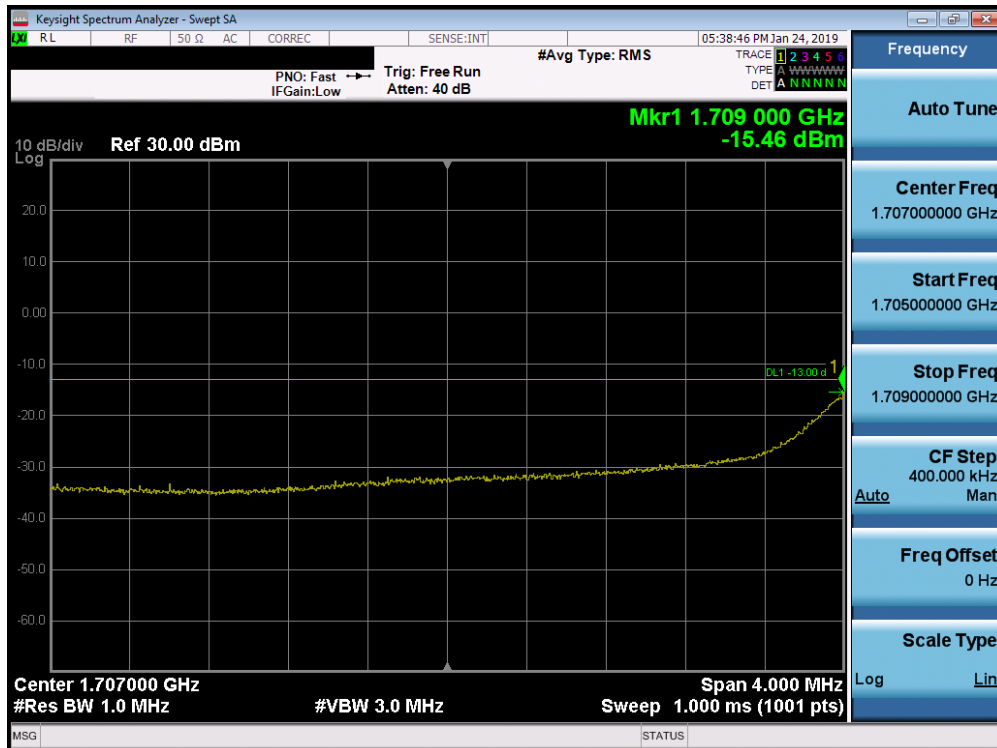


AWS WCDMA Mode



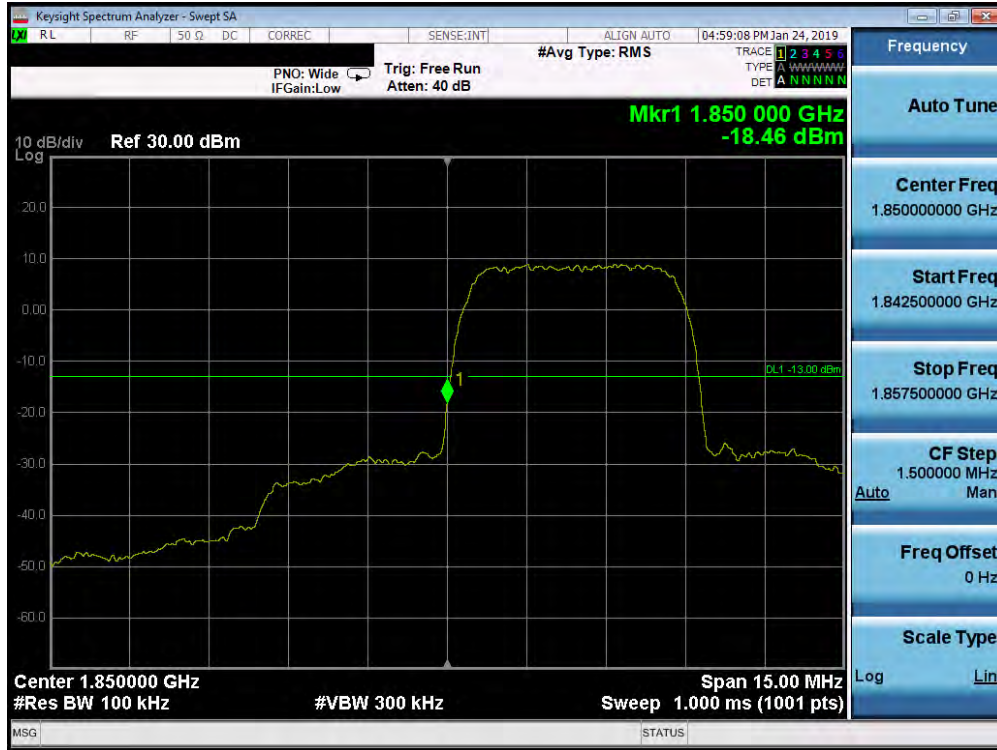
Plot 7-89. Band Edge Plot (AWS WCDMA Mode - Low Channel)



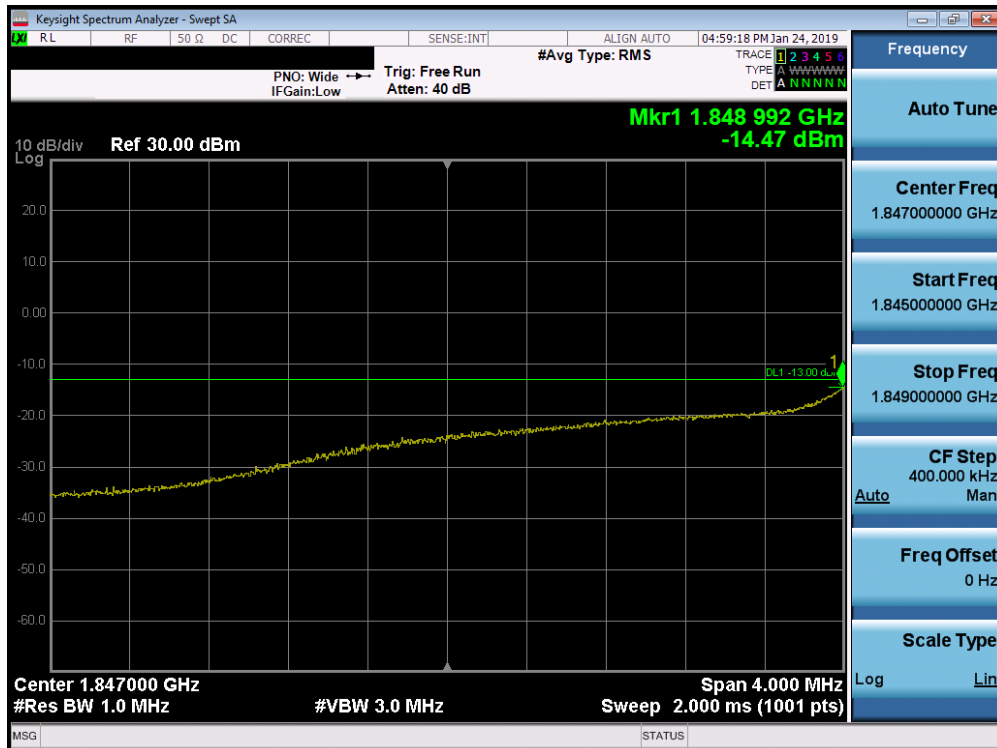
Plot 7-90. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 64 of 111

PCS WCDMA Mode



Plot 7-93. Band Edge Plot (PCS WCDMA Mode - Low Channel)



Plot 7-94. 4MHz Span Plot (PCS WCDMA Mode - Low Channel)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 66 of 111

7.5 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

1. The signal analyzer’s CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal “RF Burst” trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the “on time” of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

