



Appendix B

E-UTRA Band 14



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch (CMA, CNAS, ILAC) Laboratory

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1. Effective (Isotropic) Radiated Power

1.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Conducted Power(dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band14	5MHz	QPSK	23305	1RB#0	22.93	24.78	34.77	PASS
Band14	5MHz	QPSK	23305	1RB#12	23.47	25.32	34.77	PASS
Band14	5MHz	QPSK	23305	1RB#24	22.17	24.02	34.77	PASS
Band14	5MHz	QPSK	23305	12RB#0	22.01	23.86	34.77	PASS
Band14	5MHz	QPSK	23305	12RB#6	22.06	23.91	34.77	PASS
Band14	5MHz	QPSK	23305	12RB#13	21.88	23.73	34.77	PASS
Band14	5MHz	QPSK	23305	25RB#0	22.09	23.94	34.77	PASS
Band14	5MHz	QPSK	23330	1RB#0	22.95	24.80	34.77	PASS
Band14	5MHz	QPSK	23330	1RB#12	23.29	25.14	34.77	PASS
Band14	5MHz	QPSK	23330	1RB#24	22.43	24.28	34.77	PASS
Band14	5MHz	QPSK	23330	12RB#0	21.97	23.82	34.77	PASS
Band14	5MHz	QPSK	23330	12RB#6	21.95	23.80	34.77	PASS
Band14	5MHz	QPSK	23330	12RB#13	21.99	23.84	34.77	PASS
Band14	5MHz	QPSK	23330	25RB#0	22.05	23.90	34.77	PASS
Band14	5MHz	QPSK	23355	1RB#0	23.19	25.04	34.77	PASS
Band14	5MHz	QPSK	23355	1RB#12	23.42	25.27	34.77	PASS
Band14	5MHz	QPSK	23355	1RB#24	22.6	24.45	34.77	PASS
Band14	5MHz	QPSK	23355	12RB#0	22.18	24.03	34.77	PASS
Band14	5MHz	QPSK	23355	12RB#6	22.24	24.09	34.77	PASS
Band14	5MHz	QPSK	23355	12RB#13	22.19	24.04	34.77	PASS
Band14	5MHz	QPSK	23355	25RB#0	22.18	24.03	34.77	PASS
Band14	5MHz	16QAM	23305	1RB#0	22.24	24.09	34.77	PASS
Band14	5MHz	16QAM	23305	1RB#12	22.12	23.97	34.77	PASS
Band14	5MHz	16QAM	23305	1RB#24	22.15	24.00	34.77	PASS
Band14	5MHz	16QAM	23305	12RB#0	21.08	22.93	34.77	PASS
Band14	5MHz	16QAM	23305	12RB#6	21.07	22.92	34.77	PASS
Band14	5MHz	16QAM	23305	12RB#13	20.97	22.82	34.77	PASS
Band14	5MHz	16QAM	23305	25RB#0	20.92	22.77	34.77	PASS
Band14	5MHz	16QAM	23330	1RB#0	22.34	24.19	34.77	PASS
Band14	5MHz	16QAM	23330	1RB#12	22.15	24.00	34.77	PASS
Band14	5MHz	16QAM	23330	1RB#24	22.17	24.02	34.77	PASS
Band14	5MHz	16QAM	23330	12RB#0	21.03	22.88	34.77	PASS



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Band14	5MHz	16QAM	23330	12RB#6	21.05	22.90	34.77	PASS
Band14	5MHz	16QAM	23330	12RB#13	21.08	22.93	34.77	PASS
Band14	5MHz	16QAM	23330	25RB#0	21.01	22.86	34.77	PASS
Band14	5MHz	16QAM	23355	1RB#0	22.47	24.32	34.77	PASS
Band14	5MHz	16QAM	23355	1RB#12	22.62	24.47	34.77	PASS
Band14	5MHz	16QAM	23355	1RB#24	22.56	24.41	34.77	PASS
Band14	5MHz	16QAM	23355	12RB#0	21.29	23.14	34.77	PASS
Band14	5MHz	16QAM	23355	12RB#6	21.32	23.17	34.77	PASS
Band14	5MHz	16QAM	23355	12RB#13	21.18	23.03	34.77	PASS
Band14	5MHz	16QAM	23355	25RB#0	21.19	23.04	34.77	PASS
Band14	10MHz	QPSK	23330	1RB#0	23.07	24.92	34.77	PASS
Band14	10MHz	QPSK	23330	1RB#24	23.77	25.62	34.77	PASS
Band14	10MHz	QPSK	23330	1RB#49	22.06	23.91	34.77	PASS
Band14	10MHz	QPSK	23330	25RB#0	22.25	24.10	34.77	PASS
Band14	10MHz	QPSK	23330	25RB#12	22.08	23.93	34.77	PASS
Band14	10MHz	QPSK	23330	25RB#25	21.92	23.77	34.77	PASS
Band14	10MHz	QPSK	23330	50RB#0	21.99	23.84	34.77	PASS
Band14	10MHz	16QAM	23330	1RB#0	22.27	24.12	34.77	PASS
Band14	10MHz	16QAM	23330	1RB#24	22.33	24.18	34.77	PASS
Band14	10MHz	16QAM	23330	1RB#49	22.51	24.36	34.77	PASS
Band14	10MHz	16QAM	23330	25RB#0	20.98	22.83	34.77	PASS
Band14	10MHz	16QAM	23330	25RB#12	21.01	22.86	34.77	PASS
Band14	10MHz	16QAM	23330	25RB#25	20.97	22.82	34.77	PASS
Band14	10MHz	16QAM	23330	50RB#0	20.94	22.79	34.77	PASS

Remark:

a: For getting the EIRP (Efficient Isotropic Radiated Power), the following formula should be taken to calculate it,

ERP [dBm] = Conducted Power [dBm] + Gain [dBd]

EIRP [dBm] = Conducted Power [dBm] + Gain [dBi]



