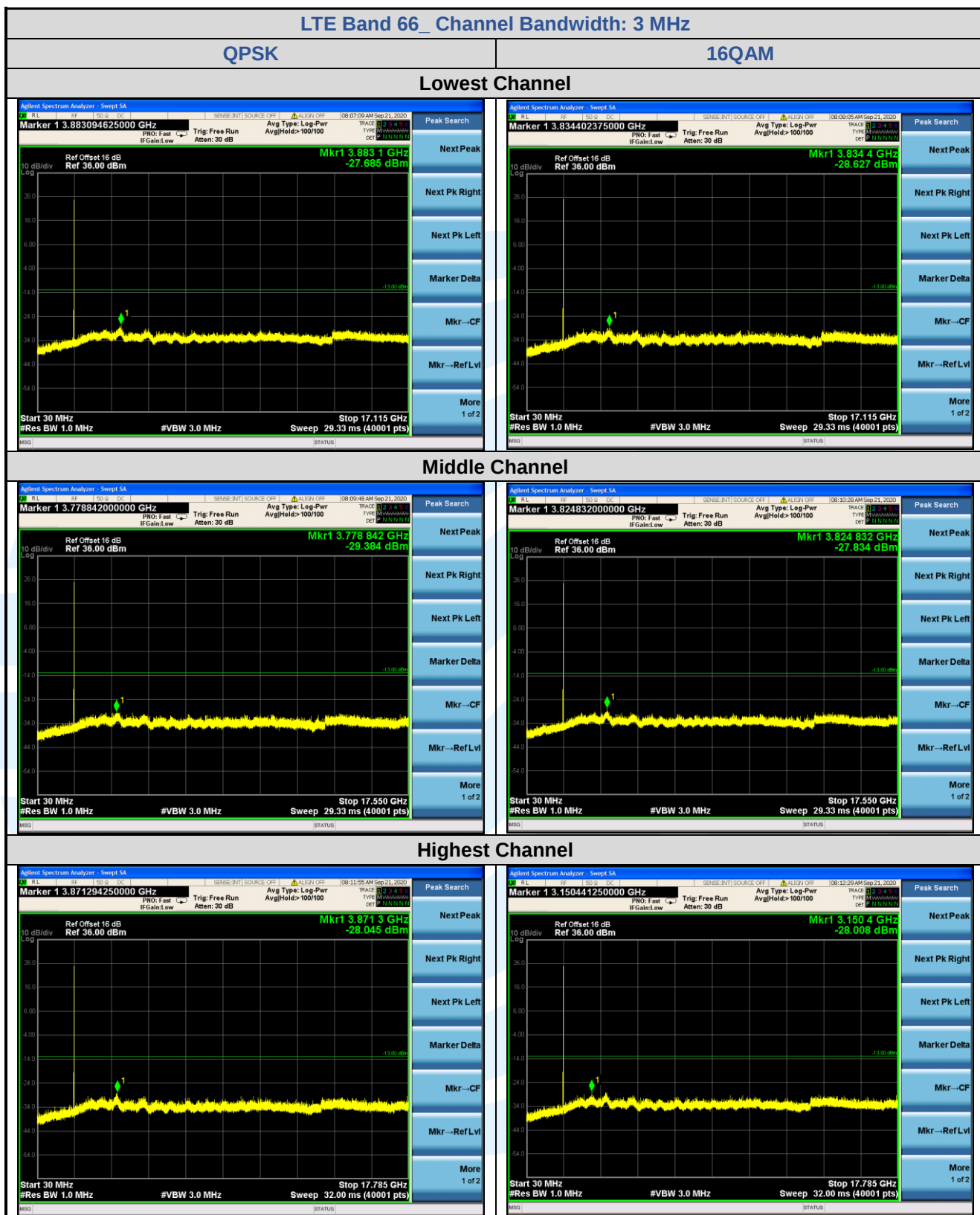
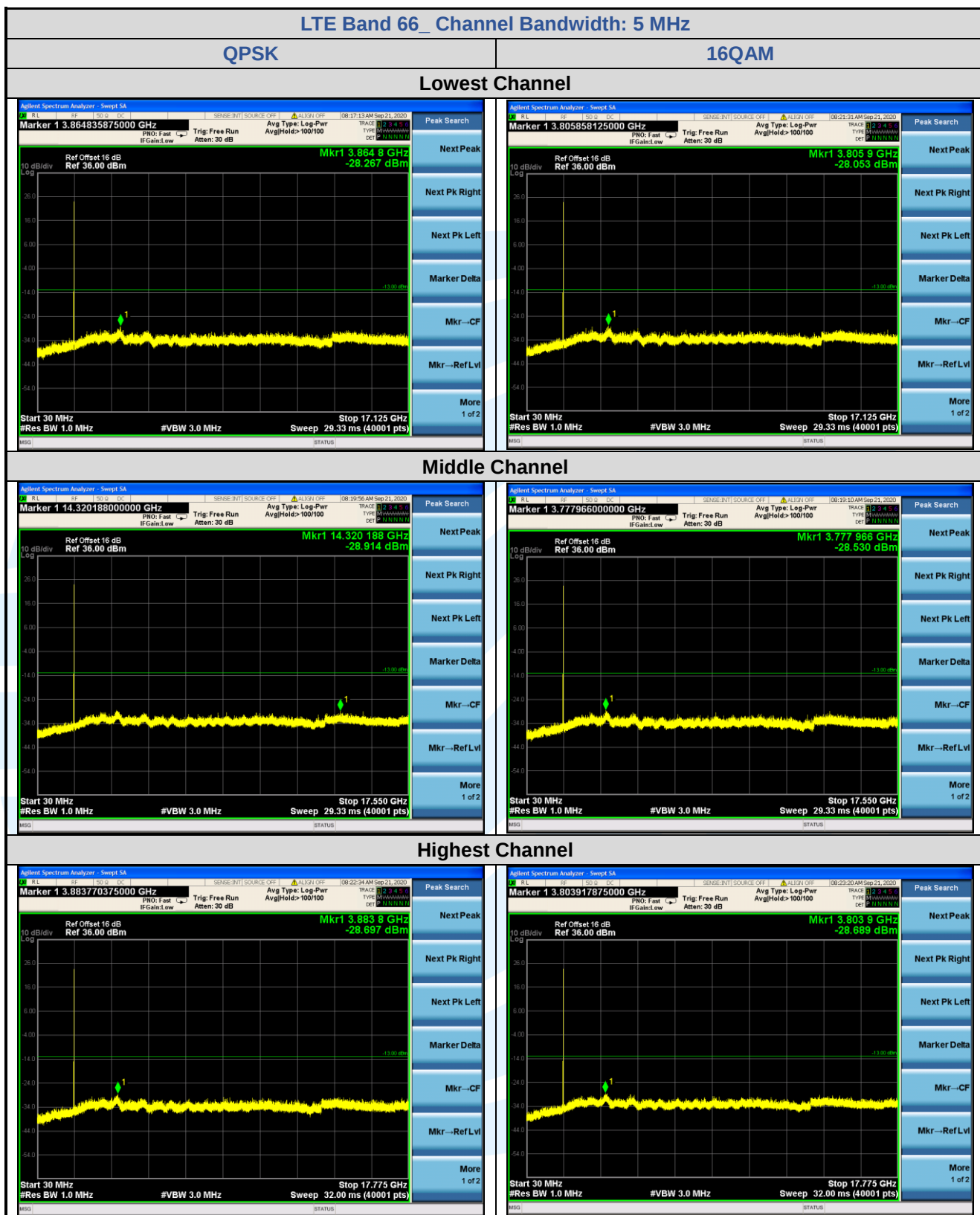
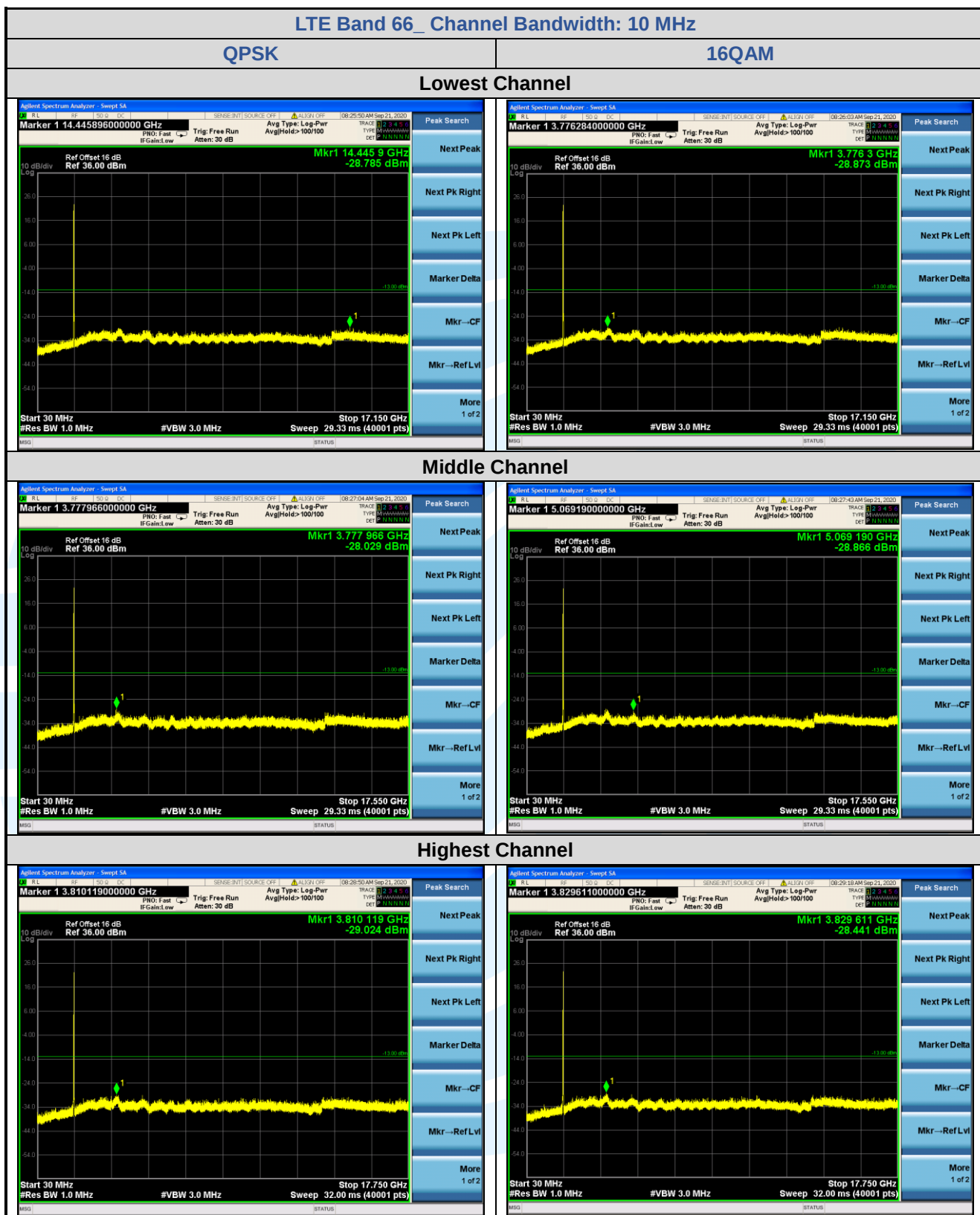
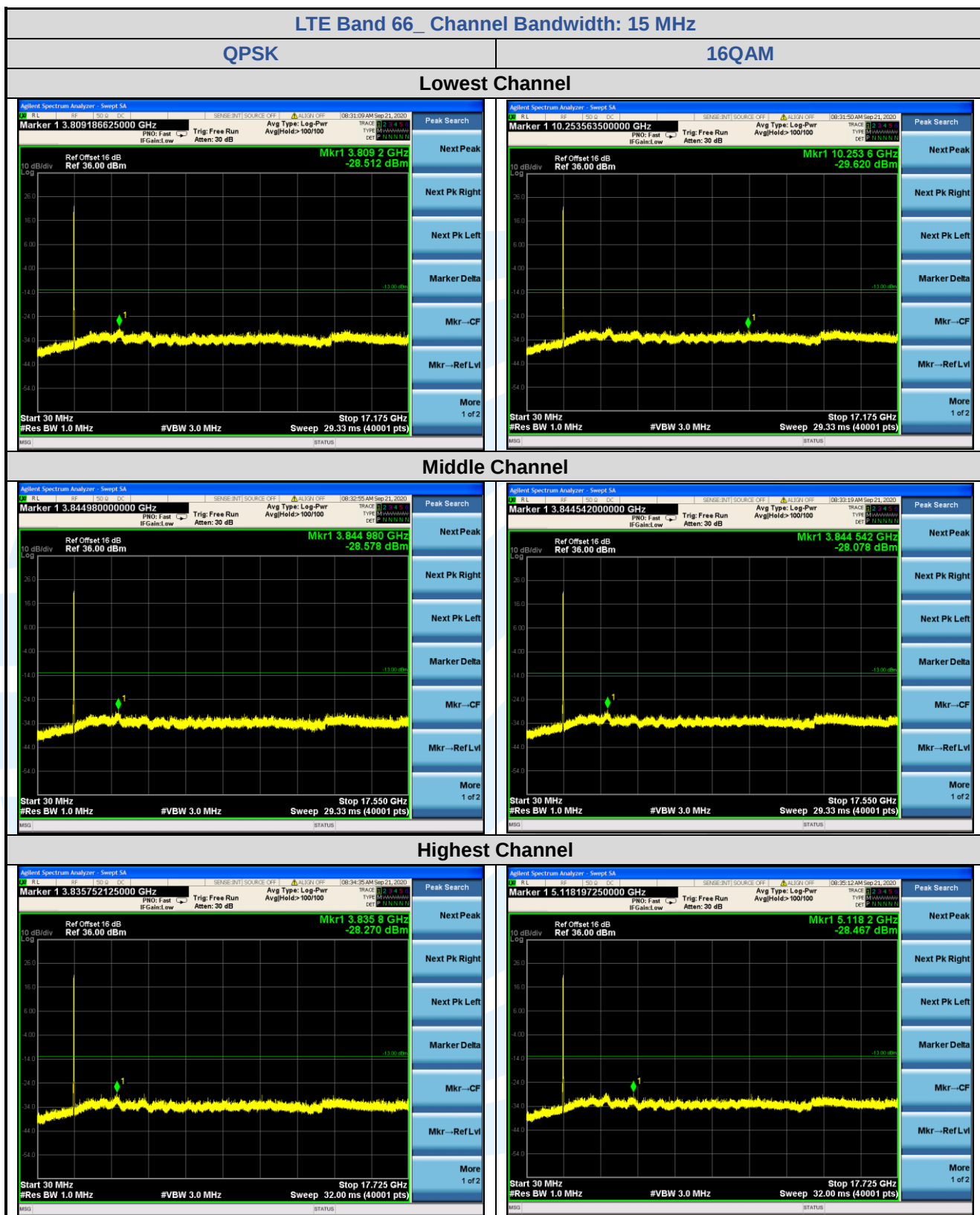
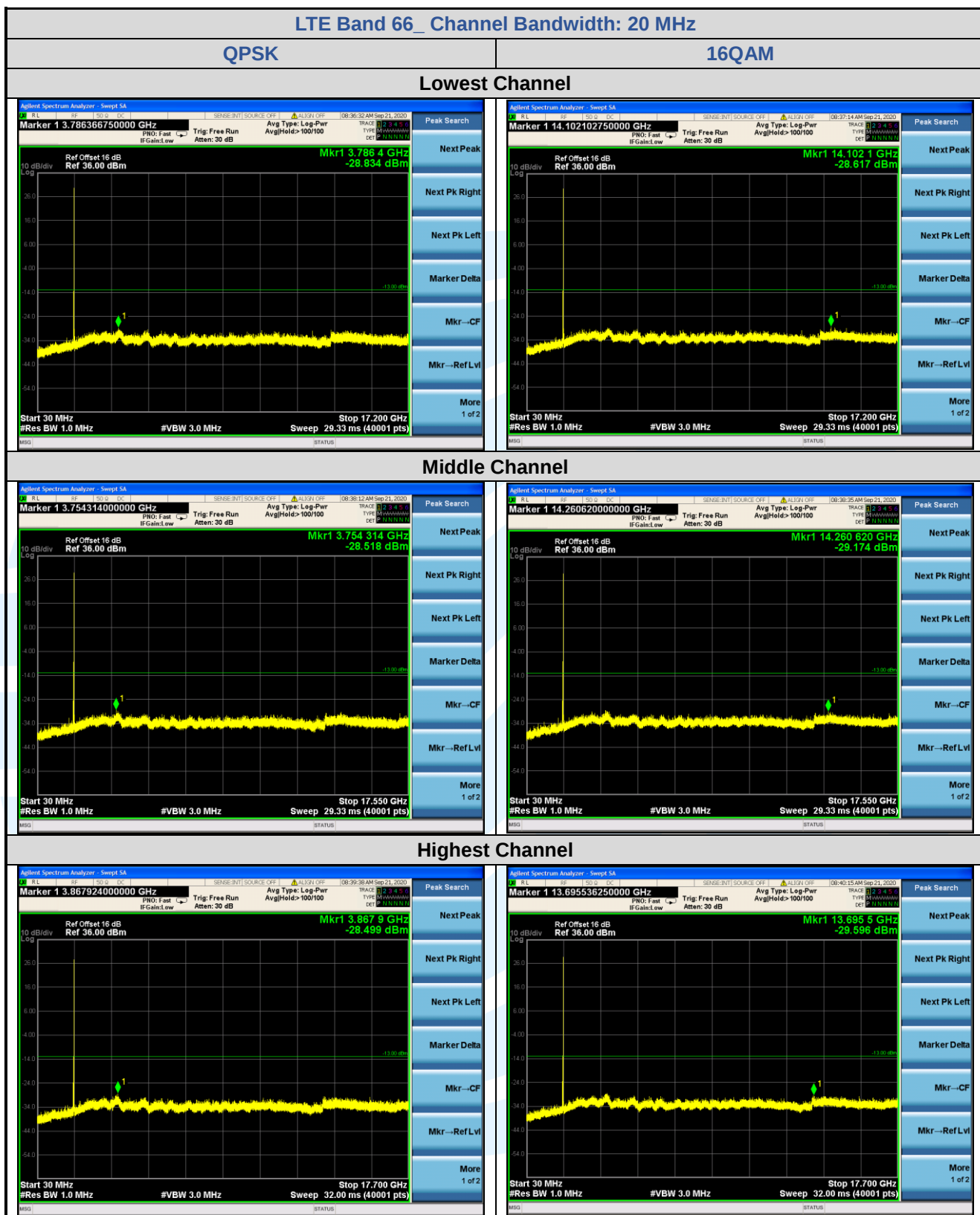












## 5.8 FIELD STRENGTH OF SPURIOUS RADIATION

**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

**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 dBW/MHz = -40dBm/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                                  | 52.634    | -69.49     | -5.41             | -74.90      | -13.00 | -61.90 | Horizontal |
| 2                                  | 69.718    | -72.07     | -5.11             | -77.18      | -13.00 | -64.18 | Horizontal |
| 3                                  | 958.714   | -81.95     | 14.29             | -67.66      | -13.00 | -54.66 | Horizontal |
| 4                                  | 52.266    | -65.19     | -5.58             | -70.77      | -13.00 | -57.77 | Vertical   |
| 5                                  | 72.211    | -69.91     | -5.00             | -74.91      | -13.00 | -61.91 | Vertical   |
| 6                                  | 938.714   | -81.45     | 12.99             | -68.46      | -13.00 | -55.46 | Vertical   |
| Middle Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 53.379    | -68.07     | -5.46             | -73.53      | -13.00 | -60.53 | Horizontal |
| 2                                  | 72.211    | -73.31     | -5.00             | -78.31      | -13.00 | -65.31 | Horizontal |
| 3                                  | 958.714   | -81.25     | 14.29             | -66.96      | -13.00 | -53.96 | Horizontal |
| 4                                  | 53.379    | -64.85     | -5.56             | -70.41      | -13.00 | -57.41 | Vertical   |
| 5                                  | 72.211    | -69.74     | -5.00             | -74.74      | -13.00 | -61.74 | Vertical   |
| 6                                  | 925.613   | -81.56     | 13.01             | -68.55      | -13.00 | -55.55 | Vertical   |
| Highest Channel                    |           |            |                   |             |        |        |            |