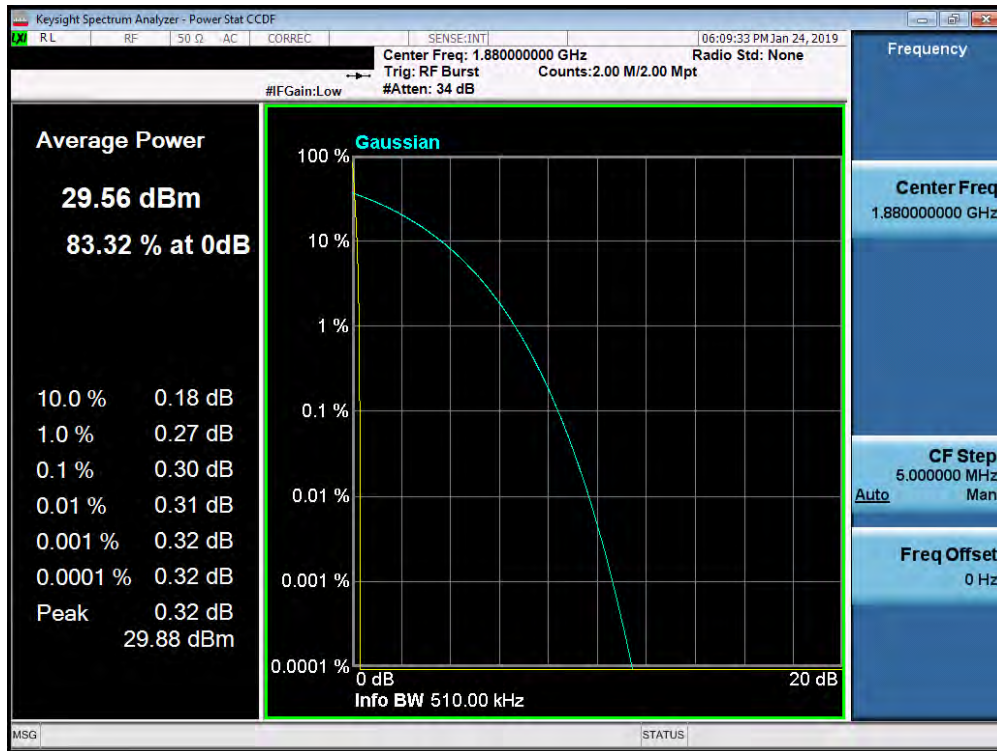


Figure 7-4. Test Instrument & Measurement Setup

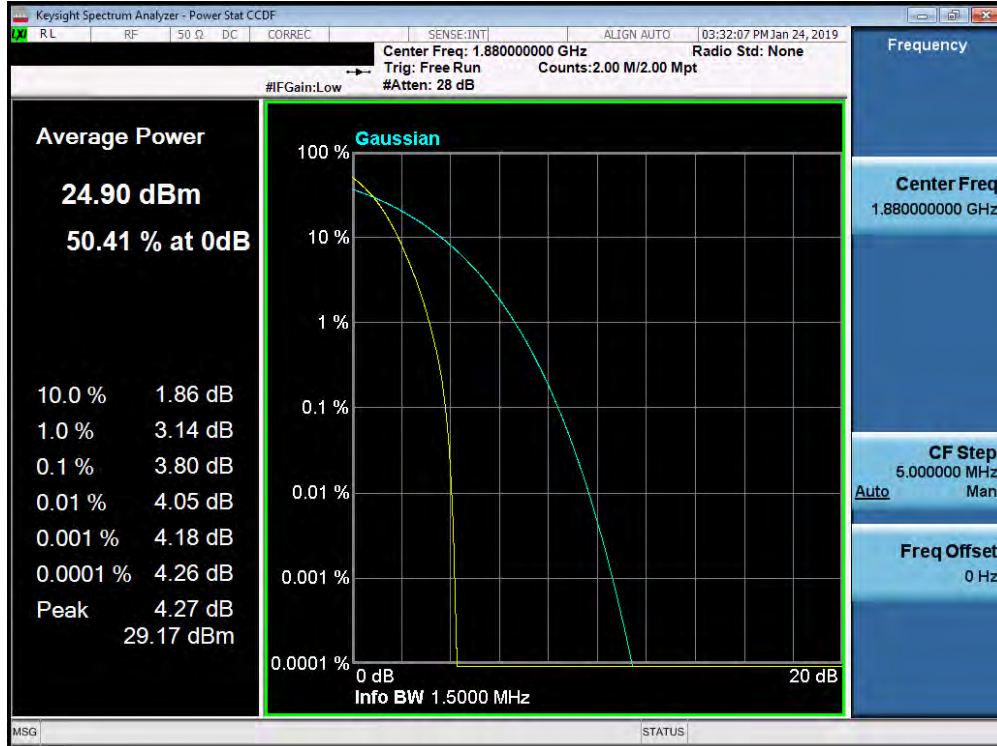
Test Notes

None

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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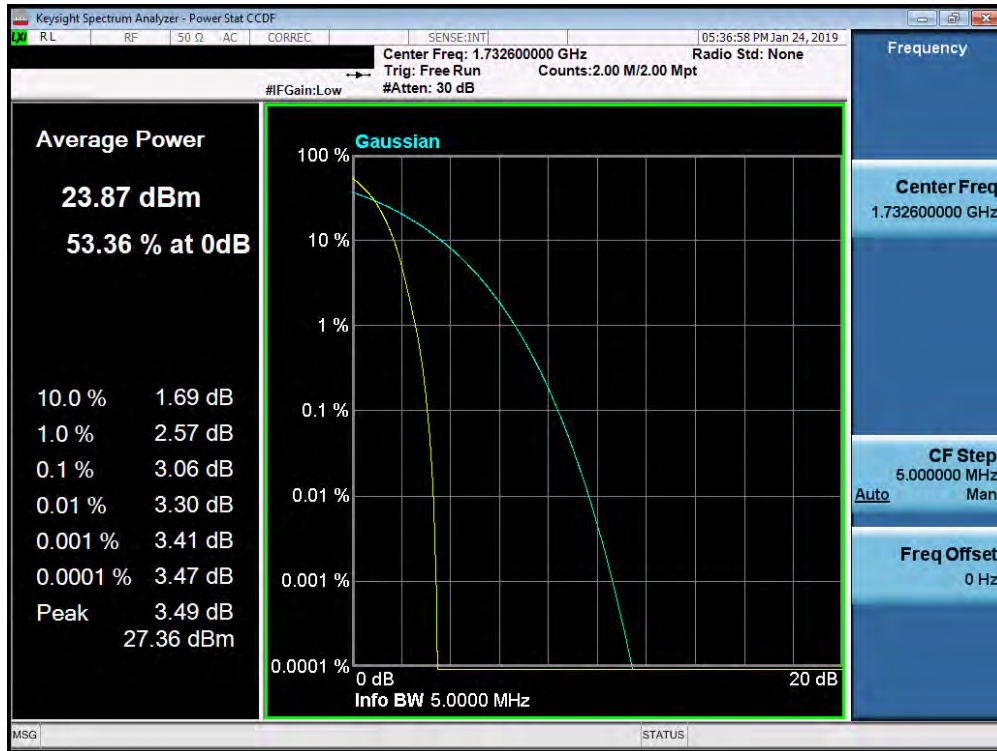


Plot 7-97. Peak-Average Ratio Plot (PCS GPRS Mode)

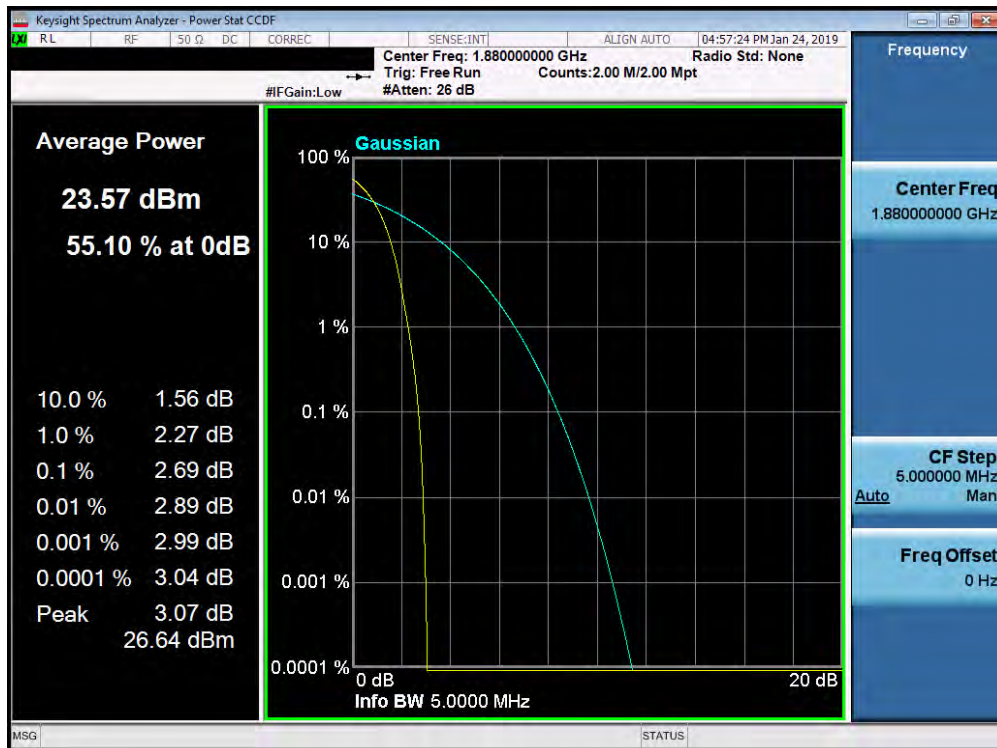


Plot 7-98. Peak-Average Ratio Plot (PCS CDMA Mode)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 69 of 111



Plot 7-99. Peak-Average Ratio Plot (AWS WCDMA Mode)



Plot 7-100. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: A3LSMG977T	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 70 of 111

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

FCC ID: A3LSMG977T	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Test Setup

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

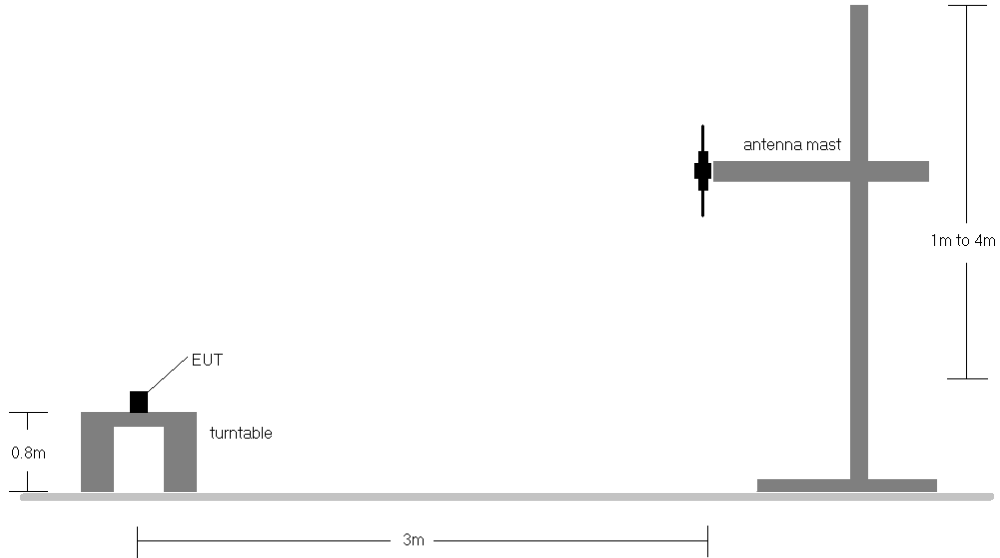


Figure 7-5. Radiated Test Setup <1GHz

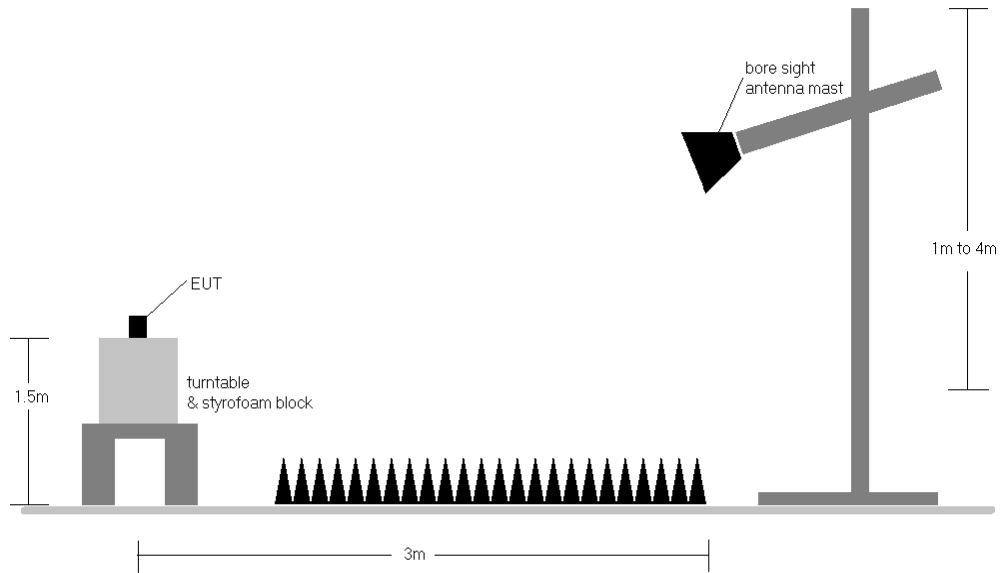


Figure 7-6. Radiated Test Setup >1GHz

<p>FCC ID: A3LSMG977T</p>		<p>MEASUREMENT REPORT (CERTIFICATION)</p>	 <p>Approved by: Quality Manager</p>
<p>Test Report S/N: 1M1903060032-02.A3L</p>	<p>Test Dates: 01/22 - 05/08/2019</p>	<p>EUT Type: Portable Handset</p>	<p>Page 72 of 111</p>

Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) For CDMA, this device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.

