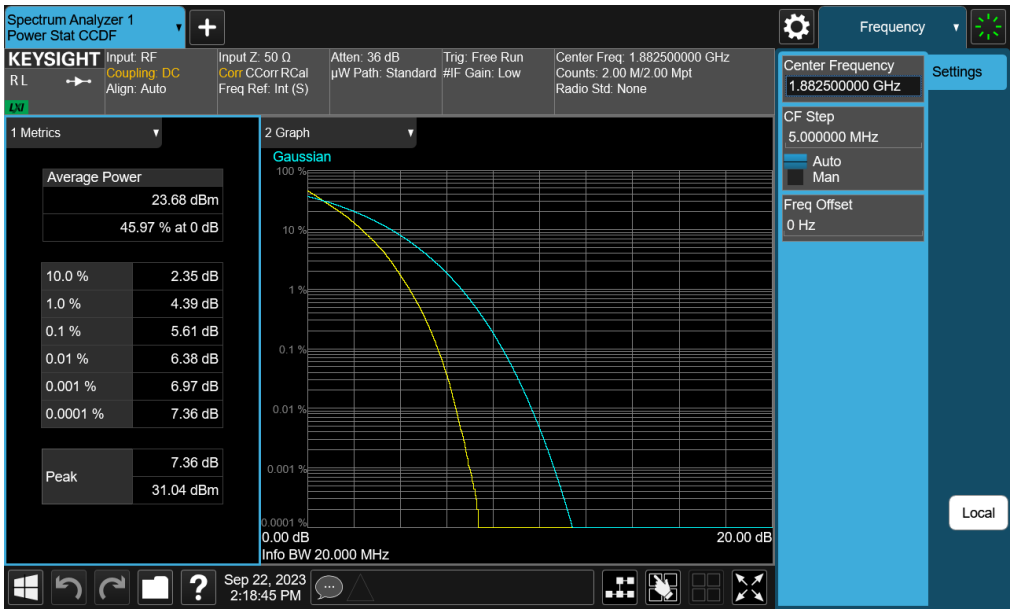
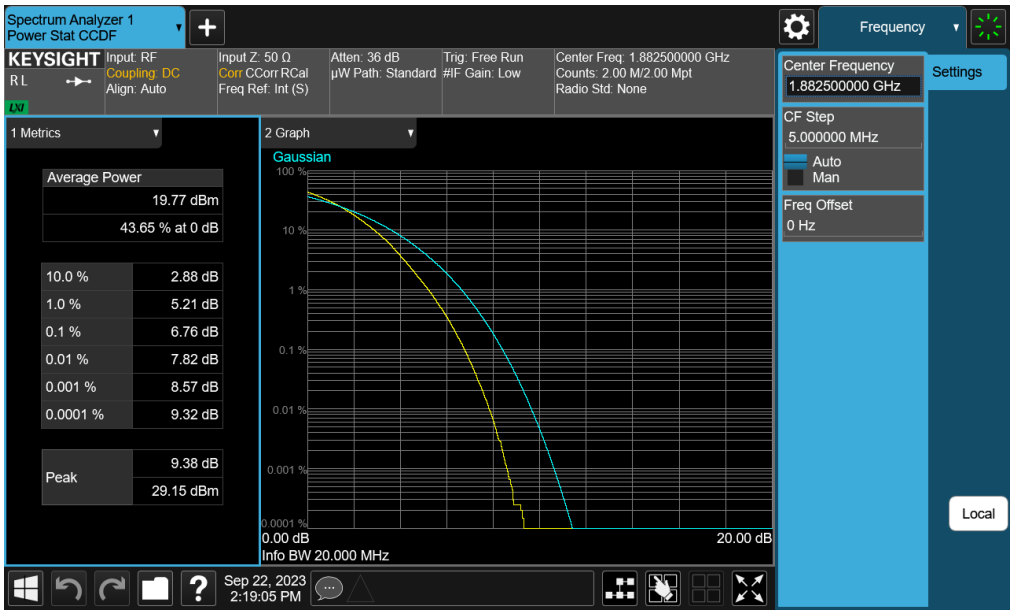
LTE Band 25/2 – Ant M3

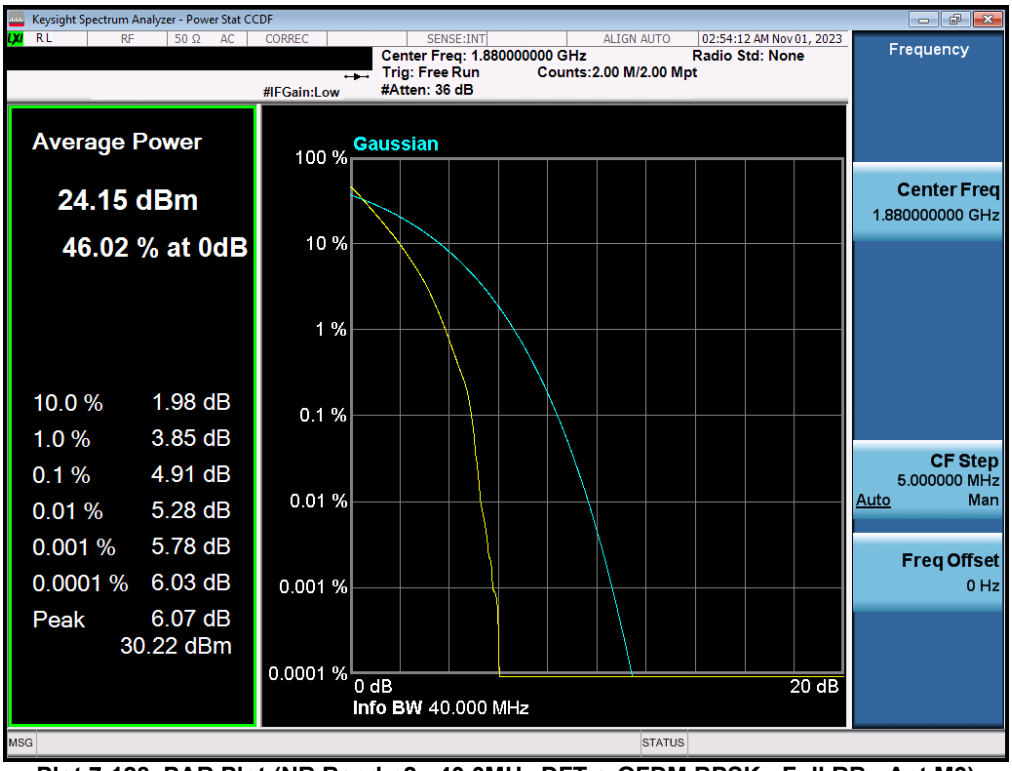


Plot 7-126. PAR Plot (LTE Band 25/2 - 20MHz QPSK - Full RB - Ant M3)

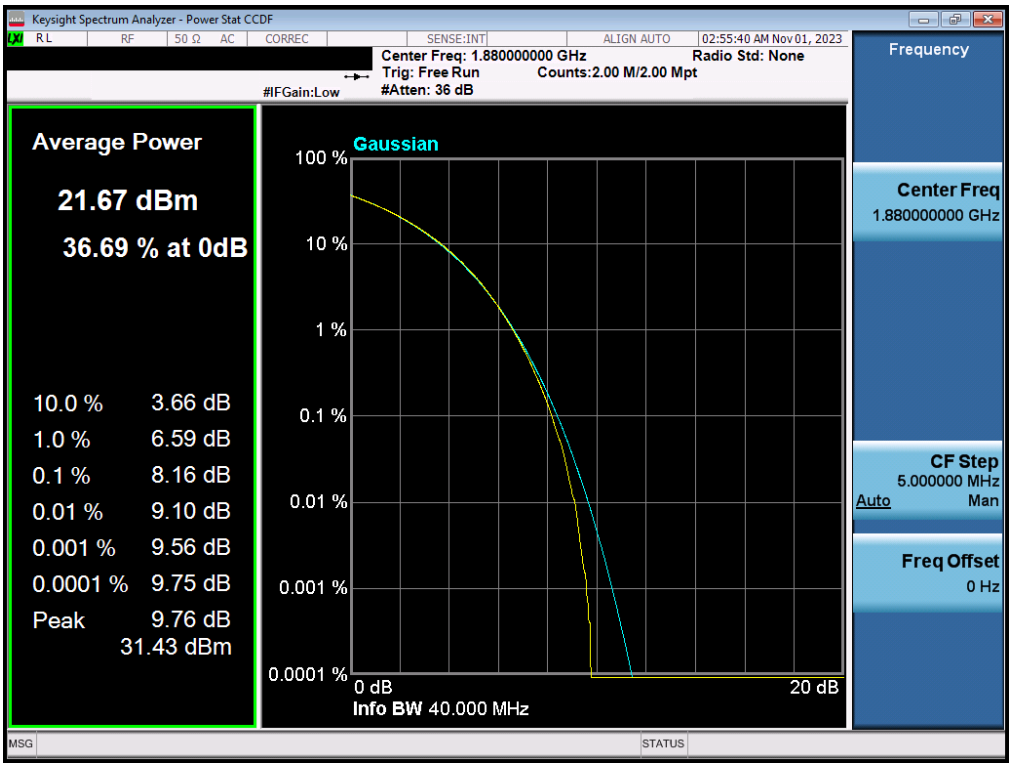


Plot 7-127. PAR Plot (LTE Band 25/2 - 20MHz 256-QAM - Full RB - Ant M3)

