Appendix B

LTE-M1 BAND26(814MHz-824MHz)

CONTENT

Page

1 Effective (Isotropic) Radiated Power Output Data

Effective Isotropic Radiated Power of Transmitter (ERP) for LTE-M1 BAND26

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM1	1.4M	LCH	RB1#0	23.27	19.72	50.00	PASS
				RB1#5	23.25	19.7	50.00	PASS
				RB6#0	22.25	18.7	50.00	PASS
			MCH	RB1#0	23.26	19.71	50.00	PASS
				RB1#5	23.18	19.63	50.00	PASS
				RB6#0	22.24	18.69	50.00	PASS
			HCH	RB1#0	23.23	19.68	50.00	PASS
				RB1#5	23.25	19.7	50.00	PASS
				RB6#0	22.27	18.72	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM2	1.4M	LCH	RB1#0	22.36	18.81	50.00	PASS
				RB1#5	22.46	18.91	50.00	PASS
				RB6#0	21.15	17.6	50.00	PASS
			MCH	RB1#0	22.49	18.94	50.00	PASS
				RB1#5	22.44	18.89	50.00	PASS
				RB6#0	21.22	17.67	50.00	PASS
			HCH	RB1#0	22.47	18.92	50.00	PASS
				RB1#5	22.57	19.02	50.00	PASS
				RB6#0	21.13	17.58	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM1	3M	LCH	RB1#0	23.18	19.63	50.00	PASS
				RB1#5	23.16	19.61	50.00	PASS
				RB6#0	22.23	18.68	50.00	PASS
			MCH	RB1#0	23.13	19.58	50.00	PASS
				RB1#5	23.17	19.62	50.00	PASS
				RB6#0	22.32	18.77	50.00	PASS
			HCH	RB1#0	23.25	19.7	50.00	PASS
				RB1#5	23.21	19.66	50.00	PASS
				RB6#0	22.29	18.74	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM2	3M	LCH	RB1#0	22.31	18.76	50.00	PASS
				RB1#5	22.37	18.82	50.00	PASS
				RB6#0	21.11	17.56	50.00	PASS
			MCH	RB1#0	22.42	18.87	50.00	PASS
				RB1#5	22.27	18.72	50.00	PASS
				RB6#0	21.19	17.64	50.00	PASS

			HCH	RB1#0	22.43	18.88	50.00	PASS
				RB1#5	22.35	18.8	50.00	PASS
				RB6#0	21.16	17.61	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM1	5M	LCH	RB1#0	23.13	19.58	50.00	PASS
				RB1#5	23.23	19.68	50.00	PASS
				RB6#0	22.15	18.6	50.00	PASS
			MCH	RB1#0	23.16	19.61	50.00	PASS
				RB1#5	23.17	19.62	50.00	PASS
				RB6#0	22.21	18.66	50.00	PASS
			HCH	RB1#0	23.23	19.68	50.00	PASS
				RB1#5	23.07	19.52	50.00	PASS
				RB6#0	22.28	18.73	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM2	5M	LCH	RB1#0	22.68	19.13	50.00	PASS
				RB1#5	22.75	19.2	50.00	PASS
				RB6#0	21.18	17.63	50.00	PASS
			MCH	RB1#0	22.75	19.2	50.00	PASS
				RB1#5	22.67	19.12	50.00	PASS
				RB6#0	21.33	17.78	50.00	PASS
			HCH	RB1#0	22.64	19.09	50.00	PASS
				RB1#5	22.67	19.12	50.00	PASS
				RB6#0	21.19	17.64	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM1	10M	MCH	RB1#0	23.03	19.48	50.00	PASS
				RB1#5	23.12	19.57	50.00	PASS
				RB6#0	22.24	18.69	50.00	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM2	10M	MCH	RB1#0	22.48	18.93	50.00	PASS
				RB1#5	22.63	19.08	50.00	PASS
				RB6#0	21.22	17.67	50.00	PASS

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

ERP [dBm] = SGP [dBm] – Cable Loss [dB] + Gain [dBd]

b: SGP=Signal Generator Level

2 Peak-to-Average Ratio

Part I - Test Results

Test Band	Test Mode	Test Channel	Measured[dB]	Limit [dB]	Verdict
BAND26	TM1/5M Full RB	LCH	5.19	13	PASS
		MCH	4.87	13	PASS
		HCH	4.93	13	PASS
	TM1/5M 1 RB	LCH	4.64	13	PASS
		MCH	4.72	13	PASS
		HCH	4.49	13	PASS
	TM2/5M Full RB	LCH	5.62	13	PASS
		MCH	5.80	13	PASS
		HCH	5.74	13	PASS
	TM2/5M 1 RB	LCH	5.13	13	PASS
		MCH	5.28	13	PASS
		HCH	5.10	13	PASS

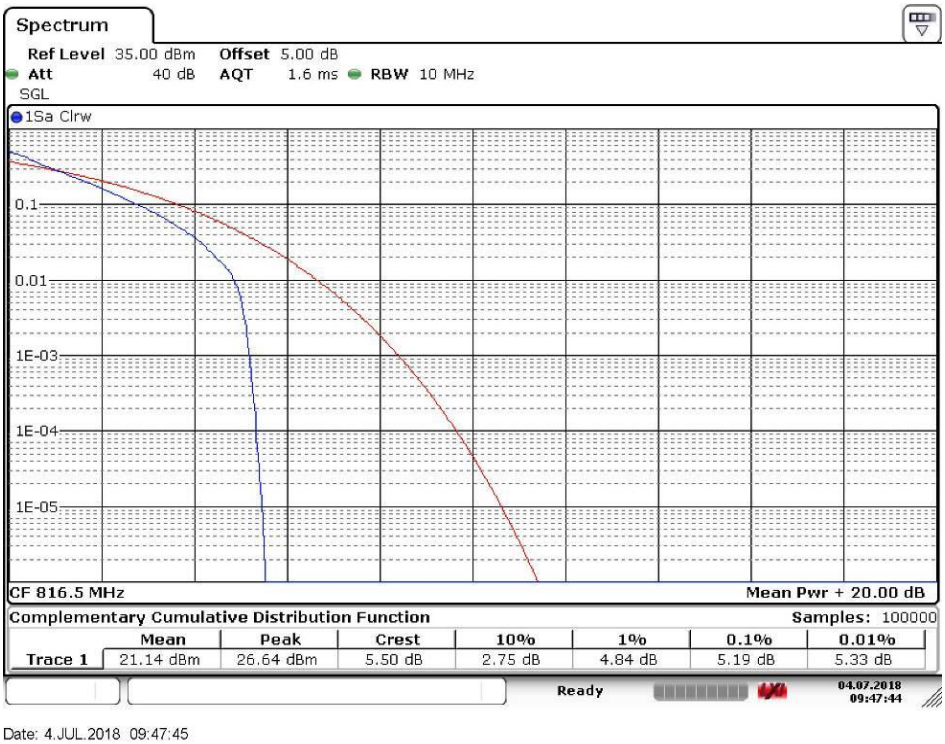
Part II - Test Plots

2.1 For LTE-M1

2.1.1 Test Band = LTE-M1 BAND26(814MHz-824MHz)

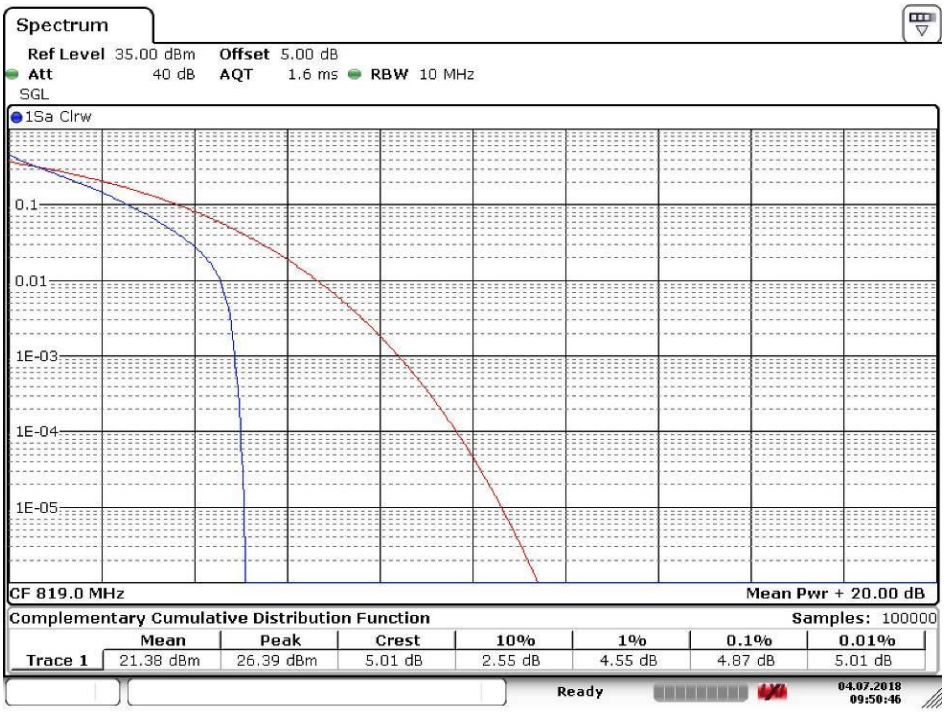
2.1.1.1 Test Mode = LTE-M1/TM1.Bandwidth=5MHz Full RB

