

Appendix B

E-UTRA BAND 12



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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
Band12	1.4MHz	QPSK	23017	1RB#0	23.23	17.08	34.77	PASS
Band12	1.4MHz	QPSK	23017	1RB#2	23.18	17.03	34.77	PASS
Band12	1.4MHz	QPSK	23017	1RB#5	23.17	17.02	34.77	PASS
Band12	1.4MHz	QPSK	23017	3RB#0	23.22	17.07	34.77	PASS
Band12	1.4MHz	QPSK	23017	3RB#1	23.25	17.10	34.77	PASS
Band12	1.4MHz	QPSK	23017	3RB#3	23.24	17.09	34.77	PASS
Band12	1.4MHz	QPSK	23017	6RB#0	22.40	16.25	34.77	PASS
Band12	1.4MHz	QPSK	23095	1RB#0	23.17	17.02	34.77	PASS
Band12	1.4MHz	QPSK	23095	1RB#2	23.07	16.92	34.77	PASS
Band12	1.4MHz	QPSK	23095	1RB#5	23.09	16.94	34.77	PASS
Band12	1.4MHz	QPSK	23095	3RB#0	23.13	16.98	34.77	PASS
Band12	1.4MHz	QPSK	23095	3RB#1	23.12	16.97	34.77	PASS
Band12	1.4MHz	QPSK	23095	3RB#3	23.15	17.00	34.77	PASS
Band12	1.4MHz	QPSK	23095	6RB#0	22.32	16.17	34.77	PASS
Band12	1.4MHz	QPSK	23173	1RB#0	23.10	16.95	34.77	PASS
Band12	1.4MHz	QPSK	23173	1RB#2	23.13	16.98	34.77	PASS
Band12	1.4MHz	QPSK	23173	1RB#5	23.14	16.99	34.77	PASS
Band12	1.4MHz	QPSK	23173	3RB#0	23.12	16.97	34.77	PASS
Band12	1.4MHz	QPSK	23173	3RB#1	23.11	16.96	34.77	PASS
Band12	1.4MHz	QPSK	23173	3RB#3	23.13	16.98	34.77	PASS
Band12	1.4MHz	QPSK	23173	6RB#0	22.30	16.15	34.77	PASS
Band12	3MHz	QPSK	23025	1RB#0	23.18	17.03	34.77	PASS
Band12	3MHz	QPSK	23025	1RB#8	23.16	17.01	34.77	PASS
Band12	3MHz	QPSK	23025	1RB#14	23.10	16.95	34.77	PASS
Band12	3MHz	QPSK	23025	8RB#0	22.43	16.28	34.77	PASS
Band12	3MHz	QPSK	23025	8RB#4	22.37	16.22	34.77	PASS
Band12	3MHz	QPSK	23025	8RB#7	22.39	16.24	34.77	PASS
Band12	3MHz	QPSK	23025	15RB#0	22.38	16.23	34.77	PASS
Band12	3MHz	QPSK	23095	1RB#0	23.13	16.98	34.77	PASS
Band12	3MHz	QPSK	23095	1RB#8	23.10	16.95	34.77	PASS
Band12	3MHz	QPSK	23095	1RB#14	22.93	16.78	34.77	PASS



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Band12	3MHz	QPSK	23095	8RB#0	22.29	16.14	34.77	PASS
Band12	3MHz	QPSK	23095	8RB#4	22.26	16.11	34.77	PASS
Band12	3MHz	QPSK	23095	8RB#7	22.23	16.08	34.77	PASS
Band12	3MHz	QPSK	23095	15RB#0	22.27	16.12	34.77	PASS
Band12	3MHz	QPSK	23165	1RB#0	22.97	16.82	34.77	PASS
Band12	3MHz	QPSK	23165	1RB#8	23.01	16.86	34.77	PASS
Band12	3MHz	QPSK	23165	1RB#14	23.01	16.86	34.77	PASS
Band12	3MHz	QPSK	23165	8RB#0	22.26	16.11	34.77	PASS
Band12	3MHz	QPSK	23165	8RB#4	22.22	16.07	34.77	PASS
Band12	3MHz	QPSK	23165	8RB#7	22.23	16.08	34.77	PASS
Band12	3MHz	QPSK	23165	15RB#0	22.23	16.08	34.77	PASS
Band12	5MHz	QPSK	23035	1RB#0	23.17	17.02	34.77	PASS
Band12	5MHz	QPSK	23035	1RB#12	23.14	16.99	34.77	PASS
Band12	5MHz	QPSK	23035	1RB#24	23.06	16.91	34.77	PASS
Band12	5MHz	QPSK	23035	12RB#0	22.37	16.22	34.77	PASS
Band12	5MHz	QPSK	23035	12RB#6	22.35	16.20	34.77	PASS
Band12	5MHz	QPSK	23035	12RB#13	22.37	16.22	34.77	PASS
Band12	5MHz	QPSK	23035	25RB#0	22.36	16.21	34.77	PASS
Band12	5MHz	QPSK	23095	1RB#0	23.16	17.01	34.77	PASS
Band12	5MHz	QPSK	23095	1RB#12	23.09	16.94	34.77	PASS
Band12	5MHz	QPSK	23095	1RB#24	22.89	16.74	34.77	PASS
Band12	5MHz	QPSK	23095	12RB#0	22.32	16.17	34.77	PASS
Band12	5MHz	QPSK	23095	12RB#6	22.26	16.11	34.77	PASS
Band12	5MHz	QPSK	23095	12RB#13	22.20	16.05	34.77	PASS
Band12	5MHz	QPSK	23095	25RB#0	22.25	16.10	34.77	PASS
Band12	5MHz	QPSK	23155	1RB#0	22.94	16.79	34.77	PASS
Band12	5MHz	QPSK	23155	1RB#12	22.97	16.82	34.77	PASS
Band12	5MHz	QPSK	23155	1RB#24	22.99	16.84	34.77	PASS
Band12	5MHz	QPSK	23155	12RB#0	22.22	16.07	34.77	PASS
Band12	5MHz	QPSK	23155	12RB#6	22.16	16.01	34.77	PASS
Band12	5MHz	QPSK	23155	12RB#13	22.19	16.04	34.77	PASS
Band12	5MHz	QPSK	23155	25RB#0	22.19	16.04	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,

