




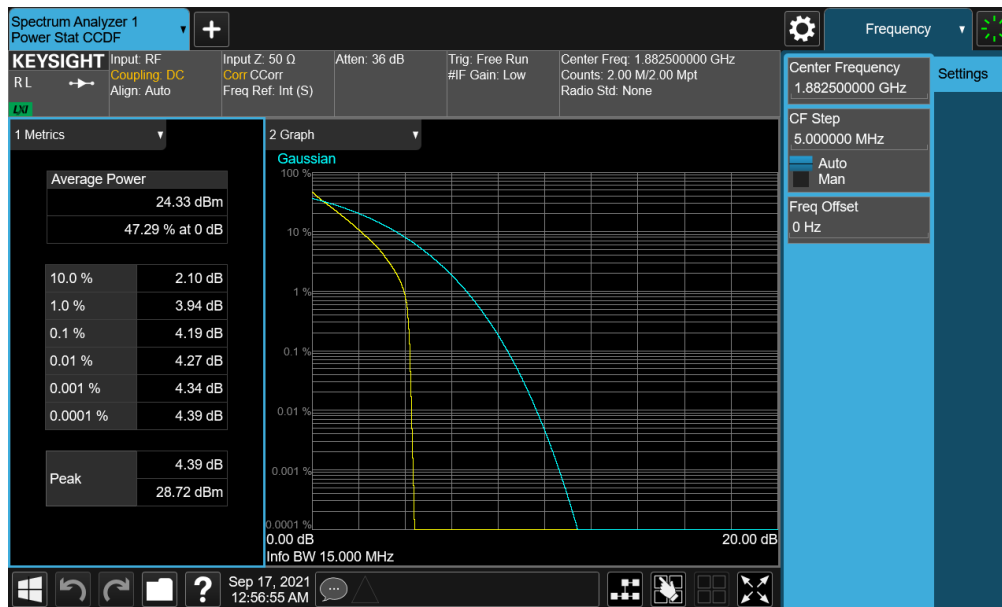


Plot 7-203. PAR Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB - ANT A)

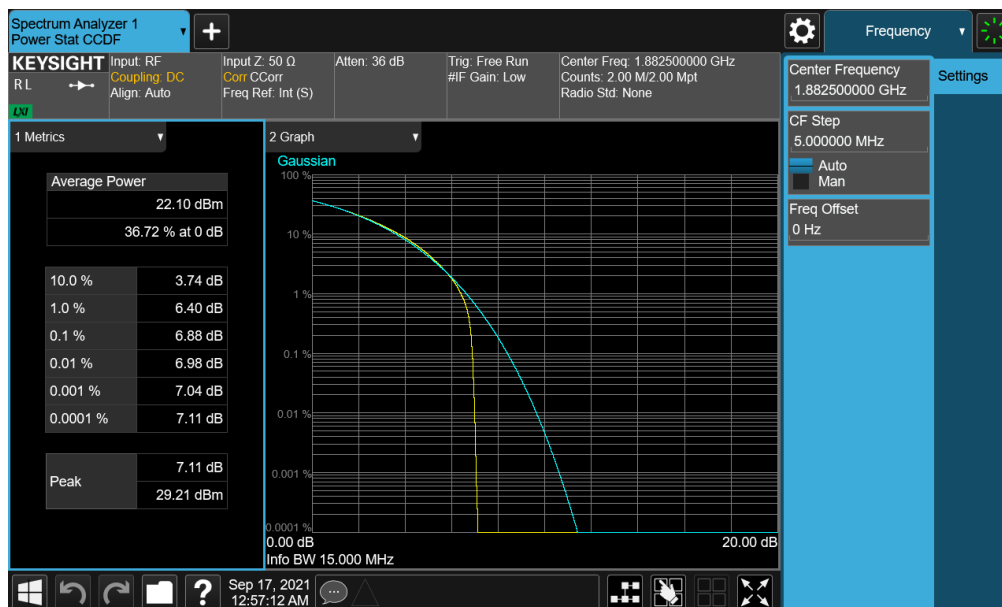


Plot 7-204. PAR Plot (NR Band n25/2 - 20.0MHz CP-OFDM 256-QAM - Full RB - ANT A)

FCC ID: A3LSMS901U	 PCTEST Proud to be part of 	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 126 of 164

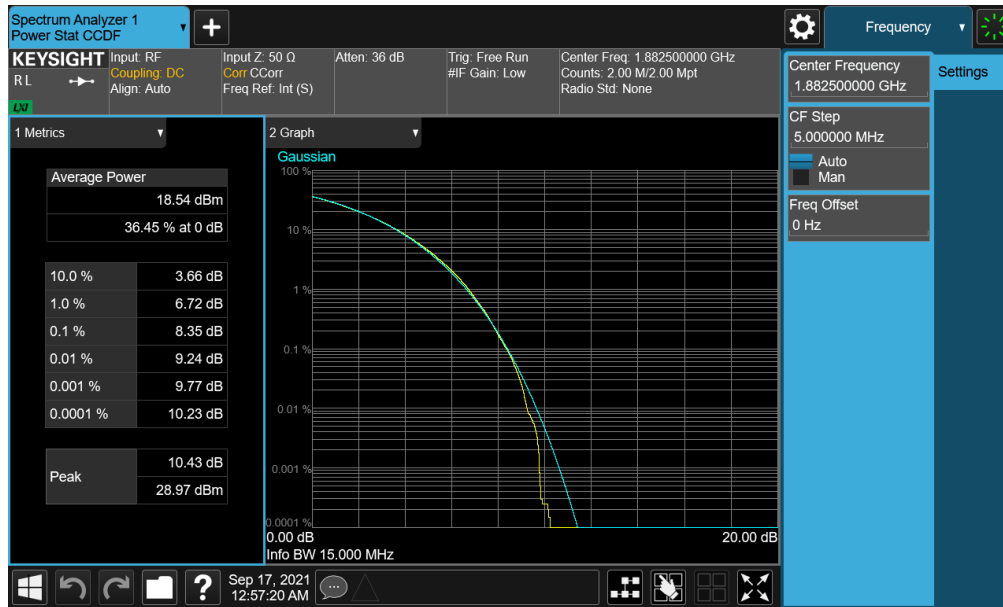


Plot 7-205. PAR Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT A)

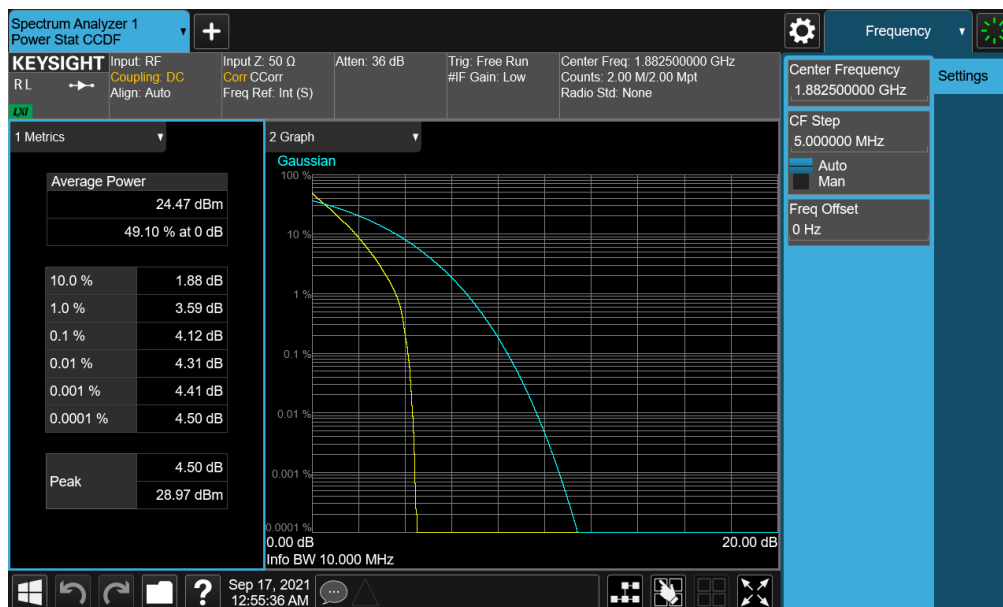


Plot 7-206. PAR Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB - ANT A)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2-A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 127 of 164

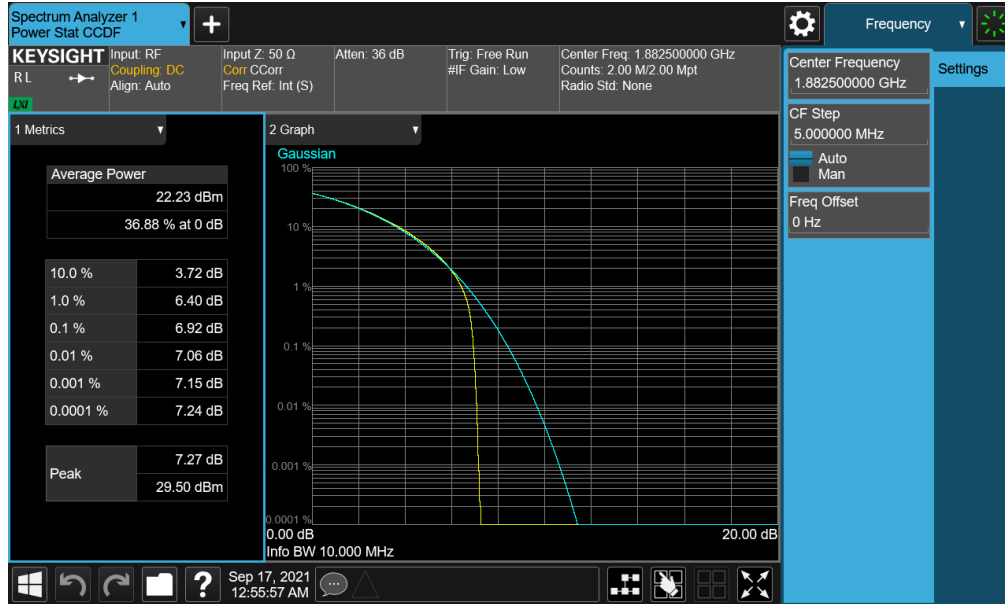


Plot 7-207. PAR Plot (NR Band n25/2 - 15.0MHz CP-OFDM 256-QAM - Full RB - ANT A)

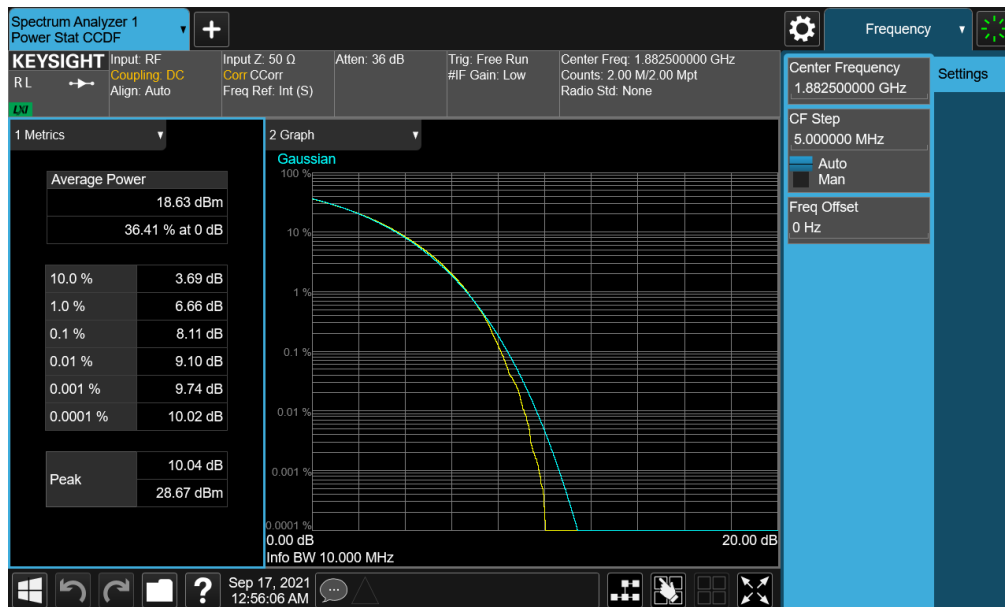


Plot 7-208. PAR Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT A)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 128 of 164

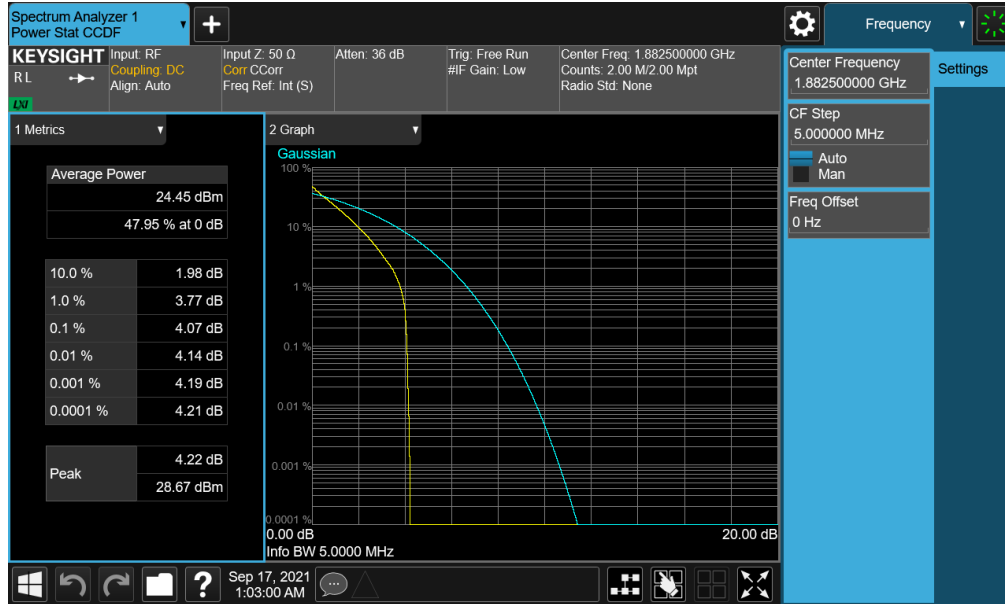


Plot 7-209. PAR Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB - ANT A)

