



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	22.85	23.30	34.77	PASS
BAND13	5MHz	QPSK	23205	1RB#12	23.10	23.55	34.77	PASS
BAND13	5MHz	QPSK	23205	1RB#24	22.83	23.28	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#0	22.07	22.52	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#6	22.23	22.68	34.77	PASS
BAND13	5MHz	QPSK	23205	12RB#13	22.08	22.53	34.77	PASS
BAND13	5MHz	QPSK	23205	25RB#0	22.17	22.62	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#0	22.93	23.38	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#12	23.32	23.77	34.77	PASS
BAND13	5MHz	QPSK	23230	1RB#24	22.83	23.28	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#0	22.05	22.50	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#6	22.13	22.58	34.77	PASS
BAND13	5MHz	QPSK	23230	12RB#13	22.11	22.56	34.77	PASS
BAND13	5MHz	QPSK	23230	25RB#0	22.16	22.61	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#0	22.85	23.30	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#12	23.28	23.73	34.77	PASS
BAND13	5MHz	QPSK	23255	1RB#24	22.92	23.37	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#0	22.07	22.52	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#6	22.10	22.55	34.77	PASS
BAND13	5MHz	QPSK	23255	12RB#13	22.11	22.56	34.77	PASS
BAND13	5MHz	QPSK	23255	25RB#0	22.10	22.55	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#0	21.68	22.13	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#12	22.21	22.66	34.77	PASS
BAND13	5MHz	16QAM	23205	1RB#24	21.65	22.10	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#0	21.13	21.58	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#6	21.04	21.49	34.77	PASS
BAND13	5MHz	16QAM	23205	12RB#13	21.16	21.61	34.77	PASS
BAND13	5MHz	16QAM	23205	25RB#0	21.05	21.50	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#0	21.74	22.19	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#12	22.07	22.52	34.77	PASS
BAND13	5MHz	16QAM	23230	1RB#24	21.75	22.20	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#0	21.01	21.46	34.77	PASS



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BAND13	5MHz	16QAM	23230	12RB#6	20.99	21.44	34.77	PASS
BAND13	5MHz	16QAM	23230	12RB#13	20.85	21.30	34.77	PASS
BAND13	5MHz	16QAM	23230	25RB#0	21.13	21.58	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#0	21.72	22.17	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#12	21.97	22.42	34.77	PASS
BAND13	5MHz	16QAM	23255	1RB#24	21.69	22.14	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#0	20.85	21.30	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#6	21.16	21.61	34.77	PASS
BAND13	5MHz	16QAM	23255	12RB#13	21.08	21.53	34.77	PASS
BAND13	5MHz	16QAM	23255	25RB#0	21.21	21.66	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#0	22.84	23.29	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#24	22.96	23.41	34.77	PASS
BAND13	10MHz	QPSK	23230	1RB#49	22.89	23.34	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#0	22.16	22.61	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#12	22.15	22.60	34.77	PASS
BAND13	10MHz	QPSK	23230	25RB#25	22.06	22.51	34.77	PASS
BAND13	10MHz	QPSK	23230	50RB#0	22.08	22.53	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#0	21.52	21.97	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#24	21.94	22.39	34.77	PASS
BAND13	10MHz	16QAM	23230	1RB#49	21.76	22.21	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#0	21.28	21.73	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#12	21.17	21.62	34.77	PASS
BAND13	10MHz	16QAM	23230	25RB#25	21.01	21.46	34.77	PASS
BAND13	10MHz	16QAM	23230	50RB#0	21.12	21.57	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 [dBi]

