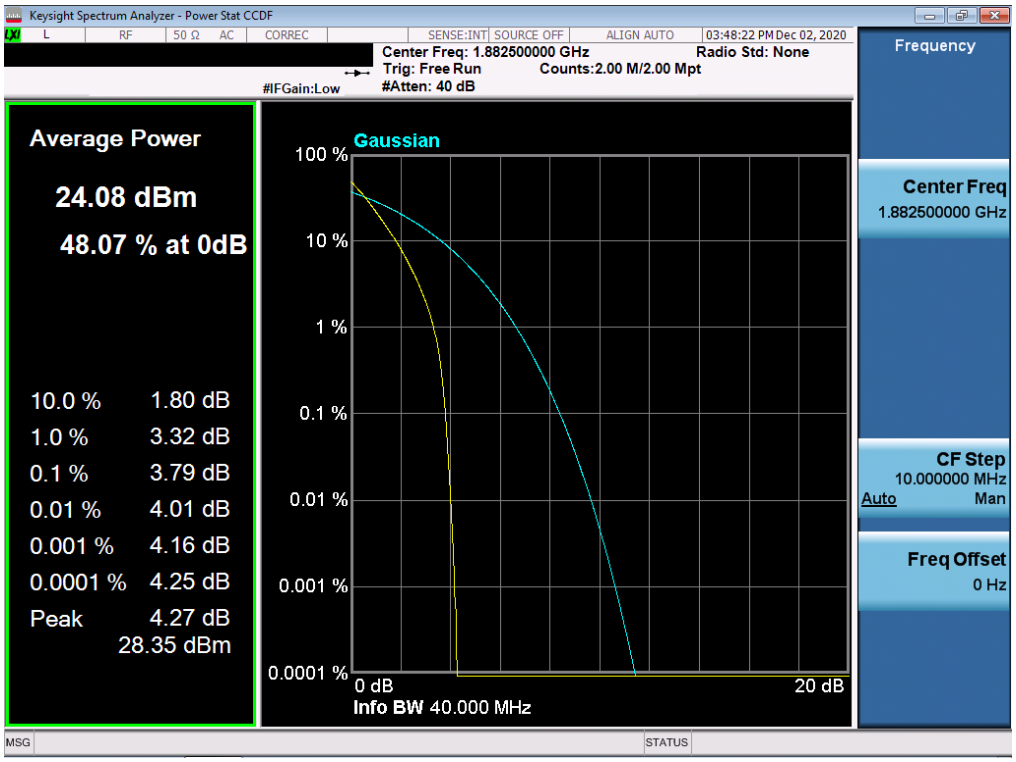
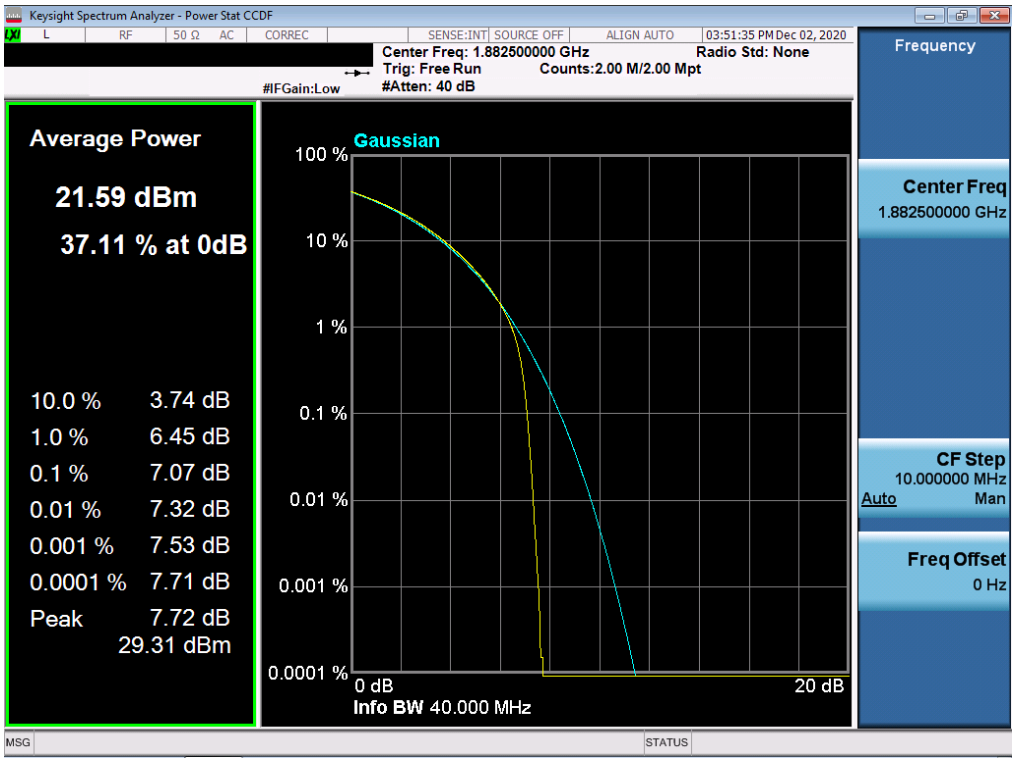
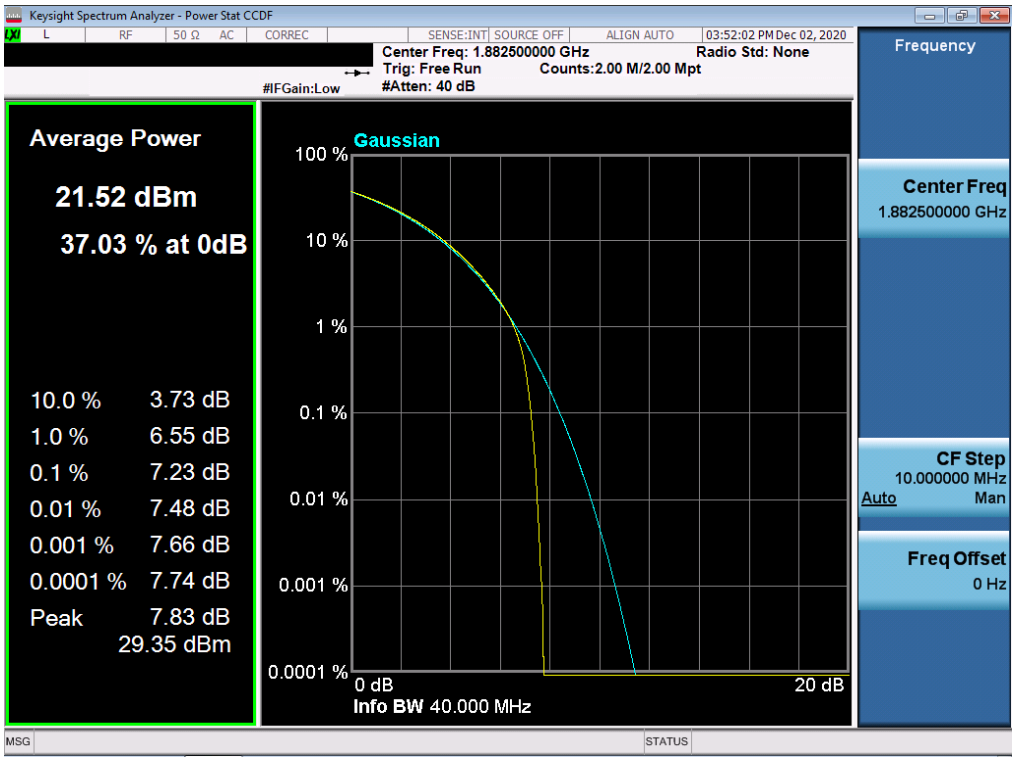
NR Band n25 Ant I



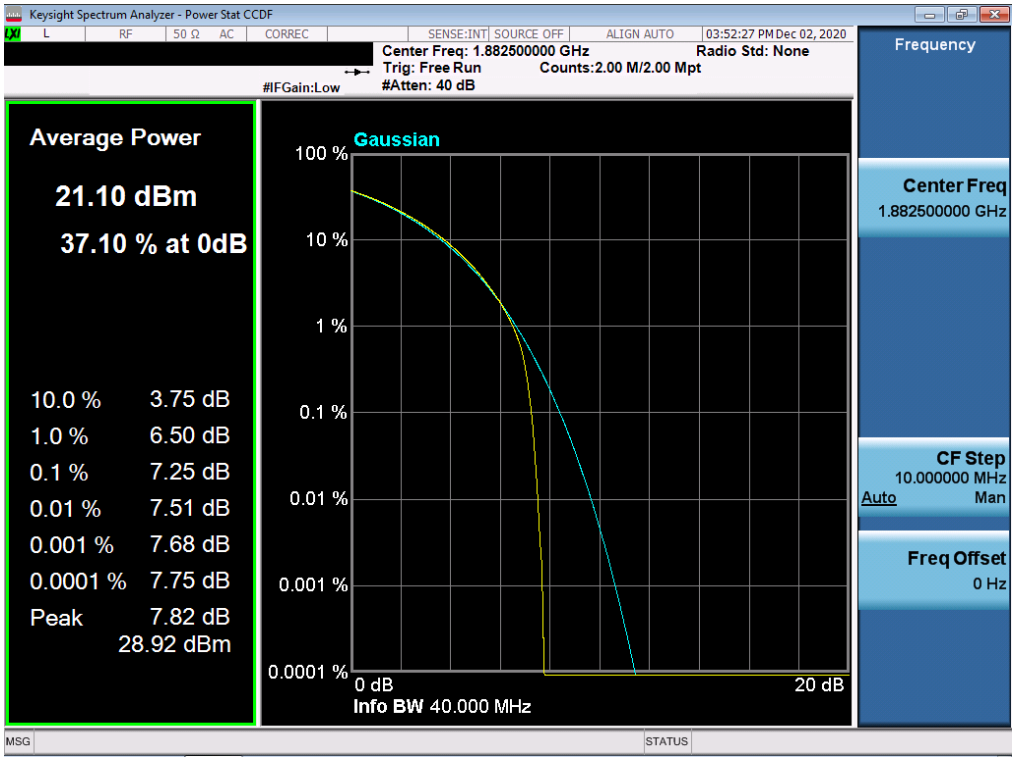
Plot 7-312. PAR Plot (NR Band n25 Ant I- 40.0MHz DFT-s-OFDM BPSK - Full RB)



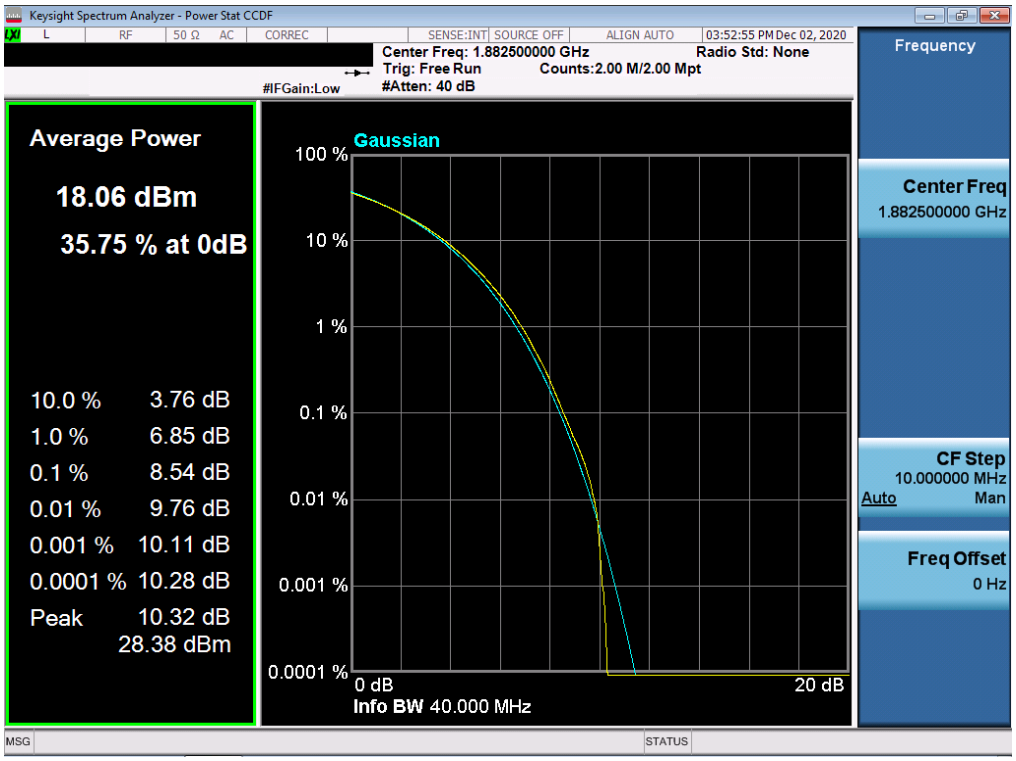
Plot 7-313. PAR Plot (NR Band n25 Ant I- 40.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



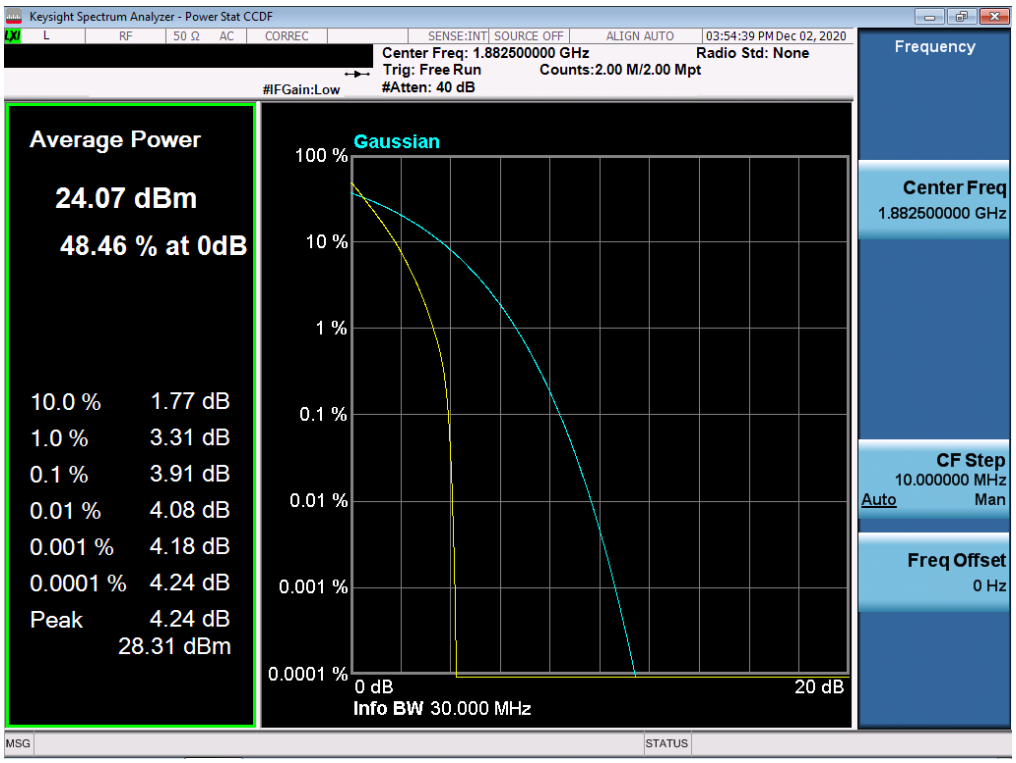
Plot 7-314. PAR Plot (NR Band n25 Ant I- 40.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)



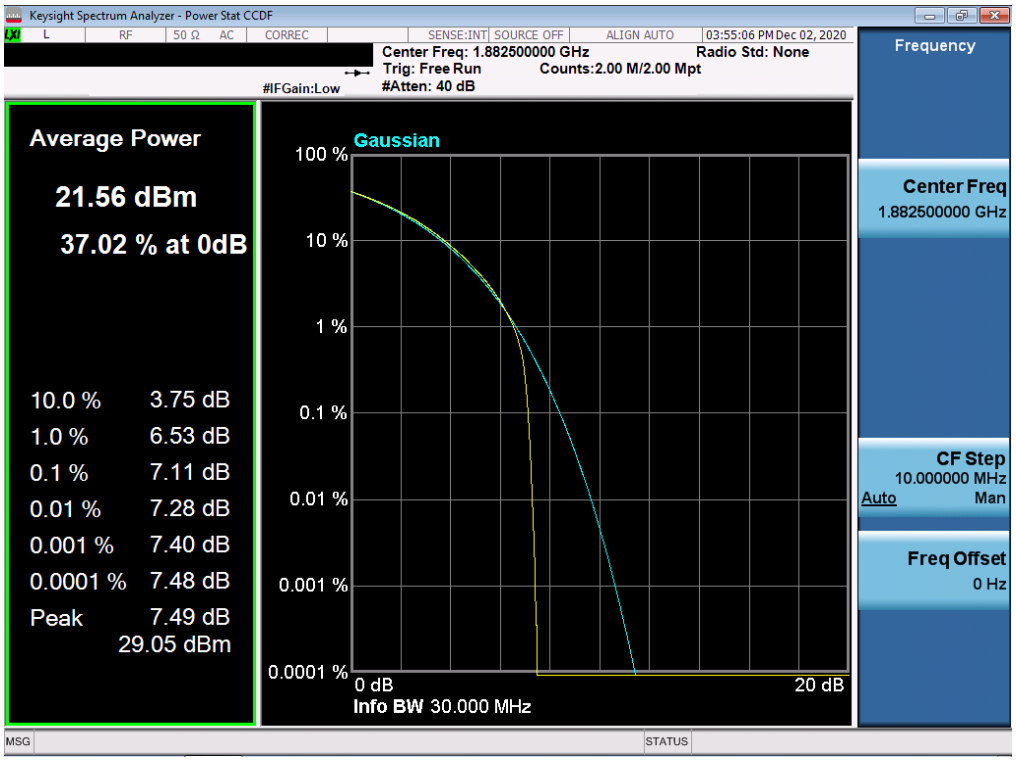
Plot 7-315. PAR Plot (NR Band n25 Ant I- 40.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)



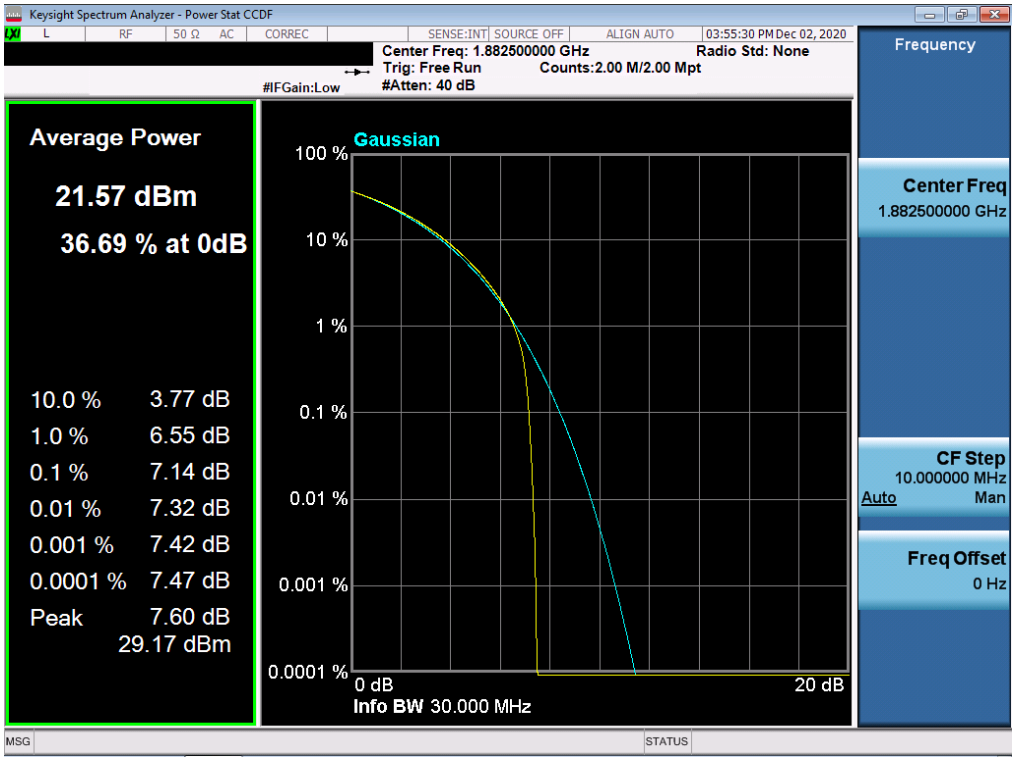
Plot 7-316. PAR Plot (NR Band n25 Ant I- 40.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)



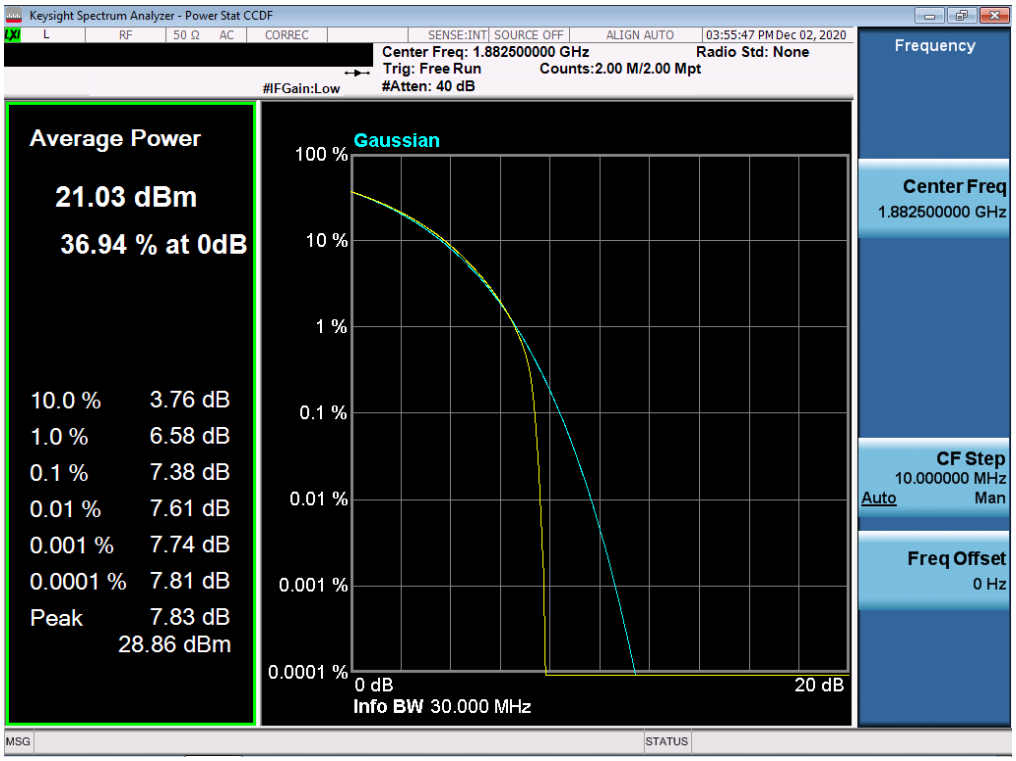
Plot 7-317. PAR Plot (NR Band n25 Ant I- 30.0MHz DFT-s-OFDM BPSK - Full RB)



