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#0	24.07	22.72	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#12	24.33	22.98	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	24.15	22.8	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	23.17	21.82	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	23.24	21.89	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	23.08	21.73	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	23.12	21.77	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	24.01	22.66	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	24.30	22.95	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	24.25	22.9	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	23.20	21.85	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	23.15	21.8	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	23.18	21.83	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	23.12	21.77	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	23.71	22.36	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	24.21	22.86	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	24.21	22.86	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	23.22	21.87	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	23.26	21.91	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	23.22	21.87	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	23.26	21.91	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	23.22	21.87	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	23.32	21.97	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	22.59	21.24	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	21.98	20.63	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	22.09	20.74	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	22.03	20.68	34.77	PASS

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Band13	5MHz	16QAM	23205	25RB#0	22.06	20.71	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	23.01	21.66	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	22.51	21.16	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	22.60	21.25	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#0	22.16	20.81	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	22.01	20.66	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#6	22.03	20.68	34.77	PASS
Band13	5MHz	16QAM	23230	25RB#0	22.15	20.8	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	22.31	20.96	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	22.61	21.26	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#0	22.28	20.93	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#13	22.06	20.71	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	22.01	20.66	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	21.99	20.64	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	22.22	20.87	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	24.37	23.02	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	24.25	22.9	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	23.98	22.63	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	23.25	21.9	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	23.12	21.77	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	23.33	21.98	34.77	PASS
Band13	10MHz	QPSK	23230	50RB#0	23.10	21.75	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	23.20	21.85	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	23.25	21.9	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	23.15	21.8	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	22.18	20.83	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	22.12	20.77	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	22.34	20.99	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	22.17	20.82	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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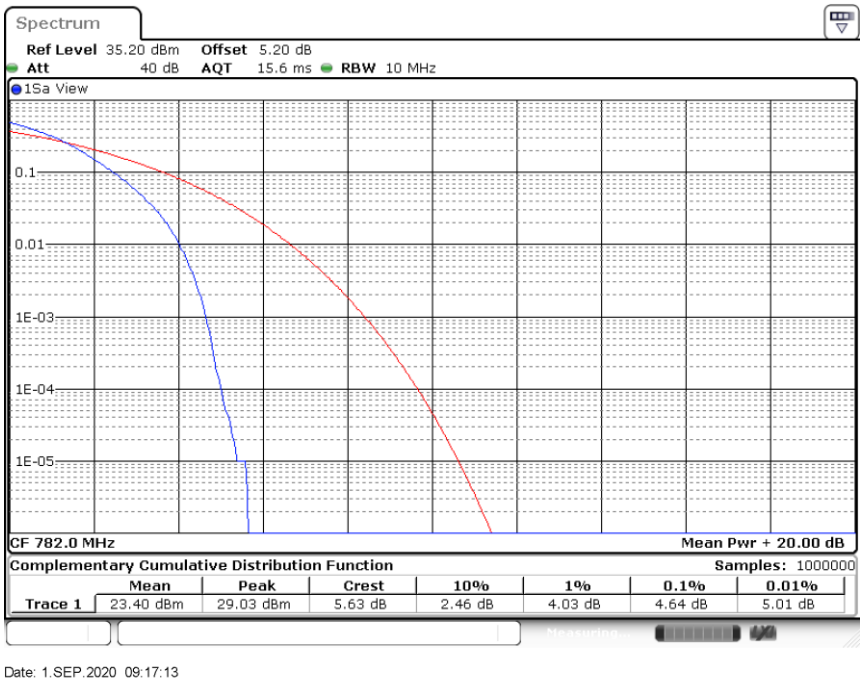
2. Peak-to-Average Ratio (CCDF)

2.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	4.64	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.59	13	PASS

2.2. Test Plots

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



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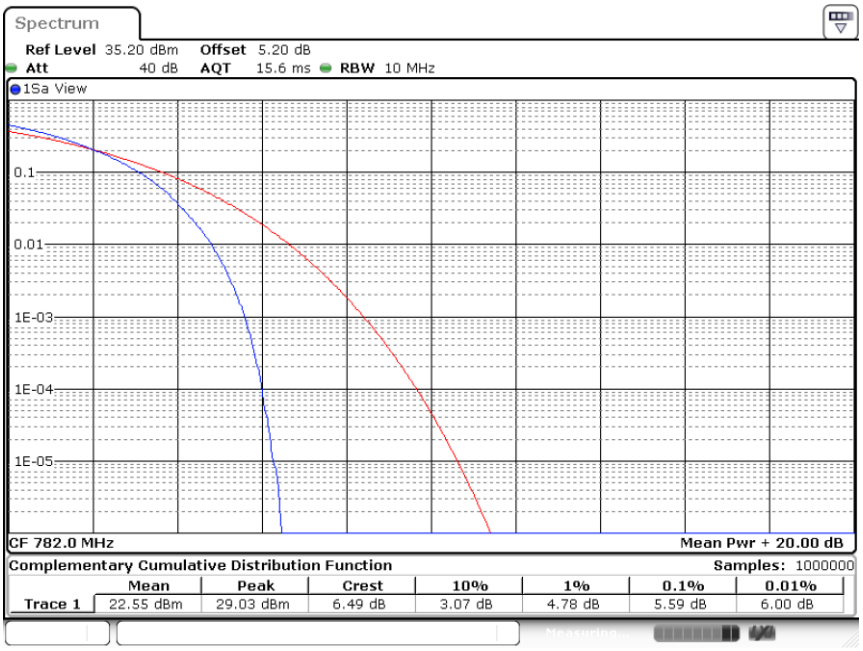
Band13-10MHz-16QAM-23230-50RB#0



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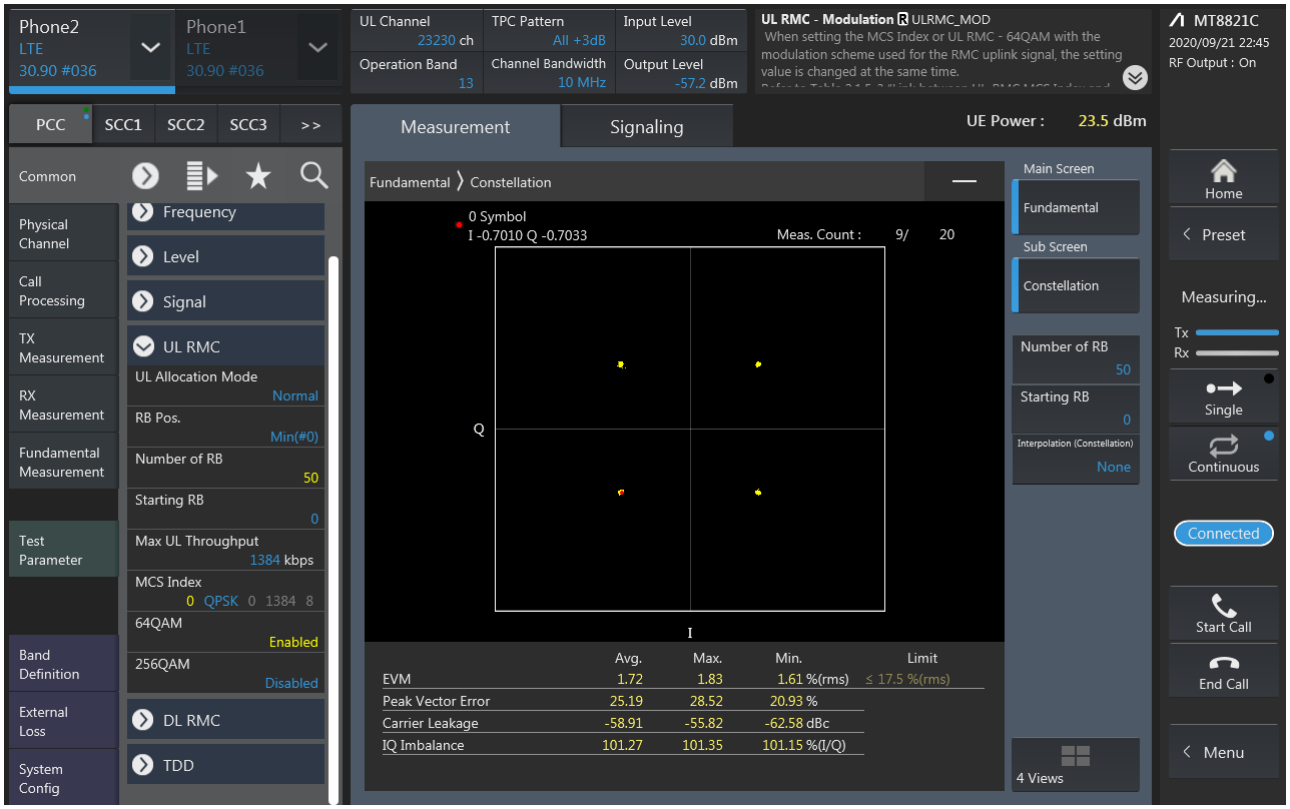
3. Modulation Characteristics