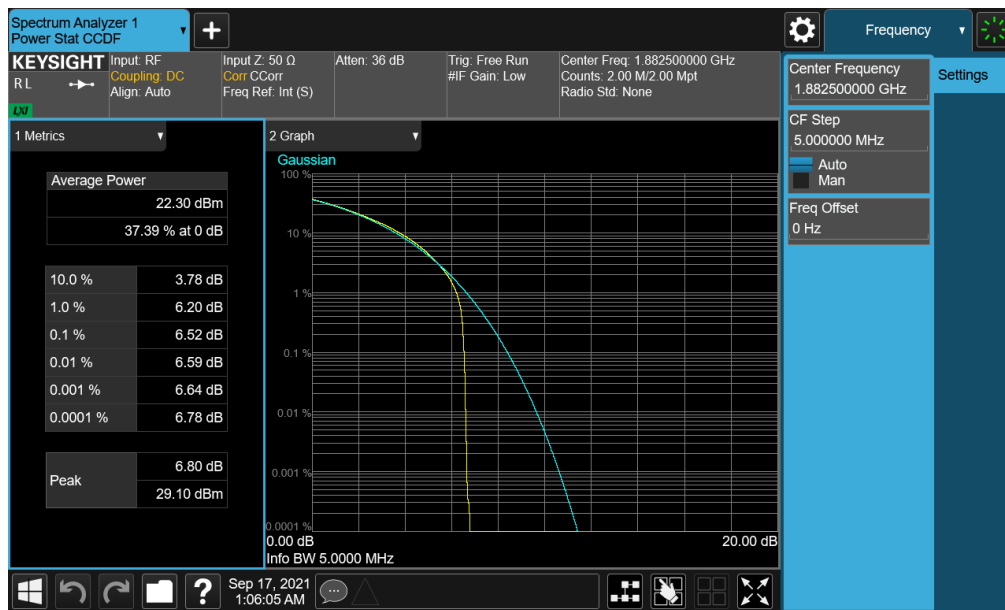


Plot 7-210. PAR Plot (NR Band n25/2 - 10.0MHz CP-OFDM 256-QAM - Full RB - ANT A)




FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 129 of 164

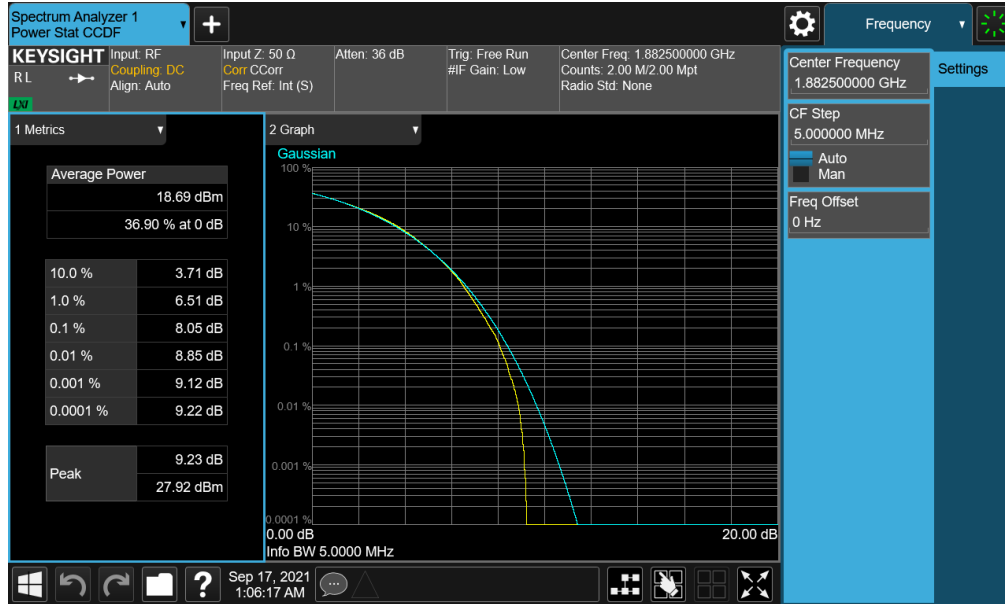


Plot 7-211. PAR Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB - ANT A)





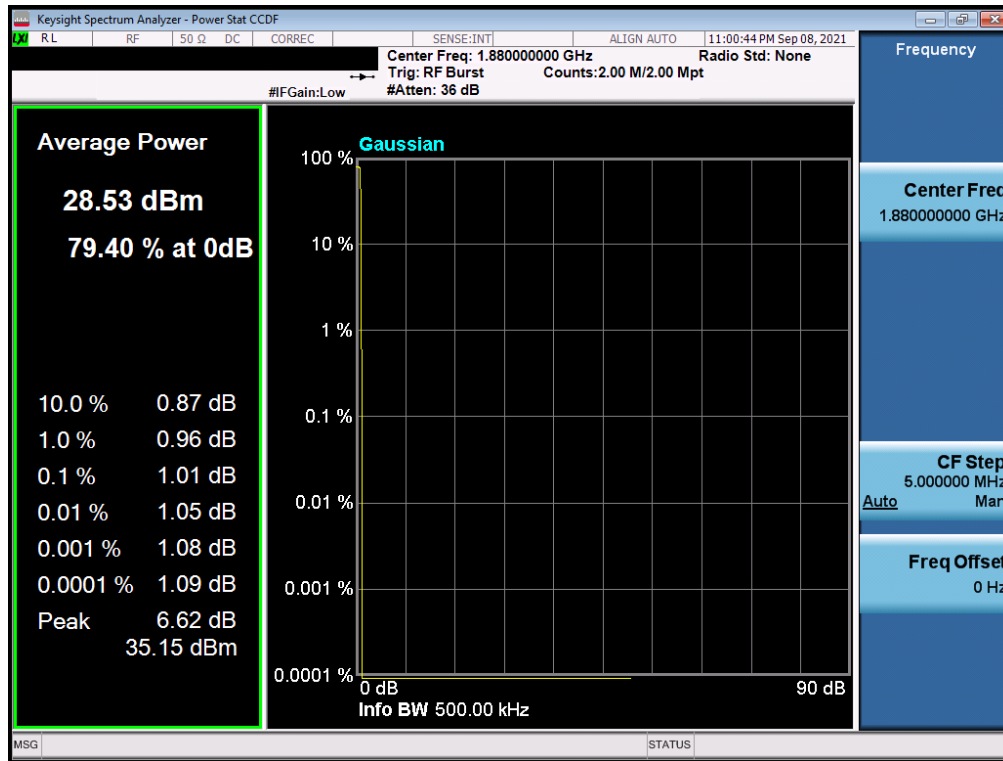
Plot 7-212. PAR Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB - ANT A)

FCC ID: A3LSMS901U	 PCTEST Proud to be part of 	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 130 of 164

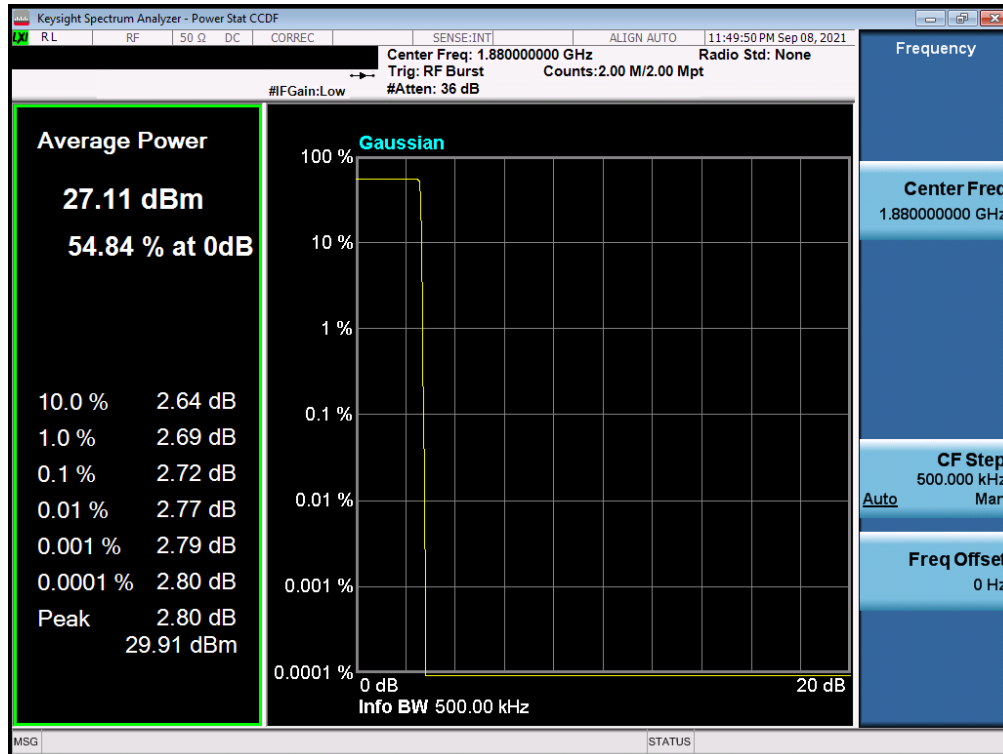


Plot 7-213. PAR Plot (NR Band n25/2 - 5.0MHz CP-OFDM 256-QAM - Full RB - ANT A)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset
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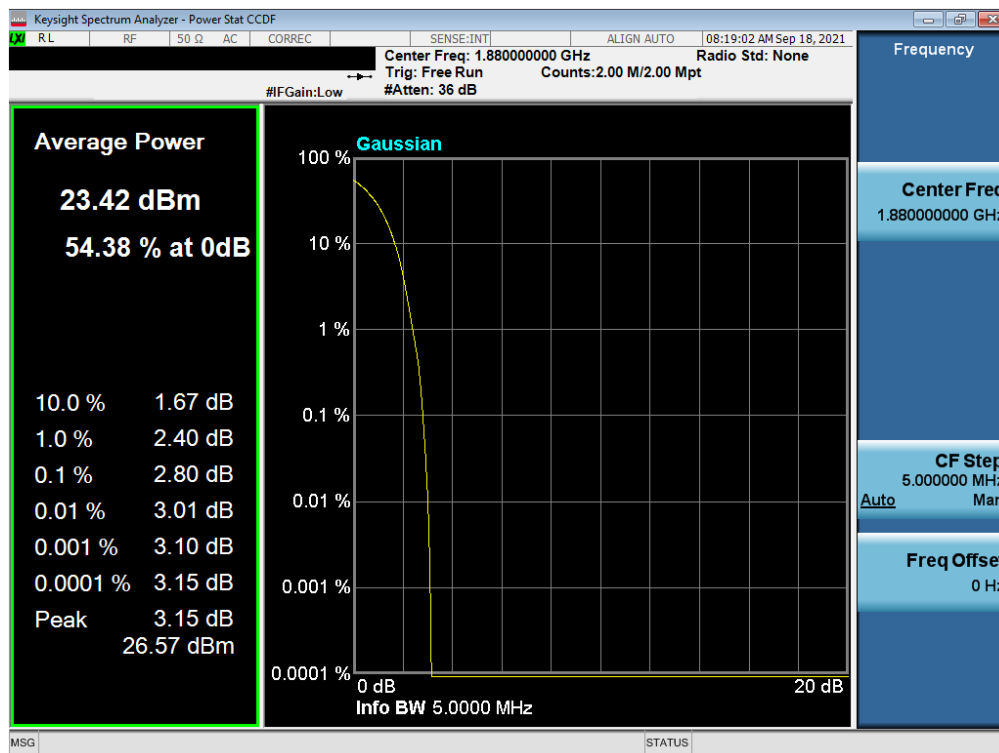


Plot 7-214. PAR Plot (GPRS, Ch. 661)



Plot 7-215. PAR Plot (EDGE, Ch. 661)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 132 of 164



Plot 7-216. PAR Plot (WCDMA, Ch. 9400)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 133 of 164

7.7 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 hybrid 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

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 $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ 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

FCC ID: A3LSMS901U	 PCTEST <small>Proud to be part of element</small>	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

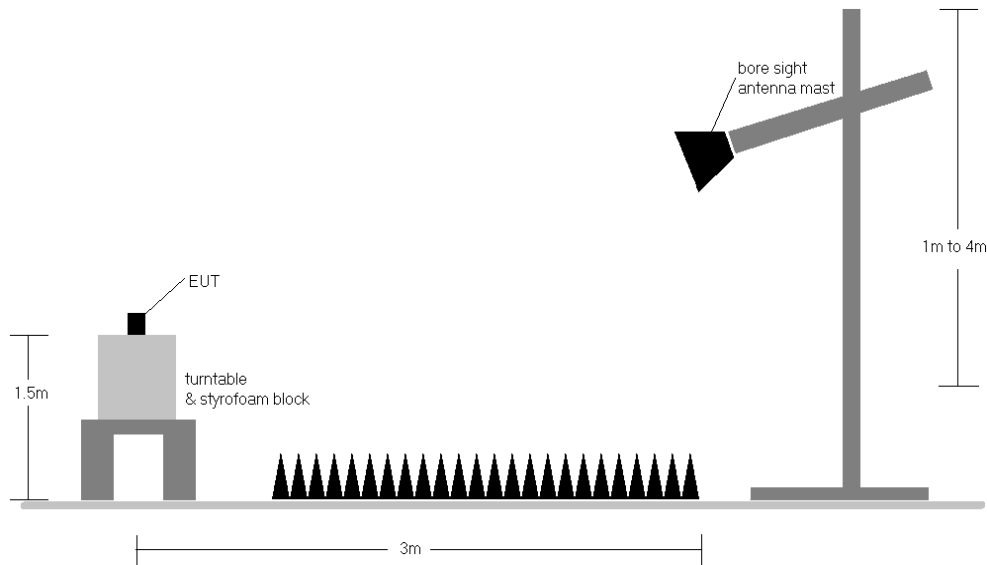


Figure 7-6. Radiated Test Setup >1GHz



Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers 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) 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.

