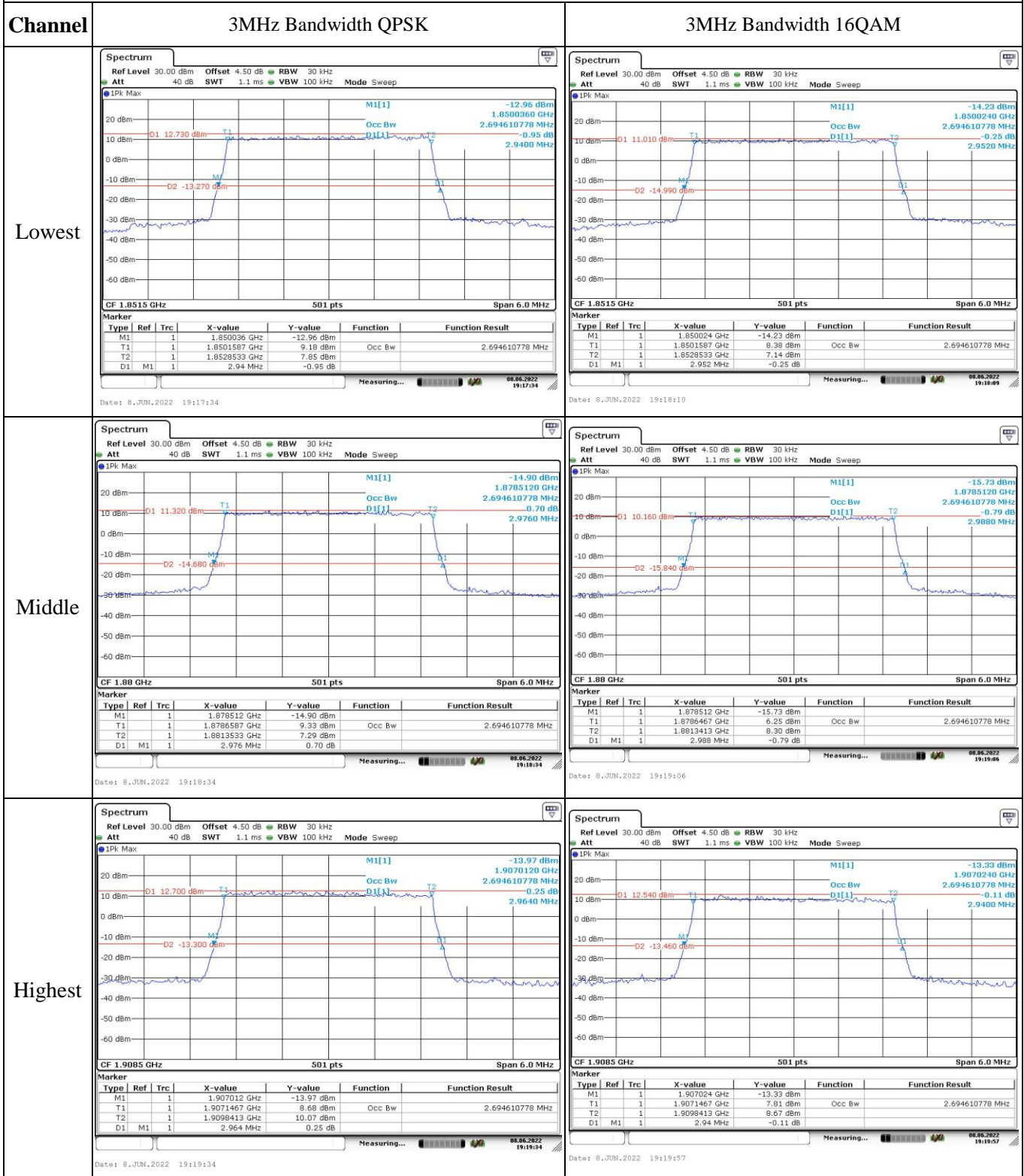


Occupied Bandwidth



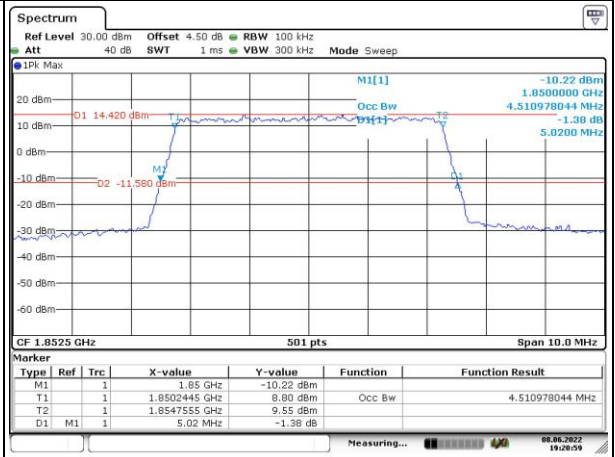
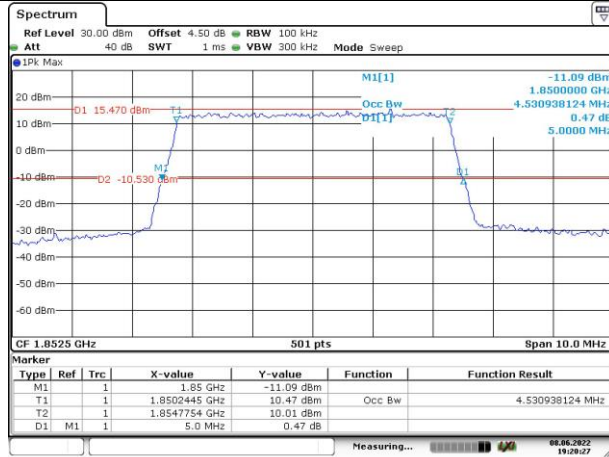
Occupied Bandwidth

Channel

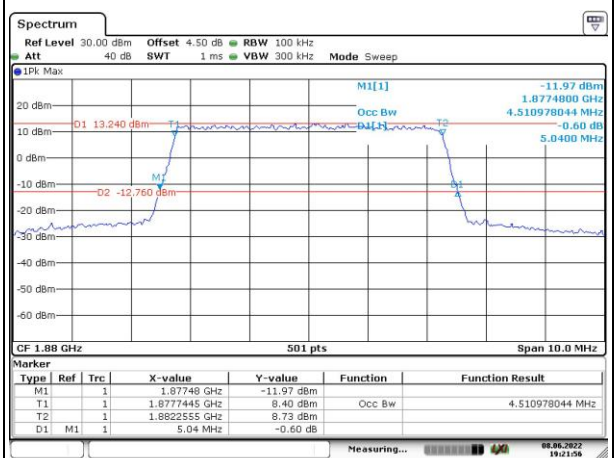
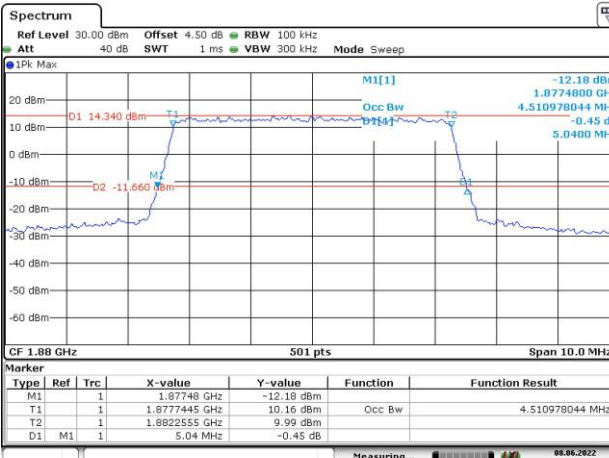
5MHz Bandwidth QPSK

