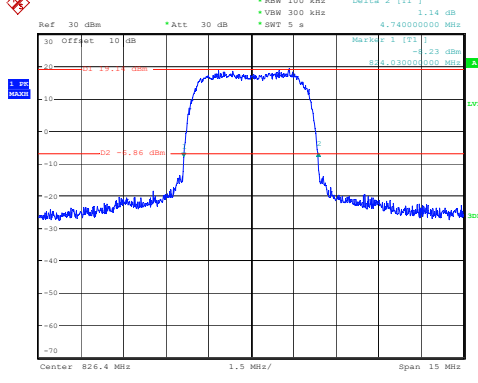
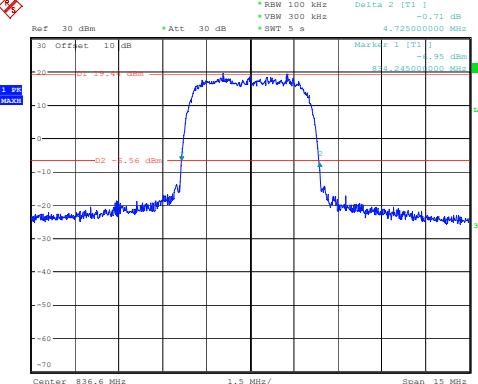
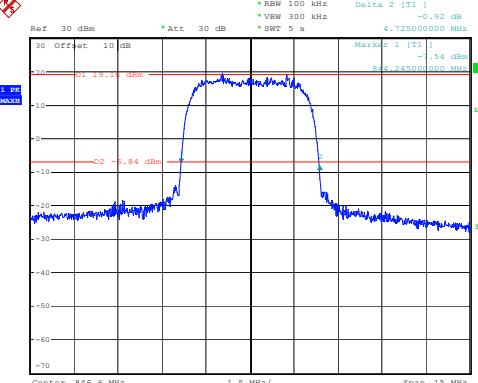


Test Plots(Note: The 10 dB is the Insertion loss of the RF cable and Power Splitter, which was offset into the Spectrum Analyzer):

26dB Bandwidth		
Channel	WCDMA R99	HSDPA
Lowest	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:32:50</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:07:54</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:36:35</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:04:14</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:39:48</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:58:31</p>

26dB Bandwidth

Channel	HSUPA
Lowest	 <p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7_SEP.2023 16:12:58</p>
Middle	 <p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7_SEP.2023 16:16:52</p>
Highest	 <p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7_SEP.2023 16:20:36</p>

Occupied Bandwidth

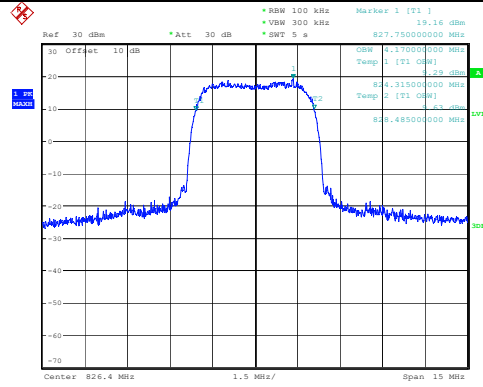
Channel	WCDMA R99	HSDPA
Lowest	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:32:09</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:07:12</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:36:08</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:03:32</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:39:22</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:56:49</p>

Occupied Bandwidth

Channel

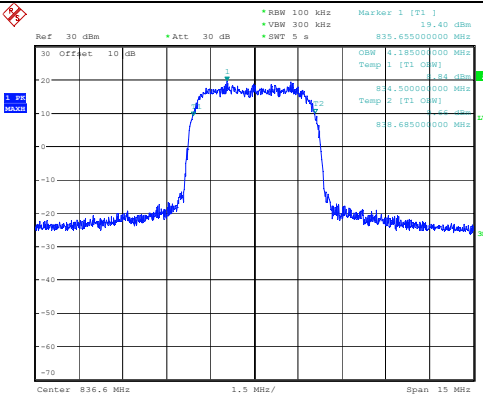
HSUPA

Lowest



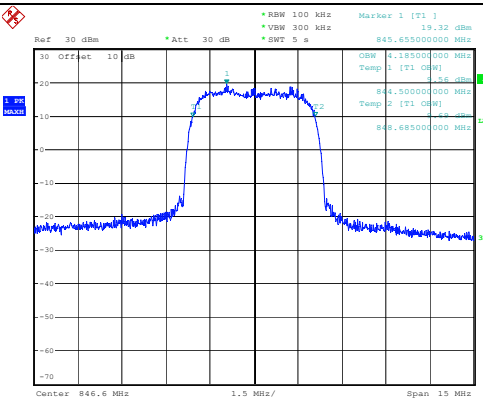
ProjectNo.:CR230848964 Tester:Rod Luo
 Date: 7_SEP.2023 16:12:18

Middle



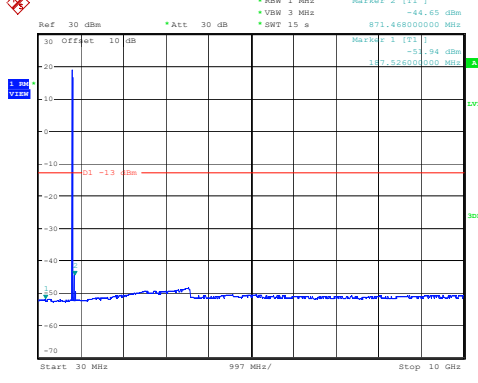
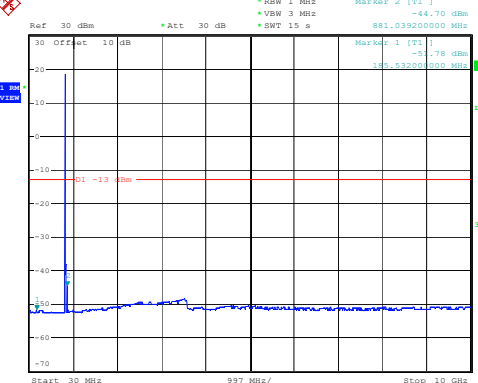
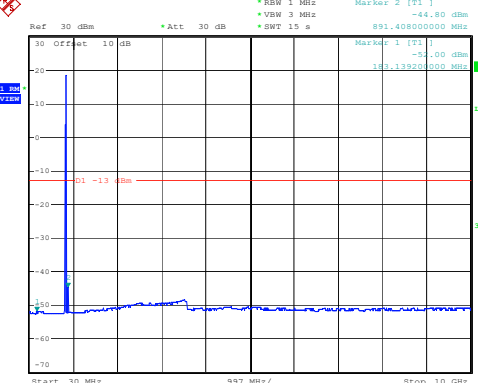
ProjectNo.:CR230848964 Tester:Rod Luo
 Date: 7_SEP.2023 16:15:56

Highest



ProjectNo.:CR230848964 Tester:Rod Luo
 Date: 7_SEP.2023 16:19:54

Spurious Emissions at Antenna Terminal

Channel	WCDMA R99
Lowest	 <p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:34:04</p>
Middle	 <p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:37:22</p>
Highest	 <p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:41:01</p>

Out of band emission, Band Edge

Mode	Lowest	Highest
R99	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:33:16</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 15:40:14</p>
HSUPA	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:13:24</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:21:02</p>
HSDPA	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 7.SEP.2023 16:08:21</p>	<p>ProjectNo.:CR230848964 Tester:Rod Luo Date: 19.SEP.2023 17:15:30</p>

4.6 Antenna Port Test Data and Results for LTE Band 2

Serial Number:	2A93-1	Test Date:	2023/9/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	28.3	Relative Humidity: (%)	46	ATM Pressure: (kPa)	100.2
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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
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Weinschel	Power Splitter	1515	RA914	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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).

Test Frequency for Each Mode:

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

Test Data:**FCC§2.1046;§ 24.232****RF Output Power:**

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP(dBm)	EIRP Limit(dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	17.21	17.03	17.22	16.03	33
	RB1#3	17.42	17.20	17.38		
	RB1#5	17.23	17.06	17.25		
	RB3#0	17.40	17.13	17.34		
	RB3#3	17.43	17.09	17.36		
	RB6#0	16.36	16.13	16.30		
1.4MHz 16QAM	RB1#0	16.24	16.04	16.31	15.13	33
	RB1#3	16.32	16.25	16.53		
	RB1#5	16.27	16.05	16.34		
	RB3#0	16.38	16.27	16.35		
	RB3#3	16.46	16.27	16.33		
	RB6#0	15.31	15.17	15.40		
3MHz QPSK	RB1#0	17.31	17.09	17.25	15.92	33
	RB1#8	17.24	17.03	17.32		
	RB1#14	17.22	17.05	17.26		
	RB6#0	16.21	16.09	16.27		
	RB6#9	16.27	16.06	16.21		
	RB15#0	16.25	16.06	16.21		
3MHz 16QAM	RB1#0	16.18	16.63	16.37	15.24	33
	RB1#8	16.30	16.64	16.35		
	RB1#14	16.22	16.61	16.35		
	RB6#0	15.26	15.17	15.33		
	RB6#9	15.23	15.15	15.31		
	RB15#0	15.33	15.16	15.21		
5MHz QPSK	RB1#0	17.22	17.00	17.18	15.93	33
	RB1#13	17.26	17.13	17.33		
	RB1#24	17.17	16.99	17.20		
	RB15#0	16.20	16.10	16.28		
	RB15#10	16.26	16.08	16.21		
	RB25#0	16.23	16.08	16.22		
5MHz 16QAM	RB1#0	16.49	16.08	16.08	15.20	33
	RB1#13	16.60	16.19	16.22		
	RB1#24	16.42	16.08	16.09		
	RB15#0	15.28	15.13	15.35		
	RB15#10	15.28	15.14	15.25		
	RB25#0	15.28	15.12	15.29		

10MHz QPSK	RB1#0	17.28	17.13	17.17	16.03	33
	RB1#25	17.42	17.29	17.43		
	RB1#49	17.21	17.07	17.27		
	RB25#0	16.30	16.13	16.30		
	RB25#25	16.30	16.11	16.22		
	RB50#0	16.25	16.11	16.25		
10MHz 16QAM	RB1#0	16.40	16.11	16.74	15.56	33
	RB1#25	16.51	16.25	16.96		
	RB1#49	16.30	16.08	16.81		
	RB25#0	15.36	15.22	15.38		
	RB25#25	15.33	15.17	15.31		
	RB50#0	15.30	15.18	15.32		
15MHz QPSK	RB1#0	17.26	16.99	17.14	15.86	33
	RB1#38	17.26	17.09	17.25		
	RB1#74	17.06	16.97	17.18		
	RB36#0	16.37	16.16	16.22		
	RB36#39	16.24	16.08	16.19		
	RB75#0	16.26	16.10	16.22		
15MHz 16QAM	RB1#0	16.67	16.60	16.24	15.27	33
	RB1#38	16.63	16.67	16.33		
	RB1#74	16.45	16.55	16.29		
	RB36#0	15.31	15.16	15.28		
	RB36#39	15.21	15.09	15.24		
	RB75#0	15.26	15.15	15.23		
20MHz QPSK	RB1#0	17.17	16.92	16.98	15.97	33
	RB1#50	17.37	17.26	17.35		
	RB1#99	16.96	16.86	17.04		
	RB50#0	16.28	16.14	16.17		
	RB50#50	16.18	16.01	16.06		
	RB100#0	16.25	16.12	16.18		
20MHz 16QAM	RB1#0	16.33	16.43	16.24	15.41	33
	RB1#50	16.50	16.81	16.57		
	RB1#99	16.08	16.36	16.29		
	RB50#0	15.28	15.20	15.21		
	RB50#50	15.21	15.09	15.10		
	RB100#0	15.27	15.14	15.20		

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	5.10	6.12	6.23	13
	RB100#0	5.42	5.25	5.28	13
20MHz 16QAM	RB1#0	7.42	6	7.19	13
	RB100#0	6.17	6.03	6.23	13
Result:					Pass

FCC §2.1049, §24.238:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.096	1.102	1.290	1.308	1.320
1.4MHz 16QAM	1.096	1.096	1.09	1.296	1.320	1.29
3MHz QPSK	2.683	2.683	2.683	2.880	2.880	2.880
3MHz 16QAM	2.683	2.683	2.683	2.880	2.892	2.868
5MHz QPSK	4.511	4.491	4.511	4.960	4.960	4.940
5MHz 16QAM	4.511	4.511	4.471	4.960	4.960	4.940
10MHz QPSK	8.942	8.942	8.942	9.600	9.680	9.560
10MHz 16QAM	8.942	8.942	8.942	9.600	9.560	9.640
15MHz QPSK	13.473	13.473	13.533	14.700	14.760	14.760
15MHz 16QAM	13.533	13.473	13.533	14.640	14.640	14.700
20MHz QPSK	17.964	17.964	17.964	19.200	19.440	19.120
20MHz 16QAM	17.884	17.884	17.964	19.360	19.200	19.200

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

FCC §2.1051, § 24.238 (a):Spurious Emissions at Antenna Terminal	
Result:	Pass, Please refer to the test plots of Spurious Emissions at Antenna Terminal.

