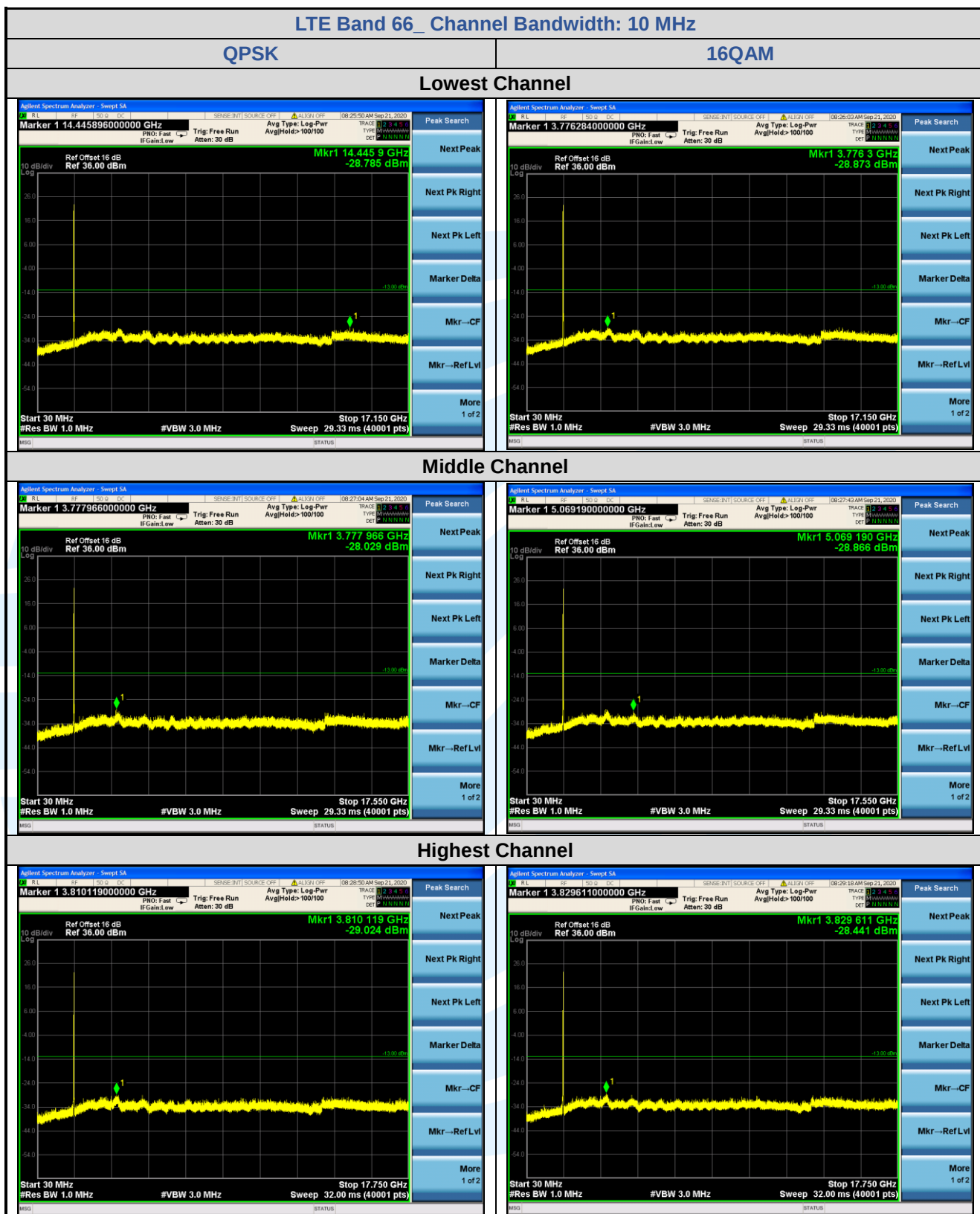
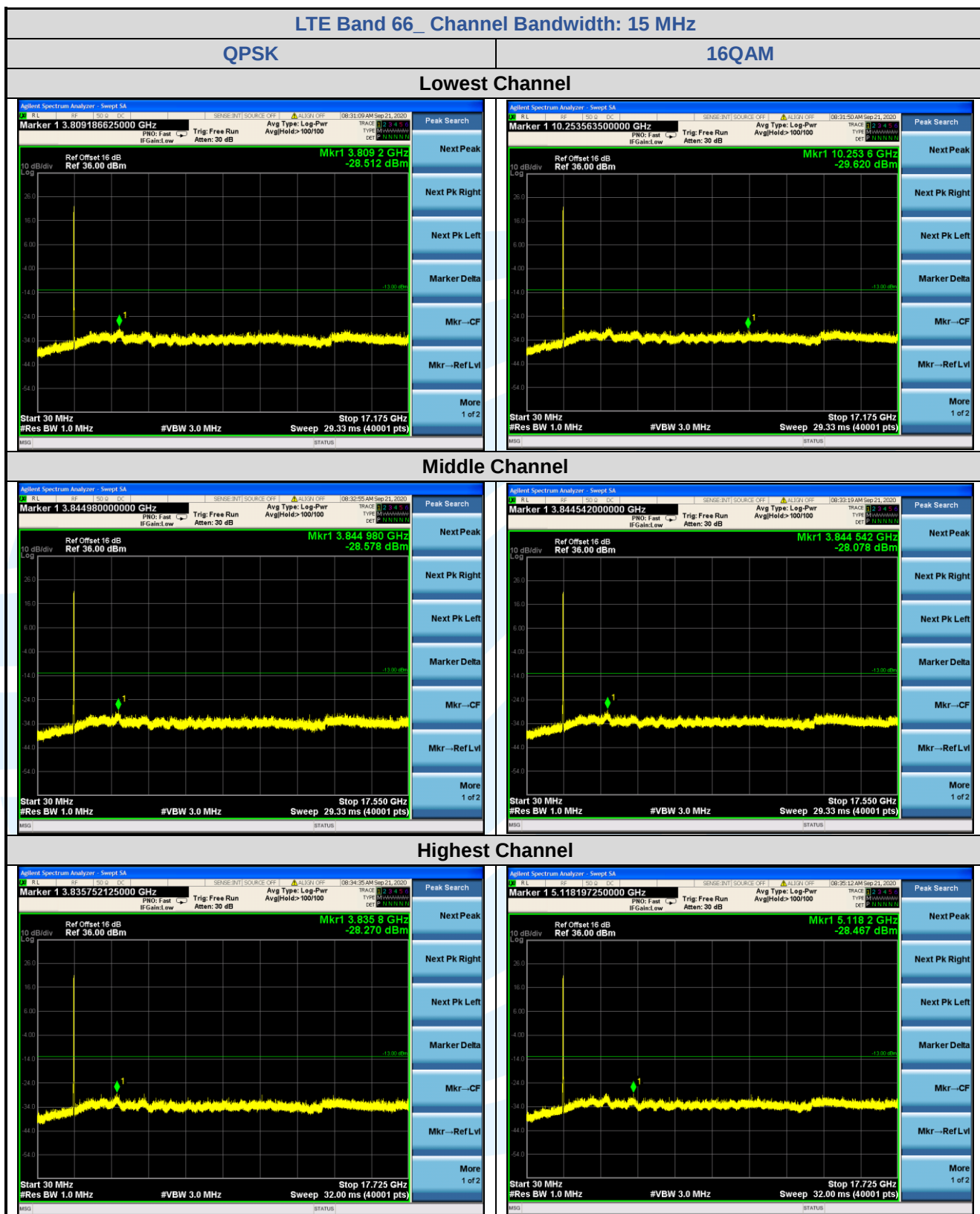