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1860.0	V	141	323	9.68	1 / 99	14.90	24.58	0.287	33.01	-8.43
	QPSK	1882.5	V	133	256	9.99	1 / 50	15.24	25.23	0.333	33.01	-7.78
	QPSK	1905.0	V	127	325	10.18	1 / 0	14.19	24.37	0.274	33.01	-8.64
	16-QAM	1882.5	V	133	256	9.99	1 / 50	14.44	24.43	0.277	33.01	-8.58
15 MHz	QPSK	1857.5	V	141	323	9.66	1 / 37	14.78	24.44	0.278	33.01	-8.57
	QPSK	1882.5	V	133	256	9.99	1 / 37	15.09	25.08	0.322	33.01	-7.93
	QPSK	1907.5	V	127	325	10.19	1 / 0	14.24	24.43	0.277	33.01	-8.58
	16-QAM	1882.5	V	133	256	9.99	1 / 37	14.51	24.50	0.282	33.01	-8.51
10 MHz	QPSK	1855.0	V	141	323	9.64	1 / 25	14.84	24.48	0.281	33.01	-8.53
	QPSK	1882.5	V	133	256	9.99	1 / 25	15.19	25.17	0.329	33.01	-7.84
	QPSK	1910.0	V	127	325	10.20	1 / 25	14.21	24.42	0.276	33.01	-8.59
	16-QAM	1882.5	V	133	256	9.99	1 / 25	14.63	24.61	0.289	33.01	-8.40
5 MHz	QPSK	1852.5	V	141	323	9.63	1 / 24	15.03	24.65	0.292	33.01	-8.36
	QPSK	1882.5	V	133	256	9.99	1 / 12	15.30	25.29	0.338	33.01	-7.72
	QPSK	1912.5	V	127	325	10.21	1 / 24	14.34	24.54	0.285	33.01	-8.47
	16-QAM	1882.5	V	133	256	9.99	1 / 12	14.54	24.53	0.284	33.01	-8.48
3 MHz	QPSK	1851.5	V	141	323	9.62	1 / 7	15.09	24.71	0.296	33.01	-8.30
	QPSK	1882.5	V	133	256	9.99	1 / 14	15.32	25.31	0.339	33.01	-7.70
	QPSK	1913.5	V	127	325	10.21	1 / 0	14.43	24.64	0.291	33.01	-8.37
	16-QAM	1882.5	V	133	256	9.99	1 / 14	14.63	24.62	0.290	33.01	-8.39
1.4 MHz	QPSK	1850.7	V	141	323	9.61	1 / 5	15.01	24.62	0.290	33.01	-8.39
	QPSK	1882.5	V	133	256	9.99	1 / 5	15.30	25.29	0.338	33.01	-7.72
	QPSK	1914.3	V	127	325	10.21	1 / 5	14.29	24.50	0.282	33.01	-8.51
	16-QAM	1882.5	V	133	256	9.99	1 / 5	14.54	24.53	0.284	33.01	-8.48
20 MHz	Opposite Pol. (QPSK)	1882.5	H	191	190	9.83	1/0	14.22	24.05	0.254	33.01	-8.96
	WCP (QPSK)	1882.5	V	125	232	9.99	1/99	10.82	20.81	0.120	33.01	-12.20

Table 7-4. EIRP Data (LTE Band 25/2)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset
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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	$\pi/2$ BPSK	1870.0	V	147	224	9.75	1 / 54	14.83	24.58	0.287	33.01	-8.43
	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 108	14.50	24.49	0.281	33.01	-8.52
	$\pi/2$ BPSK	1895.0	V	133	322	10.12	1 / 54	14.48	24.60	0.288	33.01	-8.41
	QPSK	1870.0	V	147	224	9.75	1 / 54	14.78	24.53	0.284	33.01	-8.48
	QPSK	1882.5	V	168	320	9.99	1 / 108	14.49	24.48	0.280	33.01	-8.53
	QPSK	1895.0	V	133	322	10.12	1 / 54	13.76	23.88	0.244	33.01	-9.13
30 MHz	16-QAM	1882.5	V	168	320	9.99	1 / 108	13.43	23.42	0.220	33.01	-9.59
	$\pi/2$ BPSK	1865.0	V	147	224	9.72	1 / 80	14.79	24.51	0.282	33.01	-8.50
	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 80	14.47	24.46	0.279	33.01	-8.55
	$\pi/2$ BPSK	1900.0	V	133	322	10.16	1 / 80	14.41	24.57	0.286	33.01	-8.44
	QPSK	1865.0	V	147	224	9.72	1 / 80	14.80	24.52	0.283	33.01	-8.49
	QPSK	1882.5	V	168	320	9.99	1 / 80	14.36	24.35	0.272	33.01	-8.66
25 MHz	QPSK	1900.0	V	133	322	10.16	1 / 40	13.74	23.90	0.245	33.01	-9.11
	16-QAM	1900.0	V	133	322	10.16	1 / 80	13.15	23.31	0.214	33.01	-9.70
	$\pi/2$ BPSK	1862.5	V	147	224	9.70	1 / 33	14.02	23.71	0.235	33.01	-9.30
	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 33	14.47	24.46	0.279	33.01	-8.55
	$\pi/2$ BPSK	1902.5	V	133	322	10.17	1 / 33	14.43	24.60	0.288	33.01	-8.41
	QPSK	1862.5	V	147	224	9.70	1 / 33	13.42	23.12	0.205	33.01	-9.89
20 MHz	QPSK	1882.5	V	168	320	9.99	1 / 33	13.82	23.80	0.240	33.01	-9.21
	QPSK	1902.5	V	133	322	10.17	1 / 33	13.69	23.86	0.243	33.01	-9.15
	16-QAM	1902.5	V	133	322	10.17	1 / 33	13.07	23.24	0.211	33.01	-9.77
	$\pi/2$ BPSK	1860.0	V	147	224	9.68	1 / 79	15.14	24.82	0.303	33.01	-8.19
	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 53	14.55	24.54	0.284	33.01	-8.47
	$\pi/2$ BPSK	1905.0	V	133	322	10.18	1 / 26	14.04	24.22	0.264	33.01	-8.79
15 MHz	QPSK	1860.0	V	147	224	9.68	1 / 79	14.96	24.64	0.291	33.01	-8.37
	QPSK	1882.5	V	168	320	9.99	1 / 53	14.42	24.41	0.276	33.01	-8.60
	QPSK	1905.0	V	133	322	10.18	1 / 26	13.74	23.92	0.247	33.01	-9.09
	16-QAM	1860.0	V	147	224	9.68	1 / 79	13.56	23.24	0.211	33.01	-9.77
	$\pi/2$ BPSK	1857.5	V	147	224	9.66	1 / 58	15.05	24.71	0.296	33.01	-8.30
	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 58	14.63	24.62	0.290	33.01	-8.39
10 MHz	$\pi/2$ BPSK	1907.5	V	133	322	10.19	79 / 0	14.25	24.44	0.278	33.01	-8.57
	QPSK	1857.5	V	147	224	9.66	1 / 58	14.95	24.61	0.289	33.01	-8.40
	QPSK	1882.5	V	168	320	9.99	1 / 58	14.58	24.57	0.286	33.01	-8.44
	QPSK	1907.5	V	133	322	10.19	1 / 20	13.69	23.88	0.244	33.01	-9.13
	16-QAM	1857.5	V	147	224	9.66	1 / 58	13.44	23.10	0.204	33.01	-9.91
	$\pi/2$ BPSK	1855.0	V	147	224	9.64	1 / 38	15.19	24.83	0.304	33.01	-8.18
5 MHz	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 26	14.57	24.56	0.285	33.01	-8.45
	$\pi/2$ BPSK	1910.0	V	133	322	10.20	1 / 13	14.23	24.43	0.277	33.01	-8.58
	QPSK	1855.0	V	147	224	9.64	1 / 38	15.05	24.70	0.295	33.01	-8.31
	QPSK	1882.5	V	168	320	9.99	1 / 26	14.56	24.55	0.285	33.01	-8.46
	QPSK	1910.0	V	133	322	10.20	1 / 13	13.79	23.99	0.251	33.01	-9.02
	16-QAM	1855.0	V	147	224	9.64	1 / 38	13.68	23.32	0.215	33.01	-9.69
40 MHz	$\pi/2$ BPSK	1852.5	V	147	224	9.63	1 / 18	15.03	24.65	0.292	33.01	-8.36
	$\pi/2$ BPSK	1882.5	V	168	320	9.99	1 / 6	14.58	24.57	0.286	33.01	-8.44
	$\pi/2$ BPSK	1912.5	V	133	322	10.21	1 / 6	14.14	24.35	0.272	33.01	-8.66
	QPSK	1852.5	V	147	224	9.63	1 / 18	14.96	24.59	0.288	33.01	-8.42
	QPSK	1882.5	V	168	320	9.99	1 / 6	14.52	24.51	0.282	33.01	-8.51
	QPSK	1912.5	V	133	322	10.21	1 / 6	13.46	23.67	0.233	33.01	-9.34
40 MHz	16-QAM	1852.5	V	147	224	9.63	1 / 18	13.54	23.17	0.207	33.01	-9.84
	BPSK (CP-OFDM)	1895.0	V	120	332	10.12	1 / 6	14.42	24.54	0.284	33.01	-8.47
	BPSK (Opposite Pol.)	1895.0	H	148	186	10.01	1 / 6	13.31	23.32	0.215	33.01	-9.69
	BPSK (WCP)	1895.0	V	141	304	10.12	1 / 6	11.73	21.85	0.153	33.01	-11.16

Table 7-5. EIRP Data (NR Band n25/2 – Ant A)

FCC ID: A3LSMS901U	 PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 137 of 164

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	$\pi/2$ BPSK	1870.0	H	152	51	9.66	1 / 161	11.65	21.31	0.135	33.01	-11.70
	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 54	11.37	21.20	0.132	33.01	-11.81
	$\pi/2$ BPSK	1895.0	H	149	48	10.01	1 / 54	10.73	20.74	0.119	33.01	-12.27
	QPSK	1870.0	H	152	51	9.66	1 / 161	11.15	20.81	0.121	33.01	-12.20
	QPSK	1882.5	H	149	50	9.83	1 / 54	11.61	21.44	0.139	33.01	-11.57
	QPSK	1895.0	H	149	48	10.01	1 / 54	10.62	20.63	0.116	33.01	-12.38
30 MHz	16-QAM	1870.0	H	152	51	9.66	1 / 161	10.73	20.39	0.109	33.01	-12.62
	$\pi/2$ BPSK	1865.0	H	152	51	9.61	1 / 40	11.83	21.44	0.139	33.01	-11.57
	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 40	11.35	21.18	0.131	33.01	-11.83
	$\pi/2$ BPSK	1900.0	H	149	48	10.07	1 / 119	10.72	20.79	0.120	33.01	-12.22
	QPSK	1865.0	H	152	51	9.61	1 / 40	11.20	20.81	0.120	33.01	-12.20
	QPSK	1882.5	H	149	50	9.83	1 / 40	11.74	21.57	0.144	33.01	-11.44
25 MHz	QPSK	1900.0	H	149	48	10.07	1 / 119	10.68	20.75	0.119	33.01	-12.26
	16-QAM	1882.5	H	149	50	9.83	1 / 40	10.47	20.30	0.107	33.01	-12.71
	$\pi/2$ BPSK	1862.5	H	152	51	9.58	1 / 66	12.31	21.88	0.154	33.01	-11.13
	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 66	11.86	21.69	0.148	33.01	-11.32
	$\pi/2$ BPSK	1902.5	H	149	48	10.11	1 / 66	11.19	21.30	0.135	33.01	-11.71
	QPSK	1862.5	H	152	51	9.58	1 / 66	11.76	21.33	0.136	33.01	-11.68
20 MHz	QPSK	1882.5	H	149	50	9.83	1 / 66	11.41	21.24	0.133	33.01	-11.77
	QPSK	1902.5	H	149	48	10.11	1 / 66	11.24	21.35	0.137	33.01	-11.66
	16-QAM	1862.5	H	152	51	9.58	1 / 66	11.39	20.96	0.125	33.01	-12.05
	$\pi/2$ BPSK	1860.0	H	152	51	9.55	1 / 79	11.37	20.92	0.124	33.01	-12.09
	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 26	10.06	19.89	0.098	33.01	-13.12
	$\pi/2$ BPSK	1905.0	H	149	48	10.16	1 / 53	9.28	19.44	0.088	33.01	-13.57
15 MHz	QPSK	1860.0	H	152	51	9.55	1 / 79	11.02	20.56	0.114	33.01	-12.45
	QPSK	1882.5	H	149	50	9.83	1 / 26	10.48	20.31	0.107	33.01	-12.70
	QPSK	1905.0	H	149	48	10.16	1 / 53	9.19	19.35	0.086	33.01	-13.66
	16-QAM	1860.0	H	152	51	9.55	1 / 79	10.44	19.98	0.100	33.01	-13.03
	$\pi/2$ BPSK	1857.5	H	152	51	9.51	1 / 20	12.01	21.52	0.142	33.01	-11.49
	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 58	11.31	21.15	0.130	33.01	-11.86
10 MHz	$\pi/2$ BPSK	1907.5	H	149	48	10.21	1 / 20	9.58	19.78	0.095	33.01	-13.23
	QPSK	1857.5	H	152	51	9.51	1 / 20	11.38	20.90	0.123	33.01	-12.11
	QPSK	1882.5	H	149	50	9.83	1 / 58	11.72	21.56	0.143	33.01	-11.45
	QPSK	1907.5	H	149	48	10.21	1 / 20	9.66	19.86	0.097	33.01	-13.15
	16-QAM	1882.5	H	149	50	9.83	1 / 58	10.45	20.29	0.107	33.01	-12.72
	$\pi/2$ BPSK	1855.0	H	152	51	9.48	1 / 38	11.90	21.38	0.137	33.01	-11.63
5 MHz	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 38	11.56	21.39	0.138	33.01	-11.62
	$\pi/2$ BPSK	1910.0	H	149	48	10.25	1 / 26	10.44	20.70	0.117	33.01	-12.31
	QPSK	1855.0	H	152	51	9.48	1 / 38	11.43	20.91	0.123	33.01	-12.10
	QPSK	1882.5	H	149	50	9.83	1 / 38	11.79	21.62	0.145	33.01	-11.39
	QPSK	1910.0	H	149	48	10.25	1 / 26	10.67	20.92	0.124	33.01	-12.09
	16-QAM	1882.5	H	149	50	9.83	1 / 38	10.58	20.41	0.110	33.01	-12.60
40 MHz	$\pi/2$ BPSK	1852.5	H	152	51	9.44	1 / 18	11.92	21.37	0.137	33.01	-11.64
	$\pi/2$ BPSK	1882.5	H	149	50	9.83	1 / 6	11.44	21.27	0.134	33.01	-11.74
	$\pi/2$ BPSK	1912.5	H	149	48	10.28	1 / 12	10.46	20.74	0.119	33.01	-12.27
	QPSK	1852.5	H	152	51	9.44	1 / 18	11.39	20.83	0.121	33.01	-12.18
	QPSK	1882.5	H	149	50	9.83	1 / 6	11.71	21.54	0.143	33.01	-11.47
	QPSK	1912.5	H	149	48	10.28	1 / 12	10.59	20.87	0.122	33.01	-12.14
40 MHz	16-QAM	1852.5	H	152	51	9.44	1 / 18	10.82	20.26	0.106	33.01	-12.75
	QPSK (CP-OFDM)	1882.5	H	148	48	9.83	1 / 6	10.13	19.96	0.099	33.01	-13.05
	QPSK (Opposite Pol.)	1882.5	V	100	155	9.99	1 / 12	10.37	20.36	0.109	33.01	-12.65
40 MHz	QPSK (WCP)	1882.5	H	151	38	9.83	1 / 6	10.56	20.39	0.109	33.01	-12.62

