

Out of band emission, Band Edge-Minimum RB

Mode	Lowest-RB 1#0	Highest RB 1#Max
16QAM 1.4MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 10:51:12</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:27:43</p>
16QAM 3MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 10:53:09</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:29:09</p>
16QAM 5MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 10:54:32</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:30:23</p>

Out of band emission, Band Edge-Minimum RB

Mode	Lowest-RB 1#0	Highest RB 1#Max
16QAM 10MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 10:56:20</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:31:43</p>
16QAM 15MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 10:57:49</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:33:11</p>
16QAM 20MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 10:59:35</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:34:26</p>

4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	2BD2-1	Test Date:	2023/12/13~2024/1/8
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5~25.6	Relative Humidity: (%)	45~49	ATM Pressure: (kPa)	101.2~101.4
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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	2023/3/31	2024/3/30
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	143458	2023/3/31	2024/3/30
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2023/9/29	2024/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	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).

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:

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	23.22	23.73	23.65	13.08	38.45
	RB1#3	23.14	23.43	23.19		
	RB1#5	22.98	23.03	23.18		
	RB3#0	22.88	23.15	23.07		
	RB3#3	22.72	23.02	23.2		
	RB6#0	22.65	22.8	22.69		
1.4MHz 16QAM	RB1#0	22.5	22.81	22.95	12.3	38.45
	RB1#3	22.41	22.42	22.63		
	RB1#5	22.32	22.42	22.5		
	RB3#0	22.23	22.52	22.3		
	RB3#3	22.07	22.29	22.42		
	RB6#0	22.05	22.09	22.38		
1.4MHz 64QAM	RB1#0	21.88	22.18	22.02	11.53	38.45
	RB1#3	21.74	21.71	22.07		
	RB1#5	21.65	22.15	22.09		
	RB3#0	21.52	22.06	21.7		
	RB3#3	21.35	21.78	21.47		
	RB6#0	21.34	21.72	21.84		
3MHz QPSK	RB1#0	21.87	22.01	21.87	13.05	38.45
	RB1#8	21.79	21.92	22.31		
	RB1#14	21.65	21.66	21.69		
	RB6#0	23.22	23.58	23.7		
	RB6#9	23.07	23.39	23.27		
	RB15#0	22.94	23.16	23.41		
3MHz 16QAM	RB1#0	22.8	23.2	23.15	12.65	38.45
	RB1#8	22.78	23.07	23.3		
	RB1#14	22.72	22.7	23.23		
	RB6#0	22.68	22.92	22.97		
	RB6#9	22.49	22.74	23.02		
	RB15#0	22.43	22.41	22.63		
3MHz 64QAM	RB1#0	21.73	21.83	22.26	11.61	38.45
	RB1#8	21.63	21.85	21.72		
	RB1#14	21.45	21.82	21.86		
	RB6#0	21.33	21.68	21.85		
	RB6#9	21.31	21.81	21.75		
	RB15#0	21.3	21.55	21.36		

5MHz QPSK	RB1#0	22.23	22.4	22.74	12.09	38.45
	RB1#13	22.06	22.55	22.32		
	RB1#24	21.95	21.94	22.2		
	RB15#0	21.81	21.8	22.07		
	RB15#10	21.7	22.13	21.97		
	RB25#0	21.68	22.03	22.23		
5MHz 16QAM	RB1#0	23.22	23.27	23.58	12.97	38.45
	RB1#13	23.06	23.07	23.43		
	RB1#24	23.22	23.28	23.62		
	RB15#0	23.22	23.53	23.42		
	RB15#10	23.2	23.38	23.22		
	RB25#0	23.1	23.37	23.24		
5MHz 64QAM	RB1#0	22.83	23.04	23.42	12.77	38.45
	RB1#13	22.66	23.12	22.67		
	RB1#24	22.5	22.77	23.07		
	RB15#0	22.49	22.75	23.01		
	RB15#10	22.3	22.56	22.62		
	RB25#0	22.17	22.42	22.17		
10MHz QPSK	RB1#0	22.95	23.34	22.96	12.69	38.45
	RB1#25	22.8	23.1	23.16		
	RB1#49	22.74	22.79	23.21		
	RB25#0	22.61	23.06	22.76		
	RB25#25	22.6	22.83	22.8		
	RB50#0	22.55	22.65	22.91		
10MHz 16QAM	RB1#0	22.54	22.7	22.98	12.33	38.45
	RB1#25	22.48	22.52	22.5		
	RB1#49	22.39	22.65	22.45		
	RB25#0	22.36	22.87	22.49		
	RB25#25	22.18	22.52	22.38		
	RB50#0	22.06	22.23	22.06		
10MHz 64QAM	RB1#0	21.72	21.89	21.76	11.24	38.45
	RB1#25	21.57	21.64	21.77		
	RB1#49	21.4	21.54	21.85		
	RB25#0	21.28	21.24	21.72		
	RB25#25	21.28	21.67	21.37		
	RB50#0	21.23	21.42	21.58		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

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	4.64	5.04	4.35	13
	RB50#0	4.99	4.9	4.81	13
10MHz 16QAM	RB1#0	5.16	5.83	4.87	13
	RB50#0	5.91	5.86	5.8	13
Result:					Pass

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	1.308	1.326	1.296
1.4MHz 16QAM	1.102	1.096	1.096	1.326	1.284	1.302
1.4MHz 64QAM	/	1.098	/	/	1.329	/
3MHz QPSK	2.695	2.695	2.683	2.904	2.88	2.916
3MHz 16QAM	2.683	2.683	2.683	2.928	2.916	2.916
3MHz 64QAM	/	2.683	/	/	2.944	/
5MHz QPSK	4.511	4.511	4.491	5	5	4.96
5MHz 16QAM	4.471	4.511	4.511	4.96	5	5
5MHz 64QAM	/	4.486	/	/	4.978	/
10MHz QPSK	8.942	8.942	8.942	9.72	9.6	9.6
10MHz 16QAM	8.942	8.942	8.942	9.6	9.64	9.68
10MHz 64QAM	/	8.973	/	/	9.638	/
Note: The test plots please refer to the Plots of Occupied Bandwidth 64QAM only test with middle channel.						

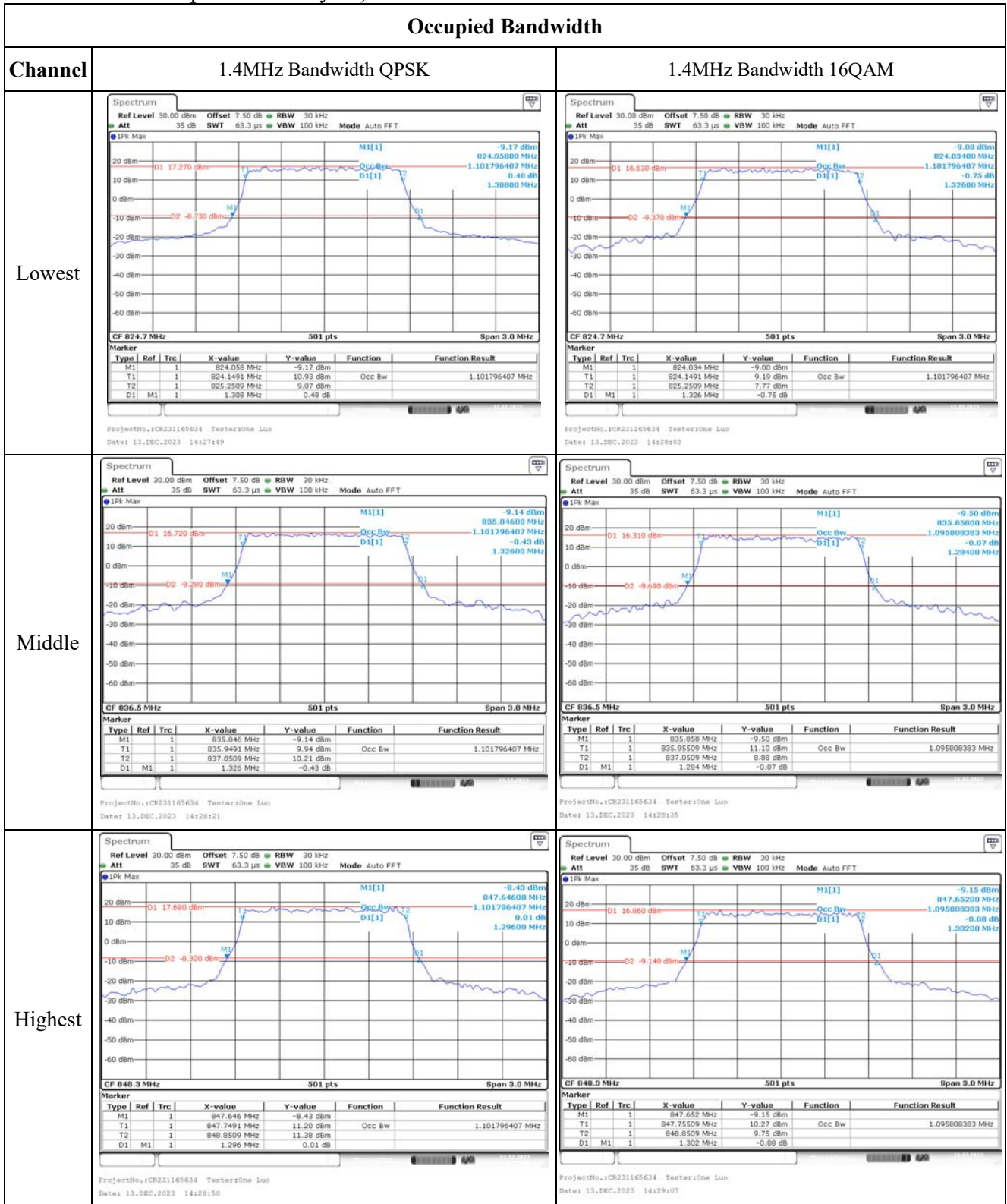
Spurious Emissions at Antenna Terminal	
Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.

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

Frequency Stability					
Test Modulation:	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	3.91	-1.36	-0.002	2.5
	-20	3.91	-9.97	-0.012	2.5
	-10	3.91	-6.13	-0.007	2.5
	0	3.91	6.17	0.007	2.5
	10	3.91	7.92	0.009	2.5
	20	3.91	6.46	0.008	2.5
	30	3.91	-6.52	-0.008	2.5
	40	3.91	7.18	0.009	2.5
	50	3.91	-9.7	-0.012	2.5
Frequency Stability vs. Voltage	20	3.45	-8.17	-0.010	2.5
	20	4.5	-7.05	-0.008	2.5
				Result:	Pass

Test Modulation:	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	3.91	-2.92	-0.003	2.5
	-20	3.91	-6.68	-0.008	2.5
	-10	3.91	9.77	0.012	2.5
	0	3.91	-7.62	-0.009	2.5
	10	3.91	-9.91	-0.012	2.5
	20	3.91	-9.82	-0.012	2.5
	30	3.91	-6.68	-0.008	2.5
	40	3.91	-8.86	-0.011	2.5
	50	3.91	5.67	0.007	2.5
Frequency Stability vs. Voltage	20	3.45	6.05	0.007	2.5
	20	4.5	7.52	0.009	2.5
				Result:	Pass

Test Plots(Note: The 7.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):



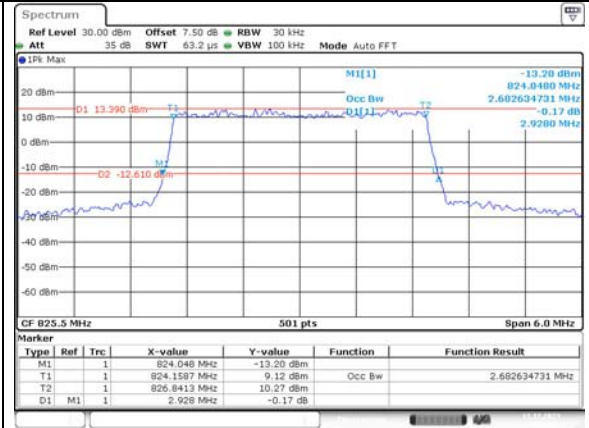
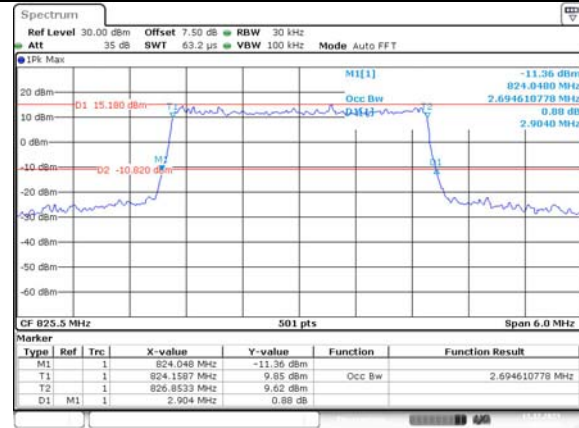
Occupied Bandwidth

