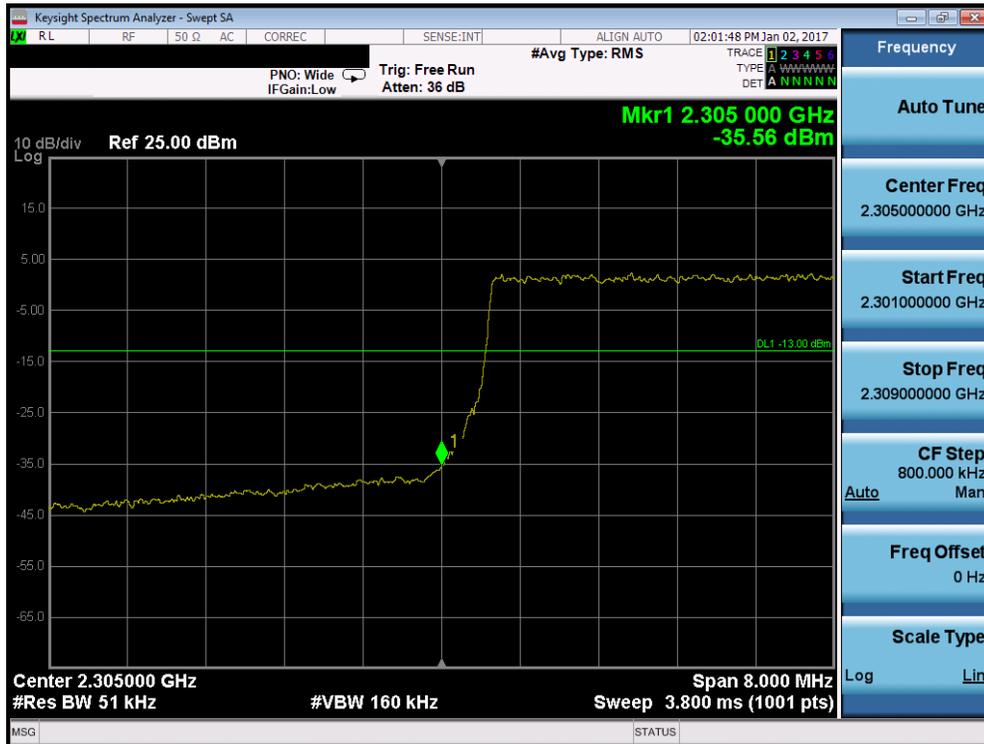




Plot 7-231. Upper Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

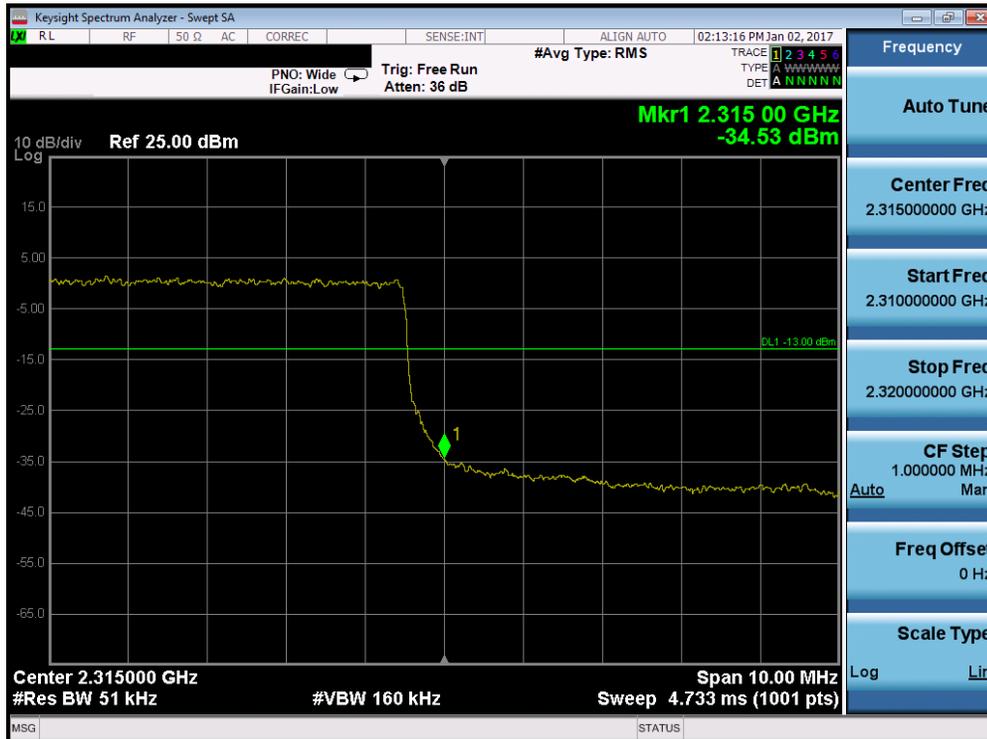


Plot 7-232. Lower Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

| | | | | |
|---|-------------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 137 of 205 |



Plot 7-233. Lower Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

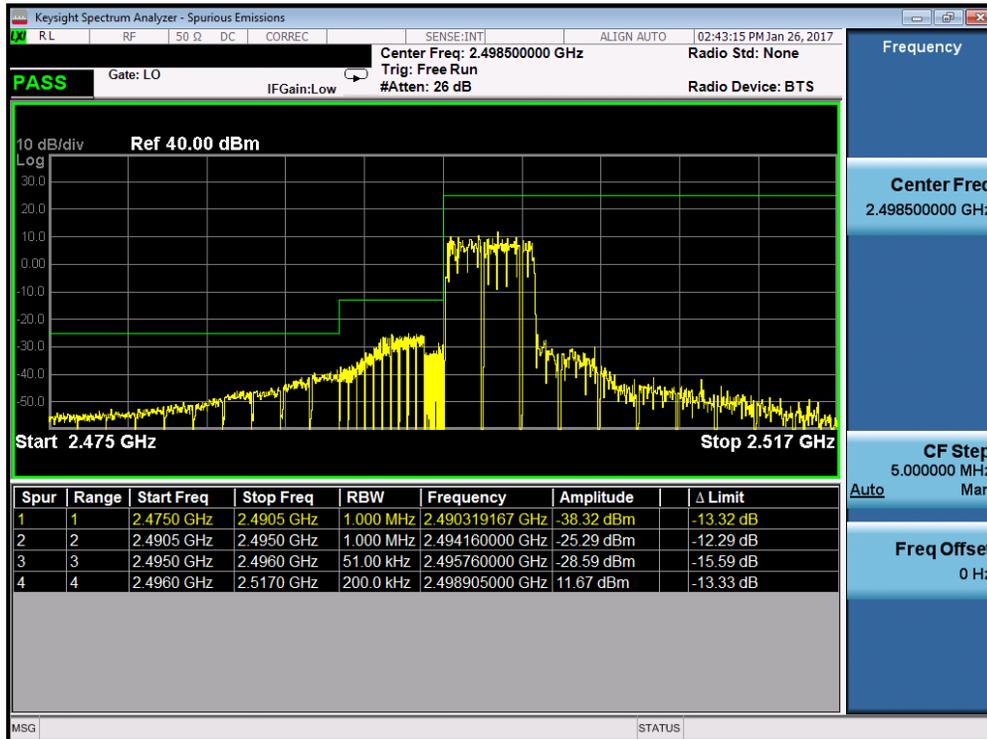


Plot 7-234. Upper Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 138 of 205 |

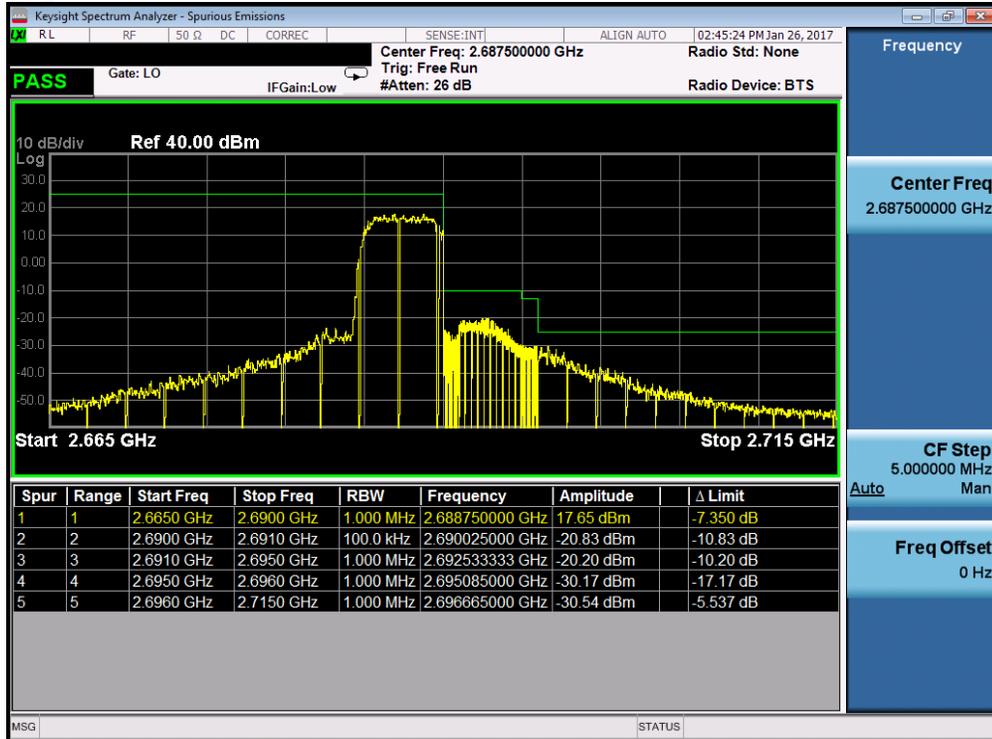


Plot 7-235. Upper Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

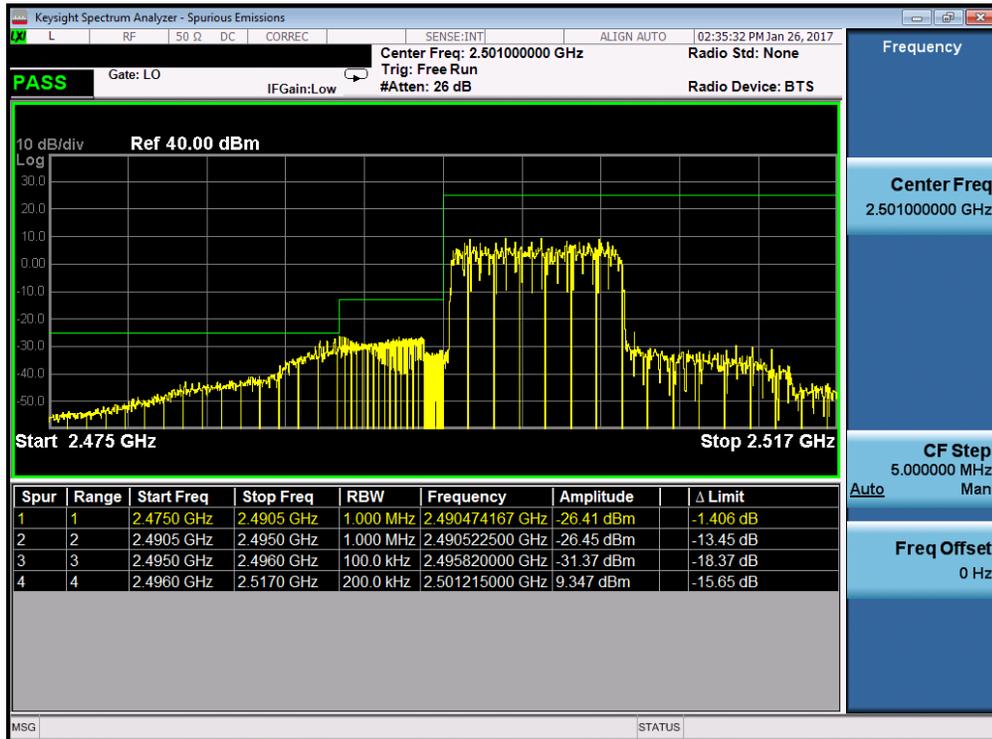


Plot 7-236. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 139 of 205 |

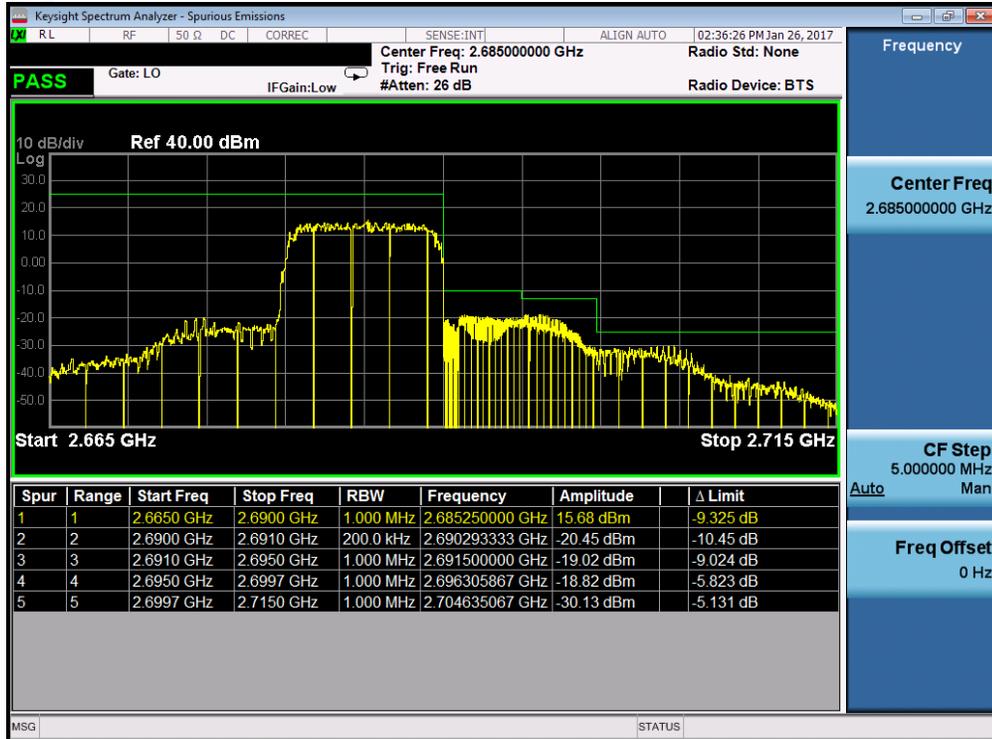


Plot 7-237. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

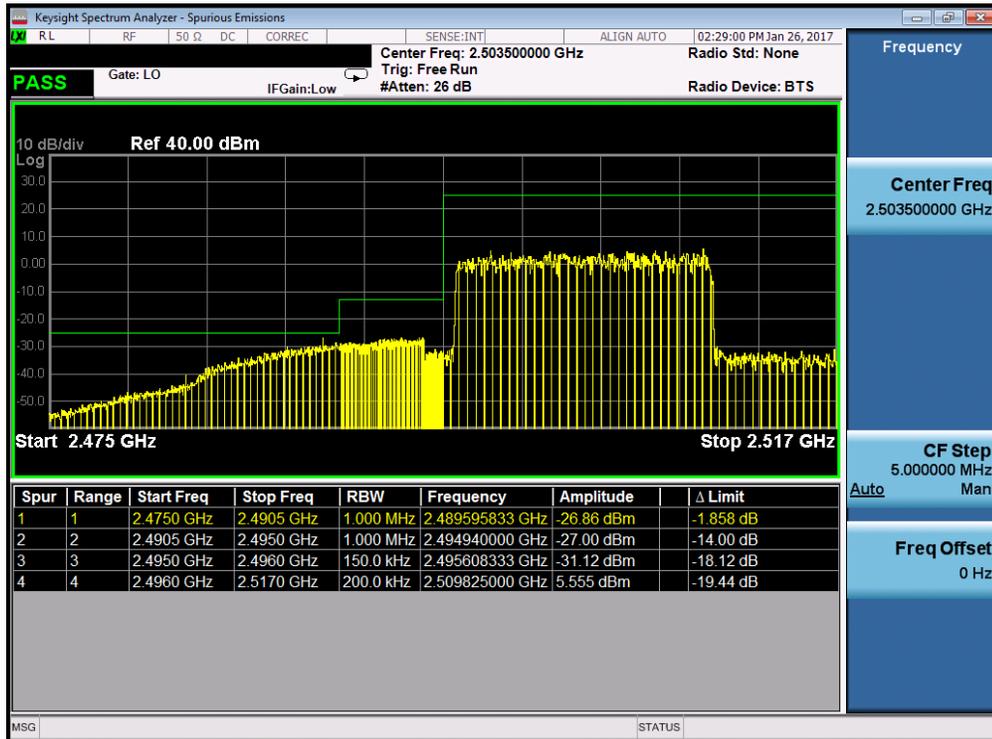


Plot 7-238. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 140 of 205 |



Plot 7-239. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

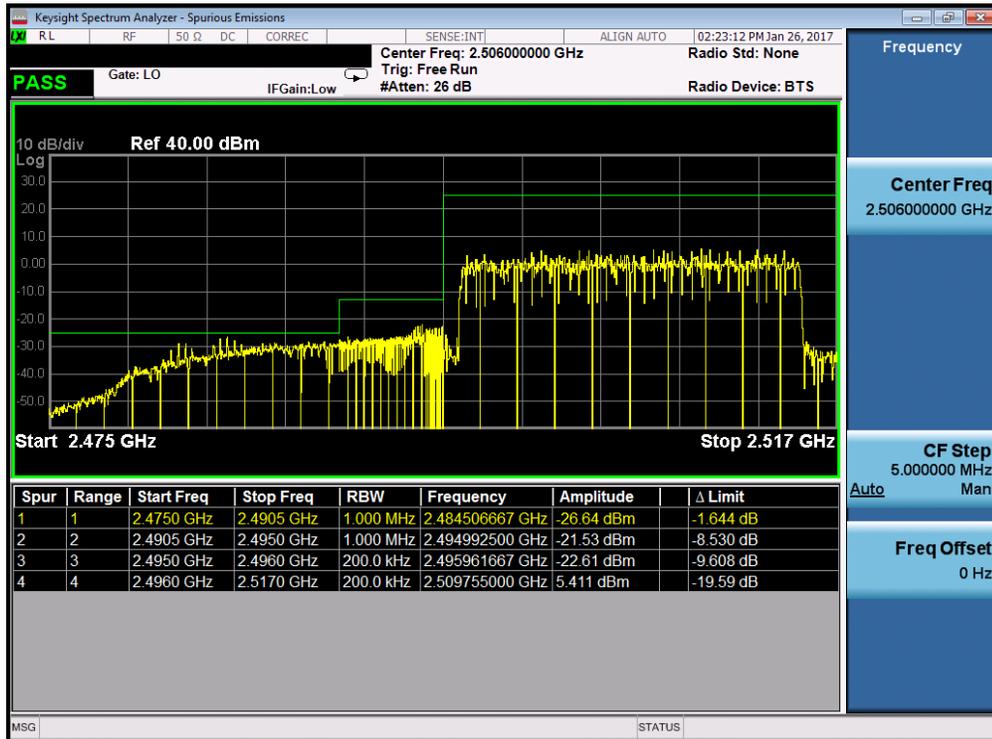


Plot 7-240. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 141 of 205 |

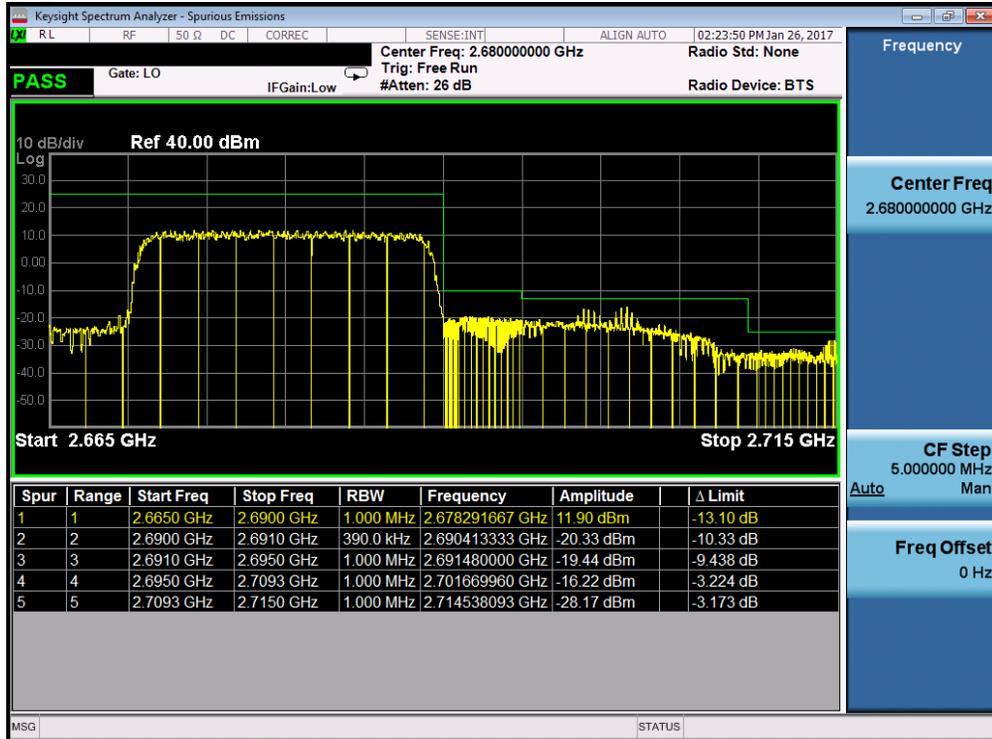


Plot 7-241. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



Plot 7-242. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 142 of 205 |



Plot 7-243. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 143 of 205 |

7.5 Uplink Carrier Aggregation

§27.53(m)

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

For Band 41, the minimum permissible attenuation level of any spurious emission is $55 + \log_{10}(P_{[Watts]})$.

