Appendix B

E-UTRA Band 13

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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
Band13	5MHz	QPSK	23205	1RB#12	21.94	18.29	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	22.15	18.50	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#0	21.97	18.32	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	21.19	17.54	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	21.31	17.66	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	21.19	17.54	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	21.16	17.51	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	22.01	18.36	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	22.17	18.52	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	22.00	18.35	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	21.22	17.57	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	21.12	17.47	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	21.10	17.45	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	21.05	17.40	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	22.04	18.39	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	22.16	18.51	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	21.99	18.34	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	21.19	17.54	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	21.23	17.58	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	21.10	17.45	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	21.18	17.53	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	21.46	17.81	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	21.28	17.63	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	21.43	17.78	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	20.26	16.61	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	20.16	16.51	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	20.23	16.58	34.77	PASS
Band13	5MHz	16QAM	23205	25RB#0	20.15	16.50	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	21.30	17.65	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	21.33	17.68	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	21.25	17.60	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#0	20.12	16.47	34.77	PASS

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Band13	5MHz	16QAM	23230	12RB#6	20.23	16.58	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	20.11	16.46	34.77	PASS
Band13	5MHz	16QAM	23230	25RB#0	20.09	16.44	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#0	21.43	17.78	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	21.46	17.81	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	21.46	17.81	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#13	20.29	16.64	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	20.17	16.52	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	20.17	16.52	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	20.05	16.40	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	22.16	18.51	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	22.17	18.52	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	22.16	18.51	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	21.25	17.60	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	21.26	17.61	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	21.18	17.53	34.77	PASS
Band13	10MHz	QPSK	23230	50RB#0	21.30	17.65	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	21.45	17.80	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	21.36	17.71	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	21.25	17.60	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	20.32	16.67	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	20.20	16.55	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	20.13	16.48	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	20.20	16.55	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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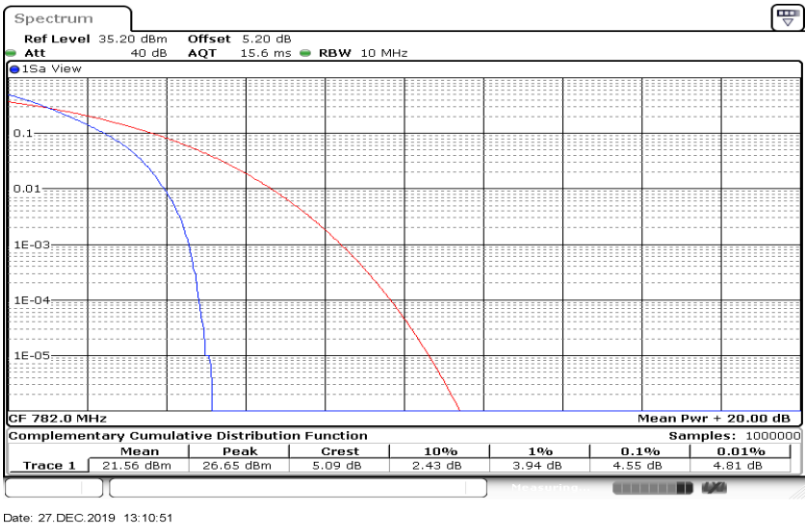
2. Peak-to-Average Ratio (CCDF)

2.1. Test Result

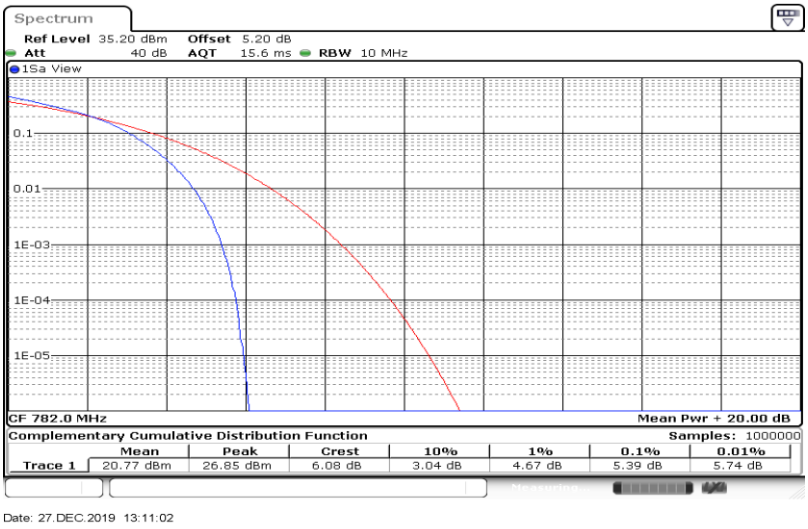
Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	4.55	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.39	13	PASS

