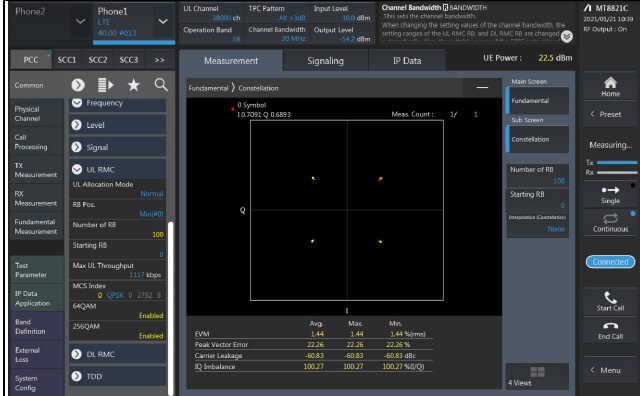


LTE Band 38

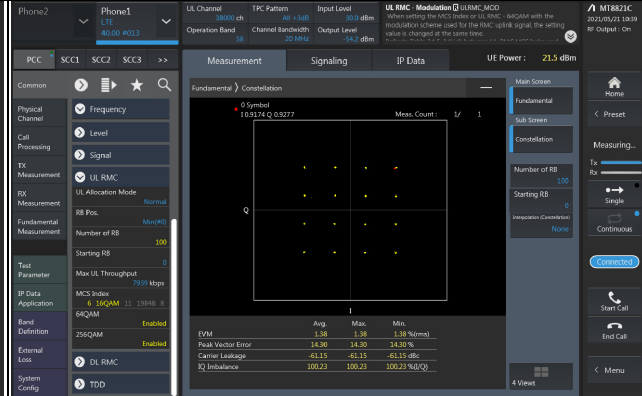
Spectrum Plot of Measurement Value

Channel: 38000 / Frequency (MHz): 2595.0MHz

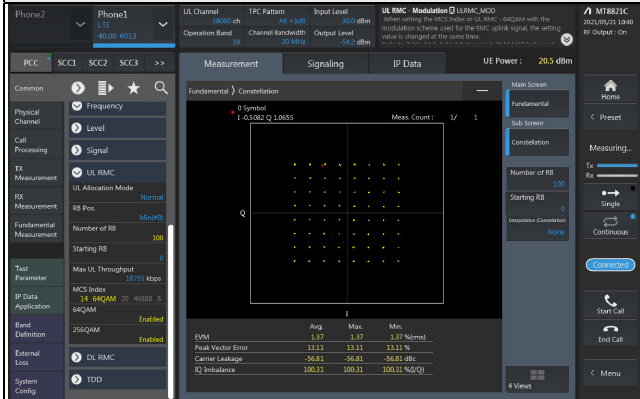
QPSK



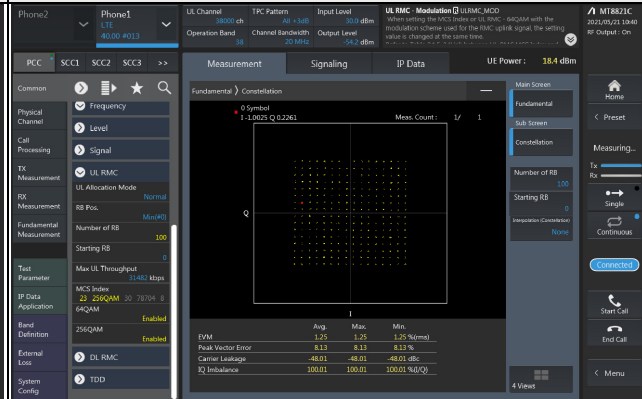
16QAM



64QAM



256QAM

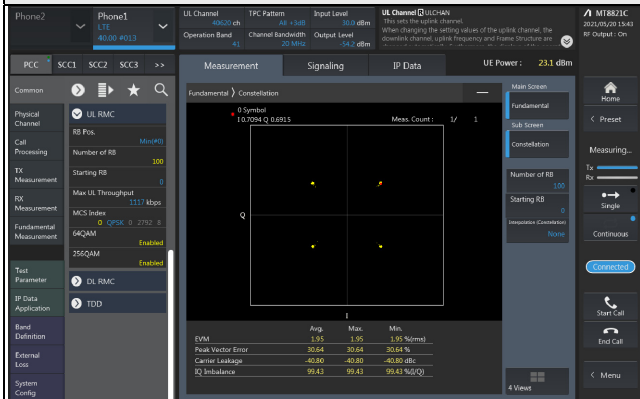


LTE Band 41

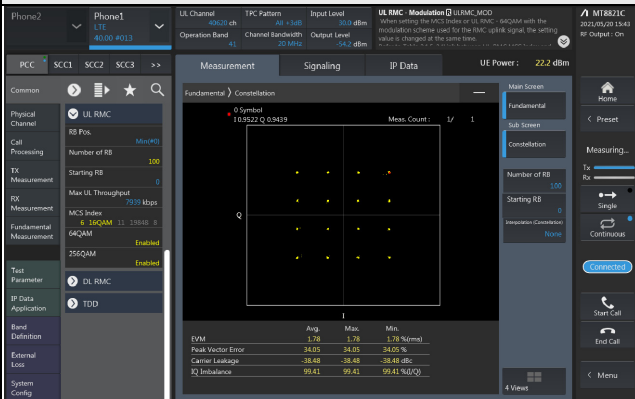
Spectrum Plot of Measurement Value

Channel: 40620 / Frequency (MHz): 2593.0MHz

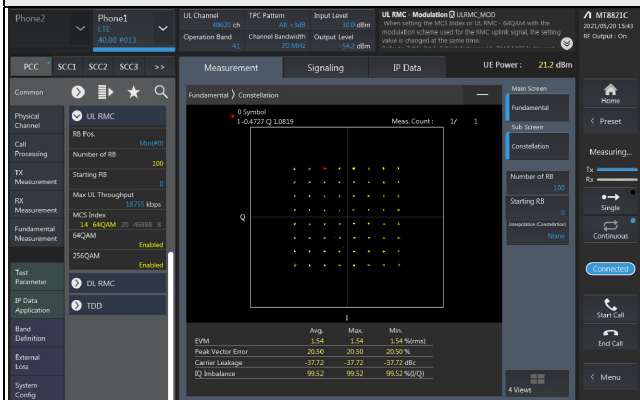
QPSK



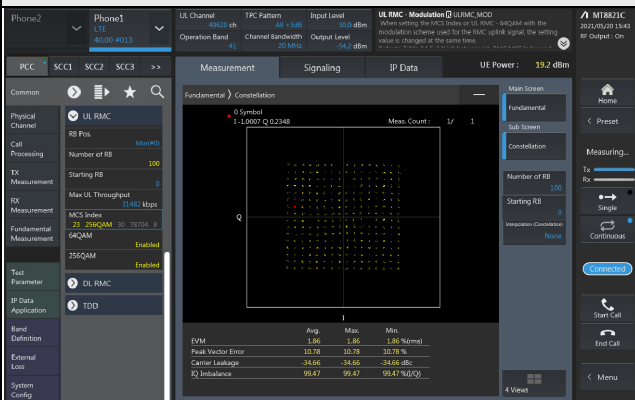
16QAM



64QAM



256QAM

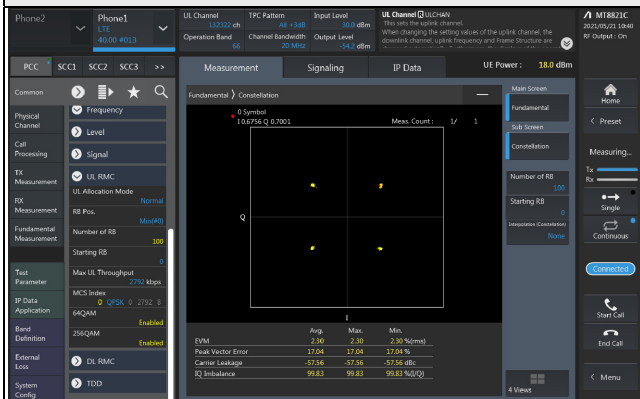


LTE Band 66

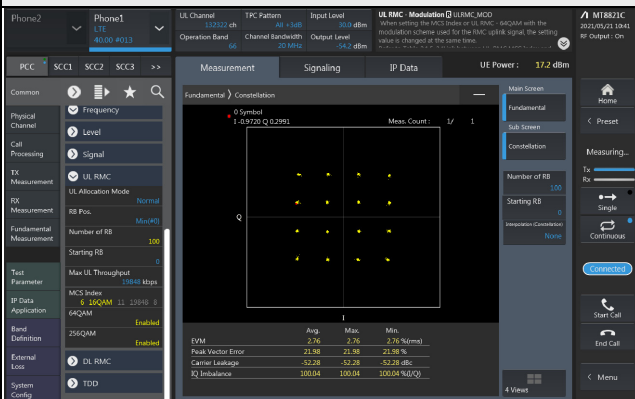
Spectrum Plot of Measurement Value

Channel: 132322 / Frequency (MHz): 1745.0MHz

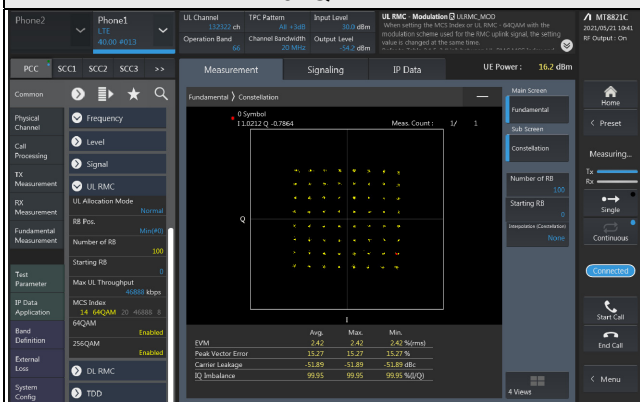
QPSK



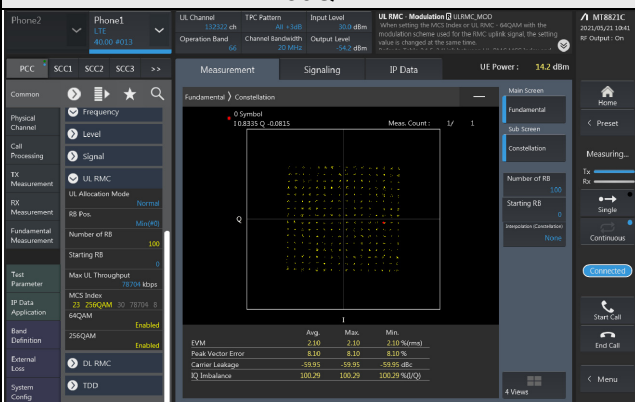
16QAM



64QAM



256QAM

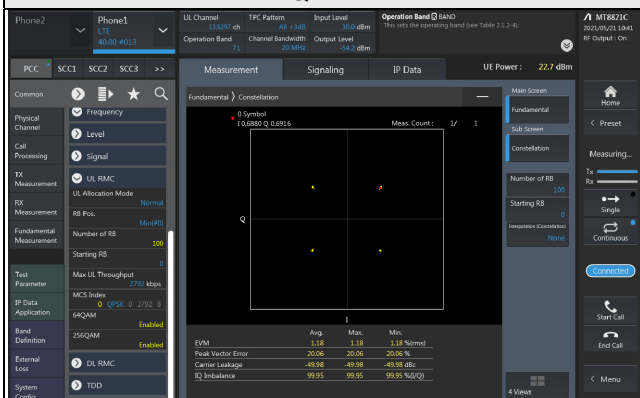


LTE Band 71

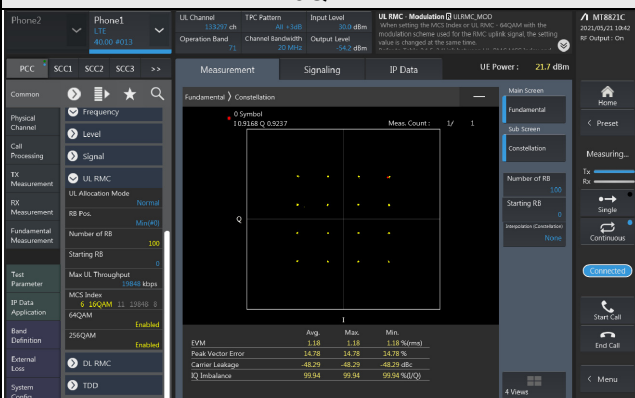
