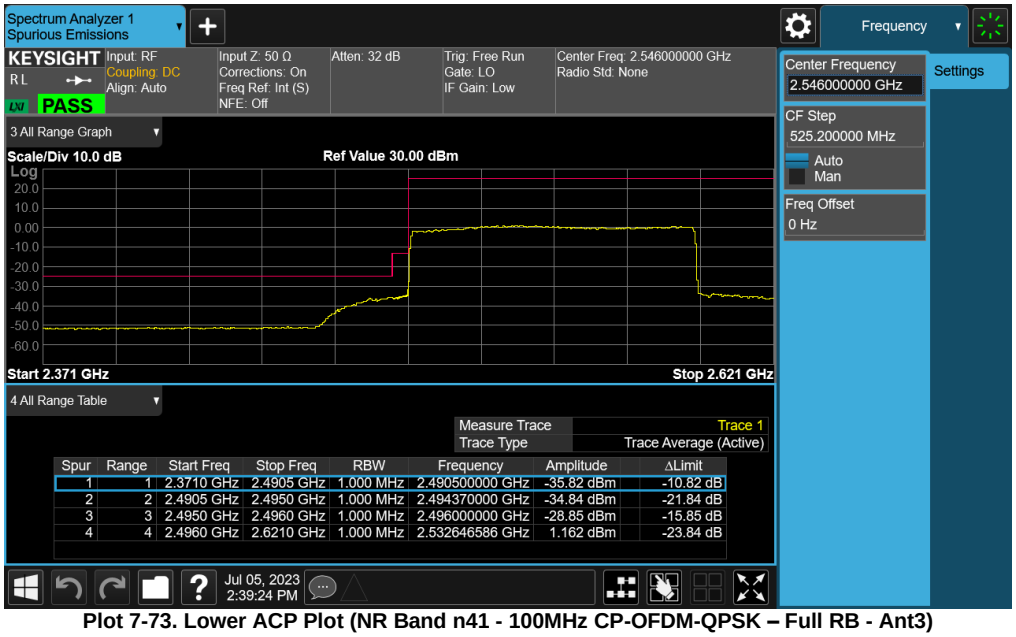
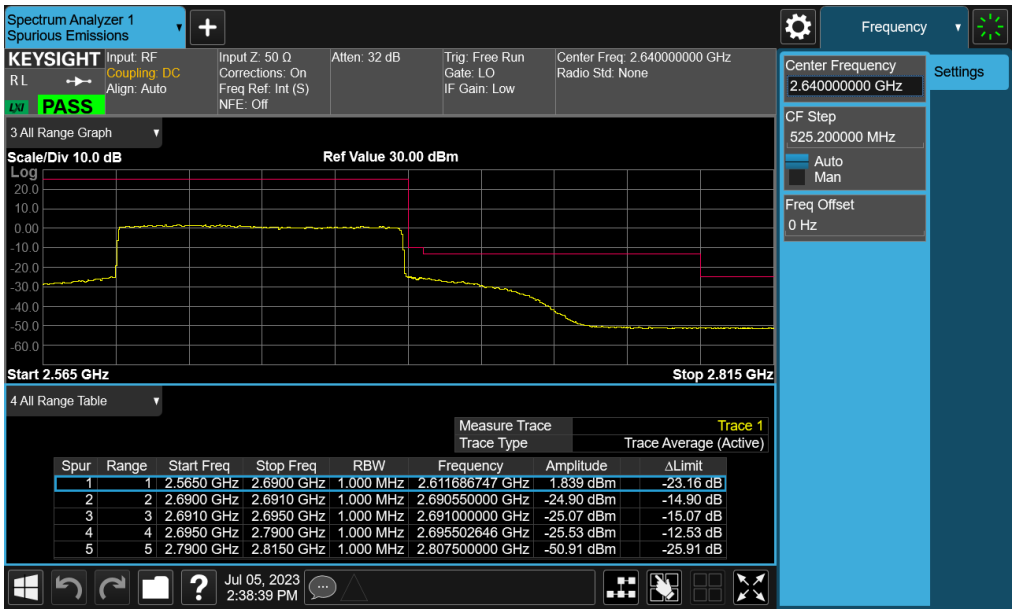
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
NR Band n41	100MHz	Low	Band Edge	-35.82	-25	-10.82
		High	Band Edge	-25.53	-13	-12.53

Table 7-17. Band Edge Emissions Test Results – Ant3

NR Band n41 – Ant3



Plot 7-73. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - Ant3)

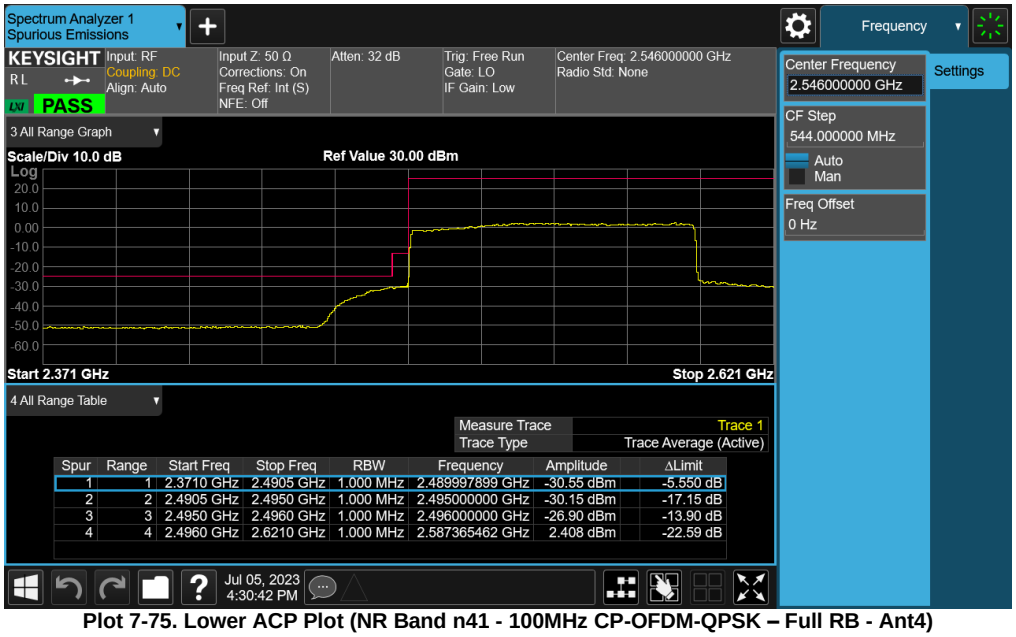


Plot 7-74. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - Ant3)

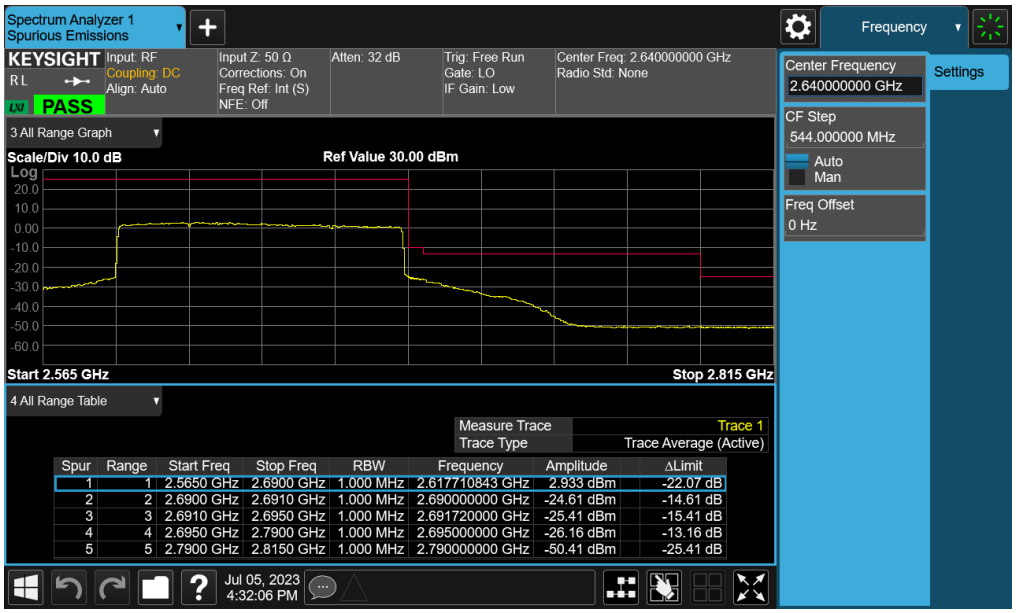
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
NR Band n41	100MHz	Low	Band Edge	-30.55	-25	-5.55
		High	Band Edge	-26.16	-13	-13.16

Table 7-18. Band Edge Emissions Test Results – Ant4

NR Band n41 – Ant4



Plot 7-75. Lower ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - Ant4)



Plot 7-76. Upper ACP Plot (NR Band n41 - 100MHz CP-OFDM-QPSK – Full RB - Ant4)

7.6 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.

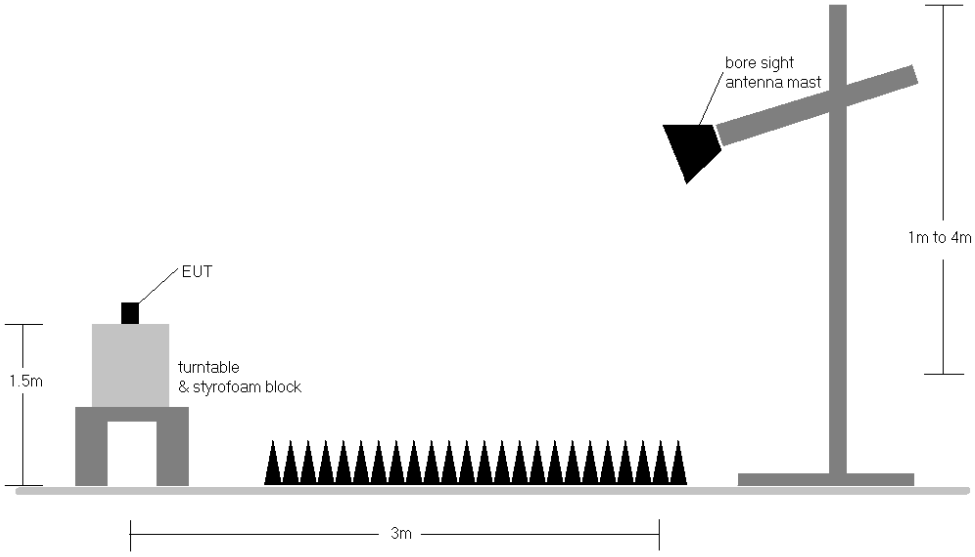


Figure 7-5. Radiated Test Setup >1GHz

Test Notes

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

2) This unit was tested with its standard battery.