FCC ID: A3LSMG977T	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.20	GPRS850	H	180	166	24.78	7.11	29.74	0.942	38.45	-8.71	31.89	1.545	40.61	-8.72
836.60	GPRS850	H	108	258	25.06	7.34	30.25	1.059	38.45	-8.20	32.40	1.737	40.61	-8.21
848.80	GPRS850	H	128	42	24.93	7.56	30.34	1.082	38.45	-8.11	32.49	1.775	40.61	-8.12
848.80	GPRS850	V	205	18	22.00	7.09	26.94	0.494	38.45	-11.52	29.09	0.810	40.61	-11.52
848.80	EDGE850	H	108	258	21.52	7.34	26.71	0.469	38.45	-11.74	28.86	0.769	40.61	-11.75
848.80	GPRS850 (WCP)	H	169	301	18.89	7.34	24.08	0.256	38.45	-14.37	26.23	0.420	40.61	-14.38

Table 7-2. ERP/EIRP (Cellular GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	CDMA850	V	132	292	16.08	7.12	21.05	0.127	38.45	-17.40	23.20	0.209	40.61	-17.41
836.52	CDMA850	V	101	247	16.15	7.34	21.34	0.136	38.45	-17.11	23.49	0.223	40.61	-17.12
848.31	CDMA850	V	144	257	15.96	7.55	21.36	0.137	38.45	-17.09	23.51	0.225	40.61	-17.09
836.52	CDMA850	H	203	286	14.00	7.34	19.19	0.083	38.45	-19.26	21.34	0.136	40.61	-19.27
836.52	CDMA850 (WCP)	H	203	301	11.36	7.34	16.55	0.045	38.45	-21.90	18.70	0.074	40.61	-21.91

Table 7-3. ERP/EIRP (Cellular CDMA)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	V	100	288	15.79	7.15	20.79	0.120	38.45	-17.66	22.94	0.197	40.61	-17.67
836.60	WCDMA850	V	140	287	16.05	7.34	21.24	0.133	38.45	-17.21	23.39	0.218	40.61	-17.22
846.60	WCDMA850	V	130	251	15.19	7.52	20.56	0.114	38.45	-17.89	22.71	0.187	40.61	-17.90
836.60	WCDMA850	H	207	291	15.05	7.09	19.99	0.100	38.45	-18.47	22.14	0.163	40.61	-18.47
836.60	WCDMA850 (WCP)	H	199	304	14.79	7.34	19.98	0.100	38.45	-18.47	22.13	0.163	40.61	-18.48

Table 7-4. ERP/EIRP (Cellular WCDMA)

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]
1712.40	WCDMA1700	V	193	341	14.24	9.59	23.83	0.242	30.00	-6.17
1732.60	WCDMA1700	V	176	318	13.95	9.53	23.48	0.223	30.00	-6.52
1752.60	WCDMA1700	V	100	330	13.89	9.45	23.34	0.216	30.00	-6.66
1712.40	WCDMA1700	H	134	207	13.68	9.62	23.30	0.214	30.00	-6.70
1712.40	WCDMA1700 (WCP)	V	158	178	11.82	9.59	21.41	0.139	30.00	-8.59

Table 7-5. EIRP (AWS WCDMA)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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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	GSM1900	V	203	313	20.57	9.06	29.63	0.918	33.01	-3.38
1880.00	GSM1900	V	253	347	20.22	9.09	29.31	0.853	33.01	-3.70
1909.80	GSM1900	V	149	354	19.02	9.17	28.19	0.659	33.01	-4.82
1850.20	GSM1900	H	106	1	19.17	9.06	28.23	0.665	33.01	-4.78
1850.20	EDGE1900	V	203	313	16.51	9.06	25.57	0.361	33.01	-7.44
1850.20	GSM1900 (WCP)	H	229	116	17.18	9.06	26.24	0.421	33.01	-6.77

Table 7-6. EIRP (PCS GPRS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1851.25	CDMA1900	V	135	351	13.37	9.06	22.43	0.175	33.01	-10.58
1880.00	CDMA1900	V	125	344	12.86	9.09	21.95	0.157	33.01	-11.06
1908.75	CDMA1900	V	108	345	13.60	9.16	22.76	0.189	33.01	-10.25
1908.75	CDMA1900	H	105	182	12.79	9.27	22.06	0.161	33.01	-10.95
1908.75	CDMA1900 (WCP)	V	173	169	11.27	9.16	20.43	0.110	33.01	-12.58

Table 7-7. EIRP (PCS CDMA)

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	105	343	14.12	9.06	23.18	0.208	33.01	-9.83
1880.00	WCDMA1900	V	100	337	13.70	9.09	22.79	0.190	33.01	-10.22
1907.60	WCDMA1900	V	108	348	14.72	9.15	23.87	0.244	33.01	-9.14
1907.60	WCDMA1900	H	102	179	13.90	9.09	22.99	0.199	33.01	-10.02
1907.60	WCDMA1900 (WCP)	V	165	158	11.66	9.15	20.81	0.120	33.01	-12.20

Table 7-8. EIRP (PCS WCDMA)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions 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 horizontally and vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW \geq 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points \geq 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: A3LSMG977T	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Test Setup

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

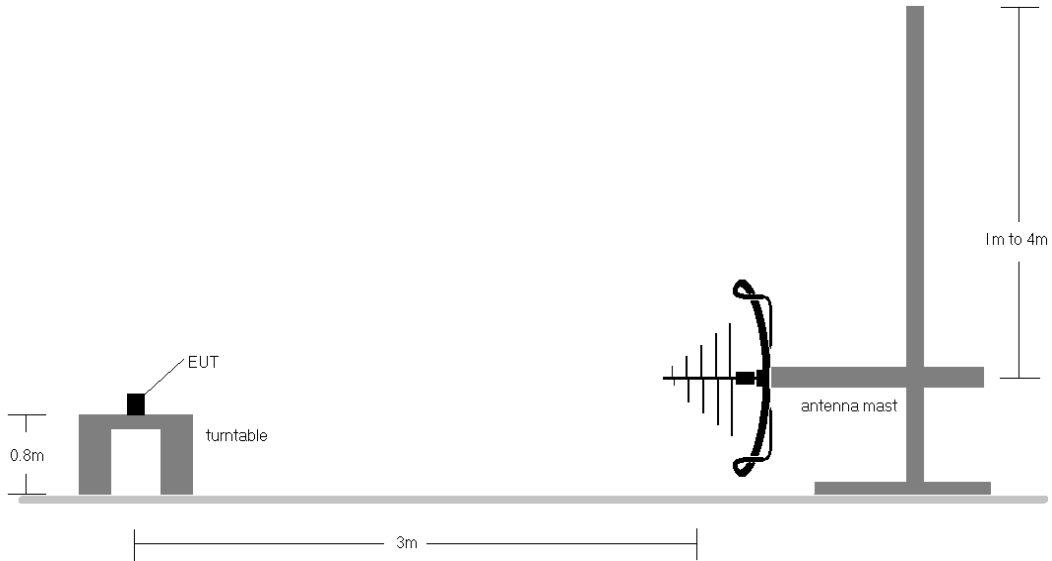


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

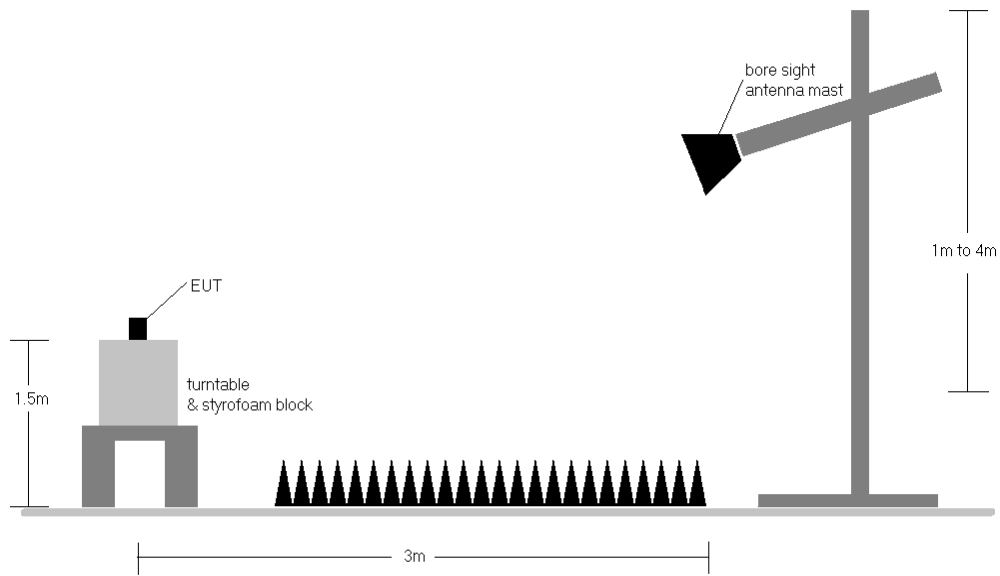


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

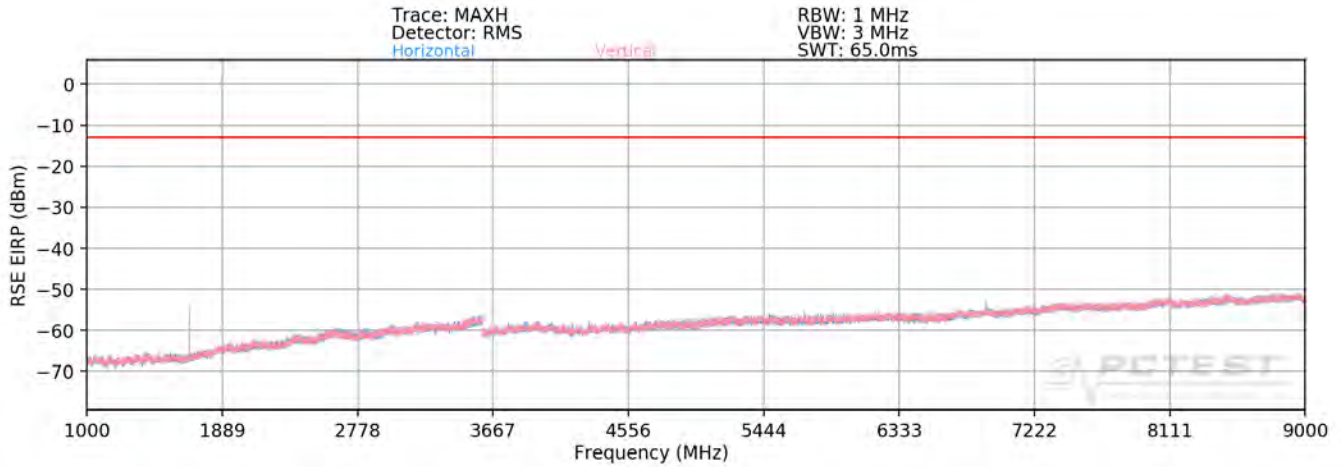
FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 77 of 111

Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA transmission, all configurations were investigated and the worst case UMTS emissions were found in RMC WCDMA mode at 12.2kbps with HSDPA inactive and TPC bits all set to "1."
- 3) For CDMA, this device was tested under all RC and SO combinations and the worst case is reported with RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case setup is reported in the tables below.
- 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.

