

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 1.4MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 16:48:35</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 16:49:40</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:22:56</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:23:12</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 3MHz		

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 5MHz	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:06:43</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:08:09</p>
	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:24:59</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:25:15</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 10MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 17:18:01</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 17:19:55</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:25:58</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:26:15</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 15MHz	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:13:00</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:15:13</p>
	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:27:08</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:27:26</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 20MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 17:21:34</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 17:22:50</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23.NOV.2023 15:28:11</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23.NOV.2023 15:28:30</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 1.4MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 16:49:08</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 16:50:23</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:23:04</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:23:19</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 3MHz	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 16:52:02</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 16:54:18</p>
	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:24:01</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:24:16</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 5MHz	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:07:27</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:08:42</p>
	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:25:07</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:25:23</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 10MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 17:18:35</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 17:20:33</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:26:06</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23,NOV,2023 15:26:23</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 15MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 17:14:13</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 17:15:53</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23.NOV.2023 15:27:17</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 23.NOV.2023 15:27:55</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 20MHz	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:22:18</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 20. DEC. 2023 17:23:24</p>
	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:28:20</p>	<p>ProjectNo.: CR231167220 Tester: Len Huang Date: 23. NOV. 2023 15:28:39</p>

4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	2DMI-1	Test Date:	2023/11/22~2023/12/21
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.3~26	Relative Humidity: (%)	40~55	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	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	2023/9/28	2024/9/27
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:**FCC§2.1046;§ 22.913 (a)****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	23.36	23.32	23.16	16.39	38.45
	RB1#3	23.34	23.34	23.17		
	RB1#5	23.34	23.34	23.17		
	RB3#0	23.42	23.44	23.24		
	RB3#3	23.42	23.41	23.24		
	RB6#0	22.42	22.48	22.23		
1.4MHz 16QAM	RB1#0	22.42	22.58	22.25	15.54	38.45
	RB1#3	22.43	22.59	22.27		
	RB1#5	22.43	22.59	22.26		
	RB3#0	22.55	22.37	22.26		
	RB3#3	22.58	22.36	22.25		
	RB6#0	21.43	21.51	21.12		
3MHz QPSK	RB1#0	23.35	23.34	23.30	16.33	38.45
	RB1#8	23.34	23.38	23.24		
	RB1#14	23.34	23.36	23.29		
	RB6#0	22.45	22.44	22.30		
	RB6#9	22.42	22.41	22.21		
	RB15#0	22.40	22.43	22.19		
3MHz 16QAM	RB1#0	22.57	22.43	22.78	15.73	38.45
	RB1#8	22.51	22.43	22.69		
	RB1#14	22.53	22.45	22.69		
	RB6#0	21.46	21.37	21.31		
	RB6#9	21.47	21.35	21.26		
	RB15#0	21.37	21.44	21.29		
5MHz QPSK	RB1#0	23.48	23.66	23.34	16.64	38.45
	RB1#13	23.45	23.69	23.23		
	RB1#24	23.47	23.62	23.22		
	RB15#0	22.48	22.47	22.32		
	RB15#10	22.45	22.41	22.20		
	RB25#0	22.45	22.41	22.25		
5MHz 16QAM	RB1#0	22.50	22.33	22.67	15.62	38.45
	RB1#13	22.47	22.34	22.55		
	RB1#24	22.48	22.34	22.51		
	RB15#0	21.46	21.52	21.29		
	RB15#10	21.43	21.46	21.17		
	RB25#0	21.46	21.51	21.26		
10MHz QPSK	RB1#0	23.40	23.46	23.49	16.50	38.45

	RB1#25	23.45	23.55	23.41		
	RB1#49	23.38	23.43	23.30		
	RB25#0	22.45	22.48	22.47		
	RB25#25	22.43	22.38	22.30		
	RB50#0	22.45	22.51	22.43		
10MHz 16QAM	RB1#0	22.41	22.44	22.94	15.89	38.45
	RB1#25	22.46	22.49	22.88		
	RB1#49	22.43	22.37	22.75		
	RB25#0	21.52	21.57	21.51		
	RB25#25	21.51	21.48	21.35		
	RB50#0	21.49	21.51	21.40		

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	4.58	4.35	4.29	13
	RB50#0	5.04	4.90	5.04	13
10MHz 16QAM	RB1#0	5.57	5.10	5.16	13
	RB50#0	6.03	5.88	6.00	13
Result:					Pass

FCC §2.1049, §22.905:Occupied Bandwidth

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.096	1.102	1.290	1.308	1.314
1.4MHz 16QAM	1.096	1.102	1.090	1.296	1.320	1.278
3MHz QPSK	2.683	2.683	2.683	2.880	2.904	2.904
3MHz 16QAM	2.683	2.683	2.683	2.904	2.892	2.916
5MHz QPSK	4.511	4.511	4.511	5.020	5.000	5.000
5MHz 16QAM	4.511	4.511	4.491	5.000	5.020	4.960
10MHz QPSK	8.942	8.942	8.942	9.720	9.640	9.640
10MHz 16QAM	8.942	8.942	8.982	9.560	9.640	9.680

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

FCC §2.1051, §22.917(a):Spurious Emissions at Antenna Terminal

Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.
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FCC §2.1051, §22.917(a): Out of band emission, Band Edge

Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.
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FCC §2.1055, §22.355: Frequency Stability

Test 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	4.75	0.006	2.5
	-20	3.91	-10.46	-0.013	2.5
	-10	3.91	6.72	0.008	2.5
	0	3.91	-8.17	-0.010	2.5
	10	3.91	-10.53	-0.013	2.5
	20	3.91	5.17	0.006	2.5
	30	3.91	13.35	0.016	2.5
	40	3.91	-9.43	-0.011	2.5
Frequency Stability vs. Voltage	20	3.45	5.31	0.006	2.5
	20	4.5	10.21	0.012	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	-14.3	-0.017	2.5
	-20	3.91	6.52	0.008	2.5
	-10	3.91	6.02	0.007	2.5
	0	3.91	9.29	0.011	2.5
	10	3.91	-7.79	-0.009	2.5
	20	3.91	8.81	0.011	2.5
	30	3.91	-4.55	-0.005	2.5
	40	3.91	8.2	0.010	2.5
Frequency Stability vs. Voltage	20	3.45	12.42	0.015	2.5
	20	4.5	5.2	0.006	2.5
				Result:	Pass