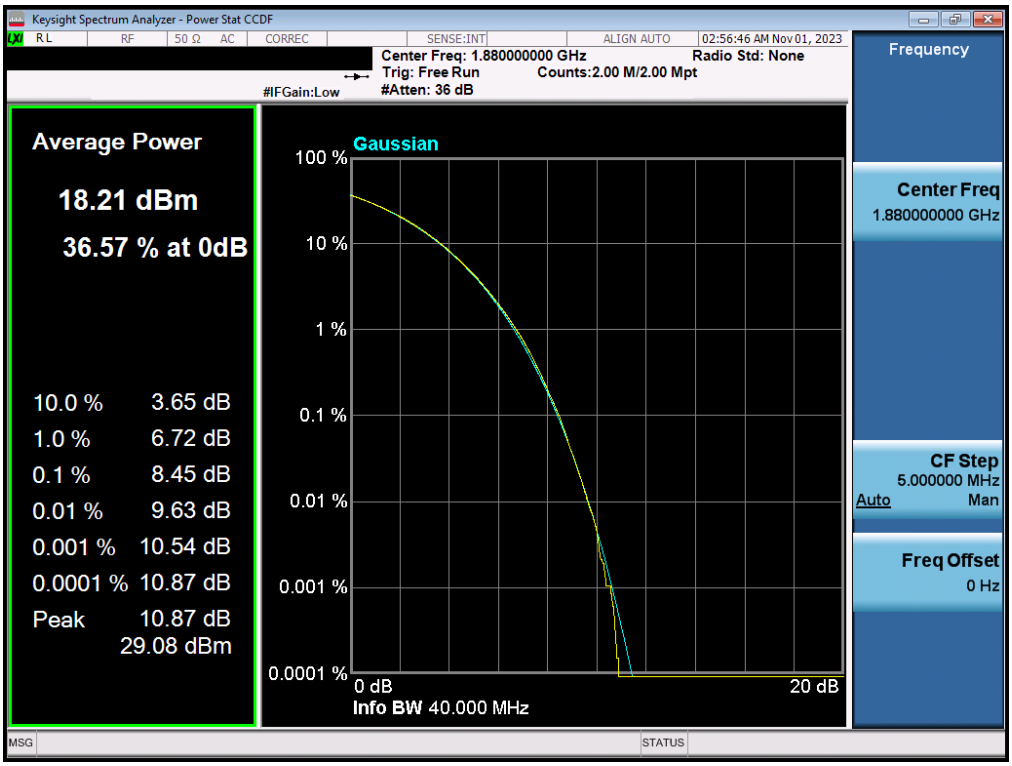
NR Band n2 – Ant M3



Plot 7-128. PAR Plot (NR Band n2 - 40.0MHz DFT-s-OFDM BPSK - Full RB - Ant M3)



Plot 7-129. PAR Plot (NR Band n2 - 40.0MHz CP-OFDM QPSK - Full RB - Ant M3)



Plot 7-130. PAR Plot (NR Band n2 - 40.0MHz CP-OFDM 256-QAM - Full RB - Ant M3)

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.

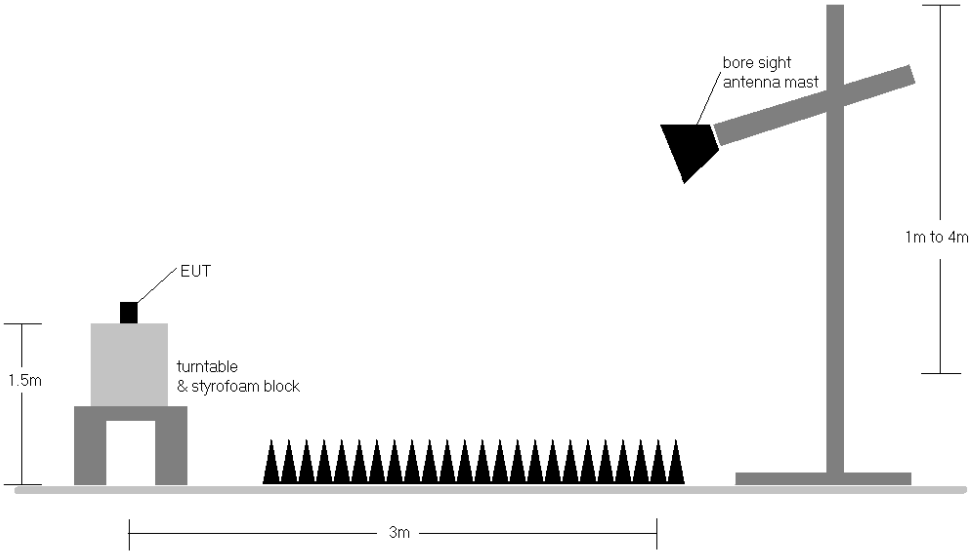


Figure 7-6. Radiated Test Setup >1GHz

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	144	60	21.53	8.27	**29.80**	**0.956**	33.01	-3.21
1880.00	GSM1900	V	144	61	20.55	8.29	28.84	0.766	33.01	-4.17
1909.80	GSM1900	V	133	124	19.46	8.33	27.79	0.601	33.01	-5.22
1850.20	GSM1900	H	127	5	20.45	8.27	28.72	0.745	33.01	-4.29
1850.20	EDGE1900	V	144	60	17.45	8.27	**25.72**	0.373	33.01	-7.29

Table 7-17. EIRP Data (GPRS PCS – Ant M2)

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	112	57	13.37	8.27	**21.64**	**0.146**	33.01	-11.37
1880.00	WCDMA1900	V	111	56	12.28	8.29	20.57	0.114	33.01	-12.44
1907.60	WCDMA1900	V	112	58	11.71	8.32	20.03	0.101	33.01	-12.98
1852.40	WCDMA1900	H	126	4	11.53	8.27	19.80	0.096	33.01	-13.21

Table 7-18. EIRP Data (WCDMA PCS – Ant M2)

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	V	138	60	8.28	1 / 0	16.02	**24.30**	0.269	33.01	-8.71
	QPSK	1882.50	V	141	61	8.29	1 / 50	15.29	23.58	0.228	33.01	-9.43
	QPSK	1905.00	V	140	60	8.32	1 / 0	15.45	23.77	0.238	33.01	-9.24
	16-QAM	1860.00	V	138	60	8.28	1 / 0	15.15	23.43	0.220	33.01	-9.58
15 MHz	QPSK	1857.50	V	138	60	8.28	1 / 74	16.12	**24.40**	0.275	33.01	-8.61
	QPSK	1882.50	V	141	61	8.29	1 / 0	15.40	23.69	0.234	33.01	-9.32
	QPSK	1907.50	V	140	60	8.32	1 / 74	15.29	23.61	0.230	33.01	-9.40
	16-QAM	1857.50	V	138	60	8.28	1 / 74	15.09	23.37	0.217	33.01	-9.64
10 MHz	QPSK	1855.00	V	138	60	8.28	1 / 25	15.95	**24.22**	0.264	33.01	-8.79
	QPSK	1882.50	V	141	61	8.29	1 / 25	15.28	23.57	0.228	33.01	-9.44
	QPSK	1910.00	V	140	60	8.33	1 / 25	15.21	23.54	0.226	33.01	-9.48
	16-QAM	1855.00	V	138	60	8.28	1 / 25	15.33	23.61	0.229	33.01	-9.40
5 MHz	QPSK	1852.50	V	138	60	8.27	1 / 0	15.90	**24.17**	0.261	33.01	-8.84
	QPSK	1882.50	V	141	61	8.29	1 / 0	15.36	23.65	0.232	33.01	-9.36
	QPSK	1912.50	V	140	60	8.34	1 / 24	15.28	23.62	0.230	33.01	-9.39
	16-QAM	1852.50	V	138	60	8.27	1 / 0	15.16	23.44	0.221	33.01	-9.57
3 MHz	QPSK	1851.50	V	138	60	8.27	1 / 14	15.89	**24.16**	0.261	33.01	-8.85
	QPSK	1882.50	V	141	61	8.29	1 / 0	15.37	23.66	0.232	33.01	-9.35
	QPSK	1913.50	V	140	60	8.34	1 / 14	15.20	23.54	0.226	33.01	-9.47
	16-QAM	1851.50	V	138	60	8.27	1 / 14	15.01	23.28	0.213	33.01	-9.73
1.4 MHz	QPSK	1850.70	V	138	60	8.27	1 / 5	15.65	**23.92**	0.247	33.01	-9.09
	QPSK	1882.50	V	141	61	8.29	1 / 0	15.27	23.56	0.227	33.01	-9.45
	QPSK	1914.30	V	140	60	8.34	1 / 5	14.88	23.22	0.210	33.01	-9.79
	16-QAM	1850.70	V	138	60	8.27	1 / 5	14.62	22.89	0.195	33.01	-10.12
20 MHz	QPSK (Opposite Pol.)	1860.00	H	163	292	8.27	1 / 0	11.65	19.92	0.098	33.01	-13.09

Table 7-19. EIRP Data (LTE Band 25/2 – Ant M2)

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	V	100	234	8.28	1 / 99	10.31	18.59	0.072	33.01	-14.42
	QPSK	1882.50	V	163	232	8.29	1 / 99	9.95	18.24	0.067	33.01	-14.77
	QPSK	1905.00	V	101	234	8.32	1 / 99	10.67	**18.99**	0.079	33.01	-14.02
	16-QAM	1905.00	V	101	234	8.32	1 / 99	9.68	18.00	0.063	33.01	-15.01
15 MHz	QPSK	1857.50	V	100	234	8.28	1 / 0	10.30	18.58	0.072	33.01	-14.43
	QPSK	1882.50	V	163	232	8.29	1 / 37	10.03	18.32	0.068	33.01	-14.69
	QPSK	1907.50	V	101	234	8.32	1 / 74	10.62	**18.95**	0.078	33.01	-14.07
	16-QAM	1907.50	V	101	234	8.32	1 / 74	9.57	17.89	0.062	33.01	-15.12
10 MHz	QPSK	1855.00	V	100	234	8.28	1 / 0	10.33	18.61	0.073	33.01	-14.40
	QPSK	1882.50	V	163	232	8.29	1 / 25	9.92	18.22	0.066	33.01	-14.79
	QPSK	1910.00	V	101	234	8.33	1 / 49	10.64	**18.97**	0.079	33.01	-14.04
	16-QAM	1910.00	V	101	234	8.33	1 / 49	9.60	17.93	0.062	33.01	-15.08
5 MHz	QPSK	1852.50	V	100	234	8.27	1 / 24	10.31	18.58	0.072	33.01	-14.43
	QPSK	1882.50	V	163	232	8.29	1 / 12	9.90	18.19	0.066	33.01	-14.82
	QPSK	1912.50	V	101	234	8.34	1 / 12	10.56	**18.90**	0.078	33.01	-14.11
	16-QAM	1912.50	V	101	234	8.34	1 / 12	9.69	18.02	0.063	33.01	-14.99
3 MHz	QPSK	1851.50	V	100	234	8.27	1 / 7	10.27	18.54	0.071	33.01	-14.47
	QPSK	1882.50	V	163	232	8.29	1 / 7	9.97	18.27	0.067	33.01	-14.75
	QPSK	1913.50	V	101	234	8.34	1 / 14	10.61	**18.95**	0.078	33.01	-14.06
	16-QAM	1913.50	V	101	234	8.34	1 / 14	9.73	18.06	0.064	33.01	-14.95
1.4 MHz	QPSK	1850.70	V	100	234	8.27	1 / 3	10.10	18.37	0.069	33.01	-14.64
	QPSK	1882.50	V	163	232	8.29	1 / 0	9.68	17.97	0.063	33.01	-15.04
	QPSK	1914.30	V	101	234	8.34	1 / 0	10.73	**19.07**	0.081	33.01	-13.94
	16-QAM	1914.30	V	101	234	8.34	1 / 0	9.87	18.21	0.066	33.01	-14.80
20 MHz	QPSK (Opposite Pol.)	1905.00	H	151	105	8.32	1 / 99	9.58	17.90	0.062	33.01	-15.11

