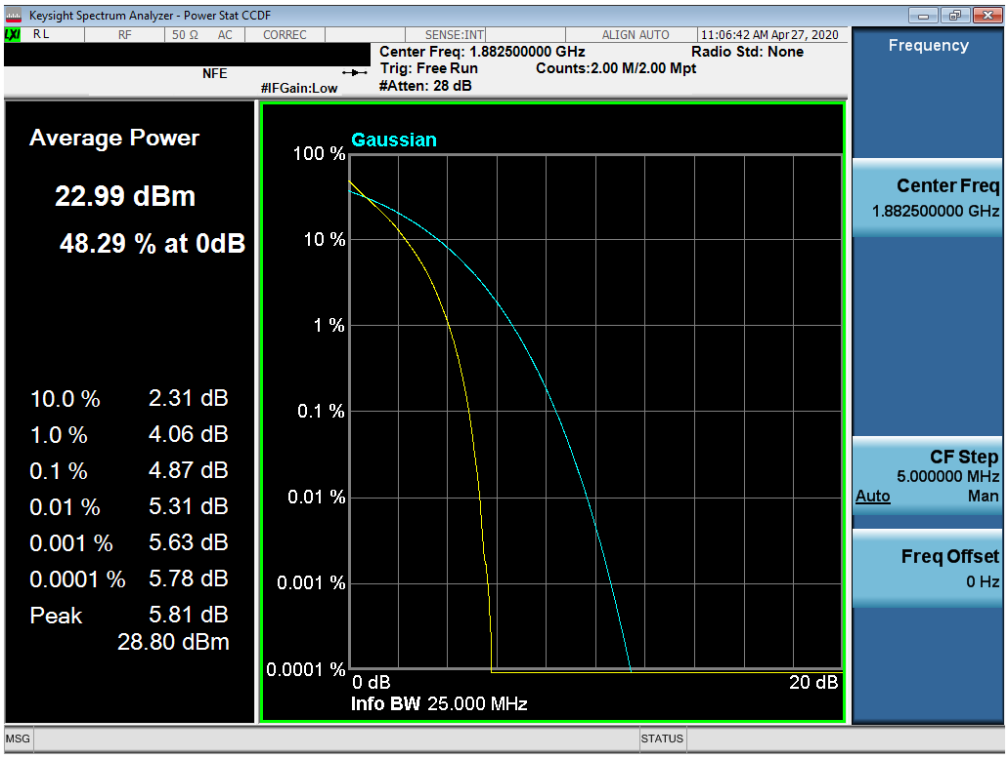
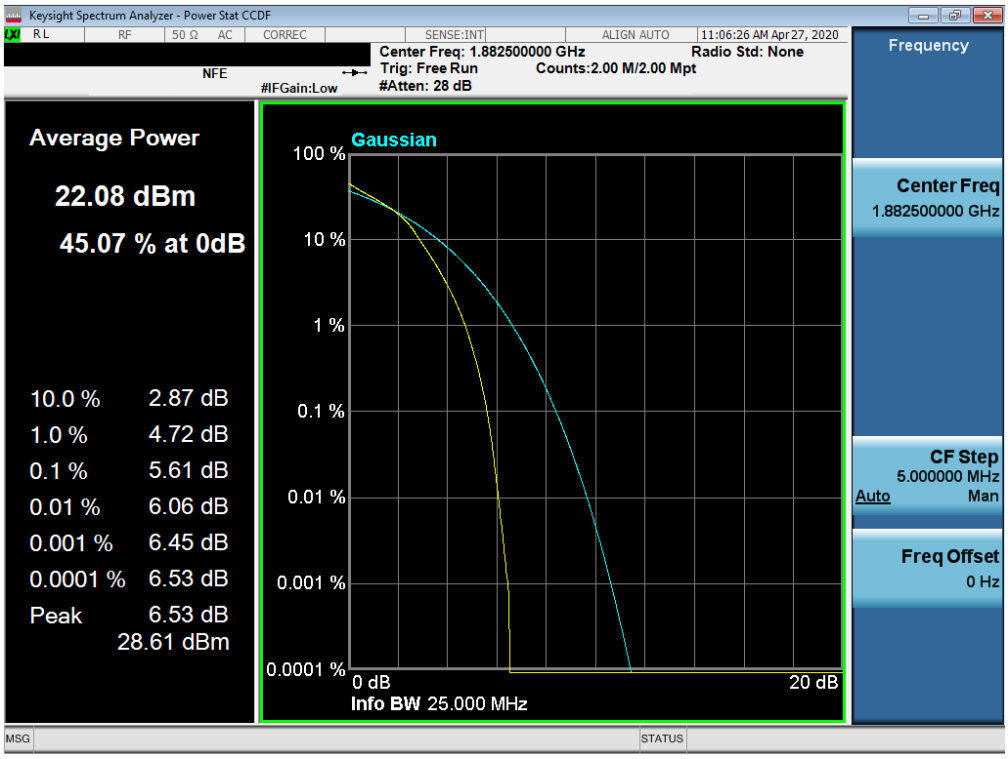
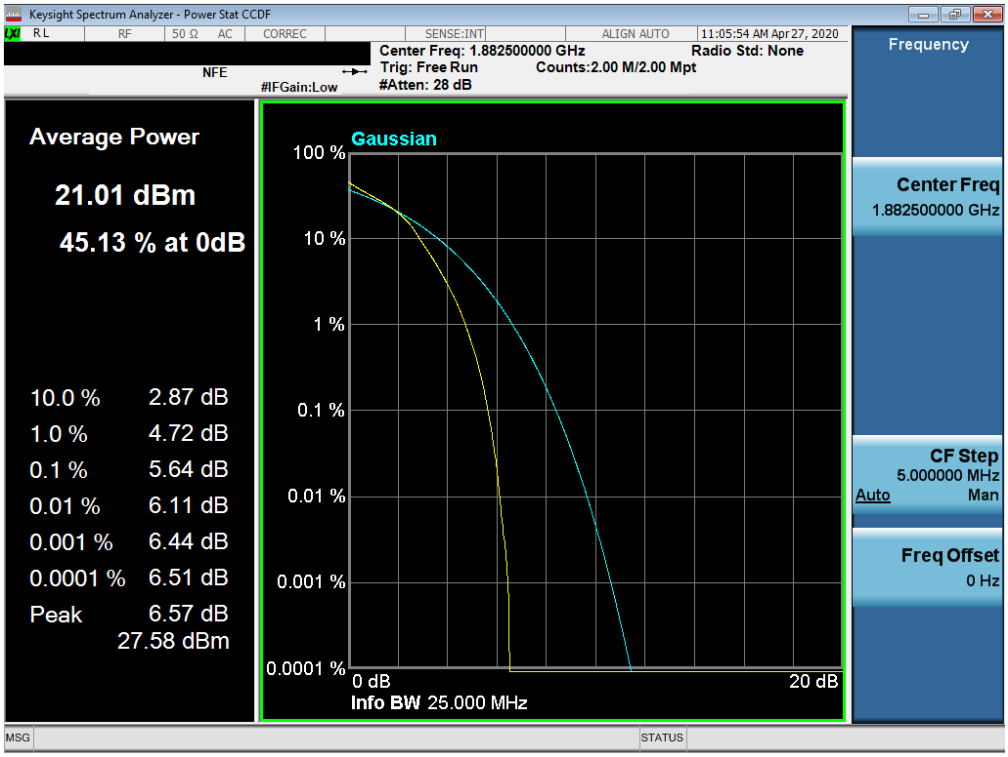
LTE Band 25/2



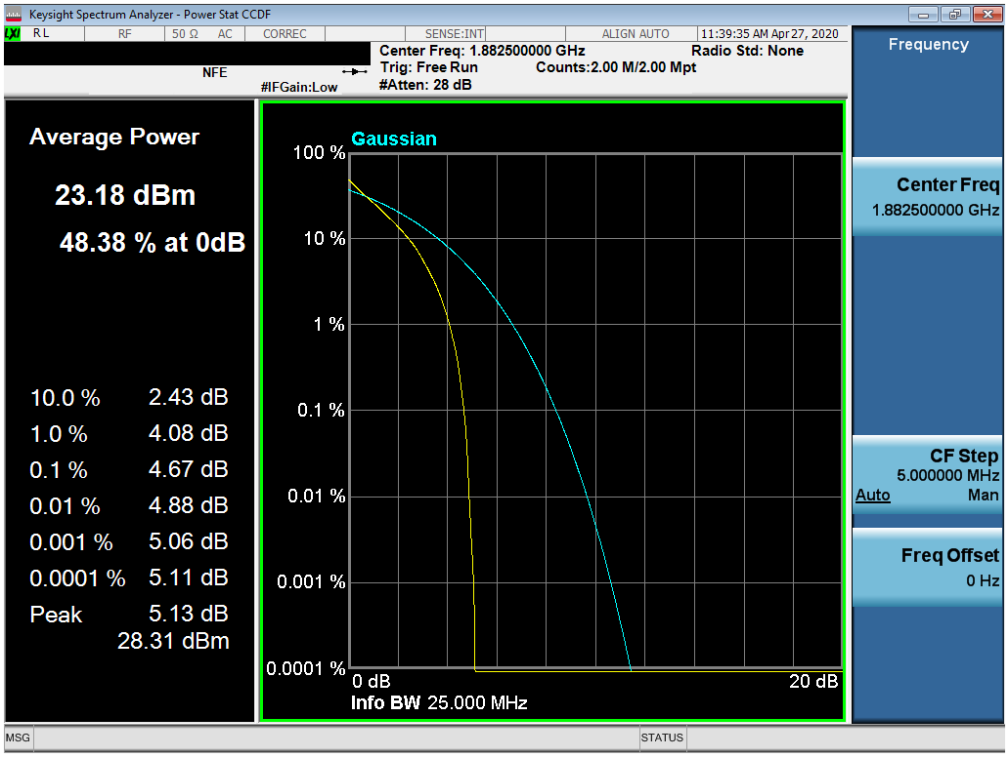
Plot 7-80. PAR Plot (LTE Band 25/2 - 20MHz QPSK - Full RB Configuration)



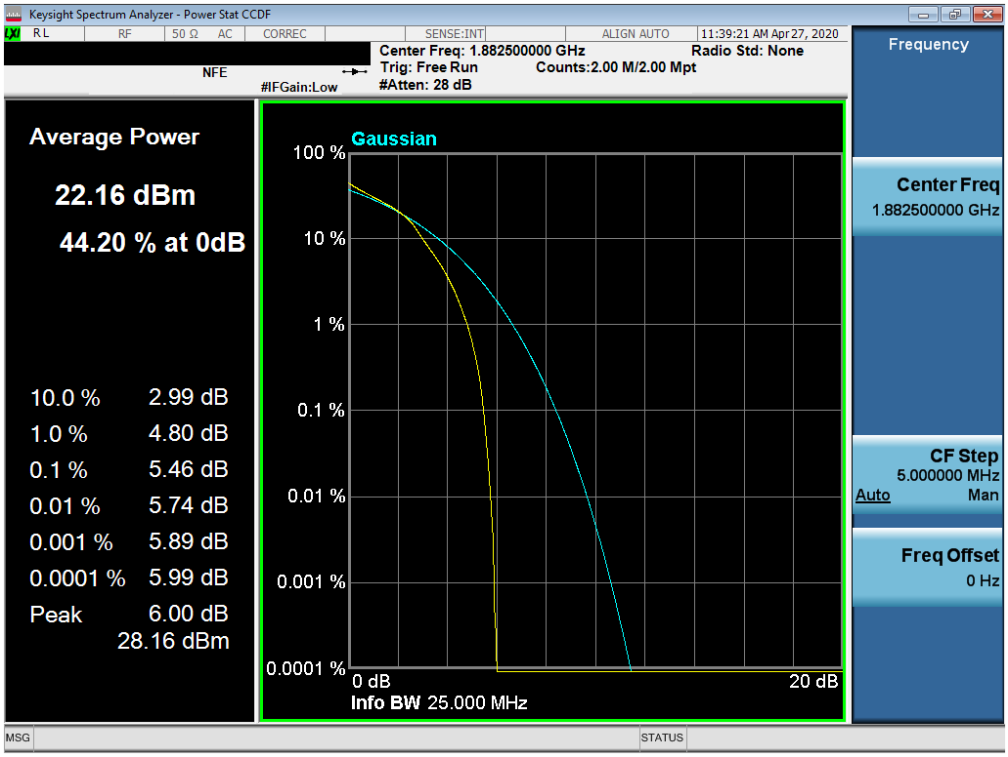
Plot 7-81. PAR Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB Configuration)