Test Plots: (Note: The 10dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

Occupied Bandwidth

Channel	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:23:40</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:23:55</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:24:12</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:24:33</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:24:48</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:25:02</p>

Occupied Bandwidth

Channel	3MHz Bandwidth QPSK	3MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:25:55</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:26:15</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:26:33</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:26:54</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:27:15</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:27:29</p>

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:28:19</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:28:39</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:29:01</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:29:21</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:29:46</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:30:06</p>

Occupied Bandwidth

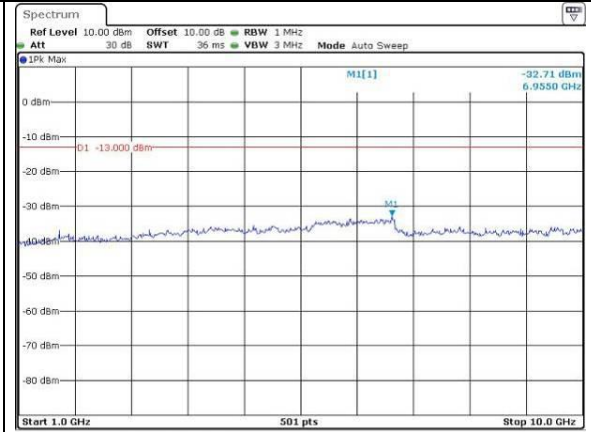
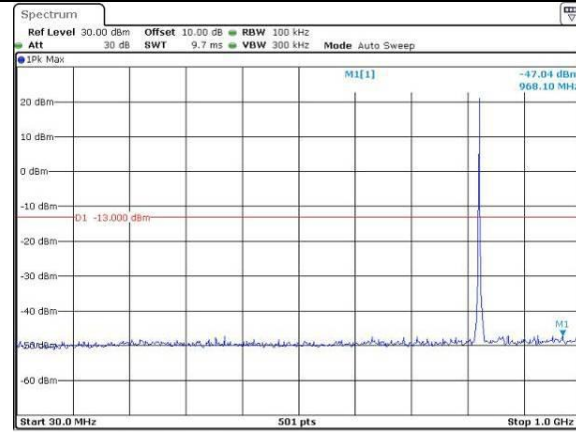
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:31:05</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:31:26</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:32:00</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:32:27</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:32:48</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:33:22</p>

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

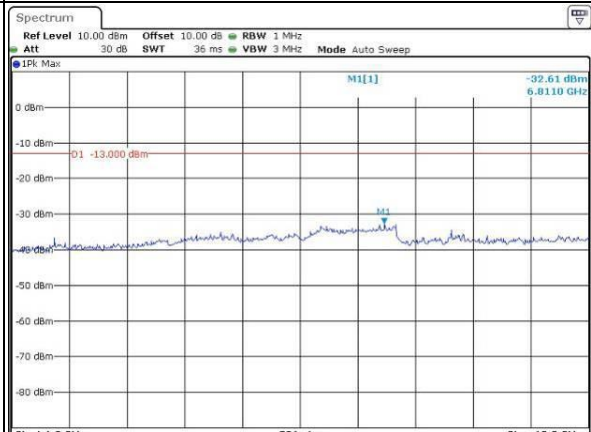
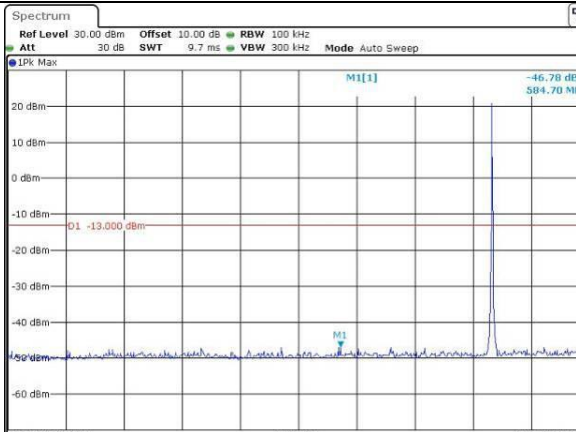
Lowest



ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:04:23

ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:04:46

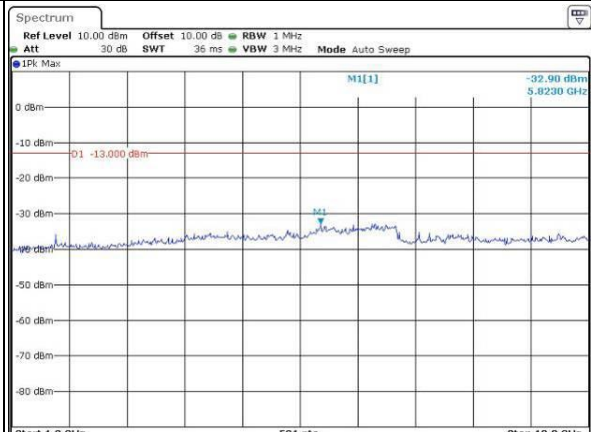
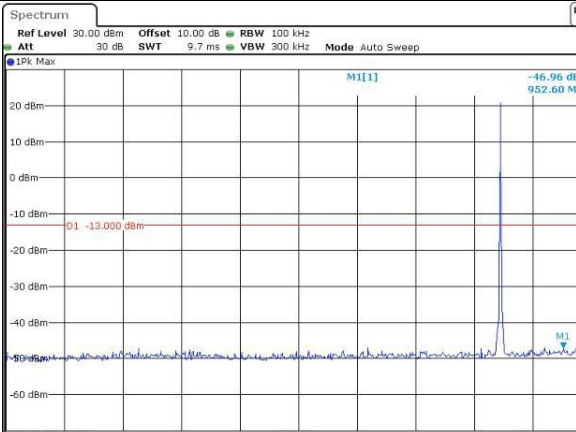
Middle



ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:05:21

ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:05:47

Highest



ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:06:19

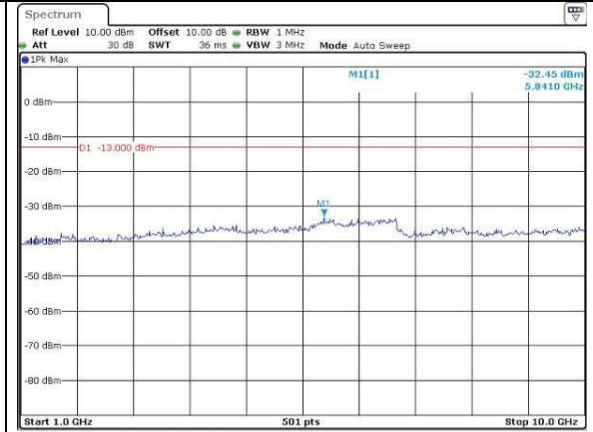
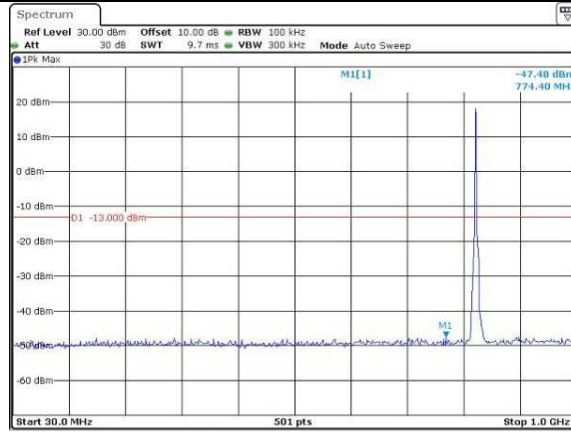
ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:06:52

Spurious Emissions at Antenna Terminal

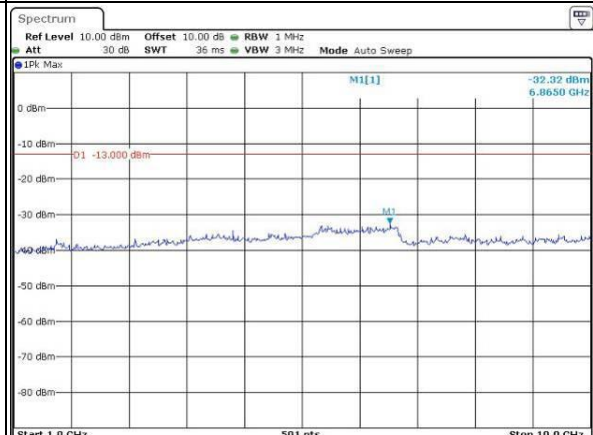
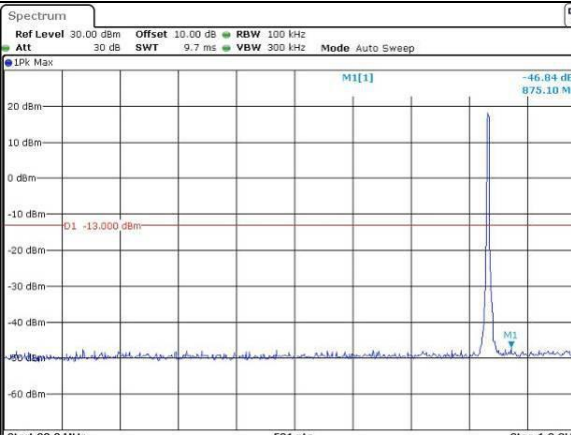
Channel

3MHz Bandwidth QPSK

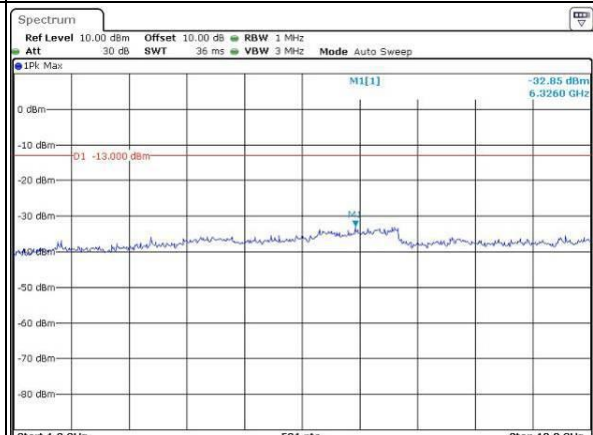
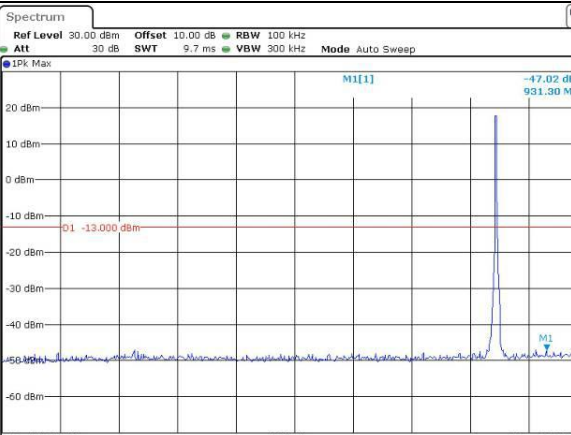
Lowest