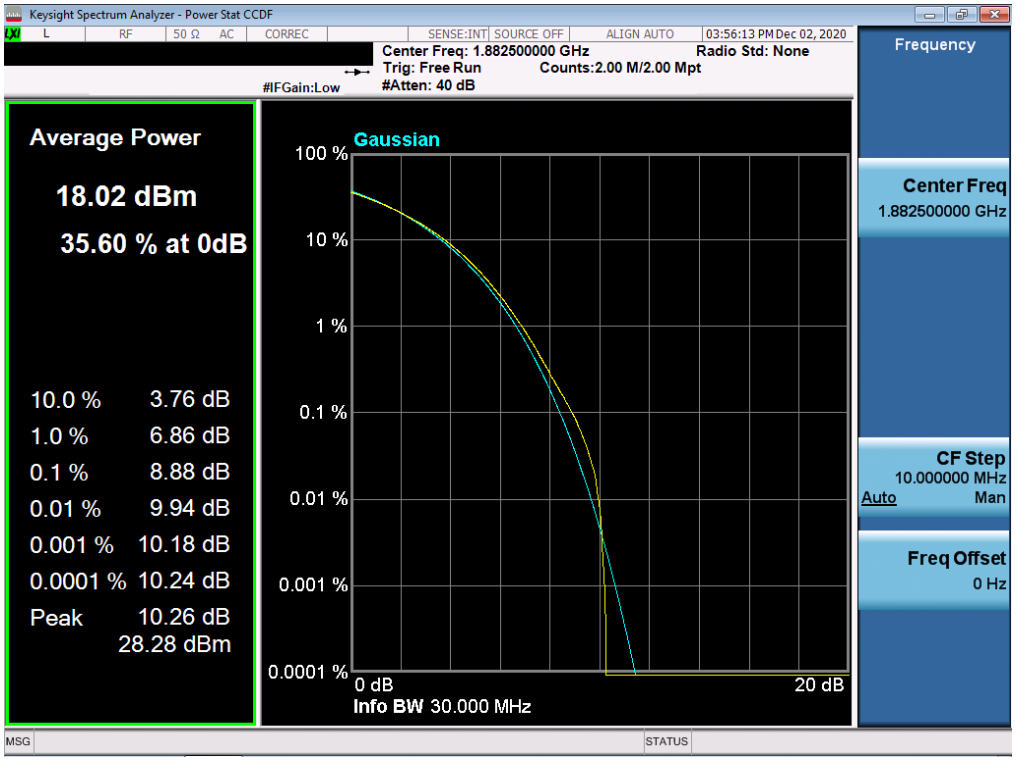
Plot 7-318. PAR Plot (NR Band n25 Ant I- 30.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



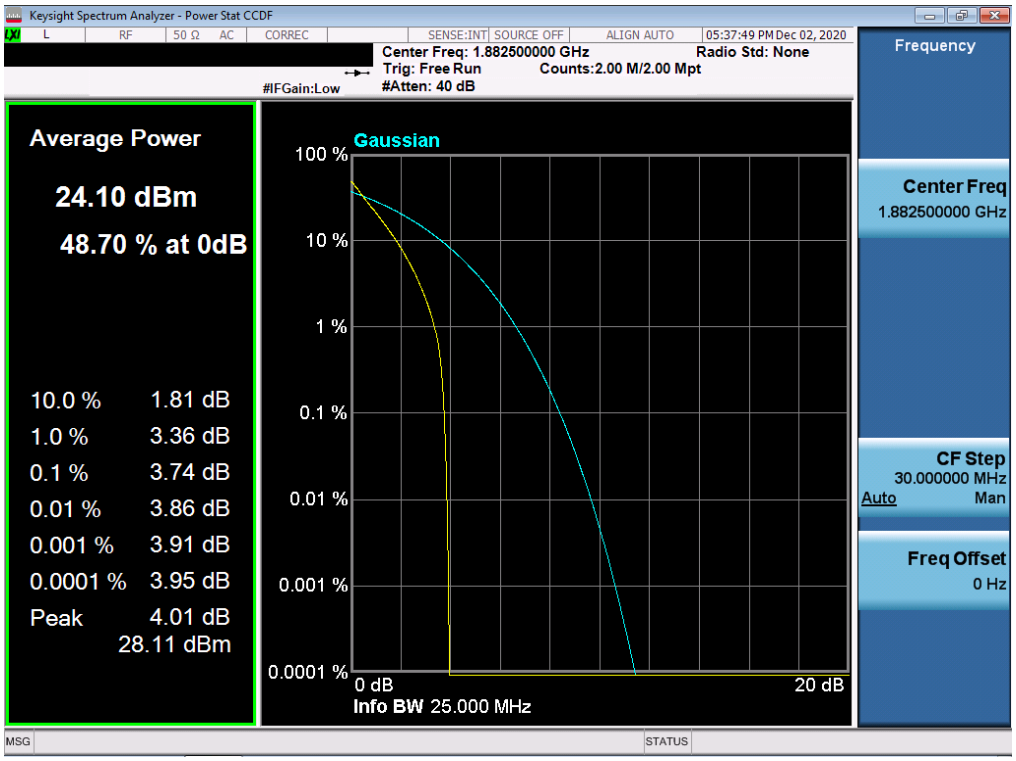
Plot 7-319. PAR Plot (NR Band n25 Ant I- 30.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)



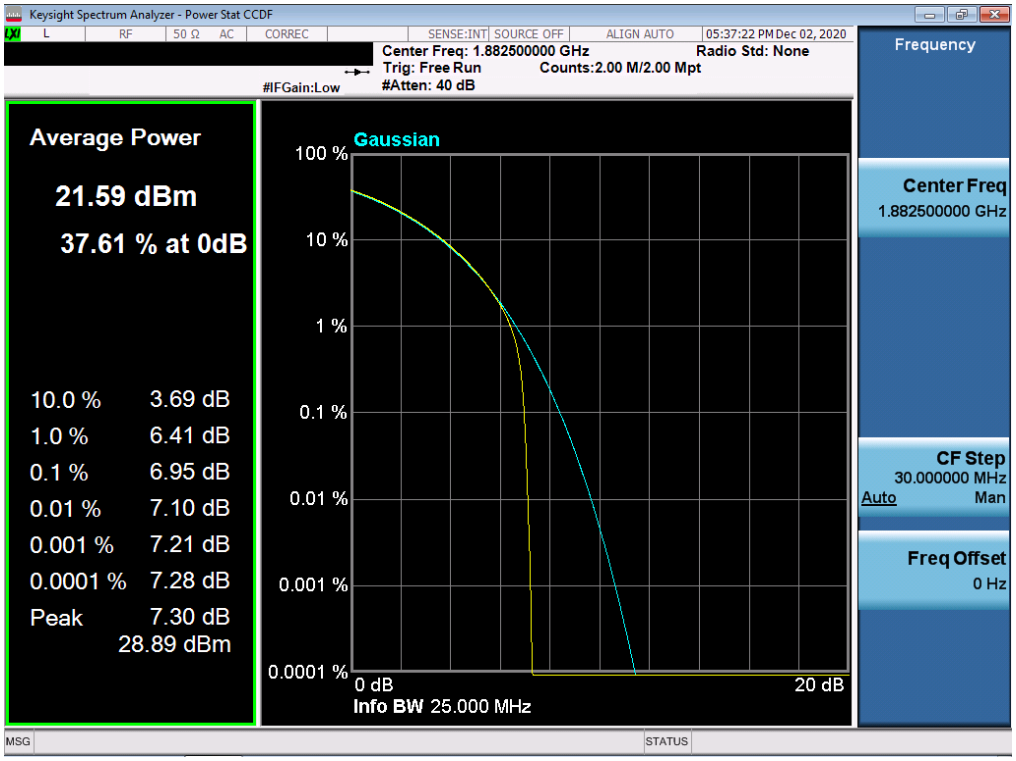
Plot 7-320. PAR Plot (NR Band n25 Ant I- 30.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)



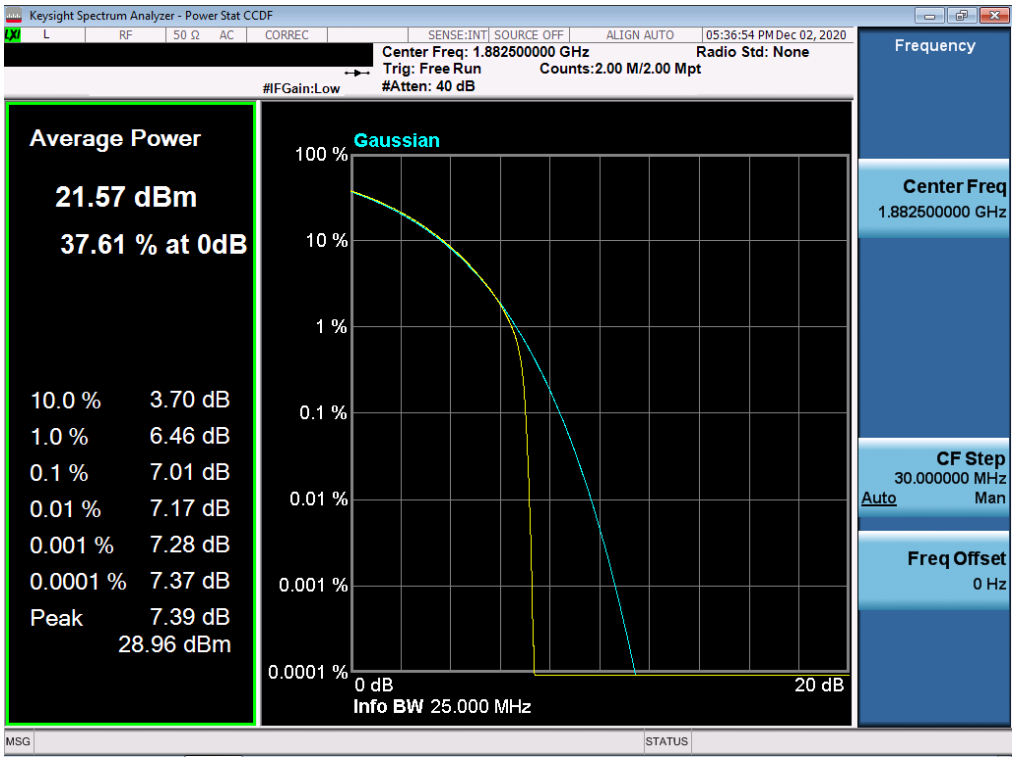
Plot 7-321. PAR Plot (NR Band n25 Ant I- 30.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)



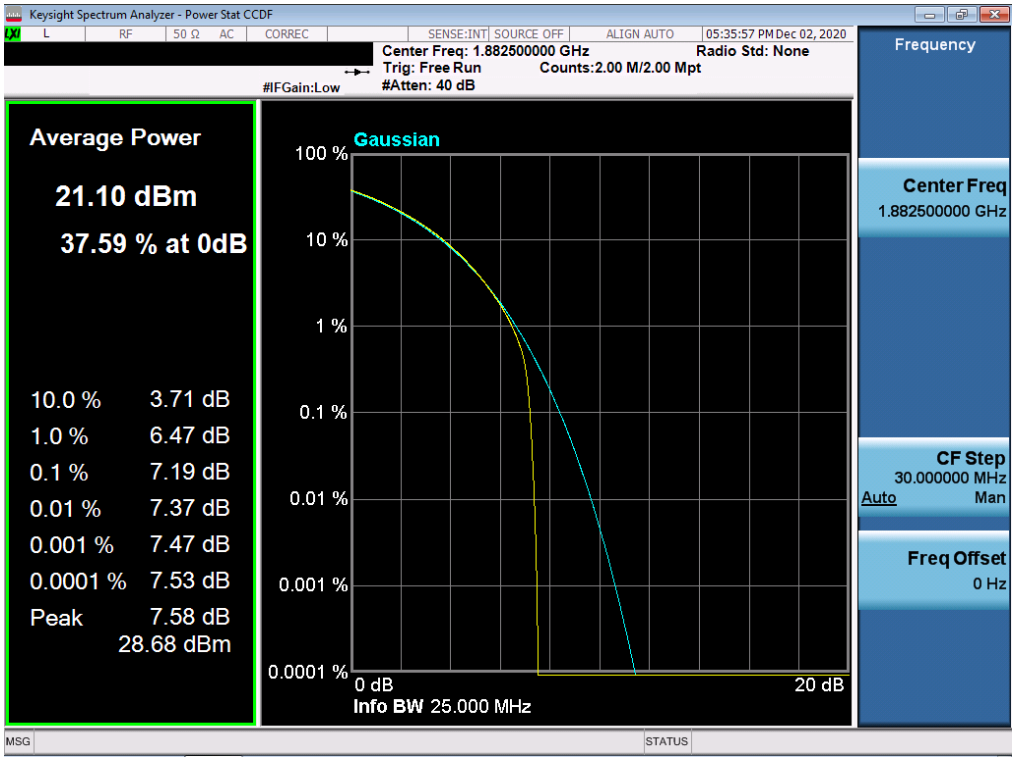
Plot 7-322. PAR Plot (NR Band n25 Ant I- 25.0MHz DFT-s-OFDM BPSK - Full RB)



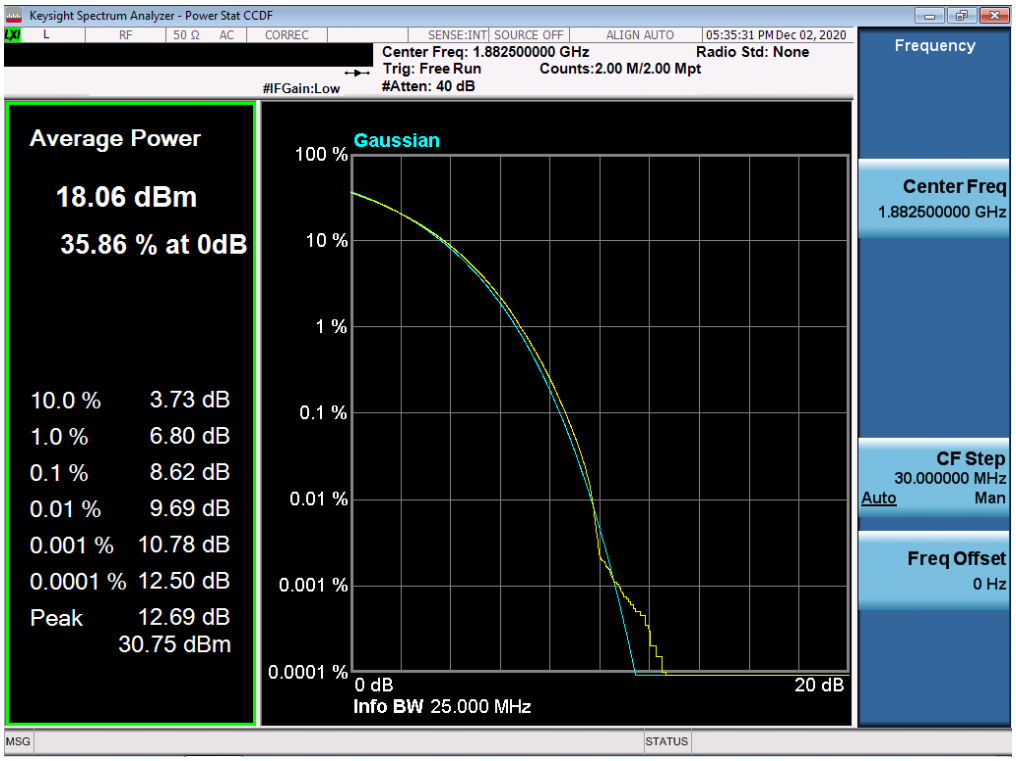
Plot 7-323. PAR Plot (NR Band n25 Ant I- 25.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



Plot 7-324. PAR Plot (NR Band n25 Ant I- 25.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)

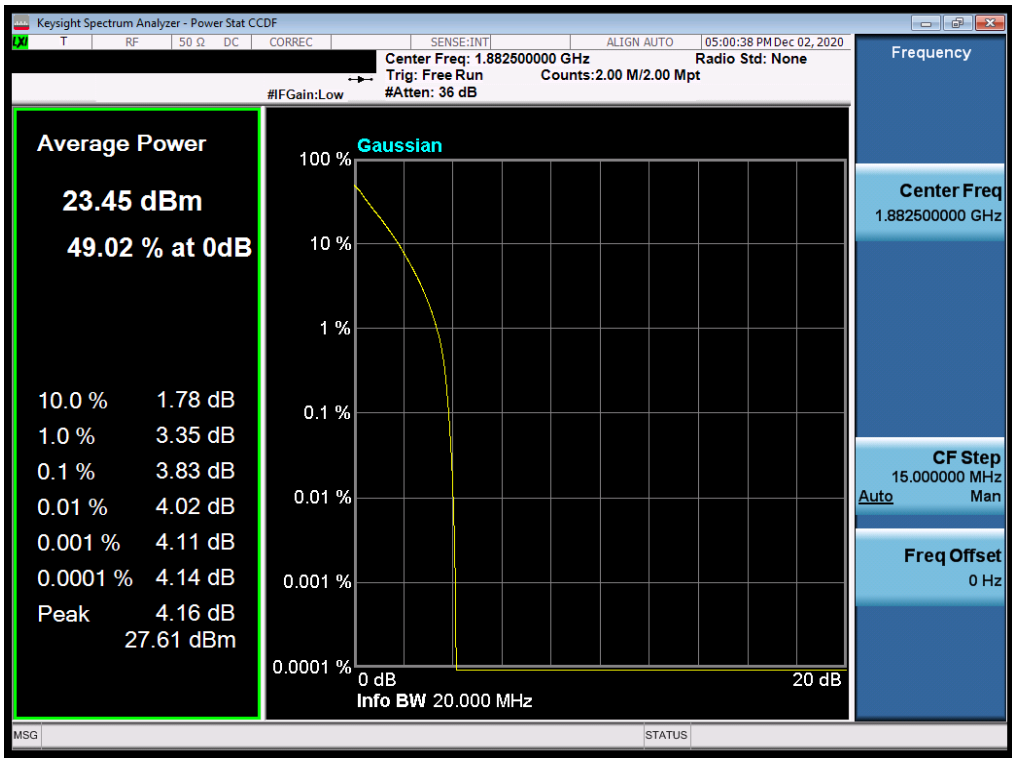


Plot 7-325. PAR Plot (NR Band n25 Ant I- 25.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)

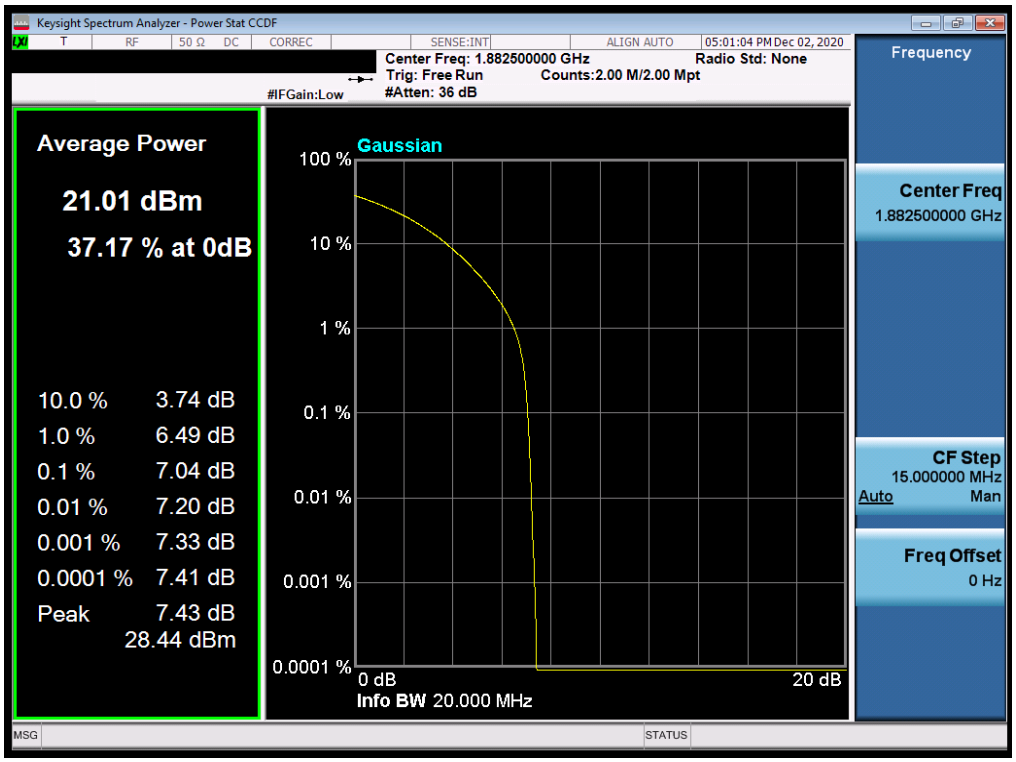


Plot 7-326. PAR Plot (NR Band n25 Ant I- 25.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)