$$ERP [dBm] = \text{Conducted Power [dBm]} + \text{Gain [dBd]}$$

$$EIRP [dBm] = \text{Conducted Power [dBm]} + \text{Gain [dBi]}$$



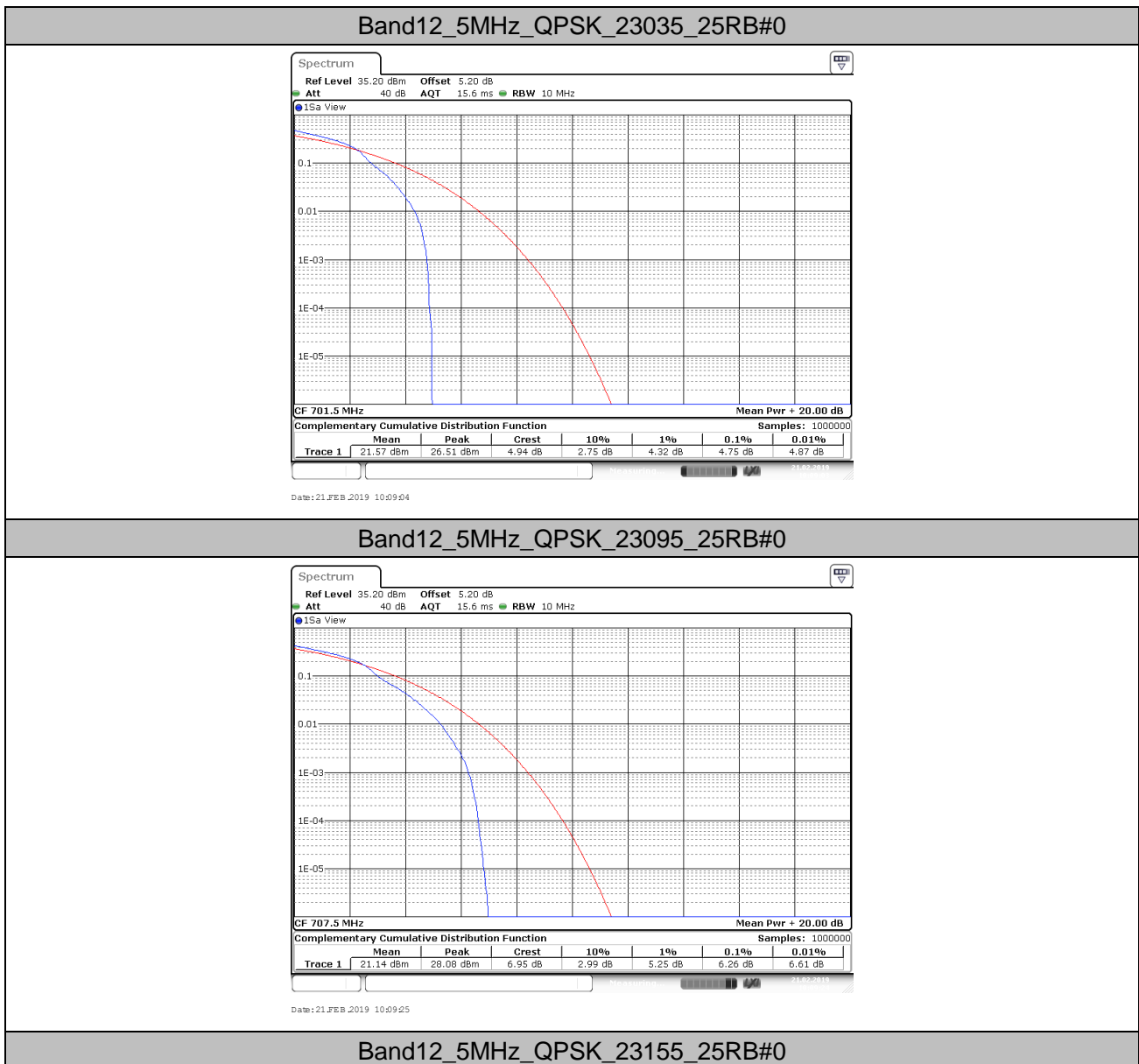
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2. Peak-to-Average Ratio(CCDF)

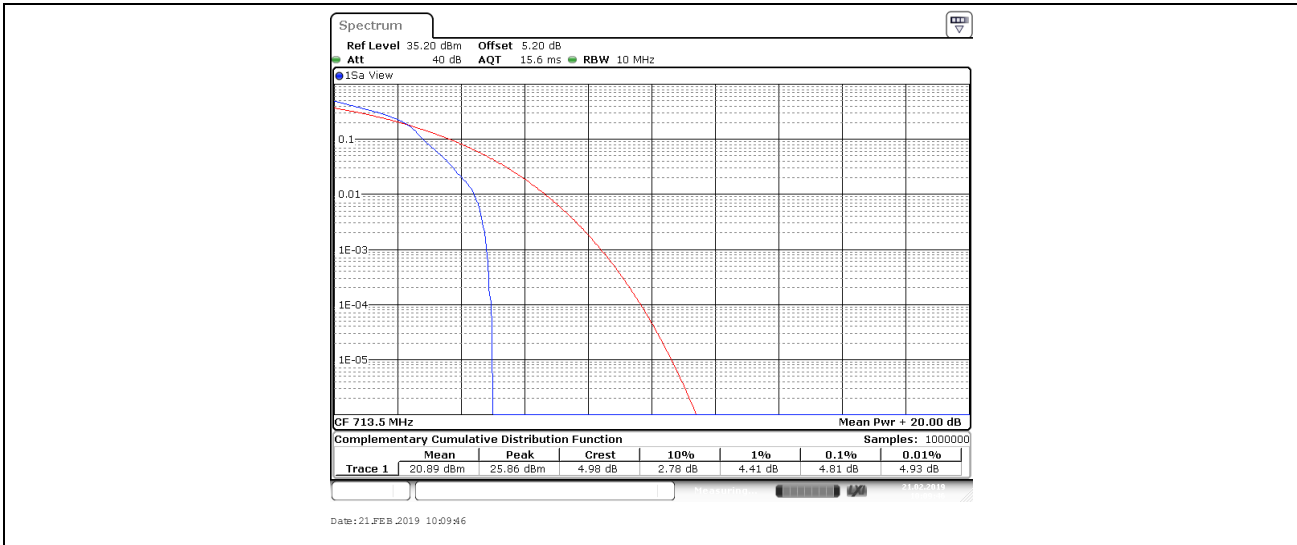
2.1. Test Result

BAND	Bandwidth	Modulation	Channel	RB Configuration	Result(dB)	Limit(dB)	Verdict
Band12	5MHz	QPSK	23035	25RB#0	4.75	13	PASS
Band12	5MHz	QPSK	23095	25RB#0	6.26	13	PASS
Band12	5MHz	QPSK	23155	25RB#0	4.81	13	PASS

2.2. Test Plots



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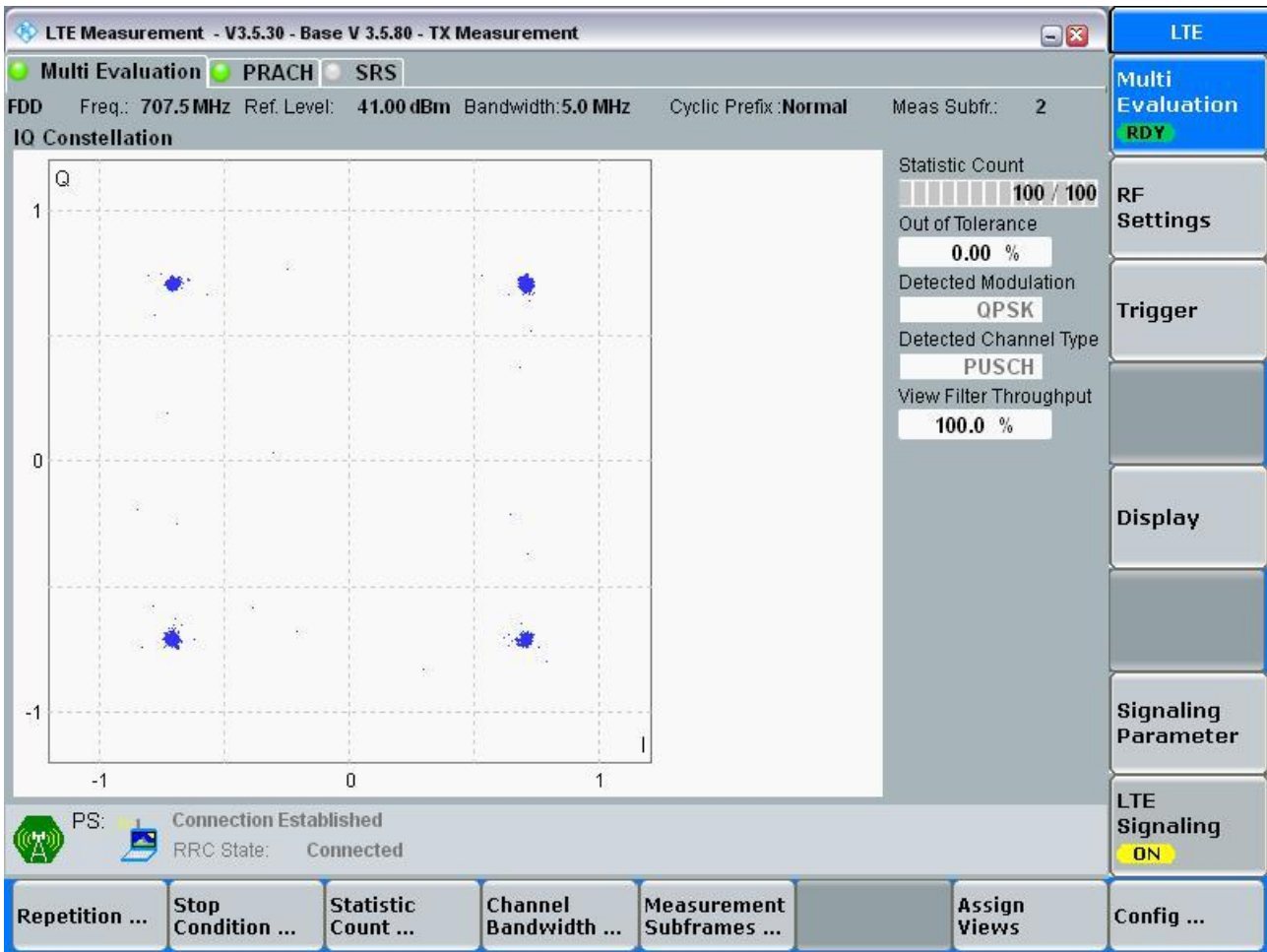
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3. Modulation Characteristics