Middle



Highest

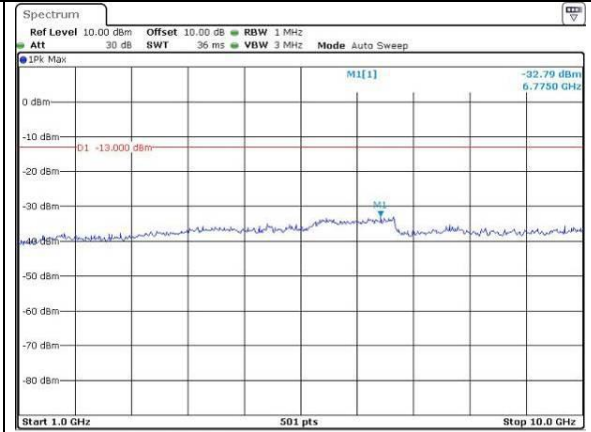
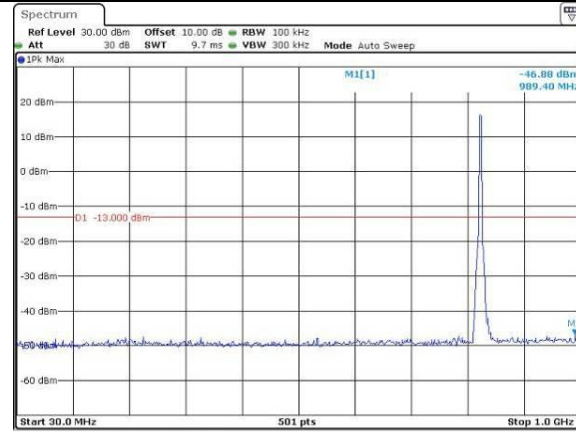


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

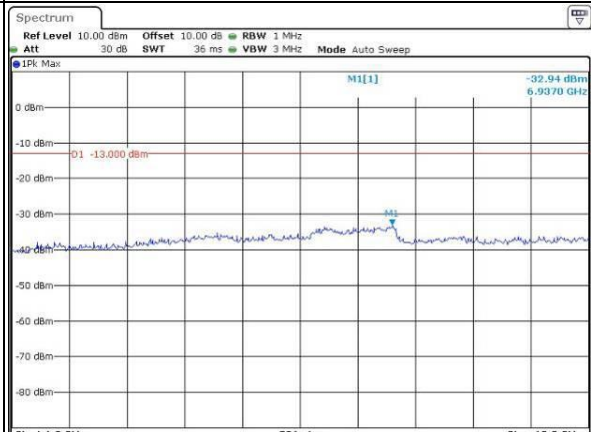
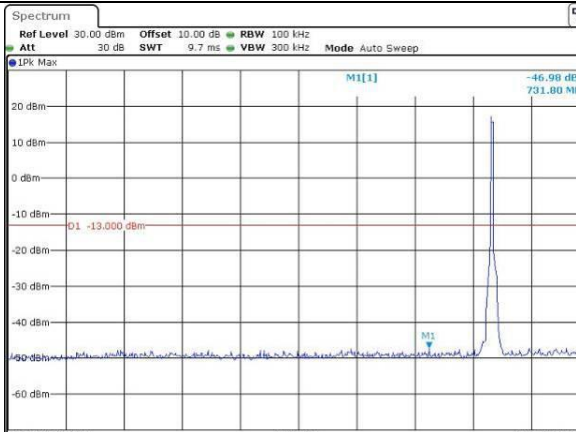
Lowest



ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:11:12

ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:11:42

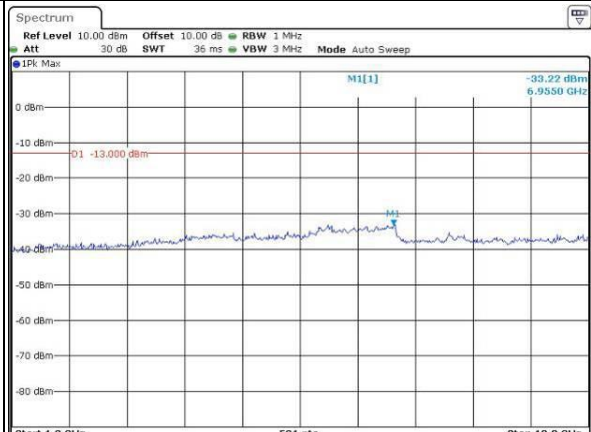
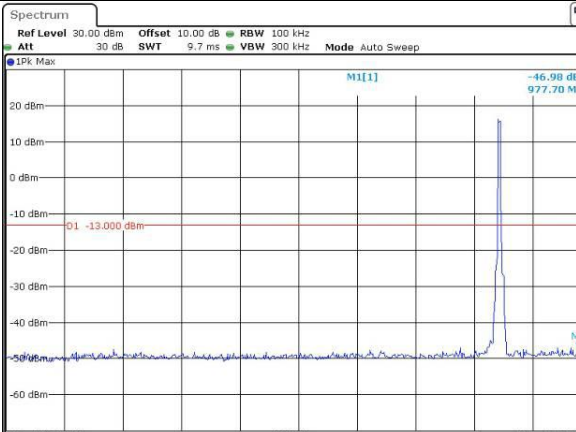
Middle



ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:12:14

ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:12:40

Highest



ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:13:09

ProjectNo.:CR231167220 Tester:Len Huang
Date: 25.NOV.2023 15:13:35

Spurious Emissions at Antenna Terminal

Channel	10MHz Bandwidth QPSK	
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:14:41</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:15:07</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:15:36</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:16:03</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:16:33</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:17:11</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 1.4MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.Oct.2023 09:42:14</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.Oct.2023 09:45:40</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:52:39</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:52:54</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 3MHz		