5MHz Bandwidth 16QAM

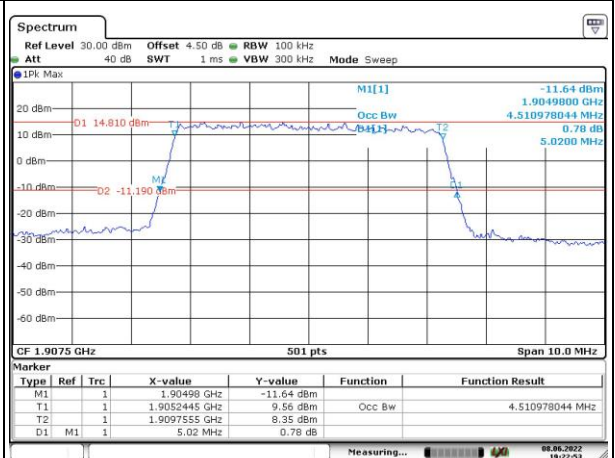
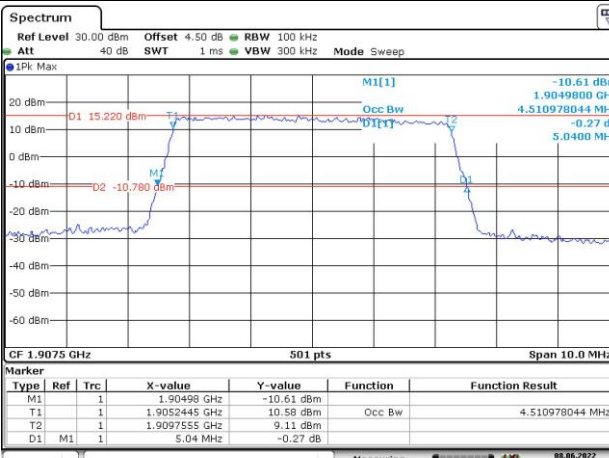
Lowest