Test Procedure Used

KDB 971168 D01 v02r02 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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

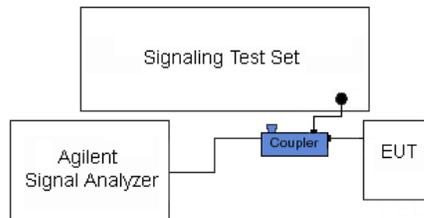


Figure 7-4. Test Instrument & Measurement Setup

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 144 of 205 | |

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-3 below, with both carriers set to transmit using 1RB.
3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

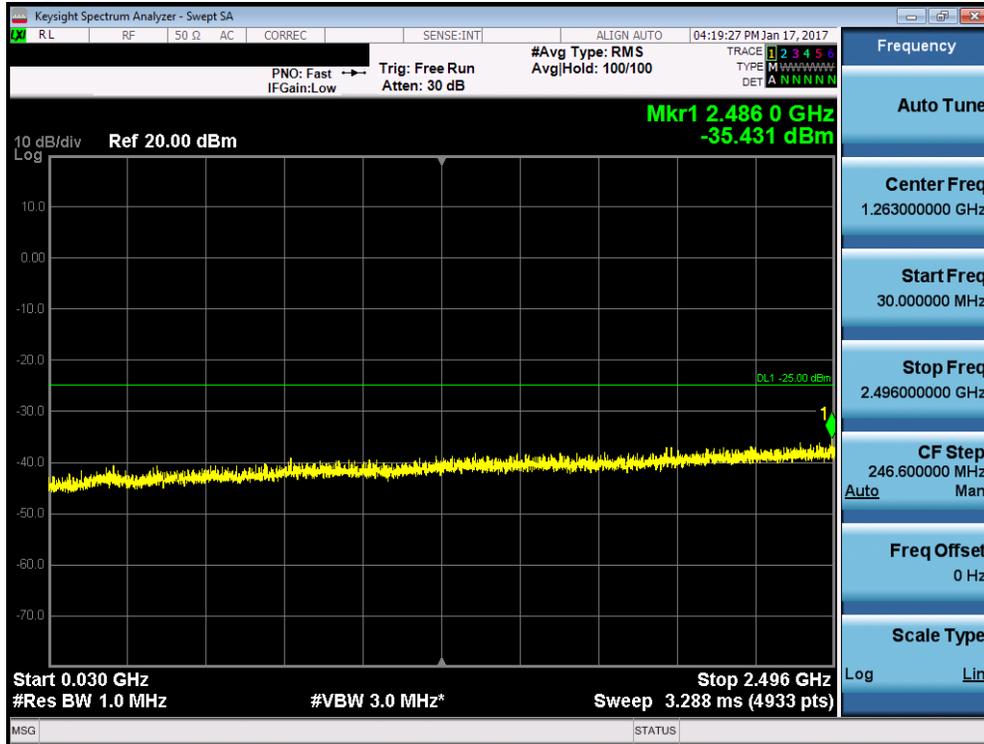
| Power State | PCC | | | | | | | SCC | | | | | | | Power ULCA Tx.Power (dBm) |
|-------------|----------|---------------------|------------------|--------------------------|------------|------------|------------------|----------|---------------------|------------------|--------------------------|------------|------------|------------------|------------------------------------|
| | PCC Band | PCC Bandwidth [MHz] | PCC (UL) Channel | PCC (UL) Frequency [MHz] | Modulation | PCC UL# RB | PCC UL RB Offset | SCC Band | SCC Bandwidth [MHz] | SCC (UL) Channel | SCC (UL) Frequency [MHz] | Modulation | PCC UL# RB | PCC UL RB Offset | |
| Max | LTE B41 | 10 | 40620 | 2593 | QPSK | 1 | 49 | LTE B41 | 20 | 40764 | 2607.4 | QPSK | 1 | 0 | 22.72 |
| Max | LTE B41 | 15 | 40620 | 2593 | QPSK | 1 | 74 | LTE B41 | 15 | 40770 | 2608 | QPSK | 1 | 0 | 22.45 |
| Max | LTE B41 | 15 | 40620 | 2593 | QPSK | 1 | 74 | LTE B41 | 20 | 40791 | 2610.1 | QPSK | 1 | 0 | 22.59 |
| Max | LTE B41 | 20 | 40620 | 2593 | QPSK | 1 | 99 | LTE B41 | 10 | 40764 | 2607.4 | QPSK | 1 | 0 | 22.46 |
| Max | LTE B41 | 20 | 40620 | 2593 | QPSK | 1 | 99 | LTE B41 | 15 | 40791 | 2610.1 | QPSK | 1 | 0 | 22.46 |
| Max | LTE B41 | 20 | 40620 | 2593 | QPSK | 1 | 99 | LTE B41 | 20 | 40818 | 2612.8 | QPSK | 1 | 0 | 22.74 |

Table 7-2. Conducted Powers (B41 – PCC: RB Size 1 Offset Max SCC: RB Size 1 Offset 0)

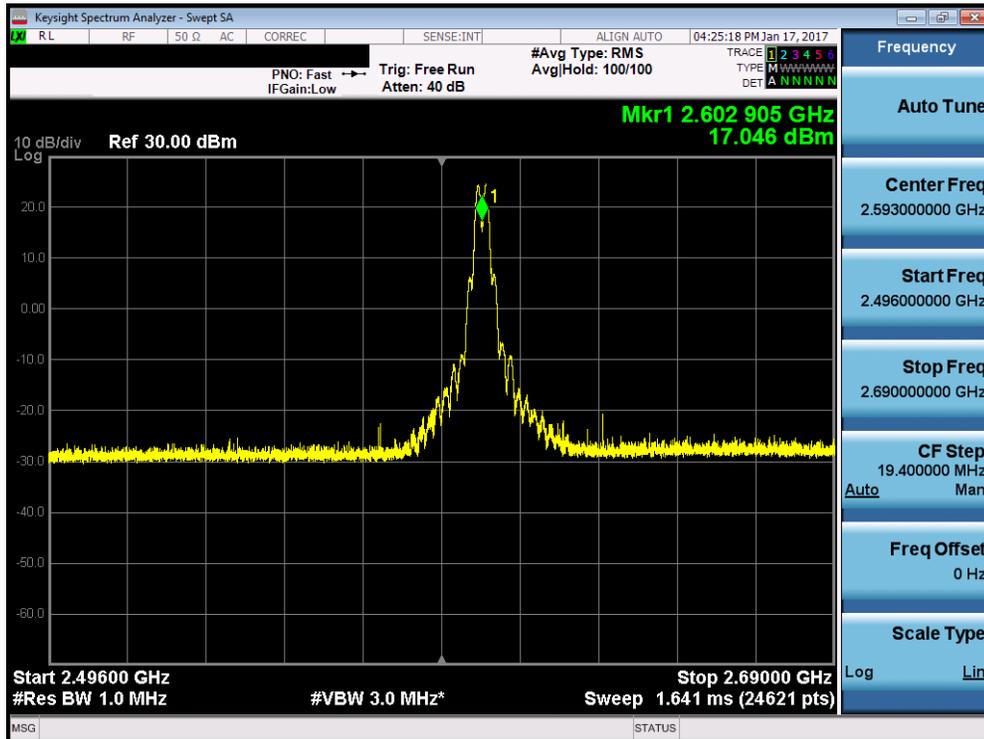
| Power State | PCC | | | | | | | SCC | | | | | | | Power ULCA Tx.Power (dBm) |
|-------------|----------|---------------------|------------------|--------------------------|------------|------------|------------------|----------|---------------------|------------------|--------------------------|------------|------------|------------------|------------------------------------|
| | PCC Band | PCC Bandwidth [MHz] | PCC (UL) Channel | PCC (UL) Frequency [MHz] | Modulation | PCC UL# RB | PCC UL RB Offset | SCC Band | SCC Bandwidth [MHz] | SCC (UL) Channel | SCC (UL) Frequency [MHz] | Modulation | PCC UL# RB | PCC UL RB Offset | |
| Max | LTE B41 | 20 | 39750 | 2506 | QPSK | 1 | 0 | LTE B41 | 20 | 39948 | 2525.8 | QPSK | 1 | 0 | 18.52 |
| Max | LTE B41 | 20 | 39750 | 2506 | QPSK | 1 | 99 | LTE B41 | 20 | 39948 | 2525.8 | QPSK | 1 | 99 | 18.31 |
| Max | LTE B41 | 20 | 39750 | 2506 | QPSK | 1 | 0 | LTE B41 | 20 | 39948 | 2525.8 | QPSK | 1 | 99 | 14.65 |
| Max | LTE B41 | 20 | 39750 | 2506 | QPSK | 1 | 50 | LTE B41 | 20 | 39948 | 2525.8 | QPSK | 1 | 50 | 18.39 |
| Max | LTE B41 | 20 | 39750 | 2506 | QPSK | 1 | 99 | LTE B41 | 20 | 39948 | 2525.8 | QPSK | 1 | 0 | 22.95 |
| Max | LTE B41 | 20 | 39750 | 2506 | QPSK | 100 | 0 | LTE B41 | 20 | 39948 | 2525.8 | QPSK | 1 | 100 | 21.12 |
| Max | LTE B41 | 20 | 39750 | 2506 | 16-QAM | 100 | 0 | LTE B41 | 20 | 39948 | 2525.8 | 16-QAM | 1 | 100 | 20.14 |
| Max | LTE B41 | 20 | 39750 | 2506 | 64-QAM | 100 | 0 | LTE B41 | 20 | 39948 | 2525.8 | 64-QAM | 1 | 100 | 20.12 |

Table 7-3. Conducted Powers (B41 with Various Combinations for 20MHz Channel Bandwidth)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 145 of 205 | |

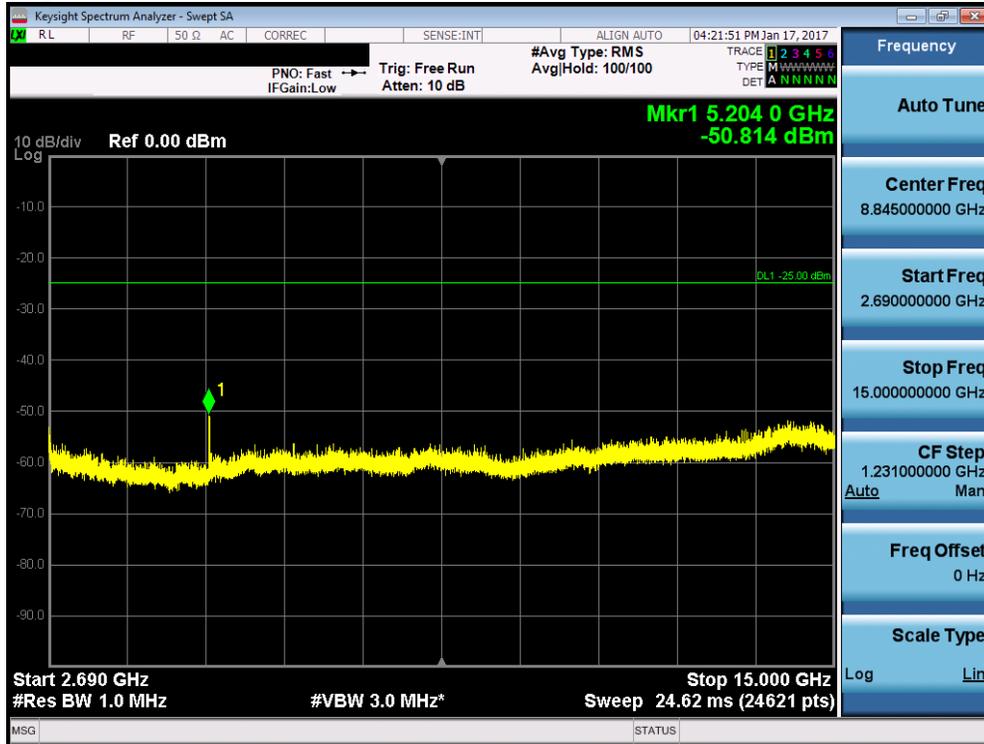


Plot 7-244. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

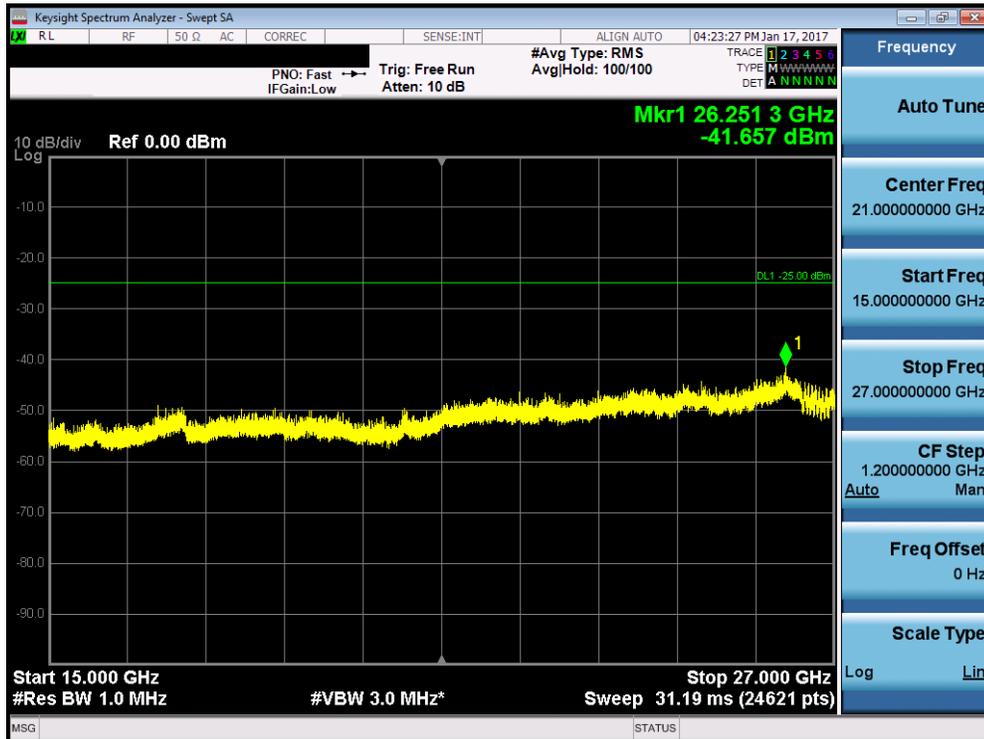


Plot 7-245. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

| | | | | | |
|---|-------------------------------------|-------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950U | | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | | Page 146 of 205 |

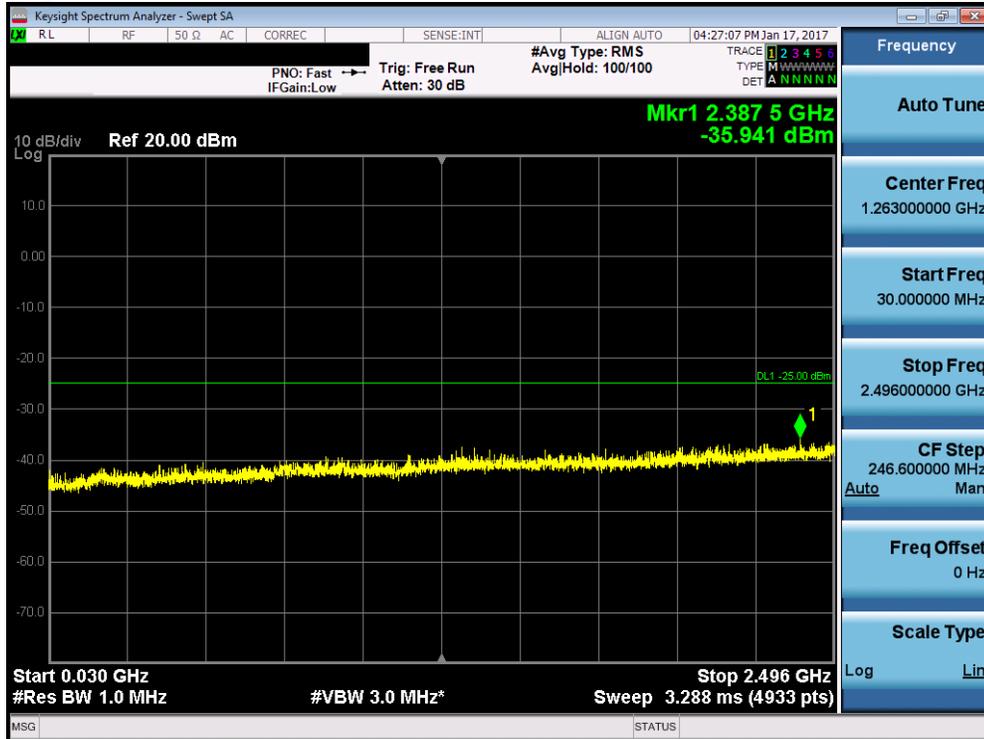


Plot 7-246. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

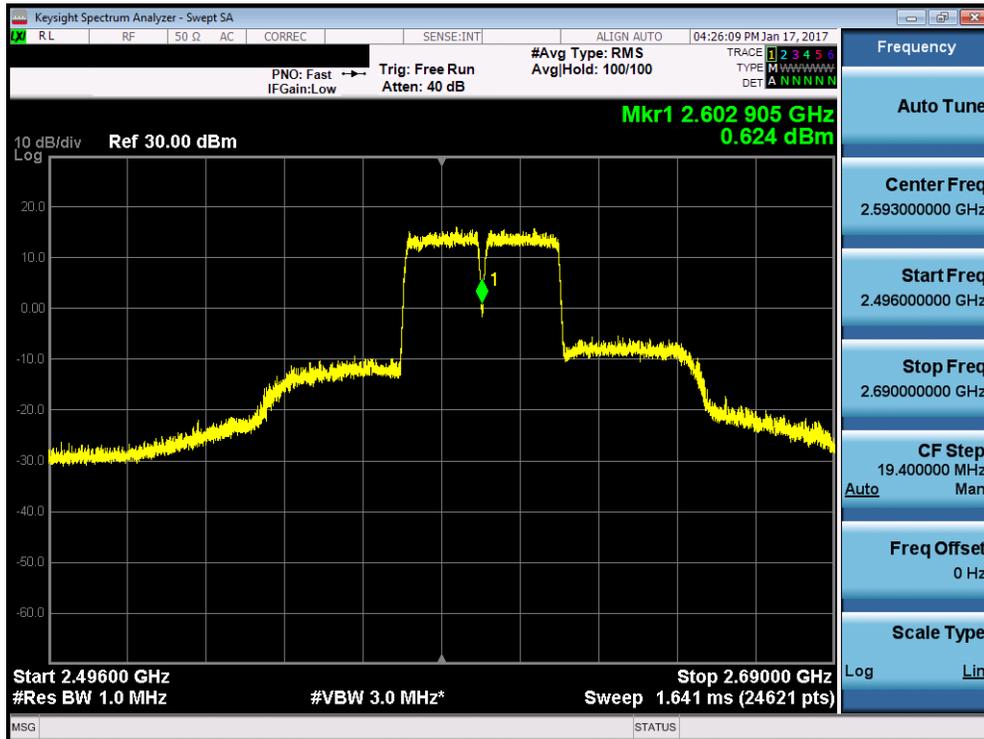


Plot 7-247. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

| | | | | |
|--|--|--------------------------------------|-----------------|--|
| FCC ID: A3LSMG950U | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 147 of 205 | |

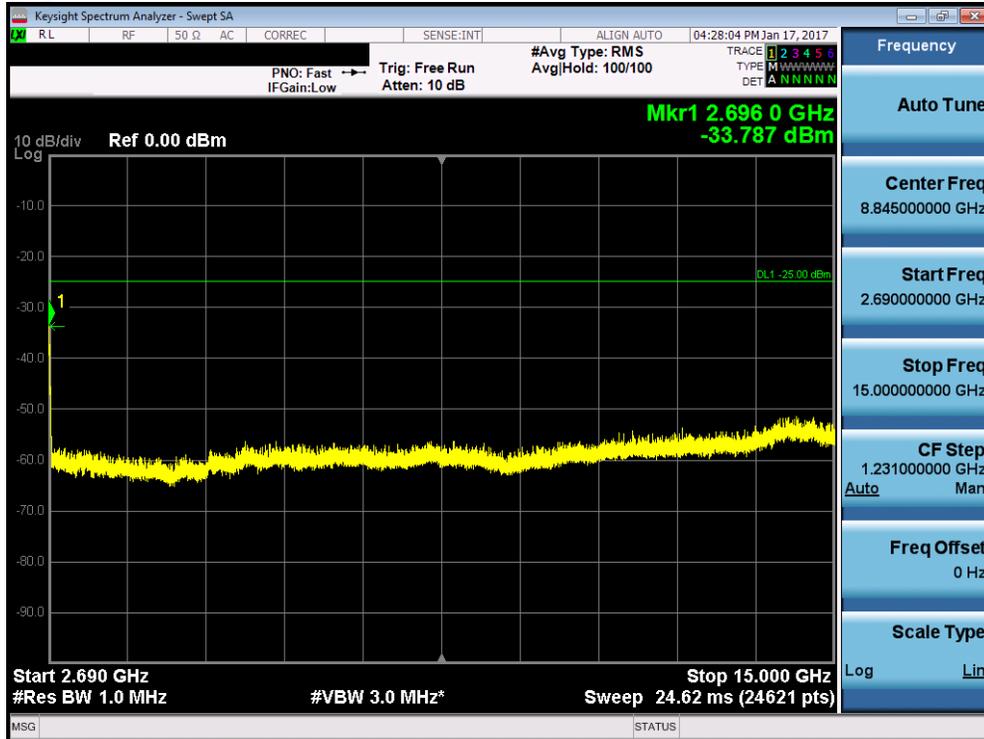


Plot 7-248. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-249. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

| | | | | |
|---|-------------------------------------|---|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 148 of 205 |



Plot 7-250. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)



Plot 7-251. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 149 of 205 |

7.6 Peak-Average Ratio

§24.232(d)

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 v02r02 – 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.

