

PCS CDMA Mode



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



Plot 7-84. 4MHz Span Plot (PCS CDMA Mode - Low Channel)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 61 of 108



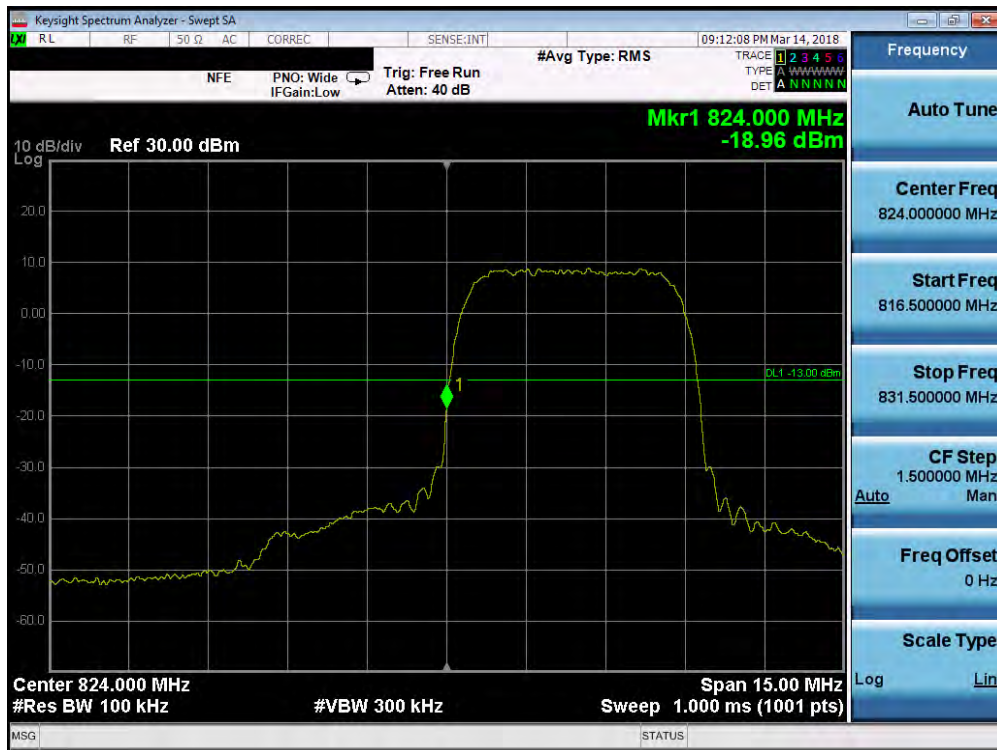
Plot 7-85. Band Edge Plot (PCS CDMA Mode - High Channel)



Plot 7-86. 4MHz Span Plot (PCS CDMA Mode - High Channel)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Cellular WCDMA Mode



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



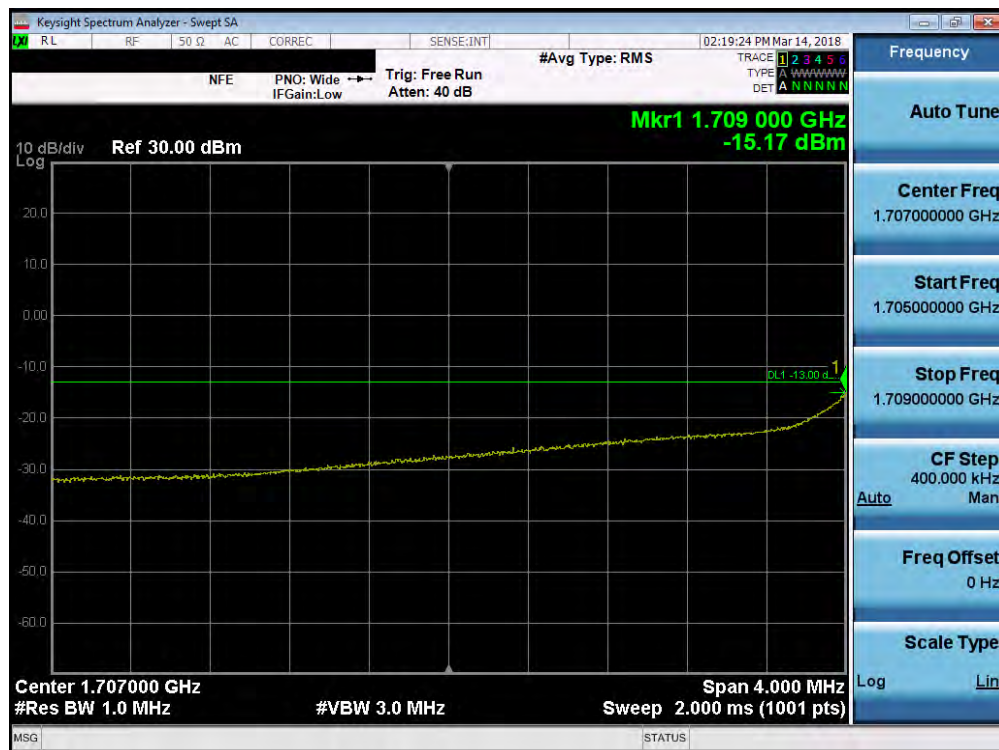
Plot 7-88. Band Edge Plot (Cellular WCDMA Mode - High Channel)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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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: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 64 of 108



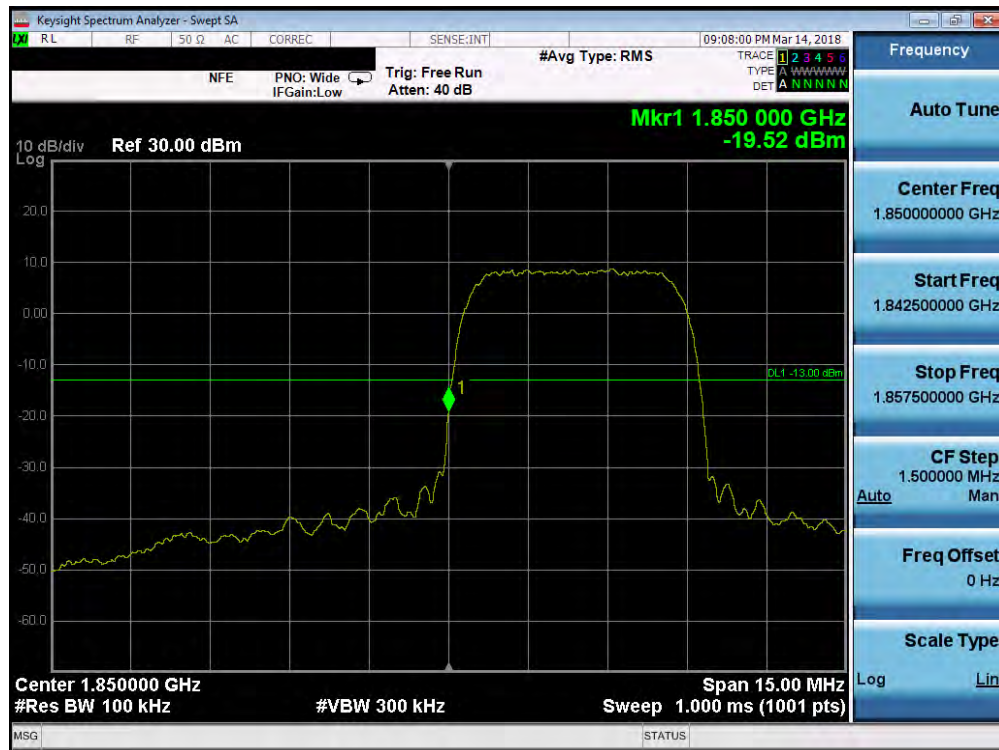
Plot 7-91. Band Edge Plot (AWS WCDMA Mode - High Channel)



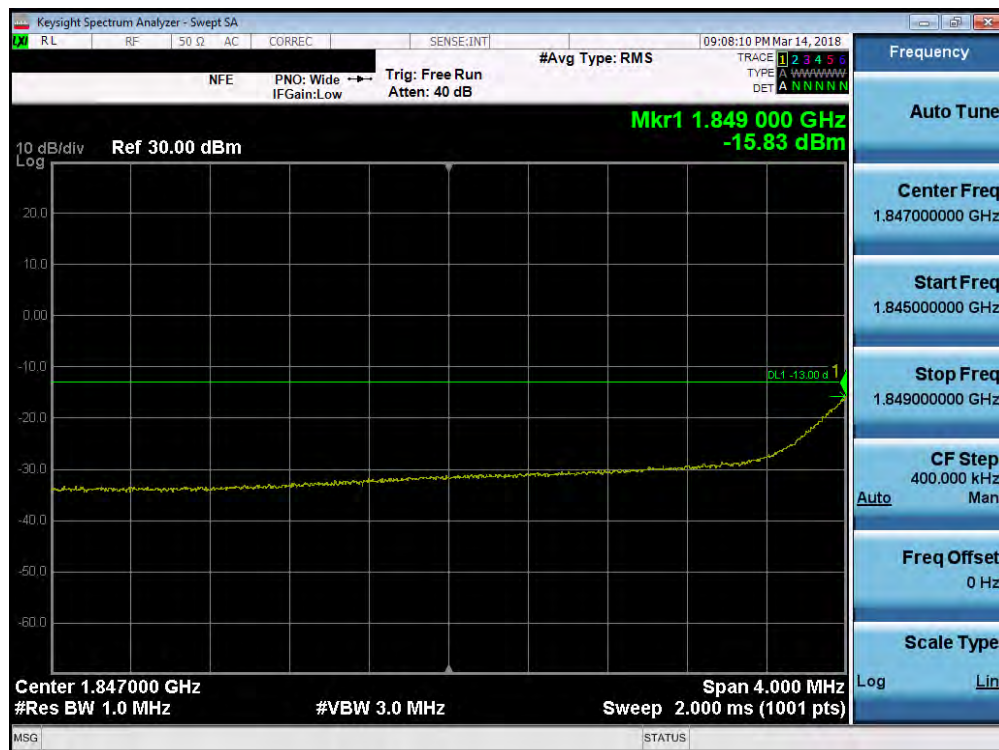
Plot 7-92. 4MHz Span Plot (AWS WCDMA Mode - High Channel)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 65 of 108

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: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 66 of 108



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



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

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 67 of 108

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.