2.1.1.1.1 Test Channel = LCH



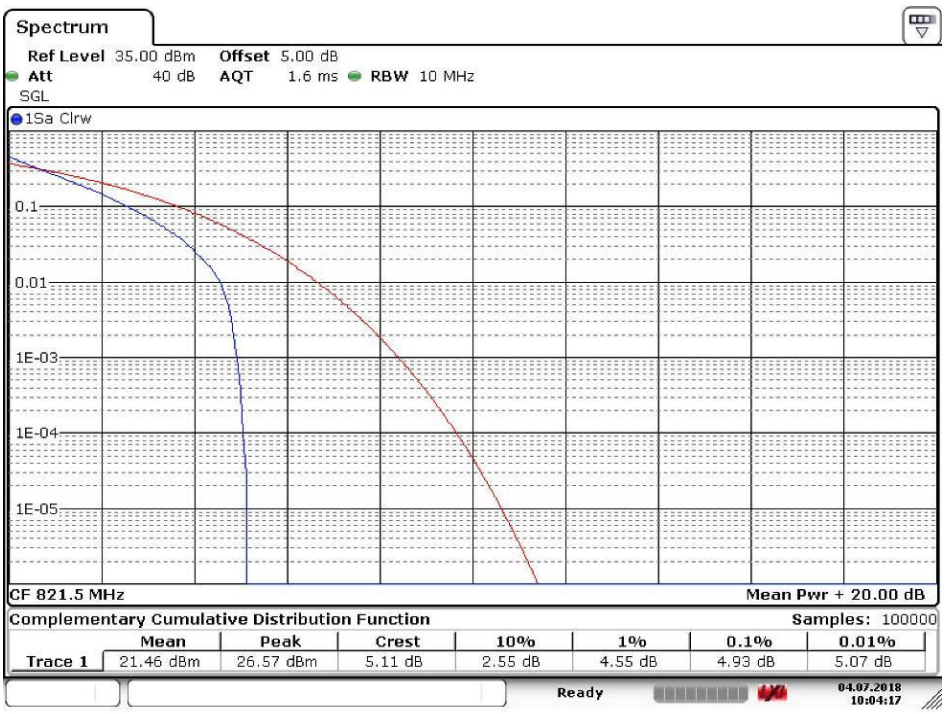
Date: 4.JUL.2018 09:47:45

2.1.1.1.2 Test Channel = MCH



Date: 4.JUL.2018 09:50:46

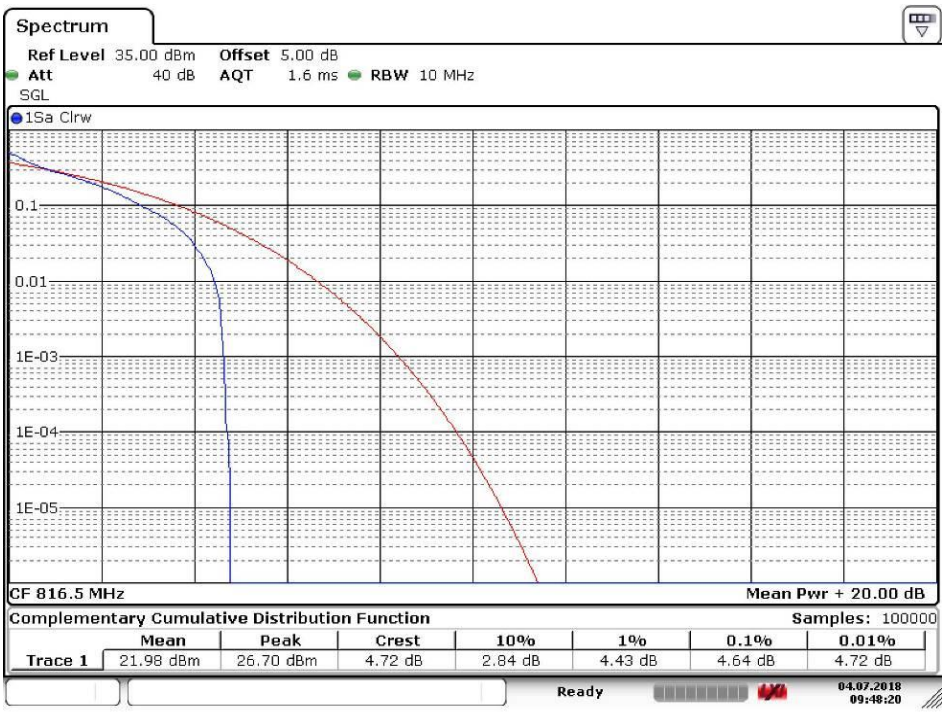
2.1.1.1.3 Test Channel = HCH



Date: 4.JUL.2018 10:04:17

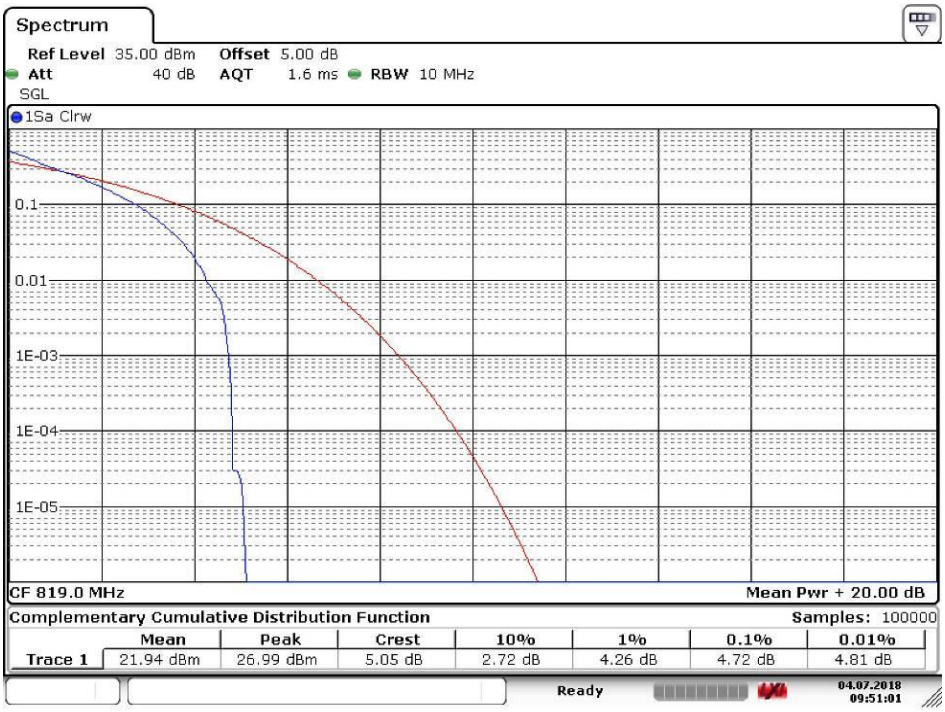
2.1.1.2 Test Mode = LTE-M1/TM1.Bandwidth=5MHz 1 RB

2.1.1.2.1 Test Channel = LCH



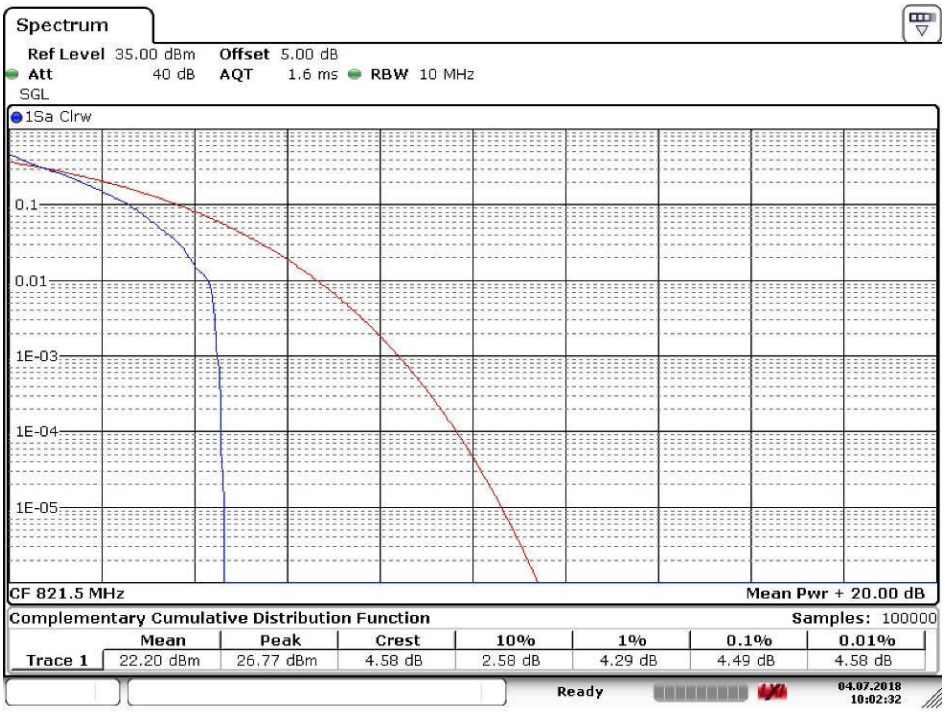
Date: 4.JUL.2018 09:48:20

2.1.1.2.2 Test Channel = MCH



Date: 4.JUL.2018 09:51:01

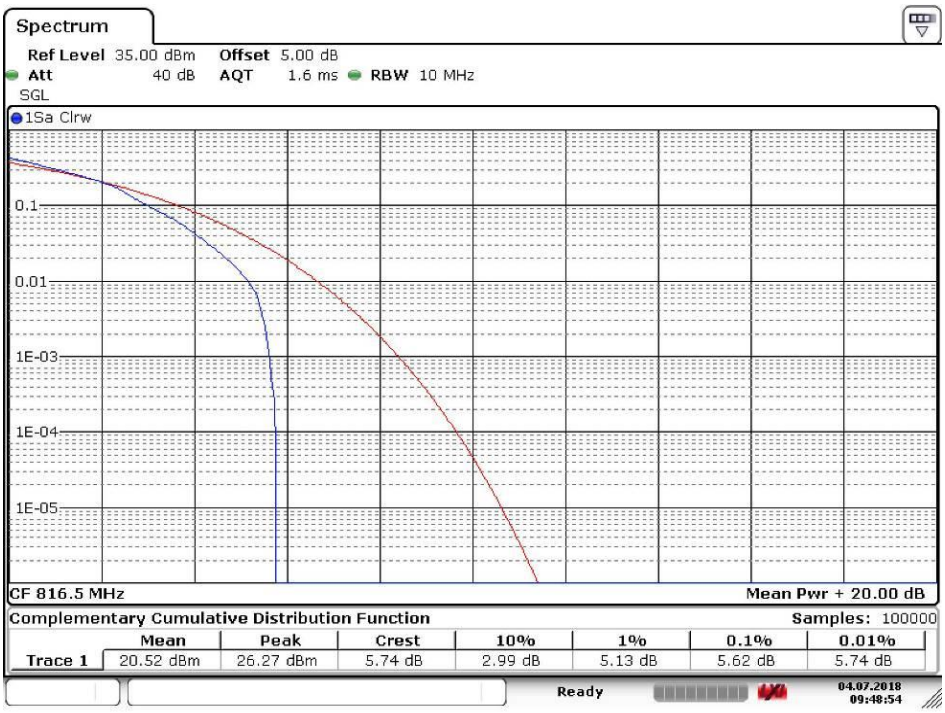
2.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 10:02:33

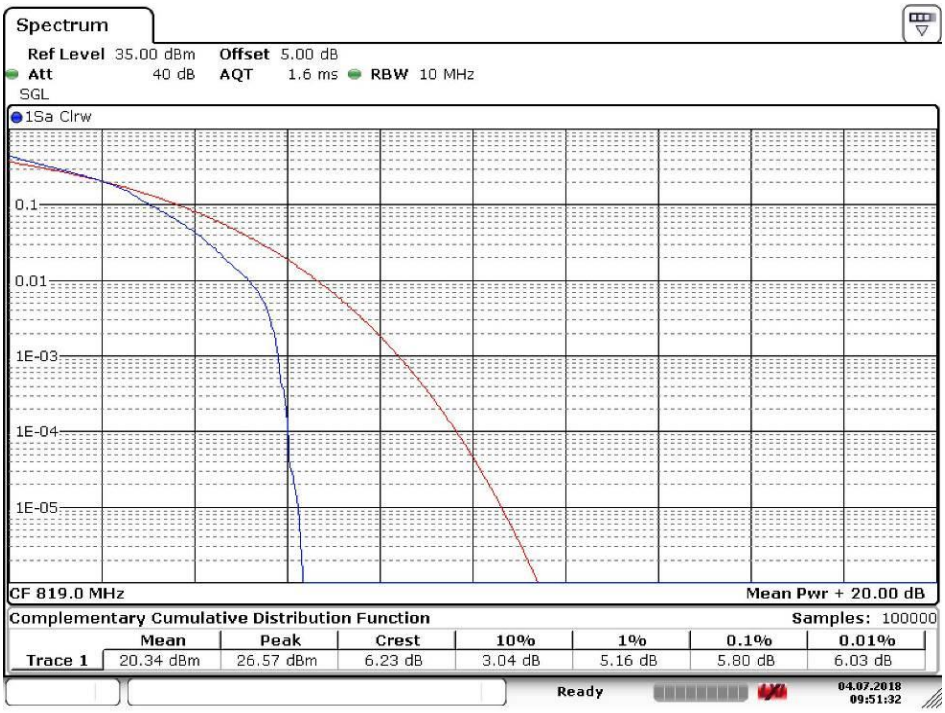
2.1.1.3 Test Mode = LTE-M1/TM2.Bandwidth=5MHz Full RB