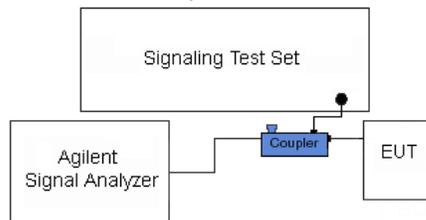
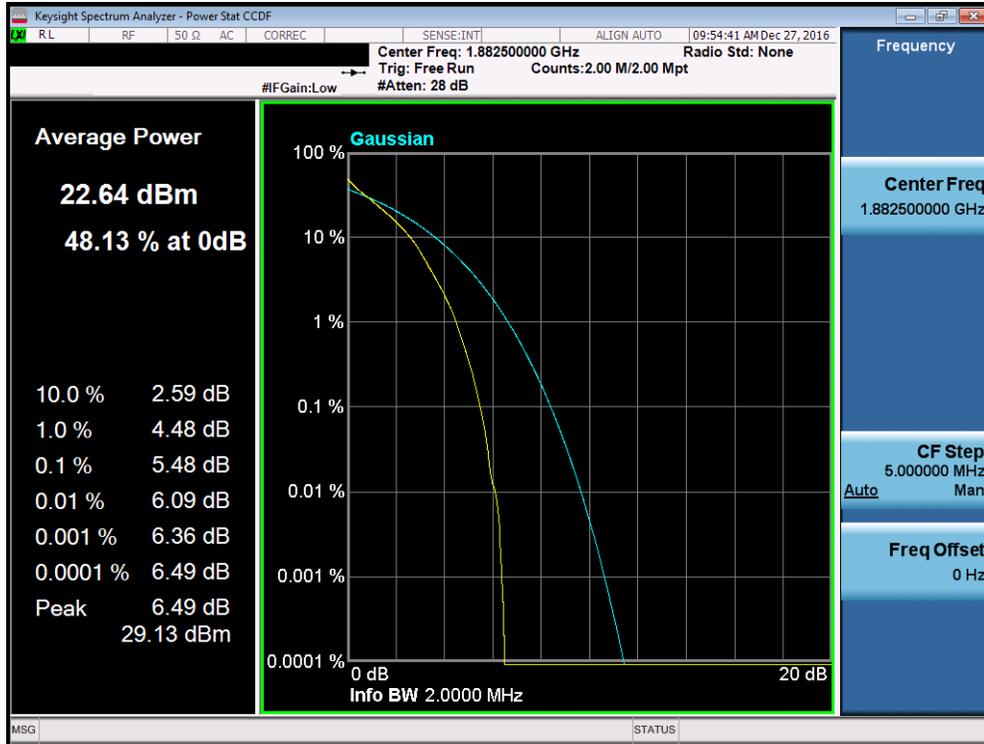


Figure 7-5. Test Instrument & Measurement Setup

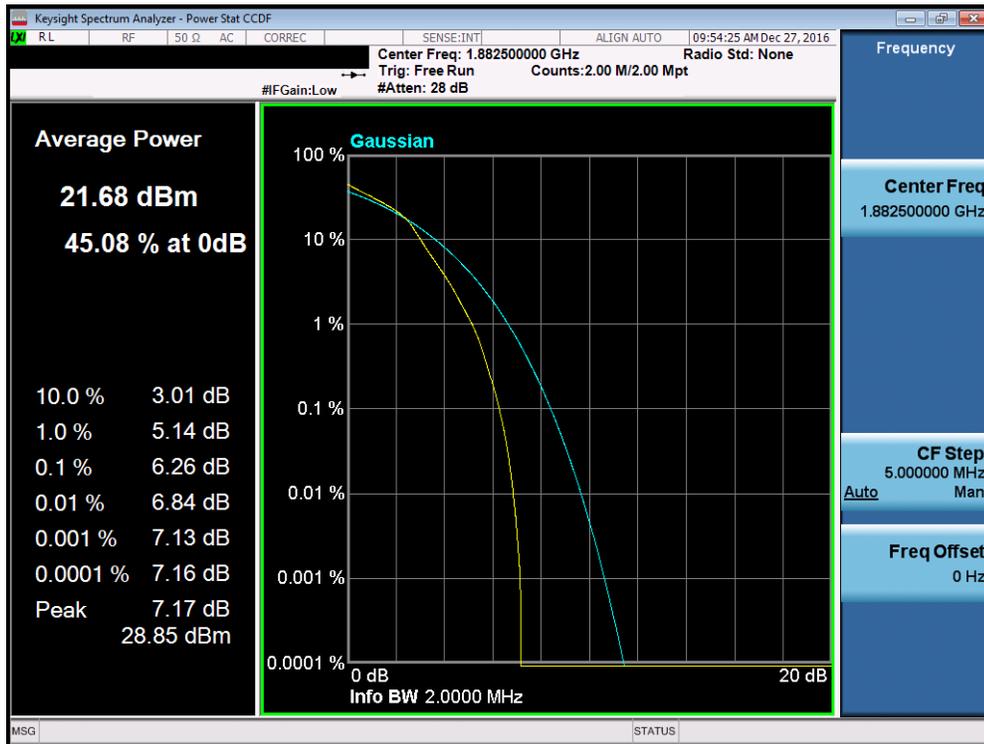
Test Notes

None.

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 150 of 205 | |

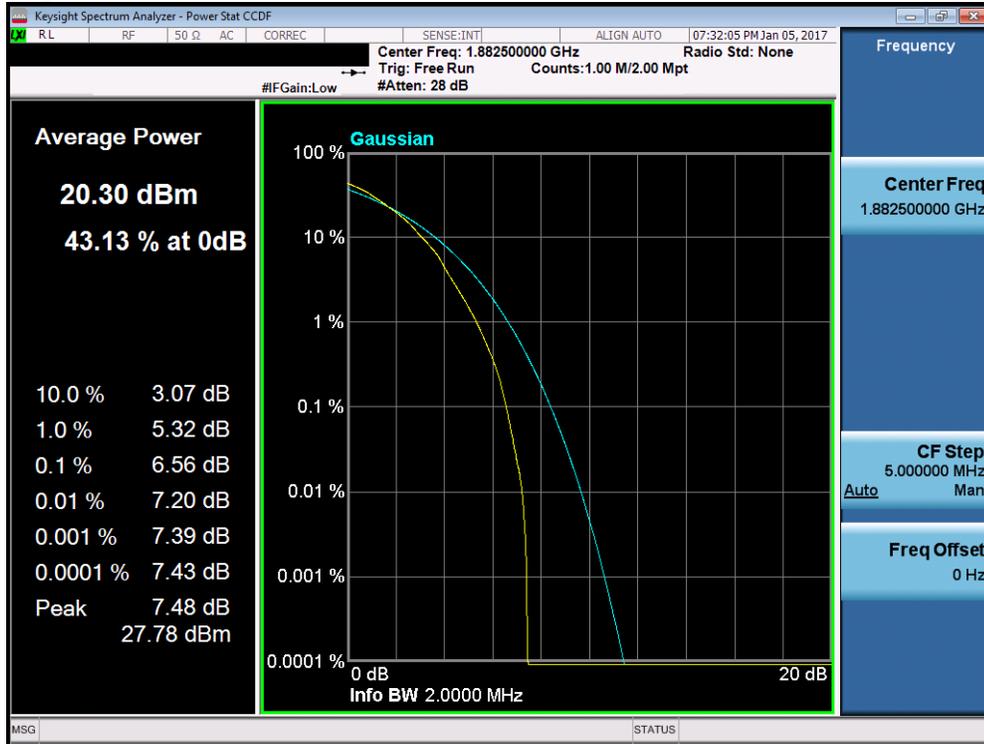


Plot 7-252. PAR Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

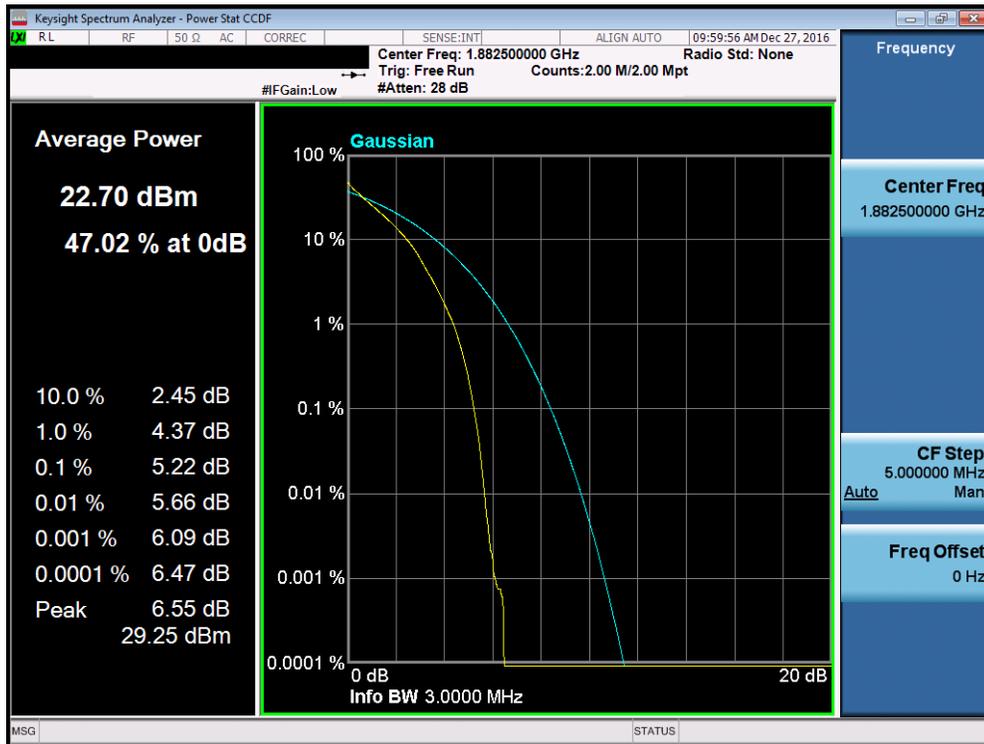


Plot 7-253. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 151 of 205 |

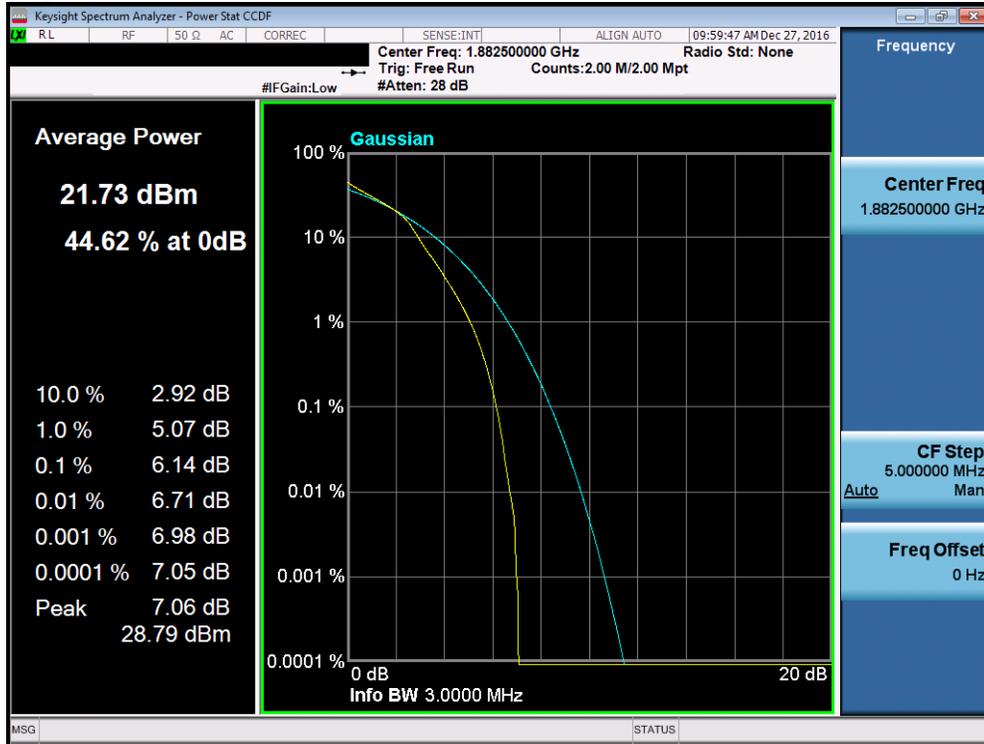


Plot 7-254. PAR Plot (Band 2/25 - 1.4MHz 64-QAM - RB Size 6)

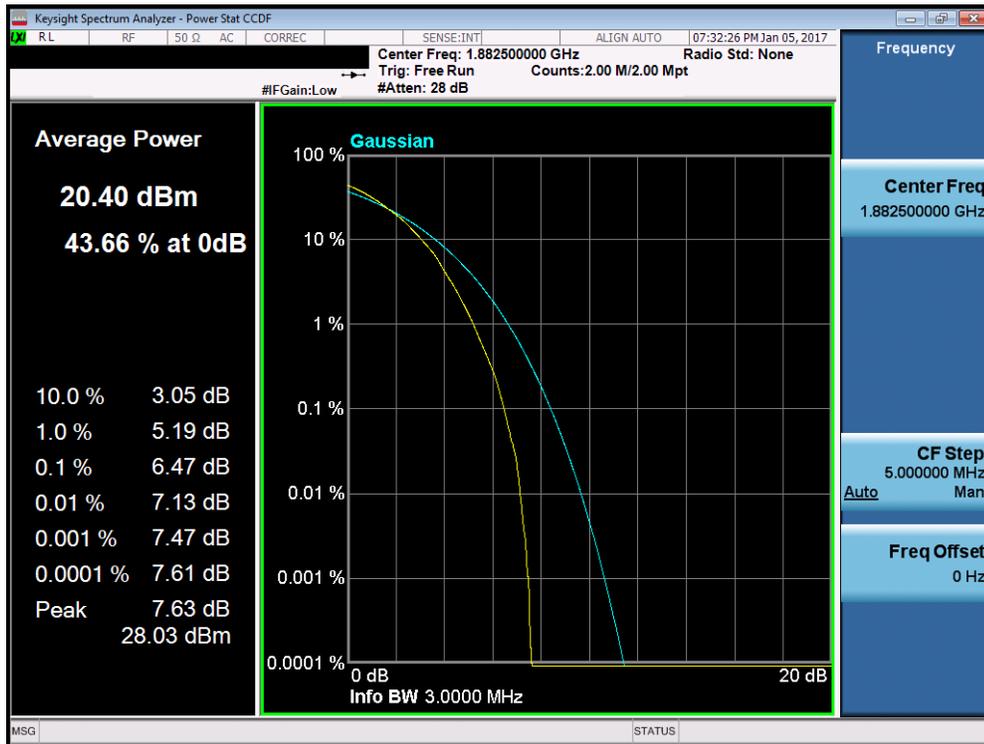


Plot 7-255. PAR Plot (Band 2/25 - 3.0MHz QPSK - RB Size 15)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 152 of 205 |

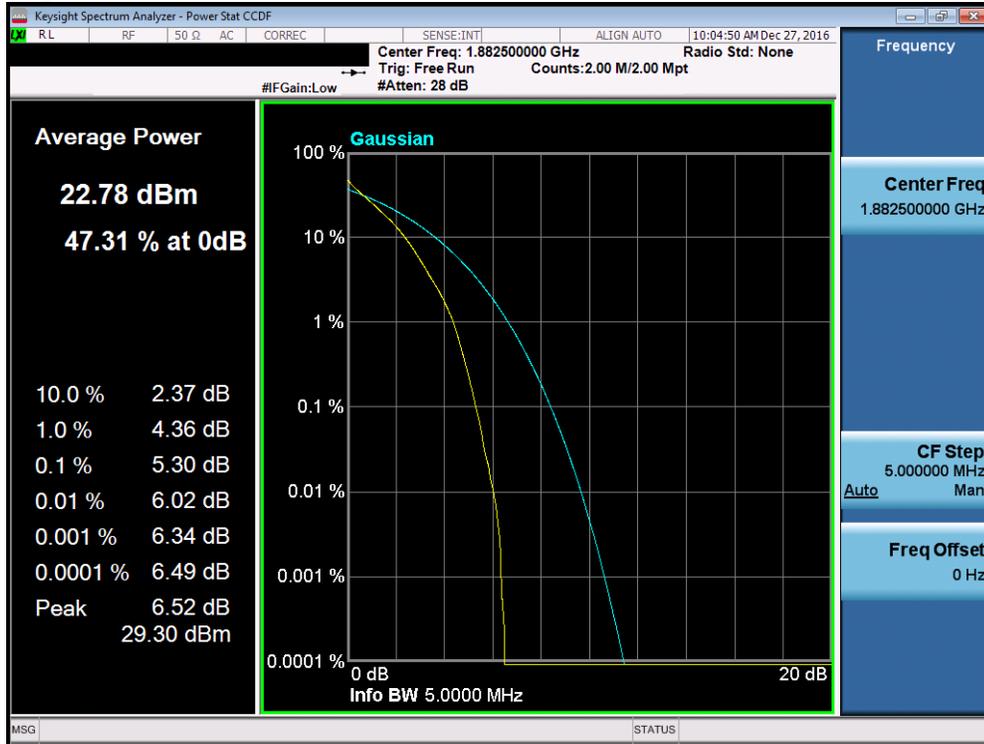


Plot 7-256. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)

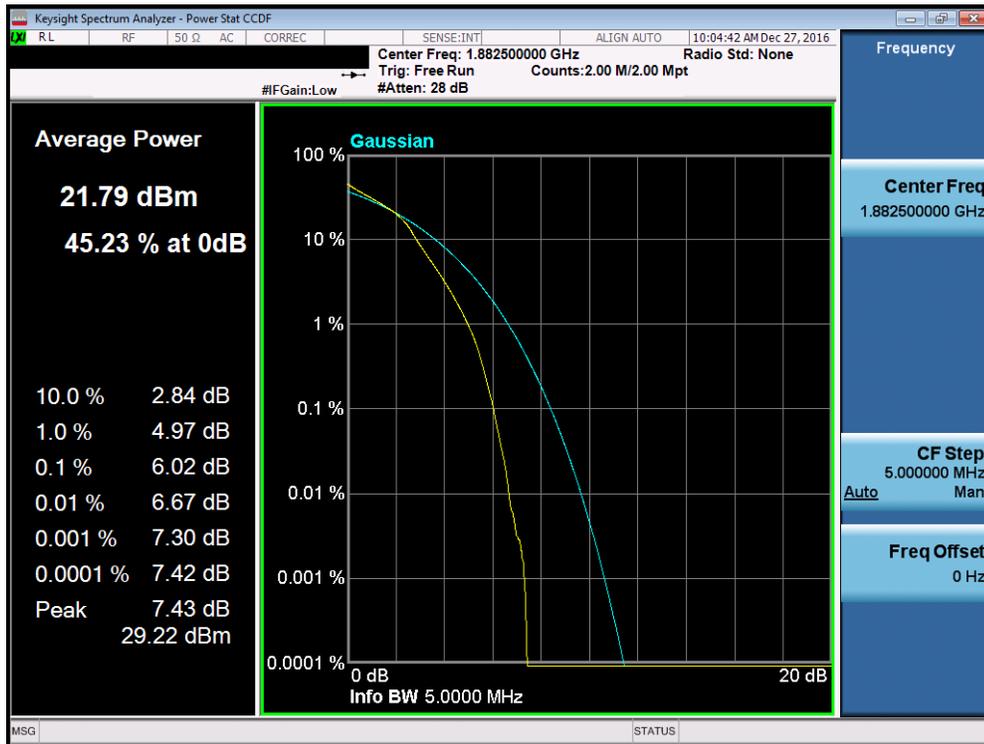


Plot 7-257. PAR Plot (Band 2/25 – 3.0MHz 64-QAM – RB Size 15)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 153 of 205 |

