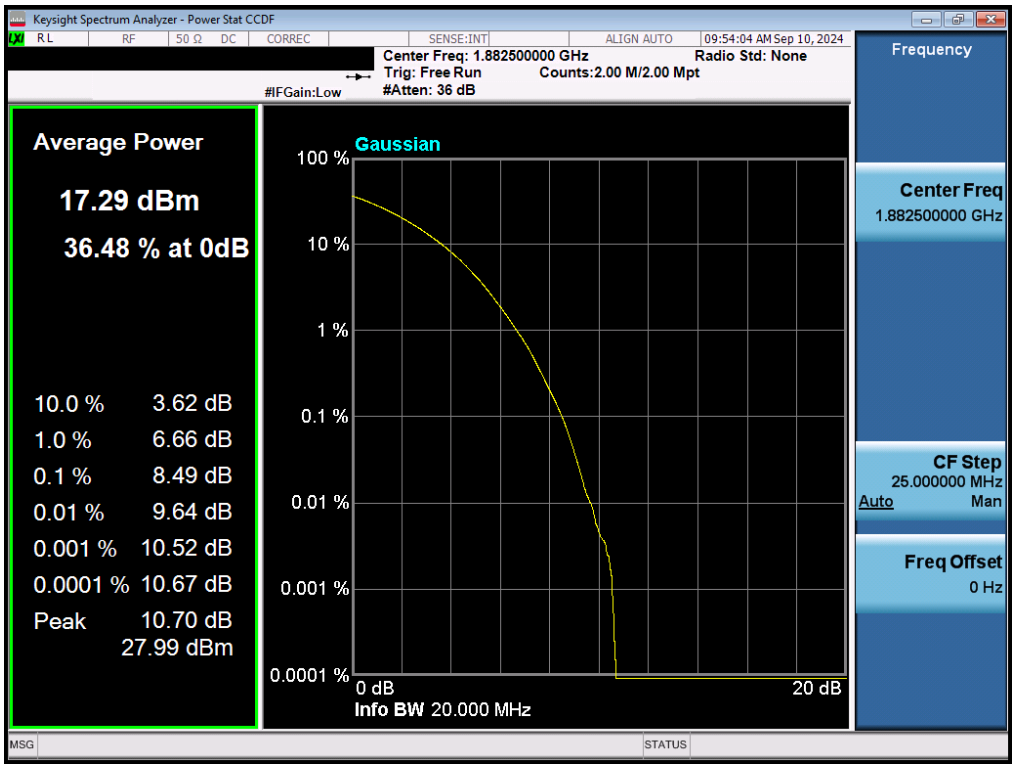
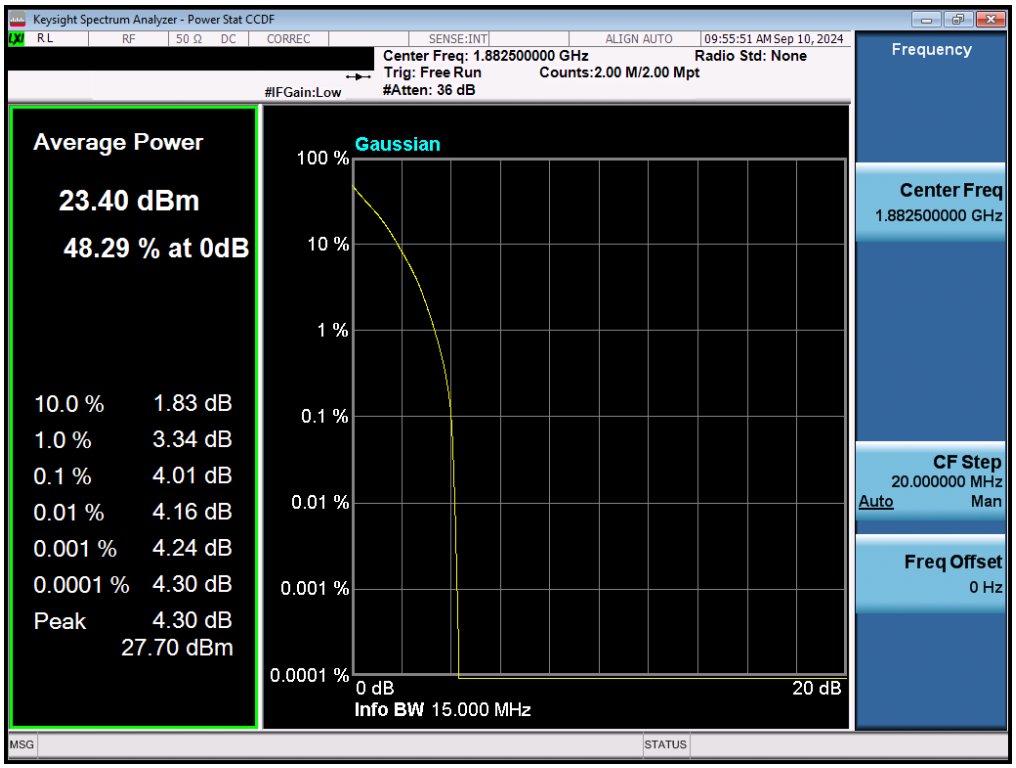
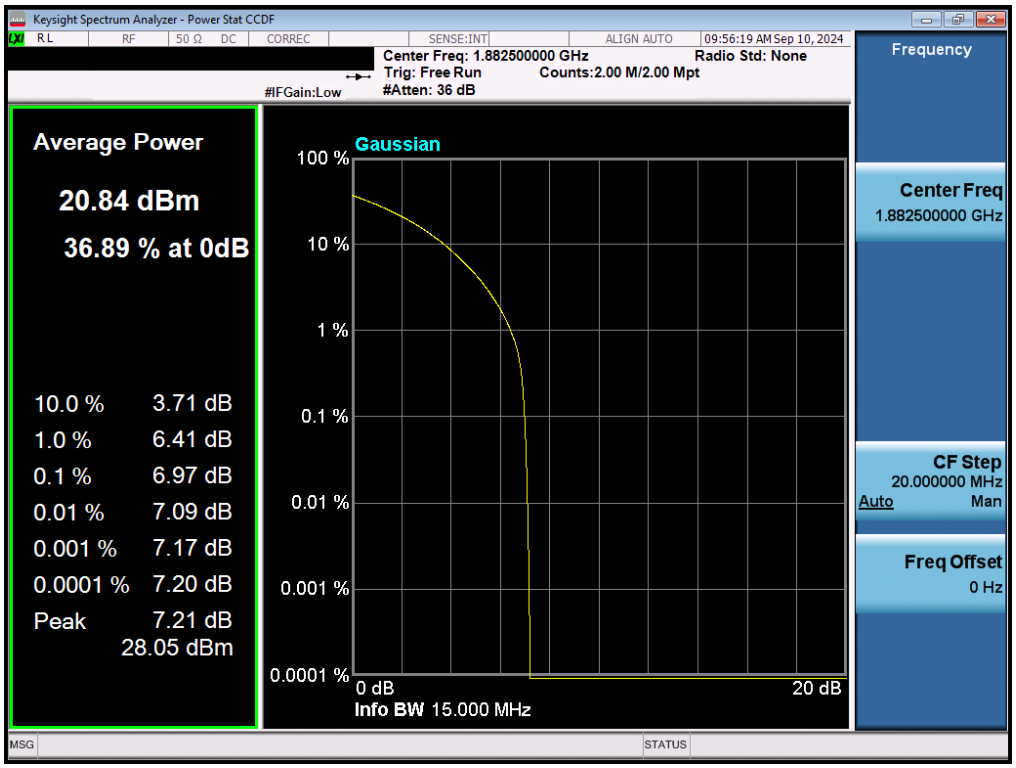


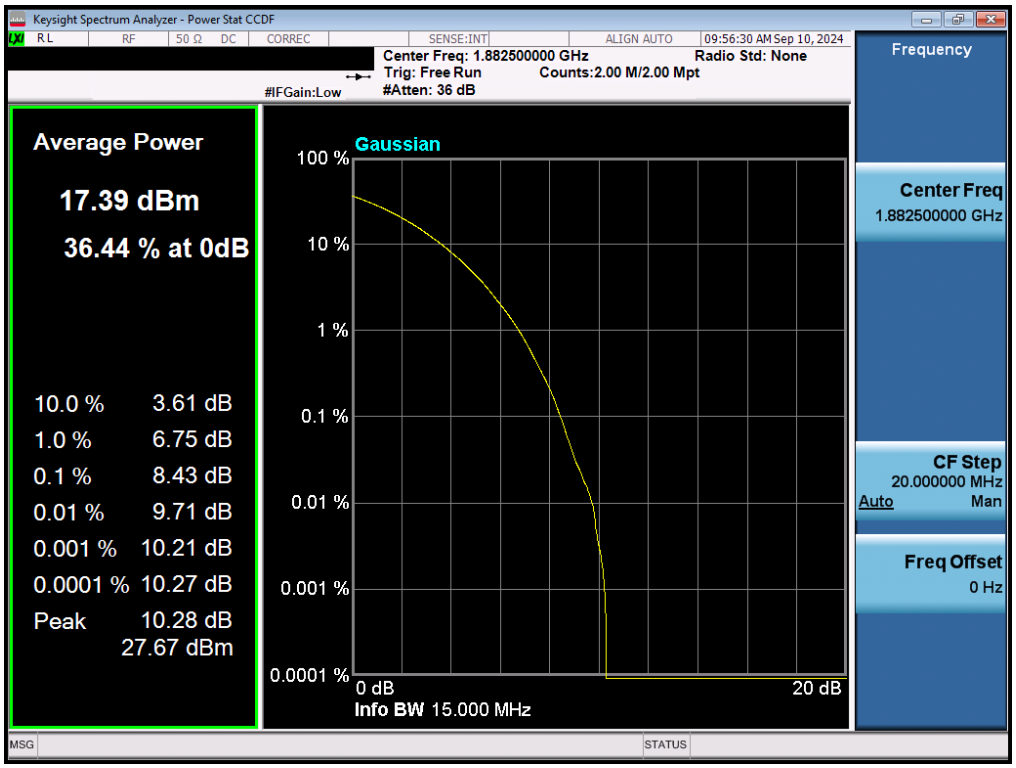
Plot 7-190. PAR Plot (NR Band n25/2 - 20.0MHz CP-OFDM 256-QAM - Full RB - ANT1)



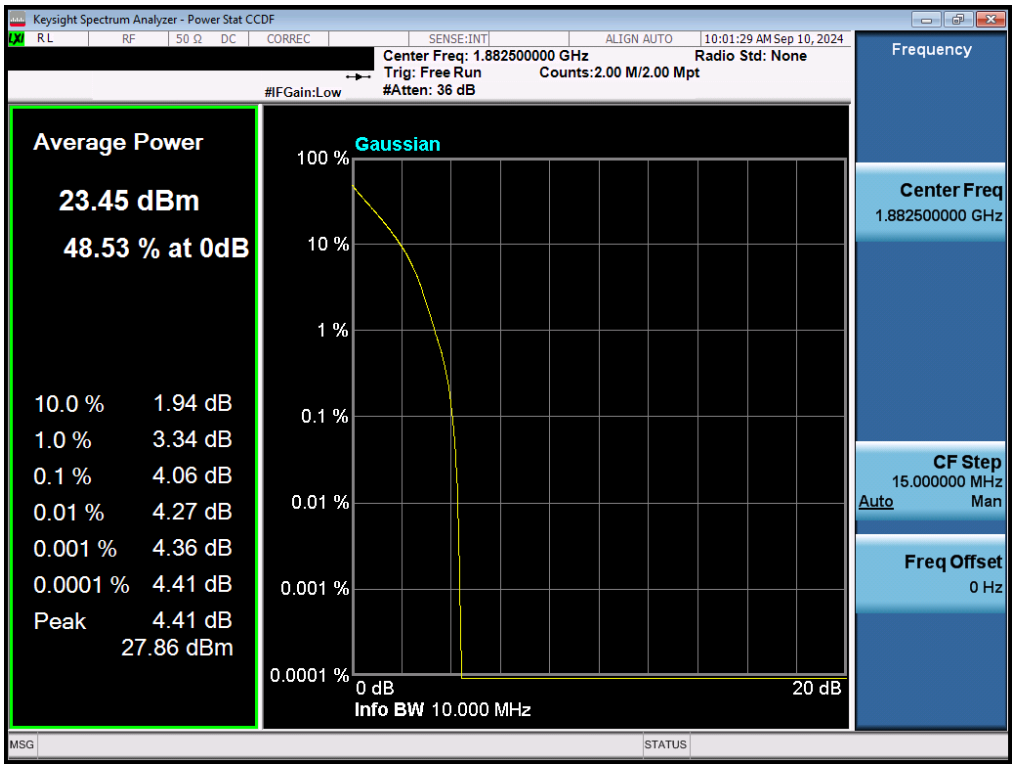
Plot 7-191. PAR Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)



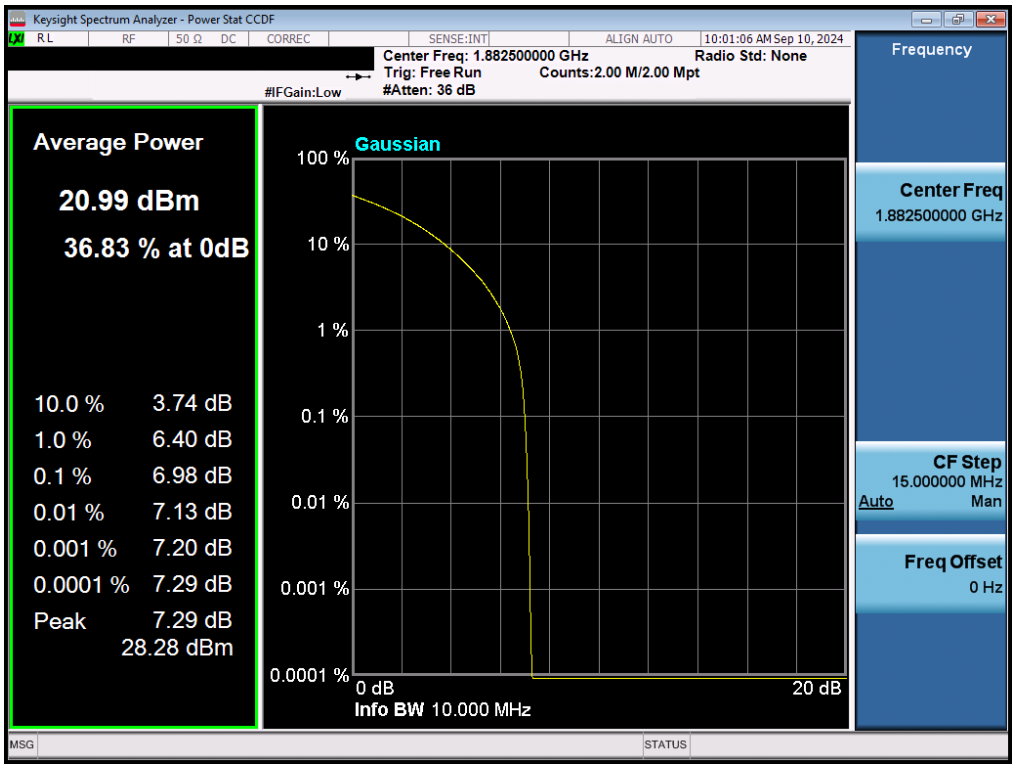
Plot 7-192. PAR Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB - ANT1)



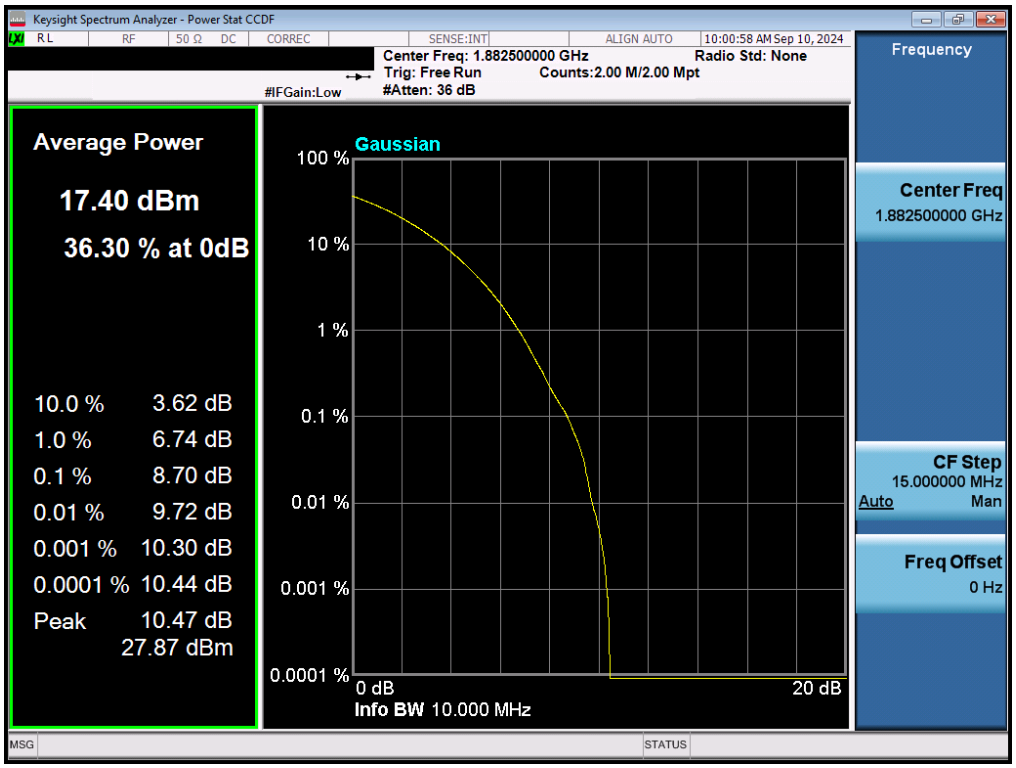
Plot 7-193. PAR Plot (NR Band n25/2 - 15.0MHz CP-OFDM 256-QAM - Full RB - ANT1)



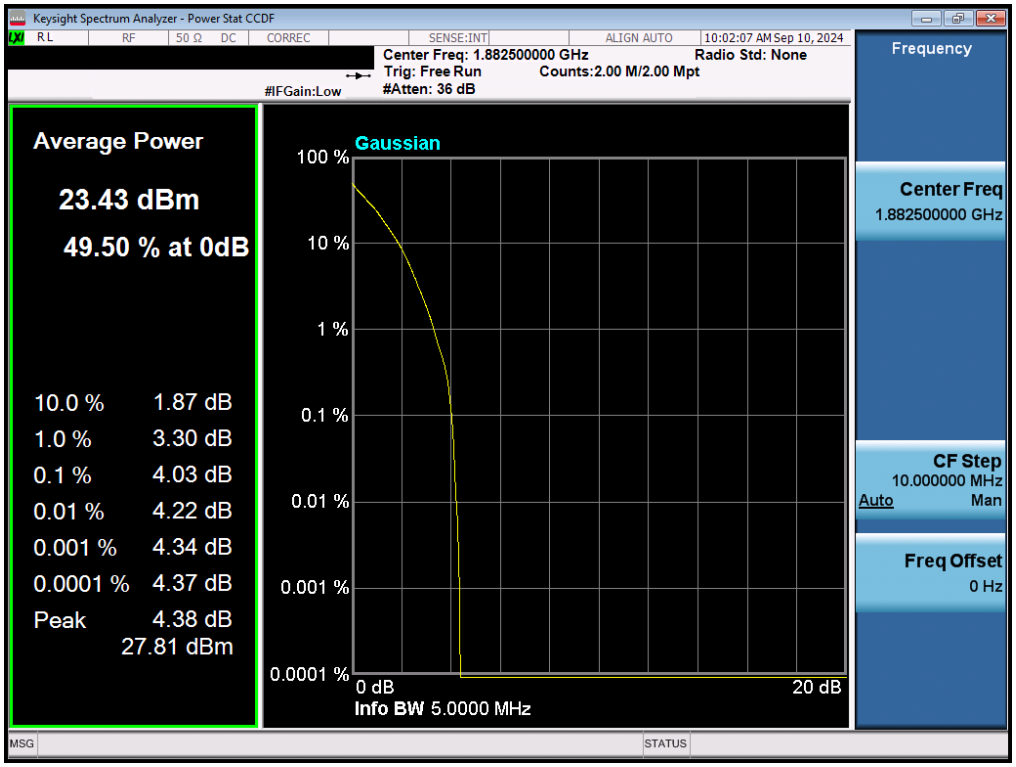
Plot 7-194. PAR Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)



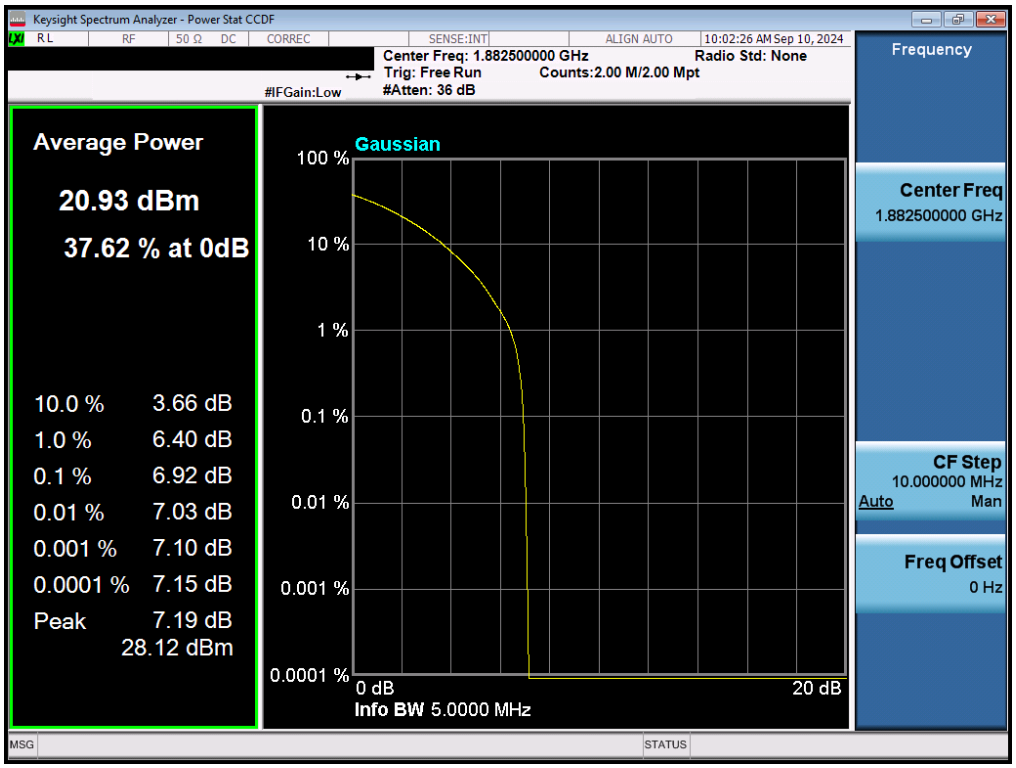
Plot 7-195. PAR Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB - ANT1)



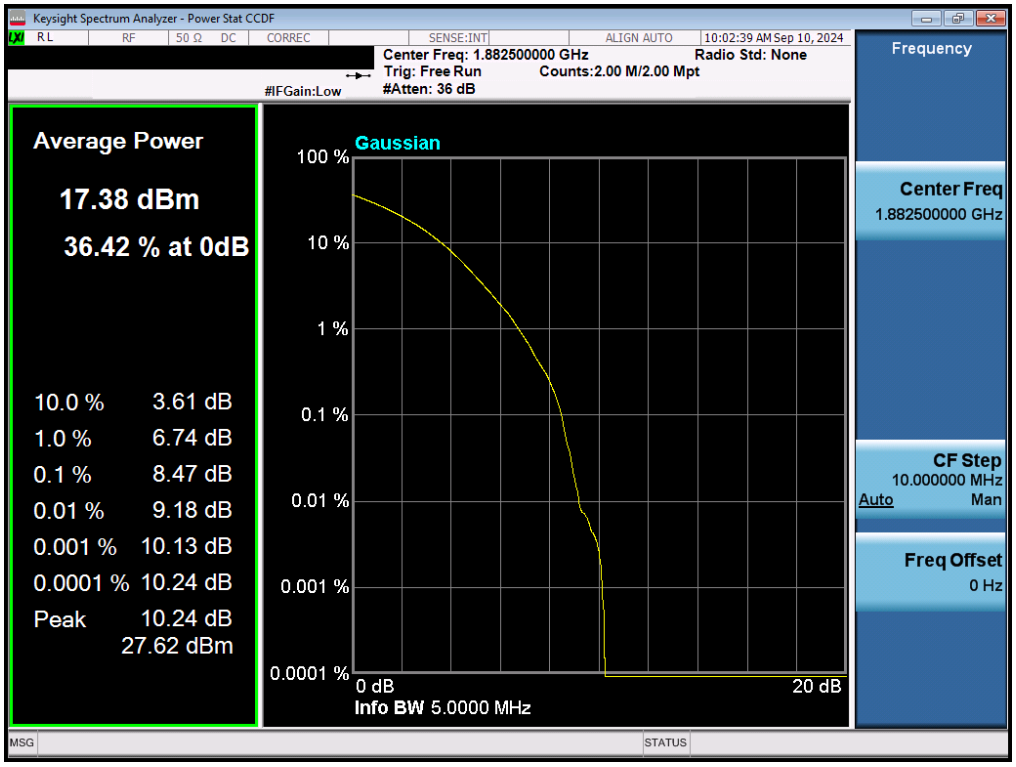
Plot 7-196. PAR Plot (NR Band n25/2 - 10.0MHz CP-OFDM 256-QAM - Full RB - ANT1)



