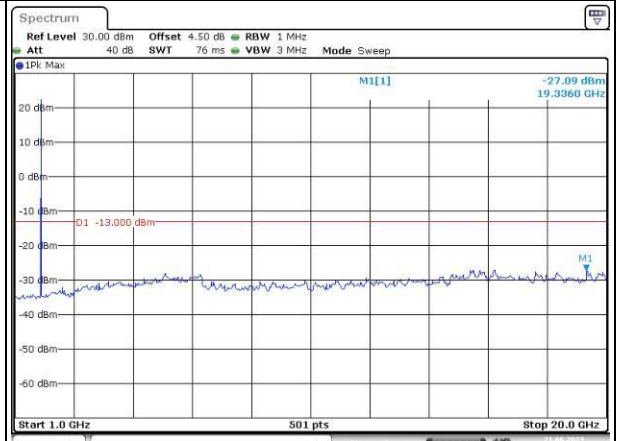
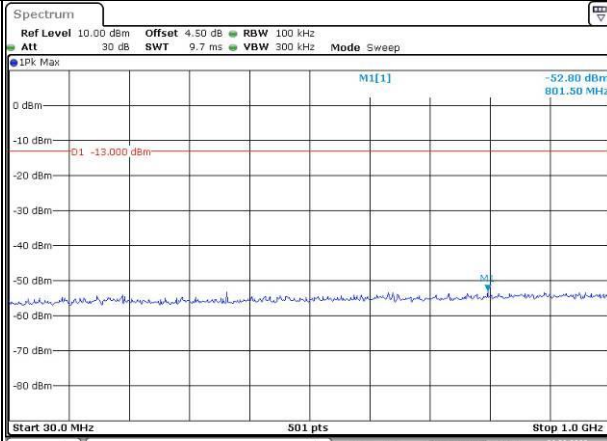
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Spurious Emissions at Antenna Terminal

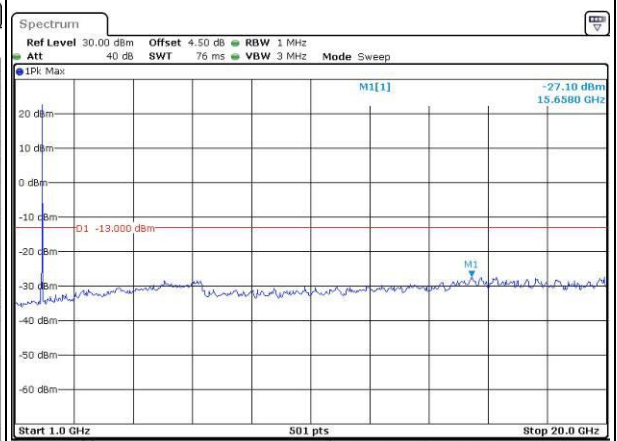
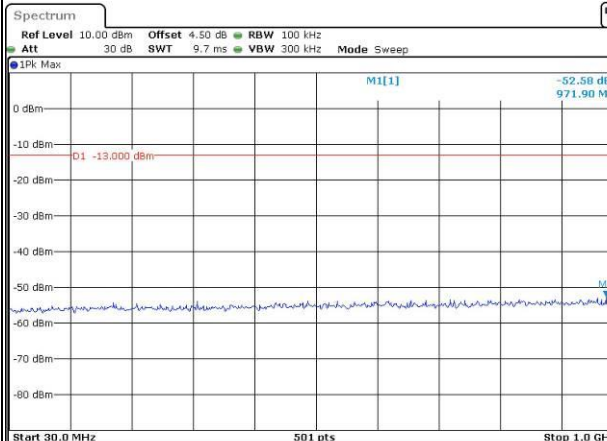
Channel

3MHz Bandwidth QPSK

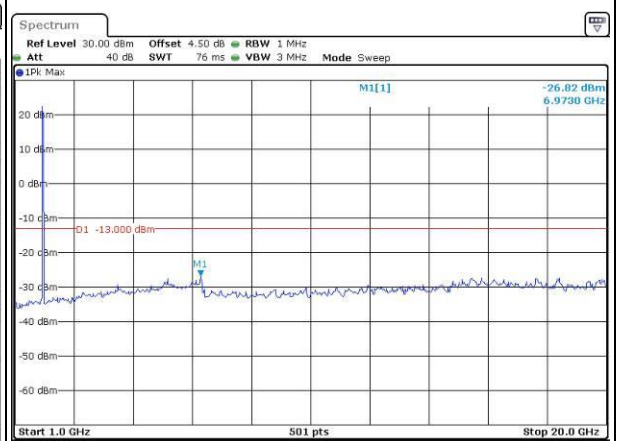
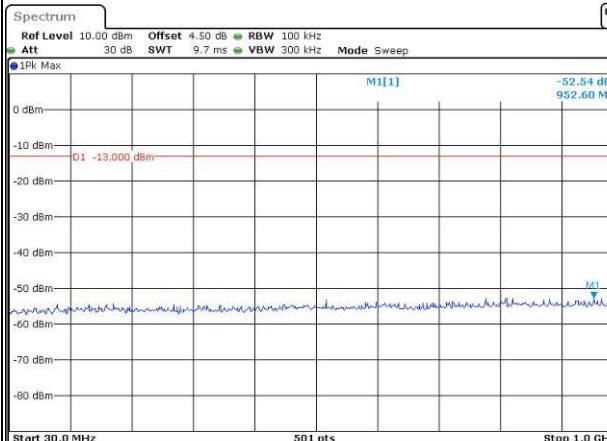
Lowest