| 1                                  | 53.379    | -68.36     | -5.46             | -73.82      | -13.00 | -60.82 | Horizontal |
| 2                                  | 71.203    | -73.01     | -5.04             | -78.05      | -13.00 | -65.05 | Horizontal |
| 3                                  | 952.000   | -82.59     | 14.42             | -68.17      | -13.00 | -55.17 | Horizontal |
| 4                                  | 52.634    | -65.62     | -5.57             | -71.19      | -13.00 | -58.19 | Vertical   |
| 5                                  | 73.750    | -70.77     | -4.96             | -75.73      | -13.00 | -62.73 | Vertical   |
| 6                                  | 958.714   | -81.07     | 13.00             | -68.07      | -13.00 | -55.07 | 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  | -65.22     | 6.82              | -58.40      | -13.00 | -45.40 | Horizontal |
| 2                                  | 5580.000  | -65.59     | 10.86             | -54.73      | -13.00 | -41.73 | Horizontal |
| 3                                  | 3720.000  | -63.80     | 6.81              | -56.99      | -13.00 | -43.99 | Vertical   |
| 4                                  | 5580.000  | -67.81     | 11.34             | -56.47      | -13.00 | -43.47 | Vertical   |
| Middle Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 3760.000  | -63.82     | 6.93              | -56.89      | -13.00 | -43.89 | Horizontal |
| 2                                  | 5640.000  | -66.69     | 10.84             | -55.85      | -13.00 | -42.85 | Horizontal |
| 3                                  | 3760.000  | -65.28     | 6.93              | -58.35      | -13.00 | -45.35 | Vertical   |
| 4                                  | 5640.000  | -65.74     | 11.32             | -54.42      | -13.00 | -41.42 | Vertical   |
| Highest Channel                    |           |            |                   |             |        |        |            |
| 1                                  | 3800.000  | -64.34     | 7.03              | -57.31      | -13.00 | -44.31 | Horizontal |
| 2                                  | 5700.000  | -66.80     | 10.83             | -55.97      | -13.00 | -42.97 | Horizontal |