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 5MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:53:05</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:55:43</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:54:41</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:54:57</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 10MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:57:29</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:59:50</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:55:52</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:56:09</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 1.4MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:44:36</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:46:33</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:52:46</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:53:01</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 3MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:50:04</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:51:17</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:53:47</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:54:02</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 5MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:54:57</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:56:14</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:54:48</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:55:04</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 10MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 09:58:06</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 21.DEC.2023 10:00:59</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:56:00</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 14:56:17</p>

4.9 Antenna Port Test Data and Results for LTE Band 7

Serial Number:	2DMI-1	Test Date:	2023/11/22~2023/12/20
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.3~26	Relative Humidity: (%)	40~55	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	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	2023/9/28	2024/9/27
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912 386	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:**FCC§2.1046;§ 27.50(h)(2)****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	22.84	23.26	22.56	21.21	33
	RB1#13	22.82	23.23	22.52		
	RB1#24	22.85	23.24	22.50		
	RB15#0	21.89	22.10	21.68		
	RB15#10	21.89	21.98	21.54		
	RB25#0	21.84	22.02	21.62		
5MHz 16QAM	RB1#0	21.88	21.96	21.88	19.92	33
	RB1#13	21.85	21.93	21.81		
	RB1#24	21.89	21.97	21.74		
	RB15#0	20.90	21.14	20.71		
	RB15#10	20.87	21.00	20.56		
	RB25#0	20.92	21.12	20.64		
10MHz QPSK	RB1#0	22.75	23.07	22.72	21.06	33
	RB1#25	22.79	23.11	22.62		
	RB1#49	22.77	23.08	22.51		
	RB25#0	21.84	22.14	21.74		
	RB25#25	21.90	22.02	21.55		
	RB50#0	21.89	22.11	21.71		
10MHz 16QAM	RB1#0	21.80	22.46	22.16	20.44	33
	RB1#25	21.85	22.49	22.08		
	RB1#49	21.80	22.45	21.96		
	RB25#0	20.94	21.20	20.77		
	RB25#25	20.99	21.05	20.59		
	RB50#0	20.91	21.08	20.66		
15MHz QPSK	RB1#0	22.72	22.86	22.69	20.91	33
	RB1#38	22.80	22.96	22.57		
	RB1#74	22.78	22.91	22.43		
	RB36#0	21.72	22.03	21.69		
	RB36#39	21.77	21.94	21.50		
	RB75#0	21.78	22.02	21.64		
15MHz 16QAM	RB1#0	22.20	22.09	22.11	20.21	33
	RB1#38	22.26	22.15	22.01		
	RB1#74	22.21	22.10	21.84		
	RB36#0	20.80	21.06	20.71		
	RB36#39	20.80	20.97	20.55		
	RB75#0	20.80	21.02	20.62		
20MHz QPSK	RB1#0	22.59	22.82	22.78	20.92	33

	RB1#50	22.68	22.97	22.69		
	RB1#99	22.64	22.88	22.40		
	RB50#0	21.77	22.14	21.82		
	RB50#50	21.92	21.98	21.60		
	RB100#0	21.84	22.04	21.69		
20MHz 16QAM	RB1#0	21.96	22.09	22.49	20.44	33
	RB1#50	22.01	22.24	22.37		
	RB1#99	21.92	22.14	22.09		
	RB50#0	20.75	21.11	20.77		
	RB50#50	20.90	20.95	20.60		
	RB100#0	20.85	21.03	20.70		

Note: EIRP=Conducted Power(dBm) - Lc(dB) + G_T(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	4.14	3.97	3.88	13
	RB100#0	4.78	4.78	4.58	13
20MHz 16QAM	RB1#0	5.10	4.70	4.72	13
	RB100#0	5.71	5.74	5.57	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
5MHz QPSK	4.511	4.511	4.511	5.020	4.960	4.980
5MHz 16QAM	4.511	4.511	4.491	5.000	5.020	4.960
10MHz QPSK	8.942	8.942	8.942	9.680	9.640	9.600
10MHz 16QAM	8.942	8.942	8.982	9.560	9.600	9.680
15MHz QPSK	13.473	13.473	13.473	14.760	14.700	14.760
15MHz 16QAM	13.473	13.473	13.473	14.700	14.760	14.700
20MHz QPSK	17.964	17.964	17.884	19.360	19.120	19.200
20MHz 16QAM	17.964	17.964	17.884	19.200	19.120	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.
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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	3.91	2500.790	2500.00	2569.931	2570
	-20	3.91	2500.830	2500.00	2569.929	2570
	-10	3.91	2500.894	2500.00	2569.890	2570
	0	3.91	2500.398	2500.00	2569.915	2570
	10	3.91	2500.717	2500.00	2569.941	2570
	20	3.91	2500.356	2500.00	2569.980	2570
	30	3.91	2500.264	2500.00	2569.941	2570
	40	3.91	2500.480	2500.00	2569.974	2570
Frequency Stability vs. Voltage	50	3.91	2500.699	2500.00	2569.938	2570
	20	3.45	2500.279	2500.00	2569.935	2570
	20	4.5	2500.696	2500.00	2569.979	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	2500.191	2500.00	2569.916	2570
	-20	3.91	2500.253	2500.00	2569.968	2570
	-10	3.91	2500.306	2500.00	2569.908	2570
	0	3.91	2500.218	2500.00	2569.888	2570
	10	3.91	2500.199	2500.00	2569.969	2570
	20	3.91	2500.298	2500.00	2569.980	2570
	30	3.91	2500.195	2500.00	2569.953	2570
	40	3.91	2500.326	2500.00	2569.953	2570
Frequency Stability vs. Voltage	50	3.91	2500.395	2500.00	2569.917	2570
	20	3.45	2500.177	2500.00	2569.926	2570
	20	4.5	2500.289	2500.00	2569.899	2570
					Result:	Pass

Test Plots: (Note: The 10.5 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:50:36</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:51:08</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:51:18</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:51:36</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:51:54</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:52:21</p>

Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:54:58</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:55:28</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:55:49</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:56:16</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:56:44</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 15:57:08</p>