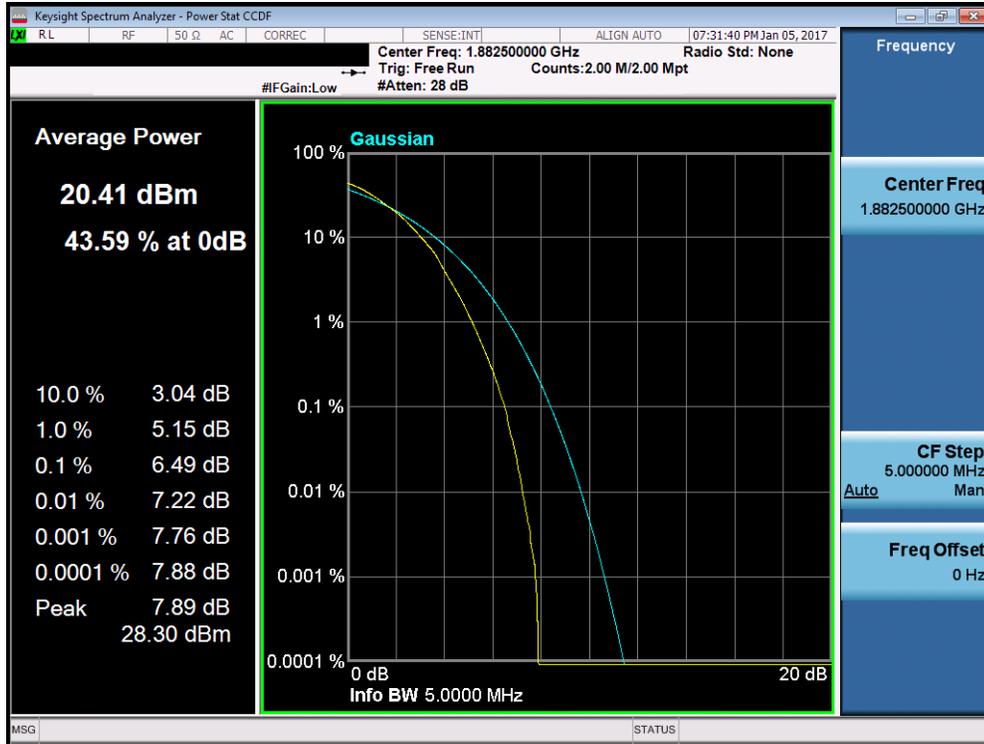


Plot 7-258. PAR Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

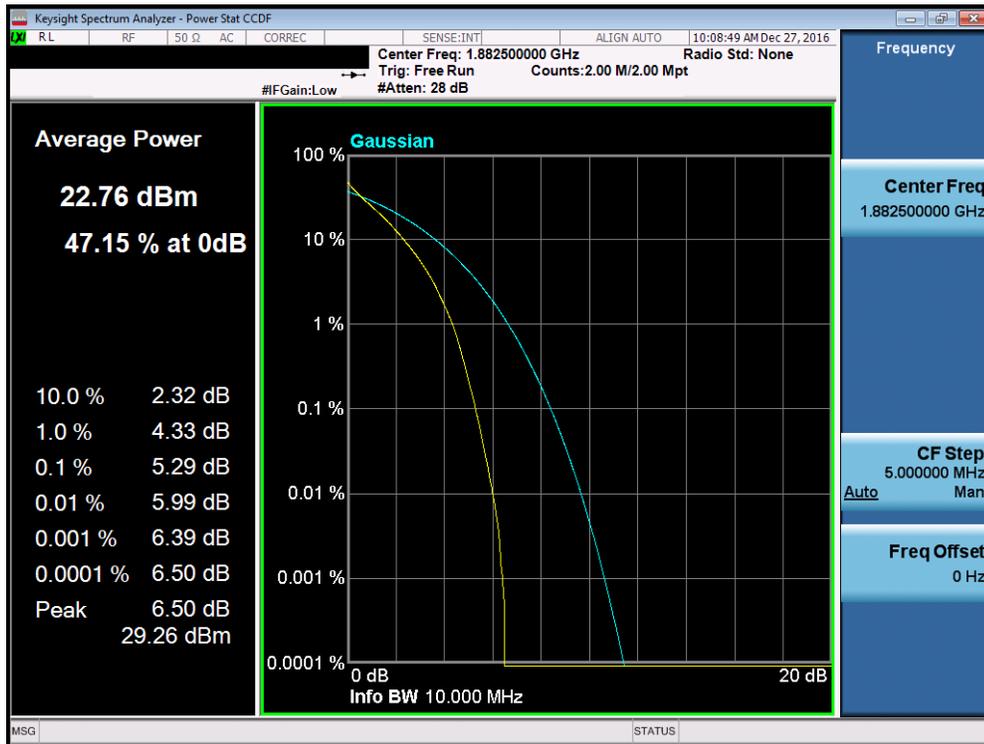


Plot 7-259. PAR Plot (Band 2/25 – 5.0MHz 16-QAM – RB Size 25)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 154 of 205 |

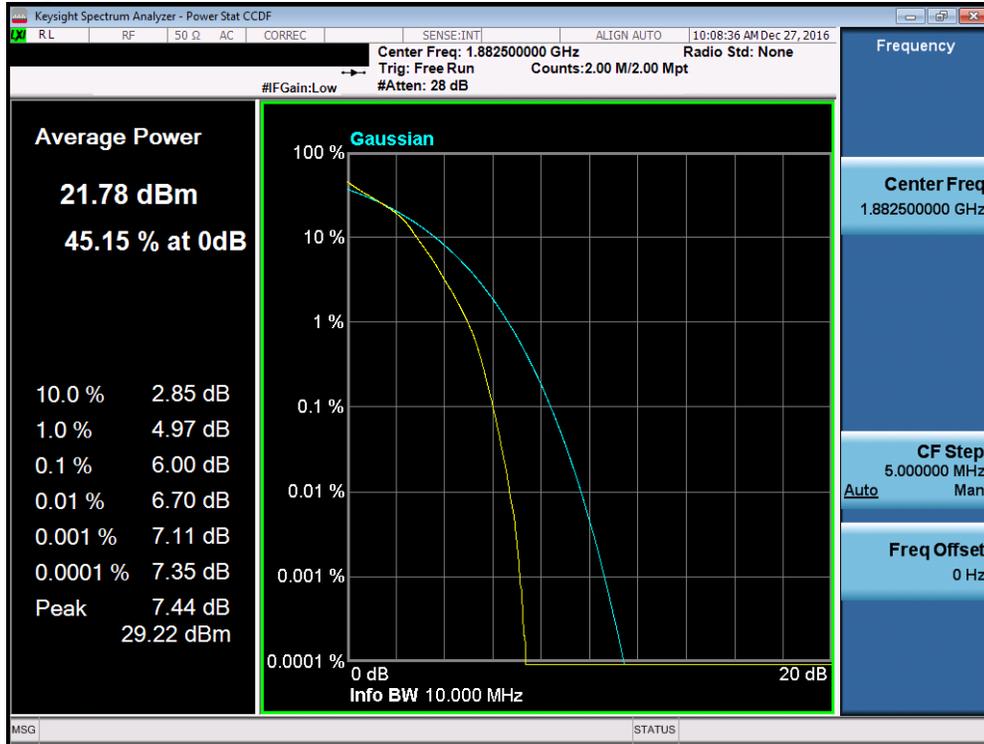


Plot 7-260. PAR Plot (Band 2/25 – 5.0MHz 64-QAM – RB Size 25)

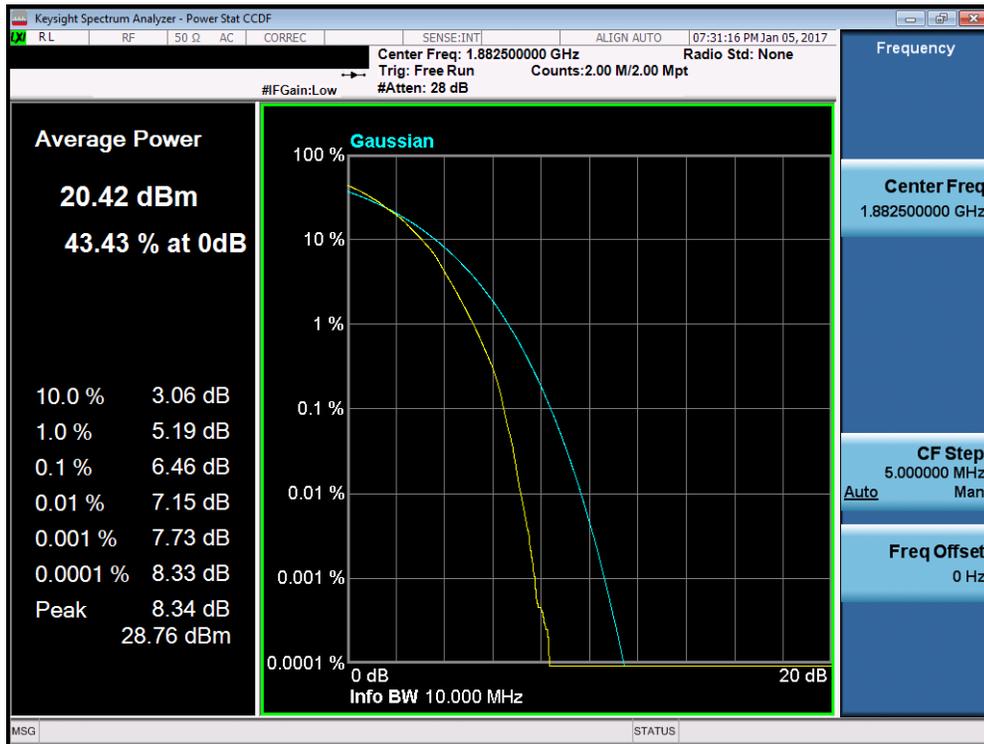


Plot 7-261. PAR Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 155 of 205 |

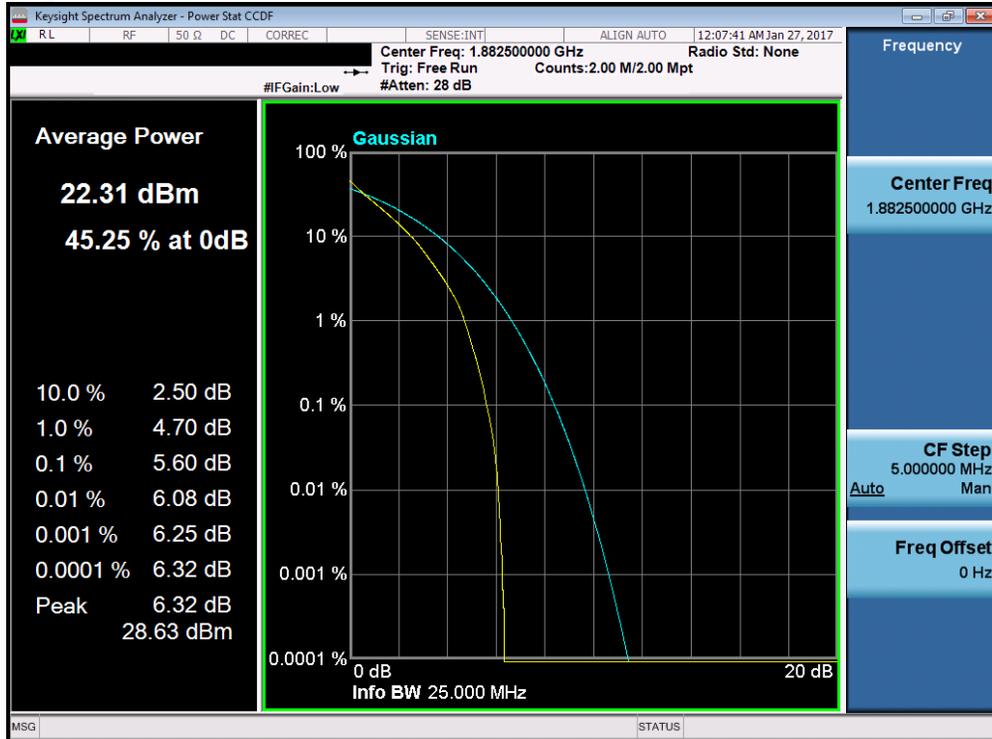


Plot 7-262. PAR Plot (Band 2/25 – 10.0MHz 16-QAM – RB Size 50)

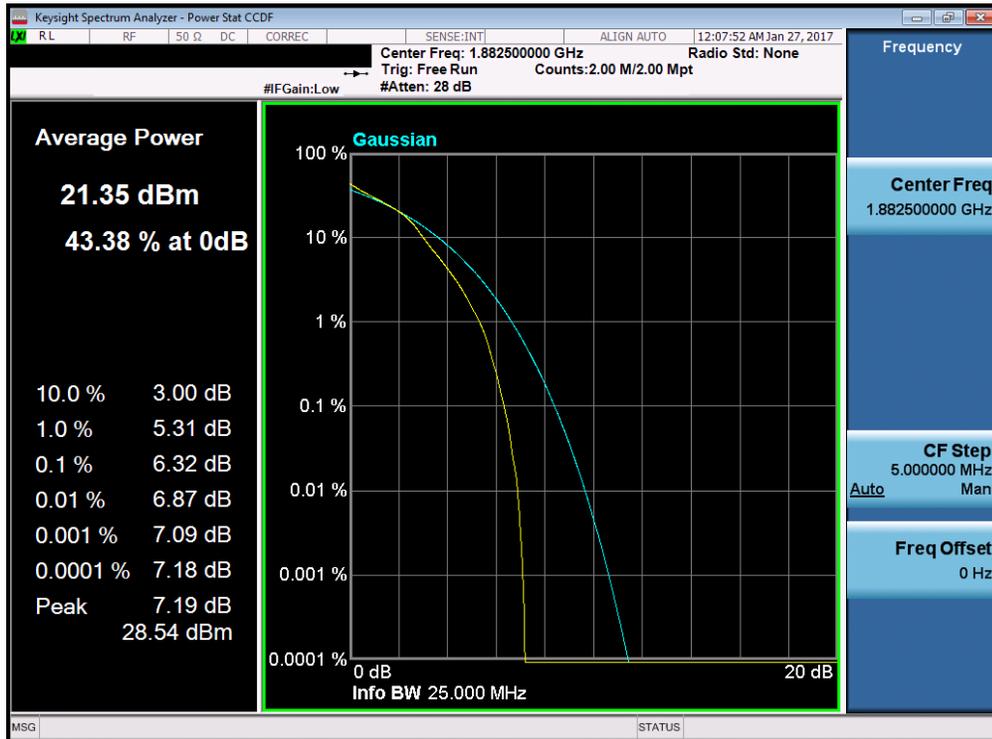


Plot 7-263. PAR Plot (Band 2/25 – 10.0MHz 64-QAM – RB Size 50)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 156 of 205 |

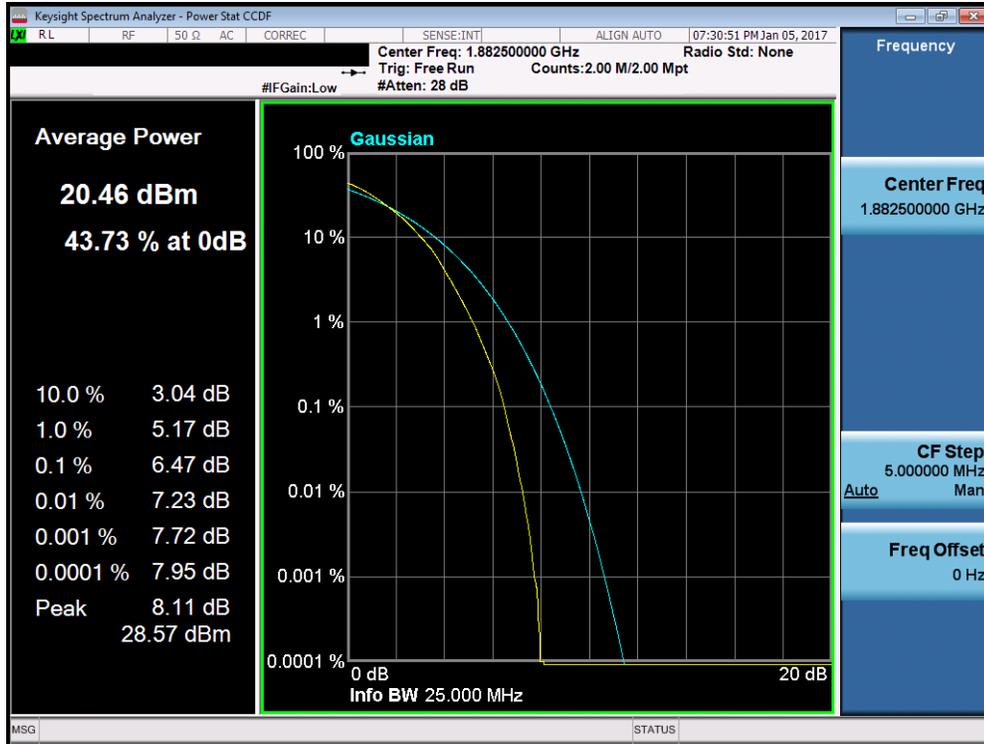


Plot 7-264. PAR Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

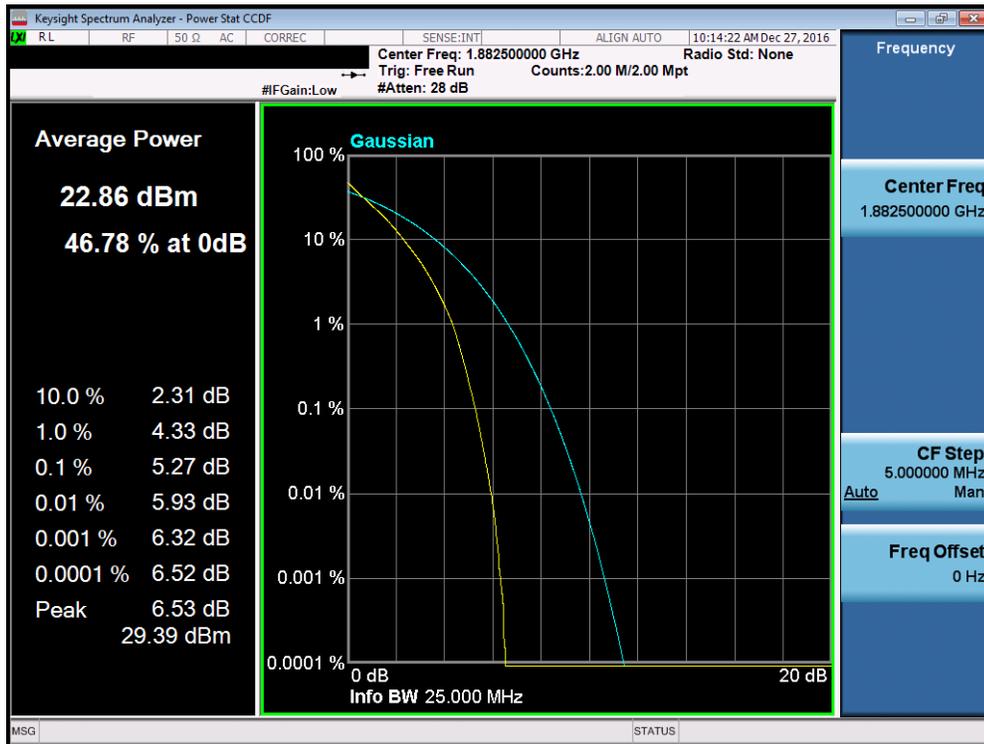


Plot 7-265. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 157 of 205 |

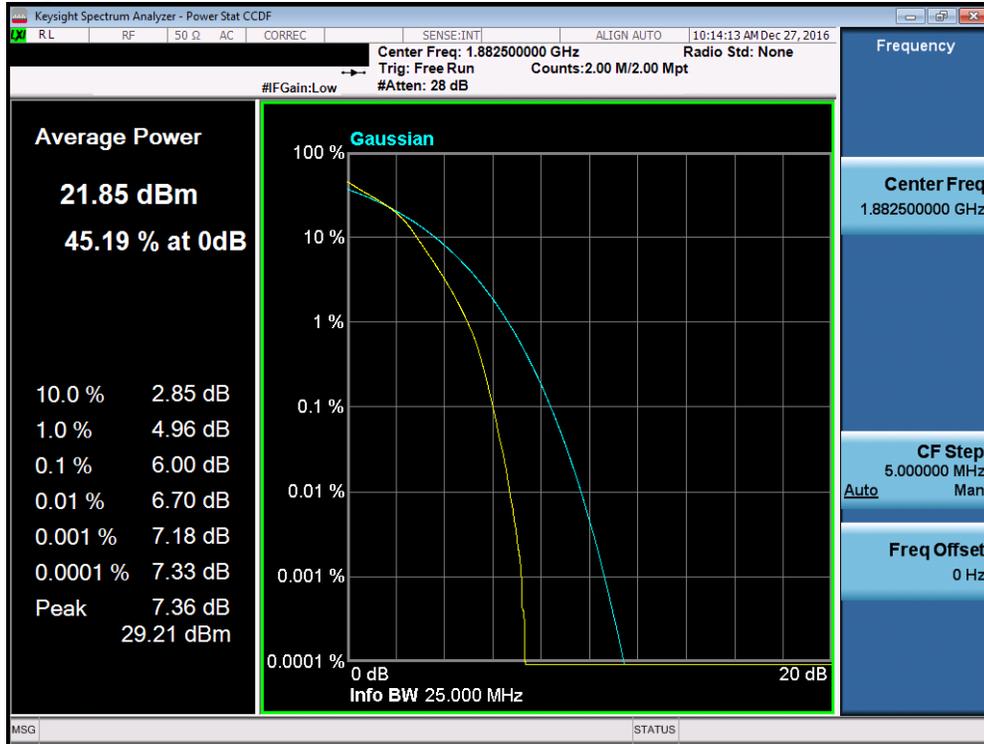


Plot 7-266. PAR Plot (Band 2/25 – 15.0MHz 64-QAM – RB Size 75)