Table 7-20. EIRP Data (LTE Band 25/2 – Ant M3)

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	109	235	8.29	1 / 1	14.83	23.12	0.205	33.01	-9.89
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 1	14.81	23.10	0.204	33.01	-9.91
	π/2 BPSK	1895.00	H	151	242	8.30	1 / 1	12.81	21.11	0.129	33.01	-11.90
	QPSK	1870.00	H	109	235	8.29	1 / 1	14.86	**23.15**	0.206	33.01	-9.86
	QPSK	1882.50	H	113	240	8.29	1 / 1	14.79	23.08	0.203	33.01	-9.93
	QPSK	1895.00	H	151	242	8.30	1 / 1	13.05	21.35	0.136	33.01	-11.66
	16-QAM	1870.00	H	109	235	8.29	1 / 1	13.67	21.96	0.157	33.01	-11.05
30 MHz	π/2 BPSK	1865.00	H	109	235	8.28	1 / 158	14.85	23.13	0.205	33.01	-9.88
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 80	14.72	23.02	0.200	33.01	-9.99
	π/2 BPSK	1900.00	H	151	242	8.30	1 / 1	12.77	21.07	0.128	33.01	-11.94
	QPSK	1865.00	H	109	235	8.28	1 / 158	15.16	**23.44**	0.221	33.01	-9.57
	QPSK	1882.50	H	113	240	8.29	1 / 80	14.75	23.04	0.201	33.01	-9.97
	QPSK	1900.00	H	151	242	8.30	1 / 158	13.11	21.42	0.139	33.01	-11.59
	16-QAM	1865.00	H	109	235	8.28	1 / 158	13.74	22.02	0.159	33.01	-10.99
25 MHz	π/2 BPSK	1862.50	H	109	235	8.28	1 / 131	14.76	23.04	0.201	33.01	-9.97
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 66	14.83	23.12	0.205	33.01	-9.89
	π/2 BPSK	1902.50	H	151	242	8.31	1 / 1	12.81	21.12	0.129	33.01	-11.89
	QPSK	1862.50	H	109	235	8.28	1 / 131	14.95	**23.23**	0.211	33.01	-9.78
	QPSK	1882.50	H	113	240	8.29	1 / 66	14.93	23.23	0.210	33.01	-9.78
	QPSK	1902.50	H	151	242	8.31	1 / 131	13.09	21.40	0.138	33.01	-11.61
	16-QAM	1862.50	H	109	235	8.28	1 / 131	13.76	22.04	0.160	33.01	-10.97
20 MHz	π/2 BPSK	1860.00	H	109	235	8.28	1 / 53	14.57	22.85	0.193	33.01	-10.16
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 53	14.66	22.96	0.198	33.01	-10.05
	π/2 BPSK	1905.00	H	151	242	8.32	1 / 1	12.76	21.08	0.128	33.01	-11.93
	QPSK	1860.00	H	109	235	8.28	1 / 104	14.93	23.21	0.210	33.01	-9.80
	QPSK	1882.50	H	113	240	8.29	1 / 53	15.04	**23.33**	0.215	33.01	-9.68
	QPSK	1905.00	H	151	242	8.32	1 / 104	12.95	21.27	0.134	33.01	-11.74
	16-QAM	1882.50	H	113	240	8.29	1 / 53	13.92	22.21	0.166	33.01	-10.80
15 MHz	π/2 BPSK	1857.50	H	109	235	8.28	1 / 77	14.60	22.88	0.194	33.01	-10.13
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 77	14.82	23.11	0.205	33.01	-9.90
	π/2 BPSK	1907.50	H	151	242	8.32	1 / 77	12.91	21.23	0.133	33.01	-11.78
	QPSK	1857.50	H	109	235	8.28	1 / 77	14.79	23.07	0.203	33.01	-9.94
	QPSK	1882.50	H	113	240	8.29	1 / 39	14.97	**23.26**	0.212	33.01	-9.75
	QPSK	1907.50	H	151	242	8.32	1 / 77	12.96	21.28	0.134	33.01	-11.73
	16-QAM	1882.50	H	113	240	8.29	1 / 77	13.56	21.85	0.153	33.01	-11.16
10 MHz	π/2 BPSK	1855.00	H	109	235	8.28	1 / 50	14.66	22.93	0.197	33.01	-10.08
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 50	14.71	23.00	0.199	33.01	-10.01
	π/2 BPSK	1910.00	H	151	242	8.33	1 / 1	12.75	21.08	0.128	33.01	-11.93
	QPSK	1855.00	H	109	235	8.28	1 / 26	14.94	**23.22**	0.210	33.01	-9.79
	QPSK	1882.50	H	113	240	8.29	1 / 50	14.88	23.17	0.207	33.01	-9.84
	QPSK	1910.00	H	151	242	8.33	1 / 50	12.99	21.32	0.136	33.01	-11.69
	16-QAM	1855.00	H	109	235	8.28	1 / 26	13.32	21.59	0.144	33.01	-11.42
5 MHz	π/2 BPSK	1852.50	H	109	235	8.27	1 / 12	14.53	22.80	0.191	33.01	-10.21
	π/2 BPSK	1882.50	H	113	240	8.29	1 / 1	14.67	22.96	0.198	33.01	-10.05
	π/2 BPSK	1912.50	H	151	242	8.34	1 / 12	12.87	21.20	0.132	33.01	-11.81
	QPSK	1852.50	H	109	235	8.27	1 / 12	14.76	23.04	0.201	33.01	-9.97
	QPSK	1882.50	H	113	240	8.29	1 / 1	14.85	**23.15**	0.206	33.01	-9.86
	QPSK	1912.50	H	151	242	8.34	1 / 23	13.19	21.53	0.142	33.01	-11.48
	16-QAM	1882.50	H	113	240	8.29	1 / 1	13.60	21.89	0.155	33.01	-11.12
40 MHz	QPSK (CP-OFDM)	1870.00	H	109	234	8.29	1 / 1	12.06	20.35	0.108	33.01	-12.66
	QPSK (Opposite Pol.)	1870.00	V	235	11	8.29	1 / 1	12.84	21.13	0.130	33.01	-11.88

Table 7-21. EIRP Data (NR Band n25/2 – Ant M2)

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	V	127	237	8.29	1 / 214	10.42	18.71	0.074	33.01	-14.30
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 214	10.47	18.76	0.075	33.01	-14.25
	π/2 BPSK	1890.00	V	120	240	8.30	1 / 214	11.62	**19.92**	0.098	33.01	-13.09
	QPSK	1870.00	V	127	237	8.29	1 / 214	10.37	18.66	0.073	33.01	-14.35
	QPSK	1880.00	V	129	235	8.29	1 / 214	10.44	18.73	0.075	33.01	-14.28
	QPSK	1890.00	V	120	240	8.30	1 / 214	11.51	19.81	0.096	33.01	-13.20
	16-QAM	1890.00	V	120	240	8.30	1 / 214	10.47	18.77	0.075	33.01	-14.24
30 MHz	π/2 BPSK	1865.00	V	127	237	8.28	1 / 80	10.52	18.80	0.076	33.01	-14.21
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 80	10.51	18.81	0.076	33.01	-14.20
	π/2 BPSK	1895.00	V	120	240	8.30	1 / 80	11.67	**19.98**	0.100	33.01	-13.03
	QPSK	1865.00	V	127	237	8.28	1 / 80	10.43	18.71	0.074	33.01	-14.30
	QPSK	1880.00	V	129	235	8.29	1 / 80	10.43	18.73	0.075	33.01	-14.28
	QPSK	1895.00	V	120	240	8.30	1 / 80	11.53	19.83	0.096	33.01	-13.18
	16-QAM	1895.00	V	120	240	8.30	1 / 80	10.67	18.98	0.079	33.01	-14.03
25 MHz	π/2 BPSK	1862.50	V	127	237	8.28	1 / 66	10.33	18.61	0.073	33.01	-14.40
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 66	10.34	18.63	0.073	33.01	-14.38
	π/2 BPSK	1897.50	V	120	240	8.31	1 / 131	11.36	**19.67**	0.093	33.01	-13.34
	QPSK	1862.50	V	127	237	8.28	1 / 66	10.29	18.57	0.072	33.01	-14.44
	QPSK	1880.00	V	129	235	8.29	1 / 66	10.36	18.65	0.073	33.01	-14.36
	QPSK	1897.50	V	120	240	8.31	1 / 131	11.27	19.58	0.091	33.01	-13.43
	16-QAM	1897.50	V	120	240	8.31	1 / 131	10.44	18.75	0.075	33.01	-14.26
20 MHz	π/2 BPSK	1860.00	V	127	237	8.28	1 / 104	10.66	18.94	0.078	33.01	-14.07
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 53	10.52	18.81	0.076	33.01	-14.20
	π/2 BPSK	1900.00	V	120	240	8.32	1 / 104	11.55	19.87	0.097	33.01	-13.14
	QPSK	1860.00	V	127	237	8.28	1 / 104	10.46	18.74	0.075	33.01	-14.27
	QPSK	1880.00	V	129	235	8.29	1 / 53	10.65	18.94	0.078	33.01	-14.07
	QPSK	1900.00	V	120	240	8.32	1 / 1	11.60	**19.91**	0.098	33.01	-13.10
	16-QAM	1900.00	V	120	240	8.32	1 / 1	10.73	19.04	0.080	33.01	-13.97
15 MHz	π/2 BPSK	1857.50	V	127	237	8.28	1 / 77	10.54	18.81	0.076	33.01	-14.20
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 1	10.60	18.90	0.078	33.01	-14.11
	π/2 BPSK	1902.50	V	120	240	8.32	1 / 77	11.65	**19.97**	0.099	33.01	-13.04
	QPSK	1857.50	V	127	237	8.28	1 / 77	10.37	18.65	0.073	33.01	-14.36
	QPSK	1880.00	V	129	235	8.29	1 / 1	10.51	18.81	0.076	33.01	-14.21
	QPSK	1902.50	V	120	240	8.32	1 / 77	11.49	19.81	0.096	33.01	-13.20
	16-QAM	1902.50	V	120	240	8.32	1 / 77	10.67	19.00	0.079	33.01	-14.01
10 MHz	π/2 BPSK	1855.00	V	127	237	8.28	1 / 1	10.46	18.74	0.075	33.01	-14.27
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 26	10.60	18.90	0.078	33.01	-14.11
	π/2 BPSK	1905.00	V	120	240	8.33	1 / 50	11.51	**19.84**	0.096	33.01	-13.17
	QPSK	1855.00	V	127	237	8.28	1 / 1	10.44	18.72	0.074	33.01	-14.30
	QPSK	1880.00	V	129	235	8.29	1 / 1	10.48	18.77	0.075	33.01	-14.24
	QPSK	1905.00	V	120	240	8.33	1 / 50	11.48	19.81	0.096	33.01	-13.20
	16-QAM	1905.00	V	120	240	8.33	1 / 50	10.61	18.94	0.078	33.01	-14.07
5 MHz	π/2 BPSK	1852.50	V	127	237	8.27	1 / 12	10.44	18.72	0.074	33.01	-14.29
	π/2 BPSK	1880.00	V	129	235	8.29	1 / 1	10.46	18.76	0.075	33.01	-14.25
	π/2 BPSK	1907.50	V	120	240	8.34	1 / 23	11.29	**19.62**	0.092	33.01	-13.39
	QPSK	1852.50	V	127	237	8.27	1 / 12	10.17	18.45	0.070	33.01	-14.56
	QPSK	1880.00	V	129	235	8.29	1 / 12	10.42	18.72	0.074	33.01	-14.29
	QPSK	1907.50	V	120	240	8.34	1 / 23	11.06	19.40	0.087	33.01	-13.61
	16-QAM	1907.50	V	120	240	8.34	1 / 23	10.20	18.54	0.071	33.01	-14.47
40 MHz	QPSK (CP-OFDM)	1890.00	V	129	235	8.30	1 / 214	8.91	17.21	0.053	33.01	-15.80
	QPSK (Opposite Pol.)	1890.00	H	162	177	8.30	1 / 214	10.13	18.43	0.070	33.01	-14.58