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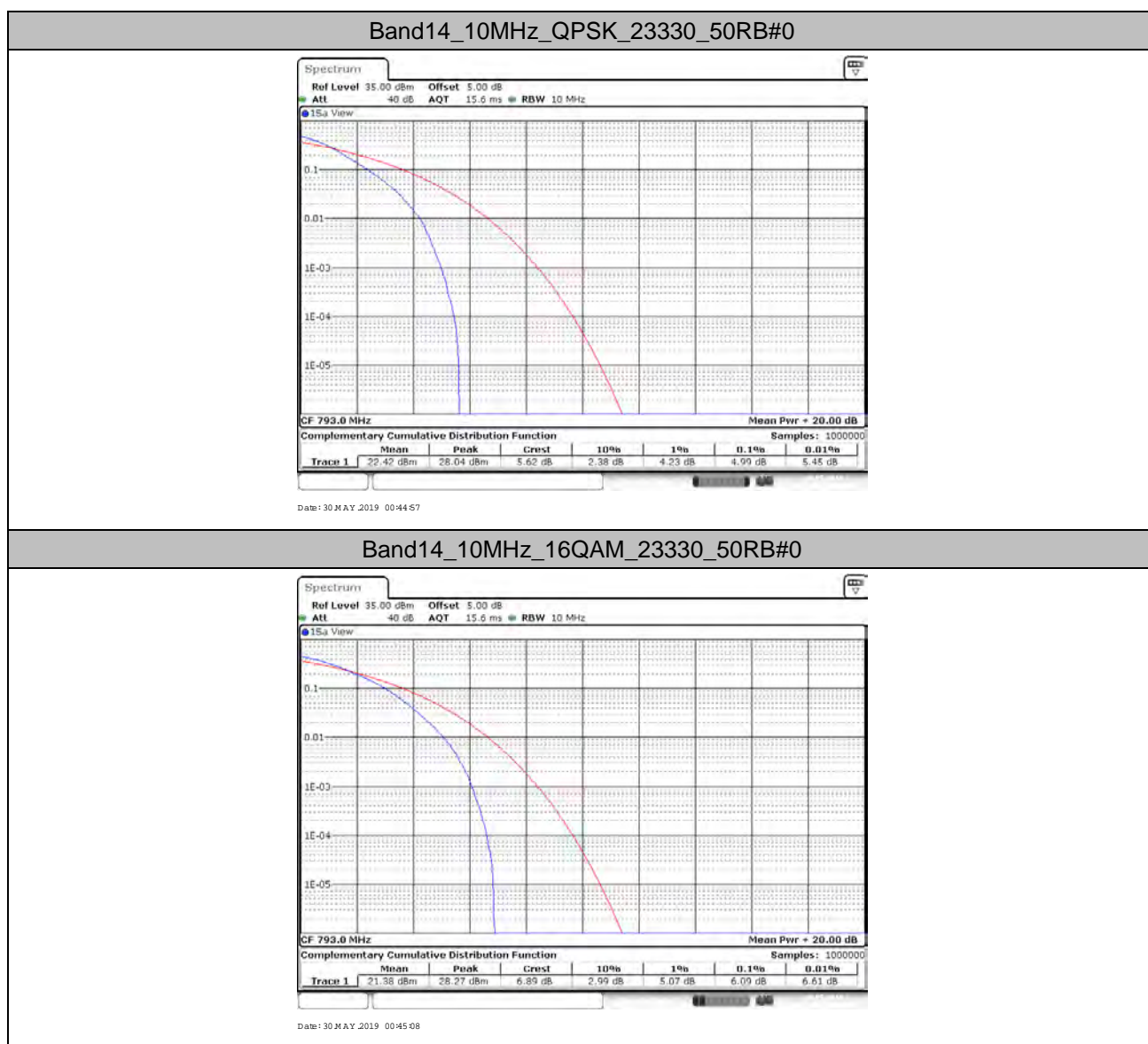


2. Peak-to-Average Ratio(CCDF)

2.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band14	10MHz	QPSK	23330	50RB#0	4.99	13	PASS
Band14	10MHz	16QAM	23330	50RB#0	6.09	13	PASS

2.2. Test Plots



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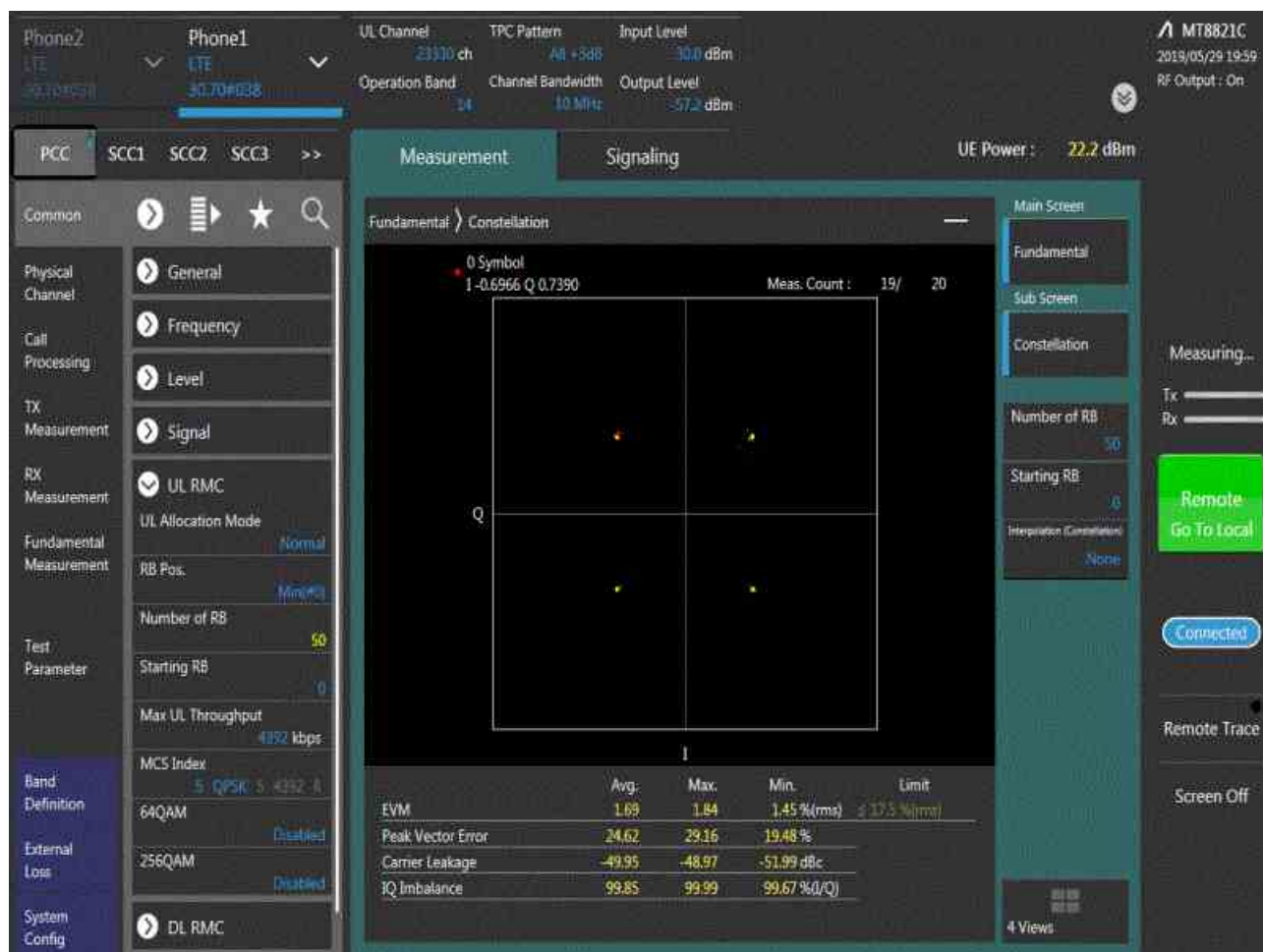
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3. Modulation Characteristics

