

Appendix B

E-UTRA BAND 13

CONTENT

1. EFFECTIVE (ISOTROPIC) RADIATED POWER.....	3
1.1. <i>Test Result</i>	3
2. PEAK-TO-AVERAGE RATIO(CCDF)	5
2.1. <i>Test Result</i>	5
2.2. <i>Test Plots</i>	5
3. MODULATION CHARACTERISTICS	6
3.1. <i>Test BAND = LTE BAND13</i>	6
3.1.1. <i>Test Mode = LTE /TM1 10MHz</i>	6
3.1.1.1. <i>Test Channel = MCH</i>	6
3.1.1.2. <i>Test Mode = LTE /TM2 10MHz</i>	7
3.1.1.2.1. <i>Test Channel = MCH</i>	7
4. <i>26dB BANDWIDTH AND OCCUPIED BANDWIDTH</i>	8
4.1. <i>Test Result</i>	8
4.2. <i>Test Plots</i>	8
5. BAND EDGE COMPLIANCE	12
5.1. <i>Test Plots</i>	12
6. SPURIOUS EMISSION AT ANTENNA TERMINAL	17
6.1. <i>Test Plots</i>	17
7. FIELD STRENGTH OF SPURIOUS RADIATION	18
7.1. <i>Test BAND = LTE BAND 13</i>	18
7.1.1. <i>Test Mode =LTE/TM1 10MHz</i>	18
7.1.1.1. <i>Test Channel = MCH</i>	18
8. FREQUENCY STABILITY	19
8.1. <i>Frequency Vs Voltage</i>	19
8.2. <i>Frequency Vs Temperature</i>	19

1. Effective (Isotropic) Radiated Power

1.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result (dBm)	ERP (dBm)	Limit (dBm)	Verdict
Band13	5MHz	QPSK	23205	1RB#0	22.55	20.10	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#12	22.84	20.39	34.77	PASS
Band13	5MHz	QPSK	23205	1RB#24	22.42	19.97	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#0	21.69	19.24	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#6	21.93	19.48	34.77	PASS
Band13	5MHz	QPSK	23205	12RB#13	21.83	19.38	34.77	PASS
Band13	5MHz	QPSK	23205	25RB#0	21.72	19.27	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#0	22.65	20.20	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#12	22.34	19.89	34.77	PASS
Band13	5MHz	QPSK	23230	1RB#24	22.37	19.92	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#0	21.68	19.23	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#6	21.75	19.30	34.77	PASS
Band13	5MHz	QPSK	23230	12RB#13	21.69	19.24	34.77	PASS
Band13	5MHz	QPSK	23230	25RB#0	21.70	19.25	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#0	22.33	19.88	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#12	22.41	19.96	34.77	PASS
Band13	5MHz	QPSK	23255	1RB#24	22.54	20.09	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#0	21.73	19.28	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#6	21.72	19.27	34.77	PASS
Band13	5MHz	QPSK	23255	12RB#13	21.79	19.34	34.77	PASS
Band13	5MHz	QPSK	23255	25RB#0	21.69	19.24	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#0	21.24	18.79	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#12	21.52	19.07	34.77	PASS
Band13	5MHz	16QAM	23205	1RB#24	20.89	18.44	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#0	20.56	18.11	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#6	20.96	18.51	34.77	PASS
Band13	5MHz	16QAM	23205	12RB#13	20.85	18.40	34.77	PASS
Band13	5MHz	16QAM	23205	25RB#0	20.77	18.32	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#0	21.87	19.42	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#12	21.52	19.07	34.77	PASS
Band13	5MHz	16QAM	23230	1RB#24	21.27	18.82	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#0	20.59	18.14	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#6	20.48	18.03	34.77	PASS
Band13	5MHz	16QAM	23230	12RB#13	20.48	18.03	34.77	PASS

Band13	5MHz	16QAM	23230	25RB#0	20.63	18.18	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#0	21.12	18.67	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#12	21.66	19.21	34.77	PASS
Band13	5MHz	16QAM	23255	1RB#24	21.83	19.38	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#0	20.47	18.02	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#6	20.59	18.14	34.77	PASS
Band13	5MHz	16QAM	23255	12RB#13	20.57	18.12	34.77	PASS
Band13	5MHz	16QAM	23255	25RB#0	20.82	18.37	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#0	22.45	20.00	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#24	22.58	20.13	34.77	PASS
Band13	10MHz	QPSK	23230	1RB#49	22.42	19.97	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#0	21.86	19.41	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#12	21.62	19.17	34.77	PASS
Band13	10MHz	QPSK	23230	25RB#25	21.62	19.17	34.77	PASS
Band13	10MHz	QPSK	23230	50RB#0	21.70	19.25	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#0	21.45	19.00	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#24	21.99	19.54	34.77	PASS
Band13	10MHz	16QAM	23230	1RB#49	21.71	19.26	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#0	20.75	18.30	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#12	20.64	18.19	34.77	PASS
Band13	10MHz	16QAM	23230	25RB#25	20.48	18.03	34.77	PASS
Band13	10MHz	16QAM	23230	50RB#0	20.61	18.16	34.77	PASS

Remark:

