



Appendix B

LTE-CatM1 Band 26 (824-849)

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CONTENT

	Page
1 EFFECTIVE RADIATED POWER OUTPUT DATA.....	3
2 PEAK-TO-AVERAGE RATIO.....	5
2.1 TEST RESULTS.....	5
2.2 TEST PLOTS.....	5
3 MODULATION CHARACTERISTICS	9
3.1 FOR LTE-CATM1.....	9
3.1.1 <i>Test Band = LTE-CatM1 Band 26.....</i>	9
4 26DB BANDWIDTH AND OCCUPIED BANDWIDTH.....	11
4.1 TEST RESULTS	11
4.2 TEST PLOTS.....	11
5 BAND EDGES COMPLIANCE.....	18
5.1 TEST PLOTS.....	18
6 SPURIOUS EMISSION AT ANTENNA TERMINAL	23
6.1 TEST PLOTS.....	23
7 FIELD STRENGTH OF SPURIOUS RADIATION.....	25
7.1 FOR LTE-CATM1.....	25
7.1.1 <i>Test Band = LTE-CatM1 Band 26.....</i>	25
8 FREQUENCY STABILITY.....	27
8.1 FREQUENCY ERROR VS. VOLTAGE	27
8.2 FREQUENCY ERROR VS. TEMPERATURE.....	28



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1 Effective Radiated Power Output Data

Effective Radiated Power of Transmitter (ERP) for LTE-CatM1 Band 26

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 26	QPSK	1.4M	LCH	1RB#0	20.18	17.03	38.45	PASS
CatM1 Band 26	QPSK	1.4M	LCH	5RB#0	19.34	16.19	38.45	PASS
CatM1 Band 26	QPSK	1.4M	LCH	6RB#0	18.25	15.10	38.45	PASS
CatM1 Band 26	QPSK	1.4M	MCH	1RB#0	20.53	17.38	38.45	PASS
CatM1 Band 26	QPSK	1.4M	MCH	5RB#0	19.54	16.39	38.45	PASS
CatM1 Band 26	QPSK	1.4M	MCH	6RB#0	18.43	15.28	38.45	PASS
CatM1 Band 26	QPSK	1.4M	HCH	1RB#0	20.46	17.31	38.45	PASS
CatM1 Band 26	QPSK	1.4M	HCH	5RB#0	19.44	16.29	38.45	PASS
CatM1 Band 26	QPSK	1.4M	HCH	6RB#0	18.37	15.22	38.45	PASS
CatM1 Band 26	16QAM	1.4M	LCH	1RB#0	19.23	16.08	38.45	PASS
CatM1 Band 26	16QAM	1.4M	LCH	5RB#0	18.13	14.98	38.45	PASS
CatM1 Band 26	16QAM	1.4M	MCH	1RB#0	19.60	16.45	38.45	PASS
CatM1 Band 26	16QAM	1.4M	MCH	5RB#0	18.58	15.43	38.45	PASS
CatM1 Band 26	16QAM	1.4M	HCH	1RB#0	19.55	16.40	38.45	PASS
CatM1 Band 26	16QAM	1.4M	HCH	5RB#0	18.39	15.24	38.45	PASS
CatM1 Band 26	QPSK	3M	LCH	1RB#0	20.55	17.40	38.45	PASS
CatM1 Band 26	QPSK	3M	LCH	5RB#0	19.34	16.19	38.45	PASS
CatM1 Band 26	QPSK	3M	LCH	6RB#0	18.37	15.22	38.45	PASS
CatM1 Band 26	QPSK	3M	MCH	1RB#0	20.77	17.62	38.45	PASS
CatM1 Band 26	QPSK	3M	MCH	5RB#0	19.57	16.42	38.45	PASS
CatM1 Band 26	QPSK	3M	MCH	6RB#0	18.45	15.30	38.45	PASS
CatM1 Band 26	QPSK	3M	HCH	1RB#0	20.81	17.66	38.45	PASS
CatM1 Band 26	QPSK	3M	HCH	5RB#0	19.61	16.46	38.45	PASS
CatM1 Band 26	QPSK	3M	HCH	6RB#0	18.41	15.26	38.45	PASS
CatM1 Band 26	16QAM	3M	LCH	1RB#0	19.34	16.19	38.45	PASS
CatM1 Band 26	16QAM	3M	LCH	5RB#0	18.37	15.22	38.45	PASS
CatM1 Band 26	16QAM	3M	MCH	1RB#0	19.50	16.35	38.45	PASS
CatM1 Band 26	16QAM	3M	MCH	5RB#0	18.53	15.38	38.45	PASS
CatM1 Band 26	16QAM	3M	HCH	1RB#0	19.54	16.39	38.45	PASS
CatM1 Band 26	16QAM	3M	HCH	5RB#0	18.60	15.45	38.45	PASS
CatM1 Band 26	QPSK	5M	LCH	1RB#0	20.67	17.52	38.45	PASS
CatM1 Band 26	QPSK	5M	LCH	5RB#0	19.44	16.29	38.45	PASS
CatM1 Band 26	QPSK	5M	LCH	6RB#0	19.37	16.22	38.45	PASS
CatM1 Band 26	QPSK	5M	MCH	1RB#0	20.79	17.64	38.45	PASS
CatM1 Band 26	QPSK	5M	MCH	5RB#0	19.47	16.32	38.45	PASS
CatM1 Band 26	QPSK	5M	MCH	6RB#0	19.54	16.39	38.45	PASS
CatM1 Band 26	QPSK	5M	HCH	1RB#0	20.93	17.78	38.45	PASS
CatM1 Band 26	QPSK	5M	HCH	5RB#0	19.35	16.20	38.45	PASS
CatM1 Band 26	QPSK	5M	HCH	6RB#0	19.35	16.20	38.45	PASS

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CatM1 Band 26	16QAM	5M	LCH	1RB#0	20.11	16.96	38.45	PASS
CatM1 Band 26	16QAM	5M	LCH	5RB#0	19.44	16.29	38.45	PASS
CatM1 Band 26	16QAM	5M	MCH	1RB#0	20.19	17.04	38.45	PASS
CatM1 Band 26	16QAM	5M	MCH	5RB#0	19.49	16.34	38.45	PASS
CatM1 Band 26	16QAM	5M	HCH	1RB#0	20.35	17.20	38.45	PASS
CatM1 Band 26	16QAM	5M	HCH	5RB#0	19.35	16.20	38.45	PASS
CatM1 Band 26	QPSK	10M	LCH	1RB#0	20.64	17.49	38.45	PASS
CatM1 Band 26	QPSK	10M	LCH	5RB#0	20.32	17.17	38.45	PASS
CatM1 Band 26	QPSK	10M	LCH	6RB#0	19.24	16.09	38.45	PASS
CatM1 Band 26	QPSK	10M	MCH	1RB#0	20.84	17.69	38.45	PASS
CatM1 Band 26	QPSK	10M	MCH	5RB#0	20.54	17.39	38.45	PASS
CatM1 Band 26	QPSK	10M	MCH	6RB#0	19.47	16.32	38.45	PASS
CatM1 Band 26	QPSK	10M	HCH	1RB#0	20.77	17.62	38.45	PASS
CatM1 Band 26	QPSK	10M	HCH	5RB#0	20.43	17.28	38.45	PASS
CatM1 Band 26	QPSK	10M	HCH	6RB#0	19.44	16.29	38.45	PASS
CatM1 Band 26	16QAM	10M	LCH	1RB#0	20.05	16.90	38.45	PASS
CatM1 Band 26	16QAM	10M	LCH	5RB#0	20.34	17.19	38.45	PASS
CatM1 Band 26	16QAM	10M	MCH	1RB#0	20.25	17.10	38.45	PASS
CatM1 Band 26	16QAM	10M	MCH	5RB#0	20.47	17.32	38.45	PASS
CatM1 Band 26	16QAM	10M	HCH	1RB#0	20.14	16.99	38.45	PASS
CatM1 Band 26	16QAM	10M	HCH	5RB#0	20.44	17.29	38.45	PASS

Note:

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

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

$$\text{ERP [dBm]} = \text{Conducted Power [dBm]} + \text{Gain [dBi]} - 2.15$$

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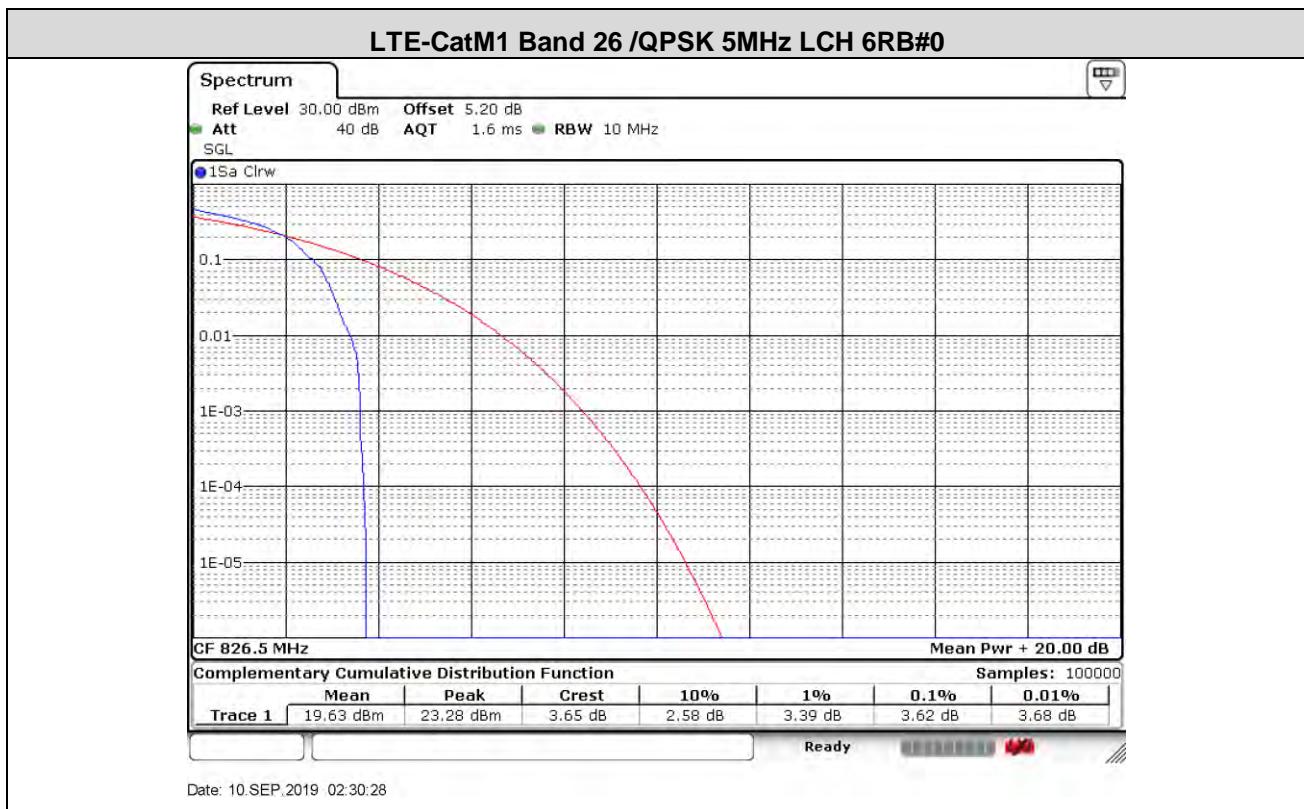
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2 Peak-to-Average Ratio

2.1 Test Results

Test Band	Test Mode	RB Config	Test Channel	Measured [dB]	Limit [dB]	Verdict
CatM1 Band 26	QPSK/5M	6RB#0	LCH	3.62	13	PASS
CatM1 Band 26	QPSK/5M	6RB#0	MCH	6.12	13	PASS
CatM1 Band 26	QPSK/5M	6RB#0	HCH	5.07	13	PASS
CatM1 Band 26	16QAM/5M	5RB#0	LCH	5.33	13	PASS
CatM1 Band 26	16QAM/5M	5RB#0	MCH	5.71	13	PASS
CatM1 Band 26	16QAM/5M	5RB#0	HCH	5.59	13	PASS

2.2 Test Plots

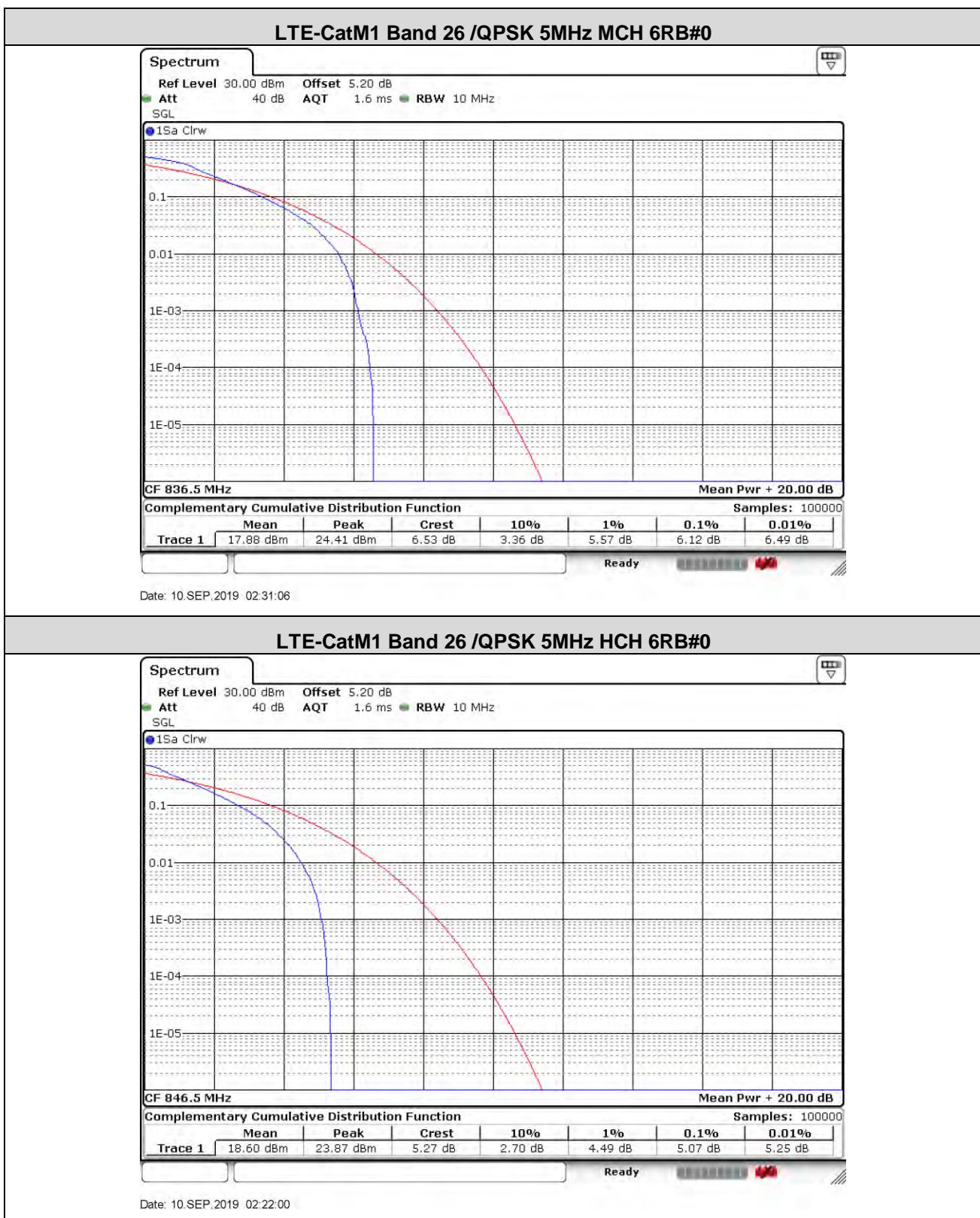


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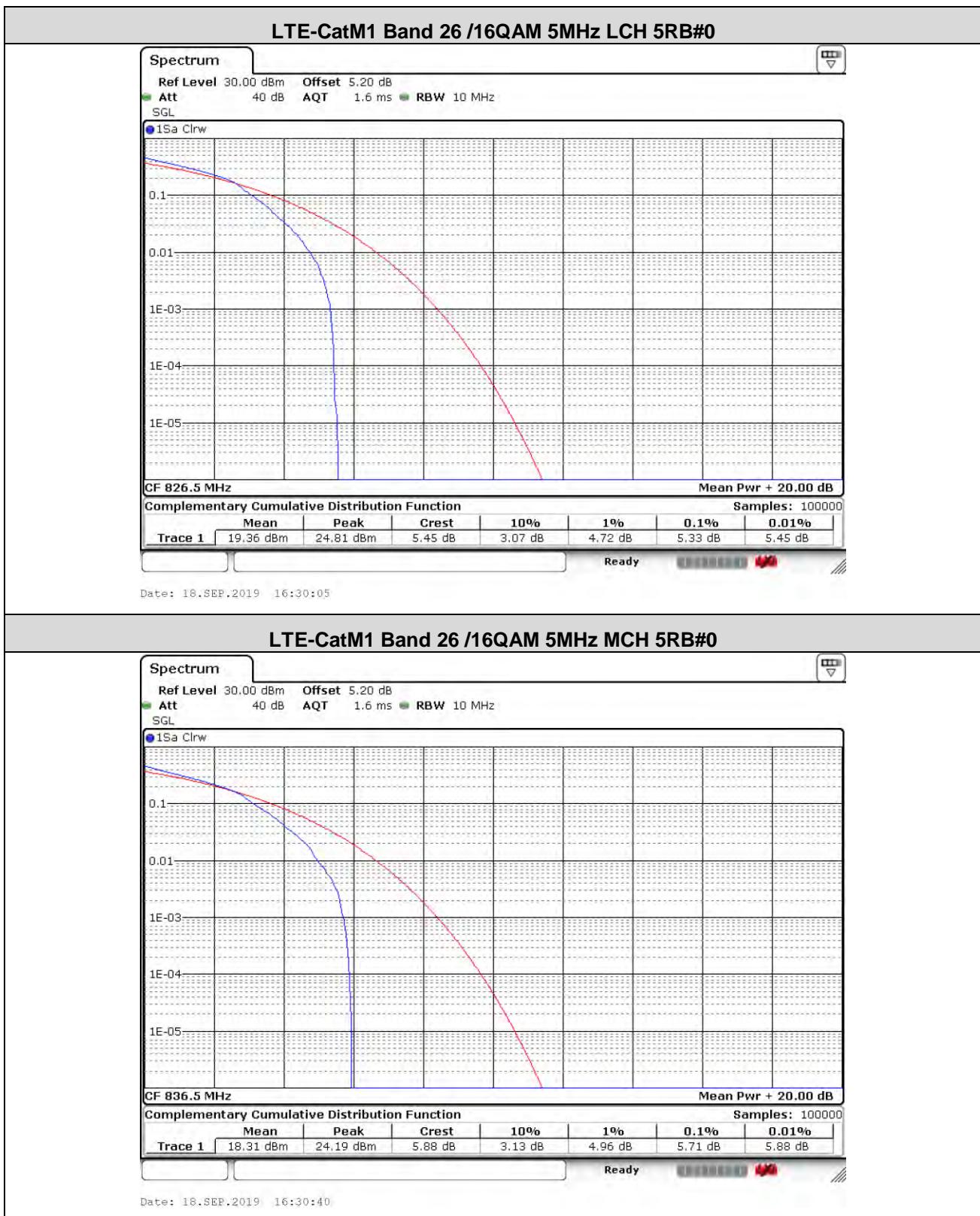
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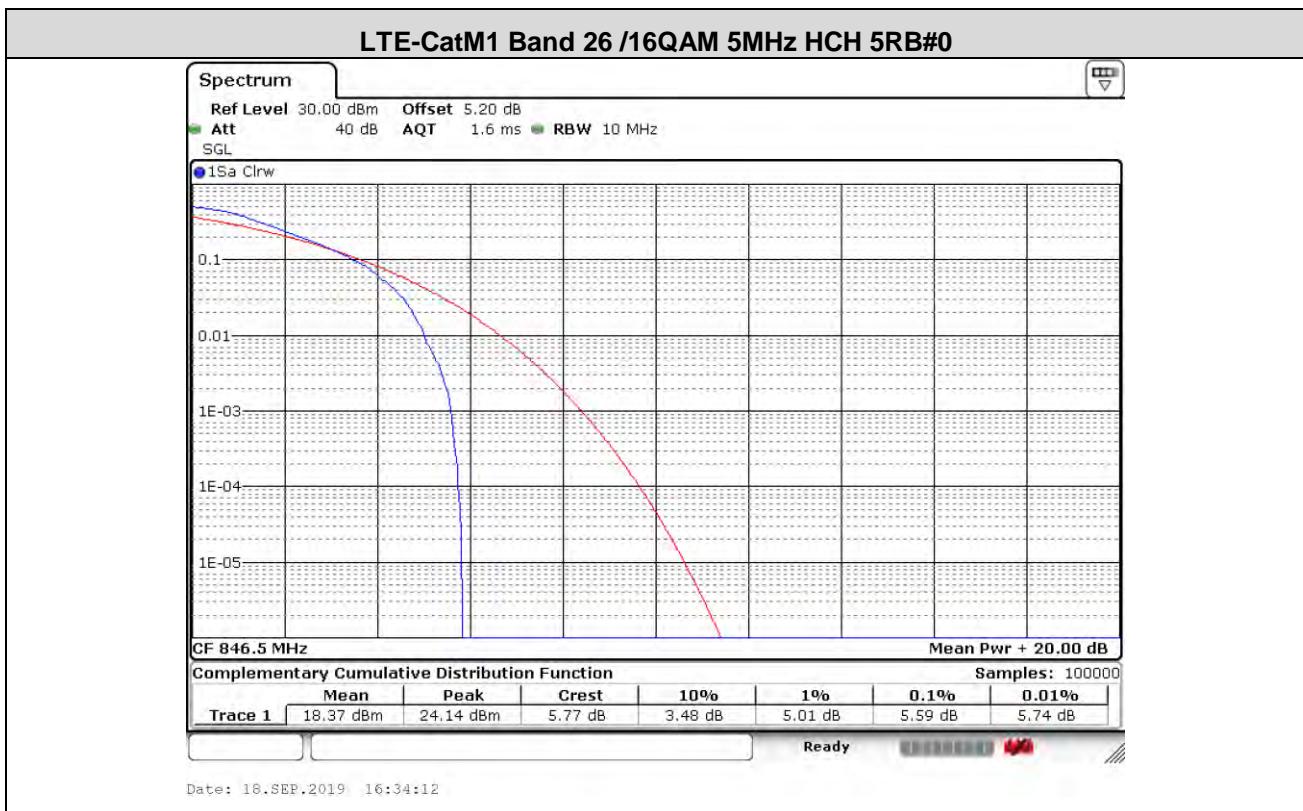
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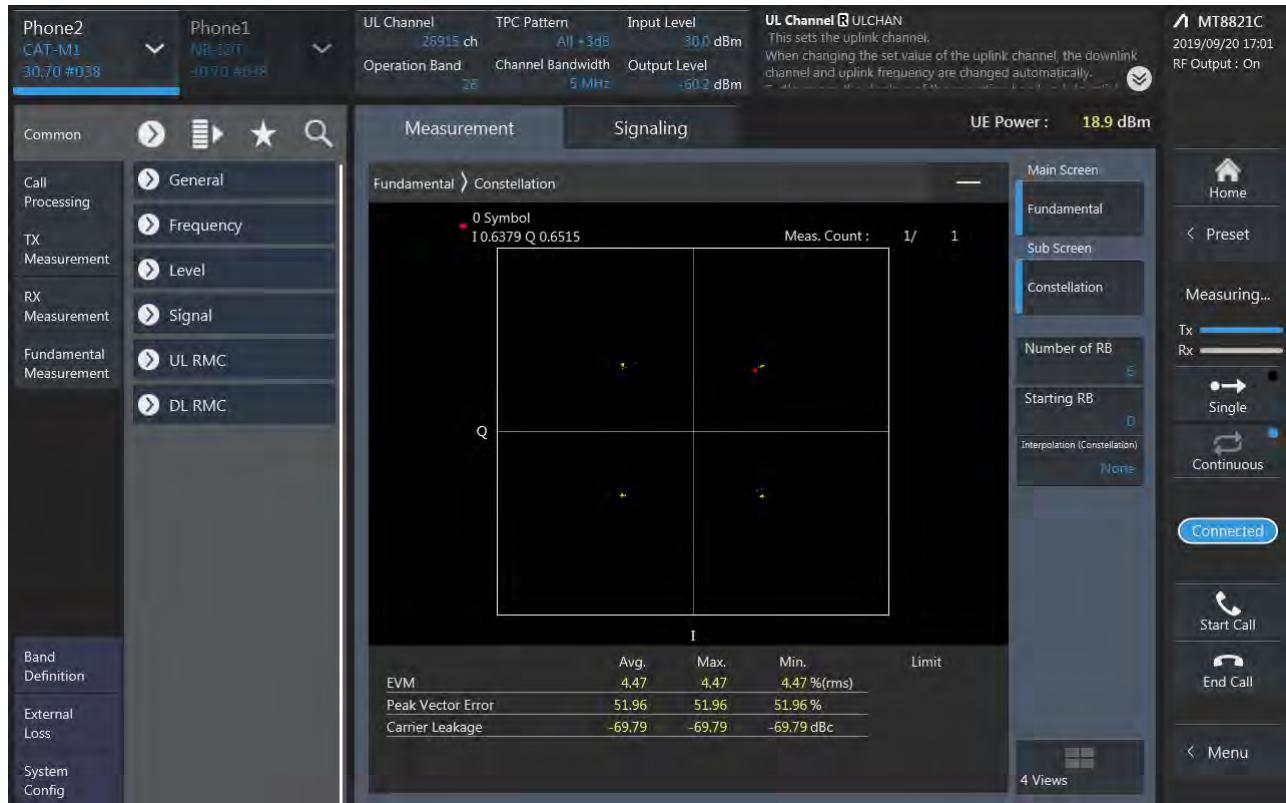
3 Modulation Characteristics

3.1 For LTE-CatM1

3.1.1 Test Band = LTE-CatM1 Band 26

3.1.1.1 Test Mode = LTE-CatM1 /QPSK 5MHz

3.1.1.1.1 Test Channel = MCH



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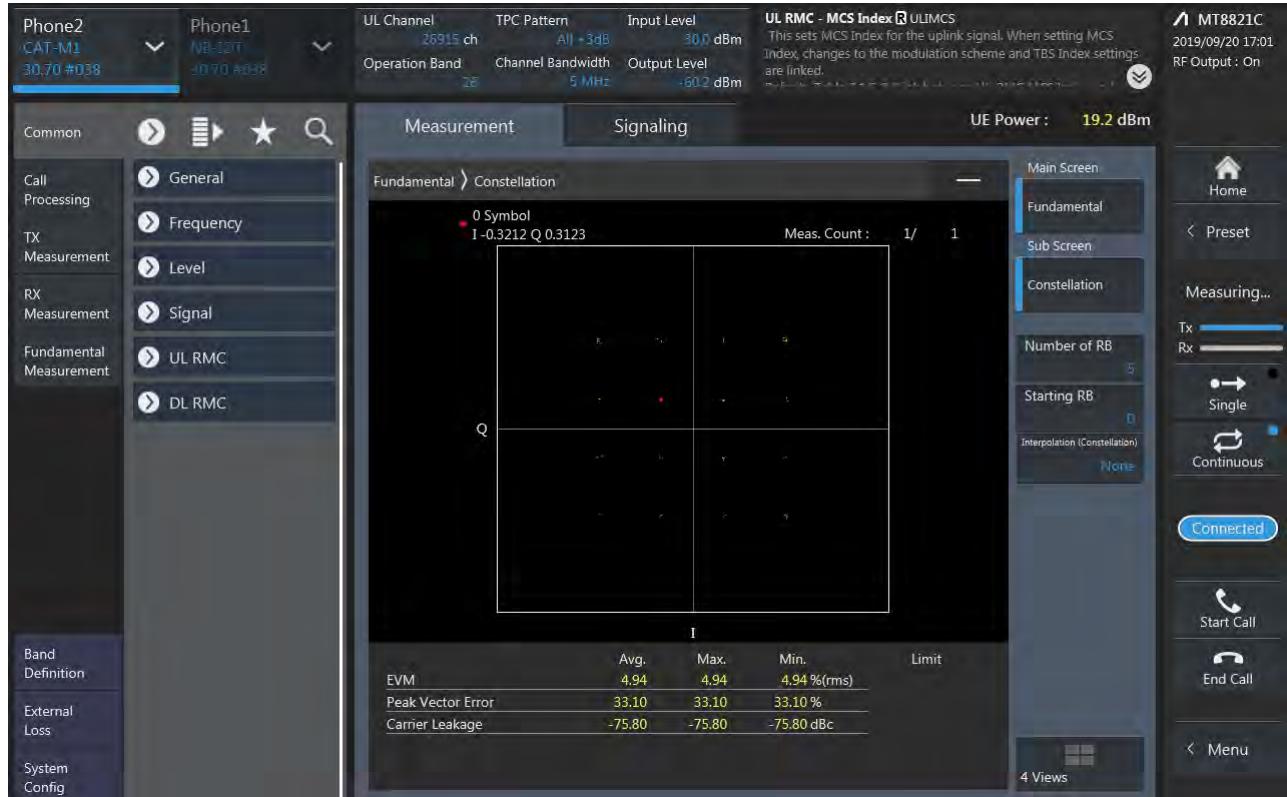


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3.1.1.2 Test Mode = LTE-CatM1 /16QAM 5MHz

3.1.1.2.1 Test Channel = MCH



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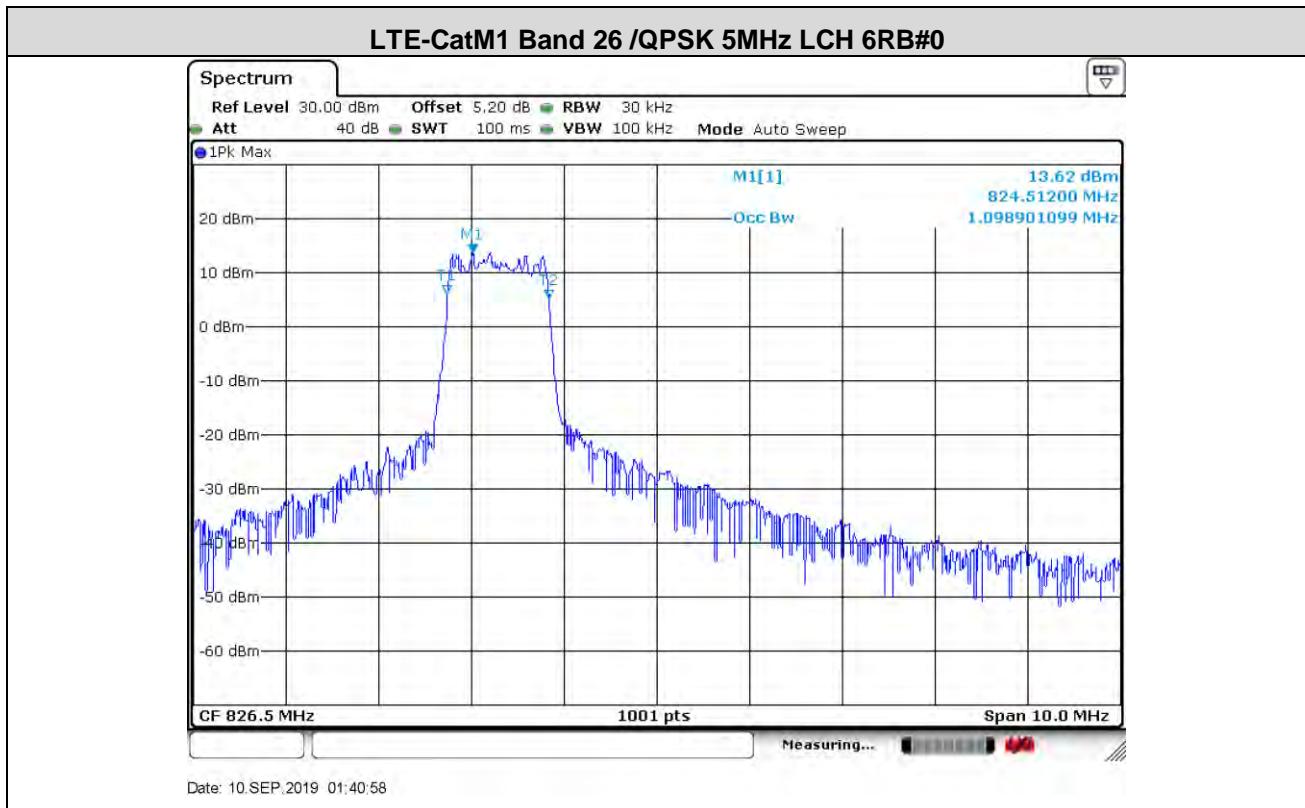
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4 26dB Bandwidth and Occupied Bandwidth