| 3                                  | 3800.000  | -64.19     | 7.05              | -57.14      | -13.00 | -44.14 | Vertical   |
| 4                                  | 5700.000  | -67.05     | 11.29             | -55.76      | -13.00 | -42.76 | Vertical   |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

### 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    | -68.23     | -5.52             | -73.75      | -13.00 | -60.75 | Horizontal |
| 2                                  | 70.705    | -73.33     | -5.06             | -78.39      | -13.00 | -65.39 | Horizontal |
| 3                                  | 958.714   | -82.01     | 14.29             | -67.72      | -13.00 | -54.72 | Horizontal |
| 4                                  | 52.266    | -64.92     | -5.58             | -70.50      | -13.00 | -57.50 | Vertical   |
| 5                                  | 73.233    | -69.73     | -4.97             | -74.70      | -13.00 | -61.70 | Vertical   |
| 6                                  | 862.802   | -80.88     | 11.79             | -69.09      | -13.00 | -56.09 | Vertical   |
| Middle Channel                     |           |            |                   |             |        |        |            |
| 1                                  | 53.756    | -67.67     | -5.49             | -73.16      | -13.00 | -60.16 | Horizontal |
| 2                                  | 72.211    | -72.75     | -5.00             | -77.75      | -13.00 | -64.75 | Horizontal |
| 3                                  | 952.000   | -82.83     | 14.42             | -68.41      | -13.00 | -55.41 | Horizontal |
| 4                                  | 54.135    | -64.39     | -5.55             | -69.94      | -13.00 | -56.94 | Vertical   |
| 5                                  | 73.750    | -69.68     | -4.96             | -74.64      | -13.00 | -61.64 | Vertical   |
| 6                                  | 906.304   | -81.90     | 12.83             | -69.07      | -13.00 | -56.07 | Vertical   |
| Highest Channel                    |           |            |                   |             |        |        |            |