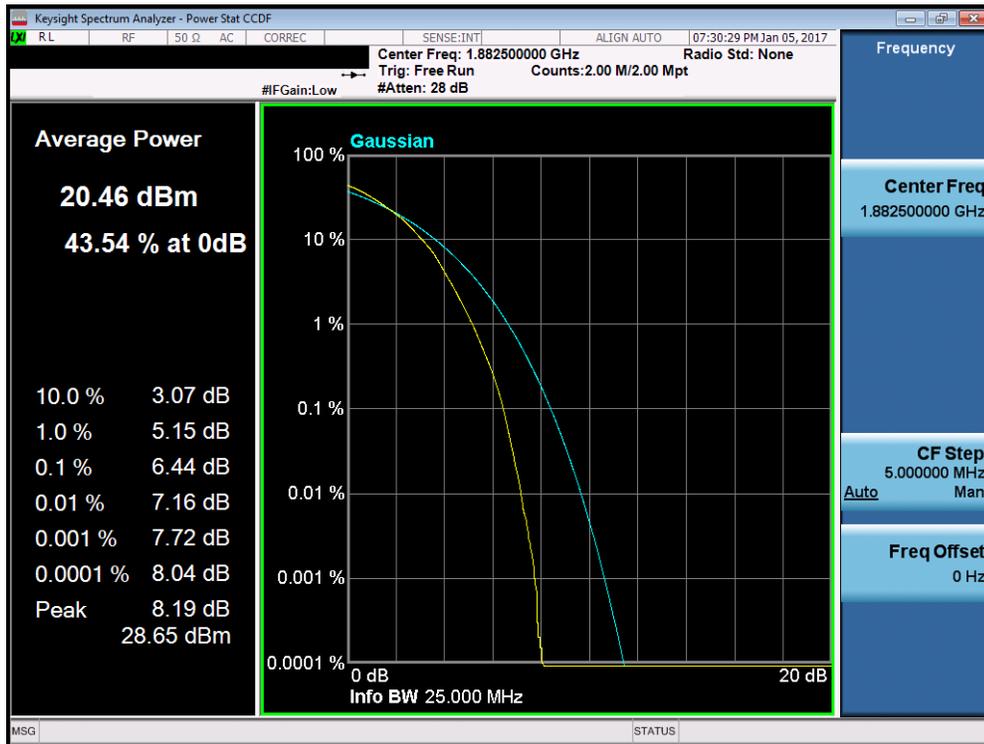


Plot 7-267. PAR Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 158 of 205 |



Plot 7-268. PAR Plot (Band 2/25 – 20.0MHz 16-QAM – RB Size 100)



Plot 7-269. PAR Plot (Band 2/25 – 20.0MHz 64-QAM – RB Size 100)

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 159 of 205 |

7.7 Radiated Power (ERP/EIRP)

§22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(b.10) §27.50(c.10) §27.50(d.4) §27.50(a.3)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – Section 2.2.17

Test Settings

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

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 160 of 205 | |

Test Setup

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

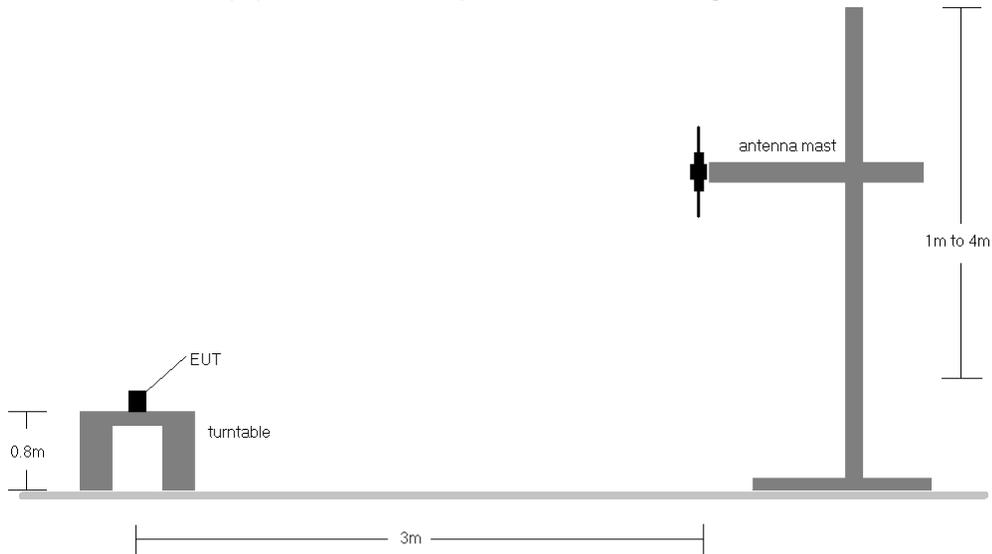


Figure 7-6. Radiated Test Setup <1GHz

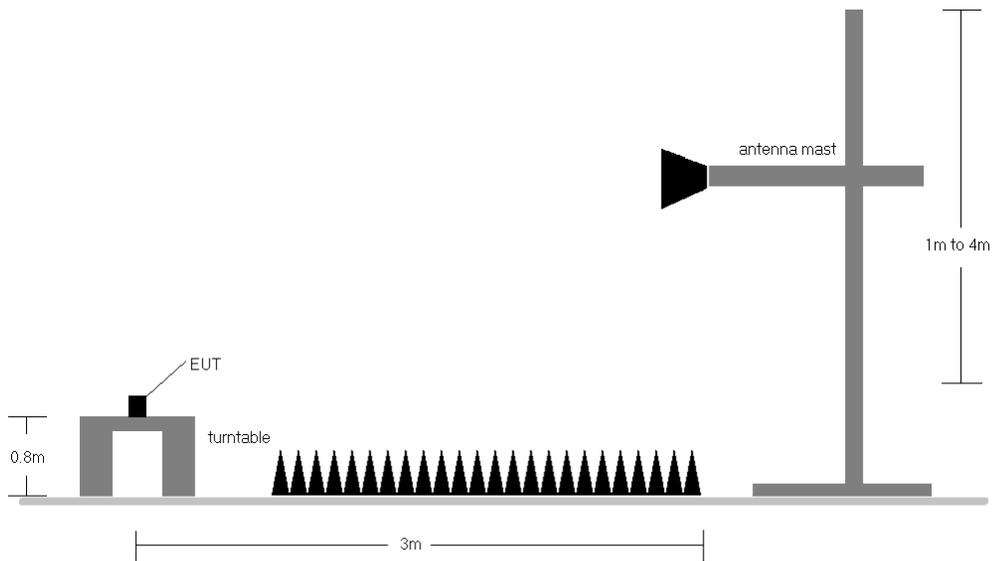


Figure 7-7. Radiated Test Setup >1GHz

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.

| | | | | |
|---|-------------------------------------|--|--|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 161 of 205 |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBd] | ERP [dBm] | ERP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|-----------|-----------------|-------------|
| 699.70 | 1.4 | QPSK | V | 5 | 316 | 1 / 0 | 18.68 | -1.18 | 17.50 | 34.77 | -17.27 |
| 707.50 | 1.4 | QPSK | V | 10 | 312 | 1 / 0 | 19.47 | -1.18 | 18.29 | 34.77 | -16.48 |
| 715.30 | 1.4 | QPSK | V | 354 | 301 | 1 / 0 | 19.34 | -1.18 | 18.16 | 34.77 | -16.61 |
| 707.50 | 1.4 | 16-QAM | V | 10 | 312 | 1 / 0 | 18.51 | -1.18 | 17.33 | 34.77 | -17.44 |
| 707.50 | 1.4 | 64-QAM | V | 10 | 312 | 1 / 0 | 17.66 | -1.18 | 16.48 | 34.77 | -18.29 |
| 700.50 | 3 | QPSK | V | 348 | 315 | 1 / 0 | 18.72 | -1.18 | 17.54 | 34.77 | -17.23 |
| 707.50 | 3 | QPSK | V | 355 | 316 | 1 / 0 | 19.28 | -1.18 | 18.10 | 34.77 | -16.67 |
| 714.50 | 3 | QPSK | V | 362 | 308 | 1 / 14 | 19.45 | -1.18 | 18.27 | 34.77 | -16.50 |
| 714.50 | 3 | 16-QAM | V | 362 | 308 | 1 / 14 | 18.82 | -1.18 | 17.64 | 34.77 | -17.13 |
| 714.50 | 3 | 64-QAM | V | 362 | 308 | 1 / 0 | 16.99 | -1.18 | 15.81 | 34.77 | -18.96 |

Table 7-4. ERP Data (Band 12)

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBd] | ERP [dBm] | ERP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|-----------|-----------------|-------------|
| 701.50 | 5 | QPSK | V | 361 | 301 | 1 / 24 | 18.76 | -1.18 | 17.58 | 34.77 | -17.19 |
| 707.50 | 5 | QPSK | V | 365 | 318 | 1 / 0 | 19.49 | -1.18 | 18.31 | 34.77 | -16.46 |
| 713.50 | 5 | QPSK | V | 363 | 303 | 1 / 24 | 19.43 | -1.18 | 18.25 | 34.77 | -16.52 |
| 707.50 | 5 | 16-QAM | V | 365 | 318 | 1 / 0 | 18.91 | -1.18 | 17.73 | 34.77 | -17.04 |
| 707.50 | 5 | 64-QAM | V | 365 | 318 | 1 / 0 | 17.69 | -1.18 | 16.51 | 34.77 | -18.26 |
| 704.00 | 10 | QPSK | V | 350 | 301 | 1 / 49 | 19.05 | -1.18 | 17.87 | 34.77 | -16.90 |
| 707.50 | 10 | QPSK | V | 357 | 303 | 1 / 0 | 19.22 | -1.18 | 18.04 | 34.77 | -16.73 |
| 711.00 | 10 | QPSK | V | 362 | 310 | 1 / 0 | 19.30 | -1.18 | 18.12 | 34.77 | -16.65 |
| 711.00 | 10 | 16-QAM | V | 362 | 310 | 1 / 0 | 18.57 | -1.18 | 17.39 | 34.77 | -17.38 |
| 711.00 | 10 | 64-QAM | V | 362 | 310 | 1 / 0 | 17.45 | -1.18 | 16.27 | 34.77 | -18.50 |
| 707.50 | 5 | QPSK | H | 7 | 84 | 1 / 0 | 18.41 | -0.28 | 18.13 | 34.77 | -16.64 |
| 707.50 | 5 (WCP) | QPSK | H | 0 | 90 | 1 / 0 | 18.10 | -0.28 | 17.82 | 34.77 | -16.95 |

Table 7-5. ERP Data (Band 12/17)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 162 of 205 | |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Positioner Azimuth [degree] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBd] | ERP [dBm] | ERP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|-----------------------------|----------------------------|----------------|------------------------|-----------------|-----------|-----------------|-------------|
| 779.50 | 5 | QPSK | H | 25 | 6 | 1 / 0 | 22.06 | -0.58 | 21.48 | 34.77 | -13.29 |
| 782.00 | 5 | QPSK | H | 27 | 12 | 1 / 0 | 22.38 | -0.58 | 21.80 | 34.77 | -12.97 |
| 784.50 | 5 | QPSK | H | 35 | 10 | 1 / 0 | 22.23 | -0.58 | 21.65 | 34.77 | -13.12 |
| 782.00 | 5 | 16-QAM | H | 27 | 12 | 1 / 0 | 21.46 | -0.58 | 20.88 | 34.77 | -13.89 |
| 782.00 | 5 | 64-QAM | H | 27 | 12 | 1 / 0 | 20.60 | -0.58 | 20.02 | 34.77 | -14.75 |
| 782.00 | 10 | QPSK | H | 0 | 2 | 1 / 0 | 22.23 | -0.58 | 21.65 | 34.77 | -13.12 |
| 782.00 | 10 | 16-QAM | H | 0 | 2 | 1 / 0 | 21.27 | -0.58 | 20.69 | 34.77 | -14.08 |
| 782.00 | 10 | 64-QAM | H | 0 | 2 | 1 / 0 | 20.03 | -0.58 | 19.45 | 34.77 | -15.32 |
| 782.00 | 5 | QPSK | V | 0 | 2 | 1 / 0 | 22.28 | -1.38 | 20.90 | 34.77 | -13.87 |
| 782.00 | 5 (WCP) | QPSK | H | 0 | 78 | 1 / 0 | 21.48 | -0.58 | 20.90 | 34.77 | -13.87 |

Table 7-6. ERP Data (Band 13)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 163 of 205 |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBd] | ERP [dBm] | ERP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|-----------|-----------------|-------------|
| 824.70 | 1.4 | QPSK | H | 198 | 277 | 1 / 0 | 15.89 | 5.36 | 21.25 | 38.45 | -17.20 |
| 836.50 | 1.4 | QPSK | H | 395 | 284 | 3 / 2 | 15.47 | 5.15 | 20.62 | 38.45 | -17.83 |
| 848.30 | 1.4 | QPSK | H | 358 | 282 | 1 / 0 | 15.47 | 5.16 | 20.63 | 38.45 | -17.82 |
| 824.70 | 1.4 | 16-QAM | H | 198 | 277 | 1 / 5 | 15.66 | 5.36 | 21.02 | 38.45 | -17.43 |
| 824.70 | 1.4 | 64-QAM | H | 198 | 277 | 1 / 0 | 14.12 | 5.36 | 19.48 | 38.45 | -18.97 |
| 825.50 | 3 | QPSK | H | 194 | 276 | 1 / 0 | 15.89 | 5.35 | 21.24 | 38.45 | -17.21 |
| 836.50 | 3 | QPSK | H | 205 | 282 | 1 / 0 | 15.76 | 5.15 | 20.91 | 38.45 | -17.54 |
| 847.50 | 3 | QPSK | H | 356 | 276 | 1 / 14 | 15.57 | 5.14 | 20.71 | 38.45 | -17.74 |
| 825.50 | 3 | 16-QAM | H | 194 | 276 | 1 / 0 | 15.57 | 5.35 | 20.92 | 38.45 | -17.53 |
| 825.50 | 3 | 64-QAM | H | 194 | 276 | 1 / 0 | 14.04 | 5.35 | 19.39 | 38.45 | -19.06 |
| 826.50 | 5 | QPSK | H | 197 | 276 | 1 / 0 | 16.05 | 5.34 | 21.39 | 38.45 | -17.06 |
| 836.50 | 5 | QPSK | H | 206 | 282 | 1 / 0 | 15.96 | 5.15 | 21.11 | 38.45 | -17.34 |
| 846.50 | 5 | QPSK | H | 355 | 284 | 1 / 24 | 15.45 | 5.13 | 20.58 | 38.45 | -17.87 |
| 826.50 | 5 | 16-QAM | H | 197 | 276 | 1 / 0 | 15.76 | 5.34 | 21.10 | 38.45 | -17.35 |
| 826.50 | 5 | 64-QAM | H | 197 | 276 | 1 / 0 | 14.24 | 5.34 | 19.58 | 38.45 | -18.87 |
| 829.00 | 10 | QPSK | H | 200 | 277 | 1 / 0 | 15.95 | 5.30 | 21.25 | 38.45 | -17.20 |
| 836.50 | 10 | QPSK | H | 200 | 281 | 1 / 0 | 16.31 | 5.15 | 21.46 | 38.45 | -16.99 |
| 844.00 | 10 | QPSK | H | 202 | 284 | 1 / 0 | 15.39 | 5.11 | 20.50 | 38.45 | -17.95 |
| 836.50 | 10 | 16-QAM | H | 200 | 281 | 1 / 0 | 16.13 | 5.15 | 21.28 | 38.45 | -17.17 |
| 836.50 | 10 | 64-QAM | H | 200 | 281 | 1 / 0 | 14.49 | 5.15 | 19.64 | 38.45 | -18.81 |
| 831.50 | 15 | QPSK | H | 201 | 276 | 1 / 0 | 15.96 | 5.25 | 21.21 | 38.45 | -17.25 |
| 836.50 | 15 | QPSK | H | 202 | 278 | 1 / 0 | 16.02 | 5.15 | 21.17 | 38.45 | -17.28 |
| 841.50 | 15 | QPSK | H | 200 | 279 | 1 / 0 | 15.83 | 5.11 | 20.94 | 38.45 | -17.51 |
| 831.50 | 15 | 16-QAM | H | 201 | 276 | 1 / 0 | 15.75 | 5.25 | 21.00 | 38.45 | -17.46 |
| 831.50 | 15 | 64-QAM | H | 201 | 276 | 1 / 0 | 14.11 | 5.25 | 19.36 | 38.45 | -19.10 |
| 836.50 | 10 | QPSK | V | 142 | 347 | 1 / 0 | 15.88 | 5.15 | 21.03 | 38.45 | -17.42 |
| 836.50 | 10 (WCP) | QPSK | H | 100 | 85 | 1 / 0 | 20.11 | -0.55 | 19.56 | 38.45 | -18.89 |

Table 7-7. ERP Data (Band 5/26)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 164 of 205 | |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBi] | EIRP [dBm] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|------------|------------------|-------------|
| 1710.70 | 1.4 | QPSK | H | 108 | 183 | 1 / 0 | 16.76 | 9.44 | 26.20 | 30.00 | -3.80 |
| 1745.00 | 1.4 | QPSK | H | 103 | 180 | 1 / 0 | 16.43 | 9.25 | 25.68 | 30.00 | -4.32 |
| 1779.30 | 1.4 | QPSK | H | 100 | 208 | 1 / 5 | 14.22 | 9.05 | 23.27 | 30.00 | -6.73 |
| 1710.70 | 1.4 | 16-QAM | H | 108 | 183 | 1 / 0 | 15.75 | 9.44 | 25.19 | 30.00 | -4.81 |
| 1710.70 | 1.4 | 64-QAM | H | 108 | 183 | 1 / 0 | 14.85 | 9.44 | 24.29 | 30.00 | -5.71 |
| 1711.50 | 3 | QPSK | H | 104 | 157 | 1 / 0 | 16.71 | 9.44 | 26.15 | 30.00 | -3.85 |
| 1745.00 | 3 | QPSK | H | 100 | 207 | 1 / 0 | 16.04 | 9.25 | 25.29 | 30.00 | -4.71 |
| 1778.50 | 3 | QPSK | H | 100 | 207 | 1 / 0 | 13.79 | 9.06 | 22.85 | 30.00 | -7.15 |
| 1711.50 | 3 | 16-QAM | H | 104 | 157 | 1 / 0 | 16.02 | 9.44 | 25.46 | 30.00 | -4.54 |
| 1711.50 | 3 | 64-QAM | H | 104 | 157 | 1 / 0 | 14.94 | 9.44 | 24.38 | 30.00 | -5.62 |
| 1712.50 | 5 | QPSK | H | 106 | 182 | 1 / 0 | 17.16 | 9.43 | 26.59 | 30.00 | -3.41 |
| 1745.00 | 5 | QPSK | H | 101 | 180 | 1 / 0 | 16.93 | 9.25 | 26.18 | 30.00 | -3.82 |
| 1777.50 | 5 | QPSK | H | 100 | 149 | 1 / 0 | 13.55 | 9.06 | 22.61 | 30.00 | -7.39 |
| 1712.50 | 5 | 16-QAM | H | 106 | 182 | 1 / 0 | 16.52 | 9.43 | 25.95 | 30.00 | -4.05 |
| 1712.50 | 5 | 64-QAM | H | 106 | 182 | 1 / 0 | 15.47 | 9.43 | 24.90 | 30.00 | -5.10 |
| 1715.00 | 10 | QPSK | H | 106 | 157 | 1 / 0 | 17.10 | 9.42 | 26.52 | 30.00 | -3.48 |
| 1745.00 | 10 | QPSK | H | 102 | 182 | 1 / 0 | 16.82 | 9.25 | 26.07 | 30.00 | -3.93 |
| 1775.00 | 10 | QPSK | H | 100 | 202 | 1 / 0 | 14.09 | 9.08 | 23.17 | 30.00 | -6.83 |
| 1715.00 | 10 | 16-QAM | H | 106 | 157 | 1 / 0 | 16.44 | 9.42 | 25.86 | 30.00 | -4.14 |
| 1715.00 | 10 | 64-QAM | H | 106 | 157 | 1 / 0 | 15.50 | 9.42 | 24.92 | 30.00 | -5.08 |
| 1717.50 | 15 | QPSK | H | 104 | 179 | 1 / 0 | 16.88 | 9.40 | 26.28 | 30.00 | -3.72 |
| 1745.00 | 15 | QPSK | H | 104 | 177 | 1 / 0 | 16.92 | 9.25 | 26.17 | 30.00 | -3.83 |
| 1772.50 | 15 | QPSK | H | 101 | 146 | 1 / 0 | 14.53 | 9.09 | 23.62 | 30.00 | -6.38 |
| 1717.50 | 15 | 16-QAM | H | 104 | 179 | 1 / 0 | 16.25 | 9.40 | 25.65 | 30.00 | -4.35 |
| 1717.50 | 15 | 64-QAM | H | 104 | 179 | 1 / 0 | 15.28 | 9.40 | 24.68 | 30.00 | -5.32 |
| 1720.00 | 20 | QPSK | H | 108 | 181 | 1 / 0 | 16.86 | 9.39 | 26.25 | 30.00 | -3.75 |
| 1745.00 | 20 | QPSK | H | 107 | 176 | 1 / 0 | 16.84 | 9.25 | 26.09 | 30.00 | -3.91 |
| 1770.00 | 20 | QPSK | H | 100 | 174 | 1 / 0 | 14.58 | 9.10 | 23.68 | 30.00 | -6.32 |
| 1720.00 | 20 | 16-QAM | H | 108 | 181 | 1 / 0 | 16.20 | 9.39 | 25.59 | 30.00 | -4.41 |
| 1720.00 | 20 | 64-QAM | H | 108 | 181 | 1 / 0 | 15.25 | 9.39 | 24.64 | 30.00 | -5.36 |
| 1712.50 | 5 | QPSK | V | 241 | 29 | 1 / 0 | 14.43 | 9.61 | 24.04 | 30.00 | -5.96 |
| 1712.50 | 5 (WCP) | QPSK | H | 100 | 154 | 1 / 0 | 16.34 | 9.43 | 25.77 | 30.00 | -4.23 |