Spectrum Plot of Measurement Value

Channel: 133297 / Frequency (MHz): 680.5MHz

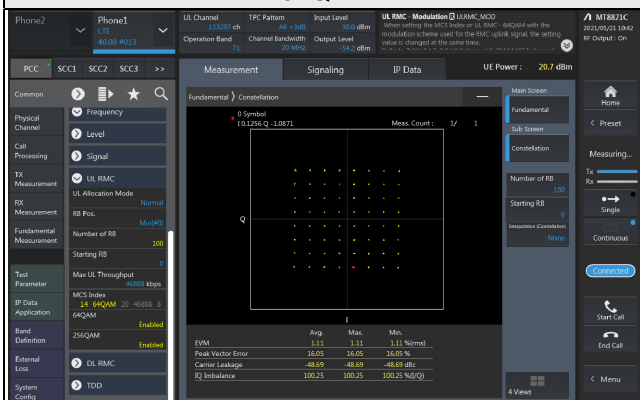
QPSK



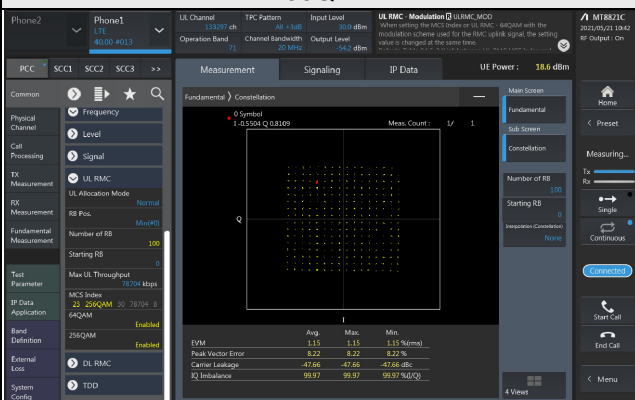
16QAM



64QAM



256QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

4.3.2 Test Procedure

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

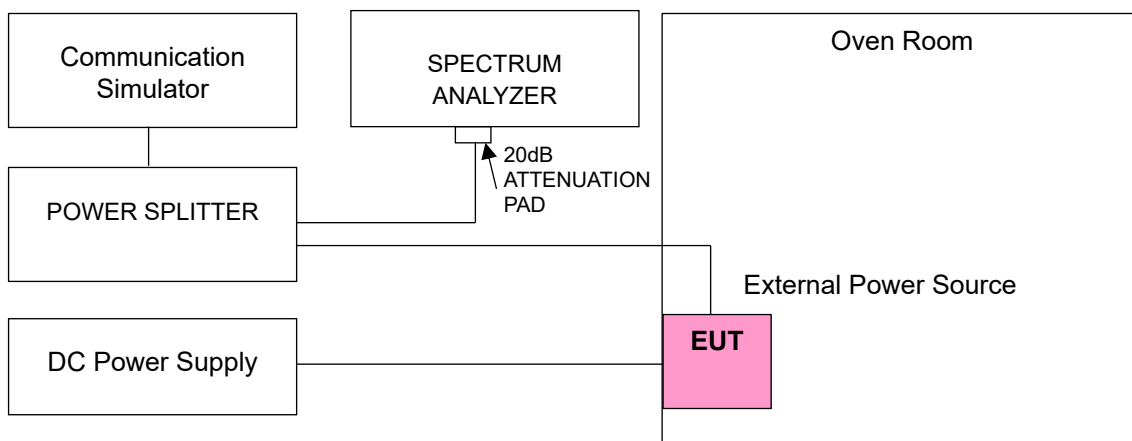
Note: The frequency error was recorded frequency error from the communication simulator.

4.3.3 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|--|-----------|------------|---------------|---------------|
| Radio Communication Analyzer Anritsu | MT8820C | 6201010284 | Dec. 28, 2020 | Dec. 27, 2021 |
| Temperature & Humidity Chamber TERCHY | HRM-120RF | 931022 | Dec. 24, 2020 | Dec. 23, 2021 |
| Digital Multimeter Fluke | 87-III | 70360742 | Jun. 23, 2020 | Jun. 22, 2021 |
| DC Power Supply Topward | 6306A | 727263 | NA | NA |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.4 Test Setup