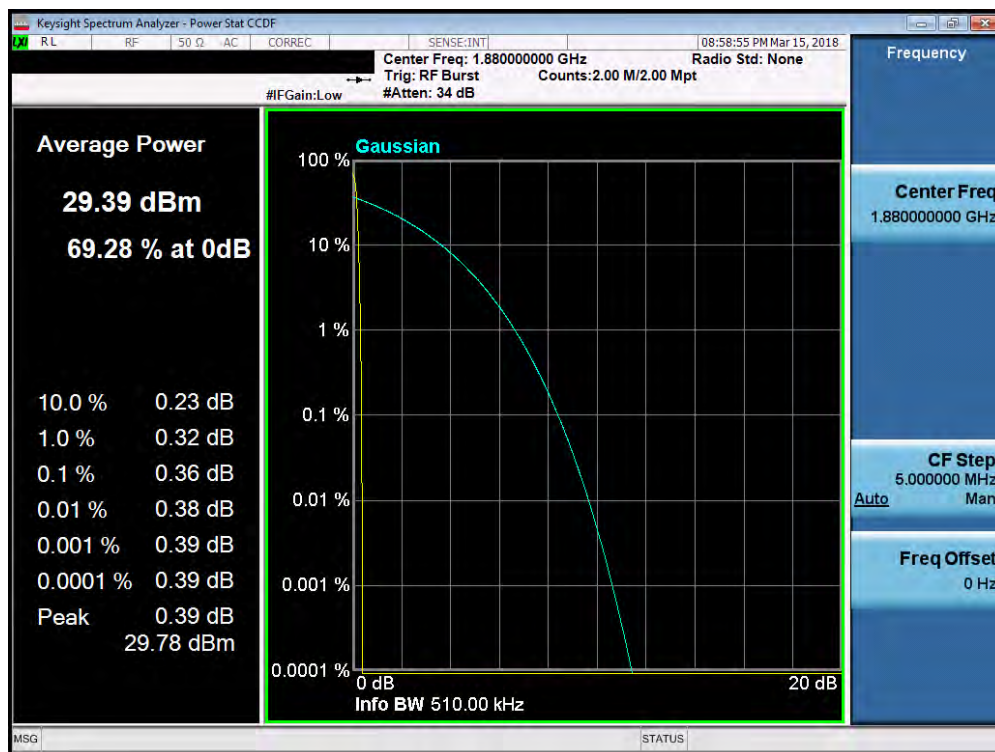


Figure 7-4. Test Instrument & Measurement Setup

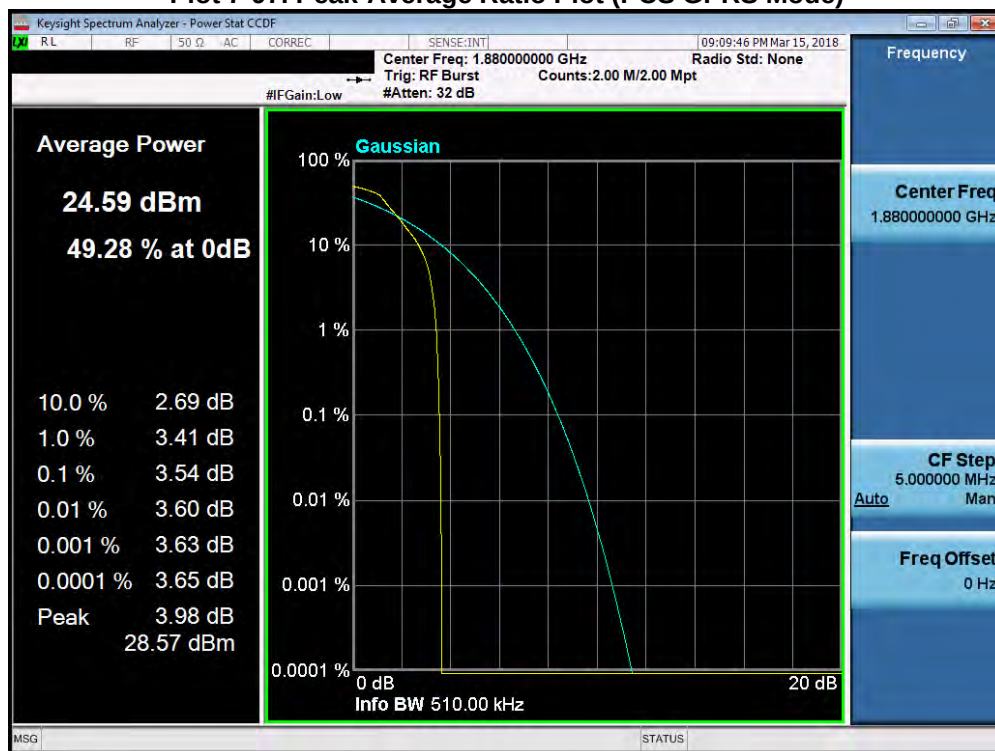
Test Notes

None

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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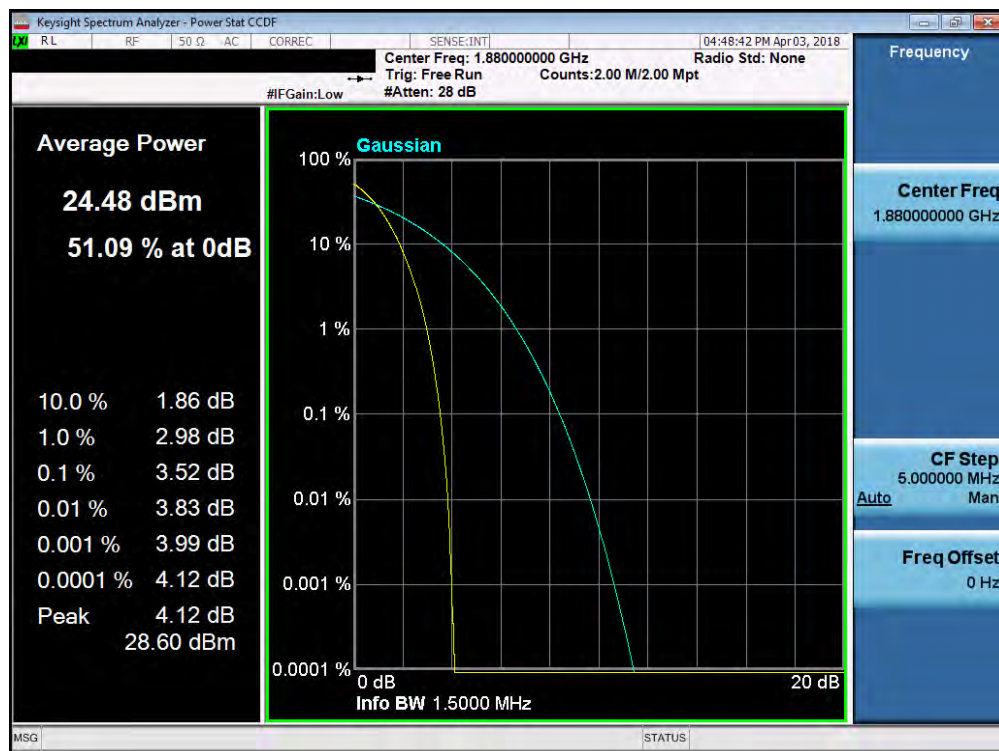


Plot 7-97. Peak-Average Ratio Plot (PCS GPRS Mode)

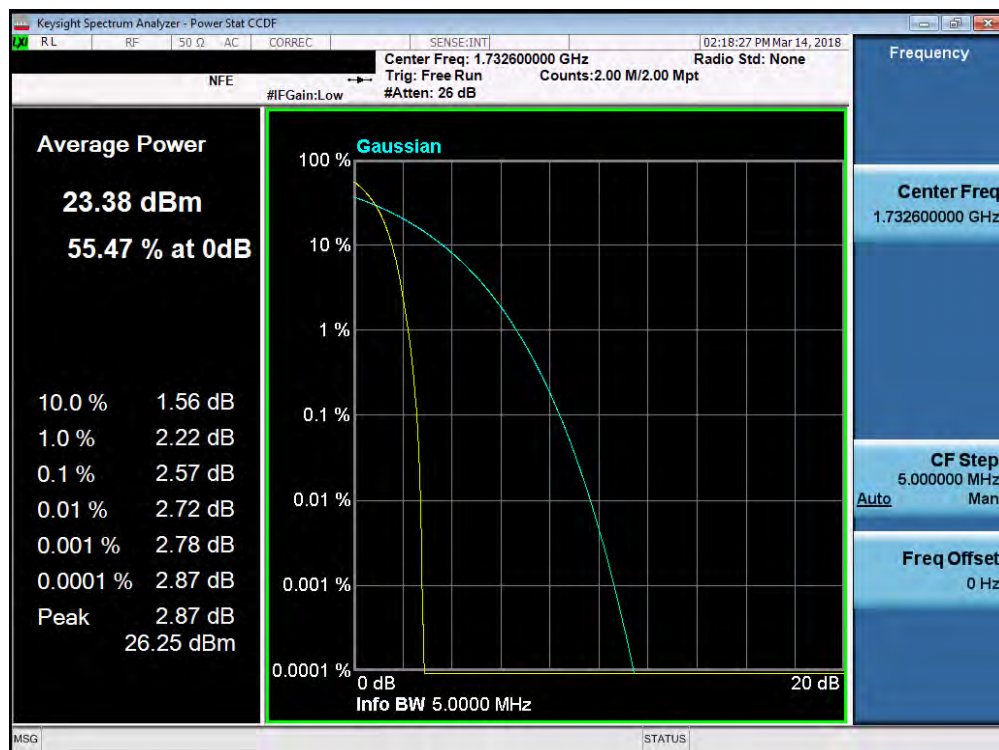


Plot 7-98. Peak-Average Ratio Plot (PCS EDGE Mode)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 69 of 108

