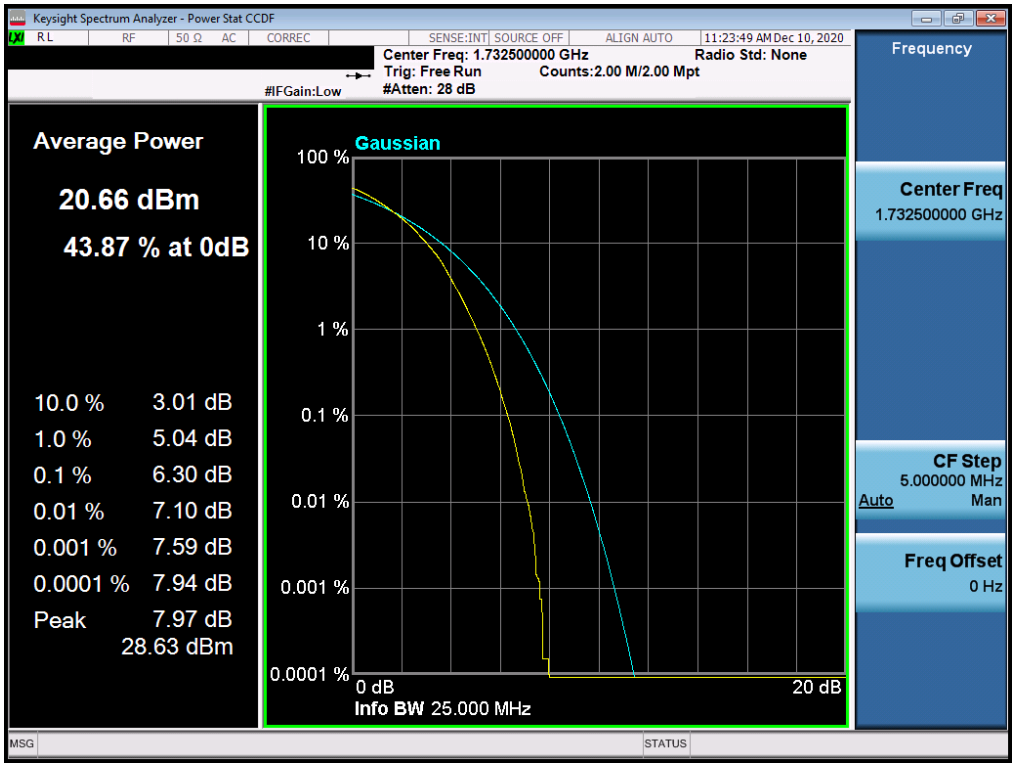
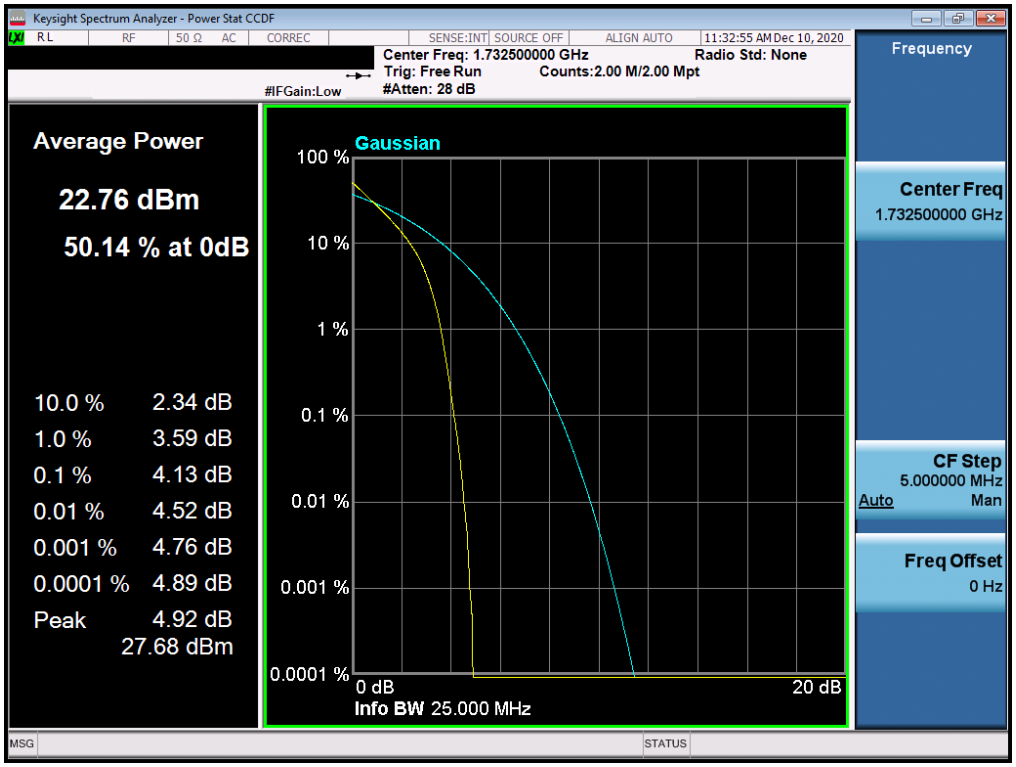
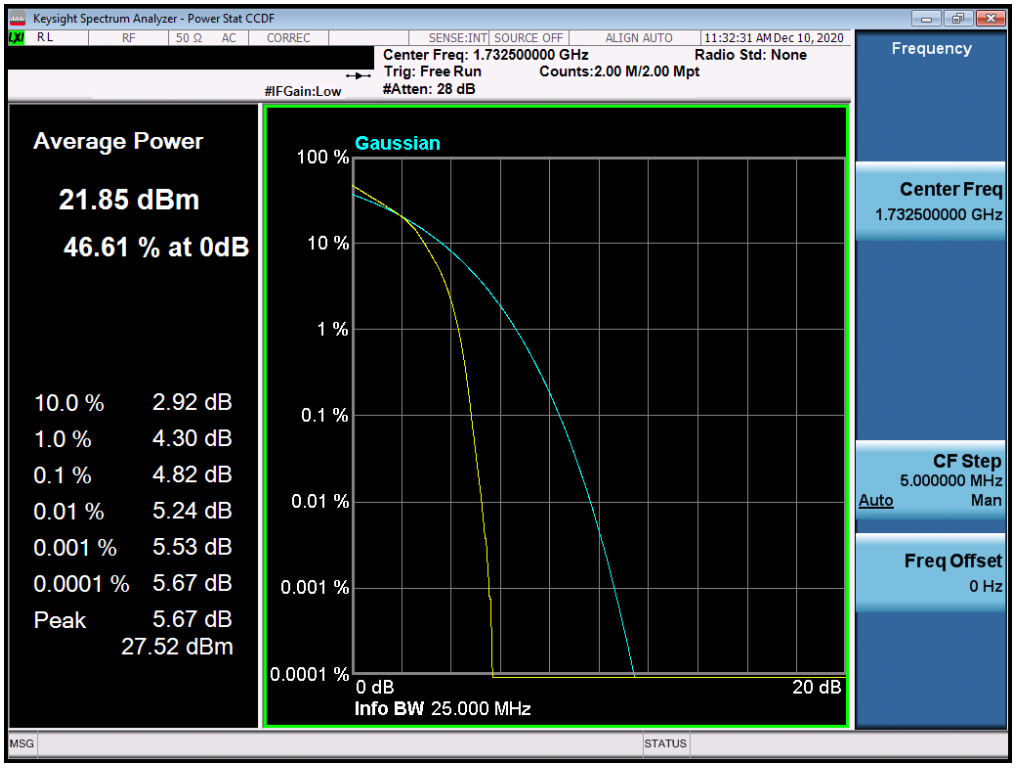


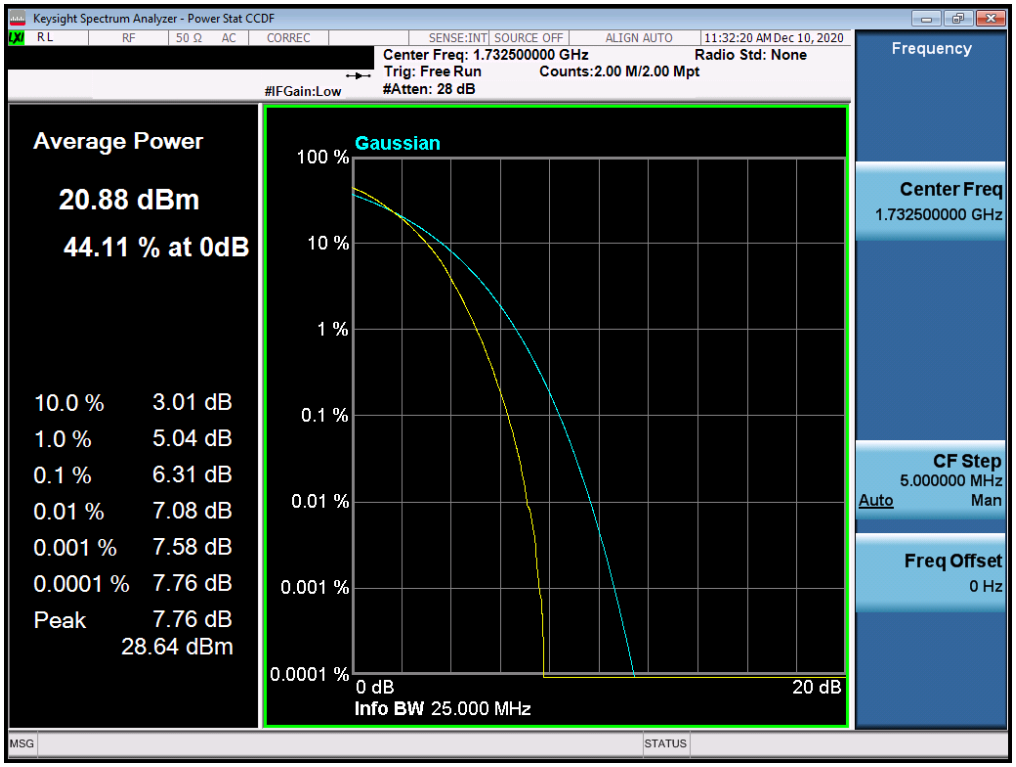
Plot 7-105. PAR Plot (LTE Band 4 - 20MHz 64-QAM - Full RB Configuration)



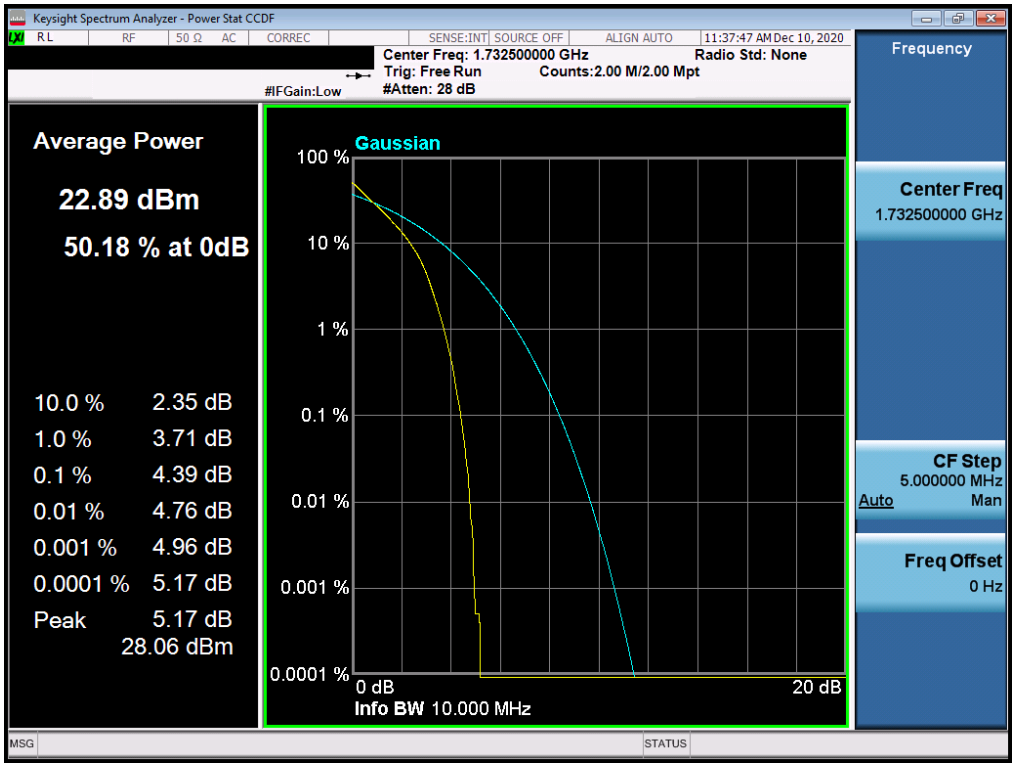
Plot 7-106. PAR Plot (LTE Band 4 - 15MHz QPSK - Full RB Configuration)



