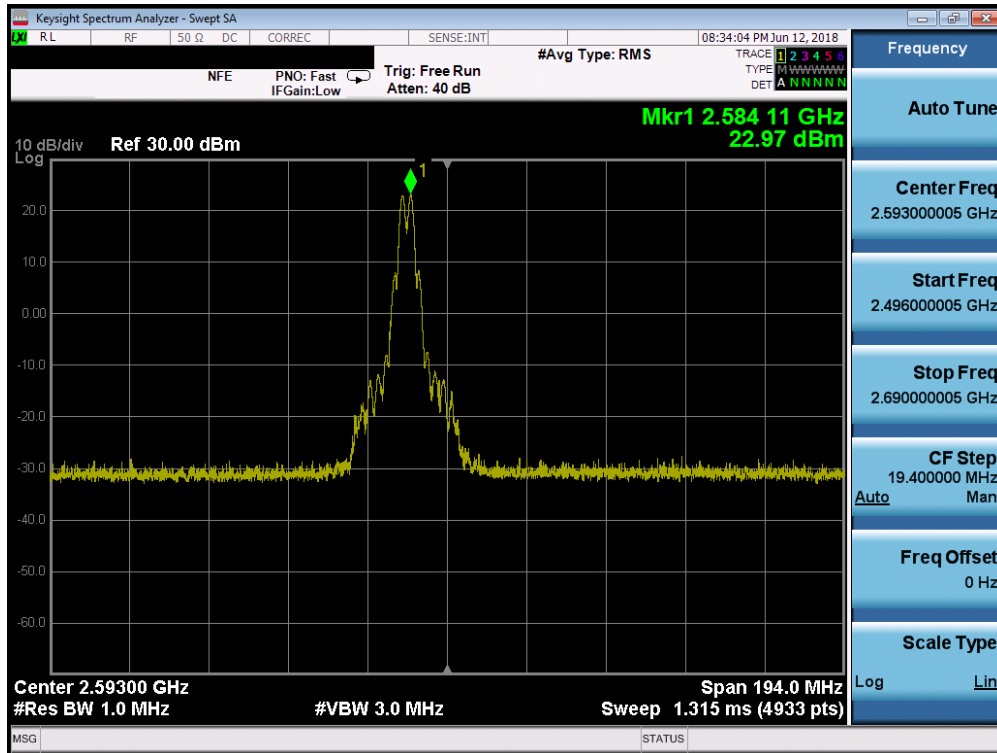
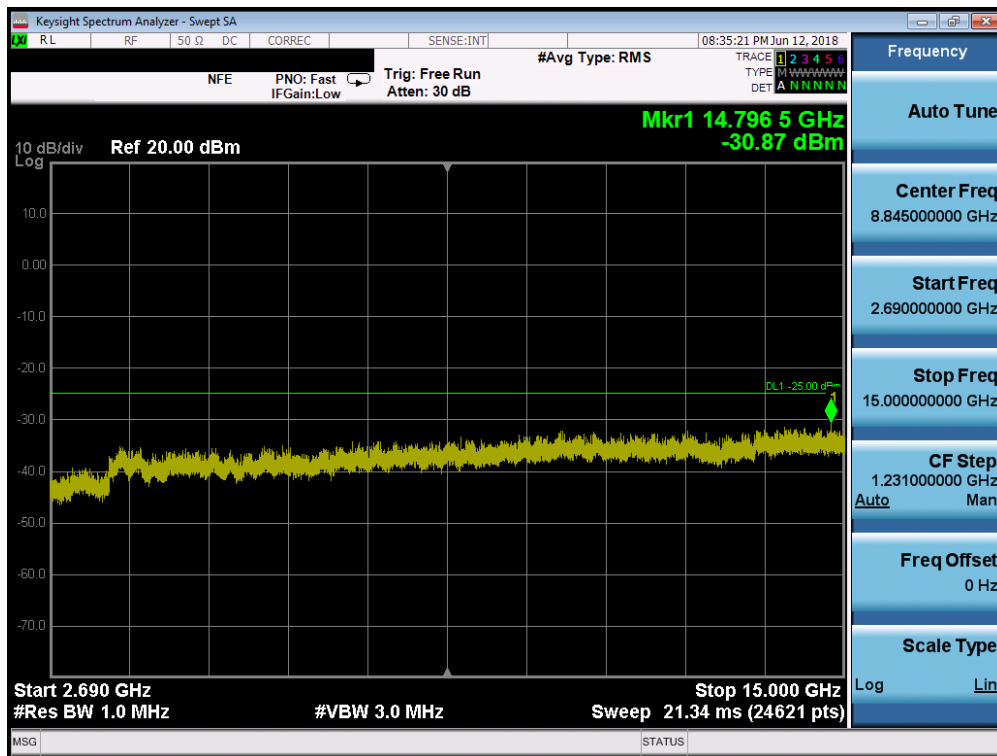


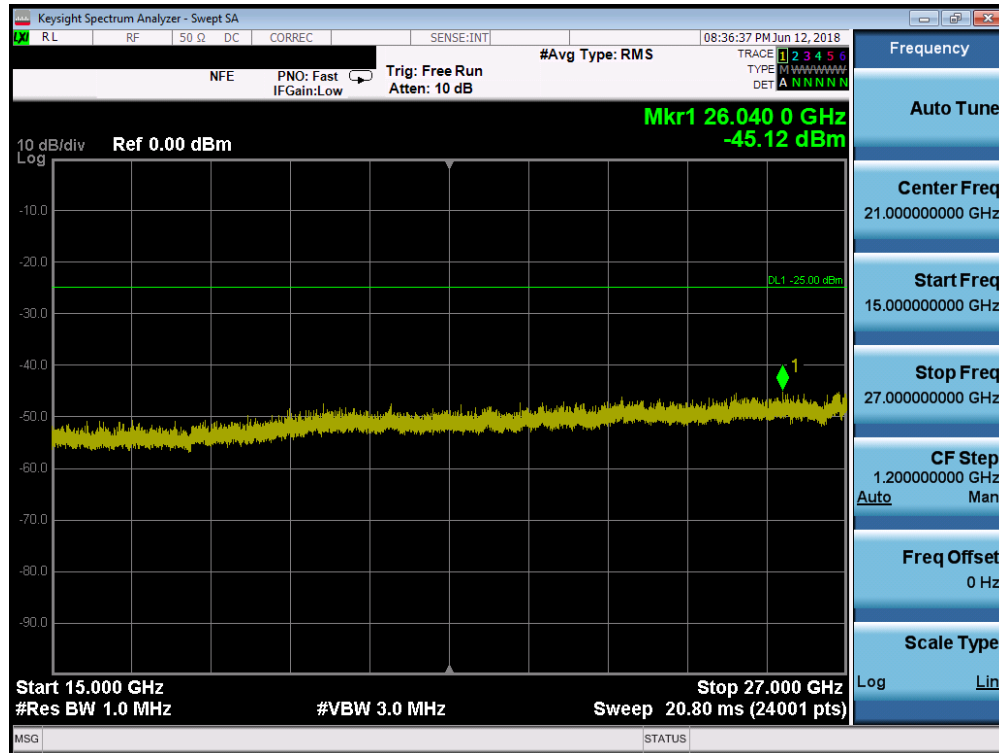


Plot 7-352. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid hannel)

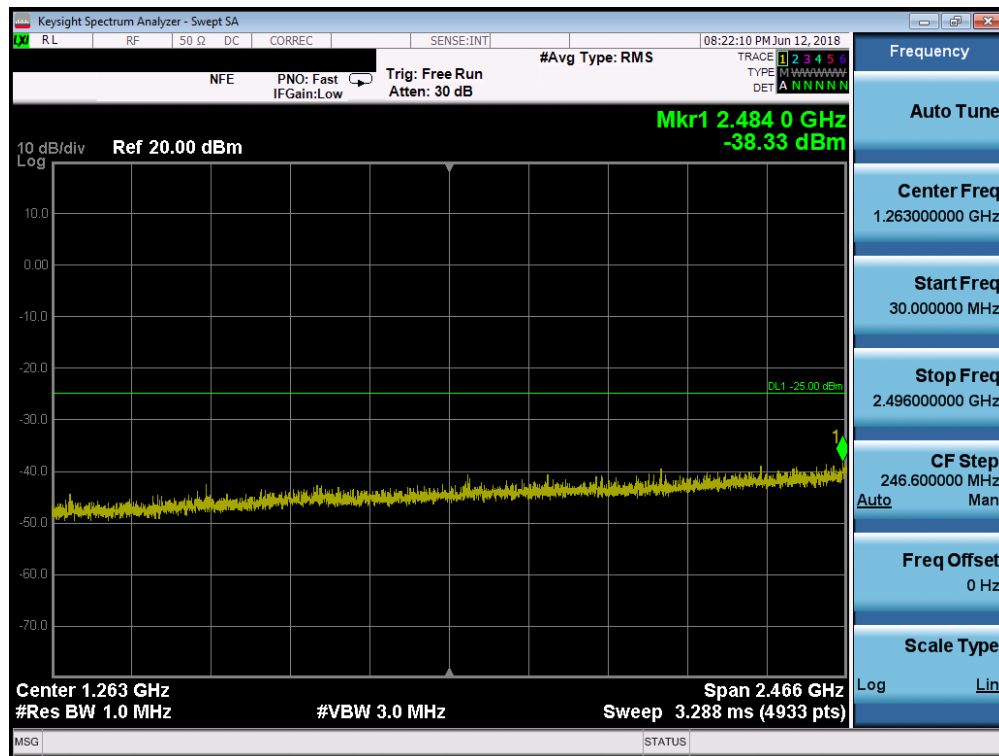


Plot 7-353. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |                | Page 204 of 261                 |

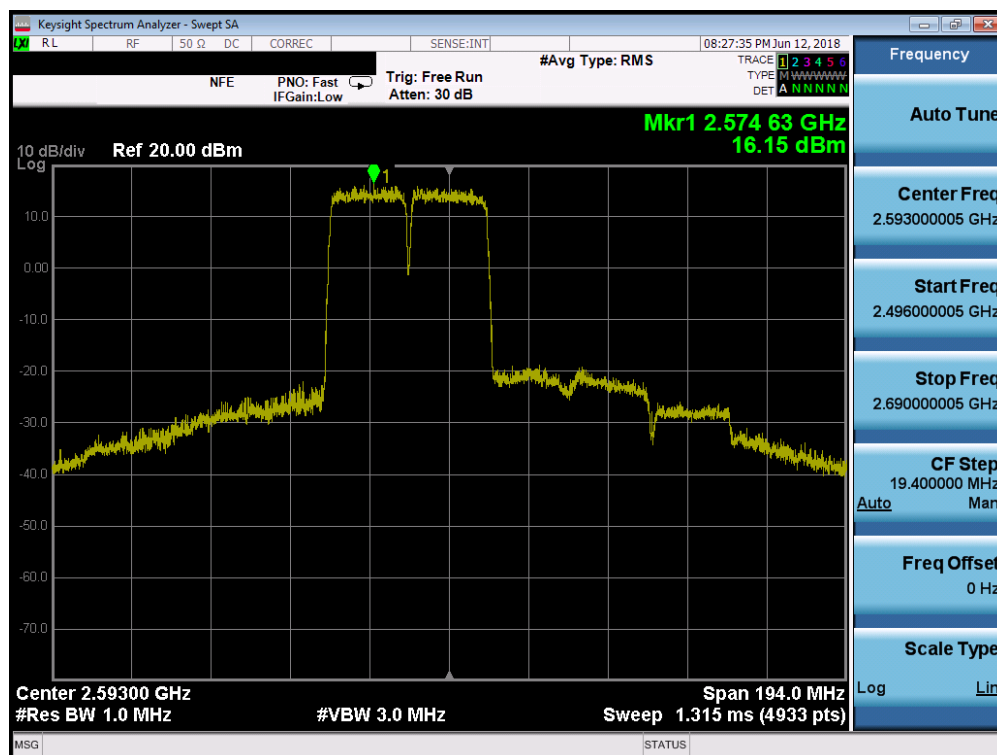


Plot 7-354. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – Mid Channel)

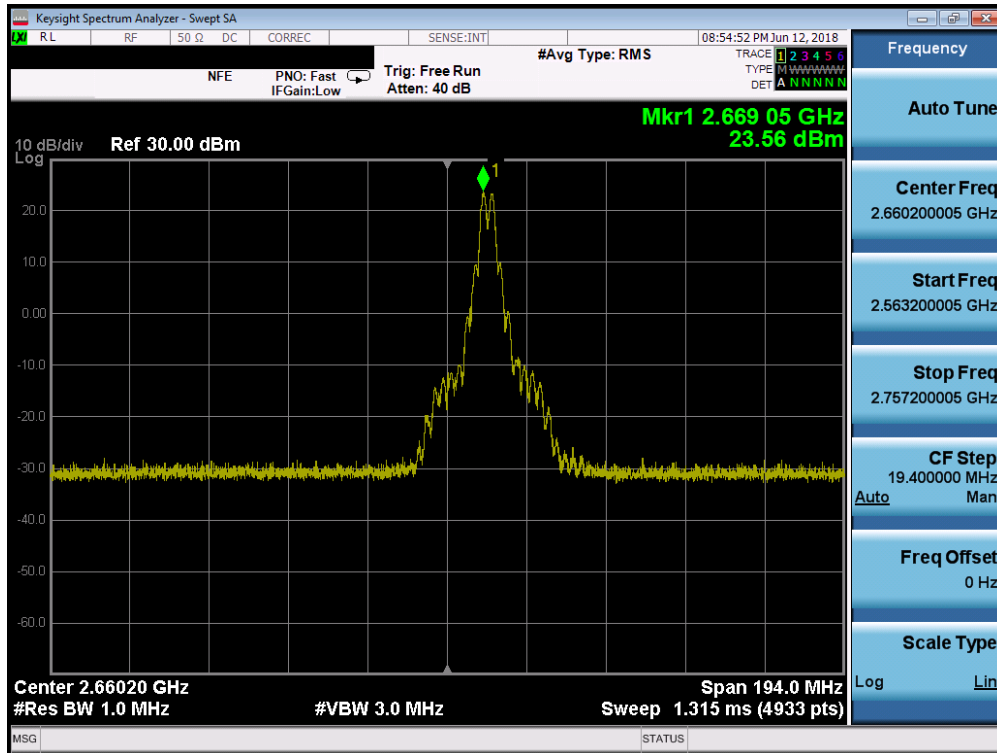


Plot 7-355. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – Mid Channel)

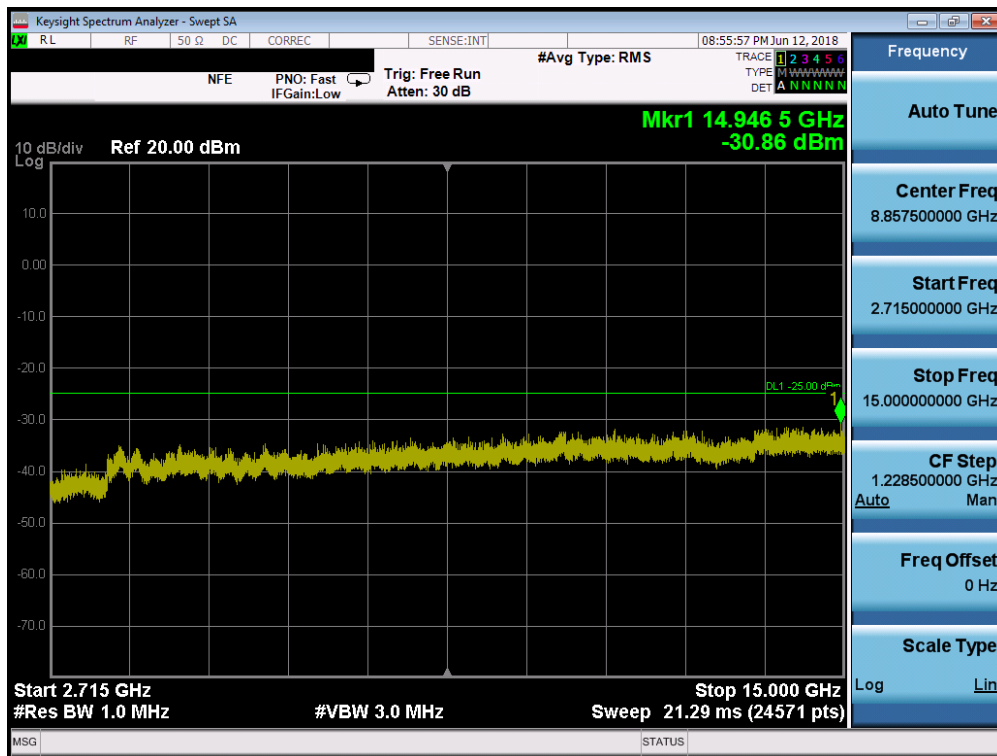
|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 205 of 261                 |





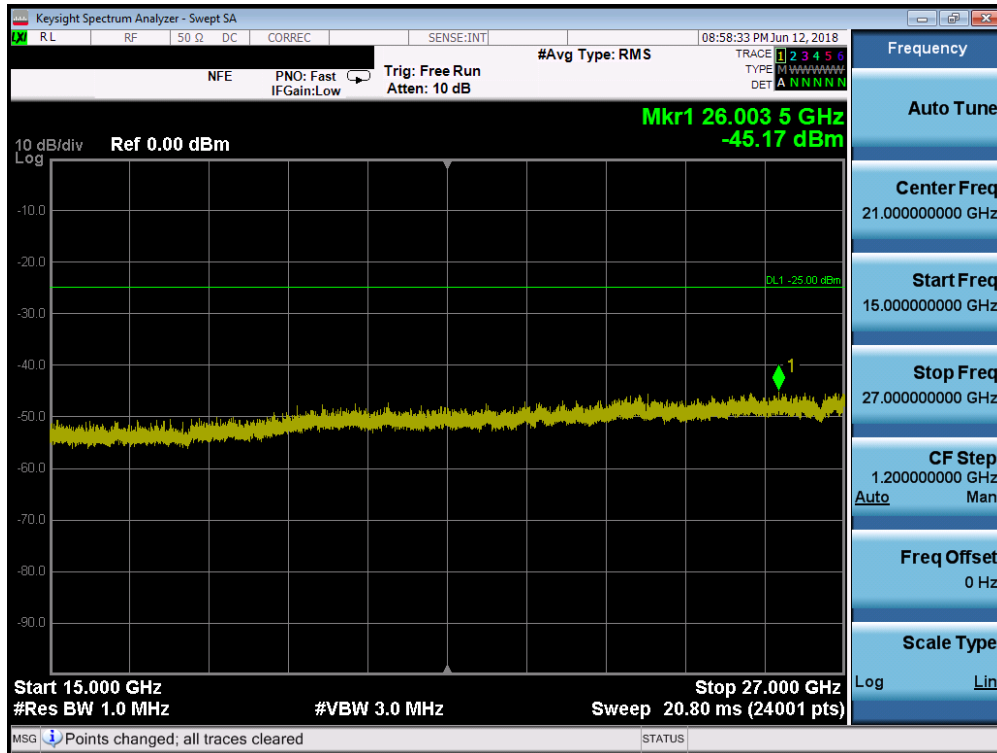


Plot 7-360. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High hannel)