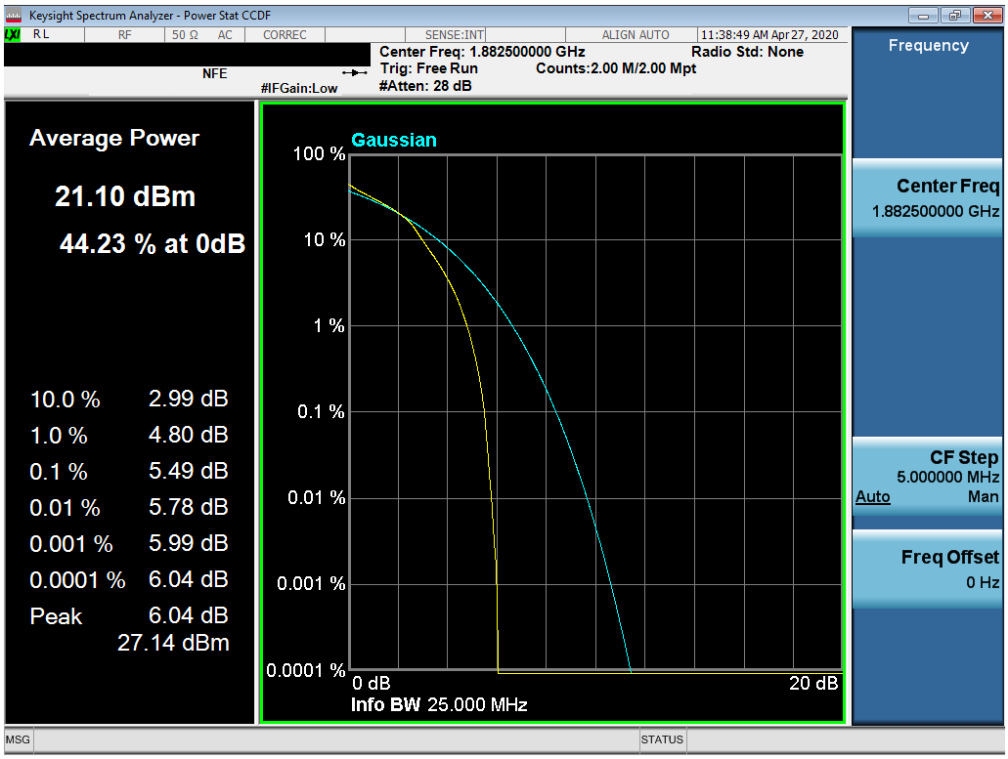
Plot 7-82. PAR Plot (LTE Band 25/2 - 20MHz 64-QAM - Full RB Configuration)



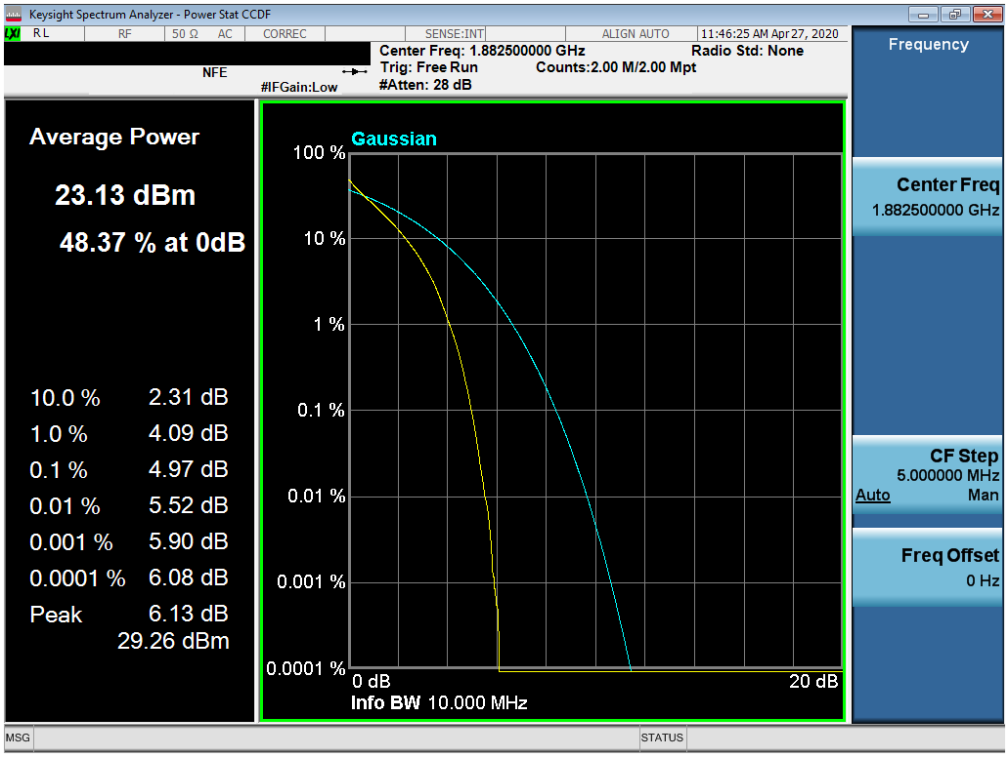
Plot 7-83. PAR Plot (LTE Band 25/2 - 15MHz QPSK - Full RB Configuration)



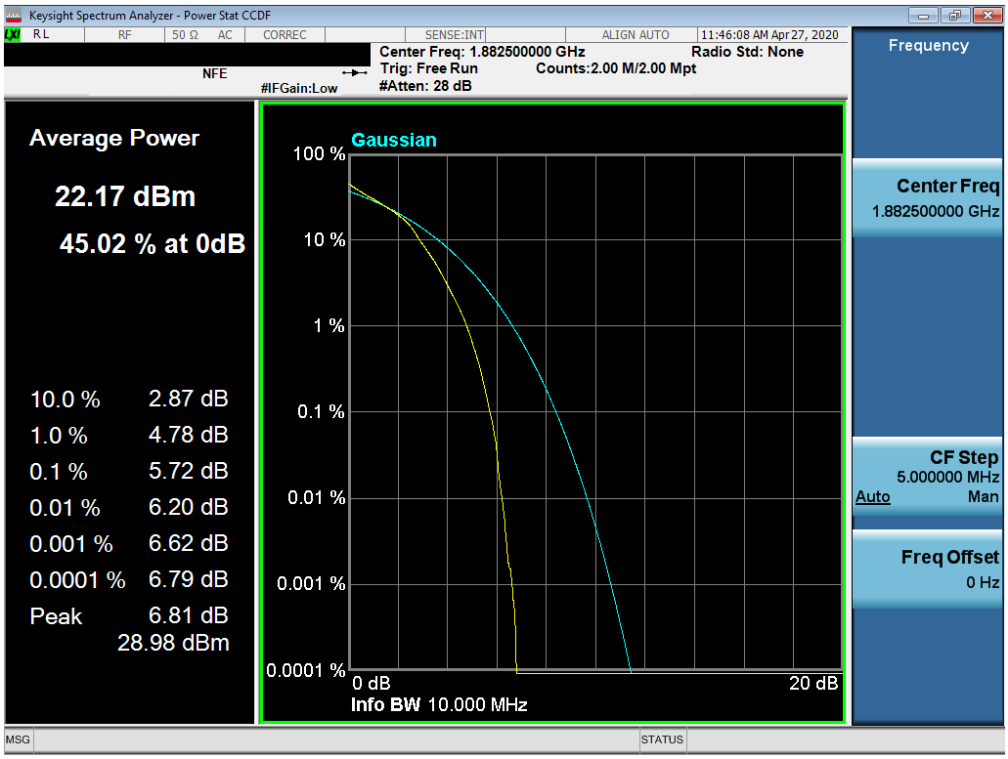
Plot 7-84. PAR Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB Configuration)



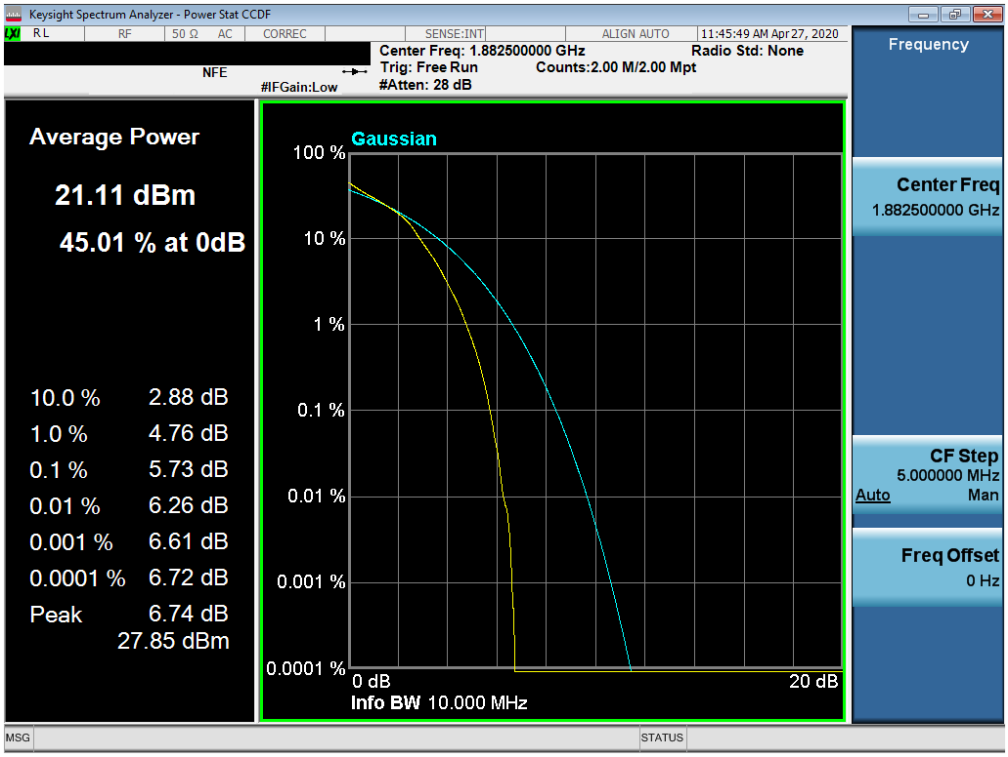
Plot 7-85. PAR Plot (LTE Band 25/2 - 15MHz 64-QAM - Full RB Configuration)