Middle



Highest

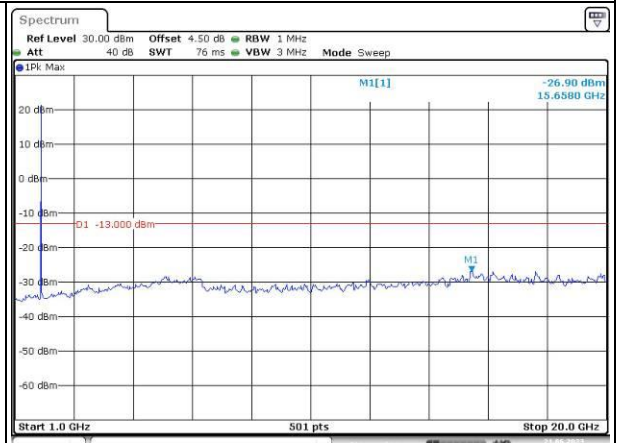
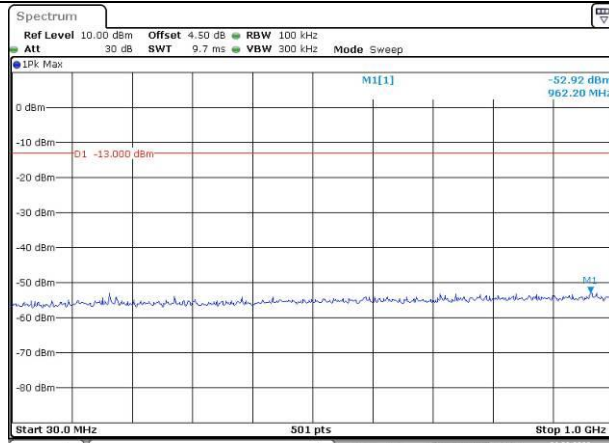


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

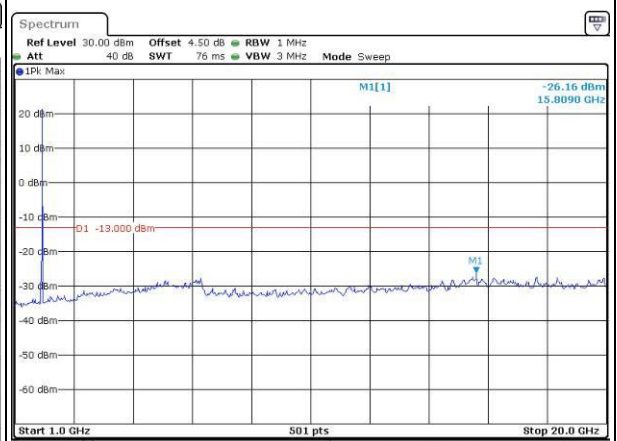
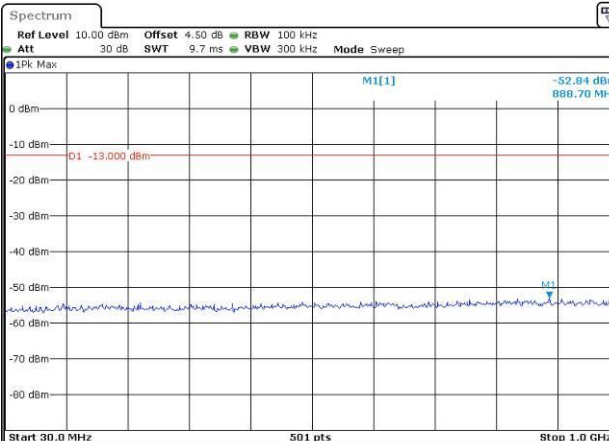
Lowest