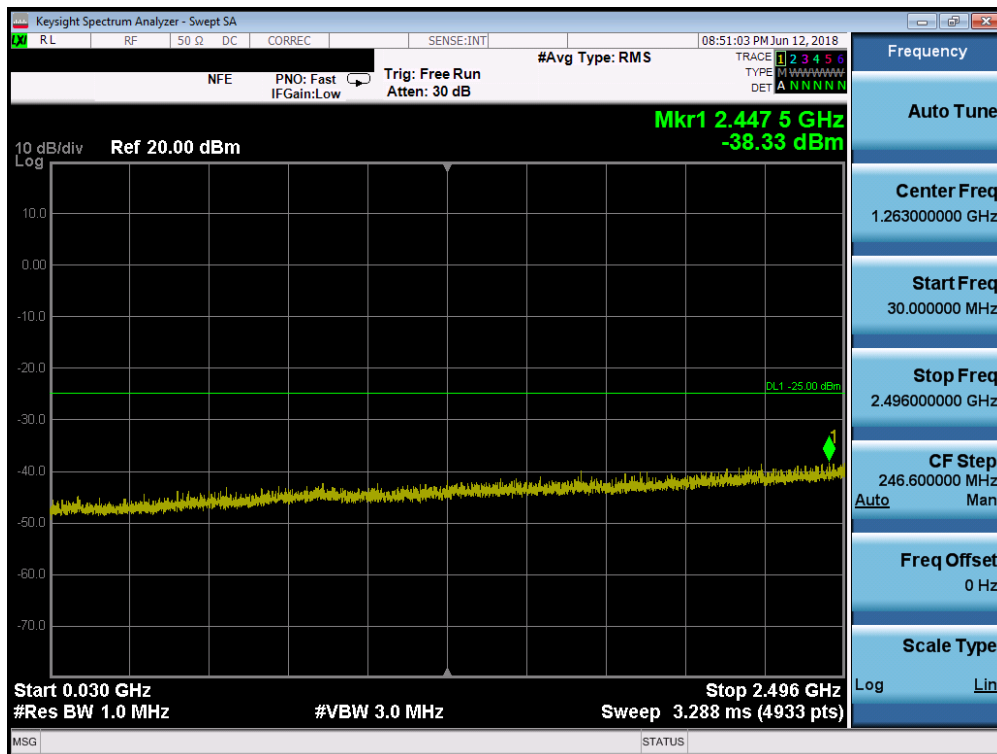


Plot 7-361. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High Channel)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018               | EUT Type:<br>Portable Handset |  | Page 208 of 261                 |

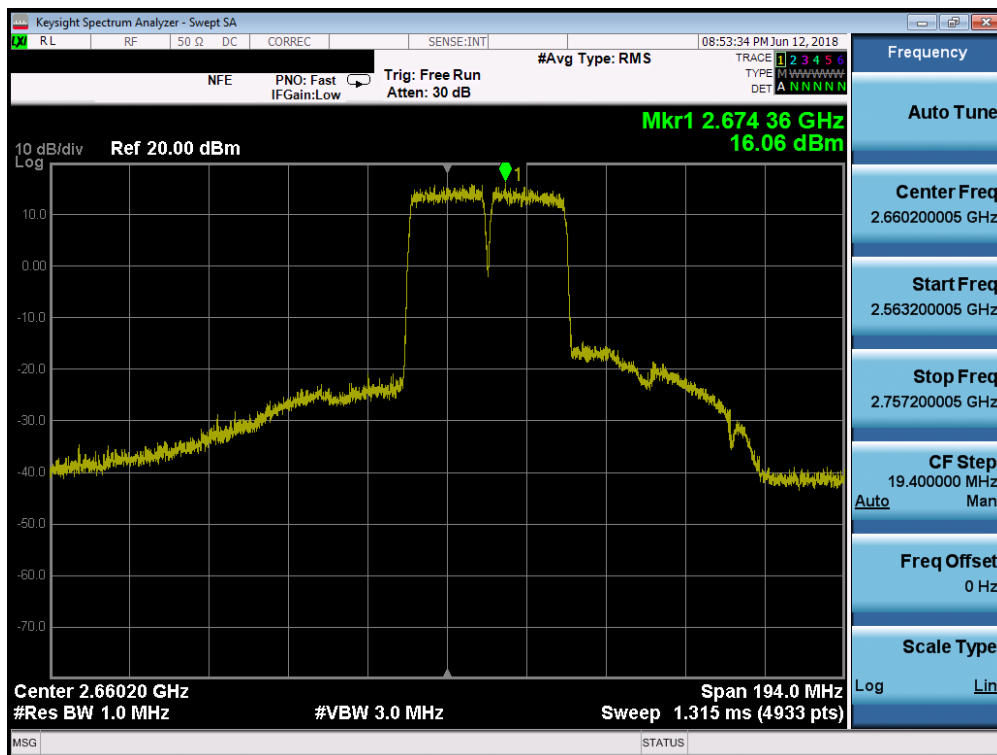


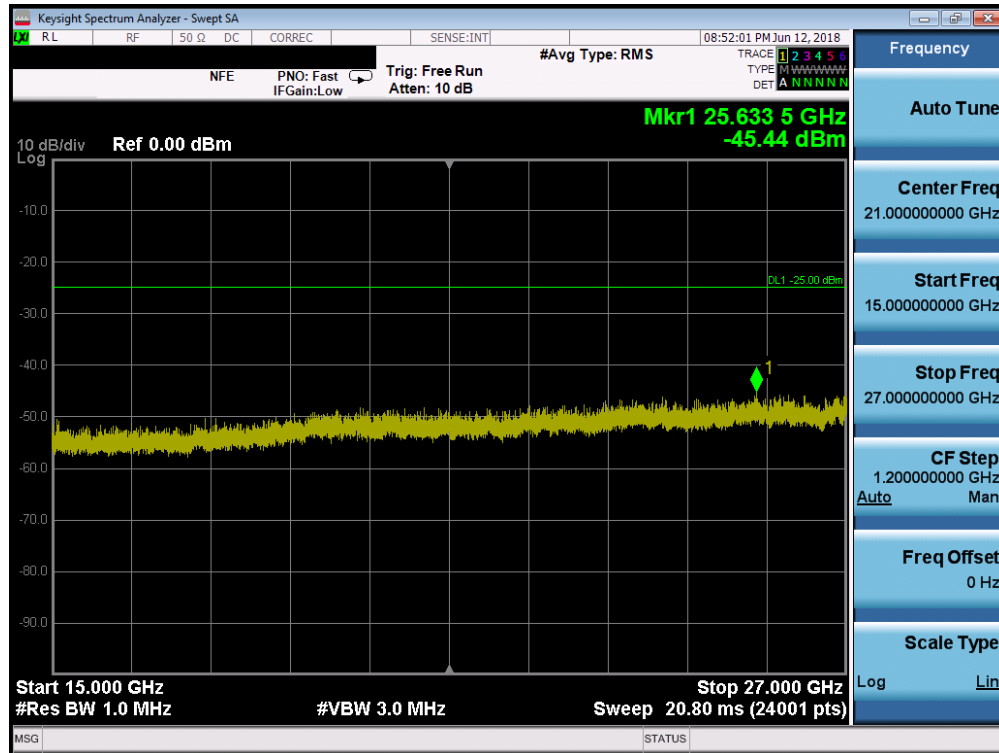
Plot 7-362. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 1/99 SCC 1/0 – High Channel)



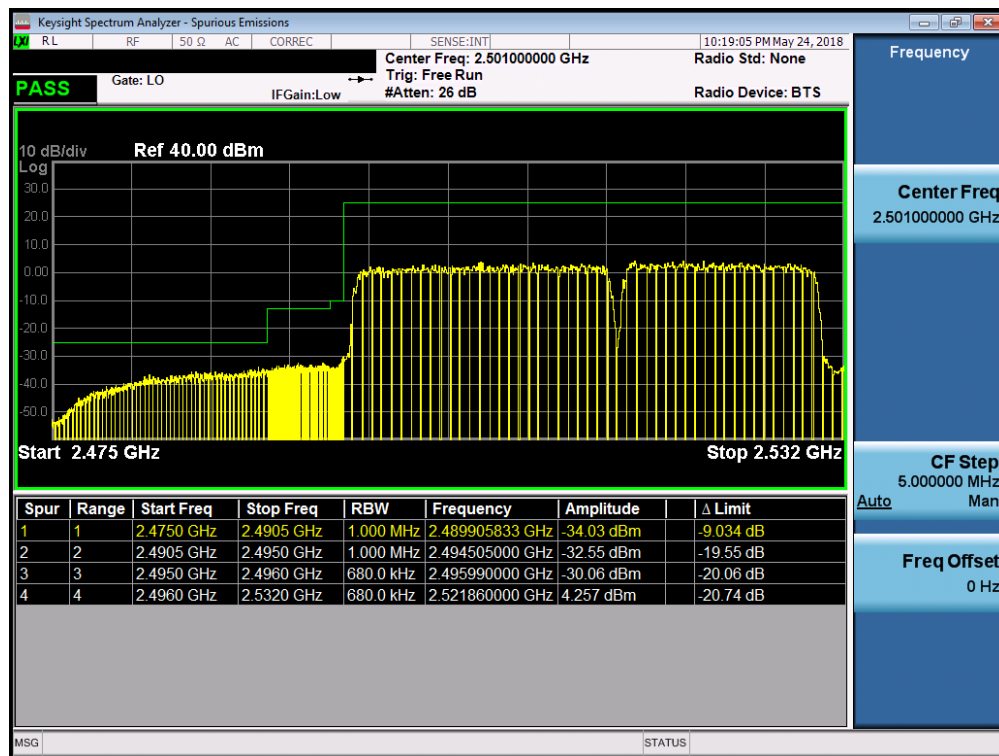
Plot 7-363. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – High Channel)

|                                         |                                              |                               |                 |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|-----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |                 | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018               | EUT Type:<br>Portable Handset | Page 209 of 261 |                                 |



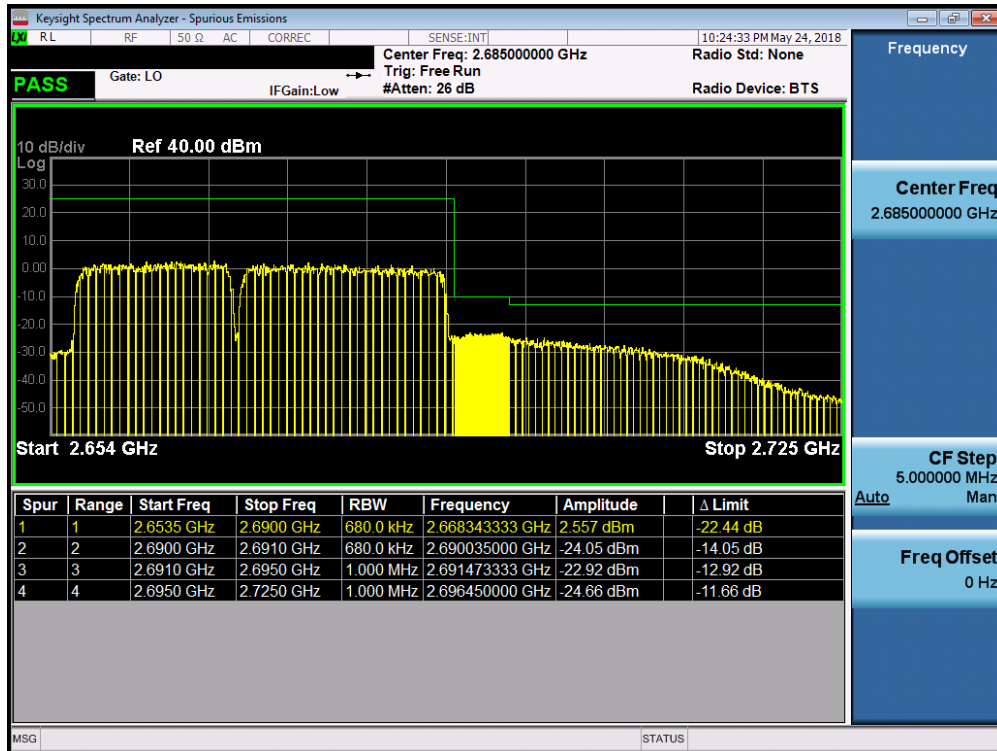


Plot 7-366. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – PCC 100/0 SCC 100/0 – High Channel)

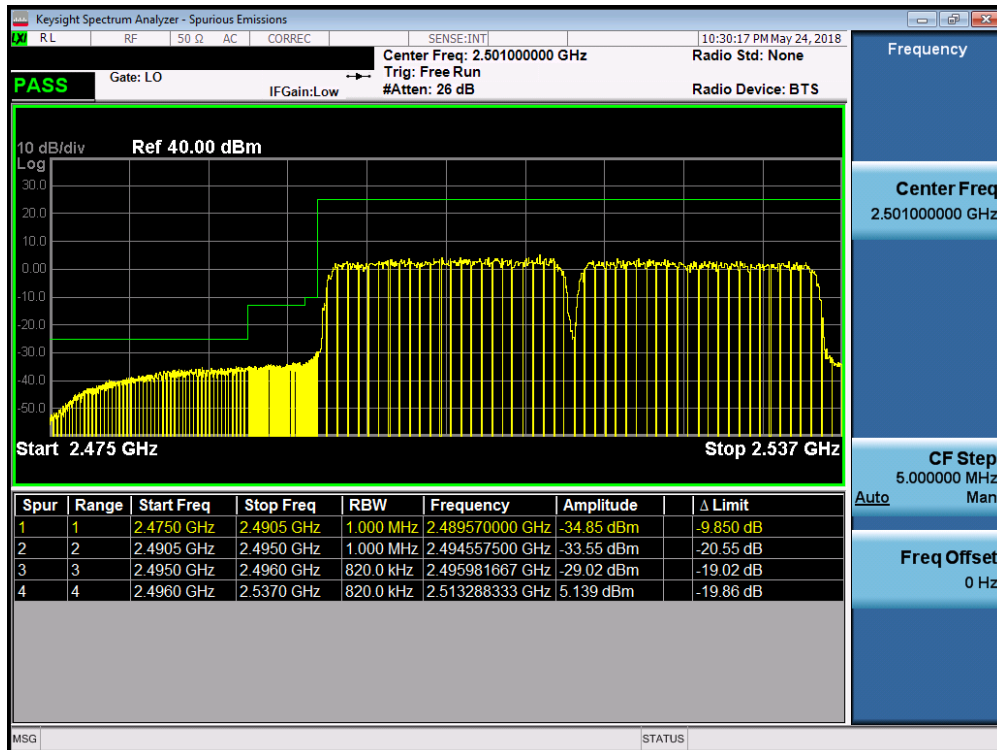


Plot 7-367. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:15 MHz – Full RB)

|                                         |                                              |                               |  |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018               | EUT Type:<br>Portable Handset |  | Page 211 of 261                 |

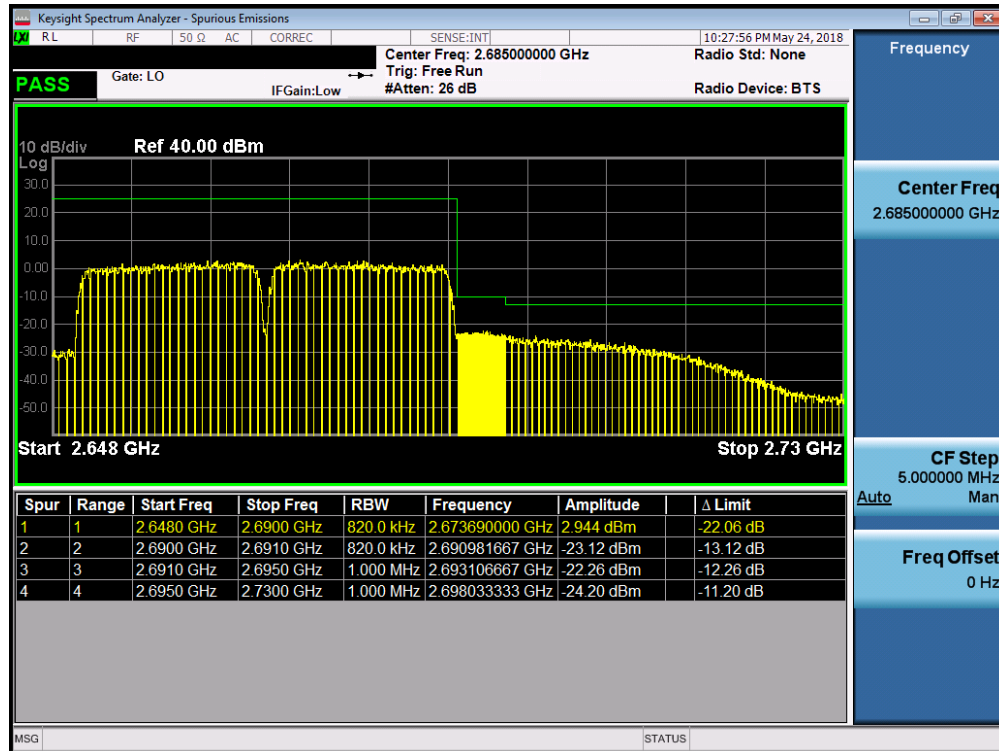


Plot 7-368. Upper ACP Plot (Band 41 QPSK – PCC:15 MHz SCC:20 MHz – Full RB)



Plot 7-369. Lower ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

|                                         |                                              |                               |                 |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|-----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |                 | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018               | EUT Type:<br>Portable Handset | Page 212 of 261 |                                 |



Plot 7-370. Upper ACP Plot (Band 41 QPSK – PCC:20 MHz SCC:20 MHz – Full RB)

|                                         |                                               |                               |  |                                 |
|-----------------------------------------|-----------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset |  | Page 213 of 261                 |

## 7.8 Radiated Power (ERP/EIRP)

### Test Overview

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

### Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

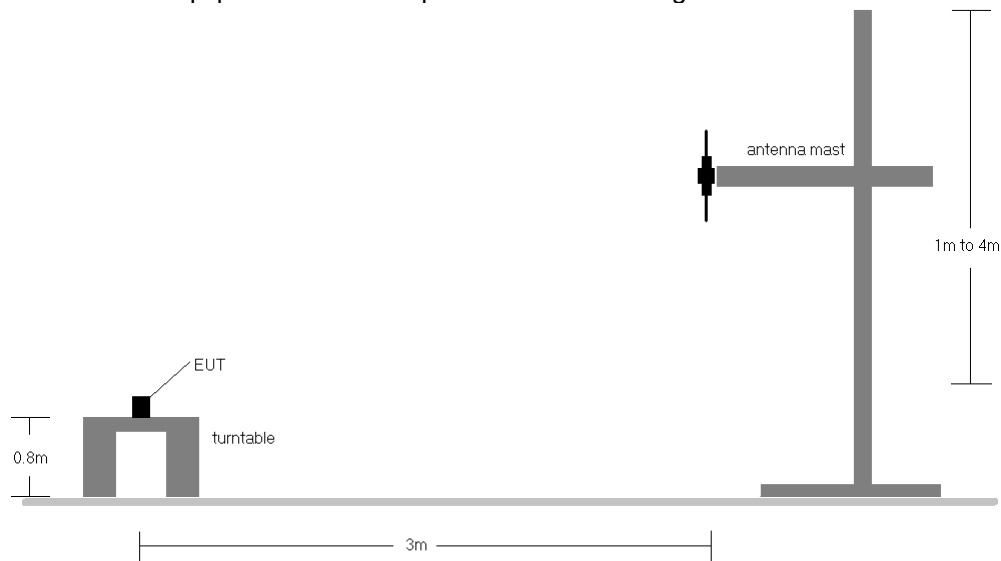
### Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW  $\geq 3 \times$  RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $\geq 2 \times$  span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

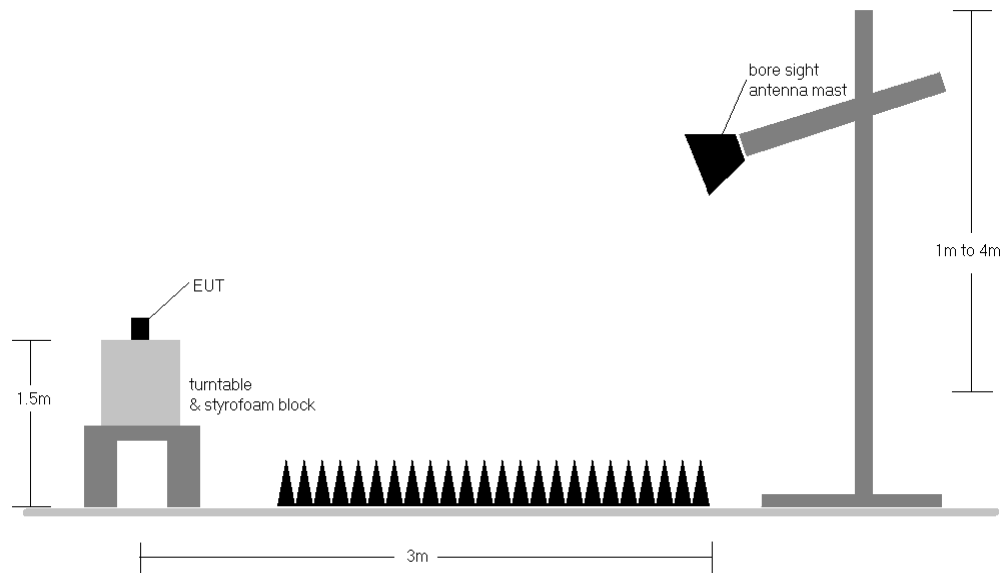
|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 214 of 261                 |