4.1 Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	26dB Emission Bandwidth [MHz]	Verdict
CatM1 Band 26	QPSK/ 5MHz	LCH	1.10	1.29	PASS
CatM1 Band 26	QPSK/ 5MHz	MCH	1.11	1.29	PASS
CatM1 Band 26	QPSK/ 5MHz	HCH	1.11	1.28	PASS
CatM1 Band 26	16QAM/ 5MHz	LCH	0.91	1.11	PASS
CatM1 Band 26	16QAM/ 5MHz	MCH	0.92	1.10	PASS
CatM1 Band 26	16QAM/ 5MHz	HCH	0.92	1.08	PASS

4.2 Test Plots



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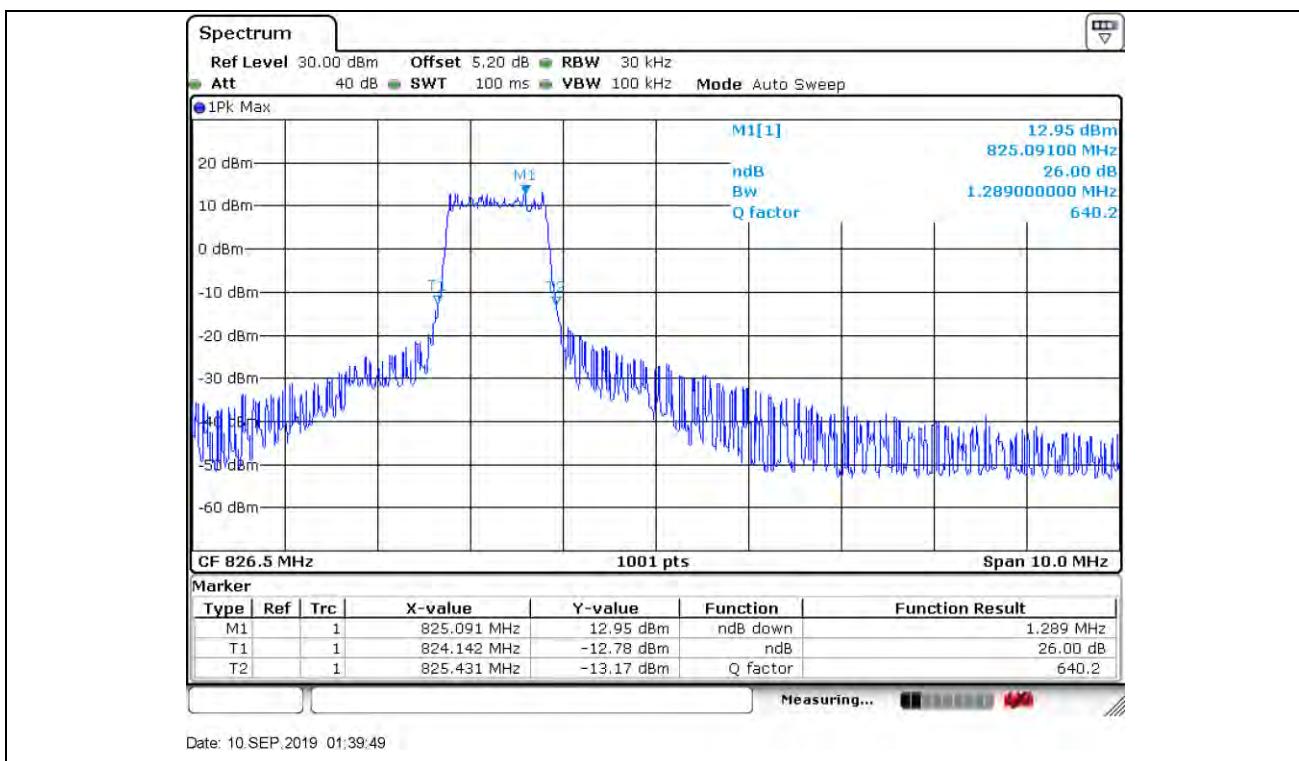
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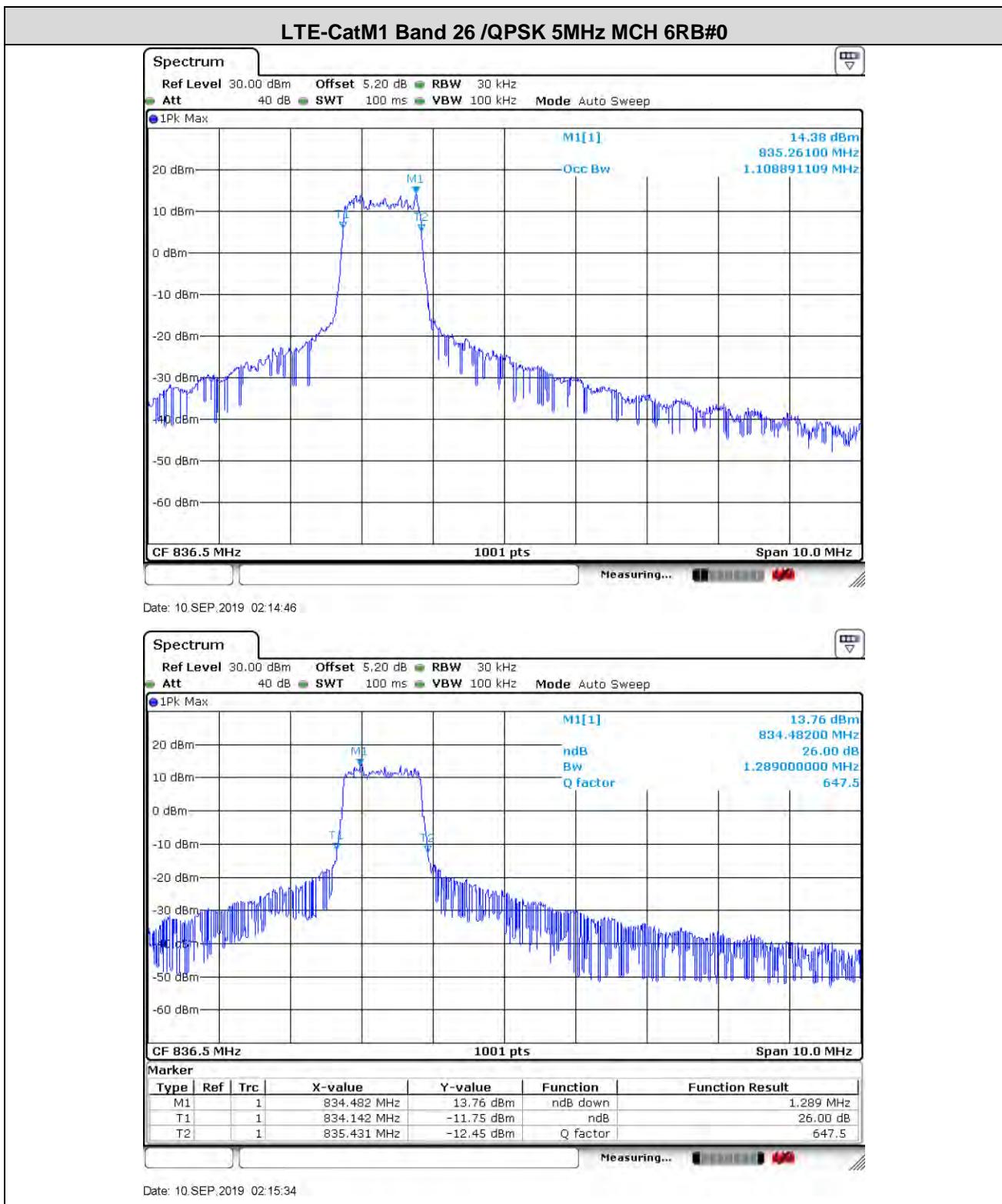


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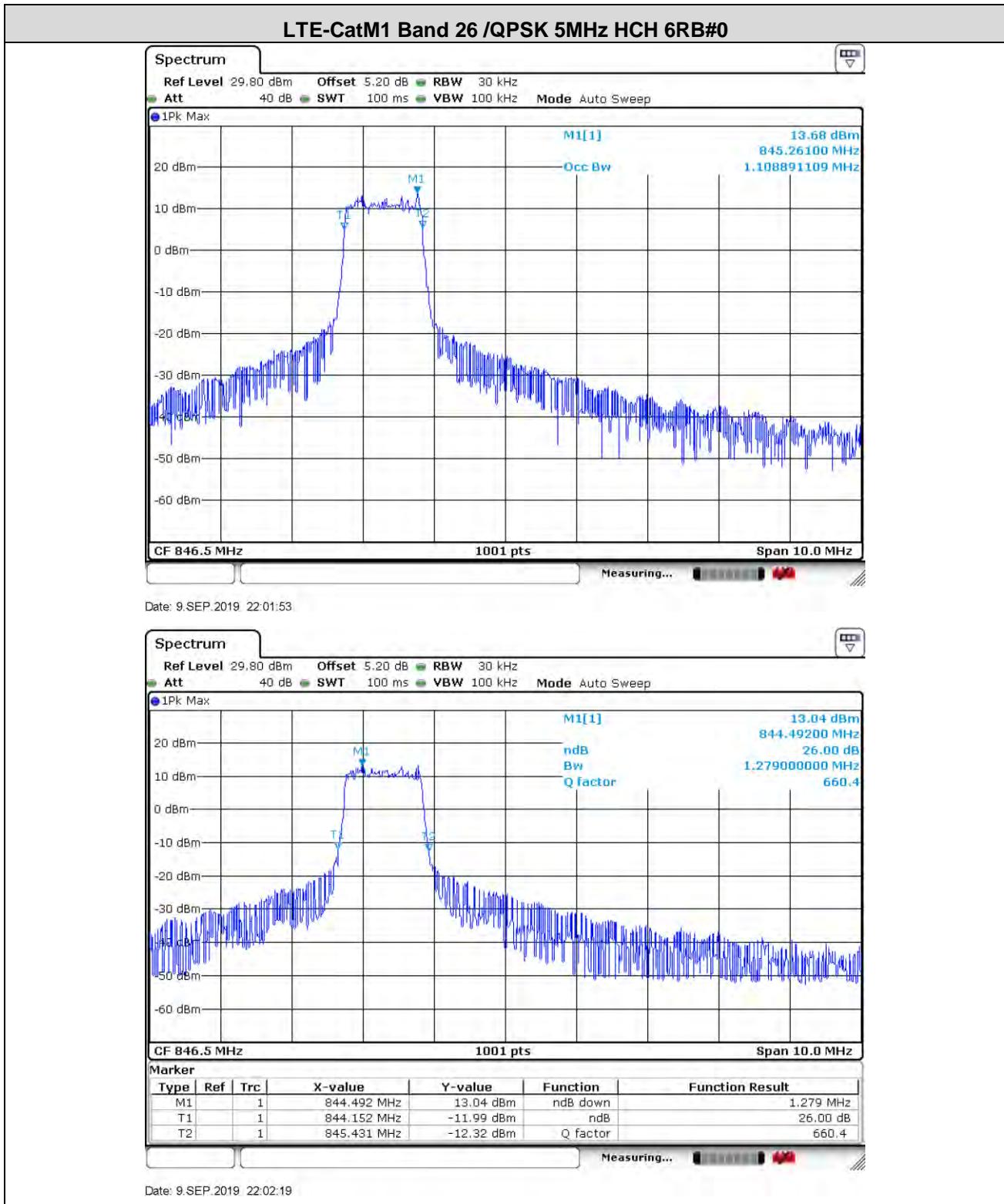


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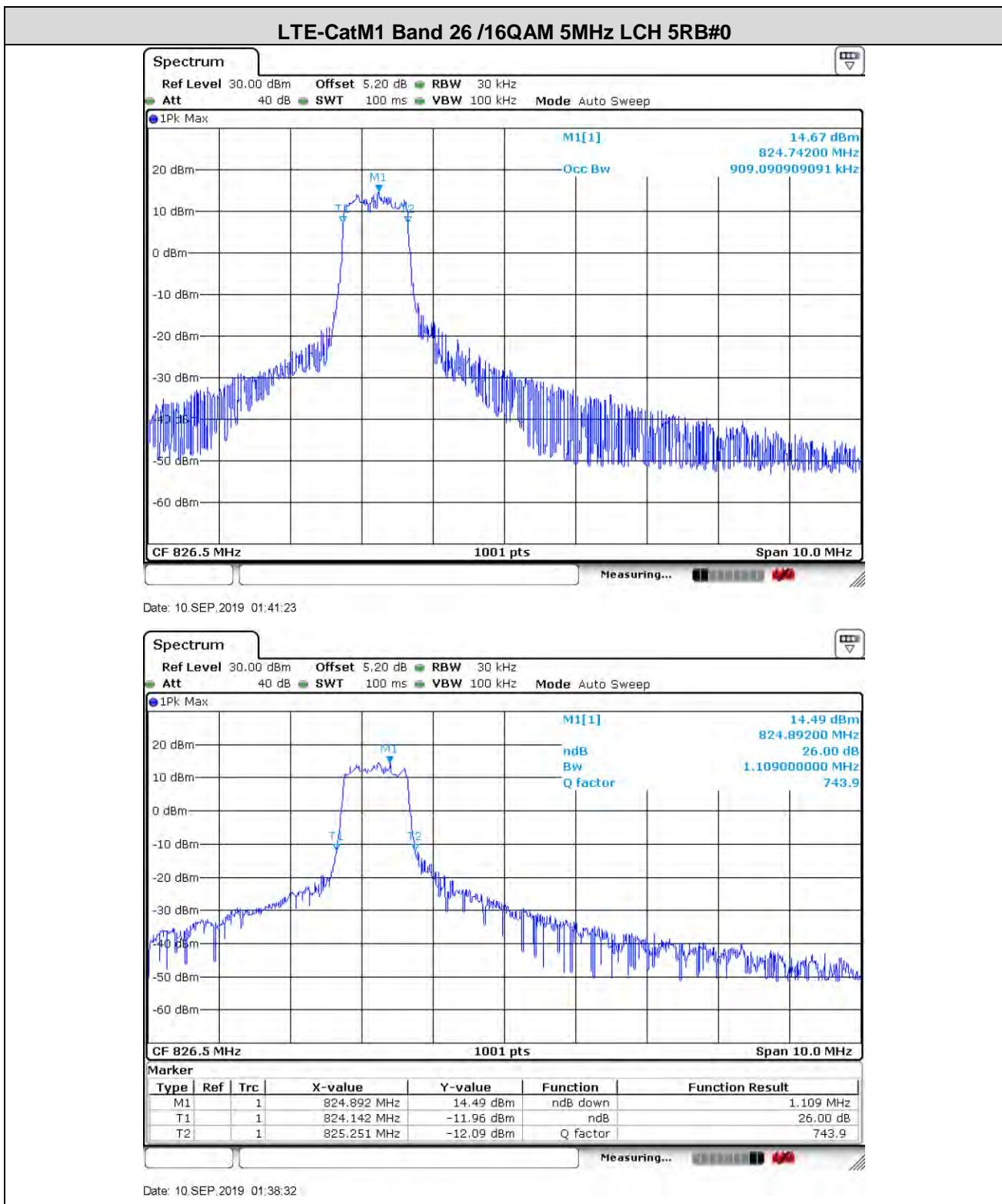


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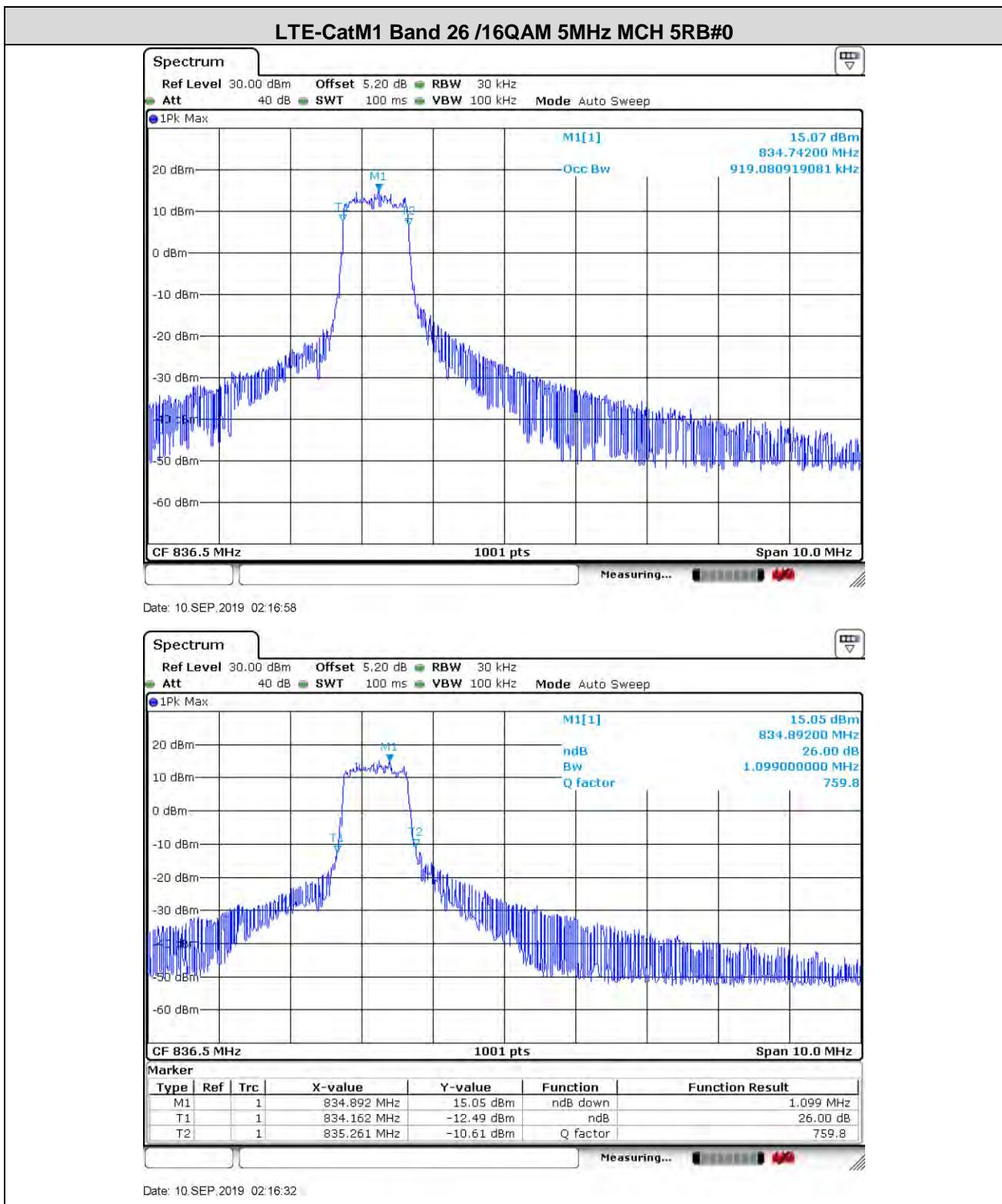
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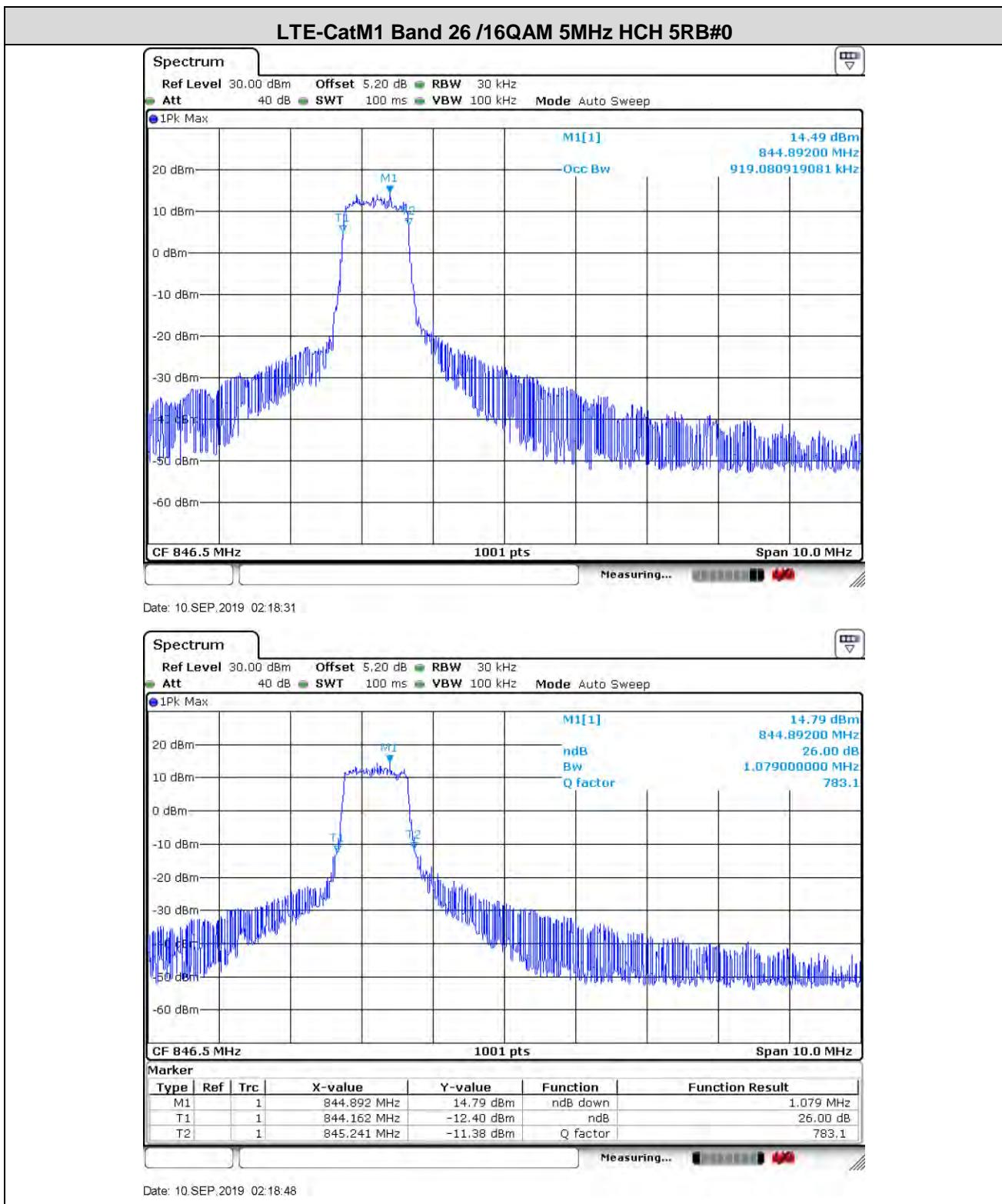


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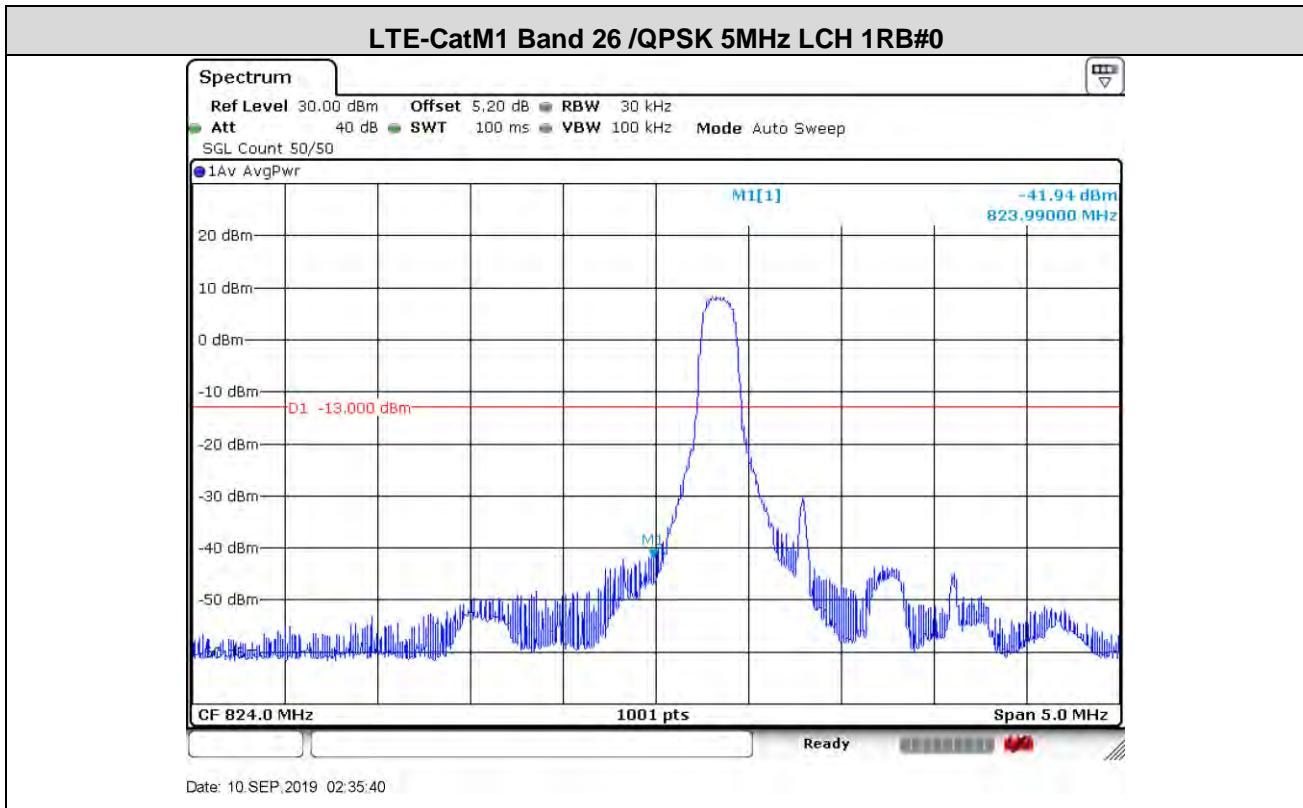
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5 Band Edges Compliance

5.1 Test Plots

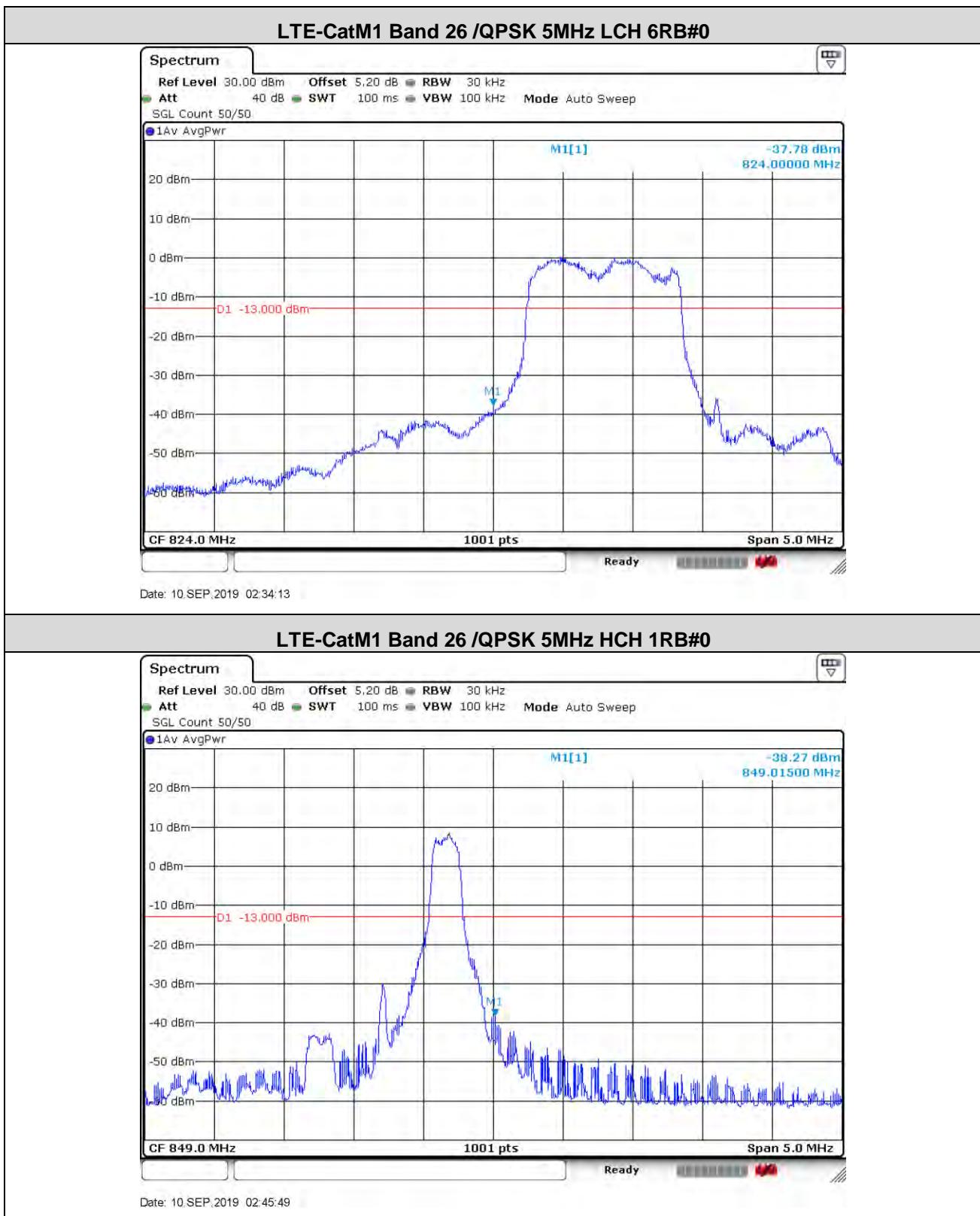


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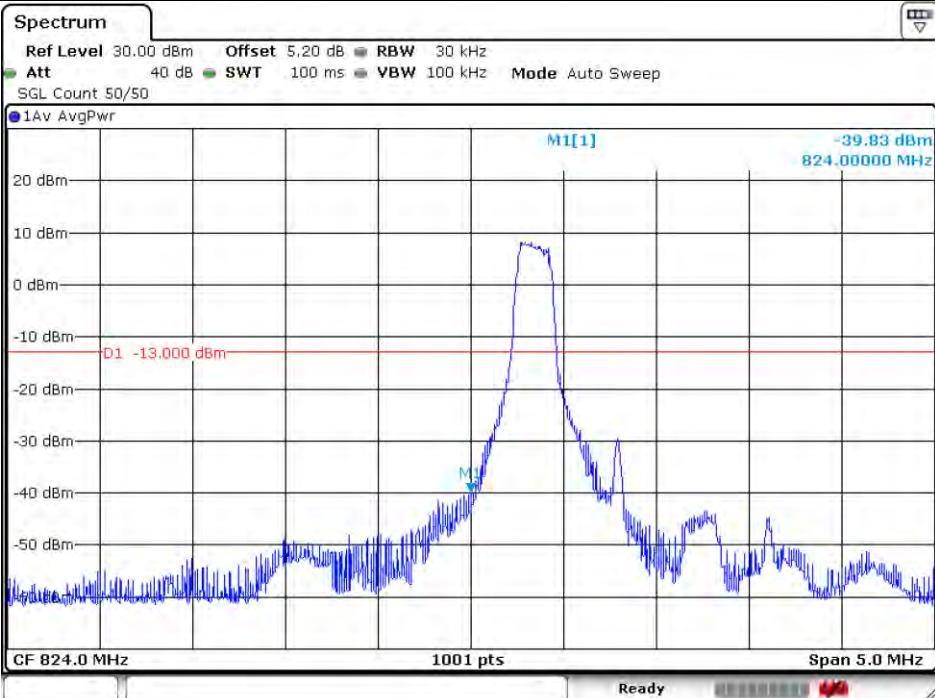