3.1. Test BAND = LTE Band 14

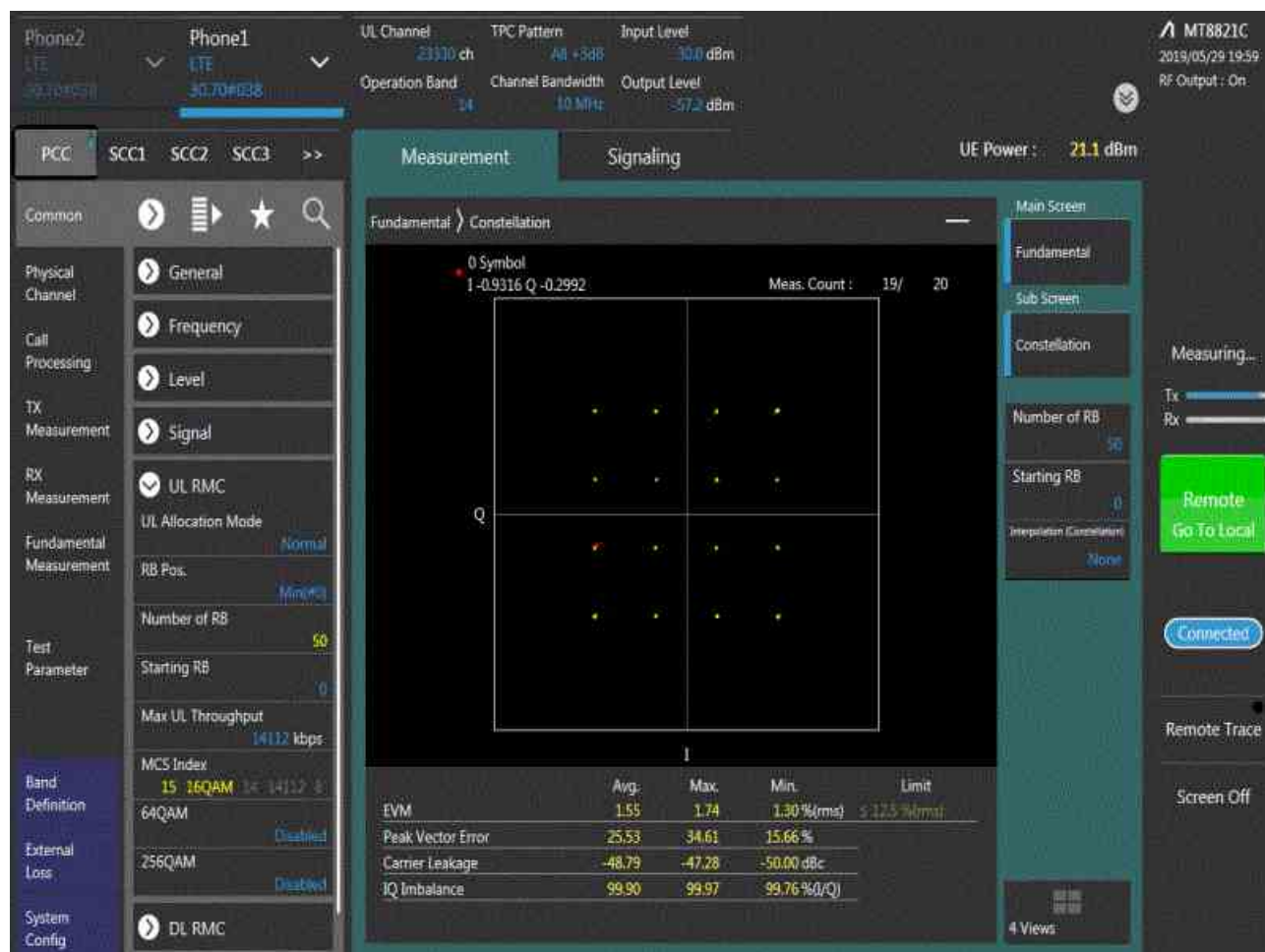
3.2. Test Mode = LTE /TM1 10MHz

3.2.1. Test Channel = MCH



3.3. Test Mode = LTE /TM2 10MHz

3.3.1. Test Channel = MCH



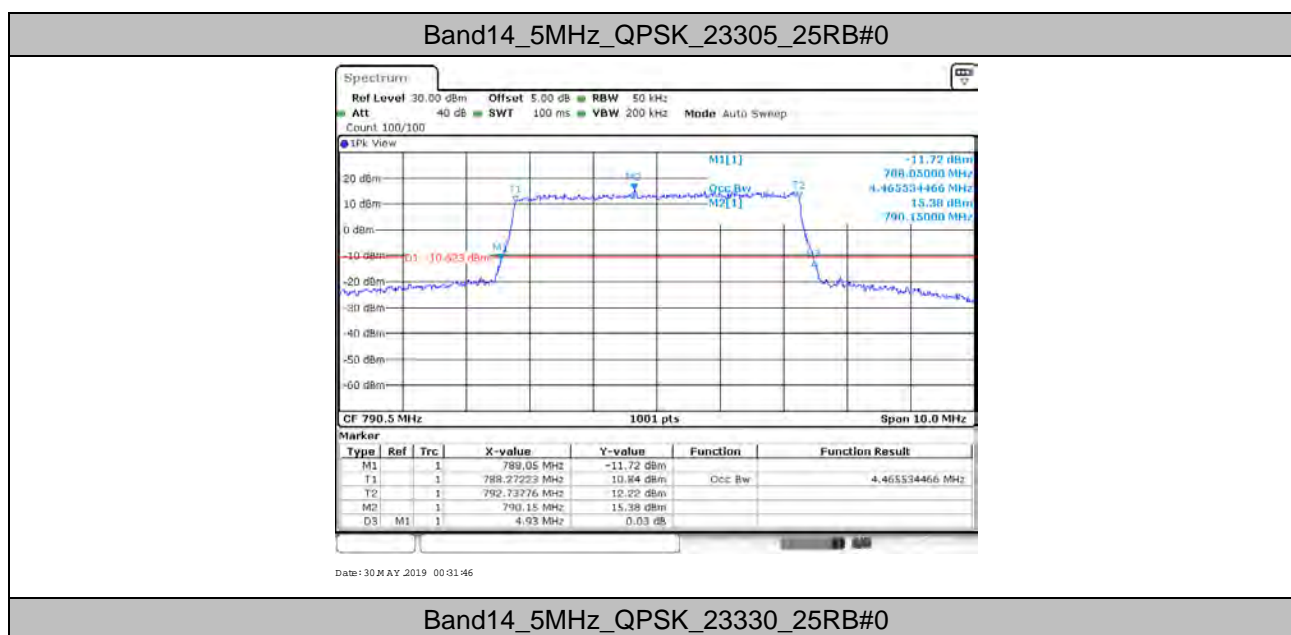


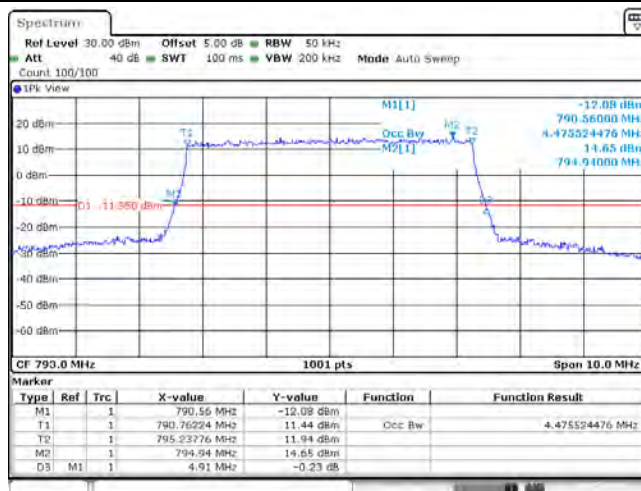
4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band14	5MHz	QPSK	23305	25RB#0	4.466	4.930	PASS
Band14	5MHz	QPSK	23330	25RB#0	4.476	4.910	PASS
Band14	5MHz	QPSK	23355	25RB#0	4.476	4.930	PASS
Band14	5MHz	16QAM	23305	25RB#0	4.476	4.950	PASS
Band14	5MHz	16QAM	23330	25RB#0	4.466	4.930	PASS
Band14	5MHz	16QAM	23355	25RB#0	4.456	4.850	PASS
Band14	10MHz	QPSK	23330	50RB#0	8.911	9.700	PASS
Band14	10MHz	16QAM	23330	50RB#0	8.891	9.700	PASS

4.2. Test Plots





Date: 30 MAY 2019 00:32:29

Band14_5MHz_QPSK_23355_25RB#0



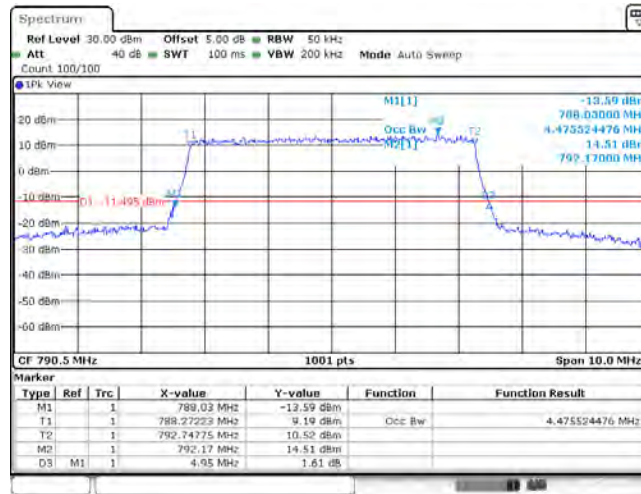
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Band14_5MHz_16QAM_23305_25RB#0