Occupied Bandwidth

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

Occupied Bandwidth

Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:02:48</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:03:14</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:03:57</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:04:23</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:04:59</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:05:22</p>

Spurious Emissions at Antenna Terminal

Channel	5MHz Bandwidth QPSK	
Lowest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:43:25</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:43:51</p>
Middle	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:44:19</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:44:49</p>
Highest	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:45:14</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:45:49</p>

Spurious Emissions at Antenna Terminal

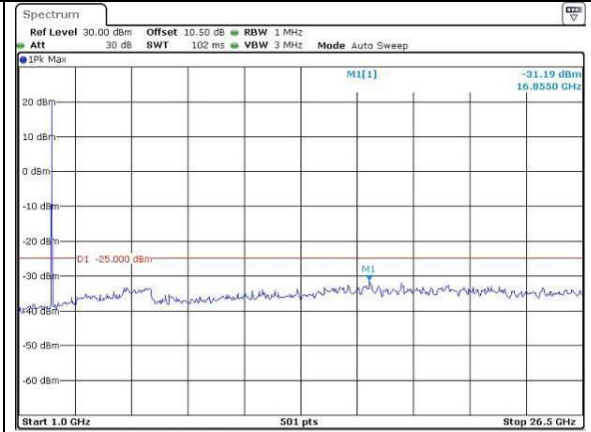
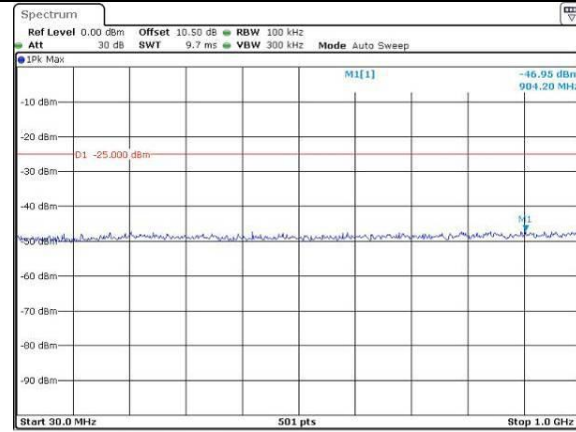
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref Level 0.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -46.08 dBm 960.30 MHz</p> <p>D1 -25.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:47:25</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 102 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -32.06 dBm 18.2800 GHz</p> <p>D1 -25.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 26.5 GHz</p> <p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:47:51</p>
Middle	<p>Ref Level 0.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -45.62 dBm 867.40 MHz</p> <p>D1 -25.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:48:26</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 102 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -32.10 dBm 18.3310 GHz</p> <p>D1 -25.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 26.5 GHz</p> <p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:48:52</p>
Highest	<p>Ref Level 0.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -46.57 dBm 801.50 MHz</p> <p>D1 -25.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:49:26</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 102 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -32.28 dBm 6.6240 GHz</p> <p>D1 -25.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 26.5 GHz</p> <p>ProjectNo.:CR231167220 Tester:Len Huang Date: 25.NOV.2023 16:49:56</p>

Spurious Emissions at Antenna Terminal

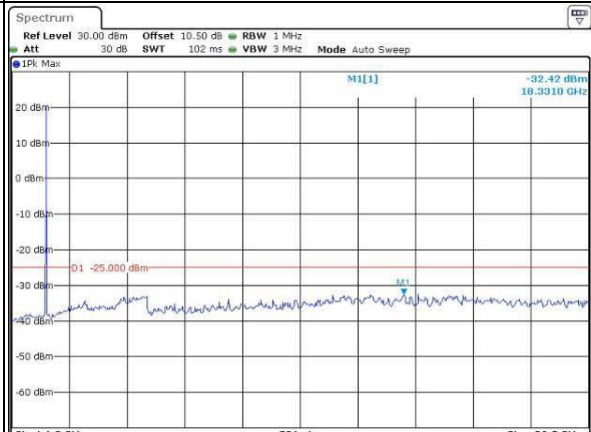
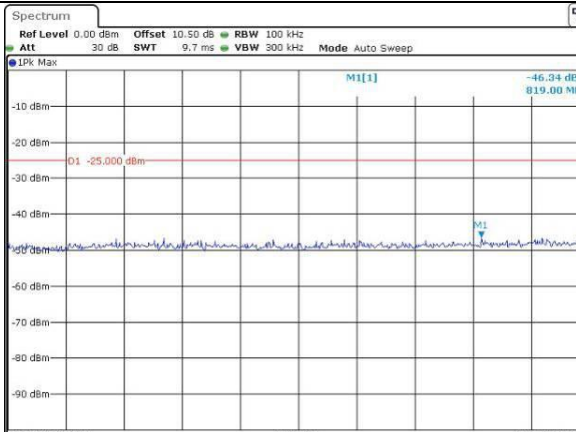
Channel

15MHz Bandwidth QPSK

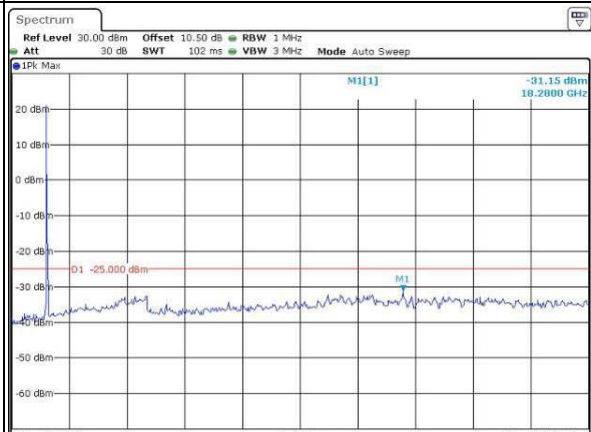
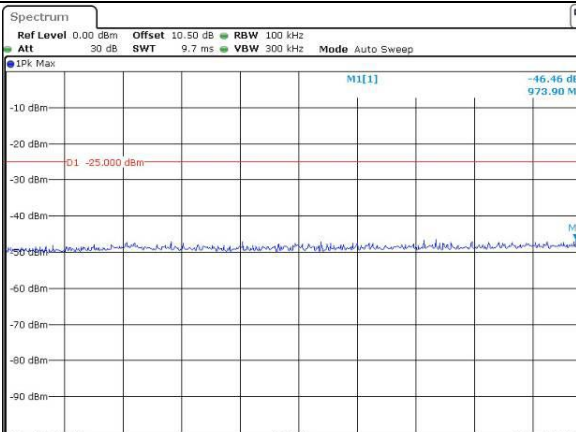
Lowest