3.1. Test BAND = LTE BAND12

3.1.1. Test Mode = LTE /TM1 5MHz

3.1.1.1. Test Channel = MCH



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4. 26dB Bandwidth and Occupied Bandwidth

4.1. Test Result

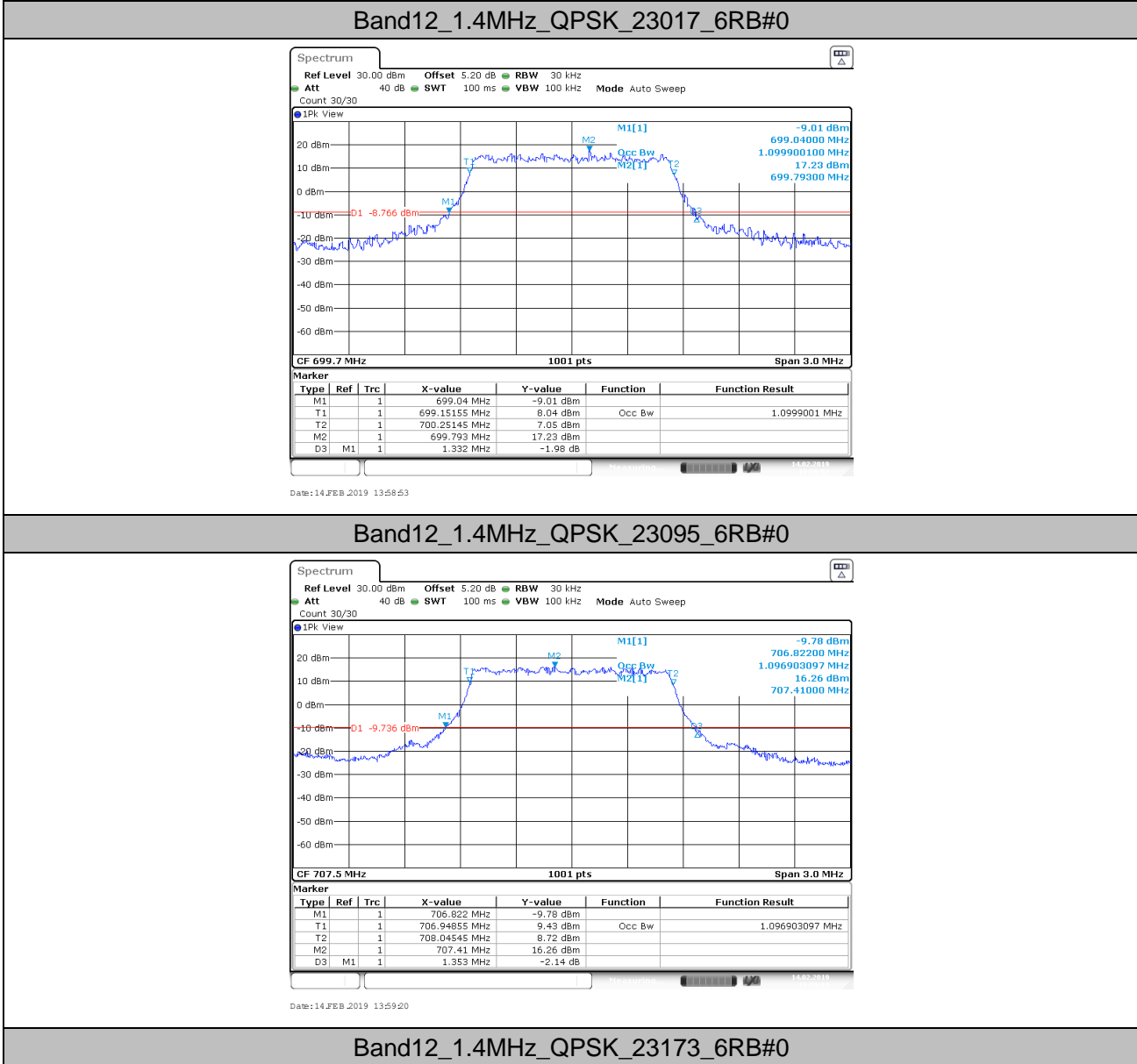
BAND	Bandwidth	Modulation	Channel	RB Configuration	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Verdict
Band12	1.4MHz	QPSK	23017	6RB#0	1.100	1.332	PASS
Band12	1.4MHz	QPSK	23095	6RB#0	1.097	1.353	PASS
Band12	1.4MHz	QPSK	23173	6RB#0	1.091	1.341	PASS
Band12	3MHz	QPSK	23025	15RB#0	2.697	3.006	PASS
Band12	3MHz	QPSK	23095	15RB#0	2.697	3.042	PASS
Band12	3MHz	QPSK	23165	15RB#0	2.691	3.012	PASS
Band12	5MHz	QPSK	23035	25RB#0	4.466	4.930	PASS
Band12	5MHz	QPSK	23095	25RB#0	4.476	4.990	PASS
Band12	5MHz	QPSK	23155	25RB#0	4.456	4.910	PASS



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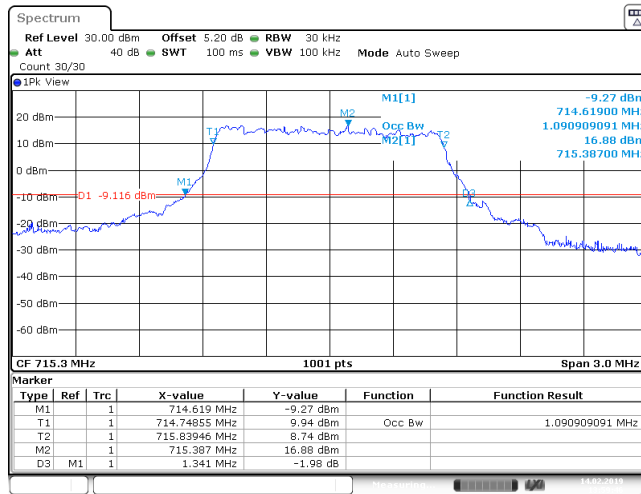
4.2. Test Plots