FCC ID: A3LSMG977T	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Cellular GPRS Mode



Plot 7-101. Radiated Spurious Plot above 1GHz (Cellular GPRS Mode)

OPERATING FREQUENCY: 824.20 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1648.40	H	195	180	-54.65	8.94	-45.71	-32.7
2472.60	H	113	262	-65.26	9.64	-55.62	-42.6
3296.80	H	186	151	-65.32	9.57	-55.75	-42.7
4121.00	H	-	-	-68.34	10.17	-58.17	-45.2
4945.20	H	-	-	-67.75	10.90	-56.85	-43.8

Table 7-9. Radiated Spurious Data (Cellular GPRS Mode – Ch. 128)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 79 of 111

OPERATING FREQUENCY: 836.60 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	H	124	174	-60.67	8.95	-51.71	-38.7
2509.80	H	149	250	-66.70	9.75	-56.95	-43.9
3346.40	H	150	113	-65.87	9.60	-56.26	-43.3
4183.00	H	-	-	-68.71	10.35	-58.36	-45.4
5019.60	H	-	-	-67.10	10.88	-56.21	-43.2

Table 7-10. Radiated Spurious Data (Cellular GPRS Mode – Ch. 190)

OPERATING FREQUENCY: 848.80 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1697.60	H	116	216	-63.28	8.95	-54.33	-41.3
2546.40	H	113	162	-59.67	9.74	-49.92	-36.9
3395.20	H	397	123	-65.93	9.78	-56.15	-43.2
4244.00	H	-	-	-68.78	10.58	-58.20	-45.2
5092.80	H	-	-	-66.53	10.69	-55.84	-42.8

Table 7-11. Radiated Spurious Data (Cellular GPRS Mode – Ch. 251)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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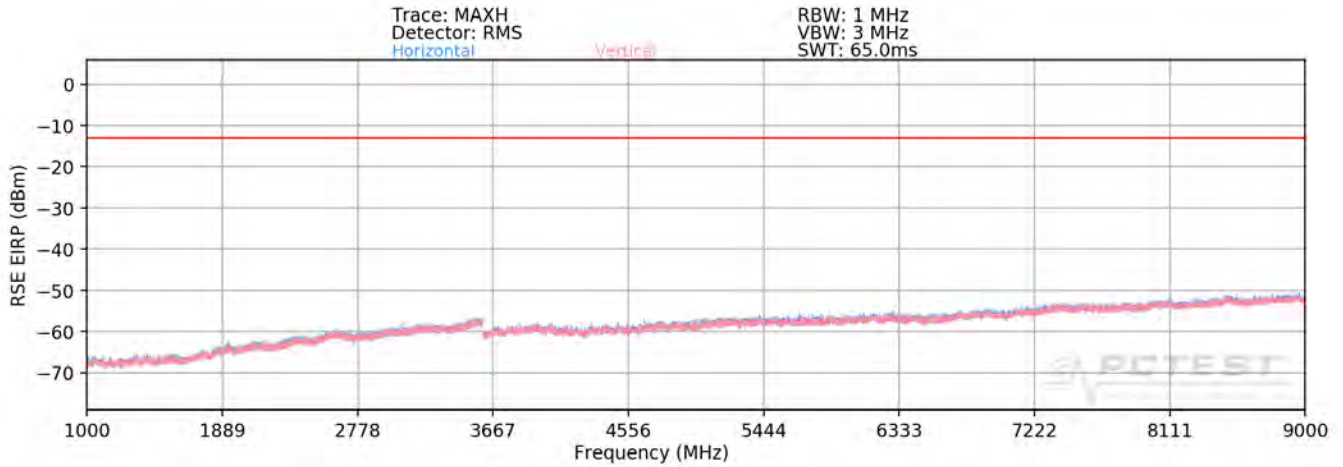
OPERATING FREQUENCY: 848.80 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1697.60	H	189	351	-55.41	8.95	-46.46	-33.5
2546.40	H	145	5	-55.81	9.74	-46.06	-33.1
3395.20	H	-	-	-66.43	9.78	-56.65	-43.7
4244.00	H	-	-	-69.02	10.58	-58.44	-45.4

Table 7-12. Radiated Spurious Data with WCP (Cellular GPRS Mode – Ch. 251)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 81 of 111

Cellular CDMA Mode



Plot 7-102. Radiated Spurious Plot above 1GHz (Cellular CDMA Mode)

OPERATING FREQUENCY: 824.70 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	H	397	280	-59.65	3.08	-56.57	-43.6
2474.10	H	203	367	-56.21	3.84	-52.38	-39.4
3298.80	H	-	-	-58.98	6.00	-52.98	-40.0
4123.50	H	-	-	-60.99	7.68	-53.31	-40.3
4948.20	H	-	-	-63.20	8.72	-54.47	-41.5

Table 7-13. Radiated Spurious Data (Cellular CDMA Mode – Ch. 1013)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 82 of 111

OPERATING FREQUENCY: 836.52 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.04	H	397	280	-59.66	3.10	-56.56	-43.6
2509.56	H	-	-	-58.13	4.02	-54.11	-41.1
3346.08	H	-	-	-59.04	6.03	-53.01	-40.0
4182.60	H	-	-	-60.41	7.79	-52.62	-39.6
5019.12	H	-	-	-60.23	8.78	-51.45	-38.5

Table 7-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 384)

OPERATING FREQUENCY: 848.31 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.62	H	211	112	-59.80	3.15	-56.64	-43.6
2544.93	H	-	-	-58.67	4.14	-54.53	-41.5
3393.24	H	-	-	-59.48	6.23	-53.25	-40.2
4241.55	H	-	-	-60.78	7.96	-52.81	-39.8
5089.86	H	-	-	-60.80	8.88	-51.92	-38.9

Table 7-15. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 83 of 111

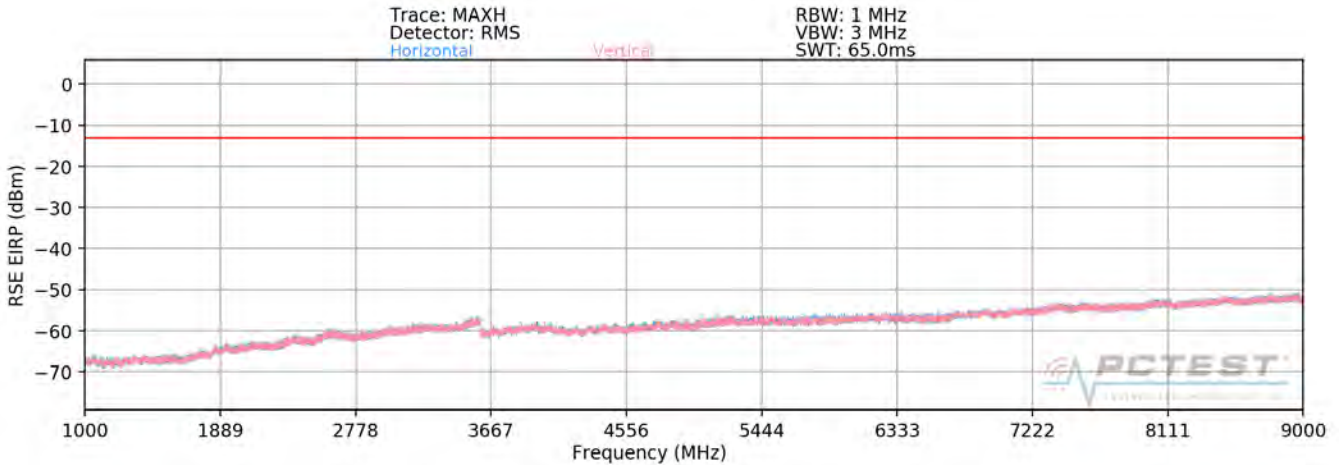
OPERATING FREQUENCY: 836.52 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.04	H	393	33	-61.10	3.10	-58.00	-45.0
2509.56	H	-	-	-58.00	4.02	-53.98	-41.0
3346.08	H	-	-	-59.52	6.03	-53.49	-40.5
4182.60	H	-	-	-60.25	7.79	-52.46	-39.5

Table 7-16. Radiated Spurious Data with WCP (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 84 of 111	

Cellular WCDMA Mode



Plot 7-103. Radiated Spurious Plot above 1GHz (Cellular WCDMA Mode)

OPERATING FREQUENCY: 826.40 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1652.80	H	346	153	-79.06	8.95	-70.11	-57.1
2479.20	H	-	-	-77.16	9.67	-67.48	-54.5
3305.60	H	-	-	-73.73	9.58	-64.14	-51.1

Table 7-17. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)

OPERATING FREQUENCY: 836.60 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	H	-	-	-80.20	8.95	-71.24	-58.2
2509.80	H	-	-	-77.84	9.75	-68.09	-55.1

Table 7-18. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 85 of 111

OPERATING FREQUENCY: 846.60 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1693.20	H	-	-	-79.68	8.95	-70.72	-57.7
2539.80	H	-	-	-77.19	9.74	-67.45	-54.4

Table 7-19. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)