FCC §2.1051, § 24.238 (a):Out of band emission, Band Edge	
Result:	Pass, Please refer to the test plots of Out of band emission, Band Edge.

FCC §2.1055, §24.235: Frequency Stability						
Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	1850.333	1850.000	1909.830	1910.000
	-20	3.85	1850.299	1850.000	1909.747	1910.000
	-10	3.85	1850.287	1850.000	1909.826	1910.000
	0	3.85	1850.177	1850.000	1909.820	1910.000
	10	3.85	1850.229	1850.000	1909.802	1910.000
	20	3.85	1850.308	1850.000	1909.876	1910.000
	30	3.85	1850.218	1850.000	1909.728	1910.000
	40	3.85	1850.226	1850.000	1909.773	1910.000
	50	3.85	1850.137	1850.000	1909.732	1910.000
Frequency Stability vs. Voltage	20	3.35	1850.170	1850.000	1909.818	1910.000
	20	4.4	1850.336	1850.000	1909.817	1910.000
					Result:	Pass
Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge,Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.85	1850.313	1850.000	1909.741	1910.000
	-20	3.85	1850.325	1850.000	1909.795	1910.000
	-10	3.85	1850.332	1850.000	1909.771	1910.000
	0	3.85	1850.315	1850.000	1909.758	1910.000
	10	3.85	1850.131	1850.000	1909.762	1910.000
	20	3.85	1850.312	1850.000	1909.814	1910.000
	30	3.85	1850.324	1850.000	1909.725	1910.000
	40	3.85	1850.218	1850.000	1909.861	1910.000
	50	3.85	1850.150	1850.000	1909.779	1910.000
Frequency Stability vs. Voltage	20	3.35	1850.128	1850.000	1909.846	1910.000
	20	4.4	1850.184	1850.000	1909.804	1910.000
					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	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:39:05</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:39:27</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:39:48</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:40:09</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:40:28</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:40:46</p>

Occupied Bandwidth

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

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:44:30</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:44:38</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:45:23</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:45:48</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:46:14</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:46:35</p>

Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:47:39</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:48:07</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:48:43</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:49:21</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:49:54</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:50:28</p>

Occupied Bandwidth

Channel	15MHz Bandwidth QPSK	15MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:51:43</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:52:21</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:52:53</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:53:18</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:53:43</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:54:17</p>

Occupied Bandwidth

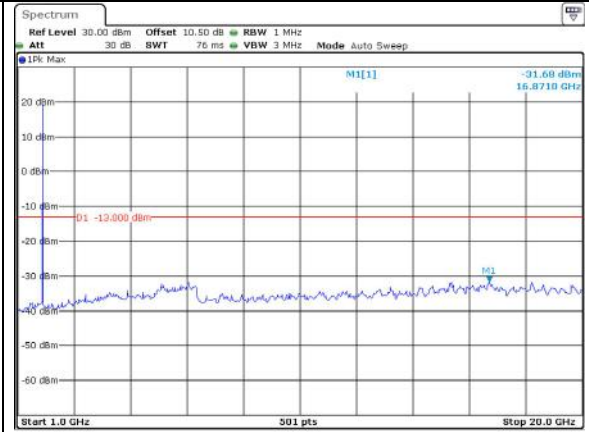
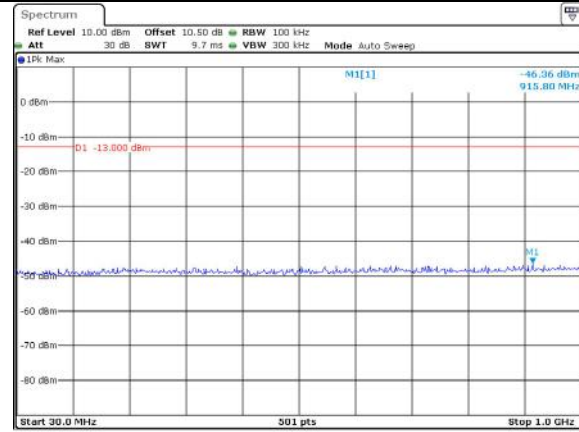
Channel	20MHz Bandwidth QPSK	20MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:55:14</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:56:32</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:57:08</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:57:45</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:58:21</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 08:59:02</p>

Spurious Emissions at Antenna Terminal

Channel

1.4MHz Bandwidth QPSK

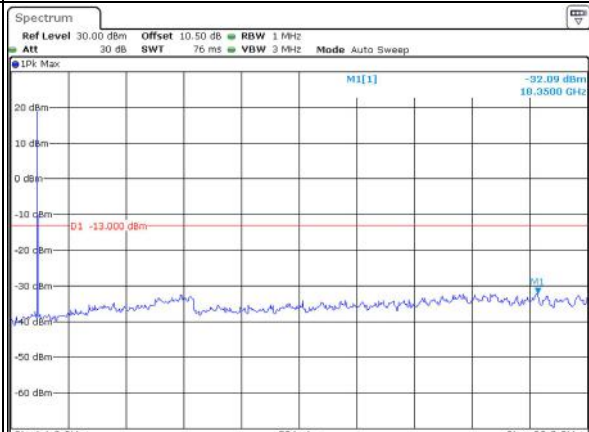
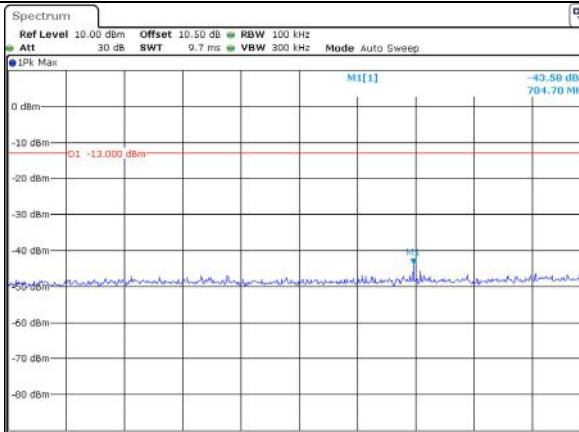
Lowest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 10:59:35

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:00:21

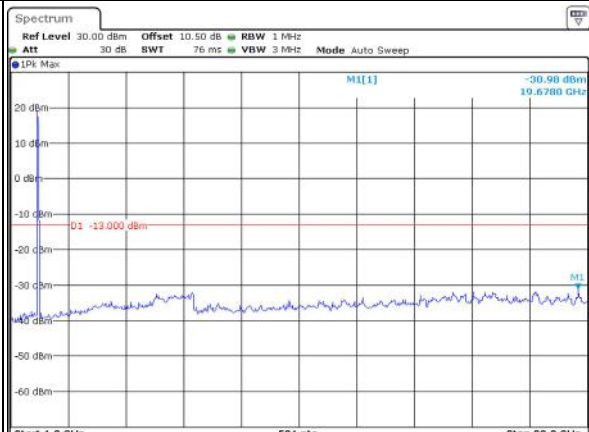
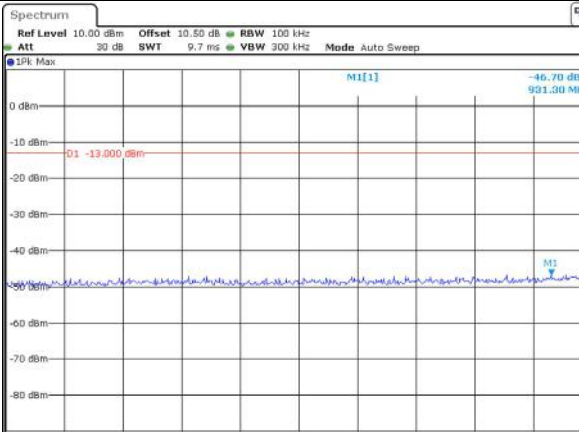
Middle



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:00:51

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:01:10

Highest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:01:37

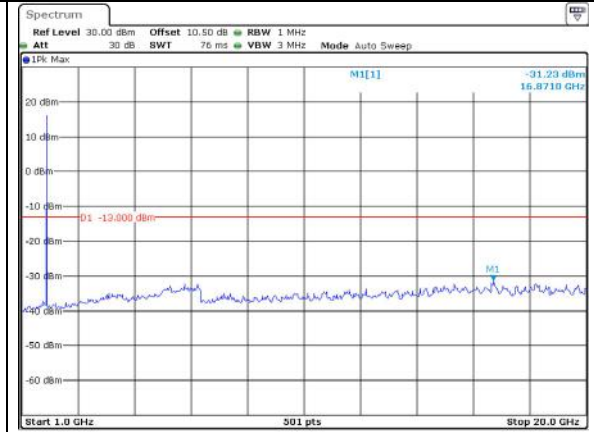
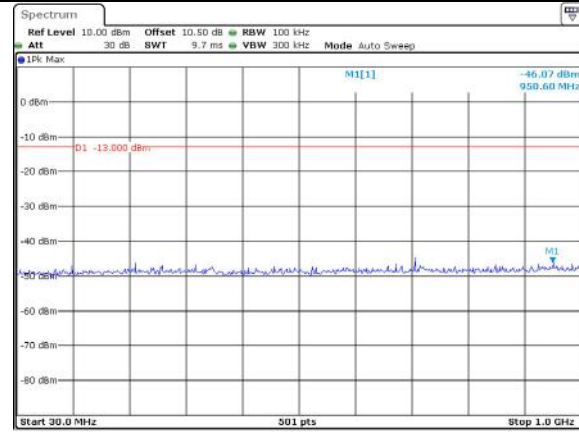
ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:02:04

Spurious Emissions at Antenna Terminal

Channel

3MHz Bandwidth QPSK

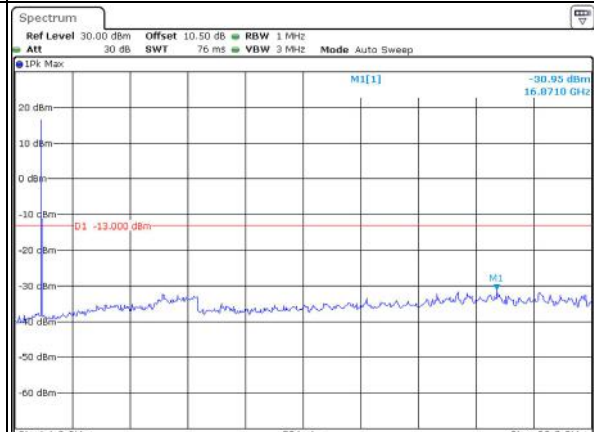
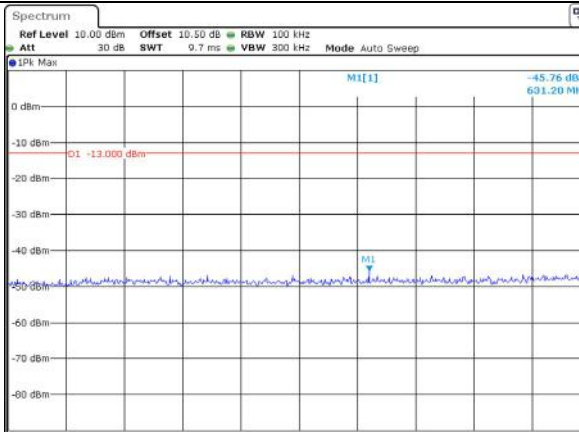
Lowest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:03:08