Channel

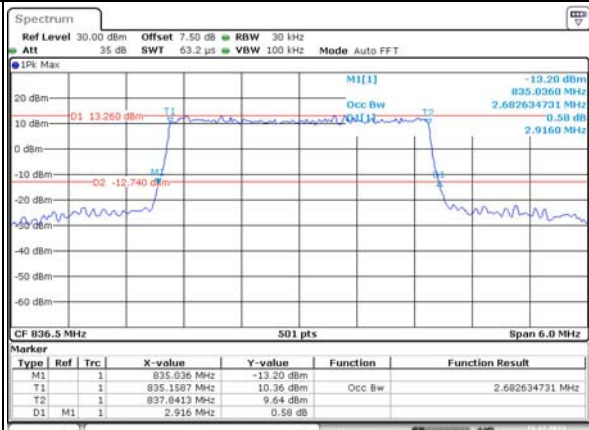
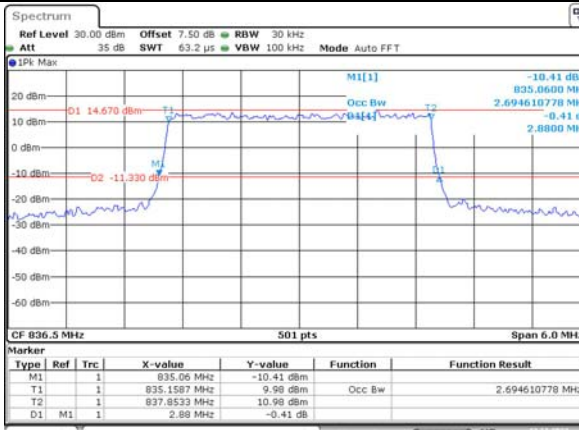
3MHz Bandwidth QPSK

3MHz Bandwidth 16QAM

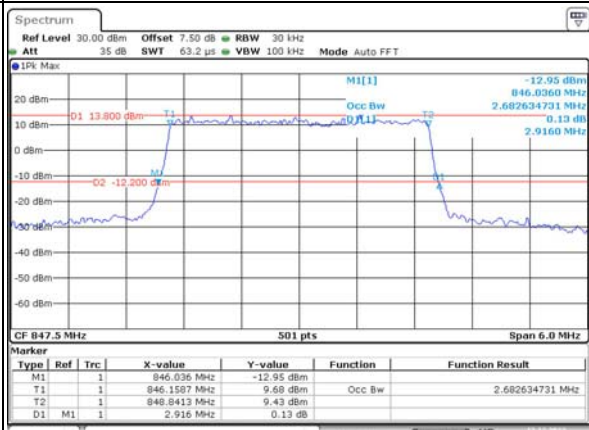
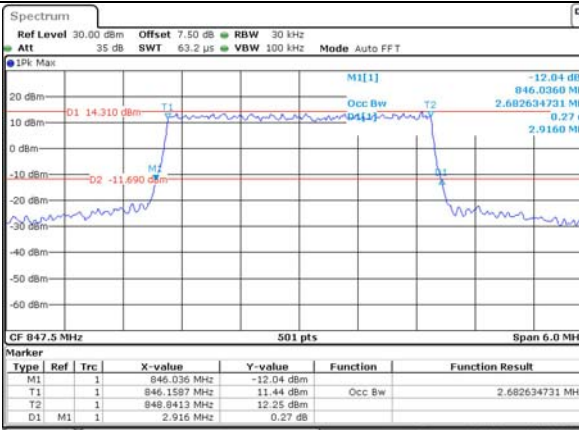
Lowest



Middle



Highest



Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM																																																																						
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Type	Ref	Trc	X-value	Y-value	Function	Function Result																																																																		
M1	1		844.02 MHz	-8.18 dBm																																																																				
T1	1		844.2445 MHz	11.60 dBm	Occ Bw	4.491017964 MHz																																																																		
T2	1		848.7355 MHz	12.96 dBm																																																																				
D1	M1	1	4.96 MHz	0.24 dB																																																																				
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																																																		
M1	1		844.0 MHz	-9.67 dBm																																																																				
T1	1		844.2445 MHz	10.55 dBm	Occ Bw	4.510978044 MHz																																																																		
T2	1		848.7555 MHz	10.41 dBm																																																																				
D1	M1	1	5.0 MHz	-0.73 dB																																																																				

Occupied Bandwidth

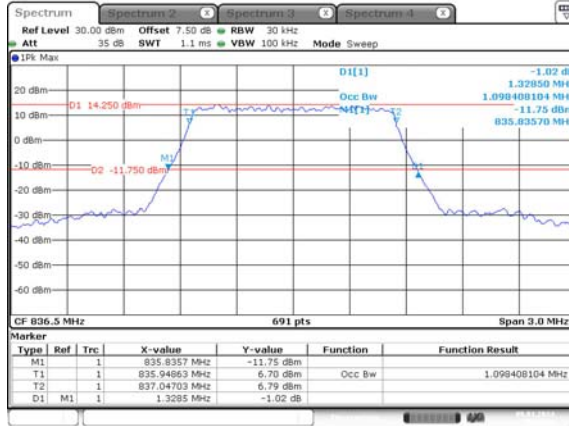
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM																																																																						
Lowest	<table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td>1</td> <td>824.12 MHz</td> <td>-11.62 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td>1</td> <td>824.5289 MHz</td> <td>10.63 dBm</td> <td>Occ Bw</td> <td>8.942115768 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td>1</td> <td>833.4711 MHz</td> <td>11.85 dBm</td> <td></td> <td></td> </tr> <tr> <td>D1</td> <td>M1</td> <td>1</td> <td>9.72 MHz</td> <td>-0.93 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 14:35:49</p>	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1	1	824.12 MHz	-11.62 dBm			T1	1	1	824.5289 MHz	10.63 dBm	Occ Bw	8.942115768 MHz	T2	1	1	833.4711 MHz	11.85 dBm			D1	M1	1	9.72 MHz	-0.93 dB			<table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td>1</td> <td>824.2 MHz</td> <td>-12.42 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td>1</td> <td>824.5289 MHz</td> <td>10.33 dBm</td> <td>Occ Bw</td> <td>8.942115768 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td>1</td> <td>833.4711 MHz</td> <td>11.56 dBm</td> <td></td> <td></td> </tr> <tr> <td>D1</td> <td>M1</td> <td>1</td> <td>9.6 MHz</td> <td>0.35 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 14:36:10</p>	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1	1	824.2 MHz	-12.42 dBm			T1	1	1	824.5289 MHz	10.33 dBm	Occ Bw	8.942115768 MHz	T2	1	1	833.4711 MHz	11.56 dBm			D1	M1	1	9.6 MHz	0.35 dB		
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Type	Ref	Trc	X-value	Y-value	Function	Function Result																																																																		
M1	1	1	839.2 MHz	-11.34 dBm																																																																				
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Occupied Bandwidth

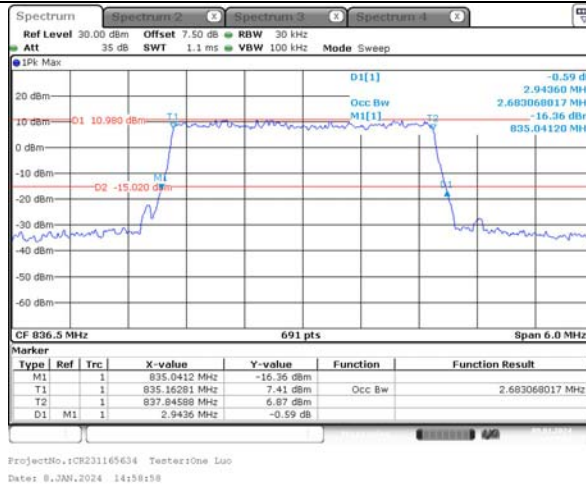
Channel

Middle

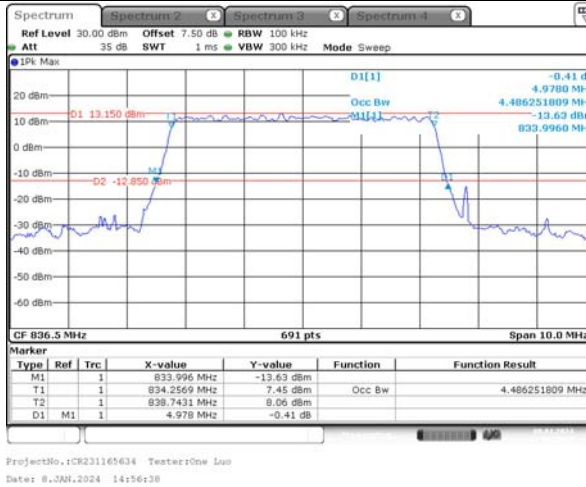
1.4MHz
Bandwidth
64QAM



3MHz
Bandwidth
64QAM



5MHz
Bandwidth
64QAM

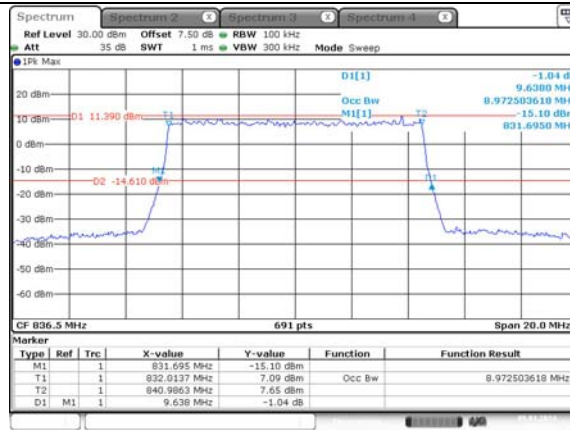


Occupied Bandwidth

Channel

Middle

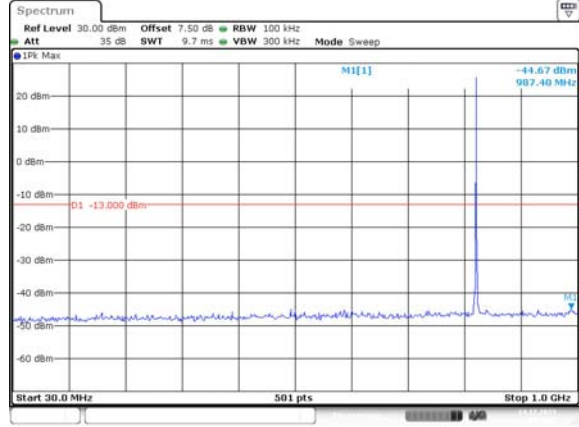
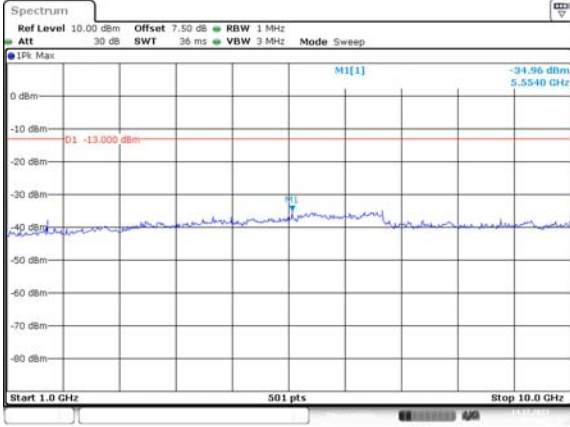
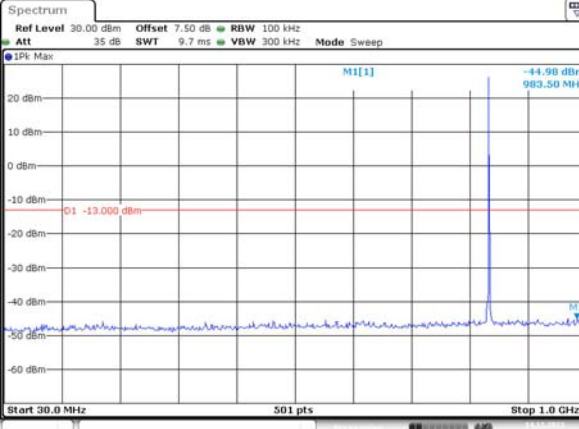
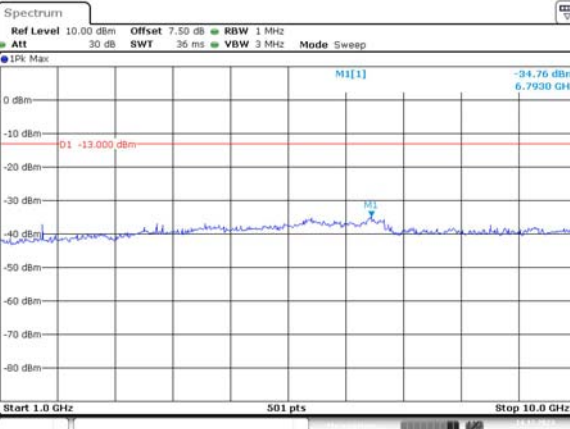
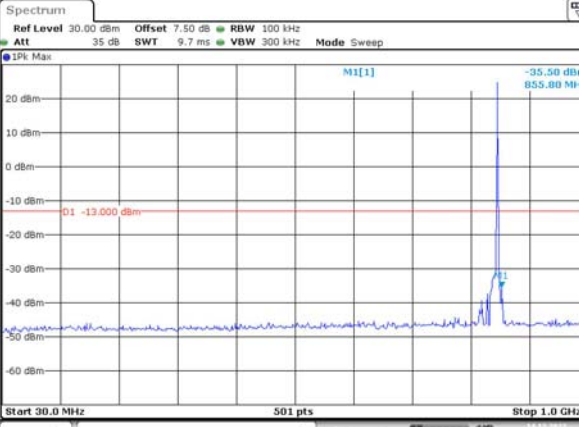
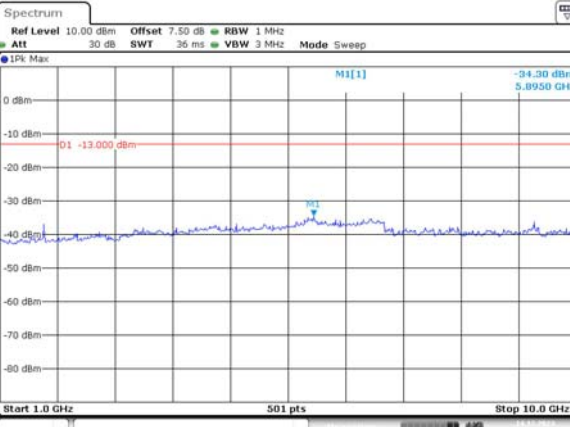
10MHz
Bandwidth
64QAM