Table 7-22. EIRP Data (NR Band n2 – Ant M3)

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.

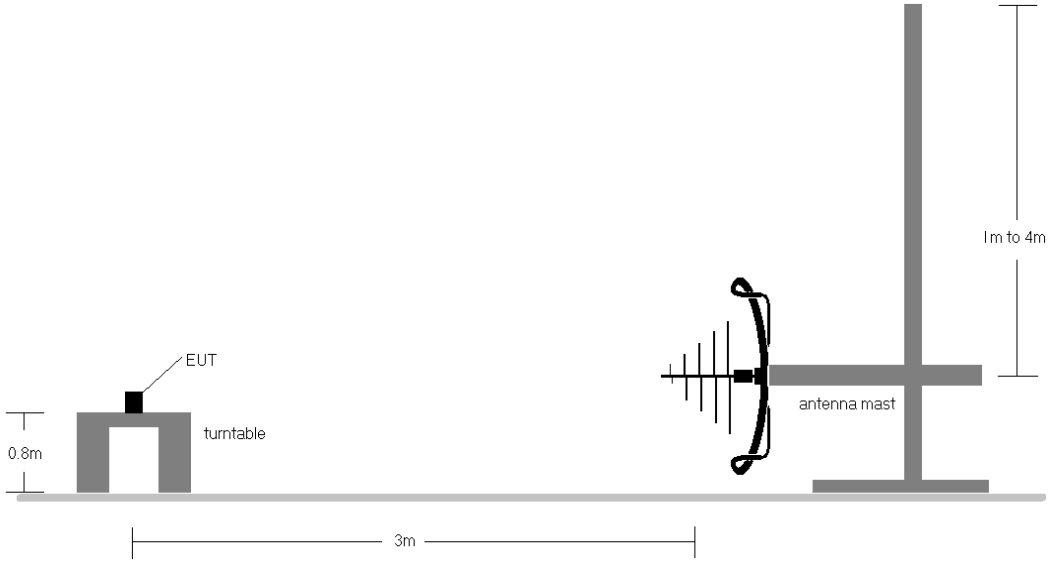


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

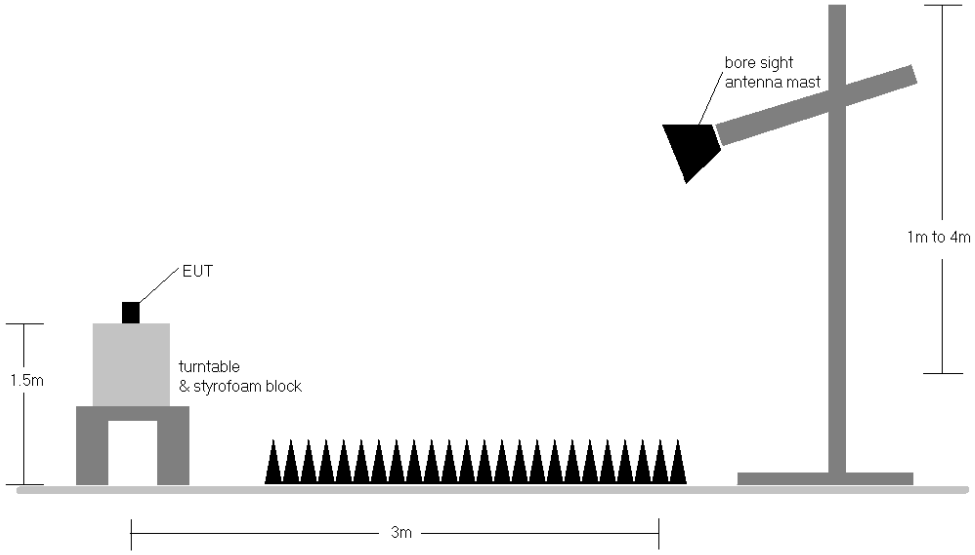


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

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.

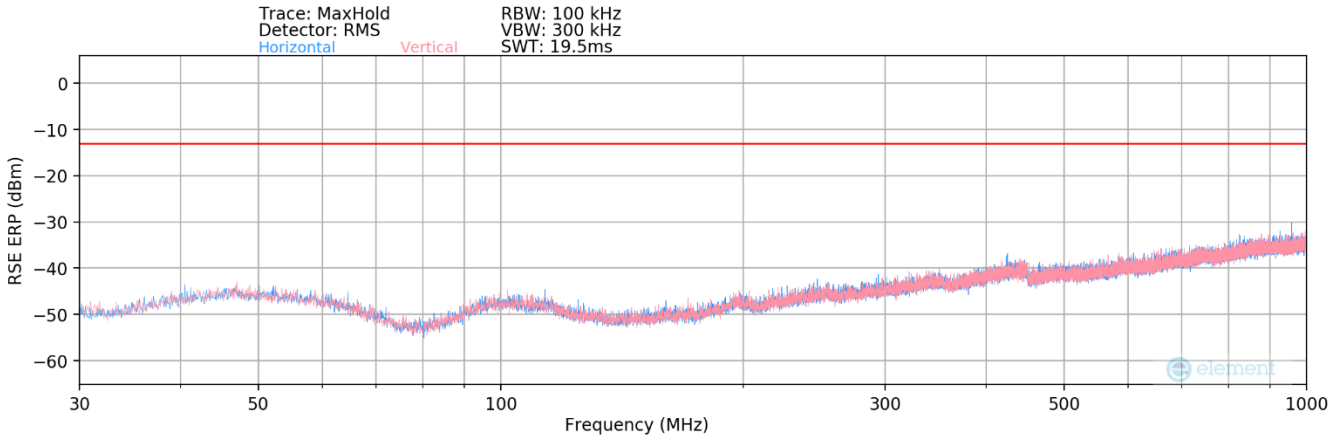
7) Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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.

LTE Band 25/2 – Ant M2

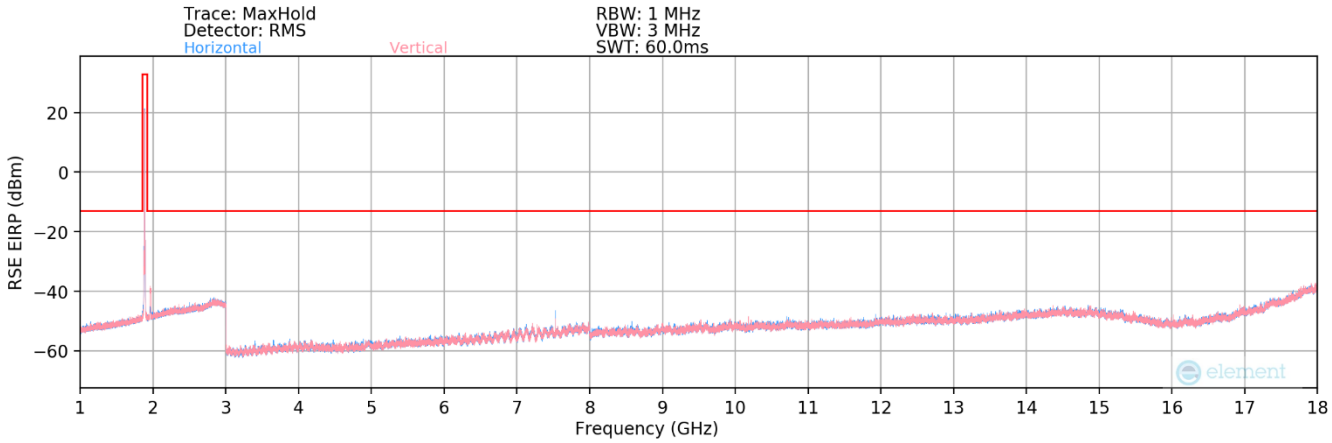


Plot 7-131. Radiated Spurious Plot Below 1GHz (LTE Band 25/2 – Ant M2)

