



Appendix F: Test Data for E-UTRA Band 13

Product Name: 4G module

Test Model: TM18NA

Environmental Conditions

Temperature:	23.8° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Eason Zhou
Supervised by:	Nick Peng



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F.1 Conducted Output Power Data

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	23.55	PASS
Band13	5MHz	16QAM	23205	1RB#0	23.58	PASS
Band13	5MHz	QPSK	23205	1RB#12	23.64	PASS
Band13	5MHz	16QAM	23205	1RB#12	24.01	PASS
Band13	5MHz	QPSK	23205	1RB#24	24.01	PASS
Band13	5MHz	16QAM	23205	1RB#24	24.01	PASS
Band13	5MHz	QPSK	23205	12RB#0	24.00	PASS
Band13	5MHz	16QAM	23205	12RB#0	24.00	PASS
Band13	5MHz	QPSK	23205	12RB#6	24.00	PASS
Band13	5MHz	16QAM	23205	12RB#6	24.00	PASS
Band13	5MHz	QPSK	23205	12RB#13	23.66	PASS
Band13	5MHz	16QAM	23205	12RB#13	23.67	PASS
Band13	5MHz	QPSK	23205	25RB#0	23.66	PASS
Band13	5MHz	16QAM	23205	25RB#0	23.62	PASS
Band13	5MHz	QPSK	23230	1RB#0	23.80	PASS
Band13	5MHz	16QAM	23230	1RB#0	22.99	PASS
Band13	5MHz	QPSK	23230	1RB#12	23.61	PASS
Band13	5MHz	16QAM	23230	1RB#12	22.98	PASS
Band13	5MHz	QPSK	23230	1RB#24	23.54	PASS
Band13	5MHz	16QAM	23230	1RB#24	22.82	PASS
Band13	5MHz	QPSK	23230	12RB#0	22.87	PASS
Band13	5MHz	16QAM	23230	12RB#0	22.25	PASS
Band13	5MHz	QPSK	23230	12RB#6	23.06	PASS
Band13	5MHz	16QAM	23230	12RB#6	22.28	PASS
Band13	5MHz	QPSK	23230	12RB#13	22.94	PASS
Band13	5MHz	16QAM	23230	12RB#13	22.19	PASS
Band13	5MHz	QPSK	23230	25RB#0	22.85	PASS
Band13	5MHz	16QAM	23230	25RB#0	22.27	PASS
Band13	5MHz	QPSK	23255	1RB#0	23.80	PASS
Band13	5MHz	16QAM	23255	1RB#0	22.65	PASS
Band13	5MHz	QPSK	23255	1RB#12	23.72	PASS
Band13	5MHz	16QAM	23255	1RB#12	22.59	PASS
Band13	5MHz	QPSK	23255	1RB#24	23.60	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.43	PASS
Band13	5MHz	QPSK	23255	12RB#0	22.89	PASS



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Band13	5MHz	16QAM	23255	12RB#0	22.38	PASS
Band13	5MHz	QPSK	23255	12RB#6	22.99	PASS
Band13	5MHz	16QAM	23255	12RB#6	22.14	PASS
Band13	5MHz	QPSK	23255	12RB#13	22.89	PASS
Band13	5MHz	16QAM	23255	12RB#13	22.21	PASS
Band13	5MHz	QPSK	23255	25RB#0	22.85	PASS
Band13	5MHz	16QAM	23255	25RB#0	22.25	PASS
Band13	10MHz	QPSK	23230	1RB#0	23.35	PASS
Band13	10MHz	16QAM	23230	1RB#0	22.84	PASS
Band13	10MHz	QPSK	23230	1RB#24	23.30	PASS
Band13	10MHz	16QAM	23230	1RB#24	22.73	PASS
Band13	10MHz	QPSK	23230	1RB#49	22.91	PASS
Band13	10MHz	16QAM	23230	1RB#49	22.55	PASS
Band13	10MHz	QPSK	23230	25RB#0	22.62	PASS
Band13	10MHz	16QAM	23230	25RB#0	21.90	PASS
Band13	10MHz	QPSK	23230	25RB#12	22.43	PASS
Band13	10MHz	16QAM	23230	25RB#12	21.91	PASS
Band13	10MHz	QPSK	23230	25RB#25	22.32	PASS
Band13	10MHz	16QAM	23230	25RB#25	21.62	PASS
Band13	10MHz	QPSK	23230	50RB#0	22.39	PASS
Band13	10MHz	16QAM	23230	50RB#0	21.83	PASS



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F.2 Peak-to-Average Ratio(CCDF)

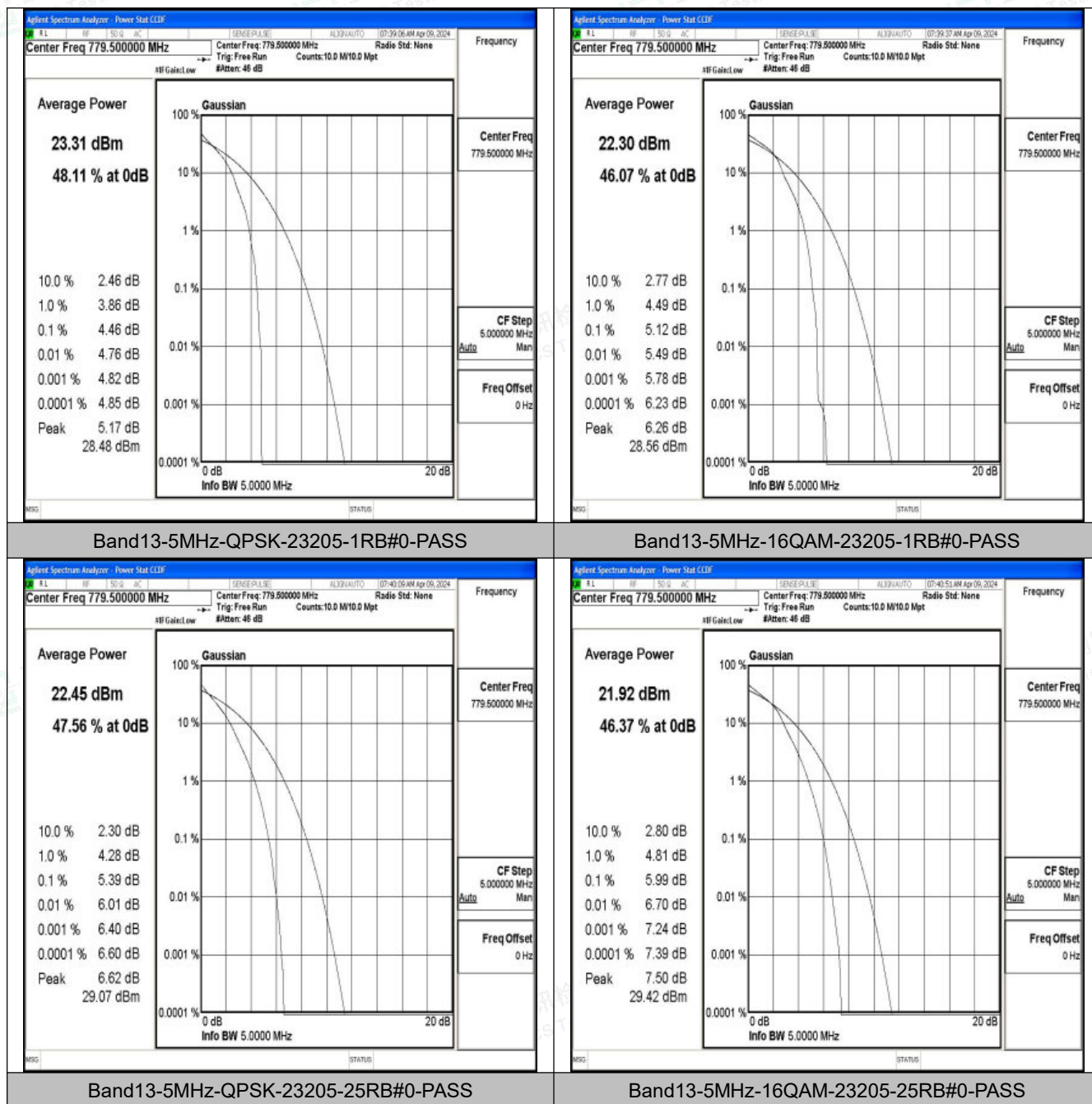
Test Result

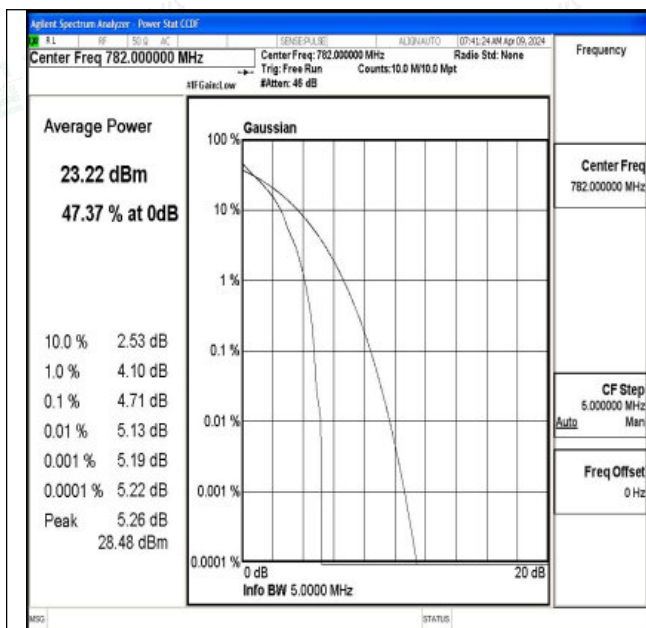
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	4.46	13	PASS
Band13	5MHz	16QAM	23205	1RB#0	5.12	13	PASS
Band13	5MHz	QPSK	23205	25RB#0	5.39	13	PASS
Band13	5MHz	16QAM	23205	25RB#0	5.99	13	PASS
Band13	5MHz	QPSK	23230	1RB#0	4.71	13	PASS
Band13	5MHz	16QAM	23230	1RB#0	4.94	13	PASS
Band13	5MHz	QPSK	23230	25RB#0	5.42	13	PASS
Band13	5MHz	16QAM	23230	25RB#0	6.04	13	PASS
Band13	5MHz	QPSK	23255	1RB#0	4.68	13	PASS
Band13	5MHz	16QAM	23255	1RB#0	5.19	13	PASS
Band13	5MHz	QPSK	23255	25RB#0	5.40	13	PASS
Band13	5MHz	16QAM	23255	25RB#0	6.04	13	PASS
Band13	10MHz	QPSK	23230	1RB#0	4.40	13	PASS
Band13	10MHz	16QAM	23230	1RB#0	5.02	13	PASS
Band13	10MHz	QPSK	23230	50RB#0	5.40	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	6.02	13	PASS



