Appendix B

LTE-M1 BAND 26(824MHz-849MHz)

CONTENT

Page

1 Effective (Isotropic) Radiated Power Output Data

Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE-M1 BAND 26

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	23.3	19.75	38.45	PASS
				RB1#5	23.31	19.76	38.45	PASS
				RB6#0	22.27	18.72	38.45	PASS
			MCH	RB1#0	23.19	19.64	38.45	PASS
				RB1#5	23.22	19.67	38.45	PASS
				RB6#0	22.19	18.64	38.45	PASS
			HCH	RB1#0	23.19	19.64	38.45	PASS
				RB1#5	23.23	19.68	38.45	PASS
				RB6#0	22.21	18.66	38.45	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	22.48	18.93	38.45	PASS
				RB1#5	22.52	18.97	38.45	PASS
				RB6#0	21.06	17.51	38.45	PASS
			MCH	RB1#0	22.44	18.89	38.45	PASS
				RB1#5	22.6	19.05	38.45	PASS
				RB6#0	21.12	17.57	38.45	PASS
			HCH	RB1#0	22.44	18.89	38.45	PASS
				RB1#5	22.57	19.02	38.45	PASS
				RB6#0	21.26	17.71	38.45	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	23.15	19.6	38.45	PASS
				RB1#5	23.19	19.64	38.45	PASS
				RB6#0	22.17	18.62	38.45	PASS
			MCH	RB1#0	23.28	19.73	38.45	PASS
				RB1#5	23.2	19.65	38.45	PASS
				RB6#0	22.26	18.71	38.45	PASS
			HCH	RB1#0	23.14	19.59	38.45	PASS
				RB1#5	23.17	19.62	38.45	PASS
				RB6#0	22.22	18.67	38.45	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	22.23	18.68	38.45	PASS
				RB1#5	22.43	18.88	38.45	PASS
				RB6#0	21.22	17.67	38.45	PASS
			MCH	RB1#0	22.42	18.87	38.45	PASS
				RB1#5	22.47	18.92	38.45	PASS
				RB6#0	21.21	17.66	38.45	PASS

			HCH	RB1#0	22.32	18.77	38.45	PASS
				RB1#5	22.36	18.81	38.45	PASS
				RB6#0	21.22	17.67	38.45	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	23.24	19.69	38.45	PASS
				RB1#5	23.18	19.63	38.45	PASS
				RB6#0	22.21	18.66	38.45	PASS
			MCH	RB1#0	23.21	19.66	38.45	PASS
				RB1#5	23.28	19.73	38.45	PASS
				RB6#0	22.33	18.78	38.45	PASS
			HCH	RB1#0	23.23	19.68	38.45	PASS
				RB1#5	23.26	19.71	38.45	PASS
				RB6#0	22.29	18.74	38.45	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	22.75	19.2	38.45	PASS
				RB1#5	22.68	19.13	38.45	PASS
				RB6#0	21.37	17.82	38.45	PASS
			MCH	RB1#0	22.74	19.19	38.45	PASS
				RB1#5	22.65	19.1	38.45	PASS
				RB6#0	21.34	17.79	38.45	PASS
			HCH	RB1#0	22.45	18.9	38.45	PASS
				RB1#5	22.66	19.11	38.45	PASS
				RB6#0	21.35	17.8	38.45	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM1	10M	LCH	RB1#0	23.27	19.72	38.45	PASS
				RB1#5	23.32	19.77	38.45	PASS
				RB6#0	22.28	18.73	38.45	PASS
			MCH	RB1#0	23.23	19.68	38.45	PASS
				RB1#5	23.26	19.71	38.45	PASS
				RB6#0	22.26	18.71	38.45	PASS
			HCH	RB1#0	23.33	19.78	38.45	PASS
				RB1#5	23.23	19.68	38.45	PASS
				RB6#0	22.4	18.85	38.45	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM2	10M	LCH	RB1#0	22.63	19.08	38.45	PASS
				RB1#5	22.65	19.1	38.45	PASS
				RB6#0	21.36	17.81	38.45	PASS
			MCH	RB1#0	22.73	19.18	38.45	PASS
				RB1#5	22.64	19.09	38.45	PASS
				RB6#0	21.39	17.84	38.45	PASS
			HCH	RB1#0	22.71	19.16	38.45	PASS

				RB1#5	22.69	19.14	38.45	PASS
				RB6#0	21.36	17.81	38.45	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM1	15M	LCH	RB1#0	23.18	19.63	38.45	PASS
				RB1#5	23.28	19.73	38.45	PASS
				RB6#0	22.38	18.83	38.45	PASS
			MCH	RB1#0	23.18	19.63	38.45	PASS
				RB1#5	23.29	19.74	38.45	PASS
				RB6#0	22.25	18.7	38.45	PASS
			HCH	RB1#0	23.26	19.71	38.45	PASS
				RB1#5	23.29	19.74	38.45	PASS
				RB6#0	22.33	18.78	38.45	PASS

Test Band(LTE)	Test Mode	Test Bandwidth	Test channel	Test RB	Measured (dBm)	ERP (dBm)	limit (dBm)	Verdict
BAND26	LTE-M1/TM2	15M	LCH	RB1#0	22.67	19.12	38.45	PASS
				RB1#5	22.72	19.17	38.45	PASS
				RB6#0	21.44	17.89	38.45	PASS
			MCH	RB1#0	22.59	19.04	38.45	PASS
				RB1#5	22.63	19.08	38.45	PASS
				RB6#0	21.37	17.82	38.45	PASS
			HCH	RB1#0	22.69	19.14	38.45	PASS
				RB1#5	22.57	19.02	38.45	PASS
				RB6#0	21.38	17.83	38.45	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
Band 2	TM1/5M Full RB	LCH	4.99	13	PASS
		MCH	5.07	13	PASS
		HCH	5.97	13	PASS
	TM1/5M 1 RB	LCH	5.45	13	PASS
		MCH	4.72	13	PASS
		HCH	6.84	13	PASS
	TM2/5M Full RB	LCH	5.74	13	PASS
		MCH	5.88	13	PASS
		HCH	5.94	13	PASS
	TM2/5M 1 RB	LCH	5.36	13	PASS
		MCH	5.25	13	PASS
		HCH	6.29	13	PASS

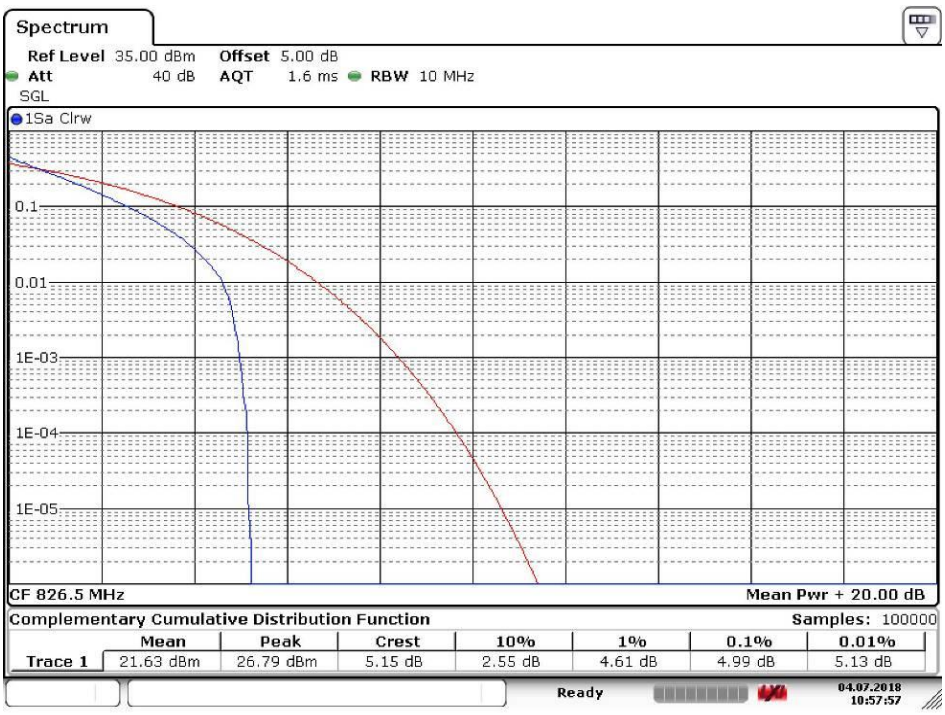
Part II - Test Plots

2.1 For LTE-M1

2.1.1 Test Band = LTE-M1 BAND26(824MHz-849MHz)

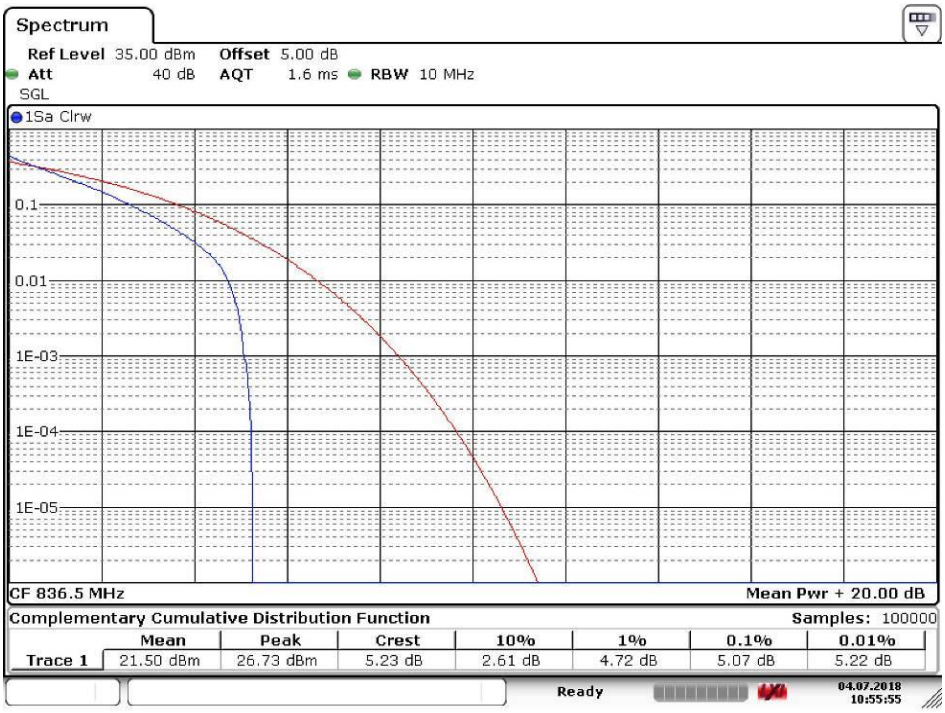
2.1.1.1 Test Mode = LTE-M1/TM1.Bandwidth=5MHz Full RB