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



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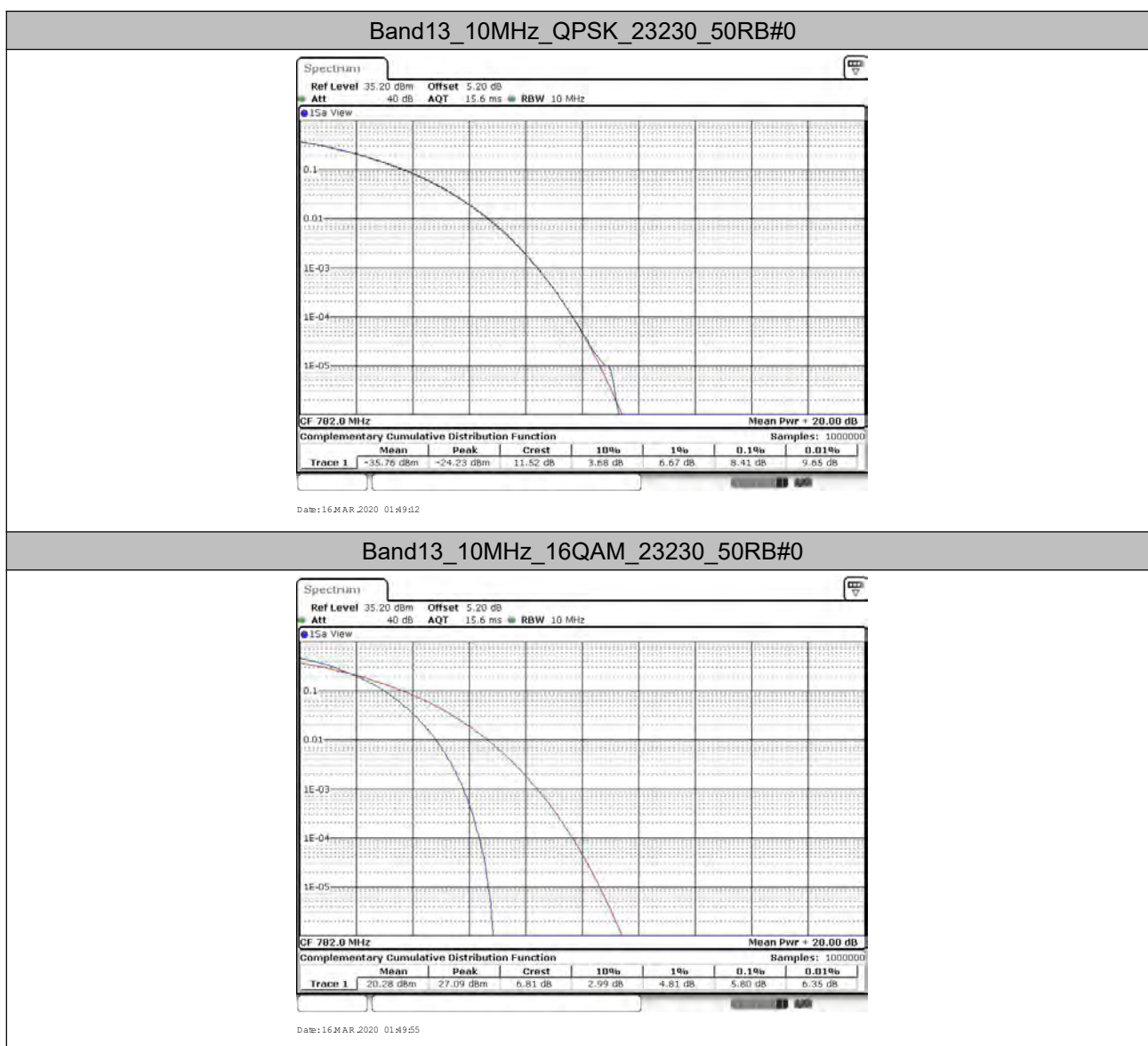


2. Peak-to-Average Ratio (CCDF)

2.1. Test Result

Band	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	8.41	13.00	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.80	13.00	PASS