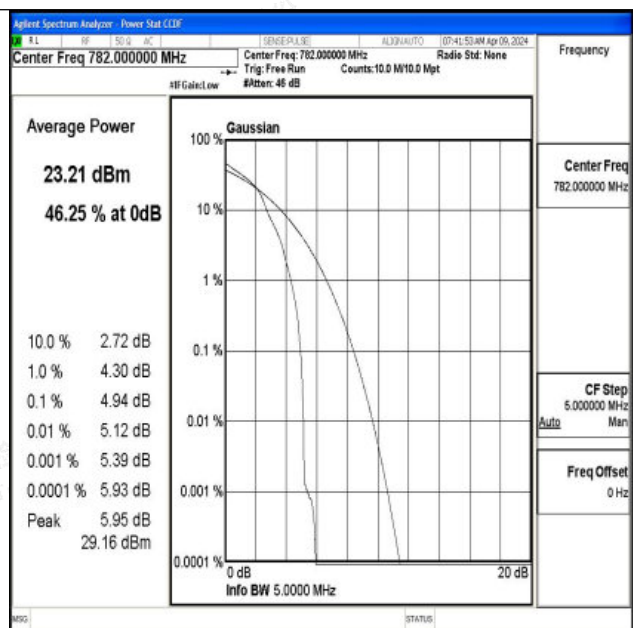


Test Graphs

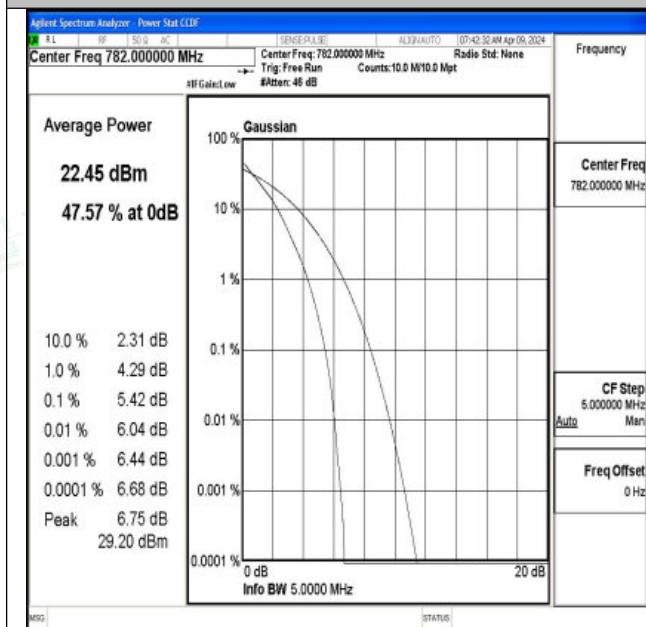




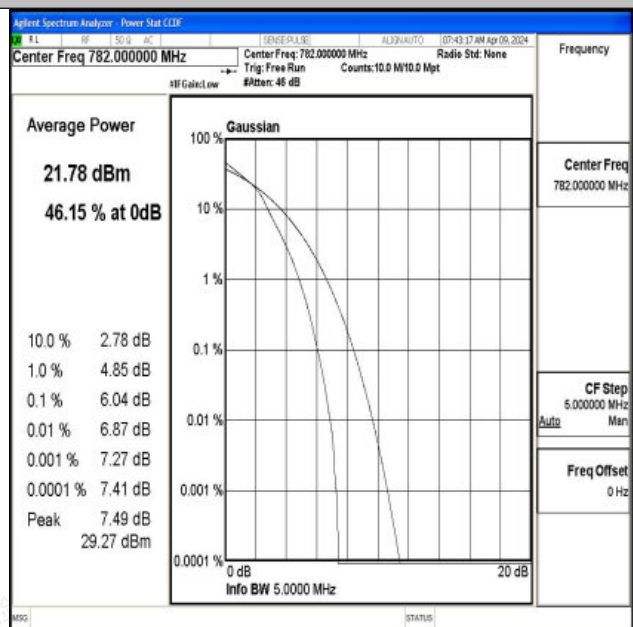
Band13-5MHz-QPSK-23230-1RB#0-PASS



Band13-5MHz-16QAM-23230-1RB#0-PASS



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Band13-5MHz-16QAM-23230-25RB#0-PASS

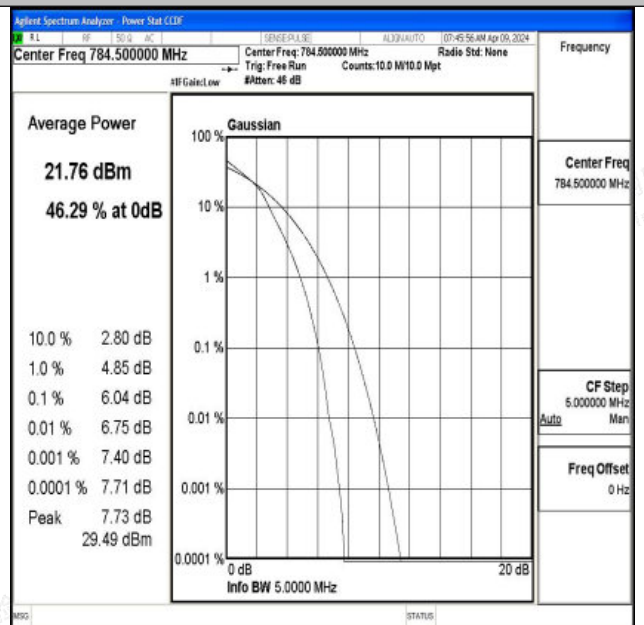
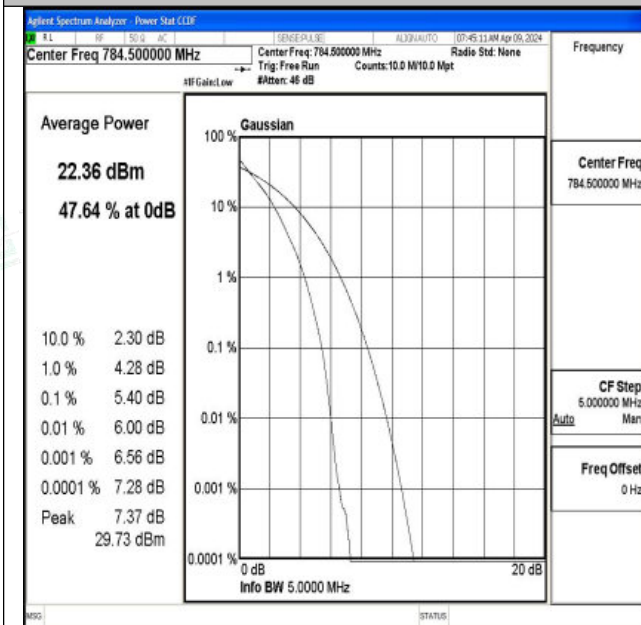
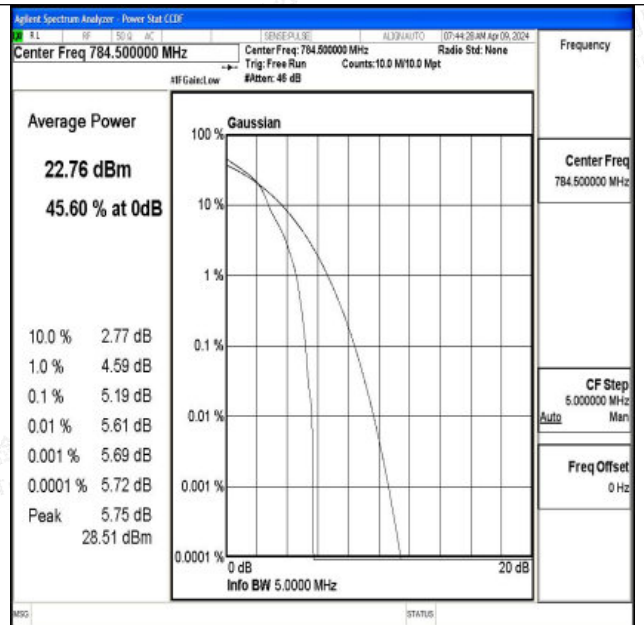
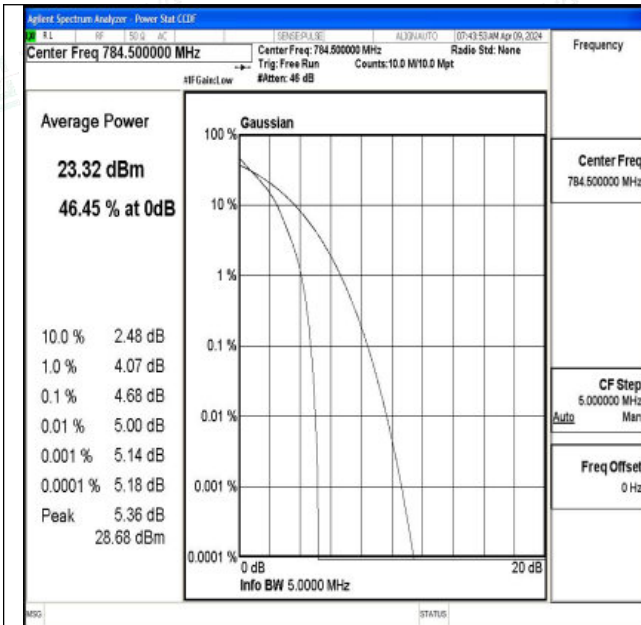


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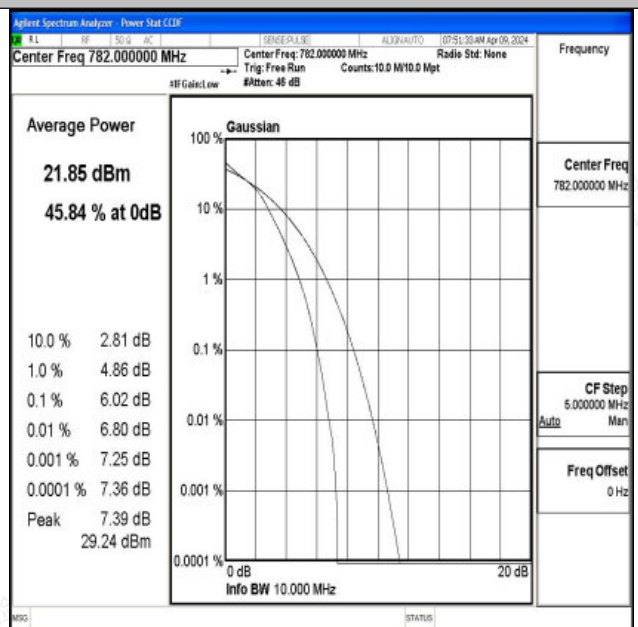
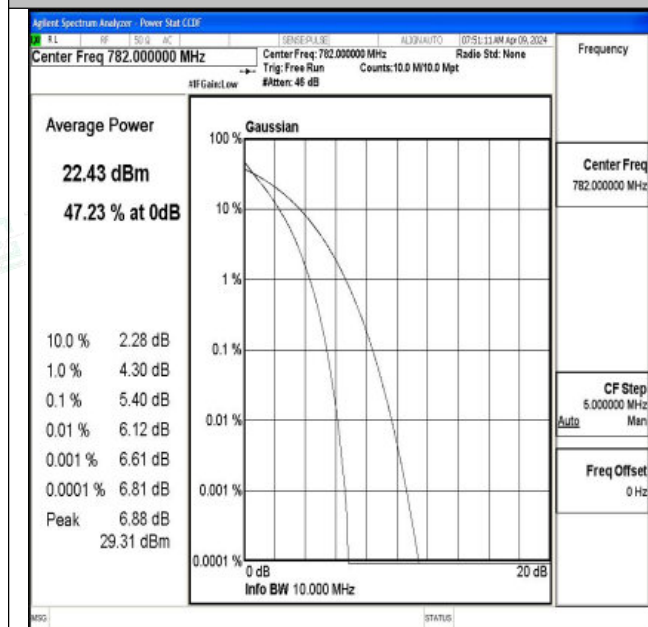
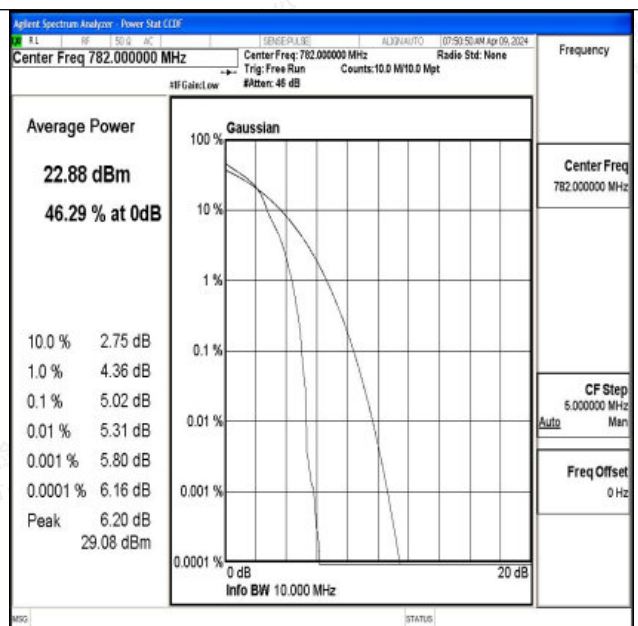
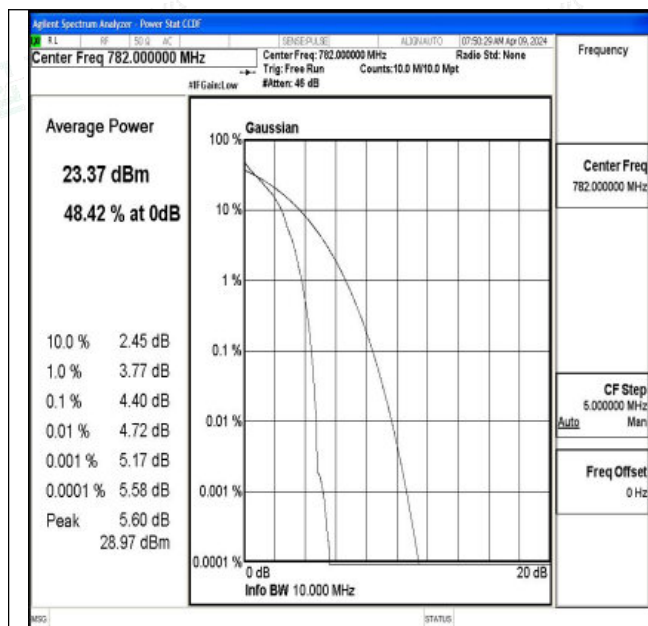


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F.3 26dB Bandwidth and Occupied Bandwidth