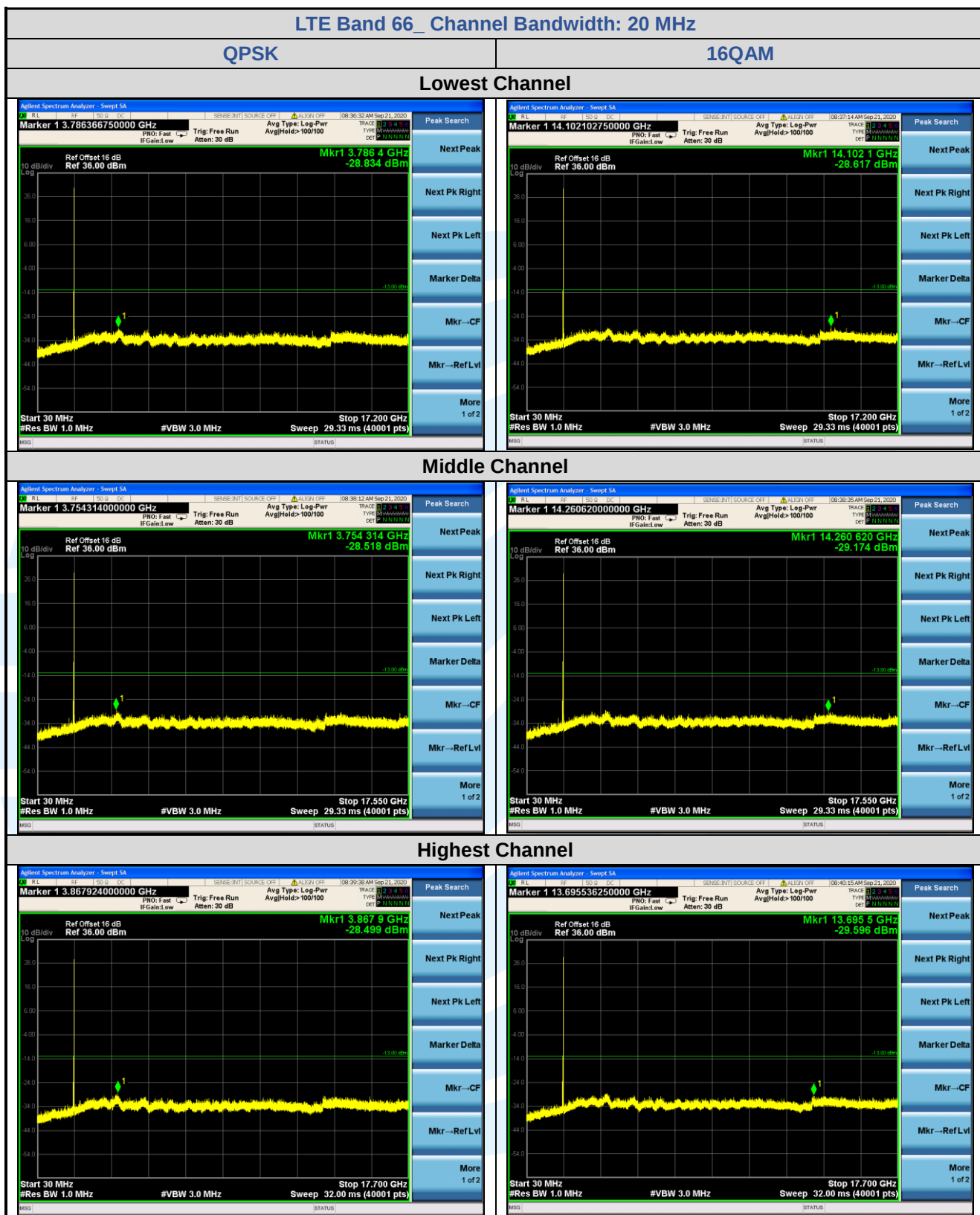