| 1                                  | 54.135    | -67.54     | -5.52             | -73.06      | -13.00 | -60.06 | Horizontal |
| 2                                  | 288.284   | -81.13     | 2.53              | -78.60      | -13.00 | -65.60 | Horizontal |
| 3                                  | 952.000   | -81.61     | 14.42             | -67.19      | -13.00 | -54.19 | Horizontal |
| 4                                  | 52.634    | -65.11     | -5.57             | -70.68      | -13.00 | -57.68 | Vertical   |
| 5                                  | 72.720    | -70.62     | -4.99             | -75.61      | -13.00 | -62.61 | Vertical   |
| 6                                  | 938.714   | -81.88     | 12.99             | -68.89      | -13.00 | -55.89 | 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  | -65.81     | 5.94              | -59.87      | -13.00 | -46.87 | Horizontal |
| 2                                   | 5160.000  | -66.07     | 9.17              | -56.90      | -13.00 | -43.90 | Horizontal |
| 3                                   | 3440.000  | -65.94     | 5.75              | -60.19      | -13.00 | -47.19 | Vertical   |
| 4                                   | 5160.000  | -65.43     | 9.53              | -55.90      | -13.00 | -42.90 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 3440.000  | -64.22     | 5.94              | -58.28      | -13.00 | -45.28 | Horizontal |
| 2                                   | 5160.000  | -65.13     | 9.17              | -55.96      | -13.00 | -42.96 | Horizontal |
| 3                                   | 3440.000  | -63.90     | 5.75              | -58.15      | -13.00 | -45.15 | Vertical   |
| 4                                   | 5160.000  | -65.81     | 9.53              | -56.28      | -13.00 | -43.28 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 3490.000  | -65.32     | 6.11              | -59.21      | -13.00 | -46.21 | Horizontal |
| 2                                   | 5235.000  | -66.31     | 9.50              | -56.81      | -13.00 | -43.81 | Horizontal |
| 3                                   | 3490.000  | -65.05     | 5.99              | -59.06      | -13.00 | -46.06 | Vertical   |