2.1.1.1.1 Test Channel = LCH



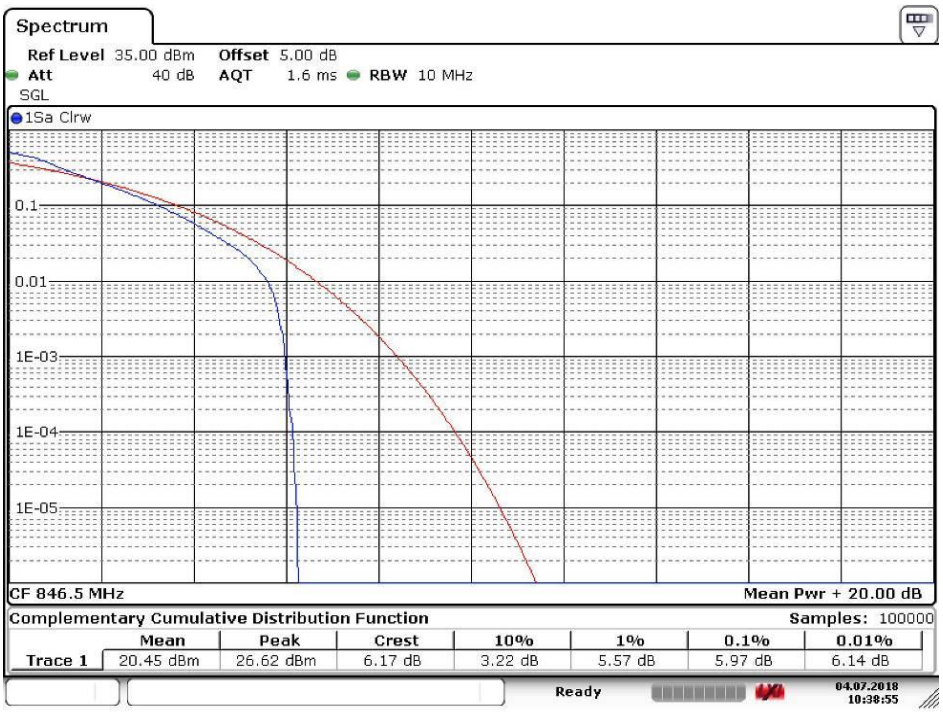
Date: 4.JUL.2018 10:57:58

2.1.1.1.2 Test Channel = MCH



Date: 4.JUL.2018 10:55:55

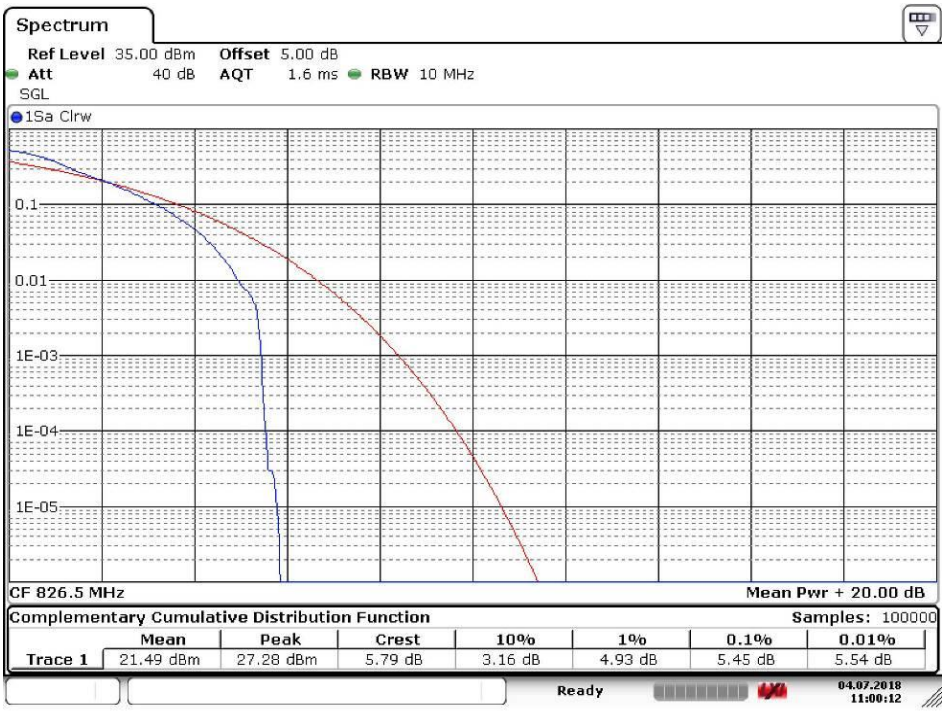
2.1.1.1.3 Test Channel = HCH



Date: 4.JUL.2018 10:38:55

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

2.1.1.2.1 Test Channel = LCH



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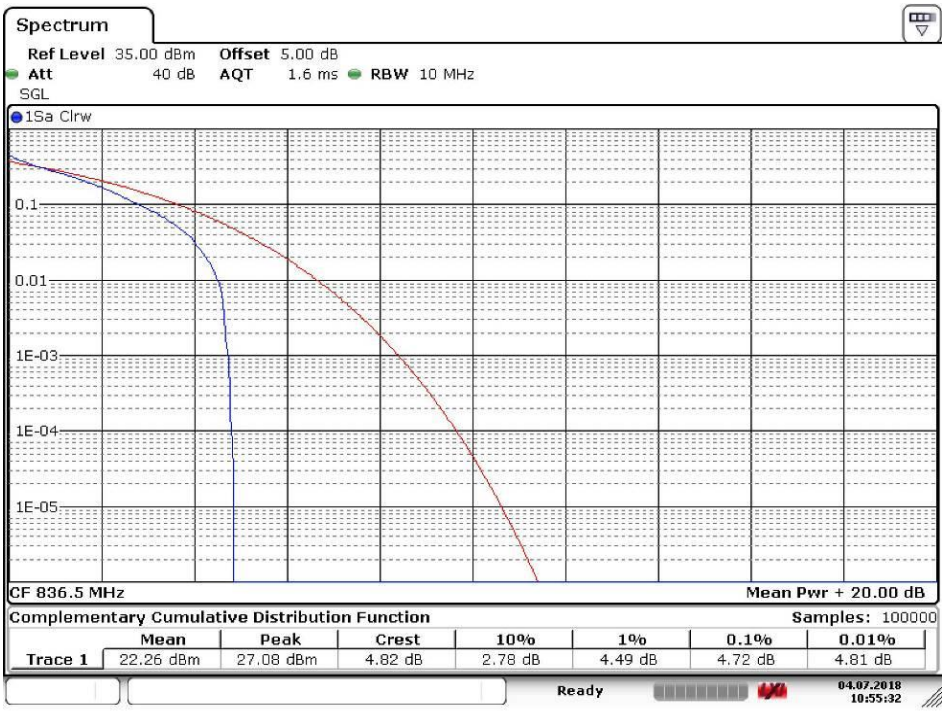
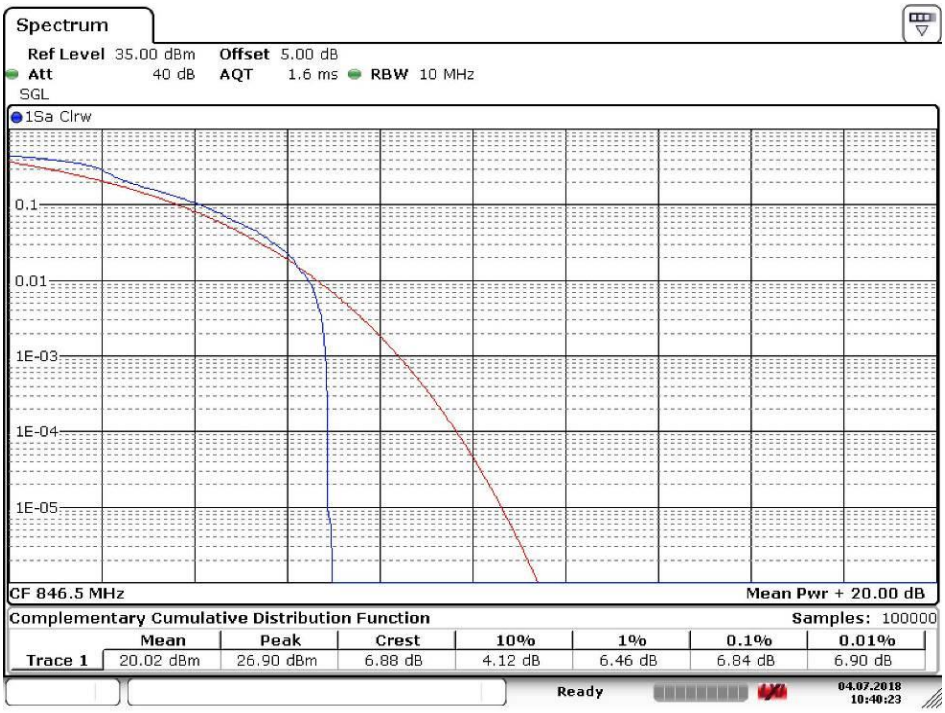
2.1.1.2.2 Test Channel = MCH



Date: 4.JUL.2018 10:55:33

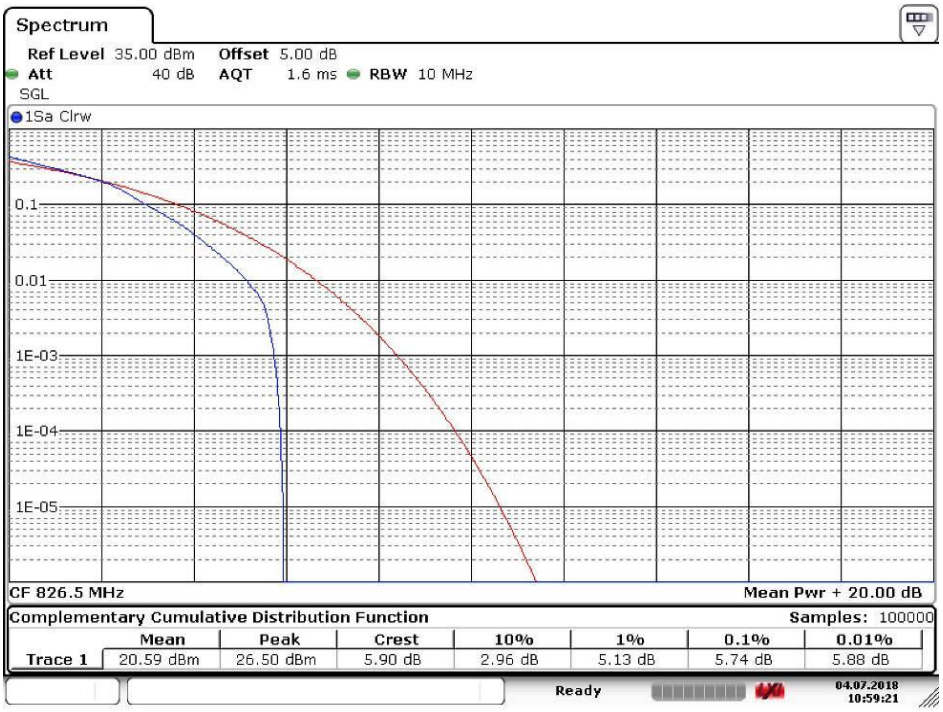
2.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 10:40:23

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

2.1.1.3.1 Test Channel = LCH



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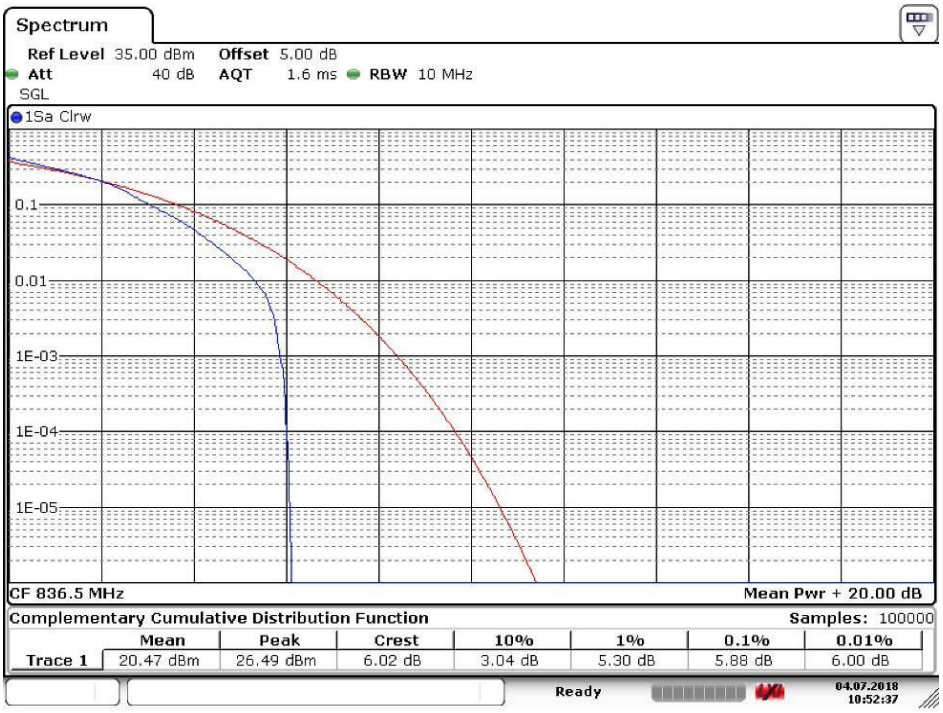
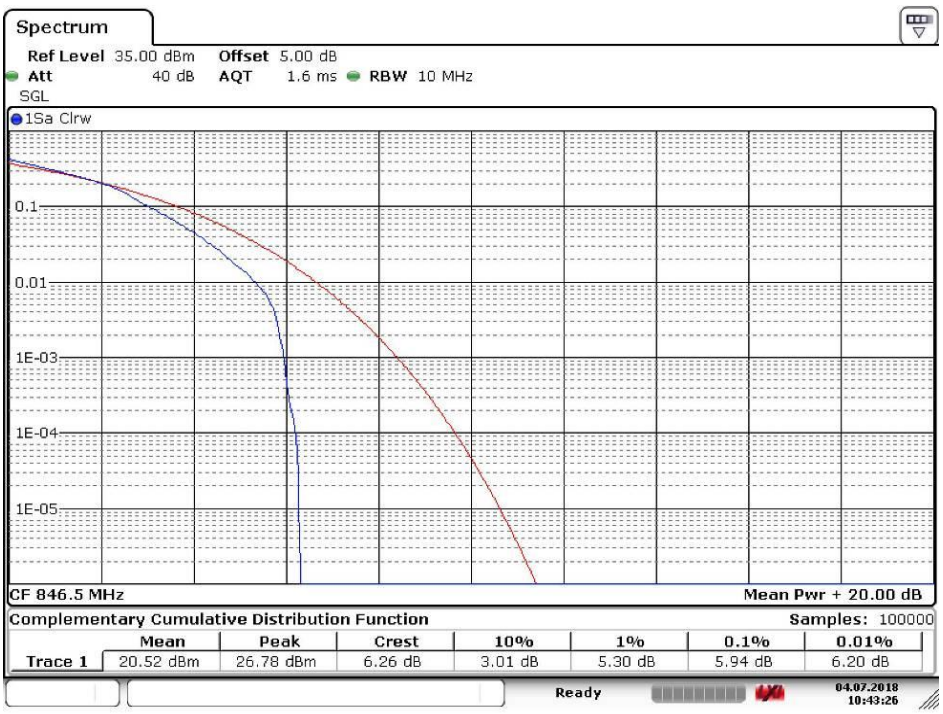
2.1.1.3.2 Test Channel = MCH