LTE-CatM1 Band 26 /QPSK 5MHz HCH 6RB#0



Date: 10.SEP.2019 02:46:40

LTE-CatM1 Band 26 /16QAM 5MHz LCH 1RB#0



Date: 10.SEP.2019 02:36:08

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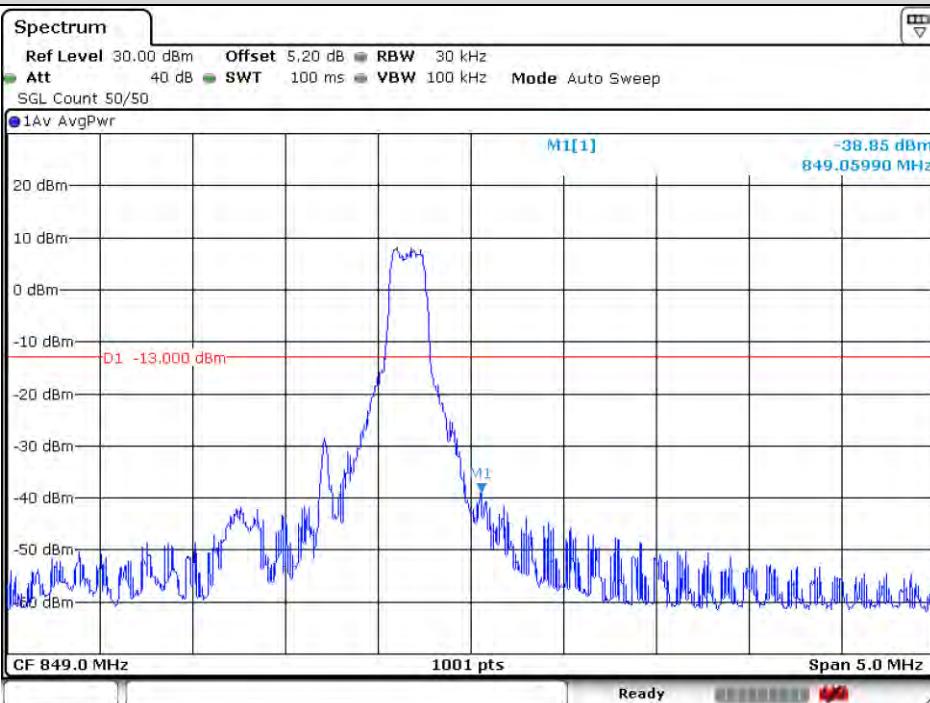


LTE-CatM1 Band 26 /16QAM 5MHz LCH 5RB#0



Date: 10.SEP.2019 02:36:33

LTE-CatM1 Band 26 /16QAM 5MHz HCH 1RB#0



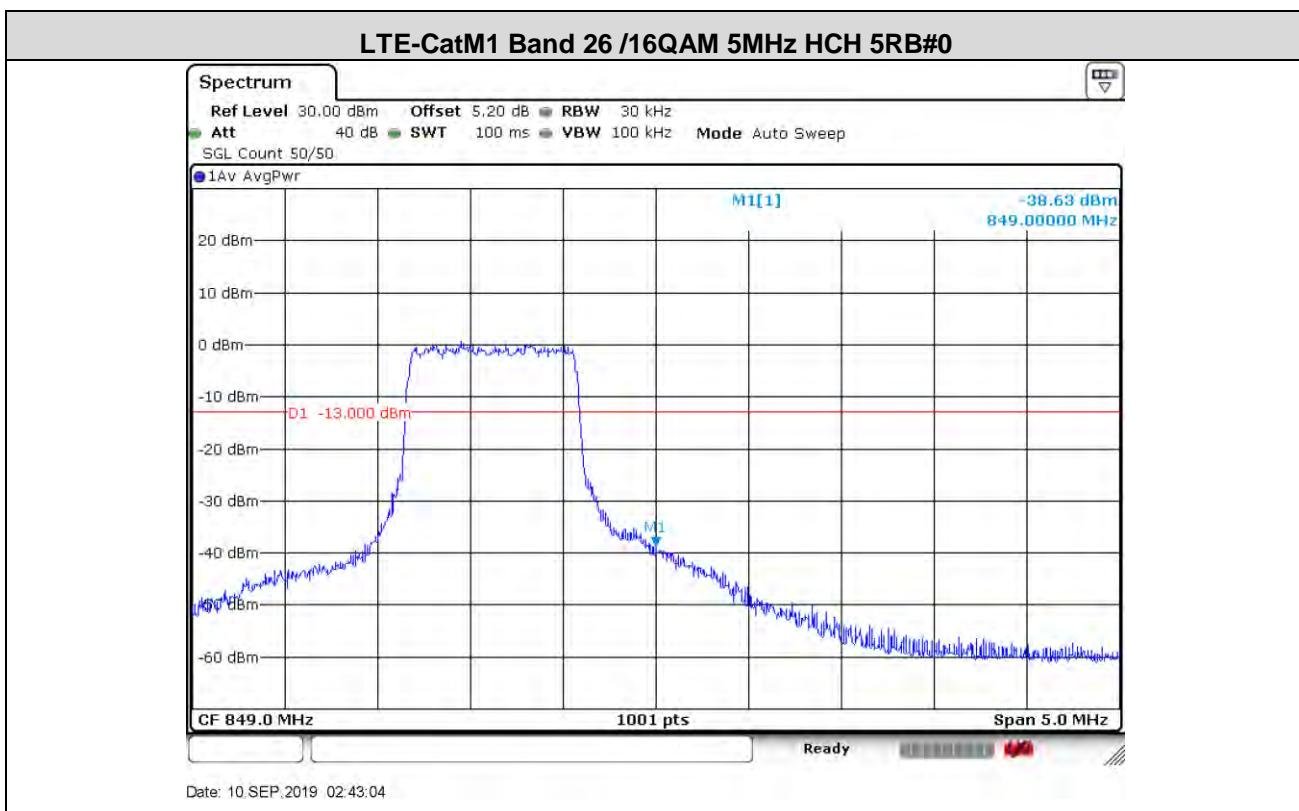
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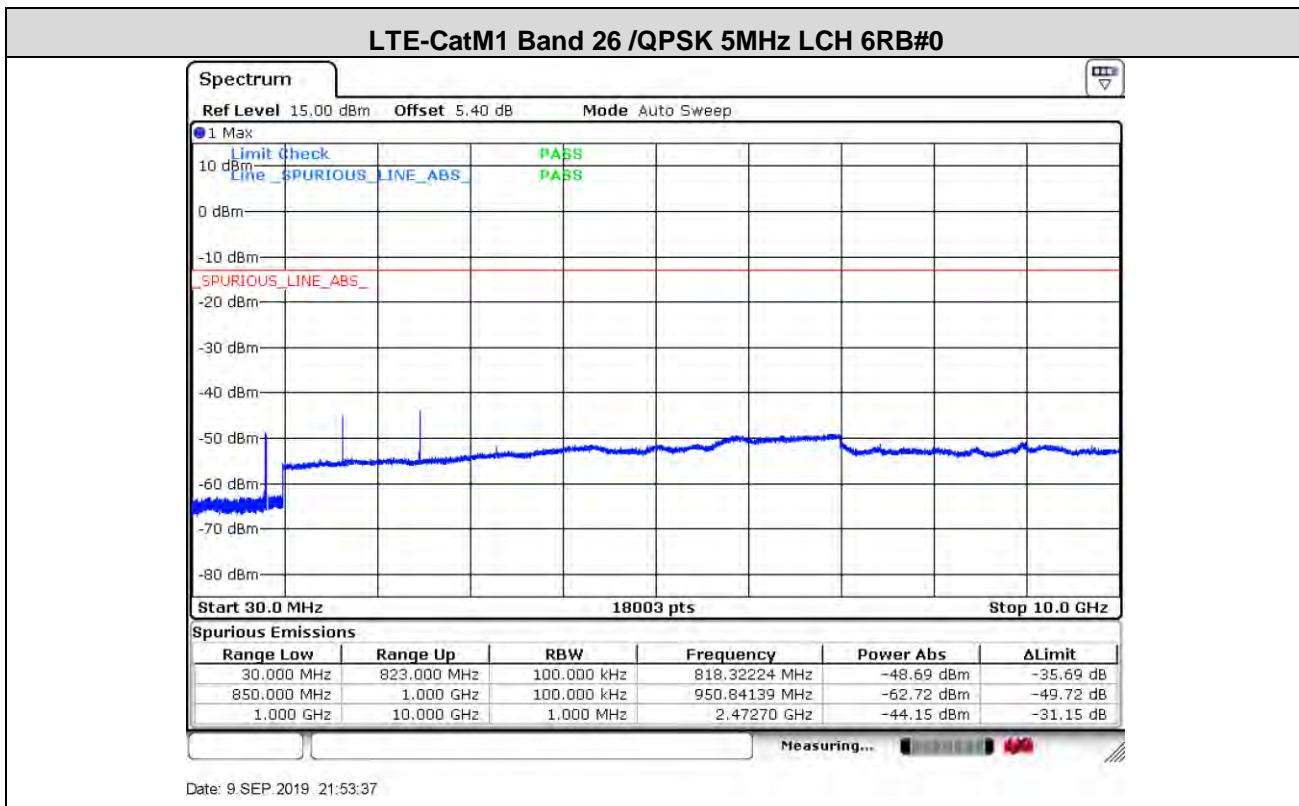


6 Spurious Emission at Antenna Terminal

NOTE1: 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.

Part I - Test Plots

6.1 Test Plots

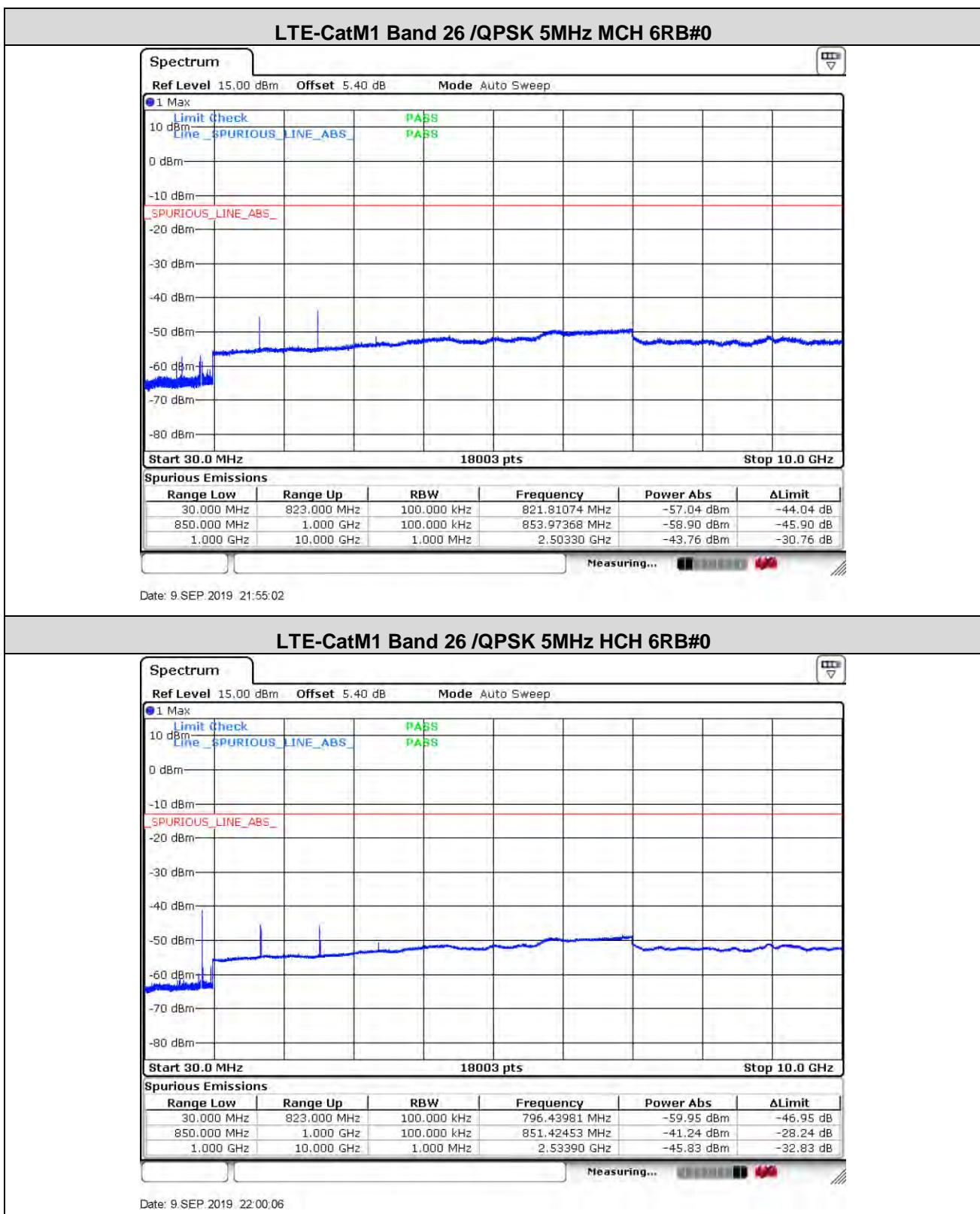


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7 Field Strength of Spurious Radiation

7.1 For LTE-CatM1

7.1.1 Test Band = LTE-CatM1 Band 26

7.1.1.1 Test Mode =LTE-CatM1/QPSK

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
112.9866	-62.80	-13.00	49.80	Vertical
642.7971	-64.62	-13.00	51.62	Vertical
1161.7940	-60.77	-13.00	47.77	Vertical
2432.7988	-49.96	-13.00	36.96	Vertical
7282.8544	-48.95	-13.00	35.95	Vertical
8602.3976	-52.56	-13.00	39.56	Vertical
42.3106	-63.94	-13.00	50.94	Horizontal
234.6156	-63.34	-13.00	50.34	Horizontal
1169.6056	-60.18	-13.00	47.18	Horizontal
2476.8876	-42.56	-13.00	29.56	Horizontal
5836.1191	-52.08	-13.00	39.08	Horizontal
8731.5993	-55.36	-13.00	42.36	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
113.2654	-60.10	-13.00	47.10	Vertical
643.3217	-63.38	-13.00	50.38	Vertical
1165.8066	-68.78	-13.00	55.78	Vertical
2436.8061	-50.73	-13.00	37.73	Vertical
7284.0146	-56.11	-13.00	43.11	Vertical
8609.8786	-51.62	-13.00	38.62	Vertical
45.5491	-64.05	-13.00	51.05	Horizontal
239.3275	-67.71	-13.00	54.71	Horizontal
1167.4453	-61.39	-13.00	48.39	Horizontal
2473.9082	-43.04	-13.00	30.04	Horizontal
5837.0322	-56.57	-13.00	43.57	Horizontal
8727.8894	-51.79	-13.00	38.79	Horizontal

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7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
107.1854	-64.07	-13.00	51.07	Vertical
641.9925	-63.28	-13.00	50.28	Vertical
1169.5944	-64.81	-13.00	51.81	Vertical
2434.4699	-46.25	-13.00	33.25	Vertical
7277.7717	-53.02	-13.00	40.02	Vertical
8604.5256	-53.94	-13.00	40.94	Vertical
44.9966	-62.82	-13.00	49.82	Horizontal
241.2116	-63.28	-13.00	50.28	Horizontal
1162.0356	-66.34	-13.00	53.34	Horizontal
2471.6632	-48.22	-13.00	35.22	Horizontal
5832.2790	-58.76	-13.00	45.76	Horizontal
8723.1661	-51.56	-13.00	38.56	Horizontal

NOTE:

- 1) The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) only the worst case data presented in this report.

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8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	RB Config	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	TN	VL	-3.58	-0.00433	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	TN	VN	2.27	0.00274	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	TN	VH	2.40	0.00291	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	TN	VL	-1.15	-0.00137	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	TN	VN	-5.43	-0.00650	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	TN	VH	-2.08	-0.00249	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	TN	VL	-2.07	-0.00244	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	TN	VN	0.00	0.00000	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	TN	VH	-5.15	-0.00608	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	TN	VL	7.61	0.00921	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	TN	VN	4.62	0.00559	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	TN	VH	-6.88	-0.00833	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	TN	VL	4.07	0.00487	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	TN	VN	-2.52	-0.00302	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	TN	VH	9.80	0.01171	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	TN	VL	-4.82	-0.00569	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	TN	VN	5.18	0.00611	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	TN	VH	-2.47	-0.00292	±2.5	PASS

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8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	RB Config	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	-30	1.69	0.00205	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	-20	-0.93	-0.00112	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	-10	-9.30	-0.01125	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	0	-7.04	-0.00852	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	10	5.05	0.00611	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	20	-4.98	-0.00603	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	30	-6.43	-0.00778	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	40	6.99	0.00846	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	LCH	6RB#0	VN	50	-0.75	-0.00091	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	-30	-0.99	-0.00118	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	-20	-4.65	-0.00556	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	-10	2.58	0.00309	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	0	-4.72	-0.00565	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	10	-4.43	-0.00530	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	20	-8.58	-0.01026	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	30	-7.06	-0.00844	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	40	0.07	0.00009	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	MCH	6RB#0	VN	50	-4.39	-0.00525	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	-30	7.48	0.00884	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	-20	2.75	0.00325	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	-10	6.92	0.00817	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	0	9.84	0.01162	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	10	1.98	0.00233	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	20	9.64	0.01139	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	30	0.19	0.00023	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	40	2.58	0.00305	±2.5	PASS
CatM1 Band 26	QPSK 5MHz	HCH	6RB#0	VN	50	-6.36	-0.00751	±2.5	PASS

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Test Band	Test Mode	Test Channel	RB Config	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	-30	3.53	0.00427	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	-20	-5.83	-0.00706	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	-10	7.00	0.00847	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	0	-9.54	-0.01155	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	10	2.37	0.00287	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	20	4.97	0.00601	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	30	5.27	0.00638	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	40	7.92	0.00958	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	LCH	5RB#0	VN	50	-5.98	-0.00724	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	-30	3.83	0.00458	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	-20	6.39	0.00764	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	-10	-4.59	-0.00548	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	0	2.15	0.00257	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	10	-2.01	-0.00240	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	20	6.00	0.00717	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	30	-3.82	-0.00456	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	40	-5.14	-0.00615	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	MCH	5RB#0	VN	50	0.14	0.00017	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	-30	4.79	0.00565	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	-20	-5.83	-0.00689	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	-10	4.04	0.00477	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	0	7.80	0.00921	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	10	-1.06	-0.00125	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	20	-7.85	-0.00927	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	30	1.43	0.00169	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	40	3.34	0.00394	±2.5	PASS
CatM1 Band 26	16QAM 5MHz	HCH	5RB#0	VN	50	3.71	0.00438	±2.5	PASS

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Appendix B

LTE-CatM1 Band 66



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CONTENT

	Page
1 EFFECTIVE (ISOTROPIC) RADIATED POWER OUTPUT DATA	3
2 PEAK-TO-AVERAGE RATIO.....	6
2.1 TEST RESULTS.....	6
2.2 TEST PLOTS.....	6
3 MODULATION CHARACTERISTICS	10
3.1 FOR LTE-CATM1.....	10
3.1.1 <i>Test Band = LTE-CatM1 Band 66.....</i>	10
4 26DB BANDWIDTH AND OCCUPIED BANDWIDTH.....	12
4.1 TEST RESULTS	12
4.2 TEST PLOTS.....	12
5 BAND EDGES COMPLIANCE.....	19
5.1 TEST PLOTS.....	19
6 SPURIOUS EMISSION AT ANTENNA TERMINAL	24
6.1 TEST PLOTS.....	24
7 FIELD STRENGTH OF SPURIOUS RADIATION.....	26
7.1 FOR LTE-CATM1.....	26
7.1.1 <i>Test Band = LTE-CatM1 Band 66.....</i>	26
8 FREQUENCY STABILITY.....	28
8.1 FREQUENCY ERROR VS. VOLTAGE	28
8.2 FREQUENCY ERROR VS. TEMPERATURE.....	29



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1 Effective (Isotropic) Radiated Power Output Data

Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE-CatM1 Band 66

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	EIRP (dBm)	limit (dBm)	Verdict
CatM1 Band 66	QPSK	1.4M	LCH	1RB#0	20.35	21.95	33.00	PASS
CatM1 Band 66	QPSK	1.4M	LCH	5RB#0	19.27	20.87	33.00	PASS
CatM1 Band 66	QPSK	1.4M	LCH	6RB#0	18.29	19.89	33.00	PASS
CatM1 Band 66	QPSK	1.4M	MCH	1RB#0	20.47	22.07	33.00	PASS
CatM1 Band 66	QPSK	1.4M	MCH	5RB#0	19.34	20.94	33.00	PASS
CatM1 Band 66	QPSK	1.4M	MCH	6RB#0	18.39	19.99	33.00	PASS
CatM1 Band 66	QPSK	1.4M	HCH	1RB#0	21.11	22.71	33.00	PASS
CatM1 Band 66	QPSK	1.4M	HCH	5RB#0	20.29	21.89	33.00	PASS
CatM1 Band 66	QPSK	1.4M	HCH	6RB#0	19.15	20.75	33.00	PASS
CatM1 Band 66	16QAM	1.4M	LCH	1RB#0	19.23	20.83	33.00	PASS
CatM1 Band 66	16QAM	1.4M	LCH	5RB#0	18.28	19.88	33.00	PASS
CatM1 Band 66	16QAM	1.4M	MCH	1RB#0	19.63	21.23	33.00	PASS
CatM1 Band 66	16QAM	1.4M	MCH	5RB#0	18.45	20.05	33.00	PASS
CatM1 Band 66	16QAM	1.4M	HCH	1RB#0	20.21	21.81	33.00	PASS
CatM1 Band 66	16QAM	1.4M	HCH	5RB#0	19.29	20.89	33.00	PASS
CatM1 Band 66	QPSK	3M	LCH	1RB#0	20.57	22.17	33.00	PASS
CatM1 Band 66	QPSK	3M	LCH	5RB#0	19.36	20.96	33.00	PASS
CatM1 Band 66	QPSK	3M	LCH	6RB#0	18.47	20.07	33.00	PASS
CatM1 Band 66	QPSK	3M	MCH	1RB#0	20.50	22.10	33.00	PASS
CatM1 Band 66	QPSK	3M	MCH	5RB#0	19.46	21.06	33.00	PASS
CatM1 Band 66	QPSK	3M	MCH	6RB#0	18.84	20.44	33.00	PASS
CatM1 Band 66	QPSK	3M	HCH	1RB#0	21.34	22.94	33.00	PASS
CatM1 Band 66	QPSK	3M	HCH	5RB#0	20.16	21.76	33.00	PASS
CatM1 Band 66	QPSK	3M	HCH	6RB#0	19.32	20.92	33.00	PASS
CatM1 Band 66	16QAM	3M	LCH	1RB#0	19.19	20.79	33.00	PASS
CatM1 Band 66	16QAM	3M	LCH	5RB#0	18.59	20.19	33.00	PASS
CatM1 Band 66	16QAM	3M	MCH	1RB#0	19.25	20.85	33.00	PASS
CatM1 Band 66	16QAM	3M	MCH	5RB#0	18.14	19.74	33.00	PASS
CatM1 Band 66	16QAM	3M	HCH	1RB#0	19.63	21.23	33.00	PASS
CatM1 Band 66	16QAM	3M	HCH	5RB#0	18.6	20.20	33.00	PASS
CatM1 Band 66	QPSK	5M	LCH	1RB#0	20.59	22.19	33.00	PASS
CatM1 Band 66	QPSK	5M	LCH	5RB#0	19.61	21.21	33.00	PASS
CatM1 Band 66	QPSK	5M	LCH	6RB#0	19.53	21.13	33.00	PASS
CatM1 Band 66	QPSK	5M	MCH	1RB#0	20.61	22.21	33.00	PASS
CatM1 Band 66	QPSK	5M	MCH	5RB#0	19.51	21.11	33.00	PASS
CatM1 Band 66	QPSK	5M	MCH	6RB#0	19.44	21.04	33.00	PASS
CatM1 Band 66	QPSK	5M	HCH	1RB#0	21.62	23.22	33.00	PASS
CatM1 Band 66	QPSK	5M	HCH	5RB#0	20.18	21.78	33.00	PASS
CatM1 Band 66	QPSK	5M	HCH	6RB#0	20.33	21.93	33.00	PASS

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Report No.: ZR/2019/8003201

Page: 4 of 30

CatM1 Band 66	16QAM	5M	LCH	1RB#0	20.34	21.94	33.00	PASS
CatM1 Band 66	16QAM	5M	LCH	5RB#0	19.55	21.15	33.00	PASS
CatM1 Band 66	16QAM	5M	MCH	1RB#0	20.25	21.85	33.00	PASS
CatM1 Band 66	16QAM	5M	MCH	5RB#0	19.44	21.04	33.00	PASS
CatM1 Band 66	16QAM	5M	HCH	1RB#0	21.03	22.63	33.00	PASS
CatM1 Band 66	16QAM	5M	HCH	5RB#0	20.10	21.70	33.00	PASS
CatM1 Band 66	QPSK	10M	LCH	1RB#0	20.6	22.20	33.00	PASS
CatM1 Band 66	QPSK	10M	LCH	5RB#0	20.39	21.99	33.00	PASS
CatM1 Band 66	QPSK	10M	LCH	6RB#0	19.38	20.98	33.00	PASS
CatM1 Band 66	QPSK	10M	MCH	1RB#0	20.54	22.14	33.00	PASS
CatM1 Band 66	QPSK	10M	MCH	5RB#0	20.35	21.95	33.00	PASS
CatM1 Band 66	QPSK	10M	MCH	6RB#0	19.43	21.03	33.00	PASS
CatM1 Band 66	QPSK	10M	HCH	1RB#0	20.71	22.31	33.00	PASS
CatM1 Band 66	QPSK	10M	HCH	5RB#0	20.47	22.07	33.00	PASS
CatM1 Band 66	QPSK	10M	HCH	6RB#0	19.49	21.09	33.00	PASS
CatM1 Band 66	16QAM	10M	LCH	1RB#0	20.32	21.92	33.00	PASS
CatM1 Band 66	16QAM	10M	LCH	5RB#0	20.29	21.89	33.00	PASS
CatM1 Band 66	16QAM	10M	MCH	1RB#0	20.23	21.83	33.00	PASS
CatM1 Band 66	16QAM	10M	MCH	5RB#0	20.33	21.93	33.00	PASS
CatM1 Band 66	16QAM	10M	HCH	1RB#0	20.38	21.98	33.00	PASS
CatM1 Band 66	16QAM	10M	HCH	5RB#0	20.31	21.91	33.00	PASS
CatM1 Band 66	QPSK	15M	LCH	1RB#0	20.44	22.04	33.00	PASS
CatM1 Band 66	QPSK	15M	LCH	5RB#0	20.46	22.06	33.00	PASS
CatM1 Band 66	QPSK	15M	LCH	6RB#0	20.42	22.02	33.00	PASS
CatM1 Band 66	QPSK	15M	MCH	1RB#0	20.48	22.08	33.00	PASS
CatM1 Band 66	QPSK	15M	MCH	5RB#0	20.36	21.96	33.00	PASS
CatM1 Band 66	QPSK	15M	MCH	6RB#0	20.44	22.04	33.00	PASS
CatM1 Band 66	QPSK	15M	HCH	1RB#0	20.51	22.11	33.00	PASS
CatM1 Band 66	QPSK	15M	HCH	5RB#0	20.51	22.11	33.00	PASS
CatM1 Band 66	QPSK	15M	HCH	6RB#0	20.41	22.01	33.00	PASS
CatM1 Band 66	16QAM	15M	LCH	1RB#0	20.18	21.78	33.00	PASS
CatM1 Band 66	16QAM	15M	LCH	5RB#0	20.27	21.87	33.00	PASS
CatM1 Band 66	16QAM	15M	MCH	1RB#0	20.20	21.80	33.00	PASS
CatM1 Band 66	16QAM	15M	MCH	5RB#0	20.32	21.92	33.00	PASS
CatM1 Band 66	16QAM	15M	HCH	1RB#0	20.22	21.82	33.00	PASS
CatM1 Band 66	16QAM	15M	HCH	5RB#0	20.34	21.94	33.00	PASS
CatM1 Band 66	QPSK	20M	LCH	1RB#0	20.55	22.15	33.00	PASS
CatM1 Band 66	QPSK	20M	LCH	5RB#0	20.42	22.02	33.00	PASS
CatM1 Band 66	QPSK	20M	LCH	6RB#0	20.47	22.07	33.00	PASS
CatM1 Band 66	QPSK	20M	MCH	1RB#0	20.57	22.17	33.00	PASS
CatM1 Band 66	QPSK	20M	MCH	5RB#0	20.40	22.00	33.00	PASS
CatM1 Band 66	QPSK	20M	MCH	6RB#0	20.42	22.02	33.00	PASS
CatM1 Band 66	QPSK	20M	HCH	1RB#0	20.52	22.12	33.00	PASS
CatM1 Band 66	QPSK	20M	HCH	5RB#0	20.47	22.07	33.00	PASS
CatM1 Band 66	QPSK	20M	HCH	6RB#0	20.45	22.05	33.00	PASS
CatM1 Band 66	16QAM	20M	LCH	1RB#0	20.18	21.78	33.00	PASS
CatM1 Band 66	16QAM	20M	LCH	5RB#0	20.25	21.85	33.00	PASS

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CatM1 Band 66	16QAM	20M	MCH	1RB#0	20.24	21.84	33.00	PASS
CatM1 Band 66	16QAM	20M	MCH	5RB#0	20.15	21.75	33.00	PASS
CatM1 Band 66	16QAM	20M	HCH	1RB#0	20.22	21.82	33.00	PASS
CatM1 Band 66	16QAM	20M	HCH	5RB#0	20.32	21.92	33.00	PASS

Note:

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

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

$$\text{ERP [dBm]} = \text{Conducted Power [dBm]} + \text{Gain [dBi]} - 2.15$$



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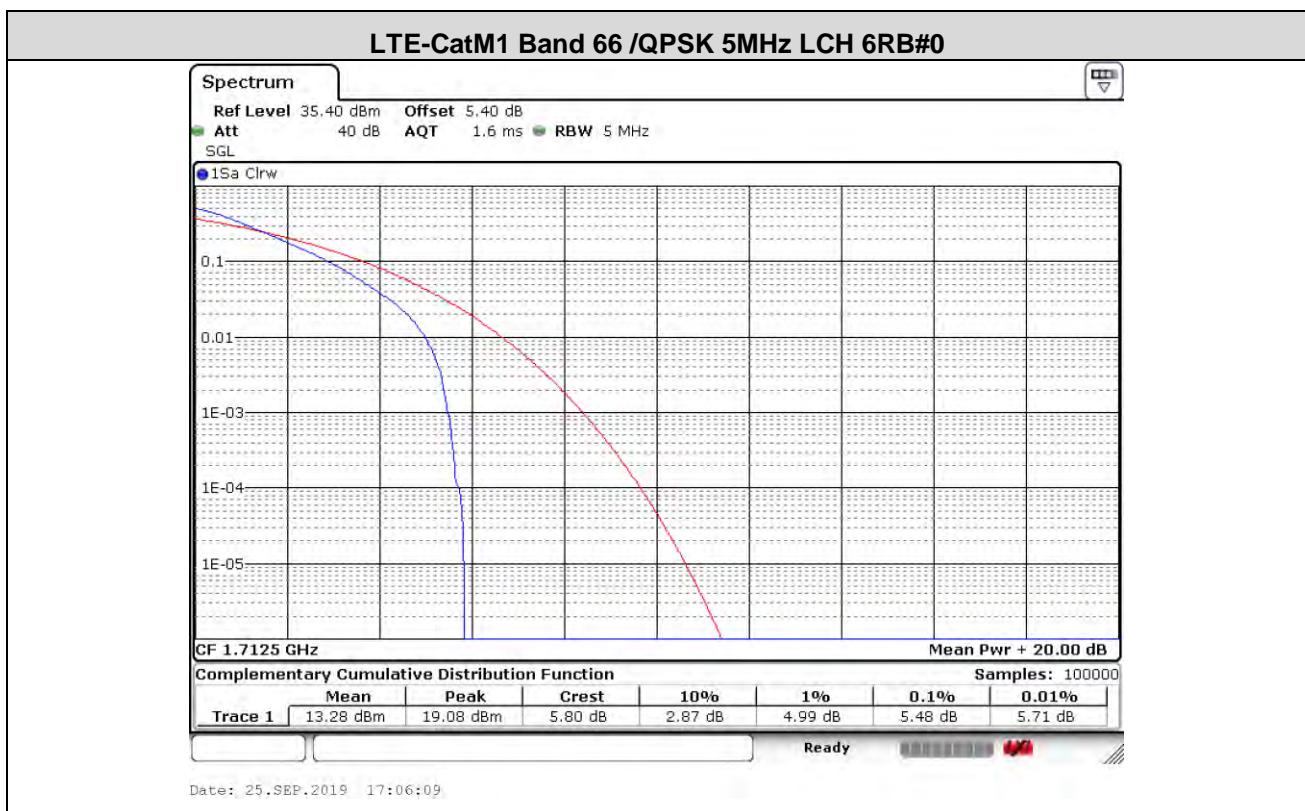
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2 Peak-to-Average Ratio

2.1 Test Results

Test Band	Test Mode	RB Config	Test Channel	Measured [dB]	Limit [dB]	Verdict
CatM1 Band 66	QPSK/5M	6RB#0	LCH	5.48	13	PASS
CatM1 Band 66	QPSK/5M	6RB#0	MCH	5.13	13	PASS
CatM1 Band 66	QPSK/5M	6RB#0	HCH	5.01	13	PASS
CatM1 Band 66	16QAM/5M	5RB#0	LCH	5.48	13	PASS
CatM1 Band 66	16QAM/5M	5RB#0	MCH	6.61	13	PASS
CatM1 Band 66	16QAM/5M	5RB#0	HCH	5.57	13	PASS

2.2 Test Plots

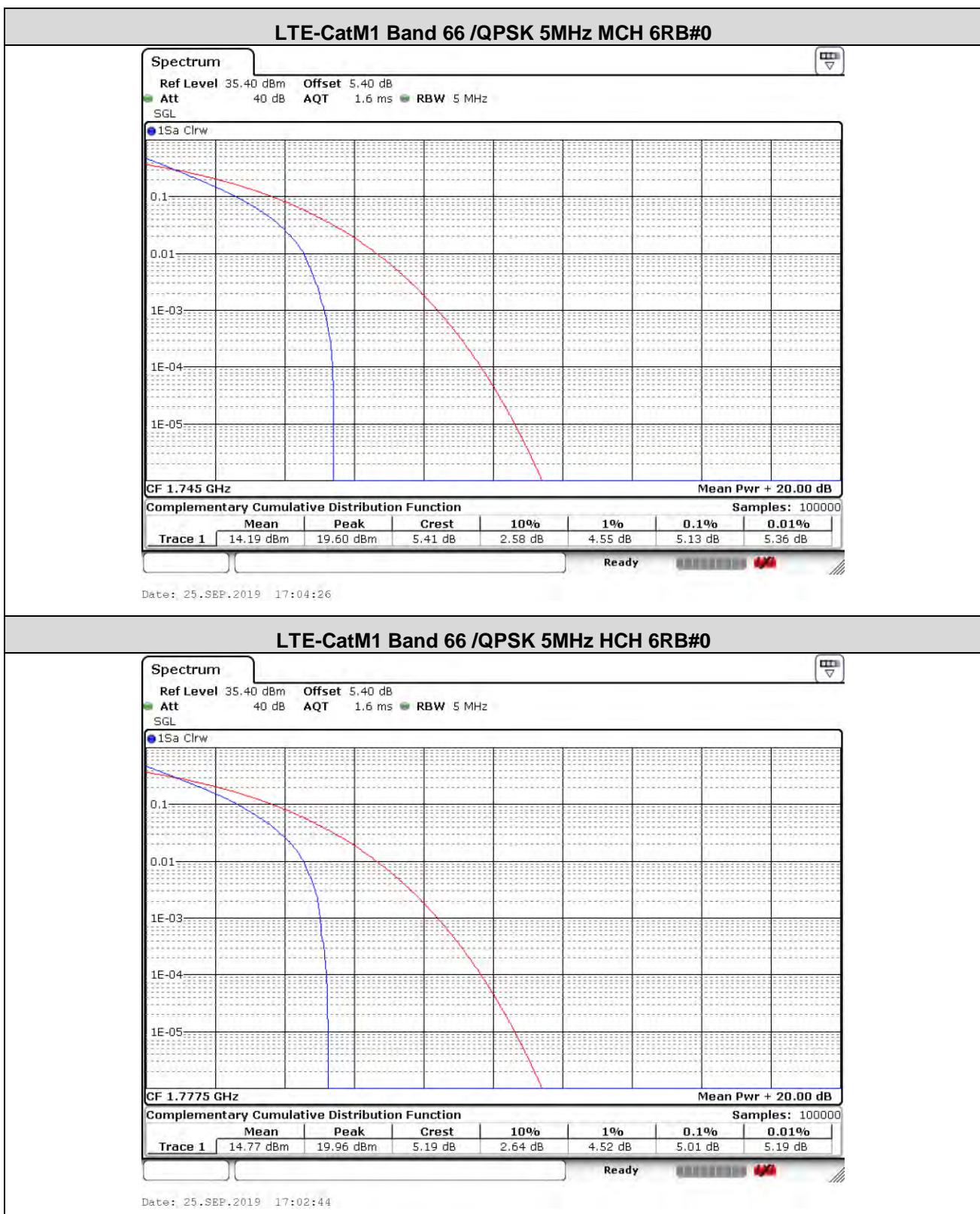


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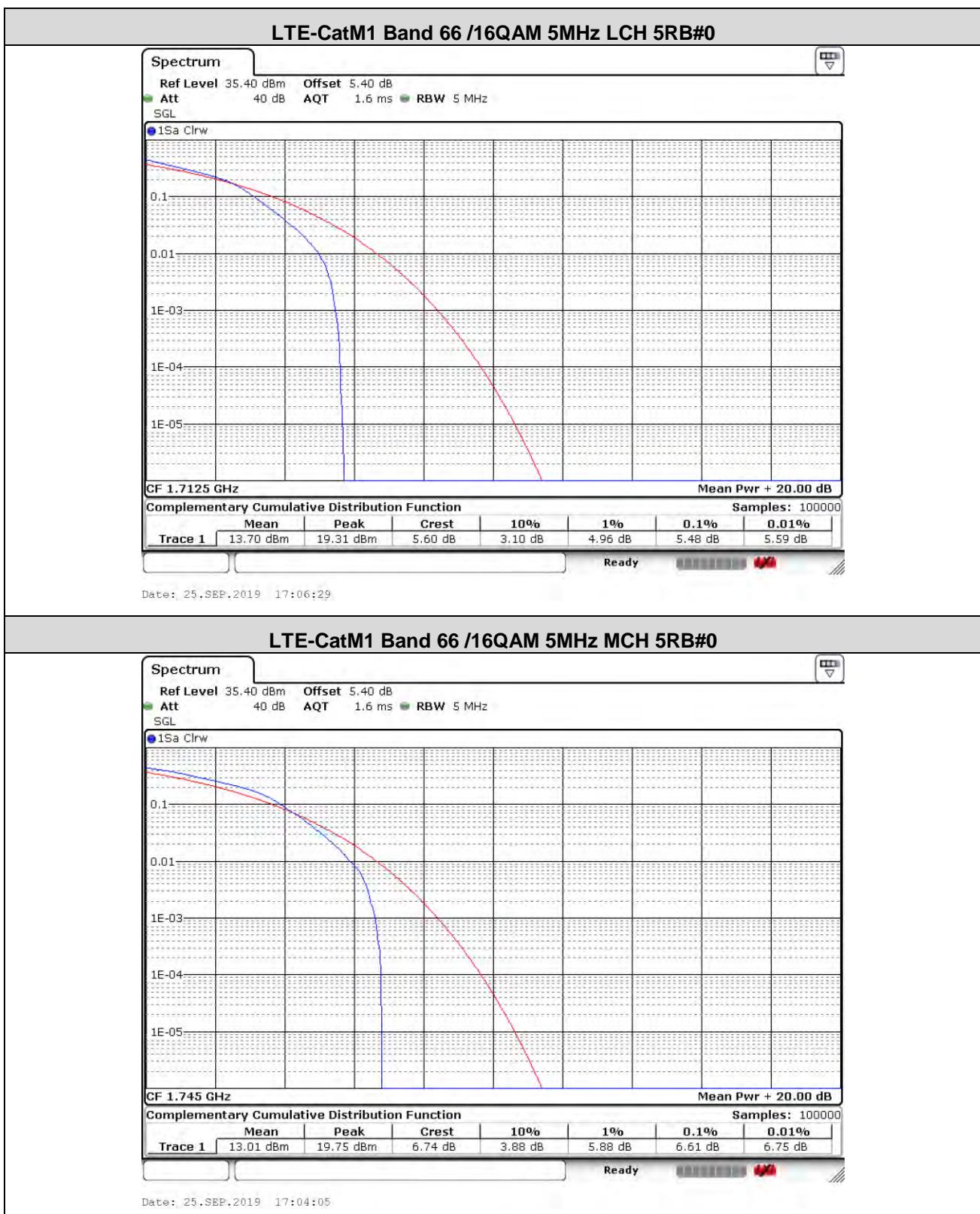
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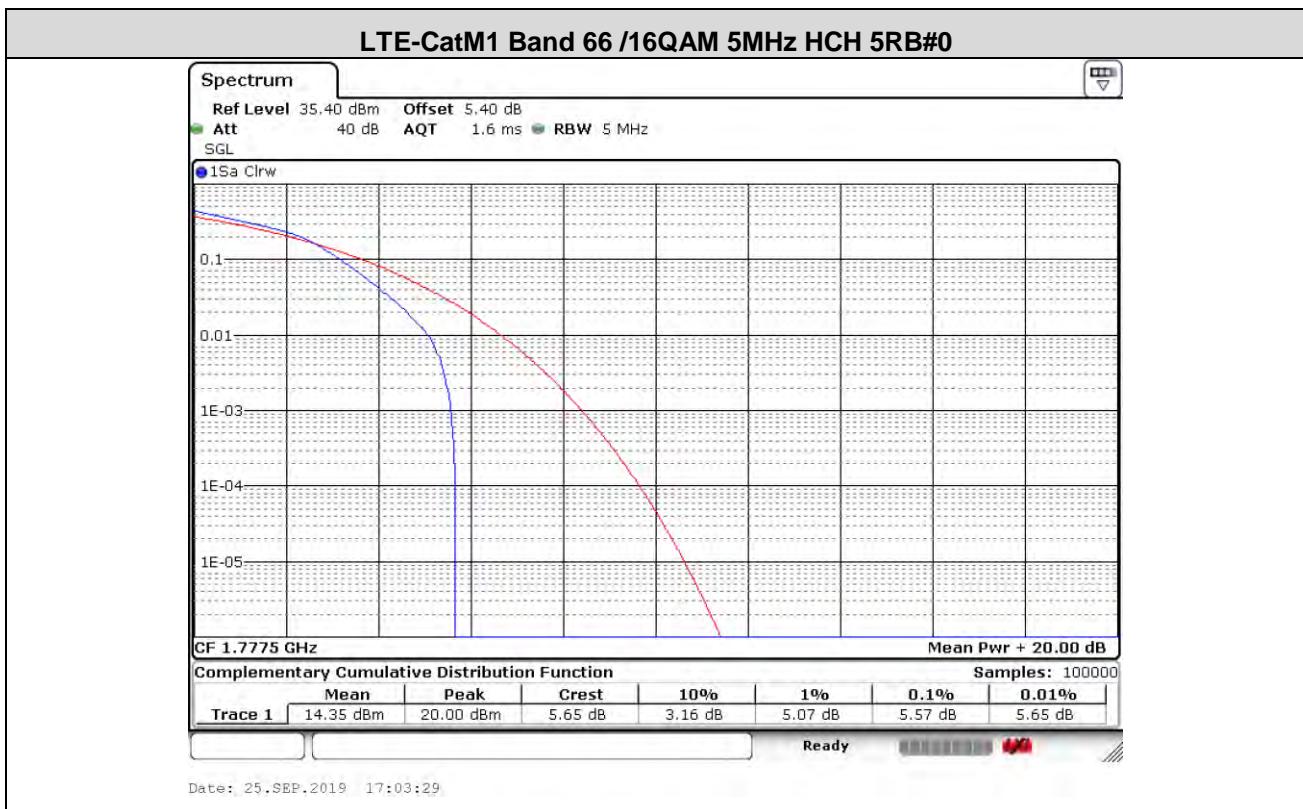


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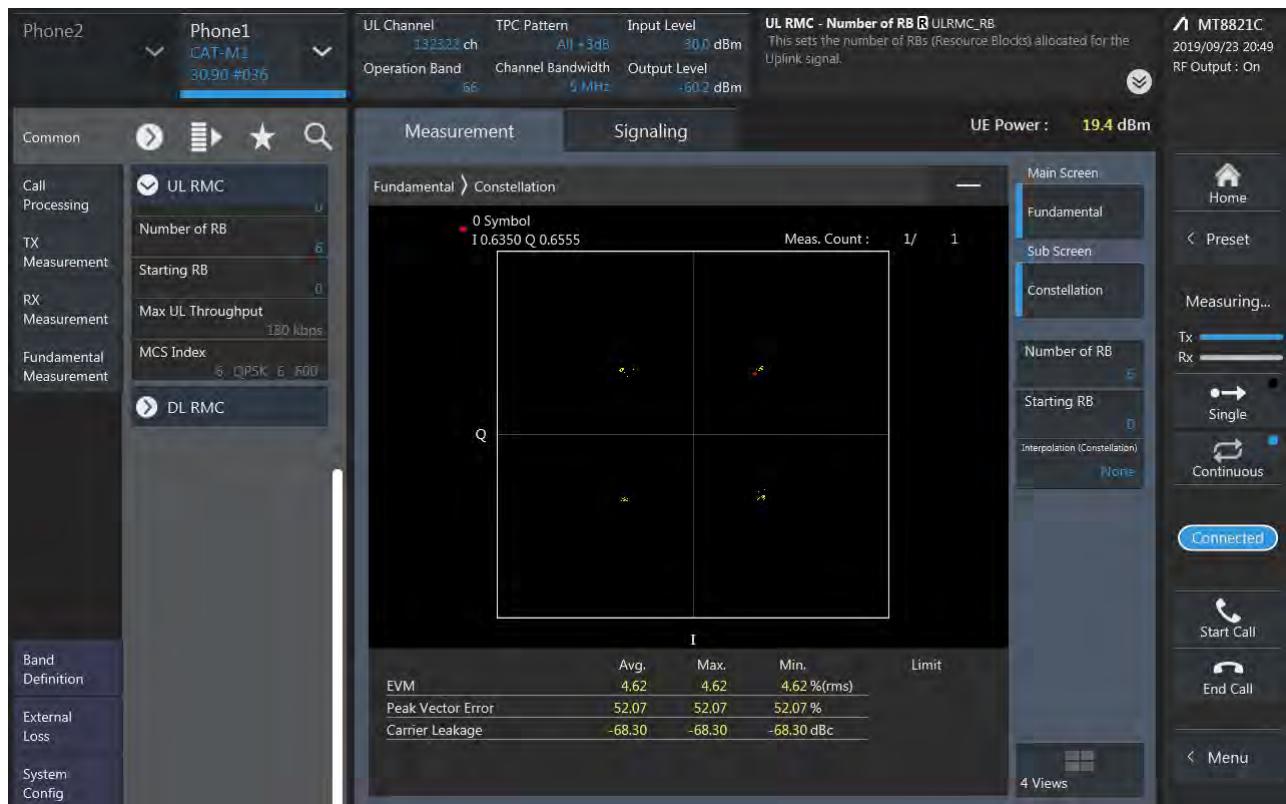
3 Modulation Characteristics

3.1 For LTE-CatM1

3.1.1 Test Band = LTE-CatM1 Band 66

3.1.1.1 Test Mode = LTE-CatM1 /QPSK 5MHz

3.1.1.1.1 Test Channel = MCH



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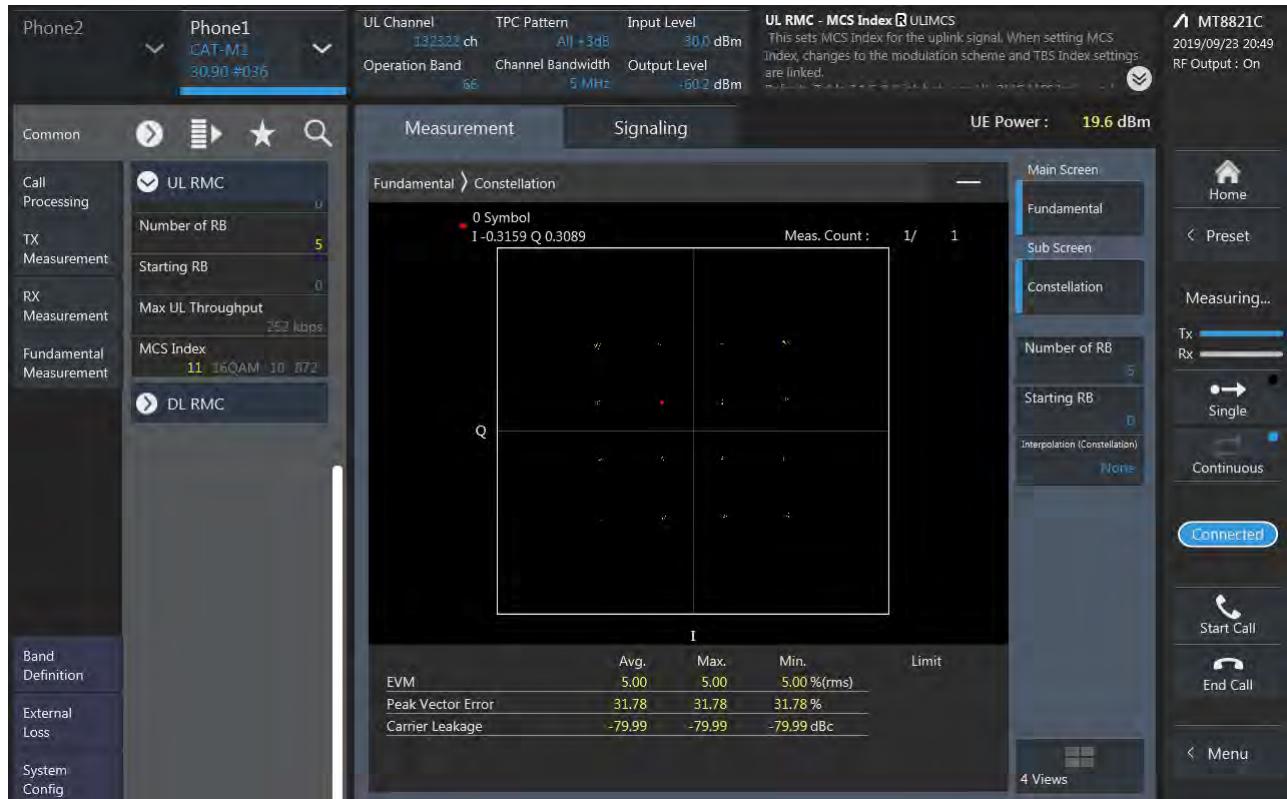


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3.1.1.2 Test Mode = LTE-CatM1 /16QAM 5MHz

3.1.1.2.1 Test Channel = MCH



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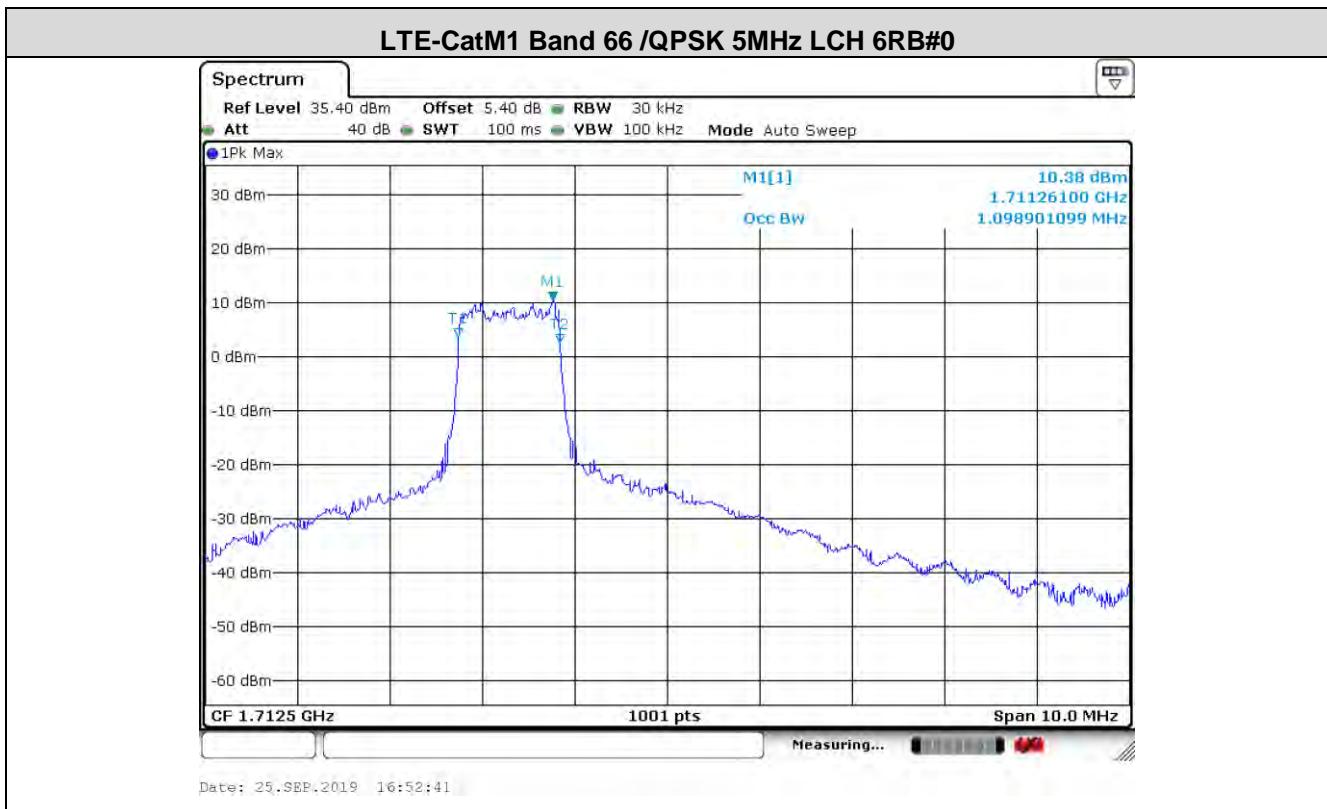
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4 26dB Bandwidth and Occupied Bandwidth

4.1 Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	26dB Emission Bandwidth [MHz]	Verdict
CatM1 Band 66	QPSK/ 5MHz	LCH	1.10	1.29	PASS
CatM1 Band 66	QPSK/ 5MHz	MCH	1.10	1.29	PASS
CatM1 Band 66	QPSK/ 5MHz	HCH	1.10	1.27	PASS
CatM1 Band 66	16QAM/ 5MHz	LCH	0.92	1.11	PASS
CatM1 Band 66	16QAM/ 5MHz	MCH	0.92	1.10	PASS
CatM1 Band 66	16QAM/ 5MHz	HCH	0.92	1.09	PASS

4.2 Test Plots



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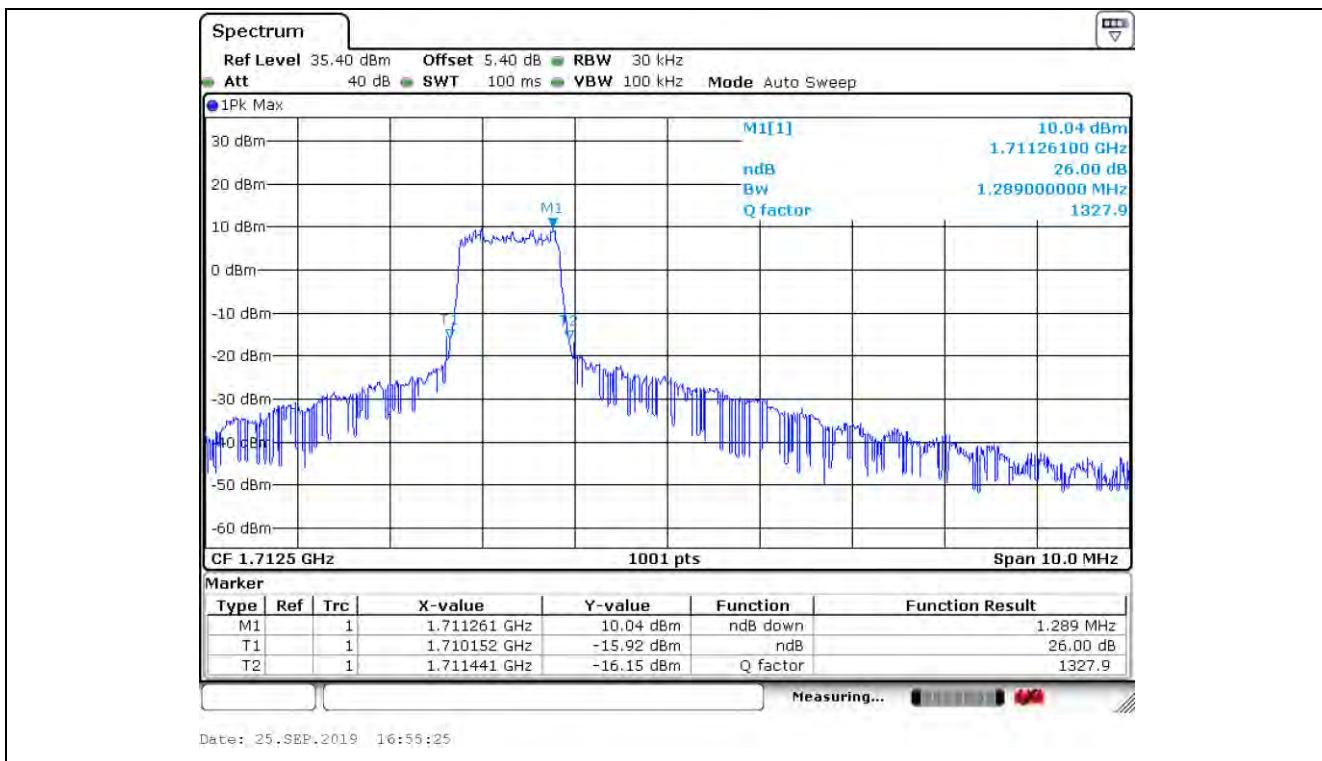
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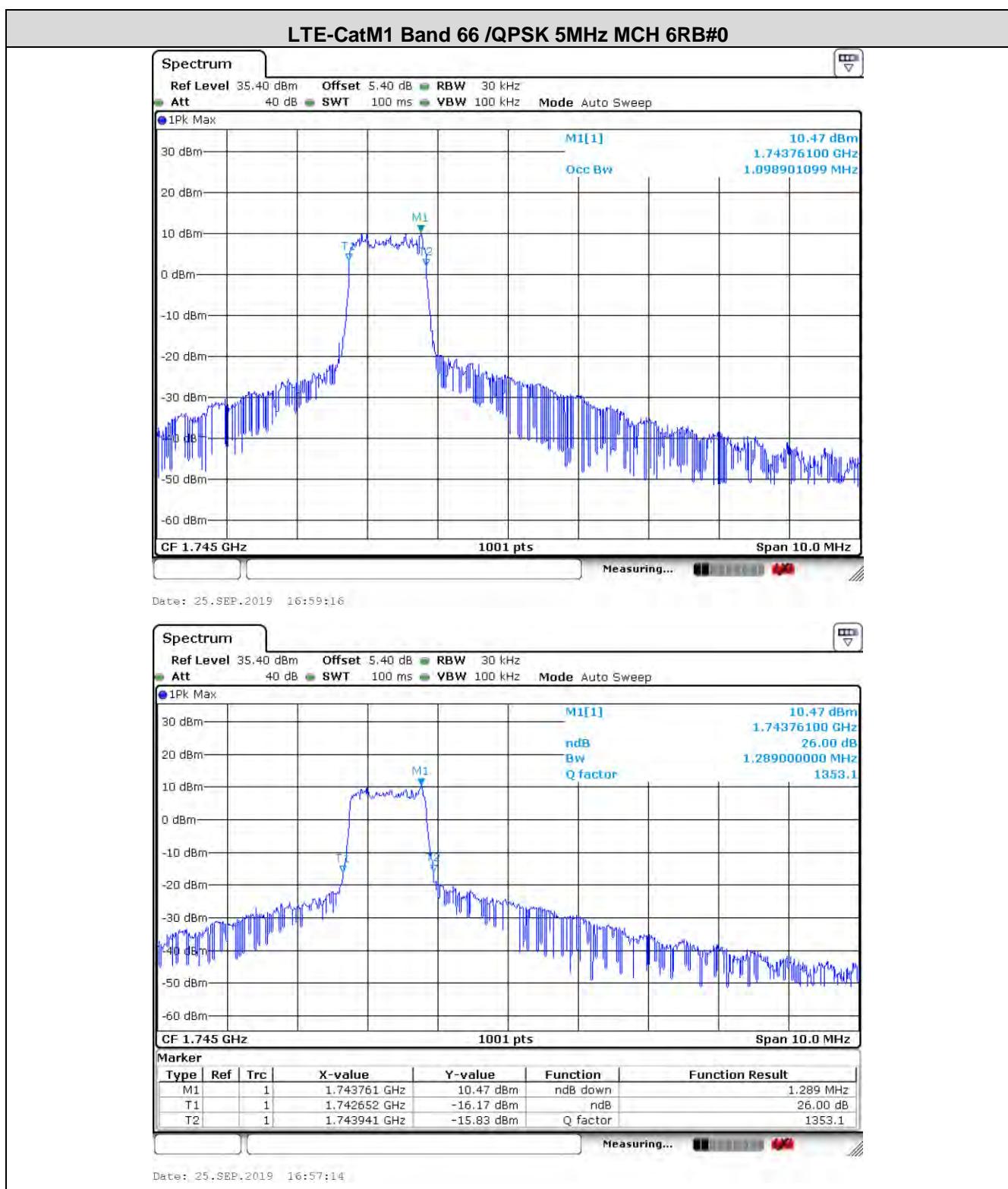
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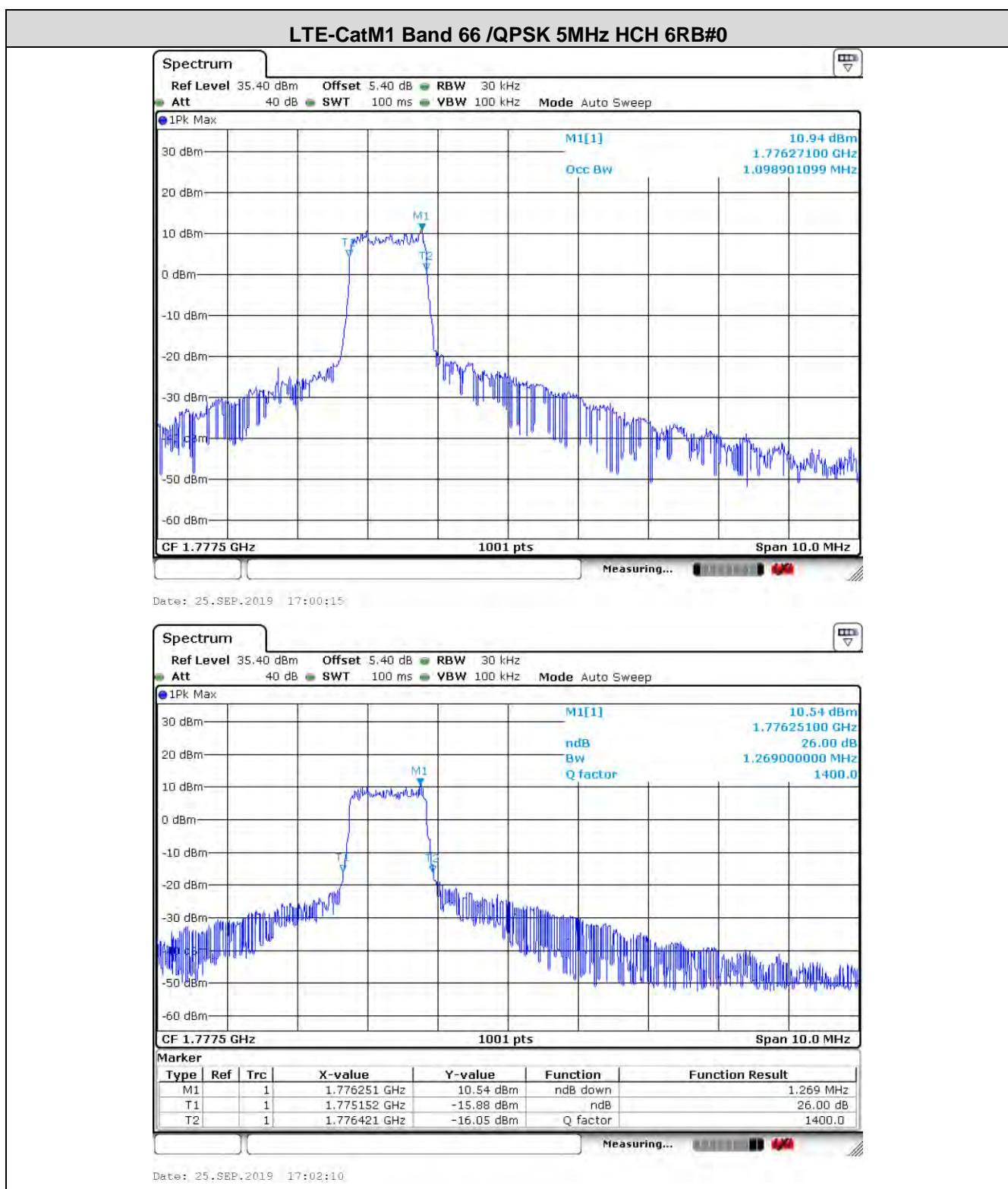


