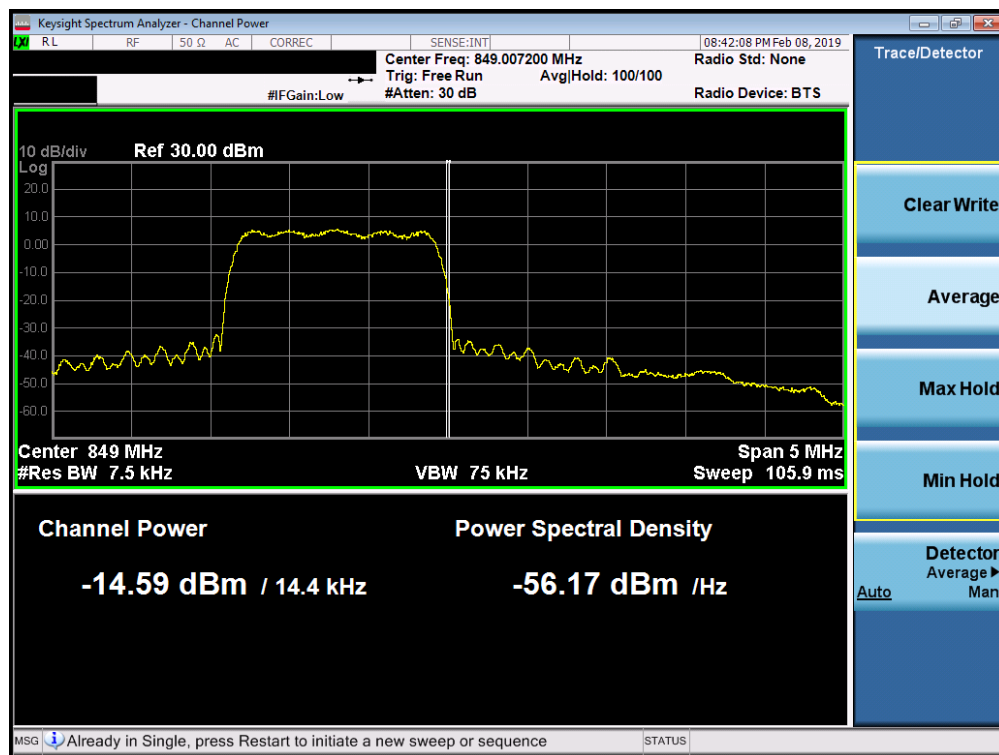
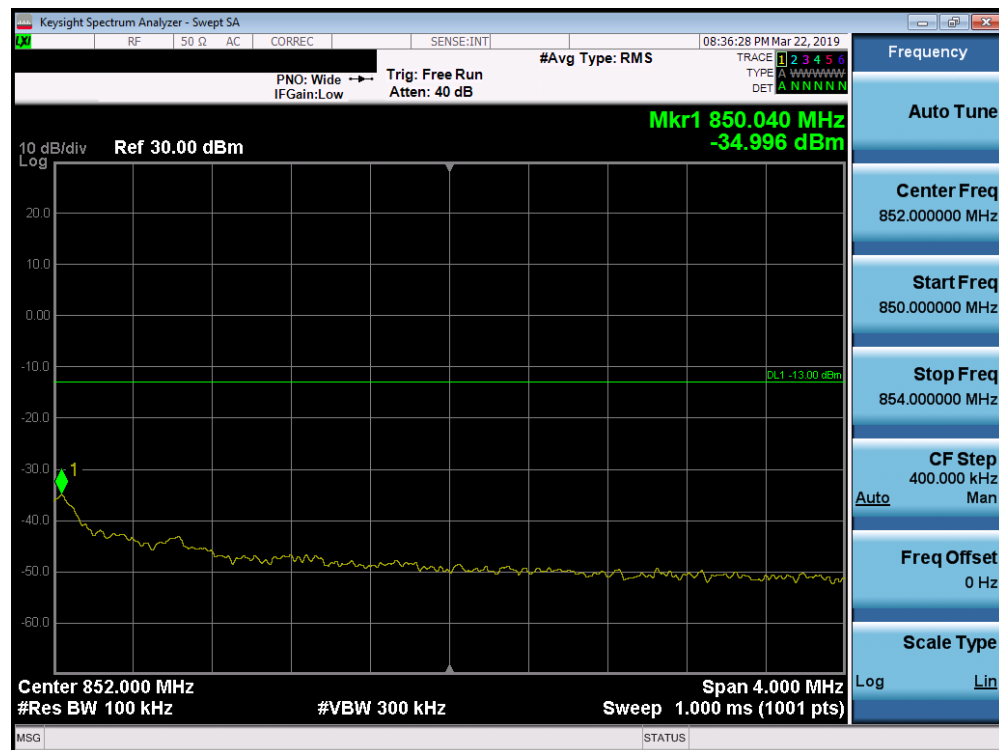




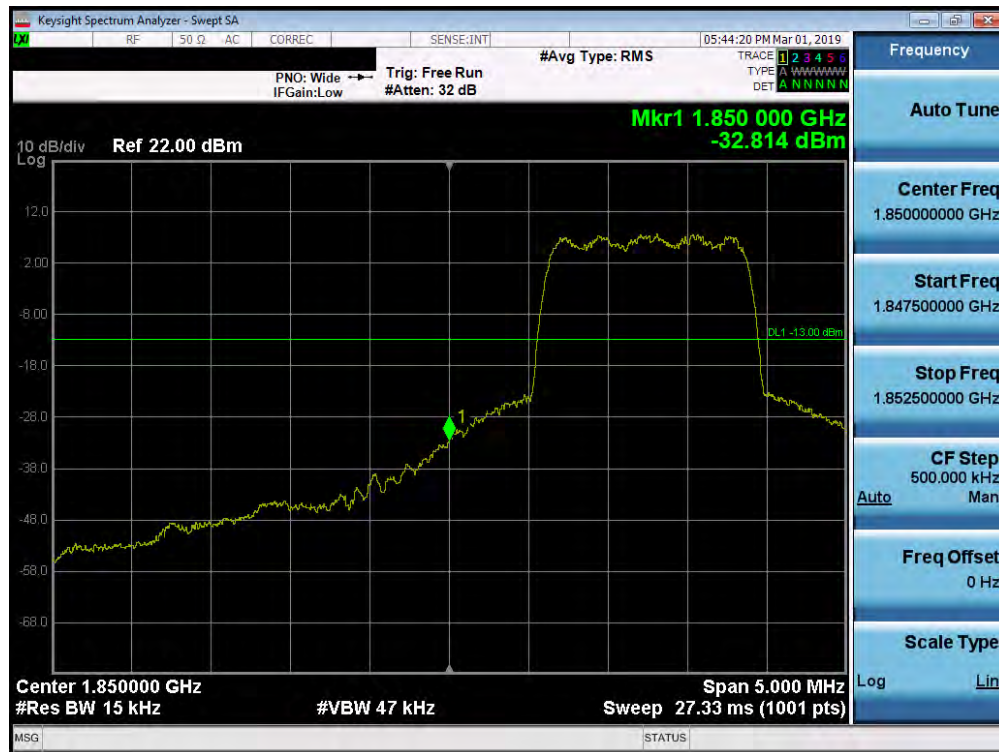
Plot 7-81. Band Edge Plot (Cellular CDMA Mode - High Channel)



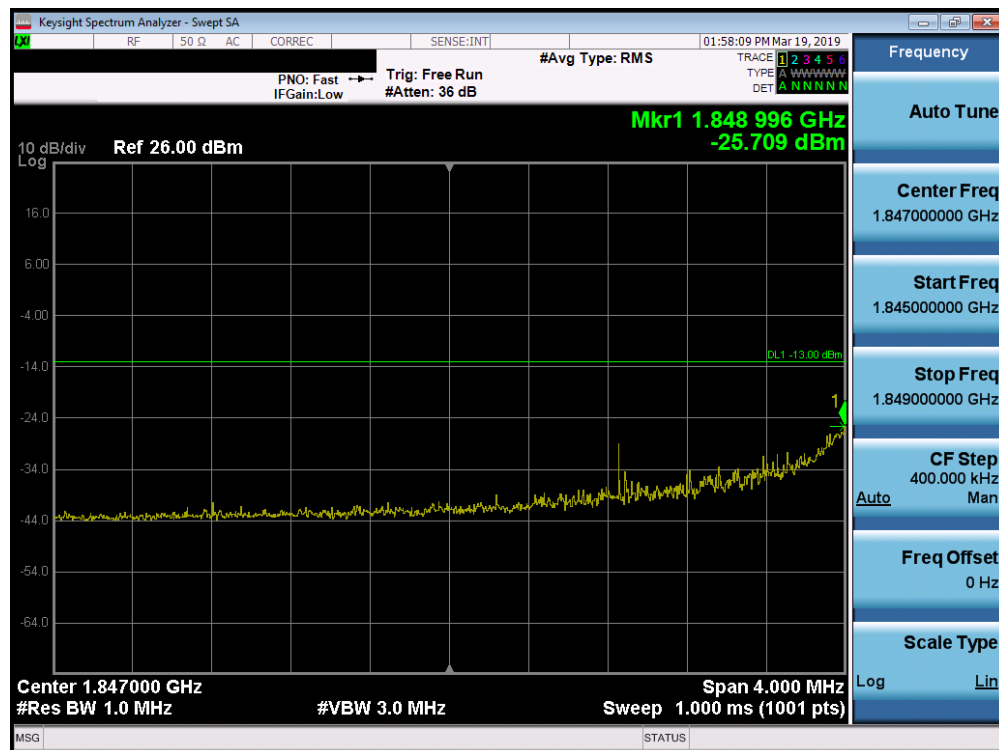
Plot 7-82. Extended Band Edge Plot (Cellular CDMA Mode - High Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 60 of 114

PCS CDMA Mode

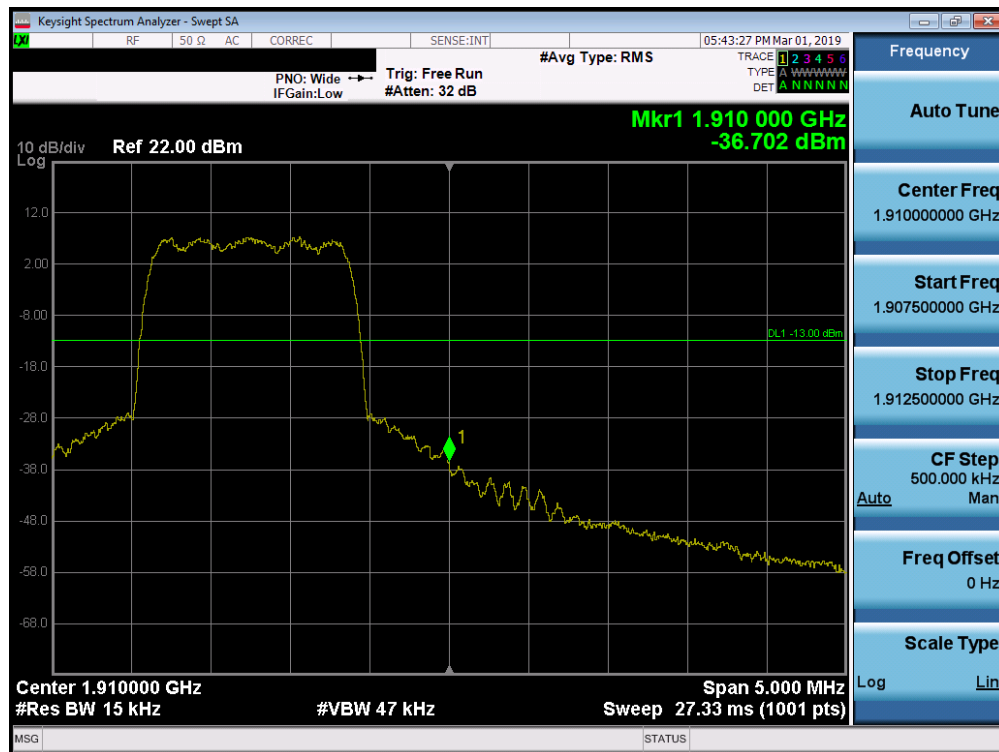


Plot 7-83. Band Edge Plot (PCS CDMA Mode - Low Channel)

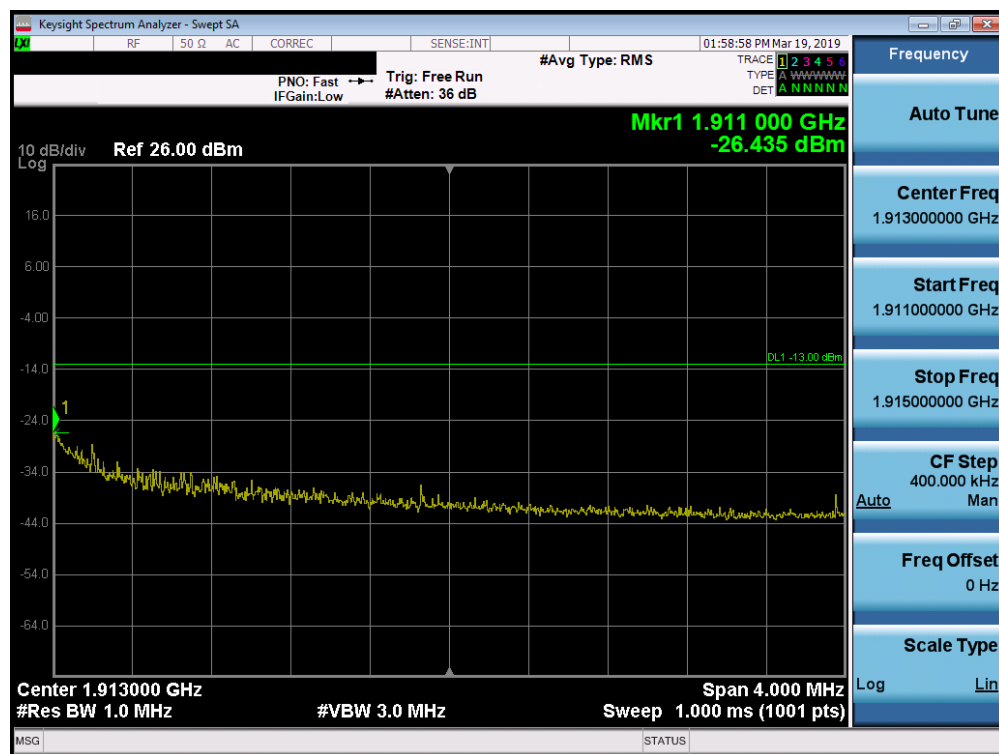


Plot 7-84. Extended Band Edge Plot (PCS CDMA Mode - Low Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 61 of 114



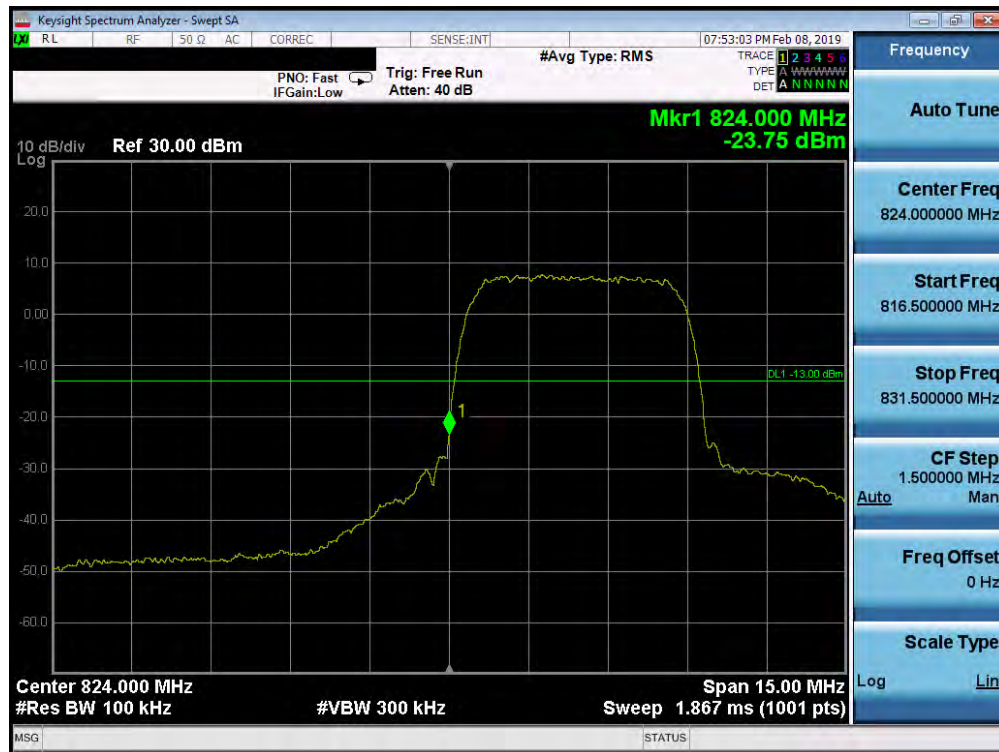
Plot 7-85. Band Edge Plot (PCS CDMA Mode - High Channel)



