Plot 7-91. PAR Plot (LTE Band 25/2 - 5MHz QPSK - Full RB)

Plot 7-92. PAR Plot (LTE Band 25/2 - 5MHz 256-QAM - Full RB)

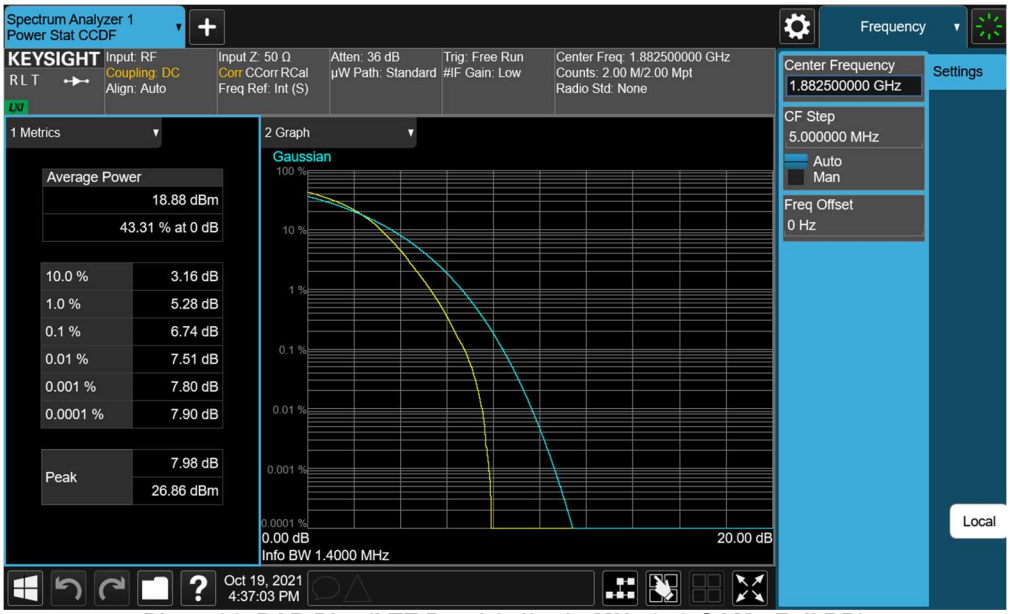
© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Plot 7-93. PAR Plot (LTE Band 25/2 - 3MHz QPSK - Full RB)

Plot 7-94. PAR Plot (LTE Band 25/2 - 3MHz 256-QAM - Full RB)

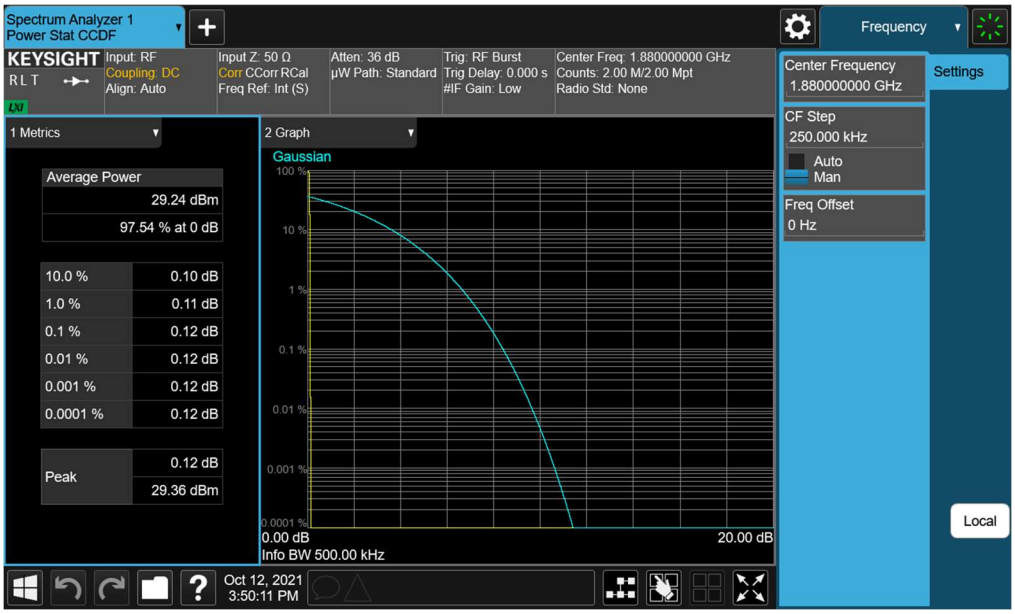
© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Plot 7-95. PAR Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB)



Plot 7-96. PAR Plot (LTE Band 25/2 - 1.4MHz 256-QAM - Full RB)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.