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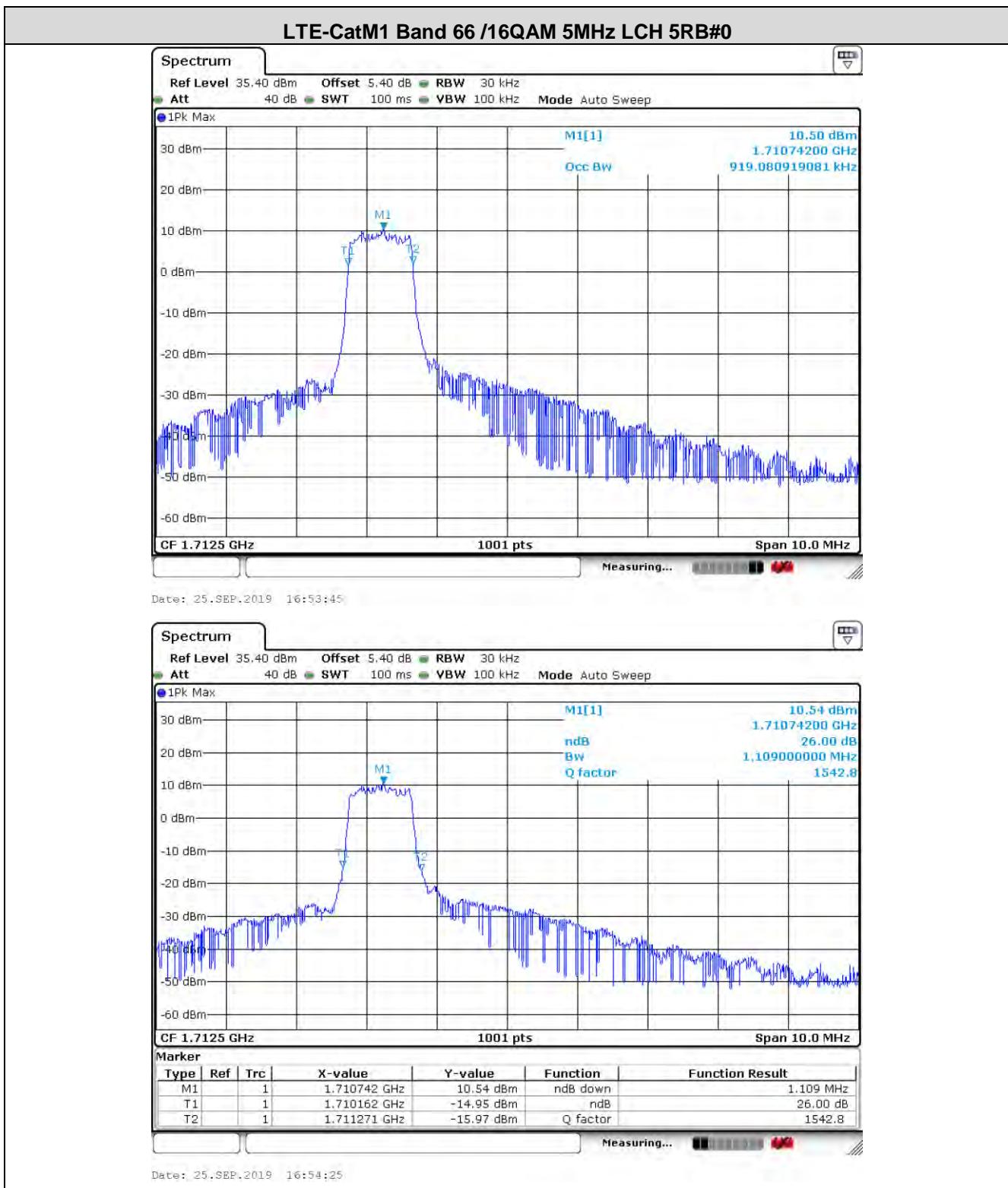


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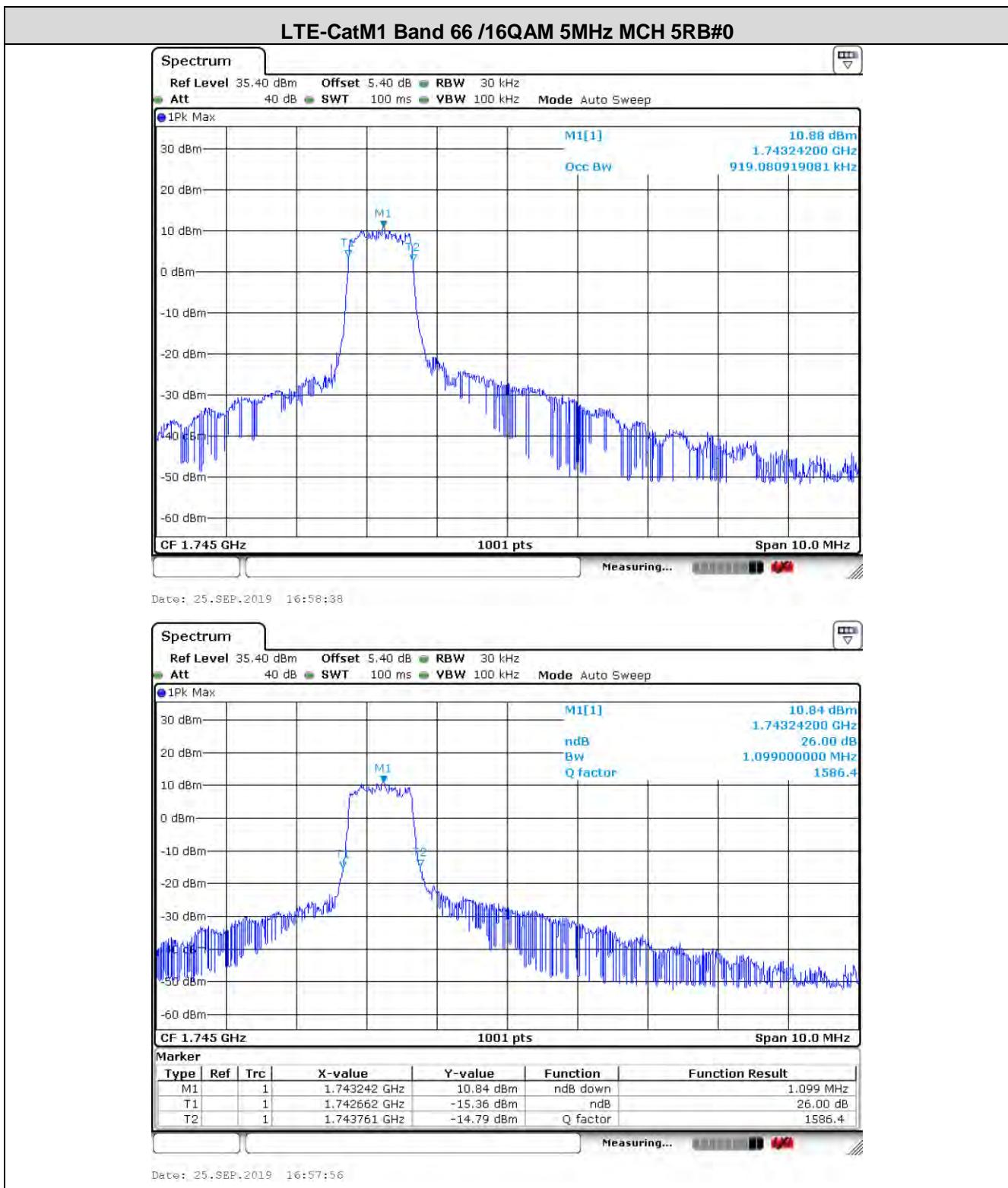
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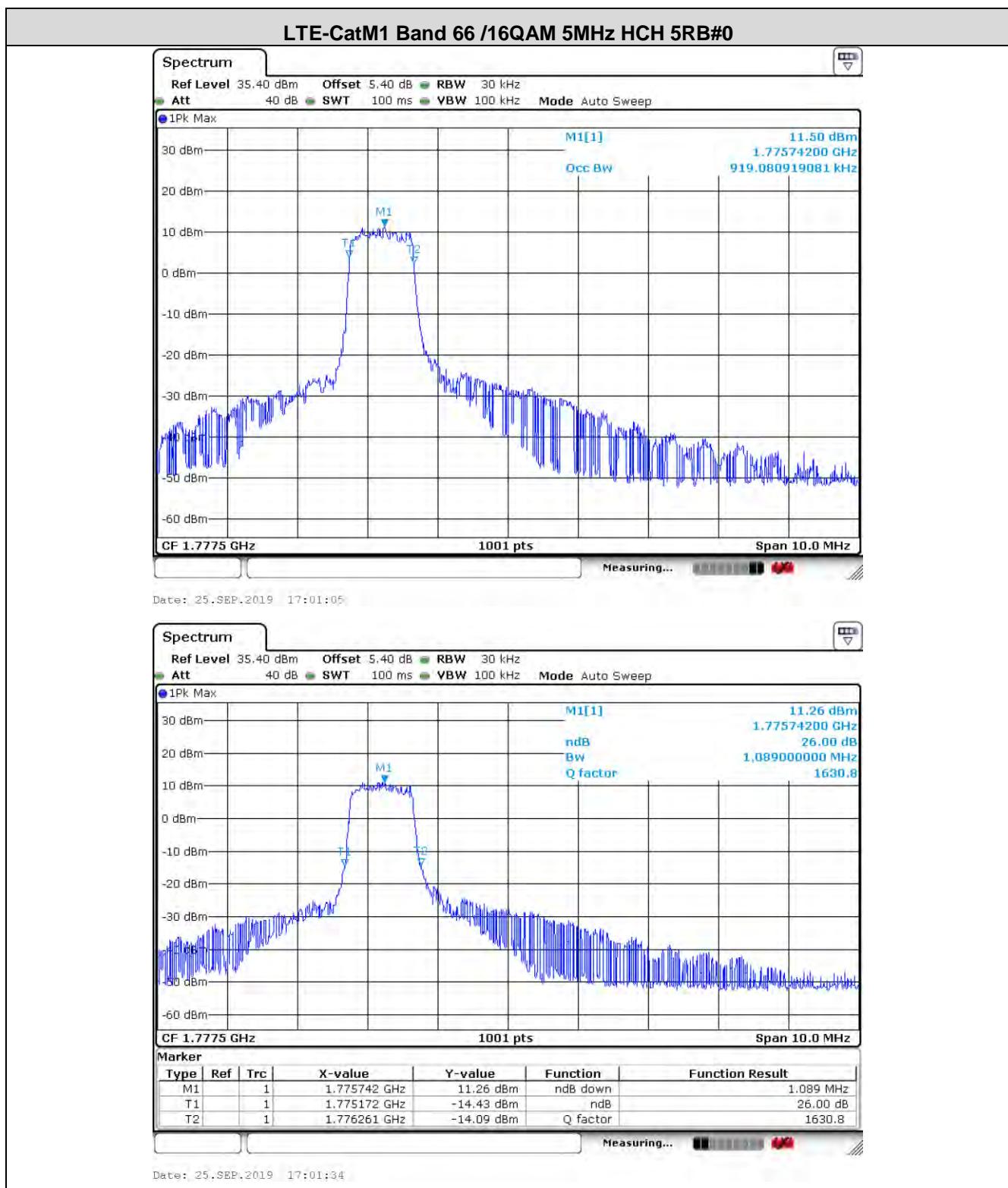
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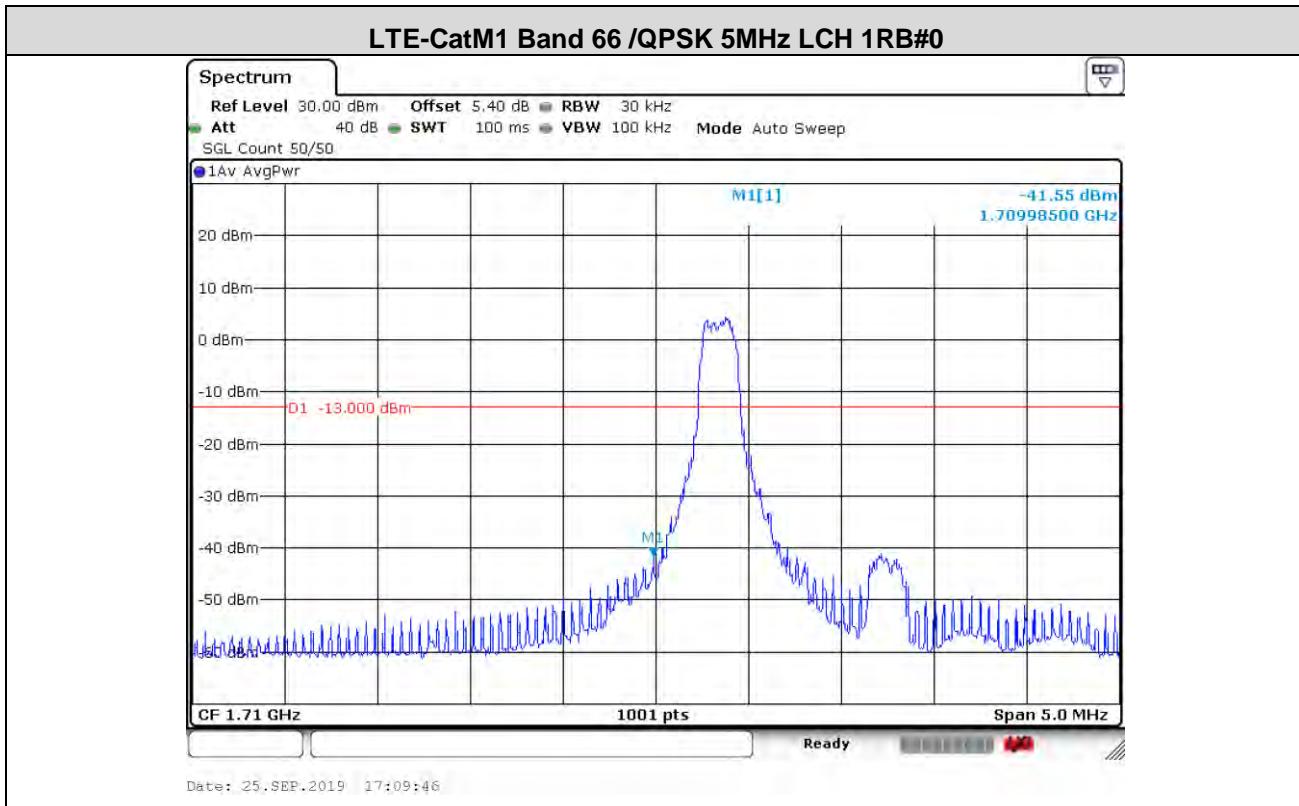
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5 Band Edges Compliance

5.1 Test Plots

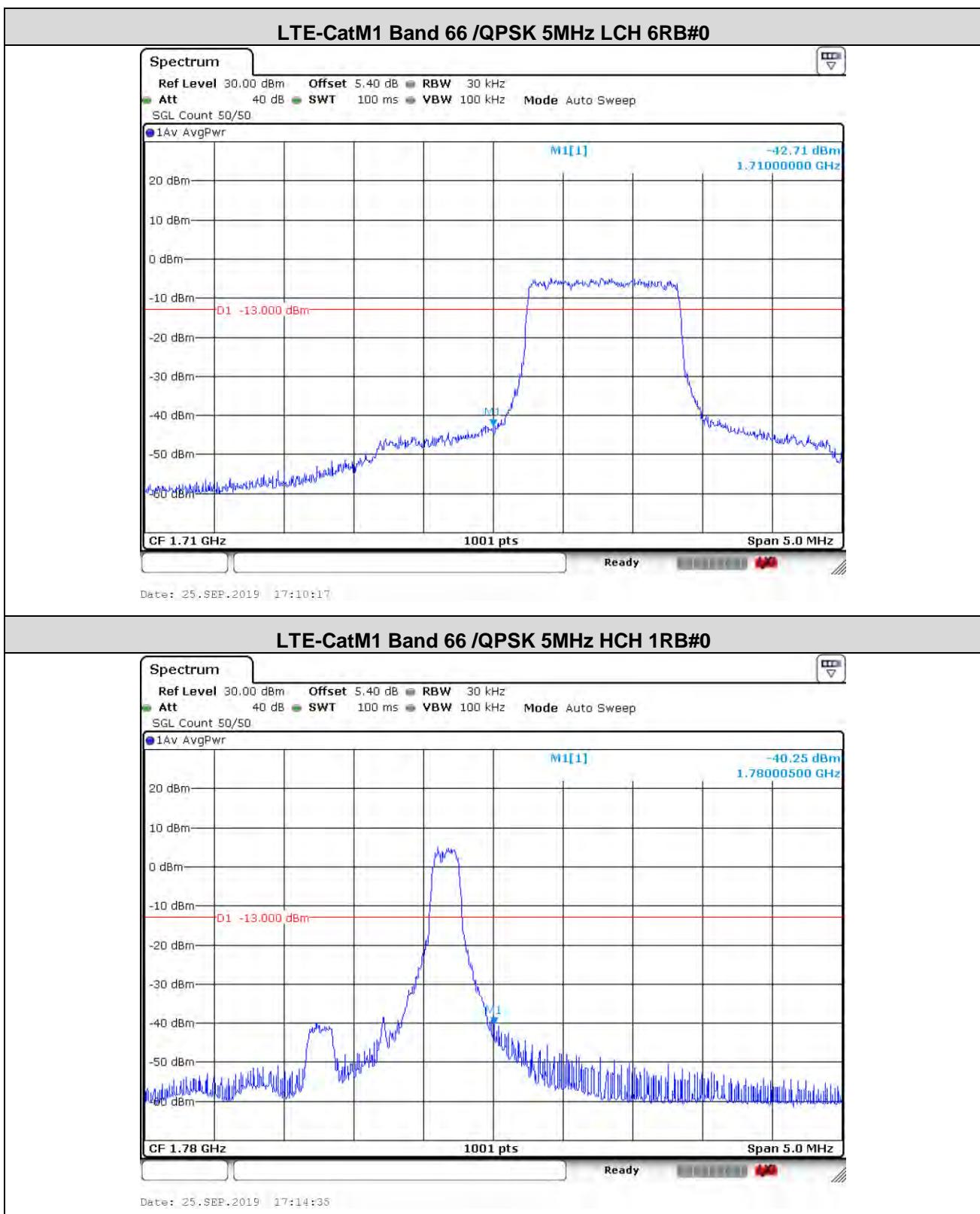


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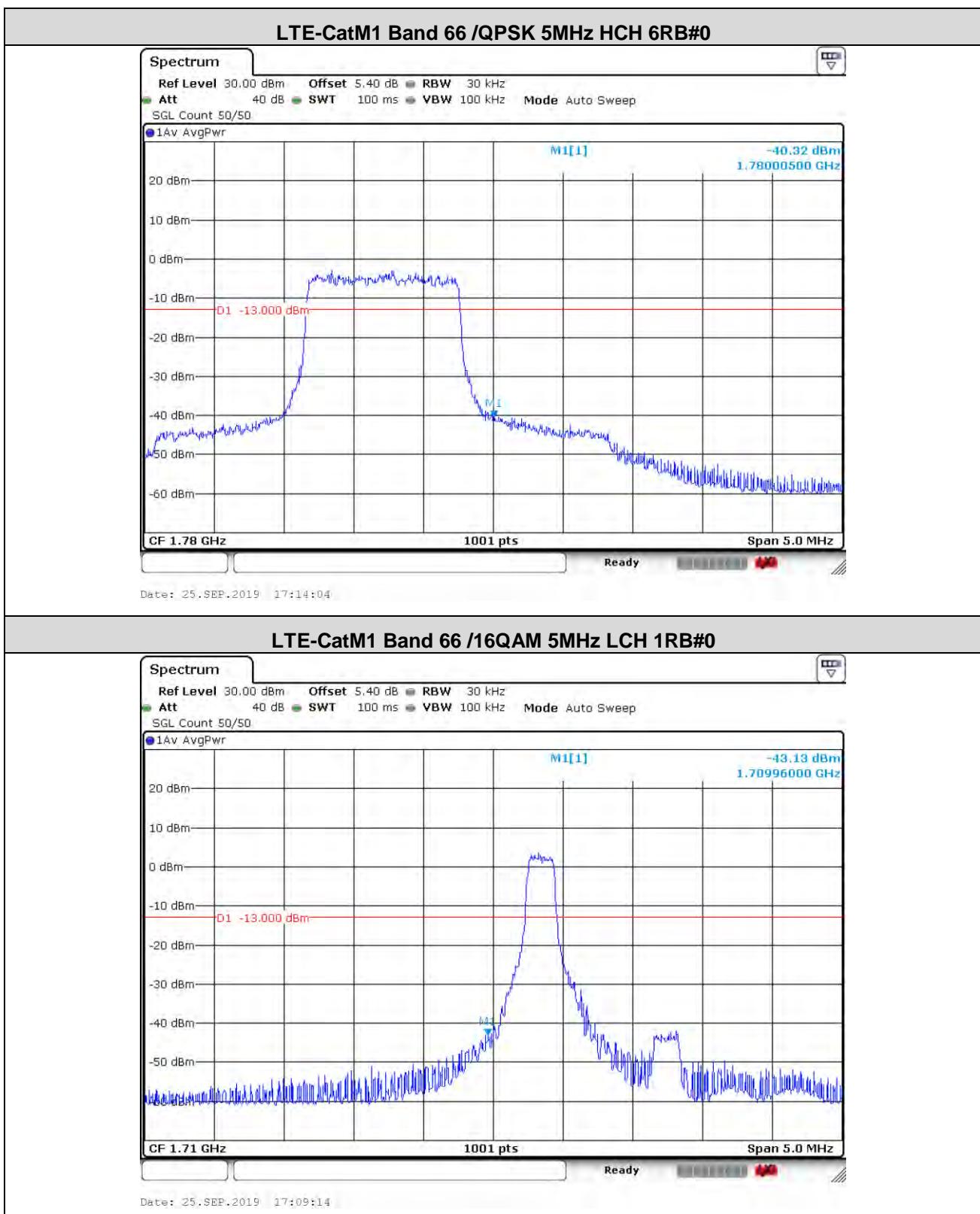
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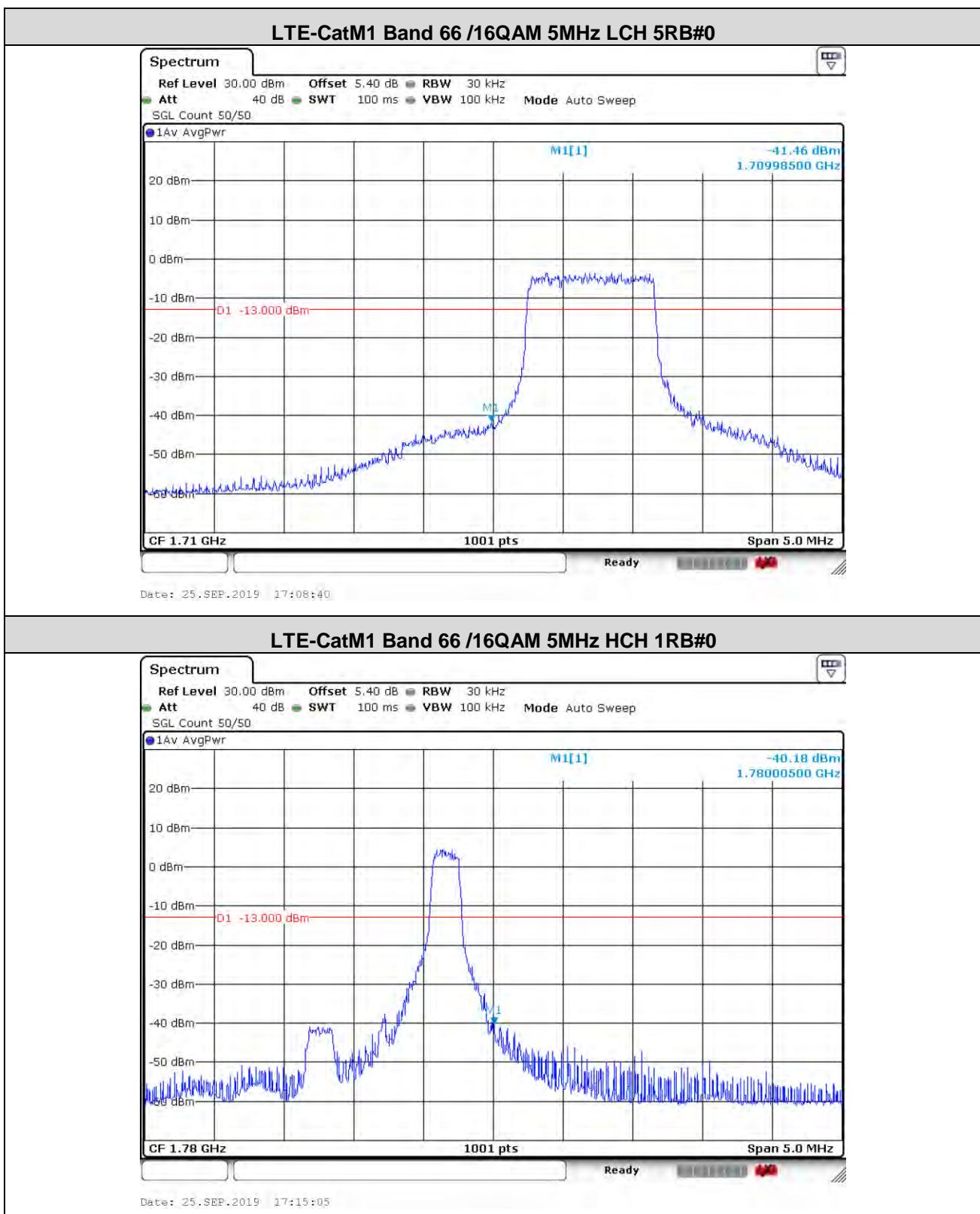


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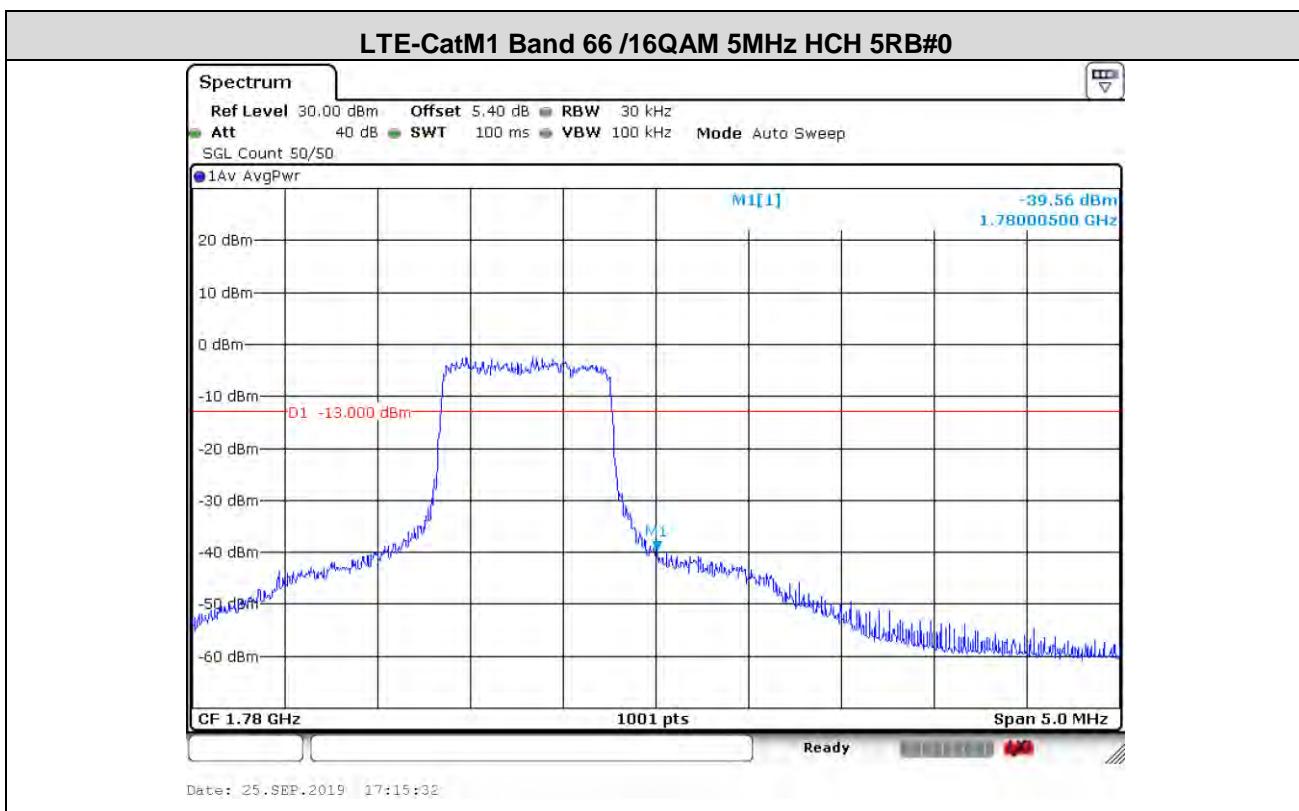


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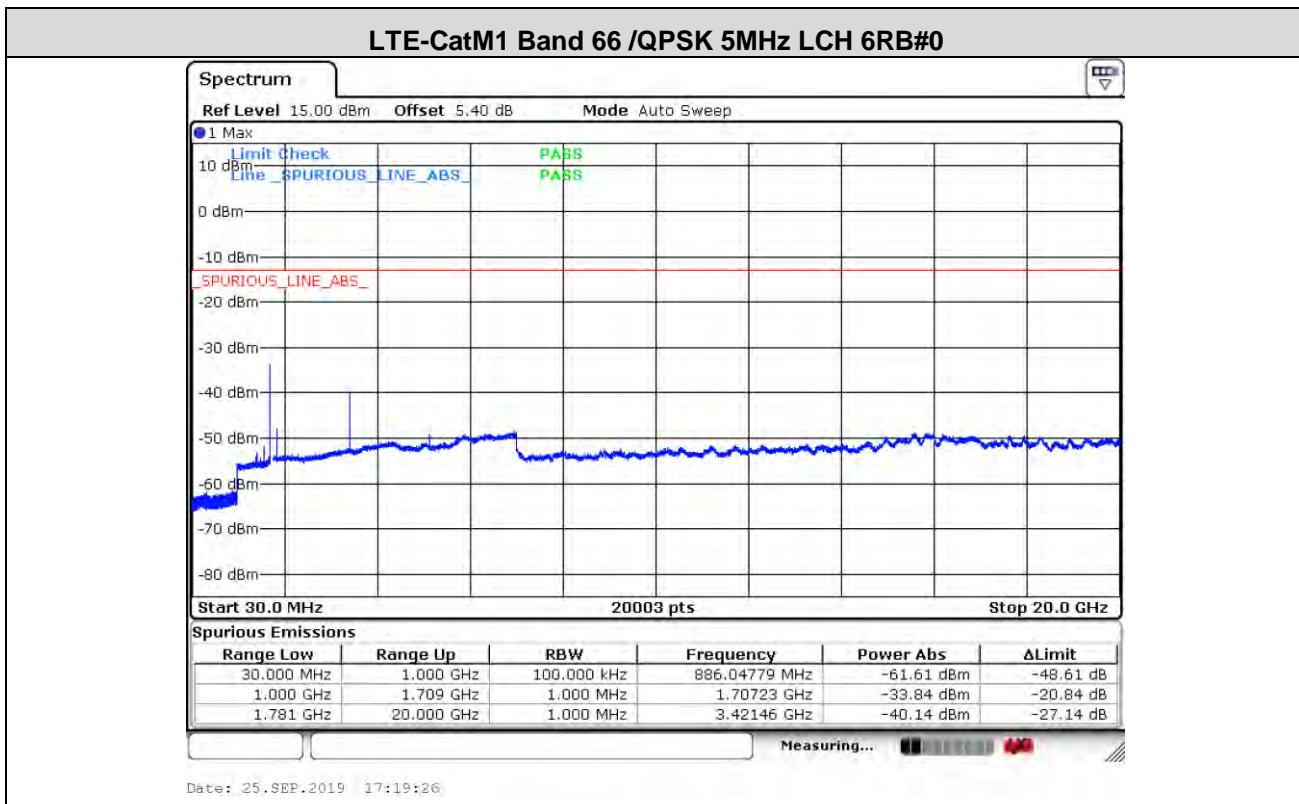
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6 Spurious Emission at Antenna Terminal

NOTE1: 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.