| 4                                   | 5235.000  | -65.79     | 9.89              | -55.90      | -13.00 | -42.90 | Vertical   |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

### 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                                   | 31.735    | -92.14     | 31.84             | -60.30      | -13.00 | -47.30 | Horizontal |
| 2                                   | 89.787    | -87.85     | 24.72             | -63.13      | -13.00 | -50.13 | Horizontal |
| 3                                   | 945.334   | -86.92     | 43.34             | -43.58      | -13.00 | -30.58 | Horizontal |
| 4                                   | 30.425    | -93.25     | 32.74             | -60.51      | -13.00 | -47.51 | Vertical   |
| 5                                   | 263.115   | -89.63     | 30.10             | -59.53      | -13.00 | -46.53 | Vertical   |
| 6                                   | 912.695   | -87.84     | 41.99             | -45.85      | -13.00 | -32.85 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 30.855    | -91.74     | 32.28             | -59.46      | -13.00 | -46.46 | Horizontal |
| 2                                   | 89.787    | -88.09     | 24.72             | -63.37      | -13.00 | -50.37 | Horizontal |
| 3                                   | 965.474   | -87.43     | 43.12             | -44.31      | -13.00 | -31.31 | Horizontal |
| 4                                   | 30.425    | -92.72     | 32.74             | -59.98      | -13.00 | -46.98 | Vertical   |
| 5                                   | 95.649    | -88.95     | 25.17             | -63.78      | -13.00 | -50.78 | Vertical   |
| 6                                   | 952.000   | -87.15     | 41.99             | -45.16      | -13.00 | -32.16 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 30.425    | -92.96     | 32.49             | -60.47      | -13.00 | -47.47 | Horizontal |
| 2                                   | 144.790   | -89.63     | 25.80             | -63.83      | -13.00 | -50.83 | Horizontal |