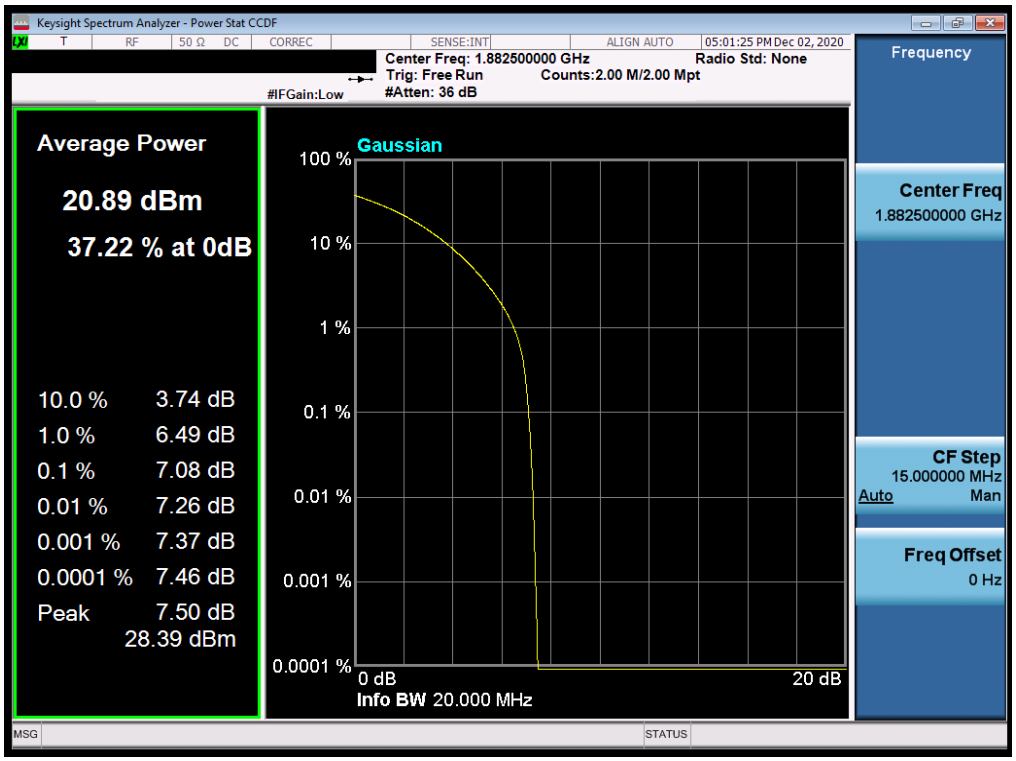
NR Band n2 Ant I



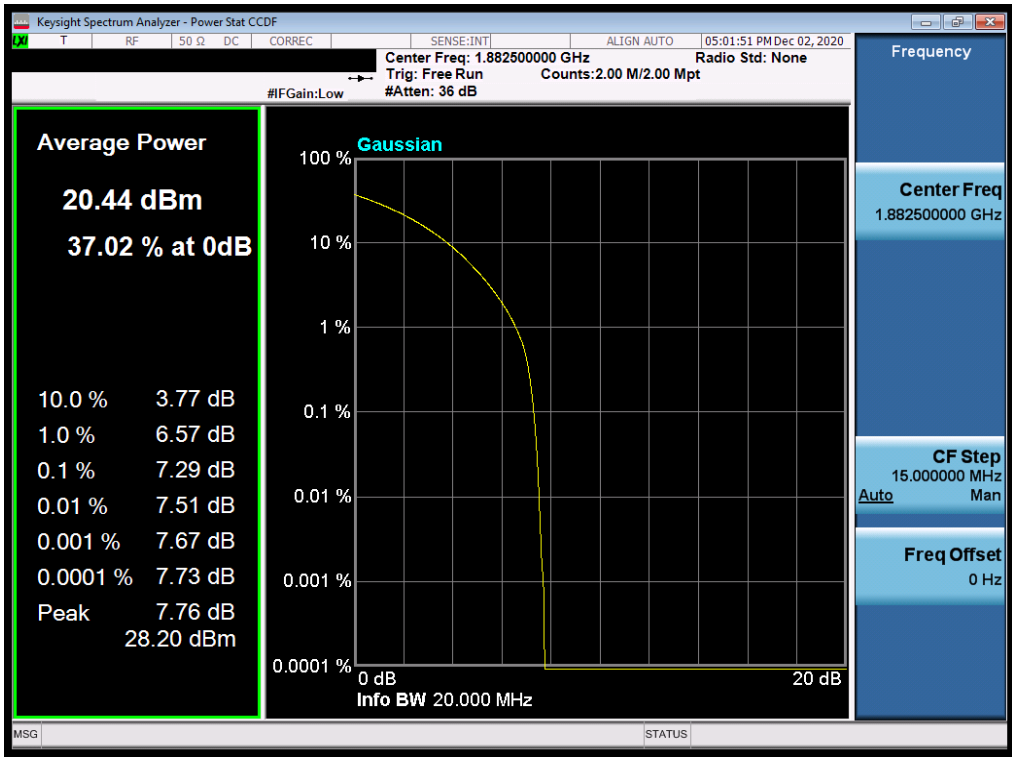
Plot 7-327. PAR Plot (NR Band n2 Ant I- 20.0MHz DFT-s-OFDM BPSK - Full RB)



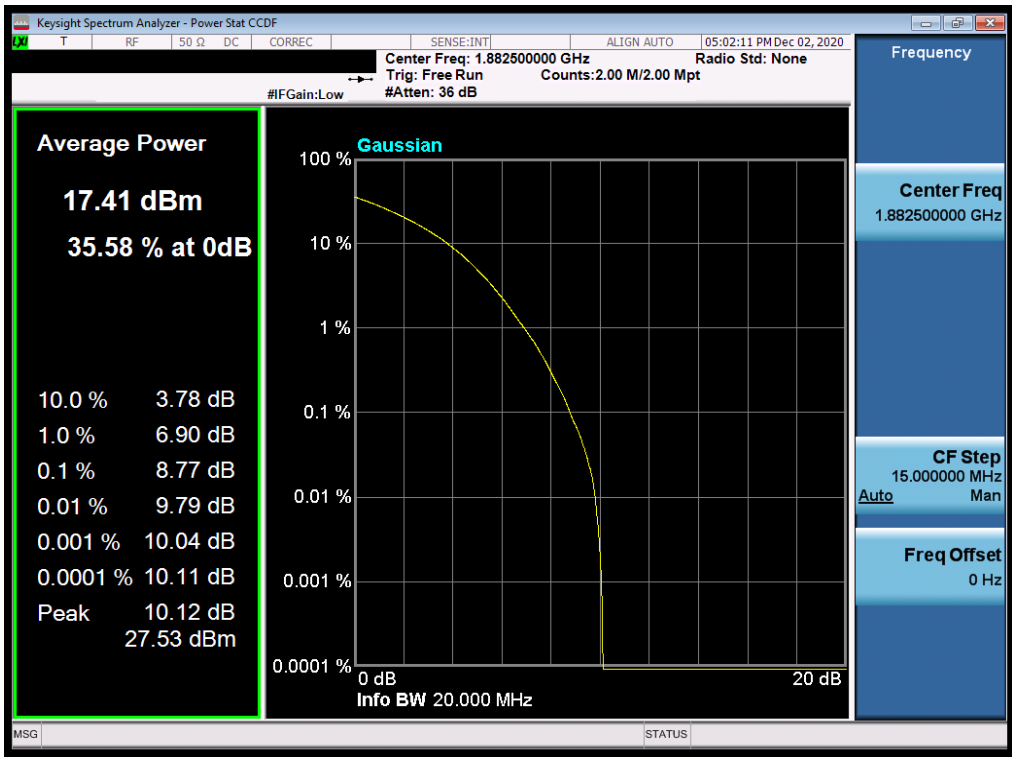
Plot 7-328. PAR Plot (NR Band n2 Ant I- 20.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



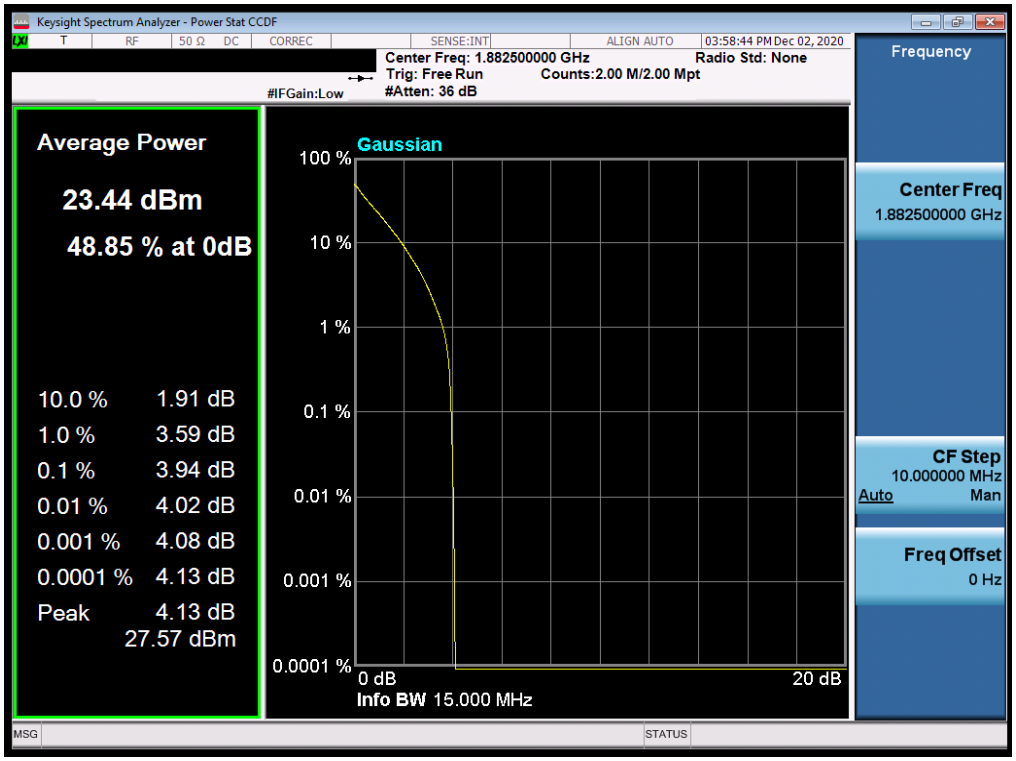
Plot 7-329. PAR Plot (NR Band n2 Ant I- 20.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)



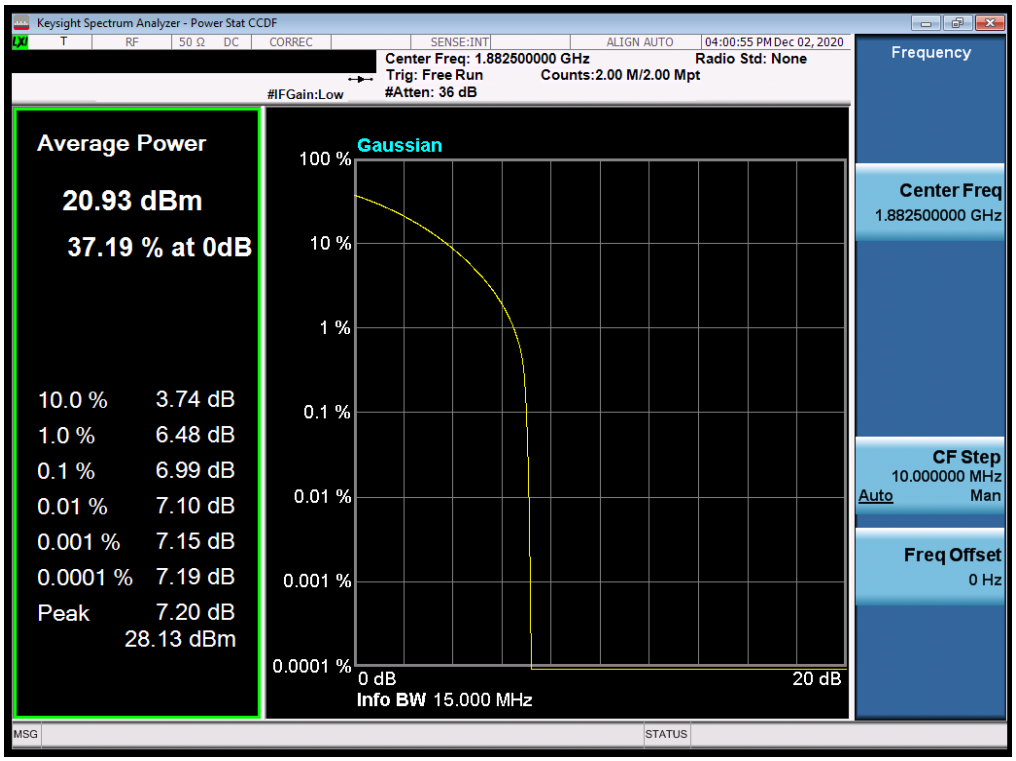
Plot 7-330. PAR Plot (NR Band n2 Ant I- 20.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)



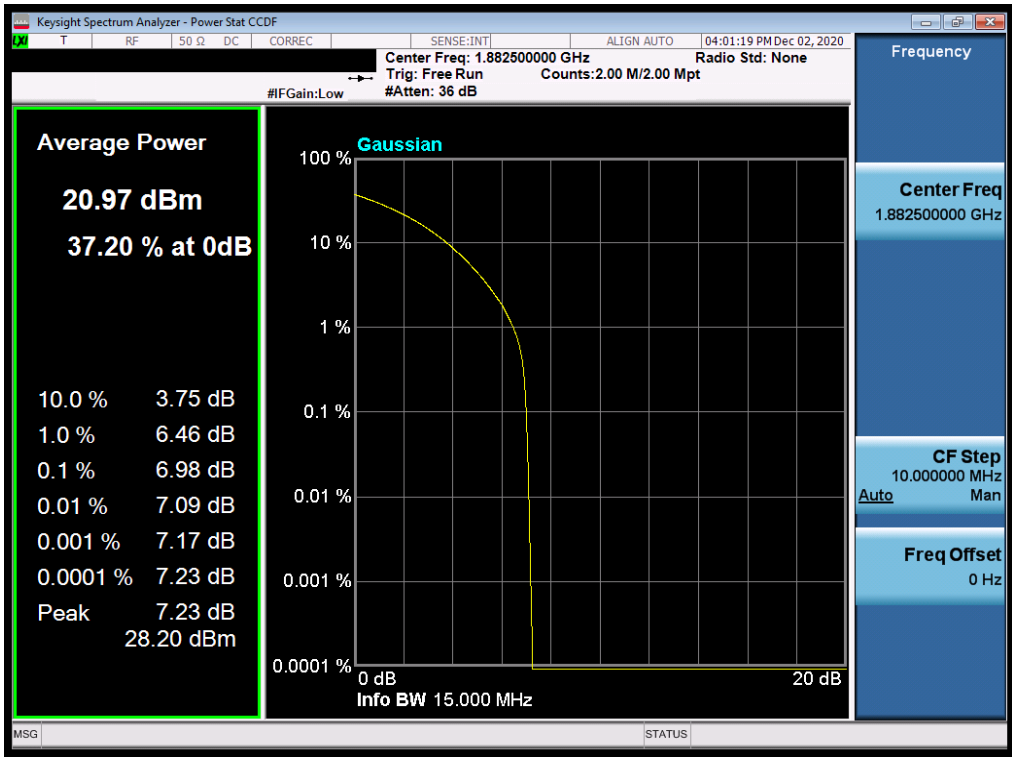
Plot 7-331. PAR Plot (NR Band n2 Ant I- 20.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)



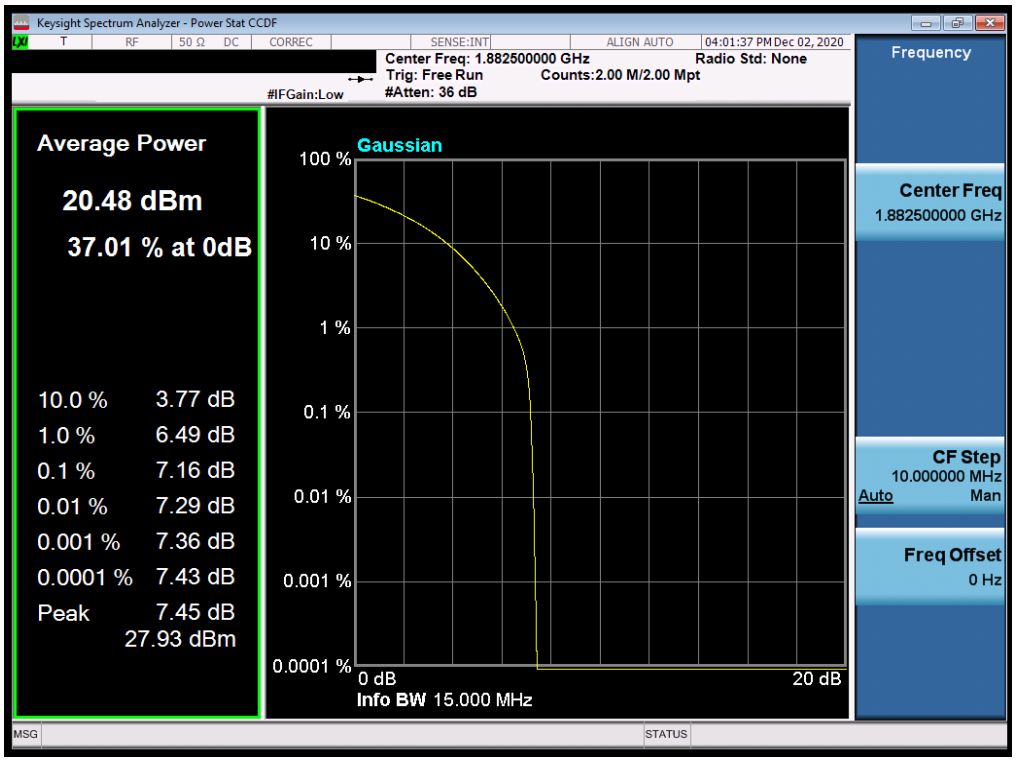
Plot 7-332. PAR Plot (NR Band n2 Ant I- 15.0MHz DFT-s-OFDM BPSK - Full RB)



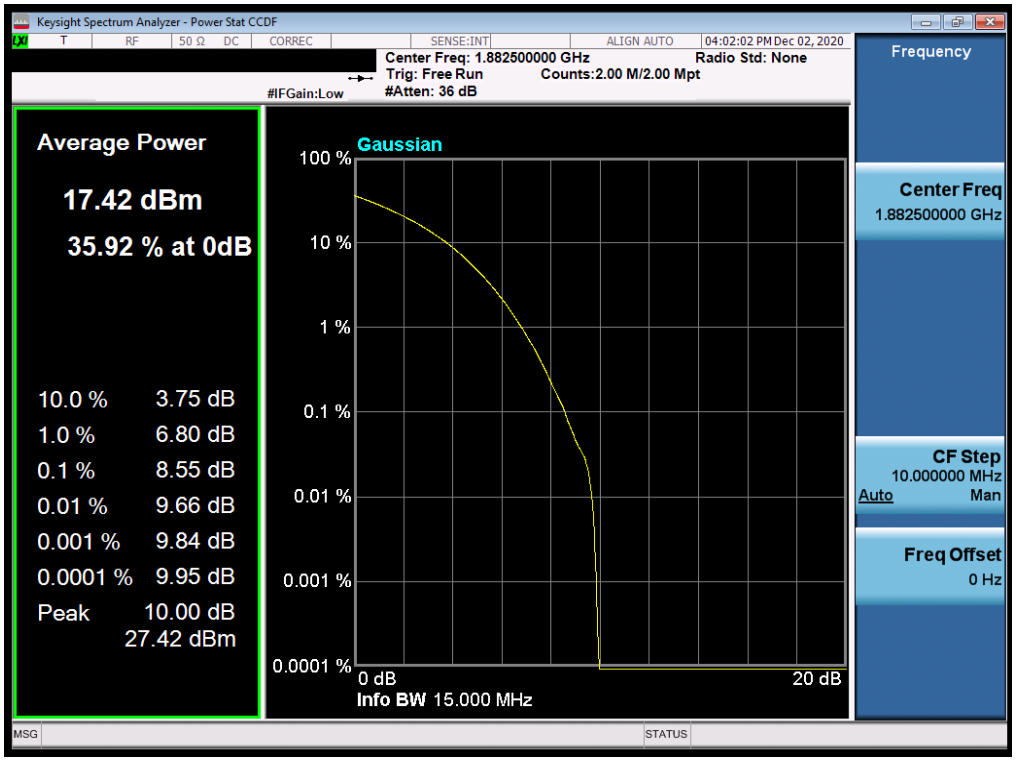
Plot 7-333. PAR Plot (NR Band n2 Ant I- 15.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



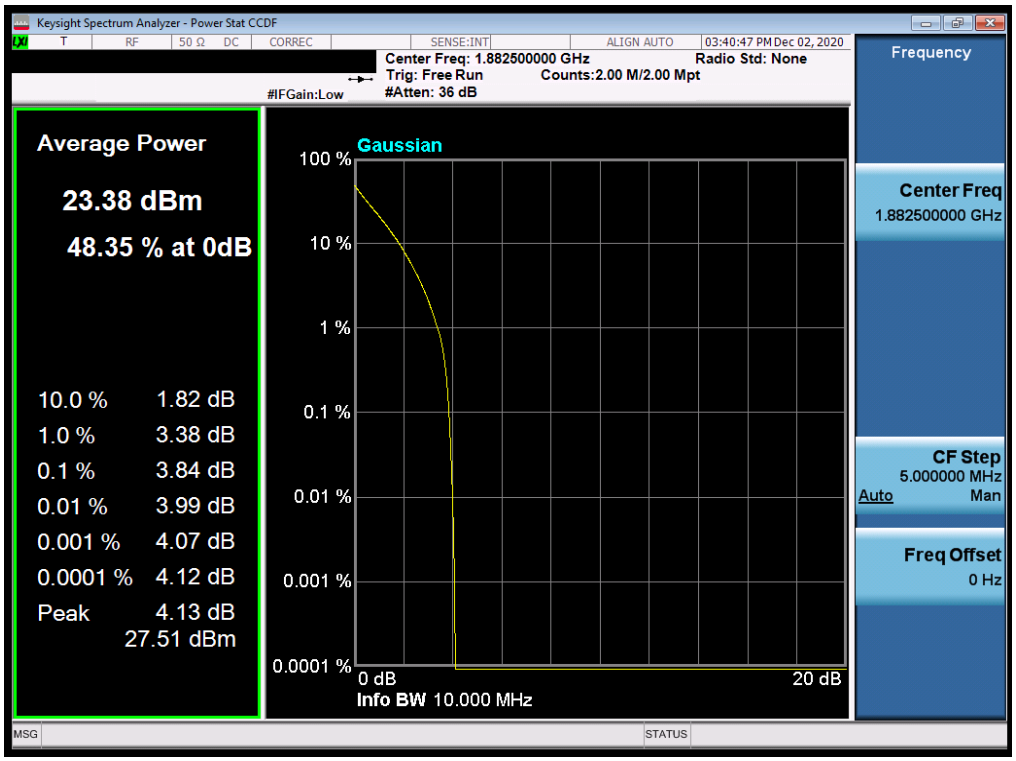
Plot 7-334. PAR Plot (NR Band n2 Ant I- 15.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)