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

$$\text{ERP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBd]}$$

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

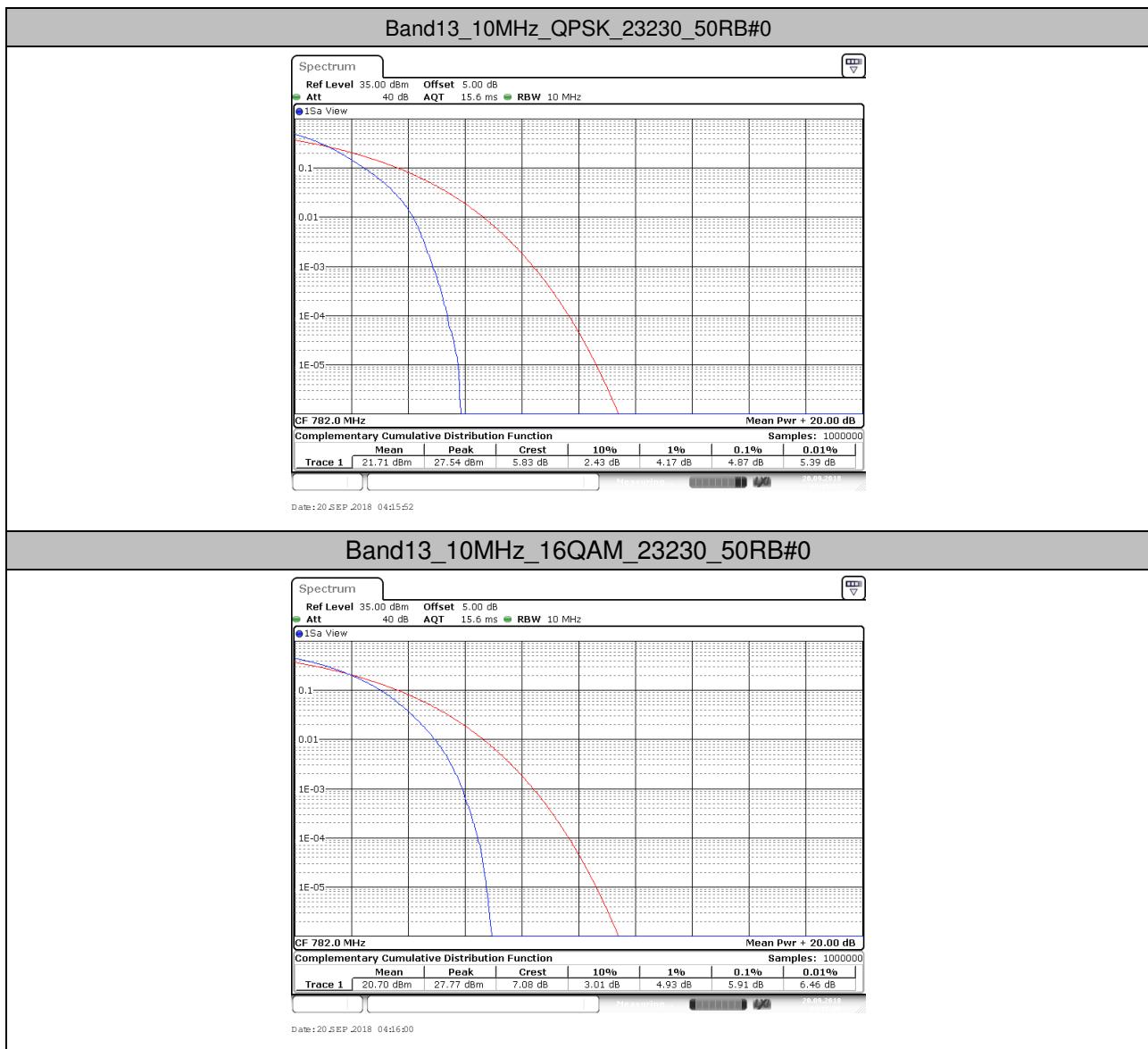
b: SGP=Signal Generator Level

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	4.87	13	PASS
Band13	10MHz	16QAM	23230	50RB#0	5.91	13	PASS