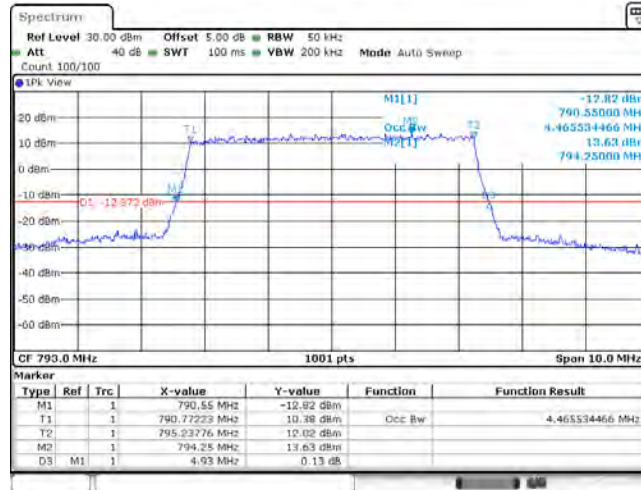
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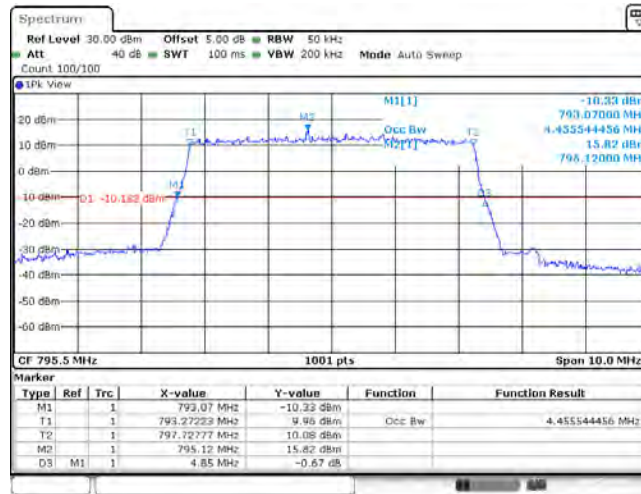
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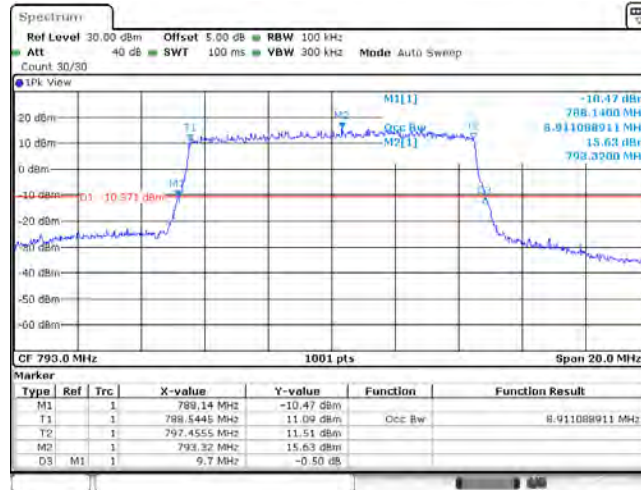
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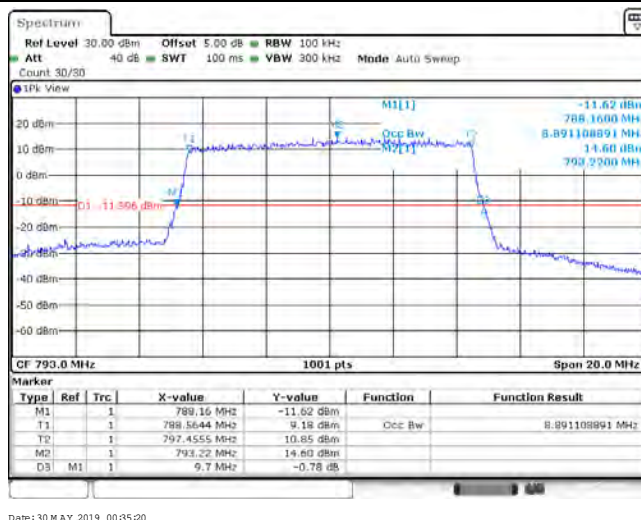
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Date: 30 MAY 2019 00:35:07

Band14_10MHz_16QAM_23330_50RB#0





Date: 30 MAY 2019 00:35:20



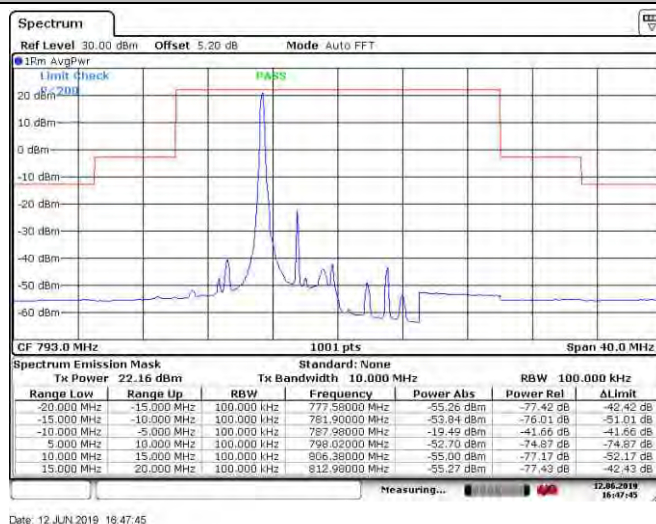
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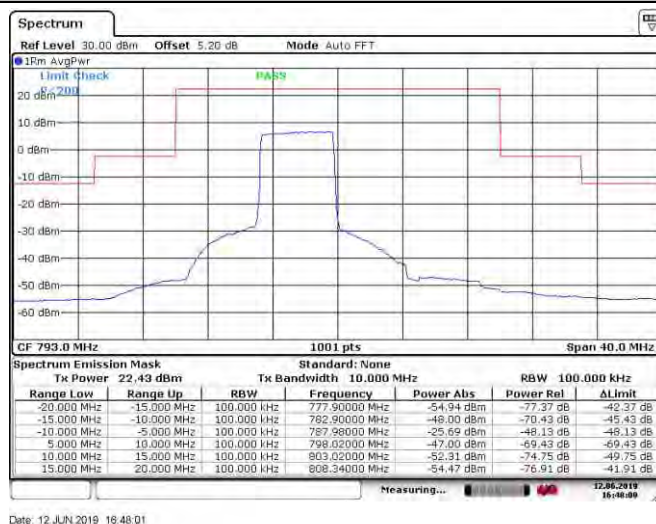
5. Emission Mask