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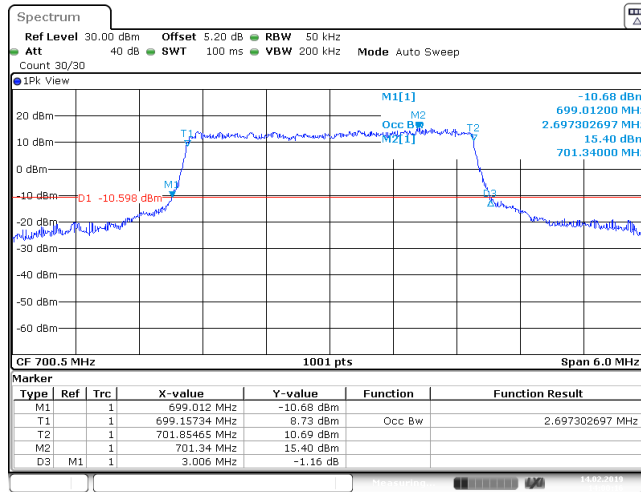
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Date: 14.FEB.2019 13:59:46

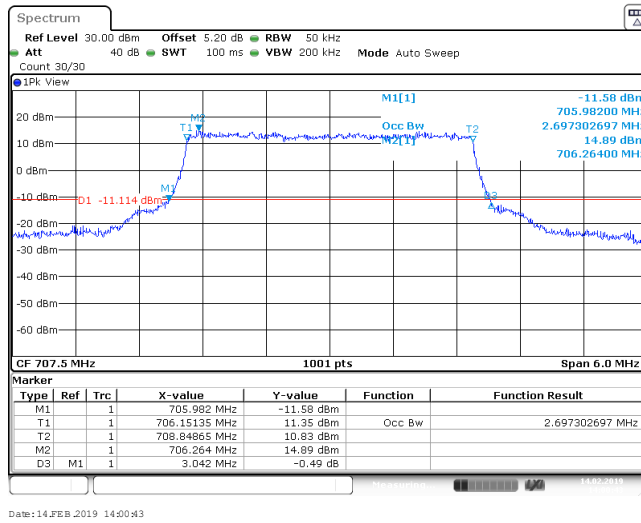
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Date: 14.FEB.2019 14:00:17

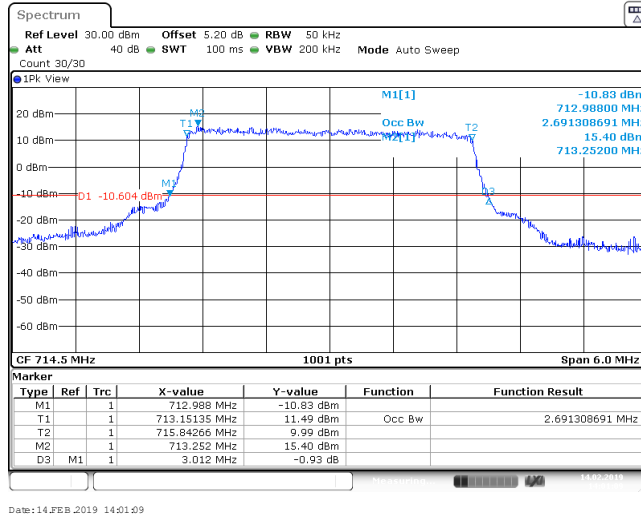
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Date: 14.FEB.2019 14:00:43

Band12_3MHz_QPSK_23165_15RB#

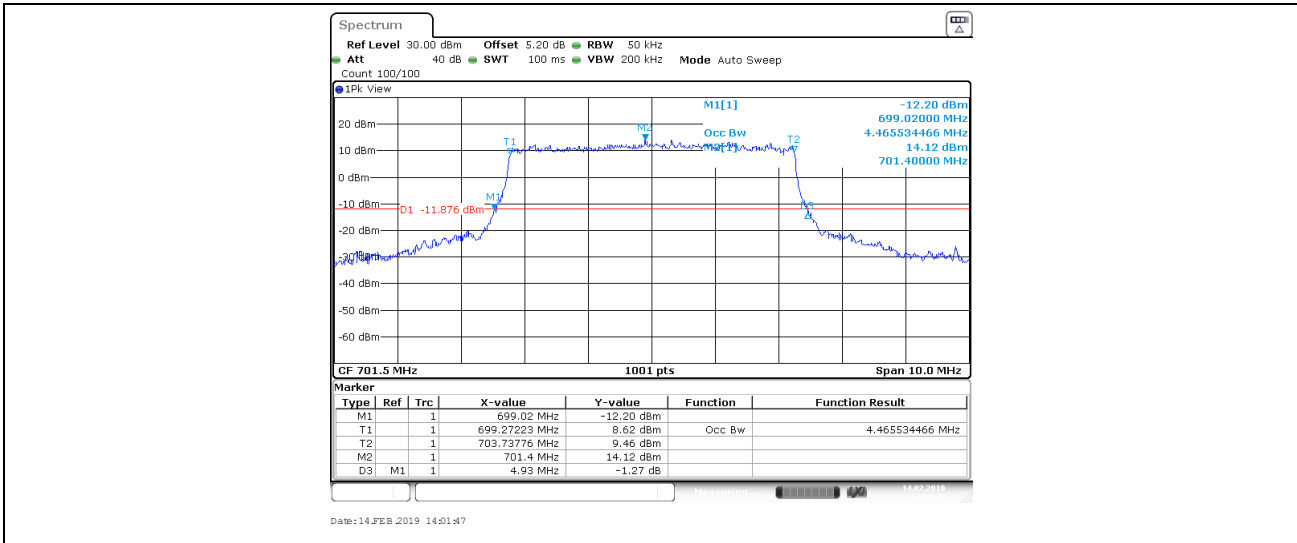


Date: 14.FEB.2019 14:01:09

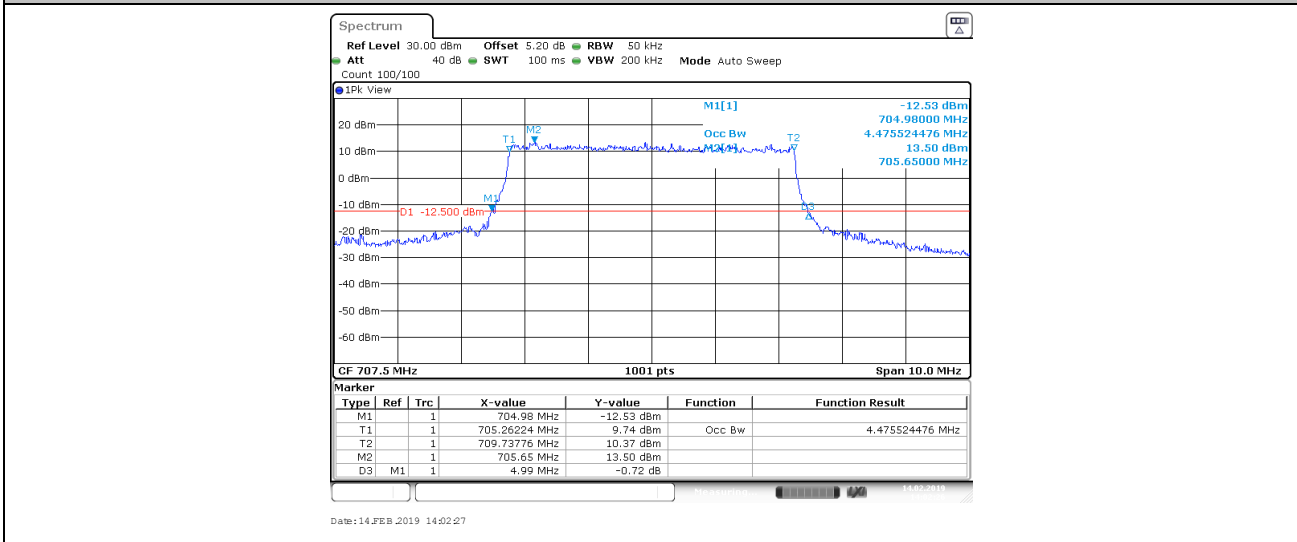
Band12_5MHz_QPSK_23035_25RB#



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Band12_5MHz_QPSK_23095_25RB#0