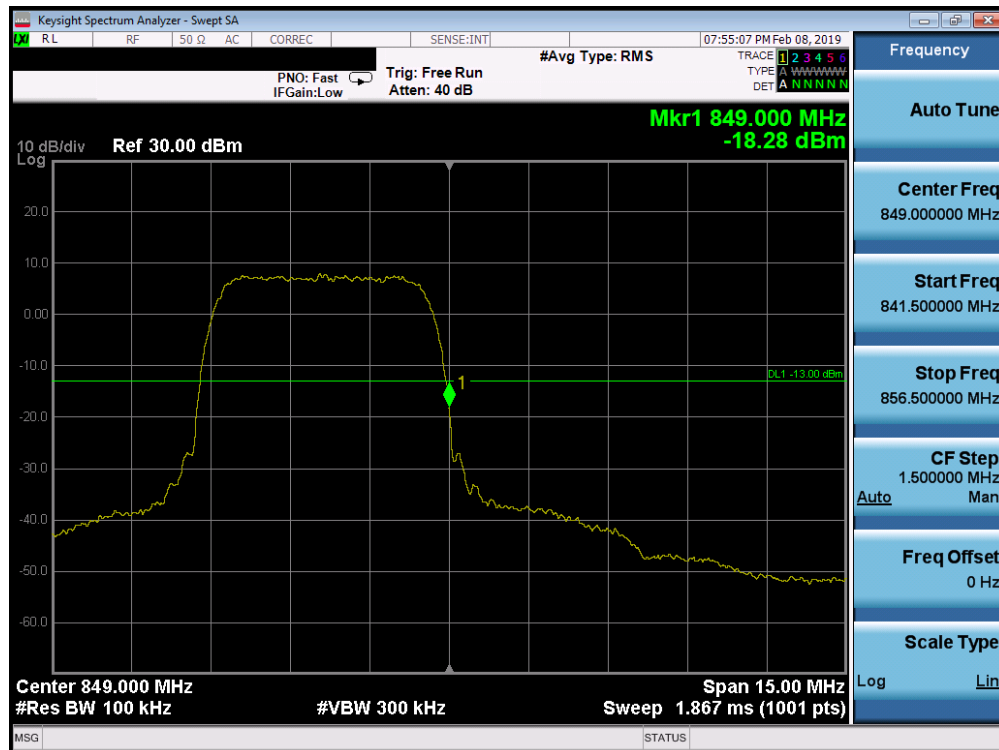
Plot 7-86. Extended Band Edge Plot (PCS CDMA Mode - High Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 62 of 114

Cellular WCDMA Mode



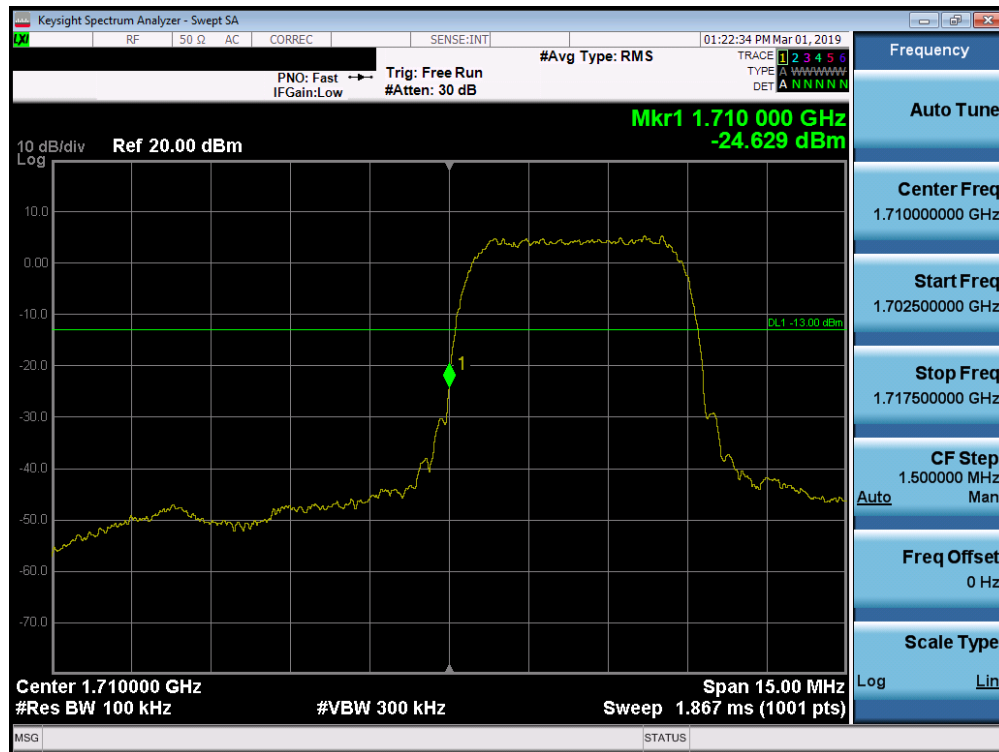
Plot 7-87. Band Edge Plot (Cellular WCDMA Mode - Low Channel)



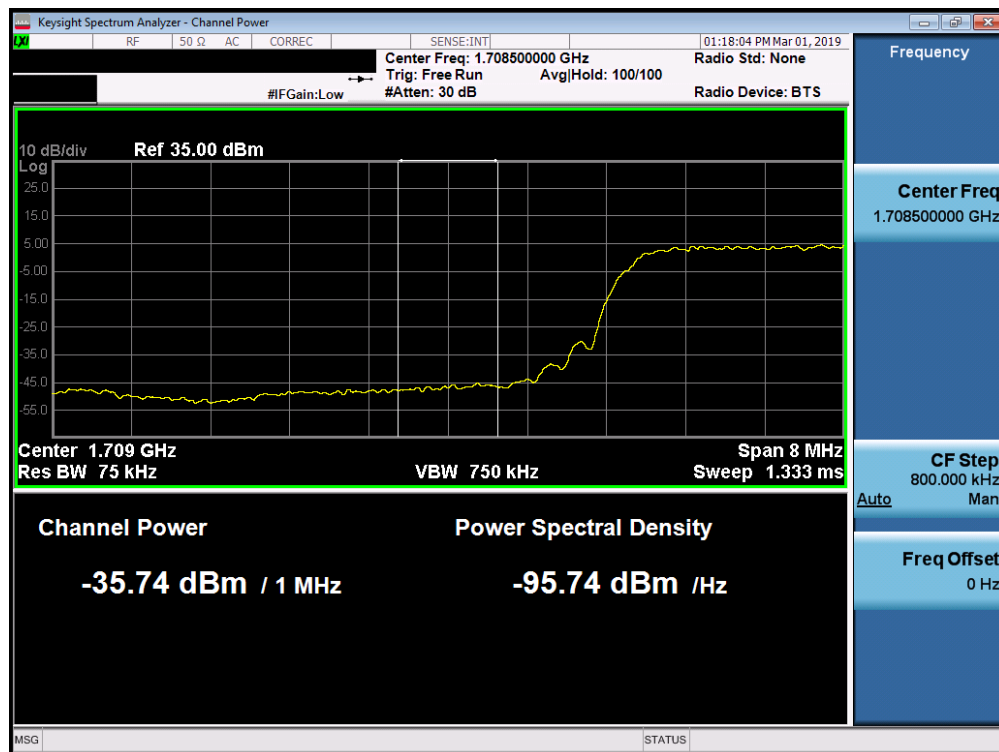
Plot 7-88. Band Edge Plot (Cellular WCDMA Mode - High Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 63 of 114

AWS WCDMA Mode

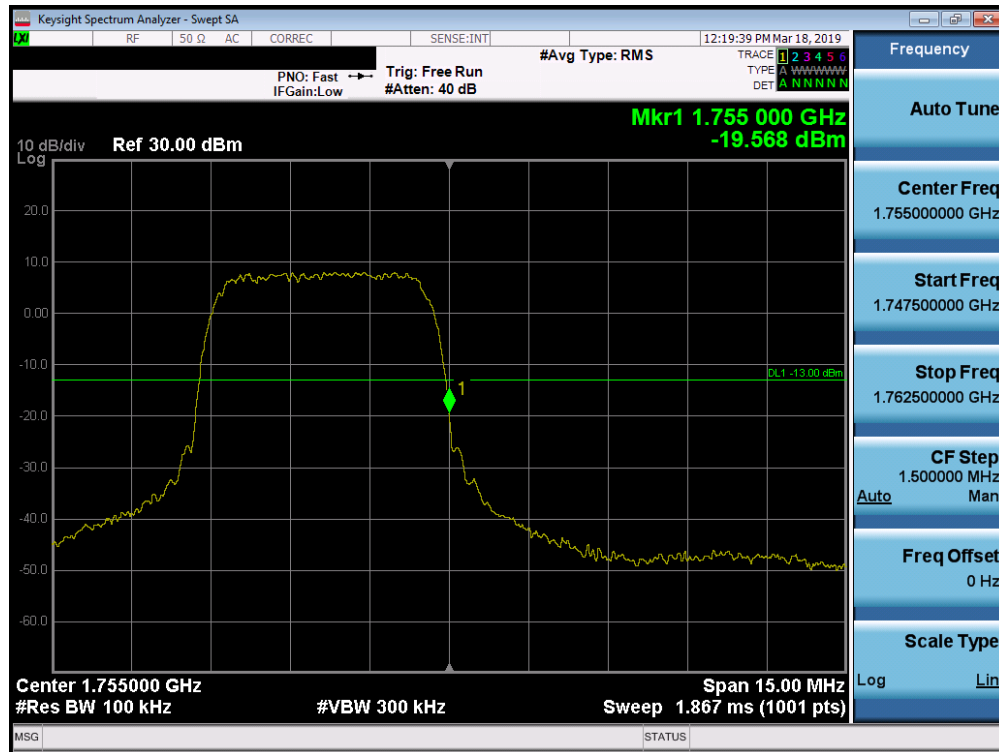


Plot 7-89. Band Edge Plot (AWS WCDMA Mode - Low Channel)

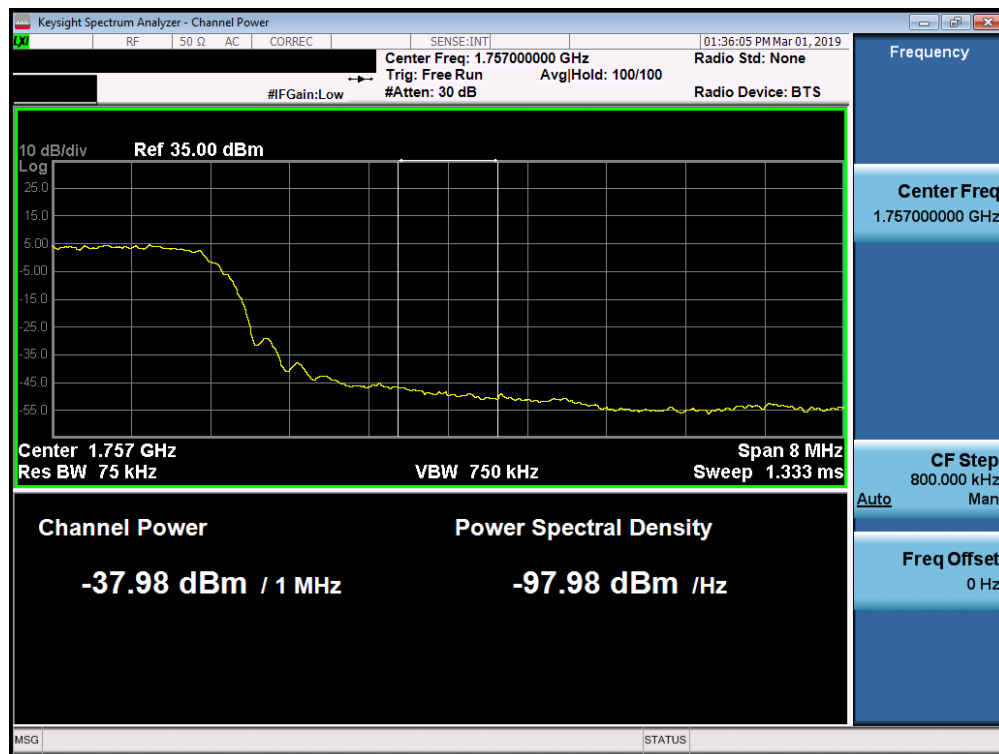


Plot 7-90. 4MHz Span Plot (AWS WCDMA Mode - Low Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 64 of 114



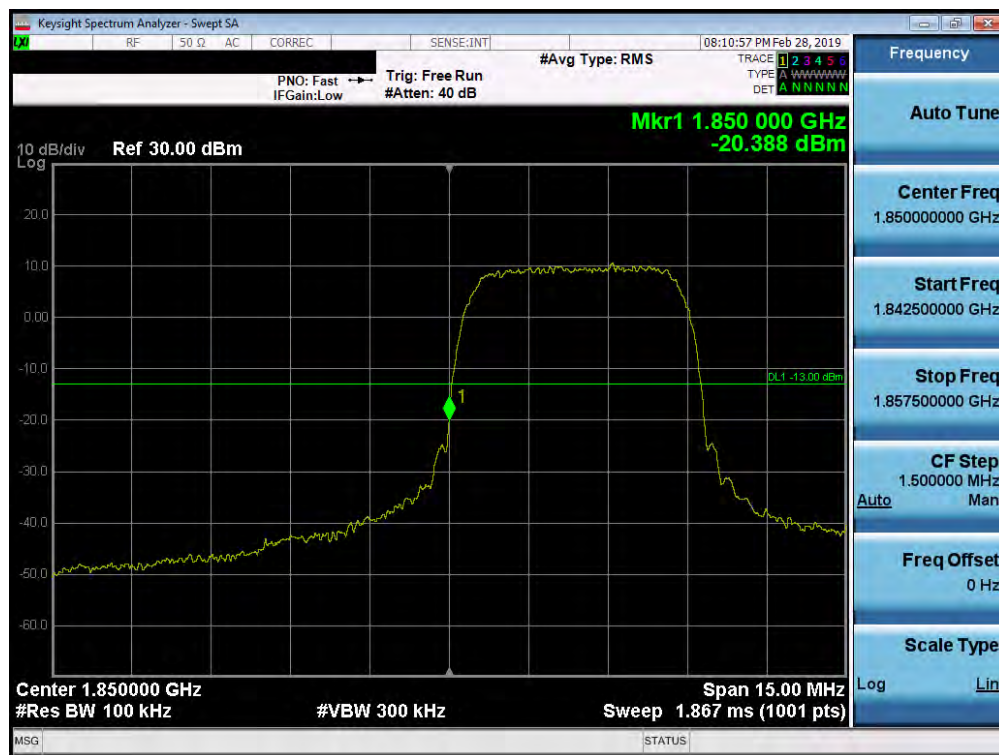
Plot 7-91. Band Edge Plot (AWS WCDMA Mode - High Channel)



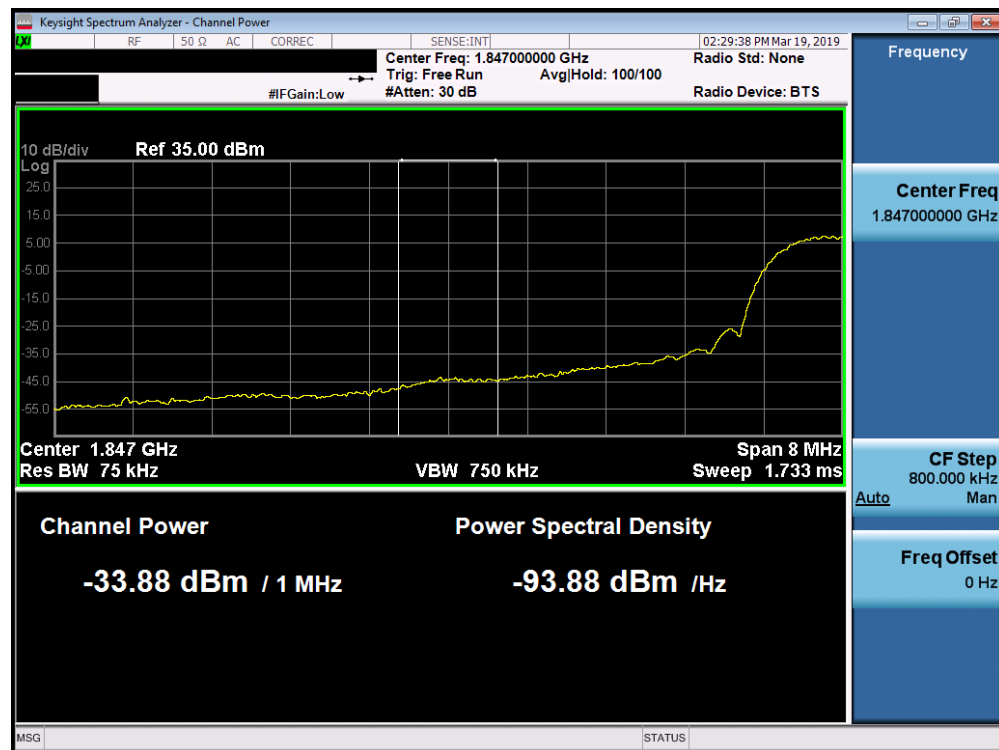
Plot 7-92. 4MHz Span Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 65 of 114

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: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 66 of 114



Plot 7-95. Band Edge Plot (PCS WCDMA Mode – High Channel)



Plot 7-96. 4MHz Span Plot (PCS WCDMA Mode - High Channel)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 67 of 114

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.