## Test Setup

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



**Figure 7-7. Radiated Test Setup <1GHz**



**Figure 7-8. 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: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 215 of 261                 |

| 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] | ERP [dBm]    | ERP [Watts] | ERP Limit [dBm] | Margin [dB] | EIRP [dBm]   | EIRP [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|-------------|-----------------|-------------|--------------|--------------|------------------|-------------|
| 699.70          | 1.4                     | QPSK   | H               | 150                 | 16                         | 1 / 5          | 17.87                  | 1.10            | 16.82        | 0.048       | 34.77           | -17.95      | 18.97        | 0.079        | 36.99            | -18.02      |
| 707.50          | 1.4                     | QPSK   | H               | 150                 | 15                         | 1 / 0          | 18.11                  | 1.13            | 17.09        | 0.051       | 34.77           | -17.68      | 19.24        | 0.084        | 36.99            | -17.75      |
| 715.30          | 1.4                     | QPSK   | H               | 150                 | 16                         | 1 / 0          | 18.17                  | 1.16            | <b>17.18</b> | 0.052       | 34.77           | -17.59      | <b>19.33</b> | 0.086        | 36.99            | -17.66      |
| 715.30          | 1.4                     | 16-QAM | H               | 150                 | 16                         | 1 / 0          | 17.42                  | 1.16            | <b>16.43</b> | 0.044       | 34.77           | -18.34      | <b>18.58</b> | 0.072        | 36.99            | -18.41      |
| 715.30          | 1.4                     | 64-QAM | H               | 150                 | 16                         | 1 / 0          | 16.49                  | 1.16            | <b>15.50</b> | 0.035       | 34.77           | -19.27      | <b>17.65</b> | 0.058        | 36.99            | -19.34      |
| 700.50          | 3                       | QPSK   | H               | 150                 | 16                         | 1 / 0          | 17.90                  | 1.10            | 16.85        | 0.048       | 34.77           | -17.92      | 19.00        | 0.079        | 36.99            | -17.99      |
| 707.50          | 3                       | QPSK   | H               | 150                 | 15                         | 1 / 0          | 18.16                  | 1.13            | 17.14        | 0.052       | 34.77           | -17.63      | 19.29        | 0.085        | 36.99            | -17.70      |
| 714.50          | 3                       | QPSK   | H               | 150                 | 13                         | 1 / 0          | 18.39                  | 1.16            | <b>17.40</b> | 0.055       | 34.77           | -17.37      | <b>19.55</b> | 0.090        | 36.99            | -17.44      |
| 714.50          | 3                       | 16-QAM | H               | 150                 | 13                         | 1 / 0          | 17.72                  | 1.16            | <b>16.73</b> | 0.047       | 34.77           | -18.04      | <b>18.88</b> | 0.077        | 36.99            | -18.11      |
| 714.50          | 3                       | 64-QAM | H               | 150                 | 13                         | 1 / 0          | 16.66                  | 1.16            | <b>15.67</b> | 0.037       | 34.77           | -19.10      | <b>17.82</b> | 0.061        | 36.99            | -19.17      |

Table 7-6. 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 [dBi] | ERP [dBm]    | ERP [Watts]  | ERP Limit [dBm] | Margin [dB] | EIRP [dBm]   | EIRP [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|-----------------|-------------|--------------|--------------|------------------|-------------|
| 701.50          | 5                       | QPSK   | H               | 150                 | 18                         | 1 / 24         | 18.31                  | 1.11            | 17.27        | 0.053        | 34.77           | -17.51      | 19.42        | 0.087        | 36.99            | -17.57      |
| 707.50          | 5                       | QPSK   | H               | 150                 | 13                         | 1 / 24         | 18.61                  | 1.13            | <b>17.59</b> | <b>0.057</b> | 34.77           | -17.18      | <b>19.74</b> | <b>0.094</b> | 36.99            | -17.25      |
| 713.50          | 5                       | QPSK   | H               | 150                 | 13                         | 1 / 0          | 18.13                  | 1.15            | 17.13        | 0.052        | 34.77           | -17.64      | 19.28        | 0.085        | 36.99            | -17.71      |
| 707.50          | 5                       | 16-QAM | H               | 150                 | 13                         | 1 / 24         | 18.00                  | 1.13            | <b>16.98</b> | 0.050        | 34.77           | -17.79      | <b>19.13</b> | 0.082        | 36.99            | -17.86      |
| 707.50          | 5                       | 64-QAM | H               | 150                 | 13                         | 1 / 24         | 17.33                  | 1.13            | <b>16.31</b> | 0.043        | 34.77           | -18.46      | <b>18.46</b> | 0.070        | 36.99            | -18.53      |
| 704.00          | 10                      | QPSK   | H               | 150                 | 15                         | 1 / 49         | 18.06                  | 1.12            | 17.03        | 0.050        | 34.77           | -17.74      | 19.18        | 0.083        | 36.99            | -17.81      |
| 707.50          | 10                      | QPSK   | H               | 150                 | 11                         | 1 / 49         | 18.24                  | 1.13            | <b>17.22</b> | 0.053        | 34.77           | -17.55      | <b>19.37</b> | 0.087        | 36.99            | -17.62      |
| 711.00          | 10                      | QPSK   | H               | 150                 | 16                         | 1 / 0          | 17.99                  | 1.14            | 16.98        | 0.050        | 34.77           | -17.79      | 19.13        | 0.082        | 36.99            | -17.86      |
| 707.50          | 10                      | 16-QAM | H               | 150                 | 11                         | 1 / 49         | 17.27                  | 1.13            | <b>16.25</b> | 0.042        | 34.77           | -18.52      | <b>18.40</b> | 0.069        | 36.99            | -18.59      |
| 707.50          | 10                      | 64-QAM | H               | 150                 | 11                         | 1 / 49         | 16.63                  | 1.13            | <b>15.61</b> | 0.036        | 34.77           | -19.16      | <b>17.76</b> | 0.060        | 36.99            | -19.23      |
| 707.50          | 5                       | QPSK   | V               | 150                 | 233                        | 1 / 24         | 18.41                  | 1.13            | 17.39        | 0.055        | 34.77           | -17.38      | 19.54        | 0.090        | 36.99            | -17.45      |
| 707.50          | 5 (WCP)                 | QPSK   | H               | 150                 | 267                        | 1 / 24         | 16.97                  | 1.13            | 15.95        | 0.039        | 34.77           | -18.82      | 18.10        | 0.065        | 36.99            | -18.89      |

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

| 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] | ERP [dBm]    | ERP [Watts]  | ERP Limit [dBm] | Margin [dB] | EIRP [dBm]   | EIRP [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|-----------------|-------------|--------------|--------------|------------------|-------------|
| 779.50          | 5                       | QPSK   | V               | 150                 | 244                        | 1 / 0          | 16.18                  | 1.32            | 15.35        | 0.034        | 34.77           | -19.42      | 17.50        | 0.056        | 36.99            | -19.49      |
| 782.00          | 5                       | QPSK   | V               | 150                 | 250                        | 1 / 24         | 15.93                  | 1.33            | 15.11        | 0.032        | 34.77           | -19.66      | 17.26        | 0.053        | 36.99            | -19.73      |
| 784.50          | 5                       | QPSK   | V               | 150                 | 254                        | 1 / 24         | 16.42                  | 1.34            | <b>15.61</b> | 0.036        | 34.77           | -19.16      | <b>17.76</b> | 0.060        | 36.99            | -19.23      |
| 784.50          | 5                       | 16-QAM | V               | 150                 | 254                        | 1 / 24         | 15.67                  | 1.34            | <b>14.86</b> | 0.031        | 34.77           | -19.91      | <b>17.01</b> | 0.050        | 36.99            | -19.98      |
| 784.50          | 5                       | 64-QAM | V               | 150                 | 254                        | 1 / 24         | 14.49                  | 1.34            | <b>13.68</b> | 0.023        | 34.77           | -21.09      | <b>15.83</b> | 0.038        | 36.99            | -21.16      |
| 782.00          | 10                      | QPSK   | V               | 150                 | 253                        | 1 / 49         | 17.07                  | 1.33            | <b>16.25</b> | <b>0.042</b> | 34.77           | -18.52      | <b>18.40</b> | <b>0.069</b> | 36.99            | -18.59      |
| 782.00          | 10                      | 16-QAM | V               | 150                 | 253                        | 1 / 49         | 16.13                  | 1.33            | <b>15.31</b> | 0.034        | 34.77           | -19.46      | <b>17.46</b> | 0.056        | 36.99            | -19.53      |
| 782.00          | 10                      | 64-QAM | V               | 150                 | 253                        | 1 / 49         | 15.44                  | 1.33            | <b>14.62</b> | 0.029        | 34.77           | -20.15      | <b>16.77</b> | 0.048        | 36.99            | -20.22      |
| 782.00          | 10                      | QPSK   | H               | 150                 | 149                        | 1 / 49         | 15.59                  | 1.34            | 14.78        | 0.030        | 34.77           | -19.99      | 16.93        | 0.049        | 36.99            | -20.06      |
| 782.00          | 10 (WCP)                | QPSK   | V               | 150                 | 282                        | 1 / 49         | 14.41                  | 1.34            | 13.60        | 0.023        | 34.77           | -21.17      | 15.75        | 0.038        | 36.99            | -21.24      |

Table 7-8. ERP Data (Band 13)

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 216 of 261                 |

| 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] | ERP [dBm]    | ERP [Watts]  | ERP Limit [dBm] | Margin [dB] | EIRP [dBm]   | EIRP [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|-----------------|-------------|--------------|--------------|------------------|-------------|
| 824.70          | 1.4                     | QPSK   | H               | 150                 | 289                        | 1 / 5          | 18.21                  | 1.50            | 17.56        | 0.057        | 38.45           | -20.89      | 19.71        | 0.094        | 40.61            | -20.90      |
| 836.50          | 1.4                     | QPSK   | H               | 150                 | 295                        | 1 / 0          | 18.63                  | 1.50            | <b>17.98</b> | 0.063        | 38.45           | -20.47      | <b>20.13</b> | 0.103        | 40.61            | -20.48      |
| 848.30          | 1.4                     | QPSK   | H               | 150                 | 301                        | 1 / 5          | 17.76                  | 1.50            | 17.11        | 0.051        | 38.45           | -21.34      | 19.26        | 0.084        | 40.61            | -21.35      |
| 836.50          | 1.4                     | 16-QAM | H               | 150                 | 295                        | 1 / 0          | 18.03                  | 1.50            | <b>17.38</b> | 0.055        | 38.45           | -21.07      | <b>19.53</b> | 0.090        | 40.61            | -21.08      |
| 836.50          | 1.4                     | 64-QAM | H               | 150                 | 295                        | 1 / 5          | 16.89                  | 1.50            | <b>16.24</b> | 0.042        | 38.45           | -22.21      | <b>18.39</b> | 0.069        | 40.61            | -22.22      |
| 825.50          | 3                       | QPSK   | H               | 150                 | 292                        | 1 / 14         | 18.39                  | 1.50            | 17.74        | 0.059        | 38.45           | -20.71      | 19.89        | 0.097        | 40.61            | -20.72      |
| 836.50          | 3                       | QPSK   | H               | 150                 | 287                        | 1 / 0          | 18.93                  | 1.50            | <b>18.28</b> | <b>0.067</b> | 38.45           | -20.17      | <b>20.43</b> | <b>0.110</b> | 40.61            | -20.18      |
| 847.50          | 3                       | QPSK   | H               | 150                 | 283                        | 1 / 0          | 18.56                  | 1.50            | 17.91        | 0.062        | 38.45           | -20.54      | 20.06        | 0.101        | 40.61            | -20.55      |
| 836.50          | 3                       | 16-QAM | H               | 150                 | 287                        | 1 / 0          | 18.05                  | 1.50            | <b>17.40</b> | 0.055        | 38.45           | -21.05      | <b>19.55</b> | 0.090        | 40.61            | -21.06      |
| 836.50          | 3                       | 64-QAM | H               | 150                 | 287                        | 1 / 0          | 17.20                  | 1.50            | <b>16.55</b> | 0.045        | 38.45           | -21.90      | <b>18.70</b> | 0.074        | 40.61            | -21.91      |
| 826.50          | 5                       | QPSK   | H               | 150                 | 292                        | 1 / 24         | 18.65                  | 1.50            | 18.00        | 0.063        | 38.45           | -20.45      | 20.15        | 0.104        | 40.61            | -20.46      |
| 836.50          | 5                       | QPSK   | H               | 150                 | 287                        | 1 / 0          | 18.81                  | 1.50            | <b>18.16</b> | 0.065        | 38.45           | -20.29      | <b>20.31</b> | 0.107        | 40.61            | -20.30      |
| 846.50          | 5                       | QPSK   | H               | 150                 | 287                        | 1 / 24         | 18.53                  | 1.50            | 17.88        | 0.061        | 38.45           | -20.57      | 20.03        | 0.101        | 40.61            | -20.58      |
| 836.50          | 5                       | 16-QAM | H               | 150                 | 287                        | 1 / 24         | 18.17                  | 1.50            | <b>17.52</b> | 0.056        | 38.45           | -20.93      | <b>19.67</b> | 0.093        | 40.61            | -20.94      |
| 836.50          | 5                       | 64-QAM | H               | 150                 | 287                        | 1 / 24         | 17.24                  | 1.50            | <b>16.59</b> | 0.046        | 38.45           | -21.86      | <b>18.74</b> | 0.075        | 40.61            | -21.87      |
| 829.00          | 10                      | QPSK   | H               | 150                 | 297                        | 1 / 49         | 18.19                  | 1.50            | 17.54        | 0.057        | 38.45           | -20.91      | 19.69        | 0.093        | 40.61            | -20.92      |
| 836.50          | 10                      | QPSK   | H               | 150                 | 285                        | 1 / 0          | 18.68                  | 1.50            | <b>18.03</b> | 0.064        | 38.45           | -20.42      | <b>20.18</b> | 0.104        | 40.61            | -20.43      |
| 844.00          | 10                      | QPSK   | H               | 150                 | 295                        | 1 / 49         | 18.29                  | 1.50            | 17.64        | 0.058        | 38.45           | -20.81      | 19.79        | 0.095        | 40.61            | -20.82      |
| 836.50          | 10                      | 16-QAM | H               | 150                 | 285                        | 1 / 0          | 18.29                  | 1.50            | <b>17.64</b> | 0.058        | 38.45           | -20.81      | <b>19.79</b> | 0.095        | 40.61            | -20.82      |
| 836.50          | 10                      | 64-QAM | H               | 150                 | 285                        | 1 / 0          | 17.14                  | 1.50            | <b>16.49</b> | 0.045        | 38.45           | -21.96      | <b>18.64</b> | 0.073        | 40.61            | -21.97      |
| 836.50          | 3                       | QPSK   | V               | 150                 | 255                        | 1 / 0          | 18.13                  | 1.50            | 17.48        | 0.056        | 38.45           | -20.97      | 19.63        | 0.092        | 40.61            | -20.98      |
| 836.50          | 3 (WCP)                 | QPSK   | H               | 150                 | 241                        | 1 / 0          | 15.51                  | 1.50            | 14.86        | 0.031        | 38.45           | -23.59      | 17.01        | 0.050        | 40.61            | -23.60      |

Table 7-9. ERP Data (Band 26/5)

| 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] | ERP [dBm]    | ERP [Watts] | ERP Limit [dBm] | Margin [dB] | EIRP [dBm]   | EIRP [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|-------------|-----------------|-------------|--------------|--------------|------------------|-------------|
| 831.50          | 15                      | QPSK   | H               | 150                 | 296                        | 1 / 74         | 18.50                  | 1.50            | <b>17.85</b> | 0.061       | 38.45           | -20.60      | <b>20.00</b> | 0.100        | 40.61            | -20.61      |
| 836.50          | 15                      | QPSK   | H               | 150                 | 298                        | 1 / 74         | 18.09                  | 1.50            | 17.44        | 0.055       | 38.45           | -21.01      | 19.59        | 0.091        | 40.61            | -21.02      |
| 841.50          | 15                      | QPSK   | H               | 150                 | 291                        | 1 / 0          | 18.49                  | 1.50            | 17.84        | 0.061       | 38.45           | -20.61      | 19.99        | 0.100        | 40.61            | -20.62      |
| 841.50          | 15                      | 16-QAM | H               | 150                 | 291                        | 1 / 0          | 18.09                  | 1.50            | <b>17.44</b> | 0.055       | 38.45           | -21.01      | <b>19.59</b> | 0.091        | 40.61            | -21.02      |
| 841.50          | 15                      | 64-QAM | H               | 150                 | 291                        | 1 / 0          | 16.81                  | 1.50            | <b>16.16</b> | 0.041       | 38.45           | -22.29      | <b>18.31</b> | 0.068        | 40.61            | -22.30      |