Date: 21 JUN, 2023 20:14:28

Date: 21 JUN, 2023 20:15:05

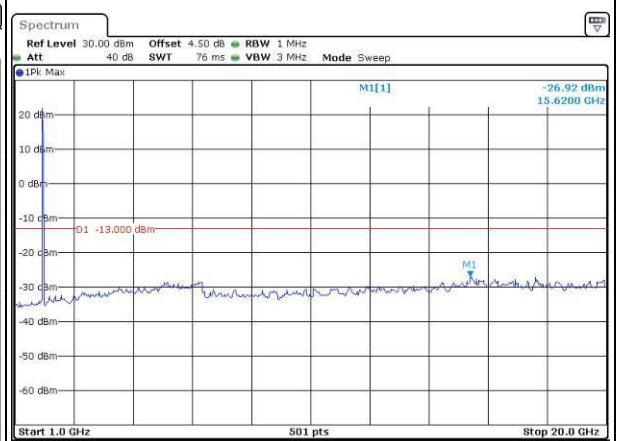
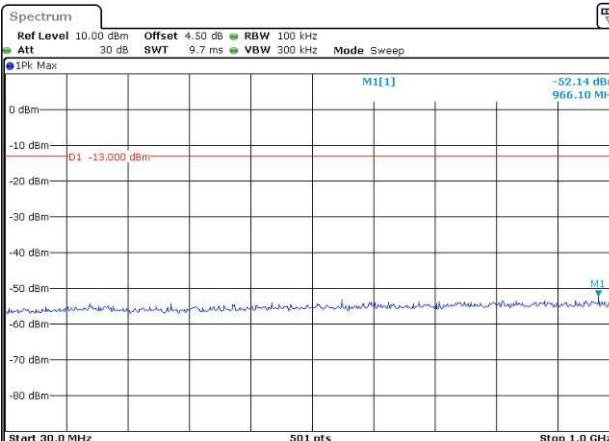
Middle



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Date: 21 JUN, 2023 20:16:11

Highest



Date: 21 JUN, 2023 20:16:44

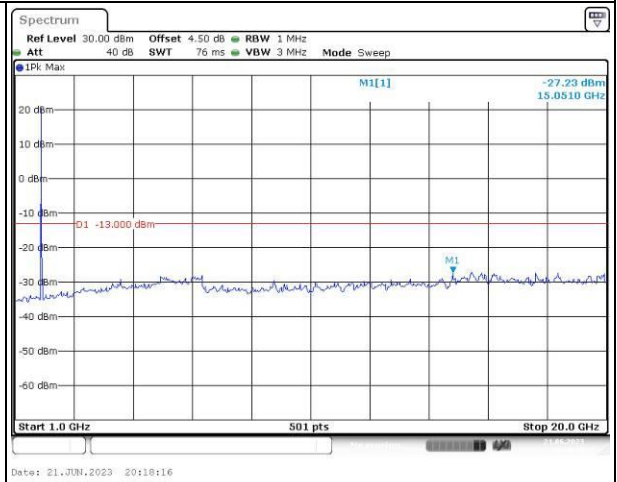
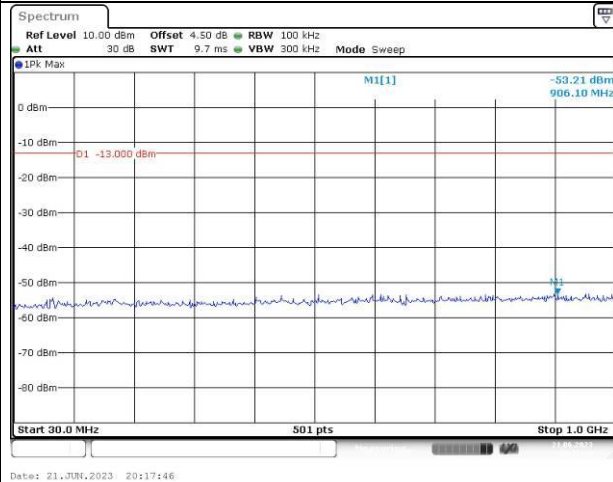
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Spurious Emissions at Antenna Terminal

Channel

10MHz Bandwidth QPSK

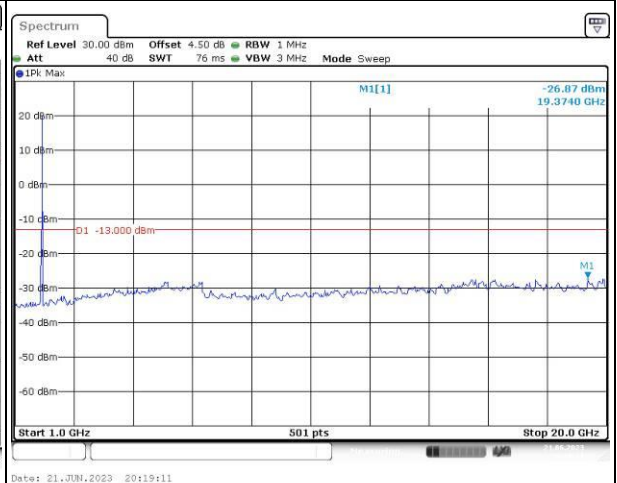
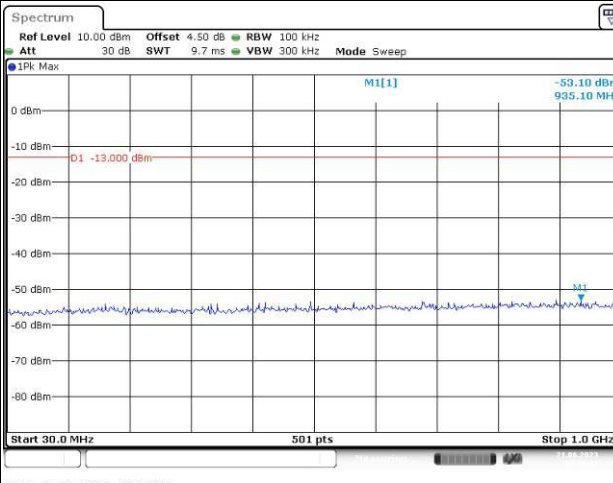
Lowest