3.1. Test Mode = LTE /TM1 10MHz

3.1.1.Test Channel = MCH



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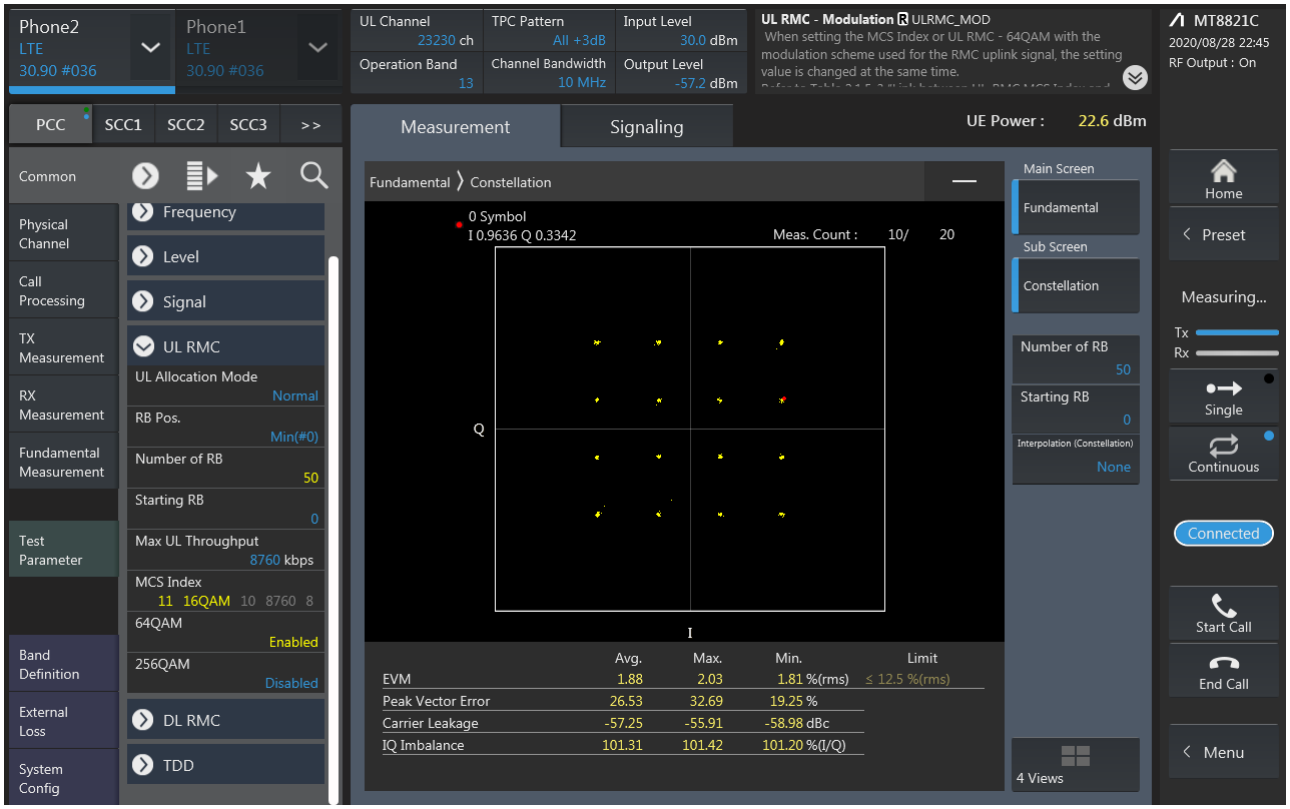
3.2. Test Mode = LTE /TM2 10MHz

3.2.1.Test Channel = MCH



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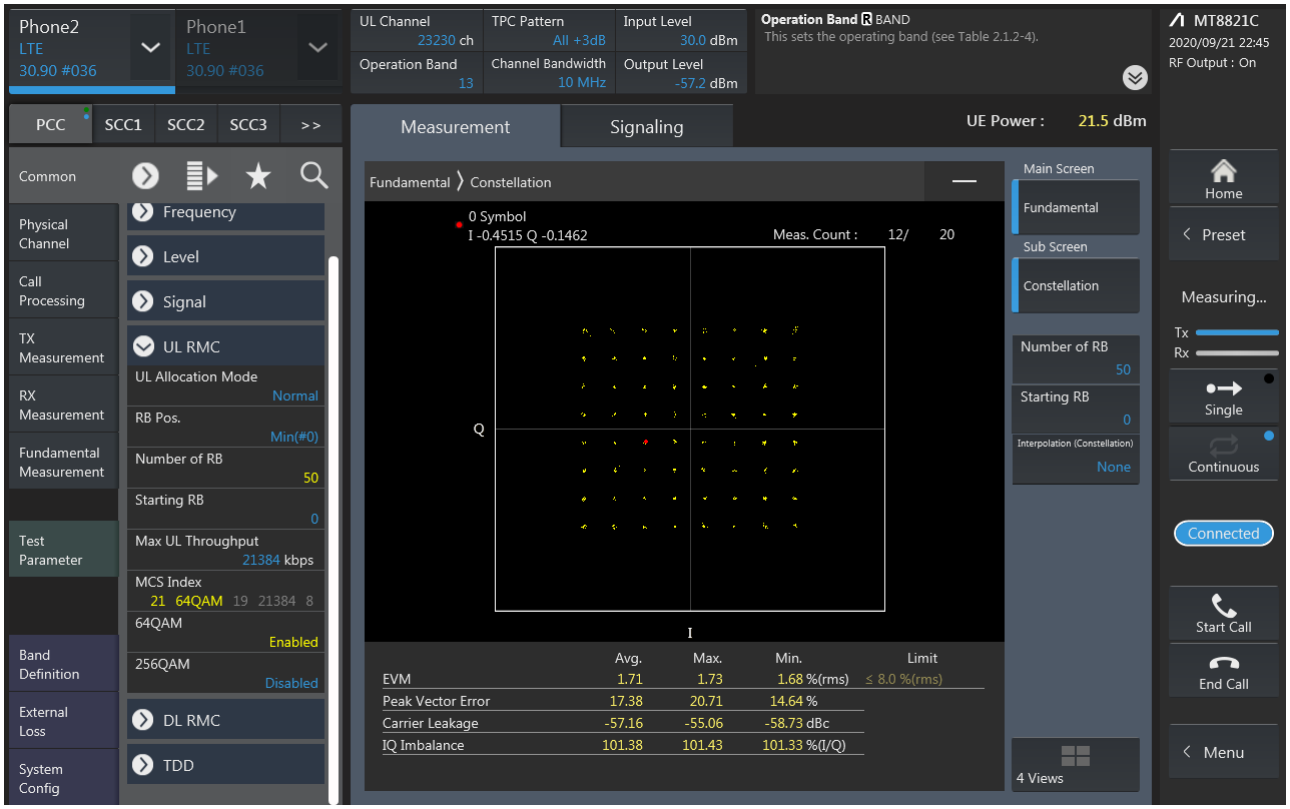
3.3. Test Mode = LTE /TM3 10MHz

3.3.1.Test Channel = MCH



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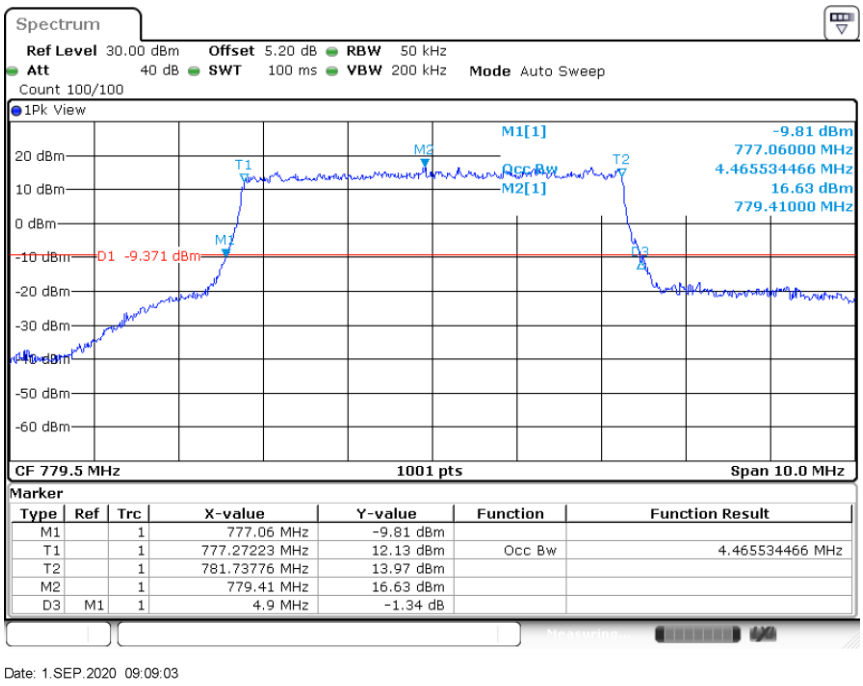
4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.466	4.900	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.466	4.900	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.476	4.930	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	4.970	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.486	4.960	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.496	4.950	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.891	9.680	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.911	9.700	PASS