## 5.8 FIELD STRENGTH OF SPURIOUS RADIATION

**Test Requirement:** **LTE Band 2:** FCC 47 CFR Part 24.238(a), RSS-133 Issue 6, Section 6.5  
**LTE Band 4 & LTE Band 66:** FCC 47 CFR Part 27.53(h), RSS-139 Issue 3, Section 6.6  
**LTE Band 12:** FCC 47 CFR Part 27.53(g), RSS-130 Issue 2, Section 4.7  
**LTE Band 13:** FCC 47 CFR Part 27.53, RSS-130 Issue 2, Section 4.7

**Test Method:** ANSI C63.26-2015 & KDB 971168 D01v03r01

**Receiver Setup:**

| Frequency        | Detector   | RBW     | VBW     | Remark |
|------------------|------------|---------|---------|--------|
| 0.009 MHz-30 MHz | Peak       | 10 kHz  | 30 KHz  | Peak   |
| 30 MHz-1 GHz     | Quasi-peak | 100 kHz | 300 KHz | Peak   |
| Above 1 GHz      | Peak       | 1 MHz   | 3 MHz   | Peak   |

**Limits:**

**FCC 47 CFR Part 24.238(a), 27.53(h)(1), 27.53(g), 27.53(c)(2):**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13 dBm.

**FCC 47 CFR Part 27.53:**

(c) The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. ( $-70 \text{ dBW/MHz} = -40 \text{ dBm/MHz}$ ).

**RSS-133 Issue 6, Section 6.6, RSS-139 Issue 3, Section 6.5, RSS-130 Issue 2, Section 4.7:**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13 dBm.

**Test Setup:** Refer to section 4.2.1 for details.

**Test Procedures:** KDB 971168 D01v03r01 Section 7

**Equipment Used:** Refer to section 3 for details.

**Test Result:** Pass

**The measurement data as follows:**

### 5.8.1 LTE Band 2

| LTE Band 2_ 20 MHz_ QPSK_ Below 1G |           |            |                   |             |        |        |            |
|------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                    | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 54.135    | -71.03     | -5.52             | -76.55      | -13.00 | -63.55 | Horizontal |
| 2                                  | 104.798   | -76.10     | -3.37             | -79.47      | -13.00 | -66.47 | Horizontal |
| 3                                  | 952.000   | -82.53     | 14.42             | -68.11      | -13.00 | -55.11 | Horizontal |
| 4                                  | 52.634    | -70.77     | -5.57             | -76.34      | -13.00 | -63.34 | Vertical   |
| 5                                  | 121.462   | -69.43     | -3.65             | -73.08      | -13.00 | -60.08 | Vertical   |
| 6                                  | 938.714   | -80.05     | 12.99             | -67.06      | -13.00 | -54.06 | Vertical   |
| Middle Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 54.135    | -70.25     | -5.52             | -75.77      | -13.00 | -62.77 | Horizontal |
| 2                                  | 101.893   | -75.24     | -3.33             | -78.57      | -13.00 | -65.57 | Horizontal |
| 3                                  | 938.714   | -82.27     | 14.08             | -68.19      | -13.00 | -55.19 | Horizontal |
| 4                                  | 35.762    | -77.39     | 0.35              | -77.04      | -13.00 | -64.04 | Vertical   |
| 5                                  | 123.181   | -71.35     | -3.64             | -74.99      | -13.00 | -61.99 | Vertical   |
| 6                                  | 925.613   | -81.21     | 13.01             | -68.20      | -13.00 | -55.20 | Vertical   |
| Highest Channel                    |           |            |                   |             |        |        |            |
| 1                                  | 51.176    | -71.12     | -5.29             | -76.41      | -13.00 | -63.41 | Horizontal |
| 2                                  | 129.392   | -75.51     | -3.59             | -79.10      | -13.00 | -66.10 | Horizontal |
| 3                                  | 919.132   | -81.35     | 13.48             | -67.87      | -13.00 | -54.87 | Horizontal |
| 4                                  | 50.461    | -72.05     | -5.61             | -77.66      | -13.00 | -64.66 | Vertical   |
| 5                                  | 122.319   | -70.69     | -3.65             | -74.34      | -13.00 | -61.34 | Vertical   |
| 6                                  | 906.304   | -81.19     | 12.83             | -68.36      | -13.00 | -55.36 | Vertical   |