2.2. Test Plots

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



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



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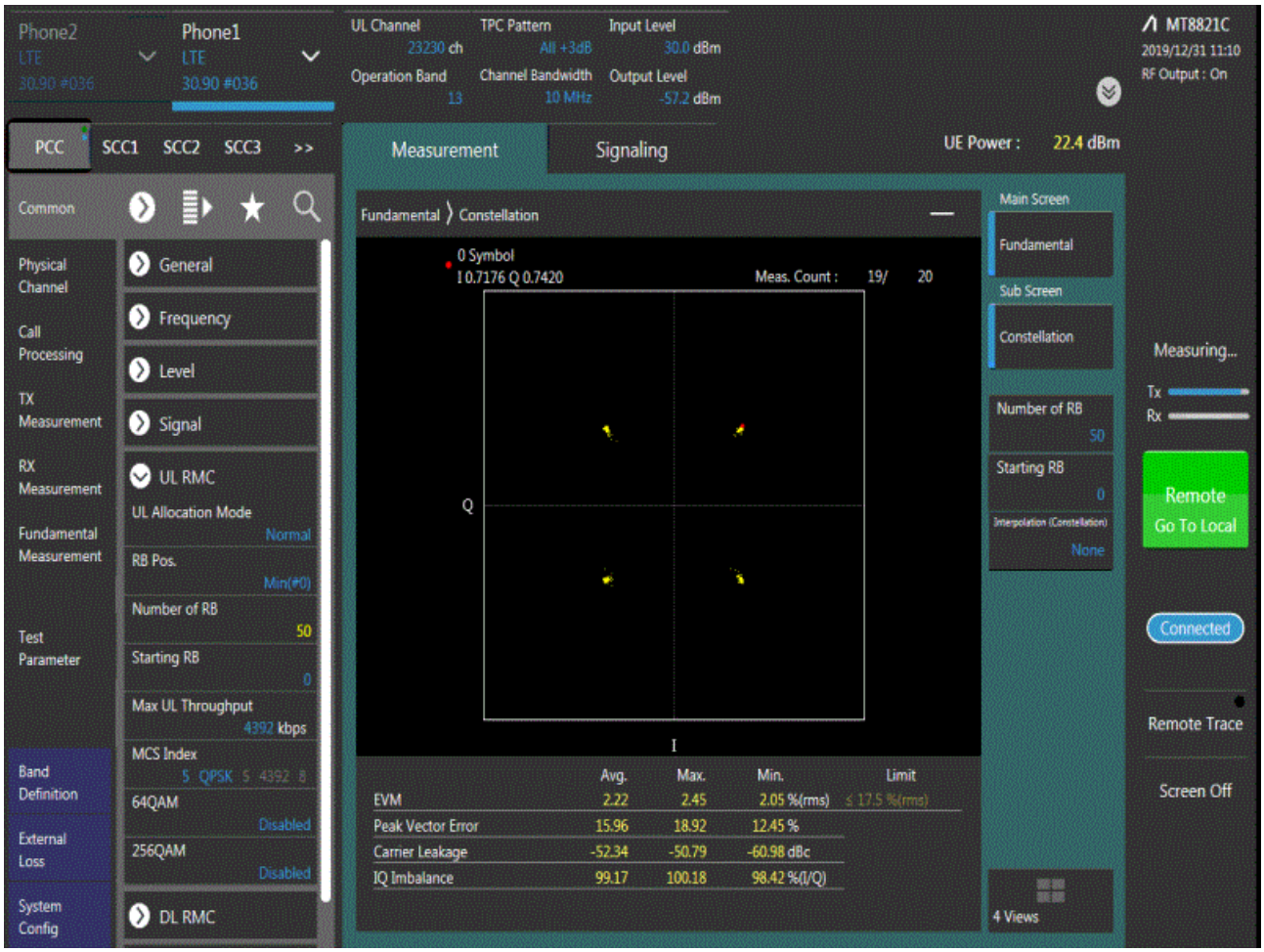
3. Modulation Characteristics

3.1. Test Mode = LTE /TM1 10MHz

3.1.1.Test Channel = MCH



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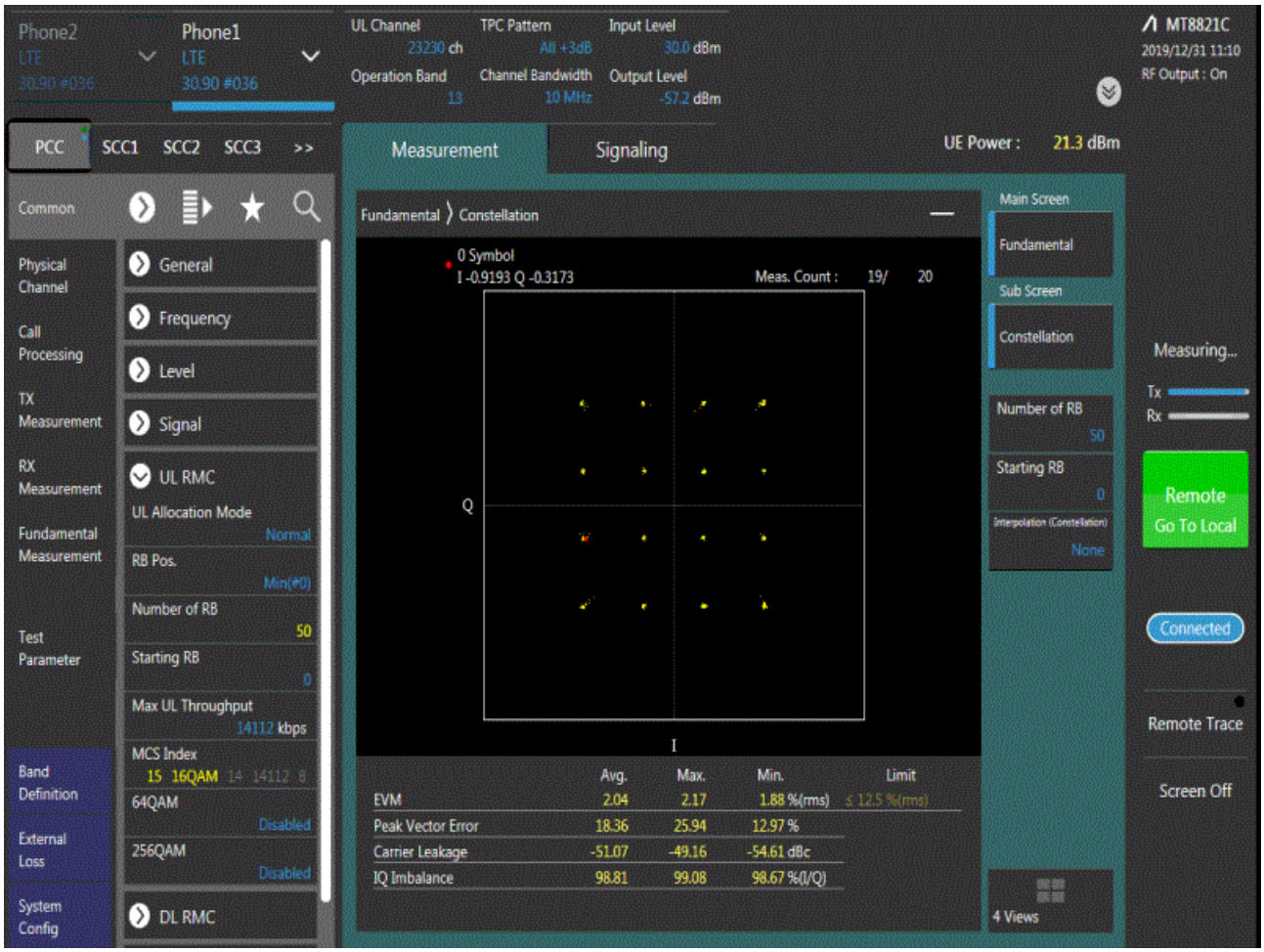
3.2. Test Mode = LTE /TM2 10MHz