3) 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	2506.0	V	172	281	4.15	1 / 50	18.29	22.44	0.175	33.01	-10.57
	QPSK	2593.0	V	297	294	4.14	1 / 50	19.04	23.18	0.208	33.01	-9.83
	QPSK	2680.0	V	400	285	4.49	1 / 99	19.35	**23.84**	0.242	33.01	-9.17
	16-QAM	2680.0	V	400	285	4.49	1 / 99	18.58	23.07	0.203	33.01	-9.94
	64-QAM	2680.0	V	400	285	4.49	1 / 99	17.26	21.75	0.150	33.01	-11.26
	256-QAM	2680.0	V	400	285	4.49	1 / 99	15.87	20.36	0.109	33.01	-12.65
15 MHz	QPSK	2503.5	V	172	281	4.15	1 / 0	18.16	22.31	0.170	33.01	-10.70
	QPSK	2593.0	V	297	294	4.14	1 / 0	19.03	23.17	0.208	33.01	-9.84
	QPSK	2682.5	V	400	285	4.50	1 / 0	19.19	**23.68**	0.233	33.01	-9.33
	16-QAM	2682.5	V	400	285	4.50	1 / 0	18.85	23.34	0.216	33.01	-9.67
	64-QAM	2682.5	V	400	285	4.50	1 / 0	17.21	21.70	0.148	33.01	-11.31
	256-QAM	2682.5	V	400	285	4.50	1 / 0	15.83	20.32	0.108	33.01	-12.69
10 MHz	QPSK	2501.0	V	172	281	4.15	1 / 49	18.27	22.42	0.175	33.01	-10.59
	QPSK	2593.0	V	297	294	4.14	1 / 0	19.20	23.34	0.216	33.01	-9.67
	QPSK	2685.0	V	400	285	4.50	1 / 49	19.06	**23.56**	0.227	33.01	-9.45
	16-QAM	2685.0	V	400	285	4.50	1 / 0	18.69	23.19	0.209	33.01	-9.82
	64-QAM	2685.0	V	400	285	4.50	1 / 0	16.91	21.41	0.138	33.01	-11.60
	256-QAM	2685.0	V	400	285	4.50	1 / 0	15.81	20.31	0.107	33.01	-12.70
5 MHz	QPSK	2498.5	V	172	281	4.14	1 / 12	18.22	22.36	0.172	33.01	-10.65
	QPSK	2593.0	V	297	294	4.14	1 / 0	19.01	23.15	0.207	33.01	-9.86
	QPSK	2687.5	V	400	285	4.50	1 / 12	19.09	**23.59**	0.229	33.01	-9.42
	16-QAM	2687.5	V	400	285	4.50	1 / 12	18.76	23.26	0.212	33.01	-9.75
	64-QAM	2687.5	V	400	285	4.50	1 / 12	16.90	21.40	0.138	33.01	-11.61
	256-QAM	2687.5	V	400	285	4.50	1 / 12	15.59	20.09	0.102	33.01	-12.92
20 MHz	WCP	2680.0	V	108	290	4.49	1 / 50	17.24	21.73	0.149	33.01	-11.28

Table 7-19. EIRP Data (LTE Band 41(PC2) – Ant1)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	2506.0	V	172	283	4.15	1 / 50	17.14	21.29	0.135	33.01	-11.72
	QPSK	2593.0	V	224	284	4.14	1 / 99	18.28	22.42	0.175	33.01	-10.59
	QPSK	2680.0	V	400	287	4.49	1 / 99	18.44	**22.93**	0.196	33.01	-10.08
	16-QAM	2680.0	V	400	287	4.49	1 / 99	16.15	20.64	0.116	33.01	-12.37
	64-QAM	2680.0	V	400	287	4.49	1 / 99	15.11	19.60	0.091	33.01	-13.41
	256-QAM	2680.0	V	400	287	4.49	1 / 99	14.02	18.51	0.071	33.01	-14.50
15 MHz	QPSK	2503.5	V	172	283	4.15	1 / 37	17.15	21.30	0.135	33.01	-11.71
	QPSK	2593.0	V	224	284	4.14	1 / 0	18.22	22.36	0.172	33.01	-10.65
	QPSK	2682.5	V	400	287	4.50	1 / 0	18.37	**22.86**	0.193	33.01	-10.15
	16-QAM	2682.5	V	400	287	4.50	1 / 0	16.10	20.59	0.115	33.01	-12.42
	64-QAM	2682.5	V	400	287	4.50	1 / 0	15.25	19.74	0.094	33.01	-13.27
	256-QAM	2682.5	V	400	287	4.50	1 / 0	13.90	18.39	0.069	33.01	-14.62
10 MHz	QPSK	2501.0	V	172	283	4.15	1 / 49	17.18	21.33	0.136	33.01	-11.68
	QPSK	2593.0	V	224	284	4.14	1 / 0	18.23	22.37	0.173	33.01	-10.64
	QPSK	2685.0	V	400	287	4.50	1 / 0	18.30	**22.80**	0.191	33.01	-10.21
	16-QAM	2685.0	V	400	287	4.50	1 / 0	16.10	20.60	0.115	33.01	-12.41
	64-QAM	2685.0	V	400	287	4.50	1 / 0	15.14	19.64	0.092	33.01	-13.37
	256-QAM	2685.0	V	400	287	4.50	1 / 0	14.02	18.52	0.071	33.01	-14.49
5 MHz	QPSK	2498.5	V	172	283	4.14	1 / 24	17.08	21.22	0.132	33.01	-11.79
	QPSK	2593.0	V	224	284	4.14	1 / 0	18.13	22.27	0.169	33.01	-10.74
	QPSK	2687.5	V	400	287	4.50	1 / 12	18.26	**22.76**	0.189	33.01	-10.25
	16-QAM	2687.5	V	400	287	4.50	1 / 12	16.15	20.65	0.116	33.01	-12.36
	64-QAM	2593.0	V	224	284	4.14	1 / 0	15.46	19.60	0.091	33.01	-13.41
	256-QAM	2687.5	V	400	287	4.50	1 / 12	13.78	18.28	0.067	33.01	-14.73
20 MHz	WCP	2680.0	V	156	280	4.49	1 / 0	16.12	20.61	0.115	33.01	-12.40

Table 7-20. EIRP Data (LTE Band 41(PC3) – Ant1)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2546.0	V	331	268	4.13	1 / 136	17.47	21.60	0.145	33.01	-11.41
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 136	17.99	22.13	0.163	33.01	-10.88
	π/2 BPSK	2640.0	V	400	274	4.39	1 / 136	18.20	**22.59**	0.181	33.01	-10.42
	QPSK	2546.0	V	331	268	4.13	1 / 136	17.33	21.46	0.140	33.01	-11.55
	QPSK	2593.0	V	363	283	4.14	1 / 136	17.83	21.97	0.158	33.01	-11.04
	QPSK	2640.0	V	400	274	4.39	1 / 136	18.09	22.48	0.177	33.01	-10.53
	16-QAM	2640.0	V	400	274	4.39	1 / 136	16.81	21.20	0.132	33.01	-11.81
90 MHz	π/2 BPSK	2541.0	V	331	268	4.14	1 / 122	17.82	21.96	0.157	33.01	-11.05
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 183	18.02	22.17	0.165	33.01	-10.84
	π/2 BPSK	2645.0	V	400	274	4.42	1 / 183	18.50	**22.92**	0.196	33.01	-10.09
	QPSK	2541.0	V	331	268	4.14	1 / 122	17.13	21.26	0.134	33.01	-11.75
	QPSK	2593.0	V	363	283	4.14	1 / 61	17.68	21.82	0.152	33.01	-11.19
	QPSK	2645.0	V	400	274	4.42	1 / 183	18.03	22.44	0.176	33.01	-10.57
	16-QAM	2645.0	V	400	274	4.42	1 / 183	16.63	21.05	0.127	33.01	-11.96
80 MHz	π/2 BPSK	2536.0	V	331	268	4.14	1 / 54	17.51	21.65	0.146	33.01	-11.36
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 54	18.10	22.25	0.168	33.01	-10.76
	π/2 BPSK	2650.0	V	400	274	4.45	1 / 162	18.03	22.48	0.177	33.01	-10.53
	QPSK	2536.0	V	331	268	4.14	1 / 54	17.05	21.19	0.131	33.01	-11.82
	QPSK	2593.0	V	363	283	4.14	1 / 54	17.98	22.12	0.163	33.01	-10.89
	QPSK	2650.0	V	400	274	4.45	1 / 162	18.04	**22.48**	0.177	33.01	-10.53
	16-QAM	2593.0	V	363	283	4.14	1 / 54	16.86	21.00	0.126	33.01	-12.01
70 MHz	π/2 BPSK	2531.0	V	331	268	4.14	1 / 1	17.54	21.68	0.147	33.01	-11.33
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 1	18.11	22.25	0.168	33.01	-10.76
	π/2 BPSK	2655.0	V	400	274	4.46	1 / 94	18.37	**22.83**	0.192	33.01	-10.18
	QPSK	2531.0	V	331	268	4.14	1 / 1	17.57	21.71	0.148	33.01	-11.30
	QPSK	2593.0	V	363	283	4.14	1 / 1	18.16	22.30	0.170	33.01	-10.71
	QPSK	2655.0	V	400	274	4.46	1 / 94	18.12	22.59	0.181	33.01	-10.42
	16-QAM	2593.0	V	363	283	4.14	1 / 1	16.75	20.89	0.123	33.01	-12.12
	64-QAM	2593.0	V	363	283	4.14	1 / 1	14.86	19.01	0.080	33.01	-14.00
	256-QAM	2655.0	V	400	274	4.46	1 / 94	14.23	18.70	0.074	33.01	-14.31
60 MHz	π/2 BPSK	2526.0	V	331	268	4.14	1 / 81	17.42	21.56	0.143	33.01	-11.45
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 40	18.37	22.51	0.178	33.01	-10.50
	π/2 BPSK	2660.0	V	400	274	4.46	1 / 40	18.17	22.63	0.183	33.01	-10.38
	QPSK	2526.0	V	331	268	4.14	1 / 81	17.83	21.97	0.158	33.01	-11.04
	QPSK	2593.0	V	363	283	4.14	1 / 40	18.07	22.21	0.166	33.01	-10.80
	QPSK	2660.0	V	400	274	4.46	1 / 40	17.75	22.22	0.167	33.01	-10.79
	16-QAM	2593.0	V	363	283	4.14	1 / 40	17.33	21.47	0.140	33.01	-11.54
50 MHz	π/2 BPSK	2521.0	V	331	268	4.14	1 / 99	17.79	21.94	0.156	33.01	-11.07
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 33	17.84	21.98	0.158	33.01	-11.03
	π/2 BPSK	2665.0	V	400	274	4.47	1 / 99	18.22	**22.69**	0.186	33.01	-10.32
	QPSK	2521.0	V	331	268	4.14	1 / 99	17.57	21.72	0.148	33.01	-11.29
	QPSK	2593.0	V	363	283	4.14	1 / 66	18.16	22.30	0.170	33.01	-10.71
	QPSK	2665.0	V	400	274	4.47	1 / 99	18.09	22.56	0.180	33.01	-10.45
	16-QAM	2593.0	V	363	283	4.14	1 / 66	17.14	21.28	0.134	33.01	-11.73
40 MHz	π/2 BPSK	2516.0	V	331	268	4.15	1 / 53	17.35	21.50	0.141	33.01	-11.51
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 53	17.17	21.31	0.135	33.01	-11.70
	π/2 BPSK	2670.0	V	400	274	4.48	1 / 26	18.50	**22.98**	0.199	33.01	-10.03
	QPSK	2516.0	V	331	268	4.15	1 / 53	17.42	21.57	0.143	33.01	-11.44
	QPSK	2593.0	V	363	283	4.14	1 / 53	17.35	21.49	0.141	33.01	-11.52
	QPSK	2670.0	V	400	274	4.48	1 / 26	18.22	22.70	0.186	33.01	-10.31
	16-QAM	2670.0	V	400	274	4.48	1 / 26	17.26	21.73	0.149	33.01	-11.28
30 MHz	π/2 BPSK	2511.0	V	331	268	4.15	1 / 39	17.42	21.57	0.143	33.01	-11.44
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 58	17.60	21.74	0.149	33.01	-11.27
	π/2 BPSK	2675.0	V	400	274	4.48	1 / 39	17.99	22.47	0.177	33.01	-10.54
	QPSK	2511.0	V	331	268	4.15	1 / 39	17.68	21.82	0.152	33.01	-11.19
	QPSK	2593.0	V	363	283	4.14	1 / 19	18.04	22.18	0.165	33.01	-10.83
	QPSK	2675.0	V	400	274	4.48	1 / 39	18.23	**22.71**	0.187	33.01	-10.30
	16-QAM	2511.0	V	331	268	4.15	1 / 39	15.61	19.76	0.095	33.01	-13.25
20 MHz	π/2 BPSK	2506.0	V	331	268	4.15	1 / 25	17.34	21.49	0.141	33.01	-11.52
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 37	17.66	21.80	0.151	33.01	-11.21
	π/2 BPSK	2680.0	V	400	274	4.49	1 / 25	17.84	22.34	0.171	33.01	-10.68
	QPSK	2506.0	V	331	268	4.15	1 / 25	17.45	21.60	0.145	33.01	-11.41
	QPSK	2593.0	V	363	283	4.14	1 / 13	18.09	22.24	0.167	33.01	-10.77
	QPSK	2680.0	V	400	274	4.49	1 / 25	18.59	23.08	0.203	33.01	-9.93
	16-QAM	2680.0	V	400	274	4.49	1 / 25	16.72	21.21	0.132	33.01	-11.80
15 MHz	π/2 BPSK	2503.5	V	331	268	4.15	1 / 1	17.27	21.42	0.139	33.01	-11.59
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 19	16.94	21.08	0.128	33.01	-11.93
	π/2 BPSK	2682.5	V	400	274	4.49	1 / 19	17.67	22.16	0.165	33.01	-10.85
	QPSK	2503.5	V	331	268	4.15	1 / 1	16.93	21.08	0.128	33.01	-11.93
	QPSK	2593.0	V	363	283	4.14	1 / 1	17.28	21.42	0.139	33.01	-11.59
	QPSK	2682.5	V	400	274	4.49	1 / 1	17.89	22.38	0.173	33.01	-10.63
	16-QAM	2503.5	V	331	268	4.15	1 / 1	16.43	20.58	0.114	33.01	-12.43
10 MHz	π/2 BPSK	2501.0	V	331	268	4.15	1 / 12	17.42	21.57	0.144	33.01	-11.44
	π/2 BPSK	2593.0	V	363	283	4.14	1 / 22	18.94	23.09	0.203	33.01	-9.92
	π/2 BPSK	2685.0	V	400	274	4.49	1 / 22	19.32	**23.81**	0.240	33.01	-9.20
	QPSK	2501.0	V	331	268	4.15	1 / 12	16.51	20.66	0.116	33.01	-12.35
	QPSK	2593.0	V	363	283	4.14	1 / 22	18.16	22.30	0.170	33.01	-10.71
	QPSK	2685.0	V	400	274	4.49	1 / 22	18.69	23.18	0.208	33.01	-9.83
	16-QAM	2501.0	V	331	268	4.15	1 / 12	17.91	22.06	0.161	33.01	-10.95
100 MHz	QPSK (CP-OFDM)	2640.0	V	400	273	4.39	1 / 136	15.70	20.09	0.102	33.01	-12.92
	QPSK (WCP)	2640.0	V	123	291	4.39	1 / 136	16.07	20.46	0.111	33.01	-12.55