2.2. Test Plots

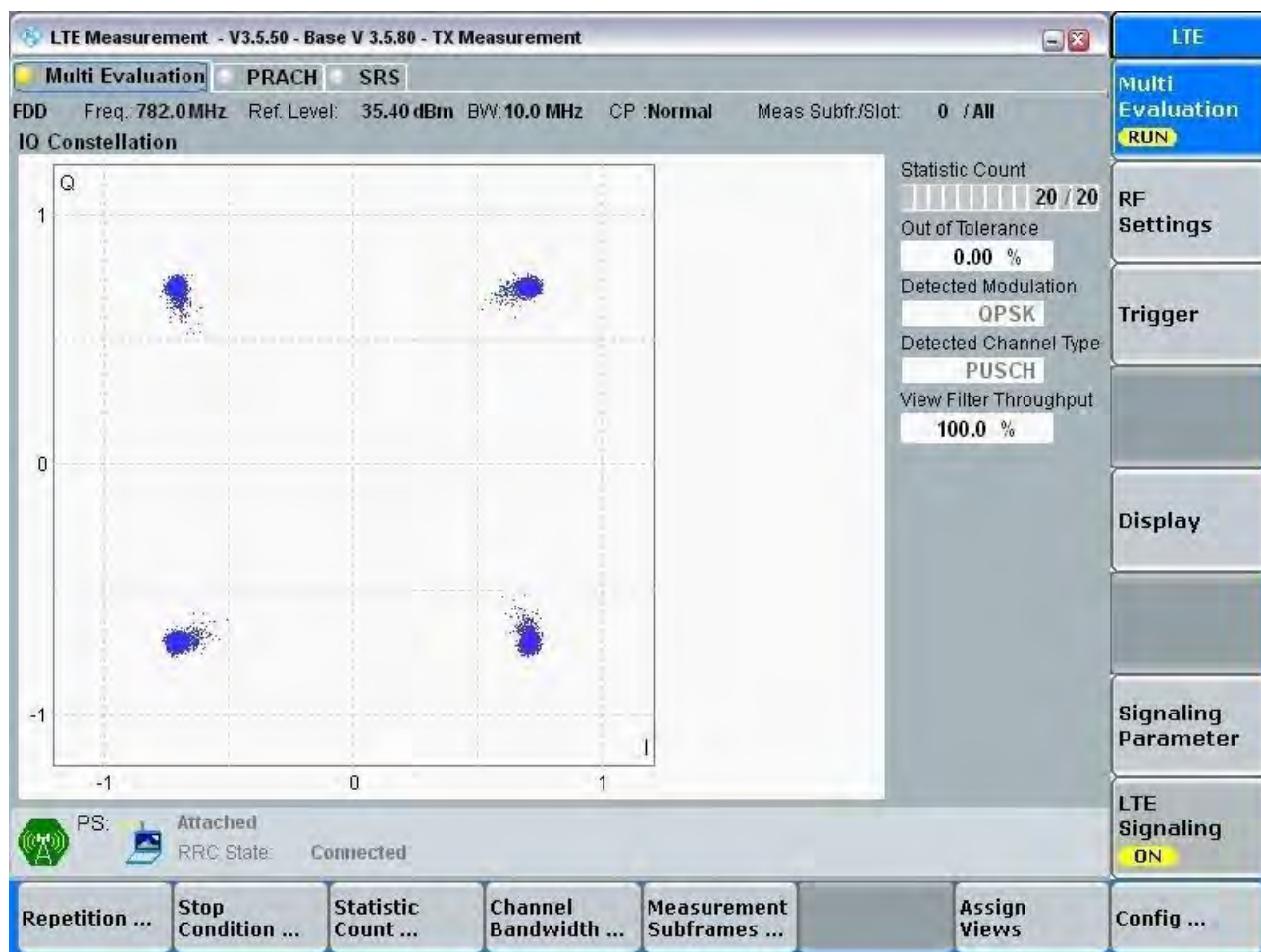


3. Modulation Characteristics

3.1. Test Band = LTE Band 13

3.2. Test Mode = LTE /TM1 10MHz

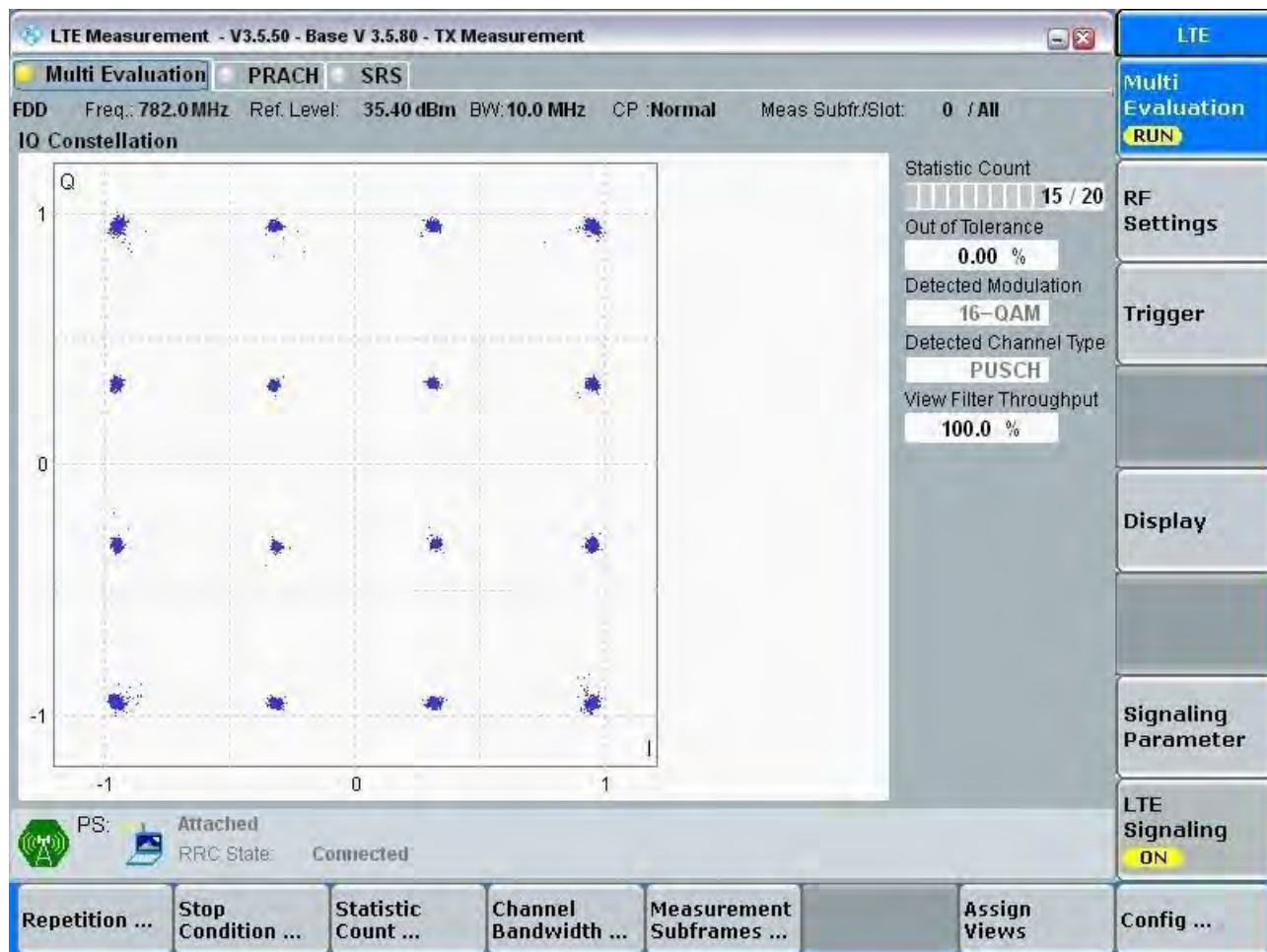
3.2.1. Test Channel = MCH