3.2.1.Test Channel = MCH



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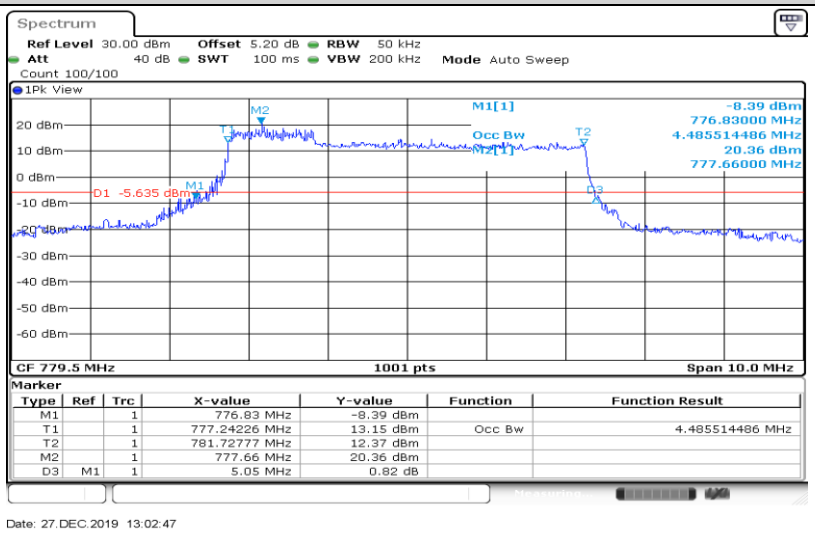
4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.486	5.050	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.486	4.940	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.496	4.950	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	4.920	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.505	4.930	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.486	4.910	PASS
Band13	10MHz	QPSK	23230	50RB#0	9.011	9.740	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.971	9.640	PASS

4.2. Test Plots

Band13-5MHz-QPSK-23205-25RB#0-4.486



Band13-5MHz-QPSK-23230-25RB#0-4.486

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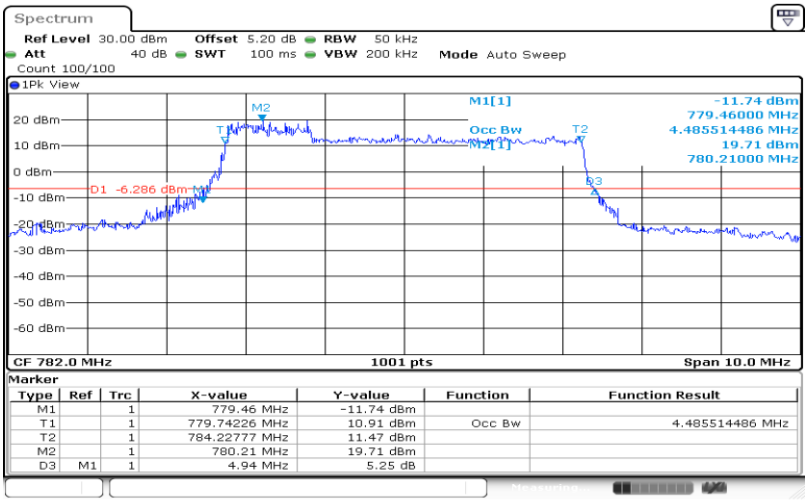
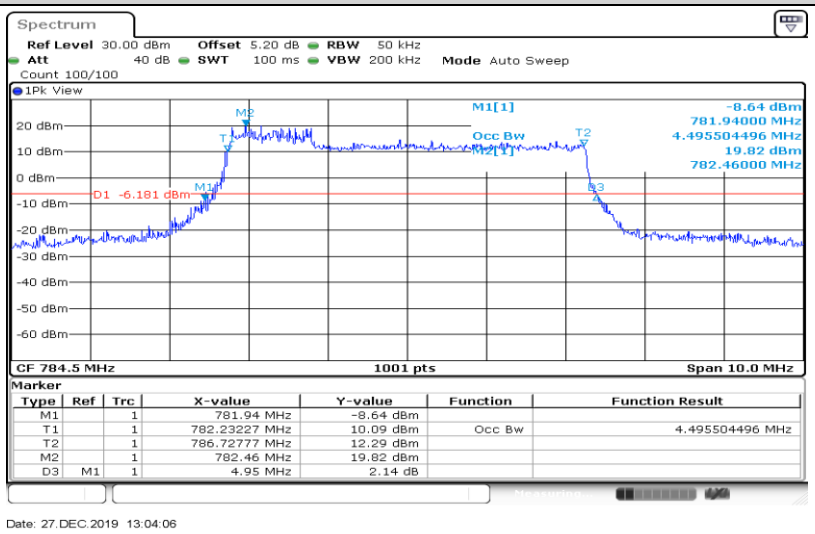


Band13-5MHz-QPSK-23255-25RB#0-4.496



Band13-5MHz-16QAM-23205-25RB#0-4.486

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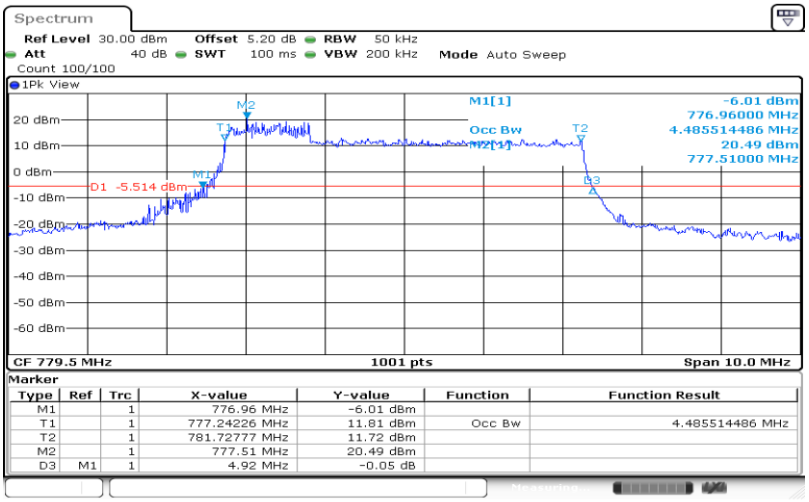
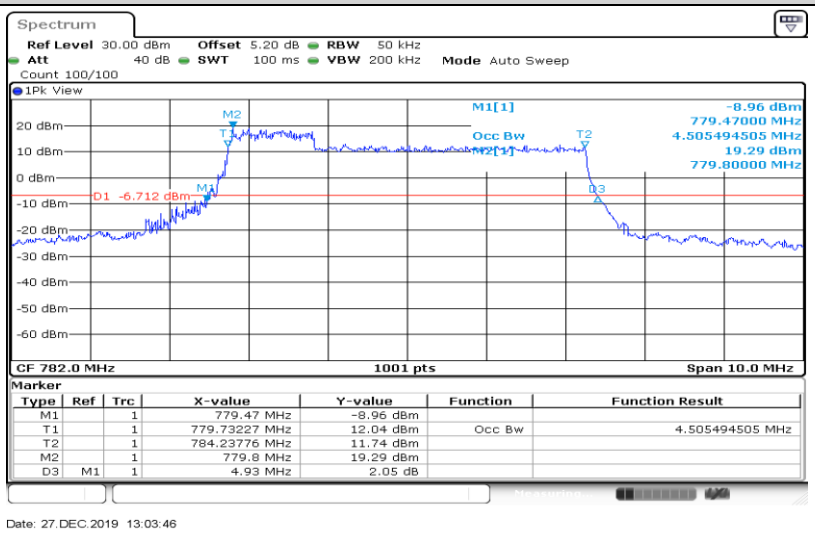