Date: 4.JUL.2018 10:52:38

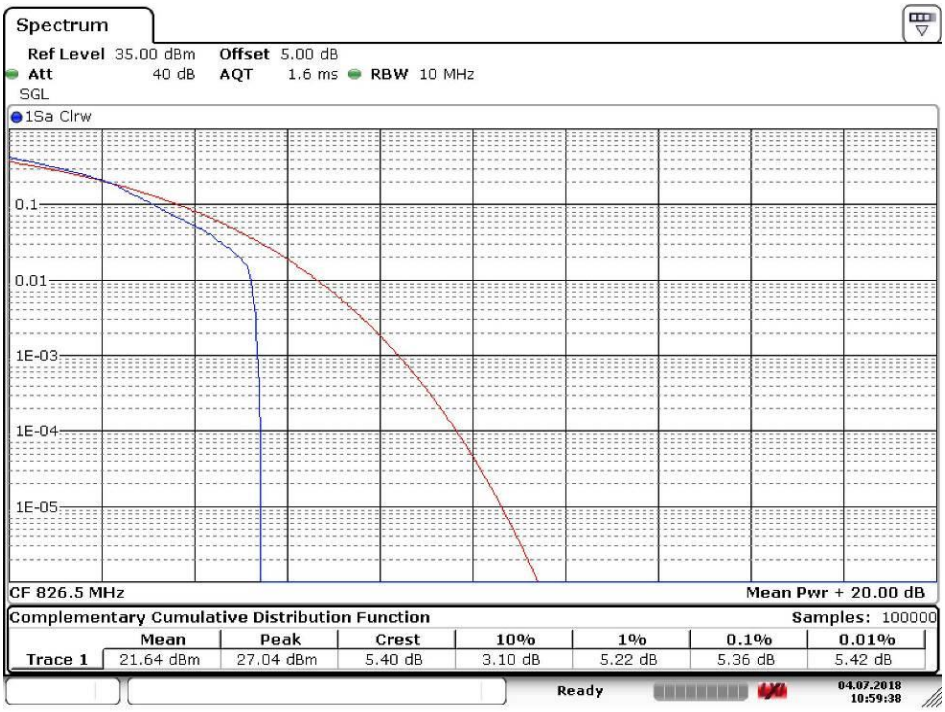
2.1.1.3.3 Test Channel = HCH



Date: 4.JUL.2018 10:43:27

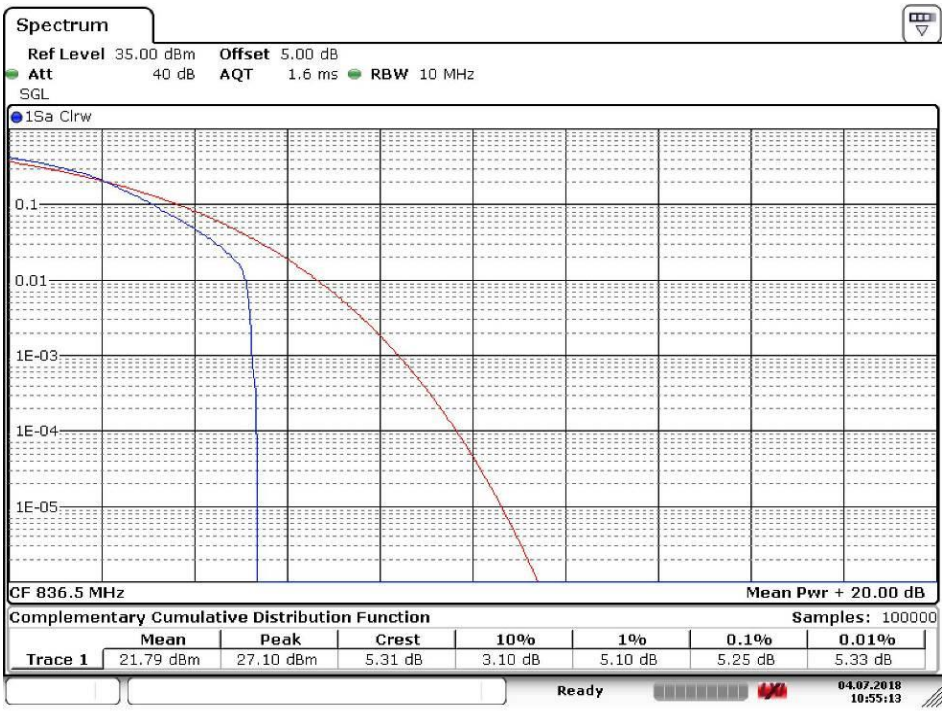
2.1.1.4 Test Mode = LTE-M1/TM2.Bandwidth=5MHz 1 RB