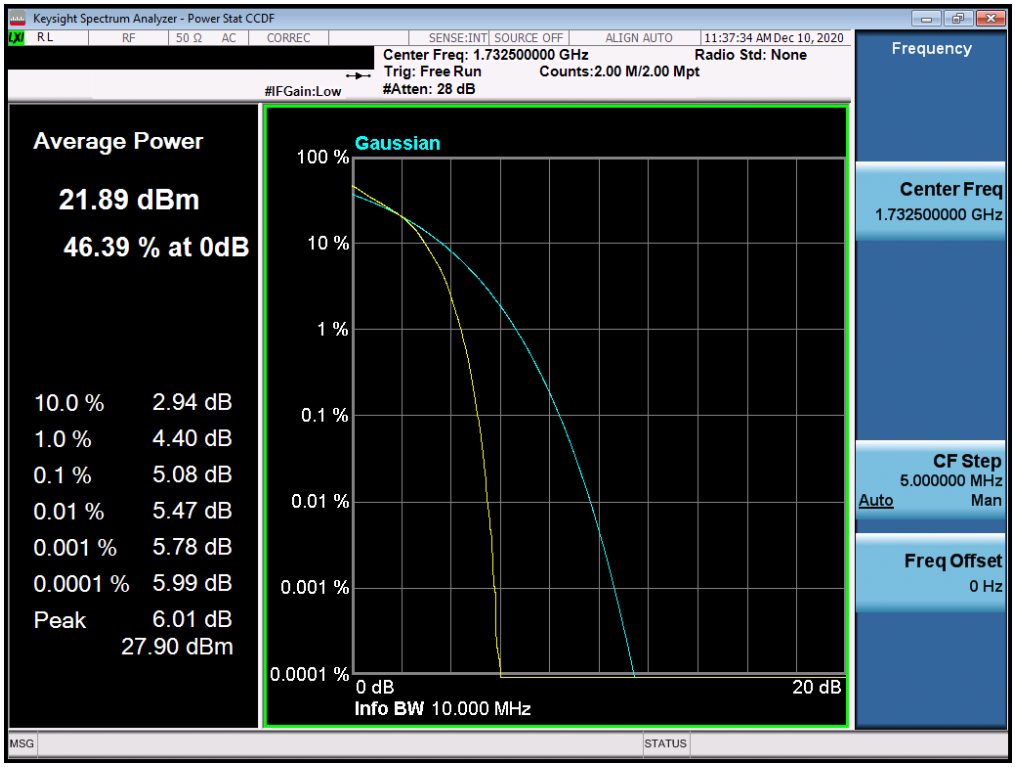
Plot 7-107. PAR Plot (LTE Band 4 - 15MHz 16-QAM - Full RB Configuration)



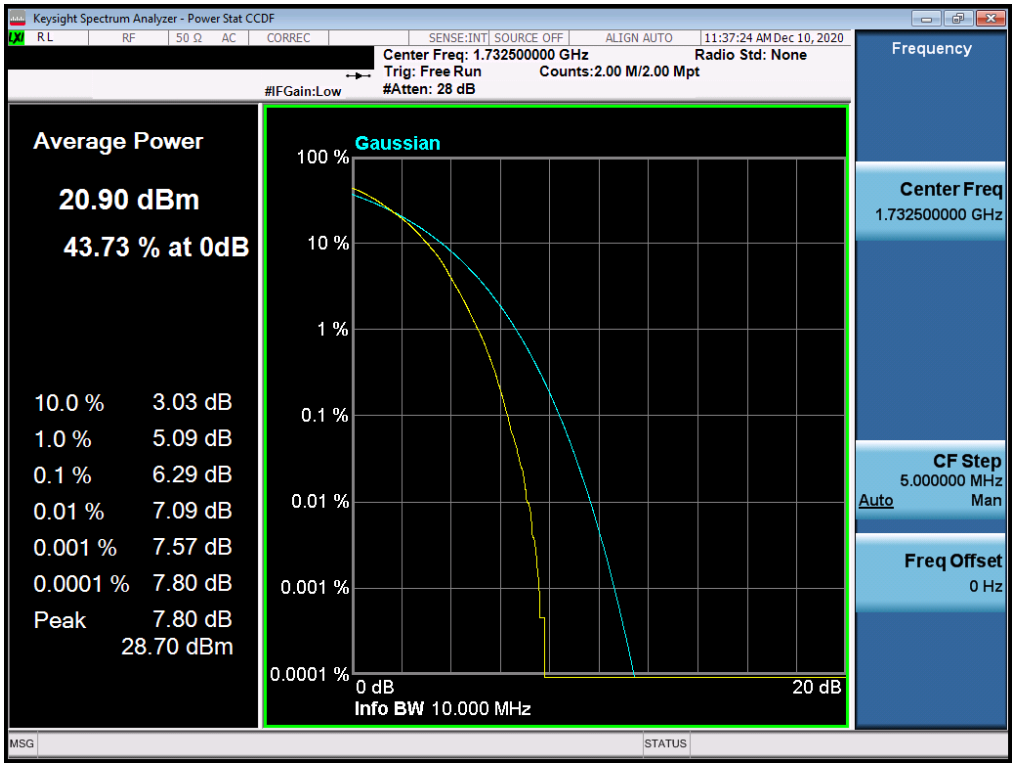
Plot 7-108. PAR Plot (LTE Band 4 - 15MHz 64-QAM - Full RB Configuration)



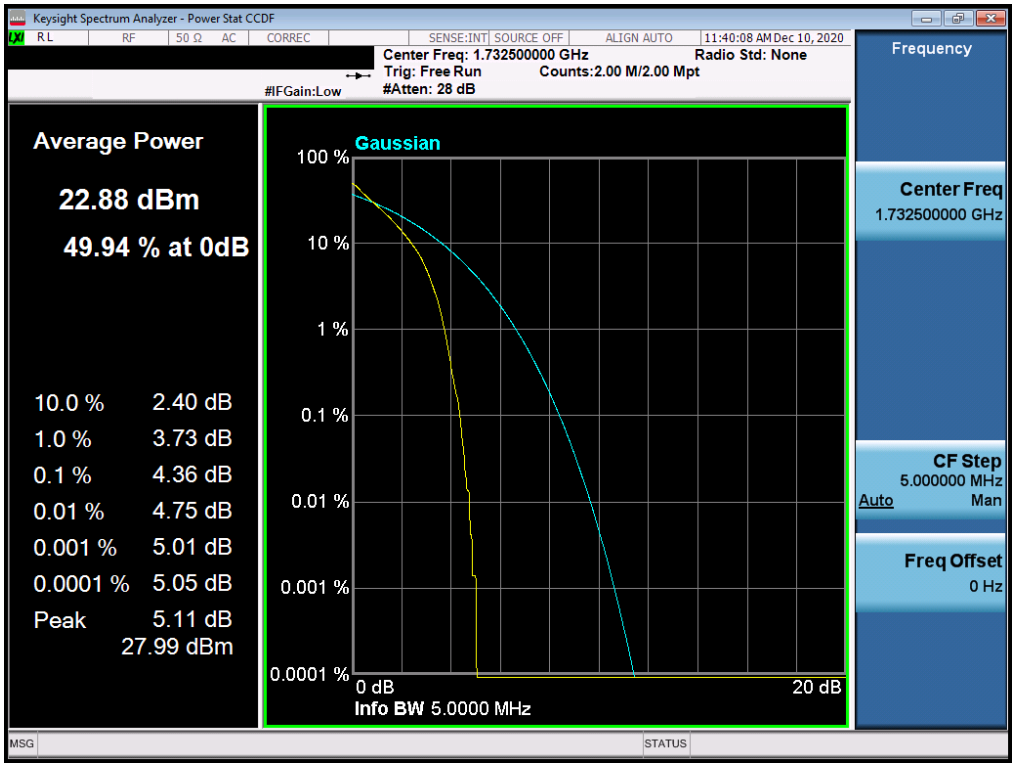
Plot 7-109. PAR Plot (LTE Band 4 - 10MHz QPSK - Full RB Configuration)



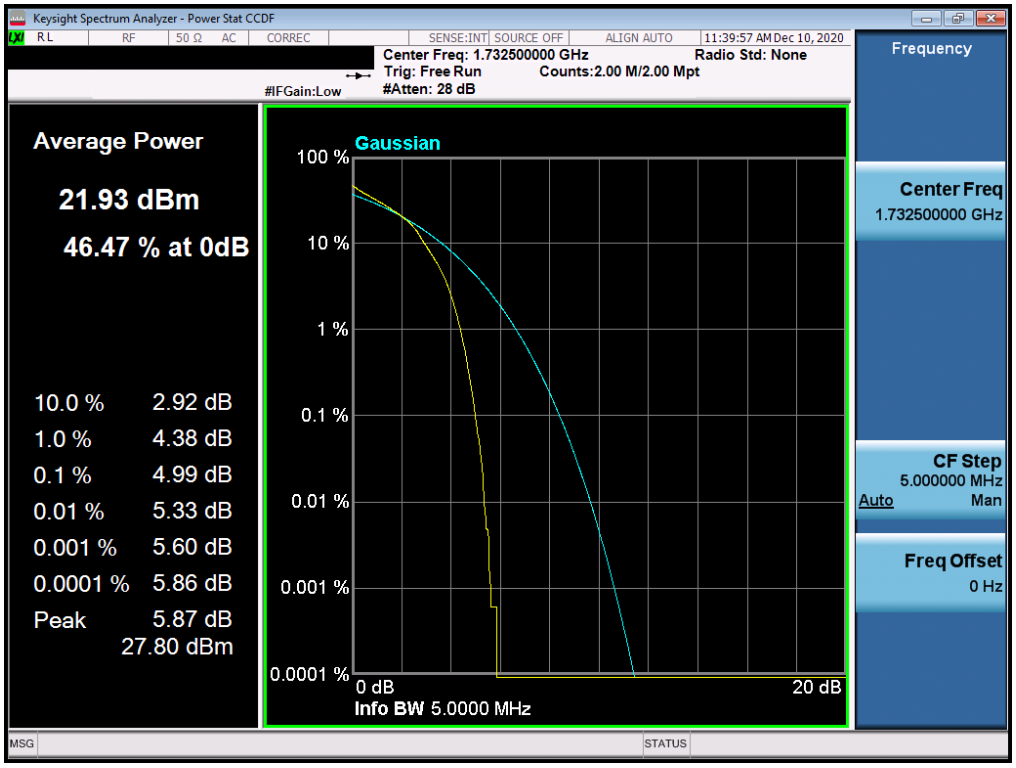
Plot 7-110. PAR Plot (LTE Band 4 - 10MHz 16-QAM - Full RB Configuration)



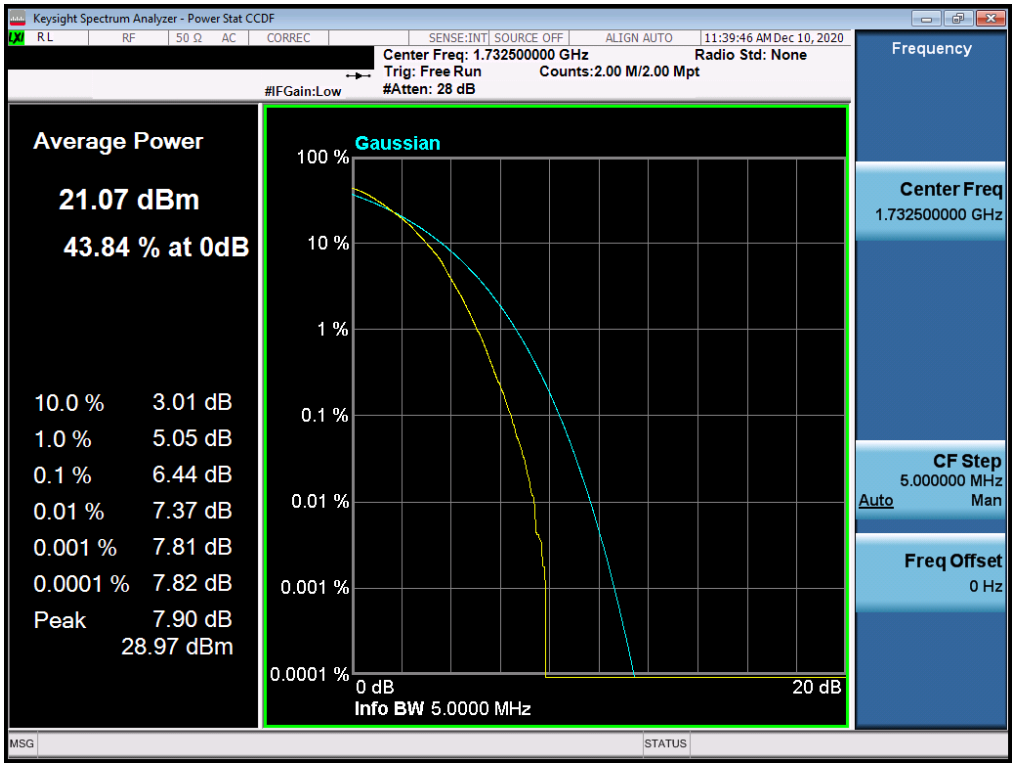
Plot 7-111. PAR Plot (LTE Band 4 - 10MHz 64-QAM - Full RB Configuration)



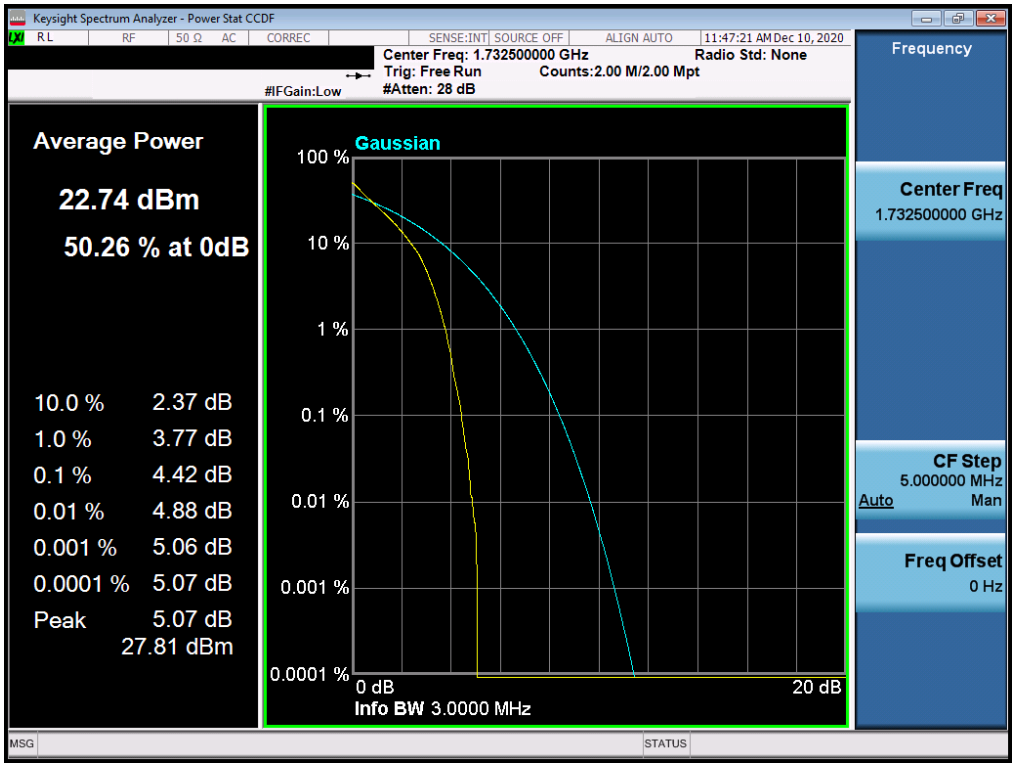
Plot 7-112. PAR Plot (LTE Band 4 - 5MHz QPSK - Full RB Configuration)