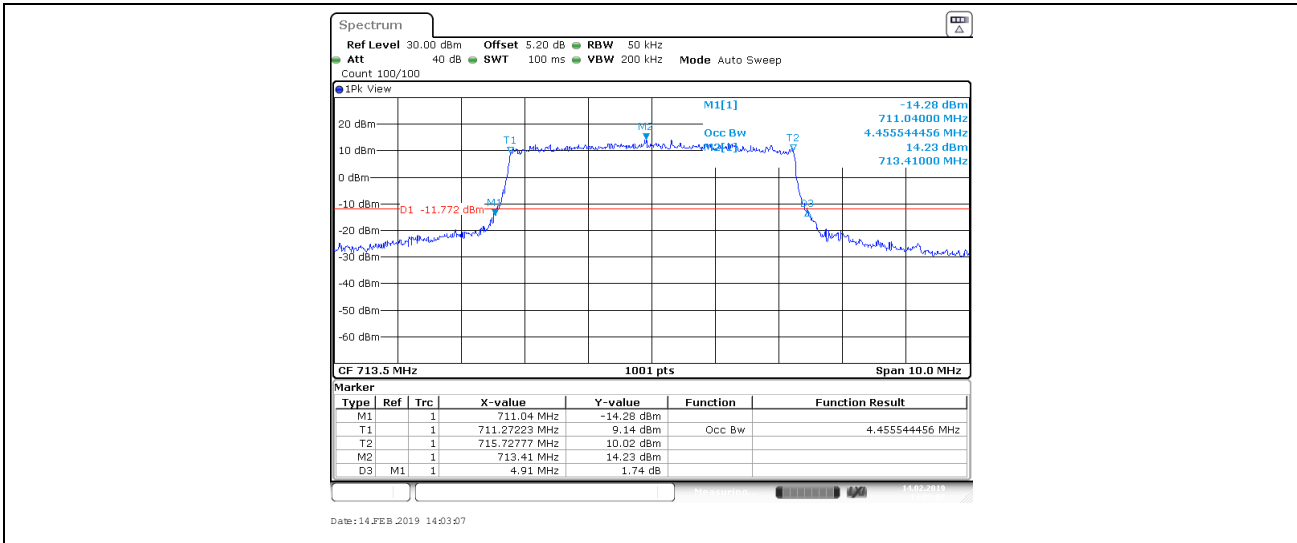


Band12_5MHz_QPSK_23155_25RB#0



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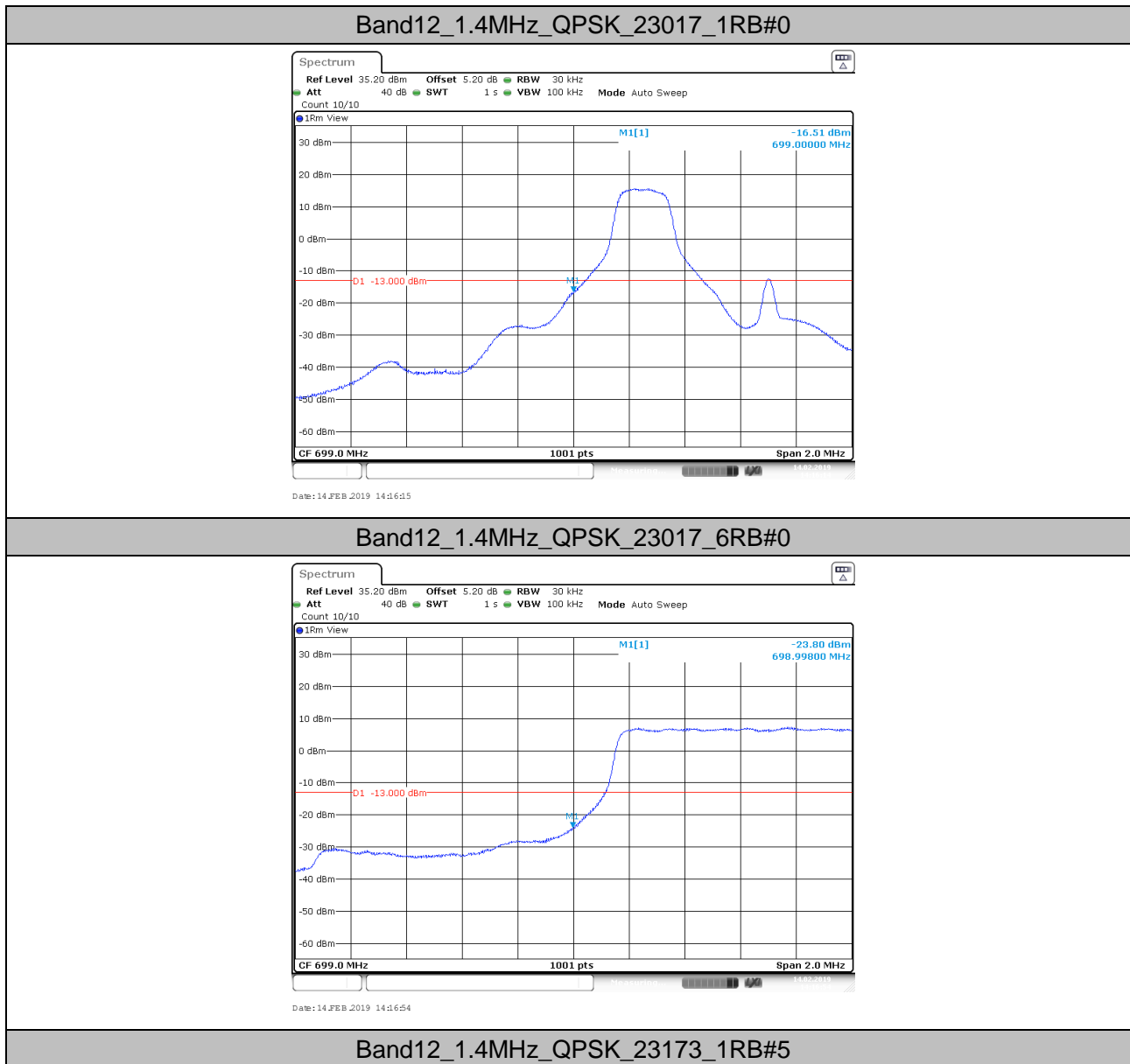


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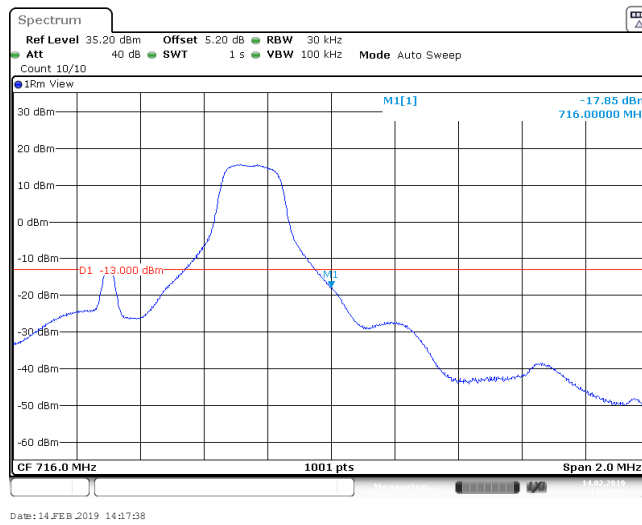
5. Band Edge Compliance