Band13-5MHz-16QAM-23230-25RB#0-4.505



Band13-5MHz-16QAM-23255-25RB#0-4.486

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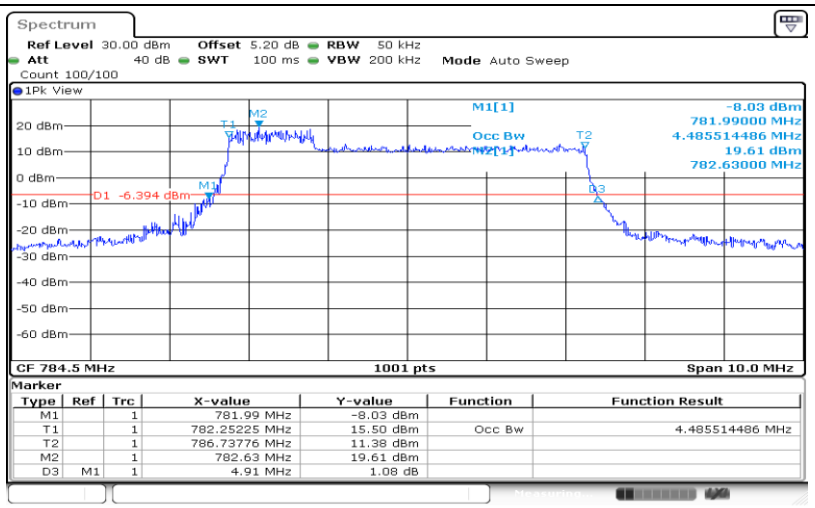

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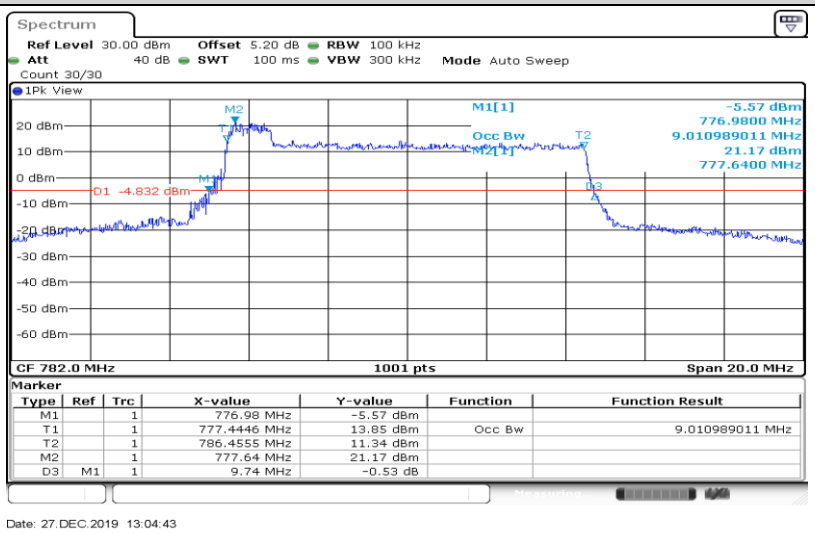

Band13-10MHz-16QAM-23230-50RB#0-8.971

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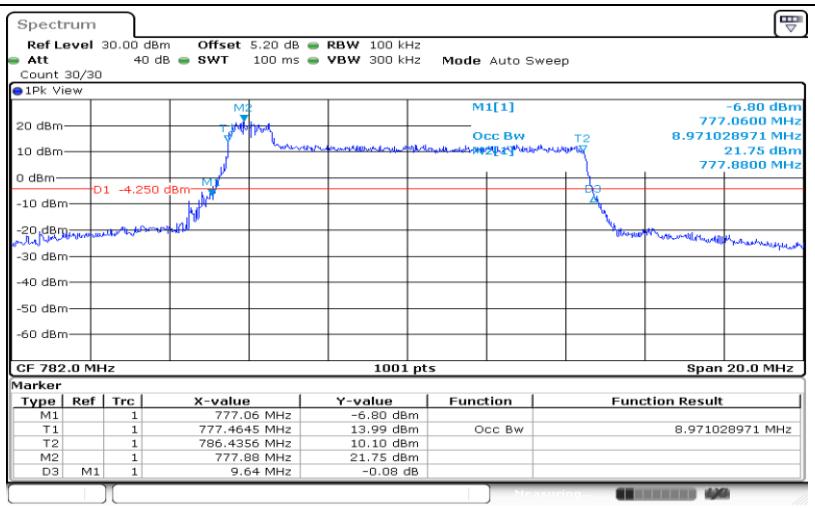

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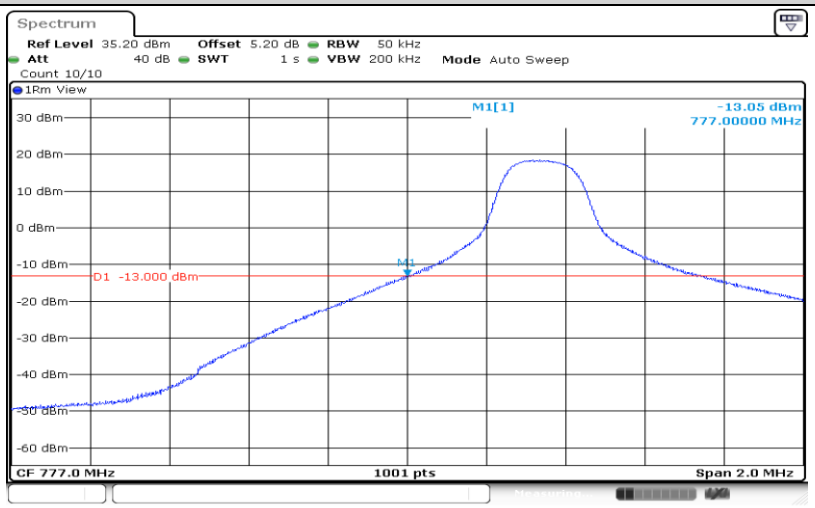
5. Band Edge Compliance