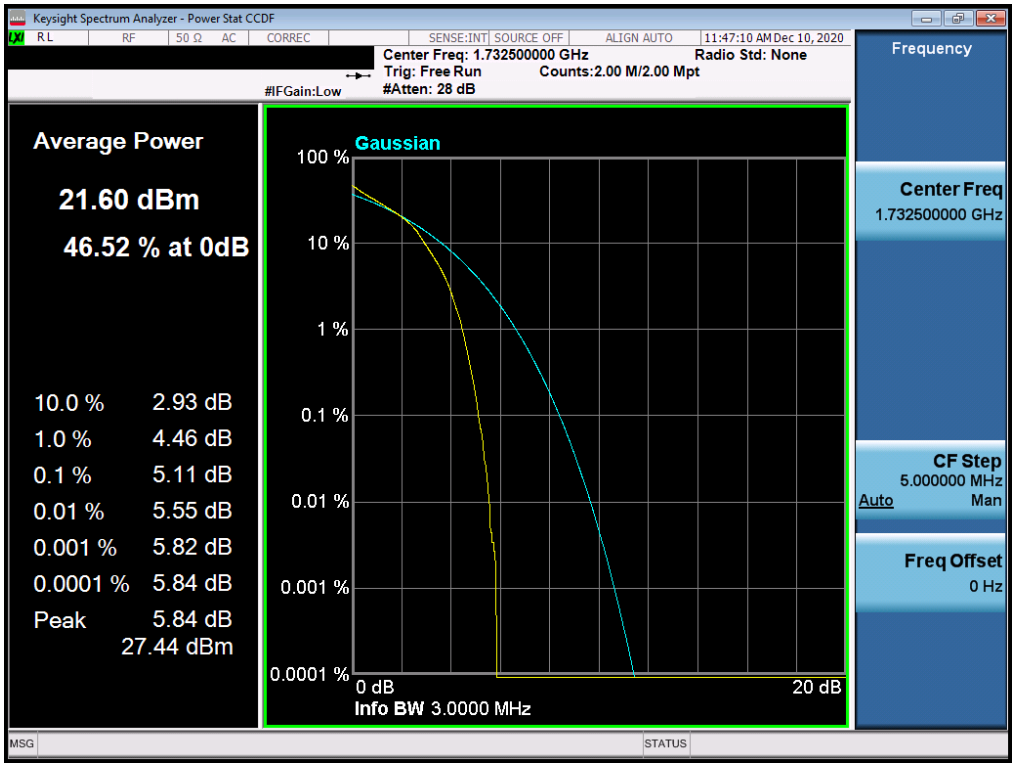
Plot 7-113. PAR Plot (LTE Band 4 - 5MHz 16-QAM - Full RB Configuration)



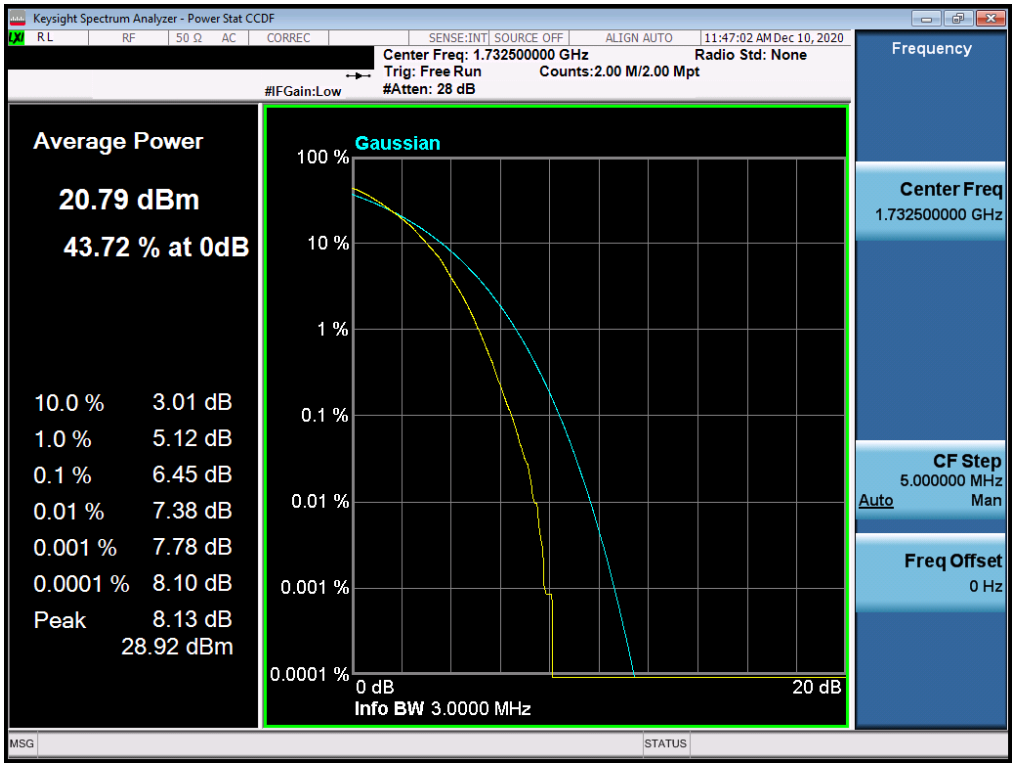
Plot 7-114. PAR Plot (LTE Band 4 - 5MHz 64-QAM - Full RB Configuration)



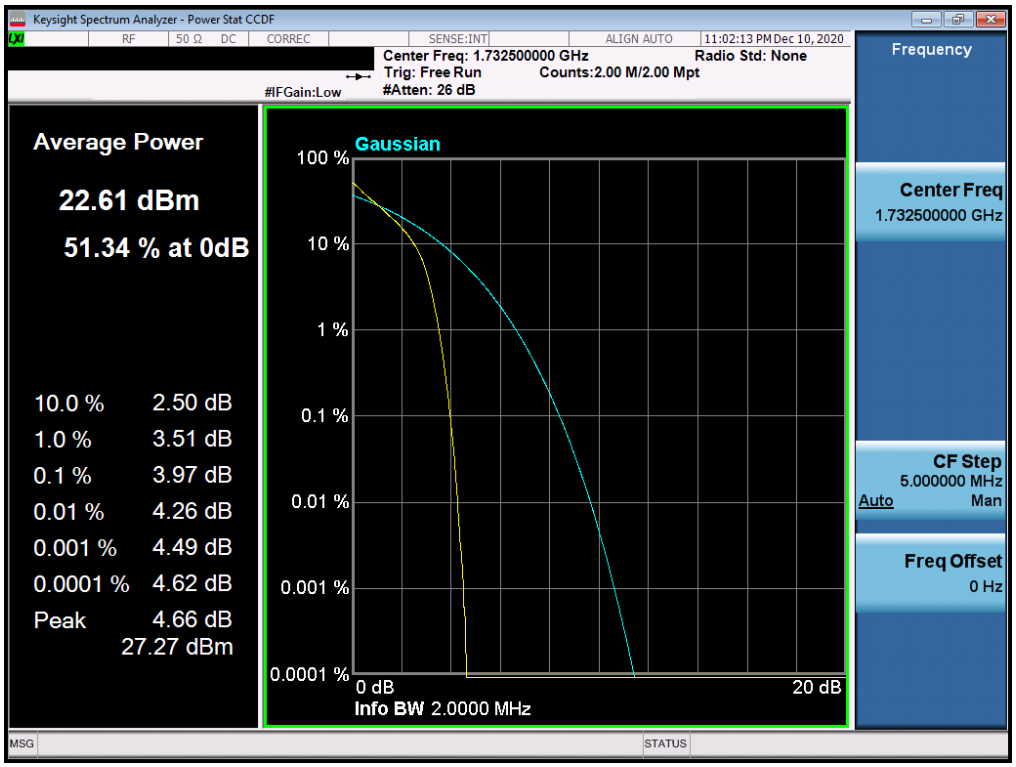
Plot 7-115. PAR Plot (LTE Band 4 - 3MHz QPSK - Full RB Configuration)



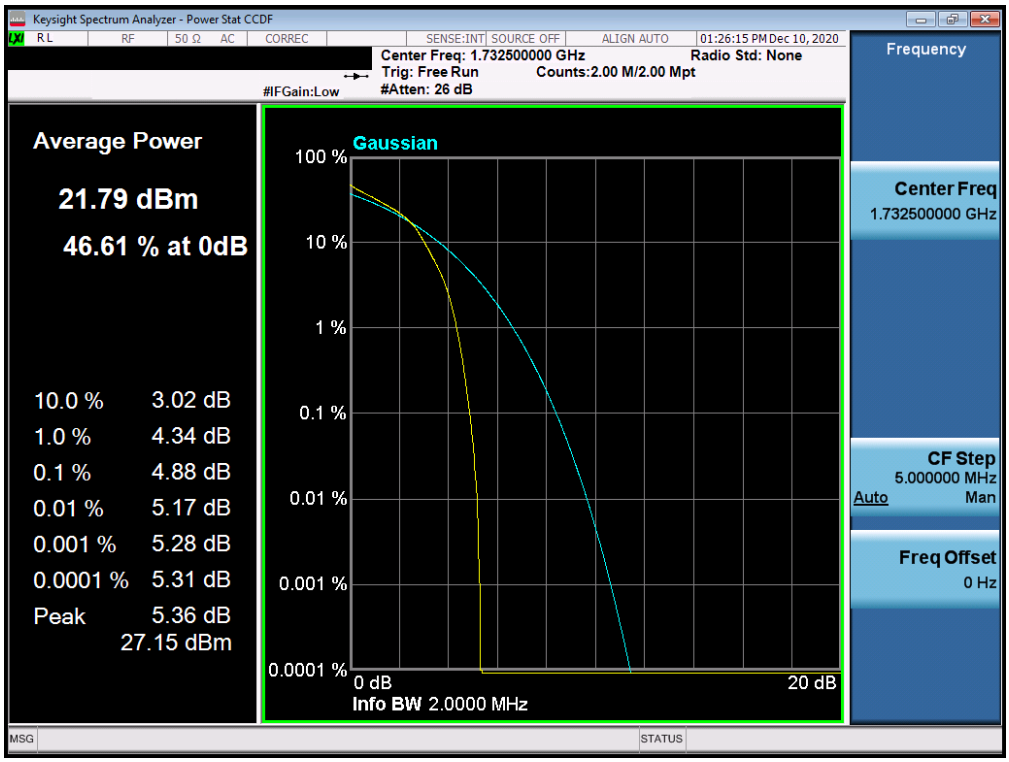
Plot 7-116. PAR Plot (LTE Band 4 - 3MHz 16-QAM - Full RB Configuration)



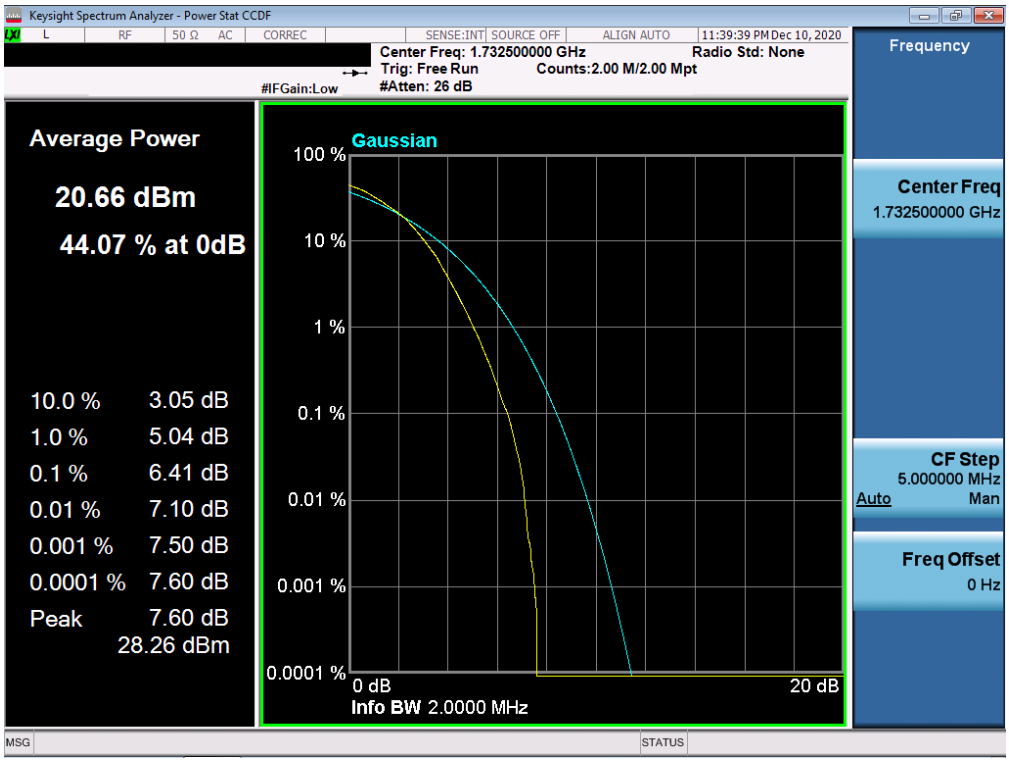
Plot 7-117. PAR Plot (LTE Band 4 - 3MHz 64-QAM - Full RB Configuration)



Plot 7-118. PAR Plot (LTE Band 4 - 1.4MHz QPSK - Full RB Configuration)