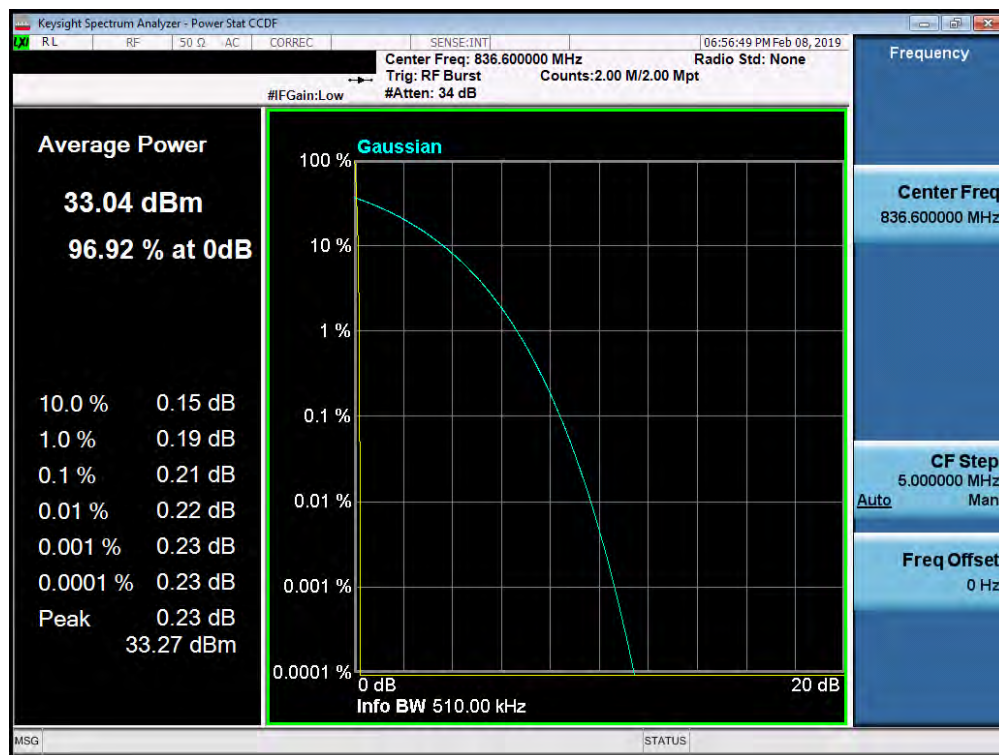


Figure 7-4. Test Instrument & Measurement Setup

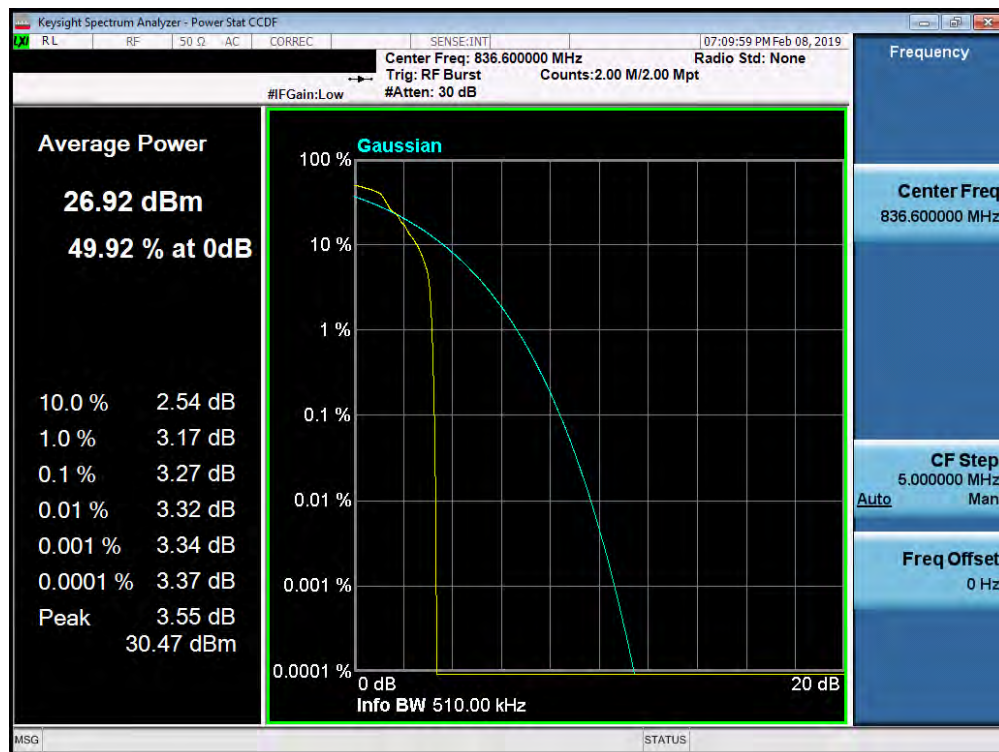
Test Notes

None

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 68 of 114

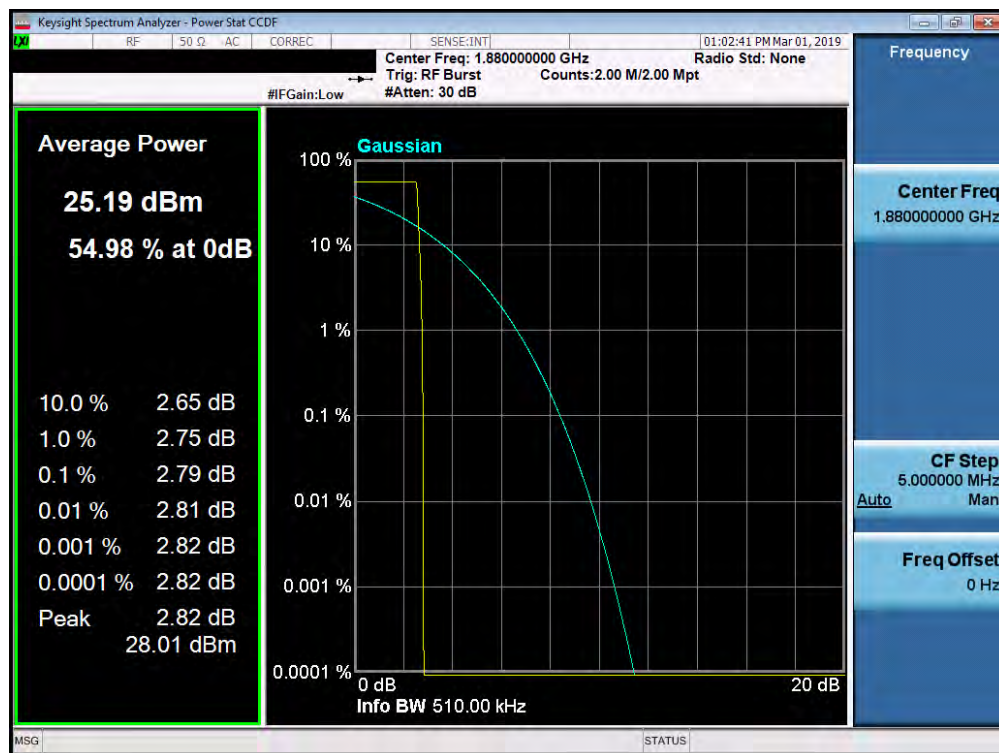


Plot 7-97. Peak-Average Ratio Plot (Cellular GPRS Mode)

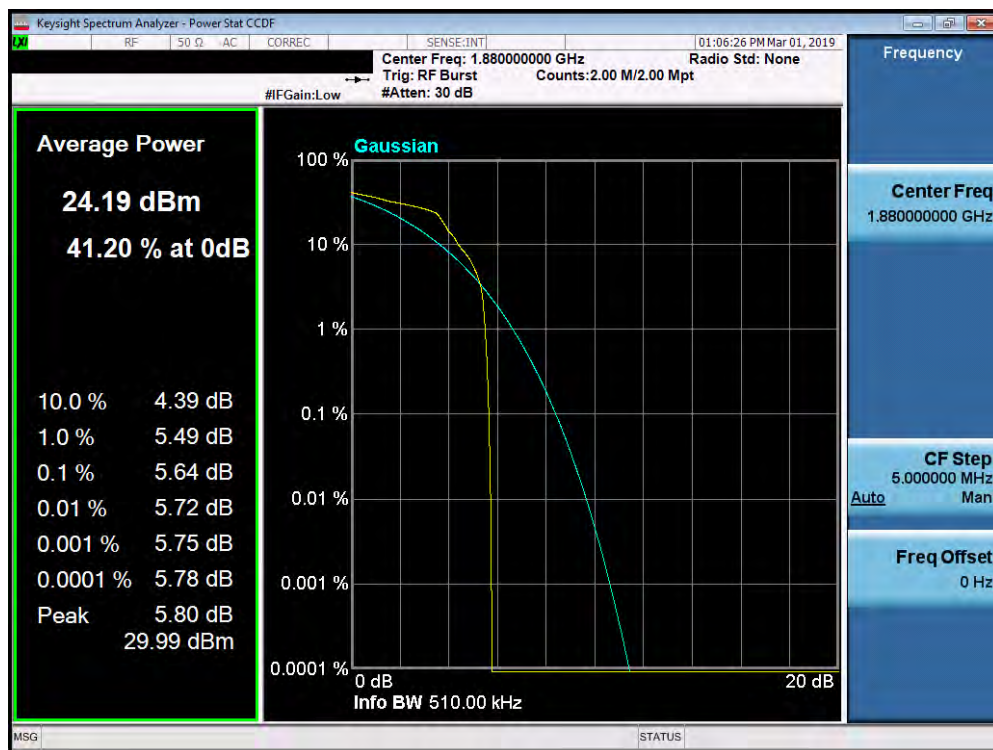


Plot 7-98. Peak-Average Ratio Plot (EDGE850 Mode)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 69 of 114

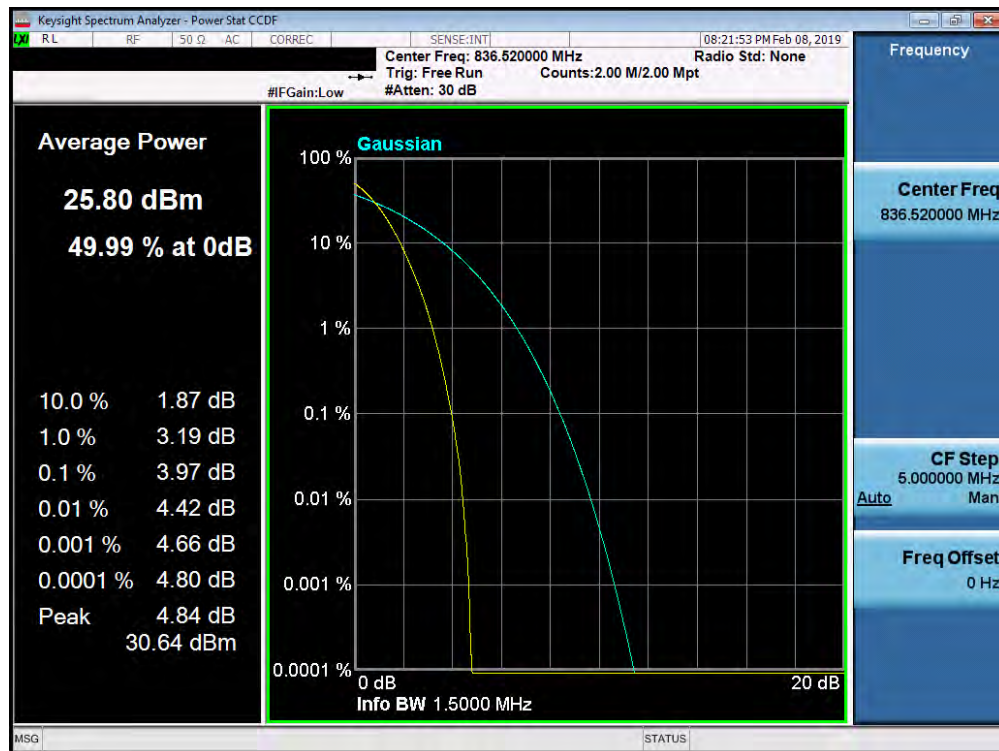


Plot 7-99. Peak-Average Ratio Plot (PCS GPRS Mode)

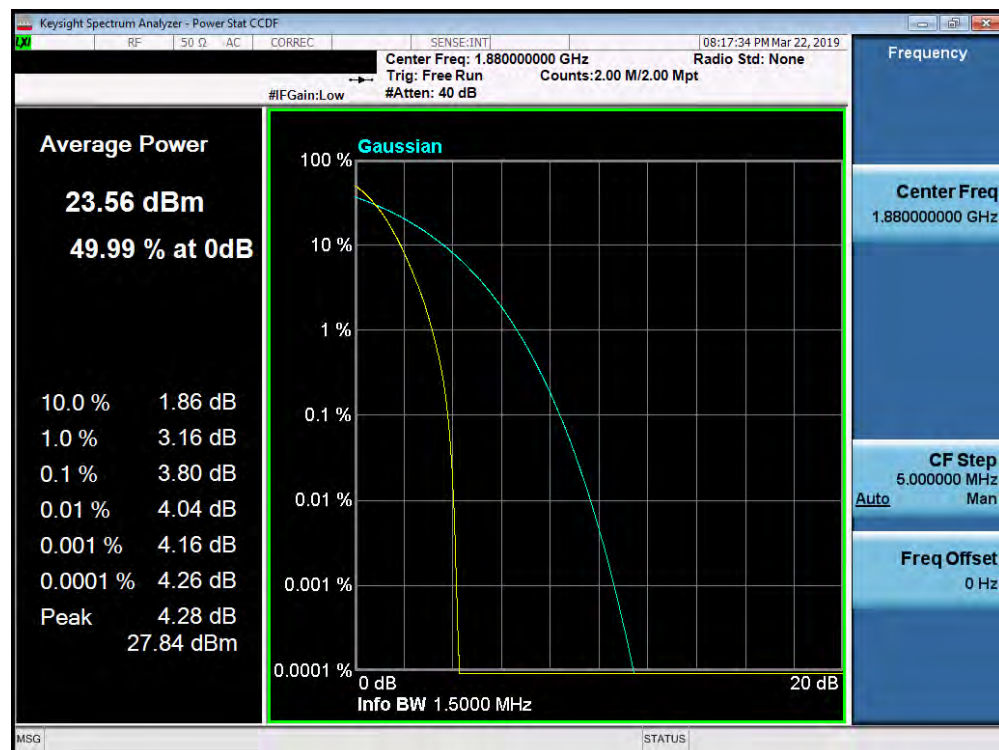


Plot 7-100. Peak-Average Ratio Plot (EDGE1900 Mode)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 70 of 114