Part I - Test Plots

6.1 Test Plots



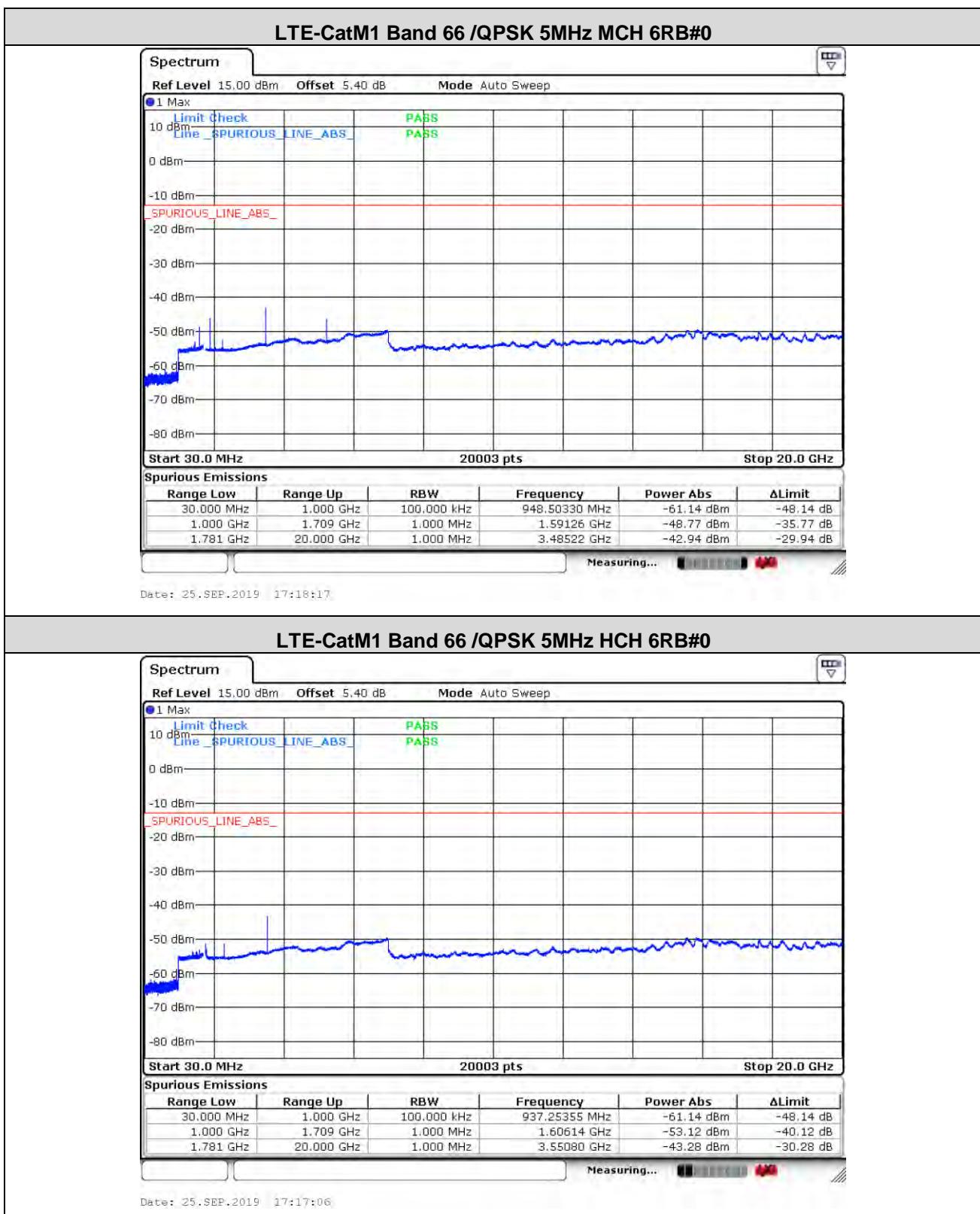
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7 Field Strength of Spurious Radiation

7.1 For LTE-CatM1

7.1.1 Test Band = LTE-CatM1 Band 66

7.1.1.1 Test Mode =LTE-CatM1/QPSK

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
42.3681	-84.21	-13.00	71.21	Vertical
105.7123	-71.87	-13.00	58.87	Vertical
335.6623	-75.83	-13.00	62.83	Vertical
2417.0834	-21.25	-13.00	8.25	Vertical
14496.3832	-43.05	-13.00	30.05	Vertical
17999.0000	-35.14	-13.00	22.14	Vertical
42.4651	-68.83	-13.00	55.83	Horizontal
104.2572	-70.34	-13.00	57.34	Horizontal
276.9743	-74.06	-13.00	61.06	Horizontal
2703.9408	-36.38	-13.00	23.38	Horizontal
3420.5140	-38.13	-13.00	25.13	Horizontal
17984.9995	-39.72	-13.00	26.72	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
41.4951	-77.95	-13.00	64.95	Vertical
71.3241	-87.98	-13.00	74.98	Vertical
697.2964	-76.93	-13.00	63.93	Vertical
2711.5423	-37.52	-13.00	24.52	Vertical
16914.9638	-40.71	-13.00	27.71	Vertical
17996.9999	-34.65	-13.00	21.65	Vertical
42.1256	-71.75	-13.00	58.75	Horizontal
112.2116	-65.85	-13.00	52.85	Horizontal
2459.4919	-33.80	-13.00	20.80	Horizontal
3505.5169	-41.00	-13.00	28.00	Horizontal
5258.5753	-46.62	-13.00	33.62	Horizontal
17999.0000	-39.35	-13.00	26.35	Horizontal

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7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
80.5880	-75.37	-13.00	62.37	Vertical
108.3314	-72.03	-13.00	59.03	Vertical
316.1643	-76.21	-13.00	63.21	Vertical
2703.9408	-37.70	-13.00	24.70	Vertical
14564.8855	-42.65	-13.00	29.65	Vertical
17994.9998	-34.80	-13.00	21.80	Vertical
42.3196	-70.70	-13.00	57.70	Horizontal
109.0105	-67.01	-13.00	54.01	Horizontal
2676.3353	-37.16	-13.00	24.16	Horizontal
3550.0183	-40.98	-13.00	27.98	Horizontal
5325.5775	-44.64	-13.00	31.64	Horizontal
16994.4665	-38.90	-13.00	25.90	Horizontal

NOTE:

- 1) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) only the worst case data presented in this report.

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8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	RB Config	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	TN	VL	4.14	0.00242	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	TN	VN	-6.10	-0.00356	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	TN	VH	6.71	0.00392	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	TN	VL	8.69	0.00498	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	TN	VN	5.38	0.00308	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	TN	VH	5.35	0.00307	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	TN	VL	-5.28	-0.00297	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	TN	VN	9.61	0.00541	±2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	TN	VH	-2.91	-0.00164	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	TN	VL	6.61	0.00386	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	TN	VN	9.82	0.00574	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	TN	VH	9.43	0.00551	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	TN	VL	9.54	0.00547	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	TN	VN	-2.55	-0.00146	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	TN	VH	-0.29	-0.00016	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	TN	VL	-4.43	-0.00249	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	TN	VN	5.52	0.00310	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	TN	VH	4.52	0.00254	±2.5	PASS



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8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	RB Config	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	-30	-8.58	-0.00501	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	-20	3.52	0.00206	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	-10	-2.28	-0.00133	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	0	-7.74	-0.00452	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	10	1.76	0.00103	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	20	9.41	0.00550	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	30	0.69	0.00041	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	40	3.66	0.00214	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	LCH	6RB#0	VN	50	-3.28	-0.00191	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	-30	-8.89	-0.00510	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	-20	8.59	0.00492	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	-10	2.50	0.00143	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	0	-5.03	-0.00288	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	10	3.94	0.00226	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	20	-7.59	-0.00435	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	30	-6.89	-0.00395	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	40	8.10	0.00464	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	MCH	6RB#0	VN	50	-8.07	-0.00462	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	-30	5.47	0.00308	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	-20	9.25	0.00520	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	-10	1.49	0.00084	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	0	6.33	0.00356	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	10	-8.10	-0.00455	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	20	-2.75	-0.00155	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	30	-8.35	-0.00470	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	40	-9.00	-0.00506	± 2.5	PASS
CatM1 Band 66	QPSK 5MHz	HCH	6RB#0	VN	50	3.08	0.00173	± 2.5	PASS

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Test Band	Test Mode	Test Channel	RB Config	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	-30	-4.83	-0.00282	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	-20	5.20	0.00304	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	-10	-2.08	-0.00121	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	0	0.50	0.00029	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	10	-3.17	-0.00185	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	20	7.49	0.00437	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	30	-0.34	-0.00020	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	40	5.94	0.00347	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	LCH	5RB#0	VN	50	2.66	0.00155	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	-30	9.24	0.00530	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	-20	4.92	0.00282	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	-10	-6.09	-0.00349	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	0	-6.85	-0.00393	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	10	6.27	0.00359	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	20	9.97	0.00571	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	30	-1.41	-0.00081	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	40	3.47	0.00199	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	MCH	5RB#0	VN	50	4.48	0.00257	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	-30	-8.51	-0.00479	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	-20	-9.73	-0.00547	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	-10	8.21	0.00462	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	0	4.04	0.00227	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	10	-8.09	-0.00455	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	20	7.00	0.00394	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	30	-0.15	-0.00008	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	40	-1.55	-0.00087	±2.5	PASS
CatM1 Band 66	16QAM 5MHz	HCH	5RB#0	VN	50	4.30	0.00242	±2.5	PASS

The End

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Appendix B

LTE-CatM1 Band 85



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CONTENT

	Page
1 EFFECTIVE RADIATED POWER OUTPUT DATA.....	3
2 PEAK-TO-AVERAGE RATIO.....	4
2.1 TEST RESULTS.....	4
2.2 TEST PLOTS.....	4
3 MODULATION CHARACTERISTICS	8
3.1 FOR LTE-CATM1.....	8
3.1.1 Test Band = LTE-CatM1 Band 85.....	8
4 26DB BANDWIDTH AND OCCUPIED BANDWIDTH.....	10
4.1 TEST RESULTS	10
4.2 TEST PLOTS.....	10
5 BAND EDGES COMPLIANCE.....	17
5.1 TEST PLOTS.....	17
6 SPURIOUS EMISSION AT ANTENNA TERMINAL	22
6.1 TEST PLOTS.....	22
7 FIELD STRENGTH OF SPURIOUS RADIATION.....	24
7.1 FOR LTE-CATM1.....	24
7.1.1 Test Band = LTE-CatM1 Band 85.....	24
8 FREQUENCY STABILITY.....	26
8.1 FREQUENCY ERROR VS. VOLTAGE	26
8.2 FREQUENCY ERROR VS. TEMPERATURE.....	27



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1 Effective Radiated Power Output Data

Effective Radiated Power of Transmitter (ERP) for LTE-CatM1 Band 85

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 85	QPSK	5M	LCH	1RB#0	20.79	17.94	34.77	PASS
CatM1 Band 85	QPSK	5M	LCH	5RB#0	19.48	16.63	34.77	PASS
CatM1 Band 85	QPSK	5M	LCH	6RB#0	19.45	16.60	34.77	PASS
CatM1 Band 85	QPSK	5M	MCH	1RB#0	20.76	17.91	34.77	PASS
CatM1 Band 85	QPSK	5M	MCH	5RB#0	19.55	16.70	34.77	PASS
CatM1 Band 85	QPSK	5M	MCH	6RB#0	19.62	16.77	34.77	PASS
CatM1 Band 85	QPSK	5M	HCH	1RB#0	20.73	17.88	34.77	PASS
CatM1 Band 85	QPSK	5M	HCH	5RB#0	19.51	16.66	34.77	PASS
CatM1 Band 85	QPSK	5M	HCH	6RB#0	19.55	16.70	34.77	PASS
CatM1 Band 85	16QAM	5M	LCH	1RB#0	20.42	17.57	34.77	PASS
CatM1 Band 85	16QAM	5M	LCH	5RB#0	19.51	16.66	34.77	PASS
CatM1 Band 85	16QAM	5M	MCH	1RB#0	20.39	17.54	34.77	PASS
CatM1 Band 85	16QAM	5M	MCH	5RB#0	19.63	16.78	34.77	PASS
CatM1 Band 85	16QAM	5M	HCH	1RB#0	20.47	17.62	34.77	PASS
CatM1 Band 85	16QAM	5M	HCH	5RB#0	19.57	16.72	34.77	PASS
CatM1 Band 85	QPSK	10M	LCH	1RB#0	20.73	17.88	34.77	PASS
CatM1 Band 85	QPSK	10M	LCH	5RB#0	20.67	17.82	34.77	PASS
CatM1 Band 85	QPSK	10M	LCH	6RB#0	19.49	16.64	34.77	PASS
CatM1 Band 85	QPSK	10M	MCH	1RB#0	20.85	18.00	34.77	PASS
CatM1 Band 85	QPSK	10M	MCH	5RB#0	20.64	17.79	34.77	PASS
CatM1 Band 85	QPSK	10M	MCH	6RB#0	19.66	16.81	34.77	PASS
CatM1 Band 85	QPSK	10M	HCH	1RB#0	20.77	17.92	34.77	PASS
CatM1 Band 85	QPSK	10M	HCH	5RB#0	20.65	17.80	34.77	PASS
CatM1 Band 85	QPSK	10M	HCH	6RB#0	19.57	16.72	34.77	PASS
CatM1 Band 85	16QAM	10M	LCH	1RB#0	20.31	17.46	34.77	PASS
CatM1 Band 85	16QAM	10M	LCH	5RB#0	20.55	17.70	34.77	PASS
CatM1 Band 85	16QAM	10M	MCH	1RB#0	20.49	17.64	34.77	PASS
CatM1 Band 85	16QAM	10M	MCH	5RB#0	20.63	17.78	34.77	PASS
CatM1 Band 85	16QAM	10M	HCH	1RB#0	20.38	17.53	34.77	PASS
CatM1 Band 85	16QAM	10M	HCH	5RB#0	20.59	17.74	34.77	PASS

Note:

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

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

$$\text{ERP [dBm]} = \text{Conducted Power [dBm]} + \text{Gain [dBi]} - 2.15$$

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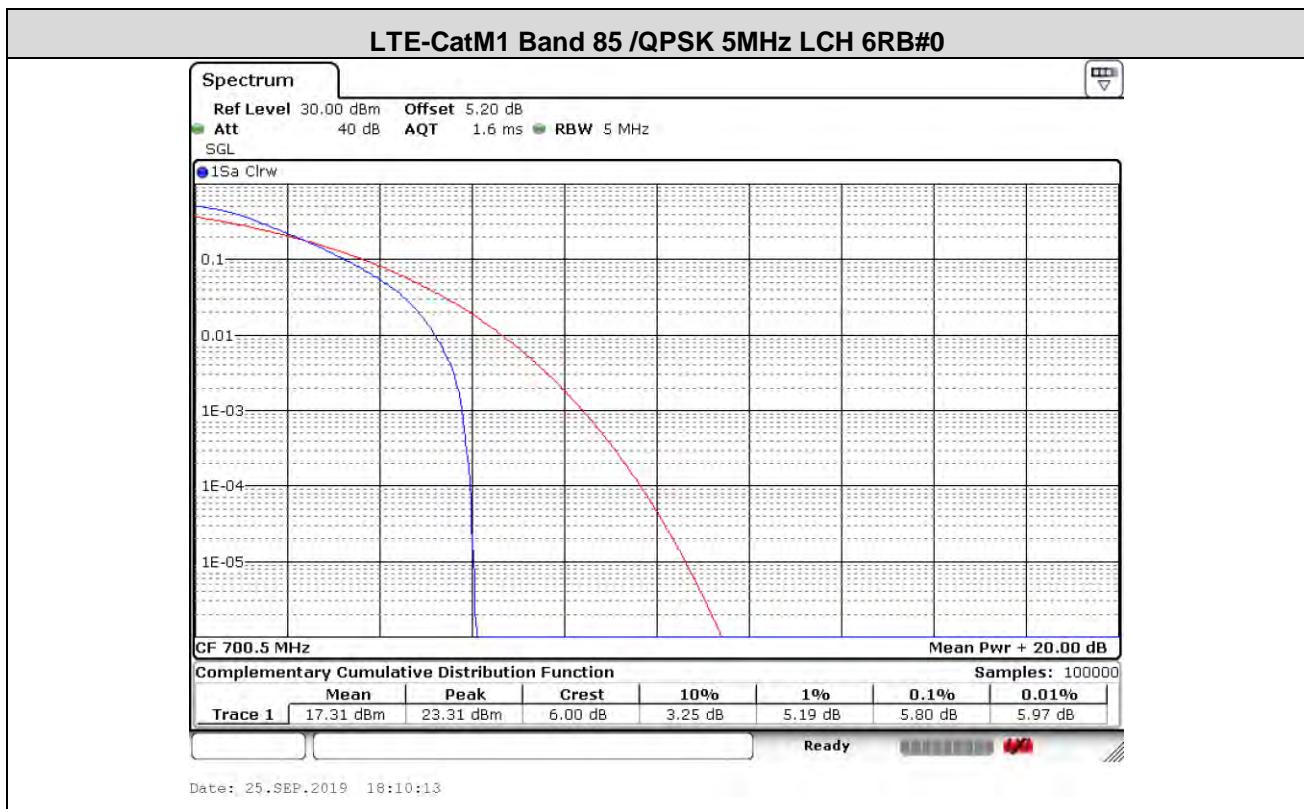
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2 Peak-to-Average Ratio

2.1 Test Results

Test Band	Test Mode	RB Config	Test Channel	Measured [dB]	Limit [dB]	Verdict
CatM1 Band 85	QPSK/5M	6RB#0	LCH	5.80	13	PASS
CatM1 Band 85	QPSK/5M	6RB#0	MCH	4.75	13	PASS
CatM1 Band 85	QPSK/5M	6RB#0	HCH	5.65	13	PASS
CatM1 Band 85	16QAM/5M	5RB#0	LCH	5.25	13	PASS
CatM1 Band 85	16QAM/5M	5RB#0	MCH	4.78	13	PASS
CatM1 Band 85	16QAM/5M	5RB#0	HCH	6.20	13	PASS

2.2 Test Plots

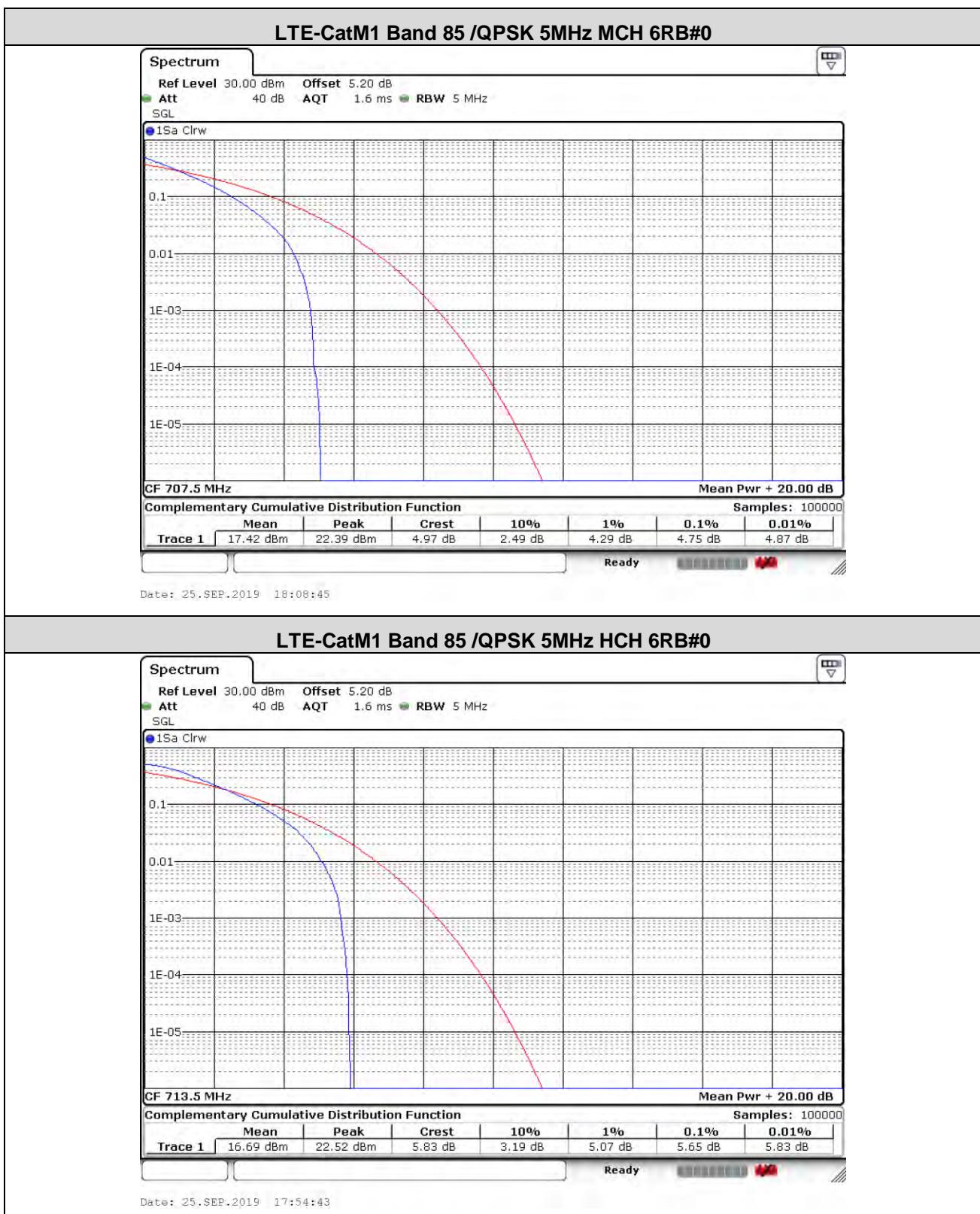


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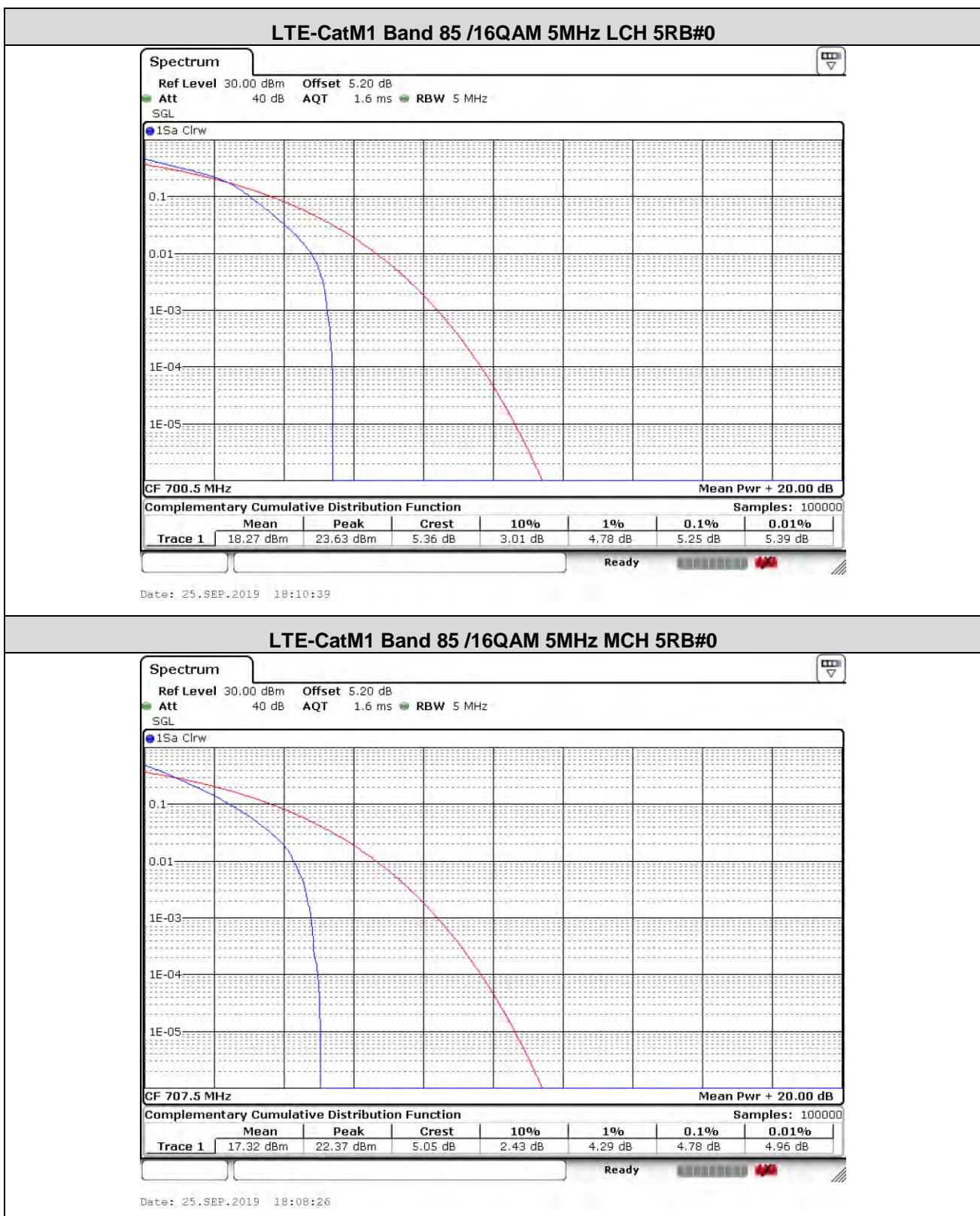


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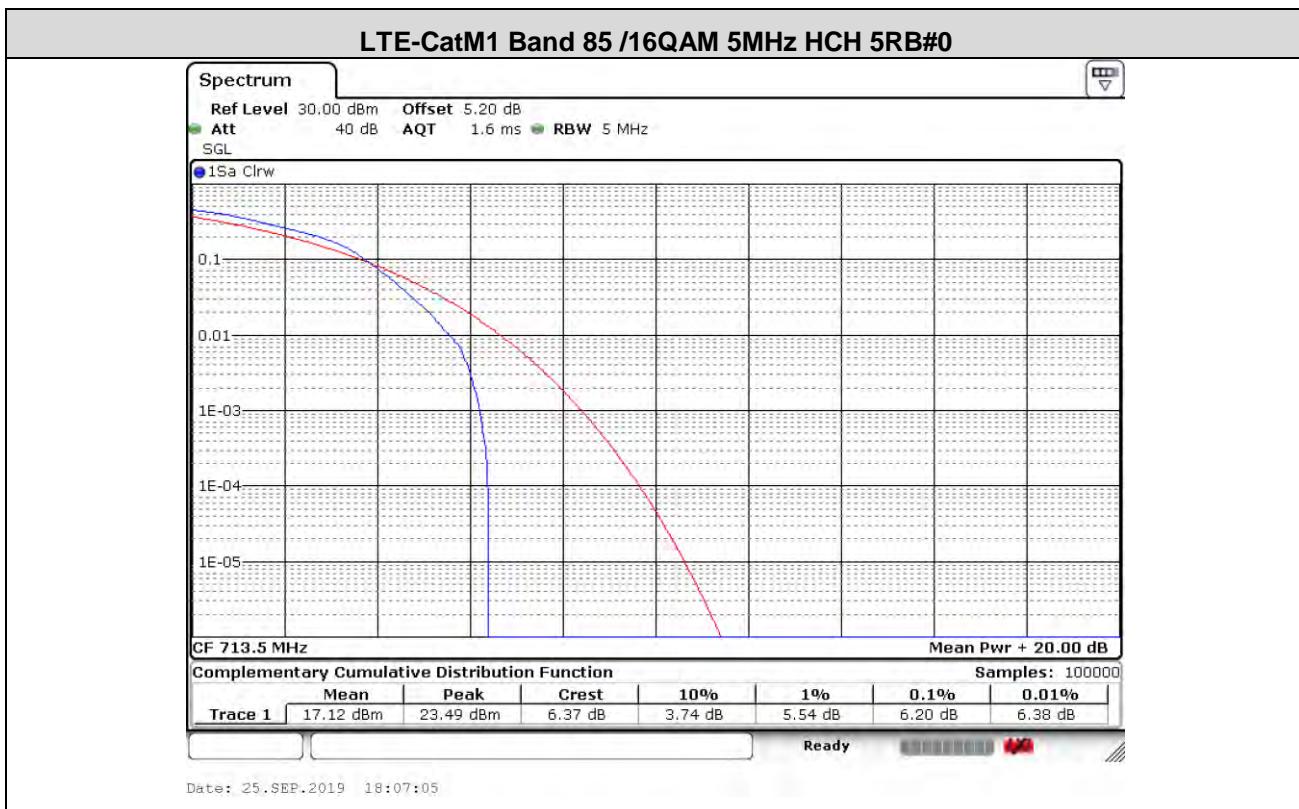