2.1.1.4.1 Test Channel = LCH



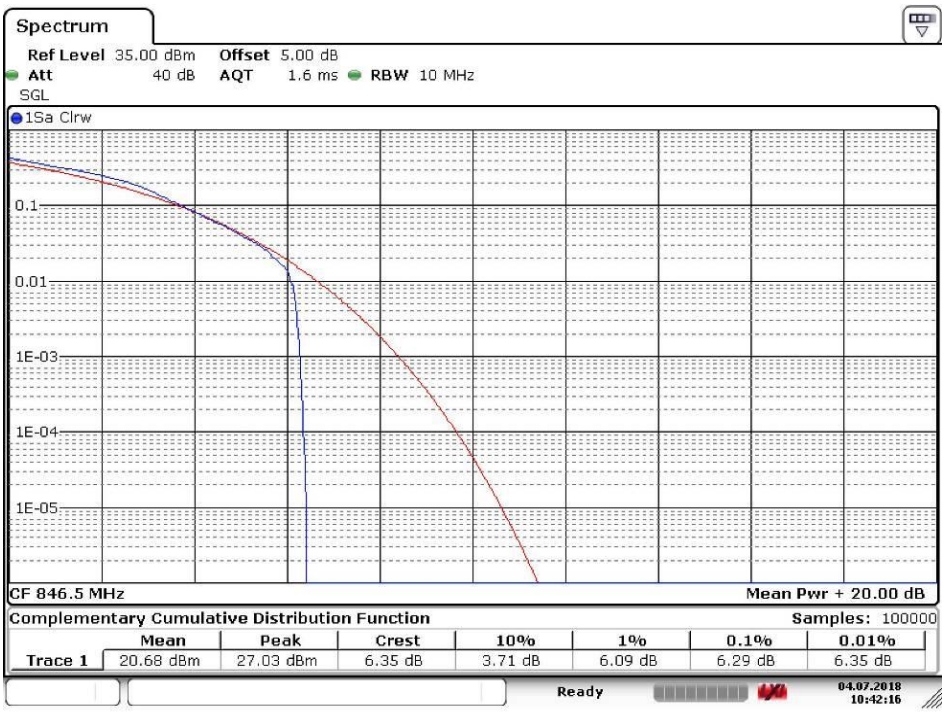
Date: 4.JUL.2018 10:59:38

2.1.1.4.2 Test Channel = MCH



Date: 4.JUL.2018 10:55:14

2.1.1.4.3 Test Channel = HCH



Date: 4.JUL.2018 10:42:17

3 Modulation Characteristics

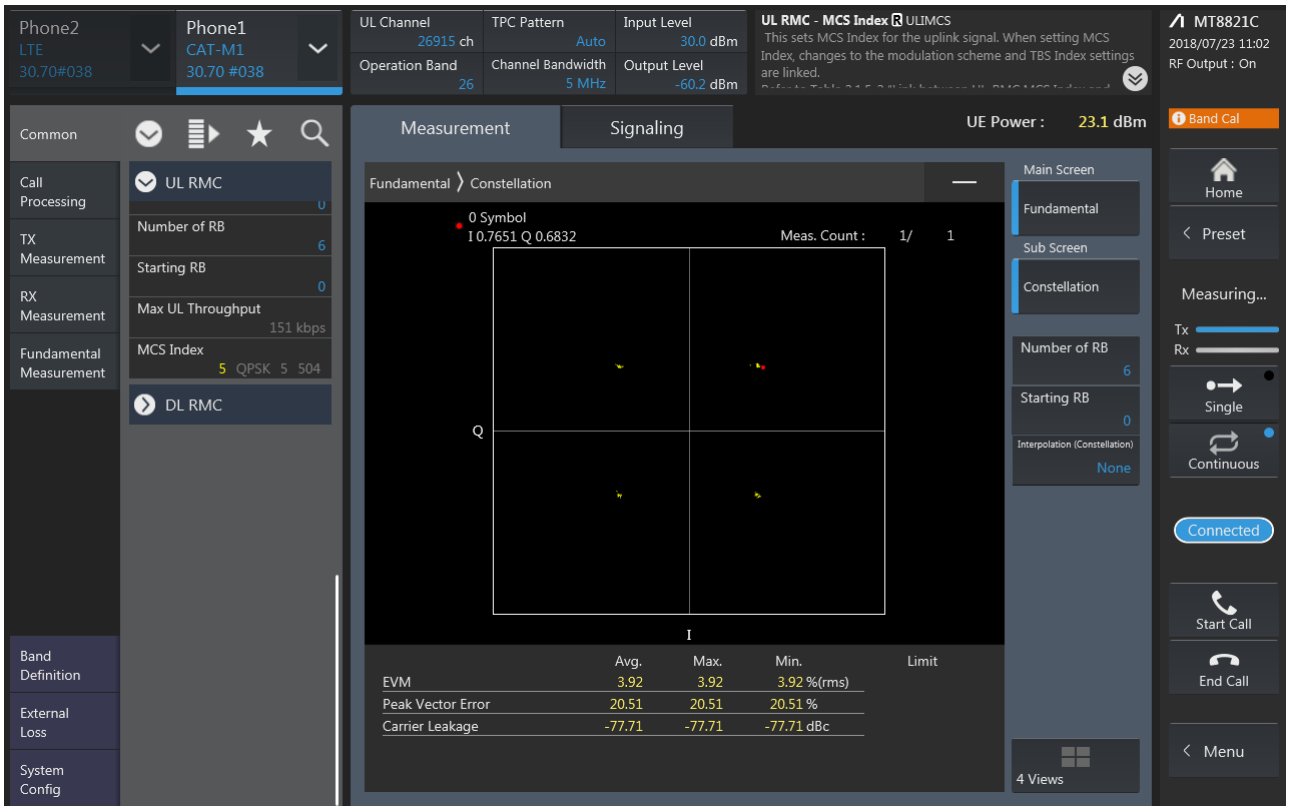
Part I - Test Plots

3.1 For LTE-M1

3.1.1 Test Band = LTE-M1 BAND26(824MHz-849MHz)

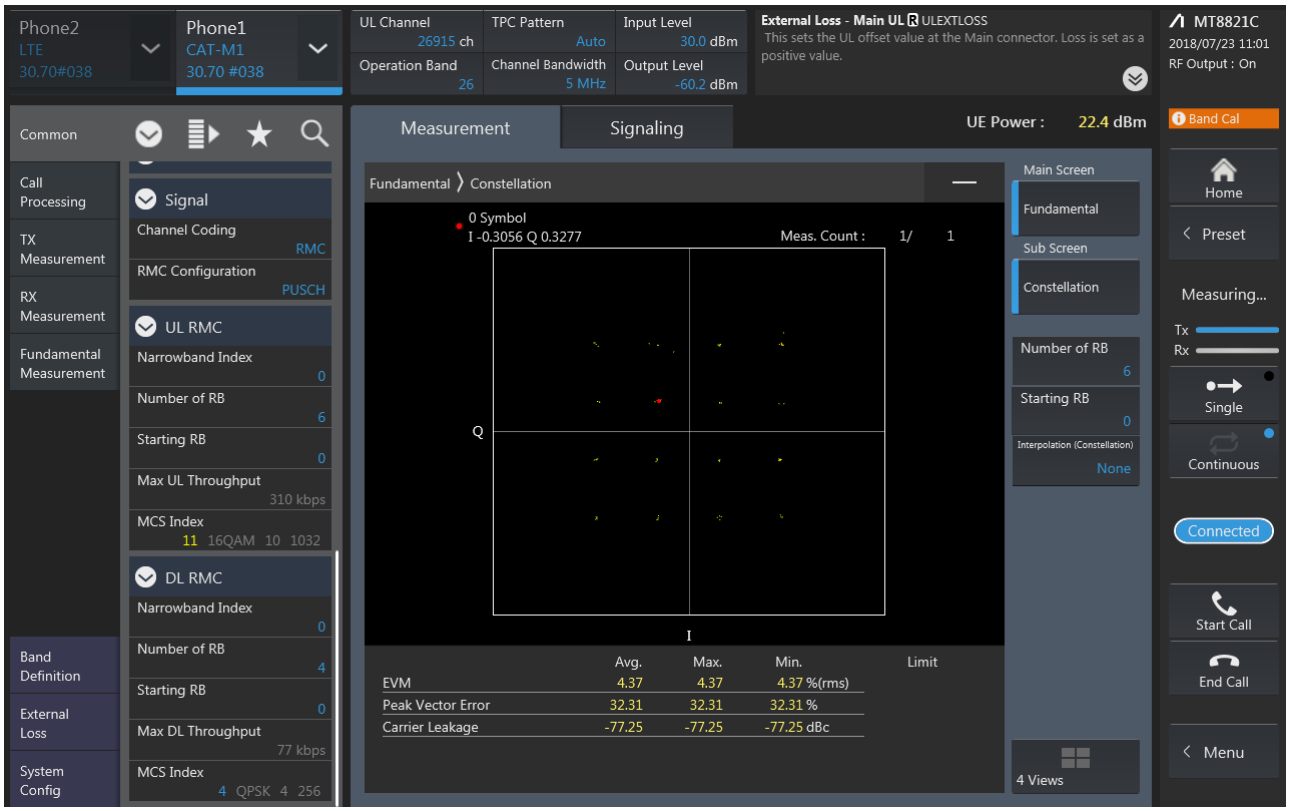
3.1.1.1 Test Mode = LTE-M1 /TM1 5MHz

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

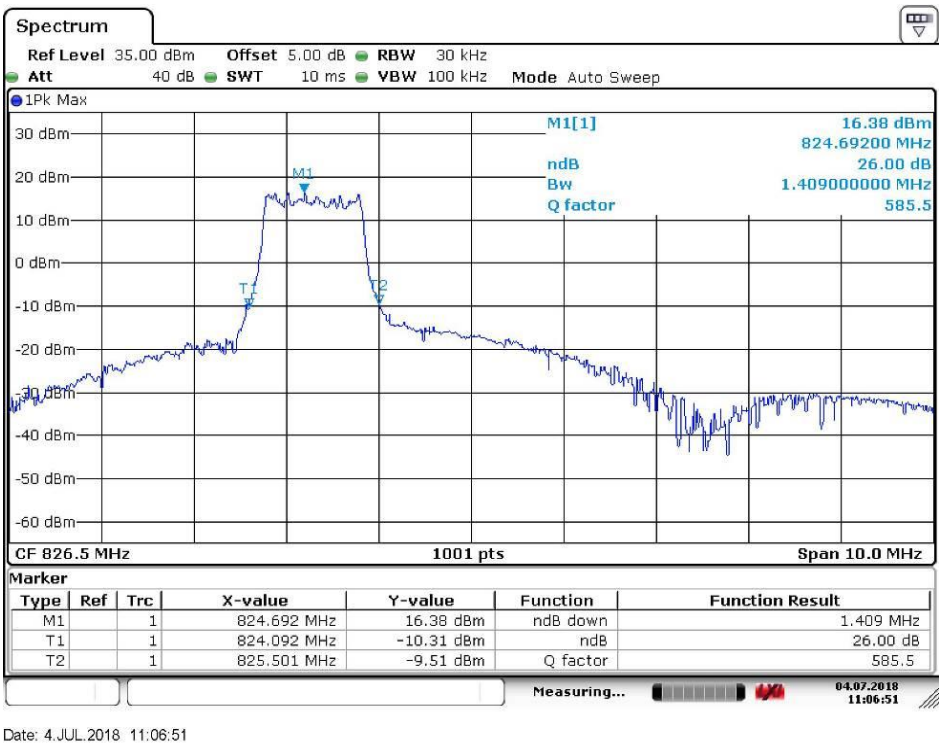
Test Band	Test Mode	Test Channel	Occupied Bandwidth [MHz]	Emission Bandwidth [MHz]	Verdict
BAND26	TM1/ 5MHz	LCH	1.10	1.40	PASS
		MCH	1.12	1.40	PASS
		HCH	1.10	1.41	PASS
	TM2/ 5MHz	LCH	1.11	1.46	PASS
		MCH	1.11	1.45	PASS
		HCH	1.11	1.44	PASS

4.1 For LTE

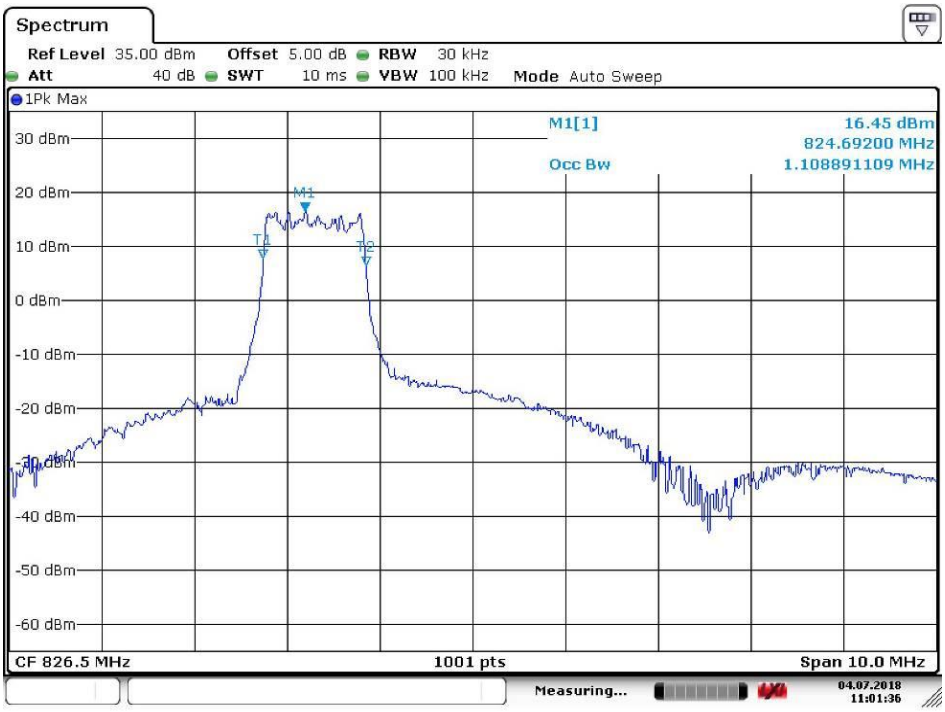
4.1.1 Test Band = LTE-M1 BAND26(824MHz-849MHz)

4.1.1.1 Test Mode = LTE-M1/TM1 5MHz

4.1.1.1.1 Test Channel = LCH

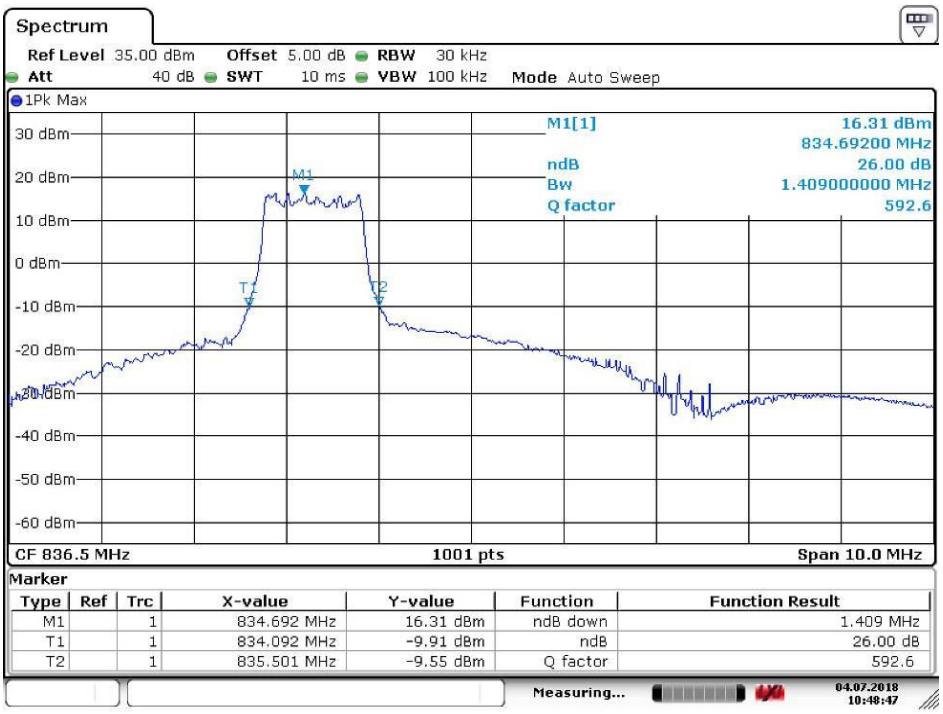


Date: 4.JUL.2018 11:06:51



Date: 4.JUL.2018 11:01:36

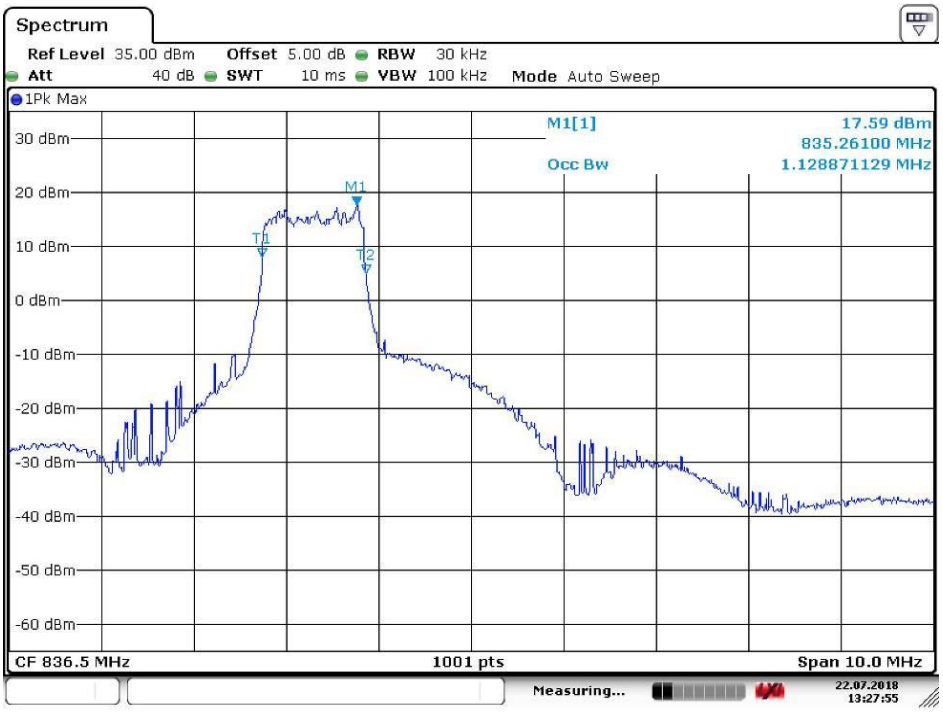
4.1.1.1.2 Test Channel = MCH



Marker

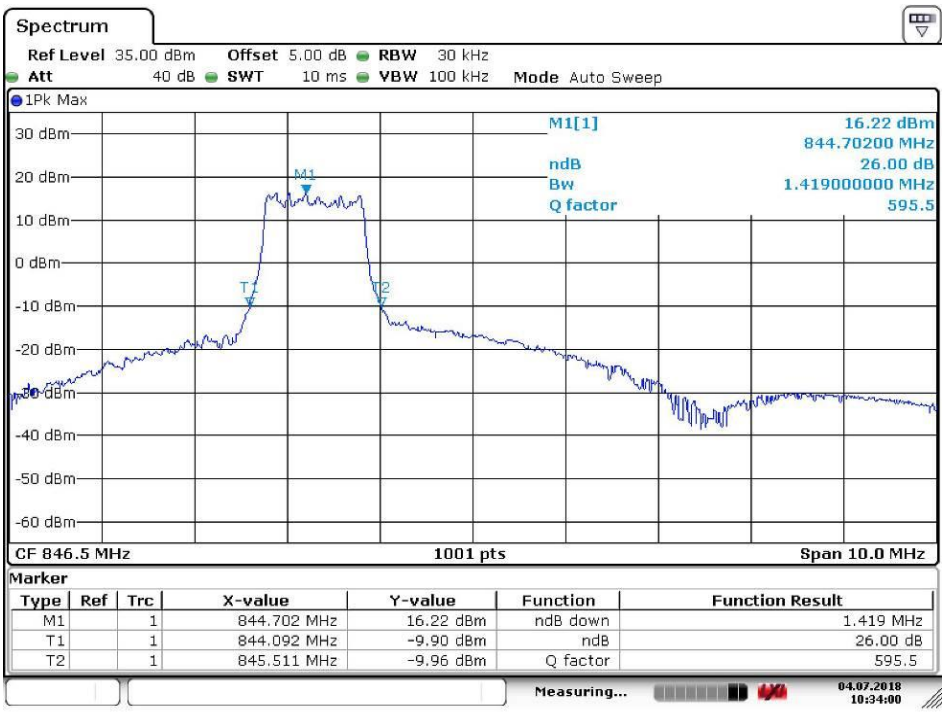
Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	834.692 MHz	16.31 dBm	ndB down	1.409 MHz
T1		1	834.092 MHz	-9.91 dBm	ndB	26.00 dB
T2		1	835.501 MHz	-9.55 dBm	Q factor	592.6