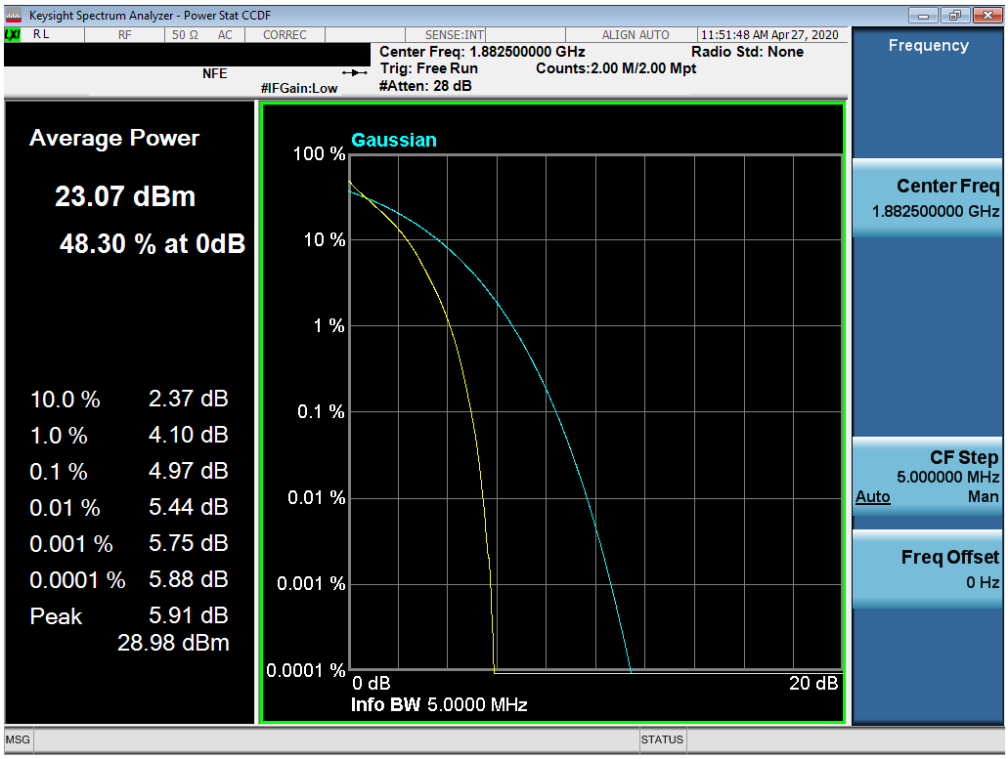
Plot 7-86. PAR Plot (LTE Band 25/2 - 10MHz QPSK - Full RB Configuration)



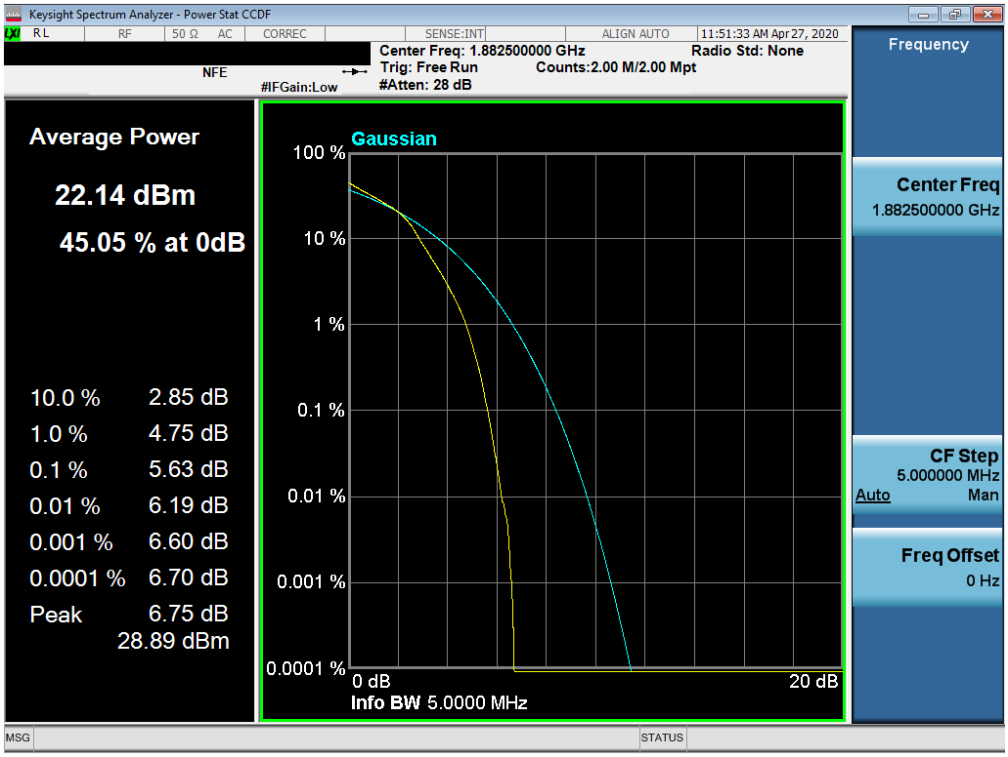
Plot 7-87. PAR Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB Configuration)



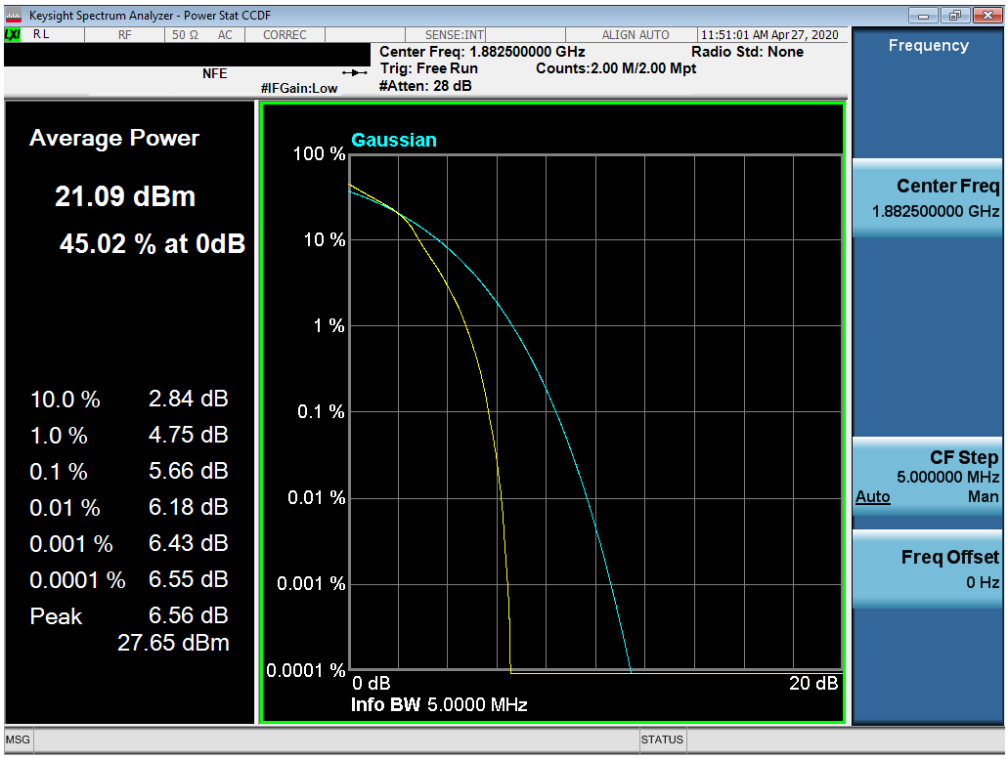
Plot 7-88. PAR Plot (LTE Band 25/2 - 10MHz 64-QAM - Full RB Configuration)



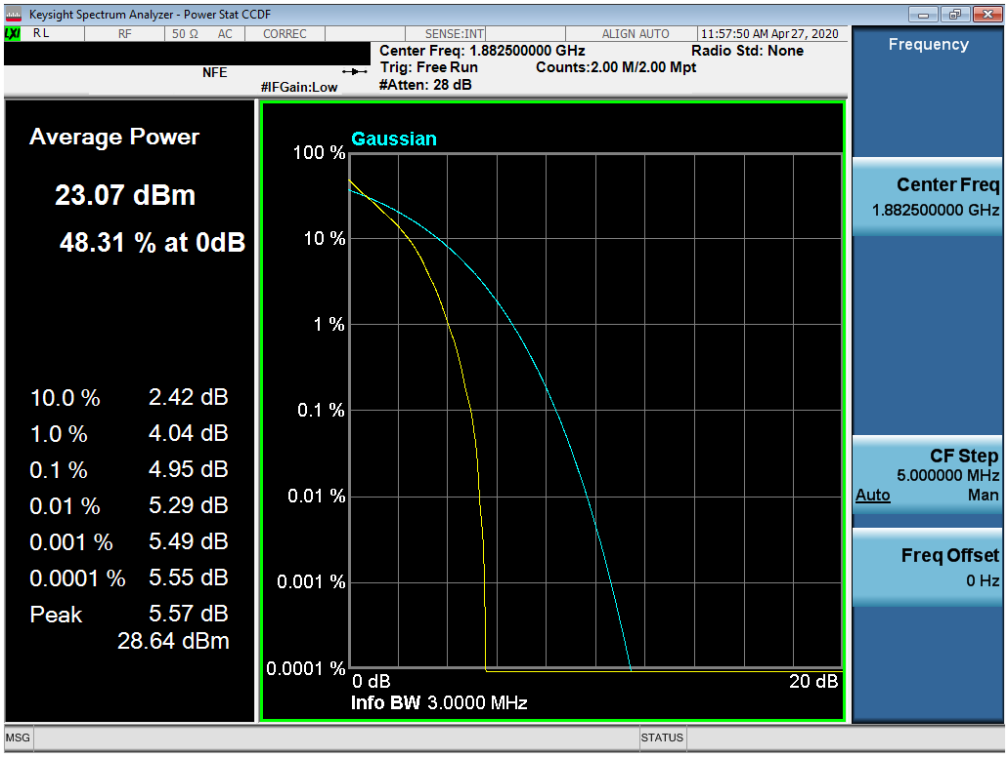
Plot 7-89. PAR Plot (LTE Band 25/2 - 5MHz QPSK - Full RB Configuration)