| 3                                   | 952.000   | -87.62     | 43.44             | -44.18      | -13.00 | -31.18 | Horizontal |
| 4                                   | 42.931    | -89.28     | 25.67             | -63.61      | -13.00 | -50.61 | Vertical   |
| 5                                   | 213.103   | -89.72     | 27.94             | -61.78      | -13.00 | -48.78 | Vertical   |
| 6                                   | 925.613   | -88.01     | 42.10             | -45.91      | -13.00 | -32.91 | 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  | -64.77     | -0.43             | -65.20      | -13.00 | -52.20 | Horizontal |
| 2                                   | 2112.000  | -65.64     | 2.00              | -63.64      | -13.00 | -50.64 | Horizontal |
| 3                                   | 1408.000  | -64.95     | -1.20             | -66.15      | -13.00 | -53.15 | Vertical   |
| 4                                   | 2112.000  | -65.53     | 1.52              | -64.01      | -13.00 | -51.01 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 1415.000  | -63.58     | -0.44             | -64.02      | -13.00 | -51.02 | Horizontal |
| 2                                   | 2122.500  | -64.60     | 2.00              | -62.60      | -13.00 | -49.60 | Horizontal |
| 3                                   | 1415.000  | -64.49     | -1.22             | -65.71      | -13.00 | -52.71 | Vertical   |
| 4                                   | 2122.500  | -65.23     | 1.53              | -63.70      | -13.00 | -50.70 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 1422.000  | -63.92     | -0.45             | -64.37      | -13.00 | -51.37 | Horizontal |
| 2                                   | 2133.000  | -66.80     | 2.01              | -64.79      | -13.00 | -51.79 | Horizontal |
| 3                                   | 1422.000  | -64.46     | -1.24             | -65.70      | -13.00 | -52.70 | Vertical   |
| 4                                   | 2133.000  | -65.53     | 1.53              | -64.00      | -13.00 | -51.00 | Vertical   |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