4.2. Test Plots

Band13-5MHz-QPSK-23205-25RB#0-4.466



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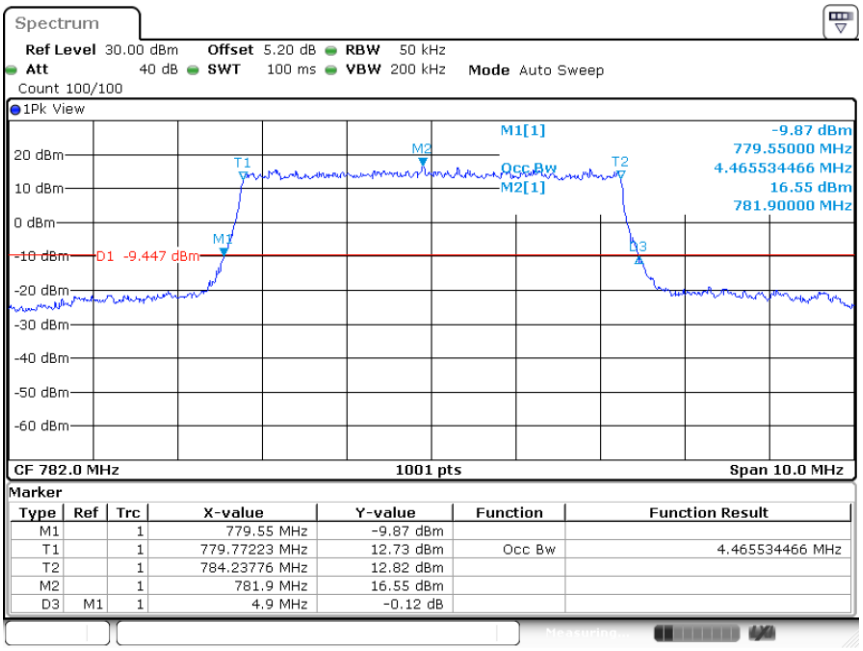
Band13-5MHz-QPSK-23230-25RB#0-4.466



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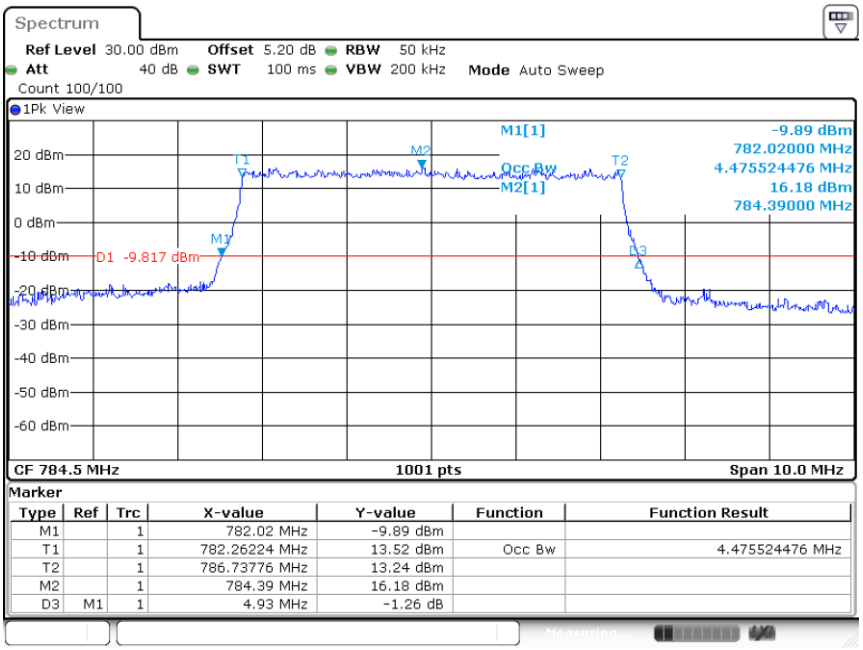
Band13-5MHz-QPSK-23255-25RB#0-4.476



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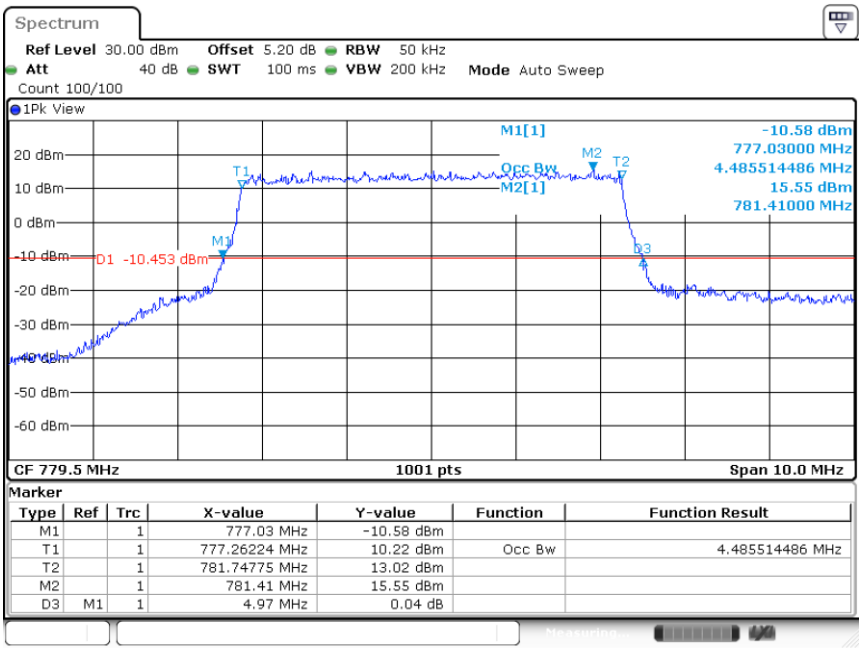
Band13-5MHz-16QAM-23205-25RB#0-4.486



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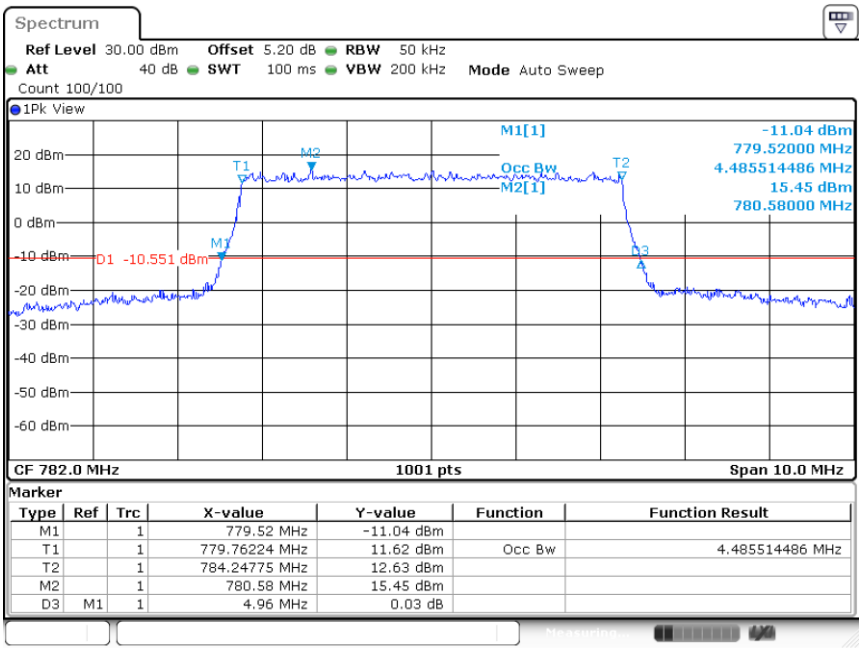
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	777.03 MHz	-10.58 dBm		
T1		1	777.26224 MHz	10.22 dBm	Occ Bw	4.485514486 MHz
T2		1	781.74775 MHz	13.02 dBm		
M2		1	781.41 MHz	15.55 dBm		
D3	M1	1	4.97 MHz	0.04 dB		

Date: 1.SEP.2020 09:09:23

Band13-5MHz-16QAM-23230-25RB#0-4.486



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	779.52 MHz	-11.04 dBm		
T1		1	779.76224 MHz	11.62 dBm	Occ Bw	4.485514486 MHz
T2		1	784.24775 MHz	12.63 dBm		
M2		1	780.58 MHz	15.45 dBm		
D3	M1	1	4.96 MHz	0.03 dB		