Date: 4.JUL.2018 10:48:47



Date: 22.JUL.2018 13:27:55

4.1.1.1.3 Test Channel = HCH



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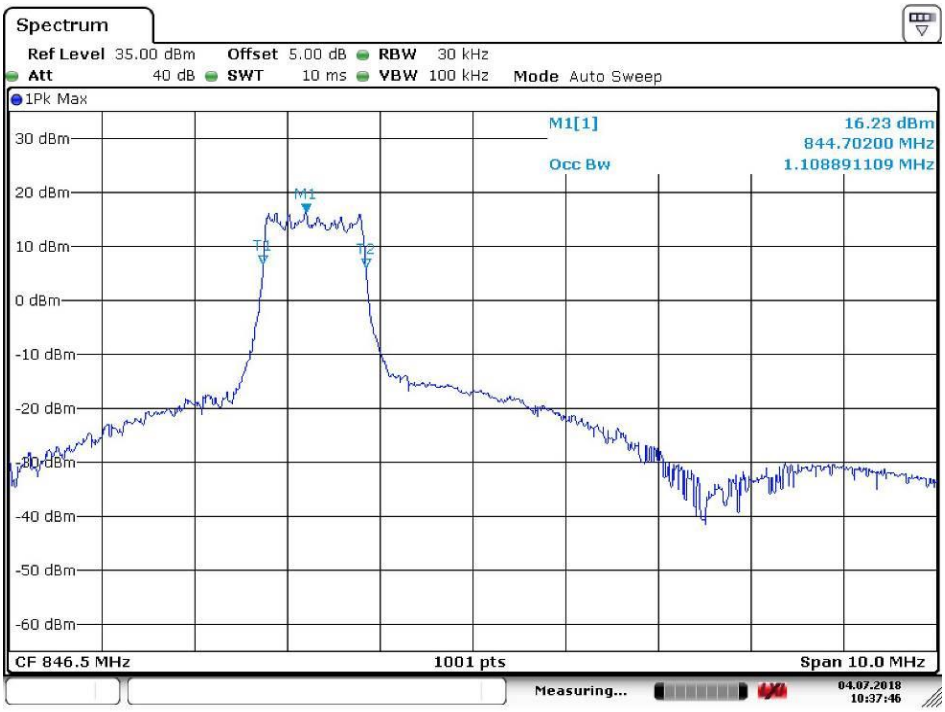
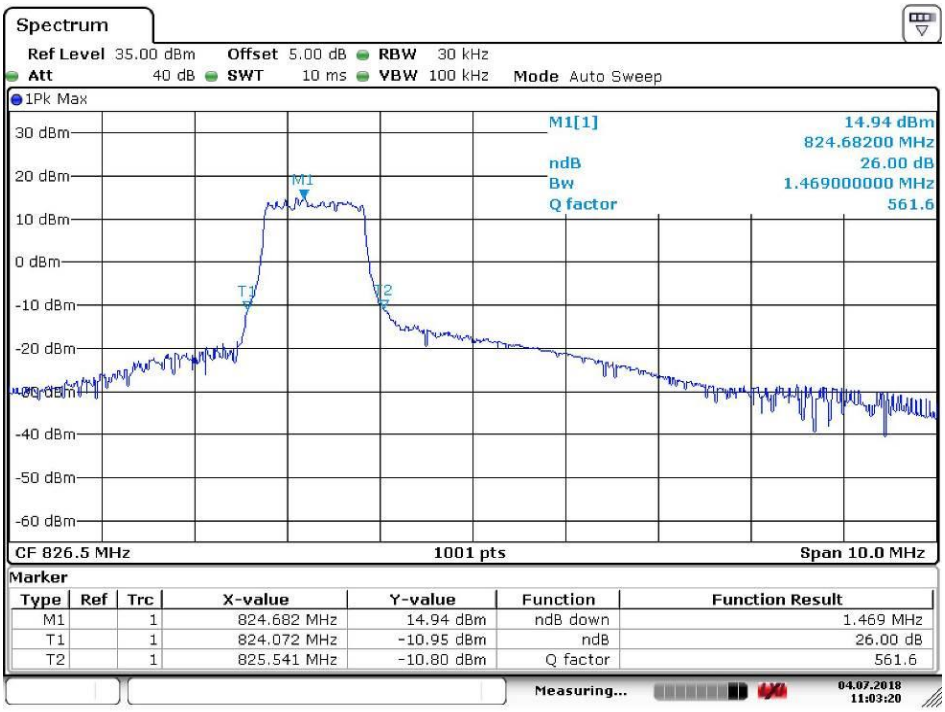


Date: 4.JUL.2018 10:37:46

4.1.1.2 Test Mode = LTE-M1/TM2 5MHz

4.1.1.2.1 Test Channel = LCH



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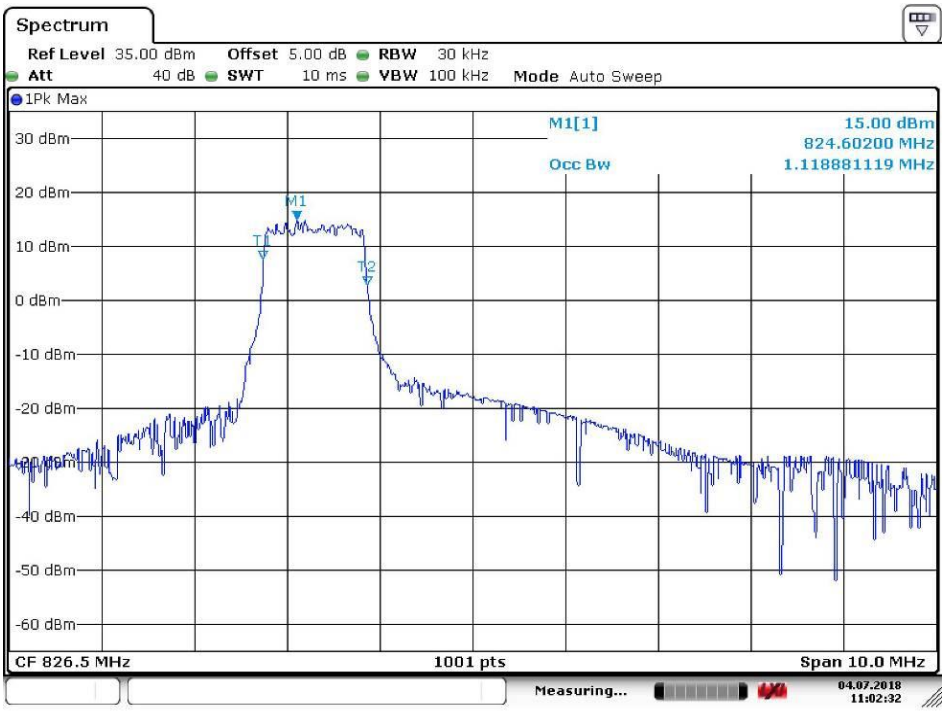
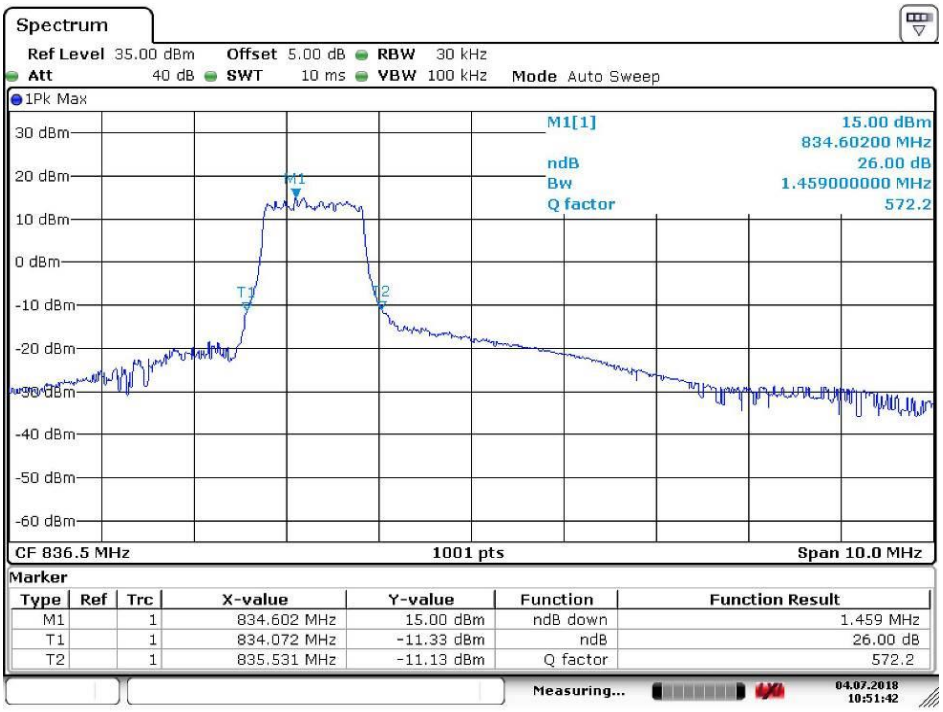


Date: 4.JUL.2018 11:02:33

4.1.1.2.2 Test Channel = MCH



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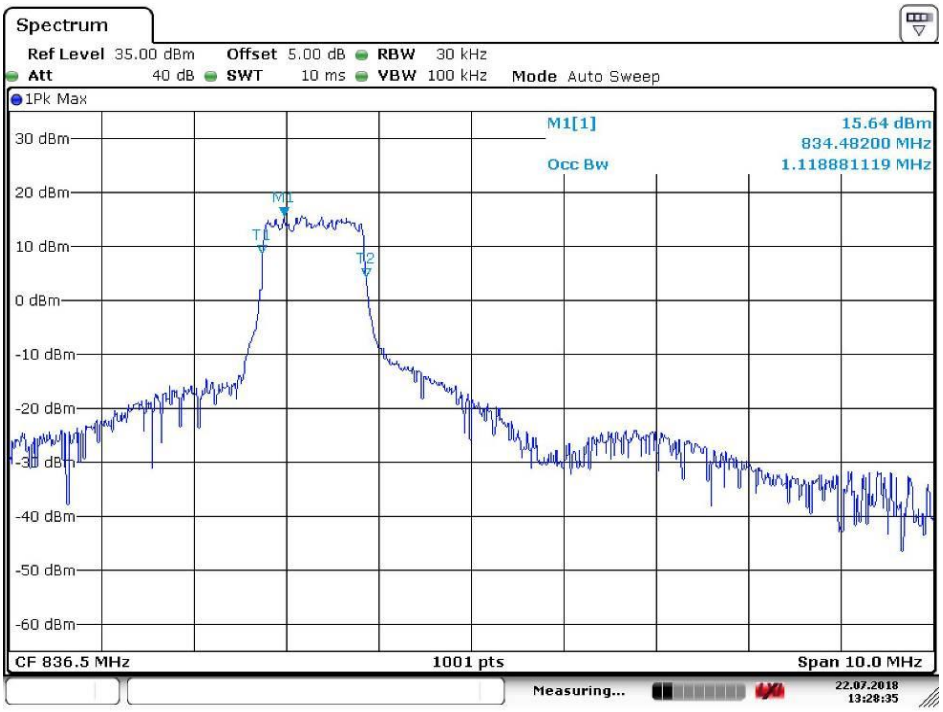
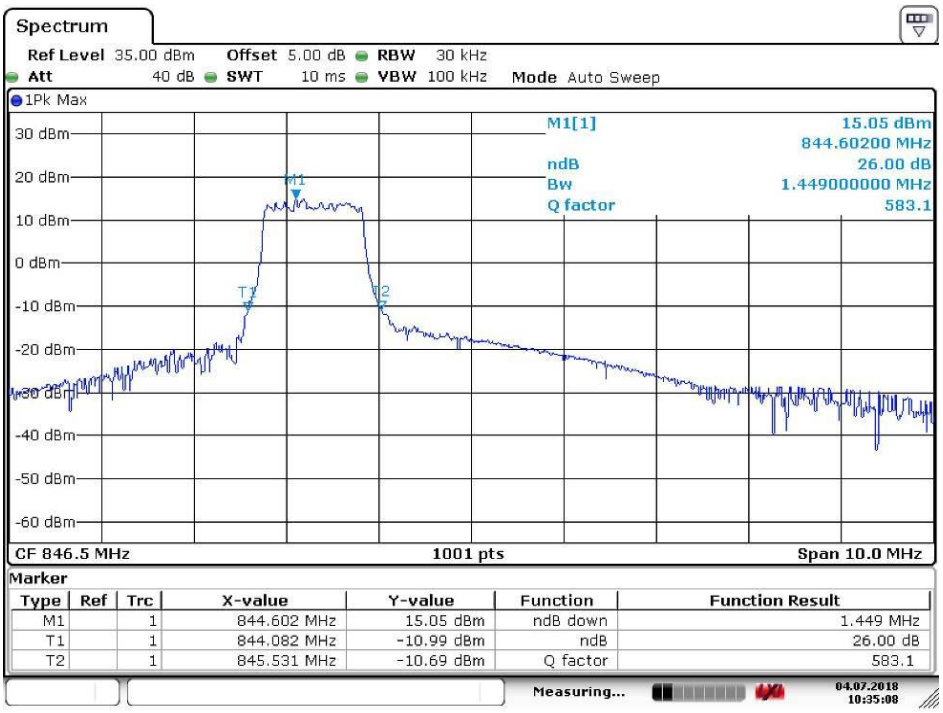
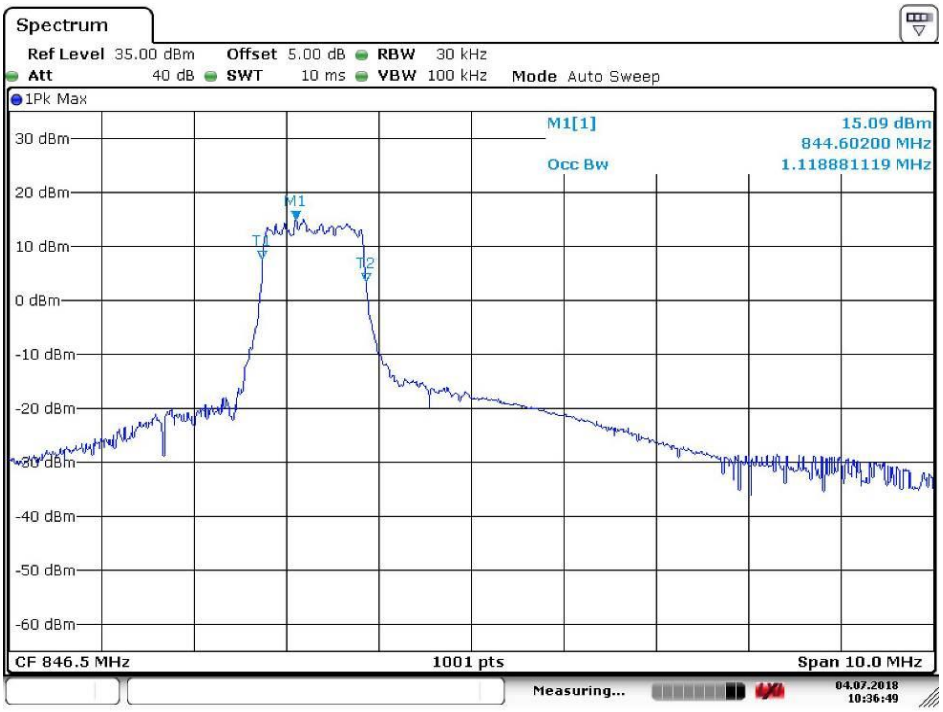