Date: 21 JUN, 2023 20:17:46

Date: 21 JUN, 2023 20:18:16

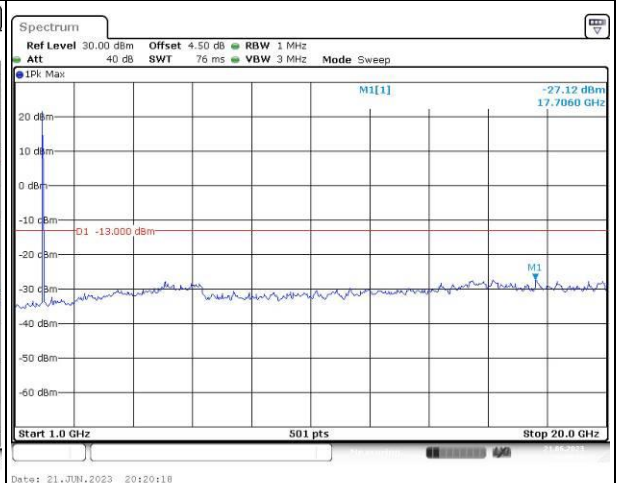
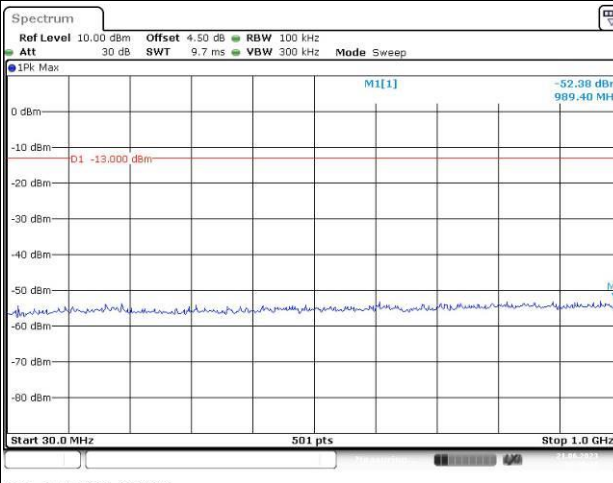
Middle



Date: 21 JUN, 2023 20:18:45

Date: 21 JUN, 2023 20:19:11

Highest



Date: 21 JUN, 2023 20:19:48

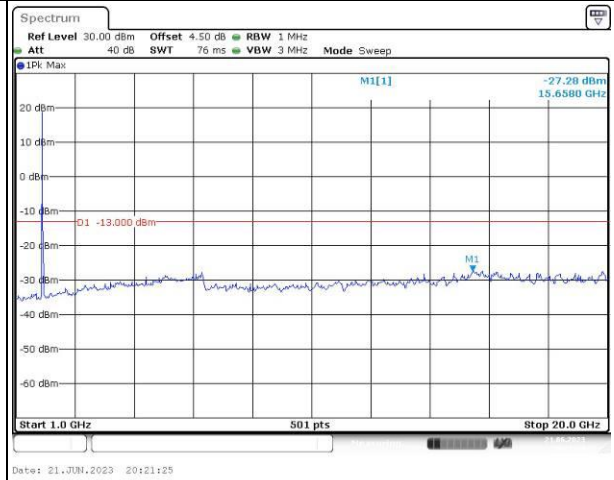
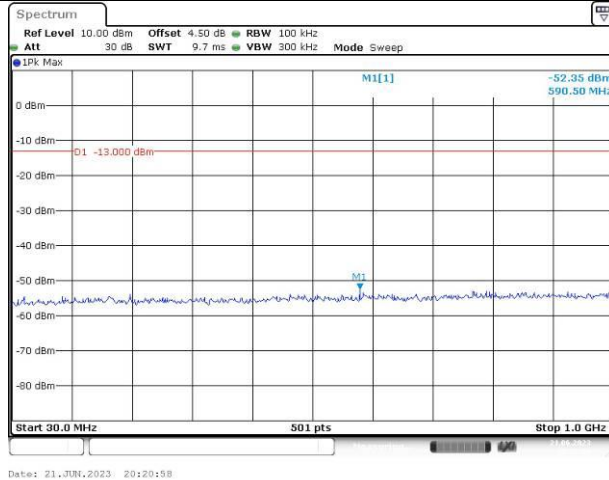
Date: 21 JUN, 2023 20:20:10