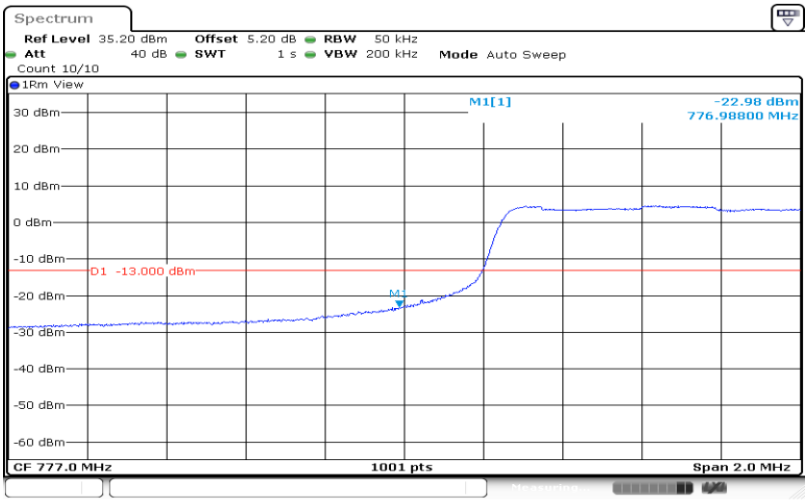
5.1. Test Plots

Band13-5MHz-QPSK-23205-1RB#0



Date: 27.DEC.2019 13:05:19

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



Date: 27.DEC.2019 13:05:58

Band13-5MHz-QPSK-23255-1RB#24

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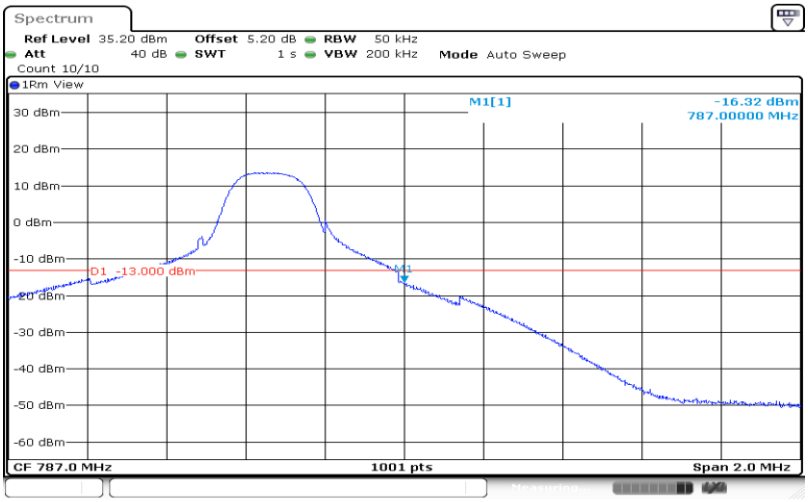

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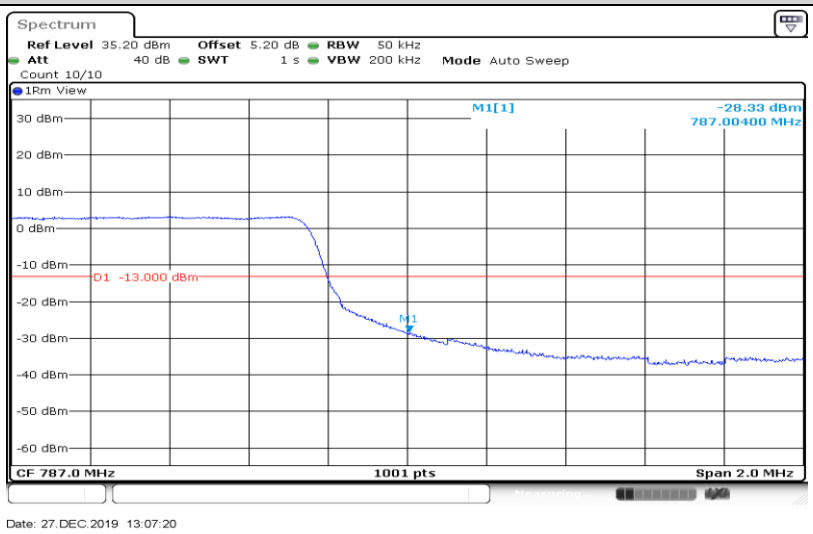

Band13-5MHz-16QAM-23205-1RB#0

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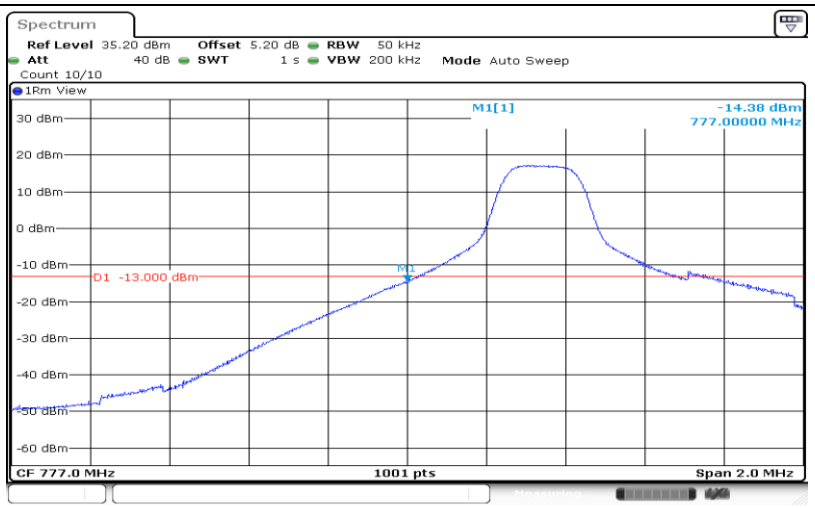