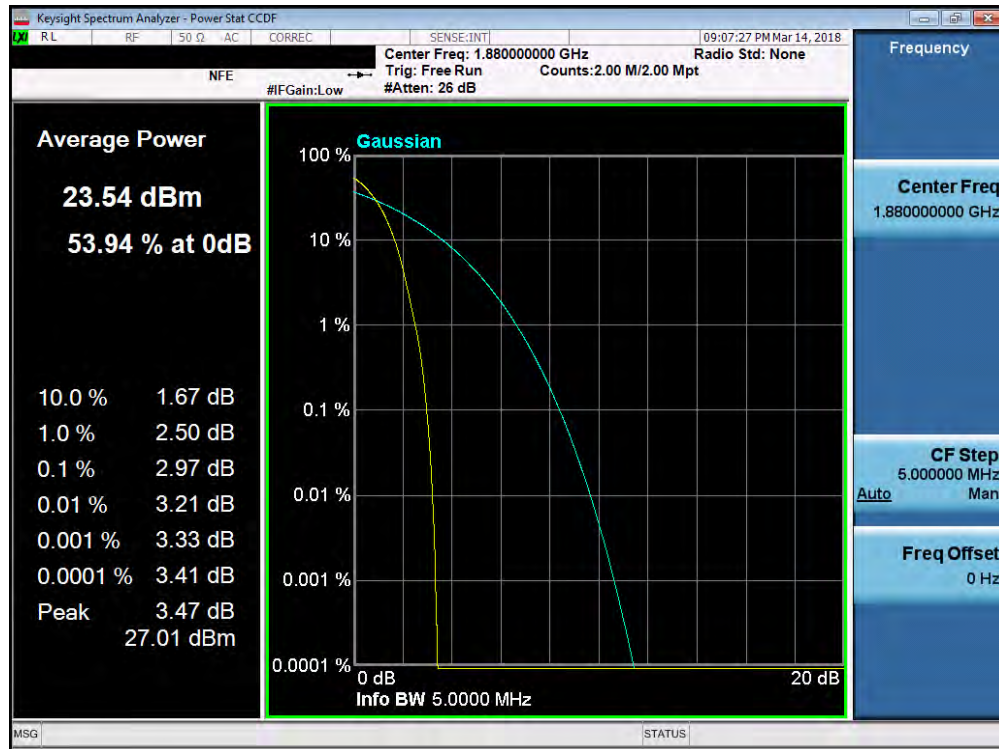


Plot 7-99. Peak-Average Ratio Plot (PCS CDMA Mode)



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

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 70 of 108



Plot 7-101. Peak-Average Ratio Plot (PCS WCDMA Mode)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 71 of 108

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: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 72 of 108

Test Setup

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

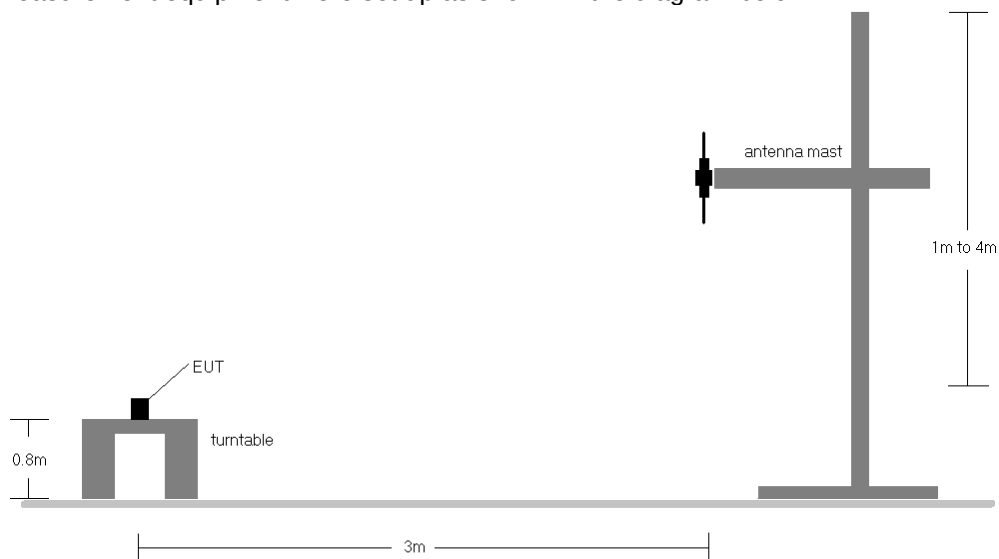


Figure 7-5. Radiated Test Setup <1GHz

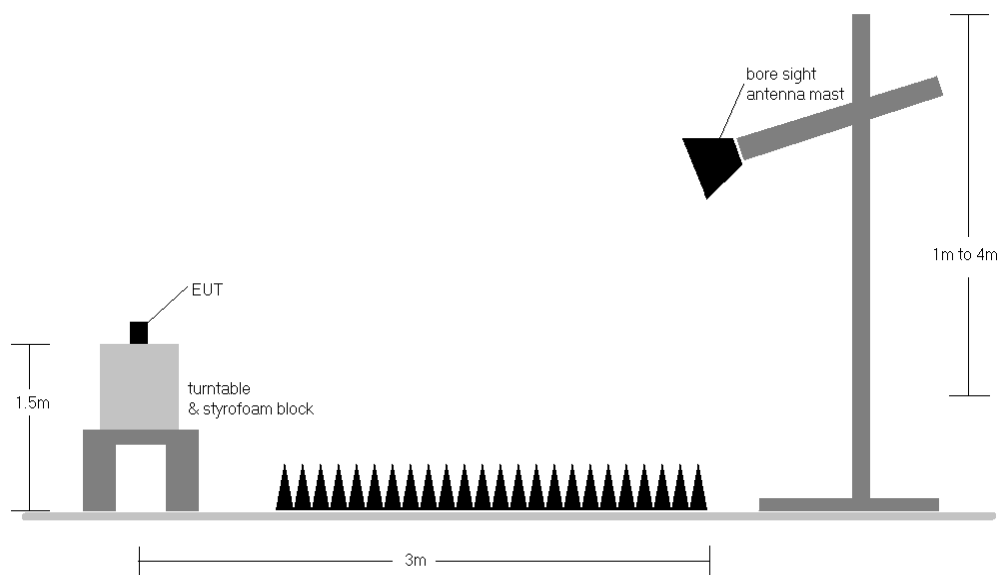


Figure 7-6. Radiated Test Setup >1GHz

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	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 and EVDO capabilities. The EUT 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.

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	150	226	26.42	1.50	25.77	0.377	38.45	-12.68	27.92	0.619	40.61	-12.69
836.60	GPRS850	H	150	3	31.10	1.50	30.45	1.109	38.45	-8.00	32.60	1.820	40.61	-8.01
848.80	GPRS850	H	150	185	30.33	1.50	29.68	0.929	38.45	-8.77	31.83	1.524	40.61	-8.78
836.60	GPRS850	V	150	3	28.31	1.50	27.66	0.583	38.45	-10.80	29.81	0.956	40.61	-10.80
836.60	EDGE850	H	150	3	24.53	1.50	23.88	0.245	38.45	-14.57	26.03	0.401	40.61	-14.57

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

FCC ID: A3LSMJ337P		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 Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
824.70	CDMA850	H	150	207	21.85	1.50	21.20	38.45	-17.25	23.35	40.61	-17.26
836.52	CDMA850	H	150	6	24.00	1.50	23.35	38.45	-15.10	25.50	40.61	-15.11
848.31	CDMA850	H	150	188	22.70	1.50	22.05	38.45	-16.40	24.20	40.61	-16.41
836.52	CDMA850	V	150	1	21.35	1.50	20.70	38.45	-17.75	22.85	40.61	-17.76

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 Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
826.40	WCDMA850	H	150	0	22.79	1.50	22.14	38.45	-16.31	24.29	40.61	-16.32
836.60	WCDMA850	H	150	6	23.16	1.50	22.51	38.45	-15.94	24.66	40.61	-15.95
846.60	WCDMA850	H	150	7	22.97	1.50	22.32	38.45	-16.13	24.47	40.61	-16.14
836.60	WCDMA850	V	150	9	20.16	1.50	19.51	38.45	-18.94	21.66	40.61	-18.95

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 Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	H	150	110	17.81	5.55	23.36	30.00	-6.64
1732.60	WCDMA1700	H	150	109	17.49	5.41	22.90	30.00	-7.10
1752.60	WCDMA1700	H	150	111	18.27	5.27	23.54	30.00	-6.46
1752.60	WCDMA1700	V	150	258	18.23	5.27	23.50	30.00	-6.50

Table 7-5. EIRP (AWS WCDMA)

FCC ID: A3LSMJ337P		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 Limit [dBm]	Margin [dB]
1850.20	GPRS1900	H	150	16	24.50	4.82	29.32	33.01	-3.69
1880.00	GPRS1900	H	150	16	25.03	4.74	29.77	33.01	-3.24
1909.80	GPRS1900	H	150	100	25.13	4.68	29.81	33.01	-3.20
1909.80	GPRS1900	V	150	81	24.79	4.68	29.47	33.01	-3.54
1909.80	EDGE1900	H	150	100	18.93	4.68	23.61	33.01	-9.40

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 Limit [dBm]	Margin [dB]
1851.25	CDMA1900	H	150	102	20.50	4.82	25.32	33.01	-7.69
1880.00	CDMA1900	H	150	16	19.59	4.74	24.33	33.01	-8.68
1908.75	CDMA1900	H	150	17	19.00	4.68	23.68	33.01	-9.33
1851.25	CDMA1900	V	150	123	20.48	4.82	25.30	33.01	-7.71

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 Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	H	150	18	18.86	4.81	23.67	33.01	-9.34
1880.00	WCDMA1900	H	150	20	18.30	4.74	23.04	33.01	-9.97
1907.60	WCDMA1900	H	150	19	17.71	4.68	22.39	33.01	-10.62
1852.40	WCDMA1900	V	150	91	18.78	4.81	23.59	33.01	-9.42

Table 7-8. EIRP (PCS WCDMA)

FCC ID: A3LSMJ337P			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 $\geq 3 \times$ 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: A3LSMJ337P		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.