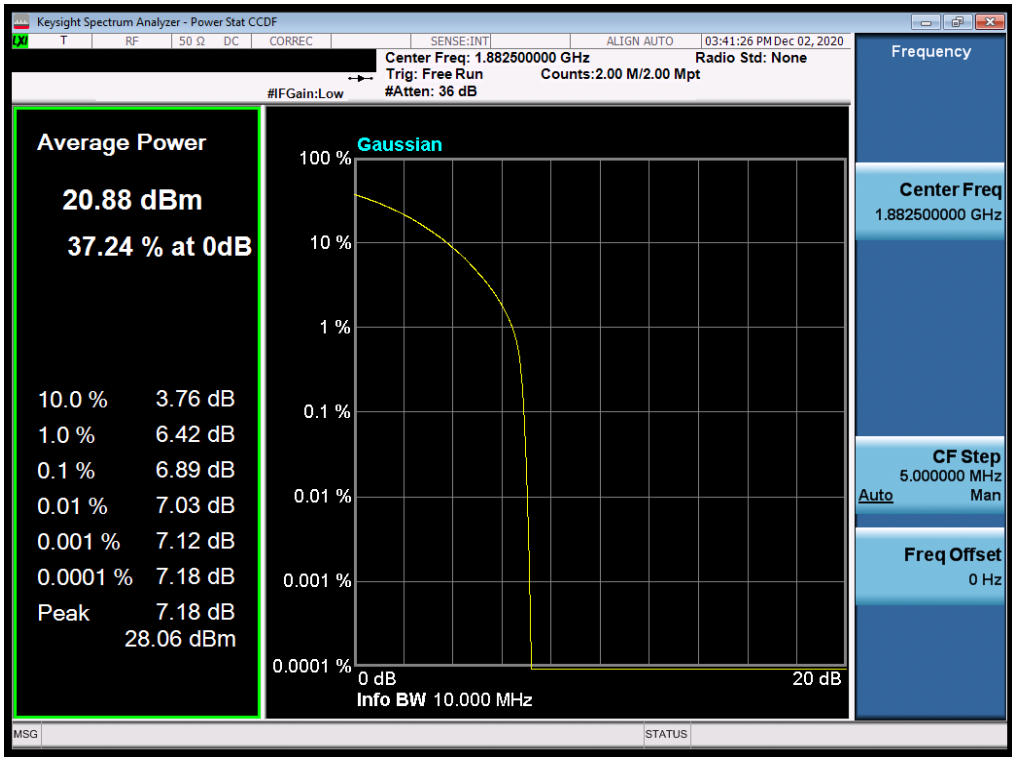
Plot 7-335. PAR Plot (NR Band n2 Ant I- 15.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)



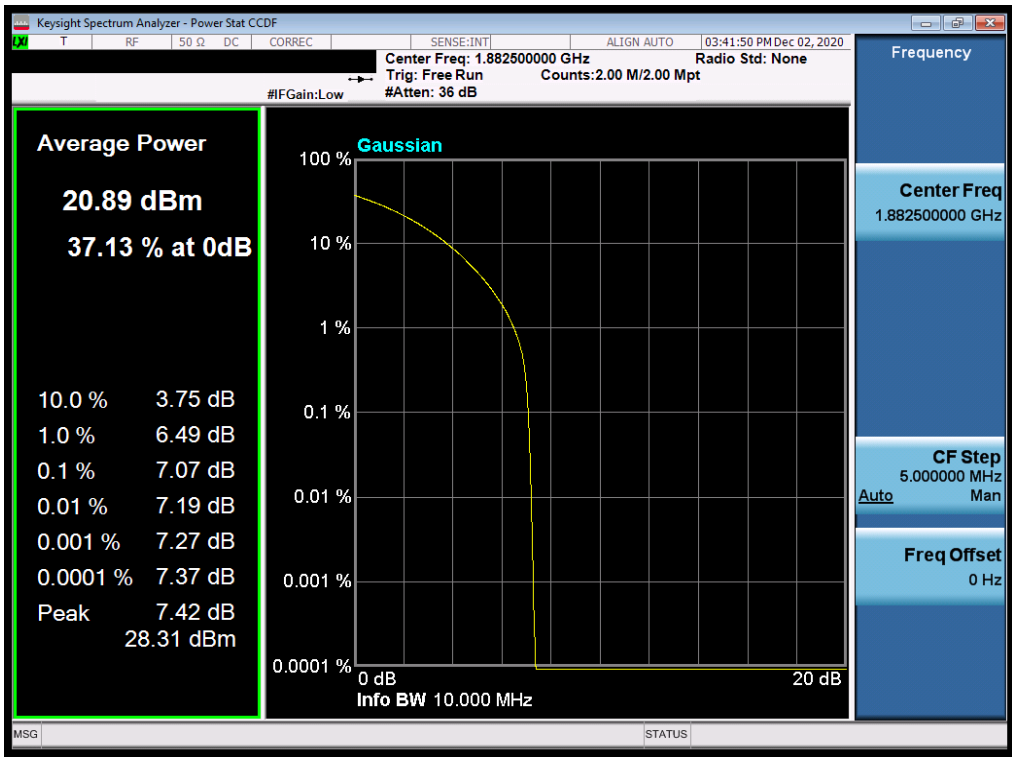
Plot 7-336. PAR Plot (NR Band n2 Ant I- 15.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)



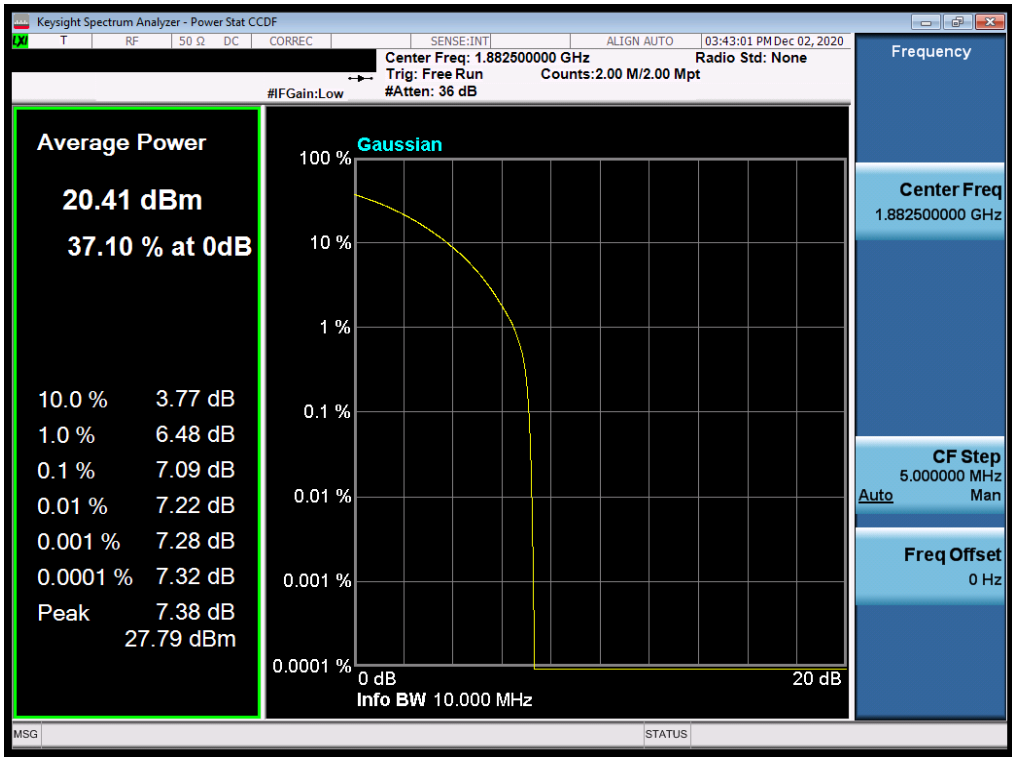
Plot 7-337. PAR Plot (NR Band n2 Ant I- 10.0MHz DFT-s-OFDM BPSK - Full RB)



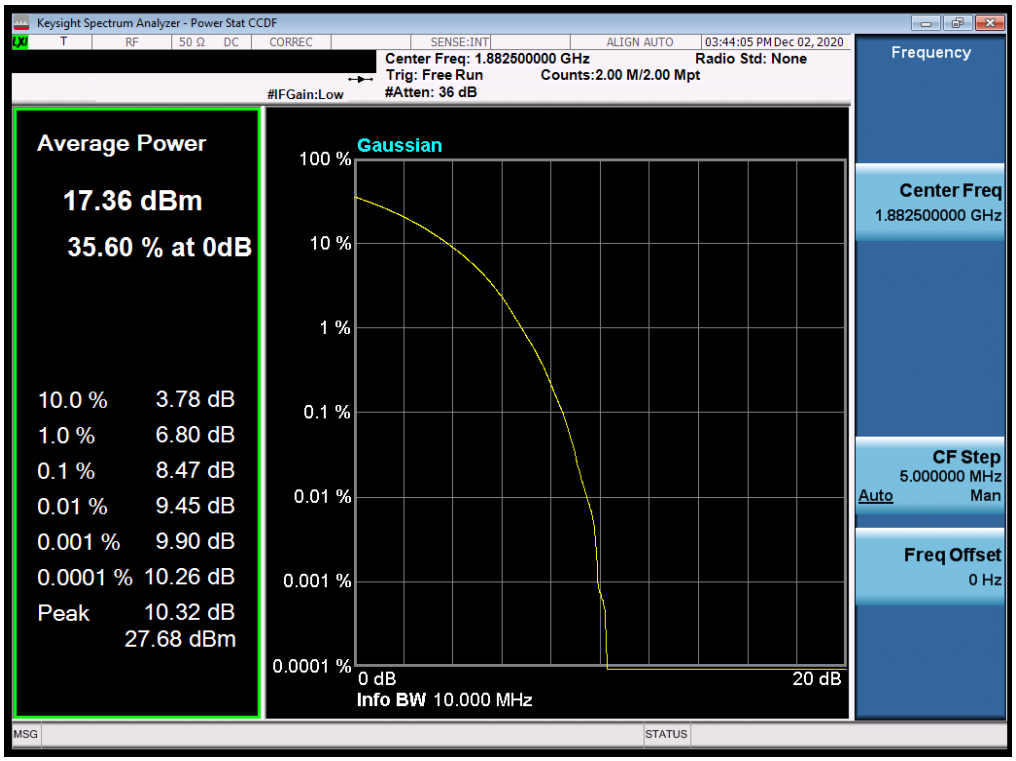
Plot 7-338. PAR Plot (NR Band n2 Ant I- 10.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



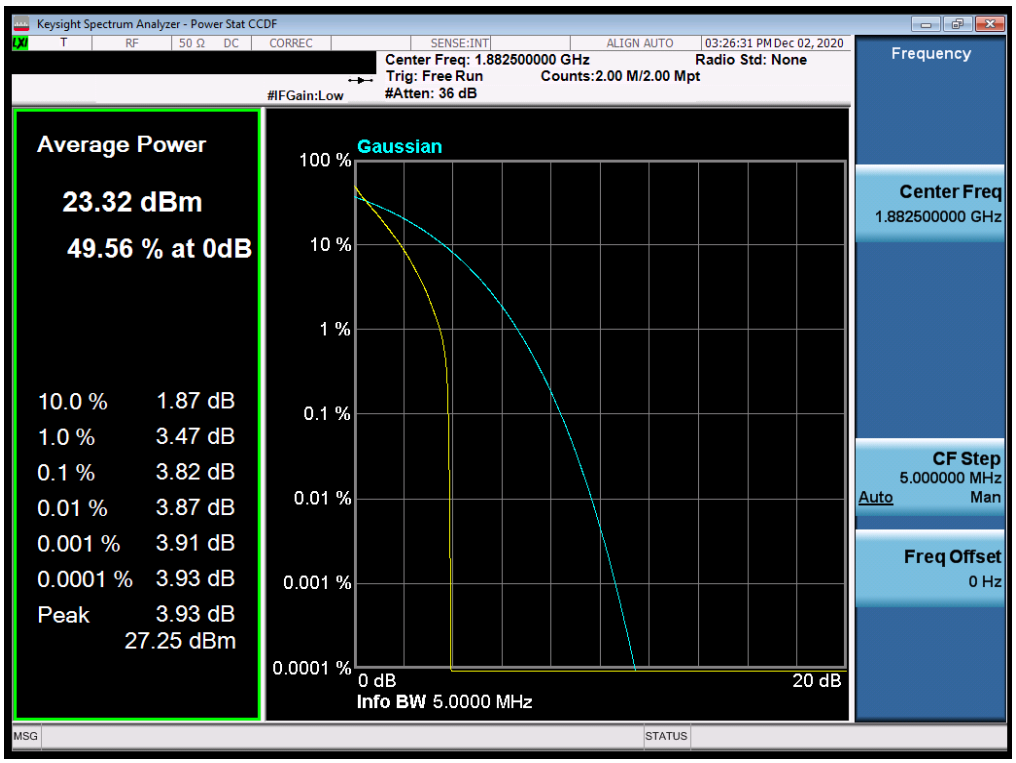
Plot 7-339. PAR Plot (NR Band n2 Ant I- 10.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)



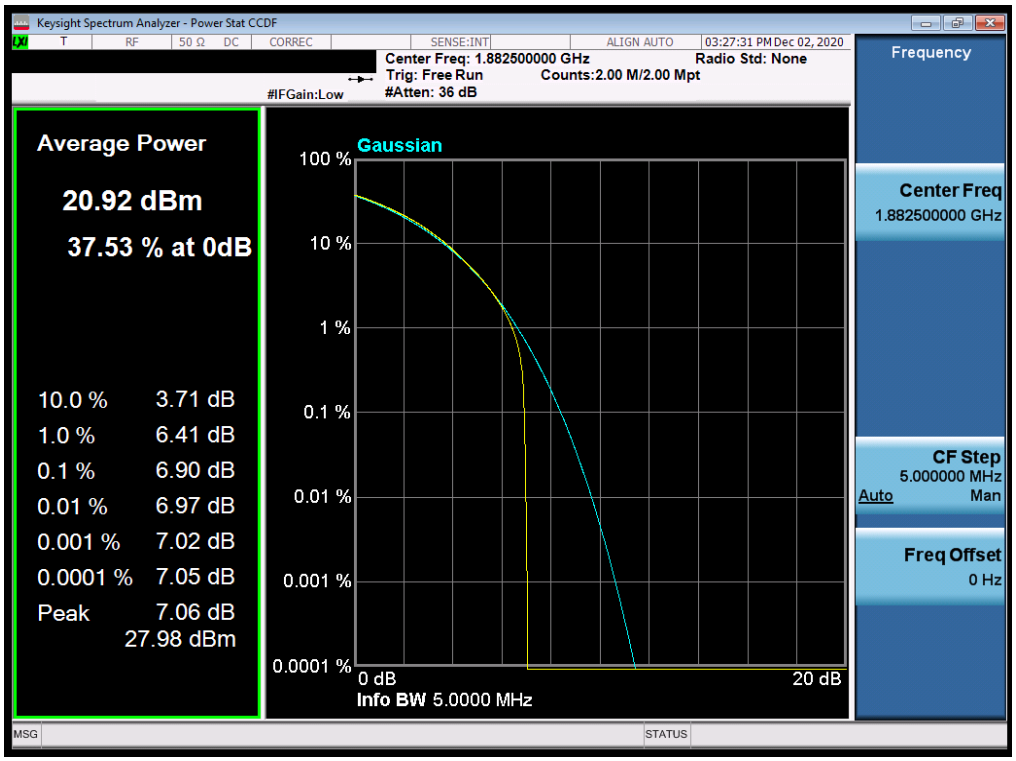
Plot 7-340. PAR Plot (NR Band n2 Ant I- 10.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)



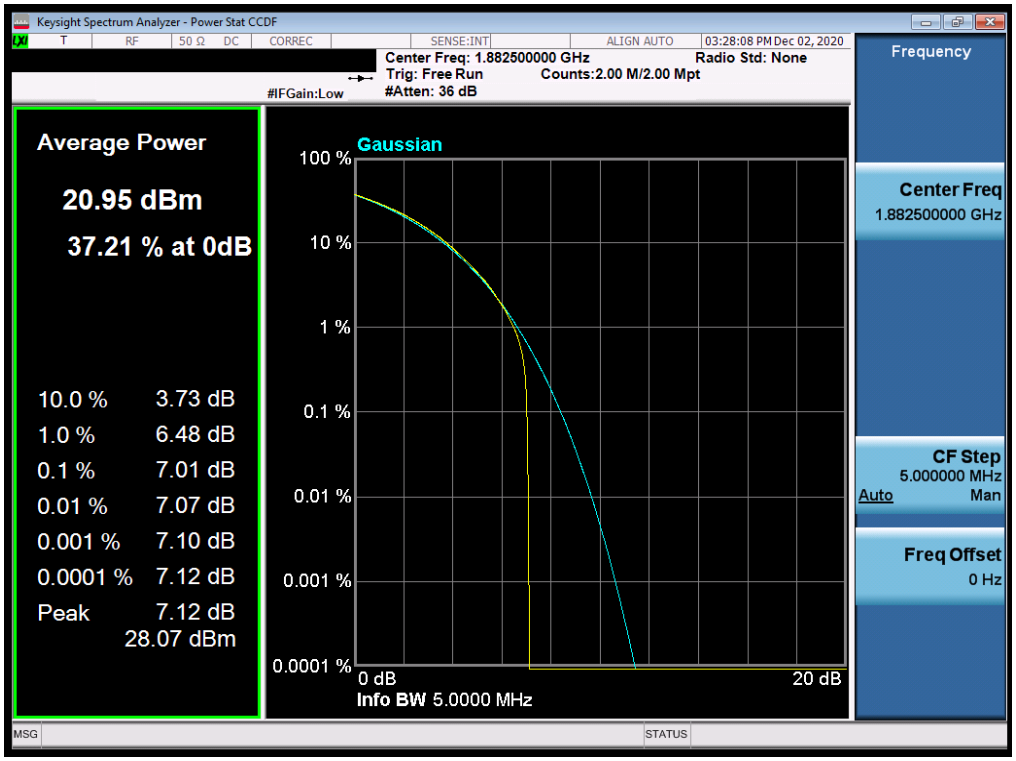
Plot 7-341. PAR Plot (NR Band n2 Ant I- 10.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)



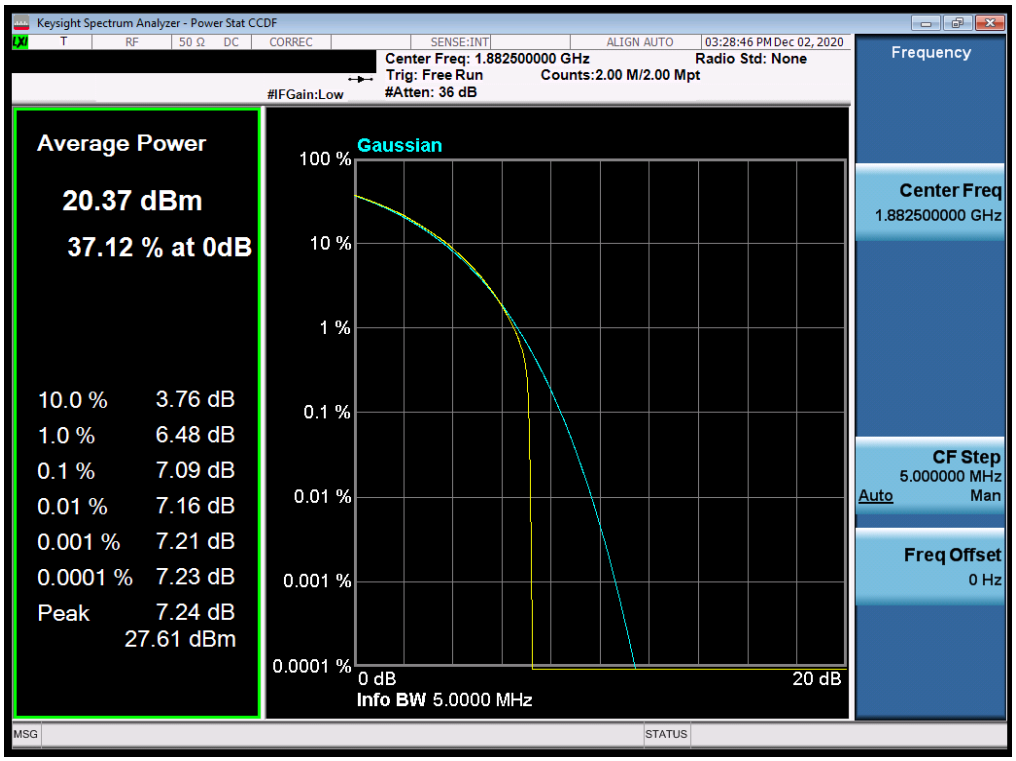
Plot 7-342. PAR Plot (NR Band n2 Ant I- 5.0MHz DFT-s-OFDM BPSK - Full RB)



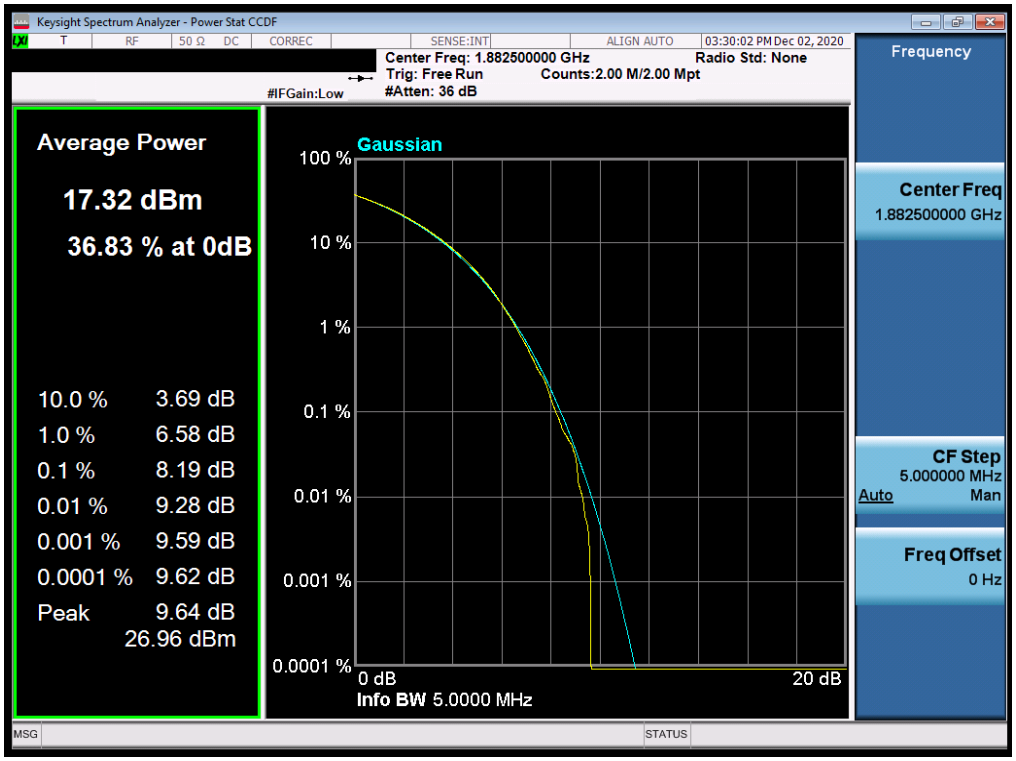
Plot 7-343. PAR Plot (NR Band n2 Ant I- 5.0MHz CP-OFDM-CP-OFDM QPSK - Full RB)