Spurious Emissions at Antenna Terminal

Channel

15MHz Bandwidth QPSK

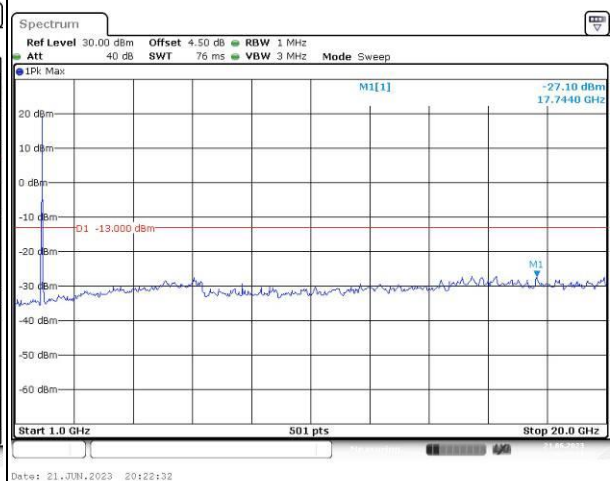
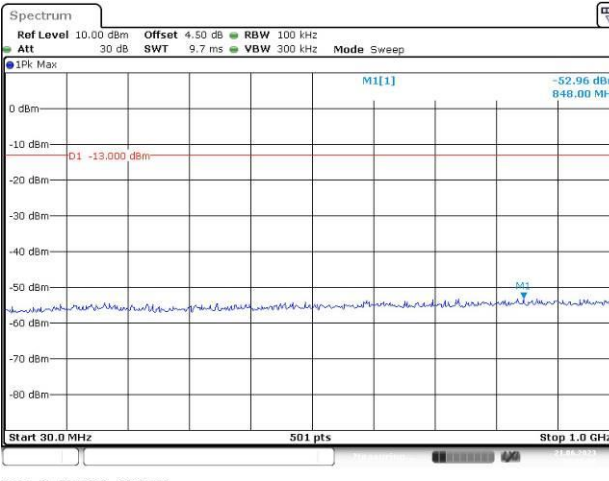
Lowest



Date: 21 JUN, 2023 20:20:58

Date: 21 JUN, 2023 20:21:25

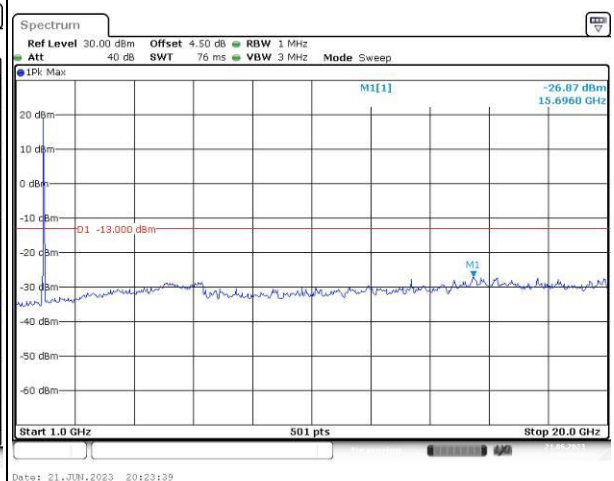
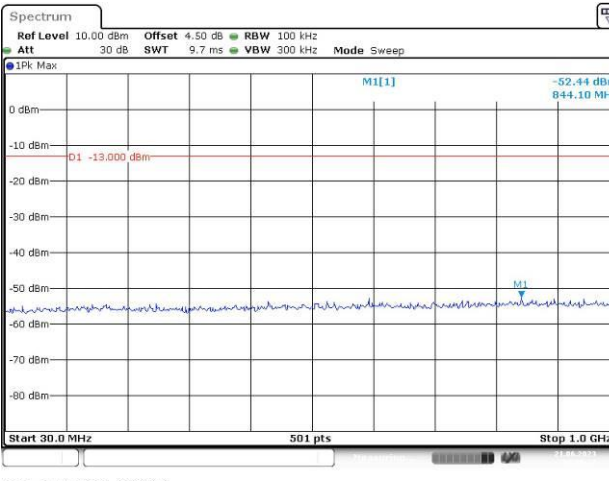
Middle