Table 7-10. ERP Data (Band 26)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 217 of 261                 |

| 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 [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|------------------|-------------|
| 1710.70         | 1.4                     | QPSK   | H               | 150                 | 356                        | 1 / 0          | 18.58                  | 5.56            | <b>24.14</b> | 0.259        | 30.00            | -5.86       |
| 1745.00         | 1.4                     | QPSK   | H               | 150                 | 350                        | 1 / 0          | 18.34                  | 5.32            | 23.66        | 0.232        | 30.00            | -6.34       |
| 1779.30         | 1.4                     | QPSK   | H               | 150                 | 360                        | 1 / 5          | 18.88                  | 5.09            | 23.97        | 0.250        | 30.00            | -6.03       |
| 1779.30         | 1.4                     | 16-QAM | H               | 150                 | 360                        | 1 / 5          | 18.10                  | 5.09            | <b>23.19</b> | 0.209        | 30.00            | -6.81       |
| 1779.30         | 1.4                     | 64-QAM | H               | 150                 | 360                        | 1 / 5          | 17.17                  | 5.09            | <b>22.26</b> | 0.168        | 30.00            | -7.74       |
| 1711.50         | 3                       | QPSK   | H               | 150                 | 357                        | 1 / 0          | 18.64                  | 5.55            | <b>24.19</b> | 0.263        | 30.00            | -5.81       |
| 1745.00         | 3                       | QPSK   | H               | 150                 | 350                        | 1 / 14         | 18.45                  | 5.32            | 23.77        | 0.238        | 30.00            | -6.23       |
| 1778.50         | 3                       | QPSK   | H               | 150                 | 361                        | 1 / 0          | 18.95                  | 5.10            | 24.05        | 0.254        | 30.00            | -5.95       |
| 1711.50         | 3                       | 16-QAM | H               | 150                 | 357                        | 1 / 0          | 18.00                  | 5.55            | <b>23.55</b> | 0.227        | 30.00            | -6.45       |
| 1711.50         | 3                       | 64-QAM | H               | 150                 | 357                        | 1 / 0          | 17.22                  | 5.55            | <b>22.77</b> | 0.189        | 30.00            | -7.23       |
| 1712.50         | 5                       | QPSK   | H               | 150                 | 357                        | 1 / 0          | 18.73                  | 5.55            | <b>24.28</b> | 0.268        | 30.00            | -5.72       |
| 1745.00         | 5                       | QPSK   | H               | 150                 | 352                        | 1 / 0          | 18.44                  | 5.32            | 23.76        | 0.238        | 30.00            | -6.24       |
| 1777.50         | 5                       | QPSK   | H               | 150                 | 358                        | 1 / 24         | 18.93                  | 5.10            | 24.03        | 0.253        | 30.00            | -5.97       |
| 1777.50         | 5                       | 16-QAM | H               | 150                 | 358                        | 1 / 24         | 18.20                  | 5.10            | <b>23.30</b> | 0.214        | 30.00            | -6.70       |
| 1777.50         | 5                       | 64-QAM | H               | 150                 | 358                        | 1 / 24         | 17.12                  | 5.10            | <b>22.22</b> | 0.167        | 30.00            | -7.78       |
| 1715.00         | 10                      | QPSK   | H               | 150                 | 357                        | 1 / 0          | 18.65                  | 5.53            | <b>24.18</b> | 0.262        | 30.00            | -5.82       |
| 1745.00         | 10                      | QPSK   | H               | 150                 | 352                        | 1 / 0          | 18.58                  | 5.32            | 23.90        | 0.246        | 30.00            | -6.10       |
| 1775.00         | 10                      | QPSK   | H               | 150                 | 359                        | 1 / 49         | 18.90                  | 5.12            | 24.02        | 0.252        | 30.00            | -5.98       |
| 1715.00         | 10                      | 16-QAM | H               | 150                 | 357                        | 1 / 0          | 18.00                  | 5.53            | <b>23.53</b> | 0.225        | 30.00            | -6.47       |
| 1715.00         | 10                      | 64-QAM | H               | 150                 | 357                        | 1 / 0          | 17.14                  | 5.53            | <b>22.67</b> | 0.185        | 30.00            | -7.33       |
| 1717.50         | 15                      | QPSK   | H               | 150                 | 356                        | 1 / 0          | 18.94                  | 5.51            | <b>24.45</b> | 0.279        | 30.00            | -5.55       |
| 1745.00         | 15                      | QPSK   | H               | 20                  | 351                        | 1 / 0          | 18.44                  | 5.32            | 23.76        | 0.238        | 30.00            | -6.24       |
| 1772.50         | 15                      | QPSK   | H               | 150                 | 359                        | 1 / 74         | 18.90                  | 5.14            | 24.04        | 0.253        | 30.00            | -5.96       |
| 1772.50         | 15                      | 16-QAM | H               | 150                 | 359                        | 1 / 74         | 18.18                  | 5.14            | <b>23.32</b> | 0.215        | 30.00            | -6.68       |
| 1717.50         | 15                      | 64-QAM | H               | 150                 | 356                        | 1 / 0          | 16.97                  | 5.51            | <b>22.48</b> | 0.177        | 30.00            | -7.52       |
| 1720.00         | 20                      | QPSK   | H               | 150                 | 355                        | 1 / 0          | 18.97                  | 5.49            | <b>24.46</b> | <b>0.279</b> | 30.00            | -5.54       |
| 1745.00         | 20                      | QPSK   | H               | 150                 | 350                        | 1 / 0          | 18.89                  | 5.32            | 24.21        | 0.264        | 30.00            | -5.79       |
| 1770.00         | 20                      | QPSK   | H               | 150                 | 358                        | 1 / 99         | 18.93                  | 5.15            | 24.08        | 0.256        | 30.00            | -5.92       |
| 1720.00         | 20                      | 16-QAM | H               | 150                 | 355                        | 1 / 0          | 18.17                  | 5.49            | <b>23.66</b> | 0.232        | 30.00            | -6.34       |
| 1720.00         | 20                      | 64-QAM | H               | 150                 | 355                        | 1 / 0          | 17.28                  | 5.49            | <b>22.77</b> | 0.189        | 30.00            | -7.23       |
| 1720.00         | 20                      | QPSK   | V               | 150                 | 50                         | 1 / 0          | 15.57                  | 5.49            | 21.06        | 0.128        | 30.00            | -8.94       |
| 1720.00         | 20 (WCP)                | QPSK   | H               | 150                 | 359                        | 1 / 0          | 17.70                  | 5.49            | 23.19        | 0.209        | 30.00            | -6.81       |

**Table 7-11. EIRP Data (Band 66/4)**

|                                         |                                                                                                                                                                                                                        |                               |                                 |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT</b><br>(CERTIFICATION)  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                         | EUT Type:<br>Portable Handset | Page 218 of 261                 |

| 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 [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|------------------|-------------|
| 1850.70         | 1.4                     | QPSK   | H               | 150                 | 5                          | 1 / 5          | 17.77                  | 4.82            | <b>22.59</b> | 0.181        | 33.01            | -10.42      |
| 1882.50         | 1.4                     | QPSK   | H               | 150                 | 7                          | 1 / 0          | 17.15                  | 4.73            | 21.88        | 0.154        | 33.01            | -11.13      |
| 1914.30         | 1.4                     | QPSK   | H               | 150                 | 6                          | 1 / 5          | 16.44                  | 4.68            | 21.12        | 0.129        | 33.01            | -11.89      |
| 1850.70         | 1.4                     | 16-QAM | H               | 150                 | 5                          | 1 / 0          | 17.14                  | 4.82            | <b>21.96</b> | 0.157        | 33.01            | -11.05      |
| 1850.70         | 1.4                     | 64-QAM | H               | 150                 | 5                          | 1 / 5          | 16.24                  | 4.82            | <b>21.06</b> | 0.128        | 33.01            | -11.95      |
| 1851.50         | 3                       | QPSK   | H               | 150                 | 0                          | 1 / 0          | 18.06                  | 4.82            | <b>22.88</b> | 0.194        | 33.01            | -10.13      |
| 1882.50         | 3                       | QPSK   | H               | 150                 | 356                        | 1 / 0          | 16.93                  | 4.73            | 21.66        | 0.147        | 33.01            | -11.35      |
| 1913.50         | 3                       | QPSK   | H               | 150                 | 0                          | 1 / 0          | 16.50                  | 4.68            | 21.18        | 0.131        | 33.01            | -11.83      |
| 1851.50         | 3                       | 16-QAM | H               | 150                 | 0                          | 1 / 0          | 17.32                  | 4.82            | <b>22.14</b> | 0.164        | 33.01            | -10.87      |
| 1851.50         | 3                       | 64-QAM | H               | 150                 | 0                          | 1 / 0          | 16.29                  | 4.82            | <b>21.11</b> | 0.129        | 33.01            | -11.90      |
| 1852.50         | 5                       | QPSK   | H               | 150                 | 359                        | 1 / 0          | 18.16                  | 4.81            | <b>22.97</b> | 0.198        | 33.01            | -10.04      |
| 1882.50         | 5                       | QPSK   | H               | 150                 | 358                        | 1 / 0          | 17.03                  | 4.73            | 21.76        | 0.150        | 33.01            | -11.25      |
| 1912.50         | 5                       | QPSK   | H               | 150                 | 357                        | 1 / 0          | 16.28                  | 4.68            | 20.96        | 0.125        | 33.01            | -12.05      |
| 1852.50         | 5                       | 16-QAM | H               | 150                 | 359                        | 1 / 0          | 17.30                  | 4.81            | <b>22.11</b> | 0.163        | 33.01            | -10.90      |
| 1852.50         | 5                       | 64-QAM | H               | 150                 | 359                        | 1 / 0          | 16.47                  | 4.81            | <b>21.28</b> | 0.134        | 33.01            | -11.73      |
| 1855.00         | 10                      | QPSK   | H               | 150                 | 2                          | 1 / 0          | 18.55                  | 4.81            | <b>23.36</b> | <b>0.217</b> | 33.01            | -9.65       |
| 1882.50         | 10                      | QPSK   | H               | 150                 | 1                          | 1 / 0          | 17.56                  | 4.73            | 22.29        | 0.170        | 33.01            | -10.72      |
| 1910.00         | 10                      | QPSK   | H               | 150                 | 0                          | 1 / 0          | 16.74                  | 4.68            | 21.42        | 0.139        | 33.01            | -11.59      |
| 1855.00         | 10                      | 16-QAM | H               | 150                 | 2                          | 1 / 0          | 18.02                  | 4.81            | <b>22.83</b> | 0.192        | 33.01            | -10.18      |
| 1855.00         | 10                      | 64-QAM | H               | 150                 | 2                          | 1 / 0          | 17.07                  | 4.81            | <b>21.88</b> | 0.154        | 33.01            | -11.13      |
| 1857.50         | 15                      | QPSK   | H               | 150                 | 4                          | 1 / 0          | 18.13                  | 4.80            | <b>22.93</b> | 0.196        | 33.01            | -10.08      |
| 1882.50         | 15                      | QPSK   | H               | 150                 | 359                        | 1 / 0          | 17.43                  | 4.73            | 22.16        | 0.165        | 33.01            | -10.85      |
| 1907.50         | 15                      | QPSK   | H               | 150                 | 4                          | 1 / 0          | 16.87                  | 4.68            | 21.55        | 0.143        | 33.01            | -11.46      |
| 1857.50         | 15                      | 16-QAM | H               | 150                 | 4                          | 1 / 0          | 17.26                  | 4.80            | <b>22.06</b> | 0.161        | 33.01            | -10.95      |
| 1857.50         | 15                      | 64-QAM | H               | 150                 | 4                          | 1 / 0          | 16.34                  | 4.80            | <b>21.14</b> | 0.130        | 33.01            | -11.87      |
| 1860.00         | 20                      | QPSK   | H               | 150                 | 6                          | 1 / 0          | 18.24                  | 4.79            | <b>23.03</b> | 0.201        | 33.01            | -9.98       |
| 1882.50         | 20                      | QPSK   | H               | 150                 | 3                          | 1 / 0          | 17.59                  | 4.73            | 22.32        | 0.171        | 33.01            | -10.69      |
| 1905.00         | 20                      | QPSK   | H               | 150                 | 4                          | 1 / 0          | 16.97                  | 4.68            | 21.65        | 0.146        | 33.01            | -11.36      |
| 1860.00         | 20                      | 16-QAM | H               | 150                 | 6                          | 1 / 0          | 17.95                  | 4.79            | <b>22.74</b> | 0.188        | 33.01            | -10.27      |
| 1860.00         | 20                      | 64-QAM | H               | 150                 | 6                          | 1 / 0          | 16.91                  | 4.79            | <b>21.70</b> | 0.148        | 33.01            | -11.31      |
| 1855.00         | 10                      | QPSK   | V               | 150                 | 280                        | 1 / 0          | 13.89                  | 4.73            | 18.62        | 0.073        | 33.01            | -14.39      |
| 1855.00         | 10 (WCP)                | QPSK   | H               | 150                 | 0                          | 1 / 0          | 14.58                  | 4.73            | 19.31        | 0.085        | 33.01            | -13.70      |

**Table 7-12. EIRP Data (Band 25/2)**

|                                         |                                                                                                                                                                                                                        |                               |  |                                 |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT</b><br>(CERTIFICATION)  |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                         | EUT Type:<br>Portable Handset |  | Page 219 of 261                 |

| 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 [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|------------------|-------------|
| 2498.50         | 5                       | QPSK   | V               | 150                 | 290                        | 1 / 0          | 19.59                  | 5.73            | <b>25.32</b> | 0.340        | 33.01            | -7.69       |
| 2593.00         | 5                       | QPSK   | V               | 150                 | 295                        | 1 / 24         | 18.71                  | 6.07            | 24.78        | 0.301        | 33.01            | -8.23       |
| 2687.50         | 5                       | QPSK   | V               | 150                 | 276                        | 1 / 0          | 17.49                  | 6.48            | 23.97        | 0.250        | 33.01            | -9.04       |
| 2593.00         | 5                       | 16-QAM | V               | 150                 | 295                        | 1 / 24         | 18.44                  | 6.07            | <b>24.51</b> | 0.283        | 33.01            | -8.50       |
| 2498.50         | 5                       | 64-QAM | V               | 150                 | 290                        | 1 / 0          | 18.74                  | 5.73            | <b>24.47</b> | 0.280        | 33.01            | -8.54       |
| 2501.00         | 10                      | QPSK   | V               | 150                 | 283                        | 1 / 0          | 19.27                  | 5.73            | 25.00        | 0.317        | 33.01            | -8.01       |
| 2593.00         | 10                      | QPSK   | V               | 150                 | 276                        | 1 / 0          | 20.42                  | 6.07            | <b>26.49</b> | <b>0.446</b> | 33.01            | -6.52       |
| 2685.00         | 10                      | QPSK   | V               | 150                 | 273                        | 1 / 0          | 18.64                  | 6.47            | 25.11        | 0.325        | 33.01            | -7.90       |
| 2593.00         | 10                      | 16-QAM | V               | 150                 | 276                        | 1 / 0          | 19.80                  | 6.07            | <b>25.87</b> | 0.387        | 33.01            | -7.14       |
| 2501.00         | 10                      | 64-QAM | V               | 150                 | 283                        | 1 / 0          | 19.33                  | 5.73            | <b>25.06</b> | 0.321        | 33.01            | -7.95       |
| 2503.50         | 15                      | QPSK   | V               | 150                 | 306                        | 1 / 0          | 16.51                  | 5.74            | 22.25        | 0.168        | 33.01            | -10.76      |
| 2593.00         | 15                      | QPSK   | V               | 150                 | 303                        | 1 / 74         | 18.19                  | 6.07            | <b>24.26</b> | 0.267        | 33.01            | -8.75       |
| 2682.50         | 15                      | QPSK   | V               | 150                 | 292                        | 1 / 0          | 15.81                  | 6.46            | 22.27        | 0.169        | 33.01            | -10.74      |
| 2593.00         | 15                      | 16-QAM | V               | 150                 | 303                        | 1 / 74         | 17.68                  | 6.07            | <b>23.75</b> | 0.237        | 33.01            | -9.26       |
| 2593.00         | 15                      | 64-QAM | V               | 150                 | 303                        | 1 / 74         | 16.55                  | 6.07            | <b>22.62</b> | 0.183        | 33.01            | -10.39      |
| 2506.00         | 20                      | QPSK   | V               | 150                 | 285                        | 1 / 0          | 20.46                  | 5.75            | <b>26.21</b> | 0.418        | 33.01            | -6.80       |
| 2593.00         | 20                      | QPSK   | V               | 150                 | 278                        | 1 / 0          | 18.22                  | 6.07            | 24.29        | 0.269        | 33.01            | -8.72       |
| 2680.00         | 20                      | QPSK   | V               | 150                 | 271                        | 1 / 0          | 16.78                  | 6.45            | 23.23        | 0.210        | 33.01            | -9.78       |
| 2506.00         | 20                      | 16-QAM | V               | 150                 | 285                        | 1 / 0          | 18.87                  | 5.75            | <b>24.62</b> | 0.290        | 33.01            | -8.39       |
| 2506.00         | 20                      | 64-QAM | V               | 150                 | 285                        | 1 / 0          | 16.72                  | 5.75            | <b>22.47</b> | 0.177        | 33.01            | -10.54      |
| 2593.00         | 10                      | QPSK   | H               | 150                 | 221                        | 1 / 0          | 19.21                  | 6.07            | 25.28        | 0.337        | 33.01            | -7.73       |
| 2593.00         | 10 (WCP)                | QPSK   | V               | 150                 | 340                        | 1 / 0          | 15.69                  | 6.07            | 21.76        | 0.150        | 33.01            | -11.25      |

**Table 7-13. EIRP Data (Band 41 PC2)**

|                                         |                                                                                                                                  |                               |                                                                                       |                                 |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                   | EUT Type:<br>Portable Handset |                                                                                       | Page 220 of 261                 |

| 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 [Watts] | EIRP Limit [dBm] | Margin [dB] |
|-----------------|-------------------------|--------|-----------------|---------------------|----------------------------|----------------|------------------------|-----------------|--------------|--------------|------------------|-------------|
| 2498.50         | 5                       | QPSK   | V               | 150                 | 286                        | 1 / 0          | 15.35                  | 5.73            | 21.08        | 0.128        | 33.01            | -11.93      |
| 2593.00         | 5                       | QPSK   | V               | 150                 | 283                        | 1 / 0          | 15.00                  | 6.07            | 21.07        | 0.128        | 33.01            | -11.94      |
| 2687.50         | 5                       | QPSK   | V               | 150                 | 272                        | 1 / 24         | 16.16                  | 6.48            | <b>22.64</b> | 0.184        | 33.01            | -10.37      |
| 2593.00         | 5                       | 16-QAM | V               | 150                 | 283                        | 1 / 0          | 14.20                  | 6.07            | <b>20.27</b> | 0.106        | 33.01            | -12.74      |
| 2687.50         | 5                       | 64-QAM | V               | 150                 | 272                        | 1 / 24         | 14.25                  | 6.48            | <b>20.73</b> | 0.118        | 33.01            | -12.28      |
| 2501.00         | 10                      | QPSK   | V               | 150                 | 284                        | 1 / 0          | 15.24                  | 5.73            | 20.97        | 0.125        | 33.01            | -12.04      |
| 2593.00         | 10                      | QPSK   | V               | 150                 | 277                        | 1 / 0          | 17.39                  | 6.07            | <b>23.46</b> | 0.222        | 33.01            | -9.55       |
| 2685.00         | 10                      | QPSK   | V               | 150                 | 270                        | 1 / 0          | 16.55                  | 6.47            | 23.02        | 0.201        | 33.01            | -9.99       |
| 2593.00         | 10                      | 16-QAM | V               | 150                 | 277                        | 1 / 0          | 16.94                  | 6.07            | <b>23.01</b> | 0.200        | 33.01            | -10.00      |
| 2593.00         | 10                      | 64-QAM | V               | 150                 | 277                        | 1 / 0          | 14.58                  | 6.07            | <b>20.65</b> | 0.116        | 33.01            | -12.36      |
| 2503.50         | 15                      | QPSK   | V               | 150                 | 280                        | 1 / 74         | 15.71                  | 5.74            | 21.45        | 0.140        | 33.01            | -11.56      |
| 2593.00         | 15                      | QPSK   | V               | 150                 | 277                        | 1 / 0          | 17.56                  | 6.07            | <b>23.63</b> | 0.231        | 33.01            | -9.38       |
| 2682.50         | 15                      | QPSK   | V               | 150                 | 270                        | 1 / 74         | 17.04                  | 6.46            | 23.50        | 0.224        | 33.01            | -9.51       |
| 2593.00         | 15                      | 16-QAM | V               | 150                 | 277                        | 1 / 0          | 16.55                  | 6.07            | <b>22.62</b> | 0.183        | 33.01            | -10.39      |
| 2682.50         | 15                      | 64-QAM | V               | 150                 | 270                        | 1 / 0          | 16.36                  | 6.46            | <b>22.82</b> | 0.192        | 33.01            | -10.19      |
| 2506.00         | 20                      | QPSK   | V               | 150                 | 256                        | 1 / 0          | 15.52                  | 5.75            | 21.27        | 0.134        | 33.01            | -11.74      |
| 2593.00         | 20                      | QPSK   | V               | 150                 | 263                        | 1 / 0          | 17.85                  | 6.07            | <b>23.92</b> | <b>0.247</b> | 33.01            | -9.09       |
| 2680.00         | 20                      | QPSK   | V               | 150                 | 270                        | 1 / 99         | 16.55                  | 6.45            | 23.00        | 0.200        | 33.01            | -10.01      |
| 2593.00         | 20                      | 16-QAM | V               | 150                 | 263                        | 1 / 0          | 16.52                  | 6.07            | <b>22.59</b> | 0.182        | 33.01            | -10.42      |
| 2680.00         | 20                      | 64-QAM | V               | 150                 | 270                        | 1 / 0          | 15.29                  | 6.45            | <b>21.74</b> | 0.149        | 33.01            | -11.27      |
| 2593.00         | 20                      | QPSK   | H               | 150                 | 221                        | 1 / 0          | 16.70                  | 6.07            | 22.77        | 0.189        | 33.01            | -10.24      |
| 2593.00         | 20 (WCP)                | QPSK   | V               | 150                 | 276                        | 1 / 0          | 16.77                  | 6.07            | 22.84        | 0.192        | 33.01            | -10.17      |