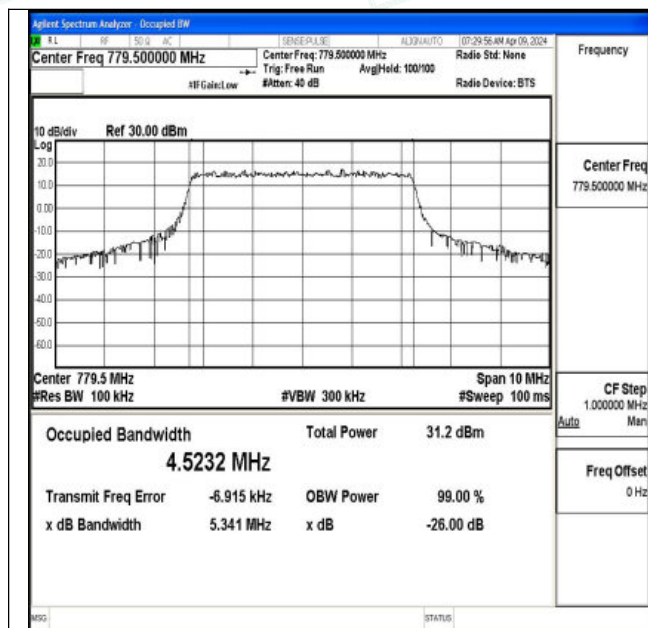
Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.5232	5.341	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.5119	5.302	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.5153	5.431	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.5212	5.259	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.5199	5.193	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.5358	5.419	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.9906	10.06	PASS
Band13	10MHz	16QAM	23230	50RB#0	9.0043	10.07	PASS

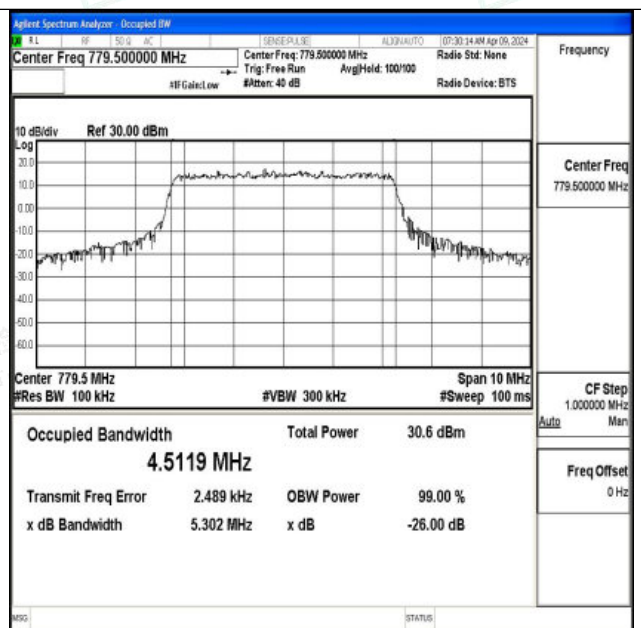




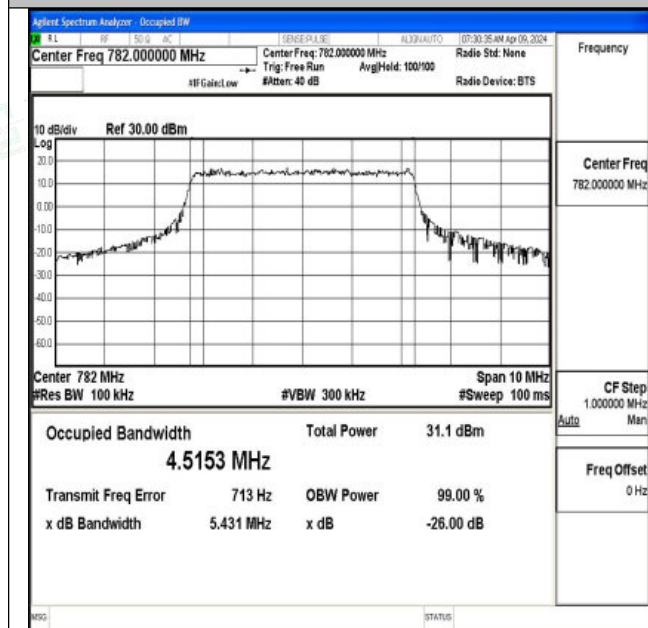
Test Graphs



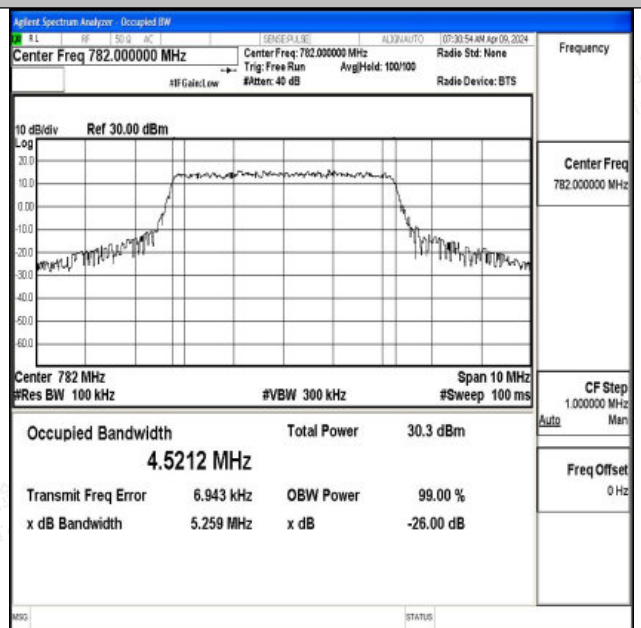
Band13-5MHz-QPSK-23205-25RB#0-PASS



Band13-5MHz-16QAM-23205-25RB#0-PASS



Band13-5MHz-QPSK-23230-25RB#0-PASS



Band13-5MHz-16QAM-23230-25RB#0-PASS

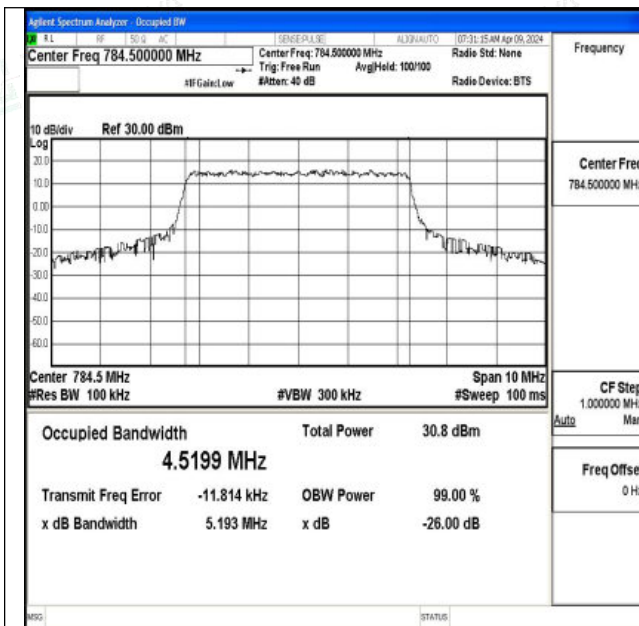


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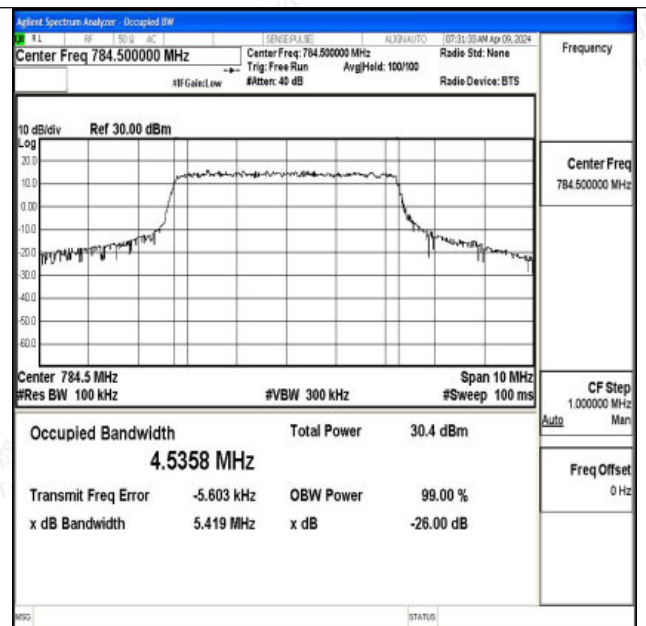
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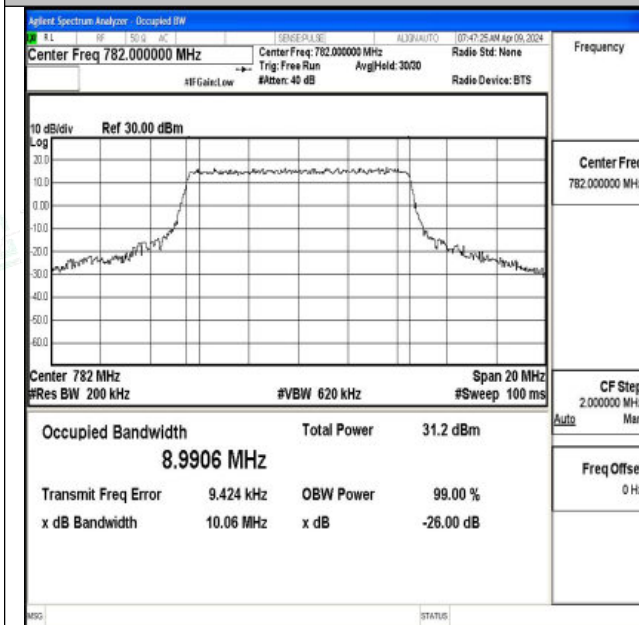
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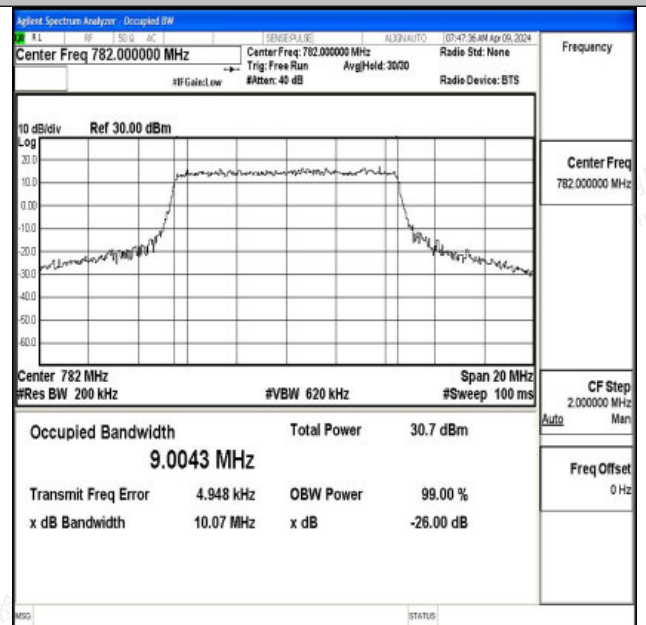
Band13-5MHz-QPSK-23255-25RB#0-PASS



Band13-5MHz-16QAM-23255-25RB#0-PASS



Band13-10MHz-QPSK-23230-50RB#0-PASS



Band13-10MHz-16QAM-23230-50RB#0-PASS



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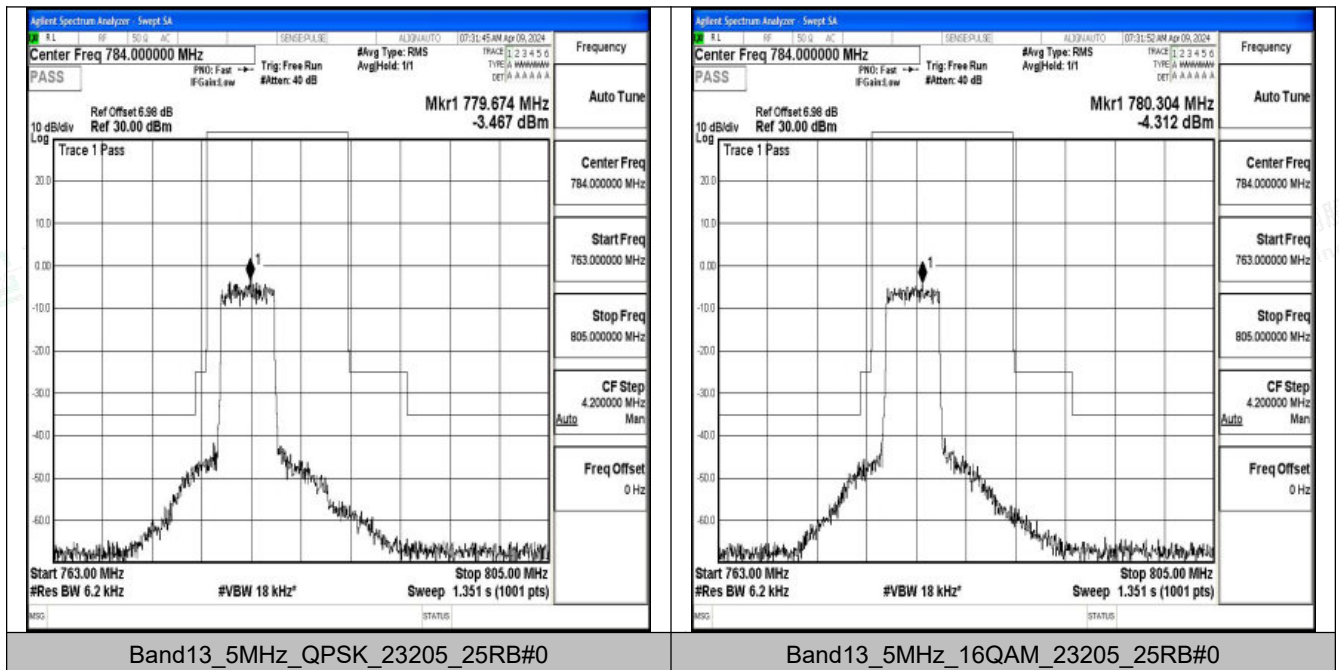