Plot 7-197. PAR Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)



Plot 7-198. PAR Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB - ANT1)



Plot 7-199. PAR Plot (NR Band n25/2 - 5.0MHz CP-OFDM 256-QAM - Full RB - ANT1)

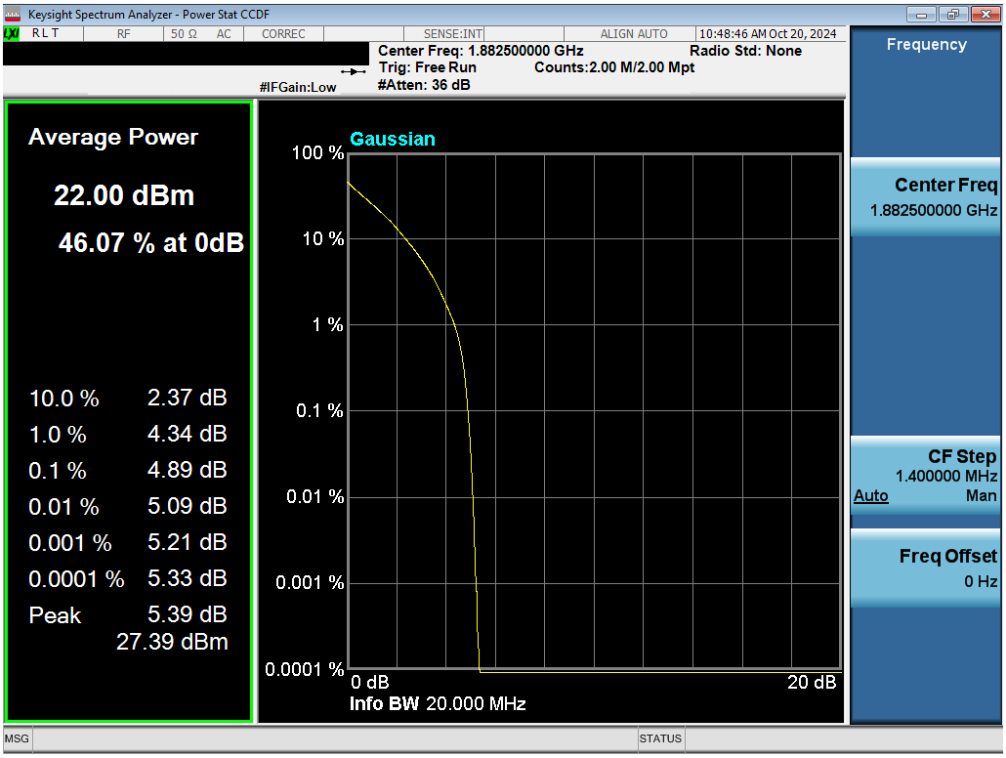
Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
LTE-B25-2	20MHz	QPSK	23.27	4.46	13	-8.54
		256QAM	19.32	6.49	13	-6.51
	15MHz	QPSK	23.27	4.47	13	-8.53
		256QAM	19.32	6.50	13	-6.50
	10MHz	QPSK	23.35	4.50	13	-8.50
		256QAM	19.37	6.48	13	-6.52
	5MHz	QPSK	23.34	4.45	13	-8.55
		256QAM	19.41	6.52	13	-6.48
	3MHz	QPSK	23.36	4.38	13	-8.62
		256QAM	19.46	6.54	13	-6.46
	1.4MHz	QPSK	23.29	4.39	13	-8.61
		256QAM	19.44	6.52	13	-6.48

Table 7-17. PAR Test Results – Ant2

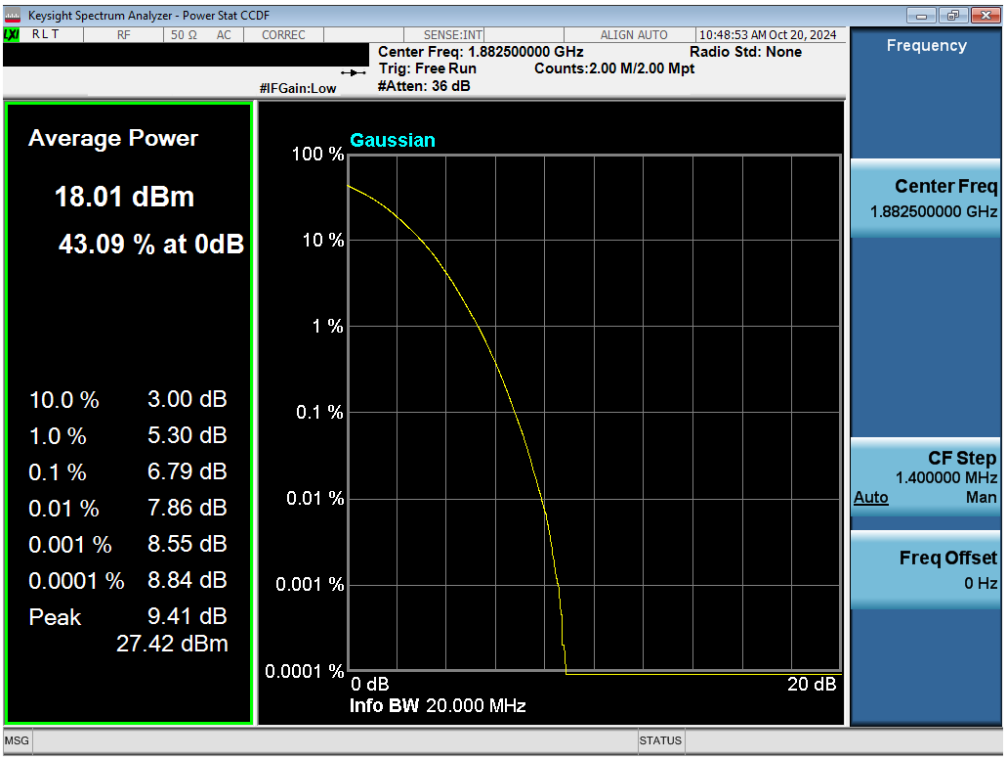
Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
NR-n25-2	40MHz	BPSK	22.65	4.29	13	-8.71
		QPSK	20.08	7.78	13	-5.22
		256QAM	16.46	8.74	13	-4.26
	35MHz	BPSK	22.58	4.53	13	-8.47
		QPSK	19.89	7.53	13	-5.47
		256QAM	16.39	8.79	13	-4.21
	30MHz	BPSK	22.61	4.42	13	-8.58
		QPSK	19.99	7.55	13	-5.45
		256QAM	16.49	8.76	13	-4.24
	25MHz	BPSK	22.65	4.73	13	-8.27
		QPSK	20.19	7.61	13	-5.39
		256QAM	16.52	9.01	13	-3.99
	20MHz	BPSK	22.70	4.46	13	-8.54
		QPSK	20.06	7.54	13	-5.46
		256QAM	16.42	8.78	13	-4.22
	15MHz	BPSK	22.61	4.39	13	-8.61
		QPSK	20.08	7.56	13	-5.44
		256QAM	18.47	6.82	13	-6.18
	10MHz	BPSK	22.60	4.40	13	-8.60
		QPSK	20.07	7.45	13	-5.55
		256QAM	16.42	8.93	13	-4.07
	5MHz	BPSK	22.59	4.36	13	-8.64
		QPSK	20.06	7.61	13	-5.39
		256QAM	16.32	8.77	13	-4.23

Table 7-18. PAR Test Results – Ant2

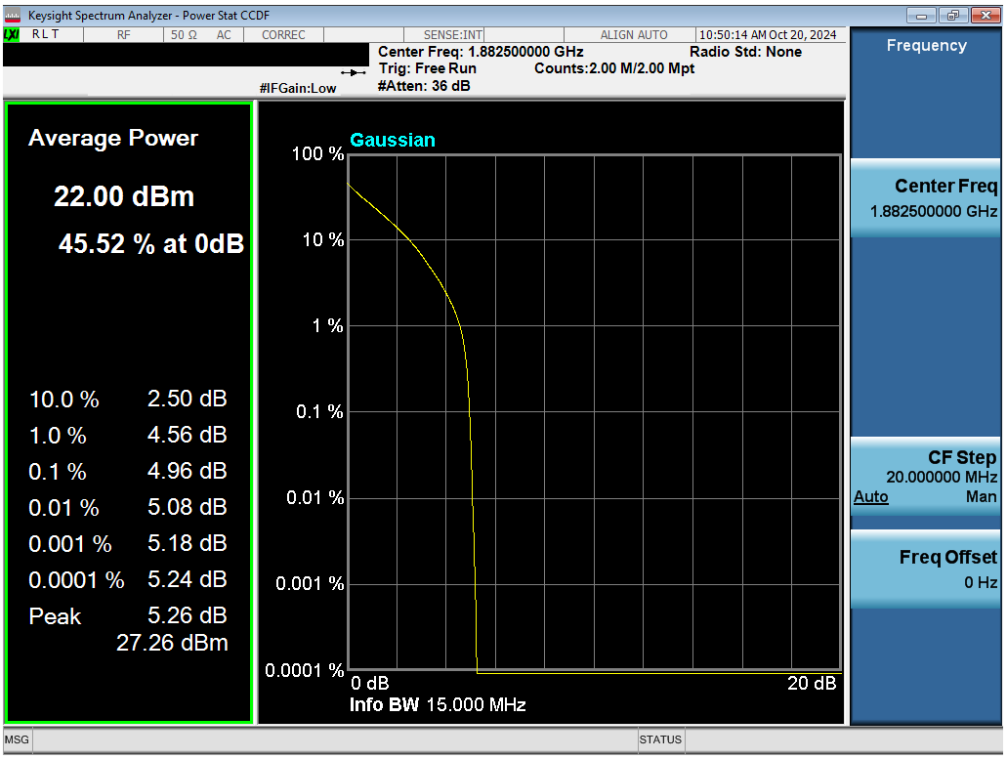
LTE Band 25/2 – Ant2



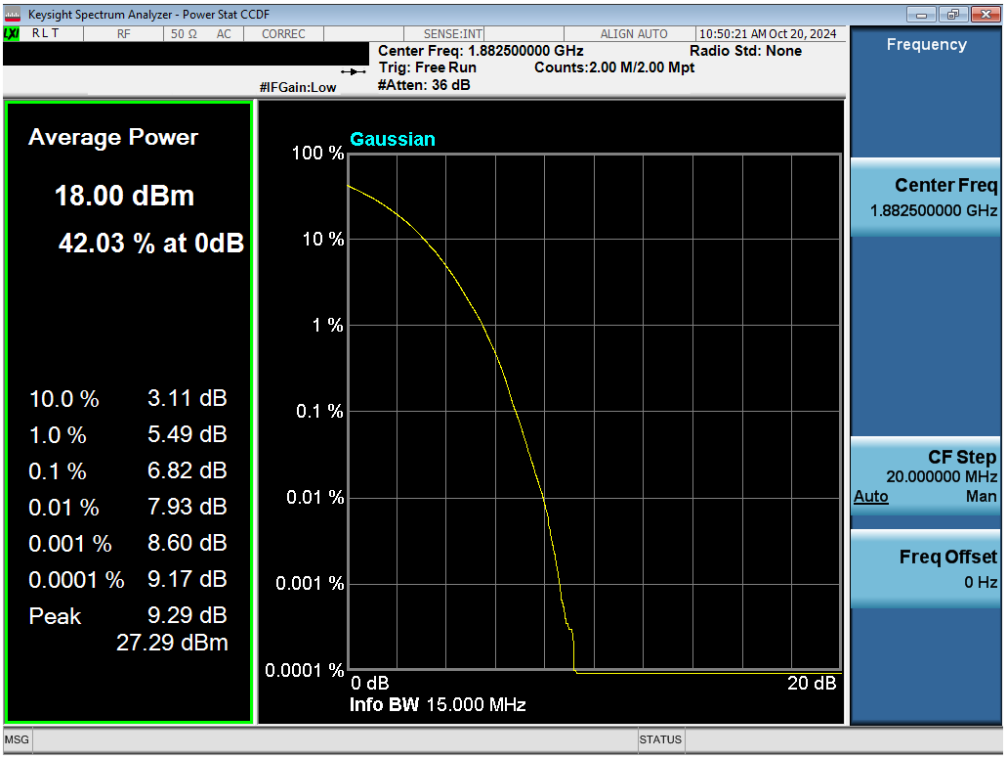
Plot 7-200. PAR Plot (LTE Band 25/2 - 20MHz QPSK - Full RB - Ant2)



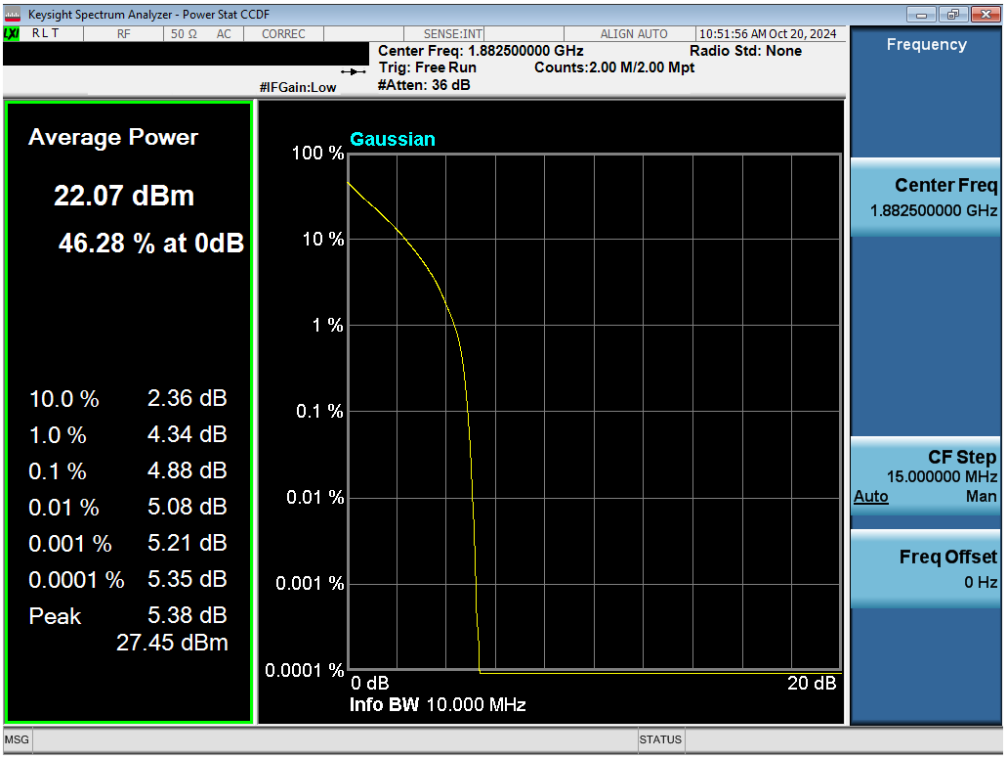
Plot 7-201. PAR Plot (LTE Band 25/2 - 20MHz 256-QAM - Full RB - Ant2)



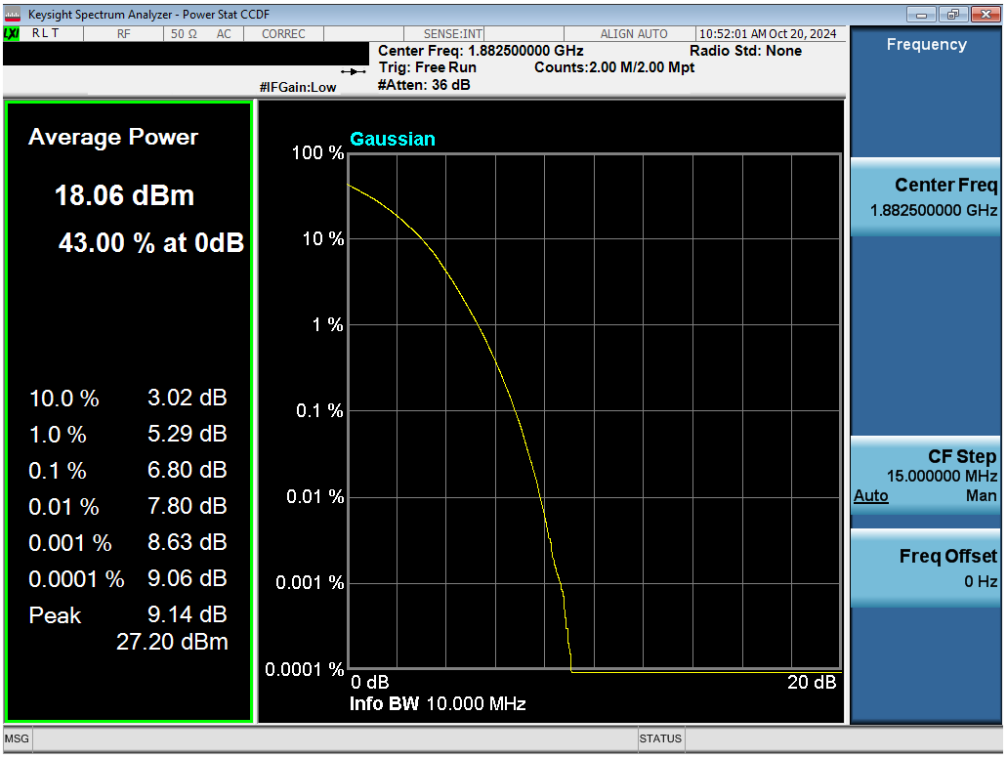
Plot 7-202. PAR Plot (LTE Band 25/2 - 15MHz QPSK - Full RB - Ant2)



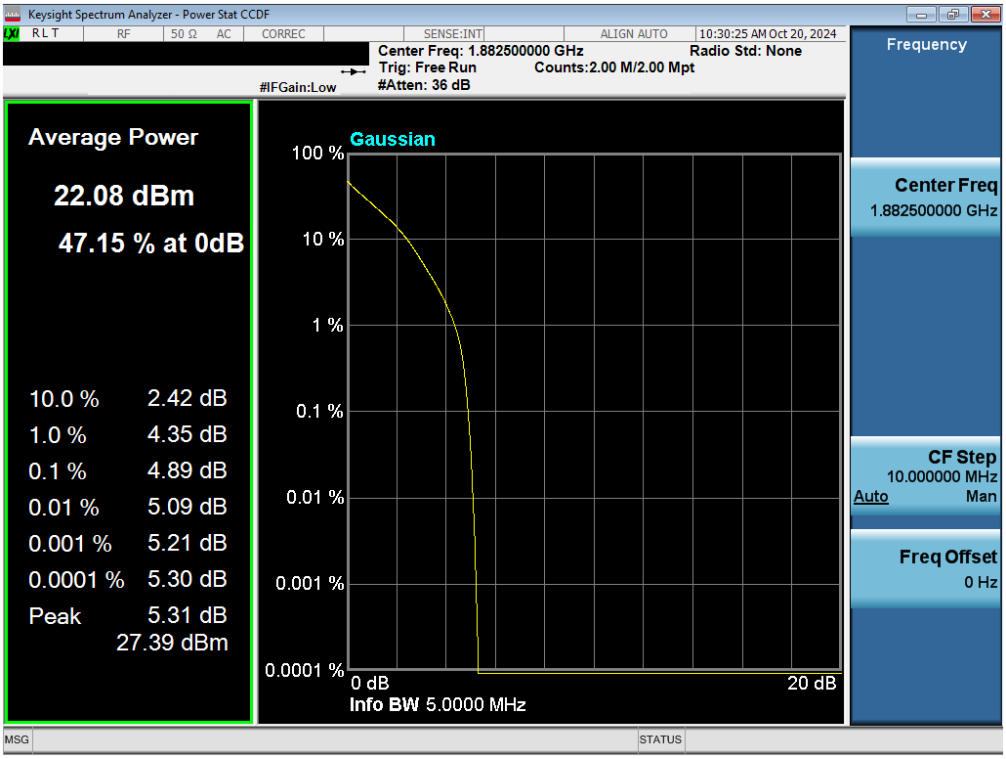
Plot 7-203. PAR Plot (LTE Band 25/2 - 15MHz 256-QAM - Full RB - Ant2)



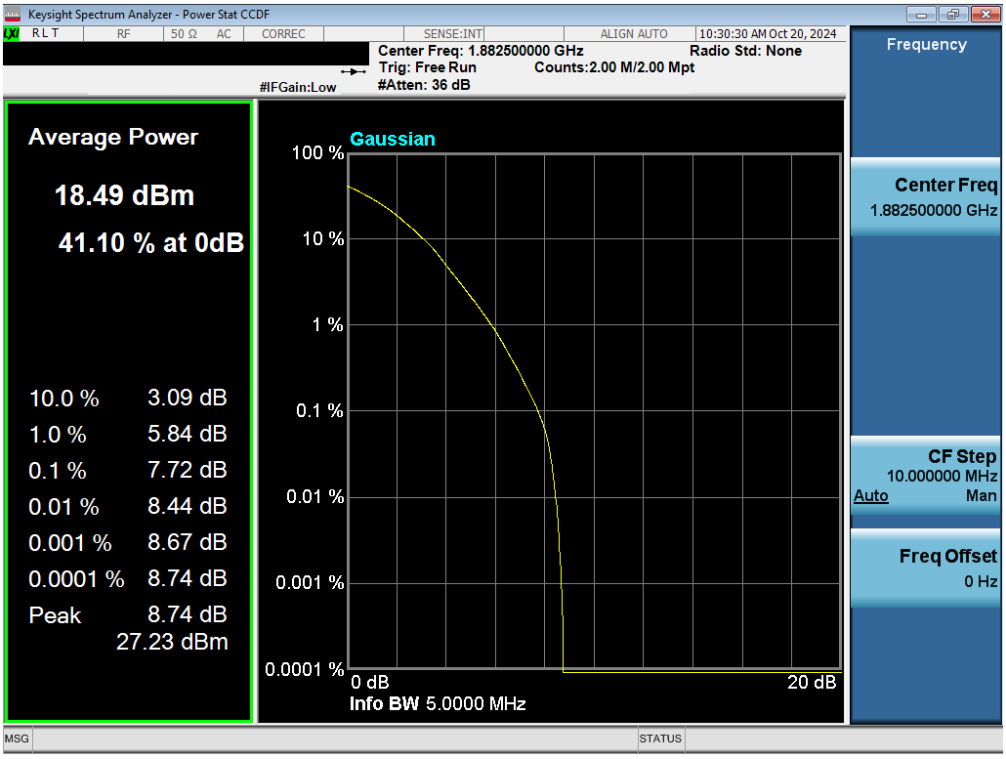
Plot 7-204. PAR Plot (LTE Band 25/2 - 10MHz QPSK - Full RB - Ant2)