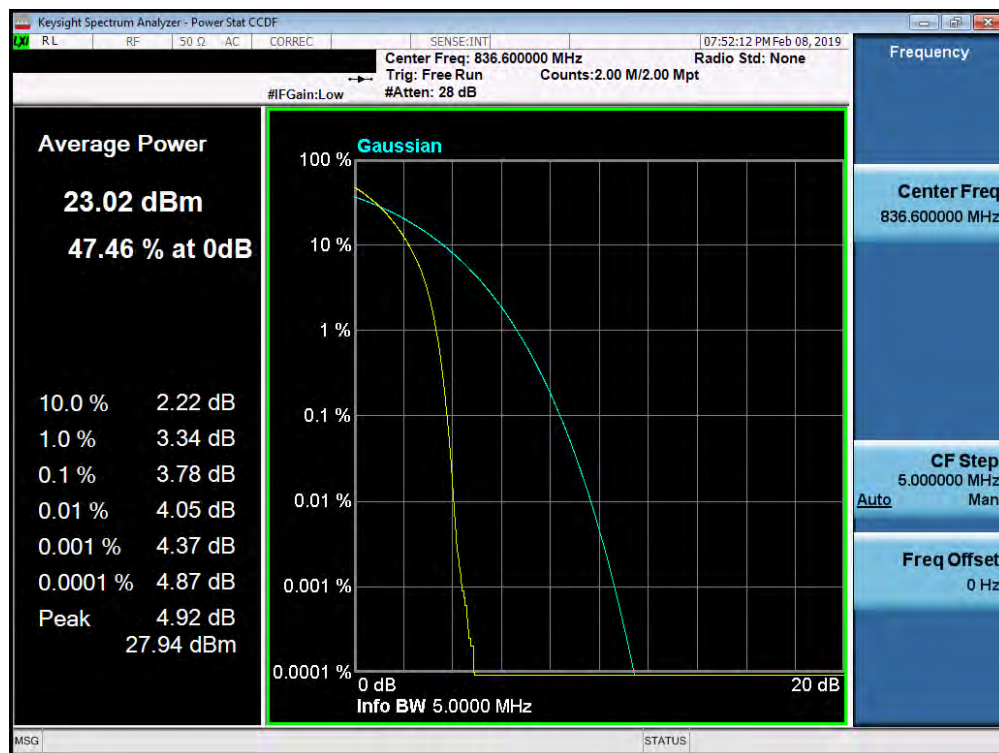


Plot 7-101. Peak-Average Ratio Plot (Cellular CDMA Mode)

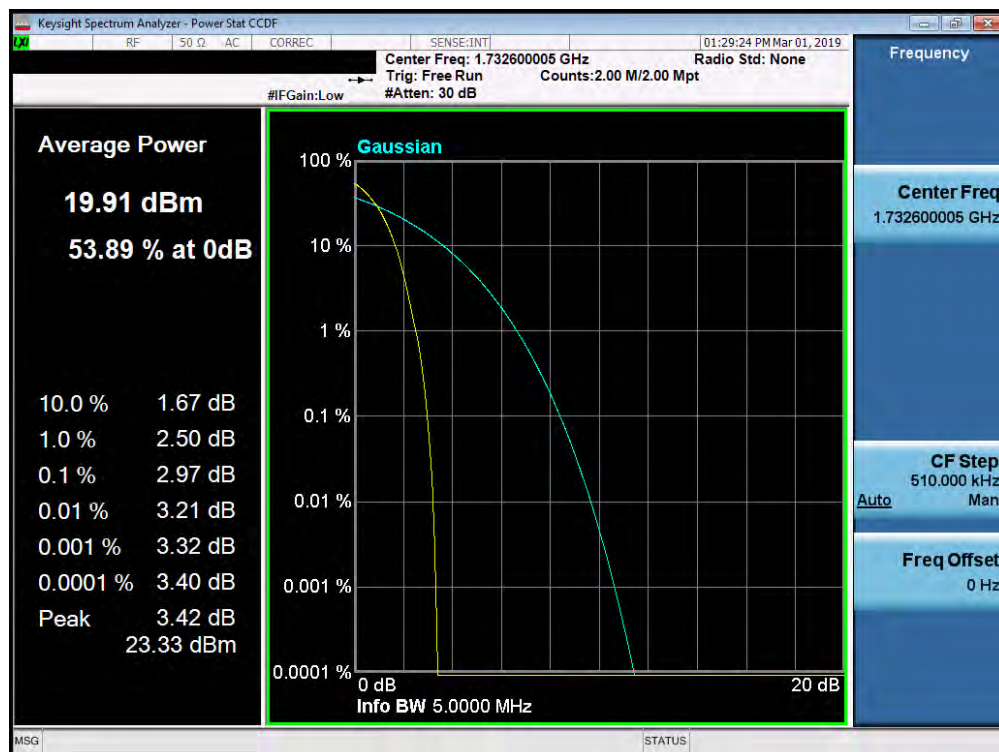


Plot 7-102. Peak-Average Ratio Plot (PCS CDMA Mode)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 71 of 114

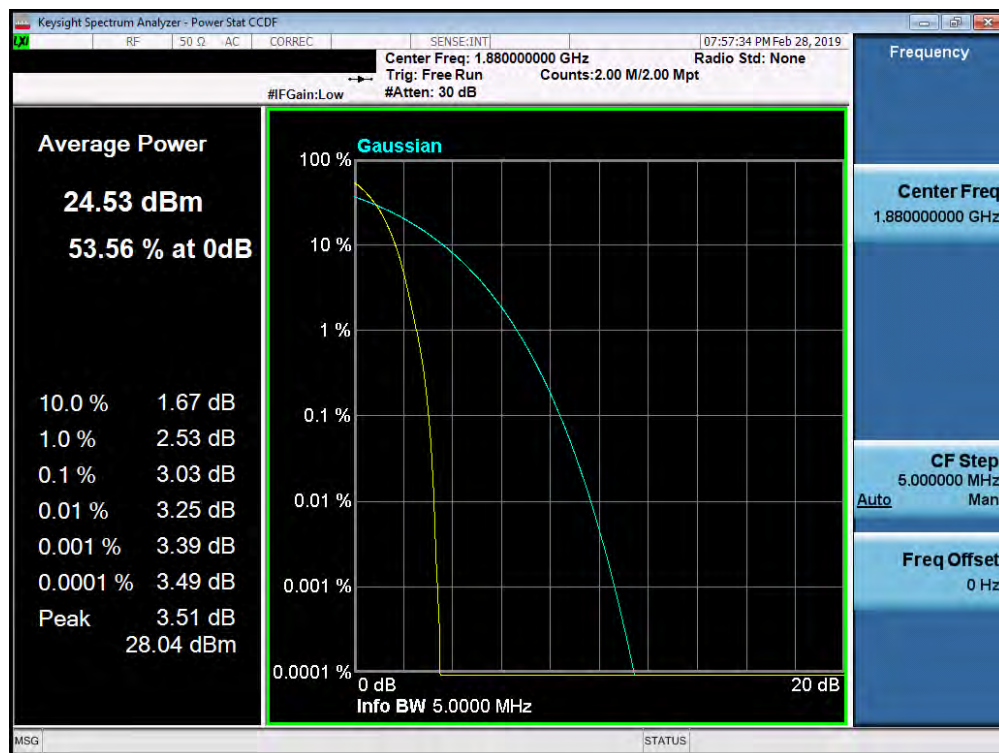


Plot 7-103. Peak-Average Ratio Plot (Cellular WCDMA Mode)



Plot 7-104. Peak-Average Ratio Plot (AWS WCDMA Mode)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 72 of 114



Plot 7-105. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 73 of 114

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 $\geq 3 \times$ 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: A3LSMF900U		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.

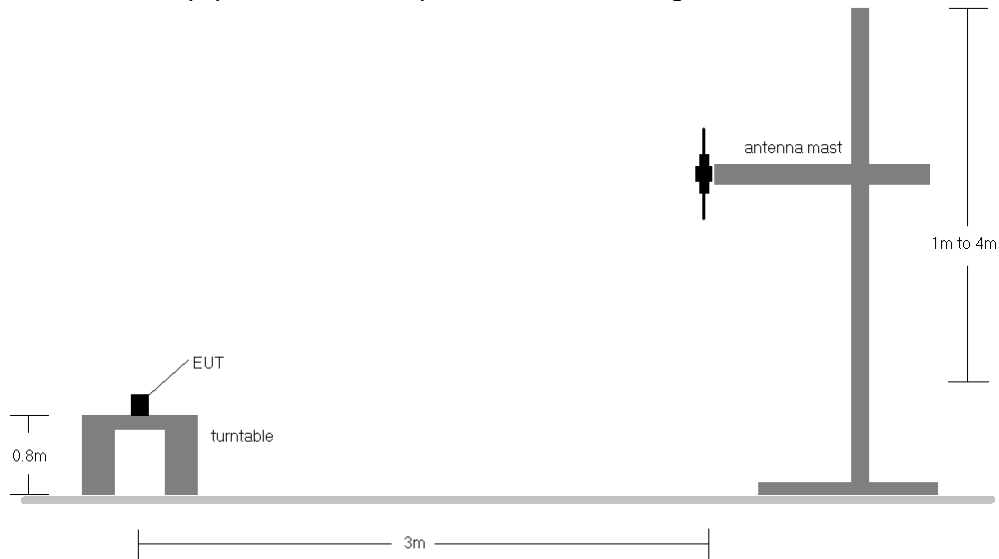


Figure 7-5. Radiated Test Setup <1GHz

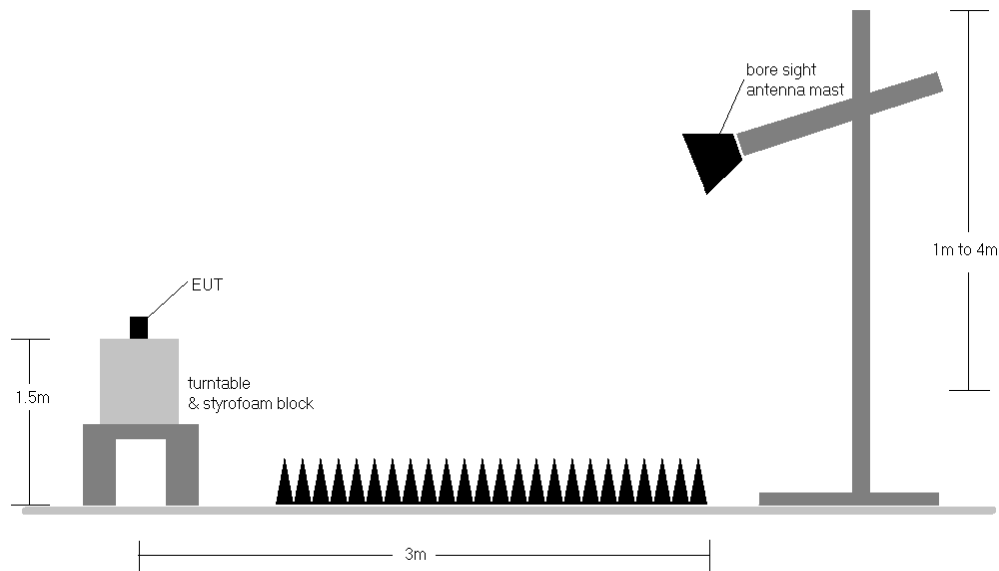


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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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) This device employs CDMA technology and was tested under all RC and SO combinations and the worst case is reported with CDMA 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: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency [MHz]	Mode	EUT Configuration	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	Open	H	133	207	23.79	7.08	28.72	0.744	38.45	-9.73	30.87	1.221	40.61	-9.74
836.60	GPRS850	Open	H	119	206	22.91	7.26	28.02	0.634	38.45	-10.43	30.17	1.040	40.61	-10.44
848.80	GPRS850	Open	H	119	209	22.23	7.44	27.52	0.565	38.45	-10.93	29.67	0.927	40.61	-10.94
824.20	GPRS850	Open	V	256	336	18.76	7.08	23.69	0.234	38.45	-14.76	25.84	0.383	40.61	-14.77
824.20	EDGE850	Open	H	X	133	17.76	7.08	22.69	0.186	38.45	-15.76	24.84	0.305	40.61	-15.77
824.20	GPRS850 (WCP)	Open	H	138	210	21.58	7.08	26.51	0.447	38.45	-11.94	28.66	0.734	40.61	-11.95
824.20	GPRS850	Closed	H	131	215	20.80	7.08	25.73	0.374	38.45	-12.72	27.88	0.613	40.61	-12.73

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

Frequency [MHz]	Mode	EUT Configuration	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	Open	H	140	330	16.50	6.75	21.10	0.129	38.45	-17.35	23.25	0.211	40.61	-17.36
836.52	CDMA850	Open	H	214	323	16.72	6.78	21.35	0.136	38.45	-17.11	23.50	0.224	40.61	-17.11
848.31	CDMA850	Open	H	135	329	15.64	6.80	20.29	0.107	38.45	-18.16	22.44	0.175	40.61	-18.17
836.52	CDMA850	Open	V	121	62	15.00	6.75	19.60	0.091	38.45	-18.85	21.75	0.150	40.61	-18.86
836.52	CDMA850 (WCP)	Open	H	389	284	7.74	6.75	12.34	0.017	38.45	-26.11	14.49	0.028	40.61	-26.12
836.52	CDMA850	Closed	H	203	295	14.35	6.78	18.98	0.079	38.45	-19.47	21.13	0.130	40.61	-19.48

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

Frequency [MHz]	Mode	EUT Configuration	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	Open	H	130	23	14.32	7.11	19.28	0.085	38.45	-19.17	21.43	0.139	40.61	-19.18
836.60	WCDMA850	Open	H	130	23	13.77	7.26	18.88	0.077	38.45	-19.57	21.03	0.127	40.61	-19.58
846.60	WCDMA850	Open	H	135	21	13.39	7.41	18.65	0.073	38.45	-19.80	20.80	0.120	40.61	-19.81
826.40	WCDMA850	Open	V	122	173	11.55	7.11	16.51	0.045	38.45	-21.94	18.66	0.073	40.61	-21.95
826.40	WCDMA850 (WCP)	Open	H	139	3	12.85	7.11	17.81	0.060	38.45	-20.64	19.96	0.099	40.61	-20.65
826.40	WCDMA850	Closed	H	124	27	12.07	7.11	17.03	0.050	38.45	-21.42	19.18	0.083	40.61	-21.43

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

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency [MHz]	Mode	EUT Configuration	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	Open	H	176	254	16.41	9.53	25.94	0.393	30.00	-4.06
1732.50	WCDMA1700	Open	H	152	254	15.85	9.40	25.25	0.335	30.00	-4.75
1752.50	WCDMA1700	Open	H	100	251	15.24	9.28	24.52	0.283	30.00	-5.48
1712.40	WCDMA1700	Open	V	250	251	10.89	9.53	20.42	0.110	30.00	-9.58
1712.40	WCDMA1700 (WCP)	Open	V	215	358	11.73	9.53	21.26	0.134	30.00	-8.74
1712.40	WCDMA1700	Closed	H	174	251	15.01	9.53	24.54	0.285	30.00	-5.46

Table 7-5. EIRP (AWS WCDMA)

Frequency [MHz]	Mode	EUT Configuration	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	Open	H	100	140	21.07	9.09	30.16	1.038	33.01	-2.85
1880.00	GPRS1900	Open	H	100	141	20.96	9.19	30.15	1.034	33.01	-2.86
1909.80	GPRS1900	Open	H	168	172	20.22	9.28	29.50	0.891	33.01	-3.51
1850.20	GPRS1900	Open	V	141	323	19.13	9.09	28.22	0.664	33.01	-4.79
1850.20	EDGE1900	Open	H	X	100	16.35	9.09	25.44	0.350	33.01	-7.57
1850.20	GPRS1900 (WCP)	Open	V	167	360	20.05	9.09	29.14	0.820	33.01	-3.87
1850.20	GPRS1900	Closed	V	100	135	21.06	9.09	30.15	1.035	33.01	-2.86

Table 7-6. EIRP (PCS GPRS)

Frequency [MHz]	Mode	EUT Configuration	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	Open	H	141	135	14.96	8.37	23.33	0.215	33.01	-9.68
1880.00	CDMA1900	Open	H	135	125	14.41	8.41	22.82	0.192	33.01	-10.19
1908.75	CDMA1900	Open	H	138	129	14.60	8.46	23.06	0.202	33.01	-9.95
1851.25	CDMA1900	Open	V	301	263	13.35	8.37	21.72	0.149	33.01	-11.29
1851.25	CDMA1900 (WCP)	Open	H	242	189	11.19	8.37	19.56	0.090	33.01	-13.45
1908.75	CDMA1900	Closed	V	288	272	14.27	8.37	22.64	0.184	33.01	-10.37

Table 7-7. EIRP (PCS CDMA)

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset	Page 78 of 114

Frequency [MHz]	Mode	EUT Configuration	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	Closed	V	154	30	13.27	8.97	22.24	0.168	33.01	-10.77
1880.00	WCDMA1900	Closed	V	154	30	13.36	8.99	22.35	0.172	33.01	-10.66
1907.60	WCDMA1900	Closed	V	149	84	13.47	8.99	22.46	0.176	33.01	-10.55
1907.60	WCDMA1900	Closed	H	141	23	10.71	8.99	19.70	0.093	33.01	-13.31
1907.60	WCDMA1900 (WCP)	Closed	V	205	358	11.09	8.99	20.08	0.102	33.01	-12.93
1907.60	WCDMA1900	Open	H	147	80	12.64	8.99	21.63	0.145	33.01	-11.38

Table 7-8. EIRP (PCS WCDMA)

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset	Page 79 of 114

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 $\geq 3 \times$ 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

FCC ID: A3LSMF900U		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.