Table 7-14. EIRP Data (Band 41 PC3)

|                                         |                                                                                                                                  |                               |                                                                                       |                                 |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                   | EUT Type:<br>Portable Handset |                                                                                       | Page 221 of 261                 |

## 7.9 Radiated Spurious Emissions Measurements

### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

### Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

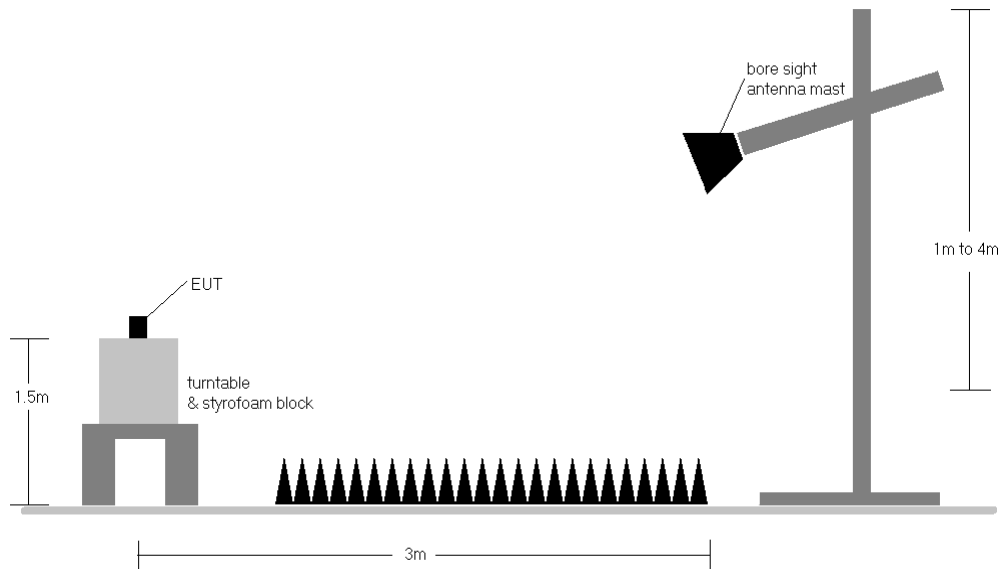
### Test Settings

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

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         | Page 222 of 261                                                                       |                                 |

## Test Setup

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



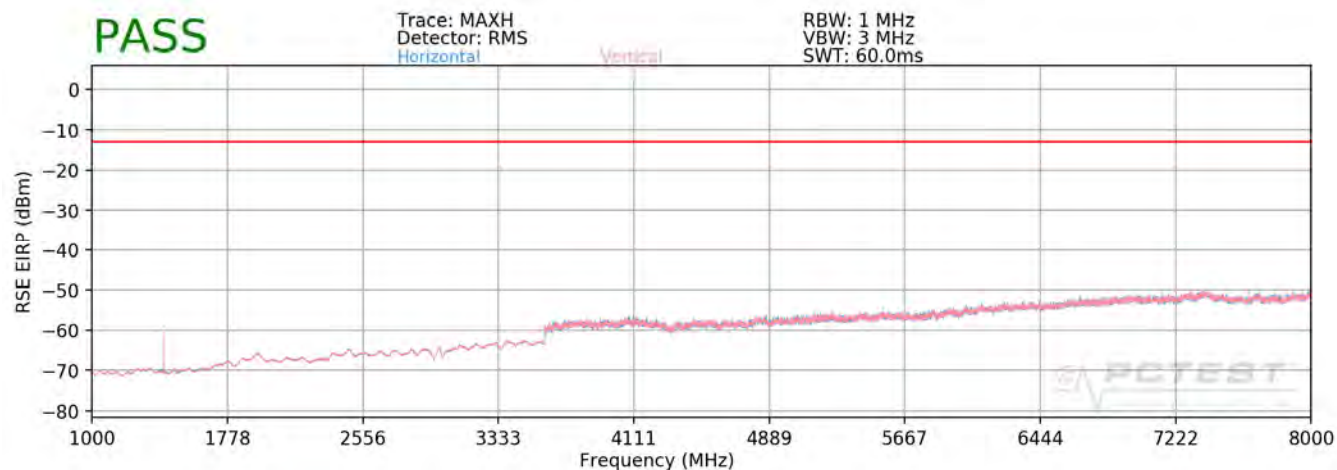
**Figure 7-9. Test Instrument & Measurement Setup**

## 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) 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: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 223 of 261                 |

## Band 12/17



**Plot 7-371. Radiated Spurious Plot above 1GHz (Band 12/17)**

OPERATING FREQUENCY: 701.50 MHz  
CHANNEL: 23035  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 5.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1403.00         | H               | 146                 | 240                        | -69.56                           | 7.94                          | -61.62                        | -48.6       |
| 2104.50         | H               | 143                 | 261                        | -77.24                           | 8.90                          | -68.34                        | -55.3       |
| 2806.00         | H               | -                   | -                          | -77.50                           | 10.07                         | -67.43                        | -54.4       |

**Table 7-15. Radiated Spurious Data (Band 12/17- Low Channel)**

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |                | Page 224 of 261                 |

OPERATING FREQUENCY: 707.50 MHz  
 CHANNEL: 23095  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1415.00         | H               | 113                 | 263                        | -64.82                           | 8.09                          | -56.73                        | -43.7       |
| 2122.50         | H               | 118                 | 294                        | -76.33                           | 8.88                          | -67.45                        | -54.4       |
| 2830.00         | H               | -                   | -                          | -76.36                           | 10.13                         | -66.23                        | -53.2       |

Table 7-16. Radiated Spurious Data (Band 12/17 – Mid Channel)

OPERATING FREQUENCY: 713.50 MHz  
 CHANNEL: 23155  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1427.00         | H               | 153                 | 291                        | -70.96                           | 8.23                          | -62.73                        | -49.7       |
| 2140.50         | H               | 151                 | 291                        | -76.77                           | 8.86                          | -67.91                        | -54.9       |
| 2854.00         | H               | -                   | -                          | -77.21                           | 10.18                         | -67.03                        | -54.0       |

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

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 225 of 261                 |

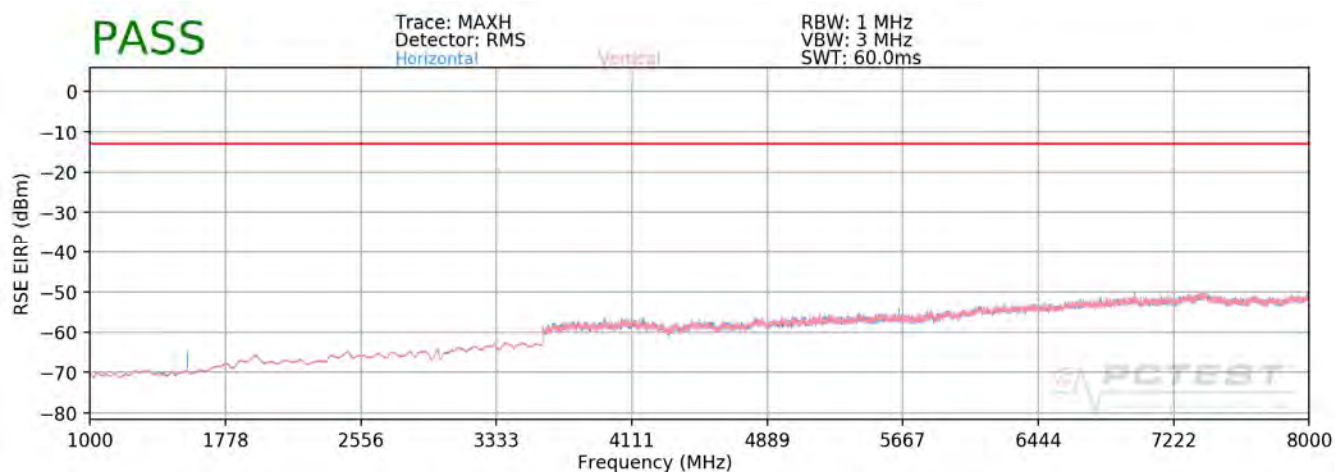
OPERATING FREQUENCY: 707.50 MHz  
 CHANNEL: 23095  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 5.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1415.00         | H               | 149                 | 191                        | -69.95                           | 8.09                          | -61.86                        | -48.9       |
| 2122.50         | H               | 149                 | 185                        | -76.61                           | 8.88                          | -67.73                        | -54.7       |
| 2830.00         | H               | -                   | -                          | -77.04                           | 10.13                         | -66.91                        | -53.9       |

Table 7-18. Radiated Spurious Data with WCP (Band 12/17 – Mid Channel)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 226 of 261                 |

## Band 13



**Plot 7-372. Radiated Spurious Plot above 1GHz (Band 13)**

OPERATING FREQUENCY: 782.00 MHz  
CHANNEL: 23230  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 2346.00         | H               | -                   | -                          | -78.08                           | 9.49                          | -68.59                        | -55.6       |
| 3128.00         | H               | -                   | -                          | -75.80                           | 9.53                          | -66.27                        | -53.3       |

**Table 7-19. Radiated Spurious Data (Band 13 – Mid Channel)**

MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.00 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 [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1564.00         | H               | 118                 | 134                        | -72.91                           | 8.73                          | -64.18                        | -24.2       |

**Table 7-20. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)**

|                                         |                                               |                                       |  |  |  |                 |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|--|--|--|-----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) |  |  |  | <b>SAMSUNG</b>  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |  |  |  | Page 227 of 261 |                                 |

OPERATING FREQUENCY: 782.00 MHz  
CHANNEL: 23230  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 2346.00         | H               | -                   | -                          | -75.05                           | 9.49                          | -65.56                        | -52.6       |
| 3128.00         | H               | -                   | -                          | -76.10                           | 9.53                          | -66.57                        | -53.6       |

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

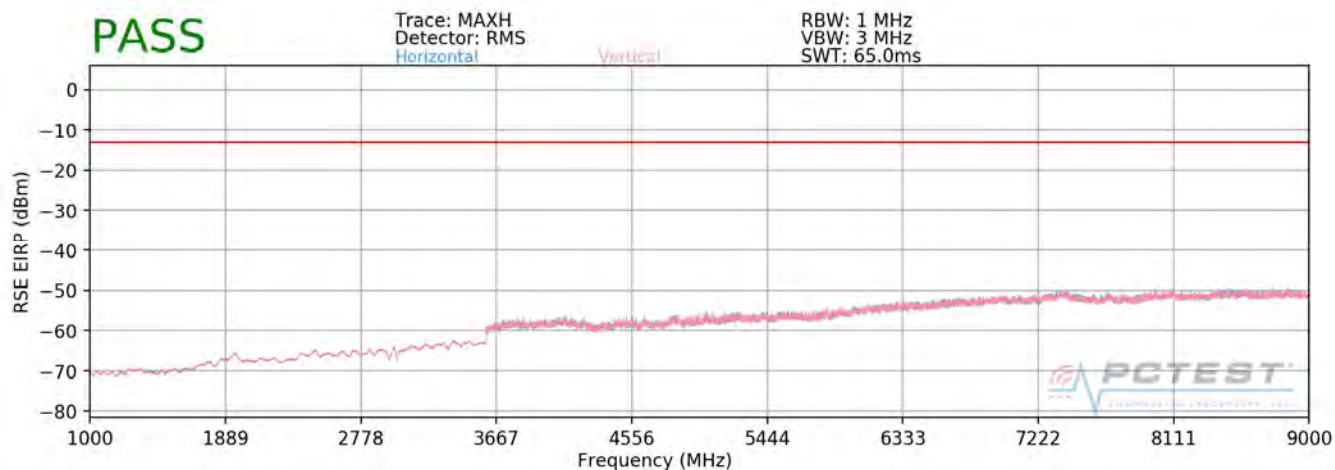
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.00 MHz  
DISTANCE: 3 meters  
NARROWBAND EMISSION LIMIT: -50 dBm  
WIDEBAND EMISSION LIMIT: -40 dBm/MHz

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1564.00         | H               | -                   | -                          | -77.91                           | 9.49                          | -68.42                        | -28.4       |

Table 7-22. Radiated Spurious Data with WCP (Band 13 – 1559-1610MHz Band)

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 228 of 261                 |

## Band 26/5



**Plot 7-373. Radiated Spurious Plot above 1GHz (Band 26/5)**

OPERATING FREQUENCY: 825.50 MHz

CHANNEL: 26805

MODULATION SIGNAL: QPSK

BANDWIDTH: 3.0 MHz

DISTANCE: 3 meters

LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1651.00         | H               | -                   | -                          | -80.56                           | 9.31                          | -71.25                        | -58.2       |
| 2476.50         | H               | 118                 | 115                        | -73.48                           | 8.63                          | -64.85                        | -51.9       |
| 3302.00         | H               | -                   | -                          | -72.31                           | 8.27                          | -64.04                        | -51.0       |

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

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |                | Page 229 of 261                 |

OPERATING FREQUENCY: 836.50 MHz  
 CHANNEL: 26915  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 3.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1673.00         | H               | 315                 | 254                        | -80.92                           | 9.45                          | -71.47                        | -58.5       |
| 2509.50         | H               | 324                 | 56                         | -74.85                           | 8.50                          | -66.35                        | -53.4       |
| 3346.00         | H               | -                   | -                          | -73.93                           | 8.71                          | -65.22                        | -52.2       |

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

OPERATING FREQUENCY: 847.50 MHz  
 CHANNEL: 27025  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 3.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1695.00         | H               | 232                 | 27                         | -80.75                           | 9.58                          | -71.17                        | -58.2       |
| 2542.50         | H               | -                   | -                          | -74.47                           | 8.43                          | -66.04                        | -53.0       |
| 3390.00         | H               | -                   | -                          | -72.83                           | 9.01                          | -63.82                        | -50.8       |

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

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 230 of 261                 |

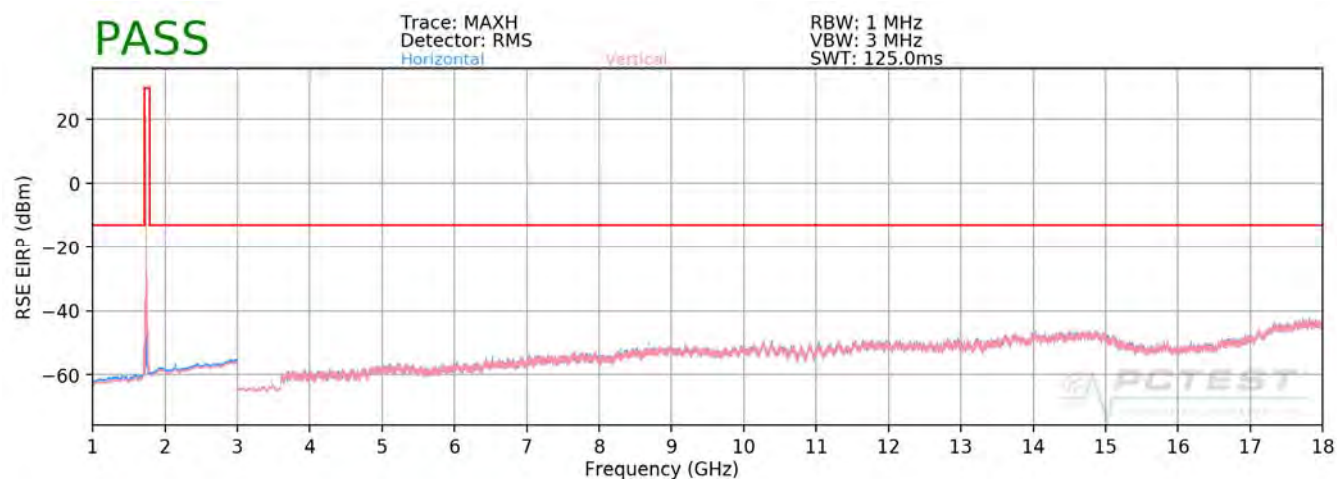
OPERATING FREQUENCY: 836.50 MHz  
 CHANNEL: 26915  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 3.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 1673.00         | H               | -                   | -                          | -80.70                           | 9.45                          | -71.25                        | -58.2       |
| 2509.50         | H               | -                   | -                          | -74.46                           | 8.50                          | -65.96                        | -53.0       |
| 3346.00         | H               | -                   | -                          | -73.34                           | 8.71                          | -64.63                        | -51.6       |

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

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 231 of 261                 |

## Band 66/4



**Plot 7-374. Radiated Spurious Plot above 1GHz (Band 66/4)**

OPERATING FREQUENCY: 1720.00 MHz  
CHANNEL: 132072  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 20.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3440.00         | V               | 147                 | 7                          | -68.70                           | 9.84                          | -58.86                        | -45.9       |
| 5160.00         | V               | -                   | -                          | -69.44                           | 10.71                         | -58.73                        | -45.7       |
| 6880.00         | V               | -                   | -                          | -68.09                           | 11.68                         | -56.41                        | -43.4       |

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

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |                | Page 232 of 261                 |

OPERATING FREQUENCY: 1745.00 MHz  
CHANNEL: 132322  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 20.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3490.00         | V               | 130                 | 344                        | -68.78                           | 9.91                          | -58.86                        | -45.9       |
| 5235.00         | V               | -                   | -                          | -69.80                           | 10.73                         | -59.07                        | -46.1       |
| 6980.00         | V               | -                   | -                          | -68.69                           | 11.82                         | -56.87                        | -43.9       |

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

OPERATING FREQUENCY: 1770.00 MHz  
CHANNEL: 132572  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 20.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3540.00         | V               | 129                 | 221                        | -71.60                           | 9.89                          | -61.70                        | -48.7       |
| 5310.00         | V               | -                   | -                          | -69.36                           | 10.69                         | -58.68                        | -45.7       |
| 7080.00         | V               | -                   | -                          | -68.57                           | 11.79                         | -56.78                        | -43.8       |

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

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 233 of 261                 |

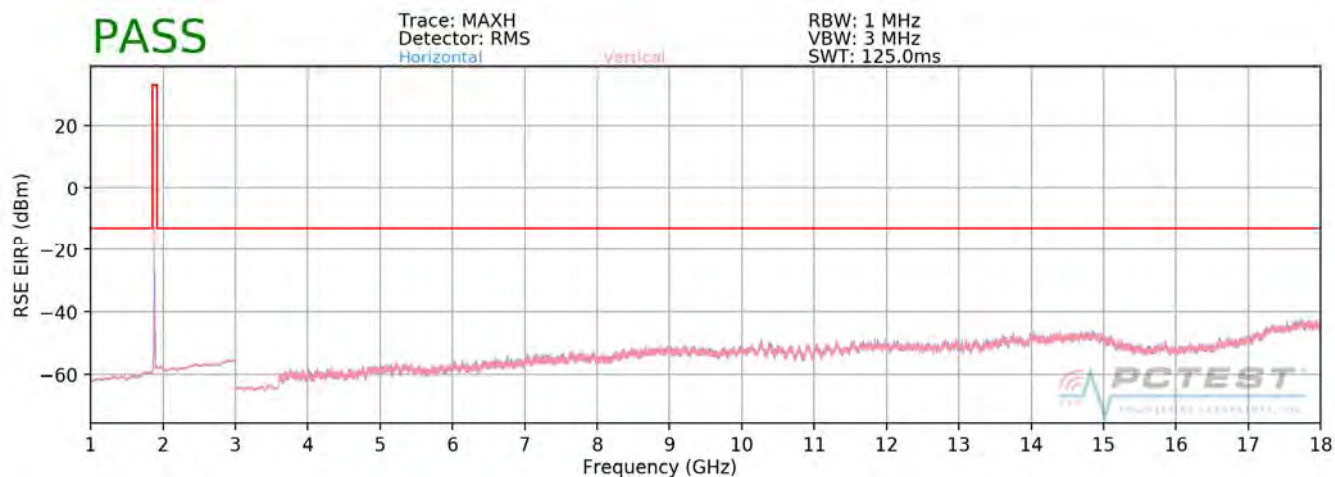
OPERATING FREQUENCY: 1720.00 MHz  
 CHANNEL: 132072  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3440.00         | V               | 113                 | 300                        | -66.70                           | 9.84                          | -56.86                        | -43.9       |
| 5160.00         | V               | -                   | -                          | -69.51                           | 10.71                         | -58.80                        | -45.8       |
| 6880.00         | V               | -                   | -                          | -68.14                           | 11.68                         | -56.46                        | -43.5       |