Table 7-6. EIRP Data (NR Band n25/2 – Ant F)



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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	GPRS1900	V	102	320	18.16	9.61	27.77	0.598	33.01	-5.24
1880.00	GPRS1900	V	133	323	18.42	9.96	28.38	0.688	33.01	-4.63
1909.80	GPRS1900	V	160	225	17.70	10.20	27.90	0.617	33.01	-5.11
1880.00	GPRS1900	H	240	143	17.77	9.79	27.56	0.571	33.01	-5.45
1880.00	EDGE1900	V	133	323	14.59	9.96	24.55	0.285	33.01	-8.46
1880.00	GPRS1900 (WCP)	V	218	46	14.44	9.96	24.40	0.275	33.01	-8.61

Table 7-7. 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	152	320	15.15	9.63	24.78	0.300	33.01	-8.24
1880.00	WCDMA1900	V	139	310	13.92	9.96	23.88	0.244	33.01	-9.13
1907.60	WCDMA1900	V	148	325	13.40	10.19	23.59	0.229	33.01	-9.42
1852.40	WCDMA1900	H	245	176	13.83	9.44	23.27	0.212	33.01	-9.74
1852.40	WCDMA1900 (WCP)	V	156	316	12.69	9.63	22.32	0.170	33.01	-10.70

Table 7-8. EIRP Data (WCDMA PCS)

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7.8 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 RMS 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 $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

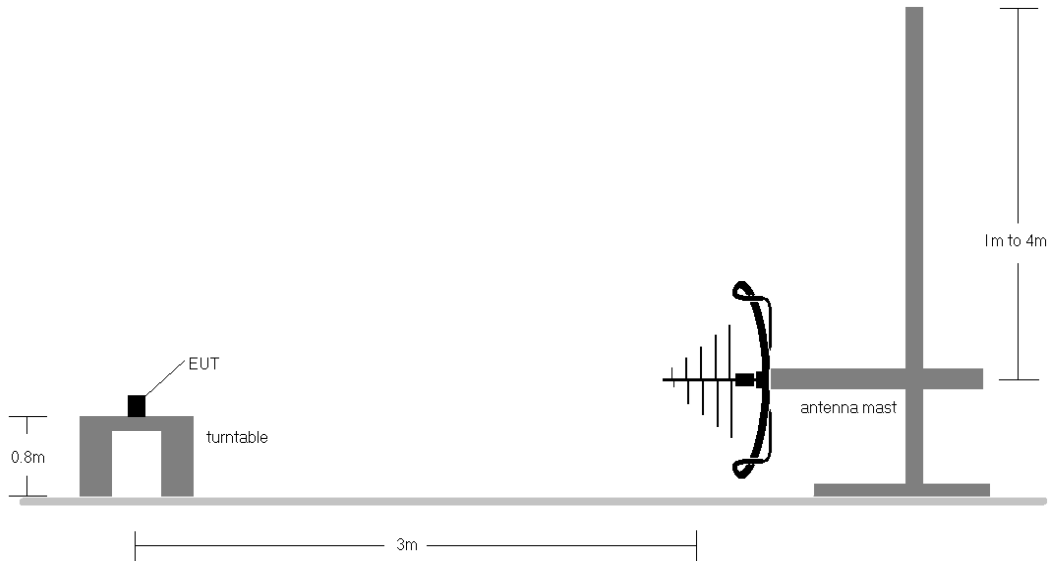


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

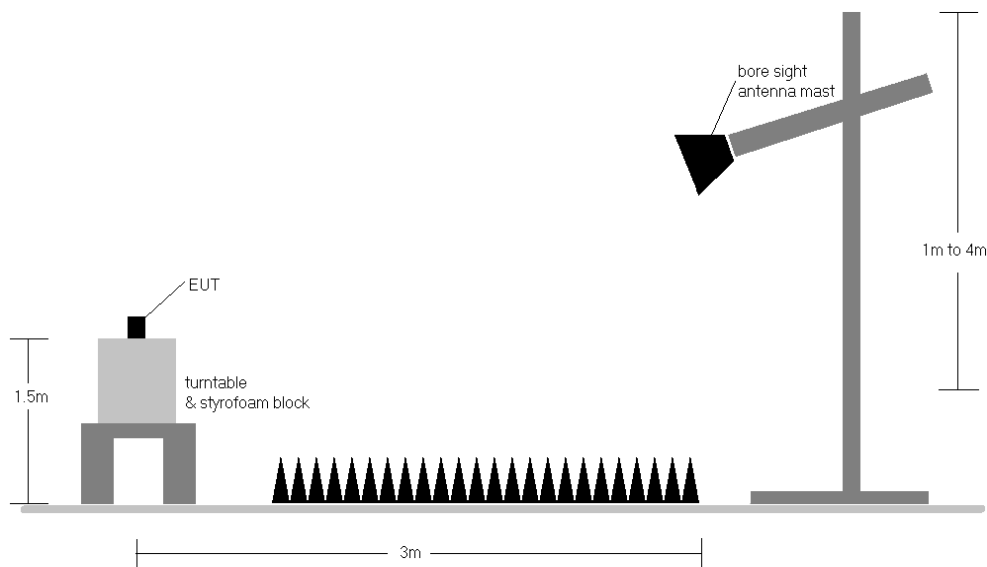




Figure 7-8. Test Instrument & Measurement Setup >1 GHz

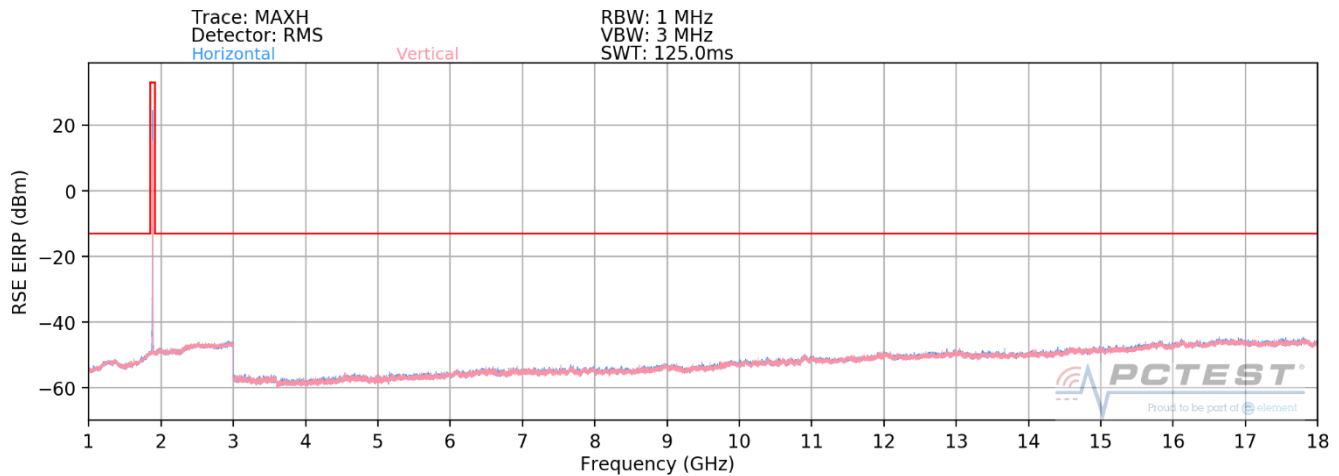
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Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
 - a) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; 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) 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, 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.
- 11) Spurious emissions measurements are included in this section to address compliance of the NR FR1 ULCA capability. The EUT was set to transmit at the widest bandwidth and on the middle channel of each band.

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LTE Band 25/2



Plot 7-217. Radiated Spurious Plot (LTE Band 25/2)

Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1 / 50
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

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	-	-	-78.99	4.31	32.32	-62.93	-13.00	-49.93
5580.00	H	-	-	-79.03	6.65	34.62	-60.64	-13.00	-47.64
7440.00	H	256	45	-79.62	8.46	35.84	-59.41	-13.00	-46.41
9300.00	H	-	-	-81.06	9.59	35.53	-59.73	-13.00	-46.73
11160.00	H	-	-	-81.41	12.32	37.91	-57.35	-13.00	-44.35

Table 7-9. Radiated Spurious Data (LTE Band 25/2 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1 / 50
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

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	-	-	-78.89	4.29	32.40	-62.86	-13.00	-49.86
5647.50	H	-	-	-79.63	6.85	34.22	-61.03	-13.00	-48.03
7530.00	H	124	209	-79.57	8.68	36.11	-59.15	-13.00	-46.15
9412.50	H	-	-	-81.63	10.35	35.72	-59.54	-13.00	-46.54
11295.00	H	-	-	-82.03	12.64	37.61	-57.65	-13.00	-44.65



Table 7-10. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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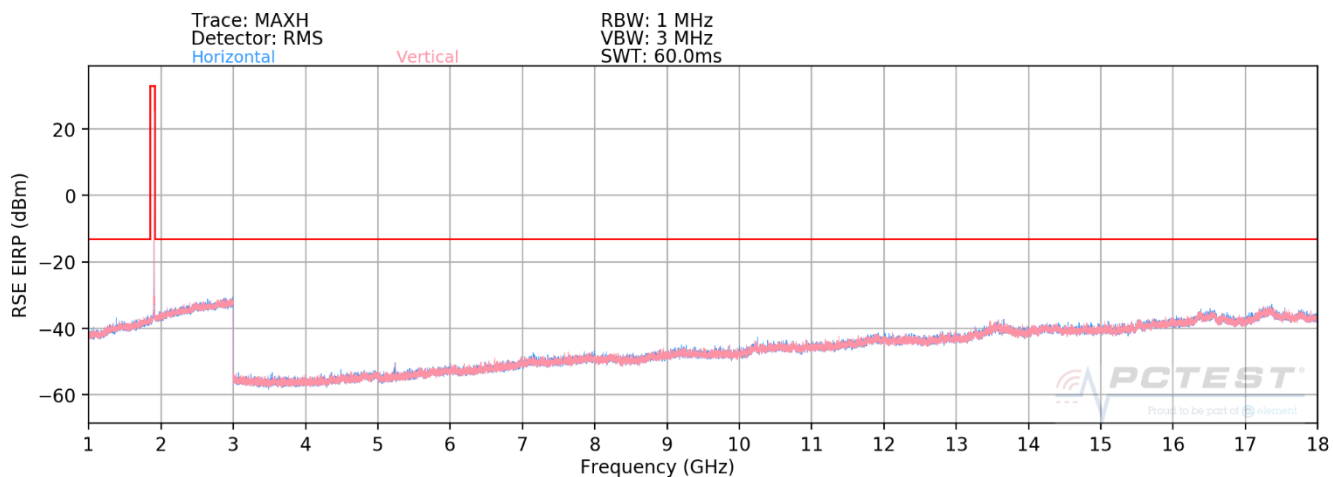
Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 50
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

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	116	36	-77.96	4.14	33.18	-62.08	-13.00	-49.08
5715.00	H	-	-	-79.43	6.67	34.24	-61.02	-13.00	-48.02
7620.00	H	340	186	-78.23	8.57	37.34	-57.92	-13.00	-44.92
9525.00	H	-	-	-81.28	10.25	35.97	-59.28	-13.00	-46.28
11430.00	H	-	-	-82.57	13.24	37.67	-57.59	-13.00	-44.59

Table 7-11. Radiated Spurious Data (LTE Band 25/2 – High Channel)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
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NR Band n25/2 – Ant A



Plot 7-218. Radiated Spurious Plot (NR Band n25/2 – Ant A)

Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1 / 53
Mode:	Stand Alone
Anchor Band:	Ant A

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3720.00	V	-	-	-81.11	7.87	33.76	-61.50	-13.00	-48.50
5580.00	V	-	-	-82.71	12.12	36.41	-58.84	-13.00	-45.84
7440.00	V	301	334	-81.15	15.55	41.40	-53.86	-13.00	-40.86
9300.00	V	-	-	-83.97	18.67	41.70	-53.56	-13.00	-40.56
11160.00	V	-	-	-84.67	20.84	43.17	-52.09	-13.00	-39.09
13020.00	V	-	-	-85.10	24.93	46.83	-48.43	-13.00	-35.43

Table 7-12. Radiated Spurious Data (NR Band n25/2 – Low Channel – Ant A)

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1 / 53
Mode:	Stand Alone
Anchor Band:	Ant A

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3765.00	V	-	-	-81.32	8.08	33.76	-61.50	-13.00	-48.50
5647.50	V	-	-	-82.17	11.00	35.83	-59.42	-13.00	-46.42
7530.00	V	224	325	-81.37	15.71	41.34	-53.92	-13.00	-40.92
9412.50	V	-	-	-84.11	18.88	41.77	-53.49	-13.00	-40.49
11295.00	V	-	-	-84.55	21.42	43.87	-51.39	-13.00	-38.39
13177.50	V	-	-	-84.86	24.52	46.66	-48.60	-13.00	-35.60



Table 7-13. Radiated Spurious Data (NR Band n25/2 – Mid Channel – Ant A)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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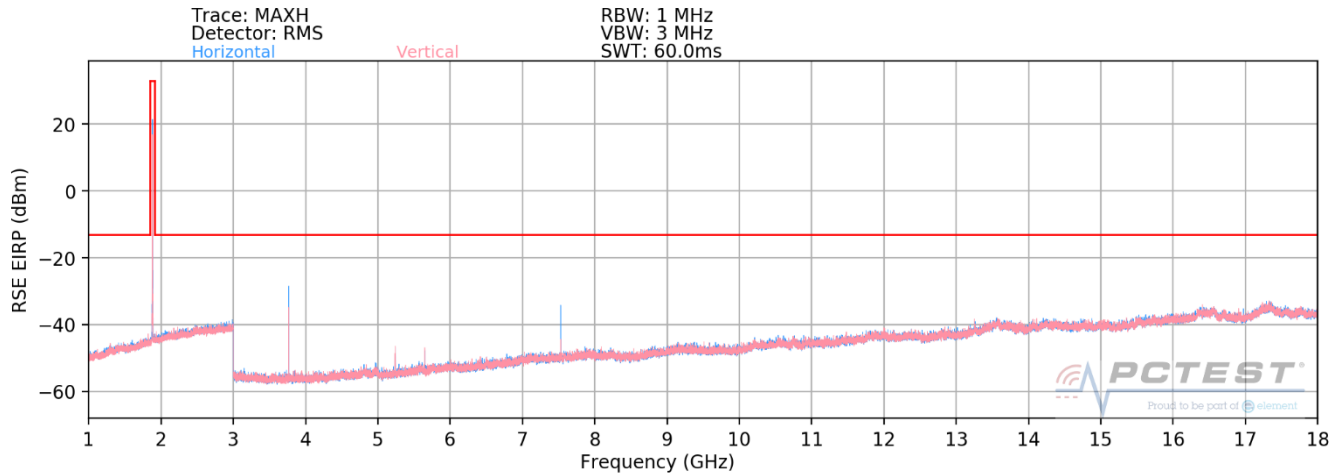
Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 53
Mode:	Stand Alone
Anchor Band:	Ant A