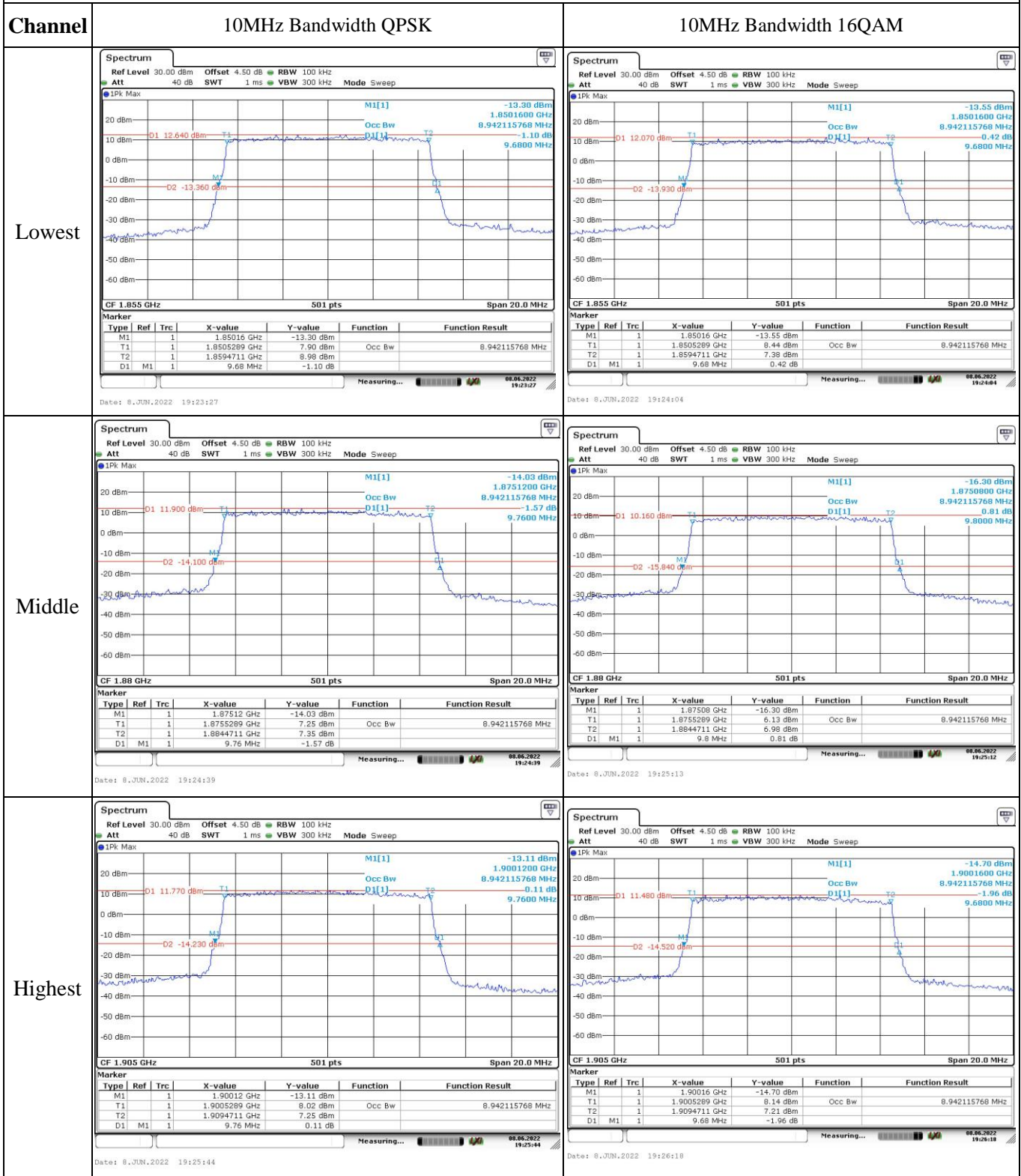
Middle



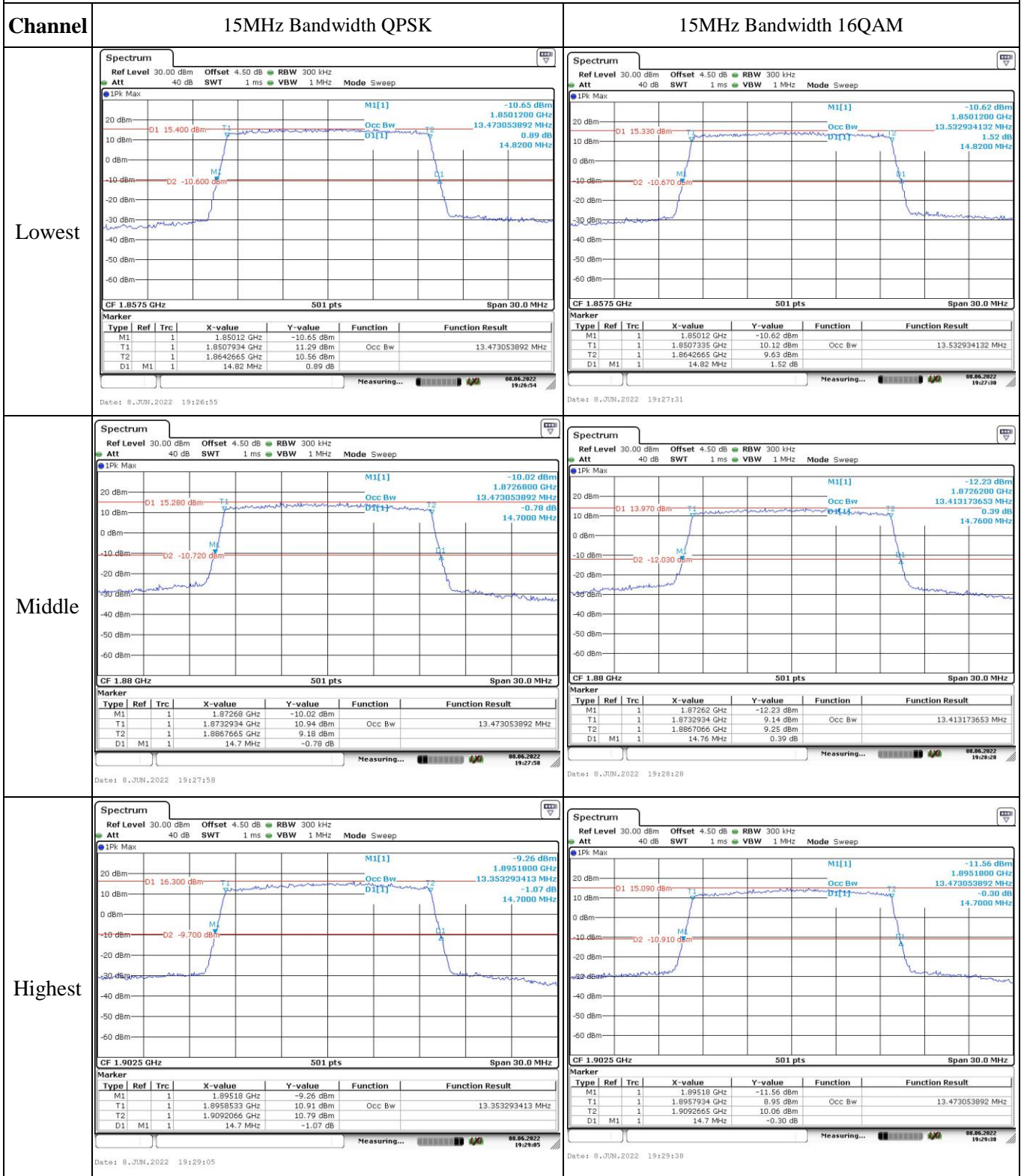
Highest



Occupied Bandwidth



Occupied Bandwidth



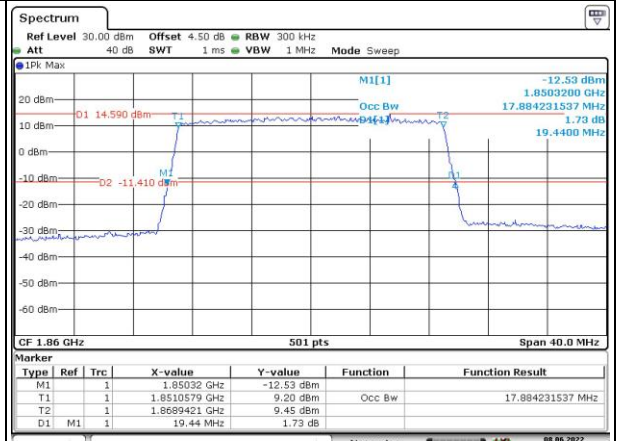
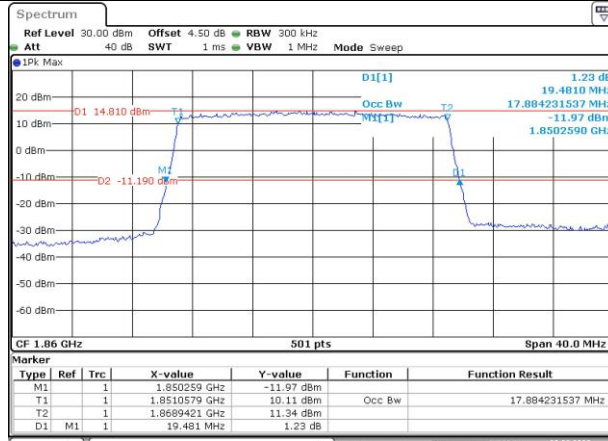
Occupied Bandwidth

Channel

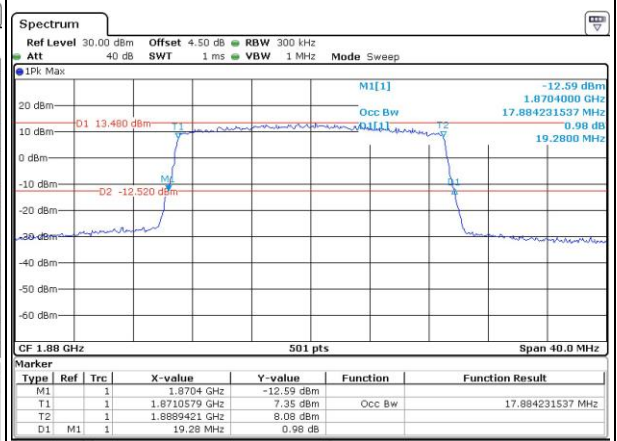
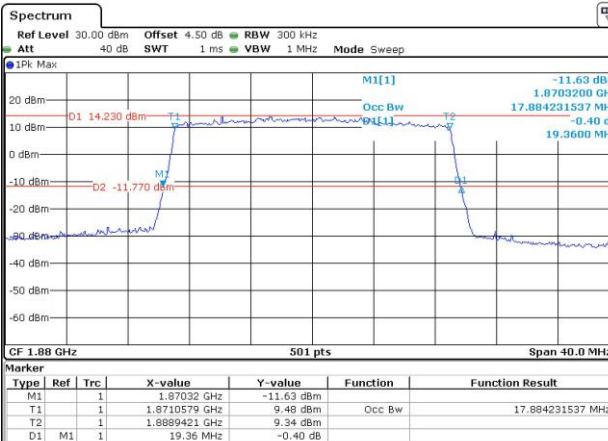
20MHz Bandwidth QPSK

20MHz Bandwidth 16QAM

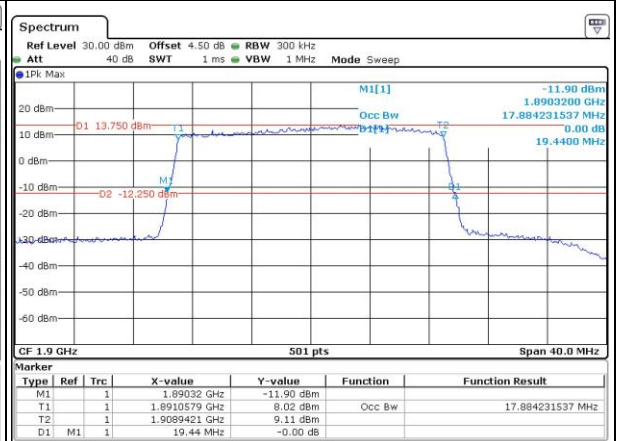
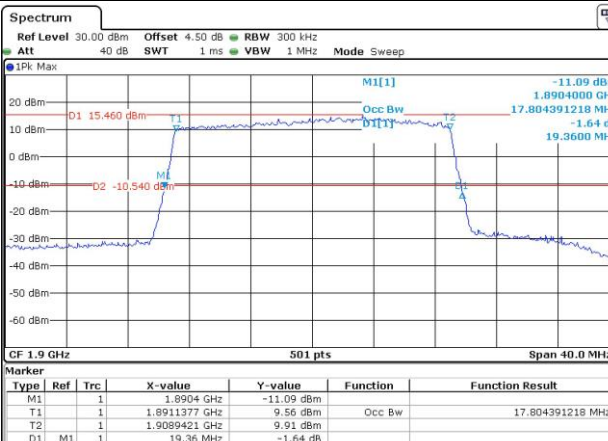
Lowest