| LTE Band 2_ 20 MHz_ QPSK_ Above 1G |           |            |                   |             |        |        |            |
|------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                    | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 3720.000  | -64.74     | 6.82              | -57.92      | -13.00 | -44.92 | Horizontal |
| 2                                  | 5580.000  | -65.75     | 10.86             | -54.89      | -13.00 | -41.89 | Horizontal |
| 3                                  | 3720.000  | -64.44     | 6.81              | -57.63      | -13.00 | -44.63 | Vertical   |
| 4                                  | 5580.000  | -66.19     | 11.34             | -54.85      | -13.00 | -41.85 | Vertical   |
| Middle Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 3760.000  | -64.81     | 6.93              | -57.88      | -13.00 | -44.88 | Horizontal |
| 2                                  | 5640.000  | -65.69     | 10.84             | -54.85      | -13.00 | -41.85 | Horizontal |
| 3                                  | 3760.000  | -64.89     | 6.93              | -57.96      | -13.00 | -44.96 | Vertical   |
| 4                                  | 5640.000  | -66.23     | 11.32             | -54.91      | -13.00 | -41.91 | Vertical   |
| Highest Channel                    |           |            |                   |             |        |        |            |
| 1                                  | 3800.000  | -64.40     | 7.03              | -57.37      | -13.00 | -44.37 | Horizontal |
| 2                                  | 5700.000  | -65.94     | 10.83             | -55.11      | -13.00 | -42.11 | Horizontal |
| 3                                  | 3800.000  | -64.08     | 7.05              | -57.03      | -13.00 | -44.03 | Vertical   |
| 4                                  | 5700.000  | -65.56     | 11.29             | -54.27      | -13.00 | -41.27 | Vertical   |

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### 5.8.2 LTE Band 4

| LTE Band 4_ 20 MHz_ QPSK_ Below 1G |           |            |                   |             |        |        |            |
|------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                    | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 54.135    | -70.50     | -5.52             | -76.02      | -13.00 | -63.02 | Horizontal |
| 2                                  | 104.064   | -76.21     | -3.36             | -79.57      | -13.00 | -66.57 | Horizontal |
| 3                                  | 815.635   | -80.56     | 11.86             | -68.70      | -13.00 | -55.70 | Horizontal |
| 4                                  | 53.379    | -72.20     | -5.56             | -77.76      | -13.00 | -64.76 | Vertical   |
| 5                                  | 123.181   | -70.63     | -3.64             | -74.27      | -13.00 | -61.27 | Vertical   |
| 6                                  | 887.398   | -80.77     | 12.40             | -68.37      | -13.00 | -55.37 | Vertical   |
| Middle Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 52.634    | -71.81     | -5.41             | -77.22      | -13.00 | -64.22 | Horizontal |
| 2                                  | 101.893   | -76.09     | -3.33             | -79.42      | -13.00 | -66.42 | Horizontal |
| 3                                  | 952.000   | -82.86     | 14.42             | -68.44      | -13.00 | -55.44 | Horizontal |
| 4                                  | 52.634    | -70.55     | -5.57             | -76.12      | -13.00 | -63.12 | Vertical   |
| 5                                  | 120.612   | -71.21     | -3.66             | -74.87      | -13.00 | -61.87 | Vertical   |
| 6                                  | 932.141   | -82.10     | 13.00             | -69.10      | -13.00 | -56.10 | Vertical   |
| Highest Channel                    |           |            |                   |             |        |        |            |
| 1                                  | 55.288    | -70.66     | -5.60             | -76.26      | -13.00 | -63.26 | Horizontal |
| 2                                  | 101.893   | -76.63     | -3.33             | -79.96      | -13.00 | -66.96 | Horizontal |
| 3                                  | 912.695   | -81.02     | 13.32             | -67.70      | -13.00 | -54.70 | Horizontal |
| 4                                  | 53.379    | -72.26     | -5.56             | -77.82      | -13.00 | -64.82 | Vertical   |
| 5                                  | 121.462   | -71.83     | -3.65             | -75.48      | -13.00 | -62.48 | Vertical   |
| 6                                  | 952.000   | -81.51     | 12.97             | -68.54      | -13.00 | -55.54 | Vertical   |

| LTE Band 4_ 20 MHz_ QPSK _ Above 1G |           |            |                   |             |        |        |            |
|-------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                 | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                     | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 3440.000  | -63.14     | 5.94              | -57.20      | -13.00 | -44.20 | Horizontal |
| 2                                   | 5160.000  | -65.11     | 9.17              | -55.94      | -13.00 | -42.94 | Horizontal |
| 3                                   | 3440.000  | -65.37     | 5.75              | -59.62      | -13.00 | -46.62 | Vertical   |
| 4                                   | 5160.000  | -65.49     | 9.53              | -55.96      | -13.00 | -42.96 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 3465.000  | -65.61     | 6.02              | -59.59      | -13.00 | -46.59 | Horizontal |
| 2                                   | 5197.500  | -65.08     | 9.31              | -55.77      | -13.00 | -42.77 | Horizontal |
| 3                                   | 3465.000  | -65.10     | 5.87              | -59.23      | -13.00 | -46.23 | Vertical   |
| 4                                   | 5197.500  | -65.54     | 9.69              | -55.85      | -13.00 | -42.85 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 3490.000  | -64.32     | 6.11              | -58.21      | -13.00 | -45.21 | Horizontal |
| 2                                   | 5235.000  | -65.54     | 9.50              | -56.04      | -13.00 | -43.04 | Horizontal |
| 3                                   | 3490.000  | -64.54     | 5.99              | -58.55      | -13.00 | -45.55 | Vertical   |
| 4                                   | 5235.000  | -65.21     | 9.89              | -55.32      | -13.00 | -42.32 | Vertical   |