ProjectNo.: CR231165634 TestersOne Luo
Date: 8 JAN 2024 14:53:12

Note: The test is performed in RB 1#0

Spurious Emissions at Antenna Terminal

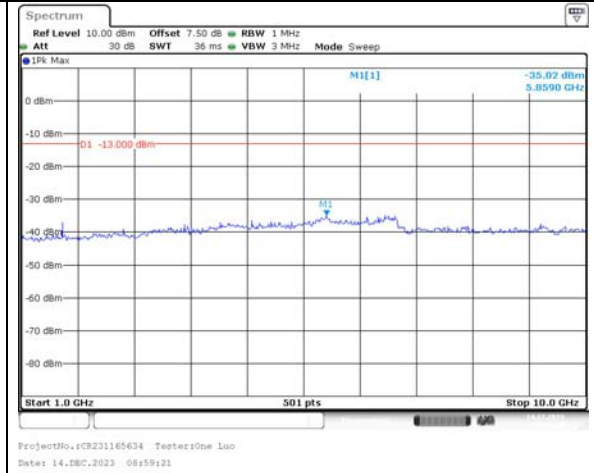
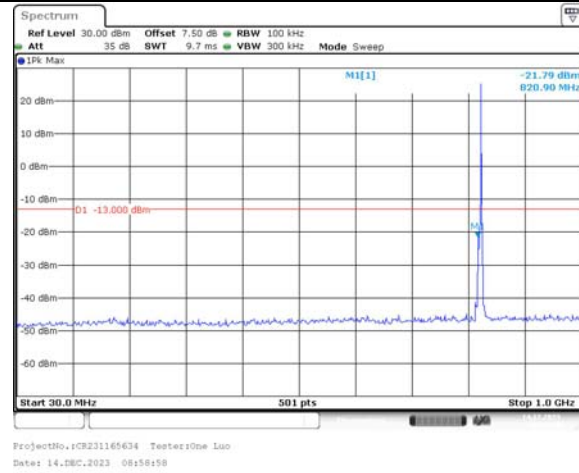
Channel	1.4MHz Bandwidth QPSK	
Lowest	 <p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 08:55:27</p>	 <p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 08:55:55</p>
Middle	 <p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 08:56:28</p>	 <p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 08:56:53</p>
Highest	 <p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 08:57:32</p>	 <p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 08:58:00</p>

Spurious Emissions at Antenna Terminal

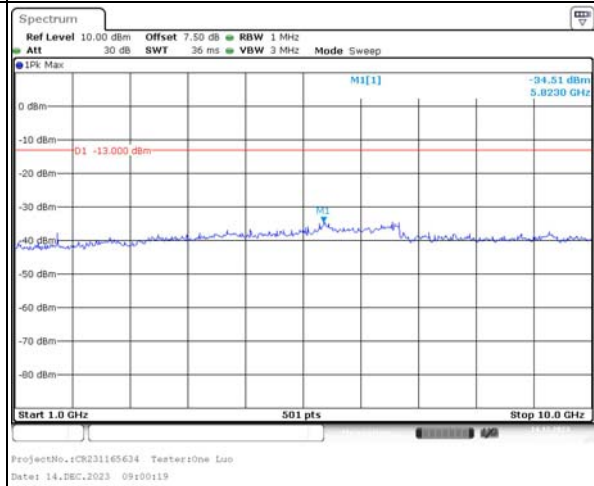
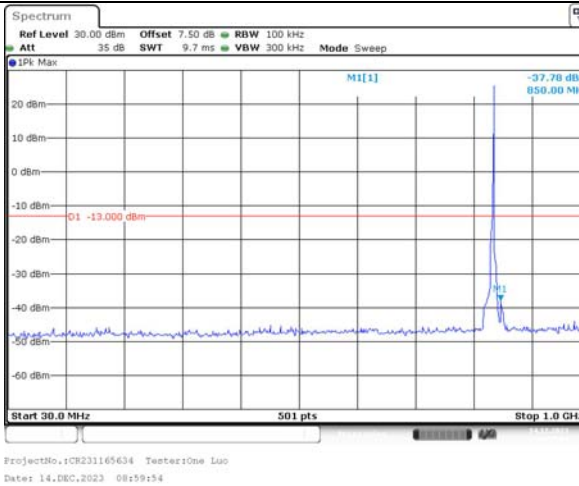
Channel

3MHz Bandwidth QPSK

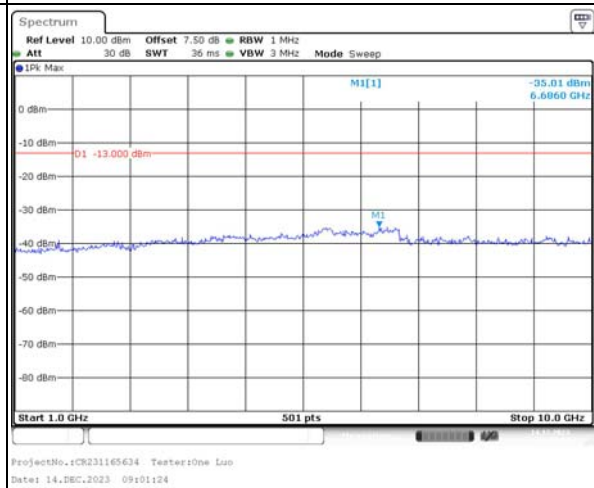
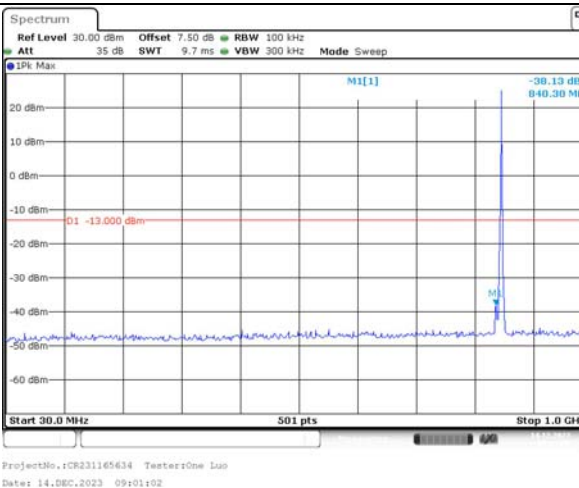
Lowest



Middle



Highest

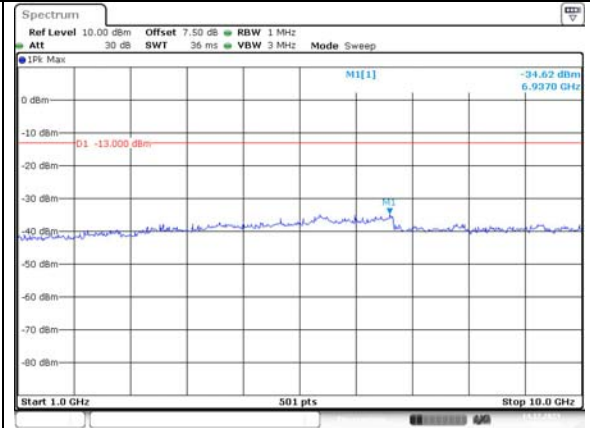
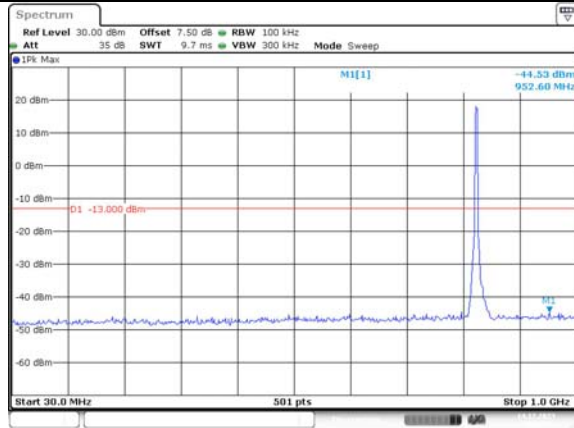


Spurious Emissions at Antenna Terminal

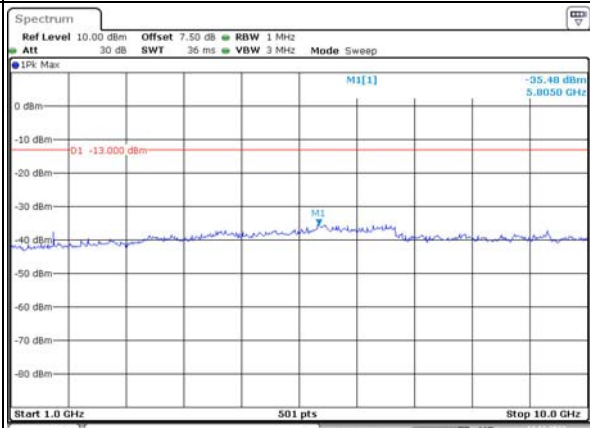
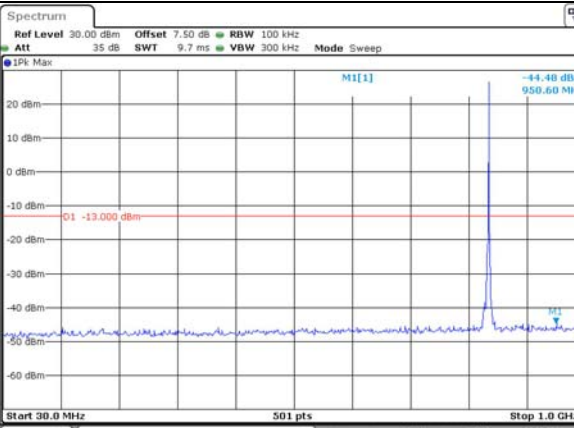
Channel