5.1. Test Plots

BAND 14_5MHz_QPSK_23305_1RB#0



BAND 14_5MHz_QPSK_23305_25RB#0



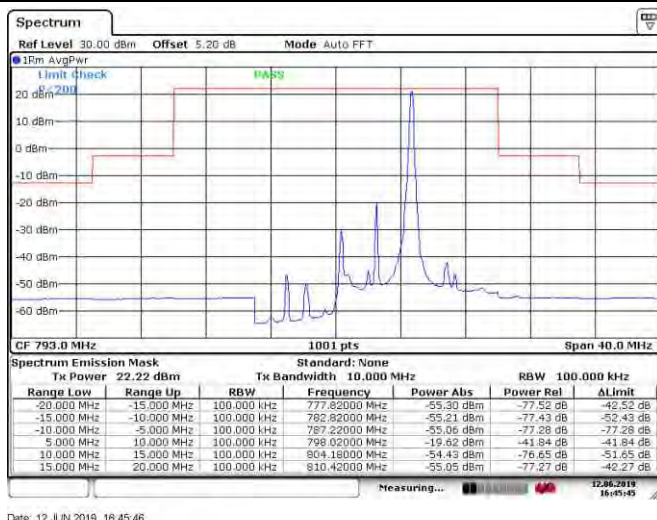
BAND 14_5MHz_QPSK_23355_1RB#24



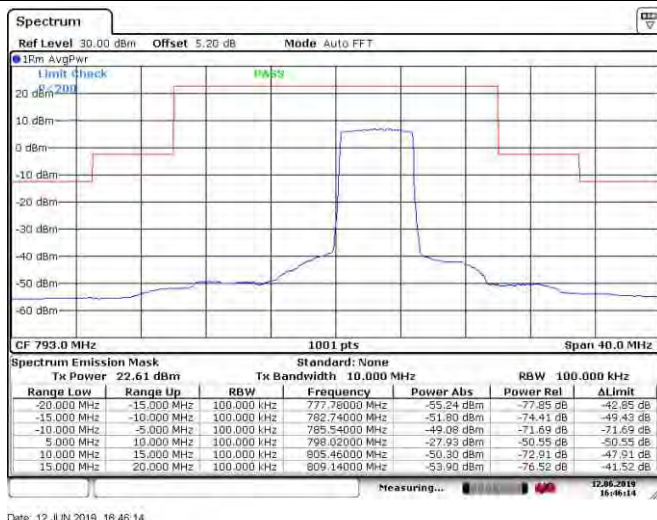
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BAND 14_5MHz_QPSK_23355_25RB#0

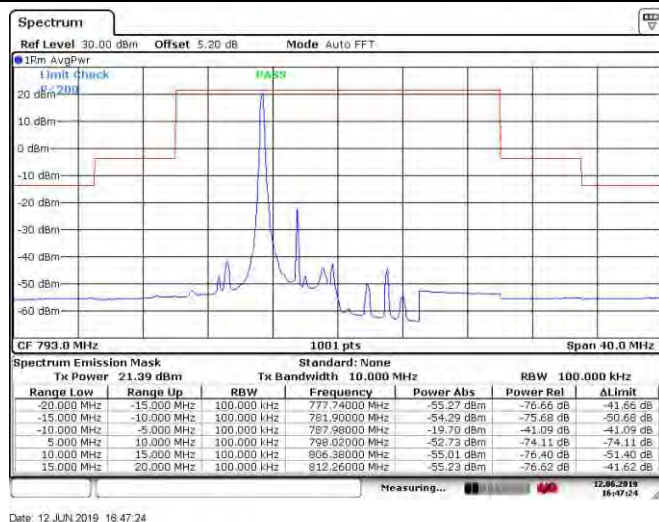


BAND 14_5MHz_16QAM_23305_1RB#0

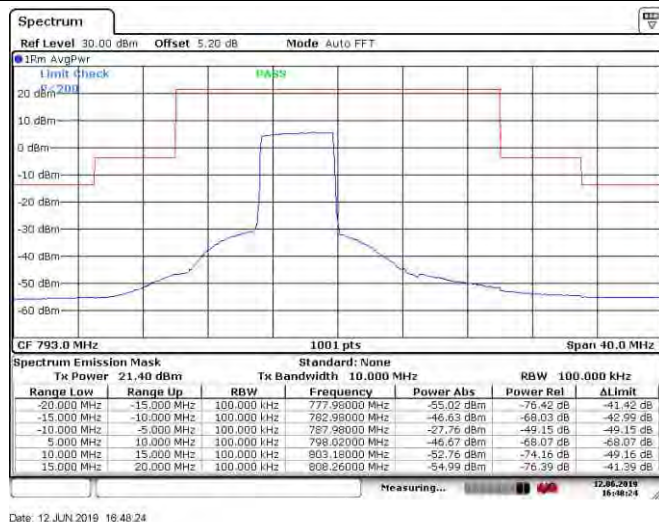


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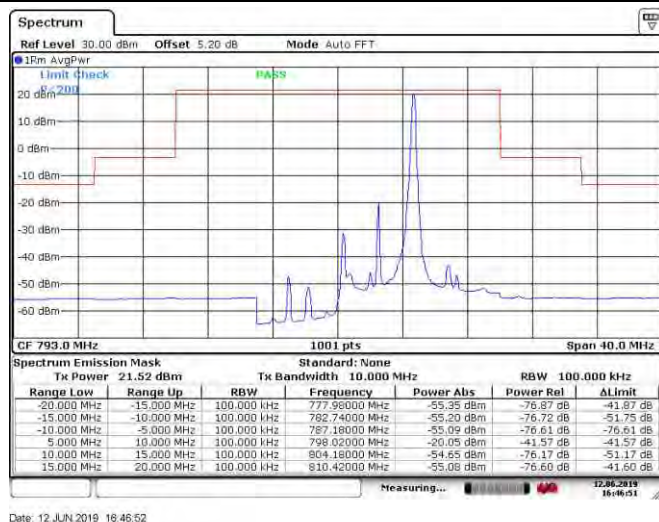


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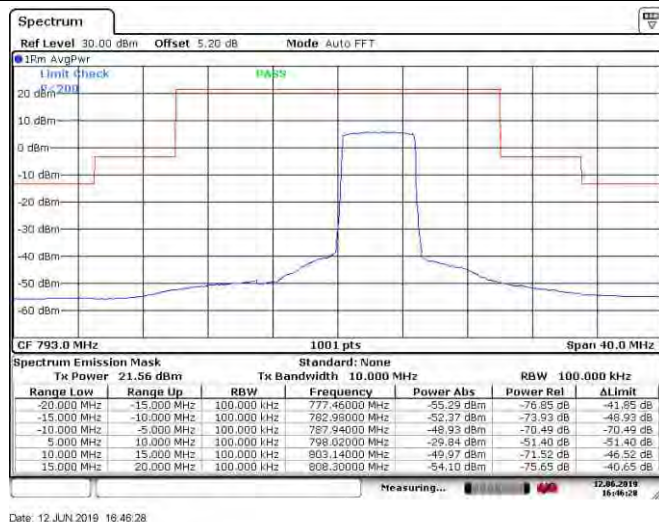