2.2. Test Plots

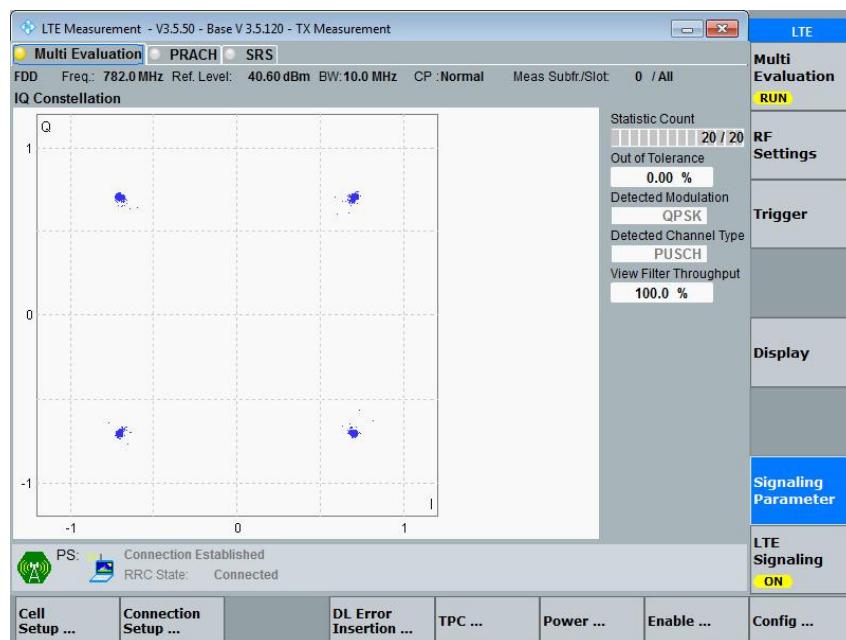


3. Modulation Characteristics

3.1. Test BAND = LTE BAND13

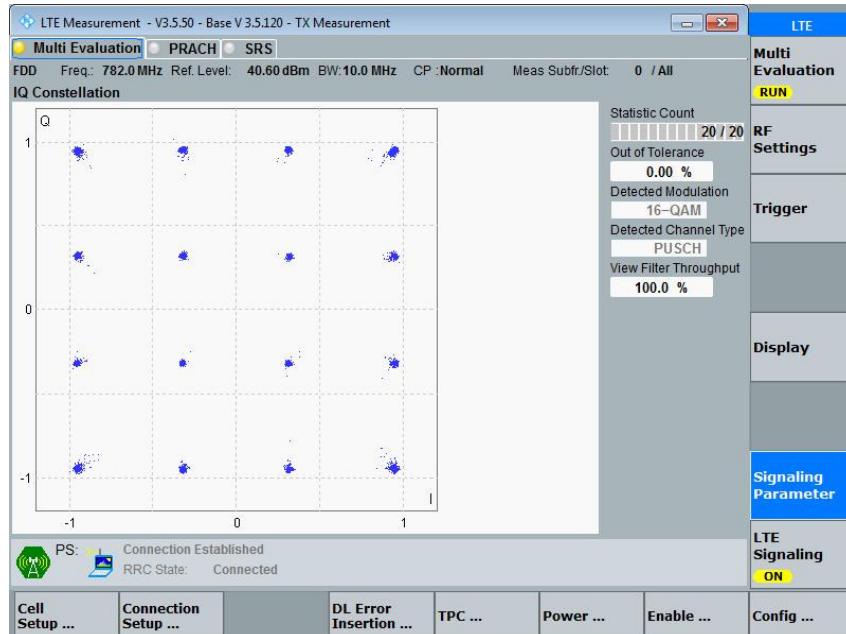
3.1.1. Test Mode = LTE /TM1 10MHz

3.1.1.1. Test Channel = MCH



3.1.2. Test Mode = LTE /TM2 10MHz

3.1.2.1. Test Channel = MCH

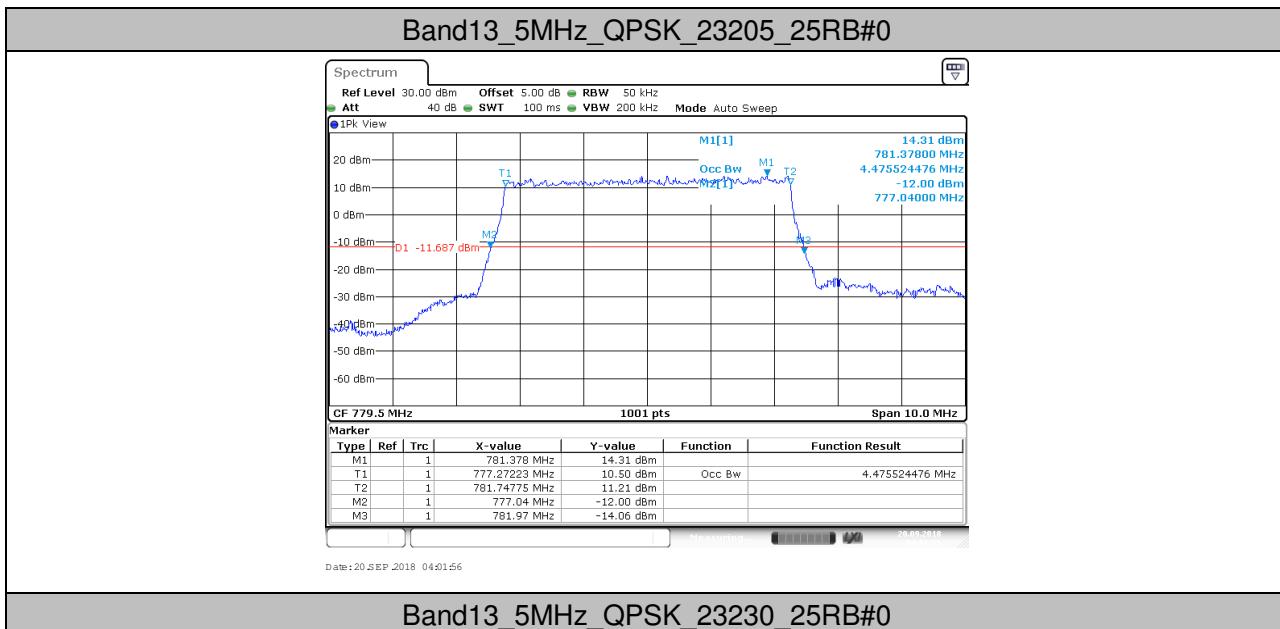


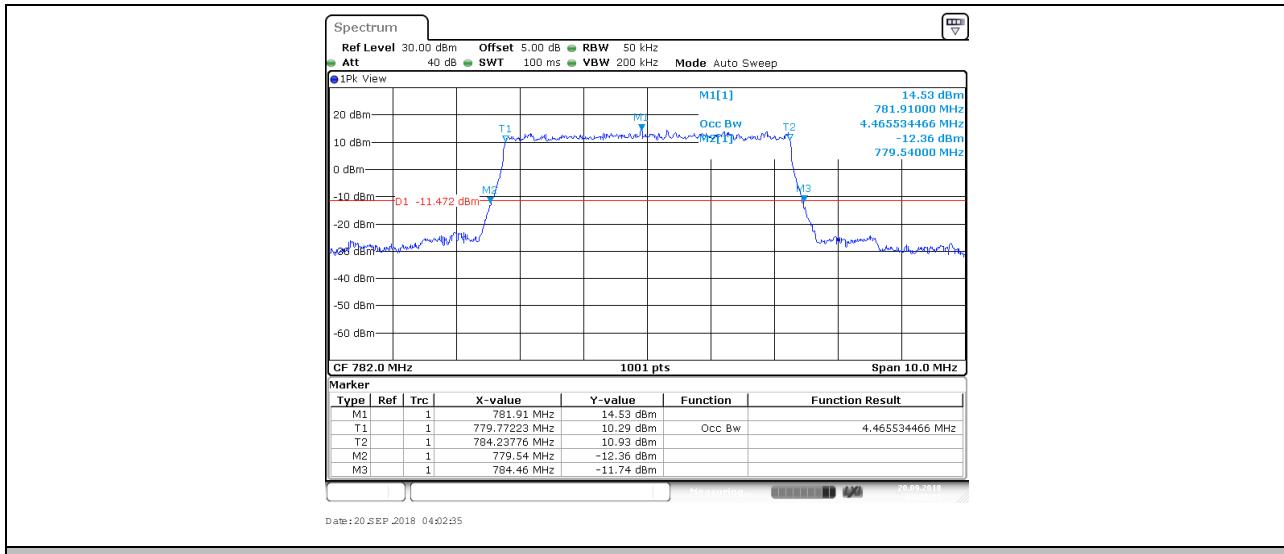
4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

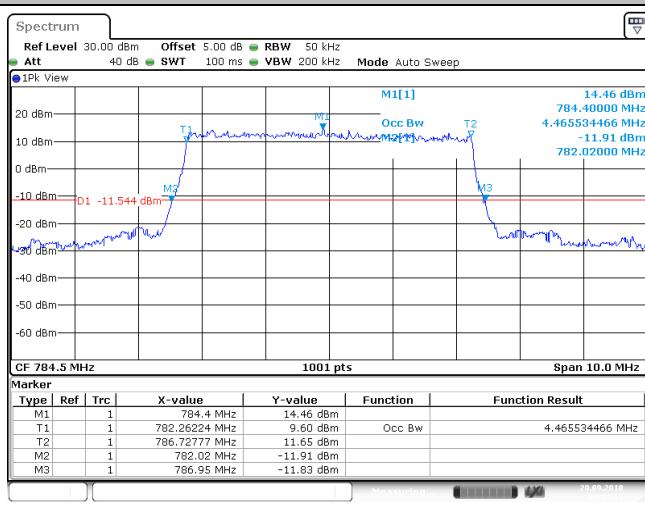
BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band13	5MHz	QPSK	23205	25RB#0	4.476	4.930	PASS
Band13	5MHz	QPSK	23230	25RB#0	4.466	4.920	PASS
Band13	5MHz	QPSK	23255	25RB#0	4.466	4.930	PASS
Band13	5MHz	16QAM	23205	25RB#0	4.486	4.950	PASS
Band13	5MHz	16QAM	23230	25RB#0	4.486	4.960	PASS
Band13	5MHz	16QAM	23255	25RB#0	4.486	4.930	PASS
Band13	10MHz	QPSK	23230	50RB#0	8.891	9.640	PASS
Band13	10MHz	16QAM	23230	50RB#0	8.891	9.700	PASS