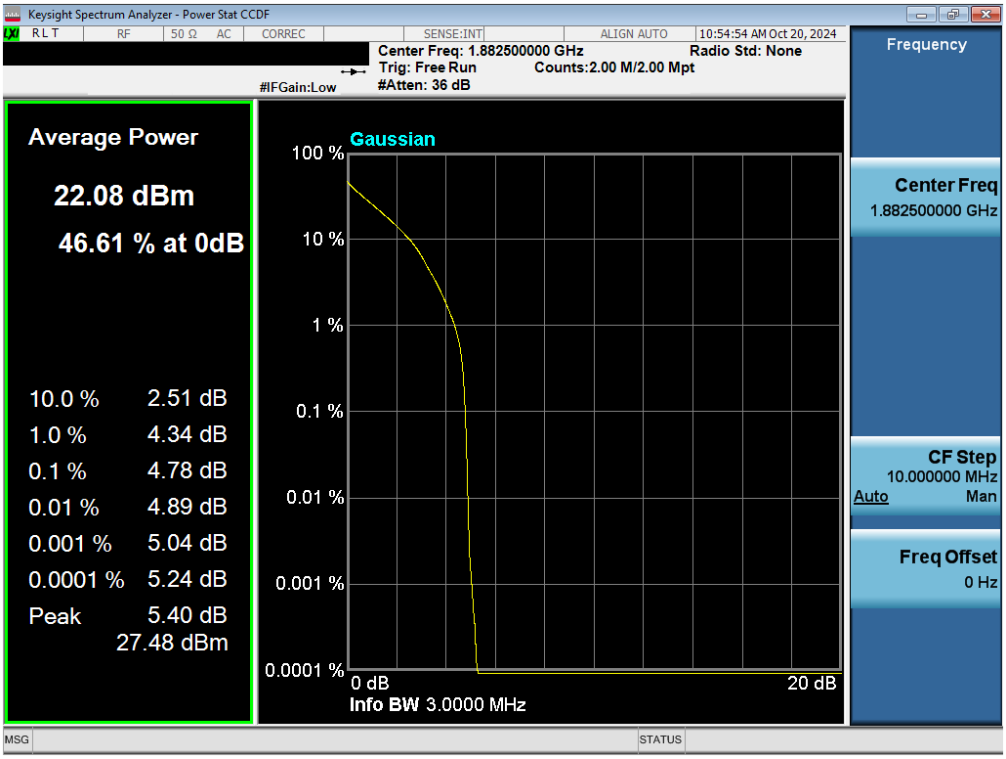
Plot 7-205. PAR Plot (LTE Band 25/2 - 10MHz 256-QAM - Full RB - Ant2)



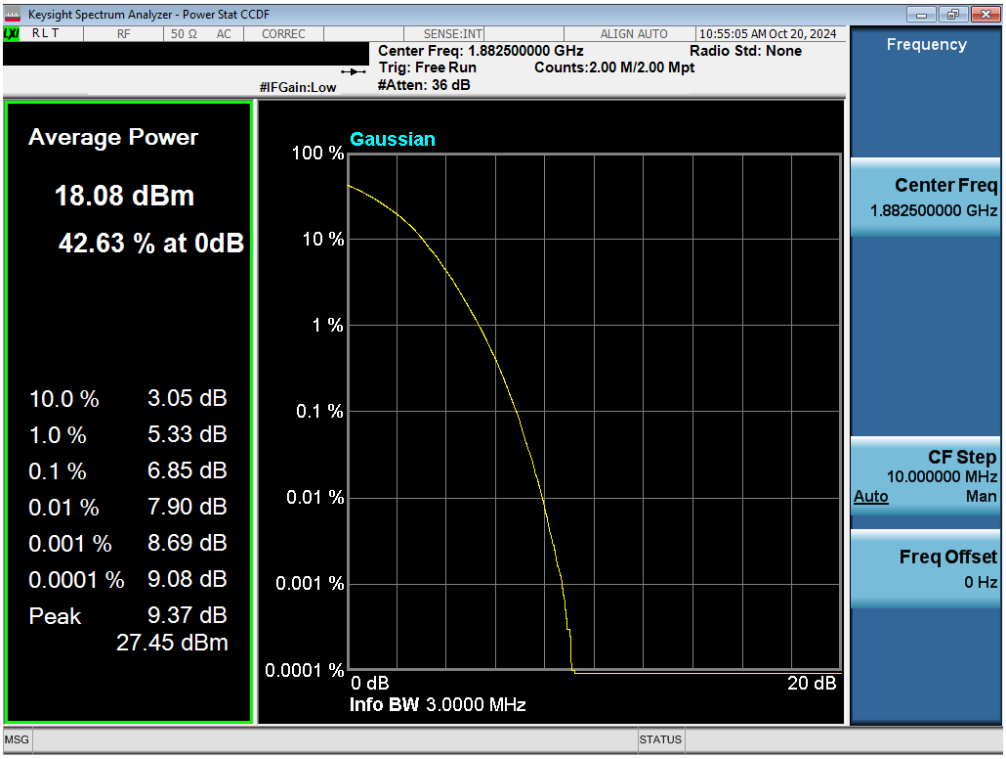
Plot 7-206. PAR Plot (LTE Band 25/2 - 5MHz QPSK - Full RB - Ant2)



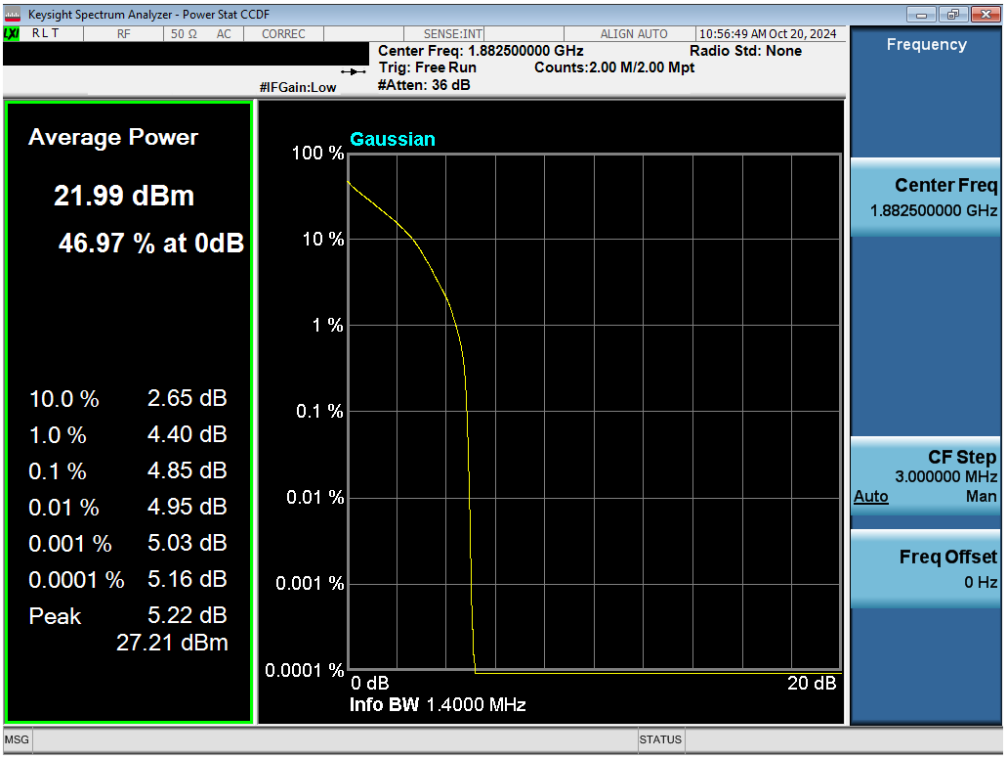
Plot 7-207. PAR Plot (LTE Band 25/2 - 5MHz 256-QAM - Full RB - Ant2)



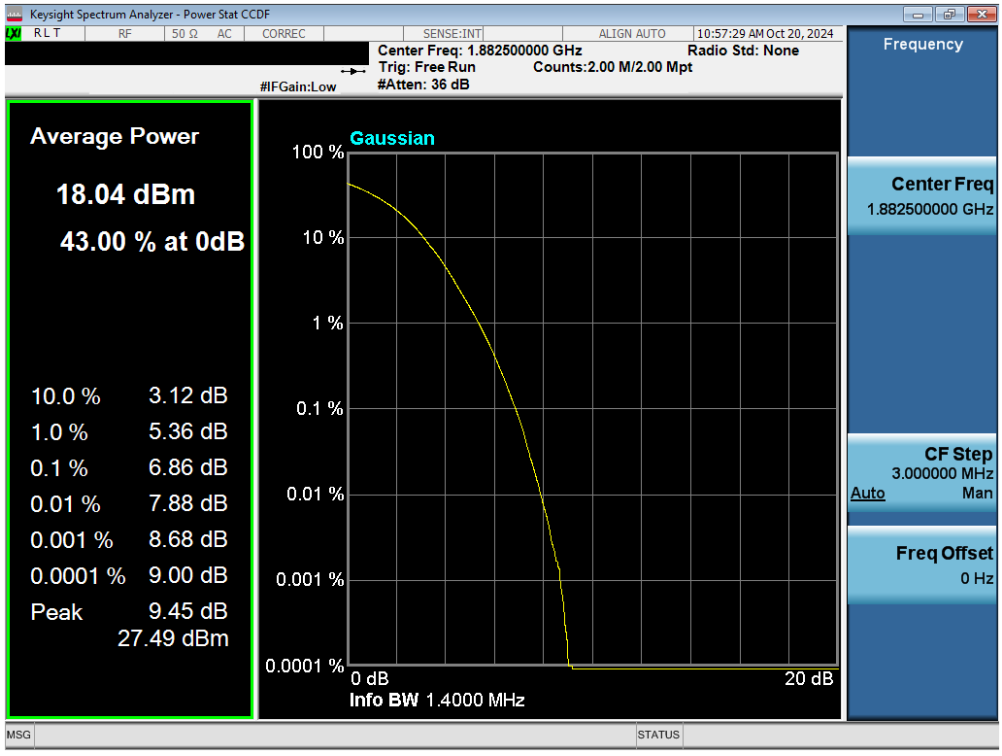
Plot 7-208. PAR Plot (LTE Band 25/2 - 3MHz QPSK - Full RB - Ant2)



Plot 7-209. PAR Plot (LTE Band 25/2 - 3MHz 256-QAM - Full RB - Ant2)

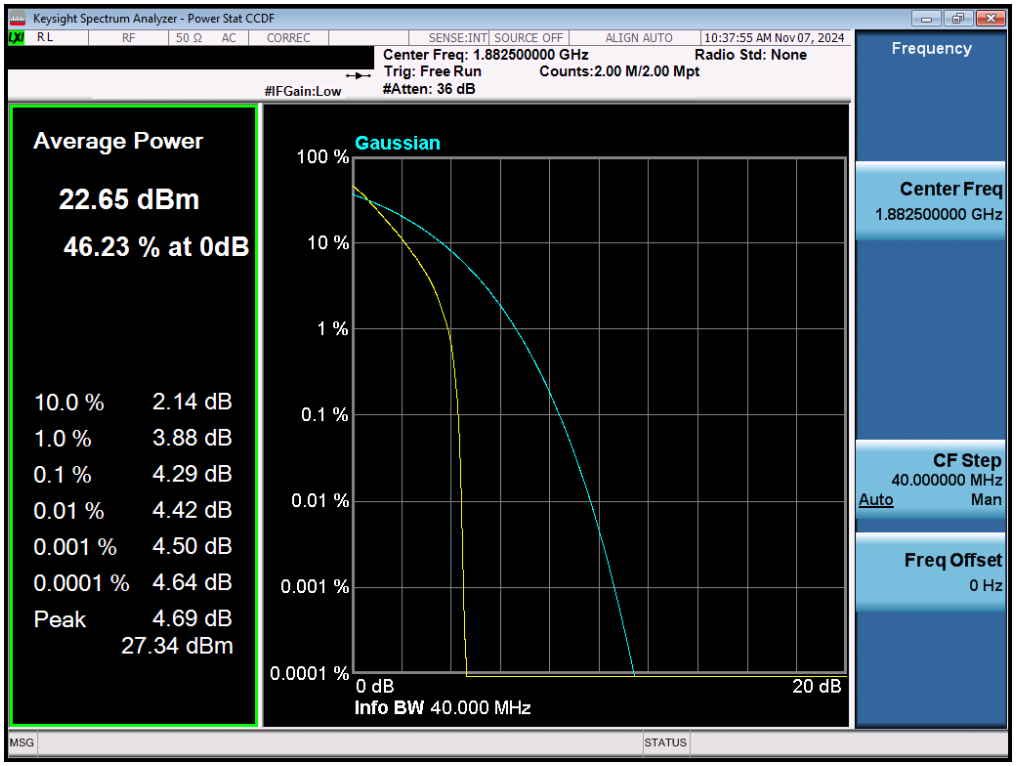


Plot 7-210. PAR Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB - Ant2)

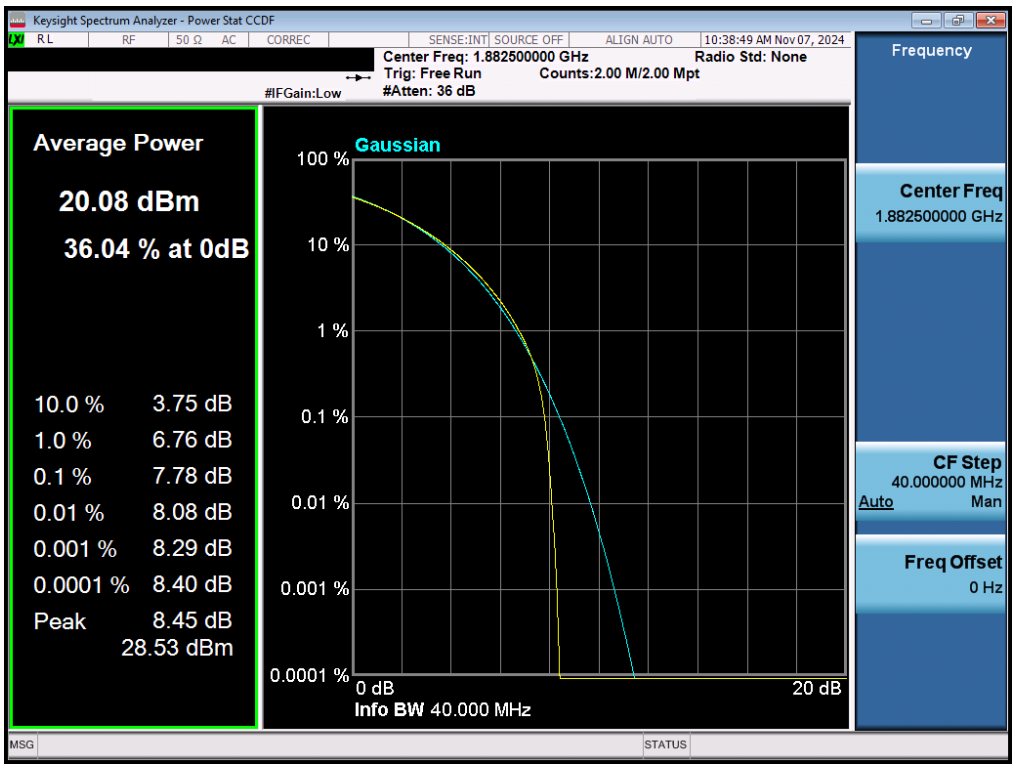


Plot 7-211. PAR Plot (LTE Band 25/2 - 1.4MHz 256-QAM - Full RB - Ant2)

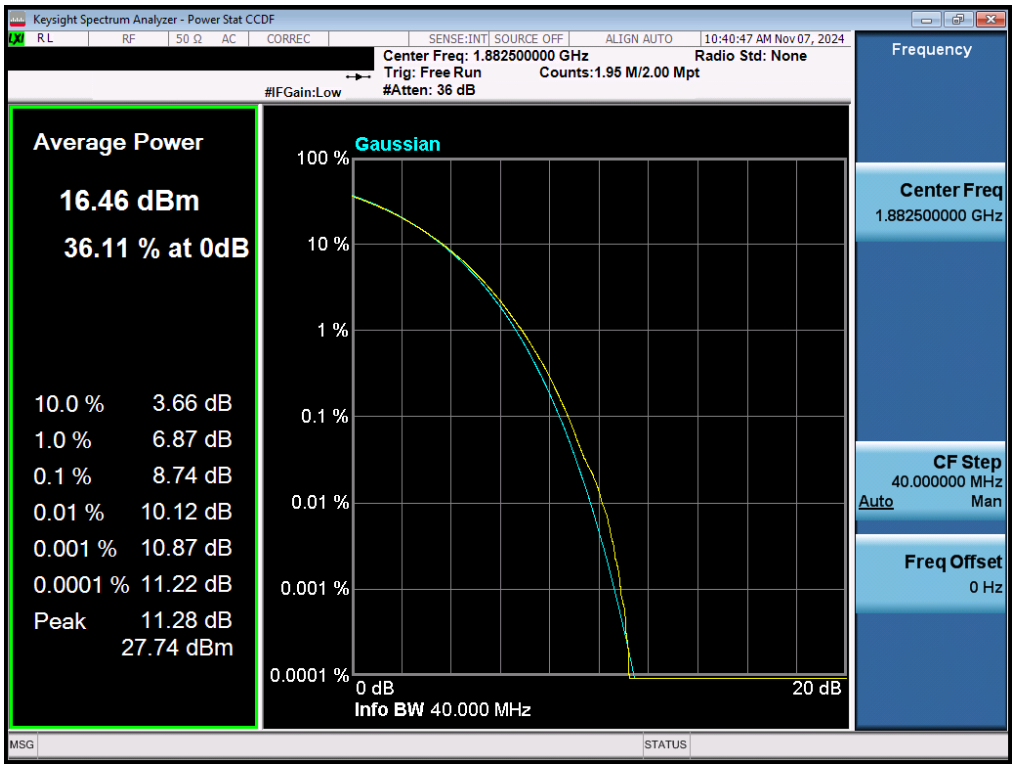
NR Band n25/2 – Ant2



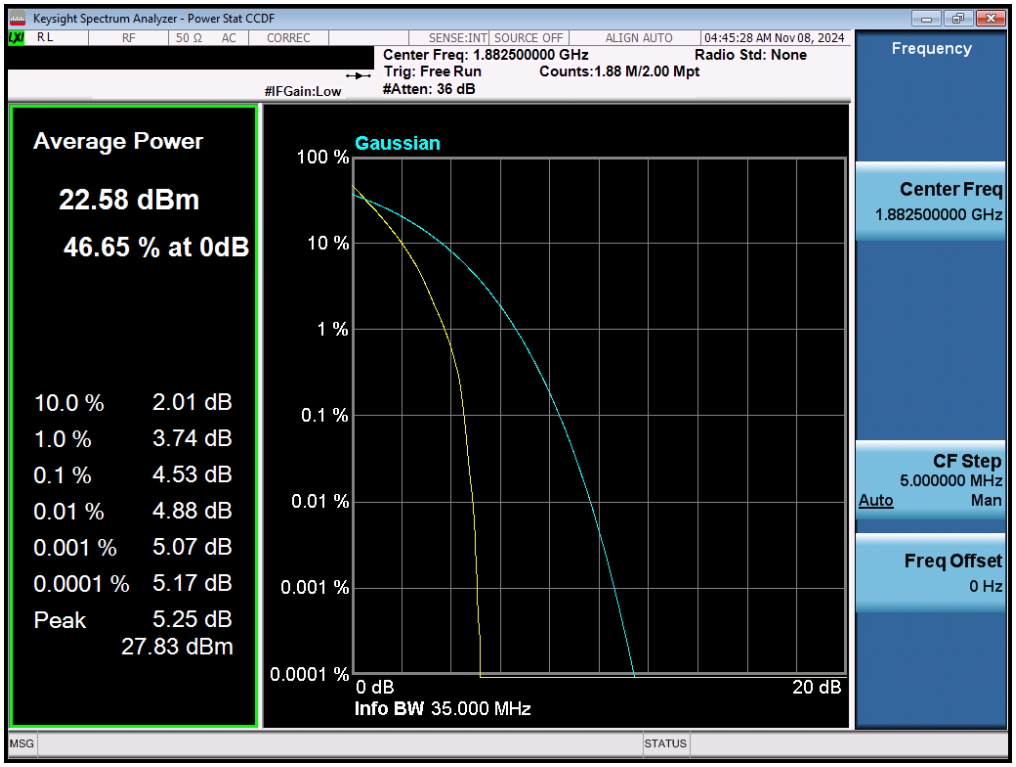
Plot 7-212. PAR Plot (NR Band n25/2 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



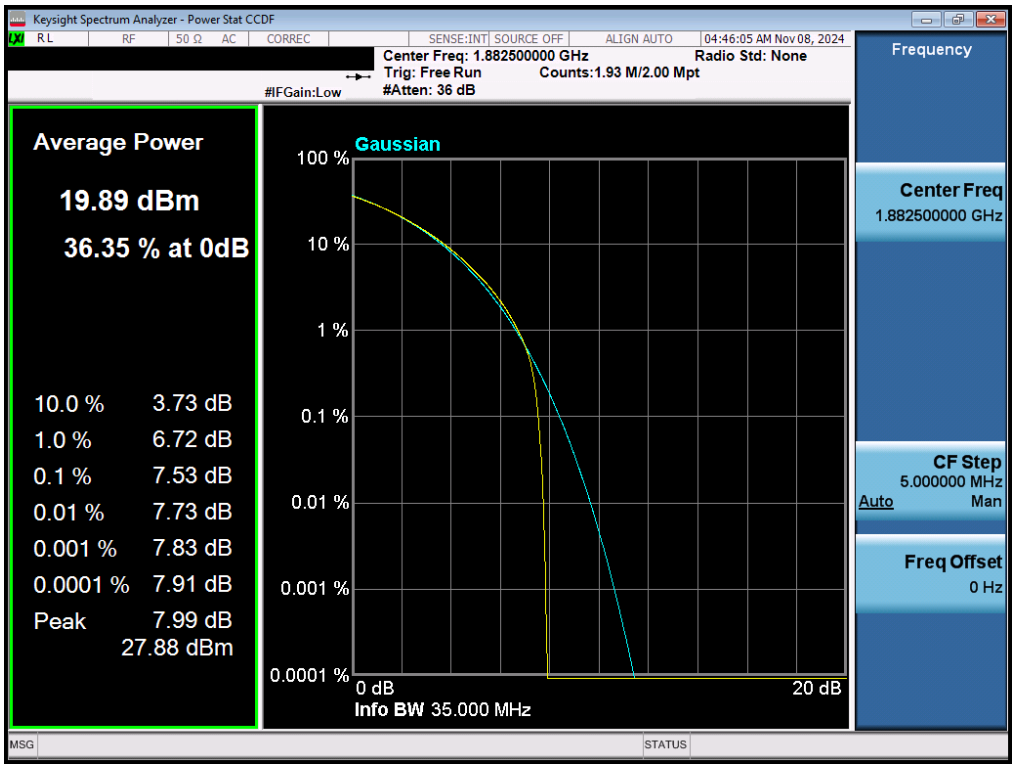
Plot 7-213. PAR Plot (NR Band n25/2 - 40.0MHz CP-OFDM QPSK - Full RB - ANT2)



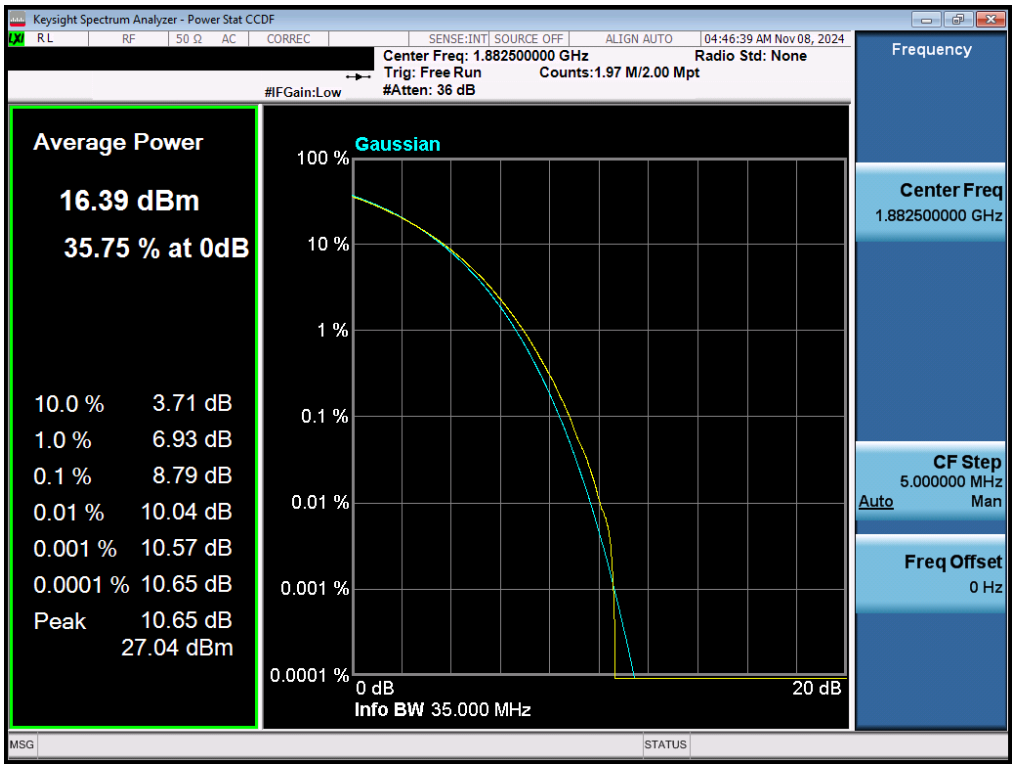
Plot 7-214. PAR Plot (NR Band n25/2 - 40.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