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:03:31

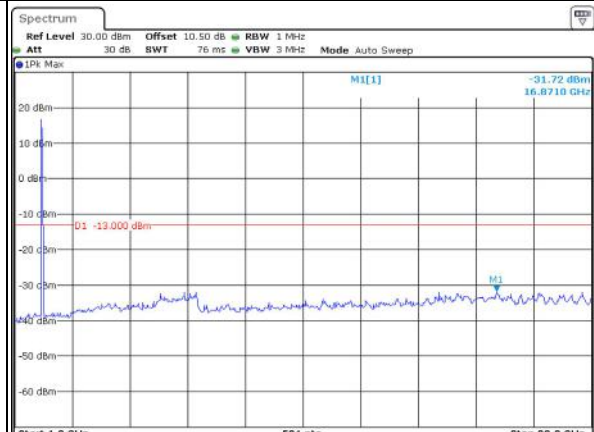
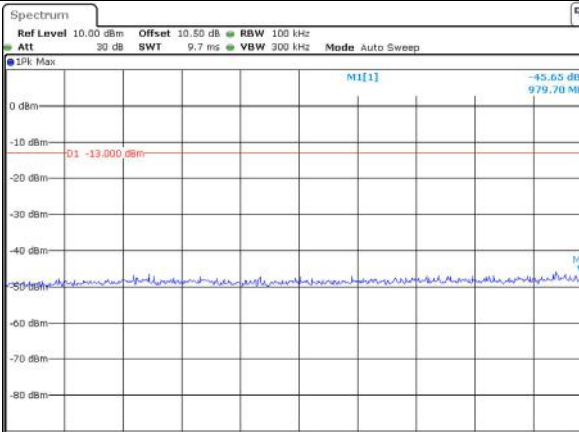
Middle



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:04:05

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:04:28

Highest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:04:55

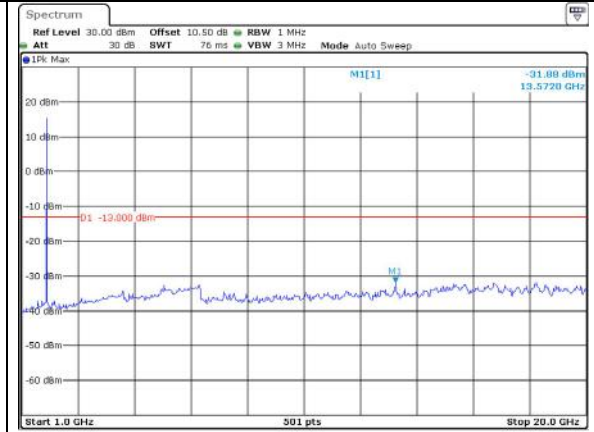
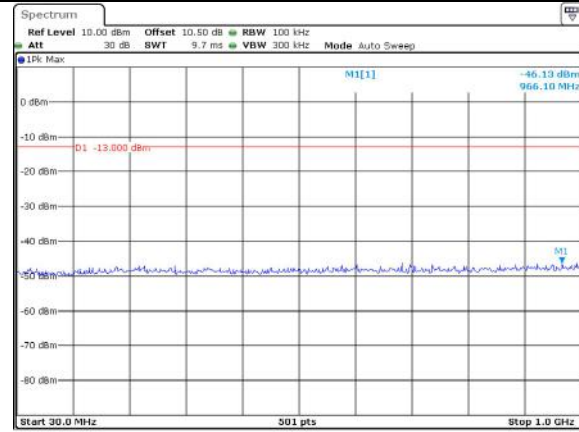
ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:05:21

Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

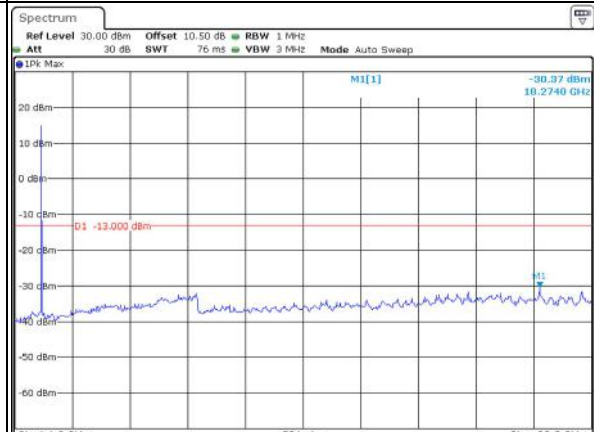
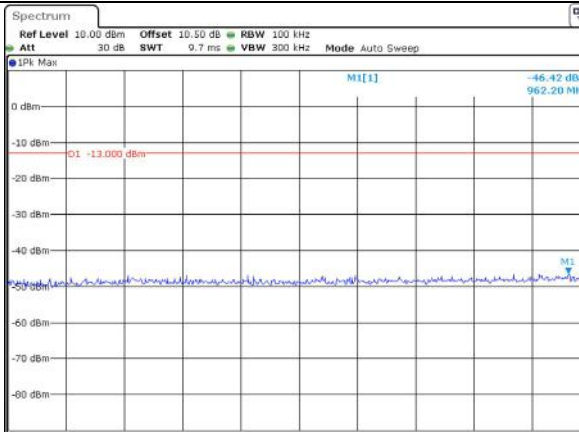
Lowest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:06:49

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:07:15

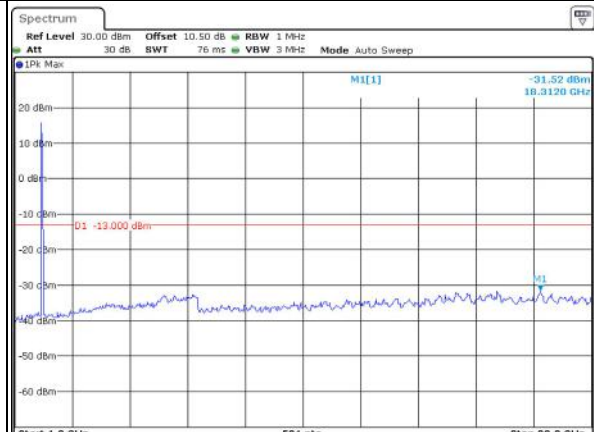
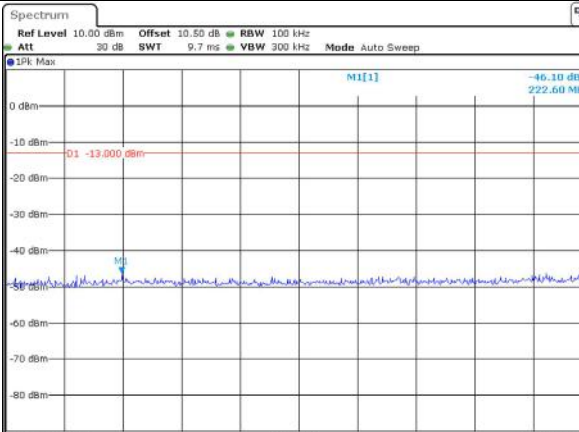
Middle



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:07:45

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:08:15

Highest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:08:39

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:09:05

Spurious Emissions at Antenna Terminal

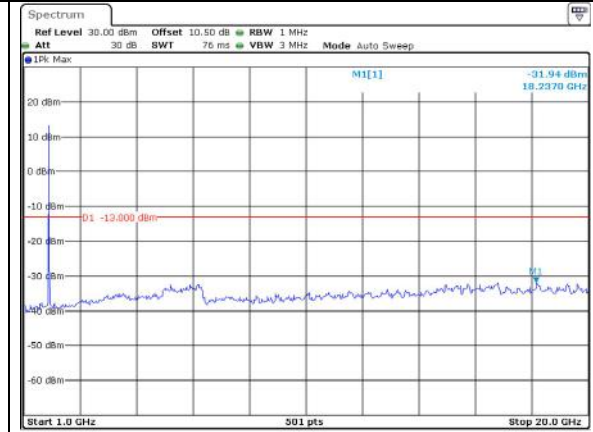
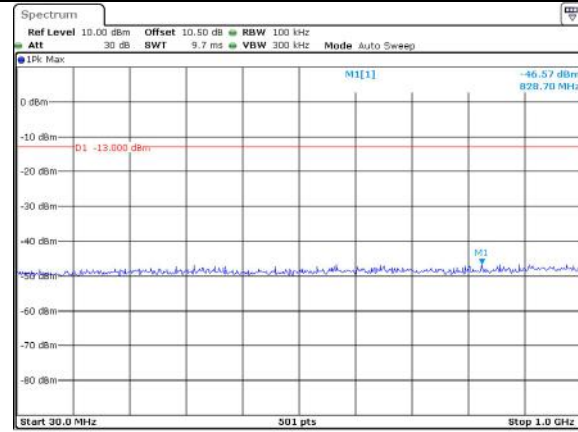
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref Level 10.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -46.65 dBm 999.00 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:10:10</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -31.31 dBm 16.8710 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:10:30</p>
Middle	<p>Ref Level 10.00 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] -46.23 dBm 315.60 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:10:58</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -31.72 dBm 18.2740 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:11:18</p>
Highest	<p>Ref Level 10.00 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] -46.14 dBm 733.80 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:11:43</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -31.80 dBm 15.5920 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:12:09</p>

Spurious Emissions at Antenna Terminal

Channel

15MHz Bandwidth QPSK

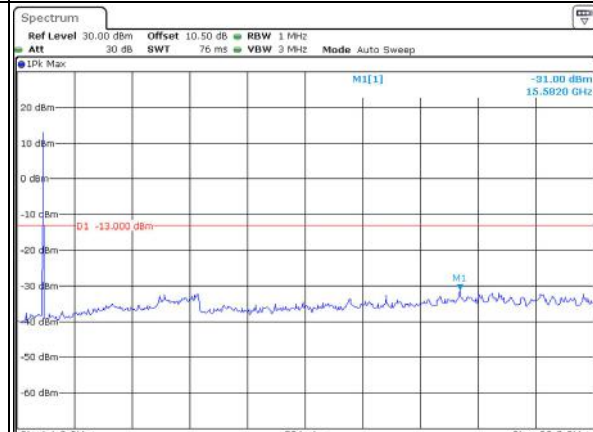
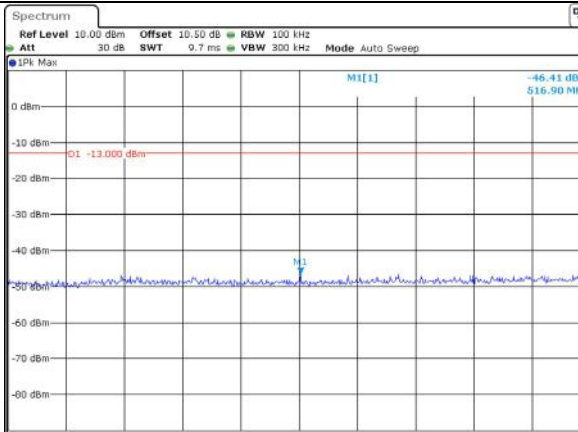
Lowest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:13:23