4.2. Test Plots

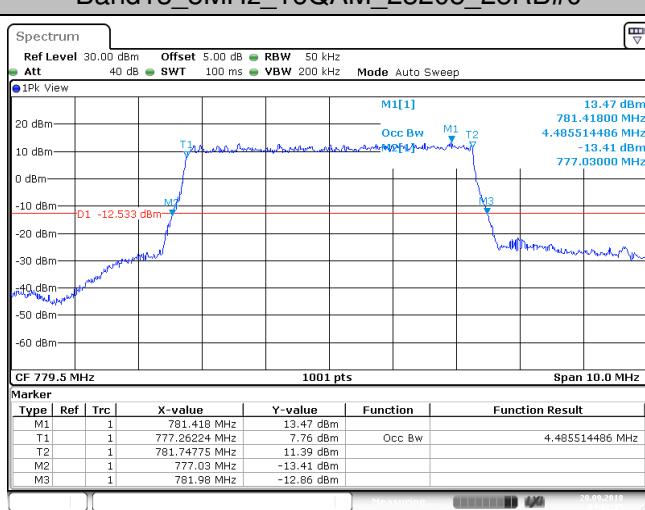




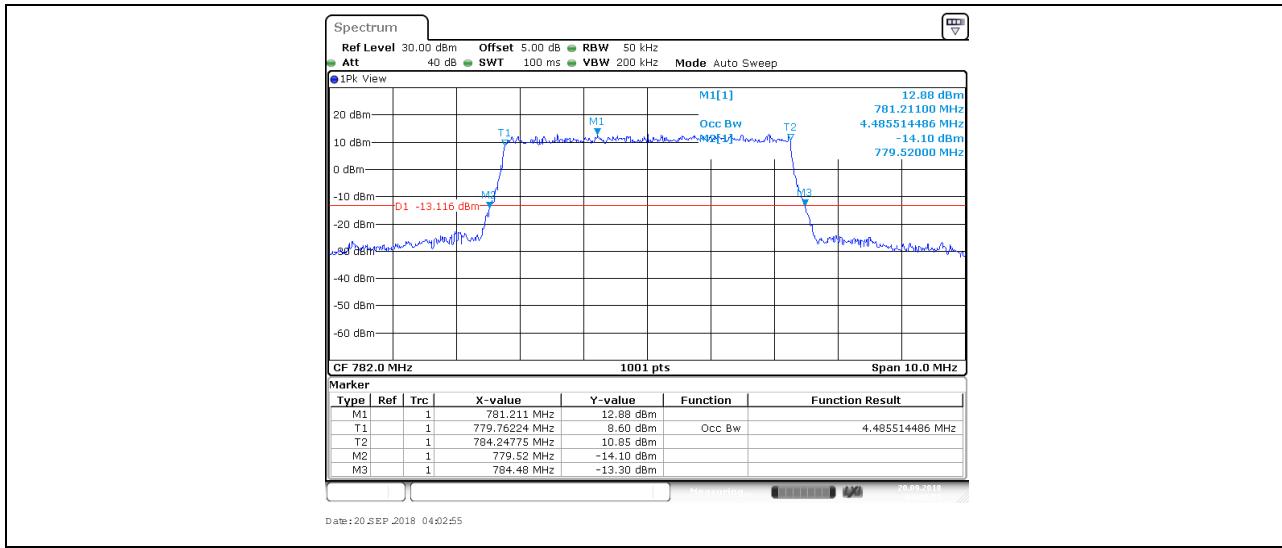
Band13_5MHz_QPSK_23255_25RB#0



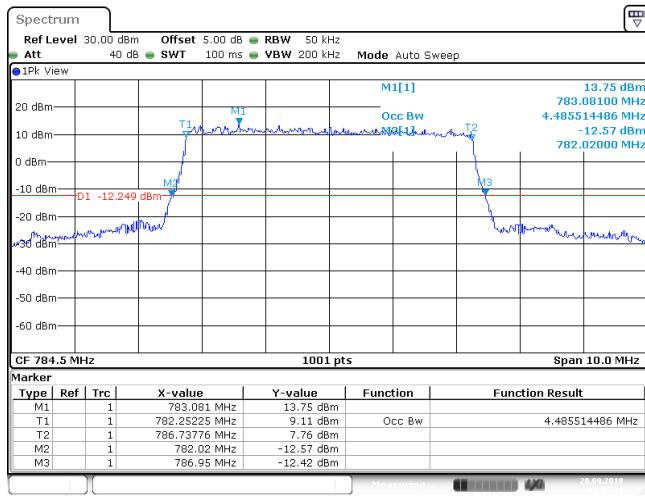
Band13_5MHz_16QAM_23205_25RB#0



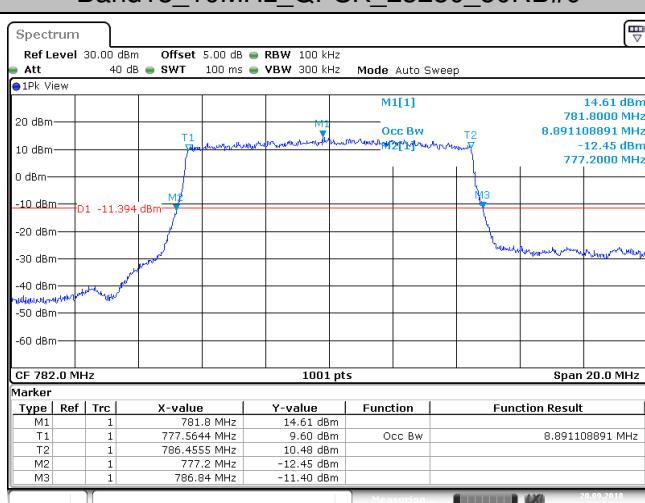
Band13_5MHz_16QAM_23230_25RB#0



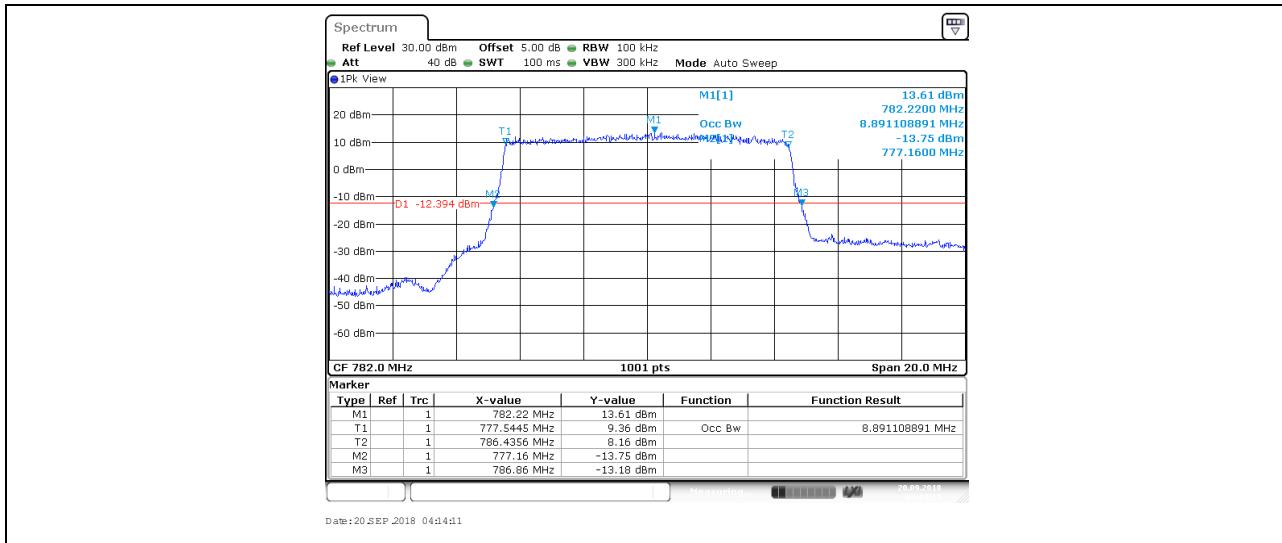
Band13_5MHz_16QAM_23255_25RB#0



Band13_10MHz_QPSK_23230_50RB#0

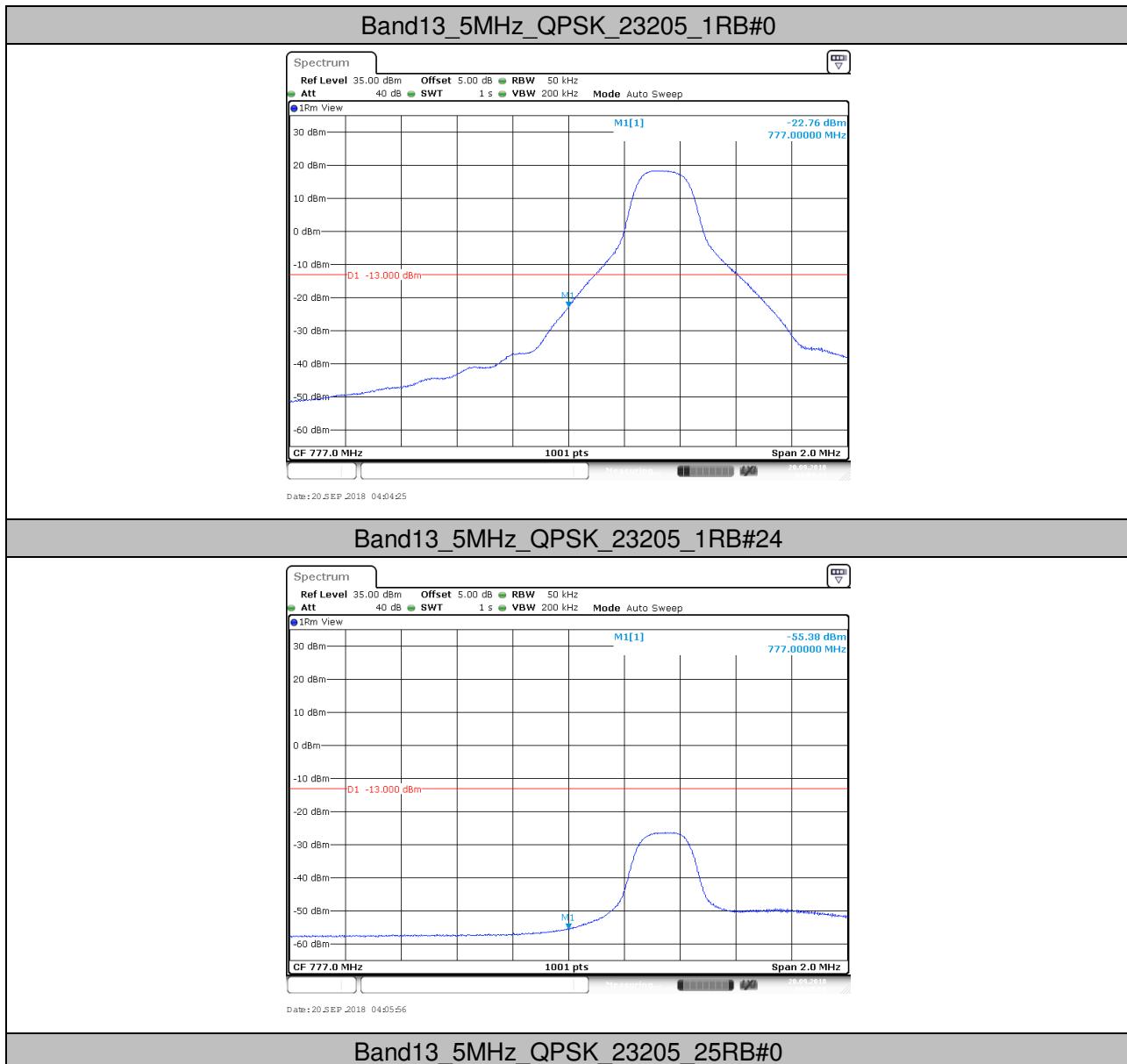


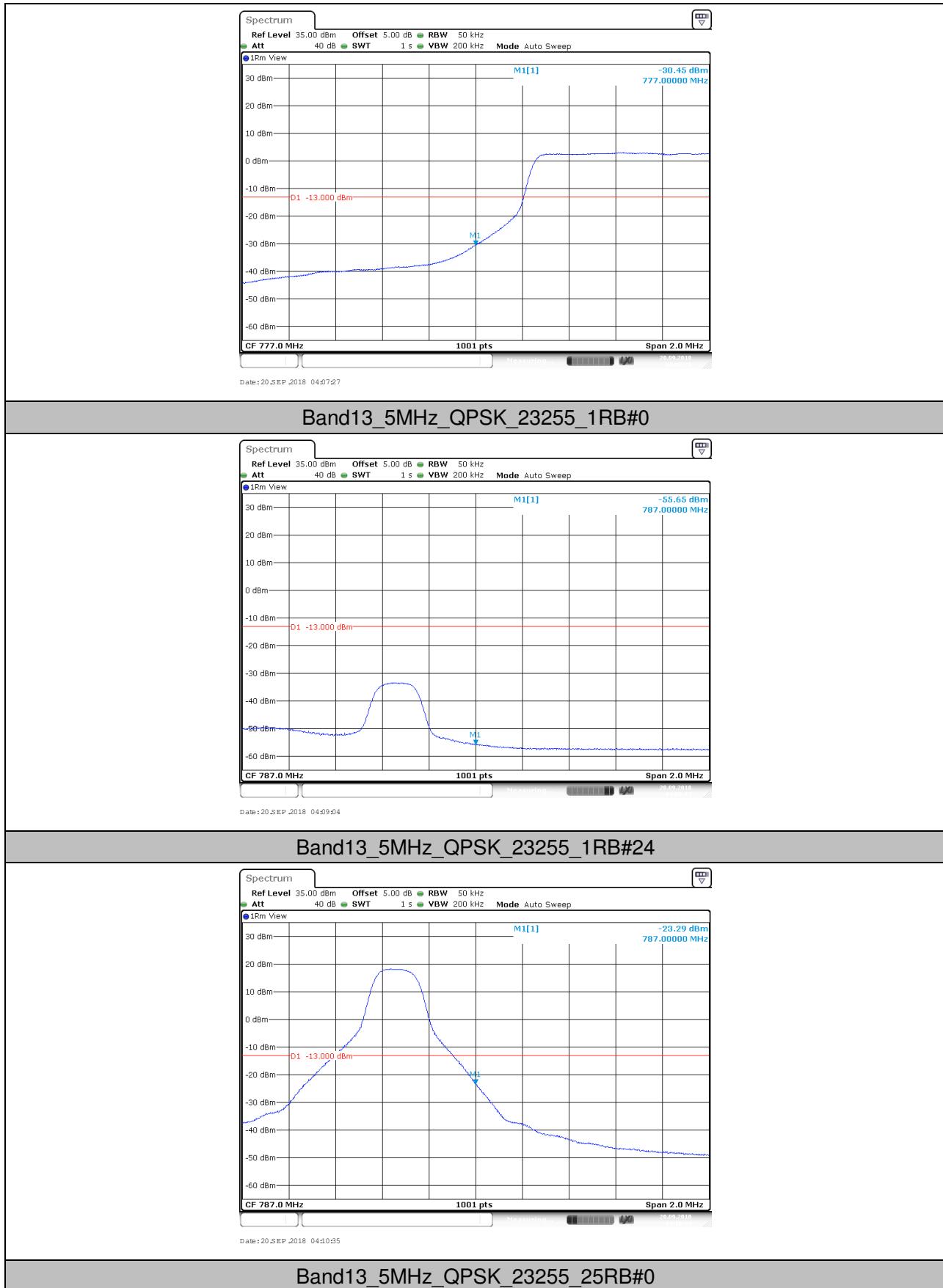
Band13_10MHz_16QAM_23230_50RB#0

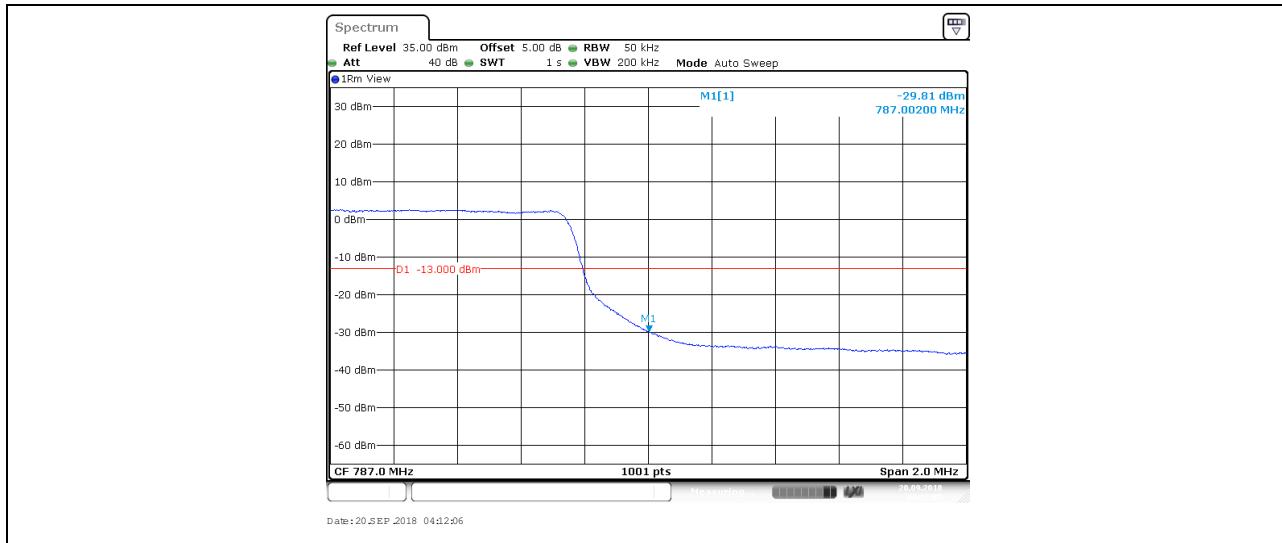


5. Band Edge Compliance

5.1. Test Plots



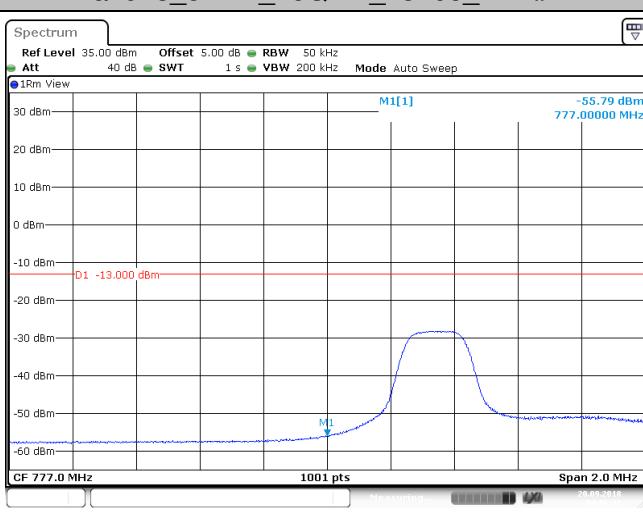




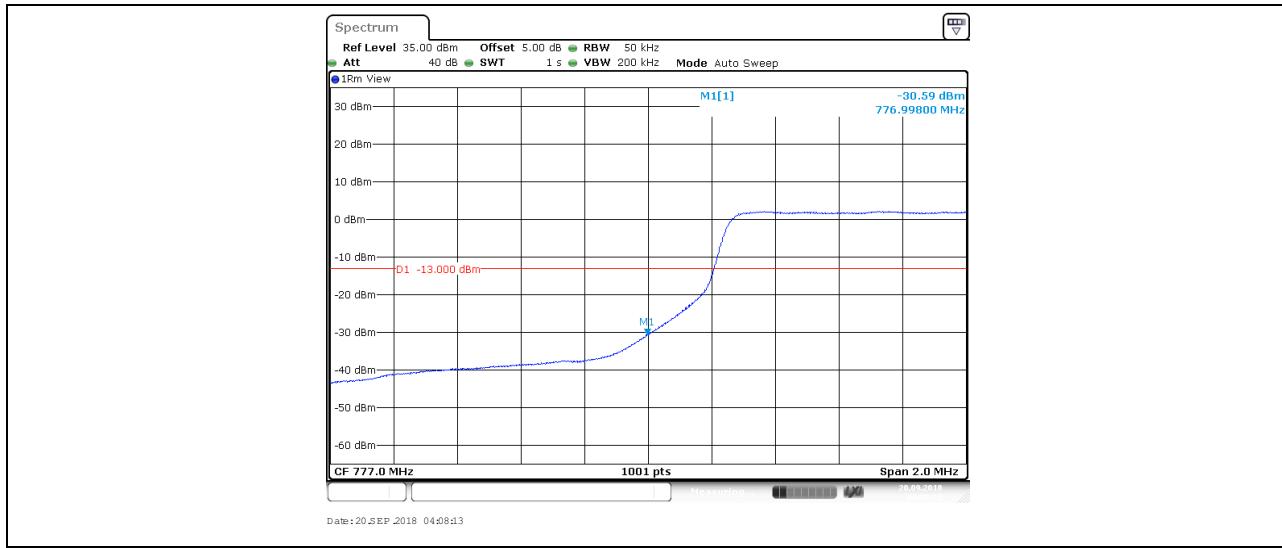
Band13_5MHz_16QAM_23205_1RB#0