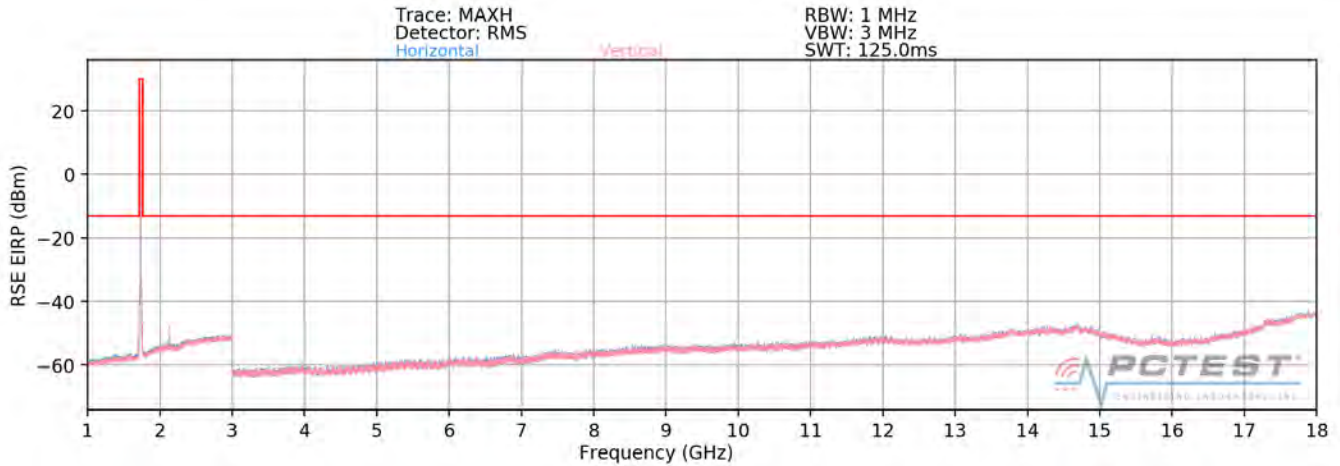
OPERATING FREQUENCY: 836.60 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.20	H	322	140	-79.41	8.95	-70.45	-57.5
2509.80	H	-	-	-77.54	9.75	-67.79	-54.8
3346.40	H	-	-	-74.20	9.60	-64.59	-51.6

Table 7-20. Radiated Spurious Data with WCP (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 86 of 111	

AWS WCDMA Mode



Plot 7-104. Radiated Spurious Plot above 1GHz (AWS WCDMA Mode)

OPERATING FREQUENCY: 1712.40 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3424.80	H	131	242	-71.76	9.83	-61.93	-48.9
5137.20	H	-	-	-72.11	10.69	-61.42	-48.4
6849.60	H	-	-	-70.61	11.64	-58.97	-46.0

Table 7-21. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1312)

OPERATING FREQUENCY: 1732.60 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.20	H	-	-	-73.25	9.88	-63.37	-50.4
5197.80	H	-	-	-72.43	10.76	-61.67	-48.7

Table 7-22. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 87 of 111

OPERATING FREQUENCY: 1752.60 MHz

MODULATION SIGNAL: WCDMA

DISTANCE: 3 meters

LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3505.20	H	-	-	-73.65	9.92	-63.73	-50.7
5257.80	H	-	-	-72.32	10.72	-61.60	-48.6

Table 7-23. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1513)

OPERATING FREQUENCY: 1712.40 MHz

MODULATION SIGNAL: WCDMA

DISTANCE: 3 meters

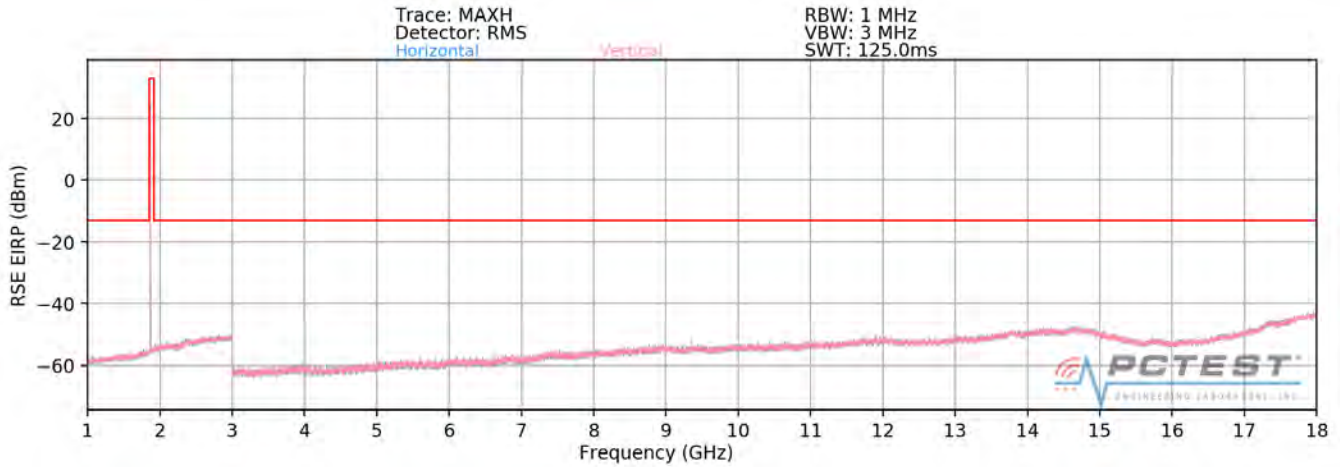
LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3424.80	H	130	230	-71.23	9.83	-61.40	-48.4
5137.20	H	-	-	-72.16	10.69	-61.47	-48.5
6849.60	H	-	-	-70.79	11.64	-59.15	-46.2

Table 7-24. Radiated Spurious Data with WCP (AWS WCDMA Mode – Ch. 1312)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 88 of 111

PCS GPRS Mode



Plot 7-105. Radiated Spurious Plot above 1GHz (PCS GPRS Mode)

OPERATING FREQUENCY: 1850.20 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3700.40	V	134	351	-69.28	9.58	-59.69	-46.7
5550.60	V	151	10	-62.32	10.94	-51.38	-38.4
7400.80	V	135	342	-60.74	10.96	-49.79	-36.8
9251.00	V	130	337	-52.75	11.63	-41.11	-28.1
11101.20	V	-	-	-65.77	12.74	-53.03	-40.0
12951.40	V	-	-	-64.02	13.30	-50.72	-37.7

Table 7-25. Radiated Spurious Data (PCS GPRS Mode – Ch. 512)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 89 of 111	

OPERATING FREQUENCY: 1880.00 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	175	347	-68.54	9.37	-59.17	-46.2
5640.00	V	113	6	-62.69	11.17	-51.53	-38.5
7520.00	V	139	327	-61.70	11.11	-50.59	-37.6
9400.00	V	111	348	-56.40	11.57	-44.82	-31.8
11280.00	V	-	-	-65.41	12.72	-52.70	-39.7
13160.00	V	-	-	-63.75	13.15	-50.61	-37.6

Table 7-26. Radiated Spurious Data (PCS GPRS Mode – Ch. 661)

OPERATING FREQUENCY: 1909.80 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3819.60	V	127	21	-65.61	9.30	-56.30	-43.3
5729.40	V	111	356	-64.23	11.39	-52.84	-39.8
7639.20	V	116	321	-62.33	11.33	-51.00	-38.0
9549.00	V	115	345	-57.29	11.79	-45.50	-32.5
11458.80	V	-	-	-65.14	12.82	-52.33	-39.3
13368.60	V	-	-	-63.30	12.78	-50.51	-37.5

Table 7-27. Radiated Spurious Data (PCS GPRS Mode – Ch. 810)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset		Page 90 of 111

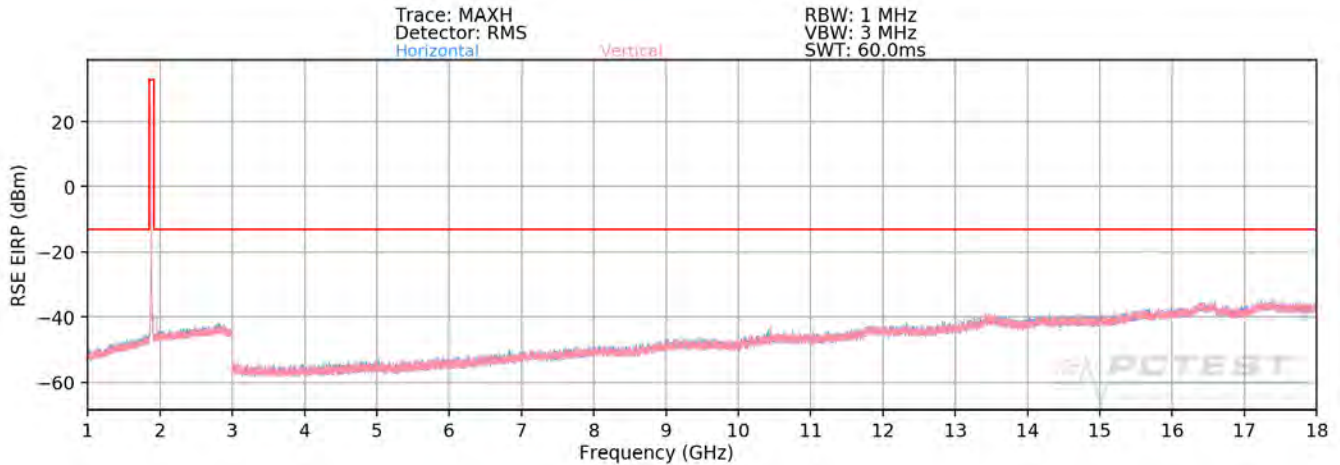
OPERATING FREQUENCY: 1850.20 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3700.40	V	135	343	-66.28	9.58	-56.69	-43.7
5550.60	V	121	322	-65.33	10.94	-54.39	-41.4
7400.80	V	141	82	-61.69	10.96	-50.74	-37.7
9251.00	V	125	77	-59.63	11.63	-47.99	-35.0
11101.20	V	-	-	-66.32	12.74	-53.58	-40.6
12951.40	V	-	-	-64.46	13.30	-51.16	-38.2

Table 7-28. Radiated Spurious Data with WCP (PCS GPRS Mode – Ch. 512)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1903060032-02.A3L	Test Dates: 01/22 - 05/08/2019	EUT Type: Portable Handset	Page 91 of 111	

PCS CDMA Mode



Plot 7-106. Radiated Spurious Plot above 1GHz (PCS CDMA Mode)