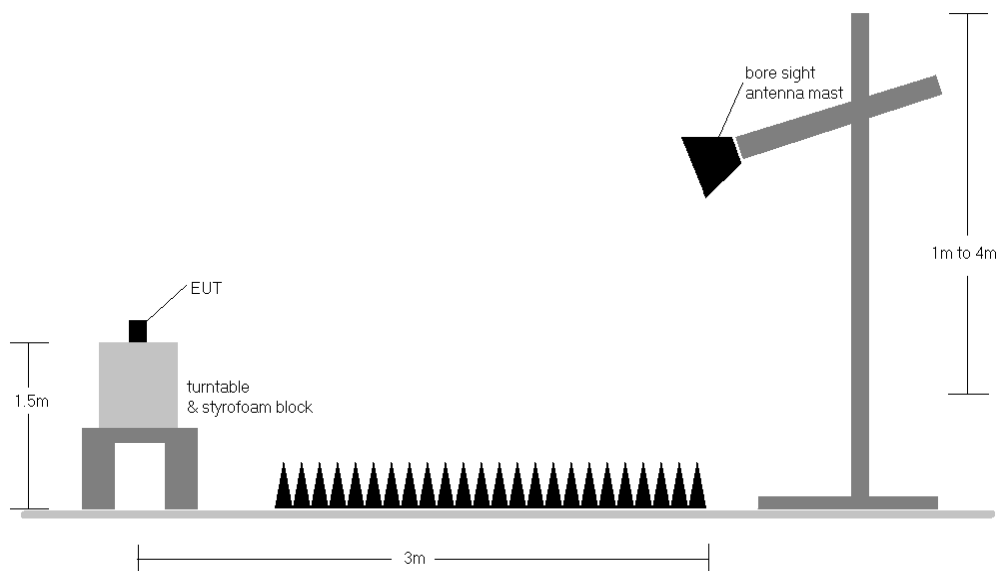


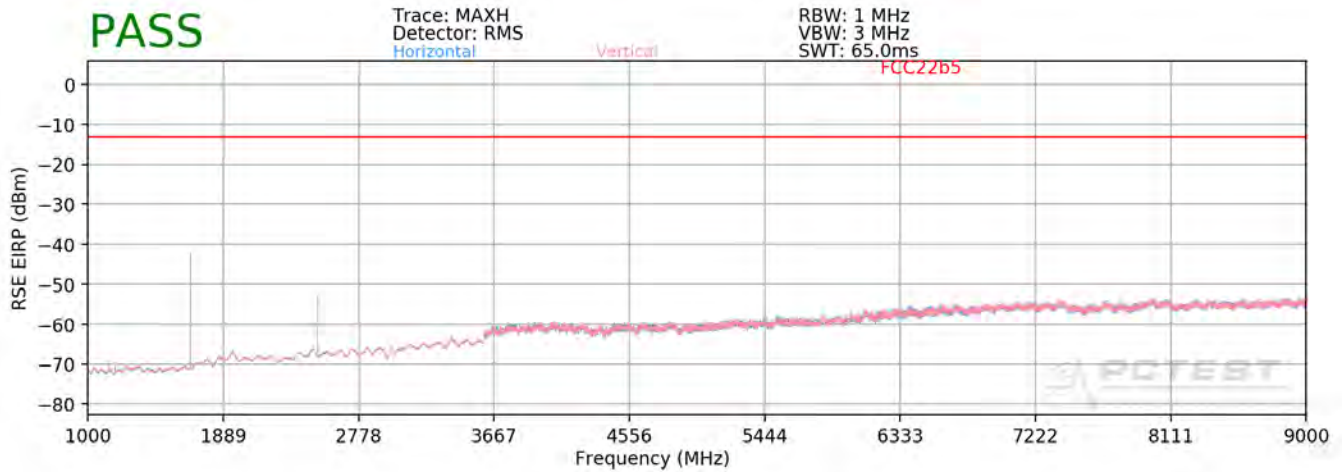
Figure 7-7. Test Instrument & Measurement Setup

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 and EVDO capabilities. The EUT 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.

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Cellular GPRS Mode



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

OPERATING FREQUENCY: 824.20 MHz
CHANNEL: 128
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	118	30	-30.31	9.01	-21.30	-8.3
2472.60	H	120	48	-45.12	9.12	-36.00	-23.0
3296.80	H	158	20	-66.48	9.37	-57.12	-44.1
4121.00	H	118	5	-67.40	9.83	-57.56	-44.6
4945.20	H	-	-	-70.99	11.24	-59.74	-46.7
5769.40	H	-	-	-69.53	11.36	-58.16	-45.2

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

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY: 836.60 MHz
 CHANNEL: 190
 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	119	11	-38.57	8.85	-29.72	-16.7
2509.80	H	255	37	-48.91	9.17	-39.75	-26.7
3346.40	H	-	-	-68.31	9.36	-58.95	-46.0
4183.00	H	105	4	-65.61	10.19	-55.42	-42.4
5019.60	H	-	-	-69.87	11.09	-58.78	-45.8
5856.20	H	-	-	-69.15	11.32	-57.83	-44.8

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

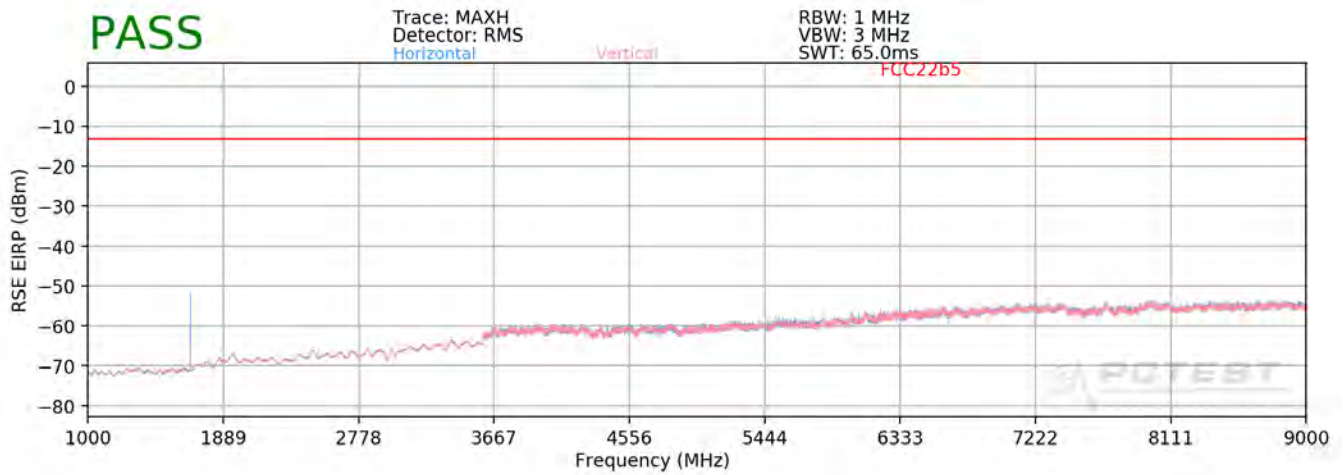
OPERATING FREQUENCY: 848.80 MHz
 CHANNEL: 251
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	146	37	-42.72	8.67	-34.05	-21.0
2546.40	H	150	352	-48.98	9.28	-39.70	-26.7
3395.20	H	-	-	-67.32	9.46	-57.86	-44.9
4244.00	H	105	0	-62.60	10.48	-52.12	-39.1
5092.80	H	-	-	-69.57	10.88	-58.69	-45.7
5941.60	H	-	-	-68.95	11.23	-57.73	-44.7

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

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 80 of 108

Cellular CDMA Mode



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

OPERATING FREQUENCY: 824.70 MHz
CHANNEL: 1013
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	150	354	-52.53	4.81	-47.72	-34.7
2474.10	H	150	6	-64.97	4.99	-59.98	-47.0
3298.80	H	-	-	-65.97	6.25	-59.72	-46.7

Table 7-12. Radiated Spurious Data (Cellular CDMA Mode – Ch. 1013)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 81 of 108

OPERATING FREQUENCY: 836.52 MHz
 CHANNEL: 384
 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	150	352	-54.68	4.86	-49.82	-36.8
2509.56	H	150	7	-65.42	5.10	-60.32	-47.3
3346.08	H	-	-	-65.78	6.25	-59.53	-46.5

Table 7-13. Radiated Spurious Data (Cellular CDMA Mode – Ch. 384)

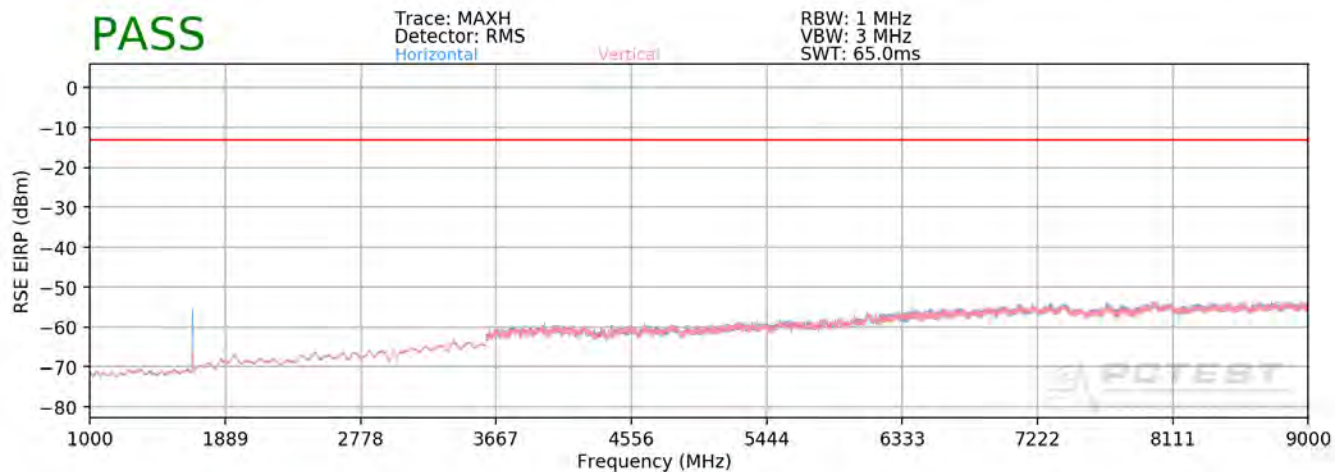
OPERATING FREQUENCY: 848.31 MHz
 CHANNEL: 777
 MODULATION SIGNAL: CDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	150	353	-61.29	4.91	-56.38	-43.4
2544.93	H	-	-	-66.11	5.27	-60.84	-47.8

Table 7-14. Radiated Spurious Data (Cellular CDMA Mode – Ch. 777)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 82 of 108

Cellular WCDMA Mode



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

OPERATING FREQUENCY: 826.40 MHz

CHANNEL: 4132

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	207	16	-62.10	8.99	-53.11	-40.1
2479.20	H	-	-	-74.17	9.12	-65.05	-52.0
3305.60	H	-	-	-74.01	9.37	-64.64	-51.6

Table 7-15. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4132)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset			Page 83 of 108

OPERATING FREQUENCY: 836.60 MHz
 CHANNEL: 4183
 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	156	6	-65.98	8.85	-57.13	-44.1
2509.80	H	-	-	-77.33	9.17	-68.17	-55.2
3346.40	H	-	-	-73.97	9.36	-64.61	-51.6

Table 7-16. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4183)