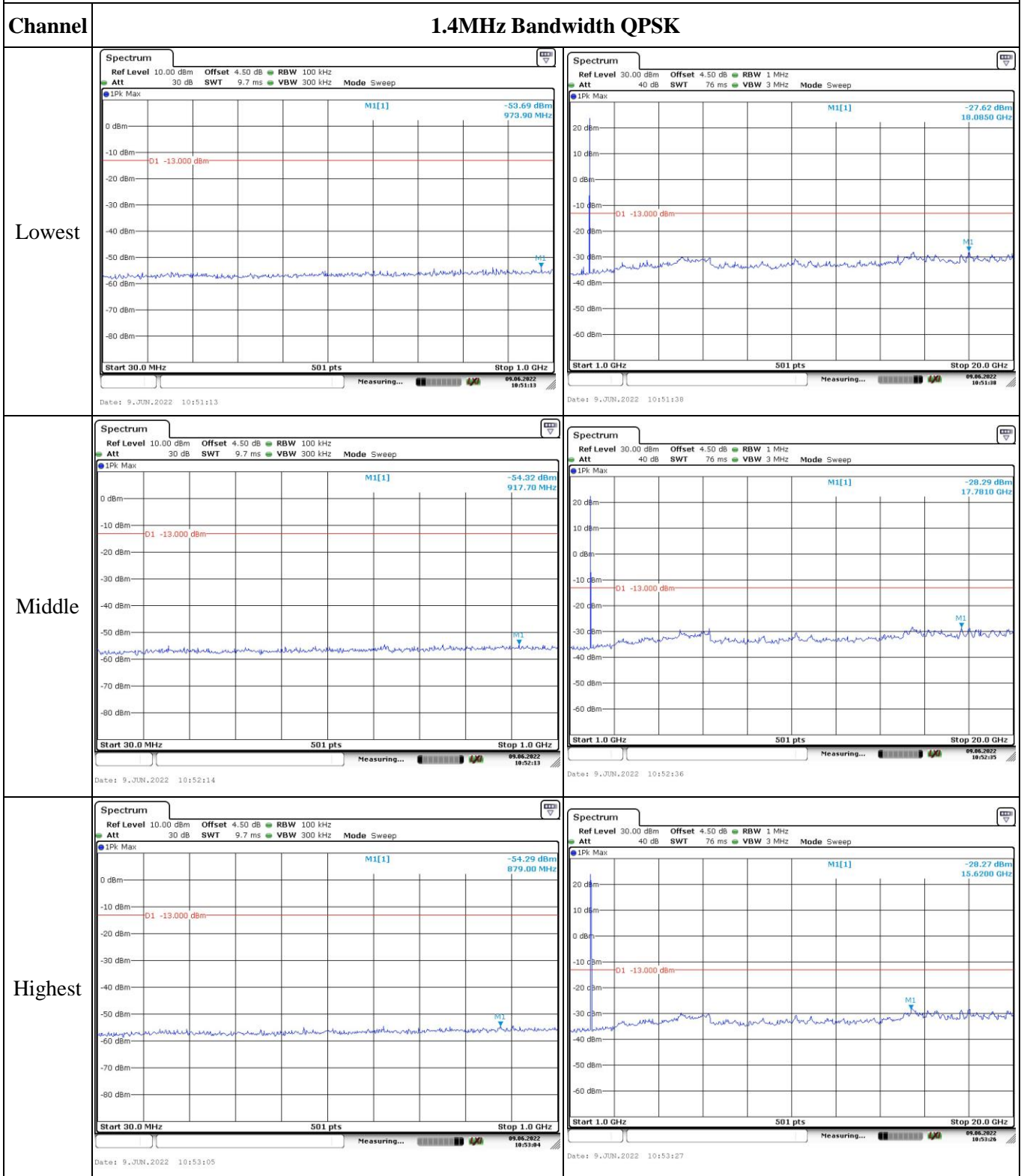
Middle



Highest



Spurious Emissions at Antenna Terminal

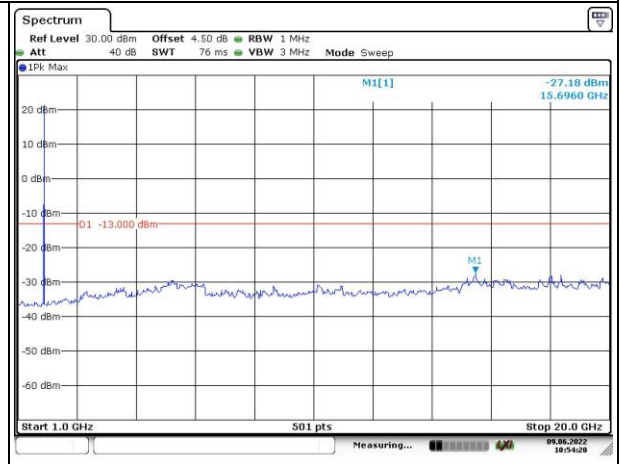
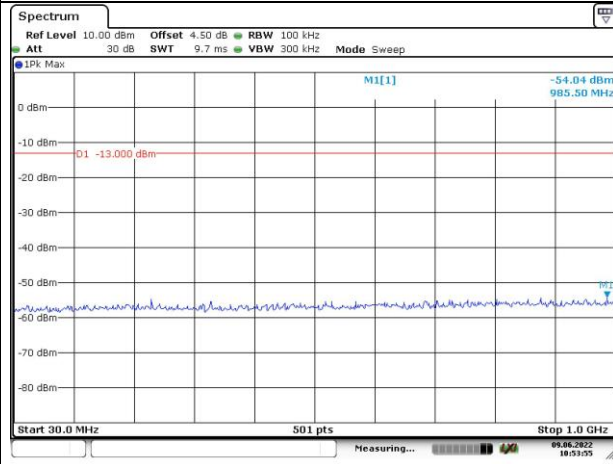


Spurious Emissions at Antenna Terminal

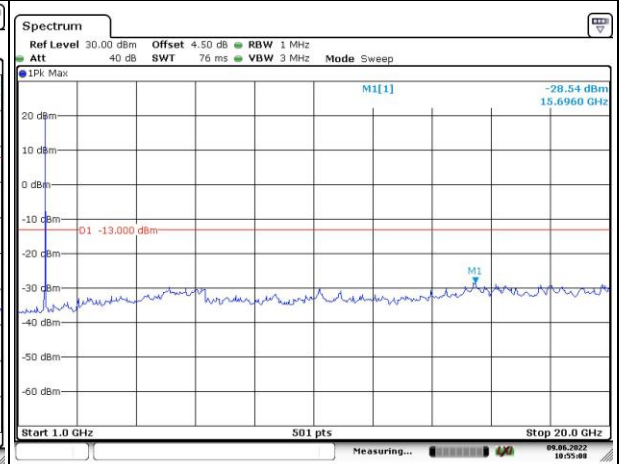
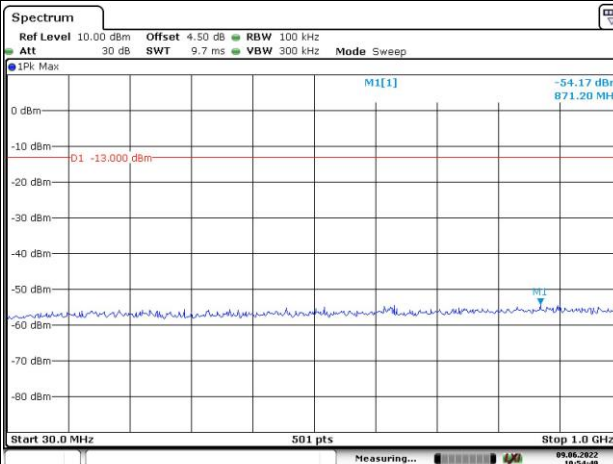
Channel