5.1. Test Plots

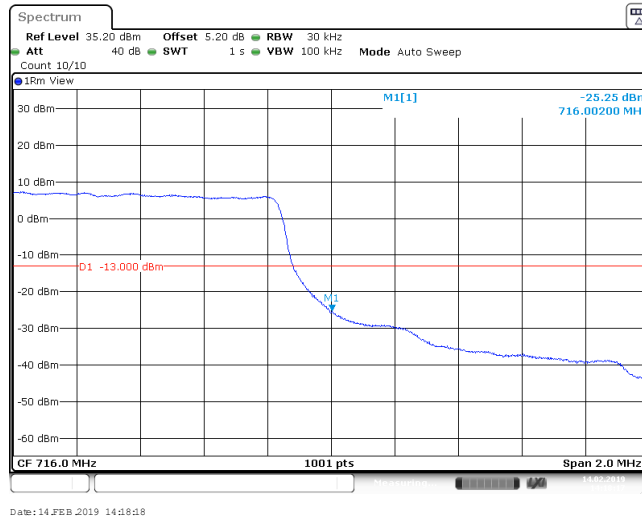


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Band12_1.4MHz_QPSK_23173_6RB#0

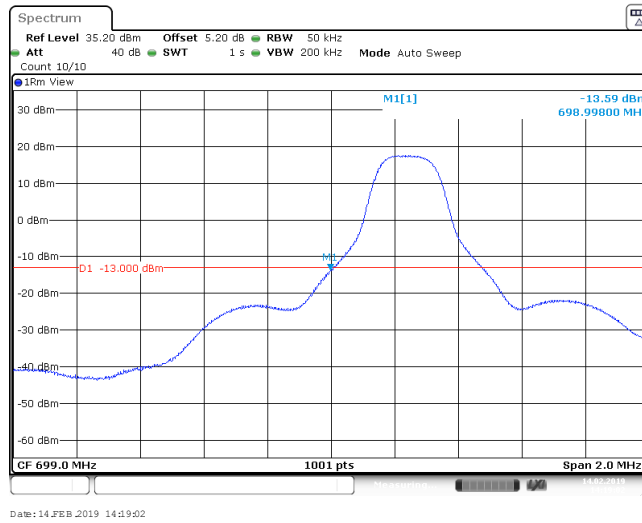


Band12_3MHz_QPSK_23025_1RB#0

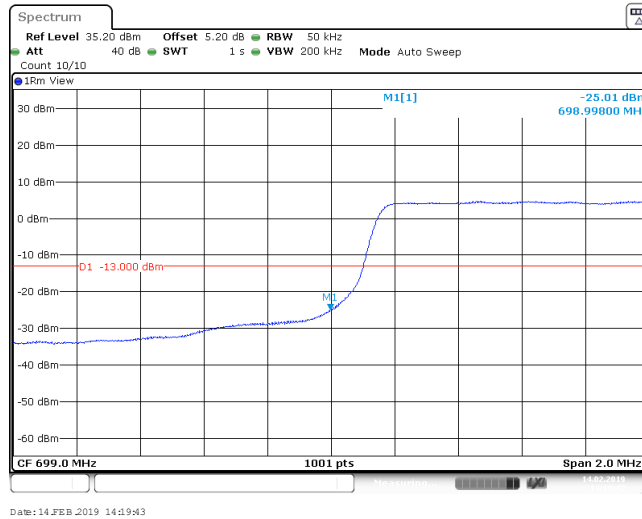


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Band12_3MHz_QPSK_23025_15RB#0

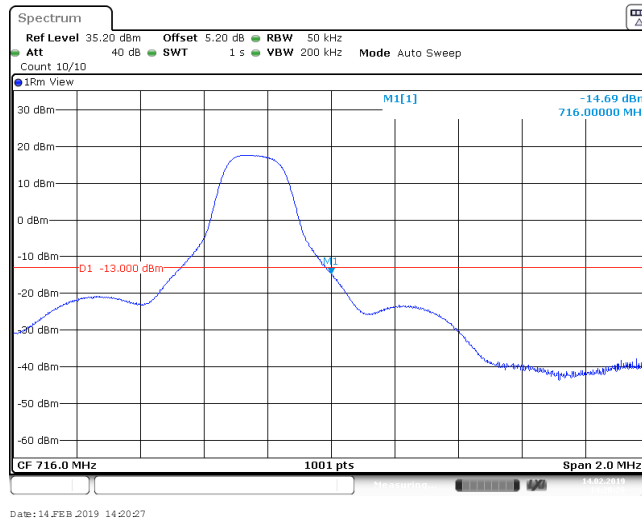


Band12_3MHz_QPSK_23165_1RB#14

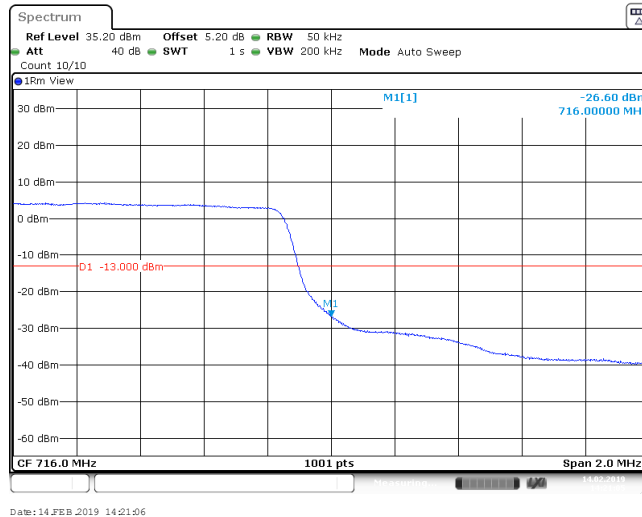


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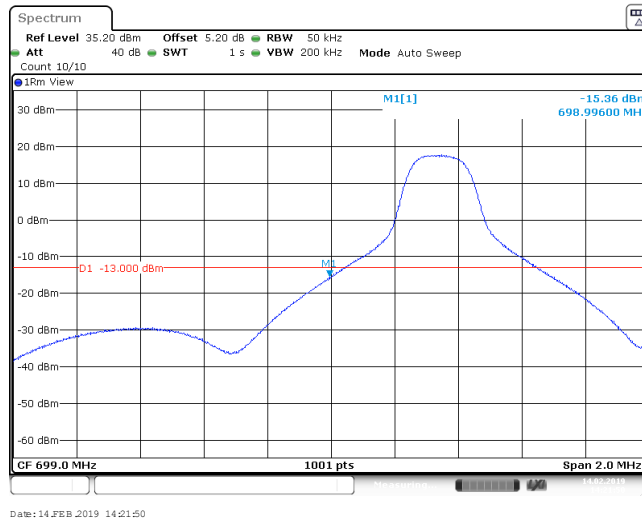
Band12_3MHz_QPSK_23165_15RB#0