2.1.1.3.1 Test Channel = LCH



Date: 4.JUL.2018 09:48:55

2.1.1.3.2 Test Channel = MCH



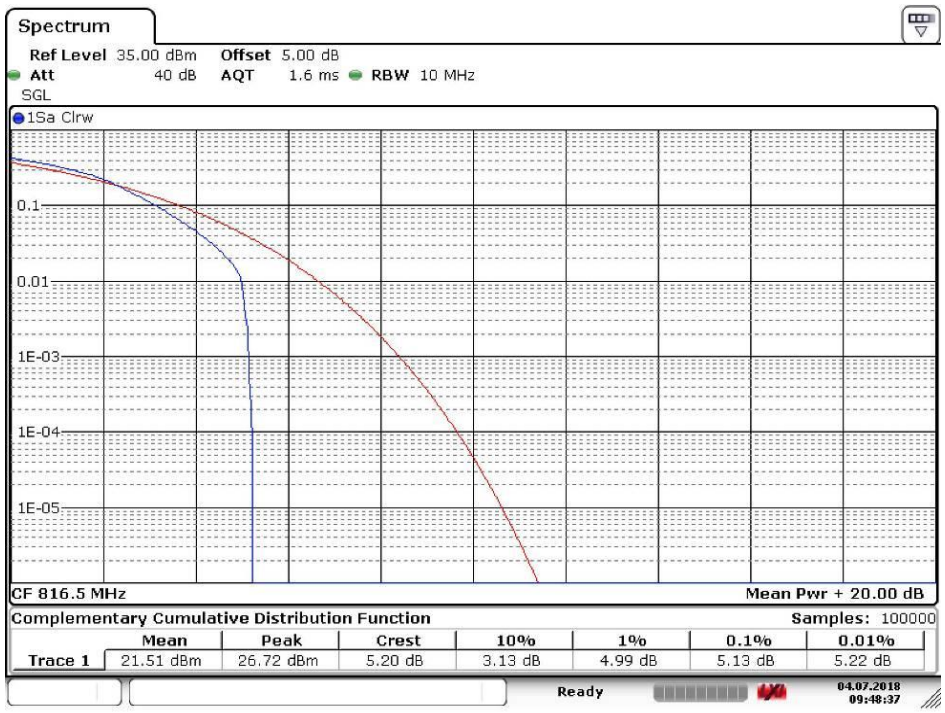
Date: 4.JUL.2018 09:51:33

2.1.1.3.3 Test Channel = HCH

Date: 4.JUL.2018 10:01:30

2.1.1.4 Test Mode = LTE-M1/TM2.Bandwidth=5MHz 1 RB

2.1.1.4.1 Test Channel = LCH

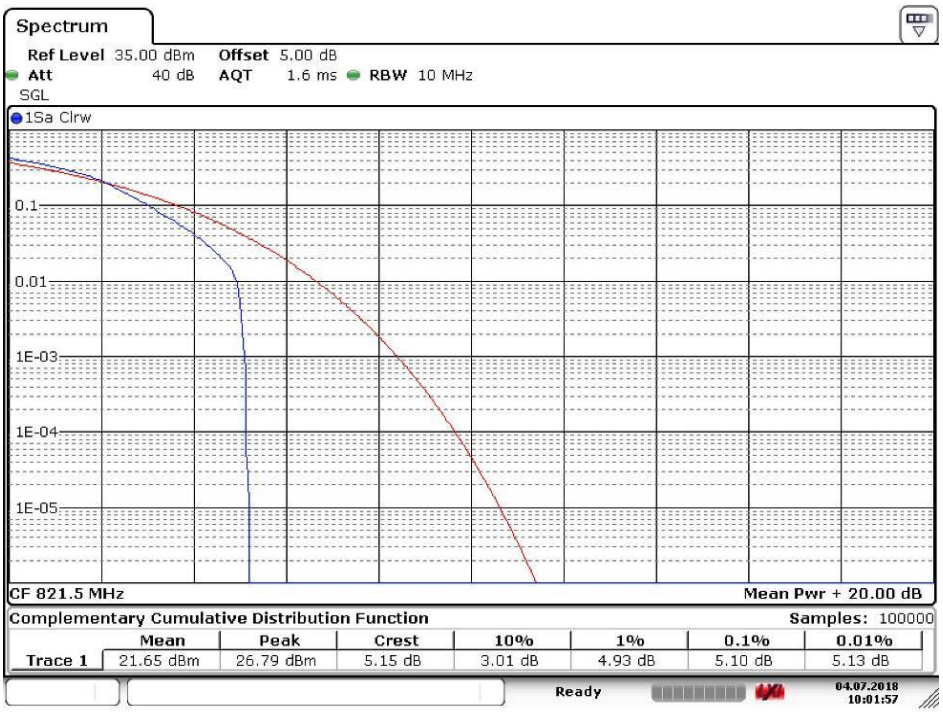


Date: 4.JUL.2018 09:48:37

2.1.1.4.2 Test Channel = MCH

Date: 4.JUL.2018 09:51:16

2.1.1.4.3 Test Channel = HCH



Date: 4.JUL.2018 10:01:57

3 Modulation Characteristics

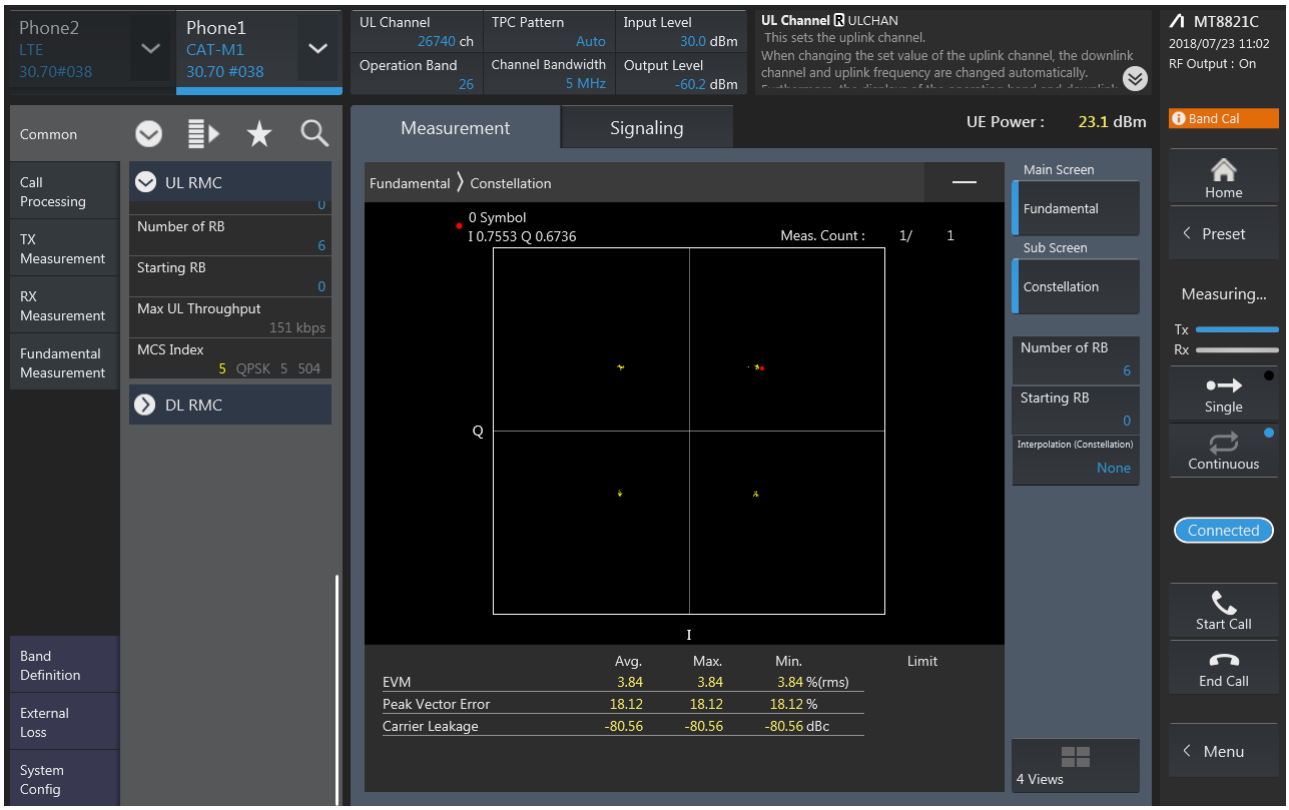
Part I - Test Plots

3.1 For LTE-M1

3.1.1 Test Band = LTE-M1 BAND26(814MHz-824MHz)

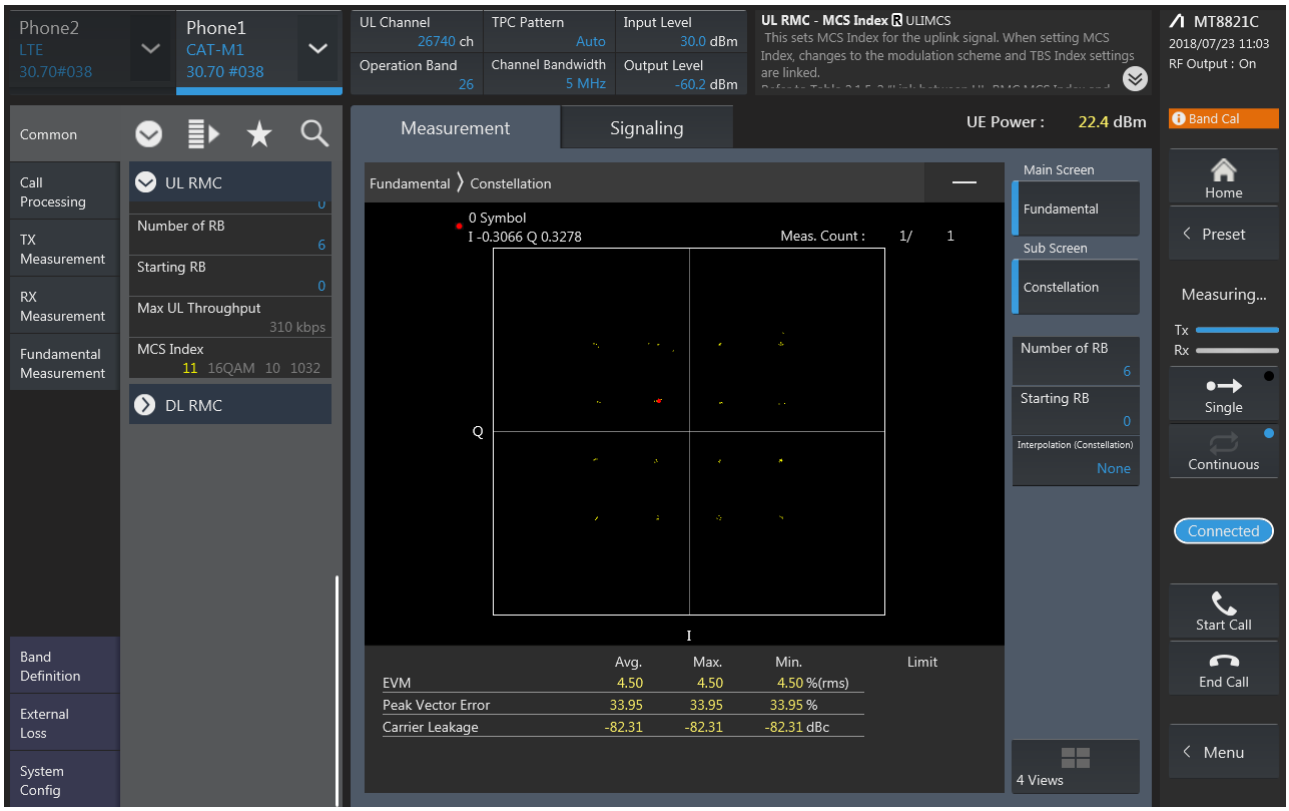
3.1.1.1 Test Mode = LTE-M1 /TM1 5MHz

3.1.1.1.1 Test Channel = MCH



3.1.1.2 Test Mode = LTE-M1 /TM2 5MHz

3.1.1.2.1 Test Channel = MCH



4 Bandwidth

Part I - Test Results

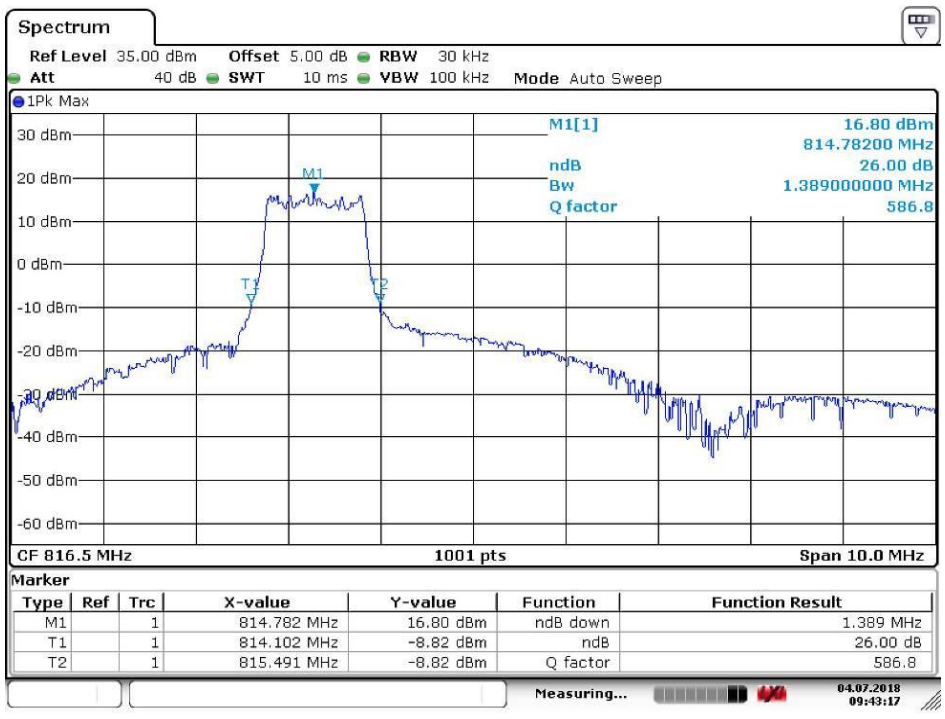
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
BAND26	TM1/ 5MHz	LCH	1.10	1.38	PASS
		MCH	1.10	1.40	PASS
		HCH	1.10	1.40	PASS
	TM2/ 5MHz	LCH	1.11	1.48	PASS
		MCH	1.11	1.47	PASS
		HCH	1.11	1.46	PASS