4.3.5 Test Results

Frequency Error vs. Voltage

| Voltage (Vdc) | WCDMA Band 4 | | | |
|---------------|-----------------|-----------------------|-----------------|-----------------------|
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1712.400001 | 0.001 | 1752.600002 | 0.001 |
| 3.85 | 1712.400003 | 0.002 | 1752.600001 | 0.001 |
| 3.28 | 1712.400003 | 0.002 | 1752.600004 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | WCDMA Band 4 | | | |
|------------|-----------------|-----------------------|-----------------|-----------------------|
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1712.400001 | 0.001 | 1752.600002 | 0.001 |
| -20 | 1712.400004 | 0.002 | 1752.600004 | 0.002 |
| -10 | 1712.400003 | 0.002 | 1752.600002 | 0.001 |
| 0 | 1712.400002 | 0.001 | 1752.600001 | 0.001 |
| 10 | 1712.399997 | -0.002 | 1752.599997 | -0.002 |
| 20 | 1712.399997 | -0.002 | 1752.599999 | -0.001 |
| 30 | 1712.399996 | -0.002 | 1752.599998 | -0.001 |
| 40 | 1712.399997 | -0.002 | 1752.599996 | -0.002 |
| 50 | 1712.399999 | -0.001 | 1752.599997 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 4 | | | |
|---------------|---------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1710.700001 | 0.001 | 1754.300002 | 0.001 |
| 3.85 | 1710.700002 | 0.001 | 1754.300001 | 0.001 |
| 3.28 | 1710.700001 | 0.001 | 1754.300004 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4 | | | |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1710.700004 | 0.002 | 1754.300001 | 0.001 |
| -20 | 1710.700002 | 0.001 | 1754.300002 | 0.001 |
| -10 | 1710.700004 | 0.002 | 1754.300003 | 0.002 |
| 0 | 1710.700002 | 0.001 | 1754.300004 | 0.002 |
| 10 | 1710.699996 | -0.002 | 1754.299999 | -0.001 |
| 20 | 1710.699999 | -0.001 | 1754.299997 | -0.002 |
| 30 | 1710.699999 | -0.001 | 1754.299997 | -0.002 |
| 40 | 1710.699998 | -0.001 | 1754.299999 | -0.001 |
| 50 | 1710.699998 | -0.001 | 1754.299998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 4 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 3 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1711.500002 | 0.001 | 1753.500004 | 0.002 |
| 3.85 | 1711.500003 | 0.002 | 1753.500003 | 0.001 |
| 3.28 | 1711.500002 | 0.001 | 1753.500001 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 3 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1711.500004 | 0.002 | 1753.500002 | 0.001 |
| -20 | 1711.500001 | 0.001 | 1753.500002 | 0.001 |
| -10 | 1711.500004 | 0.002 | 1753.500002 | 0.001 |
| 0 | 1711.500003 | 0.002 | 1753.500002 | 0.001 |
| 10 | 1711.499998 | -0.001 | 1753.499998 | -0.001 |
| 20 | 1711.499996 | -0.002 | 1753.499998 | -0.001 |
| 30 | 1711.499997 | -0.002 | 1753.499998 | -0.001 |
| 40 | 1711.499998 | -0.001 | 1753.499997 | -0.002 |
| 50 | 1711.499996 | -0.002 | 1753.499999 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 4 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1712.500004 | 0.002 | 1752.500004 | 0.002 |
| 3.85 | 1712.500004 | 0.002 | 1752.500003 | 0.002 |
| 3.28 | 1712.500004 | 0.002 | 1752.500002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1712.500003 | 0.001 | 1752.500003 | 0.001 |
| -20 | 1712.500001 | 0.001 | 1752.500002 | 0.001 |
| -10 | 1712.500003 | 0.002 | 1752.500003 | 0.002 |
| 0 | 1712.500002 | 0.001 | 1752.500003 | 0.001 |
| 10 | 1712.499999 | -0.001 | 1752.499996 | -0.002 |
| 20 | 1712.499997 | -0.002 | 1752.499996 | -0.002 |
| 30 | 1712.499996 | -0.002 | 1752.499998 | -0.001 |
| 40 | 1712.499998 | -0.001 | 1752.499997 | -0.002 |
| 50 | 1712.499996 | -0.002 | 1752.499997 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 4 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1715.000002 | 0.001 | 1750.000004 | 0.002 |
| 3.85 | 1715.000003 | 0.002 | 1750.000003 | 0.002 |
| 3.28 | 1715.000001 | 0.001 | 1750.000001 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1715.000004 | 0.002 | 1750.000004 | 0.002 |
| -20 | 1715.000003 | 0.002 | 1750.000003 | 0.002 |
| -10 | 1715.000003 | 0.002 | 1750.000001 | 0.001 |
| 0 | 1715.000003 | 0.002 | 1750.000002 | 0.001 |
| 10 | 1714.999996 | -0.002 | 1749.999999 | -0.001 |
| 20 | 1714.999997 | -0.002 | 1749.999998 | -0.001 |
| 30 | 1714.999998 | -0.001 | 1749.999999 | -0.001 |
| 40 | 1714.999997 | -0.002 | 1749.999999 | -0.001 |
| 50 | 1714.999998 | -0.001 | 1749.999997 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 4 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1717.500002 | 0.001 | 1747.500001 | 0.001 |
| 3.85 | 1717.500001 | 0.001 | 1747.500003 | 0.001 |
| 3.28 | 1717.500001 | 0.001 | 1747.500004 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1717.500003 | 0.002 | 1747.500004 | 0.002 |
| -20 | 1717.500002 | 0.001 | 1747.500002 | 0.001 |
| -10 | 1717.500002 | 0.001 | 1747.500004 | 0.002 |
| 0 | 1717.500004 | 0.002 | 1747.500003 | 0.002 |
| 10 | 1717.499996 | -0.002 | 1747.499998 | -0.001 |
| 20 | 1717.499997 | -0.002 | 1747.499997 | -0.002 |
| 30 | 1717.499998 | -0.001 | 1747.499998 | -0.001 |
| 40 | 1717.499999 | -0.001 | 1747.499996 | -0.002 |
| 50 | 1717.499998 | -0.001 | 1747.499997 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 4 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1720.000002 | 0.001 | 1745.000002 | 0.001 |
| 3.85 | 1720.000003 | 0.002 | 1745.000004 | 0.002 |
| 3.28 | 1720.000002 | 0.001 | 1745.000001 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 4 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1720.000001 | 0.001 | 1745.000001 | 0.001 |
| -20 | 1720.000003 | 0.002 | 1745.000002 | 0.001 |
| -10 | 1720.000001 | 0.001 | 1745.000002 | 0.001 |
| 0 | 1720.000002 | 0.001 | 1745.000001 | 0.001 |
| 10 | 1719.999998 | -0.001 | 1744.999996 | -0.002 |
| 20 | 1719.999998 | -0.001 | 1744.999997 | -0.002 |
| 30 | 1719.999996 | -0.002 | 1744.999997 | -0.002 |
| 40 | 1719.999997 | -0.002 | 1744.999998 | -0.001 |
| 50 | 1719.999999 | -0.001 | 1744.999998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 7 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2502.500003 | 0.001 | 2567.500003 | 0.001 |
| 3.85 | 2502.500001 | 0.000 | 2567.500003 | 0.001 |
| 3.28 | 2502.500004 | 0.002 | 2567.500002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 7 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2502.500003 | 0.001 | 2567.500001 | 0.000 |
| -20 | 2502.500002 | 0.001 | 2567.500004 | 0.001 |
| -10 | 2502.500002 | 0.001 | 2567.500004 | 0.002 |
| 0 | 2502.500003 | 0.001 | 2567.500001 | 0.000 |
| 10 | 2502.499998 | -0.001 | 2567.499996 | -0.002 |
| 20 | 2502.499999 | 0.000 | 2567.499997 | -0.001 |
| 30 | 2502.499997 | -0.001 | 2567.499996 | -0.002 |
| 40 | 2502.499996 | -0.001 | 2567.499997 | -0.001 |
| 50 | 2502.499998 | -0.001 | 2567.499996 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 7 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2505.000004 | 0.001 | 2565.000004 | 0.001 |
| 3.85 | 2505.000003 | 0.001 | 2565.000003 | 0.001 |
| 3.28 | 2505.000004 | 0.002 | 2565.000002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 7 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2505.000001 | 0.001 | 2565.000003 | 0.001 |
| -20 | 2505.000003 | 0.001 | 2565.000002 | 0.001 |
| -10 | 2505.000003 | 0.001 | 2565.000003 | 0.001 |
| 0 | 2505.000003 | 0.001 | 2565.000004 | 0.002 |
| 10 | 2504.999996 | -0.001 | 2564.999999 | -0.001 |
| 20 | 2504.999997 | -0.001 | 2564.999996 | -0.002 |
| 30 | 2504.999998 | -0.001 | 2564.999996 | -0.002 |
| 40 | 2504.999997 | -0.001 | 2564.999996 | -0.002 |
| 50 | 2504.999997 | -0.001 | 2564.999996 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 7 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2507.500002 | 0.001 | 2562.500002 | 0.001 |
| 3.85 | 2507.500004 | 0.002 | 2562.500002 | 0.001 |
| 3.28 | 2507.500003 | 0.001 | 2562.500001 | 0.000 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 7 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2507.500003 | 0.001 | 2562.500001 | 0.000 |
| -20 | 2507.500003 | 0.001 | 2562.500003 | 0.001 |
| -10 | 2507.500003 | 0.001 | 2562.500003 | 0.001 |
| 0 | 2507.500002 | 0.001 | 2562.500002 | 0.001 |
| 10 | 2507.499997 | -0.001 | 2562.499997 | -0.001 |
| 20 | 2507.499998 | -0.001 | 2562.499996 | -0.001 |
| 30 | 2507.499997 | -0.001 | 2562.499999 | 0.000 |
| 40 | 2507.499998 | -0.001 | 2562.499997 | -0.001 |
| 50 | 2507.499998 | -0.001 | 2562.499997 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 7 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2510.000003 | 0.001 | 2560.000004 | 0.001 |
| 3.85 | 2510.000002 | 0.001 | 2560.000003 | 0.001 |
| 3.28 | 2510.000001 | 0.000 | 2560.000001 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 7 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2510.000002 | 0.001 | 2560.000003 | 0.001 |
| -20 | 2510.000002 | 0.001 | 2560.000003 | 0.001 |
| -10 | 2510.000003 | 0.001 | 2560.000003 | 0.001 |
| 0 | 2510.000003 | 0.001 | 2560.000002 | 0.001 |
| 10 | 2509.999998 | -0.001 | 2559.999997 | -0.001 |
| 20 | 2509.999997 | -0.001 | 2559.999997 | -0.001 |
| 30 | 2509.999999 | 0.000 | 2559.999998 | -0.001 |
| 40 | 2509.999999 | 0.000 | 2559.999997 | -0.001 |
| 50 | 2509.999996 | -0.002 | 2559.999997 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 12 | | | |
|---------------|---------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 699.700003 | 0.004 | 715.300004 | 0.005 |
| 3.85 | 699.700003 | 0.004 | 715.300003 | 0.004 |