5MHz Bandwidth QPSK

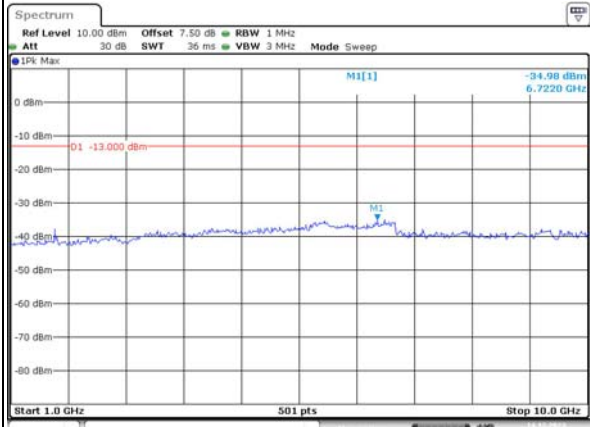
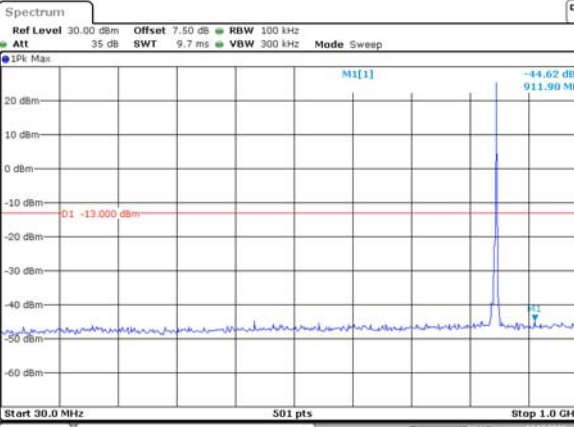
Lowest



Middle



Highest



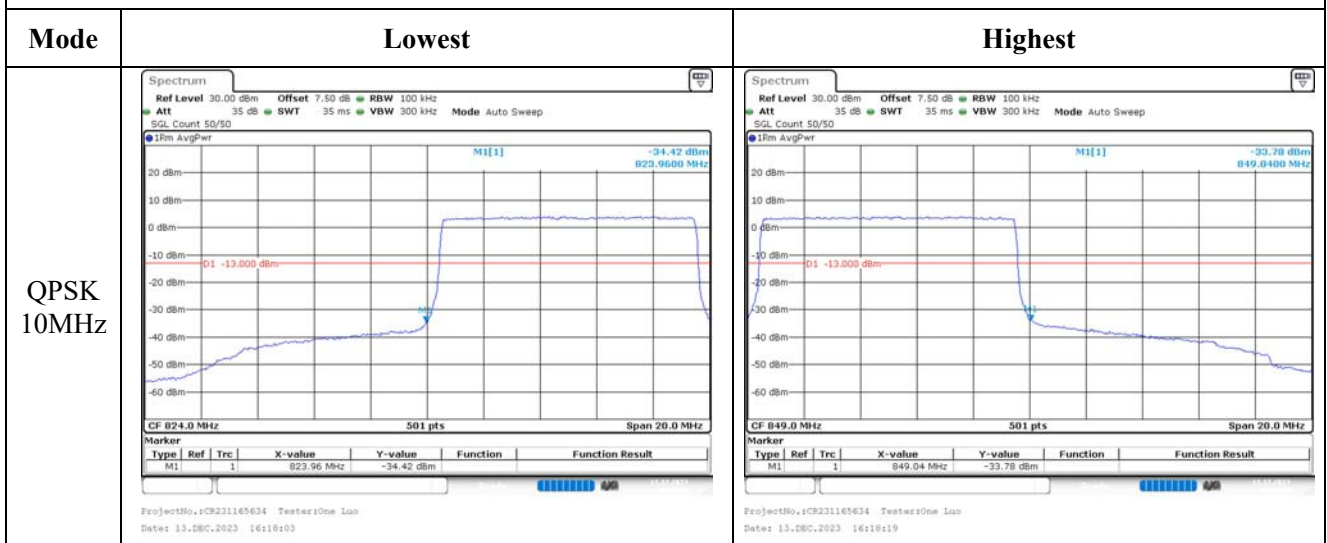
Spurious Emissions at Antenna Terminal

Channel	10MHz Bandwidth QPSK	
Lowest	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 09:06:36</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 09:07:05</p>
Middle	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 09:07:43</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 09:08:08</p>
Highest	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 09:08:37</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14.DEC.2023 09:09:03</p>

Out of band emission, Band Edge-Full RB

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

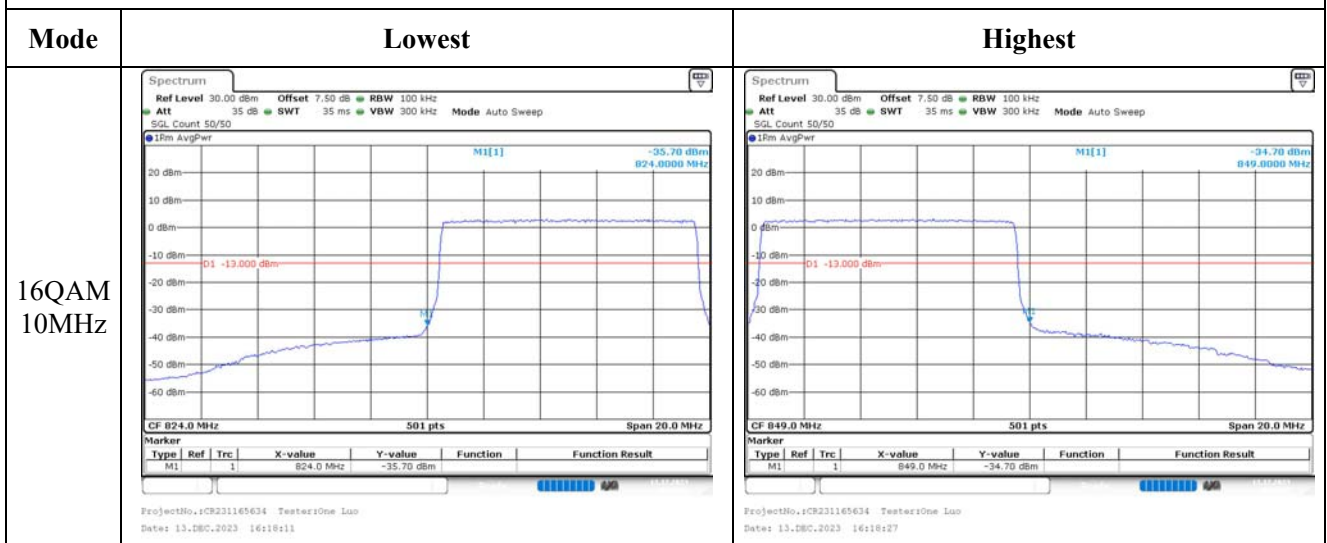
Out of band emission, Band Edge-Full RB



Out of band emission, Band Edge-Full RB

Mode	Lowest	Highest
16QAM 1.4MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 16:14:23</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 16:14:36</p>
16QAM 3MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 16:16:01</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 16:16:15</p>
16QAM 5MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 16:17:02</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 13.DEC.2023 16:17:16</p>

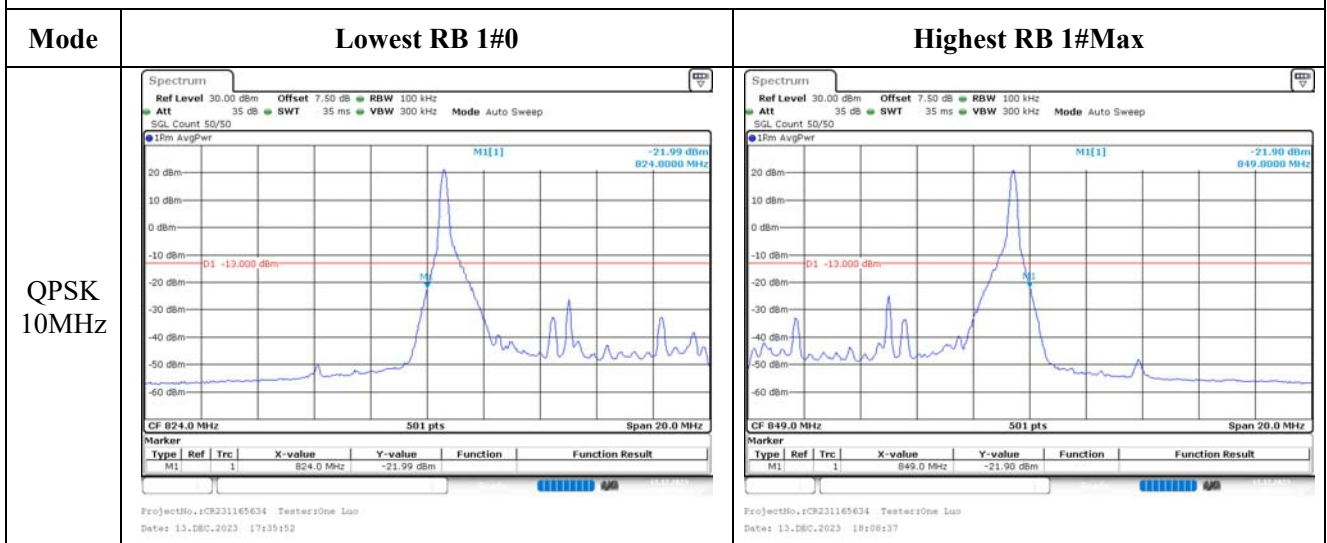
Out of band emission, Band Edge-Full RB



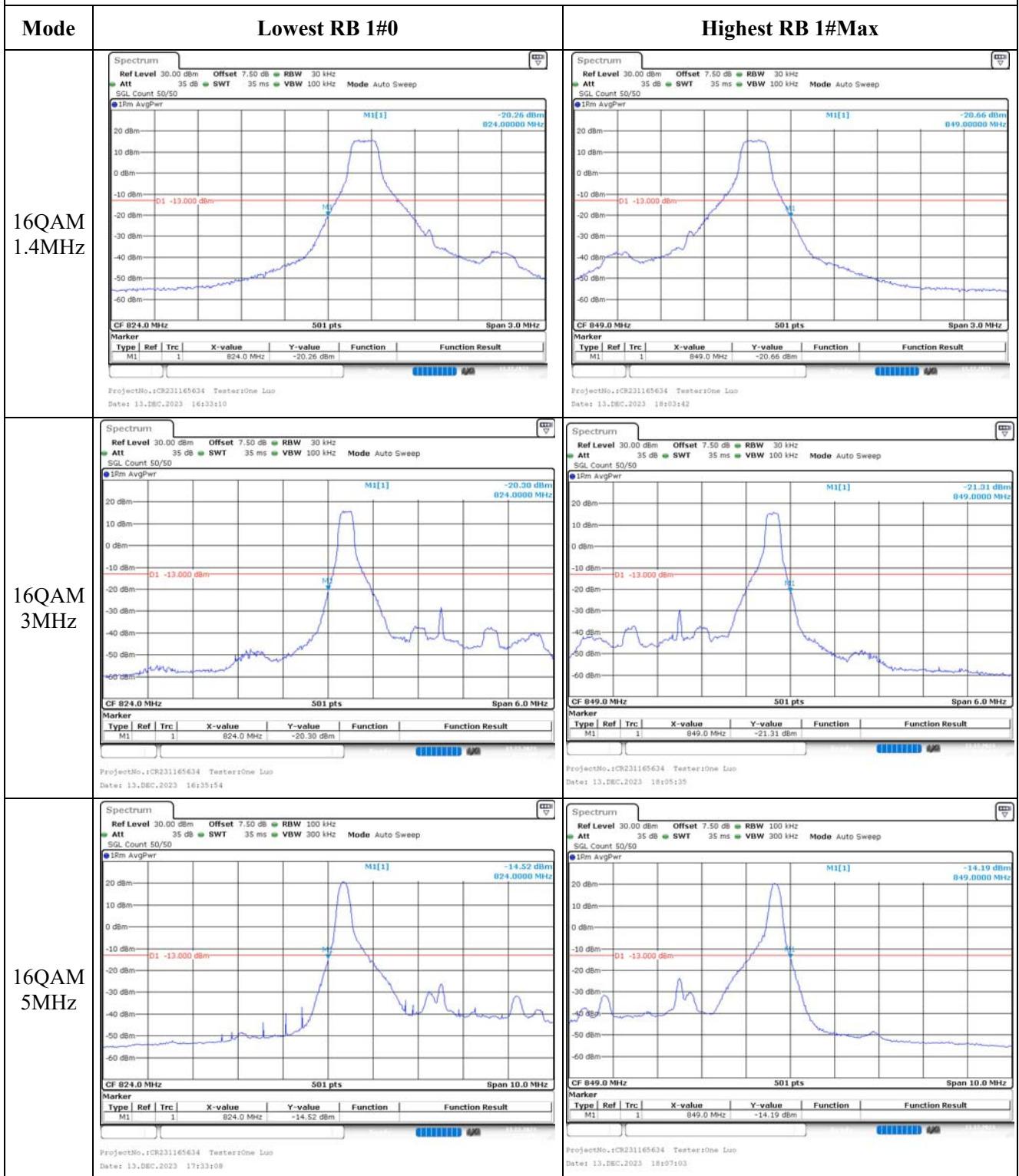
Out of band emission, Band Edge-Minimum RB