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:13:46

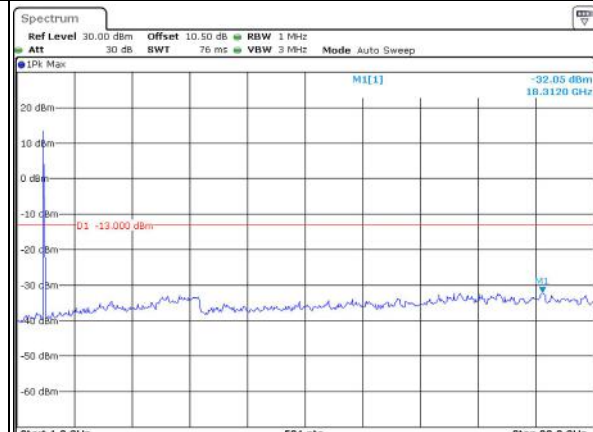
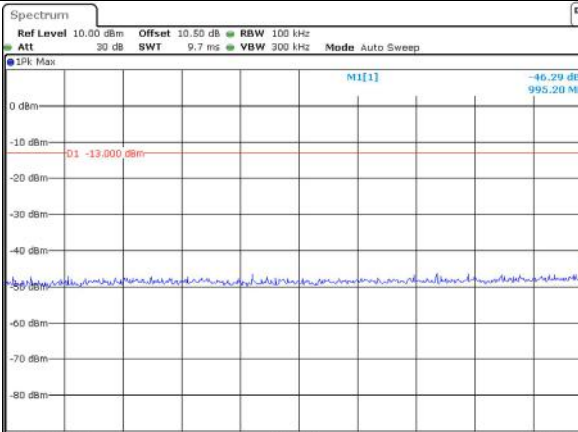
Middle



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:14:16

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:14:39

Highest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:15:16

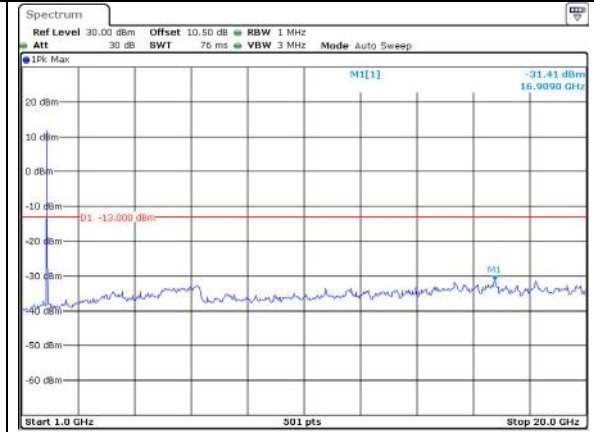
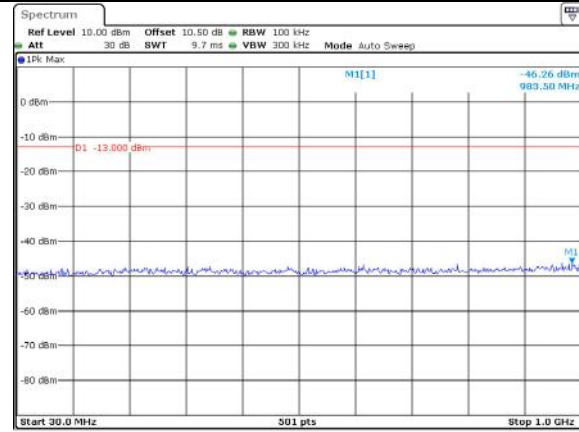
ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:15:36

Spurious Emissions at Antenna Terminal

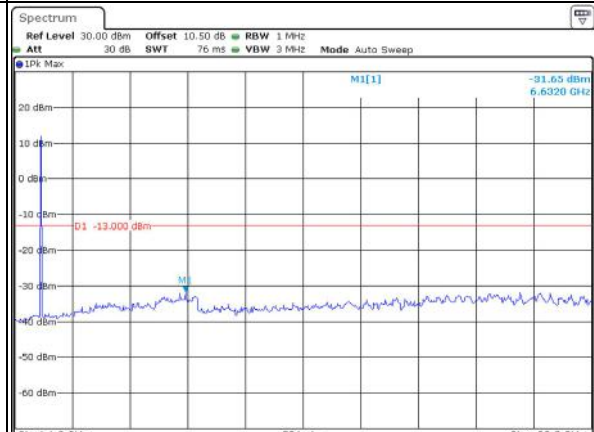
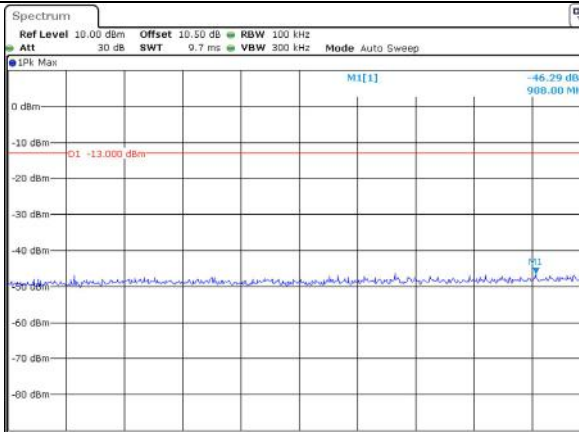
Channel

20MHz Bandwidth QPSK

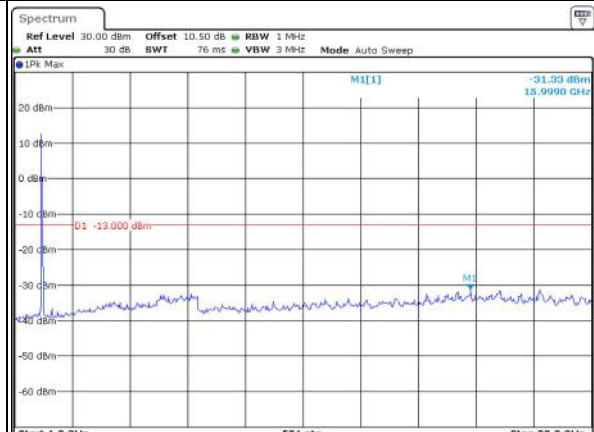
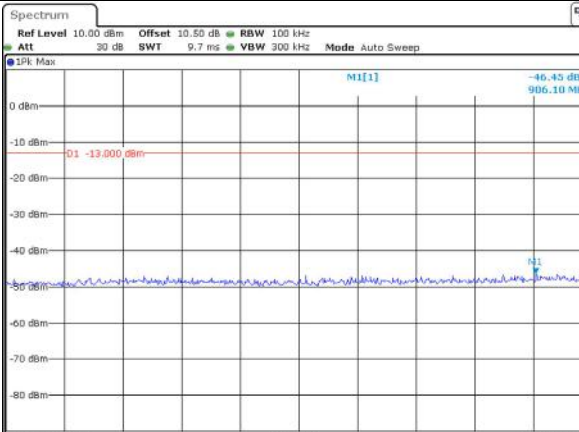
Lowest



Middle



Highest



Out of band emission, Band Edge

Mode	Lowest	Highest
QPSK 1.4MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:02:07</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:02:23</p>
QPSK 3MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:03:14</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:03:30</p>
QPSK 5MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:04:39</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:04:58</p>

Out of band emission, Band Edge

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

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 1.4MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:02:14</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:02:31</p>
16QAM 3MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:03:22</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:03:38</p>
16QAM 5MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:04:48</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:05:07</p>

Out of band emission, Band Edge

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

4.7 Antenna Port Test Data and Results for LTE Band 4

Serial Number:	2A93-1	Test Date:	2023/9/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	28.3	Relative Humidity: (%)	46	ATM Pressure: (kPa)	100.2
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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
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Weinschel	Power Splitter	1515	RA914	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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).

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	18.79	18.89	18.78	17.86	30
	RB1#3	18.99	19.06	18.94		
	RB1#5	18.77	18.89	18.76		
	RB3#0	18.92	18.95	18.88		
	RB3#3	18.93	18.90	18.87		
	RB6#0	17.91	17.92	17.83		
1.4MHz 16QAM	RB1#0	17.80	17.90	17.91	16.95	30
	RB1#3	18.06	18.05	18.09		
	RB1#5	17.81	17.89	17.85		
	RB3#0	17.92	18.12	17.77		
	RB3#3	17.90	18.15	17.83		
	RB6#0	16.87	16.94	16.91		
3MHz QPSK	RB1#0	18.82	18.97	18.85	17.77	30
	RB1#8	18.81	18.97	18.85		
	RB1#14	18.79	18.90	18.80		
	RB6#0	17.83	17.89	17.78		
	RB6#9	17.84	17.88	17.82		
	RB15#0	17.83	17.90	17.80		
3MHz 16QAM	RB1#0	18.44	18.08	17.85	17.24	30
	RB1#8	18.40	18.06	17.88		
	RB1#14	18.37	18.04	17.82		
	RB6#0	16.97	16.96	16.79		
	RB6#9	16.92	16.98	16.77		
	RB15#0	16.97	16.94	16.92		
5MHz QPSK	RB1#0	18.77	18.83	18.77	17.8	30
	RB1#13	18.91	19.00	18.91		
	RB1#24	18.75	18.81	18.78		
	RB15#0	17.81	17.90	17.82		
	RB15#10	17.84	17.99	17.82		
	RB25#0	17.80	17.89	17.79		
5MHz 16QAM	RB1#0	18.03	17.93	17.67	17.01	30
	RB1#13	18.21	18.07	17.78		
	RB1#24	18.05	17.91	17.65		
	RB15#0	16.83	17.01	16.90		
	RB15#10	16.90	17.01	16.84		
	RB25#0	16.87	16.96	16.90		

10MHz QPSK	RB1#0	18.89	18.93	18.90	17.92	30
	RB1#25	18.99	19.12	19.01		
	RB1#49	18.91	18.85	18.82		
	RB25#0	17.84	17.89	17.86		
	RB25#25	17.86	17.91	17.81		
	RB50#0	17.85	17.89	17.80		
10MHz 16QAM	RB1#0	17.87	18.51	18.05	17.51	30
	RB1#25	18.04	18.71	18.16		
	RB1#49	17.91	18.46	17.95		
	RB25#0	16.97	17.03	16.93		
	RB25#25	17.01	17.00	16.85		
	RB50#0	16.93	16.97	16.87		
15MHz QPSK	RB1#0	18.82	18.79	18.80	17.79	30
	RB1#38	18.92	18.99	18.85		
	RB1#74	18.83	18.79	18.68		
	RB36#0	17.83	17.90	17.94		
	RB36#39	17.93	17.89	17.84		
	RB75#0	17.88	17.90	17.88		
15MHz 16QAM	RB1#0	17.91	18.26	18.39	17.24	30
	RB1#38	18.04	18.36	18.44		
	RB1#74	17.90	18.20	18.30		
	RB36#0	16.90	16.88	16.94		
	RB36#39	16.96	16.92	16.82		
	RB75#0	16.91	16.91	16.89		
20MHz QPSK	RB1#0	18.67	18.68	18.72	17.87	30
	RB1#50	19.07	19.04	19.06		
	RB1#99	18.65	18.59	18.56		
	RB50#0	17.83	17.94	17.92		
	RB50#50	17.87	17.90	17.78		
	RB100#0	17.86	17.90	17.86		
20MHz 16QAM	RB1#0	17.86	18.23	17.99	17.49	30
	RB1#50	18.31	18.69	18.33		
	RB1#99	17.87	18.15	17.83		
	RB50#0	16.87	16.96	16.92		
	RB50#50	16.87	16.90	16.80		
	RB100#0	16.91	16.98	16.92		

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	6.03	6.29	6.14	13
	RB100#0	5.48	5.51	5.42	13
20MHz 16QAM	RB1#0	7.54	6.41	7.13	13
	RB100#0	6.32	6.29	6.29	13
Result:					Pass

FCC §2.1049, §27.53:Occupied Bandwidth						
Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.102	1.096	1.096	1.284	1.296	1.320
1.4MHz 16QAM	1.096	1.096	1.09	1.290	1.314	1.284
3MHz QPSK	2.683	2.683	2.683	2.880	2.868	2.880
3MHz 16QAM	2.683	2.683	2.683	2.868	2.904	2.880
5MHz QPSK	4.511	4.491	4.511	4.960	4.920	4.960
5MHz 16QAM	4.511	4.511	4.471	4.960	4.960	4.900
10MHz QPSK	8.942	8.942	8.942	9.560	9.560	9.680
10MHz 16QAM	8.942	8.942	8.942	9.600	9.560	9.520
15MHz QPSK	13.413	13.473	13.533	14.640	14.760	14.760
15MHz 16QAM	13.533	13.533	13.533	14.640	14.700	14.700
20MHz QPSK	17.884	17.884	17.964	19.200	19.280	19.200
20MHz 16QAM	17.884	17.964	17.964	19.200	19.360	19.200