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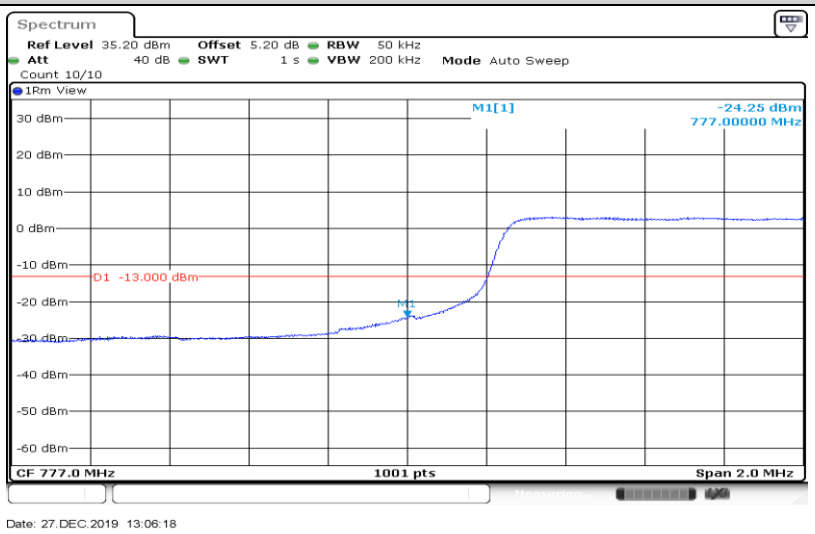

Band13-5MHz-16QAM-23255-1RB#24

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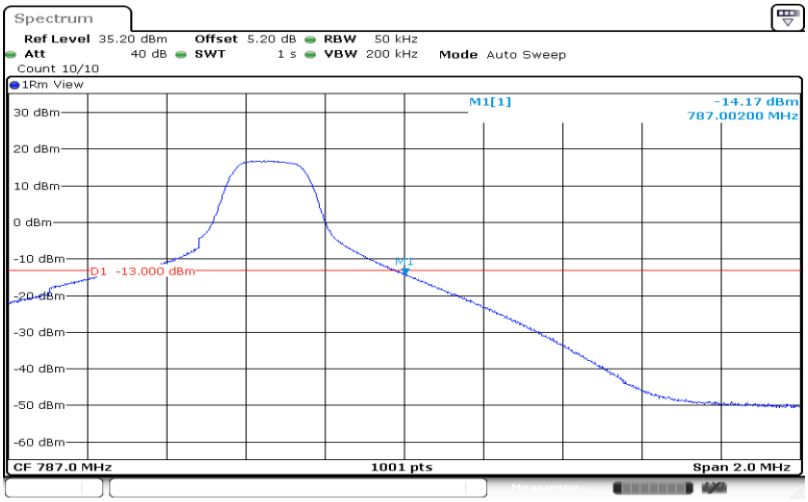

Band13-5MHz-16QAM-23255-25RB#0

Band13-10MHz-QPSK-23230_Left-1RB#0

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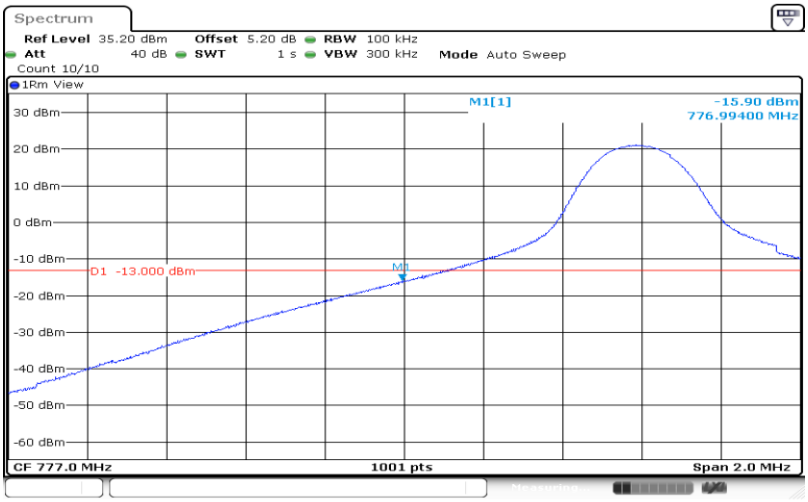
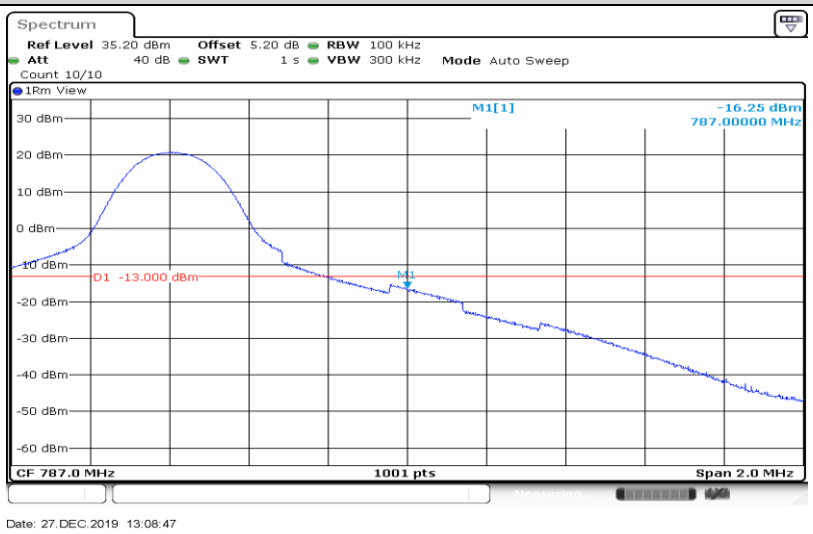