BAND 14_5MHz_16QAM_23355_1RB#24





BAND 14_5MHz_16QAM_23355_25RB#0

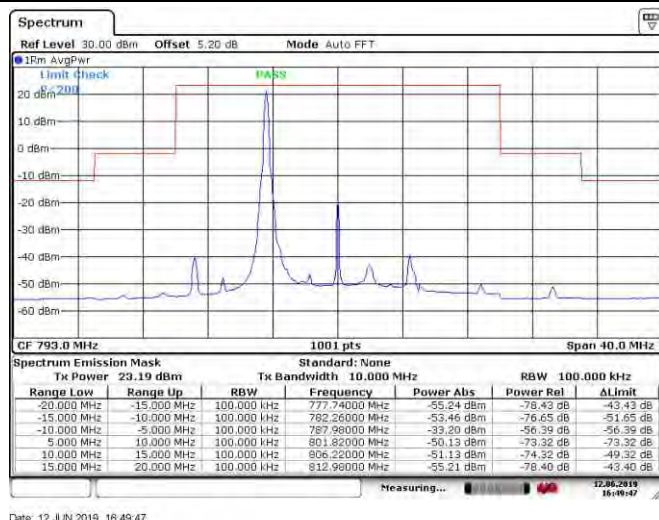


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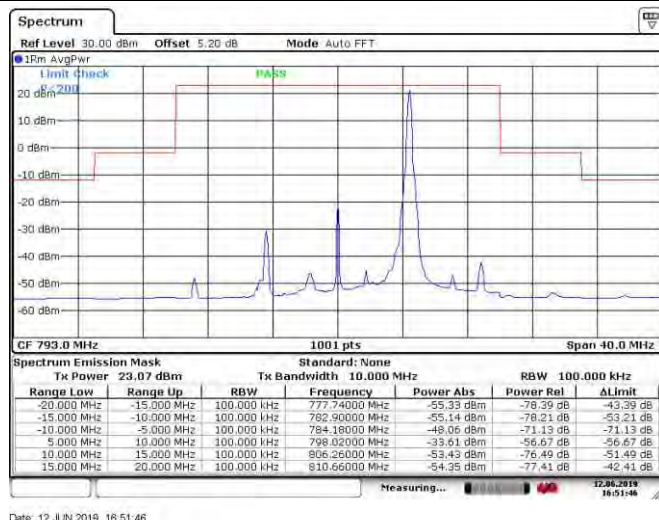


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BAND 14_10MHz_QPSK_23330_1RB#49

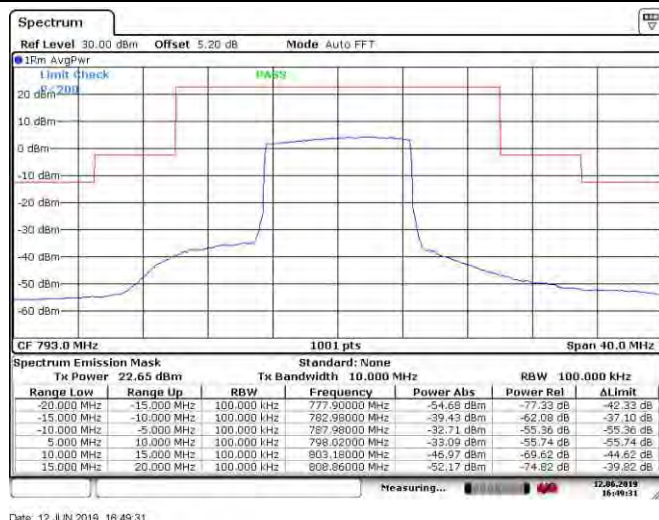


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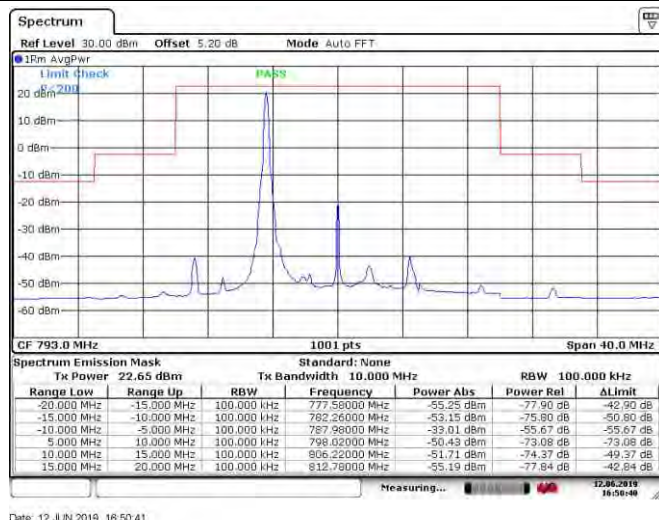


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BAND 14_10MHz_16QAM_23330_1RB#0

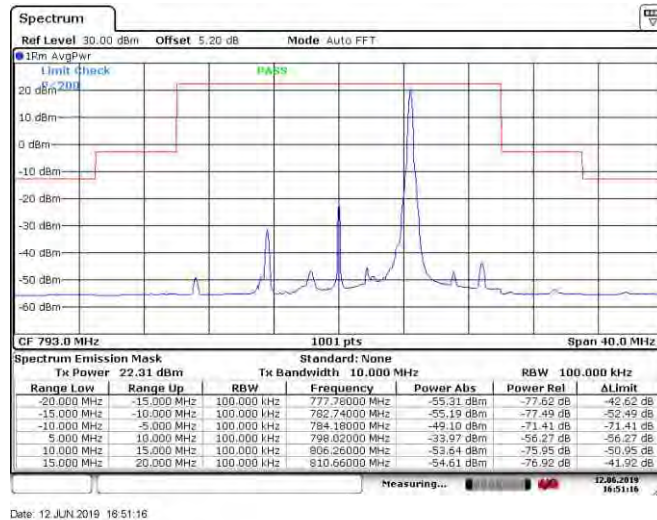


BAND 14_10MHz_16QAM_23330_1RB#49

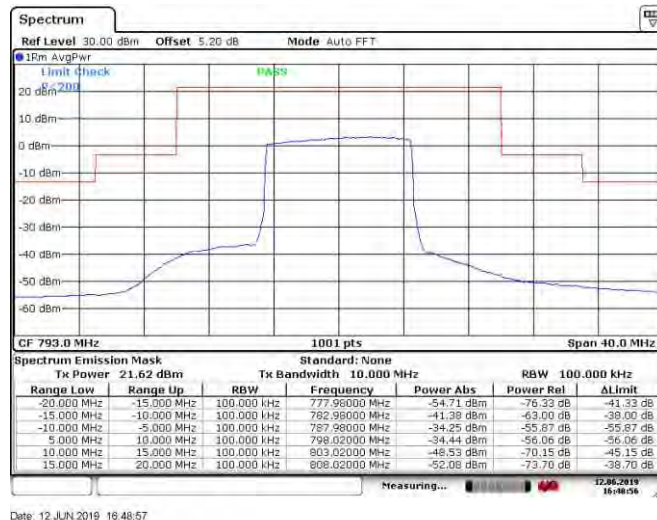


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BAND 14_10MHz_16QAM_23330_50RB#0



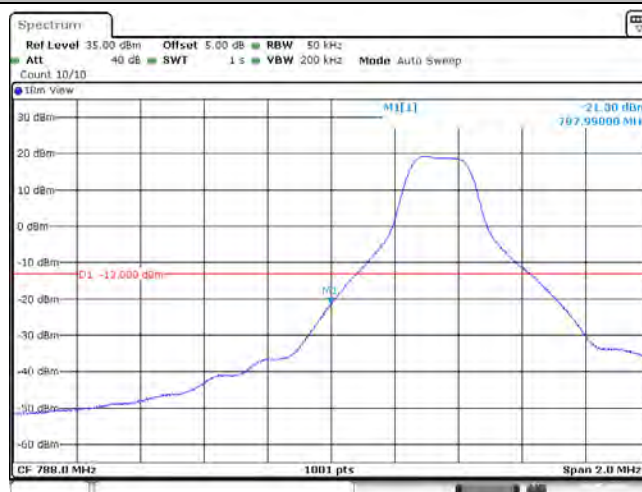
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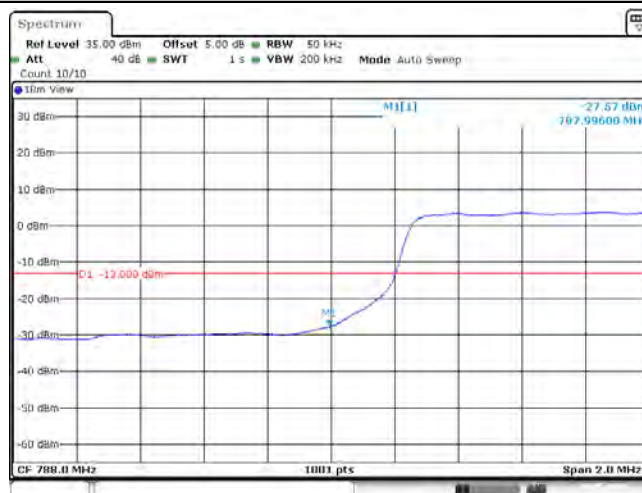
6. Band Edge Compliance