3.3. Test Mode = LTE /TM2 10MHz

3.3.1. Test Channel = MCH



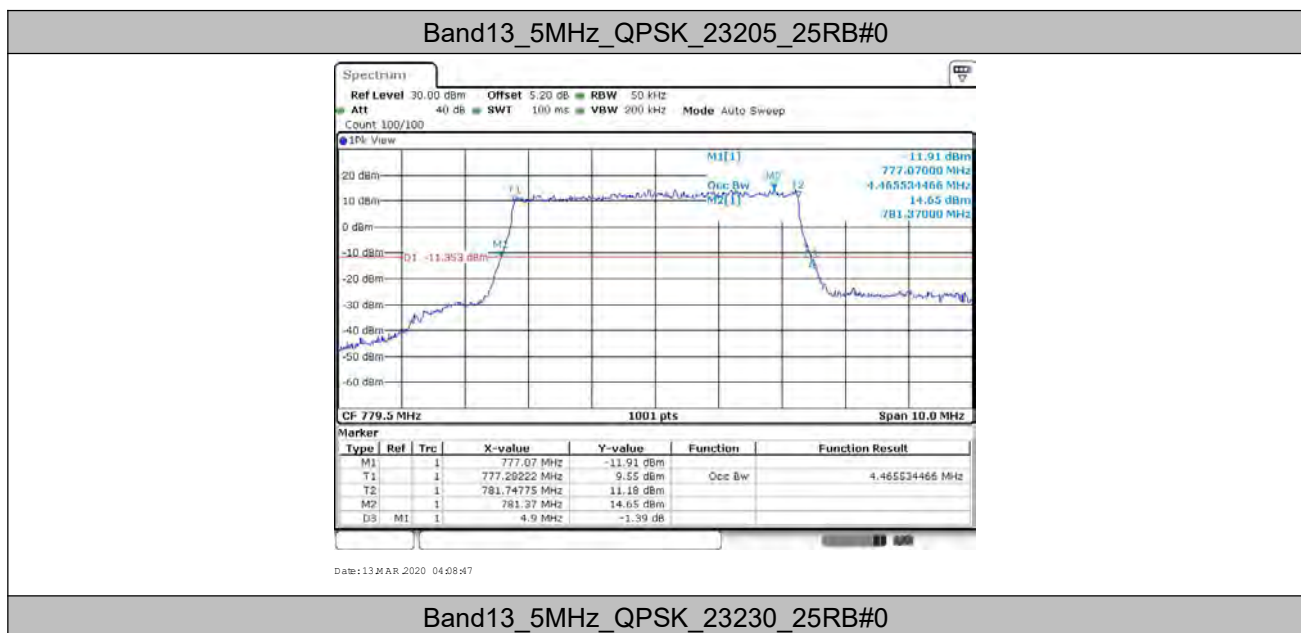


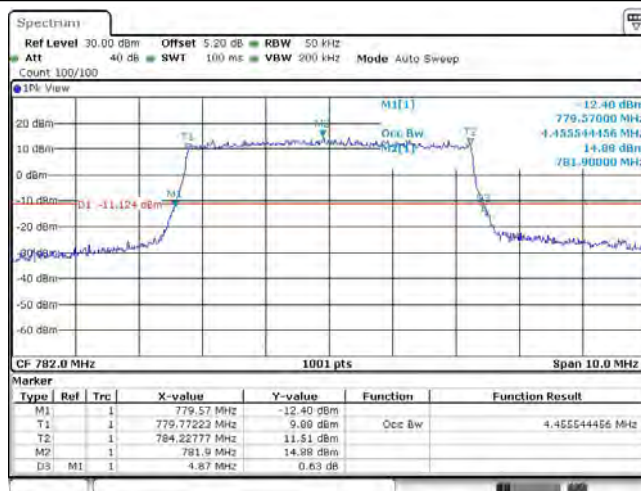
4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