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	-	-	-81.61	8.08	33.47	-61.79	-13.00	-48.79
5715.00	V	-	-	-82.51	11.57	36.06	-59.20	-13.00	-46.20
7620.00	V	300	330	-82.59	16.11	40.52	-54.74	-13.00	-41.74
9525.00	V	-	-	-84.31	18.93	41.62	-53.64	-13.00	-40.64
11430.00	V	-	-	-84.89	22.19	44.30	-50.96	-13.00	-37.96
13335.00	V	-	-	-85.36	24.95	46.59	-48.67	-13.00	-35.67

Table 7-14. Radiated Spurious Data (NR Band n25/2 – High Channel – Ant A)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
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NR Band n25/2 – Ant F



Plot 7-219. Radiated Spurious Plot (NR Band n25/2 – Ant F)

Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1 / 53
Mode:	Stand Alone
Anchor Band:	Ant F

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	220	39	-52.45	7.87	62.42	-32.84	-13.00	-19.84
5580.00	H	201	6	-80.31	12.12	38.81	-56.44	-13.00	-43.44
7440.00	H	160	354	-68.17	15.55	54.38	-40.88	-13.00	-27.88
9300.00	H	103	311	-82.03	18.67	43.64	-51.62	-13.00	-38.62
11160.00	H	-	-	-84.01	20.84	43.83	-51.43	-13.00	-38.43
13020.00	H	-	-	-84.93	24.93	47.00	-48.26	-13.00	-35.26

Table 7-15. Radiated Spurious Data (NR Band n25/2 – Low Channel – Ant F)

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1 / 53
Mode:	Stand Alone
Anchor Band:	Ant F

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	193	38	-51.34	8.08	63.74	-31.52	-13.00	-18.52
5647.50	H	201	5	-76.35	11.00	41.65	-53.60	-13.00	-40.60
7530.00	H	173	9	-66.52	15.71	56.19	-39.07	-13.00	-26.07
9412.50	H	109	317	-82.49	18.88	43.39	-51.87	-13.00	-38.87
11295.00	H	-	-	-83.87	21.42	44.55	-50.71	-13.00	-37.71
13177.50	H	-	-	-84.90	24.52	46.62	-48.64	-13.00	-35.64



Table 7-16. Radiated Spurious Data (NR Band n25/2 – Mid Channel – Ant F)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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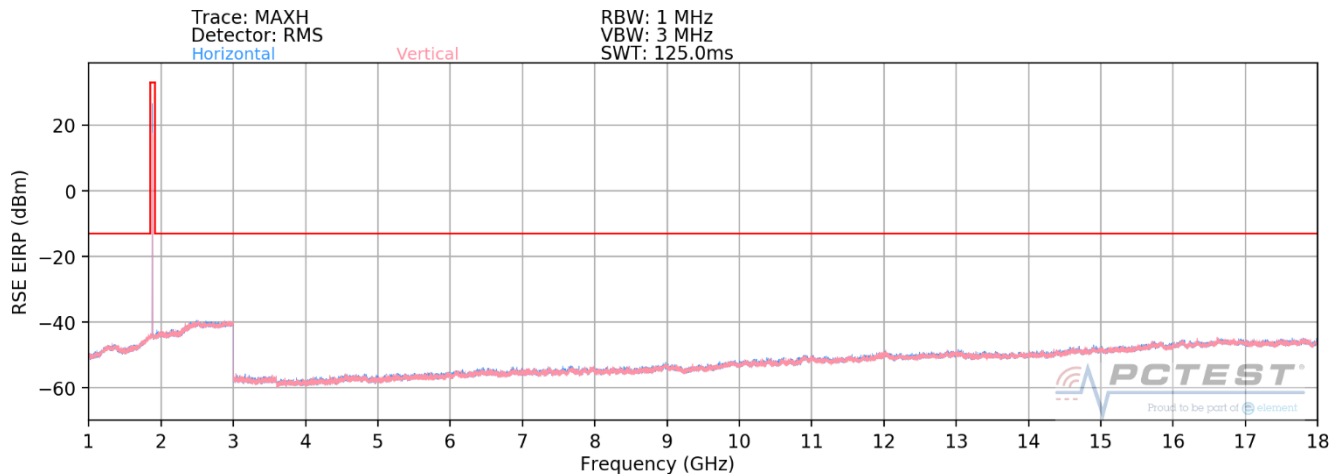
Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 53
Mode:	Stand Alone
Anchor Band:	Ant F

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	191	37	-53.22	8.08	61.86	-33.40	-13.00	-20.40
5715.00	H	215	3	-75.97	11.57	42.60	-52.66	-13.00	-39.66
7620.00	H	159	359	-68.91	16.11	54.20	-41.06	-13.00	-28.06
9525.00	H	118	316	-82.88	18.93	43.05	-52.21	-13.00	-39.21
11430.00	H	-	-	-84.70	22.19	44.49	-50.77	-13.00	-37.77
13335.00	H	-	-	-84.99	24.95	46.96	-48.30	-13.00	-35.30

Table 7-17. Radiated Spurious Data (NR Band n25/2 – High Channel – Ant F)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset
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GSM/GPRS PCS



Plot 7-220. Radiated Spurious Plot (GPRS PCS)

Mode:	GPRS 1 Tx Slot
Channel:	512
Frequency (MHz):	1850.2
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz

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	130	26	-74.68	4.56	36.88	-58.38	-13.00	-45.38
5550.60	H	-	-	-76.47	6.25	36.78	-58.48	-13.00	-45.48
7400.80	H	142	359	-76.37	8.52	39.15	-56.11	-13.00	-43.11
9251.00	H	-	-	-78.17	9.45	38.28	-56.97	-13.00	-43.97
11101.20	H	-	-	-78.62	12.82	41.20	-54.06	-13.00	-41.06
12951.40	H	-	-	-79.08	14.49	42.41	-52.84	-13.00	-39.84

Table 7-18. Radiated Spurious Data (GPRS PCS – Low Channel)

Mode:	GPRS 1 Tx Slot
Channel:	661
Frequency (MHz):	1880
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz

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	130	12	-75.37	4.31	35.94	-59.32	-13.00	-46.32
5640.00	H	-	-	-76.92	6.83	36.91	-58.35	-13.00	-45.35
7520.00	H	119	349	-76.78	8.50	38.72	-56.53	-13.00	-43.53
9400.00	H	-	-	-78.77	10.48	38.71	-56.55	-13.00	-43.55
11280.00	H	-	-	-78.76	12.50	40.74	-54.52	-13.00	-41.52
13160.00	H	-	-	-79.48	14.45	41.97	-53.29	-13.00	-40.29

Table 7-19. Radiated Spurious Data (GPRS PCS – Mid Channel)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 149 of 164

Mode:	GPRS 1 Tx Slot
Channel:	810
Frequency (MHz):	1909.8
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz



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	120	137	-75.30	4.25	35.95	-59.31	-13.00	-46.31
5729.40	H	-	-	-76.95	6.65	36.70	-58.56	-13.00	-45.56
7639.20	H	111	218	-74.57	9.08	41.51	-53.75	-13.00	-40.75
9549.00	H	-	-	-78.53	10.50	38.97	-56.29	-13.00	-43.29
11458.80	H	-	-	-79.38	12.84	40.46	-54.80	-13.00	-41.80
13368.60	H	-	-	-79.26	14.64	42.38	-52.87	-13.00	-39.87

Table 7-20. Radiated Spurious Data (GPRS PCS – High Channel)

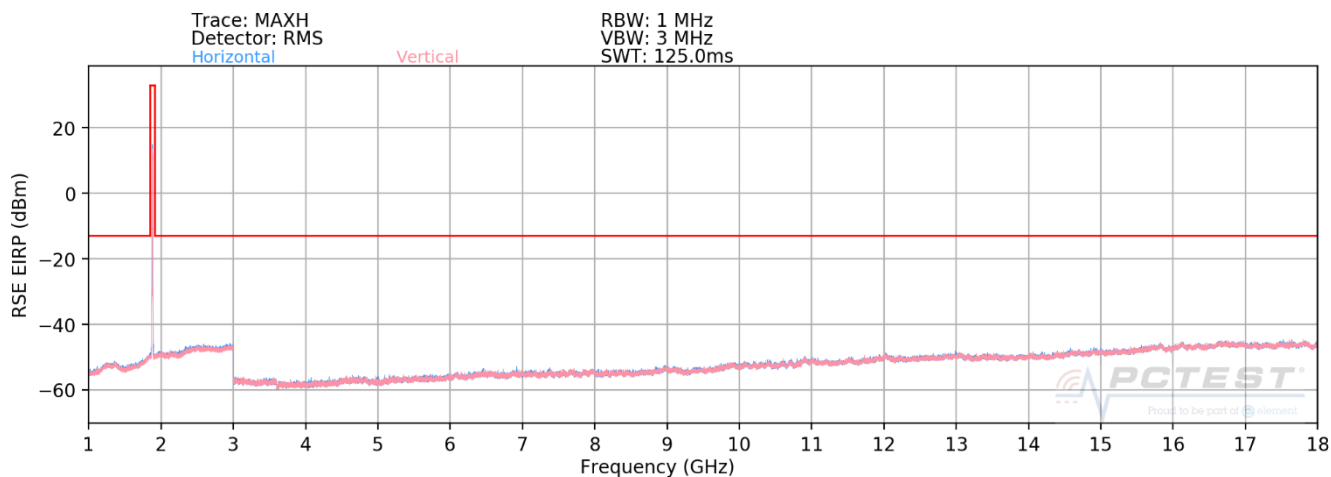
Case:	w/ Wireless Charging Pad
Mode:	GPRS 1 Tx Slot
Channel:	810
Frequency (MHz):	1909.8

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	114	135	-75.53	4.25	35.72	-59.54	-13.00	-46.54
5729.40	H	-	-	-76.93	6.65	36.72	-58.54	-13.00	-45.54
7639.20	H	150	340	-75.79	9.08	40.29	-54.97	-13.00	-41.97
9549.00	H	-	-	-78.89	10.50	38.61	-56.65	-13.00	-43.65
11458.80	H	-	-	-79.33	12.84	40.51	-54.75	-13.00	-41.75
13368.60	H	-	-	-79.02	14.64	42.62	-52.63	-13.00	-39.63

Table 7-21. Radiated Spurious Data with WCP (GPRS PCS)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset
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WCDMA PCS



Plot 7-221. 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]
3704.80	V	-	-	-79.38	4.50	32.12	-63.13	-13.00	-50.13
5557.20	V	-	-	-79.19	6.32	34.13	-61.13	-13.00	-48.13
7409.60	V	-	-	-80.12	8.28	35.16	-60.10	-13.00	-47.10

Table 7-22. Radiated Spurious Data (WCDMA PCS – Low Channel)

Sample #:	0291M
Mode:	WCDMA RMC
Channel:	9400
Frequency (MHz):	1880
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	V	-	-	-79.32	4.31	31.99	-63.27	-13.00	-50.27
5640.00	V	-	-	-79.35	6.83	34.48	-60.78	-13.00	-47.78
7520.00	V	-	-	-80.95	8.50	34.55	-60.70	-13.00	-47.70



Table 7-23. Radiated Spurious Data (WCDMA PCS – Mid Channel)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 151 of 164

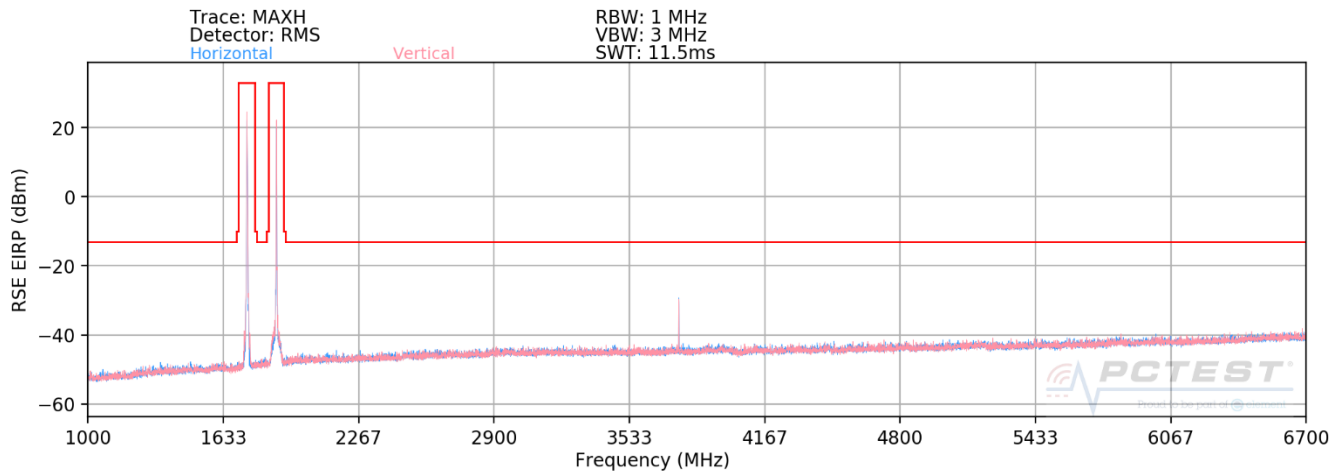
Sample #:	0291M
Mode:	WCDMA RMC
Channel:	9538
Frequency (MHz):	1907.6
Detector / Trace Mode:	RMS / Average
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3815.20	V	-	-	-78.72	4.20	32.48	-62.78	-13.00	-49.78
5722.80	V	-	-	-79.61	6.65	34.04	-61.22	-13.00	-48.22
7630.40	V	-	-	-80.91	8.78	34.87	-60.39	-13.00	-47.39