Band13-10MHz-QPSK-23230_Right-1RB#49



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

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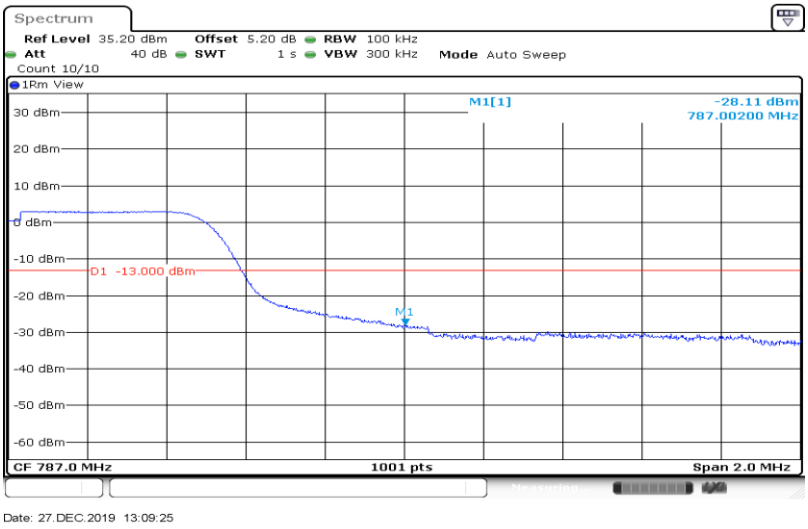

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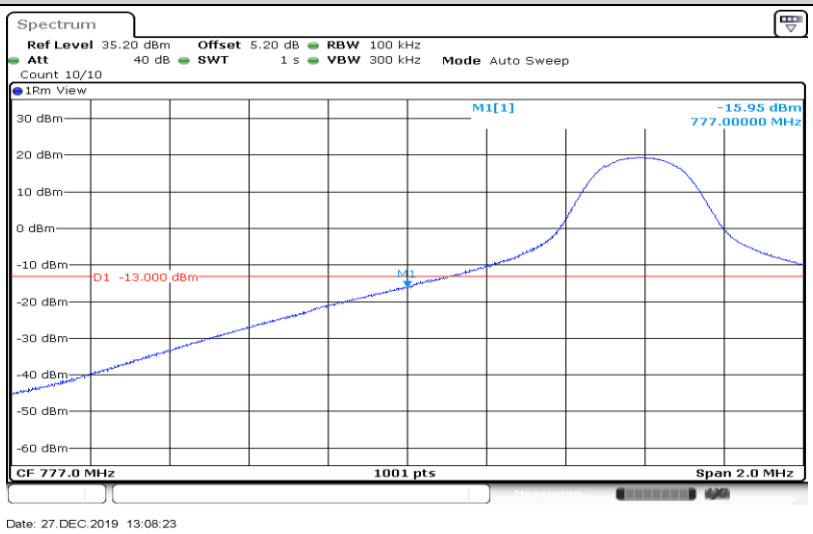

Band13-10MHz-16QAM-23230_Right-1RB#49

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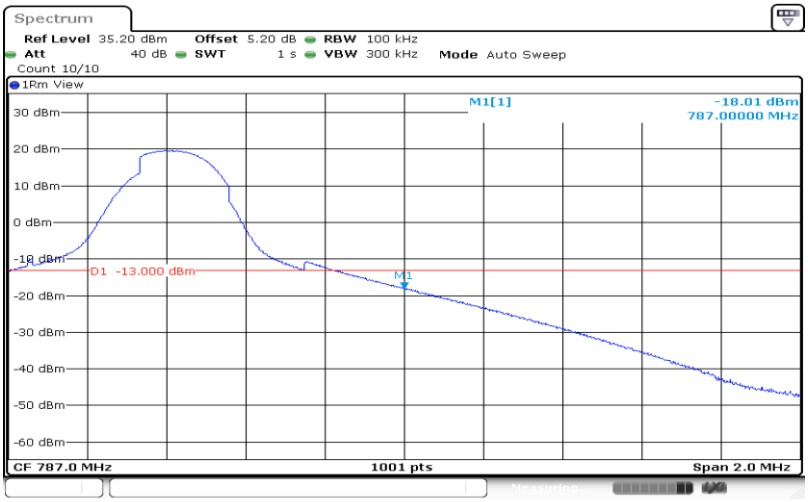

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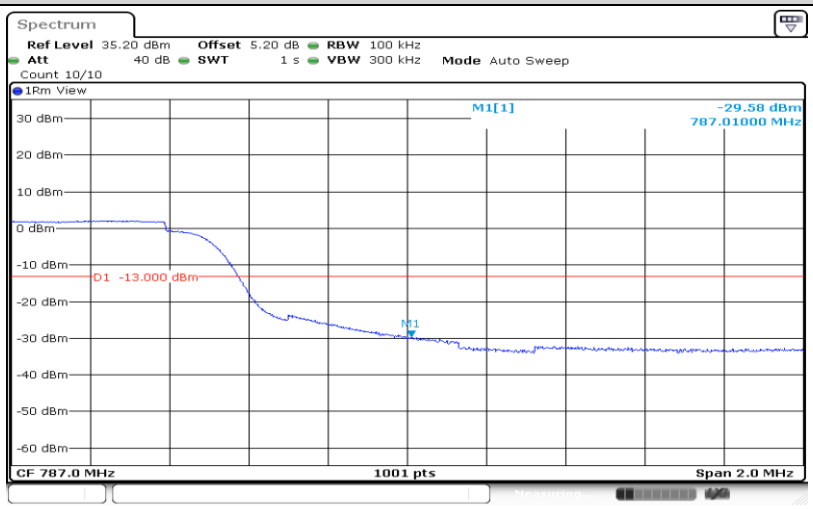
Band13-10MHz-16QAM-23230_Right-50RB#0



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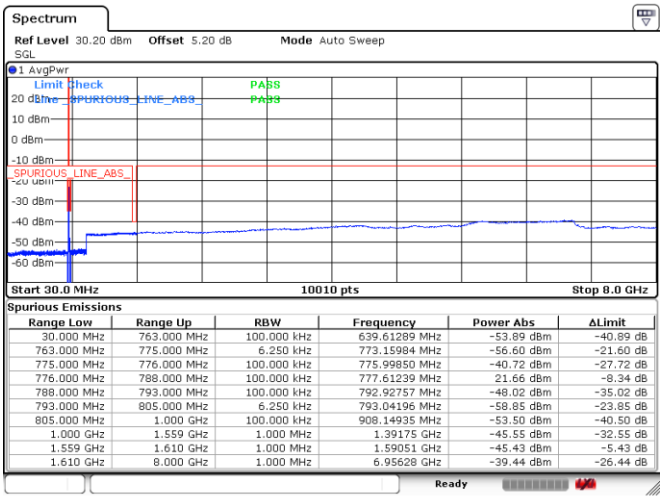
6. Spurious Emission at Antenna Terminal

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 * (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.