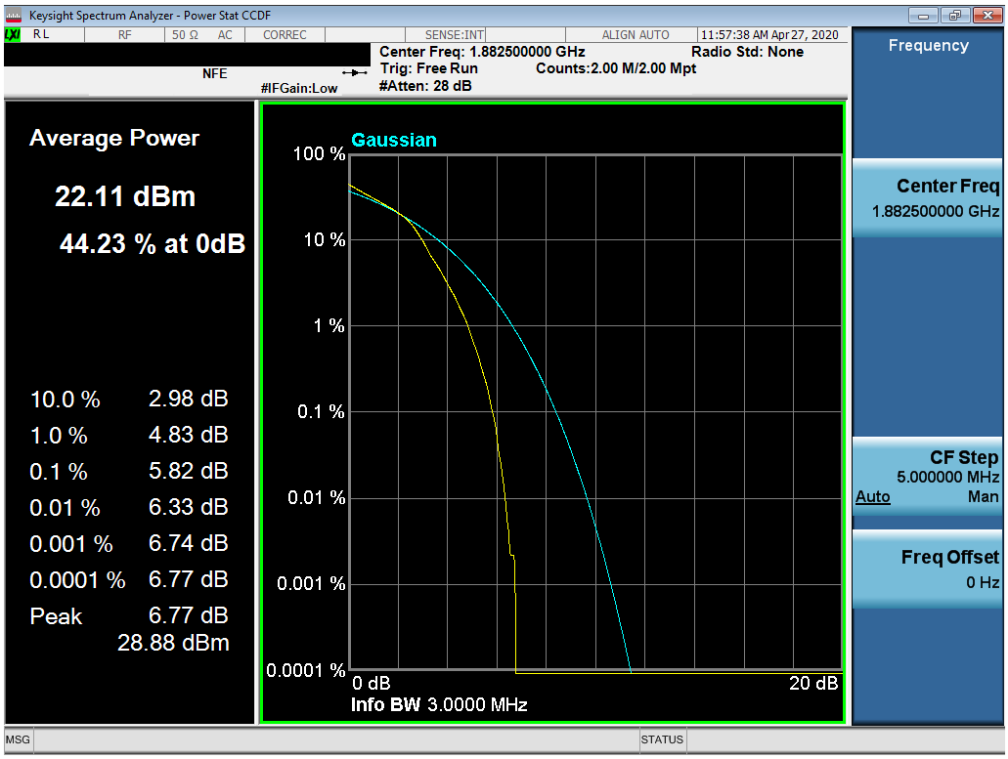
Plot 7-90. PAR Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB Configuration)



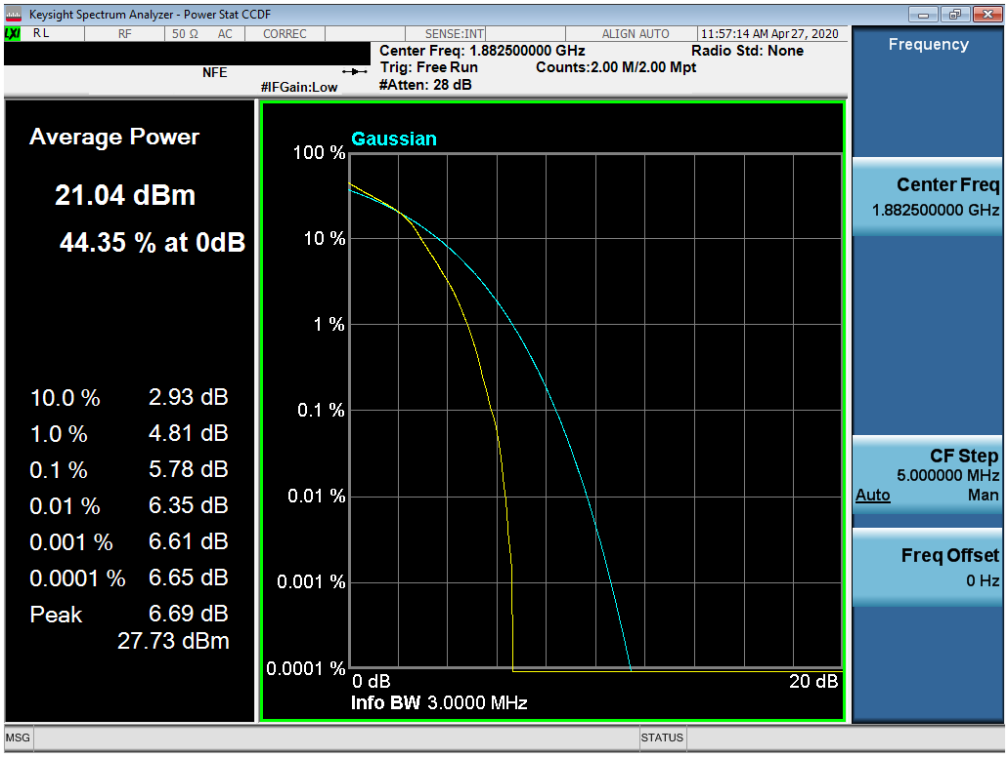
Plot 7-91. PAR Plot (LTE Band 25/2 - 5MHz 64-QAM - Full RB Configuration)



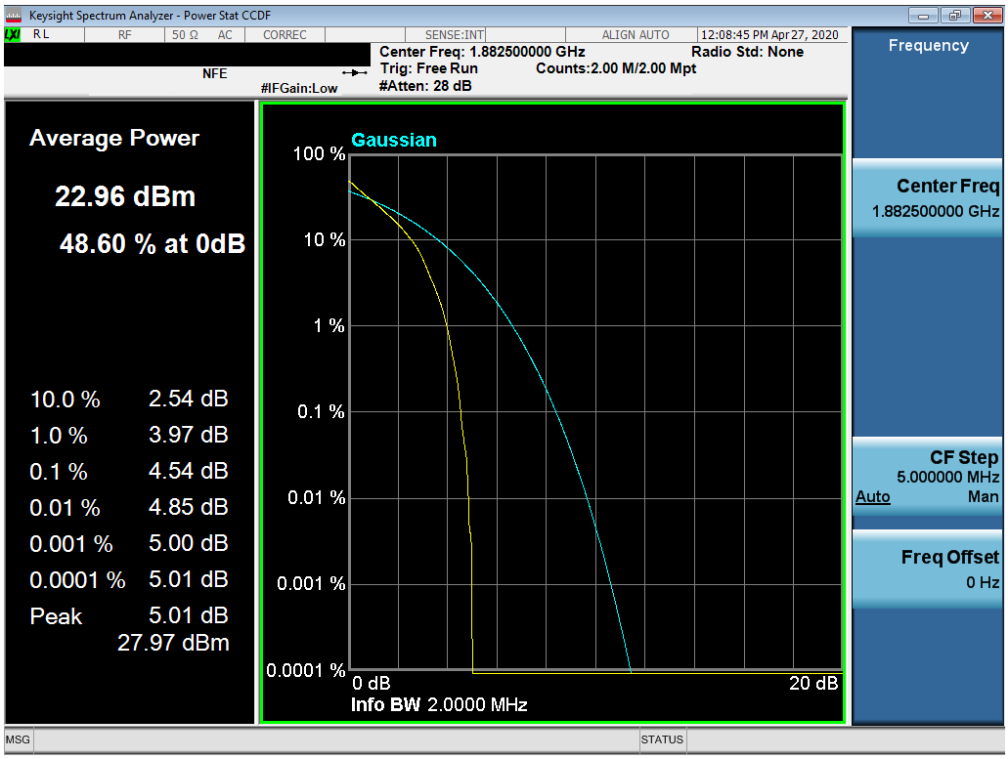
Plot 7-92. PAR Plot (LTE Band 25/2 - 3MHz QPSK - Full RB Configuration)



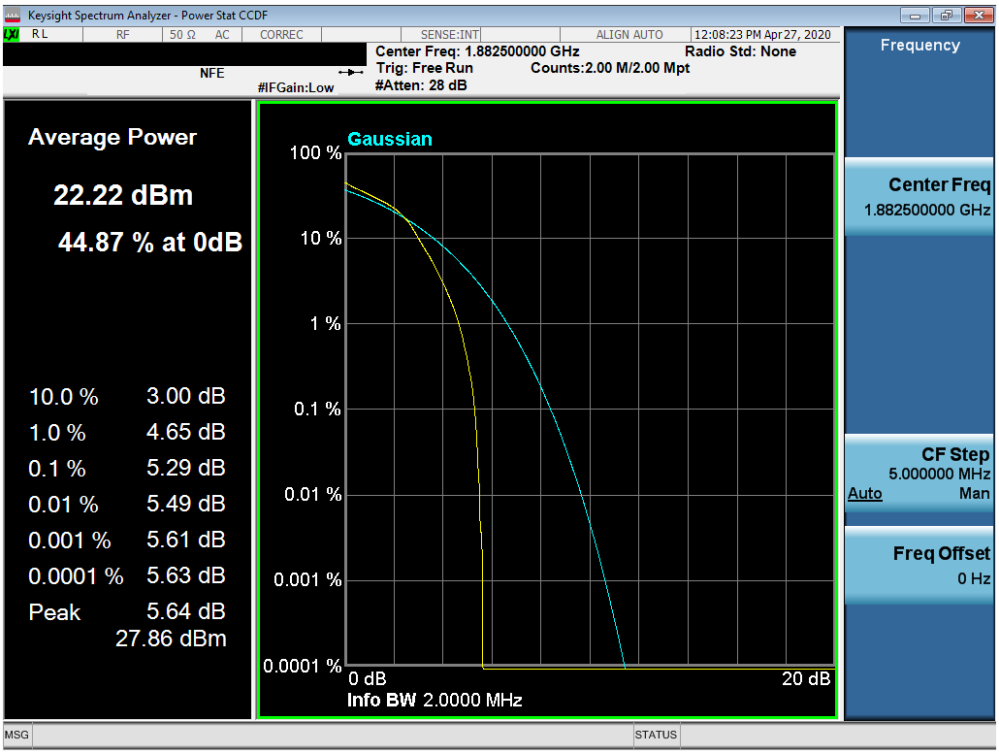
Plot 7-93. PAR Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB Configuration)



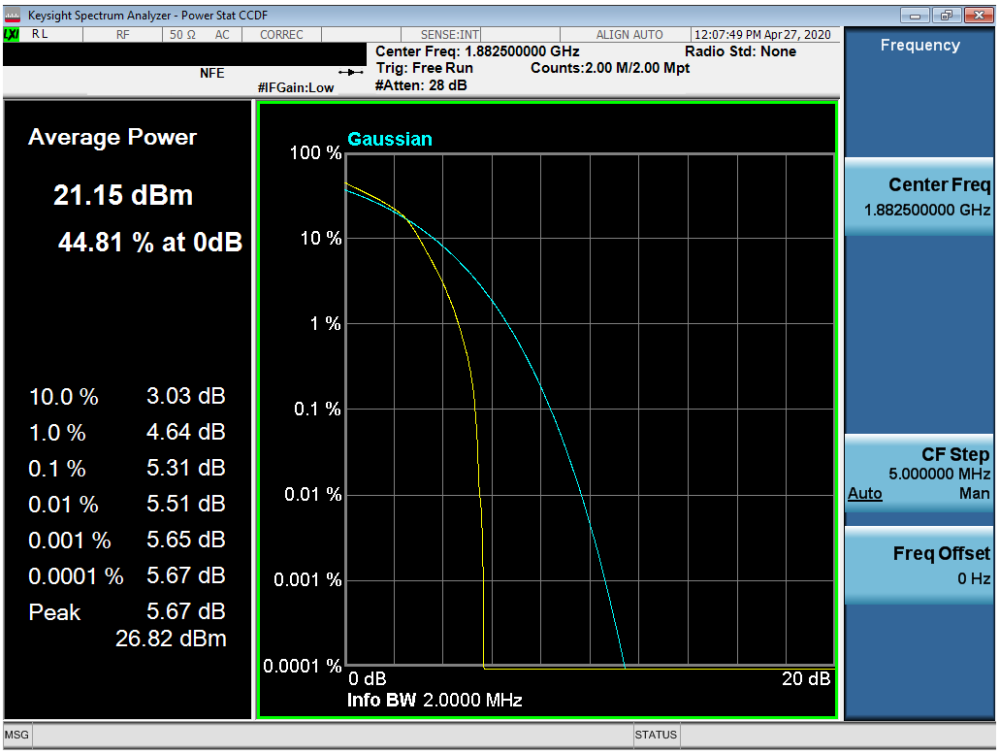
Plot 7-94. PAR Plot (LTE Band 25/2 - 3MHz 64-QAM - Full RB Configuration)



