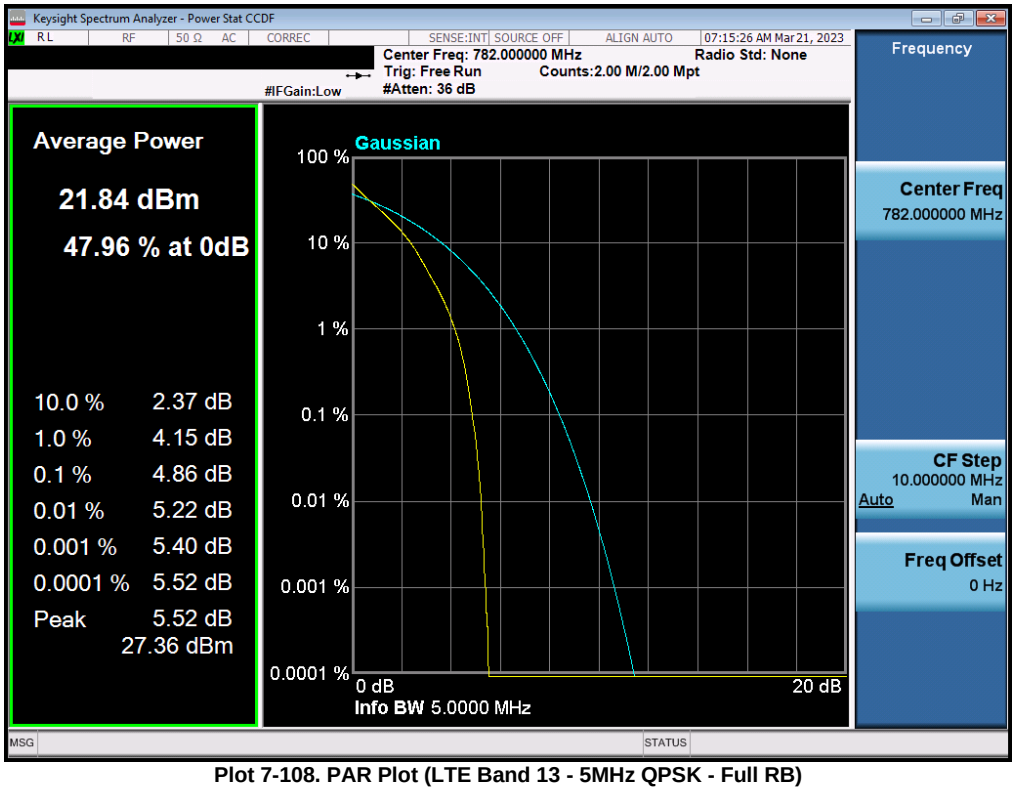
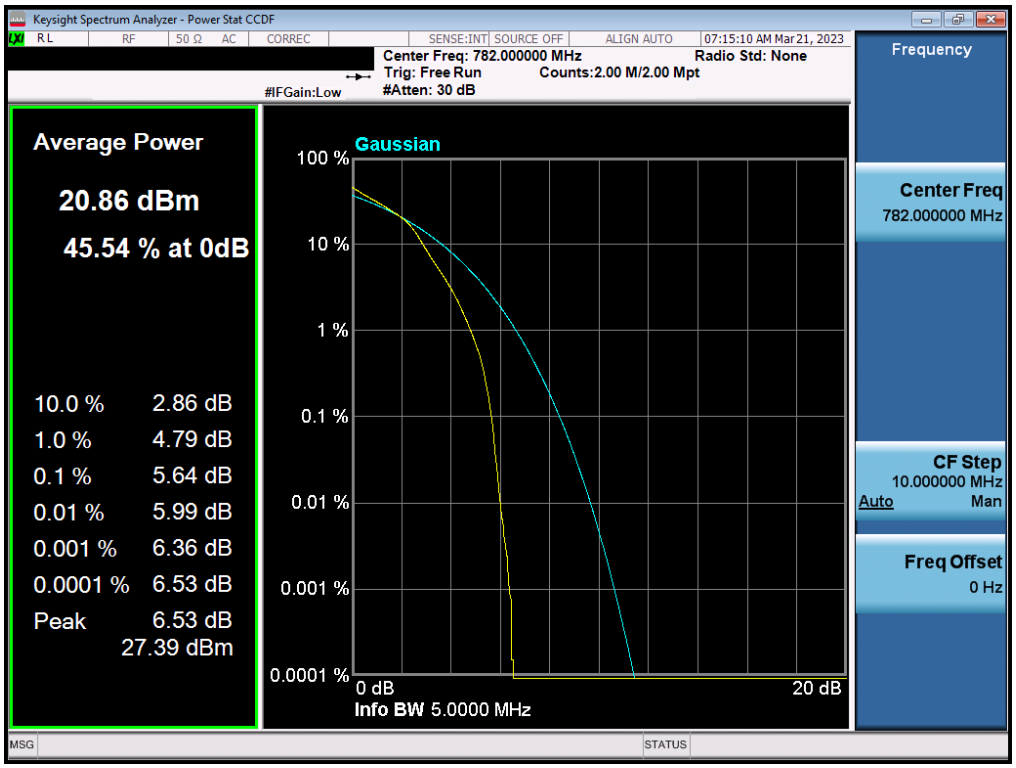
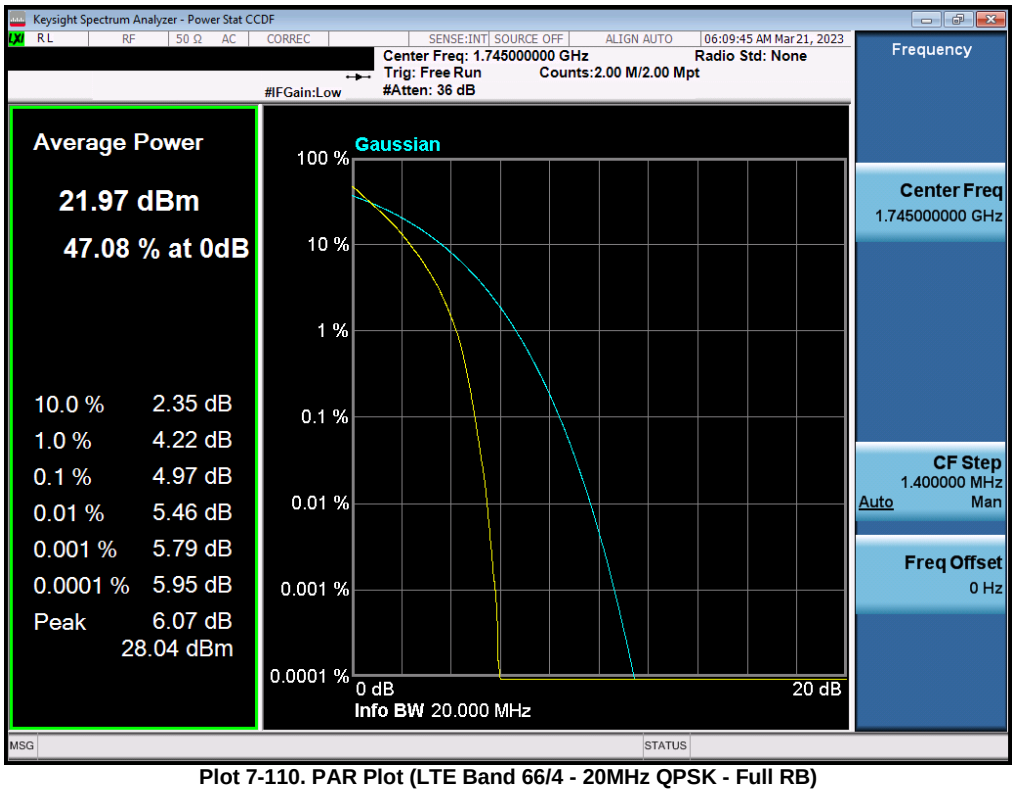


Plot 7-108. PAR Plot (LTE Band 13 - 5MHz QPSK - Full RB)