Table 7-8. EIRP Data (Band 4/66)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 165 of 205 |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBi] | EIRP [dBm] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|------------|------------------|-------------|
| 1850.70 | 1.4 | QPSK | V | 112 | 286 | 1 / 0 | 15.31 | 8.97 | 24.28 | 33.01 | -8.73 |
| 1882.50 | 1.4 | QPSK | V | 117 | 284 | 1 / 0 | 14.96 | 8.99 | 23.95 | 33.01 | -9.06 |
| 1914.30 | 1.4 | QPSK | V | 110 | 337 | 1 / 5 | 15.33 | 8.97 | 24.30 | 33.01 | -8.71 |
| 1914.30 | 1.4 | 16-QAM | V | 110 | 337 | 1 / 0 | 14.56 | 8.97 | 23.53 | 33.01 | -9.48 |
| 1914.30 | 1.4 | 64-QAM | V | 110 | 337 | 1 / 0 | 13.55 | 8.97 | 22.52 | 33.01 | -10.49 |
| 1851.50 | 3 | QPSK | V | 117 | 288 | 1 / 0 | 15.36 | 8.97 | 24.33 | 33.01 | -8.68 |
| 1882.50 | 3 | QPSK | V | 110 | 285 | 1 / 0 | 15.11 | 8.99 | 24.10 | 33.01 | -8.91 |
| 1913.50 | 3 | QPSK | V | 108 | 336 | 1 / 14 | 15.17 | 8.97 | 24.14 | 33.01 | -8.87 |
| 1851.50 | 3 | 16-QAM | V | 117 | 288 | 1 / 0 | 14.46 | 8.97 | 23.43 | 33.01 | -9.58 |
| 1851.50 | 3 | 64-QAM | V | 117 | 288 | 1 / 0 | 13.59 | 8.97 | 22.56 | 33.01 | -10.45 |
| 1852.50 | 5 | QPSK | V | 114 | 285 | 1 / 0 | 15.94 | 8.97 | 24.91 | 33.01 | -8.10 |
| 1882.50 | 5 | QPSK | V | 110 | 286 | 1 / 0 | 15.46 | 8.99 | 24.45 | 33.01 | -8.56 |
| 1912.50 | 5 | QPSK | V | 105 | 334 | 1 / 24 | 15.21 | 8.98 | 24.19 | 33.01 | -8.82 |
| 1852.50 | 5 | 16-QAM | V | 114 | 285 | 1 / 0 | 15.31 | 8.97 | 24.28 | 33.01 | -8.73 |
| 1852.50 | 5 | 64-QAM | V | 114 | 285 | 1 / 24 | 14.06 | 8.97 | 23.03 | 33.01 | -9.98 |
| 1855.00 | 10 | QPSK | V | 112 | 286 | 1 / 0 | 15.54 | 8.97 | 24.51 | 33.01 | -8.50 |
| 1882.50 | 10 | QPSK | V | 111 | 286 | 1 / 0 | 15.06 | 8.99 | 24.05 | 33.01 | -8.96 |
| 1910.00 | 10 | QPSK | V | 116 | 339 | 1 / 0 | 15.45 | 8.98 | 24.43 | 33.01 | -8.58 |
| 1855.00 | 10 | 16-QAM | V | 112 | 286 | 1 / 0 | 14.78 | 8.97 | 23.75 | 33.01 | -9.26 |
| 1855.00 | 10 | 64-QAM | V | 112 | 286 | 1 / 0 | 13.61 | 8.97 | 22.58 | 33.01 | -10.43 |
| 1857.50 | 15 | QPSK | V | 113 | 285 | 1 / 0 | 15.66 | 8.97 | 24.63 | 33.01 | -8.38 |
| 1882.50 | 15 | QPSK | V | 112 | 287 | 1 / 74 | 14.71 | 8.99 | 23.70 | 33.01 | -9.31 |
| 1907.50 | 15 | QPSK | V | 116 | 332 | 1 / 0 | 15.16 | 8.99 | 24.15 | 33.01 | -8.86 |
| 1857.50 | 15 | 16-QAM | V | 113 | 285 | 1 / 74 | 14.86 | 8.97 | 23.83 | 33.01 | -9.18 |
| 1857.50 | 15 | 64-QAM | V | 113 | 285 | 1 / 0 | 13.87 | 8.97 | 22.84 | 33.01 | -10.17 |
| 1860.00 | 20 | QPSK | V | 114 | 285 | 1 / 0 | 15.54 | 8.98 | 24.52 | 33.01 | -8.49 |
| 1882.50 | 20 | QPSK | V | 112 | 334 | 1 / 99 | 15.10 | 8.99 | 24.09 | 33.01 | -8.92 |
| 1905.00 | 20 | QPSK | V | 110 | 338 | 1 / 0 | 15.61 | 8.99 | 24.60 | 33.01 | -8.41 |
| 1905.00 | 20 | 16-QAM | V | 110 | 338 | 1 / 0 | 14.88 | 8.99 | 23.87 | 33.01 | -9.14 |
| 1905.00 | 20 | 64-QAM | V | 110 | 338 | 1 / 0 | 13.93 | 8.99 | 22.92 | 33.01 | -10.09 |
| 1852.50 | 5 | QPSK | H | 100 | 173 | 1 / 0 | 12.10 | 9.12 | 21.22 | 33.01 | -11.79 |
| 1852.50 | 5 (WCP) | QPSK | H | 102 | 164 | 1 / 0 | 11.31 | 9.12 | 20.43 | 33.01 | -12.58 |

Table 7-9. EIRP Data (Band 2/25)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 166 of 205 | |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBi] | EIRP [dBm] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|------------|------------------|-------------|
| 2307.50 | 5 | QPSK | H | 100 | 32 | 1 / 24 | 17.76 | 5.74 | 23.50 | 23.98 | -0.48 |
| 2310.00 | 5 | QPSK | H | 100 | 33 | 1 / 24 | 17.72 | 5.74 | 23.46 | 23.98 | -0.52 |
| 2312.50 | 5 | QPSK | H | 100 | 29 | 1 / 0 | 17.82 | 5.74 | 23.56 | 23.98 | -0.42 |
| 2312.50 | 5 | 16-QAM | H | 100 | 29 | 1 / 0 | 17.07 | 5.74 | 22.81 | 23.98 | -1.17 |
| 2312.50 | 5 | 64-QAM | H | 100 | 29 | 1 / 0 | 15.97 | 5.74 | 21.71 | 23.98 | -2.27 |
| 2310.00 | 10 | QPSK | H | 100 | 31 | 1 / 0 | 17.50 | 5.74 | 23.24 | 23.98 | -0.74 |
| 2310.00 | 10 | 16-QAM | H | 100 | 31 | 1 / 0 | 16.76 | 5.74 | 22.50 | 23.98 | -1.48 |
| 2310.00 | 10 | 64-QAM | H | 100 | 31 | 1 / 0 | 15.71 | 5.57 | 21.28 | 23.98 | -2.70 |
| 2312.50 | 5 | QPSK | V | 100 | 173 | 1 / 0 | 17.54 | 5.59 | 23.13 | 23.98 | -0.85 |
| 2312.50 | 5 (WCP) | QPSK | H | 100 | 360 | 1 / 24 | 14.42 | 5.74 | 20.16 | 23.98 | -3.82 |

Table 7-10. EIRP Data (Band 30)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 167 of 205 | |

| Frequency [MHz] | Channel Bandwidth [MHz] | Mod. | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | RB Size/Offset | Substitute Level [dBm] | Ant. Gain [dBi] | EIRP [dBm] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|------------|------------------|-------------|
| 2498.50 | 5 | QPSK | H | 197 | 357 | 1 / 0 | 19.27 | 5.73 | 25.00 | 33.01 | -8.01 |
| 2593.00 | 5 | QPSK | H | 184 | 360 | 1 / 24 | 18.53 | 6.07 | 24.60 | 33.01 | -8.41 |
| 2687.50 | 5 | QPSK | H | 190 | 356 | 1 / 0 | 18.53 | 6.48 | 25.01 | 33.01 | -8.00 |
| 2687.50 | 5 | 16-QAM | H | 190 | 356 | 1 / 0 | 17.84 | 6.48 | 24.32 | 33.01 | -8.69 |
| 2687.50 | 5 | 64-QAM | H | 190 | 356 | 1 / 0 | 16.68 | 6.48 | 23.16 | 33.01 | -9.85 |
| 2501.00 | 10 | QPSK | H | 213 | 357 | 1 / 0 | 18.89 | 5.73 | 24.62 | 33.01 | -8.39 |
| 2593.00 | 10 | QPSK | H | 201 | 360 | 1 / 0 | 18.20 | 6.07 | 24.27 | 33.01 | -8.74 |
| 2685.00 | 10 | QPSK | H | 193 | 360 | 1 / 0 | 18.14 | 6.47 | 24.61 | 33.01 | -8.40 |
| 2501.00 | 10 | 16-QAM | H | 213 | 357 | 1 / 0 | 18.45 | 5.73 | 24.18 | 33.01 | -8.83 |
| 2501.00 | 10 | 64-QAM | H | 213 | 357 | 1 / 0 | 17.13 | 5.73 | 22.86 | 33.01 | -10.15 |
| 2503.50 | 15 | QPSK | H | 202 | 360 | 1 / 0 | 19.09 | 5.74 | 24.83 | 33.01 | -8.18 |
| 2593.00 | 15 | QPSK | H | 193 | 11 | 1 / 74 | 18.44 | 6.07 | 24.51 | 33.01 | -8.50 |
| 2682.50 | 15 | QPSK | H | 186 | 360 | 1 / 0 | 18.61 | 6.46 | 25.07 | 33.01 | -7.94 |
| 2682.50 | 15 | 16-QAM | H | 186 | 360 | 1 / 0 | 18.04 | 6.46 | 24.50 | 33.01 | -8.51 |
| 2682.50 | 15 | 64-QAM | H | 186 | 360 | 1 / 0 | 17.01 | 6.46 | 23.47 | 33.01 | -9.54 |
| 2506.00 | 20 | QPSK | H | 198 | 350 | 1 / 0 | 19.20 | 5.75 | 24.95 | 33.01 | -8.06 |
| 2593.00 | 20 | QPSK | H | 197 | 360 | 1 / 0 | 18.26 | 6.07 | 24.33 | 33.01 | -8.68 |
| 2680.00 | 20 | QPSK | H | 191 | 361 | 1 / 0 | 18.71 | 6.45 | 25.16 | 33.01 | -7.85 |
| 2680.00 | 20 | 16-QAM | H | 191 | 361 | 1 / 0 | 17.61 | 6.45 | 24.06 | 33.01 | -8.95 |
| 2680.00 | 20 | 64-QAM | H | 191 | 361 | 1 / 0 | 17.15 | 6.45 | 23.60 | 33.01 | -9.41 |
| 2680.00 | 20 | QPSK | V | 113 | 148 | 1 / 99 | 5.76 | 6.45 | 12.21 | 33.01 | -20.80 |
| 2680.00 | 20 (WCP) | QPSK | H | 196 | 360 | 1 / 0 | 18.55 | 6.45 | 25.00 | 33.01 | -8.01 |

Table 7-11. EIRP Data (Band 41)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 168 of 205 | |

7.8 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §27.53(g) §27.53(h) §27.53(m) §27.53(a.4)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – 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: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 169 of 205 | |

Test Setup

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

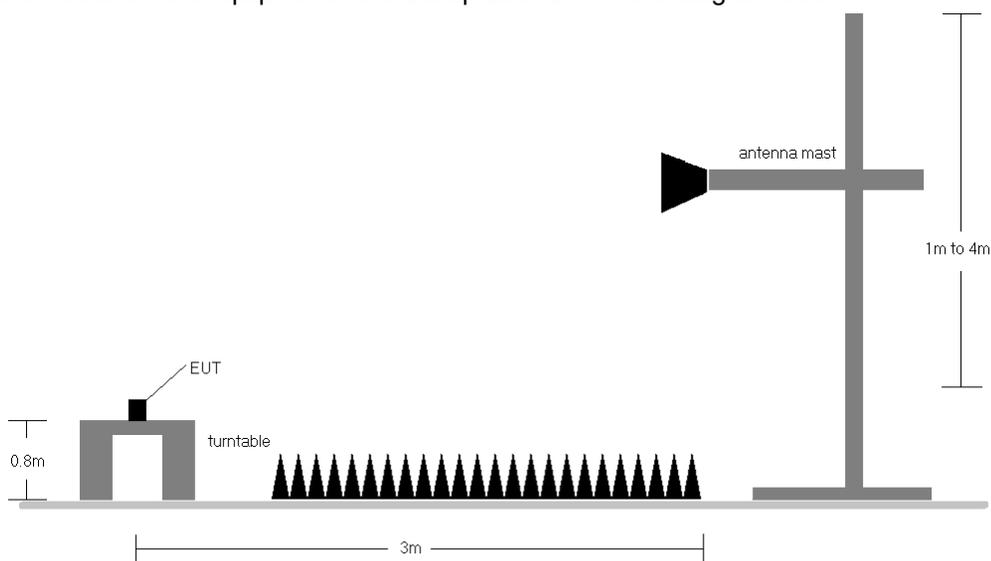


Figure 7-8. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) 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.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 170 of 205 | |

OPERATING FREQUENCY: 701.50 MHz
 CHANNEL: 23035
 MEASURED OUTPUT POWER: 17.58 dBm = 0.057 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.58 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1403.00 | H | - | - | -75.08 | 5.60 | -69.48 | 87.1 |
| 2104.50 | H | - | - | -72.71 | 6.67 | -66.04 | 83.6 |

Table 7-12. Radiated Spurious Data (Band 12/17/17 – Low Channel)

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 18.31 dBm = 0.068 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.31 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1415.00 | H | - | - | -75.05 | 5.69 | -69.36 | 87.7 |
| 2122.50 | H | - | - | -72.75 | 6.75 | -66.01 | 84.3 |

Table 7-13. Radiated Spurious Data (Band 12/17 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 171 of 205 | |

OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23155
 MEASURED OUTPUT POWER: 18.25 dBm = 0.067 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.25 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1427.00 | H | - | - | -74.11 | 5.79 | -68.32 | 86.6 |
| 2140.50 | H | - | - | -72.80 | 6.82 | -65.98 | 84.2 |

Table 7-14. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 17.62 dBm = 0.058 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.62 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1415.00 | H | - | - | -76.99 | 5.69 | -71.30 | 88.9 |
| 2122.50 | H | - | - | -75.48 | 6.75 | -68.74 | 86.4 |

Table 7-15. Radiated Spurious Data with WCP (Band 12/17 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 172 of 205 | |

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 21.48 dBm = 0.141 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.48 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 2338.50 | H | 123 | 191 | -75.49 | 7.35 | -68.14 | 89.6 |
| 3118.00 | H | - | - | -72.28 | 7.19 | -65.09 | 86.6 |

Table 7-16. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 21.80 dBm = 0.151 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.80 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 2346.00 | H | 112 | 247 | -73.15 | 7.33 | -65.83 | 87.6 |
| 3128.00 | H | - | - | -70.16 | 7.20 | -62.96 | 84.8 |

Table 7-17. Radiated Spurious Data (Band 13 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 173 of 205 | |

OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MEASURED OUTPUT POWER: 21.65 dBm = 0.146 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.65 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 2353.50 | H | - | - | -73.36 | 7.30 | -66.06 | 87.7 |
| 3138.00 | H | - | - | -70.02 | 7.21 | -62.81 | 84.5 |

Table 7-18. Radiated Spurious Data (Band 13 – High Channel)

MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1559.00 | H | - | - | -76.24 | 6.55 | -69.68 | -29.7 |
| 1564.00 | H | - | - | -76.42 | 6.57 | -69.85 | -29.8 |
| 1569.00 | H | - | - | -76.17 | 6.59 | -69.58 | -29.6 |

Table 7-19. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
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OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 20.90 dBm = 0.123 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.90 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 2346.00 | H | - | - | -73.45 | 7.33 | -66.13 | 87.0 |
| 3128.00 | H | - | - | -69.98 | 7.20 | -62.78 | 83.7 |

Table 7-20. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.00 MHz
 DISTANCE: 3 meters
 NARROWBAND EMISSION LIMIT: -50 dBm
 WIDEBAND EMISSION LIMIT: -40 dBm/MHz

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1564.00 | H | - | - | -76.08 | 6.57 | -69.51 | -29.5 |

Table 7-21. Radiated Spurious Data with WCP (Band 13 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 175 of 205 | |

OPERATING FREQUENCY: 829.00 MHz
 CHANNEL: 26840
 MEASURED OUTPUT POWER: 21.25 dBm = 0.133 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.25 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1658.00 | H | - | - | -78.39 | 6.70 | -71.69 | 92.9 |
| 2487.00 | H | - | - | -75.48 | 7.58 | -67.91 | 89.2 |

Table 7-22. Radiated Spurious Data (Band 5/26 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MEASURED OUTPUT POWER: 21.46 dBm = 0.140 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.46 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1673.00 | H | - | - | -78.44 | 6.70 | -71.75 | 93.2 |
| 2509.50 | H | - | - | -75.55 | 7.63 | -67.92 | 89.4 |

Table 7-23. Radiated Spurious Data (Band 5/26 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 176 of 205 | |

OPERATING FREQUENCY: 844.00 MHz
 CHANNEL: 26990
 MEASURED OUTPUT POWER: 20.50 dBm = 0.112 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.50 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1688.00 | H | - | - | -77.68 | 6.70 | -70.98 | 91.5 |
| 2532.00 | H | - | - | -75.61 | 7.61 | -68.00 | 88.5 |

Table 7-24. Radiated Spurious Data (Band 5/26 – High Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MEASURED OUTPUT POWER: 19.56 dBm = 0.090 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.56 dBc

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBd] | Spurious Emission Level [dBm] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 1673.00 | H | - | - | -78.08 | 6.70 | -71.39 | 90.9 |
| 2509.50 | H | - | - | -76.21 | 7.63 | -68.58 | 88.1 |

Table 7-25. Radiated Spurious Data with WCP (Band 5/26 – Mid Channel)

| | | | | |
|---|-------------------------------------|---|-----------------|---------------------------------|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 177 of 205 | |

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 131997
 MEASURED OUTPUT POWER: 26.59 dBm = 0.456 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 39.59 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3425.00 | V | 150 | 4 | -69.35 | 9.78 | -59.58 | 86.2 |
| 5137.50 | V | - | - | -67.25 | 10.70 | -56.55 | 83.1 |

Table 7-26. Radiated Spurious Data (Band 4/66 – Low Channel)

OPERATING FREQUENCY: 1745.00 MHz
 CHANNEL: 131322
 MEASURED OUTPUT POWER: 26.18 dBm = 0.415 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 39.18 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3490.00 | V | 245 | 332 | -69.07 | 9.90 | -59.18 | 85.4 |
| 5235.00 | V | - | - | -67.10 | 10.63 | -56.47 | 82.6 |

Table 7-27. Radiated Spurious Data (Band 4/66 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 178 of 205 | |

OPERATING FREQUENCY: 1777.50 MHz
 CHANNEL: 132647
 MEASURED OUTPUT POWER: 22.61 dBm = 0.182 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.61 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3555.00 | V | 118 | 28 | -68.15 | 9.90 | -58.26 | 80.9 |
| 5332.50 | V | - | - | -66.65 | 10.71 | -55.94 | 78.6 |

Table 7-28. Radiated Spurious Data (Band 4/66 – High Channel)

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 131997
 MEASURED OUTPUT POWER: 25.77 dBm = 0.378 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 38.77 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3425.00 | H | 150 | 1 | -67.32 | 9.78 | -57.55 | 83.3 |
| 5137.50 | H | - | - | -67.40 | 10.70 | -56.70 | 82.5 |

Table 7-29. Radiated Spurious Data with WCP (Band 4/66 – Low Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 179 of 205 | |

OPERATING FREQUENCY: 1852.50 MHz
 CHANNEL: 26065
 MEASURED OUTPUT POWER: 24.91 dBm = 0.310 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.91 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3705.00 | V | - | - | -68.68 | 9.52 | -59.16 | 84.1 |
| 5557.50 | V | 146 | 0 | -66.67 | 11.03 | -55.64 | 80.6 |
| 7410.00 | V | - | - | -59.45 | 10.95 | -48.50 | 73.4 |