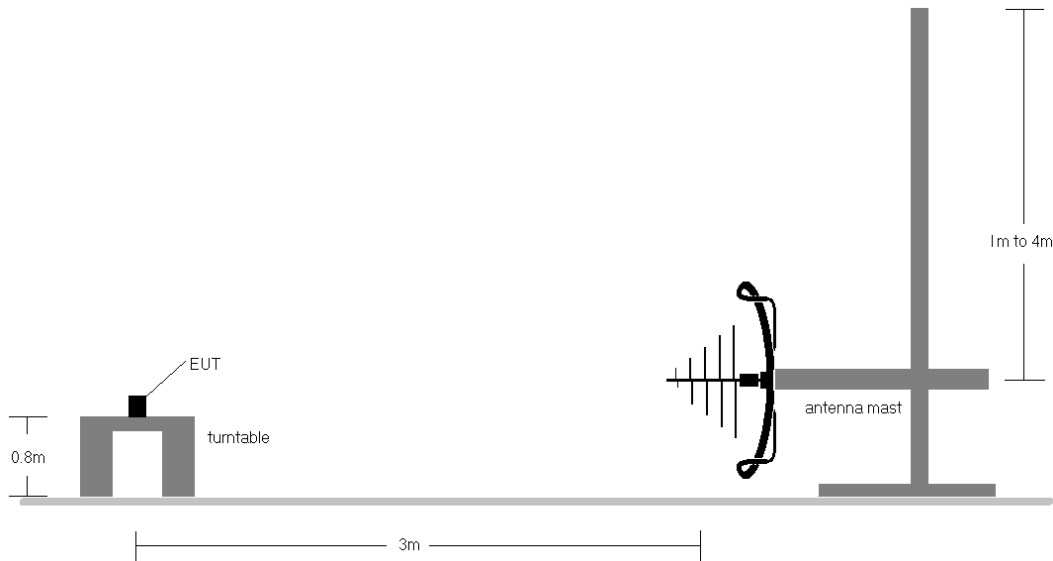


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

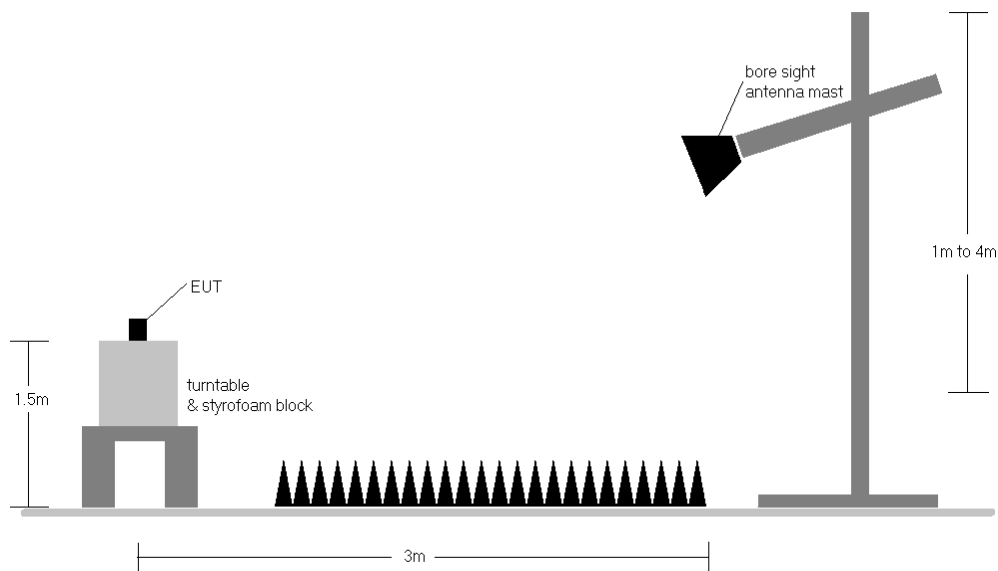


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

Test Notes

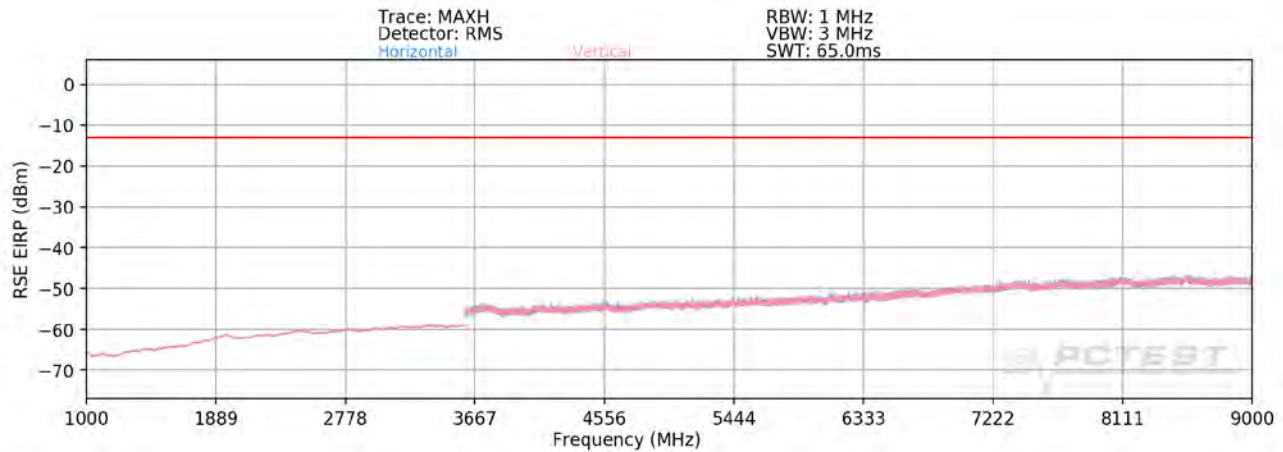
- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest power is reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC), HSDPA, and HSUPA capabilities. For WCDMA and HSUPA 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."

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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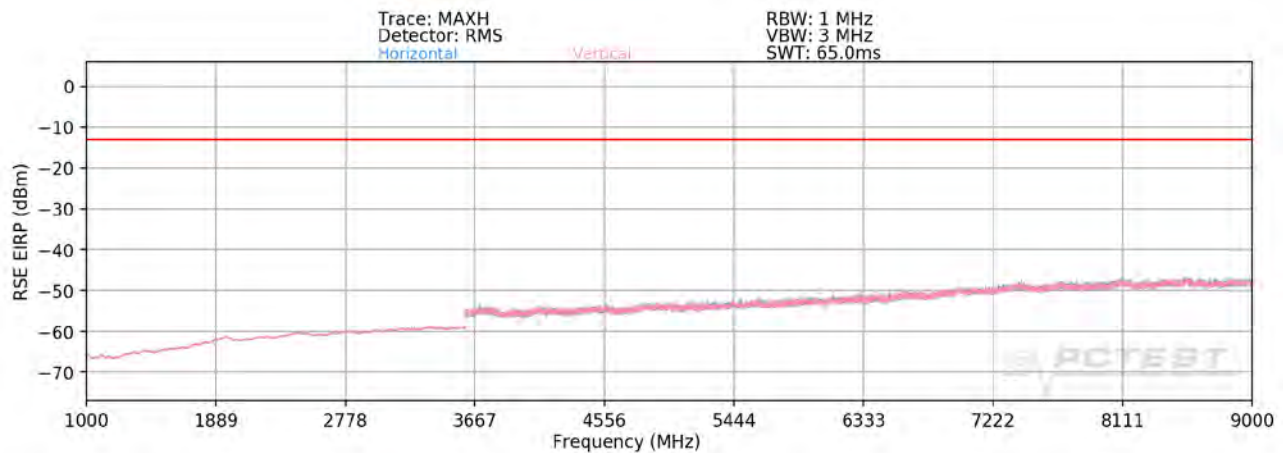
- 3) This device employs CDMA technology and was tested under all RC and SO combinations and the worst case is reported with CDMA RC3/SO55 with "All Up" power control bits.
- 4) This unit was tested with its standard battery.
- 5) The EUT was tested in three orthogonal planes and in all possible test 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: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Cellular GPRS Mode



Plot 7-106. Radiated Spurious Plot above 1GHz (Cellular GPRS Mode - CLOSED)



Plot 7-107. Radiated Spurious Plot above 1GHz (Cellular GPRS Mode - OPEN)

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	-	-	-64.73	8.95	-55.78	-42.8
2472.60	H	-	-	-63.06	9.67	-53.39	-40.4

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

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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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	-	-	-64.67	8.96	-55.71	-42.7
2509.80	H	-	-	-61.40	9.69	-51.71	-38.7

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

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	-	-	-63.98	8.95	-55.03	-42.0
2546.40	H	-	-	-61.58	9.75	-51.83	-38.8

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

OPERATING FREQUENCY: 824.20 MHz

MODULATION SIGNAL: GPRS (GMSK)

DISTANCE: 3 meters

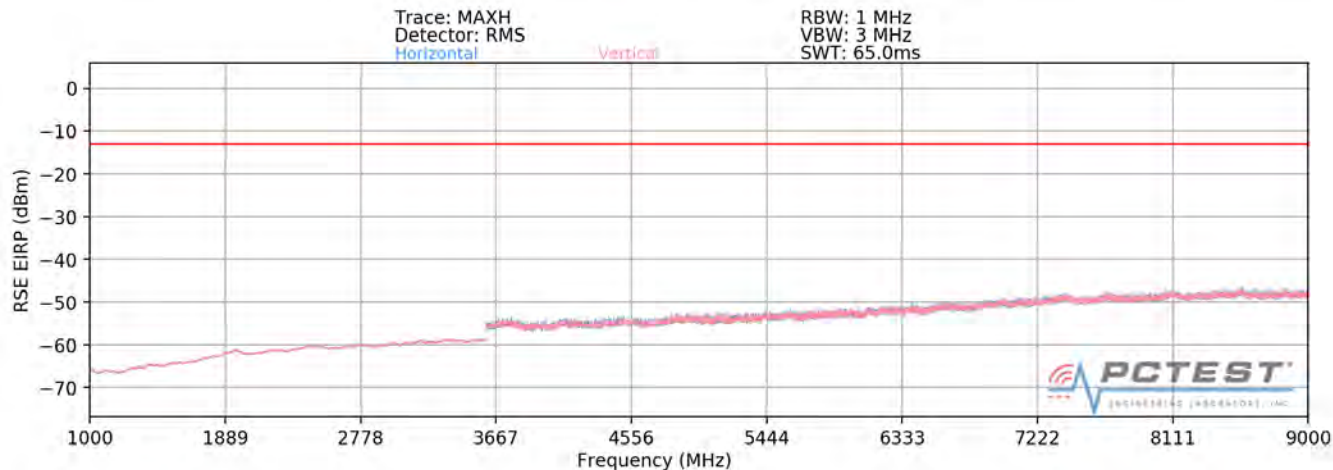
LIMIT: -13 dBm

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	-	-	-64.54	8.95	-55.59	-42.6
2472.60	H	-	-	-61.92	9.67	-52.25	-39.2

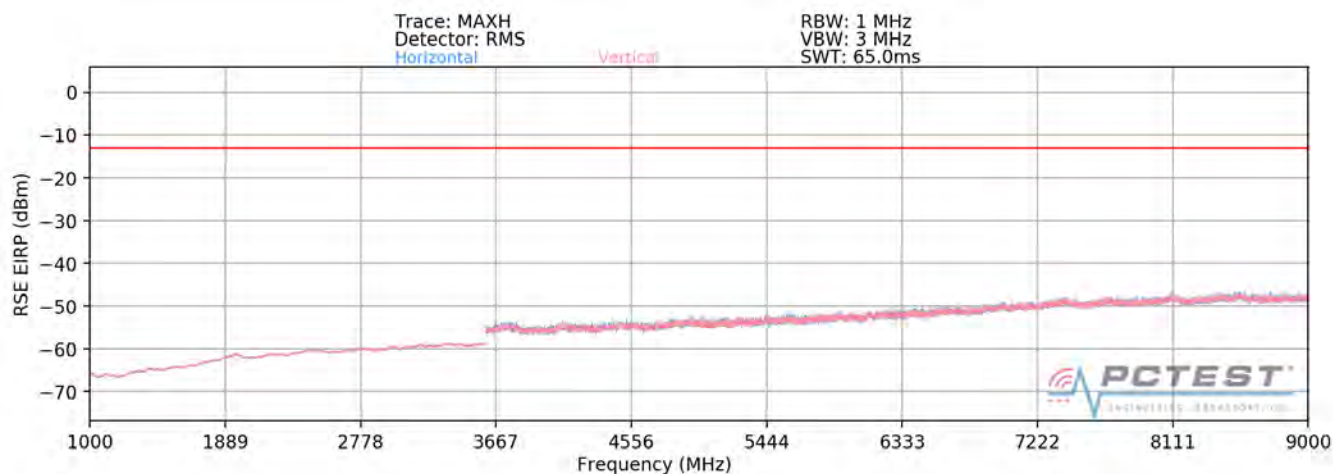
Table 7-12. Radiated Spurious Data with WCP (Cellular GPRS Mode – Ch. 128 - OPEN)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Cellular CDMA Mode



Plot 7-108. Radiated Spurious Plot above 1GHz (Cellular CDMA Mode - CLOSED)



Plot 7-109. Radiated Spurious Plot above 1GHz (Cellular CDMA Mode - OPEN)

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	-	-	-65.86	8.95	-56.91	-43.9
2474.10	H	-	-	-63.67	9.67	-54.00	-41.0

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

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 85 of 114

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	-	-	-65.63	8.96	-56.67	-43.7
2509.56	H	-	-	-63.92	9.69	-54.23	-41.2

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

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	-	-	-65.77	8.95	-56.82	-43.8
2544.93	H	-	-	-64.24	9.75	-54.49	-41.5

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

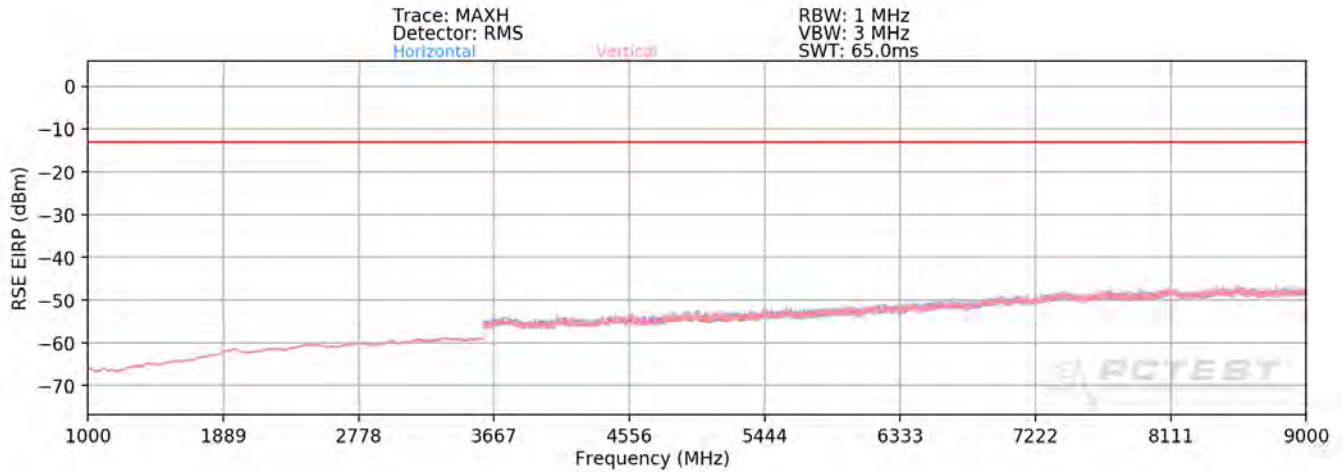
OPERATING FREQUENCY: 836.52 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	-	-	-65.95	8.96	-56.99	-44.0
2509.56	H	-	-	-64.12	9.69	-54.43	-41.4