| 3.28 | 699.700002 | 0.003 | 715.300003 | 0.004 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12 | | | |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 699.700004 | 0.005 | 715.300004 | 0.005 |
| -20 | 699.700003 | 0.004 | 715.300004 | 0.005 |
| -10 | 699.700002 | 0.002 | 715.300002 | 0.003 |
| 0 | 699.700003 | 0.005 | 715.300004 | 0.005 |
| 10 | 699.699998 | -0.003 | 715.299998 | -0.003 |
| 20 | 699.699998 | -0.004 | 715.299998 | -0.003 |
| 30 | 699.699999 | -0.002 | 715.299998 | -0.003 |
| 40 | 699.699999 | -0.002 | 715.299996 | -0.005 |
| 50 | 699.699998 | -0.002 | 715.299999 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 12 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 3 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 700.500002 | 0.003 | 714.500001 | 0.002 |
| 3.85 | 700.500002 | 0.002 | 714.500004 | 0.005 |
| 3.28 | 700.500004 | 0.005 | 714.500004 | 0.005 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 3 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 700.500004 | 0.005 | 714.500004 | 0.006 |
| -20 | 700.500004 | 0.006 | 714.500003 | 0.004 |
| -10 | 700.500003 | 0.004 | 714.500003 | 0.005 |
| 0 | 700.500002 | 0.002 | 714.500002 | 0.003 |
| 10 | 700.499996 | -0.006 | 714.499998 | -0.002 |
| 20 | 700.499998 | -0.003 | 714.499998 | -0.003 |
| 30 | 700.499996 | -0.006 | 714.499999 | -0.002 |
| 40 | 700.499996 | -0.005 | 714.499997 | -0.004 |
| 50 | 700.499996 | -0.006 | 714.499998 | -0.003 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 12 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 701.500003 | 0.005 | 713.500002 | 0.002 |
| 3.85 | 701.500002 | 0.002 | 713.500003 | 0.005 |
| 3.28 | 701.500003 | 0.004 | 713.500002 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 701.500004 | 0.005 | 713.500003 | 0.004 |
| -20 | 701.500004 | 0.005 | 713.500003 | 0.004 |
| -10 | 701.500001 | 0.002 | 713.500003 | 0.004 |
| 0 | 701.500002 | 0.003 | 713.500004 | 0.005 |
| 10 | 701.499998 | -0.003 | 713.499997 | -0.004 |
| 20 | 701.499997 | -0.004 | 713.499996 | -0.006 |
| 30 | 701.499999 | -0.002 | 713.499999 | -0.002 |
| 40 | 701.499998 | -0.003 | 713.499998 | -0.003 |
| 50 | 701.499997 | -0.005 | 713.499998 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 12 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 704.000002 | 0.002 | 711.000002 | 0.003 |
| 3.85 | 704.000003 | 0.004 | 711.000002 | 0.003 |
| 3.28 | 704.000003 | 0.004 | 711.000001 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 12 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 704.000004 | 0.006 | 711.000003 | 0.004 |
| -20 | 704.000002 | 0.002 | 711.000004 | 0.005 |
| -10 | 704.000002 | 0.002 | 711.000002 | 0.003 |
| 0 | 704.000002 | 0.003 | 711.000003 | 0.005 |
| 10 | 703.999997 | -0.005 | 710.999998 | -0.004 |
| 20 | 703.999997 | -0.005 | 710.999997 | -0.004 |
| 30 | 703.999997 | -0.005 | 710.999999 | -0.002 |
| 40 | 703.999996 | -0.005 | 710.999998 | -0.002 |
| 50 | 703.999998 | -0.004 | 710.999997 | -0.004 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 13 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 779.500003 | 0.004 | 784.500001 | 0.001 |
| 3.85 | 779.500003 | 0.004 | 784.500001 | 0.002 |
| 3.28 | 779.500003 | 0.003 | 784.500003 | 0.004 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 13 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 779.500002 | 0.003 | 784.500002 | 0.002 |
| -20 | 779.500003 | 0.004 | 784.500002 | 0.002 |
| -10 | 779.500004 | 0.005 | 784.500003 | 0.003 |
| 0 | 779.500002 | 0.003 | 784.500003 | 0.004 |
| 10 | 779.499998 | -0.003 | 784.499998 | -0.002 |
| 20 | 779.499997 | -0.004 | 784.499998 | -0.002 |
| 30 | 779.499997 | -0.003 | 784.499999 | -0.001 |
| 40 | 779.499997 | -0.004 | 784.499999 | -0.001 |
| 50 | 779.499996 | -0.005 | 784.499997 | -0.003 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 13 | |
|---------------|-------------------------|-----------------------|
| | Channel Bandwidth 10MHz | |
| | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 782.000002 | 0.003 |
| 3.85 | 782.000003 | 0.004 |
| 3.28 | 782.000002 | 0.003 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 13 | |
|------------|-------------------------|-----------------------|
| | Channel Bandwidth 10MHz | |
| | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 782.000004 | 0.004 |
| -20 | 782.000002 | 0.002 |
| -10 | 782.000002 | 0.002 |
| 0 | 782.000002 | 0.002 |
| 10 | 781.999998 | -0.003 |
| 20 | 781.999996 | -0.005 |
| 30 | 781.999997 | -0.003 |
| 40 | 781.999999 | -0.002 |
| 50 | 781.999998 | -0.003 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 38 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2572.500001 | 0.000 | 2617.500002 | 0.001 |
| 3.85 | 2572.500003 | 0.001 | 2617.500001 | 0.000 |
| 3.28 | 2572.500003 | 0.001 | 2617.500003 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 38 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2572.500004 | 0.002 | 2617.500002 | 0.001 |
| -20 | 2572.500003 | 0.001 | 2617.500002 | 0.001 |
| -10 | 2572.500001 | 0.001 | 2617.500003 | 0.001 |
| 0 | 2572.500004 | 0.002 | 2617.500003 | 0.001 |
| 10 | 2572.499996 | -0.001 | 2617.499997 | -0.001 |
| 20 | 2572.499999 | -0.001 | 2617.499997 | -0.001 |
| 30 | 2572.499998 | -0.001 | 2617.499998 | -0.001 |
| 40 | 2572.499998 | -0.001 | 2617.499998 | -0.001 |
| 50 | 2572.499998 | -0.001 | 2617.499998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 38 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2575.000003 | 0.001 | 2615.000003 | 0.001 |
| 3.85 | 2575.000003 | 0.001 | 2615.000004 | 0.001 |
| 3.28 | 2575.000003 | 0.001 | 2615.000002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 38 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2575.000002 | 0.001 | 2615.000003 | 0.001 |
| -20 | 2575.000002 | 0.001 | 2615.000002 | 0.001 |
| -10 | 2575.000004 | 0.001 | 2615.000003 | 0.001 |
| 0 | 2575.000002 | 0.001 | 2615.000003 | 0.001 |
| 10 | 2574.999997 | -0.001 | 2614.999997 | -0.001 |
| 20 | 2574.999997 | -0.001 | 2614.999998 | -0.001 |
| 30 | 2574.999999 | 0.000 | 2614.999998 | -0.001 |
| 40 | 2574.999998 | -0.001 | 2614.999998 | -0.001 |
| 50 | 2574.999998 | -0.001 | 2614.999998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 38 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2577.500003 | 0.001 | 2612.500003 | 0.001 |
| 3.85 | 2577.500004 | 0.002 | 2612.500002 | 0.001 |
| 3.28 | 2577.500002 | 0.001 | 2612.500003 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 38 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2577.500003 | 0.001 | 2612.500003 | 0.001 |
| -20 | 2577.500001 | 0.000 | 2612.500001 | 0.000 |
| -10 | 2577.500003 | 0.001 | 2612.500003 | 0.001 |
| 0 | 2577.500001 | 0.001 | 2612.500004 | 0.001 |
| 10 | 2577.499997 | -0.001 | 2612.499998 | -0.001 |
| 20 | 2577.499999 | -0.001 | 2612.499996 | -0.001 |
| 30 | 2577.499998 | -0.001 | 2612.499998 | -0.001 |
| 40 | 2577.499996 | -0.002 | 2612.499998 | -0.001 |
| 50 | 2577.499999 | 0.000 | 2612.499998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 38 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2580.000003 | 0.001 | 2610.000002 | 0.001 |
| 3.85 | 2580.000003 | 0.001 | 2610.000004 | 0.002 |
| 3.28 | 2580.000001 | 0.000 | 2610.000000 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 38 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2580.000002 | 0.001 | 2610.000004 | 0.001 |
| -20 | 2580.000004 | 0.001 | 2610.000002 | 0.001 |
| -10 | 2580.000001 | 0.001 | 2610.000003 | 0.001 |
| 0 | 2580.000002 | 0.001 | 2610.000001 | 0.001 |
| 10 | 2579.999998 | -0.001 | 2609.999999 | 0.000 |
| 20 | 2579.999998 | -0.001 | 2609.999998 | -0.001 |
| 30 | 2579.999998 | -0.001 | 2609.999997 | -0.001 |
| 40 | 2579.999997 | -0.001 | 2609.999997 | -0.001 |
| 50 | 2579.999997 | -0.001 | 2609.999999 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 41 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2498.500004 | 0.001 | 2687.500004 | 0.001 |
| 3.85 | 2498.500004 | 0.002 | 2687.500004 | 0.001 |
| 3.28 | 2498.500003 | 0.001 | 2687.500001 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 41 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2498.500003 | 0.001 | 2687.500001 | 0.000 |
| -20 | 2498.500003 | 0.001 | 2687.500001 | 0.000 |
| -10 | 2498.500002 | 0.001 | 2687.500001 | 0.000 |
| 0 | 2498.500002 | 0.001 | 2687.500002 | 0.001 |
| 10 | 2498.499999 | -0.001 | 2687.499998 | -0.001 |
| 20 | 2498.499999 | -0.001 | 2687.499997 | -0.001 |
| 30 | 2498.499998 | -0.001 | 2687.499998 | -0.001 |
| 40 | 2498.499997 | -0.001 | 2687.499998 | -0.001 |
| 50 | 2498.499997 | -0.001 | 2687.499998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 41 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2501.000002 | 0.001 | 2685.000003 | 0.001 |
| 3.85 | 2501.000003 | 0.001 | 2685.000001 | 0.000 |
| 3.28 | 2501.000002 | 0.001 | 2685.000002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 41 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2501.000003 | 0.001 | 2685.000003 | 0.001 |
| -20 | 2501.000002 | 0.001 | 2685.000004 | 0.001 |
| -10 | 2501.000001 | 0.001 | 2685.000003 | 0.001 |
| 0 | 2501.000002 | 0.001 | 2685.000004 | 0.001 |
| 10 | 2500.999996 | -0.002 | 2684.999997 | -0.001 |
| 20 | 2500.999999 | 0.000 | 2684.999999 | 0.000 |
| 30 | 2500.999998 | -0.001 | 2684.999999 | -0.001 |
| 40 | 2500.999999 | 0.000 | 2684.999998 | -0.001 |