6.1. Test Plots

Band13-10MHz-QPSK-23230-1RB#0-Range1

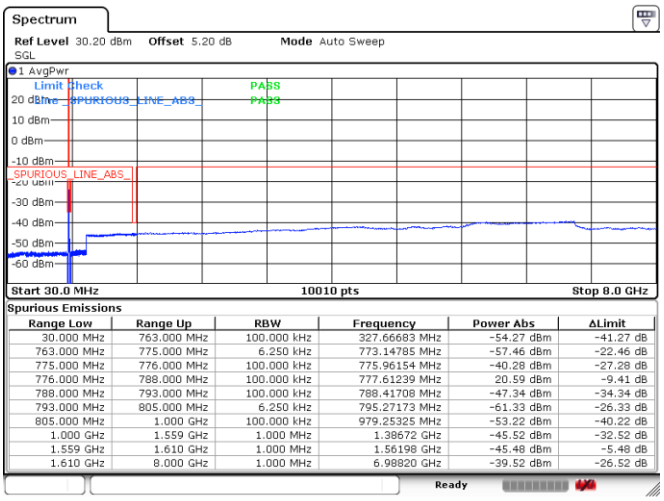


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	763.000 MHz	100.000 kHz	639.61289 MHz	-53.89 dBm	-40.89 dB
763.000 MHz	775.000 MHz	6.250 kHz	773.15984 MHz	-56.60 dBm	-21.60 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.99850 MHz	-40.72 dBm	-27.72 dB
776.000 MHz	788.000 MHz	100.000 kHz	777.61239 MHz	21.66 dBm	-8.34 dB
788.000 MHz	793.000 MHz	100.000 kHz	792.92757 MHz	-48.02 dBm	-35.02 dB
793.000 MHz	805.000 MHz	6.250 kHz	793.04196 MHz	-58.85 dBm	-23.85 dB
805.000 MHz	1.000 GHz	100.000 kHz	908.14935 MHz	-53.50 dBm	-40.50 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.39175 GHz	-45.55 dBm	-32.55 dB
1.559 GHz	1.610 GHz	1.000 MHz	1.59051 GHz	-45.43 dBm	-5.43 dB
1.610 GHz	8.000 GHz	1.000 MHz	6.95628 GHz	-39.44 dBm	-26.44 dB

Date: 28.DEC.2019 09:08:54

Band13-10MHz-16QAM-23230-1RB#0-Range1



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	763.000 MHz	100.000 kHz	327.66683 MHz	-54.27 dBm	-41.27 dB
763.000 MHz	775.000 MHz	6.250 kHz	773.14785 MHz	-57.46 dBm	-22.46 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.96154 MHz	-40.28 dBm	-27.28 dB
776.000 MHz	788.000 MHz	100.000 kHz	777.61239 MHz	20.59 dBm	-9.41 dB
788.000 MHz	793.000 MHz	100.000 kHz	788.41708 MHz	-47.34 dBm	-34.34 dB
793.000 MHz	805.000 MHz	6.250 kHz	795.27173 MHz	-61.33 dBm	-26.33 dB
805.000 MHz	1.000 GHz	100.000 kHz	979.25325 MHz	-53.22 dBm	-40.22 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.38672 GHz	-45.52 dBm	-32.52 dB
1.559 GHz	1.610 GHz	1.000 MHz	1.56198 GHz	-45.48 dBm	-5.48 dB
1.610 GHz	8.000 GHz	1.000 MHz	6.98820 GHz	-39.52 dBm	-26.52 dB

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7. Field Strength of Spurious Radiation

The 5029E data：

7.1. Test Mode =LTE/TM1

7.1.1.Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
109.1560	-64.98	-13.00	51.98	Vertical
1559.3111	-63.64	-40.00	23.64	Vertical
3110.4044	-60.80	-13.00	47.80	Vertical
3888.0355	-61.81	-13.00	48.81	Vertical
4665.6666	-54.13	-13.00	41.13	Vertical
17996.3999	-42.82	-13.00	29.82	Vertical
42.0286	-64.37	-13.00	51.37	Horizontal
1559.9110	-64.43	-40.00	24.43	Horizontal
3110.4044	-58.98	-13.00	45.98	Horizontal
3888.0355	-58.52	-13.00	45.52	Horizontal
4665.6666	-57.90	-13.00	44.90	Horizontal
16382.9353	-46.58	-13.00	33.58	Horizontal

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8. Spot Check Field Strength of Spurious Radiation

The 5029F data：

8.1. Test Mode =LTE/TM1

8.1.1.Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
116.5283	-65.23	-13.00	52.23	Vertical
530.1085	-67.25	-13.00	54.25	Vertical
1587.3175	-65.24	-40.00	25.24	Vertical
3887.9155	-59.88	-13.00	46.88	Vertical
4665.5066	-53.48	-13.00	40.48	Vertical
9331.3333	-51.86	-13.00	38.86	Vertical
40.5735	-65.46	-13.00	52.46	Horizontal
230.2665	-68.33	-13.00	55.33	Horizontal
1600.5201	-64.87	-40.00	24.87	Horizontal
3887.9155	-58.14	-13.00	45.14	Horizontal
4665.5066	-54.68	-13.00	41.68	Horizontal
6220.6888	-56.81	-13.00	43.81	Horizontal

Remark:

1 According to 971168 D01 Power Meas License Digital Systems, The amplitudes of unwanted emissions that are attenuated more than 20 dB below the applicable limit are not required to be reported.

2 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 displayed in this report.

3 all modulation and all Bandwidth had been tested, but only the worst case data displayed in this report.

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9. Frequency Stability

9.1. Frequency Vs Voltage

Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	VL	NT	-2.40	-0.003069	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-8.20	-0.010486	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	-4.20	-0.005371	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-5.80	-0.007417	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-5.50	-0.007033	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-8.40	-0.010742	±2.5	PASS

9.2. Frequency Vs Temperature

Band	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (℃)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	NV	-30	-8.90	-0.011381	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	-8.40	-0.010742	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	-1.90	-0.002430	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-8.90	-0.011381	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-13.70	-0.017519	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-10.30	-0.013171	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-2.90	-0.003708	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-8.60	-0.010997	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-1.90	-0.002430	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-2.00	-0.002558	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-0.60	-0.000767	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-13.00	-0.016624	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-5.20	-0.006650	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-8.00	-0.010230	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-10.00	-0.012788	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-4.90	-0.006266	±2.5	PASS

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