Table 7-21. EIRP Data (NR Band n41 – Ant1)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2546.01	H	111	327	4.19	1 / 136	17.30	**21.49**	0.141	33.01	-11.52
	π/2 BPSK	2592.99	H	139	319	4.00	1 / 136	17.21	21.21	0.132	33.01	-11.80
	π/2 BPSK	2640.00	H	162	321	4.31	1 / 136	16.93	21.24	0.133	33.01	-11.77
	QPSK	2546.01	H	111	327	4.19	1 / 136	17.04	21.23	0.133	33.01	-11.78
	QPSK	2592.99	H	139	319	4.00	1 / 136	17.01	21.01	0.126	33.01	-12.00
	QPSK	2640.00	H	162	321	4.31	1 / 136	16.70	21.01	0.126	33.01	-12.00
	16-QAM	2592.99	H	139	319	4.00	1 / 136	16.39	20.39	0.109	33.01	-12.62
100 MHz	QPSK (CP-OFDM)	2546.0	H	112	321	4.00	1 / 136	15.38	19.38	0.087	33.01	-13.63

Table 7-22. EIRP Data (NR Band n41 – Ant2)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
100 MHz	π/2 BPSK	2546.01	H	152	341	4.19	1 / 1	13.36	17.55	0.057	33.01	-15.46
	π/2 BPSK	2592.99	H	112	157	4.00	1 / 1	13.46	17.46	0.056	33.01	-15.55
	π/2 BPSK	2640.00	H	108	161	4.31	1 / 1	12.42	16.73	0.047	33.01	-16.28
	QPSK	2546.01	H	152	341	4.19	1 / 1	13.43	**17.62**	0.058	33.01	-15.39
	QPSK	2592.99	H	112	157	4.00	1 / 1	11.89	15.89	0.039	33.01	-17.12
	QPSK	2640.00	H	108	161	4.31	1 / 1	12.32	16.63	0.046	33.01	-16.38
	16-QAM	2546.01	H	152	341	4.19	1 / 1	10.27	14.46	0.028	33.01	-18.55
100 MHz	QPSK (CP-OFDM)	2546.0	H	316	94	4.19	1 / 1	9.11	13.30	0.021	33.01	-19.71

Table 7-23. EIRP Data (NR Band n41 – Ant3)

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]
100 MHz	π/2 BPSK	2546.01	H	101	223	4.19	1 / 136	12.54	16.73	0.047	33.01	-16.28
	π/2 BPSK	2592.99	H	101	225	4.00	1 / 136	11.64	15.64	0.037	33.01	-17.37
	π/2 BPSK	2640.00	H	101	224	4.31	1 / 136	12.64	16.95	0.050	33.01	-16.06
	QPSK	2546.01	H	101	223	4.19	1 / 136	12.30	16.49	0.045	33.01	-16.52
	QPSK	2592.99	H	101	225	4.00	1 / 136	11.09	15.09	0.032	33.01	-17.92
	QPSK	2640.00	H	101	224	4.31	1 / 136	13.44	**17.75**	0.060	33.01	-15.26
	16-QAM	2640.00	H	101	224	4.31	1 / 136	11.37	15.68	0.037	33.01	-17.33
100 MHz	QPSK (CP-OFDM)	2640.0	H	101	224	4.31	1 / 136	10.90	15.21	0.033	33.01	-17.80

Table 7-24. EIRP Data (NR Band n41 – Ant4)

7.7 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.

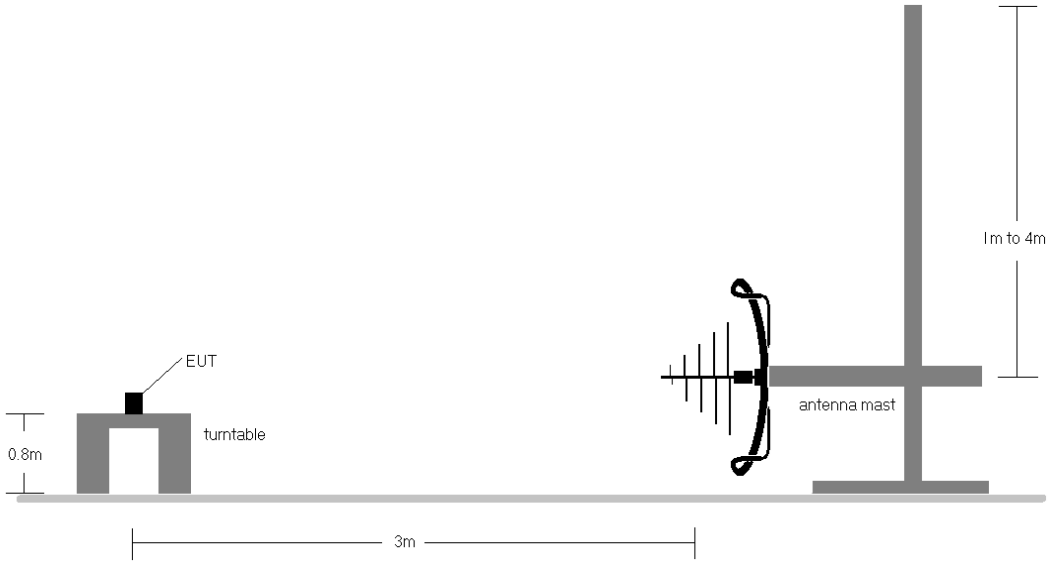


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

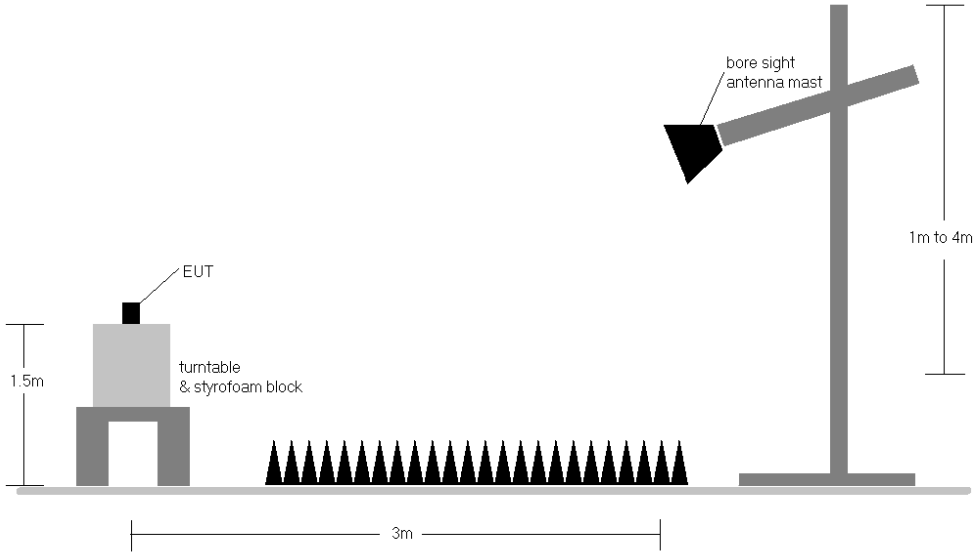


Figure 7-7. Test Instrument & Measurement Setup >1 GHz

Test Notes

1) Field strengths are calculated using the Measurement quantity conversions in 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) 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.

3) This unit was tested with its standard battery.

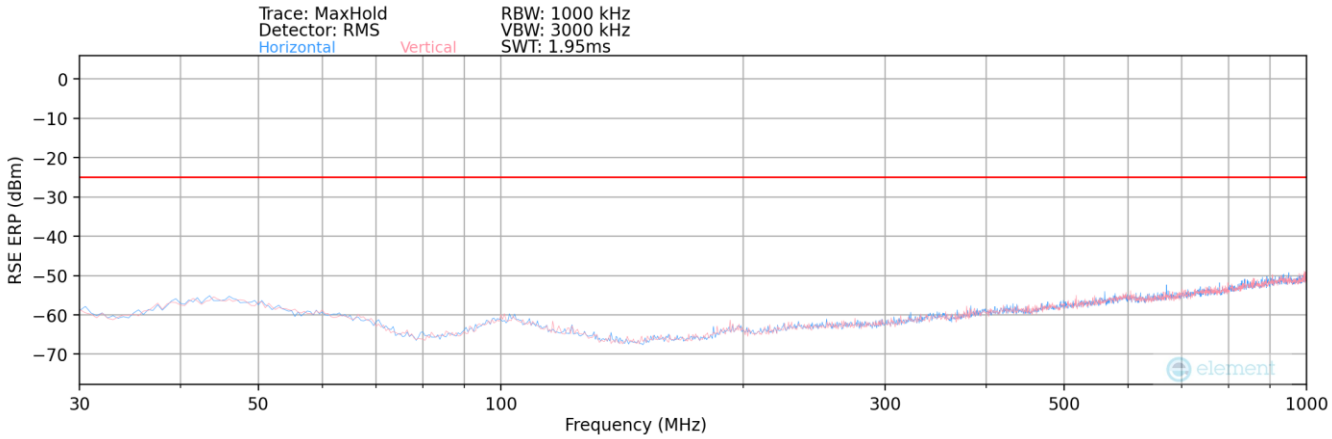
4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

5) 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.