Date: 22.JUL.2018 13:28:35

4.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 10:35:08



Date: 4.JUL.2018 10:36:49

5 Band Edges Compliance

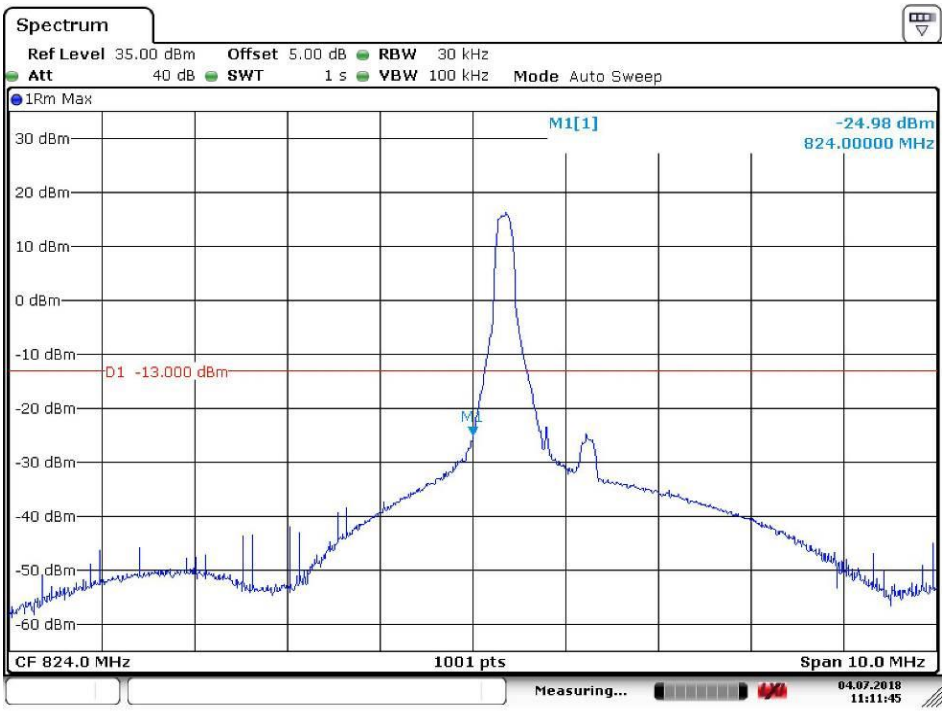
5.1 For LTE-M1

5.1.1 Test Band = LTE-M1 BAND26(824MHz-849MHz)

5.1.1.1 Test Mode = LTE-M1/TM1 5MHz

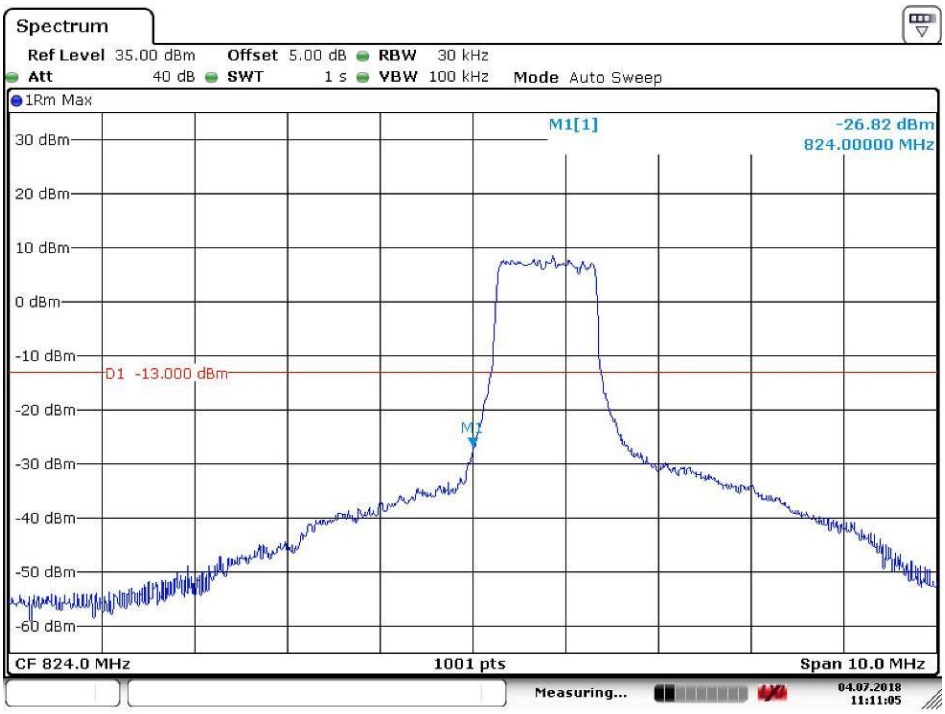
5.1.1.1.1 Test Channel = LCH

5.1.1.1.1.1 Test RB=1RB



Date: 4.JUL.2018 11:11:45

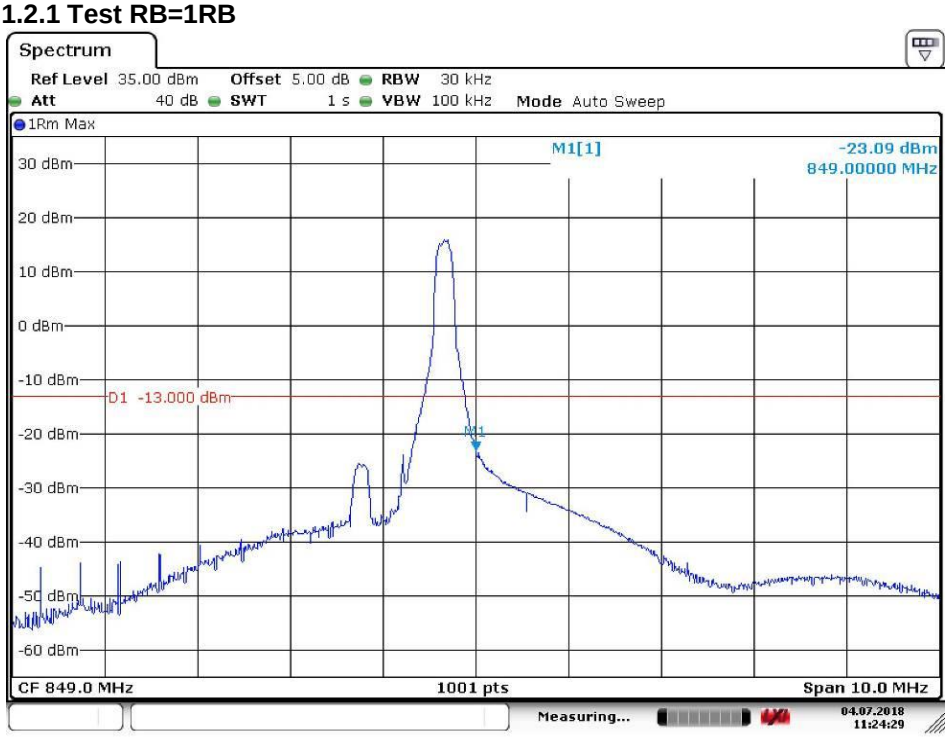
5.1.1.1.1.2 Test RB=6RB



Date: 4.JUL.2018 11:11:05

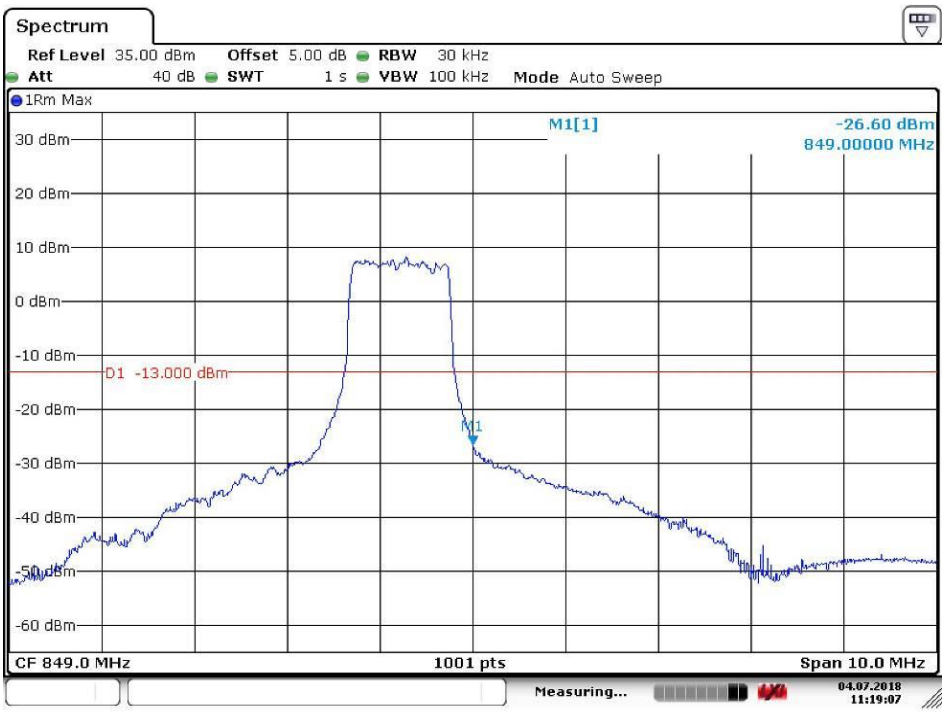
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 4.JUL.2018 11:24:30