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]
989.36	H	-	-	-81.94	31.08	56.14	-41.27	-13.00	-28.27

Table 7-23. Radiated Spurious Data Below 1GHz (LTE Band 25/2 – Ant M2)



Plot 7-132. Radiated Spurious Plot Above 1GHz (LTE Band 25/2 – Ant M2)

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	-	-	-75.44	-0.93	30.63	-64.62	-13.00	-51.62
5580.00	H	-	-	-76.77	2.02	32.25	-63.01	-13.00	-50.01
7440.00	H	242	55	-72.04	6.20	41.16	-54.10	-13.00	-41.10
9300.00	H	-	-	-80.33	9.64	36.31	-58.94	-13.00	-45.94
11160.00	H	-	-	-80.07	11.49	38.42	-56.83	-13.00	-43.83
13020.00	H	-	-	-81.61	14.26	39.65	-55.61	-13.00	-42.61

Table 7-24. Radiated Spurious Data Above 1GHz (LTE Band 25/2 – Low Channel – Ant M2)

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	-	-	-75.36	-0.30	31.34	-63.92	-13.00	-50.92
5647.50	H	-	-	-76.83	2.40	32.57	-62.69	-13.00	-49.69
7530.00	H	238	50	-70.21	6.16	42.95	-52.30	-13.00	-39.30
9412.50	H	-	-	-79.48	9.38	36.90	-58.36	-13.00	-45.36
11295.00	H	-	-	-80.29	11.51	38.22	-57.04	-13.00	-44.04
13177.50	H	-	-	-81.09	14.04	39.95	-55.31	-13.00	-42.31

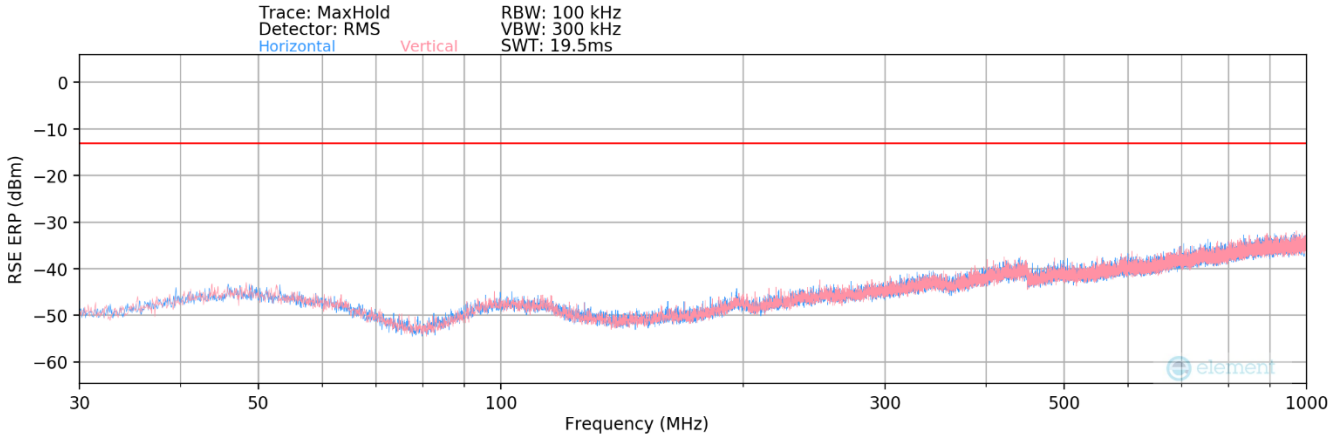
Table 7-25. Radiated Spurious Data Above 1GHz (LTE Band 25/2 – Mid Channel – Ant M2)

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	-	-	-76.32	-0.42	30.26	-65.00	-13.00	-52.00
5715.00	H	-	-	-76.00	2.73	33.73	-61.53	-13.00	-48.53
7620.00	H	241	50	-71.13	6.47	42.34	-52.92	-13.00	-39.92
9525.00	H	-	-	-79.57	9.81	37.24	-58.02	-13.00	-45.02
11430.00	H	-	-	-80.34	11.81	38.47	-56.79	-13.00	-43.79
13335.00	H	-	-	-80.97	14.39	40.42	-54.83	-13.00	-41.83

Table 7-26. Radiated Spurious Data Above 1GHz (LTE Band 25/2 – High Channel – Ant M2)

NR Band n25/2 – Ant M2

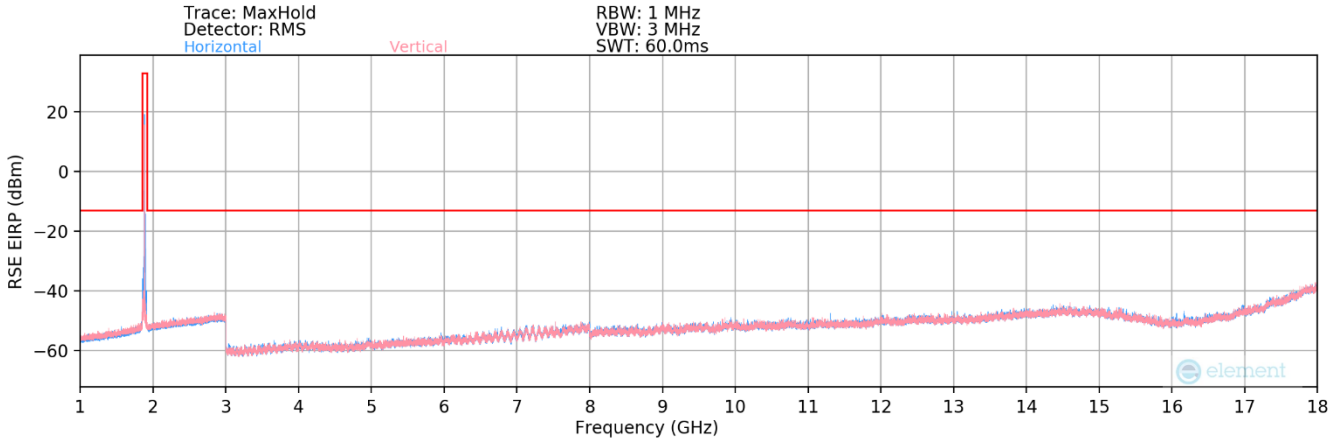


Plot 7-133. Radiated Spurious Plot Below 1GHz (NR Band n25/2 – Ant M2)

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]
940.97	H	-	-	-81.29	30.55	56.26	-41.14	-13.00	-28.14

Table 7-27. Radiated Spurious Data Below 1GHz (NR Band n25/2 – Ant M2)



Plot 7-134. Radiated Spurious Plot Above 1GHz (NR Band n25/2 – Ant M2)

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	-	-	-75.48	-0.68	30.84	-64.42	-13.00	-51.42
5610.00	H	-	-	-76.42	2.04	32.62	-62.64	-13.00	-49.64
7480.00	H	-	-	-77.28	6.59	36.31	-58.94	-13.00	-45.94

Table 7-28. Radiated Spurious Data Above 1GHz (NR Band n25/2 – Low Channel – Ant M2)

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	-	-	-75.18	-0.30	31.52	-63.74	-13.00	-50.74
5647.50	H	-	-	-76.42	2.40	32.98	-62.28	-13.00	-49.28
7530.00	H	-	-	-77.21	6.16	35.95	-59.30	-13.00	-46.30

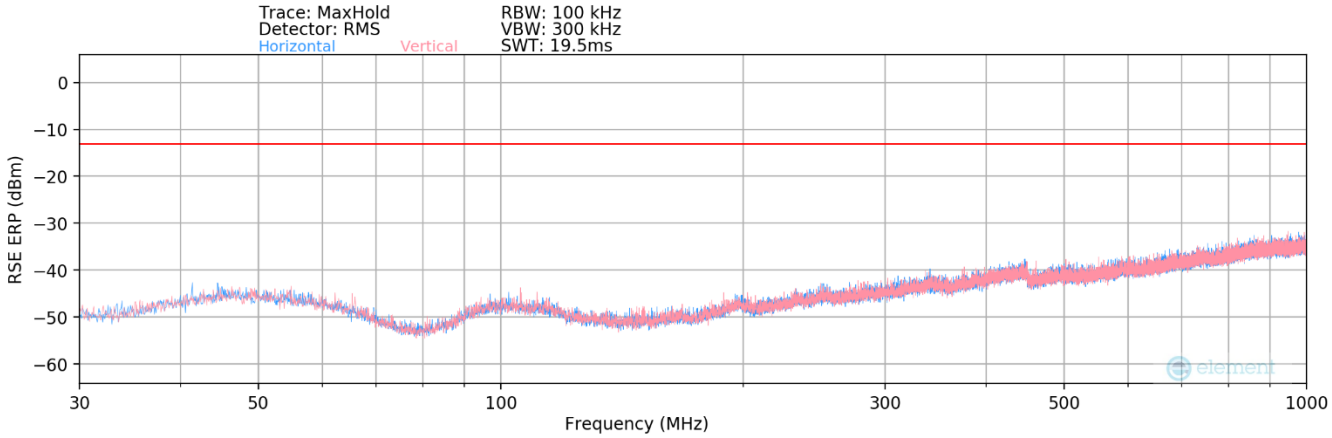
Table 7-29. Radiated Spurious Data Above 1GHz (NR Band n25/2 – Mid Channel – Ant M2)

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	-	-	-75.51	-0.50	30.99	-64.26	-13.00	-51.26
5685.00	H	-	-	-76.40	2.03	32.63	-62.63	-13.00	-49.63
7580.00	H	-	-	-77.01	6.52	36.51	-58.75	-13.00	-45.75

Table 7-30. Radiated Spurious Data Above 1GHz (NR Band n25/2 – High Channel – Ant M2)