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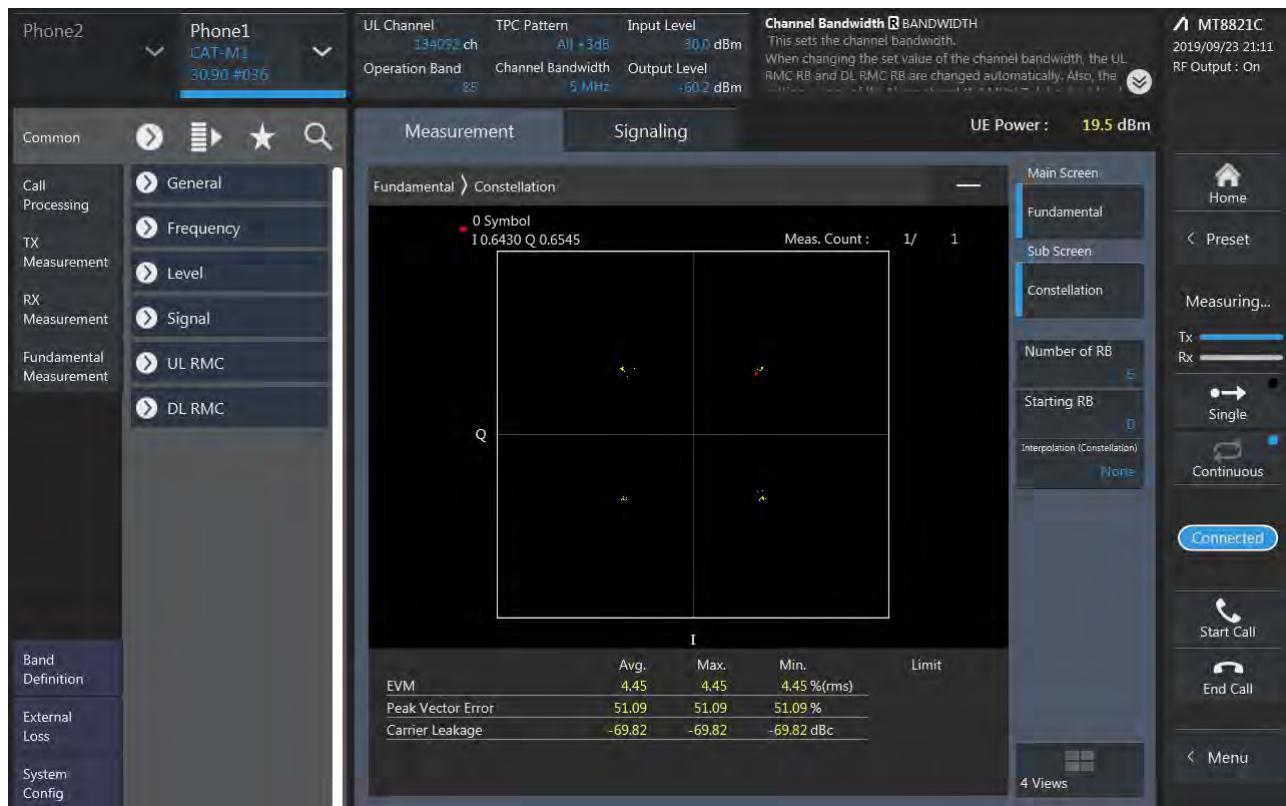
3 Modulation Characteristics

3.1 For LTE-CatM1

3.1.1 Test Band = LTE-CatM1 Band 85

3.1.1.1 Test Mode = LTE-CatM1 /QPSK 5MHz

3.1.1.1.1 Test Channel = MCH



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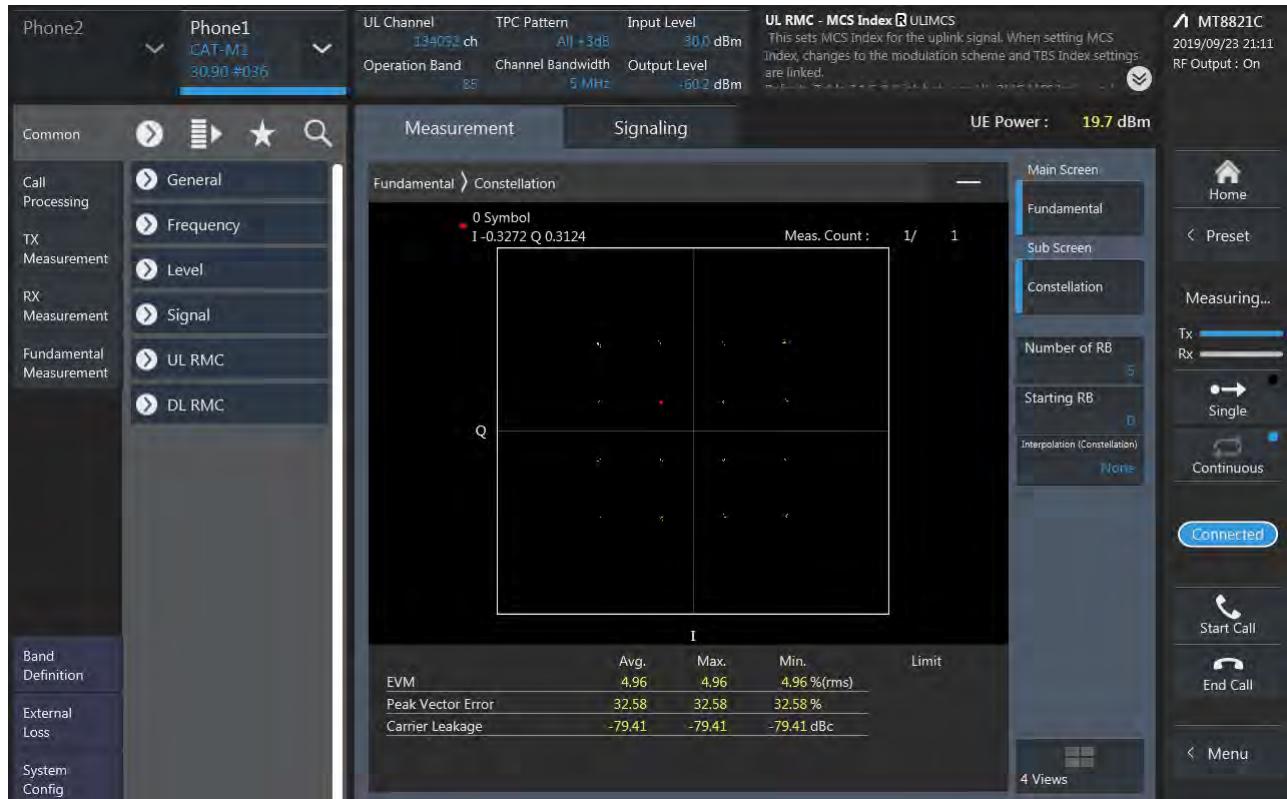


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3.1.1.2 Test Mode = LTE-CatM1 /16QAM 5MHz

3.1.1.2.1 Test Channel = MCH



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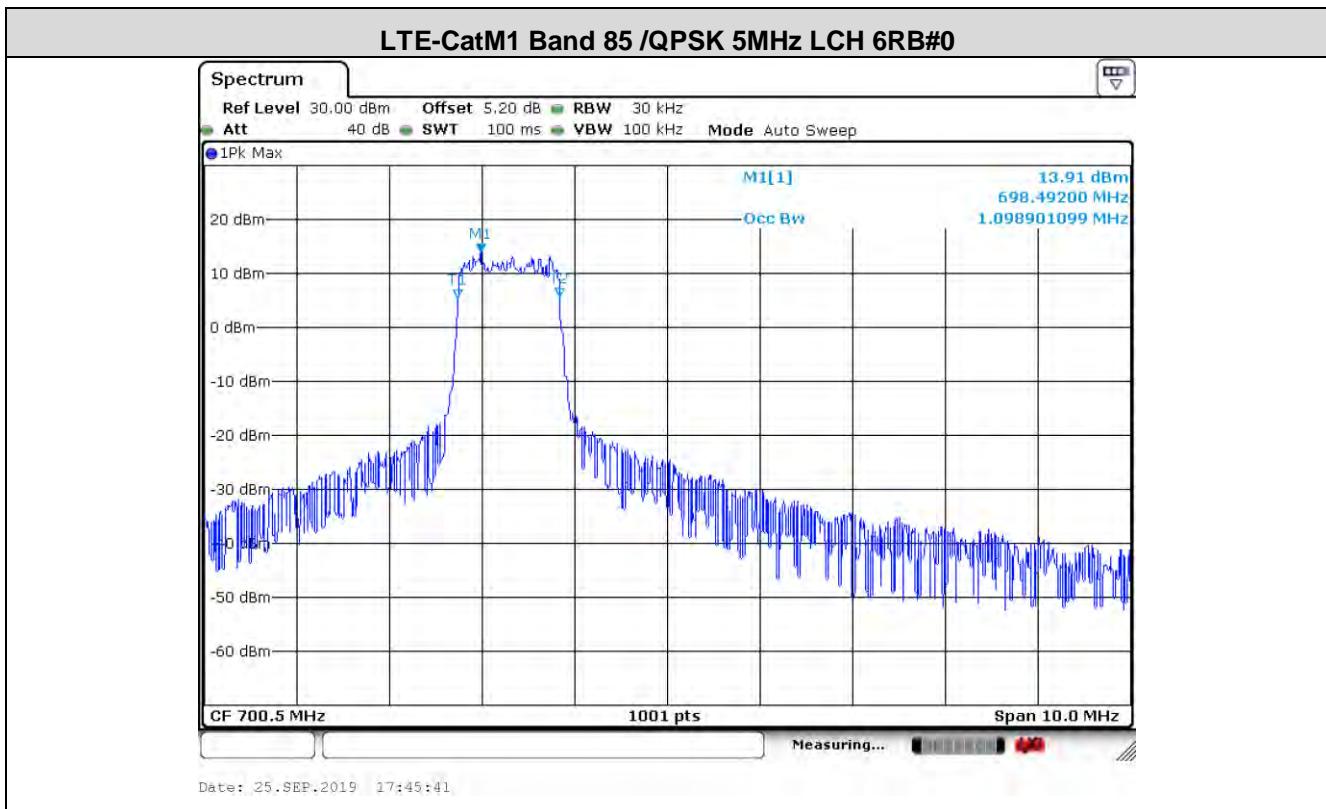
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4 26dB Bandwidth and Occupied Bandwidth

4.1 Test Results

Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	26dB Emission Bandwidth [MHz]	Verdict
CatM1 Band 85	QPSK/ 5MHz	LCH	1.10	1.29	PASS
CatM1 Band 85	QPSK/ 5MHz	MCH	1.10	1.28	PASS
CatM1 Band 85	QPSK/ 5MHz	HCH	1.10	1.29	PASS
CatM1 Band 85	16QAM/ 5MHz	LCH	0.92	1.13	PASS
CatM1 Band 85	16QAM/ 5MHz	MCH	0.92	1.09	PASS
CatM1 Band 85	16QAM/ 5MHz	HCH	0.92	1.10	PASS

4.2 Test Plots



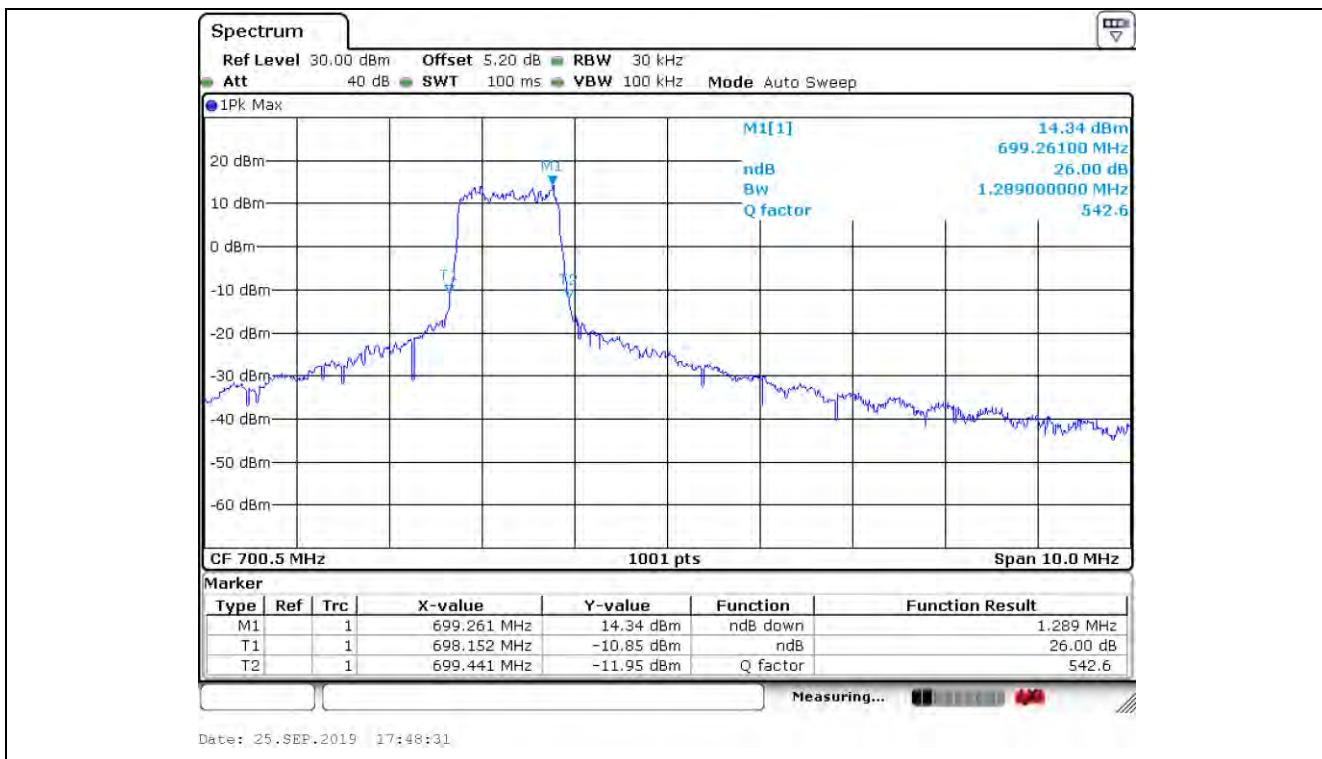
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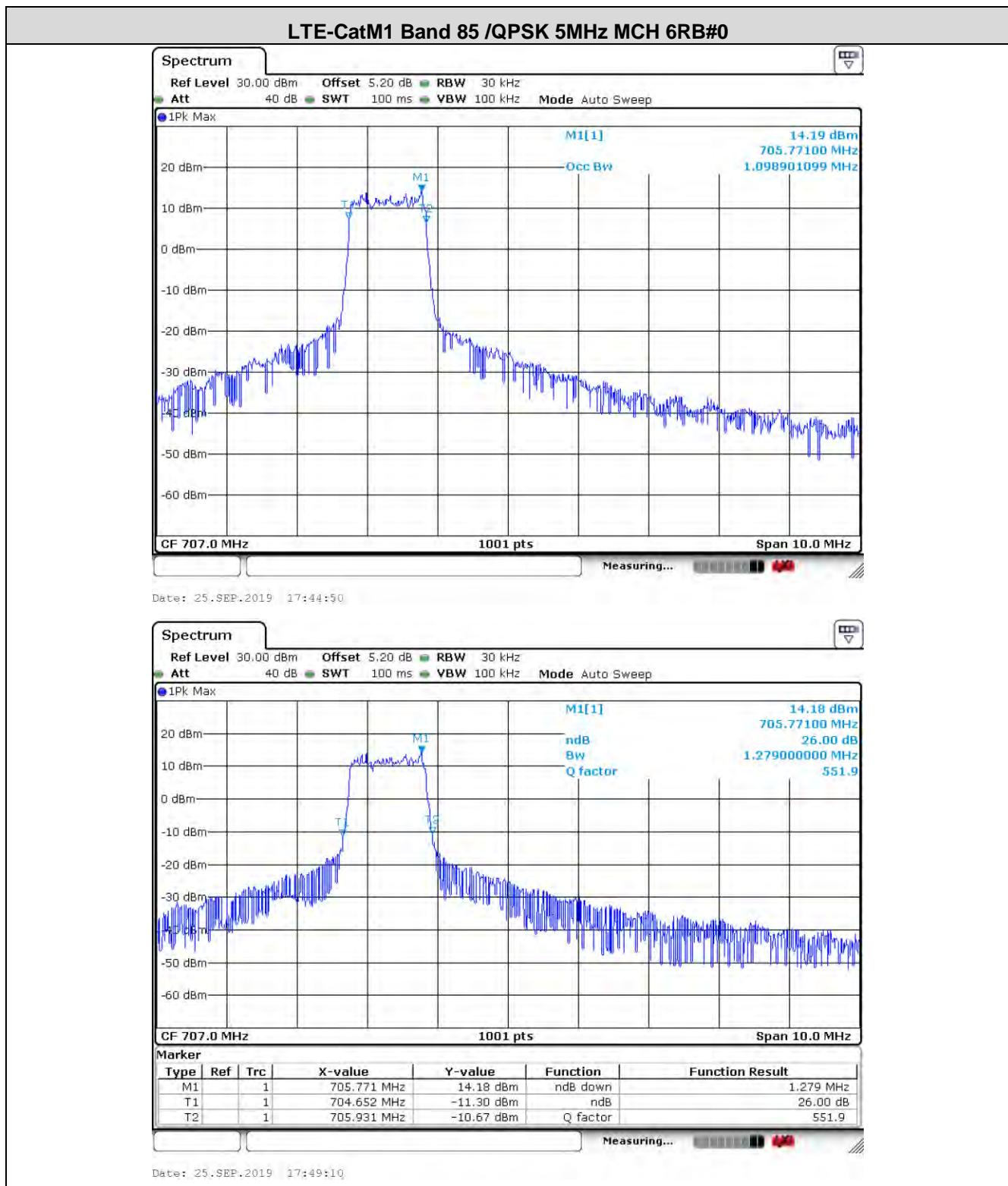
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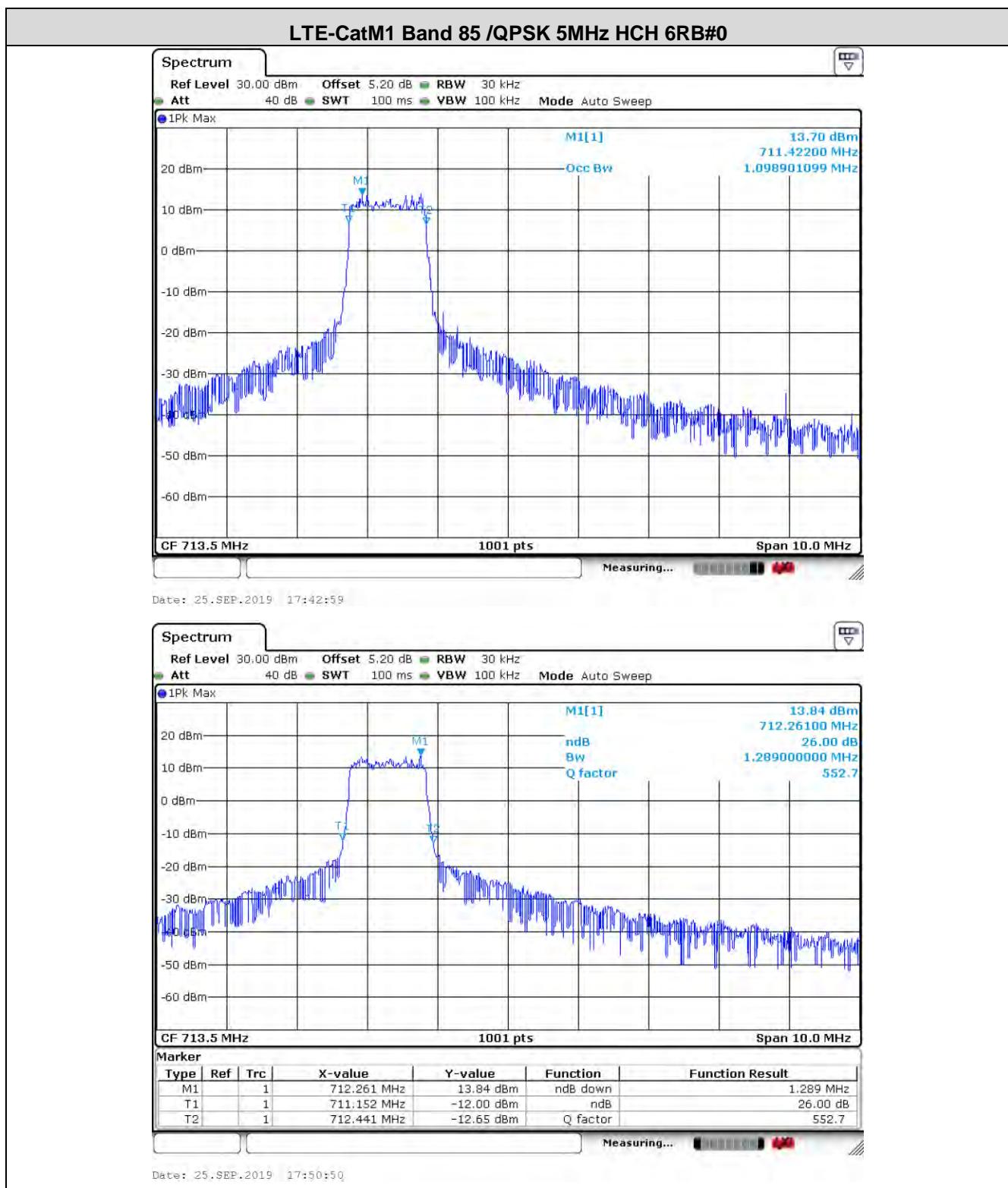
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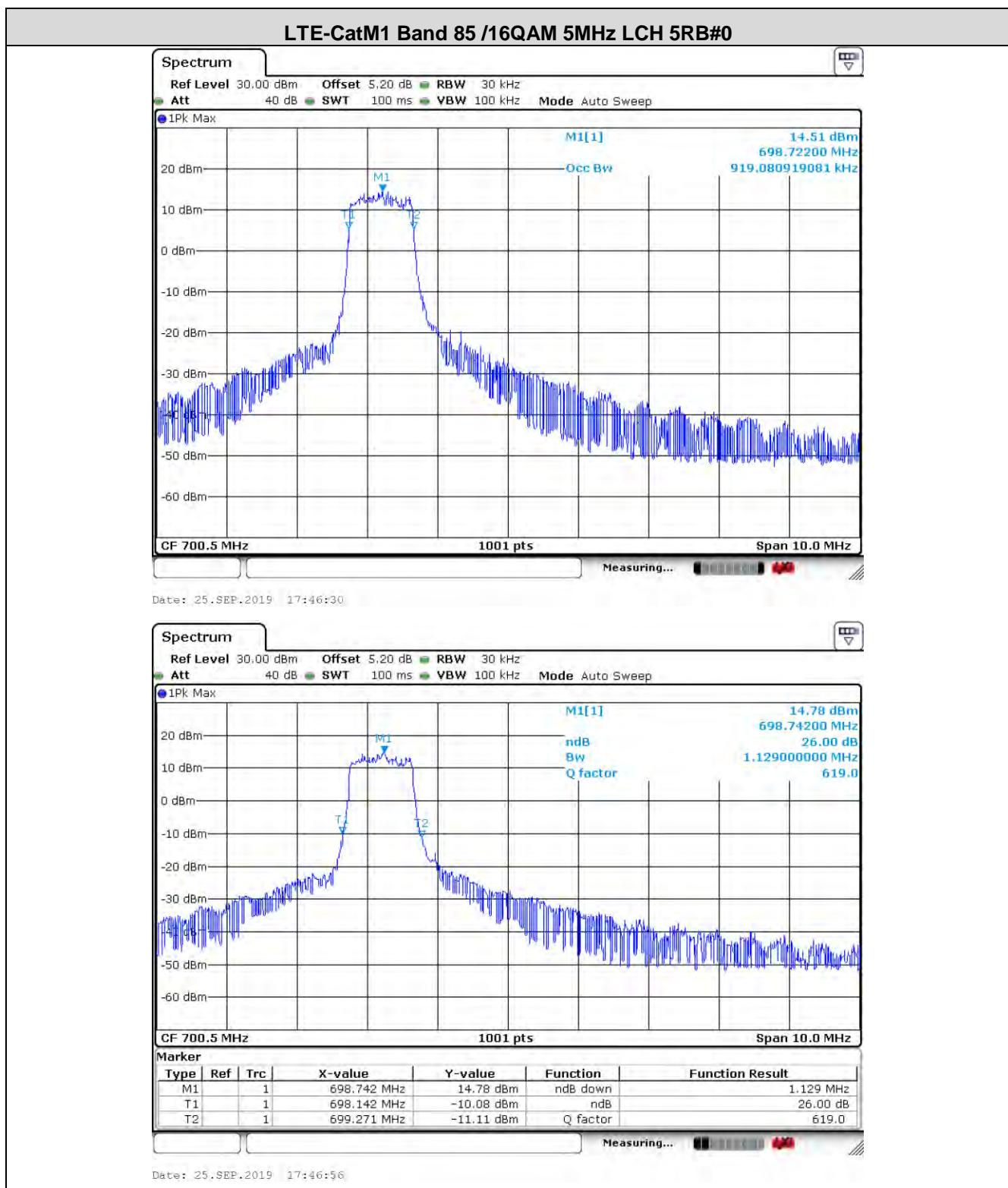
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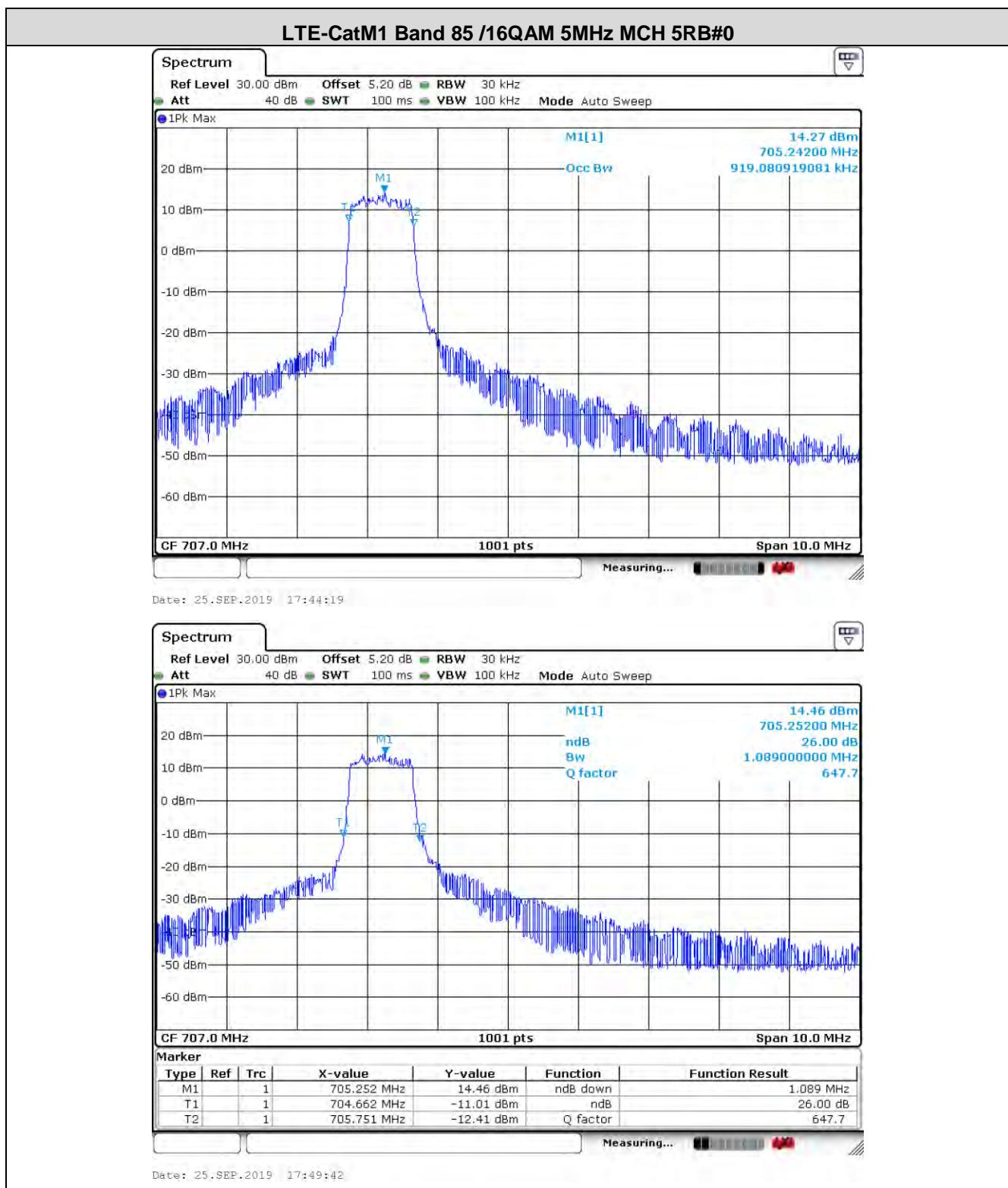
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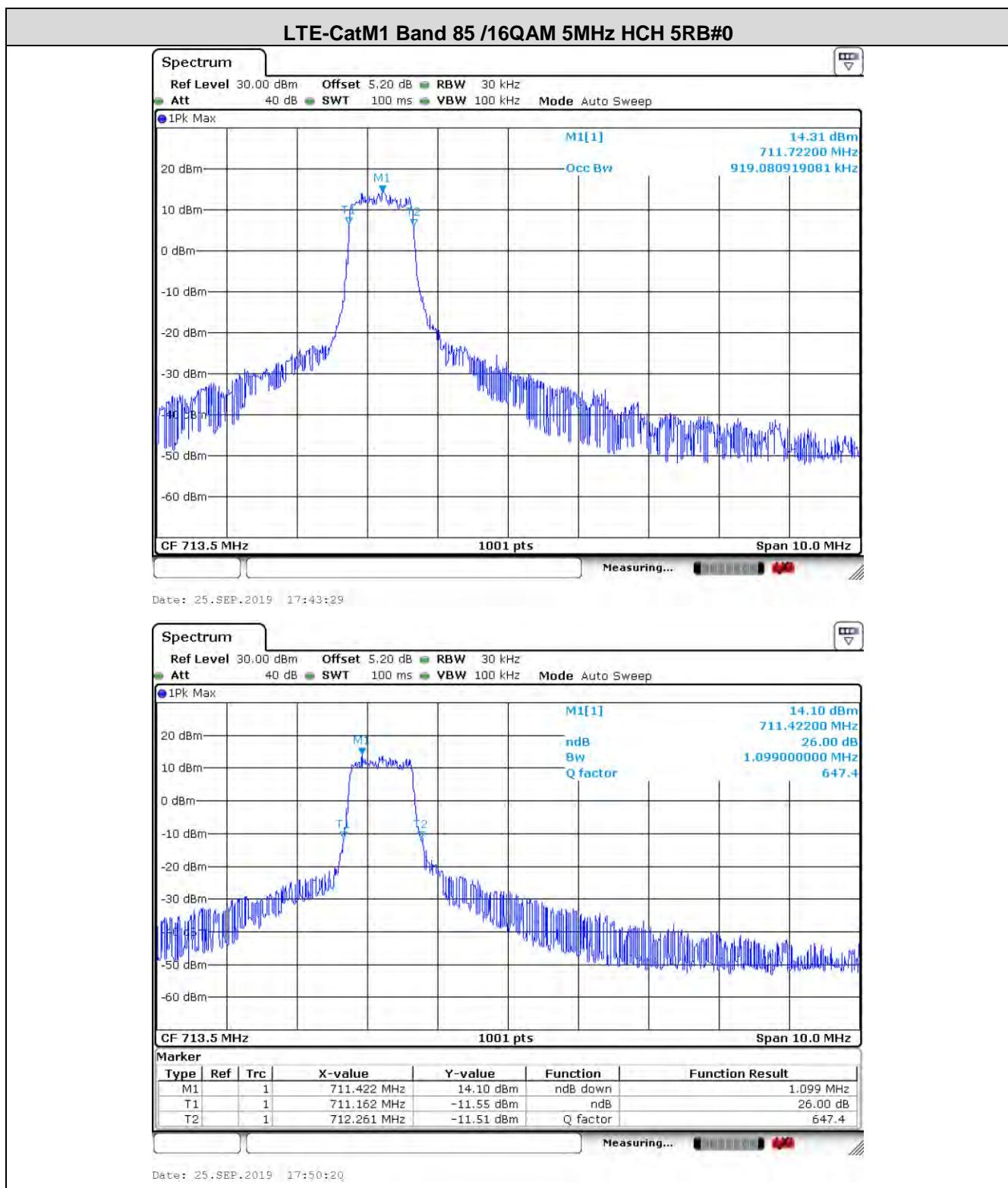