OPERATING FREQUENCY: 1851.25 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3702.50	V	-	-	-68.79	6.89	-61.89	-48.9
5553.75	V	-	-	-68.64	9.02	-59.62	-46.6

Table 7-29. Radiated Spurious Data (PCS CDMA Mode – Ch. 25)

OPERATING FREQUENCY: 1880.00 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	-	-	-69.00	6.93	-62.07	-49.1
5640.00	V	-	-	-69.17	9.15	-60.02	-47.0

Table 7-30. Radiated Spurious Data (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1908.75 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3817.50	V	-	-	-68.45	7.10	-61.35	-48.4
5726.25	V	-	-	-69.10	9.03	-60.07	-47.1

Table 7-31. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

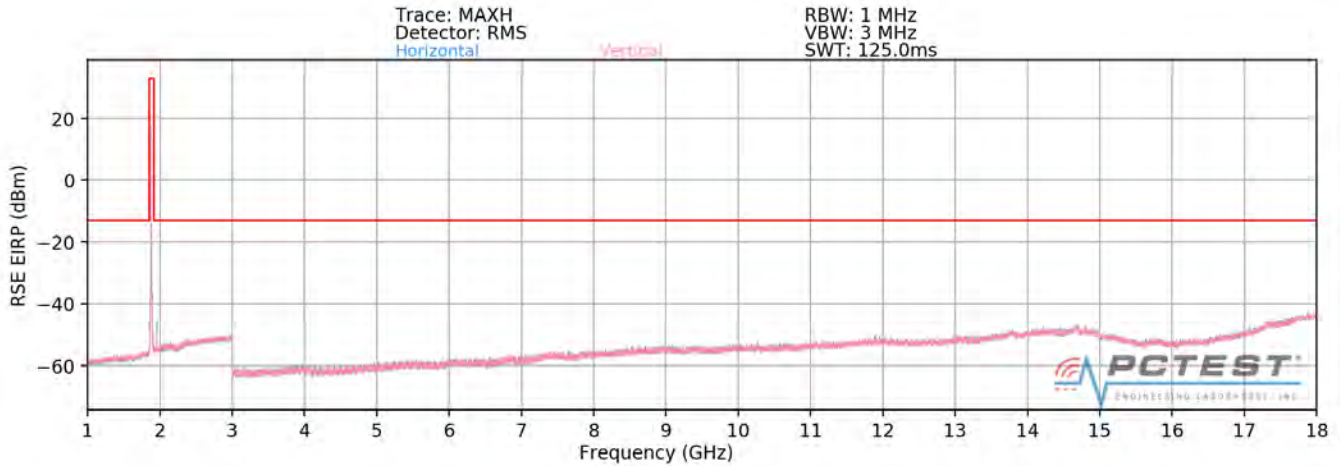
OPERATING FREQUENCY: 1908.75 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3817.50	V	-	-	-68.67	7.10	-61.57	-48.6
5726.25	V	-	-	-69.29	9.03	-60.26	-47.3

Table 7-32. Radiated Spurious Data with WCP (PCS CDMA Mode – Ch. 1175)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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PCS WCDMA Mode



Plot 7-107. Radiated Spurious Plot above 1GHz (PCS WCDMA Mode)

OPERATING FREQUENCY: 1852.40 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3704.80	V	-	-	-69.64	6.89	-62.75	-49.7
5557.20	V	-	-	-70.62	9.02	-61.60	-48.6

Table 7-33. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)

OPERATING FREQUENCY: 1880.00 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	-	-	-69.85	6.93	-62.92	-49.9
5640.00	V	-	-	-70.15	9.15	-61.00	-48.0

Table 7-34. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1907.60 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.20	V	-	-	-69.93	7.10	-62.83	-49.8
5722.80	V	-	-	-69.94	9.03	-60.91	-47.9

Table 7-35. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9538)

OPERATING FREQUENCY: 1907.60 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.20	V	-	-	-70.34	7.10	-63.24	-50.2
5722.80	V	-	-	-70.09	9.03	-61.06	-48.1

Table 7-36. Radiated Spurious Data with WCP (PCS WCDMA Mode – Ch. 9538)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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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.

For Part 22, RSS-132, and RSS-133, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24, Part 27, and RSS-139, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 836,600,000 Hz
 CHANNEL: 190
 REFERENCE VOLTAGE: 4.31 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	836,599,775	-225	-0.0000269
100 %		- 20	836,599,980	-20	-0.0000024
100 %		- 10	836,600,023	23	0.0000027
100 %		0	836,599,883	-117	-0.0000140
100 %		+ 10	836,600,239	239	0.0000286
100 %		+ 20	836,599,873	-127	-0.0000152
100 %		+ 30	836,599,878	-122	-0.0000146
100 %		+ 40	836,599,989	-11	-0.0000013
100 %		+ 50	836,599,922	-78	-0.0000093
BATT. ENDPOINT	3.44	+ 20	836,600,381	381	0.0000455

Table 7-37. Frequency Stability Data (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

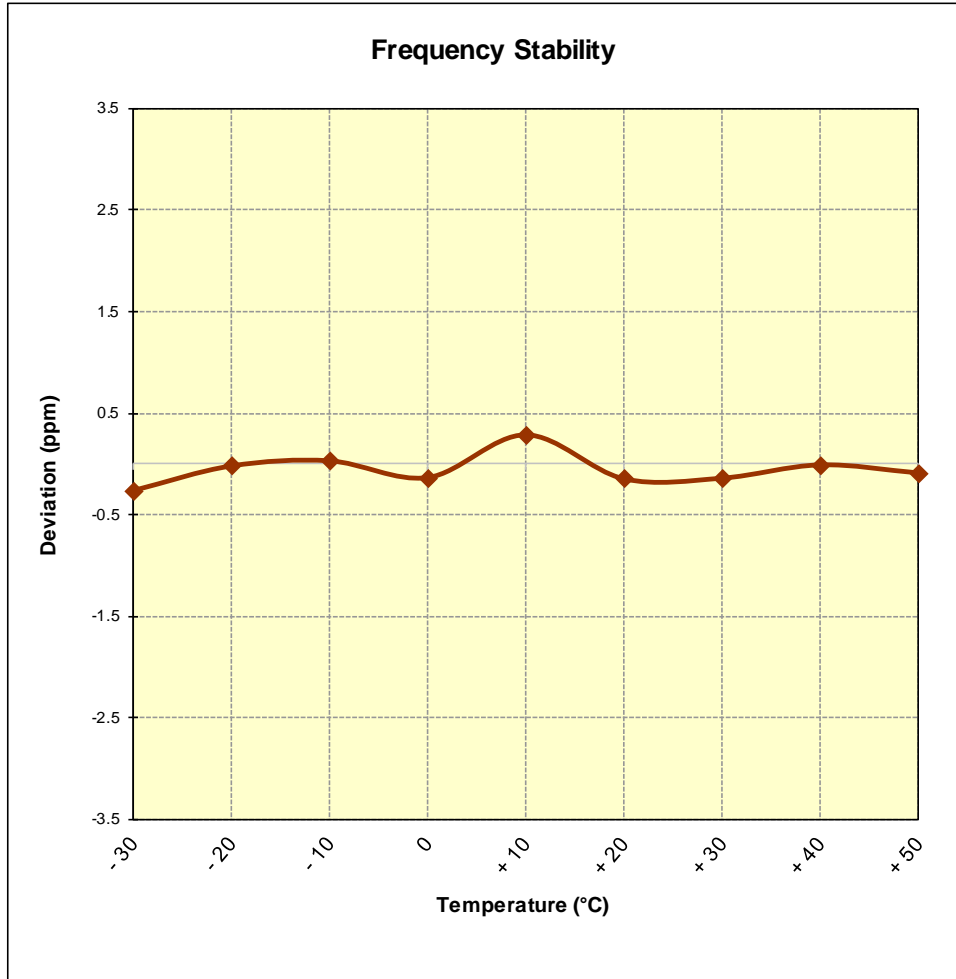


Figure 7-9. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	836,520,000	Hz
CHANNEL:	384	
REFERENCE VOLTAGE:	4.31	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	836,519,731	-269	-0.0000322
100 %		- 20	836,520,169	169	0.0000202
100 %		- 10	836,519,825	-175	-0.0000209
100 %		0	836,519,642	-358	-0.0000428
100 %		+ 10	836,520,172	172	0.0000206
100 %		+ 20	836,520,225	225	0.0000269
100 %		+ 30	836,520,172	172	0.0000206
100 %		+ 40	836,520,302	302	0.0000361
100 %		+ 50	836,519,580	-420	-0.0000502
BATT. ENDPOINT	3.44	+ 20	836,519,897	-103	-0.0000123