GSM/GPRS PCS – Ant M2

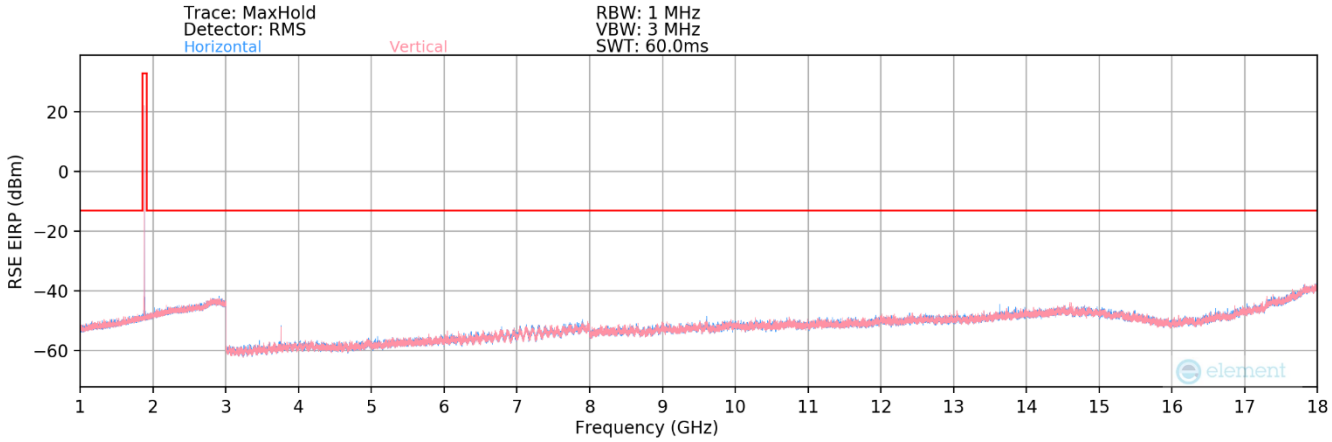


Plot 7-135. Radiated Spurious Plot Below 1GHz (GSM/GPRS PCS – Ant M2)

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]
992.45	H	-	-	-82.27	31.14	55.87	-41.54	-13.00	-28.54

Table 7-31. Radiated Spurious Data Below 1GHz (GSM/GPRS PCS – Ant M2)



Plot 7-136. Radiated Spurious Plot Above 1GHz (GSM/GPRS PCS – Ant M2)

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	H	112	322	-67.56	-1.02	38.42	-56.84	-13.00	-43.84
5550.60	H	-	-	-76.11	2.08	32.97	-62.29	-13.00	-49.29
7400.80	H	-	-	-77.41	6.99	36.58	-58.68	-13.00	-45.68
9251.00	H	-	-	-79.08	9.40	37.32	-57.93	-13.00	-44.93
11101.20	H	-	-	-80.30	11.35	38.05	-57.21	-13.00	-44.21

Table 7-32. Radiated Spurious Data Above 1GHz (GSM/GPRS PCS – Low Channel – Ant M2)

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	H	109	329	-70.02	-0.34	36.64	-58.61	-13.00	-45.61
5640.00	H	-	-	-76.68	2.45	32.77	-62.49	-13.00	-49.49
7520.00	H	-	-	-77.82	6.05	35.23	-60.03	-13.00	-47.03
9400.00	H	-	-	-80.03	9.22	36.19	-59.07	-13.00	-46.07
11280.00	H	-	-	-79.48	11.31	38.83	-56.43	-13.00	-43.43

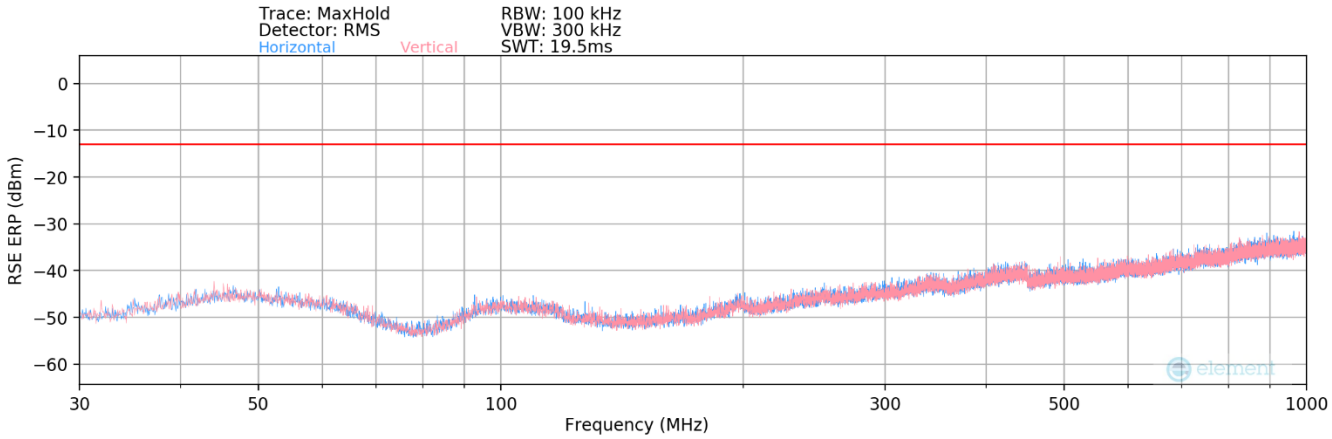
Table 7-33. Radiated Spurious Data Above 1GHz (GSM/GPRS PCS – Mid Channel – Ant M2)

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	H	109	316	-70.71	-0.31	35.98	-59.28	-13.00	-46.28
5729.40	H	-	-	-75.79	2.64	33.85	-61.41	-13.00	-48.41
7639.20	H	-	-	-77.38	6.92	36.54	-58.72	-13.00	-45.72
9549.00	H	-	-	-79.82	9.48	36.66	-58.60	-13.00	-45.60
11458.80	H	-	-	-79.48	11.68	39.20	-56.05	-13.00	-43.05

Table 7-34. Radiated Spurious Data Above 1GHz (GSM/GPRS PCS – High Channel – Ant M2)

WCDMA PCS – Ant M2

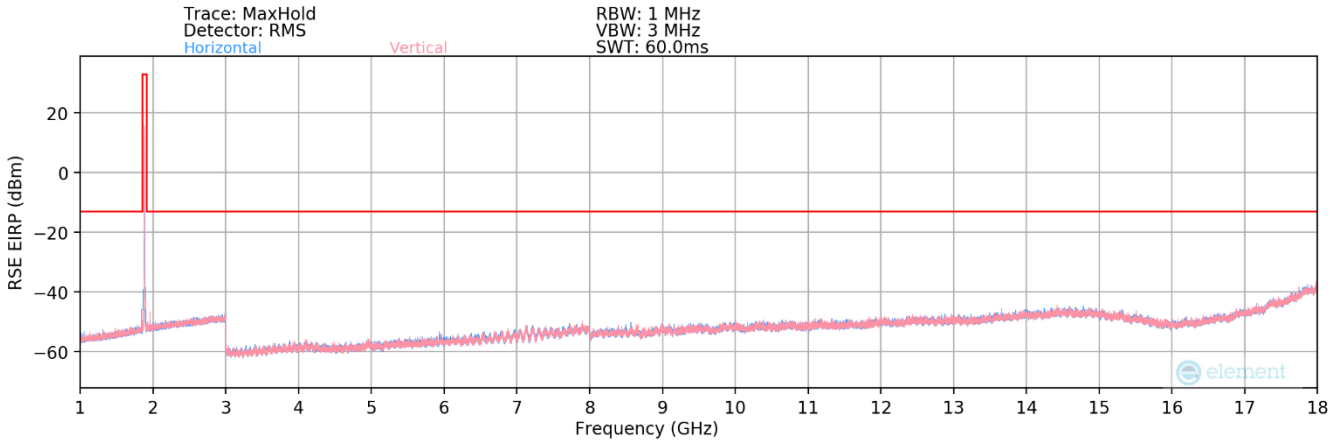


Plot 7-137. Radiated Spurious Plot Below 1GHz (WCDMA PCS – Ant M2)

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]
991.50	H	-	-	-82.37	31.12	55.75	-41.66	-13.00	-28.66

Table 7-35. Radiated Spurious Data Below 1GHz (WCDMA PCS – Ant M2)



Plot 7-138. Radiated Spurious Plot Above 1GHz (WCDMA PCS – Ant M2)

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	H	-	-	-75.86	-1.04	30.10	-65.16	-13.00	-52.16
5557.20	H	-	-	-76.41	2.13	32.72	-62.53	-13.00	-49.53
7409.60	H	-	-	-77.73	6.61	35.88	-59.38	-13.00	-46.38

Table 7-36. Radiated Spurious Data Above 1GHz (WCDMA PCS – Low Channel – Ant M2)

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	H	-	-	-74.98	-0.34	31.68	-63.57	-13.00	-50.57
5640.00	H	-	-	-76.01	2.45	33.44	-61.82	-13.00	-48.82
7520.00	H	-	-	-77.53	6.05	35.52	-59.74	-13.00	-46.74

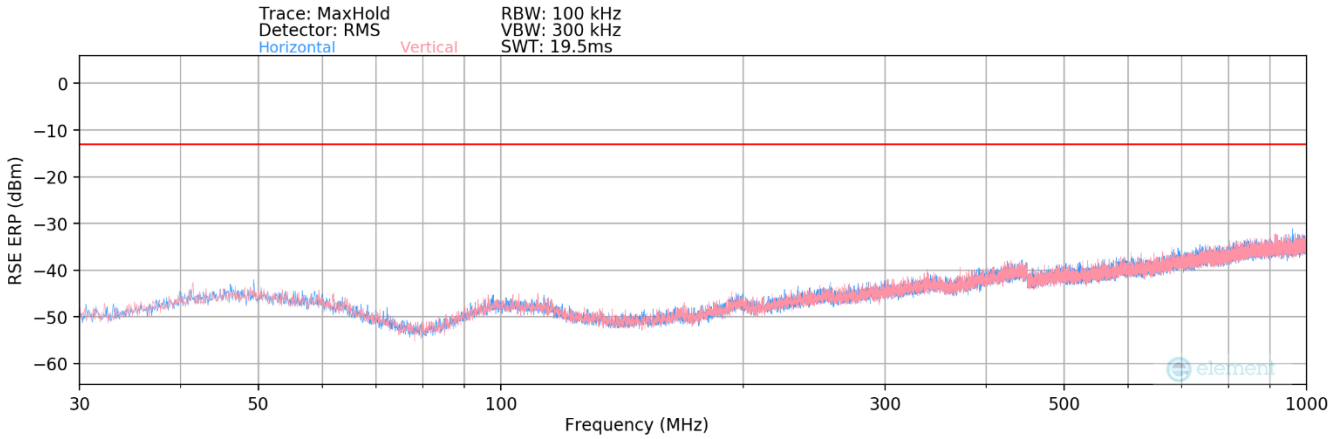
Table 7-37. Radiated Spurious Data Above 1GHz (WCDMA PCS – Mid Channel – Ant M2)