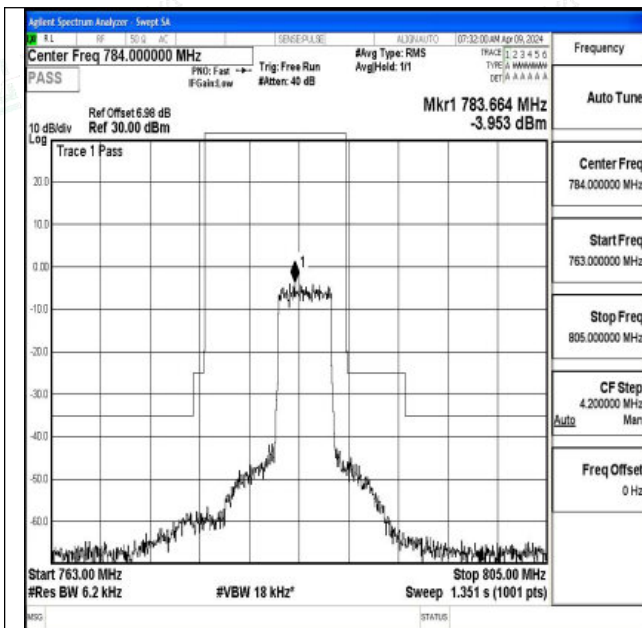
F.4 Band Edge

Test Result

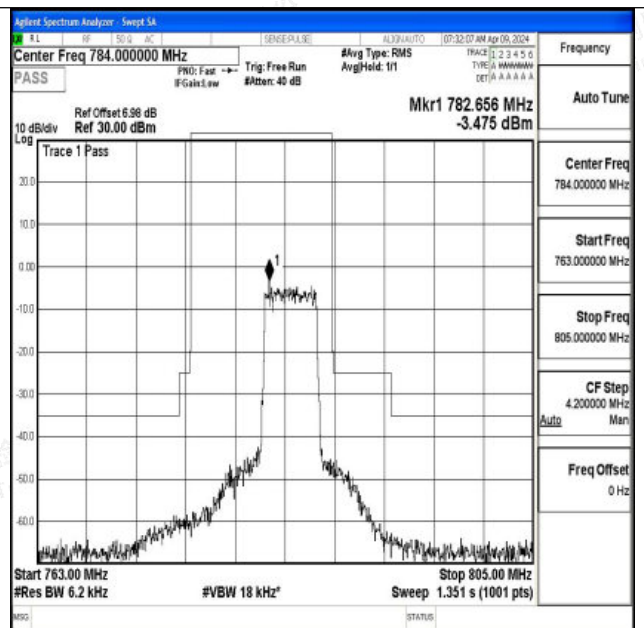
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	-47.33	PASS
Band13	5MHz	16QAM	23205	25RB#0	-46.27	PASS
Band13	5MHz	QPSK	23255	25RB#0	-45.04	PASS
Band13	5MHz	16QAM	23255	25RB#0	-45.52	PASS
Band13	10MHz	QPSK	23230	50RB#0	-48.98	PASS
Band13	10MHz	16QAM	23230	50RB#0	-47.48	PASS

Test Graphs

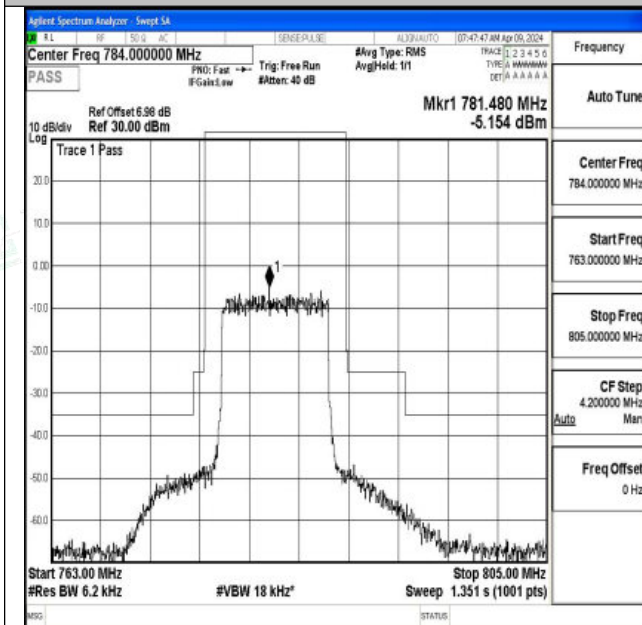




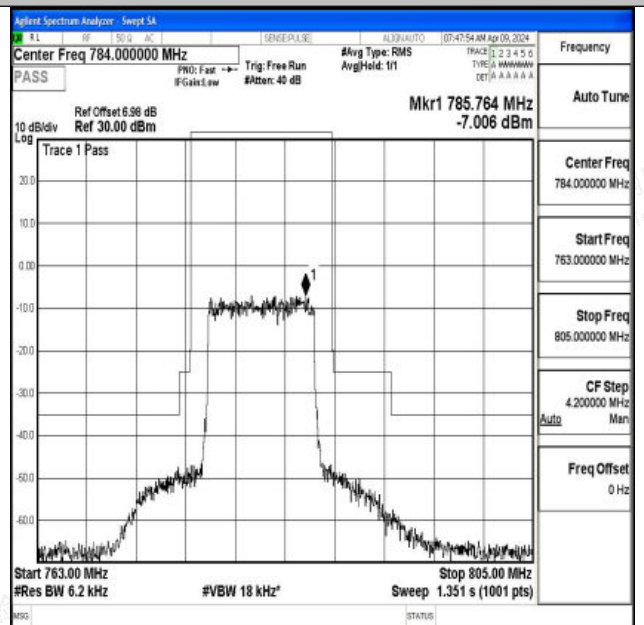
Band13_5MHz_QPSK_23255_25RB#0



Band13_5MHz_16QAM_23255_25RB#0



Band13_10MHz_QPSK_23230_50RB#0



Band13_10MHz_16QAM_23230_50RB#0



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F.5 Conducted Spurious Emission

Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Frequency Range	Result (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	0.009~0.15	-59.35	PASS
Band13	5MHz	QPSK	23205	1RB#0	0.15~30	-52.09	PASS
Band13	5MHz	QPSK	23205	1RB#0	30~1000	-61.99	PASS
Band13	5MHz	QPSK	23205	1RB#0	1000~3000	-42.97	PASS
Band13	5MHz	QPSK	23205	1RB#0	3000~10000	-43.83	PASS
Band13	5MHz	16QAM	23205	1RB#0	0.009~0.15	-58.51	PASS
Band13	5MHz	16QAM	23205	1RB#0	0.15~30	-54.66	PASS
Band13	5MHz	16QAM	23205	1RB#0	30~1000	-60.22	PASS
Band13	5MHz	16QAM	23205	1RB#0	1000~3000	-43.97	PASS
Band13	5MHz	16QAM	23205	1RB#0	3000~10000	-44.04	PASS
Band13	5MHz	QPSK	23230	1RB#0	0.009~0.15	-53.03	PASS
Band13	5MHz	QPSK	23230	1RB#0	0.15~30	-52.76	PASS
Band13	5MHz	QPSK	23230	1RB#0	30~1000	-61.83	PASS
Band13	5MHz	QPSK	23230	1RB#0	1000~3000	-43.69	PASS
Band13	5MHz	QPSK	23230	1RB#0	3000~10000	-44.36	PASS
Band13	5MHz	16QAM	23230	1RB#0	0.009~0.15	-56.28	PASS
Band13	5MHz	16QAM	23230	1RB#0	0.15~30	-50.58	PASS
Band13	5MHz	16QAM	23230	1RB#0	30~1000	-61.96	PASS
Band13	5MHz	16QAM	23230	1RB#0	1000~3000	-43.36	PASS
Band13	5MHz	16QAM	23230	1RB#0	3000~10000	-44.42	PASS
Band13	5MHz	QPSK	23255	1RB#0	0.009~0.15	-57.24	PASS
Band13	5MHz	QPSK	23255	1RB#0	0.15~30	-50.28	PASS
Band13	5MHz	QPSK	23255	1RB#0	30~1000	-61.89	PASS
Band13	5MHz	QPSK	23255	1RB#0	1000~3000	-43.85	PASS
Band13	5MHz	QPSK	23255	1RB#0	3000~10000	-44.03	PASS
Band13	5MHz	16QAM	23255	1RB#0	0.009~0.15	-58.81	PASS
Band13	5MHz	16QAM	23255	1RB#0	0.15~30	-52.67	PASS
Band13	5MHz	16QAM	23255	1RB#0	30~1000	-61.93	PASS
Band13	5MHz	16QAM	23255	1RB#0	1000~3000	-43.31	PASS
Band13	5MHz	16QAM	23255	1RB#0	3000~10000	-44.31	PASS
Band13	10MHz	QPSK	23230	1RB#0	0.009~0.15	-59.35	PASS
Band13	10MHz	QPSK	23230	1RB#0	0.15~30	-52.79	PASS
Band13	10MHz	QPSK	23230	1RB#0	30~1000	-61.90	PASS
Band13	10MHz	QPSK	23230	1RB#0	1000~3000	-43.96	PASS



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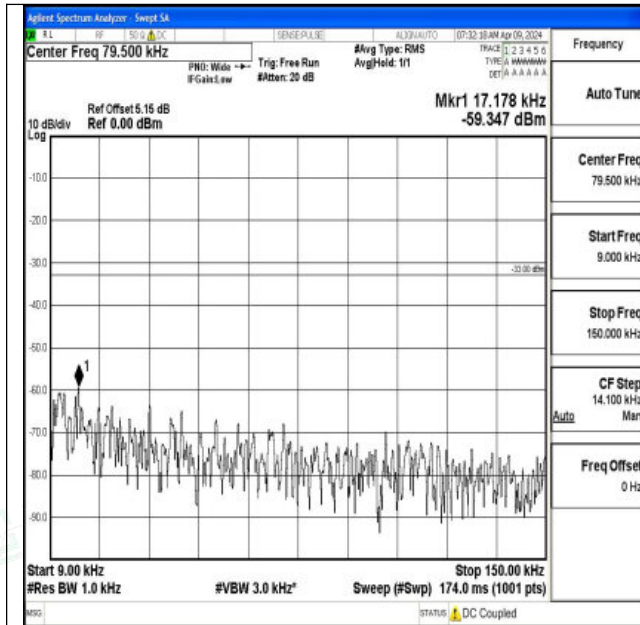
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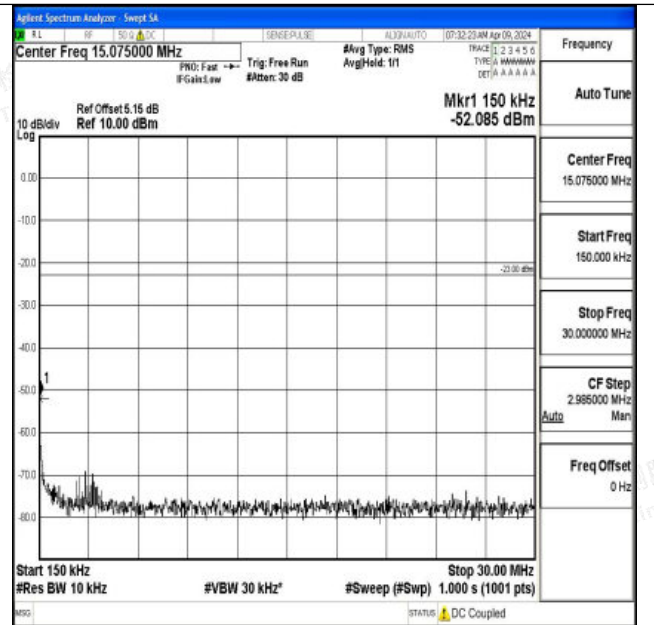