Middle



Highest

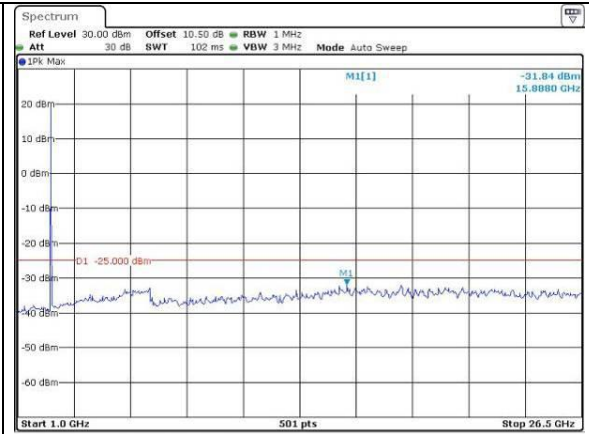
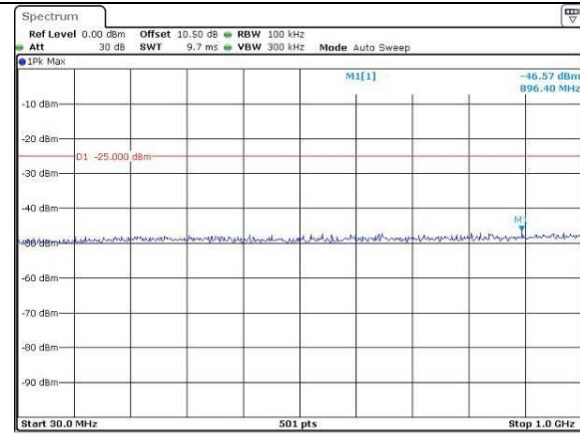


Spurious Emissions at Antenna Terminal

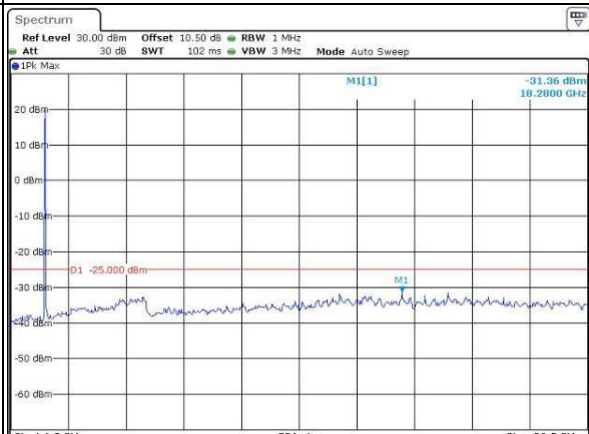
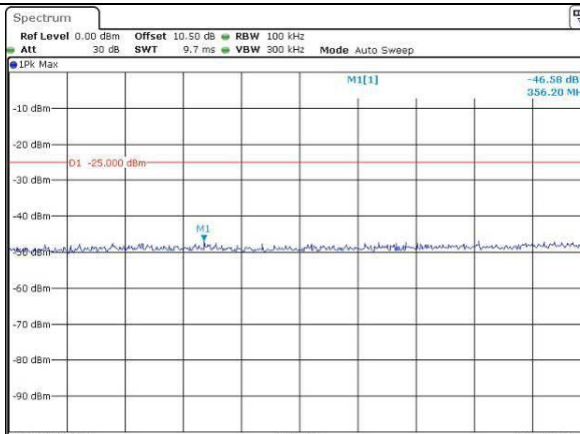
Channel

20MHz Bandwidth QPSK

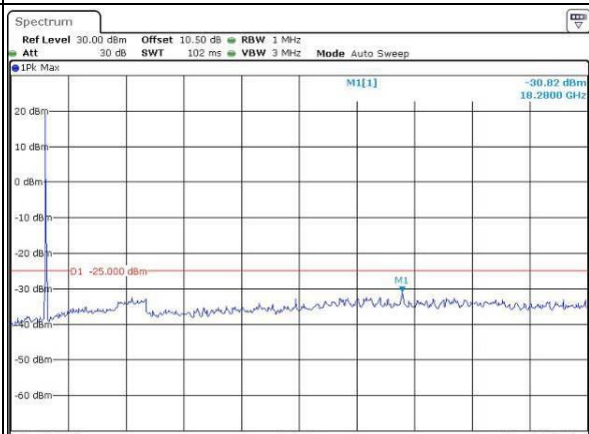
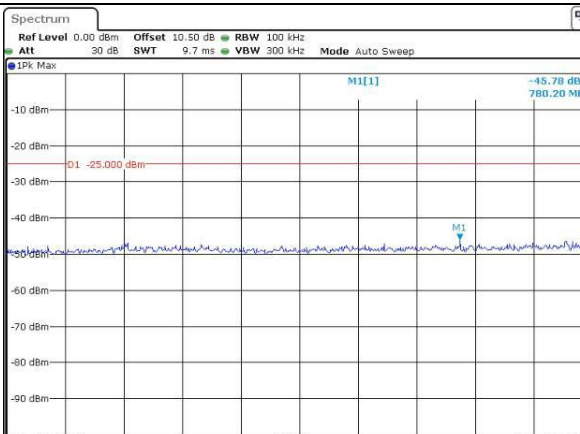
Lowest