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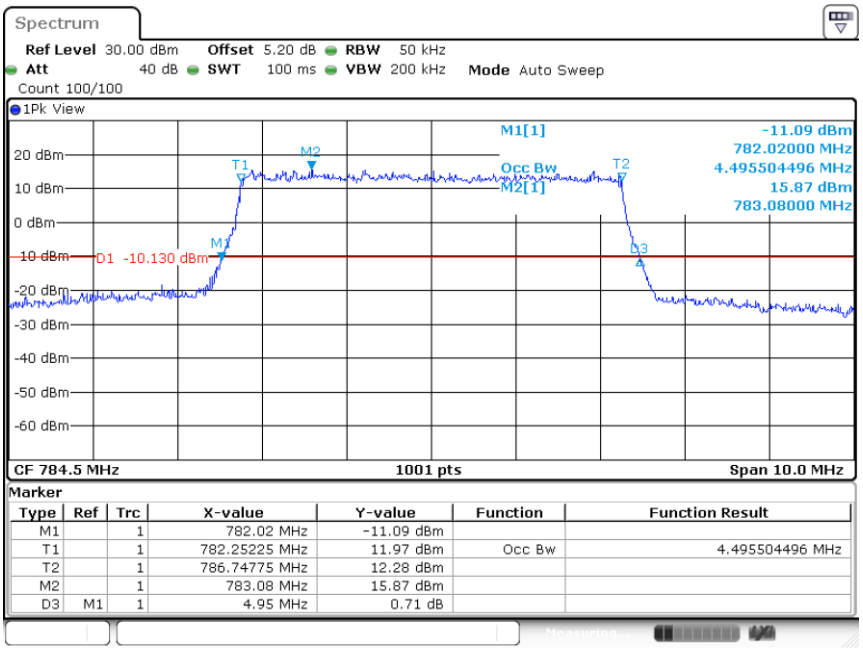
Band13-5MHz-16QAM-23255-25RB#0-4.496



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	782.02 MHz	-11.09 dBm		
T1		1	782.25225 MHz	11.97 dBm	Occ Bw	4.495504496 MHz
T2		1	786.74775 MHz	12.28 dBm		
M2		1	783.08 MHz	15.87 dBm		
D3	M1	1	4.95 MHz	0.71 dB		

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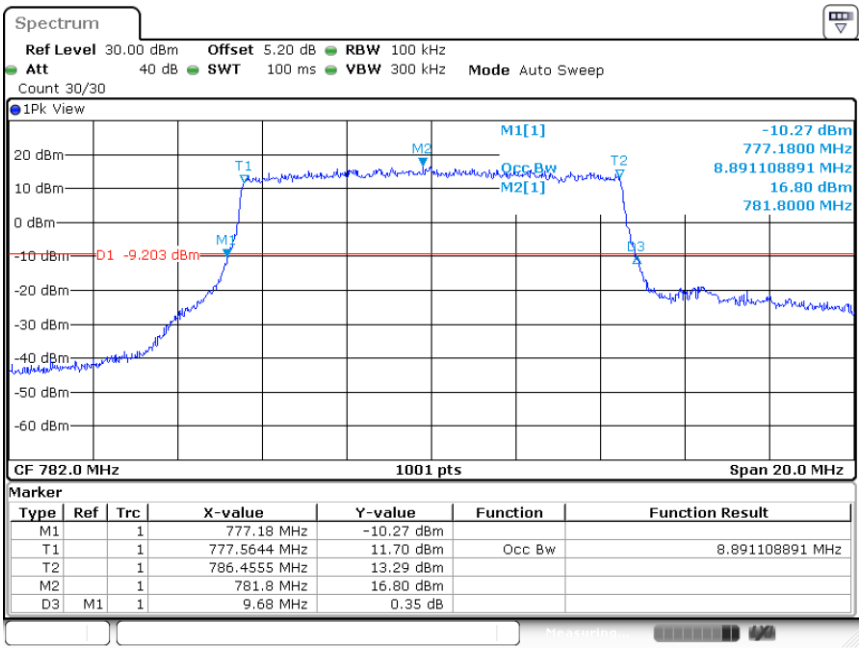
Band13-10MHz-QPSK-23230-50RB#0-8.891



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	777.18 MHz	-10.27 dBm		
T1		1	777.5644 MHz	11.70 dBm	Occ Bw	8.891108891 MHz
T2		1	786.4555 MHz	13.29 dBm		
M2		1	781.8 MHz	16.80 dBm		
D3	M1	1	9.68 MHz	0.35 dB		

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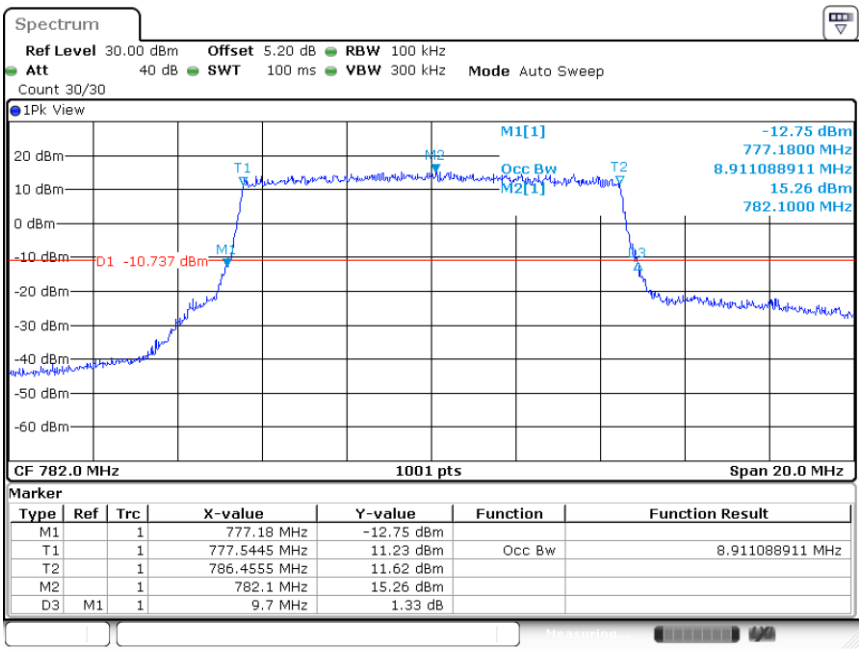
Band13-10MHz-16QAM-23230-50RB#0-8.911



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	777.18 MHz	-12.75 dBm		
T1		1	777.5445 MHz	11.23 dBm	Occ Bw	8.911088911 MHz
T2		1	786.4555 MHz	11.62 dBm		
M2		1	782.1 MHz	15.26 dBm		
D3	M1	1	9.7 MHz	1.33 dB		

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5. Band Edge Compliance

5.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	-19.62	PASS
Band13	5MHz	QPSK	23205	25RB#0	-26.17	PASS
Band13	5MHz	QPSK	23255	1RB#24	-21.10	PASS
Band13	5MHz	QPSK	23255	25RB#0	-26.60	PASS
Band13	5MHz	16QAM	23205	1RB#0	-20.82	PASS
Band13	5MHz	16QAM	23205	25RB#0	-26.79	PASS
Band13	5MHz	16QAM	23255	1RB#24	-21.65	PASS
Band13	5MHz	16QAM	23255	25RB#0	-27.56	PASS
Band13	10MHz	QPSK	23230_Left	1RB#0	-30.76	PASS
Band13	10MHz	QPSK	23230_Left	50RB#0	-28.87	PASS
Band13	10MHz	QPSK	23230_Right	1RB#49	-31.05	PASS
Band13	10MHz	QPSK	23230_Right	50RB#0	-28.01	PASS
Band13	10MHz	16QAM	23230_Left	1RB#0	-31.03	PASS
Band13	10MHz	16QAM	23230_Left	50RB#0	-30.87	PASS
Band13	10MHz	16QAM	23230_Right	1RB#49	-32.97	PASS
Band13	10MHz	16QAM	23230_Right	50RB#0	-29.86	PASS

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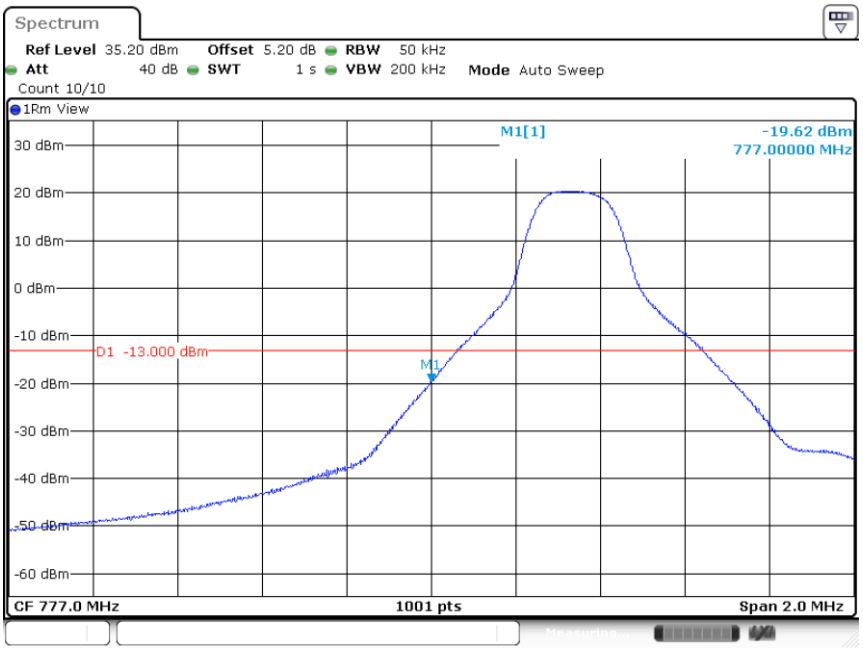
5.2. Test Plots