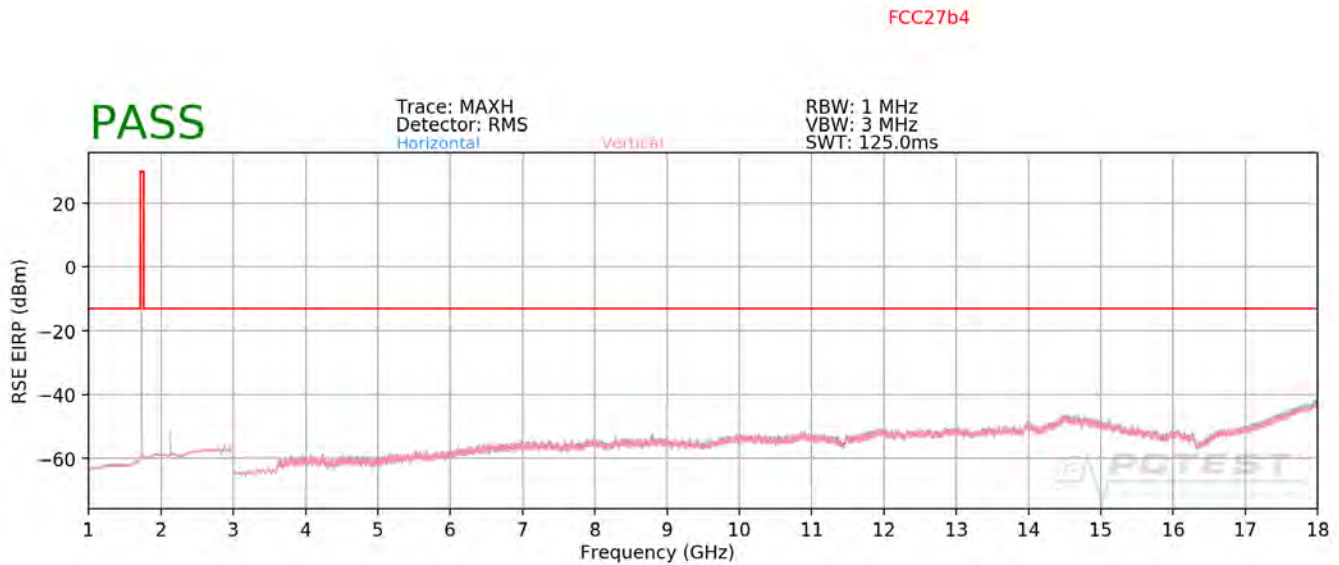
OPERATING FREQUENCY: 846.60 MHz
 CHANNEL: 4233
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	191	21	-66.58	8.70	-57.88	-44.9
2539.80	H	115	40	-74.55	9.26	-65.29	-52.3
3386.40	H	-	-	-73.11	9.44	-63.67	-50.7

Table 7-17. Radiated Spurious Data (Cellular WCDMA Mode – Ch. 4233)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 84 of 108

AWS WCDMA Mode



Plot 7-105. Radiated Spurious Plot above 1GHz (AWS WCDMA)

OPERATING FREQUENCY: 1712.40 MHz

CHANNEL: 1312

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	187	44	-69.10	8.11	-60.99	-48.0
5137.20	H	-	-	-71.95	10.24	-61.71	-48.7

Table 7-18. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1312)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 85 of 108

OPERATING FREQUENCY: 1732.60 MHz
 CHANNEL: 1413
 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	132	39	-69.95	8.33	-61.62	-48.6
5197.80	H	140	132	-68.93	10.27	-58.66	-45.7
6930.40	H	-	-	-70.25	11.42	-58.83	-45.8

Table 7-19. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1413)

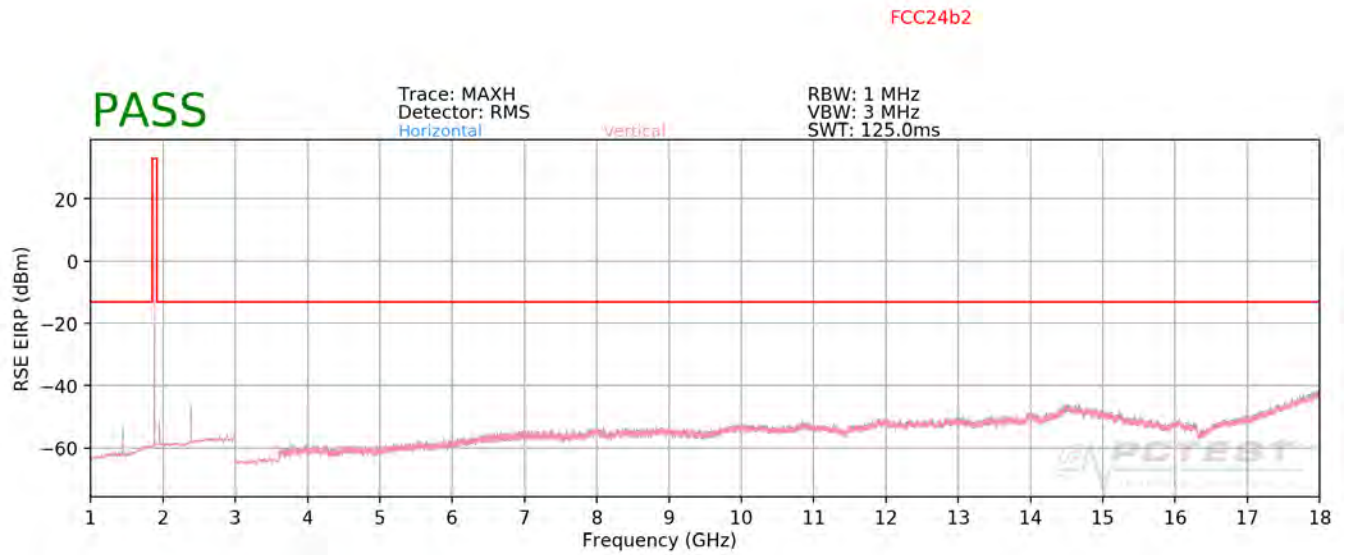
OPERATING FREQUENCY: 1752.60 MHz
 CHANNEL: 1513
 MODULATION SIGNAL: WCDMA
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	132	145	-66.49	8.52	-57.98	-45.0
5257.80	H	145	200	-70.50	10.29	-60.20	-47.2
7010.40	H	-	-	-71.21	11.50	-59.71	-46.7

Table 7-20. Radiated Spurious Data (AWS WCDMA Mode – Ch. 1513)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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PCS GPRS Mode



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

OPERATING FREQUENCY: 1850.20 MHz
 CHANNEL: 512
 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	363	130	-54.67	8.30	-46.37	-33.4
5550.60	H	112	129	-56.56	10.52	-46.04	-33.0
7400.80	H	110	167	-60.67	11.91	-48.76	-35.8
9251.00	H	116	102	-55.51	13.41	-42.10	-29.1
11101.20	H	-	-	-69.17	13.37	-55.81	-42.8

Table 7-21. Radiated Spurious Data (PCS GPRS Mode – Ch. 512)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 87 of 108

OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 661
 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	128	167	-56.39	8.46	-47.93	-34.9
5640.00	H	122	133	-57.81	10.60	-47.22	-34.2
7520.00	H	112	326	-62.69	12.11	-50.58	-37.6
9400.00	H	111	94	-54.09	13.35	-40.74	-27.7
11280.00	H	-	-	-68.85	13.43	-55.42	-42.4

Table 7-22. Radiated Spurious Data (PCS GPRS Mode – Ch. 661)

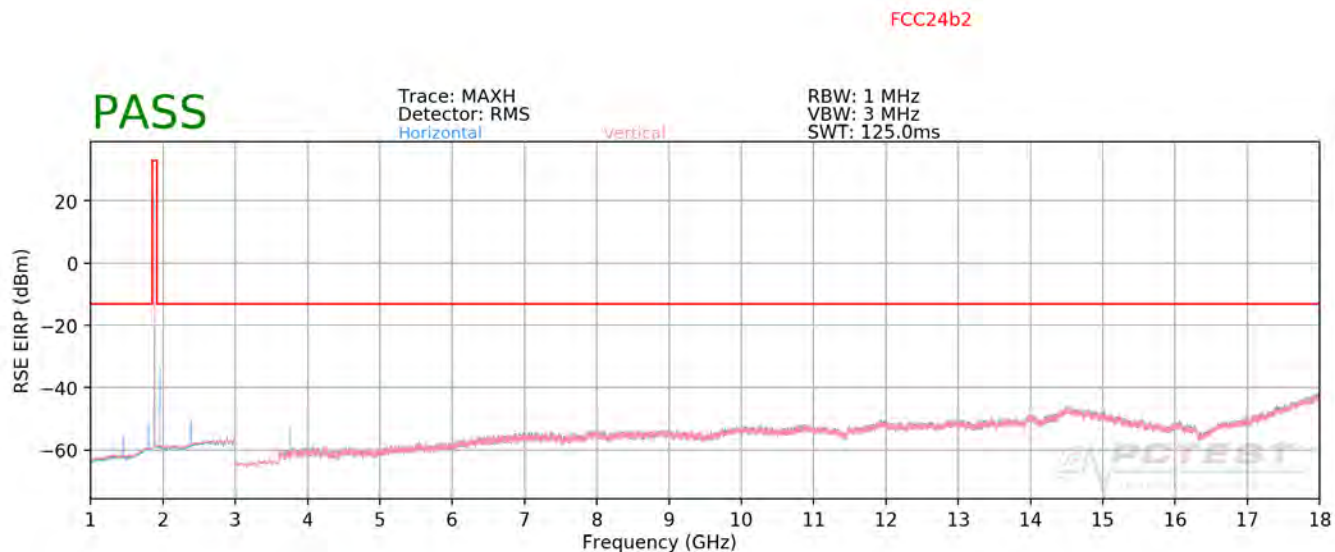
OPERATING FREQUENCY: 1909.80 MHz
 CHANNEL: 810
 MODULATION SIGNAL: GPRS (GMSK)
 DISTANCE: 3 meters
 LIMIT: -13 dBm

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	11	168	-56.16	8.56	-47.60	-34.6
5729.40	H	384	137	-56.96	10.64	-46.31	-33.3
7639.20	H	110	19	-63.99	12.20	-51.80	-38.8
9549.00	H	111	94	-53.79	13.30	-40.50	-27.5
11458.80	H	-	-	-69.19	13.46	-55.73	-42.7

Table 7-23. Radiated Spurious Data (PCS GPRS Mode – Ch. 810)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 88 of 108

PCS CDMA Mode



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

OPERATING FREQUENCY: 1851.25 MHz

CHANNEL: 25

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	150	248	-50.41	6.76	-43.65	-30.6
5553.75	H	150	355	-56.66	8.44	-48.22	-35.2
7405.00	H	150	56	-60.04	8.27	-51.77	-38.8

Table 7-24. Radiated Spurious Data (PCS CDMA Mode – Ch. 25)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 89 of 108