Plot 7-97. PAR Plot (GPRS, Ch. 661)

Plot 7-98. PAR Plot (EDGE, Ch. 661)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

WCDMA PCS

Plot 7-99. PAR Plot (WCDMA, Ch. 9400)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

7.6 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Test Setup

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

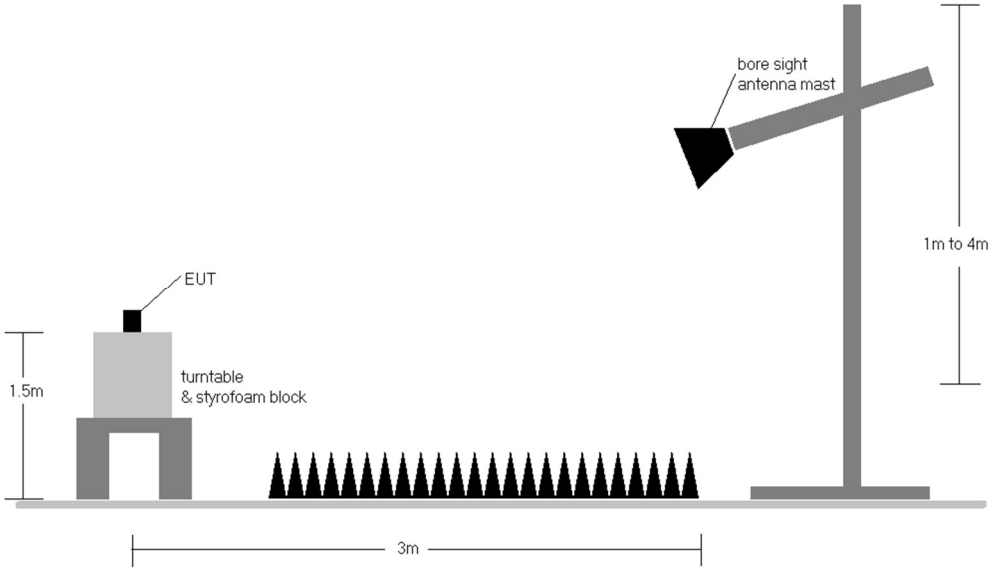


Figure 7-5. Radiated Test Setup >1GHz

Test Notes

1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers is reported in GPRS mode while transmitting with one slot active.

2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to “1”.

3) 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.

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1860.0	H	110	171	8.72	1 / 99	13.43	22.15	0.164	33.01	-10.86
	QPSK	1882.5	H	117	172	8.73	1 / 50	13.63	22.36	0.172	33.01	-10.65
	QPSK	1905.0	H	111	174	8.73	1 / 50	13.68	**22.41**	0.174	33.01	-10.60
	16-QAM	1905.0	H	111	174	8.73	1 / 50	12.44	21.17	0.131	33.01	-11.84
15 MHz	QPSK	1857.5	H	110	171	8.72	1 / 74	13.45	22.17	0.165	33.01	-10.84
	QPSK	1882.5	H	117	172	8.73	1 / 37	13.58	22.31	0.170	33.01	-10.70
	QPSK	1907.5	H	111	174	8.73	1 / 74	13.69	**22.42**	0.175	33.01	-10.59
	16-QAM	1907.5	H	111	174	8.73	1 / 74	12.29	21.02	0.127	33.01	-11.99
10 MHz	QPSK	1855.0	H	110	171	8.72	1 / 49	13.05	21.77	0.150	33.01	-11.24
	QPSK	1882.5	H	117	172	8.73	1 / 25	13.81	22.54	0.179	33.01	-10.47
	QPSK	1910.0	H	111	174	8.73	1 / 49	14.05	**22.78**	0.190	33.01	-10.23
	16-QAM	1910.0	H	111	174	8.73	1 / 49	12.72	21.45	0.140	33.01	-11.56
5 MHz	QPSK	1852.5	H	110	171	8.72	1 / 12	12.78	21.50	0.141	33.01	-11.51
	QPSK	1882.5	H	117	172	8.73	1 / 12	13.43	22.16	0.164	33.01	-10.85
	QPSK	1912.5	H	111	174	8.73	1 / 12	13.64	**22.37**	0.173	33.01	-10.64
	16-QAM	1912.5	H	111	174	8.73	1 / 12	12.34	21.07	0.128	33.01	-11.94
3 MHz	QPSK	1851.5	H	110	171	8.72	1 / 7	12.21	20.93	0.124	33.01	-12.08
	QPSK	1882.5	H	117	172	8.73	1 / 0	12.72	21.45	0.140	33.01	-11.56
	QPSK	1913.5	H	111	174	8.73	1 / 7	12.94	**21.67**	0.147	33.01	-11.34
	16-QAM	1913.5	H	111	174	8.73	1 / 7	11.96	20.69	0.117	33.01	-12.32
1.4 MHz	QPSK	1850.7	H	110	171	8.72	1 / 0	12.13	20.85	0.122	33.01	-12.16
	QPSK	1882.5	H	117	172	8.73	1 / 3	12.67	21.40	0.138	33.01	-11.61
	QPSK	1914.3	H	111	174	8.73	1 / 3	13.03	**21.76**	0.150	33.01	-11.25
	16-QAM	1914.3	H	111	174	8.73	1 / 3	12.17	20.90	0.123	33.01	-12.11
10 MHz	Opposite Pol.	1910.0	V	144	180	8.73	1 / 0	13.58	22.31	0.170	33.01	-10.70
	WCP	1910.0	H	140	153	8.73	1 / 5	12.92	21.65	0.146	33.01	-11.36