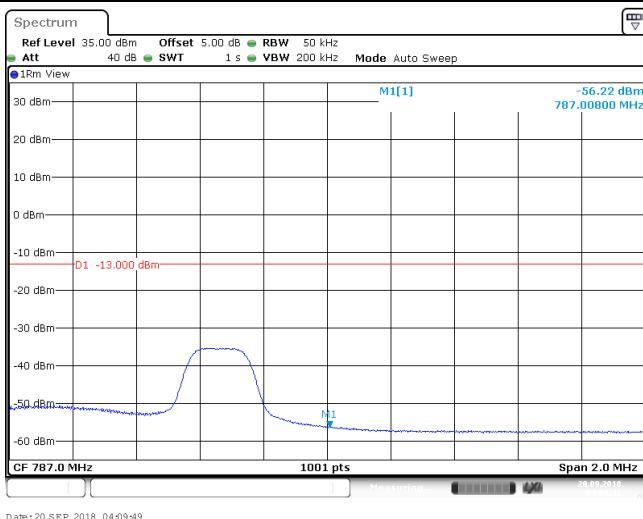
Band13_5MHz_16QAM_23205_1RB#24



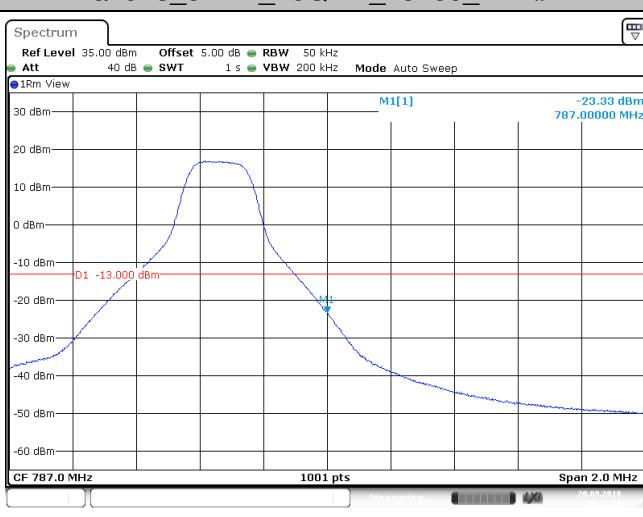
Band13_5MHz_16QAM_23205_25RB#0



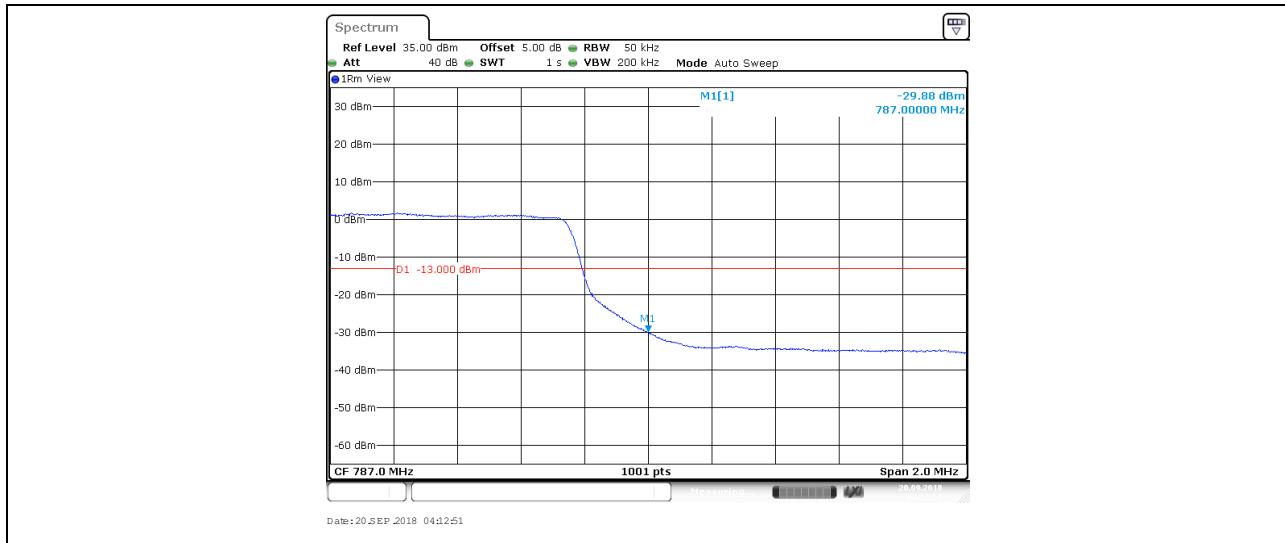
Band13_5MHz_16QAM_23255_1RB#0



Band13_5MHz_16QAM_23255_1RB#24



Band13_5MHz_16QAM_23255_25RB#0

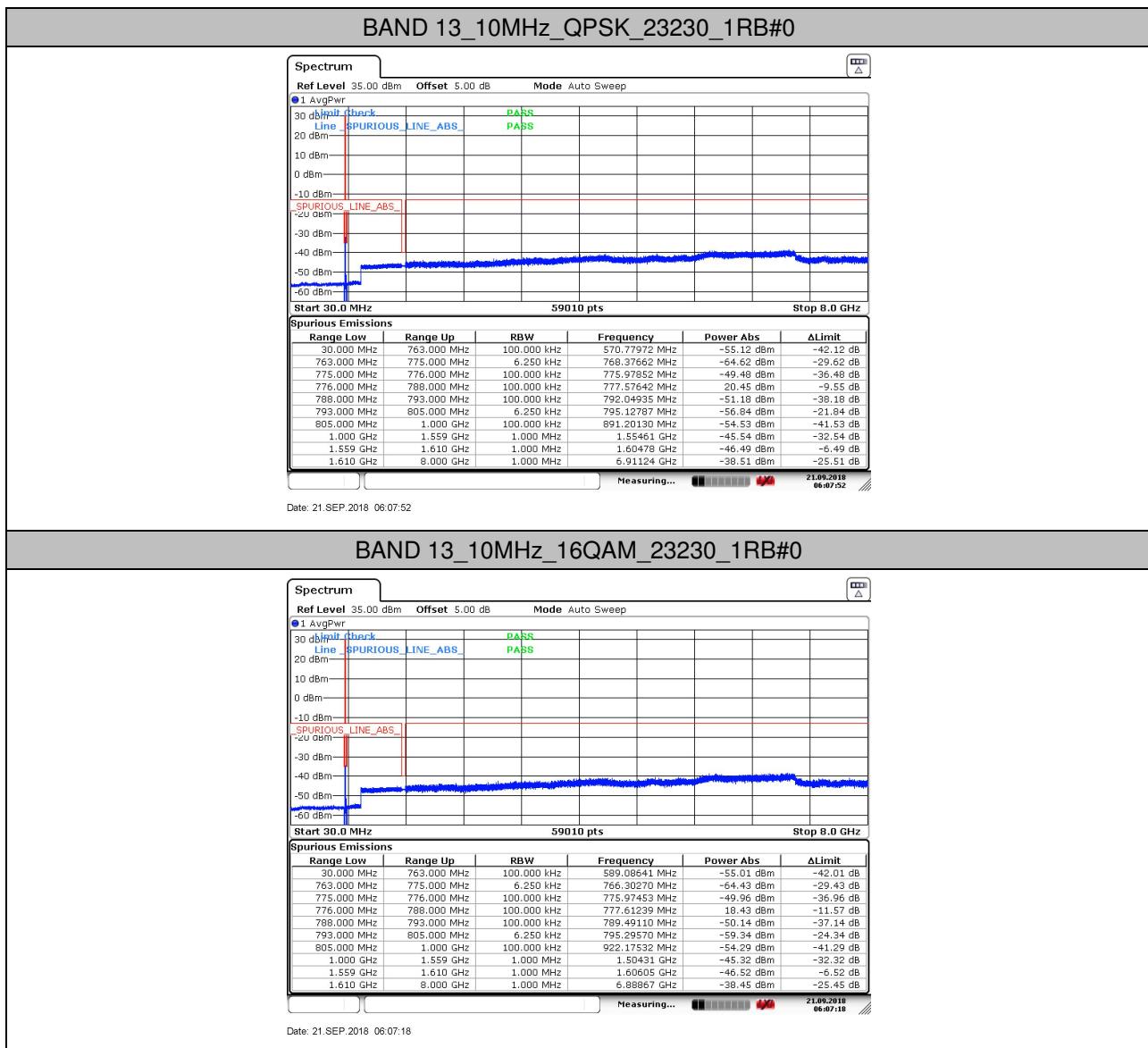


6. Spurious Emission at Antenna Terminal

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 $< \text{RBW}/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k * (\text{Span} / \text{RBW})$ " 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



7. Field Strength of Spurious Radiation

7.1. Test BAND = LTE BAND 13

7.1.1. Test Mode =LTE/TM1 10MHz

7.1.1.1. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