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	3.85	1710.136	1710.00	1754.835	1755
	-20	3.85	1710.313	1710.00	1754.732	1755
	-10	3.85	1710.307	1710.00	1754.802	1755
	0	3.85	1710.192	1710.00	1754.824	1755
	10	3.85	1710.207	1710.00	1754.796	1755
	20	3.85	1710.156	1710.00	1754.871	1755
	30	3.85	1710.297	1710.00	1754.884	1755
	40	3.85	1710.212	1710.00	1754.746	1755
	50	3.85	1710.281	1710.00	1754.824	1755
Frequency Stability vs. Voltage	20	3.35	1710.311	1710.00	1754.816	1755
	20	4.4	1710.266	1710.00	1754.720	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	3.85	1710.276	1710.00	1754.756	1755
	-20	3.85	1710.172	1710.00	1754.807	1755
	-10	3.85	1710.162	1710.00	1754.742	1755
	0	3.85	1710.240	1710.00	1754.873	1755
	10	3.85	1710.154	1710.00	1754.853	1755
	20	3.85	1710.332	1710.00	1754.768	1755
	30	3.85	1710.326	1710.00	1754.853	1755
	40	3.85	1710.238	1710.00	1754.751	1755
	50	3.85	1710.336	1710.00	1754.834	1755
Frequency Stability vs. Voltage	20	3.35	1710.212	1710.00	1754.872	1755
	20	4.4	1710.323	1710.00	1754.837	1755
					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	1.4MHz Bandwidth QPSK	1.4MHz Bandwidth 16QAM
Lowest		
Middle		
Highest		

Occupied Bandwidth

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

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:05:07</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:05:12</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:05:57</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:06:21</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:06:41</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:06:59</p>

Occupied Bandwidth

Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:07:52</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:08:21</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:08:53</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:09:15</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:09:41</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:10:10</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.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:14:57</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:15:32</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:16:02</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:16:33</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:17:05</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 09:17:34</p>

Spurious Emissions at Antenna Terminal

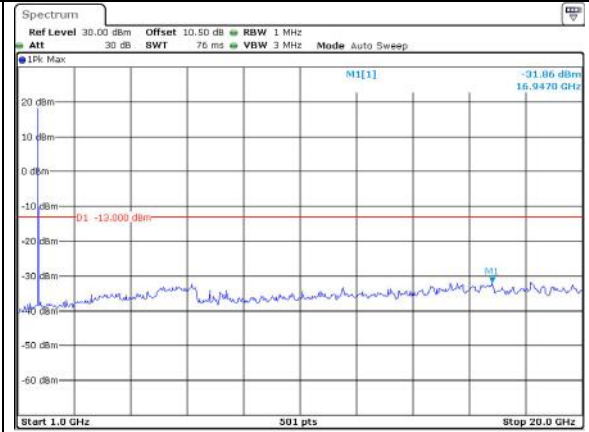
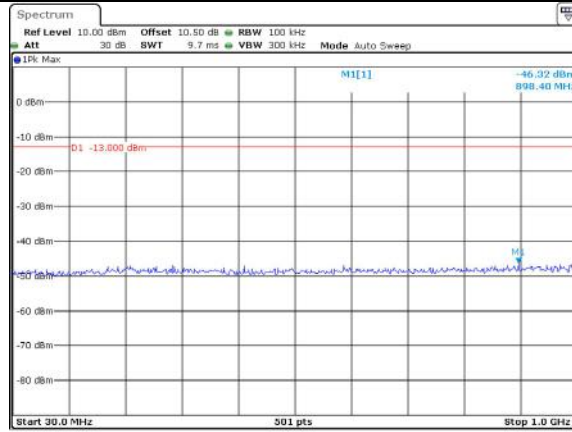
Channel	1.4MHz Bandwidth QPSK	
Lowest	<p>Ref Level 10.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max MI[1] -45.92 dBm 915.80 MHz</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 11:20:21</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max MI[1] -31.06 dBm 18.3120 GHz</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 11:20:44</p>
Middle	<p>Ref Level 10.00 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 MI[1] -46.21 dBm 993.20 MHz</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 11:21:07</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max MI[1] -31.74 dBm 6.9730 GHz</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 11:21:33</p>
Highest	<p>Ref Level 10.00 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 MI[1] -46.37 dBm 973.90 MHz</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 11:22:10</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max MI[1] -32.28 dBm 18.2740 GHz</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 11:22:33</p>

Spurious Emissions at Antenna Terminal

Channel

3MHz Bandwidth QPSK

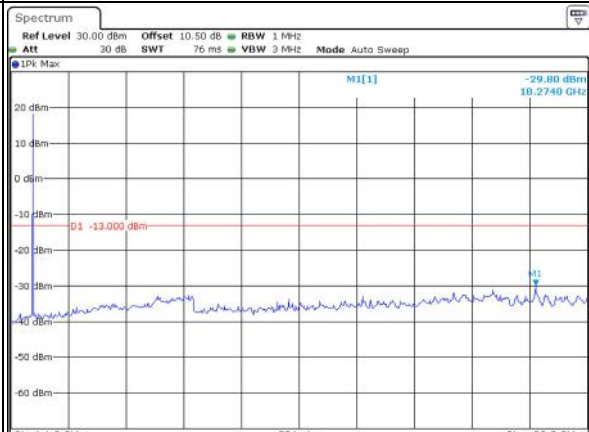
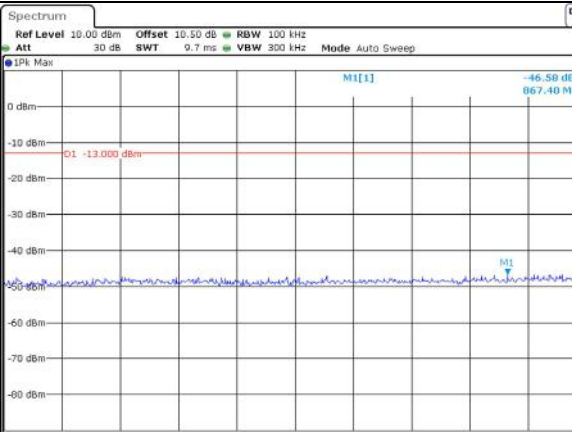
Lowest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:23:29

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:23:55

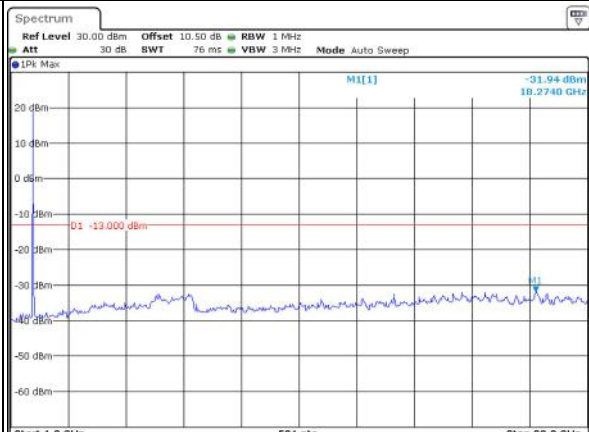
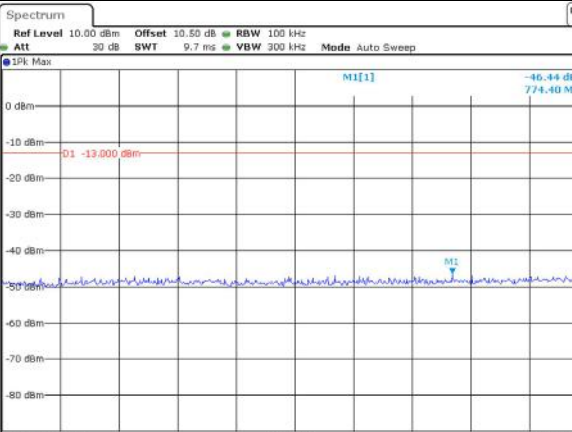
Middle



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:24:25

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:24:54

Highest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:25:21

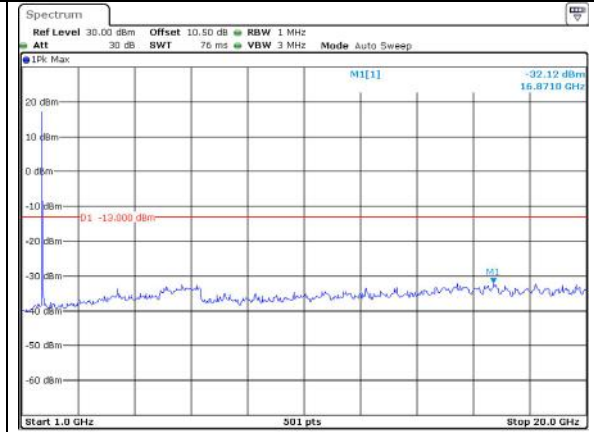
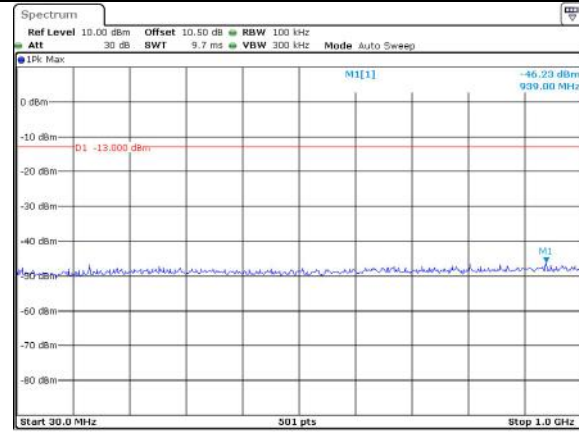
ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 11:25:44

Spurious Emissions at Antenna Terminal

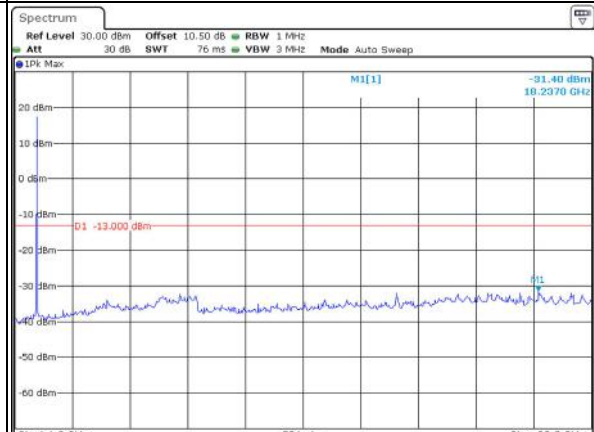
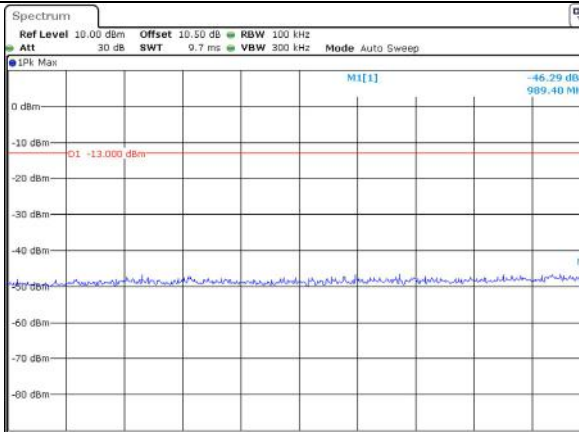
Channel