| 50 | 2500.999998 | -0.001 | 2684.999999 | 0.000 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 41 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2503.500003 | 0.001 | 2682.500002 | 0.001 |
| 3.85 | 2503.500002 | 0.001 | 2682.500003 | 0.001 |
| 3.28 | 2503.500004 | 0.002 | 2682.500003 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 41 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2503.500003 | 0.001 | 2682.500003 | 0.001 |
| -20 | 2503.500001 | 0.000 | 2682.500001 | 0.000 |
| -10 | 2503.500002 | 0.001 | 2682.500003 | 0.001 |
| 0 | 2503.500001 | 0.000 | 2682.500001 | 0.000 |
| 10 | 2503.499999 | 0.000 | 2682.499997 | -0.001 |
| 20 | 2503.499998 | -0.001 | 2682.499999 | 0.000 |
| 30 | 2503.499996 | -0.001 | 2682.499998 | -0.001 |
| 40 | 2503.499997 | -0.001 | 2682.499997 | -0.001 |
| 50 | 2503.499998 | -0.001 | 2682.499998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 41 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 2506.000003 | 0.001 | 2680.000001 | 0.001 |
| 3.85 | 2506.000002 | 0.001 | 2680.000003 | 0.001 |
| 3.28 | 2506.000002 | 0.001 | 2680.000002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 41 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 2506.000003 | 0.001 | 2680.000002 | 0.001 |
| -20 | 2506.000003 | 0.001 | 2680.000002 | 0.001 |
| -10 | 2506.000002 | 0.001 | 2680.000004 | 0.001 |
| 0 | 2506.000003 | 0.001 | 2680.000003 | 0.001 |
| 10 | 2505.999998 | -0.001 | 2679.999998 | -0.001 |
| 20 | 2505.999997 | -0.001 | 2679.999998 | -0.001 |
| 30 | 2505.999996 | -0.002 | 2679.999998 | -0.001 |
| 40 | 2505.999997 | -0.001 | 2679.999998 | -0.001 |
| 50 | 2505.999997 | -0.001 | 2679.999998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 66 | | | |
|---------------|---------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1710.700002 | 0.001 | 1779.300002 | 0.001 |
| 3.85 | 1710.700003 | 0.001 | 1779.300002 | 0.001 |
| 3.28 | 1710.700004 | 0.002 | 1779.300002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66 | | | |
|------------|---------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1710.700003 | 0.002 | 1779.300001 | 0.001 |
| -20 | 1710.700004 | 0.002 | 1779.300001 | 0.001 |
| -10 | 1710.700003 | 0.002 | 1779.300003 | 0.002 |
| 0 | 1710.700003 | 0.002 | 1779.300003 | 0.002 |
| 10 | 1710.699997 | -0.002 | 1779.299997 | -0.002 |
| 20 | 1710.699996 | -0.002 | 1779.299999 | -0.001 |
| 30 | 1710.699998 | -0.001 | 1779.299997 | -0.002 |
| 40 | 1710.699997 | -0.002 | 1779.299999 | -0.001 |
| 50 | 1710.699998 | -0.001 | 1779.299996 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 66 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 3 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1711.500003 | 0.002 | 1778.500003 | 0.002 |
| 3.85 | 1711.500003 | 0.002 | 1778.500004 | 0.002 |
| 3.28 | 1711.500004 | 0.002 | 1778.500003 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 3 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1711.500001 | 0.001 | 1778.500003 | 0.002 |
| -20 | 1711.500004 | 0.002 | 1778.500004 | 0.002 |
| -10 | 1711.500001 | 0.001 | 1778.500003 | 0.002 |
| 0 | 1711.500002 | 0.001 | 1778.500003 | 0.001 |
| 10 | 1711.499996 | -0.002 | 1778.499997 | -0.002 |
| 20 | 1711.499998 | -0.001 | 1778.499998 | -0.001 |
| 30 | 1711.499999 | -0.001 | 1778.499997 | -0.002 |
| 40 | 1711.499998 | -0.001 | 1778.499997 | -0.002 |
| 50 | 1711.499999 | -0.001 | 1778.499997 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 66 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1712.500003 | 0.001 | 1777.500003 | 0.002 |
| 3.85 | 1712.500002 | 0.001 | 1777.500002 | 0.001 |
| 3.28 | 1712.500004 | 0.002 | 1777.500004 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1712.500003 | 0.002 | 1777.500004 | 0.002 |
| -20 | 1712.500002 | 0.001 | 1777.500002 | 0.001 |
| -10 | 1712.500003 | 0.002 | 1777.500004 | 0.002 |
| 0 | 1712.500001 | 0.001 | 1777.500002 | 0.001 |
| 10 | 1712.499999 | -0.001 | 1777.499999 | -0.001 |
| 20 | 1712.499998 | -0.001 | 1777.499998 | -0.001 |
| 30 | 1712.499998 | -0.001 | 1777.499999 | -0.001 |
| 40 | 1712.499998 | -0.001 | 1777.499997 | -0.002 |
| 50 | 1712.499998 | -0.001 | 1777.499998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 66 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1715.000003 | 0.001 | 1775.000002 | 0.001 |
| 3.85 | 1715.000004 | 0.002 | 1775.000002 | 0.001 |
| 3.28 | 1715.000001 | 0.001 | 1775.000003 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1715.000003 | 0.002 | 1775.000003 | 0.002 |
| -20 | 1715.000002 | 0.001 | 1775.000001 | 0.001 |
| -10 | 1715.000004 | 0.002 | 1775.000004 | 0.002 |
| 0 | 1715.000002 | 0.001 | 1775.000003 | 0.002 |
| 10 | 1714.999996 | -0.002 | 1774.999998 | -0.001 |
| 20 | 1714.999996 | -0.002 | 1774.999998 | -0.001 |
| 30 | 1714.999998 | -0.001 | 1774.999997 | -0.002 |
| 40 | 1714.999997 | -0.002 | 1774.999997 | -0.002 |
| 50 | 1714.999998 | -0.001 | 1774.999997 | -0.002 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 66 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1717.500001 | 0.001 | 1772.500004 | 0.002 |
| 3.85 | 1717.500001 | 0.001 | 1772.500003 | 0.001 |
| 3.28 | 1717.500001 | 0.001 | 1772.500002 | 0.001 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1717.500002 | 0.001 | 1772.500002 | 0.001 |
| -20 | 1717.500002 | 0.001 | 1772.500002 | 0.001 |
| -10 | 1717.500001 | 0.001 | 1772.500001 | 0.001 |
| 0 | 1717.500001 | 0.001 | 1772.500003 | 0.001 |
| 10 | 1717.499998 | -0.001 | 1772.499997 | -0.002 |
| 20 | 1717.499997 | -0.002 | 1772.499997 | -0.002 |
| 30 | 1717.499998 | -0.001 | 1772.499997 | -0.002 |
| 40 | 1717.499997 | -0.002 | 1772.499999 | -0.001 |
| 50 | 1717.499998 | -0.001 | 1772.499998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 66 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 1720.000003 | 0.002 | 1770.000001 | 0.001 |
| 3.85 | 1720.000001 | 0.001 | 1770.000003 | 0.002 |
| 3.28 | 1720.000001 | 0.001 | 1770.000004 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 66 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1720.000001 | 0.001 | 1770.000002 | 0.001 |
| -20 | 1720.000003 | 0.002 | 1770.000003 | 0.002 |
| -10 | 1720.000003 | 0.002 | 1770.000002 | 0.001 |
| 0 | 1720.000003 | 0.002 | 1770.000001 | 0.001 |
| 10 | 1719.999997 | -0.002 | 1769.999997 | -0.002 |
| 20 | 1719.999999 | -0.001 | 1769.999998 | -0.001 |
| 30 | 1719.999998 | -0.001 | 1769.999998 | -0.001 |
| 40 | 1719.999996 | -0.002 | 1769.999997 | -0.001 |
| 50 | 1719.999997 | -0.002 | 1769.999998 | -0.001 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 71 | | | |
|---------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 665.500002 | 0.003 | 695.500004 | 0.005 |
| 3.85 | 665.500001 | 0.002 | 695.500002 | 0.003 |
| 3.28 | 665.500003 | 0.005 | 695.500004 | 0.005 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 71 | | | |
|------------|------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 5MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 665.500004 | 0.006 | 695.500003 | 0.004 |
| -20 | 665.500001 | 0.002 | 695.500002 | 0.002 |
| -10 | 665.500002 | 0.002 | 695.500002 | 0.002 |
| 0 | 665.500003 | 0.005 | 695.500002 | 0.002 |
| 10 | 665.499998 | -0.003 | 695.499998 | -0.003 |
| 20 | 665.499999 | -0.002 | 695.499997 | -0.005 |
| 30 | 665.499998 | -0.003 | 695.499996 | -0.005 |
| 40 | 665.499999 | -0.002 | 695.499999 | -0.002 |
| 50 | 665.499996 | -0.006 | 695.499998 | -0.003 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 71 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 668.000002 | 0.003 | 693.000001 | 0.002 |
| 3.85 | 668.000001 | 0.002 | 693.000003 | 0.004 |
| 3.28 | 668.000001 | 0.002 | 693.000003 | 0.004 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 71 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 10MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 668.000003 | 0.004 | 693.000001 | 0.002 |
| -20 | 668.000001 | 0.002 | 693.000001 | 0.002 |
| -10 | 668.000003 | 0.004 | 693.000004 | 0.005 |
| 0 | 668.000004 | 0.006 | 693.000004 | 0.005 |
| 10 | 667.999997 | -0.004 | 692.999998 | -0.003 |
| 20 | 667.999997 | -0.004 | 692.999998 | -0.003 |
| 30 | 667.999998 | -0.003 | 692.999999 | -0.001 |
| 40 | 667.999996 | -0.006 | 692.999997 | -0.004 |
| 50 | 667.999998 | -0.004 | 692.999997 | -0.004 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 71 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 670.500004 | 0.005 | 690.500002 | 0.003 |
| 3.85 | 670.500004 | 0.006 | 690.500002 | 0.002 |
| 3.28 | 670.500002 | 0.003 | 690.500002 | 0.003 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 71 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 15MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 670.500003 | 0.004 | 690.500004 | 0.005 |
| -20 | 670.500003 | 0.004 | 690.500002 | 0.003 |
| -10 | 670.500004 | 0.006 | 690.500002 | 0.003 |
| 0 | 670.500004 | 0.005 | 690.500004 | 0.005 |
| 10 | 670.499996 | -0.006 | 690.499997 | -0.004 |
| 20 | 670.499998 | -0.003 | 690.499997 | -0.004 |
| 30 | 670.499998 | -0.003 | 690.499997 | -0.005 |
| 40 | 670.499999 | -0.001 | 690.499996 | -0.005 |
| 50 | 670.499998 | -0.004 | 690.499997 | -0.004 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 71 | | | |
|---------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 4.43 | 673.000002 | 0.003 | 688.000002 | 0.002 |
| 3.85 | 673.000003 | 0.004 | 688.000001 | 0.002 |
| 3.28 | 673.000001 | 0.002 | 688.000001 | 0.002 |