6.1. Test Plots

Band14_5MHz_QPSK_23305_1RB#0



Band14_5MHz_QPSK_23305_25RB#0

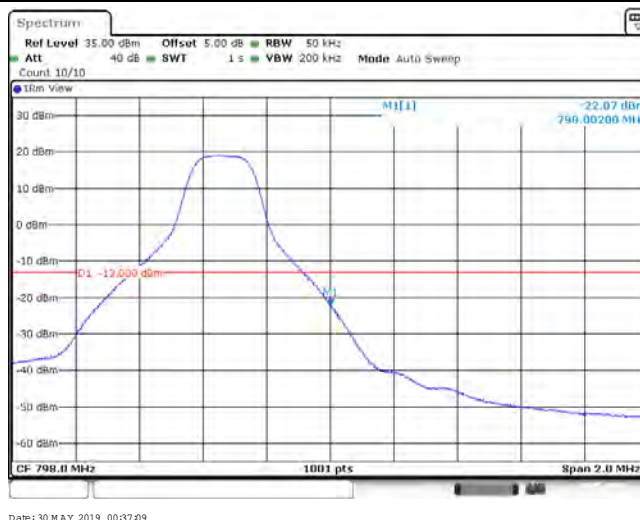


Band14_5MHz_QPSK_23355_1RB#24

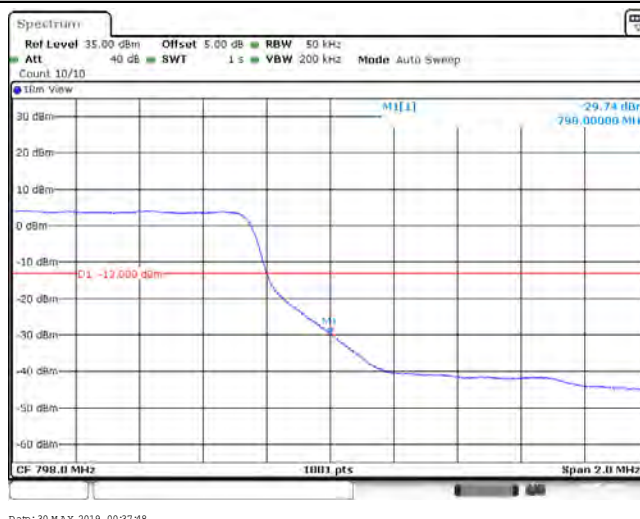


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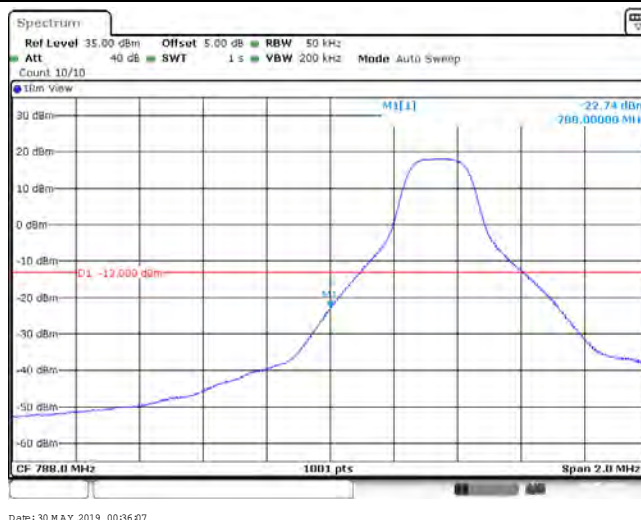


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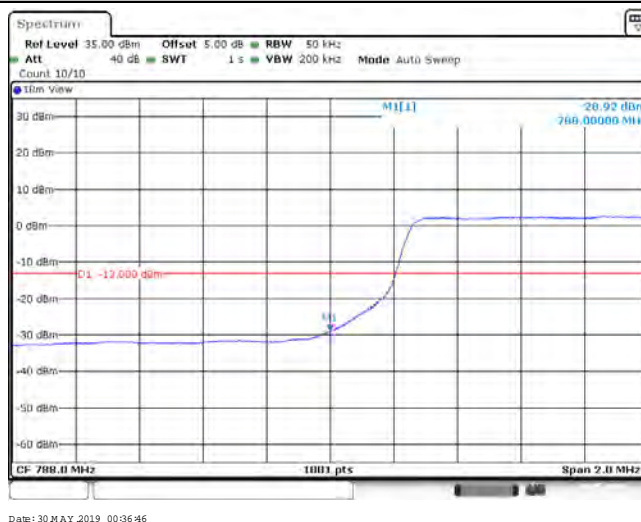