5.1.1.1.2.2 Test RB=6RB

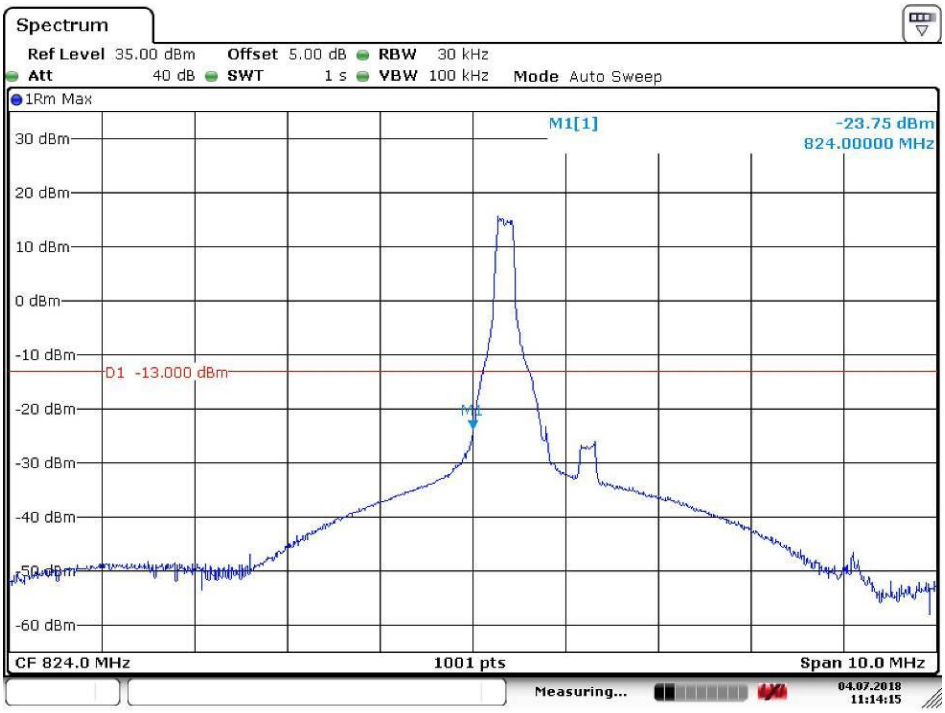


Date: 4.JUL.2018 11:19:08

5.1.1.2 Test Mode = LTE-M1/TM2 5MHz

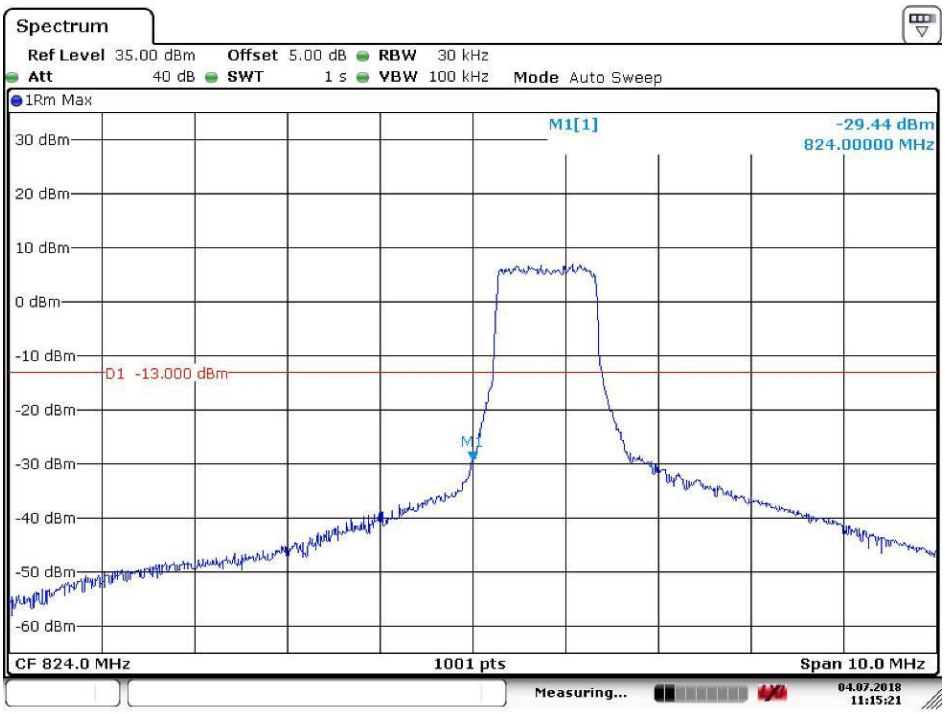
5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



Date: 4.JUL.2018 11:14:15

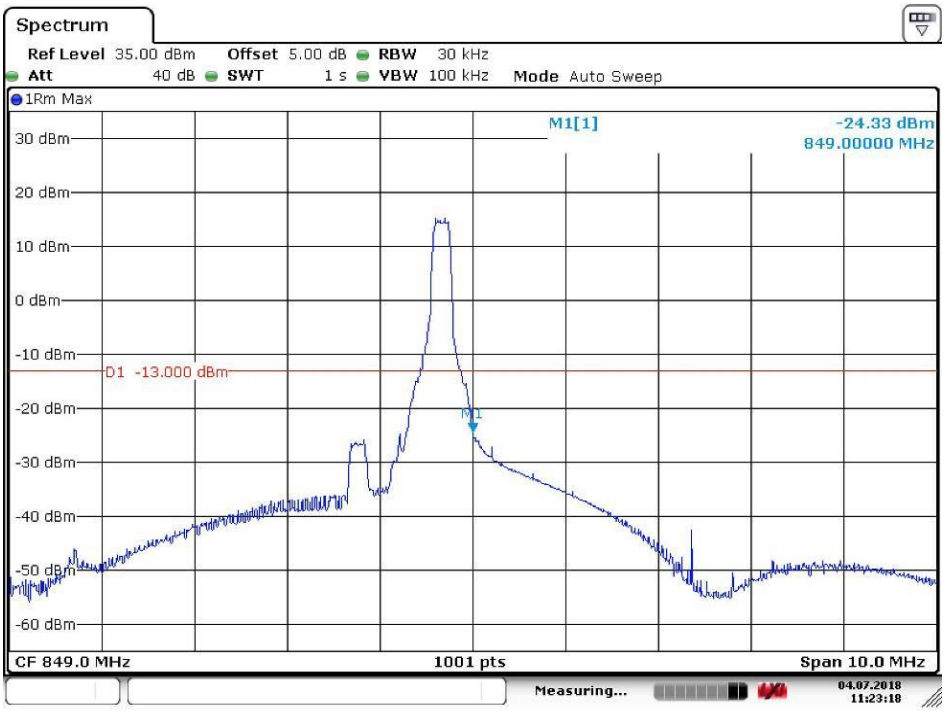
5.1.1.2.1.2 Test RB=6RB



Date: 4.JUL.2018 11:15:21

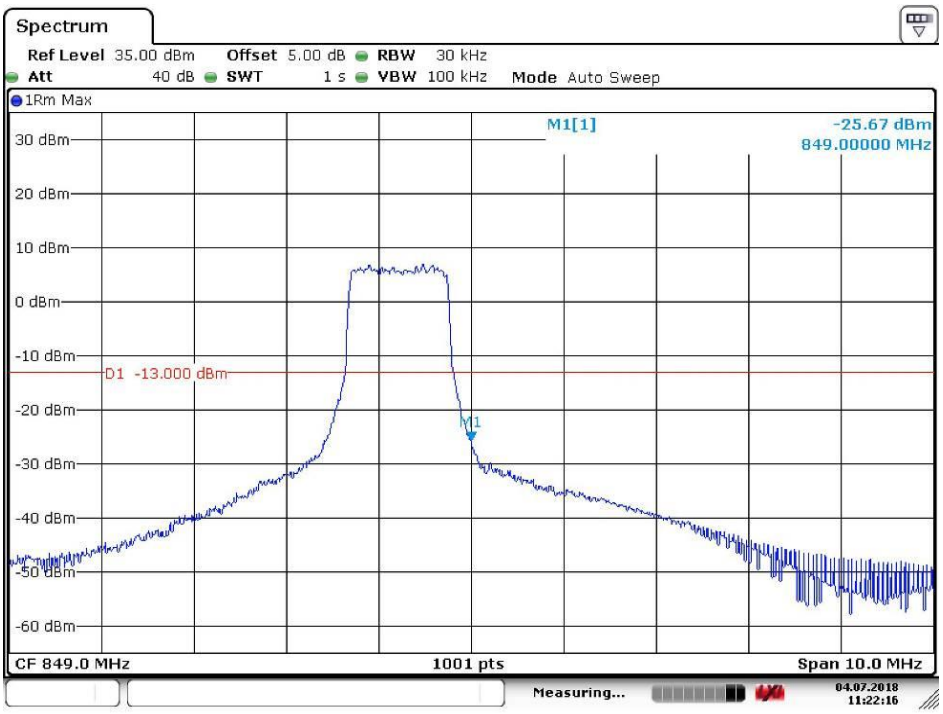
5.1.1.2.2 Test Channel = HCH

5.1.1.2.2.1 Test RB=1RB



Date: 4.JUL.2018 11:23:18

5.1.1.2.2.2 Test RB=6RB



Date: 4.JUL.2018 11:22:16

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.

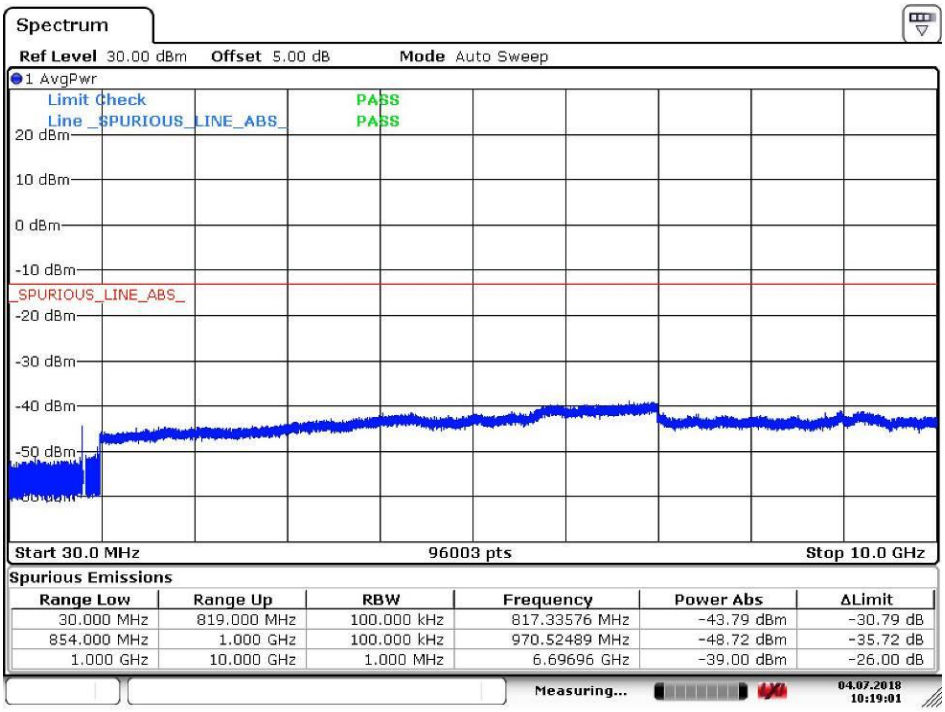
Part I - Test Plots

6.1 For LTE-M1

6.1.1 Test Band = LTE-M1 BAND26(824MHz-849MHz)

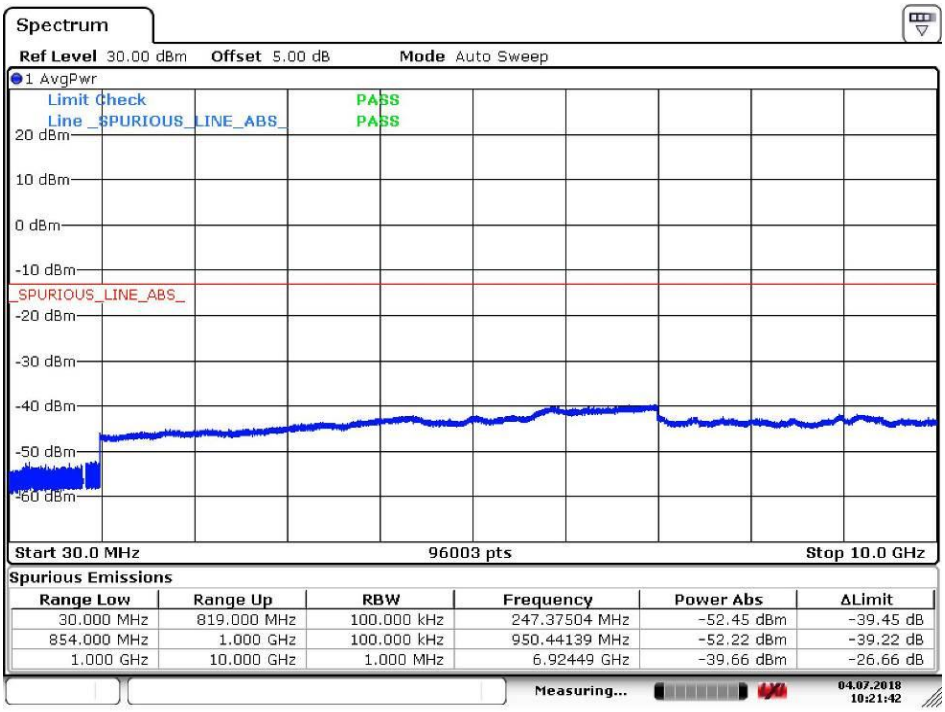
6.1.1.1 Test Mode = LTE-M1 / TM1 5MHz RB1#0