OPERATING FREQUENCY: 1880.00 MHz
CHANNEL: 600
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	150	248	-54.90	6.84	-48.06	-35.1
5640.00	H	150	354	-54.35	8.52	-45.83	-32.8
7520.00	H	-	-	-62.47	8.44	-54.03	-41.0

Table 7-25. Radiated Spurious Data (PCS CDMA Mode – Ch. 600)

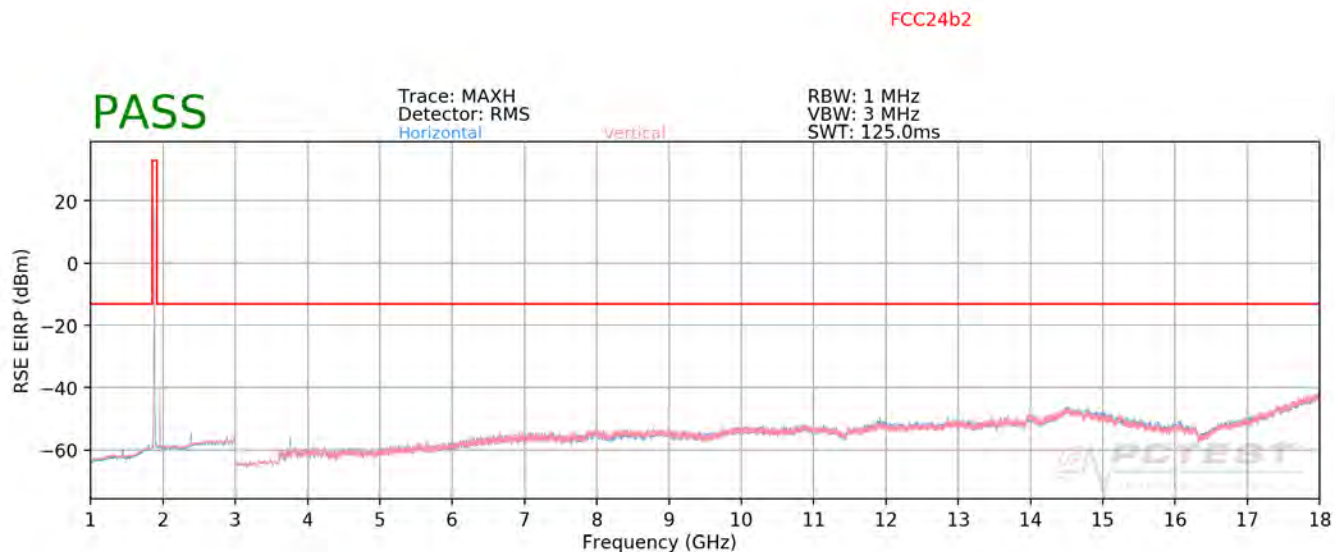
OPERATING FREQUENCY: 1908.75 MHz
CHANNEL: 1175
MODULATION SIGNAL: CDMA
DISTANCE: 3 meters
LIMIT: -13 dBm

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	150	251	-58.72	6.99	-51.73	-38.7
5726.25	H	150	354	-53.02	8.58	-44.44	-31.4
7635.00	H	150	52	-61.29	8.56	-52.73	-39.7
9543.75	H	-	-	-62.95	9.81	-53.13	-40.1

Table 7-26. Radiated Spurious Data (PCS CDMA Mode – Ch. 1175)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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PCS WCDMA Mode



Plot 7-108. Radiated Spurious Plot above 1GHz (PCS WCDMA)

OPERATING FREQUENCY: 1852.40 MHz

CHANNEL: 9262

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	152	140	-65.33	8.31	-57.02	-44.0
5557.20	H	100	245	-67.90	10.54	-57.36	-44.4
7409.60	H	-	-	-70.78	11.92	-58.86	-45.9

Table 7-27. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9262)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 91 of 108

OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 9400
 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	117	263	-62.90	8.46	-54.44	-41.4
5640.00	H	124	334	-64.51	10.60	-53.91	-40.9
7520.00	H	-	-	-71.19	12.11	-59.09	-46.1

Table 7-28. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9400)

OPERATING FREQUENCY: 1907.60 MHz
 CHANNEL: 9538
 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	111	109	-67.27	8.56	-58.71	-45.7
5722.80	H	-	-	-70.47	10.63	-59.84	-46.8

Table 7-29. Radiated Spurious Data (PCS WCDMA Mode – Ch. 9538)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 92 of 108

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: A3LSMJ337P		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: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,599,994	-6	-0.0000008
100 %		- 30	836,599,842	-158	-0.0000188
100 %		- 20	836,599,890	-110	-0.0000131
100 %		- 10	836,599,993	-7	-0.0000009
100 %		0	836,599,904	-96	-0.0000115
100 %		+ 10	836,599,985	-15	-0.0000018
100 %		+ 20	836,599,948	-52	-0.0000062
100 %		+ 30	836,599,893	-107	-0.0000128
100 %		+ 40	836,599,995	-5	-0.0000005
100 %		+ 50	836,599,912	-88	-0.0000105
BATT. ENDPOINT	3.40	+ 20	836,599,837	-163	-0.0000195

Table 7-30. Frequency Stability Data (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 94 of 108

Frequency Stability / Temperature Variation

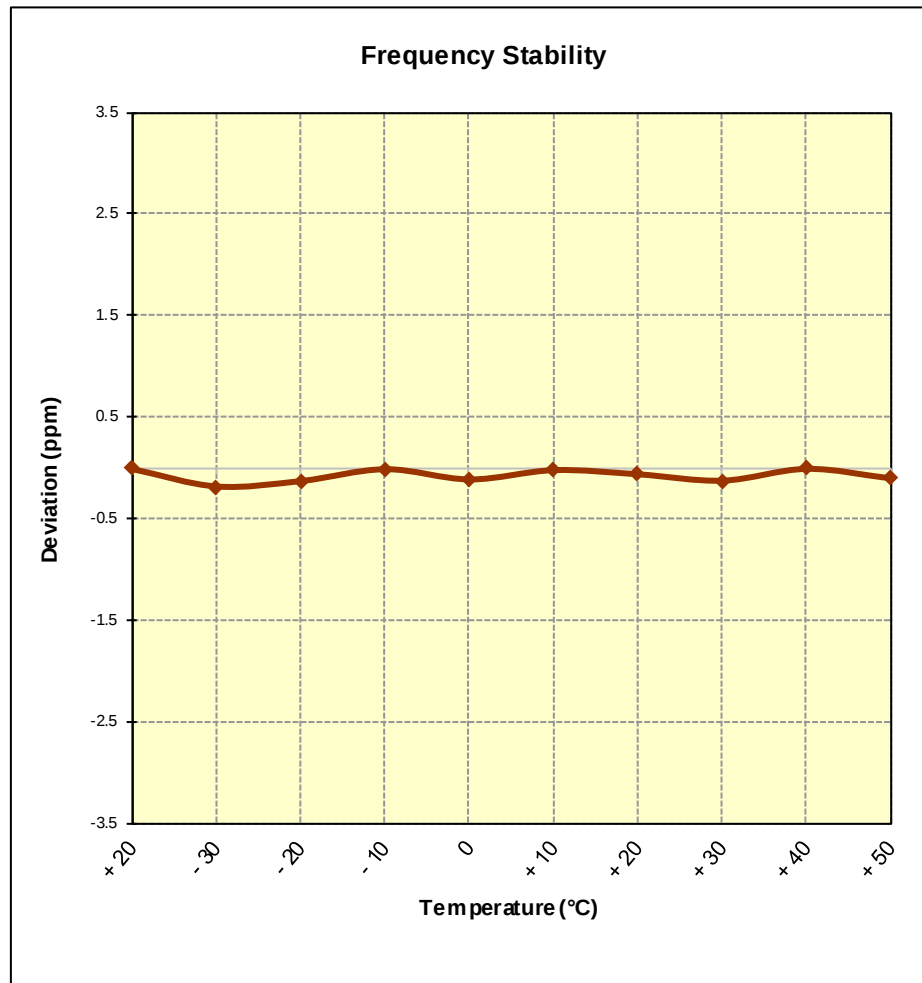


Figure 7-8. Frequency Stability Graph (Cellular GPRS Mode – Ch. 190)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 95 of 108

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 836,520,000 Hz

CHANNEL: 384

REFERENCE VOLTAGE: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,519,936	-64	-0.0000076
100 %		- 30	836,519,988	-12	-0.0000014
100 %		- 20	836,519,957	-43	-0.0000052
100 %		- 10	836,519,806	-194	-0.0000232
100 %		0	836,519,827	-173	-0.0000206
100 %		+ 10	836,519,884	-116	-0.0000138
100 %		+ 20	836,519,855	-145	-0.0000173
100 %		+ 30	836,519,806	-194	-0.0000232
100 %		+ 40	836,519,888	-112	-0.0000134
100 %		+ 50	836,519,824	-176	-0.0000211
BATT. ENDPOINT	3.40	+ 20	836,519,864	-136	-0.0000163

Table 7-31. Frequency Stability Data (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