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	H	-	-	-75.25	-0.36	31.39	-63.86	-13.00	-50.86
5722.80	H	-	-	-76.11	2.67	33.56	-61.69	-13.00	-48.69
7630.40	H	-	-	-77.08	6.87	36.79	-58.47	-13.00	-45.47

Table 7-38. Radiated Spurious Data Above 1GHz (WCDMA PCS – High Channel – Ant M2)

LTE Band 25/2 – Ant M3

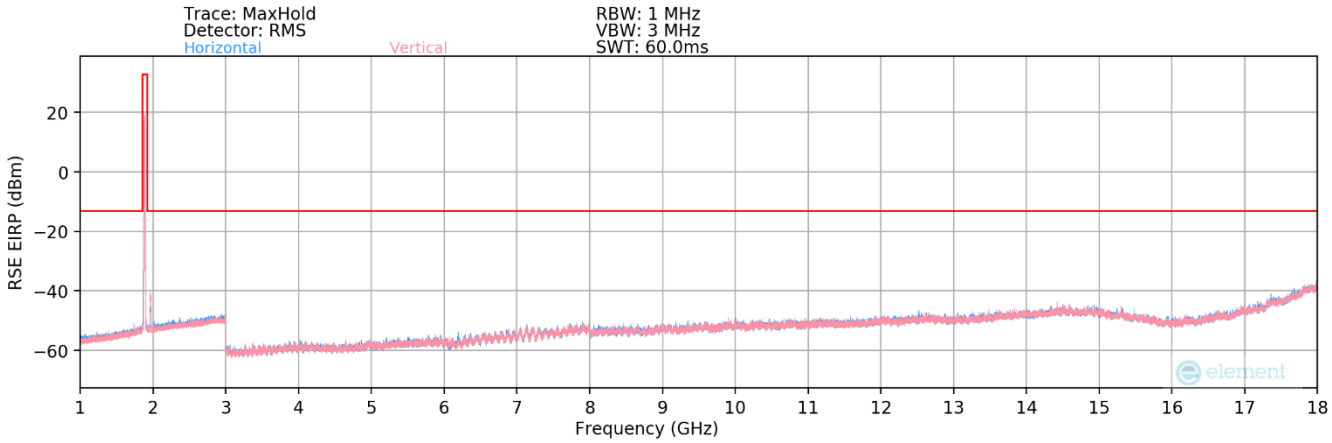


Plot 7-139. Radiated Spurious Plot Below 1GHz (LTE Band 25/2 – Ant M3)

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]
991.37	H	-	-	-82.05	31.12	56.07	-41.34	-13.00	-28.34

Table 7-39. Radiated Spurious Data Below 1GHz (LTE Band 25/2 – Ant M3)



Plot 7-140. Radiated Spurious Plot Above 1GHz (LTE Band 25/2 –Ant M3)

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	-	-	-75.24	-0.93	30.83	-64.42	-13.00	-51.42
5580.00	H	109	22	-75.11	2.02	33.91	-61.35	-13.00	-48.35
7440.00	H	-	-	-78.26	6.20	34.94	-60.32	-13.00	-47.32
9300.00	H	109	0	-77.50	9.64	39.14	-56.11	-13.00	-43.11
11160.00	H	-	-	-80.35	11.49	38.14	-57.11	-13.00	-44.11
13020.00	H	-	-	-81.88	14.26	39.38	-55.88	-13.00	-42.88
14880.00	H	-	-	-81.98	17.17	42.19	-53.07	-13.00	-40.07

Table 7-40. Radiated Spurious Data Above 1GHz (LTE Band 25/2 – Low Channel – Ant M3)

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	-	-	-76.44	-0.30	30.26	-65.00	-13.00	-52.00
5647.50	H	112	6	-69.26	2.40	40.14	-55.12	-13.00	-42.12
7530.00	H	-	-	-77.97	6.16	35.19	-60.06	-13.00	-47.06
9412.50	H	113	13	-76.11	9.38	40.27	-54.99	-13.00	-41.99
11295.00	H	-	-	-80.03	11.51	38.48	-56.78	-13.00	-43.78
13177.50	H	-	-	-81.26	14.04	39.78	-55.48	-13.00	-42.48
15060.00	H	-	-	-81.59	16.84	42.25	-53.01	-13.00	-40.01

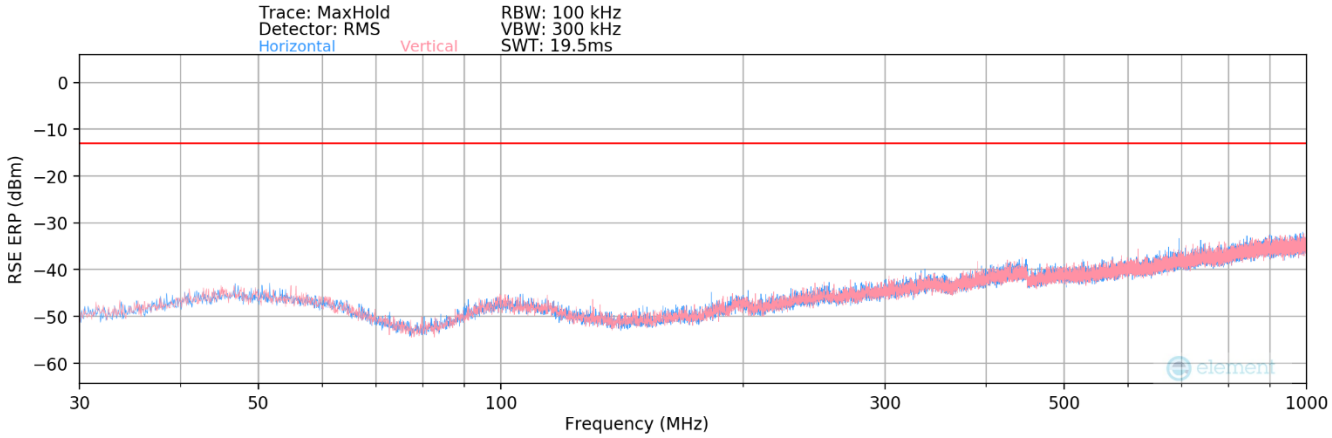
Table 7-41. Radiated Spurious Data Above 1GHz (LTE Band 25/2 – Mid Channel – Ant M3)

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	-	-	-75.73	-0.42	30.85	-64.41	-13.00	-51.41
5715.00	H	110	1	-67.47	2.73	42.26	-53.00	-13.00	-40.00
7620.00	H	111	0	-77.38	6.47	36.09	-59.17	-13.00	-46.17
9525.00	H	125	14	-75.35	9.81	41.46	-53.80	-13.00	-40.80
11430.00	H	-	-	-80.69	11.81	38.12	-57.14	-13.00	-44.14
13335.00	H	-	-	-81.15	14.39	40.24	-55.01	-13.00	-42.01
15240.00	H	-	-	-81.79	15.98	41.19	-54.07	-13.00	-41.07

Table 7-42. Radiated Spurious Data Above 1GHz (LTE Band 25/2 – High Channel – Ant M3)

NR Band n2 – Ant M3

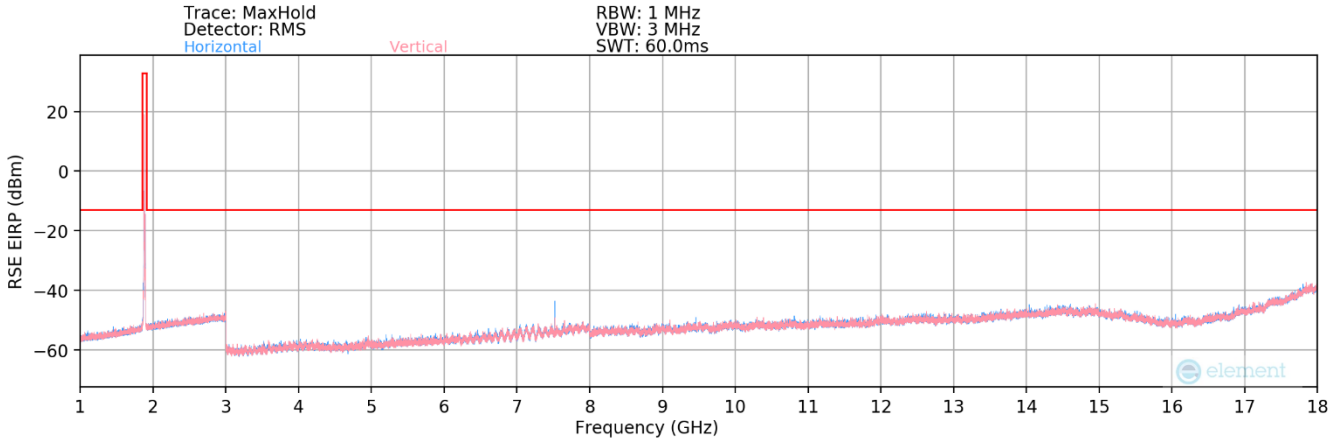


Plot 7-141. Radiated Spurious Plot Below 1GHz (NR Band n2 – Ant M3)

Bandwidth (MHz):	20
Frequency (MHz):	1880
RB / Offset:	1 / 53

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]
991.25	H	-	-	-82.03	31.12	56.09	-41.32	-13.00	-28.32

Table 7-43. Radiated Spurious Data Below 1GHz (NR Band n2 – Ant M3)



Plot 7-142. Radiated Spurious Plot Above 1GHz (NR Band n2 – Ant M3)

Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1 / 53

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	-	-	-75.92	-0.93	30.15	-65.10	-13.00	-52.10
5580.00	H	-	-	-76.46	2.02	32.56	-62.70	-13.00	-49.70
7440.00	H	244	52	-66.91	6.20	46.29	-48.97	-13.00	-35.97
9300.00	H	-	-	-79.55	9.64	37.09	-58.16	-13.00	-45.16
11160.00	H	-	-	-79.83	11.49	38.66	-56.59	-13.00	-43.59
13020.00	H	-	-	-80.66	14.26	40.60	-54.66	-13.00	-41.66

Table 7-44. Radiated Spurious Data Above 1GHz (NR Band n2 – Low Channel – Ant M3)