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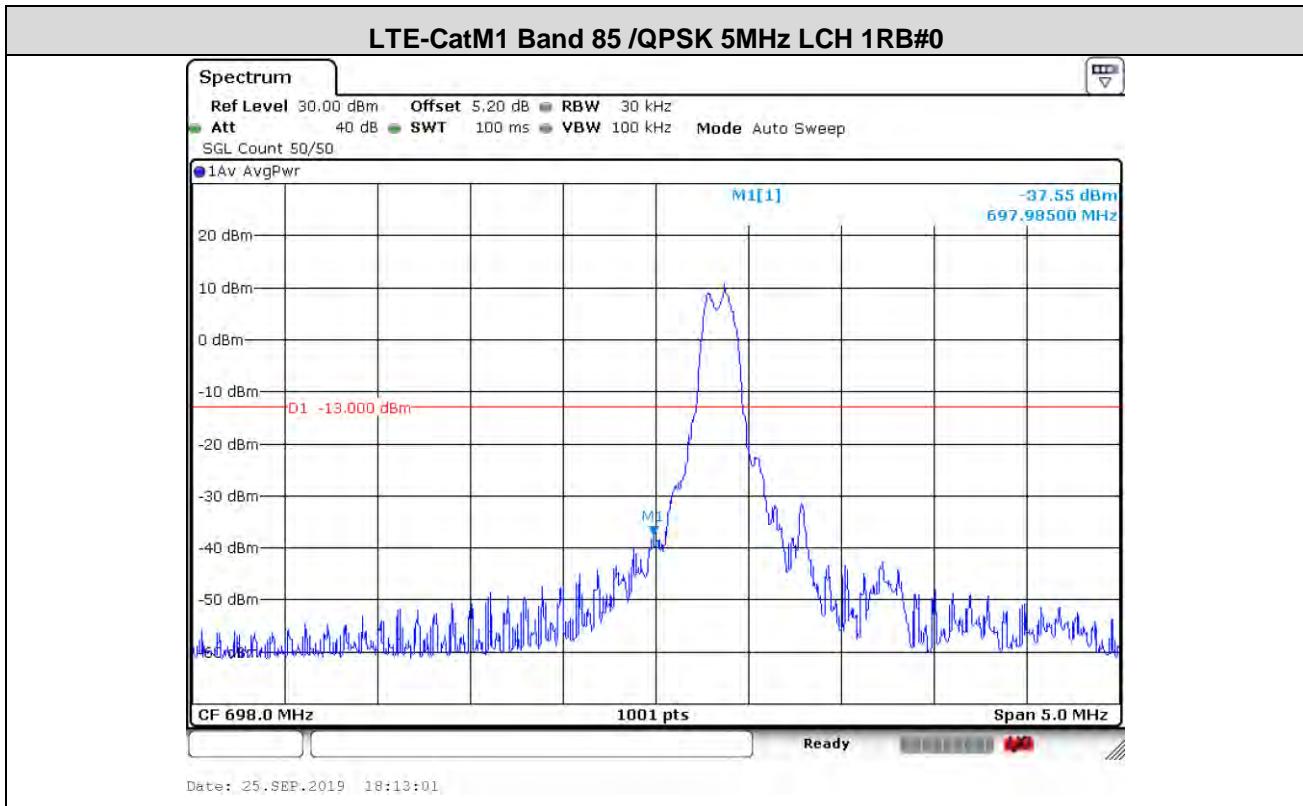
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5 Band Edges Compliance

5.1 Test Plots

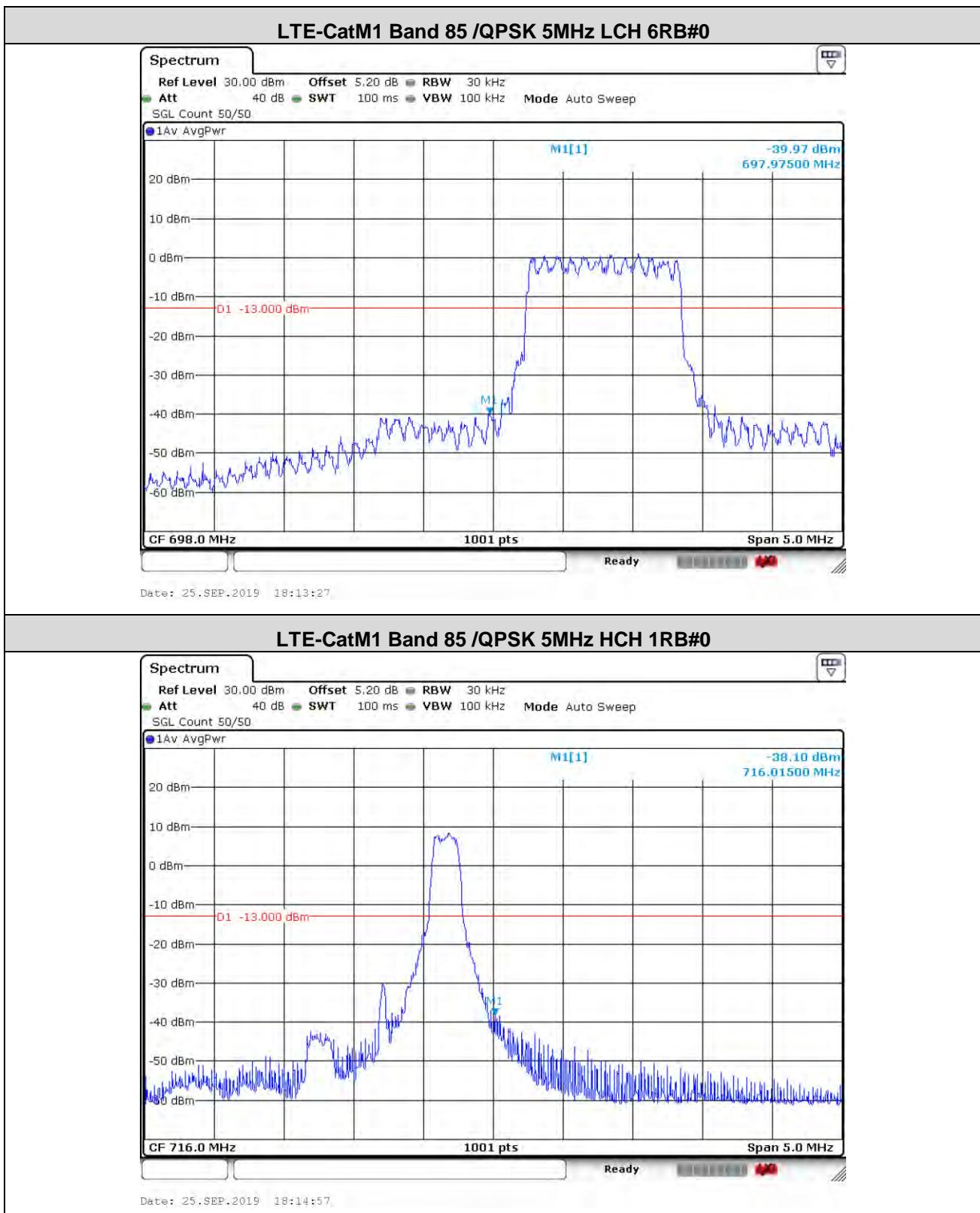


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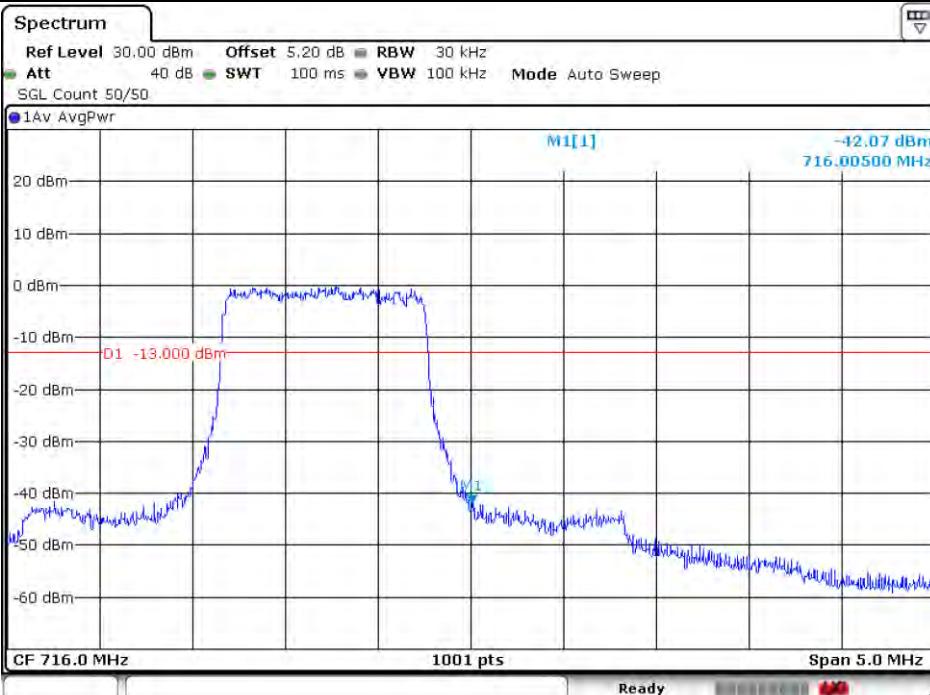
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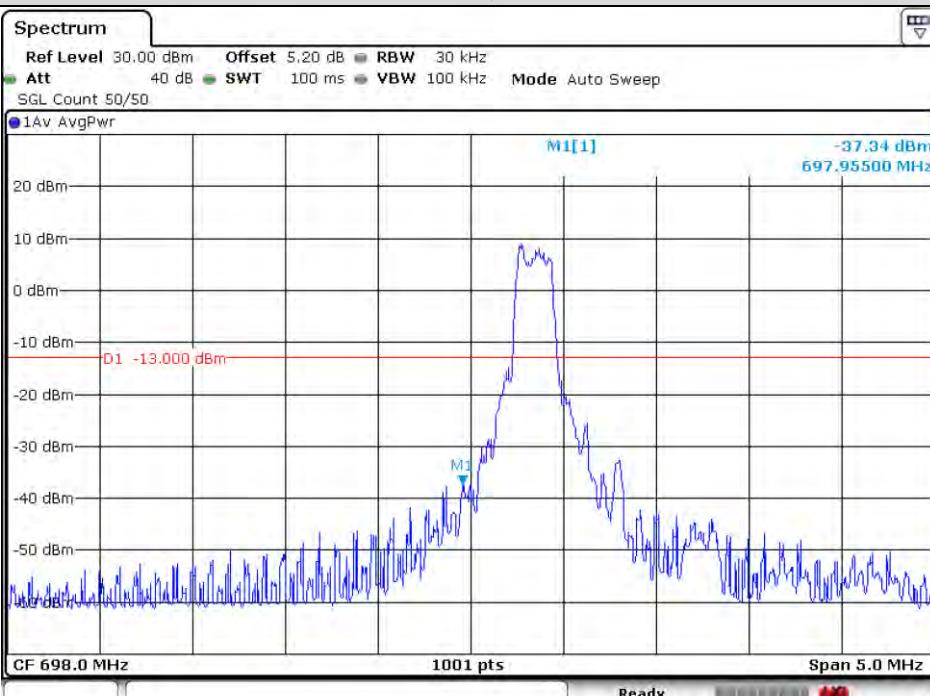
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LTE-CatM1 Band 85 /QPSK 5MHz HCH 6RB#0



LTE-CatM1 Band 85 /16QAM 5MHz LCH 1RB#0

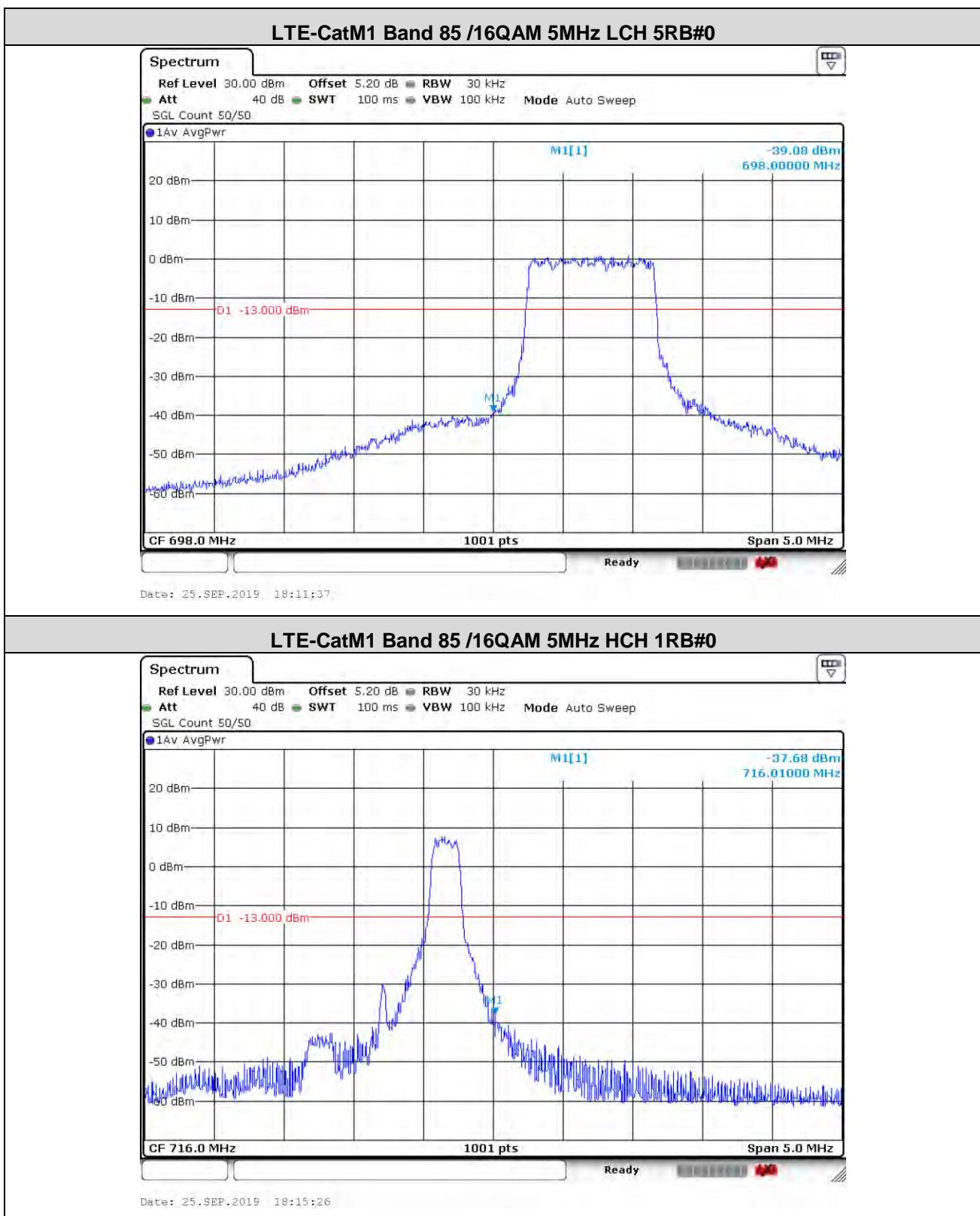


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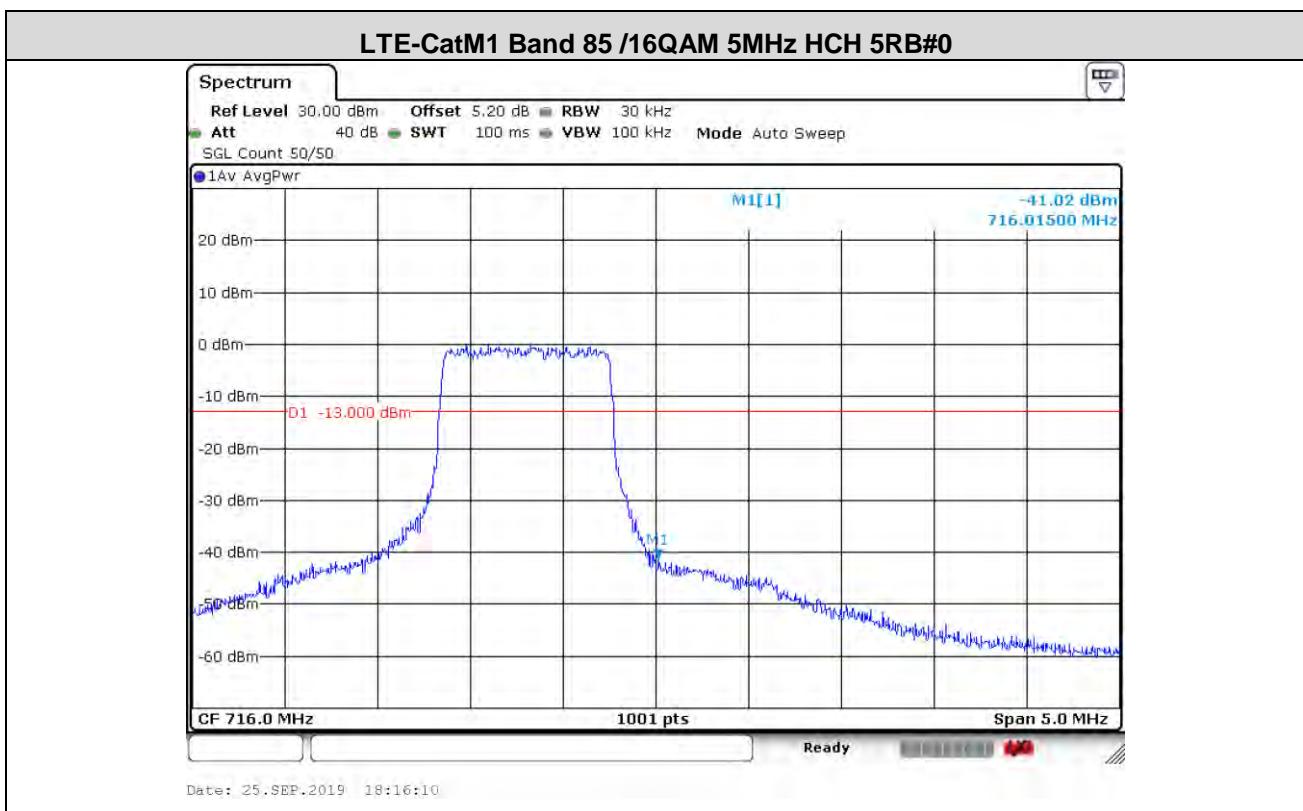


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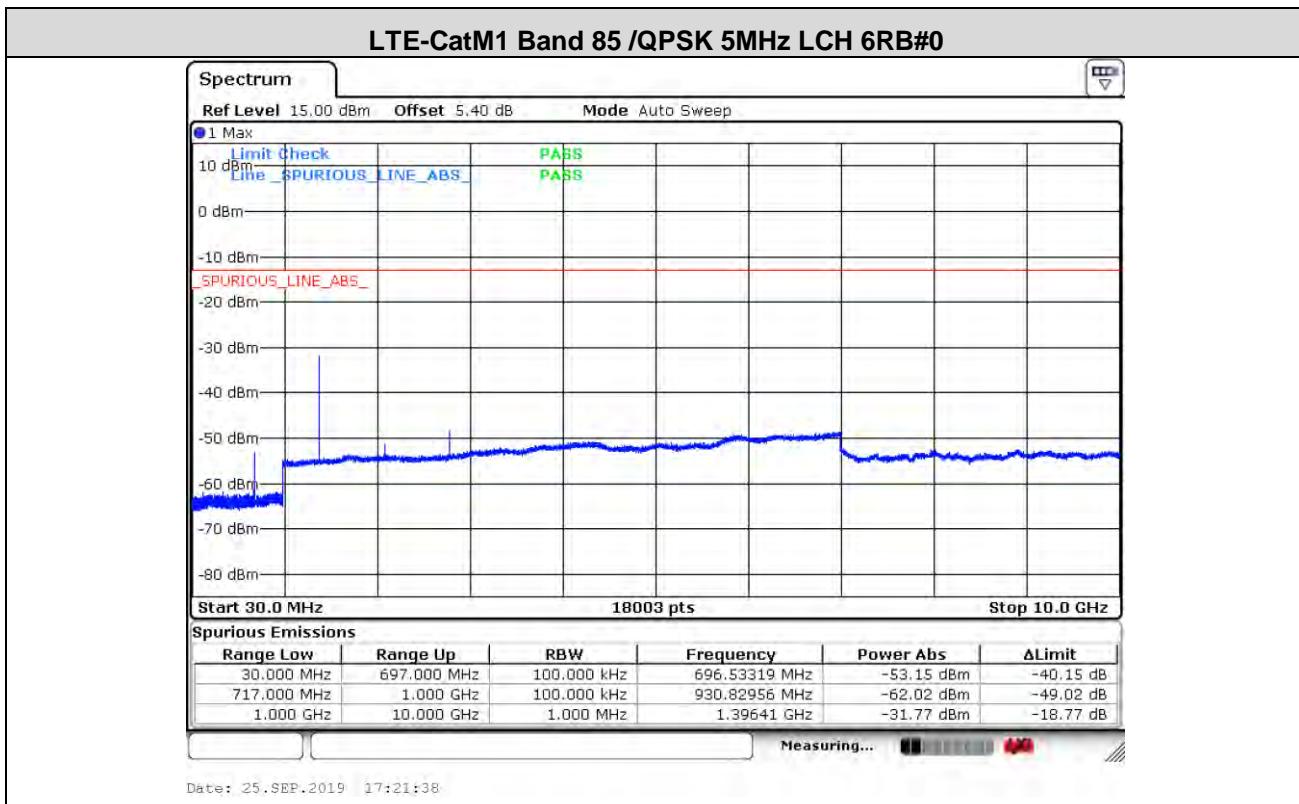


6 Spurious Emission at Antenna Terminal

NOTE1: 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.

Part I - Test Plots

6.1 Test Plots



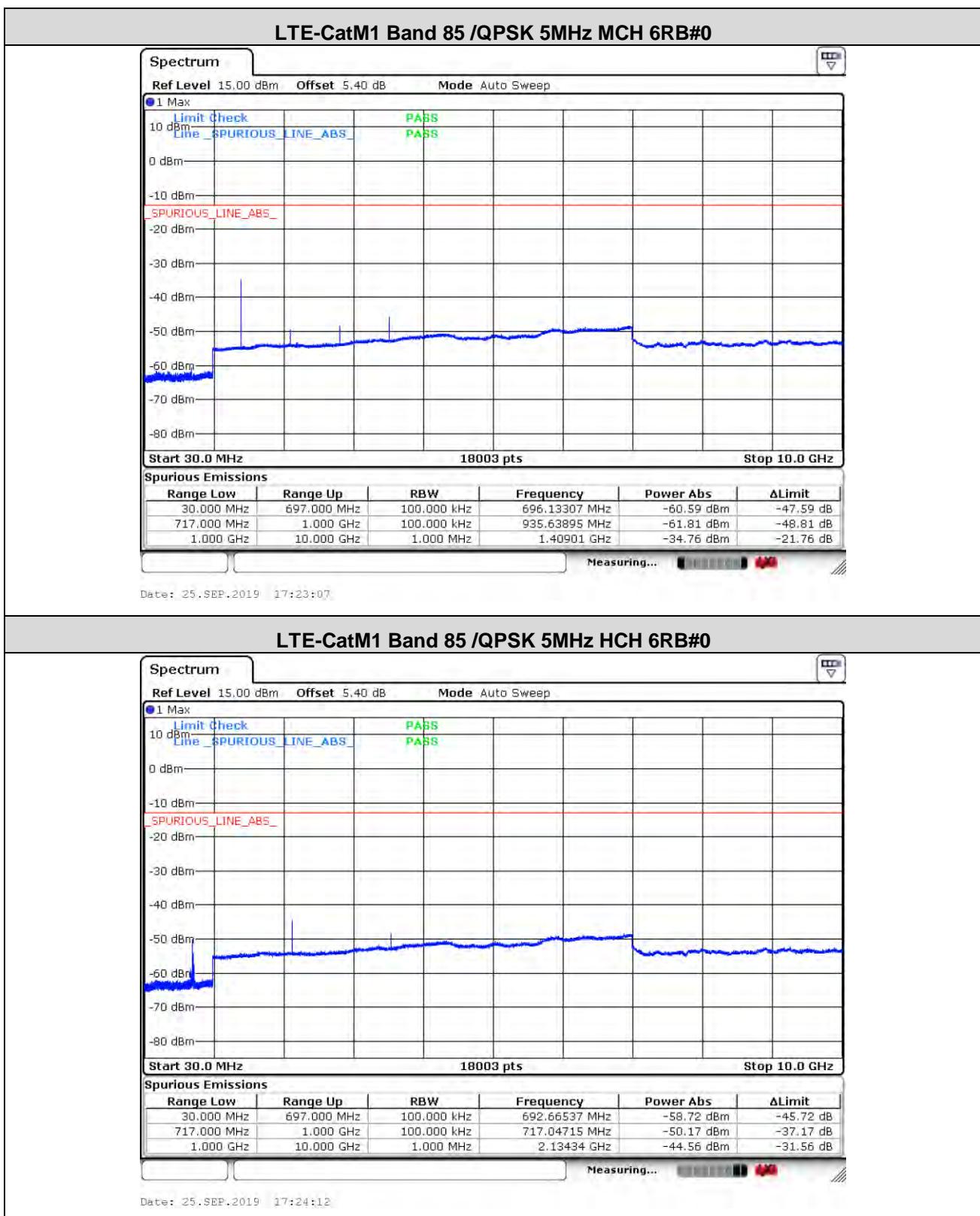
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7 Field Strength of Spurious Radiation

7.1 For LTE-CatM1

7.1.1 Test Band = LTE-CatM1 Band 85

7.1.1.1 Test Mode =LTE-CatM1/QPSK

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
110.1745	-64.58	-13.00	51.58	Vertical
590.9790	-64.68	-13.00	51.68	Vertical
1396.4793	-58.38	-13.00	45.38	Vertical
2464.2929	-52.38	-13.00	39.38	Vertical
14555.2622	-43.12	-13.00	30.12	Vertical
17971.1988	-35.31	-13.00	22.31	Vertical
42.6106	-64.26	-13.00	51.26	Horizontal
226.7743	-68.92	-13.00	55.92	Horizontal
1396.8794	-54.50	-13.00	41.50	Horizontal
2095.0190	-46.57	-13.00	33.57	Horizontal
3491.4197	-52.59	-13.00	39.59	Horizontal
16820.9528	-40.89	-13.00	27.89	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
110.5140	-65.59	-13.00	52.59	Vertical
1409.6819	-56.83	-13.00	43.83	Vertical
2465.4931	-53.67	-13.00	40.67	Vertical
14418.4567	-43.86	-13.00	30.86	Vertical
17973.5989	-35.04	-13.00	22.04	Vertical
43.1442	-63.99	-13.00	50.99	Horizontal
247.0969	-68.39	-13.00	55.39	Horizontal
1409.6819	-51.00	-13.00	38.00	Horizontal
2114.6229	-50.14	-13.00	37.14	Horizontal
3523.8210	-54.21	-13.00	41.21	Horizontal
16985.3594	-38.81	-13.00	25.81	Horizontal

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7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
111.6296	-64.43	-13.00	51.43	Vertical
586.9048	-64.67	-13.00	51.67	Vertical
1422.4845	-56.00	-13.00	43.00	Vertical
2963.1926	-56.87	-13.00	43.87	Vertical
14568.4627	-42.81	-13.00	29.81	Vertical
17974.1990	-35.33	-13.00	22.33	Vertical
40.2825	-63.81	-13.00	50.81	Horizontal
242.7801	-67.87	-13.00	54.87	Horizontal
1422.4845	-51.25	-13.00	38.25	Horizontal
2133.8268	-50.73	-13.00	37.73	Horizontal
2464.6929	-48.76	-13.00	35.76	Horizontal
16989.5596	-39.60	-13.00	26.60	Horizontal

NOTE:

- 1) The disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) only the worst case data presented in this report.

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8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	RB Config	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	TN	VL	-0.59	-0.00084	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	TN	VN	1.06	0.00151	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	TN	VH	-4.24	-0.00605	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	TN	VL	6.95	0.00983	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	TN	VN	-0.39	-0.00055	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	TN	VH	-8.41	-0.01189	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	TN	VL	1.99	0.00279	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	TN	VN	-8.59	-0.01205	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	TN	VH	-6.79	-0.00952	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	TN	VL	8.59	0.01226	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	TN	VN	0.41	0.00058	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	TN	VH	0.60	0.00085	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	TN	VL	5.23	0.00739	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	TN	VN	-3.28	-0.00464	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	TN	VH	-6.08	-0.00859	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	TN	VL	2.63	0.00369	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	TN	VN	-2.09	-0.00293	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	TN	VH	-4.28	-0.00600	±2.5	PASS



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8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	RB Config	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	-30	6.55	0.00935	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	-20	5.83	0.00833	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	-10	2.31	0.00329	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	0	-0.30	-0.00043	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	10	-0.56	-0.00080	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	20	-2.08	-0.00297	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	30	-8.84	-0.01261	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	40	7.19	0.01027	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	LCH	6RB#0	VN	50	-2.65	-0.00378	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	-30	6.49	0.00918	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	-20	-2.90	-0.00410	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	-10	-1.08	-0.00153	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	0	2.34	0.00331	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	10	-4.56	-0.00645	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	20	-3.19	-0.00452	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	30	-0.33	-0.00047	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	40	5.85	0.00828	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	MCH	6RB#0	VN	50	-4.48	-0.00634	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	-30	5.28	0.00740	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	-20	-6.34	-0.00888	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	-10	-8.87	-0.01243	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	0	-7.33	-0.01028	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	10	-4.49	-0.00630	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	20	0.91	0.00128	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	30	4.50	0.00631	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	40	-3.90	-0.00547	±2.5	PASS
CatM1 Band 85	QPSK 5MHz	HCH	6RB#0	VN	50	-6.74	-0.00945	±2.5	PASS



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Test Band	Test Mode	Test Channel	RB Config	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Limit (ppm)	Verdict
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	-30	4.66	0.00665	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	-20	-1.07	-0.00153	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	-10	4.14	0.00591	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	0	-4.54	-0.00648	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	10	-1.83	-0.00262	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	20	-2.56	-0.00365	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	30	-1.78	-0.00254	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	40	1.60	0.00228	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	LCH	5RB#0	VN	50	-8.46	-0.01208	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	-30	0.17	0.00024	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	-20	7.93	0.01122	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	-10	-7.39	-0.01045	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	0	-9.37	-0.01326	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	10	-1.37	-0.00193	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	20	5.61	0.00793	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	30	-4.33	-0.00612	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	40	4.06	0.00574	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	MCH	5RB#0	VN	50	-6.74	-0.00953	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	-30	-7.72	-0.01083	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	-20	4.85	0.00680	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	-10	-7.76	-0.01088	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	0	-5.61	-0.00787	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	10	-6.90	-0.00967	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	20	9.82	0.01376	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	30	5.51	0.00773	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	40	8.22	0.01152	±2.5	PASS
CatM1 Band 85	16QAM 5MHz	HCH	5RB#0	VN	50	-2.78	-0.00389	±2.5	PASS

The End

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