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



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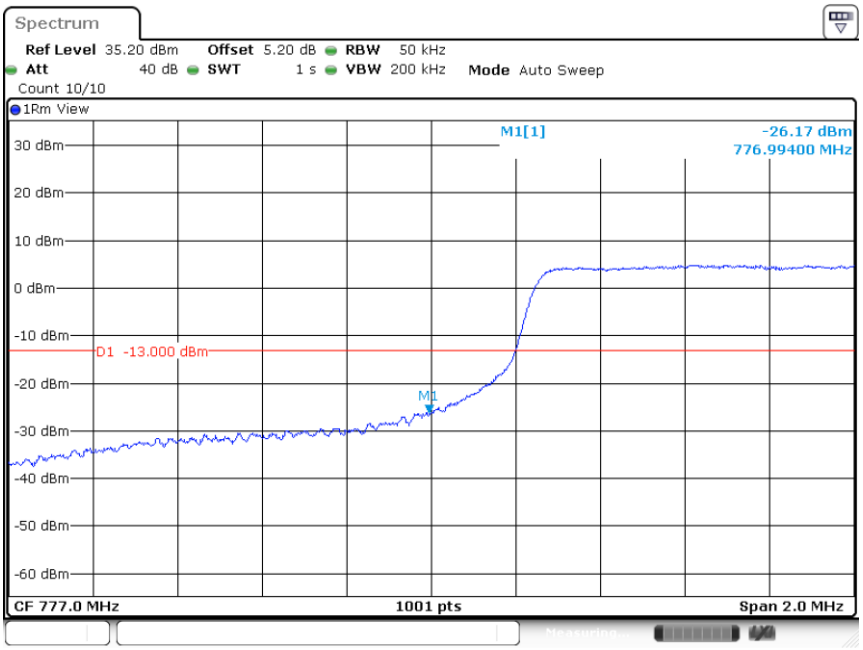
Band13-5MHz-QPSK-23205-25RB#0



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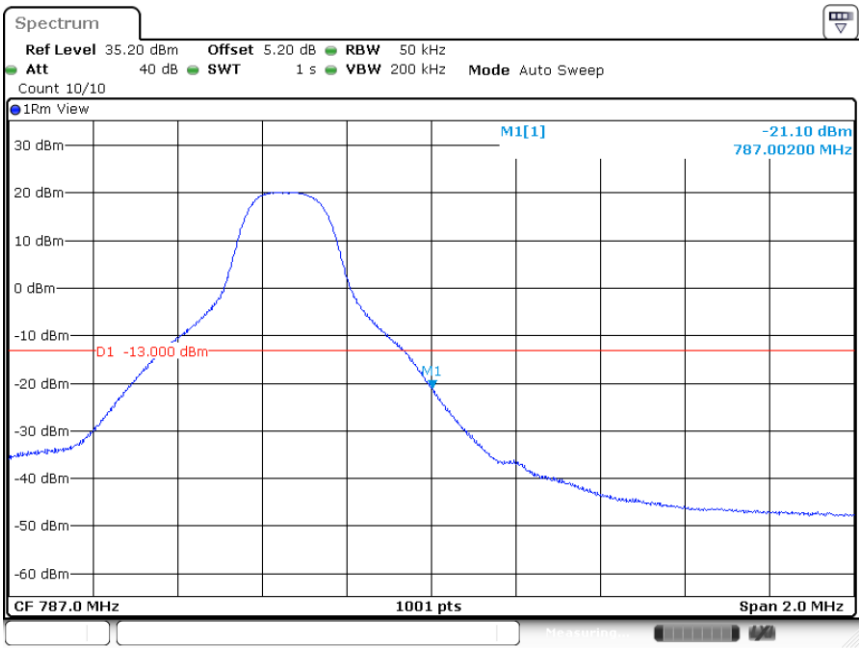
Band13-5MHz-QPSK-23255-1RB#24



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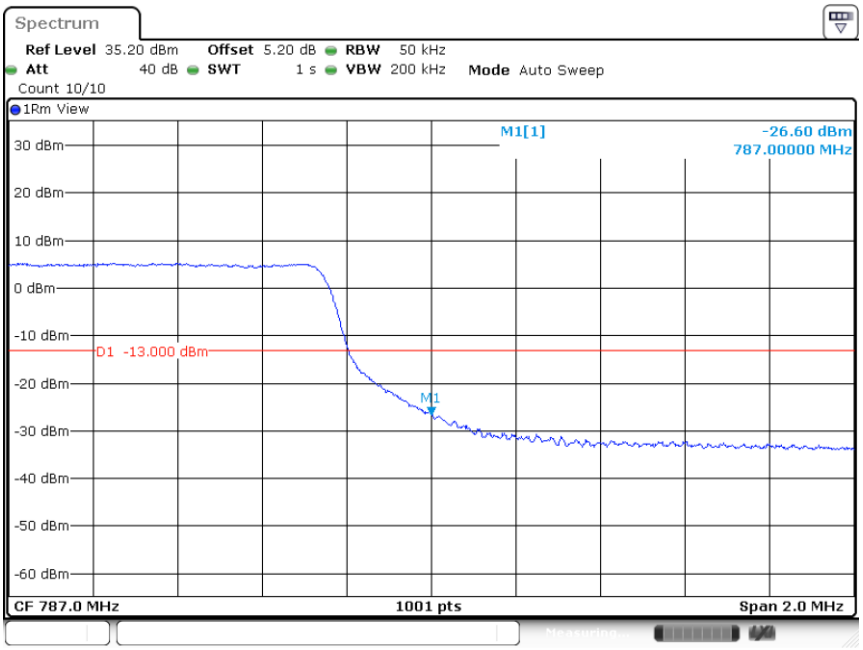

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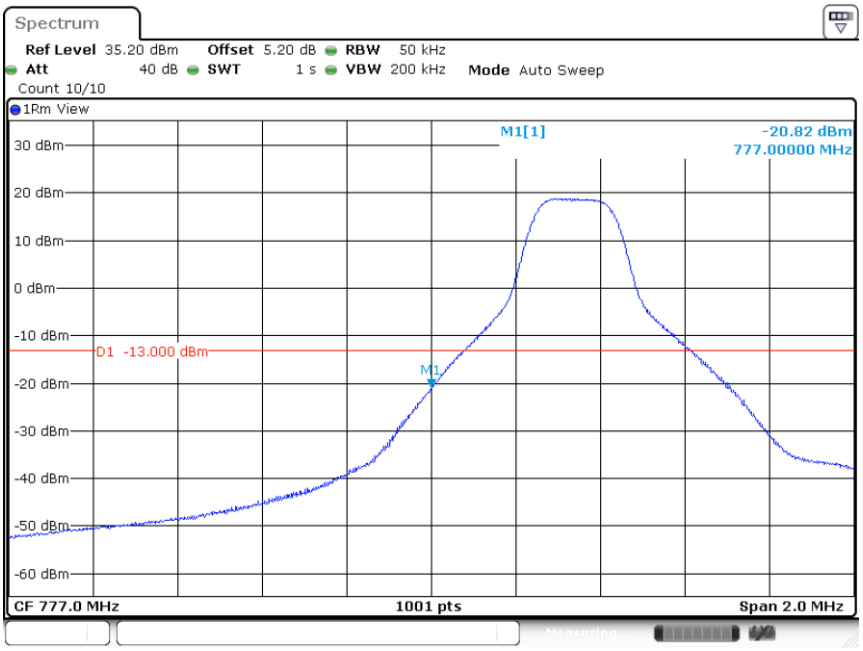

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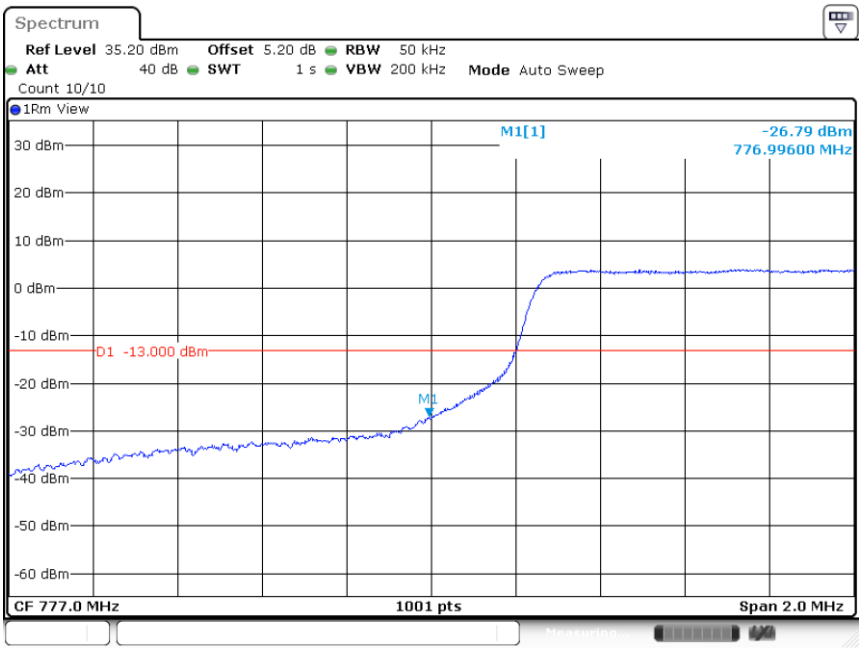