3MHz Bandwidth QPSK

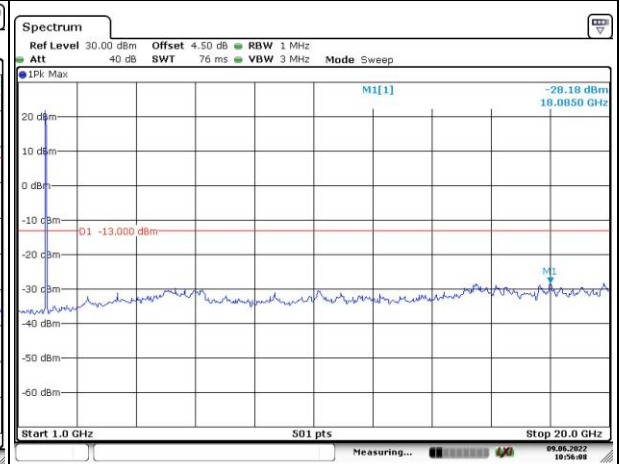
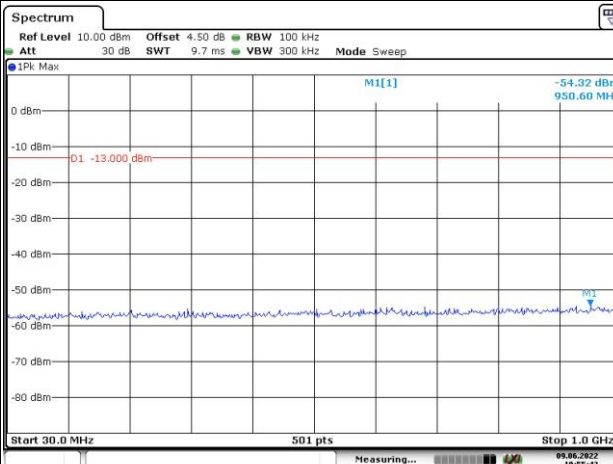
Lowest