Mode	Lowest RB 1#0	Highest RB 1#Max
QPSK 1.4MHz	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 13.DEC.2023 16:32:29</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 13.DEC.2023 16:03:07</p>
QPSK 3MHz	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 13.DEC.2023 16:35:17</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 13.DEC.2023 18:05:20</p>
QPSK 5MHz	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 13.DEC.2023 17:32:41</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 13.DEC.2023 18:06:49</p>

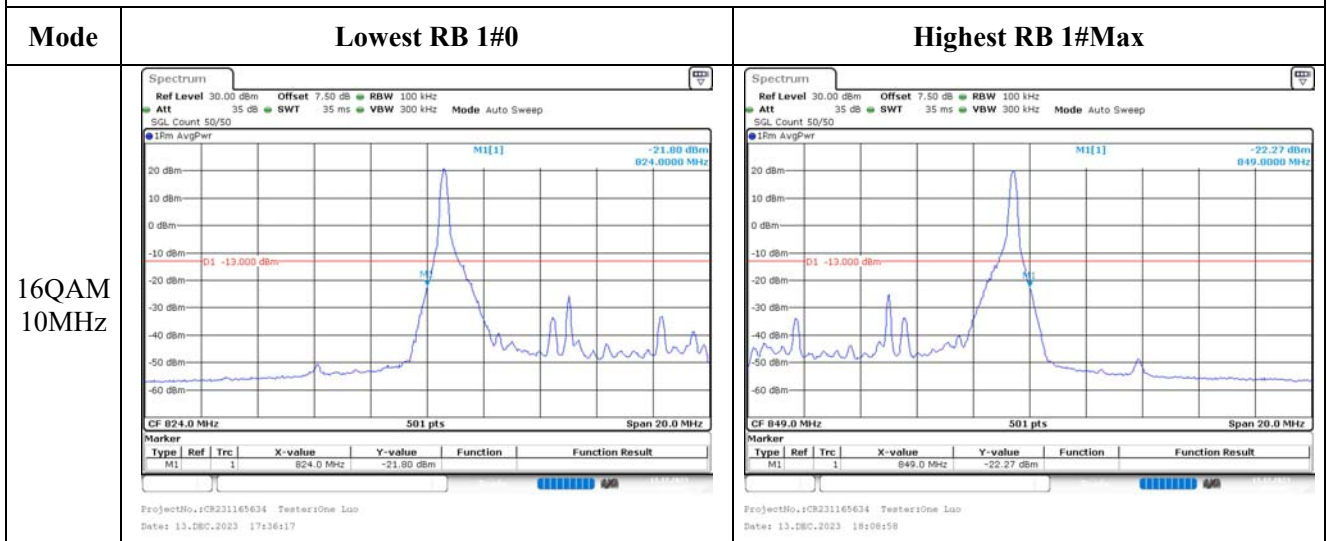
Out of band emission, Band Edge-Minimum RB



Out of band emission, Band Edge-Minimum RB



Out of band emission, Band Edge-Minimum RB



4.9 Antenna Port Test Data and Results for LTE Band 7

Serial Number:	2BD2-1	Test Date:	2023/12/13~2024/1/8
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5~25.6	Relative Humidity: (%)	45~49	ATM Pressure: (kPa)	101.2~101.4
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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	2023/3/31	2024/3/30
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	143458	2023/3/31	2024/3/30
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2023/9/29	2024/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	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).

Test Frequency For Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
5MHz	2502.5	2535	2567.5
10MHz	2505	2535	2565
15MHz	2507.5	2535	2562.5
20MHz	2510	2535	2560

Test Data:

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		
5MHz QPSK	RB1#0	21.91	21.83	21.81	16.57	33
	RB1#13	21.92	21.8	21.79		
	RB1#24	21.97	21.86	21.83		
	RB15#0	20.72	20.87	20.84		
	RB15#10	20.71	20.79	20.65		
	RB25#0	20.71	20.81	20.74		
5MHz 16QAM	RB1#0	20.6	21.13	20.86	15.73	33
	RB1#13	20.58	21.11	20.8		
	RB1#24	20.66	21.12	20.85		
	RB15#0	19.73	19.84	19.83		
	RB15#10	19.73	19.78	19.69		
	RB25#0	19.77	19.79	19.76		
5MHz 64QAM	RB1#0	20.43	20.97	20.82	15.57	33
	RB1#13	20.39	20.63	20.82		
	RB1#24	20.28	20.27	20.45		
	RB15#0	20.12	20.37	20.48		
	RB15#10	20.05	20.38	20.47		
	RB25#0	19.96	19.98	20.49		
10MHz QPSK	RB1#0	21.52	21.89	21.79	16.52	33
	RB1#25	21.59	21.87	21.73		
	RB1#49	21.66	21.92	21.77		
	RB25#0	20.62	20.85	20.79		
	RB25#25	20.72	20.83	20.65		
	RB50#0	20.74	20.88	20.75		
10MHz 16QAM	RB1#0	20.63	21.38	21.02	15.98	33
	RB1#25	20.66	21.33	20.92		
	RB1#49	20.72	21.35	20.93		
	RB25#0	19.77	19.9	19.83		
	RB25#25	19.82	19.9	19.67		
	RB50#0	19.75	19.88	19.73		
10MHz 64QAM	RB1#0	20.55	20.63	20.56	15.49	33
	RB1#25	20.39	20.89	20.47		
	RB1#49	20.37	20.76	20.42		
	RB25#0	20.25	20.78	20.64		
	RB25#25	20.15	20.38	20.42		
	RB50#0	20.14	20.34	20.65		

15MHz QPSK	RB1#0	21.56	21.65	21.71	16.45	33
	RB1#38	21.44	21.74	21.76		
	RB1#74	21.37	21.85	21.58		
	RB36#0	21.27	21.61	21.55		
	RB36#39	21.07	21.37	21.18		
	RB75#0	20.98	21.01	21.08		
15MHz 16QAM	RB1#0	20.93	21.3	21.25	16.43	33
	RB1#38	20.8	21.08	21.2		
	RB1#74	21.56	21.77	21.65		
	RB36#0	21.47	21.66	21.83		
	RB36#39	21.46	21.69	21.78		
	RB75#0	21.45	21.71	21.57		
15MHz 64QAM	RB1#0	20.86	21.37	21.23	15.97	33
	RB1#38	20.76	21.03	21.13		
	RB1#74	20.63	20.95	21.2		
	RB36#0	20.51	20.8	21.03		
	RB36#39	20.39	20.74	20.63		
	RB75#0	20.33	20.52	20.81		
20MHz QPSK	RB1#0	21.42	21.62	22.01	16.61	33
	RB1#50	21.41	21.85	21.84		
	RB1#99	21.3	21.43	21.77		
	RB50#0	21.2	21.36	21.75		
	RB50#50	21.56	21.61	21.61		
	RB100#0	21.53	21.93	21.66		
20MHz 16QAM	RB1#0	21.34	21.36	21.34	16.14	33
	RB1#50	21.22	21.29	21.22		
	RB1#99	21.19	21.21	21.29		
	RB50#0	21.1	21.3	21.2		
	RB50#50	21.09	21.29	21.46		
	RB100#0	21.03	21.54	21.17		
20MHz 64QAM	RB1#0	20.86	21.35	21.23	15.95	33
	RB1#50	20.72	21.21	21.21		
	RB1#99	20.53	21.01	20.59		
	RB50#0	20.43	20.92	21		
	RB50#50	20.3	20.3	20.43		
	RB100#0	20.2	20.36	20.37		

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	4.32	4	3.94	13
	RB100#0	3.94	3.86	3.88	13
20MHz 16QAM	RB1#0	5.3	4.67	4.75	13
	RB100#0	5.71	5.62	5.62	13
Result:					Pass

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
5MHz QPSK	4.511	4.491	4.511	5	4.98	4.98
5MHz 16QAM	4.531	4.531	4.511	4.98	5	4.96
5MHz 64QAM	/	4.486	/	/	4.949	/
10MHz QPSK	8.942	8.942	8.942	9.64	9.68	9.72
10MHz 16QAM	8.942	8.942	8.942	9.72	9.72	9.6
10MHz 64QAM	/	8.944	/	/	9.609	/
15MHz QPSK	13.473	13.473	13.473	14.76	15.12	14.76
15MHz 16QAM	13.473	13.533	13.473	14.76	14.82	14.7
15MHz 64QAM	/	13.502	/	/	15.166	/
20MHz QPSK	17.964	17.964	17.964	19.36	19.6	19.28
20MHz 16QAM	17.964	17.964	17.964	19.52	19.36	19.44
20MHz 64QAM	/	17.945	/	/	19.32	/
Note: The test plots please refer to the Plots of Occupied Bandwidth 64QAM only test with middle channel.						

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

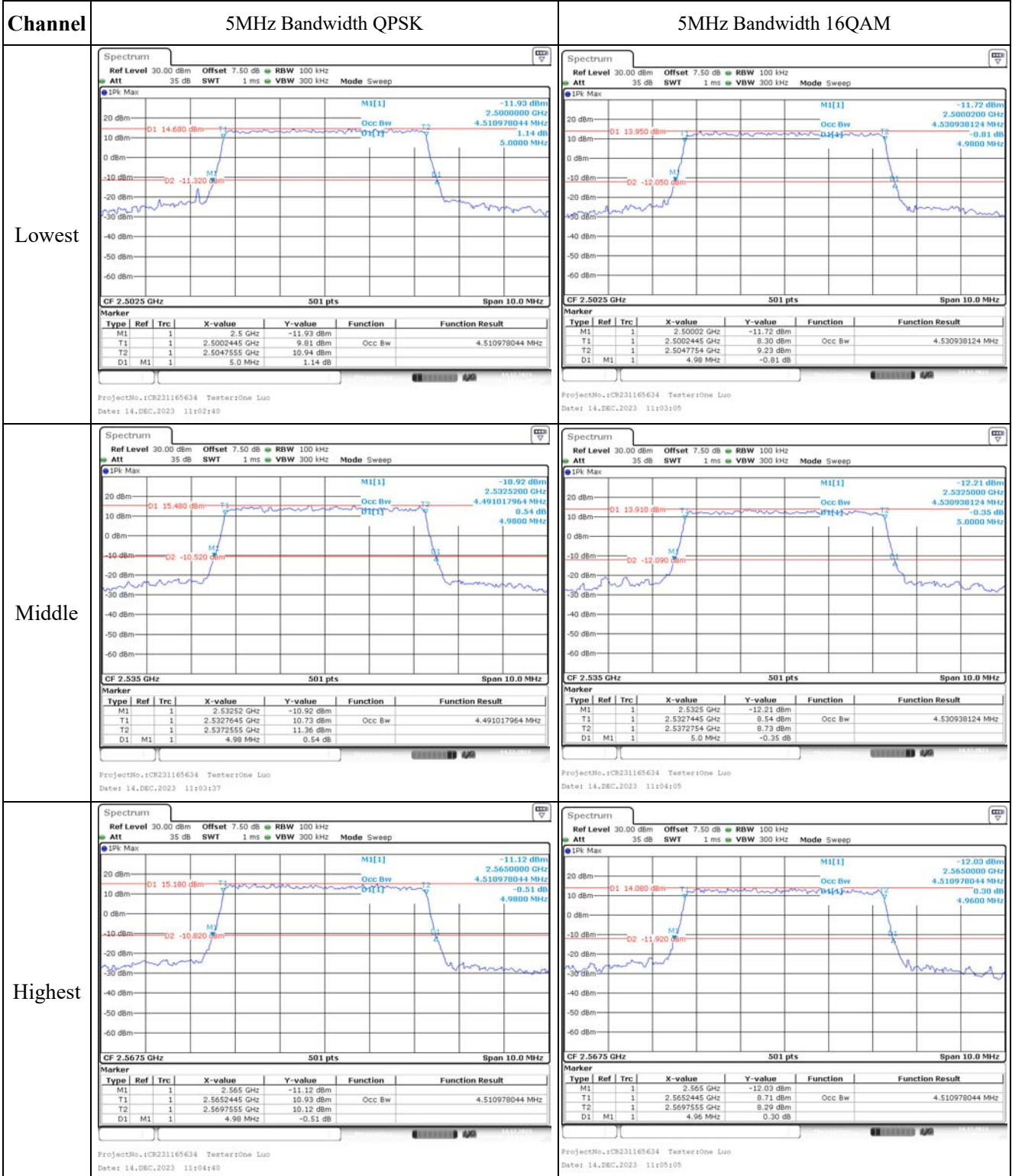
Out of band emission, Band Edge	
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.