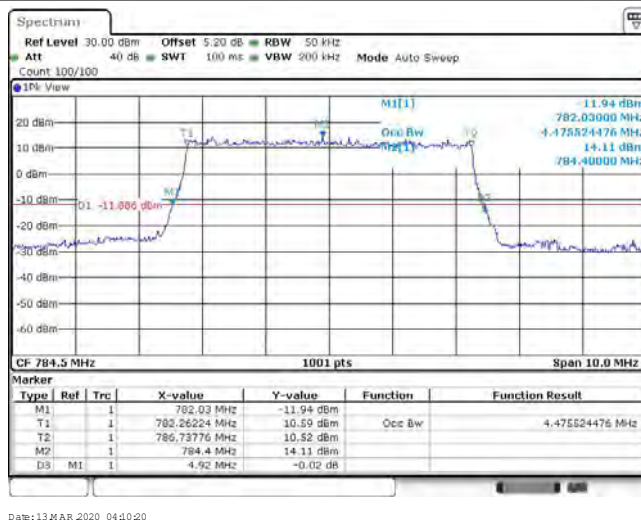
Band	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.466	4.900	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.456	4.870	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.476	4.920	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	4.930	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.476	4.930	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.486	4.960	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.891	9.640	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.891	9.660	PASS

4.2. Test Plots



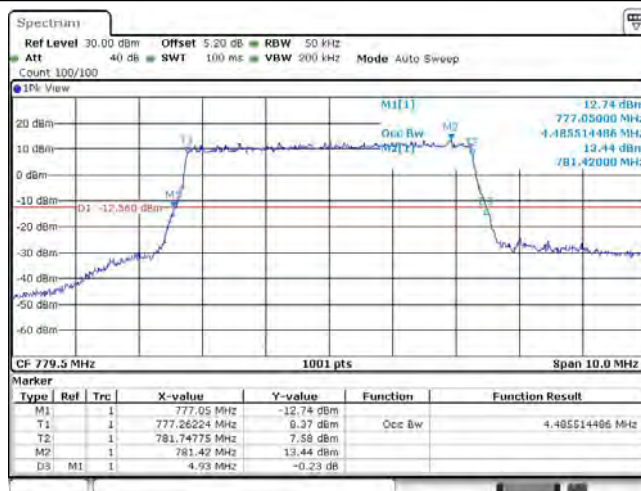


Band13_5MHz_QPSK_23255_25RB#0



Band13_5MHz_16QAM_23205_25RB#0





Date: 13 MAR 2020 04:09:10

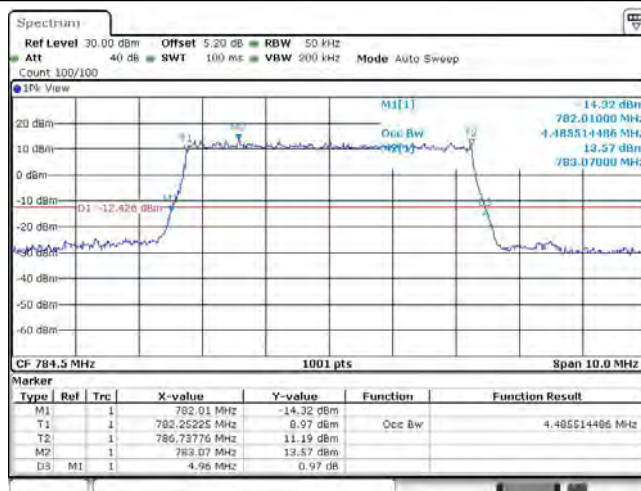
Band13_5MHz_16QAM_23230_25RB#0