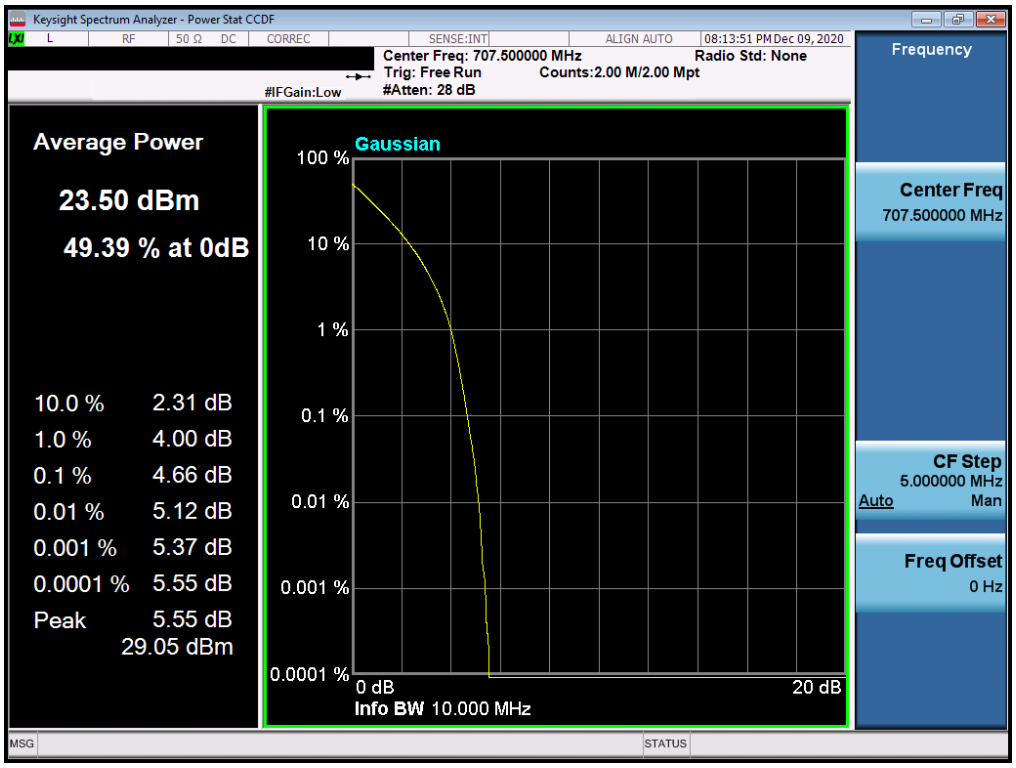


Plot 7-119. PAR Plot (LTE Band 4 - 1.4MHz 16-QAM - Full RB Configuration)

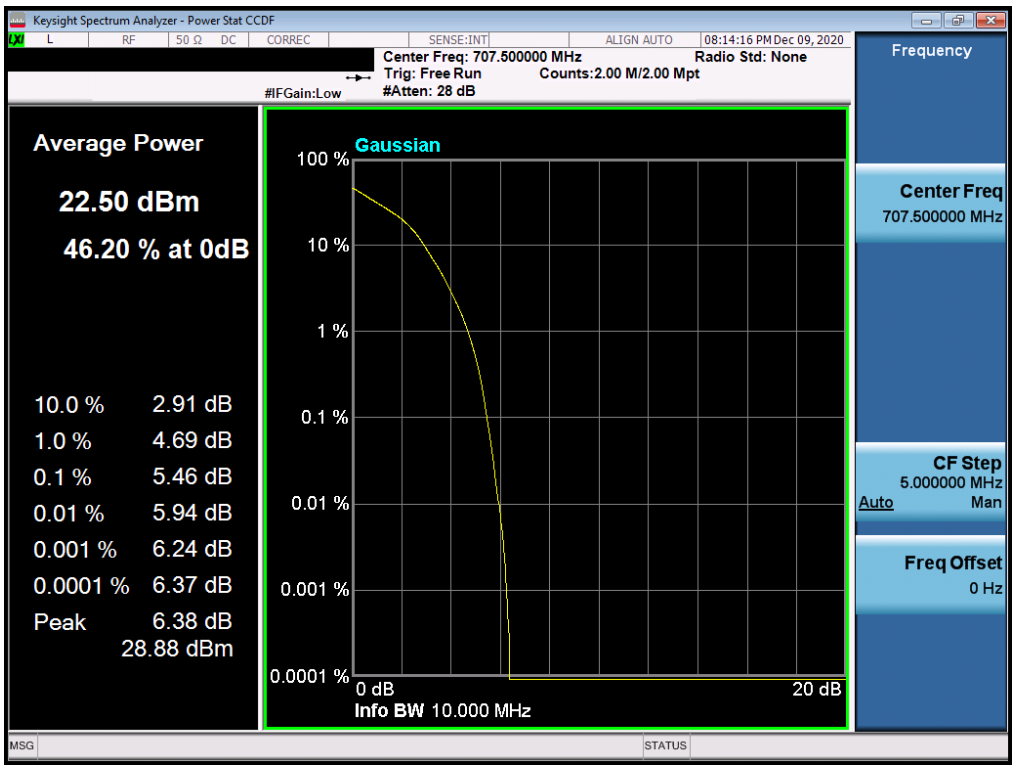


Plot 7-120. PAR Plot (LTE Band 4 - 1.4MHz 64-QAM - Full RB Configuration)

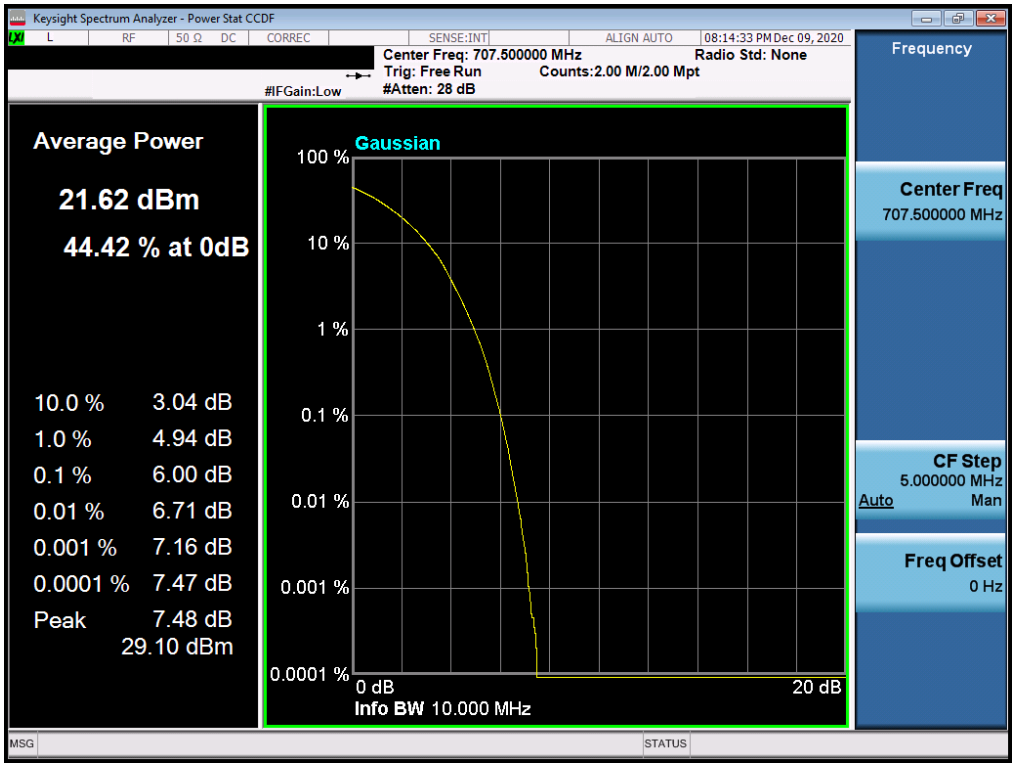
LTE Band 12



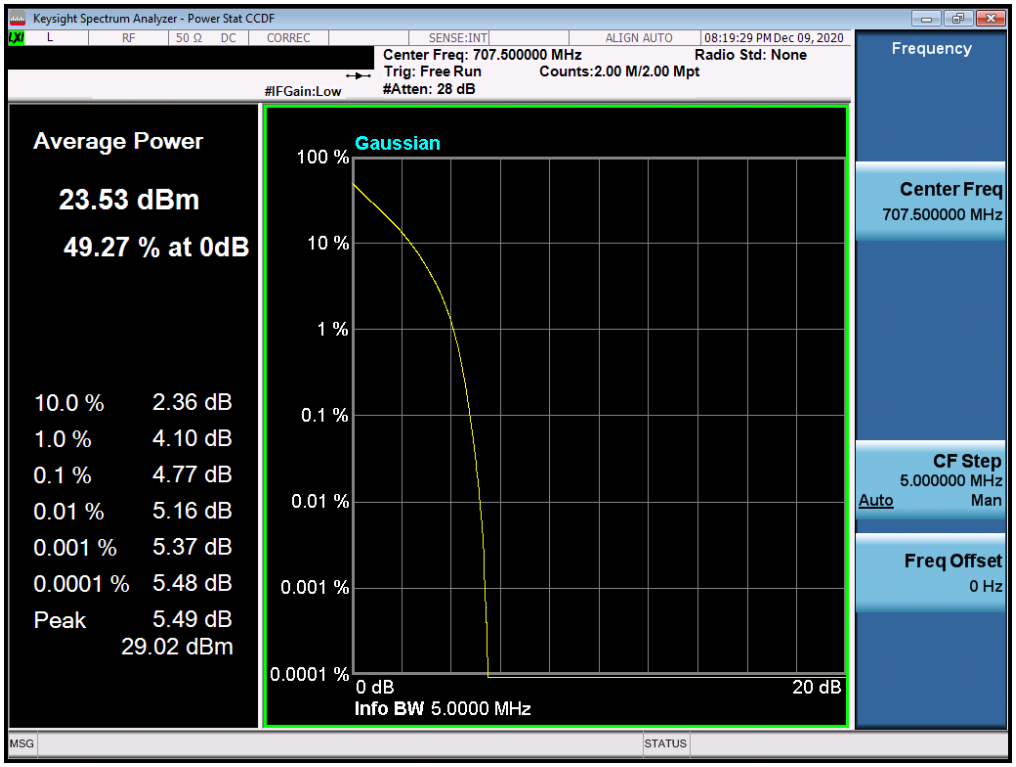
Plot 7-121. PAR Plot (LTE Band 12 - 10MHz QPSK - Full RB Configuration)



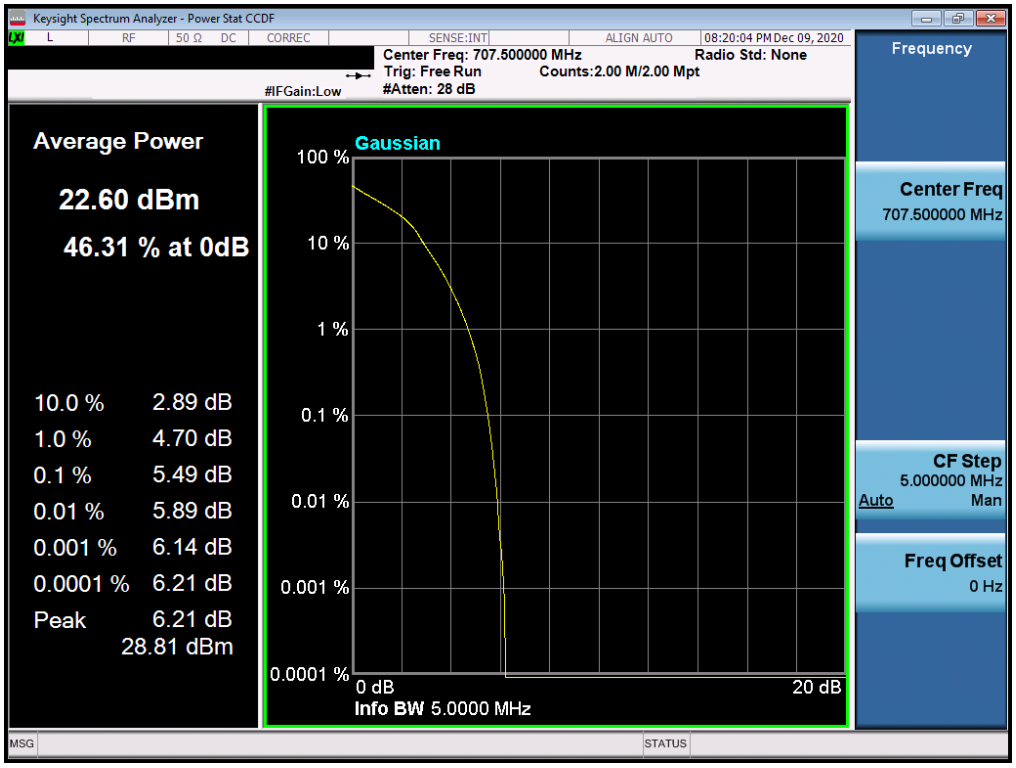
Plot 7-122. PAR Plot (LTE Band 12 - 10MHz 16-QAM - Full RB Configuration)



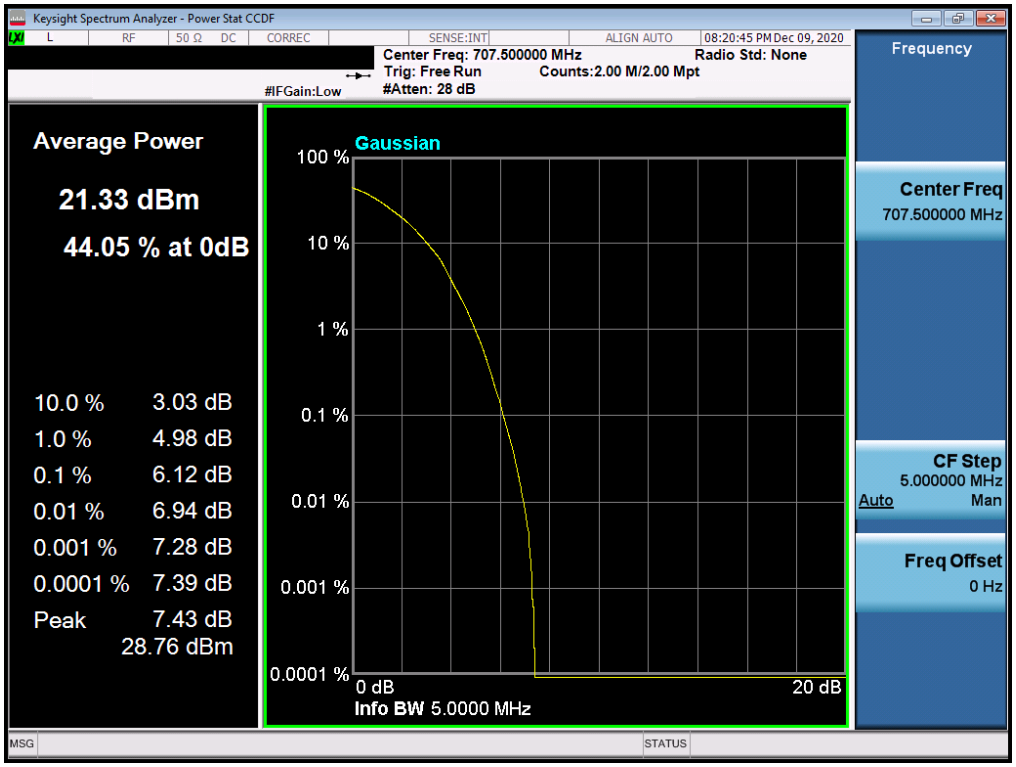
Plot 7-123. PAR Plot (LTE Band 12 - 10MHz 64-QAM - Full RB Configuration)