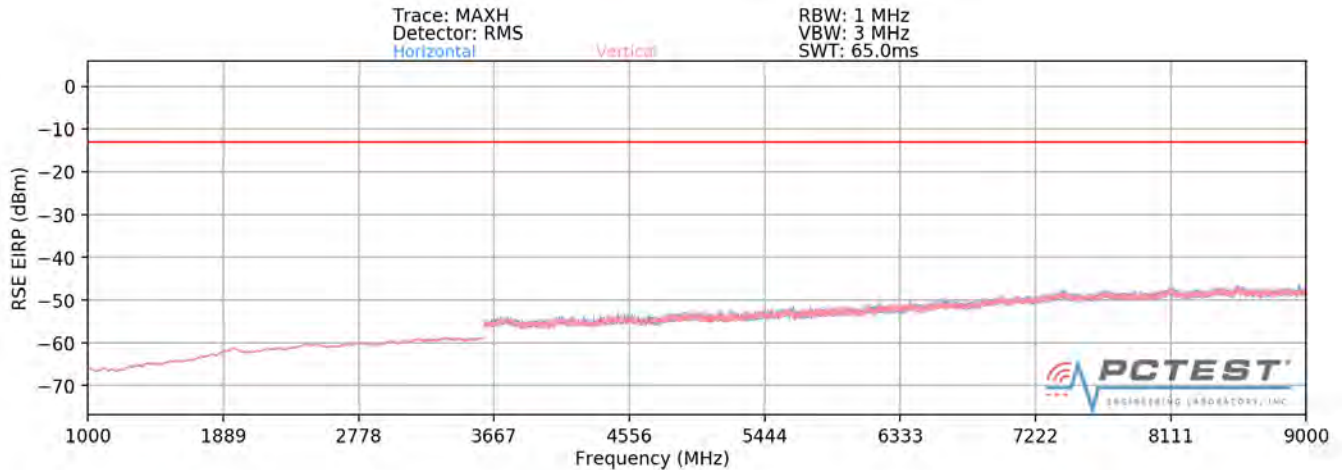
Table 7-16. Radiated Spurious Data with WCP (Cellular CDMA Mode – Ch. 384 - OPEN)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Cellular WCDMA Mode



Plot 7-110. Radiated Spurious Plot above 1GHz (Cellular WCDMA Mode - CLOSED)



Plot 7-111. Radiated Spurious Plot above 1GHz (Cellular WCDMA Mode - OPEN)

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	-	-	-64.19	8.95	-55.24	-42.2
2479.20	H	-	-	-63.17	9.67	-53.50	-40.5

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

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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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	-	-	-65.63	8.96	-56.67	-43.7
2509.80	H	-	-	-60.74	9.69	-51.05	-38.0

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

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	-	-	-64.23	8.95	-55.28	-42.3
2539.80	H	-	-	-61.46	9.75	-51.71	-38.7

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

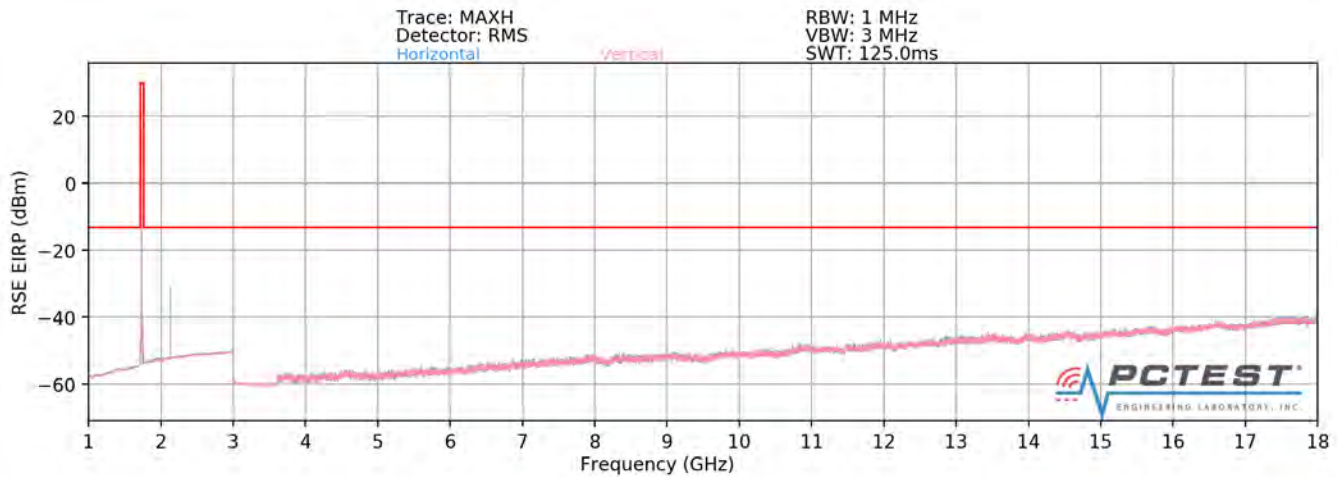
OPERATING FREQUENCY: 826.40 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	-	-	-64.39	8.95	-55.44	-42.4
2479.20	H	-	-	-61.40	9.67	-51.73	-38.7

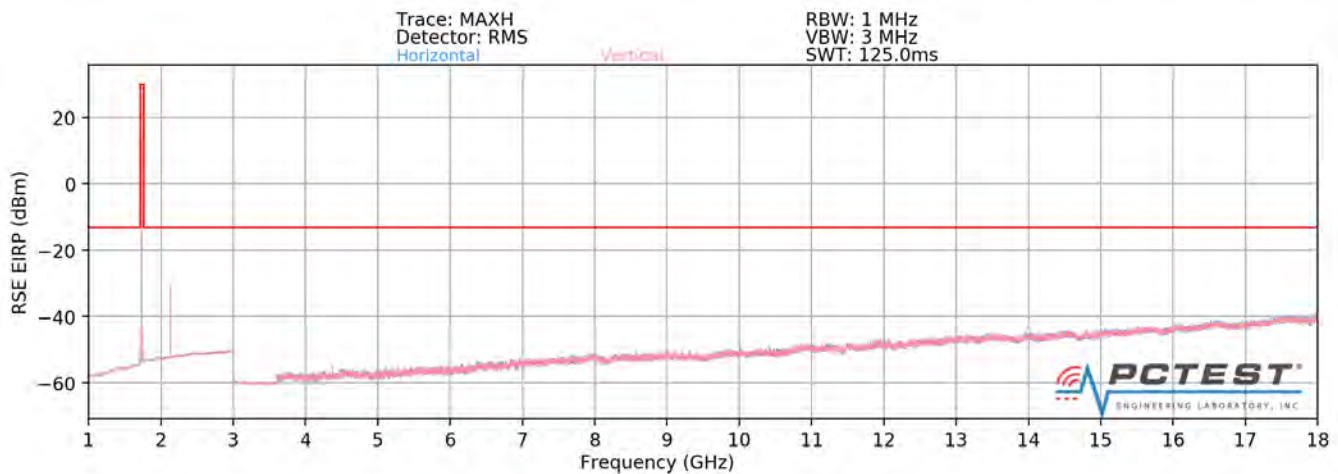
Table 7-20. Radiated Spurious Data with WCP (Cellular WCDMA Mode – Ch. 4132 - OPEN)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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AWS WCDMA Mode



Plot 7-112. Radiated Spurious Plot above 1GHz (AWS WCDMA Mode - CLOSED)



Plot 7-113. Radiated Spurious Plot above 1GHz (AWS WCDMA Mode - OPEN)

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	-	-	-64.43	9.80	-54.63	-41.6
5137.20	H	-	-	-63.44	10.12	-53.32	-40.3

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

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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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	-	-	-64.15	9.80	-54.35	-41.4
5197.80	H	-	-	-63.56	10.22	-53.34	-40.3

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

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	-	-	-64.23	9.82	-54.41	-41.4
5257.80	H	-	-	-60.33	10.29	-50.04	-37.0

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

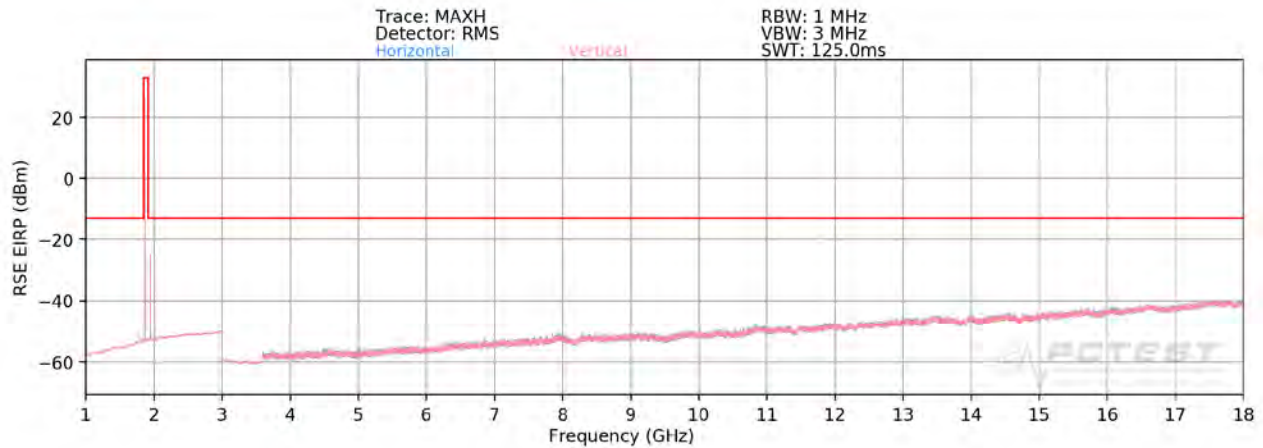
OPERATING FREQUENCY: 1712.40 MHz
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	-	-	-62.30	9.80	-52.50	-39.5
5137.20	H	-	-	-59.53	10.12	-49.41	-36.4

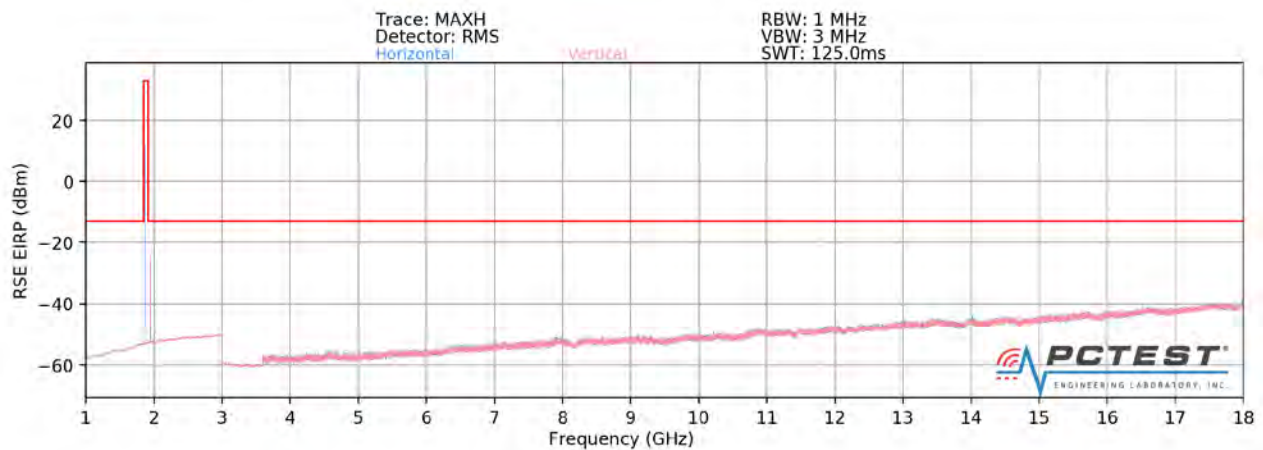
Table 7-24. Radiated Spurious Data with WCP (AWS WCDMA Mode – Ch. 1312 - OPEN)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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PCS GPRS Mode



Plot 7-114. Radiated Spurious Plot above 1GHz (PCS GPRS Mode - CLOSED)



Plot 7-115. Radiated Spurious Plot above 1GHz (PCS GPRS Mode - OPEN)

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	H	-	-	-62.91	9.51	-53.40	-40.4
5550.60	H	102	46	-59.32	10.99	-48.33	-35.3
7400.80	H	-	-	-58.24	10.99	-47.25	-34.3

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

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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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	H	-	-	-62.42	9.36	-53.06	-40.1
5640.00	H	343	219	-61.70	11.19	-50.51	-37.5
7520.00	H	-	-	-58.17	11.13	-47.04	-34.0

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

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	H	184	103	-62.00	9.29	-52.71	-39.7
5729.40	H	100	215	-60.23	11.35	-48.88	-35.9
7639.20	H	-	-	-58.69	11.29	-47.40	-34.4

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

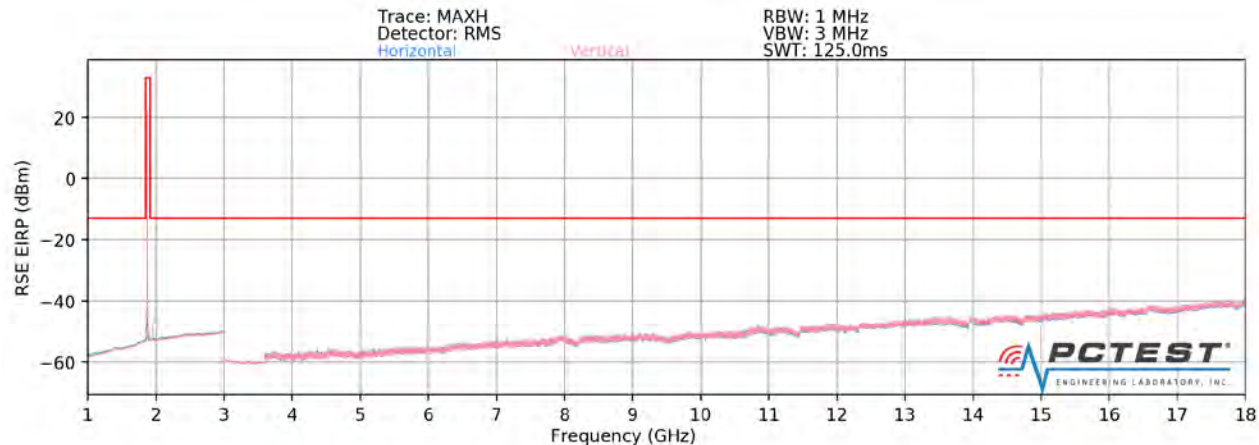
OPERATING FREQUENCY: 1850.20 MHz
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	H	388	49	-60.78	9.51	-51.27	-38.3
5550.60	H	108	356	-59.20	10.99	-48.21	-35.2
7400.80	H	-	-	-58.33	10.99	-47.34	-34.3

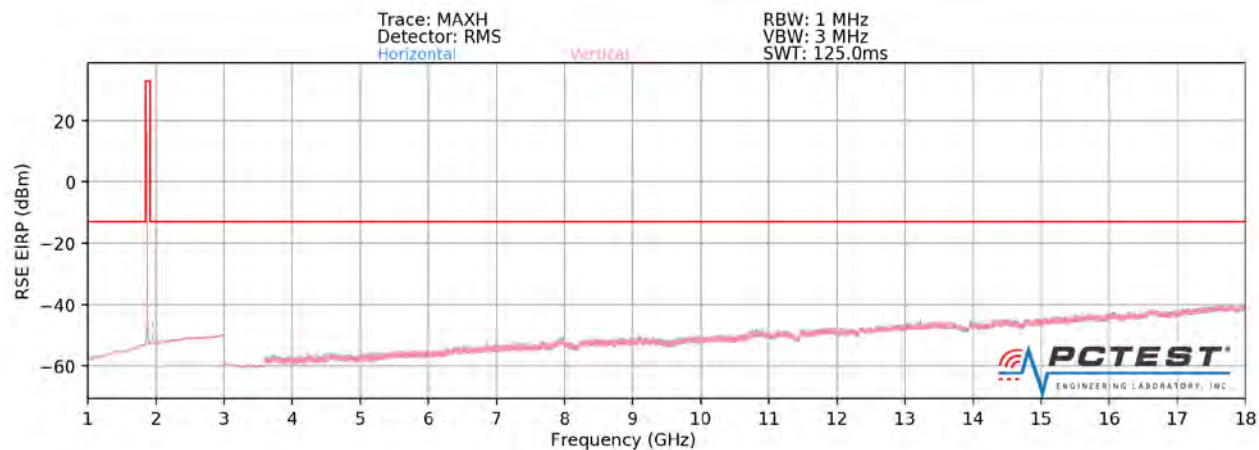
Table 7-28. Radiated Spurious Data with WCP (PCS GPRS Mode – Ch. 512 - OPEN)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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PCS CDMA Mode