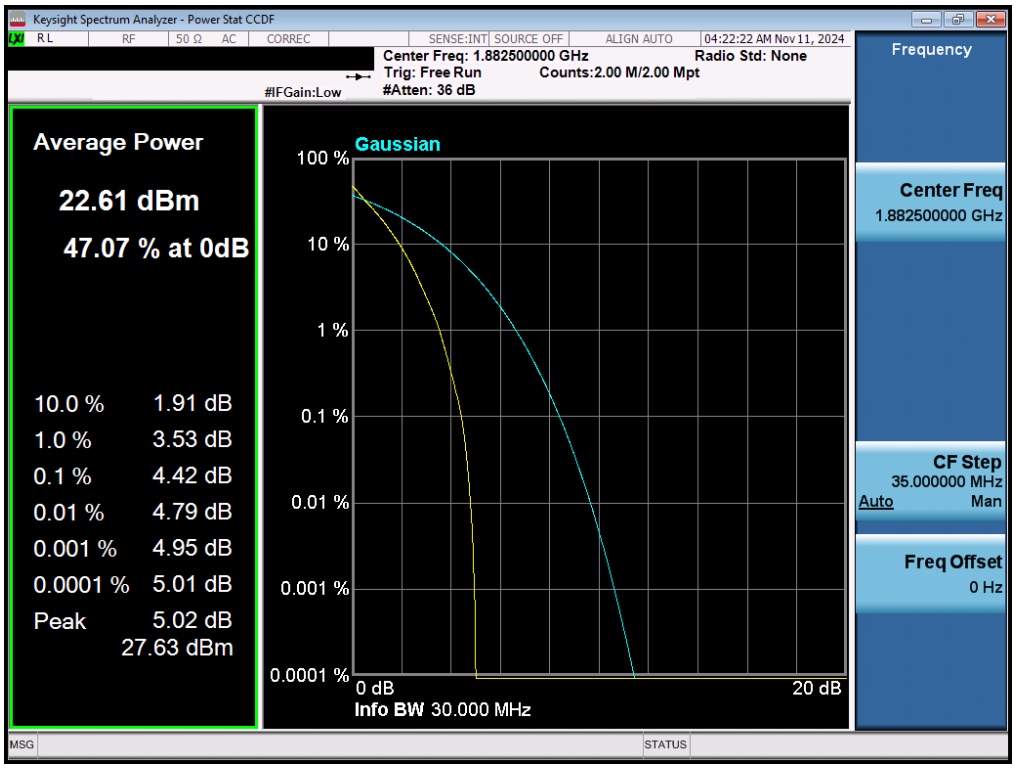
Plot 7-215. PAR Plot (NR Band n25/2 - 35.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



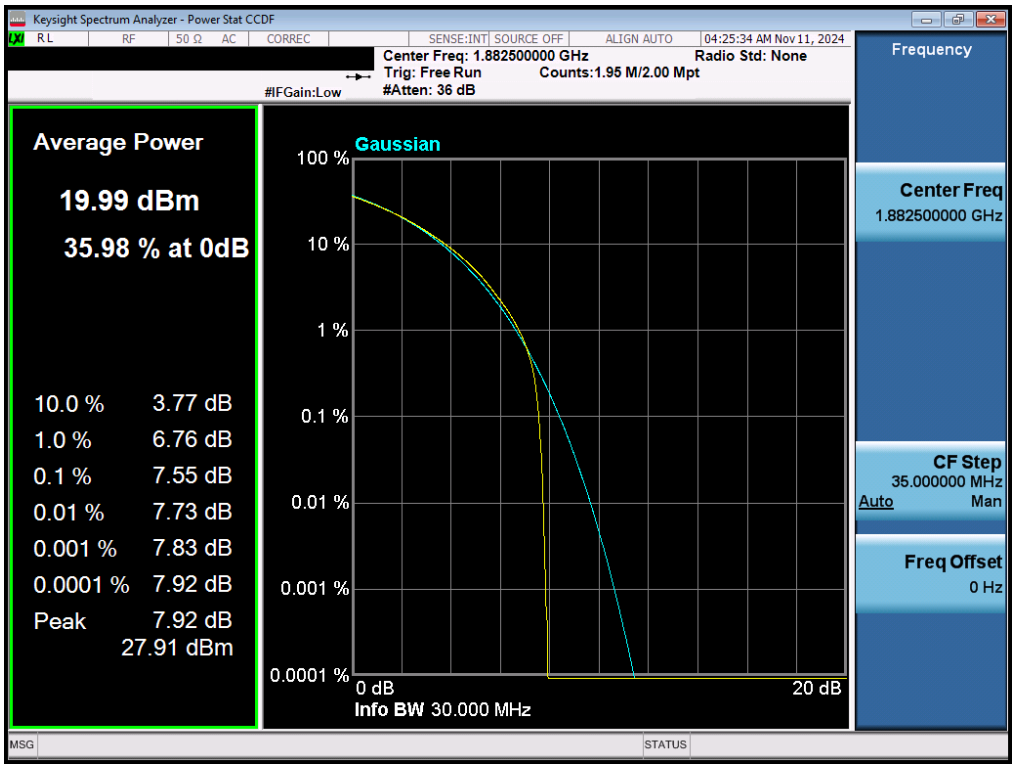
Plot 7-216. PAR Plot (NR Band n25/2 - 35.0MHz CP-OFDM QPSK - Full RB - ANT2)



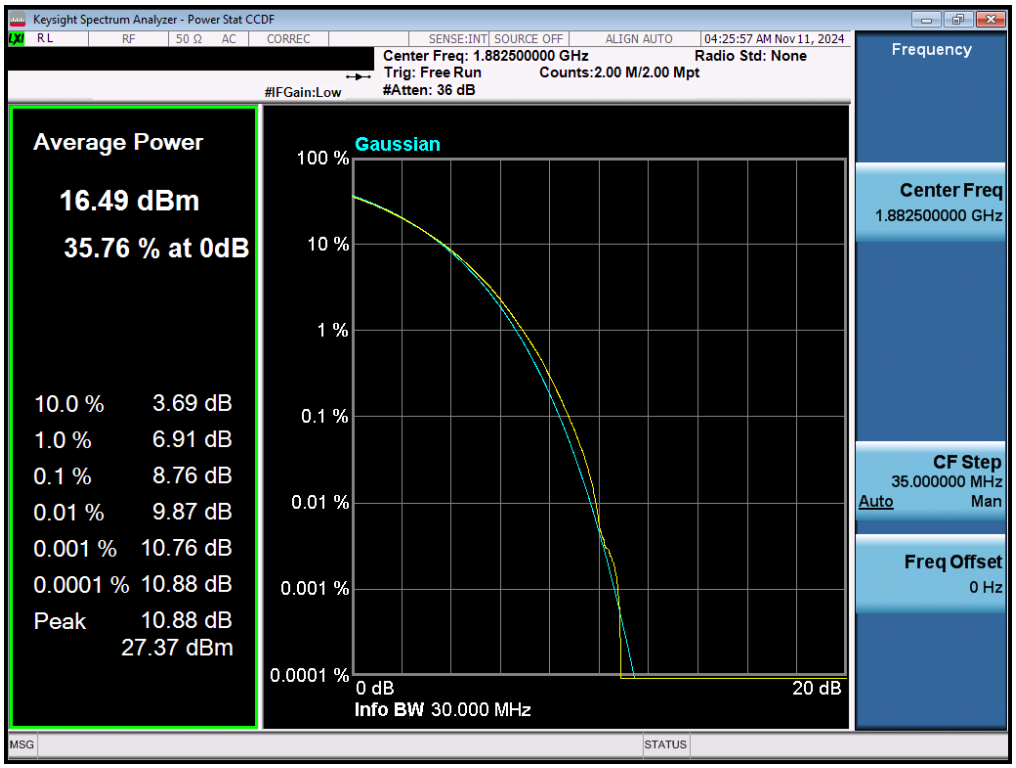
Plot 7-217. PAR Plot (NR Band n25/2 - 35.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



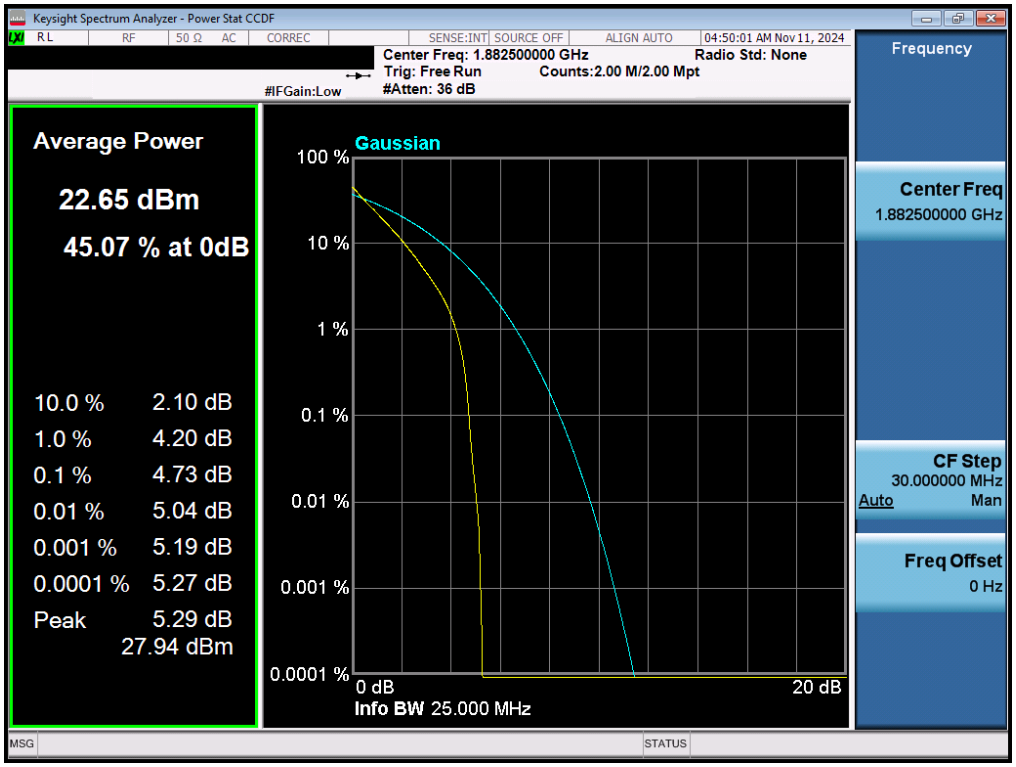
Plot 7-218. PAR Plot (NR Band n25/2 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



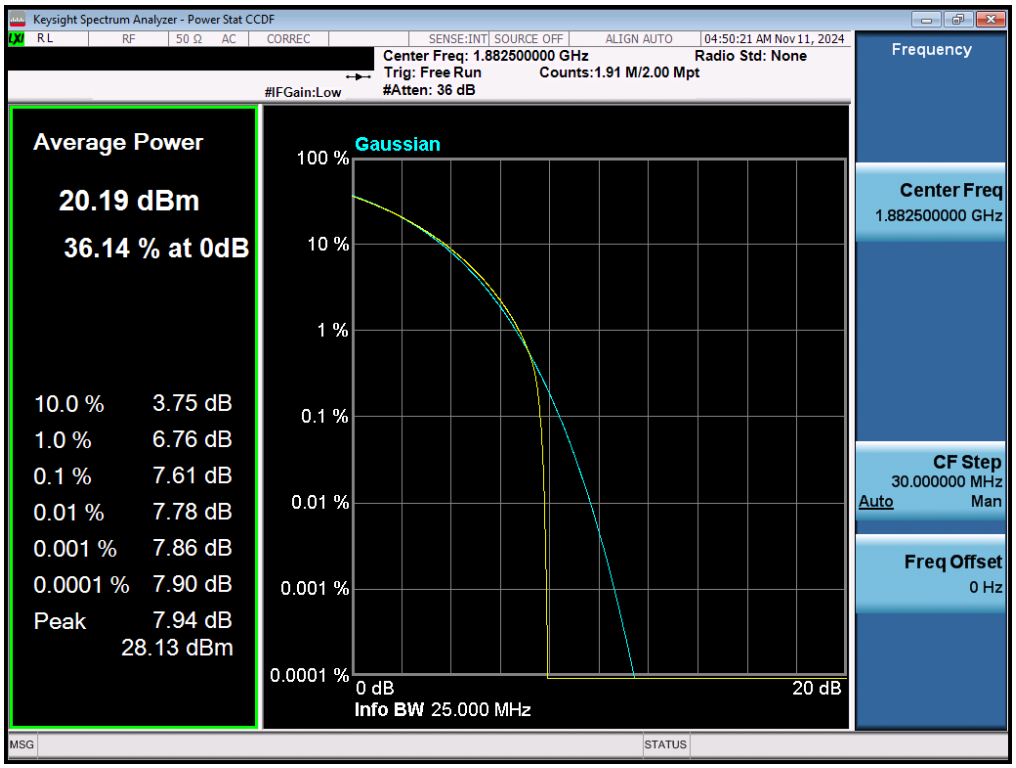
Plot 7-219. PAR Plot (NR Band n25/2 - 30.0MHz CP-OFDM QPSK - Full RB - ANT2)



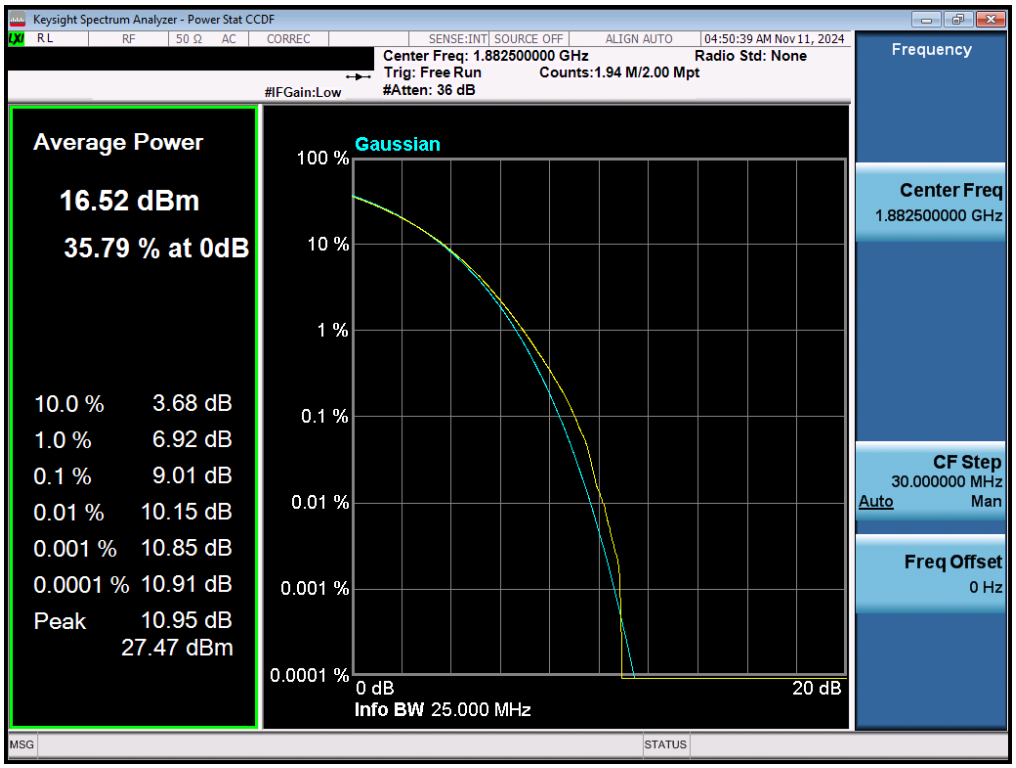
Plot 7-220. PAR Plot (NR Band n25/2 - 30.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



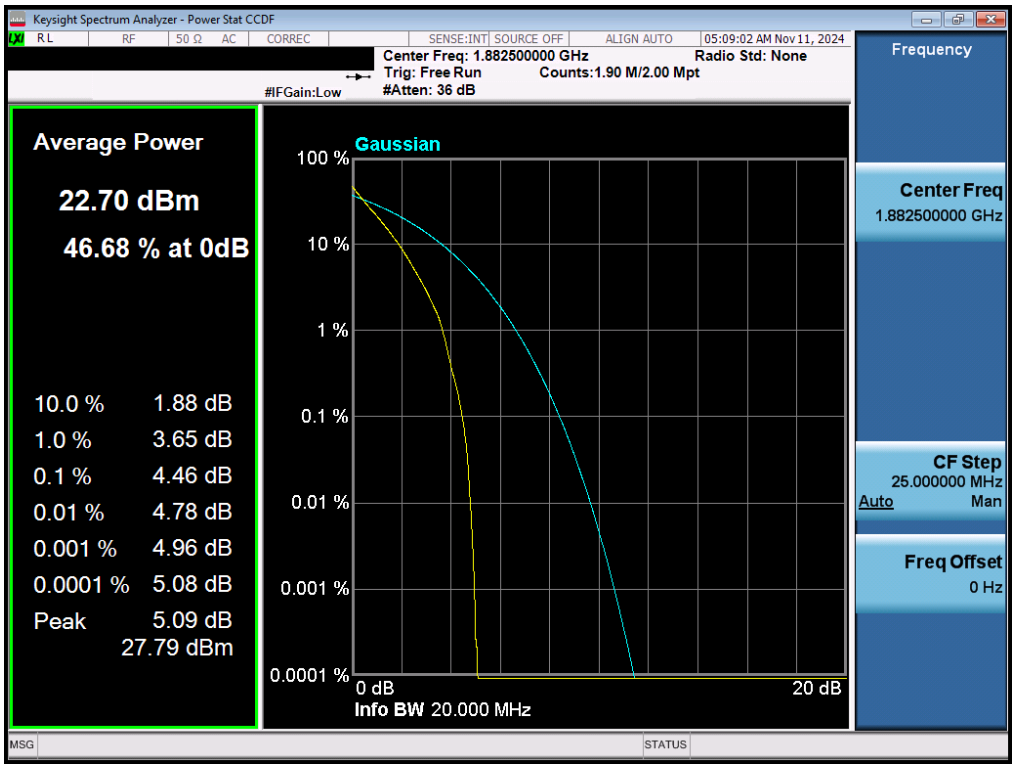
Plot 7-221. PAR Plot (NR Band n25/2 - 25.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



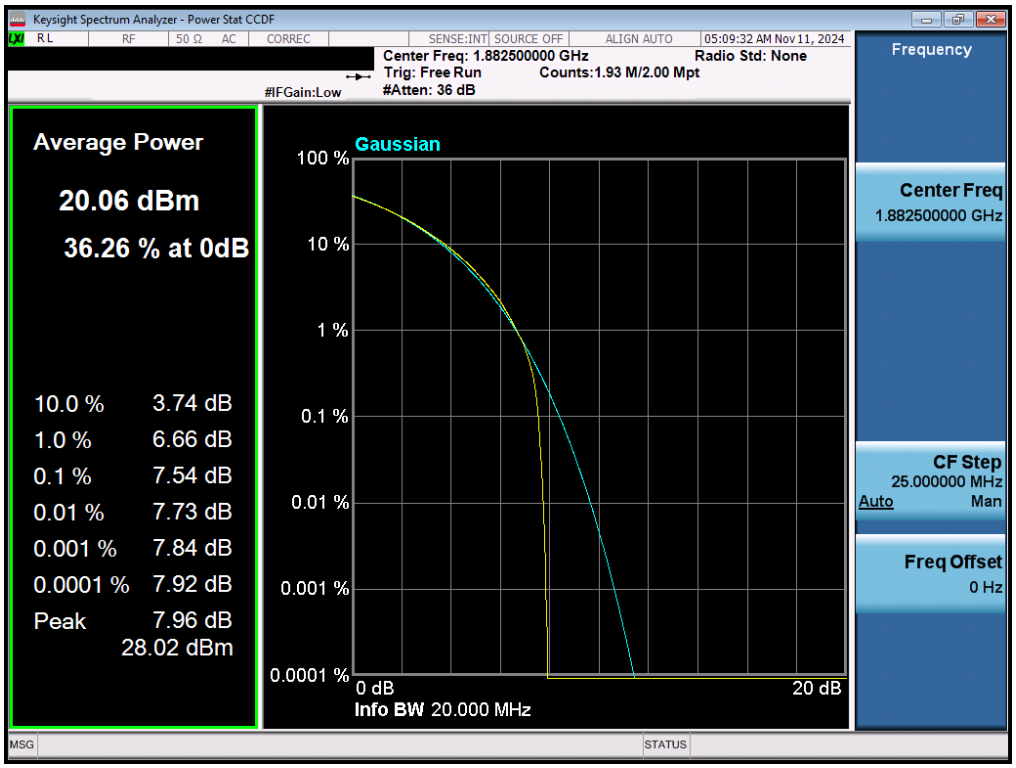
Plot 7-222. PAR Plot (NR Band n25/2 - 25.0MHz CP-OFDM QPSK - Full RB - ANT2)



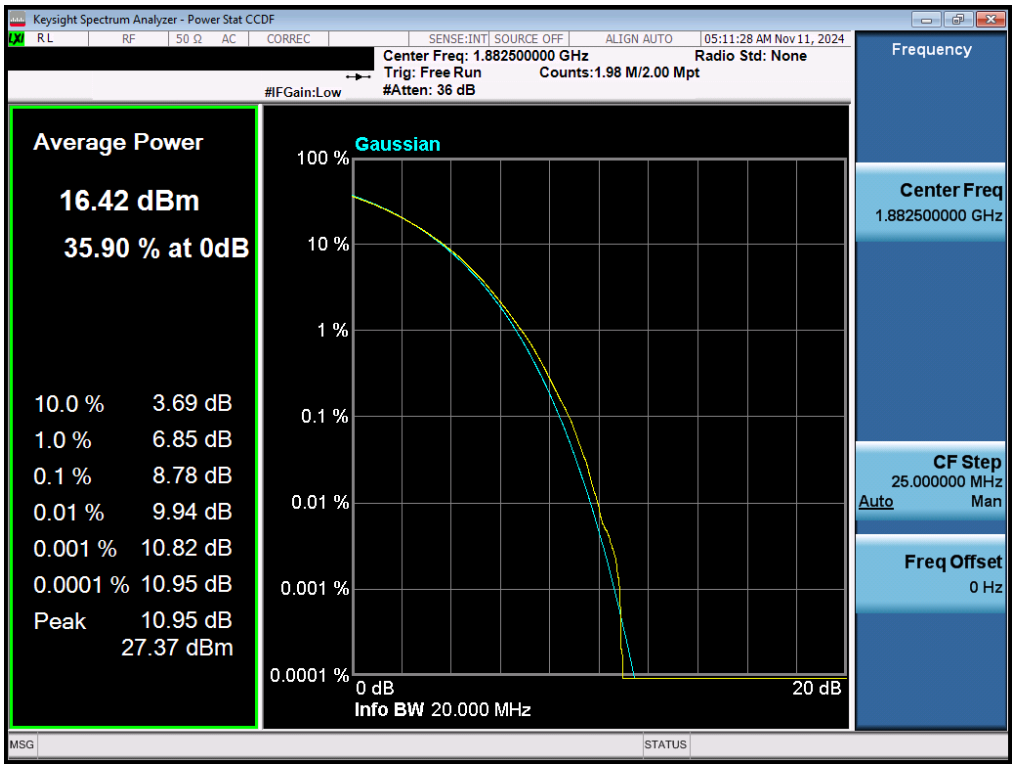
Plot 7-223. PAR Plot (NR Band n25/2 - 25.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