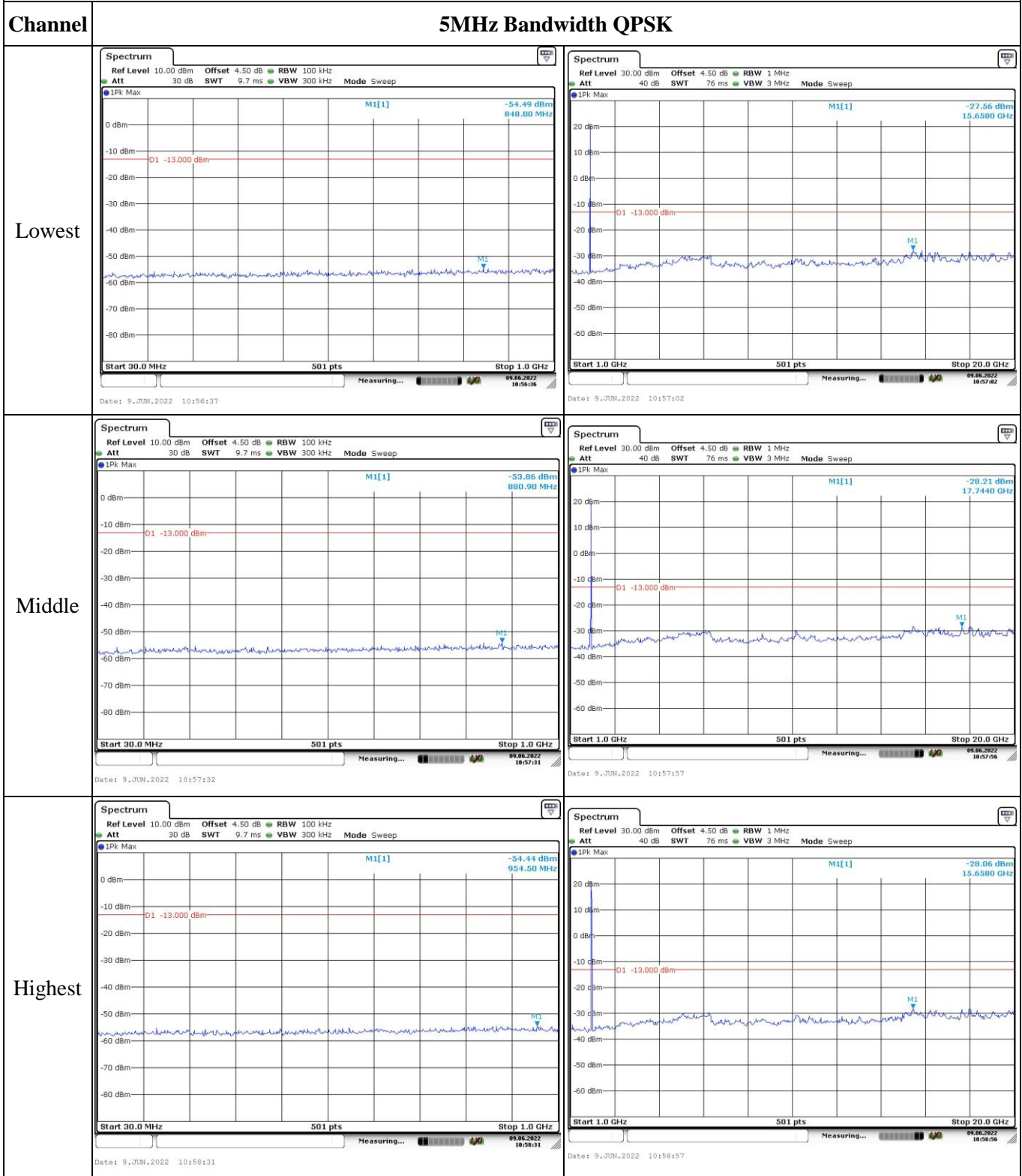
Middle



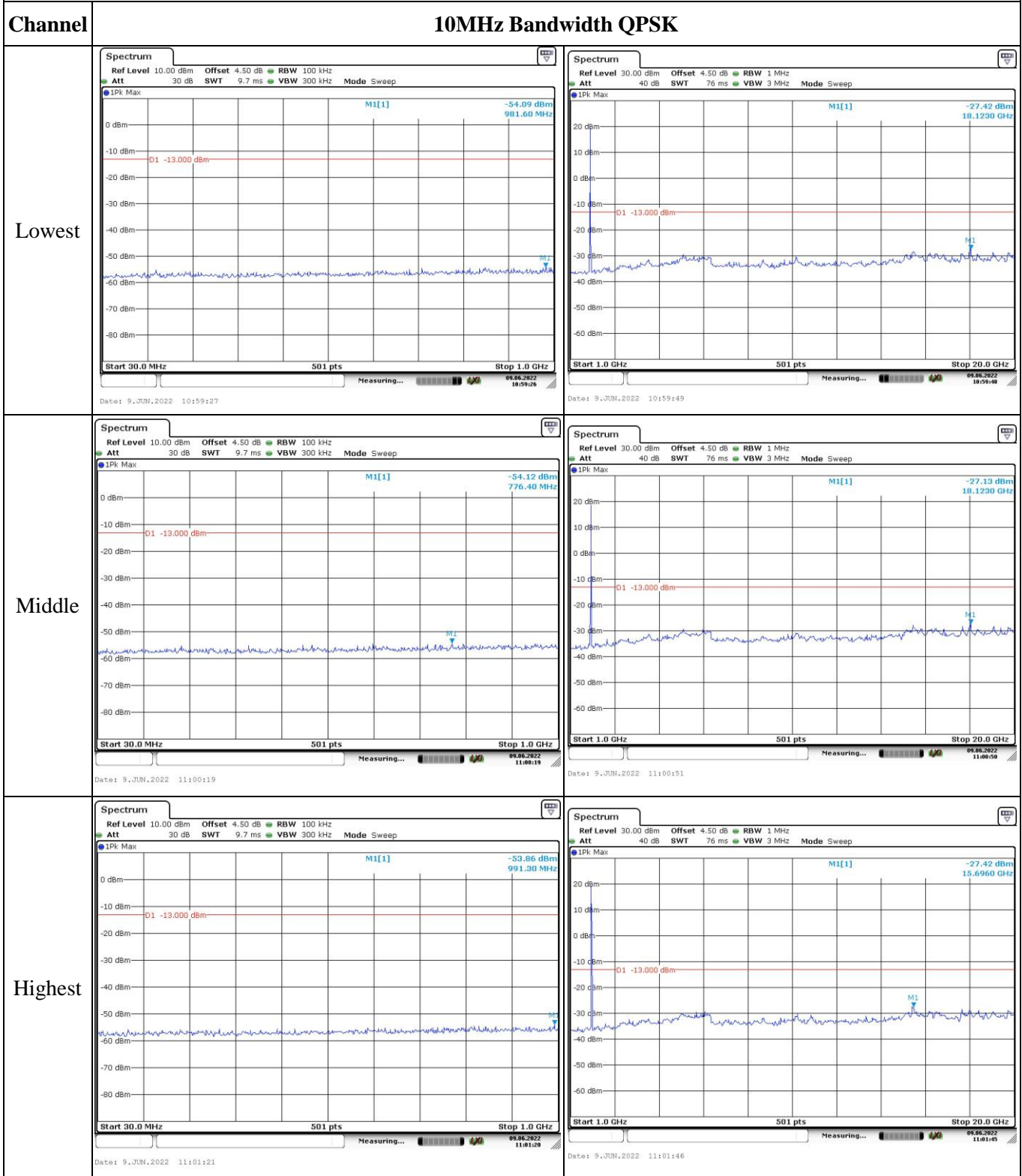
Highest



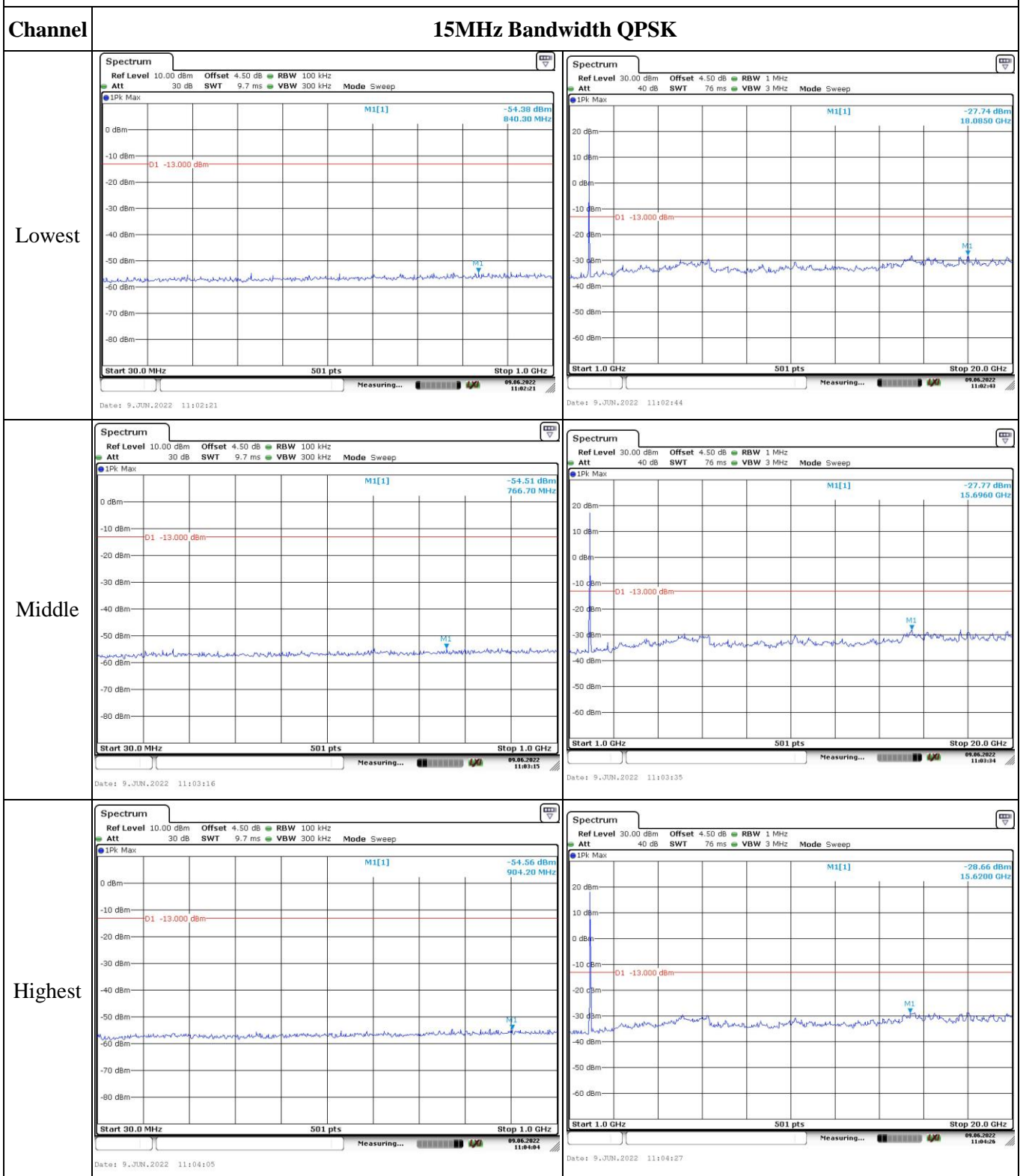
Spurious Emissions at Antenna Terminal



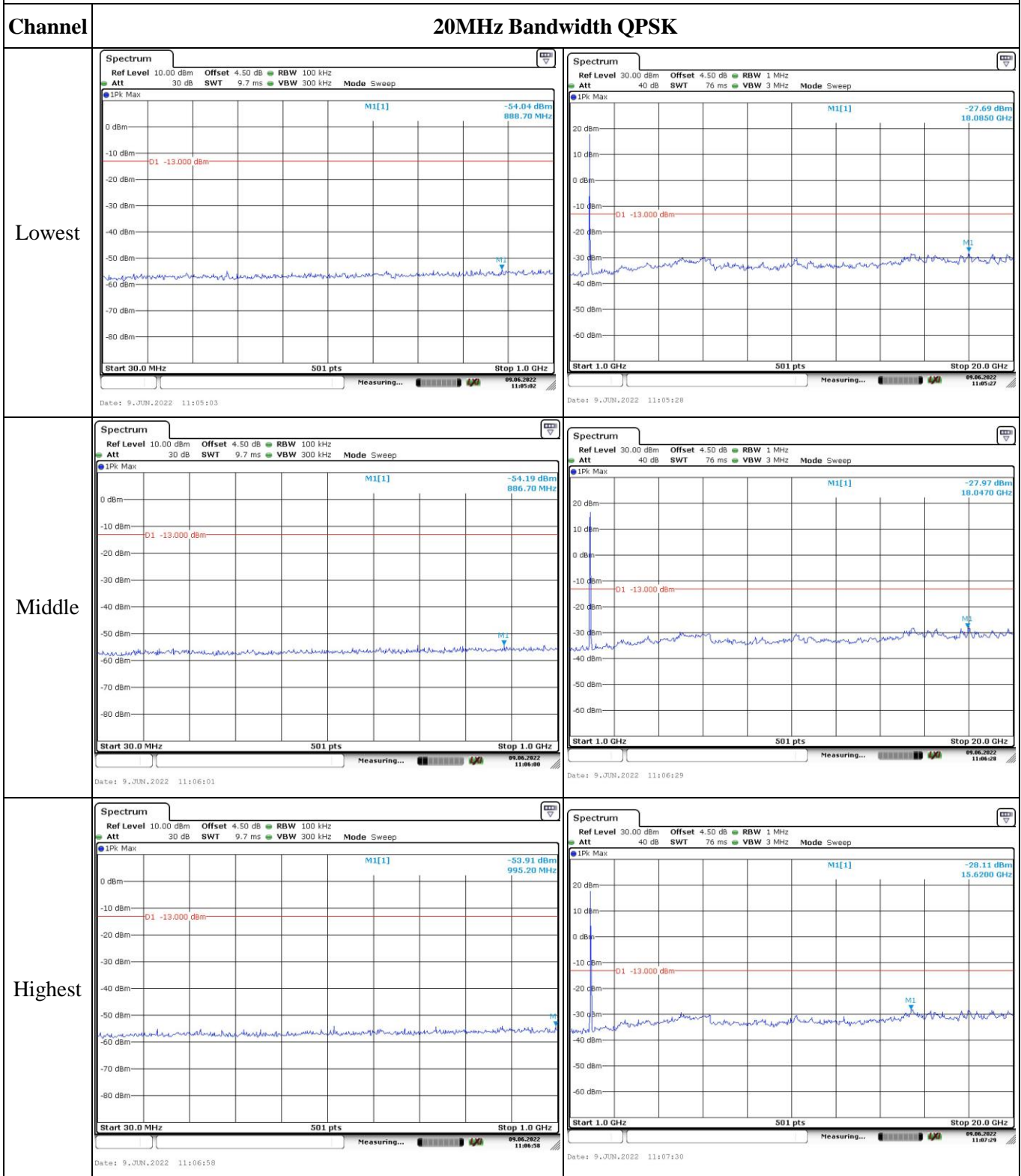
Spurious Emissions at Antenna Terminal



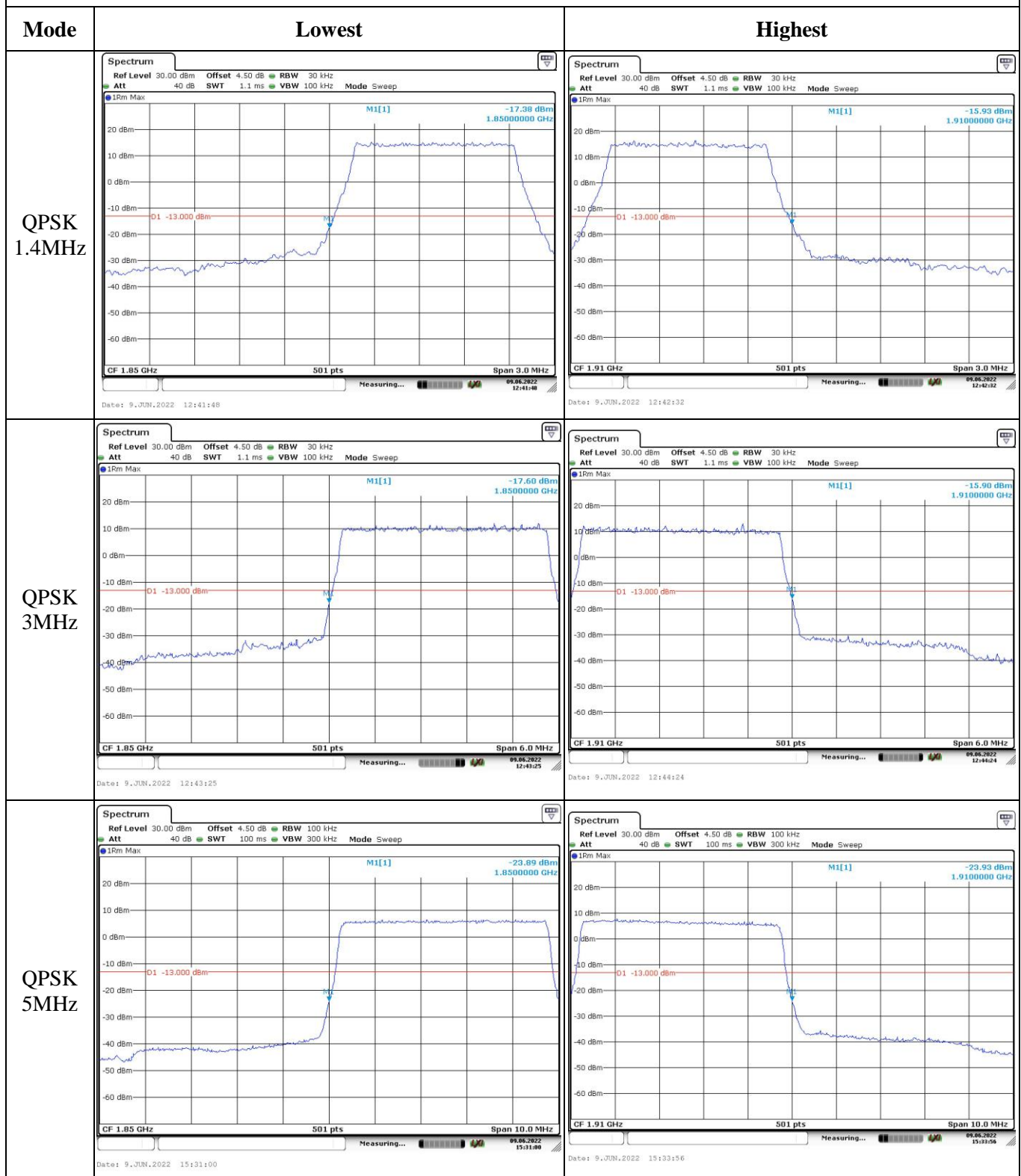
Spurious Emissions at Antenna Terminal



Spurious Emissions at Antenna Terminal



Out of band emission, Band Edge



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>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 IRm Max M1[1] -17.74 dBm 1.8500000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 6.0 MHz Date: 9 JUN 2022 12:42:05</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 IRm Max M1[1] -16.95 dBm 1.9100000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 3.0 MHz Date: 9 JUN 2022 12:42:58</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 IRm Max M1[1] -17.73 dBm 1.8500000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 6.0 MHz Date: 9 JUN 2022 12:43:54</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 IRm Max M1[1] -17.40 dBm 1.9100000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 6.0 MHz Date: 9 JUN 2022 12:44:53</p>
16QAM 5MHz	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 100 ms VBW 300 kHz Mode Sweep IRm Max M1[1] -24.86 dBm 1.8500000 GHz -13.000 dBm CF 1.85 GHz 501 pts Span 10.0 MHz Date: 9 JUN 2022 15:31:37</p>	<p>Spectrum Ref Level 30.00 dBm Offset 4.50 dB RBW 100 kHz Att 40 dB SWT 100 ms VBW 300 kHz Mode Sweep IRm Max M1[1] -25.14 dBm 1.9100000 GHz -13.000 dBm CF 1.91 GHz 501 pts Span 10.0 MHz Date: 9 JUN 2022 15:34:30</p>