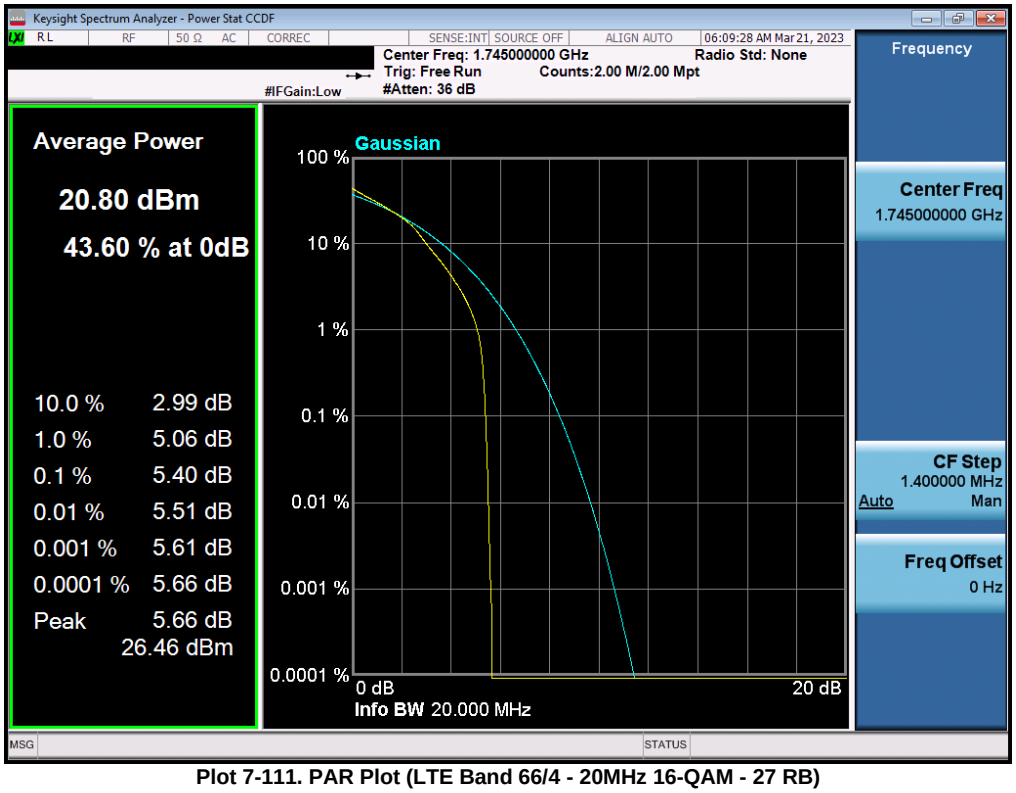


Plot 7-109. PAR Plot (LTE Band 13 - 5MHz 16-QAM - Full RB)

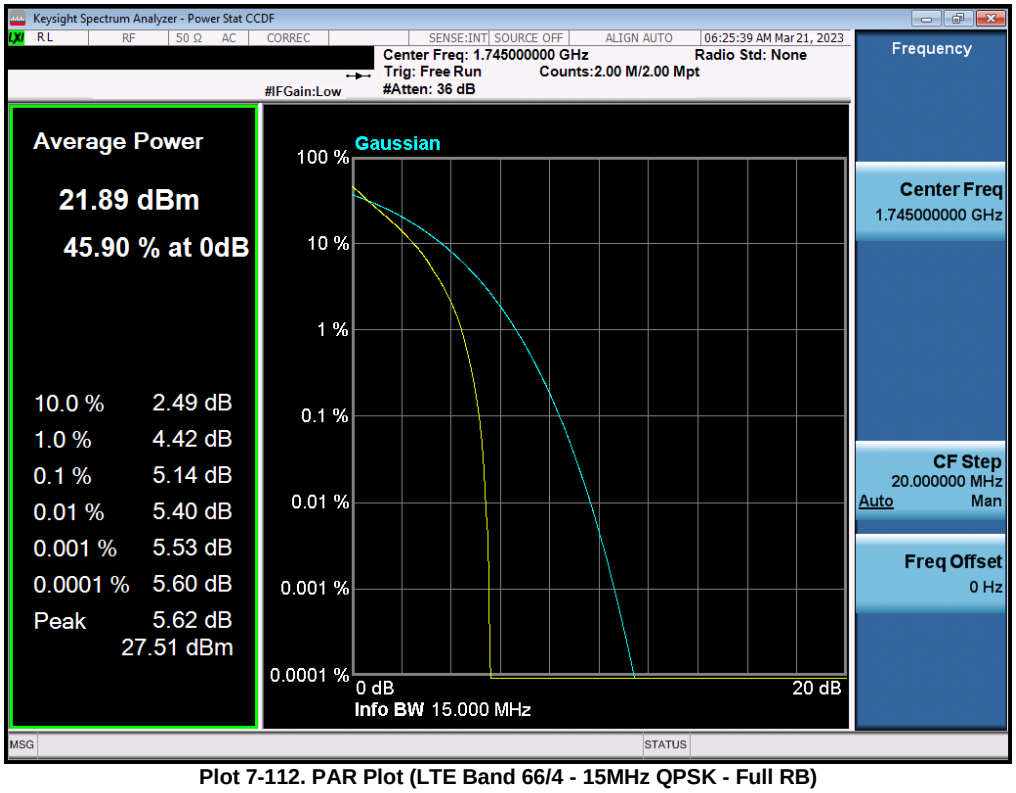
LTE Band 66/4



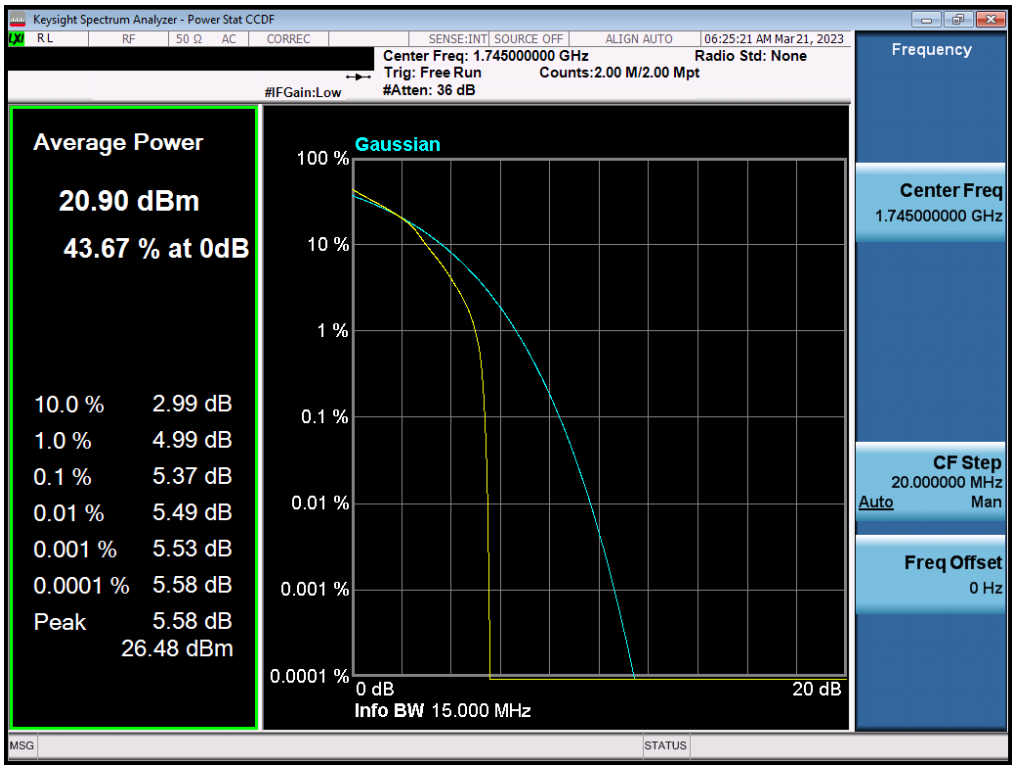
Plot 7-110. PAR Plot (LTE Band 66/4 - 20MHz QPSK - Full RB)