Table 7-30. Radiated Spurious Data with WCP (Band 66/4 – Low Channel)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 234 of 261                 |

## Band 25/2



**Plot 7-375. Radiated Spurious Plot above 1GHz (Band 25/2)**

OPERATING FREQUENCY: 1855.00 MHz  
CHANNEL: 26090  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3710.00         | H               | 376                 | 313                        | -66.68                           | 9.55                          | -57.13                        | -44.1       |
| 5565.00         | H               | -                   | -                          | -69.41                           | 10.96                         | -58.45                        | -45.5       |
| 7420.00         | H               | -                   | -                          | -66.83                           | 10.97                         | -55.86                        | -42.9       |

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

|                                         |                                |                               |                                       |  |                                 |
|-----------------------------------------|--------------------------------|-------------------------------|---------------------------------------|--|---------------------------------|
| FCC ID: A3LSMN9600                      |                                |                               | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018 | EUT Type:<br>Portable Handset |                                       |  | Page 235 of 261                 |

OPERATING FREQUENCY: 1882.50 MHz  
 CHANNEL: 26365  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3765.00         | H               | 382                 | 333                        | -72.99                           | 9.36                          | -63.63                        | -50.6       |
| 5647.50         | H               | -                   | -                          | -70.08                           | 11.19                         | -58.89                        | -45.9       |
| 7530.00         | H               | -                   | -                          | -65.81                           | 11.13                         | -54.68                        | -41.7       |

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

OPERATING FREQUENCY: 1910.00 MHz  
 CHANNEL: 26640  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3820.00         | H               | 391                 | 360                        | -69.28                           | 9.31                          | -59.98                        | -47.0       |
| 5730.00         | H               | -                   | -                          | -69.67                           | 11.39                         | -58.28                        | -45.3       |
| 7640.00         | H               | -                   | -                          | -65.17                           | 11.34                         | -53.83                        | -40.8       |

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

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 236 of 261                 |

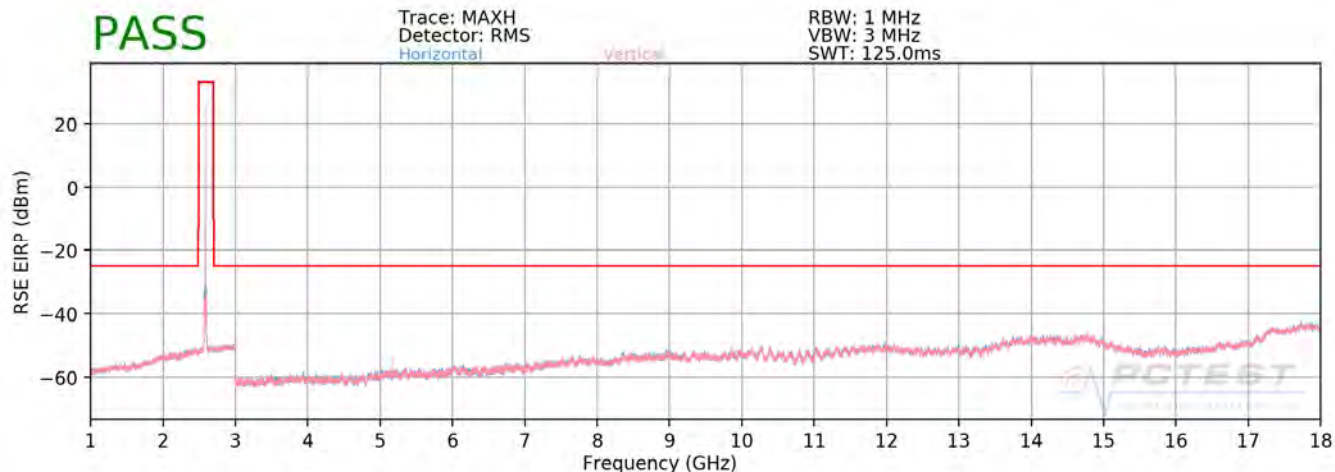
OPERATING FREQUENCY: 1855.00 MHz  
CHANNEL: 26090  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -13 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 3710.00         | H               | 135                 | 42                         | -68.72                           | 9.55                          | -59.17                        | -46.2       |
| 5565.00         | H               | -                   | -                          | -69.34                           | 10.96                         | -58.38                        | -45.4       |
| 7420.00         | H               | -                   | -                          | -66.88                           | 10.97                         | -55.91                        | -42.9       |

Table 7-34. Radiated Spurious Data with WCP (Band 25/2 – Low Channel)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 237 of 261                 |

## Band 41 (PC2)



**Plot 7-376. Radiated Spurious Plot above 1GHz (Band 41)**

OPERATING FREQUENCY: 2505.00 MHz  
CHANNEL: 39740  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5010.00         | H               | 155                 | 56                         | -62.54                           | 10.91                         | -51.64                        | -26.6       |
| 7515.00         | H               | 112                 | 10                         | -66.49                           | 11.10                         | -55.39                        | -30.4       |
| 10020.00        | H               | 341                 | 340                        | -65.60                           | 11.99                         | -53.61                        | -28.6       |
| 12525.00        | H               | -                   | -                          | -68.00                           | 13.56                         | -54.44                        | -29.4       |

**Table 7-35. Radiated Spurious Data (Band 41 – Low Channel)**

|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |                | Page 238 of 261                 |

OPERATING FREQUENCY: 2593.00 MHz  
CHANNEL: 40620  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5186.00         | H               | 121                 | 5                          | -61.55                           | 10.74                         | -50.81                        | -25.8       |
| 7779.00         | H               | 111                 | 370                        | -65.11                           | 11.44                         | -53.67                        | -28.7       |
| 10372.00        | H               | 364                 | 356                        | -65.47                           | 12.42                         | -53.05                        | -28.0       |
| 12965.00        | H               | -                   | -                          | -67.26                           | 13.29                         | -53.97                        | -29.0       |

**Table 7-36. Radiated Spurious Data (Band 41 – Mid Channel)**

OPERATING FREQUENCY: 2685.00 MHz  
CHANNEL: 41540  
MODULATION SIGNAL: QPSK  
BANDWIDTH: 10.0 MHz  
DISTANCE: 3 meters  
LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5370.00         | H               | 124                 | 109                        | -62.73                           | 10.69                         | -52.04                        | -27.0       |
| 8055.00         | H               | 338                 | 288                        | -66.50                           | 11.17                         | -55.34                        | -30.3       |
| 10740.00        | H               | 355                 | 323                        | -68.49                           | 12.61                         | -55.88                        | -30.9       |
| 13425.00        | H               | -                   | -                          | -66.82                           | 12.59                         | -54.23                        | -29.2       |

**Table 7-37. Radiated Spurious Data (Band 41 –High Channel)**

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 239 of 261                 |

OPERATING FREQUENCY: 2593.00 MHz  
 CHANNEL: 40620  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5186.00         | H               | 116                 | 254                        | -65.31                           | 10.74                         | -54.57                        | -29.6       |
| 7779.00         | H               | 113                 | 0                          | -65.85                           | 11.44                         | -54.41                        | -29.4       |
| 10372.00        | H               | 157                 | 325                        | -65.30                           | 12.42                         | -52.88                        | -27.9       |
| 12965.00        | H               | -                   | -                          | -67.95                           | 13.29                         | -54.66                        | -29.7       |

**Table 7-38. Radiated Spurious Data with WCP (Band 41 – Mid Channel)**

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 240 of 261                 |

## 7.10 Uplink Carrier Aggregation Radiated Measurements

### §2.1053

#### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using 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

971168 D01 v03r01– Section 5.8

ANSI/TIA-603-E-2016– Section 2.2.12

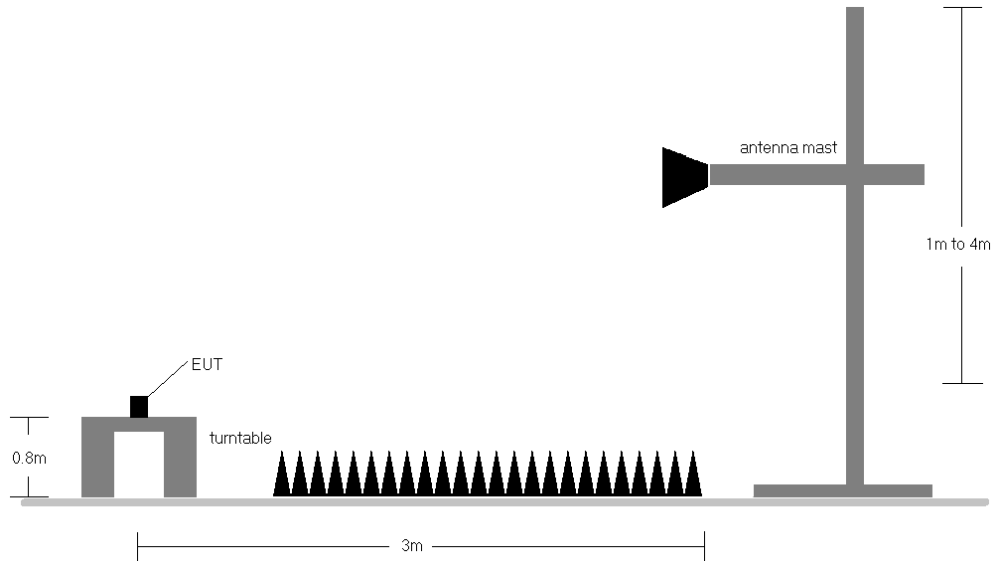
#### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq 3 \times$  RBW
3. 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: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 241 of 261                 |

## Test Setup

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

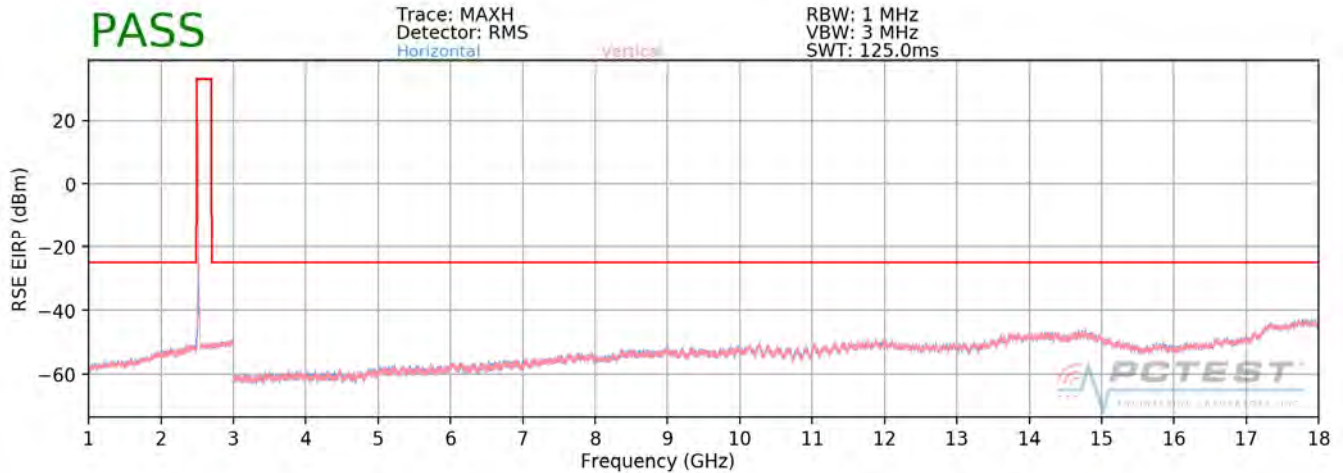


**Figure 7-10. Test Instrument & Measurement Setup**

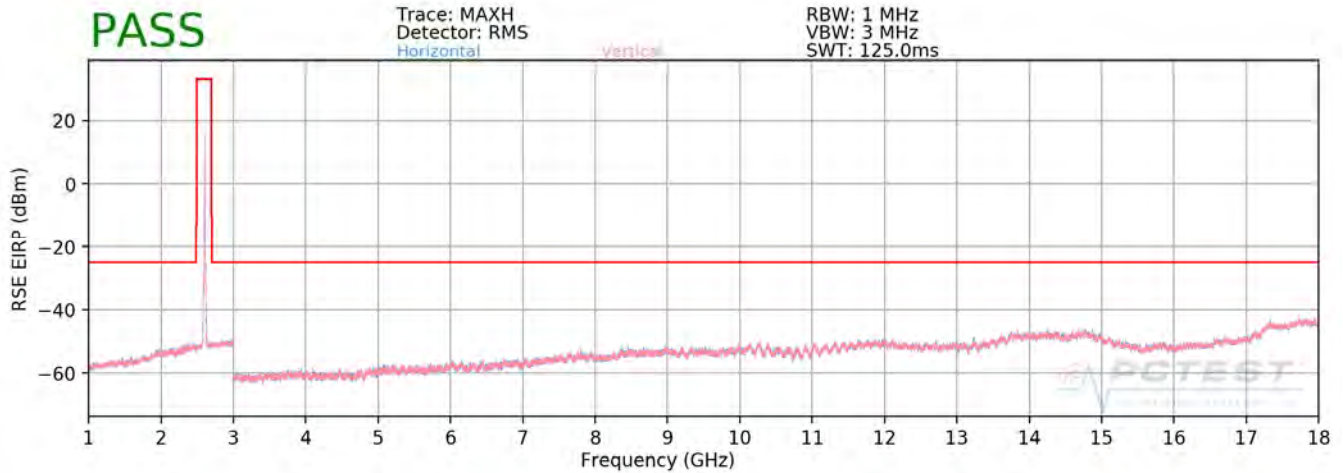
## Test Notes

- 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.

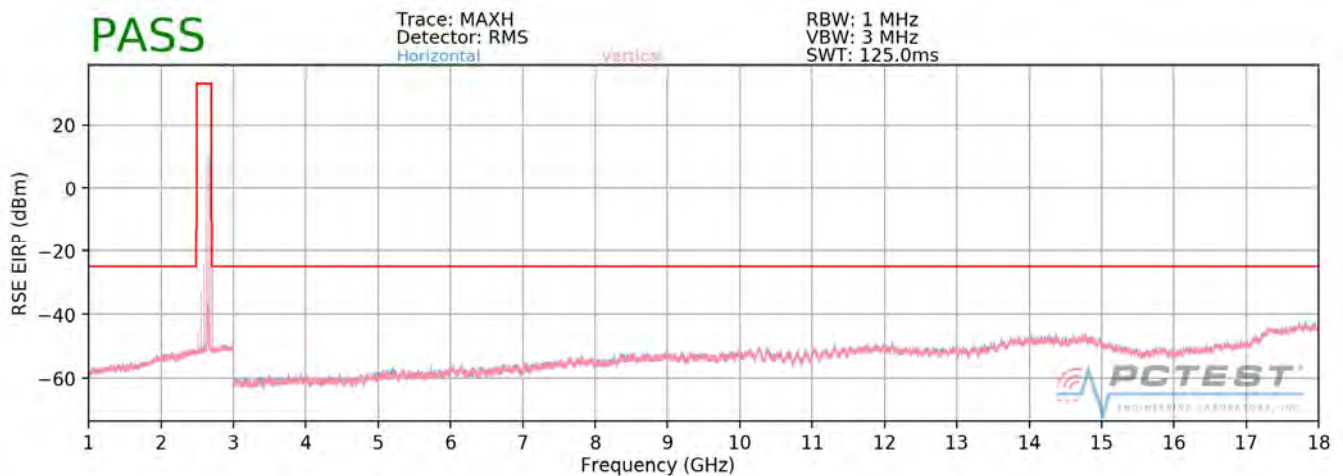
|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 242 of 261                 |



Plot 7-377. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)

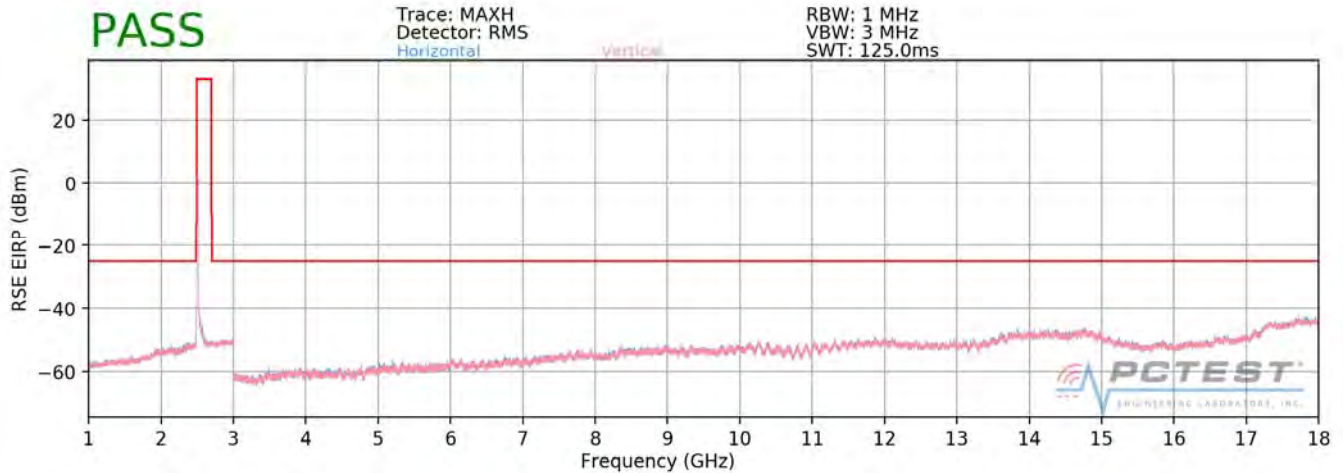


Plot 7-378. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)

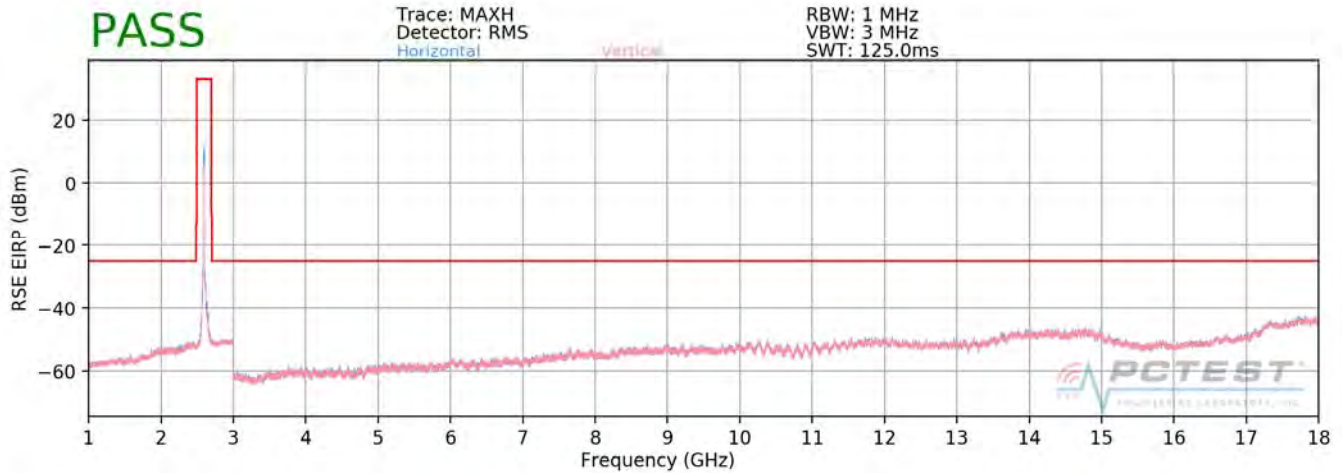


Plot 7-379. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)