Date: 13 MAR 2020 04:09:56

Band13_5MHz_16QAM_23255_25RB#0





Date: 13 MAR 2020 04:10:42

Band13_10MHz_QPSK_23230_50RB#0



Date: 13 MAR 2020 04:11:03

Band13_10MHz_16QAM_23230_50RB#0





Date: 13 MAR 2020 04:11:18



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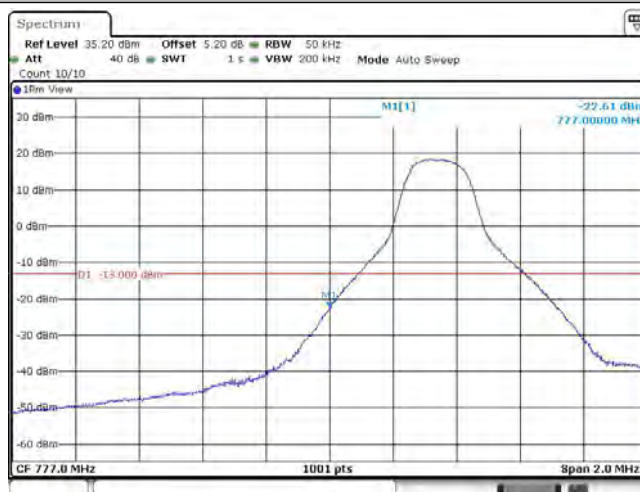
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5. Band Edge Compliance

5.1. Test Plots

Band13_5MHz_QPSK_23205_1RB#0



Date: 13 MAR 2020 04:21:46

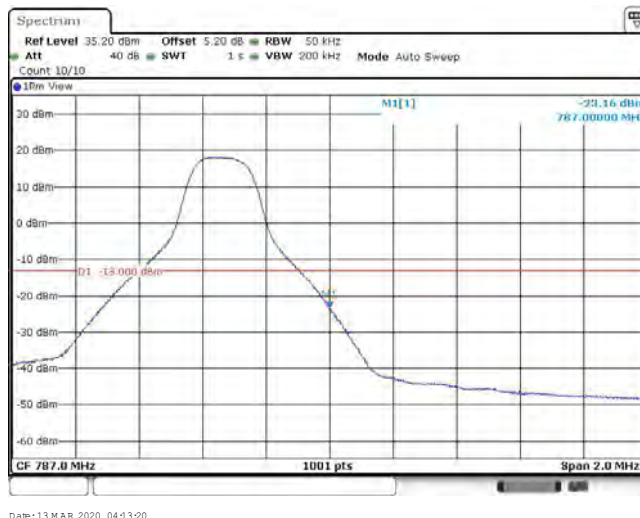
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Date: 13 MAR 2020 04:22:31

Band13_5MHz_QPSK_23255_1RB#24





Date: 13 MAR 2020 04:13:20

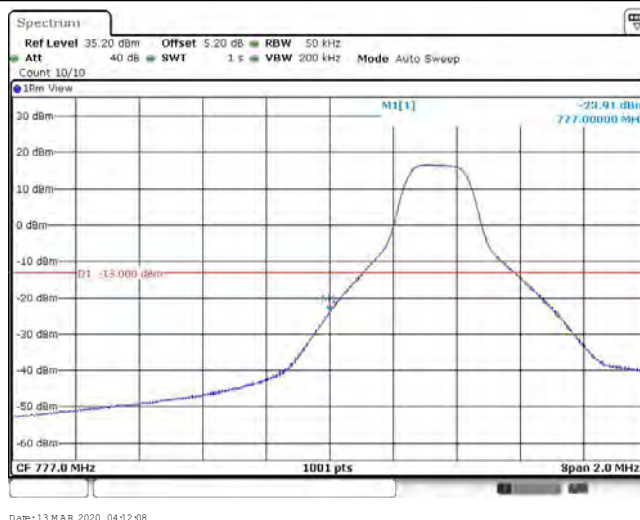
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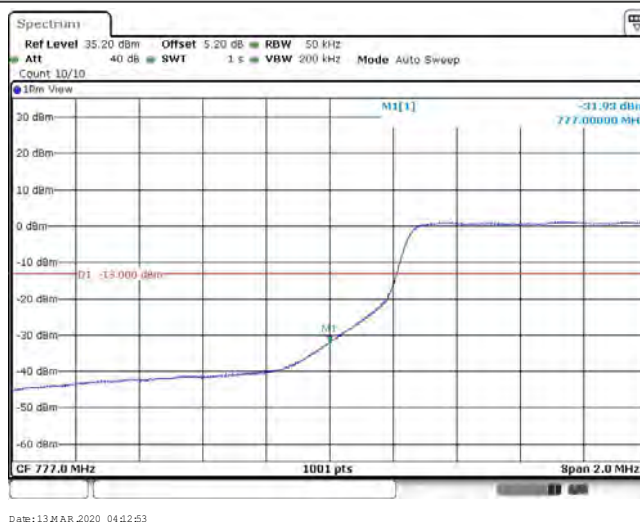
Date: 13 MAR 2020 04:14:06