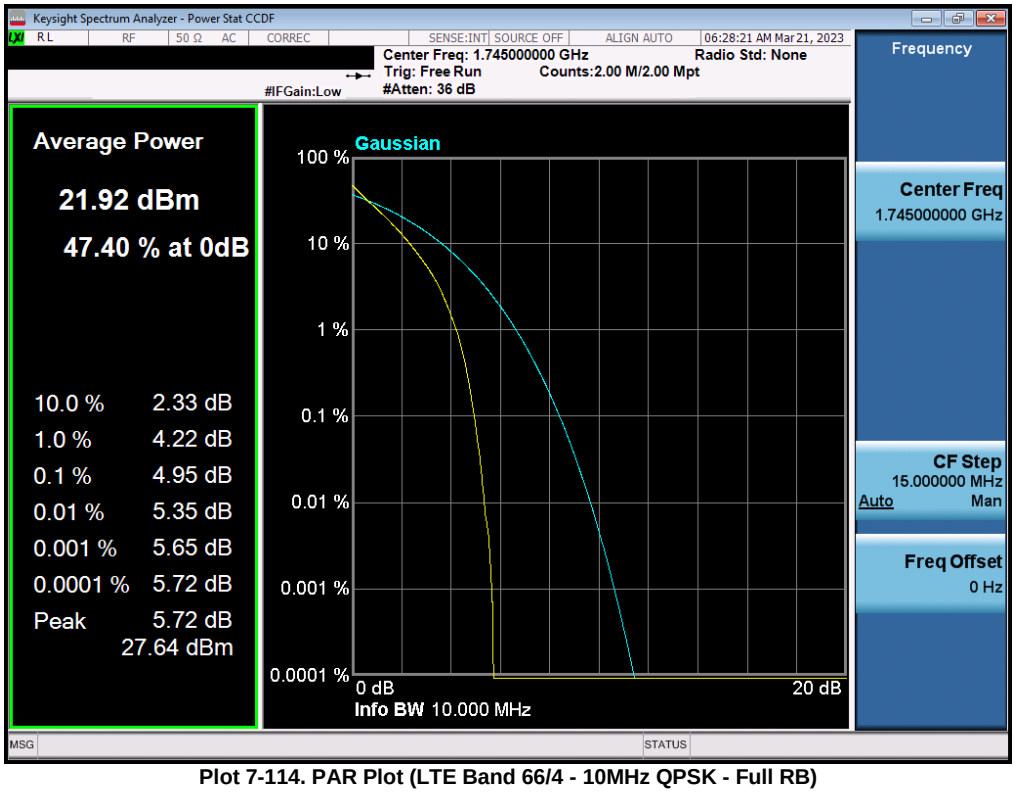
Plot 7-111. PAR Plot (LTE Band 66/4 - 20MHz 16-QAM - 27 RB)



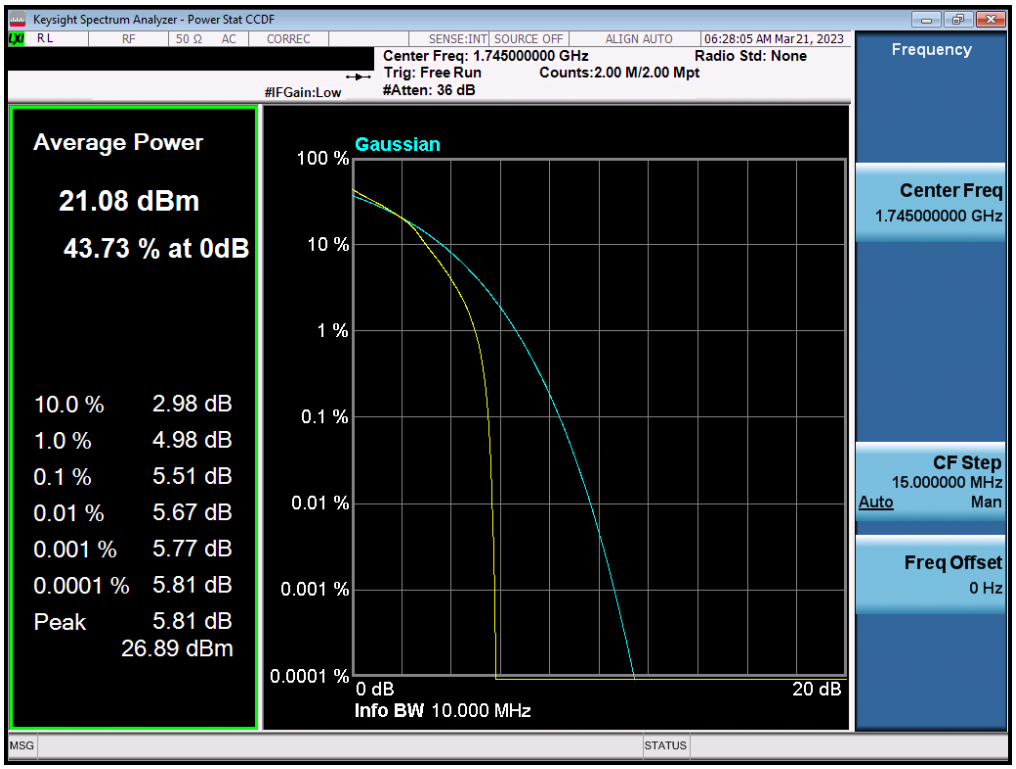
Plot 7-112. PAR Plot (LTE Band 66/4 - 15MHz QPSK - Full RB)



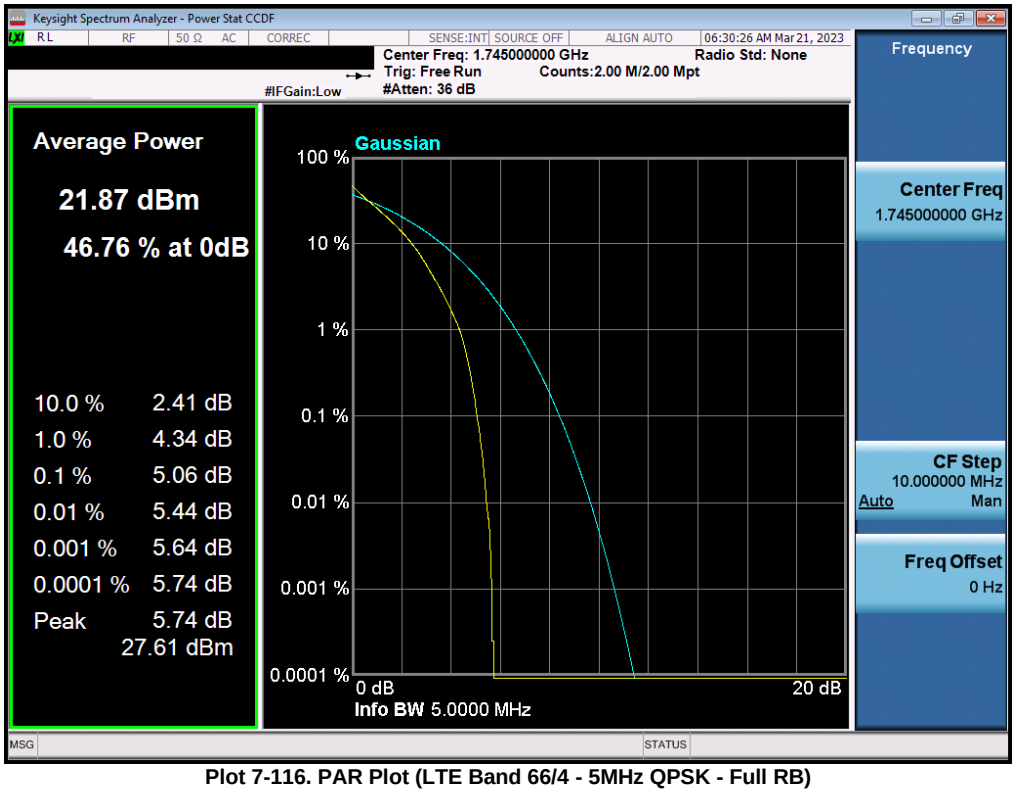
Plot 7-113. PAR Plot (LTE Band 66/4 - 15MHz 16-QAM - 27 RB)



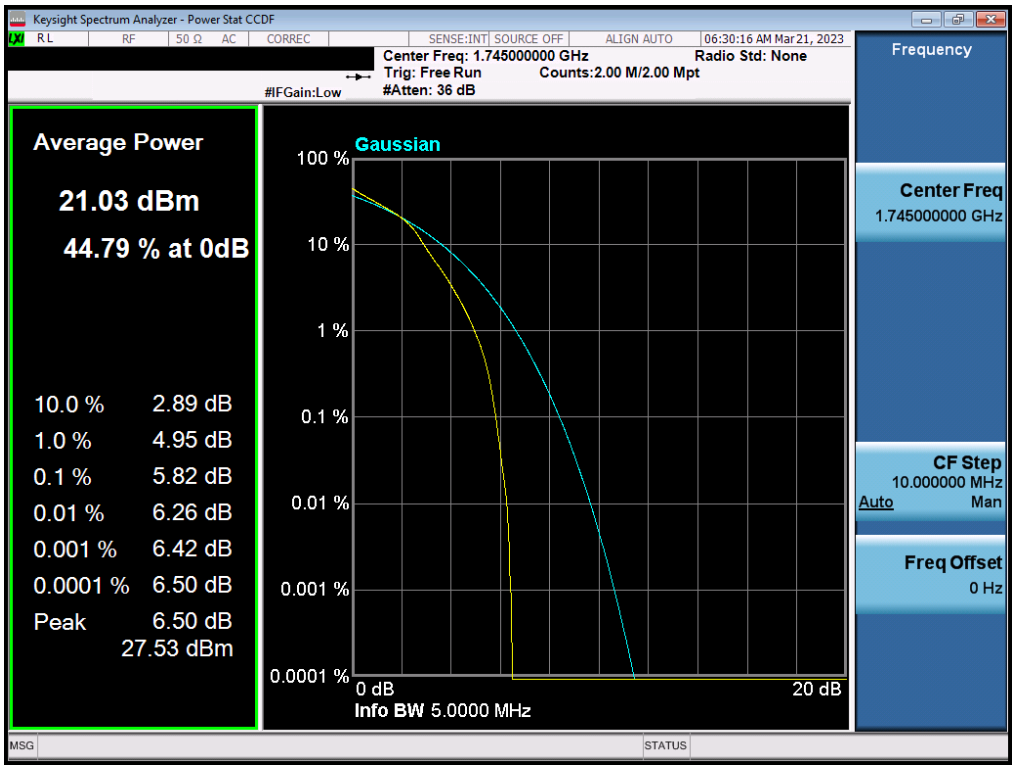
Plot 7-114. PAR Plot (LTE Band 66/4 - 10MHz QPSK - Full RB)