4.1 For LTE

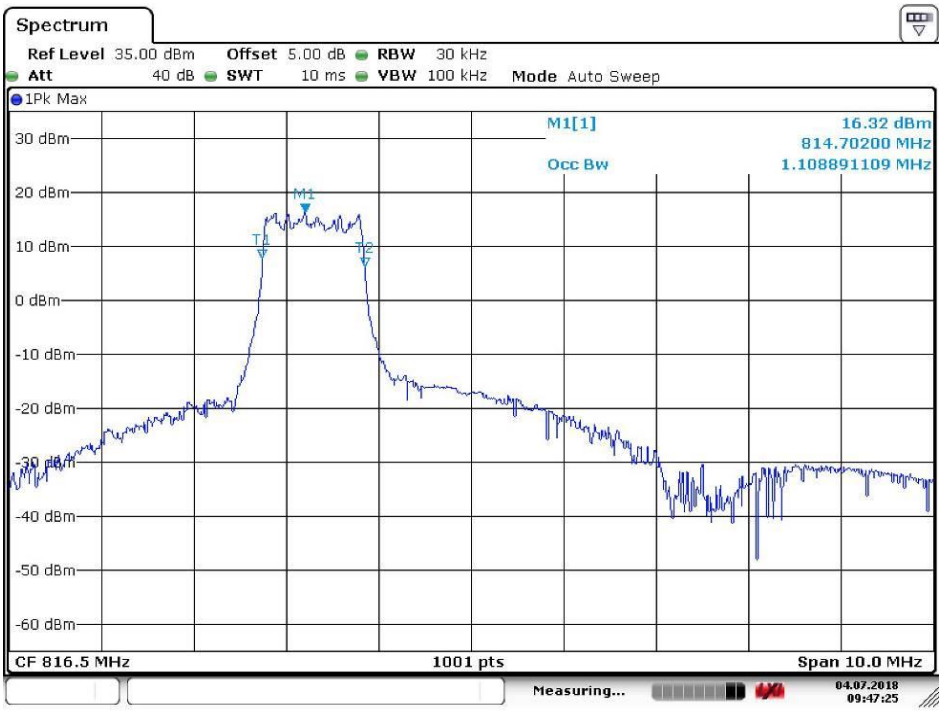
4.1.1 Test Band = LTE-M1 BAND26(814MHz-824MHz)