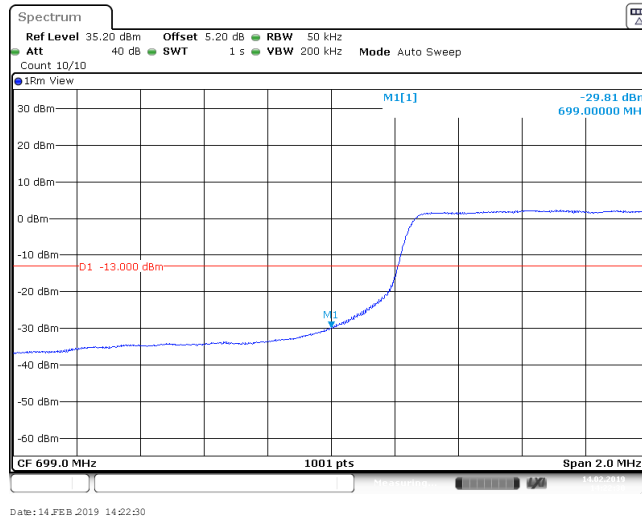
Band12_5MHz_QPSK_23035_1RB#0



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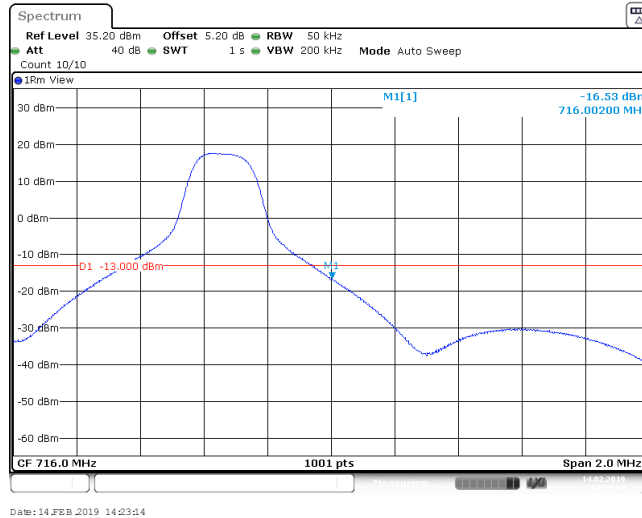
Band12_5MHz_QPSK_23035_25RB#0



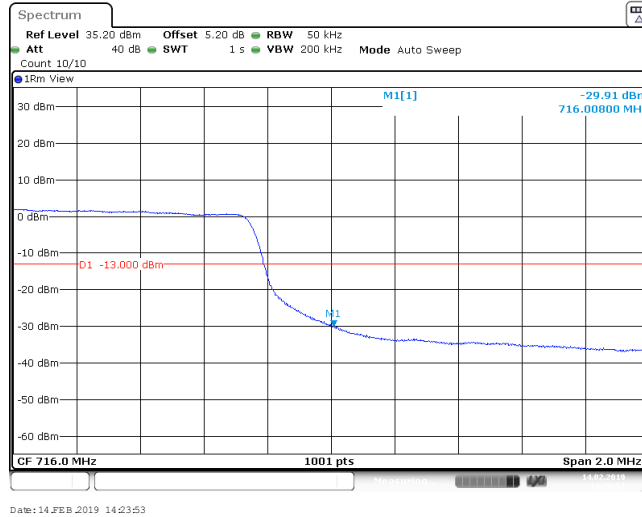
Band12_5MHz_QPSK_23155_1RB#24



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Band12_5MHz_QPSK_23155_25RB#0



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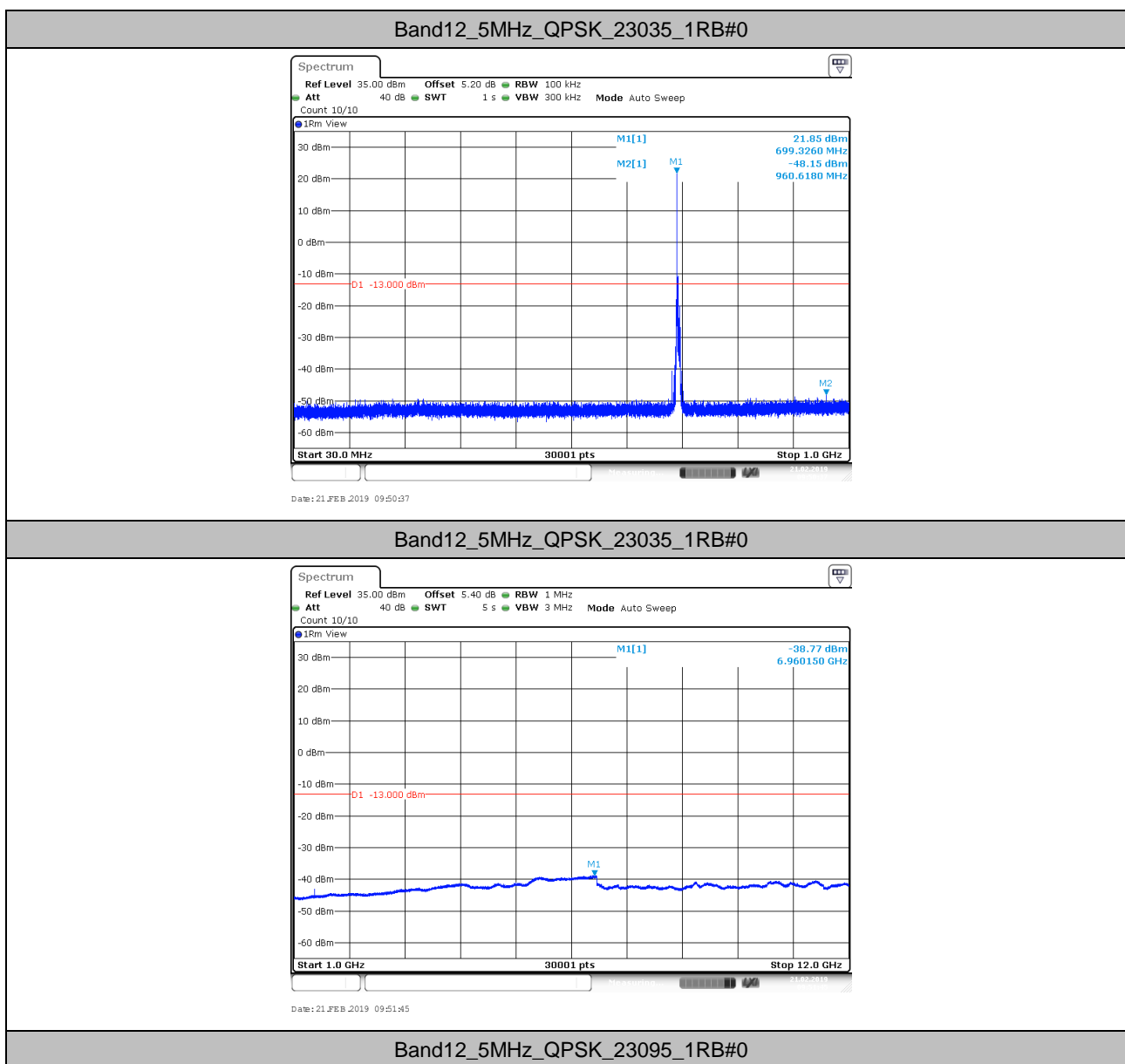
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6. Spurious Emission at Antenna Terminal

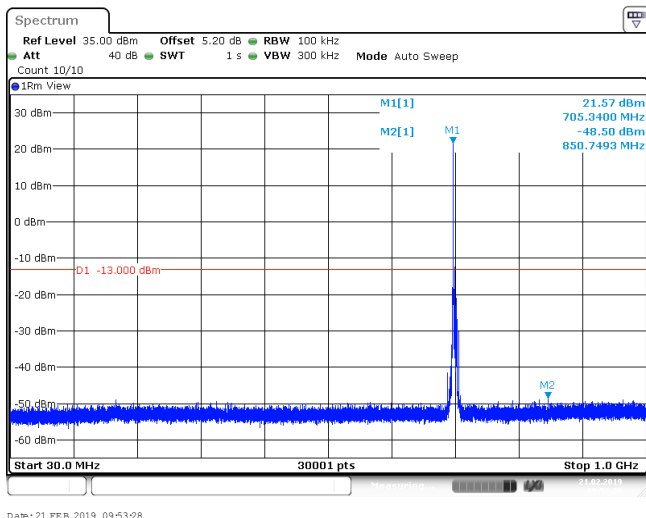
Remark1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of $< RBW/2$ so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = $k * (Span / RBW)$ " 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.