Bandwidth (MHz):	20
Frequency (MHz):	1880
RB / Offset:	1 / 53

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	-	-	-76.36	-0.34	30.30	-64.95	-13.00	-51.95
5640.00	H	-	-	-77.07	2.45	32.38	-62.88	-13.00	-49.88
7520.00	H	248	49	-66.78	6.05	46.27	-48.99	-13.00	-35.99
9400.00	H	-	-	-79.49	9.22	36.73	-58.53	-13.00	-45.53
11280.00	H	-	-	-79.76	11.31	38.55	-56.71	-13.00	-43.71
13160.00	H	-	-	-80.59	14.04	40.45	-54.81	-13.00	-41.81

Table 7-45. Radiated Spurious Data Above 1GHz (NR Band n2 – Mid Channel – Ant M3)

Bandwidth (MHz):	20
Frequency (MHz):	1900
RB / Offset:	1 / 53

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]
3800.00	H	-	-	-75.91	-0.54	30.55	-64.71	-13.00	-51.71
5700.00	H	-	-	-76.87	2.50	32.63	-62.63	-13.00	-49.63
7600.00	H	240	51	-66.31	6.19	46.88	-48.38	-13.00	-35.38
9500.00	H	-	-	-79.72	9.52	36.80	-58.46	-13.00	-45.46
11400.00	H	-	-	-79.87	11.82	38.95	-56.30	-13.00	-43.30
13300.00	H	-	-	-80.50	14.43	40.93	-54.32	-13.00	-41.32

Table 7-46. Radiated Spurious Data Above 1GHz (NR Band n2 – High Channel – Ant M3)

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

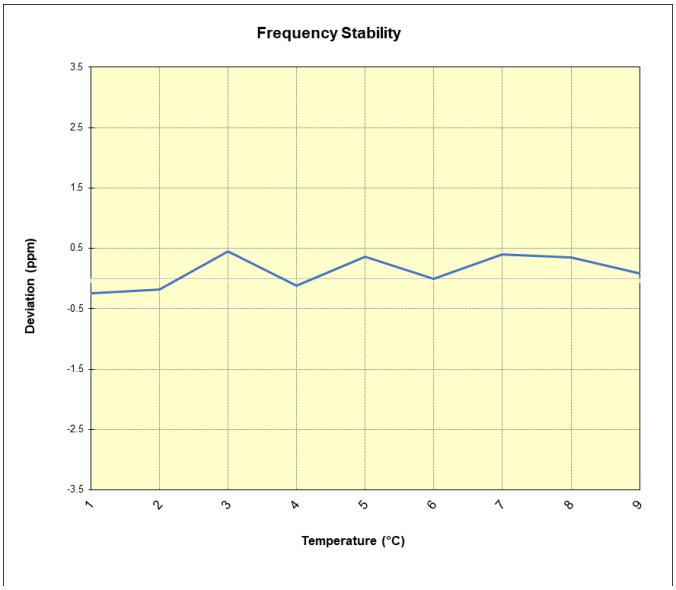
None

LTE Band 25/2

LTE Band 25/2	
Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	4.358

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.358	- 30	1,882,498,664	-449	-0.0000239
		- 20	1,882,498,767	-346	-0.0000184
		- 10	1,882,499,971	858	0.0000456
		0	1,882,498,882	-232	-0.0000123
		+ 10	1,882,499,792	679	0.0000361
		+ 20 (Ref)	1,882,499,113	0	0.0000000
		+ 30	1,882,499,857	743	0.0000395
		+ 40	1,882,499,761	648	0.0000344
		+ 50	1,882,499,284	171	0.0000091
Battery Endpoint	3.372	+ 20	1,882,499,107	-7	-0.0000003

Table 7-47. LTE Band 25/2 Frequency Stability Data



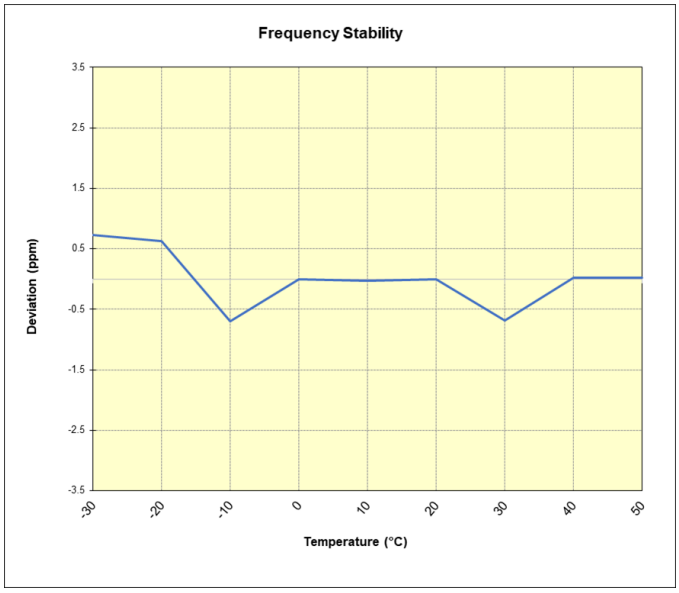
Plot 7-143. LTE Band 25/2 Frequency Stability Chart

NR Band n25/2

NR Band n25/2	
Operating Frequency (Hz):	1,882,500,000
Ref. Voltage (VDC):	4.358

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.358	- 30	1,882,493,139	1,363	0.0000724
		- 20	1,882,492,958	1,183	0.0000628
		- 10	1,882,490,471	-1,304	-0.0000693
		0	1,882,491,779	3	0.0000002
		+ 10	1,882,491,730	-45	-0.0000024
		+ 20 (Ref)	1,882,491,775	0	0.0000000
		+ 30	1,882,490,479	-1,297	-0.0000689
		+ 40	1,882,491,827	51	0.0000027
		+ 50	1,882,491,814	39	0.0000021
Battery Endpoint	3.372	+ 20	1,882,491,670	-105	-0.0000056

Table 7-48. NR Band n25/2 Frequency Stability Data



Plot 7-144. NR Band n25/2 Frequency Stability Chart

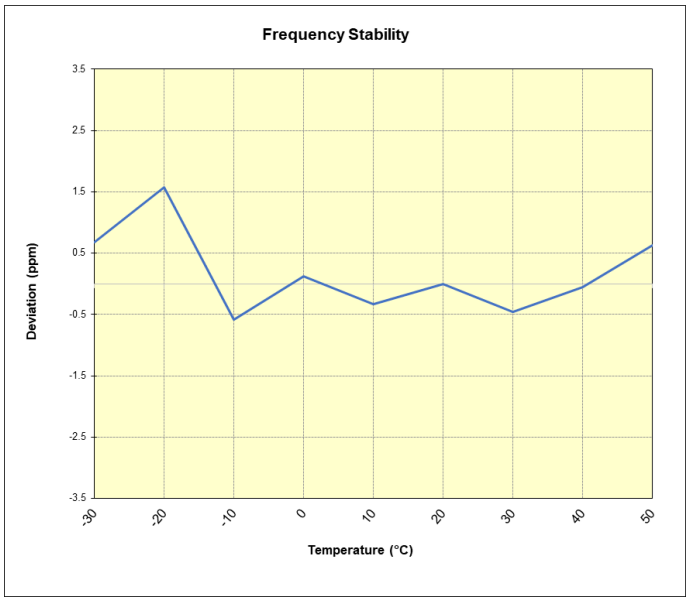
GSM/GPRS PCS

GSM/GPRS PCS

Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	4.358

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.358	- 30	1,880,003,667	1,281	0.0000681
		- 20	1,880,005,352	2,966	0.0001578
		- 10	1,880,001,280	-1,106	-0.0000588
		0	1,880,002,608	222	0.0000118
		+ 10	1,880,001,770	-616	-0.0000328
		+ 20 (Ref)	1,880,002,386	0	0.0000000
		+ 30	1,880,001,535	-851	-0.0000452
		+ 40	1,880,002,279	-107	-0.0000057
		+ 50	1,880,003,572	1,186	0.0000631
Battery Endpoint	3.372	+ 20	1,880,006,077	3,691	0.0001964

Table 7-49. GSM/GPRS PCS Frequency Stability Data



Plot 7-145. GSM/GPRS PCS Frequency Stability Chart

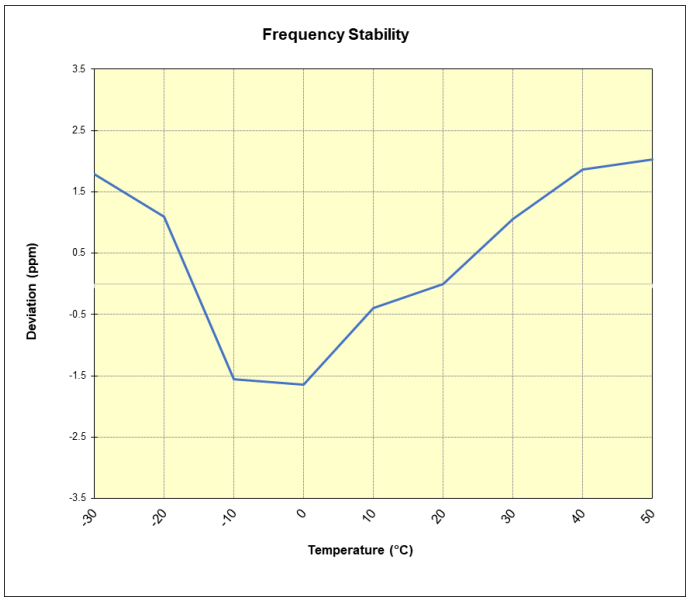
WCDMA PCS

WCDMA PCS

Operating Frequency (Hz):	1,880,000,000
Ref. Voltage (VDC):	4.358

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.358	- 30	1,879,995,640	3,373	0.0001794
		- 20	1,879,994,336	2,069	0.0001101
		- 10	1,879,989,332	-2,935	-0.0001561
		0	1,879,989,184	-3,083	-0.0001640
		+ 10	1,879,991,517	-749	-0.0000398
		+ 20 (Ref)	1,879,992,267	0	0.0000000
		+ 30	1,879,994,259	1,993	0.0001060
		+ 40	1,879,995,766	3,500	0.0001862
		+ 50	1,879,996,072	3,805	0.0002024
Battery Endpoint	3.372	+ 20	1,879,995,044	2,778	0.0001478

Table 7-50. WCDMA PCS Frequency Stability Data



Plot 7-146. 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: A3LSMA156U** complies with all the requirements of Part 24 of the FCC rules.