Date: 21 JUN, 2023 20:21:58

Date: 21 JUN, 2023 20:22:32

Highest



Date: 21 JUN, 2023 20:23:13

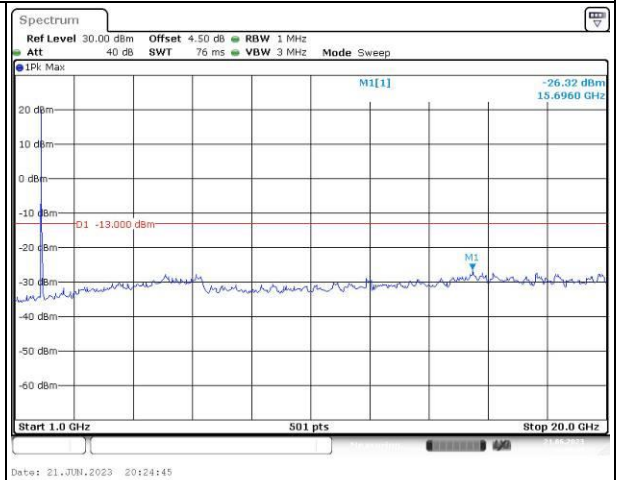
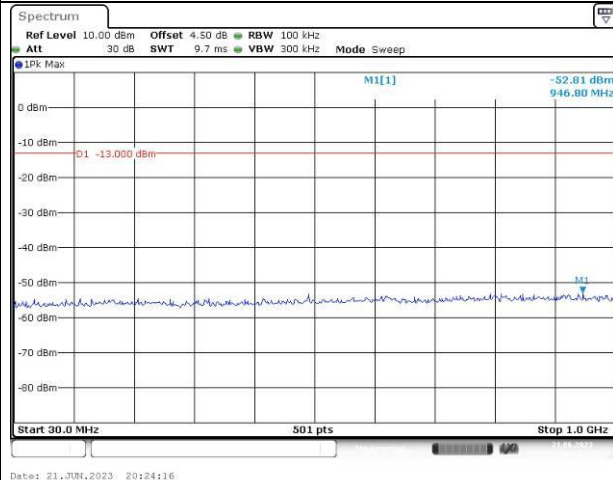
Date: 21 JUN, 2023 20:23:39

Spurious Emissions at Antenna Terminal

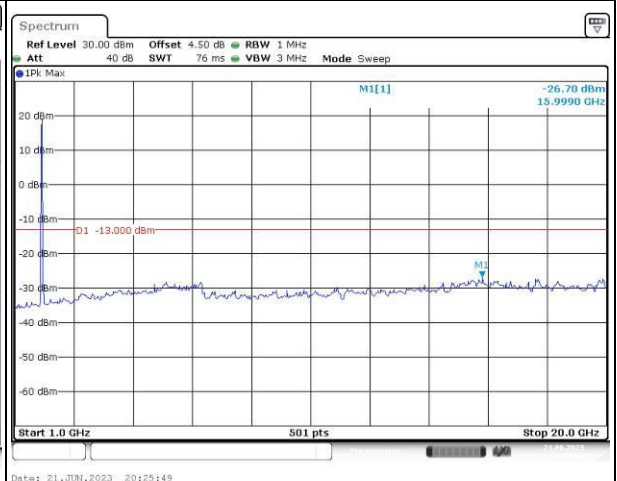
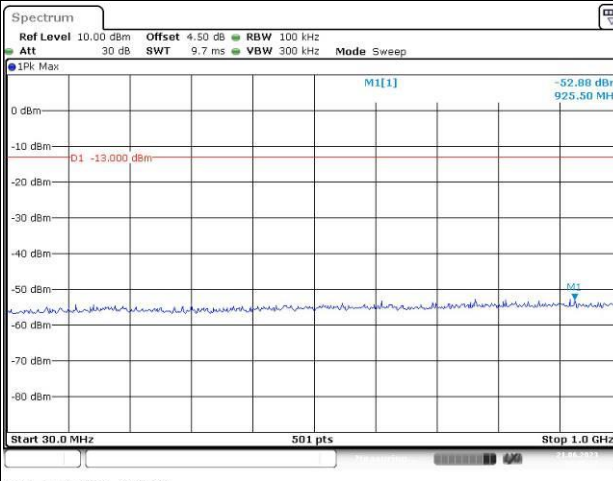
Channel

20MHz Bandwidth QPSK

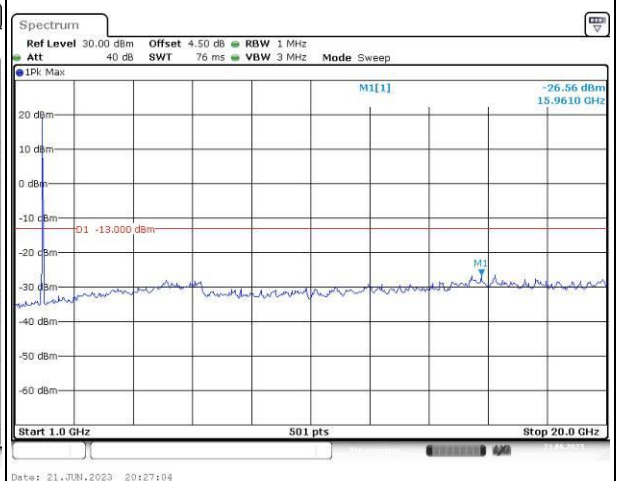
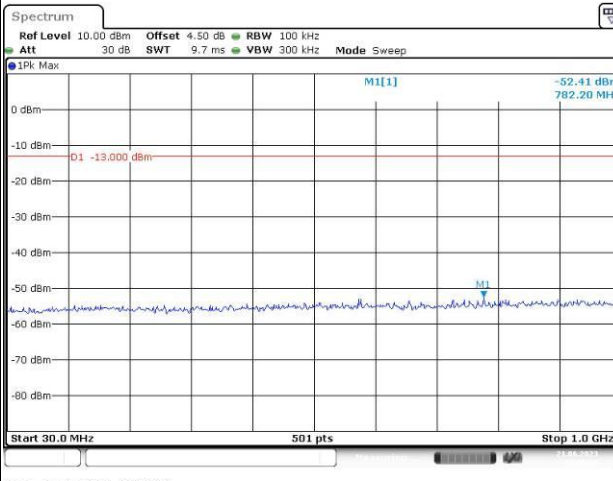
Lowest