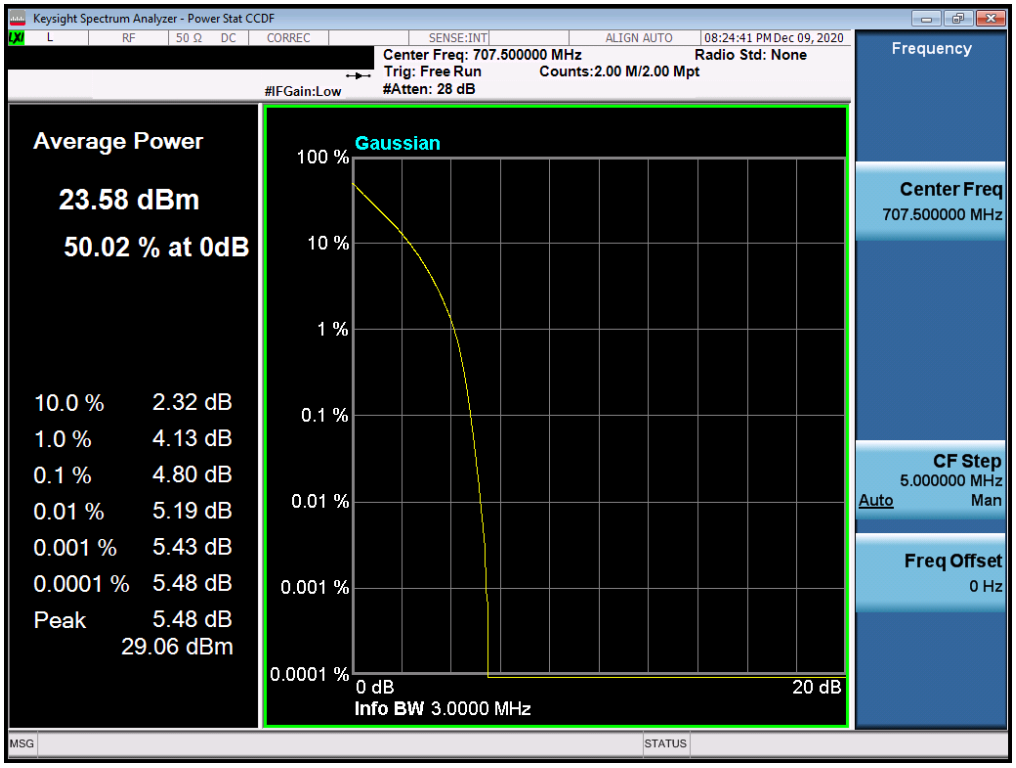
Plot 7-124. PAR Plot (LTE Band 12 - 5MHz QPSK - Full RB Configuration)



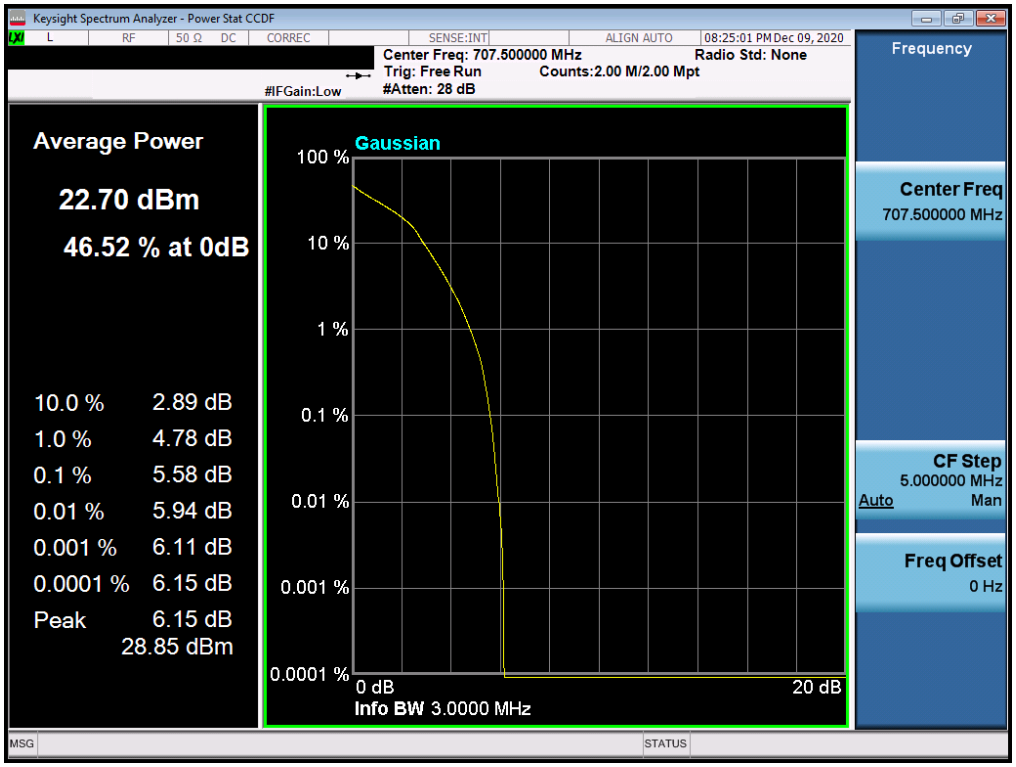
Plot 7-125. PAR Plot (LTE Band 12 - 5MHz 16-QAM - Full RB Configuration)



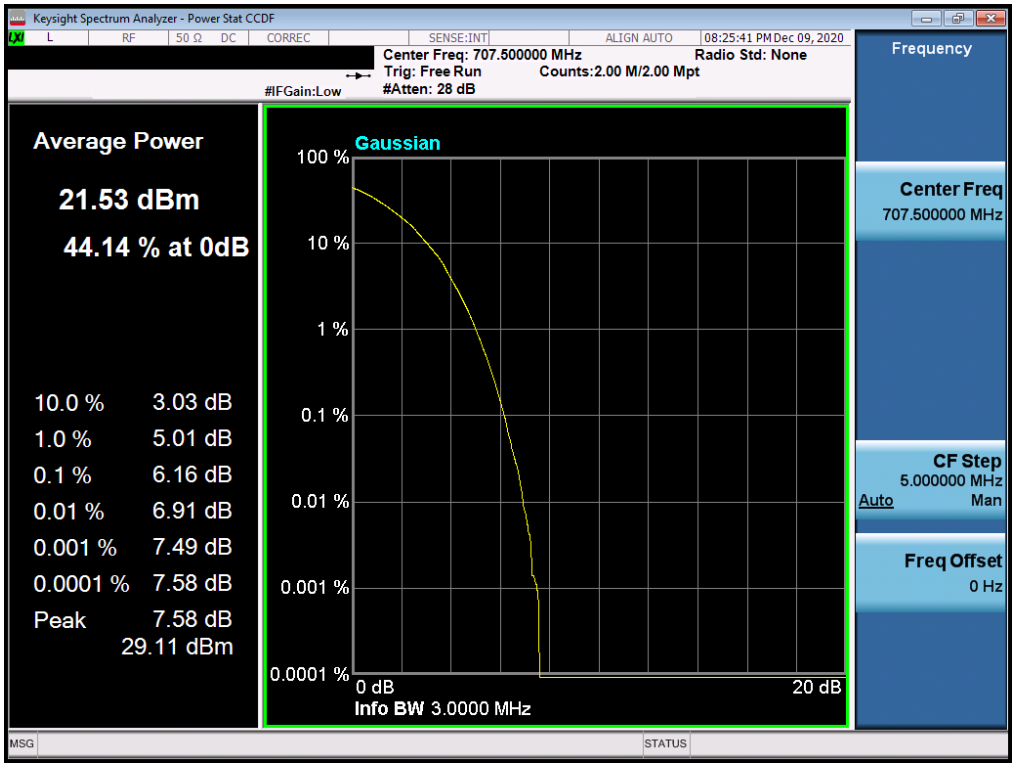
Plot 7-126. PAR Plot (LTE Band 12 - 5MHz 64-QAM - Full RB Configuration)



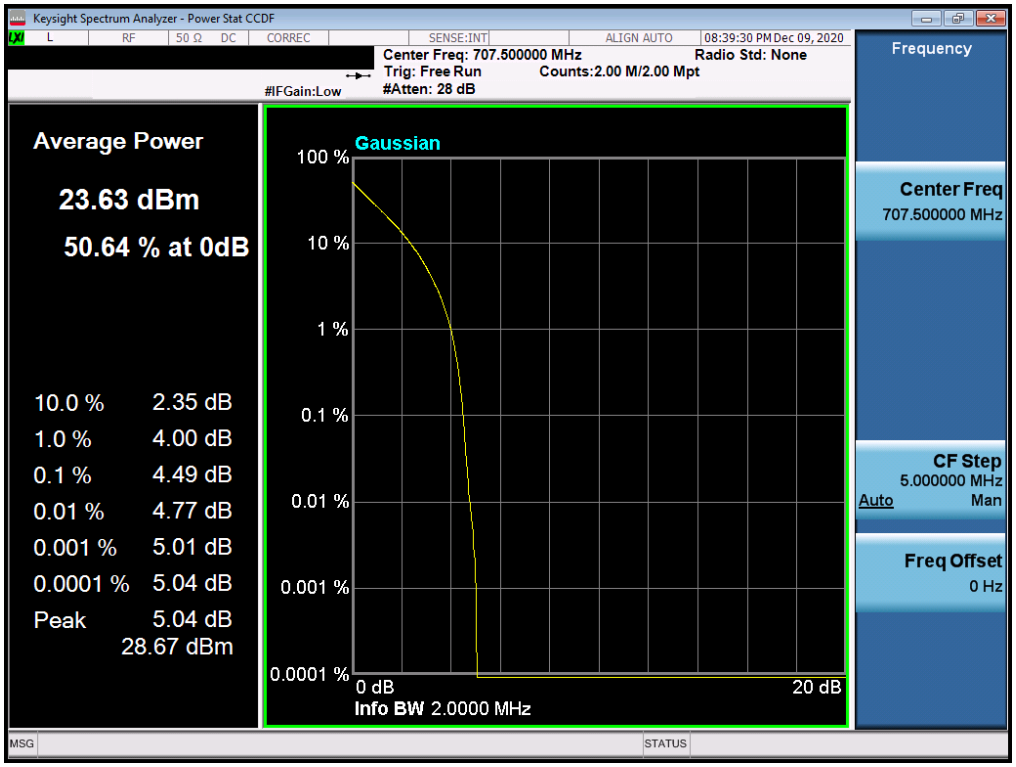
Plot 7-127. PAR Plot (LTE Band 12 - 3MHz QPSK - Full RB Configuration)



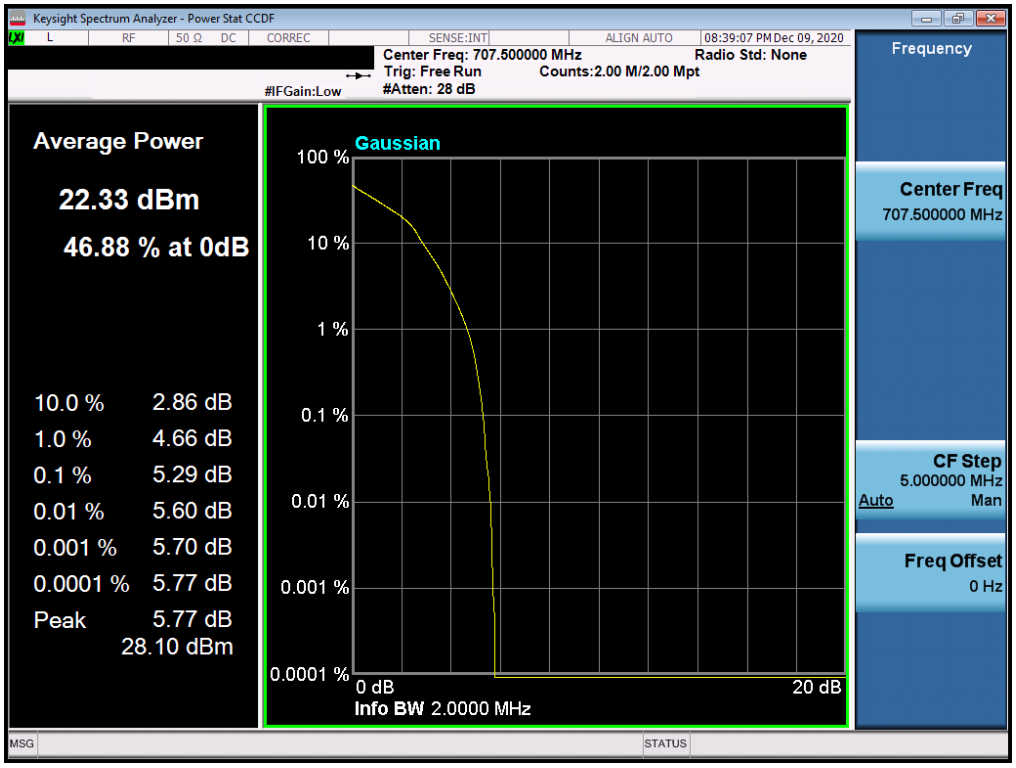
Plot 7-128. PAR Plot (LTE Band 12 - 3MHz 16-QAM - Full RB Configuration)