4.1.1.1 Test Mode = LTE-M1/TM1 5MHz

4.1.1.1.1 Test Channel = LCH

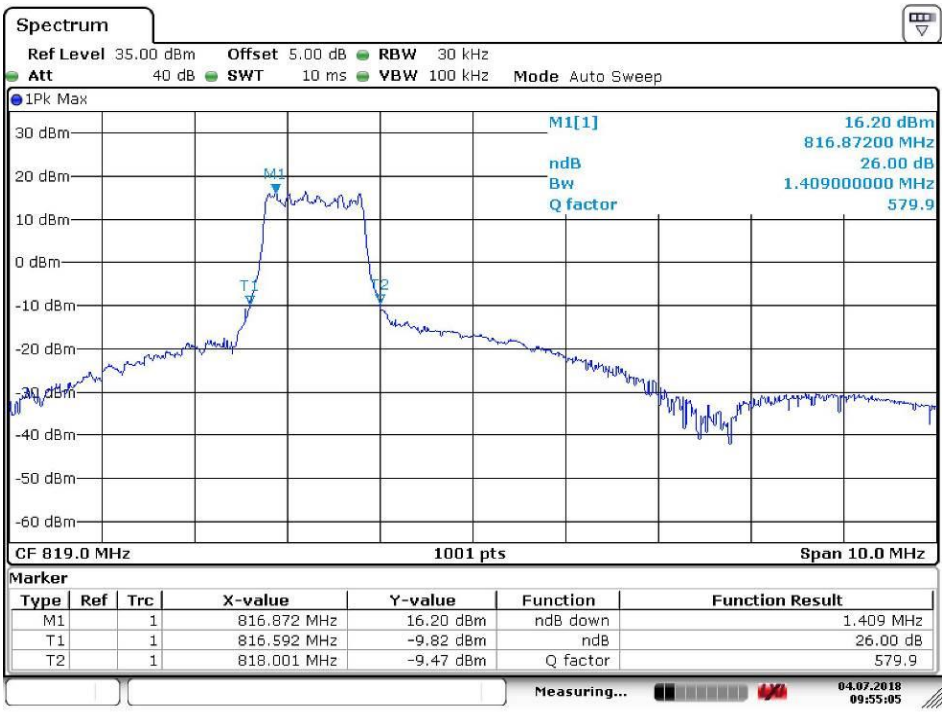


Date: 4.JUL.2018 09:43:18

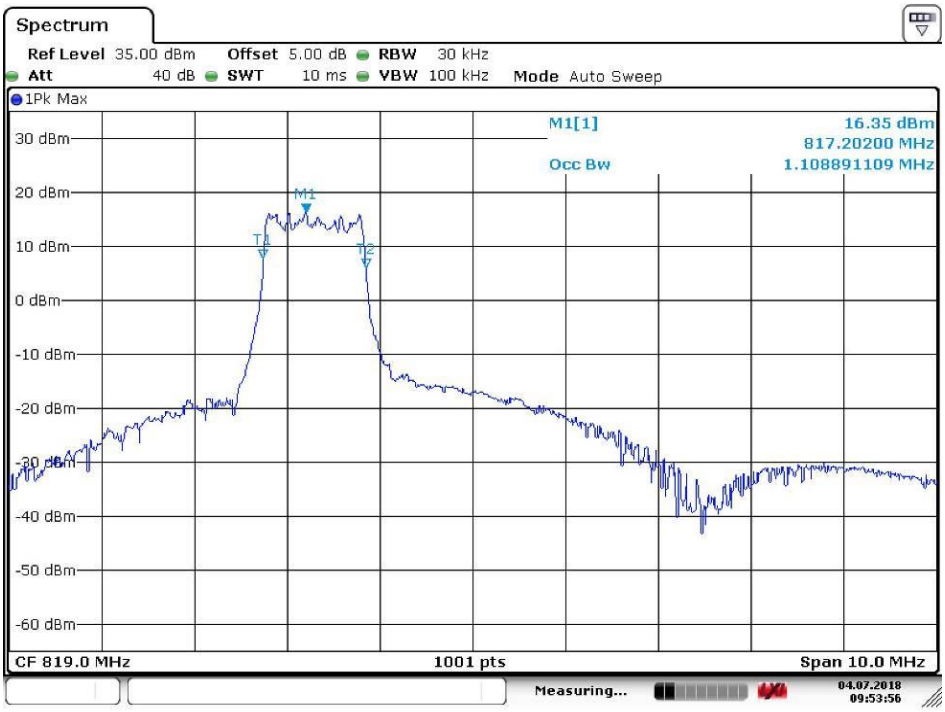


Date: 4.JUL.2018 09:47:25

4.1.1.1.2 Test Channel = MCH

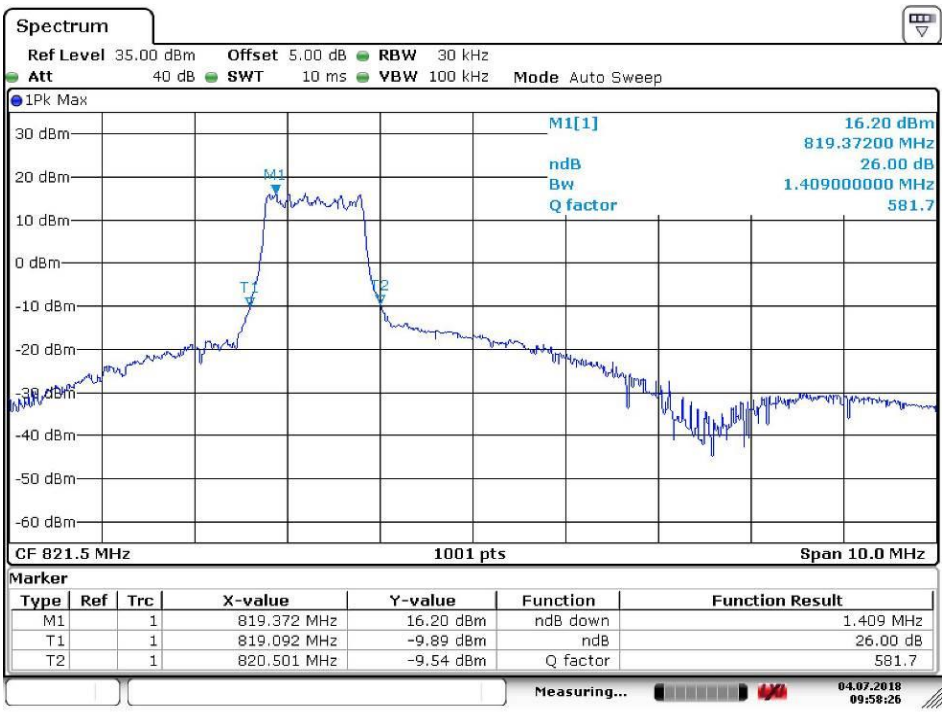


Date: 4.JUL.2018 09:55:06

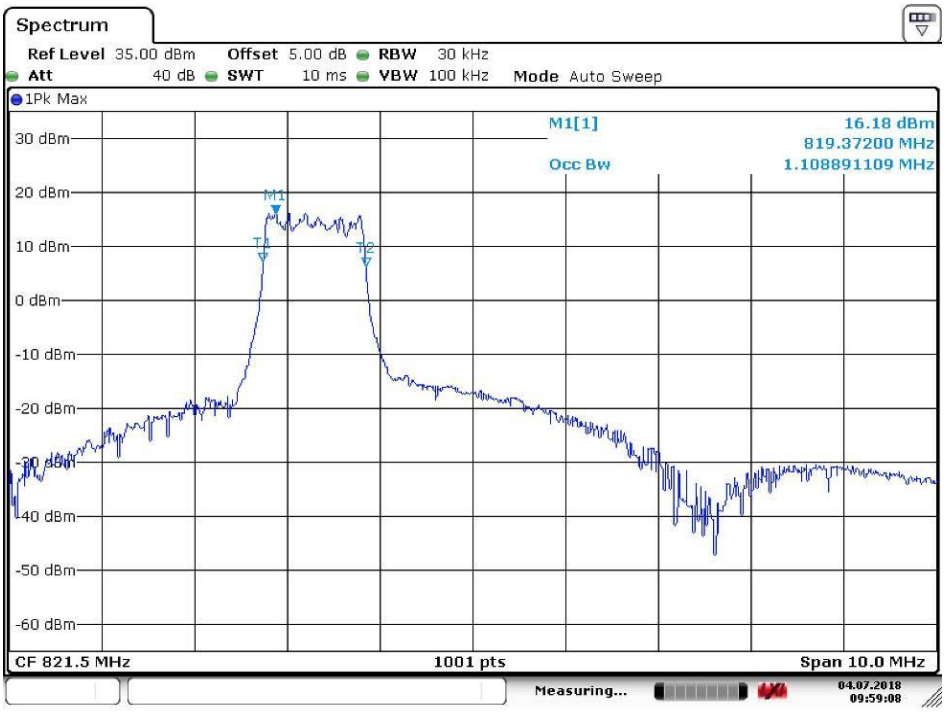


Date: 4.JUL.2018 09:53:57

4.1.1.1.3 Test Channel = HCH



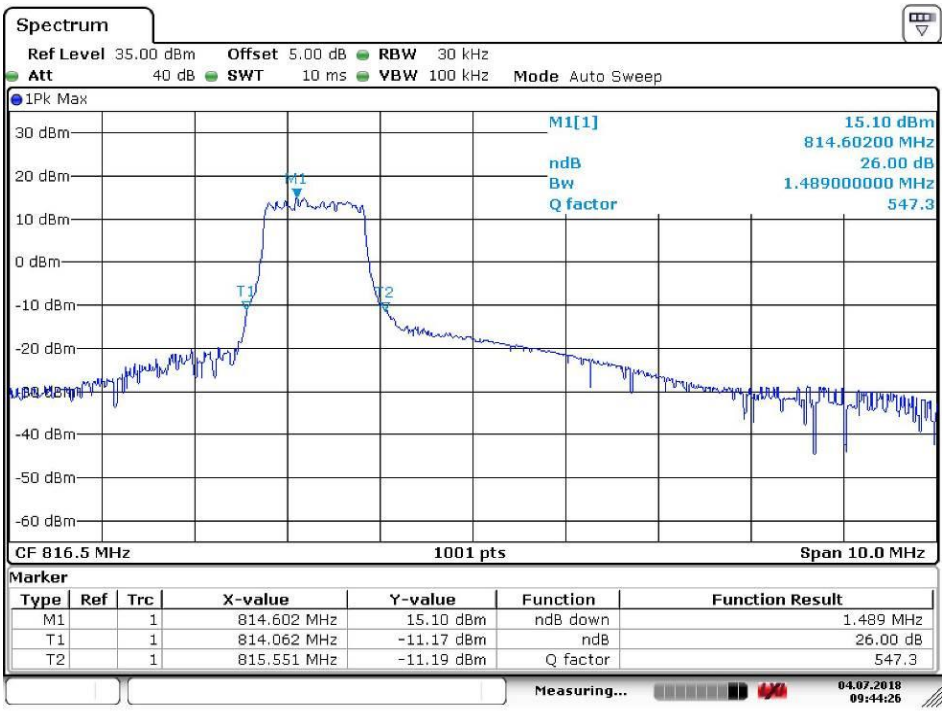
Date: 4.JUL.2018 09:58:26



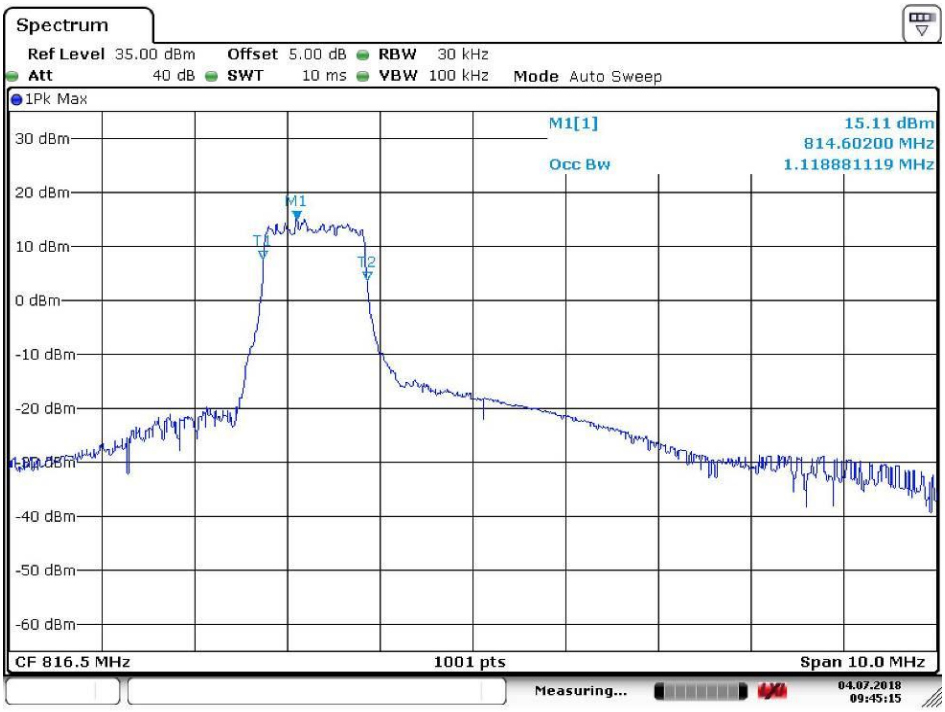
Date: 4.JUL.2018 09:59:08

4.1.1.2 Test Mode = LTE-M1/TM2 5MHz

4.1.1.2.1 Test Channel = LCH

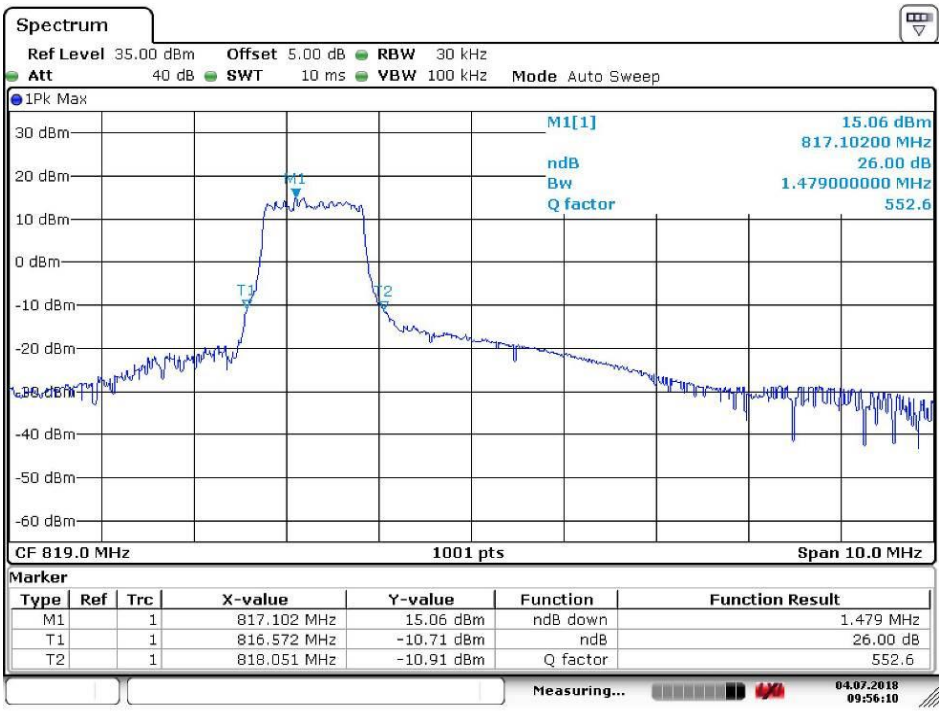


Date: 4.JUL.2018 09:44:27

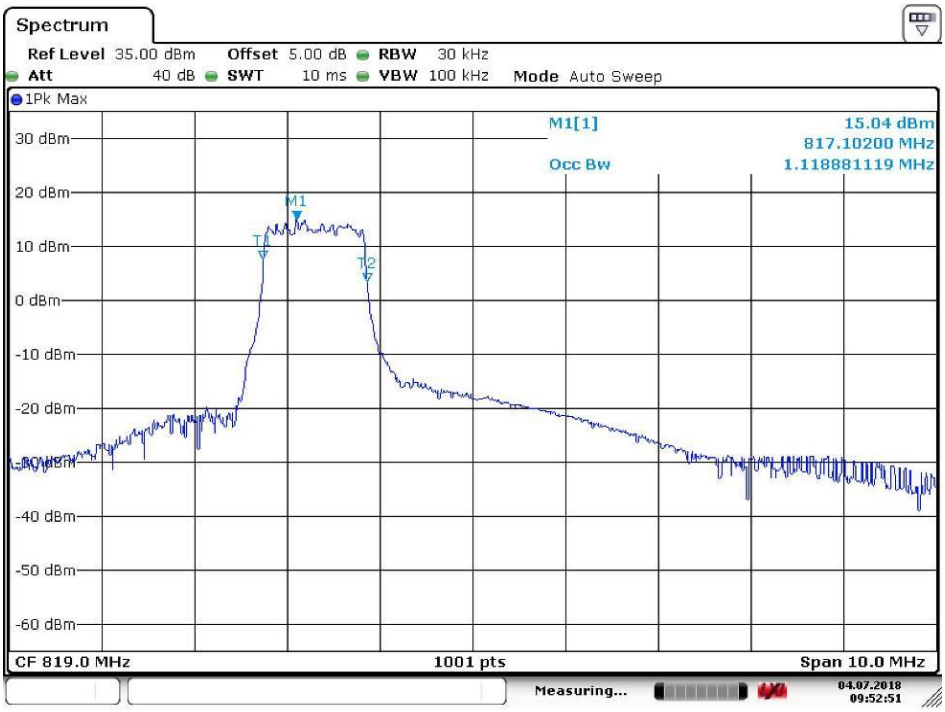


Date: 4.JUL.2018 09:45:16