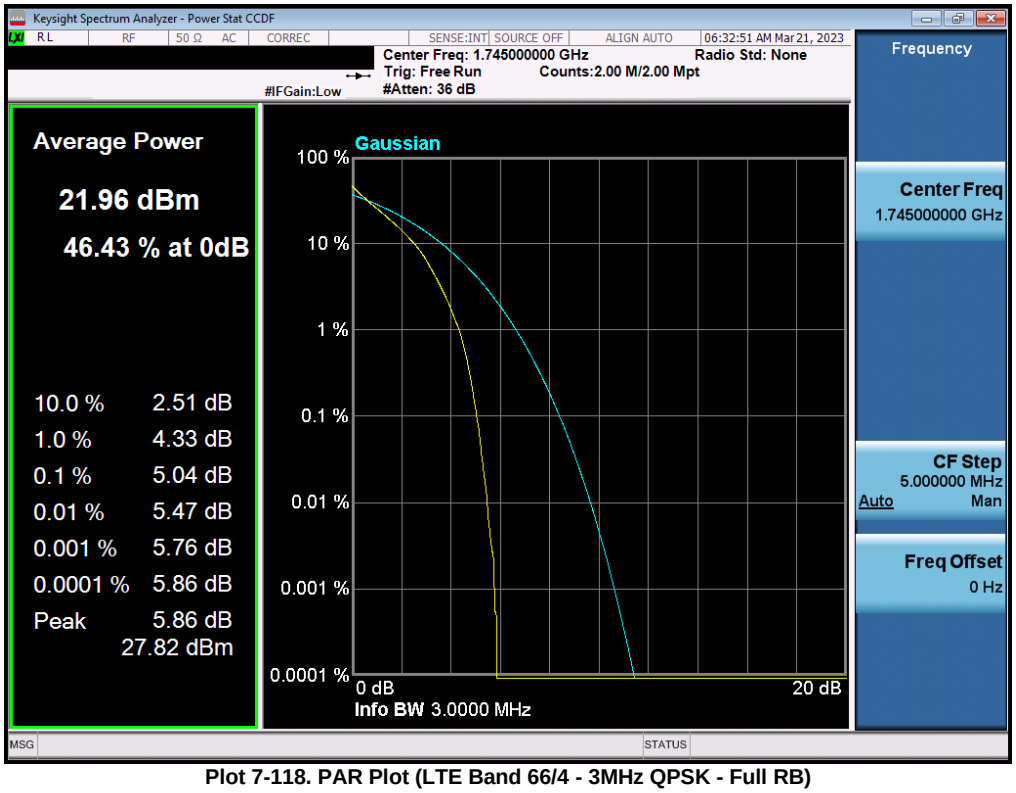
Plot 7-115. PAR Plot (LTE Band 66/4 - 10MHz 16-QAM - 27 RB)



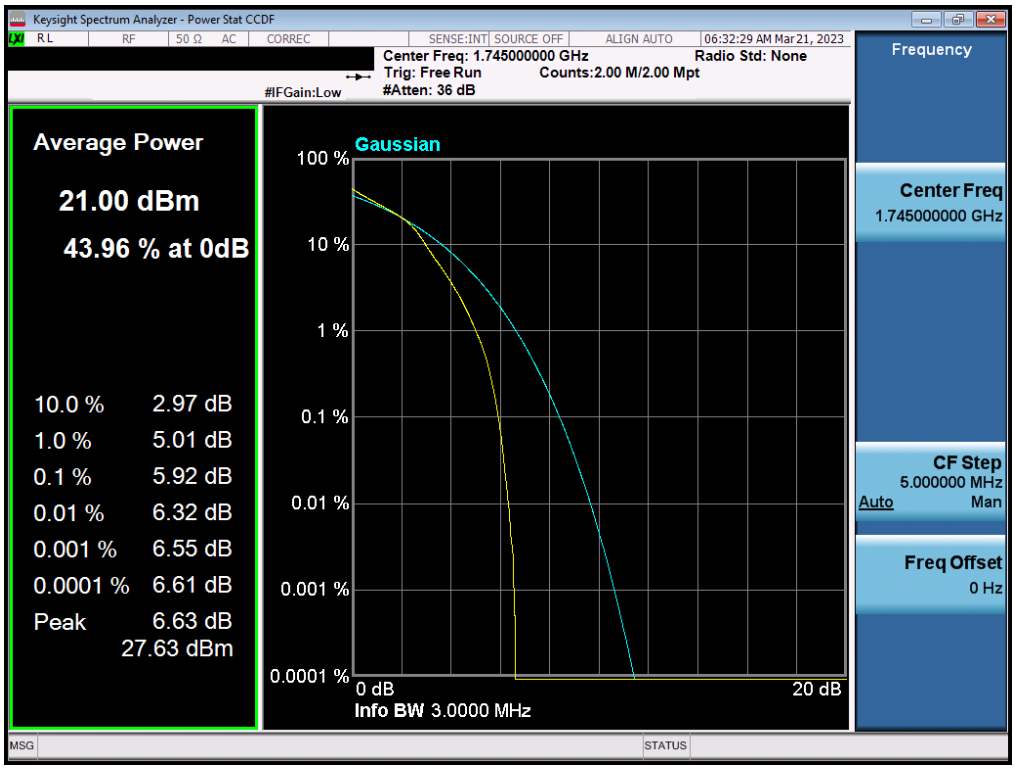
Plot 7-116. PAR Plot (LTE Band 66/4 - 5MHz QPSK - Full RB)



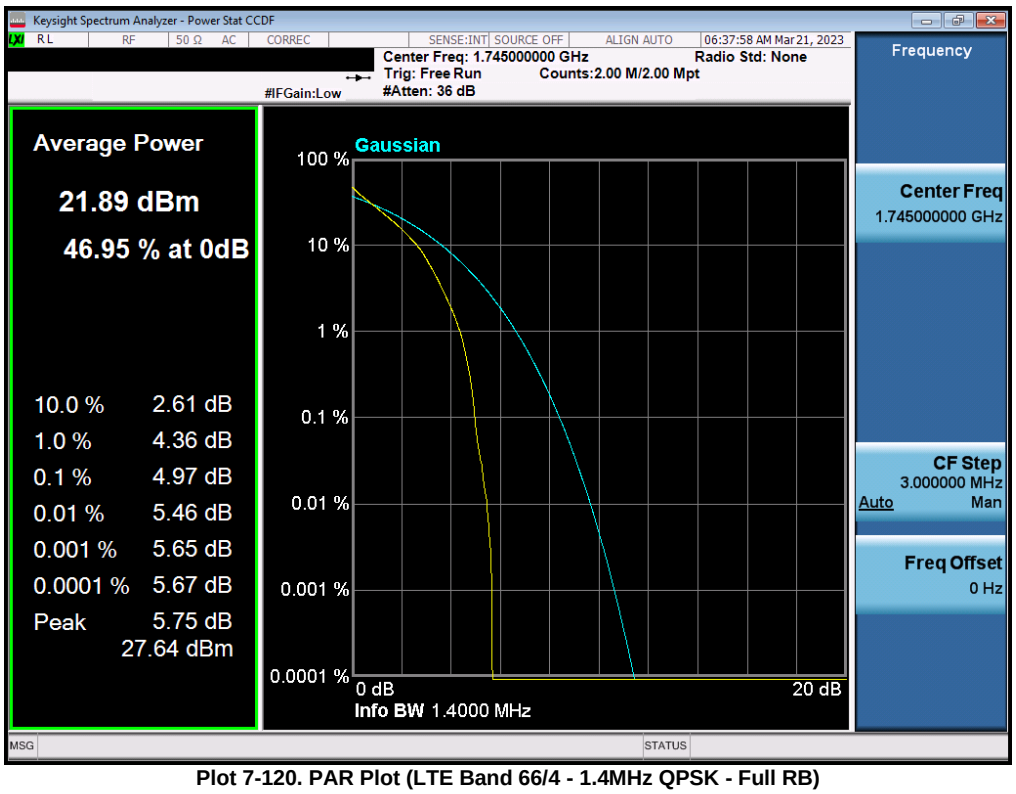
Plot 7-117. PAR Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB)