Table 7-38. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

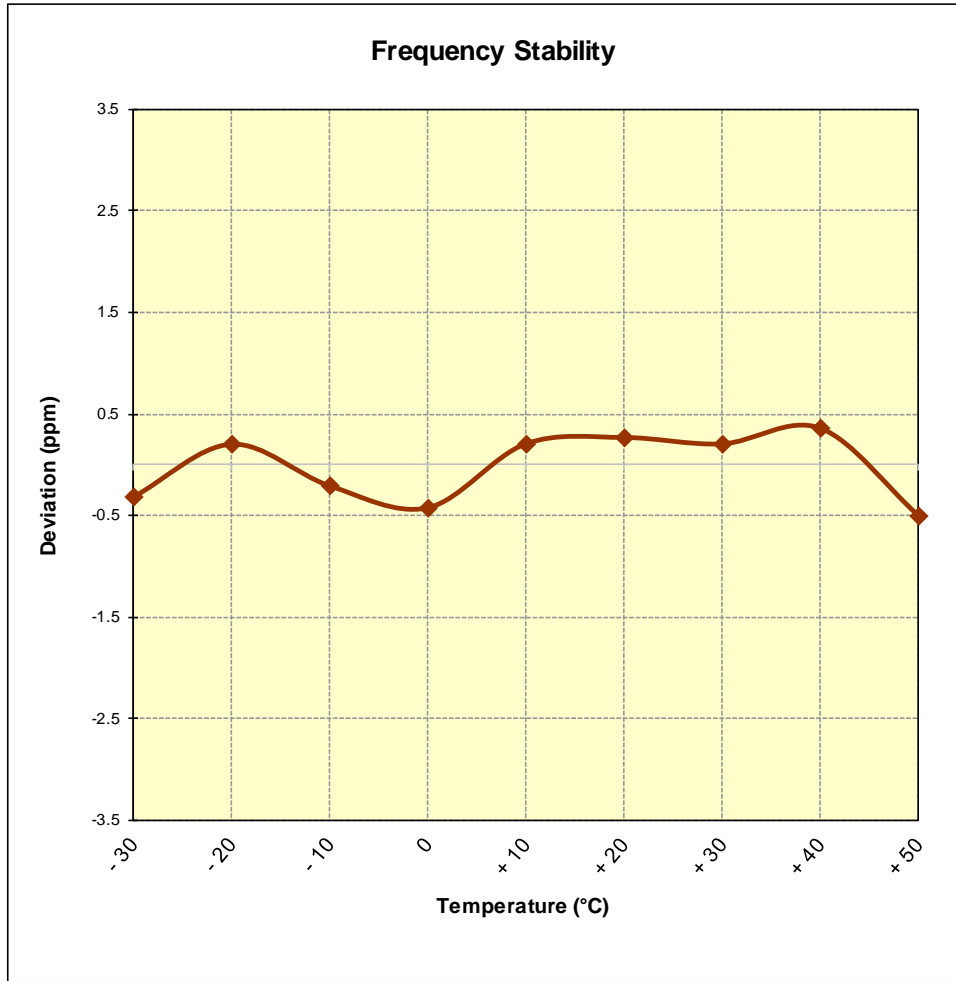


Figure 7-10. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

<p>FCC ID: A3LSMG977T</p>		<p>MEASUREMENT REPORT (CERTIFICATION)</p>	<p>Approved by: Quality Manager</p>
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	836,600,000	Hz
CHANNEL:	4183	
REFERENCE VOLTAGE:	4.31	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	836,600,022	22	0.0000026
100 %		- 20	836,599,594	-406	-0.0000485
100 %		- 10	836,600,042	42	0.0000050
100 %		0	836,599,910	-90	-0.0000108
100 %		+ 10	836,599,916	-84	-0.0000100
100 %		+ 20	836,599,590	-410	-0.0000490
100 %		+ 30	836,599,973	-27	-0.0000032
100 %		+ 40	836,599,937	-63	-0.0000075
100 %		+ 50	836,600,047	47	0.0000056
BATT. ENDPOINT	3.44	+ 20	836,600,219	219	0.0000262

Table 7-39. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

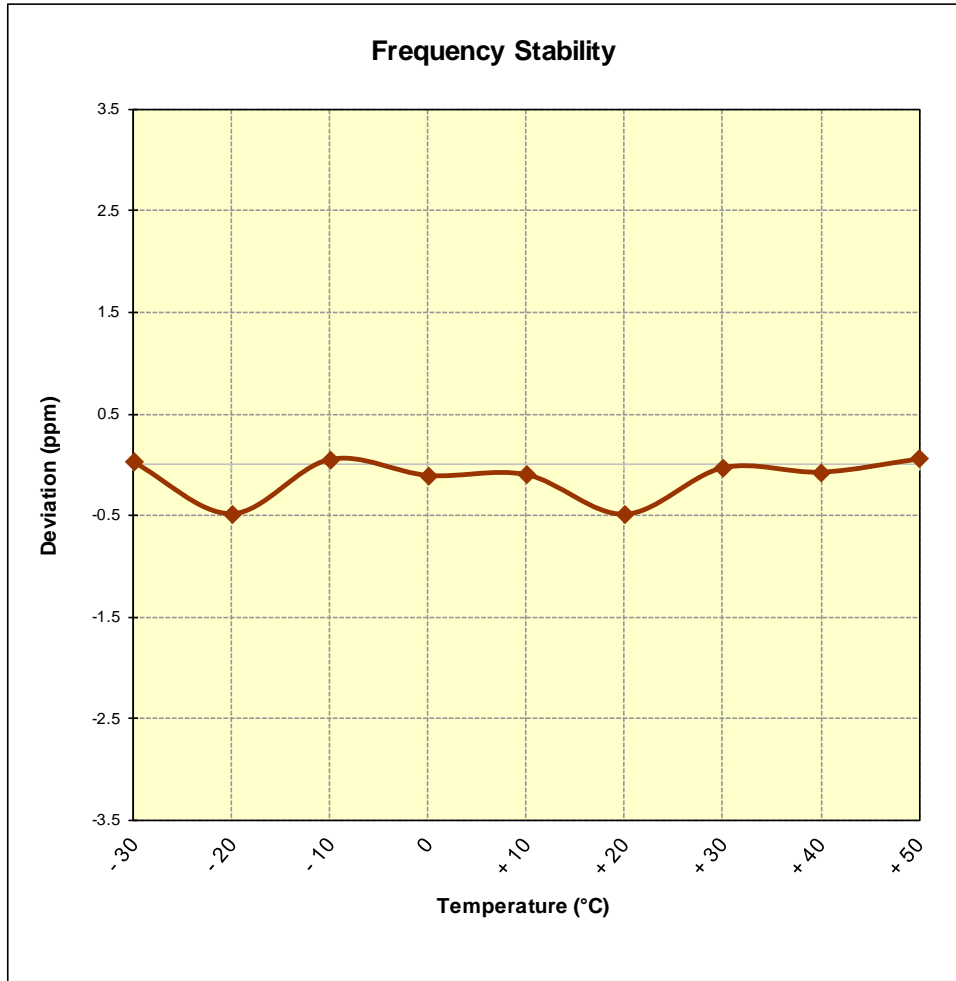


Figure 7-11. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

<p>FCC ID: A3LSMG977T</p>		<p>MEASUREMENT REPORT (CERTIFICATION)</p>	<p>Approved by: Quality Manager</p>
<p>Test Report S/N: 1M1903060032-02.A3L</p>	<p>Test Dates: 01/22 - 05/08/2019</p>	<p>EUT Type: Portable Handset</p>	<p>Page 102 of 111</p>

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,732,600,000 Hz
 CHANNEL: 1413
 REFERENCE VOLTAGE: 4.31 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,732,599,583	-417	-0.0000241
100 %		- 20	1,732,599,878	-122	-0.0000070
100 %		- 10	1,732,599,886	-114	-0.0000066
100 %		0	1,732,600,136	136	0.0000078
100 %		+ 10	1,732,599,818	-182	-0.0000105
100 %		+ 20	1,732,599,987	-13	-0.0000008
100 %		+ 30	1,732,599,544	-456	-0.0000263
100 %		+ 40	1,732,600,180	180	0.0000104
100 %		+ 50	1,732,599,931	-69	-0.0000040
BATT. ENDPOINT	3.44	+ 20	1,732,599,926	-74	-0.0000043

Table 7-40. Frequency Stability Data (AWS WCDMA Mode – Ch. 1413)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

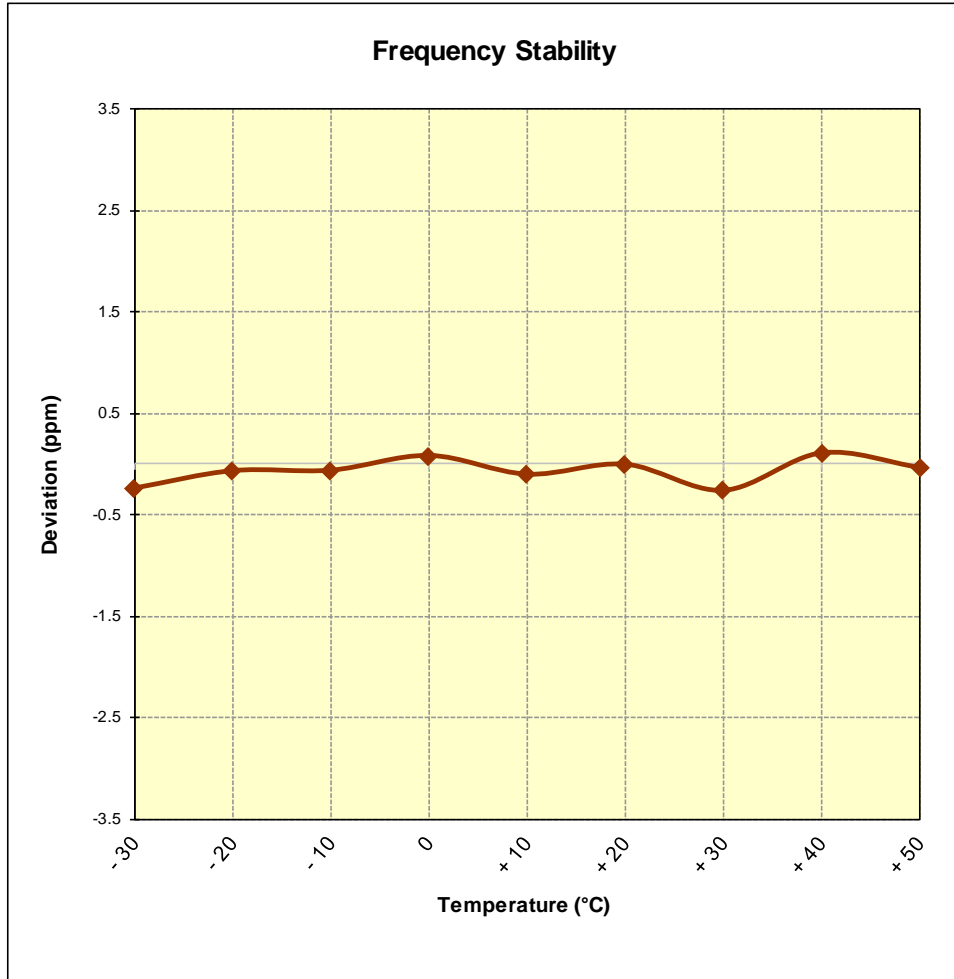


Figure 7-12. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,880,000,000 Hz
 CHANNEL: 661
 REFERENCE VOLTAGE: 4.31 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,879,999,977	-23	-0.0000012
100 %		- 20	1,880,000,113	113	0.0000060
100 %		- 10	1,880,000,293	293	0.0000156
100 %		0	1,879,999,931	-69	-0.0000037
100 %		+ 10	1,879,999,987	-13	-0.0000007
100 %		+ 20	1,880,000,215	215	0.0000114
100 %		+ 30	1,880,000,347	347	0.0000185
100 %		+ 40	1,879,999,644	-356	-0.0000189
100 %		+ 50	1,879,999,939	-61	-0.0000032
BATT. ENDPOINT	3.44	+ 20	1,880,000,071	71	0.0000038

Table 7-41. Frequency Stability Data (PCS GPRS Mode – Ch. 661)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