Note: The applicant defined the normal working voltage is from 3.28Vdc to 4.43Vdc.

Frequency Error vs. Temperature

| Temp. (°C) | LTE Band 71 | | | |
|------------|-------------------------|-----------------------|-----------------|-----------------------|
| | Channel Bandwidth 20MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 673.000004 | 0.005 | 688.000002 | 0.003 |
| -20 | 673.000002 | 0.003 | 688.000003 | 0.004 |
| -10 | 673.000001 | 0.001 | 688.000001 | 0.002 |
| 0 | 673.000002 | 0.003 | 688.000003 | 0.005 |
| 10 | 672.999996 | -0.006 | 687.999998 | -0.003 |
| 20 | 672.999999 | -0.002 | 687.999998 | -0.003 |
| 30 | 672.999997 | -0.005 | 687.999997 | -0.004 |
| 40 | 672.999996 | -0.006 | 687.999998 | -0.003 |
| 50 | 672.999997 | -0.005 | 687.999997 | -0.005 |

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

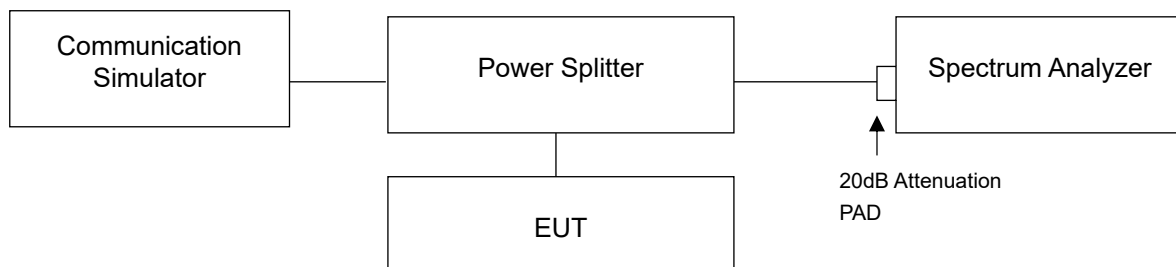
The occupied bandwidth (OBW), that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 % of the total mean power radiated by a given emission.

4.4.2 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Measurement method, please refer to section 5.4.4 of ANSI C63.26. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

4.4.3 Test Setup



4.4.4 Test Result

Occupied Bandwidth

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
|---------|-----------------|------------------------------|-------|-------|
| | | WCDMA | HSDPA | HSUPA |
| 1312 | 1712.4 | 4.19 | 4.17 | 4.17 |
| 1413 | 1732.6 | 4.17 | 4.16 | 4.17 |
| 1513 | 1752.6 | 4.18 | 4.16 | 4.16 |

Spectrum Plot of Worst Value



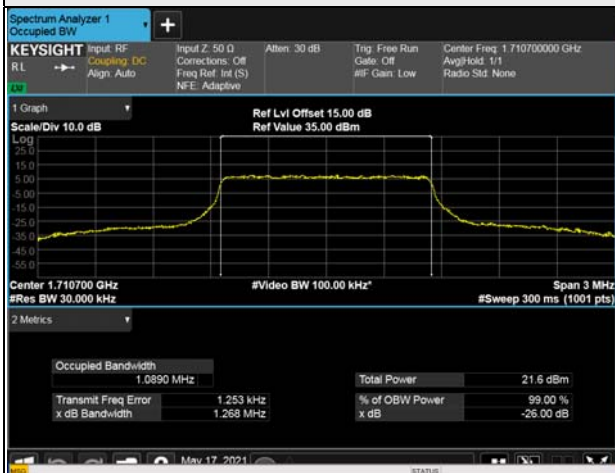
| LTE Band 4, Channel Bandwidth 1.4MHz | | | | | |
|--------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 19957 | 1710.7 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20175 | 1732.5 | 1.09 | 1.09 | 1.09 | 1.09 |
| 20393 | 1754.3 | 1.09 | 1.09 | 1.09 | 1.08 |
| LTE Band 4, Channel Bandwidth 3MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 19965 | 1711.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| 20175 | 1732.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| 20385 | 1753.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| LTE Band 4, Channel Bandwidth 5MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 19975 | 1712.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| 20175 | 1732.5 | 4.49 | 4.49 | 4.50 | 4.49 |
| 20375 | 1752.5 | 4.49 | 4.49 | 4.49 | 4.48 |
| LTE Band 4, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20000 | 1715.0 | 8.98 | 8.96 | 8.97 | 8.95 |
| 20175 | 1732.5 | 8.99 | 8.97 | 8.97 | 8.97 |
| 20350 | 1750.0 | 8.98 | 8.95 | 8.96 | 8.95 |
| LTE Band 4, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20025 | 1717.5 | 13.43 | 13.43 | 13.43 | 13.42 |
| 20175 | 1732.5 | 13.48 | 13.47 | 13.47 | 13.47 |
| 20325 | 1747.5 | 13.44 | 13.43 | 13.43 | 13.43 |

LTE Band 4, Channel Bandwidth 20MHz

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
|---------|-----------------|------------------------------|-------|-------|--------|
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20050 | 1720.0 | 17.88 | 17.89 | 17.89 | 17.89 |
| 20175 | 1732.5 | 17.97 | 17.98 | 17.98 | 17.97 |
| 20300 | 1745.0 | 17.90 | 17.92 | 17.91 | 17.91 |

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / 16QAM



5MHz / 16QAM



10MHz / QPSK



15MHz / QPSK

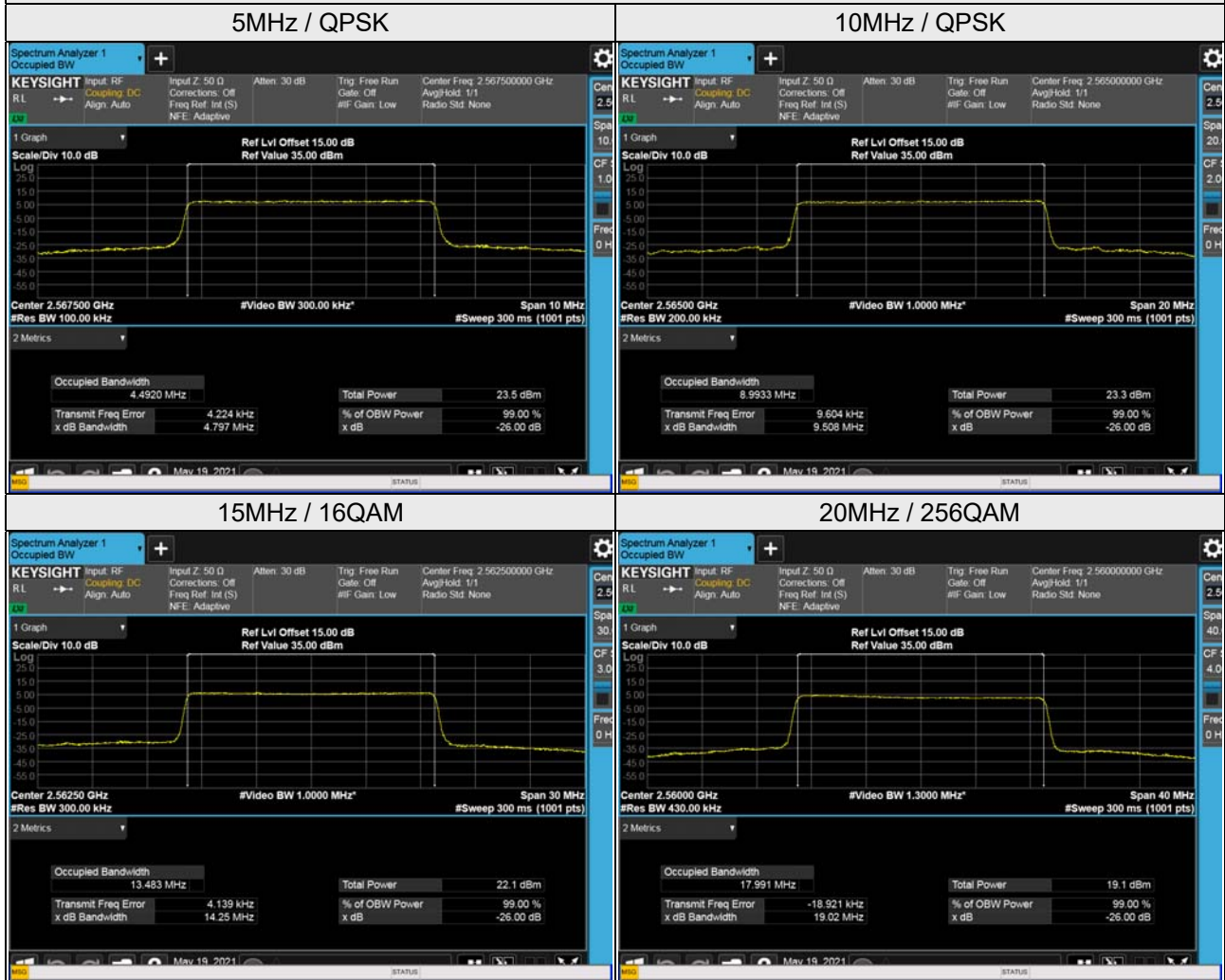


20MHz / QPSK



| LTE Band 7, Channel Bandwidth 5MHz | | | | | |
|-------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20775 | 2502.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| 21100 | 2535.0 | 4.49 | 4.49 | 4.49 | 4.49 |
| 21425 | 2567.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| LTE Band 7, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20800 | 2505.0 | 8.98 | 8.97 | 8.97 | 8.97 |
| 21100 | 2535.0 | 8.99 | 8.98 | 8.98 | 8.98 |
| 21400 | 2565.0 | 8.99 | 8.98 | 8.98 | 8.98 |
| LTE Band 7, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20825 | 2507.5 | 13.45 | 13.44 | 13.44 | 13.44 |
| 21100 | 2535.0 | 13.47 | 13.48 | 13.47 | 13.47 |
| 21375 | 2562.5 | 13.48 | 13.48 | 13.48 | 13.48 |
| LTE Band 7, Channel Bandwidth 20MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20850 | 2510.0 | 17.89 | 17.90 | 17.90 | 17.91 |
| 21100 | 2535.0 | 17.96 | 17.97 | 17.98 | 17.97 |
| 21350 | 2560.0 | 17.99 | 17.99 | 17.99 | 17.99 |