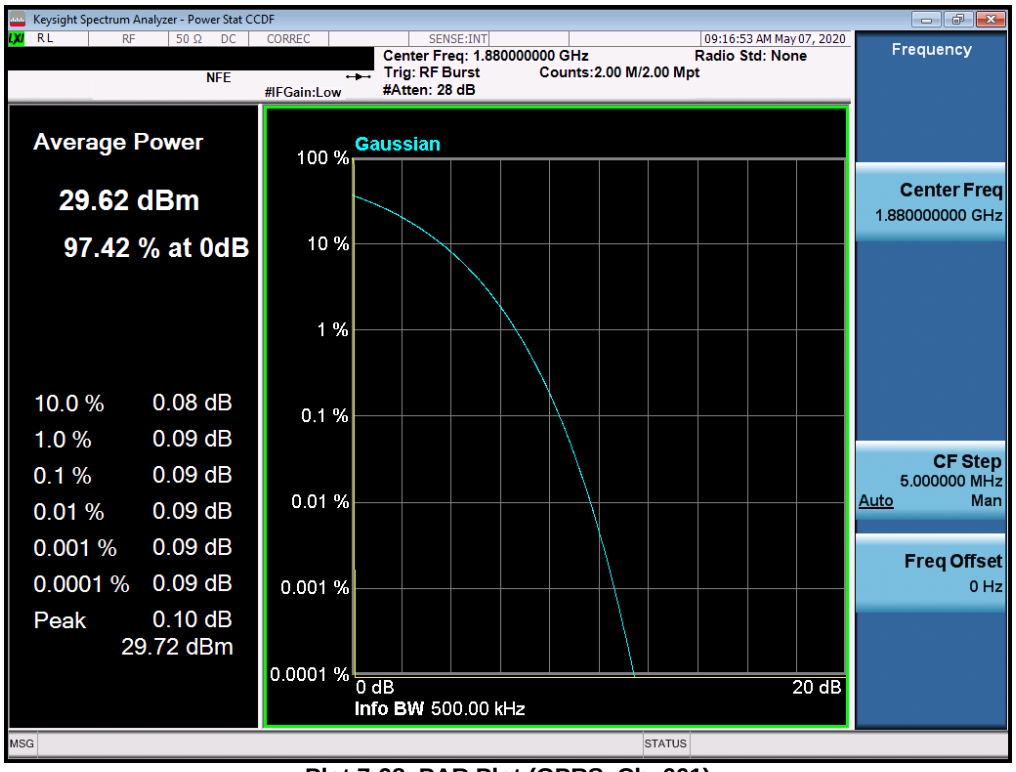
Plot 7-95. PAR Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB Configuration)



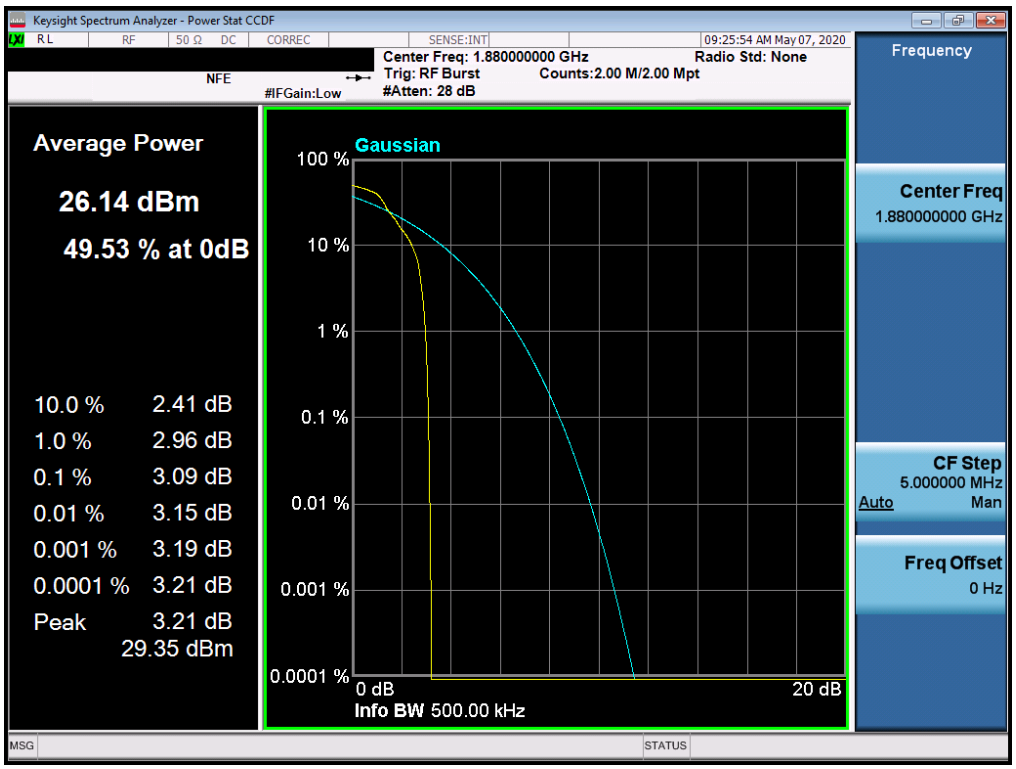
Plot 7-96. PAR Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB Configuration)



Plot 7-97. PAR Plot (LTE Band 25/2 - 1.4MHz 64-QAM - Full RB Configuration)

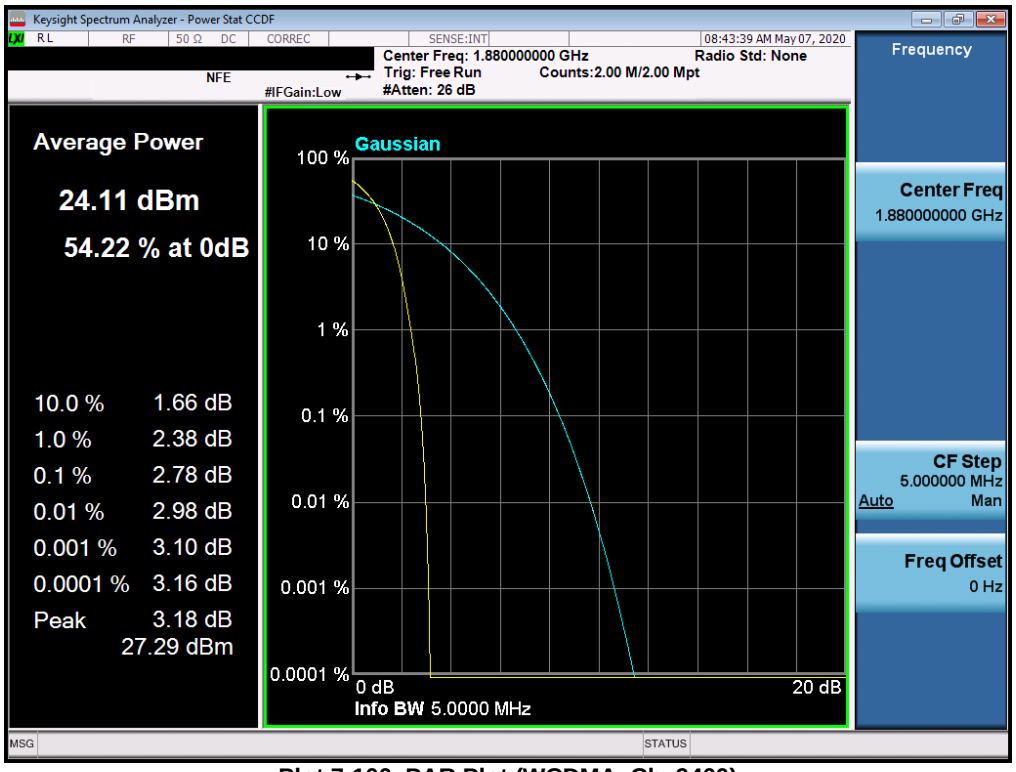


Plot 7-98. PAR Plot (GPRS, Ch. 661)



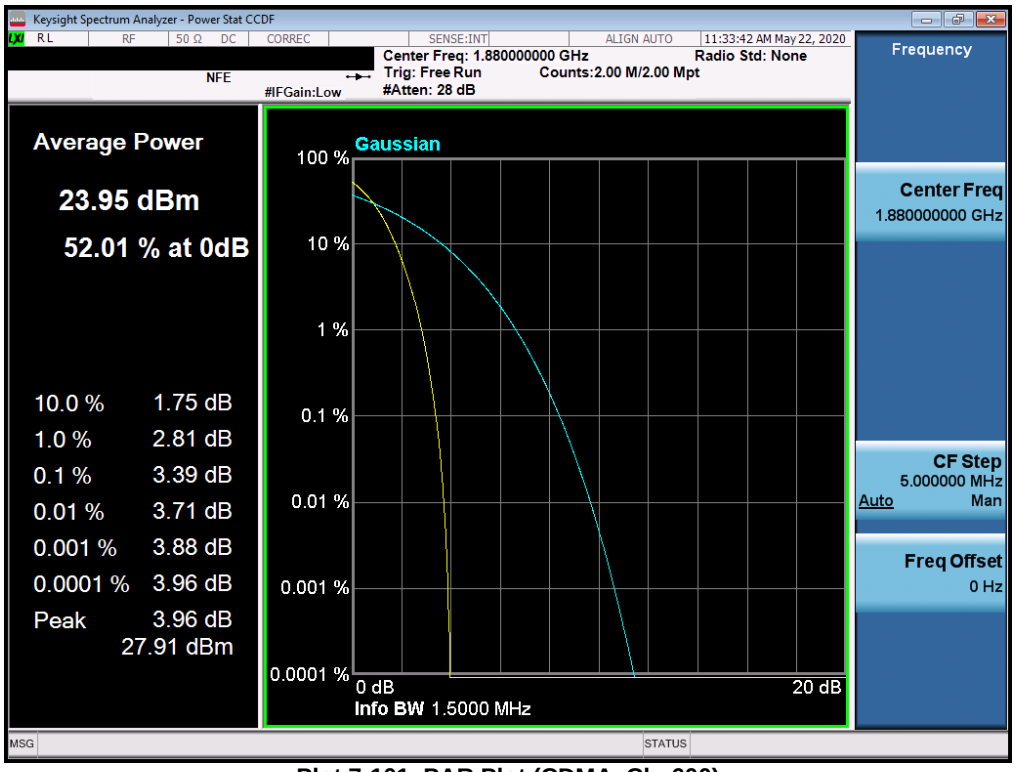
Plot 7-99. PAR Plot (EDGE, Ch. 661)

WCDMA PCS



Plot 7-100. PAR Plot (WCDMA, Ch. 9400)

CDMA PCS



Plot 7-101. PAR Plot (CDMA, Ch. 600)

7.6 Radiated Power (EIRP)

Test Overview

Equivalent Isotropic Radiated Power (EIRP) 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. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating 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. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
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". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
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.