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

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	106	257	20.33	8.72	29.05	0.804	33.01	-3.96
1880.00	GPRS1900	V	103	255	20.39	8.73	29.12	0.816	33.01	-3.89
1909.80	GPRS1900	V	132	254	21.14	8.73	**29.87**	**0.971**	33.01	-3.14
1909.80	GPRS1900	H	139	166	20.35	8.73	29.08	0.810	33.01	-3.93
1909.80	EDGE1900	V	132	254	16.08	8.73	**24.81**	0.303	33.01	-8.20
1909.80	GPRS1900 (WCP)	V	130	332	14.49	8.73	23.22	0.210	33.01	-9.79

Table 7-3. 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	115	258	12.58	8.72	21.30	0.135	33.01	-11.71
1880.00	WCDMA1900	V	113	277	13.62	8.73	22.35	0.172	33.01	-10.66
1907.60	WCDMA1900	V	139	275	14.10	8.73	**22.83**	**0.192**	33.01	-10.18
1907.60	WCDMA1900	H	142	166	13.52	8.73	22.25	0.168	33.01	-10.76
1907.60	WCDMA1900 (WCP)	V	127	315	7.92	8.73	16.65	0.046	33.01	-16.36

Table 7-4. EIRP Data (WCDMA PCS)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as 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 ≥ 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