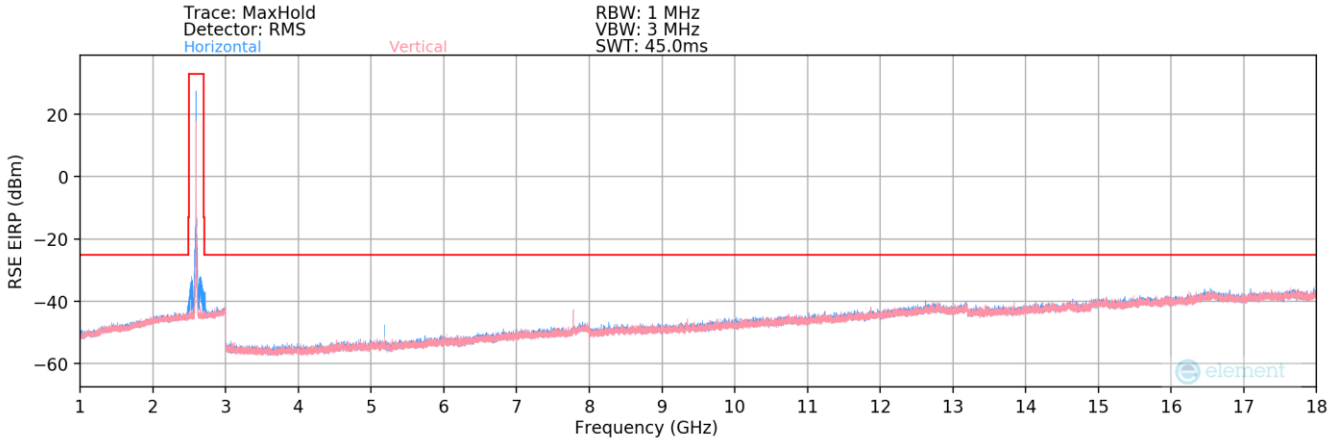
6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

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.

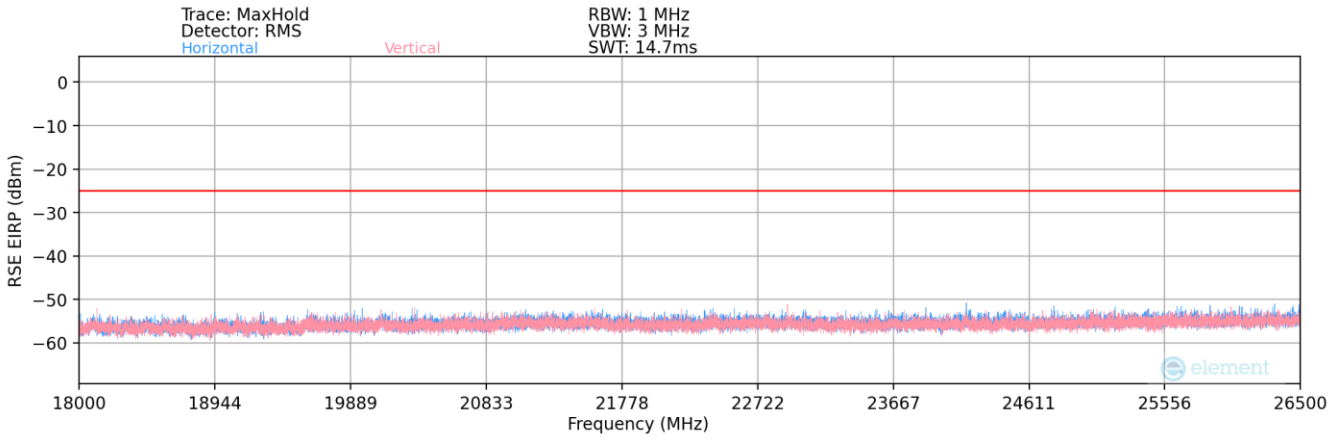
LTE Band 41(PC2) – Ant1



Plot 7-77. Radiated Spurious Plot (LTE Band 41(PC2) – Below 1GHz – Ant1)



Plot 7-78. Radiated Spurious Plot (LTE Band 41(PC2) – 1GHz - 18GHz – Ant1)



Plot 7-79. Radiated Spurious Plot (LTE Band 41(PC2) – 18GHz – 26.5GHz – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2593.0
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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
41.78	H	-	-	-55.71	-9.64	41.65	-55.76	-25.00	-30.76
66.97	H	-	-	-57.37	-11.97	37.66	-59.75	-25.00	-34.75
122.55	H	-	-	-59.33	-13.06	34.61	-62.79	-25.00	-37.79
450.17	H	-	-	-63.21	-5.91	37.88	-59.53	-25.00	-34.53
517.41	H	-	-	-60.52	-4.13	42.35	-55.05	-25.00	-30.05
858.85	H	-	-	-61.69	1.47	46.78	-50.63	-25.00	-25.63

Table 7-25. Radiated Spurious Data (LTE Band 41(PC2) – Below 1GHz – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2506.0
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]
5012.00	H	103.00	259.00	-79.98	10.11	37.13	-58.12	-25.00	-33.12
7518.00	H	-	-	-82.42	15.46	40.04	-55.22	-25.00	-30.22
10024.00	H	-	-	-83.64	18.72	42.08	-53.18	-25.00	-28.18
12530.00	H	-	-	-84.35	23.28	45.93	-49.32	-25.00	-24.32
15036.00	H	-	-	-84.64	26.22	48.58	-46.68	-25.00	-21.68
17542.00	H	-	-	-84.67	29.34	51.67	-43.58	-25.00	-18.58
20048.00	H	-	-	-66.13	3.00	43.87	-60.93	-25.00	-35.93
22554.00	H	-	-	-66.12	4.08	44.96	-59.84	-25.00	-34.84

Table 7-26. Radiated Spurious Data (LTE Band 41(PC2) – Low Channel – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2593.0
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]
5186.00	H	102.00	273.00	-80.80	10.31	36.51	-58.75	-25.00	-33.75
7779.00	H	110.00	38.00	-81.49	15.45	40.96	-54.29	-25.00	-29.29
10372.00	H	-	-	-83.05	19.59	43.54	-51.71	-25.00	-26.71
12965.00	H	-	-	-84.21	24.06	46.85	-48.41	-25.00	-23.41
15558.00	H	-	-	-84.88	28.20	50.32	-44.93	-25.00	-19.93
18151.00	V	150.00	355.00	-64.39	1.51	44.11	-60.69	-25.00	-35.69
20744.00	H	-	-	-66.34	3.53	44.20	-60.60	-25.00	-35.60
23337.00	H	-	-	-66.61	4.00	44.39	-60.41	-25.00	-35.41

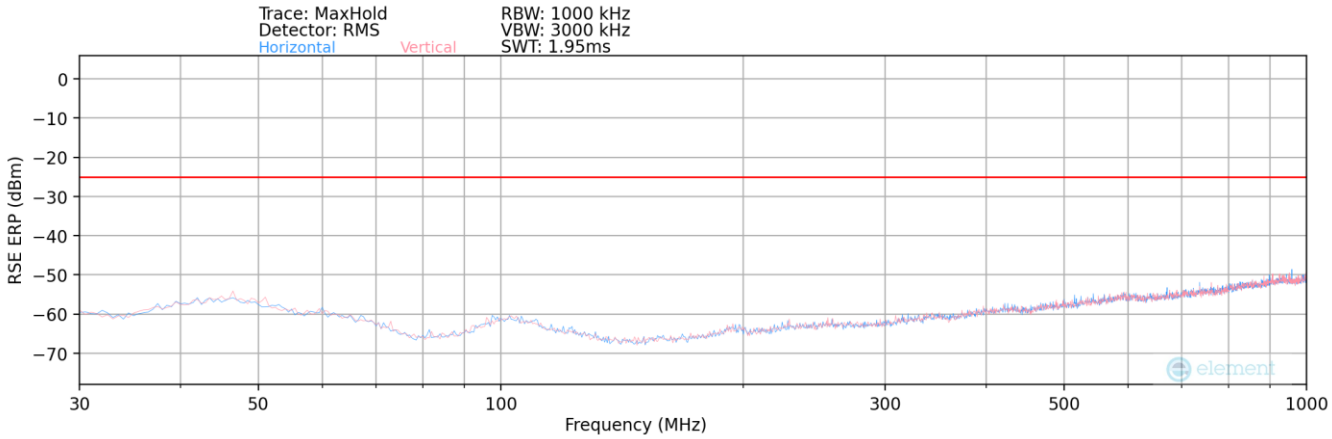
Table 7-27. Radiated Spurious Data (LTE Band 41(PC2) – Mid Channel – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2680.0
RB / Offset:	1 / 50

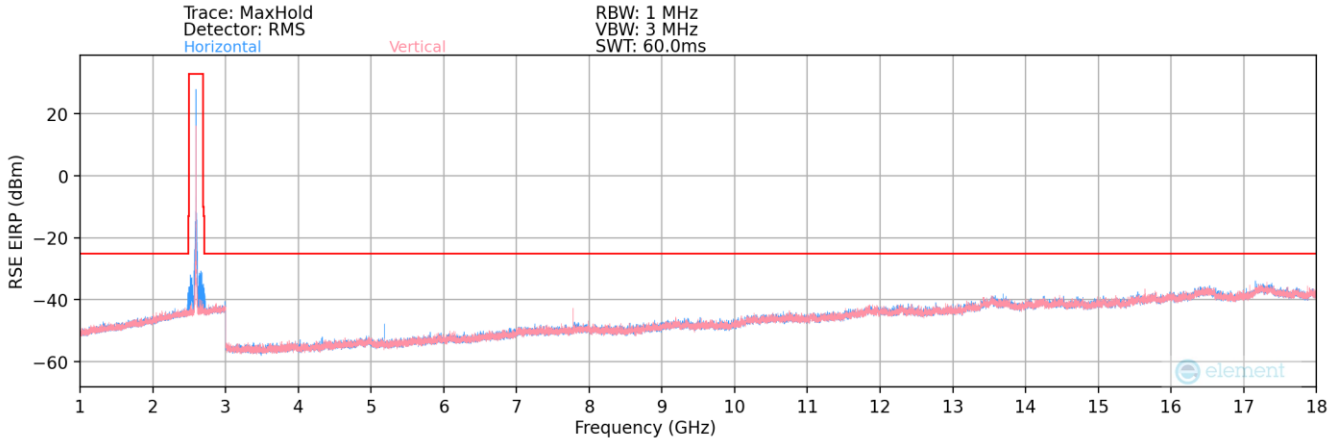
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5360.00	H	103.00	311.00	-80.68	10.55	36.87	-58.39	-25.00	-33.39
8040.00	H	166.00	331.00	-82.72	15.94	40.22	-55.04	-25.00	-30.04
10720.00	H	-	-	-83.32	20.20	43.88	-51.38	-25.00	-26.38
13400.00	H	-	-	-84.09	24.56	47.47	-47.78	-25.00	-22.78
16080.00	H	-	-	-84.80	27.90	50.10	-45.16	-25.00	-20.16
18760.00	V	150.00	358.00	-64.03	1.79	44.76	-60.04	-25.00	-35.04
21440.00	H	-	-	-66.18	4.00	44.82	-59.98	-25.00	-34.98
24120.00	H	-	-	-66.32	4.14	44.82	-59.98	-25.00	-34.98

Table 7-28. Radiated Spurious Data (LTE Band 41(PC2) – High Channel – Ant1)