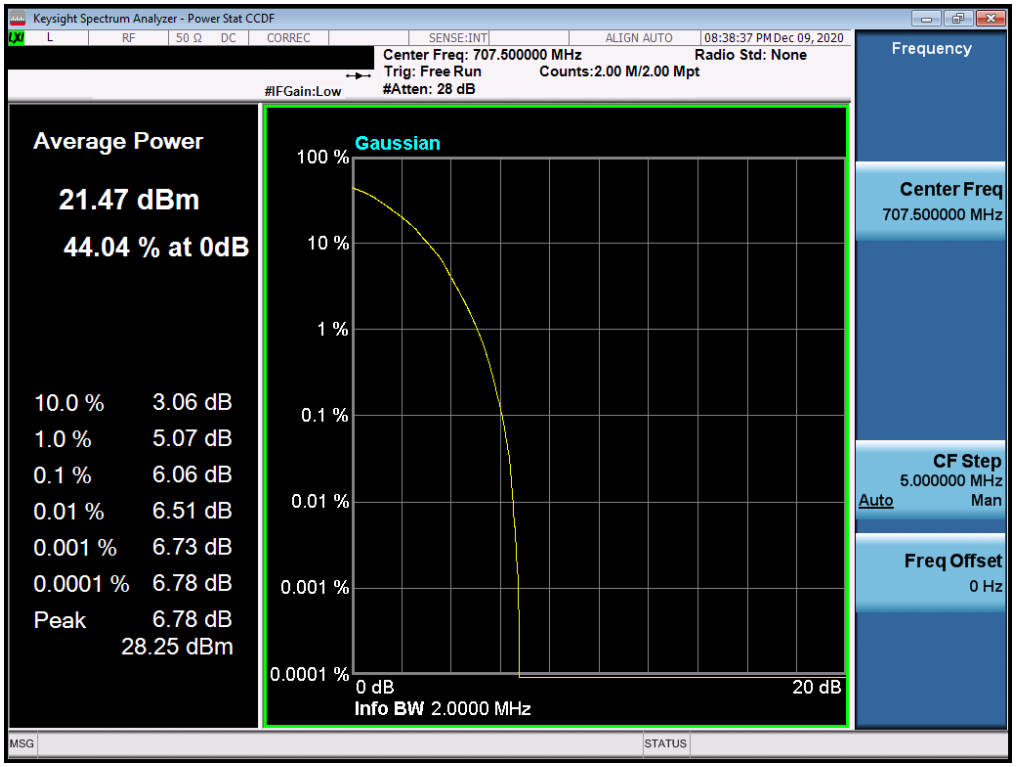
Plot 7-129. PAR Plot (LTE Band 12 - 3MHz 64-QAM - Full RB Configuration)



Plot 7-130. PAR Plot (LTE Band 12 – 1.4MHz QPSK - Full RB Configuration)

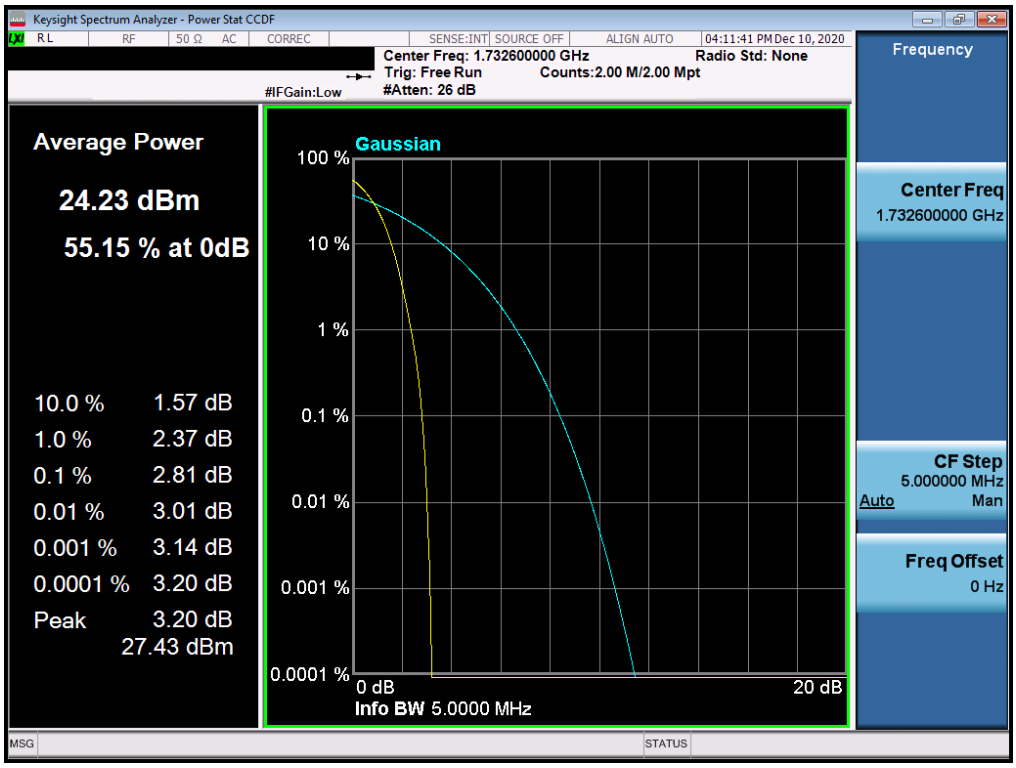


Plot 7-131. PAR Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB Configuration)



Plot 7-132. PAR Plot (LTE Band 12 – 1.4MHz 64-QAM - Full RB Configuration)

WCDMA AWS



Plot 7-133. PAR Plot (WCDMA, Ch. 1413)

7.6 Radiated Power (EIRP)

Test Overview

Effective Radiated Power (ERP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

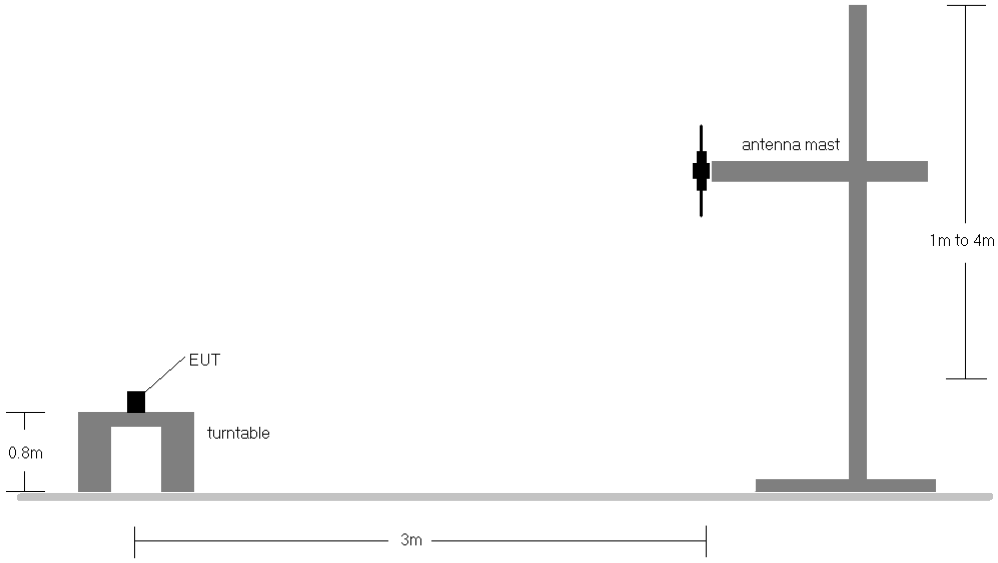


Figure 7-5. Radiated Test Setup <1GHz

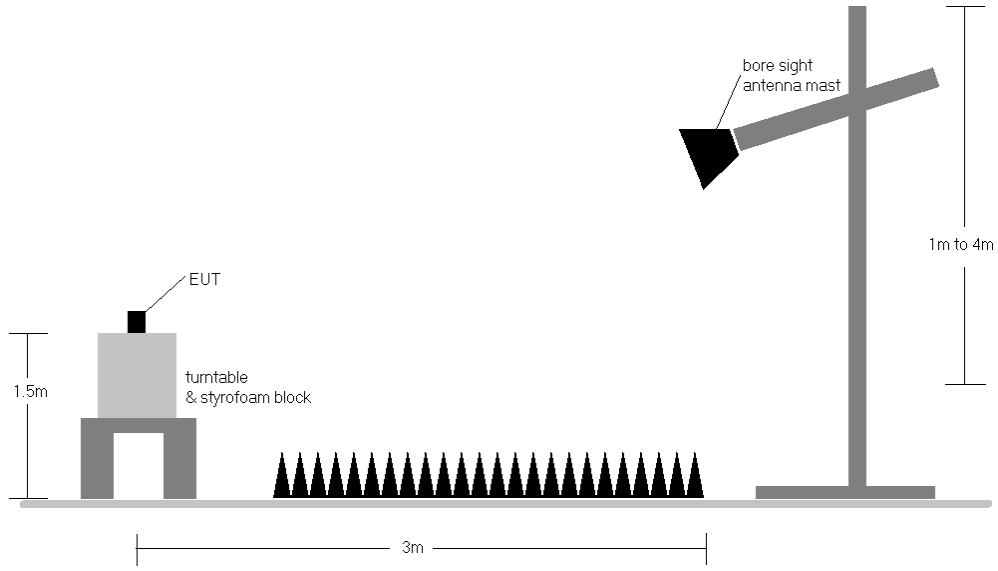


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".

3) This unit was tested with its standard battery.

4) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.0	H	182	222	9.41	1 / 0	13.28	22.69	0.186	30.00	-7.31
		1732.5	H	170	223	9.34	1 / 50	13.44	**22.78**	0.190	30.00	-7.22
		1745.0	H	172	227	9.26	1 / 0	13.07	22.33	0.171	30.00	-7.67
	16-QAM	1720.0	H	182	222	9.41	1 / 0	12.56	**21.97**	0.158	30.00	-8.03
	64-QAM	1720.0	H	182	222	9.41	1 / 0	11.69	**21.10**	0.129	30.00	-8.90
15 MHz	QPSK	1717.5	H	182	222	9.43	1/36	13.83	**23.26**	0.212	30.00	-6.74
		1732.5	H	170	223	9.34	1/36	13.67	23.01	0.200	30.00	-6.99
		1747.5	H	172	227	9.25	1/74	13.40	22.64	0.184	30.00	-7.36
	16-QAM	1717.5	H	182	222	9.43	1/36	12.85	**22.28**	0.169	30.00	-7.72
	64-QAM	1717.5	H	182	222	9.43	1/36	11.90	**21.33**	0.136	30.00	-8.67
10 MHz	QPSK	1715.0	H	182	222	9.44	1/25	13.86	**23.30**	0.214	30.00	-6.70
		1732.5	H	170	223	9.34	1/25	13.58	22.92	0.196	30.00	-7.08
		1750.0	H	172	227	9.23	1/0	13.31	22.54	0.179	30.00	-7.46
	16-QAM	1715.0	H	182	222	9.44	1/25	12.80	**22.24**	0.168	30.00	-7.76
	64-QAM	1732.5	H	170	223	9.34	1/49	11.64	**20.98**	0.125	30.00	-9.02
5 MHz	QPSK	1712.5	H	182	222	9.46	1/24	13.84	**23.30**	0.214	30.00	-6.70
		1732.5	H	170	223	9.34	1/12	13.67	23.01	0.200	30.00	-6.99
		1752.5	H	172	227	9.23	1/24	13.21	22.44	0.175	30.00	-7.56
	16-QAM	1712.5	H	182	222	9.46	1/24	12.63	**22.09**	0.162	30.00	-7.91
	64-QAM	1732.5	H	170	223	9.34	1/12	11.39	**20.73**	0.118	30.00	-9.27
3 MHz	QPSK	1711.5	H	182	222	9.47	1/7	13.61	**23.07**	0.203	30.00	-6.93
		1732.5	H	170	223	9.34	1/0	13.57	22.91	0.195	30.00	-7.09
		1753.5	H	172	227	9.24	1/7	13.12	22.36	0.172	30.00	-7.64
	16-QAM	1732.5	H	170	223	9.34	1/7	12.91	**22.25**	0.168	30.00	-7.75
	64-QAM	1711.5	H	182	222	9.47	1/7	11.32	**20.78**	0.120	30.00	-9.22
1.4 MHz	QPSK	1710.7	H	182	222	9.47	1/2	13.71	**23.18**	0.208	30.00	-6.82
		1732.5	H	170	223	9.34	1/2	13.52	22.86	0.193	30.00	-7.14
		1754.3	H	172	227	9.24	1/2	13.19	22.43	0.175	30.00	-7.57
	16-QAM	1710.7	H	182	222	9.47	3/3	12.82	**22.29**	0.170	30.00	-7.71
	64-QAM	1732.5	H	170	223	9.34	3/0	11.67	**21.01**	0.126	30.00	-8.99
20 MHz	Opposite Pol.	1732.5	V	366	228	9.22	1 / 50	12.44	21.66	0.147	30.00	-8.34