### 5.8.4 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    | -69.07     | -5.52             | -74.59      | -13.00 | -61.59 | Horizontal |
| 2                                   | 81.948    | -73.38     | -4.60             | -77.98      | -13.00 | -64.98 | Horizontal |
| 3                                   | 945.334   | -81.63     | 14.30             | -67.33      | -13.00 | -54.33 | Horizontal |
| 4                                   | 53.379    | -65.23     | -5.56             | -70.79      | -13.00 | -57.79 | Vertical   |
| 5                                   | 73.750    | -69.13     | -4.96             | -74.09      | -13.00 | -61.09 | Vertical   |
| 6                                   | 912.695   | -81.89     | 12.87             | -69.02      | -13.00 | -56.02 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 55.678    | -68.58     | -5.63             | -74.21      | -13.00 | -61.21 | Horizontal |
| 2                                   | 77.468    | -74.96     | -4.83             | -79.79      | -13.00 | -66.79 | Horizontal |
| 3                                   | 979.139   | -81.67     | 13.94             | -67.73      | -13.00 | -54.73 | Horizontal |
| 4                                   | 53.756    | -64.93     | -5.55             | -70.48      | -13.00 | -57.48 | Vertical   |
| 5                                   | 72.211    | -70.31     | -5.00             | -75.31      | -13.00 | -62.31 | Vertical   |
| 6                                   | 925.613   | -81.47     | 13.01             | -68.46      | -13.00 | -55.46 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 54.135    | -66.87     | -5.52             | -72.39      | -13.00 | -59.39 | Horizontal |
| 2                                   | 73.233    | -72.57     | -4.97             | -77.54      | -13.00 | -64.54 | Horizontal |
| 3                                   | 958.714   | -81.02     | 14.29             | -66.73      | -13.00 | -53.73 | Horizontal |
| 4                                   | 53.006    | -65.12     | -5.56             | -70.68      | -13.00 | -57.68 | Vertical   |
| 5                                   | 71.705    | -69.77     | -5.03             | -74.80      | -13.00 | -61.80 | Vertical   |