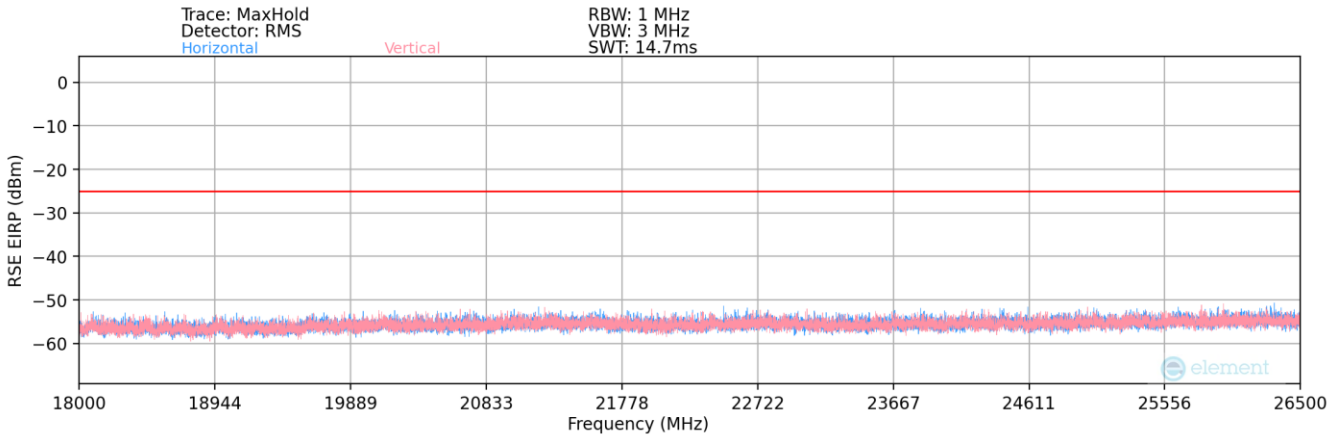
LTE Band 41(PC3) – Ant1



Plot 7-80. Radiated Spurious Plot (LTE Band 41(PC3) – Below 1GHz – Ant1)



Plot 7-81. Radiated Spurious Plot (LTE Band 41(PC3) – 1GHz - 18GHz – Ant1)



Plot 7-82. Radiated Spurious Plot (LTE Band 41(PC3) – 18GHz – 26.5GHz – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2593.0
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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
45.82	H	-	-	-64.00	-8.54	34.46	-62.95	-25.00	-37.95
191.11	H	-	-	-68.24	-11.47	27.29	-70.12	-25.00	-45.12
464.02	H	-	-	-68.47	-5.03	33.50	-63.91	-25.00	-38.91
646.08	H	-	-	-67.69	-1.66	37.65	-59.76	-25.00	-34.76
881.19	H	-	-	-67.58	1.69	41.11	-56.29	-25.00	-31.29

Table 7-29. Radiated Spurious Data (LTE Band 41(PC3) – Below 1GHz – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2506.0
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]
5012.00	H	129.00	209.00	-77.03	10.11	40.08	-55.17	-25.00	-30.17
7518.00	V	-	-	-82.40	15.46	40.06	-55.20	-25.00	-30.20
10024.00	H	-	-	-83.73	18.72	41.99	-53.27	-25.00	-28.27
12530.00	H	-	-	-84.28	23.28	46.00	-49.25	-25.00	-24.25
15036.00	H	-	-	-84.75	26.22	48.47	-46.79	-25.00	-21.79
17542.00	H	-	-	-84.77	29.34	51.57	-43.68	-25.00	-18.68
20048.00	H	-	-	-66.21	3.00	43.78	-61.02	-25.00	-36.02
22554.00	H	-	-	-66.10	4.08	44.98	-59.82	-25.00	-34.82

Table 7-30. Radiated Spurious Data (LTE Band 41(PC3) – Low Channel – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2593.0
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]
5186.00	H	130.00	208.00	-77.19	10.31	40.12	-55.14	-25.00	-30.14
7779.00	V	103.00	217.00	-78.77	15.45	43.68	-51.57	-25.00	-26.57
10372.00	H	-	-	-82.98	19.59	43.61	-51.64	-25.00	-26.64
12965.00	H	-	-	-84.03	24.06	47.03	-48.23	-25.00	-23.23
15558.00	H	-	-	-84.73	28.20	50.47	-44.78	-25.00	-19.78
18151.00	V	150.00	259.00	-64.44	1.51	44.07	-60.73	-25.00	-35.73
20744.00	V	-	-	-66.31	3.53	44.22	-60.58	-25.00	-35.58
23337.00	V	-	-	-66.29	4.00	44.71	-60.09	-25.00	-35.09

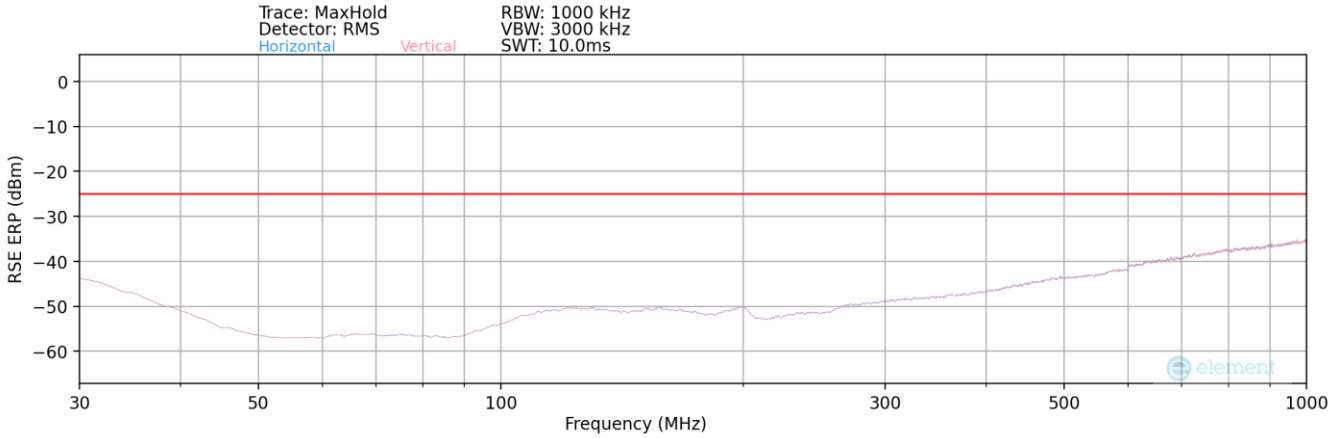
Table 7-31. Radiated Spurious Data (LTE Band 41(PC3) – Mid Channel – Ant1)

Bandwidth (MHz):	20
Frequency (MHz):	2680.0
RB / Offset:	1 / 50

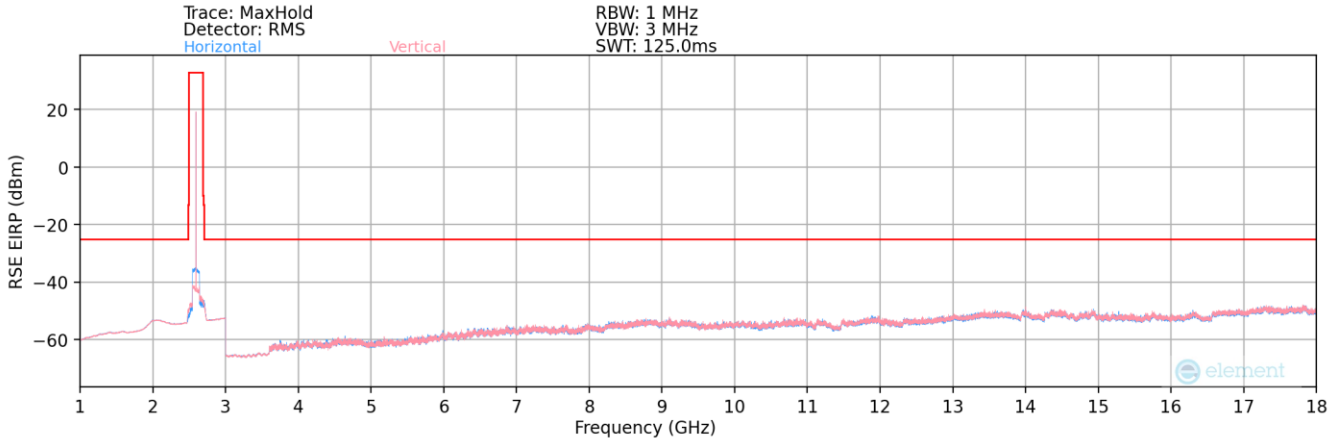
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5360.00	H	132.00	231.00	-77.85	10.55	39.70	-55.56	-25.00	-30.56
8040.00	V	109.00	285.00	-77.21	15.94	45.73	-49.53	-25.00	-24.53
10720.00	H	-	-	-83.33	20.20	43.87	-51.39	-25.00	-26.39
13400.00	H	-	-	-84.23	24.56	47.33	-47.92	-25.00	-22.92
16080.00	H	-	-	-84.75	27.90	50.15	-45.11	-25.00	-20.11
18760.00	V	150.00	351.00	-65.98	1.79	42.81	-61.99	-25.00	-36.99
21440.00	V	-	-	-67.10	4.00	43.90	-60.90	-25.00	-35.90
24120.00	V	-	-	-66.77	4.14	44.37	-60.43	-25.00	-35.43

Table 7-32. Radiated Spurious Data (LTE Band 41(PC3) – High Channel – Ant1)

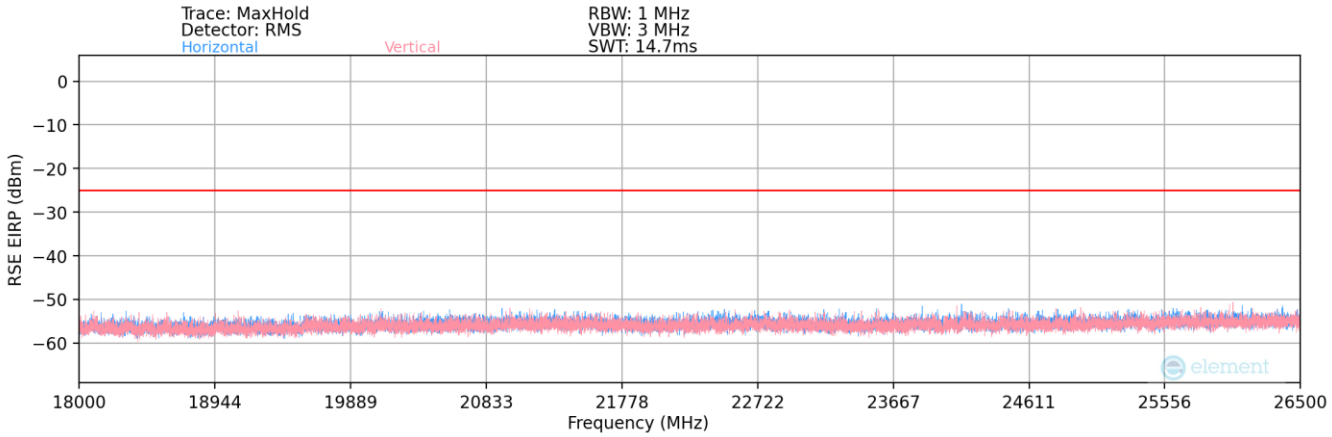
NR Band n41 – Ant1



Plot 7-77. Radiated Spurious Plot (NR Band n41 – Below 1GHz – Ant1)



Plot 7-78. Radiated Spurious Plot (NR Band n41 – 1GHz - 18GHz – Ant1)



Plot 7-79. Radiated Spurious Plot (NR Band n41 18GHz – 26.5GHz – Ant1)

Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
98.83	H	-	-	-80.07	16.78	43.71	-53.70	-25.00	-28.70
194.47	H	-	-	-80.08	19.34	46.26	-51.15	-25.00	-26.15
407.81	H	-	-	-80.17	23.48	50.31	-47.09	-25.00	-22.09

Table 7-33. Radiated Spurious Data (NR Band n41 – Below 1GHz – Ant1)

Bandwidth (MHz):	100
Frequency (MHz):	2546.0
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5092.00	H	387.00	244.00	-73.66	3.29	36.63	-58.62	-25.00	-33.62
7638.00	H	-	-	-77.34	9.13	38.79	-56.47	-25.00	-31.47
10184.00	H	-	-	-78.11	11.61	40.50	-54.76	-25.00	-29.76
12730.00	H	-	-	-78.55	13.49	41.94	-53.32	-25.00	-28.32
20368.00	H	-	-	-66.19	3.31	44.12	-60.68	-25.00	-35.68
22914.00	H	-	-	-65.78	4.11	45.33	-59.47	-25.00	-34.47

Table 7-34. Radiated Spurious Data (NR Band n41 – Low Channel – Ant1)

Bandwidth (MHz):	100
Frequency (MHz):	2593.0
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5186.00	H	331.00	236.00	-71.61	3.49	38.88	-56.37	-25.00	-31.37
7779.00	H	272.00	341.00	-75.14	8.22	40.08	-55.18	-25.00	-30.18
10372.00	H	-	-	-77.86	11.63	40.77	-54.49	-25.00	-29.49
12965.00	H	-	-	-78.26	14.13	42.87	-52.39	-25.00	-27.39
15558.00	H	-	-	-78.02	13.98	42.96	-52.30	-25.00	-27.30
18151.00	H	-	-	-65.35	1.51	43.15	-61.65	-25.00	-36.65
20744.00	H	-	-	-66.01	3.53	44.52	-60.28	-25.00	-35.28
23337.00	H	-	-	-66.66	4.00	44.34	-60.46	-25.00	-35.46

Table 7-35. Radiated Spurious Data (NR Band n41 – Mid Channel – Ant1)

Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5280.00	H	313.00	322.00	-68.89	3.34	41.45	-53.81	-25.00	-28.81
7920.00	H	264.00	326.00	-72.21	9.19	43.98	-51.28	-25.00	-26.28
10560.00	H	-	-	-78.47	12.23	40.76	-54.50	-25.00	-29.50
13200.00	H	-	-	-78.17	14.71	43.54	-51.71	-25.00	-26.71
15840.00	H	-	-	-78.66	14.94	43.28	-51.98	-25.00	-26.98
18480.00	H	-	-	-65.39	1.82	43.43	-61.37	-25.00	-36.37
21120.00	H	-	-	-66.26	3.83	44.57	-60.23	-25.00	-35.23
23760.00	H	-	-	-66.74	3.93	44.20	-60.60	-25.00	-35.60

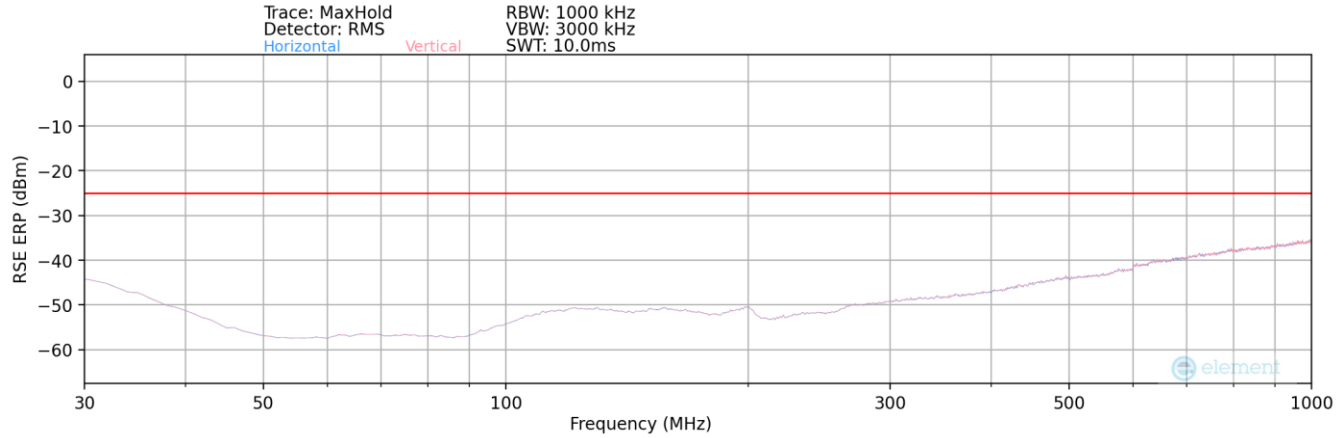
Table 7-36. Radiated Spurious Data (NR Band n41 – High Channel – Ant1)

Case:	w/ Wireless Charging Pad
Bandwidth (MHz):	100
Frequency (MHz):	2640.0
RB / Offset:	1 / 136
Mode:	Stand Alone
Anchor Band:	0

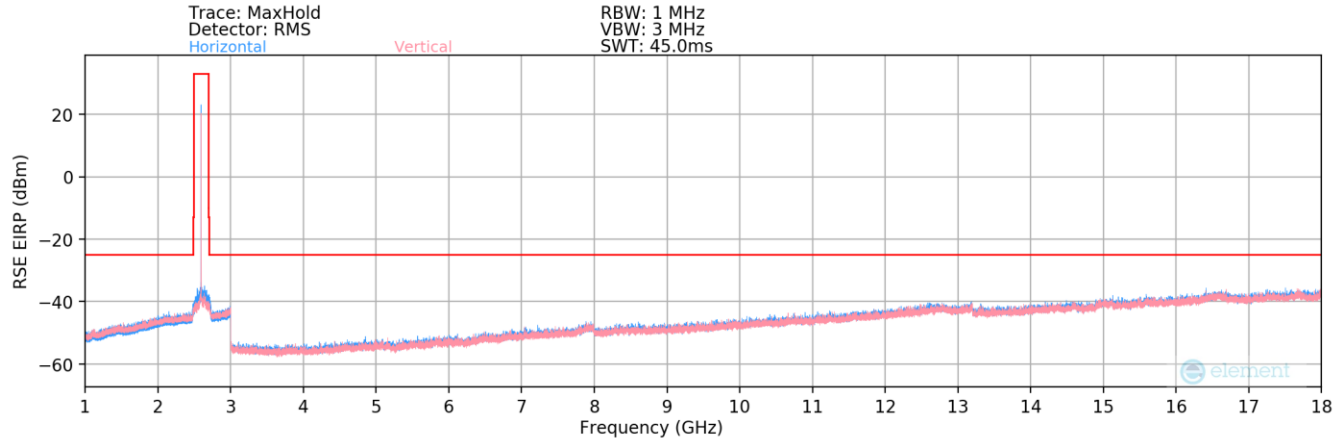
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	H	338.00	184.00	-73.41	3.34	36.93	-58.33	-25.00	-33.33
7920.00	H	310.00	342.00	-75.07	9.19	41.12	-54.14	-25.00	-29.14
10560.00	H	-	-	-78.63	12.23	40.60	-54.66	-25.00	-29.66
13200.00	H	-	-	-78.39	14.71	43.32	-51.93	-25.00	-26.93
15840.00	H	-	-	-78.71	14.94	43.23	-52.03	-25.00	-27.03

Table 7-37. Radiated Spurious Data with WCP (NR Band n41 – Ant1)

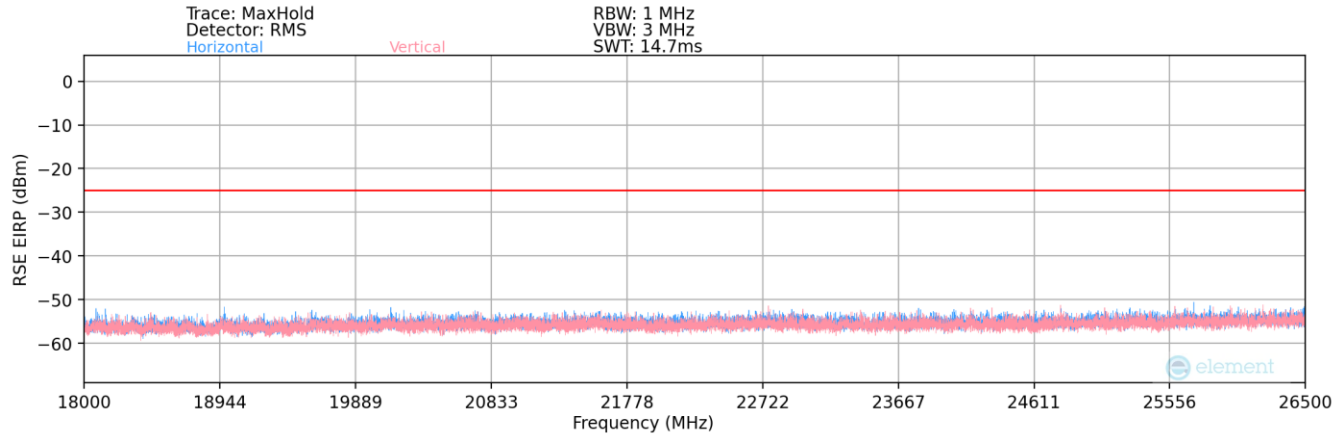
NR Band n41 – Ant2



Plot 7-80. Radiated Spurious Plot (NR Band n41 – Below 1GHz – Ant2)



Plot 7-81. Radiated Spurious Plot (NR Band n41 – 1GHz - 18GHz – Ant2)



Plot 7-82. Radiated Spurious Plot (NR Band n41 18GHz – 26.5GHz – Ant2)

Bandwidth (MHz):	100
Frequency (MHz):	2593.00
RB / Offset:	1/136
Mode:	Stand Alone

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]
498.00	H	-	-	-84.30	25.78	48.48	-48.93	-25.00	-23.93

Table 7-38. Radiated Spurious Data (NR Band n41 – Below 1GHz – Ant2)

Bandwidth (MHz):	100
Frequency (MHz):	2546.01
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5092.02	H	-	-	-69.74	7.59	44.85	-50.41	-25.00	-25.41
7638.03	H	-	-	-70.01	12.68	49.67	-45.59	-25.00	-20.59
10184.04	H	-	-	-70.80	15.73	51.93	-43.33	-25.00	-18.33

Table 7-39. Radiated Spurious Data (NR Band n41 – Low Channel – Ant2)

Bandwidth (MHz):	100
Frequency (MHz):	2592.99
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5185.98	H	-	-	-69.50	7.26	44.76	-50.50	-25.00	-25.50
7778.97	H	-	-	-69.90	12.95	50.05	-45.21	-25.00	-20.21
10371.96	H	-	-	-70.70	16.26	52.56	-42.69	-25.00	-17.69