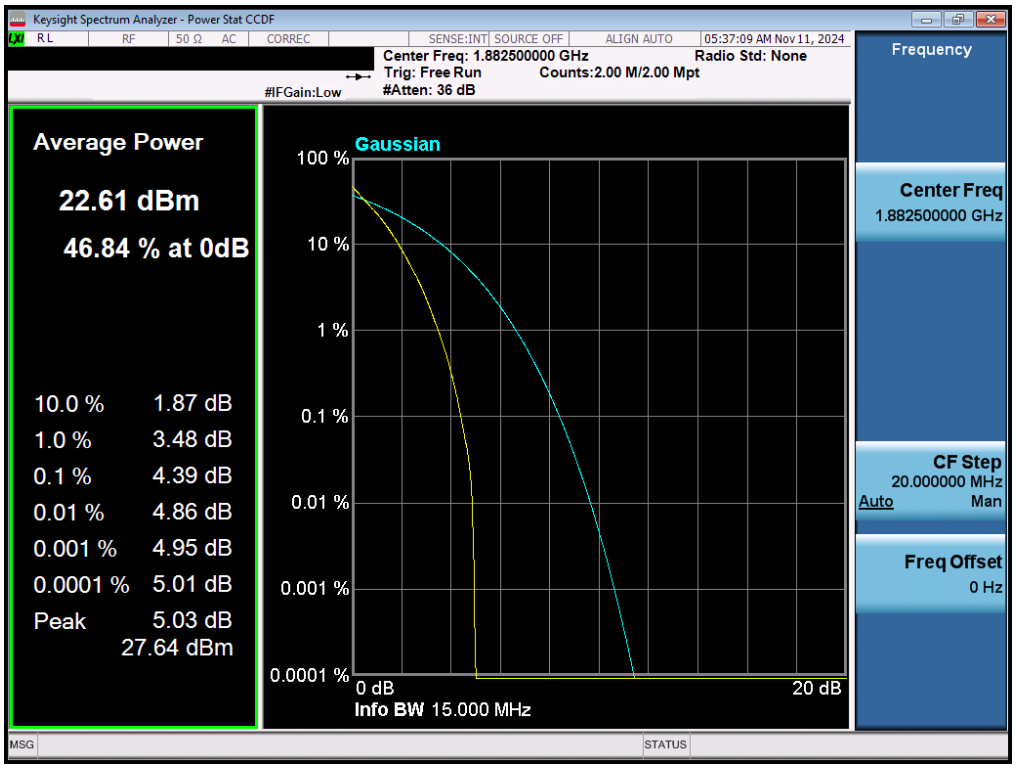
Plot 7-224. PAR Plot (NR Band n25/2 - 20.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



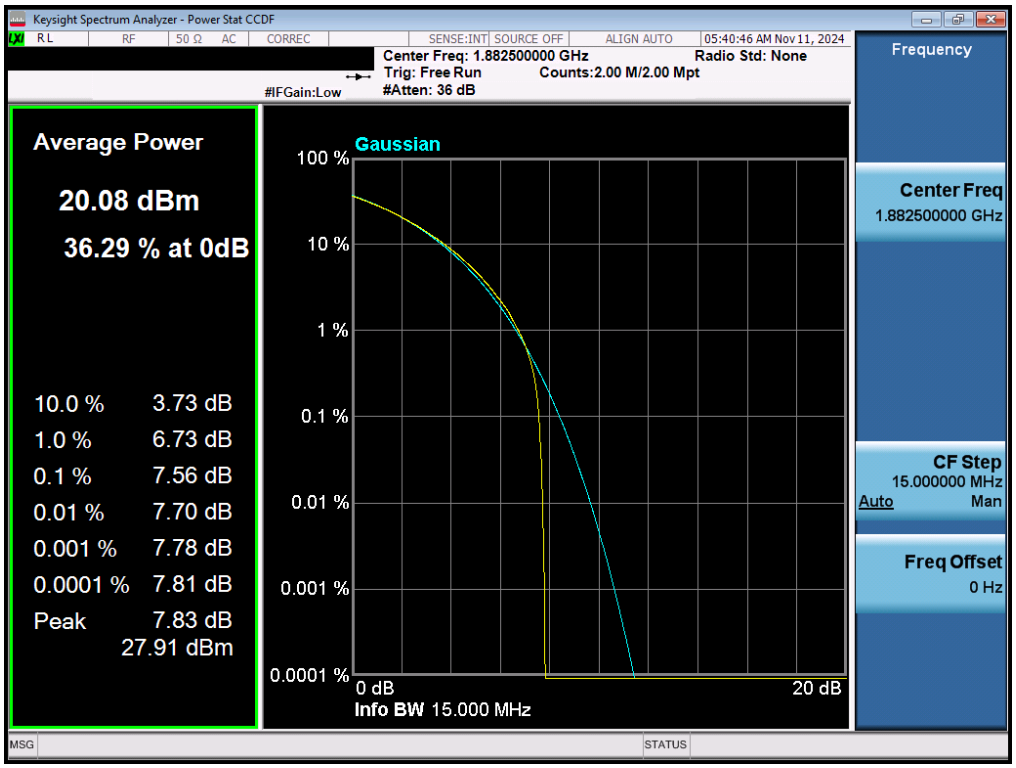
Plot 7-225. PAR Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB - ANT2)



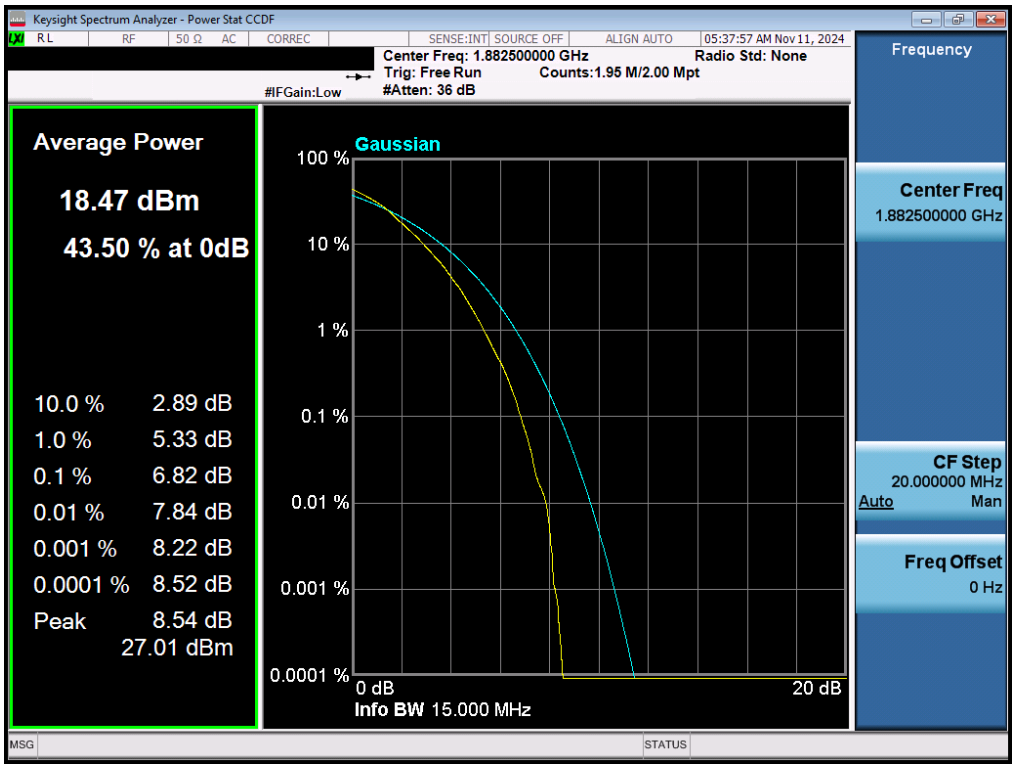
Plot 7-226. PAR Plot (NR Band n25/2 - 20.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



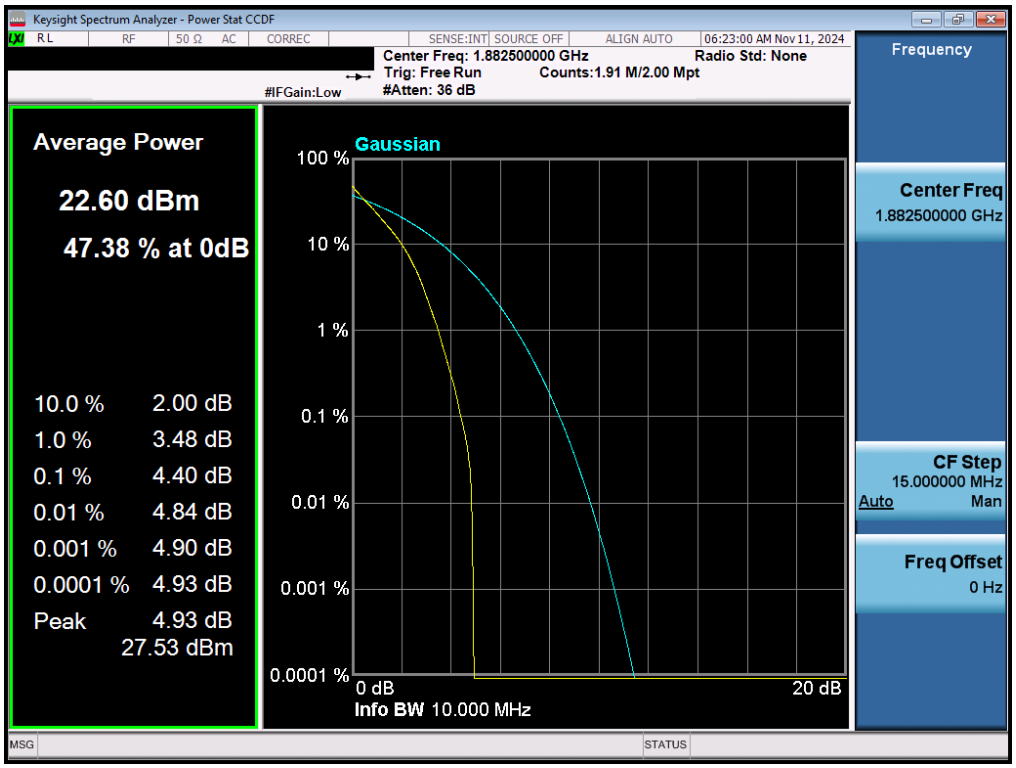
Plot 7-227. PAR Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



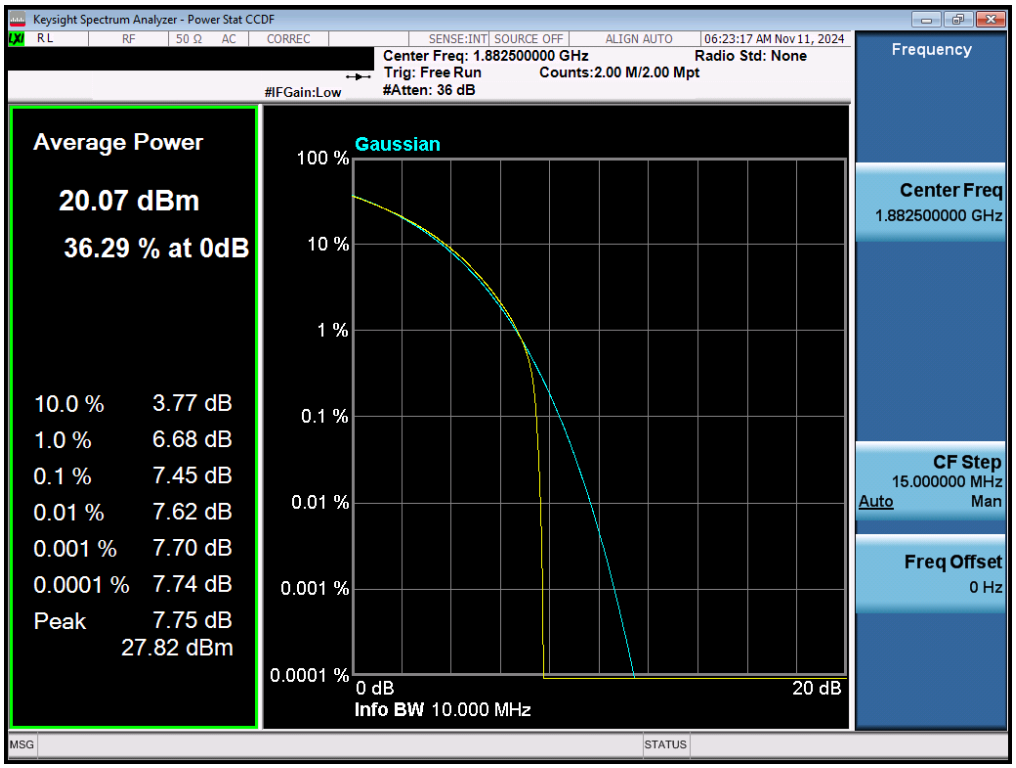
Plot 7-228. PAR Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB - ANT2)



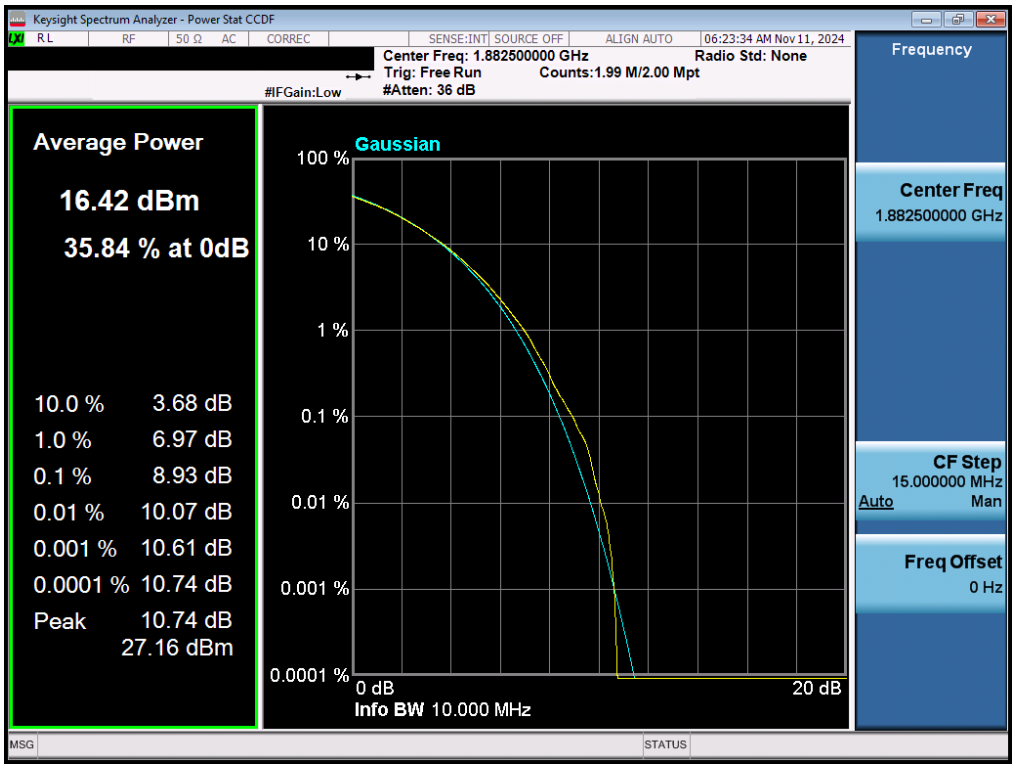
Plot 7-229. PAR Plot (NR Band n25/2 - 15.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



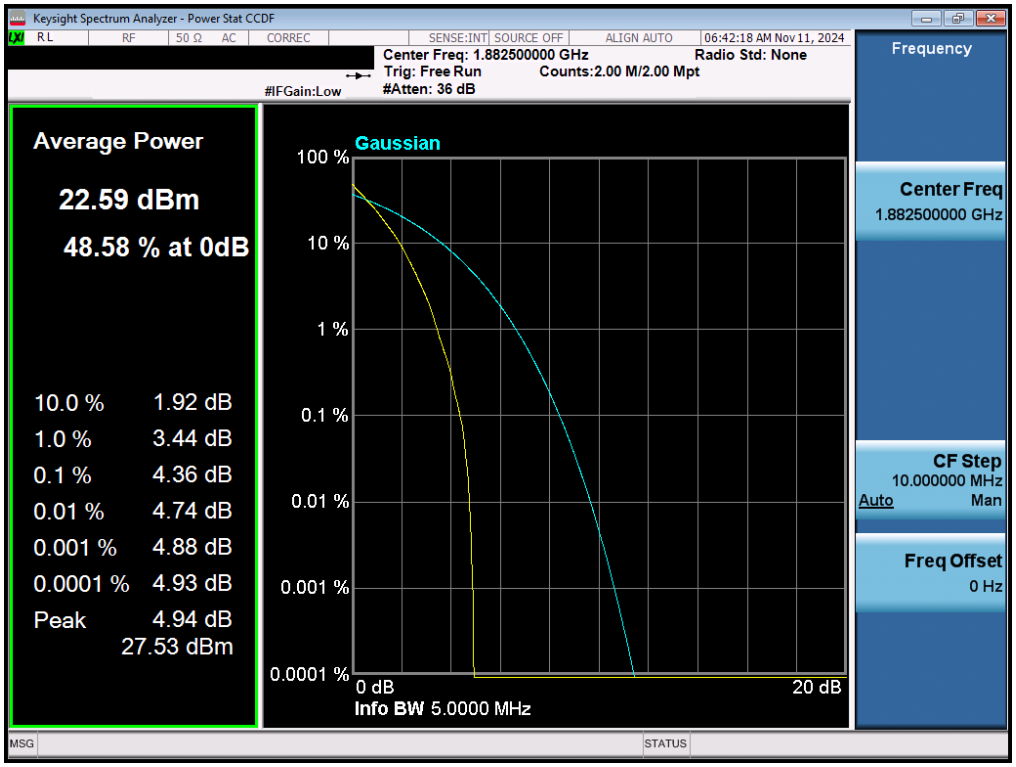
Plot 7-230. PAR Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



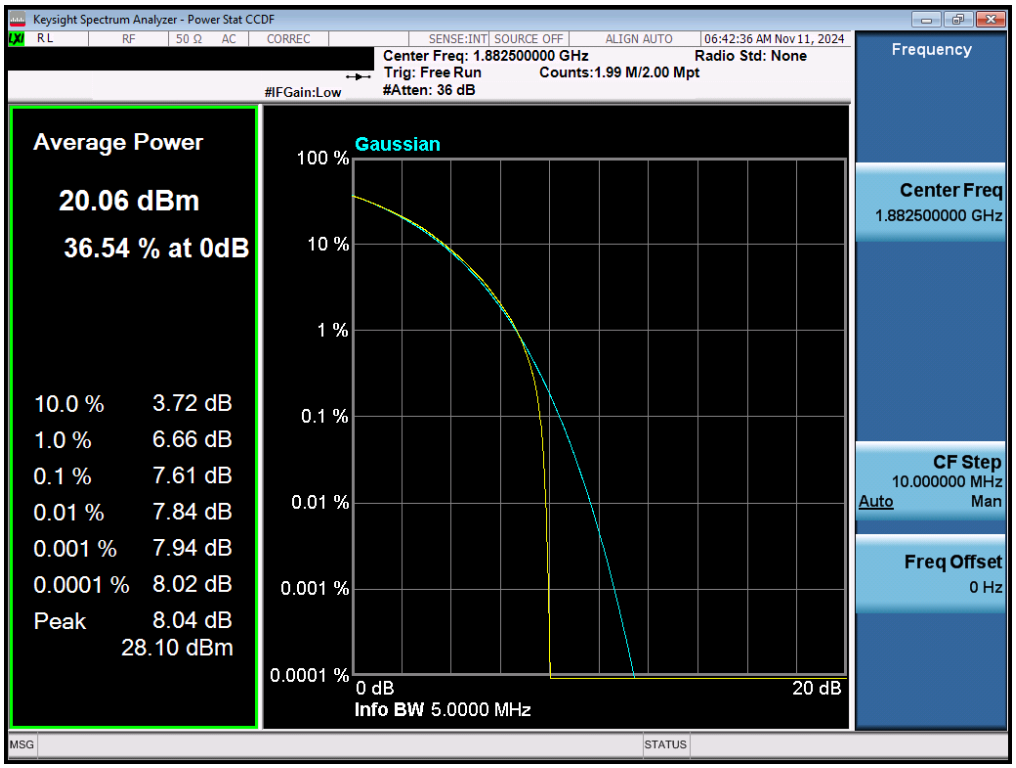
Plot 7-231. PAR Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB - ANT2)



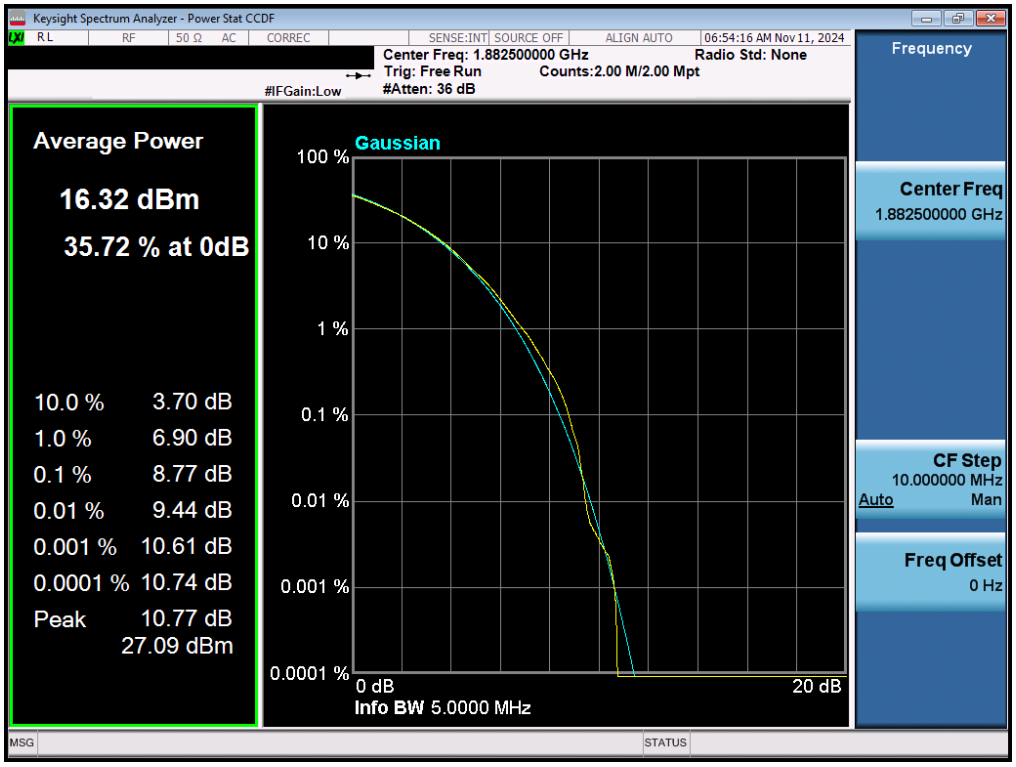
Plot 7-232. PAR Plot (NR Band n25/2 - 10.0MHz CP-OFDM 256-QAM - Full RB - ANT2)



Plot 7-233. PAR Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)



Plot 7-234. PAR Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB - ANT2)



Plot 7-235. PAR Plot (NR Band n25/2 - 5.0MHz CP-OFDM 256-QAM - Full RB - ANT2)

7.7 Radiated Power (EIRP)

Test Overview

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements 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

ANSI C63.26-2015 – Section 5.2.4.4

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.