4.1.1.2.2 Test Channel = MCH

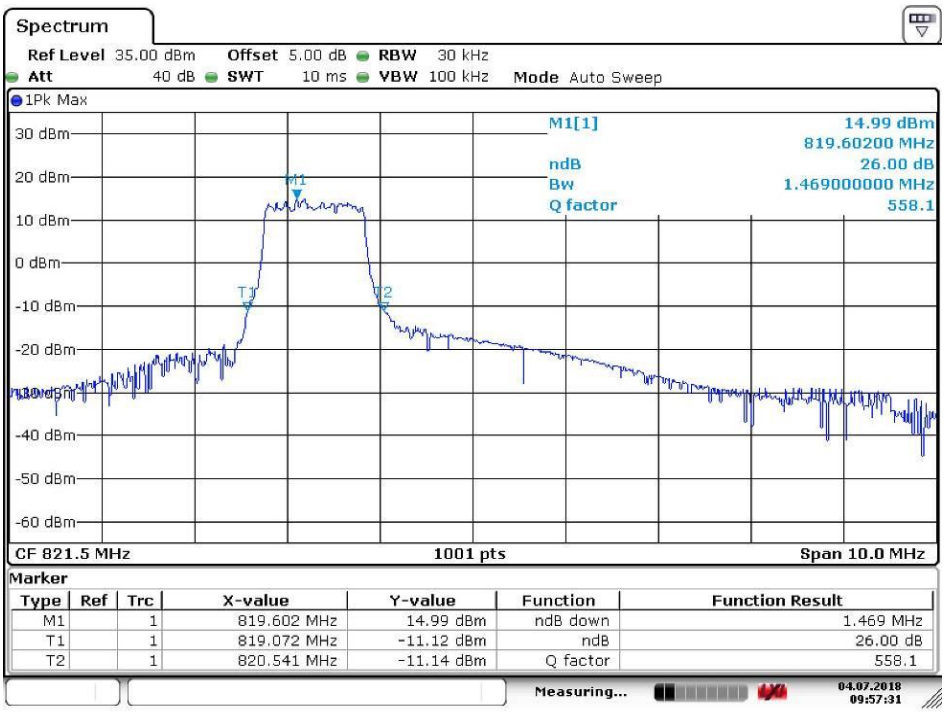


Date: 4.JUL.2018 09:56:10

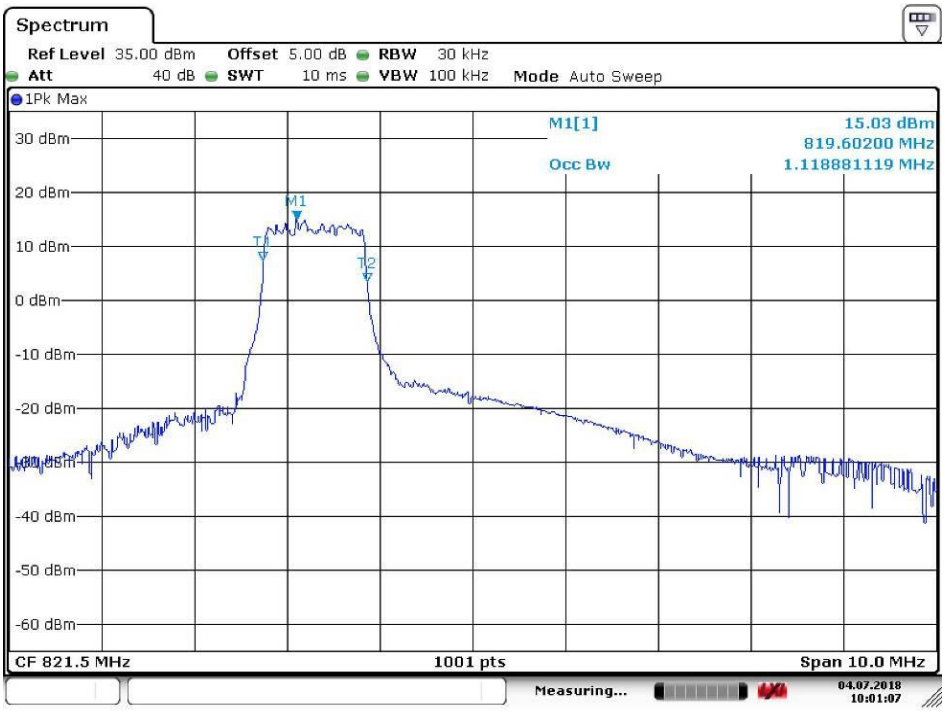


Date: 4.JUL.2018 09:52:52

4.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 09:57:31



Date: 4.JUL.2018 10:01:07

5 Emission Mask

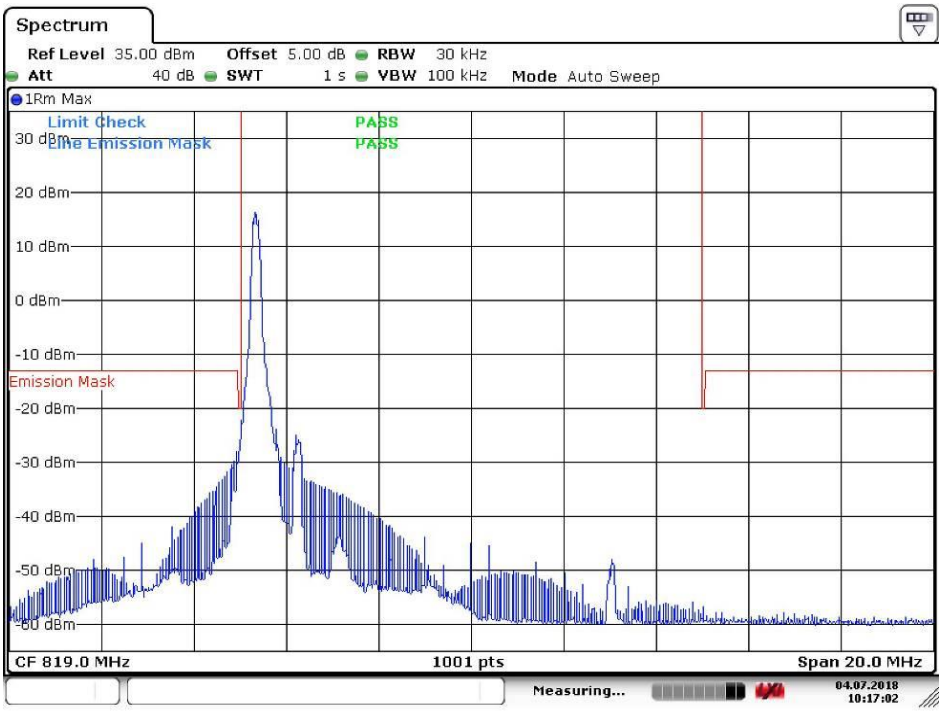
5.1 For LTE-M1

5.1.1 Test Band = LTE-M1 BAND26(814MHz-824MHz)

5.1.1.1 Test Mode = LTE-M1/TM1 5MHz

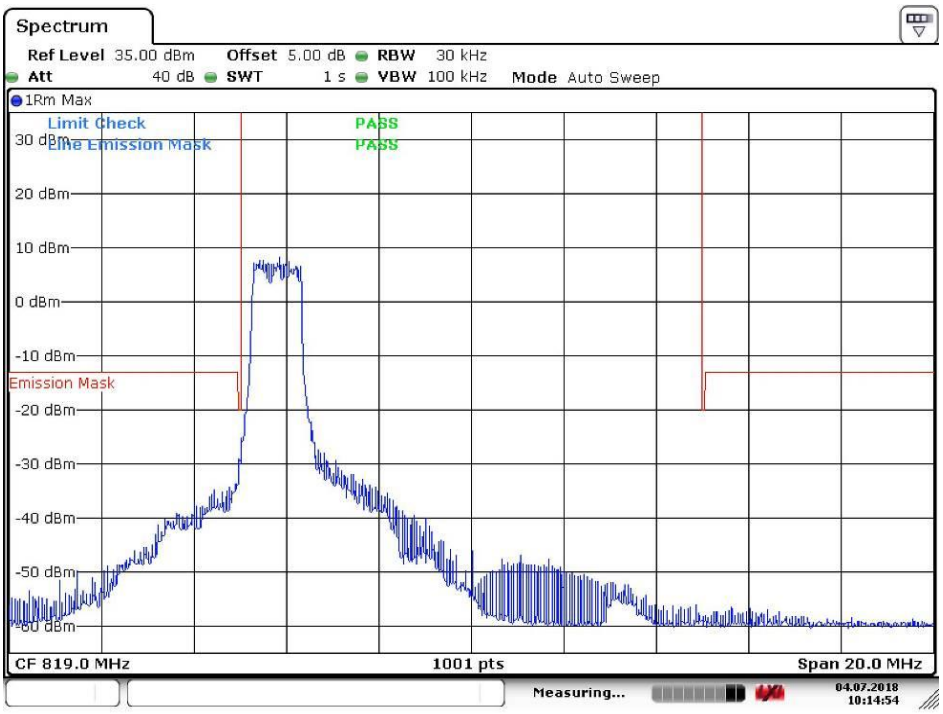
5.1.1.1.1 Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB



Date: 4.JUL.2018 10:17:03

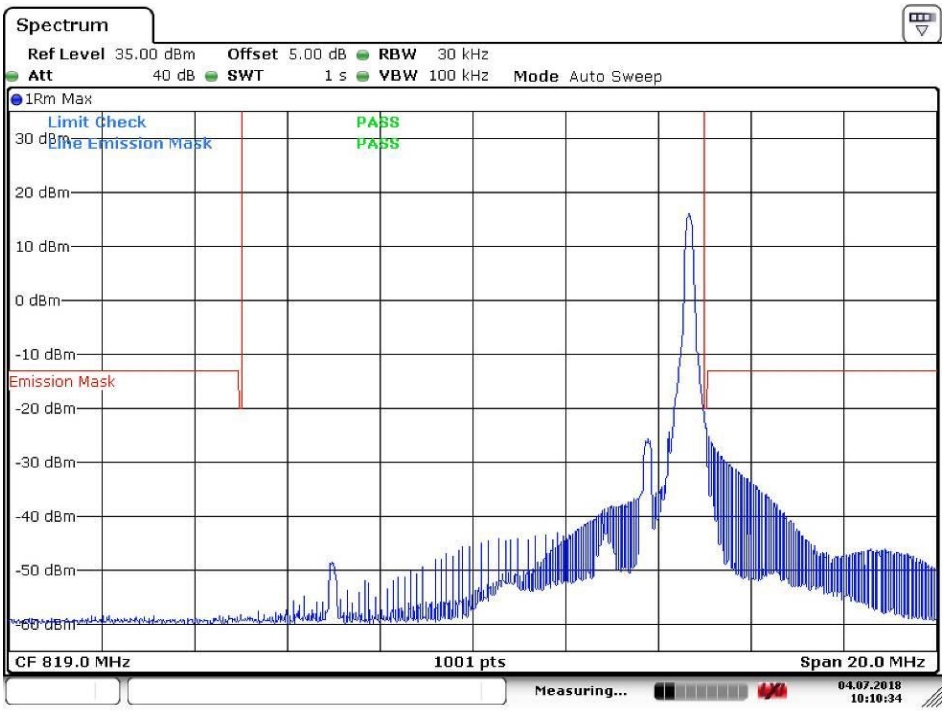
5.1.1.1.1.2 Test RB=6RB



Date: 4.JUL.2018 10:14:54

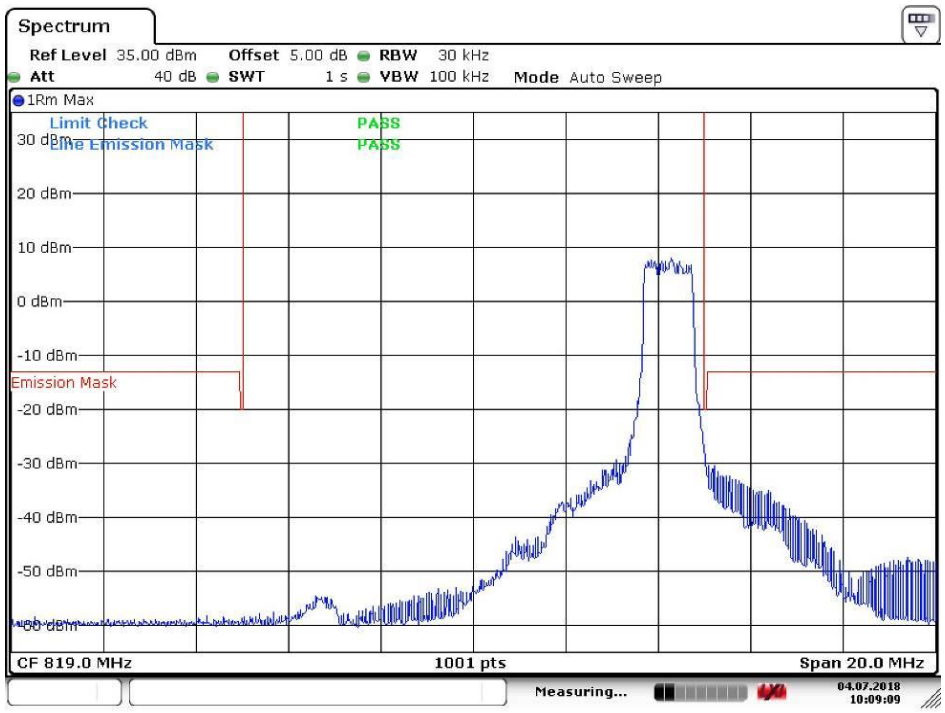
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 4.JUL.2018 10:10:34