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Test Setup

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

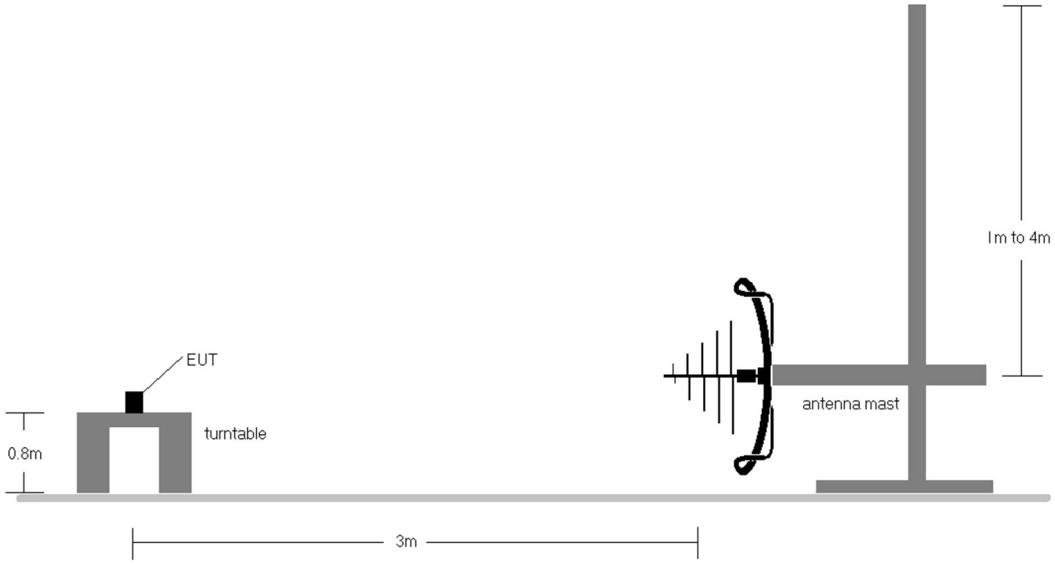


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

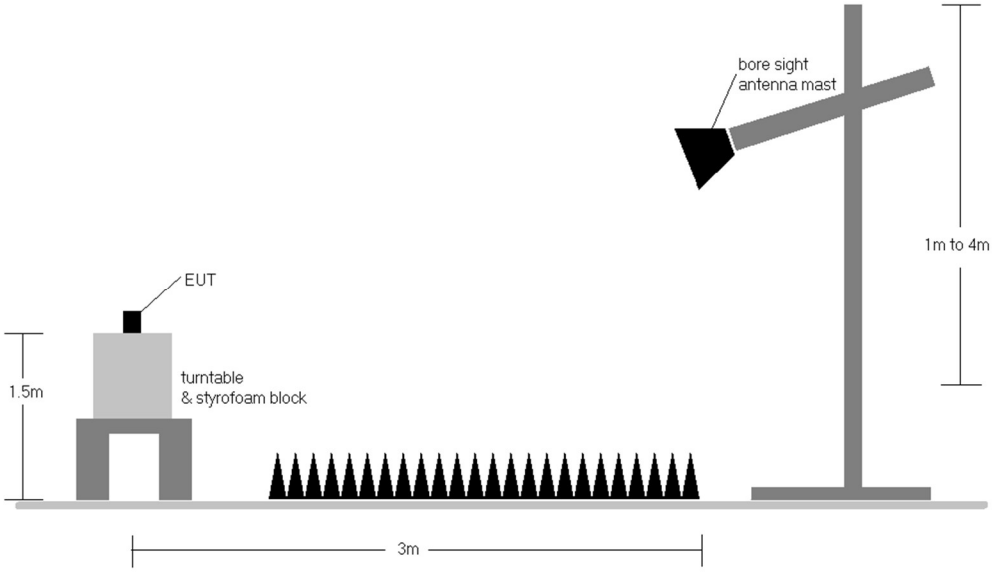


Figure 7-7. Test Instrument & Measurement Setup >1 GHz

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

Test Notes

1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
   a) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   b) EIRP (dBm) = E(dBµV/m) + 20logD – 104.8; where D is the measurement distance in meters.

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

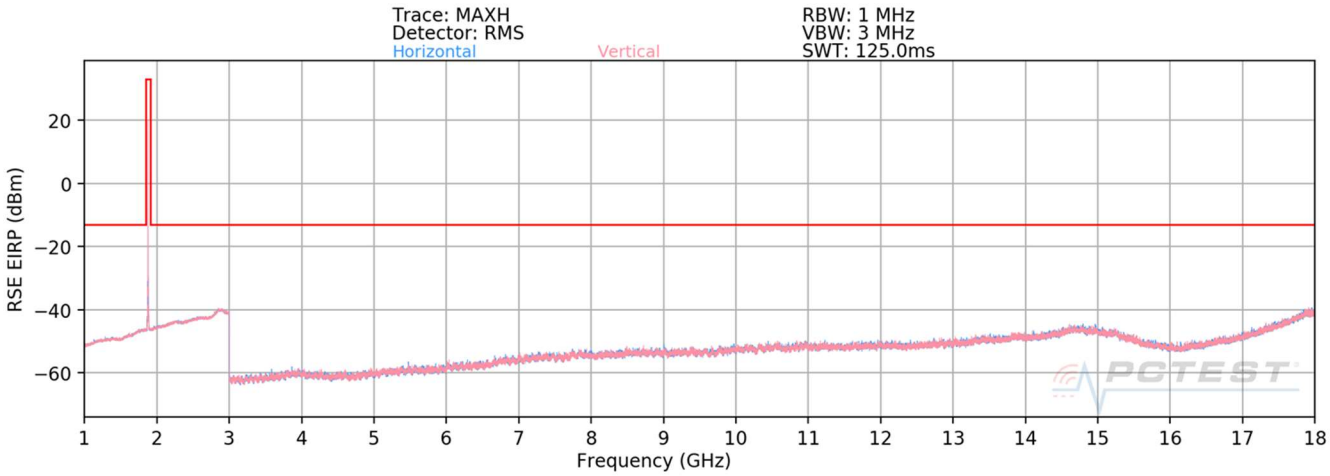
6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

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.