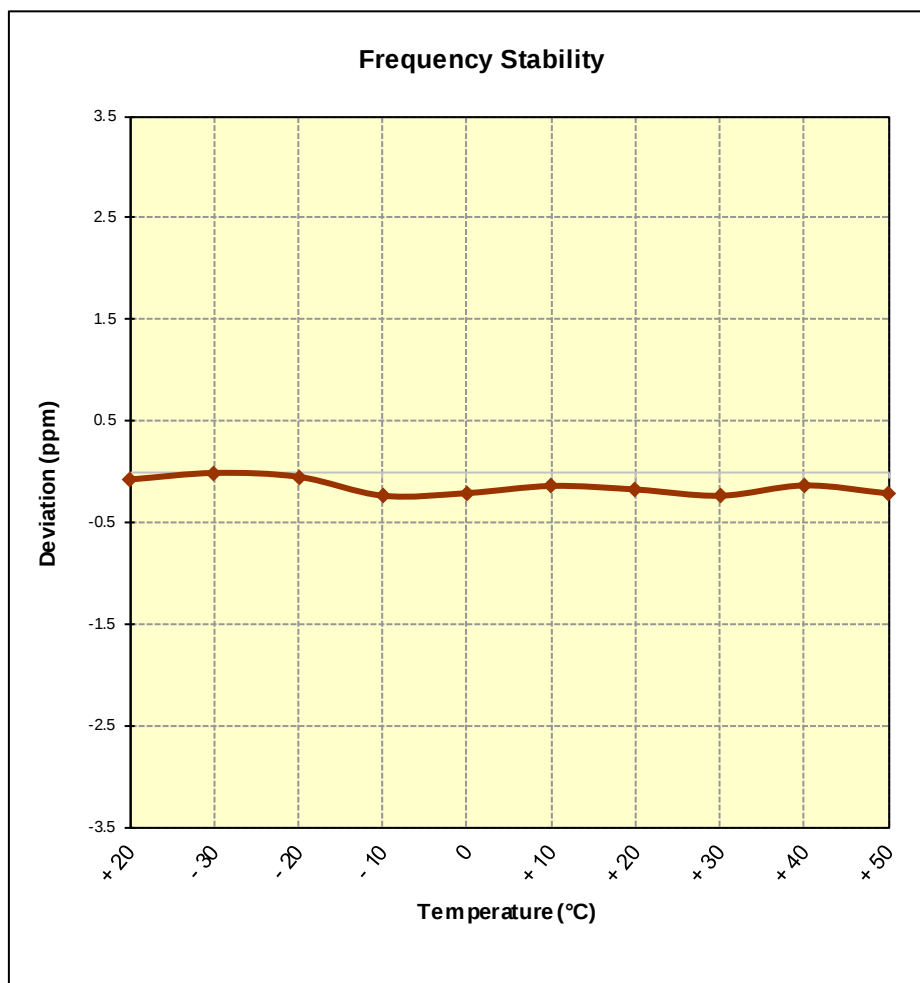


Figure 7-9. Frequency Stability Graph (Cellular CDMA Mode – Ch. 384)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 97 of 108

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 836,600,000 Hz

CHANNEL: 4183

REFERENCE VOLTAGE: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	836,599,800	-200	-0.0000239
100 %		- 30	836,599,909	-91	-0.0000108
100 %		- 20	836,599,921	-79	-0.0000094
100 %		- 10	836,599,992	-8	-0.0000009
100 %		0	836,599,870	-130	-0.0000156
100 %		+ 10	836,599,956	-44	-0.0000053
100 %		+ 20	836,599,873	-127	-0.0000152
100 %		+ 30	836,599,929	-71	-0.0000085
100 %		+ 40	836,599,953	-47	-0.0000056
100 %		+ 50	836,599,874	-126	-0.0000151
BATT. ENDPOINT	3.40	+ 20	836,599,915	-85	-0.0000101

Table 7-32. Frequency Stability Data (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

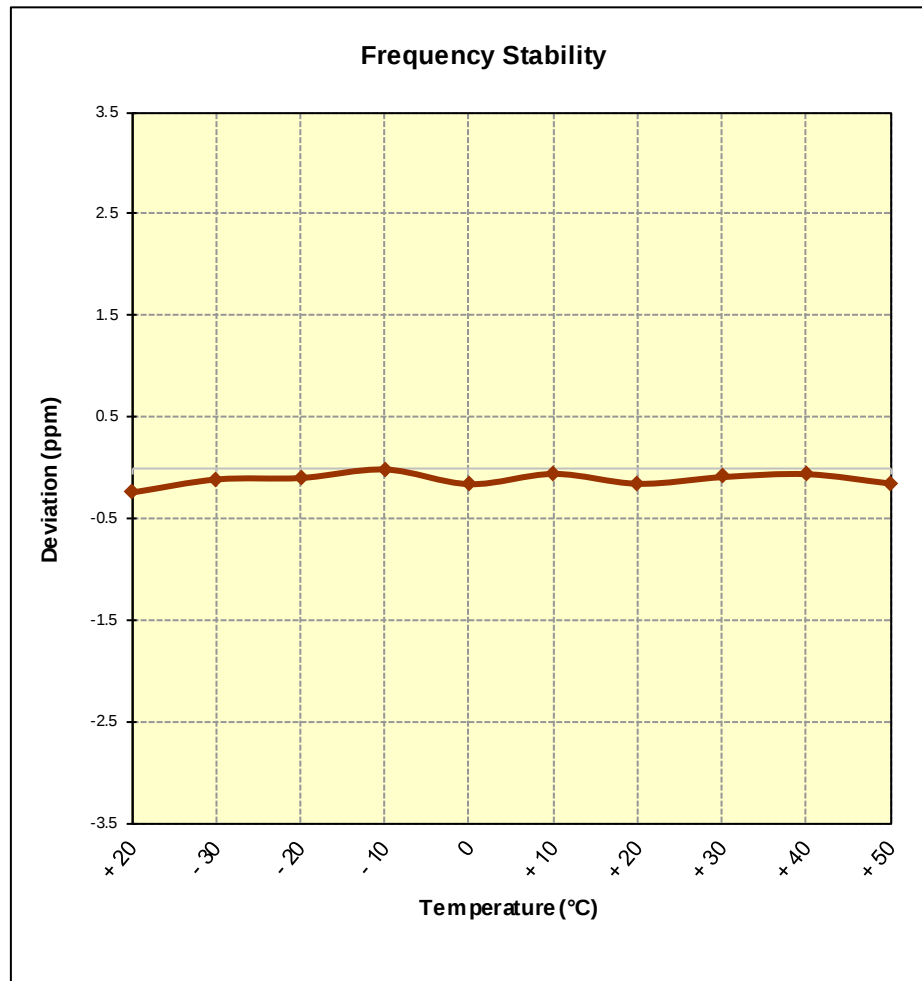


Figure 7-10. Frequency Stability Graph (Cellular WCDMA Mode – Ch. 4183)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,732,600,000 Hz
 CHANNEL: 1413
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,599,936	-64	-0.0000037
100 %		- 30	1,732,599,983	-17	-0.0000010
100 %		- 20	1,732,599,970	-30	-0.0000017
100 %		- 10	1,732,599,872	-128	-0.0000074
100 %		0	1,732,599,821	-179	-0.0000103
100 %		+ 10	1,732,599,957	-43	-0.0000025
100 %		+ 20	1,732,599,942	-58	-0.0000034
100 %		+ 30	1,732,599,839	-161	-0.0000093
100 %		+ 40	1,732,599,864	-136	-0.0000079
100 %		+ 50	1,732,599,930	-70	-0.0000041
BATT. ENDPOINT	3.40	+ 20	1,732,599,887	-113	-0.0000065

Table 7-33. 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: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

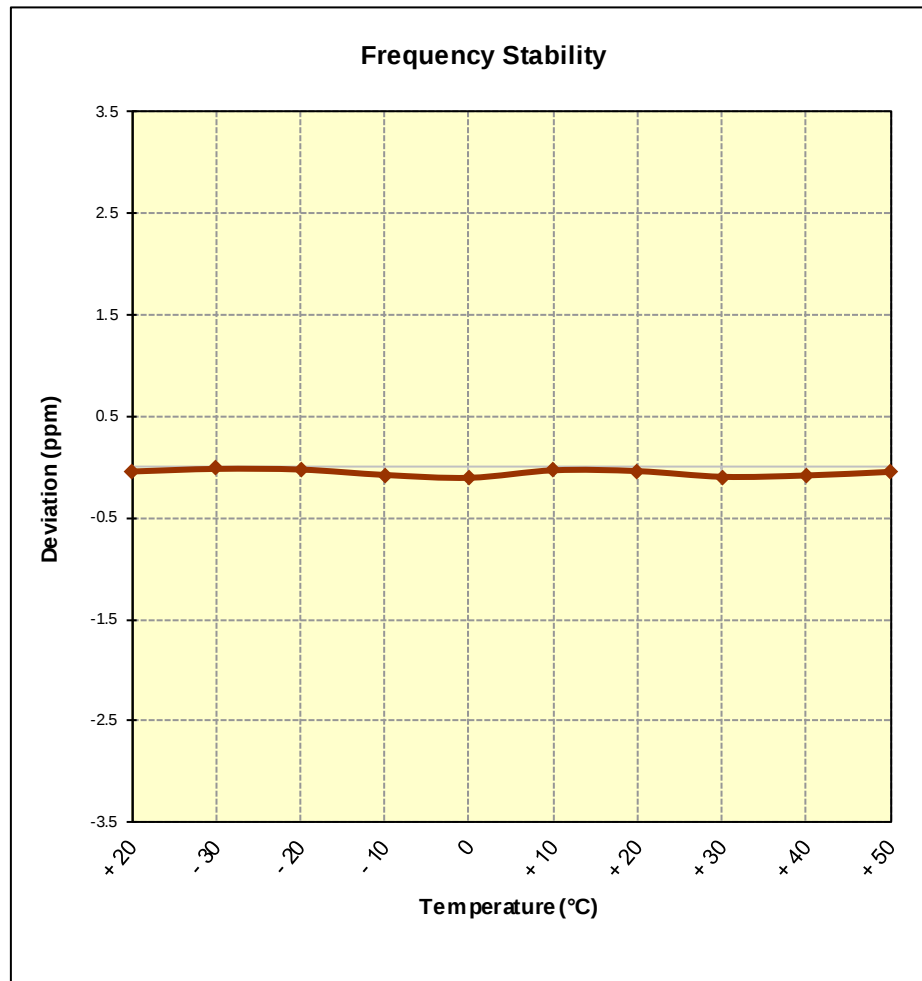


Figure 7-11. Frequency Stability Graph (AWS WCDMA Mode – Ch. 1413)

FCC ID: A3LSMJ337P		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: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,879,999,844	-156	-0.0000083
100 %		- 30	1,879,999,813	-187	-0.0000100
100 %		- 20	1,879,999,908	-92	-0.0000049
100 %		- 10	1,879,999,978	-22	-0.0000012
100 %		0	1,879,999,802	-198	-0.0000105
100 %		+ 10	1,879,999,908	-92	-0.0000049
100 %		+ 20	1,879,999,934	-66	-0.0000035
100 %		+ 30	1,879,999,885	-115	-0.0000061
100 %		+ 40	1,879,999,936	-64	-0.0000034
100 %		+ 50	1,879,999,813	-187	-0.0000100
BATT. ENDPOINT	3.40	+ 20	1,879,999,843	-157	-0.0000083

Table 7-34. Frequency Stability Data (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 102 of 108