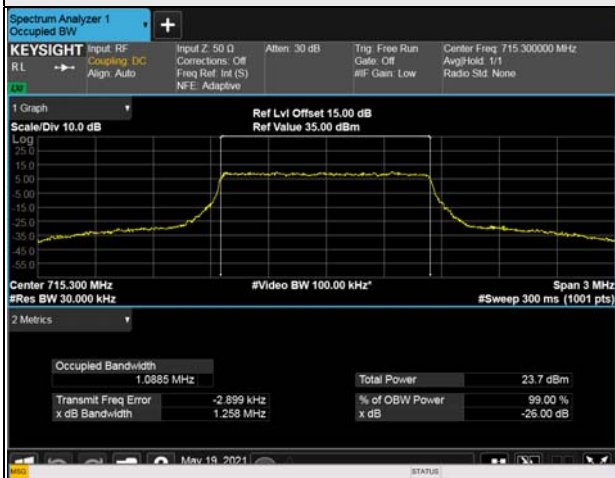
Spectrum Plot of Worst Value



| LTE Band 12, Channel Bandwidth 1.4MHz | | | | | |
|---------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 23017 | 699.7 | 1.09 | 1.09 | 1.09 | 1.09 |
| 23095 | 707.5 | 1.09 | 1.09 | 1.09 | 1.08 |
| 23173 | 715.3 | 1.09 | 1.09 | 1.09 | 1.09 |
| LTE Band 12, Channel Bandwidth 3MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 23025 | 700.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| 23095 | 707.5 | 2.70 | 2.70 | 2.70 | 2.69 |
| 23165 | 714.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| LTE Band 12, Channel Bandwidth 5MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 23035 | 701.5 | 4.49 | 4.49 | 4.48 | 4.48 |
| 23095 | 707.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| 23155 | 713.5 | 4.48 | 4.48 | 4.48 | 4.48 |
| LTE Band 12, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 23060 | 704.0 | 8.99 | 8.97 | 8.97 | 8.97 |
| 23095 | 707.5 | 8.99 | 8.98 | 8.99 | 8.98 |
| 23130 | 711.0 | 8.97 | 8.96 | 8.96 | 8.95 |

Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 16QAM



5MHz / 16QAM

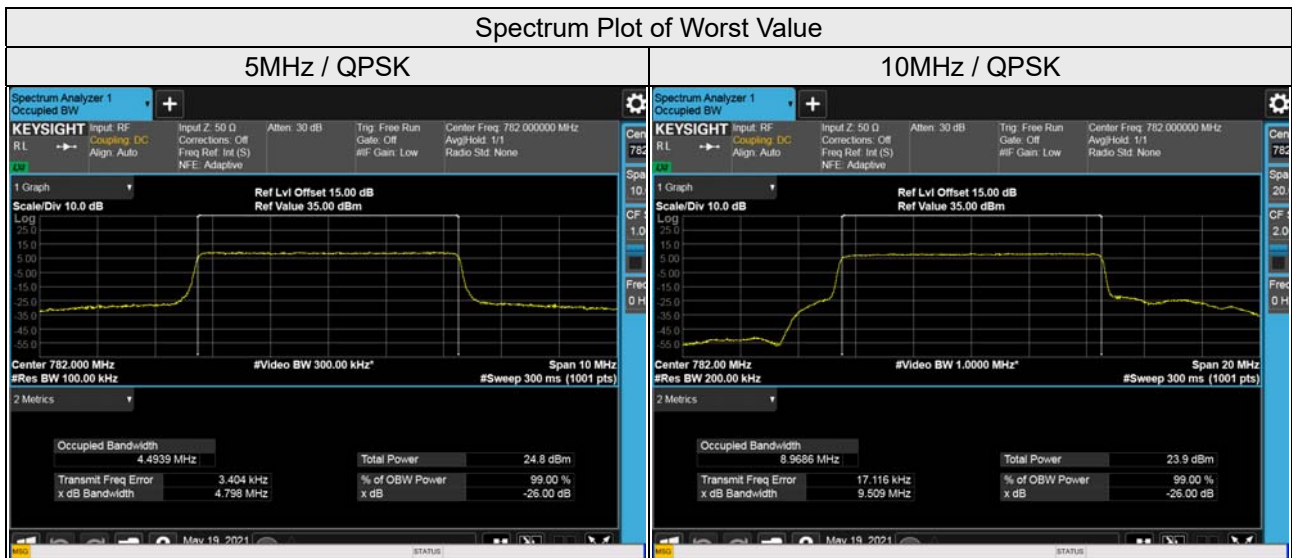


10MHz / QPSK



| LTE Band 13, Channel Bandwidth 5MHz | | | | | |
|-------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 23205 | 779.5 | 4.48 | 4.48 | 4.48 | 4.48 |
| 23230 | 782.0 | 4.49 | 4.49 | 4.49 | 4.49 |
| 23255 | 784.5 | 4.48 | 4.48 | 4.48 | 4.48 |

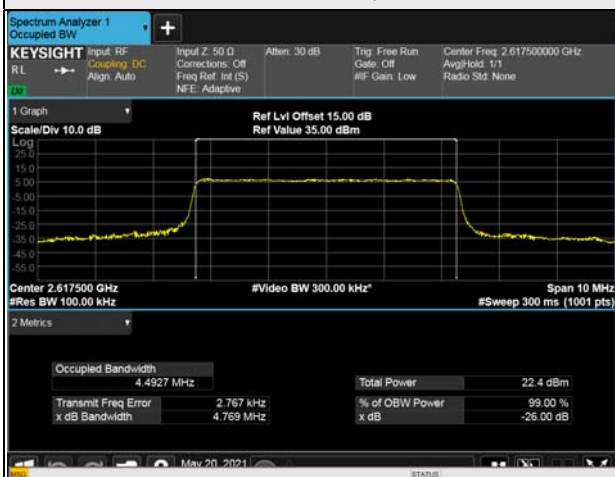
| LTE Band 13, Channel Bandwidth 10MHz | | | | | |
|--------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 23230 | 782.0 | 8.97 | 8.95 | 8.95 | 8.95 |



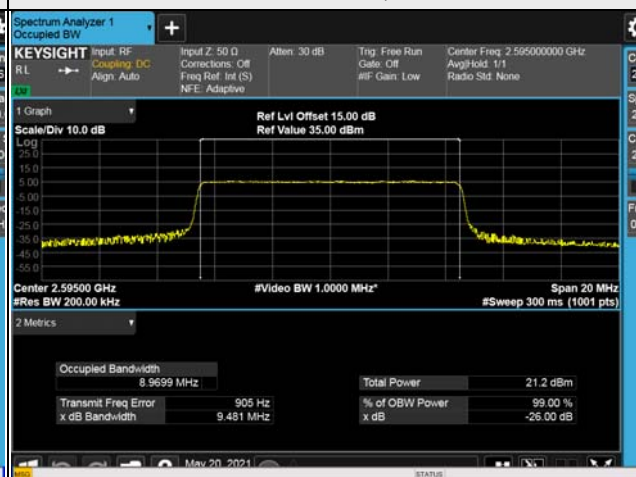
| LTE Band 38, Channel Bandwidth 5MHz | | | | | |
|--------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 37775 | 2572.5 | 4.49 | 4.49 | 4.48 | 4.48 |
| 38000 | 2595.0 | 4.49 | 4.49 | 4.48 | 4.48 |
| 38225 | 2617.5 | 4.49 | 4.49 | 4.48 | 4.47 |
| LTE Band 38, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 37800 | 2575.0 | 8.97 | 8.97 | 8.97 | 8.96 |
| 38000 | 2595.0 | 8.96 | 8.96 | 8.97 | 8.96 |
| 38200 | 2615.0 | 8.96 | 8.96 | 8.97 | 8.96 |
| LTE Band 38, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 37825 | 2577.5 | 13.44 | 13.44 | 13.44 | 13.45 |
| 38000 | 2595.0 | 13.44 | 13.44 | 13.44 | 13.44 |
| 38175 | 2612.5 | 13.45 | 13.44 | 13.45 | 13.44 |
| LTE Band 38, Channel Bandwidth 20MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 37850 | 2580.0 | 17.92 | 17.93 | 17.93 | 17.92 |
| 38000 | 2595.0 | 17.93 | 17.93 | 17.92 | 17.92 |
| 38150 | 2610.0 | 17.93 | 17.94 | 17.93 | 17.93 |