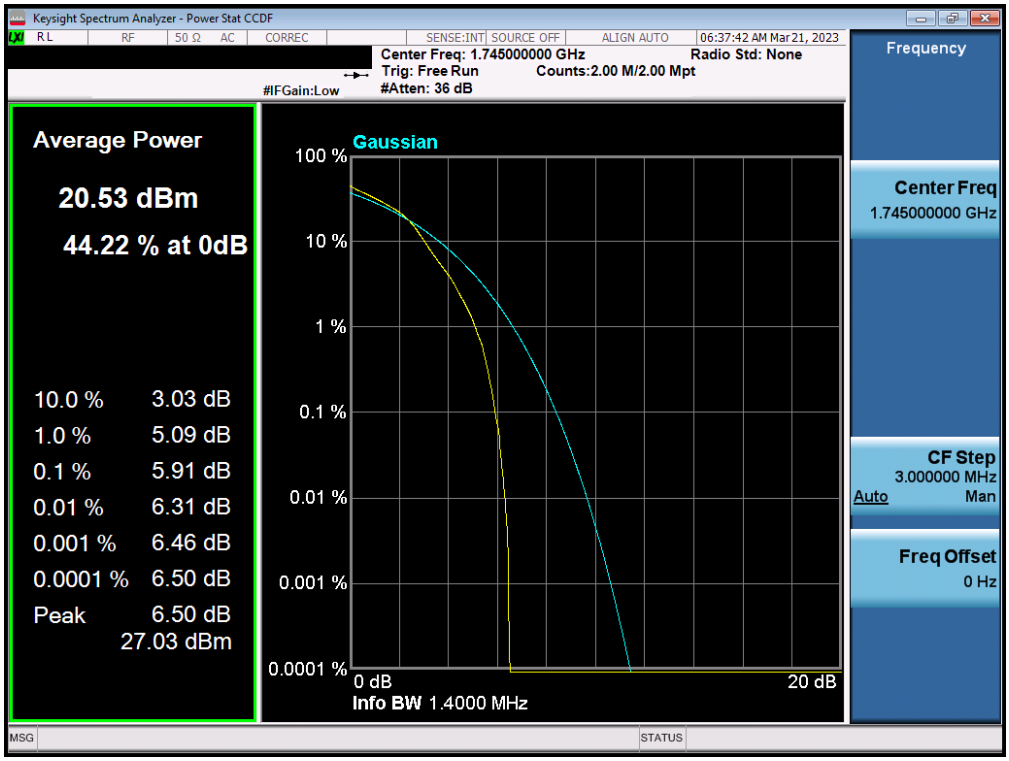
Plot 7-118. PAR Plot (LTE Band 66/4 - 3MHz QPSK - Full RB)



Plot 7-119. PAR Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB)



Plot 7-120. PAR Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB)



Plot 7-121. PAR Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB)

7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an external antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.5.4

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

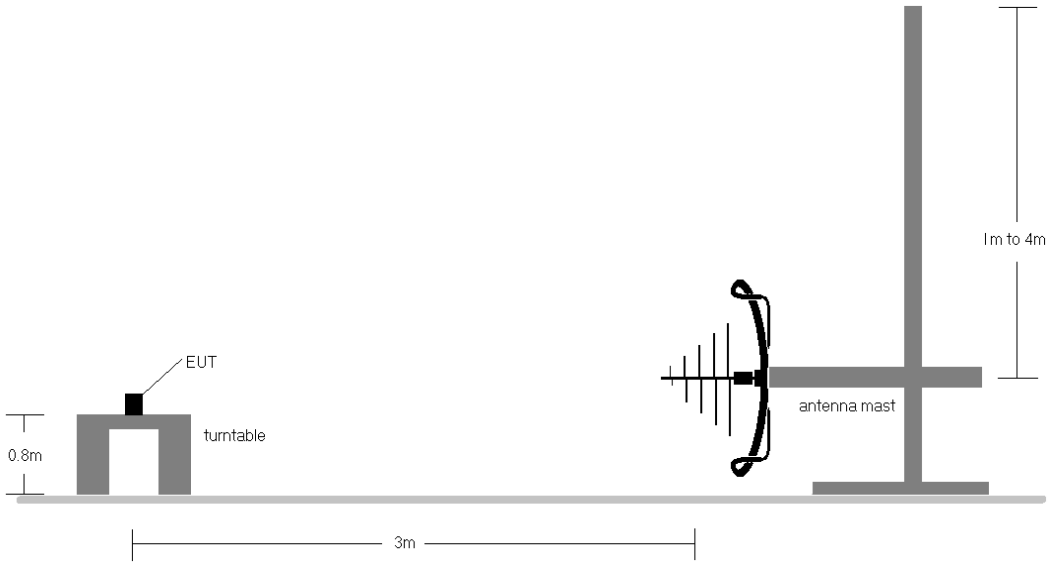


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

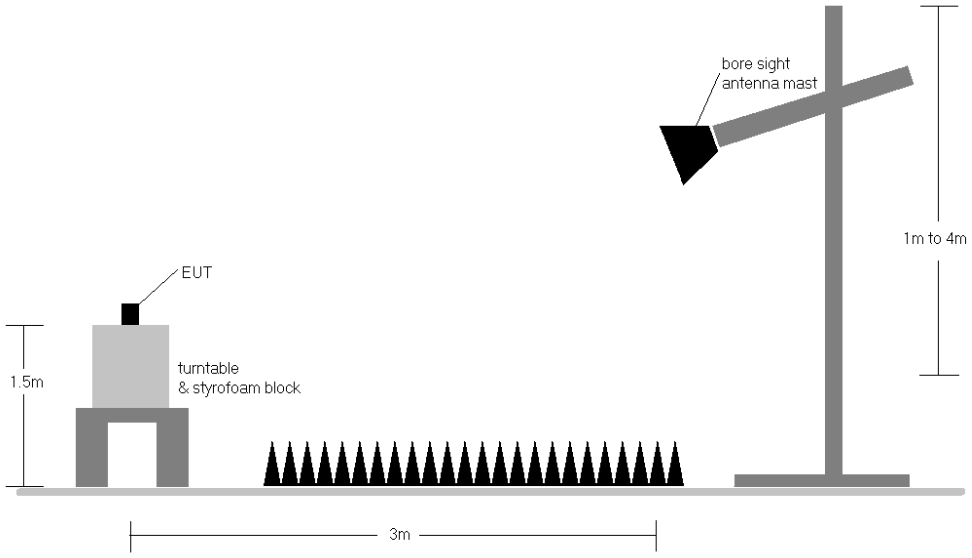


Figure 7-7. Test Instrument & Measurement Setup > 1GHz

Test Notes

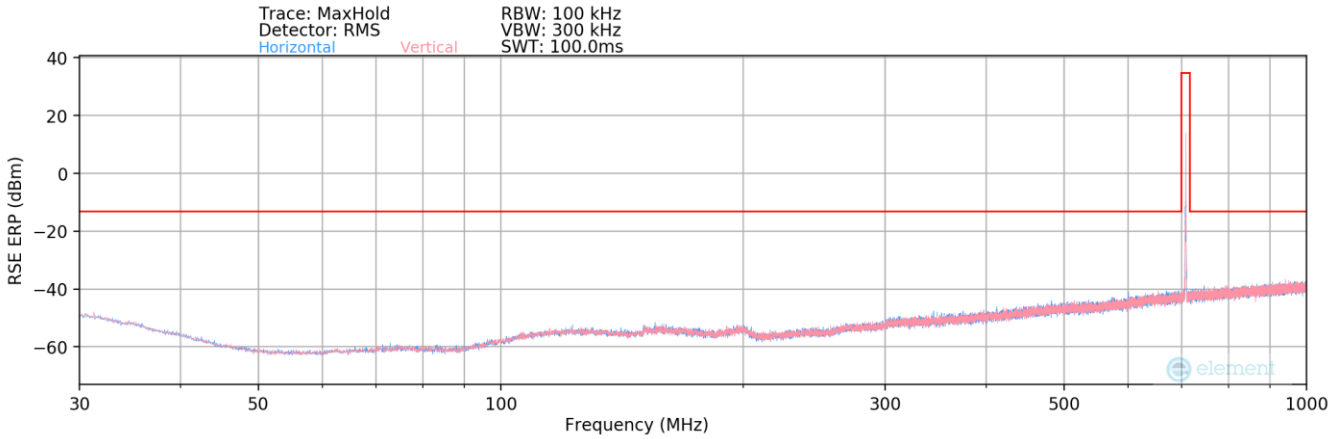
1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
   a) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   b) EIRP (dBm) = E(dBµV/m) + 20logD – 104.8; where D is the measurement distance in meters.

2) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

3) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

4) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

LTE Band 12

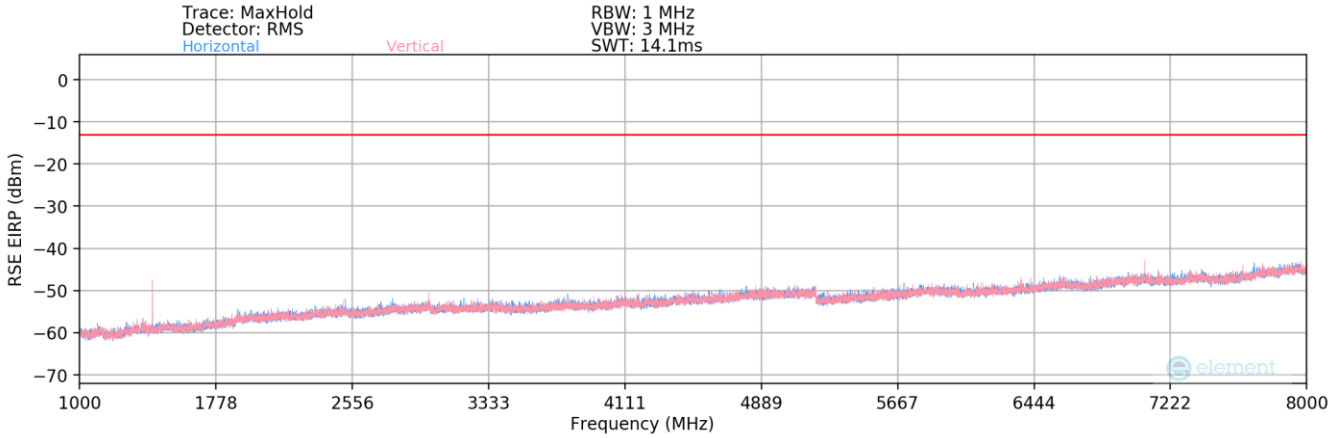


Plot 7-122. Radiated Spurious Plot (LTE Band 12)

Bandwidth (MHz):	10
Frequency (MHz):	707.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
745.43	V	-	-	-97.80	29.47	38.67	-58.74	-13.00	-45.74

Table 7-5. Radiated Spurious Data (LTE Band 12 – Mid Channel)



Plot 7-123. Radiated Spurious Plot (LTE Band 12)

Bandwidth (MHz):	10
Frequency (MHz):	704
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1408.00	V	140	147	-62.40	-2.55	42.05	-53.20	-13.00	-40.20
2112.00	V	-	-	-77.19	1.42	31.23	-64.03	-13.00	-51.03
2816.00	V	-	-	-77.69	3.62	32.93	-62.33	-13.00	-49.33
3520.00	V	-	-	-78.38	4.35	32.97	-62.29	-13.00	-49.29
4224.00	V	375	275	-78.47	5.51	34.04	-61.22	-13.00	-48.22
4928.00	V	-	-	-79.50	7.07	34.57	-60.68	-13.00	-47.68
5632.00	V	-	-	-79.51	8.24	35.73	-59.53	-13.00	-46.53
6336.00	V	274	180	-75.10	9.57	41.47	-53.79	-13.00	-40.79

Table 7-6. Radiated Spurious Data (LTE Band 12 – Low Channel)

Bandwidth (MHz):	10
Frequency (MHz):	707.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1415.00	V	126	166	-59.09	-2.53	45.38	-49.88	-13.00	-36.88
2122.50	V	-	-	-77.43	1.53	31.10	-64.15	-13.00	-51.15
2830.00	V	235	75	-77.38	3.27	32.89	-62.36	-13.00	-49.36
3537.50	V	-	-	-78.21	4.37	33.16	-62.10	-13.00	-49.10
4245.00	V	130	316	-77.68	5.52	34.84	-60.42	-13.00	-47.42
4952.50	V	213	162	-77.82	7.02	36.20	-59.06	-13.00	-46.06
5660.00	V	-	-	-79.61	8.33	35.72	-59.54	-13.00	-46.54
6367.50	V	303	170	-74.07	9.67	42.60	-52.66	-13.00	-39.66

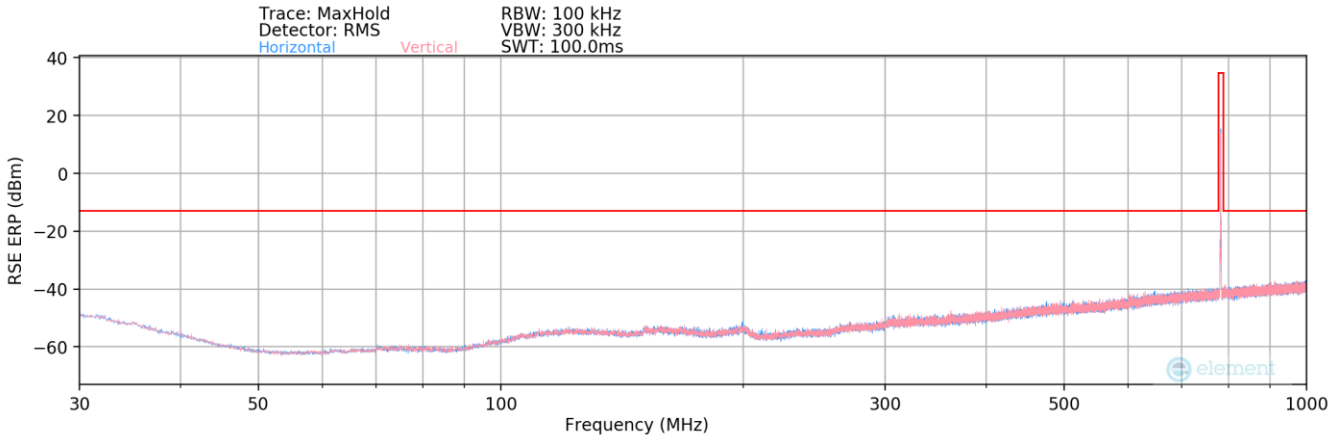
Table 7-7. Radiated Spurious Data (LTE Band 12 – Mid Channel)

Bandwidth (MHz):	10
Frequency (MHz):	711
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1422.00	V	127	157	-61.49	-2.44	43.07	-52.18	-13.00	-39.18
2133.00	V	-	-	-77.55	1.64	31.09	-64.17	-13.00	-51.17
2844.00	V	228	80	-77.33	3.09	32.76	-62.49	-13.00	-49.49
3555.00	V	-	-	-78.13	4.47	33.34	-61.92	-13.00	-48.92
4266.00	V	-	-	-78.93	5.28	33.35	-61.91	-13.00	-48.91
4977.00	V	303	347	-78.71	6.90	35.19	-60.07	-13.00	-47.07
5688.00	V	-	-	-79.59	8.19	35.60	-59.66	-13.00	-46.66
6399.00	V	-	-	-79.62	9.56	36.94	-58.32	-13.00	-45.32

Table 7-8. Radiated Spurious Data (LTE Band 12 – High Channel)