Middle



Highest



Out of band emission, Band Edge

Mode	Lowest	Highest
<p>QPSK 1.4MHz</p>		
<p>QPSK 3MHz</p>		
<p>QPSK 5MHz</p>		

Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 10MHz		
QPSK 15MHz		
QPSK 20MHz		

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 35 ms VBW 100 kHz Mode Sweep SGL Count 50/50 1Rm AvgPwr MI[1] -29.84 dBm 1.84998200 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 3.0 MHz Date: 21 JUN, 2023 19:59:14</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 35 ms VBW 100 kHz Mode Sweep SGL Count 50/50 1Rm AvgPwr MI[1] -26.14 dBm 1.91001200 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 3.0 MHz Date: 21 JUN, 2023 19:59:26</p>
16QAM 3MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 35 ms VBW 100 kHz Mode Sweep SGL Count 50/50 1Rm AvgPwr MI[1] -26.41 dBm 1.85000000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 6.0 MHz Date: 21 JUN, 2023 19:59:42</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 30 kHz Att 40 dB SWT 35 ms VBW 100 kHz Mode Sweep SGL Count 50/50 1Rm AvgPwr MI[1] -25.85 dBm 1.91000000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 6.0 MHz Date: 21 JUN, 2023 19:59:55</p>
16QAM 5MHz	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 35 ms VBW 300 kHz Mode Sweep SGL Count 50/50 1Rm AvgPwr MI[1] -26.25 dBm 1.85000000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 10.0 MHz Date: 21 JUN, 2023 20:00:11</p>	<p>Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 35 ms VBW 300 kHz Mode Sweep SGL Count 50/50 1Rm AvgPwr MI[1] -27.34 dBm 1.91000000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 10.0 MHz Date: 21 JUN, 2023 20:00:25</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz		
16QAM 15MHz		
16QAM 20MHz		

4.6 Antenna Port Test Data and Results for LTE Band 4

Serial Number:	271I-3	Test Date:	2023/06/16~2023/06/22
Test Site:	RF	Test Mode:	Transmitting
Tester:	Zero Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	23.7~27.5	Relative Humidity: (%)	38~59	ATM Pressure: (kPa)	99.8~100.9
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2022/7/15	2023/7/14
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554403	Each time	N/A
Weinschel	Power Splitter	1515	RA914	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2022/7/15	2023/7/14
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2022/9/29	2023/9/28
UNI-T	Multimeter	UT39A+	C210582554	N/A	N/A
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	2022/7/15	2023/7/14

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

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	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	22.97	22.8	23.12	22.59	30
	RB1#3	22.91	22.9	23.05		
	RB1#5	22.94	22.85	23.1		
	RB3#0	22.93	22.95	22.99		
	RB3#3	22.89	22.95	22.96		
	RB6#0	21.96	21.94	21.84		
1.4MHz 16QAM	RB1#0	22.58	22.7	21.79	22.19	30
	RB1#3	22.63	22.66	21.78		
	RB1#5	22.6	22.72	21.89		
	RB3#0	21.75	21.99	21.93		
	RB3#3	21.75	22.08	21.94		
	RB6#0	21.1	21.28	21.25		
3MHz QPSK	RB1#0	22.94	22.81	22.87	22.46	30
	RB1#8	22.93	22.82	22.84		
	RB1#14	22.99	22.87	22.83		
	RB6#0	21.96	22.04	21.83		
	RB6#9	21.91	21.94	21.95		
	RB15#0	21.97	21.98	21.93		
3MHz 16QAM	RB1#0	22.73	21.66	21.94	22.2	30
	RB1#8	22.67	21.69	22		
	RB1#14	22.72	21.73	21.97		
	RB6#0	21.08	21.15	20.95		
	RB6#9	21.05	21.22	20.95		
	RB15#0	20.95	21.08	21		
5MHz QPSK	RB1#0	22.86	22.83	22.99	22.46	30
	RB1#13	22.85	22.91	22.99		
	RB1#24	22.99	22.89	22.89		
	RB15#0	21.96	21.89	22.01		
	RB15#10	21.92	21.92	22		
	RB25#0	21.9	22.02	21.92		
5MHz 16QAM	RB1#0	22.06	21.62	21.16	21.58	30
	RB1#13	22.02	21.67	21.15		
	RB1#24	22.11	21.63	21.14		
	RB15#0	20.86	21.08	21.08		
	RB15#10	20.84	21.03	21.03		
	RB25#0	21.01	20.97	21.06		
10MHz QPSK	RB1#0	23.02	22.92	22.93	22.51	30
	RB1#25	23.04	22.96	22.94		
	RB1#49	23.02	23.03	22.95		