Band14_5MHz_16QAM_23305_1RB#0



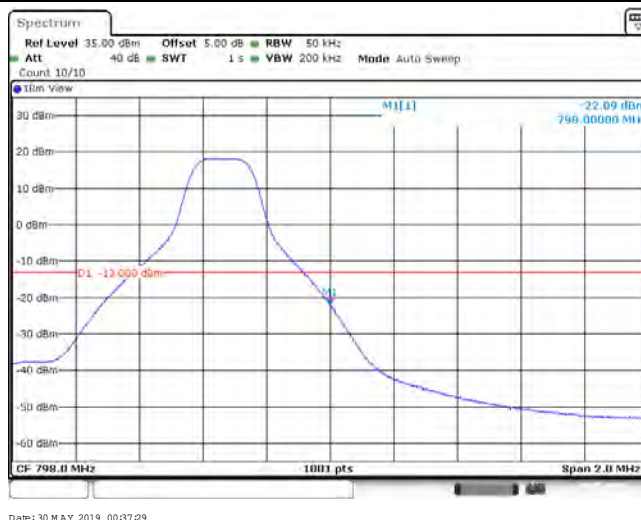


Band14_5MHz_16QAM_23305_25RB#0



Band14_5MHz_16QAM_23355_1RB#24





Band14_5MHz_16QAM_23355_25RB#0



Band14_10MHz_QPSK_23330_Left_1RB#0



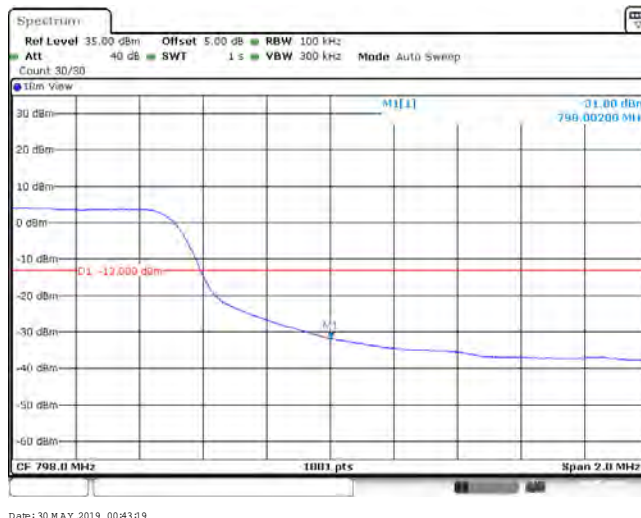


Band14_10MHz_QPSK_23330_Right_1RB#49



Band14_10MHz_QPSK_23330_Right_50RB#0



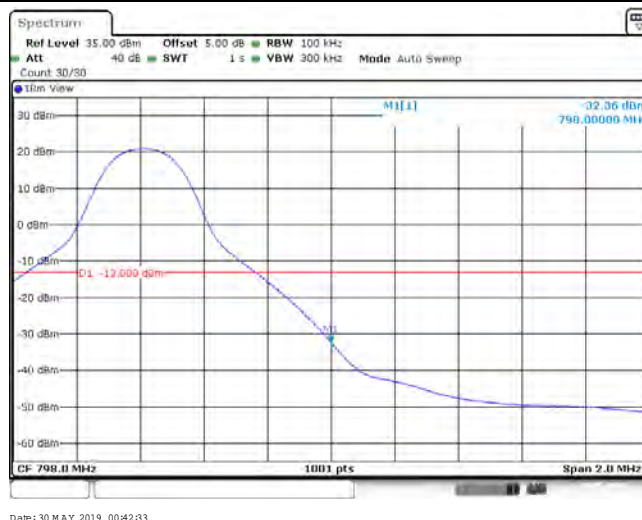


Band14_10MHz_16QAM_23330_Left_1RB#0



Band14_10MHz_16QAM_23330_Right_1RB#49





Date: 30 MAY 2019 00:42:33

Band14_10MHz_16QAM_23330_Right_50RB#0



Date: 30 MAY 2019 00:44:05



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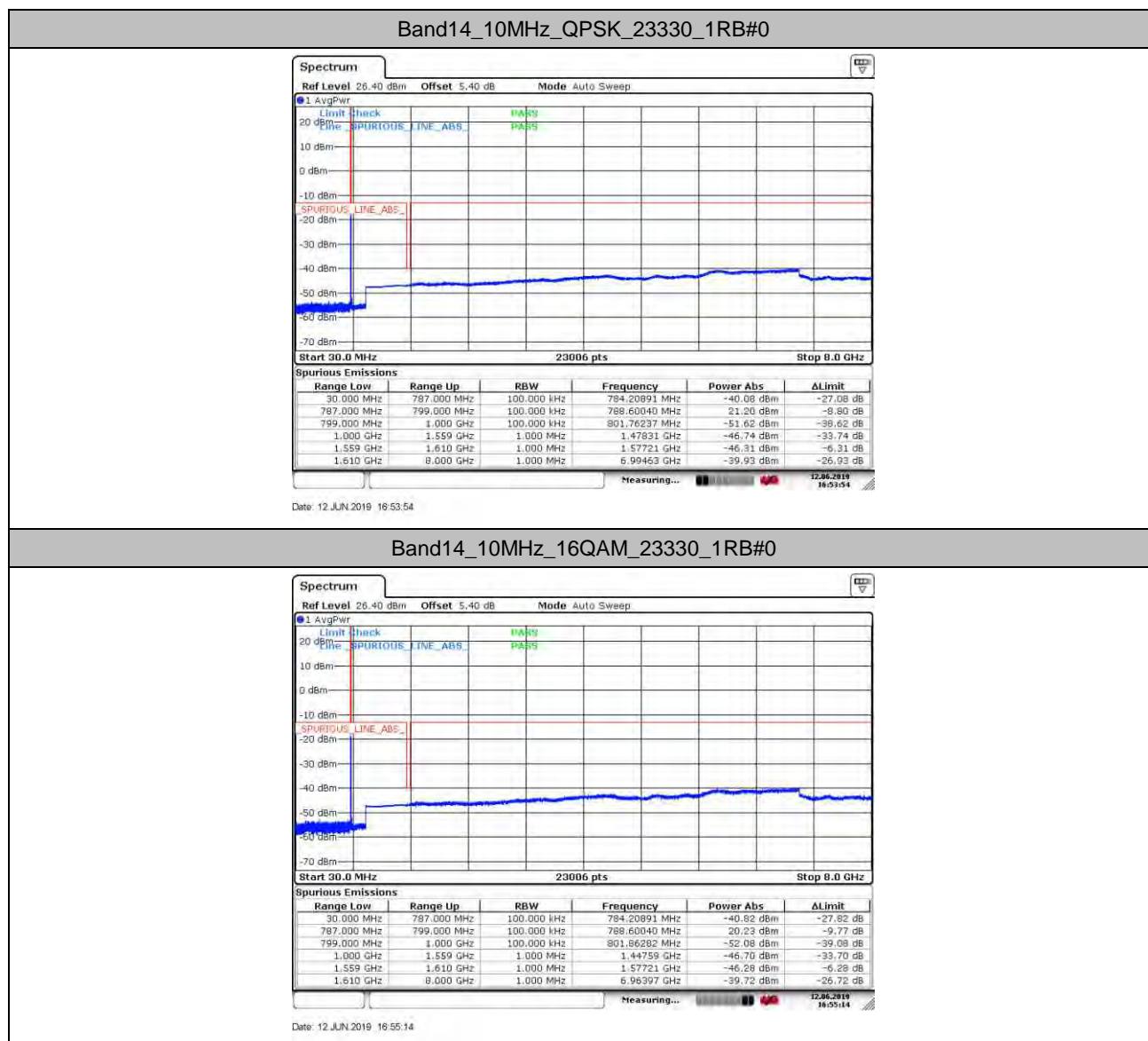


7. Spurious Emission at Antenna Terminal

Remark1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k * (\text{Span} / RBW)$ " with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

Remark2: only the worst case data displayed in this report.

7.1. Test Plots



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8. Field Strength of Spurious Radiation

8.1. Test BAND = LTE Band 14

8.1.1. Test Mode = LTE/TM1 10MHz

8.1.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
63.926667	-80.12	-13.00	67.12	Vertical
104.293333	-78.12	-13.00	65.12	Vertical
1577.000000	-60.15	-40.00	20.15	Vertical
2365.500000	-57.20	-13.00	44.20	Vertical
3154.050000	-66.29	-13.00	53.29	Vertical
4852.012500	-65.00	-13.00	52.00	Vertical
61.966667	-76.72	-13.00	63.72	Horizontal
104.293333	-79.25	-13.00	66.25	Horizontal
1577.000000	-61.82	-40.00	21.82	Horizontal
2365.500000	-51.71	-13.00	38.71	Horizontal
4142.700000	-66.49	-13.00	53.49	Horizontal
6056.137500	-63.89	-13.00	50.89	Horizontal

Remark:

The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the worst case data had been displayed.

We have tested all modulation and all Bandwidth , but only the worst case data presented in this report.



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9. Frequency Stability

9.1. Frequency Vs Voltage

Voltage										
BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band14	10MHz	QPSK	23330	50RB#0	VL	NT	-0.40	-0.000504	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	VN	NT	0.10	0.000126	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	VH	NT	-0.70	-0.000883	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	VL	NT	1.20	0.001513	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	VN	NT	-1.10	-0.001387	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	VH	NT	0.20	0.000252	±2.5	PASS

9.2. Frequency Vs Temperature

Temperature										
BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band14	10MHz	QPSK	23330	50RB#0	NV	-30	-2.10	-0.002648	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	-20	-1.50	-0.001892	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	0	-0.40	-0.000504	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	10	1.40	0.001765	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	20	-1.90	-0.002396	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	30	-0.20	-0.000252	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	40	0.10	0.000126	±2.5	PASS
Band14	10MHz	QPSK	23330	50RB#0	NV	50	-2.10	-0.002648	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	-30	-1.30	-0.001639	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	-20	1.30	0.001639	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	0	-1.60	-0.002018	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	10	0.50	0.000631	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	20	-1.00	-0.001261	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	30	-1.50	-0.001892	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	40	-1.40	-0.001765	±2.5	PASS
Band14	10MHz	16QAM	23330	50RB#0	NV	50	-2.10	-0.002648	±2.5	PASS

The End



SGS-CSTC Standards Technical Services Co., Ltd.
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