5.1.1.1.2.2 Test RB=6RB

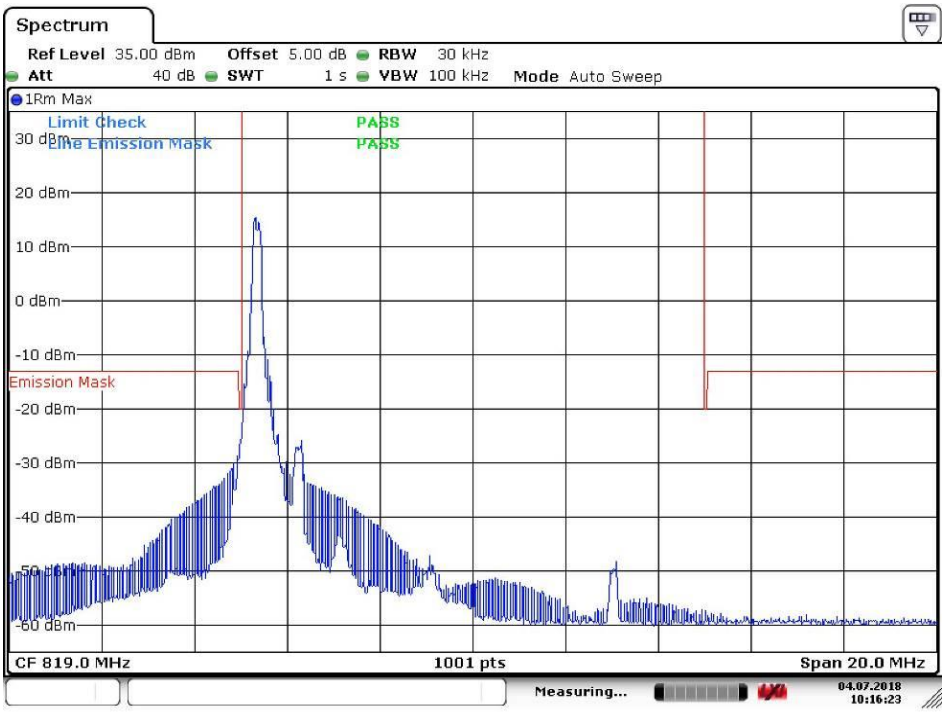


Date: 4.JUL.2018 10:09:09

5.1.1.2 Test Mode = LTE-M1/TM2 5MHz

5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



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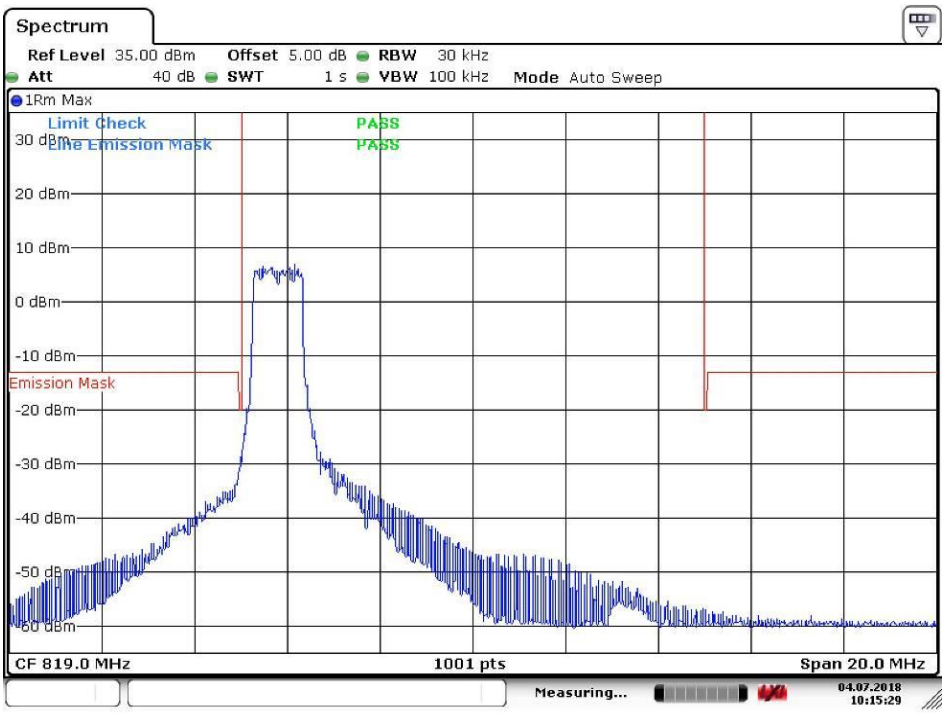
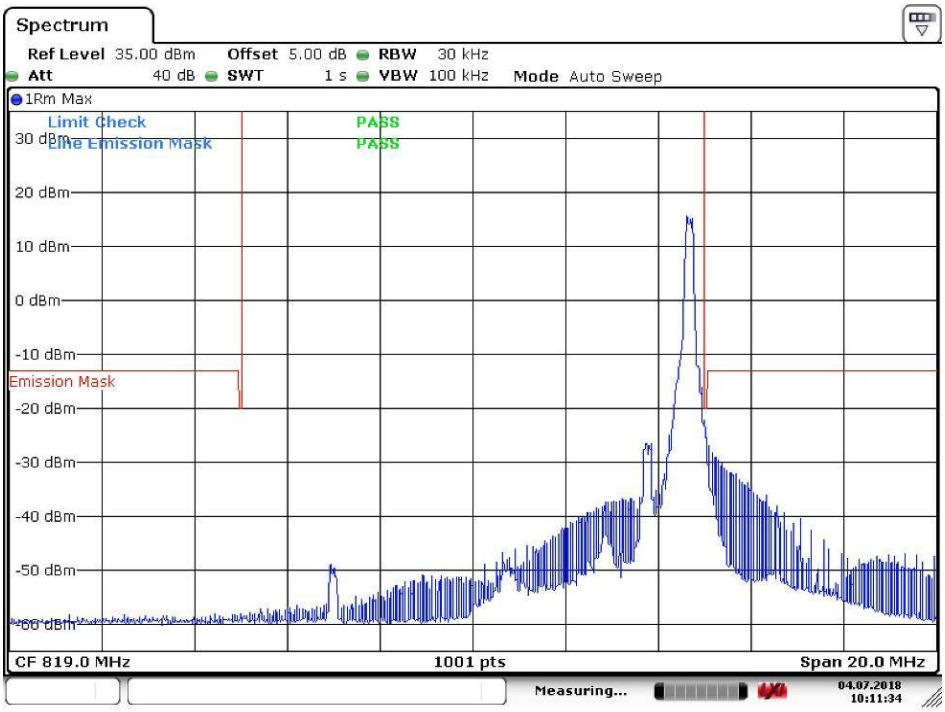
5.1.1.2.1.2 Test RB=6RB



Date: 4.JUL.2018 10:15:29

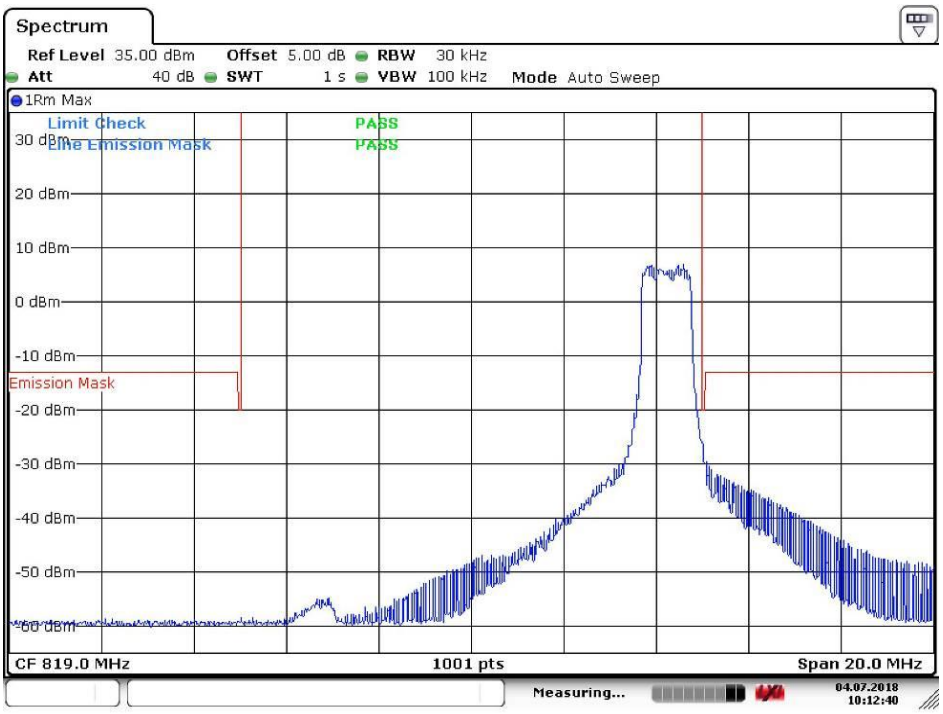
5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 4.JUL.2018 10:11:34

5.1.1.2.2.2 Test RB=6RB



Date: 4.JUL.2018 10:12:40

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.

NOTE2: only the worst case data displayed in this report.

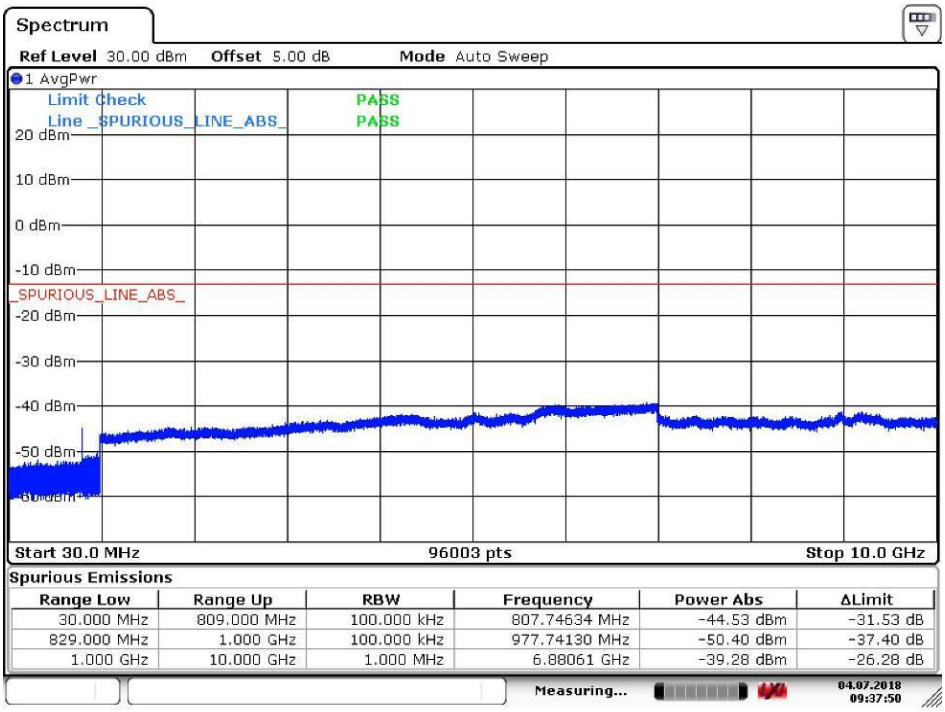
Part I - Test Plots

6.1 For LTE-M1

6.1.1 Test Band = LTE-M1 BAND26(814MHz-824MHz)

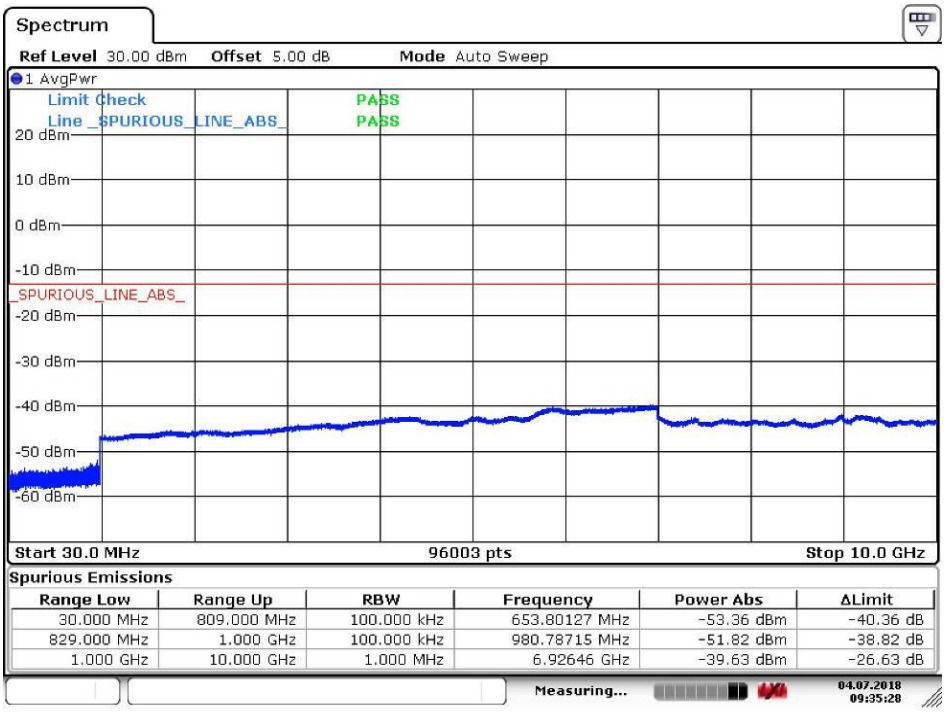
6.1.1.1 Test Mode = LTE-M1 / TM1 5MHz RB1#0