5MHz Bandwidth QPSK

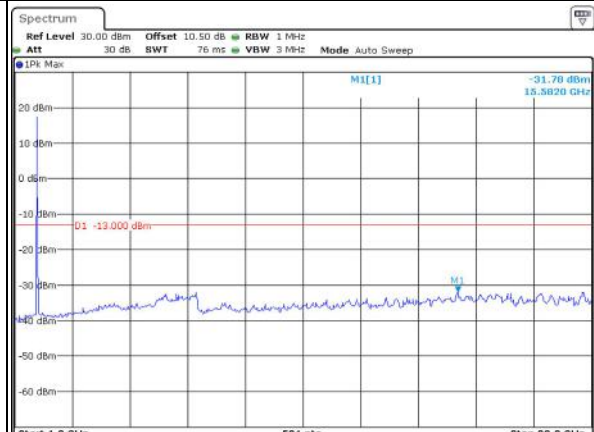
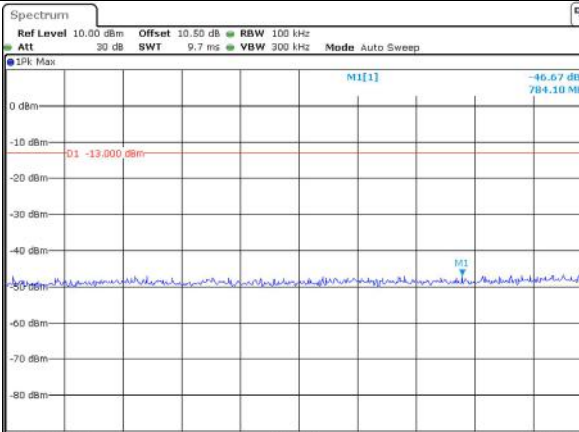
Lowest



Middle



Highest



Spurious Emissions at Antenna Terminal

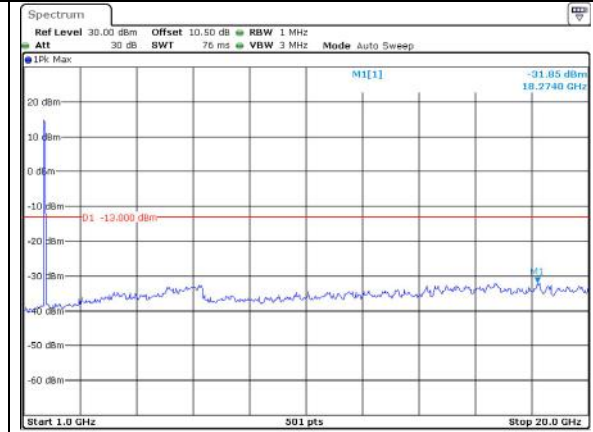
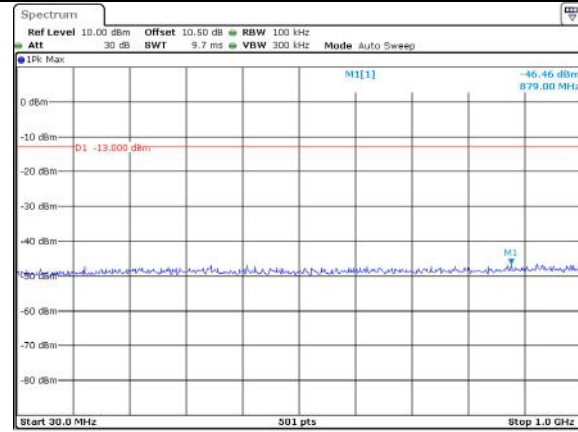
Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref Level 10.00 dBm Offset 10.50 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -45.94 dBm 931.50 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:29:46</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -32.03 dBm 16.3020 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:30:13</p>
Middle	<p>Ref Level 10.00 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] -46.48 dBm 865.40 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:30:44</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -30.89 dBm 17.6300 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:31:13</p>
Highest	<p>Ref Level 10.00 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] -46.87 dBm 966.10 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:31:38</p>	<p>Ref Level 30.00 dBm Offset 10.50 dB RBW 1 MHz Att 30 dB SWT 76 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -31.64 dBm 16.9090 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 20.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9,SEP,2023 11:32:01</p>

Spurious Emissions at Antenna Terminal

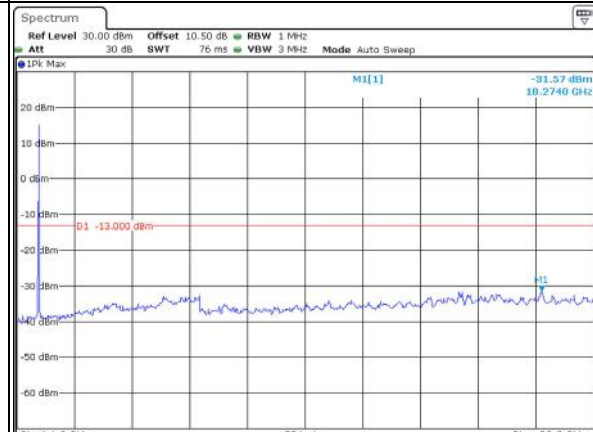
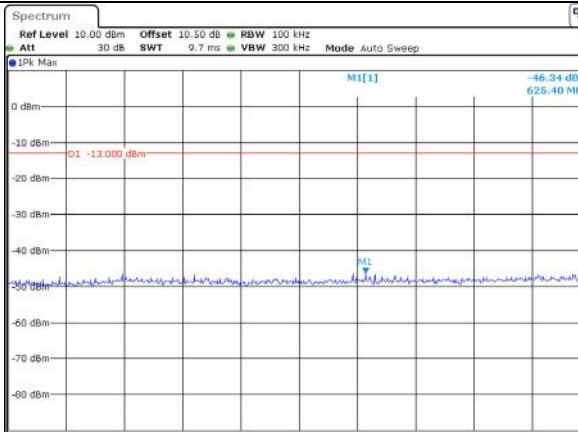
Channel

15MHz Bandwidth QPSK

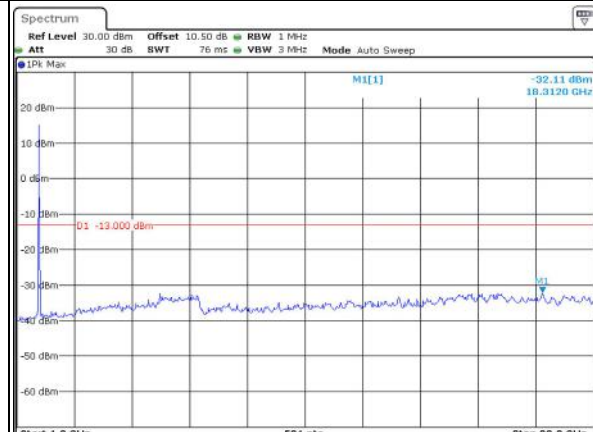
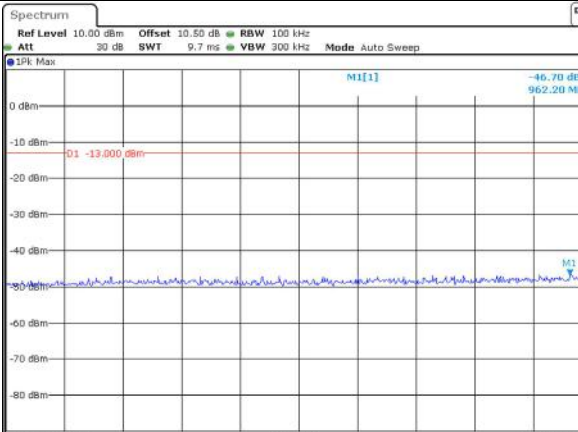
Lowest



Middle



Highest

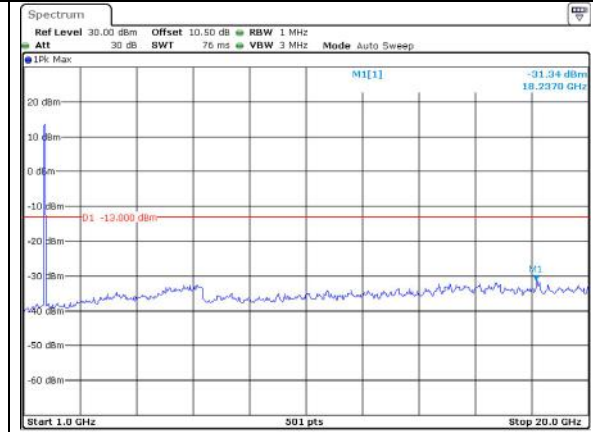
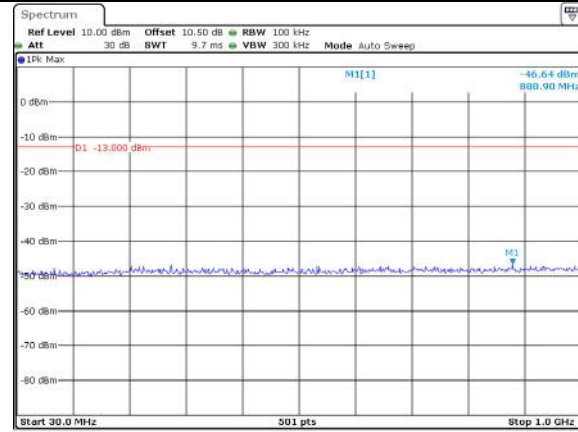


Spurious Emissions at Antenna Terminal

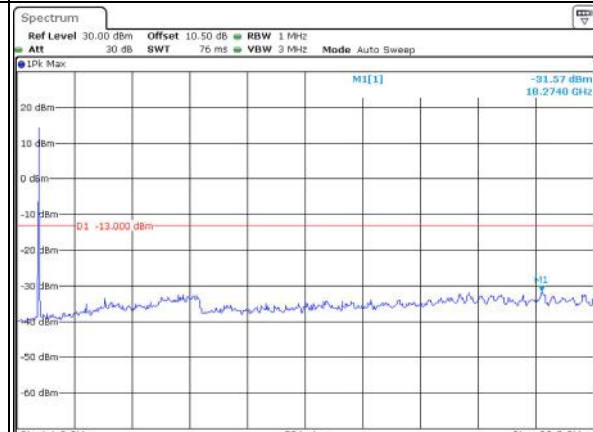
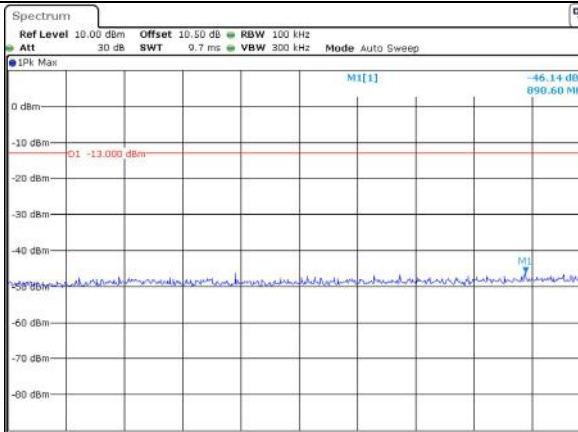
Channel

20MHz Bandwidth QPSK

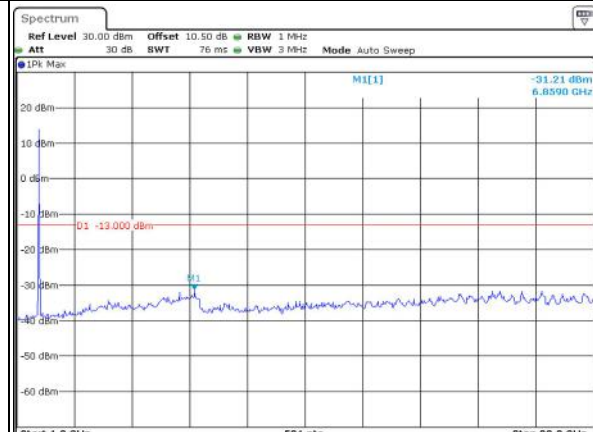
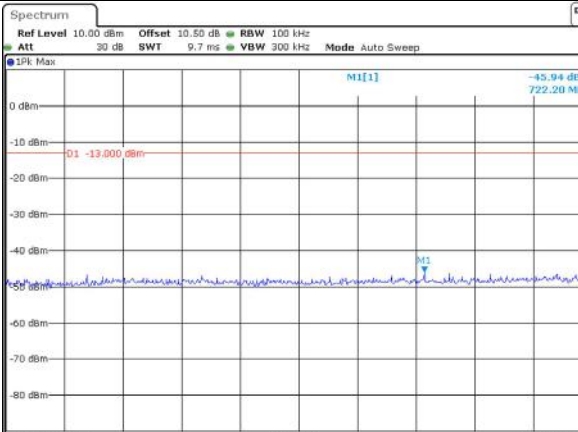
Lowest



Middle



Highest



Out of band emission, Band Edge

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

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		
16QAM 3MHz		
16QAM 5MHz		

Out of band emission, Band Edge

Mode	Lowest	Highest
16QAM 10MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:15:14</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:15:34</p>
16QAM 15MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:16:33</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:16:57</p>
16QAM 20MHz	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:18:05</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:18:30</p>

4.8 Antenna Port Test Data and Results for LTE Band 5

Serial Number:	2A93-1	Test Date:	2023/9/9
Test Site:	RF	Test Mode:	Transmitting
Tester:	Len Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	28.3	Relative Humidity: (%)	46	ATM Pressure: (kPa)	100.2
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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
R&S	Wideband Radio Communication Tester	CMW500	143458	2023/3/31	2024/3/30
Weinschel	Power Splitter	1515	RA914	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
YINSAIGE	Coaxial Cable	SS402	SJ0100001	Each time	N/A
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30174	2023/3/31	2024/3/30
UNI-T	Multimeter	UT39A+	C210582554	2022/9/29	2023/9/28
ZHAOXIN	DC Power Supply	RXN-6010D	21R6010D0912386	N/A	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	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).