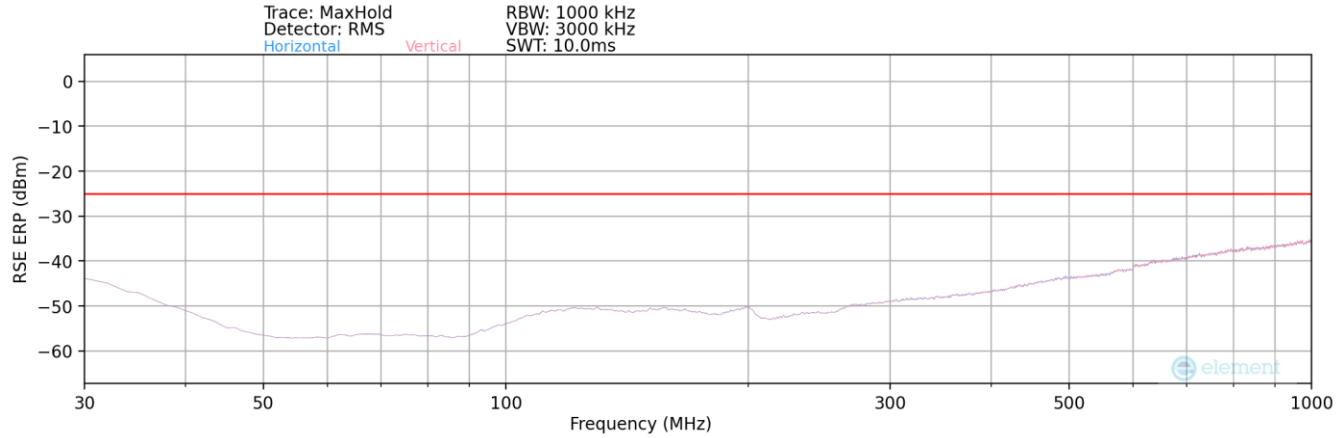
Table 7-40. Radiated Spurious Data (NR Band n41 – Mid Channel – Ant2)

Bandwidth (MHz):	100
Frequency (MHz):	2640.00
RB / Offset:	1 / 136
Mode:	Stand Alone

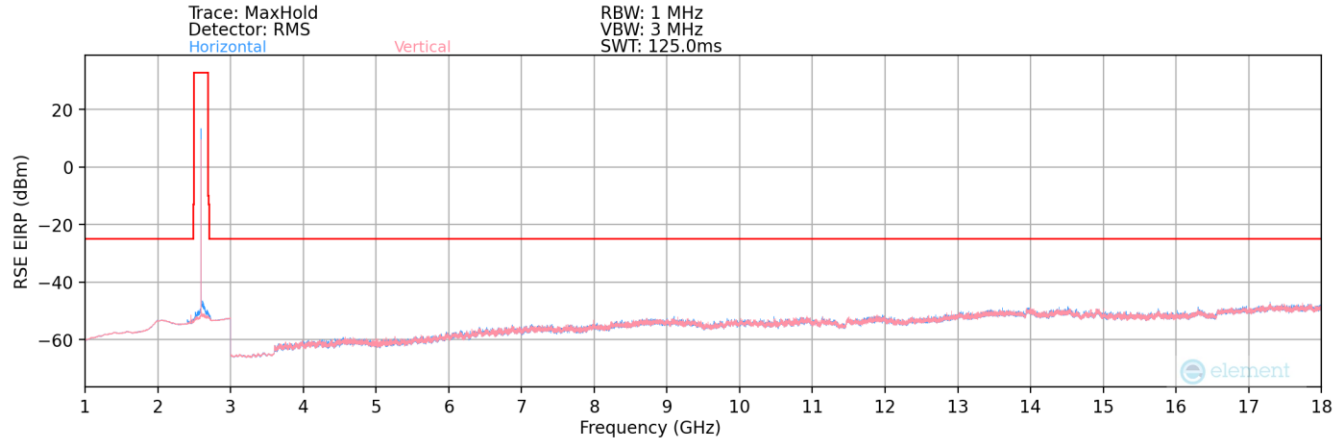
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	H	-	-	-69.40	7.18	44.78	-50.48	-25.00	-25.48
7920.00	H	-	-	-69.90	14.01	51.11	-44.14	-25.00	-19.14
10560.00	H	-	-	-70.54	16.45	52.91	-42.35	-25.00	-17.35

Table 7-41. Radiated Spurious Data (NR Band n41 – High Channel – Ant2)

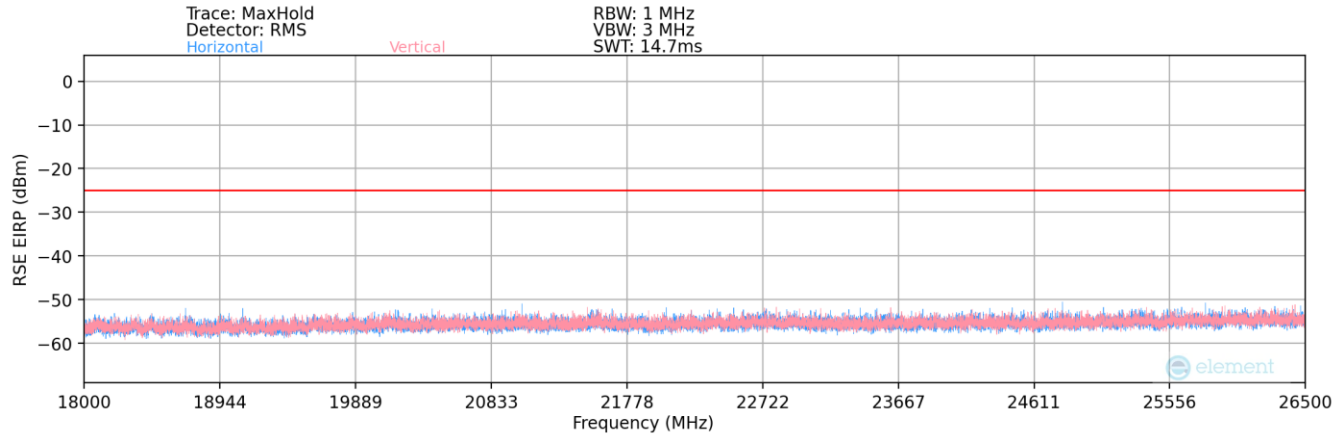
NR Band n41 – Ant3



Plot 7-83. Radiated Spurious Plot (NR Band n41 – Below 1GHz – Ant3)



Plot 7-84. Radiated Spurious Plot (NR Band n41 – 1GHz - 18GHz – Ant3)



Plot 7-85. Radiated Spurious Plot (NR Band n41 18GHz – 26.5GHz – Ant3)

Bandwidth (MHz):	100
Frequency (MHz):	2592.99
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
975.75	V	-	-	-92.57	31.70	46.13	-51.27	-25.00	-26.27

Table 7-42. Radiated Spurious Data (NR Band n41 – Below 1GHz – Ant3)

Bandwidth (MHz):	100
Frequency (MHz):	2546.01
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5092.02	V	-	-	-75.76	3.29	34.53	-60.72	-25.00	-35.72
7638.03	V	-	-	-76.76	9.13	39.37	-55.89	-25.00	-30.89
10184.04	V	-	-	-77.42	11.61	41.19	-54.07	-25.00	-29.07
12730.05	V	-	-	-78.15	13.49	42.34	-52.92	-25.00	-27.92

Table 7-43. Radiated Spurious Data (NR Band n41 – Low Channel – Ant3)

Bandwidth (MHz):	100
Frequency (MHz):	2592.99
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5185.98	V	-	-	-75.75	3.49	34.74	-60.51	-25.00	-35.51
7778.97	V	-	-	-76.28	8.22	38.94	-56.32	-25.00	-31.32
10371.96	V	-	-	-77.36	11.63	41.27	-53.99	-25.00	-28.99
12964.95	V	-	-	-77.56	14.13	43.57	-51.69	-25.00	-26.69

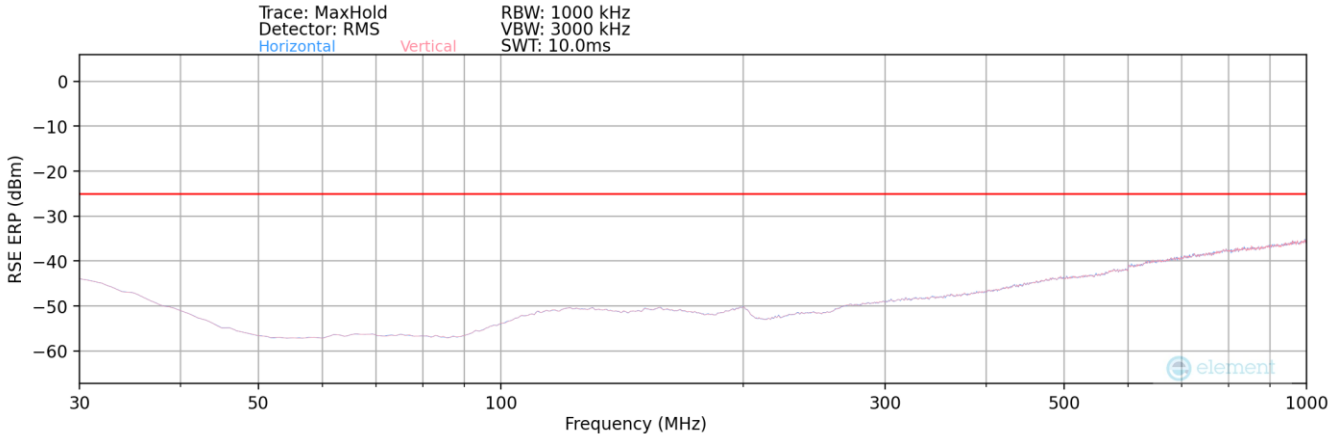
Table 7-44. Radiated Spurious Data (NR Band n41 – Mid Channel – Ant3)

Bandwidth (MHz):	100
Frequency (MHz):	2640.00
RB / Offset:	1 / 136
Mode:	Stand Alone

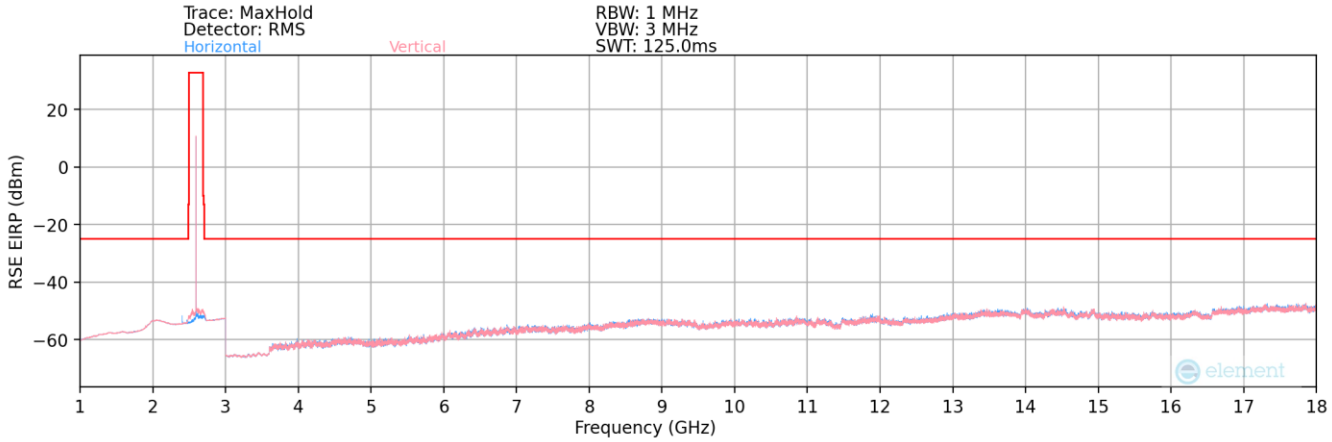
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
5280.00	V	-	-	-75.97	3.34	34.37	-60.89	-25.00	-35.89
7920.00	V	-	-	-77.18	9.19	39.01	-56.25	-25.00	-31.25
10560.00	V	-	-	-77.64	12.23	41.59	-53.67	-25.00	-28.67
13200.00	V	-	-	-77.65	14.71	44.06	-51.19	-25.00	-26.19

Table 7-45. Radiated Spurious Data (NR Band n41 – High Channel – Ant3)