LTE Band 13

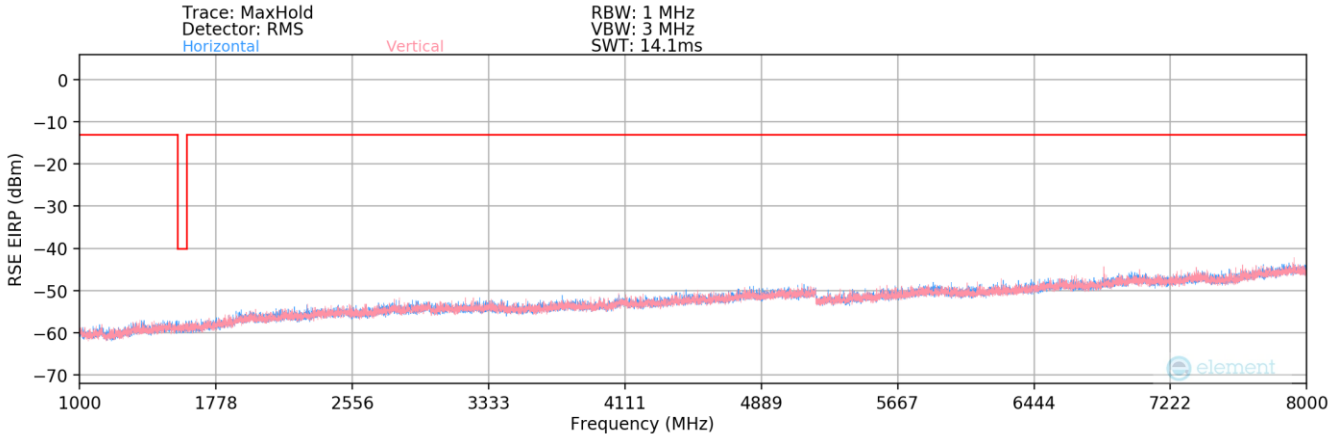


Plot 7-124. Radiated Spurious Plot (LTE Band 13)

Bandwidth (MHz):	10
Frequency (MHz):	782.0
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
641.28	H	-	-	-97.91	28.08	37.17	-60.24	-13.00	-47.24

Table 7-9. Radiated Spurious Data (LTE Band 13 – Mid Channel)



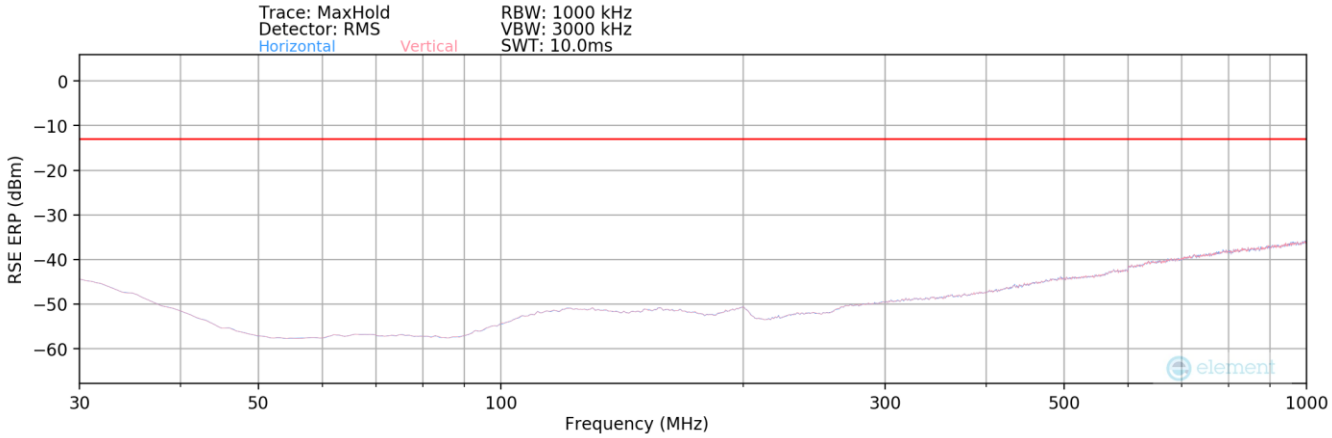
Plot 7-125. Radiated Spurious Plot (LTE Band 13)

Bandwidth (MHz):	10
Frequency (MHz):	782
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1564.00	H	-	-	-77.01	-1.36	28.63	-66.62	-40.00	-26.62
2346.00	H	-	-	-77.62	2.33	31.71	-63.54	-13.00	-50.54
3128.00	H	-	-	-78.02	3.72	32.70	-62.56	-13.00	-49.56

Table 7-10. Radiated Spurious Data (LTE Band 13 – Mid Channel)

LTE Band 66/4

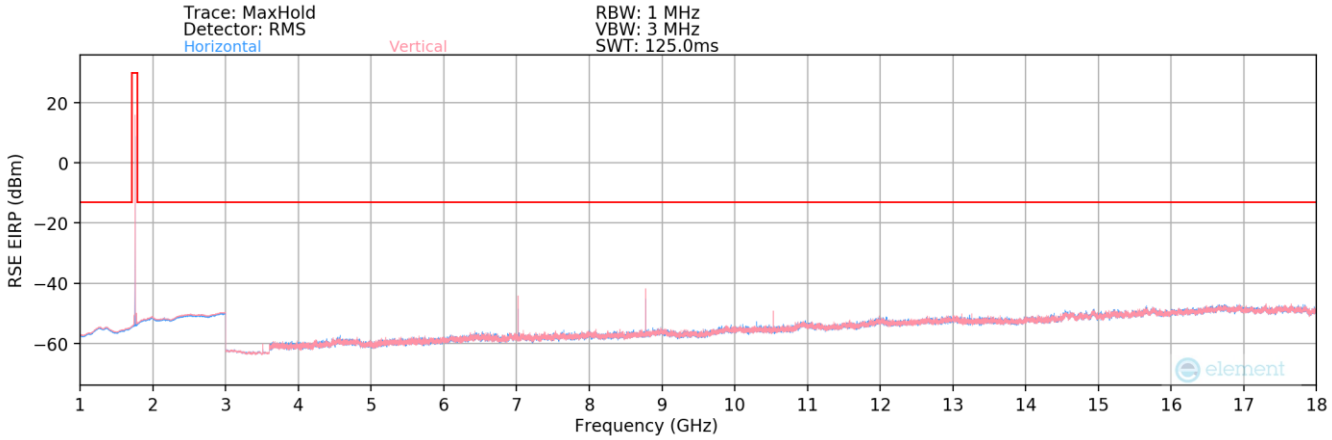


Plot 7-126. Radiated Spurious Plot (LTE Band 66/4)

Bandwidth (MHz):	20
Frequency (MHz):	1745
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
750.77	V	-	-	-90.04	29.49	46.45	-50.96	-13.00	-37.96

Table 7-11. Radiated Spurious Data (LTE Band 66/4 – Mid Channel)



Plot 7-127. Radiated Spurious Plot (LTE Band 66/4)

Bandwidth (MHz):	20
Frequency (MHz):	1720
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3440.00	V	376	83	-74.58	2.70	35.12	-60.14	-13.00	-47.14
5160.00	V	-	-	-79.29	4.73	32.44	-62.81	-13.00	-49.81
6880.00	V	313	212	-58.71	7.12	55.41	-39.85	-13.00	-26.85
8600.00	V	284	111	-58.38	8.26	56.88	-38.38	-13.00	-25.38
10320.00	V	238	7	-70.71	10.13	46.42	-48.84	-13.00	-35.84
12040.00	V	327	197	-74.10	13.52	46.42	-48.84	-13.00	-35.84
13760.00	V	283	222	-80.60	14.37	40.77	-54.49	-13.00	-41.49
15480.00	V	202	201	-76.58	16.22	46.64	-48.62	-13.00	-35.62

Table 7-12. Radiated Spurious Data (LTE Band 66/4 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1745
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.00	V	382	262	-73.24	2.29	36.05	-59.21	-13.00	-46.21
5235.00	V	-	-	-79.22	4.65	32.43	-62.83	-13.00	-49.83
6980.00	V	393	211	-59.99	6.38	53.39	-41.87	-13.00	-28.87
8725.00	V	302	177	-55.86	8.06	59.20	-36.06	-13.00	-23.06
10470.00	V	220	6	-72.23	11.17	45.94	-49.32	-13.00	-36.32
12215.00	V	287	215	-79.33	13.21	40.88	-54.37	-13.00	-41.37
13960.00	V	388	276	-81.75	13.68	38.93	-56.33	-13.00	-43.33
15705.00	V	208	202	-79.11	16.86	44.75	-50.50	-13.00	-37.50

Table 7-13. Radiated Spurious Data (LTE Band 66/4 – Mid Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1770
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.00	V	122	302	-73.08	2.27	36.19	-59.07	-13.00	-46.07
5310.00	V	-	-	-79.13	4.53	32.40	-62.86	-13.00	-49.86
7080.00	V	391	204	-60.78	6.82	53.04	-42.22	-13.00	-29.22
8850.00	V	272	200	-57.31	8.19	57.88	-37.37	-13.00	-24.37
10620.00	V	396	206	-66.01	11.11	52.10	-43.16	-13.00	-30.16
12390.00	V	349	199	-80.14	13.24	40.10	-55.16	-13.00	-42.16
14160.00	V	-	-	-81.89	14.21	39.32	-55.94	-13.00	-42.94
15930.00	V	309	187	-79.60	16.72	44.12	-51.14	-13.00	-38.14