Spectrum Plot of Worst Value

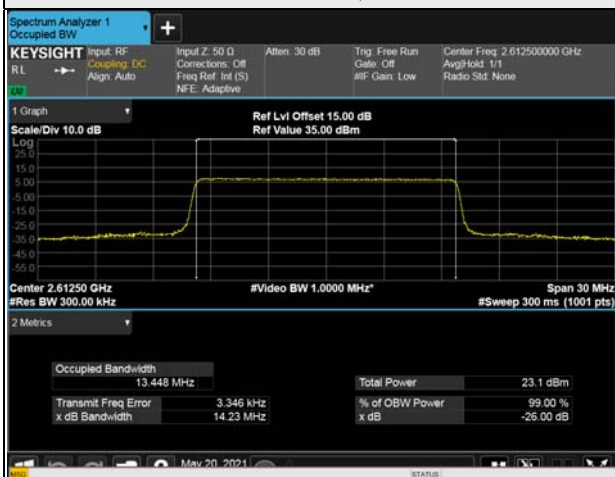
5MHz / 16QAM



10MHz / 64QAM



15MHz / QPSK



20MHz / 16QAM



| LTE Band 41, Channel Bandwidth 5MHz | | | | | |
|--------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 39675 | 2498.5 | 4.49 | 4.49 | 4.49 | 4.48 |
| 40620 | 2593.0 | 4.48 | 4.49 | 4.48 | 4.48 |
| 41565 | 2687.5 | 4.49 | 4.49 | 4.48 | 4.47 |
| LTE Band 41, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 39700 | 2501.0 | 8.97 | 8.96 | 8.97 | 8.97 |
| 40620 | 2593.0 | 8.96 | 8.96 | 8.96 | 8.89 |
| 41540 | 2685.0 | 8.96 | 8.96 | 8.96 | 8.96 |
| LTE Band 41, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 39725 | 2503.5 | 13.45 | 13.45 | 13.47 | 13.45 |
| 40620 | 2593.0 | 13.44 | 13.44 | 13.45 | 13.44 |
| 41515 | 2682.5 | 13.44 | 13.44 | 13.45 | 13.43 |
| LTE Band 41, Channel Bandwidth 20MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 39750 | 2506.0 | 17.90 | 17.92 | 17.96 | 17.92 |
| 40620 | 2593.0 | 17.92 | 17.92 | 17.92 | 17.90 |
| 41490 | 2680.0 | 17.91 | 17.91 | 17.91 | 17.89 |

Spectrum Plot of Worst Value

5MHz / 16QAM



10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM



| LTE Band 66, Channel Bandwidth 1.4MHz | | | | | |
|---------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 131979 | 1710.7 | 1.09 | 1.09 | 1.09 | 1.09 |
| 132322 | 1745.0 | 1.09 | 1.09 | 1.09 | 1.09 |
| 132665 | 1779.3 | 1.09 | 1.09 | 1.09 | 1.09 |
| LTE Band 66, Channel Bandwidth 3MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 131987 | 1711.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| 132322 | 1745.0 | 2.70 | 2.70 | 2.70 | 2.70 |
| 132657 | 1778.5 | 2.70 | 2.70 | 2.70 | 2.70 |
| LTE Band 66, Channel Bandwidth 5MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 131997 | 1712.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| 132322 | 1745.0 | 4.49 | 4.50 | 4.49 | 4.49 |
| 132647 | 1777.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| LTE Band 66, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 132022 | 1715.0 | 8.98 | 8.97 | 8.97 | 8.97 |
| 132322 | 1745.0 | 8.99 | 8.97 | 8.97 | 8.96 |
| 132622 | 1775.0 | 8.98 | 8.97 | 8.96 | 8.96 |
| LTE Band 66, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 132047 | 1717.5 | 13.43 | 13.44 | 13.43 | 13.42 |
| 132322 | 1745.0 | 13.45 | 13.44 | 13.43 | 13.44 |
| 132597 | 1772.5 | 13.43 | 13.43 | 13.42 | 13.43 |

LTE Band 66, Channel Bandwidth 20MHz

| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
|---------|-----------------|------------------------------|-------|-------|--------|
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 132072 | 1720.0 | 17.87 | 17.89 | 17.89 | 17.88 |
| 132322 | 1745.0 | 17.91 | 17.92 | 17.91 | 17.92 |
| 132572 | 1770.0 | 17.90 | 17.90 | 17.91 | 17.92 |

Spectrum Plot of Worst Value

1.4MHz / 64QAM



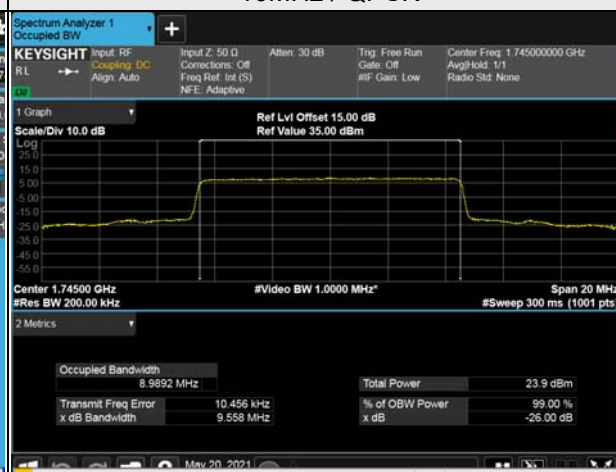
3MHz / QPSK



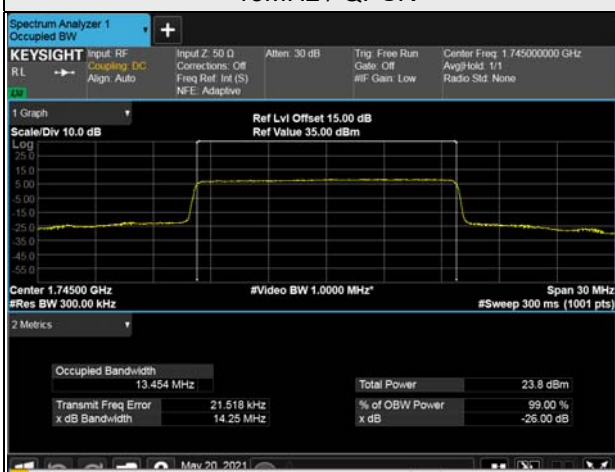
5MHz / 16QAM



10MHz / QPSK



15MHz / QPSK



20MHz / 16QAM



| LTE Band 71, Channel Bandwidth 5MHz | | | | | |
|--------------------------------------|-----------------|------------------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 133147 | 665.5 | 4.49 | 4.49 | 4.48 | 4.48 |
| 133297 | 680.5 | 4.49 | 4.49 | 4.49 | 4.49 |
| 133447 | 695.5 | 4.49 | 4.49 | 4.48 | 4.48 |
| LTE Band 71, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 133172 | 668.0 | 8.98 | 8.96 | 8.96 | 8.95 |
| 133297 | 680.5 | 8.98 | 8.96 | 8.97 | 8.97 |
| 133422 | 693.0 | 8.98 | 8.97 | 8.97 | 8.97 |
| LTE Band 71, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 133197 | 670.5 | 13.44 | 13.44 | 13.44 | 13.44 |
| 133297 | 680.5 | 13.46 | 13.45 | 13.44 | 13.44 |
| 133397 | 690.5 | 13.46 | 13.46 | 13.45 | 13.46 |
| LTE Band 71, Channel Bandwidth 20MHz | | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 133222 | 673.0 | 17.91 | 17.92 | 17.93 | 17.92 |
| 133297 | 680.5 | 17.93 | 17.94 | 17.93 | 17.94 |
| 133372 | 688.0 | 17.93 | 17.94 | 17.95 | 17.95 |

Spectrum Plot of Worst Value

5MHz / QPSK



10MHz / QPSK



15MHz / QPSK



20MHz / 256QAM



26dB Bandwidth

| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
|---------|-----------------|----------------------|-------|-------|
| | | WCDMA | HSDPA | HSUPA |
| 1312 | 1712.4 | 4.77 | 4.72 | 4.72 |
| 1413 | 1732.6 | 4.72 | 4.70 | 4.70 |
| 1513 | 1752.6 | 4.75 | 4.71 | 4.71 |

Spectrum Plot of Worst Value



| LTE Band 4, Channel Bandwidth 1.4MHz | | | | | |
|--------------------------------------|-----------------|----------------------|-------|-------|--------|
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 19957 | 1710.7 | 1.25 | 1.27 | 1.25 | 1.24 |
| 20175 | 1732.5 | 1.25 | 1.27 | 1.26 | 1.24 |
| 20393 | 1754.3 | 1.24 | 1.25 | 1.25 | 1.24 |
| LTE Band 4, Channel Bandwidth 3MHz | | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 19965 | 1711.5 | 2.89 | 2.88 | 2.88 | 2.88 |
| 20175 | 1732.5 | 2.89 | 2.88 | 2.87 | 2.88 |
| 20385 | 1753.5 | 2.89 | 2.88 | 2.87 | 2.88 |
| LTE Band 4, Channel Bandwidth 5MHz | | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 19975 | 1712.5 | 4.79 | 4.77 | 4.79 | 4.78 |
| 20175 | 1732.5 | 4.80 | 4.78 | 4.79 | 4.78 |
| 20375 | 1752.5 | 4.76 | 4.80 | 4.80 | 4.77 |
| LTE Band 4, Channel Bandwidth 10MHz | | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20000 | 1715.0 | 9.50 | 9.49 | 9.51 | 9.50 |
| 20175 | 1732.5 | 9.52 | 9.51 | 9.50 | 9.50 |
| 20350 | 1750.0 | 9.50 | 9.49 | 9.49 | 9.50 |
| LTE Band 4, Channel Bandwidth 15MHz | | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | | |
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20025 | 1717.5 | 14.23 | 14.23 | 14.23 | 14.22 |
| 20175 | 1732.5 | 14.24 | 14.25 | 14.26 | 14.26 |
| 20325 | 1747.5 | 14.23 | 14.21 | 14.23 | 14.21 |

LTE Band 4, Channel Bandwidth 20MHz

| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | | |
|---------|-----------------|----------------------|-------|-------|--------|
| | | QPSK | 16QAM | 64QAM | 256QAM |
| 20050 | 1720.0 | 19.00 | 19.00 | 19.01 | 18.98 |
| 20175 | 1732.5 | 19.04 | 19.05 | 19.05 | 19.04 |
| 20300 | 1745.0 | 19.02 | 19.02 | 19.01 | 19.00 |