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### 5.8.3 LTE Band 12

| LTE Band 12_ 10 MHz_ QPSK_ Below 1G |           |            |                   |             |        |        |            |
|-------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                 | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                     | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 31.513    | -90.68     | 31.95             | -58.73      | -13.00 | -45.73 | Horizontal |
| 2                                   | 373.886   | -87.15     | 32.92             | -54.23      | -13.00 | -41.23 | Horizontal |
| 3                                   | 986.044   | -85.64     | 42.90             | -42.74      | -13.00 | -29.74 | Horizontal |
| 4                                   | 31.959    | -90.78     | 31.77             | -59.01      | -13.00 | -46.01 | Vertical   |
| 5                                   | 512.948   | -88.84     | 37.02             | -51.82      | -13.00 | -38.82 | Vertical   |
| 6                                   | 925.613   | -86.84     | 42.10             | -44.74      | -13.00 | -31.74 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 31.513    | -90.50     | 31.95             | -58.55      | -13.00 | -45.55 | Horizontal |
| 2                                   | 315.860   | -87.07     | 31.48             | -55.59      | -13.00 | -42.59 | Horizontal |
| 3                                   | 952.000   | -86.78     | 43.44             | -43.34      | -13.00 | -30.34 | Horizontal |
| 4                                   | 31.292    | -90.63     | 32.19             | -58.44      | -13.00 | -45.44 | Vertical   |
| 5                                   | 190.441   | -87.50     | 26.97             | -60.53      | -13.00 | -47.53 | Vertical   |
| 6                                   | 899.958   | -86.40     | 41.90             | -44.50      | -13.00 | -31.50 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 31.513    | -90.00     | 31.95             | -58.05      | -13.00 | -45.05 | Horizontal |
| 2                                   | 106.281   | -87.42     | 25.38             | -62.04      | -13.00 | -49.04 | Horizontal |
| 3                                   | 958.714   | -87.07     | 43.29             | -43.78      | -13.00 | -30.78 | Horizontal |
| 4                                   | 31.292    | -90.93     | 32.19             | -58.74      | -13.00 | -45.74 | Vertical   |
| 5                                   | 181.300   | -87.19     | 27.18             | -60.01      | -13.00 | -47.01 | Vertical   |
| 6                                   | 938.714   | -87.12     | 42.04             | -45.08      | -13.00 | -32.08 | Vertical   |

| LTE Band 12_ 10 MHz_ QPSK_ Above 1G |           |            |                   |             |        |        |            |
|-------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                 | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                     | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 1408.000  | -64.24     | -0.43             | -64.67      | -13.00 | -51.67 | Horizontal |
| 2                                   | 2112.000  | -65.68     | 2.00              | -63.68      | -13.00 | -50.68 | Horizontal |
| 3                                   | 1408.000  | -63.75     | -1.20             | -64.95      | -13.00 | -51.95 | Vertical   |
| 4                                   | 2112.000  | -64.89     | 1.52              | -63.37      | -13.00 | -50.37 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 1415.000  | -63.53     | -0.44             | -63.97      | -13.00 | -50.97 | Horizontal |
| 2                                   | 2122.500  | -64.08     | 2.00              | -62.08      | -13.00 | -49.08 | Horizontal |
| 3                                   | 1415.000  | -63.59     | -1.22             | -64.81      | -13.00 | -51.81 | Vertical   |
| 4                                   | 2122.500  | -64.34     | 1.53              | -62.81      | -13.00 | -49.81 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 1422.000  | -63.31     | -0.45             | -63.76      | -13.00 | -50.76 | Horizontal |
| 2                                   | 2133.000  | -64.51     | 2.01              | -62.50      | -13.00 | -49.50 | Horizontal |
| 3                                   | 1422.000  | -65.45     | -1.24             | -66.69      | -13.00 | -53.69 | Vertical   |
| 4                                   | 2133.000  | -64.70     | 1.53              | -63.17      | -13.00 | -50.17 | Vertical   |

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#### 5.8.4 LTE Band 13

| LTE Band 13_5 MHz_QPSK_Below 1G |           |            |                   |             |        |        |            |
|---------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                             | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                 | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                  |           |            |                   |             |        |        |            |
| 1                               | 31.959    | -90.58     | 31.72             | -58.86      | -13.00 | -45.86 | Horizontal |
| 2                               | 104.798   | -87.68     | 25.41             | -62.27      | -13.00 | -49.27 | Horizontal |
| 3                               | 979.139   | -86.97     | 42.89             | -44.08      | -13.00 | -31.08 | Horizontal |
| 4                               | 31.959    | -90.17     | 31.77             | -58.40      | -13.00 | -45.40 | Vertical   |
| 5                               | 554.171   | -87.46     | 37.82             | -49.64      | -13.00 | -36.64 | Vertical   |
| 6                               | 952.000   | -86.31     | 41.99             | -44.32      | -13.00 | -31.32 | Vertical   |
| Middle Channel                  |           |            |                   |             |        |        |            |
| 1                               | 32.870    | -90.00     | 31.26             | -58.74      | -13.00 | -45.74 | Horizontal |
| 2                               | 418.378   | -87.95     | 34.85             | -53.10      | -13.00 | -40.10 | Horizontal |
| 3                               | 925.613   | -86.98     | 42.72             | -44.26      | -13.00 | -31.26 | Horizontal |
| 4                               | 33.570    | -90.81     | 30.74             | -60.07      | -13.00 | -47.07 | Vertical   |
| 5                               | 158.640   | -87.11     | 26.49             | -60.62      | -13.00 | -47.62 | Vertical   |
| 6                               | 972.283   | -85.85     | 41.99             | -43.86      | -13.00 | -30.86 | Vertical   |
| Highest Channel                 |           |            |                   |             |        |        |            |
| 1                               | 31.959    | -91.28     | 31.72             | -59.56      | -13.00 | -46.56 | Horizontal |
| 2                               | 346.074   | -88.24     | 32.86             | -55.38      | -13.00 | -42.38 | Horizontal |
| 3                               | 945.334   | -86.67     | 43.34             | -43.33      | -13.00 | -30.33 | Horizontal |
| 4                               | 30.212    | -91.25     | 32.88             | -58.37      | -13.00 | -45.37 | Vertical   |
| 5                               | 280.294   | -87.32     | 30.50             | -56.82      | -13.00 | -43.82 | Vertical   |
| 6                               | 965.474   | -87.34     | 41.99             | -45.35      | -13.00 | -32.35 | Vertical   |