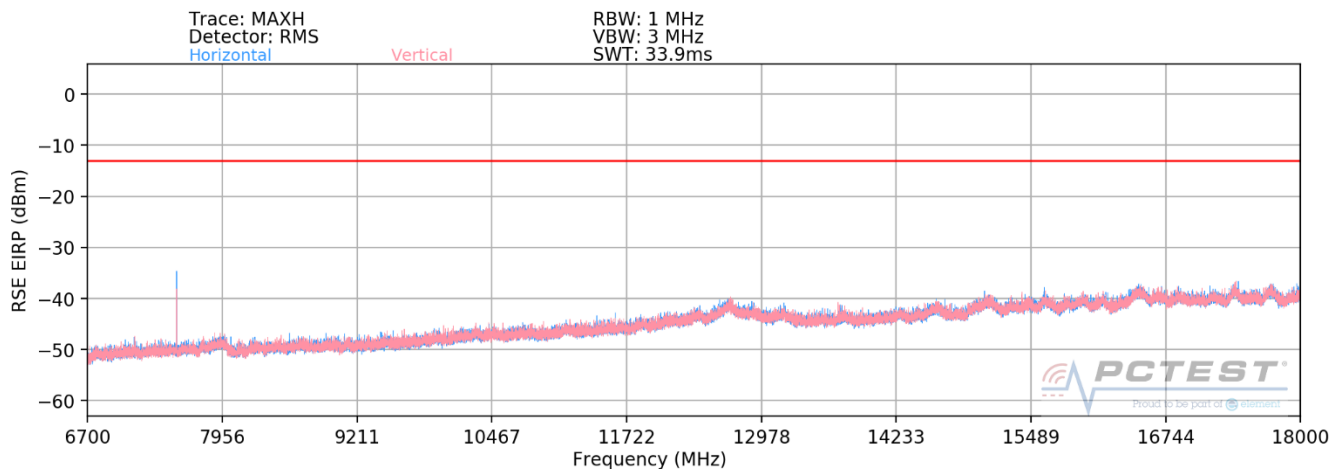
Table 7-24. Radiated Spurious Data (WCDMA PCS – High Channel)

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset
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EN-DC n25/2 (Ant F) – Band 66



Plot 7-222. Radiated Spurious Plot (EN-DC: n25/2 (Ant F) + Band 66, 1 – 6.7GHz)



Plot 7-223. Radiated Spurious Plot (EN-DC: n25/2 (Ant F) + Band 66, 6.7 – 18GHz)

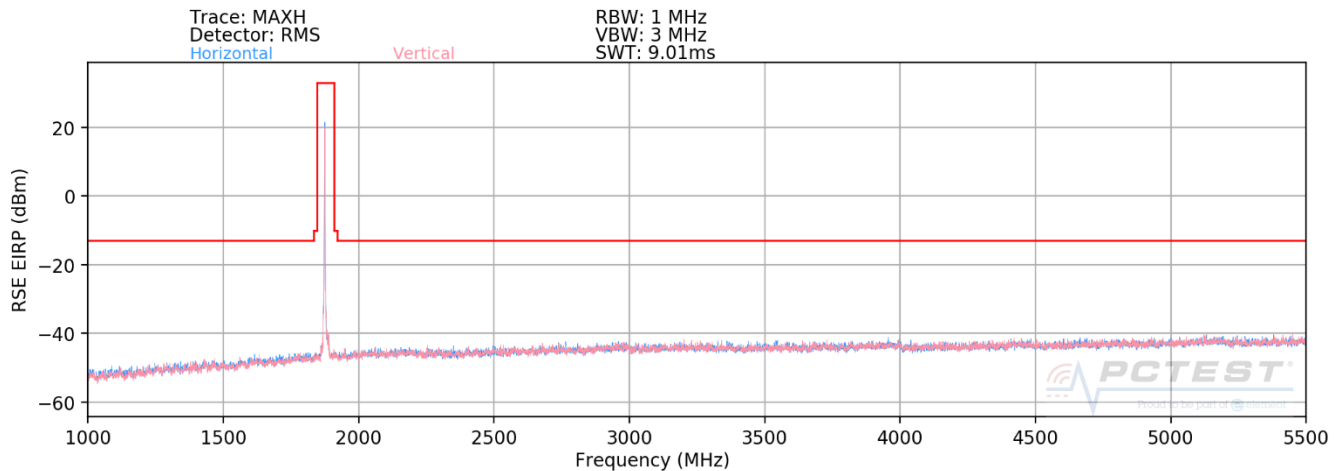
Case:	n25 (ANT F) - B66
Bandwidth (MHz):	40 & 20
Frequency (MHz):	1882.5 & 1745
RB / Offset:	1/108 & 1/50
Mode:	EN-DC
Anchor Band:	66

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dBm]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3765.0	H	221	44	-62.47	14.85	59.38	-35.88	-13.00	-22.88
7530.0	H	117	21	-64.88	12.63	54.75	-40.51	-13.00	-27.51
8862.5	H	-	-	-81.01	13.51	39.50	-55.76	-13.00	-42.76
9550.0	H	-	-	-81.17	14.60	40.43	-54.83	-13.00	-41.83
12077.5	H	-	-	-81.74	18.84	44.10	-51.16	-13.00	-38.16

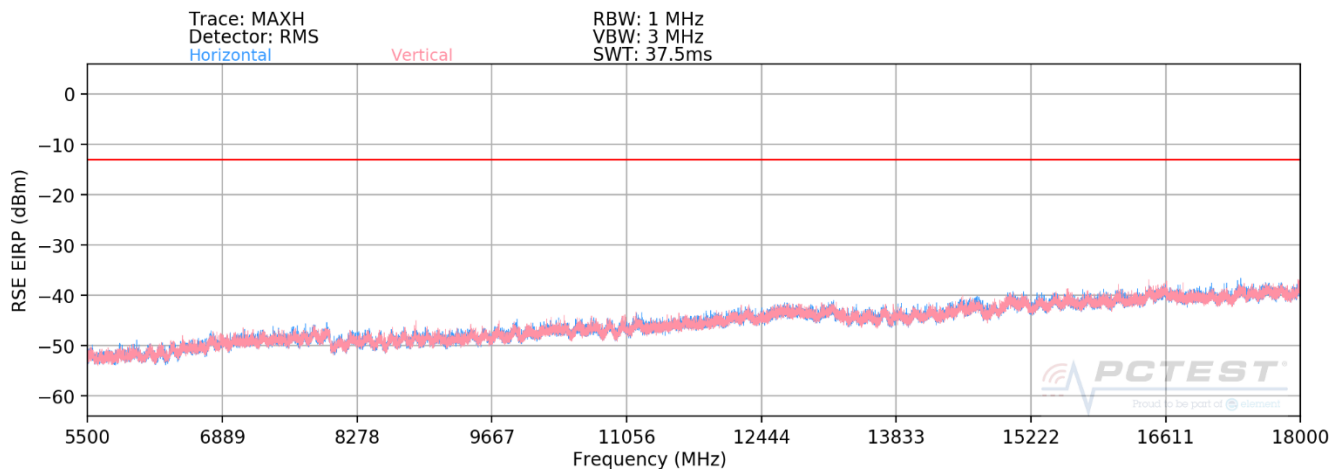
Table 7-25. Radiated Spurious Data (EN-DC: n25/2 (Ant F) + Band 66)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 153 of 164

EN-DC n25/2 (Ant A) – Band 12



Plot 7-224. Radiated Spurious Plot (EN-DC: n25/2 (Ant A) + Band 12, 1 – 5.5GHz)



Plot 7-225. Radiated Spurious Plot (EN-DC: n25/2 (Ant A) + Band 12, 5.5 – 18GHz)

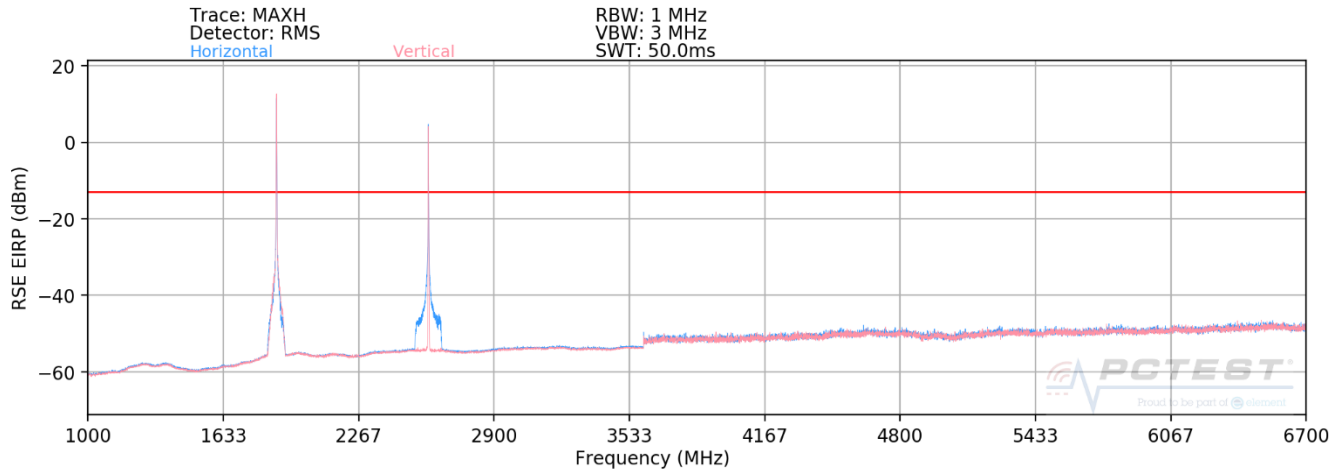
Case:	n25 (Ant A) - B12
Bandwidth (MHz):	40 & 10
Frequency (MHz):	1882.5 & 707.5
RB / Offset:	1/108 & 1/26
Mode:	EN-DC
Anchor Band:	12

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]
2764.0	H	-	-	-65.57	14.57	56.00	-39.26	-13.00	-26.26
3016.0	H	-	-	-66.07	7.75	48.68	-46.57	-13.00	-33.57
3920.0	H	-	-	-66.16	8.02	48.86	-46.40	-13.00	-33.40
4172.0	H	-	-	-65.72	8.03	49.31	-45.95	-13.00	-32.95
5328.0	H	-	-	-67.44	10.69	50.25	-45.01	-13.00	-32.01
6484.0	H	-	-	-67.89	13.17	52.28	-42.98	-13.00	-29.98

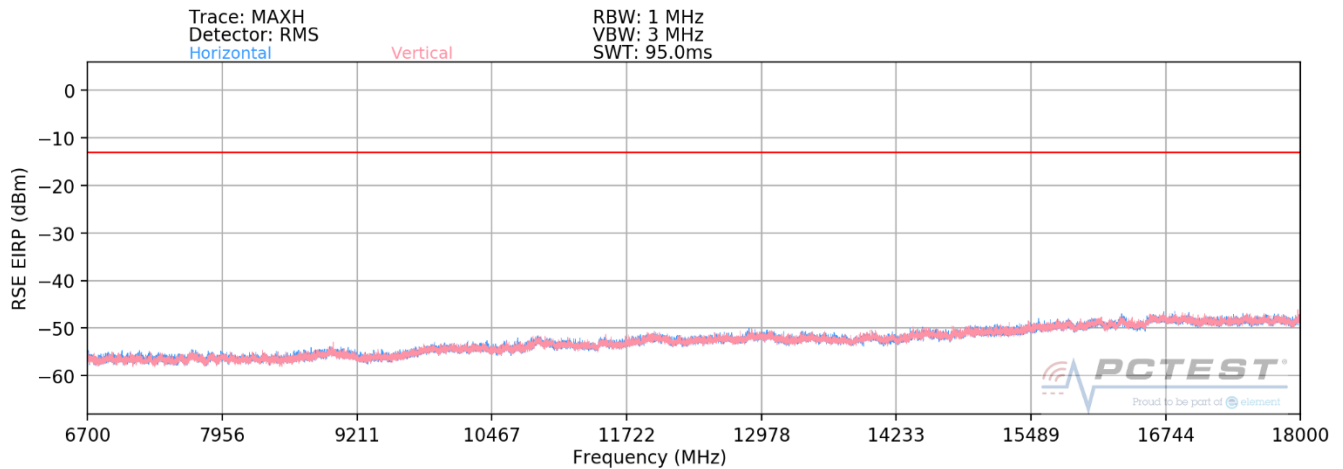
Table 7-26. Radiated Spurious Data (EN-DC: n25/2 (Ant A) + Band 12)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 154 of 164

NR FR1 ULCA: NR n25 – n41



Plot 7-226. Radiated Spurious Plot (n25 – n41, 1 – 6.7GHz)



Plot 7-227. Radiated Spurious Plot (n25 – n41, 6.7 – 18GHz)

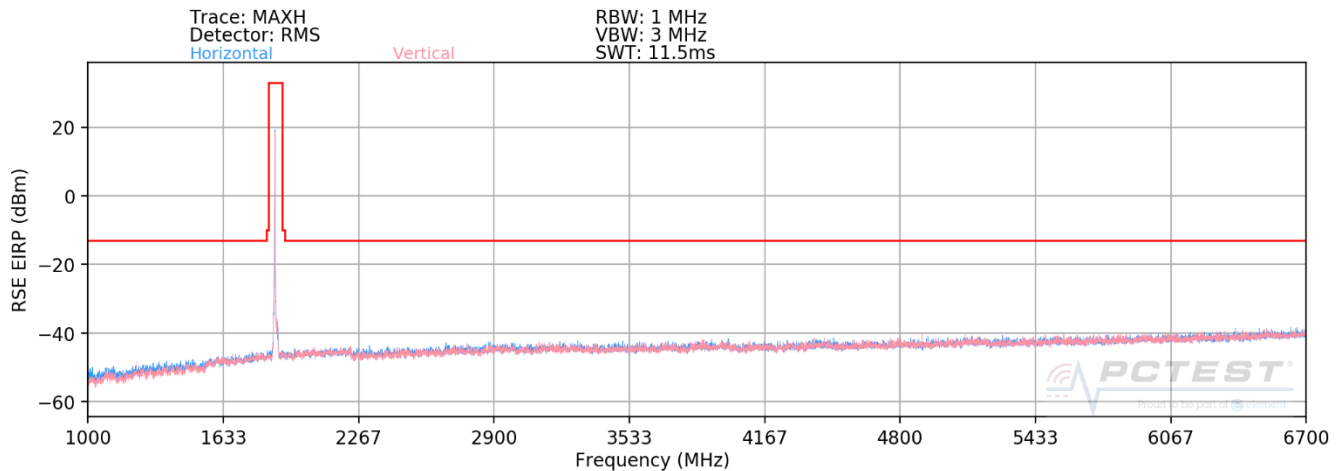
Case:	n25-n41
Bandwidth (MHz):	40 & 100
Frequency (MHz):	1882.5 & 2593
RB / Offset:	1/108 & 1/136
Mode:	InterBand ULCA