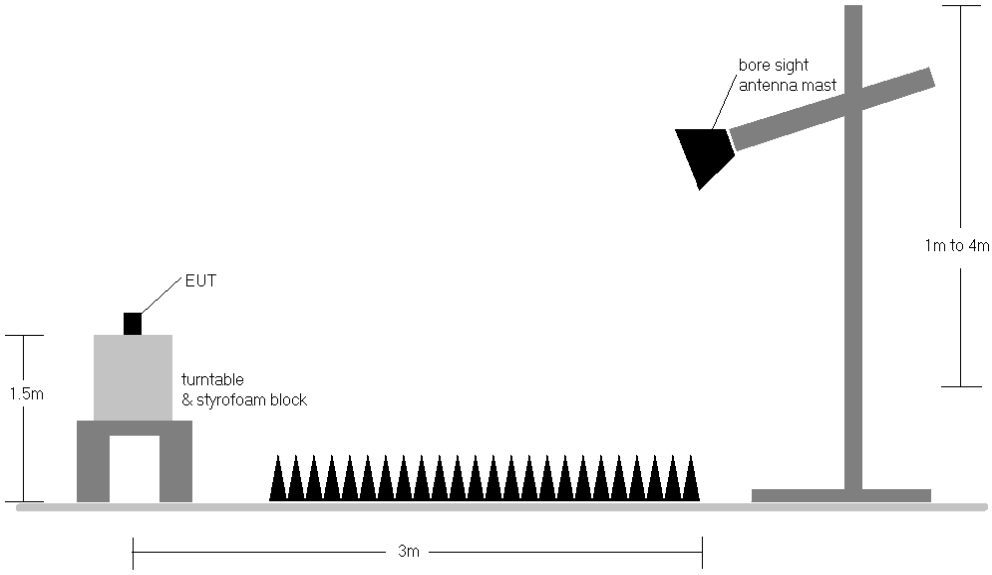


Figure 7-5. Radiated Test Setup >1GHz

Test Notes

1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.

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 device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.

4) 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.

5) This unit was tested with its standard battery.

6) 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	1860.0	V	182.0	316.0	9.98	1 / 50	12.41	**22.39**	0.173	33.01	-10.62
		1882.5	V	102.0	327.0	10.15	1 / 50	11.79	21.94	0.156	33.01	-11.07
		1905.0	V	100.0	328.0	10.31	1 / 0	11.73	22.04	0.160	33.01	-10.97
	16-QAM	1860.0	V	182.0	316.0	9.98	1 / 50	11.41	**21.39**	0.138	33.01	-11.62
	64-QAM	1860.0	V	182.0	316.0	9.98	1 / 50	10.46	**20.44**	0.111	33.01	-12.57
15 MHz	QPSK	1857.5	V	182.0	316.0	9.96	1 / 37	12.53	**22.49**	0.177	33.01	-10.52
		1882.5	V	102.0	327.0	10.15	1 / 37	11.96	22.11	0.163	33.01	-10.90
		1907.5	V	100.0	328.0	10.33	1 / 37	11.56	21.88	0.154	33.01	-11.13
	16-QAM	1857.5	V	182.0	316.0	9.96	1 / 37	11.54	**21.50**	0.141	33.01	-11.51
	64-QAM	1857.5	V	182.0	316.0	9.96	1 / 37	10.60	**20.56**	0.114	33.01	-12.45
10 MHz	QPSK	1855.0	V	182.0	316.0	9.94	1 / 25	12.49	**22.43**	0.175	33.01	-10.58
		1882.5	V	102.0	327.0	10.15	1 / 25	11.91	22.06	0.161	33.01	-10.95
		1910.0	V	100.0	328.0	10.34	1 / 25	11.76	22.10	0.162	33.01	-10.91
	16-QAM	1855.0	V	182.0	316.0	9.94	1 / 25	11.62	**21.56**	0.143	33.01	-11.45
	64-QAM	1855.0	V	182.0	316.0	9.94	1 / 25	10.48	**20.42**	0.110	33.01	-12.59
5 MHz	QPSK	1852.5	V	182.0	316.0	9.92	1 / 12	12.58	**22.50**	0.178	33.01	-10.51
		1882.5	V	102.0	327.0	10.15	1 / 12	11.85	22.00	0.159	33.01	-11.01
		1912.5	V	100.0	328.0	10.36	1 / 12	11.49	21.84	0.153	33.01	-11.17
	16-QAM	1882.5	V	102.0	327.0	10.15	1 / 12	11.27	**21.42**	0.139	33.01	-11.59
	64-QAM	1912.5	V	100.0	328.0	10.36	1 / 12	10.06	**20.41**	0.110	33.01	-12.60
3 MHz	QPSK	1851.5	V	182.0	316.0	9.91	1 / 7	12.62	**22.53**	0.179	33.01	-10.48
		1882.5	V	102.0	327.0	10.15	1 / 7	11.85	22.00	0.159	33.01	-11.01
		1913.5	V	100.0	328.0	10.36	1 / 7	11.55	21.91	0.155	33.01	-11.10
	16-QAM	1851.5	V	182.0	316.0	9.91	1 / 7	11.54	**21.45**	0.140	33.01	-11.56
	64-QAM	1913.5	V	100.0	328.0	10.36	1 / 7	9.94	**20.30**	0.107	33.01	-12.71
1.4 MHz	QPSK	1850.7	V	182.0	316.0	9.91	1 / 0	12.38	**22.29**	0.169	33.01	-10.72
		1882.5	V	102.0	327.0	10.15	1 / 0	11.74	21.89	0.155	33.01	-11.12
		1914.3	V	100.0	328.0	10.37	1 / 0	11.51	21.87	0.154	33.01	-11.14
	16-QAM	1882.5	V	102.0	327.0	10.15	1 / 0	11.35	**21.50**	0.141	33.01	-11.51
	64-QAM	1850.7	V	182.0	316.0	9.91	1 / 0	10.34	**20.25**	0.106	33.01	-12.76
	QPSK (Opp. Pol.)	1860.0	H	155.0	188.0	10.15	1 / 50	12.33	22.48	0.177	33.01	-10.53

Table 7-102. EIRP Data (LTE Band 25/2)

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]
1850.20	GSM1900	V	131	24	17.11	9.90	27.01	0.503	33.01	-6.00
1880.00	GSM1900	V	151	353	17.24	10.13	27.37	0.546	33.01	-5.64
1909.80	GSM1900	V	190	328	18.07	10.34	**28.41**	**0.693**	33.01	-4.60
1909.80	GSM1900	H	117	353	17.74	10.34	28.08	0.643	33.01	-4.93
1909.80	EDGE1900	V	190	328	13.53	10.34	**23.87**	0.244	33.01	-9.14

Table 7-103. EIRP Data (GPRS/EDGE PCS)

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]
1852.40	WCDMA1900	H	163	2	13.02	9.54	22.56	0.180	33.01	-10.45
1880.00	WCDMA1900	H	213	359	12.83	9.93	**22.76**	**0.189**	33.01	-10.25
1907.60	WCDMA1900	H	220	341	12.33	10.26	22.59	0.182	33.01	-10.42
1880.00	WCDMA1900	V	188	16	11.64	9.93	21.57	0.144	33.01	-11.44

Table 7-104. EIRP Data (WCDMA PCS)

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]
1851.25	CDMA1900	H	165	187	13.70	9.91	23.61	0.230	33.01	-9.40
1880.00	CDMA1900	H	139	185	14.46	10.13	**24.59**	**0.288**	33.01	-8.42
1908.75	CDMA1900	H	102	183	13.28	10.33	23.61	0.230	33.01	-9.40
1880.00	CDMA1900	V	164	106	10.13	10.13	20.26	0.106	33.01	-12.75

Table 7-105. EIRP Data (CDMA PCS)

7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 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

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.

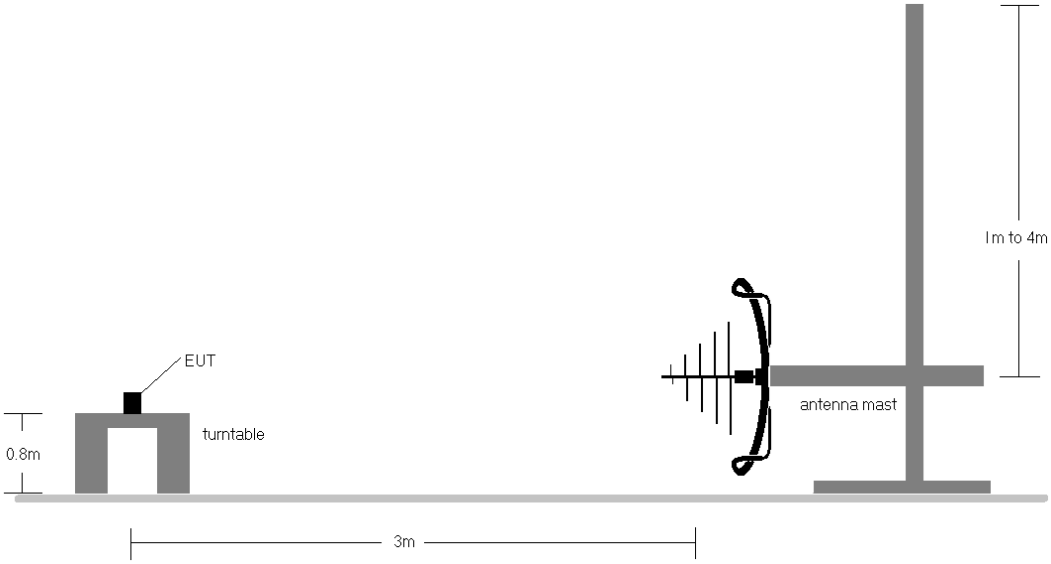


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

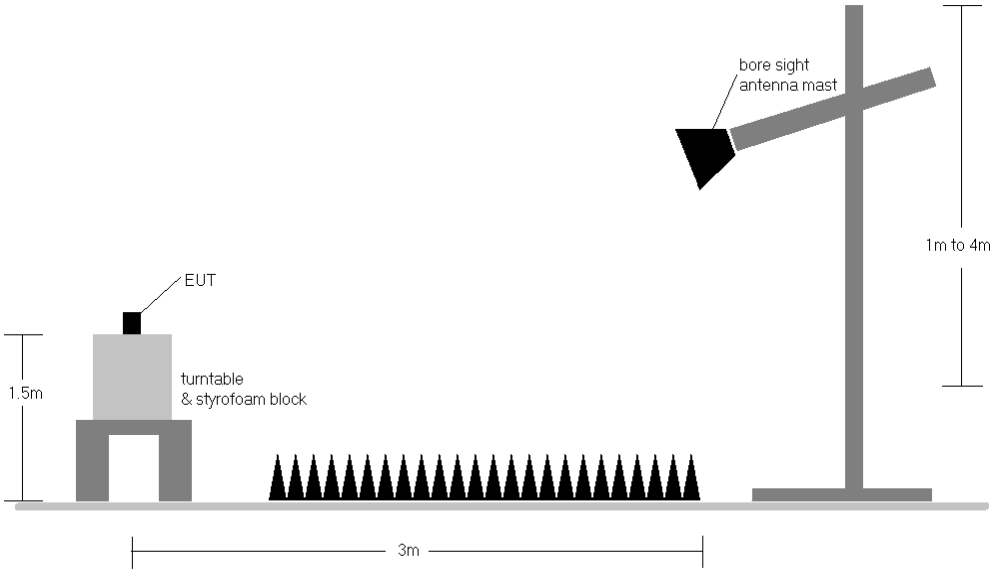


Figure 7-7. Test Instrument & Measurement Setup >1 GHz

Test Notes

1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
   b) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   d) EIRP (dBm) = E(dBµV/m) + 20logD – 104.8; where D is the measurement distance in meters.

2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.

3) 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”.

4) For CDMA, this device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.

5) 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.

6) This unit was tested with its standard battery.