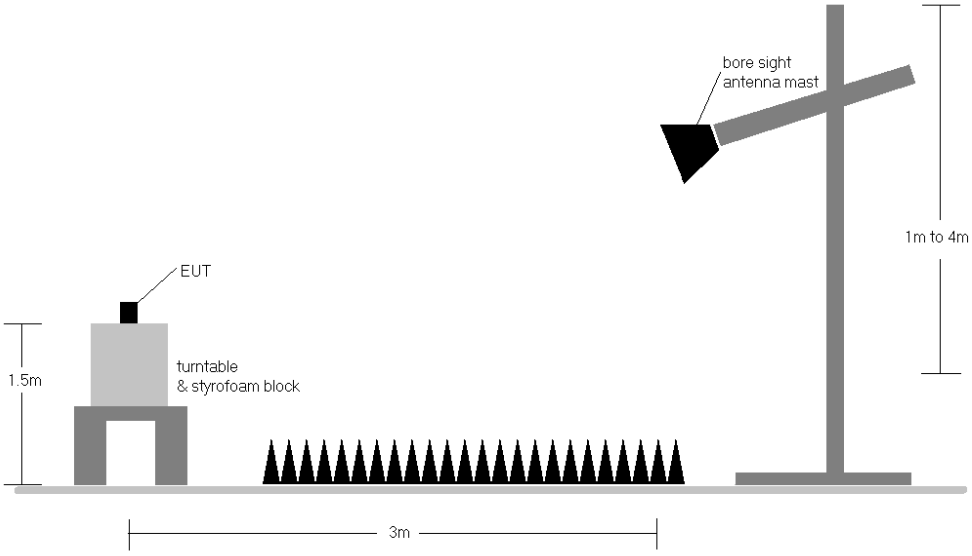


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are 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 powers are 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) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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	118	332	28.31	2.62	**30.93**	**1.240**	33.01	-2.08
1880.00	GSM1900	V	103	338	27.94	2.34	30.28	1.066	33.01	-2.73
1909.80	GSM1900	V	133	329	27.42	2.22	29.64	0.920	33.01	-3.37
1850.20	GSM1900	H	116	15	27.46	2.86	30.32	1.075	33.01	-2.69
1850.20	EDGE1900	V	118	332	22.41	2.34	**24.75**	0.298	33.01	-8.26
1850.20	GSM1900 (WCP)	V	105	134	28.40	2.34	30.74	1.186	33.01	-2.27

Table 7-19. EIRP Data (GPRS PCS – Ant1)

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	104	9	22.08	2.84	**24.92**	**0.310**	33.01	-8.09
1880.00	WCDMA1900	H	108	8	21.15	2.67	23.82	0.241	33.01	-9.20
1907.60	WCDMA1900	H	105	6	21.19	2.54	23.73	0.236	33.01	-9.28
1852.40	WCDMA1900	V	112	333	21.82	2.60	24.42	0.277	33.01	-8.59
1852.40	WCDMA1900 (WCP)	H	105	134	21.71	2.84	24.55	0.285	33.01	-8.46

Table 7-20. EIRP Data (WCDMA PCS – Ant1)

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	1860.00	H	140	223	2.79	1 / 99	20.05	**22.84**	0.192	33.01	-10.17
	QPSK	1882.50	H	139	223	2.65	1 / 0	19.51	22.16	0.164	33.01	-10.85
	QPSK	1905.00	H	140	222	2.54	1 / 99	19.36	21.90	0.155	33.01	-11.11
	16-QAM	1860.00	H	140	223	2.79	1 / 99	19.11	21.90	0.155	33.01	-11.11
15 MHz	QPSK	1857.50	H	140	223	2.81	1 / 74	19.98	**22.79**	0.190	33.01	-10.22
	QPSK	1882.50	H	139	223	2.65	1 / 0	19.58	22.23	0.167	33.01	-10.78
	QPSK	1907.50	H	140	222	2.54	1 / 0	19.31	21.85	0.153	33.01	-11.16
	16-QAM	1857.50	H	140	223	2.81	1 / 37	19.15	21.95	0.157	33.01	-11.06
10 MHz	QPSK	1855.00	H	140	223	2.82	1 / 0	20.08	**22.91**	0.195	33.01	-10.10
	QPSK	1882.50	H	139	223	2.65	1 / 49	19.45	22.10	0.162	33.01	-10.91
	QPSK	1910.00	H	140	222	2.55	1 / 0	19.29	21.84	0.153	33.01	-11.17
	16-QAM	1855.00	H	140	223	2.82	1 / 0	19.10	21.92	0.156	33.01	-11.09
5 MHz	QPSK	1852.50	H	140	223	2.84	1 / 24	20.16	**23.00**	0.199	33.01	-10.01
	QPSK	1882.50	H	139	223	2.65	1 / 0	19.39	22.04	0.160	33.01	-10.97
	QPSK	1912.50	H	140	222	2.55	1 / 0	19.25	21.80	0.151	33.01	-11.21
	16-QAM	1852.50	H	140	223	2.84	1 / 12	19.20	22.04	0.160	33.01	-10.97
3 MHz	QPSK	1851.50	H	140	223	2.85	1 / 14	20.06	**22.91**	0.195	33.01	-10.10
	QPSK	1882.50	H	139	223	2.65	1 / 14	19.40	22.05	0.160	33.01	-10.96
	QPSK	1913.50	H	140	222	2.55	1 / 0	19.10	21.65	0.146	33.01	-11.36
	16-QAM	1851.50	H	140	223	2.85	1 / 14	19.36	22.20	0.166	33.01	-10.81
1.4 MHz	QPSK	1850.70	H	140	223	2.85	1 / 0	19.93	**22.78**	0.190	33.01	-10.23
	QPSK	1882.50	H	139	223	2.65	1 / 5	19.45	22.10	0.162	33.01	-10.92
	QPSK	1914.30	H	140	222	2.55	1 / 3	19.03	21.58	0.144	33.01	-11.43
	16-QAM	1850.70	H	140	223	2.85	1 / 3	18.99	21.84	0.153	33.01	-11.17
20 MHz	WCP	1860.00	H	152	246	2.53	1 / 99	18.86	21.39	0.138	33.01	-11.62

Table 7-21. EIRP Data (LTE Band 25/2 – Ant1)

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]
40 MHz	π/2 BPSK	1870.00	H	205	123	2.73	1 / 1	19.91	22.64	0.184	33.01	-10.37
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 1	20.00	22.65	0.184	33.01	-10.36
	π/2 BPSK	1895.00	H	198	125	2.57	1 / 1	19.40	21.97	0.157	33.01	-11.04
	QPSK	1870.00	H	205	123	2.73	1 / 1	19.86	22.59	0.182	33.01	-10.42
	QPSK	1882.50	H	205	123	2.65	1 / 1	20.09	**22.74**	0.188	33.01	-10.27
	QPSK	1895.00	H	198	125	2.57	1 / 1	19.24	21.81	0.152	33.01	-11.20
	16-QAM	1870.00	H	205	123	2.73	1 / 1	18.97	21.70	0.148	33.01	-11.31
35 MHz	π/2 BPSK	1862.50	H	205	123	2.76	1 / 80	19.82	22.58	0.181	33.01	-10.43
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 80	19.94	22.59	0.181	33.01	-10.43
	π/2 BPSK	1902.50	H	198	125	2.54	1 / 1	19.42	21.96	0.157	33.01	-11.05
	QPSK	1862.50	H	205	123	2.76	1 / 80	19.81	22.57	0.181	33.01	-10.44
	QPSK	1882.50	H	205	123	2.65	1 / 80	20.07	22.72	0.187	33.01	-10.29
	QPSK	1902.50	H	198	125	2.54	1 / 1	19.26	21.80	0.151	33.01	-11.21
	16-QAM	1862.50	H	205	123	2.76	1 / 80	18.94	21.70	0.148	33.01	-11.31
30 MHz	π/2 BPSK	1865.00	H	205	123	2.76	1 / 80	19.97	22.74	0.188	33.01	-10.28
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 1	20.09	22.74	0.188	33.01	-10.27
	π/2 BPSK	1900.00	H	198	125	2.54	1 / 80	19.55	22.09	0.162	33.01	-10.92
	QPSK	1865.00	H	205	123	2.76	1 / 80	19.94	22.70	0.186	33.01	-10.31
	QPSK	1882.50	H	205	123	2.65	1 / 1	20.00	22.65	0.184	33.01	-10.36
	QPSK	1900.00	H	198	125	2.54	1 / 80	19.12	21.66	0.147	33.01	-11.35
	16-QAM	1865.00	H	205	123	2.76	1 / 80	18.68	21.45	0.139	33.01	-11.56
25 MHz	π/2 BPSK	1862.50	H	205	123	2.78	1 / 1	20.04	22.82	0.191	33.01	-10.19
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 66	20.19	**22.84**	0.192	33.01	-10.17
	π/2 BPSK	1902.50	H	198	125	2.54	1 / 1	19.44	21.98	0.158	33.01	-11.03
	QPSK	1862.50	H	205	123	2.78	1 / 1	19.77	22.55	0.180	33.01	-10.46
	QPSK	1882.50	H	205	123	2.65	1 / 66	20.00	22.65	0.184	33.01	-10.36
	QPSK	1902.50	H	198	125	2.54	1 / 1	19.07	21.61	0.145	33.01	-11.40
	16-QAM	1882.50	H	205	123	2.65	1 / 66	18.82	21.47	0.140	33.01	-11.54
20 MHz	π/2 BPSK	1860.00	H	205	123	2.79	1 / 104	19.91	22.71	0.187	33.01	-10.30
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 1	20.16	**22.81**	0.191	33.01	-10.20
	π/2 BPSK	1905.00	H	198	125	2.54	1 / 1	19.22	21.77	0.150	33.01	-11.24
	QPSK	1860.00	H	205	123	2.79	1 / 104	19.95	22.74	0.188	33.01	-10.27
	QPSK	1882.50	H	205	123	2.65	1 / 1	19.98	22.63	0.183	33.01	-10.38
	QPSK	1905.00	H	198	125	2.54	1 / 1	19.00	21.54	0.143	33.01	-11.47
	16-QAM	1860.00	H	205	123	2.79	1 / 104	18.48	21.27	0.134	33.01	-11.74
15 MHz	π/2 BPSK	1857.50	H	205	123	2.81	1 / 1	19.74	22.55	0.180	33.01	-10.46
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 1	20.09	**22.74**	0.188	33.01	-10.27
	π/2 BPSK	1907.50	H	198	125	2.54	1 / 1	19.46	22.00	0.159	33.01	-11.01
	QPSK	1857.50	H	205	123	2.81	1 / 1	19.73	22.54	0.180	33.01	-10.47
	QPSK	1882.50	H	205	123	2.65	1 / 1	19.98	22.63	0.183	33.01	-10.38
	QPSK	1907.50	H	198	125	2.54	1 / 1	19.11	21.66	0.146	33.01	-11.35
	16-QAM	1882.50	H	205	123	2.65	1 / 1	18.65	21.30	0.135	33.01	-11.71
10 MHz	π/2 BPSK	1855.00	H	205	123	2.82	1 / 1	19.73	22.55	0.180	33.01	-10.46
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 1	20.12	**22.77**	0.189	33.01	-10.24
	π/2 BPSK	1910.00	H	198	125	2.55	1 / 1	19.30	21.84	0.153	33.01	-11.17
	QPSK	1855.00	H	205	123	2.82	1 / 1	19.64	22.47	0.177	33.01	-10.54
	QPSK	1882.50	H	205	123	2.65	1 / 1	19.86	22.51	0.178	33.01	-10.50
	QPSK	1910.00	H	198	125	2.55	1 / 1	18.94	21.49	0.141	33.01	-11.52
	16-QAM	1882.50	H	205	123	2.65	1 / 1	19.05	21.70	0.148	33.01	-11.31
5 MHz	π/2 BPSK	1852.50	H	205	123	2.84	1 / 23	19.66	22.50	0.178	33.01	-10.51
	π/2 BPSK	1882.50	H	205	123	2.65	1 / 1	20.21	**22.86**	0.193	33.01	-10.15
	π/2 BPSK	1912.50	H	198	125	2.55	1 / 1	19.26	21.81	0.152	33.01	-11.21
	QPSK	1852.50	H	205	123	2.84	1 / 23	19.62	22.46	0.176	33.01	-10.55
	QPSK	1882.50	H	205	123	2.65	1 / 1	19.77	22.42	0.174	33.01	-10.59
	QPSK	1912.50	H	198	125	2.55	1 / 1	18.95	21.49	0.141	33.01	-11.52
	16-QAM	1882.50	H	205	123	2.65	1 / 1	18.81	21.46	0.140	33.01	-11.55
40 MHz	QPSK (CP-OFDM)	1882.50	H	198	125	2.65	1 / 108	18.13	20.78	0.120	33.01	-12.23
	QPSK (WCP)	1882.50	H	355	317	2.65	1 / 214	11.32	13.97	0.025	33.01	-19.04

Table 7-22. EIRP Data (NR Band n25/2 – Ant1)

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	1860.00	H	157	211	2.79	1 / 0	16.61	19.40	0.087	33.01	-13.61
	QPSK	1882.50	H	169	208	2.65	1 / 0	16.30	18.95	0.079	33.01	-14.06
	QPSK	1905.00	H	155	218	2.54	1 / 50	17.04	**19.58**	0.091	33.01	-13.43
	16-QAM	1860.00	H	157	211	2.79	1 / 0	15.64	18.43	0.070	33.01	-14.58
15 MHz	QPSK	1857.50	H	157	211	2.81	1 / 37	16.62	**19.43**	0.088	33.01	-13.58
	QPSK	1882.50	H	169	208	2.65	1 / 74	16.19	18.84	0.077	33.01	-14.17
	QPSK	1907.50	H	155	218	2.54	1 / 0	16.88	19.42	0.088	33.01	-13.59
	16-QAM	1857.50	H	157	211	2.81	1 / 74	15.52	18.33	0.068	33.01	-14.68
10 MHz	QPSK	1855.00	H	157	211	2.82	1 / 25	16.53	**19.36**	0.086	33.01	-13.66
	QPSK	1882.50	H	169	208	2.65	1 / 49	16.14	18.79	0.076	33.01	-14.22
	QPSK	1910.00	H	155	218	2.55	1 / 0	16.67	19.22	0.084	33.01	-13.79
	16-QAM	1855.00	H	157	211	2.82	1 / 25	15.43	18.25	0.067	33.01	-14.76
5 MHz	QPSK	1852.50	H	157	211	2.84	1 / 12	16.90	**19.74**	0.094	33.01	-13.27
	QPSK	1882.50	H	169	208	2.65	1 / 12	16.26	18.91	0.078	33.01	-14.10
	QPSK	1912.50	H	155	218	2.55	1 / 0	16.72	19.27	0.085	33.01	-13.74
	16-QAM	1852.50	H	157	211	2.84	1 / 0	15.68	18.52	0.071	33.01	-14.49
3 MHz	QPSK	1851.50	H	157	211	2.85	1 / 14	16.64	**19.48**	0.089	33.01	-13.53
	QPSK	1882.50	H	169	208	2.65	1 / 0	16.10	18.75	0.075	33.01	-14.26
	QPSK	1913.50	H	155	218	2.55	1 / 0	16.19	18.74	0.075	33.01	-14.27
	16-QAM	1851.50	H	157	211	2.85	1 / 7	15.61	18.45	0.070	33.01	-14.56
1.4 MHz	QPSK	1850.70	H	157	211	2.85	1 / 0	16.46	**19.31**	0.085	33.01	-13.70
	QPSK	1882.50	H	169	208	2.65	1 / 3	16.00	18.65	0.073	33.01	-14.36
	QPSK	1914.30	H	155	218	2.55	1 / 3	16.12	18.67	0.074	33.01	-14.34
	16-QAM	1850.70	H	157	211	2.85	1 / 0	15.36	18.21	0.066	33.01	-14.80
20 MHz	WCP	1905.00	H	172	142	2.19	1 / 0	15.91	18.10	0.065	33.01	-14.91

Table 7-23. EIRP Data (LTE Band 25/2 – Ant2)

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]
40 MHz	π/2 BPSK	1870.00	H	163	238	2.73	1 / 108	19.45	22.18	0.165	33.01	-10.83
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 214	20.19	**22.84**	0.192	33.01	-10.17
	π/2 BPSK	1895.00	H	163	235	2.57	1 / 1	19.09	21.66	0.147	33.01	-11.35
	QPSK	1870.00	H	163	238	2.73	1 / 108	19.05	21.78	0.151	33.01	-11.23
	QPSK	1882.50	H	163	238	2.65	1 / 1	18.74	21.39	0.138	33.01	-11.62
	QPSK	1895.00	H	163	235	2.57	1 / 1	19.15	21.72	0.149	33.01	-11.29
	16-QAM	1870.00	H	163	238	2.73	1 / 108	17.65	20.38	0.109	33.01	-12.63
35 MHz	π/2 BPSK	1867.50	H	163	238	2.74	1 / 94	19.56	22.30	0.170	33.01	-10.71
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 186	20.06	**22.71**	0.186	33.01	-10.31
	π/2 BPSK	1897.50	H	163	235	2.56	1 / 186	19.11	21.66	0.147	33.01	-11.35
	QPSK	1867.50	H	163	238	2.74	1 / 94	19.12	21.86	0.154	33.01	-11.15
	QPSK	1882.50	H	163	238	2.65	1 / 186	18.70	21.35	0.137	33.01	-11.66
	QPSK	1897.50	H	163	235	2.56	1 / 186	18.57	21.12	0.130	33.01	-11.89
	16-QAM	1867.50	H	163	238	2.74	1 / 94	17.47	20.22	0.105	33.01	-12.80
30 MHz	π/2 BPSK	1865.00	H	163	238	2.76	1 / 80	19.40	22.16	0.165	33.01	-10.85
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 80	20.17	**22.82**	0.192	33.01	-10.19
	π/2 BPSK	1900.00	H	163	235	2.54	1 / 80	19.11	21.65	0.146	33.01	-11.36
	QPSK	1865.00	H	163	238	2.76	1 / 80	19.07	21.83	0.152	33.01	-11.18
	QPSK	1882.50	H	163	238	2.65	1 / 80	18.68	21.33	0.136	33.01	-11.68
	QPSK	1900.00	H	163	235	2.54	1 / 80	19.48	22.02	0.159	33.01	-10.99
	16-QAM	1865.00	H	163	238	2.76	1 / 80	17.74	20.50	0.112	33.01	-12.51
25 MHz	π/2 BPSK	1862.50	H	163	238	2.78	1 / 131	19.51	22.28	0.169	33.01	-10.73
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 1	20.44	**23.09**	0.204	33.01	-9.92
	π/2 BPSK	1902.50	H	163	235	2.54	1 / 1	19.21	21.75	0.150	33.01	-11.26
	QPSK	1862.50	H	163	238	2.78	1 / 66	19.23	22.01	0.159	33.01	-11.00
	QPSK	1882.50	H	163	238	2.65	1 / 1	18.86	21.51	0.142	33.01	-11.50
	QPSK	1902.50	H	163	235	2.54	1 / 1	19.59	22.13	0.163	33.01	-10.88
	16-QAM	1862.50	H	163	238	2.78	1 / 66	17.70	20.47	0.112	33.01	-12.54
20 MHz	π/2 BPSK	1860.00	H	163	238	2.79	1 / 104	19.36	22.15	0.164	33.01	-10.86
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 1	20.34	**22.99**	0.199	33.01	-10.02
	π/2 BPSK	1905.00	H	163	235	2.54	1 / 53	19.05	21.59	0.144	33.01	-11.42
	QPSK	1860.00	H	163	238	2.79	1 / 104	18.95	21.74	0.149	33.01	-11.27
	QPSK	1882.50	H	163	238	2.65	1 / 1	18.73	21.38	0.137	33.01	-11.63
	QPSK	1905.00	H	163	235	2.54	1 / 53	19.23	21.78	0.151	33.01	-11.23
	16-QAM	1882.50	H	163	238	2.65	1 / 1	17.57	20.22	0.105	33.01	-12.79
15 MHz	π/2 BPSK	1857.50	H	163	238	2.81	1 / 77	19.34	22.15	0.164	33.01	-10.86
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 1	20.19	**22.84**	0.192	33.01	-10.17
	π/2 BPSK	1907.50	H	163	235	2.54	1 / 1	18.98	21.53	0.142	33.01	-11.49
	QPSK	1857.50	H	163	238	2.81	1 / 77	19.04	21.85	0.153	33.01	-11.16
	QPSK	1882.50	H	163	238	2.65	1 / 1	18.87	21.52	0.142	33.01	-11.49
	QPSK	1907.50	H	163	235	2.54	1 / 1	19.26	21.81	0.152	33.01	-11.20
	16-QAM	1857.50	H	163	238	2.81	1 / 77	17.65	20.46	0.111	33.01	-12.55
10 MHz	π/2 BPSK	1855.00	H	163	238	2.82	1 / 26	19.17	22.00	0.158	33.01	-11.01
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 1	20.22	**22.87**	0.194	33.01	-10.14
	π/2 BPSK	1910.00	H	163	235	2.55	1 / 1	19.26	21.81	0.152	33.01	-11.20
	QPSK	1855.00	H	163	238	2.82	1 / 26	18.88	21.71	0.148	33.01	-11.30
	QPSK	1882.50	H	163	238	2.65	1 / 1	18.81	21.46	0.140	33.01	-11.55
	QPSK	1910.00	H	163	235	2.55	1 / 1	19.29	21.84	0.153	33.01	-11.17
	16-QAM	1882.50	H	163	238	2.65	1 / 1	17.77	20.41	0.110	33.01	-12.60
5 MHz	π/2 BPSK	1852.50	H	163	238	2.84	1 / 1	19.23	22.07	0.161	33.01	-10.94
	π/2 BPSK	1882.50	H	163	238	2.65	1 / 1	20.10	**22.75**	0.188	33.01	-10.26
	π/2 BPSK	1912.50	H	163	235	2.55	1 / 12	19.18	21.73	0.149	33.01	-11.28
	QPSK	1852.50	H	163	238	2.84	1 / 1	18.92	21.77	0.150	33.01	-11.25
	QPSK	1882.50	H	163	238	2.65	1 / 1	18.64	21.29	0.135	33.01	-11.72
	QPSK	1912.50	H	163	235	2.55	1 / 1	18.87	21.42	0.139	33.01	-11.59
	16-QAM	1882.50	H	163	238	2.65	1 / 1	17.70	20.35	0.108	33.01	-12.66
40 MHz	QPSK (CP-OFDM)	1882.50	H	163	238	2.65	1 / 108	17.23	19.88	0.097	33.01	-13.13
	QPSK (WCP)	1882.50	H	153	306	2.65	1 / 108	16.13	18.78	0.076	33.01	-14.23

Table 7-24. EIRP Data (NR Band n25/2 – Ant2)

7.8 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 integral 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.

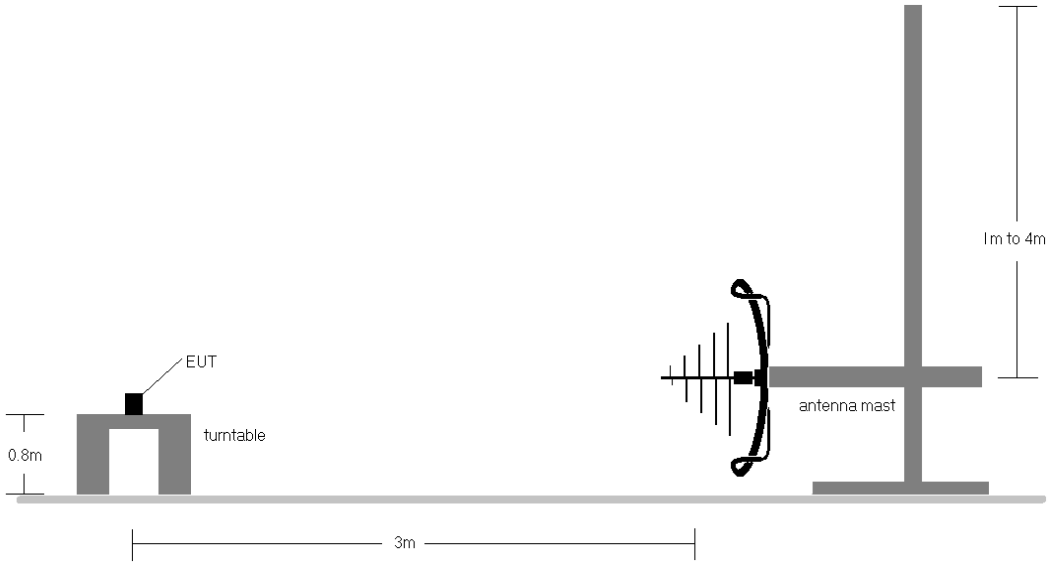


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

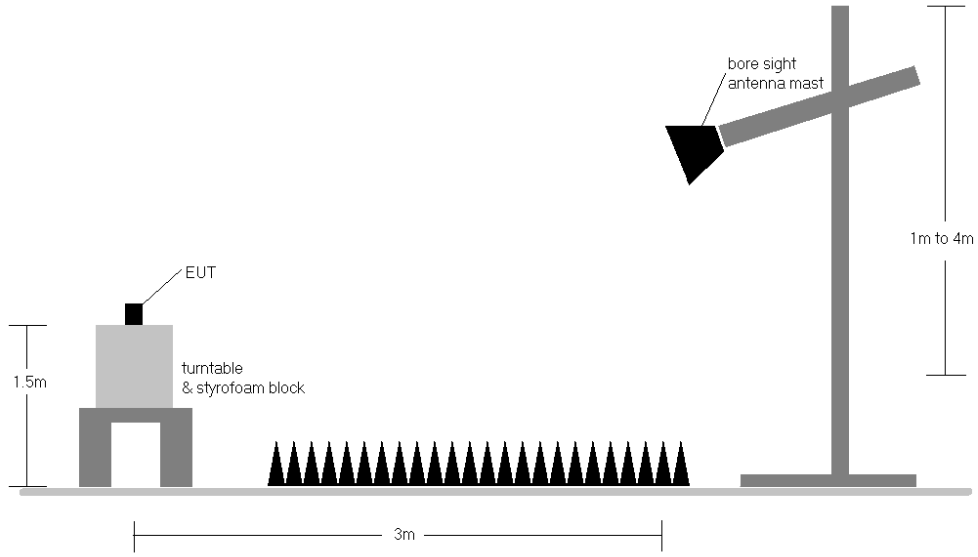


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

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) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are 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 powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to “1”.