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]
3303.50	H	-	-	-77.74	11.33	40.59	-54.67	-13.00	-41.67
4014.00	H	-	-	-78.66	12.44	40.78	-54.48	-13.00	-41.48
4724.50	H	-	-	-78.45	13.67	42.22	-53.04	-13.00	-40.04

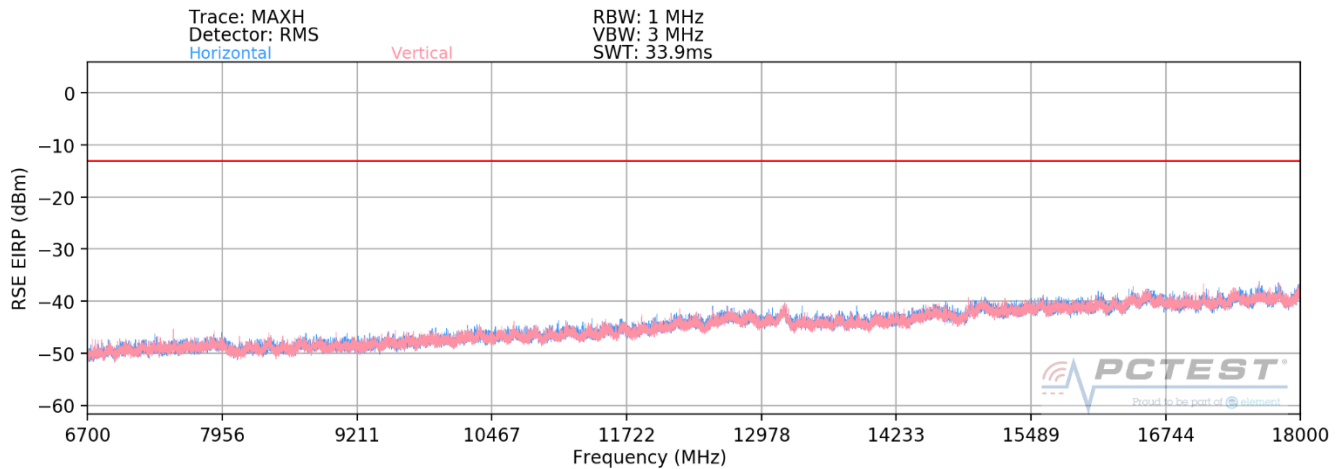
Table 7-27. Radiated Spurious Data (n25 – n41)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 155 of 164

EN-DC n2 (Ant A) – Band 5



Plot 7-228. Radiated Spurious Plot (EN-DC: n2 (Ant A) + Band 5, 1 – 6.7GHz)



Plot 7-229. Radiated Spurious Plot (EN-DC: n2 (Ant A) + Band 5, 6.7 – 18GHz)

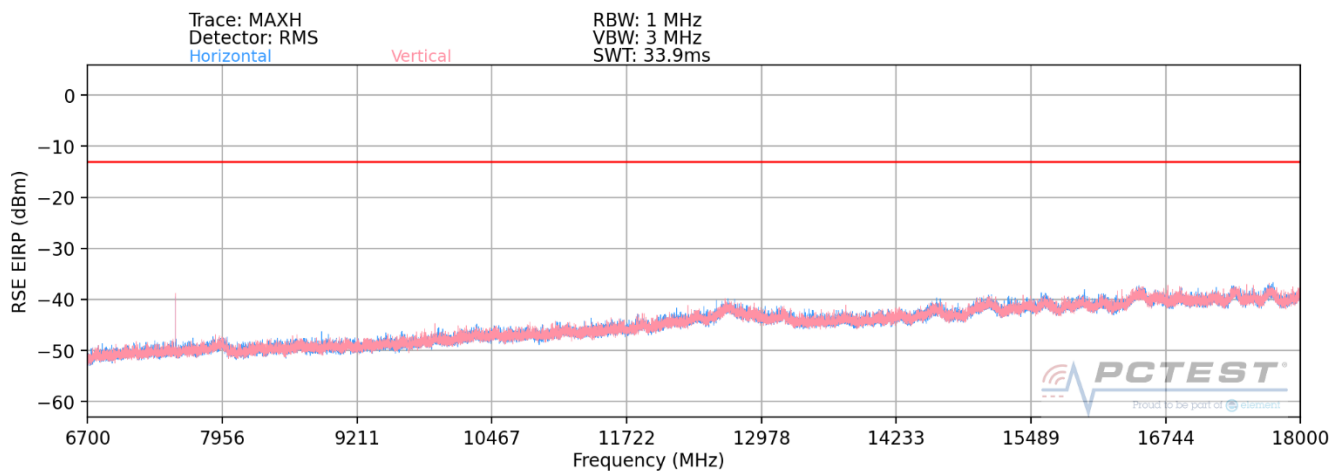
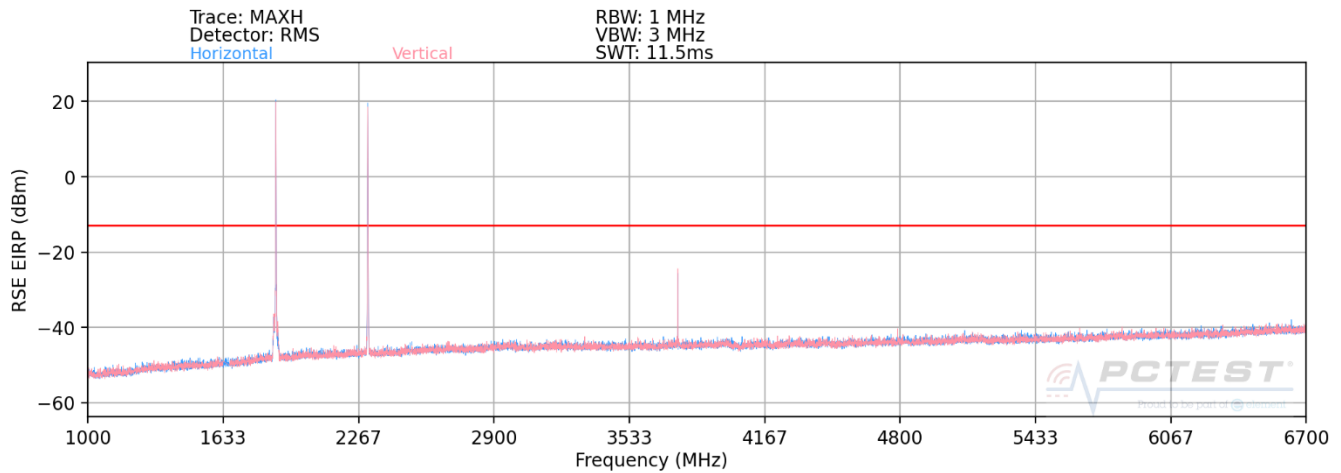
Case:	n2 (Ant F) - B30
Bandwidth (MHz):	20 & 10
Frequency (MHz):	1880 & 836.5
RB / Offset:	1/53 & 1/25
Mode:	EN-DC
Anchor Band:	LTE Band 5

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]
2923.50	H	-	-	-78.66	14.19	42.53	-52.73	-13.00	-39.73
3967.00	H	-	-	-79.09	16.13	44.04	-51.21	-13.00	-38.21
5010.50	H	-	-	-79.62	17.15	44.53	-50.73	-13.00	-37.73

Table 7-28. Radiated Spurious Data (EN-DC: n2 (Ant A) + Band 5)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 156 of 164

EN-DC n2 (Ant F) – Band 30



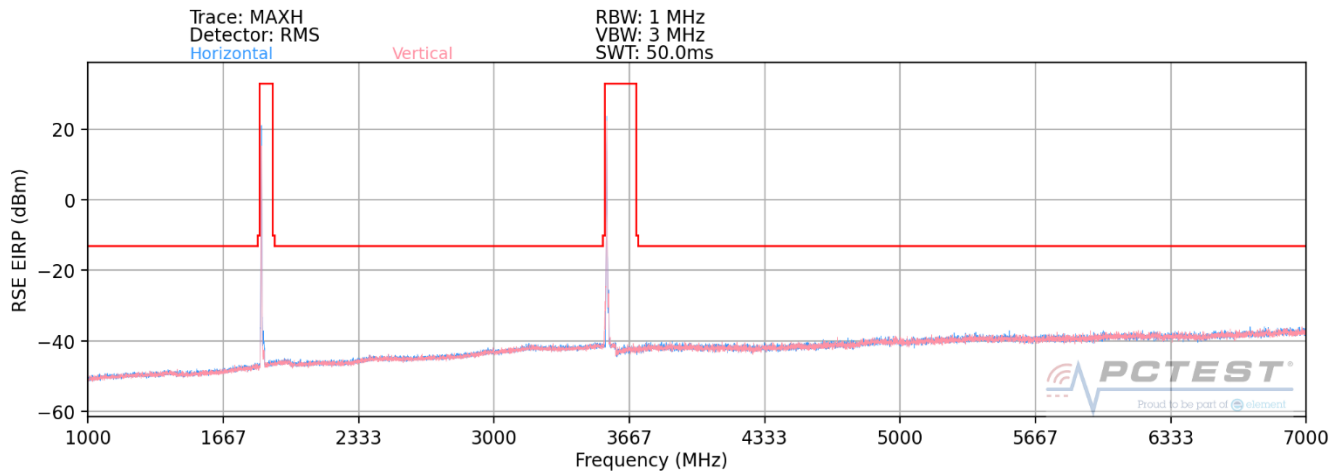
Case:	n2 (ANT F) - B30
Bandwidth (MHz):	20 & 10
Frequency (MHz):	1880 & 2310
RB / Offset:	1/53 & 1/25
Mode:	EN-DC
Anchor Band:	30

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]
3760.0	V	104	59	-66.04	14.88	55.84	-39.42	-13.00	-26.42
7520.0	V	102	13	-70.72	12.66	48.94	-46.32	-13.00	-33.32
7900.0	V	-	-	-80.96	14.22	40.26	-55.00	-13.00	-42.00
8330.0	V	-	-	-81.13	13.74	39.61	-55.65	-13.00	-42.65
8760.0	V	-	-	-80.76	13.75	39.99	-55.26	-13.00	-42.26

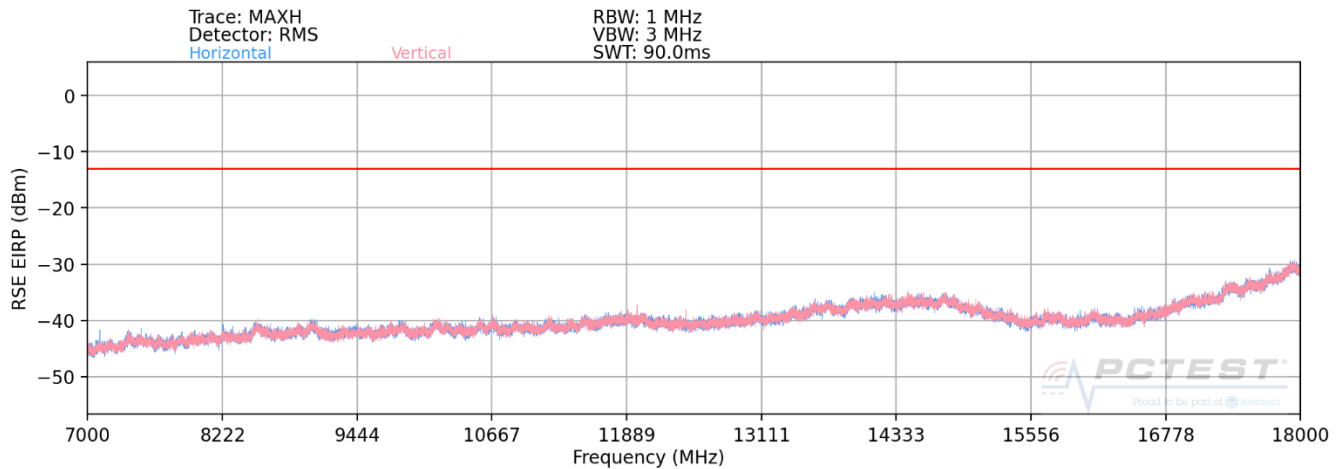
Table 7-29. Radiated Spurious Data (EN-DC: n2 (Ant F) + Band 30)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 157 of 164

EN-DC n2 (Ant A) – Band 48



Plot 7-232. Radiated Spurious Plot (EN-DC: n2 (Ant A) + Band 48, 1 – 7GHz)



Plot 7-233. Radiated Spurious Plot (EN-DC: n2 (Ant A) + Band 48, 7 – 18GHz)

Case:	n2 -B48
Bandwidth (MHz):	20 & 20
Frequency (MHz):	1860 & 3560
RB / Offset:	1 / 0 & 1 / 0
Mode:	EN-DC
Anchor Band:	48

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]
1540.0	H	-	-	-68.76	2.83	41.07	-54.19	-13.00	-41.19
3240.0	H	-	-	-67.79	9.80	49.01	-46.25	-13.00	-33.25
4940.0	H	-	-	-72.61	13.49	47.88	-47.38	-13.00	-34.38
5260.0	H	-	-	-73.46	14.37	47.91	-47.35	-13.00	-34.35
6960.0	H	-	-	-73.97	8.76	41.79	-53.47	-13.00	-40.47
10360.0	H	-	-	-74.29	12.71	45.42	-49.83	-13.00	-36.83

Table 7-30. Radiated Spurious Data (EN-DC: n2 (Ant A) + Band 48)