Band13_5MHz_16QAM_23205_1RB#0





Band13_5MHz_16QAM_23205_25RB#0



Band13_5MHz_16QAM_23255_1RB#24





Date: 13 MAR 2020 04:13:43

Band13_5MHz_16QAM_23255_25RB#0



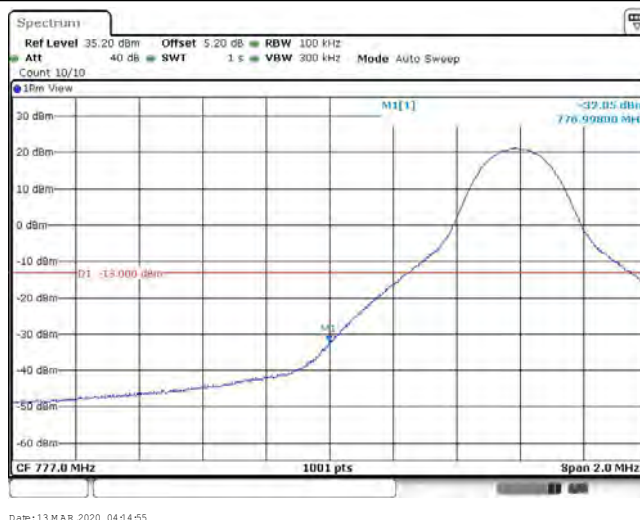
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Band13_10MHz_QPSK_23230_Left_1RB#0

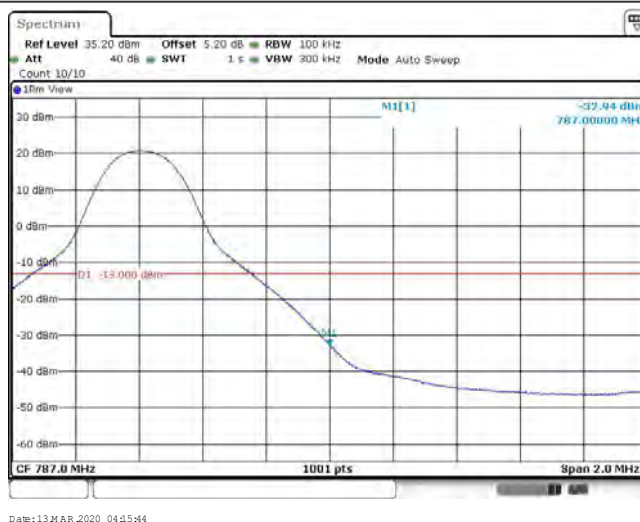


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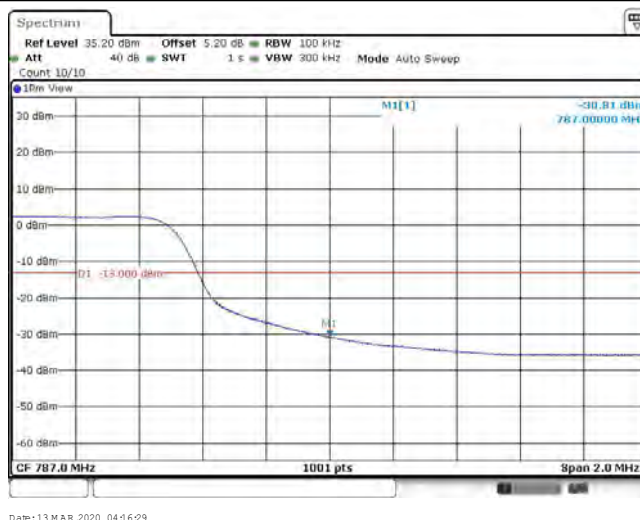


Band13_10MHz_QPSK_23230_Right_1RB#49

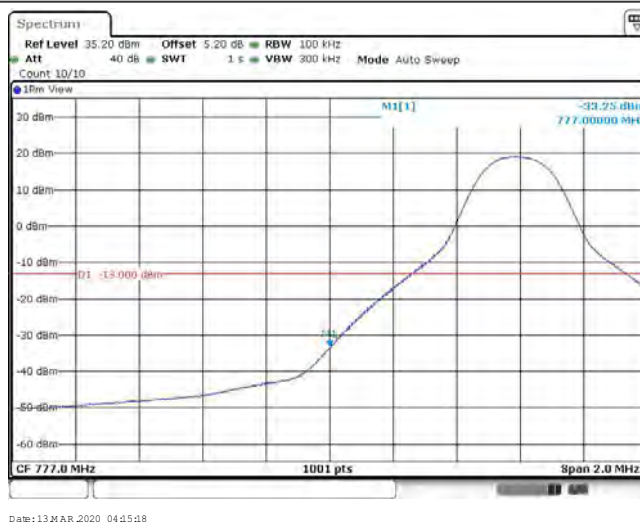


Band13_10MHz_QPSK_23230_Right_50RB#0





Band13_10MHz_16QAM_23230_Left_1RB#0



Band13_10MHz_16QAM_23230_Right_1RB#49





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Band13_10MHz_16QAM_23230_Right_50RB#0