74.846667	-79.68	-13.00	66.68	Vertical
143.960000	-78.98	-13.00	65.98	Vertical
288.020000	-80.55	-13.00	67.55	Vertical
1584.500000	-66.21	-40.00	26.21	Vertical
3110.175000	-63.59	-13.00	50.59	Vertical
4665.300000	-65.43	-13.00	52.43	Vertical
62.620000	-77.14	-13.00	64.14	Horizontal
143.960000	-79.71	-13.00	66.71	Horizontal
288.020000	-80.25	-13.00	67.25	Horizontal
1584.000000	-66.03	-40.00	26.03	Horizontal
2397.500000	-59.01	-13.00	46.01	Horizontal
3110.175000	-62.25	-13.00	49.25	Horizontal

Remark:

- 1) 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.
- 2) We have tested all modulation and all Bandwidth , but only the worst case data presented in this report.

8. Frequency Stability

8.1. Frequency Vs Voltage

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	-1.50	-0.001918	±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	-1.30	-0.001662	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VL	NT	0.90	0.001151	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VN	NT	-0.80	-0.001023	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	VH	NT	-0.10	-0.000128	±2.5	PASS

8.2. Frequency Vs Temperature

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	0.20	0.000256	±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	0	-1.80	-0.002302	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	10	-0.70	-0.000895	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	20	-0.20	-0.000256	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	30	-1.30	-0.001662	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	40	-0.20	-0.000256	±2.5	PASS
Band13	10MHz	QPSK	23230	50RB#0	NV	50	-2.30	-0.002941	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	-30	-0.30	-0.000384	±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	0	-0.50	-0.000639	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	10	1.40	0.001790	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	20	0.70	0.000895	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	30	-0.90	-0.001151	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	40	-1.00	-0.001279	±2.5	PASS
Band13	10MHz	16QAM	23230	50RB#0	NV	50	-0.20	-0.000256	±2.5	PASS

The End