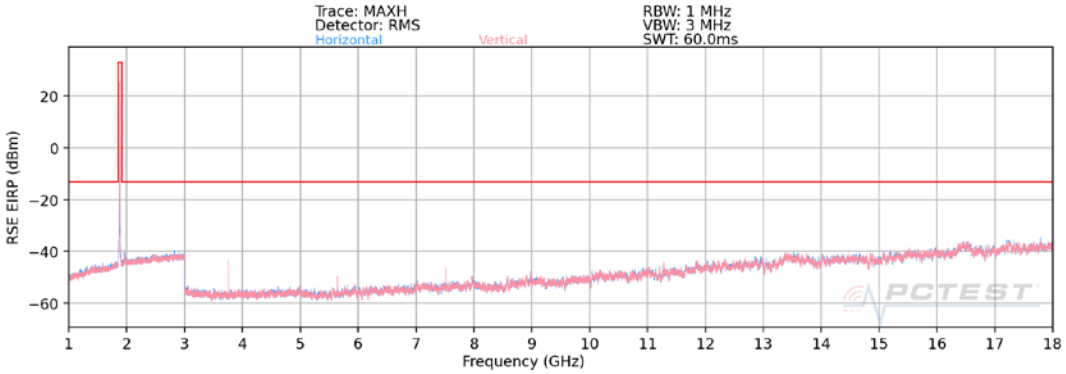
7) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

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

9) 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.

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

LTE Band 25/2



Plot 7-106. Radiated Spurious Plot (LTE Band 25/2)

Bandwidth (MHz):	20
Frequency (MHz):	1860.0
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]
3720.0	V	107	310	-59.11	6.51	54.40	-40.86	-13.00	-27.86
5580.0	V	144	293	-68.52	9.36	47.84	-47.41	-13.00	-34.41
7440.0	V	100	222	-61.13	10.97	56.84	-38.41	-13.00	-25.41
9300.0	V	-	-	-71.80	14.37	49.57	-45.69	-13.00	-32.69

Table 7-2. Radiated Spurious Data (LTE Band 25/2 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
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]
3765.0	V	125	131	-56.70	6.10	56.40	-38.86	-13.00	-25.86
5647.5	V	268	232	-63.77	8.21	51.44	-43.82	-13.00	-30.82
7530.0	V	100	134	-65.62	11.06	52.44	-42.82	-13.00	-29.82
9412.5	V	-	-	-71.66	14.45	49.79	-45.47	-13.00	-32.47

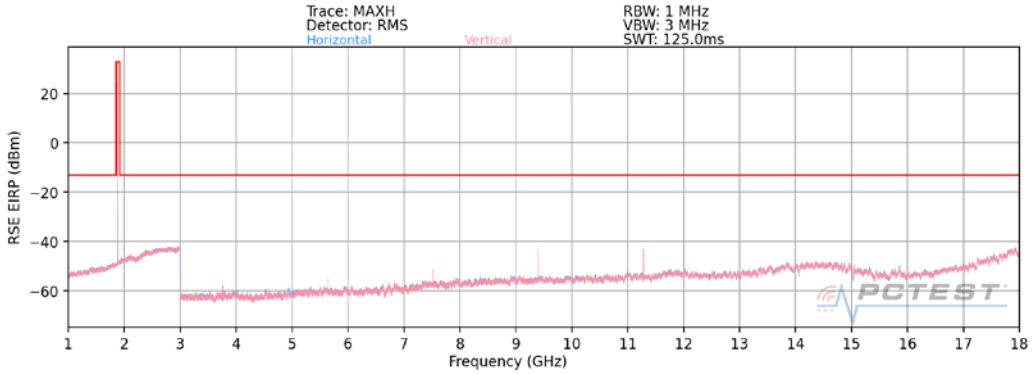
Table 7-3. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1905.0
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]
3810.00	V	101	317	-59.89	6.78	53.89	-41.37	-13.00	-28.37
5715.00	V	260	231	-63.81	7.99	51.18	-44.07	-13.00	-31.07
7620.00	V	100	224	-62.91	11.97	56.06	-39.20	-13.00	-26.20
9525.00	V	-	-	-71.52	15.35	50.83	-44.43	-13.00	-31.43

Table 7-4. Radiated Spurious Data (LTE Band 25/2 – High Channel)

GSM/GPRS PCS



Plot 7-107. Radiated Spurious Plot (GPRS PCS)

Mode:	GPRS 1 Tx Slot
Channel:	512
Frequency (MHz):	1850.2

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]
3700.4	V	144	84	-64.82	2.74	44.92	-50.34	-13.00	-37.34
5550.6	V	166	177	-62.48	5.08	49.60	-45.65	-13.00	-32.65
7400.8	V	271	123	-64.82	8.55	50.73	-44.53	-13.00	-31.53
9251.0	V	120	319	-62.88	11.03	55.15	-40.10	-13.00	-27.10
11101.2	V	306	155	-61.17	13.28	59.11	-36.15	-13.00	-23.15
12951.4	V	400	82	-67.39	13.13	52.74	-42.52	-13.00	-29.52
14801.6	V	155	172	-70.49	16.61	53.12	-42.14	-13.00	-29.14
16651.8	V	-	-	-72.33	16.37	51.04	-44.22	-13.00	-31.22

Table 7-5. Radiated Spurious Data (GPRS PCS – Low Channel)

Mode:	GPRS 1 Tx Slot
Channel:	661
Frequency (MHz):	1880

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]
3760.0	V	120	117	-62.14	2.16	47.02	-48.24	-13.00	-35.24
5640.0	V	111	160	-61.72	5.42	50.70	-44.55	-13.00	-31.55
7520.0	V	397	154	-65.15	8.87	50.72	-44.54	-13.00	-31.54
9400.0	V	112	221	-62.13	11.52	56.39	-38.87	-13.00	-25.87
11280.0	V	286	144	-60.44	11.84	58.40	-36.86	-13.00	-23.86
13160.0	V	393	136	-68.98	14.64	52.66	-42.60	-13.00	-29.60
15040.0	V	244	143	-68.47	13.81	52.34	-42.92	-13.00	-29.92
16920.0	V	-	-	-73.35	16.14	49.79	-45.46	-13.00	-32.46

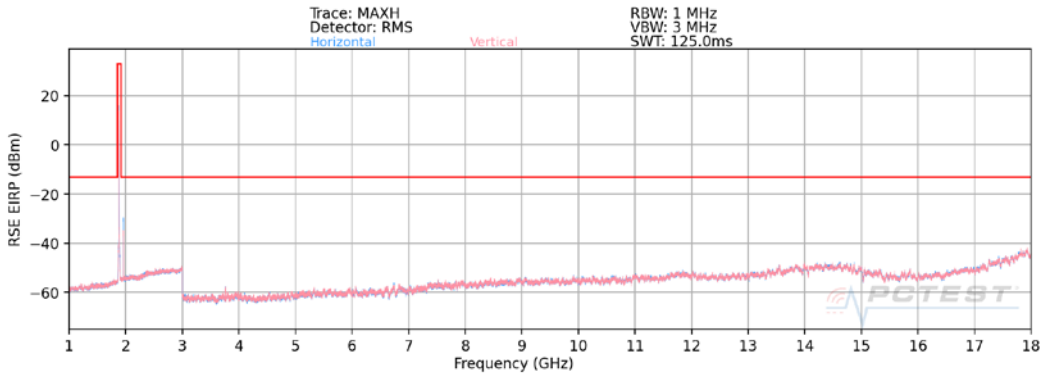
Table 7-6. Radiated Spurious Data (GPRS PCS – Mid Channel)

Mode:	GPRS 1 Tx Slot
Channel:	810
Frequency (MHz):	1909.8

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]
3819.6	V	400	311	-63.59	2.42	45.83	-49.43	-13.00	-36.43
5729.4	V	116	210	-62.24	4.75	49.51	-45.74	-13.00	-32.74
7639.2	V	400	152	-63.18	9.53	53.35	-41.91	-13.00	-28.91
9549.0	V	243	157	-60.52	11.22	57.70	-37.56	-13.00	-24.56
11458.8	V	290	158	-62.18	12.90	57.72	-37.54	-13.00	-24.54
13368.6	V	397	122	-68.11	15.88	54.77	-40.49	-13.00	-27.49
15278.4	V	252	137	-68.76	15.06	53.30	-41.95	-13.00	-28.95
17188.2	V	-	-	-73.19	17.94	51.75	-43.51	-13.00	-30.51

Table 7-7. Radiated Spurious Data (GPRS PCS – High Channel)

WCDMA PCS



Plot 7-108. Radiated Spurious Plot (WCDMA PCS)

Mode:	WCDMA RMC
Channel:	9262
Frequency (MHz):	1852.4

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]
3704.8	V	111	113	-68.24	2.87	41.63	-53.62	-13.00	-40.62
5557.2	V	-	-	-74.78	5.34	37.56	-57.69	-13.00	-44.69
7409.6	V	138	355	-74.03	8.33	41.30	-53.96	-13.00	-40.96
9262.0	V	-	-	-75.22	11.16	42.94	-52.32	-13.00	-39.32
11114.4	V	-	-	-74.10	13.48	46.38	-48.88	-13.00	-35.88

Table 7-8. Radiated Spurious Data (WCDMA PCS – Low Channel)

Mode:	WCDMA RMC
Channel:	9400
Frequency (MHz):	1880

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]
3760.0	V	131	290	-69.36	2.16	39.80	-55.46	-13.00	-42.46
5640.0	V	-	-	-74.85	5.42	37.57	-57.68	-13.00	-44.68
7520.0	V	390	279	-73.53	8.87	42.34	-52.92	-13.00	-39.92
9400.0	V	-	-	-75.07	11.52	43.45	-51.81	-13.00	-38.81
11280.0	V	-	-	-75.13	11.84	43.71	-51.55	-13.00	-38.55

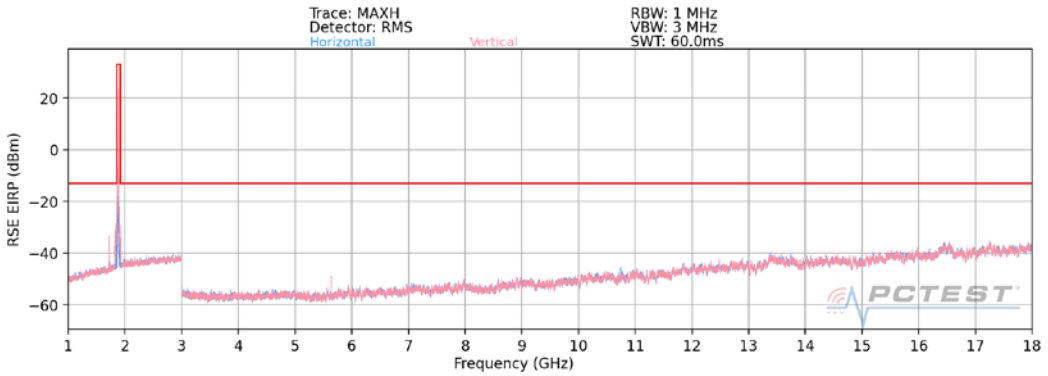
Table 7-9. Radiated Spurious Data (WCDMA PCS – Mid Channel)

Mode:	WCDMA RMC
Channel:	9538
Frequency (MHz):	1907.6

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]
3815.2	V	135	283	-69.14	2.66	40.52	-54.74	-13.00	-41.74
5722.8	V	-	-	-74.37	5.04	37.67	-57.58	-13.00	-44.58
7630.4	V	115	279	-73.97	8.86	41.89	-53.37	-13.00	-40.37
9538.0	V	-	-	-75.07	11.26	43.19	-52.07	-13.00	-39.07
11445.6	V	-	-	-74.86	12.76	44.90	-50.35	-13.00	-37.35