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

LTE Band 25/2



Plot 7-100. Radiated Spurious Plot (LTE Band 25/2)

Bandwidth (MHz):	10
Frequency (MHz):	1855
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3710.00	H	-	-	-76.64	-0.26	30.10	-65.15	-13.00	-52.15
5565.00	H	-	-	-77.92	4.03	33.11	-62.15	-13.00	-49.15
7420.00	H	-	-	-78.51	8.60	37.09	-58.16	-13.00	-45.16
9275.00	H	-	-	-79.61	11.95	39.34	-55.92	-13.00	-42.92

Table 7-5. Radiated Spurious Data (LTE Band 25/2 – Low Channel)

Bandwidth (MHz):	10
Frequency (MHz):	1882.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3765.00	H	-	-	-76.44	0.32	30.88	-64.38	-13.00	-51.38
5647.50	H	-	-	-78.36	3.31	31.95	-63.31	-13.00	-50.31
7530.00	H	-	-	-78.54	8.57	37.03	-58.23	-13.00	-45.23
9412.50	H	-	-	-79.52	11.91	39.39	-55.87	-13.00	-42.87

Table 7-6. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

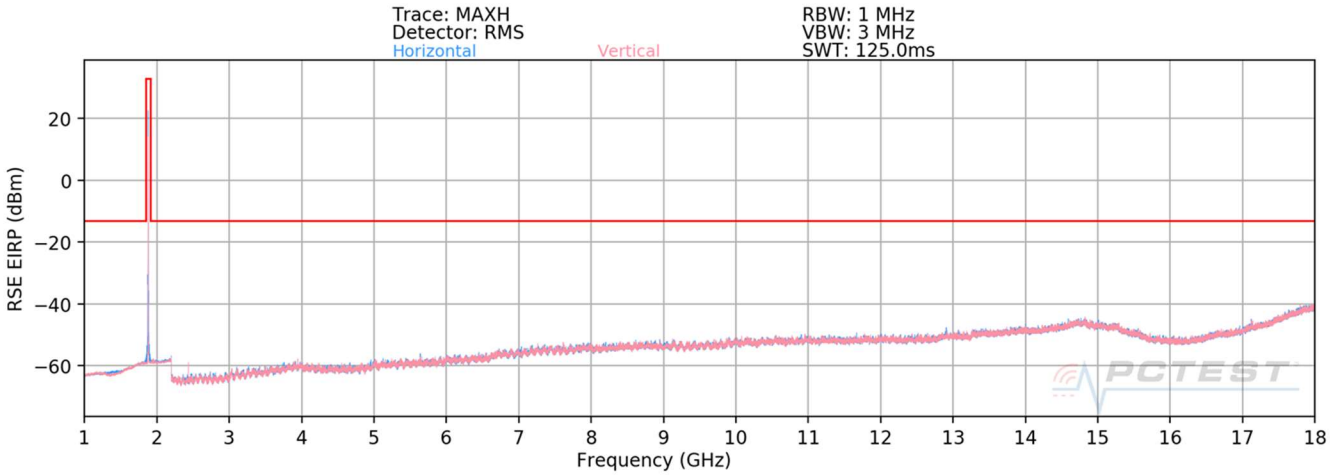
Bandwidth (MHz):	10
Frequency (MHz):	1910
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3820.00	H	-	-	-76.38	1.26	31.88	-63.38	-13.00	-50.38
5730.00	H	-	-	-78.47	3.86	32.39	-62.86	-13.00	-49.86
7640.00	H	-	-	-78.65	8.64	36.99	-58.27	-13.00	-45.27
9550.00	H	-	-	-79.88	11.85	38.97	-56.29	-13.00	-43.29

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

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

GSM/GPRS PCS



Plot 7-101. Radiated Spurious Plot (GPRS PCS)