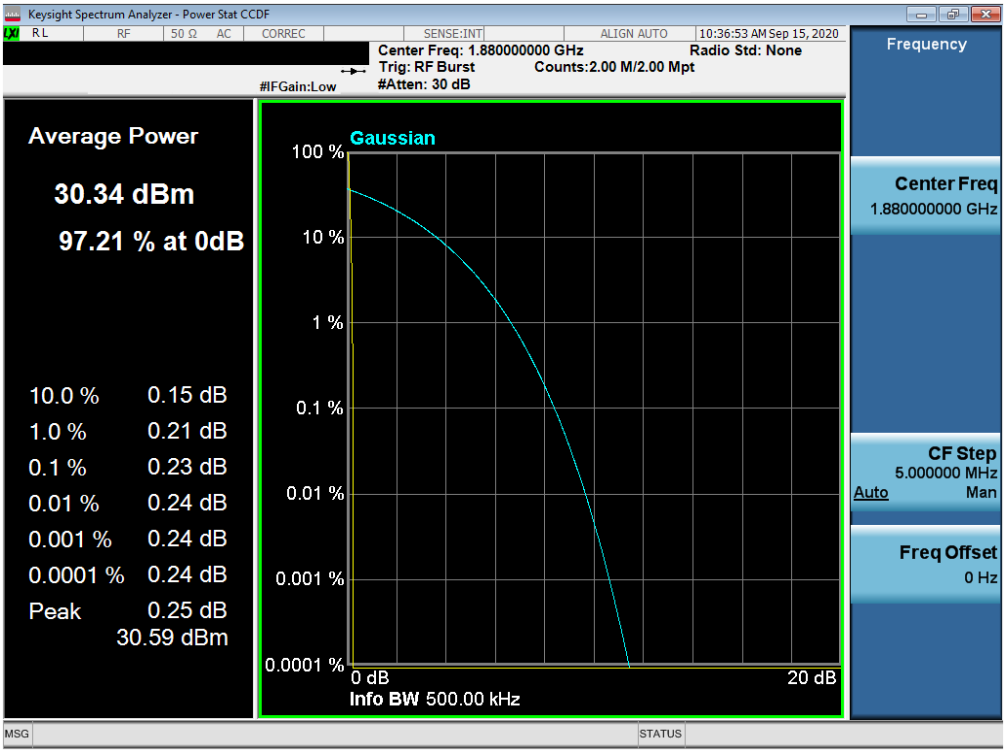
Plot 7-344. PAR Plot (NR Band n2 Ant I- 5.0MHz CP-OFDM-CP-OFDM 16-QAM - Full RB)



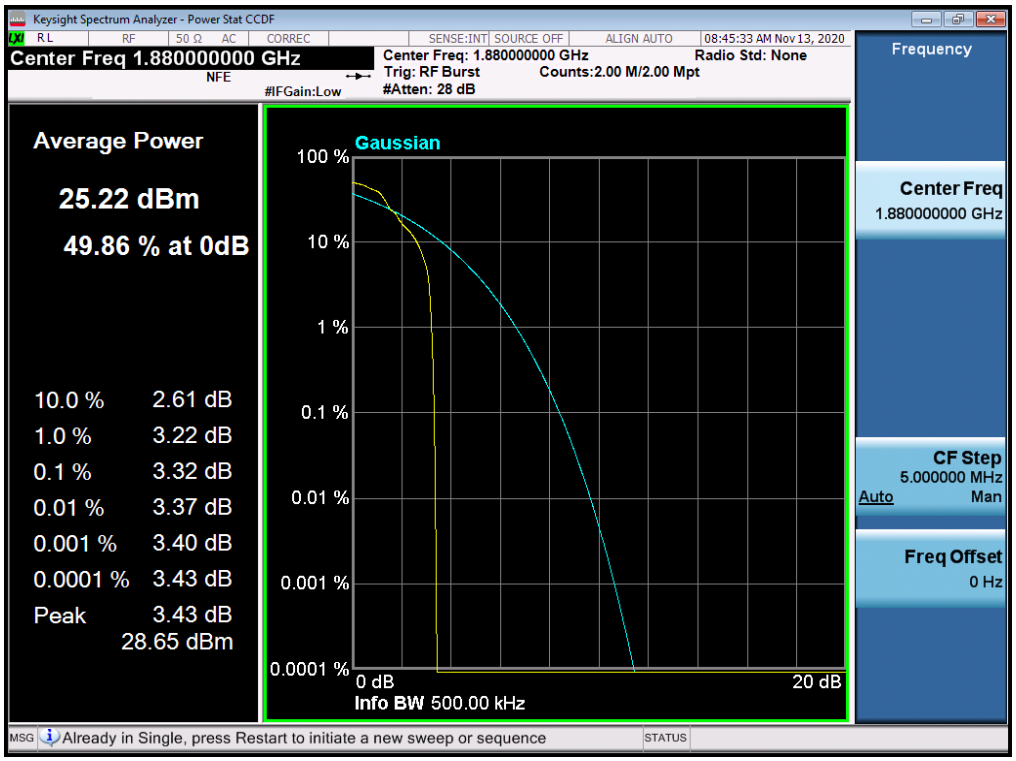
Plot 7-345. PAR Plot (NR Band n2 Ant I- 5.0MHz CP-OFDM-CP-OFDM 64-QAM - Full RB)



Plot 7-346. PAR Plot (NR Band n2 Ant I- 5.0MHz CP-OFDM-CP-OFDM 256-QAM - Full RB)

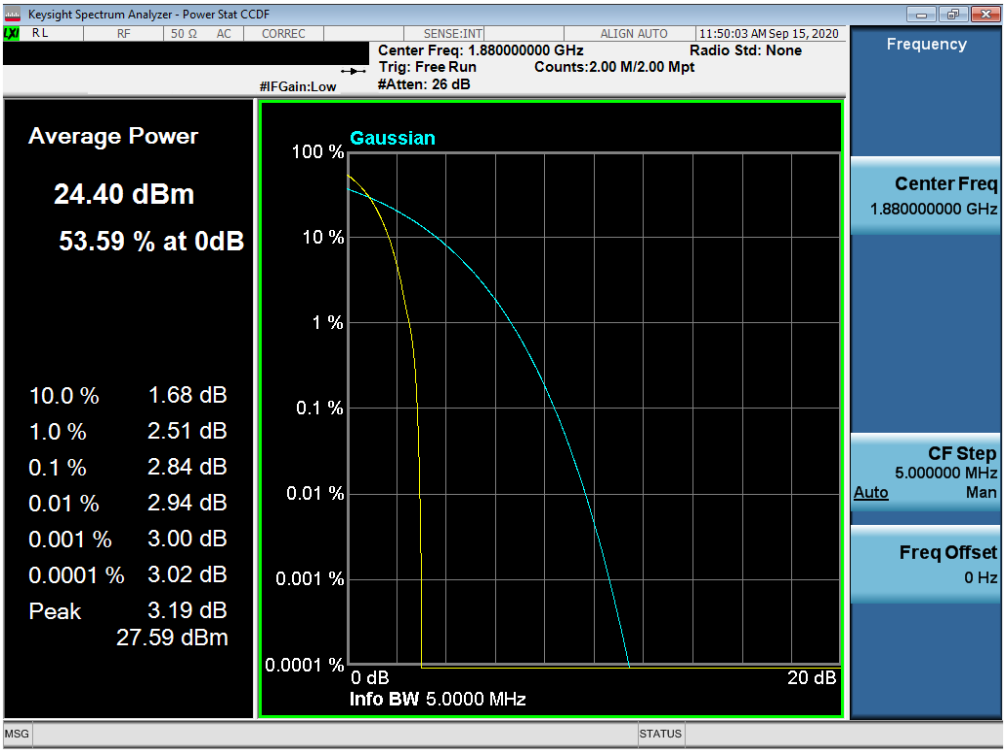


Plot 7-347. PAR Plot (GPRS, Ch. 661)

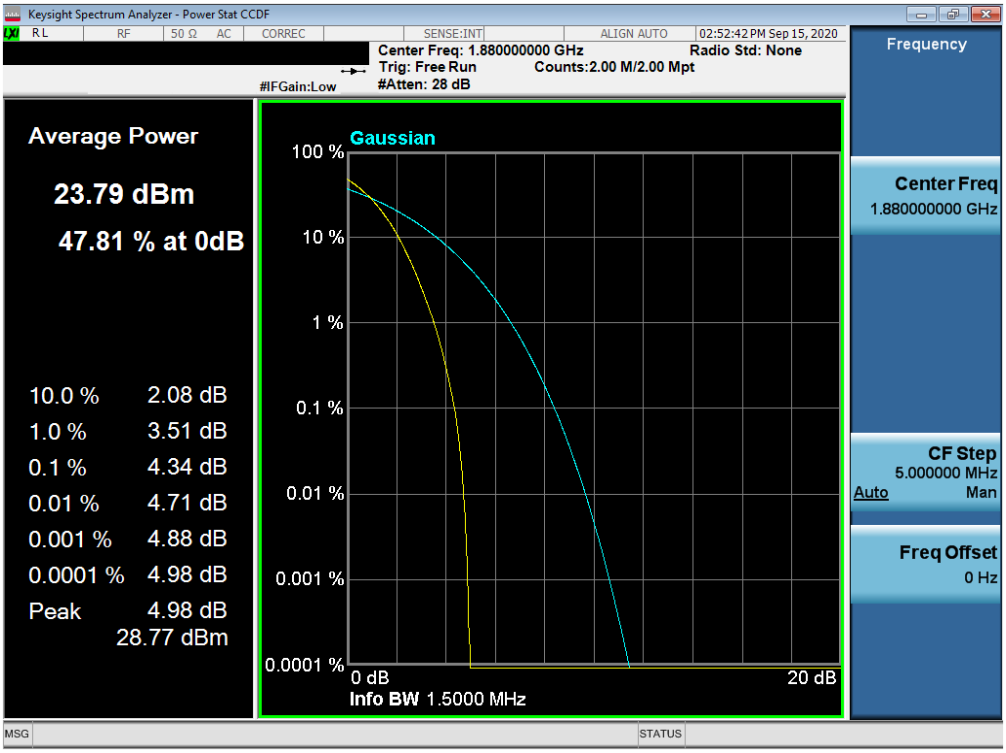


Plot 7-348. PAR Plot (EDGE, Ch. 661)

WCDMA PCS



Plot 7-349. PAR Plot (WCDMA, Ch. 9400)



Plot 7-350. PAR Plot (CDMA, Ch. 600)

7.6 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and 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.

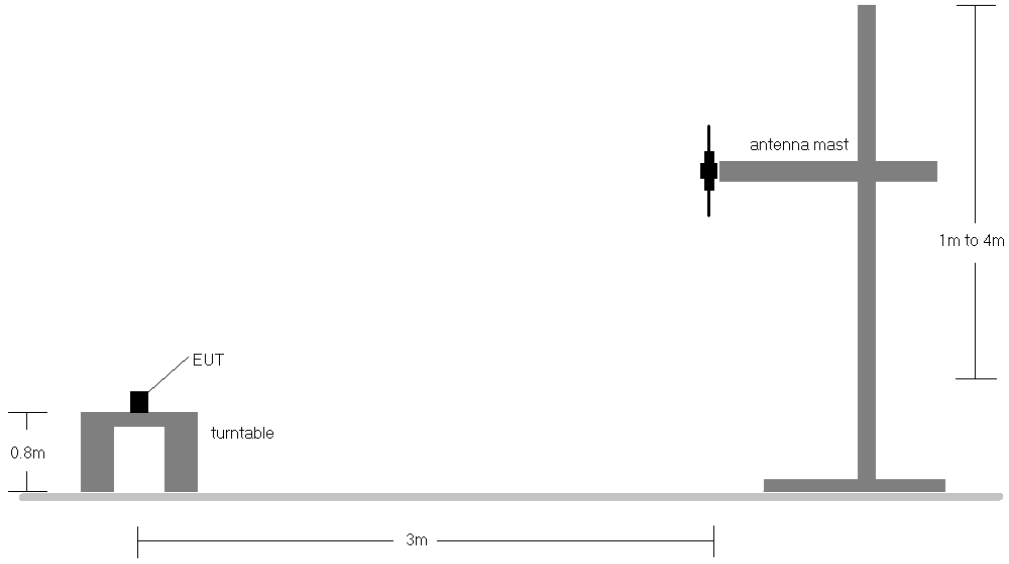


Figure 7-5. Radiated Test Setup <1GHz

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.

7) 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.

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	H	139.0	219.0	9.64	1 / 0	12.87	**22.51**	0.178	33.01	-10.50
		1882.5	H	147.0	228.0	9.96	1 / 0	12.34	22.30	0.170	33.01	-10.71
		1905.0	H	128.0	234.0	10.24	1 / 0	11.92	22.16	0.164	33.01	-10.85
	16-QAM	1882.5	H	147.0	228.0	9.96	1 / 0	12.26	**22.22**	0.167	33.01	-10.79
	64-QAM	1882.5	H	147.0	228.0	9.96	1 / 0	10.91	**20.87**	0.122	33.01	-12.14
	256-QAM	1905.0	H	128.0	234.0	10.24	1 / 0	7.06	**17.30**	0.054	33.01	-15.71
15 MHz	QPSK	1857.5	H	139.0	219.0	9.64	1/36	12.45	**22.09**	0.162	33.01	-10.92
		1882.5	H	147.0	228.0	9.96	1/74	11.65	21.61	0.145	33.01	-11.40
		1907.5	H	128.0	234.0	10.24	1/36	11.37	21.61	0.145	33.01	-11.40
	16-QAM	1882.5	H	147.0	228.0	9.96	1/74	11.18	**21.14**	0.130	33.01	-11.87
	64-QAM	1907.5	H	128.0	234.0	10.24	1/36	10.31	**20.55**	0.114	33.01	-12.46
	256-QAM	1907.5	H	128.0	234.0	10.24	1/74	9.96	**20.20**	0.105	33.01	-12.81
10 MHz	QPSK	1855.0	H	139.0	219.0	9.64	1/25	12.21	**21.85**	0.153	33.01	-11.16
		1882.5	H	147.0	228.0	9.96	1/25	11.46	21.42	0.139	33.01	-11.59
		1910.0	H	128.0	234.0	10.24	1/49	11.35	21.59	0.144	33.01	-11.42
	16-QAM	1855.0	H	139.0	219.0	9.64	1/25	11.43	**21.07**	0.128	33.01	-11.94
	64-QAM	1910.0	H	128.0	234.0	10.24	1/49	10.30	**20.54**	0.113	33.01	-12.47
	256-QAM	1910.0	H	128.0	234.0	10.24	1/25	10.00	**20.24**	0.106	33.01	-12.77
5 MHz	QPSK	1852.5	H	139.0	219.0	9.64	1/24	12.40	**22.04**	0.160	33.01	-10.97
		1882.5	H	147.0	228.0	9.96	1/24	11.70	21.66	0.147	33.01	-11.35
		1912.5	H	128.0	234.0	10.24	1/24	11.34	21.58	0.144	33.01	-11.43
	16-QAM	1882.5	H	147.0	228.0	9.96	1/24	11.56	**21.52**	0.142	33.01	-11.49
	64-QAM	1852.5	H	139.0	219.0	9.64	1/24	10.47	**20.11**	0.103	33.01	-12.90
	256-QAM	1912.5	H	128.0	234.0	10.24	25/0	9.51	**19.75**	0.094	33.01	-13.26
3 MHz	QPSK	1851.5	H	139.0	219.0	9.64	1/14	12.34	**21.98**	0.158	33.01	-11.03
		1882.5	H	147.0	228.0	9.96	1/14	11.58	21.54	0.143	33.01	-11.47
		1913.5	H	128.0	234.0	10.24	1/14	11.36	21.60	0.145	33.01	-11.41
	16-QAM	1851.5	H	139.0	219.0	9.64	1/14	11.54	**21.18**	0.131	33.01	-11.83
	64-QAM	1913.5	H	128.0	234.0	10.24	1/14	10.27	**20.51**	0.112	33.01	-12.50
	256-QAM	1913.5	H	128.0	234.0	10.24	1/14	10.00	**20.24**	0.106	33.01	-12.77
1.4 MHz	QPSK	1850.7	H	139.0	219.0	9.64	1/2	12.32	**21.96**	0.157	33.01	-11.05
		1882.5	H	147.0	228.0	9.96	1/2	11.48	21.44	0.139	33.01	-11.57
		1914.3	H	128.0	234.0	10.24	1/2	11.32	21.56	0.143	33.01	-11.45
	16-QAM	1882.5	H	147.0	228.0	9.96	1/2	11.00	**20.96**	0.125	33.01	-12.05
	64-QAM	1914.3	H	128.0	234.0	10.24	1/2	9.52	**19.76**	0.095	33.01	-13.25
	256-QAM	1914.3	H	128.0	234.0	10.24	1/5	9.24	**19.48**	0.089	33.01	-13.53
20 MHz	Opposite Pol.	1860.0	V	121.0	221.0	9.98	1 / 0	11.97	21.95	0.157	33.01	-11.06
	WCP	1860.0	H	144.0	210.0	10.13	1 / 0	12.17	22.30	0.170	33.01	-10.71

Table 7-351. EIRP Data (LTE Band 25/2)

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	1870.0	H	151	227	9.79	1 / 108	15.02	**24.81**	0.302	33.01	-8.20
		1882.5	H	153	234	9.96	1 / 108	14.53	24.49	0.281	33.01	-8.52
		1895.0	H	191	232	10.14	1 / 108	14.54	24.68	0.293	33.01	-8.34
	QPSK	1870.0	H	151	227	9.79	1 / 108	15.06	**24.85**	0.305	33.01	-8.16
		1882.5	H	153	234	9.96	1 / 108	14.49	24.45	0.279	33.01	-8.56
		1895.0	H	191	232	10.14	1 / 108	14.49	24.63	0.290	33.01	-8.39
	16-QAM	1870.0	H	151	227	9.79	1 / 108	14.00	**23.79**	0.239	33.01	-9.22
	64-QAM	1870.0	H	151	227	9.79	1 / 108	12.54	**22.33**	0.171	33.01	-10.68
	256-QAM	1870.0	H	151	227	9.79	1 / 108	10.71	**20.50**	0.112	33.01	-12.51
30 MHz	π/2 BPSK	1882.5	H	153	234	9.96	1 / 80	14.58	**24.54**	0.285	33.01	-8.47
	QPSK	1882.5	H	153	234	9.96	1 / 80	14.61	**24.57**	0.286	33.01	-8.44
	16-QAM	1882.5	H	153	234	9.96	1 / 80	13.76	**23.72**	0.236	33.01	-9.29
	64-QAM	1882.5	H	153	234	9.96	1 / 80	12.17	**22.13**	0.163	33.01	-10.88
	256-QAM	1882.5	H	153	234	9.96	1 / 80	9.81	**19.77**	0.095	33.01	-13.24
25 MHz	π/2 BPSK	1882.5	H	153	234	9.96	1 / 67	14.28	**24.24**	0.266	33.01	-8.77
	QPSK	1882.5	H	153	234	9.96	1 / 67	14.58	**24.54**	0.284	33.01	-8.47
	16-QAM	1882.5	H	153	234	9.96	1 / 67	13.45	**23.41**	0.219	33.01	-9.60
	64-QAM	1882.5	H	153	234	9.96	1 / 67	11.50	**21.46**	0.140	33.01	-11.55
	256-QAM	1882.5	H	153	234	9.96	1 / 67	9.23	**19.20**	0.083	33.01	-13.81
40 MHz	QPSK (CP-OFDM)	1870.0	H	151	227	9.79	1 / 108	13.44	**23.23**	0.210	33.01	-9.78
	QPSK (Opposite Pol.)	1870.0	V	151	287	9.79	1 / 108	14.03	23.82	0.241	33.01	-9.19
	QPSK (WCP)	1870.0	H	215	9.79	1 / 108	13.47	23.26	0.212	33.01	-9.75	

Table 7-352. EIRP Data (NR Band n25) Ant A

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	π/2 BPSK	1882.5	H	153	234	9.96	1 / 53	14.07	**24.03**	0.253	33.01	-8.98
	QPSK	1882.5	H	153	234	9.96	1 / 53	14.32	**24.28**	0.268	33.01	-8.73
	16-QAM	1882.5	H	153	234	9.96	1 / 53	13.02	**22.98**	0.199	33.01	-10.03
	64-QAM	1882.5	H	153	234	9.96	1 / 53	11.58	**21.54**	0.143	33.01	-11.47
	256-QAM	1882.5	H	153	234	9.96	1 / 53	9.52	**19.48**	0.089	33.01	-13.53
15 MHz	π/2 BPSK	1882.5	H	153	234	9.93	1 / 37	14.16	**24.08**	0.256	33.01	-8.93
	QPSK	1882.5	H	153	234	9.93	1 / 37	14.28	**24.21**	0.263	33.01	-8.80
	16-QAM	1882.5	H	153	234	9.93	1 / 37	13.26	**23.18**	0.208	33.01	-9.83
	64-QAM	1882.5	H	153	234	9.93	1 / 37	11.65	**21.57**	0.144	33.01	-11.44
	256-QAM	1882.5	H	153	234	9.93	1 / 37	9.86	**19.79**	0.095	33.01	-13.22
10 MHz	π/2 BPSK	1882.5	H	153	234	9.93	1 / 25	14.28	**24.20**	0.263	33.01	-8.81
	QPSK	1882.5	H	153	234	9.93	1 / 25	14.33	**24.26**	0.267	33.01	-8.75
	16-QAM	1882.5	H	153	234	9.93	1 / 25	13.12	**23.04**	0.201	33.01	-9.97
	64-QAM	1882.5	H	153	234	9.93	1 / 25	11.55	**21.47**	0.140	33.01	-11.54
	256-QAM	1882.5	H	153	234	9.93	1 / 25	9.60	**19.53**	0.090	33.01	-13.48
5 MHz	π/2 BPSK	1882.5	H	153	234	9.93	1 / 12	14.20	**24.13**	0.259	33.01	-8.88
	QPSK	1882.5	H	153	234	9.93	1 / 12	14.35	**24.27**	0.267	33.01	-8.74
	16-QAM	1882.5	H	153	234	9.93	1 / 12	13.15	**23.07**	0.203	33.01	-9.94
	64-QAM	1882.5	H	153	234	9.93	1 / 12	11.78	**21.71**	0.148	33.01	-11.30
	256-QAM	1882.5	H	153	234	9.93	1 / 12	9.62	19.54	0.090	33.01	-13.47