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 158 of 164

7.9 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

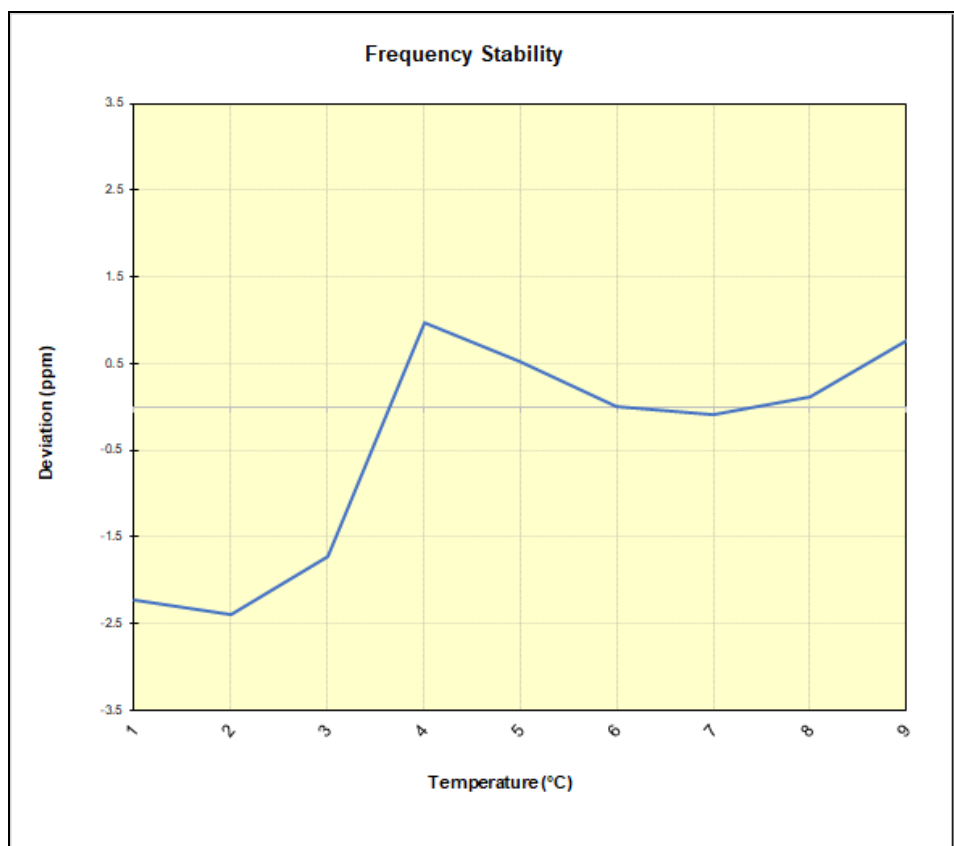
None

FCC ID: A3LSMS901U	 PART 24 MEASUREMENT REPORT 	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset
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LTE Band 25/2

LTE Band 25/2					
Operating Frequency (Hz):			1,882,500,000		
Ref. Voltage (VDC):			4.39		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	1,882,530,812	-4,191	-0.0002226
		- 20	1,882,530,508	-4,495	-0.0002388
		- 10	1,882,531,762	-3,241	-0.0001722
		0	1,882,536,817	1,814	0.0000964
		+ 10	1,882,535,980	977	0.0000519
		+ 20 (Ref)	1,882,535,003	0	0.0000000
		+ 30	1,882,534,820	-183	-0.0000097
		+ 40	1,882,535,209	206	0.0000109
		+ 50	1,882,536,449	1,446	0.0000768
Battery Endpoint	3.40	+ 20	1,882,535,264	261	0.0000139

Table 7-31. LTE Band 25/2 Frequency Stability Data



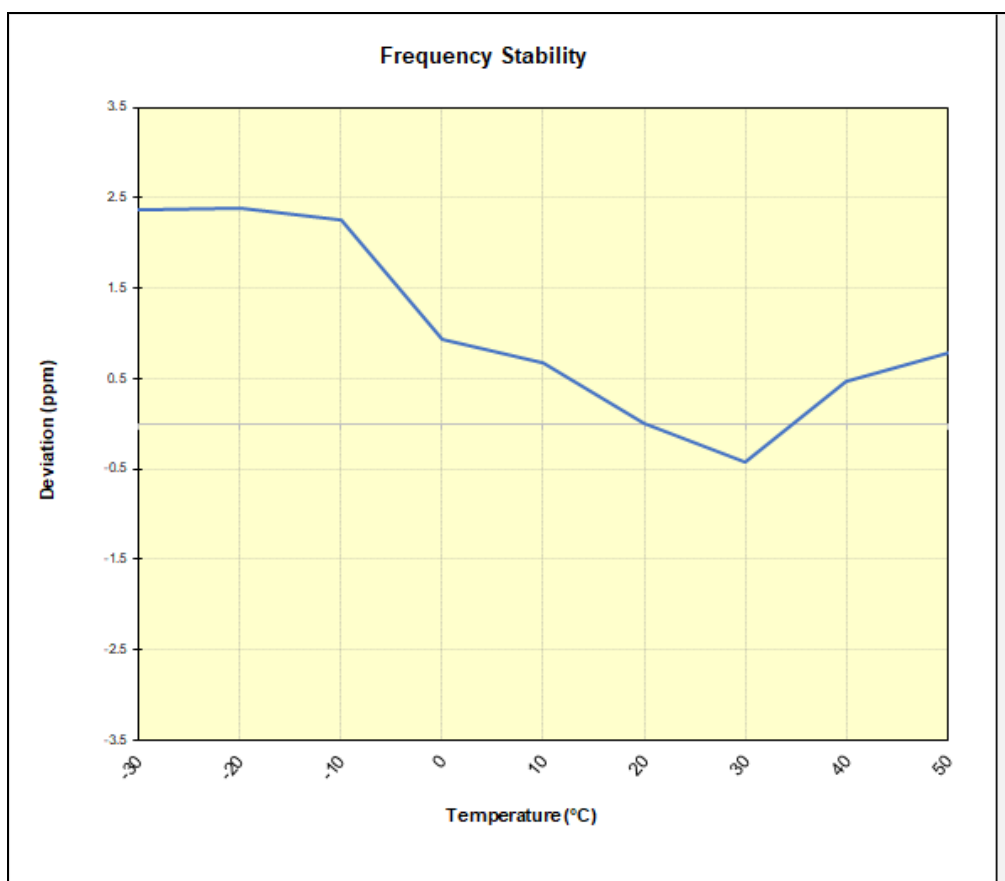
Plot 7-234. LTE Band 25/2 Frequency Stability Chart

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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NR Band n25/2 – Ant A

NR Band n25/2					
Operating Frequency (Hz):			1,882,500,000		
Ref. Voltage (VDC):			4.39		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	1,882,586,816	4,457	0.0002367
		- 20	1,882,586,851	4,492	0.0002386
		- 10	1,882,586,596	4,237	0.0002251
		0	1,882,584,119	1,760	0.0000935
		+ 10	1,882,583,614	1,255	0.0000667
		+ 20 (Ref)	1,882,582,359	0	0.0000000
		+ 30	1,882,581,559	-800	-0.0000425
		+ 40	1,882,583,246	887	0.0000471
		+ 50	1,882,583,829	1,470	0.0000781
Battery Endpoint	3.40	+ 20	1,882,582,312	-47	-0.0000025

Table 7-32. NR Band n25/2 Frequency Stability Data



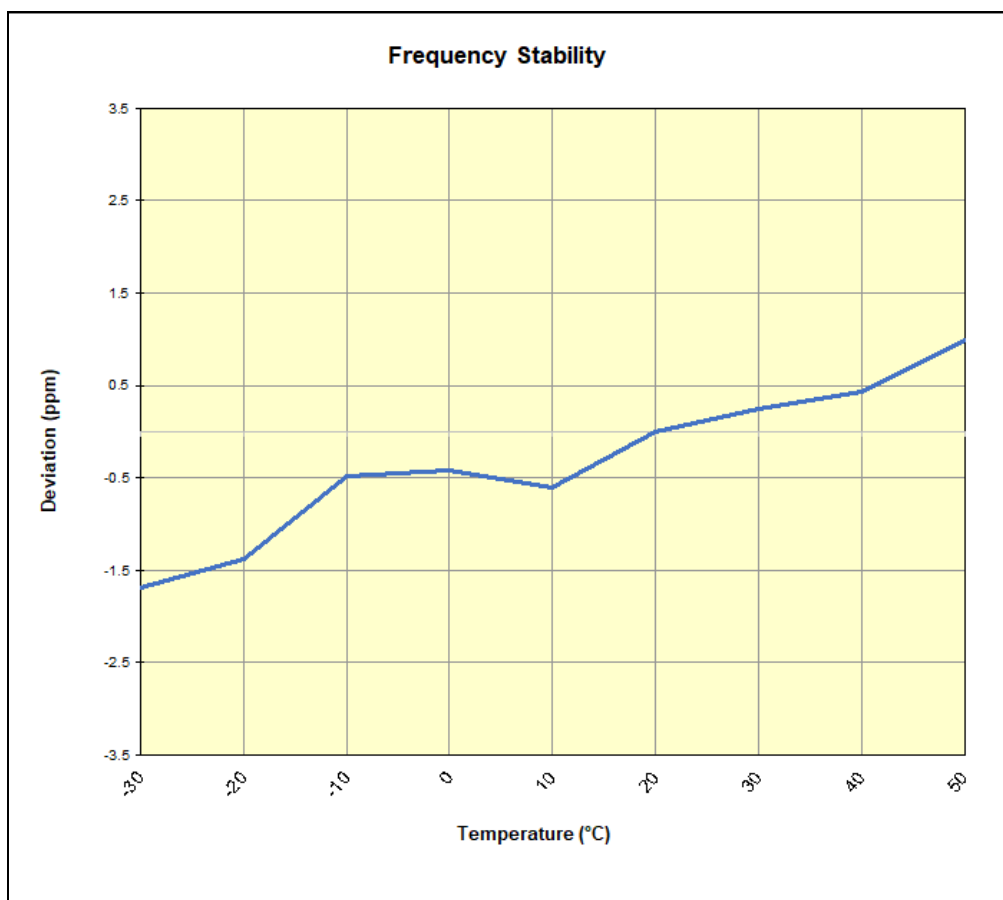
Plot 7-235. NR Band n25/2 Frequency Stability Chart

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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GSM/GPRS PCS

GSM/GPRS PCS					
Operating Frequency (Hz):			1,880,000,000		
Ref. Voltage (VDC):			4.39		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	1,880,001,264	-3,161	-0.0001682
		- 20	1,880,001,846	-2,579	-0.0001372
		- 10	1,880,003,518	-907	-0.0000483
		0	1,880,003,628	-797	-0.0000424
		+ 10	1,880,003,281	-1,144	-0.0000609
		+ 20 (Ref)	1,880,004,425	0	0.0000000
		+ 30	1,880,004,903	478	0.0000254
		+ 40	1,880,005,226	801	0.0000426
		+ 50	1,880,006,294	1,869	0.0000994
Battery Endpoint	3.40	+ 20	1,880,004,481	56	0.0000030

Table 7-33. GSM/GPRS PCS Frequency Stability Data

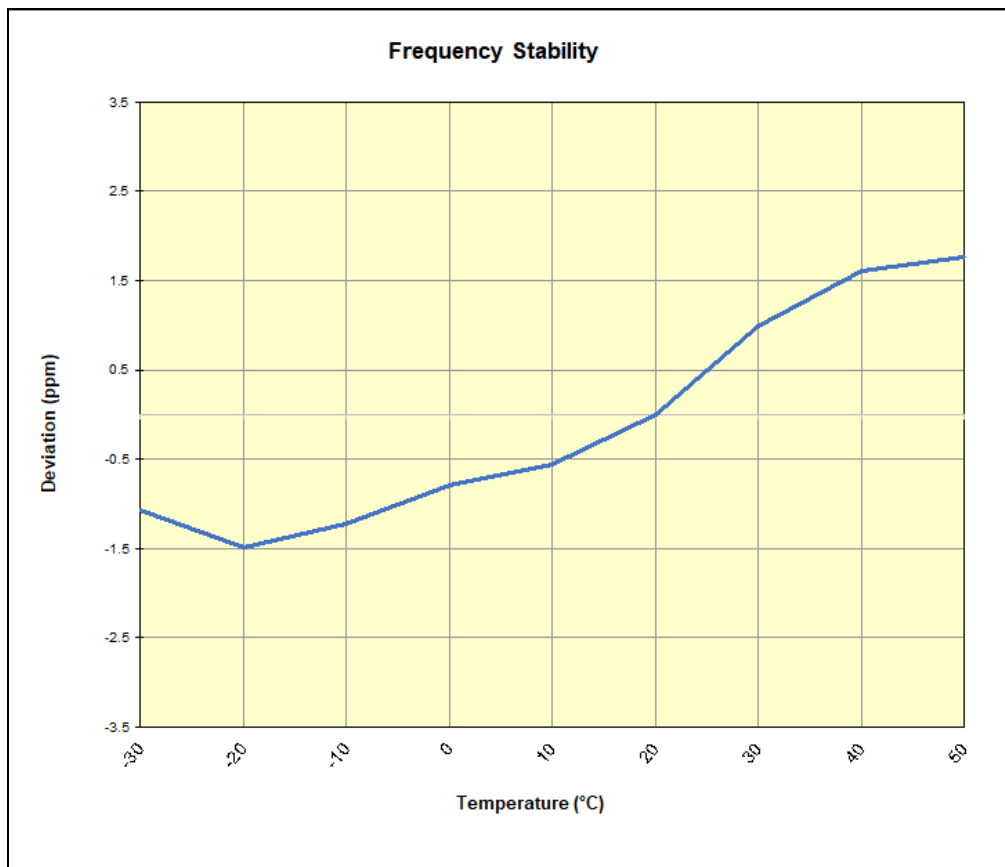


Plot 7-236. GSM/GPRS PCS Frequency Stability Chart

FCC ID: A3LSMS901U	PCTEST Proud to be part of Samsung	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset	Page 162 of 164

WCDMA PCS					
Operating Frequency (Hz):		1,880,000,000			
Ref. Voltage (VDC):		4.39			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.39	- 30	1,879,986,310	-2,003	-0.0001065
		- 20	1,879,985,514	-2,799	-0.0001489
		- 10	1,879,986,021	-2,292	-0.0001219
		0	1,879,986,814	-1,499	-0.0000797
		+ 10	1,879,987,268	-1,045	-0.0000556
		+ 20 (Ref)	1,879,988,313	0	0.0000000
		+ 30	1,879,990,165	1,852	0.0000985
		+ 40	1,879,991,348	3,035	0.0001615
		+ 50	1,879,991,624	3,311	0.0001761
Battery Endpoint	3.40	+ 20	1,879,988,308	-5	-0.0000002

Table 7-34. WCDMA PCS Frequency Stability Data





Plot 7-237. WCDMA PCS Frequency Stability Chart

FCC ID: A3LSMS901U	PCTEST Proud to be part of element	PART 24 MEASUREMENT REPORT	Approved by: Technical Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS901U** complies with all the requirements of Part 24 of the FCC rules.

FCC ID: A3LSMS901U	 PCTEST <small>Proud to be part of element</small>	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2109080099-03-R2.A3L	Test Dates: 9/8/2021 - 11/5/2021	EUT Type: Portable Handset		Page 164 of 164