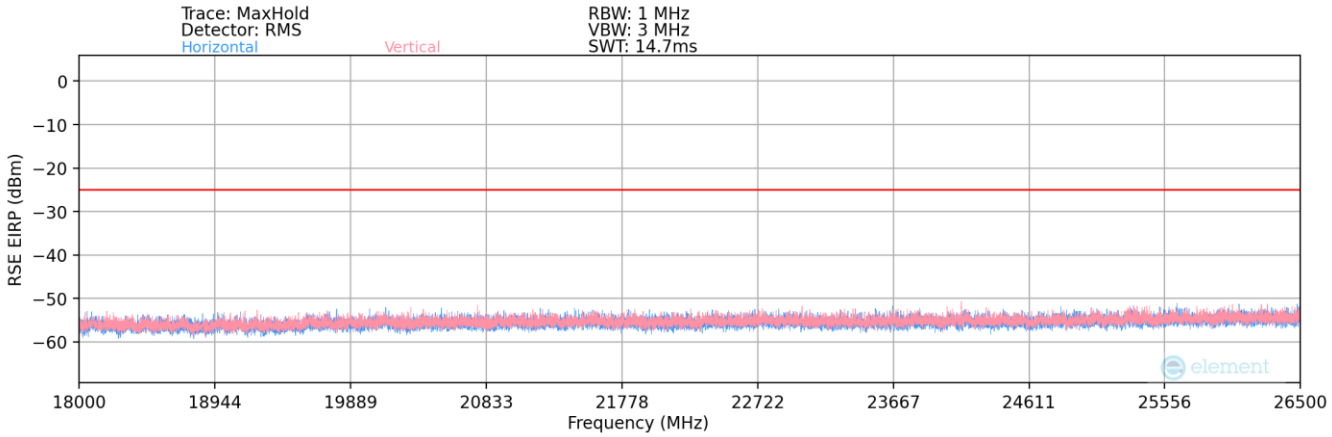
NR Band n41 – Ant4



Plot 7-86. Radiated Spurious Plot (NR Band n41 – Below 1GHz – Ant4)



Plot 7-87. Radiated Spurious Plot (NR Band n41 – 1GHz - 18GHz – Ant4)



Plot 7-88. Radiated Spurious Plot (NR Band n41 18GHz – 26.5GHz – Ant4)

Bandwidth (MHz):	100
Frequency (MHz):	2640.00
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
855.25	V	-	-	-95.22	30.95	42.73	-54.68	-25.00	-29.68

Table 7-46. Radiated Spurious Data (NR Band n41 – Below 1GHz – Ant4)

Bandwidth (MHz):	100
Frequency (MHz):	2546.01
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5092.02	V	160	19	-71.93	3.29	38.36	-56.89	-25.00	-31.89
7638.03	V	-	-	-76.61	9.13	39.52	-55.74	-25.00	-30.74
10184.04	V	-	-	-77.81	11.61	40.80	-54.46	-25.00	-29.46
12730.05	V	-	-	-78.05	13.49	42.44	-52.82	-25.00	-27.82
15276.06	V	-	-	-77.82	14.34	43.52	-51.73	-25.00	-26.73
17822.07	V	-	-	-78.45	18.27	46.82	-48.44	-25.00	-23.44

Table 7-47. Radiated Spurious Data (NR Band n41 – Low Channel – Ant4)

Bandwidth (MHz):	100
Frequency (MHz):	2592.99
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5185.98	V	140	19	-70.27	3.49	40.22	-55.03	-25.00	-30.03
7778.97	V	149	13	-74.52	8.22	40.70	-54.56	-25.00	-29.56
10371.96	V	-	-	-77.26	11.63	41.37	-53.89	-25.00	-28.89
12964.95	V	-	-	-77.85	14.13	43.28	-51.98	-25.00	-26.98
15557.94	V	-	-	-77.31	13.98	43.67	-51.59	-25.00	-26.59

Table 7-48. Radiated Spurious Data (NR Band n41 – Mid Channel – Ant4)

Bandwidth (MHz):	100
Frequency (MHz):	2640.00
RB / Offset:	1 / 136
Mode:	Stand Alone

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]
5280.00	V	188	318	-70.36	3.34	39.98	-55.28	-25.00	-30.28
7920.00	V	166	8	-74.94	9.19	41.25	-54.01	-25.00	-29.01
10560.00	V	-	-	-77.94	12.23	41.29	-53.97	-25.00	-28.97
13200.00	V	247	23	-77.09	14.71	44.62	-50.63	-25.00	-25.63
15840.00	V	-	-	-78.34	14.94	43.60	-51.66	-25.00	-26.66
18480.00	V	-	-	-58.08	1.82	50.74	-54.06	-25.00	-29.06
21120.00	V	-	-	-59.55	3.83	51.29	-53.51	-25.00	-28.51

Table 7-49. Radiated Spurious Data (NR Band n41 – High Channel – Ant4)

7.8 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 27, 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

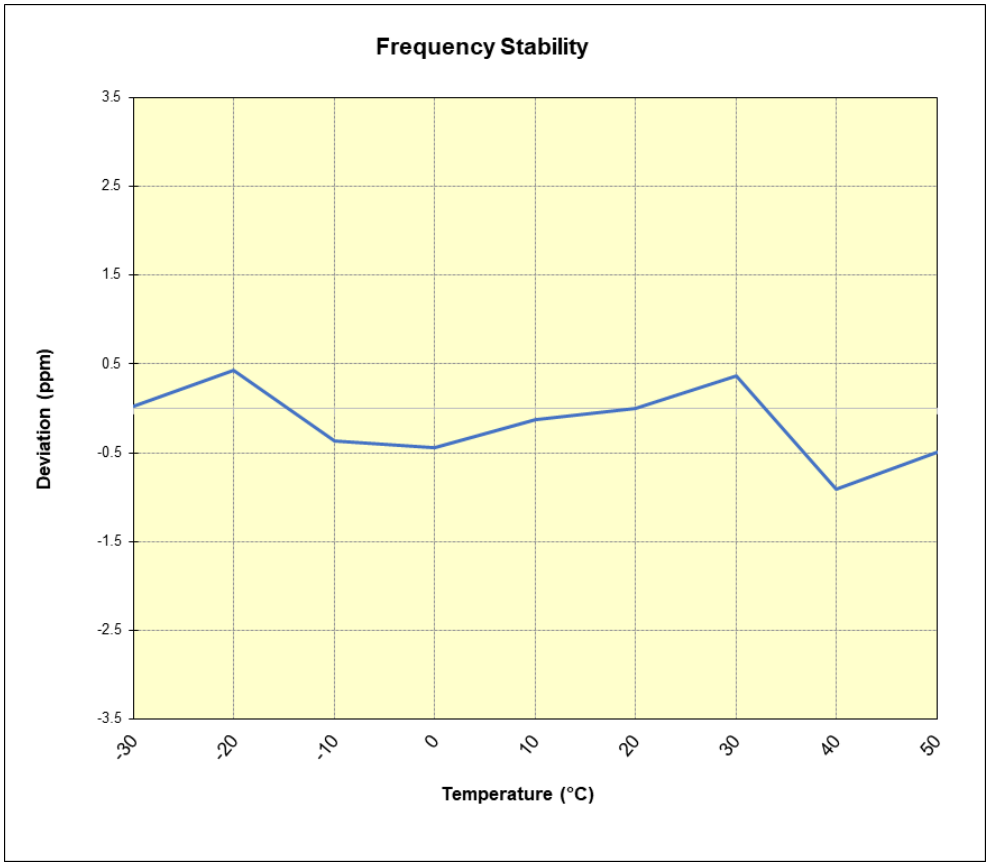
None

LTE Band 41

Operating Frequency (Hz):	2,593,000,000
Ref. Voltage (VDC):	4.43

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	2,593,286,503	70	0.0000027
		- 20	2,593,287,554	1,121	0.0000432
		- 10	2,593,285,487	-946	-0.0000365
		0	2,593,285,302	-1,131	-0.0000436
		+ 10	2,593,286,114	-319	-0.0000123
		+ 20 (Ref)	2,593,286,433	0	0.0000000
		+ 30	2,593,287,392	959	0.0000370
		+ 40	2,593,284,061	-2,372	-0.0000915
		+ 50	2,593,285,169	-1,264	-0.0000487
Battery Endpoint	3.27	+ 20	2,593,286,544	111	0.0000043

Table 7-50. LTE Band 41 Frequency Stability Data



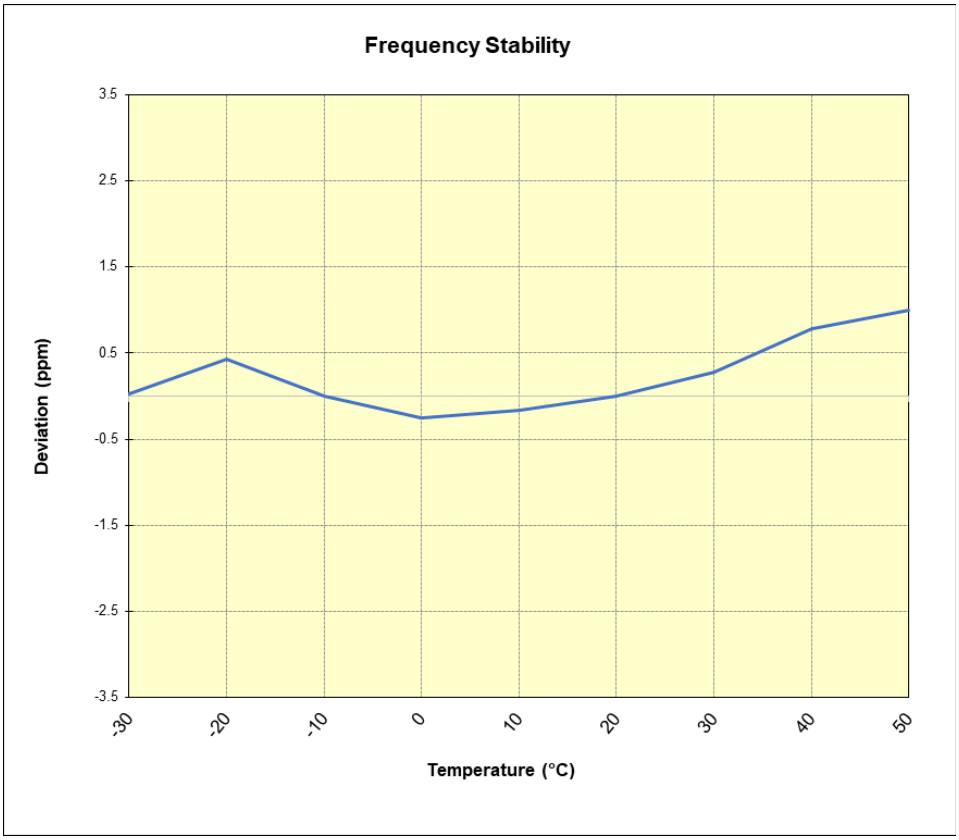
Plot 7-89. LTE Band 41 Frequency Stability Chart

NR Band n41

Operating Frequency (Hz):	2,593,000,000
Ref. Voltage (VDC):	4.43

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	2,593,286,503	70	0.0000027
		- 20	2,593,287,554	1,121	0.0000432
		- 10	2,593,286,449	16	0.0000006
		0	2,593,285,789	-644	-0.0000248
		+ 10	2,593,285,998	-435	-0.0000168
		+ 20 (Ref)	2,593,286,433	0	0.0000000
		+ 30	2,593,287,147	714	0.0000275
		+ 40	2,593,288,457	2,024	0.0000780
		+ 50	2,593,289,019	2,586	0.0000997
Battery Endpoint	3.27	+ 20	2,593,286,047	-386	-0.0000149

Table 7-51. NR Band n41 Frequency Stability Data



Plot 7-90. NR Band n41 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: A3LSMS711B** complies with all the requirements of Part 27 of the FCC rules.