Table 7-353. EIRP Data (NR Band n2) Ant A

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	1870.0	H	302	26	9.79	1 / 108	9.82	19.61	0.091	33.01	-13.40
		1882.5	H	297	25	9.96	1 / 108	10.37	**20.33**	0.108	33.01	-12.68
		1895.0	H	300	20	10.14	1 / 1	8.58	18.72	0.074	33.01	-14.30
	QPSK	1870.0	H	302	26	9.79	1 / 108	8.95	18.74	0.075	33.01	-14.27
		1882.5	H	297	25	9.96	1 / 108	9.36	**19.32**	0.086	33.01	-13.69
		1895.0	H	300	20	10.14	1 / 1	7.76	17.90	0.062	33.01	-15.12
	16-QAM	1882.5	H	297	25	9.96	1 / 108	8.41	**18.37**	0.069	33.01	-14.64
	64-QAM	1882.5	H	297	25	9.96	1 / 108	6.94	**16.90**	0.049	33.01	-16.11
	256-QAM	1882.5	H	297	25	9.96	1 / 108	5.51	**15.47**	0.035	33.01	-17.54
30 MHz	π/2 BPSK	1882.5	H	151	227	9.96	1 / 80	10.33	**20.29**	0.107	33.01	-12.72
	QPSK	1882.5	H	151	227	9.96	1 / 80	9.22	**19.18**	0.083	33.01	-13.83
	16-QAM	1882.5	H	151	227	9.96	1 / 80	8.30	**18.26**	0.067	33.01	-14.75
	64-QAM	1882.5	H	151	227	9.96	1 / 80	7.04	**17.00**	0.050	33.01	-16.01
	256-QAM	1882.5	H	151	227	9.96	1 / 80	5.43	**15.39**	0.035	33.01	-17.62
25 MHz	π/2 BPSK	1882.5	H	151	227	9.96	1/67	10.03	**19.99**	0.100	33.01	-13.02
	QPSK	1882.5	H	151	227	9.96	1/67	9.17	**19.13**	0.082	33.01	-13.88
	16-QAM	1882.5	H	151	227	9.96	1/67	7.99	**17.95**	0.062	33.01	-15.06
	64-QAM	1882.5	H	151	227	9.96	1/67	6.32	**16.28**	0.042	33.01	-16.73
	256-QAM	1882.5	H	151	227	9.96	1/67	4.77	**14.73**	0.030	33.01	-18.28
40 MHz	QPSK (CP-OFDM)	1882.5	H	297	25	9.96	1 / 108	7.99	**17.95**	0.062	33.01	-15.06
	QPSK (Opposite Pol.)	1882.5	V	101	328	9.96	1 / 108	8.24	18.20	0.066	33.01	-14.81
	QPSK (WCP)	1882.5	H	119	7	9.96	1 / 108	8.33	18.29	0.067	33.01	-14.72

Table 7-354. EIRP Data (NR Band n25) Ant I

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	π/2 BPSK	1882.5	H	151	227	9.96	1 / 53	10.19	**20.15**	0.104	33.01	-12.86
	QPSK	1882.5	H	151	227	9.96	1 / 53	9.07	**19.03**	0.080	33.01	-13.98
	16-QAM	1882.5	H	151	227	9.96	1 / 53	7.89	**17.85**	0.061	33.01	-15.16
	64-QAM	1882.5	H	151	227	9.96	1 / 53	6.73	**16.69**	0.047	33.01	-16.32
	256-QAM	1882.5	H	151	227	9.96	1 / 53	4.68	**14.64**	0.029	33.01	-18.37
15 MHz	π/2 BPSK	1882.5	H	297	25	9.93	1 / 37	10.20	**20.13**	0.103	33.01	-12.88
	QPSK	1882.5	H	297	25	9.93	1 / 37	9.04	**18.97**	0.079	33.01	-14.04
	16-QAM	1882.5	H	297	25	9.93	1 / 37	7.94	**17.87**	0.061	33.01	-15.14
	64-QAM	1882.5	H	297	25	9.93	1 / 37	6.81	**16.74**	0.047	33.01	-16.27
	256-QAM	1882.5	H	297	25	9.93	1 / 37	5.30	**15.23**	0.033	33.01	-17.78
10 MHz	π/2 BPSK	1882.5	H	297	25	9.93	1 / 25	10.26	**20.19**	0.104	33.01	-12.82
	QPSK	1882.5	H	297	25	9.93	1 / 25	9.19	**19.12**	0.082	33.01	-13.89
	16-QAM	1882.5	H	297	25	9.93	1 / 25	7.96	**17.89**	0.062	33.01	-15.12
	64-QAM	1882.5	H	297	25	9.93	1 / 25	6.83	**16.76**	0.047	33.01	-16.25
	256-QAM	1882.5	H	297	25	9.93	1 / 25	4.85	**14.78**	0.030	33.01	-18.23
5 MHz	π/2 BPSK	1882.5	H	297	25	9.93	1 / 12	10.31	**20.24**	0.106	33.01	-12.77
	QPSK	1882.5	H	297	25	9.93	1 / 12	9.17	**19.10**	0.081	33.01	-13.91
	16-QAM	1882.5	H	297	25	9.93	1 / 12	8.55	**18.48**	0.070	33.01	-14.53
	64-QAM	1882.5	H	297	25	9.93	1 / 12	6.84	**16.77**	0.048	33.01	-16.24
	256-QAM	1882.5	H	297	25	9.93	1 / 12	5.07	**15.00**	0.032	33.01	-18.01

Table 7-355. EIRP Data (NR Band n2) Ant I

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	160	289	18.70	9.51	28.21	0.662	33.01	-4.80
1880.00	GSM1900	V	156	274	18.31	9.93	28.24	0.666	33.01	-4.77
1909.80	GSM1900	V	102	270	18.60	10.28	**28.50**	**0.708**	33.01	-4.51
1909.80	GSM1900	H	100	205	16.85	10.28	27.13	0.517	33.01	-5.88
1909.80	EDGE1900	V	102	270	14.68	10.28	**24.96**	0.313	33.01	-8.05
1909.80	GSM1900 (WCP)	V	185	212	15.27	10.28	25.55	0.359	33.01	-7.46

Table 7-356. EIRP Data (GPRS 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	V	167	339	13.67	9.92	**23.59**	**0.229**	33.01	-9.42
1880.00	WCDMA1900	V	152	330	12.99	10.13	23.12	0.205	33.01	-9.89
1907.60	WCDMA1900	V	165	348	12.68	10.33	23.01	0.200	33.01	-10.00
1852.40	WCDMA1900	H	121	350	10.32	9.54	19.86	0.097	33.01	-13.15
1852.40	WCDMA1900 (WCP)	V	140	58	10.46	9.92	20.38	0.109	33.01	-12.63

Table 7-357. 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	V	166	324	13.84	9.92	23.76	0.238	33.01	-9.25
1880.00	CDMA1900	V	151	319	13.72	10.13	**23.85**	**0.243**	33.01	-9.16
1908.75	CDMA1900	V	169	339	11.59	10.33	21.92	0.156	33.01	-11.09
1880.00	CDMA1900	H	108	184	10.48	9.93	20.41	0.110	33.01	-12.60
1880.00	CDMA1900 (WCP)	V	174	28	9.25	10.13	19.38	0.087	33.01	-13.63

Table 7-358. 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.

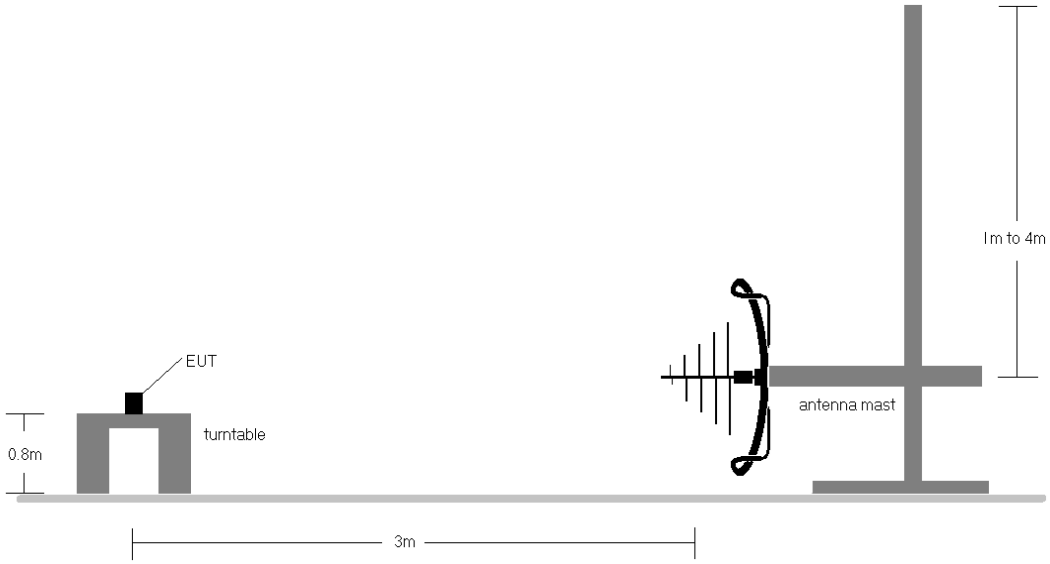


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

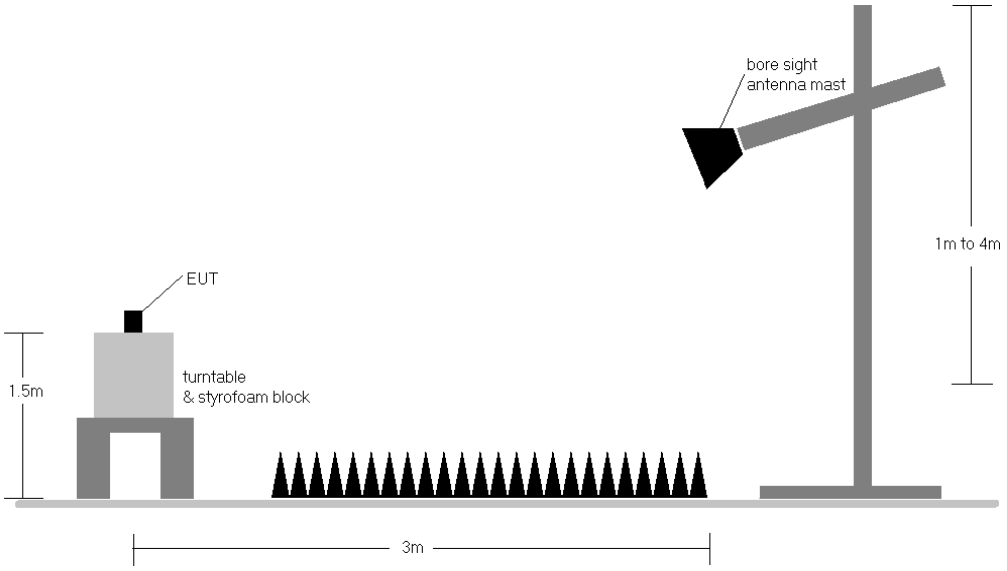


Figure 7-7. Test Instrument & Measurement Setup >1 GHz

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.

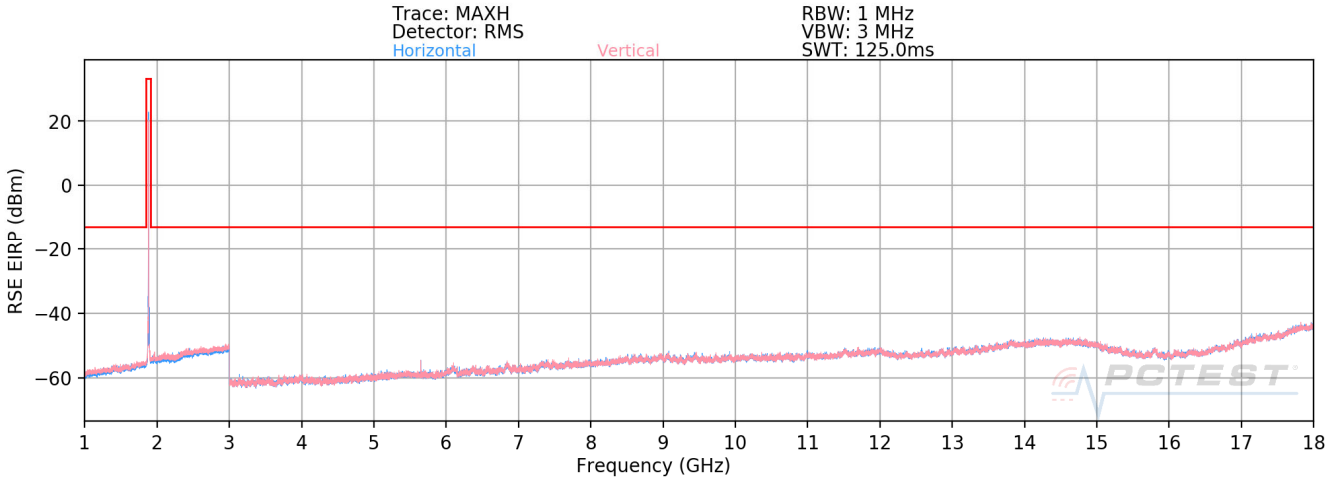
9) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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

11) 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.

12) 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, is subject to the rules under which the NR carrier operates. Spurious emission caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

LTE Band 25/2



Plot 7-359. 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	-	-	-78.90	2.66	30.76	-64.50	-13.00	-51.50
5580.0	V	114	15	-70.25	5.02	41.77	-53.49	-13.00	-40.49
7440.0	V	-	-	-80.13	8.80	35.67	-59.59	-13.00	-46.59
9300.0	V	-	-	-80.73	10.78	37.05	-58.20	-13.00	-45.20

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	-	-	-78.27	2.64	31.37	-63.89	-13.00	-50.89
5647.5	V	126	20	-72.09	5.07	39.98	-55.27	-13.00	-42.27
7530.0	V	-	-	-80.47	8.91	35.44	-59.81	-13.00	-46.81
9412.5	V	-	-	-81.82	11.82	37.00	-58.26	-13.00	-45.26

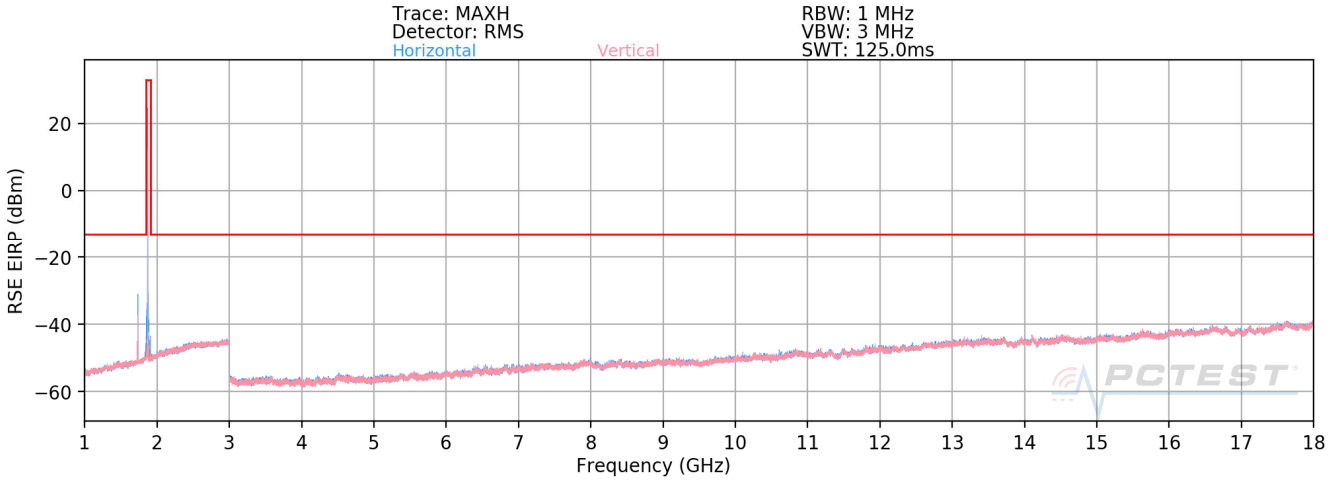
Table 7-3. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)

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	-	-	-78.53	2.39	30.86	-64.39	-13.00	-51.39
5715.00	V	326	6	-73.20	4.79	38.59	-56.67	-13.00	-43.67
7620.00	V	-	-	-80.73	8.97	35.24	-60.02	-13.00	-47.02
9525.00	V	-	-	-81.19	11.27	37.08	-58.18	-13.00	-45.18

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

NR Band n25 Ant A



Plot 7-360. Radiated Spurious Plot (NR Band n25 Ant A)

Bandwidth (MHz):	40
Frequency (MHz):	1870.0
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]
3740.0	V	-	-	-78.34	2.37	31.03	-64.23	-13.00	-51.23
5610.0	V	306	352	-74.23	5.12	37.89	-57.37	-13.00	-44.37
7480.0	V	-	-	-80.16	8.93	35.77	-59.49	-13.00	-46.49

Table 7-5. Radiated Spurious Data (NR Band n25 Ant A – Low Channel)

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]
3765.0	V	-	-	-78.27	2.47	31.20	-64.06	-13.00	-51.06
5647.5	V	117	343	-74.77	4.98	37.21	-58.05	-13.00	-45.05
7530.0	V	-	-	-80.26	8.98	35.72	-59.54	-13.00	-46.54

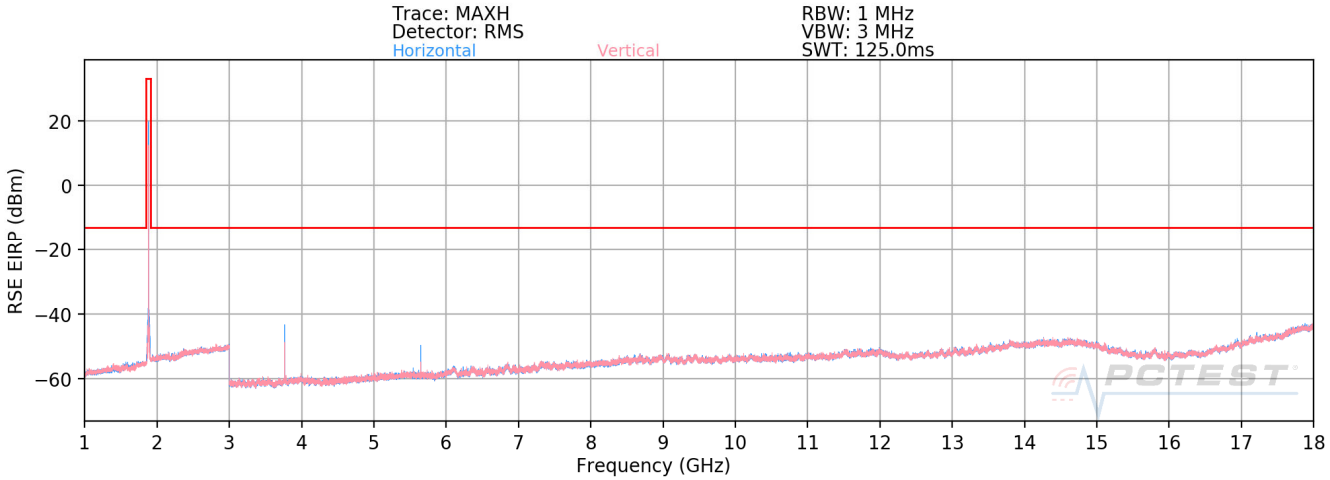
Table 7-6. Radiated Spurious Data (NR Band n25 Ant A – Mid Channel)

Bandwidth (MHz):	40
Frequency (MHz):	1895.0
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]
3790.0	V	-	-	-78.23	2.44	31.21	-64.05	-13.00	-51.05
5685.0	V	349	40	-77.29	4.81	34.52	-60.74	-13.00	-47.74
7580.0	V	-	-	-80.60	8.90	35.30	-59.95	-13.00	-46.95

Table 7-7. Radiated Spurious Data (NR Band n25 Ant A – High Channel)

NR Band n25 Ant I



Plot 7-361. Radiated Spurious Plot (NR Band n25 Ant I)

Bandwidth (MHz):	40
Frequency (MHz):	1870.0
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]
3740.0	H	377	310	-62.79	2.37	46.58	-48.68	-13.00	-35.68
5610.0	H	280	16	-69.97	5.12	42.15	-53.11	-13.00	-40.11
7480.0	H	-	-	-80.18	8.93	35.75	-59.51	-13.00	-46.51
9350.0	H	264	308	-80.92	11.04	37.12	-58.13	-13.00	-45.13

Table 7-8. Radiated Spurious Data (NR Band n25 Ant I– Low Channel)

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]
3765.0	H	372	307	-57.33	2.47	52.14	-43.12	-13.00	-30.12
5647.5	H	111	16	-66.61	4.98	45.37	-49.89	-13.00	-36.89
7530.0	H	-	-	-80.29	8.98	35.69	-59.57	-13.00	-46.57
9412.5	H	-	-	-81.64	11.11	36.47	-58.79	-13.00	-45.79

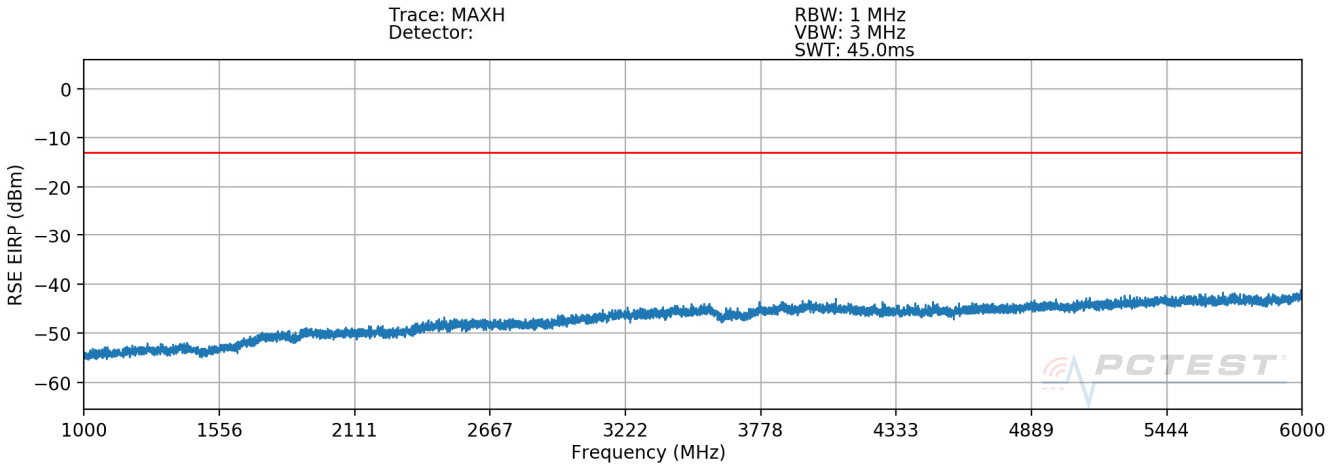
Table 7-9. Radiated Spurious Data (NR Band n25 Ant I– Mid Channel)