| LTE Band 13_5 MHz_QPSK_Above 1G |           |            |                   |             |        |        |            |
|---------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                             | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                 | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                  |           |            |                   |             |        |        |            |
| 1                               | 1559.000  | -64.61     | -0.43             | -65.04      | -13.00 | -52.04 | Horizontal |
| 2                               | 2338.500  | -64.62     | 2.39              | -62.23      | -13.00 | -49.23 | Horizontal |
| 3                               | 1559.000  | -64.17     | -1.28             | -65.45      | -13.00 | -52.45 | Vertical   |
| 4                               | 2338.500  | -64.30     | 1.96              | -62.34      | -13.00 | -49.34 | Vertical   |
| Middle Channel                  |           |            |                   |             |        |        |            |
| 1                               | 1564.000  | -64.25     | -0.41             | -64.66      | -13.00 | -51.66 | Horizontal |
| 2                               | 2346.000  | -64.19     | 2.41              | -61.78      | -13.00 | -48.78 | Horizontal |
| 3                               | 1564.000  | -64.29     | -1.26             | -65.55      | -13.00 | -52.55 | Vertical   |
| 4                               | 2346.000  | -64.54     | 1.98              | -62.56      | -13.00 | -49.56 | Vertical   |
| Highest Channel                 |           |            |                   |             |        |        |            |
| 1                               | 1569.000  | -65.48     | -0.39             | -65.87      | -13.00 | -52.87 | Horizontal |
| 2                               | 2353.500  | -63.84     | 2.43              | -61.41      | -13.00 | -48.41 | Horizontal |
| 3                               | 1569.000  | -64.72     | -1.24             | -65.96      | -13.00 | -52.96 | Vertical   |
| 4                               | 2353.500  | -64.38     | 2.01              | -62.37      | -13.00 | -49.37 | Vertical   |

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### 5.8.5 LTE Band 66

| LTE Band 66_ 20 MHz_ QPSK_ Below 1G |           |            |                   |             |        |        |            |
|-------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                 | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                     | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 54.135    | -71.04     | -5.52             | -76.56      | -13.00 | -63.56 | Horizontal |
| 2                                   | 101.893   | -76.40     | -3.33             | -79.73      | -13.00 | -66.73 | Horizontal |
| 3                                   | 965.474   | -82.31     | 14.13             | -68.18      | -13.00 | -55.18 | Horizontal |
| 4                                   | 53.006    | -71.43     | -5.56             | -76.99      | -13.00 | -63.99 | Vertical   |
| 5                                   | 122.319   | -71.35     | -3.65             | -75.00      | -13.00 | -62.00 | Vertical   |
| 6                                   | 965.474   | -82.26     | 13.00             | -69.26      | -13.00 | -56.26 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 54.135    | -70.51     | -5.52             | -76.03      | -13.00 | -63.03 | Horizontal |
| 2                                   | 102.612   | -77.57     | -3.34             | -80.91      | -13.00 | -67.91 | Horizontal |
| 3                                   | 952.000   | -82.30     | 14.42             | -67.88      | -13.00 | -54.88 | Horizontal |
| 4                                   | 54.135    | -70.73     | -5.55             | -76.28      | -13.00 | -63.28 | Vertical   |
| 5                                   | 122.319   | -71.55     | -3.65             | -75.20      | -13.00 | -62.20 | Vertical   |
| 6                                   | 899.958   | -81.44     | 12.75             | -68.69      | -13.00 | -55.69 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 54.135    | -70.08     | -5.52             | -75.60      | -13.00 | -62.60 | Horizontal |
| 2                                   | 104.798   | -77.51     | -3.37             | -80.88      | -13.00 | -67.88 | Horizontal |
| 3                                   | 958.714   | -81.60     | 14.29             | -67.31      | -13.00 | -54.31 | Horizontal |
| 4                                   | 53.006    | -71.09     | -5.56             | -76.65      | -13.00 | -63.65 | Vertical   |
| 5                                   | 121.462   | -71.66     | -3.65             | -75.31      | -13.00 | -62.31 | Vertical   |
| 6                                   | 938.714   | -81.76     | 12.99             | -68.77      | -13.00 | -55.77 | Vertical   |