Mode:	GPRS 1 Tx Slot
Channel:	512
Frequency (MHz):	1850.2

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3700.40	H	143	334	-73.11	-0.29	33.60	-61.66	-13.00	-48.66
5550.60	H	-	-	-74.83	3.59	35.76	-59.49	-13.00	-46.49
7400.80	H	-	-	-75.53	8.52	39.99	-55.27	-13.00	-42.27
9251.00	H	-	-	-76.38	11.52	42.14	-53.11	-13.00	-40.11

Table 7-8. Radiated Spurious Data (GPRS PCS – Low Channel)

Mode:	GPRS 1 Tx Slot
Channel:	661
Frequency (MHz):	1880

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	H	187	317	-71.32	0.03	35.71	-59.55	-13.00	-46.55
5640.00	H	-	-	-74.80	3.92	36.12	-59.14	-13.00	-46.14
7520.00	H	-	-	-75.04	8.68	40.64	-54.62	-13.00	-41.62
9400.00	H	-	-	-76.32	11.70	42.38	-52.88	-13.00	-39.88

Table 7-9. Radiated Spurious Data (GPRS PCS – Mid Channel)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

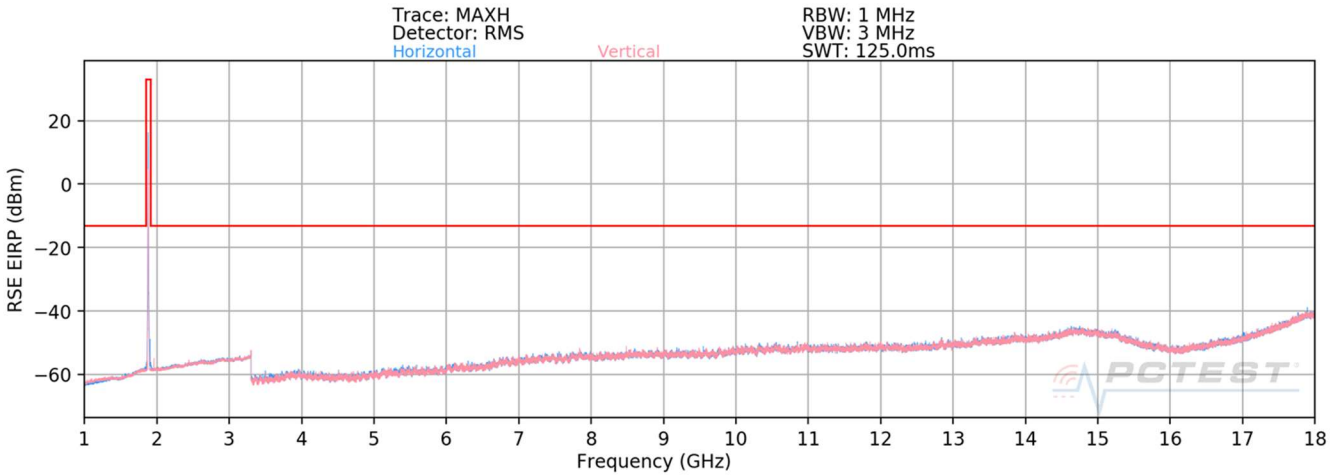
Mode:	GPRS 1 Tx Slot
Channel:	810
Frequency (MHz):	1909.8

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	138	315	-68.50	0.53	39.03	-56.22	-13.00	-43.22
5729.40	H	-	-	-75.27	4.30	36.03	-59.23	-13.00	-46.23
7639.20	H	-	-	-75.61	8.71	40.10	-55.15	-13.00	-42.15
9549.00	H	-	-	-76.70	11.49	41.79	-53.46	-13.00	-40.46

Table 7-10. Radiated Spurious Data (GPRS PCS – High Channel)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

WCDMA PCS



Plot 7-102. 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	H	-	-	-76.79	-0.34	29.87	-65.38	-13.00	-52.38
5557.20	H	-	-	-77.94	3.51	32.57	-62.69	-13.00	-49.69
7409.60	H	-	-	-78.85	8.70	36.85	-58.41	-13.00	-45.41
9262.00	H	-	-	-79.27	11.10	38.83	-56.43	-13.00	-43.43

Table 7-11. Radiated Spurious Data (WCDMA PCS – Low Channel)