| 6                                   | 887.398   | -80.82     | 12.40             | -68.42      | -13.00 | -55.42 | 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  | -64.59     | 5.94              | -58.65      | -13.00 | -45.65 | Horizontal |
| 2                                   | 5160.000  | -65.30     | 9.17              | -56.13      | -13.00 | -43.13 | Horizontal |
| 3                                   | 3440.000  | -65.04     | 5.75              | -59.29      | -13.00 | -46.29 | Vertical   |
| 4                                   | 5160.000  | -65.41     | 9.53              | -55.88      | -13.00 | -42.88 | Vertical   |
| Middle Channel                      |           |            |                   |             |        |        |            |
| 1                                   | 3490.000  | -63.62     | 6.11              | -57.51      | -13.00 | -44.51 | Horizontal |
| 2                                   | 5235.000  | -65.97     | 9.50              | -56.47      | -13.00 | -43.47 | Horizontal |
| 3                                   | 3490.000  | -62.87     | 5.99              | -56.88      | -13.00 | -43.88 | Vertical   |
| 4                                   | 5235.000  | -64.66     | 9.89              | -54.77      | -13.00 | -41.77 | Vertical   |
| Highest Channel                     |           |            |                   |             |        |        |            |
| 1                                   | 3540.000  | -66.45     | 6.27              | -60.18      | -13.00 | -47.18 | Horizontal |
| 2                                   | 5310.000  | -68.03     | 9.89              | -58.14      | -13.00 | -45.14 | Horizontal |
| 3                                   | 3540.000  | -67.35     | 6.19              | -61.16      | -13.00 | -48.16 | Vertical   |
| 4                                   | 5310.000  | -67.48     | 10.31             | -57.17      | -13.00 | -44.17 | Vertical   |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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 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 \*\*\*

---

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.

---