Out of band emission, Band Edge

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

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

Serial Number:	CR22050039-RF-S1	Test Date:	2022-06-08~2022-06-09
Test Site:	RF	Test Mode:	Transmitting
Tester:	Ada Yan	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	25.9	Relative Humidity: (%)	60	ATM Pressure: (kPa)	100
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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	2021-07-22	2022-07-21
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Mini-Circuits	DC Block	BLK-18-S+	1554404	Each time	N/A
R&S	Wideband Radio Communication Tester	CMW500	149218	2021-07-22	2022-07-21
UNI-T	Multimeter	UT39A+	C210582554	2021-09-30	2022-09-29
Weinschel	Coaxial Attenuator	53-20-34	LN751	Each time	N/A
BACL	TEMP&HUMI Test Chamber	BTH-150	30026	2021-07-22	2022-07-21
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):	3.12	Cable Loss (dB):	0
Operation Voltage(V _{DC}):			
Lowest:	3.4	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	21.98	21.99	21.94	25.22	30
	RB1#3	22.09	22.10	22.07		
	RB1#5	21.91	21.96	22.10		
	RB3#0	21.89	21.96	21.95		
	RB3#3	21.85	22.03	21.98		
	RB6#0	20.95	21.14	20.93		
1.4MHz 16QAM	RB1#0	20.87	20.94	20.95	24.21	30
	RB1#3	20.92	21.03	21.01		
	RB1#5	20.78	20.97	21.09		
	RB3#0	20.82	20.95	20.93		
	RB3#3	21.00	21.01	20.87		
	RB6#0	19.99	20.00	19.97		
3MHz QPSK	RB1#0	22.05	22.09	21.91	25.27	30
	RB1#8	21.97	22.02	21.90		
	RB1#14	21.98	22.15	22.05		
	RB6#0	20.92	21.06	20.88		
	RB6#9	21.11	21.17	20.89		
	RB15#0	21.15	21.08	20.83		
3MHz 16QAM	RB1#0	21.10	20.99	20.85	24.27	30
	RB1#8	21.05	20.98	20.91		
	RB1#14	21.06	21.15	21.04		
	RB6#0	20.02	19.98	19.96		
	RB6#9	20.06	20.17	19.94		
	RB15#0	20.14	20.12	19.85		
5MHz QPSK	RB1#0	22.09	22.04	22.12	25.26	30
	RB1#13	21.96	22.12	22.03		
	RB1#24	22.03	22.10	22.14		
	RB15#0	21.11	21.01	21.07		
	RB15#10	20.81	21.22	20.85		
	RB25#0	20.99	21.04	21.05		
5MHz 16QAM	RB1#0	20.81	20.99	21.06	24.31	30
	RB1#13	20.85	21.19	21.18		
	RB1#24	20.81	21.00	21.13		
	RB15#0	20.10	20.03	20.09		
	RB15#10	19.87	20.23	19.92		
	RB25#0	19.96	20.10	20.05		

10MHz QPSK	RB1#0	22.08	21.86	22.00	25.2	30
	RB1#25	22.00	21.86	21.81		
	RB1#49	22.03	21.99	21.91		
	RB25#0	20.87	21.02	20.95		
	RB25#25	20.85	21.19	20.89		
	RB50#0	20.91	21.01	20.94		
10MHz 16QAM	RB1#0	20.80	20.83	20.97	24.11	30
	RB1#25	20.87	20.99	20.74		
	RB1#49	20.87	20.97	20.86		
	RB25#0	19.89	19.98	19.97		
	RB25#25	20.01	20.18	19.98		
	RB50#0	19.92	20.00	19.96		
15MHz QPSK	RB1#0	21.83	21.99	21.97	25.31	30
	RB1#38	21.89	22.09	22.02		
	RB1#74	22.02	22.19	21.96		
	RB36#0	20.92	20.97	21.19		
	RB36#39	21.03	21.22	20.89		
	RB75#0	20.97	20.99	21.03		
15MHz 16QAM	RB1#0	20.85	20.76	21.19	24.31	30
	RB1#38	21.09	20.94	21.15		
	RB1#74	21.17	20.88	21.03		
	RB36#0	19.90	20.00	20.15		
	RB36#39	20.07	20.18	19.98		
	RB75#0	19.96	20.07	20.08		
20MHz QPSK	RB1#0	22.55	22.27	22.53	25.72	30
	RB1#50	22.56	22.41	22.60		
	RB1#99	22.47	22.35	22.56		
	RB50#0	22.40	22.36	22.36		
	RB50#50	22.31	22.33	22.43		
	RB100#0	21.38	21.40	21.42		
20MHz 16QAM	RB1#0	21.47	21.29	21.47	24.73	30
	RB1#50	21.61	21.51	21.46		
	RB1#99	21.35	21.33	21.52		
	RB50#0	21.41	21.31	21.37		
	RB50#50	21.38	21.40	21.47		
	RB100#0	20.39	20.40	20.37		
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	3.07	4.61	4.41	13
	RB100#0	4.49	4.81	4.67	13
20MHz 16QAM	RB1#0	4.14	5.68	5.54	13
	RB100#0	5.51	5.86	5.71	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	1.108	1.102	1.102	1.362	1.308	1.326
1.4MHz 16QAM	1.102	1.102	1.102	1.320	1.320	1.326
3MHz QPSK	2.695	2.683	2.683	2.964	2.952	2.976
3MHz 16QAM	2.707	2.683	2.683	2.988	2.964	2.964
5MHz QPSK	4.511	4.511	4.511	5.060	5.020	5.020
5MHz 16QAM	4.531	4.511	4.511	5.060	5.020	5.040
10MHz QPSK	8.942	8.902	8.942	9.880	9.720	9.680
10MHz 16QAM	8.942	8.942	8.942	9.760	9.760	9.760
15MHz QPSK	13.533	13.473	13.473	14.880	14.820	14.820
15MHz 16QAM	13.533	13.473	13.473	14.880	14.760	14.820
20MHz QPSK	17.964	17.884	17.884	19.600	19.360	19.360
20MHz 16QAM	17.964	17.884	17.884	19.600	19.360	19.360

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	1710.059	1710.00	1754.945	1755
	-20	3.7	1710.062	1710.00	1754.944	1755
	-10	3.7	1710.060	1710.00	1754.945	1755
	0	3.7	1710.061	1710.00	1754.946	1755
	10	3.7	1710.059	1710.00	1754.945	1755
	20	3.7	1710.058	1710.00	1754.942	1755
	30	3.7	1710.055	1710.00	1754.941	1755
	40	3.7	1710.053	1710.00	1754.942	1755
Frequency Stability vs. Voltage	50	3.7	1710.054	1710.00	1754.938	1755
	20	3.4	1710.055	1710.00	1754.936	1755
	20	4.2	1710.053	1710.00	1754.938	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	1710.062	1710.00	1754.945	1755
	-20	3.7	1710.059	1710.00	1754.948	1755
	-10	3.7	1710.061	1710.00	1754.945	1755
	0	3.7	1710.063	1710.00	1754.943	1755
	10	3.7	1710.059	1710.00	1754.944	1755
	20	3.7	1710.058	1710.00	1754.942	1755
	30	3.7	1710.056	1710.00	1754.940	1755
	40	3.7	1710.052	1710.00	1754.941	1755
Frequency Stability vs. Voltage	50	3.7	1710.054	1710.00	1754.937	1755
	20	3.4	1710.055	1710.00	1754.936	1755
	20	4.2	1710.057	1710.00	1754.937	1755
					Result:	Pass

Test Plots:

Occupied Bandwidth