Date: 13 MAR 2020 04:16:52



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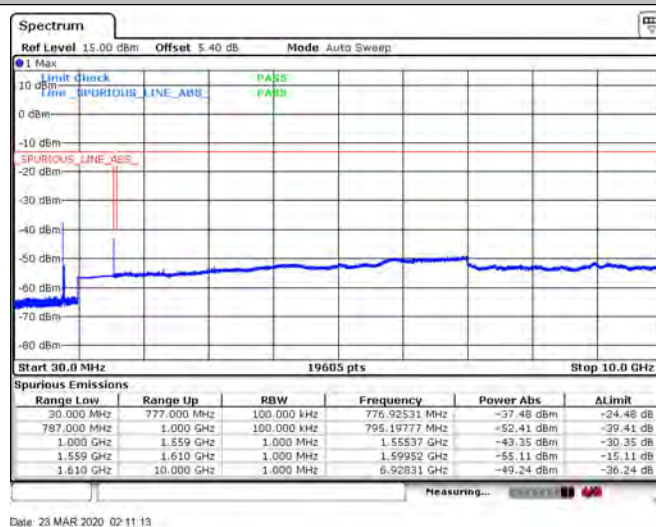
6. Spurious Emission at Antenna Terminal

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 = $k * (\text{Span} / RBW)$ " 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.

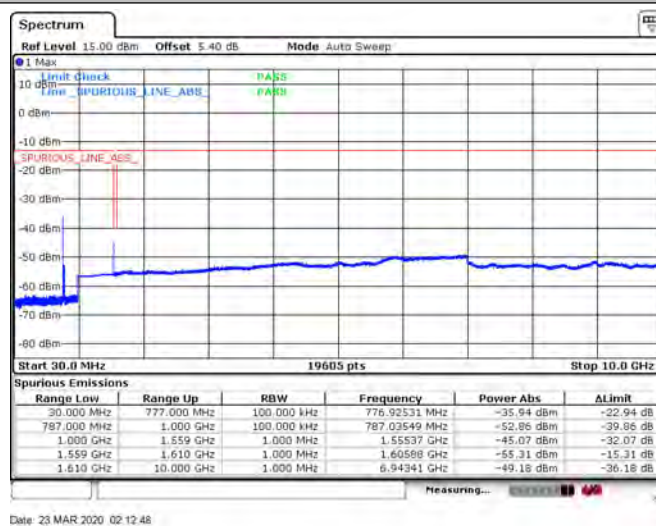
6.1. Test Plots

Band13_10MHz_QPSK_23230_1RB#0



Date: 23 MAR 2020 02:11:13

Band13_10MHz_16QAM_23230_1RB#0



Date: 23 MAR 2020 02:12:48





7. Field Strength of Spurious Radiation

7.1. Test Band = LTE Band 13

7.1.1. Test Mode = LTE/TM1

7.1.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
107.8949	-65.63	-13.00	52.63	Vertical
419.0865	-68.16	-13.00	55.16	Vertical
2419.8840	-45.62	-13.00	32.62	Vertical
3110.4044	-55.61	-13.00	42.61	Vertical
14508.4603	-47.78	-13.00	34.78	Vertical
17990.9996	-40.87	-13.00	27.87	Vertical
39.8460	-64.22	-13.00	51.22	Horizontal
225.9498	-68.59	-13.00	55.59	Horizontal
1554.9110	-57.26	-13.00	44.26	Horizontal
2332.6665	-50.37	-13.00	37.37	Horizontal
3110.4044	-47.62	-13.00	34.62	Horizontal
16394.3358	-44.46	-13.00	31.46	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 had been displayed.



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8. Frequency Stability

8.1. Frequency Vs Voltage

BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	VL	NT	5.55	0.007097	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VN	NT	6.95	0.008887	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	VH	NT	5.64	0.007212	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	-3.88	-0.004962	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-7.52	-0.009616	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-6.07	-0.007762	±2.5	PASS

8.2. Frequency Vs Temperature

BAND	Bandwidth	Modulation	Channel	RB Configure	Voltage [Vdc]	Temperature (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
Band13	10MHz	QPSK	23230	50RB#0	NV	-30	3.83	0.004898	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	-20	5.45	0.006969	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	0	6.25	0.007992	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	6.94	0.008875	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	5.78	0.007391	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	3.63	0.004642	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	6.28	0.008031	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-6.01	-0.007685	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-7.45	-0.009527	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-20	4.89	0.006253	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	0	3.08	0.003939	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	-3.55	-0.004540	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	-5.69	-0.007276	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-7.55	-0.009655	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	4.71	0.006023	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-3.75	-0.004795	±2.5	PASS

The End