Table 7-10. Radiated Spurious Data (WCDMA PCS – High Channel)

CDMA PCS



Plot 7-109. Radiated Spurious Plot (CDMA PCS)

Mode:	CDMA
Channel:	25
Frequency (MHz):	1851.25

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]
3702.50	V	-	-	-71.81	6.92	42.11	-53.15	-13.00	-40.15
5553.75	V	126	358	-73.35	8.11	41.76	-53.49	-13.00	-40.49
7405.00	V	-	-	-74.50	10.73	43.23	-52.02	-13.00	-39.02
9256.25	V	-	-	-75.54	13.22	44.68	-50.58	-13.00	-37.58
11107.50	V	-	-	-75.98	17.27	48.29	-46.96	-13.00	-33.96
12958.75	V	-	-	-76.59	22.78	53.19	-42.07	-13.00	-29.07

Table 7-11. Radiated Spurious Data (CDMA PCS – Low Channel)

Mode:	CDMA
Channel:	600
Frequency (MHz):	1880

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]
3760.00	V	120	117	-62.14	6.10	50.96	-44.30	-13.00	-31.30
5640.00	V	111	160	-61.72	8.21	53.49	-41.77	-13.00	-28.77
7520.00	V	397	154	-65.15	11.06	52.91	-42.35	-13.00	-29.35
9400.00	V	112	221	-62.13	14.45	59.32	-35.94	-13.00	-22.94
11280.00	V	286	144	-60.44	17.64	64.20	-31.05	-13.00	-18.05
13160.00	V	393	136	-68.98	22.05	60.07	-35.19	-13.00	-22.19
15040.00	V	244	143	-68.47	24.32	62.85	-32.40	-13.00	-19.40
16920.00	V	-	-	-73.35	26.61	60.26	-35.00	-13.00	-22.00

Table 7-12. Radiated Spurious Data (CDMA PCS – Mid Channel)

Mode:	CDMA
Channel:	1175
Frequency (MHz):	1908.75

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]
3817.50	V	400	311	-63.59	6.95	50.36	-44.90	-13.00	-31.90
5726.25	V	116	210	-62.24	9.10	53.86	-41.39	-13.00	-28.39
7635.00	V	400	152	-63.18	12.59	56.41	-38.85	-13.00	-25.85
9543.75	V	243	157	-60.52	14.86	61.34	-33.92	-13.00	-20.92
11452.50	V	218	129	-63.48	18.15	61.67	-33.59	-13.00	-20.59
13361.25	V	368	97	-68.77	23.47	61.70	-33.56	-13.00	-20.56
15270.00	V	255	297	-68.12	25.63	64.51	-30.74	-13.00	-17.74
17178.75	V	-	-	-72.87	27.13	61.26	-34.00	-13.00	-21.00

Table 7-13. Radiated Spurious Data (CDMA PCS – 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 24, 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 25/2

LTE Band 25/2	
Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	3.85

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,882,500,964	1,432	0.0000761
		- 20	1,882,500,405	873	0.0000464
		- 10	1,882,500,055	523	0.0000278
		0	1,882,499,823	291	0.0000155
		+ 10	1,882,500,987	1,455	0.0000773
		+ 20 (Ref)	1,882,499,532	0	0.0000000
		+ 30	1,882,500,974	1,442	0.0000766
		+ 40	1,882,500,358	826	0.0000439
		+ 50	1,882,500,088	556	0.0000295
Battery Endpoint	2.80	+ 20	1,882,500,457	925	0.0000491

Table 7-9. LTE Band 25/2 Frequency Stability Data

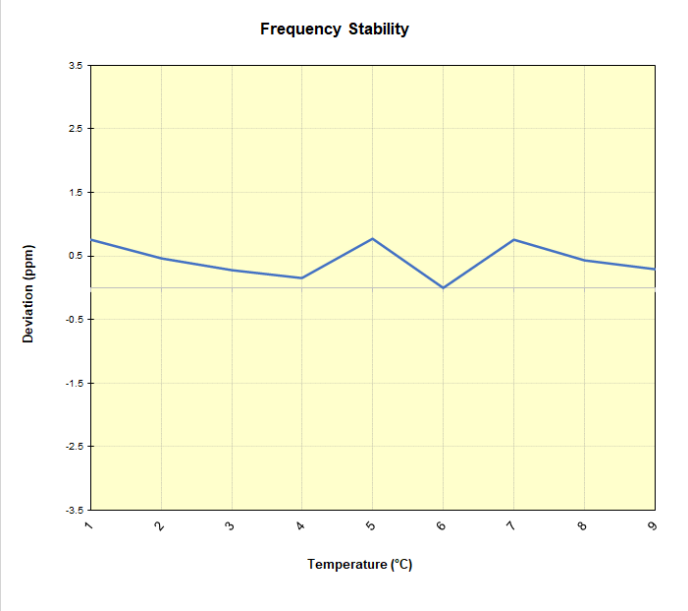


Table 7-9. LTE Band 25/2 Frequency Stability Chart

GSM/GPRS PCS	
Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	3.85

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,880,000,931	1,035	0.0000551
		- 20	1,880,000,638	742	0.0000395
		- 10	1,880,000,004	108	0.0000057
		0	1,879,999,082	-814	-0.0000433
		+ 10	1,879,999,843	-53	-0.0000028
		+ 20 (Ref)	1,879,999,896	0	0.0000000
		+ 30	1,880,000,433	537	0.0000286
		+ 40	1,880,000,078	182	0.0000097
		+ 50	1,879,999,594	-302	-0.0000161
Battery Endpoint	2.80	+ 20	1,880,000,288	392	0.0000209

Table 7-9. GSM/GPRS PCS Frequency Stability Data

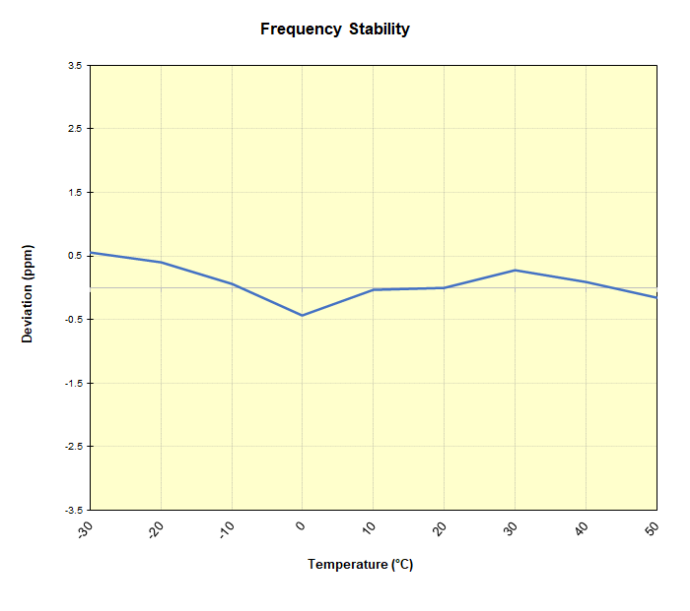


Table 7-9. GSM/GPRS PCS Frequency Stability Chart

WCDMA PCS

WCDMA PCS	
Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	3.85

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,879,999,821	-1,152	-0.0000613
		- 20	1,879,999,258	-1,715	-0.0000912
		- 10	1,879,999,201	-1,772	-0.0000943
		0	1,880,000,487	-486	-0.0000259
		+ 10	1,880,000,981	8	0.0000004
		+ 20 (Ref)	1,880,000,973	0	0.0000000
		+ 30	1,880,000,323	-650	-0.0000346
		+ 40	1,879,999,771	-1,202	-0.0000639
		+ 50	1,879,999,356	-1,617	-0.0000860
Battery Endpoint	2.80	+ 20	1,880,000,151	-822	-0.0000437

Table 7-9. WCDMA PCS Frequency Stability Data

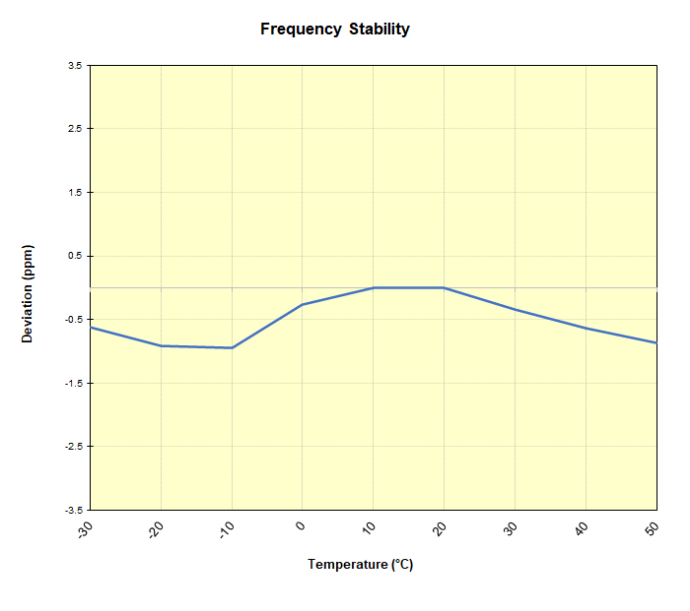


Table 7-9. WCDMA PCS Frequency Stability Chart

CDMA PCS

CDMA PCS	
Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	3.85

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,880,000,445	-506	-0.0000269
		- 20	1,880,000,846	-105	-0.0000056
		- 10	1,880,000,566	-385	-0.0000205
		0	1,880,000,253	-698	-0.0000371
		+ 10	1,879,999,104	-1,847	-0.0000982
		+ 20 (Ref)	1,880,000,951	0	0.0000000
		+ 30	1,880,000,223	-728	-0.0000387
		+ 40	1,880,000,194	-757	-0.0000403
		+ 50	1,879,999,662	-1,289	-0.0000686
Battery Endpoint	2.80	+ 20	1,879,999,315	-1,636	-0.0000870

Table 7-9. CDMA PCS Frequency Stability Data

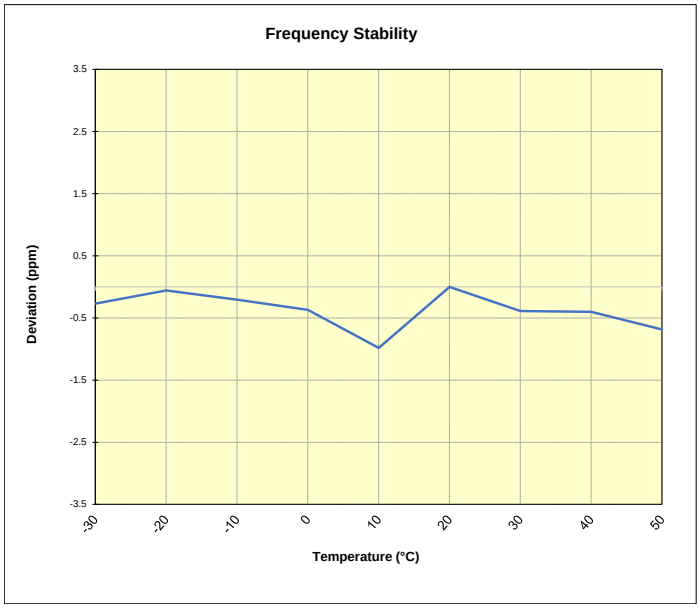


Table 7-9. CDMA PCS Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the LG **Portable Handset FCC ID: ZNFL355DL** complies with all the requirements of Part 24 of the FCC rules.