Middle



Highest



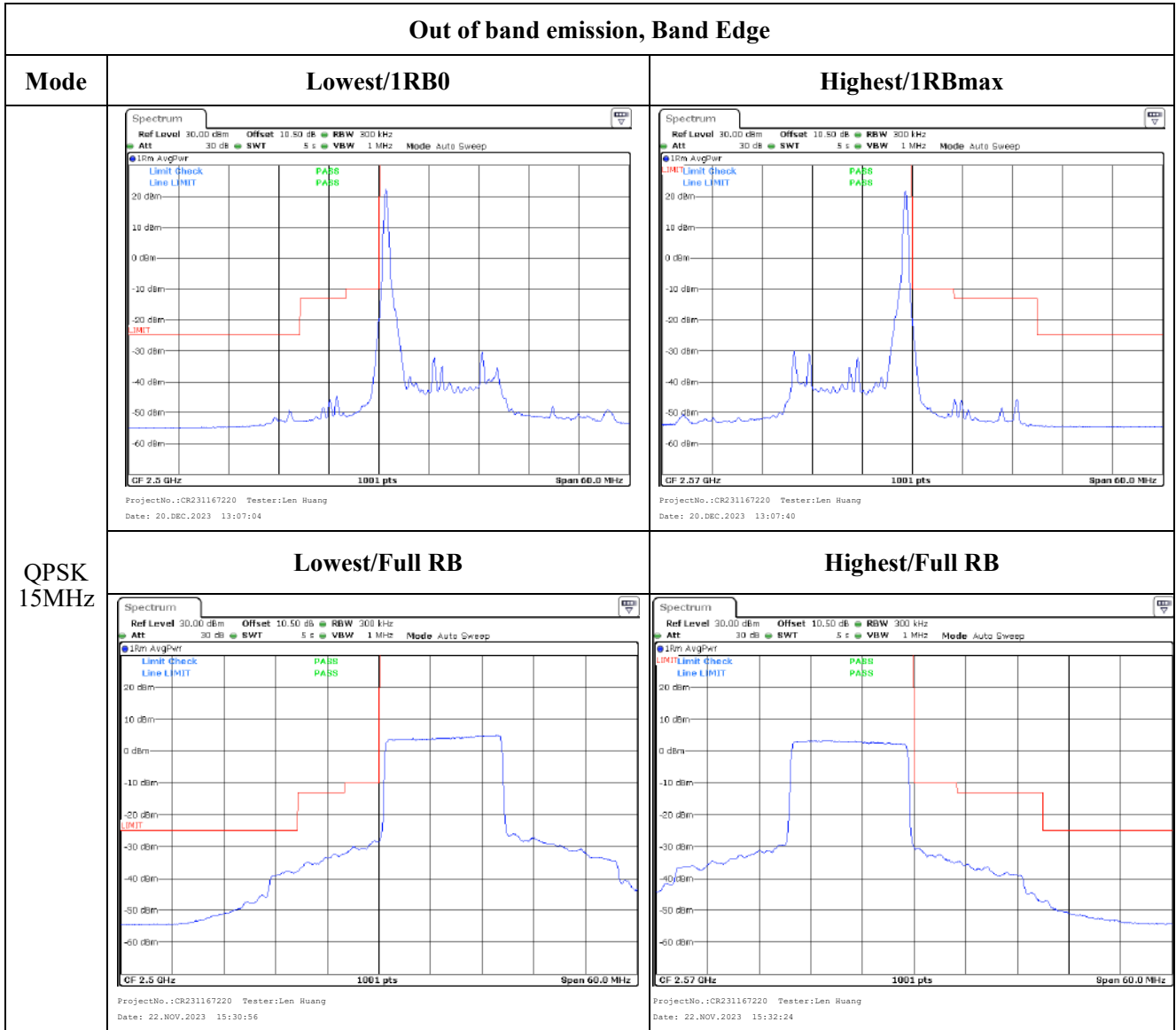
Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 5MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20. DEC.2023 11:56:32</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20. DEC.2023 11:57:09</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22. NOV.2023 15:23:33</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22. NOV.2023 15:24:49</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
<p>QPSK 10MHz</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 12:03:09</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 12:03:42</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22,NOV,2023 15:28:13</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22,NOV,2023 15:28:46</p>

Out of band emission, Band Edge



Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
QPSK 20MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 13:11:39</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 13:12:46</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22,NOV,2023 15:36:04</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22,NOV,2023 15:36:40</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 5MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 11:57:45</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20,DEC,2023 11:58:19</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22,NOV,2023 15:25:48</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22,NOV,2023 15:26:23</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 10MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 12:04:18</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 12:04:51</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22.NOV.2023 15:29:19</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22.NOV.2023 15:29:51</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 15MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 13:08:16</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 13:09:11</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22.NOV.2023 15:33:05</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22.NOV.2023 15:33:39</p>

Out of band emission, Band Edge

Mode	Lowest/1RB0	Highest/1RBmax
16QAM 20MHz	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 13:13:26</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 20.DEC.2023 13:14:01</p>
	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22.NOV.2023 15:38:34</p>	<p>ProjectNo.:CR231167220 Tester:Len Huang Date: 22.NOV.2023 15:39:13</p>

4.10 Antenna Port Test Data and Results for LTE Band 12

Serial Number:	2DMI-1	Test Date:	2023/11/22~2023/12/21
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.3~26	Relative Humidity: (%)	40~55	ATM Pressure: (kPa)	101
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40-N	102259	2023/4/18	2024/4/17
zhuoxiang	Coaxial Cable	SMA-178	211002	Each time	N/A
Minl-Circuits	Power Splitter	ZFRSC-183-S+	S F448201619	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	2023/9/28	2024/9/27
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