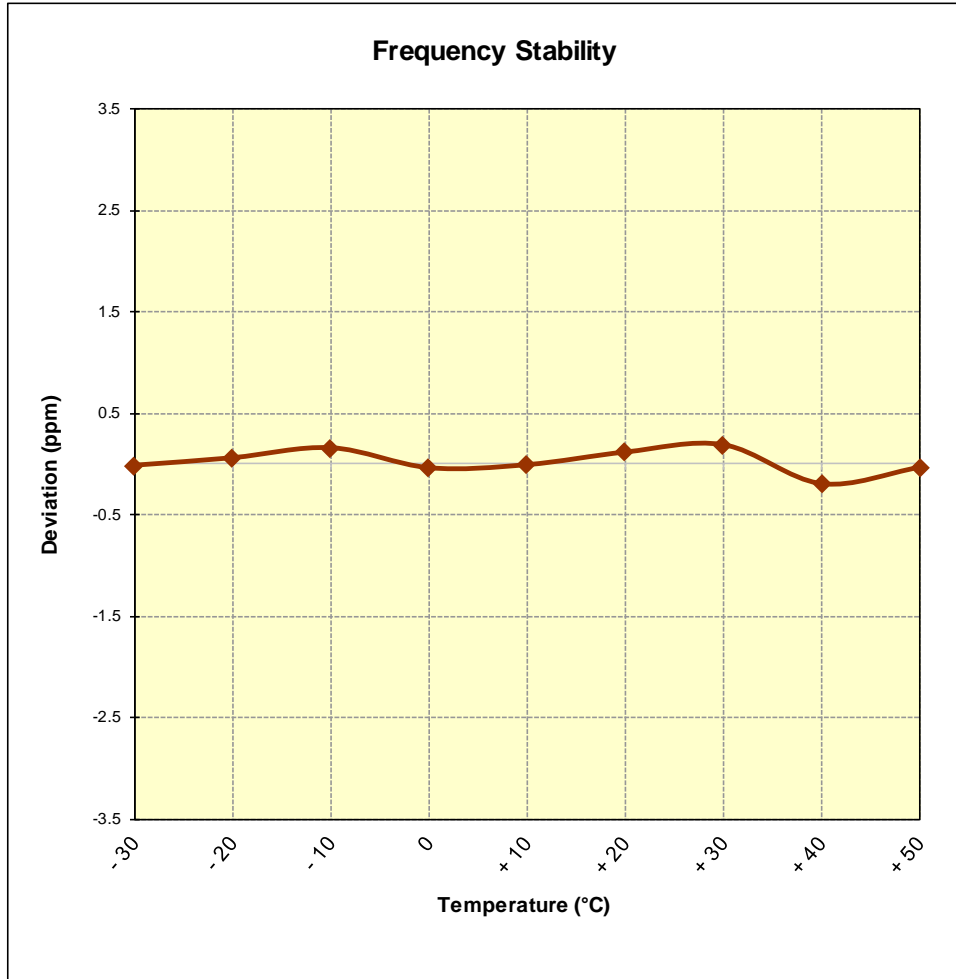


Figure 7-13. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,880,000,000 Hz
 CHANNEL: 600
 REFERENCE VOLTAGE: 4.31 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,879,999,732	-268	-0.0000143
100 %		- 20	1,879,999,855	-145	-0.0000077
100 %		- 10	1,880,000,050	50	0.0000027
100 %		0	1,880,000,294	294	0.0000156
100 %		+ 10	1,880,000,258	258	0.0000137
100 %		+ 20	1,879,999,889	-111	-0.0000059
100 %		+ 30	1,879,999,991	-9	-0.0000005
100 %		+ 40	1,879,999,620	-380	-0.0000202
100 %		+ 50	1,879,999,872	-128	-0.0000068
BATT. ENDPOINT	3.44	+ 20	1,879,999,982	-18	-0.0000010

Table 7-42. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

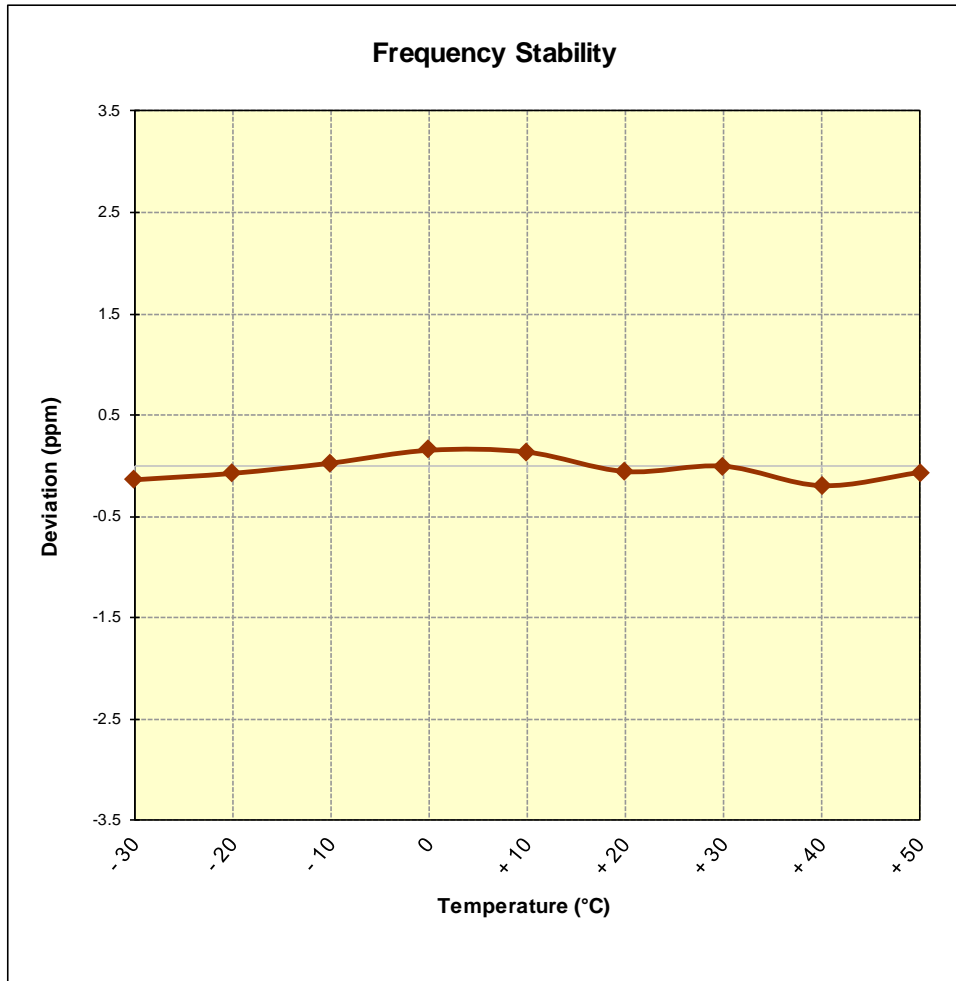


Figure 7-14. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	9400	
REFERENCE VOLTAGE:	4.31	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.31	- 30	1,879,999,878	-122	-0.0000065
100 %		- 20	1,880,000,241	241	0.0000128
100 %		- 10	1,880,000,166	166	0.0000088
100 %		0	1,880,000,060	60	0.0000032
100 %		+ 10	1,880,000,033	33	0.0000018
100 %		+ 20	1,879,999,636	-364	-0.0000194
100 %		+ 30	1,879,999,728	-272	-0.0000145
100 %		+ 40	1,880,000,004	4	0.0000002
100 %		+ 50	1,879,999,997	-3	-0.0000002
BATT. ENDPOINT	3.44	+ 20	1,880,000,060	60	0.0000032

Table 7-43. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

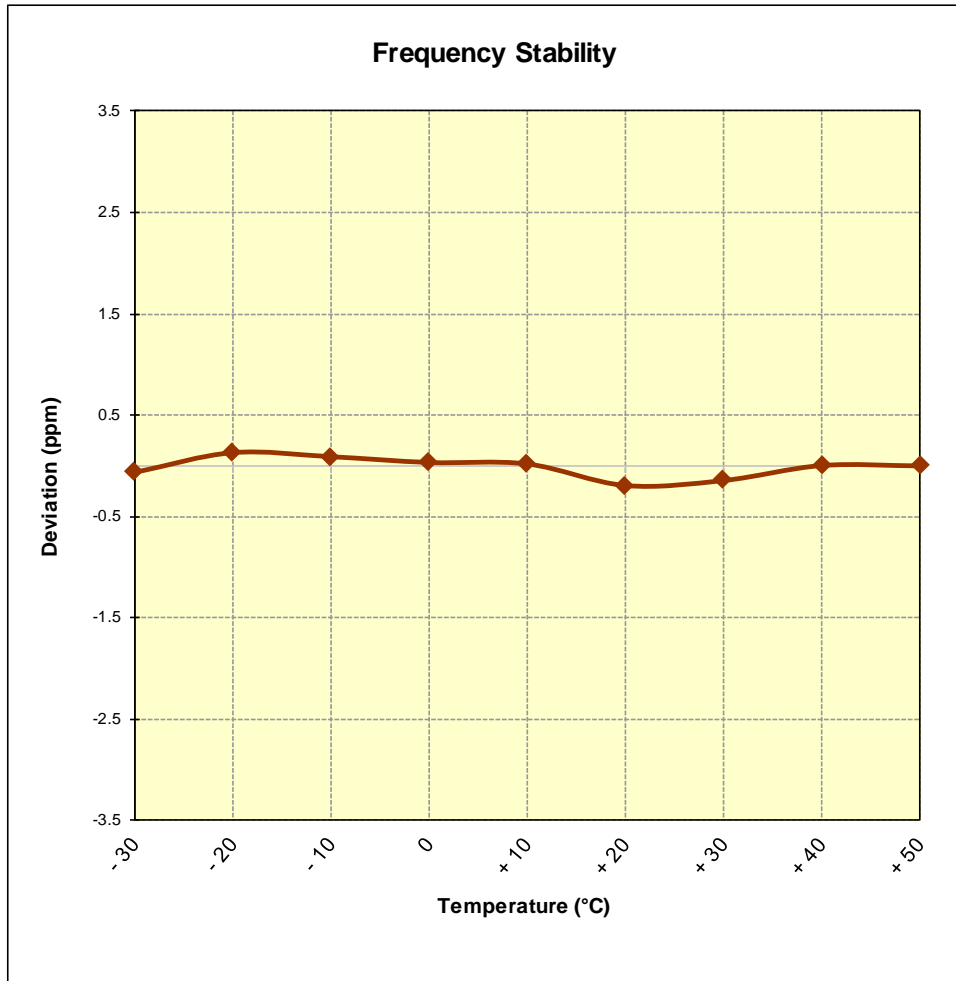


Figure 7-15. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)	 Approved by: Quality 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: A3LSMG977T** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

FCC ID: A3LSMG977T		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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