| LTE Band 66_ 20 MHz_ QPSK_ Above 1G |           |            |                   |             |        |        |            |
|-------------------------------------|-----------|------------|-------------------|-------------|--------|--------|------------|
| No.                                 | Frequency | SA Reading | Correction factor | EIRP Result | Limit  | Margin | Ant. Pol.  |
|                                     | (MHz)     | (dBm)      | (dB/m)            | (dBm)       | (dBm)  | (dB)   |            |
| Lowest Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 3440.000  | -62.80     | 5.94              | -56.86      | -13.00 | -43.86 | Horizontal |
| 2                                   | 5160.000  | -64.36     | 9.17              | -55.19      | -13.00 | -42.19 | Horizontal |
| 3                                   | 3440.000  | -63.08     | 5.75              | -57.33      | -13.00 | -44.33 | Vertical   |
| 4                                   | 5160.000  | -64.62     | 9.53              | -55.09      | -13.00 | -42.09 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 3490.000  | -63.23     | 6.11              | -57.12      | -13.00 | -44.12 | Horizontal |
| 2                                   | 5235.000  | -64.37     | 9.50              | -54.87      | -13.00 | -41.87 | Horizontal |
| 3                                   | 3490.000  | -64.00     | 5.99              | -58.01      | -13.00 | -45.01 | Vertical   |
| 4                                   | 5235.000  | -65.24     | 9.89              | -55.35      | -13.00 | -42.35 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 3540.000  | -66.41     | 6.27              | -60.14      | -13.00 | -47.14 | Horizontal |
| 2                                   | 5310.000  | -67.56     | 9.89              | -57.67      | -13.00 | -44.67 | Horizontal |
| 3                                   | 3540.000  | -66.04     | 6.19              | -59.85      | -13.00 | -46.85 | Vertical   |
| 4                                   | 5310.000  | -67.57     | 10.31             | -57.26      | -13.00 | -44.26 | Vertical   |

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UTTR-RF-FCC4G-V1.1

## Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result – Limit



## 5.9 FREQUENCY STABILITY

**Test Requirement:** FCC 47 CFR Part 2.1055 &  
FCC 47 CFR Part 24.235 &  
FCC 47 CFR Part 27.54,  
RSS-133 Issue 6, Section 6.3 & RSS-139 Issue 3, Section 6.4  
RSS-130 Issue 2, Section 4.5

**Test Method:** ANSI C63.26-2015 & KDB 971168 D01v03r01

**Limits:**

### **FCC 47 CFR Part 24.235, FCC 47 CFR Part 27.54**

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### **RSS-133 Issue 6, Section 6.3:**

The carrier frequency shall not depart from the reference frequency, in excess of  $\pm 2.5$  ppm for mobile stations and  $\pm 1.0$  ppm for base stations.

### **RSS-139 Issue 3, Section 6.4, RSS-130 Issue 2, Section 4.5:**

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

**Test Setup:** Refer to section 4.2.2 for details.

### **Test Procedures:**

- 1) Use CMW 500 or CMU 200 with Frequency Error measurement capability.
  - a) Temp. =  $-30^{\circ}$  to  $+50^{\circ}\text{C}$
  - b) Voltage = low voltage, 3.2 Vdc, Normal, 3.8Vdc and High voltage, 4.5 Vdc.

- 2) Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to  $20^{\circ}\text{C}$  and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until  $+50^{\circ}\text{C}$  is reached.

- 3) Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

**Equipment Used:** Refer to section 3 for details.

**Test Result:** Pass

### 5.9.1 LTE Band 2

| Modulation                   | Channel/<br>Frequency | Voltage | Temperature | Deviation | Deviation | Limit | Pass/ Fail |
|------------------------------|-----------------------|---------|-------------|-----------|-----------|-------|------------|
|                              | (MHz)                 | (Vdc)   | (°C)        | (Hz)      | (ppm)     | (ppm) |            |
| LTE Band 2 / 20MHz / Full RB |                       |         |             |           |           |       |            |
| QPSK                         | 18900 /<br>1880.0     | VL      | TN          | -12       | -0.0064   | N/A   | Pass       |
|                              |                       | VN      |             | -10       | -0.0053   |       | Pass       |
|                              |                       | VH      |             | -8        | -0.0043   |       | Pass       |
|                              |                       | VN      | 50          | -13       | -0.0069   |       | Pass       |
|                              |                       |         | 40          | -16       | -0.0085   |       | Pass       |
|                              |                       |         | 30          | -6        | -0.0032   |       | Pass       |
|                              |                       |         | 20          | -8        | -0.0043   |       | Pass       |
|                              |                       |         | 10          | -12       | -0.0064   |       | Pass       |
|                              |                       |         | 0           | -14       | -0.0074   |       | Pass       |
|                              |                       |         | -10         | -15       | -0.0080   |       | Pass       |
|                              |                       |         | -20         | -10       | -0.0053   |       | Pass       |
|                              |                       |         | -30         | -11       | -0.0059   |       | Pass       |