Table 7-30. Radiated Spurious Data (Band 2/25 – Low Channel)

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MEASURED OUTPUT POWER: 24.45 dBm = 0.279 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.45 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3765.00 | V | - | - | -67.70 | 9.37 | -58.33 | 82.8 |
| 5647.50 | V | 130 | 5 | -66.79 | 11.23 | -55.56 | 80.0 |
| 7530.00 | V | - | - | -59.38 | 11.13 | -48.25 | 72.7 |

Table 7-31. Radiated Spurious Data (Band 2/25 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 180 of 205 | |

OPERATING FREQUENCY: 1912.50 MHz
 CHANNEL: 26665
 MEASURED OUTPUT POWER: 24.19 dBm = 0.262 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.19 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3825.00 | V | - | - | -67.58 | 9.33 | -58.24 | 82.4 |
| 5737.50 | V | 156 | 358 | -66.10 | 11.39 | -54.71 | 78.9 |
| 7650.00 | V | - | - | -59.75 | 11.34 | -48.40 | 72.6 |

Table 7-32. Radiated Spurious Data (Band 2/25 – High Channel)

OPERATING FREQUENCY: 1852.50 MHz
 CHANNEL: 26065
 MEASURED OUTPUT POWER: 20.28 dBm = 0.107 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.28 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 3705.00 | H | - | - | -68.52 | 9.52 | -59.00 | 79.3 |
| 5557.50 | H | - | - | -67.30 | 11.03 | -56.27 | 76.6 |
| 7410.00 | H | - | - | -59.51 | 10.95 | -48.56 | 68.8 |

Table 7-33. Radiated Spurious Data with WCP (Band 2/25 – Low Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 181 of 205 | |

OPERATING FREQUENCY: 2307.50 MHz
 CHANNEL: 27685
 MEASURED OUTPUT POWER: 23.50 dBm = 0.224 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) =$ 63.50 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 4615.00 | H | 105 | 15 | -63.30 | 10.98 | -52.32 | 75.8 |
| 6922.50 | H | - | - | -59.05 | 11.75 | -47.30 | 70.8 |

Table 7-34. Radiated Spurious Data (Band 30 – Low Channel)

OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 23.46 dBm = 0.222 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) =$ 63.46 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 4620.00 | H | 101 | 15 | -65.65 | 10.98 | -54.68 | 78.1 |
| 6930.00 | H | - | - | -59.20 | 11.76 | -47.44 | 70.9 |

Table 7-35. Radiated Spurious Data (Band 30 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 182 of 205 | |

OPERATING FREQUENCY: 2312.50 MHz
 CHANNEL: 27735
 MEASURED OUTPUT POWER: 23.56 dBm = 0.227 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10}(W) =$ 63.56 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 4625.00 | H | 102 | 17 | -65.41 | 10.97 | -54.43 | 78.0 |
| 6937.50 | H | - | - | -58.99 | 11.77 | -47.22 | 70.8 |

Table 7-36. Radiated Spurious Data (Band 30 – High Channel)

OPERATING FREQUENCY: 2312.50 MHz
 CHANNEL: 27735
 MEASURED OUTPUT POWER: 20.16 dBm = 0.104 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10}(W) =$ 60.16 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 4625.00 | H | 176 | 18 | -66.86 | 9.52 | -57.34 | 77.5 |
| 6937.50 | H | - | - | -67.83 | 11.03 | -56.80 | 77.0 |

Table 7-37. Radiated Spurious Data with WCP (Band 30 – High Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 183 of 205 | |

OPERATING FREQUENCY: 2506.00 MHz
 CHANNEL: 39750
 MEASURED OUTPUT POWER: 24.95 dBm = 0.313 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 49.95 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 5012.00 | H | 134 | 185 | -64.60 | 10.93 | -53.67 | 78.6 |
| 7518.00 | H | - | - | -57.88 | 11.06 | -46.81 | 71.8 |

Table 7-38. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 24.33 dBm = 0.271 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 49.33 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 5186.00 | H | 100 | 200 | -63.17 | 10.75 | -52.42 | 76.8 |
| 7779.00 | H | - | - | -58.00 | 11.40 | -46.60 | 70.9 |
| 10372.00 | H | - | - | -55.88 | 12.59 | -43.29 | 67.6 |

Table 7-39. Radiated Spurious Data (Band 41 – Mid Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 184 of 205 | |

OPERATING FREQUENCY: 2680.00 MHz
 CHANNEL: 41490
 MEASURED OUTPUT POWER: 25.16 dBm = 0.328 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 50.16 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 5360.00 | H | 111 | 128 | -61.60 | 10.75 | -50.85 | 76.0 |
| 8040.00 | H | - | - | -56.76 | 11.15 | -45.61 | 70.8 |
| 10720.00 | H | - | - | -55.38 | 12.80 | -42.58 | 67.7 |

Table 7-40. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY: 2680.00 MHz
 CHANNEL: 41490
 MEASURED OUTPUT POWER: 25.00 dBm = 0.316 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 20.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 50.00 dBc

| 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] | [dBc] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------|
| 5360.00 | H | 111 | 128 | -62.06 | 10.75 | -51.31 | 76.3 |
| 8040.00 | H | - | - | -57.85 | 11.40 | -46.45 | 71.5 |

Table 7-41. Radiated Spurious Data with WCP (Band 41 – High Channel)

| | | | | |
|---|---|---|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 185 of 205 | |

7.9 Uplink Carrier Aggregation Radiated Measurements

\$2.1053, \$27.53(m)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – 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. No. of sweep points $\geq 2 \times$ span / RBW
4. Detector = RMS
5. Trace mode = Max Hold
6. The trace was allowed to stabilize

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 186 of 205 | |

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

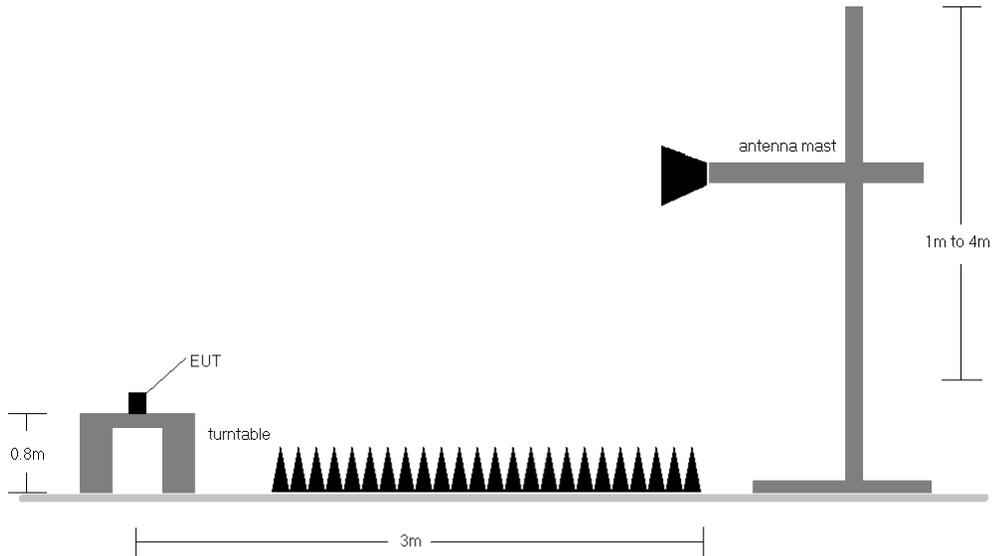
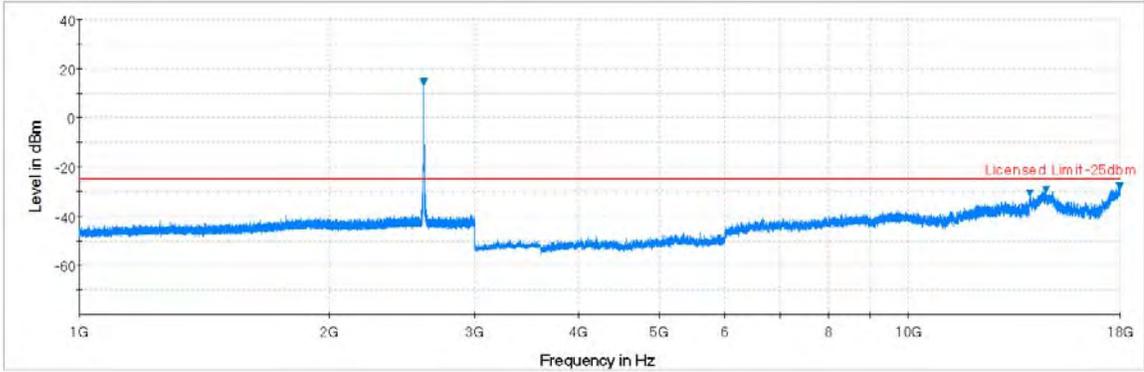


Figure 7-9. Test Instrument & Measurement Setup

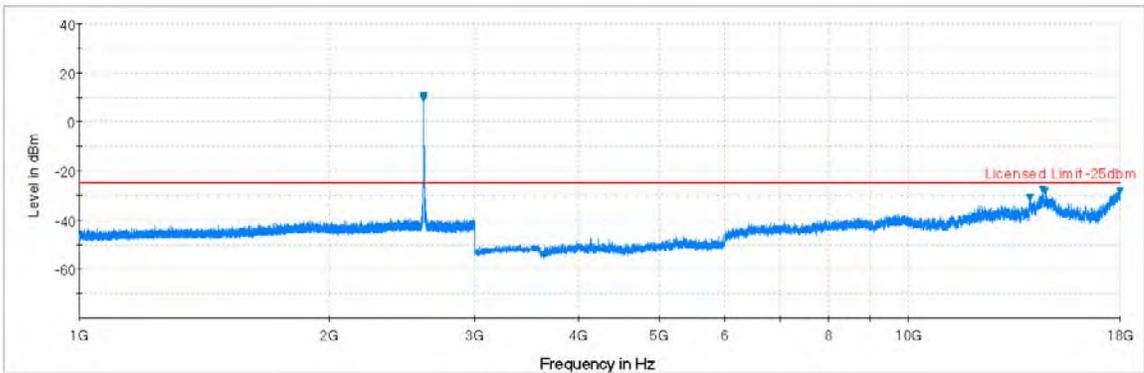
Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) 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.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

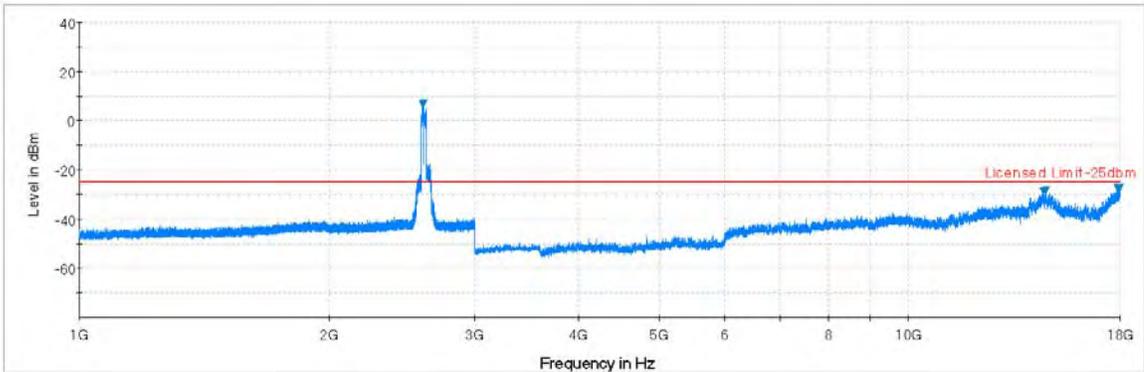
| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 187 of 205 | |



Plot 7-270. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0, Ant. Pol. H)

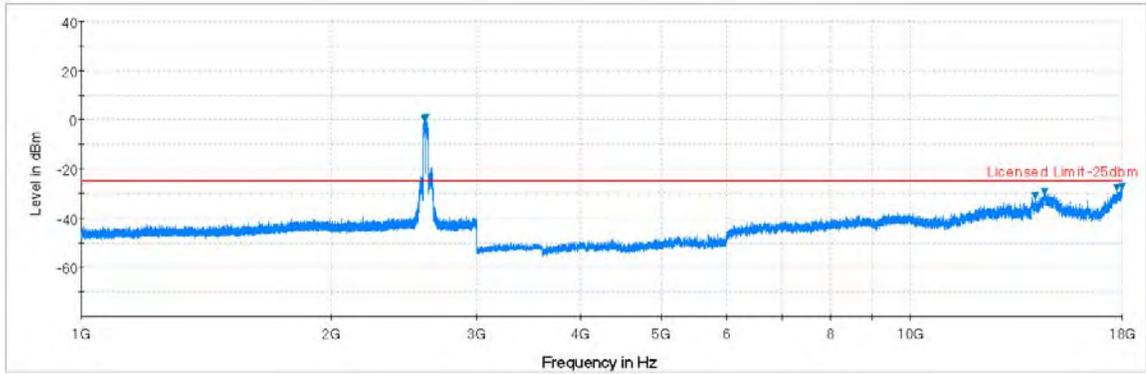


Plot 7-271. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0, Ant. Pol. V)



Plot 7-272. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0, Ant. Pol. H)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 188 of 205 | |



Plot 7-273. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0, Ant. Pol. V)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 189 of 205 | |

7.10 Frequency Stability / Temperature Variation

\$2.1055 \$22.355 \$24.235 \$27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. 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, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24 and Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-D-2010

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: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 190 of 205 | |

Band 12/17 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY: 707,500,000 Hz
 CHANNEL: 23790
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 707,499,909 | -91 | -0.0000129 |
| 100 % | | - 30 | 707,500,371 | 371 | 0.0000524 |
| 100 % | | - 20 | 707,500,003 | 3 | 0.0000004 |
| 100 % | | - 10 | 707,500,047 | 47 | 0.0000066 |
| 100 % | | 0 | 707,500,110 | 110 | 0.0000155 |
| 100 % | | + 10 | 707,499,917 | -83 | -0.0000117 |
| 100 % | | + 20 | 707,500,306 | 306 | 0.0000433 |
| 100 % | | + 30 | 707,500,067 | 67 | 0.0000095 |
| 100 % | | + 40 | 707,499,973 | -27 | -0.0000038 |
| 100 % | | + 50 | 707,499,810 | -190 | -0.0000269 |
| BATT. ENDPOINT | 3.45 | + 20 | 707,500,199 | 199 | 0.0000281 |

Table 7-42. Frequency Stability Data (Band 12/17)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 191 of 205 | |

Band 12/17 Frequency Stability Measurements
§2.1055 §27.54

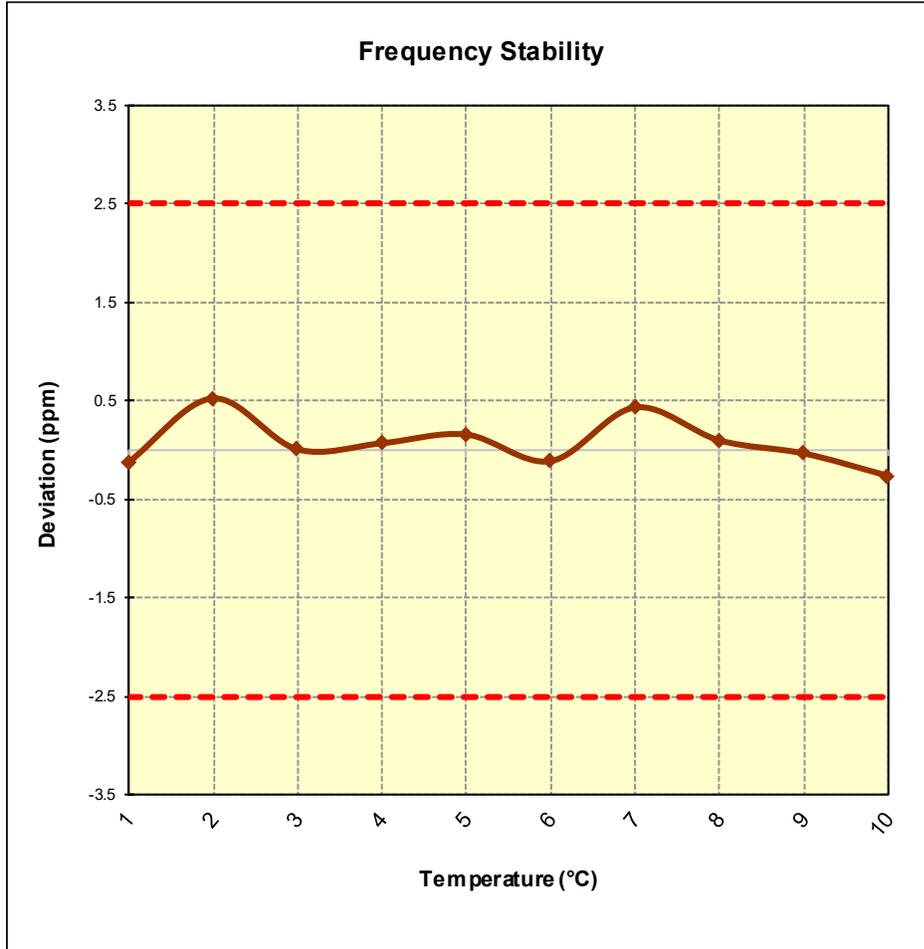


Figure 7-10. Frequency Stability Graph (Band 12/17)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 192 of 205 | |

Band 13 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY: 782,000,000 Hz
 CHANNEL: 23230
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 782,000,001 | 1 | 0.0000001 |
| 100 % | | - 30 | 781,999,598 | -402 | -0.0000514 |
| 100 % | | - 20 | 781,999,789 | -211 | -0.0000270 |
| 100 % | | - 10 | 781,999,862 | -138 | -0.0000176 |
| 100 % | | 0 | 782,000,050 | 50 | 0.0000064 |
| 100 % | | + 10 | 781,999,950 | -50 | -0.0000064 |
| 100 % | | + 20 | 782,000,061 | 61 | 0.0000078 |
| 100 % | | + 30 | 782,000,057 | 57 | 0.0000073 |
| 100 % | | + 40 | 782,000,236 | 236 | 0.0000302 |
| 100 % | | + 50 | 781,999,959 | -41 | -0.0000052 |
| BATT. ENDPOINT | 3.45 | + 20 | 781,999,922 | -78 | -0.0000100 |

Table 7-43. Frequency Stability Data (Band 13)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 193 of 205 | |

Band 13 Frequency Stability Measurements
§2.1055 §27.54

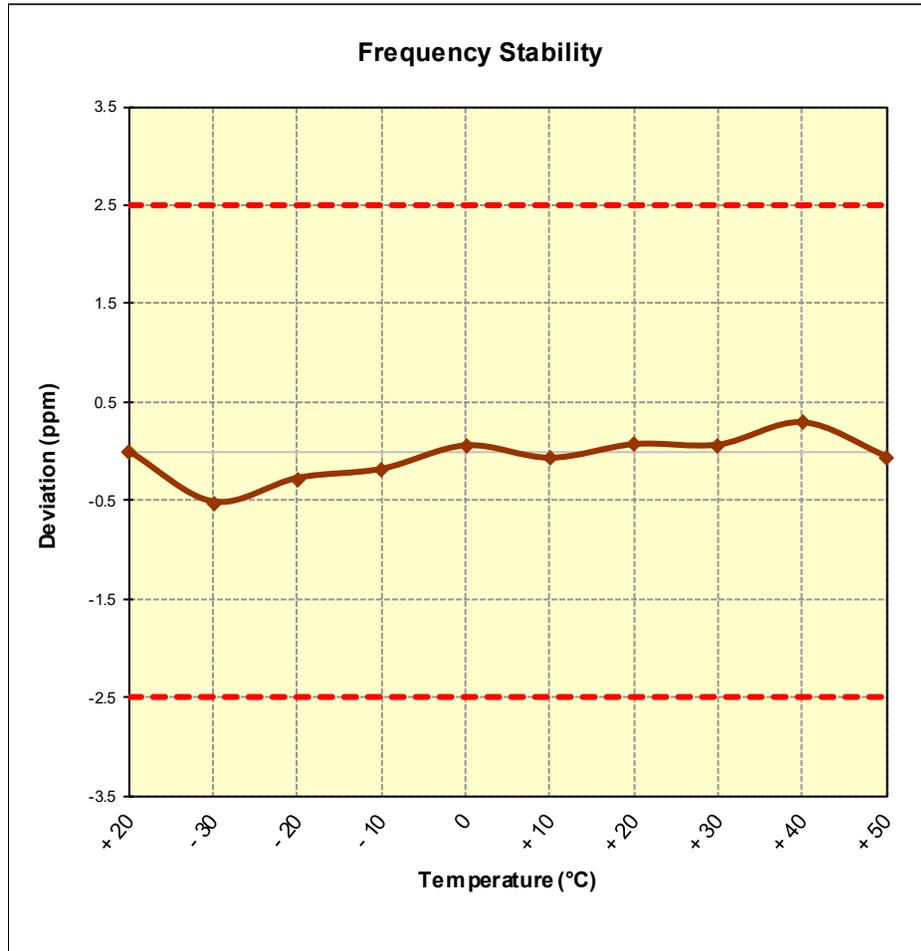


Figure 7-11. Frequency Stability Graph (Band 13)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 194 of 205 | |