Plot 7-116. Radiated Spurious Plot above 1GHz (PCS CDMA Mode - CLOSED)



Plot 7-117. Radiated Spurious Plot above 1GHz (PCS CDMA Mode - OPEN)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 93 of 114

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	H	-	-	-68.24	9.51	-58.73	-45.7
5553.75	H	394	80	-65.88	10.99	-54.89	-41.9
7405.00	H	120	259	-64.27	10.99	-53.28	-40.3
9256.25	H	-	-	-64.44	11.61	-52.83	-39.8
11107.50	H	-	-	-63.61	12.73	-50.88	-37.9

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

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	H	-	-	-67.74	9.36	-58.38	-45.4
5640.00	H	-	-	-68.04	11.19	-56.85	-43.8

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

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	H	-	-	-67.44	9.29	-58.15	-45.1
5726.25	H	-	-	-67.75	11.35	-56.40	-43.4

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

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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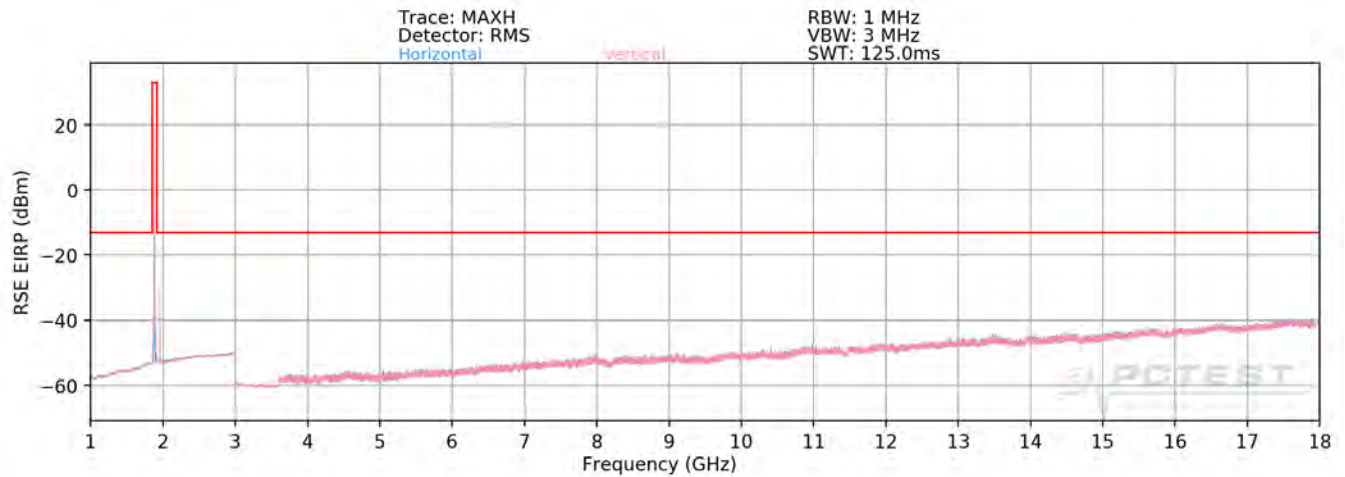
OPERATING FREQUENCY: 1851.25 MHz
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	H	-	-	-70.01	9.51	-60.50	-47.5
5553.75	H	100	180	-65.88	10.99	-54.89	-41.9
7405.00	H	114	259	-64.19	10.99	-53.20	-40.2
9256.25	H	-	-	-64.64	11.61	-53.03	-40.0
11107.50	H	-	-	-63.07	12.73	-50.34	-37.3

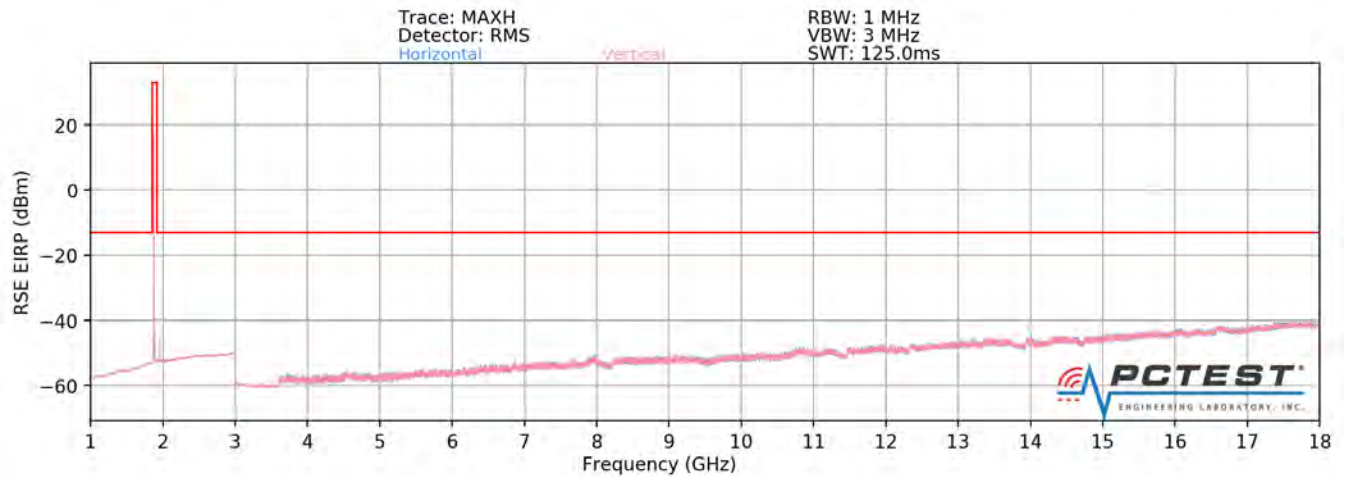
Table 7-32. Radiated Spurious Data with WCP (PCS CDMA Mode – Ch. 25 - OPEN)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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PCS WCDMA Mode



Plot 7-118. Radiated Spurious Plot above 1GHz (PCS WCDMA Mode - CLOSED)



Plot 7-119. Radiated Spurious Plot above 1GHz (PCS WCDMA Mode - OPEN)

FCC ID: A3LSMF900U	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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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	H	-	-	-62.76	9.51	-53.25	-40.2
5557.20	H	-	-	-61.71	10.99	-50.72	-37.7
7409.60	H	-	-	-58.18	10.99	-47.19	-34.2

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

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	H	-	-	-62.44	9.36	-53.08	-40.1
5640.00	H	-	-	-62.32	11.19	-51.13	-38.1

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

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	H	-	-	-62.28	9.29	-52.99	-40.0
5722.80	H	-	-	-63.44	11.35	-52.09	-39.1

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

FCC ID: A3LSMF900U		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	H	-	-	-61.05	9.29	-51.76	-38.8
5722.80	H	-	-	-60.50	11.35	-49.15	-36.2

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

FCC ID: A3LSMF900U		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: A3LSMF900U		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: 4.27 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	836,599,814	-186	-0.0000222
100 %		- 20	836,599,607	-393	-0.0000470
100 %		- 10	836,599,947	-53	-0.0000063
100 %		0	836,600,009	9	0.0000011
100 %		+ 10	836,599,861	-139	-0.0000166
100 %		+ 20	836,599,875	-125	-0.0000149
100 %		+ 30	836,600,315	315	0.0000377
100 %		+ 40	836,599,842	-158	-0.0000189
100 %		+ 50	836,599,680	-320	-0.0000383
BATT. ENDPOINT	3.45	+ 20	836,600,023	23	0.0000027

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

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

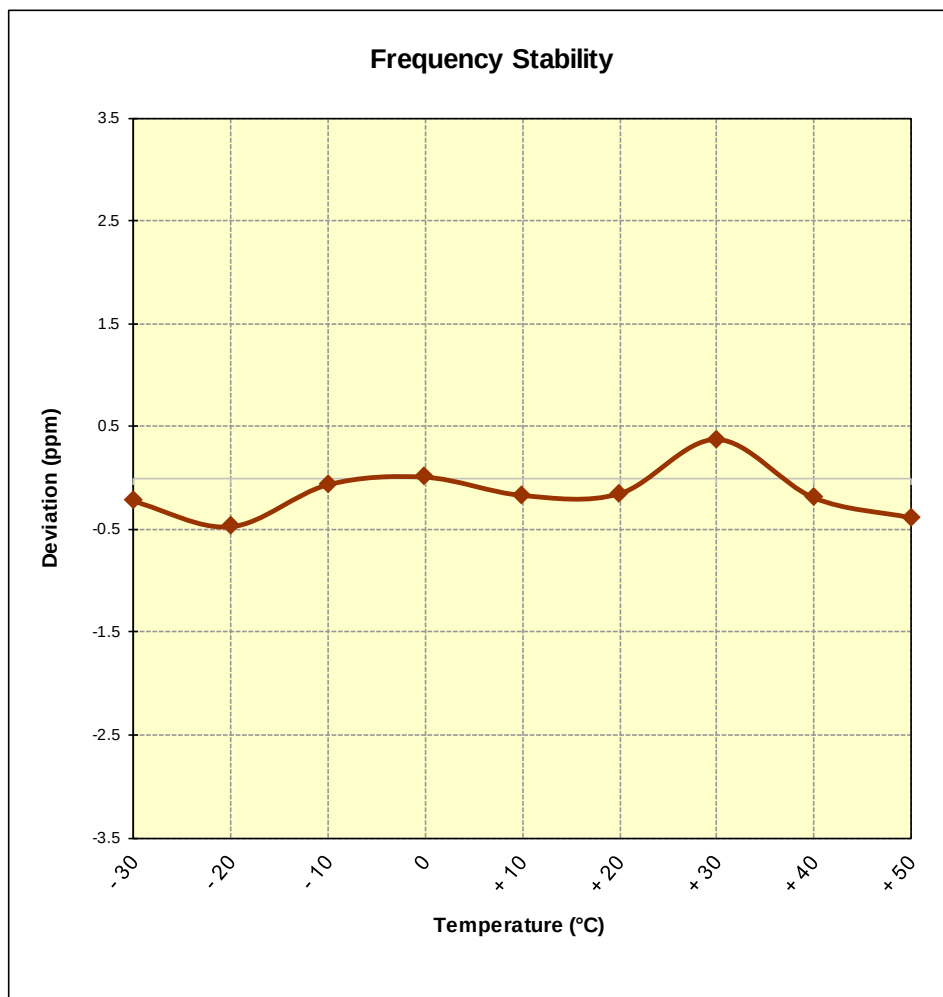


Figure 7-9. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 101 of 114

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 836,520,000 Hz

CHANNEL: 384

REFERENCE VOLTAGE: 4.27 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	836,519,934	-66	-0.0000079
100 %		- 20	836,520,075	75	0.0000090
100 %		- 10	836,519,967	-33	-0.0000039
100 %		0	836,519,750	-250	-0.0000299
100 %		+ 10	836,519,934	-66	-0.0000079
100 %		+ 20	836,520,002	2	0.0000002
100 %		+ 30	836,519,721	-279	-0.0000334
100 %		+ 40	836,520,072	72	0.0000086
100 %		+ 50	836,520,186	186	0.0000222
BATT. ENDPOINT	3.45	+ 20	836,520,080	80	0.0000096

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

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

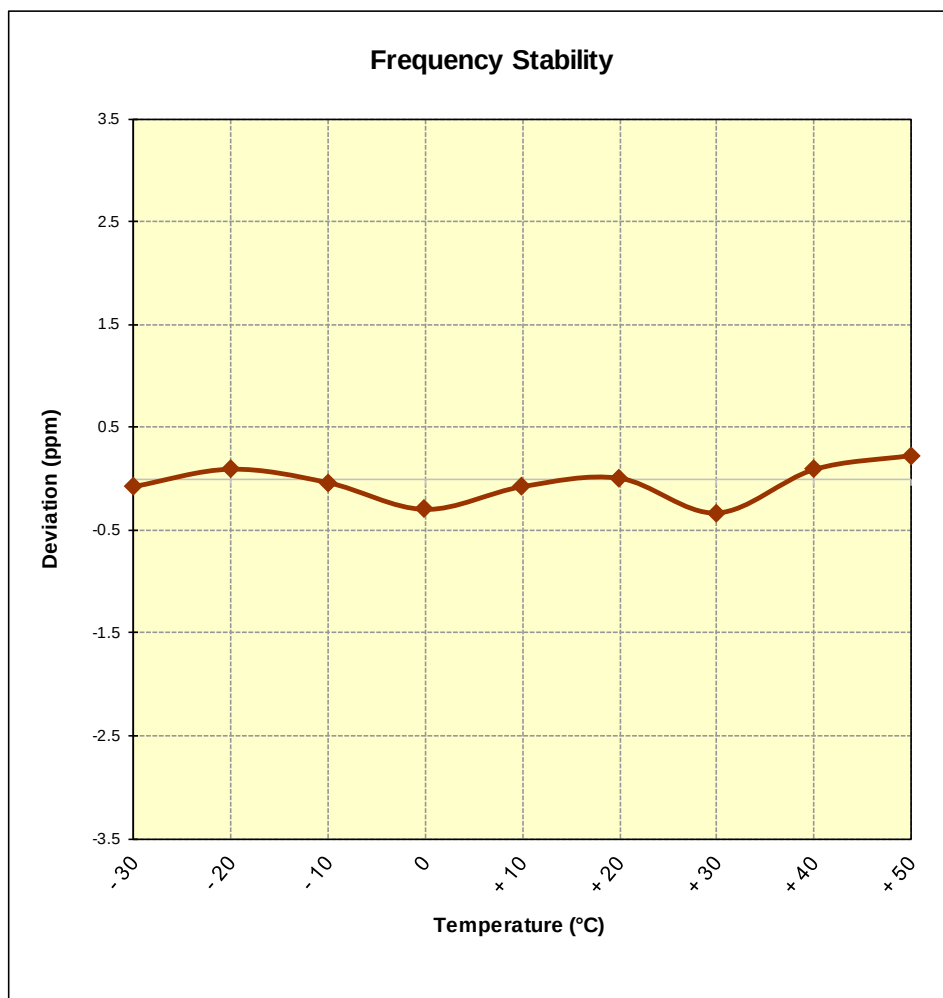


Figure 7-10. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901160007-02.A3L	Test Dates: 01/22 - 03/29/2019	EUT Type: Portable Handset		Page 103 of 114

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 4183

REFERENCE VOLTAGE: 4.27 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	836,599,996	-4	-0.0000005
100 %		- 20	836,599,903	-97	-0.0000116
100 %		- 10	836,599,673	-327	-0.0000391
100 %		0	836,599,970	-30	-0.0000036
100 %		+ 10	836,599,974	-26	-0.0000031
100 %		+ 20	836,600,037	37	0.0000044
100 %		+ 30	836,599,960	-40	-0.0000048
100 %		+ 40	836,599,956	-44	-0.0000053
100 %		+ 50	836,600,222	222	0.0000265
BATT. ENDPOINT	3.45	+ 20	836,600,096	96	0.0000115