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	3.91	2501.084	2500.00	2569.088	2570
	-20	3.91	2501.073	2500.00	2569.032	2570
	-10	3.91	2501.007	2500.00	2569.031	2570
	0	3.91	2501.091	2500.00	2569.034	2570
	10	3.91	2501.082	2500.00	2569.091	2570
	20	3.91	2501.058	2500.00	2569.022	2570
	30	3.91	2501.032	2500.00	2569.054	2570
	40	3.91	2501.074	2500.00	2569.036	2570
	50	3.91	2501.083	2500.00	2569.067	2570
Frequency Stability vs. Voltage	20	3.45	2501.013	2500.00	2569.027	2570
	20	4.5	2501.084	2500.00	2569.027	2570
					Result:	Pass

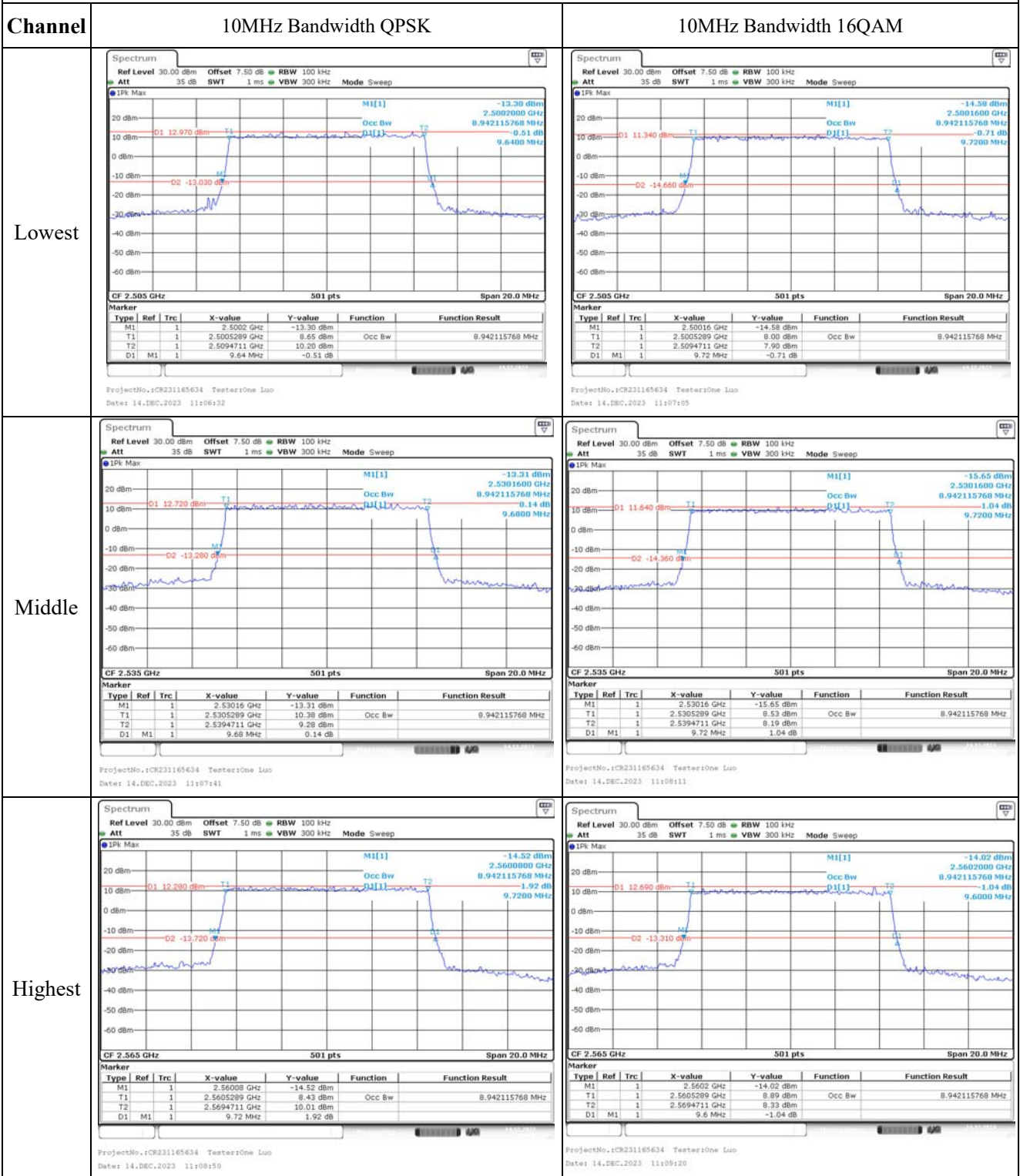
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	2501.009	2500.00	2569.100	2570
	-20	3.91	2501.011	2500.00	2569.083	2570
	-10	3.91	2501.058	2500.00	2569.064	2570
	0	3.91	2501.041	2500.00	2569.052	2570
	10	3.91	2501.021	2500.00	2569.065	2570
	20	3.91	2501.058	2500.00	2569.022	2570
	30	3.91	2501.028	2500.00	2569.064	2570
	40	3.91	2501.061	2500.00	2569.051	2570
	50	3.91	2501.058	2500.00	2569.007	2570
Frequency Stability vs. Voltage	20	3.45	2501.010	2500.00	2569.050	2570
	20	4.5	2501.033	2500.00	2569.010	2570
					Result:	Pass

Test Plots(Note: The 7.5dB is the Insertion loss of the RF cable, Power Splitter and DC Block, which was offset into the Spectrum Analyzer):

Occupied Bandwidth



Occupied Bandwidth



Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM																																																																						
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Occupied Bandwidth

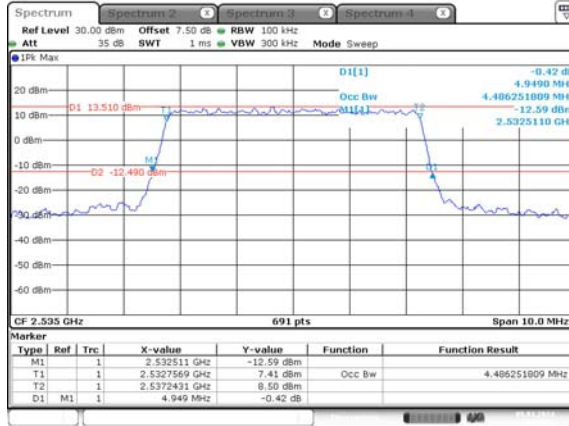
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Occupied Bandwidth

Channel

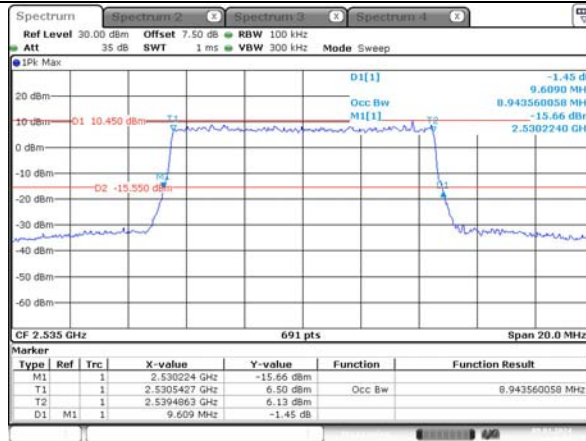
Middle

5MHz
Bandwidth
64QAM



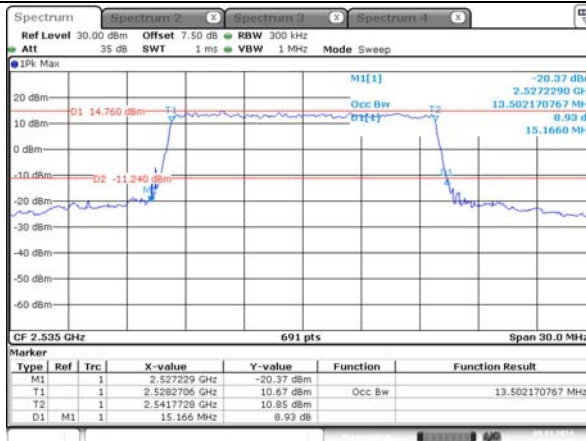
ProjectNo.:CR231165634 TestersOne Luo
Date: 8.JAN.2024 13:39:31

10MHz
Bandwidth
64QAM



ProjectNo.:CR231165634 TestersOne Luo
Date: 8.JAN.2024 13:41:54

15MHz
Bandwidth
64QAM



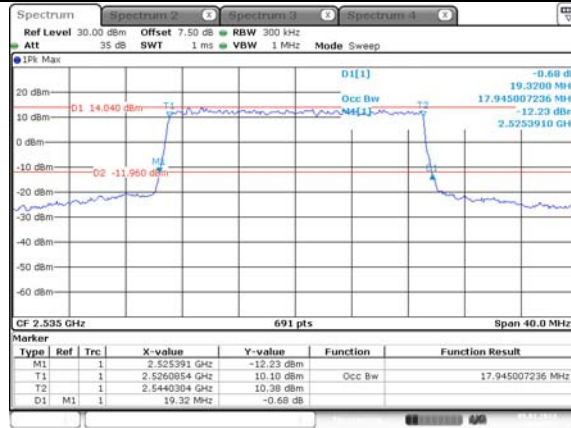
ProjectNo.:CR231165634 TestersOne Luo
Date: 8.JAN.2024 13:45:21

Occupied Bandwidth

Channel

Middle

20MHz
Bandwidth
64QAM



ProjectNo.: CR231165634 TestersOne Luo
Date: 8 JAN 2024 13:47:57

Note: The test was performed with RB 1#0

Spurious Emissions at Antenna Terminal

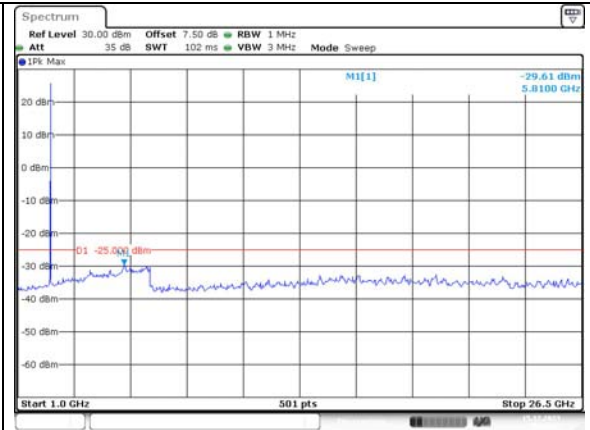
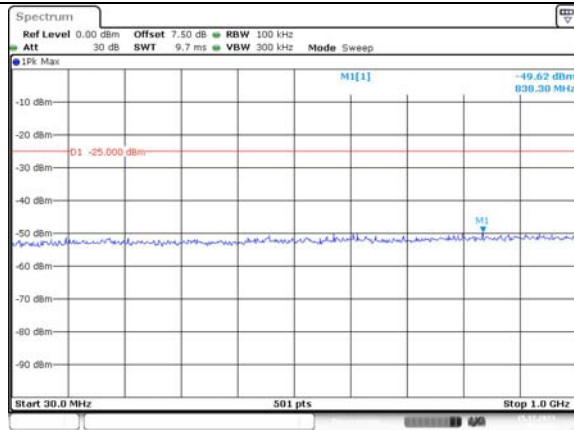
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Middle	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 15.DEC.2023 15:44:10</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 15.DEC.2023 15:44:35</p>
Highest	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 15.DEC.2023 15:45:09</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 15.DEC.2023 15:45:28</p>

Spurious Emissions at Antenna Terminal

Channel

10MHz Bandwidth QPSK

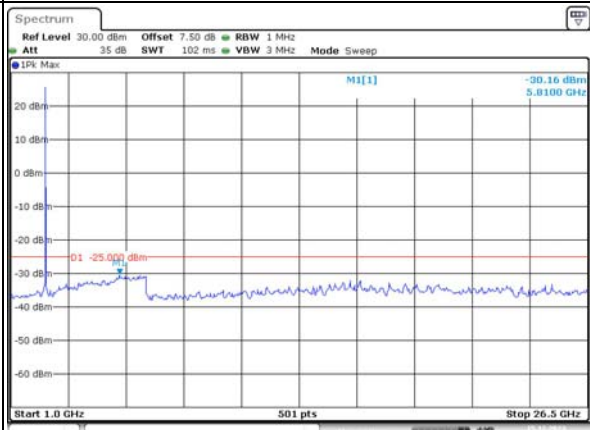
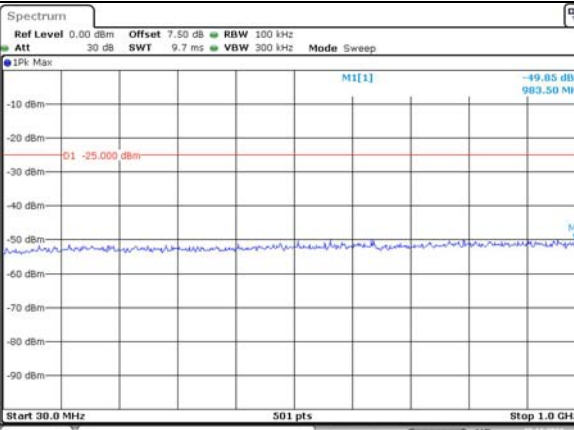
Lowest