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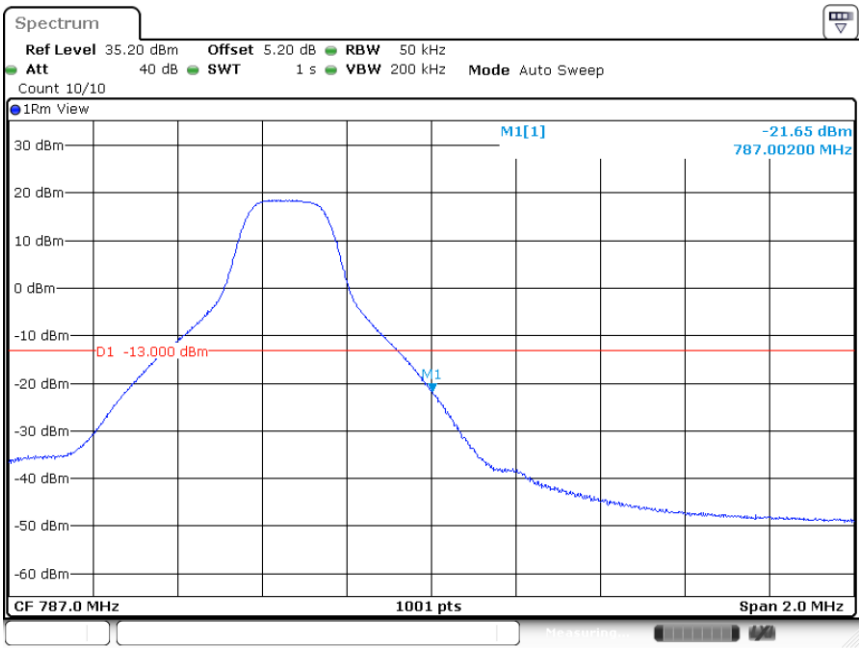

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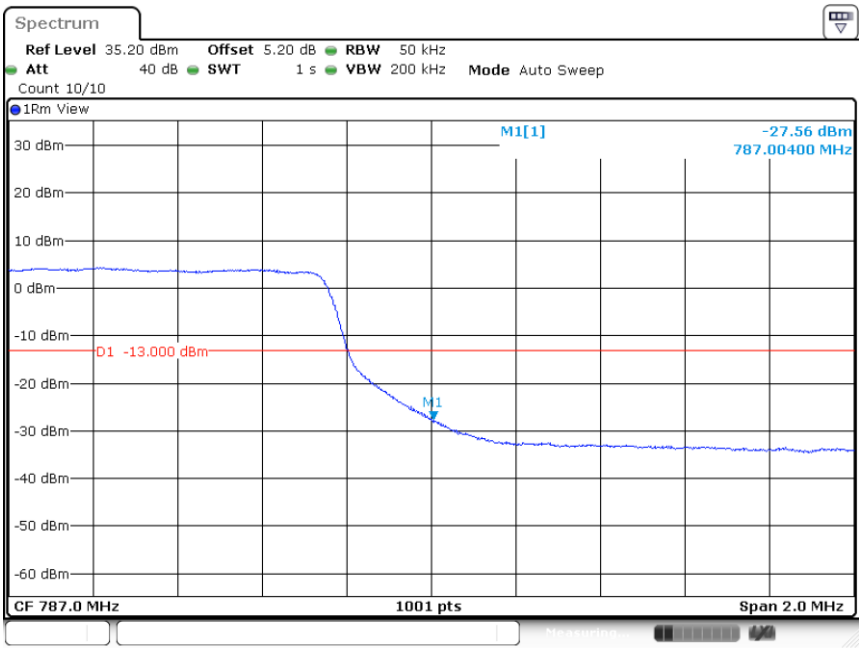

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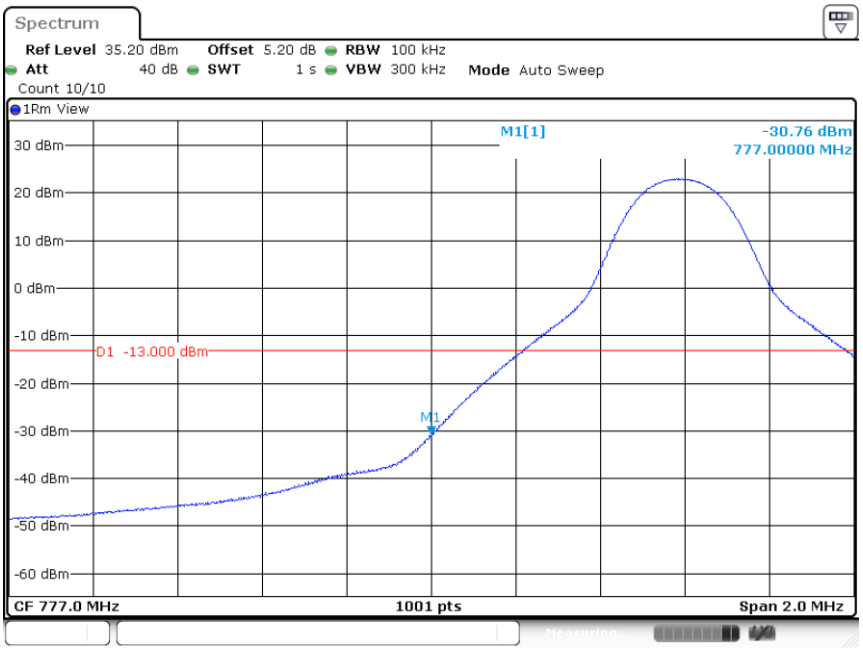
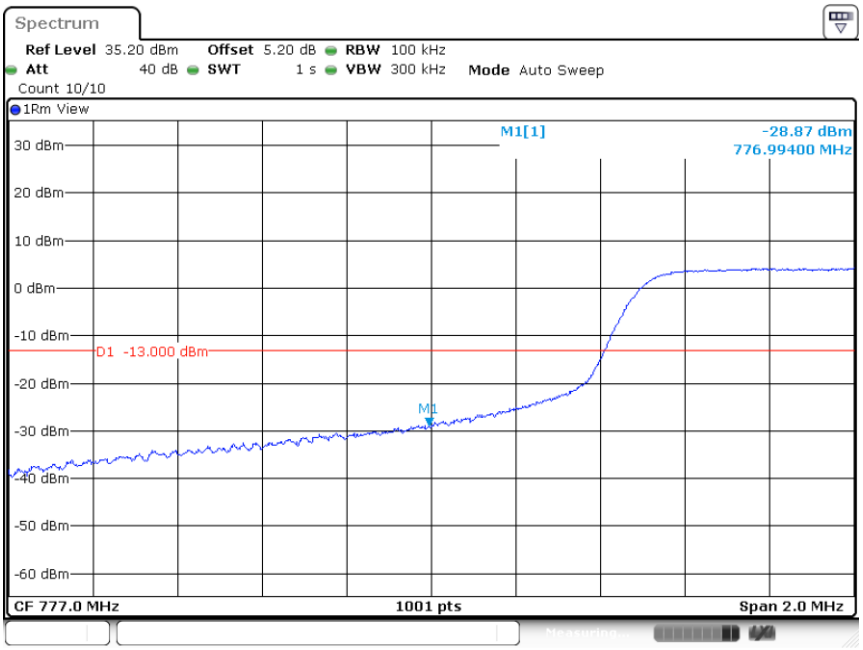
Band13-10MHz-QPSK-23230_Left-1RB#0