Band13	10MHz	QPSK	23230	1RB#0	3000~10000	-44.12	PASS
Band13	10MHz	16QAM	23230	1RB#0	0.009~0.15	-57.49	PASS
Band13	10MHz	16QAM	23230	1RB#0	0.15~30	-53.32	PASS
Band13	10MHz	16QAM	23230	1RB#0	30~1000	-62.11	PASS
Band13	10MHz	16QAM	23230	1RB#0	1000~3000	-42.85	PASS
Band13	10MHz	16QAM	23230	1RB#0	3000~10000	-44.12	PASS

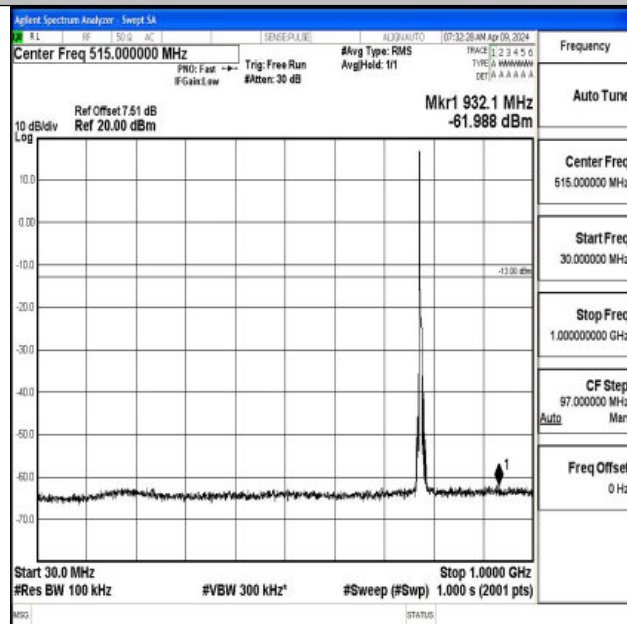
Test Graphs



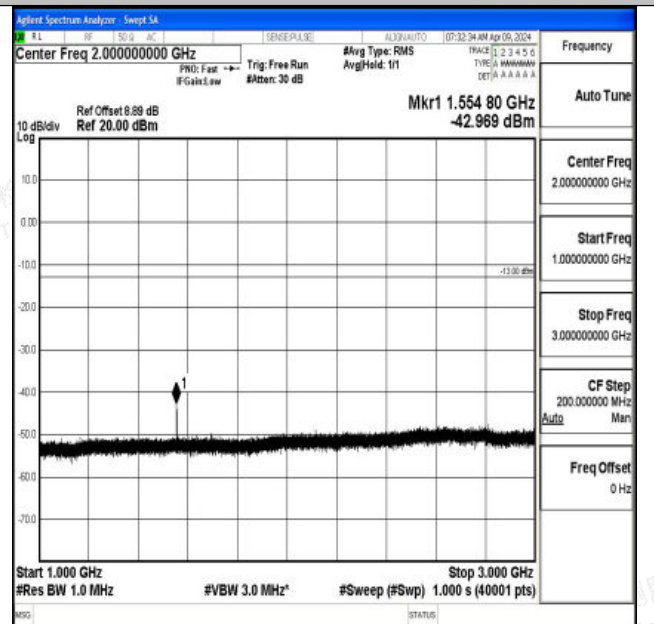
Band13_5MHz_QPSK_23205_1RB#0_0.009~0.15_0.009~0.15



Band13_5MHz_QPSK_23205_1RB#0_0.15~30_0.15~30

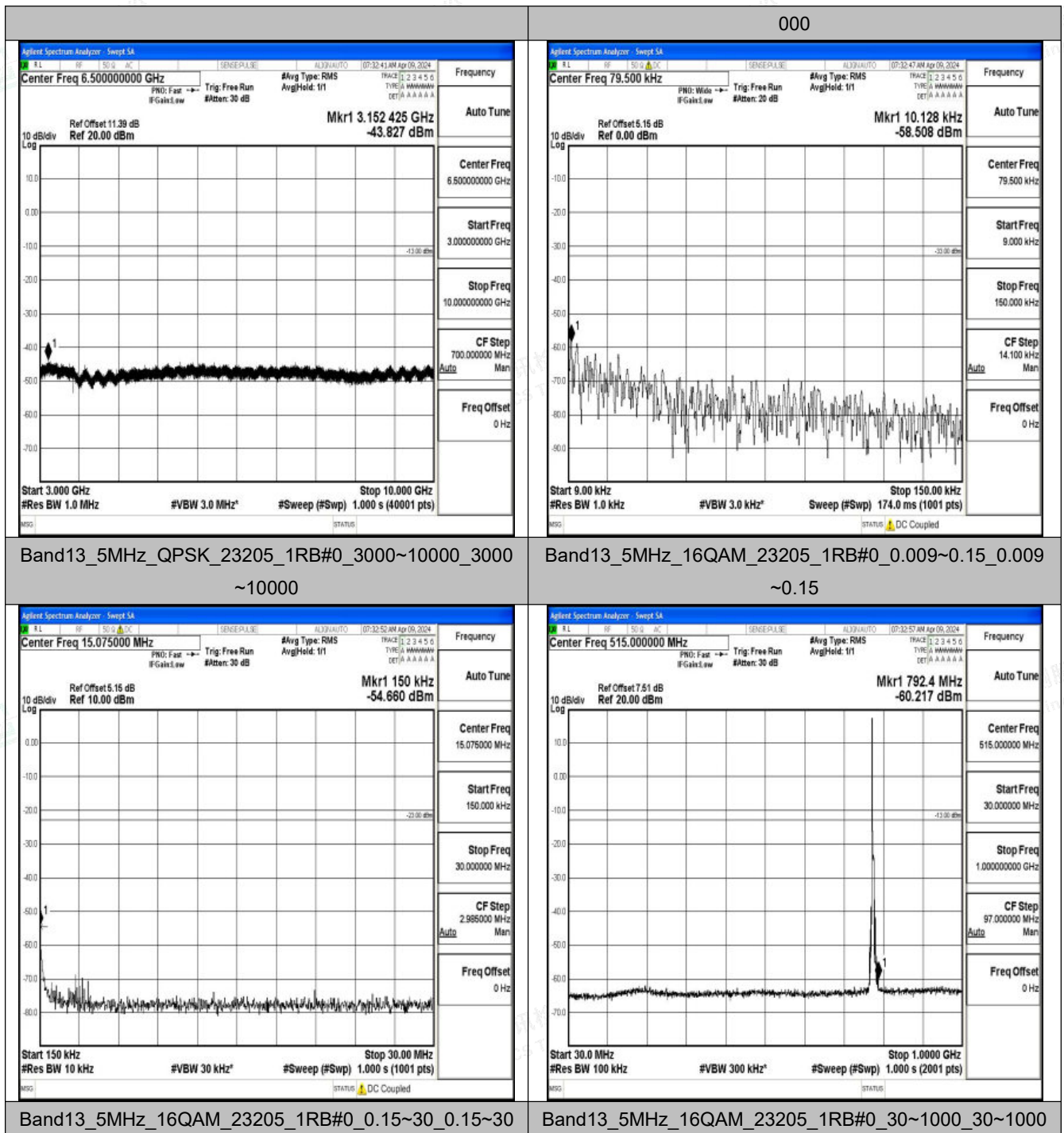


Band13_5MHz_QPSK_23205_1RB#0_30~1000_30~1000



Band13_5MHz_QPSK_23205_1RB#0_1000~3000_1000~3



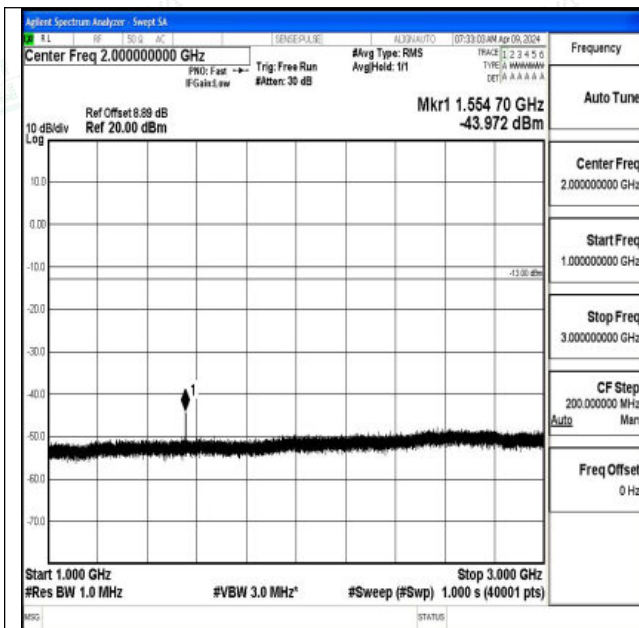


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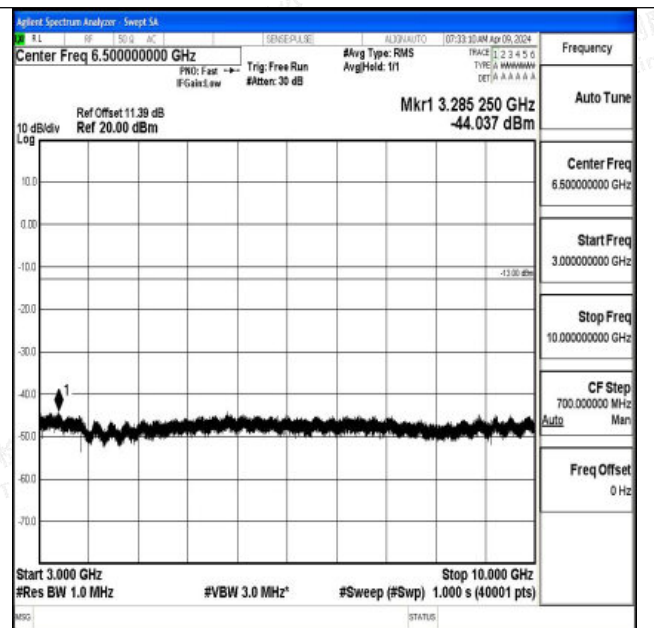
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

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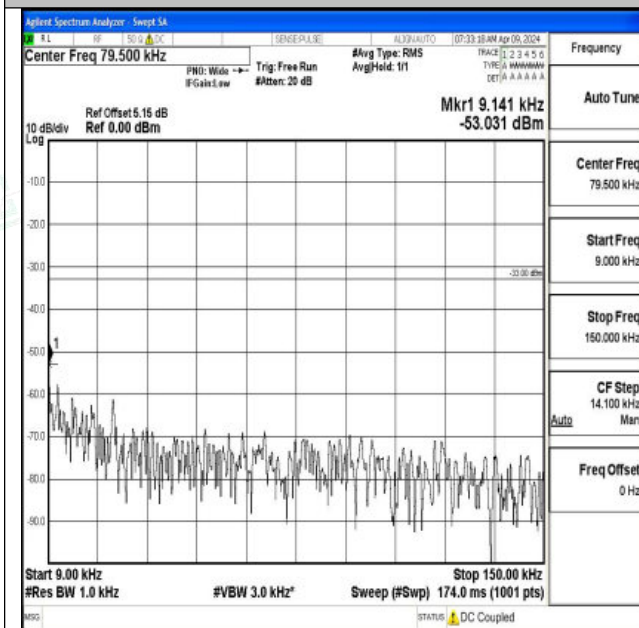
Scan code to check authenticity



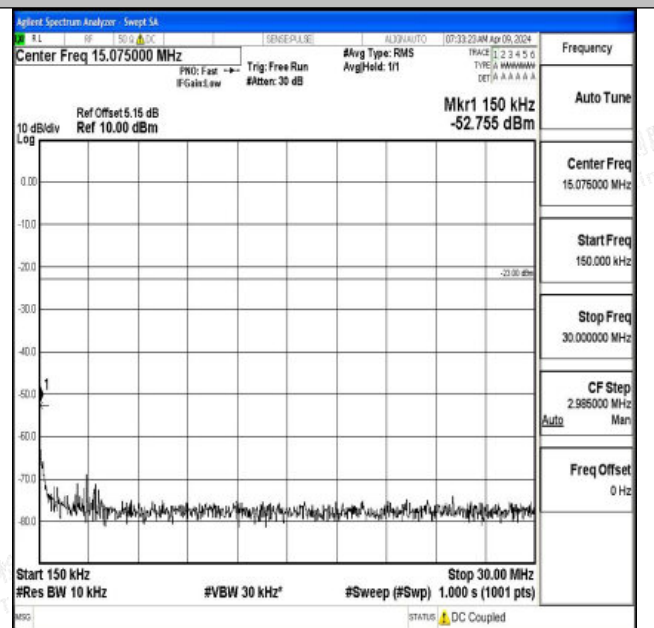
Band13_5MHz_16QAM_23205_1RB#0_1000~3000_1000
~3000