	RB25#0	21.82	21.99	21.98		
	RB25#25	21.86	22.06	21.85		
	RB50#0	21.87	21.91	21.96		
10MHz 16QAM	RB1#0	22.08	21.4	22.21	21.73	30
	RB1#25	22.13	21.41	22.26		
	RB1#49	22.1	21.43	22.25		
	RB25#0	21.06	21.15	20.97		
	RB25#25	21.07	21.59	20.95		
	RB50#0	21.06	21.01	21.17		
15MHz QPSK	RB1#0	22.99	22.8	22.95	22.55	30
	RB1#38	23.04	22.81	22.94		
	RB1#74	23.08	22.94	22.98		
	RB36#0	21.9	21.86	21.87		
	RB36#39	21.87	22.01	21.88		
	RB75#0	21.99	21.94	21.94		
15MHz 16QAM	RB1#0	21.99	22.26	22.22	21.75	30
	RB1#38	22.13	22.26	22.18		
	RB1#74	22.16	22.28	22.27		
	RB36#0	21.04	21.03	21.14		
	RB36#39	21.08	21.09	21.18		
	RB75#0	20.98	21.12	21.06		
20MHz QPSK	RB1#0	22.41	22.48	22.4	22.38	30
	RB1#50	22.89	22.91	22.79		
	RB1#99	22.47	22.48	22.37		
	RB50#0	21.66	21.67	21.72		
	RB50#50	21.74	21.69	21.62		
	RB100#0	21.74	21.73	21.68		
20MHz 16QAM	RB1#0	21.64	21.67	21.93	21.86	30
	RB1#50	22.24	22.18	22.39		
	RB1#99	21.81	21.69	21.89		
	RB50#0	20.71	20.74	20.76		
	RB50#50	20.78	20.76	20.66		
	RB100#0	20.82	20.78	20.78		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + Gr(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	4.93	5.13	5.59	13
	RB100#0	4.46	4.32	4.52	13
20MHz 16QAM	RB1#0	6.09	6.2	6.06	13
	RB100#0	5.94	5.97	6.09	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	1.09	1.108	1.09	1.254	1.26	1.254
3MHz QPSK	2.695	2.695	2.695	3.012	3.012	2.988
3MHz 16QAM	2.695	2.695	2.695	3.012	3.012	3.012
5MHz QPSK	4.511	4.491	4.531	5	5	5
5MHz 16QAM	4.551	4.531	4.511	5.02	5.02	4.98
10MHz QPSK	8.942	8.982	8.942	9.76	9.8	9.76
10MHz 16QAM	8.982	8.942	8.942	9.84	9.84	9.76
15MHz QPSK	13.473	13.533	13.533	15.06	15.06	15.06
15MHz 16QAM	13.593	13.533	13.533	15.18	15	15
20MHz QPSK	18.044	18.044	18.044	19.6	19.76	19.68
20MHz 16QAM	18.044	17.884	18.044	19.76	19.6	19.68

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

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

Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.
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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.
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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	1711.094	1710.00	1753.900	1755
	-20	3.7	1711.020	1710.00	1753.975	1755
	-10	3.7	1711.062	1710.00	1753.933	1755
	0	3.7	1711.073	1710.00	1753.922	1755
	10	3.7	1711.026	1710.00	1753.974	1755
	20	3.7	1711.058	1710.00	1753.978	1755
	30	3.7	1711.022	1710.00	1753.974	1755
	40	3.7	1711.061	1710.00	1753.933	1755
Frequency Stability vs. Voltage	20	3.3	1711.028	1710.00	1753.970	1755
	20	4.2	1711.091	1710.00	1753.905	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	1711.055	1710.00	1754.087	1755
	-20	3.7	1711.026	1710.00	1754.083	1755
	-10	3.7	1711.092	1710.00	1754.006	1755
	0	3.7	1711.086	1710.00	1754.011	1755
	10	3.7	1711.087	1710.00	1754.027	1755
	20	3.7	1711.058	1710.00	1754.022	1755
	30	3.7	1711.045	1710.00	1754.096	1755
	40	3.7	1711.011	1710.00	1754.082	1755
Frequency Stability vs. Voltage	20	3.3	1711.024	1710.00	1754.075	1755
	20	4.2	1711.074	1710.00	1754.022	1755
					Result:	Pass