ProjectNo.:CR231165634 Testers:One Luo
Date: 15.DEC.2023 15:46:32

ProjectNo.:CR231165634 Testers:One Luo
Date: 15.DEC.2023 15:46:57

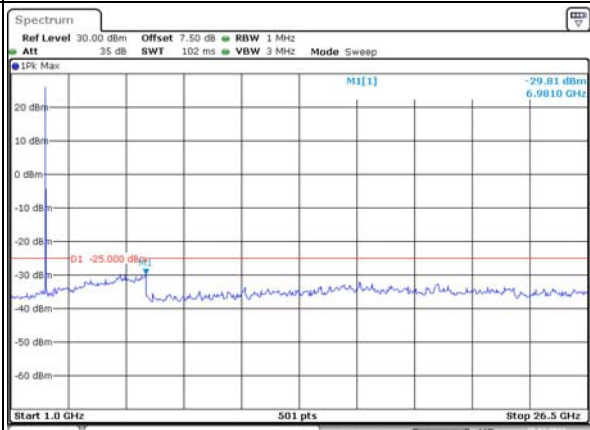
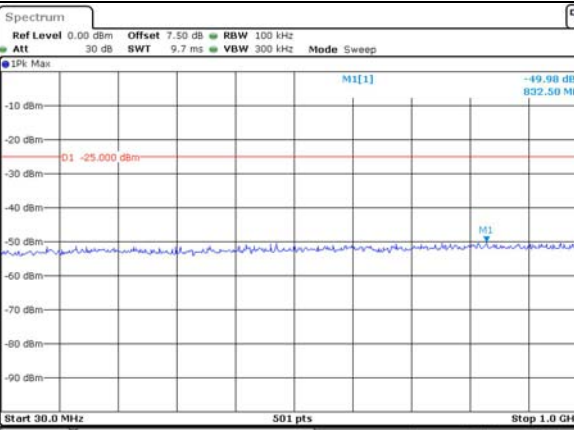
Middle



ProjectNo.:CR231165634 Testers:One Luo
Date: 15.DEC.2023 15:47:20

ProjectNo.:CR231165634 Testers:One Luo
Date: 15.DEC.2023 15:47:52

Highest



ProjectNo.:CR231165634 Testers:One Luo
Date: 15.DEC.2023 15:48:31

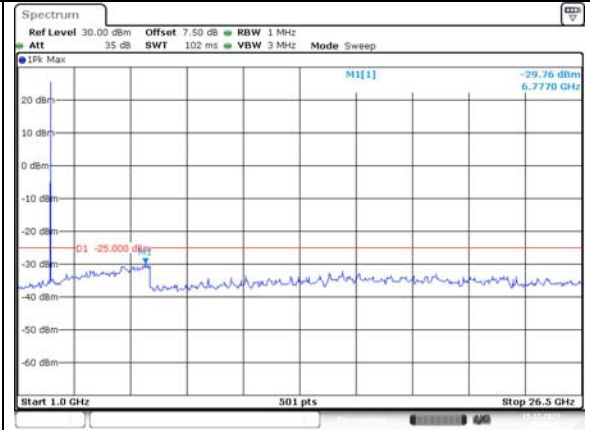
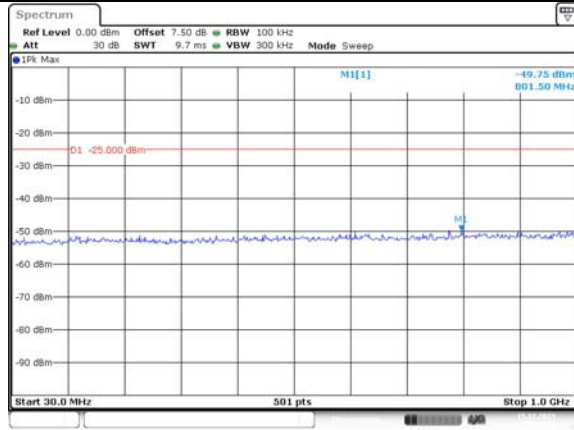
ProjectNo.:CR231165634 Testers:One Luo
Date: 15.DEC.2023 15:49:03

Spurious Emissions at Antenna Terminal

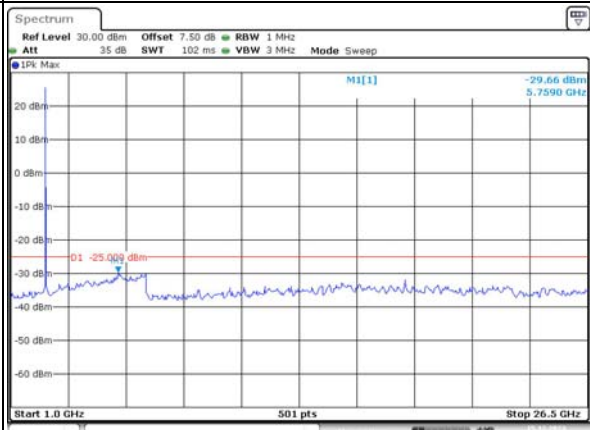
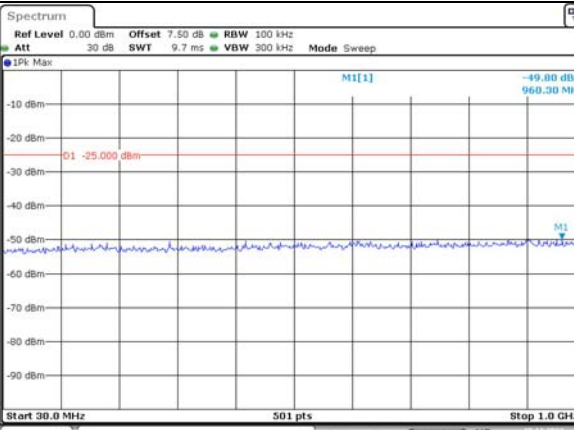
Channel

15MHz Bandwidth QPSK

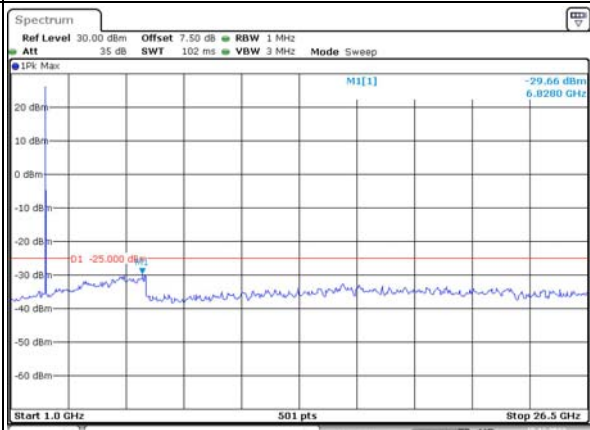
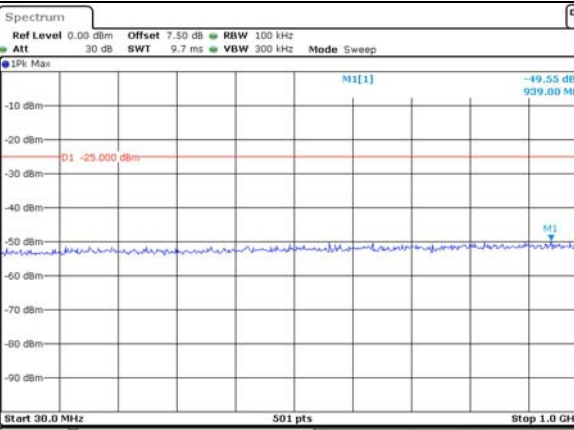
Lowest



Middle



Highest



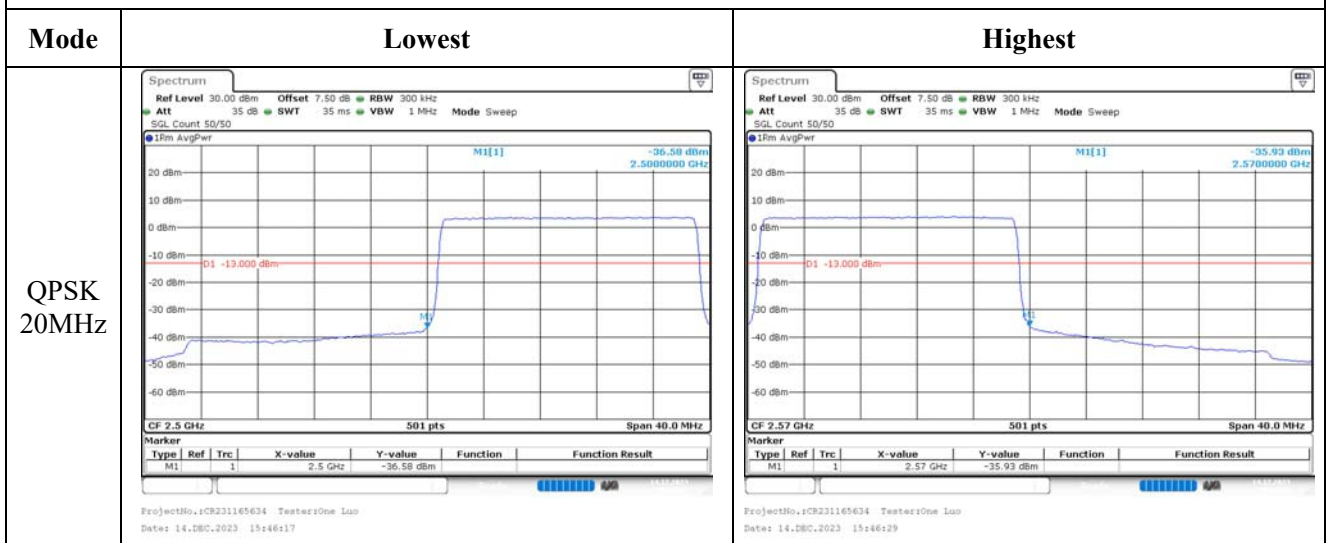
Spurious Emissions at Antenna Terminal

Channel	20MHz Bandwidth QPSK	
Lowest	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15,DEC,2023 15:52:58</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15,DEC,2023 15:53:25</p>
Middle	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15,DEC,2023 15:53:58</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15,DEC,2023 15:54:23</p>
Highest	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15,DEC,2023 15:55:02</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15,DEC,2023 15:55:16</p>

Out of band emission, Band Edge-Full RB

Mode	Lowest	Highest
QPSK 5MHz	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 14.DEC.2023 15:43:15</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 14.DEC.2023 15:43:27</p>
QPSK 10MHz	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 14.DEC.2023 15:44:17</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 14.DEC.2023 15:44:29</p>
QPSK 15MHz	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 14.DEC.2023 15:45:17</p>	<p>ProjectNo.:CR231165634 Tester:One Luo Date: 14.DEC.2023 15:45:29</p>