Band13_5MHz_16QAM_23205_1RB#0_3000~10000_3000
~10000



Band13_5MHz_QPSK_23230_1RB#0_0.009~0.15_0.009~0.15
0.15



Band13_5MHz_QPSK_23230_1RB#0_0.15~30_0.15~30

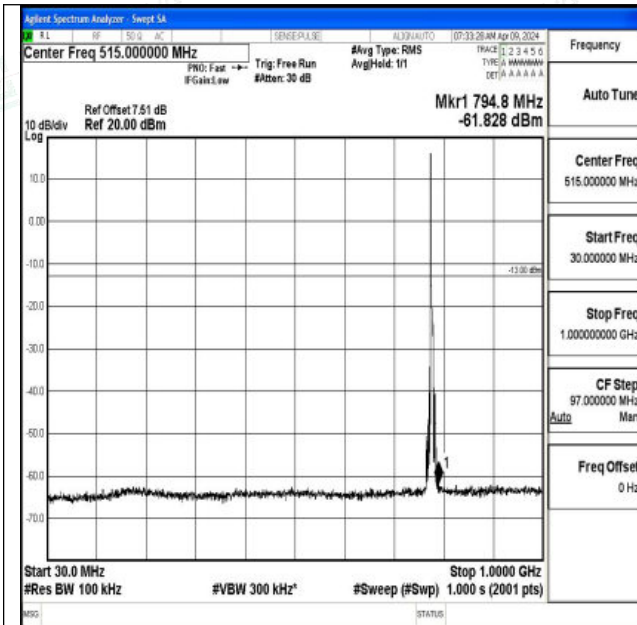


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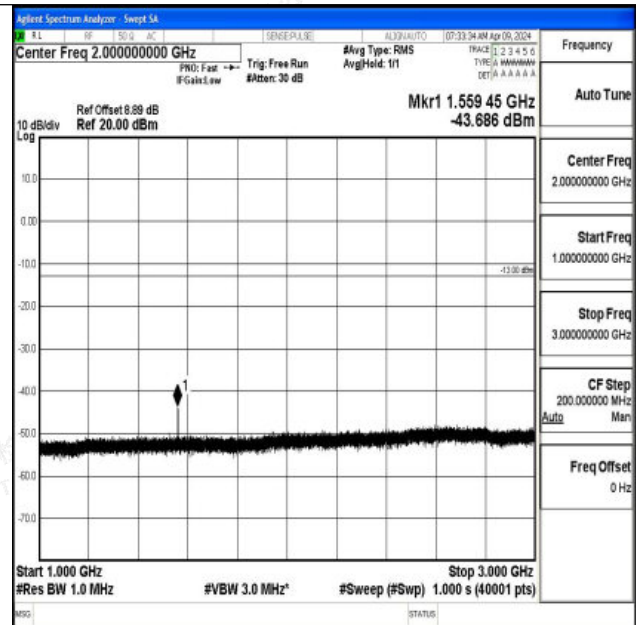
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

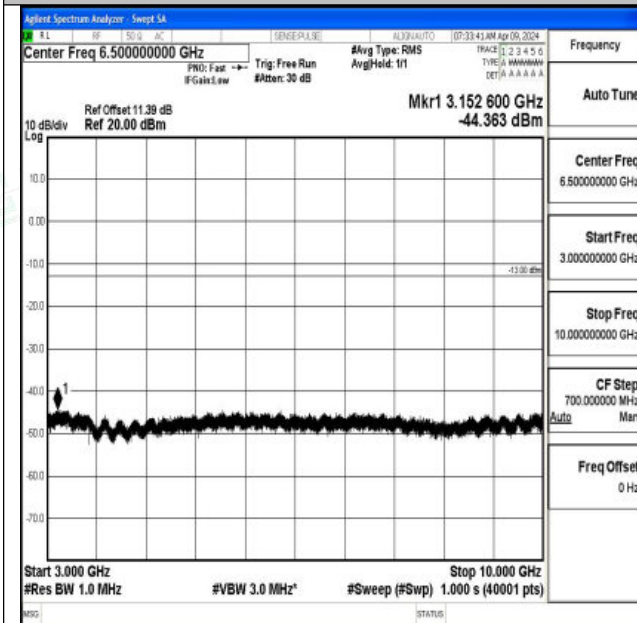
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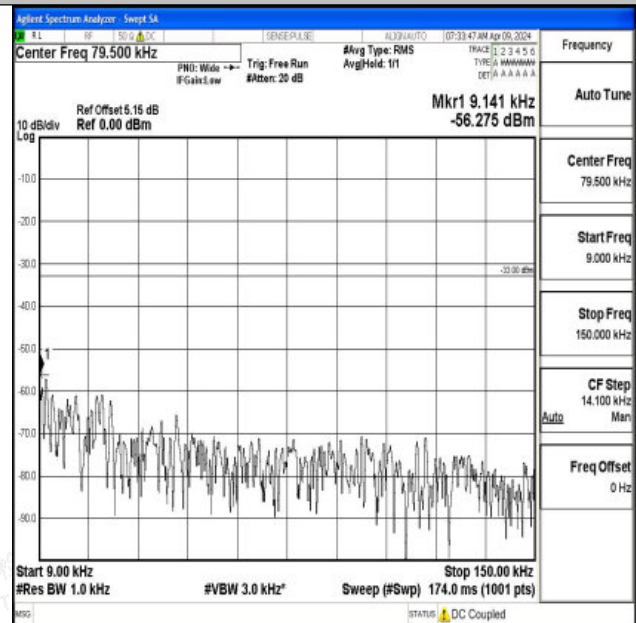
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Band13_5MHz_QPSK_23230_1RB#0_1000~3000_1000~3000

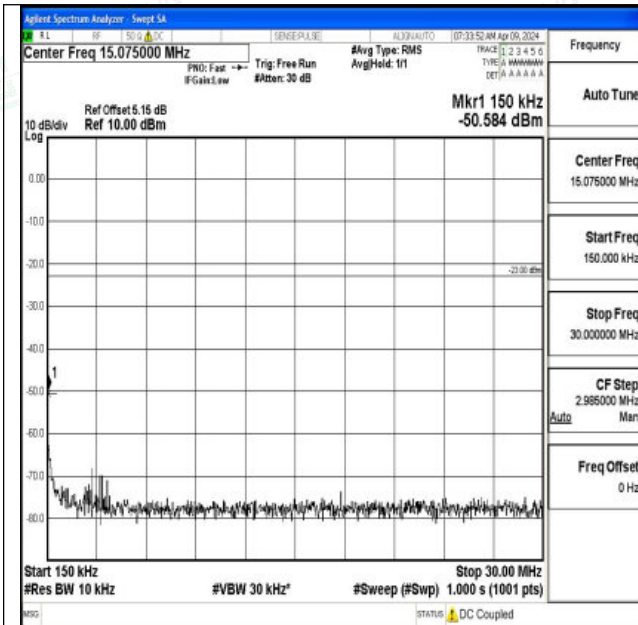


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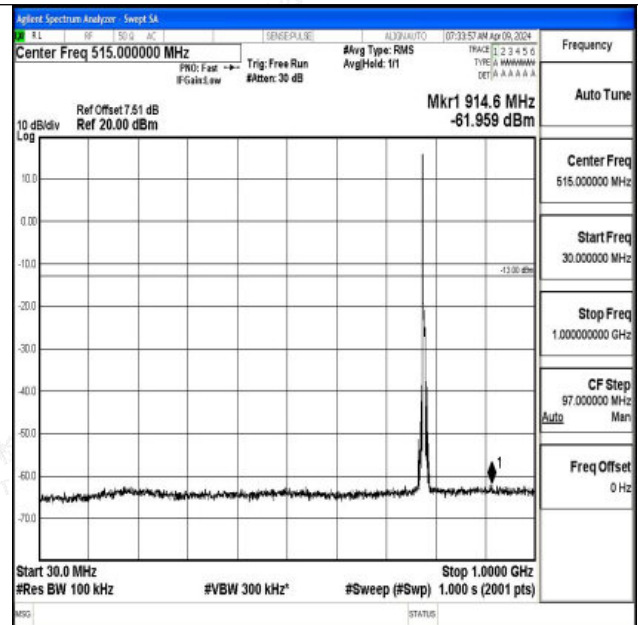


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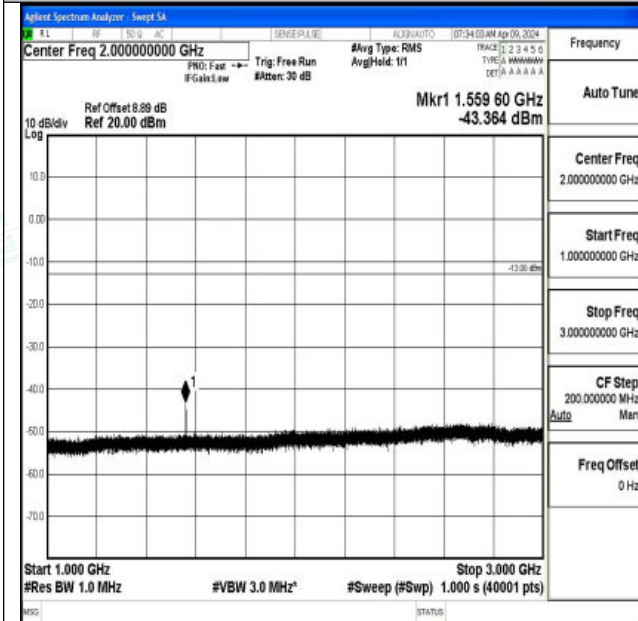
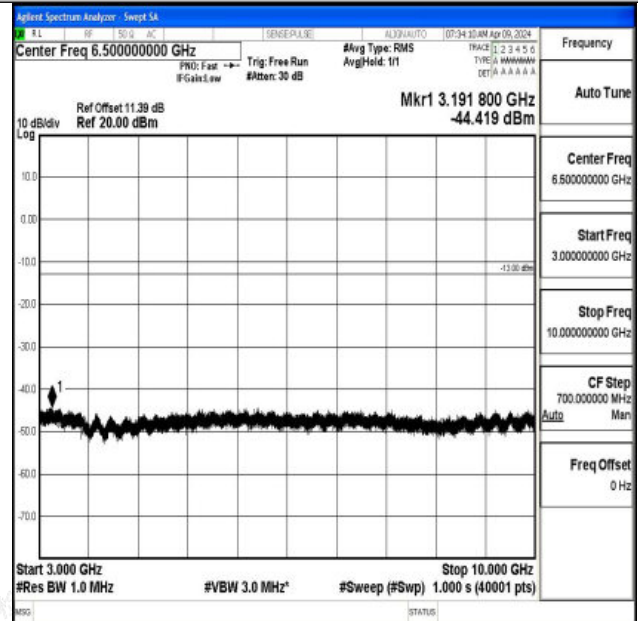