Table 7-2. EIRP Data (LTE Band 4)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	704.0	V	167	7	4.58	1 / 25	17.25	21.83	0.152	36.99	-15.16	19.68	0.093	34.77	-15.09
		707.5	V	179	358	4.62	1 / 0	17.23	**21.85**	0.153	36.99	-15.14	**19.70**	0.093	34.77	-15.07
		711.0	V	164	7	4.67	1 / 0	16.50	21.17	0.131	36.99	-15.82	19.02	0.080	34.77	-15.75
	16-QAM	707.5	V	179	358	4.62	1 / 0	15.91	**20.53**	0.113	36.99	-16.46	**18.38**	0.069	34.77	-16.39
	64-QAM	704.0	V	167	7	4.58	1 / 25	14.30	**18.88**	0.077	36.99	-18.11	**16.73**	0.047	34.77	-18.04
5 MHz	QPSK	701.5	V	167	7	4.60	1/0	17.34	21.94	0.156	36.99	-15.05	19.79	0.095	34.77	-14.98
		707.5	V	179	358	4.62	1/12	17.54	**22.16**	0.165	36.99	-14.83	**20.01**	0.100	34.77	-14.76
		713.5	V	164	7	4.70	1/24	16.88	21.58	0.144	36.99	-15.41	19.43	0.088	34.77	-15.34
	16-QAM	707.5	V	179	358	4.62	1/24	15.93	**20.55**	0.114	36.99	-16.44	**18.40**	0.069	34.77	-16.37
	64-QAM	701.5	V	167	7	4.60	1/24	14.99	**19.59**	0.091	36.99	-17.40	**17.44**	0.055	34.77	-17.33
3 MHz	QPSK	700.5	V	167	7	4.59	1/14	17.33	21.92	0.156	36.99	-15.07	19.77	0.095	34.77	-15.00
		707.5	V	179	358	4.62	1/7	17.35	**21.97**	0.158	36.99	-15.02	**19.82**	0.096	34.77	-14.95
		714.5	V	164	7	4.71	1/7	17.01	21.72	0.148	36.99	-15.27	19.57	0.091	34.77	-15.20
	16-QAM	707.5	V	179	358	4.62	1/7	16.15	**20.77**	0.120	36.99	-16.22	**18.62**	0.073	34.77	-16.15
	64-QAM	700.5	V	167	7	4.59	1/7	15.28	**19.87**	0.097	36.99	-17.12	**17.72**	0.059	34.77	-17.05
1.4 MHz	QPSK	699.7	V	167	7	4.56	3/2	17.16	**21.72**	0.149	36.99	-15.27	**19.57**	0.091	34.77	-15.20
		707.5	V	179	358	4.62	1/2	17.09	21.71	0.148	36.99	-15.28	19.56	0.090	34.77	-15.21
		715.3	V	164	7	4.72	3/3	16.70	21.42	0.139	36.99	-15.57	19.27	0.084	34.77	-15.50
	16-QAM	707.5	V	179	358	4.62	1/5	16.13	**20.75**	0.119	36.99	-16.24	**18.60**	0.073	34.77	-16.17
	64-QAM	699.7	V	167	7	4.56	3/2	15.10	**19.66**	0.092	36.99	-17.33	**17.51**	0.056	34.77	-17.26
10 MHz	Opposite Pol.	707.5	H	126	20	3.72	1 / 0	16.48	20.20	0.105	36.99	-16.79	18.05	0.064	34.77	-16.72

Table 7-3. ERP Data (LTE Band 12)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	H	100	236	14.05	9.46	**23.51**	**0.224**	30.00	-6.49
1732.60	WCDMA1700	H	115	230	12.91	9.34	22.25	0.168	30.00	-7.75
1752.60	WCDMA1700	H	127	238	13.48	9.24	22.72	0.187	30.00	-7.28
1712.40	WCDMA1700	V	315	302	10.40	9.37	19.77	0.095	30.00	-10.23

Table 7-4. EIRP Data (WCDMA AWS)

7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

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.

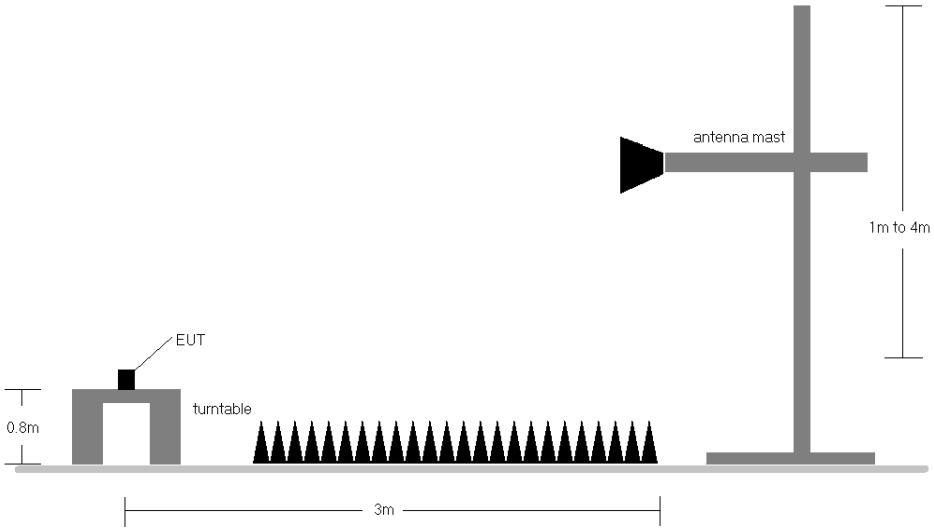


Figure 7-7. Test Instrument & Measurement Setup

Test Notes

1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
   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) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".

3) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

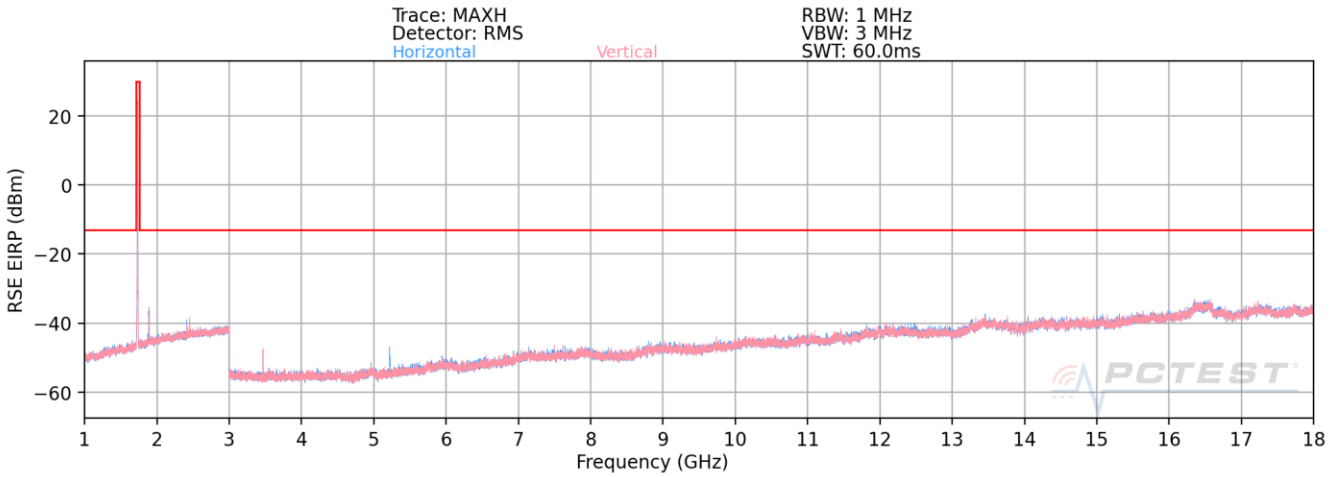
4) This unit was tested with its standard battery.

5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

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

7) 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.

LTE Band 4



Plot 7-134. Radiated Spurious Plot (LTE Band 4)

Bandwidth (MHz):	20
Frequency (MHz):	1720.0
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]
3440.0	H	139	29	-66.46	7.73	48.27	-46.99	-13.00	-33.99
5160.0	H	-	-	-81.30	10.51	36.21	-59.05	-13.00	-46.05
6880.0	H	103	52	-76.44	14.12	44.68	-50.58	-13.00	-37.58
8600.0	H	-	-	-83.42	17.14	40.72	-54.54	-13.00	-41.54
10320.0	H	-	-	-83.27	20.15	43.88	-51.38	-13.00	-38.38
12040.0	H	-	-	-83.52	22.48	45.96	-49.30	-13.00	-36.30

Table 7-5. Radiated Spurious Data (LTE Band 4 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1732.5
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]
3465.0	H	114	26	-68.48	7.29	45.81	-49.45	-13.00	-36.45
5197.5	H	109	212	-77.93	10.41	39.48	-55.78	-13.00	-42.78
6930.0	H	107	199	-78.43	14.19	42.76	-52.49	-13.00	-39.49
8662.5	H	-	-	-83.35	17.96	41.61	-53.65	-13.00	-40.65
10395.0	H	-	-	-84.01	20.45	43.44	-51.82	-13.00	-38.82
12127.5	H	-	-	-83.97	23.39	46.42	-48.83	-13.00	-35.83

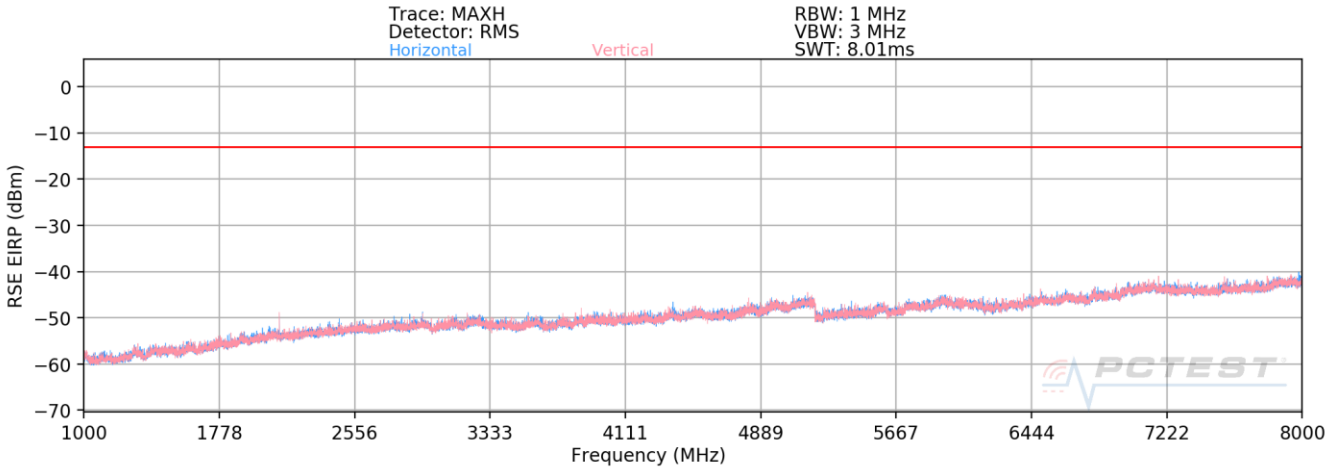
Table 7-6. Radiated Spurious Data (LTE Band 4 – Mid Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1745.0
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	H	105	171	-66.08	7.58	48.50	-46.76	-13.00	-33.76
5235.00	H	106	180	-78.35	10.31	38.96	-56.30	-13.00	-43.30
6980.00	H	101	173	-80.11	14.68	41.57	-53.69	-13.00	-40.69
8725.00	H	-	-	-83.17	17.57	41.40	-53.86	-13.00	-40.86
10470.00	H	-	-	-83.74	20.53	43.79	-51.47	-13.00	-38.47
12215.00	H	-	-	-83.79	22.87	46.08	-49.17	-13.00	-36.17

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

LTE Band 12



Plot 7-135. Radiated Spurious Plot (LTE Band 12)

Bandwidth (MHz):	10
Frequency (MHz):	704.0
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]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1408.0	H	101	219	-75.99	0.39	31.40	-63.86	-13.00	-50.86
2112.0	H	107	174	-73.73	3.94	37.21	-58.04	-13.00	-45.04
2816.0	H	-	-	-80.11	5.64	32.53	-62.73	-13.00	-49.73
3520.0	H	-	-	-80.87	7.30	33.43	-61.83	-13.00	-48.83
4224.0	H	-	-	-81.21	8.30	34.09	-61.17	-13.00	-48.17

Table 7-8. 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]
1415.0	H	101	216	-73.01	0.40	34.39	-60.86	-13.00	-47.86
2122.5	H	141	169	-69.76	3.76	41.00	-54.26	-13.00	-41.26
2830.0	H	-	-	-79.22	5.84	33.62	-61.63	-13.00	-48.63
3537.5	H	-	-	-80.04	7.43	34.39	-60.87	-13.00	-47.87
4245.0	H	-	-	-80.92	8.12	34.20	-61.06	-13.00	-48.06

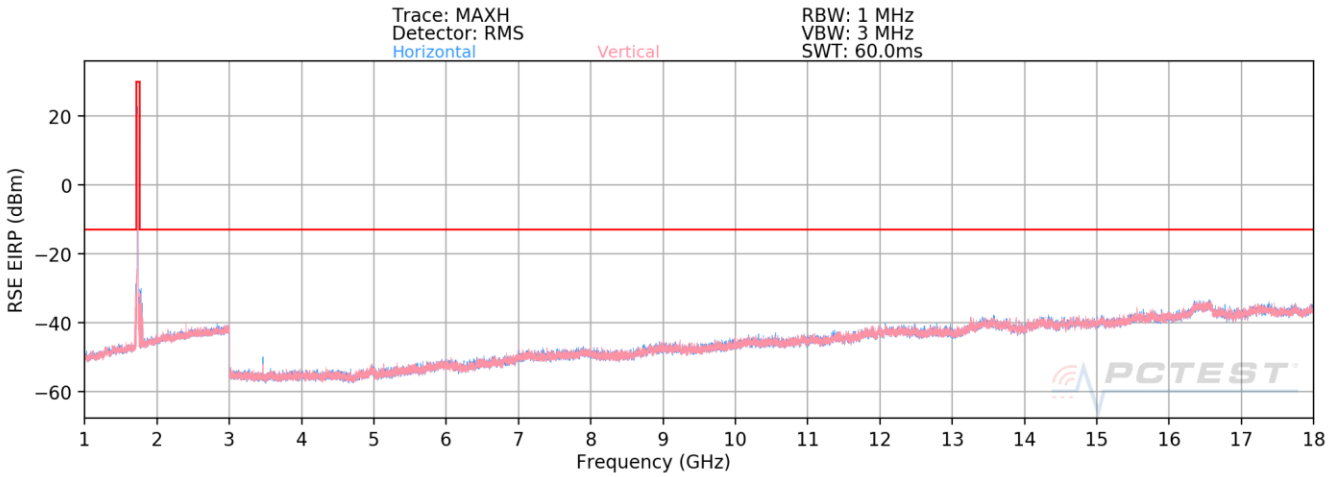
Table 7-9. Radiated Spurious Data (LTE Band 12 – Mid Channel)