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

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

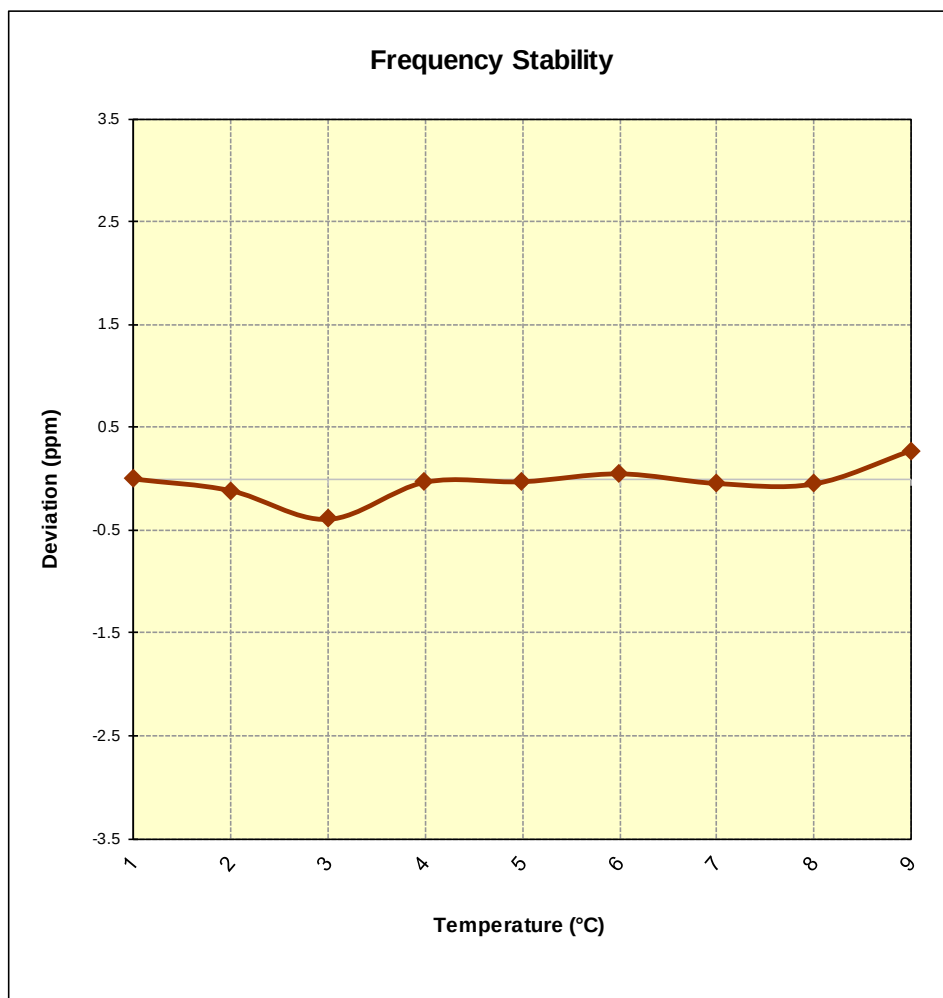


Figure 7-11. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,732,600,000 Hz
 CHANNEL: 1413
 REFERENCE VOLTAGE: 4.27 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	1,732,599,799	-201	-0.0000116
100 %		- 20	1,732,599,984	-16	-0.0000009
100 %		- 10	1,732,600,041	41	0.0000024
100 %		0	1,732,599,965	-35	-0.0000020
100 %		+ 10	1,732,599,902	-98	-0.0000057
100 %		+ 20	1,732,599,722	-278	-0.0000160
100 %		+ 30	1,732,599,803	-197	-0.0000114
100 %		+ 40	1,732,600,050	50	0.0000029
100 %		+ 50	1,732,599,970	-30	-0.0000017
BATT. ENDPOINT	3.45	+ 20	1,732,600,157	157	0.0000091

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: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

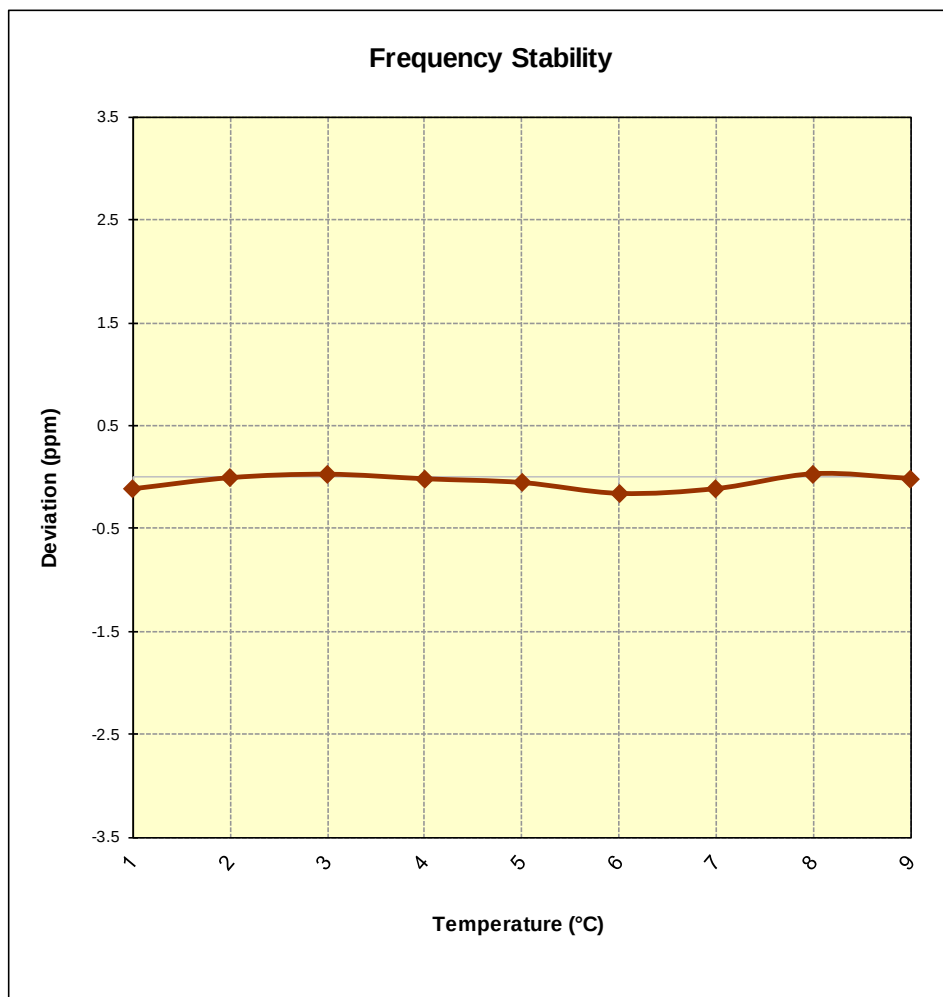


Figure 7-12. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMF900U		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: 4.27 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	1,880,000,060	60	0.0000032
100 %		- 20	1,880,000,176	176	0.0000094
100 %		- 10	1,880,000,038	38	0.0000020
100 %		0	1,880,000,105	105	0.0000056
100 %		+ 10	1,879,999,895	-105	-0.0000056
100 %		+ 20	1,879,999,757	-243	-0.0000129
100 %		+ 30	1,880,000,125	125	0.0000066
100 %		+ 40	1,879,999,850	-150	-0.0000080
100 %		+ 50	1,880,000,208	208	0.0000111
85 %		+ 20	1,879,999,942	-58	-0.0000031
BATT. ENDPOINT	3.45	+ 20	1,879,999,852	-148	-0.0000079

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

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

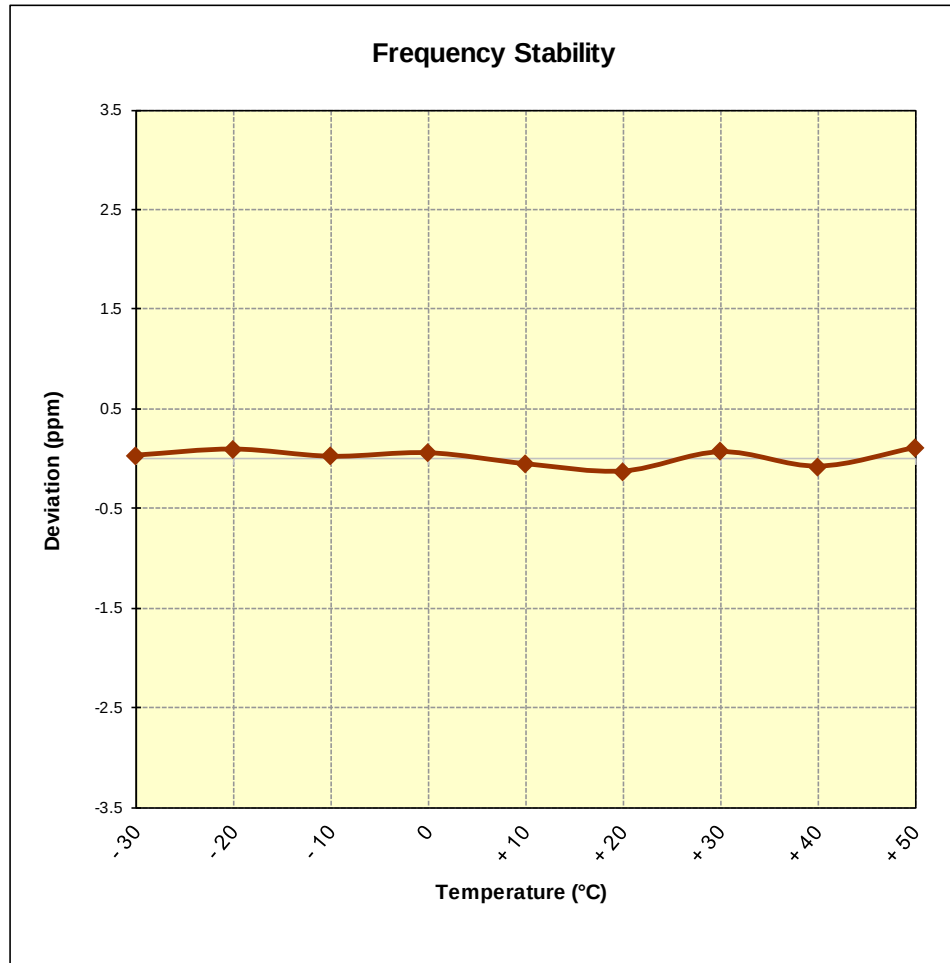


Figure 7-13. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMF900U		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: 4.27 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	1,879,999,914	-86	-0.0000046
100 %		- 20	1,880,000,061	61	0.0000032
100 %		- 10	1,879,999,741	-259	-0.0000138
100 %		0	1,880,000,051	51	0.0000027
100 %		+ 10	1,879,999,880	-120	-0.0000064
100 %		+ 20	1,879,999,908	-92	-0.0000049
100 %		+ 30	1,880,000,466	466	0.0000248
100 %		+ 40	1,879,999,724	-276	-0.0000147
100 %		+ 50	1,879,999,733	-267	-0.0000142
85 %		+ 20	1,879,999,858	-142	-0.0000076
BATT. ENDPOINT	3.45	+ 20	1,879,999,546	-454	-0.0000241

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

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

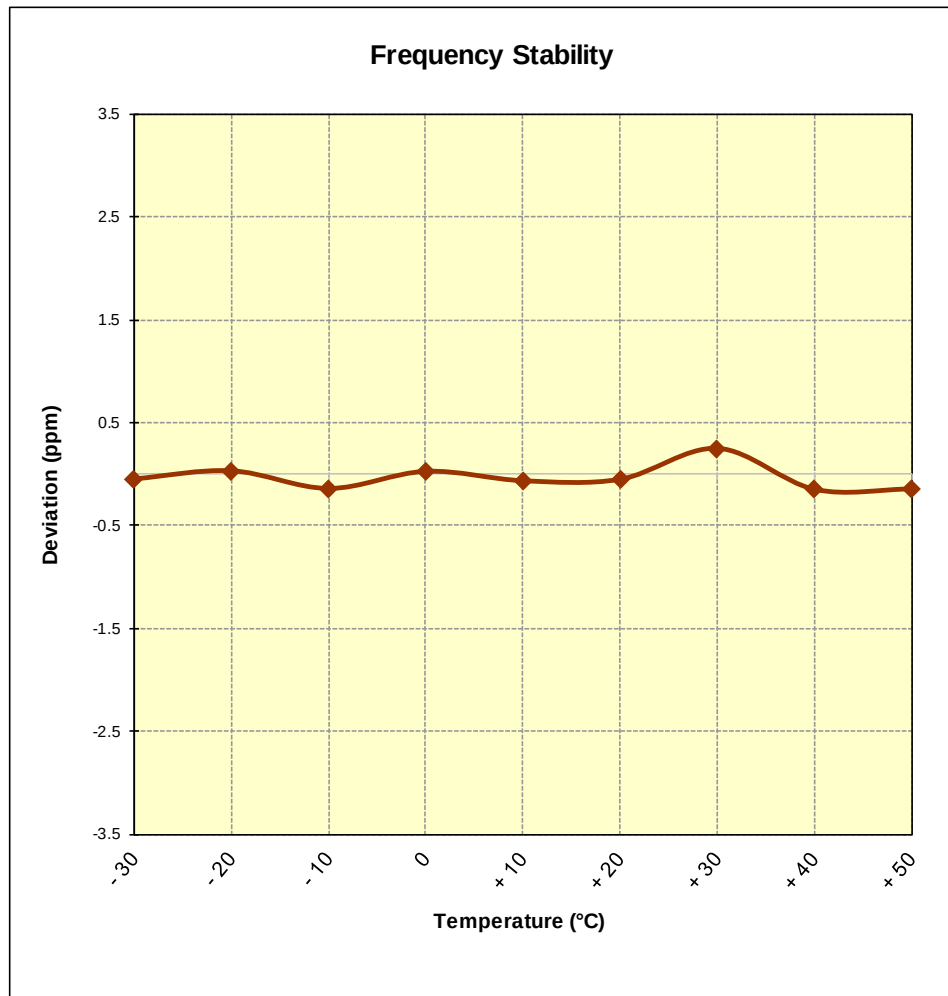


Figure 7-14. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMF900U		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: 4.27 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.27	- 30	1,880,000,185	185	0.0000098
100 %		- 20	1,880,000,076	76	0.0000040
100 %		- 10	1,879,999,862	-138	-0.0000073
100 %		0	1,880,000,125	125	0.0000066
100 %		+ 10	1,879,999,886	-114	-0.0000061
100 %		+ 20	1,879,999,838	-162	-0.0000086
100 %		+ 30	1,880,000,180	180	0.0000096
100 %		+ 40	1,880,000,205	205	0.0000109
100 %		+ 50	1,880,000,053	53	0.0000028
85 %		+ 20	1,879,999,924	-76	-0.0000040
BATT. ENDPOINT	3.45	+ 20	1,879,999,944	-56	-0.0000030

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

FCC ID: A3LSMF900U	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

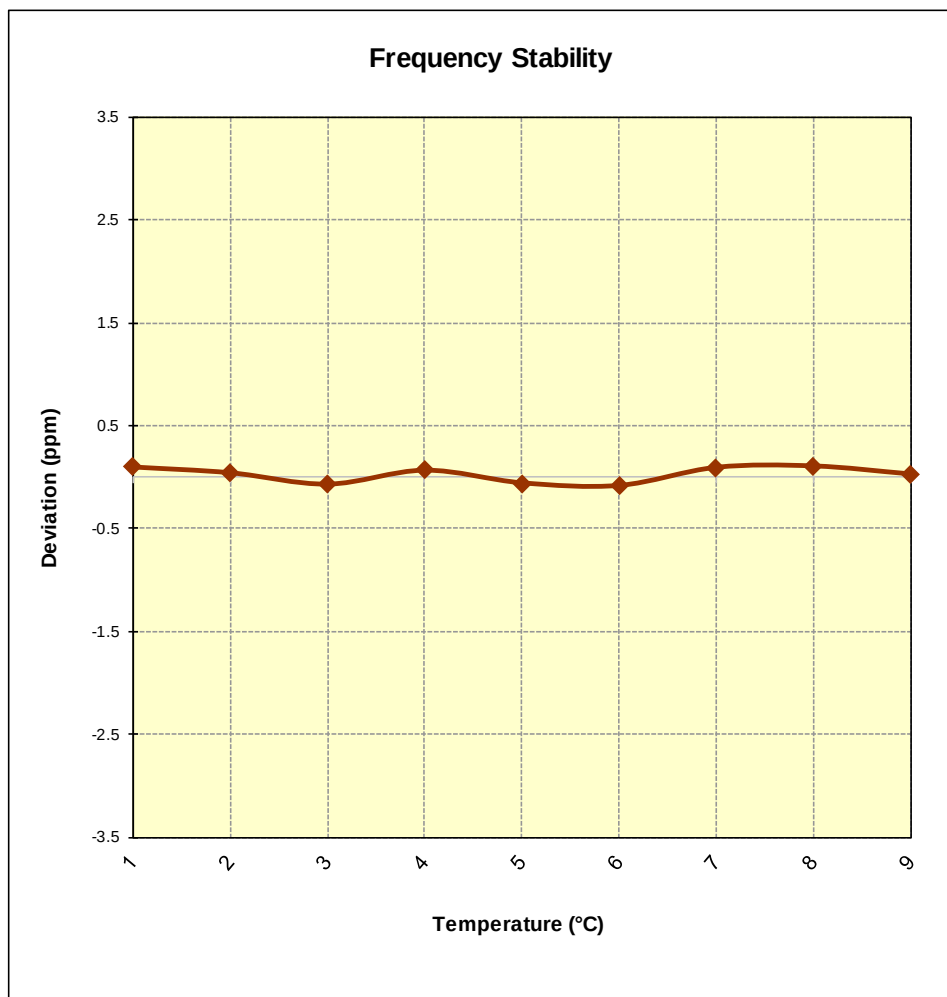


Figure 7-15. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMF900U		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: A3LSMF900U** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules and RSS-132, RSS-133, RSS-139 of the Innovation, Science and Economic Development Canada Rules.

FCC ID: A3LSMF900U		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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