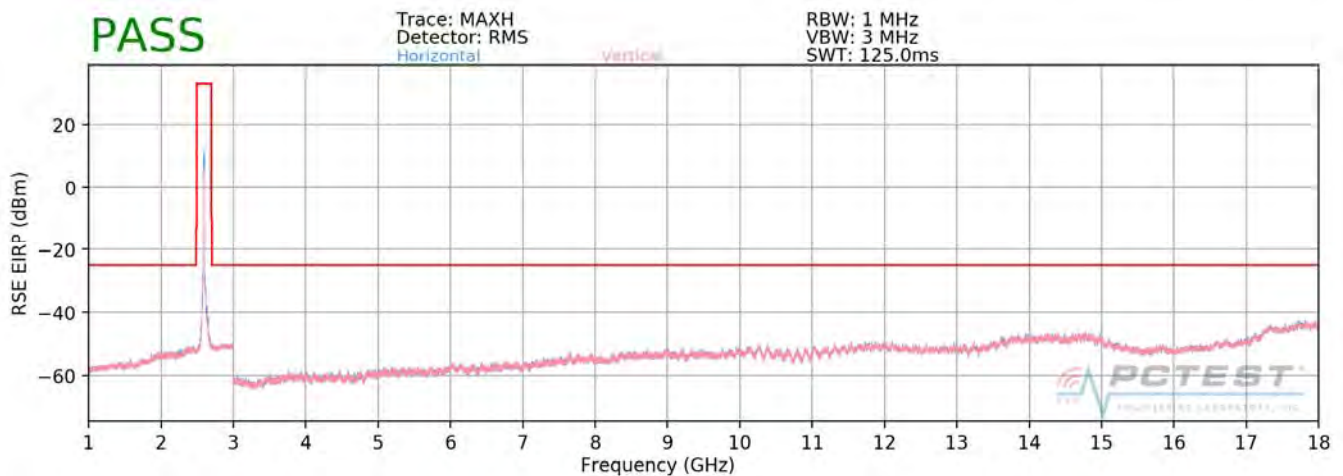
|                                         |                                               |                                       |                |                                 |
|-----------------------------------------|-----------------------------------------------|---------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | MEASUREMENT REPORT<br>(CERTIFICATION) | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset         |                | Page 243 of 261                 |



Plot 7-380. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Low Channel)

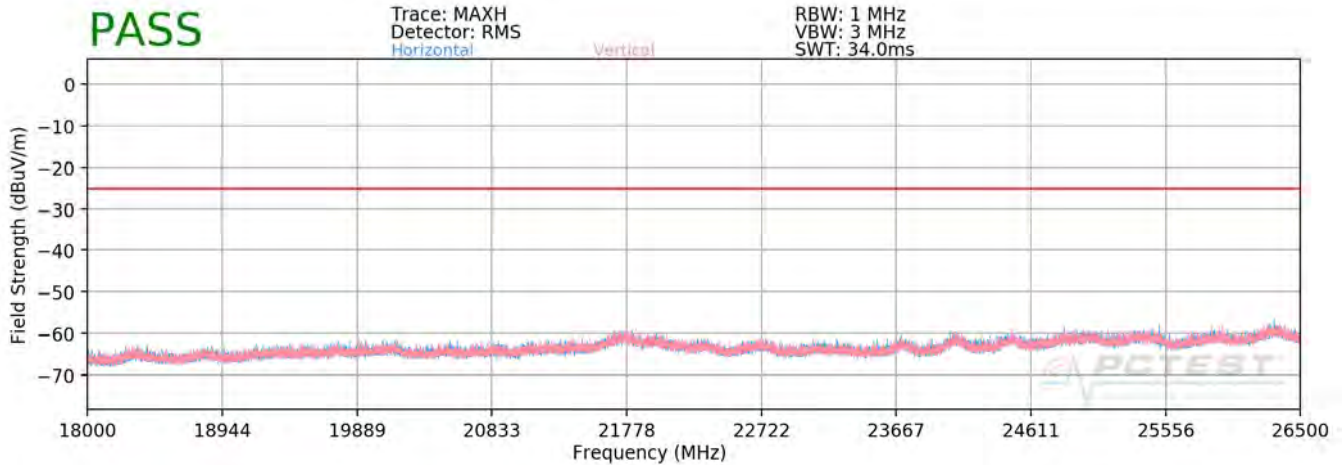


Plot 7-381. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – Mid Channel)

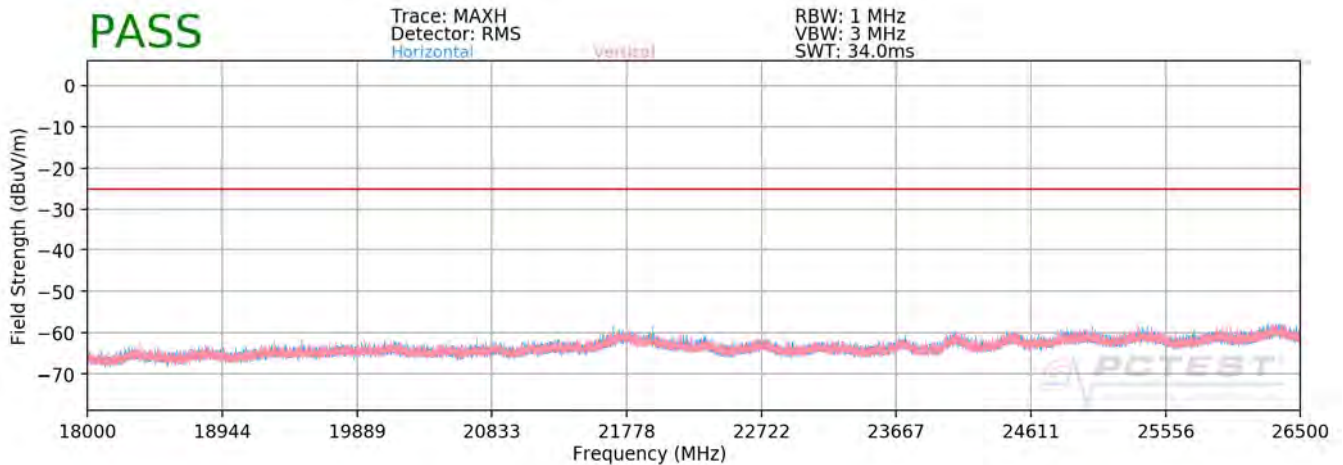


Plot 7-382. Radiated Spurious Plot (ULCA B41 PCC: RB 100 Offset 0, SCC: RB 100 Offset 0 – High Channel)

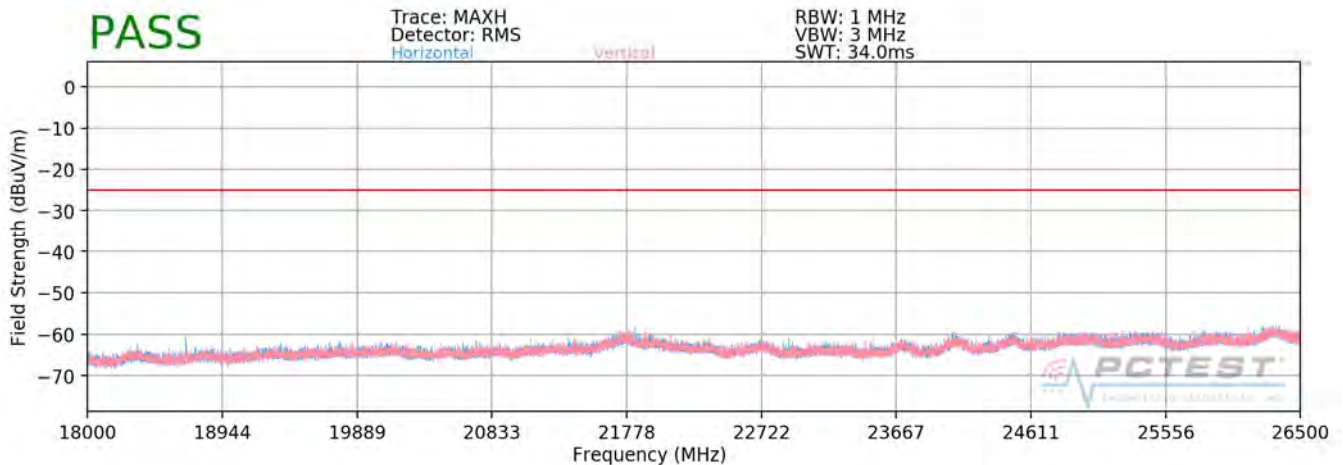
|                                         |                                              |                               |                 |                                 |
|-----------------------------------------|----------------------------------------------|-------------------------------|-----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |                 | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018               | EUT Type:<br>Portable Handset | Page 244 of 261 |                                 |



**Plot 7-383. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Low Channel)**



**Plot 7-384. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – Mid Channel)**



**Plot 7-385. Radiated Spurious Plot (ULCA B41 PCC: RB 1 Offset 99, SCC: RB 1 Offset 0 – High Channel)**

|                                         |                                               |                                               |                |                                 |
|-----------------------------------------|-----------------------------------------------|-----------------------------------------------|----------------|---------------------------------|
| FCC ID: A3LSMN9600                      | <b>PCTEST</b><br>ENGINEERING LABORATORY, INC. | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>SAMSUNG</b> | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                | EUT Type:<br>Portable Handset                 |                | Page 245 of 261                 |

OPERATING FREQUENCY (PCC): 2506.00 MHz  
 OPERATING FREQUENCY (SCC): 2525.80 MHz  
 CHANNEL (PCC): 39750  
 CHANNEL (SCC): 39948  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 + 20 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5012.00         | V               | -                   | -                          | -69.65                           | 10.90                         | -58.75                        | -33.8       |
| 7518.00         | V               | 113                 | 289                        | -61.17                           | 11.11                         | -50.07                        | -25.1       |
| 10024.00        | V               | -                   | -                          | -64.03                           | 11.99                         | -52.04                        | -27.0       |
| 12530.00        | V               | -                   | -                          | -63.83                           | 13.56                         | -50.27                        | -25.3       |

Table 7-39. Radiated Spurious Data (ULCA B41 - PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Low Channel)

OPERATING FREQUENCY (PCC): 2593.00 MHz  
 OPERATING FREQUENCY (SCC): 2612.80  
 CHANNEL (PCC): 40620  
 CHANNEL (SCC): 40818  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 + 20 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5186.00         | V               | -                   | -                          | -67.63                           | 10.74                         | -56.89                        | -31.9       |
| 7779.00         | V               | 122                 | 339                        | -63.56                           | 11.44                         | -52.12                        | -27.1       |
| 10372.00        | V               | -                   | -                          | -63.56                           | 12.42                         | -51.14                        | -26.1       |
| 12965.00        | V               | -                   | -                          | -64.61                           | 13.29                         | -51.32                        | -26.3       |

Table 7-40. Radiated Spurious Data (ULCA B41 - PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Mid Channel)

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 246 of 261                 |

OPERATING FREQUENCY (PCC): 2660.20 MHz  
 OPERATING FREQUENCY (SCC): 2680.00  
 CHANNEL (PCC): 41292  
 CHANNEL (SCC): 41490  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 + 20 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5360.00         | V               | -                   | -                          | -68.36                           | 10.70                         | -57.67                        | -32.7       |
| 8040.00         | V               | -                   | -                          | -65.71                           | 11.16                         | -54.55                        | -29.5       |
| 10720.00        | V               | -                   | -                          | -68.11                           | 12.59                         | -55.52                        | -30.5       |

Table 7-41. Radiated Spurious Data (ULCA B41 - PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 –High Channel)

OPERATING FREQUENCY (PCC): 2593.00 MHz  
 OPERATING FREQUENCY (SCC): 2612.80  
 CHANNEL (PCC): 40620  
 CHANNEL (SCC): 40818  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20 + 20 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Level at Antenna Terminals [dBm] | Substitute Antenna Gain [dBi] | Spurious Emission Level [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------------------|-------------------------------|-------------------------------|-------------|
| 5012.00         | V               | -                   | -                          | -69.68                           | 10.90                         | -58.78                        | -33.8       |
| 7518.00         | V               | 114                 | 296                        | -63.54                           | 11.11                         | -52.44                        | -27.4       |
| 10024.00        | V               | -                   | -                          | -63.96                           | 11.99                         | -51.97                        | -27.0       |
| 12530.00        | V               | -                   | -                          | -63.79                           | 13.56                         | -50.23                        | -25.2       |

Table 7-42. Radiated Spurious Data with WCP (ULCA B41 - PCC: RB 1 Offset 0, SCC: RB 1 Offset 99 – Mid Channel)

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 247 of 261                 |

## 7.11 Frequency Stability / Temperature Variation

### Test Overview and Limit

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

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

***For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24, 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-E-2016

### Test Settings

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

### Test Setup

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

### Test Notes

None

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 248 of 261                 |

## Band 12/17 Frequency Stability Measurements

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) | 707,500,007    | 7               | 0.0000010     |
| 100 %          |             | - 30       | 707,500,164    | 164             | 0.0000232     |
| 100 %          |             | - 20       | 707,499,949    | -51             | -0.0000072    |
| 100 %          |             | - 10       | 707,499,700    | -300            | -0.0000424    |
| 100 %          |             | 0          | 707,500,012    | 12              | 0.0000017     |
| 100 %          |             | + 10       | 707,500,013    | 13              | 0.0000018     |
| 100 %          |             | + 20       | 707,500,458    | 458             | 0.0000647     |
| 100 %          |             | + 30       | 707,500,291    | 291             | 0.0000411     |
| 100 %          |             | + 40       | 707,499,993    | -7              | -0.0000010    |
| 100 %          |             | + 50       | 707,500,113    | 113             | 0.0000160     |
| BATT. ENDPOINT | 3.45        | + 20       | 707,500,144    | 144             | 0.0000204     |

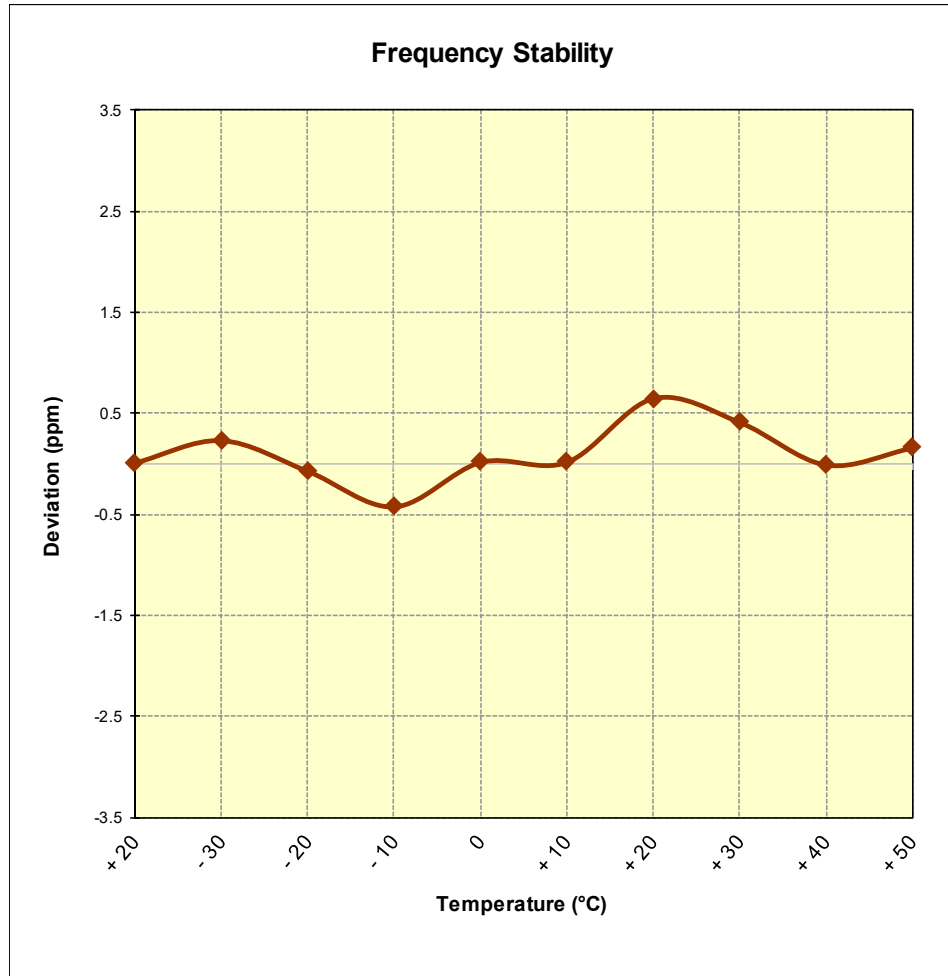
**Table 7-43. Frequency Stability Data (Band 12/17)**

### 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: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 249 of 261                 |

## Band 12/17 Frequency Stability Measurements



**Figure 7-11. Frequency Stability Graph (Band 12/17)**

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 250 of 261                 |

© 2018 PCTEST Engineering Laboratory, Inc.