Bandwidth (MHz):	10
Frequency (MHz):	711.0
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]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1422.0	H	203	221	-75.36	0.23	31.87	-63.39	-13.00	-50.39
2133.0	H	143	19	-71.73	3.61	38.88	-56.37	-13.00	-43.37
2844.0	H	-	-	-79.84	5.80	32.96	-62.30	-13.00	-49.30
3555.0	H	-	-	-80.73	8.14	34.41	-60.85	-13.00	-47.85
4266.0	H	-	-	-81.22	8.27	34.05	-61.20	-13.00	-48.20

Table 7-10. Radiated Spurious Data (LTE Band 12 – High Channel)

WCDMA AWS



Plot 7-136. Radiated Spurious Plot (WCDMA AWS)

Mode:	WCDMA RMC
Channel:	1312
Frequency (MHz):	1712.4

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]
3424.8	H	135	8	-73.96	7.44	40.48	-54.78	-13.00	-41.78
5137.2	H	104	206	-80.06	10.57	37.51	-57.75	-13.00	-44.75
6849.6	H	103	47	-80.67	14.29	40.62	-54.64	-13.00	-41.64
8562.0	H	-	-	-83.57	17.01	40.44	-54.81	-13.00	-41.81

7-11. Radiated Spurious Data (WCDMA AWS – Low Channel)

Mode:	WCDMA RMC
Channel:	1413
Frequency (MHz):	1732.6

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]
3465.2	H	116	25	-76.30	7.29	37.99	-57.27	-13.00	-44.27
5197.8	H	-	-	-81.50	10.41	35.91	-59.35	-13.00	-46.35
6930.4	H	111	51	-80.70	14.20	40.50	-54.76	-13.00	-41.76
8663.0	H	-	-	-83.53	17.97	41.44	-53.82	-13.00	-40.82

Table 7-12. Radiated Spurious Data (WCDMA AWS – Mid Channel)

Mode:	WCDMA RMC
Channel:	1513
Frequency (MHz):	1752.6

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]
3505.2	H	103	19	-72.67	7.80	42.13	-53.13	-13.00	-40.13
5257.8	H	153	204	-81.31	10.75	36.44	-58.82	-13.00	-45.82
7010.4	H	-	-	-82.27	15.20	39.93	-55.32	-13.00	-42.32
8763.0	H	-	-	-82.58	17.05	41.47	-53.79	-13.00	-40.79

Table 7-13. Radiated Spurious Data (WCDMA AWS – High Channel)

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. 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/TIA-603-E-2016

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

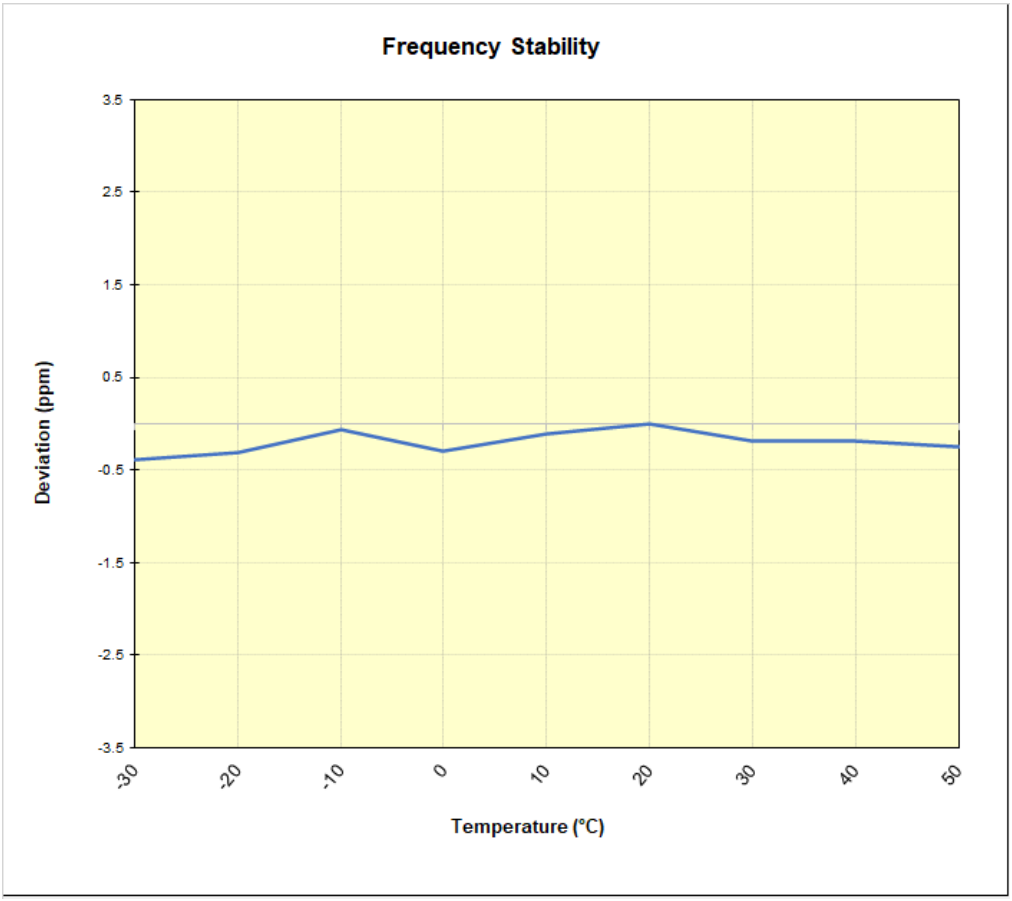
None

LTE Band 4

Operating Frequency (Hz):	1,732,500,000
Ref. Voltage (VDC):	4.25

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	1,732,499,688	-674	-0.0000389
		- 20	1,732,499,826	-536	-0.0000309
		- 10	1,732,500,267	-95	-0.0000055
		0	1,732,499,842	-520	-0.0000300
		+ 10	1,732,500,186	-176	-0.0000102
		+ 20 (Ref)	1,732,500,362	0	0.0000000
		+ 30	1,732,500,037	-325	-0.0000188
		+ 40	1,732,500,051	-311	-0.0000180
		+ 50	1,732,499,929	-433	-0.0000250
Battery Endpoint	3.49	+ 20	1,732,500,141	-221	-0.0000128

Table 7-14. LTE Band 4 Frequency Stability Data



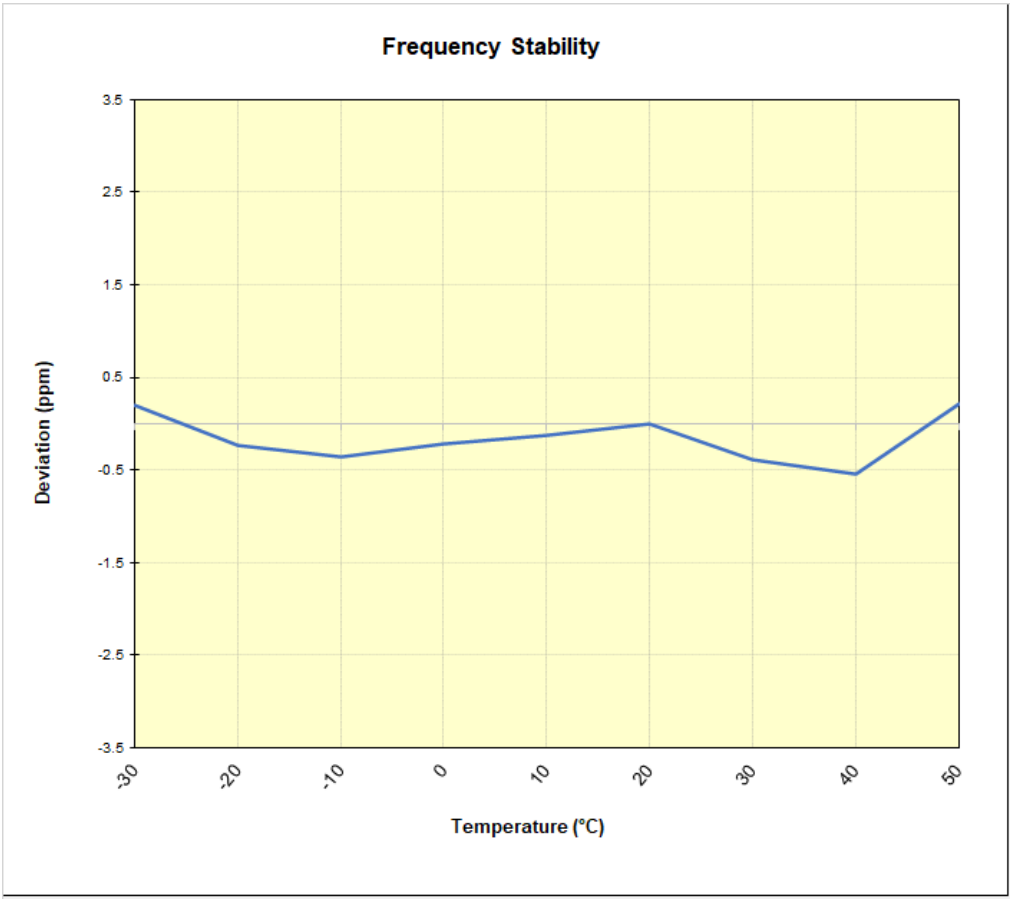
Plot 7-137. LTE Band 4 Frequency Stability Chart

LTE Band 12

Operating Frequency (Hz):	707,500,000
Ref. Voltage (VDC):	4.25

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	707,500,205	143	0.0000202
		- 20	707,499,902	-160	-0.0000226
		- 10	707,499,808	-254	-0.0000359
		0	707,499,911	-151	-0.0000213
		+ 10	707,499,977	-85	-0.0000120
		+ 20 (Ref)	707,500,062	0	0.0000000
		+ 30	707,499,790	-272	-0.0000384
		+ 40	707,499,678	-384	-0.0000543
		+ 50	707,500,213	151	0.0000213
Battery Endpoint	3.49	+ 20	707,499,690	-372	-0.0000526

Table 7-15. LTE Band 12 Frequency Stability Data



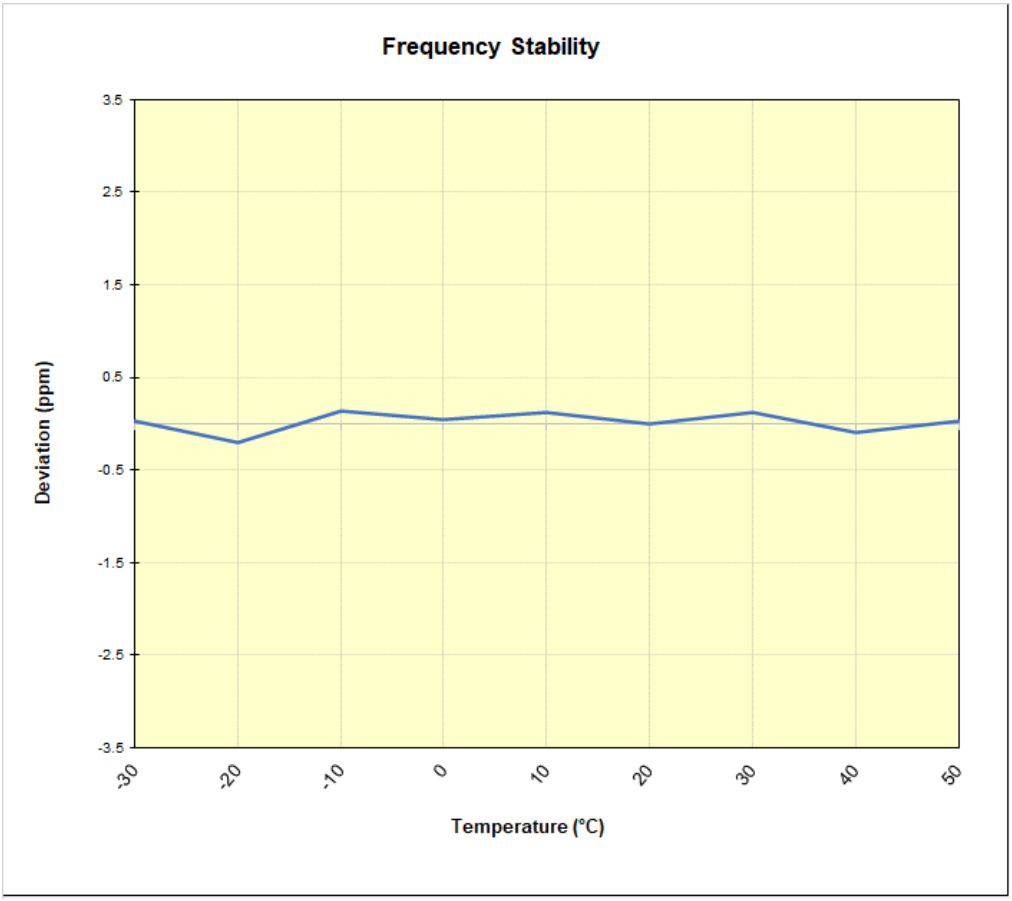
Plot 7-138. LTE Band 12 Frequency Stability Chart

WCDMA AWS

Operating Frequency (Hz):	1,732,600,000
Ref. Voltage (VDC):	4.25

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.25	- 30	1,732,600,053	53	0.0000031
		- 20	1,732,599,661	-339	-0.0000196
		- 10	1,732,600,253	253	0.0000146
		0	1,732,600,091	91	0.0000053
		+ 10	1,732,600,220	220	0.0000127
		+ 20 (Ref)	1,732,600,000	0	0.0000000
		+ 30	1,732,600,211	211	0.0000122
		+ 40	1,732,599,845	-155	-0.0000089
		+ 50	1,732,600,043	43	0.0000025
Battery Endpoint	3.49	+ 20	1,732,599,806	-194	-0.0000112

Table 7-16. WCDMA AWS Frequency Stability Data



Plot 7-139. WCDMA AWS Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFK200AM** complies with all the requirements of Part 27 of the FCC rules.