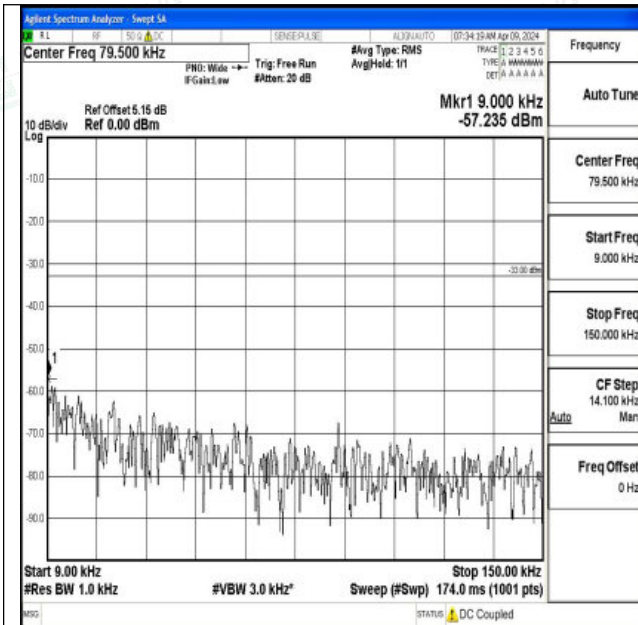


Band13_5MHz_16QAM_23230_1RB#0_0.15~30_0.15~30

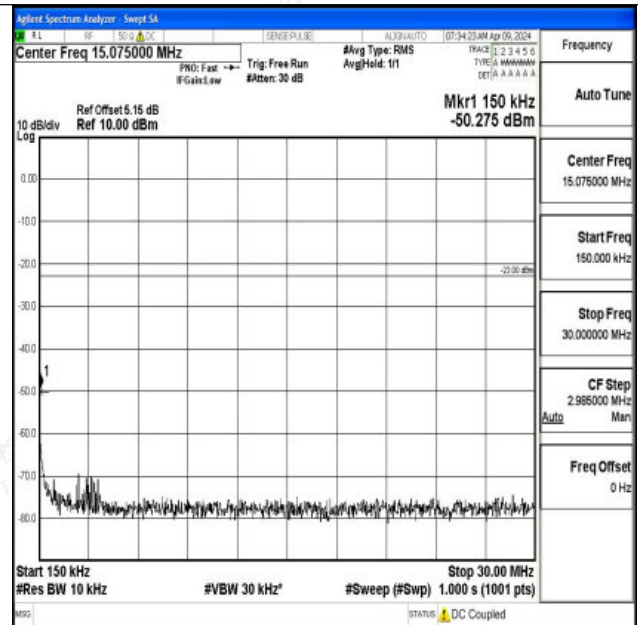


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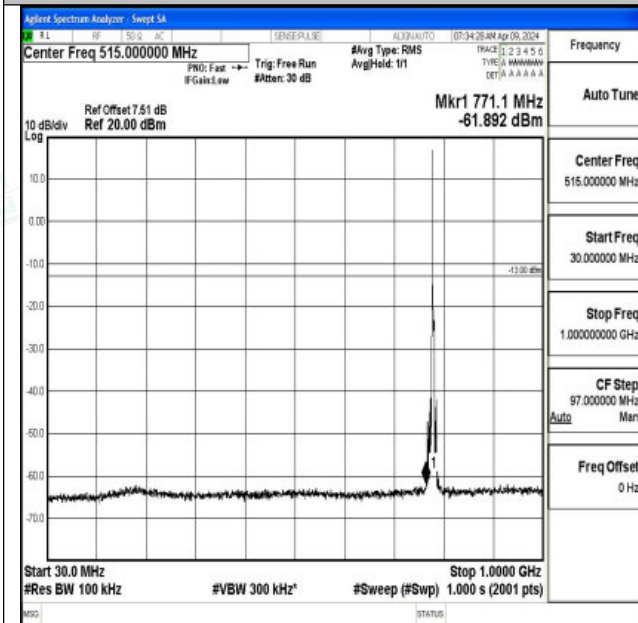
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~3000Band13_5MHz_16QAM_23230_1RB#0_3000~10000_3000
~10000



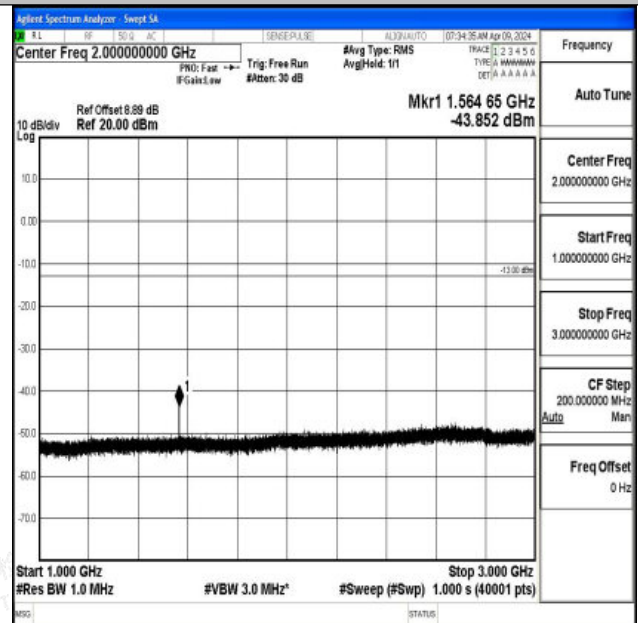
Band13_5MHz_QPSK_23255_1RB#0_0.009~0.15_0.009~0.15



Band13_5MHz_QPSK_23255_1RB#0_0.15~30_0.15~30

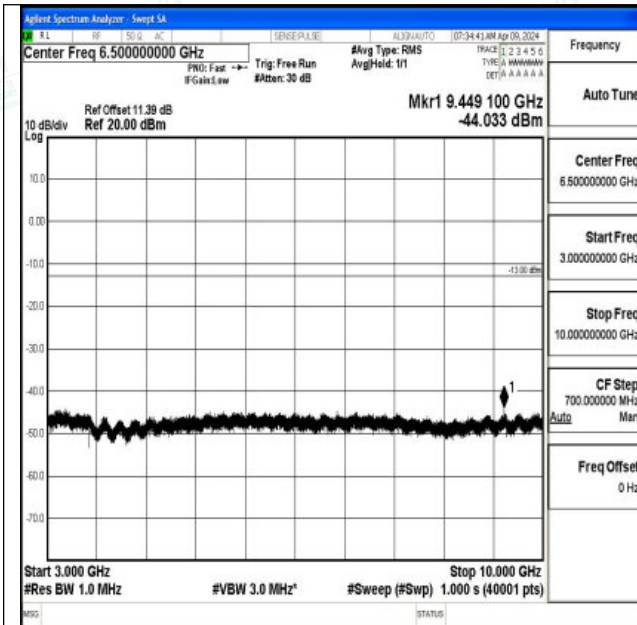


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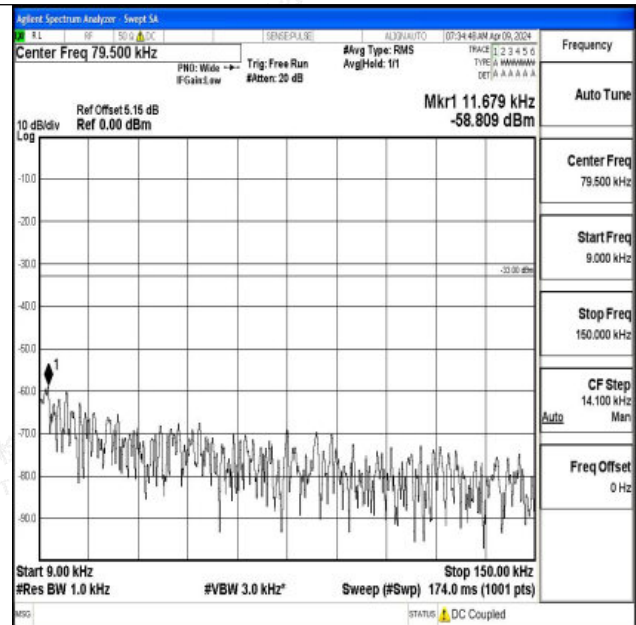


Band13_5MHz_QPSK_23255_1RB#0_1000~3000_1000~3000

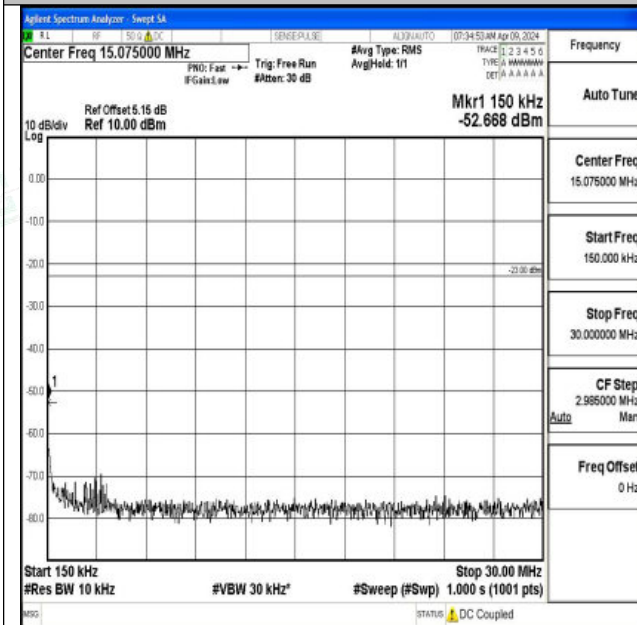




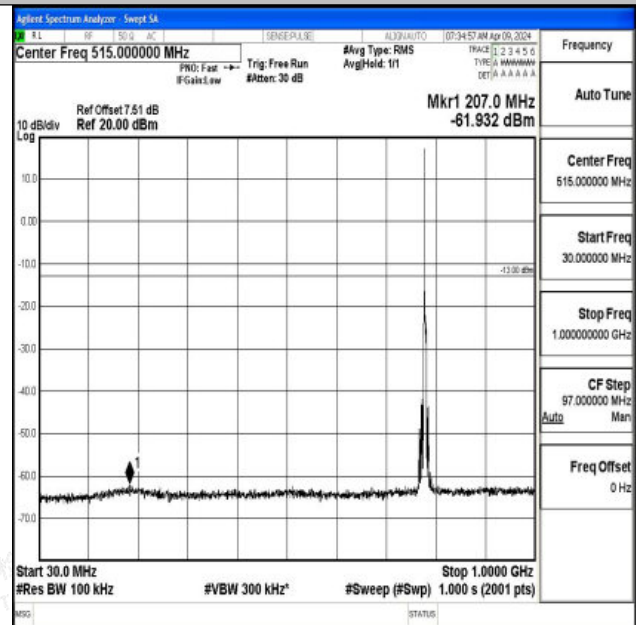
Band13_5MHz_QPSK_23255_1RB#0_3000~10000_3000~10000



Band13_5MHz_16QAM_23255_1RB#0_0.009~0.15_0.009~0.15

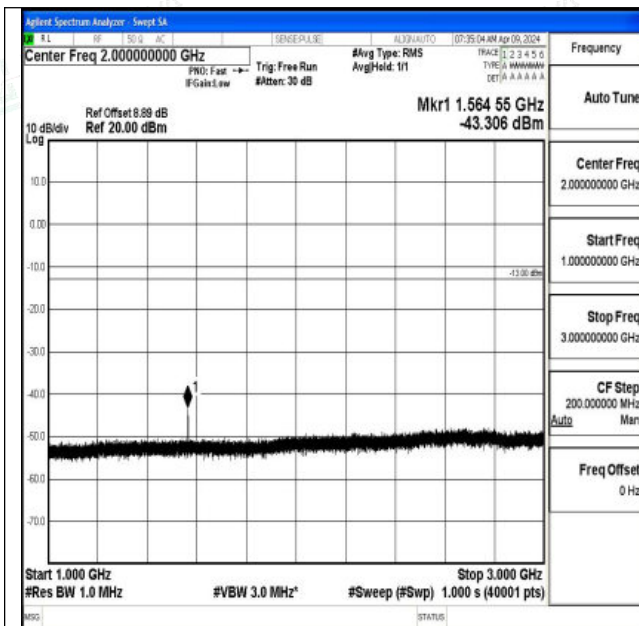


Band13_5MHz_16QAM_23255_1RB#0_0.15~30_0.15~30

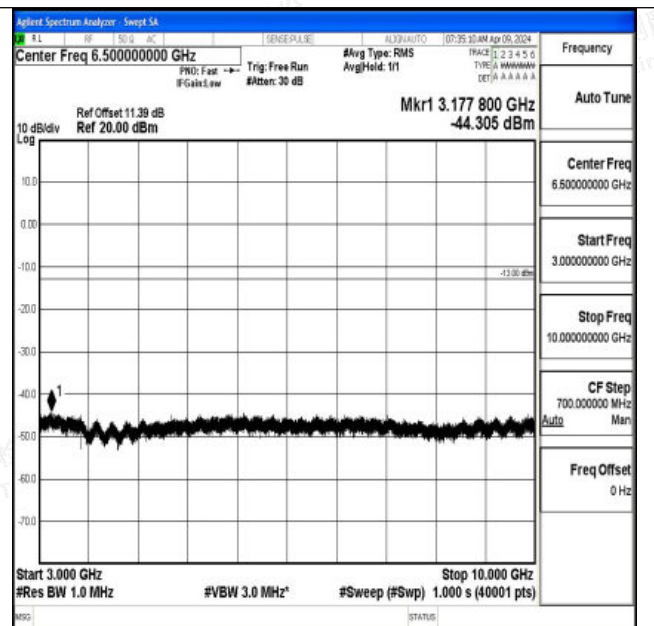


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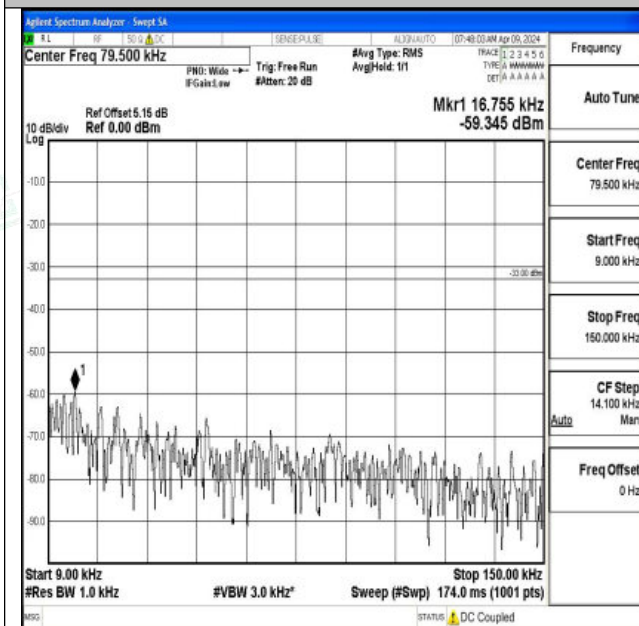