Band 5/26 Frequency Stability Measurements

§2.1055 §22.355

OPERATING FREQUENCY: 831,500,000 Hz
 CHANNEL: 26865
 REFERENCE VOLTAGE: 3.85 VDC
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 831,499,929 | -71 | -0.0000085 |
| 100 % | | - 30 | 831,499,837 | -163 | -0.0000196 |
| 100 % | | - 20 | 831,499,623 | -377 | -0.0000453 |
| 100 % | | - 10 | 831,499,911 | -89 | -0.0000107 |
| 100 % | | 0 | 831,500,032 | 32 | 0.0000038 |
| 100 % | | + 10 | 831,499,819 | -181 | -0.0000218 |
| 100 % | | + 20 | 831,499,969 | -31 | -0.0000037 |
| 100 % | | + 30 | 831,500,138 | 138 | 0.0000166 |
| 100 % | | + 40 | 831,499,626 | -374 | -0.0000450 |
| 100 % | | + 50 | 831,500,028 | 28 | 0.0000034 |
| BATT. ENDPOINT | 3.45 | + 20 | 831,500,075 | 75 | 0.0000090 |

Table 7-44. Frequency Stability Data (Band 5/26)

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 195 of 205 | |

Band 5/26 Frequency Stability Measurements
§2.1055 §22.355

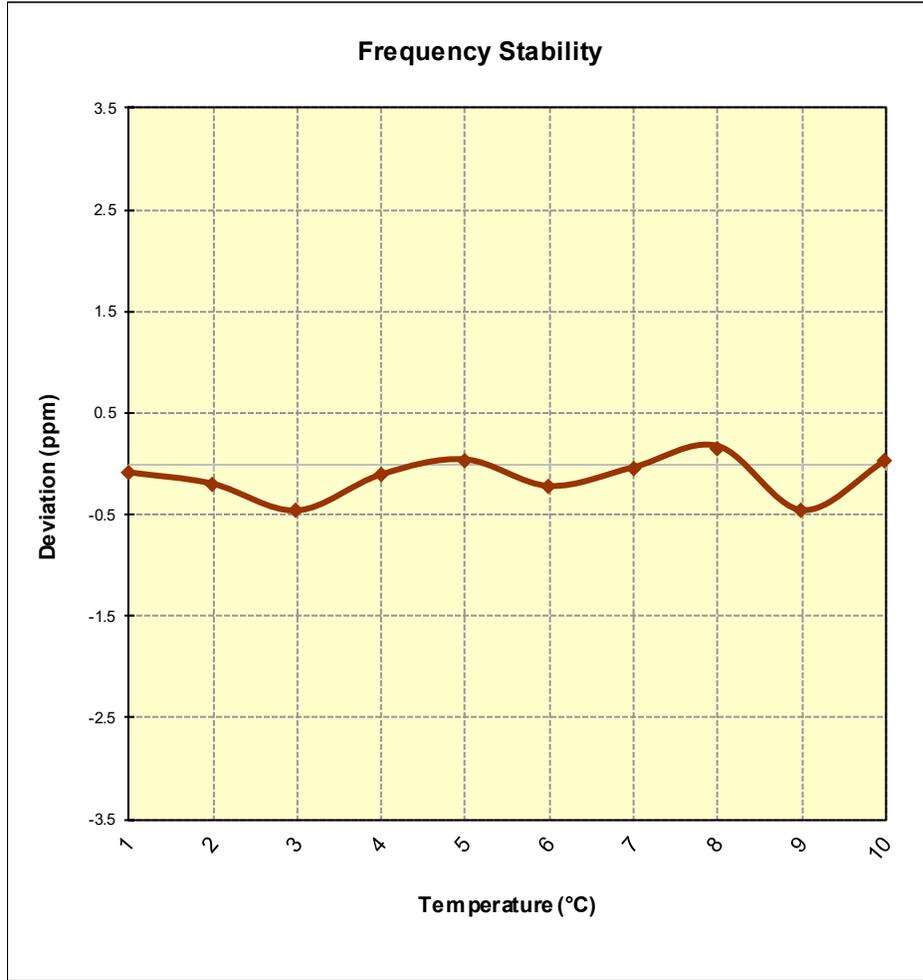


Figure 7-12. Frequency Stability Graph (Band 5/26)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 196 of 205 | |

Band 4/66 Frequency Stability Measurements
§2.1055 §§27.54

OPERATING FREQUENCY: 1,745,000,000 Hz
 CHANNEL: 132322
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 1,745,000,322 | 322 | 0.0000185 |
| 100 % | | - 30 | 1,745,000,058 | 58 | 0.0000033 |
| 100 % | | - 20 | 1,745,000,173 | 173 | 0.0000099 |
| 100 % | | - 10 | 1,745,000,022 | 22 | 0.0000013 |
| 100 % | | 0 | 1,745,000,106 | 106 | 0.0000061 |
| 100 % | | + 10 | 1,744,999,995 | -5 | -0.0000003 |
| 100 % | | + 20 | 1,744,999,728 | -272 | -0.0000156 |
| 100 % | | + 30 | 1,744,999,878 | -122 | -0.0000070 |
| 100 % | | + 40 | 1,744,999,911 | -89 | -0.0000051 |
| 100 % | | + 50 | 1,744,999,980 | -20 | -0.0000011 |
| BATT. ENDPOINT | 3.45 | + 20 | 1,744,999,814 | -186 | -0.0000107 |

Table 7-45. Frequency Stability Data (Band 4/66)

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: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 197 of 205 | |

Band 4/66 Frequency Stability Measurements
§2.1055 §§27.54

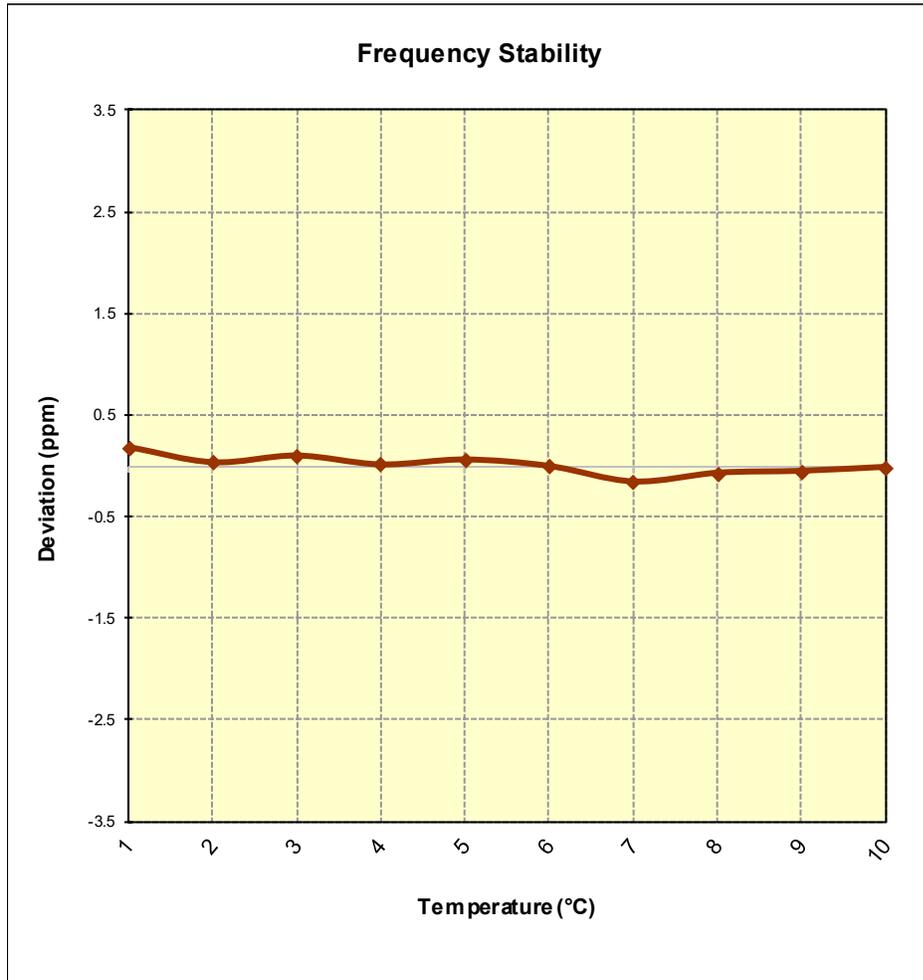


Figure 7-13. Frequency Stability Graph (Band 4/66)

| | | | | |
|---|--|--|---------|---------------------------------|
| FCC ID: A3LSMG950U | PCTEST ENGINEERING LABORATORY, INC. | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | SAMSUNG | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | | Page 198 of 205 |

Band 2/25 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY: 1,882,500,000 Hz
 CHANNEL: 26365
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 1,882,500,173 | 173 | 0.0000092 |
| 100 % | | - 30 | 1,882,499,723 | -277 | -0.0000147 |
| 100 % | | - 20 | 1,882,500,179 | 179 | 0.0000095 |
| 100 % | | - 10 | 1,882,499,989 | -11 | -0.0000006 |
| 100 % | | 0 | 1,882,500,264 | 264 | 0.0000140 |
| 100 % | | + 10 | 1,882,499,999 | -1 | -0.0000001 |
| 100 % | | + 20 | 1,882,499,920 | -80 | -0.0000042 |
| 100 % | | + 30 | 1,882,499,818 | -182 | -0.0000097 |
| 100 % | | + 40 | 1,882,500,064 | 64 | 0.0000034 |
| 100 % | | + 50 | 1,882,499,970 | -30 | -0.0000016 |
| BATT. ENDPOINT | 3.45 | + 20 | 1,882,499,965 | -35 | -0.0000019 |

Table 7-46. Frequency Stability Data (Band 2/25)

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: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 199 of 205 | |

Band 2/25 Frequency Stability Measurements
§2.1055 §24.235

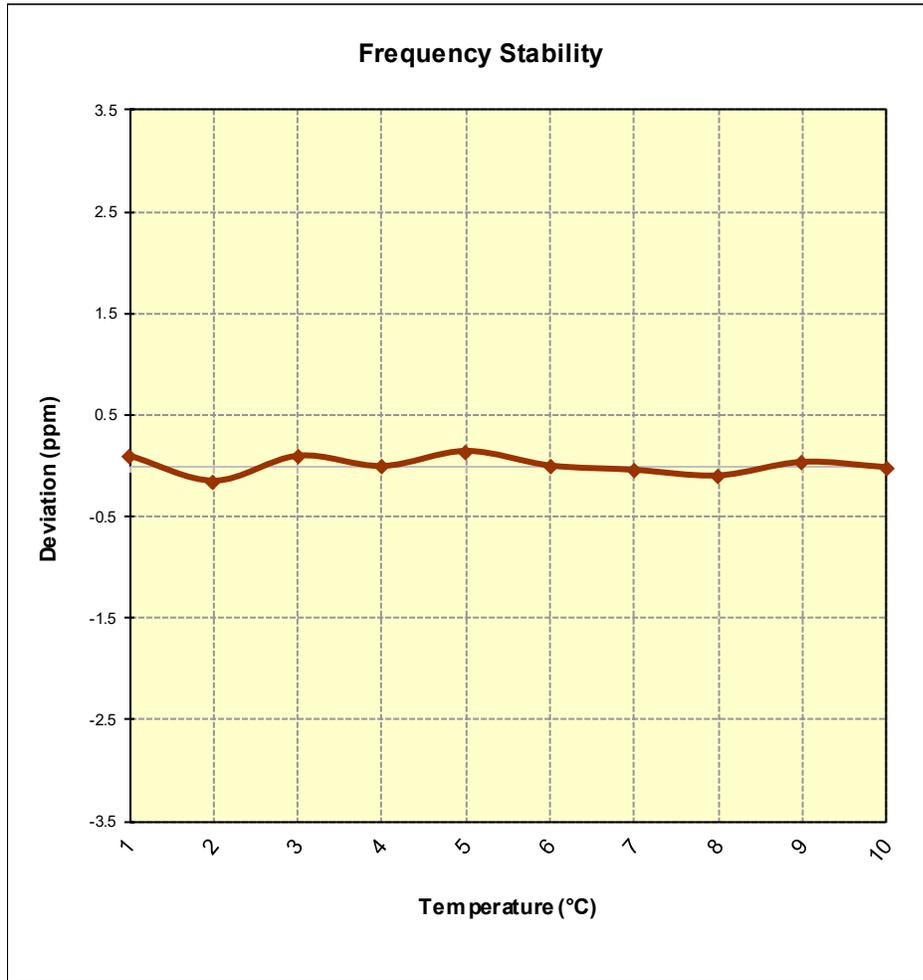


Figure 7-14. Frequency Stability Graph (Band 2/25)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 200 of 205 | |

Band 30 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY: 2,310,000,000 Hz
 CHANNEL: 27710
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 2,310,000,196 | 196 | 0.0000085 |
| 100 % | | - 30 | 2,309,999,982 | -18 | -0.0000008 |
| 100 % | | - 20 | 2,310,000,002 | 2 | 0.0000001 |
| 100 % | | - 10 | 2,310,000,174 | 174 | 0.0000075 |
| 100 % | | 0 | 2,309,999,808 | -192 | -0.0000083 |
| 100 % | | + 10 | 2,310,000,114 | 114 | 0.0000049 |
| 100 % | | + 20 | 2,310,000,012 | 12 | 0.0000005 |
| 100 % | | + 30 | 2,310,000,038 | 38 | 0.0000016 |
| 100 % | | + 40 | 2,310,000,088 | 88 | 0.0000038 |
| 100 % | | + 50 | 2,310,000,077 | 77 | 0.0000033 |
| BATT. ENDPOINT | 3.45 | + 20 | 2,309,999,840 | -160 | -0.0000069 |

Table 7-47. Frequency Stability Data (Band 30)

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: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 201 of 205 | |

Band 30 Frequency Stability Measurements
§2.1055 §24.235

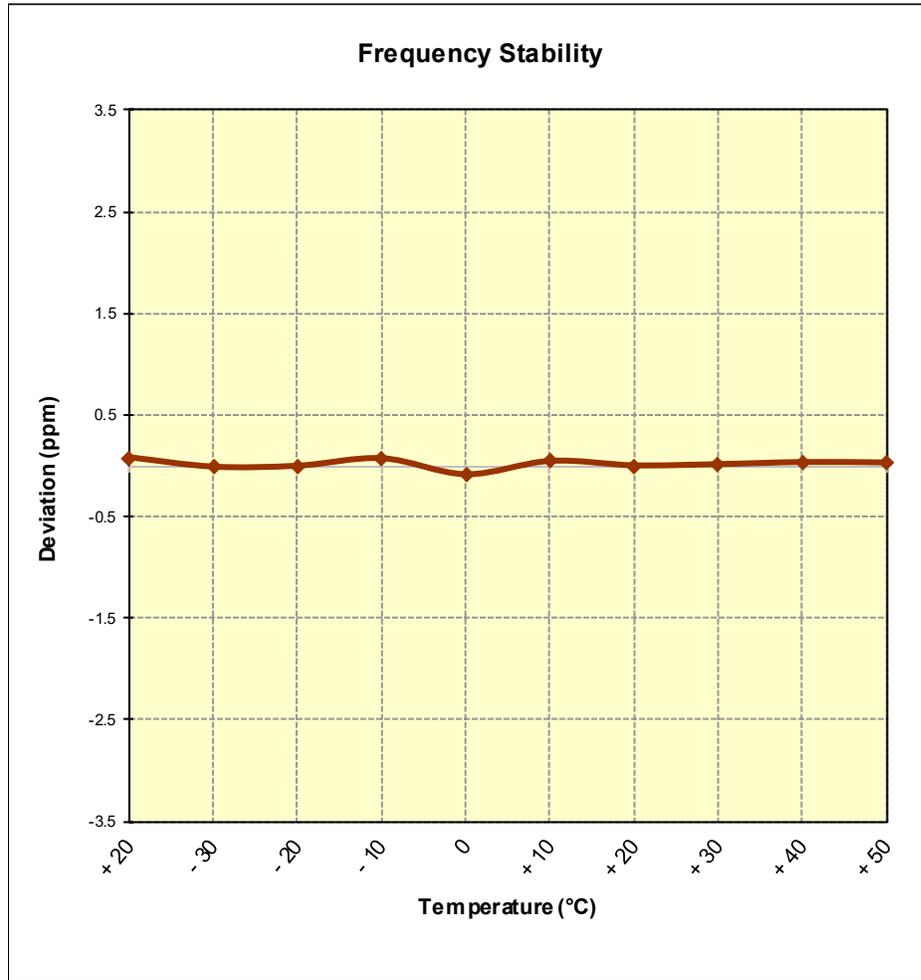


Figure 7-15. Frequency Stability Graph (Band 30)

| | | | | |
|---|---|--|---|---------------------------------|
| FCC ID: A3LSMG950U |  | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 202 of 205 | |

Band 41 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 3.85 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | 3.85 | + 20 (Ref) | 2,592,999,830 | -170 | -0.0000066 |
| 100 % | | - 30 | 2,593,000,105 | 105 | 0.0000040 |
| 100 % | | - 20 | 2,592,999,844 | -156 | -0.0000060 |
| 100 % | | - 10 | 2,592,999,931 | -69 | -0.0000027 |
| 100 % | | 0 | 2,592,999,812 | -188 | -0.0000073 |
| 100 % | | + 10 | 2,593,000,090 | 90 | 0.0000035 |
| 100 % | | + 20 | 2,592,999,724 | -276 | -0.0000106 |
| 100 % | | + 30 | 2,593,000,043 | 43 | 0.0000017 |
| 100 % | | + 40 | 2,592,999,974 | -26 | -0.0000010 |
| 100 % | | + 50 | 2,592,999,889 | -111 | -0.0000043 |
| BATT. ENDPOINT | 3.45 | + 20 | 2,593,000,077 | 77 | 0.0000030 |

Table 7-48. Frequency Stability Data (Band 41)

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: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 203 of 205 | |

Band 41 Frequency Stability Measurements
§2.1055 §27.54

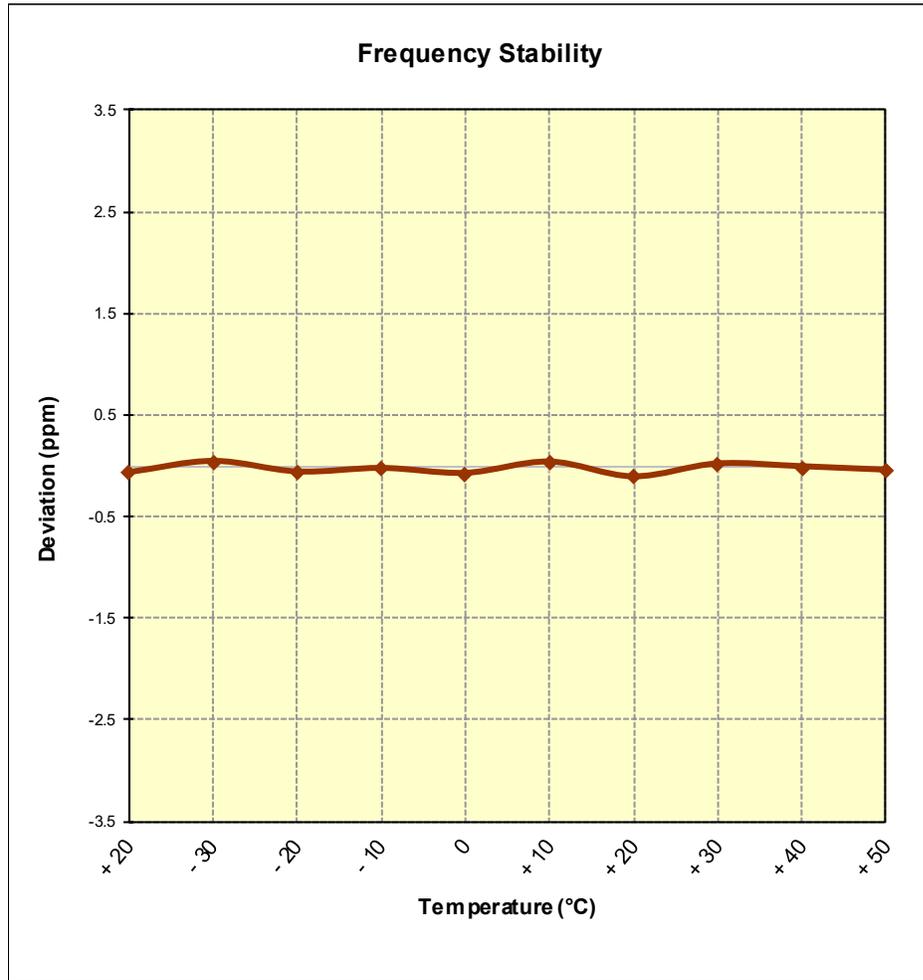


Figure 7-16. Frequency Stability Graph (Band 41)

| | | | | |
|--|--|--|-----------------|--|
| FCC ID: A3LSMG950U | | FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 204 of 205 | |

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG950U** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

| | | | | |
|--|--|--------------------------------------|---|--|
| FCC ID: A3LSMG950U |  FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Quality Manager |
| Test Report S/N: 1M1701030004-03.A3L | Test Dates: 12/23/2016-1/31/2017 | EUT Type: Portable Handset | Page 205 of 205 | |