Date: 1.SEP.2020 09:14:30

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



Date: 1.SEP.2020 09:15:11

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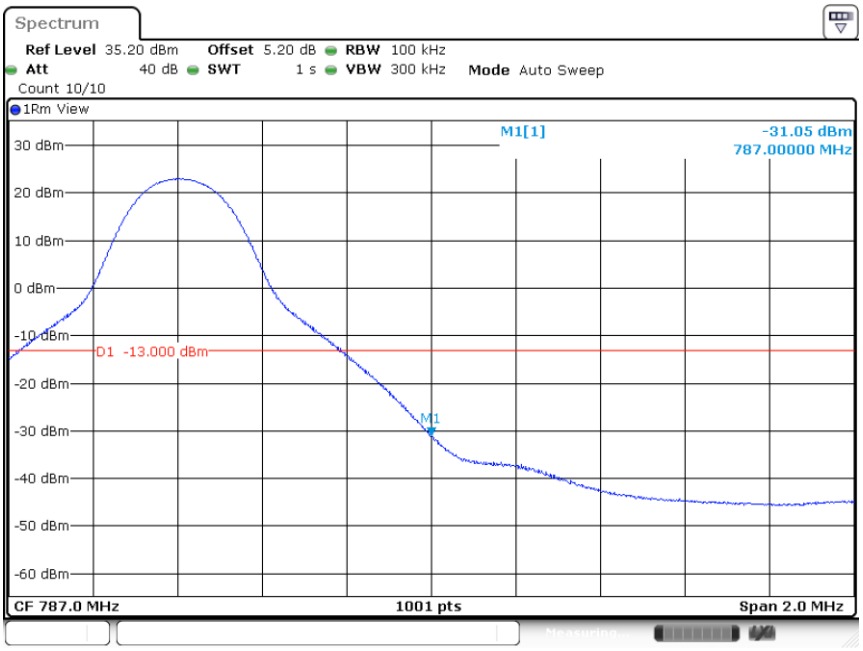
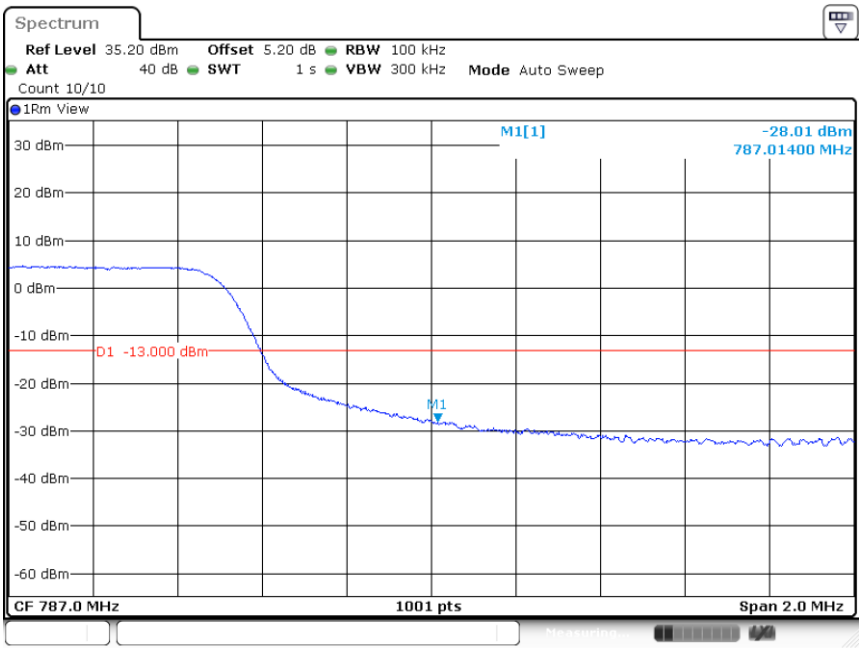
Band13-10MHz-QPSK-23230_Right-1RB#49



Date: 1.SEP.2020 09:15:56

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



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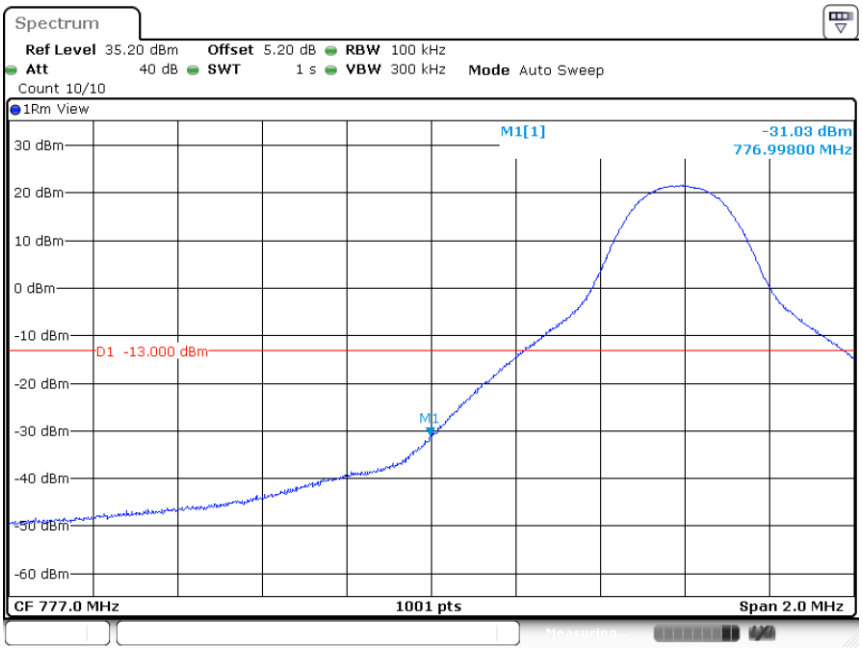
Band13-10MHz-16QAM-23230_Left-1RB#0



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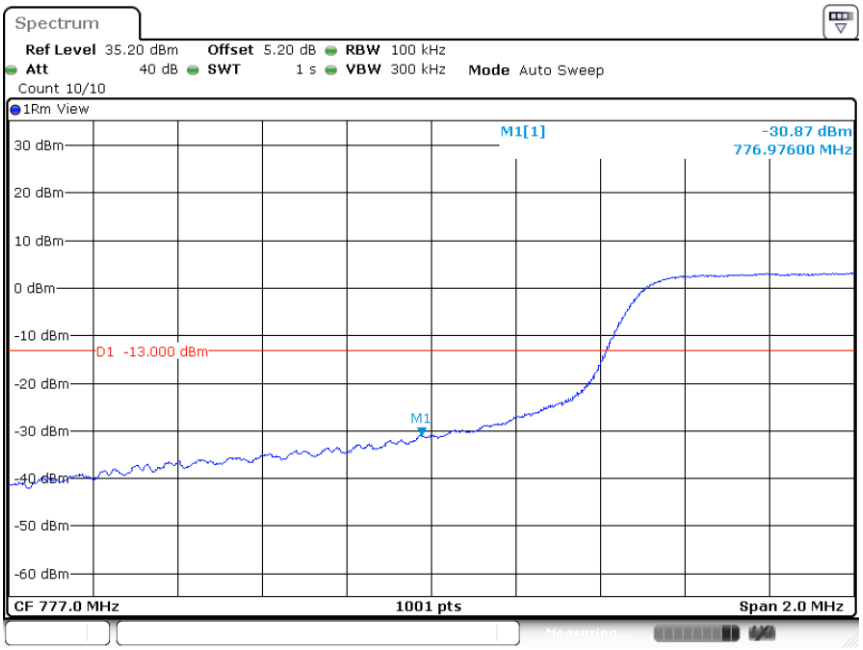
Band13-10MHz-16QAM-23230_Left-50RB#0



Date: 1.SEP.2020 09:15:32

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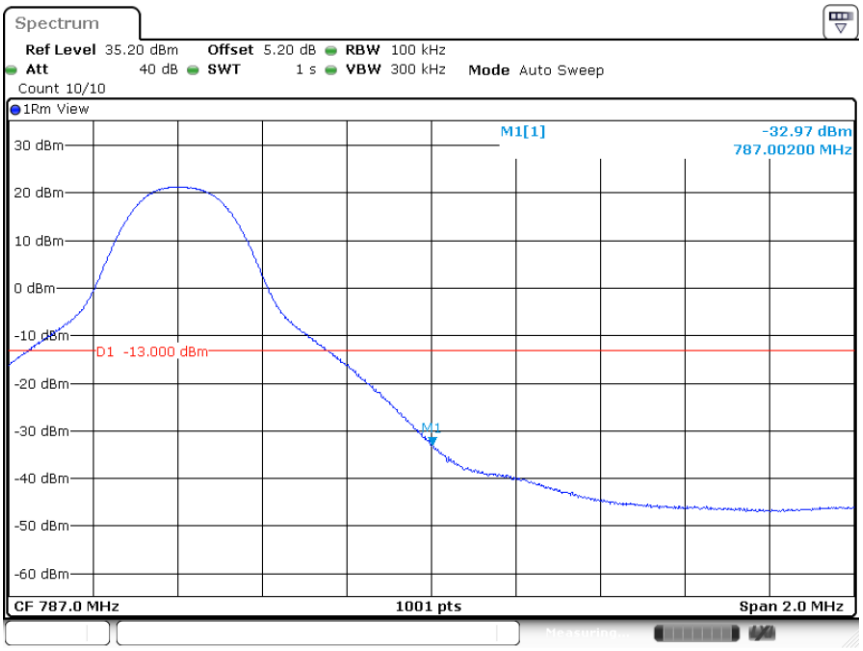
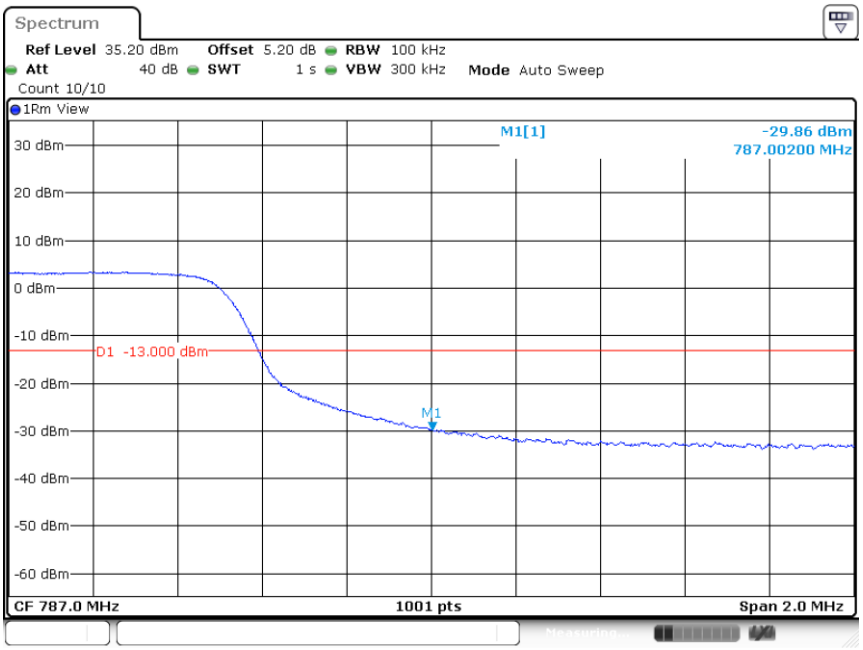
Band13-10MHz-16QAM-23230_Right-1RB#49