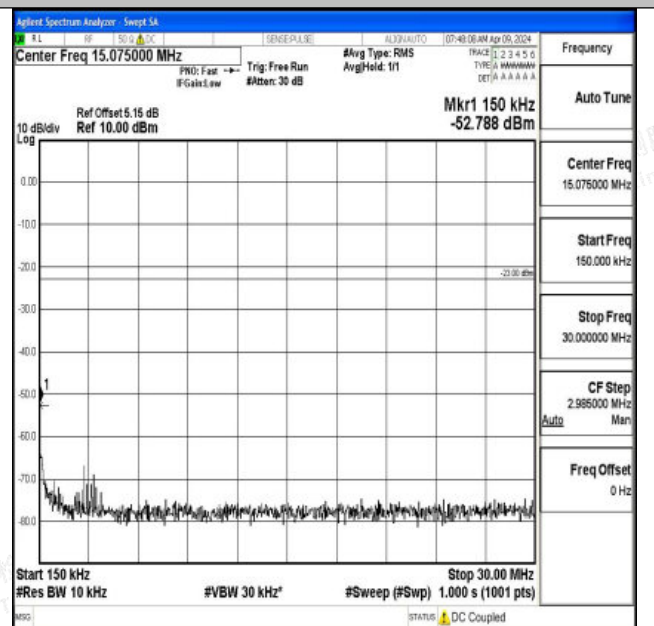
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~3000



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~10000

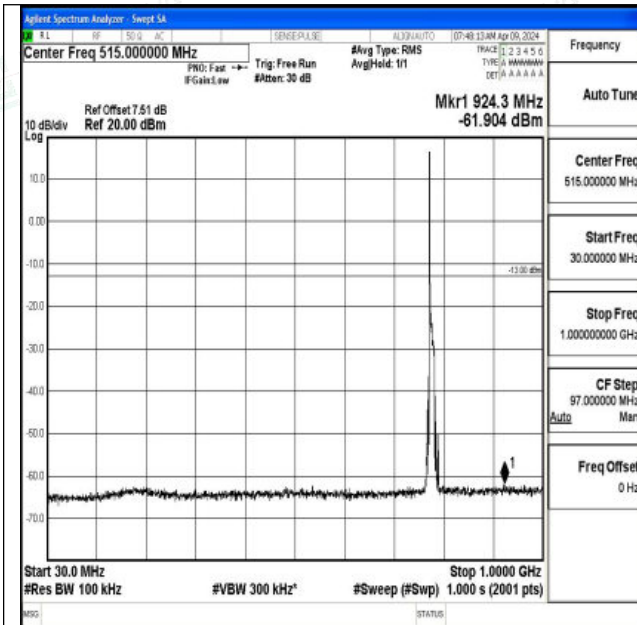


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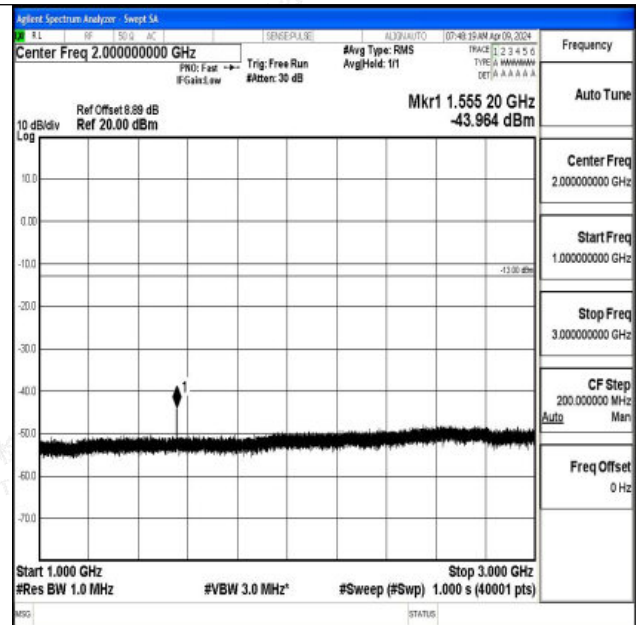
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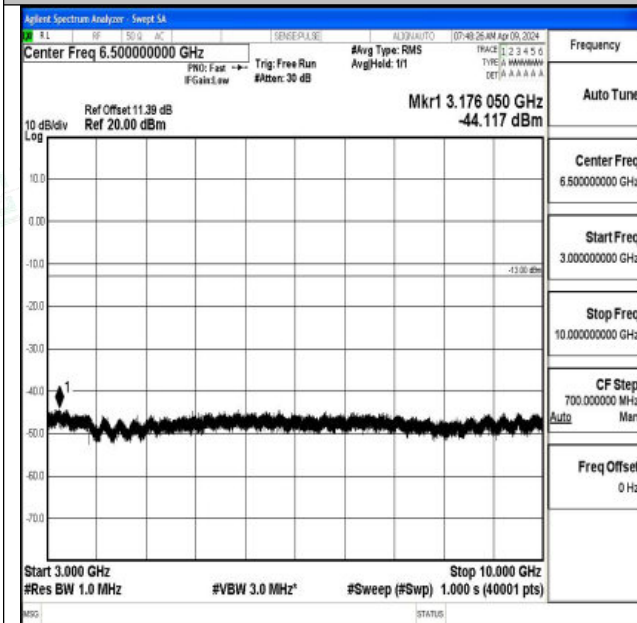
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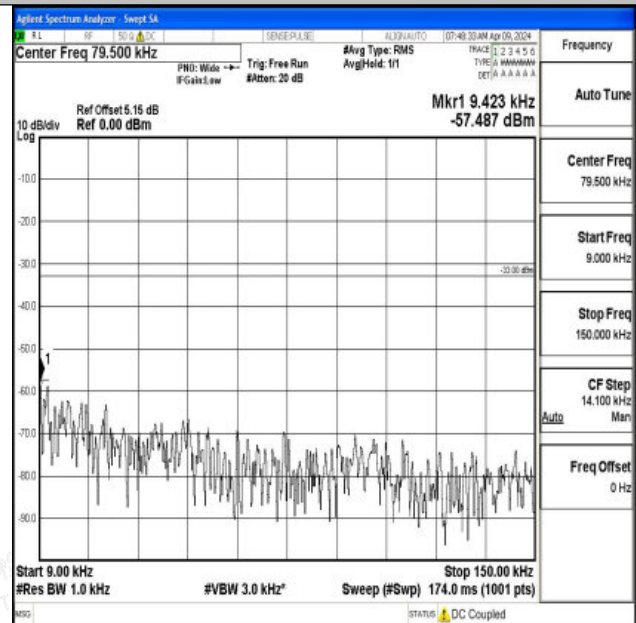
Band13_10MHz_QPSK_23230_1RB#0_1000~3000_1000~3000

3000



Band13_10MHz_QPSK_23230_1RB#0_3000~10000_3000~10000

0~10000



Band13_10MHz_16QAM_23230_1RB#0_0.009~0.15_0.009~0.15

~0.15

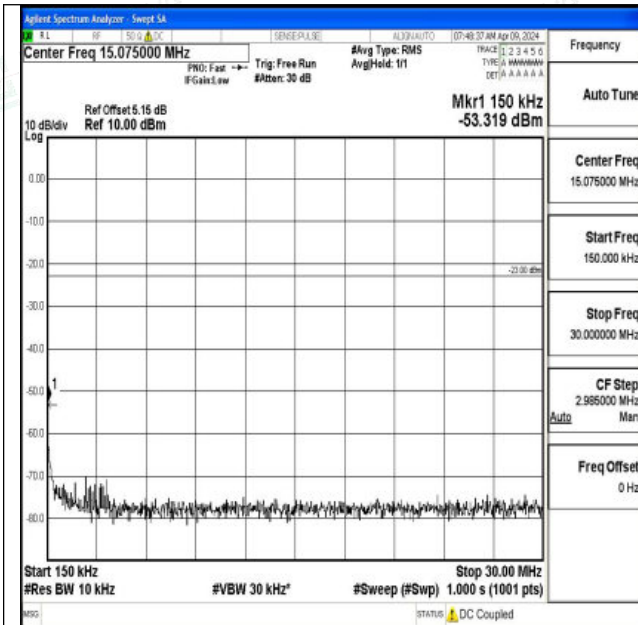


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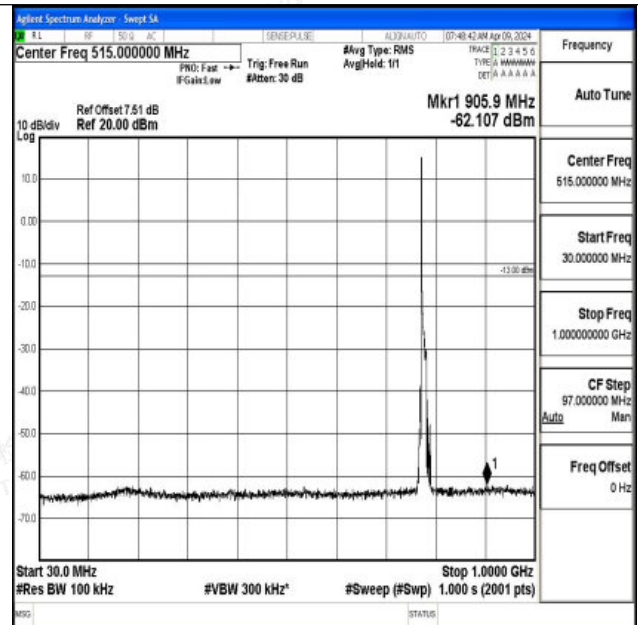
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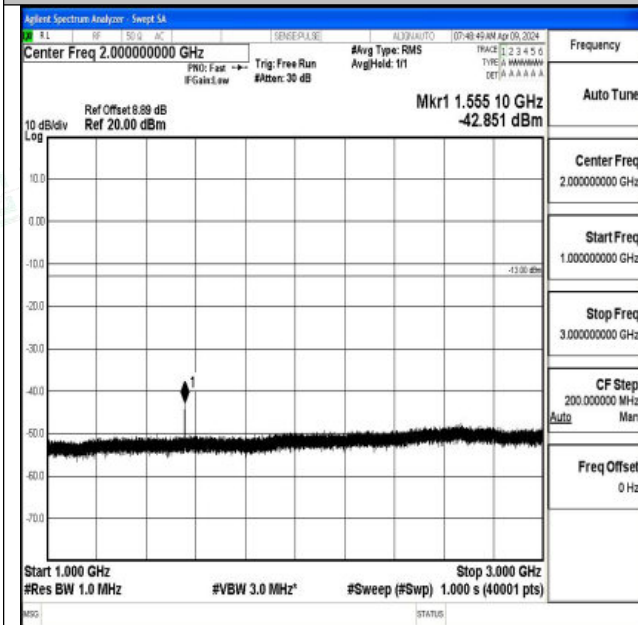
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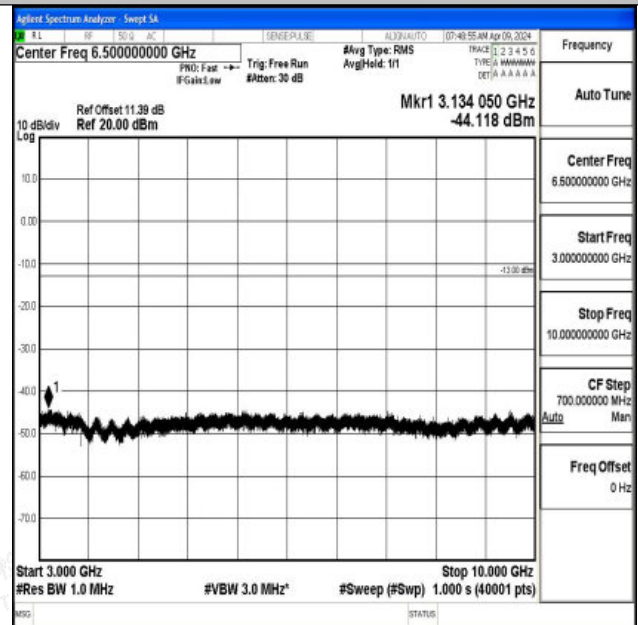
Band13_10MHz_16QAM_23230_1RB#0_30~1000_30~100

0



Band13_10MHz_16QAM_23230_1RB#0_1000~3000_100

0~3000



Band13_10MHz_16QAM_23230_1RB#0_3000~10000_300

0~10000



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