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	23.03	23.02	23.00	16.37	38.45
	RB1#3	23.22	23.17	23.19		
	RB1#5	23.05	23.00	22.94		
	RB3#0	23.09	23.07	23.11		
	RB3#3	23.13	23.05	23.08		
	RB6#0	22.14	22.13	22.16		
1.4MHz 16QAM	RB1#0	22.03	21.99	22.12	15.48	38.45
	RB1#3	22.22	22.18	22.33		
	RB1#5	22.08	22.02	22.17		
	RB3#0	22.15	22.25	22.09		
	RB3#3	22.13	22.24	22.10		
	RB6#0	21.02	21.12	21.16		
3MHz QPSK	RB1#0	23.03	23.07	22.99	16.22	38.45
	RB1#8	23.07	23.04	22.98		
	RB1#14	23.03	23.01	22.97		
	RB6#0	22.02	22.03	22.03		
	RB6#9	22.04	21.99	22.02		
	RB15#0	22.03	22.02	22.07		
3MHz 16QAM	RB1#0	22.15	22.07	22.60	15.75	38.45
	RB1#8	22.16	22.05	22.52		
	RB1#14	22.17	22.03	22.51		
	RB6#0	21.02	21.01	21.09		
	RB6#9	21.08	20.98	21.06		
	RB15#0	20.98	21.08	21.14		
5MHz QPSK	RB1#0	22.97	22.95	22.89	16.27	38.45
	RB1#13	23.12	23.04	23.00		
	RB1#24	23.01	22.90	22.91		
	RB15#0	22.08	22.07	22.09		
	RB15#10	22.13	22.06	22.02		
	RB25#0	22.06	22.03	22.01		
5MHz 16QAM	RB1#0	22.25	22.04	21.82	15.53	38.45
	RB1#13	22.38	22.12	21.96		
	RB1#24	22.26	22.00	21.84		
	RB15#0	21.04	21.08	21.09		
	RB15#10	21.08	21.05	21.07		
	RB25#0	21.07	21.03	21.08		

10MHz QPSK	RB1#0	23.05	23.08	22.97	16.38	38.45
	RB1#25	23.23	23.21	23.07		
	RB1#49	23.00	23.03	23.01		
	RB25#0	22.11	22.12	22.09		
	RB25#25	22.09	22.07	22.03		
	RB50#0	22.07	22.10	22.02		
10MHz 16QAM	RB1#0	22.16	22.05	22.51	15.80	38.45
	RB1#25	22.38	22.20	22.65		
	RB1#49	22.18	22.04	22.56		
	RB25#0	21.11	21.17	21.12		
	RB25#25	21.11	21.14	21.09		
	RB50#0	21.07	21.08	21.06		

Note: ERP= Conducted Power(dBm) - Lc(dB) + G_T(dBd)G_r(dBd)=G_T(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	5.19	5.16	4.29	13
	RB50#0	4.96	4.84	5.13	13
10MHz 16QAM	RB1#0	4.52	4.64	5.59	13
	RB50#0	5.97	5.83	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	1.296	1.302	1.302
1.4MHz 16QAM	1.090	1.096	1.090	1.290	1.320	1.284
3MHz QPSK	2.683	2.683	2.683	2.868	2.892	2.868
3MHz 16QAM	2.683	2.683	2.683	2.868	2.868	2.892
5MHz QPSK	4.511	4.491	4.511	4.980	4.960	4.940
5MHz 16QAM	4.511	4.511	4.471	4.960	5.160	4.920
10MHz QPSK	8.942	8.942	8.982	9.560	9.600	9.680
10MHz 16QAM	8.942	8.982	8.942	9.600	9.600	9.560

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	3.85	15.34	0.018	2.5
	-20	3.85	16.92	0.020	2.5
	-10	3.85	12.04	0.014	2.5
	0	3.85	13.75	0.016	2.5
	10	3.85	10.36	0.012	2.5
	20	3.85	15.32	0.018	2.5
	30	3.85	16.24	0.019	2.5
	40	3.85	16.38	0.020	2.5
Frequency Stability vs. Voltage	20	3.35	23.01	0.028	2.5
	20	4.4	22.43	0.027	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	3.85	16.54	0.020	2.5
	-20	3.85	15.29	0.018	2.5
	-10	3.85	17.63	0.021	2.5
	0	3.85	19.45	0.023	2.5
	10	3.85	21.53	0.026	2.5
	20	3.85	22.43	0.027	2.5
	30	3.85	26.54	0.032	2.5
	40	3.85	19.34	0.023	2.5
Frequency Stability vs. Voltage	20	3.35	16.24	0.019	2.5
	20	4.4	13.68	0.016	2.5
Result:				Pass	

Test Plots(Note: The 10 dB 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.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:33:36</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:33:38</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:34:16</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:34:14</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:34:53</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:35:17</p>

Occupied Bandwidth

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

Occupied Bandwidth

Channel	5MHz Bandwidth QPSK	5MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:39:00</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:39:24</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:39:56</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:40:19</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:40:37</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:40:55</p>

Occupied Bandwidth

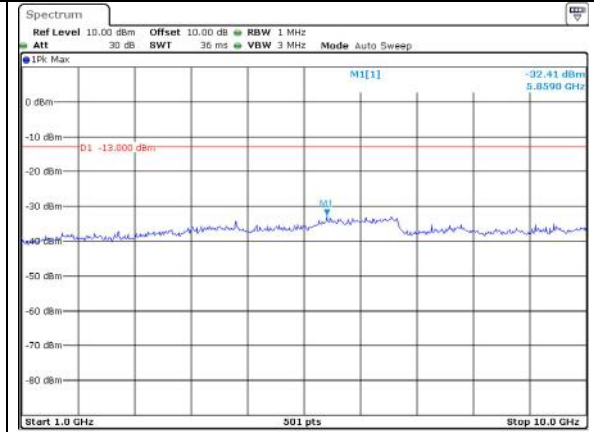
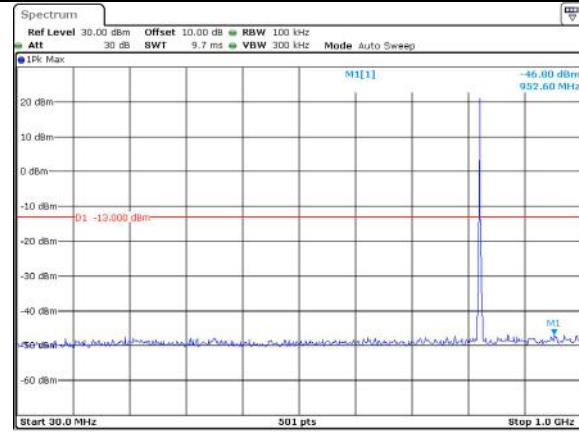
Channel	10MHz Bandwidth QPSK	10MHz Bandwidth 16QAM
Lowest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:42:14</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:42:36</p>
Middle	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:43:05</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:43:33</p>
Highest	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:44:09</p>	<p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9.SEP.2023 13:44:37</p>

Spurious Emissions at Antenna Terminal

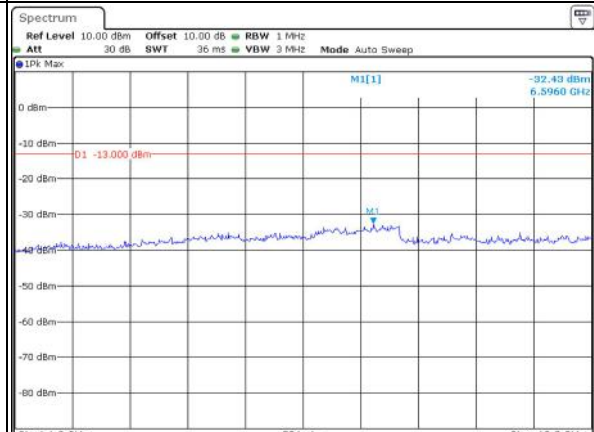
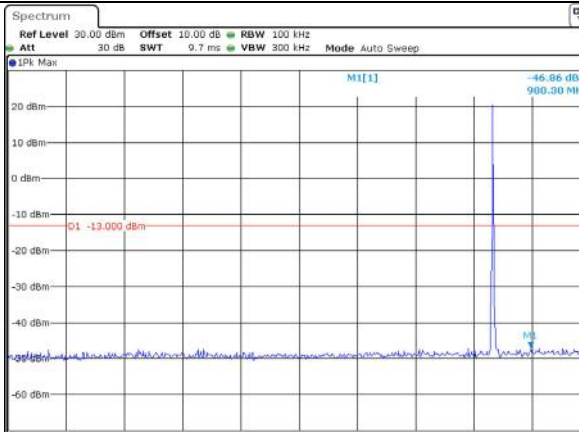
Channel

1.4MHz Bandwidth QPSK

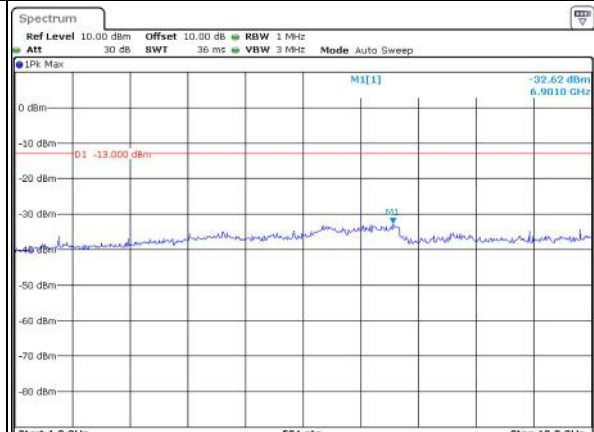
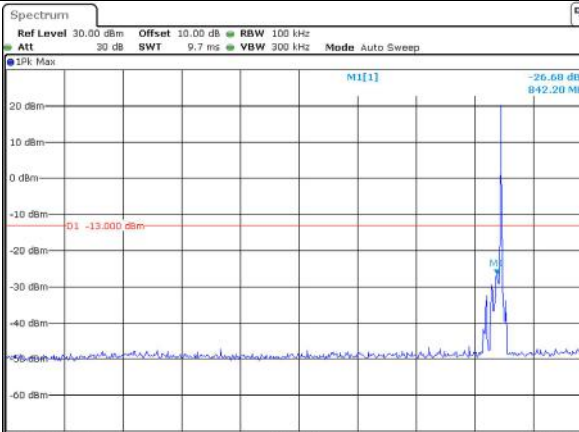
Lowest