6.1.1.1.1 Test Channel = LCH



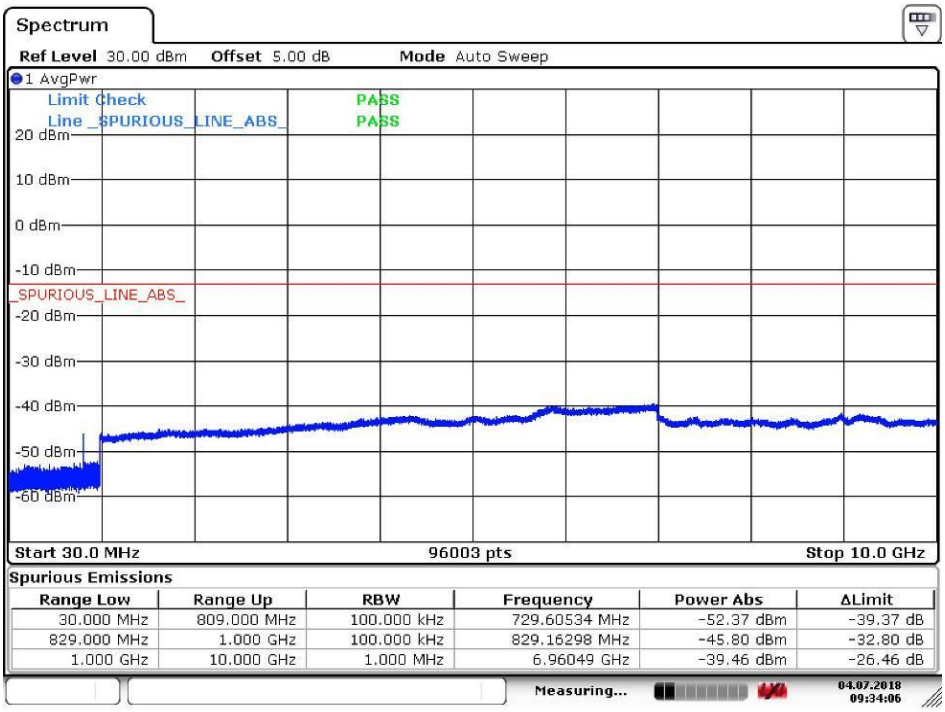
Date: 4.JUL.2018 09:37:50

6.1.1.1.2 Test Channel = MCH



Date: 4.JUL.2018 09:35:28

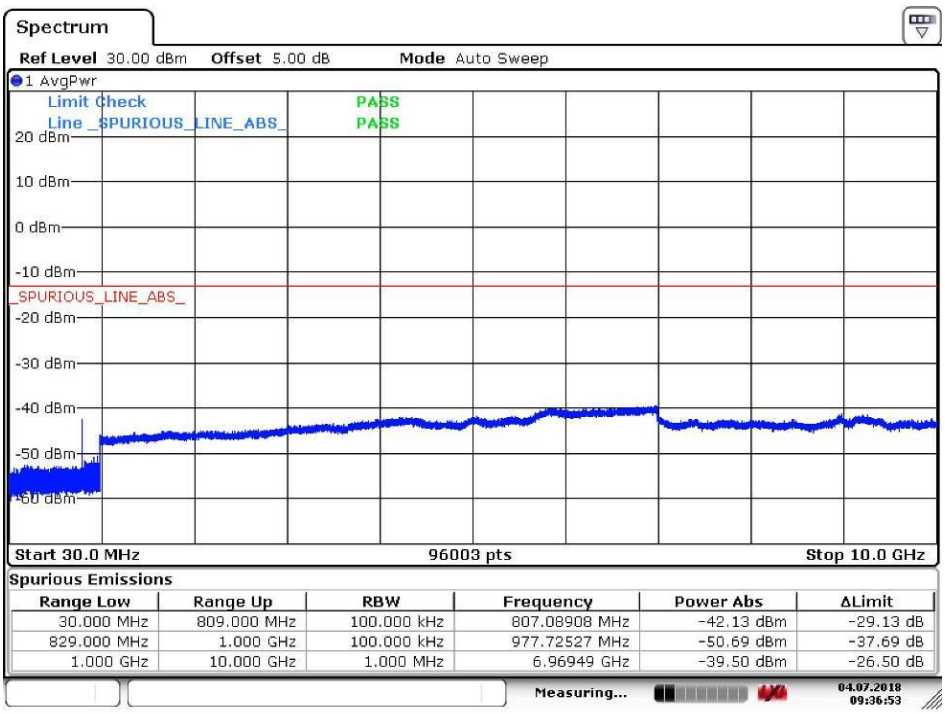
6.1.1.1.3 Test Channel = HCH



Date: 4.JUL.2018 09:34:06

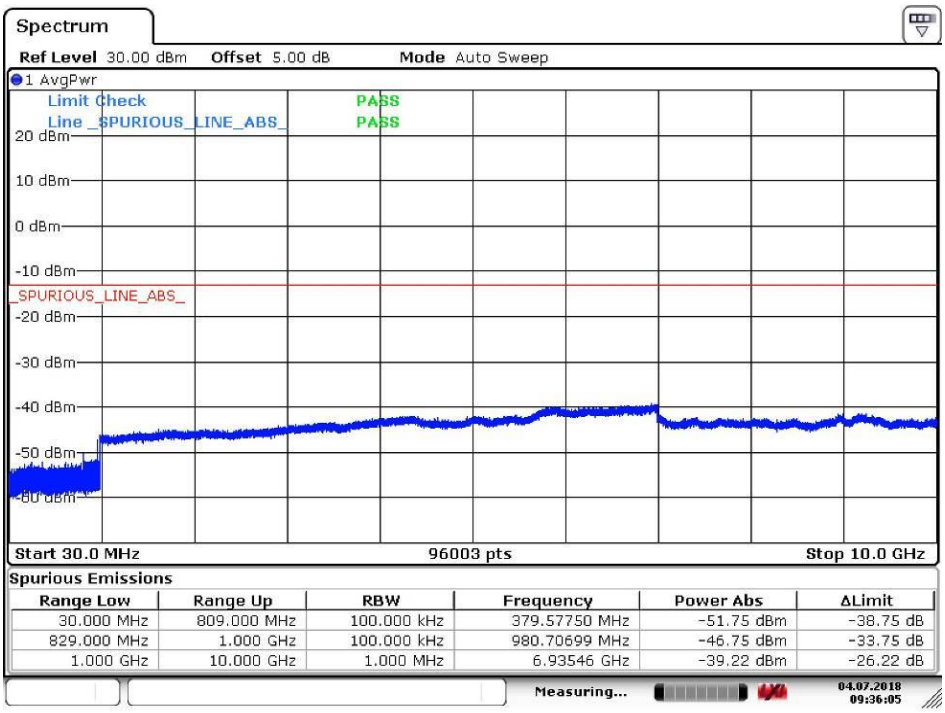
6.1.1.2 Test Mode = LTE-M1 / TM2 5MHz RB1#0

6.1.1.2.1 Test Channel = LCH



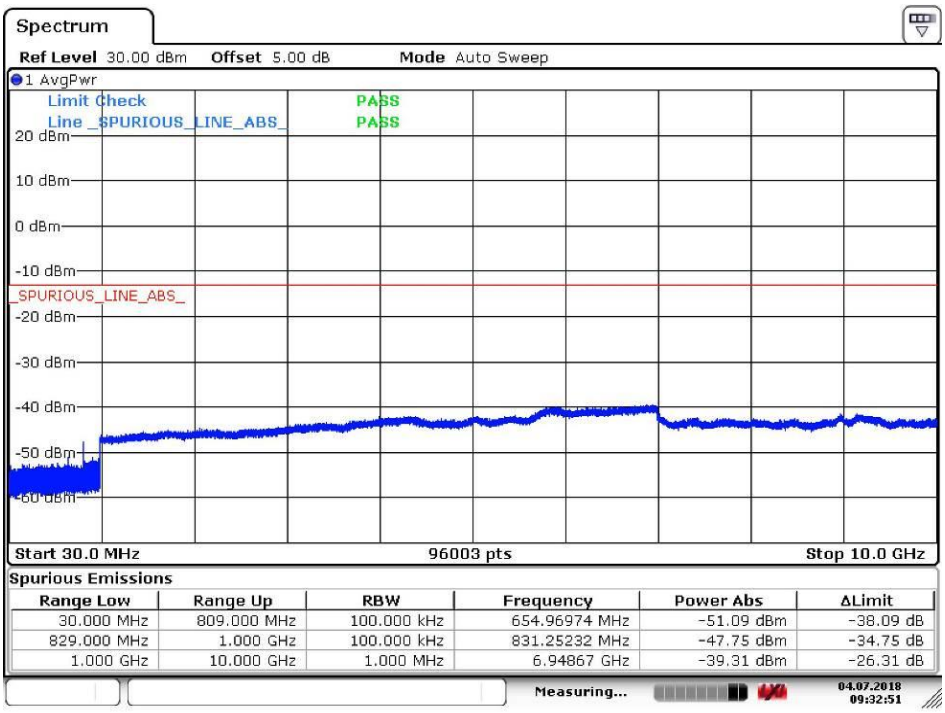
Date: 4.JUL.2018 09:36:53

6.1.1.2.2 Test Channel = MCH



Date: 4.JUL.2018 09:36:06

6.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 09:32:51

7 Field Strength of Spurious Radiation

7.1 For LTE-M1

7.1.1 Test Band = LTE-M1 BAND26(814MHz-824MHz)

7.1.1.1 Test Mode =LTE-M1/TM1 5MHz RB1#0

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
64.533333	-81.98	-13.00	-68.98	Vertical
90.480000	-83.79	-13.00	-70.79	Vertical
977.816667	-55.84	-13.00	-42.84	Vertical
1629.000000	-59.11	-13.00	-46.11	Vertical
2442.500000	-54.78	-13.00	-41.78	Vertical
3257.400000	-66.22	-13.00	-53.22	Vertical
62.340000	-78.22	-13.00	-65.22	Horizontal
977.725000	-49.01	-13.00	-36.01	Horizontal
1629.000000	-56.45	-13.00	-43.45	Horizontal
2443.500000	-55.99	-13.00	-42.99	Horizontal
3256.912500	-65.30	-13.00	-52.30	Horizontal
3445.575000	-64.03	-13.00	-51.03	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
64.253333	-81.92	-13.00	-68.92	Vertical
653.820833	-60.45	-13.00	-47.45	Vertical
1634.000000	-59.33	-13.00	-46.33	Vertical
2450.500000	-55.56	-13.00	-42.56	Vertical
3267.150000	-66.94	-13.00	-53.94	Vertical
6534.862500	-64.38	-13.00	-51.38	Vertical
63.553333	-78.14	-13.00	-65.14	Horizontal
633.791667	-63.99	-13.00	-50.99	Horizontal
980.750000	-47.03	-13.00	-34.03	Horizontal
1634.000000	-56.21	-13.00	-43.21	Horizontal
2450.500000	-56.07	-13.00	-43.07	Horizontal
3455.812500	-64.08	-13.00	-51.08	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
63.413333	-82.38	-13.00	-69.38	Vertical
90.480000	-83.53	-13.00	-70.53	Vertical
655.837500	-67.75	-13.00	-54.75	Vertical
1638.500000	-59.99	-13.00	-46.99	Vertical
2457.500000	-55.45	-13.00	-42.45	Vertical
3276.412500	-67.67	-13.00	-54.67	Vertical
62.993333	-77.84	-13.00	-64.84	Horizontal
655.745833	-61.88	-13.00	-48.88	Horizontal
983.775000	-46.90	-13.00	-33.90	Horizontal
1638.500000	-56.12	-13.00	-43.12	Horizontal
2457.500000	-55.55	-13.00	-42.55	Horizontal
3465.562500	-65.38	-13.00	-52.38	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) We have tested all modulation and all bandwidth, but only the worst case data presented in this report.

8 Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE-M1 BAND26	LTE-M1/TM1 5MHz	LCH	TN	VL	-10.51	-0.012876	PASS
				VN	-2.01	-0.002463	PASS
				VH	-5.44	-0.006663	PASS
		MCH	TN	VL	-4.47	-0.005452	PASS
				VN	-4.15	-0.005065	PASS
				VH	5.35	0.006532	PASS
		HCH	TN	VL	9.78	0.011909	PASS
				VN	-8.62	-0.010491	PASS
				VH	-2.37	-0.002881	PASS
	LTE-M1/TM2 5MHz	LCH	TN	VL	-5.96	-0.007294	PASS
				VN	6.85	0.008388	PASS
				VH	-6.06	-0.007423	PASS
		MCH	TN	VL	-6.24	-0.007625	PASS
				VN	8.13	0.009925	PASS
				VH	-4.01	-0.004895	PASS
		HCH	TN	VL	6.86	0.008347	PASS
				VN	3.88	0.004723	PASS
				VH	-4.78	-0.005823	PASS

8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE-M1 BAND26	LTE-M1/TM1 5MHz	LCH	VN	-30	5.79	0.007097	PASS
				-20	4.44	0.005443	PASS
				-10	-8.69	-0.010645	PASS
				0	0.90	0.001107	PASS
				10	4.97	0.006084	PASS
				20	-9.62	-0.011785	PASS
				30	-4.27	-0.005225	PASS
				40	-3.09	-0.003788	PASS
				50	-1.89	-0.002320	PASS
		MCH	VN	-30	7.21	0.008798	PASS
				-20	3.16	0.003853	PASS
				-10	8.45	0.010312	PASS
				0	9.06	0.011058	PASS
				10	-3.79	-0.004629	PASS
				20	-5.27	-0.006432	PASS
				30	3.77	0.004606	PASS
				40	-3.90	-0.004757	PASS
				50	2.60	0.003169	PASS
		HCH	VN	-30	9.39	0.011430	PASS
				-20	7.01	0.008537	PASS
				-10	4.24	0.005158	PASS
				0	8.53	0.010384	PASS
				10	-7.41	-0.009020	PASS
				20	-4.12	-0.005012	PASS
				30	9.35	0.011378	PASS
				40	-3.64	-0.004429	PASS
				50	4.76	0.005794	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE-M1 BAND26	LTE-M1/TM2 5MHz	LCH	VN	-30	-7.00	-0.008579	PASS
				-20	9.41	0.011531	PASS
				-10	7.42	0.009089	PASS
				0	-8.53	-0.010449	PASS
				10	7.50	0.009183	PASS
				20	3.11	0.003809	PASS
				30	8.02	0.009822	PASS
				40	-6.35	-0.007782	PASS
				50	-3.13	-0.003837	PASS
		MCH	VN	-30	1.57	0.001912	PASS
				-20	-0.13	-0.000154	PASS
				-10	2.61	0.003186	PASS
				0	-5.54	-0.006764	PASS
				10	6.39	0.007797	PASS
				20	5.48	0.006695	PASS
				30	2.27	0.002768	PASS
				40	-3.00	-0.003660	PASS
				50	-4.58	-0.005595	PASS
		HCH	VN	-30	-1.89	-0.002301	PASS
				-20	2.44	0.002970	PASS
				-10	1.16	0.001416	PASS
				0	3.73	0.004538	PASS
				10	-2.20	-0.002677	PASS
				20	-5.53	-0.006736	PASS
				30	6.67	0.008119	PASS
				40	-6.16	-0.007499	PASS
				50	-7.88	-0.009597	PASS

The End