Bandwidth (MHz):	40
Frequency (MHz):	1895.0
RB / Offset:	1 / 108

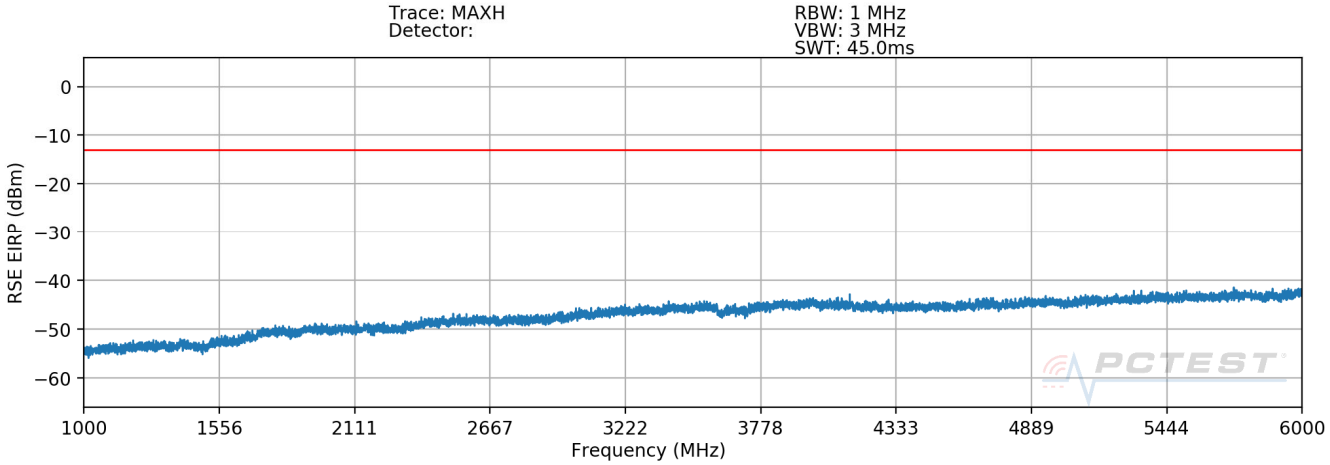
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3790.0	H	372	315	-64.24	2.44	45.20	-50.06	-13.00	-37.06
5685.0	H	297	18	-70.47	4.81	41.34	-53.92	-13.00	-40.92
7580.0	H	-	-	-80.62	8.90	35.28	-59.97	-13.00	-46.97
9475.0	H	245	20	-80.55	11.08	37.53	-57.73	-13.00	-44.73

Table 7-10. Radiated Spurious Data (NR Band n25 Ant I– High Channel)

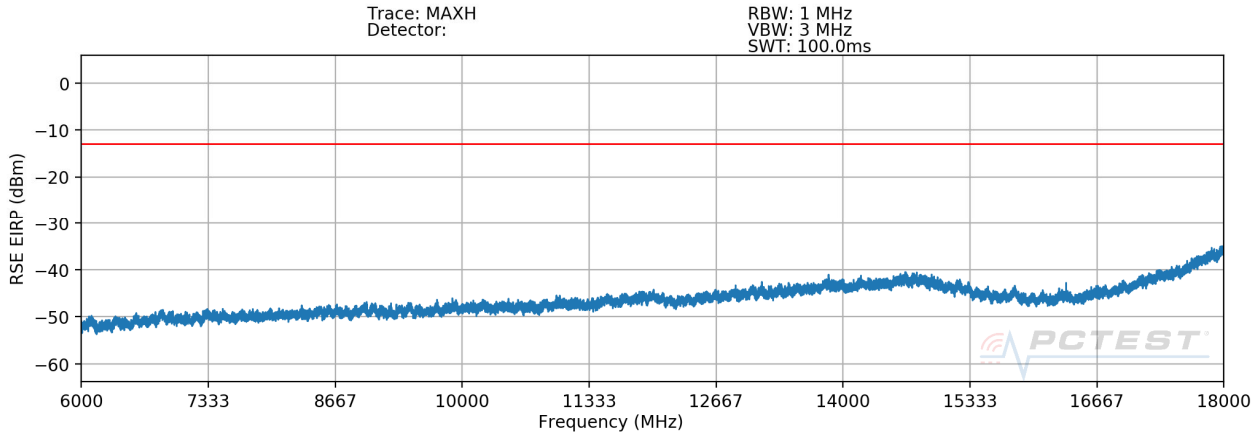
EN-DC - n25 + Anchor B12



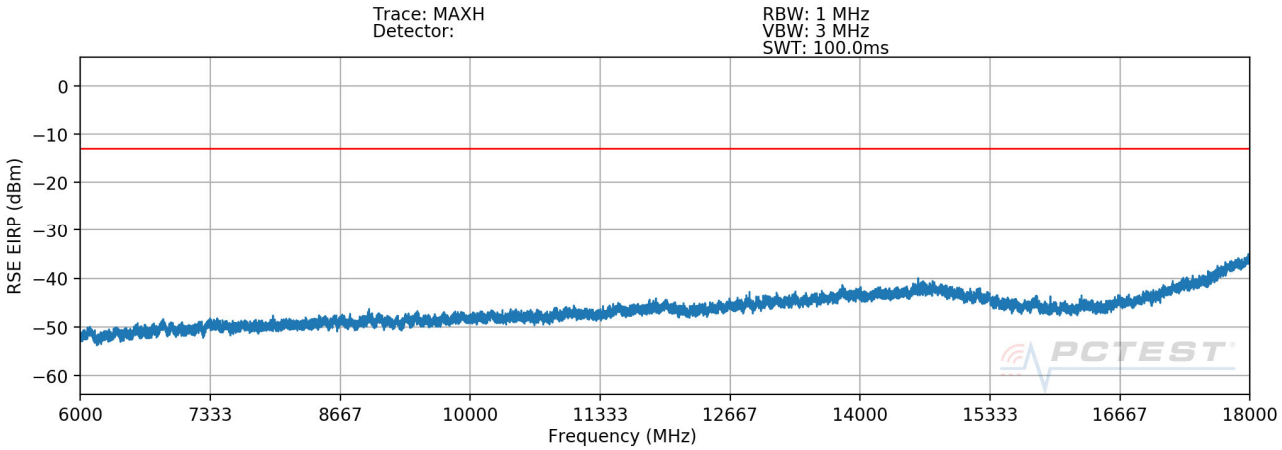
Plot 7-362. Radiated Spurious Plot (n25 + Anchor B12 – EN-DC) – HX



Plot 7-363. Radiated Spurious Plot (n25 + Anchor B12 – EN-DC) – VX



Plot 7-364. Radiated Spurious Plot (n25 + Anchor B12 – EN-DC) – HX



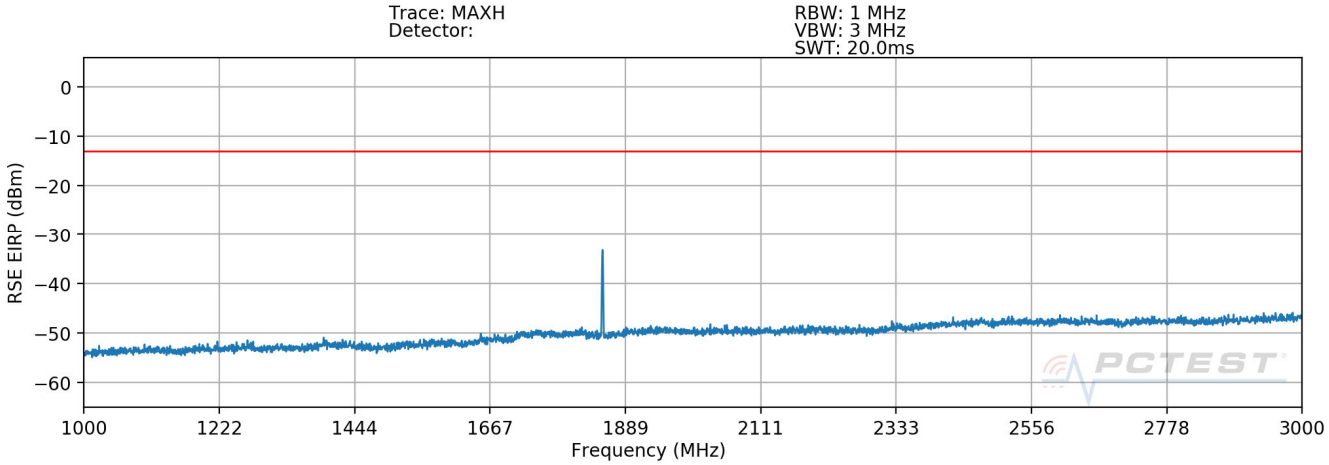
Plot 7-365. Radiated Spurious Plot (n25 + Anchor B12 – EN-DC) – VX

Mode:	EN-DC
Anchor Band:	12

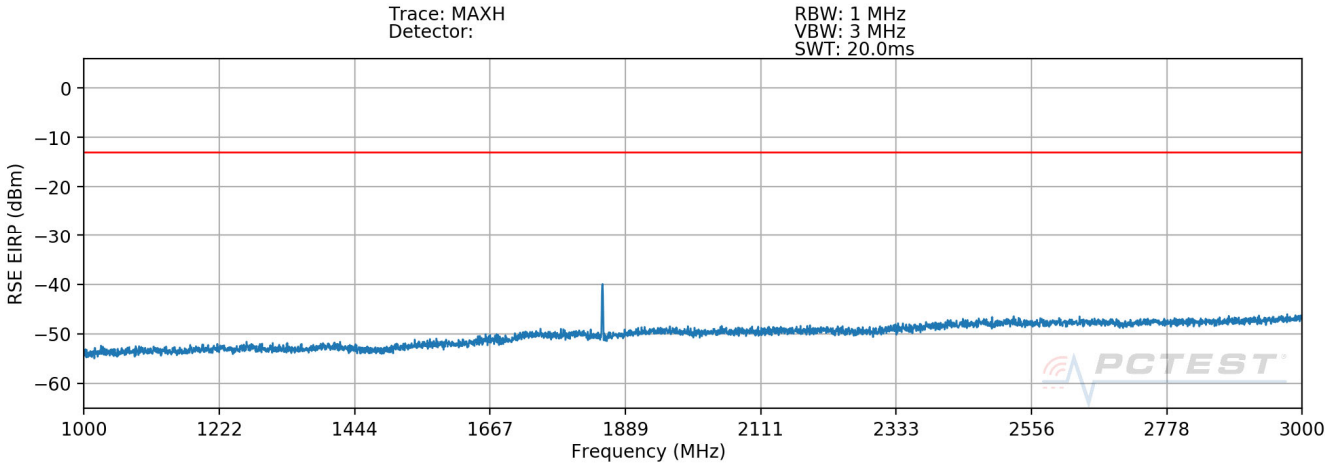
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3765.0	H	-	-	-78.69	2.64	30.95	-64.31	-13.00	-51.31
5647.5	H	-	-	-79.53	5.07	32.54	-62.71	-13.00	-49.71
7530.0	H	-	-	-79.97	8.91	35.94	-59.31	-13.00	-46.31

Table 7-11. Radiated Spurious Data (n25 + Anchor B12 – EN-DC)

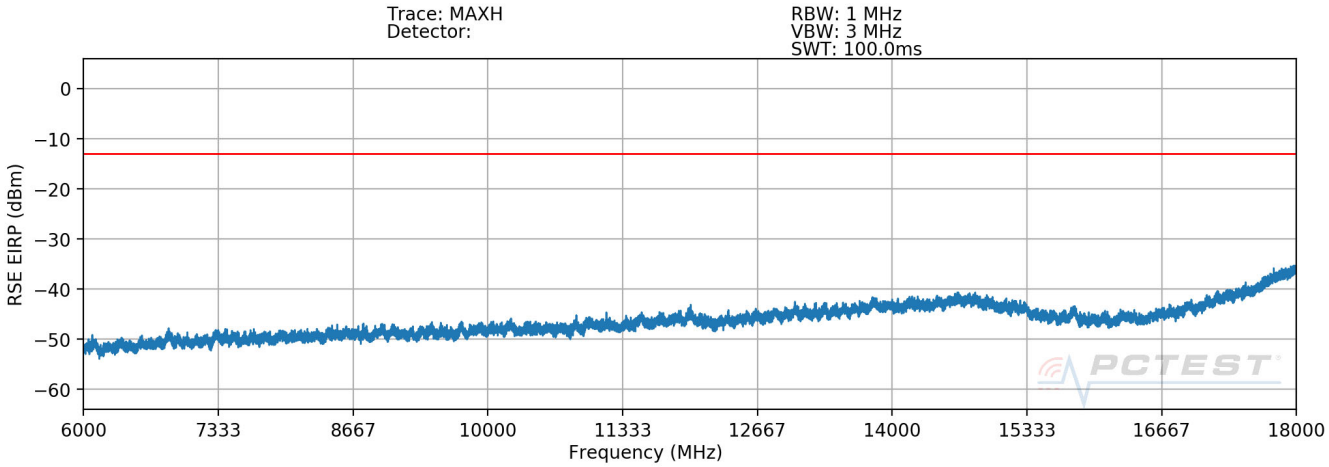
EN-DC - n2 + Anchor B66



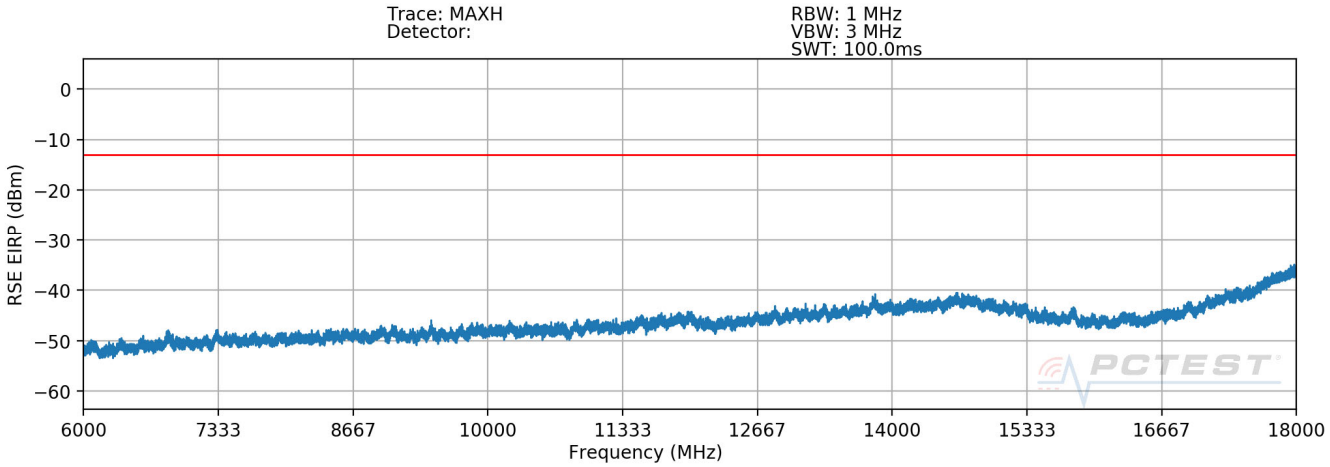
Plot 7-366. Radiated Spurious Plot (n2 + Anchor B66 – EN-DC) – HX



Plot 7-367. Radiated Spurious Plot (n2 + Anchor B66 – EN-DC) – VX



Plot 7-368. Radiated Spurious Plot (n2 + Anchor B66 – EN-DC) – HX



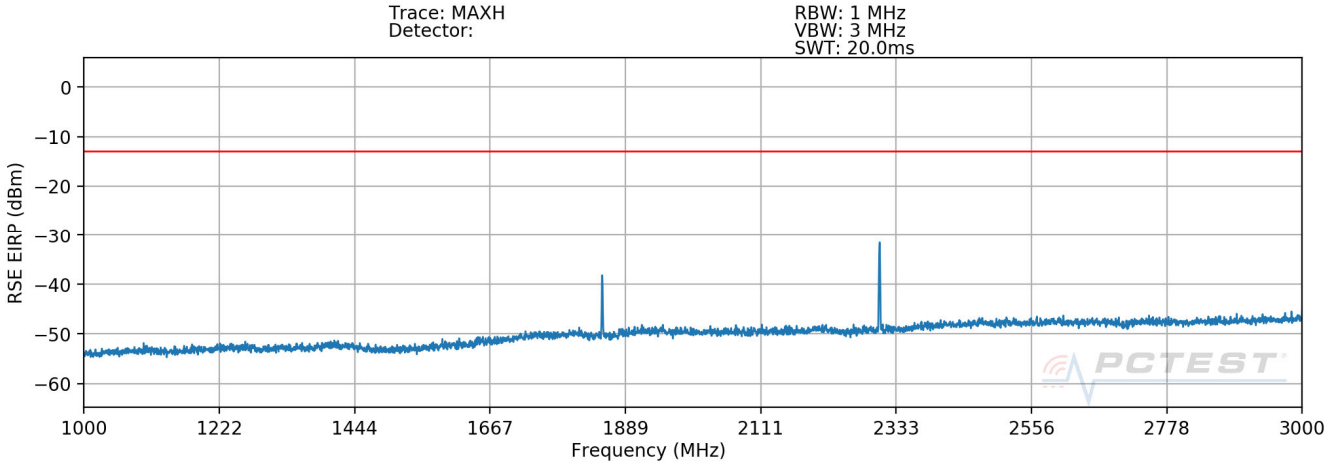
Plot 7-369. Radiated Spurious Plot (n2 + Anchor B66 – EN-DC) – VX

Mode:	EN-DC
Anchor Band:	66

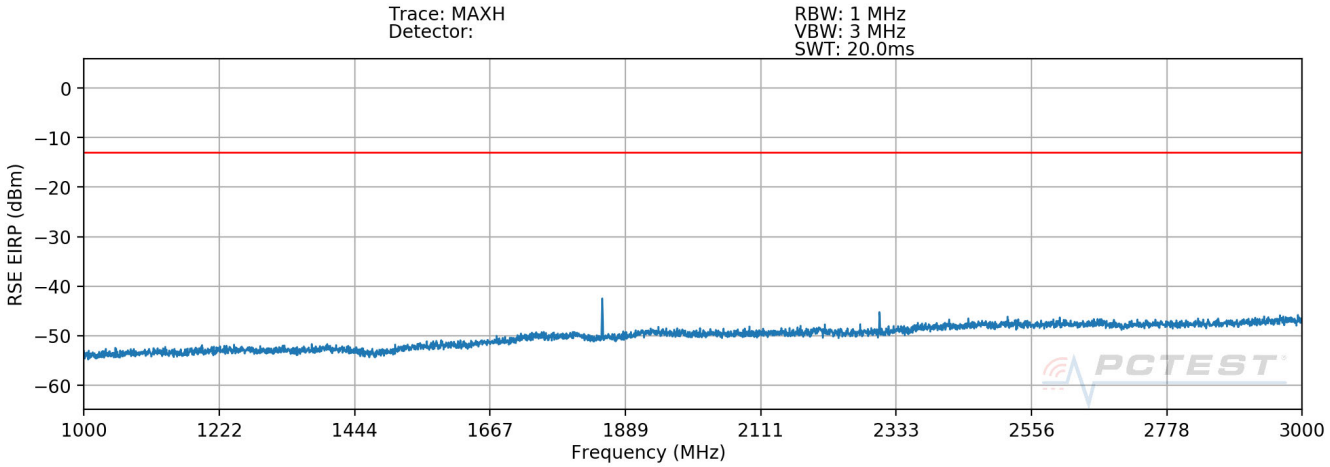
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3740.0	V	109	9	-52.41	2.60	57.19	-38.06	-13.00	-25.06
5610.0	V	280	58	-74.06	5.29	38.23	-57.03	-13.00	-44.03
7480.0	V	-	-	-79.57	8.88	36.31	-58.95	-13.00	-45.95
9350.0	V	-	-	-80.27	11.72	38.45	-56.81	-13.00	-43.81

Table 7-12. Radiated Spurious Data (n2 + Anchor 66 – EN-DC)

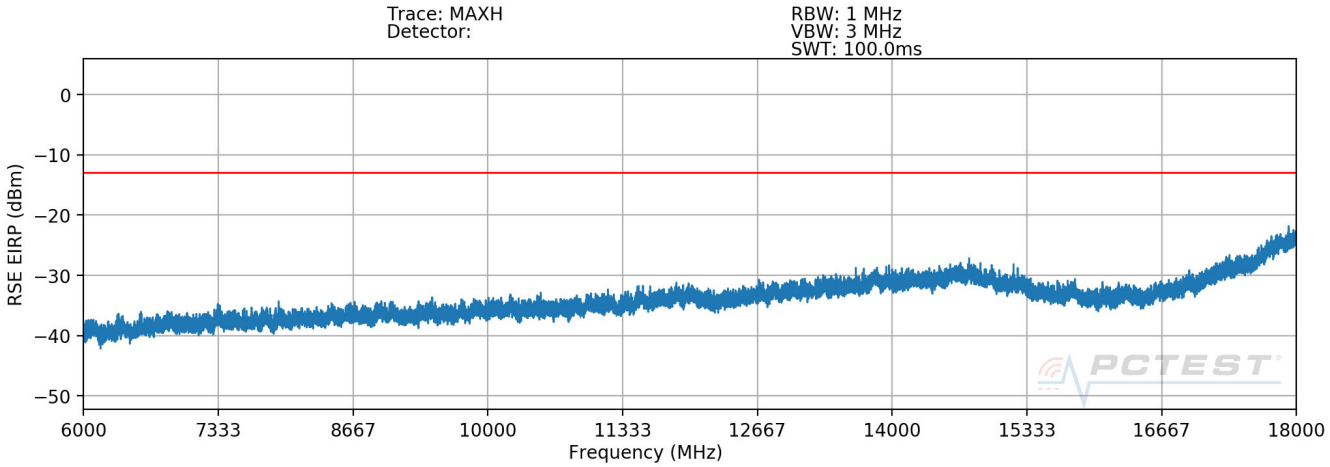
EN-DC - n2 + Anchor B30



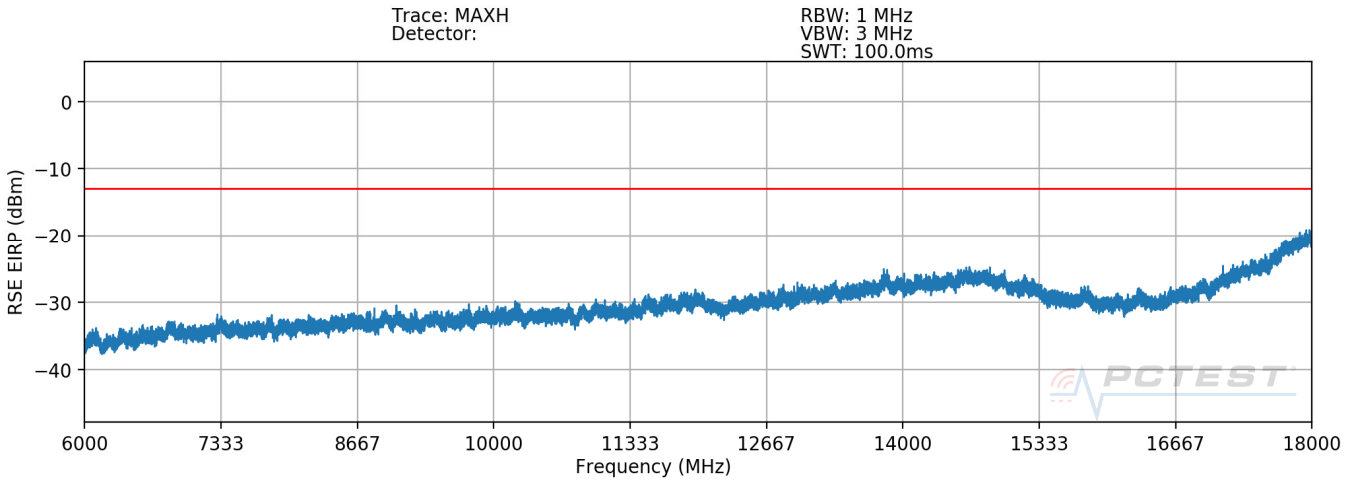
Plot 7-370. Radiated Spurious Plot (n2 + Anchor B30 – EN-DC) – HX