### 5.9.2 LTE Band 4

| Modulation                   | Channel/<br>Frequency | Voltage | Temperature | Deviation | Deviation | Limit | Pass/ Fail |
|------------------------------|-----------------------|---------|-------------|-----------|-----------|-------|------------|
|                              | (MHz)                 | (Vdc)   | (°C)        | (Hz)      | (ppm)     | (ppm) |            |
| LTE Band 4 / 20MHz / Full RB |                       |         |             |           |           |       |            |
| QPSK                         | 20175 /<br>1732.5     | VL      | TN          | -13       | -0.0075   | N/A   | Pass       |
|                              |                       | VN      |             | -13       | -0.0075   |       | Pass       |
|                              |                       | VH      |             | -11       | -0.0063   |       | Pass       |
|                              |                       | VN      | 50          | -16       | -0.0092   |       | Pass       |
|                              |                       |         | 40          | -19       | -0.0110   |       | Pass       |
|                              |                       |         | 30          | -9        | -0.0052   |       | Pass       |
|                              |                       |         | 20          | -11       | -0.0063   |       | Pass       |
|                              |                       |         | 10          | -15       | -0.0087   |       | Pass       |
|                              |                       |         | 0           | -17       | -0.0098   |       | Pass       |
|                              |                       |         | -10         | -18       | -0.0104   |       | Pass       |
|                              |                       |         | -20         | -13       | -0.0075   |       | Pass       |
|                              |                       |         | -30         | -14       | -0.0081   |       | Pass       |

### 5.9.3 LTE Band 12

| Modulation                    | Channel/<br>Frequency | Voltage | Temperature | Deviation | Deviation | Limit | Result |
|-------------------------------|-----------------------|---------|-------------|-----------|-----------|-------|--------|
|                               | (MHz)                 | (Vdc)   | (°C)        | (Hz)      | (ppm)     | (ppm) |        |
| LTE Band 12 / 10MHz / Full RB |                       |         |             |           |           |       |        |
| QPSK                          | 23095 / 707.5         | VL      | TN          | -7        | -0.0099   | N/A   | Pass   |
|                               |                       | VN      |             | -13       | -0.0184   |       | Pass   |
|                               |                       | VH      |             | -12       | -0.0170   |       | Pass   |
|                               |                       | VN      | 50          | -9        | -0.0127   |       | Pass   |
|                               |                       |         | 40          | -12       | -0.0170   |       | Pass   |
|                               |                       |         | 30          | -13       | -0.0184   |       | Pass   |
|                               |                       |         | 20          | -10       | -0.0141   |       | Pass   |
|                               |                       |         | 10          | -12       | -0.0170   |       | Pass   |
|                               |                       |         | 0           | -17       | -0.0240   |       | Pass   |
|                               |                       |         | -10         | -16       | -0.0226   |       | Pass   |
|                               |                       |         | -20         | -13       | -0.0184   |       | Pass   |
|                               |                       |         | -30         | -17       | -0.0240   |       | Pass   |

### 5.9.4 LTE Band 13

| Modulation                    | Channel/<br>Frequency<br>(MHz) | Voltage<br>(Vdc) | Temperature<br>(°C) | Deviation<br>(Hz) | Deviation<br>(ppm) | Limit<br>(ppm) | Result |
|-------------------------------|--------------------------------|------------------|---------------------|-------------------|--------------------|----------------|--------|
| LTE Band 13 / 10MHz / Full RB |                                |                  |                     |                   |                    |                |        |
| QPSK                          | 23230 / 782                    | VL               | TN                  | -5                | -0.0064            | N/A            | Pass   |
|                               |                                | VN               |                     | -4                | -0.0051            |                | Pass   |
|                               |                                | VH               |                     | -8                | -0.0102            |                | Pass   |
|                               |                                | VN               | 50                  | -12               | -0.0153            |                | Pass   |
|                               |                                |                  | 40                  | -9                | -0.0115            |                | Pass   |
|                               |                                |                  | 30                  | -11               | -0.0141            |                | Pass   |
|                               |                                |                  | 20                  | -10               | -0.0128            |                | Pass   |
|                               |                                |                  | 10                  | -6                | -0.0077            |                | Pass   |
|                               |                                |                  | 0                   | -8                | -0.0102            |                | Pass   |
|                               |                                |                  | -10                 | -13               | -0.0166            |                | Pass   |
|                               |                                |                  | -20                 | -12               | -0.0153            |                | Pass   |
|                               |                                |                  | -30                 | -10               | -0.0128            |                | Pass   |

### 5.9.5 LTE Band 66

| Modulation                    | Channel/<br>Frequency<br>(MHz) | Voltage<br>(Vdc) | Temperature<br>(°C) | Deviation<br>(Hz) | Deviation<br>(ppm) | Limit<br>(ppm) | Result |
|-------------------------------|--------------------------------|------------------|---------------------|-------------------|--------------------|----------------|--------|
| LTE Band 66 / 20MHz / Full RB |                                |                  |                     |                   |                    |                |        |
| QPSK                          | 132322 / 1745                  | VL               | TN                  | -14               | -0.0080            | N/A            | Pass   |
|                               |                                | VN               |                     | -7                | -0.0040            |                | Pass   |
|                               |                                | VH               |                     | -8                | -0.0046            |                | Pass   |
|                               |                                | VN               | 50                  | -11               | -0.0063            |                | Pass   |
|                               |                                |                  | 40                  | -13               | -0.0074            |                | Pass   |
|                               |                                |                  | 30                  | -9                | -0.0052            |                | Pass   |
|                               |                                |                  | 20                  | -4                | -0.0023            |                | Pass   |
|                               |                                |                  | 10                  | -7                | -0.0040            |                | Pass   |
|                               |                                |                  | 0                   | -8                | -0.0046            |                | Pass   |
|                               |                                |                  | -10                 | -12               | -0.0069            |                | Pass   |
|                               |                                |                  | -20                 | -14               | -0.0080            |                | Pass   |
|                               |                                |                  | -30                 | -7                | -0.0040            |                | Pass   |

## APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

## APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

\*\*\* End of Report \*\*\*

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The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.

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