Date: 1.SEP.2020 09:16:16

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



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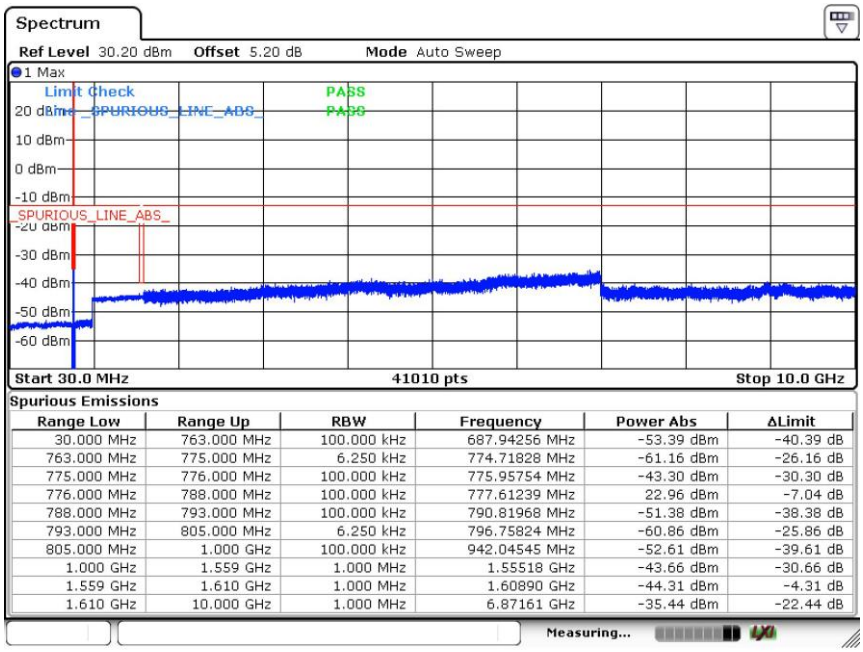
6. Spurious Emission at Antenna Terminal

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



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	763.000 MHz	100.000 kHz	687.94256 MHz	-53.39 dBm	-40.39 dB
763.000 MHz	775.000 MHz	6.250 kHz	774.71828 MHz	-61.16 dBm	-26.16 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.95754 MHz	-43.30 dBm	-30.30 dB
776.000 MHz	788.000 MHz	100.000 kHz	777.61239 MHz	22.96 dBm	-7.04 dB
788.000 MHz	793.000 MHz	100.000 kHz	790.81968 MHz	-51.38 dBm	-38.38 dB
793.000 MHz	805.000 MHz	6.250 kHz	796.75824 MHz	-60.86 dBm	-25.86 dB
805.000 MHz	1.000 GHz	100.000 kHz	942.04545 MHz	-52.61 dBm	-39.61 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.55518 GHz	-43.66 dBm	-30.66 dB
1.559 GHz	1.610 GHz	1.000 MHz	1.60890 GHz	-44.31 dBm	-4.31 dB
1.610 GHz	10.000 GHz	1.000 MHz	6.87161 GHz	-35.44 dBm	-22.44 dB

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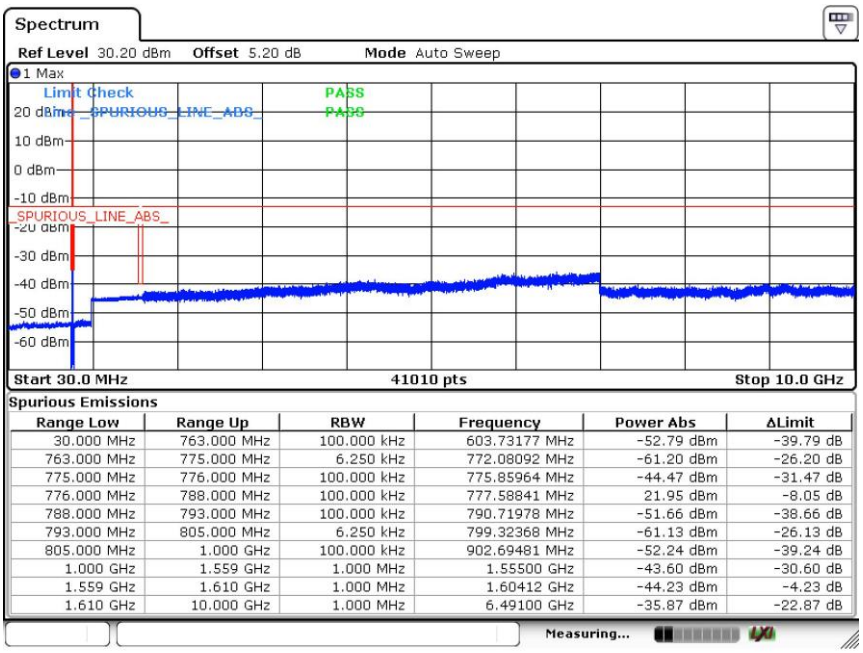
Band13-10MHz-16QAM



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	763.000 MHz	100.000 kHz	603.73177 MHz	-52.79 dBm	-39.79 dB
763.000 MHz	775.000 MHz	6.250 kHz	772.08092 MHz	-61.20 dBm	-26.20 dB
775.000 MHz	776.000 MHz	100.000 kHz	775.85964 MHz	-44.47 dBm	-31.47 dB
776.000 MHz	788.000 MHz	100.000 kHz	777.58841 MHz	21.95 dBm	-8.05 dB
788.000 MHz	793.000 MHz	100.000 kHz	790.71978 MHz	-51.66 dBm	-38.66 dB
793.000 MHz	805.000 MHz	6.250 kHz	799.32368 MHz	-61.13 dBm	-26.13 dB
805.000 MHz	1.000 GHz	100.000 kHz	902.69481 MHz	-52.24 dBm	-39.24 dB
1.000 GHz	1.559 GHz	1.000 MHz	1.55500 GHz	-43.60 dBm	-30.60 dB
1.559 GHz	1.610 GHz	1.000 MHz	1.60412 GHz	-44.23 dBm	-4.23 dB
1.610 GHz	10.000 GHz	1.000 MHz	6.49100 GHz	-35.87 dBm	-22.87 dB

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7. Field Strength of Spurious Radiation

7.1. Test Mode =LTE/TM1 10MHz

7.1.1.Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
112.0661	-65.05	-13.00	52.05	Vertical
1555.3111	-45.85	-13.00	32.85	Vertical
2333.0666	-48.36	-13.00	35.36	Vertical
3110.3244	-51.00	-13.00	38.00	Vertical
4665.7866	-52.21	-13.00	39.21	Vertical
9327.1331	-52.11	-13.00	39.11	Vertical
45.1813	-63.78	-13.00	50.78	Horizontal
1555.3111	-42.58	-13.00	29.58	Horizontal
2332.6665	-42.23	-13.00	29.23	Horizontal
3110.6044	-51.74	-13.00	38.74	Horizontal
4665.5066	-54.09	-13.00	41.09	Horizontal
9267.2107	-52.80	-13.00	39.80	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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8. Frequency Stability

8.1. 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	-0.40	-0.000512	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	-1.70	-0.002174	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	0.30	0.000384	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-1.00	-0.001279	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	0.30	0.000384	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-0.50	-0.000639	±2.5	PASS

8.2. 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	-1.30	-0.001662	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	0.10	0.000128	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-10	1.20	0.001535	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	0.00	0.000000	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-0.80	-0.001023	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-1.80	-0.002302	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-1.10	-0.001407	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-1.40	-0.001790	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-0.50	-0.000639	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-0.40	-0.000512	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	-1.00	-0.001279	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-10	0.00	0.000000	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	-0.70	-0.000895	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-0.80	-0.001023	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	0.50	0.000639	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-0.10	-0.000128	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	0.10	0.000128	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-0.60	-0.000767	±2.5	PASS

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