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

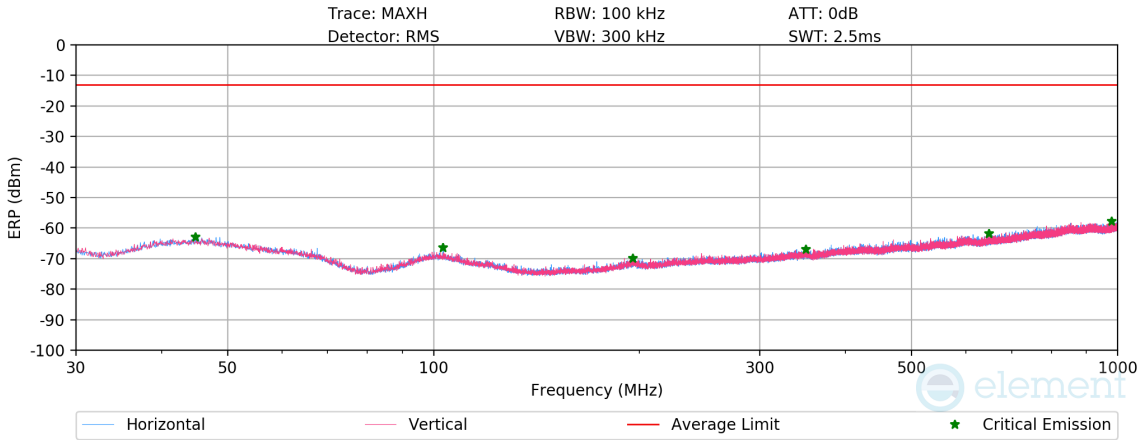
7) Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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

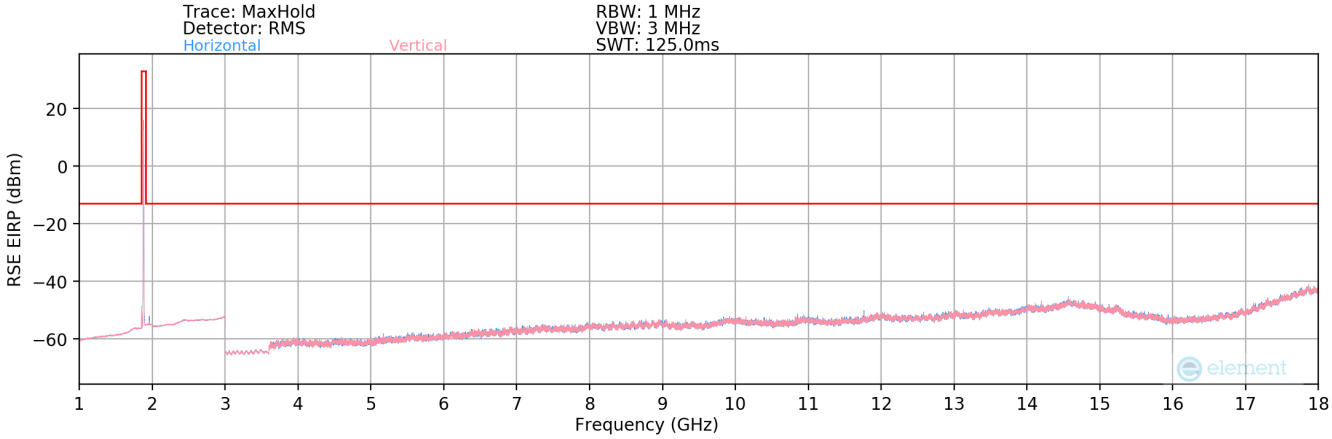
9) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

10) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device are subject to the rules under which the NR carrier operates. Spurious emissions caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

GSM/GPRS PCS – Ant1



Plot 7-236. Radiated Spurious Plot (GPRS PCS - Ant1)



Plot 7-237. Radiated Spurious Plot (GPRS PCS - Ant1)

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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
44.82	H	200	-	-70.82	-1.38	34.80	-62.96	-13.00	-49.96
103.22	H	200	-	-72.49	-3.18	31.33	-66.43	-13.00	-53.43
195.32	V	200	-	-76.49	-2.65	27.86	-69.89	-13.00	-56.89
349.66	V	200	-	-77.73	1.53	30.80	-66.96	-13.00	-53.96
647.74	V	200	-	-78.09	7.16	36.07	-61.69	-13.00	-48.69
979.18	V	200	-	-78.97	12.02	40.05	-57.71	-13.00	-44.71

Table 7-25. Radiated Spurious Data (GPRS PCS – Mid Channel - Ant1)

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]
3700.40	V	-	-	-80.87	6.93	33.06	-62.20	-13.00	-49.20
5550.60	V	-	-	-82.85	11.37	35.52	-59.74	-13.00	-46.74
7400.80	V	-	-	-83.16	13.64	37.48	-57.78	-13.00	-44.78

Table 7-26. Radiated Spurious Data (GPRS PCS – Low Channel - Ant1)

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]
3760.00	V	-	-	-81.11	7.24	33.13	-62.13	-13.00	-49.13
5640.00	V	253	33	-82.63	11.46	35.83	-59.43	-13.00	-46.43
7520.00	V	-	-	-83.15	13.89	37.74	-57.52	-13.00	-44.52
9400.00	V	-	-	-83.44	15.78	39.34	-55.92	-13.00	-42.92
11280.00	V	-	-	-84.80	19.80	42.00	-53.26	-13.00	-40.26

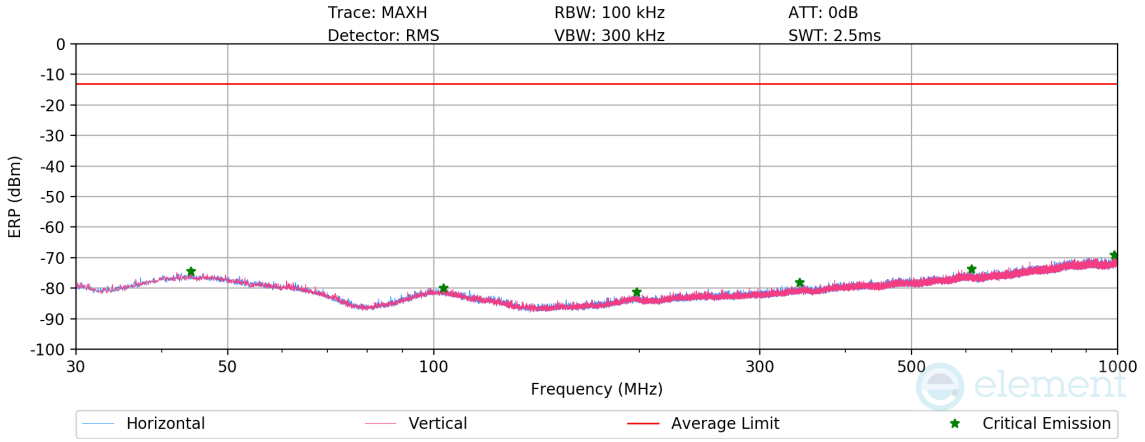
Table 7-27. Radiated Spurious Data (GPRS PCS – Mid Channel - Ant1)

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

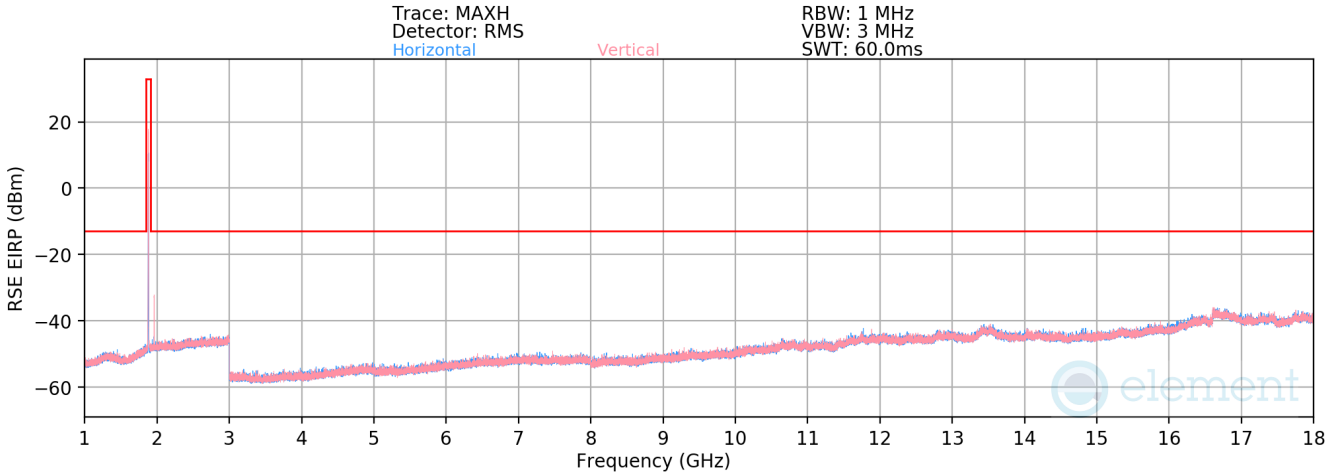
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3819.60	V	-	-	-80.89	7.26	33.37	-61.89	-13.00	-48.89
5729.40	V	-	-	-83.05	11.83	35.79	-59.47	-13.00	-46.47
7639.20	V	-	-	-83.13	13.64	37.52	-57.74	-13.00	-44.74

Table 7-28. Radiated Spurious Data (GPRS PCS – High Channel - Ant1)

WCDMA PCS – Ant1



Plot 7-238. Radiated Spurious Plot (WCDMA PCS - Ant1)



Plot 7-239. Radiated Spurious Plot (WCDMA PCS - Ant1)

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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
45.22	V	200	-	-70.59	-13.31	23.10	-74.65	-13.00	-61.65
102.92	H	200	-	-73.05	-15.18	18.77	-78.99	-13.00	-65.99
224.36	H	200	-	-75.50	-14.22	17.28	-80.48	-13.00	-67.48
340.16	H	200	-	-76.86	-10.79	19.35	-78.41	-13.00	-65.41
660.74	V	200	-	-78.02	-4.58	24.40	-73.36	-13.00	-60.36
985.38	V	200	-	-78.34	0.10	28.76	-69.00	-13.00	-56.00

Table 7-29. Radiated Spurious Data (WCDMA PCS – Mid Channel - Ant1)

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]
3704.80	V	-	-	-80.86	6.30	32.45	-62.81	-13.00	-49.81
5557.20	V	-	-	-82.54	10.35	34.81	-60.45	-13.00	-47.45
7409.60	V	-	-	-82.97	13.28	37.31	-57.94	-13.00	-44.94

Table 7-30. Radiated Spurious Data (WCDMA PCS – Low Channel - Ant1)

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]
3760.00	V	-	-	-80.45	6.12	32.67	-62.59	-13.00	-49.59
5640.00	V	-	-	-82.37	10.44	35.07	-60.19	-13.00	-47.19
7520.00	V	-	-	-82.99	13.58	37.59	-57.67	-13.00	-44.67

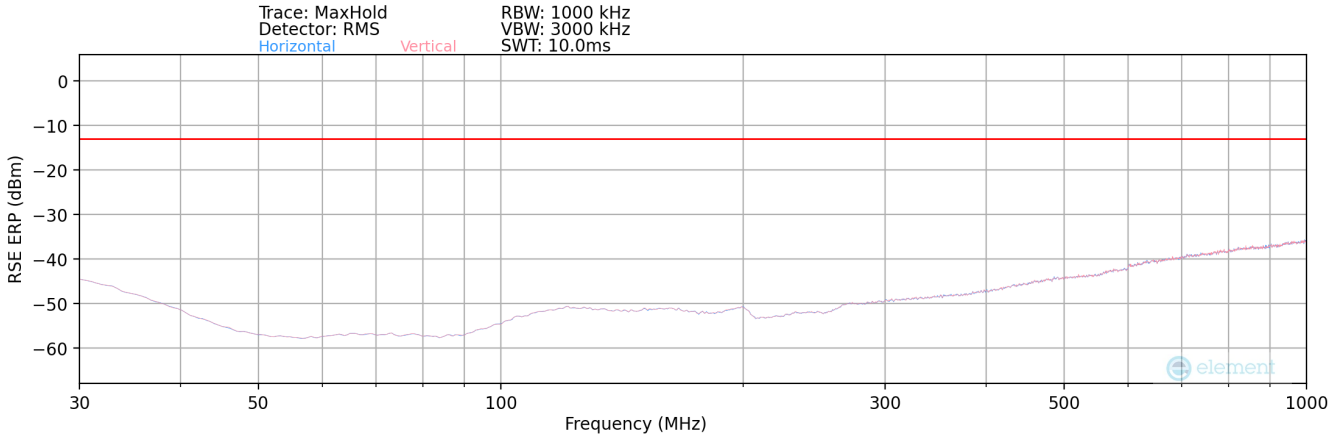
Table 7-31. Radiated Spurious Data (WCDMA PCS – Mid Channel - Ant1)

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

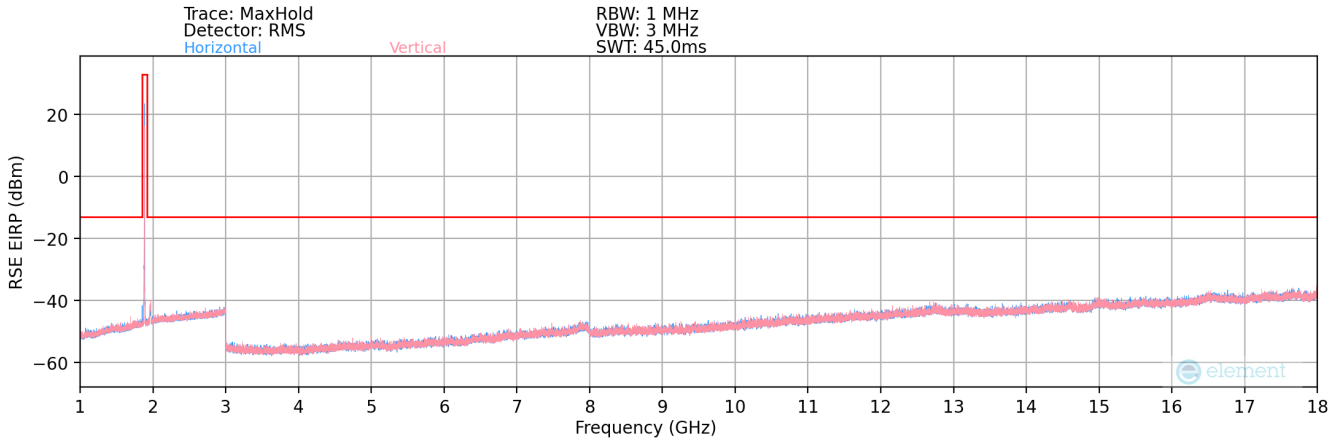
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3815.20	V	-	-	-80.29	6.17	32.88	-62.37	-13.00	-49.37
5722.80	V	-	-	-82.95	11.03	35.08	-60.18	-13.00	-47.18
7630.40	V	-	-	-82.86	13.39	37.53	-57.73	-13.00	-44.73

Table 7-32. Radiated Spurious Data (WCDMA PCS – High Channel - Ant1)

LTE Band 25/2 – Ant1



Plot 7-240. Radiated Spurious Plot (LTE Band 25/2 - Ant1)



Plot 7-241. Radiated Spurious Plot (LTE Band 25/2 - Ant1)

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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
70.31	H	-	-	-107.99	14.68	13.69	-83.72	-13.00	-70.72
127.73	H	-	-	-107.73	20.39	19.66	-77.75	-13.00	-64.75
291.55	H	-	-	-107.60	20.98	20.38	-77.03	-13.00	-64.03

Table 7-33. Radiated Spurious Data (LTE Band 25/2 – Mid Channel - Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	1860
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]
3720.00	H	-	-	-80.11	5.49	32.38	-62.88	-13.00	-49.88
5580.00	H	-	-	-81.18	8.34	34.16	-61.10	-13.00	-48.10
7440.00	H	-	-	-81.33	12.59	38.26	-56.99	-13.00	-43.99

Table 7-34. Radiated Spurious Data (LTE Band 25/2 – Low Channel - Ant1)

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]
3765.00	H	-	-	-79.73	5.65	32.92	-62.34	-13.00	-49.34
5647.50	H	-	-	-81.18	8.26	34.08	-61.18	-13.00	-48.18
7530.00	H	-	-	-81.57	13.01	38.44	-56.82	-13.00	-43.82

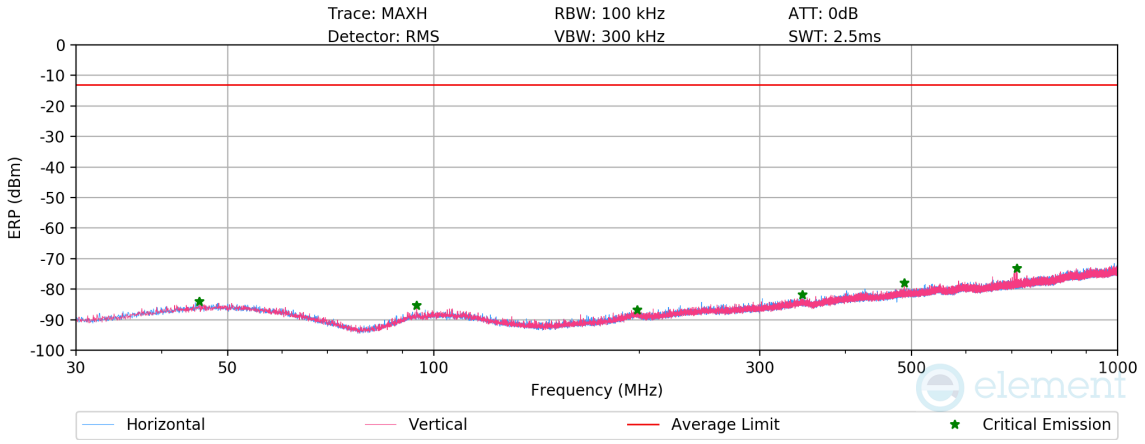
Table 7-35. Radiated Spurious Data (LTE Band 25/2 – Mid Channel - Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 50

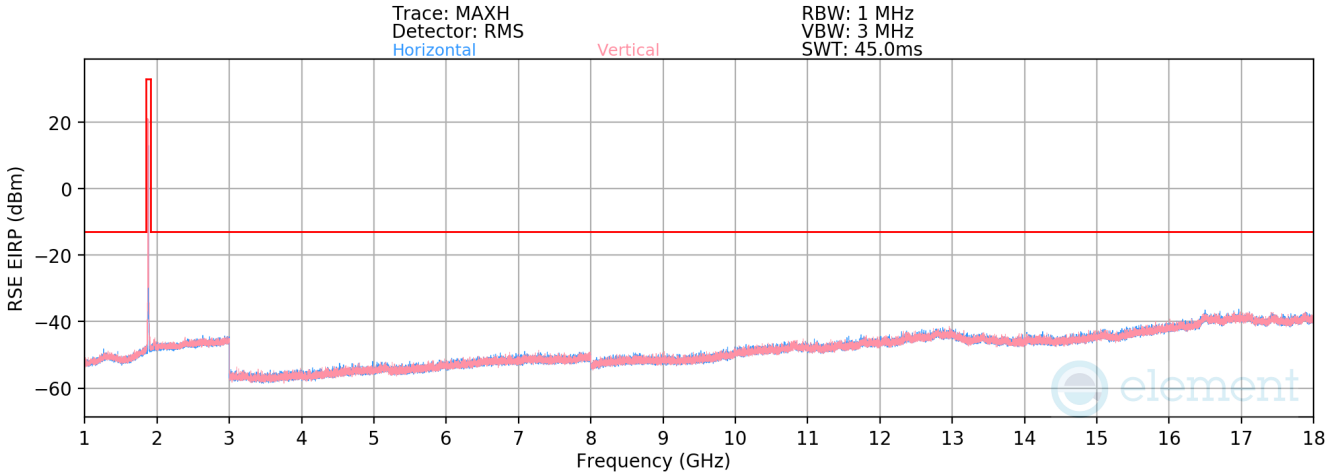
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3810.00	H	-	-	-80.63	5.91	32.28	-62.98	-13.00	-49.98
5715.00	H	-	-	-80.83	8.41	34.58	-60.67	-13.00	-47.67
7620.00	H	-	-	-81.20	12.79	38.59	-56.67	-13.00	-43.67

Table 7-36. Radiated Spurious Data (LTE Band 25/2 – High Channel - Ant1)

NR Band n25/2 – Ant1



Plot 7-242. Radiated Spurious Plot (NR Band n25/2 - Ant1)



Plot 7-243. Radiated Spurious Plot (NR Band n25/2 - Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1882.5
RB / Offset:	1 / 108

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]
45.45	V	200	-	-81.31	-11.97	13.72	-84.04	-13.00	-71.04
94.45	V	200	-	-80.16	-14.37	12.47	-85.29	-13.00	-72.29
198.55	V	200	-	-82.76	-13.20	11.04	-86.72	-13.00	-73.72
345.85	H	200	-	-82.02	-8.99	15.99	-81.77	-13.00	-68.77
487.60	V	200	-	-81.20	-5.92	19.88	-77.87	-13.00	-64.87
712.60	V	200	-	-80.79	-1.57	24.64	-73.12	-13.00	-60.12

Table 7-37. Radiated Spurious Data (NR Band n25/2 – Mid Channel - Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1870
RB / Offset:	1 / 108

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]
3740.00	H	-	-	-81.35	6.93	32.57	-62.69	-13.00	-49.69
5610.00	H	-	-	-83.42	11.58	35.16	-60.10	-13.00	-47.10
7480.00	H	-	-	-83.64	13.77	37.13	-58.12	-13.00	-45.12

Table 7-38. Radiated Spurious Data (NR Band n25/2 – Low Channel - Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1882.5
RB / Offset:	1 / 108

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]
3765.00	V	-	-	-81.36	7.21	32.85	-62.41	-13.00	-49.41
5647.50	H	-	-	-83.30	11.47	35.16	-60.10	-13.00	-47.10
7530.00	V	-	-	-83.60	13.89	37.28	-57.98	-13.00	-44.98

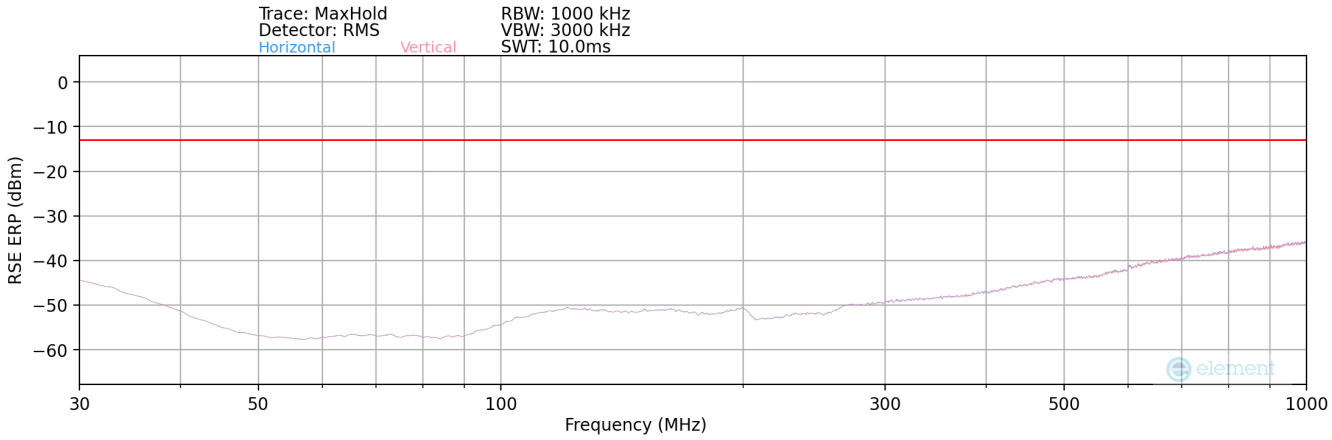
Table 7-39. Radiated Spurious Data (NR Band n25/2 – Mid Channel - Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1895
RB / Offset:	1 / 108