Plot 7-371. Radiated Spurious Plot (n2 + Anchor B30 – EN-DC) – VX



Plot 7-372. Radiated Spurious Plot (n2 + Anchor B30 – EN-DC) – HX



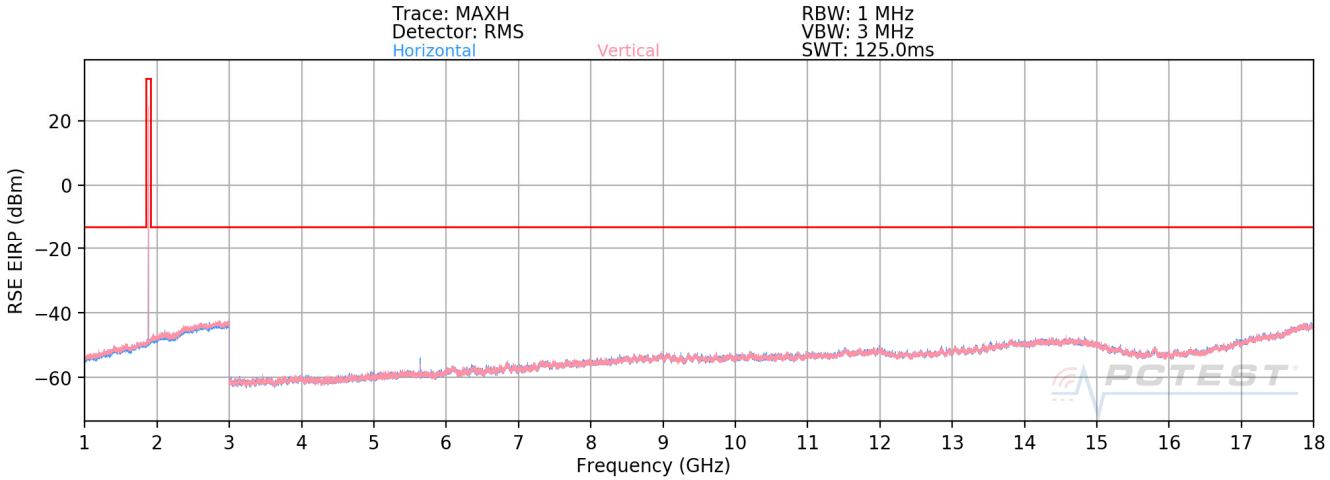
Plot 7-373. Radiated Spurious Plot (n2 + Anchor B30 – EN-DC) – VX

Mode:	EN-DC
Anchor Band:	30

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]
3790.0	H	243	105	-58.67	2.48	50.81	-44.45	-13.00	-31.45
5550.0	H	100	91	-73.05	4.74	38.69	-56.56	-13.00	-43.56
7400.0	H	-	-	-79.91	8.61	35.70	-59.56	-13.00	-46.56
4611.8	H	-	-	-77.77	3.30	32.53	-62.73	-13.00	-49.73

Table 7-13. Radiated Spurious Data (n2 + Anchor B30 – EN-DC)

GSM/GPRS PCS



Plot 7-374. 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	H	-	-	-76.04	2.50	33.46	-61.80	-13.00	-48.80
5550.6	H	276	351	-62.43	4.75	49.32	-45.94	-13.00	-32.94
7400.8	H	-	-	-77.39	8.61	38.22	-57.04	-13.00	-44.04
9251.0	H	-	-	-77.90	10.94	40.04	-55.22	-13.00	-42.22

Table 7-14. 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	H	-	-	-75.74	2.64	33.90	-61.36	-13.00	-48.36
5640.0	H	323	344	-61.30	5.07	50.77	-44.49	-13.00	-31.49
7520.0	H	-	-	-77.44	8.86	38.42	-56.84	-13.00	-43.84
9400.0	H	-	-	-78.95	11.77	39.82	-55.44	-13.00	-42.44

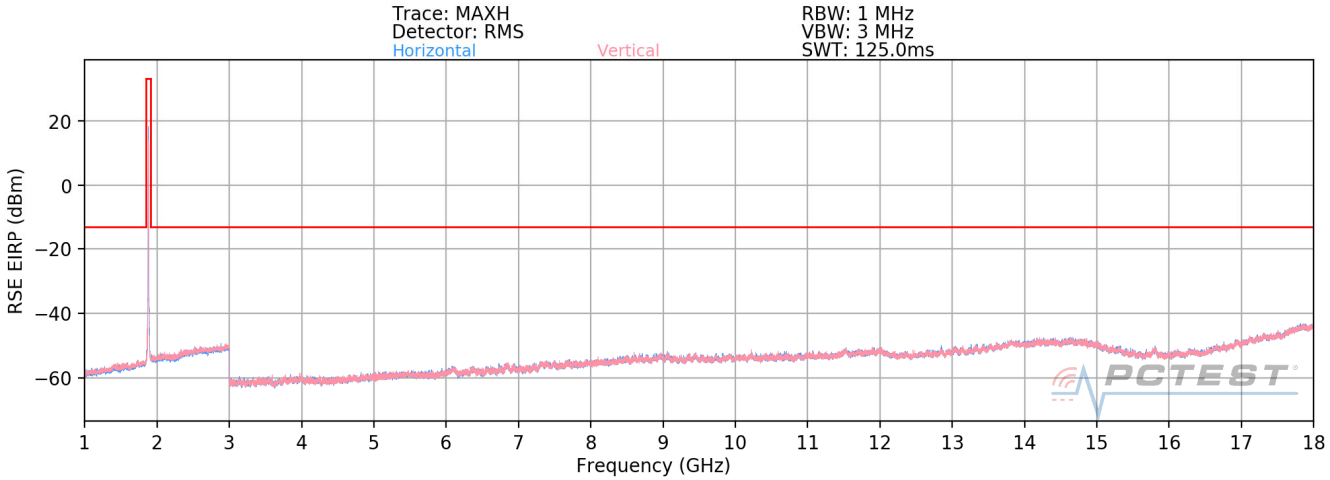
Table 7-15. Radiated Spurious Data (GPRS PCS – Mid Channel)

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	H	-	-	-76.02	2.39	33.37	-61.89	-13.00	-48.89
5729.4	H	292	349	-64.42	4.69	47.27	-47.99	-13.00	-34.99
7639.2	H	-	-	-77.79	9.22	38.43	-56.83	-13.00	-43.83
9549.0	H	-	-	-78.57	11.51	39.94	-55.32	-13.00	-42.32

Table 7-16. Radiated Spurious Data (GPRS PCS – High Channel)

WCDMA PCS



Plot 7-375. 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	H	-	-	-78.61	2.56	30.95	-64.30	-13.00	-51.30
5557.2	H	-	-	-78.96	4.76	32.80	-62.45	-13.00	-49.45

Table 7-17. 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	H	-	-	-78.34	2.64	31.30	-63.96	-13.00	-50.96
5640.0	H	-	-	-79.65	5.07	32.42	-62.84	-13.00	-49.84

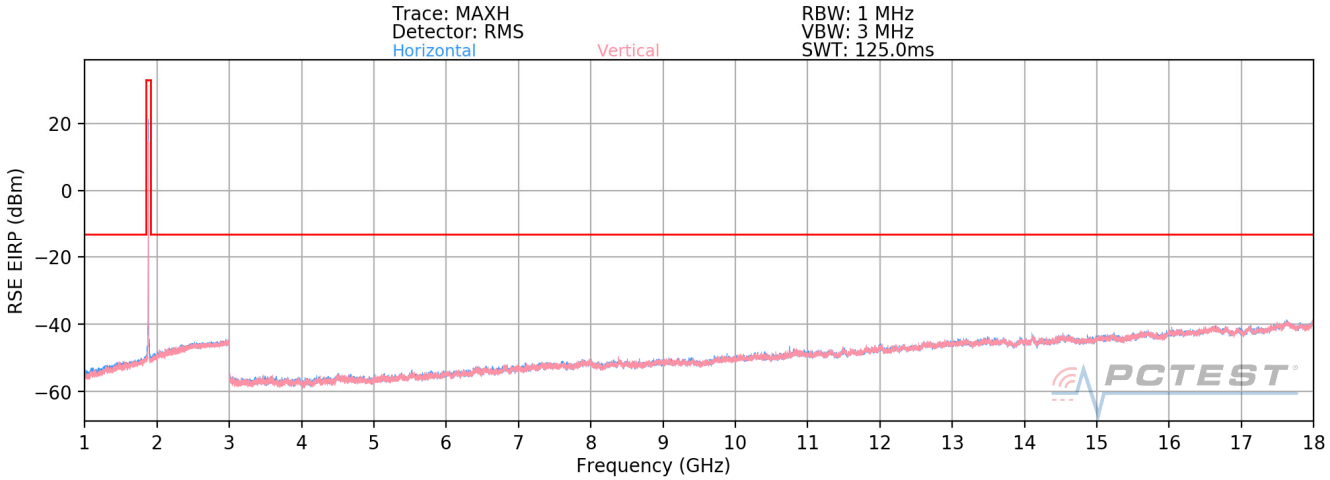
Table 7-18. Radiated Spurious Data (WCDMA PCS – Mid Channel)

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	H	-	-	-78.40	2.39	30.99	-64.27	-13.00	-51.27
5722.8	H	-	-	-79.17	4.72	32.55	-62.70	-13.00	-49.70

Table 7-19. Radiated Spurious Data (WCDMA PCS – High Channel)

CDMA PCS



Plot 7-376. 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	H	332	36	-78.79	7.62	35.83	-59.43	-13.00	-46.43
5553.75	H	-	-	-80.38	11.27	37.89	-57.37	-13.00	-44.37
7405.00	H	-	-	-80.20	15.06	41.86	-53.40	-13.00	-40.40
9256.25	H	-	-	-80.20	18.28	45.08	-50.18	-13.00	-37.18

Table 7-20. 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	H	212	367	-79.13	7.91	35.78	-59.48	-13.00	-46.48
5640.00	H	-	-	-80.41	10.76	37.35	-57.91	-13.00	-44.91
7520.00	H	-	-	-80.44	15.34	41.90	-53.36	-13.00	-40.36
9400.00	H	-	-	-81.05	18.64	44.59	-50.67	-13.00	-37.67

Table 7-21. 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	H	397	277	-79.26	8.52	36.26	-59.00	-13.00	-46.00
5726.25	H	-	-	-80.07	11.90	38.83	-56.43	-13.00	-43.43
7635.00	H	-	-	-80.19	15.96	42.77	-52.49	-13.00	-39.49
9543.75	H	-	-	-80.87	18.26	44.39	-50.87	-13.00	-37.87

Table 7-22. 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.

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

Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	4.41
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,882,500,026	-449	-0.0000239
		- 20	1,882,500,051	-474	-0.0000252
		- 10	1,882,499,911	-334	-0.0000177
		0	1,882,500,180	-603	-0.0000320
		+ 10	1,882,500,018	-441	-0.0000234
		+ 20 (Ref)	1,882,499,577	0	0.0000000
		+ 30	1,882,500,099	-522	-0.0000277
		+ 40	1,882,500,044	-467	-0.0000248
		+ 50	1,882,500,384	-807	-0.0000429
Battery Endpoint	3.37	+ 20	1,882,500,146	-569	-0.0000302

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

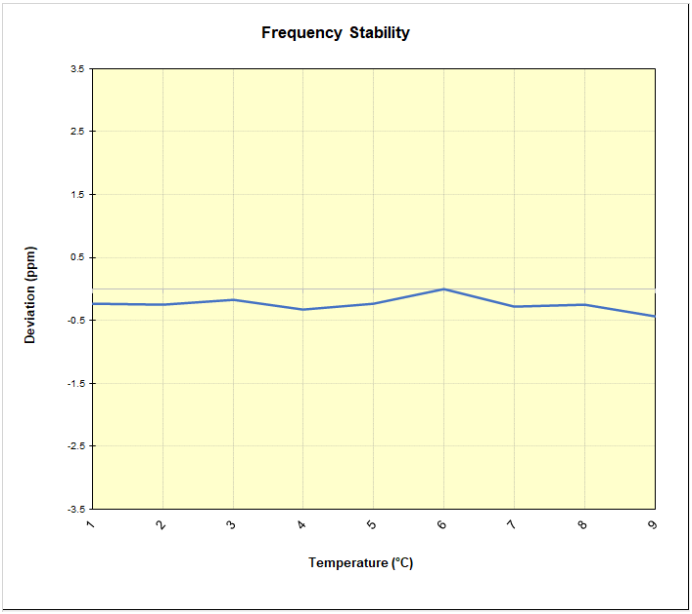


Table 7-9. LTE Band 25/2 Frequency Stability Chart

NR Band n2

Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	4.41
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,880,000,384	-145	-0.0000077
		- 20	1,880,000,048	191	0.0000102
		- 10	1,879,999,579	660	0.0000351
		0	1,880,000,024	215	0.0000114
		+ 10	1,880,000,262	-23	-0.0000012
		+ 20 (Ref)	1,880,000,239	0	0.0000000
		+ 30	1,879,999,695	544	0.0000289
		+ 40	1,880,000,158	81	0.0000043
		+ 50	1,879,999,948	291	0.0000155
Battery Endpoint	3.37	+ 20	1,880,000,442	-203	-0.0000108

Table 7-9. NR Band n2 Frequency Stability Data

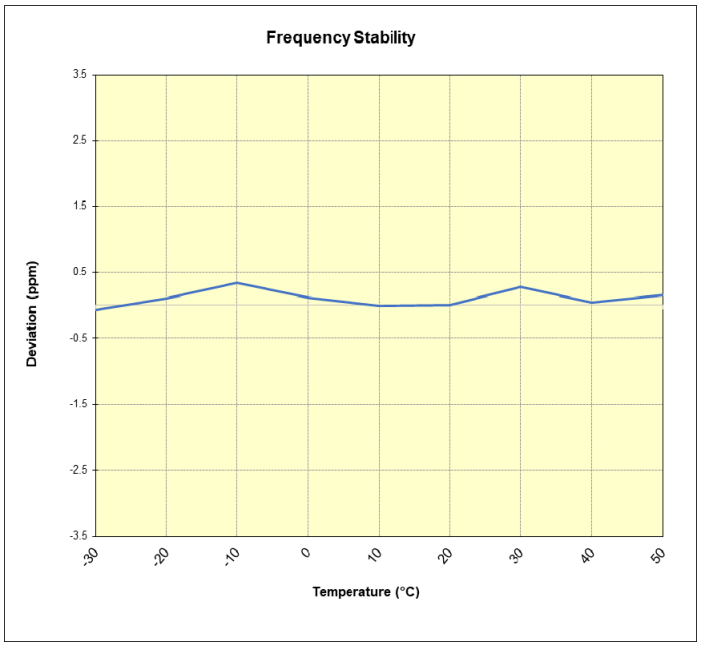


Table 7-9. NR Band n2 Frequency Stability Chart

GSM/GPRS PCS

Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	4.41
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,880,000,174	-207	-0.0000110
		- 20	1,880,000,341	-374	-0.0000199
		- 10	1,880,000,302	-335	-0.0000178
		0	1,880,000,011	-44	-0.0000023
		+ 10	1,879,999,656	311	0.0000165
		+ 20 (Ref)	1,879,999,967	0	0.0000000
		+ 30	1,879,999,781	186	0.0000099
		+ 40	1,880,000,096	-129	-0.0000069
		+ 50	1,880,000,033	-66	-0.0000035
Battery Endpoint	3.37	+ 20	1,880,000,113	-146	-0.0000078

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

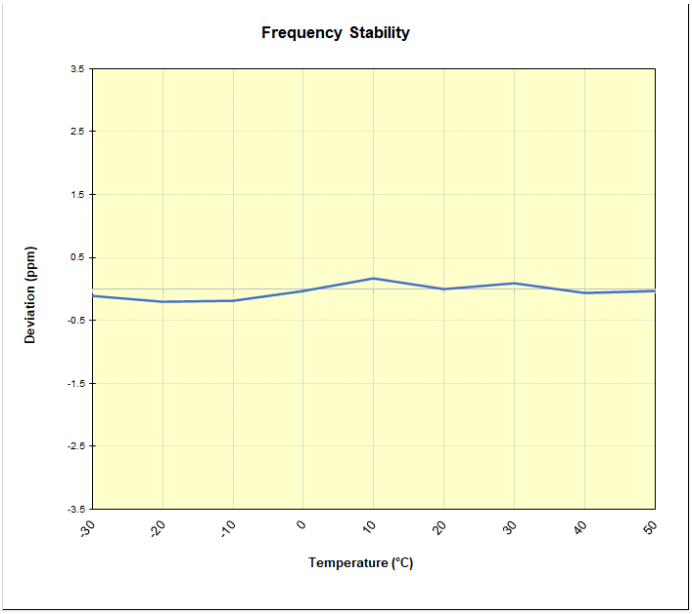


Table 7-9. GSM/GPRS PCS Frequency Stability Chart

WCDMA PCS

Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	4.41
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,879,999,726	-118	-0.0000063
		- 20	1,879,999,979	-371	-0.0000197
		- 10	1,879,999,880	-272	-0.0000145
		0	1,880,000,102	-494	-0.0000263
		+ 10	1,879,999,997	-389	-0.0000207
		+ 20 (Ref)	1,879,999,608	0	0.0000000
		+ 30	1,879,999,978	-370	-0.0000197
		+ 40	1,880,000,150	-542	-0.0000288
		+ 50	1,879,999,968	-360	-0.0000191
Battery Endpoint	3.37	+ 20	1,879,999,957	-349	-0.0000186

Table 7-9. WCDMA PCS Frequency Stability Data

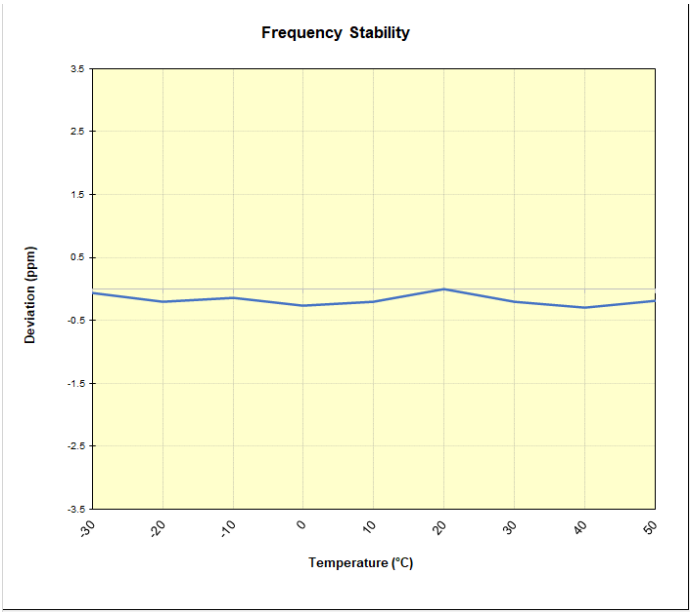


Table 7-9. WCDMA PCS Frequency Stability Chart

CDMA PCS

Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	4.41
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.41	- 30	1,879,999,747	552	0.0000294
		- 20	1,879,999,826	473	0.0000252
		- 10	1,880,000,198	101	0.0000054
		0	1,879,999,965	334	0.0000178
		+ 10	1,880,000,032	267	0.0000142
		+ 20 (Ref)	1,880,000,299	0	0.0000000
		+ 30	1,879,999,911	388	0.0000206
		+ 40	1,879,999,962	337	0.0000179
		+ 50	1,880,000,111	188	0.0000100
Battery Endpoint	3.37	+ 20	1,879,999,859	440	0.0000234

Table 7-9. CDMA PCS Frequency Stability Data

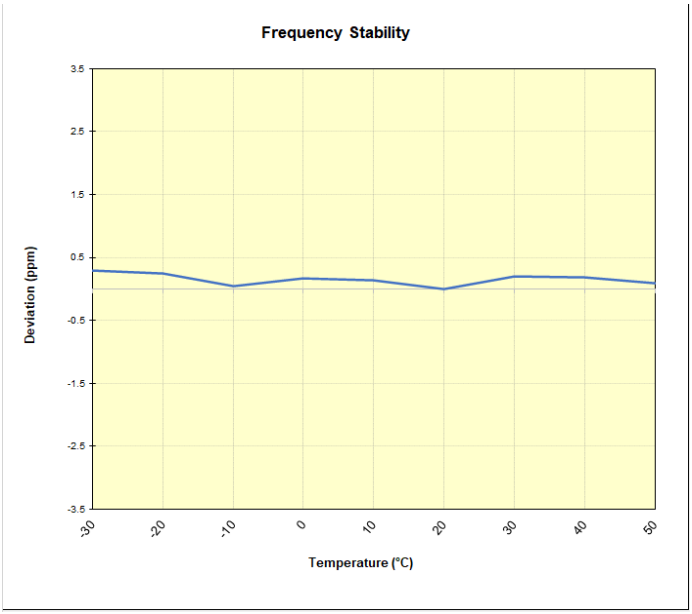


Table 7-9. CDMA PCS Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset FCC ID: A3LSMG996U** complies with all the requirements of Part 24 of the FCC rules.