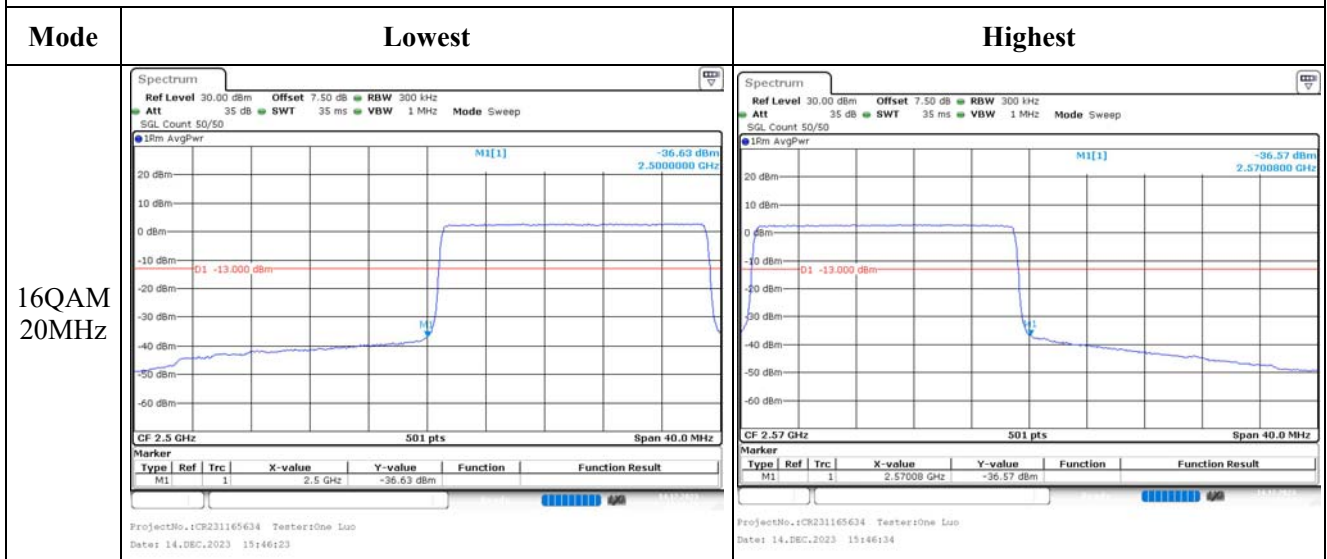
Out of band emission, Band Edge-Full RB



Out of band emission, Band Edge-Full RB

Mode	Lowest	Highest
16QAM 5MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14,DEC,2023 15:43:21</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14,DEC,2023 15:43:33</p>
16QAM 10MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14,DEC,2023 15:44:23</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14,DEC,2023 15:44:35</p>
16QAM 15MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14,DEC,2023 15:45:22</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 14,DEC,2023 15:45:34</p>

Out of band emission, Band Edge-Full RB



Out of band emission, Band Edge-Minimum RB

Mode	Lowest RB 1#0	Highest RB 1#Max
QPSK 5MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:00:29</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:35:19</p>
QPSK 10MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:01:54</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:36:42</p>
QPSK 15MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:04:08</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:38:09</p>

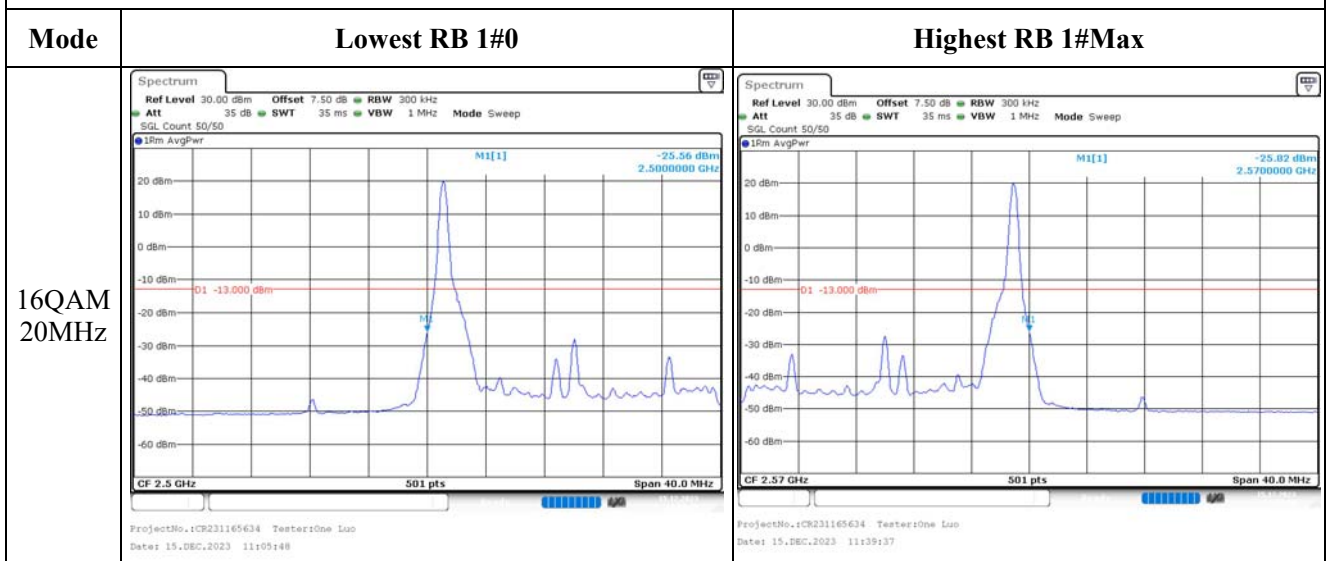
Out of band emission, Band Edge-Minimum RB

Mode	Lowest RB 1#0	Highest RB 1#Max
QPSK 20MHz	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:05:32</p>	<p>ProjectNo.:CR231165634 TestersOne Luo Date: 15.DEC.2023 11:39:24</p>

Out of band emission, Band Edge-Minimum RB

Mode	Lowest RB 1#0	Highest RB 1#Max
16QAM 5MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:00:43</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:35:37</p>
16QAM 10MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:03:00</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:36:56</p>
16QAM 15MHz	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:04:21</p>	<p>ProjectNo.:CR231165634 Testers:One Luo Date: 15.DEC.2023 11:38:21</p>

Out of band emission, Band Edge-Minimum RB



4.10 Antenna Port Test Data and Results for LTE Band 12

Serial Number:	2BD2-1	Test Date:	2023/12/13~ 2024/1/8
Test Site:	RF	Test Mode:	Transmitting
Tester:	One Luo	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.5~25.6	Relative Humidity: (%)	45~49	ATM Pressure: (kPa)	101.2~101.4
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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	2023/3/31	2024/3/30
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	143458	2023/3/31	2024/3/30
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2023/9/29	2024/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	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).

Test Frequency for Each Mode:

Operation Bandwidth	Lowest Frequency (MHz)	Middle Frequency (MHz)	Highest Frequency (MHz)
1.4MHz	699.7	707.5	715.3
3MHz	700.5	707.5	714.5
5MHz	701.5	707.5	713.5
10MHz	704	707.5	711

Test Data:

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	23.46	23.49	23.62	11.69	34.77
	RB1#3	23.31	23.84	23.61		
	RB1#5	23.17	23.22	23.57		
	RB3#0	23.05	23.02	23.19		
	RB3#3	22.93	23.23	23.4		
	RB6#0	22.84	23.17	22.86		
1.4MHz 16QAM	RB1#0	22.82	23	22.93	10.9	34.77
	RB1#3	22.7	22.68	22.81		
	RB1#5	22.63	22.94	23.05		
	RB3#0	22.5	22.85	22.92		
	RB3#3	22.43	22.97	22.8		
	RB6#0	22.43	22.66	22.86		
1.4MHz 64QAM	RB1#0	21.73	22.14	22.25	10.1	34.77
	RB1#3	21.57	21.7	22.04		
	RB1#5	21.54	21.84	22.01		
	RB3#0	21.48	21.66	21.94		
	RB3#3	21.38	21.72	21.6		
	RB6#0	21.32	21.41	21.54		
3MHz QPSK	RB1#0	22.26	22.24	22.43	11.82	34.77
	RB1#8	22.21	22.38	22.7		
	RB1#14	22.05	22.51	22.59		
	RB6#0	23.46	23.79	23.91		
	RB6#9	23.45	23.81	23.97		
	RB15#0	23.33	23.78	23.35		
3MHz 16QAM	RB1#0	23.24	23.36	23.42	11.27	34.77
	RB1#8	23.08	23.23	23.29		
	RB1#14	22.89	23.2	23.34		
	RB6#0	22.73	22.77	23.29		
	RB6#9	22.53	22.95	22.99		
	RB15#0	22.47	22.54	22.84		
3MHz 64QAM	RB1#0	22.82	23.28	23.12	11.13	34.77
	RB1#8	22.81	22.79	22.95		
	RB1#14	22.68	22.99	23.01		
	RB6#0	22.63	22.59	23.14		
	RB6#9	22.5	22.53	22.73		
	RB15#0	22.41	22.71	22.88		

5MHz QPSK	RB1#0	22.45	22.78	23.04	10.89	34.77
	RB1#13	22.45	22.97	22.64		
	RB1#24	22.31	22.57	22.89		
	RB15#0	22.29	22.5	22.7		
	RB15#10	22.13	22.23	22.44		
	RB25#0	21.98	22.01	22.03		
5MHz 16QAM	RB1#0	23.46	23.91	23.53	11.81	34.77
	RB1#13	23.31	23.85	23.68		
	RB1#24	23.15	23.46	23.65		
	RB15#0	23.46	23.43	23.67		
	RB15#10	23.44	23.96	23.94		
	RB25#0	23.31	23.5	23.73		
5MHz 64QAM	RB1#0	22.89	22.94	23.28	11.13	34.77
	RB1#13	22.84	22.89	23.1		
	RB1#24	22.78	23.14	22.97		
	RB15#0	22.75	22.73	23		
	RB15#10	22.64	22.92	22.74		
	RB25#0	22.54	22.91	22.67		
10MHz QPSK	RB1#0	23.24	23.27	23.8	11.65	34.77
	RB1#25	23.15	23.19	23.58		
	RB1#49	23.01	23.51	23.26		
	RB25#0	22.91	23.06	23.35		
	RB25#25	22.79	23.28	23.02		
	RB50#0	22.69	23.05	23.12		
10MHz 16QAM	RB1#0	22.51	22.85	23.09	10.94	34.77
	RB1#25	22.31	22.52	22.54		
	RB1#49	22.11	22.09	22.57		
	RB25#0	22.03	22.41	22.49		
	RB25#25	21.9	22.38	22.02		
	RB50#0	21.7	21.88	22.2		
10MHz 64QAM	RB1#0	21.89	22.28	22.12	10.13	34.77
	RB1#25	21.82	22.11	22.24		
	RB1#49	21.67	22.02	21.95		
	RB25#0	21.56	21.58	22.06		
	RB25#25	21.52	21.65	21.65		
	RB50#0	21.47	21.87	22		

Note:

ERP= Conducted Power(dBm) - Lc(dB) + Gr(dBd)

Gr(dBd)=Gr(dBi)-2.15

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	4.09	4.03	4.06	13
	RB50#0	4.84	4.75	4.72	13
10MHz 16QAM	RB1#0	5.01	5.01	4.81	13
	RB50#0	5.8	5.8	5.77	13
Result:					Pass

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	1.096	1.102	1.096	1.32	1.29	1.326
1.4MHz 16QAM	1.096	1.102	1.102	1.284	1.296	1.308
1.4MHz 64QAM	/	1.094	/	/	1.303	/
3MHz QPSK	2.695	2.695	2.683	2.904	2.892	2.916
3MHz 16QAM	2.683	2.683	2.683	2.928	2.904	2.892
3MHz 64QAM	/	2.674	/	/	2.909	/
5MHz QPSK	4.511	4.511	4.511	5	5	4.96
5MHz 16QAM	4.491	4.511	4.511	4.94	5	5
5MHz 64QAM	/	4.486	/	/	4.981	/
10MHz QPSK	8.942	8.942	8.942	9.72	9.6	9.64
10MHz 16QAM	8.942	8.942	8.942	9.56	9.68	9.6
10MHz 64QAM	/	8.944	/	/	9.598	/
Note: The test plots please refer to the Plots of Occupied Bandwidth 64QAM only test with middle channel						

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

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

Frequency Stability						
Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	699.551	699.00	715.494	716.00
	-20	3.91	699.595	699.00	715.455	716.00
	-10	3.91	699.583	699.00	715.469	716.00
	0	3.91	699.519	699.00	715.495	716.00
	10	3.91	699.522	699.00	715.434	716.00
	20	3.91	699.529	699.00	715.471	716.00
	30	3.91	699.586	699.00	715.448	716.00
	40	3.91	699.504	699.00	715.457	716.00
	50	3.91	699.567	699.00	715.464	716.00
Frequency Stability vs. Voltage	20	3.45	699.565	699.00	715.495	716.00
	20	4.5	699.574	699.00	715.491	716.00
					Result:	Pass

Frequency Stability						
Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.91	699.555	699.00	715.457	716.00
	-20	3.91	699.562	699.00	715.407	716.00
	-10	3.91	699.594	699.00	715.408	716.00
	0	3.91	699.586	699.00	715.464	716.00
	10	3.91	699.575	699.00	715.480	716.00
	20	3.91	699.529	699.00	715.471	716.00
	30	3.91	699.564	699.00	715.447	716.00
	40	3.91	699.569	699.00	715.441	716.00
	50	3.91	699.566	699.00	715.418	716.00
Frequency Stability vs. Voltage	20	3.45	699.517	699.00	715.438	716.00
	20	4.5	699.580	699.00	715.473	716.00
					Result:	Pass