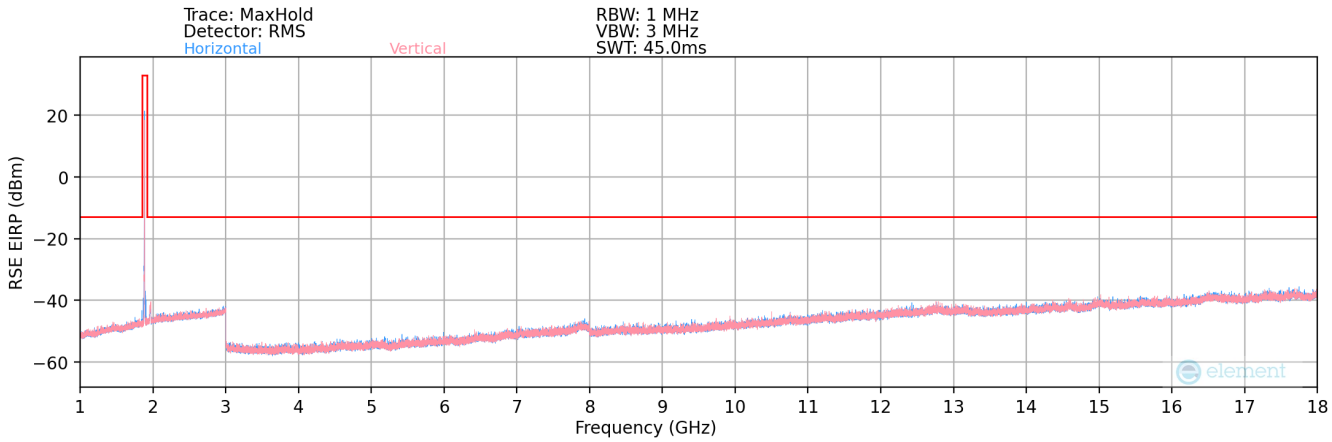
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3790.00	H	-	-	-81.56	7.36	32.80	-62.46	-13.00	-49.46
5685.00	H	-	-	-83.49	11.70	35.21	-60.05	-13.00	-47.05
7580.00	H	-	-	-83.67	13.64	36.97	-58.29	-13.00	-45.29

Table 7-40. Radiated Spurious Data (NR Band n25/2 – High Channel - Ant1)

LTE Band 25/2 – Ant2



Plot 7-244. Radiated Spurious Plot (LTE Band 25/2 - Ant2)



Plot 7-245. Radiated Spurious Plot (LTE Band 25/2 - Ant2)

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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
69.95	V	-	-	-107.98	14.63	13.65	-83.76	-13.00	-70.76
129.76	V	-	-	-108.31	20.26	18.95	-78.46	-13.00	-65.46
300.53	V	-	-	-108.37	21.40	20.03	-77.38	-13.00	-64.38

Table 7-41. Radiated Spurious Data (LTE Band 25/2 – Mid Channel - Ant2)

Bandwidth (MHz):	20
Frequency (MHz):	1860
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]
3720.00	V	-	-	-79.77	5.49	32.72	-62.54	-13.00	-49.54
5580.00	V	-	-	-80.64	8.34	34.70	-60.56	-13.00	-47.56
7440.00	V	-	-	-81.89	12.59	37.70	-57.55	-13.00	-44.55

Table 7-42. Radiated Spurious Data (LTE Band 25/2 – Low Channel - Ant2)

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]
3765.00	V	-	-	-79.73	5.65	32.92	-62.34	-13.00	-49.34
5647.50	V	-	-	-80.76	8.26	34.50	-60.76	-13.00	-47.76
7530.00	V	-	-	-82.56	13.01	37.45	-57.81	-13.00	-44.81

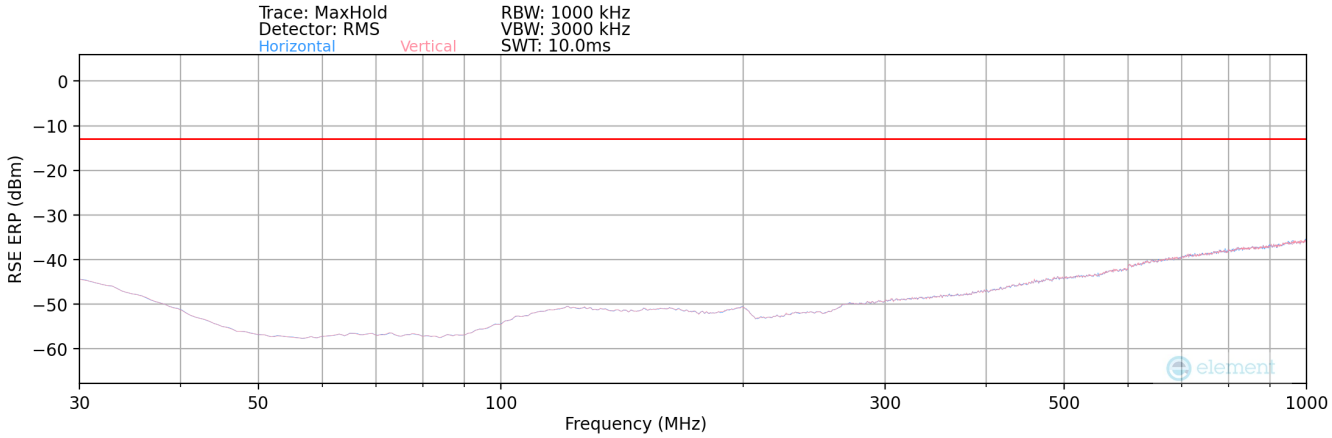
Table 7-43. Radiated Spurious Data (LTE Band 25/2 – Mid Channel - Ant2)

Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 50

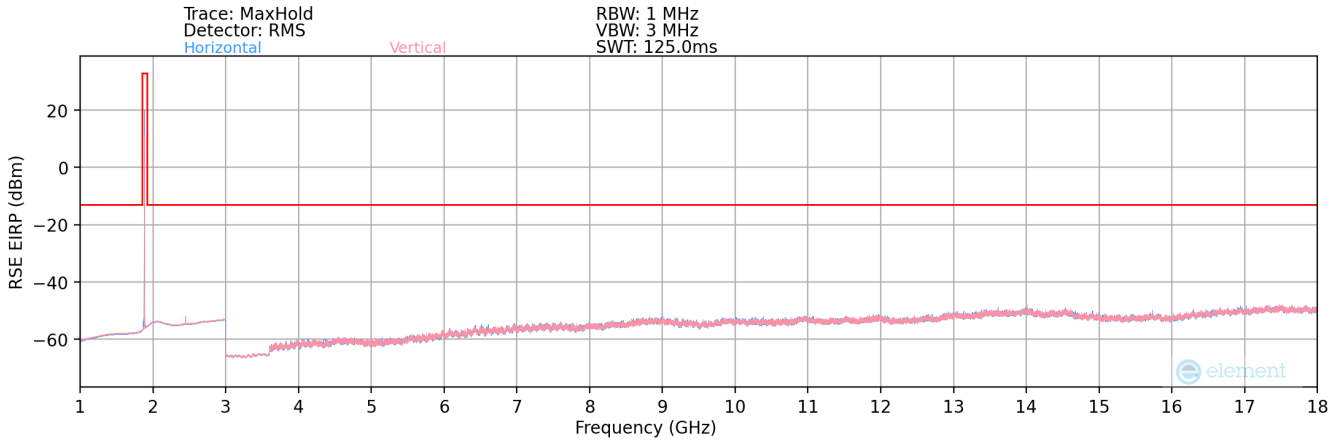
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3810.00	V	-	-	-80.13	5.91	32.78	-62.48	-13.00	-49.48
5715.00	V	-	-	-81.49	8.41	33.92	-61.33	-13.00	-48.33
7620.00	V	-	-	-81.59	12.79	38.20	-57.06	-13.00	-44.06

Table 7-44. Radiated Spurious Data (LTE Band 25/2 – High Channel - Ant2)

NR Band n25/2 – Ant2



Plot 7-246. Radiated Spurious Plot (NR Band n25/2 - Ant2)



Plot 7-247. Radiated Spurious Plot (NR Band n25/2 - Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1882.5
RB / Offset:	1 / 108

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]
70.04	H	-	-	-107.65	14.62	13.97	-83.44	-13.00	-70.44
124.18	H	-	-	-107.99	20.51	19.52	-77.89	-13.00	-64.89
287.21	H	-	-	-107.76	20.90	20.14	-77.26	-13.00	-64.26

Table 7-45. Radiated Spurious Data (NR Band n25/2 – Mid Channel - Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1870
RB / Offset:	1 / 108

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]
3740.00	H	-	-	-77.67	1.06	30.39	-64.86	-13.00	-51.86
5610.00	H	-	-	-78.43	4.43	33.00	-62.26	-13.00	-49.26
7480.00	H	290	194	-76.61	9.11	39.50	-55.76	-13.00	-42.76
9350.00	H	-	-	-80.37	12.04	38.67	-56.59	-13.00	-43.59
11220.00	H	-	-	-80.30	12.46	39.16	-56.10	-13.00	-43.10
13090.00	H	-	-	-80.45	14.31	40.86	-54.40	-13.00	-41.40

Table 7-46. Radiated Spurious Data (NR Band n25/2 – Low Channel - Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1882.5
RB / Offset:	1 / 108

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]
3765.00	H	393	193	-77.05	1.00	30.95	-64.31	-13.00	-51.31
5647.50	H	-	-	-78.39	4.69	33.30	-61.96	-13.00	-48.96
7530.00	H	274	186	-77.53	9.28	38.75	-56.50	-13.00	-43.50
9412.50	H	-	-	-80.51	12.00	38.49	-56.77	-13.00	-43.77
11295.00	H	-	-	-80.48	12.63	39.15	-56.10	-13.00	-43.10
13177.50	H	-	-	-80.57	14.57	41.00	-54.26	-13.00	-41.26

Table 7-47. Radiated Spurious Data (NR Band n25/2 – Mid Channel - Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1895
RB / Offset:	1 / 108

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]
3790.00	H	289	207	-77.23	1.02	30.79	-64.47	-13.00	-51.47
5685.00	H	-	-	-78.65	4.59	32.94	-62.32	-13.00	-49.32
7580.00	H	273	200	-76.39	9.60	40.21	-55.05	-13.00	-42.05
9475.00	H	-	-	-80.05	11.66	38.61	-56.65	-13.00	-43.65
11370.00	H	-	-	-80.71	12.67	38.96	-56.30	-13.00	-43.30
13265.00	H	-	-	-80.37	14.61	41.24	-54.02	-13.00	-41.02

Table 7-48. Radiated Spurious Data (NR Band n25/2 – High Channel - Ant2)

7.9 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 24, 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

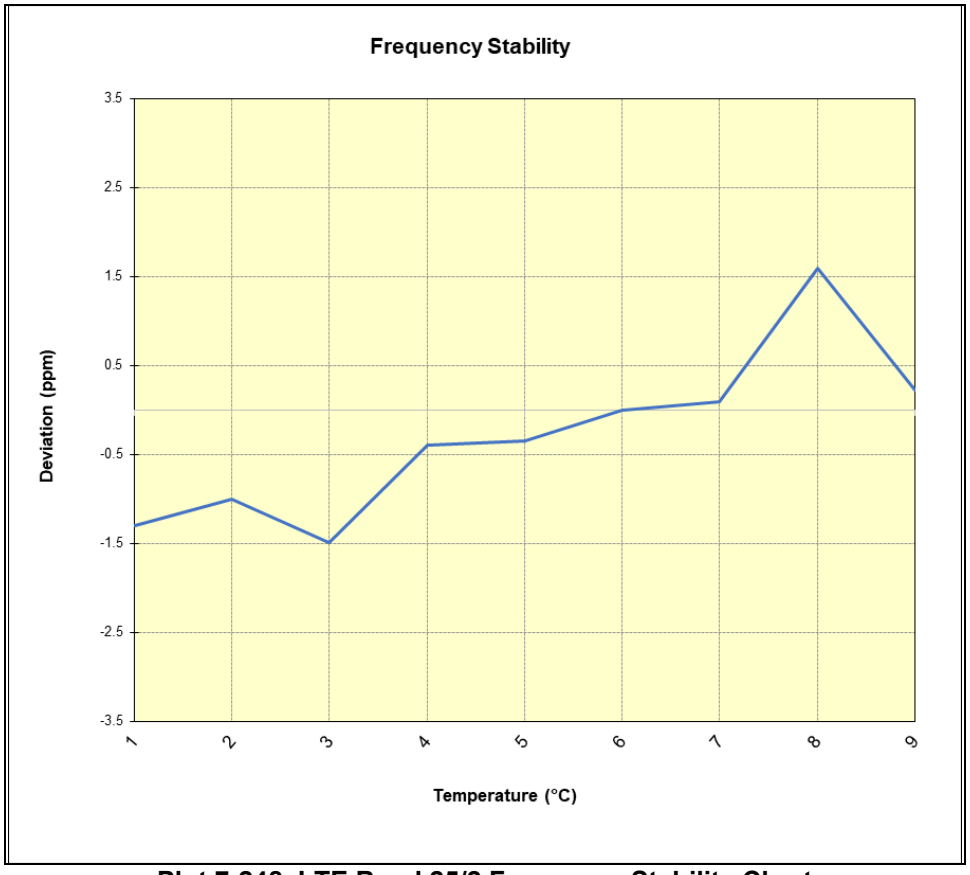
None

LTE Band 25/2

LTE Band 25/2	
Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	3.863

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.863	- 30	1,882,491,223	-2,443	-0.0001298
		- 20	1,882,491,773	-1,893	-0.0001006
		- 10	1,882,490,860	-2,806	-0.0001491
		0	1,882,492,913	-753	-0.0000400
		+ 10	1,882,493,003	-663	-0.0000352
		+ 20 (Ref)	1,882,493,666	0	0.0000000
		+ 30	1,882,493,825	159	0.0000084
		+ 40	1,882,496,654	2,988	0.0001587
		+ 50	1,882,494,091	425	0.0000226
Battery Endpoint	3.174	+ 20	1,882,493,973	307	0.0000163

Table 7-49. LTE Band 25/2 Frequency Stability Data



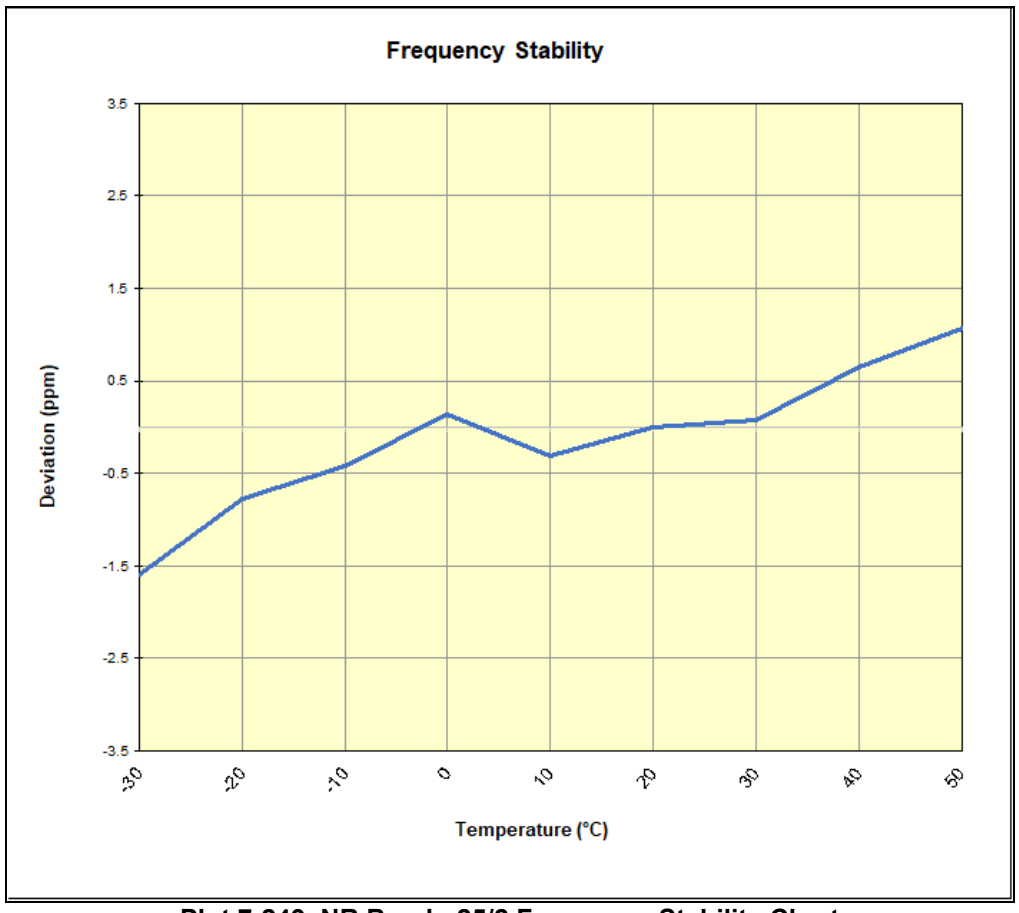
Plot 7-248. LTE Band 25/2 Frequency Stability Chart

NR Band n25/2

NR Band n25/2	
Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	3.863

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.863	- 30	1,882,509,255	-3,014	-0.0001601
		- 20	1,882,510,821	-1,448	-0.0000769
		- 10	1,882,511,470	-799	-0.0000424
		0	1,882,512,523	254	0.0000135
		+ 10	1,882,511,680	-589	-0.0000313
		+ 20 (Ref)	1,882,512,269	0	0.0000000
		+ 30	1,882,512,413	144	0.0000076
		+ 40	1,882,513,495	1,226	0.0000651
		+ 50	1,882,514,285	2,016	0.0001071
Battery Endpoint	3.174	+ 20	1,882,512,824	555	0.0000295

Table 7-50. NR Band n25/2 Frequency Stability Data



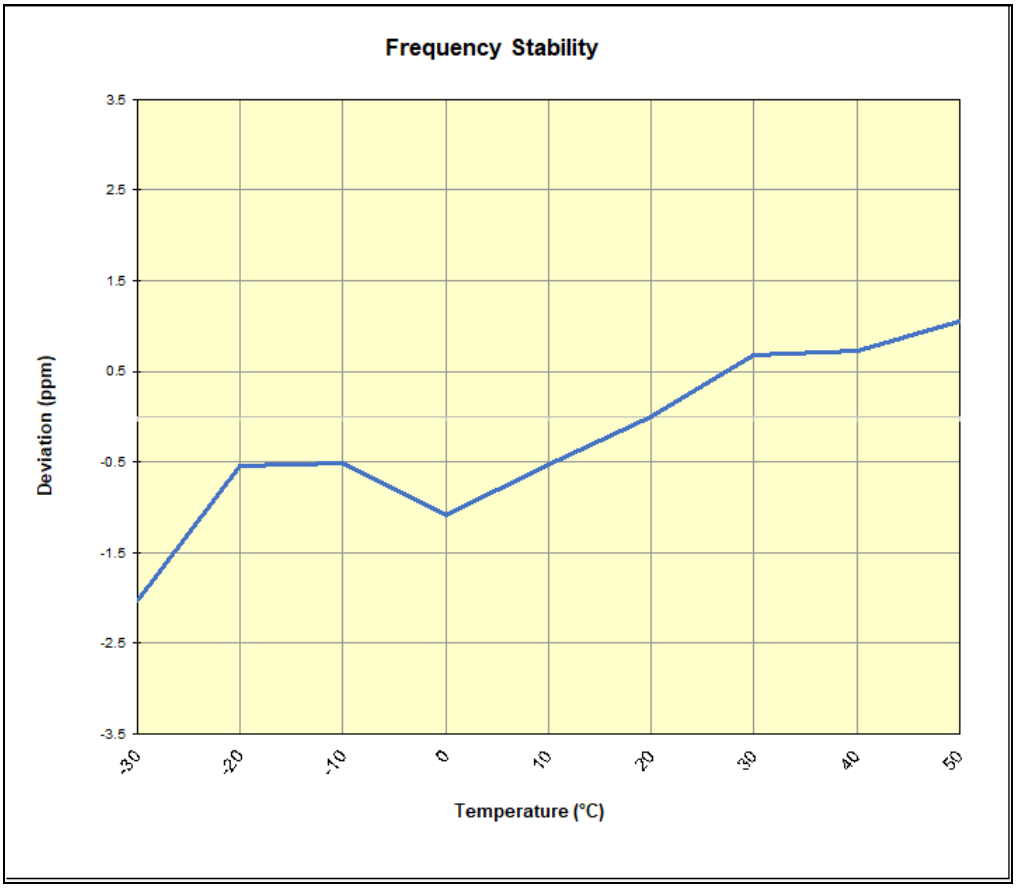
Plot 7-249. NR Band n25/2 Frequency Stability Chart

GSM/GPRS PCS

GSM/GPRS PCS	
Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	3.86

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.86	- 30	1,880,132,441	-3,814	-0.0002029
		- 20	1,880,135,222	-1,033	-0.0000549
		- 10	1,880,135,287	-968	-0.0000515
		0	1,880,134,222	-2,033	-0.0001081
		+ 10	1,880,135,258	-997	-0.0000530
		+ 20 (Ref)	1,880,136,255	0	0.0000000
		+ 30	1,880,137,522	1,267	0.0000674
		+ 40	1,880,137,633	1,378	0.0000733
		+ 50	1,880,138,244	1,989	0.0001058
Battery Endpoint	3.17	+ 20	1,880,136,478	223	0.0000119

Table 7-51. GSM/GPRS PCS Frequency Stability Data



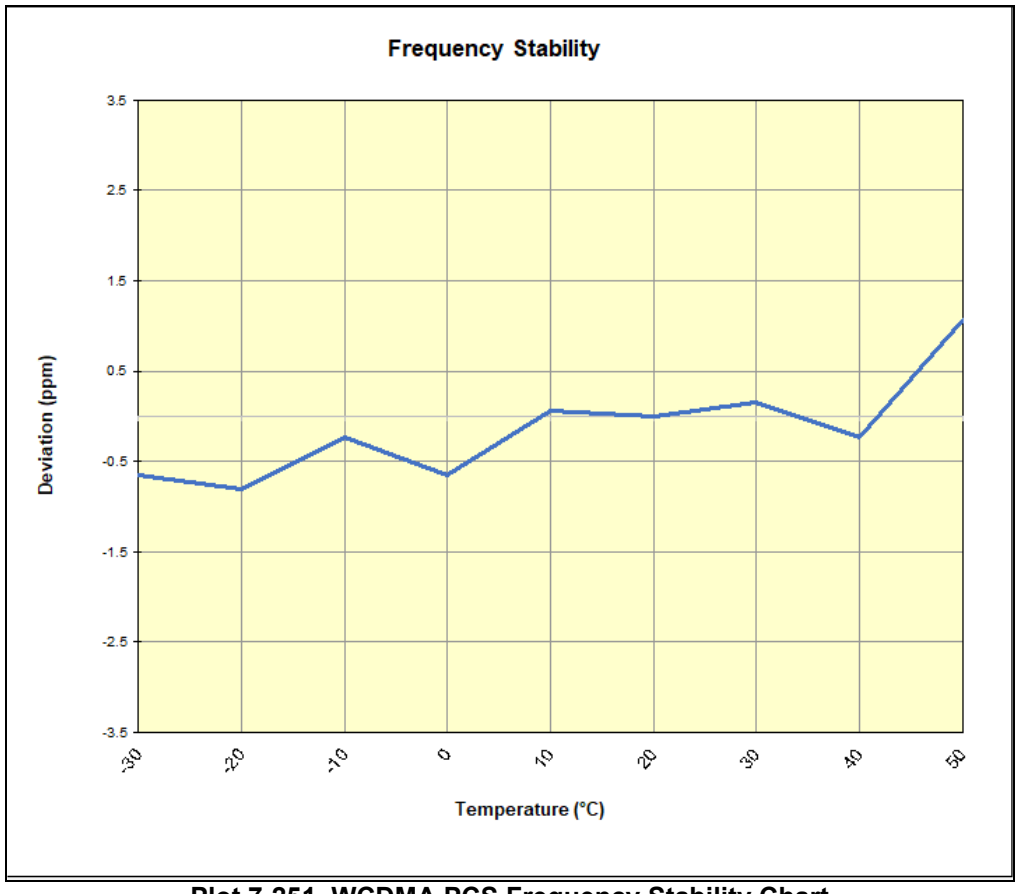
Plot 7-250. GSM/GPRS PCS Frequency Stability Chart

WCDMA PCS

WCDMA PCS	
Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	3.863

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.863	- 30	1,880,011,222	-1,222	-0.0000650
		- 20	1,880,010,938	-1,506	-0.0000801
		- 10	1,880,012,008	-436	-0.0000232
		0	1,880,011,222	-1,222	-0.0000650
		+ 10	1,880,012,570	126	0.0000067
		+ 20 (Ref)	1,880,012,444	0	0.0000000
		+ 30	1,880,012,731	287	0.0000153
		+ 40	1,880,012,016	-428	-0.0000228
		+ 50	1,880,014,445	2,001	0.0001064
Battery Endpoint	3.174	+ 20	1,880,013,943	1,499	0.0000797

Table 7-52. WCDMA PCS Frequency Stability Data



Plot 7-251. WCDMA PCS Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS936B** complies with all the requirements of Part 24 of the FCC rules.