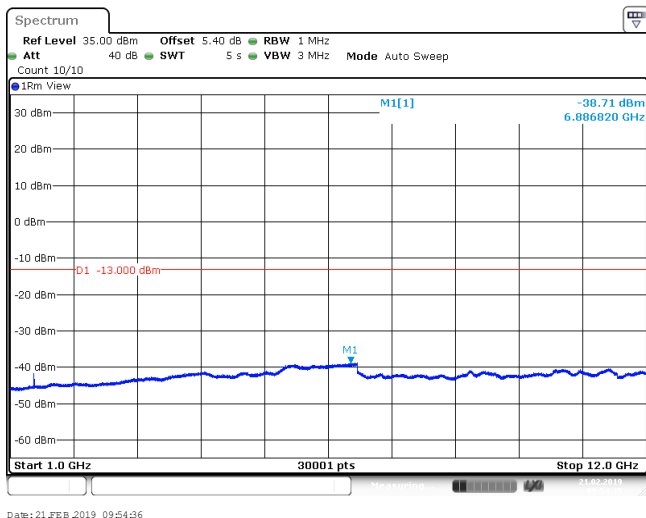
6.1. Test Plots



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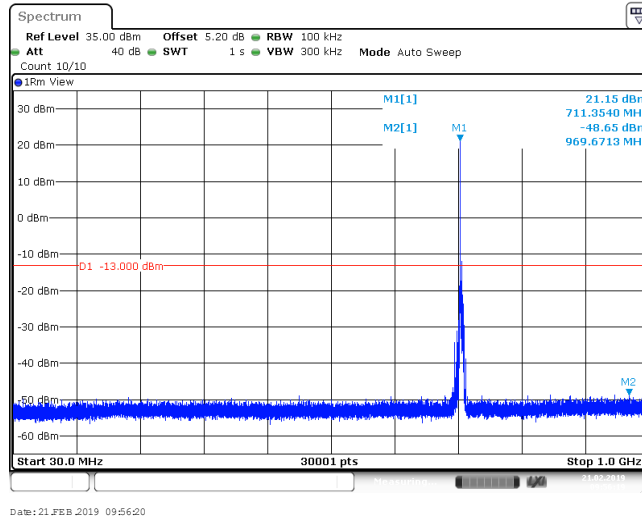
Band12_5MHz_QPSK_23095_1RB#0



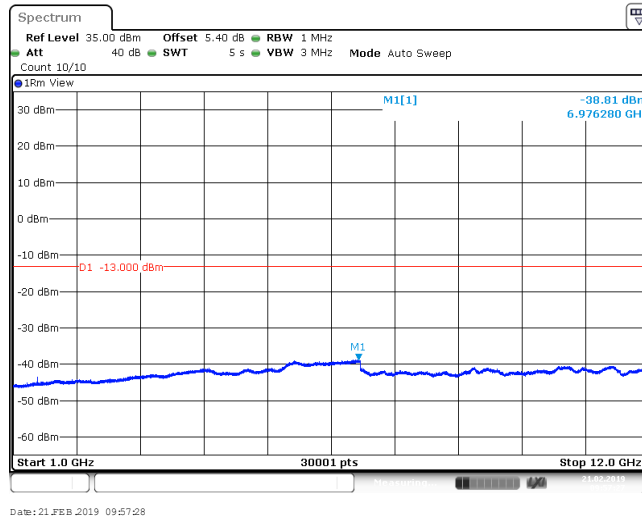
Band12_5MHz_QPSK_23155_1RB#0



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Band12_5MHz_QPSK_23155_1RB#0



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7. Field Strength of Spurious Radiation

7.1. Test BAND = LTE BAND 12

7.1.1. Test Mode = LTE/TM1 5MHz

7.1.1.1. Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
73.120000	-80.88	-13.00	67.88	Vertical
113.300000	-79.10	-13.00	66.10	Vertical
267.020000	-74.86	-13.00	61.86	Vertical
1399.000000	-41.06	-13.00	28.06	Vertical
2099.000000	-54.64	-13.00	41.64	Vertical
4134.412500	-61.45	-13.00	48.45	Vertical
62.620000	-77.48	-13.00	64.48	Horizontal
267.020000	-75.84	-13.00	62.84	Horizontal
1399.000000	-37.96	-13.00	24.96	Horizontal
2099.000000	-61.01	-13.00	48.01	Horizontal
3470.925000	-66.01	-13.00	53.01	Horizontal
4134.412500	-62.65	-13.00	49.65	Horizontal

7.1.1.2. Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
73.166667	-80.23	-13.00	67.23	Vertical
112.413333	-78.42	-13.00	65.42	Vertical
267.020000	-74.30	-13.00	61.30	Vertical
1406.000000	-40.62	-13.00	27.62	Vertical
2109.500000	-57.15	-13.00	44.15	Vertical
4134.412500	-61.35	-13.00	48.35	Vertical
62.293333	-77.02	-13.00	64.02	Horizontal
242.753333	-76.62	-13.00	63.62	Horizontal



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1406.000000	-37.15	-13.00	24.15	Horizontal
2109.500000	-58.93	-13.00	45.93	Horizontal
3470.925000	-65.87	-13.00	52.87	Horizontal
4134.412500	-62.81	-13.00	49.81	Horizontal

7.1.1.3. Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Margin (dB)	Polarization
72.000000	-80.49	-13.00	67.49	Vertical
112.226667	-78.45	-13.00	65.45	Vertical
267.020000	-74.65	-13.00	61.65	Vertical
1413.000000	-40.16	-13.00	27.16	Vertical
2120.000000	-55.43	-13.00	42.43	Vertical
4134.412500	-61.36	-13.00	48.36	Vertical
63.320000	-77.28	-13.00	64.28	Horizontal
267.020000	-76.06	-13.00	63.06	Horizontal
1413.000000	-35.61	-13.00	22.61	Horizontal
2120.000000	-58.29	-13.00	45.29	Horizontal
3470.925000	-65.85	-13.00	52.85	Horizontal
4134.412500	-62.54	-13.00	49.54	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.



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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
Band12	5MHz	QPSK	23035	25RB#0	VL	NT	12.56	0.017904	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	VN	NT	13.36	0.019045	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	VH	NT	11.44	0.016308	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	VL	NT	7.50	0.010601	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	VN	NT	6.15	0.008693	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	VH	NT	7.35	0.010389	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	VL	NT	22.46	0.031479	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	VN	NT	21.94	0.030750	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	VH	NT	20.91	0.029306	±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
Band12	5MHz	QPSK	23035	25RB#0	NV	-30	12.10	0.017249	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	-20	12.93	0.018432	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	0	13.02	0.018560	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	10	13.38	0.019073	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	20	12.60	0.017962	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	30	12.59	0.017947	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	40	12.42	0.017705	±2.5	PASS
Band12	5MHz	QPSK	23035	25RB#0	NV	50	12.89	0.018375	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	-30	6.38	0.009018	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	-20	5.64	0.007972	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	0	9.44	0.013343	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	10	-6.09	-0.008608	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	20	8.30	0.011731	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	30	9.26	0.013088	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	40	6.54	0.009244	±2.5	PASS
Band12	5MHz	QPSK	23095	25RB#0	NV	50	7.05	0.009965	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	-30	20.70	0.029012	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	-20	21.39	0.029979	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	0	23.50	0.032936	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	10	20.76	0.029096	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	20	22.23	0.031156	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	30	20.93	0.029334	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	40	22.27	0.031212	±2.5	PASS
Band12	5MHz	QPSK	23155	25RB#0	NV	50	21.59	0.030259	±2.5	PASS



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