Middle



Highest

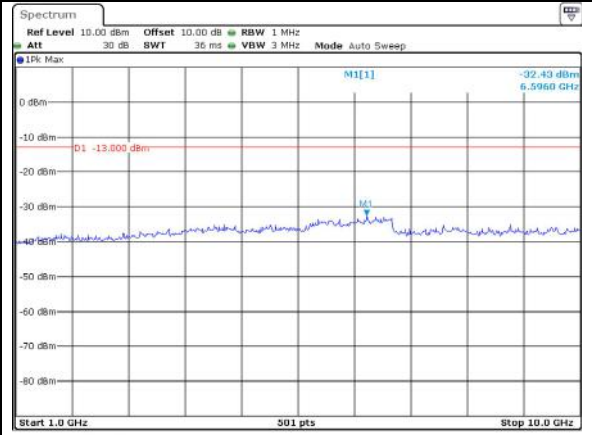
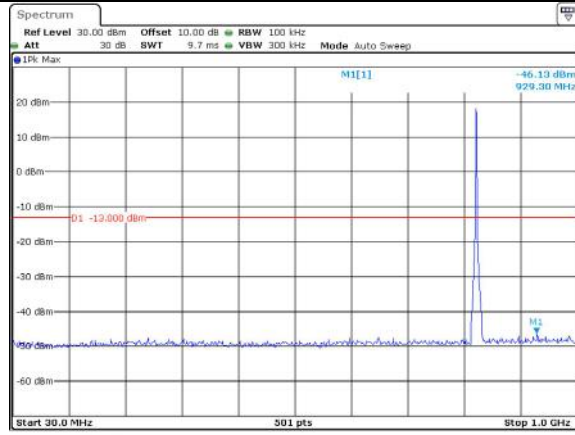


Spurious Emissions at Antenna Terminal

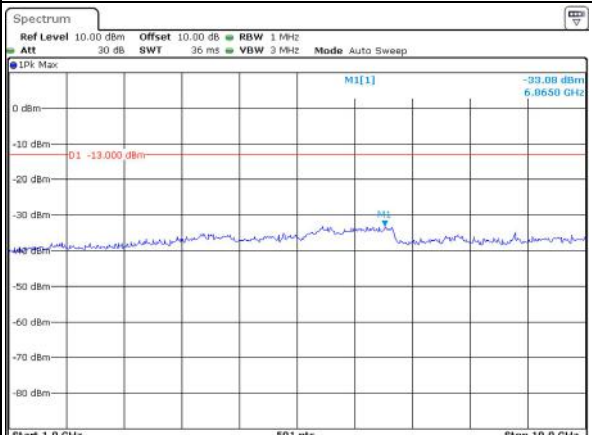
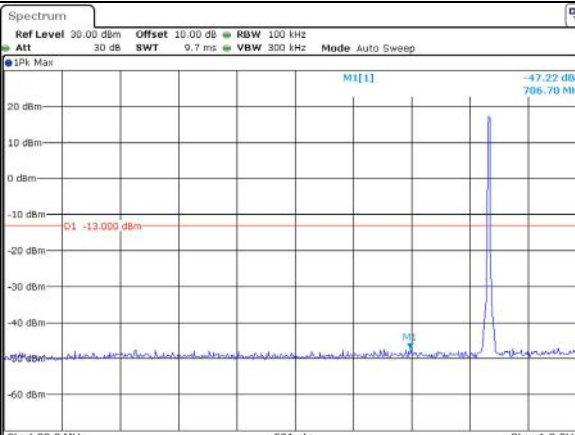
Channel

3MHz Bandwidth QPSK

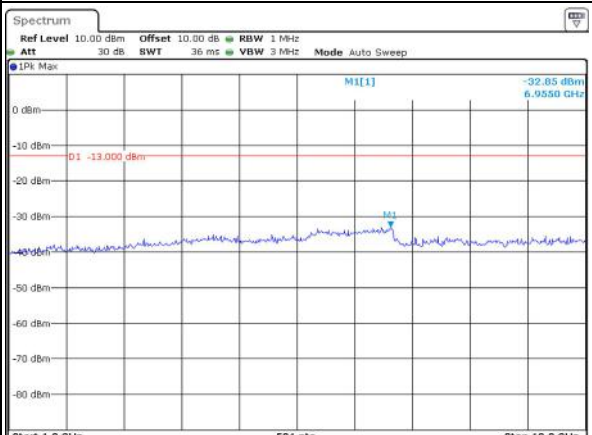
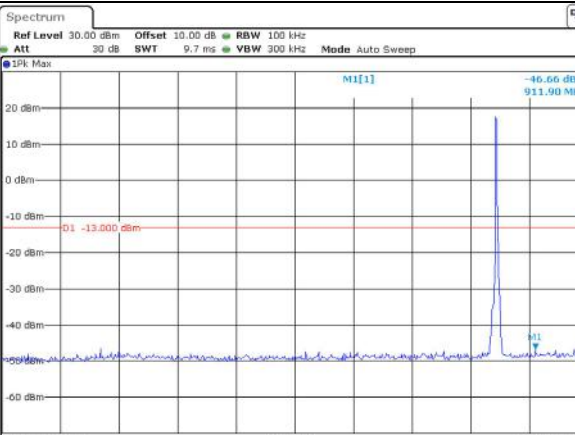
Lowest



Middle



Highest

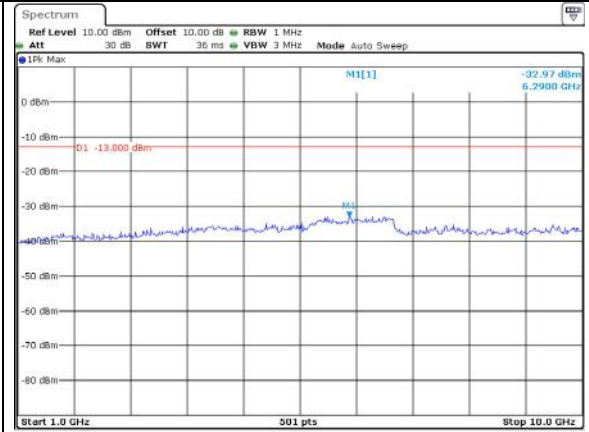
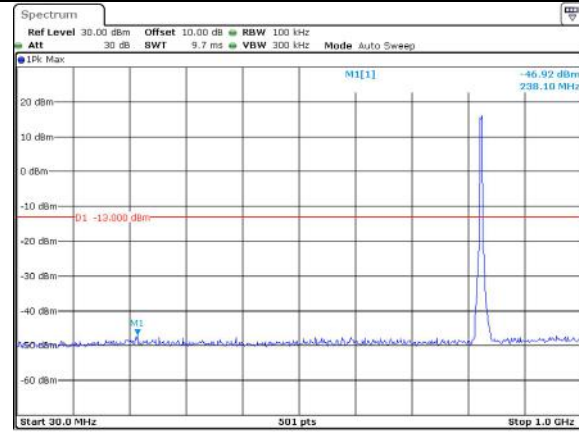


Spurious Emissions at Antenna Terminal

Channel

5MHz Bandwidth QPSK

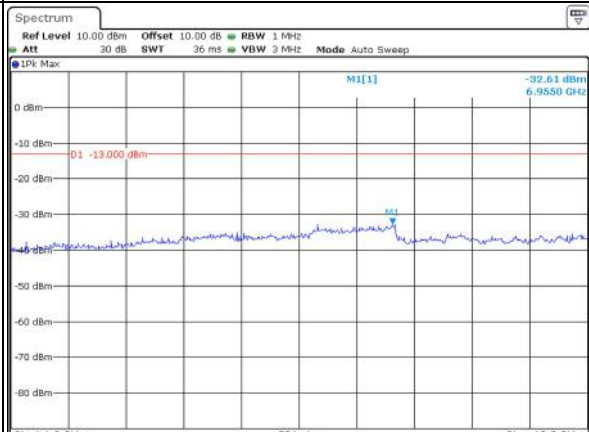
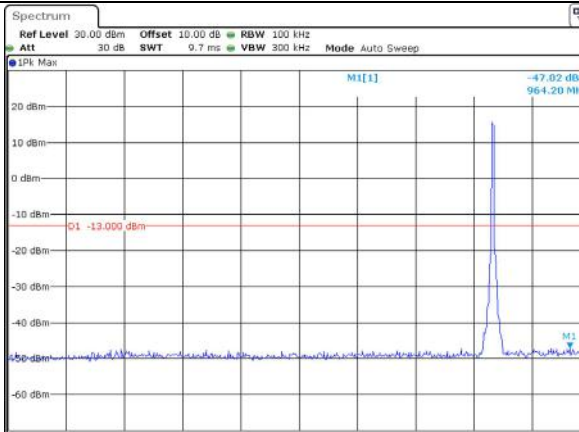
Lowest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 14:26:43

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 14:27:14

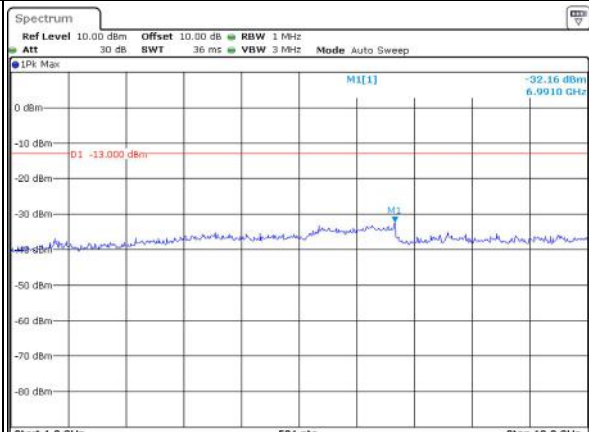
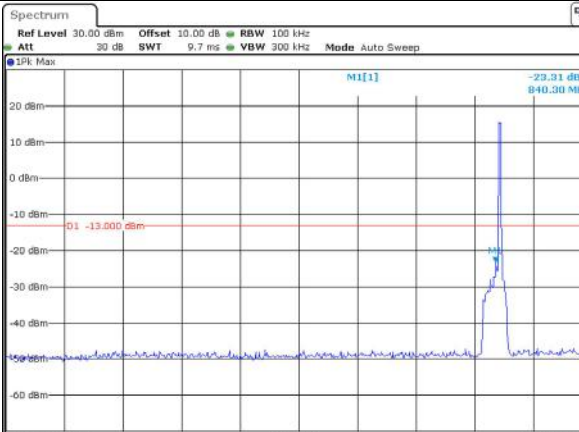
Middle



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 14:27:41

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 14:28:11

Highest



ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 14:28:47

ProjectNo.:CR230848964 Tester:Len Huang
Date: 9.SEP.2023 14:29:10

Spurious Emissions at Antenna Terminal

Channel	10MHz Bandwidth QPSK	
Lowest	<p>Ref Level 30.00 dBm Offset 10.00 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -46.93 dBm 884.80 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9_SEP_2023 14:30:16</p>	<p>Ref Level 10.00 dBm Offset 10.00 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -33.06 dBm 6.4160 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 10.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9_SEP_2023 14:30:36</p>
Middle	<p>Ref Level 30.00 dBm Offset 10.00 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -46.46 dBm 896.40 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9_SEP_2023 14:31:13</p>	<p>Ref Level 10.00 dBm Offset 10.00 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -32.73 dBm 6.7040 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 10.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9_SEP_2023 14:31:40</p>
Highest	<p>Ref Level 30.00 dBm Offset 10.00 dB RBW 100 kHz Att 30 dB SWT 9.7 ms VBW 300 kHz Mode Auto Sweep</p> <p>IPk Max M1[1] -46.47 dBm 880.90 MHz</p> <p>D1 -13.000 dBm</p> <p>Start 30.0 MHz 501 pts Stop 1.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9_SEP_2023 14:32:17</p>	<p>Ref Level 10.00 dBm Offset 10.00 dB RBW 1 MHz Att 30 dB SWT 36 ms VBW 3 MHz Mode Auto Sweep</p> <p>IPk Max M1[1] -32.85 dBm 6.9190 GHz</p> <p>D1 -13.000 dBm</p> <p>Start 1.0 GHz 501 pts Stop 10.0 GHz</p> <p>ProjectNo.:CR230848964 Tester:Len Huang Date: 9_SEP_2023 14:32:47</p>