Frequency Stability / Temperature Variation

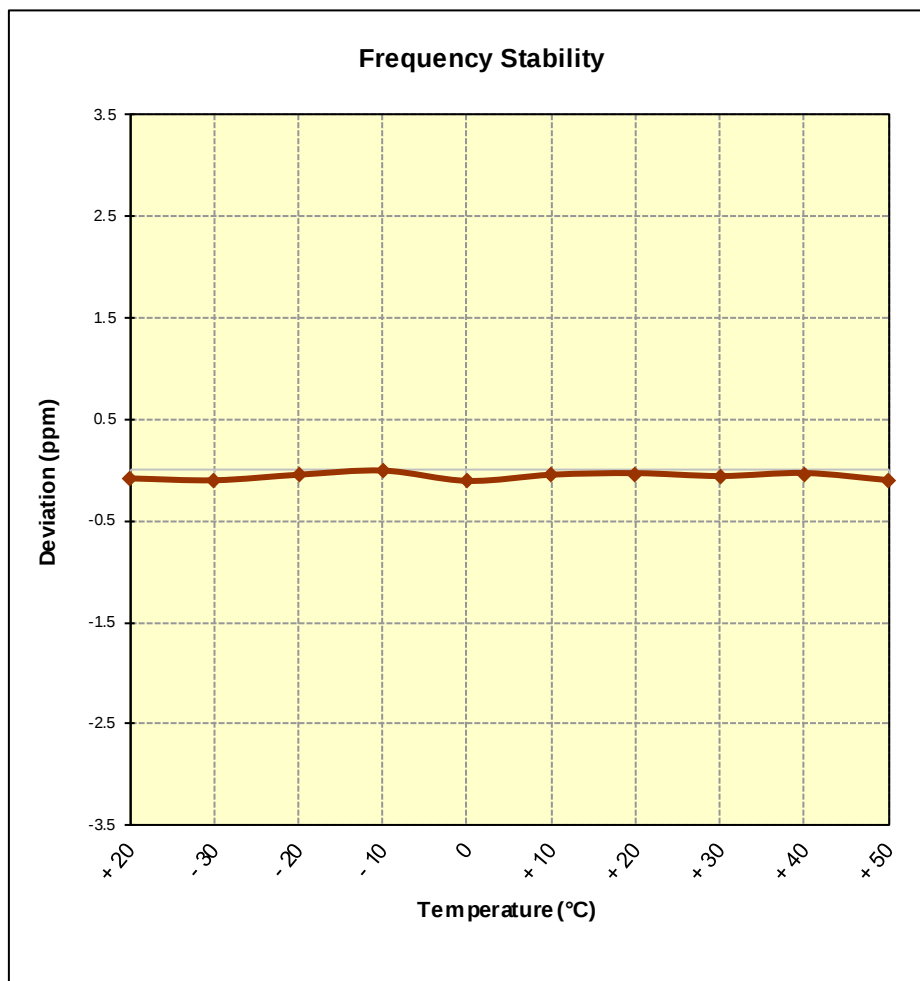


Figure 7-12. Frequency Stability Graph (PCS GPRS Mode – Ch. 661)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 103 of 108

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 600

REFERENCE VOLTAGE: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,879,999,970	-30	-0.0000016
100 %		- 30	1,879,999,946	-54	-0.0000029
100 %		- 20	1,879,999,882	-118	-0.0000063
100 %		- 10	1,879,999,811	-189	-0.0000101
100 %		0	1,879,999,943	-57	-0.0000031
100 %		+ 10	1,879,999,882	-118	-0.0000063
100 %		+ 20	1,879,999,937	-63	-0.0000034
100 %		+ 30	1,879,999,858	-142	-0.0000076
100 %		+ 40	1,879,999,944	-56	-0.0000030
100 %		+ 50	1,879,999,850	-150	-0.0000080
BATT. ENDPOINT	3.40	+ 20	1,879,999,876	-124	-0.0000066

Table 7-35. Frequency Stability Data (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

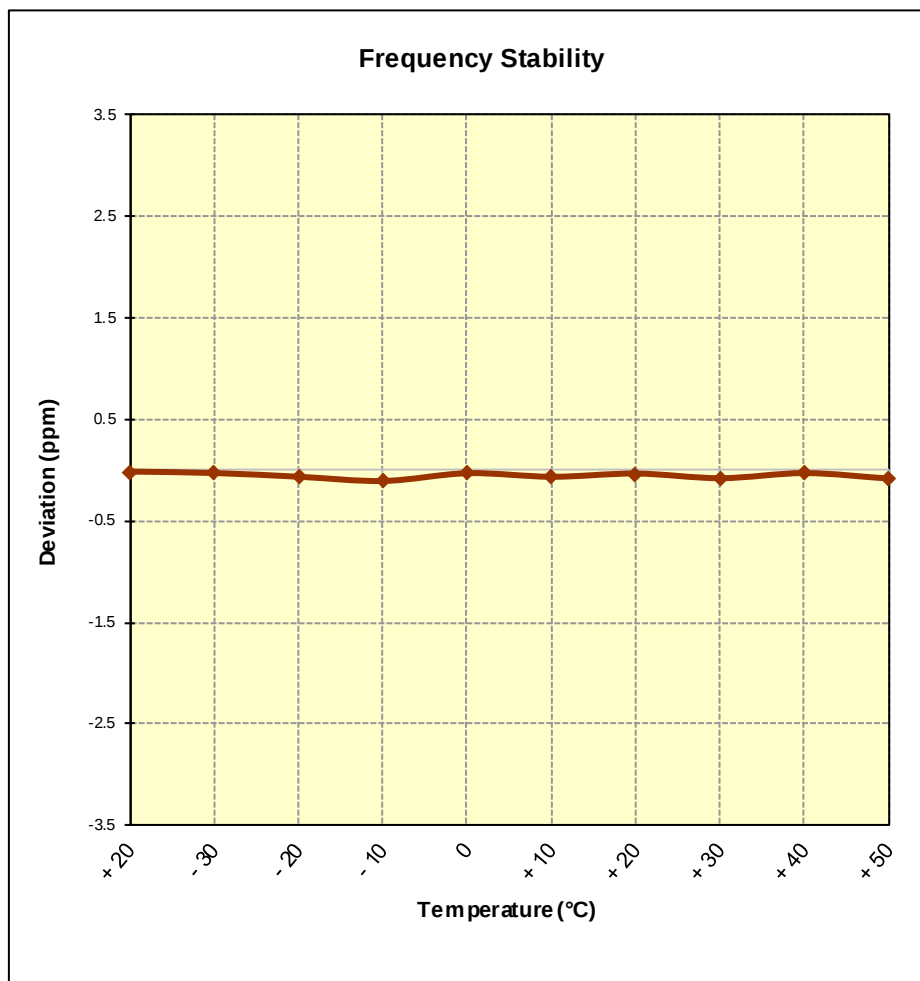


Figure 7-13. Frequency Stability Graph (PCS CDMA Mode – Ch. 600)

FCC ID: A3LSMJ337P	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 105 of 108

Frequency Stability / Temperature Variation

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 9400

REFERENCE VOLTAGE: 3.80 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,879,999,829	-171	-0.0000091
100 %		- 30	1,879,999,893	-107	-0.0000057
100 %		- 20	1,879,999,974	-26	-0.0000014
100 %		- 10	1,879,999,968	-32	-0.0000017
100 %		0	1,879,999,986	-14	-0.0000008
100 %		+ 10	1,879,999,921	-79	-0.0000042
100 %		+ 20	1,879,999,925	-75	-0.0000040
100 %		+ 30	1,879,999,901	-99	-0.0000053
100 %		+ 40	1,879,999,866	-134	-0.0000071
100 %		+ 50	1,879,999,896	-104	-0.0000055
BATT. ENDPOINT	3.40	+ 20	1,879,999,953	-47	-0.0000025

Table 7-36. Frequency Stability Data (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Frequency Stability / Temperature Variation

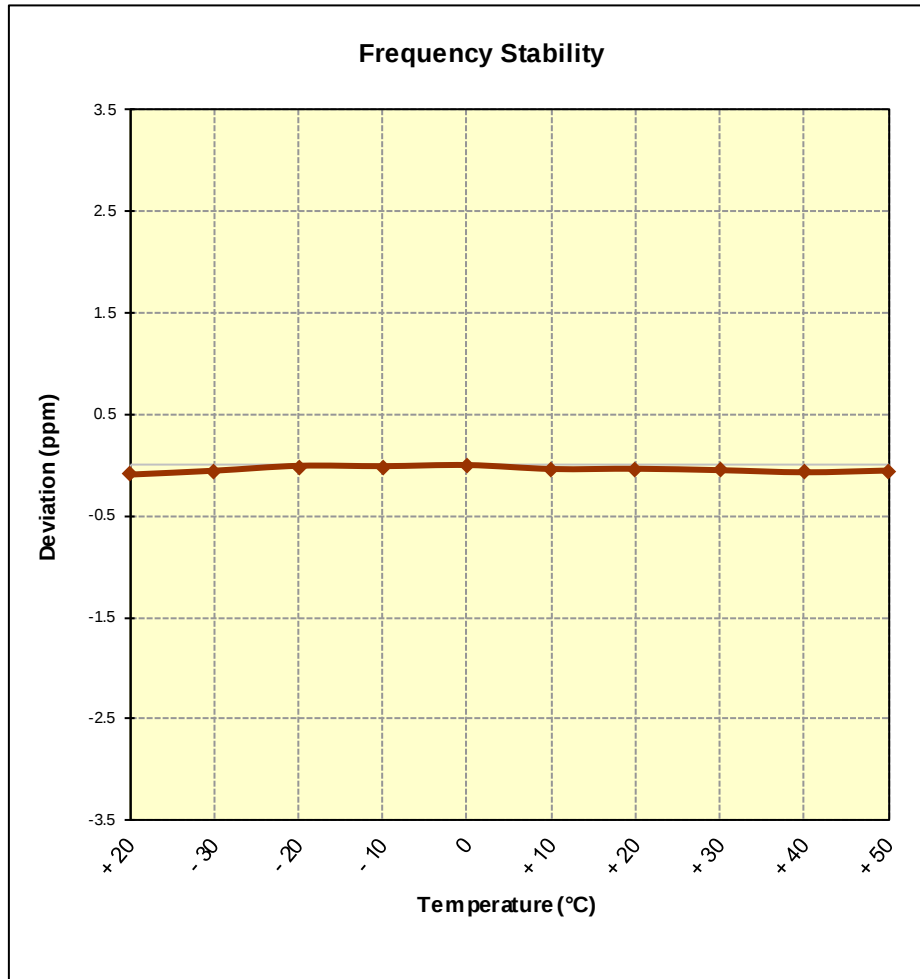


Figure 7-14. Frequency Stability Graph (PCS WCDMA Mode – Ch. 9400)

FCC ID: A3LSMJ337P		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: A3LSMJ337P** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules.

FCC ID: A3LSMJ337P		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1803090037-02-R1.A3L	Test Dates: 3/9 - 5/10/2018	EUT Type: Portable Handset		Page 108 of 108