Mode:	WCDMA RMC
Channel:	9400
Frequency (MHz):	1880

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	H	-	-	-76.58	0.03	30.45	-64.81	-13.00	-51.81
5640.00	H	-	-	-78.36	3.92	32.56	-62.70	-13.00	-49.70
7520.00	H	-	-	-78.34	8.68	37.34	-57.92	-13.00	-44.92
9400.00	H	-	-	-79.97	11.70	38.73	-56.53	-13.00	-43.53

Table 7-12. Radiated Spurious Data (WCDMA PCS – Mid Channel)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

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

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3815.20	H	-	-	-76.39	0.52	31.13	-64.13	-13.00	-51.13
5722.80	H	-	-	-78.51	4.19	32.68	-62.57	-13.00	-49.57
7630.40	H	-	-	-78.52	8.72	37.20	-58.05	-13.00	-45.05
9538.00	H	-	-	-79.64	11.89	39.25	-56.01	-13.00	-43.01

Table 7-13. Radiated Spurious Data (WCDMA PCS – High Channel)

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

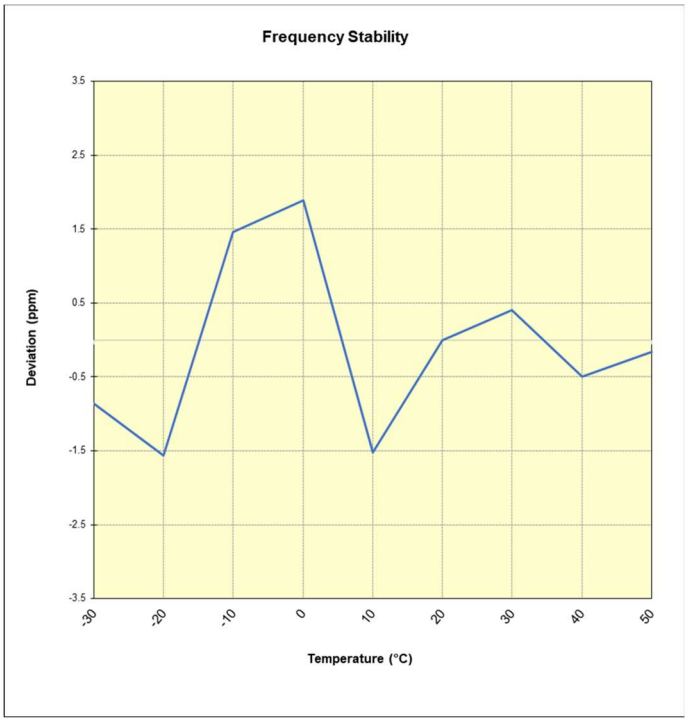
None

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

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	1,882,498,366	-1,619	-0.0000860
		- 20	1,882,497,048	-2,937	-0.0001560
		- 10	1,882,502,731	2,746	0.0001459
		0	1,882,503,538	3,553	0.0001887
		+ 10	1,882,497,120	-2,865	-0.0001522
		+ 20 (Ref)	1,882,499,985	0	0.0000000
		+ 30	1,882,500,756	771	0.0000410
		+ 40	1,882,499,049	-937	-0.0000497
		+ 50	1,882,499,686	-299	-0.0000159
Battery Endpoint	3.80	+ 20	1,882,499,066	-919	-0.0000488

Table 7-14. LTE Band 25/2 Frequency Stability Data



Plot 7-103. LTE Band 25/2 Frequency Stability Chart

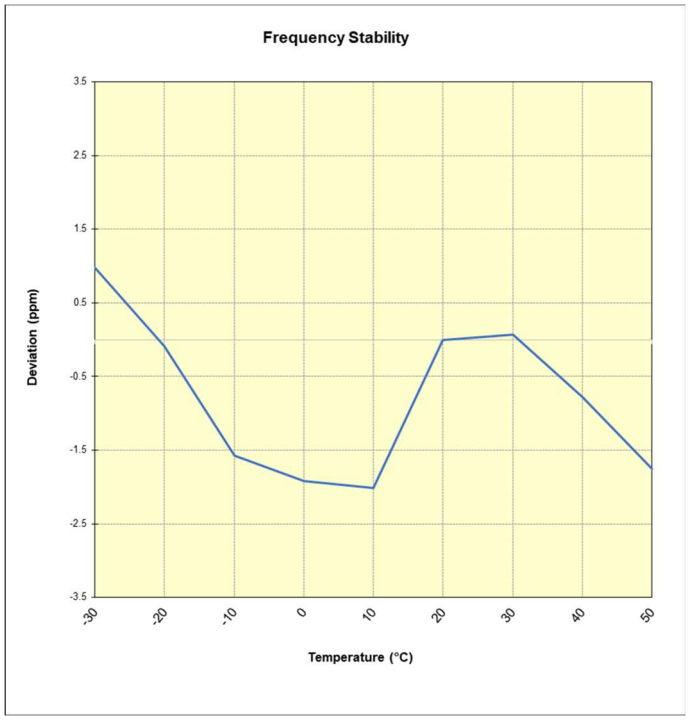
© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