6.1.1.1.1 Test Channel = LCH



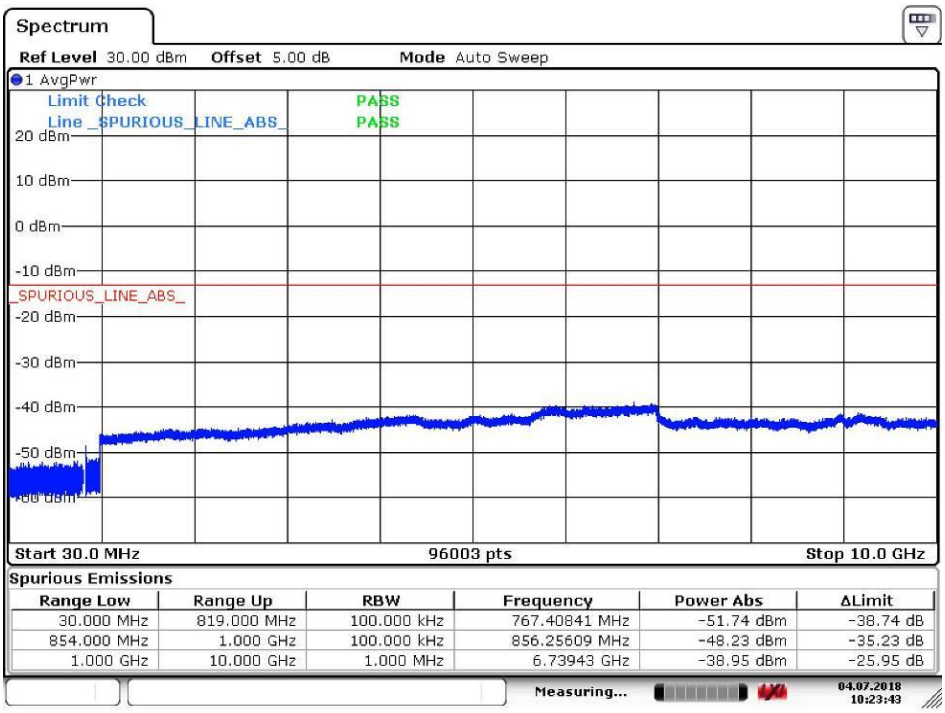
Date: 4.JUL.2018 10:19:01

6.1.1.1.2 Test Channel = MCH



Date: 4.JUL.2018 10:21:42

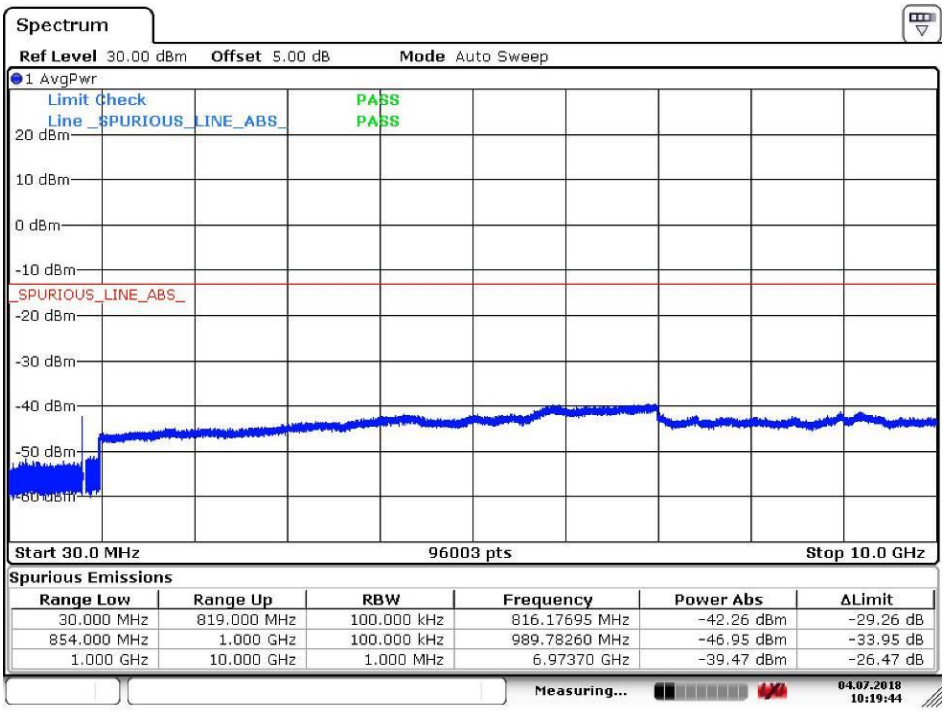
6.1.1.1.3 Test Channel = HCH



Date: 4.JUL.2018 10:23:43

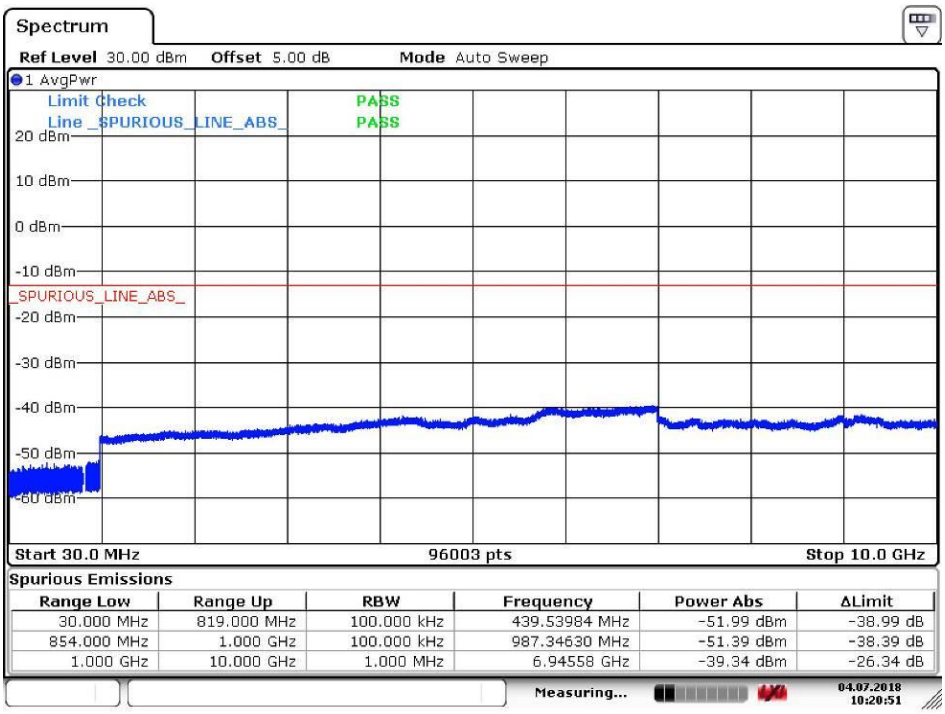
6.1.1.2 Test Mode = LTE-M1 / TM2 5MHz RB1#0

6.1.1.2.1 Test Channel = LCH



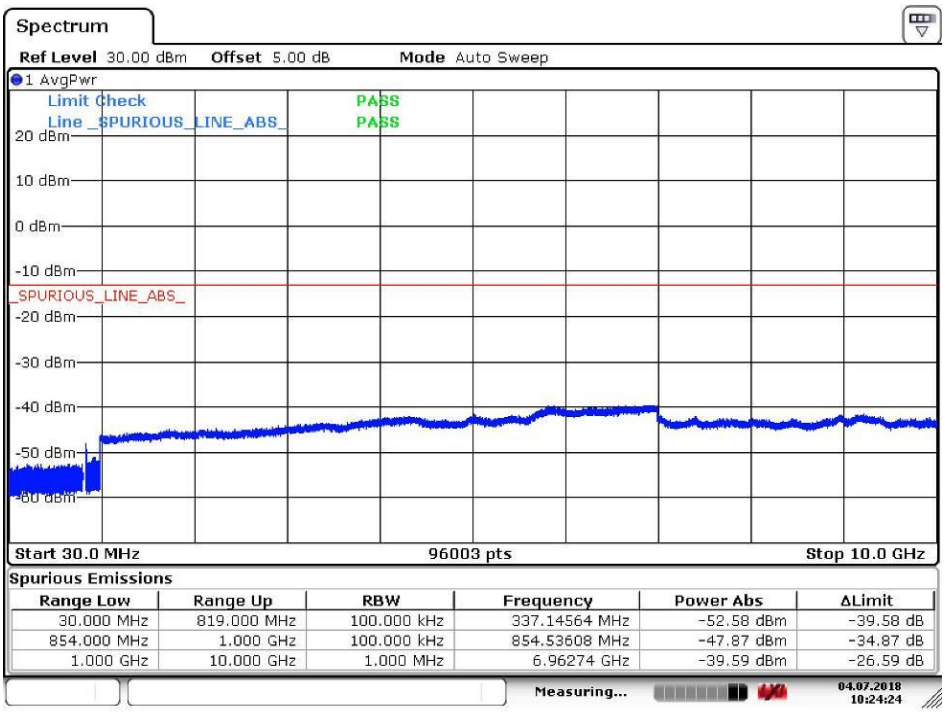
Date: 4.JUL.2018 10:19:44

6.1.1.2.2 Test Channel = MCH



Date: 4.JUL.2018 10:20:50

6.1.1.2.3 Test Channel = HCH



Date: 4.JUL.2018 10:24:24

7 Field Strength of Spurious Radiation

7.1 For LTE-M1

7.1.1 Test Band = LTE-M1 BAND26(824MHz-849MHz)

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
64.346667	-82.03	-13.00	-69.03	Vertical
658.908333	-67.51	-13.00	-54.51	Vertical
989.733333	-59.97	-13.00	-46.97	Vertical
1648.500000	-60.66	-13.00	-47.66	Vertical
2472.500000	-57.98	-13.00	-44.98	Vertical
3296.887500	-65.53	-13.00	-52.53	Vertical
62.340000	-77.85	-13.00	-64.85	Horizontal
659.000000	-65.20	-13.00	-52.20	Horizontal
989.733333	-48.34	-13.00	-35.34	Horizontal
1648.500000	-58.38	-13.00	-45.38	Horizontal
2472.500000	-57.41	-13.00	-44.41	Horizontal
3297.375000	-64.83	-13.00	-51.83	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
63.786667	-82.38	-13.00	-69.38	Vertical
648.595833	-72.31	-13.00	-59.31	Vertical
1001.000000	-58.87	-13.00	-45.87	Vertical
1668.500000	-64.17	-13.00	-51.17	Vertical
2502.500000	-58.02	-13.00	-45.02	Vertical
3336.862500	-68.15	-13.00	-55.15	Vertical
61.733333	-78.81	-13.00	-65.81	Horizontal
667.845833	-61.97	-13.00	-48.97	Horizontal
1001.500000	-53.15	-13.00	-40.15	Horizontal
1668.500000	-60.65	-13.00	-47.65	Horizontal
3336.862500	-65.85	-13.00	-52.85	Horizontal
6486.112500	-65.57	-13.00	-52.57	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
63.273333	-82.61	-13.00	-69.61	Vertical
675.775000	-67.26	-13.00	-54.26	Vertical
1013.500000	-59.25	-13.00	-46.25	Vertical
1689.000000	-63.26	-13.00	-50.26	Vertical
2533.000000	-58.91	-13.00	-45.91	Vertical
3377.325000	-66.36	-13.00	-53.36	Vertical
63.040000	-77.72	-13.00	-64.72	Horizontal
675.820833	-61.53	-13.00	-48.53	Horizontal
1013.500000	-53.53	-13.00	-40.53	Horizontal
1689.000000	-62.08	-13.00	-49.08	Horizontal
2532.500000	-59.36	-13.00	-46.36	Horizontal
3377.325000	-65.75	-13.00	-52.75	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	-14.45	-0.017525	PASS
				VN	2.26	0.002737	PASS
				VH	-9.05	-0.010978	PASS
		MCH	TN	VL	-7.44	-0.008894	PASS
				VN	-4.04	-0.004826	PASS
				VH	-5.85	-0.006995	PASS
		HCH	TN	VL	-8.13	-0.009582	PASS
				VN	1.75	0.002066	PASS
				VH	-1.06	-0.001255	PASS
	LTE-M1/TM2 5MHz	LCH	TN	VL	4.75	0.005757	PASS
				VN	4.09	0.004955	PASS
				VH	8.68	0.010526	PASS
		MCH	TN	VL	7.99	0.009547	PASS
				VN	-5.73	-0.006847	PASS
				VH	-1.63	-0.001951	PASS
		HCH	TN	VL	0.99	0.001164	PASS
				VN	1.56	0.001834	PASS
				VH	5.18	0.006112	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	8.22	0.009964	PASS
				-20	-5.52	-0.006693	PASS
				-10	7.69	0.009327	PASS
				0	-4.79	-0.005809	PASS
				10	1.92	0.002330	PASS
				20	5.10	0.006185	PASS
				30	3.21	0.003895	PASS
				40	-5.78	-0.007004	PASS
				50	-6.17	-0.007477	PASS
		MCH	VN	-30	2.43	0.002904	PASS
				-20	4.11	0.004912	PASS
				-10	-4.15	-0.004961	PASS
				0	1.45	0.001734	PASS
				10	-4.02	-0.004811	PASS
				20	-2.04	-0.002440	PASS
				30	-0.39	-0.000464	PASS
				40	-1.29	-0.001540	PASS
				50	6.30	0.007528	PASS
		HCH	VN	-30	9.16	0.010801	PASS
				-20	6.48	0.007643	PASS
				-10	5.65	0.006656	PASS
				0	1.99	0.002349	PASS
				10	-0.88	-0.001041	PASS
				20	2.79	0.003287	PASS
				30	6.27	0.007394	PASS
				40	-7.03	-0.008292	PASS
				50	-9.02	-0.010635	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	-9.27	-0.011245	PASS
				-20	-4.61	-0.005588	PASS
				-10	0.35	0.000420	PASS
				0	7.54	0.009142	PASS
				10	-8.26	-0.010011	PASS
				20	2.94	0.003565	PASS
				30	-3.94	-0.004772	PASS
				40	5.78	0.007013	PASS
				50	7.63	0.009251	PASS
		MCH	VN	-30	-1.62	-0.001932	PASS
				-20	-8.11	-0.009692	PASS
				-10	-8.68	-0.010371	PASS
				0	-0.35	-0.000416	PASS
				10	-1.14	-0.001363	PASS
				20	-0.81	-0.000971	PASS
				30	3.28	0.003916	PASS
				40	2.16	0.002582	PASS
				50	-3.11	-0.003721	PASS
		HCH	VN	-30	9.44	0.011133	PASS
				-20	2.94	0.003462	PASS
				-10	2.98	0.003513	PASS
				0	-7.27	-0.008572	PASS
				10	0.62	0.000731	PASS
				20	-9.93	-0.011701	PASS
				30	4.51	0.005312	PASS
				40	4.39	0.005175	PASS
				50	-8.98	-0.010589	PASS

The End