V 8.0 04/05/2018

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

## Band 13 Frequency Stability Measurements

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) | 782,000,041    | 41              | 0.0000052     |
| 100 %          |             | - 30       | 781,999,721    | -279            | -0.0000357    |
| 100 %          |             | - 20       | 782,000,093    | 93              | 0.0000119     |
| 100 %          |             | - 10       | 781,999,875    | -125            | -0.0000160    |
| 100 %          |             | 0          | 782,000,077    | 77              | 0.0000098     |
| 100 %          |             | + 10       | 782,000,092    | 92              | 0.0000118     |
| 100 %          |             | + 20       | 782,000,132    | 132             | 0.0000169     |
| 100 %          |             | + 30       | 782,000,334    | 334             | 0.0000427     |
| 100 %          |             | + 40       | 781,999,855    | -145            | -0.0000185    |
| 100 %          |             | + 50       | 781,999,794    | -206            | -0.0000263    |
| BATT. ENDPOINT | 3.45        | + 20       | 781,999,977    | -23             | -0.0000029    |

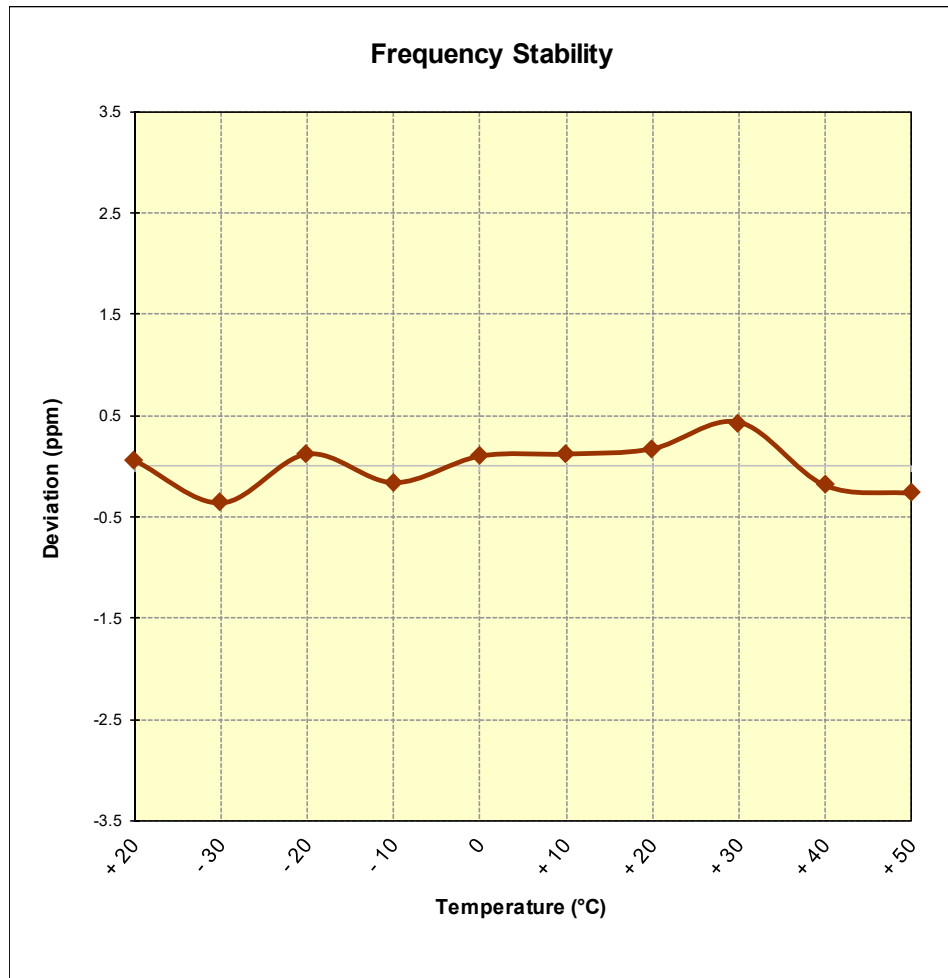
**Table 7-44. Frequency Stability Data (Band 13)**

### 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: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 251 of 261                 |

## Band 13 Frequency Stability Measurements



**Figure 7-12. Frequency Stability Graph (Band 13)**

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 252 of 261                 |

## Band 26/5 Frequency Stability Measurements

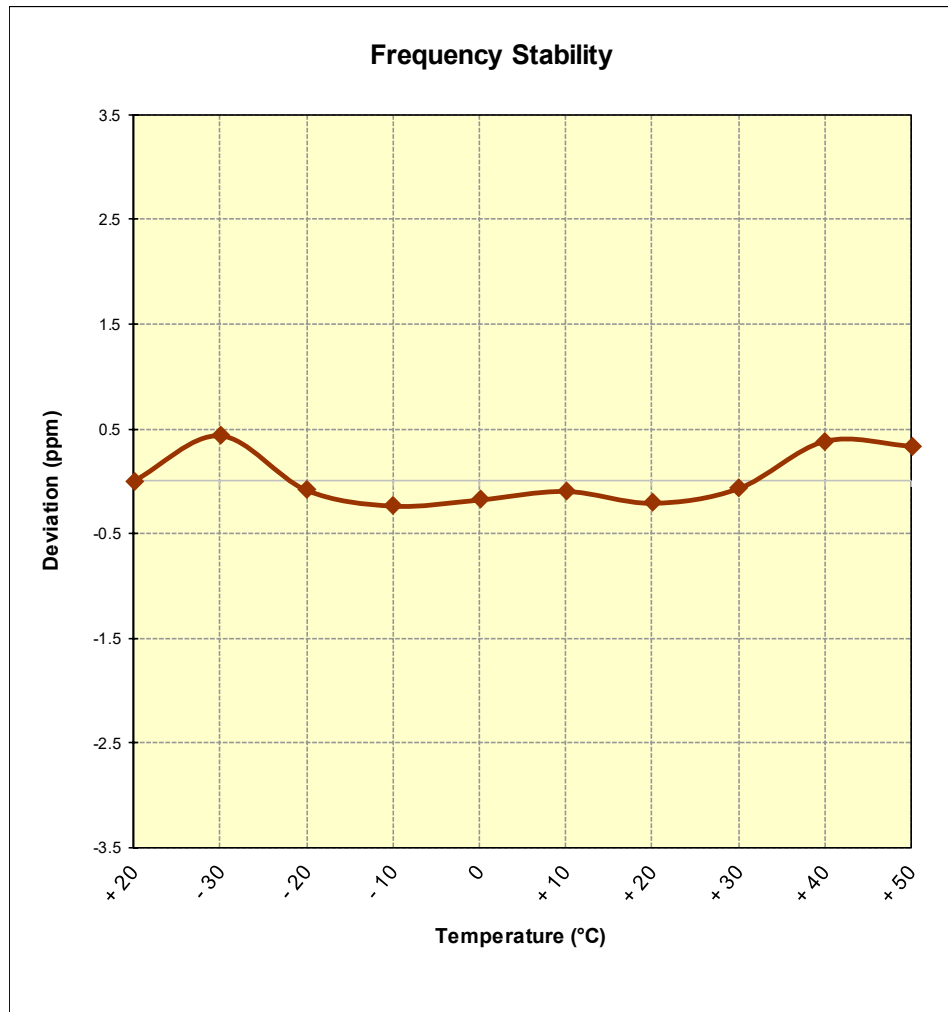
OPERATING FREQUENCY: 831,500,000 Hz  
 CHANNEL: 26865  
 REFERENCE VOLTAGE: 3.85 VDC  
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

| VOLTAGE (%)    | POWER (VDC) | TEMP (°C)  | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 %          | 3.85        | + 20 (Ref) | 831,500,003    | 3               | 0.0000004     |
| 100 %          |             | - 30       | 831,500,363    | 363             | 0.0000437     |
| 100 %          |             | - 20       | 831,499,933    | -67             | -0.0000081    |
| 100 %          |             | - 10       | 831,499,807    | -193            | -0.0000232    |
| 100 %          |             | 0          | 831,499,855    | -145            | -0.0000174    |
| 100 %          |             | + 10       | 831,499,923    | -77             | -0.0000093    |
| 100 %          |             | + 20       | 831,499,829    | -171            | -0.0000206    |
| 100 %          |             | + 30       | 831,499,945    | -55             | -0.0000066    |
| 100 %          |             | + 40       | 831,500,319    | 319             | 0.0000384     |
| 100 %          |             | + 50       | 831,500,281    | 281             | 0.0000338     |
| BATT. ENDPOINT | 3.45        | + 20       | 831,499,747    | -253            | -0.0000304    |

Table 7-45. Frequency Stability Data (Band 26/5)

|                                         |                                                                                                                                  |                               |                                                                                       |                                 |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                               |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                   | EUT Type:<br>Portable Handset |                                                                                       | Page 253 of 261                 |

## Band 26/5 Frequency Stability Measurements



**Figure 7-13. Frequency Stability Graph (Band 26/5)**

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 254 of 261                 |

## Band 66/4 Frequency Stability Measurements

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) | 1,745,000,017  | 17              | 0.0000010     |
| 100 %          |             | - 30       | 1,745,000,012  | 12              | 0.0000007     |
| 100 %          |             | - 20       | 1,744,999,938  | -62             | -0.0000036    |
| 100 %          |             | - 10       | 1,744,999,873  | -127            | -0.0000073    |
| 100 %          |             | 0          | 1,744,999,602  | -398            | -0.0000228    |
| 100 %          |             | + 10       | 1,745,000,086  | 86              | 0.0000049     |
| 100 %          |             | + 20       | 1,745,000,105  | 105             | 0.0000060     |
| 100 %          |             | + 30       | 1,744,999,617  | -383            | -0.0000219    |
| 100 %          |             | + 40       | 1,745,000,118  | 118             | 0.0000068     |
| 100 %          |             | + 50       | 1,744,999,744  | -256            | -0.0000147    |
| BATT. ENDPOINT | 3.45        | + 20       | 1,744,999,822  | -178            | -0.0000102    |

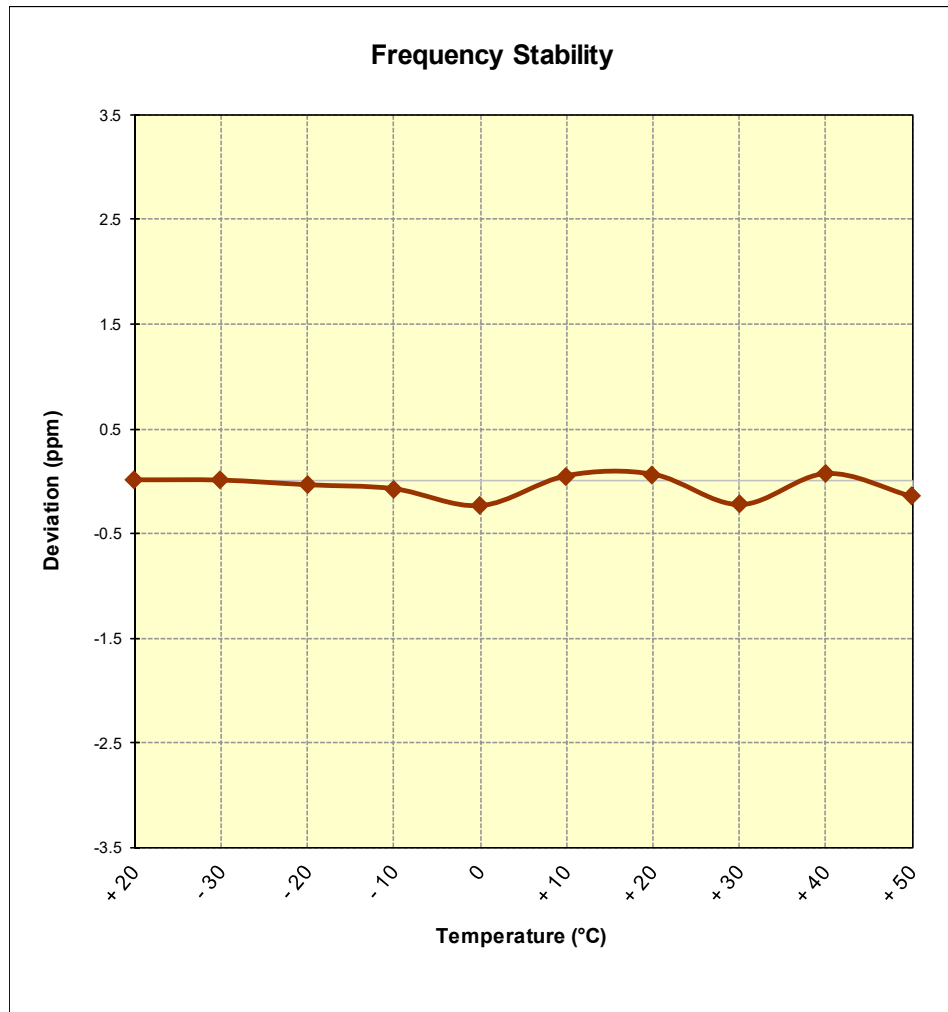
Table 7-46. Frequency Stability Data (Band 66/4)

### 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: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 255 of 261                 |

## Band 66/4 Frequency Stability Measurements



**Figure 7-14. Frequency Stability Graph (Band 66/4)**

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 256 of 261                 |

## Band 25/2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365

REFERENCE VOLTAGE: 3.85 VDC

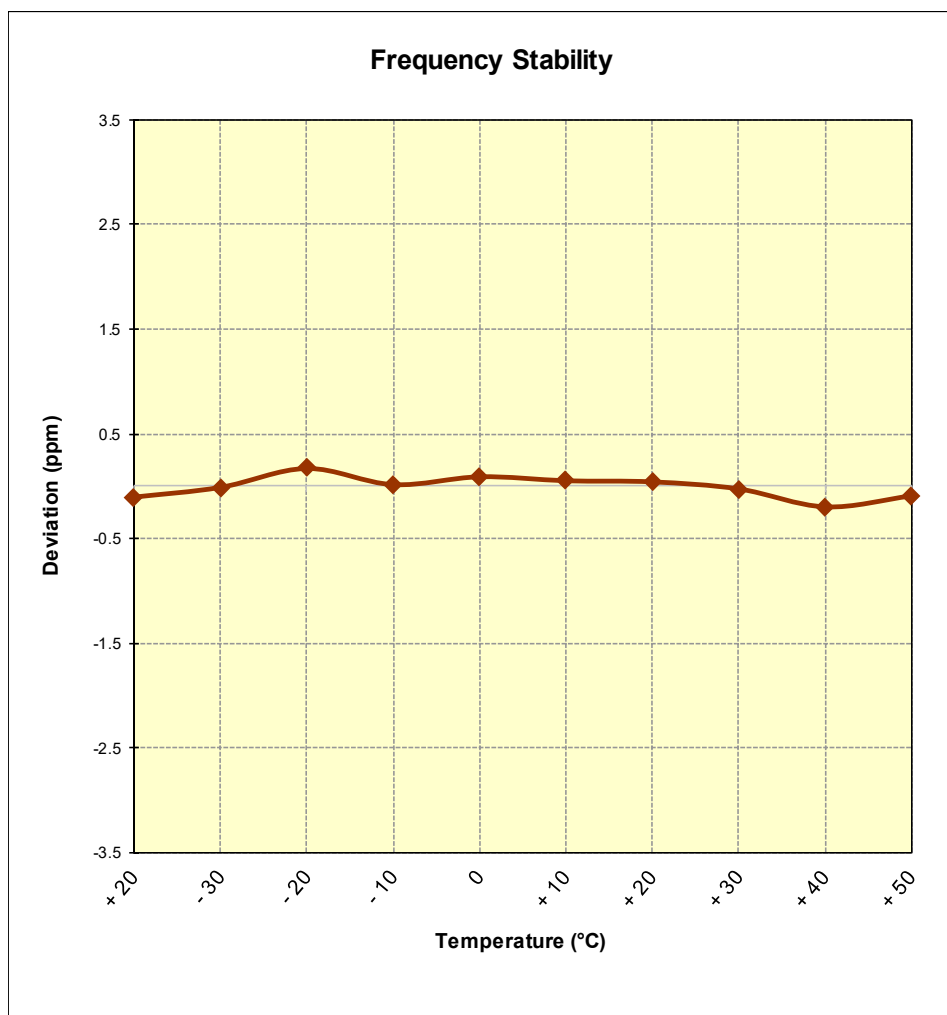
DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

| VOLTAGE (%)    | POWER (VDC) | TEMP (°C)  | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|----------------|-------------|------------|----------------|-----------------|---------------|
| 100 %          | 3.85        | + 20 (Ref) | 1,882,499,797  | -203            | -0.0000108    |
| 100 %          |             | - 30       | 1,882,499,977  | -23             | -0.0000012    |
| 100 %          |             | - 20       | 1,882,500,327  | 327             | 0.0000174     |
| 100 %          |             | - 10       | 1,882,500,027  | 27              | 0.0000014     |
| 100 %          |             | 0          | 1,882,500,174  | 174             | 0.0000092     |
| 100 %          |             | + 10       | 1,882,500,101  | 101             | 0.0000054     |
| 100 %          |             | + 20       | 1,882,500,080  | 80              | 0.0000042     |
| 100 %          |             | + 30       | 1,882,499,949  | -51             | -0.0000027    |
| 100 %          |             | + 40       | 1,882,499,617  | -383            | -0.0000203    |
| 100 %          |             | + 50       | 1,882,499,821  | -179            | -0.0000095    |
| BATT. ENDPOINT | 3.45        | + 20       | 1,882,499,952  | -48             | -0.0000025    |

Table 7-47. Frequency Stability Data (Band 25/2)

|                                         |                                                                                                                                                                                                                     |                               |                                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 257 of 261                 |

## Band 25/2 Frequency Stability Measurements



**Figure 7-15. Frequency Stability Graph (Band 25/2)**

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 258 of 261                 |

## Band 41 Frequency Stability Measurements

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) | 2,593,000,054  | 54              | 0.0000021     |
| 100 %          |             | - 30       | 2,593,000,089  | 89              | 0.0000034     |
| 100 %          |             | - 20       | 2,593,000,011  | 11              | 0.0000004     |
| 100 %          |             | - 10       | 2,592,999,952  | -48             | -0.0000019    |
| 100 %          |             | 0          | 2,593,000,064  | 64              | 0.0000025     |
| 100 %          |             | + 10       | 2,592,999,822  | -178            | -0.0000069    |
| 100 %          |             | + 20       | 2,592,999,904  | -96             | -0.0000037    |
| 100 %          |             | + 30       | 2,593,000,031  | 31              | 0.0000012     |
| 100 %          |             | + 40       | 2,593,000,118  | 118             | 0.0000046     |
| 100 %          |             | + 50       | 2,592,999,964  | -36             | -0.0000014    |
| BATT. ENDPOINT | 3.45        | + 20       | 2,593,000,001  | 1               | 0.0000000     |

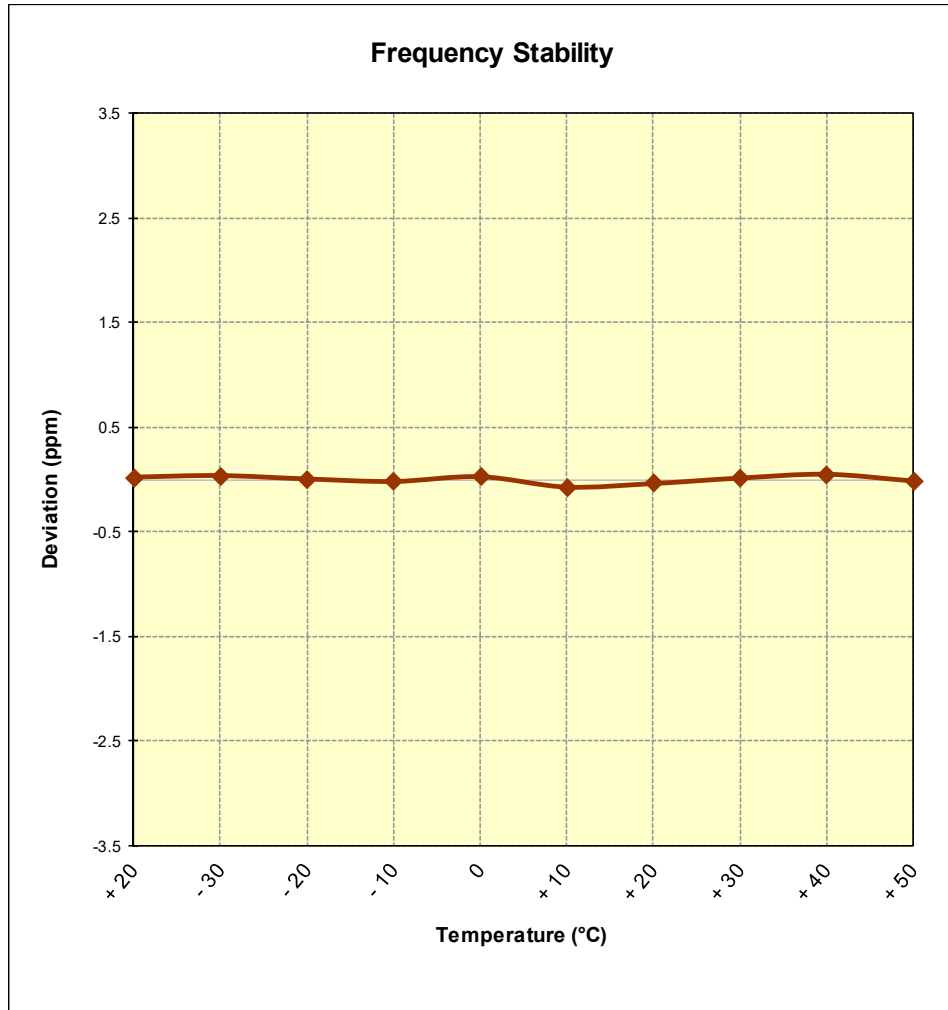
Table 7-48. Frequency Stability Data (Band 41)

### 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: A3LSMN9600                      |  <b>MEASUREMENT REPORT (CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                      | EUT Type:<br>Portable Handset | Page 259 of 261                 |

## Band 41 Frequency Stability Measurements



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

|                                         |                                                                                                                                                                                                                         |                               |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b>  |                               | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                                                                                                                                                          | EUT Type:<br>Portable Handset | Page 260 of 261                 |

## 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMN9600** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.

|                                         |                                                                                     |                                       |                                                                                       |                                 |
|-----------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------------|---------------------------------|
| FCC ID: A3LSMN9600                      |  | MEASUREMENT REPORT<br>(CERTIFICATION) |  | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1M1804300090-03.A3L | Test Dates:<br>5/3 - 6/22/2018                                                      | EUT Type:<br>Portable Handset         |                                                                                       | Page 261 of 261                 |