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	1,880,004,789	1,839	0.0000978
		- 20	1,880,002,785	-165	-0.0000088
		- 10	1,879,999,986	-2,964	-0.0001577
		0	1,879,999,336	-3,615	-0.0001923
		+ 10	1,879,999,156	-3,794	-0.0002018
		+ 20 (Ref)	1,880,002,950	0	0.0000000
		+ 30	1,880,003,079	129	0.0000069
		+ 40	1,880,001,495	-1,455	-0.0000774
		+ 50	1,879,999,653	-3,297	-0.0001754
Battery Endpoint	3.80	+ 20	1,880,001,750	-1,200	-0.0000638

Table 7-15. GSM/GPRS PCS Frequency Stability Data



Plot 7-104. GSM/GPRS PCS Frequency Stability Chart

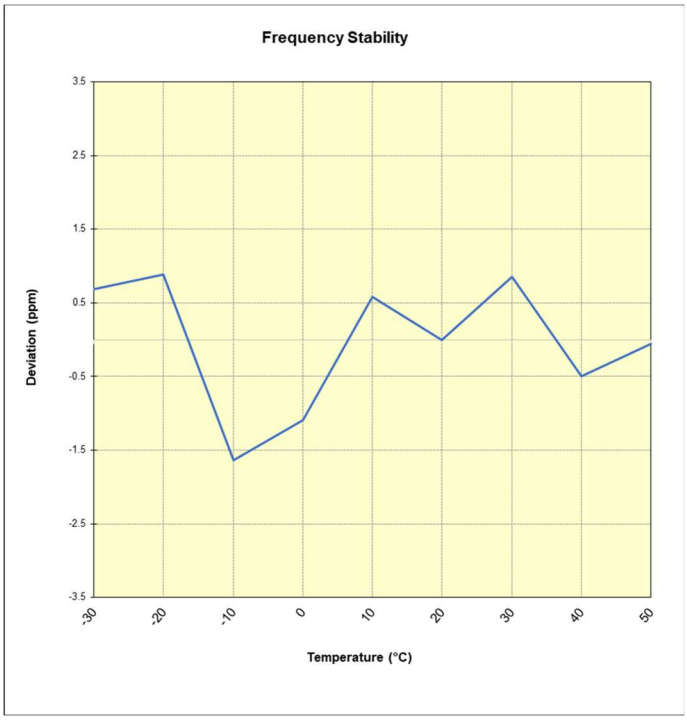
© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

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	1,880,001,359	1,301	0.0000692
		- 20	1,880,001,720	1,661	0.0000884
		- 10	1,879,996,986	-3,073	-0.0001634
		0	1,879,998,005	-2,054	-0.0001093
		+ 10	1,880,001,158	1,100	0.0000585
		+ 20 (Ref)	1,880,000,059	0	0.0000000
		+ 30	1,880,001,667	1,609	0.0000856
		+ 40	1,879,999,123	-936	-0.0000498
		+ 50	1,879,999,959	-100	-0.0000053
Battery Endpoint	3.80	+ 20	1,880,000,331	273	0.0000145

Table 7-16. WCDMA PCS Frequency Stability Data



Plot 7-105. WCDMA PCS Frequency Stability Chart

© 2021 PCTEST V2.0 3/15/2021
All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Samsung **Portable Handset FCC ID: A3LSMS908E** complies with all the requirements of Part 24 of the FCC rules.

© 2021 PCTEST V2.0 3/15/2021

All rights reserved. Unless otherwise specified, no part of this report may be reproduced or utilized in any part, form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from PCTEST. If you have any questions about this international copyright or have an enquiry about obtaining additional rights to this report or assembly of contents thereof, please contact INFO@PCTEST.COM.