Table 7-14. Radiated Spurious Data (LTE Band 66/4 – High Channel)

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI C63.26-2015 – Section 5.6

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

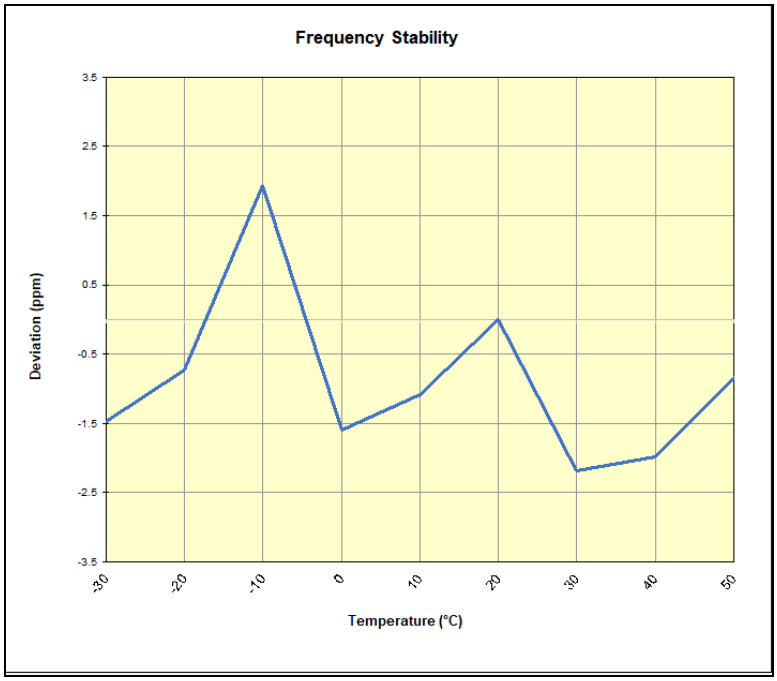
Frequency Stability / Temperature Variation

LTE Band 12

Operating Frequency (Hz):	707,500,000
Ref. Voltage (VDC):	3.90

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.90	- 30	707,847,485	-1,041	-0.0001470
		- 20	707,848,011	-515	-0.0000727
		- 10	707,849,892	1,366	0.0001930
		0	707,847,392	-1,133	-0.0001601
		+ 10	707,847,761	-764	-0.0001079
		+ 20 (Ref)	707,848,525	0	0.0000000
		+ 30	707,846,978	-1,548	-0.0002186
		+ 40	707,847,121	-1,404	-0.0001984
		+ 50	707,847,937	-589	-0.0000832
85 %	3.32	+ 20	707,847,373	-1,152	-0.0001628
115 %	4.49	+ 20	707,848,065	-460	-0.0000650

Table 7-15. LTE Band 12 Frequency Stability Data



Plot 7-128. LTE Band 12 Frequency Stability Chart

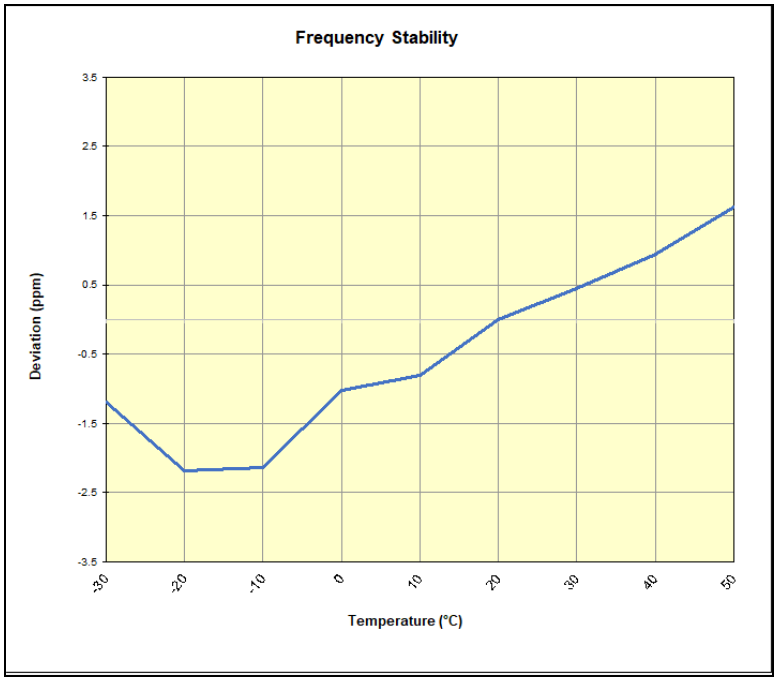
Frequency Stability / Temperature Variation

LTE Band 13

Operating Frequency (Hz):	782,000,000
Ref. Voltage (VDC):	3.90

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.90	- 30	782,014,936	-926	-0.0001185
		- 20	782,014,159	-1,704	-0.0002178
		- 10	782,014,196	-1,667	-0.0002132
		0	782,015,063	-799	-0.0001022
		+ 10	782,015,237	-626	-0.0000800
		+ 20 (Ref)	782,015,863	0	0.0000000
		+ 30	782,016,215	353	0.0000451
		+ 40	782,016,603	741	0.0000947
		+ 50	782,017,136	1,274	0.0001629
85 %	3.32	+ 20	782,015,638	-225	-0.0000287
115 %	4.49	+ 20	782,015,866	3	0.0000004

Table 7-16. LTE Band 13 Frequency Stability Data



Plot 7-129. LTE Band 13 Frequency Stability Chart

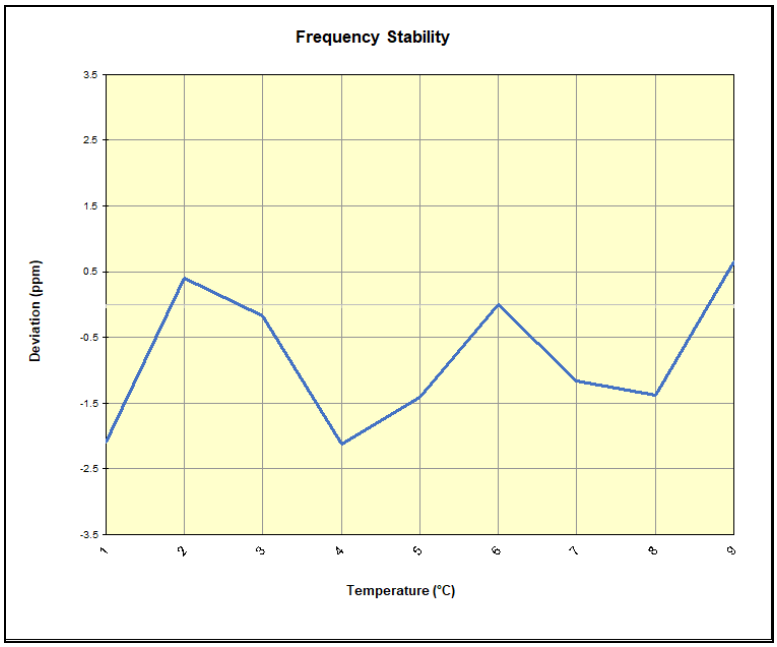
Frequency Stability / Temperature Variation

LTE Band 66/4

Operating Frequency (Hz):	1,745,000,000
Ref. Voltage (VDC):	3.90

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.90	- 30	1,745,065,474	-3,654	-0.0002094
		- 20	1,745,069,846	717	0.0000411
		- 10	1,745,068,841	-288	-0.0000165
		0	1,745,065,398	-3,731	-0.0002138
		+ 10	1,745,066,653	-2,476	-0.0001419
		+ 20 (Ref)	1,745,069,129	0	0.0000000
		+ 30	1,745,067,078	-2,051	-0.0001175
		+ 40	1,745,066,709	-2,419	-0.0001386
		+ 50	1,745,070,262	1,133	0.0000649
85 %	3.32	+ 20	1,745,070,226	1,097	0.0000629
115 %	4.49	+ 20	1,745,069,346	217	0.0000125

Table 7-17. LTE Band 66/4 Frequency Stability Data



Plot 7-130. LTE Band 66/4 Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Telit Module FCC ID: RI7LE910C1SNX / IC: 5131A-LE910C1SNX** complies with all the requirements of Part 27 of the FCC rules and RSS-130, RSS-139 of the ISED rules.